BMC Minerals LTD

2016 GEOLOGICAL, GEOPHYSICAL, DIAMOND DRILLING AND GEOTECHNICAL PROGRAM REPORT ON THE KUDZ ZE KAYAH (KZK) PROPERTY

Field Work Completed Between April 15th, 2016 and October 3rd, 2016

Located in the Watson Lake Mining District, Yukon
NTS 105G/7, 8, 9 and 10
61˚ 31' N Latitude; 130˚ 33' W Longitude

-prepared for-

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March 2017

EQUITY

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SUMMARY

BMC Minerals' Kudz Ze Kayah ("KZK") Property consists of 879 quartz claims that cover 16005 hectares (160 km^2) of south-central Yukon, and is centred at 61˚ 31' N latitude and 130˚ 33' W longitude on NTS map sheets 105G/7–10, within the Watson Lake Mining District. It is notable for containing the ABM and GP4F volcanogenic massive sulphide (VMS) deposits, which are located 5 km apart. Following the 2016 exploration work described in this report, BMC announced an updated (indicated + inferred) resource for the ABM deposit comprising 19.2 Mt at 0.9% Cu, 1.9% Pb, 6.3% Zn, 1.4 g/t Au and 148 g/t Ag (BMC Minerals Ltd., 2016a). In addition, an updated indicated + inferred resource for the GP4F deposit was estimated at 1.7Mt grading 0.2%Cu, 2.6% Pb, 5.3% Zn, 1.4 g/t Au and 73 g/t Ag (BMC Minerals Ltd., 2016a).

The 2016 field program included earthworks, work on the historical core archive, terrain surveys (airborne LiDAR, ground-based DGPS), geophysics (airborne magnetics and EM, ground-based borehole EM), resource and exploration drilling (on Krakatoa Zone, GP4F deposit, ABM Zone, Sebesi and Tarawera targets), metallurgical drilling (Krakatoa, GP4F, ABM), geotechnical investigations (mine site, Krakatoa rock quality), hydrogeological drilling, and environmental baseline surveys (Table 1).

Earthworks included building of trails and pads for the 2016 drilling program, followed by extensive reclamation of 2015/16 trails (65% reclaimed) and pads (95% reclaimed).

Historical core work included relocation of archived core (5464 boxes, 33902.6 m of drill core) five kilometres up the tote road to the new KZK Camp, and completion of the comprehensive re-logging program started in 2015. Re-sampling and assay of historical GP4F core suggests that Cominco's assays were likely accurate. Re-coding of historical and 2015 core was done to generate a consistent lithological interpretation across the GP4F deposit.

Table 1: Summary of work done and filed for the 2016 KZK Project

Program	Work type/target	Description	Filed?
Earthworks	Construction	5.8 km of drill trail, 59 drill pads	Yes
	Reclamation	17.5 km of drill trail from 2015/16, 140 drill pads from 2015/16	Yes
Historical core	Relocation	Historical core relocated from km-25 to new KZK Camp at km-20	Yes
	Re-logging, -coding	Re-logged 24 holes for 4030.3 m, re-coded 13 holes for 3535.5 m	Yes
	Re-sampling and assay	24 samples from historical GP4F core	Yes
Terrain surveys	Airborne LiDAR	341 km² survey over high priority core of the Property	Yes
	DGPS	246 surveyed points including all 2016 collars, outstanding 2015 collars, wells	Yes
Geophysical surveys	Airborne magnetics and EM	902 line-km magnetics and VTEM + 38 line-km reflights to redress QA/QC	Yes
	Borehole EM	11 holes surveyed for 6790.5 m	Yes
Resource and exploration drilling	Krakatoa Zone	32 holes for 8623.2 m, 1276 samples assayed	Yes
	GP4F deposit	7 holes for 1553.6 m, 196 samples assayed	Yes
	ABM Zone	3 holes for 770.0 m	Yes
	Sebesi target	4 completed holes for 3185.3 m, 7 abandoned holes for 1911.3 m; 35 samples assayed, petrography	Yes
	Tarawera target	1 hole for 854.5 m, 6 samples assayed	Yes
Metallurgical drilling	Krakatoa Zone	2 dedicated holes for 443.5 m and 173 assays, 4 dual purpose holes for 757.9 m	Yes
	GP4F deposit	5 dual purpose holes for 886.3 m	Yes
	ABM Zone	5 dedicated holes for 611.9 m, 405 samples assayed	Yes
Geotechnical investigations	Mine site	53 test pits; 16 drill holes for 631.0 m	Yes
	Krakatoa rock quality	4 dedicated holes for 608.1 m; 15 dual purpose holes for 3665.5 m	Yes
Hydrogeological	Mine site	3 dedicated holes for 18.0 m, 6 dual purpose holes for 209.9 m	Yes
Environmental	Krakatoa ARD static testing	79 samples collected from historical and 2015 drill holes	Yes
	Baseline studies	Water quality, wetland, vegetation and wildlife surveys	No
2016 TOTAL	**All work**	**84 holes for 19210.5 m, 2094 samples assayed, 902 km airborne EM-mag, 6790.5 m BHEM, 7565.8 re-logging/coding, engineering and environmental studies**	

A 341 km² airborne LiDAR survey was flown over the proposed mining area and tote road corridor to provide a high-resolution topographic surface. Ground-based differential GPS surveys measured the last 30 collars drilled in the 2015 program and all collars drilled in 2016.

The 2016 airborne magnetic and VTEM survey (902 line-km) used the same contractor and equipment as the 2015 survey, and completed coverage over the KZK Property. Preliminary review reveals broad formational responses, especially for the Wind Lake Formation, structurally influenced magnetic lows, and at least one EM anomaly (here called the "GLF EM high") that merits ground-based investigation. The "core rack" anomaly is retained as a weak EM and magnetic response even after the metal core racks were removed, and is spatially associated with an intercept of mafic footwall intrusion that is untested along at least 150 m of strike length and 300 m of downdip extent. Further groundwork on the GLF EM high and core rack anomalies is recommended, possibly comprising prospecting and/or ground-based geophysical work.

Borehole EM surveys were done in 11 holes for 6790.5 m, with responses showing a strong correlation with sulphide intercepted in drill core. Both geophysical data sets require further analysis and interpretation by an expert geophysicist.

A total of 84 holes for 19210.5 m were drilled on the KZK project in 2016, with 54 holes and 16898.0 m drilled for resource (infill, expansion) and exploration (± metallurgical) purposes. DGPS and downhole (EZ-shot ± Gyro) surveys show that the actual drilling accurately reflects the planned drilling. Core was oriented from the base of overburden to the end of each hole. Recovery and RQD averaged 91.7% and 51.6% respectively, and is lowest in the GP4F area (85.0% recovery, 48.2% RQD). A total of 2094 samples were submitted for geochemical assay, comprising 1858 core samples, 134 certified reference materials (CRMs) and 102 blanks. QA/QC review suggests that these assays are accurate and free of contamination.

Resource infill and expansion drilling on the Krakatoa Zone, which was discovered by BMC in 2015, mostly closed off mineralization along strike and at depth. Along-strike drill testing found that the bounding East and Fault Creek Faults are wider than previously recognized and consumed areas of the inferred resource modelled in January 2016 (Green et al., 2016), decreasing the indicated + inferred tonnage from 5.1 Mt to 4.2 Mt. On the other hand, the proportion of indicated resource rose from 40% to 90%, thereby meeting a key objective of the Krakatoa work program. The overall probability of significant resource expansion at Krakatoa has dropped through the 2016 work, although there are still untested gaps that could add incremental tonnage.

Resource infill drilling at the GP4F deposit was done in six holes for 1368.7 m, with a seventh (K16-407, 185.0 m) drilled as a twin to confirm a coincident core block placement and rod count error through the GP4F lens of K16-388. Results increased the proportion of indicated resource from 0% to 60%, thereby meeting a key objective of the program. Re-logging and re-coding were used to generate consistency between the 1998, 2015 and 2016 logs, and so develop a coherent lithological model across the deposit. Additional infill drilling is proposed on sections 419550E and 600E, and downdip expansion drilling is recommended for sections 419400E, 450E and 500E.

Resource expansion drilling on the ABM Zone failed to extend mineralization along strike to the west or downdip to the north, thereby closing off those parts of the deposit. BHEM surveys, done on two of three expansion holes, did not show an obvious response. Any future exploration drilling in this area should focus on the untested deep footwall rocks near the East Fault, which are prospective for Krakatoa-equivalent mineralization.

Exploration drilling on the Sebesi target did not intersect significant sulphide mineralization, with the best intercept comprising 0.5 m of pyrrhotite-rich massive sulphide grading 9.3% Zn and 0.5% Cu. This layer occurs within a ~50 m thick "Sebesi mudstone marker" unit, which was intersected in each completed drill hole (as well as, possibly, Tarawera and GP4F) and occurs 450–700 m below the top of the KZK Formation. A short mafic interval, similar to the Krakatoa Zone, occurs near the top of K16-372 and is untested along 150 m of projected strike up to the Fault Creek Fault, and for 300 m downdip. This unexplored area is spatially associated with the "core rack" airborne EM anomaly.

Exploration drilling on the Tarawera target also intersected a 0.5 m pyrrhotite-rich sulphide layer (grading 9.0% Zn, 0.8% Cu) at 46.5–47.0 m core depth, which may explain the other prospective features of this area (EM and soil anomalies, mineralized float). The Tarawera sulphide shows similar width, mineralogy

and grade to the sulphide layer hit at Sebesi, but stratigraphic interpretation suggests that the Tarawera layer lies ~400 m above the Sebesi one. Recommended future work should start with assessing whether the 2016 drilling results explain the 2015 VTEM data, as well as the historical soil and float anomalies.

Metallurgical drilling generated 792 samples of various ore types and grades from the Krakatoa Zone, GP4F deposit and ABM Zone. Composite samples for Krakatoa and GP4F have been sent for metallurgical testwork.

The mine site geotechnical program was successful in testing the proposed infrastructure sites with a combination of test pits and drill holes. Bedrock quality within the proposed mine site is generally classified as “fair” and locally ranges from “good” to “poor”. Nine 10-node thermistors were also installed to monitor ground temperature profiles across the project site.

The rock quality investigation comprised four holes drilled into each wall of the proposed Krakatoa open pit and detailed logging of 15 Krakatoa resource infill holes, with the aim of characterizing the geotechnical and engineering properties of sulphide and host silicate rocks. Results indicate that massive to semi-massive sulphide is relatively strong whereas Wind Lake Formation mudstone and fault zone intervals are weak, weathered and highly fractured. Rock strength proxies for felsic volcanic (RHYv) and footwall mafic intrusion (MAFi) typically fall between these end members, with aphanitic rhyolite (RHYi) generally stronger than other felsic volcanic types and coherent rhyolite (RHYc) somewhat weaker. Structural measurements on oriented core confirm the orientation of the dominant foliation in the project area and the trend of larger-scale fault structures, and show that brittle failure occurred on planes subparallel to the dominant foliation.

The hydrogeological investigation included drilling and installation of six deep monitoring wells, three shallow wells as well as packer testing. Ground water depths range from above surface to 19 m below ground level. Packer testing shows that the most permeable bedrock occurs in the class C storage area.

Environmental baseline studies are an ongoing part of the KZK work program. The methodology for these studies are summarized in this report but results are not presented, as this is part of an on-going study in the KZK project area. The environmental baseline work has not been filed for assessment.

1.0 INTRODUCTION

This report has been prepared for BMC Minerals Ltd ("BMC") in order to document the procedures and results of the 2016 exploration work undertaken on the Kudz Ze Kayah ("KZK") Property and to satisfy assessment reporting requirements for the Yukon Department of Energy, Mines and Resources ("EMR"). Equity Exploration Consultants Ltd. ("Equity") was engaged by BMC to undertake the 2016 KZK fieldwork and to prepare this assessment report. The report has been prepared on the basis of personal observations, assessment reports filed with EMR, data and reports supplied by BMC, regional geological publications by EMR, and on the 2016 fieldwork undertaken by Equity under the direct supervision of the authors. A complete list of references is provided in Appendix A.

Units and abbreviations used in this report are as follows:

Units:

cm	centimetre
C$	Canadian dollar
g	gram
g/t	grams/tonne
km	kilometre
kg	kilogram
Koz	thousand troy ounces
Kt	thousand tonnes
kW	kilowatt
m	metre
mGal	milligal
mm	millimetre
Mt	million tonnes
Moz	million troy ounces
nT	nanotesla
ppm	part per million
psi	pounds per square inch
"	inch

Abbreviations:

AAS	atomic absorption spectroscopy (an analytical technique)
AES	atomic emission spectroscopy (an analytical technique)
Ag	silver
APS	azimuth pointing system (a DDH orientation system)
ARD	acid rock drainage
As	arsenic
Au	gold
Ba	barium
BI	biotite
Bi	bismuth
CB	carbonate
CI	cordierite
CL	chlorite
CP	chalcopyrite
CRM	certified reference material (QA/QC standard)
Cu	copper
DDH	diamond drill hole
DGPS	differential global positioning system
DO	dissolved oxygen
EM	electromagnetic

EDTA	ethylenediaminetetraacetic acid (a metallurgical test)
EMR	Yukon Department of Energy, Mines and Resources
Fe	iron
FP	feldspar
GL	galena
GNSS	global navigation satellite system
GPS	global positioning system
Hg	mercury
HLEM	horizontal loop EM
HQ	drill core measuring 63.6 mm in diameter
HQ3	drill core measuring 61.2 mm in diameter
ICP	inductively coupled plasma (an analytical technique)
ID	identification
KZK	Kudz Ze Kayah
LiDAR	light detection and ranging
Ma	million years ago
MG	magnetite
MS	mass spectrometry (an analytical technique)
MU	muscovite
NAD83	North American datum (1983)
NQ3	drill core measuring 45.2 mm in diameter
Pb	lead
pH	measure of hydrogen ion concentration (acidity)
PLT	point load testing
PO	pyrrhotite
PVC	polyvinyl chloride (a plastic)
PY	pyrite
QA	quality assurance
QC	quality control
QZ	quartz
RQD	rock quality designation
RTK	real-time kinetic (a GPS enhancement)
S	sulphur
Sb	antimony
Se	selenium
SEPA	socio-economic participation agreement
SP	sphalerite
SPT	standard penetration test
UCS	unconfined compressive strength
UTEM	University of Toronto electromagnetic (a geophysical technique)
UTM	universal Transverse Mercator
VMS	volcanogenic massive sulphide
VTEM	versatile time-domain electromagnetic (a geophysical survey system)
VWP	vibrating wire piezometer
WAAS	wide area augmentation system (a GPS enhancement)
WAD	weak acid dissociable
wt%	weight per cent
XRF	X-ray diffraction (an analytical technique)
Zn	zinc

2.0 RELIANCE ON OTHER EXPERTS

In Section 3.0, the authors have relied entirely upon information provided by BMC concerning their purchase agreement with Teck and the extent of any underlying interests and royalties. Also in Section 3.0, the authors have relied entirely on the Geomatics Yukon website for downloaded shapefile tenure data. Also in Section 3.0, the authors have relied entirely upon information provided by BMC regarding their Socio-Economic Participation Agreement ("SEPA") with the Ross River Dena Council. The authors have not relied upon a report, opinion or statement of another expert concerning legal, political, environmental or tax matters relevant to this assessment report.

3.0 PROPERTY DESCRIPTION AND LOCATION

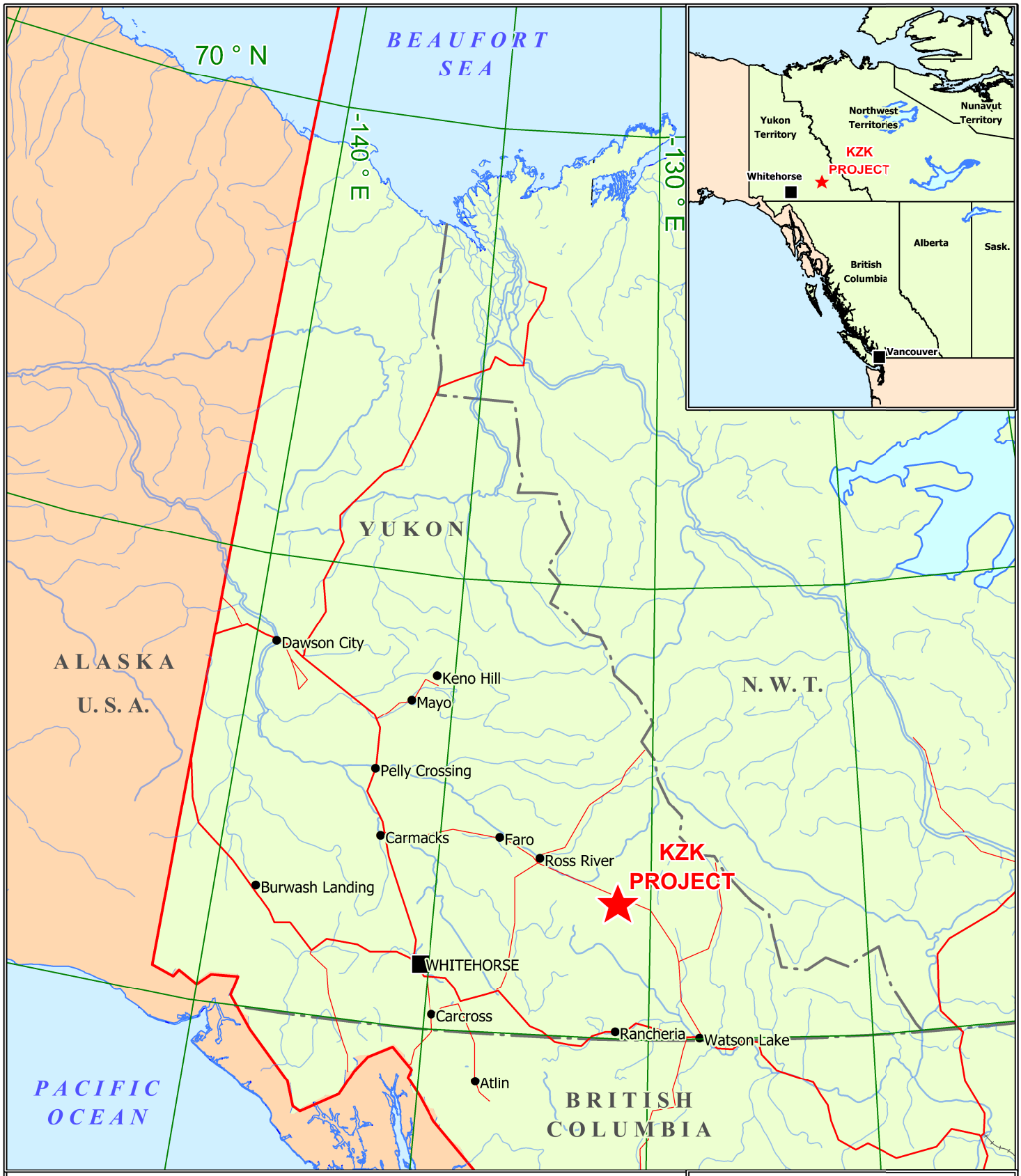
The KZK Property is one of three properties controlled by BMC in the Finlayson Lake area of the Yukon Territory, and consists of 879 quartz claims that cover an area of approximately 16005 hectares (160 km^2) of south-central Yukon (Figure 1). It is centred at 61˚ 31' N latitude and 130˚ 33' W longitude (NAD83 UTM Zone 9: 416000E 6817000N) on NTS map sheets 105G/7–10, within the Watson Lake Mining District.

The KZK Property consists of three separate claim blocks. The main claim block, with 864 contiguous claims, covers an area of about 11 km x 20 km and hosts the ABM and GP4F deposits. A single line of claims extends for 14 km north from the main claim block, covering the tote road from where it extends to the Robert Campbell highway. The EL 1–8 and Limy 1–9 claim blocks are not contiguous with the other claim blocks, lying a few kilometres to the west and east of the tote road respectively (Figures 2a, 2b). All claims were acquired through staking on the ground. The area covered by each claim is determined by the location of the two claim posts on the ground. Mineral claim data is summarized in Appendix C.

All claims are registered in the name of BMC Minerals Ltd. ("BMC"). BMC purchased the KZK Property 100% from Teck Resources Limited ("Teck") on 24 January 2015 and there are no residual royalties across the known mineral resources. The KZK Property area is covered by a 2004 SEPA that includes all Kaska First Nations. The SEPA was assigned to BMC upon purchase of the project from Teck. No significant environmental liabilities were noted by the authors on the KZK Property.

The claims confer title to hard rock mineral tenure only. Surface rights are held by the Crown, as administered by the Yukon Territory. Trapping rights over the western portion of the KZK Property are held by the Ross River Dena Council under Group Trapline #405, while Ted and Franklin Charlie hold trapping rights over the rest of the Property under Single Holder Trapline #250. KZK overlaps with part of Outfitter Concession #20, held by Yukon Big Game Outfitters. There are several parcels of land in the vicinity of the KZK Property which have been reserved for a future land claim settlement with the Ross River Dena Council. Most importantly, a parcel of Interim Protected Land (RRDC-R15A) adjoins the southern boundary of the KZK Property and covers the along-strike continuation of host stratigraphy for the GP4F deposit. Teck explored the RRDC-R15A parcel in 2004, successfully identifying the R-15 VMS prospect (MacRobbie and Holroyd, 2005b). Currently, staking is not permitted within a large area surrounding the KZK Property due to a government moratorium.

Yukon law requires eligible assessment expenditures of C$100/claim/year on the KZK Property to extend tenure ownership past the current expiry dates. Five claim groupings, containing a maximum of 750 contiguous claims, making up the KZK Property were filed with EMR to allow the representation of work done on one or more claims to be distributed to other claims where work was not done.



0 200,000

metres

Scale: 1:6,500,000

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KZK Project

Location Map

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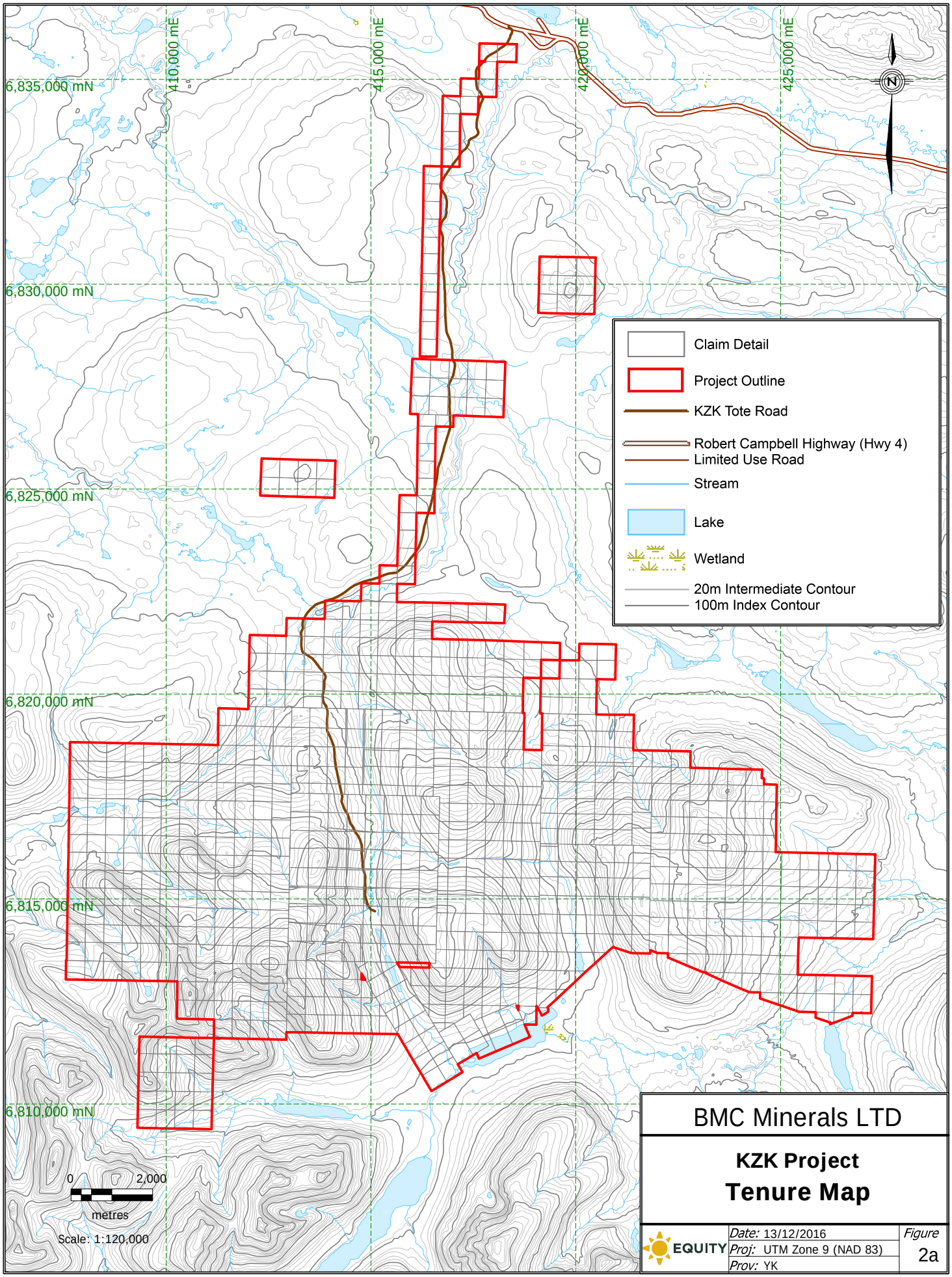
Date: 13/12/2016	*Map* 1
Proj: UTM Zone 9 (NAD 83)	
Prov: YUKON	



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KZK Project
Tenure Map

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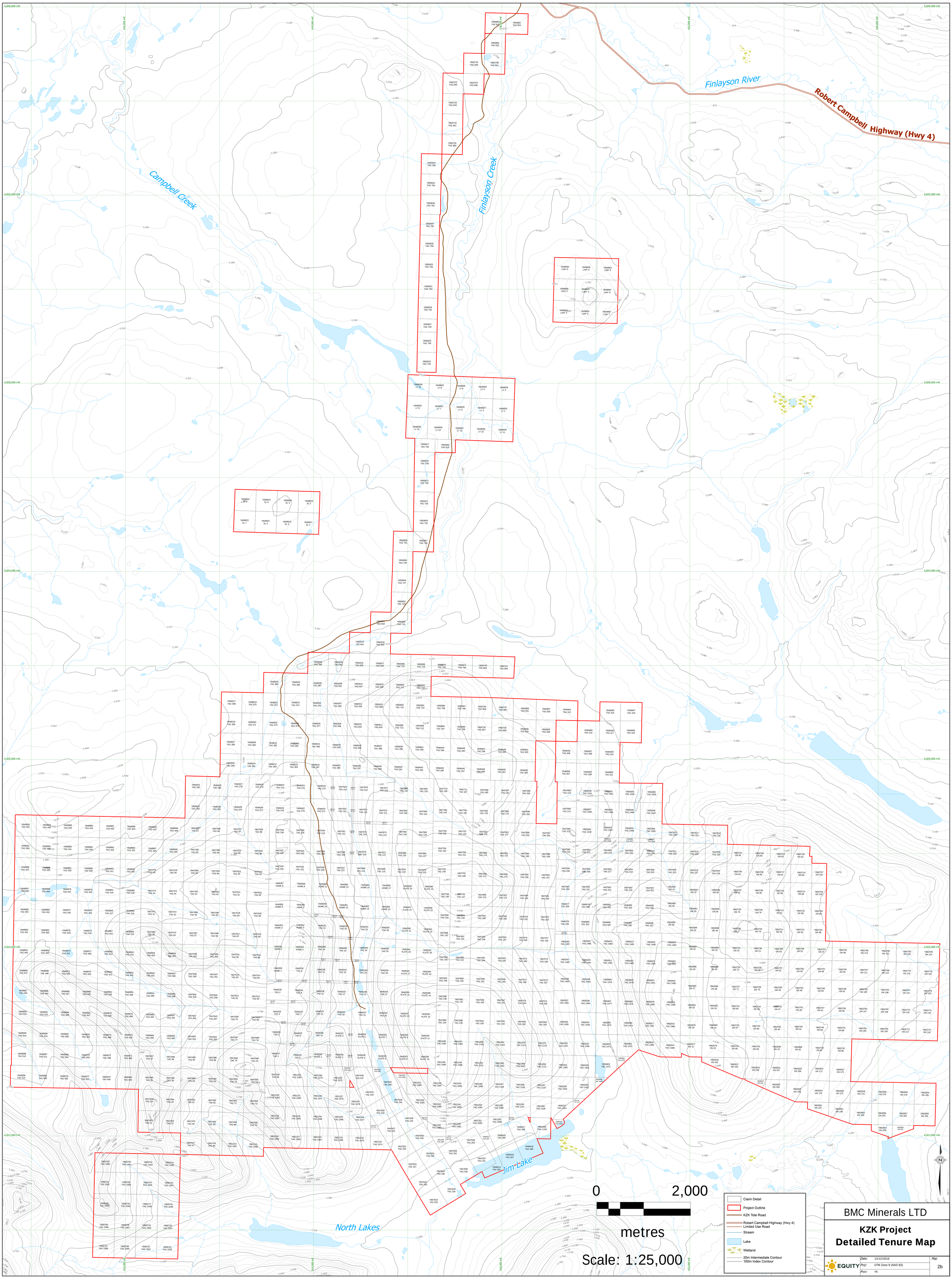
Date: 13/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK

Figure 2a


Campbell Creek
Finlayson Creek
Finlayson River
Robert Campbell Highway (Hwy 4)
Jim Lake
North Lakes
6,836,000 mN
6,832,000 mN
6,828,000 mN
6,824,000 mN
6,820,000 mN
6,816,000 mN
6,812,000 mN
410,000 mE
414,000 mE
418,000 mE
422,000 mE
426,000 mE
0
2,000
metres
Scale: 1:25,000
Claim Detail
Project Outline
KZK Tote Road
Robert Campbell Highway (Hwy 4)
Limited Use Road
Stream
Lake
Wetland
20m Intermediate Contour
100m Index Contour
BMC Minerals LTD
KZK Project
Detailed Tenure Map
EQUITY
Date: 13/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Map
2b

Exploration programs in the Yukon are divided into Class 1 (grassroots) through Class 4 (advanced), depending on threshold levels of camp person-days, fuel storage and extent of exploration activities. In the KZK area, notification of EMR is required for Classes 1 and 2, but submittal of a plan of operations and granting of a Quartz Mining Land Use Permit by EMR is necessary prior to undertaking Class 3 and 4 programs. The 2016 KZK exploration work was carried out under Class 3 Quartz Mining Land Use Permit LQ00424, which is valid to June 28th, 2020. Additional permits, leases and licenses used to complete the exploration activities include: Tote Road and Gatehouse Lease 105G07-001, Type A Water Use License QZ97-026-1, Approval to Use a Sewage Disposal System 4599, Special Waste Permit 41-289, Storage Tank System Permit 2015-22 and Fuel Tank Registration T-1004 and T-1005.

The KZK Property lies within the traditional territory of the Ross River Dena Council. Land claims have not been settled in this part of Yukon and their future impact on the Property's access, title or the right and ability to perform work remain unknown. However, the SEPA provides assurances that the Ross River Dena Council will support exploration and mining of the Property, subject to certain terms and conditions.

4.0 HUMAN AND PHYSICAL GEOGRAPHY

4.1 Accessibility

Access to the KZK Property is via a 25 km long, gated, single lane gravel tote road that connects to the Robert Campbell Highway (Highway 4) near Finlayson Lake, at a point 135 road-km east of Ross River and 237 road-km northwest of Watson Lake. Fixed wing aircraft can land on Finlayson Lake or at an airstrip located at its northwestern end.

The mainly gravel Robert Campbell Highway connects the Property to Watson Lake on the paved Alaska Highway and Carmacks on the paved Klondike Highway, giving access to Whitehorse and points south (Figure 1). All highways are maintained by the government for use year-round but maintenance of the tote road is the responsibility of the KZK Project operator. The ABM deposit on the KZK Property is accessible by the tote road for skid-supported drilling, but helicopters are still necessary for access to most of the remainder of the Property, including the GP4F deposit.

4.2 Local Resources and infrastructure

Ross River, the nearest settlement to the KZK Property, has a population of about 300 and provides basic services (groceries, fuel, accommodation and meals). Whitehorse (population 25000), which is located 260 km west of KZK, offers a full range of services and supplies for mineral exploration and mining, including skilled and unskilled labour, bulk fuel, freight, heavy equipment, groceries, hardware and daily jet service to Vancouver (Figure 1).

The Yukon electrical grid supplies 138 kV electrical power to Faro, located 170 km northwest of the KZK Property but only 25 kV electricity to Ross River. Concentrates from the Wolverine Mine, located 25 kilometres to the east of KZK, were trucked 900 kilometres south to port facilities at Stewart, BC prior to Wolverine's shutdown in early 2015.

4.3 Physiography and climate

The KZK Property, which lies in the Pelly Mountains, covers portions of several creeks which ultimately drain north-easterly into the Finlayson River. The ABM deposit lies near the head of Geona creek, which drains into Finlayson Creek near where the tote road intersects the Robert Campbell Highway. The topography is fairly rugged, and typical of mountainous terrain. Elevations range from 1000 m ASL near Finlayson Lake to over 2000 m ASL on the peaks southwest of the ABM deposit. The surface elevations in the vicinity of the ABM and GP4F deposits are between 1300 and 1500 m ASL.

Below the tree line (1350–1500 m), white and black spruce are the most common tree types. Black spruce is usually dominant in wetter areas; white spruce predominates in drier areas. Paper birch, aspen, balsam and lodgepole pine are also present. Alpine fir grows near the tree line. In dense coniferous stands,

feather moss dominates the understory, but in more open areas willows and heath-like shrubs become prevalent.

Sedge or sphagnum tussocks are common in wetlands and under black spruce. Shrub birch and willow occur in the subalpine and extend well above the tree line. The region has intermittent permafrost with moist depressions comprising peat plateaus, patterned fen and bog complexes.

The climate is cold continental with a mean daily summer temperature of 15˚C and a mean daily winter temperature of -25˚C. Precipitation falls fairly evenly throughout the year, predominantly as rain from May through September, and snow for the balance of the year. The mean annual precipitation is 655 mm. Groundwork on the Property is possible from May until October, while snow may cover parts of higher elevations late into the summer. Drilling can be conducted year round by using heated water for drilling.

During the last glacial period, ice moved across the eastern part of the area in a northwesterly to westerly direction and extended to heights of about 1525 m (Ritson, 2000).

5.0 HISTORY

The following description of pre-2004 exploration history of the KZK Property has been adapted from MacRobbie and Holroyd (2005b).

No work had been reported in the KZK area prior to 1992, when Cominco Ltd. ("Cominco"), which merged with Teck Corp. in 2001 to form Teck Cominco Ltd. (and ultimately Teck Resources Ltd., both of which are referred to as "Teck" in this report), confirmed and expanded an anomalous regional silt sample from earlier work (Hornbrook and Friske, 1988). In the following year prospector A. B. Mawer discovered a well-mineralized, layered sulphide cobble in the anomalous drainage area. This was immediately followed by a reconnaissance UTEM geophysical survey over the projected trace of the suspected host stratigraphy that outlined an EM conductor. Staking of the first TAG claims over the conductor was accompanied by a ground magnetic survey. Further magnetic and horizontal loop EM and soil surveys were completed later that fall and defined a compelling drill target (Schultze, 1993).

The target was drilled in April 1994, with the first hole intersecting 22.5 m of massive sulphide in two sections (Schultze, 1995). Three additional holes were drilled in April, and each of them intersected sulphide mineralization over significant widths. The weighted average grade of sulphide in the discovery hole was 0.5% Cu, 2.8% Pb, 10.0% Zn, 278 g/t Ag and 2.9 g/t Au over 22.5 m. The sulphide body was named ABM after the long-time Cominco prospector who made the initial float discovery. In total, 52 diamond drill holes (DDHs) (8485 m) were drilled in 1994 along with ground and airborne geophysical surveys, detailed mapping in the vicinity of the deposit, regional and detailed exploration geochemistry and baseline environmental sampling (Schultze, 1996).

In 1995 an additional 133 DDHs (16178 m), were completed at the ABM deposit and on regional targets. Additional soil sampling, minor geological mapping and ground geophysical surveys were completed (Schultze, 1996). Engineering and environmental work included geotechnical investigations, bulk metallurgical sampling, construction of the tote road and environmental baseline and archaeological studies (Stacey, 1996). A pre-feasibility engineering study was completed by Cominco in July 1995 (Brown, 1995).

The 1996 program involved regional, 1:20,000 scale geological mapping outside the immediate ABM deposit area, minor line cutting, ground geophysical surveys and soil geochemistry over the northeastern part of the TAG Property. Diamond drilling (99 m) was completed in the southwest corner of the current KZK Property. Minor structural mapping and core logging were completed at the ABM deposit.

The 1997 program consisted of ground geophysical surveys and diamond drilling. An extensive UTEM and magnetic survey was done east of the ABM deposit and additional gravity and magnetic surveying was done over several coincident EM-magnetic targets proximal to ABM. A total of 17 drill holes were completed for 3566 m, with seven aimed at expanding the ABM deposit, two testing regional targets and eight holes completed on the Fault Creek target. Drilling at Fault Creek intercepted 6.4 m of Cu-rich sulphide in K97-181, which assayed 5.2% Cu, 1.0% Pb, 5.6% Zn, 141 g/t Ag and 2.4 g/t Au. This poorly defined occurrence

represented the first discovery of significant sulphide mineralization south of the Fault Creek Fault (MacRobbie and Bannister, 1998). By the end of 1997, 168 geological and 15 metallurgical drill holes had been completed in the immediate ABM deposit area, and another 20 drill holes had been completed elsewhere on the Property (including the eight on the Fault Creek target). Environmental studies, metallurgical testing and permitting activities were ongoing.

In 1998 additional line cutting, soil sampling and limited ground geophysical surveys were completed in several areas. A further 11 DDHs (K98-188 to 198; 1755 m) were completed, nine of which tested the GP4F area and two testing a coincident magnetic-EM feature northeast of GP4F (MacRobbie and Holroyd, 1999). The most significant result was the discovery of the GP4F deposit located 5 km southeast of ABM, which was estimated by Cominco to comprise a (non 43-101 compliant) resource of 1.5 Mt grading 0.1% Cu, 3.1% Pb, 6.4% Zn, 89.7 g/t Ag and 2.0 g/t Au (MacRobbie and Holroyd, 2000).

In 1999 a small geophysical program was completed, including an In-Loop UTEM survey over the GP4F deposit As well as HLEM and magnetics in the GP4F deposit area (MacRobbie and Holroyd, 2000).

In 2000 the KZK Property and properties in the Wolverine Lake area were optioned to Expatriate Resources Ltd. (“Expatriate”) (Schultze, 2001), a predecessor company to Yukon Zinc Corporation who currently own the Wolverine VMS deposit located 23 km east of ABM. Expatriate carried out ground geophysical surveys (UTEM, magnetics) in the area south of the ABM deposit and extending south of the Fault Creek target (Klein, 2000). Expatriate allowed the option to lapse in late 2001.

In 2004 Teck optioned the R-15 block, immediately south of the KZK Property, from Kaska Minerals Corporation, an entity controlled by the Kaska First Nation in Ross River. That summer, Teck carried out mapping, ground geophysical (UTEM and magnetic) surveying and drilled 7 DDHs (1481 m) on the R-15 block, discovering the R-15 deposit. The program extended north into the area of the GP4F deposit on the KZK Property, with 6.8 line-km of UTEM, 0.4 line-km of magnetics and one drill hole (K04-199; 246 m) (MacRobbie and Holroyd, 2005a).

The R-15 option was subsequently terminated and no further exploration was done on the KZK Property until 2015, after BMC purchased it from Teck. Following approval of exploration permits in July 2015 BMC began an ambitious exploration program that included building exploration infrastructure, data compilation, re-logging historical drill core, LiDAR and ground-based differential GPS surveys, geophysics (airborne VTEM, ground-based gravity and borehole EM), resource and exploration drilling, metallurgical drilling, petrographic studies, geotechnical drilling, hydrogeological drilling and environmental baseline studies (Hughes et al., 2016). The highlight of this program was the discovery of the Krakatoa Zone immediately southeast of the ABM Zone, which (at the time) added 5.1 Mt (2.1 Mt indicated, 3.0 Mt inferred) to the ABM deposit resource inventory (Green et al., 2016).

Several mineral resource estimates have been completed for the ABM and GP4F deposits by Cominco and Teck (Cominco, 1995; Teck-Cominco, 2007), and also by CSA Global Pty Ltd (“CSA”) on behalf of BMC (Green, 2015a, b; Green et al., 2016). The most recent estimate (Table 2) was completed by CSA in November 2016, (BMC Minerals Ltd., 2016a) and incorporates all of the data up to the end of the 2016 exploration program.

Table 2: Mineral resource estimates for the ABM and GP4F deposits

Deposit	Date	Category	Mt	Cu (wt%)	Pb (wt%)	Zn (wt%)	Au (g/t)	Ag (g/t)	Reference
ABM	Nov-94	Non-compliant	14.0	0.9	1.3	5.6	1.2	125	from Green, 2016
	Nov-94	Non-compliant	13.9	1.0	1.3	5.5	1.2	127	from Green, 2016
	Apr-95	Non-compliant	13.7	1.0	1.3	5.5	1.2	128	Cominco, 1995
	Jun-95	Non-compliant	11.4	1.0	1.6	6.4	1.5	143	Cominco, 1995
	Dec-07	Inferred	12.8	0.8	1.7	5.9	1.4	N/A	Teck-Cominco, 2007
	Apr-15	Inferred	13.7	0.9	1.6	6.1	1.4	140	Green, 2015a
	Jan-16	Indicated & Inferred	20.1	0.9	2.0	6.4	1.4	151	Green, 2016
	Nov-16	Indicated & Inferred	19.2	0.9	1.9	6.3	1.4	148	BMC Minerals, 2016
GP4F	Jan-00	Non-compliant	1.5	0.1	3.1	6.4	2.0	90	MacRobbie and Holroyd, 2000
	Jul-15	Inferred	1.7	0.2	2.6	6.1	1.0	76	Green, 2015b
	Nov-16	Indicated & Inferred	1.7	0.2	2.6	5.3	1.4	73	BMC Minerals, 2016

6.0 2016 WORK PROGRAM DESIGN

Work at KZK during 2016 comprised a multifaceted geological and engineering program that included construction and rehabilitation of new and historical exploration trails, completion of the historical re-logging program, airborne LiDAR and orthophoto survey, airborne and ground-based geophysics (magnetics, EM), diamond drilling (resource, exploration, metallurgical), geochemical assay, petrographic analysis, geotechnical and hydrogeological drilling, test pitting and environmental baseline studies.

6.1 Earthworks

Construction work related to the 2016 drilling program included building of new drill sites and trails, followed by their reclamation when they were no longer needed. Both the construction and reclamation earthworks were completed by Cliff McLeod Contracting of Ross River, Yukon, and Tim Moon Construction Ltd, also from Ross River (both here referred to as “machine operators”). Heavy machinery used included a Hitachi 270 and Link-Belt 290 excavators, Caterpillar D6R and D7 bulldozers, and a Western Star dump truck.

Trails were laid out by Equity staff and/or machine operators, with an emphasis on avoiding tree (mostly spruce) stands. The dozer and/or excavator were used to clear the trail, after which the excavator would cut ditches and place bars/culverts across the trail to guide runoff. Where possible, problematic soft spots were filled with till burrowed from the 18-km mark on the tote road.

Post-drilling reclamation work involved recontouring and stabilizing of trails and pads. Sumps were backfilled after sediment cuttings had settled and the drill fluids had either drained away or was pumped and dispersed into the surrounding vegetation. Reclaimed pads and trails were reseeded with native vegetation.

6.2 Historical core program

Work on “historical” core (Cominco 1994–1998) include relocation to the new KZK Camp, as well as re-logging, -coding and -sampling. Before the 2016 field season, historical core was stored in metal racks at km-25 on the tote road (Figure 3a) whereas BMC’s 2015 core was stored at km-20 in KZK Camp. Reasons for relocating the historical core include consolidation, and clearing out an area targeted for potential exploration and mine infrastructure. Historical core was relocated on 20–24 May 2016, through hand stacking of boxes on pallets followed by forklift-assisted transport to KZK Camp by truck and trailer, where it was wrapped in TYVEK and placed in a cleared out area (Figure 3b). Metal core racks were broken down and also trucked up to KZK Camp.

Re-logging of historical core aimed to complete the significant re-logging work done in 2015, which reviewed 85% (24953 m) of all historical core stored at km-25. Core that was not re-logged in 2015 includes some of the GP4F drilling and several wildcat holes.

The re-logging and re-coding programs were done by Equity personnel in three campaigns; 17 April to 5 May, 21–24 May and 10–29 August 2016. Re-logging was done at KZK Camp, with data collected in GeoSpark core logging software. A total of 24 drill holes were re-logged for 4030 m with the logs attached as Appendix D.

Whereas re-logging only loosely followed the historical drill logs, re-coding generally respected previously defined geological boundaries but changed the lithological codes if necessary. Re-coding work in 2016 focussed on historical and 2015 GP4F drilling, in an attempt to establish consistency with 2016 data. A total of 13 holes were re-coded for 3535.5 m.

A re-sampling program of historical GP4F core was done to confirm Cominco's assay results. Twenty-one samples were taken from nine of the 1998 drill cores, with each re-sample matching the original interval. Re-sampling removed all remaining drill core for that interval. Samples were bagged, sealed and shipped to SGS Mineral Services Geochemistry Vancouver in Burnaby, BC ("SGS"), along with two CRMs and one blank to monitor assay QA/QC. Results of this re-assay program are included with the other 2016 analytical certificates in Appendix L.

Figure 3: Photos of the historical and new core storage areas. (a) Aerial photo of Cominco's historical core racks located at km-25 on the tote road. (b) New storage area for historical core at KZK Camp, where it is stored on pallets and wrapped in TYVEK.

6.3 Terrain surveys

Terrain surveys included an airborne LiDAR survey, as well as ground-based differential GPS (DGPS) surveys. Contractors, procedures and methods used for these programs are summarized below.

6.3.1 Airborne LiDAR

A 341 km² airborne LiDAR survey was completed over the KZK Property by Eagle Mapping Ltd of Port Coquitlam, BC, with the aim of providing a high resolution topographic surface for the core part of the Property ("high priority area"). A large buffer was collected around the 2016 survey area to guarantee accuracy and proper data density within the high priority area.

The airborne LiDAR survey was completed in a single flight out of Watson Lake, Yukon, on 10 June 2016, using a Piper Navajo aircraft operated by Peregrine Aerial Surveys from Abbotsford, BC, fitted with a Riegl Q1560 dual-channel LiDAR system. The survey area comprised a high priority area, which covers the deposit, camp and tote road areas, and a lower priority buffer. High priority surveying comprised 10 lines spaced at 620 m and flown 1000 m above ground level ("AGL") at a speed of 140 knots, in comparison to 1550 m spacing, 1400 m AGL and 160 knots for the low priority area. Point densities averaged 10 points per square metre (p/m^2) as high priority and 2 p/m^2 at low. The scan field of view for the Q1560 is 29° either side of the nadir, for a total scan 58°. A report written by the contractor (Eagle Mapping) is attached as Appendix E.

6.3.2 DGPS

Ground-based DGPS surveys were done by Challenger Geomatics Ltd of Whitehorse, Yukon ("Challenger"), over five campaigns through the course of the 2016 field program (27–30 April, 1–2 June, 1 July, 2–4 August, 30 September 2016). All surveying was completed in NAD83 UTM Zone 9 with Leica Real Time Kinematic (RTK) DGPS survey equipment and Leica Viva Global Navigation Satellite Systems (GNSS). Radio base stations were set up in proximity to the survey sites providing RTK corrections when radio contact was possible, which applies to most of the KZK project. However, radio contact could not be established from the GP4F area and so the GNSS vectors were post-processed to provide the final survey location.

A report and data from Challenger is attached as Appendix F. Surveyed coordinates for all of the 2016 drill holes as well as the un-surveyed 2015 holes are included in Appendix G.

6.4 Geophysical surveys

Geophysical work done in 2016 includes an airborne magnetic and versatile time domain electromagnetic (VTEM) survey and ground-based borehole electromagnetic (BHEM) surveys. The procedures and methods for these surveys are summarized below and described in more detail by the contractor reports (Geotech Ltd, Aurora Geosciences) attached as Appendices H and I, respectively.

6.4.1 Airborne magnetics and VTEM

A 902 line-km VTEM survey was flown over the KZK Property to the north, west and north-east of the 2015 survey (Hughes et al., 2016), in order to cover the remainder of the Property and identify anomalous areas that could reflect additional VMS targets. Work was undertaken by Geotech Ltd. from Aurora, Ontario, ("Geotech") between 23 April and 3 May 2016. An Astar 350 B3 helicopter and pilot was contracted by Trans North Helicopters of Whitehorse, Yukon, ("Trans North"). The survey was flown as part of a larger airborne survey on all of BMC's property holdings in the area. The contractor report is attached as Appendix H.

The 2016 VTEM survey covered an area of approximately 121 km² and was flown at an azimuth of 015° with a traverse line spacing of 150 m. The total distance surveyed includes 902 line-km of first pass surveying and 36.3 line-km of reflights, for a total 938.3 line-km flown. Tie lines were flown perpendicular to the traverse lines at a spacing of 1500 m. Navigation was achieved using a NovAtel Wide Area Augmentation System (WAAS) -enabled GPS receiver and screen display, for the pilot to direct flight, as well as a NovAtel GPS antenna mounted on the helicopter tail. During the survey an average altitude of 81 m above ground surface was maintained using a Terra TRA 3000/TRI 40 radar mounted beneath the cockpit, and an average speed of 80 km/hr was maintained. This allowed for an average transmitter-receiver loop terrain clearance of 50 m and a magnetic sensor clearance of 60 m.

Data acquisition was made with a Geotech versatile time-domain electromagnetic (VTEMplus) system with receiver and transmitter coils in a concentric-coplanar and Z direction oriented configuration. The receiver system also included a coincident-coaxial X direction coil. The transmitter-receiver loop was towed at a mean distance of 31 metres below the helicopter with measurements consisting of the vertical (Z) and In-line horizontal (X) components of the EM fields. The aeromagnetic total field was measured using a horizontal magnetic gradiometer with two Geometrics split-beam field magnetic sensors with a sampling interval of 0.1 seconds. The sensors are mounted 12.5 metres apart on a separate loop, 10 metres above the EM transmitter-receiver. A GPS and gyro inclinometer are also installed on aeromagnetic field loop to accurately record the tilt and position of the magnetic bird. A magnetometer/GPS base station was set up away from all infrastructure at the back of KZK Camp. Base station data was used during the post-processing of survey data at the end of each day.

Quality assurance and quality control (QA/QC) of airborne survey data was monitored by Dr. Jules Lajoie, P.Eng., of Vancouver, BC. QA/QC checks included assessment of (a) horizontal deviation from the planned flight path, (b) terrain clearance, (c) noise on magnetic recordings, (d) magnetic diurnal variation, (e) recording failures in the navigational systems or deliverable instrumentation, (f) connectivity to navigational satellites, (g) along-line sampling and (h) the normally processed last time gate for the Z component. Excessively high terrain clearance led to 36.3 line-km of reflights to bring the survey within QA/QC specifications.

6.4.2 Borehole EM (BHEM)

The ground-based borehole electromagnetic (BHEM) surveys were done to try and detect off-hole EM conductors that could represent additional drill targets. Work was undertaken by Aurora Geosciences Ltd of Whitehorse, Yukon, ("Aurora") over five separate campaigns lasting from 28 June to 7 July, 29 July to 12 August, 2–5 September, 16–18 September and 26–28 September, 2016. Surveys were completed on the Krakatoa Zone, ABM Zone, Sebesi target and Tarawera target.

Eleven drill holes were surveyed for a total of 6790 m, split between the Sebesi target (4 holes, 3185 m), Krakatoa Zone (4 holes, 2152 m), Tarawera terget (1 hole, 855 m) and ABM Zone (2 holes, 599 m). Four transmitter loops were utilized during the course of the program with the largest of these encompassing all of the Sebesi and Krakatoa drill holes. Smaller single-use survey loops were used for the ABM and Tarawera holes. All surveyed drill holes were located inside the transmitter loops, with the loops positioned so as to optimize coupling with the expected conductor geometry.

BHEM surveys were done with a Volterra Borehole EM probe with a Volterra transmitter assembly and a receiver powered by a Honda 2 kW generator. Ten of the 11 surveys were completed through the drill string as the diamond drill crew pulled rods, which ensured the hole did not collapse before the survey could be completed. The probe assembly was hung through the core barrel and the drill bit, extending 9 m from the drill bit to the bottom of the probe. Station spacing was in multiples of 3 m to account for the intervals available with 3 m drill rods so that the actual station spacing varied between 6 m and 15 m. The larger station spacing was used in lower priority parts of the hole dictated by the project geologist prior to completing the survey. Readings were made 20 seconds after the drill crew had shut down the drill after removing the selected rods. Each reading was at least 120 seconds in length to provide an adequate signal to noise ratio while allowing a large number of readings to be recorded in a single survey. Measurements were made for four components at each survey station: A (axial down hole), U (transverse to axial in the vertical plane containing the drill hole), V (transverse to axial in the horizontal plane containing the drill hole) and B-field coil (axial down hole), utilising 20 channels (channel 20 = early time, channel 1 = late time). A logistics report provided by Aurora, along with the processed results for each survey, are included as Appendix I.

DDH K16-369 was surveyed in an open hole with the use of a hand winch, with survey stations located via a winch counter and station spacing set at 5 m intervals. A discrepancy between the counter and EOH depth likely resulted from poor calibration of the counter, and required reduction of the final station spacing to 4.6 m.

6.5 Resource and exploration drilling

The 2016 drilling program included, resource infill and expansion drilling of the Krakatoa Zone (N = 32), infill drilling at the GP4F deposit (N = 7), expansion drilling on the ABM Zone (N = 3), and exploration drilling on the ABM-proximal Sebesi (N = 11) and Tarawera (N = 1) targets, for a total of 53 drill holes and 16897.98 m (Table 3). Nine of these holes also helped to meet the objectives of the metallurgical program (see section 6.6). Surveyed drill collar locations are presented in Appendix G and drill logs are attached as Appendix J. Sectional interpretations are attached as Appendix K.

The Krakatoa Zone resource infill drill program was designed to upgrade mineralization categorized as "inferred" (Green et al., 2016) into "indicated" or "measured" status. Drilling aimed to generate a staggered pierce point pattern with nominal 50 m spacing between points that tied into the 2015 program. Expansion drilling was designed to test downdip of pierce points like DDH K15-277, which intersected a thick upper lens and lacked any further downdip pierce points. Borehole EM surveys were completed on two of the 2016 expansion and two infill holes.

Infill drilling on the GP4F deposit was designed to upgrade mineralization from inferred (Green, 2015b) to indicated, and test the "lower target" described by Jones (2016). Drilling was designed to complete six 50 m-spaced pierce points over two sections.

Resource expansion drilling at ABM was designed to test for ABM Zone to the west ("west target") and downdip of the defined resource. Borehole EM surveys were completed on two of the three holes.

The Sebesi drill target encompasses a fault-bounded block of KZK stratigraphy lying adjacent to the fault-bound block hosting the Krakatoa Zone. Drill holes were designed to test for mineralization that was downthrown or laterally offset relative to the Krakatoa Zone and were spaced to maximize coverage of both drilling and subsequent borehole EM surveys.

The Tarawera target was recognized through anomalous Zn + Ba historic soil geochemistry, sphalerite- and galena-bearing float found on a reconnaissance traverse in 2015, prospective stratigraphy and an EM anomaly identified in the 2015 airborne VTEM survey that was modelled as a northeast-dipping plate. A single hole was drilled to test the plate model and prospective stratigraphy, and a borehole EM survey was also completed.

Hy-Tech Drilling Ltd. of Smithers, BC, ("Hy-Tech") and New Age Drilling Solutions of Whitehorse, Yukon ("New Age") completed the 2016 KZK drilling program. Hy-Tech drilled from 1 May to 14 August 2016, completing the geotechnical and most of the Krakatoa Zone programs using two skid-mounted Tech 5000 diamond drill rigs. New Age drilled from 17 June to 28 September 2016, using one skid-mounted and one helicopter-portable Zinex A5 diamond drill rig to complete the GP4F and Tarawera drilling, and parts of the Sebesi and Krakatoa program. All drilling was done as either triple tube HQ3 or NQ3, with inner splits used to maximize core recovery.

Trans North Helicopters Ltd of Whitehorse, Yukon, ("Trans North") provided helicopter support for drill moves and logistical support. Yukon-based contractors hired through Equity built lumber drill pads for helicopter-supported drilling, with sites cleared by the pad builders using a CanDig Mini Excavator.

Table 3: Summary of 2016 resource and exploration drilling

Zone	Target	DH Type	DHs (N.o.)	Metres	Comments
Krakatoa	Upper and main lenses	Resource infill ± metallurgical	28*	6283.2*	Includes 5 abandoned holes for 248.1 m
		Resource expansion	4	2340.0	Downdip tests
GP4F	GP4F lens	Resource infill ± metallurgical	7*	1553.6*	Includes one twinned hole drilled to correct block error
ABM	ABM lens	Resource expansion	3	770.0	Downdip and west-marginal tests
n/a	Sebesi	Exploration	11	5096.6	Includes 7 abandoned holes for 1911.3 m
n/a	Tarawera	Exploration	1	854.5	
2016 Total			**54**	**16897.9**	

*Includes dual purpose infill and metallurgical drill holes

6.5.1 Collar and downhole surveys

Drill hole collars were spotted with either a handheld GPS or were laid out by Challenger using their RTK DGPS. After completion of the hole, drill collars were marked with a wooden stake and surveyed with an RTK DGPS. These coordinates and other collar data are attached as Appendix G.

Prior to drilling, the drill rig was aligned to the planned azimuth using a Reflex Azimuth Positioning System (APS) or TN14 gyrocompass. The APS is a GPS-based compass that is unaffected by ferromagnetic materials and produces azimuth measurements whose accuracy depends on satellite connectivity ("integrity"), with 80% integrity yielding approximately 0.5° accuracy. The TN14 gyrocompass is a gyroscope-based compass that is likewise unaffected by ferromagnetic materials but has an advantage over the APS in that it does not rely on a satellite GPS signal, which can be blocked and/or reflected by drill machinery (e.g. Frischman and Clifford, 2010). Azimuth measurements are reportedly accurate to within ±0.2°, depending on latitude. Holes K16-338 to 357 were aligned with the APS whereas K16-358 to 419 were lined up with the TN14. For both units, alignment was completed in true north and converted to UTM grid north by adding 1.4°. The dip was generally set by the drill crew under instruction from the site geologists, using an inclinometer with a magnetic base.

Downhole orientation surveys were completed using both a Reflex EZ-shot system and Reflex Gyro downhole probe. The EZ-Shot measures drill hole azimuth relative to magnetic north, as well as dip and magnetic field strength. Magnetic north azimuth readings were converted to UTM grid north by adding 22.1°. The first EZ-shot survey was typically completed once the drill hole had penetrated 12–18 m into bedrock,

followed by tests at 24 m intervals as the hole progressed. Survey results were flagged as “false” if the measured azimuth was strikingly different from those on either side of it, which is due mainly to magnetic interference (i.e. magnetic bedrock, drill string). Such interference is often indicated by magnetic field strength readings of <5600 nT or >6000 nT.

The Reflex Gyro probe utilizes a surface referenced micro-electromechanical system (MEMS) that measures drill hole azimuth and dip deviation relative to a known starting point (i.e. TN14 or APS azimuth, setup dip). Measurements are unaffected by ferromagnetic materials so that the Gyro can be used inside the drill string. Gyro surveys are typically done at the completion of the drill hole with readings taken at 5 m intervals and a second survey done to provide a check on data quality. The “0 m” starting azimuth for the Gyro survey was set equivalent to the TN14 alignment.

All resource and exploration drill holes were surveyed with the EZ-shot system whereas 51% were also surveyed with the Gyro, including all ABM expansion holes, all GP4F drilling and 44% of the Krakatoa resource holes.

Drill core was oriented in every 2016 hole, from the base of overburden until the end of hole (EOH). The bottom-of-hole orientation mark was placed by the drill crew with the help of a Reflex ACTII RD core orientation system. Following transport to the core shack, geotechnicians would realign the core and draw a blue orientation line if the bottom of hole mark could be accurately related to the rest of the drill run. Orientation lines were transposed onto adjacent runs if the start or end of the runs could accurately fit together. Alpha and beta angles of structural features were recorded along with a confidence rating on a scale of 1 to 3 as follows: (1) not certain of orientation and measurement, (2) moderate confidence since core matches well with orientation mark, and (3) high confidence because orientation line matches well for entire drill run.

6.5.2 Geotechnical core logging

All drill core (100%) was geotechnically logged, with logging data captured in GeoSpark software, an Access-based database management system. Geotechnical core logging was done by geotechnicians and involved measuring recovery, rock quality designation (RQD), magnetic susceptibility and bulk density. Results are captured within data tables named “Geotech” (recovery, RQD), “Geophysics” (magnetic susceptibility) and “Specific Gravity” (bulk density).

Recovery was measured to the nearest centimetre, from core block to core block and from the base of overburden to the end of hole. The total recovery for the 2016 drilling program was 91.7%, which is calculated by summing all of the core recovered and then dividing by the difference of drilled metres minus overburden. Overall, the 2016 recovery is slightly higher than the 2015 program (89.8%).

Rock quality designation (RQD) was also measured from core block to core block, comprising the sum of all naturally fractured core lengths >10 cm in length divided by the run length. Natural fractures include breaks that are inherent to the lithology (e.g. joints) but not mechanical breaks generated by drilling. Average RQD is broadly similar for the 2015 (47.9%) and 2016 (51.6%) programs, thereby more-or-less validating the accuracy of both data sets.

Magnetic susceptibility on the first 14 holes (K16-337 to 350) was measured with a Terraplus KT-10 magnetic susceptibility meter (“KT-10”) whereas holes K16-351 to 419 were measured with a multi-parameter (MPP) probe from Instrumentation GDD Inc.. KT-10 measurements were taken at 1 m intervals and then averaged over 3 m lengths, starting from below the base of overburden to the end of hole. A switch to the MPP probe was made to expedite the measurement process, as this instrument provides more rapid readings and file transfer capabilities. MPP measurements were taken 0.5 m intervals from the top to the bottom of the drill hole. Descriptive statistics (Table 4) show a reasonable match between the 2016 KT-10 and MPP data. The slight differences are likely a result of the KT-10 data being an average of three measurements.

Table 4: Magnetic susceptibility data collected as part of the 2016 drill program

Campaign	Instrument	Readings	Mean	Std dev	Skew	Min	25th %ile	Median	75th %ile	Max
2016	KT-10	846	1.7	12.9	13.5	0.0	0.0	0.2	0.3	248
	MPP probe	31484	2.4	21.4	21.7	0.0	0.0	0.3	1.1	796

A total of 3175 bulk density (BD) measurements were completed, mostly on each entire half- or quarter-core sample submitted for analysis (N = 1921) as well as representative 10–15 cm long whole core samples of various hanging wall and footwall lithologies (N = 865) and standards (N = 389). Each of these samples was twice weighed in a basket suspended below a digital metric balance, once in air and a second time in water (i.e. "water immersion method"). Measuring directly on the scale was avoided due to magnetic interference concerns. No measurements were taken on excessively friable or broken samples.

The two standards used to monitor BD measurements were each calibrated by averaging 50 measurements, which returned bulk densities of 4.60 ± 0.10 g/cm^3 for a piece of NQ-sized massive sulphide (SG MXSX standard) and 2.65 ± 0.05 g/cm^3 for a BQ-sized piece of porphyritic rhyolite (SG RHY standard). Weights of these standards overlap with core samples. One standard was weighed for every nine bulk density measurements.

Additional bulk density measurements were completed by SGS on 223 sample pulps using the pycnometer method, as an independent confirmation of the accuracy of the water immersion method. Certificates of analysis for the pycnometer testing program are attached in Appendix L, along with the analytical certificates.

6.5.3 Geological core logging

Geological logging was completed by the onsite geologists, who collectively logged 100% of the core drilled in 2016. Core logging focussed on lithology, mineralization, alteration, structure, veining, oxidation intensity and geodomain classification, with data captured in GeoSpark software. All drill core was photographed prior to sampling and is stored on pallets at the KZK Camp, along with relocated historical core. Drill logs are attached as Appendix J.

Lithology was logged with the same coding system defined in 2015 (Hughes et al., 2016), with the addition of new codes for pelite (PEL) and chert (CHT). As well, the Wind Lake-specific mudstone code (MDU) was dropped in favour of a generic code for mudstone (MDS), and a column was added to specify the geological formation (e.g. KZK, Wind Lake). Intervals logged with sparsely used codes (e.g. WCK for greywacke) were re-coded as a more generic lithology (e.g. SED) and the sparely used code was then eliminated as a coding option.

Mineralized intervals are recorded in the mineralization table and, if modal sulphide abundances are high enough, the lithology table as well. Within the lithology table, mineralized intervals with >60% modal sulphide are logged as massive sulphide (e.g. OA, OB) and those with 20–60% sulphide are broken out as semi-massive sulphide (e.g. OI, OJ). At GP4F, however, semi-massive lithologies are broken out at ≥10% modal sulphide due to the high sphalerite proportions and the possibility that some of the base metal budget is carried by non-sulphide phases like gahnite. Intervals with <20% sulphide (or <10% at GP4F) are logged as silicate rock with the type and abundance of sulphide recorded in the mineralization table (e.g. 5% PY).

Alteration is logged in the alteration table of the GeoSpark database, with key features recorded including mineral type (e.g. MU for muscovite, CL for chlorite) and an interpreted origin as either "original" (OR) or "overprint" (OP) alteration, corresponding to syngenetic hydrothermal and regional metamorphic events respectively. So an interval logged as "original muscovite" (OR MU) refers to syngenetic hydrothermal alteration that includes, for example, the Type 3 muscovite alteration that envelopes the ABM deposit. "Overprint muscovite" (OP MU) alteration, on the other hand, relates to widely developed sericitic alteration of felsic volcanic and lacks an obvious link to a localized hydrothermal system. Other important alteration types include original chlorite (OR CL), which is equal to Type 4 proximal chlorite alteration, and original cordierite (OR CI), which is equivalent to Type 5 restricted cordierite alteration.

Structures were characterized as "type" (i.e. fault, foliation), attributed an intensity on a scale of 1 to 7 (1 = trace, 7 = intense) and, at the very least, given an angle to core axis (alpha angle). Orientations measured on oriented core were also given a beta angle and orientation confidence on a scale of 1 to 3, where 1 is lower certainty and 3 is highest. Approximately 90% of all structural records (N = 3362) are for the dominant, or joint,

foliation (DFOL, FOL) and fault zones (FLT). Fault zones that prevent reliable interpretation of protoliths are recorded as fault zone (FLZ) within the lithology table as well.

Veins were logged as sets that were characterized by a core depth from and to, mineralogy, angle to core axis and percent abundance within the defined interval. Oxidation was logged on an intensity scale of 0 to 4, where 0 is unoxidized and 4 is completely oxidized. The geodomain classification was typically applied by the project geologist after core logging was complete and the drill trace plus data was imported into MicroMine. Classifications include three metallurgical domains for ore and nine metallurgical domains for waste rock, and used the codes developed in 2015 (Baker, 2015a; Duncan, 2015).

6.5.4 Geochemical sampling and assay

A total of 2094 samples were submitted for geochemical assay, comprising 1858 HQ3 and NQ3 half-core and quarter core samples, 102 blanks and 134 certified reference material (CRM) samples. Each of the core samples was marked with a unique sample tag in the core box. All mineralized intersections were sampled along with 1–10 m of the immediate hanging wall and footwall rock to characterize waste rock dilution. Core samples were constrained by lithological contacts and, if possible, alteration and mineralization features as well. Mineralized samples had a nominal sample length of 1.0 m and a minimum length of 0.3 m whereas barren or weakly mineralized samples have typical nominal and minimum sample lengths of 1.5 m and 0.5 m respectively.

Half core samples were cut parallel to the core axis with an open circulation rock saw. Quarter core samples were initially split to provide a half core metallurgical sample, then quartered parallel to provide one sample for geochemical assay and a second quarter retained in the core box for reference. Split core was consistently sampled from the same side, then placed into labelled plastic sample bags that were sealed with a plastic zip tie. Samples were then packed into rice bags together with QA/QC samples (i.e. certified reference materials, blanks), sealed with security tags and then shipped to SGS Mineral Services Geochemistry Vancouver in Burnaby, BC, (“SGS”) for geochemical assay. A list of required quartz washes to follow suspected high-grade samples was also submitted to SGS, in order to avoid contaminating adjacent lower grade samples. These quartz washes were completed at the crush and pulveriser stage of sample preparation.

Each core sample was analyzed for selected base metals (Cu, Fe, Pb, Zn), precious metals (Ag, Au) and trace elements (As, Ba, Bi, Hg, S, Sb, Se), with all analytical certificates attached in Appendix L. Quality assurance and quality control (QA/QC) of these analyses was monitored through the insertion of certified reference materials (CRMs) and blanks alternately every 10 samples into the sample sequence, and through two check assay programs. A review of the QA/QC program is attached as Appendix M.

All CRMs were manufactured from sulphide ores and are the same as those used during the 2015 drill program (Hughes et al., 2016; Voordouw, 2016b). The CRMs are certified for Cu, Pb, Zn at the % level, as well as Au and Ag at the ppm level, and were originally selected to match low-, medium- and high-grade mineralization. During sampling, CRM selection was based on the tenor of surrounding mineralization, with CDN-ME-1311 used for low-grade, OREAS 621 and 623 used sequentially for medium-grade, and OREAS 113, GBM310-16 and G312-4 used for high-grade. A minimum weight of 100 g was used for CRM samples so that reanalyses could be completed if required. Blank material comprised the same barren landscaping stone that was calibrated in 2015 (Hughes et al., 2016; Voordouw, 2016b). The CRM suite was more widely used in 2015 with three CRMs preferentially used in 2016 and GBM310-16 only used once (Table 5).

Table 5: CRM usage during the 2015 and 2016 drilling programs

CRM Type	Number of times used	
	2015	*2016*
CDN-ME-1311	109	65
OREAS 621	63	34
OREAS 623	62	34
OREAS 113	14	0
GBM310-16	15	1
G312-4	9	0

ALS Minerals of North Vancouver, BC, completed check assays on 64 pulps with methods analogous to those used by SGS (Table 6). Overall, QA/QC samples including blanks, CRMs and check assays comprised 14% of all 2016 analyses.

Drill core and blank samples were weighed, dried and crushed to 75% passing 2 mm, and then separated into a 250 g split that was pulverized to 85% passing 75 microns. Analytical methods are summarized in Table 6 for each element and for those elements requiring different methods at higher concentrations (i.e. Ag, Au, Ba). Descriptions of these methods can be found in the services brochure of the SGS and ALS websites. An Na_2O_2 fusion was picked for base metal analysis as it provides a complete digestion and thereby a near total chemical analysis.

Table 6: Overview of assay methods used for 2016 core (SGS) and check assays (ALS)

Element	SGS			ALS		
	Code	*Range*	*Method*	*Code*	*Range*	*Method*
Ag <250 ppm	GE_AAS12E	0.3–300 ppm	2-acid digest, AAS	Ag-AA45	0.2–100 ppm	AR digest, AAS
				Ag-AA46	1–1500 ppm	AR digest, AAS
Ag >250 ppm	GO_FAG313	10–3000 ppm	FA, GRAV	Ag-GRA21	5–10000 ppm	FA, GRAV
				Ag-OG46	1–1500ppm	AR digest, ICP-AES
Au <5 ppm	GE_FAA313	0.005–10 ppm	FA, AAS	Au-AA25	0.01–100 ppm	30 g, FA, AAS
Au >5 ppm	GO_FAG303	1.0–3000 ppm	FA, GRAV	Au-GRA21	0.05–1000 ppm	30 g, FA, GRAV
Cu	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.002–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.2–10000 ppm	AR digest, ICP-MS
				Cu-OG46	0.001–40%	AR digest, ICP-AES
Fe	GO_ICP90Q	0.05–50%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–70%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.01–50%	AR digest, ICP-MS
Pb	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.2–10000 ppm	AR digest, ICP-MS
				Pb-OG46	0.001–30 %	AR digest, ICP-AES
Zn	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.002–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.1–10000 ppm	AR digest, ICP-MS
				Zn-OG46	0.001–60 %	AR digest, ICP-AES
As	GE_ICM14B	1–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
Ba <4%	GO_ICP90Q	0.01–4%	Na_2O_2 fusion, ICP-AES	ME-MS85	?	LiBO2 fusion, ICP-MS
Ba >4%	GO_XRF77B	0.2–100%?	S_2O_7 fusion, XRF	ME-MS41	0.5–10000 ppm	AR digest, ICP-MS
Bi	GE_ICM14B	0.02–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
Hg	GE_ICM14B	0.01–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
S	GO_ICP90Q	0.01–30%?	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–60 %	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.01–10 %	AR digest, ICP-MS
Sb	GE_ICM14B	0.05–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.05–10000 ppm	AR digest, ICP-MS
Se	GE_ICM14B	1–1000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.2–10000 ppm	AR digest, ICP-MS

6.5.5 Petrographic studies

Four samples were submitted to Vancouver Petrographic Ltd of Langley, BC, for petrographic analysis. These analyses were done with a transmitted light microscope, with results including an estimate of the modal mineralogy and descriptions of mineralogy and texture. A report written by Vancouver Petrographic (Leitch, 2016) has more detailed descriptions and is attached as Appendix N.

6.6 Metallurgical drilling

The 2016 metallurgical drilling program consisted of seven dedicated drill holes (1055.4 m) and nine dual purpose holes, with eight of these drilled as resource infill holes (1459.2 m) and the ninth drilled to confirm a coincident core measurement and rod count error (185.0 m), for a total of 2699.6 m of drilling (Table 7). Drilling was split between the Krakatoa Zone, GP4F deposit and ABM Zone, and was done by the same two contractors (Hy-Tech, New Age) who completed the resource and exploration drilling (section 6.5). All metallurgical drilling was done as HQ3 size core to maximize material for metallurgical testing. Collar data, including coordinates, azimuth and dip, are included in Appendix G.

Metallurgical work on the Krakatoa Zone aimed to collect representative samples of the upper and main lenses. Upper lens material was collected from four drill holes (K16-344, 345, 347, 349) located within the proposed open pit whereas main lens material was collected from two holes (K16-340, 378), one of which (K16-340) was drilled downdip through a thick segment that occurs in both the proposed open pit and underground mining areas.

Table 7: Summary of the 2016 metallurgical drilling program

Zone	Target	DH Type	Dedicated holes			Dual-purpose holes		
			DHs (N.o.)	*Metres*	*Samples*	*DHs (N.o.)*	*Metres*	*Samples*
Krakatoa	Upper and main lenses	Metallurgical	2	443.5	153			
		Resource infill + metallurgical				4	757.9	177
GP4F	GP4F lens	Resource infill + metallurgical				4	701.3	97
		Twin + metallurgical				1	185.0	22
ABM	ABM lens	Metallurgical	5	611.9	344			
2016 Total			**7**	**1055.4**	**497**	**9**	**1644.2**	**296**

The GP4F metallurgical program was designed to collect representative samples of the GP4F and lower lens, and was done in conjunction with infill drilling. Hence, all of these hole were drilled perpendicular to the dip direction rather than parallel as in most dedicated metallurgical holes.

The primary purpose of the ABM metallurgical drilling was to collect additional near-surface samples that would reflect years 1 and 2 of the mine plan. All five of holes were drilled downdip to maximize the amount of mineralized material per metre drilled.

A total of 771 HQ3 half core samples and 22 HQ3 whole core samples were collected as metallurgical samples from 16 drill holes, for 793 samples. Each sample interval was matched to a parent assay sample that was submitted for geochemical assay. Metallurgical samples were marked with a unique, wax coated, sample tag in the core box. Half core samples were initially cut in half with an open circulation rock saw, parallel to the core axis, with one-half forming the metallurgical sample and the second half cut into quarters to form the assay (or “metallurgical parent”) and reference samples. Metallurgical samples were placed into labelled plastic sample bags, sealed with a plastic zip tie and shipped in sealed rice bags to Small’s Expediting in Whitehorse, Yukon, for storage in a refrigerated sea container. A list of metallurgical samples collected in 2016 is attached as Appendix O.

6.7 Geotechnical investigations

Geotechnical investigations completed in 2016 included diamond drilling, test pitting, geotechnical logging as well as field and laboratory testing of geological materials. The bulk of this work, including 16 of the 20 geotechnical drill holes (631.0 m) and all 53 test pits, was carried out as part of the mine site geotechnical investigation conducted by Knight Piésold Consulting of Vancouver, BC ("Knight Piésold"). The remaining four holes (608.1 m) were drilled as part of the Krakatoa rock quality investigation, which also included detailed geotechnical logging of several Krakatoa resource drill cores. Both programs are summarized in the subsections below and geotechnical drill production is summarized in Table 8. Geotechnical data collected as part of the mine infrastructure and Krakatoa rock quality programs is attached in Appendices P and Q respectively.

Table 8: Summary of the 2016 geotechnical drilling program

Program	DH Type	Dedicated holes		Dual-purpose holes	
		DHs (N.o.)	*Metres*	*DHs (N.o.)*	*Metres*
Mine site geotechnical	Geotechnical	10	381.6		
	Geotechnical and hydrogeological	6	249.4		
Krakatoa rock quality	Geotechnical	4	608.1		
	Resource and geotechnical			15	3665.5
2016 Total		**20**	**1239.1**	**15**	**3665.5**

6.7.1 Mine site

The 2016 KZK mine site geotechnical investigation was conducted by Knight Piésold and comprised excavation and logging of 53 test pits, followed by the drilling and logging of 16 geotechnical drill holes. In addition, Knight Piésold conducted standard penetration testing (SPT) on surficial materials, point load testing on representative rock core samples, and *in situ* packer testing at regular intervals during drilling (Knight Piésold Ltd., 2016). Laboratory index testing of select test pit and SPT overburden samples was also done, as well as lab-based unconfined compressive strength (UCS) testing of select rock core samples. Geotechnical data collected by Knight Piésold during the mine site investigation is attached as Appendix P.

Test pitting was completed between 18–26 May 2016, with a total of 53 pits dug by a Link-Belt 290 excavator provided by T. Moon Construction Ltd of Ross River, Yukon ("Tim Moon") and under the supervision of Knight Piésold. Test pits were spotted with a handheld GPS and dug to the top of bedrock, unless the excavation was stopped because of machine capabilities, groundwater ingress, wall instability and/or permafrost. Test pit walls and stockpiles were geotechnically logged and samples were collected for additional laboratory testing. Pits were accessed using existing trails and roads when possible but required making some new trails. Each test pit was reclaimed through backfilling and recontoured to match the pre-excavation ground profile.

Forty overburden samples collected from the test pits underwent off-site laboratory testing to supplement the field data. Samples were sent to the Knight Piésold Geotechnical Soils Laboratory in Denver, Colorado, ("KP Soils Lab") for tests on natural moisture content, particle size distribution and hydrometer analysis, standard proctor compaction, triaxial compression and flexible wall permeability.

Sixteen geotechnical holes were drilled by Hy-Tech, using a skid-mounted and then helicopter-portable Tech 5000 diamond drill retrofitted with an SPT hammer. This drill was converted from skid-mounted to heli-portable at KZK Camp. Drill hole locations were spotted by the project geologist using a hand held GPS whereas actual collar locations were measured with a RTK DGPS (see also section 6.5.1). Downhole surveys were not requested, as all of the drill holes were vertical. Core was drilled as HQ3 size using triple tube methods to maximize recovery. The methodology summarized below is adapted from Knight Piésold (2016).

Drilling and logging of the geotechnical drill holes also included standard penetration testing (SPT) of surficial materials, point load testing (PLT) on representative core samples, and *in situ* packer hydraulic conductivity testing ("packer testing") at regular intervals. SPTs were performed at approximately 1.5 m

intervals until bedrock was encountered to estimate the state (compactness) of the material and to obtain samples for laboratory testing. Tests were conducted with an automatic hammer equipped with a 610 mm AWJ split spoon sampler. Blow counts were recorded at four continuous 150 mm intervals for a maximum sampling length of 600 mm. The N-value was determined as the sum of the blow counts for the second and third interval and can be related to the compactness of the soil. The tests were terminated prior to reaching the maximum sampling length when less than 150 mm penetration per 50 blows was achieved. The length of the incomplete test was recorded when early refusal occurred.

PLTs were performed on core samples at the drill using a portable hydraulic testing apparatus with calibrated gauges. The field PLT results provide a preliminary indication of intact rock strength (Appendix P). The PLT test procedure consists of inserting a rock specimen between two conical steel platens. The distance between the platens is recorded and then a load is steadily applied and increased until the sample fails. The test data allows the calculation of the Point Load Index (Is50), which is used as an index for strength classification and for correlation with UCS. This strength classification can be used to qualitatively assess the differences in rock mass strength across the site.

Packer testing was completed at 6–10 m intervals with a nitrogen-inflatable single-packer system manufactured by RST Instruments Ltd of Maple Ridge, BC. The procedure involved flushing the drill hole with water, inflating the packer and 10–15 minutes of constant pressure water injection into the isolated zone, with injected water volume measured with a flow meter. The injection pressure and volume of water pumped into the bedrock are used to calculate the hydraulic conductivity of the rock mass.

Ten-node thermistor cables were installed in nine of the geotechnical drill holes, with the purpose of establishing ground temperature profiles across the project site. Six of these installations were completed during the drill program, with each attached to PVC pipe, lowered downhole and then grouted in place with a mixture of cement and bentonite powder. The three installations completed after the drill program were done by lowering thermistor cables into an empty PVC housing installed by the drill crew, and then encasing the thermistor in silicone oil. A DT2055B data logger was installed at each location to collect and record temperature measurements at regular intervals. A plastic protective casing was installed over the data logger at each site.

Geotechnical logging involved applying soil and rock mass classification systems for each drill hole. Attributes collected for soil classification include type, particle size, particle shape, plasticity, moisture content, unit, colour, odour, fabric, structure and compactness (or consistency). Characteristics described for rock mass classification include rock quality designation (RQD), estimated UCS, lithology, and the number and condition of discontinuities. The RMR_{89} system (Bieniawski, 1989) for rock mass classification was implemented to define zones of weakness and general rock mass conditions for bedrock.

Select overburden and rock samples underwent off-site laboratory testing to supplement field data collected across the mine infrastructure sites. Twenty overburden samples collected during SPT tests were sent to the the KP Soils Lab to determine natural moisture content, particle size distribution and hydrometer analysis. In addition, eight samples of bedrock were sent to the Rock Mechanics Laboratory at Queen's University in Kingston, Ontario, for UCS testing to characterize the strength of the shallow bedrock.

6.7.2 Krakatoa rock quality

The 2016 Krakatoa rock quality investigation was completed by BMC and Rockland Ltd. of North Vancouver, BC ("Rockland"). This aim of this work was to define geotechnical engineering properties for lithological units comprising and associated with the Krakatoa Zone. The work program included drilling of four dedicated diamond drill holes for 608.1 m (Table 7) as well as detailed geotechnical logging on 15 of the 2016 Krakatoa resource holes, for an additional 3665.5 m. The four dedicated holes were planned to intersect the vertical centre of the pit wall at four equidistant locations within the proposed open pit design, and penetrate ~50 m into the primary faults that bound the Krakatoa Zone (Haque, 2016). Geotechnical data collected during the Krakatoa rock quality investigation program is attached as Appendix Q.

Drilling alignment, downhole survey and collar survey procedures were the same as those used for the resource and exploration drilling (Section 6.5). Core was drilled as HQ3 size using triple tube methods with

inner split tubes and drill crews used a Reflex ACTII RD core orientation system to orient drill core from the base of overburden to the end of hole. Geotechnical logging was completed at the drill site whilst the core was still in the splits.

The geotechnical logging system used to developed a rock mass classification involved measuring rock strength proxies (e.g. recovery, RQD, fracture frequency), structural orientations (e.g. alpha and beta angles, structure type, orientation confidence level) and specific engineering properties, like joint set number, joint roughness, joint alteration, weathering/alteration index and rock strength (hammer, point load and UCS testing). Packer tests were completed following the same procedures described in Section 6.7.1.

6.8 Hydrogeological investigations

The 2016 hydrogeological work program was done in conjunction with the mine site geotechnical investigation program (i.e. section 6.7.1), and involved drilling six deep monitoring wells and three shallow wells (Table 9).

Drilling contractors and methods were the same as those used in the geotechnical site investigation (section 6.7.1), although each well hole was drilled without the use of drilling additives or rod grease. Once drilling was complete the holes were then flushed with clean water until the water return out of the casing was clear. Recovered core was reviewed by Knight Piésold staff to select a suitable zone over which the well screen would be installed. Screened zones were selected to target areas of increased permeability identified by geotechnical logging and packer testing.

Hydraulic conductivity packer testing was completed in 16 drill holes comprising all six of the deep monitoring wells and 10 holes drilled for geotechnical purposes. No packer testing was done on the three shallow wells. Single packer profile testing was completed at 6–10 m intervals during drilling to estimate the hydraulic conductivity of the bedrock, following the same procedure described in Section 6.7.1.

Table 9: Summary of the 2016 hydrogeological drilling program

Program	Type	Dedicated holes		Dual-purpose holes	
		DHs (N.o.)	*Metres*	*DHs (N.o.)*	*Metres*
Mine site hydrogeological	Hydrogeological	3	18.0		
	Geotechnical and hydrogeological			6	249.4
2016 Total		**3**	**18.0**	**6**	**249.4**

Monitoring wells were installed in all nine hydrogeological holes and were constructed using 1.5” diameter flush-threaded schedule 50 PVC riser pipe. Holes that extended below the base of the selected screen zone were backfilled to the required depth with alternating layers of sand and bentonite pellets. This was followed by a layer of bentonite pellets to seal off the drill hole below the completion zone. A 0.5 m layer of coarser filter sand was placed above the bottom bentonite seal to protect the well screen. A bottom end cap was placed on the slotted PVC screen and lowered onto the coarse sand layer down hole along with the PVC riser pipe assembly. Filter sand was poured down the drill hole to fully encompass the screened section and approximately 0.5 m of riser pipe above the screened interval. A bentonite plug with a minimum thickness of 1 m, was placed on top of the sand pack and the hole was then grouted to surface. Depths to the sand pack and bentonite horizons were monitored throughout the installation using a tag line. Each installation was completed with the placement of a lockable steel monument over the exposed PVC at surface.

Three vibrating wire piezometers (“VWP”) were installed at different depths in K16-379 to monitor the pore water pressure profile with depth and time. The VWPs were attached the schedule 40 PVC pipe as it was lowered down the hole. The pipe and piezometers were then grouted into place from the bottom of the hole using a cement and bentonite powder mixture that was pumped down through the PVC. The VWPs were monitored throughout the grouting process to track grouting progress and to ensure no damage was done to the instruments. A permanent DT2055B data logger was installed at surface to regularly record pressure and temperature measurements. A plastic protective casing was also installed to protect the data logger.

6.9 Environmental studies

Several environmental and social studies were continued in 2016 in an effort to characterize the baseline conditions of the project area. This work includes ongoing studies on the acid rock drainage (ARD) potential, monitoring of surface and groundwater water quality and quantity, fish and fish habitat surveys, wildlife and wildlife habitat surveys, vegetation and soil studies, climate measurements and heritage surveys. Alexco Environmental Group ("Alexco") of Whitehorse, Yukon, completed most of this work. In addition, Knight Piésold did some of the groundwater work, and Ecofor Consulting Ltd of Whitehorse, Yukon ("Ecofor") did the heritage surveys. A summary of the 2016 field activities is provided below.

Work done to help characterize ARD potential and/or metal leaching behaviour included the collection of 79 additional core samples to further characterize the Krakatoa Zone waste rock geodomains. Each individual sample was marked in the core box, weighed, placed and sealed in a labelled plastic sample bag, packed into rice bags and then shipped to Global ARD Testing Services Inc. in Burnaby, BC ("Global ARD"). Test work done by Global ARD includes static geochemical analyses of neutralising potential, sulphate sulphur by HCl leach, total sulphur, total organic carbon, and ultratrace metals by aqua regia digest and ICP-MS. A list of the ARD samples collected in 2016 is included in Appendix R.

Surface water quality and quantity monitoring was undertaken on a monthly basis for all of 2016, tying into the work that was started in April 2015. Samples to assess water quality were collected from 11 surface water stations and five seep locations, with field measurements collected including pH, specific conductivity, temperature, redox potential, dissolved oxygen, temperature and turbidity. Laboratory testing of various other parameters was done by Maxxam Analytics of Whitehorse, YT, ("Maxxam") and included anions, alkalinity, acidity, ammonia, dissolved organic carbon, total and dissolved metals, total cyanide and weak acid dissociable (WAD) cyanide. Water quantity was assessed through monthly manual discharge measurements at the 11 surface water stations. Each station was also surveyed biannually (June, September) to quantify any staff gauge drift. Eight continuous data collection hydrometric stations were also installed on the Property (six at historical locations and two at new locations that correspond to historical sampling locations) and water seeps/artesian conditions were evaluated in the ABM deposit area.

Ground water quality monitoring was done on a monthly basis in conjunction with the surface water program, lasting from May until November 2016. Prior to sample collection, monitoring wells were purged so that field parameters stabilized to less than 10% variability. Measured field and laboratory parameters are the same as those measured for the surface water, with lab tests also completed by Maxxam. Split duplicates were analyzed at a frequency of one for every 10 samples, and blanks were collected as part of each sampling program.

Fish and fish habitat surveys were completed on Geona creek and the Geona-Finlayson creek confluence, with an emphasis on re-sampling the sites previously surveyed in 1995 and 2015. A scientific collection license was obtained from the Department of Fisheries and Oceans (DFO) prior to sampling. Captured fish were identified, measured, weighed and assessed for abnormalities, then released at the point of capture. Catch per unit effort (CPUE) was calculated to enable semi-quantitative comparisons of populations over space and time. Sampling locations and *in situ* water parameters (i.e. temperature, dissolved oxygen, conductivity) were also characterized. Ground- and air-based Arctic grayling spawning surveys were conducted in mid-May and early June, in the most suitable habitats and after the water temperature had increased to at least 4 °C so as to trigger spawning. These surveys were complemented with angling efforts. Overwintering habitat investigations were carried out in later winter (February-March) on Geona creek and related ponds, by measuring dissolved oxygen, ice thickness and depth of water below ice cover.

Wildlife and wildlife habitat surveys focussed on caribou, moose, bear, beaver, pika, marmot, bats, breeding birds, waterfowl and raptors. Caribou studies included a post-calving aerial survey in early July and a rut aerial survey in early October. Both surveys focussed on the same areas used for the 1995 and/or 2015 surveys and were conducted with contour flight line patterns over alpine and subalpine areas. Moose studies included air-based late winter and post-rut surveys done in March and November, respectively. Aerial bear denning surveys were done in April and May to overlap with their emergent period. Beaver studies were completed for Geona creek and included a review of the most up-to-date aerial photographs for beaver signs (e.g. dams, lodges, caches), followed by helicopter- and ground-based follow-up. Pika and marmot surveys

were undertaken in the four pre-identified locations that matched those used in 2015 and comprised 30 minute surveys by two observers who independently recorded sightings, hay piles and calls. Bat surveys focussed on wetland areas and were done by placing an AnaBat portable acoustic recorder unit at the end of a 6.5 m pole, with the recorder timed to operate for a six-hour period between dusk and dawn for a total of 42 hours. Breeding bird and waterfowl surveys were done at locations within the proposed mine site, along the tote road and where the tote road intersects creeks and wetlands. Both surveys utilized standard five minute point counts. Breeding birds were identified through sight and/or sound, and species of interest observed between point counts were also recorded. Ground- and air-based raptor surveys were done in late June and as part of the breeding bird surveys.

Vegetation and soil surveys done in 2016 included ecosystem plots, assessment of plant metal uptake, rare plant surveys, invasive plant surveys, soil characterization, wildlife habitat suitability surveys and timber plots.

Heritage surveys were completed in June and July 2016, starting with reconnaissance surveys and followed by shovel testing of high priority areas. Tested locations included those associated with access roads, ditching, proposed mine infrastructure sites (e.g. open pit, mill site, storage facilities, stockpiles, water management pond, settling pond), drill holes and potential construction laydown areas. A total of 186 shovel tests were completed at five locations with an additional 41 shovel tests done at one heritage site identified in 2015.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Geological setting

In the following sections, the geological setting of the KZK Property is described at regional, local and property scales.

7.1.1 Regional geology

The KZK Property is underlain by polydeformed Devonian to Mississippian meta-sedimentary, -volcanic and -plutonic rocks assigned to the Yukon-Tanana terrane, which extends from central British Columbia to eastern Alaska. These rocks are interpreted as the product of middle Palaeozoic continental arc magmatism in a pericratonic setting that was separated from Ancestral North America by a back-arc rift basin occupied by the Slide Mountain Ocean. In central Yukon the Finlayson Lake belt is comprised of lithologies assigned to both the Yukon Tanana and Slide Mountain terranes (Nelson et al., 2013). Syngenetic volcanogenic massive sulphide (VMS) mineralization occurs in both terranes and is hosted in multiple settings.

The Finlayson Lake belt is a crescent-shaped area that is approximately 300 km long and 50 km wide, extending from Ross River in the north to Watson Lake in the south. It is juxtaposed with Proterozoic and Palaeozoic strata of the ancient North American continental margin to the southwest, along the Tintina Fault, and with Carboniferous rocks of the Slide Mountain Terrane to the northeast (Figure 4). The main part of the Yukon-Tanana terrane, which underlies most of west-central Yukon, is contiguous with the Finlayson Lake district through 456 km of Late Cretaceous right lateral strike-slip movement along the Tintina Fault (Layton-Matthews et al., 2008).

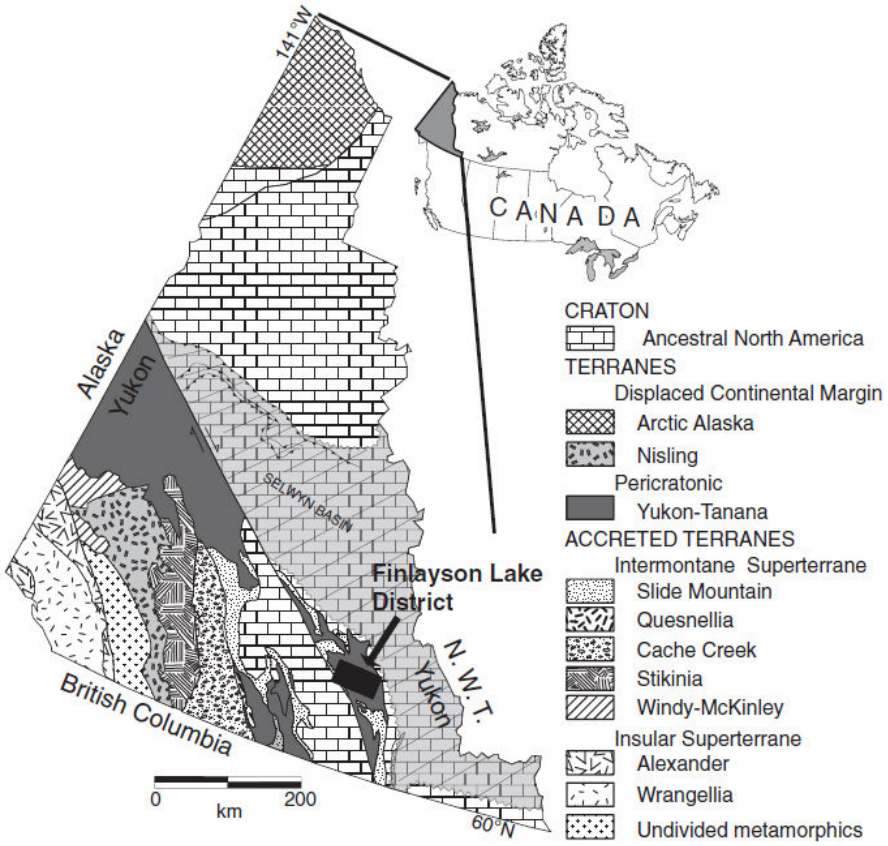


Figure 4: Regional geology of the Yukon showing the Finlayson Lake district (from Layton-Matthews et al., 2008)

7.1.2 Local geology

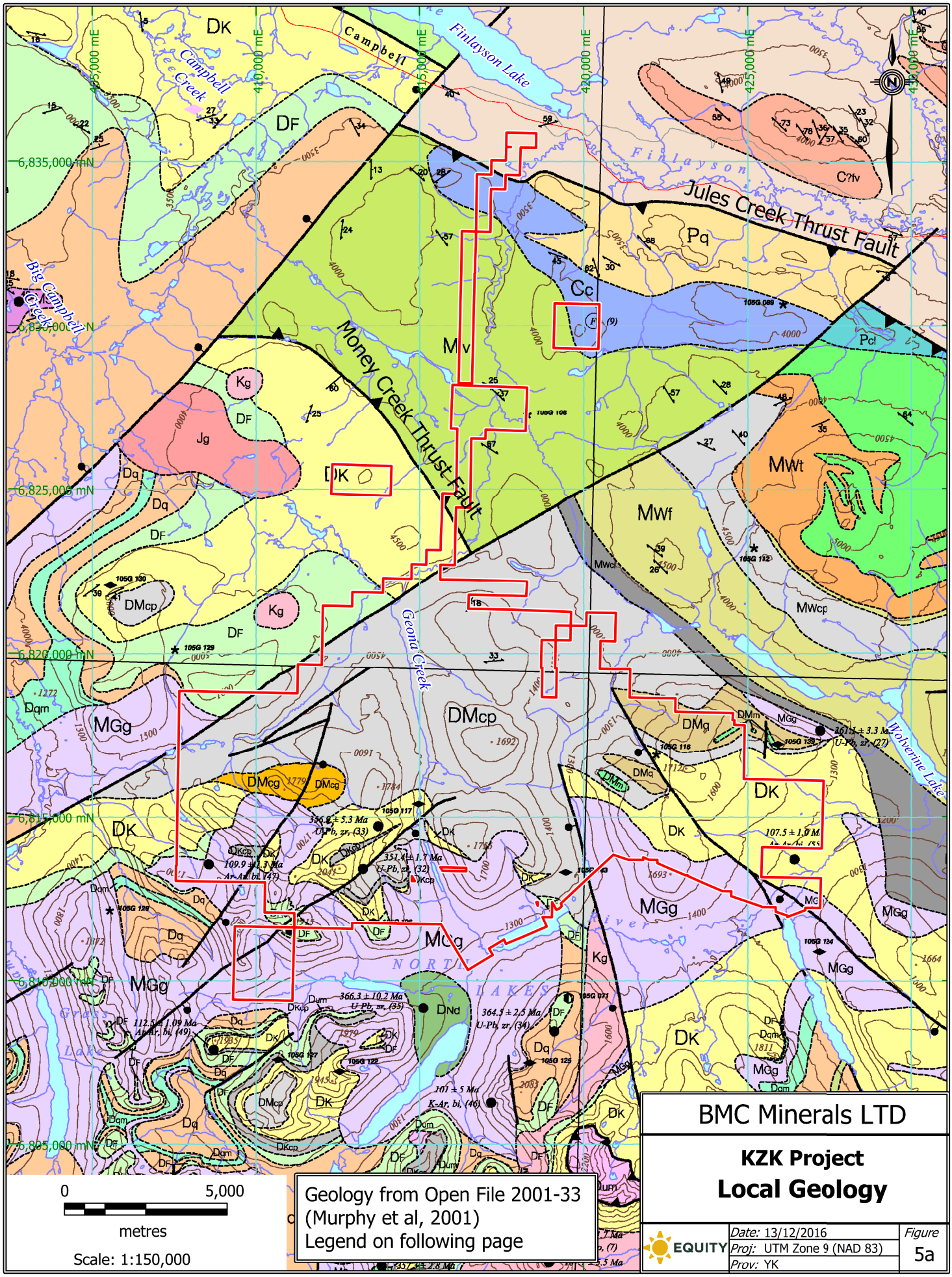
The Finlayson Lake belt of the Yukon-Tanana terrane is composed of foliated and lineated greenschist- to lower amphibolite-grade meta-sedimentary, -volcanic and -plutonic rocks (Figures 5a, 5b) that were imbricated by Permian thrust faulting into the Cleaver Lake, Money and Big Campbell thrust sheets. The final stage of thrusting placed this rock package onto North America and occurred along the Big Campbell and Inconnu thrusts in Late Triassic to Early Jurassic (MacRobbie and Holroyd, 2005b). With the exception of the Limy 1–9 claim block and the line of claims along the tote road to the Robert Campbell Highway, the KZK Property lies entirely within the Big Campbell thrust sheet in what is the structurally deepest part of the Yukon-Tanana terrane. Two middle Palaeozoic unconformity-bounded groups (Grass Lake and Wolverine) are exposed within the Big Campbell thrust sheet.

The lowermost part of the Grass Lakes Group (North River Formation) consists of pre-Early Mississippian (pre-365 Ma) quartz-rich, non-carbonaceous metaclastic rocks (**Dm**, **Dfv**, **Dqm** and **Dq**) dominated by quartzite psammite and metapelite with minor felsic metavolcanic schist, calcareous schist/metapelite and marble members. The North River Formation is conformably overlain by 30 to >200 metres of the *c.* 365 to 360 Ma mafic-dominated arc- and back-arc-related Fire Lake Formation (**DF**), which consists of mafic metavolcanic schist and phyllite with minor carbonaceous phyllite and quartzite, rare marble and felsic metavolcanic, and locally significant meta-gabbro, -pyroxenite and -ultramafic bodies. The Besshi-style Fyre Lake Cu-Co-Au VMS deposit is hosted in boninite at the top of the Fire Lake Formation.

Conformably overlying the Fire Lake Formation is the felsic volcanic and sedimentary rock-dominated Kudz Ze Kayah ("KZK") Formation (**DK**, **DKcp** and **DKcs**), whose lower parts consist predominantly of Devono-Mississippian (*c.* 360–356 Ma) felsic volcanic and variably carbonaceous sedimentary rocks. These rocks are interpreted to have formed within a continental back-arc rift to back-arc basin (Layton-Matthews et al., 2008). The thickest accumulation of felsic metavolcanic rocks within the KZK Formation occur on the KZK Property, which hosts the ABM and GP4F VMS deposits. The KZK Formation grades conformably upwards into the Wind Lake Formation, which comprises a thick sequence of carbonaceous to locally calcareous phyllite with lesser siltstone, mafic metavolcanic, blue quartz-bearing grits, conglomerate, psammite and quartzite (**DMq**, **DMm**, **DMcp**, and **DMcg**). Coeval with the KZK and Wind Lake formations are Devonian-Mississippian (360±1 Ma) peraluminous K-feldspar porphyritic to megacrystic granites of the Grass Lakes plutonic suite (**MGg** and **MGag**), which are inferred to be subvolcanic feeders (MacRobbie and Holroyd, 2005b; Murphy et al., 2001; Piercey et al., 2001).

The Wolverine Group unconformably overlies the Grass Lakes Group and consists predominantly of Early Mississippian (*c.* 356–346 Ma) felsic volcanic and carbonaceous sedimentary rocks (**MWb**, **MWt**, **MWf**, **MWcp** and **MWcl**). The succession contains, from bottom to top, a lower conglomerate, felsic volcanic-dominated unit, carbonaceous argillite, the immediate footwall felsic volcanic and subvolcanic rocks to the Wolverine VMS deposit, and a hanging wall consisting of aphyric rhyolite and carbonaceous sedimentary rocks that, near their top, host basalt flows. Rocks of the Wolverine succession are interpreted to have formed within an ensialic back-arc rift basin that evolved to seafloor spreading (Layton-Matthews et al., 2008). The Wolverine Kuroko-style VMS deposit occurs at the contact between footwall felsic volcaniclastic rocks and either hanging wall carbonaceous argillite or exhalative rocks (Murphy et al., 2001; Piercey et al., 2001).

A subhorizontal to moderately steep north to northeast dipping, penetrative ductile deformation fabric overprints all Grass Lakes Group lithologies, and is associated with isoclinal folds and mid-greenschist facies (chlorite-biotite grade) metamorphic assemblages. It is less prominent or absent in the Wolverine Group. These fabrics and the metamorphism may reflect two phases of deformation: an early Mississippian event; and, an event related to continent arc collision during the Late Permian to early Triassic time (Schultze, 2001).



Geology from Open File 2001-33
(Murphy et al, 2001)
Legend on following page

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KZK Project

Local Geology

EQUITY

Date: 13/12/2016
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Prov: YK

Figure 5a

LEGEND FOR KZK LOCAL GEOLOGY (OPEN FILE 2001-33)

POST-THRUST INTRUSIVE ROCKS

CRETACEOUS

Kg — Equigranular biotite-muscovite granite

JURASSIC

Jg — Equigranular hornblende-biotite granite

YUKON-TANANA TERRANE

Footwall of Jules Creek Thrust

CARBONIFEROUS?

C?cs — Phyllite, ribbon chert, sandstone, grit, conglomerate

C?iv — Chlorite-feldspar-quartz phyllite (intermediate metavolcanic rocks)

Hanging wall of Jules Creek Thrust

PENNSYLVANIAN

Pcl — Phyllite, chert, conglomerate, greywacke, diamictite, limestone

Hanging wall of Money Creek Thrust

PENNSYLVANIAN

Pq — Quartz sandstone/quartzite

UPPER MISSISSIPPIANTO MID-PENSYLVANIAN

Cc — Bioclastic crinoidal limestone

EARLY MISSISSIPPIAN

SIMPSON RANGE PLUTONIC SUITE

MSg — Granite, quartz monzonite

LOWER MISSISSIPPIAN

Miv — Chlorite-muscovite-quartz phyllite (intermediate composition)

UPPER DEVONIAN

DF — Chloritic phyllite with lesser clastic rocks, marble

Footwall of Money Creek Thrust

EARLY MISSISSIPPIAN

WOLVERINE SUCCESSION

MWb — Chloritic phyllite

MWt — Thinly interbedded siliceous rock and phyllite (metatuff and exhalites)

MWf — Muscovite-quartz phyllite

MWcp — Carbonaceous phyllite and quartz sandstone

MWcl — Feldspathic meta-sandstone, grit and carbonaceous phyllite

EARLY MISSISSIPPIAN

GRASS LAKES PLUTONIC SUITE

MGg/ MGag — Granitic to monzonitic equigranular meta-plutonic rocks/Augen-textured granitic to monzonitic meta-plutonic rocks

LATE DEVONIAN

NORTH LAKES META-DIORITE

DNd — Foliated hornblende-biotite meta-diorite

UPPER DEVONIAN (TO LOWER MISSISSIPPIAN?)

GRASS LAKES SUCCESSION

DMq — Quartzite

DMm — Chloritic phyllite

DMcp — Carbonaceous phyllite and quartzite

DMcg — Meta-conglomerate

Kudz Ze Kayah felsic metavolcanic unit

DK — Undifferentiated feldspar-muscovite-quartz schist/ phyllite, siliceous muscovite-quartz schist/phyllite, augen schist/phyllite (meta-porphyry)

DKcp — Carbonaceous phyllite and quartzite

DKcs — Calcareous meta-sandstone and grit

Fire Lake metavolcanic unit

DF — Plagioclase-chlorite phyllite/schist, carbonaceous phyllite, muscovite-quartz phyllite

UPPER DEVONIAN AND OLDER?

Dq — Psammitic and meta-pelitic schist

Dqm — Marble, calcareous schist and lesser carbonaceous phyllite

Dm — Biotite-plagioclase-actinolite-chlorite schist

Dfv — Feldspar-muscovite-quartz schist (felsic metavolcanic rock)

Reference: Murphy et al (2001)

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KZK Project

Local Geology Legend

EQUITY

Date: 13/12/2016

Proj:

Prov: YK

Figure 5b

7.1.3 Property geology

The KZK Property was fully mapped in 1996 at 1:20,000 scale by Cominco geologists (Schultze and Hall, 1997). Since then, no property-wide geological mapping has been reported, although more detailed mapping has been done locally. The following discussion is modified from Schultze and Hall (1997). Lithologic codes used on the 2016 KZK Project are summarized in Table 10. A map showing the property geology around the ABM and GP4F deposits is included as Figure 6.

The Grass Lakes Group on the KZK Property is divided into three main components (Figure 6): (1) Kudz Ze Kayah (KZK) Formation felsic volcanic, which hosts all significant VMS mineralization on the Property, (2) overlying Wind Lake Formation (or "upper sedimentary and mafic volcanic sequence" in MacRobbie and Holroyd, 2000), and (3) underlying lower sedimentary KZK Formation (or "lower sedimentary sequence" in MacRobbie and Holroyd, 2000), which is equivalent to the **DKcp** unit in Murphy et al (2001) (Figure 6). In a gross sense, stratigraphy trends easterly, dips moderately to the north and is right way up.

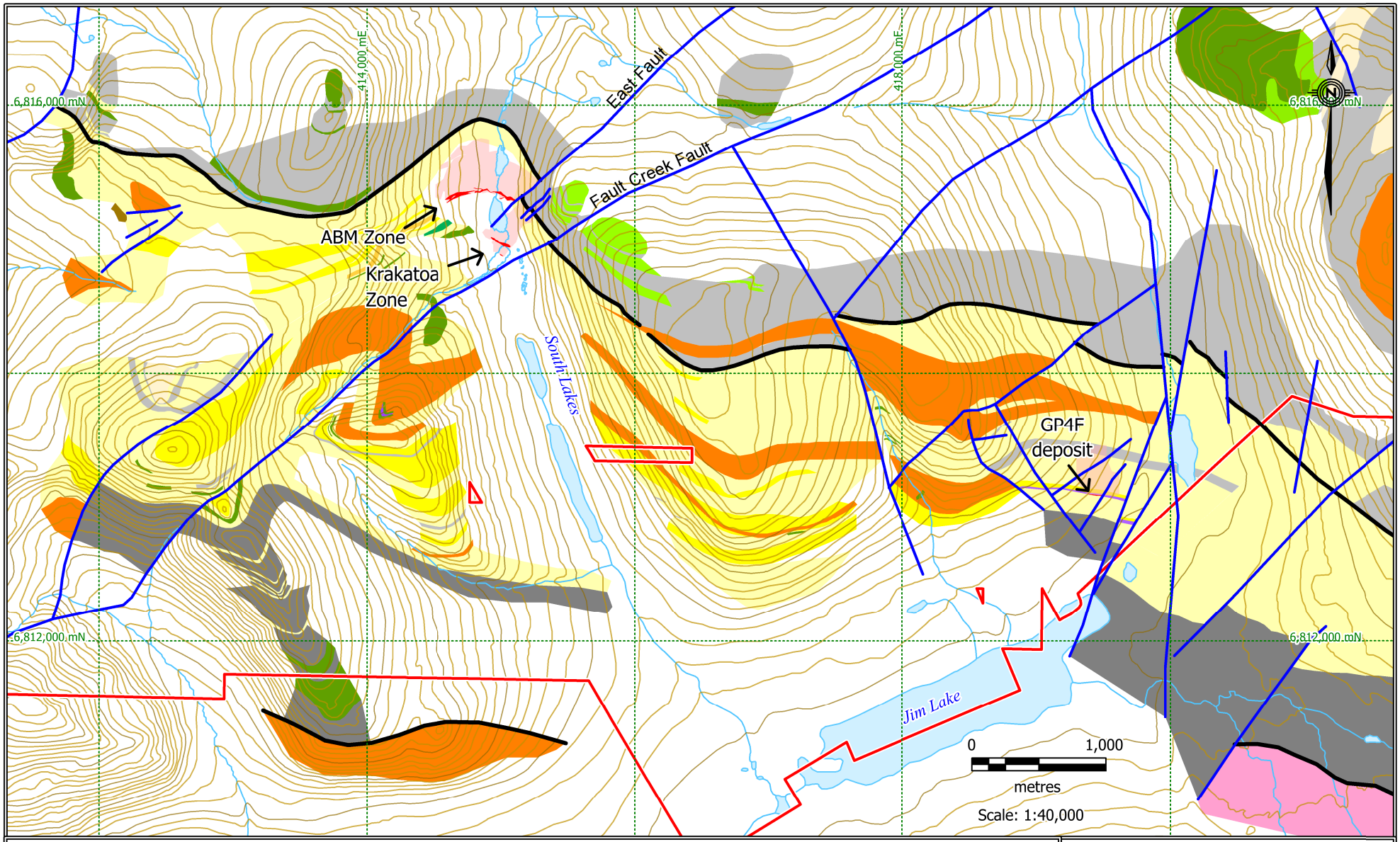
The lower sedimentary KZK Formation consists of siltstone, phyllitic schist, light grey quartzite and massive tuffaceous wacke that is interfingered with feldspar porphyry. Lithologies of minor abundance include mudstone, carbonaceous mudstone and felsic tuff. Mafic sills and dykes (flows?) (**MAFi**) are common and locally associated with thinly banded cherty layers.

Felsic volcanic of the KZK Formation can be subdivided into mappable end member units that comprise felsic volcaniclastic (**RHYv**), coherent felsic volcanic flows and intrusives (**RHYc**), and aphanitic to feldspar-quartz porphyritic intrusives (**RHYi**). Minor abundances of mafic intrusive (**MAFi**) and mudstone (**MDS**) also occur. The most abundant lithology is volcaniclastic rhyolite (**RHYv**), which comprises thinly bedded tuffs, lapilli tuffs and crystal tuffs that are locally intercalated with thin layers of mudstone. With increasing grain size these fine-grained felsic tuffs grade into crystal-rich ash tuffs containing up to 35% light grey to white feldspar and clear grey quartz crystals. Feldspar-augen crystal tuffs are well exposed along ridges southeast of ABM. The fissile character and internal variations of feldspar augen content and lateral extent suggest that this unit is a crystal-rich tuff.

Rhyolite flows and associated intrusives (**RHYc**) are thickest, most abundant and best exposed on Rhyolite Peak, west of the ABM deposit. These units are typically dense, siliceous, and aphanitic. Some outcrops along Fault Creek contain up to 70% spherulites ranging from 5–25 mm in diameter. Feldspar-quartz porphyry intrusions (**RHYi**) are characterized by 15–30% feldspar and/or 5–20% quartz phenocrysts set in a very fine-grained quartz-sericite-feldspar ± chlorite-ankerite groundmass. Feldspar phenocrysts are euhedral, light grey and range from 3–18 mm in size. Quartz crystals are subhedral, clear grey and 2–4 mm in diameter. Porphyry units are likely cogenetic with the epiclastic rocks.

Mafic intrusions (**MAFi**) are mapped throughout the KZK Formation, the best defined of which occurs immediately below the ABM deposit. This so-called "mafic footwall intrusion" consists of strongly foliated porphyroblastic chlorite-biotite-calcite schist. Other types of mafic intrusion consist of coarse-grained mafic schist with less deformed enclaves exhibiting a relict gabbroic texture. Biotite-rich units with quartz, feldspar and/or calcite are logged as both mafic intrusion and sedimentary rocks, and in 2016 were reinterpreted as "pelite" (**PEL**) on the basis of their mineralogy and typically finely intercalated contacts with enveloping felsic volcanic rocks. Mafic tuffs (**MAFt**) consist of fine-grained chlorite-calcite phyllitic schist and are volumetrically minor in the KZK Formation.

The base of the Wind Lake Formation lies about 200 m above the ABM deposit. It is finer-grained than the lower KZK Formation and comprises carbonaceous and calcareous mudstone (**MDS**) that is intercalated with mafic volcanic (**MAFt**) along with minor quartzite, siltstone, chert and felsic volcanic. The package underlies the northern half of the KZK Property (Murphy et al., 2001).



Wind Lake Formation
- Carbonaceous argillite, phyllitic quartzite
- Mafic-intermediate flow, dyke, sill

Kudz Ze Kayah Formation

Felsic volcanic
- Felsic crystal-rich to aphyric tuff
- Felsic flow/sill, augened, possibly some RHYif
- Undifferentiated sediment and carbonaceous mudstone

Lower KZK
- Carbonaceous mudstone, tuffaceous schist, biotitic metapelites, mudstone

VMS mineralization
- Massive sulphide (surface/sub-surface)
- GP4F "Horizon": Sulphide-rich chlorite-altered schist

Grass Lakes Plutonic Suite
- Feldspar+quartz porphry, augened porphyry
- Biotite and biotite chlorite schist

- Formation Contact
- Faults
- Property Boundary
- 100m Index contour
- 20m contour
- Lake
- Stream

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KZK Project
Deposit Area Geology

EQUITY

Date: 13/12/2016
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Prov: YK

Figure 6

Table 10: Lithological legend for KZK Project

Rock Type	Code	Subcode	Name	Description
Unconsolidated sediments	OVBN	-	Overburden	Unconsolidated overburden
Felsic volcanic and (related?) intrusive	RHY	-	Undifferentiated rhyolite	Typically strongly altered, deformed or gouged; difficult to identify protolith
	RHYc	-	Undifferentiated coherent rhyolite	Undifferentiated coherent rhyolite
		RHYcw	Curdy-textured and/or flow-banded coherent rhyolite	Flows or subvolcanic intrusions with definitive siliceous flow banding or relict flow banding textures
		RHYcf	Feldspar ± quartz phyric rhyolite	Medium- to coarse-grained FP ± QZ porphyritic rhyolite
		RHYcq	Quartz phyric rhyolite	Medium- to coarse-grained QZ porphyritic rhyolite
	RHYi	-	Undifferentiated intrusive (or aphanitic) rhyolite	Aphyric massive to semi-massive siliceous rhyolite
		RHYif	Feldspar + quartz porphyry intrusion	Medium- to coarse-grained FP-QZ porphyry with a siliceous groundmass
	RHYv	-	Undifferentiated volcaniclastic rhyolite	Undifferentiated fine- to medium-grained volcaniclastic rhyolite
		RHYvl	Lapilli tuff	Heterolithic tuff with >15% lapilli typically in an ash-dominated groundmass
		RHYva	Coarse-grained to ash tuff	Phaneritic ash tuff with >10% of crystals of 1–2 mm size; typically in an ash-dominated groundmass
		RHYvx	Quartz ± feldspar crystal tuff	>10% QZ and/or FP crystals in ash-dominated groundmass
Sedimentary rocks	SED	-	Undifferentiated sedimentary rock	Undifferentiated sedimentary rocks
		SEDc	Calcareous sedimentary rock	Dominantly fine-grained calcareous sediment with rare rounded clasts
	MDS	-	Undifferentiated mudstone	Undifferentiated mudstone
		MDSc	Carbonaceous mudstone	Heterolithic (>15% MDS) to semi massive mudstone; typically black and with slaty cleavage
		MDSt	Rhyolite tuff-dominant mudstone	Volcaniclastic rhyolite with 1–15% (typically carbonaceous) mudstone
		MDSw	Coherent rhyolite with minor carbonaceous mudstone	Coherent rhyolite with 1–15% (typically carbonaceous) mudstone
	SLT	-	Siltstone	Fine-grained, siliceous siltstone with rare BI, dominantly homogeneous
	PEL	-	Pelite	BI-rich with CB, QZ and/or FP and generally lacking CL; typically has finely intercalated contacts
	CHT	-	Chert	Hard, amorphous, siliceous rock often with thin carbonaceous or mudstone bands
Mafic volcanic and (related?) intrusive	MAFt	-	Undifferentiated mafic volcaniclastic	Undifferentiated mafic volcaniclastic
		MAFta	Mafic ash tuff	Dominantly fine- to coarse-grained, calcareous, mafic ash tuff
	MAFi	-	Undifferentiated mafic intrusion	Porphyroblastic CL-BI-CA schist; predominantly within the mafic footwall intrusion
Intermediate intrusive	DIOf	-	Feldspar augen diorite	North Lakes meta-diorite or Grass Lakes plutonic suite?
Sulphide	Massive	OA	MG-rich massive sulphide	Massive sulphide (PY-MG-SP-GL ± CP-PO) with abundant disseminated euhedral medium-grained and/or laminated MG
		OB	MG-free massive sulphide	Wispy, laminate, fine buckshot-textured fine- to coarse-grained massive sulphide (PY-SP-GL ± CP-PO) with trace to no MG

Rock Type	Code	Subcode	Name	Description
		OC	CP + PO-rich massive sulphide	Net-textured fine- to coarse-grained massive sulphide with 10–50% CP-PO
		OF	PO-rich sulphide	Massive sulphide with >50% PO in addition to MG ± CP-PY-SP-GL
		OG	CP-rich sulphide	Semi-massive to massive sulphide with >30% CP in addition to PO-PY-SP ± GL-MG
		OH	PY-rich massive sulphide	Fine-grained, homogeneous, with >80% PY
		OL	Coarse PY in SP ± PO matrix	Semi-massive to massive sulphide comprising 10–40 % coarse buckshot-textured PY in a SP ± PO-BI matrix; mostly at the GP4F deposit
	Semi-massive	OI	Semi-massive sulphide in schistose host rock	20–50% sulphide (PY ± CP-SP-PO-GL) as stringer, disseminations and/or bands in schistose host rock
		OJ	Semi-massive sulphide in proximal altered rock	20–50% sulphide (PY-CP-SP ± PO-GL) as stringer, disseminations and/or bands in proximal (CL-CI) altered host rock
		OK	Semi-massive sulphide with BA-SI gangue	20–50% sulphide as stringer, disseminations and/or bands associated with BA ± SI-CB gangue in proximal (CL-CI) altered host rock
	Brecciated	OD	Brecciated sulphide	Sulphide (PY-SP-GL ± CP-PO-MG) with crackle to mosaic breccia texture
Structure	FLZ		Fault Zone	Intervals of gouge and/or breccia in which it is not possible to recognize the protolith

The Yukon-Tanana rocks on the KZK Property are strongly structurally transposed, polydeformed, and overprinted by mid-greenschist metamorphism. Locally developed higher-grade metamorphism (i.e. upper greenschist to amphibolite) is more likely related to thermal (or contact) effects. Cominco noted evidence of five distinct phases of deformation. The first three phases (D1, D2. D3) were regionally penetrative and involved ductile simple shearing, faulting and folding. Early-stage fabrics (S1), which range from weak, bedding-parallel schistosity to a well-developed mylonitic fabric, are transposed into a strong, shallowly dipping, axial plane crenulation cleavage (S2) that formed during the development of south- to southeast-verging F2 folds. North- to northeast dipping S3 cleavage and shear bands commonly offset S2 fabrics in a top-to-the-south/southeast shear sense.

The last two phases of deformation (D4, D5) were relatively minor and involved non-penetrative compression and extension. D4 deformation is characterized by broad open folds whereas D5 deformation is characterized by late-stage, commonly north- and northeast-striking, brittle-style normal faults. In addition, early thrust faults commonly display late-stage (D5) extensional reactivation.

7.2 Mineralization

Mineralization on the KZK Property consists of the ABM and GP4F deposits, with the ABM deposit further subdivided into the ABM and Krakatoa Zones. Each is described in more detail below.

7.2.1 ABM deposit

Cominco originally discovered the ABM deposit in 1994 by following up on anomalous silt and soil samples, as well as a mineralized float, with ground-based geophysics and drilling. BMC has since expanded on Cominco's discovery and now recognizes that the ABM deposit comprises the ABM and Krakatoa Zones, separated from each other by the northeast striking East Fault (Figures 7, 8). Movement on the East Fault appears to have been down and to the right, so that Wind Lake Formation in the Krakatoa Zone is juxtaposed against KZK Formation in the ABM Zone.

The ABM Zone comprises massive sulphide and stringer-style sulphide mineralization primarily hosted within felsic volcanic and directly overlying the chlorite-altered mafic footwall intrusion (MAFi). Unlike the Krakatoa Zone, the ABM Zone appears to consist of just one main lens (named the "ABM lens") that typically coalesces at shallow depth and splits into an upper and lower part further down (see sections in Hughes et al.,

2016). There are no other named lenses within the ABM Zone. The ABM lens is up to 39 m thick with a 400 m downdip extent and 700 m strike length (Hughes and Baknes, 2015), and strikes ~290° with a ~35° dip to the north. A flexure occurs ~200 m downdip that flattens the dip to 10–15°. Semi-massive sulphide at the margins of the ABM lens appear to pass laterally into an intercalated package of volcanic and sedimentary rocks (Hughes and Baknes, 2015).

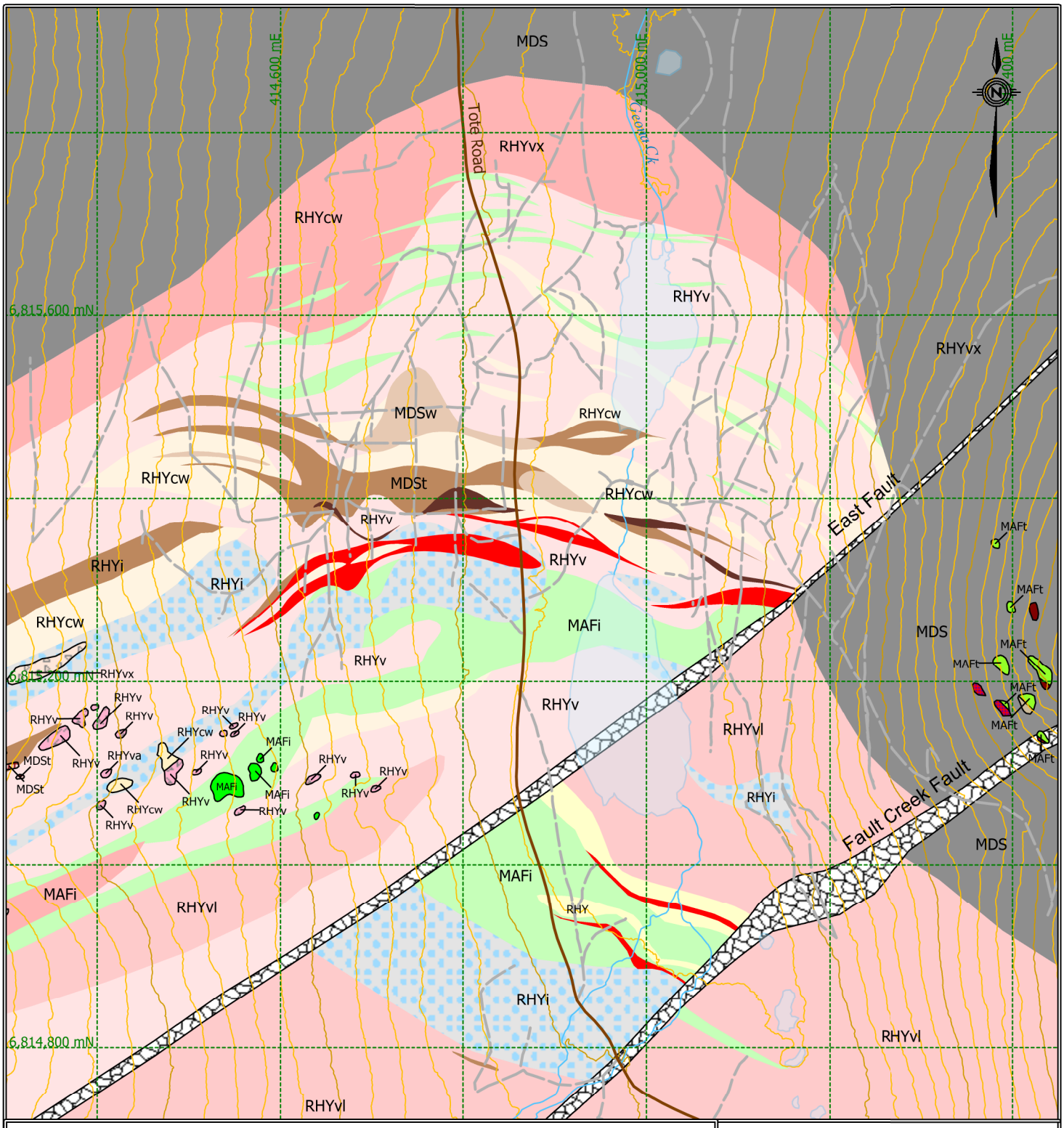
The Krakatoa Zone comprises numerous lenses and pods of massive to semi-massive sulphide, the larger and more continuous of which are referred to as the main, lower and upper lenses. The main lens typically occurs within the mafic footwall intrusion (MAFi) or at its lower contact whereas the upper lens occurs immediately above this mafic unit, in more-or-less the same stratigraphic position as the ABM lens. The lower lens is the thinnest and least extensive of the three, and generally occurs at the base of the mafic footwall intrusion or below it within the underlying felsic volcanic rocks. Mineralization is generally concordant to stratigraphy and oriented subparallel to the ABM Zone at ~300º/35º NNE, which is broadly similar to the ABM lens. The Krakatoa main lens has a true thickness of up to 22 m, width of 150 m and downdip continuity of at least 430 m. The width of the mineralized zone is constrained by the East Fault to the west and the Fault Creek Fault to the east. Mineralization extends to the top of bedrock but fails to daylight, as it is buried under 2–30 m of glacial overburden.

The most recent mineral resource estimate for the ABM deposit was completed in November 2016 (BMC Minerals Ltd., 2016a) in accordance with the JORC Code (JORC, 2012), and is reported in Table 11.

Sulphide mineralization in the ABM deposit is generally dominated by pyrite with lesser amounts of sphalerite, pyrrhotite, galena and chalcopyrite, and gangue minerals that include chlorite, magnetite, quartz, Fe-carbonate, calcite, sericite, cordierite, albite, celsian and barite. Mineralized lenses typically occur within an envelope of chlorite and muscovite alteration and are subdivided into massive and semi-massive styles, the latter consisting of disseminations, stringers and/or bands. These styles are further subdivided into ten end member “ore” types (Table 12, Figure 9) based on macroscopic mineralogical and textural features (Hughes and Baknes, 2015; Hughes et al., 2016; Schultze, 1995).

Table 11: Updated mineral resource estimate for the ABM deposit

Category	Tonnage	Cu	Pb	Zn	Au	Ag	Cu metal	Pb metal	Zn metal	Au	Ag
	Mt	*(wt%)*	*(wt%)*	*(wt%)*	*(g/t)*	*(g/t)*	*(Kt)*	*(Kt)*	*(Kt)*	*(Koz)*	*(Moz)*
ABM Zone											
Indicated	14.6	1.0	1.6	6.1	1.3	132	141.2	229.7	888.9	615.0	62.2
Inferred	0.4	1.5	1.4	4.2	1.0	107	5.5	5.2	15.5	11.6	1.3
Total	**15.0**	**1.0**	**1.6**	**6.0**	**1.3**	**132**	**146.7**	**234.9**	**904.4**	**626.6**	**63.5**
Krakatoa Zone											
Indicated	3.7	0.6	3.1	7.2	1.8	211	23.1	116.7	265.9	213.1	25.2
Inferred	0.5	0.8	1.7	8.9	1.2	161	3.7	8.4	43.5	18.7	2.5
Total	**4.2**	**0.6**	**3**	**7.4**	**1.7**	**205**	**26.8**	**125.1**	**309.4**	**231.8**	**27.7**
ABM deposit (total)											
Indicated	18.3	0.9	1.9	6.3	1.4	148	164.4	346.5	1154.8	828.1	87.4
Inferred	0.9	1.1	1.6	6.9	1.1	138	9.2	13.6	58.9	30.3	3.8
Total	**19.2**	**0.9**	**1.9**	**6.3**	**1.4**	**148**	**173.6**	**360.1**	**1213.7**	**858.4**	**91.2**



Wind Lake Formation
- MDS: mudstone and tuffaceous mudstone

Kudz Ze Kayah Formation
- MDSc: carbonaceous mudstone
- MDSt: rhyolite tuff-dominant mudstone
- MDSw: coherent rhyolite with minor carbonaceous mudstone
- MXSX: massive sulphide
- RHY: undifferentiated rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYvl: rhyolite lapilli tuff
- RHYvx: rhyolite quartz ± feldspar crystal tuff
- MAFi: mafic intrusions
- Faults
- Outcrops
- Tote Road
- Limited Use Roads/Trails

BMC Minerals

KZK Project
ABM Deposit Geology

EQUITY

Date:	13/12/2016
Proj:	UTM Zone 9 (NAD 83)
Prov:	YK

Figure 7

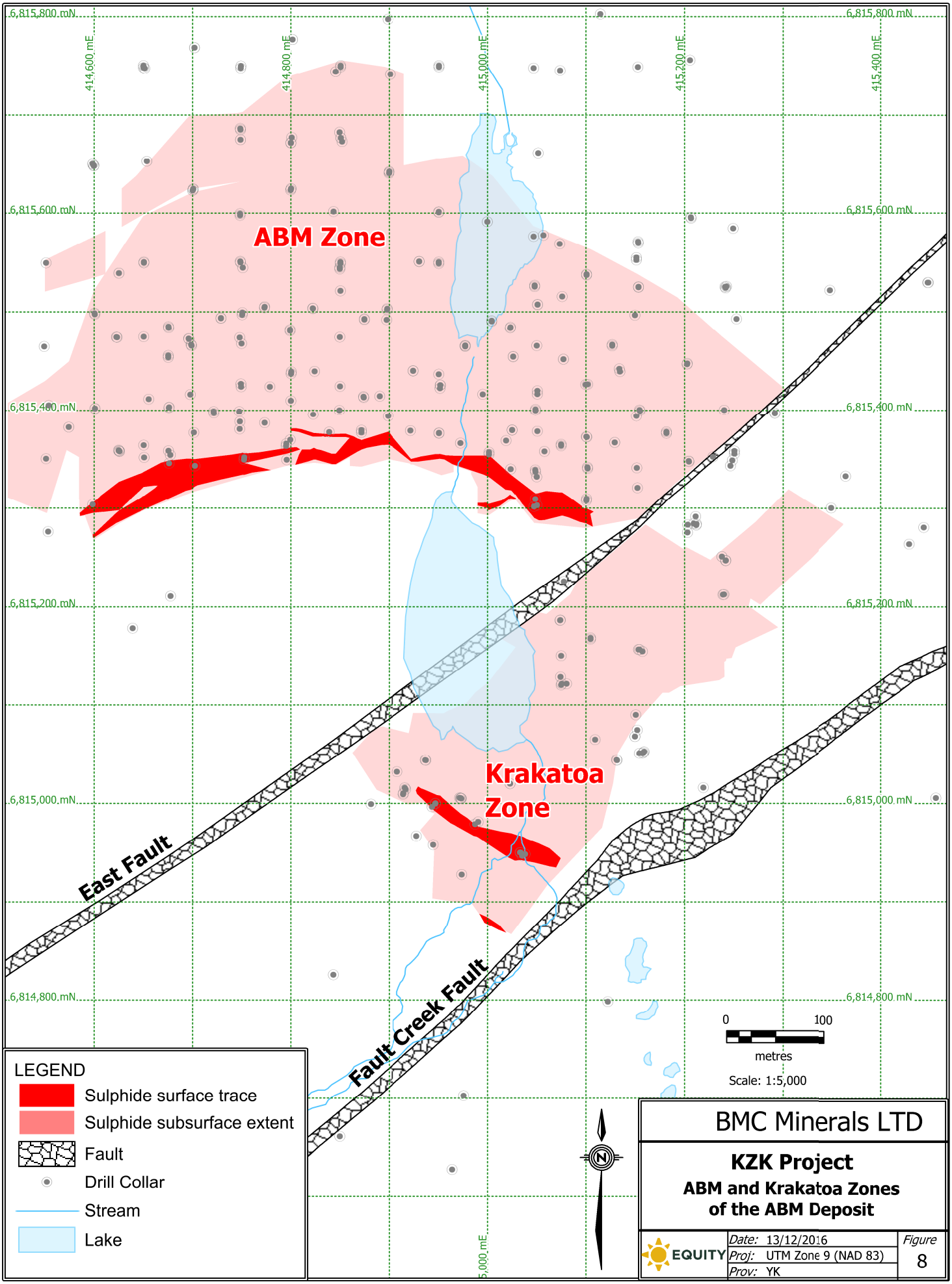

6,815,800 mN
414,600 mE
414,800 mE
415,000 mE
415,200 mE
415,400 mE
6,815,600 mN
6,815,400 mN
6,815,200 mN
6,815,000 mN
6,814,800 mN
ABM Zone
Krakatoa Zone
East Fault
Fault Creek Fault
0
100
metres
Scale: 1:5,000
LEGEND
Sulphide surface trace
Sulphide subsurface extent
Fault
Drill Collar
Stream
Lake
BMC Minerals LTD
KZK Project
ABM and Krakatoa Zones of the ABM Deposit
EQUITY
Date: 13/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure 8

Figure 9: Photos of principal ore types showing (a) OA, (b) OB, (c) OC, (d) OF, (e) OG and (f) OI ore types.

Table 12: Summary of key ore types in the ABM and GP4F deposits

Type	Subcode	Key feature(s)	Mineralogy (%)						
			PY	*SP*	*GL*	*CP*	*PO*	*MG*	*Gangue*
Massive	OA	High MG	70	10	<5	5	<5	10	
	OB	Low MG, SP-rich, fine buckshot texture	60	10–30	5–8	1–2	?	<5	QZ-BA-CB
	OC	High CP-PO, net-textured	10–20	<5	<5	>50		<5	CL-CI
	OF	High PO				Var.	>50	Var.	
	OG	High CP	<15	<5	<5	>30–50	<15	<5	CL-CI
	OH	High PY, homogeneous	>80	<5	Low	Low			
	OL	Coarse PY in SP matrix	10-40	10-15	<5		5-10		BI
Semi-massive	OI	Hosted in schist	20–60						QZ-MS/SE
	OJ	Hosted in proximal alteration	Maj.	<5	<5	Maj.	Maj.		CL-CI
	OK	Gangue	30-50	10	<5	1-5			BA-SI
Brecciated	OD	Brecciated	Variable						

Massive sulphide forms the bulk of the ABM, Krakatoa main and Krakatoa upper lenses. Pyrite is the predominant sulphide mineral, comprising 60–70% of the mode, and ranging from fine- to coarse-grained and massive to buckshot-textured. The upper parts of the ABM lens are strongly magnetic, containing up to 10% fine- to coarse-grained magnetite as laminar bands and heavily disseminated pods. Magnetite also occurs within the main and upper lenses of the Krakatoa Zone but appears to be absent from the lower lens. Sphalerite forms two distinct types: (1) dark brown sphalerite intergrown with magnetite and (2) red-brown sphalerite occurring as wispy laminations and/or disseminations within pyrite. Galena is difficult to identify but occurs throughout the ABM and Krakatoa zones as fine- to medium-sized grains. Chalcopyrite is generally minor and occurs as coarse-grained clots, blebs and disseminations. Silica, barite and carbonate gangue are most abundant within the lower portions of both zones, with Krakatoa containing more barite than ABM.

Semi-massive mineralization occurs throughout the ABM deposit but is more restricted and less abundant in the Krakatoa Zone. In the ABM lens, stringer- and disseminated-style mineralization forms a 1–10 m thick halo around massive sulphide mineralization. Additional zones of semi-massive sulphide also occur between stacked lenses where it has the appearance of a deformed stockwork-style zone and is typically associated with strong chlorite ± cordierite alteration. Sulphide mineralogy consists of chalcopyrite + pyrrhotite + pyrite ± sphalerite ± galena with trace magnetite, with Cu typically assaying >2% but ranging anywhere from 0.1–14% Cu. This variability in grade correlates with the textural and mineralogical diversity inherent to this style of mineralization, which ranges from thick chalcopyrite-rich stringers to Cu-poor disseminated sulphide. Grades of Cu, Au and Ag appear to be lower in Krakatoa semi-massive sulphide than at ABM (Duncan and Baker, 2015).

Some intercepts of the Krakatoa main lens preserve the partial replacement of felsic tuff and/or mafic footwall host rock by sulphide, the former typically sandwiched between intervals of mafic footwall. These occurrences typically comprise a combination of OB-type ore with relatively high gangue content and OI-type with relic lapilli or ashy groundmass, and provide support for a replacement-style origin. The downdip gradation of the ABM lens into sedimentary and epiclastic rocks likewise suggests that the ABM Zone may have a similar origin (Duncan and Rabb, 2015; Hughes and Baknes, 2015).

The alteration framework for the ABM deposit is based on the work by Cominco (e.g. Schultze, 2001) that recognized five superimposed alteration styles within the structural hanging wall of the deposit. Four of these alteration types were systematically logged in the 2015 and 2016 programs (Table 13). The exception is the weak pyrrhotite alteration (i.e. Type 1) that was generally found to be pervasive and lacking in log-able variability.

Table 13: Summary of alteration types associated with the ABM deposit

Type	Name	Key feature	Comments
Type 1	Weak PO	PO	~1% disseminated PO as foliation-parallel wisps in felsic groundmass
Type 2	Greenish-grey	CL-SE ± FU	Greenish-grey alteration possibly related to aphanitic rhyolite (RHYi) intrusions, especially near MAFi; locally obscures sulphide-MAFi contact zones
Type 3	Pervasive MU/SE	MU/SE	Distinctive silvery grey to waxy greyish-yellow-green MU/SE ± disseminated sulphide; usually within 50 m of sulphide mineralization; preferentially developed in felsic volcanic; shows inverse relation with AK alteration.
Type 4	Proximal CL	CL >> MU/SE	Dark green CL typically occurring within <5 m wide of massive sulphide; associated minerals include BI, AK, MG and disseminated PO-CP; also as stratabound zones marking distal expression of massive sulphide lenses
Type 5	Restricted CI	CI-CL	Spatially associated with proximal CL alteration or as distal stratabound zones extending beyond sulphide; CI forms grey glassy porphyroblasts up to 2 cm in size and hosted within CL-rich matrix; associated minerals include ferroan DO, SI and sulphide

Host rocks of the ABM deposit typically show a penetrative schistosity, the intensity of which is dependent on host rock type. For example, most of the volcaniclastic rhyolite units (RHYv) exhibit a tightly spaced penetrative foliation whereas foliation within the more coherent rhyolite flow units (RHYc) is more broadly developed between silica- and sericite-dominant domains. Schistosity is broadly concordant to the lithological contact and is folded about cm-scale tight to isoclinal parasitic folds that are widespread in drill core. Similar metre-scale folds are more difficult to see in drill core but are present in outcrops west of the ABM deposit (Szybinski, 1996). Within fold hinges, an earlier foliation that is concordant to bedding is preserved, so that folds are defined by both this primary bedding and early foliation. Along fold limbs, however, the folded fabrics and later axial-planar foliation are transposed and so form a coplanar fabric that comprises the dominant tectonic foliation throughout the ABM deposit area.

Schistosity is truncated by brittle faulting along the East and Fault Creek Faults (Baker, 2015b), as well as smaller structures possibly related to these larger faults. Although no direct age of this faulting exists, it is likely these faults formed during the ~425 km of Eocene dextral slip along the Tintina Fault, which is located about 30 km southwest of the ABM deposit.

7.2.2 GP4F deposit

The GP4F deposit lies near the southern margin of the Property, located about five kilometres southeast of the ABM deposit (Figure 6, 10). It is hosted within an interval of the KZK Formation interpreted to lie stratigraphically below the ABM deposit (Jones, 2016). Last year's work split the GP4F deposit into GP4F, lower and upper zones (Jones, 2016) and then the GP4F lens and lower target (Hughes et al., 2016). The 2016 program, however, established predictable continuity of the "lower target" so that it is now upgraded to "lens".

The GP4F lens is the thickest and most continuous part of the deposit, and contains 90% of all massive sulphide intercepts. The width of most intercepts falls between 3–20 m, averaging 9.8 m and decreasing to the east with only one (suspect) occurrence in the three drill holes on the eastern-most section (419650E). Strike length ranges from 200–325 m on plan maps 1150 RL to 1250 RL (see Voordouw et al., 2016), respectively, and downdip extents range from 300–400 m on sections 419350E to 500E. The GP4F lens dips an average of 30° towards 025°–030°, and is either naturally undulating or gently folded along east-west trending fold axes.

The lower lens lies 20–85 m (average = 45 m) below the GP4F lens and occurs on all six sections. Drilling intercepts range from 0.7–24.0 m in width, average 8.0 m and thicken in the opposite direction of the GP4F lens (i.e. from west to east), averaging 4.9, 9.0 m and 11.8 m on sections 419400E, 500E and 650E respectively. Strike length measures ~200 m on plan map 1250 RL and downdip extents range from 200–300 m on sections 419500E and 650E. The relatively thick lower lens on 419650E, coupled with a paucity of GP4F lens, suggests that the lower lens may become the more important sulphide layer further east.

Table 14: Updated mineral resource estimate for the GP4F deposit

Category	Tonnage	Cu	Pb	Zn	Au	Ag	Cu metal	Pb metal	Zn metal	Au	Ag
	Mt	*(wt%)*	*(wt%)*	*(wt%)*	*(g/t)*	*(g/t)*	*(Kt)*	*(Kt)*	*(Kt)*	*(Koz)*	*(Moz)*
Indicated	1.0	0.2	2.7	5.7	1.0	83	1.6	26.9	56.7	31.3	2.7
Inferred	0.7	0.2	2.4	4.8	2.0	59	1.1	16.4	33.3	43.8	1.3
Total	1.7	0.2	2.6	5.3	1.4	73	2.7	43.3	90.0	75.1	4.0

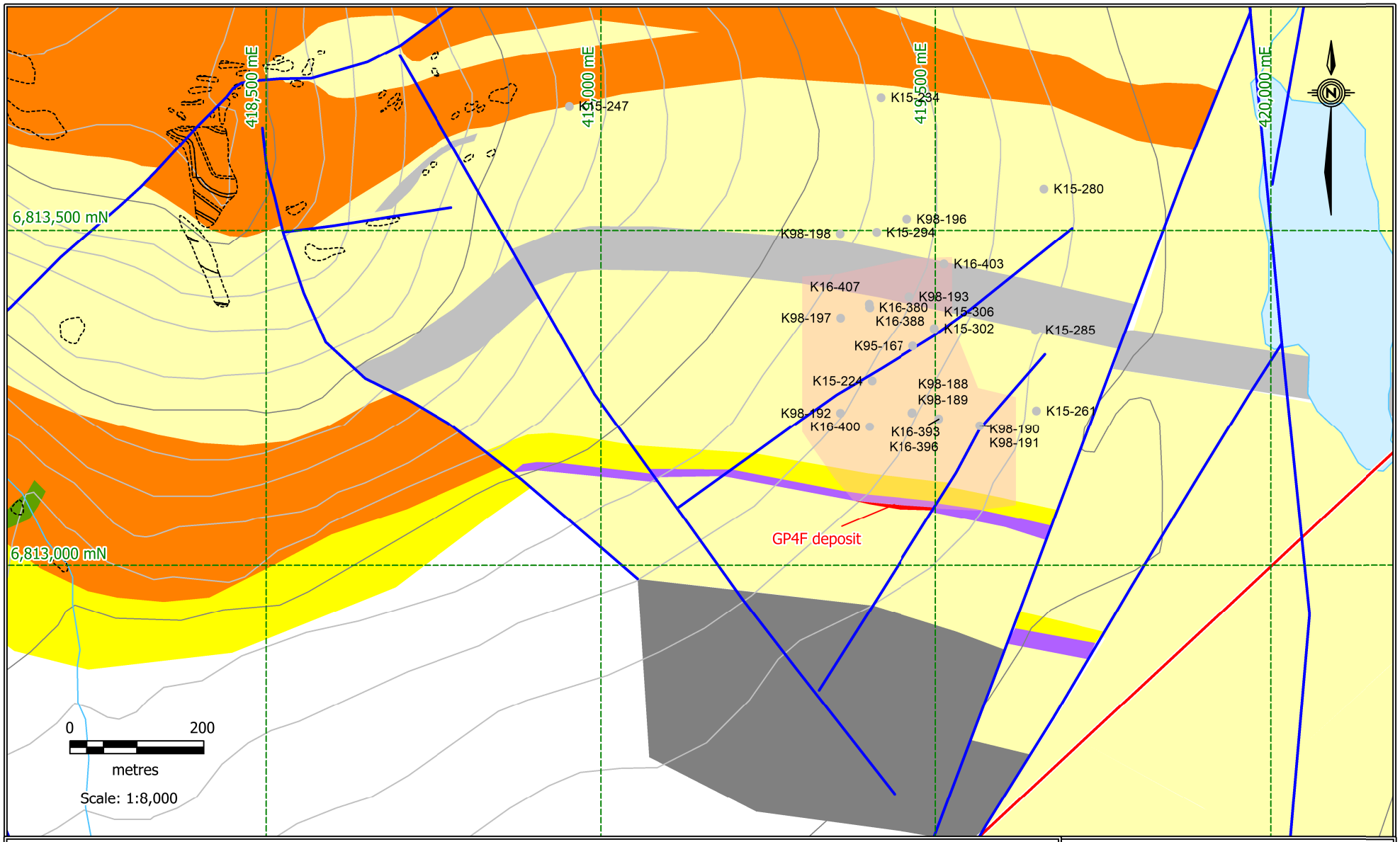
An updated resource for the GP4F deposit was generated as the result of 2016 work (BMC Minerals Ltd., 2016a), and is broadly similar to the inferred resource of July 2015 (Green, 2015b). Both resources are in accordance with the JORC code (JORC, 2012), with the 2016 estimate summarized in Table 14.

Mineralization in the GP4F lens consists of narrow, high-grade, layers of massive sulphide enveloped by stringer- and disseminated-style semi-massive sulphide. Lenses of massive sulphide are similar to the OB ore type at the ABM deposit, with 50–70% massive to buckshot-textured pyrite along with semi-massive to massive bands of sphalerite and/or pyrrhotite. Sphalerite also forms larger blebs whereas galena and chalcopyrite occur mostly as interstitial fillings and disseminated blebs. Some of the better grades in the deposit are returned from intervals comprising stacked bands of OB-type mineralization, typically ranging from 0.1–0.4 m in width, within an interval of semi-massive OJ-type. Examples of such intervals include 9.7% Zn, 4.1% Pb, 117 g/t Ag and 1.7 g/t Au over 8.9 m in K98-188, as well as 7.4% Zn, 2.8% Pb, 123 g/t Ag, and 1.0 g/t Au over 4.65 m in K15-306 (Jones, 2016).

More typically, the GP4F and lower lenses consist of stringer- and disseminated-style sulphide mineralization associated with strong chlorite-biotite alteration (Jones, 2016). Modal sulphide abundances range from 5–40% and form blebs, stringers (0.1–1 cm wide) and bands (1–4 cm wide). Sulphide assemblages include sphalerite-dominant, sphalerite-galena and pyrrhotite-pyrite-chalcopyrite, and various combinations in between. There is some evidence of the sulphide overprinting the altered groundmass (Boulton, 2002), suggesting replacement-style mineralization.

The GP4F deposit occurs within a much larger, tabular zone of alteration and weakly disseminated mineralization (Jones, 2016). Alteration in close proximity to the GP4F and lower lenses is similar to the proximal and restricted alteration types associated with the ABM deposit, while also including biotite, garnet (in places Zn-rich) and gahnite (Boulton, 2002). Garnet and gahnite are unreported from ABM. The distinct silvery-grey to waxy yellow muscovite (Type 3) alteration is less pervasively developed at GP4F than at ABM but still shows a mappable spatial association with sulphide mineralization (Hughes, 2016b). At GP4F, this so-called “original muscovite” alteration is associated with disseminated pyrite. Other alteration minerals include cordierite and possibly albite (Boulton, 2002), which was widely reported by Cominco as comprising whitish porphyroblasts and vitreous masses that, in essence, are similar to cordierite habits seen at the ABM and GP4F deposits.

There is evidence for brittle faulting in the GP4F area but there appear to be no significant disruptions of the deposit, as it forms a fairly continuous and predictable tabular ore body. The most prominent zone of fault gouge occurs below the deposit and appears to strike 35°/270° N, which is more-or-less parallel to stratigraphy. There are no constraints on the movement direction or offset across this fault. Plan-based interpretations (Voordouw et al., 2016) shows several kinked lithological contacts that could be manifested through 25–35 m of dextral offset along NNE-trending faults. Property-scale airborne geophysical data suggests there is a prominent ENE-trending structure that runs between the GP4F deposit and the R15 deposit to the ESE. This lineament runs broadly parallel to the Fault Creek and East faults in the ABM area, and lies 4.0–4.5 km south of the Fault Creek Fault. At this time, however, there is no geological evidence (e.g. drill intercepts, outcrops) that this lineament is related to faulting.



Wind Lake Formation

- Carbonaceous argillite, phyllitic quartzite
- Mafic-intermediate flow, dyke, sill

Kudz Ze Kayah Formation

Felsic volcanic

- Felsic crystal-rich to aphyric tuff
- Felsic flow/sill, augened, possibly some RHYif
- Undifferentiated sediment and carbonaceous mudstone

Lower KZK

- Carbonaceous mudstone, tuffaceous schist, biotitic metapelites, mudstone

VMS mineralization

- Massive sulphide (surface/sub-surface)
- GP4F "Horizon": Sulphide-rich chlorite-altered schist

Grass Lakes Plutonic Suite

- Feldspar+quartz porphry, augened porphyry
- Biotite and biotite chlorite schist

- Formation Contact
- Faults
- Mapped Outcrop
- Property Boundary
- 100m Index Contour
- 20m Intermediate Contour
- Lake
- Stream

BMC Minerals LTD

KZK Project

GP4F Deposit Geology

EQUITY

Date: 13/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK

Figure 10

8.0 RESULTS OF THE 2016 WORK PROGRAM

The 2016 KZK Project comprised a multifaceted geology and engineering program primarily geared towards upgrading “inferred” resources to “indicated” within the Krakatoa Zone and GP4F deposit, expanding the ABM Zone, exploring the Sebesi and Tarawera targets, metallurgical sampling, and characterizing the geotechnical and environmental baseline parameters for the project area. The following sections describe significant results from the 2016 program that were available at the time of reporting.

8.1 Earthworks

Drilling activities in 2016 required the construction of 59 new drill sites and 5.8 km of new drill trail. These earthworks, together with unreclaimed pads and trails from the 2015 program, were progressively reclaimed during the 2016 season as they were no longer needed. At the end of the 2016 field season, approximately 17.5 km of trail and 140 drill sites were reclaimed, comprising 65% of all trails and 95% of all 2015/16 drill pads (Figure 11). Trails that remain open lead to monitoring wells that need to be accessed as part of the ongoing groundwater-monitoring program.

Reclaimed pads and trails were reseeded with native vegetation, with follow-up monitoring planned for 2017 to evaluate the success in re-establishing the vegetative mat.

8.2 Historical core program

The historical core relocation program involved transport of 5464 core boxes, totalling 33902.6 m of drill core, from km-25 on the tote road to the KZK Camp at km-20. No significant core loss was incurred during transport and all drill core from the Property is now consolidated at the KZK Camp.

Twenty-four historical holes were re-logged for 4030 m, leaving just three historical holes (for 286 m) that have not been re-logged (Table 15). Holes that were re-logged in 2016 include eight of the ten 1998 GP4F holes, several 1995–1997 and 2004 wildcat holes, and a single ABM deposit hole (K94-002). The three historical holes that have not been re-logged include one hole that is entirely missing (K94-001), one hole where most of the core is missing (K95-168) and a short hole that was likely abandoned in overburden (K97-183A). Hence, the historical re-logging program is, at this point, considered complete.

Key findings of the re-logging program were centred on lithological coding and Cominco’s wildcat drilling. New codes developed through this work include “PEL” (pelite) and “CHT” (chert), of which the former proved especially useful in advancing the lithological model for the GP4F deposit. Chert was identified in some of the wildcat holes that tested Wind Lake Formation rocks.

A total of fourteen chert (CHT) intervals were identified during the re-logging, within four drill holes. The highlight of these occurrences was in K97-180, which hosts seven closely spaced chert intervals, totalling 19.4 m in thickness, over 41.7 m from 47.2–88.9 m core depth. This chert-rich interval is also associated with felsic volcanic rocks suggesting that there may be felsic volcanic centres in the Wind Lake Formation.

Re-coding of 1998 and 2015 GP4F drill core placed particular emphasis on applying the PEL and semi-massive sulphide (OJ, OI) codes. The PEL code was used for chlorite-deficient units of biotite + carbonate, quartz and/or feldspar schist that, in 2015, were logged as both mafic intrusions (MAFi) and undifferentiated sedimentary rocks (SED). These units were characterized as “pelite” on the basis of their mineralogy and finely intercalated contacts with adjacent felsic volcanic. It was also found that the 20% modal sulphide required to break out semi-massive sulphide units at the ABM deposit is too high for GP4F because (1) sphalerite is abundant but can be difficult to identify, and (2) some of the base metal budget may be carried by non-sulphide phases like gahnite. The lower limit for breaking out OI and OJ units was therefore dropped to ~10% sulphide.

Figure 11: Before (left) and after (right) pictures of drill trail and pad reclamation done as part of the 2016 KZK Project.

A re-sampling program of historical GP4F core was done to confirm Cominco's assay results. Twenty-one samples were taken from nine of the 1998 drill holes, with each re-sample matching the original interval. One of the re-assayed samples (D00005575) showed a poor match with its historical duplicate, reporting Ag (17 g/t), Pb (0.3%) and Zn (0.2%) that are significantly lower than Cominco's 513 g/t Ag, 7.4% Pb and 13.7% Zn. However, the measured density, received weight and sample length suggest that the wrong interval may have been sampled (Voordouw, 2016a). The other 20 samples show strong Pearson and rank correlation for Ag, Pb and Zn, moderate-strong for copper and moderate correlation for gold. Furthermore, one of the re-assayed samples returned 573 g/t Ag, 20.3% Pb and 27.9% Zn (over 0.2 m) against a historical assay of 566 g/t Ag, 20.0% Pb and 26.3% Zn, indicating precise duplication of a high-grade historical assay. The generally strong correlation between re-assayed samples and historical assay data, with the exception of what is likely a mis-sampled interval, suggests that the historical GP4F assay data is likely accurate as reported.

Table 15: Summary of 2015/16 re-logging programs

Year	DH IDs	Historical database		2015 re-logging		2016 re-logging		Not re-logged	
		DHs (N.o.)	*Metres*	*DHs (N.o.)*	*Metres*	*DHs (N.o.)*	*Metres*	*DHs (N.o.)*	*Metres*
1994	001 to 052	52	8518.1	49	8258.1	2	180.5	1	79.5
1995	053 to 170	119	14984.0	110	13717.7	8	1073.4	1	192.9
1996	171	1	99.2	0	0.0	1	99.2	0	0.0
1997	172 to 187	17	3566.2	13	2478.9	3	1073.9	1	13.4
1998	188 to 198	11	1855.4	2	498.1	9	1357.3	0	0.0
2004	199	1	246.0	0	0.0	1	246.0	0	0.0
Total		**201**	**29268.9**	**174**	**24952.8**	**24**	**4030.3**	**3**	**285.8**

8.3 Terrain surveys

Terrain surveys included differential GPS (DGPS) surveys of 2015/16 collar locations, as well as airborne LiDAR over the tote road corridor and proposed mine infrastructure area. Each is described in more detail below.

8.3.1 Airborne LiDAR

The 2016 airborne LiDAR survey was completed in a single flight from Watson Lake on 10 June 2016. Products delivered to BMC include a digital elevation model (DEM) with 1 m contours, "bare earth" DEM on a 1 m grid and "highest hit" digital surface model at 1 m grid, all of which are included on the data disk attached as Appendix T.

LiDAR data was positioned with an average density of 4–6 points/m^2 for all returns, including 2–3 points/m^2 for first-returns and 12–15 p/m^2 for the tote road corridor and proposed mine infrastructure block (Eagle Mapping Ltd., 2016). Data accuracy was calibrated with ground control points and is accurate to within <6.7 cm vertically and <30 cm horizontally at 95% confidence (Eagle Mapping Ltd., 2016). A report written by the contractor (Eagle Mapping) is attached as Appendix E.

8.3.2 DGPS

Survey measurements of collar locations, using a real time kinematic differential GPS (RTK DGPS), were done over five campaigns during the 2016 field season (Table 16). Coordinates surveyed in the first campaign included un-surveyed holes from the 2015 program, refurbished monitoring wells, proposed 2016 collar locations and new drill trails (Figures 12a, 12b). The next two campaigns focussed on surveying the 2016 drill hole collars and laying out proposed drill holes, followed by the fourth and fifth campaigns measuring the remaining 2016 collars. The 2nd and 3rd campaigns were timed to follow up on the Krakatoa resource infill drilling whereas the 4th survey was done at the conclusion of the GP4F infill program. The fifth, and last, survey captured all remaining 2016 holes and marked in some key infrastructure points.

Three of the 2015 drill collars (K15-281, 303, 318) and two of the 2016 collars (K16-356, 391) were not surveyed by Challenger as the collar locations were either destroyed by ongoing earthworks or were not marked following completion of drilling. In these cases, the final collar location is an integration of X and Y coordinates derived from an azimuth positioning system (APS) or TN14 gyrocompass, with the Z coordinate corrected to the LiDAR topographic surface. The collar coordinate for K16-391 is the planned coordinate with the LiDAR elevation. Wedged holes (e.g. K16-414W1) have the same collar coordinates as their parent.

Results of the RTK DGPS surveys show that the average error between the planned and actual coordinate for each drill hole is 1.7 m for easting and 0.1 m for northing. The total average offset of planned and actual coordinates is 3.2 m within a range of 0.0 to 12.0 m. Averages are slightly lower for the GP4F (0.9 m) and Krakatoa (2.9 m) infill programs than they are for ABM metallurgical (4.0 m) and Sebesi/Tarawera exploration drilling (4.8 m). Overall, collar locations are considered to accurately reflect the drill plan.

Table 16: Overview of 2016 geomatic survey campaigns

Campaign	Date	DHs and wells		Collar layouts	Other	Comments
		≤2015	*2016*			
1	27–30 April	61		23	36	"Other" is survey on new cat trail
2	1–2 June		17	20		First of two surveys to finalize Krakatoa resource infill program
3	1 July		20	17		Second of two surveys on Krakatoa
4	2–4 August		32			Survey to finalize GP4F infill drilling
5	30 September		12		8	Last survey to capture remaining 2016 collars, key infrastructure points
Totals		**61**	**81**	**60**	**44**	

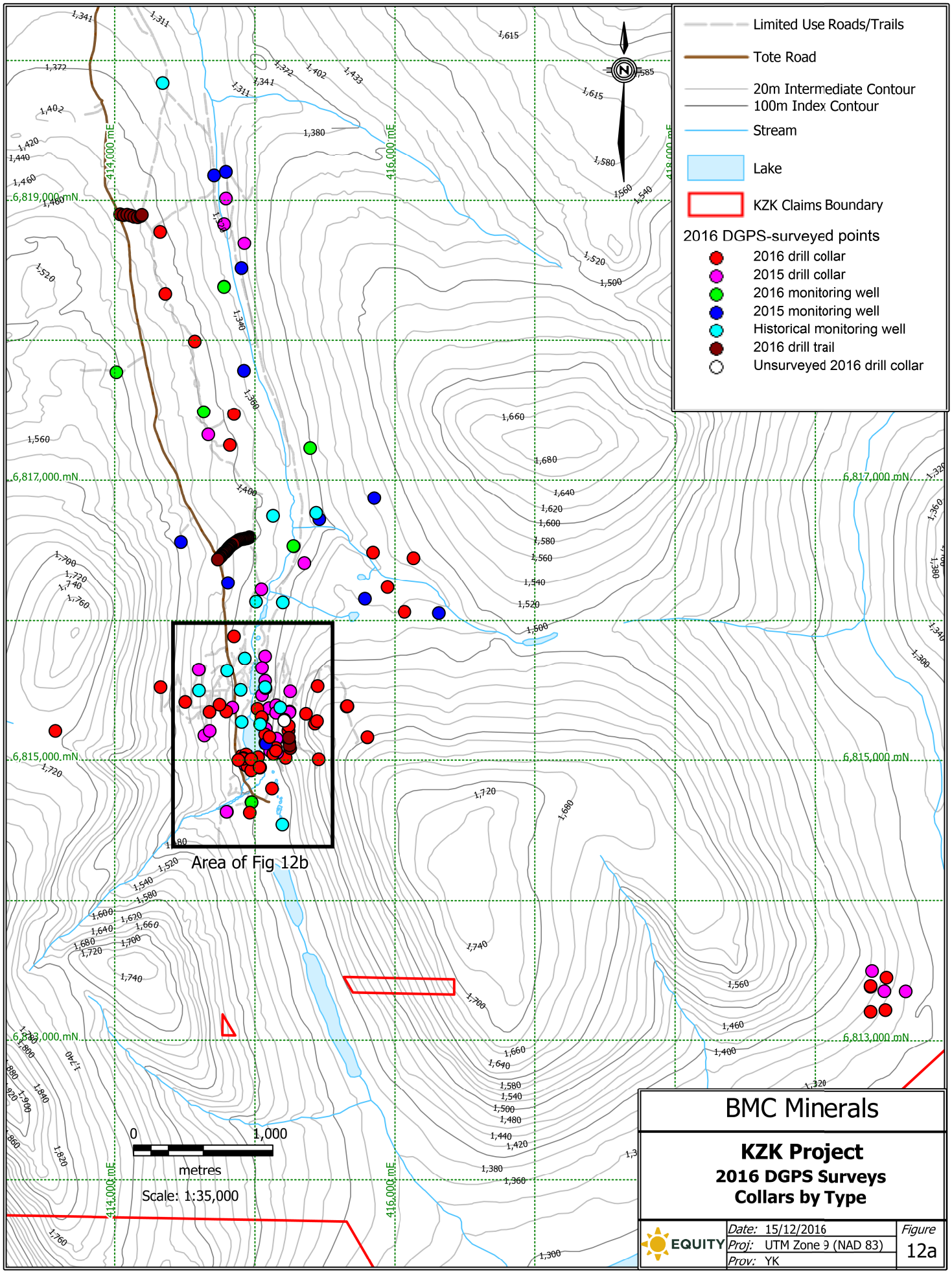
8.4 Geophysical surveys

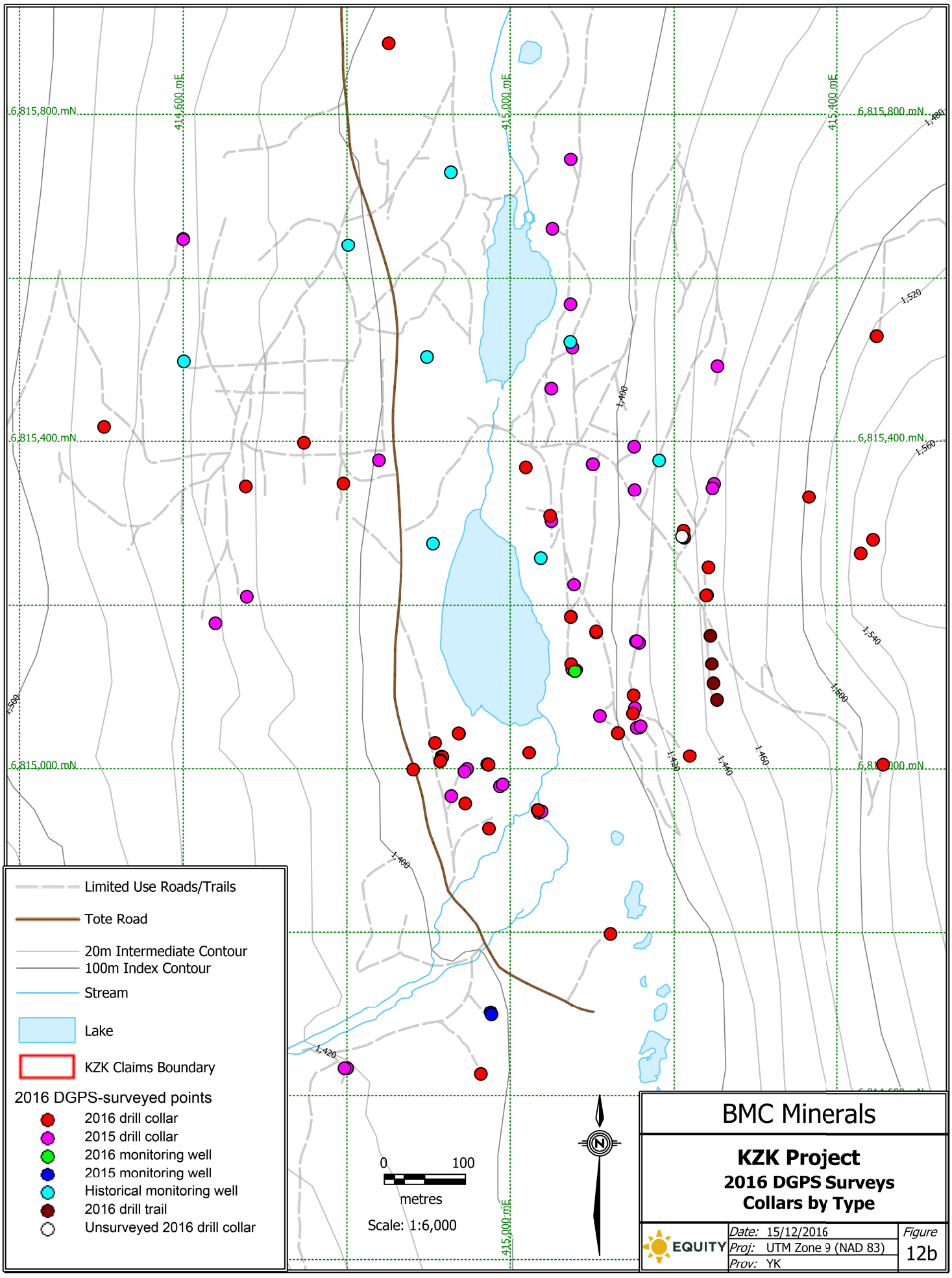
Geophysical work done in 2016 consists of an airborne magnetic and VTEM survey, and borehole EM (BHEM) surveys. This work is summarized below.

8.4.1 Airborne magnetics and VTEM

The 2016 airborne VTEM survey was designed to tie into the 2015 survey (Hughes et al., 2016) and complete coverage over the KZK Property. A total of 938.3 line-km was surveyed (902 km of first pass, 36.3 km of reflights to redress QA/QC), covering the northern, eastern and western parts of the Property. The southern part, which hosts the ABM and GP4F deposits, was flown in 2015.

The contractor report (Venter et al., 2016) attached as Appendix H shows magnetic data mapped as total intensity (TMI), calculated vertical gradient (CVG), total horizontal gradient (TotHGrad) and tilt-angle derivative (TiltDrv), as well as cross- (Hgcxline) and in-line (Hginline) gradients. These gridded map products each show a broadly similar pattern of high magnetic response in central part of the 2016 survey area (i.e. northern half of KZK Property) with a moderate response to the east and west (Figure 13a). The stronger response is spatially associated with the Wind Lake Formation and appears to comprise highly magnetic and non-magnetic units (Figure 13b). Handheld magnetic susceptibility measurements on Wind Lake drill core suggests that, on average, mafic volcanic is slightly more magnetic (1.3 SI units) then carbonaceous phyllite (0.9 SI). However, both rock types feature strongly magnetic subunits so that the intercalated highs and lows are unlikely to be exclusively lithology-dependent.


Limited Use Roads/Trails
Tote Road
20m Intermediate Contour
100m Index Contour
Stream
Lake
KZK Claims Boundary
2016 DGPS-surveyed points
2016 drill collar
2015 drill collar
2016 monitoring well
2015 monitoring well
Historical monitoring well
2016 drill trail
Unsurveyed 2016 drill collar
414,000 mE
416,000 mE
418,000 mE
6,819,000 mN
6,817,000 mN
6,815,000 mN
6,813,000 mN
Area of Fig 12b
0
1,000
metres
Scale: 1:35,000
BMC Minerals
KZK Project
2016 DGPS Surveys
Collars by Type
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
12a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415,000 mE
415,400 mE
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1,540
1,500
1,580
1,420
1,440
1,460
1,490
1,420
Limited Use Roads/Trails
Tote Road
20m Intermediate Contour
100m Index Contour
Stream
Lake
KZK Claims Boundary
2016 DGPS-surveyed points
2016 drill collar
2015 drill collar
2016 monitoring well
2015 monitoring well
Historical monitoring well
2016 drill trail
Unsurveyed 2016 drill collar
0
100
metres
Scale: 1:6,000
N
BMC Minerals
KZK Project
2016 DGPS Surveys
Collars by Type
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
12b

A prominent magnetic high occurs within a generally moderately magnetic area, near the eastern boundary of the KZK Property (see “East mag high” label on Figures 13a, b) and within bedrock that is regionally mapped as KZK Formation (Murphy et al., 2001). There is currently no geological explanation for this anomaly.

Regional-scale faults appear to be manifested as linear magnetic lows. The East and Fault Creek Faults (labelled on Figures 13a, b), for example, form a 750 m wide fault corridor that extends across the KZK Property for a minimum strike length of 15 km. Six kilometres to the northwest, a subparallel fault corridor is mapped by Murphy et al (2001) and also suggested by a prominent magnetic low lying ~1 km southeast of the mapped fault (see ‘Grass Lk fault” and “Grass Lk mag low?” labels on Figures 13a, b). Together, this “Grass Lakes Fault” area appears to comprise a similar magnetic signature, trend and width as the East/Fault Creek Fault system.

Geotech mapped the conductivity data as calculated time constant with vertical derivative contours (TauSF) and for channels 15 (SFz15), 30 (SFz30) and 45 (SFz45), time constant with B-field Z component (TauBF) and component channel 36 (BFz36) and Fraser filtered B-field X component for channel 20 (SFxFF20) (Venter et al., 2016). Each of these maps shows a similar pattern comprising a prominent response at the northern end of the survey area, with smaller responses to the south and west (Figure 13c). The strong northern response is spatially associated with Wind Lake Formation and likely related to carbonaceous material within phyllitic units.

The weaker EM response in the southern part of the 2016 survey area (or central part of the KZK Property) is also associated with Wind Lake Formation, possibly suggesting volumetrically less and/or thinner carbonaceous phyllite units. Results from the 2016 drill program indicate 5:4 ratio of phyllite and mafic volcanic in the lower (i.e. southern) part of the Wind Lake Formation, suggesting that the upper (or northern?) part may contain >>50% carbonaceous phyllite.

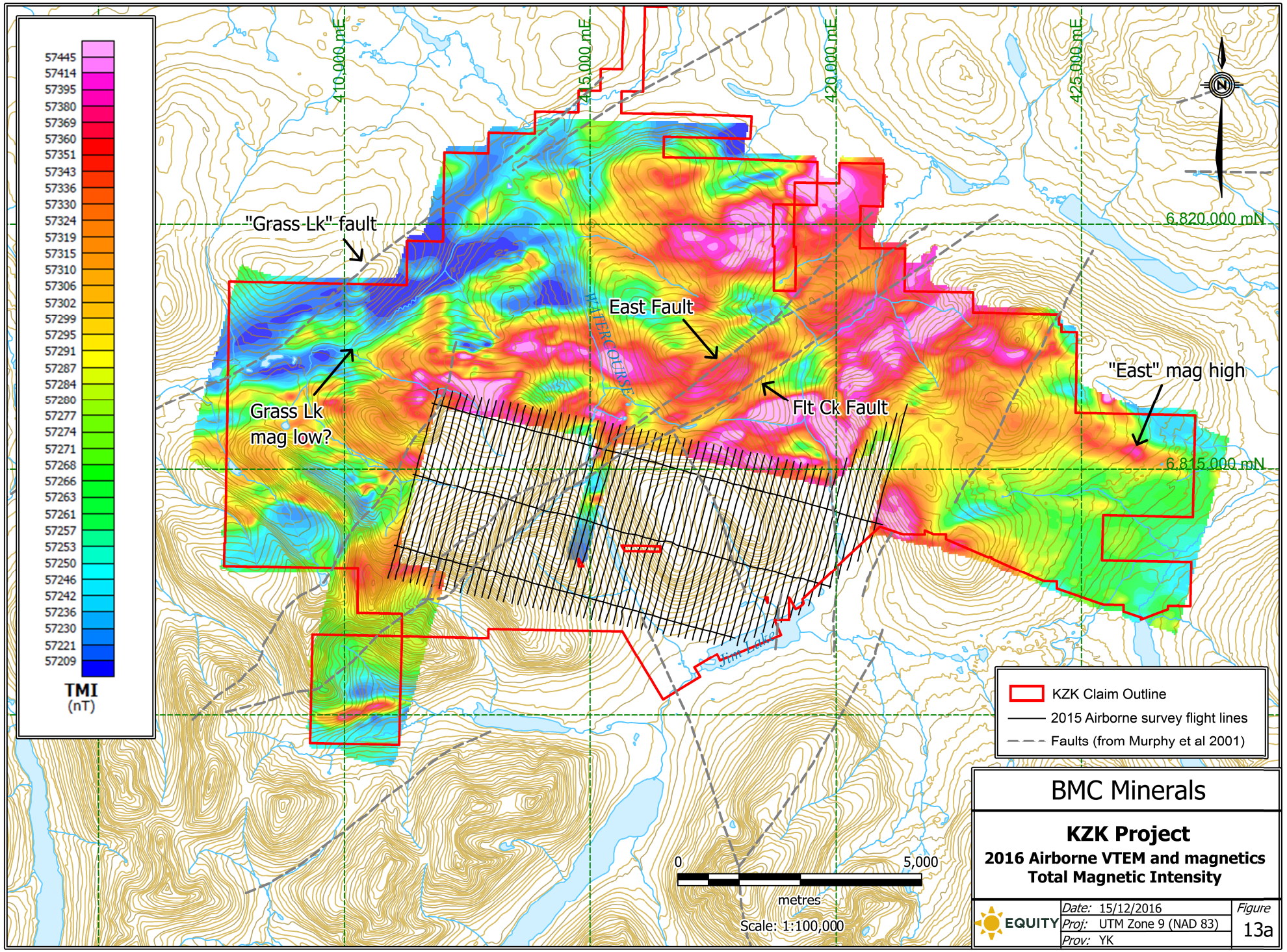
One of the more interesting EM anomalies lies in the western part of the survey area and consists of a moderate to strong EM response that is spatially associated with the “Grass Lakes” fault (see “GLF EM high” on Figure 13c). Regional mapping (Murphy et al., 2001) suggests that this fault juxtaposes Wind Lake Formation against the older Fire Lake Formation, which also hosts VMS deposits (Hunt, 2002).

The historical core storage area was resurveyed after the core and metal core racks had been removed as part of the historical core relocation program. Results show that weak EM and magnetic anomalies occur 50–100 m north of the former core rack location, and that these signals were formerly masked by the strong core rack response.

8.4.2 Borehole EM (BHEM)

Borehole electromagnetic (BHEM) surveys were completed in 11 drill holes as part of the 2016 work program (Aurora Geosciences, 2016), as summarized in Table 17. BHEM surveys can typically detect conductors lying within ~100–150 m of the drill hole. A report written by the contractor (Aurora Geosciences) is attached as Appendix I and the surveyed holes and loop layouts are shown on Figure 14.

The 11 surveys were done in five separate deployments in order to minimize the time that the BHEM contractor would spend on site. Instrument failure was responsible for partial loss of data in several instances. On hole K16-406, B-field coil data was properly recorded but all flux-magnetometer data was unrecoverable. This issue could not be resolved in the field and resulted in the instrument being replaced by the supplier. Toroid data was lost on several occasions; a battery failure caused irregular waveforms to be recorded on holes K16-394 and K16-409 and a corrupt file meant that no toroid data was collected on K16-419. In all cases, data collection from a backup current monitor allowed the timing of the transmitter signal to be faithfully recorded resulting in good quality raw data. The raw data could then be properly aligned and normalized but not deconvolved.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57380
57369
57360
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57343
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57295
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57253
57250
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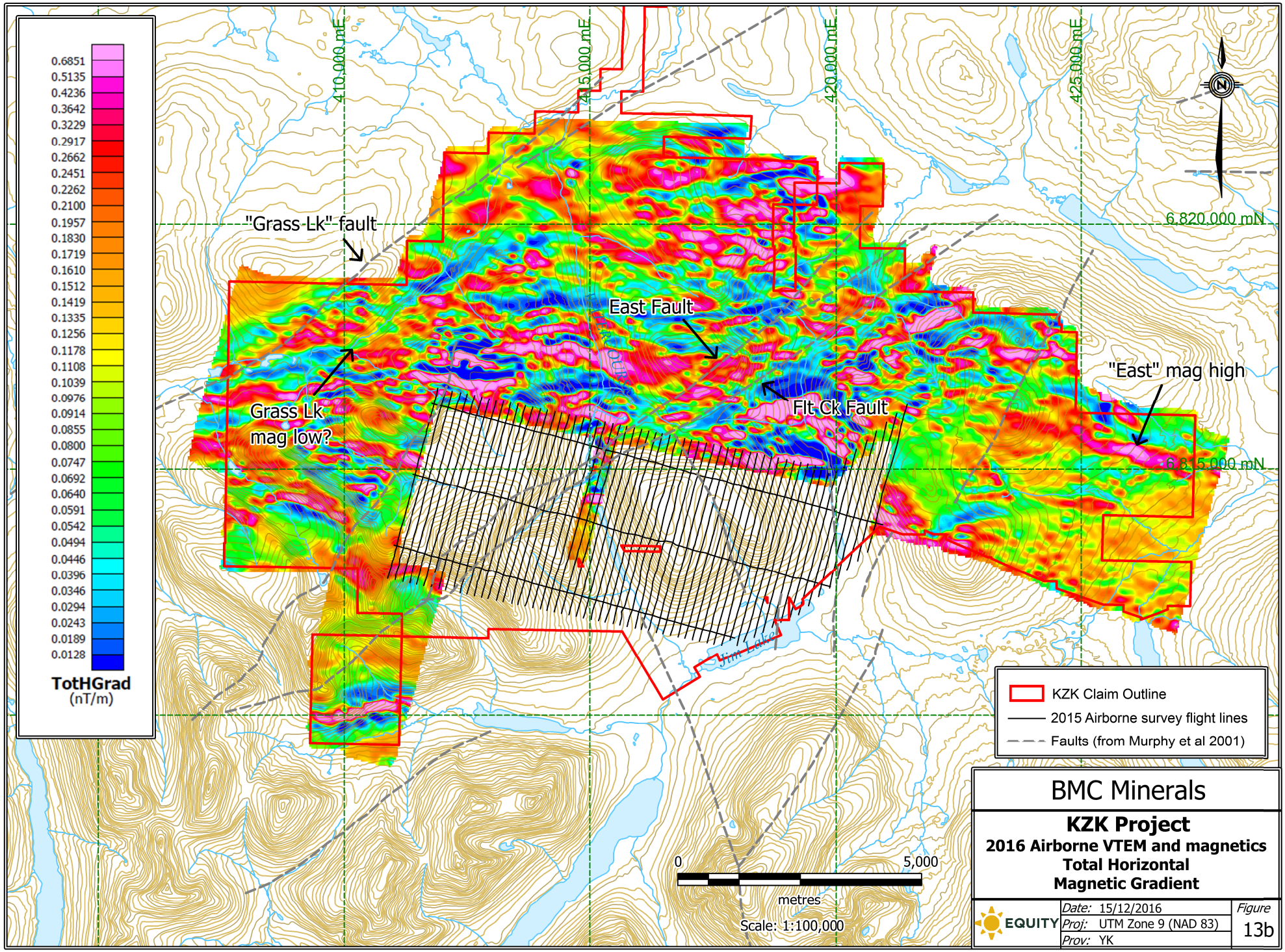
57242
57236
57230
57221
57209
TMI
(nT)
410,000 mE
415,000 mE
420,000 mE
425,000 mE
6,820,000 mN
6,815,000 mN
"Grass Lk" fault
East Fault
Flt Ck Fault
"East" mag high
Grass Lk
mag low?
WATERCOURSE
Jim Lake
KZK Claim Outline
2015 Airborne survey flight lines
Faults (from Murphy et al 2001)
0
5,000
metres
Scale: 1:100,000
BMC Minerals
KZK Project
2016 Airborne VTEM and magnetics
Total Magnetic Intensity
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
13a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0.1419
0.1335
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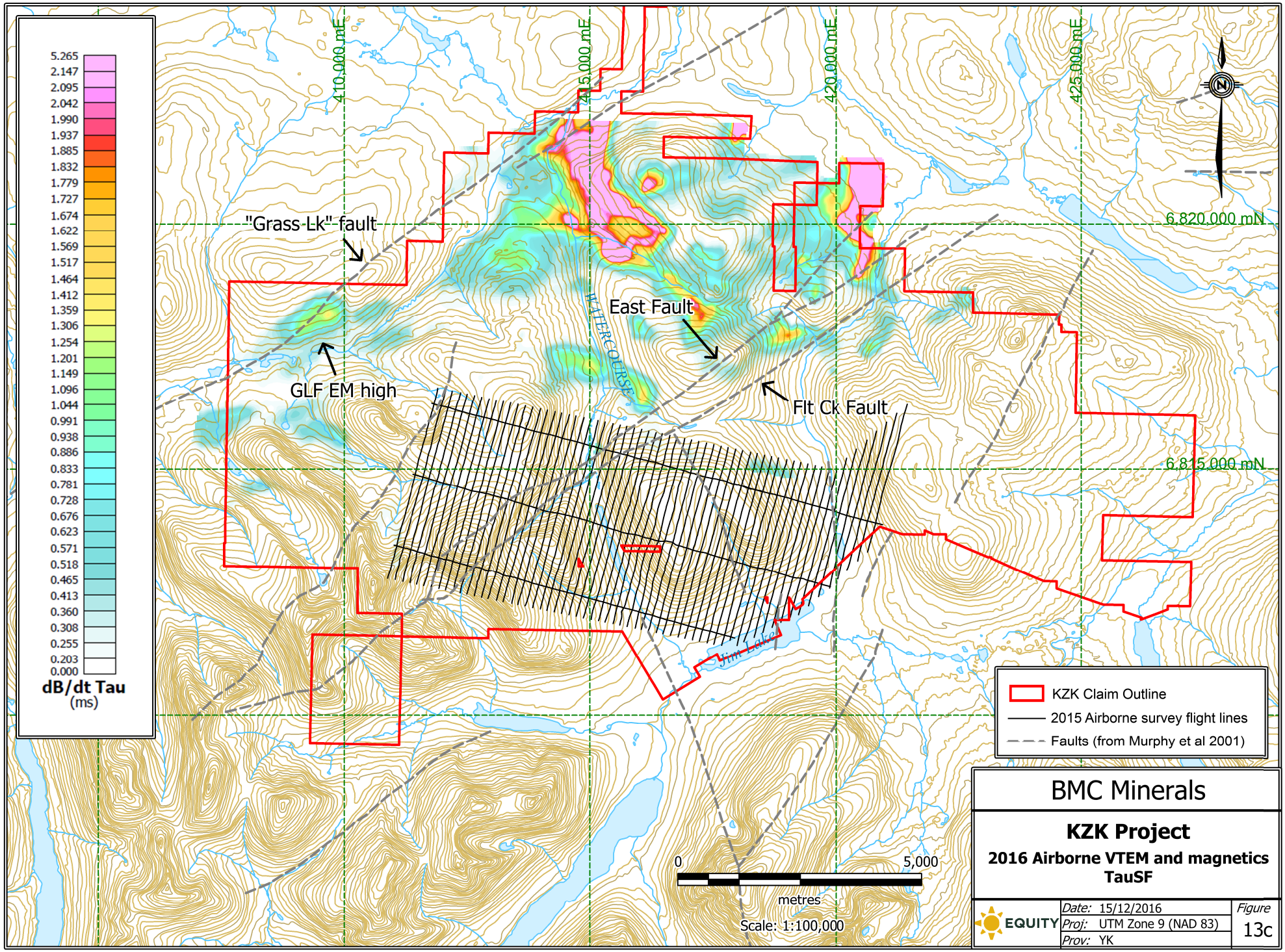
0.1108
0.1039
0.0976
0.0914
0.0855
0.0800
0.0747
0.0692
0.0640
0.0591
0.0542
0.0494
0.0446
0.0396
0.0346
0.0294
0.0243
0.0189
0.0128
TotHGrad
(nT/m)
410,000 mE
415,000 mE
420,000 mE
425,000 mE
6,820,000 mN
6,815,000 mN
"Grass Lk" fault
East Fault
Flt Ck Fault
Grass Lk
mag low?
"East" mag high
Jim Lake
KZK Claim Outline
2015 Airborne survey flight lines
Faults (from Murphy et al 2001)
0
5,000
metres
Scale: 1:100,000
BMC Minerals
KZK Project
2016 Airborne VTEM and magnetics
Total Horizontal
Magnetic Gradient
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
13b


5.265
2.147
2.095
2.042
1.990
1.937
1.885
1.832
1.779
1.727
1.674
1.622
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1.412
1.359
1.306
1.254
1.201
1.149
1.096
1.044
0.991
0.938
0.886
0.833
0.781
0.728
0.676
0.623
0.571
0.518
0.465
0.413
0.360
0.308
0.255
0.203
0.000
dB/dt Tau
(ms)
410,000 mE
415,000 mE
420,000 mE
425,000 mE
6,820,000 mN
6,815,000 mN
"Grass Lk" fault
East Fault
GLF EM high
Flt Ck Fault
WATERCOURSE
Jim Lake
KZK Claim Outline
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Faults (from Murphy et al 2001)
0
5,000
metres
Scale: 1:100,000
BMC Minerals
KZK Project
2016 Airborne VTEM and magnetics
TauSF
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
13c

A preliminary review of BHEM data shows notable EM responses for all of the drill holes that intersected massive sulphide layers whereas the EM response for those holes that did not intersect sulphide was generally flat (BHEM profile plots are attached as Appendix I). Drill holes with sulphide layers that generated EM responses are listed in Table 17.

Table 17: Preliminary summary of the 2016 BHEM surveys

Drill hole	Target	Length (m)	Sulphide			Summary of BHEM results
			From (m)	*To (m)*	*Length (m)*	
K16-369	Krakatoa	450.0	369.2	392.9	23.7	EM response associated with 23.7 m of Krakatoa Zone
K16-372	Sebesi	597.0				No sulphide in core; relatively flat EM profile
K16-374	Sebesi	801.0				No sulphide in core; relatively flat EM profile
K16-394	Sebesi	953.3	797.4	797.9	0.5	EM response associated with 50 cm of OF-type sulphide
K16-399	Krakatoa	810.0				No sulphide in core; relatively flat EM profile
K16-406	ABM	299.0				No sulphide in core; relatively flat EM profile
K16-409	ABM	300.0				No sulphide in core; relatively flat EM profile
K16-415	Tarawera	854.5	46.5	47.0	0.5	EM response associated with 50 cm of OF-type sulphide
K16-416	Sebesi	834.0				No sulphide in core; relatively flat EM profile
K16-418	Krakatoa	475.5	435.0	436.7	1.7	EM response associated with 1.7 m of faulted OB-type sulphide
K16-419	Krakatoa	416.2	333.2	346.6	13.4	EM response associated with 13.4 m of Krakatoa Zone

8.5 Resource and exploration drilling

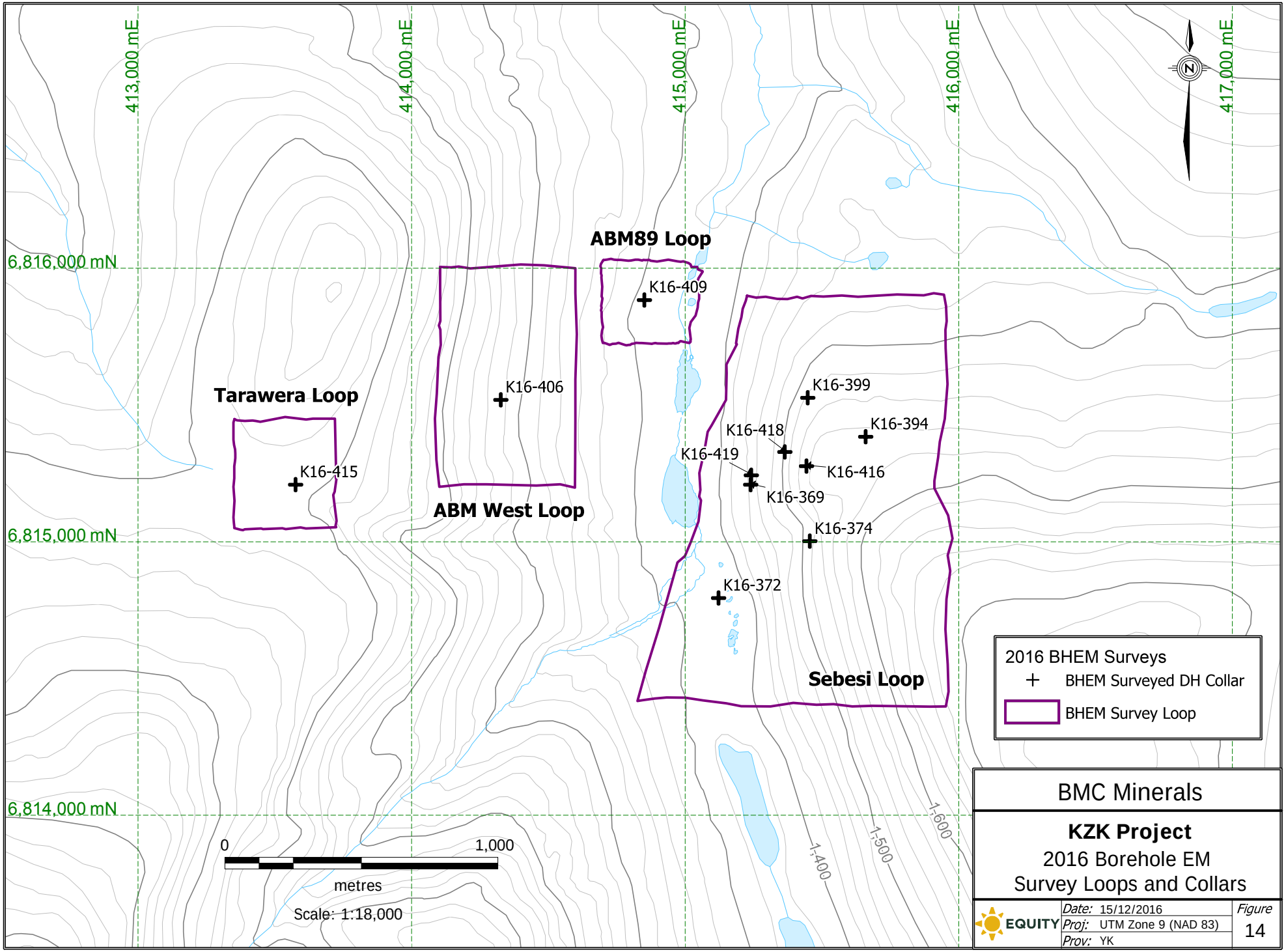
The 2016 drilling program included resource infill and expansion drilling on the Krakatoa Zone, infill drilling on the GP4F deposit, expansion drilling on the ABM Zone, and exploration drilling on the Sebesi and Tarawera targets. The following sections describe significant results from these drill programs.

8.5.1 Krakatoa Zone

The Krakatoa Zone was discovered in 2015 (BMC Minerals Ltd., 2016b; Hughes et al., 2016) after following up on historic intercepts (K95-124, K97-173) that Cominco interpreted as the ABM equivalent lens east of the East Fault (Schultze, 2001). The 2016 work program on the Krakatoa Zone comprised resource infill and expansion drilling with the primary aims of upgrading inferred resources to indicated, as well as testing the downdip and along-strike extents. The program successfully upgraded the indicated proportion of the resource from 40% to 90% and generated some downdip expansion. A summary of the drill program is provided below, along with a drill collar map (Figure 15) and interpretive cross-sections showing lithology and alteration (Table 18, Appendix K). Significant assay composites are summarized in Table 19.

The 2016 Krakatoa work program included 9066.7 m of resource, exploration and metallurgical drilling over 34 holes (Figure 15), which generated 21 new intercepts through the upper lens, 8 through the main lens and 14 through the lower lens. Pierce points generated by the two dedicated metallurgical holes were also used as part of the infill program.

Twenty-nine of the 34 drill holes were brought to completion, with five abandoned due to excessive drill hole deviation at core depths of 20–75 m. RTK DGPS surveys show that the average offset between the planned and actual coordinate for each drill hole is 2.9 m, indicating that the actual collar locations are consistent with the drill plan. All Krakatoa holes were surveyed with the EZ-shot and 48% were also surveyed with the Gyro, with the two surveys generally yielding complementary results (Hughes, 2016a). The average core recovery of 90.3% is higher than 2015 (86.4%) and similar to the 2016 program as a whole. Recovery through the sulphide lenses was even higher, averaging 93.7%.


413,000 mE
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6,815,000 mN
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ABM89 Loop
K16-409
Tarawera Loop
K16-406
K16-415
ABM West Loop
K16-399
K16-394
K16-418
K16-419
K16-416
K16-369
K16-374
K16-372
Sebesi Loop
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1,600
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1,000
metres
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2016 BHEM Surveys
BHEM Surveyed DH Collar
BHEM Survey Loop
BMC Minerals
KZK Project
2016 Borehole EM
Survey Loops and Collars
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
14

Table 18: List of sections through the Krakatoa Zone

Section	X centre	Y centre	Z centre	Orientation	Looking	Width	Figure reference
K-D	414853	6814948	1220	060°	330°	±25 m	Appendix K - Figure 1
K-E	414830	6814858	1220	060°	330°	±25 m	Appendix K - Figure 2
K-F	414882	6814898	1210	060°	330°	±25 m	Appendix K - Figure 3
K-G	414909	6814896	1210	060°	330°	±25 m	Appendix K - Figure 4
K-H	414984	6814976	1210	060°	330°	±25 m	Appendix K - Figure 5
K-I	415061	6815058	1210	060°	330°	±25 m	Appendix K - Figure 6
K-J	415074	6815031	1220	060°	330°	±25 m	Appendix K - Figure 7
K-K	415180	6815164	1220	060°	330°	±25 m	Appendix K - Figure 8
K-L	415246	6815228	1240	060°	330°	±25 m	Appendix K - Figure 9
K-M	415246	6815178	1240	060°	330°	±25 m	Appendix K - Figure 10

Magnetic susceptibility measurements were made on all drill core, with anomalies typically matching up against OA-type mineralization and/or pyrrhotite-rich intervals. Bulk density measurements were completed on 1866 half and whole core samples of sulphide and various silicate hanging wall and footwall lithologies. QA/QC monitoring through measurement of a rhyolite and sulphide standard as well as through pycnometer analyses on pulps shows that the BD measurements are accurate.

A total of 1276 Krakatoa samples were submitted for geochemical assay, comprising 1130 core samples, 82 CRM and 64 blanks. These totals do not include the two dedicated metallurgical holes (K16-340, 378) but does include the dual-purpose resource and metallurgical drilling. QA/QC monitoring of geochemical assays recorded one failure, comprising two consecutive CRMs where the Zn assays returned Z-scores between +2 and +3. This failure was not submitted for re-assay, in line with 2015 procedures where only 3-SD (SD = standard deviation) failures in mineralized intervals were re-assayed (Voordouw, 2016b). In light of this, the 2016 Krakatoa core assays are considered accurate and free of contamination (Appendix M). Check assays by ALS further confirms that core assays of Ag, Cu, Pb and Zn are accurate, although the SGS assays are an average of 0.6–2.5% higher for Ag, Cu and Pb, as well as 2.7% lower for Zn and 7.1% for Au.

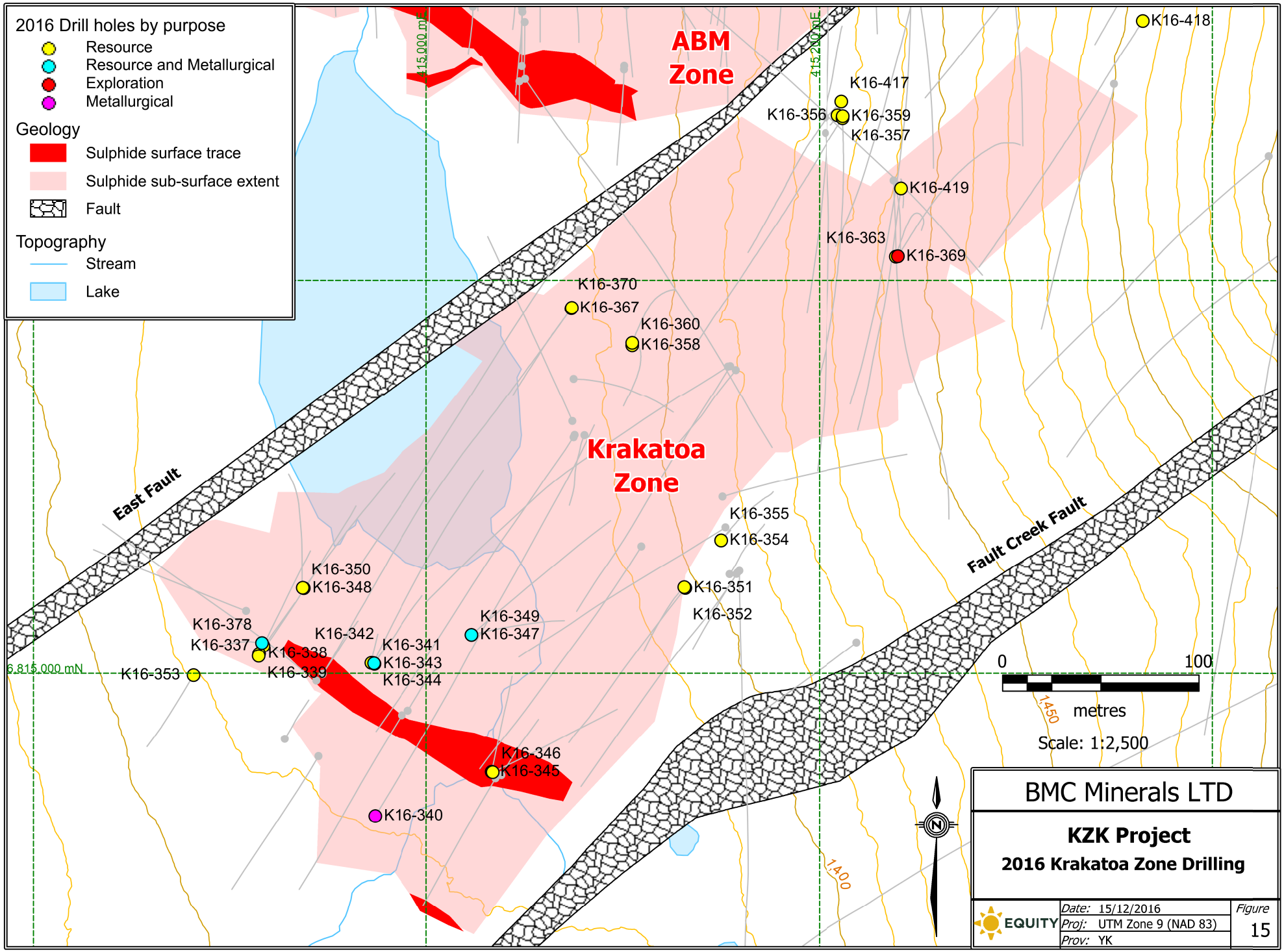
Significant 2016 intercepts that helped to expand mineralization include a series of three holes drilled on sections K-L and K-M (Appendix K). The first of these holes (K16-363) tested a pierce point ~50 m further downdip than previous drilling, and intersected 19.7 m (true width) of massive sulphide grading 0.3% Cu, 3.7% Pb, 8.7% Zn, 2.0 g/t Au and 218 g/t Ag. A follow-up hole (K16-369) intersected 5.2 m (true width) of massive sulphide another 70 m further downdip, which assayed 1.5% Cu, 0.5% Pb, 12.2 % Zn, 0.8 g/t Au and 102 g/t Ag. Together these two holes added ~120 m of downdip extent to the Krakatoa Zone. An additional follow-up hole (K16-419) deviated towards K16-363 and intersected just ~15 m away from it, returning 0.3% Cu, 2.8% Pb, 8.3% Zn, 1.9 g/t Au and 215 g/t Ag over 6.4 m (true width). There is still room for expansion of mineralization to the northwest of K16-419, and it is recommended that this area is tested in 2017.

The downdip extent of the Krakatoa upper lens was also increased through drilling of K16-417, K16-360 and K16-357, which are shown on sections K-I, K-H and K-J respectively (Appendix K). There is still some room to extend mineralization downdip from each of these three holes. For example, there is no pierce point downdip of K16-417 although K15-248 appears to have been heading towards the projected Krakatoa upper lens and pulled up short, stopping in Type 3 muscovite alteration within what could be the hanging wall of the Krakatoa Zone (see Section K-I in Appendix K). K16-385 closed off the downdip extents of Krakatoa Zone mineralization and the 2016 results also showed that the width of the Krakatoa main lens can rapidly change from up to 20 m to <1 m over short downdip distances (e.g. K16-367 on section K-F; K16-357 on section K-J).

Table 19: Selected composites from the 2016 Krakatoa drill program.

DDH ID	From (m)	To (m)	Length (m)	True w. (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Au (g/t)	Lens
K16-337	130.0	151.8	21.8	15.4	0.6	3.1	6.1	172	1.8	Main
and	162.1	163.5	1.4	1.0	0.3	1.1	2.6	66	0.4	Lower
K16-339	97.8	111.3	13.5	7.8	0.2	1.2	4.7	120	0.7	
including	97.8	100.0	2.2	1.3	0.5	3.0	9.5	294	1.7	Upper
including	102.2	107.4	5.2	3.0	0.4	1.1	5.9	111	0.8	
and	145.6	173.6	28.0	16.1	1.0	4.8	10.3	247	2.1	Main
K16-340	127.1	164.3	37.2	9.6	0.2	3.6	5.0	279	2.1	Main
including	134.2	137.5	3.3	0.9	0.1	0.5	0.9	70	0.6	
and	232.3	255.3	23.0	6.0	0.1	1.6	4.8	196	1.6	Lower
and	261.6	275.1	13.5	3.5	0.6	1.1	7.6	59	0.2	Lower
K16-343	55.4	59.7	4.3	3.0	0.6	1.4	3.7	148	1.1	Upper
K16-344	56.7	61.9	5.2	3.7	0.9	1.4	5.0	148	1.4	Upper
and	95.6	98.7	3.1	2.2	0.2	3.0	4.4	366	3.8	Upper
K16-345	54.4	57.0	2.6	1.2	0.1	4.4	10.6	375	1.7	Upper
K16-346	54.9	62.9	8.0	2.3	0.7	4.3	7.7	207	1.9	Upper
and	62.8	65.0	2.2	0.6	0.2	3.9	5.4	174	1.1	Upper
K16-347	127.6	137.3	9.7	4.2	0.5	4.4	7.6	217	1.8	Upper
K16-349	75.3	82.2	6.9	5.1	0.3	3.5	7.9	250	2.2	Upper
and	104.4	117.3	12.9	9.6	0.5	4.1	7.1	182	2.2	Main
K16-350	105.4	113.2	7.8	5.5	0.2	1.0	3.2	118	0.9	Upper
K16-351	131.8	140.2	8.4	8.4	0.4	4.1	5.7	137	2.3	Main
K16-353	8.9	12.9	4.0	3.8	0.1	1.2	3.9	148	1.0	?
K16-357	252.2	254.6	2.4	2.3	0.6	1.8	4.9	339	4.0	Upper
K16-358	165.8	170.4	4.6	3.9	0.8	2.9	6.9	281	2.8	Upper
and	218.6	225.7	7.1	6.0	0.9	2.8	8.0	184	1.5	Main
K16-359	249.1	252.8	3.7	3.5	0.4	2.1	6.9	212	2.0	Upper
and	258.0	269.0	11.0	10.5	0.2	1.4	3.3	98	1.1	Upper
including	258.0	261.4	3.4	3.3	0.4	2.1	6.7	196	1.5	
and	264.3	267.9	3.6	3.5	0.2	2.1	3.8	109	1.9	Upper
K16-360	176.6	182.6	6.0	4.4	0.3	2.0	5.6	131	1.6	Upper
K16-363	323.2	344.0	20.8	19.7	0.3	3.7	8.7	218	2.0	Upper
K16-367	172.1	177.1	5.0	5.0	0.2	2.2	3.7	97	1.7	Upper
and	184.3	188.8	4.5	4.5	0.7	3.8	9.5	201	1.1	Upper
K16-369	369.2	372.8	3.6	2.4	0.2	0.4	4.2	24	0.0	Upper
and	385.0	392.9	7.9	5.2	1.5	0.5	12.2	102	0.8	Upper
K16-370	145.7	150.7	5.0	4.7	0.2	0.9	5.7	88	0.7	Upper
K16-417	269.9	277.2	7.3	3.5	0.6	1.1	3.8	151	1.8	Upper
and	283.0	292.2	9.2	4.4	0.4	5.5	8.1	339	2.0	Upper
and	295.1	297.0	1.9	0.9	1.4	1.0	2.2	648	10.9	Main
K16-418	435.0	437.5	2.5	1.2	0.3	0.3	4.2	21	0.0	Upper
K16-419	296.4	299.4	3.0	1.5	1.0	0.7	5.4	123	1.2	Upper
and	333.2	346.6	13.4	6.4	0.3	2.8	8.3	215	1.9	Upper

Intercepts: length-weighted average with maximum 3 m internal waste (true thickness). When assay value is below the detection limit, half the detection limit is used.


2016 Drill holes by purpose
Resource
Resource and Metallurgical
Exploration
Metallurgical
Geology
Sulphide surface trace
Sulphide sub-surface extent
Fault
Topography
Stream
Lake
ABM Zone
Krakatoa Zone
East Fault
Fault Creek Fault
415,000 mE
415,200 mE
6,815,000 mN
K16-418
K16-417
K16-356
K16-359
K16-357
K16-419
K16-363
K16-369
K16-370
K16-367
K16-360
K16-358
K16-355
K16-354
K16-351
K16-352
K16-350
K16-348
K16-378
K16-337
K16-338
K16-339
K16-342
K16-341
K16-343
K16-344
K16-349
K16-347
K16-353
K16-346
K16-345
K16-340
0
100
1,450
metres
Scale: 1:2,500
1400
BMC Minerals LTD
KZK Project
2016 Krakatoa Zone Drilling
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
15

Holes testing the along-strike extents of the Krakatoa Zone were less successful. The 2016 drill program showed that Krakatoa Zone mineralization abuts the Fault Creek Fault but the fault has a shallower dip than previously recognized which consumes some of the space where mineralization was inferred to exist. Drilling also showed that the East and Fault Creek Faults comprise 10–70 m wide damage zones that contain anastomosing networks of fault gouge enclosing displaced panels of more coherent bedrock. Drilling generally failed to locate mineralization within these damage zones with the exception of holes like K16-368, which intersected five short intervals of massive sulphide within a 145 m long hole dominated by fault gouge.

8.5.2 GP4F deposit

The 2016 work program on the GP4F deposit comprised resource infill drilling aimed at upgrading inferred resources to indicated. The program was successful in meeting these aims, with the latest resource estimate (BMC Minerals Ltd., 2016a) increasing the indicated proportion of the resource from 0% to 60%. A summary of the drill program is provided below, map of drill collars is shown as Figure 14 and interpretive cross-sections through the deposit, showing both lithology and alteration, are listed in Table 20 and attached as Appendix K. Significant assay composites from the 2016 work are summarized in Table 21.

The 2016 GP4F work program comprised 1553.6 m of infill drilling over seven drill holes, generating six new intercepts through the GP4F lens, five intercepts through the lower lens and a single intercept of the “lower II target”. A duplicate intercept of the GP4F lens was generated through drilling K16-407, which was drilled to validate a coincident core block placement and rod count error in K16-388. All 2016 drilling was completed on two of the five sections through the GP4F deposit (419400E, 419500E).

All six drill holes were brought to completion. RTK DGPS surveys show that the average offset between the planned and actual coordinate for each drill hole is 0.9 m, indicating that the actual collar locations are in line with the drill plan. Downhole EZ-shot and Gyro surveys were done on each hole and are complementary except for a 24° offset in azimuth between readings from subvertical drill hole K16-396. The average core recovery of 85.0% is similar to 2015 and historical recovery at GP4F but lower than the 2016 program as a whole. Recovery through the sulphide lenses averaged a combined 86.4% for the 2015/16 programs.

Magnetic susceptibility measurements taken in the 2015 and 2016 programs show enough similarities that they validate each other and can be used together in a single data set. Sulphide units typically show high magnetic susceptibility most likely related to pyrrhotite contents. Bulk density measurements are similar for the 2015 and 2016 programs, and were validated through the measurement of QA/QC rhyolite and sulphide standards.

A total of 196 GP4F samples were submitted for geochemical assay, comprising 176 core samples, 10 CRM and 10 blanks. All drill assays passed QA/QC based on monitoring of CRMs and blanks (Appendix M), so that all of the 2016 core assays are considered accurate and free of contamination. The ALS check assay program further confirms that SGS assays of Ag, Cu, Pb and Zn are accurate, though an average of 2–5% higher (for Ag, Pb, Zn) than duplicate assays from ALS. There is no indication that non-sulphide phases like gahnite retain significant amounts of base metals in an aqua regia digestion (Voordouw, 2016a). Duplicate samples collected from historical drill core show strong correlation with historical assays, suggesting that the Cominco assays are also accurate. These re-assays include the precise duplication of a very high-grade historical sample.

Table 20: List of sections through the GP4F deposit

Section	X centre	Y centre	Z centre	Orientation	Looking	Width	Figure reference
419350E	419350	6813400	1150	0°	270°	±25 m	Appendix K - Figure 11
419400E	419400	6813400	1150	0°	270°	±25 m	Appendix K - Figure 12
419450E	419450	6813400	1150	0°	270°	±25 m	Appendix K - Figure 13
419500E	419500	6813400	1150	0°	270°	±25 m	Appendix K - Figure 14
419550E	419550	6813400	1150	0°	270°	±25 m	Appendix K - Figure 15

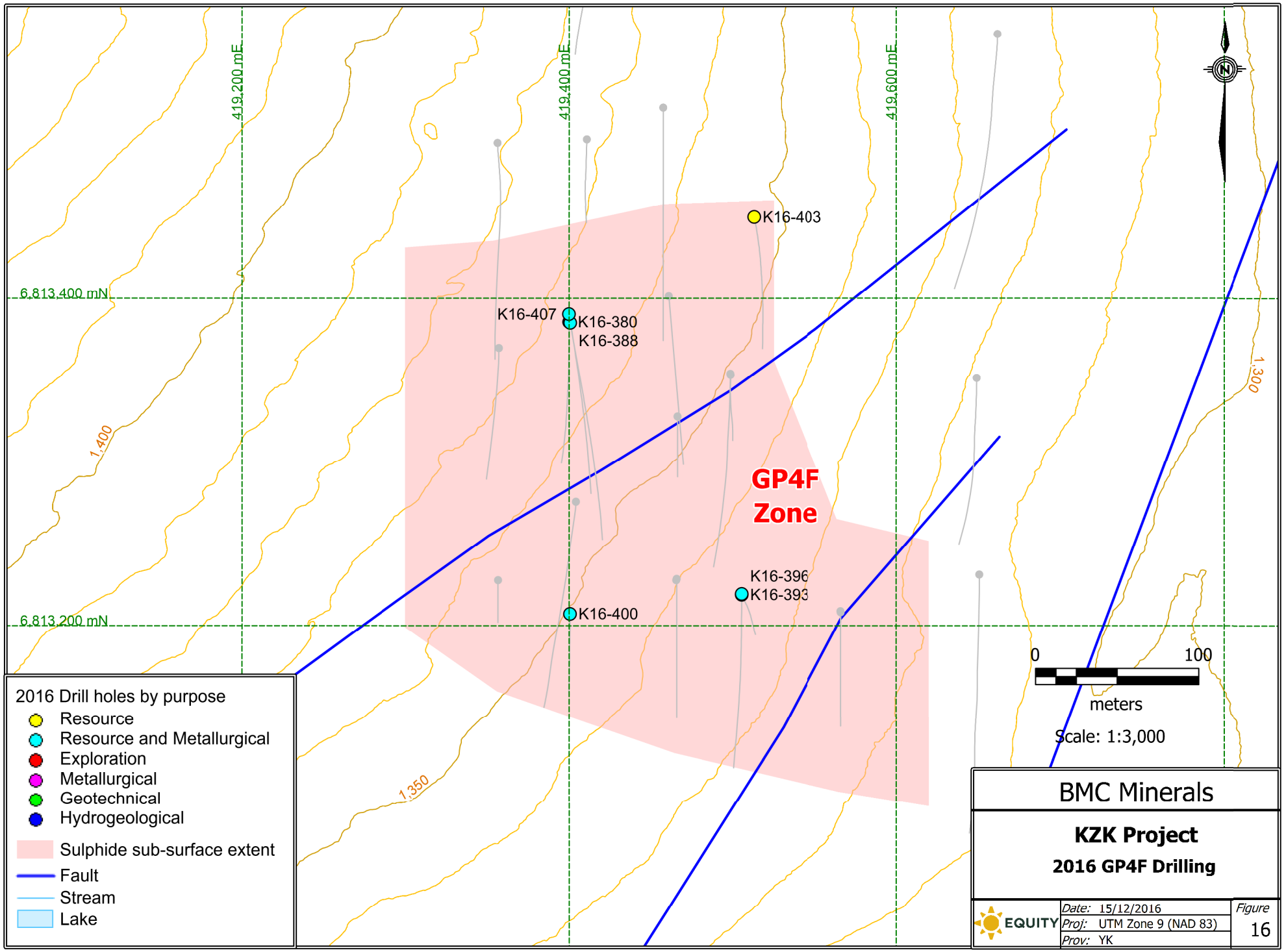
The three new intercepts of GP4F lens on 419400E provide the highest Ag, Au, Pb and Zn composites from this section to date, with the best of these assaying 11.5% Zn + Pb and 170 g/t Ag over 4.9 m in K16-388 (Table 21). The previous best intercept of 5.3% Zn + Pb and 62 g/t Ag over 5.6 m was from the 2015. Drilling on section 419500E returned a GP4F lens intercept of 15.6% Zn + Pb and 164 g/t Ag over 3.8 m in K16-393, which is comparable to the previous best of 9.3% Zn + Pb with 136 g/t Ag over 5.8 m that was also generated during the 2015 program. Overall, the 2016 drill program returned four composites for the GP4F lens that are comparable or better than the previous best intercepts on their respective sections.

New intersections of the lower lens were also generated on both of sections. Two new intercepts on section 419400E include an assay of 12.7% Zn + Pb and 140 g/t Ag over 0.55 m (Table 21), which improves significantly on the previous best assay of 1.7% Zn + Pb and 10 g/t Ag over 1.0 m from the 2015 program. Drilling on 419500E returned assays of 11.9% Zn over 0.45 m as well as 9.4% Zn + Pb and 360 g/t Ag over 1.2 m, both of which are higher-grade but narrower than the best 2015 assay of 6.2% Zn + Pb and 16 g/t Ag over 6.6 m.

K16-403 returned the third ever intersection of the lower II target, 150 m west of the only other two intercepts on section 419650E (in K15-261 and K15-285). A single sample taken from K16-403 returned 5.3% Zn + Pb and 80 g/t Ag over 0.35 m, which is similar to previous assays of lower II target from K15-261 (6.5% Zn + Pb, 117 g/t Ag, over 0.45 m) and K15-285 (8.5% Zn + Pb, 80 g/t Ag, over 0.54). Given the similarities in geology and geochemistry, the 2016 program appears to have added 150 m of east-west strike length to the lower II target.

Table 21: Selected composites from the 2016 GP4F drilling program

DDH ID	From (m)	To (m)	Length (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Au (g/t)	Lens/Target
K16-380	153.3	164.7	11.5	0.10	0.90	2.31	22	0.2	GP4F lens
including	156.6	158.9	2.2	0.18	1.51	5.24	14	0.1	
	199.3	207.2	7.9	0.02	0.30	1.09	6	0.0	Lower lens
K16-388	157.2	166.9	9.7	0.22	3.21	5.38	107	1.2	GP4F lens
including	162.0	166.9	4.9	0.30	4.32	7.16	170	2.0	
	220.7	230.7	10.0	0.04	0.91	2.49	17	0.0	Lower lens
including	221.5	222.0	0.6	0.12	3.54	9.24	140	0.1	
K16-393	76.3	80.1	3.8	0.22	5.72	9.83	164	3.5	GP4F lens
K16-396	83.7	90.5	6.8	0.23	3.02	4.78	82	1.3	GP4F lens
including	85.9	88.8	2.9	0.39	4.51	6.90	134	2.0	
	160.6	164.7	4.2	0.08	0.17	3.14	6	0.0	Lower lens
including	162.0	162.5	0.5	0.15	0.09	11.90	8	0.0	
K16-400	46.1	57.8	11.7	0.10	0.78	3.24	16	0.1	GP4F lens
including	46.1	50.5	4.3	0.19	0.46	5.36	14	0.0	
K16-403	207.1	222.8	15.7	0.07	0.96	2.25	54	1.0	GP4F lens
including	217.8	218.6	0.8	0.13	3.61	6.12	94	0.7	
and	221.5	222.8	1.3	0.10	4.26	7.65	329	0.9	
	233.5	238.0	4.5	0.07	1.01	2.36	203	1.0	Lower lens (2 stacked lenses)
including	236.8	238.0	1.2	0.22	2.65	6.68	360	1.4	
	250.2	257.3	7.1	0.05	0.38	1.27	6	0.0	
including	253.0	253.3	0.4	0.07	0.31	5.91	20	0.0	
	326.4	326.8	0.4	0.22	1.68	3.62	81	0.0	Lower II target


419,200 mE
419,400 mE
419,600 mE
6,813,400 mN
6,813,200 mN
1,400
1,350
1,300
K16-403
K16-407
K16-380
K16-388
K16-396
K16-393
K16-400
GP4F
Zone
0
100
meters
Scale: 1:3,000
2016 Drill holes by purpose
Resource
Resource and Metallurgical
Exploration
Metallurgical
Geotechnical
Hydrogeological
Sulphide sub-surface extent
Fault
Stream
Lake
BMC Minerals
KZK Project
2016 GP4F Drilling
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
16

8.5.3 ABM Zone

The 2016 resource expansion drilling program on the ABM Zone consisted of three holes for 770 m with BHEM surveys completed on two of these holes. Neither the drilling nor the BHEM surveys returned any indications of significant sulphide mineralization. A summary of the drill program is provided below, along with a map of drill collars (Figure 17).

All three of the expansion holes were brought to completion. RTK DGPS surveys show that the average offset between the planned and actual coordinate is 6.4 m, which is high relative to other programs as the holes were spotted with a handheld GPS, but still accurate enough to meet the program objectives. Downhole EZ-shot and Gyro surveys were done on all three holes and are complementary. Average recovery and RQD are 97.4% and 79.3% respectively. The mean magnetic susceptibility (1.4 SI units) is relatively low and typical of unmineralized KZK Formation. Bulk density measurements range from 2.6 to 2.9 g/cm^3 with one sample returning 3.3 g/cm^3, which is typical of silicate rocks and, in one case, semi-massive sulphide. No samples were taken for geochemical assay.

Two of the three expansion holes were drilled along the western margin of the ABM Zone, and the third was drilled at the northern downdip extent (Figure 17). No massive sulphide mineralization was intersected. K16-375, which was collared 50 m west of the ABM Zone, intersected ~35 m of 5–10% pyrite from ~100–135 m core depth, which is associated with moderate Type 3 muscovite-sericite alteration and minor to trace sphalerite contents. This is probably the western extent of the ABM lens. Within K16-406, which was collared another 200 m further west, the ABM lens equivalent horizon is most likely indicated by nearly 70 m of Type 3 muscovite-sericite alteration from 152–219 m core depth. Approximately 75 m above this lies 0.7 m of semi-massive OI-type sulphide at ~96 m core depth. Results from K16-409, which tested the northern downdip extent, include 20 m of strong Type 3 alteration within an interval overlying the downdip projection of the ABM lens, possibly indicating an additional horizon of (VMS-related?) alteration.

8.5.4 Sebesi target

The “Sebesi target” encompasses a fault bounded block of prospective KZK Formation stratigraphy that lies adjacent and southeast of the Krakatoa Zone and was identified under the assumption that part of the Krakatoa Zone was cut off and displaced by the Fault Creek Fault. The 2016 Sebesi program was designed to test this hypothesis and assumed that the prospective stratigraphy was either downthrown or displaced dextral relative to the Krakatoa Zone. BHEM surveys were carried out on all completed drill holes. A summary of this program is given below and drill collar locations are shown on Figure 15.

The 2016 Sebesi drilling program was planned as six holes drilled in two fences, with the first fence located immediately southeast of the Fault Creek Fault and the second fence located ~150 m further southeast. Proposed hole lengths ranged from 600–1000 m to test a good package of KZK Formation stratigraphy. Difficult ground conditions, however, resulted in only three of these planned holes being brought to completion, with other attempts ending stuck in one of several large fault zones or deviating strongly off course. A seventh hole was designed to traverse these fault structures at a higher angle, and so comprised the fourth, and final, of the completed Sebesi drill holes. As a result, a total of 11 drill holes were attempted on the Sebesi target for 4830.1 m, with the four completed holes totalling 3686.3 m or 75% of the metres drilled.

RTK DGPS collar surveys show that the average offset between the planned and actual coordinate for each drill hole is 4.8 m, which is higher than the Krakatoa and GP4F programs. Nonetheless, these offsets are insignificant in terms of the program objective and exploration nature of the drilling. Downhole EZ-shot tests show acceptable values and typically correlate well with adjacent measurements, suggesting they are reliable. A Gyro downhole survey was done on K16-384 and correlates well with the EZ-shot readings. Core recovery averaged 92.7% and is similar to the average of all 2016 programs. Very low RQD was recorded in holes that ended stuck in fault zones, like K16-368 (RQD = 12.4%) and K16-408 (RQD = 33.4%).

Magnetic susceptibility readings are generally low, averaging 0.9 SI units for all readings with ~80% measuring ≤1 SI unit. The highest reading of 137 SI units is associated with the ~50 cm thick layer of pyrrhotite-rich OF-type massive sulphide intersected in K16-394. Bulk densities range from 2.6 to 3.7 g/cm^3, with the latter corresponding to the same 50 cm layer of OF sulphide in K16-394.

A total of 34 Sebesi samples were submitted for geochemical assay, comprising 34 core samples and 1 CRM that passed QA/QC, so that the assay results are considered accurate and free of contamination.

Six narrow intercepts of massive sulphide were returned from the Sebesi drilling program, five of which comprise Krakatoa mineralization caught up and dismembered within a long interval of Fault Creek Fault gouge in K16-368 (not included in Table 22). The sixth intercept was returned from K16-394 at a core depth of 797.4–797.9 m (Table 22), and comprised massive pyrrhotite-rich sulphide with lesser amounts of pyrite, sphalerite, chalcopyrite and galena. Assays returned 9.3% Zn, 0.5% Cu, 0.2% Pb and 8 g/t Ag over 50 cm. Other intercepts of interest include 1.4 m of OI-type disseminated sulphide (~15% pyrite) in K16-408 and 1.8 m of chert in K16-372 that returned assays with up to 18 g/t Ag and 0.15 g/t Au.

Intersected gabbro (MAFi) similar to the footwall mafic intrusion in the Krakatoa Zone occurs in three Sebesi drill holes. In two of these holes (K16-368, 408), intervals of MAFi occur within significant intervals of fault gouge related to the Fault Creek Fault. In K16-368 the MAFi is also intercalated with the aforementioned narrow massive sulphide intercepts. In K16-408 a 2.8 m block of MAFi is hosted in 64 m of fault gouge. The up dip position of MAFi that hosts Krakatoa Zone mineralization projects into the Fault Creek Fault at a similar elevation to the dismembered MAFi and massive sulphide blocks in K16-368. This suggests that there is potential for additional mineralization down dip from K16-368.

The third interval of MAFi occurs ~150 m southeast of the Fault Creek Fault near the top of K16-372, where it is overlain by ~1.5 m of volcaniclastic rhyolite and then overburden. It is unclear if the rhyolite unit overlies the MAFi or is an inclusion within it. The MAFi unit has a minimum width of 16.8 m, extending from 22.5–39.3 m core depth, and is thinner than most of the MAFi unit in the Krakatoa Zone, which ranges from ~20–90 m in width. The lowest ~5 m interval of MAFi shows weak syngenetic chlorite alteration. This is the only MAFi intercept on the southeast side of the Fault Creek Fault, and it is untested in all directions.

The contact between the KZK and Wind Lake Formations, which marks the top of the KZK Formation, was intersected in three of the completed holes and three of the abandoned ones (Table 22). Contact morphology ranges from sharp and/or faulted (e.g. K16-384, 416) to interleaved over core lengths of 40 m (e.g. K16-394). All six holes that crossed the Wind Lake-KZK contact include a unit of quartz eye-bearing rhyolite at, or near, the very top of the KZK Formation, which averages 5.5 m in width within a range of 0.8–8.1 m. Since crystal tuff is not particularly abundant within the KZK Formation (4% of all lithologies logged), it is possible that the same crystal tuff was intersected in six different holes, providing support for a concordant Wind Lake-KZK contact.

The base of the KZK Formation may have been intersected in K16-372, where the deepest 14.6 m of the drill hole comprises feldspar-phyric diorite that is tentatively grouped as Grass Lakes plutonic suite (or the North Lakes meta-diorite). Above this contact, the bottom-most 65 m of KZK Formation comprises volcaniclastic rhyolite and pelite that is cut by a felsic dyke swarm possibly also related to the Grass Lakes suite.

A potentially useful mudstone marker unit was intersected in all four of the completed Sebesi holes, and comprises a 25–85 m thick (average = 50 m) package of 70% mudstone + 25% mafic volcanic rock, that lies 450–700 m below the base of the Wind Lake Formation. This unit is referred to as the “Sebesi mudstone marker”. This marker is also notable for hosting thin intervals of pyrrhotite-rich massive to semi-massive sulphide, in addition to chert (Table 22). A similar unit was also intersected in the Tarawera drilling, suggesting that it may be widely developed across the property.

Table 22: Sulphide, chert and stratigraphic features intersected in 2016 Sebesi drilling

Hole ID	Formation	Feature	From (m)	To (m)	Length (m)	Comments
K16-372	KZK	MAFi unit	22.5	39.3	16.8	MAFi unit similar to Krakatoa Zone
	KZK	Sebesi mudstone marker	416.7	467.9	51.2	
	KZK	Chert	423.2	425.0	1.8	Hosted in Sebesi mudstone marker
	KZK/Grass Lakes?	Base of KZK, top of Grass Lakes?	582.8	582.8	-	Possibly North Lakes meta-diorite?
K16-374	Wind Lake/KZK	Base of Wind Lake, top of KZK	50.9	50.9	-	
	KZK	Sebesi mudstone marker	754.0	778.3	24.3	Occurs 700 m below base of Wind Lake
K16-384	Wind Lake/KZK	Base of Wind Lake, top of KZK	292.7	292.7	-	Abandoned hole
K16-394	Wind Lake/KZK	Base of Wind Lake, top of KZK	293.1	293.1	-	
	KZK	Sebesi mudstone marker	764.7	800.5	35.8	Occurs 470 m below base of Wind Lake
	KZK	Sebesi mudstone marker	797.4	797.9	0.5	Hosted in Sebesi mudstone marker
K16-408	Wind Lake/KZK	Base of Wind Lake, top of KZK	182.2	182.2	-	Abandoned hole
K16-414	Wind Lake/KZK	Base of Wind Lake, top of KZK	237.9	237.9	-	Abandoned hole
K16-416	Wind Lake/KZK	Base of Wind Lake, top of KZK	190.6	190.6	-	
	KZK	Sebesi mudstone marker	650.3	736.3	86.0	Occurs 460 m below base of Wind Lake
	KZK	10% PO + 5% CP	696.9	697.0	0.1	Hosted in Sebesi mudstone marker

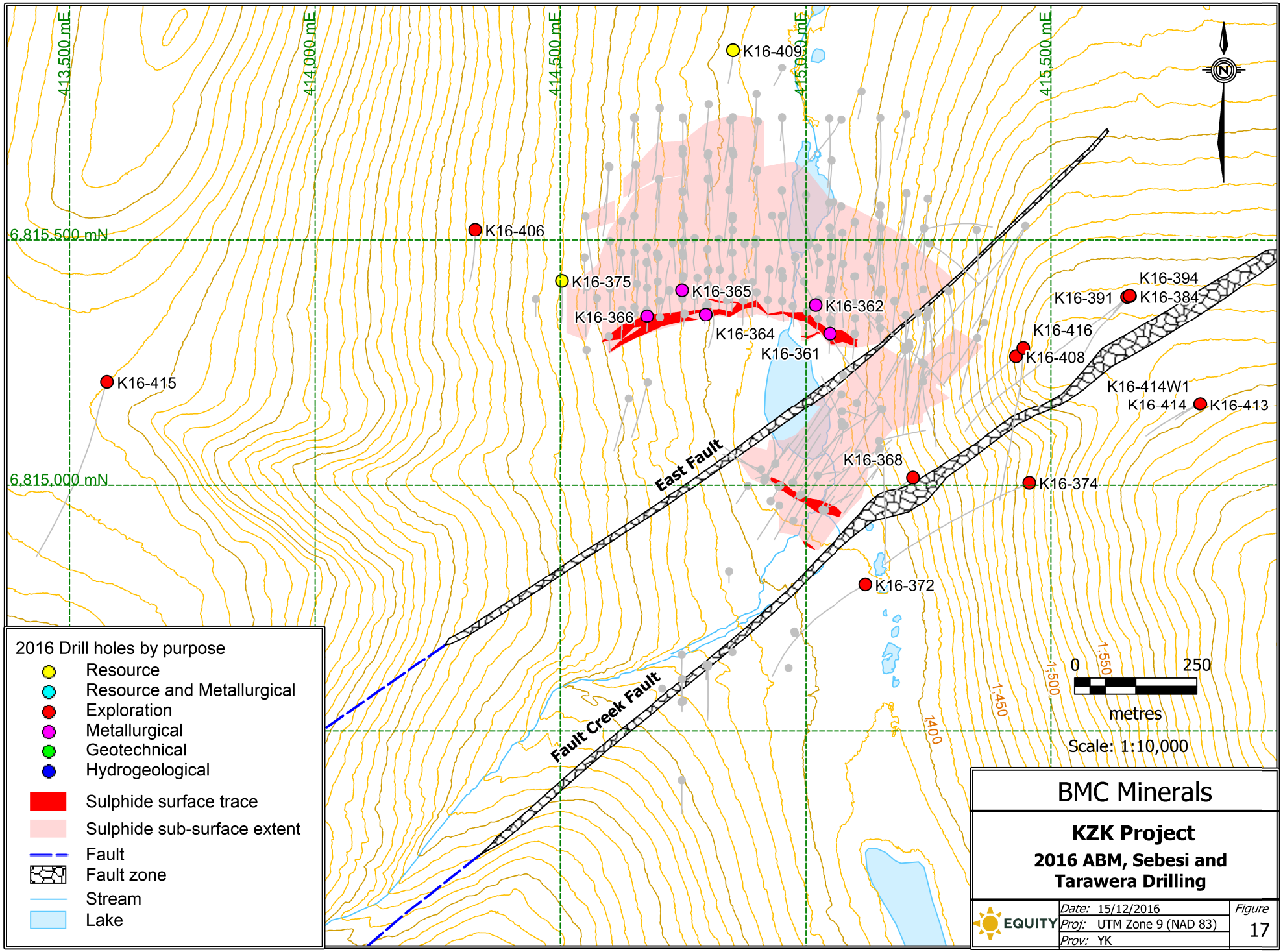
Four thin sections of Wind Lake Formation were examined by Vancouver Petrographic (Leitch, 2016), with the aim of further characterizing the mudstone (MDS) and mafic tuff (MAFt) lithologies of the Wind Lake Formation. The four samples were logged as mudstone (N = 2), mafic tuff (N = 1) and mafic ash tuff (N = 1). An overview of these samples is shown as Table 23 and detailed thin section descriptions are provided in the report (Leitch, 2016) provided as Appendix N.

The two samples of mudstone are characterized by relatively high sericite/muscovite (25–50 modal%) and carbonate (17–40%) contents, as well as minor to trace abundances of carbonaceous material and tourmaline. Abundances of tourmaline are higher-than-expected for typical metasediment, suggesting a possible hydrothermal input (Leitch, 2016). Both samples are also crenulated.

The mafic tuff and ash tuff samples contain higher proportions of chlorite (25–35%) and plagioclase (3–20%), in addition to significant proportions of quartz (25%), carbonate (12–17%) and sericite/muscovite (0–25%). Minerals of minor to trace abundance include rutile, monazite and apatite. Both samples are strongly foliated, but not crenulated, and both host foliation-parallel veins of carbonate ± quartz.

Table 23: Overview of samples submitted for petrographic analysis

Sample	DH ID	From (m)	To (m)	Formation	Lithology	Hand sample description
PET 2016-01	K16-418	123.38	123.5	Wind Lake	MDS	Dark grey to black, fine-grained, well-sorted
PET 2016-02	K16-418	106.32	106.44	Wind Lake	MAFt	Silty mafic tuff with finely interbedded carbonaceous mudstone.
PET 2016-03	K16-394	267.81	267.92	Wind Lake	MAFta	Light green, fine-grained, weakly foliated, carbonate veins
PET 2016-04	K16-394	263.76	263.85	Wind Lake	MDS	Blue/grey, fine-grained, containing rare mafic tuff beds and PO clots


413,500 mE
414,000 mE
414,500 mE
415,000 mE
415,500 mE
6,815,500 mN
6,815,000 mN
K16-409
K16-406
K16-375
K16-365
K16-362
K16-366
K16-364
K16-361
K16-394
K16-391
K16-384
K16-416
K16-408
K16-415
K16-414W1
K16-414
K16-413
K16-368
K16-374
K16-372
East Fault
Fault Creek Fault
1400
1-450
1-500
1-550
0
250
metres
Scale: 1:10,000
2016 Drill holes by purpose
Resource
Resource and Metallurgical
Exploration
Metallurgical
Geotechnical
Hydrogeological
Sulphide surface trace
Sulphide sub-surface extent
Fault
Fault zone
Stream
Lake
BMC Minerals
KZK Project
2016 ABM, Sebesi and Tarawera Drilling
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
17

8.5.5 Tarawera target

Drilling on the Tarawera target comprised a single hole designed to test an EM anomaly identified with the 2015 VTEM survey, in addition to anomalous Zn + Ba historic soil geochemistry and sphalerite- and galena-bearing float. The hole was drilled to a depth of 854.5 m and surveyed with BHEM. The location of the drill collar is shown on Figure 15.

An RTK DGPS survey confirms that the hole was collared 2.2 m from where it was planned, which is well within the tolerance needed to meet the program objectives. Downhole EZ-shot tests show a gradual change in azimuth from 195° to 210° near the end of hole, with a few readings thrown off by ferromagnetic interference. Recovery averaged 99.1% and RQD averaged 79.3%, indicating the rock is competent in this area.

Magnetic susceptibility is low for the overall length of the hole, with slightly higher average values (1.5 SI units) in the upper ~80 m compared to the rest of the hole (0.7 SI). Slightly elevated values may be related to increased disseminated pyrrhotite content associated with the 0.5 m thick sulphide layer at ~47 m depth. Bulk density measurements range from 2.8–3.5 g/cm^3, with the highest values again related to the thin sulphide layer intersected at ~47 m depth (see next paragraph).

Six Tarawera samples were submitted for geochemical assay, comprising five core samples and one CRM that passed QA/QC, so that the assays are considered accurate and free of contamination.

Mineralization intersected at Tarawera comprised 0.5 m of pyrrhotite-rich semi-massive sulphide between 46.5–47.0 m depth (Table 24). Mineralogy comprises an estimated 30% pyrrhotite with 10% pyrite, 5% chalcopyrite and 5% sphalerite, and is associated with moderate chlorite, tourmaline, biotite and muscovite alteration. Assays returned 9.0% Zn, 0.8% Cu and 26 g/t Ag over 0.5 m, which is similar to grades returned from pyrrhotite-rich sulphide at Sebesi. It is likely that this thin sulphide horizon accounts for the VTEM anomaly.

Two intervals of sediment bearing rock packages were intersected, the first between 472.3 m to 517.1 m core depth and a second from 819.8 m to the end of hole at 854.5 m. The first of these two packages comprises ~45 m of 40% mudstone, 35% other sedimentary rocks, 15% mafic volcanic and 10% chert, which is similar in terms of both length and lithology to the marker unit defined from the Sebesi drilling. The second interval consists of 65% mafic volcanic and 35% mudstone, and is either lower KZK Formation or a different, underlying formation all together. The first interval most likely correlates with the Sebesi mudstone marker, since it lies a minimum of 470 m below the top of KZK Formation in comparison to the 450–700 m range measured at Sebesi. The second interval is too deep to match up with the Sebesi area marker unit.

The lower-most unit of felsic volcanic, which occurs immediately above the second sedimentary package, shows moderate garnet and silica alteration.

Table 24: Sulphide and stratigraphic features intersected in 2016 Tarawera drilling

Hole ID	Formation	Feature	From (m)	To (m)	Length (m)	Comments
K16-415	KZK	Sulphide	46.5	47.0	0.5	Hosted in volcaniclastic rhyolite
	KZK	Sebesi mudstone marker	472.3	517.1	44.9	Occurs ≥470 m below base of Wind Lake
	?	Mudstone and mafic volcanic	819.8	845.5	>25.8	Marker or different formation?

8.6 Metallurgical drilling

Metallurgical samples were collected from the Krakatoa Zone, ABM Zone and GP4F deposit, through a combination of dedicated metallurgical holes and dual-purpose holes (i.e. most of which were infill holes). The drilling and sampling is the first step in a comprehensive metallurgical testing program for both the ABM and GP4F deposits, which also includes 3-D modelling of geodomain, EDTA analysis and metallurgical test work (Black, 2015). Only the drilling and sampling is described here as it is the only element of this work program that will be filed for assessment. A list of the metallurgical samples collected during 2016 is included as Appendix O.

The 2016 metallurgical drilling and sampling program comprised 16 drill holes for 2699.6 m, with seven of these holes (1055.4 m) dedicated metallurgical drill holes (Figures 15, 16, 17). Six of the 16 holes were drilled on the Krakatoa Zone, five were drilled at the ABM Zone and five were drilled at the GP4F deposit.

All of the metallurgical drill holes were brought to completion. RTK DGPS surveys reveal an average offset of 2.1 m from the planned coordinates, indicating close correspondence between the planned and actual locations of drill holes. Downhole EZ-shot surveys are reliable outside of the mineralized zones and less reliable within them, especially those with significant proportions of OA-type massive sulphide (i.e. most of the downdip ABM holes). Average recovery from metallurgical drilling is 89.7% which is slightly lower than the 2016 program average. Magnetic susceptibility and bulk density measurements are consistent with sampling of massive sulphide. A total of 793 half and whole core samples were collected.

Geochemical assays were obtained for most metallurgical samples except for 22 samples from K16-407, which was sampled as whole core because it was drilled as a twin (see paragraph on GP4F below). All drill assays passed QA/QC based on monitoring of CRMs and blanks, so that all of the 2016 core assays are considered accurate and free of contamination.

Metallurgical samples (N = 330) from the Krakatoa Zone were collected from six drill holes, two of which were drilled downdip to generate more sampling material and four drilled perpendicular to dip direction to achieve their primary objective as infill drill holes. The 1201.4 m of drilling generated 122.2 m of massive and semi-massive sulphide, with 70.9 m derived from downdip hole K16-340. Sulphide intercepts comprised ~90% massive sulphide and ~10% semi-massive, and were mostly logged as OB-type (68% of all sulphide) with lesser amounts of OK (13.9%), OJ (6.1%), OI (5.0%), OA (4.5%) and OF (2.6%).

The five ABM metallurgical holes generated 344 samples from 193.2 m of massive and semi-massive sulphide over 611.9 m of drilling. The high ratio of sulphide to meters drilled is derived from the downdip orientation of each drill hole. Mineralization comprised ~90% massive sulphide and ~10% semi-massive, with loggers recording 61.6% OB-type, 23.9% OA, 10.1% OI and ≤ 2.0% of OC, OJ, OF and OH.

The GP4F metallurgical samples (N = 119) were collected from dual purpose holes, with four of these drilled to generate new pierce points and the fifth (K16-407) drilled to validate a coincident core block placement and rod count error through the GP4F lens. Because K16-407 was essentially a duplicate of K16-388, no samples were taken for geochemical assay and all metallurgical samples were taken as whole core. The five holes totalled 886.3 m and generated 37.5 m of mineralized material split into 70% semi-massive sulphide and 30% massive sulphide. Core loggers recorded these intercepts as 66.2% OJ-type, 11.7% OL, 9.5% OF and ≤ 6% each of OC, OI and OD.

Metallurgical samples were shipped to Small's Expediting Services in Whitehorse, Yukon, where they were stored in a refrigerated sea can to prevent oxidation. Samples were later assembled into composites of anticipated ore types and grade ranges for metallurgical testing.

8.7 Geotechnical investigations

Geotechnical investigations included test pitting and drilling in support of the proposed mine site design, as well as drilling and geotechnical core logging to characterize Krakatoa rock quality for mine planning. Each of these programs is summarized below and data is included as Appendix P and Appendix Q. A map showing the proposed infrastructure, test pits and geotechnical drill collar locations is presented as Figure 18.

8.7.1 Mine site

The 2016 mine site investigation was managed by Knight Piésold and involved both test pitting and geotechnical drilling. The objective of the test pit program was to characterize the overburden materials from across the proposed mine site and to identify potential borrow sources for construction materials. Fifty-three pits were completed and reached an average depth of 3.3 m below ground surface, within a range of 1.3–5.1 metres. Tested sites of proposed infrastructure include the class A storage facility (N = 14 test pits), ABM open pit area (N = 14), class B storage facility (N = 11), mill site (N = 6), Fault Creek area (N = 4), Krakatoa open pit (N = 2) and the topsoil stockpile (N = 2). Test pit logs are included in Appendix P. Wherever possible, test pits were accessed through the existing road and trail network. Pits were typically abandoned due to either hitting bedrock or reaching the operational limit of the excavator, with other causes including over-sized boulders, wall instability, groundwater ingress and permafrost. Each pit was backfilled and recontoured after work was completed.

Geotechnical drilling was completed between 2 July to 14 August 2016, with a total of 16 diamond drill holes for 631 m (Table 25). For each hole, geotechnical engineers completed detailed geotechnical logs, standard penetration testing (SPT), point load testing (PLT) and packer testing. The following summary of this work is adapted from the report provided by Knight Piésold (2016). Geotechnical logs are included in Appendix P.

All of the mine site geotechnical drill holes were brought to completion. RTK DGPS surveys show that the planned and actual coordinates are an average of 5.5 m apart, within a range of 0.7–19.3 m. This program recorded the largest offset between planned and actual holes, although these offsets did not interfere with program objectives. No downhole EZ-shot or Gyro surveys were completed since all 16 holes were vertical and short (≤70.6 m). Core recovery averaged 91.2% and RQD averaged 48.8%, both of which are similar to the 2016 project averages. The low RQD is related to the shallow depth for all of these holes, since bedrock closer to surface is generally more fractured.

The 2016 mine site drill program was also used to characterize surficial deposits and complement the test pit program. Drilling results indicate that surficial deposits range from 0.1 m to 19.2 m in depth, with the deepest deposits occurring underneath the proposed class C storage facility and the Geona creek valley floor. The shallowest deposits occur on valley walls, especially at higher elevations. The typical overburden profile comprises 0.1–0.5 m of organic material overlying silt and sand deposits with varying amounts of gravel and cobbles. Fine-grained clay and silt deposits occur in the class C area, where they are interbedded with more sandy layers.

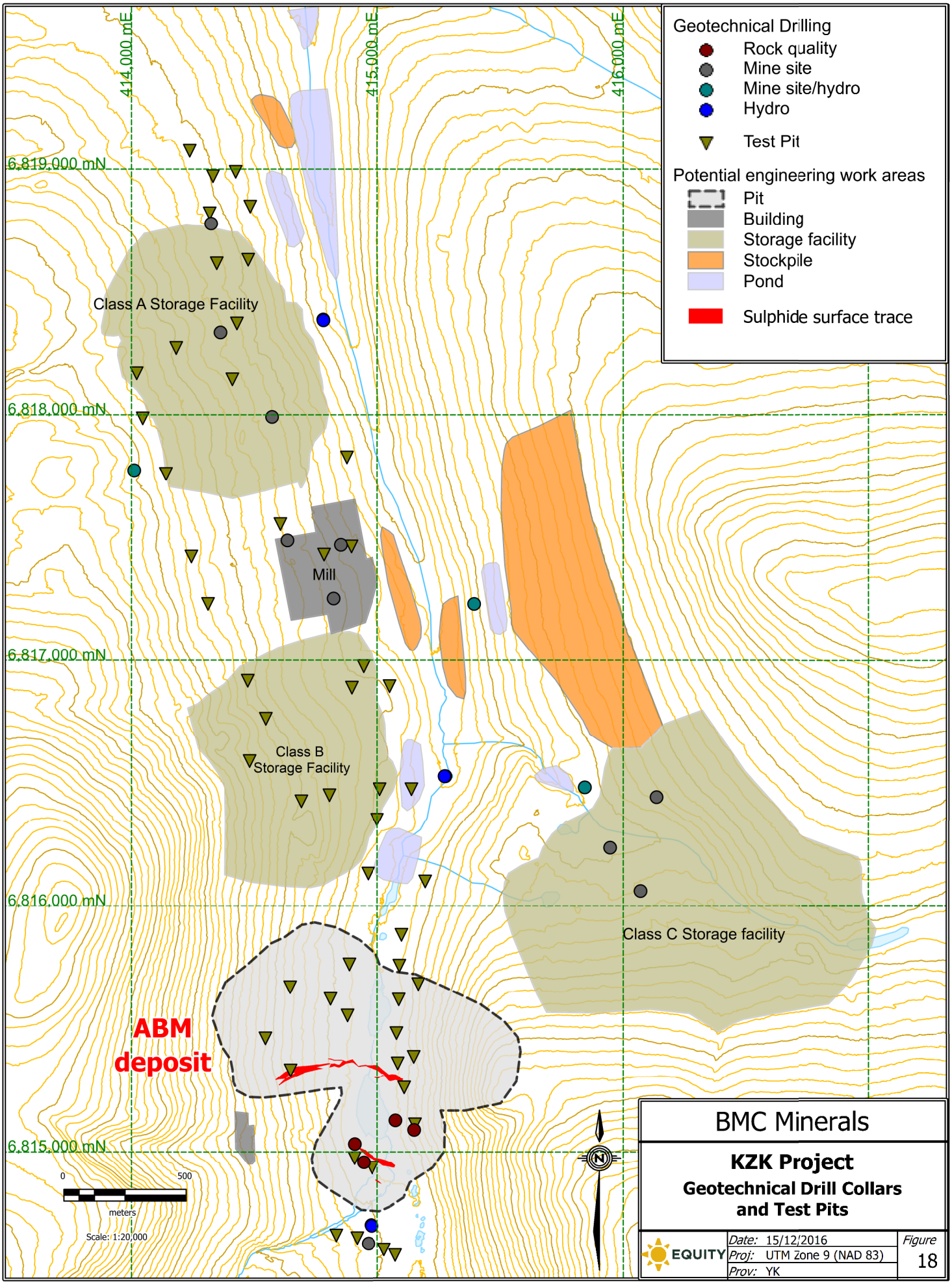
Encountered bedrock includes lithologies of the KZK and Wind Lake formations, most of which exhibits an extreme strength anisotropy due to pervasive and strong foliation. Field-estimated and lab-determined UCS values suggest medium strong to strong bedrock with zones of extremely weak rubble and clay-rich material. Field RMR_{89} (Bieniawski, 1989) logging resulted in a classification of “fair” quality rock for the majority of the site.

Previous work (e.g. Golder Associates Ltd., 1996) identified discontinuous permafrost at several locations around the project site. The nine thermistors installed in 2016, however, did not identify permafrost. Ice was found during standard penetration testing of K16-410, which was drilled into the proposed class C facility site. Monitoring well MW16-13 (K16-383), which targeted the proposed class A facility, was also found to be frozen in bedrock at 6 m below ground surface. A total of 52 packer tests were also completed.

Table 25: Overview of drilling done for the 2016 mine site geotechnical investigation

Hole	Target	Length (m)	Azimuth (°)	Dip (°)	OVBN (m)	SPT	Packer	Installations
K16-379	Upstream from open pit	39.7	360	-90	5.7	5	3	3 x vibrating wire piezometers
K16-381	Upstream from open pit	42.2	360	-90	5.7	5	3	Monitoring well
K16-383	Class B storage facility	27.9	360	-90	1.5	1	3	Monitoring well
K16-386	Class A storage facility	31.1	360	-90	1.5	1	3	Standpipe piezometer
K16-387	Class A storage facility	34.0	360	-90	4.3	1	3	Thermistor
K16-389	Class A storage facility	42.0	360	-90	11.5	6	3	Thermistor
K16-390	Class A storage facility	38.6	360	-90	~4–6*	3	3	Thermistor
K16-392	Mill site	46.2	360	-90	4.0	4	4	Thermistor
K16-395	Mill site	46.2	360	-90	2.0	2	4	Thermistor
K16-397	OVBN stockpile	40.3	360	-90	3.9	3	4	Monitoring well
K16-398	Class B storage facility	28.2	360	-90	7.2	5	2	Monitoring well
K16-402	Class C seepage pond	70.6	360	-90	6.3	4	6	Thermistor
K16-404	Class A storage facility	40.2	360	-90	8.4	4	3	Monitoring well
K16-410	Class C storage facility	31.0	360	-90	6.1	4	3	Thermistor
K16-411	Class C storage facility	34.1	360	-90	18.2	8	2	Thermistor
K16-412	Class C storage facility	38.7	360	-90	19.0	9	3	Thermistor
16 holes		**631.0**				**65**	**52**	

*OVBN depth logged as 1.5 m but <50% recovery to 6.8 m depth
Abbreviations: OVBN = overburden, SPT = standard penetration testing


414,000 mE
415,000 mE
416,000 mE
6,819,000 mN
6,818,000 mN
6,817,000 mN
6,816,000 mN
6,815,000 mN
Geotechnical Drilling
Rock quality
Mine site
Mine site/hydro
Hydro
Test Pit
Potential engineering work areas
Pit
Building
Storage facility
Stockpile
Pond
Sulphide surface trace
Class A Storage Facility
Mill
Class B
Storage Facility
Class C Storage facility
ABM
deposit
0
500
meters
Scale: 1:20,000
N
BMC Minerals
KZK Project
Geotechnical Drill Collars
and Test Pits
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure
18

8.7.2 Krakatoa rock quality

The primary aim of the 2016 Krakatoa rock quality program was to define the geotechnical and engineering properties of lithological units that fall within the proposed open pit and underground workings. Program objectives were achieved through dedicated drilling and geotechnical logging of four holes, in addition to detailed geotechnical logging on 15 Krakatoa resource holes. These holes are listed in Table 26 and collar locations are shown on Figure 18. The Krakatoa rock quality geotechnical data is included in Appendix Q.

The four dedicated Krakatoa rock quality drill holes totalled 608.1 m, and were designed to intersect each mid pit wall, extend ~50 m into primary faults and have equidistant spacing with respect to each other. All four of these holes were brought to completion. Downhole surveys were done with the EZ-shot and show acceptable values and good correlation with adjacent tests that suggest the results are accurate. Core recovery averaged 96.3% and RQD averaged 58.8%, both of which are well above the 2016 project average. There is a fairly regular distribution from low to high RQD, with 25% of all measurements recording RQD <25%, 20% showing RQD between 25–50%, another 20% of runs showing RQD between 50–75% and the remaining 35% showing RQD of 75–100% (Haque, 2016).

Lithologies were characterized by joint set numbers (Jn), weathering and alteration (W/A) code, rock hammer tests, point load testing and UCS testing. The most fractured lithology are intervals logged as “fault zone” (FLZ), where >50% of intervals have a joint number >15. Among the more coherent lithologies, mudstone and quartz vein are the most fractured rock types whereas semi-massive and massive sulphide are the most coherent. Aphanitic rhyolite (RHYi) is typically more fractured than coherent rhyolite (RHYc) and volcaniclastic rhyolite (RHYv).

Logging of W/A codes followed the classifications of Brown (1981) and shows that FLZ intervals are the most weathered whereas massive sulphide intersections are the least. Quartz vein is an example of a unit with relatively strong fracturing (i.e. high joint set number) but little weathering and alteration, presumably because massive quartz is essentially inert. Undifferentiated rhyolite (RHY) and mudstone (MDS) are also among the more weathered and altered lithologies.

Rock hammer testing followed the classification in ISRN (1978), with results more-or-less consistent with data from the Jn and W/A logging. Fault zone intervals are the weakest and classified as extremely weak to very weak rock. Massive and semi-massive sulphide intervals, on the other hand, are classified as medium strong to strong rock. RHY, MDS and mafic tuff (MAFt) are also relatively weak whereas quartz vein, RHYi and MAFi are stronger.

Point load tests were preformed at orientations parallel (42% of all tests) and perpendicular (58%) to core axis, with results suggesting massive sulphide and RHYi are relatively strong whereas FLZ and MDS are weak. Perhaps the most surprising result is how much stronger the RHYi is compared to the other types of rhyolite, which was not apparent from the hammer testing. MAFi and semi-massive sulphide are slightly stronger than the other types of rhyolite, but weaker than massive sulphide and RHYi.

Lab-based UCS testing showed that massive sulphide and RHYi are relatively strong, failing at an average of 100 and 105 Mpa respectively. MDS and RHYc on the other hand, fail at around 25 Mpa. The result for RHYc, in particular, was a surprise and may be due to the relatively marked compositional and textural heterogeneity of this lithology, which locally comprises mm- to cm-scale alternations of silica- and muscovite-rich domains. MAFi, semi-massive sulphide and RHYv, on the other hand, typically fail at intermediate stress of 46–66 Mpa.

Structural measurements on oriented core included joint foliation (N = 1541), normal joints (N = 2131) and fault structures (N = 269). The average orientation for joint foliations at the highest confidence level (i.e. level 3) is 279°/29° N, which is similar to the range defined in previous work (Golder Associates Ltd., 1996). Three normal joint sets can be distinguished at high confidence, with each showing an average orientation of 247°/10° NW, 110°/53° SW and 202°/45° WNW. Fault structures were found at orientations of 304°/30° NW, 027°/46° SE, 222°/71° NW and 060°/70° SE, the latter three of which are subparallel to the 230°–240° trending East and Fault Creek faults. Additional structural measurements on the Wind Lake Formation indicate a similar joint foliation and a single normal joint set oriented subparallel to foliation.

Seven packer tests were done as part of the rock quality program, with three tests completed within fault intervals and four done within more coherent KZK Formation rocks. Results are summarized in Tables 1-22 to 1-28 in Appendix Q.

The 2016 rock quality program also included a survey of outcrops within the proposed pit and pit wall areas. An outcrop summary is included as Table 1-29 as part of Appendix Q. Fieldwork confirmed the joint foliation and subparallel joint sets although, otherwise, normal joints were not particularly comparable to oriented core data.

Table 26: Overview of drilling done for the Krakatoa rock quality investigation

Hole ID	Proposed ID	Length (m)	Purpose	Rock quality target
K16-371	GT04	117.0	Rock quality investigation	West open pit wall
K16-373	GT02	170.3	Rock quality investigation	North open pit wall; East Fault
K16-376	GT03	170.2	Rock quality investigation	Northeast open pit wall; East Fault
K16-377	GT01	150.6	Rock quality investigation	High north open pit wall; Fault Creek Fault
K16-351	KRAK025	198.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-352	KRAK006	192.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-353	KRAK014	159.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-354	KRAK010	39.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-355	KRAK010A	329.7	Resource infill drilling	Krakatoa Zone, HW and FW
K16-356	KRAK019	19.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-357	KRAK019A	381.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-358	KRAK012	348.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-359	KRAK030	390.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-360	KRAK013	330.0	Resource infill drilling	Krakatoa Zone, HW and FW
K16-363	KRAK033	435.0	Resource expansion drilling	Krakatoa Zone, HW and FW
K16-367	KRAK007	282.0	Resource infill drilling	Krakatoa Zone (underground), HW and FW
K16-370	KRAK009	280.5	Resource infill drilling	Krakatoa Zone (underground), HW and FW
K16-378	KRAK038	162.0	Resource expansion drilling	Krakatoa Zone, HW and FW
K16-385	KRAK035	645.0	Resource expansion drilling	Wind Lake Formation

8.8 Hydrogeological investigations

The 2016 hydrogeological drilling program was designed to build on baseline work started in 2015, with particular focus on the proposed open pit areas (ABM, Krakatoa) and mine infrastructure locations. Collar locations were picked to tie into a network of re-developed historical monitoring wells and wells that were drilled in 2015 (Hughes et al., 2016). New wells drilled in 2016 include six deep monitoring wells and three shallow monitoring wells, for a total of 267.4 m (Table 27). A summary of the 2016 hydrogeological drilling program is provided below.

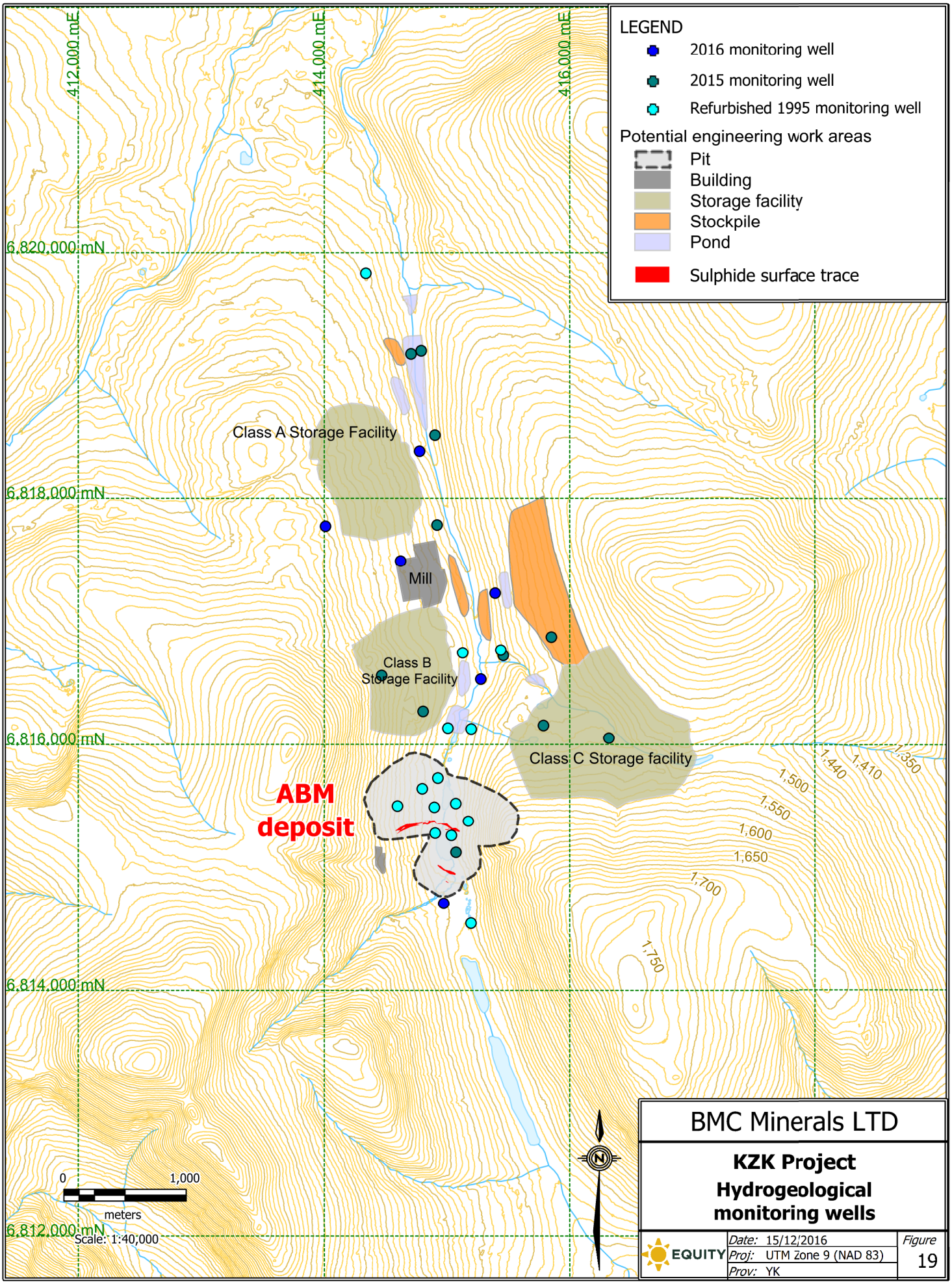
All nine holes were drilled to completion and monitoring wells were successfully installed. RTK DGPS surveys show that the actual collar locations are an average of 3.2 m from the planned locations, which is within the tolerance guidance provided by Knight Piésold. No downhole surveys were completed, as all of the holes were vertical and short. Core recovery and RQD measurements were made for holes that were also drilled for geotechnical purposes, and this data was used, in part, to select screened zones.

Groundwater levels ranged from above the ground surface to approximately 19 m below the ground surface. Artesian conditions were encountered in drill holes completed in the Geona creek valley bottom.

Hydraulic conductivity packer testing was completed in 16 drill holes during the mine site investigation, comprising all six deep monitoring wells and ten geotechnical holes. No packer testing was done on the three shallow monitoring wells. Hydraulic conductivity values from packer testing ranged from 5 x 10-5 m/s to 9 x 10-8 m/s. The most permeable bedrock was encountered in the class C facility area.

Table 27: Overview of drilling done for the 2016 hydrogeological investigation

Hole	Well ID	Target	Length (m)	Azimuth	Dip	Installation
K16-381	MW16-15D	Krakatoa open pit	42.2	360	-90	Deep monitoring well
K16-382	MW16-15S	Krakatoa open pit	6	360	-90	Shallow monitoring well
K16-383	MW16-13	Class B storage facility	27.9	360	-90	Deep monitoring well
K16-386	MW16-17	Class A storage facility	31.1	360	-90	Deep monitoring well
K16-397	MW16-16	OVBN stockpile	40.3	360	-90	Deep monitoring well
K16-398	MW16-12D	Class B storage facility	28.2	360	-90	Deep monitoring well
K16-401	MW16-12S	Class B storage facility	7.5	360	-90	Shallow monitoring well
K16-404	MW16-14D	Class A storage facility	40.2	360	-90	Deep monitoring well
K16-405	MW16-14S	Class A storage facility	4.5	360	-90	Shallow monitoring well


LEGEND
2016 monitoring well
2015 monitoring well
Refurbished 1995 monitoring well
Potential engineering work areas
Pit
Building
Storage facility
Stockpile
Pond
Sulphide surface trace
412,000 mE
414,000 mE
416,000 mE
6,820,000 mN
6,818,000 mN
6,816,000 mN
6,814,000 mN
6,812,000 mN
Class A Storage Facility
Mill
Class B Storage Facility
Class C Storage facility
ABM deposit
1,350
1,410
1,440
1,500
1,550
1,600
1,650
1,700
1,750
0
1,000
meters
Scale: 1:40,000
N
BMC Minerals LTD
KZK Project
Hydrogeological monitoring wells
EQUITY
Date: 15/12/2016
Proj: UTM Zone 9 (NAD 83)
Prov: YK
Figure 19

9.0 DISCUSSION

The following sections provide some discussion on the results of the 2016 KZK work program, presented in the same order as the above sections. Summaries for 2016 program elements and recommendations for future work are presented in the Section 10.0.

9.1 Historical core program

Historical core was relocated to KZK Camp, and is now stored together with BMC's 2015 and 2016 drill core. All of the drill core is stored on pallets so that it can be easily moved once a more permanent long-term storage facility is available.

The 2016 re-logging program completed the work that was started in 2015 (Baknes, 2015; Hughes et al., 2016), with 198 of 201 historical holes now re-logged. It is unlikely that the three missing holes will be re-logged, since two of them are not on the Property and the third one is essentially destroyed. The historical core re-logging program is therefore considered complete.

Re-coding work focussed on application of the pelite (PEL) and semi-massive sulphide (OI, OJ) codes at GP4F, and was useful in generating a more coherent lithological deposit model. Addition of the chert (CHT) code was aimed at helping to highlight silica-rich intervals that could be exhalative in nature, most of which were previously logged as silicified mudstone (Jerome de Pasquale, personal communication, May 2016). Chert and other exhalite units play an important role in defining some of the VMS-prospective horizons within the Finlayson Lake district (e.g. Hunt, 2002), so it is important to break out even suspect examples of such lithologies.

Re-sampling and assay of GP4F historical core suggests that Cominco's assays are accurate. This result is consistent with an extensive twin drilling and re-assay program done on the ABM deposit in 2015 (Hughes et al., 2016), which also concluded that Cominco's geochemical assay data was reliable.

9.2 Terrain surveys

The 2016 collar survey program completed surveying previously un-surveyed 2015 holes and monitoring wells, as well as all of the 2016 drill collars using an RTK DGPS. Historical collars were surveyed in 2015 (Hughes et al., 2016). The collar survey program on the KZK Property is therefore complete up to October 2016.

RTK DGPS work showed that actual drill collar coordinates were offset an average of 3–4 m from the planned ones. The magnitude of this offset averaged 2–3 m for the resource programs and 4–6 m for the exploration and geotechnical drill holes suggesting offset magnitudes are, in part, related to how much leeway there is in drill plan that still allows for the drill hole to meet its objective. Although these offsets are mostly negligible in terms of meeting project objectives, it is worth noting that the majority of planned collars were also spotted by DPGS, so it would be reasonable to expect less offset between planned and actual coordinates. Reasons for the observed offsets likely include one or more of the following additive errors: (1) relocation of the collar picket to facilitate safe drill rig positioning after drill pads were constructed (0–10 m), (2) placement of the skid drill on the drill pad (0–5 m), (3) errors related to twisting of the rig during pre-drilling azimuth alignment (0–1 m), and/or (4) DGPS and/or RTK correction errors (0–0.5 m?).

9.3 Geophysical surveys

Results of the 2016 airborne magnetics and VTEM survey, as well as the borehole EM surveys, require review and interpretation by a qualified geophysicist.

The airborne magnetic and VTEM survey shows broad formational and structural responses that should be integrated with property-scale geological maps. The "Grass Lakes fault corridor" is one such example, which is marked as a discrete planar fault on the regional map of Murphy et al (2001) whereas the 2016 airborne data suggests it may comprise a fault zone up to 1 km wide. Parallel structures of similar width to the Grass Lakes fault corridor include the East and Fault Creek Faults.

Two large-scale airborne anomalies were identified for ground-based follow-up work. The first of these is the so-called “East mag high” (Figure 13a, 13b), comprising a magnetic high within an area that is regionally mapped as KZK Formation (Murphy et al., 2001). This magnetic anomaly occurs in the remote eastern part of the Property and at an elevation similar to the GP4F deposit, implying that it is likely entirely under cover.

The second anomaly of note is an EM high that occurs within the Grass Lake fault corridor (GLF high on Figure 13c). Its topographic position is on a covered slope near a valley bottom, so it is unlikely that there is extensive exposure near this anomaly. A possible source for this anomaly could be Wind Lake Formation rocks. However, its position with the inferred fault zone and mapped Fire Lake Formation rocks, without other sizable nearby anomalies, make it a compelling target for follow-up work.

Resurveying over the historical core storage area, which was broken down in 2016, revealed that a weak EM and magnetic anomaly is retained even after the metal core racks were removed. In addition, drill hole K16-372 indicated that there is a mafic unit in this area similar to the MAFi unit that hosts mineralization in the Krakatoa Zone. The area around K16-372 is untested over ~150 m of strike length, from the drill collar to the Fault Creek Fault in the northwest, and ~300 m downdip. Additional surface work, like a focussed ground-based HLEM survey for example, is recommended for this area.

9.4 Resource and exploration drilling

The bulk of the 2016 drilling program comprised resource (infill, expansion) and exploration drilling, on the Krakatoa Zone, GP4F deposit, ABM Zone, Sebesi target and Tarawera target. Results are discussed in the sections below.

9.4.1 Krakatoa Zone

The 2016 resource infill and expansion drill program on the Krakatoa Zone was successful in upgrading a signification proportion of the inferred resource to indicated, but also resulted in an overall loss of tonnage from 5.1 Mt estimated in January 2016 (Green et al., 2016) to 4.2 Mt in November (BMC Minerals Ltd., 2016a). The leading cause for this reduction was increased understanding and model refinement of the East and Fault Creek Faults, which were found to comprise 10–70 m wide zones with the Fault Creek Fault now having a more shallow dip than previously recognised. Inferred resources that were initially extended to the modelled faults (Green et al., 2016) were therefore consumed by the updated fault interpretation.

It is possible that Krakatoa Zone mineralization is preserved within these fault zones, as it is within K16-368, for example, and in light of the 2016 geotechnical work showing that massive sulphide is among the stronger rock types in the area. However, the jumbled nature of stratigraphy within these faults makes it very difficult to target and find fault-hosted massive sulphide.

Downdip testing of the Krakatoa Zone revealed some additional continuity beyond the previously defined maximum depth extent (Green et al., 2016). One of the interesting geological features of the deep Krakatoa Zone is the abrupt termination of the MAFi unit across an inferred structure informally referred to as the “MAFi growth fault”. In some cases, thick massive sulphide will occur on either side of the MAFi growth fault but will be hosted within MAFi on the up dip side and felsic volcanics downdip. This geometry suggests that the MAFi unit was emplaced along the MAFi growth fault and flowed in the up dip direction.

Some units within the Krakatoa Zone may be more altered than currently recognized and include aphanitic rhyolite (RHYi) and coherent rhyolite (RHYc), both of which typically contain significant proportions of amorphous silica. Evidence that the silica in these units is secondary includes its (1) amorphous and locally pervasive character, especially within RHYi, and (2) spatial association with VMS mineralization and other types of hydrothermal alteration.

9.4.2 GP4F deposit

Following completion of the 2016 drilling, the GP4F deposit remains sparsely drilled in some areas of the resource and is open in several directions (Voordouw, 2016a). The most notable gap is section 419550E (see Appendix K), on which there are currently just two short holes (K98-190, 191) with historical intercepts that include 4.8% Zn, 3.4% Pb and 104 g/t Ag over 5.9 m as well as 77 g/t Au over 1.4 m and 566 g/t Ag over

0.2 m. The section lying immediately west (419500E) is adequately drilled and has returned some of the better grade-metre composites from the GP4F deposit whereas there is no drilling for another 100 m east of this section. Additional drilling on sections 419550E and 419600E would better help define the eastern half of the GP4F deposit and would likely upgrade significant proportions of the remaining inferred resource to indicated.

The downdip extent of the GP4F deposit is open on sections 419400E, 450E and 500E. The furthest downdip intercepts on these sections include composites of 21.1% Zn + Pb and 513 g/t Ag over 0.4 m (section 419450E) and 12.0% Zn + Pb and 330 g/t Ag over 1.3 m (419500E). On-section follow-up of these intercepts with 100 m downdip step-outs can be achieved with 350–400 m long drill holes.

The existing nomenclature for the GP4F deposit should be updated to establish consistency with deposit nomenclature used for the Krakatoa Zone. In particular, the “GP4F lens” should be renamed as the “main lens”, which then together with the lower lens comprises the GP4F deposit (Table 28). A similar change should be made for the “ABM lens”, which should be renamed as the “main lens” of the ABM Zone to establish a consistent nomenclature for naming deposit features in the project area.

Table 28: Proposed revisions to deposit nomenclature for the KZK Project

Deposit	Zone	Lens or target	Historical equivalents
ABM	ABM	Main lens	ABM lens
	Krakatoa	Upper lens	
		Main lens	
		Lower lens	
GP4F	GP4F	Upper target	Upper target
		Main lens	GP4F lens
		Lower lens	Lower target
		Lower II target	

9.4.3 ABM Zone

No massive sulphide was intersected in the ABM expansion drilling program. A key part of this work was also the BHEM surveys, which appear flat but are pending analysis by a geophysicist.

The 2016 drilling did intersect an altered and weakly mineralized horizon located ~75 m above the ABM lens. This horizon was intercepted in both K16-406 and -409, which were collared 200 m west and 100 m downdip of the ABM lens respectively. This altered and weakly mineralized horizon could represent an additional exploration target.

9.4.4 Sebesi target

The 2016 Sebesi exploration program targeted the fault-bounded block of KZK stratigraphy located on the southeast side of the Fault Creek Fault, immediately across from the Krakatoa Zone. The most significant result from this program was the intersection of a mafic unit in K16-372, which is similar to the MAFi unit that hosts mineralization in the Krakatoa Zone. K16-372 is collared 150 m southeast of the Fault Creek Fault and the mafic intercept is untested along strike up to the Fault Creek Fault, and along 300 m of downdip extent until it is cut off by K16-374. In addition, this prospective area is spatially associated with a weak to moderate EM anomaly that was previously referred to as the “core rack anomaly”, but where weakly anomalous EM and magnetism was retained even after removal of the core racks in 2016.

Other results from the Sebesi program include the identification of two marker horizons/units that can be used to characterize and model the KZK Formation. The first of these is the contact between the Wind Lake and KZK formations, which is marked by the abrupt transition from carbonaceous phyllite and mafic volcanics into underlying felsic volcanics. Despite the marked lithological change, however, there is some evidence that this contact is concordant, including the occurrence of units similar to the Wind Lake Formation in the upper-most 40 m of the KZK Formation and the widespread occurrence of an otherwise rare quartz-phyric crystal tuff unit immediately below the base of the Wind Lake Formation.

Another prominent marker is a package of carbonaceous phyllite ± mafic volcanic rock that occurs in each of the Sebesi holes, at a depth of 450–700 m below the base of the Wind Lake Formation and is informally referred to as the Sebesi mudstone marker. Similar units were logged at Tarawera and may be corelatable to the Sebesi marker. Other features suggest this marker may have an exhalative component, including 10–50 cm thick layers of semi-massive to massive pyrrhotite ± chalcopyrite (K16-394, K16-416) and 1.7 m of chert (K16-372). KZK Formation rocks underlying the Sebesi marker appear to contain a more significant component of sedimentary rocks than overlying KZK Formation.

9.4.5 Tarawera target

The 2016 Tarawera exploration program also intersected a 50 cm wide layer of pyrrhotite-rich massive sulphide that is nearly identical - in terms of width, grade and mineralogy - to the sulphide layer intersected in Sebesi hole K16-394. However, the inferred stratigraphic position of these two layers suggests that the Tarawera sulphide layers lies ~400 m above the Sebesi one, and so it is unlikely that they are corelatable.

The pyrrhotite-rich sulphide layer at Tarawera occurs at ~50 m depth and projects to daylight ~100 m south of the drill collar. It is possible that this sulphide layer accounts for the airborne EM anomaly, as well as the soil anomaly and mineralized float in the area. Additional review of float mineralogy and soil enrichments is suggested for a more complete assessment of whether this sulphide layer explains these anomalies.

The Tarawera drill program also intersected two packages of intercalated mudstone + mafic volcanic ± chert, the first occurring from 472–517 m depth and the second at the end of the hole. The first of these two intervals has a similar width to the Sebesi mudstone marker and, given its core depth, occurs at a minimum of 470 m below the top of the KZK Formation. This is within the range of 450–700 m below top of the KZK Formation measured for the marker in the Sebesi area. The second interval occurs a minimum of 815 m below the top of the KZK Formation, which is outside the range measured at Sebesi. For this reason, the first interval is the most likely correlative of the marker at Sebesi. The second interval thereby either comprises a lower felsic volcanic-poor part of the KZK Formation or, possibly, another formation altogether.

9.5 Geotechnical work

9.5.1 Mine site

The 2016 mine site investigation included excavating 53 test pits and drilling 16 geotechnical holes for 631.0 m. The aim of the investigation was to determine the geotechnical properties of soil and shallow bedrock at proposed mine infrastructure sites. Sites that were investigated with both test pits and drilling include the class A storage facility (14 test pits, 5 drill holes), class B storage facility (11 pits, 2 holes), mill site (6 pits, 2 holes), overburden stockpile (2 pits, 1 hole) and the Fault Creek area (4 pits, 2 holes), which lies upstream from the proposed open pits. Infrastructure sites examined only with test pits include the ABM (14 pits) and Krakatoa (2 test pits) open pit areas. The class C storage facility (2 drill holes) and seepage pond (1 hole) was inaccessible for test pitting and was drilled using helicopter support.

The property geological map shows that the class C storage facility holes lie within 90–150 m of the East Fault. The observed geotechnical features in this area are likely related to the proximity of these drill holes to the East Fault and/or subparallel fault structures.

9.5.2 Krakatoa rock quality

Results of the Krakatoa rock quality program can be used to further characterize lithological units broken out through geological core logging. Intervals logged as fault zone, for example, were characterized as having high joint set numbers, strong weathering and alteration, extremely weak to weak strength, and structural orientations that trend parallel to larger-scale structures (e.g. East and Fault Creek Faults). Other interesting results show that aphanitic rhyolite (RHYi) is typically more fractured than other types of felsic volcanic (i.e. RHYv, RHYc) but much stronger as measured through PLT and UCS testing. Coherent rhyolite (RHYc), on the other hand, fails more readily under UCS testing than other types of rhyolite, possibly because of its' locally marked textural and mineralogical heterogeneity. Carbonaceous mudstone of the Wind Lake Formation is also

among the weaker, weathered and altered lithologies, and may have accommodated significant amounts of strain during regional deformation.

Structures measured in oriented core confirm the predominant structural orientations known for the project area, including the dominant (or joint) foliation (30°/280°–300° N to NE) and the parallel trend of several fault zones to the larger-scale East and Fault Creek Faults. In addition, the rock quality work reveals a set of brittle structures developed subparallel to the dominant foliation, suggesting that foliation (and likely transposed lithological contacts as well) acted as planes of weakness during regional deformation.

9.6 Hydrogeological investigations

Packer testing of fault intervals as part of the Krakatoa rock quality program indicates that these are significantly more permeable than non-faulted bedrock. Packer tests at the proposed class C storage facility suggest that the East Fault may have influenced this area.

10.0 SUMMARY AND RECOMMENDATIONS

Earthworks done as part of the 2016 work program included drill pad and trail construction as well as reclamation. By the end of the 2016 field program, 65% of the 2015/16 exploration trails had been reclaimed and 95% of the drill pads.

Work on the historical core (1994–1998) archive included relocation, re-logging, re-coding and re-sampling. All historical, 2015 and 2016 core is now consolidated at the KZK Camp, where it will be stored on pallets until a longer-term storage facility is available. The 2016 re-logging program (24 holes, 4030 m) completed the comprehensive re-logging program started in 2015 (Baknes, 2015; Hughes et al., 2016). Re-sampling, coupled with assay, confirmed that Cominco's GP4F assays are accurate and suitable for use in current resource calculations given that historical samples were analysed differently (aqua regia digestion) to the 2015/2016 samples (sodium peroxide fusion). No further relocation, re-logging or re-sampling work is therefore recommended.

Additional re-coding work should be done as the geological understanding of the project area improves. Examples of possible re-coding projects include re-examination of mafic (or pelite?) layers in the hanging wall of the ABM deposit, determining (and breaking out if necessary) the extent of silica alteration within the aphanitic rhyolite (RHYi) and coherent rhyolite (RHYc) units, and applying larger-scale stratigraphic groupings to facilitate modelling.

Airborne LiDAR data collected in 2016 is included on the data disk attached as Appendix T. The 2016 surveying program measured all previously un-surveyed 2015 holes and monitoring wells, as well as all 2016 drill collars. Historical collars were surveyed in 2015 (Hughes et al., 2016). The RTK DGPS collar survey program on the KZK Property is now complete.

A 902 line-km airborne magnetics and VTEM survey was completed that ties into the 304 line-km survey done in 2015 (Hughes et al., 2016), for a total of 1206 line-km of new airborne geophysical data. Together, these two surveys provide complete airborne coverage over the KZK Property. Results indicate broad formational and structural responses that should be integrated into the Property-scale geology map. The "GLF EM high" is spatially associated with the inferred Grass Lakes fault corridor and should be targeted for follow-up surface work, starting with reconnaissance prospecting. The "core rack" anomaly is retained as a weak EM and magnetic response even after the metal core racks were removed. This is spatially associated with an intercept of mafic rock, similar to the MAFi unit that hosts mineralization in the Krakatoa Zone, which is untested along at least 150 m of strike length and 300 m of downdip extent.

Ground-based borehole EM surveys were also done in 11 holes totalling 6790.5 m. Preliminary review suggests a strong correlation between EM response and intersected sulphide layers, and a generally flat response from unmineralized rock. Both the airborne magnetic and VTEM survey and the BHEM surveys, however, require review and interpretation by a qualified geophysicist.

Resource drilling on the Krakatoa Zone (32 holes, 8623.2 m) helped to increase the proportion of indicated resource from 40% to 90% (BMC Minerals Ltd., 2016a), but also decreased the resource size and largely closed off the ore body. Along-strike drilling was the primary cause of resource contraction, where the locations of the East and Fault Creek Fault zones were better refined. Downdip resource extension was limited and closed off with most tests, although a few areas remain open for minor additions to the resource inventory, particularly the Krakatoa upper lens on sections K-H, K-I, K-J and K-K. Future work should include infill drilling in any remaining resource gaps.

Infill drilling on the GP4F deposit (7 holes, 1553.6 m) met its primary objective of upgrading the GP4F resource, with 60% of the resource now classified as indicated (BMC Minerals Ltd., 2016a). The deposit is open at depth, with the deepest pierce points on most sections comprising decent intercepts. Along-strike expansion is limited as the eastern- and western-most sections both host a relatively poorly developed GP4F lens. On the other hand, the lower lens is widest on the eastern-most section. Proposed future work would include infill drilling on section 419550E with possible expansion drilling on 419600E, downdip expansion drilling on sections 419400E to 500E, and lower priority expansion drilling on sections 419650E and 300E (Voordouw, 2016a).

Resource expansion drilling on the ABM Zone (3 holes,770.0 m) was unsuccessful and closed off parts of the western and downdip margins of the ABM lens. This program did identify a possible new exploration target located ~75 m above the ABM lens, which is defined by Type 3 muscovite alteration and/or weak sulphide mineralization. Future work on the ABM Zone could include infill drilling identified from the 2015 work (Hughes et al., 2016) and test for underlying (i.e. Krakatoa-type) mineralization, especially near the East Fault.

Exploration drilling on the Sebesi target (4 completed holes for 3385.3 m; 7 abandoned holes for 1911.3 m) was unsuccessful at intersecting significant sulphide mineralization, with the best intercept comprising 0.5 m of pyrrhotite-rich sulphide that assayed 9.3% Zn and 0.5% Cu. The most significant finding of this program was the intersection of a mafic unit in K16-372, similar to the MAFi unit that hosts mineralization in the Krakatoa Zone, which is unexplored along at least 150 m of strike length, right up to the Fault Creek Fault, and 300 m of downdip extent. In addition, this target area overlaps with the core rack EM anomaly. Other findings from the Sebesi program include the identification of a possible marker unit, named the Sebesi mudstone marker, which occurs 450–700 m below the base of the Wind Lake Formation. Future work should asses the prospectivity of the KZK Formation around K16-372 - possibly with ground-based geophysics and/or drilling, and focus on wider-scale correlations of the Sebesi marker across the Property.

Exploration drilling on the Tarawera target (1 hole, 854.4 m) was also unsuccessful in finding significant sulphide mineralization, with the best intercept comprising 0.5 m of pyrrhotite-rich sulphide that assayed 9.0% Zn and 0.8% Cu. Stratigraphic highlights include intersection of a marker unit that could correlate with a similar unit at Sebesi, as well as garnet- and silica-alteration in the lower-most felsic volcanic unit.

The mine site geotechnical program included 53 test pits and 16 holes (631.0 m). Most of the proposed infrastructure sites were investigated with two or more test pits and at least one shallow vertical drill hole, except for the less accessible class C storage facility and seepage pond (no test pits, 4 drill holes). Bedrock quality is generally classified as “fair” across the project site and locally ranges from “good” to “poor”. Unambiguous permafrost was not identified although ice was encountered in two drill holes.

The Krakatoa rock quality investigation comprised four dedicated holes for 608.1 m that were drilled into each wall of the proposed Krakatoa open pit, with the aim of geotechnically characterizing lithologies within the Krakatoa Zone. An additional 15 resource holes (4190.2 m) were geotechnically logged. Results indicate that massive to semi-massive sulphide is relatively strong whereas Wind Lake mudstone and fault zone intervals are weak, weathered and highly fractured. Felsic volcanic (RHYv) and the mafic footwall intrusion (MAFi) typically fall in between these endmembers, with aphanitic rhyolite (RHYi) generally stronger than other felsic volcanic types and coherent rhyolite (RHYc) somewhat weaker. Structural measurements on oriented core generally confirm the orientation of the dominant foliation and trend of larger-scale fault structures, and also indicate brittle failure on planes subparallel to the dominant foliation.

The hydrogeological investigation comprised nine drill holes for 267.4 m, six of which were dual purpose holes (with the mine site investigation) completed as deep monitoring wells and three shallow wells drilled only

for the hydrogeological program. Ground water depths were found to range from surface to 19 m below ground level and the highest permeability was found in the class C storage area.

Respectfully submitted,

Signed "Chris Hughes"

Chris Hughes

Signed "Ronald Voordouw"

Ron Voordouw

EQUITY EXPLORATION CONSULTANTS LTD.

Vancouver, British Columbia

Date: 13th March 2017

Appendix A: References

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Appendix B: Statement of Expenditures

STATEMENT OF EXPENDITURES

KZK Project

February 01, 2016 - December 31, 2016

PROFESSIONAL FEES AND WAGES:

Henry Awmack, P. Eng.		
3.75 days @ $700/day	$	2,625.00
Darcy Baker, P. Geo.		
4.69 days @ $700/day		3,283.00
Crystal Beaudry, Environmental Manager		
15.00 days @ $625/day		9,375.00
Thomas Branson, P. Geo		
4.88 days @ $700/day		3,416.00
Matt Brickenden, Exploration Assistant		
18.00 days @ $400/day		7,200.00
Steve Bultitude, Assistant Geologist		
29.50 days @ $400/day		11,800.00
Darrin Dawson, Exploration Assistant		
26.00 days @ $400/day		10,400.00
Jerome de Pasquale, Geologist		
107.50 days @ $575/day		61,812.50
Henry Dick, Environmental Services		
5.00 days @ $400/day		2,000.00
Robert Duncan, Project Geologist		
76.64 days @ $700/day		53,648.00
Rafe Etzel, Padbuilder		
52.72 days @ $450/day		23,725.00
Kellin Friesen, Senior Sampler		
73.50 days @ $325/day		23,887.50
Annette Giesbrecht, Head Cook		
41.50 days @ $550/day		22,825.00
Rory Heaney, First Aid Attendant Level III		
119.00 days @ $400/day		47,600.00
Brian Hegarty, Project Manager		
170.51 days @ $625/day		106,568.75
Morgan Hendrie, Exploration Assistant		
10.00 days @ $400/day		4,000.00
Chris Hughes, Project Geologist		
188.29 days @ $700/day		131,803.00
Roger Hulstein, P. Geo		
57.25 days @ $700/day		40,075.00
Dillon Hume, Geologist		
83.50 days @ $575/day		48,012.50
Jody Inkster, Environmental Monitor		
66.50 days @ $400/day		26,600.00
Doris John, Head Cook		

122.45 days @ $550/day	67,350.00
Grace Johnny, Assistant Cook	
44.00 days @ $325/day	14,300.00
Sheila Johnny, Cook	
87.00 days @ $475/day	41,325.00
Whitney Johnson-Ward, Senior Sampler	
15.00 days @ $325/day	4,875.00
Murray Jones, P. Geo.	
4.00 days @ $700/day	2,800.00
Doreen Ladue, Assistant Cook	
82.00 days @ $325/day	26,650.00
Shirley Ladue, Assistant Cook	
29.00 days @ $325/day	9,425.00
Philippe LaPointe, Senior Sampler	
10.00 days @ $325/day	4,875.00
Martine Le Levier, Head Cook	
60.00 days @ $550/day	33,000.00
Cecile Legare, First Aid Attendant Level III	
8.00 days @ $400/day	3,200.00
Scott MacNeill, Project Environmental Manager	
102.50 days @ $700/day	71,750.00
Jamie McLennan, Project Manager	
70.50 days @ $625/day	44,062.50
Danny Menacho, Senior Sampler	
30.00 days @ $325/day	9,750.00
Dennis Menacho, Senior Sampler	
43.00 days @ $325/day	13,975.00
Heiko Mueller, Geologist	
18.78 days @ $575/day	10,800.00
Trent Newkirk, Project Environmental Manager	
54.00 days @ $700/day	37,800.00
Oscar Nielsen, Geologist	
104.64 days @ $525/day	54,937.50
Richard Ney, Senior Sampler	
31.50 days @ $325/day	10,237.50
Dave Nuttall, Geologist	
33.50 days @ $575/day	19,262.50
Tara Ollie, Environmental Monitor	
13.00 days @ $325/day	4,225.00
Terry Ollie, Environmental Monitor	
14.00 days @ $325/day	12,285.00
Scott Parker, GIS / Logistics	
27.00 hours @ $75/hour	20,100.00
Neil Perk, P. Geo.	
14.00 days @ $700/day	2,800.00
Tyler Porter, First Aid Attendant Level III	
52.00 days @ $400/day	20,800.00

Trevor Rabb, P. Geo			
16.75 days @ $700/day	11,725.00		
Will Shawcross, Site Services			
127.50 days @ $400/day	51,000.00		
Colin Slauenwhite, Project Manager			
132.46 days @ $625/day	82,787.50		
John Sterriah, Senior Sampler			
67.50 days @ $325/day	21,937.50		
Jason Stone-Smith, Senior Sampler			
93.50 days @ $325/day	30,387.50		
Sean Suttie, Environmental Manager			
19.70 days @ $625/day	12,312.50		
David Swanton, P.Geo.			
1.00 day @ $700/day	700.00		
Jennifer Tom, Assistant Cook			
84.00 days @ $325/day	27,300.00		
Abraham Tutcho, Site Services			
64.00 days @ $325/day	20,800.00		
Alicia Vainio, Geologist			
99.00 days @ $575/day	56,925.00		
Ron Voordouw, P. Geo			
170.79 days @ $700/day	119,553.00		
Agata Zurek, GIS			
565.50 hours @ $75/hour	42,412.50		
Clerical			
46.02 hours @ $35/hour	1,610.70	$	1,660,692.45

EQUIPMENT RENTALS:

Chainsaw			
1.00 day @ $30/day	$ 120.00		
Core Saw (Gas)			
90.00 days @ $60/day	5,400.00		
Field Camp			
6,398.00 days @ $20/manday	127,960.00		
Field Computers			
1,588.00 days @ $20/day	31,760.00		
First Aid Rental			
467.33 days @ $45/day	21,030.00		
Generator Rental			
771.67 days @ $45/day	34,725.00		
Power Auger			
6.00 days @ $30/day	180.00		
Magnetic Susceptibility Meter			
27.00 days @ $15/day	405.00		
Micromine Software			
347.00 hours @ $50/hour	17,350.00		
Burnadette Incinerator			

	253.14 days @ $43/day	10,885.00	$	249,815.00

EXPENSES:

Licenses	19,238.81
Claim Management	19,380.52
Chemical Analyses	164,840.86
Database Administration	36,438.19
Field Equipment Repairs & Maint.	7,580.55
Field Consumables	7,769.29
Materials and Supplies	249,001.36
Small Tools and Equipment (<$200)	775.06
Plot Charges	1,511.45
Printing and Reproductions	790.11
Camp Food	198,649.35
Meals	3,013.59
Accommodation	22,026.56
Taxis and Airporters	2,672.82
Parking	108.63
ATV Rental (Non-Equity)	29,800.00
Truck Rental (Non-Equity)	154,948.80
Automotive Fuel	2,157.53
Automotive Expenses	2,004.33
Aircraft Charters	239,865.21
Helicopter Charters	362,449.03
Busfare	8.29
Airfare	64,832.00
Telephone Distance Charges	421.86
Courier	815.91
Freight	233,720.02
Bulk Fuel + Tank Rental	364,681.32
Airborne Geophysics: Field Work	168,984.94
Ground Geophysics: Field Work	110,791.79
Geophysical Consulting	2,668.75
Health/Fitness	32,620.75
Camp Maintenance / Catering	67,057.27
Blasting, Linecutting, Padbuilding	4,188.58
Dump Disposal Fees	70.23
Road Rehabilitation + Maintenance	17,400.33
Satellite Phone Rental (Non-Equity)	5,330.06
Radio Rental (Non-Equity)	31,616.59
Chainsaw Rental (Non-Equity)	2,840.00
Downhole Survey Tool Rental (Non-Equity)	147,922.43
Generator Rental (Non-Equity)	2,225.00
Other Equipment Rental (Non-Equity)	24,099.46
Earthworks	403,606.79
Excavator	13,250.00
Loader	24,600.00

Drilling: Footage	2,745,381.01	
Drilling: Materials	2,273.92	
Drilling: Coreboxes	56,090.00	
Surveying: Field Work	119,017.15	
Geological Consulting	431,136.46	
Engineering Consulting	1,003,701.87	
Petrography	18,068.44	
Health & Safety + Training	39,712.31	
Expediting	81,905.38	
Rent: Other Storage	3,500.00	
Utilities (Warehouse)	28.57	
Postage	21.91	
Internet Charges	89,461.83	
Course or Lecture Fees, MEG	424.05	
Report (estimated)	10,000.00	7,849,497.32
SUB-TOTAL:		$ 9,760,004.77
PROJECT SUPERVISION CHARGES:		669,000.02
TOTAL:		$ 10,429,004.79

Appendix C: Claim Data

This appendix contains a list of all claims comprising the KZK Property as of March 2017. Claims are ordered by grant number in Table C-1 below.

Table C-1: Tenure details for KZK Property claims

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB46227	Quartz	TAG	1	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46228	Quartz	TAG	2	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46229	Quartz	TAG	3	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46230	Quartz	TAG	4	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46231	Quartz	TAG	5	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46232	Quartz	TAG	6	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46233	Quartz	TAG	7	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46234	Quartz	TAG	8	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46235	Quartz	TAG	9	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46236	Quartz	TAG	10	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46237	Quartz	TAG	11	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46238	Quartz	TAG	12	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46239	Quartz	TAG	13	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46240	Quartz	TAG	14	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46241	Quartz	TAG	15	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46242	Quartz	TAG	16	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46243	Quartz	TAG	17	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46244	Quartz	TAG	18	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46245	Quartz	TAG	19	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46246	Quartz	TAG	20	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46247	Quartz	TAG	21	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46248	Quartz	TAG	22	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46249	Quartz	TAG	23	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46250	Quartz	TAG	24	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46251	Quartz	TAG	25	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46252	Quartz	TAG	26	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46253	Quartz	TAG	27	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46254	Quartz	TAG	28	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46255	Quartz	TAG	29	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46256	Quartz	TAG	30	18-Aug-93	20-Aug-93	2-Apr-28	Active
YB46325	Quartz	PLATE	1	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46326	Quartz	PLATE	2	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46327	Quartz	PLATE	3	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46328	Quartz	PLATE	4	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46329	Quartz	PLATE	5	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46330	Quartz	PLATE	6	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46331	Quartz	PLATE	7	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46332	Quartz	PLATE	8	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46333	Quartz	PLATE	9	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46334	Quartz	PLATE	10	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46335	Quartz	PLATE	11	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46336	Quartz	PLATE	12	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46337	Quartz	PLATE	13	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46338	Quartz	PLATE	14	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46339	Quartz	PLATE	15	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46340	Quartz	PLATE	16	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46341	Quartz	PLATE	17	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46342	Quartz	PLATE	18	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46343	Quartz	PLATE	19	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46344	Quartz	PLATE	20	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46345	Quartz	PLATE	21	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46346	Quartz	PLATE	22	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46347	Quartz	PLATE	23	15-Sep-93	29-Sep-93	2-Apr-28	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB46348	Quartz	PLATE	24	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46349	Quartz	PLATE	25	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46350	Quartz	HOME	1	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46351	Quartz	HOME	2	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46352	Quartz	HOME	3	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46353	Quartz	HOME	4	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46354	Quartz	HOME	5	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46355	Quartz	HOME	6	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46356	Quartz	HOME	7	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46357	Quartz	HOME	8	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46358	Quartz	HOME	9	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46359	Quartz	HOME	10	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46360	Quartz	HOME	11	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46361	Quartz	HOME	12	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46362	Quartz	HOME	13	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46363	Quartz	HOME	14	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46364	Quartz	HOME	15	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46365	Quartz	HOME	16	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB46366	Quartz	HOME	17	15-Sep-93	29-Sep-93	2-Apr-28	Active
YB47461	Quartz	TAG	31	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47462	Quartz	TAG	32	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47463	Quartz	TAG	33	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47464	Quartz	TAG	34	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47465	Quartz	TAG	35	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47466	Quartz	TAG	36	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47467	Quartz	TAG	37	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47468	Quartz	TAG	38	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47469	Quartz	TAG	39	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47470	Quartz	TAG	40	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47471	Quartz	TAG	41	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47472	Quartz	TAG	42	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47473	Quartz	TAG	43	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47474	Quartz	TAG	44	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47475	Quartz	TAG	45	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47476	Quartz	TAG	46	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47477	Quartz	TAG	47	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47478	Quartz	TAG	48	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47479	Quartz	TAG	49	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47480	Quartz	TAG	50	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47481	Quartz	TAG	51	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47482	Quartz	TAG	52	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47483	Quartz	TAG	53	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47484	Quartz	TAG	54	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47485	Quartz	TAG	55	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47486	Quartz	TAG	56	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47487	Quartz	TAG	57	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47488	Quartz	TAG	58	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47489	Quartz	TAG	59	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47490	Quartz	TAG	60	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47491	Quartz	TAG	61	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47492	Quartz	TAG	62	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47493	Quartz	TAG	63	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47494	Quartz	TAG	64	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47495	Quartz	TAG	65	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47496	Quartz	TAG	66	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47497	Quartz	TAG	67	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47498	Quartz	TAG	68	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47499	Quartz	TAG	69	9-Apr-94	15-Apr-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB47500	Quartz	TAG	70	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47501	Quartz	TAG	71	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47502	Quartz	TAG	72	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47503	Quartz	TAG	73	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47504	Quartz	TAG	74	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47505	Quartz	TAG	75	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47506	Quartz	TAG	76	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47507	Quartz	TAG	77	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47508	Quartz	TAG	78	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47509	Quartz	TAG	79	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47510	Quartz	TAG	80	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47511	Quartz	TAG	81	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47512	Quartz	TAG	82	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47513	Quartz	TAG	83	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47514	Quartz	TAG	84	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47515	Quartz	TAG	85	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47516	Quartz	TAG	86	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47517	Quartz	TAG	87	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47518	Quartz	TAG	88	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47519	Quartz	TAG	89	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47520	Quartz	TAG	90	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47521	Quartz	TAG	91	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47522	Quartz	TAG	92	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47523	Quartz	TAG	93	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47524	Quartz	TAG	94	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47525	Quartz	TAG	95	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47526	Quartz	TAG	96	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47527	Quartz	TAG	97	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47528	Quartz	TAG	98	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47529	Quartz	TAG	99	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47530	Quartz	TAG	100	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47531	Quartz	TAG	101	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47532	Quartz	TAG	102	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47533	Quartz	TAG	103	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47534	Quartz	TAG	104	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47535	Quartz	TAG	105	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47536	Quartz	TAG	106	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47537	Quartz	TAG	107	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47538	Quartz	TAG	108	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47539	Quartz	TAG	109	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47540	Quartz	TAG	110	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47541	Quartz	TAG	111	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47542	Quartz	TAG	112	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47543	Quartz	TAG	113	9-Apr-94	15-Apr-94	2-Apr-26	Active
YB47544	Quartz	TAG	158	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47545	Quartz	TAG	159	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47546	Quartz	TAG	160	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47547	Quartz	TAG	161	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47548	Quartz	TAG	162	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47549	Quartz	TAG	163	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47550	Quartz	TAG	164	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47551	Quartz	TAG	165	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47552	Quartz	TAG	166	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47553	Quartz	TAG	167	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47554	Quartz	TAG	168	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47555	Quartz	TAG	169	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47556	Quartz	TAG	170	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47557	Quartz	TAG	171	10-Apr-94	15-Apr-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB47558	Quartz	TAG	172	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47559	Quartz	TAG	173	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47560	Quartz	TAG	174	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47561	Quartz	TAG	175	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47562	Quartz	TAG	176	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47563	Quartz	TAG	177	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47564	Quartz	TAG	178	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47565	Quartz	TAG	179	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47566	Quartz	TAG	180	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47567	Quartz	TAG	181	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47568	Quartz	TAG	182	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47569	Quartz	TAG	183	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47570	Quartz	TAG	184	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47571	Quartz	TAG	185	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47572	Quartz	TAG	186	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47573	Quartz	TAG	187	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47574	Quartz	TAG	188	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47575	Quartz	TAG	189	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47576	Quartz	TAG	190	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47577	Quartz	TAG	191	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47578	Quartz	TAG	192	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47579	Quartz	TAG	193	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47580	Quartz	TAG	194	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47581	Quartz	TAG	195	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47582	Quartz	TAG	196	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47583	Quartz	TAG	197	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47584	Quartz	TAG	198	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47585	Quartz	TAG	199	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47586	Quartz	TAG	200	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47587	Quartz	TAG	201	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47588	Quartz	TAG	202	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47590	Quartz	TAG	204	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47592	Quartz	TAG	206	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47593	Quartz	TAG	207	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47594	Quartz	TAG	208	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47595	Quartz	TAG	209	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47596	Quartz	TAG	210	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47597	Quartz	TAG	211	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47598	Quartz	TAG	212	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47599	Quartz	TAG	213	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47600	Quartz	TAG	214	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47601	Quartz	TAG	215	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47602	Quartz	TAG	216	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47603	Quartz	TAG	217	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47604	Quartz	TAG	218	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47605	Quartz	TAG	219	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47606	Quartz	TAG	220	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47607	Quartz	TAG	221	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47608	Quartz	TAG	222	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47609	Quartz	TAG	223	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47610	Quartz	TAG	224	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47611	Quartz	TAG	225	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47612	Quartz	TAG	226	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47613	Quartz	TAG	227	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47614	Quartz	TAG	228	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47615	Quartz	TAG	229	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47616	Quartz	TAG	230	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47617	Quartz	TAG	231	10-Apr-94	15-Apr-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB47618	Quartz	TAG	232	10-Apr-94	15-Apr-94	2-Apr-26	Active
YB47619	Quartz	TAG	233	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47620	Quartz	TAG	234	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47621	Quartz	TAG	235	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47622	Quartz	TAG	236	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47623	Quartz	TAG	237	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47624	Quartz	TAG	238	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47625	Quartz	TAG	239	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47626	Quartz	TAG	240	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47627	Quartz	TAG	241	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47628	Quartz	TAG	242	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47629	Quartz	TAG	243	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47630	Quartz	TAG	244	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47631	Quartz	TAG	245	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47632	Quartz	TAG	246	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47633	Quartz	TAG	247	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47634	Quartz	TAG	248	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47635	Quartz	TAG	249	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47636	Quartz	TAG	250	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47637	Quartz	TAG	251	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47638	Quartz	TAG	252	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47639	Quartz	TAG	253	11-Apr-94	15-Apr-94	2-Apr-26	Active
YB47640	Quartz	TAG	254	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47641	Quartz	TAG	255	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47642	Quartz	TAG	256	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47643	Quartz	TAG	257	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47644	Quartz	TAG	258	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47645	Quartz	TAG	259	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47646	Quartz	TAG	260	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47647	Quartz	TAG	261	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47648	Quartz	TAG	262	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47649	Quartz	TAG	263	14-Apr-94	15-Apr-94	2-Apr-26	Active
YB47668	Quartz	TAG	114	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47669	Quartz	TAG	115	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47670	Quartz	TAG	116	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47671	Quartz	TAG	117	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47672	Quartz	TAG	118	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47673	Quartz	TAG	119	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47674	Quartz	TAG	120	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47675	Quartz	TAG	121	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47676	Quartz	TAG	122	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47677	Quartz	TAG	123	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47678	Quartz	TAG	124	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47679	Quartz	TAG	125	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47680	Quartz	TAG	126	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47681	Quartz	TAG	127	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47682	Quartz	TAG	128	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47683	Quartz	TAG	129	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47684	Quartz	TAG	130	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47685	Quartz	TAG	131	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47686	Quartz	TAG	132	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47687	Quartz	TAG	133	9-Apr-94	26-Apr-94	2-Apr-26	Active
YB47688	Quartz	TAG	134	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47689	Quartz	TAG	135	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47690	Quartz	TAG	136	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47691	Quartz	TAG	137	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47692	Quartz	TAG	138	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47693	Quartz	TAG	139	10-Apr-94	26-Apr-94	2-Apr-26	Active

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YB47694	Quartz	TAG	140	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47695	Quartz	TAG	141	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47696	Quartz	TAG	142	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47697	Quartz	TAG	143	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47698	Quartz	TAG	144	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47699	Quartz	TAG	145	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47700	Quartz	TAG	146	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47701	Quartz	TAG	147	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47702	Quartz	TAG	148	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47703	Quartz	TAG	149	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47704	Quartz	TAG	150	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47705	Quartz	TAG	151	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47706	Quartz	TAG	152	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47707	Quartz	TAG	153	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47708	Quartz	TAG	154	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47709	Quartz	TAG	155	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47710	Quartz	TAG	156	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB47711	Quartz	TAG	157	10-Apr-94	26-Apr-94	2-Apr-26	Active
YB48413	Quartz	TAG	264	26-Apr-94	2-May-94	2-Apr-26	Active
YB48414	Quartz	TAG	265	26-Apr-94	2-May-94	2-Apr-26	Active
YB48415	Quartz	TAG	266	26-Apr-94	2-May-94	2-Apr-28	Active
YB48416	Quartz	TAG	267	26-Apr-94	2-May-94	2-Apr-28	Active
YB48417	Quartz	TAG	268	26-Apr-94	2-May-94	2-Apr-28	Active
YB48418	Quartz	TAG	269	26-Apr-94	2-May-94	2-Apr-28	Active
YB48419	Quartz	TAG	270	26-Apr-94	2-May-94	2-Apr-26	Active
YB48420	Quartz	TAG	271	26-Apr-94	2-May-94	2-Apr-26	Active
YB48421	Quartz	TAG	272	26-Apr-94	2-May-94	2-Apr-26	Active
YB48422	Quartz	TAG	273	26-Apr-94	2-May-94	2-Apr-26	Active
YB48423	Quartz	TAG	274	26-Apr-94	2-May-94	2-Apr-26	Active
YB48424	Quartz	TAG	275	26-Apr-94	2-May-94	2-Apr-26	Active
YB48425	Quartz	TAG	276	26-Apr-94	2-May-94	2-Apr-26	Active
YB48426	Quartz	TAG	277	26-Apr-94	2-May-94	2-Apr-26	Active
YB48427	Quartz	TAG	278	26-Apr-94	2-May-94	2-Apr-26	Active
YB48428	Quartz	TAG	279	26-Apr-94	2-May-94	2-Apr-26	Active
YB48429	Quartz	TAG	280	26-Apr-94	2-May-94	2-Apr-26	Active
YB48430	Quartz	TAG	281	26-Apr-94	2-May-94	2-Apr-26	Active
YB48431	Quartz	TAG	282	26-Apr-94	2-May-94	2-Apr-26	Active
YB48432	Quartz	TAG	283	26-Apr-94	2-May-94	2-Apr-26	Active
YB48433	Quartz	TAG	284	26-Apr-94	2-May-94	2-Apr-26	Active
YB48434	Quartz	TAG	285	26-Apr-94	2-May-94	2-Apr-26	Active
YB48435	Quartz	TAG	286	26-Apr-94	2-May-94	2-Apr-26	Active
YB48436	Quartz	TAG	287	26-Apr-94	2-May-94	2-Apr-26	Active
YB48437	Quartz	TAG	288	26-Apr-94	2-May-94	2-Apr-26	Active
YB48438	Quartz	TAG	289	26-Apr-94	2-May-94	2-Apr-26	Active
YB48439	Quartz	TAG	290	26-Apr-94	2-May-94	2-Apr-26	Active
YB48440	Quartz	TAG	291	26-Apr-94	2-May-94	2-Apr-26	Active
YB48441	Quartz	TAG	292	26-Apr-94	2-May-94	2-Apr-26	Active
YB48442	Quartz	TAG	293	26-Apr-94	2-May-94	2-Apr-26	Active
YB48443	Quartz	TAG	294	26-Apr-94	2-May-94	2-Apr-26	Active
YB48444	Quartz	TAG	295	26-Apr-94	2-May-94	2-Apr-26	Active
YB48445	Quartz	TAG	296	26-Apr-94	2-May-94	2-Apr-26	Active
YB48446	Quartz	TAG	297	26-Apr-94	2-May-94	2-Apr-26	Active
YB48447	Quartz	TAG	298	26-Apr-94	2-May-94	2-Apr-26	Active
YB48448	Quartz	TAG	299	26-Apr-94	2-May-94	2-Apr-26	Active
YB48449	Quartz	TAG	300	26-Apr-94	2-May-94	2-Apr-26	Active
YB48450	Quartz	TAG	301	26-Apr-94	2-May-94	2-Apr-26	Active
YB48451	Quartz	TAG	302	26-Apr-94	2-May-94	2-Apr-26	Active
YB48452	Quartz	TAG	303	26-Apr-94	2-May-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB48455	Quartz	TAG	306	26-Apr-94	2-May-94	2-Apr-26	Active
YB48456	Quartz	TAG	307	26-Apr-94	2-May-94	2-Apr-26	Active
YB48457	Quartz	TAG	308	26-Apr-94	2-May-94	2-Apr-26	Active
YB48458	Quartz	TAG	309	26-Apr-94	2-May-94	2-Apr-26	Active
YB48459	Quartz	TAG	310	26-Apr-94	2-May-94	2-Apr-26	Active
YB48460	Quartz	TAG	311	26-Apr-94	2-May-94	2-Apr-26	Active
YB48461	Quartz	TAG	312	27-Apr-94	2-May-94	2-Apr-26	Active
YB48464	Quartz	TAG	315	27-Apr-94	2-May-94	2-Apr-26	Active
YB48465	Quartz	TAG	316	27-Apr-94	2-May-94	2-Apr-26	Active
YB48466	Quartz	TAG	317	27-Apr-94	2-May-94	2-Apr-26	Active
YB48467	Quartz	TAG	318	27-Apr-94	2-May-94	2-Apr-26	Active
YB48468	Quartz	TAG	319	27-Apr-94	2-May-94	2-Apr-26	Active
YB48477	Quartz	TAG	328	26-Apr-94	2-May-94	2-Apr-26	Active
YB48478	Quartz	TAG	329	26-Apr-94	2-May-94	2-Apr-26	Active
YB48479	Quartz	TAG	330	26-Apr-94	2-May-94	2-Apr-26	Active
YB48480	Quartz	TAG	331	26-Apr-94	2-May-94	2-Apr-26	Active
YB48481	Quartz	TAG	332	26-Apr-94	2-May-94	2-Apr-26	Active
YB48482	Quartz	TAG	333	26-Apr-94	2-May-94	2-Apr-26	Active
YB48483	Quartz	TAG	334	26-Apr-94	2-May-94	2-Apr-26	Active
YB48484	Quartz	TAG	335	26-Apr-94	2-May-94	2-Apr-26	Active
YB48485	Quartz	TAG	336	26-Apr-94	2-May-94	2-Apr-26	Active
YB48486	Quartz	TAG	337	26-Apr-94	2-May-94	2-Apr-26	Active
YB48507	Quartz	TAG	358	26-Apr-94	2-May-94	2-Apr-26	Active
YB48508	Quartz	TAG	359	26-Apr-94	2-May-94	2-Apr-26	Active
YB48509	Quartz	TAG	360	26-Apr-94	2-May-94	2-Apr-26	Active
YB48510	Quartz	TAG	361	26-Apr-94	2-May-94	2-Apr-26	Active
YB48511	Quartz	TAG	362	26-Apr-94	2-May-94	2-Apr-26	Active
YB48512	Quartz	TAG	363	26-Apr-94	2-May-94	2-Apr-26	Active
YB48513	Quartz	TAG	364	26-Apr-94	2-May-94	2-Apr-26	Active
YB48514	Quartz	TAG	365	26-Apr-94	2-May-94	2-Apr-26	Active
YB48515	Quartz	TAG	366	26-Apr-94	2-May-94	2-Apr-26	Active
YB48516	Quartz	TAG	367	26-Apr-94	2-May-94	2-Apr-26	Active
YB48517	Quartz	TAG	368	27-Apr-94	2-May-94	2-Apr-26	Active
YB48518	Quartz	TAG	369	27-Apr-94	2-May-94	2-Apr-26	Active
YB48519	Quartz	TAG	370	27-Apr-94	2-May-94	2-Apr-26	Active
YB48520	Quartz	TAG	371	27-Apr-94	2-May-94	2-Apr-26	Active
YB48521	Quartz	TAG	372	27-Apr-94	2-May-94	2-Apr-26	Active
YB48522	Quartz	TAG	373	27-Apr-94	2-May-94	2-Apr-26	Active
YB48523	Quartz	TAG	374	27-Apr-94	2-May-94	2-Apr-26	Active
YB48524	Quartz	TAG	375	27-Apr-94	2-May-94	2-Apr-26	Active
YB48525	Quartz	TAG	376	27-Apr-94	2-May-94	2-Apr-26	Active
YB48526	Quartz	TAG	377	27-Apr-94	2-May-94	2-Apr-26	Active
YB48532	Quartz	TAG	383	27-Apr-94	2-May-94	2-Apr-26	Active
YB48534	Quartz	TAG	385	27-Apr-94	2-May-94	2-Apr-26	Active
YB48535	Quartz	TAG	386	27-Apr-94	2-May-94	2-Apr-26	Active
YB48536	Quartz	TAG	387	27-Apr-94	2-May-94	2-Apr-26	Active
YB48917	Quartz	EL	1	17-May-94	27-May-94	2-Apr-26	Active
YB48918	Quartz	EL	2	17-May-94	27-May-94	2-Apr-26	Active
YB48919	Quartz	EL	3	17-May-94	27-May-94	2-Apr-26	Active
YB48920	Quartz	EL	4	17-May-94	27-May-94	2-Apr-26	Active
YB48921	Quartz	EL	5	17-May-94	27-May-94	2-Apr-26	Active
YB48922	Quartz	EL	6	17-May-94	27-May-94	2-Apr-26	Active
YB48923	Quartz	EL	7	17-May-94	27-May-94	2-Apr-26	Active
YB48924	Quartz	EL	8	17-May-94	27-May-94	2-Apr-26	Active
YB48925	Quartz	LY	1	17-May-94	27-May-94	2-Apr-26	Active
YB48926	Quartz	LY	2	17-May-94	27-May-94	2-Apr-26	Active
YB48927	Quartz	LY	3	17-May-94	27-May-94	2-Apr-26	Active
YB48928	Quartz	LY	4	17-May-94	27-May-94	2-Apr-26	Active

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YB48929	Quartz	LY	5	17-May-94	27-May-94	2-Apr-26	Active
YB48930	Quartz	LY	6	17-May-94	27-May-94	2-Apr-26	Active
YB48931	Quartz	LY	7	17-May-94	27-May-94	2-Apr-26	Active
YB48932	Quartz	LY	8	17-May-94	27-May-94	2-Apr-26	Active
YB48933	Quartz	LY	9	17-May-94	27-May-94	2-Apr-26	Active
YB48934	Quartz	LY	10	17-May-94	27-May-94	2-Apr-26	Active
YB48935	Quartz	LY	11	17-May-94	27-May-94	2-Apr-26	Active
YB48936	Quartz	LY	12	17-May-94	27-May-94	2-Apr-26	Active
YB48937	Quartz	LY	13	17-May-94	27-May-94	2-Apr-26	Active
YB48938	Quartz	LY	14	17-May-94	27-May-94	2-Apr-26	Active
YB48939	Quartz	LY	15	17-May-94	27-May-94	2-Apr-26	Active
YB48940	Quartz	TAG	398	16-May-94	27-May-94	2-Apr-26	Active
YB48941	Quartz	TAG	399	16-May-94	27-May-94	2-Apr-26	Active
YB48942	Quartz	TAG	400	16-May-94	27-May-94	2-Apr-26	Active
YB48943	Quartz	TAG	401	16-May-94	27-May-94	2-Apr-26	Active
YB48944	Quartz	TAG	402	16-May-94	27-May-94	2-Apr-26	Active
YB48945	Quartz	TAG	403	16-May-94	27-May-94	2-Apr-26	Active
YB48946	Quartz	TAG	404	16-May-94	27-May-94	2-Apr-26	Active
YB48947	Quartz	TAG	405	16-May-94	27-May-94	2-Apr-26	Active
YB48948	Quartz	TAG	406	16-May-94	27-May-94	2-Apr-26	Active
YB48949	Quartz	TAG	407	16-May-94	27-May-94	2-Apr-26	Active
YB48950	Quartz	TAG	408	16-May-94	27-May-94	2-Apr-26	Active
YB48951	Quartz	TAG	409	16-May-94	27-May-94	2-Apr-26	Active
YB48952	Quartz	TAG	410	16-May-94	27-May-94	2-Apr-26	Active
YB48953	Quartz	TAG	411	16-May-94	27-May-94	2-Apr-26	Active
YB48954	Quartz	TAG	412	16-May-94	27-May-94	2-Apr-26	Active
YB48955	Quartz	TAG	413	16-May-94	27-May-94	2-Apr-26	Active
YB48956	Quartz	TAG	414	16-May-94	27-May-94	2-Apr-26	Active
YB48957	Quartz	TAG	415	16-May-94	27-May-94	2-Apr-26	Active
YB48958	Quartz	TAG	416	16-May-94	27-May-94	2-Apr-26	Active
YB48959	Quartz	TAG	417	16-May-94	27-May-94	2-Apr-26	Active
YB48960	Quartz	TAG	418	16-May-94	27-May-94	2-Apr-26	Active
YB48961	Quartz	TAG	419	16-May-94	27-May-94	2-Apr-26	Active
YB48962	Quartz	TAG	420	16-May-94	27-May-94	2-Apr-26	Active
YB48963	Quartz	TAG	421	16-May-94	27-May-94	2-Apr-26	Active
YB48964	Quartz	TAG	422	16-May-94	27-May-94	2-Apr-26	Active
YB48965	Quartz	TAG	423	16-May-94	27-May-94	2-Apr-26	Active
YB48966	Quartz	TAG	424	16-May-94	27-May-94	2-Apr-26	Active
YB48967	Quartz	TAG	425	16-May-94	27-May-94	2-Apr-26	Active
YB48968	Quartz	TAG	426	16-May-94	27-May-94	2-Apr-26	Active
YB48969	Quartz	TAG	427	16-May-94	27-May-94	2-Apr-26	Active
YB48970	Quartz	TAG	428	16-May-94	27-May-94	2-Apr-26	Active
YB48971	Quartz	TAG	429	16-May-94	27-May-94	2-Apr-26	Active
YB48972	Quartz	TAG	430	16-May-94	27-May-94	2-Apr-26	Active
YB48973	Quartz	TAG	431	16-May-94	27-May-94	2-Apr-26	Active
YB48974	Quartz	TAG	432	16-May-94	27-May-94	2-Apr-26	Active
YB48975	Quartz	TAG	433	16-May-94	27-May-94	2-Apr-26	Active
YB48976	Quartz	TAG	434	16-May-94	27-May-94	2-Apr-26	Active
YB48977	Quartz	TAG	435	16-May-94	27-May-94	2-Apr-26	Active
YB48978	Quartz	TAG	436	16-May-94	27-May-94	2-Apr-26	Active
YB48979	Quartz	TAG	437	16-May-94	27-May-94	2-Apr-26	Active
YB48980	Quartz	TAG	438	16-May-94	27-May-94	2-Apr-26	Active
YB48981	Quartz	TAG	439	16-May-94	27-May-94	2-Apr-26	Active
YB48982	Quartz	TAG	440	16-May-94	27-May-94	2-Apr-26	Active
YB48983	Quartz	TAG	441	16-May-94	27-May-94	2-Apr-26	Active
YB48984	Quartz	TAG	442	16-May-94	27-May-94	2-Apr-26	Active
YB48985	Quartz	TAG	443	16-May-94	27-May-94	2-Apr-26	Active
YB48986	Quartz	TAG	444	16-May-94	27-May-94	2-Apr-26	Active

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YB48987	Quartz	TAG	445	16-May-94	27-May-94	2-Apr-26	Active
YB48988	Quartz	TAG	446	16-May-94	27-May-94	2-Apr-26	Active
YB48989	Quartz	TAG	447	16-May-94	27-May-94	2-Apr-26	Active
YB48990	Quartz	TAG	448	16-May-94	27-May-94	2-Apr-26	Active
YB48991	Quartz	TAG	449	16-May-94	27-May-94	2-Apr-26	Active
YB48992	Quartz	TAG	450	16-May-94	27-May-94	2-Apr-26	Active
YB48993	Quartz	TAG	451	16-May-94	27-May-94	2-Apr-26	Active
YB48994	Quartz	TAG	452	16-May-94	27-May-94	2-Apr-26	Active
YB48995	Quartz	TAG	453	16-May-94	27-May-94	2-Apr-26	Active
YB48996	Quartz	TAG	454	16-May-94	27-May-94	2-Apr-26	Active
YB48997	Quartz	TAG	455	16-May-94	27-May-94	2-Apr-26	Active
YB48998	Quartz	TAG	456	16-May-94	27-May-94	2-Apr-26	Active
YB48999	Quartz	TAG	457	16-May-94	27-May-94	2-Apr-26	Active
YB49000	Quartz	TAG	458	16-May-94	27-May-94	2-Apr-26	Active
YB49001	Quartz	TAG	459	16-May-94	27-May-94	2-Apr-26	Active
YB49002	Quartz	TAG	460	16-May-94	27-May-94	2-Apr-26	Active
YB49003	Quartz	TAG	461	16-May-94	27-May-94	2-Apr-26	Active
YB49565	Quartz	TAG	489	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49566	Quartz	TAG	490	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49567	Quartz	TAG	491	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49568	Quartz	TAG	492	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49569	Quartz	TAG	493	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49570	Quartz	TAG	494	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49571	Quartz	TAG	495	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49572	Quartz	TAG	496	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49573	Quartz	TAG	497	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49574	Quartz	TAG	498	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49575	Quartz	TAG	499	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49576	Quartz	TAG	500	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49577	Quartz	TAG	501	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49578	Quartz	TAG	502	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49579	Quartz	TAG	503	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49580	Quartz	TAG	504	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49581	Quartz	TAG	505	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49582	Quartz	TAG	506	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49583	Quartz	TAG	507	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49584	Quartz	TAG	508	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49585	Quartz	TAG	509	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49586	Quartz	TAG	510	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49587	Quartz	TAG	511	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49588	Quartz	TAG	512	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49589	Quartz	TAG	513	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49590	Quartz	TAG	514	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49591	Quartz	TAG	515	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49592	Quartz	TAG	516	1-Jun-94	22-Jun-94	2-Apr-26	Active
YB49654	Quartz	LIMY	1	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49655	Quartz	LIMY	2	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49656	Quartz	LIMY	3	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49657	Quartz	LIMY	4	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49658	Quartz	LIMY	5	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49659	Quartz	LIMY	6	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49660	Quartz	LIMY	7	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49661	Quartz	LIMY	8	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB49662	Quartz	LIMY	9	10-Jun-94	22-Jun-94	2-Apr-26	Active
YB50436	Quartz	TAG	559	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50437	Quartz	TAG	560	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50438	Quartz	TAG	561	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50439	Quartz	TAG	562	23-Jun-94	7-Jul-94	2-Apr-26	Active

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YB50510	Quartz	TAG	633	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50511	Quartz	TAG	634	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50512	Quartz	TAG	635	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50513	Quartz	TAG	636	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50514	Quartz	TAG	637	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50515	Quartz	TAG	638	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50516	Quartz	TAG	639	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50517	Quartz	TAG	640	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50518	Quartz	TAG	641	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50519	Quartz	TAG	642	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50521	Quartz	TAG	644	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50589	Quartz	TAG	712	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50590	Quartz	TAG	713	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50591	Quartz	TAG	714	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50592	Quartz	TAG	715	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50593	Quartz	TAG	716	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50594	Quartz	TAG	717	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50595	Quartz	TAG	718	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50596	Quartz	TAG	719	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50600	Quartz	TAG	723	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50602	Quartz	TAG	725	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50604	Quartz	TAG	727	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50606	Quartz	TAG	729	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50607	Quartz	TAG	730	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50608	Quartz	TAG	731	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50609	Quartz	TAG	732	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50611	Quartz	TAG	734	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50613	Quartz	TAG	736	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50615	Quartz	TAG	738	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50617	Quartz	TAG	740	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50623	Quartz	TAG	746	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50625	Quartz	TAG	748	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50627	Quartz	TAG	750	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50629	Quartz	TAG	752	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50631	Quartz	TAG	754	25-Jun-94	7-Jul-94	2-Apr-26	Active
YB50633	Quartz	TAG	756	25-Jun-94	7-Jul-94	2-Apr-26	Active
YB50635	Quartz	TAG	758	25-Jun-94	7-Jul-94	2-Apr-26	Active
YB50637	Quartz	TAG	760	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50639	Quartz	TAG	762	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50641	Quartz	TAG	764	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50643	Quartz	TAG	766	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50664	Quartz	TAG	787	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50665	Quartz	TAG	788	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50666	Quartz	TAG	789	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50667	Quartz	TAG	790	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50670	Quartz	TAG	793	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50671	Quartz	TAG	794	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50692	Quartz	TAG	815	24-Jun-94	7-Jul-94	2-Apr-26	Active
YB50716	Quartz	TAG	839	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50718	Quartz	TAG	841	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50720	Quartz	TAG	843	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50722	Quartz	TAG	845	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50723	Quartz	TAG	846	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50725	Quartz	TAG	848	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50734	Quartz	TAG	857	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50735	Quartz	TAG	858	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50736	Quartz	TAG	859	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50737	Quartz	TAG	860	23-Jun-94	7-Jul-94	2-Apr-26	Active

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YB50740	Quartz	TAG	863	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50741	Quartz	TAG	864	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50798	Quartz	TAG	921	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50800	Quartz	TAG	923	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50801	Quartz	TAG	924	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50802	Quartz	TAG	925	26-Jun-94	7-Jul-94	2-Apr-26	Active
YB50805	Quartz	TAG	928	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50806	Quartz	TAG	929	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50807	Quartz	TAG	930	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB50808	Quartz	TAG	931	23-Jun-94	7-Jul-94	2-Apr-26	Active
YB51214	Quartz	TAG	1057	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51215	Quartz	TAG	1058	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51216	Quartz	TAG	1059	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51217	Quartz	TAG	1060	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51218	Quartz	TAG	1061	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51219	Quartz	TAG	1062	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51220	Quartz	TAG	1063	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51221	Quartz	TAG	1064	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51222	Quartz	TAG	1065	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51223	Quartz	TAG	1066	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51224	Quartz	TAG	1067	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51225	Quartz	TAG	1068	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51226	Quartz	TAG	1069	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51227	Quartz	TAG	1070	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51228	Quartz	TAG	1071	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51229	Quartz	TAG	1072	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51230	Quartz	TAG	1073	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51231	Quartz	TAG	1074	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51232	Quartz	TAG	1075	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51233	Quartz	TAG	1076	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51234	Quartz	TAG	1077	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51235	Quartz	TAG	1078	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51236	Quartz	TAG	1079	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51237	Quartz	TAG	1080	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51238	Quartz	TAG	1081	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51239	Quartz	TAG	1082	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51240	Quartz	TAG	1083	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51241	Quartz	TAG	1084	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51242	Quartz	TAG	1085	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51243	Quartz	TAG	1086	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51244	Quartz	TAG	1087	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51245	Quartz	TAG	1088	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51246	Quartz	TAG	1089	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51247	Quartz	TAG	1090	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51248	Quartz	TAG	1091	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51249	Quartz	TAG	1092	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51250	Quartz	TAG	1093	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51251	Quartz	TAG	1094	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51252	Quartz	TAG	1095	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51253	Quartz	TAG	1096	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51254	Quartz	TAG	1097	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51255	Quartz	TAG	1098	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51256	Quartz	TAG	1099	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51257	Quartz	TAG	1100	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51258	Quartz	TAG	1101	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51259	Quartz	TAG	1102	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51260	Quartz	TAG	1103	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51261	Quartz	TAG	1104	27-Jun-94	19-Jul-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB51262	Quartz	TAG	1105	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51263	Quartz	TAG	1106	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51264	Quartz	TAG	1107	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51265	Quartz	TAG	1108	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51266	Quartz	TAG	1109	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51267	Quartz	TAG	1110	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51268	Quartz	TAG	1111	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51269	Quartz	TAG	1112	27-Jun-94	19-Jul-94	2-Apr-28	Active
YB51270	Quartz	TAG	1113	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB51271	Quartz	TAG	1114	27-Jun-94	19-Jul-94	2-Apr-26	Active
YB55325	Quartz	TAG	1449	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55326	Quartz	TAG	1450	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55327	Quartz	TAG	1451	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55328	Quartz	TAG	1452	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55329	Quartz	TAG	1453	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55330	Quartz	TAG	1454	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55331	Quartz	TAG	1455	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55332	Quartz	TAG	1456	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55333	Quartz	TAG	1457	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55334	Quartz	TAG	1458	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55335	Quartz	TAG	1459	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55336	Quartz	TAG	1460	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55337	Quartz	TAG	1461	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55338	Quartz	TAG	1462	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55339	Quartz	TAG	1463	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55340	Quartz	TAG	1464	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55341	Quartz	TAG	1465	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55342	Quartz	TAG	1466	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55343	Quartz	TAG	1467	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55344	Quartz	TAG	1468	18-Aug-94	31-Aug-94	2-Apr-26	Active
YB55346	Quartz	TAG	1505	23-Aug-94	31-Aug-94	2-Apr-26	Active
YB55348	Quartz	TAG	1507	23-Aug-94	31-Aug-94	2-Apr-26	Active
YB55350	Quartz	TAG	1509	23-Aug-94	31-Aug-94	2-Apr-26	Active
YB55377	Quartz	TAG	1538	23-Aug-94	31-Aug-94	2-Apr-26	Active
YB55899	Quartz	TAG	1469	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55900	Quartz	TAG	1470	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55901	Quartz	TAG	1471	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55902	Quartz	TAG	1472	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55903	Quartz	TAG	1473	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55904	Quartz	TAG	1474	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55905	Quartz	TAG	1475	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55906	Quartz	TAG	1476	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55907	Quartz	TAG	1477	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55908	Quartz	TAG	1478	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55909	Quartz	TAG	1479	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55910	Quartz	TAG	1480	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55911	Quartz	TAG	1481	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55912	Quartz	TAG	1482	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55913	Quartz	TAG	1483	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55914	Quartz	TAG	1484	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55915	Quartz	TAG	1485	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55916	Quartz	TAG	1486	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55917	Quartz	TAG	1487	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55918	Quartz	TAG	1488	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55919	Quartz	TAG	1489	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55920	Quartz	TAG	1490	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55921	Quartz	TAG	1491	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55922	Quartz	TAG	1492	18-Aug-94	6-Sep-94	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB55923	Quartz	TAG	1493	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55924	Quartz	TAG	1494	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55925	Quartz	TAG	1495	18-Aug-94	6-Sep-94	2-Apr-26	Active
YB55926	Quartz	TAG	1496	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55927	Quartz	TAG	1497	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55928	Quartz	TAG	1498	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55929	Quartz	TAG	1499	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55930	Quartz	TAG	1500	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55931	Quartz	TAG	1501	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55934	Quartz	TAG	1536	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55935	Quartz	TAG	1537	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55936	Quartz	TAG	1539	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55937	Quartz	TAG	1540	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB55938	Quartz	TAG	1541	22-Aug-94	6-Sep-94	2-Apr-26	Active
YB56713	Quartz	TAG	1544	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56714	Quartz	TAG	1545	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56715	Quartz	TAG	1546	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56716	Quartz	TAG	1547	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56717	Quartz	TAG	1548	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56718	Quartz	TAG	1549	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56719	Quartz	TAG	1550	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56720	Quartz	TAG	1551	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56721	Quartz	TAG	1552	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56722	Quartz	TAG	1553	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56729	Quartz	TAG	1560	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56730	Quartz	TAG	1561	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56731	Quartz	TAG	1562	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56732	Quartz	TAG	1563	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56733	Quartz	TAG	1564	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56734	Quartz	TAG	1565	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56735	Quartz	TAG	1566	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56736	Quartz	TAG	1567	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56737	Quartz	TAG	1568	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB56738	Quartz	TAG	1569	16-Nov-94	30-Nov-94	2-Apr-26	Active
YB62677	Quartz	ON	21	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62678	Quartz	ON	22	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62679	Quartz	ON	23	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62680	Quartz	ON	24	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62681	Quartz	ON	25	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62682	Quartz	ON	26	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62683	Quartz	ON	27	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62684	Quartz	ON	28	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62685	Quartz	ON	29	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62686	Quartz	ON	30	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62687	Quartz	ON	31	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62688	Quartz	ON	32	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62689	Quartz	ON	33	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62690	Quartz	ON	34	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62691	Quartz	ON	35	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62692	Quartz	ON	36	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62693	Quartz	ON	37	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62694	Quartz	ON	38	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62695	Quartz	ON	39	17-Sep-95	2-Oct-95	2-Apr-26	Active
YB62696	Quartz	ON	40	17-Sep-95	2-Oct-95	2-Apr-26	Active
YB62697	Quartz	ON	41	17-Sep-95	2-Oct-95	2-Apr-26	Active
YB62698	Quartz	ON	42	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62699	Quartz	ON	43	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62700	Quartz	ON	44	14-Sep-95	2-Oct-95	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB62701	Quartz	ON	45	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62702	Quartz	ON	46	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62703	Quartz	ON	47	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62704	Quartz	ON	48	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62705	Quartz	ON	49	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62706	Quartz	ON	50	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62707	Quartz	ON	51	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62708	Quartz	ON	52	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62709	Quartz	ON	53	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62710	Quartz	ON	54	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62711	Quartz	ON	55	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62712	Quartz	ON	56	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62713	Quartz	ON	57	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62714	Quartz	ON	58	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62715	Quartz	ON	59	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62716	Quartz	ON	60	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62717	Quartz	ON	61	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62718	Quartz	ON	62	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62719	Quartz	ON	63	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62720	Quartz	ON	64	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62721	Quartz	ON	65	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62722	Quartz	ON	66	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62723	Quartz	ON	67	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62724	Quartz	ON	68	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62725	Quartz	ON	69	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62726	Quartz	ON	70	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62727	Quartz	ON	71	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62728	Quartz	ON	72	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62729	Quartz	ON	73	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62730	Quartz	ON	74	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62731	Quartz	ON	75	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62732	Quartz	ON	76	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62733	Quartz	ON	77	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62734	Quartz	ON	78	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62735	Quartz	ON	79	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62736	Quartz	ON	80	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62737	Quartz	ON	81	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62738	Quartz	ON	82	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62739	Quartz	ON	83	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62740	Quartz	ON	84	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62741	Quartz	ON	85	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62742	Quartz	ON	86	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62743	Quartz	ON	87	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62744	Quartz	ON	88	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62745	Quartz	ON	89	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62746	Quartz	ON	90	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62747	Quartz	ON	91	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62748	Quartz	ON	92	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62749	Quartz	ON	93	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62750	Quartz	ON	94	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62751	Quartz	ON	95	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62752	Quartz	ON	96	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62753	Quartz	ON	97	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62754	Quartz	ON	98	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62755	Quartz	ON	99	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62756	Quartz	ON	100	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62757	Quartz	ON	101	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62760	Quartz	ON	104	14-Sep-95	2-Oct-95	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB62761	Quartz	ON	105	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62762	Quartz	ON	106	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62763	Quartz	ON	107	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62764	Quartz	ON	108	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62765	Quartz	ON	109	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62766	Quartz	ON	110	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62767	Quartz	ON	111	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62768	Quartz	ON	112	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62769	Quartz	ON	113	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62772	Quartz	ON	116	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62773	Quartz	ON	117	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62774	Quartz	ON	118	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62775	Quartz	ON	119	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62776	Quartz	ON	120	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62777	Quartz	ON	121	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62778	Quartz	ON	122	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62779	Quartz	ON	123	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62780	Quartz	ON	124	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62781	Quartz	ON	125	14-Sep-95	2-Oct-95	2-Apr-26	Active
YB62816	Quartz	ON	162	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62817	Quartz	ON	163	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62818	Quartz	ON	164	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62819	Quartz	ON	165	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62820	Quartz	ON	166	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62821	Quartz	ON	167	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62822	Quartz	ON	168	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62823	Quartz	ON	169	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62824	Quartz	ON	170	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62825	Quartz	ON	171	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62826	Quartz	ON	172	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62827	Quartz	ON	173	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62828	Quartz	ON	174	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62830	Quartz	ON	176	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62832	Quartz	ON	178	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62834	Quartz	ON	180	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62851	Quartz	ON	197	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62852	Quartz	ON	198	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62853	Quartz	ON	199	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62854	Quartz	ON	200	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62855	Quartz	ON	201	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62856	Quartz	ON	202	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62857	Quartz	ON	203	16-Sep-95	2-Oct-95	2-Apr-26	Active
YB62859	Quartz	ON	205	17-Sep-95	2-Oct-95	2-Apr-26	Active
YB85276	Quartz	KZK	1	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85277	Quartz	KZK	2	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85278	Quartz	KZK	3	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85279	Quartz	KZK	4	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85280	Quartz	KZK	5	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85281	Quartz	KZK	6	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85282	Quartz	KZK	7	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85283	Quartz	KZK	8	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85284	Quartz	KZK	9	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85285	Quartz	KZK	10	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85286	Quartz	KZK	11	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85287	Quartz	KZK	12	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85288	Quartz	KZK	13	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85289	Quartz	KZK	14	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85290	Quartz	KZK	15	1-Jul-96	12-Jul-96	2-Apr-26	Active

Grant Number	Tenure Type	Claim Name	Claim Number	Staking Date	Recording Date	Expiry Date	Claim Status
YB85291	Quartz	KZK	16	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85292	Quartz	KZK	17	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85293	Quartz	KZK	18	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85294	Quartz	KZK	19	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85295	Quartz	KZK	20	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85296	Quartz	KZK	21	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85297	Quartz	KZK	22	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85298	Quartz	KZK	23	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85299	Quartz	KZK	24	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85300	Quartz	KZK	25	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85301	Quartz	KZK	26	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85302	Quartz	KZK	27	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85303	Quartz	KZK	28	1-Jul-96	12-Jul-96	2-Apr-26	Active
YB85304	Quartz	KZK	29	1-Jul-96	12-Jul-96	2-Apr-26	Active

Appendix D: Geological Logs for Re-Logged Drill Core

This appendix contains all of the drill logs generated during the 2016 historical core re-logging program. Drill logs are presented in alphanumeric order, with the first page of each log starting on the page number indicated in Table D-1 below.

Table D-1: Table of contents for re-logged historical drill holes in this appendix

Hole ID	Length (m)	Target	Core Storage Location	Page Number	Number of Pages
K94-002	72.00	ABM	KZK Camp	1	1
K94-017	108.51	ABM	KZK Camp	2	5
K95-162	75.30	Exploration	KZK Camp	7	5
K95-163	45.10	Exploration	KZK Camp	12	3
K95-164	90.50	Exploration	KZK Camp	15	4
K95-165	86.70	Exploration	KZK Camp	19	3
K95-166	68.60	FCZ	KZK Camp	22	2
K95-167	108.20	GP4F	KZK Camp	24	4
K95-169	157.00	ABM	KZK Camp	28	4
K95-170	442.00	Exploration	KZK Camp	32	14
K96-171	99.20	Exploration	KZK Camp	46	4
K97-176	364.80	ABM	KZK Camp	50	12
K97-179	502.30	FCZ	KZK Camp	62	10
K97-180	206.80	Exploration	KZK Camp	72	18
K98-189	124.70	GP4F	KZK Camp	90	8
K98-190	109.10	GP4F	KZK Camp	98	6
K98-191	112.50	GP4F	KZK Camp	104	6
K98-192	93.60	GP4F	KZK Camp	110	6
K98-193	199.90	GP4F	KZK Camp	116	9
K98-194	95.70	Exploration	KZK Camp	125	5
K98-195	200.00	Exploration	KZK Camp	130	5
K98-197	172.80	GP4F	KZK Camp	135	11
K98-198	249.00	GP4F	KZK Camp	146	11
K04-199	246.00	R15	KZK Camp	157	9
Total: 24 Holes	4030.31 m				

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K94-002

Prospect:	ABM	Hole Type:	DD	Survey Type:		Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/17/2016
UTM Easting	415057.981	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/17/2016
UTM Northing:	6815357.44	Casing Pulled?:		Dip:	-60	Drill Company:	
UTM Elev. (m):	1388.072	Casing Depth (m):		Length (m):	72	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	180		180	SS				☑	
72	-60	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 18.70 OVBN Overburden

18.70 19.80 RHYcw Curdy textured-flow banded (flows, subvolcanics)

18.7 - 19.8: banded strained RHYcw

<<Min: 18.7 - 19.8 2% Min: Pyrite>>

<<Alt: 18.7 - 19.8 Moderate Muscovite>>

<<Alt: 18.7 - 19.8 Weak Ankerite>>

19.80 50.20 No Core No Core

19.8 - 50.2: missing core

50.20 72.00 MAFi Mafic Intrusions (primarily footwall mafic intrusion) MCG

<<Alt: 50.2 - 54 Weak Chlorite>>

End of Hole @ 72

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K94-017

Prospect:	ABM	Hole Type:	DD	Survey Type:		Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/17/2016
UTM Easting	414651.3	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/17/2016
UTM Northing:	6816474	Casing Pulled?:		Dip:	-55	Drill Company:	
UTM Elev. (m):	1459.66	Casing Depth (m):		Length (m):	108.51	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-45	180		180	SS				☑	
23	-55	180		180	SS				☑	
54	-60	181		181	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 16.80 OVBN Overburden

16.80 22.80 MAFt Mafic Volcaniclastics FMG

16.8 - 22.8: pale olive green gradational with MDS decimeter bands within. Stg calcareous

<<Alt: 16.8 - 85.9 Strong Calcite>>

<<Alt: 16.8 - 85.9 Weak-Moderate Ankerite>>

<<Vein: 20 - 20.1 100% Quartz>> bull white QZ

22.80 23.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

22.8 - 23.6: gradational lower contact. Stg calcareous

23.60 32.00 MAFt Mafic Volcaniclastics FMG

23.6 - 32: as above

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

32.00 37.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

32 - 37: minor tuffaceous component, calc.

<<Min: 32 - 47 0.5% Min: Pyrite>>

<<Min: 32 - 47 0.5% Min: Pyrrhotite>>

37.00 37.70 MAFt Mafic Volcaniclastics FMG

37 - 37.7: olive green, calc

37.70 44.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

37.7 - 44.2: intercalated with MAFt up to 10cm, calc.

44.20 47.50 MAFt Mafic Volcaniclastics FMG

44.2 - 47.5: calc.

47.50 47.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

47.5 - 47.8: calc.

47.80 49.10 MAFt Mafic Volcaniclastics FMG

47.8 - 49.1: gradational lower contact over 20cm, calc.

49.10 50.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

49.1 - 50.9: intercalated with MAFt

50.90 52.40 MAFt Mafic Volcaniclastics FMG

50.9 - 52.4: minor intercalated MDS

52.40 54.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

52.4 - 54.5: tuffaceous ash component

<<Min: 54 - 59 0.5% Min: Pyrite>>

<<Min: 54 - 59 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

54.50 55.10 MAFta Coarse grained to ash tuff FMG

54.5 - 55.1: gradational upper contact

55.10 56.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

55.1 - 56.4: tuffaceous ash component, calc

56.40 56.70 MAFt Mafic Volcaniclastics FMG

56.70 60.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

56.7 - 60: minor intercalated with MAFt, calc.

60.00 64.20 MAFta Coarse grained to ash tuff FMG

<<Struc: 63.3 - 63.4 Trace Fault>>

64.20 68.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

64.2 - 68.8: significant intercalated with MAFt decimetre scale.

68.80 69.50 MAFta Coarse grained to ash tuff FMG

68.8 - 69.5: calc. banding

69.50 70.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

69.5 - 70.2: minor tuffaceous component

70.20 75.50 MAFt Mafic Volcaniclastics FMG

70.2 - 75.5: 10cm gradational contacts plus intercalated with MDS for 40cm around 75.0m

75.50 82.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

75.5 - 82.8: patchy tuffaceous component.

<<Min: 76 - 82.8 0.5% Min: Pyrite>>

<<Min: 76 - 82.8 0.5% Min: Pyrrhotite>>

<<Vein: 77.8 - 78.1 100% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

82.80 83.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion) FMG

82.8 - 83.4: pale green brown, fine grained homogeneous wit h5% po dissem, stg calcareous matrix

<<Min: 82.8 - 83.4 1% Min: Pyrite>>

<<Min: 82.8 - 83.4 3% Min: Pyrrhotite>>

83.40 85.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

83.4 - 85.3: calc.

<<Min: 83.4 - 108.51 0.5% Min: Pyrrhotite>>

85.30 85.90 MAFi Mafic Intrusions (primarily footwall mafic intrusion) FMG

85.3 - 85.9: homogeneous fine grained

85.90 90.90 RHYvl Lapilli tuff CG

85.9 - 90.9: minor sections with lapilli, trace blppo; calling this KZK unit as only seen these felsic rocks in KZK, but clearly Wind Lake on either side.

<<Alt: 85.9 - 90.9 Trace Muscovite>>

<<Vein: 86.3 - 86.6 40% Quartz 25 deg. >> 5 cm wide discordant qz tourmaline vein

90.90 94.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

90.9 - 94.5: minor tuffaceous component

<<Min: 91 - 108.51 1% Min: Pyrite>>

<<Alt: 90.9 - 108.51 Moderate-Strong Calcite>>

<<Alt: 90.9 - 108.51 Moderate Ankerite>>

94.50 96.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion) MG

94.5 - 96.2: homogeneous, chill margin, coarser centre, sil adjacent MDS

96.20 97.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

96.2 - 97.5: minor tuffaceous component, 10cm margin silicified against dyke.

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
97.50	**98.40**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**CG**									
97.5 - 98.4: as above													
98.40	**101.70**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**FMG**									
98.4 - 101.7: significant tuffaceous component throughout													
101.70	**104.10**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**MG**									
101.7 - 104.1: as above.													
104.10	**108.51**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**FMG**									
104.1 - 108.51: significant tuffaceous component.													

End of Hole @ 108.51

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-162

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/17/2016
UTM Easting	414899.996	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/18/2016
UTM Northing:	6818924.947	Casing Pulled?:		Dip:	-90	Drill Company:	
UTM Elev. (m):	1340.427	Casing Depth (m):		Length (m):	75.3	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	180		180	SS				☑	
75	-90	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**23.70**	**OVBN**	**Overburden**										
23.70	**31.64**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**black**	**VFG**								

23.7 - 31.64: Black to grey, finely laminated (bedding and bed-parallel foliation?), graphitic mudstone; oxidized and pitted

<<Struc: 29.2 - 29.21 Moderate-Strong Foliation>> Well-developed foliation between graphite and calcite rich bands

<<Struc: 29.8 - 39.25 Weak-Moderate Fault>> Pervasive fracturing with short intervals of in situ fault gouge and complete disintegration

31.64	**33.00**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**yl**	**FG**								

31.64 - 33: Light grey to yellow orange, strongly oxidized (and clay altered?), mafic intrusion?; similar to oxidized units logged as MAFi in K95-163; lithological ID based on softness and Cominco description (which ranges from mafic to intermediate)

<<Min: 31.64 - 33 5% Min: Pyrite>> Lenticular blebs of PY that range from pristine to strongly oxidized

<<Struc: 31.64 - 31.65 Contact>> Contact between MAFi and MDS

<<Struc: 32.6 - 32.61 Moderate-Strong Foliation>> Defined by aligned lenticular pyrite aggregates in MAFi

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

33.00 35.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

33 - 35.9: Black to grey, finely laminated (bedding and bed-parallel foliation?), strongly fractured, graphitic mudstone; oxidized and pitted

35.90 36.87 MAFi Mafic Intrusions (primarily footwall mafic intrusion) yl FG

35.9 - 36.87: Yellow orange, strongly oxidized, foliated mafic intrusion (?); same as MAFi previous interval; ID based on similar rock types in K95-163, softness and Cominco logging

36.87 37.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

36.87 - 37.8: Black to grey, finely laminated (bedding and bed-parallel foliation?) graphitic mudstone; oxidized and pitted; shows gradational contact with mafic volcaniclastic

37.80 40.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone grey-brown FG

37.8 - 40.3: Well-laminated (bedding with parallel foliation?) very fine-grained graphitic mudstone with slight coarser-grained limonite-altered (mafic) material; limonite oxidation similar to that of more massive mafic units; entire unit appears sedimentary but with more mafic input than overlying graphite-rich interval

<<Alt: 37.8 - 40.3 Moderate-Strong Chlorite>> Pervasive alteration of mafic elements to CL

<<Struc: 38 - 38.01 Moderate-Strong Bedding>> Within MDS; foliation appears to be parallel to bedding

40.30 40.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

40.3 - 40.8: Black to grey, finely laminated (bedding and bed-parallel foliation?) graphitic mudstone with minor MAFt; oxidized and pitted; shows gradational contact with mafic volcaniclastic on either side

40.80 54.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone grey-brown FG

40.8 - 54.8: Well-laminated (bedding with parallel foliation?) very fine-grained graphitic mudstone with slight coarser-grained limonite-altered (mafic) material; limonite oxidation similar to that of more massive mafic units; entire unit appears sedimentary but with more mafic input than overlying graphite-rich interval

<<Alt: 40.8 - 65.15 Moderate-Strong Chlorite>> Pervasive alteration of mafic elements to CL

<<Struc: 45.8 - 46.3 Weak Fault>> Strong fracturing with short interval of gravel-sized particles

<<Struc: 50.8 - 50.81 Weak-Moderate Bedding>> Bedding defined by alternations of mafic-rich and graphite-rich material; foliation is parallel to bedding

<<Struc: 54 - 54.5 Strong Fault>> Only gravel to clay sized particles; fault gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

54.80 57.60 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey FMG

54.8 - 57.6: Homogeneous and massive MAFi, both in terms of texture and grain size; mineralogy dominantly chlorite-plagioclase; patchy limonite staining

<<Struc: 54.8 - 54.81 Contact>> Bedding parallel contact between MAFi and MDS

57.60 62.15 MDS Carbonaceous Mudstone & Tuffaceous Mudstone grey-brown FG

57.6 - 62.15: Grey-brown to yellow, showing significantly more limonite staining than overlying intervals; well-laminated (bedding with parallel foliation?); very fine-grained graphitic mudstone with slight coarser-grained limonite-altered (mafic) material.

<<Struc: 59.6 - 59.61 Weak-Moderate Bedding>> Bedding defined by alternations of mafic-rich and graphite-rich material; foliation is parallel to bedding

62.15 65.15 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey FG

62.15 - 65.15: Fine medium to fine-grained, relatively massive but with xenoliths (or interlayered?) MDS near the lower contact; abundant leucoxene, weak limonite staining and localized overgrowth by biotite porphyroblasts

<<Alt: 62.55 - 63.6 Moderate Biotite>> Biotite porphyroblasts in MAFi

65.15 65.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

65.15 - 65.8: Black to grey, finely laminated (bedding and bed-parallel foliation?) graphitic mudstone with minor MAFt; pitted; shows sharp contacts with adjacent MAFi

<<Struc: 65.15 - 65.16 Contact>> Sharp contact between MAFi and MDS

65.80 66.65 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey FG

65.8 - 66.65: Massive to strongly laminated near basal contact; ranges from MAFi seen in above interval to MDS-like; most of this interval is gone (either by GSC sampling and/or faulting

<<Alt: 65.8 - 66.65 Moderate-Strong Chlorite>> Pervasive alteration of MAFi to CL

<<Struc: 65.8 - 65.81 Contact>> Sharp contact between MDS and MAFi

66.65 69.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

66.65 - 69.88: Typical graphitic mudstone with relatively high proportion of calcite-rich layers

<<Struc: 68 - 68.01 Strong Foliation>> Defined by calcite-rich and graphite-rich bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

69.88 70.53 MAFi Mafic Intrusions (primarily footwall mafic intrusion) yl FMG

69.88 - 70.53: Massive MAFi with pervasive limonite alteration; pitted

<<Min: 69.88 - 70.53 3% Min: Pyrite>> Strongly oxidized lenticular blebs

<<Alt: 69.88 - 70.53 Moderate-Strong Chlorite>> Pervasive alteration of MAFi to CL

<<Alt: 69.88 - 70.53 Weak-Moderate Biotite>> Biotite porphyroblasts in MAFi

<<Struc: 69.88 - 69.89 Contact>> Sharp contact between MDS and MAFi

70.53 71.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

70.53 - 71.2: Typical graphitic mudstone with relatively high proportion of calcite-rich layers

<<Struc: 70.53 - 70.54 Contact>> Sharp contact between MDS and MAFi

<<Struc: 71.15 - 71.16 Strong Foliation>> Defined by calcite-rich and graphite-rich bands

71.20 71.52 MAFi Mafic Intrusions (primarily footwall mafic intrusion) yl FMG

71.2 - 71.52: Strongly oxidized MAFi

<<Alt: 71.2 - 71.52 Moderate-Strong Chlorite>> Pervasive alteration of MAFi to CL

71.52 71.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

71.52 - 71.8: Typical graphitic mudstone with relatively high proportion of calcite-rich layers

<<Struc: 71.52 - 71.53 Contact>> Sharp contact between MDS and MAFi

71.80 72.95 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey FG

71.8 - 72.95: Massive to foliated, light grey to strongly oxidized over short intervals; similarity to most previous MAFi layers

<<Min: 72.4 - 72.8 10% Min: Pyrite>> Lenticular blebs of PY that range from pristine to strongly oxidized

<<Alt: 71.8 - 72.95 Moderate-Strong Chlorite>> Pervasive alteration of MAFi to CL

<<Alt: 71.8 - 72.95 Weak-Moderate Biotite>> Biotite porphyroblasts in MAFi

72.95 74.87 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

72.95 - 74.87: Typical graphitic mudstone with relatively high proportion of calcite-rich layers

<<Struc: 72.95 - 72.96 Contact>> Sharp contact between MDS and MAFi

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 73 - 73.01 Strong Foliation>> Defined by calcite-rich and graphite-rich bands

<<Struc: 73.6 - 74.55 Moderate-Strong Fault>> Strong fracturing with some in situ fault gouge

74.87 75.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey FMG

74.87 - 75.3: Relatively unaltered and massive mafic dyke to EOH

<<Alt: 74.87 - 75.3 Moderate-Strong Chlorite>> Pervasive alteration of MAFi to CL

<<Alt: 74.87 - 75.3 Weak-Moderate Biotite>> Biotite porphyroblasts in MAFi

<<Struc: 74.87 - 74.88 Contact>> Sharp contact between MDS and MAFi

End of Hole @ 75.3

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-163

Prospect:		Hole Type:	DD	Survey Type:		Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/17/2016
UTM Easting	414900	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/17/2016
UTM Northing:	6818675	Casing Pulled?:		Dip:	-90	Drill Company:	
UTM Elev. (m):	1324	Casing Depth (m):		Length (m):	45.1	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	180		180	SS				☑	
45	-90	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**23.80**	**OVBN**	**Overburden**										
23.80	**30.45**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**black**	**VFG**								

23.8 - 30.45: Black, very fine to fine-grained, finely laminated mudstone with patches of yellow limonite alteration

<<Struc: 23.8 - 27.3 Strong Fault>> Heavily fractured interval with significant core loss; estimated recovery about 10%

<<Struc: 27.8 - 27.81 Moderate-Strong dominant foliation>> Well-developed fabric that appears to be parallel to bedding

<<Struc: 28.05 - 28.1 Intense Fault>> Complete disintegration of mudstone host into fault gouge

<<Struc: 29.8 - 30.45 Intense Fault>> Heavily fractured interval with >95% core loss

30.45	**32.25**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**yl**	**FG**								

30.45 - 32.25: Light grey to grey with strong yellow to orange ankerite-limonite overprint; very soft; obliterated mineralogy; lithological designation based on softness and Cominco log

<<Min: 30.45 - 32.25 1% Min: Pyrite>> Relict lenticular blebs of completely oxidized sulphide; identified as pyrite based on less oxidized correlatives further down the hole

<<Alt: 30.45 - 32.25 Moderate Chlorite>> Now mostly obliterated by limonite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 30.45 - 32.25 Moderate Ankerite>> Possibly related to later oxidation?

<<Struc: 30.45 - 30.46 Contact>> Contact between MDS and MAFta

<<Struc: 30.8 - 30.81 Moderate-Strong dominant foliation>> Well-developed fabric in mafic tuff that is defined by compositional gradients and oxidized pyrite grains

32.25 32.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

32.25 - 32.7: As MDS interval above but with more calcite bands and less limonite alteration

<<Struc: 32.25 - 32.26 Contact>> Contact between MDS and MAFta

<<Struc: 32.3 - 32.31 Moderate-Strong dominant foliation>> Well-developed fabric that appears to be parallel to bedding; defined by alternating calcite and graphite rich layers

<<Struc: 32.55 - 33.47 Moderate Fault>> Ranges from strongly fractured with heavy core loss to in situ proto-fault gouge

32.70 32.90 MAFi Mafic Intrusions (primarily footwall mafic intrusion) yl FG

32.7 - 32.9: As MAFi interval above with similar strong limonite-ankerite overprint

<<Alt: 32.7 - 32.9 Moderate Chlorite>>

<<Alt: 32.7 - 32.9 Moderate Ankerite>>

32.90 33.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

32.9 - 33.2: Narrow interval of heavily fractured and poorly recovered (<10%) mudstone separating MAFi intervals

33.20 33.72 MAFi Mafic Intrusions (primarily footwall mafic intrusion) yl FG

33.2 - 33.72: Light grey to grey with strong yellow to orange ankerite-limonite overprint; very soft; obliterated mineralogy; lithological designation based on softness and Cominco log

<<Min: 33.2 - 33.72 2% Min: Pyrite>> Parallel lenticular to disk-like aggregates of completely oxidized to preserved pyrite

<<Alt: 33.2 - 33.72 Moderate Chlorite>> Downward increase in abundance

<<Alt: 33.2 - 33.72 Weak-Moderate Ankerite>> Downward decrease in abundance

<<Struc: 33.2 - 33.21 Contact>> Contact between MDS and MAFta

33.72 45.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

33.72 - 45.1: Black, very fine to fine-grained, finely laminated mudstone with patches of yellow limonite alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 33.72 - 39.5 0.5% Min: Pyrite>> Mostly in association with foliation-parallel calcite-rich layers or veins <<Vein: 44.5 - 45.1 30% Calcite>> Calcite vein breccia/stockwork in fault zone with significant core loss <<Struc: 33.72 - 33.73 Contact>> Contact between MDS and MAFta <<Struc: 36.45 - 36.46 Moderate-Strong dominant foliation>> Well-developed fabric that appears to be parallel to bedding; defined by alternating calcite and graphite rich layers <<Struc: 38.9 - 45.1 Strong Fault>> Strongly fractured with significant core loss to EOH **End of Hole @ 45.1**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-164

Prospect:		Hole Type:	DD	Survey Type:		Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/18/2016
UTM Easting	414900	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/18/2016
UTM Northing:	6818375	Casing Pulled?:		Dip:	-90	Drill Company:	
UTM Elev. (m):	1335	Casing Depth (m):		Length (m):	90.5	Drill Rig:	
Local Easting:	4900	Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:	8375	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1335			Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	180		180	SS				☑	
90	-90	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**10.70**	**OVBN**	**Overburden**										
10.70	**11.00**	**MAFt**	**Mafic Volcaniclastics**	**grey-green**	**FMG**								
10.7 - 11: olive green, calc													
<<Alt: 10.7 - 34 Strong Calcite>> calcite in bands blebs porphyroblasts as well as dis.													
<<Alt: 10.7 - 34 Weak Ankerite>> and rare Cbppo													
11.00	**12.10**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**		**FG**								
11 - 12.1: calc													
12.10	**14.80**	**MAFt**	**Mafic Volcaniclastics**		**FMG**								
12.1 - 14.8: patchy Blppo, also patchy Cbppo													
<<Min: 12.5 - 19.5 0.01% Min: Pyrite>>													
<<Min: 12.5 - 19.5 0.01% Min: Pyrrhotite>>													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

14.80 17.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

14.8 - 17.6: intercalated minor tuffaceous component

17.60 18.70 MAFt Mafic Volcaniclastics FG

17.6 - 18.7: 10%cm scale intercalated bed/bands of MDS

18.70 19.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

18.7 - 19.4: lower contact gradational to MAFt over 25cm

19.40 26.50 MAFt Mafic Volcaniclastics FMG

19.4 - 26.5: central section coarser grained, with Cbppo, more flow like?

<<Min: 19.5 - 34 0.5% Min: Pyrite>>

<<Min: 19.5 - 34 0.5% Min: Pyrrhotite>>

26.50 27.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

26.5 - 27.8: lower contact gradational with MAFt over 20cm

27.80 29.30 MAFt Mafic Volcaniclastics FMG

<<Vein: 28.7 - 29 100% Quartz 80 deg. >>

29.30 30.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

29.3 - 30.5: tuffaceous component and 10cm MAFt included

30.50 32.10 MAFt Mafic Volcaniclastics FG

30.5 - 32.1: gradational lower contact over 30cm into MDS below.

32.10 34.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FMG

32.1 - 34.1: more grey, homogeneous texture. Far less banding than MDS less calcite bands. Significant MAFt component homogeneously distributed.

<<Min: 34 - 41 1% Min: Pyrrhotite>>

<<Alt: 34 - 88.2 Strong Calcite>> and dis and as ppo

<<Alt: 34 - 90.5 Trace Ankerite>>

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
34.10	**36.30**	**MAFt**	**Mafic Volcaniclastics** **FG**									
36.30	**37.60**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone** **FMG**									
36.3 - 37.6: significant mafic intermediate tuffaceous component												
37.60	**39.10**	**MAFt**	**Mafic Volcaniclastics** **FMG**									
37.6 - 39.1: 20cm of MDS @ 38.4 - 38.7												
39.10	**41.30**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone** **FG**									
39.1 - 41.3: tuffaceous component. Gradational lower contact with MAFT over 30cm												
41.30	**44.80**	**MAFt**	**Mafic Volcaniclastics** **FMG**									
41.3 - 44.8: coarser grained central section with calcite porphyroblasts												
44.80	**46.80**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone** **FMG**									
44.8 - 46.8: mixture of MDS and MAFt												
<<Min: 44.8 - 45.8 1% Min: Pyrrhotite>>												
46.80	**48.20**	**MAFt**	**Mafic Volcaniclastics** **FMG**									
48.20	**48.80**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone** **FG**									
48.2 - 48.8: very muddy. No tuffaceous												
<<Struc: 48.2 - 50 Weak Fault>> gouge cataclastic but no movement.												
48.80	**73.50**	**MAFt**	**Mafic Volcaniclastics** **FMG**									
48.8 - 73.5: calcite bands and porphyroblasts, patchy Bippo, grain size differences. Looks like tuff but flow is possible												
<<Min: 50 - 74 0.01% Min: Pyrrhotite>>												
<<Vein: 49.1 - 49.4 100% Quartz 40 deg. >> weak fault gouge on lower contact over 20cm												
<<Vein: 65.3 - 65.4 100% Quartz 75 deg. >>												
73.50	**74.50**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone** **FMG**									
73.5 - 74.5: gradational upper and lower contacts with MDS central 25cm. Suggests tuffs above and below												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

74.50 88.20 MAFt Mafic Volcaniclastics FMG

74.5 - 88.2: Bippo and CA ppo patchy over 5cm segments. Gradational lower contact

<<Min: 74.5 - 88 0.5% Min: Pyrrhotite>>

<<Vein: 85 - 85.3 100% Quartz 80 deg. >>

<<Vein: 86.9 - 87.2 100% Quartz 75 deg. >>

<<Struc: 86 - 86.2 Trace Fault>> gouge on either side of 6cm QZ vein foliaform.

88.20 90.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone FG

88.2 - 90.5: extremely Calcareous. Limy mud??

<<Alt: 88.2 - 90.5 Intense Calcite>>

End of Hole @ 90.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-165

Prospect:		Hole Type:	DD	Survey Type:		Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/24/2016
UTM Easting	411750	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/25/2016
UTM Northing:	6812952	Casing Pulled?:		Dip:	-70	Drill Company:	
UTM Elev. (m):	1660	Casing Depth (m):	9	Length (m):	86.7	Drill Rig:	
Local Easting:	1750	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	2950	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1660			Hole Completed?:		Purpose:	Exploration
						Parent Hole:	

Comments:

K95-165 consists in calcareous mafic tuff and silicified mudstone very similar to those encountered East of ABM deposit, in the Wind Lake formations, Regarding to the geological map (Murphy's), it could be the same units. This is not confirmed by Cominco's geological map.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70	180		180	SS				☑	
86	-70	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.10 OVBN Overburden

9.10 18.71 MAFt Mafic Volcaniclastics

9.1 - 18.71: CA banded. Fine grain.

<<Min: 9.1 - 84.41 0.1% Min: Pyrite>> And associated with QZ vein (vuggy texture).

<<Min: 9.1 - 84.41 0.5% Min: Pyrrhotite>> Very few veinlets and patch bin QZ/CA vein.

<<Alt: 9.1 - 18.71 Strong Calcite>> 20 to 30.

18.71 24.40 MDSc Carbonaceous dominant mudstone

18.71 - 24.4: Mixed with tuff (gradual contact). Thin foliation. Few CA.

<<Struc: 23.8 - 25 Weak-Moderate Fault>> Highly fractured.

24.40 32.63 MAFt Mafic Volcaniclastics

24.4 - 32.63: Mixed with mudstone. AK/CA veinlets.

<<Alt: 24.4 - 43.7 Strong Calcite>> 20 to 30.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 28.5 - 32.63 Moderate-Strong Ankerite>> Porphyroblasts and veinlets.

32.63 43.70 MAFt Mafic Volcaniclastics

32.63 - 43.7: Crosscut by 2 QZ veins (30 cm wide), limonite at contact. Few BI porphyroblasts aggregated.

<<Vein: 38.4 - 38.7 Quartz>> QZ vein.

<<Vein: 41.9 - 42.18 Quartz>> QZ vein.

43.70 53.40 MDSc Carbonaceous dominant mudstone

43.7 - 53.4: Silicified mudstone. Few BI. From 48.12 to 43.30 MAFt interbedded (slope) containing AK/BI/CL and PY.

<<Alt: 43.7 - 53.4 Moderate-Strong Silicification>>

53.40 55.18 MAFt Mafic Volcaniclastics

53.4 - 55.18: CA veinlets. Fine grain.

<<Alt: 53.4 - 58.24 Moderate-Strong Calcite>> 30 to 40.

55.18 69.68 MDSc Carbonaceous dominant mudstone

55.18 - 69.68: CA banded, thin foliation. 2 beds of mafic tuff interbedded from 55.50 to 55.70 and from 57.94 to 58.24. Locally folded.

<<Alt: 58.24 - 69.68 Moderate-Strong Silicification>>

<<Alt: 58.24 - 69.68 Weak-Moderate Calcite>>

69.68 71.60 MAFt Mafic Volcaniclastics

69.68 - 71.6: Fine grain. Few CA veinlets.

<<Alt: 69.68 - 71.6 Strong Calcite>>

71.60 73.35 MDSc Carbonaceous dominant mudstone

71.6 - 73.35: CA banded, few mafic tuff interbedded.

<<Alt: 71.6 - 73.35 Moderate-Strong Silicification>>

73.35 74.90 MAFt Mafic Volcaniclastics

73.35 - 74.9: CA banded. Locally BI porphyroblasts aggregated.

<<Alt: 73.35 - 74.9 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

74.90 77.95 CHT Chert

74.9 - 77.95: Cherty mafic tuff. SI banded.

<<Alt: 74.9 - 77.95 Moderate-Strong Silicification>> Cherty mudstone.

77.95 83.30 MAFt Mafic Volcaniclastics

77.95 - 83.3: CA veinlets. BI bands (could be mixed with sediments) from 82.04 to 83.30. CA porphyroblasts (up to 0.5 cm wide).

<<Alt: 77.95 - 83.3 Moderate Calcite>> And porphyroblasts.

83.30 84.41 SED undifferentiated Sediment

83.3 - 84.41: Foliated. BI rich/QZ. CA irregular vein at lower contact.

<<Alt: 83.3 - 84.41 Weak-Moderate Calcite>>

<<Vein: 84.3 - 84.7 Calcite>> CA/BI/QZ.

84.41 86.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

84.41 - 86.3: BI essentially, CA porphyroblasts (retrograde AK?), few CL. Homogenous texture. E.O.H.

<<Alt: 84.5 - 84.7 Intense Calcite>> CA vein.

<<Alt: 84.7 - 86.3 Moderate-Strong Calcite>> Porphyroblasts.

End of Hole @ 86.7

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-166

Prospect:	FCZ	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/18/2016
UTM Easting	413333.041	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/18/2016
UTM Northing:	6813430.702	Casing Pulled?:		Dip:	-70	Drill Company:	
UTM Elev. (m):	1741.557	Casing Depth (m):	12	Length (m):	68.6	Drill Rig:	
Local Easting:	3340	Stored?:	Yes	Claims Title	KZK	Drill Started:	8/18/1995
Local Northing:	3425	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	8/19/1995
Local Elev. (m):	1741.6			Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70	180		180	SS				☑	
68	-70	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 12.40 OVBN Overburden

12.40 34.60 FLZ Fault Zone

12.4 - 34.6: MDS and schist interbedded, fault gouge. PY disseminated.

<<Min: 12.4 - 45.1 0.5% Min: Pyrite>> Euhedral xtals.

<<Struc: 12.4 - 34.6 Strong Fault>> Fault gouge. Clasts up to 3 cm, MDS and schist.

34.60 45.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

34.6 - 45.1: Locally gouge. PY disseminated. Strong schistosity.

<<Struc: 34.6 - 45.1 Moderate Fault>> Schist and fault gouge. Strong shistosity.

45.10 62.35 RHYvx Quartz and/or feldspar crystal tuff

45.1 - 62.35: Heterogeneous in term of xtal density. Locally porphyritic texture with sharp contacts. Could be RHYif (from 57.2 0 to 57.90 and from 58.35 to 58.80) intruded felsic tuff.

<<Min: 45.1 - 68.6 0.5% Min: Pyrite>>

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-166

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 45.1 - 68.6 Weak Muscovite>>

62.35 68.60 RHYc Rhyolite coherant volcanics

62.35 - 68.6: Locally RHYvx interbedded. Probably flow.

End of Hole @ 68.6

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-167

Prospect:	GP4F	Hole Type:	DD	Survey Type:		Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/18/2016
UTM Easting	419466	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/18/2016
UTM Northing:	6813328	Casing Pulled?:		Dip:	-70	Drill Company:	
UTM Elev. (m):	1342	Casing Depth (m):		Length (m):	108.2	Drill Rig:	
Local Easting:	9450	Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:	3200	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	3200			Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70	180		180	SS				☑	
108	-70	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**18.30**	**OVBN**	**Overburden**									
18.30	**24.00**	**RHYvx**	**Quartz and/or feldspar crystal tuff**	**MG**								
18.3 - 24: variable lapilli size and biotite content in groundmass												
24.00	**24.80**	**RHYc**	**Rhyolite coherant volcanics**	**FG**								
24 - 24.8: margins are brecciated, like autobreccia at top and bottom of flow. Massive in centre. Could be intrusive. Not glassy like RHYi												
24.80	**30.30**	**RHYvl**	**Lapilli tuff**	**MG**								
24.8 - 30.3: same as 18.3 - 24.8												
30.30	**30.60**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**	**FMG**								
30.3 - 30.6: biotite rich, calcareous, gradational contact. Box missing downhole												
30.60	**37.80**	**No Core**	**No Core**									
<<Struc: 37 - 42 Trace Fault>> broken core												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

37.80 41.00 RHYcf Feldspar & feldspar quartz porphyry

37.8 - 41: auto brecciated rhyolite flow. Low strain zone. Biotite matrix between bx fragments. Jigsaw texture. Hyaloclastite?

<<Min: 37.8 - 40.7 1% Min: Pyrite>>

<<Min: 37.8 - 40.7 0.01% Min: Pyrrhotite>>

41.00 41.60 PEL Equigranular biotite + calcite +/- quartz rock FMG

41 - 41.6: biotite calcite sharp contacts

<<Alt: 41 - 41.6 Moderate Calcite>>

41.60 46.50 RHYvl Lapilli tuff MG

41.6 - 46.5: variable grain size lapilli tuff. Looks derived from auto brecciation flow units above and below. Short sections over 10cm exhibit jigsaw brx pattern.

<<Min: 41.6 - 66.1 2% Min: Pyrite>>

<<Min: 41.6 - 66.1 0.01% Min: Pyrrhotite>>

46.50 47.90 RHYc Rhyolite coherant volcanics

46.5 - 47.9: sameas37.8 - 41

47.90 50.60 RHYvl Lapilli tuff MG

47.9 - 50.6: same as 41.6 - 46.5

50.60 66.00 RHYc Rhyolite coherant volcanics

50.6 - 66: as above, un brecciated, more massive 53 - 60m

<<Vein: 58.3 - 58.6 65% Quartz 30 deg. >>

66.00 67.00 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

66 - 67: biotite dominant, minor carbonate. Could be meta-pelite-rare QE.

<<Alt: 66 - 67 Moderate Calcite>>

67.00 68.00 RHYvl Lapilli tuff

67 - 68: siliceous, near white, bleached lapilli

<<Alt: 67 - 68 Weak-Moderate Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

68.00 76.00 RHYvx Quartz and/or feldspar crystal tuff MG

68 - 76: rare qtz and feldspar xtals inbt matrix lapilli tuff

<<Struc: 75.7 - 75.9 Weak-Moderate Fault>> gouge zone

76.00 77.60 RHYcf Feldspar & feldspar quartz porphyry MG

76 - 77.6: quite massive, possible RHYvx

77.60 79.00 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

77.6 - 79: biotite - calcite. These are all possible meta-pelite

<<Alt: 77.6 - 79 Moderate Calcite>>

79.00 81.70 RHYv Rhyolite volcaniclastic

79 - 81.7: felsic rock, weak MU alteration; pseudo-fragmental texture? Could be RHYva or RHYc

<<Min: 81 - 84 0.5% Min: Pyrrhotite>>

<<Alt: 79 - 81.5 Weak Muscovite>> weak

81.70 83.10 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

81.7 - 83.1: as above

<<Alt: 81.7 - 83.1 Moderate Calcite>>

83.10 87.90 RHYv Rhyolite volcaniclastic

83.1 - 87.9: as above

<<Min: 87 - 91 0.01% Min: Pyrite>>

<<Alt: 83.1 - 88 Trace Muscovite>>

<<Struc: 87.8 - 88.1 Trace Fault>> broken core gouge

87.90 90.20 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

87.9 - 90.2: same composition as MAFi above, but gradational intercalated contacts. Suggests Mafi above may be sediments also.

<<Alt: 87.9 - 90.2 Moderate-Strong Calcite>> and pervasive in groundmass

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-167

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
90.20	**91.50**	**RHYvl**	**Lapilli tuff**										
91.50	**93.60**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**	**brown**	**FMG**								
91.5 - 93.6: as above													
<<Alt: 91.5 - 93.6 Moderate Calcite>>													
<<Struc: 92 - 92.2 Trace Fault>> broken core, gouge													
93.60	**101.80**	**RHYvl**	**Lapilli tuff**										
93.6 - 101.8: possible feldspar crystals													
<<Min: 96 - 108 1% Min: Pyrite>>													
<<Alt: 95 - 101 Weak Muscovite>>													
<<Alt: 100 - 101.8 Weak-Moderate Silicification>>													
101.80	**102.30**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**	**brown**	**FMG**								
101.8 - 102.3: gradational upper and lower contact, possible meta-pelite.													
<<Alt: 101.8 - 102.3 Moderate Calcite>>													
102.30	**108.20**	**RHYcf**	**Feldspar & feldspar quartz porphyry**		**MG**								
<<Vein: 105.3 - 105.7 80% Quartz 65 deg. >>													
End of Hole @ 108.2													

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-169

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	4/17/2016
UTM Easting	414650.99	Core Size:	HQ	Azimuth:	10	Date Logging Complete:	4/17/2016
UTM Northing:	6815351.12	Casing Pulled?:		Dip:	-45	Drill Company:	
UTM Elev. (m):	1430.48	Casing Depth (m):	9	Length (m):	157	Drill Rig:	
Local Easting:	4650	Stored?:	Yes	Claims Title	KZK	Drill Started:	8/24/1995
Local Northing:	5350	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	8/26/1995
Local Elev. (m):	1430.5			Hole Completed?:		Purpose:	Metallurgical
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-45	10		10	SS				☑	
16	-45	13		13	SS				☑	
38	-45	1		1	SS				☑	
65	-45	10		10	SS				☑	
96	-46	358		358	SS				☑	
126	-46	354		354	SS				☑	
157	-48	13		13	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**9.10**	**No Core** **No Core**									
9.10	**16.80**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**									
9.1 - 16.8: Altered MU. QZ/PY wavy discontinuous veins.											
<<Min: 9.1 - 16.8 2% Min: Pyrite>> In QZ vein.											
<<Alt: 9.1 - 16.8 Moderate-Strong Muscovite>>											
16.80	**52.00**	**No Core** **No Core**									
52.00	**60.98**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**									
52 - 60.98: Altered MU. QZ vein up to 10 cm wide. Patch of FeCO3 (Ankerite or siderite), or dolomite.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 52 - 60.98 1% Min: Sphalerite>>

<<Min: 52 - 60.98 5% Min: Pyrite>> and PY disseminated.

<<Alt: 52 - 73.37 Moderate Ankerite>> 15% AK

<<Alt: 52 - 81.2 Moderate Muscovite>>

<<Vein: 52 - 54.5 Quartz-Pyrite>> Multiple QZ/PY irregular veins up to 20 cm wide.

60.98 61.41 RHYv Rhyolite volcaniclastic

60.98 - 61.41: Locally semi massive sulfide.

<<Min: 60.98 - 61.41 2% Min: Sphalerite>>

<<Min: 60.98 - 61.41 15% Min: Pyrite>>

<<Min: 60.98 - 61.41 1% Min: Magnetite>>

<<Min: 60.98 - 61.41 0.1% Min: Galena>>

61.41 65.57 RHYvl Lapilli tuff

61.41 - 65.57: Large lapilli.

<<Min: 61.41 - 73.37 1% Min: Pyrite>>

65.57 67.20 RHYva Coarse grained to ash tuff

67.20 81.20 RHYv Rhyolite volcaniclastic

67.2 - 81.2: Could be locally flow banded but probably large strained lapilli. Brecciated from 79.37 to 78.42. Ankerite/Dolomite patch, tourmaline, sphalerite (pegmatitic texture), hematite. Possibly Cl replaced by AK or/and sulfide, with black chlorite.

<<Min: 73.37 - 79.6 2% Min: Sphalerite>>

<<Min: 73.37 - 79.6 1% Min: Pyrite>>

<<Min: 79.6 - 80.2 5% Min: Sphalerite>>

<<Min: 79.6 - 80.2 15% Min: Pyrite>>

<<Min: 79.6 - 80.2 2% Min: Pyrrhotite>>

<<Min: 79.6 - 80.2 2% Min: Galena>>

<<Alt: 73.37 - 79.6 Moderate Dolomite>> 20% DO

<<Alt: 73.37 - 79.6 Strong Ankerite>> 30% AK

<<Alt: 76.9 - 77.4 Weak Cordierite>>

<<Vein: 75.64 - 76.16 Quartz>> QZ vein, containing locally sulfide and schist.

<<Struc: 68.73 - 69.68 Moderate Fault>> Fault gouge.

81.20 88.80 No Core No Core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

88.80 93.80 RHYvl Lapilli tuff

88.8 - 93.8: MxSx from 93.62 to 93.8, end of box.

<<Min: 88.8 - 93.62 3% Min: Pyrite>> and euhedral disseminated.

<<Min: 93.62 - 93.8 0.1% Min: Sphalerite>>

<<Min: 93.62 - 93.8 80% Min: Pyrite>>

<<Min: 93.62 - 93.8 0.1% Min: Galena>>

<<Alt: 88.8 - 90.64 Moderate Ankerite>> 15% AK

<<Alt: 88.8 - 93.62 Moderate Muscovite>>

<<Alt: 90.64 - 93.62 Weak Ankerite>>

<<Vein: 93.38 - 93.56 Quartz>> QZ vein.

93.80 102.50 No Core No Core

<<Min: 102.3 - 103.7 2% Min: Sphalerite>>

102.50 107.55 RHYv Rhyolite volcaniclastic

102.5 - 107.55: Locally PY vein associated with QZ vein from 102.50 to 103.7.

<<Min: 102.5 - 103.7 15% Min: Pyrite>> medium grain.

<<Min: 102.5 - 103.7 1% Min: Galena>>

<<Min: 103.7 - 107.55 1% Min: Pyrite>>

<<Alt: 102.5 - 114.1 Moderate Muscovite>>

<<Alt: 102.5 - 114.1 Trace Ankerite>>

<<Vein: 102.5 - 103.7 Quartz-Pyrite>> QZ and PY veins.

107.55 109.55 OI Heavilly disseminated sulphides in host schist

107.55 - 109.55: Up to 25 per cent of sulfide.

<<Min: 107.55 - 109.5 3% Min: Sphalerite>>

<<Min: 107.55 - 109.5 15% Min: Pyrite>>

<<Min: 107.55 - 109.5 0.1% Min: Galena>>

<<Min: 109.5 - 111.9 2% Min: Sphalerite>>

<<Min: 109.5 - 111.9 1% Min: Pyrite>>

109.55 111.90 RHYv Rhyolite volcaniclastic

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

111.90 114.10 OI Heavilly disseminated sulphides in host schist

111.9 - 114.1: Up to 20 per cent of sulfide.

<<Min: 111.9 - 114.1 3% Min: Sphalerite>>
<<Min: 111.9 - 114.1 10% Min: Pyrite>>
<<Min: 111.9 - 114.1 2% Min: Pyrrhotite>>
<<Min: 111.9 - 114.1 2% Min: Magnetite>>
<<Min: 111.9 - 114.1 0.1% Min: Galena>>

114.10 142.70 No Core No Core

142.70 152.60 RHYv Rhyolite volcaniclastic

142.7 - 152.6: Could be flow banded from 143.50 to 147.40. Maybe CI replaced by AK at 143.50.

<<Min: 142.7 - 157 0.1% Min: Sphalerite>> associated with PY.
<<Min: 142.7 - 157 2% Min: Pyrite>> and disseminated.
<<Alt: 142.7 - 153.9 Moderate Ankerite>> 10% AK
<<Alt: 142.7 - 157 Moderate Muscovite>>

152.60 157.00 RHYcw Curdy textured-flow banded (flows, subvolcanics)

152.6 - 157: 157.00 E.O.H.

<<Alt: 153.9 - 157 Trace Ankerite>>

End of Hole @ 157

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K95-170

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:		Survey By:	Challenger_Survey	Date Logging Start:	4/25/2016
UTM Easting	417104.97	Core Size:	HQ/NQ	Azimuth:	150	Date Logging Complete:	4/28/2016
UTM Northing:	6815120.294	Casing Pulled?:		Dip:	-90	Drill Company:	
UTM Elev. (m):	1618.8	Casing Depth (m):	9	Length (m):	442	Drill Rig:	
Local Easting:	7150	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	5100	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1619			Hole Completed?:		Purpose:	Exploration
						Parent Hole:	

Comments:

Wind Lake/KZK formation contact at 197.52. Lots of biotite in the lowest units suggesting an intermediate composition of the rocks. Possibly some evidences of pelitic layers presence.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	150		150	SS				☑	
30	-89	149		149	SS				☑	
61	-87	118		118	SS				☑	
91	-86	131		131	SS				☑	
122	-85	156		156	SS				☑	
152	-83	154		154	SS				☑	
192	-80	138		138	SS				☑	
250	-78	151		151	SS				☑	
259	-78	151		151	SS				☑	
350	-74	168		168	SS				☑	
442	-73	168		168	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**8.80**	**OVBN Overburden**									
8.80	**9.07**	**MAFt Mafic Volcaniclastics**									

8.8 - 9.07: Rusty, calcareous.

<<Min: 8.8 - 20 0.1% Min: Sphalerite>>

<<Min: 8.8 - 442 0.1% Min: Pyrite>>

<<Min: 8.8 - 442 0.1% Min: Pyrrhotite>> Mostly in mafic tuff units.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 8.8 - 36 Moderate-Strong Calcite>> 15 per cent CA.

9.07 19.12 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

9.07 - 19.12: Thin foliation, locally vuggu. CA veining. Rare PY/SP veinlets. Fault from 12.50 to 12.80. Strongly oxidized from 14.70 to 14.85, probably due to groundwater.

<<Struc: 11.5 - 13.5 Moderate Fault>> Sandy-silty gouge. Broken zone.

19.12 22.55 MAFt Mafic Volcaniclastics

19.12 - 22.55: CA in veinlets and matrix.

22.55 23.66 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

22.55 - 23.66: CA veining. Few MAFt interbedded.

23.66 29.80 MAFt Mafic Volcaniclastics

23.66 - 29.8: Few lapilli. Fine grain from 27.55 to 28.62. Locally mixed with MDS. Few silica bands, possibly chert.

29.80 32.84 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

29.8 - 32.84: Mixed with mafic tuff. Some silica bands, possibly chert.

32.84 33.48 MAFta Coarse grained to ash tuff

32.84 - 33.48: Fine grain mafic tuff.

33.48 35.78 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

33.48 - 35.78: Faulted. CA veining. Mixed with mafic tuff.

<<Struc: 34.5 - 36.1 Moderate-Strong Fault>> Sandy-clay gouge over 30 and 40 cm.

35.78 43.71 MAFw mafic volcanic flows

35.78 - 43.71: Fractured, altered to clay. Texture e obscured.

<<Alt: 36 - 49 Weak-Moderate Calcite>>

<<Struc: 40.8 - 43.1 Moderate-Strong Fault>> Highly broken zone, sheared.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

43.71 46.56 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

43.71 - 46.56: CA veining. Mixed with mafic tuff.

46.56 49.20 MAFt Mafic Volcaniclastics

46.56 - 49.2: Medium grain lapilli.

<<Alt: 49 - 65.62 Moderate-Strong Calcite>> In foliation, veinlets and matrix.

<<Alt: 49 - 66.1 Moderate-Strong Silicification>> Some patch highly silicified. Could also be felsic dike.

49.20 52.80 RHY undifferentiated rhyolite

49.2 - 52.8: QZ "eyes". Texture obscured. Strongly silicified. Possible dacitic flow e or quartzite.

<<Alt: 50 - 65 Strong Biotite>>

<<Vein: 50.3 - 50.4 Quartz>> QZ vein.

52.80 57.78 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

52.8 - 57.78: Massive intrusion. Silicified. BI/CL or hornblende, few CA.

<<Vein: 56.28 - 58.37 Quartz-Carbonate 35 deg. >> QZ/CA vein.

57.78 58.20 RHY undifferentiated rhyolite

57.78 - 58.2: Felsic unit, or MAFt highly silicified.

58.20 58.87 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

58.2 - 58.87: Silicified. Texture obscured.

58.87 59.12 RHY undifferentiated rhyolite

58.87 - 59.12: Possibly silicified chill margin. Foliated.

59.12 65.62 MAFt Mafic Volcaniclastics

59.12 - 65.62: Possibly MAFw. Highly silicified. Texture obscured.

65.62 68.46 MAFta Coarse grained to ash tuff

65.62 - 68.46: CA and BI bands. Fine grain.

<<Alt: 66.06 - 74.8 Moderate-Strong Calcite>> And pervasive.

<<Struc: 66.1 - 66.32 Moderate Fault>> Fault gouge. Clay.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

68.46 69.31 MAFt Mafic Volcaniclastics

68.46 - 69.31: Large CA vein associated with QZ/BI/CL, maybe talc.

<<Vein: 68.46 - 69.31 Quartz-Carbonate>> Large CA/QZ vein associated with CL/BI maybe talc. Hydrothermal fluids

69.31 74.60 MAFta Coarse grained to ash tuff

69.31 - 74.6: Or MAFw. Possibly mafic dike from 73.40 to 74.27.

74.60 75.41 MAFw mafic volcanic flows

74.6 - 75.41: BI porphyroblasts.

<<Alt: 74.8 - 84 Moderate Calcite>>

75.41 79.75 MAFw mafic volcanic flows

75.41 - 79.75: Intermediate composition. Light green, foliated, locally flow banded.

79.75 87.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

79.75 - 87: CA veining. AK bands.

<<Alt: 84 - 94.4 Moderate Ankerite>> Or dolomite.

<<Alt: 84 - 258.5 Weak-Moderate Calcite>> 5 percent.

87.00 88.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

87 - 88.5: Sheared. Broken zone.

<<Struc: 87 - 88.5 Moderate-Strong Fault>> In graphitic mudstone. Shreared/creulation.

88.50 94.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

88.5 - 94.8: CA veining. Thin foliation. Mixed with sediment and/or mafic material tightly interbedded.

<<Alt: 94.64 - 99.8 Strong Silicification>>

<<Vein: 90.05 - 90.15 Quartz>> QZ vein

<<Vein: 94.4 - 94.64 Quartz-Carbonate>> QZ/CA vein.

94.80 99.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

94.8 - 99.8: Strongly silicified mudstone. Weakly carbonaceous, weakly calcareous. White veining (possibly feldspar) locally crenulated.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

99.80 104.02 MAFt Mafic Volcaniclastics

99.8 - 104.02: CA veining. Mafic tuff crosscut but 10 cm wide CA/QZ veins associated with CL patch. Gradual lower contact with mudstone. Few lapilli. Foliation well marker downhole.

<<Vein: 99.89 - 102.17 Quarzt-Chlorite-Carbonate>> QZ/CA/CL.

104.02 105.83 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

104.02 - 105.83: CA veining. Poorly carbonaceous.

105.83 106.11 MAFt Mafic Volcaniclastics

105.83 - 106.11: CA veining. Sharp upper and lower contact.

<<Struc: 105.83 - 107.98 Moderate Shear>> In highly graphitic mudstone, broken zone.

106.11 107.98 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

106.11 - 107.98: Graphitic mudstone, sheared, almost brecciated. CA veining. Gradual lower contact.

107.98 128.64 MAFt Mafic Volcaniclastics

107.98 - 128.64: Could be partly MAFw. Lapilli/ashes interbedded suggesting normal grading. BI patchy.

<<Vein: 115 - 115.68 Quarzt-Chlorite-Carbonate>> QZ/CA/CL.

128.64 129.50 MDSt Rhyolite tuff dominant mudstone

128.64 - 129.5: Granular patch, possibly Xtl. QZ eyes aggregated suggesting felsic content. Probably QE in mudstone interbedded with mafic tuff and grading normal sequence.

129.50 135.02 MAFt Mafic Volcaniclastics

129.5 - 135.02: Dominantly mafic material mixed with mudstone. Some argilitic thin bands in larger mafic bands, Secondary schistosity observed.

135.02 137.75 MAFw mafic volcanic flows

135.02 - 137.75: Mix of mafic (silicic bands and QZ) and felsic material interbedded. Medium grain to fine grain at upper contact.

137.75 143.60 MAFw mafic volcanic flows

137.75 - 143.6: CA veining.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

143.60 145.05 MAFt Mafic Volcaniclastics

143.6 - 145.05: Lapilli to ash from bottom to top.

145.05 162.02 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

145.05 - 162.02: Gradual upper contact from 149.90. CA veining. Wavy beds disrupted locally. Narrow shear zone. Gradual lower contact.

<<Struc: 158.3 - 158.8 Moderate Shear>>

<<Struc: 159.5 - 162.5 Weak Fault>> Multiple narrow fault, minor.

162.02 165.03 MAFt Mafic Volcaniclastics

162.02 - 165.03: Massive QZ vein at lower contact. CA veining.

165.03 168.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

165.03 - 168: Folded, secondary schistosity observed. CA veining.

<<Vein: 165.03 - 165.2 Quartz-Carbonate>> QZ/CA vein.

168.00 169.91 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

168 - 169.91: Bleached mudstone in fault zone. QZ vein at lower contact. Late QZ/PY discordant vein (up to 1 cm wide).

<<Struc: 168 - 171.2 Moderate-Strong Fault>> Fault gouge over 20 cm, expended broken zone, bleached mudstone suggesting fluid circulation.

169.91 172.79 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

169.91 - 172.79: Graphitic mudstone. Broken zone. Large bull QZ vein from 171.20 to 172.50.

<<Vein: 171.2 - 175.4 Quartz>> QZ containing schist. Vuggy.

172.79 176.60 MAFt Mafic Volcaniclastics

172.79 - 176.6: Crosscut by vuggy QZ veins. Faulted (gouge).

<<Struc: 172.79 - 174.4 Moderate-Strong Fault>>

176.60 189.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

176.6 - 189: Gradual lower contact. CA veining, crenulated and folded.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 178.7 - 181 Quartz-Carbonate>> Multiple QZ/CA veins up to 30 cm wide.

189.00 191.92 MAFt Mafic Volcaniclastics

189 - 191.92: CA/QZ vein.

<<Struc: 190 - 191.75 Moderate-Strong Fault>> Few gouge.

191.92 197.52 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

191.92 - 197.52: Containing bull QZ vein over 1.20 m. Some MAFt in the QZ vein.

<<Vein: 197.3 - 197.42 Quartz-Carbonate>> QZ/CA vein.

197.52 199.95 RHYva Coarse grained to ash tuff

197.52 - 199.95: Few lapilli. Thin foliation

<<Alt: 197.52 - 337.4 Moderate Ankerite>> In lapilli.

199.95 213.00 RHYvl Lapilli tuff

199.95 - 213: Locally few fine grain bands (Bl rich-dark blue). Ash at lower contact.

<<Alt: 203.11 - 206.8 Strong Silicification>>

213.00 214.96 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

213 - 214.96: Bl/CA. Sharp contacts.

214.96 216.70 RHYvx Quartz and/or feldspar crystal tuff

214.96 - 216.7: Almost curdy texture. High density of lapilli and/or porphyroblasts.

216.70 221.43 RHYvl Lapilli tuff

216.7 - 221.43: Ash locally. Biotite rich.

221.43 223.70 RHYva Coarse grained to ash tuff

221.43 - 223.7: Bluish. Fine to very fine grain at lower contact.

<<Alt: 221.43 - 223.7 Strong Silicification>>

223.70 223.94 MDSt Rhyolite tuff dominant mudstone

223.7 - 223.94: Banded. Very fine grain and carbonaceous.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

223.94 224.60 RHYvl Lapilli tuff

224.60 225.53 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

224.6 - 225.53: CA in matrix/BI.

225.53 231.80 RHYvx Quartz and/or feldspar crystal tuff

225.53 - 231.8: Locally sheared (from 228.6 to 230)

<<Struc: 228.4 - 230 Moderate-Strong Shear>>

<<Struc: 231 - 231.6 Moderate Shear>>

231.80 232.00 RHYva Coarse grained to ash tuff

231.8 - 232: BI porphyroblasts. Locally folded.

232.00 234.54 RHYvx Quartz and/or feldspar crystal tuff

232 - 234.54: Strongly Lapillitic and heterogeneous.

234.54 235.09 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

234.54 - 235.09: CA in matrix/BI.

235.09 242.04 RHYvx Quartz and/or feldspar crystal tuff

235.09 - 242.04: Low strained.

242.04 245.86 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

242.04 - 245.86: CA in matrix/BI. Locally banded, sharp contacts. Could be pelitic.

<<Struc: 245 - 245.2 Weak-Moderate Shear>> In mafic dike (or pelite).

245.86 248.61 RHYva Coarse grained to ash tuff

245.86 - 248.61: Ash dominant. BI rich, silicified from 247.84 to lower contact.

<<Alt: 247.84 - 251.42 Strong Silicification>>

<<Vein: 247.5 - 247.84 Quartz-Carbonate>> QZ/CA vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

248.61 252.96 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

248.61 - 252.96: CA in matrix/BI. CA veinlets.

252.96 253.60 RHYv Rhyolite volcaniclastic

252.96 - 253.6: Maybe sedimentary. Thin foliation. Probably RHYv mixed with mafic or pelitic material. Few CA, possibly QZ. Proximity of massive QZ vein and mafic dyke.

253.60 259.00 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

253.6 - 259: BI rich. Large peperitic contact (upper and lower). Very fine grain BI. Bull QZ vein at upper contact.

<<Alt: 258.5 - 442 Moderate Calcite>> 10 percent and lapilli. More intense in mafic material

<<Vein: 254.26 - 256.66 Quartz>> Bull QZ vein associated with large peperitic texture.

<<Vein: 258.67 - 258.82 Quartz>> QZ vein at upper contact of mafic dike showing peperitic texture.

259.00 261.40 RHYvx Quartz and/or feldspar crystal tuff

259 - 261.4: BI rich, extension of the peperitic texture. BI porphyroblasts. Large crystals.

261.40 264.96 RHYvl Lapilli tuff

261.4 - 264.96: Almost curdy texture and intense silicification locally.

264.96 269.60 RHYvx Quartz and/or feldspar crystal tuff

264.96 - 269.6: Or low strained lapilli, high density. QZ veins crosscutting (up to 2 cm wide).

269.60 274.55 RHYvx Quartz and/or feldspar crystal tuff

274.55 276.34 RHYvl Lapilli tuff

274.55 - 276.34: BI rich.

276.34 281.34 RHYvl Lapilli tuff

276.34 - 281.34: BI rich (bluish). High stained lapilli.

281.34 282.90 RHYva Coarse grained to ash tuff

281.34 - 282.9: Medium grain lapilli.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

282.90 283.73 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

282.9 - 283.73: CA in matrix/brown biotite.

283.73 286.34 RHYva Coarse grained to ash tuff

283.73 - 286.34: BI rich.

286.34 295.68 RHYvl Lapilli tuff

286.34 - 295.68: Locally brown ash with Bippo and fine grain bands (pelite?)

295.68 296.67 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

295.68 - 296.67: CA in matrix/BI.

296.67 303.82 RHYvl Lapilli tuff

296.67 - 303.82: BI rich. Faulted at lower contact.

<<Struc: 300.22 - 300.36 Weak-Moderate Fault>> 20 cm of gouge.

<<Struc: 303.5 - 304.55 Moderate-Strong Shear>>

303.82 306.14 RHYva Coarse grained to ash tuff

303.82 - 306.14: Sheared at upper contact.

306.14 306.86 RHYvl Lapilli tuff

306.14 - 306.86: Heterogeneous, high density of lapilli.

306.86 309.72 RHYva Coarse grained to ash tuff

306.86 - 309.72: Fine grain, weakly foliated.

309.72 312.40 RHYvl Lapilli tuff

309.72 - 312.4: Ash at lower contact.

312.40 313.18 RHYva Coarse grained to ash tuff

312.4 - 313.18: Crosscut by a narrow dike showing chill margin and amygdules.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

313.18 317.17 RHYvx Quartz and/or feldspar crystal tuff

313.18 - 317.17: QZ veinlets.

317.17 320.03 RHYva Coarse grained to ash tuff

317.17 - 320.03: Faulted and sheared from 3.17.20 to 320.84.

<<Struc: 317.17 - 320.85 Moderate-Strong Fault>> And broken zone. 2 fault gouge (50 cm wide each).

320.03 324.30 RHYvl Lapilli tuff

320.03 - 324.3: Fault gouge.

324.30 325.61 PEL Equigranular biotite + calcite +/- quartz rock

324.3 - 325.61: CA/BI, ash interbed. Sharp upper contact, gradual lower contact.

325.61 334.15 RHYvl Lapilli tuff

325.61 - 334.15: Lapilli and ash interbedded.

<<Struc: 327 - 327.6 Weak-Moderate Fault>> Minor fault and shearing.

334.15 334.85 RHYcw Curdy textured-flow banded (flows, subvolcanics)

334.15 - 334.85: Base of sequence flow/lapilli/ash.

334.85 337.40 RHYvl Lapilli tuff

334.85 - 337.4: From 335.36 to 335.64, fine grain CA rich, weakly sheared.

<<Struc: 335.36 - 335.65 Weak-Moderate Shear>> In CA rick layer logged as ash.

337.40 343.72 RHYvl Lapilli tuff

<<Alt: 337.4 - 442 Trace Ankerite>>

343.72 344.42 PEL Equigranular biotite + calcite +/- quartz rock

343.72 - 344.42: Interbedded with RHY. B/QZ/CA.

344.42 347.53 RHYvl Lapilli tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

347.53 356.20 RHYva Coarse grained to ash tuff

347.53 - 356.2: Maybe xtl.

<<Alt: 347.53 - 428.7 Moderate Biotite>> Locally strong.

356.20 356.94 PEL Equigranular biotite + calcite +/- quartz rock

356.2 - 356.94: Could be MAFi. Mixed with RHY.

356.94 359.59 RHYvx Quartz and/or feldspar crystal tuff

359.59 377.74 RHYva Coarse grained to ash tuff

359.59 - 377.74: BI rich. Dominantly ash. Few beds CA rich.

377.74 382.68 RHYva Coarse grained to ash tuff

377.74 - 382.68: Flow banded at lower contact over 20 cm.

<<Vein: 381.64 - 381.95 Quartz>> QZ veins, ribboned.

382.68 391.73 MAFt Mafic Volcaniclastics

382.68 - 391.73: Or flow. Silicified CL/BI/CA. Chlorite alteration locally strong. Ribboned QZ vein from 381.62 to 381.84, could be flow. CA veining. BI goes from very fine grain to coarse grain. Possibly relic of amygdules.

<<Alt: 382.95 - 384.5 Moderate-Strong Chlorite>>

<<Alt: 383.62 - 393.5 Strong Silicification>>

<<Alt: 384.5 - 389.14 Strong Chlorite>>

<<Alt: 389.14 - 390.4 Moderate Chlorite>>

391.73 392.40 RHY undifferentiated rhyolite

391.73 - 392.4: Silicified.

392.40 392.93 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

392.93 393.40 RHY undifferentiated rhyolite

392.93 - 393.4: BI rich.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

393.40 394.54 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

393.4 - 394.54: CA at upper contact. Maybe ash layer.

394.54 397.24 RHYva Coarse grained to ash tuff

397.24 397.65 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

397.24 - 397.65: CA. Foliated.

397.65 403.33 RHYva Coarse grained to ash tuff

397.65 - 403.33: BI rich.

<<Vein: 399 - 402.6 Quartz>> Several QZ vein from 1 cm to 25 cm wide, 3/metre.

403.33 403.75 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

403.33 - 403.75: CA in matrix/BI. Gradual lower contact.

403.75 408.61 RHYva Coarse grained to ash tuff

408.61 409.27 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

408.61 - 409.27: CA in matrix/BI. Few CL.

409.27 413.78 RHYva Coarse grained to ash tuff

409.27 - 413.78: Biotite rich. Some BI/MU bands. Speck of AK.

<<Vein: 411.44 - 411.64 Quartz-Carbonate>> QZ/CA.

413.78 414.83 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

413.78 - 414.83: Banded BI/CL/CA/SI.Speck of AK. Strong foliation.

<<Alt: 413.78 - 414.83 Moderate-Strong Chlorite>>

<<Struc: 413.78 - 417.2 Weak Fault>> Multiple minor fault with gouge up to 3 cm wide.

414.83 417.63 RHY undifferentiated rhyolite

414.83 - 417.63: Speck of AK. Locally flow banded. CA/QZ vein.

<<Vein: 415.1 - 415.33 Quartz-Carbonate>> QZ/CA, ribonned.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

417.63 418.60 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

417.63 - 418.6: CA in matrix/BI.

418.60 421.80 RHYvl Lapilli tuff

421.80 422.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

421.8 - 422.4: CA in matrix ad veining/BI.

422.40 428.70 RHYvx Quartz and/or feldspar crystal tuff

428.70 432.17 MAFt Mafic Volcaniclastics

428.7 - 432.17: And Bi porphyroblasts. Possibly mafic flow. Silicified. Few RHY interbedded at upper contact.

<<Alt: 428.7 - 432.17 Moderate-Strong Chlorite>>

<<Alt: 428.7 - 439.3 Strong Biotite>>

<<Alt: 430 - 439.2 Strong Silicification>>

432.17 434.59 RHYvx Quartz and/or feldspar crystal tuff

434.59 438.24 RHY undifferentiated rhyolite

434.59 - 438.24: And BI porphyroblasts. Silicified.

438.24 442.00 RHYvl Lapilli tuff

438.24 - 442: E.O.H.

<<Alt: 439.3 - 442 Moderate Biotite>>

End of Hole @ 442

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K96-171

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/21/2016
UTM Easting	410582.959	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/22/2016
UTM Northing:	6810214.496	Casing Pulled?:		Dip:	-70	Drill Company:	
UTM Elev. (m):	1486.465	Casing Depth (m):	9	Length (m):	99.2	Drill Rig:	
Local Easting:	800	Stored?:	Yes	Claims Title	TAG 155	Drill Started:	6/14/1996
Local Northing:	125	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	6/16/1996
Local Elev. (m):	1485			Hole Completed?:		Purpose:	Exploration
						Parent Hole:	

Comments:

Fyre Lake formations.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70	180		180	UNKN				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.00 OVBN Overburden

9.00 9.65 MAFw mafic volcanic flows

9 - 9.65: BI/CL.

<<Min: 9.1 - 20.57 0.1% Min: Pyrite>>

<<Min: 9.1 - 20.57 0.5% Min: Pyrrhotite>>

9.65 11.97 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

9.65 - 11.97: BI/SI/CL thinly bedded. Trace of oxidation. PO in foliation.

11.97 16.96 MAFw mafic volcanic flows

11.97 - 16.96: Patchy BI, patchy SI. Late CA veinlets set. CL rich. Could be hydrothermal alteration.

<<Vein: 14.8 - 16.4 Calcite 30 deg. >> CA veinlet set.

16.96 18.08 PEL Equigranular biotite + calcite +/- quartz rock

16.96 - 18.08: BI/SI/CL schist. Few PO in foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 16.96 - 18.5 Moderate-Strong Silicification>> Logged as silicified but could be feldspar.

18.08 19.25 MAFw mafic volcanic flows

18.08 - 19.25: CL/QZ/BI, banded. Lat CA veinlets set.

19.25 20.57 PEL Equigranular biotite + calcite +/- quartz rock

19.25 - 20.57: BI rich. Few PO.

20.57 22.12 MAFw mafic volcanic flows

20.57 - 22.12: SI banded and patchy. Weakly foliated. PO veinlets.

22.12 23.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

22.12 - 23.6: Mafic tuff and mudstone interbedded. SI rich. Thinly foliation.

<<Min: 22.57 - 26.7 0.5% Min: Pyrite>>

<<Min: 22.57 - 26.7 1% Min: Pyrrhotite>>

<<Min: 22.67 - 26.7 0.1% Min: Sphalerite>>

23.60 24.60 MAFt Mafic Volcaniclastics

23.6 - 24.6: Foliated. CL/few BI, few SI.

24.60 27.93 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

24.6 - 27.93: Mafic tuff and mudstone interbedded. SI rich. Thinly foliation.

<<Min: 26.7 - 35.42 2% Min: Pyrrhotite>>

<<Min: 26.7 - 76.32 0.1% Min: Pyrite>>

27.93 28.79 MAFt Mafic Volcaniclastics

27.93 - 28.79: CL/BI.MU, granular SI.

28.79 34.41 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

28.79 - 34.41: Mafic tuff and mudstone interbedded. SI rich. Thinly foliation.

<<Alt: 28.79 - 38.73 Moderate Silicification>> and patchy.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

34.41 35.42 MAFt Mafic Volcaniclastics

34.41 - 35.42: Fold nose, 50/50 CL/SI. Some MU.

35.42 40.33 MAFt Mafic Volcaniclastics

35.42 - 40.33: 2 to 5 cm wide MDS interbeds. MU.

<<Alt: 38.73 - 39.3 Strong Silicification>>

<<Alt: 40.23 - 41.66 Intense Silicification>> Logged as chert.

<<Vein: 40.23 - 40.7 Calcite 12 deg. >> CA veinlet set.

40.33 41.66 CHT Chert

40.33 - 41.66: Possibly chert interbedded with MAFt.

41.66 50.03 MAFw mafic volcanic flows

41.66 - 50.03: Fine grain SI (could be Fspar, few BI/MU. Weakly foliated.

50.03 52.05 MAFw mafic volcanic flows

50.03 - 52.05: CL/MU. Folded. Few BI and granular SI (Fspar?).

52.05 57.31 MAFw mafic volcanic flows

52.05 - 57.31: Few BI and MU.

<<Min: 57.3 - 73.6 3% Min: Pyrrhotite>>

<<Vein: 54.6 - 57 Calcite 40 deg. >> CA veinlet set.

57.31 67.03 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

57.31 - 67.03: Mafic tuff and mudstone interbedded. SI rich. Thinly foliation.

<<Alt: 57.31 - 67.03 Moderate Silicification>>

<<Struc: 63.7 - 72 Weak Fault>> Highly fractured.

67.03 79.91 MAFw mafic volcanic flows

67.03 - 79.91: BI banded. CA veins, limonite/AK. Locally SI rich. Few MDS beds up to 10 cm wide.

<<Min: 73.6 - 76.32 1% Min: Pyrrhotite>>

<<Min: 76.32 - 86.8 0.1% Min: Sphalerite>>

<<Min: 76.32 - 86.8 1% Min: Pyrite>>

<<Min: 76.32 - 86.8 3% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 72.83 - 73.68 Moderate-Strong Silicification>>

<<Alt: 75.9 - 89.9 Moderate Calcite>> Associated with fractures.

<<Alt: 79.9 - 86.4 Moderate Silicification>>

<<Vein: 76.5 - 78.8 Calcite 30 deg. >> CA veinlet set, fracture, broken zone.

<<Struc: 76.32 - 79.89 Weak Fault>> Few gouge. Multiple fractures.

79.91 85.72 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

79.91 - 85.72: Mafic tuff and mudstone interbedded. SI rich. Thinly foliation. Folded locally, MU/QZ/CL bedding crenulated. Sulfide lamination associated with QZ. Maybe epidote in matrix.

85.72 92.57 MAFw mafic volcanic flows

85.72 - 92.57: BI, granular SI.

<<Min: 86.8 - 99.2 0.1% Min: Pyrite>>

<<Min: 86.8 - 99.2 1% Min: Pyrrhotite>>

92.57 96.25 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

92.57 - 96.25: Patchy silicification. CL and MU bands locally. Sheared and faulted (20 cm gouge).

<<Alt: 92.95 - 97.3 Moderate-Strong Calcite>> In sheared zone.

<<Struc: 94.2 - 96.25 Moderate Shear>> See below.

<<Struc: 94.2 - 96.25 Moderate Fault>> 20 cm of gouge in a shear zone. Primary ductile deformation.

96.25 99.20 MAFw mafic volcanic flows

96.25 - 99.2: BI, granular SI.

End of Hole @ 99.2

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K97-176

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/22/2016
UTM Easting	415114.765	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/24/2016
UTM Northing:	6815802.226	Casing Pulled?:		Dip:	-86	Drill Company:	
UTM Elev. (m):	1390.607	Casing Depth (m):		Length (m):	364.8	Drill Rig:	
Local Easting:	5110	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	5800	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1390			Hole Completed?:		Purpose:	Exploration
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-86	180		180	SS				☑	
20	-86	177		177	SS				☑	
84	-83	182		182	SS				☑	
143	-81	183		183	SS				☑	
203	-80	183		183	SS				☑	
273	-79	196		196	SS				☑	
326	-79	195		195	SS				☑	
334	-79	184		184	SS				☑	
364	-78	194		194	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**12.40**	**OVBN** **Overburden**									
12.40	**16.65**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									

12.4 - 16.65: Strongly calcareous. Wavy veining. Thin shistosity. PO clots in vening.

<<Min: 12.4 - 21.96 1% Min: Pyrrhotite>> And in foliation.
<<Min: 12.4 - 117.92 0.1% Min: Pyrite>>
<<Alt: 12.4 - 21.96 Strong Calcite>> 40
<<Alt: 12.4 - 52 Moderate Ankerite>> Lapilli. 10

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

16.65 17.58 MAFt Mafic Volcaniclastics

16.65 - 17.58: QZ/CA veins. Fine grain. Oxidized at upper contact.

<<Vein: 16.65 - 17.85 Quartz>> QZ/CA crosscutting MAFt. PY/PO

17.58 21.96 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

17.58 - 21.96: Locally mixed with MAFt. Large discordant QZ vein. Wavy CA veining, crenulated. Thin foliation. Possibly hematite veinlets.

<<Vein: 19.5 - 19.84 Quartz>> Large QZ/CA irregular vein.

21.96 26.11 RHYv Rhyolite volcaniclastic

21.96 - 26.11: Locally lapilitic. QZ vein. Lapilli altered AK. From 25.28 to 26,10, Ribboned QZ vein with oxidized sulfide surrounded by solve light grey material, possibly MAFt xenolith.

<<Min: 21.96 - 117.95 0.5% Min: Pyrrhotite>> Elongated, foliation oriented.

<<Alt: 21.96 - 38.12 Weak-Moderate Calcite>> and veins. 2

<<Alt: 21.96 - 57.7 Weak-Moderate Muscovite>>

26.11 28.70 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

26.11 - 28.7: Possibly intermediate composition. QZ/CA veinlet. Lots of BI.

<<Alt: 26.11 - 30.45 Moderate Chlorite>>

<<Alt: 26.11 - 30.45 Strong Biotite>>

28.70 29.41 RHYvl Lapilli tuff

28.7 - 29.41: Could be locally RHYc curdy.

29.41 30.45 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

29.41 - 30.45: Brownish color. No CL. Few CA veins.

30.45 31.92 RHY undifferentiated rhyolite

30.45 - 31.92: Could be locally RHYc. But probably large strained lapilli highly concentrated. Kind of repetitive of lapilli to ash sequences. AK lapilli.

31.92 38.12 RHYv Rhyolite volcaniclastic

31.92 - 38.12: some flow like texture but probably strained lapilli accumulated.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

38.12 41.31 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

38.12 - 41.31: Moderate CL altered. AK phenoblasts. BI at contacts.

<<Alt: 38.12 - 41.31 Moderate-Strong Chlorite>>

<<Alt: 38.12 - 41.31 Moderate-Strong Calcite>> 30

<<Alt: 38.12 - 41.31 Weak-Moderate Biotite>>

41.31 43.46 RHYva Coarse grained to ash tuff

41.31 - 43.46: Few lapilli altered AK.

<<Alt: 41.31 - 92.4 Weak Calcite>> 2

43.46 45.56 RHYva Coarse grained to ash tuff

43.46 - 45.56: Fine grain. Oxidation and limonite bands (might be weathering).

45.56 48.37 RHYva Coarse grained to ash tuff

48.37 50.04 RHYvl Lapilli tuff

50.04 52.00 RHYva Coarse grained to ash tuff

52.00 54.34 RHYvl Lapilli tuff

<<Alt: 52 - 84.52 Moderate-Strong Ankerite>> Lapilli. 20

54.34 55.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

54.34 - 55.2: Strongly altered by crosscutting QZ vein associated with PY. Chill margins. Oxidation. CA in matrix.

<<Vein: 54.55 - 54.86 Quartz>> QZ vein crosscutting probably mafic dike. PY. Near breccia texture. Rusty aspect.

55.20 56.90 RHYvl Lapilli tuff

<<Struc: 56 - 58.4 Strong Fault>> Gouge, core loss.

56.90 58.40 FLZ Fault Zone

56.9 - 58.4: Fault gouge, missing core.

<<Alt: 57.7 - 71.5 Moderate Muscovite>> Could be original.

58.40 59.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

58.4 - 59.4: Altered CA.

<<Struc: 58.4 - 67 Weak Fault>> Fractured, minor fault, gouge up to 10 cm wide.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

59.40 60.70 RHYvl Lapilli tuff

59.4 - 60.7: QE eyes. Possibly lightly carbonaceous.

60.70 84.52 RHYvl Lapilli tuff

60.7 - 84.52: Lapilli altered AK.

<<Alt: 71.5 - 84.1 Moderate-Strong Muscovite>> Could be original.

<<Struc: 73 - 77 Moderate-Strong Fault>> Multiple narrow fault, gouge fron 73.70 to 74.10.

<<Struc: 77 - 83.7 Moderate Fault>> Multiple minor fault, fractured.

84.52 87.54 RHYva Coarse grained to ash tuff

<<Alt: 84.52 - 122.17 Moderate Ankerite>> Lapilli. 10

87.54 88.53 RHYvl Lapilli tuff

87.54 - 88.53: BI/CL lapilli. CA altered.

88.53 92.40 RHYva Coarse grained to ash tuff

88.53 - 92.4: Weakly CL altered.

92.40 96.51 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

92.4 - 96.51: Strongly altered CL/CA. QZ/CA veins.

<<Alt: 92.4 - 96.51 Strong Chlorite>>

<<Alt: 92.4 - 96.51 Intense Calcite>> 50

<<Vein: 93.6 - 96.51 Quartz-Carbonate>> QZ/CA veins, 3 per metre, 5 cm wide.

96.51 103.48 RHYvl Lapilli tuff

96.51 - 103.48: Lapilli altered AK. Locally weak CL alteration. From 103.24 to 103.48, coarse grain, sandy texture.

<<Alt: 96.51 - 110.15 Weak Chlorite>>

<<Alt: 96.51 - 111.78 Moderate Calcite>> 5

<<Alt: 98.61 - 101.7 Moderate Biotite>>

<<Alt: 103.24 - 107.5 Moderate Biotite>>

103.48 110.60 RHYvl Lapilli tuff

103.48 - 110.6: BI/CL lapilli. Three mafic dikes, 30 cm wide each, CA altered, surrounded by silica bands.CA altered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

110.60 111.78 RHYvl Lapilli tuff

110.6 - 111.78: Lapilli altered AK.

111.78 114.36 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

111.78 - 114.36: CA bands and CA in matrix. Strong CL alteration.

<<Alt: 111.78 - 114.36 Strong Chlorite>>

<<Alt: 111.78 - 114.36 Strong Calcite>> 40

114.36 117.92 RHYvl Lapilli tuff

114.36 - 117.92: Lapilli altered AK. Fractured, 30 cm of consolidated gouge. MU alteration.

<<Alt: 114.5 - 117.9 Moderate Calcite>> CA 5 to 10 when no AK (altered lapilli).

<<Alt: 114.68 - 115.9 Moderate Muscovite>> Could be original.

<<Alt: 115.9 - 117.9 Moderate-Strong Muscovite>> Could be original.

<<Alt: 117.9 - 132.16 Moderate Muscovite>> Could be original.

<<Alt: 117.9 - 364.8 Moderate Calcite>> Calcite is associated with RHYvl containing BI/CL/QZ lapilli. See lithology. About 15 percent of CA in those units. Up to 30 percent in the mafic dikes.

<<Struc: 115.9 - 117.3 Weak-Moderate Fault>> Fractured, minor fault.

117.92 122.92 RHYvl Lapilli tuff

117.92 - 122.92: BI/CL lapilli. CA altered.

<<Min: 117.95 - 136.6 0.5% Min: Pyrite>> Locally replacing BI.

<<Min: 117.95 - 136.6 1% Min: Pyrrhotite>> Elongated, foliation oriented.

<<Alt: 122.17 - 141.51 Moderate-Strong Ankerite>> Lapilli. 15

<<Alt: 122.17 - 364.8 Weak Chlorite>> In lapilli when lithology is logged as RHYvl (BCQlpl). Few CL bands in RHYvl, lapilli AK altered.

<<Alt: 122.17 - 364.8 Moderate Ankerite>> Ankerite is found as replacement in lapilli. About 10 percent of Ankerite in the unit RHYvl.

122.92 130.51 RHYvl Lapilli tuff

122.92 - 130.51: Lapilli altered AK.

<<Struc: 123.14 - 123.8 Moderate-Strong Fault>> Core must loss. Fault gouge.

130.51 131.72 RHYvl Lapilli tuff

130.51 - 131.72: BI/CL lapilli. CA altered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

131.72 141.51 RHYvl Lapilli tuff

131.72 - 141.51: Lapilli altered AK. MU alteration.

<<Min: 136.6 - 136.7 1% Min: Sphalerite>> QZ vein, sulfide assemblage.

<<Min: 136.6 - 136.7 3% Min: Pyrite>> QZ vein, sulfide assemblage.

<<Min: 136.6 - 136.7 1% Min: Pyrrhotite>> QZ vein, sulfide assemblage.

<<Min: 136.6 - 136.7 5% Min: Galena>> QZ vein, sulfide assemblage.

<<Min: 136.6 - 136.7 2% Min: Arsenopyrite>> If ASPY, could be silvery PY. Maybe few CP in this vein.

<<Min: 136.7 - 166.4 0.1% Min: Pyrite>>

<<Min: 136.7 - 166.4 2% Min: Pyrrhotite>>

<<Alt: 132.16 - 141.41 Moderate-Strong Muscovite>> Could be original.

<<Vein: 136.5 - 136.7 Quartz-Carbonate>> QZ/CA vein mineralized PY/GL/SP possibly AS/CP.

<<Struc: 133.5 - 141.51 Weak-Moderate Fault>> Fractured, minor fault.

141.51 149.50 RHYvl Lapilli tuff

141.51 - 149.5: BI/CL lapilli. CA altered.

<<Alt: 141.51 - 145.4 Moderate Muscovite>> Could be original.

<<Alt: 141.51 - 149.9 Weak Ankerite>> Lapilli. 2

<<Alt: 145.4 - 185 Weak-Moderate Muscovite>>

<<Vein: 148.9 - 149.02 Quartz-Tourmaline>> QZ/TO

<<Struc: 144.9 - 145.4 Weak Fault>> Fractured, minor.

149.50 150.47 RHYvl Lapilli tuff

149.5 - 150.47: Lapilli altered AK.

150.47 152.93 RHYvl Lapilli tuff

150.47 - 152.93: BI/CL lapilli. CA altered.

152.93 155.39 RHYvl Lapilli tuff

152.93 - 155.39: Lapilli altered AK.

155.39 158.12 RHYvl Lapilli tuff

155.39 - 158.12: Dominantly coarse lapilli altered CL. CA altered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

158.12 158.32 MAFi **Mafic Intrusions (primarily footwall mafic intrusion)**

158.12 - 158.32: CA/BI/CL.

158.32 160.10 RHYvl **Lapilli tuff**

158.32 - 160.1: CA altered.

160.10 160.32 MAFi **Mafic Intrusions (primarily footwall mafic intrusion)**

160.1 - 160.32: CA/BI/CL.

160.32 163.75 RHYvl **Lapilli tuff**

160.32 - 163.75: Lapilli altered AK.

163.75 166.53 RHYvl **Lapilli tuff**

163.75 - 166.53: Large lapilli. CA altered.

<<Min: 166.4 - 180.8 1% Min: Pyrite>>

<<Min: 166.4 - 180.8 3% Min: Pyrrhotite>>

166.53 167.78 RHYvl **Lapilli tuff**

166.53 - 167.78: Lapilli altered AK.

167.78 170.36 RHYvl **Lapilli tuff**

167.78 - 170.36: Banded MU. Late MS alteration, secondary foliation. CA altered.

170.36 176.36 RHYvl **Lapilli tuff**

170.36 - 176.36: Lapilli altered AK.

176.36 178.86 RHYvl **Lapilli tuff**

176.36 - 178.86: CA altered.

178.86 180.80 RHYvl **Lapilli tuff**

178.86 - 180.8: Lapilli altered AK.

<<Struc: 179.75 - 180.5 Weak Fault>> Broken zone, minor gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

180.80 187.81 RHYvl Lapilli tuff

180.8 - 187.81: CA altered.

<<Min: 180.8 - 203.3 0.5% Min: Pyrrhotite>>

<<Min: 180.8 - 227.07 0.5% Min: Pyrite>>

<<Alt: 185 - 198.88 Moderate Muscovite>> Could be original.

187.81 194.20 RHY undifferentiated rhyolite

187.81 - 194.2: Flow banded. Dacitic composition.

194.20 200.04 RHY undifferentiated rhyolite

194.2 - 200.04: Intermediate composition. Ribonned blue QZ, QZ vein creating local alteration. Possibly peperitic texture. CA/sulfide.

<<Vein: 194.2 - 198.88 Quartz>> Multiple QZ veins associated with CA, TO and PO/PY. Limonite/oxidation halo.

200.04 205.79 RHYcw Curdy textured-flow banded (flows, subvolcanics)

200.04 - 205.79: Curdy texture.

<<Min: 203.3 - 215.7 1% Min: Pyrrhotite>>

205.79 210.61 RHYcw Curdy textured-flow banded (flows, subvolcanics)

205.79 - 210.61: Qz veins, TO/PY.

<<Alt: 206.79 - 212.84 Moderate-Strong Muscovite>> Could be original.

<<Vein: 206.79 - 212.34 Quartz>> Multiple QZ/CA veins. One ribboned, cherty like, wavy vein. TO/sulfide associated. Limonite/oxidation.

210.61 210.73 CHT Chert

210.61 - 210.73: Not chert but very similar. Ribboned blue/translucent QZ, folded, crosscutting RHYcw. Logged as chert in case it could be use as a stratigraphic marker.

210.73 212.34 RHY undifferentiated rhyolite

210.73 - 212.34: Crosscut by large QZ veins.

212.34 219.15 RHYcw Curdy textured-flow banded (flows, subvolcanics)

212.34 - 219.15: Large wavy/crenulated QZ band

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 215.7 - 250 0.1% Min: Pyrrhotite>> In QZ clots and discontinuous veins.

<<Alt: 215.55 - 222.35 Moderate Muscovite>> Could be original.

219.15 219.33 CHT Chert

219.15 - 219.33: Not chert but very similar. Ribboned blue/translucent QZ, folded, crosscutting RHYcw. Logged as chert in case it could be use as a stratigraphic marker.

<<Vein: 219.15 - 219.44 Quartz>> Ribonned, cherty like blue QZ veins.

219.33 245.00 RHYcw Curdy textured-flow banded (flows, subvolcanics)

219.33 - 245: Curdy to flow banded, locally pseudo fragmental.

<<Min: 227.07 - 245 1% Min: Pyrite>>

<<Alt: 222.35 - 223.8 Moderate-Strong Muscovite>> Could be original.

<<Alt: 223.8 - 245 Moderate Muscovite>> Could be original.

<<Vein: 221.85 - 222.2 Quartz>> QZ/TO/CA veins, limonite.

<<Struc: 222.2 - 222.4 Weak Fault>> Broken zone, minor gouge.

<<Struc: 241.8 - 242 Weak Fault>> Gouge over 10 cm.

245.00 246.30 RHY undifferentiated rhyolite

245 - 246.3: Transition with intermediate composition (dacitic?).

<<Min: 245 - 300 0.1% Min: Pyrite>>

246.30 250.79 RHYvl Lapilli tuff

246.3 - 250.79: CA altered. From 247.40 to 250.00, wavy QZ vein and flow banded texture.

<<Min: 250 - 255.8 3% Min: Pyrrhotite>>

250.79 258.00 RHYvl Lapilli tuff

250.79 - 258: Lapilli altered AK.

<<Min: 255.8 - 262.78 2% Min: Pyrrhotite>>

258.00 259.22 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

258 - 259.22: CA rich. Ribboned. Heterogeneous texture. Could be sedimentary unit but very sharp CA boundary with surrounded units.

259.22 271.75 RHYvl Lapilli tuff

259.22 - 271.75: CA altered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 262.78 - 315.8 0.1% Min: Pyrrhotite>>

271.75 275.89 RHYvl Lapilli tuff

271.75 - 275.89: Lapilli altered AK.

275.89 277.23 RHY undifferentiated rhyolite

275.89 - 277.23: Dark color. Lapillitic texture obscured. QZ/BI rich, few CA.

277.23 282.95 RHYvl Lapilli tuff

277.23 - 282.95: CA altered.

<<Vein: 280.8 - 280.95 Quartz-Tourmaline 25 deg. >> TO/QZ.

282.95 284.95 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

282.95 - 284.95: BI/CL/CA. Sharpe CA change at contact.

284.95 288.77 RHYvl Lapilli tuff

284.95 - 288.77: CA altered.

<<Vein: 286.55 - 286.6 Tourmaline>> TO/QZ.

288.77 289.30 RHYvl Lapilli tuff

288.77 - 289.3: Lapilli altered AK.

289.30 302.17 RHYvl Lapilli tuff

289.3 - 302.17: CA altered.

302.17 302.67 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

302.17 - 302.67: CA/BI.

302.67 306.70 RHYvl Lapilli tuff

302.67 - 306.7: CA altered.

306.70 307.52 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

306.7 - 307.52: CA/BI.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

307.52 315.80 RHYvl Lapilli tuff

307.52 - 315.8: QZ/TO veins. Maybe narrow mafic dike from 315.42 to 315.80 (chlorite bands and speck of black mineral, amphibole or tourmaline).

<<Vein: 308.38 - 308.4 Tourmaline 30 deg. >> TO.

<<Vein: 310.81 - 311.49 Quartz-Tourmaline 20 deg. >> QZ/TO., few PY. Almost brecciated.

315.80 323.54 RHYvl Lapilli tuff

315.8 - 323.54: Lapilli altered AK.

<<Min: 315.8 - 330.05 0.5% Min: Pyrrhotite>>

<<Alt: 317.7 - 319.58 Moderate Muscovite>>

<<Struc: 318.4 - 319.48 Moderate Fault>> Up to 10 cm of gouge, fractured.

323.54 326.22 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

323.54 - 326.22: CL/AK banded, speck of black mineral (amphibole or tourmaline).

326.22 333.94 RHYvl Lapilli tuff

326.22 - 333.94: Lapilli altered AK.

<<Min: 330.05 - 333.94 2% Min: Pyrrhotite>>

333.94 338.00 RHYva Coarse grained to ash tuff

333.94 - 338: Medium grain lapilli altered AK.

<<Min: 333.94 - 338 0.1% Min: Pyrrhotite>>

<<Alt: 337.7 - 344.93 Moderate Muscovite>>

<<Struc: 336.15 - 344.93 Weak >> Fractured zone. Rare gouge (1 to 3 cm wide).

338.00 343.90 RHYvl Lapilli tuff

338 - 343.9: Lapilli altered AK.

<<Min: 338 - 364.8 1% Min: Pyrrhotite>>

343.90 344.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

343.9 - 344.4: CL/AK banded. Speck of black mineral.

344.40 348.71 RHYvl Lapilli tuff

344.4 - 348.71: Lapilli altered AK.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

348.71 349.51 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

348.71 - 349.51: CL/AK banded. Speck of black mineral. Large chill margin at lower contact.

349.51 361.91 RHYvl Lapilli tuff

349.51 - 361.91: Medium grain lapilli, ash.

<<Min: 350.1 - 364.8 0.5% Min: Pyrite>>

<<Alt: 353.45 - 355.35 Moderate Muscovite>>

<<Vein: 349.9 - 350.1 Quartz>> QZ vein.

<<Struc: 353.45 - 355.55 Weak Fault>> Fracture bzone. Rare goue (1 to 3 cm wide).

361.91 362.76 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

361.91 - 362.76: CL.

362.76 364.80 RHYva Coarse grained to ash tuff

362.76 - 364.8: Fine to medium grain lapilli. E.O.H.

End of Hole @ 364.8

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K97-179

Prospect:	FCZ	Hole Type:	DD	Survey Type:		Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:		Date Logging Start:	4/18/2016
UTM Easting	416150	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/21/2016
UTM Northing:	6814900	Casing Pulled?:		Dip:	-86	Drill Company:	
UTM Elev. (m):	1685	Casing Depth (m):	3	Length (m):	502.3	Drill Rig:	
Local Easting:	6150	Stored?:	Yes	Claims Title		Drill Started:	5/31/1997
Local Northing:	4900	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	6/6/1997
Local Elev. (m):	1685			Hole Completed?:		Purpose:	Exploration
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-86	180		180	SS				☑	
76	-82	176		176	SS				☑	
243	-76	173		173	SS				☑	
320	-72	172		172	SS				☑	
411	-71	154		154	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 3.10 OVBN Overburden

3.10 24.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

3.1 - 24.3: Could be MAFt, texture obscured. Patchy BI, CA veining.

<<Min: 3.1 - 67.28 0.1% Min: Pyrite>>

<<Alt: 3.1 - 63.5 Moderate Biotite>>

<<Alt: 3.1 - 67.28 Strong Chlorite>> Mafic tuff and mafic sill.

<<Alt: 3.1 - 74.9 Moderate Calcite>>

<<Alt: 3.1 - 195 Weak-Moderate Ankerite>>

24.30 27.90 MAFt Mafic Volcaniclastics

24.3 - 27.9: Maybe mixed with carb sediments. Strongly foliated.

<<Vein: 27.8 - 27.9 Quartz>> QZ/CA

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

27.90 49.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

27.9 - 49.8: Locally bleached, texture obscured possibly due to SI fluids. Patchy BI.

<<Alt: 44.6 - 44.9 Moderate Silicification>>

<<Vein: 33.7 - 34 Quartz>> QZ/CA/CL

49.80 55.00 FLZ Fault Zone

49.8 - 55: Fault gouge and MAFt. 10 to 15 cm QZ/CA veins.

<<Struc: 49.8 - 55 Moderate Fault>> Fault gouge and mafic tuff, QZ/CA veins.

55.00 74.90 MAFt Mafic Volcaniclastics

55 - 74.9: Calcite veining. Large patch of hematite from 67.28 to 73.30 with QZ veins.

<<Min: 67.28 - 73.3 1% Min: Pyrite>> Discontinuous veinlets, disseminated and few patch.

<<Min: 67.28 - 162 1% Min: Pyrrhotite>> Foliation oriented. More concentrated in MDS.

<<Min: 73.3 - 502.3 0.1% Min: Pyrite>> Few patch associated with QZ veins.

<<Alt: 67.28 - 73.3 Weak Muscovite>>

<<Alt: 67.28 - 213.44 Moderate-Strong Chlorite>>

74.90 82.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

74.9 - 82.7: Locally MAFt interbedded (or mafic dyke p to 40cm wide).

<<Alt: 74.9 - 162 Moderate-Strong Calcite>>

<<Vein: 79.62 - 79.9 Quartz>> QZ/CA

82.70 84.10 MAFt Mafic Volcaniclastics

84.10 89.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

89.20 96.27 MAFt Mafic Volcaniclastics

89.2 - 96.27: Patch of hematite at contact. Mafic according to the LITHO whole rock assay.

<<Alt: 92.82 - 95 Weak Biotite>>

96.27 116.37 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

96.27 - 116.37: Patch of hematite (?).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 107.9 - 108.2 Weak Fault>> Fault gouge.

116.37 118.75 MAFt Mafic Volcaniclastics

116.37 - 118.75: MDS interbedded. Sharpe contact, could be narrow dyke.

118.75 130.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

118.75 - 130.85: Few MAFt interbedded.

<<Vein: 125.42 - 125.61 Quartz>> QZ/CA

130.85 132.37 MAFt Mafic Volcaniclastics

132.37 133.21 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

133.21 134.80 MAFt Mafic Volcaniclastics

134.80 136.79 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

136.79 139.65 RHY undifferentiated rhyolite

136.79 - 139.65: According to the LITHO whole rock assay. The percentage of SI could be biased by QZ veining.

139.65 142.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

142.88 144.10 RHY undifferentiated rhyolite

<<Vein: 143.16 - 143.26 Quartz>> QZ/CA

144.10 151.18 MAFt Mafic Volcaniclastics

144.1 - 151.18: Dark green, deformed CA veins. Patch of hematite (?).

<<Vein: 149.1 - 149.4 Quartz>> QZ/CA

151.18 172.64 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

151.18 - 172.64: BI/CL. Deformed CA veining. Crosscut by narrow mafic dykes up to 60 cm wide. Thinly foliated.

<<Min: 162 - 290 0.5% Min: Pyrrhotite>> Locally with SP/GL/PO?GL in QZ/CA vein.

<<Alt: 162 - 213.44 Strong Calcite>>

172.64 174.25 MAFt Mafic Volcaniclastics

172.64 - 174.25: Mixed with argillite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

174.25 184.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

174.25 - 184.7: Containing tuffaceous material at lower contact. CA veining. Thinly foliated. QZ/CA veins, hematite veinlets.

184.70 186.04 MAFt Mafic Volcaniclastics

184.7 - 186.04: Fine grain. Mixed with argillite at lower contact.

186.04 193.24 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

186.04 - 193.24: BI rich. QZ/CA veining.

193.24 194.94 MAFt Mafic Volcaniclastics

193.24 - 194.94: Fine to medium grain.

194.94 203.97 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

194.94 - 203.97: Containing tuffaceous material. QZ/CA (maybe dolomite) veining and patch.

<<Alt: 195 - 213.44 Moderate-Strong Ankerite>>

203.97 204.32 MAFt Mafic Volcaniclastics

203.97 - 204.32: Sharpe contacts, could be dike.

204.32 209.48 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

204.32 - 209.48: Tuffaceous.

<<Vein: 205.36 - 205.6 Quartz>> QZ/CA/CL

209.48 213.44 MAFt Mafic Volcaniclastics

209.48 - 213.44: CA veining. Sharpe contacts. Could be dike.

213.44 215.95 SED undifferentiated Sediment

213.44 - 215.95: Tuffaceous. Mix with mudstone/siltstone containing locally QE in RHYva layers.

<<Alt: 213.44 - 234.72 Weak-Moderate Ankerite>>

<<Alt: 213.44 - 502.3 Weak-Moderate Calcite>> and clots. Strong in the mafic dikes.

215.95 217.60 RHYva Coarse grained to ash tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 215.95 - 502.3 Moderate-Strong Muscovite>>

217.60 221.55 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

217.6 - 221.55: Medium grain locally.

221.55 222.58 RHYcw Curdy textured-flow banded (flows, subvolcanics)

222.58 229.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

222.58 - 229.1: Faulted, strongly foliated.

<<Struc: 224 - 226 Weak Fault>> Multiple narrow gouge zones.

<<Struc: 227.9 - 229.1 Moderate Fault>> Fault gouge in graphitic mudstone.

229.10 234.74 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

229.1 - 234.74: QZ/CA veining.

<<Alt: 234.72 - 502.3 Moderate Ankerite>> Replacing lapilli. Locally strong due to strong lapilli density.

<<Vein: 231.45 - 231.9 Quartz>> QZ/CA/FeCA/TO

<<Vein: 232.18 - 232.58 Quartz>> QZ/CA/PO

234.74 240.52 RHYva Coarse grained to ash tuff

234.74 - 240.52: Dominantly ash.

240.52 242.68 RHYvl Lapilli tuff

242.68 243.59 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

243.59 251.05 RHYvl Lapilli tuff

243.59 - 251.05: BI porphyroblasts, overprinted. Crosscut by narrow mafic dyke from 247.05 to 247.52 showing PO in chill margins. Two foliations observed.

251.05 262.85 RHYvl Lapilli tuff

262.85 265.13 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

262.85 - 265.13: CL.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

265.13 270.80 RHYvl Lapilli tuff

270.80 272.25 RHYvl Lapilli tuff

270.8 - 272.25: Crosscut by narrow chloritized mafic dikes.

272.25 276.82 RHYva Coarse grained to ash tuff

272.25 - 276.82: Crosscut by narrow chloritized mafic dikes.

276.82 280.41 RHYvl Lapilli tuff

280.41 282.54 RHYva Coarse grained to ash tuff

280.41 - 282.54: Crosscut by narrow chloritized mafic dikes.

282.54 284.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

282.54 - 284.2: CL/CA.

284.20 287.10 RHYva Coarse grained to ash tuff

287.10 332.83 RHYvl Lapilli tuff

287.1 - 332.83: Few CL bands. BI could be due to pelitic material.

<<Min: 290 - 502.3 0.1% Min: Pyrrhotite>>

<<Alt: 287.3 - 502.3 Moderate Biotite>> Porphyroblasts.

<<Vein: 291.81 - 292 Quartz>> QZ/CA

<<Vein: 298.3 - 299.13 Quartz>> QZ/CA vein set, up to 8 cm wide.

<<Vein: 301.86 - 302.12 Quartz>> QZ vein with PO/PY/SP/GL patch.

<<Vein: 303.07 - 303.61 Quartz>> QZ vein with PY/GL/PO patch

<<Vein: 304.2 - 304.49 Quartz>> QZ

332.83 341.50 RHYv Rhyolite volcaniclastic

332.83 - 341.5: Few lapilli. Narrow rich BI bedding up to 10 cm wide. Possibly mafic dikes. Mafic dike form 341.50 to 342.02, CL/BI/CA.

341.50 349.39 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

341.5 - 349.39: Confirmed by Whole rock assay. BI/CA. No CL. CA/BI/QZ veins.

<<Vein: 348.5 - 348.7 Calcite>> CA/BI.

<<Struc: 344.9 - 346.35 Trace Fault>> Logged by Cominco, really minor structure.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

349.39 352.46 RHY undifferentiated rhyolite

349.39 - 352.46: Showing BI rich bedding. Silicified at upper contact with MAFi.

<<Alt: 349.39 - 350.3 Moderate-Strong Silicification>> Associated with MAFi lower contact.

352.46 355.94 RHYv Rhyolite volcaniclastic

352.46 - 355.94: Some lapilli. Possibly pelitic locally, high concentration of BI. Ash and lapilli show sort of graded bed sequences.

355.94 358.62 RHYcf Feldspar & feldspar quartz porphyry

355.94 - 358.62: Could be RHYvl at lower contact.

358.62 369.02 RHYva Coarse grained to ash tuff

358.62 - 369.02: Mixed with BI rich bedding. Shows to foliation at 361.50.

369.02 380.54 RHYvx Quartz and/or feldspar crystal tuff

380.54 383.17 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

380.54 - 383.17: BI/CA.

383.17 389.28 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 388.89 - 390.3 Weak Muscovite>> Yellow-green muscovite. Could be original alteration.

389.28 391.65 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

389.28 - 391.65: Confirmed by Whole rock assay. BI/CA rich. QZ/CA veins.

391.65 402.12 RHYvl Lapilli tuff

402.12 403.13 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

402.12 - 403.13: BI/CA.

403.13 406.25 RHYva Coarse grained to ash tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

406.25 408.66 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

406.25 - 408.66: Two dikes separated by QZ/CA vein and 15 cm of RHYvl.

408.66 411.12 RHYva Coarse grained to ash tuff

411.12 425.61 RHYvx Quartz and/or feldspar crystal tuff

411.12 - 425.61: Could be locally RHYc (curdy like texture). Strong lapilli density and some angular clasts at lower contact.

425.61 443.90 RHYva Coarse grained to ash tuff

443.90 444.34 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

443.9 - 444.34: BI/CA.

444.34 446.12 RHY undifferentiated rhyolite

444.34 - 446.12: Almost curdy texture like. Xtl up to 0.5cm. Could be porphyritic.

446.12 452.04 RHYva Coarse grained to ash tuff

446.12 - 452.04: Locally BI in foliation.

<<Alt: 450 - 502.3 Trace Chlorite>> Locally in fracture.

452.04 461.78 RHYva Coarse grained to ash tuff

452.04 - 461.78: And Bippo.

<<Vein: 461.5 - 461.6 Quartz>> QZ/TO and narrow QZ/BI banded interval, sedimentary looking.

461.78 463.91 RHY undifferentiated rhyolite

461.78 - 463.91: Could be curdy texture.

463.91 465.14 RHYcw Curdy textured-flow banded (flows, subvolcanics)

465.14 466.72 RHYva Coarse grained to ash tuff

466.72 467.21 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

466.72 - 467.21: BI/CA. 10 cm of RHYvl interbedded showing sharp contacts.

467.21 467.60 RHYv Rhyolite volcaniclastic

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

467.60 469.57 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

467.6 - 469.57: BI/CA banded.

469.57 470.02 RHYv Rhyolite volcaniclastic

470.02 470.37 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

470.02 - 470.37: CI/CA

470.37 472.69 RHYvx Quartz and/or feldspar crystal tuff

470.37 - 472.69: Mixed with possibly mafic material. Lost of BI in foliation. Maybe intermediate composition or non consolidated while intruded by MAFi.

472.69 476.56 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

472.69 - 476.56: BI/CA banded.

476.56 478.92 RHYvx Quartz and/or feldspar crystal tuff

478.92 480.00 RHY undifferentiated rhyolite

478.92 - 480: Possibly curdy texture. Probably RHYvx.

480.00 480.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

480 - 480.4: BI/CA.

480.40 482.20 RHYvl Lapilli tuff

480.4 - 482.2: BI in foliation.

482.20 484.72 RHY undifferentiated rhyolite

482.2 - 484.72: Possibly ash dominant unit with RHYc locally.

484.72 484.87 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

484.72 - 484.87: Sharp contact. BI/CA/AK.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

484.87 485.23 RHYv Rhyolite volcaniclastic

485.23 487.76 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

485.23 - 487.76: Confirmed by Whole rock assay. BI/CA banded.

487.76 493.35 RHYvx Quartz and/or feldspar crystal tuff

487.76 - 493.35: Trace of deformation visible as the foliation change.

493.35 499.95 RHYvx Quartz and/or feldspar crystal tuff

499.95 500.18 RHY undifferentiated rhyolite

500.18 500.66 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

500.18 - 500.66: BI/CA.

500.66 502.30 RHYvx Quartz and/or feldspar crystal tuff

500.66 - 502.3: AK at contact with MAFi. Intermediate composition, BI rich in foliation. E.O.H.

End of Hole @ 502.3

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K97-180

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/18/2016
UTM Easting	418481.531	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/22/2016
UTM Northing:	6815055.281	Casing Pulled?:		Dip:	-60	Drill Company:	
UTM Elev. (m):	1463.882	Casing Depth (m):		Length (m):	206.8	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	180		180	SS				☑	
206	-60	180		180	SS				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.10 OVBN Overburden

9.10 14.11 MDSt Rhyolite tuff dominant mudstone dark grey FG

9.1 - 14.11: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

<<Alt: 9.1 - 14.11 Weak Muscovite>> 1-2 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff layers and oriented at an angle to bedding

<<Vein: 13.6 - 14.11 70% Quartz-Carbonate 50 deg. >> Fairly massive quartz-ankerite vein interleaved with host MDSt

<<Struc: 11.9 - 11.91 Moderate-Strong Foliation>> Bedding-parallel foliation in graphitic mudstone and rhyolite tuff

<<Struc: 11.9 - 11.91 Moderate-Strong Bedding>> Alternations between graphitic mudstone and rhyolite tuff

14.11 18.04 RHYvl Lapilli tuff grey FMG

14.11 - 18.04: Relative massive interval of granular-textured rhyolite lapilli tuff (Cominco logged as quartzite); tuff contains thin bands of muscovite-rich, graphitic and black mudstone

<<Alt: 14.11 - 18.04 Moderate Muscovite>> 1-3 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

18.04 20.40 MDSt Rhyolite tuff dominant mudstone dark grey FG

18.04 - 20.4: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

<<Alt: 18.04 - 20.4 Weak Muscovite>> 1-2 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff layers and oriented at an angle to bedding

<<Vein: 19.7 - 26.2 15% Quarzt-Chlorite-Carbonate 20 deg. >> Fairly massive quartz-ankerite veins with chlorite- and muscovite-rich selvages; partially hematized

<<Struc: 19.5 - 19.51 Moderate-Strong Foliation>> Bedding-parallel foliation in graphitic mudstone and rhyolite tuff

<<Struc: 19.5 - 19.51 Weak-Moderate Bedding>> Alternations between graphitic mudstone and rhyolite tuff

20.40 25.40 FLZ Fault Zone dark grey

20.4 - 25.4: Heavily fractured, partially hematized fault zone with significant stretches of fault gouge; also contains thick quartz veins

<<Alt: 25.3 - 26.56 Weak Muscovite>> 1-2 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff layers and oriented at an angle to bedding

<<Struc: 20.4 - 25.3 Strong Fault>> Extensive fracturing, brecciation, fault gouge development and oxidation; well-developed and prominent fault zone

25.40 26.56 MDSt Rhyolite tuff dominant mudstone dark grey FG

25.4 - 26.56: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

26.56 27.90 RHYvl Lapilli tuff grey FMG

26.56 - 27.9: Relative massive interval of granular-textured rhyolite lapilli tuff (Cominco logged as quartzite); tuff contains thin bands of muscovite-rich, graphitic and black mudstone

<<Alt: 26.56 - 27.9 Moderate Muscovite>> 1-3 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff

<<Alt: 27.5 - 27.9 Weak-Moderate Calcite>> Patches of yellowish calcite alteration associated with interleaved mudstone layers

27.90 29.61 MDSt Rhyolite tuff dominant mudstone dark grey FG

27.9 - 29.61: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

<<Alt: 27.9 - 29.61 Weak Muscovite>> 1-2 mm thick layers of muscovite (+/-graphite) cutting rhyolite tuff layers and oriented at an angle to bedding

<<Vein: 28.69 - 29.61 60% Quartz 75 deg. >> Massive quartz veins with only minor carbonate

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

29.61 35.06 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

29.61 - 35.06: Finely laminated graphitic mudstone; laminations include yellowish-grey calcite rich bands; also some biotite-rich (pelitic?) layers

<<Alt: 29.61 - 35.06 Weak-Moderate Calcite>> Scattered patches and bands of yellowish-grey calcite

<<Alt: 29.61 - 40.44 Weak-Moderate Biotite>> Up to 5 cm thick bands of biotite-rich alteration; possibly pelitic layers within mudstone?

<<Vein: 33.65 - 46.1 10% Quartz-Carbonate 70 deg. >> Scattered massive quartz-ankerite veins ranging from 5-20 cm in core width and generally with high angle TCA

<<Struc: 31 - 31.01 Moderate-Strong Foliation>> Bedding-parallel foliation defined by biotite-calcite layering within graphitic mudstone

35.06 40.44 MDSt Rhyolite tuff dominant mudstone dark grey FG

35.06 - 40.44: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

40.44 41.51 RHYc Rhyolite coherent volcanics light grey VFG

40.44 - 41.51: Granular- to glass-textured rhyolite that could be a composite tuff-coherent interval; cut by numerous 1-3 mm thick muscovite-rich bands

<<Alt: 40.44 - 41.51 Moderate Muscovite>> 1-3 mm thick layers of muscovite (+/-graphite) cutting coherent rhyolite

41.51 43.46 MAFt Mafic Volcaniclastics green FG

41.51 - 43.46: Distinctly green (i.e. chlorite-rich) fine-grained and relative massive; abundant bands and patches of yellow-ish calcite alteration; also locally interlayered with RHYvl and graphitic mudstone

<<Min: 43.1 - 43.46 5% Min: Pyrite>> Euhedral pyrite in quartz-tourmaline vein

<<Alt: 41.51 - 43.46 Strong Muscovite>> Patches of very strong biotite-muscovite alteration; associated with interleaved mafic and rhyolite tuff, as well as mudstone

<<Alt: 41.51 - 43.46 Moderate-Strong Chlorite>> Pervasive alteration of mafic protolith to chlorite and, locally, biotite

<<Alt: 41.51 - 43.46 Strong Biotite>> Patches of very strong biotite-muscovite alteration; associated with interleaved mafic and rhyolite tuff, as well as mudstone

<<Vein: 43.1 - 43.46 100% Quarzt-Tourmaline-Sulphide 75 deg. >> Massive quartz-tourmaline vein with 5% pyrite

<<Struc: 41.8 - 41.81 Moderate-Strong Foliation>> Calcite layers within chloritized mafic tuff

43.46 44.50 RHYvl Lapilli tuff grey FG

43.46 - 44.5: Short interval of granular-textured rhyolite

<<Alt: 43.46 - 47.18 Moderate Silicification>> Patchy silicification over MDSt and RHYvl units immediately overlying chert interval

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

44.50 47.18 MDSt Rhyolite tuff dominant mudstone dark grey FG

44.5 - 47.18: Alternating bands of black graphitic mudstone and grey rhyolite lapilli tuff; Cominco logged the tuff layers as quartzite, likely on the basis of their granular texture

47.18 49.96 CHT Chert grey VFG

47.18 - 49.96: Fine to coarsely laminated grey to white chert and silicified graphitic mudstone; overall, rock is very hard; planar laminated to complexly folded and disrupted texture

<<Alt: 47.18 - 64.21 Strong Silicification>> Strong pervasive silicification of graphitic mudstone intervals and layers closely associated with chert

49.96 51.86 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

49.96 - 51.86: Interval of strongly silicified mudstone within much longer interval of chert; complexly folded and disrupted texture

51.86 59.16 CHT Chert grey VFG

51.86 - 59.16: Fine to coarsely laminated grey to white chert and silicified graphitic mudstone; overall, rock is very hard; planar laminated to complexly folded and disrupted texture

<<Min: 53.59 - 53.67 10% Min: Pyrite>> Blebs and veins of pyrite associated with ankerite-rich interval (exhalative?) within chert

<<Struc: 53.5 - 53.51 Strong Bedding>> Well-defined bedding between chert and graphitic mudstone

59.16 60.81 CHT Chert grey-brown FG

59.16 - 60.81: As above but with three 5-30 cm ankerite-rich intervals (carbonate exhalative?)

<<Min: 59.16 - 60.81 3% Min: Pyrite>> Pyrite bands and veins; typically associated with ankerite-rich (exhalative?) intervals but also cutting chert

<<Alt: 59.16 - 60.81 Strong Ankerite>> Possibly exhalative; three 5-30 cm thick ankerite-rich bands within chert

60.81 62.05 MDSt Rhyolite tuff dominant mudstone dark grey FG

60.81 - 62.05: Strongly silicified interval of tuffaceous graphitic mudstone

<<Min: 60.81 - 63.63 1% Min: Pyrite>> Scattered veins and blebs

<<Struc: 61 - 61.01 Strong Bedding>> Well-defined bedding between chert and graphitic mudstone

62.05 64.21 CHT Chert grey VFG

62.05 - 64.21: Weakly magnetic and locally brecciated chert that is interbedded with graphitic mudstone; layering ranges from finely laminated to complexly folded and chaotic

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 62.05 - 63.8 1% Min: Pyrrhotite>> Imparts weakly magnetic characteristic to the rock

<<Min: 63.63 - 63.8 5% Min: Pyrite>> Large blebs in basalt part of chert breccia interval

<<Vein: 63.63 - 73.02 5% Quartz-Carbonate 45 deg. >> Massive 5-30 cm thick quartz with minor ankerite veins

64.21 66.82 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FMG

64.21 - 66.82: Relatively massive and distinctly green; pervasively altered with biotite and ankerite porphyroblasts, as well as muscovite along hairline fractures

<<Alt: 64.21 - 66.82 Moderate Silicification>> Overall lower intensity of silicification relative to surrounding rocks

<<Alt: 64.21 - 66.82 Strong Chlorite>> Abundant in the groundmass

<<Alt: 64.21 - 66.82 Weak Biotite>> 5-10 cm intervals with 10-20% biotite porphyroblasts

<<Alt: 64.21 - 66.82 Moderate Ankerite>> 1 mm sized porphyroblasts

<<Struc: 64.21 - 64.22 Contact>> Sharp contact between mafic and chert units

66.82 69.55 CHT Chert grey VFG

66.82 - 69.55: Massive to laminated chert; the most massive chert interval seen yet; graphitic mudstone is interbedded with chert

<<Min: 66.82 - 74.11 0.5% Min: Pyrite>> Scattered blebs in chert and silicified mudstone

<<Min: 66.82 - 74.11 0.5% Min: Pyrrhotite>> Scattered blebs in chert and silicified mudstone

<<Alt: 66.82 - 69.55 Intense Silicification>> Strong to intense silicification of graphitic mudstone associated with chert

69.55 70.26 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FG

69.55 - 70.26: Strongly biotite-muscovite-ankerite altered mafic intrusion

<<Alt: 69.55 - 70.26 Strong Chlorite>> Abundant in the groundmass

<<Alt: 69.55 - 70.26 Moderate-Strong Ankerite>> Abundant 1 mm ankerite porphyroblasts overgrowing chloritized groundmass

<<Alt: 69.55 - 71.05 Moderate-Strong Silicification>> Silica-dominant blebs and bands

<<Alt: 69.55 - 71.05 Moderate Muscovite>> Hairline fractures filled with hematite and muscovite

<<Alt: 69.55 - 71.05 Weak-Moderate Biotite>> Bands with 10-30% biotite porphyroblasts

70.26 71.05 RHYvl Lapilli tuff grey FG

70.26 - 71.05: Ankerite-altered rhyolite tuff with fine interbeds of silicified graphitic mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

71.05 72.59 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

71.05 - 72.59: Strongly silicified mudstone with complexly folded and disrupted texture

<<Alt: 71.05 - 88.87 Moderate-Strong Silicification>> Moderate strong to strong pervasive silicification in graphitic mudstone and mafic units underlying chert interval

72.59 74.11 CHT Chert dark grey VFG

72.59 - 74.11: Finely laminated chert and silicified graphitic mudstone, with relatively high mudstone content

<<Struc: 73.1 - 73.11 Moderate-Strong Bedding>> Laminated graphitic and calcic mudstone

74.11 83.01 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

74.11 - 83.01: Finely laminated, locally sheared, silicified graphitic mudstone with thin calcite-rich bands

<<Min: 74.11 - 83.01 2% Min: Pyrite>> Mostly as blebs and vein-like pyrite-pure veins

<<Struc: 82 - 82.01 Weak Bedding>> Weakly defined bedding between graphitic and silicic layers

83.01 87.58 SEDc calcareous Sediment dark grey FMG

83.01 - 87.58: Relatively massive to weakly bedded quartz-muscovite-ankerite rock; dark grey colour, mostly massive character and interbedded graphitic mudstone distinguish it from rhyolite units

<<Alt: 83.01 - 88.87 Weak Muscovite>> Mostly within hairline veins

<<Alt: 83.01 - 89.12 Moderate Ankerite>> Ranges from disseminated blebs to thick bands

<<Vein: 84.73 - 112.75 5% Quartz-Carbonate 70 deg. >> Massive 1-10 cm thick quartz +/- ankerite veins

<<Struc: 83.01 - 83.02 Contact>> Sharp contact between graphitic mudstone and wacke

87.58 88.87 CHT Chert black VFG

87.58 - 88.87: Strongly silicified graphitic mudstone to chert with carbonate-rich blebs and bands

<<Min: 87.58 - 88.87 2% Min: Pyrite>> Associated with silicification and ankerite alteration

88.87 89.12 INT undifferentiated (granitic) intrusive rocks beige FMG

88.87 - 89.12: Pervasively altered to beige muscovite with quartz grains and biotite porphyroblasts; sharp contacts and lithological transition suggest a dyke

<<Alt: 88.87 - 89.12 Intense Muscovite>> Near total replacement of protolith with muscovite overgrown by biotite and ankerite porphyroblasts

<<Alt: 88.87 - 89.12 Moderate-Strong Biotite>> Near total replacement of protolith with muscovite overgrown by biotite and ankerite porphyroblasts

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

89.12 94.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

89.12 - 94.6: Strongly silicified graphitic mudstone; minor development of chaotic chert-like texture

<<Min: 89.12 - 94.6 0.5% Min: Pyrite>> Scattered pyrite-dominant veins

<<Alt: 89.12 - 94.6 Strong Silicification>> Moderate to intense silicification, including 30 cm interval of chert

<<Alt: 89.12 - 95.23 Moderate Ankerite>> Blebs and bands of ankerite with minor calcite

<<Vein: 93 - 93.6 100% Quartz 55 deg. >> 60 cm wide (core width) quartz vein with minor ankerite and strongly chlorite-altered selvages

<<Struc: 92.7 - 92.71 Moderate-Strong Bedding>> Between cherty and graphitic mudstone layers

94.60 95.23 MAFt Mafic Volcaniclastics green FG

94.6 - 95.23: Silicified and fragmental mafic units; green chlorite is considered distinctive; mafic intrusive and tuff appear somewhat similar, though intrusive generally more massive; could be intrusive with peperitic contact?

<<Alt: 94.6 - 95.23 Weak-Moderate Muscovite>> Pervasive alteration of mafic unit to chlorite, muscovite and ankerite

<<Alt: 94.6 - 95.23 Moderate-Strong Chlorite>> Pervasive alteration of mafic unit to chlorite, muscovite and ankerite

<<Struc: 94.6 - 94.61 Contact>> Sharp contact between graphitic mudstone and MAFi

95.23 96.83 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

95.23 - 96.83: Strongly silicified graphitic mudstone; minor development of chaotic chert-like texture

<<Min: 95.23 - 96.83 1% Min: Pyrite>>

<<Alt: 95.23 - 96.83 Strong Silicification>> Pervasively silicified graphitic mudstone

96.83 100.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FG

96.83 - 100.8: Relatively massive, greenish, chlorite- and muscovite-altered mafic dykes with inclusions of sedimentary rock; sharp contacts; biotite porphyroblasts

<<Min: 100.3 - 100.8 1% Min: Pyrrhotite>> Small lenticular blebs that help define foliation

<<Alt: 96.83 - 100.8 Strong Muscovite>> Predominant alteration mineral together with dolomite

<<Alt: 96.83 - 100.8 Moderate-Strong Dolomite>> Imparts characteristic greyish tint to groundmass; replaces chlorite?

<<Alt: 96.83 - 100.8 Moderate Biotite>> Patches with 10-20% biotite porphyroblasts

100.80 101.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

100.8 - 101.3: Strongly silicified graphitic mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 100.8 - 103.45 1% Min: Pyrite>> Mostly as pyrite-pure veins

<<Alt: 100.8 - 103.45 Strong Silicification>> Pervasively silicified graphitic mudstone

<<Alt: 100.8 - 106.93 Weak-Moderate Ankerite>> Prominent downward decrease in intensity

<<Struc: 100.8 - 100.81 Contact>> Weakly bedding/foliation discordant contact between mafic and graphitic mudstone

101.30 101.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FG

101.3 - 101.4: Thin interval of mafic dyke similar to larger interval above

101.40 103.45 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

101.4 - 103.45: Strongly silicified, locally cherty-like, graphitic mudstone with 1-10 cm thick layers of wacke near lower contact

<<Struc: 102.1 - 102.11 Weak-Moderate Bedding>> Weakly defined between graphitic and ankerite-rich layers

103.45 106.93 SEDc calcareous Sediment dark grey FMG

103.45 - 106.93: Massive, granular-textured rock consisting mostly of quartz and muscovite; likely silicified

<<Min: 103.45 - 106.93 0.1% Min: Pyrite>>

<<Alt: 103.45 - 106.93 Moderate Silicification>> Slight decrease in silicification intensity across wacke unit

<<Struc: 105 - 105.01 Weak-Moderate Bedding>> Narrow graphitic mudstone layer in wacke

106.93 108.69 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

106.93 - 108.69: Strongly silicified, locally cherty-like, graphitic mudstone with 1-10 cm thick layers of wacke near lower contact

<<Min: 106.93 - 109.42 1% Min: Pyrite>> Mostly as veins cutting both mudstone and mafic rock

<<Alt: 106.93 - 108.69 Strong Silicification>> Silicified graphitic argillite with proto-chert like textures

<<Struc: 106.93 - 106.94 Contact>> Sharp contact between wacke and mudstone

108.69 108.87 MAFi Mafic Intrusions (primarily footwall mafic intrusion) grey-brown MG

108.69 - 108.87: Completely altered to chlorite, muscovite, biotite and ankerite

<<Alt: 108.69 - 108.87 Moderate-Strong Muscovite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

<<Alt: 108.69 - 108.87 Moderate-Strong Dolomite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 108.69 - 108.87 Moderate-Strong Biotite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

108.87 109.42 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

108.87 - 109.42: Strongly silicified, locally cherty-like, graphitic mudstone with 1-10 cm thick layers of wacke near lower contact

<<Alt: 108.87 - 109.42 Moderate-Strong Silicification>> Silicified graphitic argillite

<<Alt: 108.87 - 109.42 Weak-Moderate Ankerite>> Scattered ankerite crystals to 1 mm in size

109.42 109.87 MAFi Mafic Intrusions (primarily footwall mafic intrusion) grey-brown MG

109.42 - 109.87: Completely altered to chlorite, muscovite, biotite and ankerite

<<Min: 109.81 - 110.9 2% Min: Pyrite>> Lenticular to massive blebs

<<Alt: 109.42 - 109.87 Moderate-Strong Muscovite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

<<Alt: 109.42 - 109.87 Moderate-Strong Dolomite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

<<Alt: 109.42 - 109.87 Moderate-Strong Biotite>> Short interval of mafic rock that is strongly altered to biotite, muscovite and dolomite

109.87 110.19 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

109.87 - 110.19: Strongly silicified, locally cherty-like, graphitic mudstone with 1-10 cm thick layers of wacke near lower contact

<<Alt: 109.87 - 110.9 Strong Silicification>> Proto-chert like textures

<<Alt: 109.87 - 110.9 Weak-Moderate Ankerite>> Scattered blebs and fracture-fills

110.19 110.29 MAFi Mafic Intrusions (primarily footwall mafic intrusion) grey-brown MG

110.19 - 110.29: Completely altered to chlorite, muscovite, biotite and ankerite

110.29 110.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

110.29 - 110.9: Strong biotite and muscovite overprint

<<Struc: 110.85 - 110.86 Moderate Bedding>> Between silicic and graphitic layers

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

110.90 111.73 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FMG

110.9 - 111.73: Banded and altered mafic intrusions; bands are silicic or calcite-rich; silicic bands altered to chlorite, muscovite and biotite

<<Min: 110.93 - 113.45 1% Min: Pyrrhotite>> Blebs and veins

<<Alt: 110.9 - 111.73 Moderate Silicification>> Blebs and vein-like aggregates

<<Alt: 110.9 - 111.73 Moderate-Strong Calcite>> Pervasive replacement of groundmass by chlorite and ankerite

<<Alt: 110.9 - 111.73 Moderate-Strong Ankerite>> Rock has a reddish tint and 1 mm sized ankerite porphyroblasts

111.73 113.45 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

111.73 - 113.45: Strongly silicified graphitic mudstone with minor chert intervals

<<Alt: 111.73 - 129.57 Weak-Moderate Silicification>> Pervasive silicification of graphitic to calcareous mudstone; at least two 30-40 cm intervals of strong silicification

113.45 119.51 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

113.45 - 119.51: Typical silicified graphitic mudstone with 15% calcareous bands

<<Min: 113.45 - 129.57 0.5% Min: Pyrite>> Mostly lenticular to massive blebs; scattered veins

<<Min: 113.45 - 129.57 0.5% Min: Pyrrhotite>> most massive to lenticular blebs

<<Struc: 118 - 118.01 Moderate-Strong Bedding>> Well-defined bedding between graphitic, siliceous and carbonate-rich layers

119.51 126.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

119.51 - 126.5: Moderately strong to intensely silicified graphitic mudstone, locally passing into well-laminated chert; 1-10 cm thick layers of wacke also occur, showing sharp contacts with surrounding mudstone

<<Struc: 122.4 - 122.41 Moderate-Strong Bedding>> Well-defined bedding between graphitic, siliceous and carbonate-rich layers

<<Struc: 125.2 - 125.21 Moderate-Strong Bedding>> Well-defined bedding between graphitic, siliceous and carbonate-rich layers

126.50 129.57 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

126.5 - 129.57: Typical silicified graphitic mudstone with 15% calcareous bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

129.57 129.89 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown FMG

129.57 - 129.89: Massive mafic dyke (or lamprophyre?) consisting of biotite, dolomite and muscovite; either completely altered mafic dyke (i.e. where is chlorite?) or lamprophyre

<<Alt: 129.67 - 129.89 Weak Muscovite>> Scattered occurrence of muscovite flakes

<<Alt: 129.67 - 129.89 Moderate-Strong Dolomite>> Pinkish grey mineral that dominates the groundmass

<<Alt: 129.67 - 129.89 Moderate-Strong Biotite>> Abundant 1 mm-sized porphyroblasts

<<Struc: 129.57 - 129.58 Contact>> Sharp contact between mudstone and rhyolite tuff

129.89 131.64 RHYvl Lapilli tuff light grey FMG

129.89 - 131.64: Relatively fine-grained and light coloured lapilli tuff, compared to interval underneath it; scattered quartz eyes, relatively high abundance of quartz-dominant lapilli to 5 mm in length; matrix predominantly muscovite and quartz

<<Alt: 129.89 - 131.64 Moderate Silicification>> Appears to overprint muscovite and ankerite alteration

<<Alt: 129.89 - 131.64 Moderate Muscovite>> Groundmass dominated by fine-grained to flakey muscovite

<<Alt: 129.89 - 132.94 Moderate Ankerite>> Forms blebs and porphyroblasts up to 1 mm in size

131.64 132.94 RHYvl Lapilli tuff grey MCG

131.64 - 132.94: Flattened lapilli up to 3 cm in length in a relatively dark matrix of muscovite and biotite

<<Min: 131.64 - 132.94 0.1% Min: Pyrite>> Scattered blebs in biotite-rich groundmass

<<Alt: 131.64 - 132.94 Moderate Biotite>> Mostly biotite, rather than muscovite, in the groundmass

<<Struc: 132 - 132.01 Moderate-Strong Foliation>> Strong foliation defined by flattened lapilli and biotite in the groundmass

132.94 133.64 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown FMG

132.94 - 133.64: Massive mafic dyke (or lamprophyre?) consisting of biotite, dolomite and muscovite; either completely altered mafic dyke (i.e. where is chlorite?) or lamprophyre

<<Alt: 132.94 - 133.64 Moderate Dolomite>> Near total replacement of mafic protolith with biotite and dolomite; or lamprophyre?

<<Alt: 132.94 - 133.64 Strong Biotite>> Near total replacement of mafic protolith with biotite and dolomite; or lamprophyre?

<<Vein: 132.94 - 133.64 15% Quartz-Carbonate-Sulphide 80 deg. >> Swarm of 0.5-1 cm thick calcite-pyrite-quartz veinlets within strongly biotite-altered mafic dyke (lamprophyre?)

133.64 136.44 RHYvl Lapilli tuff grey-brown MCG

133.64 - 136.44: Flattened lapilli up to 3 cm in length in a relatively dark matrix of muscovite and biotite

<<Min: 133.64 - 136.44 0.1% Min: Pyrite>> Scattered blebs in biotite-rich groundmass

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 133.64 - 136.44 Weak-Moderate Muscovite>> Generally more biotite than muscovite in the groundmass, though ratio flips downwards

<<Alt: 133.64 - 136.44 Moderate-Strong Biotite>> Generally more biotite than muscovite in the groundmass, though ratio flips downwards

<<Alt: 133.64 - 139.63 Weak-Moderate Silicification>> Patches of harder and softer material

<<Alt: 133.64 - 139.63 Trace Ankerite>> Scarce and restricted to lapilli

136.44 139.63 RHYv Rhyolite volcaniclastic grey MG

136.44 - 139.63: Somewhat finer-grained (in terms of lapilli) and lighter lapilli tuff, comprising mostly a muscovite-rich groundmass with biotite porphyroblasts; contact with adjacent RHYvl is gradational

<<Alt: 136.44 - 139.63 Strong Muscovite>> Near total replacement of groundmass with greenish-grey muscovite/sericite

<<Alt: 136.44 - 139.63 Moderate Biotite>> Around 20% biotite porphyroblasts across most of this interval, increasing to 30% in the bottom 40 cm

<<Struc: 137.3 - 137.31 Moderate-Strong Foliation>> Strong foliation defined by flattened lapilli and biotite in the groundmass

139.63 140.62 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

139.63 - 140.62: Silicified graphitic mudstone

<<Min: 139.63 - 140.62 0.5% Min: Pyrite>> Blebs within hairline calcite vein

<<Alt: 139.63 - 140.62 Moderate-Strong Silicification>> Relatively hard graphitic argillite but lacking siliceous layers

<<Vein: 140.2 - 140.31 100% Quartz 70 deg. >> Massive quartz-dominant vein with minor ankerite; similar to more abundant veins further up hole

<<Struc: 139.63 - 139.95 Weak-Moderate Fault>> Heavily fractured interval with minor development of fault gouge

140.62 141.02 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

140.62 - 141.02: Finely interlaminated grey chert and black silicified mudstone with coarser laminations of biotite-ankerite-rich pelite (?)

<<Alt: 140.62 - 141.02 Moderate Biotite>> Biotite-ankerite-rich metapelite bands interbedded with silicified graphitic argillite

<<Alt: 140.62 - 141.02 Moderate Ankerite>> Biotite-ankerite-rich metapelite bands interbedded with silicified graphitic argillite

<<Struc: 141 - 141.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

141.02 159.29 SLT Siltstone - fine-grained sedimentary rock dark grey FG

141.02 - 159.29: Silicified and intercalated grey siltstone and black graphitic mudstone

<<Min: 141.02 - 159.29 0.1% Min: Pyrrhotite>> Scattered blebs

<<Alt: 141.02 - 159.29 Weak-Moderate Silicification>> Still somewhat hard graphitic argillite and siltstone layers, though not as hard as overlying intervals

<<Alt: 141.02 - 159.29 Weak-Moderate Muscovite>> Greenish-grey patches

<<Struc: 145.5 - 145.51 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

<<Struc: 151 - 151.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

<<Struc: 157 - 157.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

159.29 159.71 CHT Chert dark grey VFG

159.29 - 159.71: Either chert interlayered with mudstone or intensely silicified mudstone; finely laminated with chaotic and folded texture

<<Min: 159.29 - 159.71 1% Min: Pyrrhotite>> Slightly elevated pyrrhotite content associated with chert interval

<<Alt: 159.29 - 159.71 Intense Silicification>> Very strong silicification on chert interval

<<Vein: 159.29 - 178.35 7.5% Quartz-Carbonate 80 deg. >> Massive to foliation parallel quartz-ankerite veins ranging from 0.1-25 cm in core width

159.71 161.39 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

159.71 - 161.39: Mostly silicified graphitic mudstone with lesser amounts of siltstone

<<Min: 159.71 - 179.96 0.1% Min: Pyrite>>

<<Min: 159.71 - 179.96 0.1% Min: Pyrrhotite>>

<<Alt: 159.71 - 161.39 Weak-Moderate Calcite>> Manifested as a swarm of 1-5 mm wide bands

<<Alt: 159.71 - 163.28 Moderate Silicification>> Ranges from weakly to strongly silicified

161.39 163.28 SED undifferentiated Sediment grey FMG

161.39 - 163.28: Strongly silicified greenish-grey wacke; greenish tint likely related to sericite alteration

<<Alt: 161.39 - 163.83 Weak-Moderate Muscovite>> Pervasive muscovite alteration in the groundmass provides a greenish tint

<<Struc: 163 - 163.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

163.28 163.83 PEL Equigranular biotite + calcite +/- quartz rock brown MG

163.28 - 163.83: Biotite-rich metapelite (or lamprophyre?) with numerous carbonate-quartz bands; carbonate includes both ankerite and calcite, and is much more abundant that quartz; matrix consists mostly of quartz

<<Alt: 163.28 - 163.83 Moderate-Strong Calcite>> Manifested as a swarm of 1-5 mm wide bands

<<Alt: 163.28 - 163.83 Moderate-Strong Biotite>> Near total alteration of (pelitic?) protolith to biotite and muscovite

163.83 167.95 SLT Siltstone - fine-grained sedimentary rock dark grey FG

163.83 - 167.95: Silicified and intercalated grey siltstone and black graphitic mudstone; hosts 5-10% carbonate +/- quartz rich bands

<<Alt: 163.83 - 182.14 Moderate Silicification>> Ranges from weakly to strongly silicified

<<Alt: 163.83 - 182.14 Moderate Muscovite>> Most abundant within sub-intervals of wacke, which generally has a greenish tint

<<Alt: 163.83 - 182.14 Weak-Moderate Calcite>> Manifested as a swarm of 1-5 mm wide bands

167.95 178.35 SEDc calcareous Sediment grey FMG

167.95 - 178.35: Fairly diverse looking wacke with greenish-tinted intervals indicating sericite alteration, reddish intervals reflecting oxidation and ankerite, and then the more typical stretches of grey wacke

<<Alt: 176.4 - 182.66 Weak-Moderate Ankerite>> Increases in abundance towards the chert layer

<<Struc: 169 - 169.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between wacke and mudstone layers

<<Struc: 170.75 - 171.09 Weak-Moderate Fault>> Fractured interval of which 50% is gravel to clay-sized fault gouge

<<Struc: 175 - 175.01 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

178.35 182.14 SLT Siltstone - fine-grained sedimentary rock dark grey FG

178.35 - 182.14: Interbedded mudstone, siltstone and wacke with individual beds ranging from 0.1-20 cm thick; wacke forms the thickest beds; also notable for relatively abundant quartz veining as well as increased oxidation

<<Min: 179.96 - 184.52 0.5% Min: Pyrite>>

<<Vein: 178.35 - 182.63 15% Quartz-Carbonate 80 deg. >> Quartz-ankerite veins with chlorite selvages and associated with faulting and relatively strong oxidation

<<Struc: 178.4 - 178.85 Weak-Moderate Fault>> Fractured interval of which 50% is gravel to clay-sized fault gouge

<<Struc: 181.5 - 181.51 Moderate-Strong Bedding>> Well-developed foliation-parallel bedding between siltstone and mudstone layers

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

182.14 182.63 CHT Chert grey VFG

182.14 - 182.63: Massive grey to finely laminated

<<Alt: 182.14 - 182.66 Intense Silicification>> Very strong silicification on chert interval

182.63 184.52 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

182.63 - 184.52: Relatively massive interval of silicified graphitic mudstone

<<Alt: 182.66 - 184.52 Moderate-Strong Silicification>> Strongly silicified and very hard graphitic mudstone

184.52 184.78 RHYcf Feldspar & feldspar quartz porphyry red FMG

184.52 - 184.78: Short interval of pervasively ankerite- and greenish sericite-altered rhyolite (?); scattered quartz and feldspar eyes (<1%) suggest felsic protolith; quartz patches suggest silicification; sharp lithological and mineralogical contacts with surrounding sedimentary rock

<<Min: 184.52 - 184.78 10% Min: Pyrite>> Increased pyrite in associated with narrow felsic unit that is strongly altered to ankerite and muscovite

<<Alt: 184.52 - 184.78 Weak-Moderate Silicification>> As small patches and pseudo-veins

<<Alt: 184.52 - 184.78 Moderate-Strong Muscovite>> Near total replacement of felsic dyke by muscovite and ankerite

<<Alt: 184.52 - 184.78 Moderate-Strong Ankerite>> Near total replacement of felsic dyke by muscovite and ankerite

<<Struc: 184.52 - 184.53 Contact>> Sharp contact between mudstone-siltstone unit and pervasively altered felsic

184.78 188.11 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

184.78 - 188.11: Relatively massive interval of silicified graphitic mudstone

<<Min: 184.78 - 188.84 0.5% Min: Pyrite>> Calcite-pyrite hairline veins appear to extend of altered felsic intervals

<<Alt: 184.78 - 188.11 Moderate Silicification>> Ranges from weakly to strongly silicified

<<Vein: 185.67 - 185.81 100% Quartz 60 deg. >> Quartz vein with minor ankerite and chlorite selvage

<<Struc: 184.78 - 185.67 Weak-Moderate Fault>> Heavily fractured with local development of in situ fault gouge

188.11 188.23 RHYcf Feldspar & feldspar quartz porphyry red FMG

188.11 - 188.23: Short interval of pervasively ankerite- and greenish sericite-altered rhyolite (?); scattered quartz and feldspar eyes (<1%) suggest felsic protolith; quartz patches suggest silicification; sharp lithological and mineralogical contacts with surrounding sedimentary rock

<<Alt: 188.11 - 188.23 Weak-Moderate Silicification>> As small patches and pseudo-veins

<<Alt: 188.11 - 188.23 Moderate-Strong Muscovite>> Near total replacement of felsic dyke by muscovite and ankerite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 188.11 - 188.23 Moderate-Strong Ankerite>> Near total replacement of felsic dyke by muscovite and ankerite

188.23 188.84 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

188.23 - 188.84: Relatively massive interval of silicified graphitic mudstone

<<Alt: 188.23 - 188.84 Moderate-Strong Silicification>> Ranges from weakly to strongly silicified

188.84 189.18 RHYcf Feldspar & feldspar quartz porphyry red FMG

188.84 - 189.18: Short interval of pervasively ankerite- and greenish sericite-altered rhyolite (?); scattered quartz and feldspar eyes (<1%) suggest felsic protolith; quartz patches suggest silicification; sharp lithological and mineralogical contacts with surrounding sedimentary rock

<<Min: 188.84 - 189.18 2% Min: Pyrite>> Increased pyrite in associated with narrow felsic unit that is strongly altered to ankerite and muscovite

<<Alt: 188.84 - 189.18 Weak-Moderate Silicification>> As small patches and pseudo-veins

<<Alt: 188.84 - 189.18 Moderate-Strong Muscovite>> Near total replacement of felsic dyke by muscovite and ankerite

<<Alt: 188.84 - 189.18 Moderate-Strong Ankerite>> Near total replacement of felsic dyke by muscovite and ankerite

189.18 190.75 CHT Chert dark grey VFG

189.18 - 190.75: Finely laminated grey to dark grey chert with silicified graphitic mudstone

<<Min: 189.18 - 190.75 1% Min: Pyrite>> Hosted in pyrite +/- calcite veins

<<Alt: 189.18 - 190.75 Intense Silicification>> Very strong silicification on chert interval

<<Struc: 190.4 - 190.41 Moderate-Strong Bedding>> Well-defined laminations between chert and graphitic mudstone

190.75 193.13 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

190.75 - 193.13: Nearly a 50:50 split between graphitic mudstone and siltstone

<<Min: 190.75 - 206.8 0.5% Min: Pyrite>> Mostly stretches of 0.1% pyrite with short intervals of pyrite-bearing veins and/or blebs that locally average 1-2% over 10-40 cm

<<Alt: 190.75 - 196.6 Weak-Moderate Silicification>> Ranges from weakly to strongly silicified

<<Alt: 190.75 - 196.6 Weak-Moderate Ankerite>> Patches of disseminated to blebby ankerite alteration

<<Vein: 192.29 - 194.75 3% Quartz-Carbonate 80 deg. >> Quartz +/- ankerite veins with muscovite-pyrite selvages

193.13 196.60 SLT Siltstone - fine-grained sedimentary rock dark grey FG

193.13 - 196.6: Similar to the above interval but with slightly more siltstone than mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

196.60 196.88 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FMG

196.6 - 196.88: Dark greenish-grey tinted, biotite-altered, interval; fairly abundant calcite as veins and disseminated as blebs in the matrix; greenish tint appears to be due to chlorite (but could be sericite too); sharp contacts with adjacent rocks suggest mafic dyke; could be pelite too

<<Alt: 196.6 - 196.88 Moderate Chlorite>> Pervasive replacement of mafic (or pelitic?) protolith with biotite, calcite and chlorite

<<Alt: 196.6 - 196.88 Moderate Calcite>> Pervasive replacement of mafic (or pelitic?) protolith with biotite, calcite and chlorite

<<Alt: 196.6 - 196.88 Moderate Biotite>> Pervasive replacement of mafic (or pelitic?) protolith with biotite, calcite and chlorite

196.88 201.99 SLT Siltstone - fine-grained sedimentary rock dark grey FG

196.88 - 201.99: Finely bedded sedimentary rock containing slightly more siltstone than graphitic mudstone

<<Alt: 196.88 - 206.8 Weak Silicification>> Mostly weakly silicified with narrow intervals of moderate to strong silicification

<<Alt: 196.88 - 206.8 Weak-Moderate Ankerite>> Patches of disseminated to blebby ankerite alteration

<<Vein: 201.52 - 201.99 80% Quartz-Carbonate 80 deg. >> Interval of four quartz-ankerite veins that are interleaved with host rock

<<Struc: 197 - 197.01 Moderate Bedding>> Interbedded wacke and siltstone

<<Struc: 200.05 - 200.36 Weak-Moderate Shear>> At high angle TCA but in opposite direction to bedding; also several notable deflections in foliations as well as 5 cm of fault gouge

<<Struc: 200.28 - 200.33 Moderate-Strong Fault>> Short interval of fault gouge in the middle of shear zone

201.99 205.58 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

201.99 - 205.58: Graphitic mudstone with thin layers and wisps of grey siltstone

<<Struc: 202 - 202.01 Moderate Bedding>> Interbedded graphitic argillite and siltstone

<<Struc: 203.05 - 203.1 Moderate Fault>> Fault gouge at top of shear zone interval

<<Struc: 203.05 - 203.35 Weak-Moderate Shear>> Notable deflection in foliation away from bedding/foliation at 80-90; shear zone starts with 5 cm of fault gouge

<<Struc: 205.5 - 205.51 Moderate-Strong Bedding>> Well-defined foliation-parallel bedding between siltstone and graphitic mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
205.58	**206.80**	**SLT** **Siltstone - fine-grained sedimentary rock** **dark grey** **FG**									
205.58 - 206.8: Finely bedded sedimentary rock containing slightly more siltstone than graphitic mudstone											
End of Hole @ 206.8											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-189

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/21/2016
UTM Easting	419465.257	Core Size:	NQ	Azimuth:	0	Date Logging Complete:	5/22/2016
UTM Northing:	6813227.774	Casing Pulled?:	No	Dip:	-90	Drill Company:	
UTM Elev. (m):	1340.115	Casing Depth (m):		Length (m):	124.7	Drill Rig:	
Local Easting:	9450	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	3100	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1340.1			Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	0		0	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 21.70 OVBN Overburden

21.70 30.40 RHYvl Lapilli tuff

21.7 - 30.4: biotite +/- tourmaline poprphyroblasts <10%. Possible vx

<<Min: 21.7 - 30.4 0.01% Min: Pyrite>>

<<Alt: 21.7 - 30.4 Weak Muscovite>>

<<Struc: 24.1 - 25.2 Trace Fault>> broken core poor recovery

30.40 34.10 PEL Equigranular biotite + calcite +/- quartz rock

30.4 - 34.1: int CA, chl, bt. Some bleaching at margins

<<Min: 30.4 - 38 0.5% Min: Pyrrhotite>>

<<Alt: 30.4 - 34.1 Strong Calcite>>

34.10 36.10 RHYvl Lapilli tuff

34.1 - 36.1: as above

<<Alt: 34.1 - 36.1 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

36.10 38.00 PEL Equigranular biotite + calcite +/- quartz rock

36.1 - 38: int CA, no chl

<<Alt: 36.1 - 51.7 Moderate Muscovite>> sig coarse MU with py, fault related, or hydrothermal

38.00 39.10 RHYvl Lapilli tuff

38 - 39.1: BI

<<Min: 38 - 51.7 3% Min: Pyrite>>

39.10 51.70 RHYva Coarse grained to ash tuff FMG

<<Vein: 51 - 51.3 100% Quartz-Albite 60 deg. >>

<<Struc: 43.1 - 48.5 Moderate Fault>> broken, missing core, poor recovery. Gouge.

51.70 54.30 PEL Equigranular biotite + calcite +/- quartz rock

51.7 - 54.3: sharp contacts and finer grained

<<Min: 51.7 - 54.3 0.5% Min: Pyrite>>

<<Min: 51.7 - 54.3 1% Min: Pyrrhotite>>

<<Alt: 51.7 - 54.3 Moderate-Strong Calcite>>

54.30 58.40 RHYvl Lapilli tuff

54.3 - 58.4: BI decreasing, increasing mu alt

<<Min: 54.3 - 59 1% Min: Pyrite>>

<<Min: 54.3 - 59 0.5% Min: Pyrrhotite>>

<<Alt: 54.3 - 59 Weak-Moderate Muscovite>> fault related? In tuff

<<Struc: 55 - 58.6 Weak Fault>> broken & lost core, minor gouge

58.40 67.00 RHYvx Quartz and/or feldspar crystal tuff

58.4 - 67: Logged as Qtz porphyry in past. Commonly seen within 20m HW to GP4F. Strained rock with BI between QE-qtz domains, 10cm interbands of Q & Feldspar phyric material. Lower contact with PEL with intercalated ash tuff material and then back into QE bearin

<<Min: 59 - 68.2 1% Min: Pyrite>>

<<Min: 59 - 68.2 0.05% Min: Pyrrhotite>>

<<Min: 59 - 68.2 0.01% Min: Chalcopyrite>>

<<Alt: 59 - 67 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 60.5 - 60.8 80% Quartz-Albite 45 deg. >>

67.00 68.20 PEL Equigranular biotite + calcite +/- quartz rock

67 - 68.2: intercalated with felsic ash component

<<Alt: 67 - 68.2 Moderate Calcite>>

68.20 76.50 RHYcf Feldspar & feldspar quartz porphyry

68.2 - 76.5: asabove, less BI, narrow 10cm interval of Feldspars

<<Min: 68.2 - 77.9 0.5% Min: Sphalerite>>
<<Min: 68.2 - 77.9 4% Min: Pyrite>>
<<Min: 68.2 - 77.9 0.5% Min: Pyrrhotite>>
<<Min: 68.2 - 77.9 0.01% Min: Galena>>
<<Min: 68.2 - 77.9 0.01% Min: Chalcopyrite>>
<<Alt: 68.2 - 76.5 Weak Muscovite>>
<<Alt: 68.2 - 76.5 Trace Chlorite>>
<<Alt: 68.2 - 76.5 Weak Ankerite>>
<<Struc: 71.3 - 73 Trace Fault>> broken core

76.50 76.90 PEL Equigranular biotite + calcite +/- quartz rock

76.5 - 76.9: narrow, sharp contacts, homogeneous

<<Alt: 76.5 - 76.9 Moderate Calcite>>

76.90 77.90 RHYcf Feldspar & feldspar quartz porphyry

76.9 - 77.9: increased BI

<<Alt: 76.9 - 77.9 Weak Muscovite>>
<<Alt: 76.9 - 77.9 Weak-Moderate Ankerite>>

77.90 82.70 RHYva Coarse grained to ash tuff

77.9 - 82.7: stg py & MU alt

<<Min: 77.9 - 82.7 15% Min: Pyrite>>
<<Alt: 77.9 - 82.7 Moderate-Strong Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 78 - 82.7 Weak Fault>> broken core, rubble

82.70 84.70 OI Heavilly disseminated sulphides in host schist **MCG**

82.7 - 84.7: hosted in RHYV with PEL component?

<<Min: 82.7 - 84.7 5% Min: Sphalerite>>
<<Min: 82.7 - 84.7 10% Min: Pyrite>>
<<Min: 82.7 - 84.7 3% Min: Pyrrhotite>>
<<Min: 82.7 - 84.7 1% Min: Galena>>
<<Min: 82.7 - 84.7 0.5% Min: Chalcopyrite>>
<<Alt: 82.7 - 84.7 Moderate-Strong Muscovite>>
<<Alt: 82.7 - 84.7 Weak Garnet>>
<<Alt: 82.7 - 84.7 Moderate-Strong Chlorite>> foliaform stringer, patches
<<Alt: 82.7 - 84.7 Weak-Moderate Ankerite>>

84.70 86.40 PEL Equigranular biotite + calcite +/- quartz rock

84.7 - 86.4: felsic ash component

<<Min: 84.7 - 86.4 2% Min: Pyrite>>
<<Min: 84.7 - 86.4 3% Min: Pyrrhotite>>
<<Alt: 84.7 - 86.4 Moderate Chlorite>>
<<Alt: 84.7 - 86.4 Weak-Moderate Ankerite>>
<<Struc: 86 - 86.4 Weak-Moderate Fault>> rubble core missing core

86.40 88.20 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock **MG**

86.4 - 88.2: intense CI mod CL,

<<Min: 86.4 - 88.2 3% Min: Sphalerite>>
<<Min: 86.4 - 88.2 4% Min: Pyrite>>
<<Min: 86.4 - 88.2 7% Min: Pyrrhotite>>
<<Min: 86.4 - 88.2 2% Min: Galena>>
<<Min: 86.4 - 88.2 0.5% Min: Chalcopyrite>>
<<Alt: 86.4 - 88.2 Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 86.4 - 88.2 Moderate-Strong Chlorite>>

<<Alt: 86.4 - 88.2 Intense Cordierite>>

<<Vein: 87.2 - 87.3 100% Quartz-Albite 90 deg. >> remobilized cpy-py-sp on selvage

88.20 88.80 OL **semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix** **MCG**

88.2 - 88.8: buckshot texture PY; 88.4 - 88.5 RHY MU altered with garnet cl alt on margin

<<Min: 88.2 - 88.8 15% Min: Sphalerite>>

<<Min: 88.2 - 88.8 30% Min: Pyrite>> py = buckshot texture

<<Min: 88.2 - 88.8 10% Min: Pyrrhotite>>

<<Min: 88.2 - 88.8 10% Min: Magnetite>>

<<Min: 88.2 - 88.8 7% Min: Galena>>

<<Min: 88.2 - 88.8 0.5% Min: Chalcopyrite>>

88.80 89.50 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

<<Min: 88.8 - 89.5 10% Min: Sphalerite>>

<<Min: 88.8 - 89.5 5% Min: Pyrite>>

<<Min: 88.8 - 89.5 15% Min: Pyrrhotite>>

<<Min: 88.8 - 89.5 3% Min: Magnetite>>

<<Min: 88.8 - 89.5 3% Min: Galena>>

<<Min: 88.8 - 89.5 0.5% Min: Chalcopyrite>>

<<Alt: 88.8 - 89.5 Moderate-Strong Muscovite>>

<<Alt: 88.8 - 89.5 Weak-Moderate Garnet>>

<<Alt: 88.8 - 89.5 Strong Chlorite>>

<<Alt: 88.8 - 89.5 Weak Cordierite>> along fol in restricted band

89.50 91.00 OI **Heavilly disseminated sulphides in host schist** **MCG**

89.5 - 91: also definedstringers of smas within PEL with minor ash tuff

<<Min: 89.5 - 91 5% Min: Sphalerite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 89.5 - 91 10% Min: Pyrite>> buckshot in smas stringers within

<<Min: 89.5 - 91 10% Min: Pyrrhotite>> groundmass to stringers

<<Min: 89.5 - 91 2% Min: Galena>>

<<Min: 89.5 - 91 0.5% Min: Chalcopyrite>>

<<Alt: 89.5 - 91 Moderate Muscovite>>

<<Alt: 89.5 - 91 Moderate Chlorite>>

<<Alt: 89.5 - 91 Weak Cordierite>>

<<Alt: 89.5 - 91 Weak-Moderate Calcite>>

91.00 91.30 RHYva Coarse grained to ash tuff

<<Min: 91 - 91.3 4% Min: Pyrite>>

<<Alt: 91 - 91.3 Moderate-Strong Muscovite>>

91.30 92.20 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite MCG

91.3 - 92.2: buckshot text py

<<Min: 91.3 - 92.2 15% Min: Sphalerite>>

<<Min: 91.3 - 92.2 60% Min: Pyrite>> buckshot

<<Min: 91.3 - 92.2 5% Min: Pyrrhotite>> conc. In one 5cm stringer

<<Min: 91.3 - 92.2 7% Min: Galena>>

<<Min: 91.3 - 92.2 0.5% Min: Chalcopyrite>>

92.20 95.50 RHYcf Feldspar & feldspar quartz porphyry

92.2 - 95.5: BI in foliaform domains = dirty pel tuffcompnent

<<Min: 92.2 - 95.5 2% Min: Pyrite>> foliform conc. In BI domains

<<Min: 92.2 - 95.5 2% Min: Pyrrhotite>> foliform conc in BI domains

<<Alt: 92.2 - 95.5 Weak-Moderate Muscovite>>

95.50 96.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 95.5 - 104 1% Min: Pyrite>>

<<Min: 95.5 - 104 2% Min: Pyrrhotite>>

<<Alt: 95.5 - 101.9 Weak Muscovite>> in RHYvx intervals only

<<Alt: 95.5 - 104 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

96.50 97.30 RHYcf Feldspar & feldspar quartz porphyry

96.5 - 97.3: as above

97.30 101.40 PEL Equigranular biotite + calcite +/- quartz rock

97.3 - 101.4: intercalated with RHYvx QE @99.7 - 100m

<<Struc: 100.5 - 101.1 Moderate Fault>> rubble missing core, 15cm of carbonate vein? Gouge

101.40 101.90 RHYcf Feldspar & feldspar quartz porphyry

101.4 - 101.9: as above

101.90 104.00 PEL Equigranular biotite + calcite +/- quartz rock

104.00 105.90 RHYcf Feldspar & feldspar quartz porphyry

104 - 105.9: 3-5mm largely undeformed feldspars, 5-10% 2-3mm blue qtz crystals

<<Min: 104 - 109 1% Min: Pyrite>>

<<Min: 104 - 109 0.5% Min: Pyrrhotite>>

<<Alt: 104 - 109 Weak Muscovite>>

105.90 108.30 PEL Equigranular biotite + calcite +/- quartz rock

105.9 - 108.3: RHYva component intercalated

<<Alt: 105.9 - 108 Moderate Calcite>>

<<Struc: 105.9 - 107 Trace Fault>> broken core

108.30 117.30 RHYcf Feldspar & feldspar quartz porphyry

108.3 - 117.3: asabove, variability in feldspars. Lower 1m becoming more deformed foliated

<<Min: 109 - 115 3% Min: Pyrite>>

<<Min: 115 - 124.7 1% Min: Pyrite>>

<<Alt: 109 - 115.5 Moderate Muscovite>>

<<Alt: 109 - 115.5 Weak Chlorite>>

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-189

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 115.5 - 124.7 Weak Muscovite>>

<<Struc: 115 - 115.5 Moderate Fault>> glay gouge with carbonate rubble cross cutting foliation

<<Struc: 116.7 - 116.8 Moderate Fault>> gouge

117.30 119.10 RHYv Rhyolite volcaniclastic

<<Struc: 118 - 119.2 Moderate-Strong Fault>> gouge, missing core, carbonate fill rubble

119.10 120.10 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 119.1 - 120.1 Weak-Moderate Calcite>>

120.10 124.70 RHYvl Lapilli tuff

End of Hole @ 124.7

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-190

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/24/2016
UTM Easting	419566.153	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	5/24/2016
UTM Northing:	6813208.858	Casing Pulled?:	No	Dip:	-53	Drill Company:	
UTM Elev. (m):	1326.252	Casing Depth (m):		Length (m):	109.1	Drill Rig:	
Local Easting:	9550	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	3210	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1326.252			Hole Completed?:	Completed	Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-53	180		180	ACID				☑	
109	-47	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 21.50 OVBN Overburden

21.50 25.80 RHYvl Lapilli tuff

<<Min: 21.5 - 32 1% Min: Pyrite>>

<<Min: 21.5 - 32 0.5% Min: Pyrrhotite>>

25.80 26.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

25.8 - 26.3: suggestion of symettrical chill margins

<<Alt: 25.8 - 26.3 Moderate-Strong Calcite>>

26.30 36.00 RHYvl Lapilli tuff

26.3 - 36: 10cm MAFi/PEL @27m

<<Min: 32 - 36 3% Min: Pyrite>> also 4mm bands

<<Alt: 28 - 36 Weak-Moderate Muscovite>>

<<Struc: 33 - 37 Trace Fault>> broken core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

36.00 36.40 PEL Equigranular biotite + calcite +/- quartz rock

36 - 36.4: some quartz grains, gradatinoal upper contact?

<<Min: 36 - 38 1% Min: Pyrrhotite>>

<<Alt: 36 - 36.4 Moderate-Strong Calcite>>

36.40 37.30 RHYv Rhyolite volcaniclastic

37.30 38.00 PEL Equigranular biotite + calcite +/- quartz rock

37.3 - 38: qv at uper contact

<<Alt: 37.5 - 38 Moderate-Strong Calcite>>

<<Vein: 37.3 - 37.5 100% Quartz-Albite 80 deg. >>

38.00 41.90 RHYv Rhyolite volcaniclastic

<<Min: 38 - 42 1% Min: Pyrite>>

<<Alt: 38 - 42 Weak Muscovite>>

41.90 61.30 RHYvx Quartz and/or feldspar crystal tuff

41.9 - 61.3: BI rich foliation matrix altered to cl in spots

<<Min: 42 - 47 2% Min: Pyrite>>

<<Min: 47 - 57 3% Min: Pyrite>>

<<Min: 47 - 57 1% Min: Pyrrhotite>>

<<Min: 49 - 52 2% Min: Sphalerite>>

<<Min: 49 - 52 0.5% Min: Galena>>

<<Min: 49 - 52 0.5% Min: Chalcopyrite>>

<<Alt: 42 - 54 Trace Muscovite>>

<<Alt: 42 - 54 Weak Chlorite>> after BI

<<Vein: 44.5 - 44.6 100% Quartz-Albite 70 deg. >> 2% py and tetrahedrite?

<<Vein: 51.4 - 51.5 80% Quartz-Albite 80 deg. >> 5% cp

<<Struc: 42.1 - 45 Weak-Moderate Fault>> broken, missing, minor gouge rubble

<<Struc: 50 - 60 Weak Fault>> broken rubble core, missing core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

61.30 62.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

61.3 - 62.1: sharp contacts correlates to MAFI in K98-191 @ 71m approx

<<Alt: 61.3 - 62.1 Moderate-Strong Calcite>>

62.10 64.90 RHYvx Quartz and/or feldspar crystal tuff

62.1 - 64.9: as above, lower contact with intense fault

64.90 74.30 FLZ Fault Zone

64.9 - 74.3: protolith appears to be felsic with narrowmafic or sed

<<Struc: 64.9 - 74.3 Strong Fault>> fault gouge nowweathered, missing core

74.30 77.00 RHYva Coarse grained to ash tuff

74.3 - 77: lower contact 1m increasing biotite and pelitic

<<Min: 74.3 - 77 0.5% Min: Sphalerite>>

<<Min: 74.3 - 77 4% Min: Pyrite>>

<<Min: 74.3 - 77 1% Min: Pyrrhotite>>

<<Alt: 74.3 - 77 Moderate Muscovite>>

<<Alt: 74.3 - 77 Weak Chlorite>>

77.00 78.90 OI Heavilly disseminated sulphides in host schist

77 - 78.9: host rock difficult to determine, but MU - CL - BT

<<Min: 77 - 78.9 5% Min: Sphalerite>>

<<Min: 77 - 78.9 15% Min: Pyrite>> conc in smas bands 4cm wide

<<Min: 77 - 78.9 4% Min: Pyrrhotite>> massive over 5cm on margin of qtz vein

<<Min: 77 - 78.9 1% Min: Galena>>

<<Alt: 77 - 78.9 Moderate Muscovite>>

<<Alt: 77 - 78.9 Moderate-Strong Chlorite>>

<<Vein: 78.5 - 78.8 100% Quartz-Albite 80 deg. >> possible po tet

78.90 80.20 PEL Equigranular biotite + calcite +/- quartz rock

78.9 - 80.2: weak ca, quartz in matrix. CL - BT. Too much qz to be mafic.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 78.9 - 80.2 1% Min: Pyrite>>

<<Min: 78.9 - 80.2 1% Min: Pyrrhotite>>

<<Struc: 80 - 80.6 Weak Fault>> broken rubble core

80.20 80.60 RHYv Rhyolite volcaniclastic

80.2 - 80.6: core rubble, asp tet mineralized, sil zone

<<Min: 80.2 - 80.6 2% Min: Tetrahedrite>>

<<Min: 80.2 - 80.6 0.5% Min: Arsenopyrite>>

<<Alt: 80.2 - 80.6 Moderate Silicification>>

80.60 82.10 OL semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix

80.6 - 82.1: py content to 705 at upper and lower margins @ 81.6 - 81.7 QV with mu -cl alt @ 81.8-81.9 RHYv un mineralized

<<Min: 80.6 - 82.1 12% Min: Sphalerite>>

<<Min: 80.6 - 82.1 50% Min: Pyrite>> buckshot - smas

<<Min: 80.6 - 82.1 8% Min: Magnetite>>

<<Min: 80.6 - 82.1 3% Min: Galena>>

<<Vein: 81.6 - 81.7 100% Quartz-Albite 80 deg. >> py sp 2%

82.10 82.70 PEL Equigranular biotite + calcite +/- quartz rock

82.1 - 82.7: photo for loggers guide. Gradational downhle into RHYva. NOT altered, minor mu in last 10cm of rhyva

<<Min: 82.1 - 82.7 4% Min: Pyrrhotite>>

82.70 82.90 OF Pyrrhotite rich sulphides

82.7 - 82.9: sig sp within "grades up into RHYva"

<<Min: 82.7 - 82.9 15% Min: Sphalerite>>

<<Min: 82.7 - 82.9 50% Min: Pyrrhotite>>

<<Min: 82.7 - 82.9 3% Min: Galena>>

82.90 85.50 RHYvx Quartz and/or feldspar crystal tuff

82.9 - 85.5: 10% 2-4mm QE as above

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 82.9 - 87.8 1% Min: Pyrite>>

<<Min: 82.9 - 87.8 0.5% Min: Pyrrhotite>>

<<Alt: 82.9 - 86 Weak-Moderate Muscovite>>

<<Vein: 85.2 - 85.4 20% Tourmaline 25 deg. >>

85.50 86.00 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 85.5 - 86 Weak-Moderate Calcite>>

86.00 91.00 RHYvx Quartz and/or feldspar crystal tuff

86 - 91: 5% QE tr feldspar

<<Min: 87.8 - 88.3 5% Min: Pyrite>>

<<Alt: 86.5 - 87.8 Weak Muscovite>>

<<Alt: 87.8 - 88.3 Moderate Chlorite>> possible x cutting stringer alteration

<<Alt: 87.8 - 88.3 Weak-Moderate Calcite>>

<<Alt: 88.3 - 91 Weak-Moderate Muscovite>>

<<Struc: 89.5 - 90.8 Weak-Moderate Fault>> broken rubble core minor gouge

91.00 91.70 PEL Equigranular biotite + calcite +/- quartz rock

91 - 91.7: intercalated with RHYvx above over 0.4m

<<Min: 91 - 92.8 1% Min: Pyrrhotite>>

<<Alt: 91 - 91.7 Weak-Moderate Calcite>>

91.70 92.40 RHYv Rhyolite volcaniclastic

91.7 - 92.4: lower 7cm gradational BI contact with underlying PEL

92.40 92.80 PEL Equigranular biotite + calcite +/- quartz rock

92.4 - 92.8: lower contact gradational with RHYvx QE

<<Alt: 92.4 - 92.8 Moderate Calcite>>

92.80 94.40 RHYvx Quartz and/or feldspar crystal tuff

92.8 - 94.4: QE and Feldspar with BI interbands. Believe this is tuffaceous top to RHYcf below. Gradational contact from this to sheared porphyry to massive porphyry below.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 92.9 - 94 Weak-Moderate Fault>> broken missing core, sandy gouge

94.40 103.60 RHYcf Feldspar & feldspar quartz porphyry

94.4 - 103.6: becomes massive @ 97m, 7 - 10% 5mm feldspars, 5-10% 2-4mm QE

<<Min: 99 - 103.6 1% Min: Pyrite>>

<<Alt: 95 - 103.6 Weak-Moderate Muscovite>>

<<Struc: 97 - 97.3 Trace Fault>> broken core

103.60 104.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

103.6 - 104.4: indistingushable from PEL -BI-r. However, RHYcf on either side Therefore an intrusion. However, possible this RHYcf unit could be a RHYvx qe + fd and that it's core is clean of PEL input and possibly hot enough to weld (supposed to be impossible?)

<<Min: 103.6 - 104.4 2% Min: Pyrrhotite>>

<<Alt: 103.6 - 104.4 Moderate-Strong Calcite>>

104.40 109.10 RHYcf Feldspar & feldspar quartz porphyry

104.4 - 109.1: or possible qe-fd xtal tuff

<<Min: 104.4 - 106 2% Min: Pyrite>> and 2-4mm bands

<<Alt: 104.4 - 109.1 Weak Muscovite>>

End of Hole @ 109.1

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-191

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/22/2016
UTM Easting	419566.199	Core Size:	NQ	Azimuth:	0	Date Logging Complete:	5/23/2016
UTM Northing:	6813208.191	Casing Pulled?:	No	Dip:	-90	Drill Company:	
UTM Elev. (m):	1326.254	Casing Depth (m):		Length (m):	112.5	Drill Rig:	
Local Easting:	9550	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	3210	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1326.3			Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	0		0	ACID				☑	
112	-84	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 22.50 OVBN Overburden

22.50 44.10 RHYvl Lapilli tuff

22.5 - 44.1: RHYva @ 41-41.1m

<<Min: 22.5 - 37.5 0.5% Min: Pyrite>>

<<Min: 37.5 - 44.1 3% Min: Pyrite>>

<<Alt: 22.5 - 44.1 Weak-Moderate Muscovite>> med gr muscovite

<<Vein: 40.8 - 41 100% Quartz-Albite>>

<<Struc: 37.5 - 44.1 Trace Fault>> broken core

44.10 46.50 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

44.1 - 46.5: upper contactlosta block. Lower contact shows excellent chill margin to fine gr Bl, centre is coarse grained carb - chl- Bl. Likely correlates with first "PEL" in K98-189 that contained chlorite?

<<Min: 44.1 - 46 0.5% Min: Pyrite>>

<<Min: 46 - 46.5 1% Min: Pyrrhotite>>

<<Alt: 44.1 - 46.5 Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

46.50 56.40 RHYv Rhyolite volcaniclastic

46.5 - 56.4: narrow bands 2cm wide of biotite PEL plus 10-15% BI within RHYv giving pseudofrag texture

<<Alt: 46.5 - 56.4 Moderate Muscovite>>

<<Vein: 56.2 - 56.4 100% Quartz-Albite>>

<<Struc: 55 - 57 Weak-Moderate Fault>> rubble core minor gouge

56.40 58.20 RHYvl Lapilli tuff

58.20 58.60 PEL Equigranular biotite + calcite +/- quartz rock

58.2 - 58.6: 2cm band of rhyvl within

<<Alt: 58.2 - 58.8 Moderate-Strong Calcite>>

58.60 71.30 RHYvx Quartz and/or feldspar crystal tuff

58.6 - 71.3: BI in mm bands in matrix altered to CL. 10% up to 4mm QZ xtals

<<Min: 58.8 - 71.3 2% Min: Pyrite>>

<<Min: 59.3 - 59.4 80% Min: Pyrrhotite>>

<<Min: 59.3 - 63 2% Min: Sphalerite>>

<<Min: 59.3 - 63 0.5% Min: Chalcopyrite>>

<<Min: 70 - 71.3 0.5% Min: Pyrrhotite>>

<<Alt: 58.6 - 62.8 Weak-Moderate Chlorite>> replacing BI in matrix

<<Alt: 58.6 - 71.3 Weak Muscovite>> replacing BI in marix where CL is not present

<<Alt: 58.8 - 71.3 Trace Calcite>> micro fractures and BI domains

<<Vein: 59.2 - 59.3 100% Pyrrhotite>> massive PO vein with cp

<<Vein: 70.6 - 70.7 100% Tourmaline 15 deg. >>

71.30 71.60 PEL Equigranular biotite + calcite +/- quartz rock

71.3 - 71.6: sharp contacts dyke?

<<Min: 71.3 - 71.6 1% Min: Pyrrhotite>>

<<Alt: 71.3 - 71.6 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

71.60 72.90 RHYvx Quartz and/or feldspar crystal tuff

71.6 - 72.9: as above but also crowded wih 2-5mm feldspars in two 10cm bands

<<Alt: 71.6 - 72.9 Trace Muscovite>>

72.90 74.00 PEL Equigranular biotite + calcite +/- quartz rock

72.9 - 74: QZ--CB veining with chl BI - PO near both margins! Possible dyke?

<<Min: 72.9 - 74 1% Min: Pyrrhotite>>

<<Vein: 73 - 73.1 100% Quartz 90 deg. >>

<<Vein: 73.8 - 73.9 100% Quartz 70 deg. >>

74.00 82.50 RHYvx Quartz and/or feldspar crystal tuff

74 - 82.5: PEL @ 74.3 - 74.4;. Deimeter section with pelitic matrix but still carries QE; 5- 15% 2-4mm QE.

<<Min: 74 - 82.5 2% Min: Pyrrhotite>> in preserved BI domains

<<Min: 80 - 82.5 1% Min: Pyrite>>

<<Alt: 74 - 82.5 Weak Muscovite>>

<<Alt: 74 - 82.5 Weak-Moderate Chlorite>>

<<Alt: 74 - 82.5 Trace Calcite>>

<<Struc: 79.4 - 79.7 Trace Fault>> broken core, blocked runs

82.50 85.50 RHYva Coarse grained to ash tuff

82.5 - 85.5: short sections with possible lapilli, minor fine grained BI sed component

<<Min: 82.5 - 85.5 3% Min: Pyrite>>

<<Alt: 82.5 - 94.3 Moderate Muscovite>> BI altered to MU in bands and patches within pel dominant sections, some unaltered. Perv MU alt in pure RHYva sections

<<Alt: 82.5 - 94.3 Weak-Moderate Calcite>> relict ca content in pel material

<<Struc: 85 - 85.5 Weak Fault>> rubble missing core

85.50 86.60 PEL Equigranular biotite + calcite +/- quartz rock FG

85.5 - 86.6: finer grained than usual, minor ash component

<<Min: 85.5 - 94.3 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

86.60 94.30 RHYva Coarse grained to ash tuff FG

86.6 - 94.3: finer gr BI pelite component intercalated and increasing over last meter

<<Min: 86.6 - 94.3 3% Min: Pyrite>> conc. In foliaform dis bands

<<Min: 91.3 - 91.6 1% Min: Sphalerite>>

94.30 94.80 OI Heavilly disseminated sulphides in host schist MCG

94.3 - 94.8: host is likely RHYva - PEL

<<Min: 94.3 - 94.8 10% Min: Sphalerite>>

<<Min: 94.3 - 94.8 10% Min: Pyrite>>

<<Min: 94.3 - 94.8 4% Min: Pyrrhotite>>

<<Min: 94.3 - 94.8 3% Min: Galena>>

<<Min: 94.3 - 94.8 0.5% Min: Chalcopyrite>>

<<Alt: 94.3 - 94.8 Moderate-Strong Muscovite>>

<<Alt: 94.3 - 94.8 Weak Chlorite>>

<<Alt: 94.3 - 94.8 Moderate Cordierite>>

94.80 95.00 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite MCG

94.8 - 95: 15% buckshot pyrite

<<Min: 94.8 - 95 50% Min: Sphalerite>>

<<Min: 94.8 - 95 15% Min: Pyrite>> buckshot

<<Min: 94.8 - 95 10% Min: Pyrrhotite>>

<<Min: 94.8 - 95 5% Min: Magnetite>>

<<Min: 94.8 - 95 15% Min: Galena>>

95.00 95.90 RHYva Coarse grained to ash tuff

95 - 95.9: intercalated with fg BI-r meta pelite.

<<Min: 95 - 96 4% Min: Pyrite>>

<<Alt: 95 - 97 Weak-Moderate Muscovite>>

95.90 99.50 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 96 - 107.1 0.5% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 96 - 107.1 0.5% Min: Pyrrhotite>>

<<Alt: 97 - 99.5 Weak Muscovite>>

99.50 100.30 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 99.5 - 100.3 Moderate-Strong Calcite>>

100.30 102.60 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 100.3 - 102.6 Weak Muscovite>>

102.60 103.80 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 102.6 - 103.8 Moderate-Strong Calcite>>

<<Vein: 102.6 - 102.7 100% Quartz>>

103.80 106.00 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 103.8 - 106 Weak Muscovite>>

<<Alt: 105 - 106 Weak Chlorite>> replacing BI

106.00 107.10 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 106 - 107.1 Moderate-Strong Calcite>>

<<Vein: 106.9 - 107 100% Quartz 75 deg. >>

107.10 107.90 RHYvx Quartz and/or feldspar crystal tuff

107.1 - 107.9: contact with RHYcf(qe) below displays a QE free boundary going in to a 2cm PEL band. = tuffaceous

<<Min: 107.1 - 112.5 0.5% Min: Pyrrhotite>> in BI domains of lithology

<<Alt: 107.1 - 107.9 Weak Muscovite>>

<<Alt: 107.1 - 107.9 Weak Chlorite>>

107.90 112.50 RHYcf Feldspar & feldspar quartz porphyry

107.9 - 112.5: From 109 onwards have fewer xtals and morebiotite domained groundmass appearing. Could this be a xtal tuff as well?

<<Alt: 107.9 - 112.5 Trace Muscovite>> replacing BI

<<Vein: 112 - 112.2 100% Calcium carbonate/Carbonate>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 112.5											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-192

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/24/2016
UTM Easting	419356.663	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	5/24/2016
UTM Northing:	6813227.807	Casing Pulled?:	No	Dip:	-74	Drill Company:	
UTM Elev. (m):	1356.733	Casing Depth (m):		Length (m):	93.6	Drill Rig:	
Local Easting:	9350	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	3232	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1356.733			Hole Completed?:	Completed	Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-74	180		180	ACID				☑	
93.6	-74	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description
0.00	**9.30**	**OVBN Overburden**
9.30	**14.70**	**RHYvl Lapilli tuff**

9.3 - 14.7: fuzzy feldspar only phenos 2-4mm, 7%. NO QE, NOT the GP4F FW RHYcf QE. Siliceous, unaltered

14.70	**17.50**	**PEL Equigranular biotite + calcite +/- quartz rock**

14.7 - 17.5: Bi but not as much as BI-r, indication of symmetrical chil margins.

<<Min: 14.7 - 17.5 3% Min: Pyrrhotite>>

<<Alt: 14.7 - 17.5 Moderate-Strong Calcite>>

17.50	**22.10**	**RHYvl Lapilli tuff**

17.5 - 22.1: as above, less CL-Bi in groundmass

<<Min: 17.5 - 22.1 1% Min: Pyrrhotite>>

<<Vein: 22 - 22.1 50% Quartz-Albite 45 deg. >> MAFi dyke effect

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

22.10 24.10 PEL Equigranular biotite + calcite +/- quartz rock

22.1 - 24.1: as above central section is definitve CL-BI-CA mttled MAFi texture

<<Min: 22.1 - 24.1 3% Min: Pyrrhotite>>

<<Alt: 22.1 - 24.1 Moderate-Strong Calcite>>

24.10 34.40 RHYva Coarse grained to ash tuff

24.1 - 34.4: rare instances of possible feldspars. Wk MU overprint replacing BI in foliation planes giving it a pseudofrag texture. Not a Rhyv

<<Min: 24.1 - 34.4 1% Min: Pyrite>>

<<Min: 24.1 - 34.4 0.5% Min: Pyrrhotite>>

<<Alt: 24.1 - 34.4 Weak Muscovite>>

34.40 35.60 PEL Equigranular biotite + calcite +/- quartz rock

34.4 - 35.6: sharp contacts

<<Min: 34.4 - 35.6 3% Min: Pyrrhotite>>

<<Alt: 34.4 - 35.6 Moderate-Strong Calcite>>

35.60 49.40 RHYv Rhyolite volcaniclastic

35.6 - 49.4: less massive, no feldspar ghosts, more friable schistose.

<<Min: 35.6 - 45 0.5% Min: Pyrite>>

<<Min: 45 - 49.4 2% Min: Pyrite>>

<<Min: 45 - 49.4 0.5% Min: Pyrrhotite>>

<<Alt: 35.6 - 49.4 Weak Muscovite>>

<<Vein: 48.7 - 48.8 80% Quartz-Albite 80 deg. >>

<<Struc: 48.2 - 49.2 Weak Fault>> broken rubbled core

49.40 51.80 PEL Equigranular biotite + calcite +/- quartz rock

49.4 - 51.8: lower margin bleached, stil calcareous, 4mm co3 deformed veinlets.

<<Min: 49.4 - 51.8 2% Min: Pyrrhotite>>

<<Alt: 49.4 - 51.8 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

51.80 53.00 RHYva Coarse grained to ash tuff

51.8 - 53: two bands of stg sil @53m and 52.7m

<<Min: 51.8 - 59 2% Min: Pyrite>>

<<Min: 51.8 - 59.9 0.5% Min: Pyrrhotite>>

<<Alt: 51.8 - 61.2 Weak-Moderate Muscovite>>

<<Alt: 51.8 - 61.4 Weak Chlorite>> replacing BI

<<Alt: 52.8 - 53 Moderate-Strong Silicification>>

53.00 59.50 PEL Equigranular biotite + calcite +/- quartz rock

53 - 59.5: lapilli tuff component, stg SIL @ 53.5- 53.7m

<<Min: 59 - 59.9 4% Min: Pyrite>>

<<Alt: 53 - 61.4 Weak-Moderate Calcite>>

<<Alt: 53.5 - 53.7 Moderate-Strong Silicification>>

<<Alt: 54.2 - 54.4 Moderate-Strong Silicification>>

<<Struc: 54.4 - 59 Weak Fault>> broken rubble core

59.50 61.20 RHYvx Quartz and/or feldspar crystal tuff

59.5 - 61.2: 10% 4mm QE correlates to HW RHYvx above GP4F elsewhere. Very narrow here and GP4F is not well developed here!

<<Min: 59.9 - 61.2 0.01% Min: Sphalerite>>

<<Min: 59.9 - 61.4 2% Min: Pyrrhotite>>

61.20 61.40 PEL Equigranular biotite + calcite +/- quartz rock

61.40 63.50 PEL Equigranular biotite + calcite +/- quartz rock

61.4 - 63.5: core is rusted, possible intercalated PEL present

<<Min: 61.4 - 63.5 1% Min: Sphalerite>>

<<Min: 61.4 - 63.5 7% Min: Pyrite>>

<<Alt: 61.4 - 65.3 Moderate Chlorite>>

<<Alt: 61.4 - 66.9 Moderate-Strong Muscovite>>

<<Struc: 63 - 63.2 Weak Fault>> broken rubble missing core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

63.50 65.30 OI Heavilly disseminated sulphides in host schist

63.5 - 65.3: host rock is RHYva and minor PEL intercalated

<<Min: 63.5 - 65.3 5% Min: Sphalerite>>

<<Min: 63.5 - 65.3 15% Min: Pyrite>>

<<Min: 63.5 - 65.3 1% Min: Galena>>

<<Min: 63.5 - 65.3 0.5% Min: Chalcopyrite>>

<<Alt: 64 - 68 Weak-Moderate Calcite>>

65.30 66.90 RHYv Rhyolite volcaniclastic

65.3 - 66.9: some lapilli detected

<<Min: 65.3 - 68 4% Min: Pyrite>>

<<Min: 65.3 - 68 3% Min: Pyrrhotite>>

66.90 68.00 PEL Equigranular biotite + calcite +/- quartz rock

66.9 - 68: felsic ash component

68.00 69.90 RHYva Coarse grained to ash tuff

<<Min: 68 - 69.9 2% Min: Sphalerite>>

<<Min: 68 - 69.9 5% Min: Pyrite>>

<<Alt: 68 - 69.9 Moderate-Strong Muscovite>>

<<Alt: 68 - 69.9 Weak Chlorite>>

69.90 72.20 OI Heavilly disseminated sulphides in host schist

69.9 - 72.2: host rock is a RHYvl unit NOT RHYva here

<<Min: 69.9 - 72.2 5% Min: Sphalerite>>

<<Min: 69.9 - 72.2 10% Min: Pyrite>>

<<Min: 69.9 - 72.2 1% Min: Galena>>

<<Alt: 69.9 - 72.2 Moderate Silicification>>

<<Alt: 69.9 - 72.2 Moderate-Strong Muscovite>>

72.20 72.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 72.2 - 72.7 2% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 72.2 - 72.7 Weak-Moderate Calcite>>

<<Alt: 72.2 - 74.3 Moderate Muscovite>>

72.70 74.30 RHYvl Lapilli tuff

<<Min: 72.7 - 74.3 2% Min: Sphalerite>>

<<Min: 72.7 - 74.3 10% Min: Pyrite>> stringer bands

<<Alt: 72.7 - 74.3 Weak Chlorite>>

<<Struc: 74.1 - 74.3 Weak Fault>> rubble

74.30 76.60 SLT Siltstone - fine-grained sedimentary rock brown FG

74.3 - 76.6: CALCAREOUS. Could call it SEDc, buff brown colour from Bi

<<Alt: 74.3 - 76.6 Intense Calcite>>

76.60 78.20 RHYvx Quartz and/or feldspar crystal tuff

76.6 - 78.2: 5% 2-4mm QE, bottom contact interbedded with PEL

<<Min: 76.6 - 78.2 3% Min: Pyrite>>

<<Alt: 76.6 - 78.2 Weak-Moderate Muscovite>>

<<Alt: 76.6 - 78.2 Weak Chlorite>>

78.20 79.30 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 78.2 - 79.3 1% Min: Pyrrhotite>>

<<Alt: 78.2 - 79.3 Moderate-Strong Calcite>>

79.30 85.10 RHYvx Quartz and/or feldspar crystal tuff

79.3 - 85.1: two 10cm PEL @ 81.6 and 82.5: LOWER CONTACT IS GRADATIONAL INTO RHYcf. Is RHYcf also a crystal tuff?

<<Min: 79.3 - 85.1 2% Min: Pyrite>>

<<Min: 79.3 - 85.1 0.5% Min: Pyrrhotite>>

<<Alt: 79.3 - 85.1 Weak Muscovite>>

<<Struc: 81.7 - 83 Weak Fault>> rubble

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

85.10 86.60 RHYcf Feldspar & feldspar quartz porphyry

85.1 - 86.6: crowded feldspar (14%) QE (7%)

<<Min: 85.1 - 86.6 0.5% Min: Pyrite>>

<<Min: 85.1 - 86.6 0.01% Min: Pyrrhotite>>

<<Alt: 85.1 - 86.6 Trace Muscovite>>

86.60 87.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 86.6 - 87.7 3% Min: Pyrrhotite>>

<<Alt: 86.6 - 87.7 Moderate-Strong Calcite>>

87.70 89.10 RHYcf Feldspar & feldspar quartz porphyry

87.7 - 89.1: as above

<<Min: 87.7 - 93.6 2% Min: Pyrite>>

89.10 89.60 PEL Equigranular biotite + calcite +/- quartz rock

89.60 93.60 RHYvx Quartz and/or feldspar crystal tuff

89.6 - 93.6: QE 6% Feldspar 4%. Biotite domains etc. Could be a sheared RHYcf but then how do you get the RHYva between

<<Alt: 89.6 - 93.6 Weak Muscovite>>

End of Hole @ 93.6

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-193

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/3/2016
UTM Easting	419460.697	Core Size:	NQ	Azimuth:	175	Date Logging Complete:	5/5/2016
UTM Northing:	6813401.237	Casing Pulled?:	No	Dip:	-59	Drill Company:	
UTM Elev. (m):	1357.991	Casing Depth (m):	9	Length (m):	199.9	Drill Rig:	
Local Easting:	9450	Stored?:	Yes	Claims Title		Drill Started:	7/17/1998
Local Northing:	3275	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	7/20/1998
Local Elev. (m):	1358			Hole Completed?:		Purpose:	Resource Definition
						Parent Hole:	

Comments:

Note: the UTM coordinates come from Challenger's survey. They do not match with the coordinate written on the Cominco document (Easting: 419553/Northing: 6813219/Elevation: 1392m-NAD27(?)). In the mineralization zone, the depth are from the Cominco log (mineralization and alteration sections). Accurate measurements were not possible due to core deterioration. In order to be consistent, most of the BI/CA rich units have been logged as MAFi. This has to be consider carefully. Below the "rhyolite dome unit", many of the upper contacts are sharp whereas the lower contacts are more often. Abundant tourmaline is observed at depth as well as QZ/CA/CL/BI/TML/maybe fuchsite (and a light green fibrous mineral) veins, discordant and crenulated along the foliation. This elements may be related to mineralization. Garnet is observed until E.O.H.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-59	175		175	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.10 OVBN Overburden

9.10 12.50 SED undifferentiated Sediment

9.1 - 12.5: Could be overburden still. Very heterogeneous rocks.

<<Min: 9.1 - 115.81 0.1% Min: Pyrite>>

<<Min: 9.1 - 115.81 0.1% Min: Pyrrhotite>>

<<Alt: 9.1 - 30 Moderate Calcite>> In vein and veinlet, including QZ/CA/BI/MS?CL veinlet set.

12.50 18.35 SED undifferentiated Sediment

12.5 - 18.35: Granular, brownish, siliceous unit, medium to coarse grain, blurry texture.

18.35 21.55 SED undifferentiated Sediment

18.35 - 21.55: Few quartz eyes. Coarse grain, blurry texture, granular, siliceous, whitish. Could be meta sandstone.

<<Struc: 21.05 - 21.5 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

21.55 24.57 SED undifferentiated Sediment

21.55 - 24.57: Few quartz eyes. Brownish, granular, coarse grain.

24.57 29.90 SED undifferentiated Sediment

24.57 - 29.9: Brownish, medium to coarse grain. Some MS/QZ/CA/BI/few PO vein/veinlets. Veinlet primary discordant and sheared within the foliation, becoming progressively opened fractures going downhole.

<<Vein: 25.6 - 30 Quarzt-Chlorite-Carbonate>> CA/QZ/BI/MS/CL/TML vein set.

<<Struc: 28.3 - 30 Moderate Fault>>

29.90 31.75 SED undifferentiated Sediment

29.9 - 31.75: Sampled for GP4F library. Bluish, coarse grain. Meta sandstone.

<<Alt: 30 - 40.5 Trace Calcite>>

31.75 32.94 SED undifferentiated Sediment

31.75 - 32.94: Whitish, granular, siliceous. Quartzite (/).

32.94 40.50 RHYc Rhyolite coherant volcanics

32.94 - 40.5: Sampled for GP4F library. Blurry texture, coarse grain, brownish/beige, locally weakly foliated.

40.50 41.15 PEL Equigranular biotite + calcite +/- quartz rock

40.5 - 41.15: Homogeneous, black, fine grain, weakly foliated. BI/CA/feldspar.

<<Alt: 40.5 - 41.15 Moderate-Strong Calcite>>

41.15 74.10 RHYc Rhyolite coherant volcanics

41.15 - 74.1: Few quartz eyes. Beige/brownish, coarse grain. Fractured filled QZ/BI. Locally "spider" texture

<<Alt: 41.15 - 66.5 Trace Calcite>>

<<Alt: 54 - 79.6 Moderate-Strong Silicification>>

<<Alt: 66.5 - 79.7 Weak-Moderate Calcite>> In fracture.

<<Struc: 48.2 - 49.68 Weak Fault>> Core loss. Sandy material over 20cm in the box. No evidence of fault or shearing.

<<Struc: 73.5 - 74.1 Weak-Moderate Fault>> Multiple narrow faults, minor.

74.10 79.60 RHYc Rhyolite coherant volcanics

74.1 - 79.6: Siliceous, fractured, stockwork texture increasing downhole. BI/QZ in groundmass showing granular texture.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

79.60 82.09 RHYc Rhyolite coherant volcanics

79.6 - 82.09: Sampled for GP4F library. Could be logged as RHYi. Aphanitic texture. Probably rhyolitic flow dome. QZ/BI in fracture.

<<Alt: 79.6 - 87.4 Strong Silicification>>

<<Alt: 79.7 - 89.27 Trace Calcite>>

82.09 82.60 PEL Equigranular biotite + calcite +/- quartz rock

82.09 - 82.6: Black, fine grain,

82.60 87.40 RHYc Rhyolite coherant volcanics

82.6 - 87.4: Siliceous, fractured, whitish.

87.40 89.20 RHYc Rhyolite coherant volcanics

87.4 - 89.2: Strongly fractured, BI in fracture, siliceous, Locally granular texture. Disaggregated at lower contact.

<<Alt: 87.4 - 92.6 Moderate Silicification>>

89.20 90.20 PEL Equigranular biotite + calcite +/- quartz rock

89.2 - 90.2: Black, fine grain, CA in groundmass, sharp upper contact, progressive lower contact. The unit is relatively homogeneous and does not show RHY clasts suggesting dike but possibly sedimentary.

<<Alt: 89.27 - 90.2 Strong Calcite>>

90.20 92.50 RHYc Rhyolite coherant volcanics

90.2 - 92.5: Disaggregated RHYc, mixed with dark material. The foliation progressively increases downhole . Black material could be intrusive as well as sedimentary. Some beds seems to crosscut the primary fracturation. Could be RHYc massive flow collapsing in unconso

<<Alt: 90.2 - 93.7 Weak Calcite>>

92.50 93.12 PEL Equigranular biotite + calcite +/- quartz rock

92.5 - 93.12: CA veining, fine grain BI, sharp contacts, thin foliation.

93.12 93.70 RHYc Rhyolite coherant volcanics

93.12 - 93.7: Short interval on top of the larger porphyritic unit. Could be the result of a strong shearing.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

93.70 105.51 RHYvx Quartz and/or feldspar crystal tuff

93.7 - 105.51: Low to medium strain (could be logged as RHYcq). 80 percent of the core are missing from 99.00 to 103.70, sample by Piercey.

<<Alt: 93.7 - 114.66 Trace Calcite>>

<<Struc: 105.5 - 105.88 Strong Foliation>> Shearing within the foliation, very strong schistosity and rapid change within a short interval.

105.51 105.88 RHY undifferentiated rhyolite

105.51 - 105.88: High strain, foliation/schistosity very strong, shearing. Could be RHYcf.

105.88 107.00 RHYvx Quartz and/or feldspar crystal tuff

105.88 - 107: Small xtl, BI content increases with the strain.

107.00 110.38 RHYvx Quartz and/or feldspar crystal tuff

107 - 110.38: High strain, xtl still visible. BI increases/porphyroblasts appear. Granular texture in groundmass could be ghost xtl.

110.38 110.39 FLZ Fault Zone

110.38 - 110.39: Note: according to the Cominco log (core missing and fault). No evidence of fault in the box, just core missing (no gouge, no shearing).

110.39 116.27 PEL Equigranular biotite + calcite +/- quartz rock

110.39 - 116.27: Black, fine grain FI/feldspar, thin foliation, CA veining parallel to the foliation. Speck of tourmaline, QZ/BI/MS/CL vein at contact.

<<Min: 115.81 - 116.52 0.5% Min: Pyrite>>

<<Min: 115.81 - 160.36 0.5% Min: Pyrrhotite>>

<<Alt: 114.66 - 119.15 Weak-Moderate Calcite>> In mafic (sedimentary) unit and veining.

<<Vein: 115.21 - 116.2 Quarzt-Chlorite-Carbonate>> CA/QZ/BI/MS/CL/TML vein set.

116.27 118.48 RHYvx Quartz and/or feldspar crystal tuff

116.27 - 118.48: Very few blue quartz eyes. This unit could be RHYcf. Progressive lower and upper contact.

<<Min: 116.52 - 117.52 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 117.52 - 142 0.5% Min: Pyrite>>

118.48 119.08 PEL Equigranular biotite + calcite +/- quartz rock

118.48 - 119.08: Black, fine grain, BI/feldspar, speck of tourmaline, veining.

<<Vein: 118.48 - 129.34 Quarzt-Chlorite-Carbonate>> CA/QZ/BI/MS/CL/TML vein set.

119.08 119.27 RHY undifferentiated rhyolite

119.08 - 119.27: Interbedded in mafic dikes.

<<Alt: 119.15 - 126.51 Trace Calcite>>

119.27 120.35 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

119.27 - 120.35: Black, fine grain, BI/feldspar, speck of tourmaline, veining.

120.35 128.90 RHYv Rhyolite volcaniclastic

120.35 - 128.9: Mixed with black material from 126.21 to 128.90. From 120.50 to 121.60, QZ vein. TML speck abundant, aggregated. Foliated.

<<Alt: 126.51 - 141 Moderate Calcite>> In mafic (sedimentary) unit and veining.

128.90 129.80 FLZ Fault Zone

128.9 - 129.8: Sheared and fault gouge.

<<Vein: 128.9 - 135 Quarzt-Chlorite-Carbonate>> CA/QZ/BI/MS/CL/TML vein set. Possibly some fuchsite. Well developed from 130.72 to 130.92m.

<<Struc: 128.9 - 129.8 Moderate Fault>> Sandy fault gouge, broken vein or shearing.

129.80 130.10 PEL Equigranular biotite + calcite +/- quartz rock

129.8 - 130.1: QZ/BI/MS/CL vein.

<<Struc: 130 - 135 Weak Fault>> Large broken zone. No gouge and shearing. Could be the result of drilling issues.

130.10 135.00 PEL Equigranular biotite + calcite +/- quartz rock

130.1 - 135: Core missing (poor recovery or block error). Large QZ/MS/CA/TML/BI vein (maybe fuchsite and a light green fibrous mineral). TML specks. Fine grain BI.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

135.00 137.30 RHYv Rhyolite volcaniclastic

135 - 137.3: Broken zone. Maybe some xtl.

137.30 137.67 PEL Equigranular biotite + calcite +/- quartz rock

137.3 - 137.67: PY veinlet at upper contact. Fine grain BI.

137.67 150.00 RHYv Rhyolite volcaniclastic

137.67 - 150: MU altered. PY veinlets (stringers (?)). Broken zone, poor recovery.

<<Min: 142 - 160.36 1% Min: Pyrite>>

<<Alt: 137.67 - 179.1 Moderate-Strong Muscovite>>

<<Alt: 141 - 174.4 Weak-Moderate Calcite>>

150.00 150.40 PEL Equigranular biotite + calcite +/- quartz rock

150 - 150.4: CA/BI.

150.40 160.36 RHY undifferentiated rhyolite

150.4 - 160.36: Crosscut by narrow mafic dike or sediment unit. BI bands locally.

160.36 162.40 RHY undifferentiated rhyolite

160.36 - 162.4: Some BI rich bands.

<<Min: 160.36 - 173.9 0.1% Min: Sphalerite>>

<<Min: 160.36 - 173.9 3% Min: Pyrite>>

<<Min: 160.36 - 173.9 1% Min: Pyrrhotite>>

162.40 168.04 PEL Equigranular biotite + calcite +/- quartz rock

162.4 - 168.04: Or sediments.

<<Vein: 167.06 - 167.4 Quartz>> QZ vein and QZ/BI/CL/TML vein.

<<Struc: 165 - 165.4 Moderate-Strong Fault>> Fault gouge.

168.04 173.90 RHYcf Feldspar & feldspar quartz porphyry

168.04 - 173.9: Mid strain. Locally no feldspar, and BI bands.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 171 - 171.4 Moderate Fault>> Fault gouge.

173.90 174.40 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

173.9 - 174.4: Proximal alteration. Cordierite/chlorite.

<<Min: 173.9 - 174.9 5% Min: Sphalerite>>
<<Min: 173.9 - 174.9 5% Min: Pyrite>>
<<Min: 173.9 - 174.9 2% Min: Pyrrhotite>>
<<Min: 173.9 - 174.9 0.5% Min: Chalcopyrite>>
<<Alt: 173.9 - 174.4 Weak-Moderate Garnet>>
<<Alt: 173.9 - 174.4 Moderate-Strong Chlorite>>
<<Alt: 173.9 - 174.4 Weak-Moderate Cordierite>> Aggregated.

174.40 174.90 OI **Heavilly disseminated sulphides in host schist**

174.4 - 174.9: Rhyolite hosted.

<<Alt: 174.4 - 179.1 Moderate Calcite>>

174.90 175.50 OB **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**

174.9 - 175.5: Semi massive, buckshot texture. Medium grain pyrite.

<<Min: 174.9 - 179.1 10% Min: Sphalerite>>
<<Min: 174.9 - 179.1 60% Min: Pyrite>>
<<Min: 174.9 - 179.1 3% Min: Pyrrhotite>>
<<Min: 174.9 - 179.1 2% Min: Magnetite>>
<<Min: 174.9 - 179.1 3% Min: Galena>>
<<Min: 174.9 - 179.1 0.5% Min: Chalcopyrite>>
<<Alt: 174.9 - 175.5 Moderate Garnet>>
<<Alt: 174.9 - 175.5 Moderate-Strong Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

175.50 175.90 OI **Heavilly disseminated sulphides in host schist**

175.5 - 175.9: Rhyolite altered MU hosted.

175.90 179.10 OB **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**

175.9 - 179.1: Semi massive. Locally strong alteration, dark chlorite/garnet.

179.10 179.50 OI **Heavilly disseminated sulphides in host schist**

179.1 - 179.5: Schist hosted.

<<Min: 179.1 - 195.35 2% Min: Pyrite>>

<<Min: 179.1 - 195.35 1% Min: Pyrrhotite>>

<<Alt: 179.1 - 187.86 Weak Calcite>>

<<Alt: 179.1 - 199.8 Moderate Muscovite>>

179.50 185.81 RHYcf **Feldspar & feldspar quartz porphyry**

179.5 - 185.81: Irregular repartition of the feldspar. Mid to high strain. Locally no feldspar, and BI rich bands.

<<Struc: 184.61 - 184.7 Weak-Moderate Fault>> Fault gouge.

185.81 189.57 SED **undifferentiated Sediment**

185.81 - 189.57: Few QZ eyes.

<<Alt: 187.86 - 199.9 Moderate-Strong Calcite>>

189.57 199.90 RHYcf **Feldspar & feldspar quartz porphyry**

189.57 - 199.9: Crosscut by possibly mafic dikes, PY veinlets, stringer (?). BI rich narrow units. Garnet alteration present from 195.35 to 199.90 m. E.O.H.

<<Min: 195.35 - 199.9 0.5% Min: Sphalerite>>

<<Min: 195.35 - 199.9 3% Min: Pyrite>>

<<Min: 195.35 - 199.9 1% Min: Pyrrhotite>>

<<Alt: 195.35 - 199.9 Weak-Moderate Garnet>> Aggregated from 195.90 to 196.00 m.

<<Vein: 189.97 - 190.83 Quartz>> QZ vein, fractured.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 199.9											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-194

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/1/2016
UTM Easting	420336.919	Core Size:	NQ	Azimuth:	160	Date Logging Complete:	5/2/2016
UTM Northing:	6814626.854	Casing Pulled?:	No	Dip:	-60	Drill Company:	
UTM Elev. (m):	1314.318	Casing Depth (m):	15	Length (m):	95.7	Drill Rig:	
Local Easting:	10350	Stored?:	Yes	Claims Title		Drill Started:	8/22/1998
Local Northing:	4640	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	8/24/1998
Local Elev. (m):	1314			Hole Completed?:		Purpose:	Exploration
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	180		180	ACID				☑	
95.7	-65	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 16.20 OVBN Overburden

16.20 22.80 RHYv Rhyolite volcaniclastic

16.2 - 22.8: Foliated, muscovite altered schist. QZ/CA vein. Some darker beds.

<<Min: 16.2 - 30.07 2% Min: Pyrrhotite>>

<<Alt: 16.2 - 30.07 Moderate-Strong Calcite>>

<<Alt: 22.3 - 30.07 Weak Chlorite>> Heterogeneous sediment. Alteration controlled by lithology.

<<Vein: 19.7 - 20.6 Quarzt-Chlorite-Carbonate>> Discontinuous QZ/CA vein containing CL

22.80 23.98 SED undifferentiated Sediment

22.8 - 23.98: Irregular band size, heterogeneous composition. Strongly foliated, CA in foliation. Locally felsic material (rhyolitic).

23.98 24.43 MAFt Mafic Volcaniclastics

23.98 - 24.43: Chlorite altered, fine grain homogeneous unit. CA in foliation.

24.43 30.07 SED undifferentiated Sediment

24.43 - 30.07: Thinly banded, heterogeneous composition including mafic material.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

30.07 31.63 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

30.07 - 31.63: Or MAFw. Chlorite altered, massive homogeneous unit, low BI content, CA content. Sharp upper contact, gradual lower contact.

<<Min: 30.07 - 31.63 1% Min: Pyrrhotite>>

<<Alt: 30.07 - 31.63 Weak-Moderate Chlorite>> Mafic dike.

<<Alt: 30.07 - 31.63 Weak Calcite>>

31.63 31.90 MAFt Mafic Volcaniclastics

31.63 - 31.9: Foliated mafic tuff, CA veining.

<<Min: 31.63 - 68 0.5% Min: Pyrrhotite>>

<<Alt: 31.63 - 57.2 Moderate-Strong Calcite>>

31.90 33.00 FLZ Fault Zone

31.9 - 33: Fault gouge and core loss.

<<Struc: 32.7 - 48.5 Weak-Moderate Fault>> Large broken zone. 2 set of fractures. Locally sheared and minor offset on micro fault (alpha angle 25).

33.00 35.58 MAFt Mafic Volcaniclastics

33 - 35.58: Foliated mafic tuff, CA veining.

35.58 38.75 MAFt Mafic Volcaniclastics

35.58 - 38.75: Mixed of mafic tuff and mudstone (60/40). Some argilitic siliceous bands. Thin foliation.

38.75 48.93 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

38.75 - 48.93: Dominantly siliceous mudstone. Strong CA veining. Foliated and fractured with minor MAFt beds. Two massive QZ veins (from 45.69 to 46.45 and from 47.46 to 47.75). Locally sheared.

<<Alt: 48.59 - 69.18 Moderate Silicification>> Locally strong. Silicification of mudstone and dikes. Lithology controlled.

<<Vein: 45.69 - 46.45 Quarzt-Chlorite-Carbonate>> QZ/CA massive vein containing mafic tuff.

<<Vein: 47.46 - 48.93 Quartz-Carbonate>> QZ/CA vein.

48.93 55.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

48.93 - 55.9: Siliceous mudstone. Few light grey band highly silicified (quartzite).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

55.90 56.97 MAFt Mafic Volcaniclastics

55.9 - 56.97: Moderately foliated.

<<Struc: 56.77 - 57.96 Moderate-Strong Fault>> Strongly foliated, fault gouge, brittle.

56.97 57.36 FLZ Fault Zone

56.97 - 57.36: Fault gouge and weak shearing.

<<Alt: 57.2 - 92 Moderate Calcite>>

57.36 59.10 MAFt Mafic Volcaniclastics

57.36 - 59.1: Fine grain, few CA discontinuous veinlets.

59.10 60.50 MAFw mafic volcanic flows

59.1 - 60.5: Homogeneous, CL altered. BI/feldspar.

<<Alt: 59.1 - 60.56 Weak Chlorite>> Dike.

60.50 65.65 MAFt Mafic Volcaniclastics

60.5 - 65.65: Interbedded with mudstone, Some siliceous argillite weakly foliated beds. Fractured, locally faulted.

<<Struc: 63.6 - 63.9 Moderate Fault>> Fautl gouge and brittle.

<<Struc: 65 - 66.5 Moderate-Strong Fault>> Strongly fracture, powder and brittle.

65.65 67.31 MDSc Carbonaceous dominant mudstone

65.65 - 67.31: Strong CA veining in foliation. Locally sheared and faulted.

67.31 68.09 MAFt Mafic Volcaniclastics

67.31 - 68.09: Calcareous mafic tuff dominantly. Some mudstone interbedded.

<<Min: 68 - 95.7 1% Min: Pyrrhotite>> Seems to be more concentrated in the brownish, soft beds.

68.09 69.18 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

68.09 - 69.18: Some brown coarser grain beds, soft, 8 to 12 cm wide.

69.18 70.65 SED undifferentiated Sediment

69.18 - 70.65: Possibly felsic dike or metasandstone (quartzite). Light grey, homogeneous texture, SI/few BI.

<<Alt: 69.18 - 70.63 Strong Silicification>> Dike

<<Alt: 70.63 - 73.8 Moderate Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

70.65 73.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

70.65 - 73.8: Thinly foliated mudstone containing mafic tuff bands and QZ/CA veins.

73.80 74.59 SED undifferentiated Sediment

73.8 - 74.59: Possibly felsic dike. Highly siliceous unit (quartzite?), bleached. Chill margin at lower contact.

<<Alt: 73.8 - 74.58 Strong Silicification>> Dike.

74.59 76.59 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

74.59 - 76.59: CA banded.

<<Alt: 76.39 - 77.17 Weak-Moderate Chlorite>> Dike.

76.59 77.17 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

76.59 - 77.17: CL altered. Silicified dike. Highly siliceous chill margins. Low BI content. CL concentrated in the middle of the unit. Similar contact than at 74.58. Possibly intermediate composition.

77.17 81.26 MDSc Carbonaceous dominant mudstone

77.17 - 81.26: Strong CA veining.

81.26 81.75 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

81.26 - 81.75: Silicified dike. Granular texture in the middle of the unit. Brown, sofl, medium size grain bed at lower contact.

<<Alt: 81.26 - 81.75 Moderate Chlorite>> Dike

81.75 87.34 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

81.75 - 87.34: Mudstone containing brown, soft, coarse grain beds (5 to 10 cm wide) and at lower contact. Thin foliation.

87.34 87.86 SED undifferentiated Sediment

87.34 - 87.86: Siliceous unit, quartzite? Crosscut by QZ vein. Homogeneous, QZ/BI, could be felsic dike.

<<Alt: 87.34 - 89 Moderate Silicification>>

<<Vein: 87.54 - 87.75 Quartz-Carbonate>> QZ/CA vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

87.86 89.07 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

87.86 - 89.07: Brown, silicified. CA veinlets set. fine grain biotite, homogeneous, BI/feldspar.

<<Vein: 88 - 89.07 Quartz-Carbonate 80 deg. >> QZ/CA veinlet set.

89.07 89.90 FLZ Fault Zone

89.07 - 89.9: Fault gouge (MAFt)

89.90 92.80 MAFt Mafic Volcaniclastics

89.9 - 92.8: Medium grain mafic tuff, CA in matrix and veining.

<<Alt: 92 - 95 Moderate-Strong Calcite>> And in matrix in tuff.

<<Struc: 89.9 - 91.7 Moderate-Strong Fault>> Fault gouge, core loss.

92.80 95.70 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

92.8 - 95.7: CL/BI/feldspar unit. CL altered. CA veinlet set. Fine grain. Gradual contact on the last 10 cm with highly siliceous unit, quartzite?.

<<Alt: 95.51 - 95.7 Strong Silicification>>

End of Hole @ 95.7

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-195

Prospect:		Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/2/2016
UTM Easting	420541.531	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	5/3/2016
UTM Northing:	6814410.754	Casing Pulled?:	No	Dip:	-60	Drill Company:	
UTM Elev. (m):	1347.7	Casing Depth (m):	9	Length (m):	200	Drill Rig:	
Local Easting:	10550	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	4425	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1347.7			Hole Completed?:		Purpose:	Exploration
						Parent Hole:	

Comments:

Collared to test UTEM/HLEM conductor with near, flanking MAG approximately 300 metres SE of K98-194. Carbonaceous units are present. The unit intercepted from 41.13 m to 44.27 m seems easy to identify (glassy/unfoliated/silty-muddy/sorted/ dark blue/high silica content) and could be a good geological marker (logged as SLT_crb).

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	180		180	ACID				☑	
98	-64	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.10 OVBN Overburden

9.10 13.81 MAFt Mafic Volcaniclastics

9.1 - 13.81: Lithology obscured by oxidation. CA in foliation.

<<Min: 9.1 - 41.13 0.5% Min: Pyrrhotite>> in foliation.

<<Min: 9.1 - 97.48 0.1% Min: Pyrite>> very rare.

<<Alt: 9.1 - 15 Moderate-Strong Calcite>>

13.81 25.12 MAFw mafic volcanic flows

13.81 - 25.12: Or MAFt. Patch of BI. CA veining with sediments from 19.47 to 19.75. Lithology obscured by oxidation from 22.3 to 24.50.

<<Alt: 15 - 29.58 Moderate Calcite>>

<<Vein: 23.7 - 23.9 Quartz-Carbonate>> QZ/CA vein.

<<Struc: 22.3 - 23.3 Weak Fault>> Few fautl gouge and brokebn zone.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

25.12 26.95 SED undifferentiated Sediment

25.12 - 26.95: Bedded, foliated. CA veining in foliation. Some coarse grain beds (siltstone to sandstone). Lithology locally obscured by foliation. Some mafic material interbedded.

26.95 29.57 MAFw mafic volcanic flows

26.95 - 29.57: BI/CA.CL. Irregular CA vening.

<<Vein: 29.45 - 29.6 Quartz-Carbonate>> QZ/CA vein.

29.57 31.06 SED undifferentiated Sediment

29.57 - 31.06: Heterogeneous. Brown sediment containing QZ/BI beds and few CL. (sandy silty locally).

<<Alt: 29.58 - 37.99 Strong Calcite>>

31.06 33.06 SED undifferentiated Sediment

31.06 - 33.06: CA veining I foliation.

33.06 34.62 MAFw mafic volcanic flows

33.06 - 34.62: CL altered. Mafic flow crosscut by CL/QZ vein. Probably mixed with mudstone material.

34.62 37.90 SED undifferentiated Sediment

34.62 - 37.9: BI rich schist. CA veining locally, possibly silicified patch.

37.90 38.94 MAFt Mafic Volcaniclastics

37.9 - 38.94: Low CA content.

<<Alt: 37.99 - 41.13 Moderate-Strong Calcite>>

38.94 41.13 SED undifferentiated Sediment

38.94 - 41.13: CA in foliation. Some strong siliceous bands.

41.13 44.27 SLT Siltstone - fine-grained sedimentary rock

41.13 - 44.27: Silicified mudstone and siltstone, glassy, dark blue, unfoliated.

<<Alt: 41.13 - 44.27 Intense Silicification>>

<<Vein: 43.6 - 59.4 Quartz-Carbonate>> Multiple QZ/CA vein, 10 to 15 cm wide..

44.27 47.60 SED undifferentiated Sediment

<<Min: 44.27 - 97.48 0.5% Min: Pyrrhotite>> And disseminated. Seems more concentrated in mafic units.

<<Alt: 44.27 - 49.56 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 44.27 - 97.48 Weak-Moderate Silicification>>

<<Struc: 46.6 - 53 Weak Fault>> Multiple narrow fault and broken zone.

47.60 49.50 MAFt Mafic Volcaniclastics

49.50 57.02 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

49.5 - 57.02: Foliated mudstone crosscut by QZ/CA vein. Some graphitic bed and some silicified bed or highly siliceous.

<<Alt: 49.56 - 52.24 Moderate Calcite>>

<<Alt: 52.34 - 57 Weak Calcite>>

<<Alt: 57 - 57.61 Strong Calcite>>

57.02 57.61 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

57.02 - 57.61: BI/CL. QZ vein at upper contact and QZ vein crosscutting the unit.

57.61 58.56 MDSc Carbonaceous dominant mudstone

57.61 - 58.56: Low CA content.

<<Alt: 57.61 - 97.48 Weak-Moderate Calcite>>

58.56 59.30 MAFt Mafic Volcaniclastics

58.56 - 59.3: MAFi interbedded from 59.06 to 59.54. BI rich, blue, possibly andesitic composition.

59.30 64.60 MDSc Carbonaceous dominant mudstone

59.3 - 64.6: Or WCK. Thinly foliated. Sheared from 60.30 to 60.60. Could contain mafic material.

<<Struc: 60.2 - 60.6 Weak-Moderate Shear>> Shearing marks.

<<Struc: 64.5 - 67.75 Strong Fault>> Brittle and gouge in carbonaceous mudstone. Core loss.

64.60 67.75 FLZ Fault Zone

64.6 - 67.75: Sheared and faulted mudstone. Brittle and gouge.

67.75 70.95 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

70.95 72.05 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

70.95 - 72.05: Or MAFt mixed with mudstone.

72.05 76.69 MAFt Mafic Volcaniclastics

72.05 - 76.69: Poorly foliated.

76.69 81.98 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

76.69 - 81.98: Some brown coarse grain beds, non carbonaceous.

<<Vein: 79.62 - 79.85 Quartz-Carbonate>> QZ/CA vein.

<<Struc: 77.1 - 77.49 Weak Fault>> 2 narrow fault gouges.

81.98 82.68 SED undifferentiated Sediment

81.98 - 82.68: Brownish unit, poorly sorted. QZ grain, coarse matrix.

82.68 84.23 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

82.68 - 84.23: CA veining. Brown coarse grain bed at lower contact, SED showing MDS thinly interbedded..

84.23 85.21 MAFt Mafic Volcaniclastics

85.21 86.28 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

86.28 87.37 MAFt Mafic Volcaniclastics

86.28 - 87.37: Silicified on the edge, no foliation, green. QZ vein at lower contact.

87.37 87.95 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

87.95 89.75 MAFw mafic volcanic flows

87.95 - 89.75: With 10 cm of mudstone interbedded. Could be MAFt.

89.75 90.01 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

90.01 90.44 RHY undifferentiated rhyolite

90.01 - 90.44: Felsic, probably volcaniclastic, granular.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

90.44 92.17 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 92.14 - 93.77 Weak-Moderate Muscovite>>

<<Struc: 91.2 - 91.3 Weak Fault>> Narrow, minor fault gouge.

92.17 93.77 RHYv Rhyolite volcaniclastic

92.17 - 93.77: Felsic composition. Granular to clastic. Possibly rhyolite.

93.77 96.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

96.60 97.48 MAFt Mafic Volcaniclastics

97.48 98.10 SED undifferentiated Sediment

97.48 - 98.1: Felsic composition (80 to 90 percent of QZ), BI. Meta sandstone/quartzite?. E.O.H.

<<Alt: 97.48 - 98.01 Strong Silicification>>

End of Hole @ 200

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-197

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/30/2016
UTM Easting	419357.17	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	5/2/2016
UTM Northing:	6813369.707	Casing Pulled?:		Dip:	-62	Drill Company:	
UTM Elev. (m):	1372.632	Casing Depth (m):		Length (m):	172.8	Drill Rig:	
Local Easting:	9350	Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:	3375	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1372.632			Hole Completed?:		Purpose:	
Comments:						Parent Hole:	

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-62	180		180	ACID				☑	
20	-62	183		183	ACID				☑	
84	-62	186		186	ACID				☑	
172	-63	188		188	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.70 OVBN Overburden

6.70 13.60 RHYv Rhyolite volcaniclastic medium grey

6.7 - 13.6: Granular (1-4mm) grey quartz,minor quartz bands with lesser biotite and sercite as discontinuous mm bands and irregular filling around quartz grains, locally mottled.

<<Min: 6.7 - 41.8 0.1% Min: Pyrite>> Trace diss pyrite

<<Alt: 6.7 - 14.3 Weak Calcite>> diss and as mm veinlets

13.60 14.55 PEL Equigranular biotite + calcite +/- quartz rock dark grey

13.6 - 14.55: Biotite calcite rich. Contacts along foliation at approx. 70 deg.

<<Alt: 14.3 - 14.7 Moderate Calcite>> and as foliaform veinlets

14.55 24.77 RHYv Rhyolite volcaniclastic medium grey

14.55 - 24.77: As 6.7-13.6m; minor 0.5-2cm bands of cacite-chlorite-biotite parallel to 75 deg foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 14.7 - 24.77 Weak Calcite>> mostly as mm veinlets and blebs and clots.

<<Vein: 16.2 - 16.5 45% Quartz-Tourmaline>>

<<Vein: 20.8 - 23.8 3% Carbonate-Chlorite 70 deg. >> intergrown calcite-chlorite-biotite as bands

24.77 25.33 PEL Equigranular biotite + calcite +/- quartz rock dark grey

24.77 - 25.33: sharp contacts at 75 deg parallel to foliation.

<<Alt: 24.77 - 25.35 Moderate Calcite>>

25.33 38.40 RHYv Rhyolite volcaniclastic medium grey

25.33 - 38.4: as above 6.7 - 13.6m & 14.55 - 24.77m (but only very minor calcite-chlorite-biotite bands.

<<Alt: 25.35 - 38.4 Weak-Moderate Calcite>> and as veinlets

38.40 38.75 PEL Equigranular biotite + calcite +/- quartz rock

38.4 - 38.75: upper ontact appears gradational but increase in calcite is adrupt.

<<Alt: 38.4 - 38.85 Moderate-Strong Calcite>> and as veinlets

38.75 42.00 RHYc Rhyolite coherant volcanics

38.75 - 42: As 25.35-38.4m but rhy clasts and foliatin disrupted siliceous bands present - gradational to RHYc at 42.0-48.2m.

<<Min: 41.8 - 46 1% Min: Pyrite>>

<<Alt: 38.85 - 44.7 Trace Calcite>> on fractures, mm veinlets

42.00 48.20 RHYc Rhyolite coherant volcanics cream

42 - 48.2: Good RHYc, clast supported and crackle brecciated (all due to foliation and competent RHY or some is original brecciation?). Minor biotite-sericite-calcite folia and as breccia matrix.

<<Min: 46 - 58.5 0.25% Min: Pyrite>>

<<Alt: 44.7 - 57.4 Moderate Calcite>> and as veinlets and 48.2-56m; mostly in bands with chlorite - biotite

<<Vein: 47.3 - 56 15% Carbonate-Chlorite 70 deg. >> foliaform and cross cutting calcite-chlorite-biote-qtz bands and veinlets. Looks like a foliated stringer vein zone.

48.20 57.15 RHYv Rhyolite volcaniclastic

48.2 - 57.15: problematic unit. RHYv similar to above units but this unit is crosscut but numerous (15-30% total) calcite-chlorite-biotite +/- cord veins or bands at 55-65 deg and foliaform (foliation at consistant 75 deg) . RHYv has local grey mottled -granular textur

<<Alt: 48.2 - 56.1 Weak Chlorite>> bands and blebs, asociated with cord, biot and calcite, crosscutting RHYv but also foliated (unlike qtz-tourmaline veins). Possibly related to mineralizing event?

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 48.2 - 56.1 Weak Biotite>> see comments for chlorite for same interval

<<Alt: 49 - 49.6 Weak Cordierite>> replaced/altered by calcite.

<<Vein: 51.1 - 51.5 70% Quartz-Tourmaline 30 deg. >> irregular

<<Vein: 56.1 - 56.8 80% Quartz 30 deg. >>

57.15 58.50 RHYc Rhyolite coherant volcanics cream

57.15 - 58.5: similar to 42.0-48.2m.

<<Alt: 57.4 - 58.4 Weak Calcite>> blebs, diss and as veinlets

<<Alt: 58.4 - 60.7 Moderate-Strong Calcite>> mostly inbands with chlorite - biotite

58.50 60.52 RHYv Rhyolite volcaniclastic

58.5 - 60.52: silicic bands and clasts. Bands and fillings of biotite - calcite, about 20% overall.

<<Min: 58.5 - 74.5 0.25% Min: Pyrite>>

<<Min: 58.5 - 74.5 0.25% Min: Pyrrhotite>>

<<Vein: 58.5 - 64 10% Carbonate-Chlorite 70 deg. >> foliaform and cross cutting calcite-chlorit-biotite-qtz bands

60.52 62.70 RHYc Rhyolite coherant volcanics cream

60.52 - 62.7: unit over printed by qtz vein and attendant silicification and bleaching and calcite veining on fractures; might be RHYv in part.lower 0.6m is crackle brecciated rhy.minor feldspar phenos.

<<Alt: 60.7 - 64.5 Weak-Moderate Calcite>> and as veinlets

<<Vein: 61.5 - 61.8 Quartz>>

62.70 64.55 RHYc Rhyolite coherant volcanics grey

62.7 - 64.55: local brecciated siliceous bands, folia, bands and breccia matrix of qtz-biotite and later calcite-chlorite-biotite.

<<Alt: 64.5 - 66.1 Moderate Calcite>>

64.55 66.10 PEL Equigranular biotite + calcite +/- quartz rock

64.55 - 66.1: includes 0.3m section of calcareous RHYv. Unit is a

66.10 83.80 RHYv Rhyolite volcaniclastic grey

66.1 - 83.8: minor sections with quartz and or feldspar phenocryts.

<<Min: 74.5 - 80.8 0.5% Min: Pyrite>>

<<Min: 74.5 - 80.8 0.5% Min: Pyrrhotite>>

<<Min: 80.8 - 90.65 0.1% Min: Pyrite>>

<<Alt: 66.1 - 83.8 Weak Calcite>> as diss, blebs, fracture filling and veinlets

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 81.9 - 83.2 100% Quartz-Tourmaline 70 deg. >> 5% tourmaline, diss tour in wallrock.

<<Struc: 67.3 - 67.6 Moderate Fault>>

<<Struc: 73.5 - 74 Weak Fault>>

<<Struc: 83.7 - 84 Moderate Fault>>

83.80 85.20 PEL Equigranular biotite + calcite +/- quartz rock dark grey

<<Alt: 83.8 - 85.2 Moderate Calcite>>

85.20 88.80 RHYv Rhyolite volcaniclastic grey

<<Alt: 85.2 - 93.5 Weak Calcite>> as veinlets, mm folia, diss

<<Struc: 85.3 - 85.6 Moderate-Strong Fault>>

88.80 90.65 PEL Equigranular biotite + calcite +/- quartz rock

<<Vein: 88.85 - 89.5 100% Quartz-Tourmaline>> 2 separate components; upper qtz vein and lower tourmaline-calcite section,

90.65 93.50 RHYvx Quartz and/or feldspar crystal tuff light grey

90.65 - 93.5: local sections feldpsar porphyritic, biotite porphoblasts.

<<Min: 90.65 - 93 0.25% Min: Pyrite>>

<<Min: 90.65 - 93 0.25% Min: Pyrrhotite>>

<<Min: 93 - 95.4 0.5% Min: Pyrite>>

<<Vein: 93.05 - 93.1 30% Tourmaline>>

93.50 95.15 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 93.5 - 95.15 Weak-Moderate Calcite>>

<<Vein: 93.5 - 95.15 10% Carbonate-Chlorite 70 deg. >> irregular but foliated calcite-chlorite veinlets.

95.15 99.70 RHYvl Lapilli tuff grey

<<Min: 95.4 - 104 0.5% Min: Pyrrhotite>>

<<Min: 95.4 - 118.8 1% Min: Pyrite>>

<<Alt: 95.15 - 110.1 Trace Calcite>> mostly as occasional veinlets and fracture filling

99.70 110.10 RHYv Rhyolite volcaniclastic grey

99.7 - 110.1: granular, likely ash tuff

<<Min: 104 - 118.8 0.1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 108.4 - 118.8 Weak Muscovite>> fine muscovite, seems be above background musc present up hole.

110.10 110.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 110.1 - 110.7 Moderate-Strong Calcite>>

110.70 118.80 RHYv Rhyolite volcaniclastic grey

110.7 - 118.8: granular, likely ash tuff

<<Alt: 110.7 - 118.8 Weak Calcite>> as as mm veinlets - fracture filling.

<<Struc: 111.7 - 111.8 Moderate Fault>>

<<Struc: 117.5 - 123.3 Trace Fault>> 4 narrown (<10cm) fault zones with minor gouge and broken core.

118.80 120.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 118.8 - 120.5 0.5% Min: Pyrrhotite>> and in calcite veinlets

<<Alt: 118.8 - 120.5 Moderate-Strong Calcite>>

<<Vein: 118.8 - 120.5 5% Calcite>> calcite stringers in mafic dyke

120.50 121.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 120.5 - 121.7 5% Min: Pyrite>>

<<Min: 120.5 - 121.7 1% Min: Chalcopyrite>> blebs in fractures

<<Alt: 120.5 - 121.7 Weak Calcite>> also as veinlets and fracture filling

<<Alt: 120.5 - 122.7 Weak Muscovite>>

121.70 122.70 RHY undifferentiated rhyolite

<<Min: 121.7 - 122.7 5% Min: Pyrite>>

<<Min: 121.7 - 122.7 0.5% Min: Pyrrhotite>>

<<Min: 121.7 - 122.7 0.5% Min: Galena>>

<<Min: 121.7 - 122.7 3% Min: Chalcopyrite>>

<<Alt: 121.7 - 122.7 Weak Garnet>> concentrated at upper contact

<<Alt: 121.7 - 122.7 Moderate-Strong Chlorite>>

<<Alt: 121.7 - 124.7 Weak Calcite>> also as veinlets.

122.70 125.50 RHYvx Quartz and/or feldspar crystal tuff

122.7 - 125.5: 3-5% white-blue qtz eyes 3mm avg, could be a porphyry flow but no evidence of margins.

<<Min: 122.7 - 125.5 0.5% Min: Sphalerite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 122.7 - 125.5 1% Min: Pyrite>>

<<Min: 122.7 - 125.5 0.1% Min: Magnetite>>

<<Min: 122.7 - 125.5 0.5% Min: Chalcopyrite>>

<<Alt: 122.7 - 125.5 Weak Muscovite>>

<<Alt: 122.7 - 125.5 Trace Chlorite>>

<<Alt: 124.7 - 128.1 Weak-Moderate Calcite>> also as veins and mm bands

125.50 127.10 RHYva Coarse grained to ash tuff

125.5 - 127.1: includes qtz-chlorite-biotite vein

<<Min: 125.5 - 127.1 0.1% Min: Pyrite>>

<<Alt: 125.5 - 127.5 Weak Chlorite>> found within RHY and also qtz veining.

<<Alt: 125.5 - 133.7 Weak Muscovite>>

<<Vein: 126 - 126.5 Quarzt-Chlorite-Carbonate>>

127.10 128.10 RHYvx Quartz and/or feldspar crystal tuff

127.1 - 128.1: blue qtz eyes as 122.7-125.5m

<<Min: 127.1 - 128.1 0.5% Min: Sphalerite>>

<<Min: 127.1 - 128.1 0.5% Min: Pyrite>>

<<Min: 127.1 - 128.1 0.1% Min: Chalcopyrite>>

<<Alt: 127.5 - 133.7 Trace Chlorite>>

128.10 128.55 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 128.1 - 128.55 0.1% Min: Pyrite>>

<<Alt: 128.1 - 128.55 Moderate-Strong Calcite>>

128.55 131.30 RHYvx Quartz and/or feldspar crystal tuff

128.55 - 131.3: blue qtz eyes as 122.7-125.5m

<<Min: 128.55 - 130 0.5% Min: Sphalerite>>

<<Min: 128.55 - 130 1% Min: Pyrite>>

<<Min: 129.8 - 130 0.5% Min: Pyrrhotite>>

<<Min: 130 - 133.7 1% Min: Pyrite>>

<<Alt: 128.55 - 131.3 Weak Calcite>> patchy and also as veinlts and mm bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

131.30 131.60 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 131.3 - 131.6 Moderate-Strong Calcite>>

131.60 132.10 RHYvx Quartz and/or feldspar crystal tuff

131.6 - 132.1: blue qtz eyes as 122.7-125.5m

<<Min: 131.6 - 133.7 0.5% Min: Sphalerite>>

<<Alt: 131.6 - 136.4 Weak-Moderate Calcite>>

132.10 133.70 RHY undifferentiated rhyolite

133.70 134.80 OI Heavilly disseminated sulphides in host schist MCG

133.7 - 134.8: Heavily disseminated and discontinuous laminae, parallel to foliation of py (8% overall, sp (5%), including one 4 cm band massive sp, up to 2% diss cpy, irregular diss mag (approx 1%).

<<Min: 133.7 - 134.8 5% Min: Sphalerite>>

<<Min: 133.7 - 134.8 8% Min: Pyrite>>

<<Min: 133.7 - 134.8 1% Min: Magnetite>>

<<Min: 133.7 - 134.8 2% Min: Chalcopyrite>>

<<Alt: 133.7 - 135.4 Trace Chlorite>>

134.80 135.40 PEL Equigranular biotite + calcite +/- quartz rock

134.8 - 135.4: 20cm missing core

<<Min: 134.8 - 135.4 1% Min: Pyrite>>

<<Min: 134.8 - 135.4 1% Min: Magnetite>>

135.40 136.40 OI Heavilly disseminated sulphides in host schist MCG

135.4 - 136.4: Heavily disseminated and discontinuous laminae, parallel to foliation of pyrrhotie (8 % overall), 5% diss py, sp (5%), up to 1% diss cpy, irregular diss mag (approx 1-2%).

<<Min: 135.4 - 136.4 5% Min: Sphalerite>>

<<Min: 135.4 - 136.4 5% Min: Pyrite>>

<<Min: 135.4 - 136.4 8% Min: Pyrrhotite>>

<<Min: 135.4 - 136.4 1% Min: Magnetite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 135.4 - 136.4 1% Min: Galena>>

<<Min: 135.4 - 136.4 1% Min: Chalcopyrite>>

<<Alt: 135.4 - 139 Weak Chlorite>>

136.40 140.00 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 136.4 - 139 1% Min: Pyrrhotite>>

<<Min: 139 - 140 1% Min: Pyrite>>

<<Alt: 136.4 - 139 Weak Calcite>>

<<Alt: 139 - 143.6 Trace Calcite>>

140.00 141.80 OI Heavilly disseminated sulphides in host schist MCG

140 - 141.8: Heavily disseminated sulfides; up to 1% cp, 0.5% galena, 2-4 % sp, 5% Py and 5% pyrrhotite. Poorly developed silic bands 141.0-141.4m.

<<Min: 140 - 141.8 3% Min: Sphalerite>>

<<Min: 140 - 141.8 5% Min: Pyrite>>

<<Min: 140 - 141.8 0.5% Min: Pyrrhotite>>

<<Min: 140 - 141.8 5% Min: Magnetite>>

<<Min: 140 - 141.8 0.5% Min: Galena>>

<<Min: 140 - 141.8 1% Min: Chalcopyrite>>

<<Alt: 140 - 141.8 Trace Chlorite>>

141.80 146.30 RHYv Rhyolite volcaniclastic

<<Min: 141.8 - 144.6 3% Min: Pyrrhotite>>

<<Min: 141.8 - 145.6 1% Min: Pyrite>>

<<Min: 145.6 - 146 2% Min: Pyrrhotite>>

<<Min: 145.6 - 146 0.5% Min: Chalcopyrite>>

<<Min: 146 - 146.3 0.5% Min: Pyrite>>

<<Alt: 143.6 - 145 Trace Ankerite>>

<<Alt: 143.6 - 146.3 Moderate Calcite>> and as diss and minor veinlets

<<Struc: 144.7 - 145.7 Moderate Fault>> 20 cm gougy material, rest broken - crushed core.

146.30 146.70 OI Heavilly disseminated sulphides in host schist MCG

146.3 - 146.7: Heavily disseminated, py buckshot textured. 10% py, 5% mg, 1% gn and 5% sp (Cominco assays are a lot higher!

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 146.3 - 146.7 5% Min: Sphalerite>>

<<Min: 146.3 - 146.7 10% Min: Pyrite>>

<<Min: 146.3 - 146.7 5% Min: Magnetite>>

<<Min: 146.3 - 146.7 1% Min: Galena>>

<<Alt: 146.3 - 146.7 Moderate Silicification>>

<<Alt: 146.3 - 148.5 Weak Calcite>>

146.70 148.50 RHY undifferentiated rhyolite

146.7 - 148.5: includes 20cm gouge and 20cm core rubble.

<<Min: 146.7 - 148.5 1% Min: Pyrite>>

<<Alt: 148.4 - 172.8 Weak Muscovite>> fine grained , appears to be more abundant than muscovite present at top of the hole.

<<Struc: 146.7 - 147.3 Moderate Fault>> 15 cm gouge, rest is broken core - rubble.

148.50 152.10 RHYvx Quartz and/or feldspar crystal tuff

148.5 - 152.1: incudes sections where qtz eyes are rare to absent (149.25-151.6m) where rhy is finer grained and more biotitic - unit is likely strained and biotite altered version of RHYcf.

<<Min: 148.5 - 153.7 1% Min: Pyrrhotite>> locally concentrated in patches

<<Min: 150.7 - 150.9 0.5% Min: Chalcopyrite>>

<<Alt: 148.5 - 150 Weak-Moderate Calcite>>

<<Alt: 150 - 156.4 Trace Calcite>> and rare bands, blebs

152.10 153.70 PEL Equigranular biotite + calcite +/- quartz rock

152.1 - 153.7: Finer gained and no qtz eyes as compared to units above and below. 153.45-153.7m: Biotite rich, could be a mafic dyke.

153.70 155.80 RHYvx Quartz and/or feldspar crystal tuff

153.7 - 155.8: Qtz eye (white and blue) and feldspar porphyry. Elongated feldspar crystals up to 1x0.5cm.

<<Min: 153.7 - 155.8 0.5% Min: Sphalerite>> dis in <cm bands

<<Min: 153.7 - 155.8 0.5% Min: Pyrrhotite>> in descrete patches

155.80 156.40 RHYv Rhyolite volcaniclastic

155.8 - 156.4: no visible qtz eyes.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 155.8 - 157.6 0.5% Min: Pyrite>> diss in patches

<<Min: 155.8 - 157.6 0.5% Min: Pyrrhotite>> diss in patches

156.40 157.00 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 156.4 - 157 Moderate-Strong Calcite>>

157.00 167.95 RHYcf Feldspar & feldspar quartz porphyry

157 - 167.95: 157.6- 160; increase in strain intensity (qtz eye elongation) and bleached with muscovite alteration with vuggy brx calcite vein (30cm) and 20cm of bull qtz vein 159.5-160.0m. 160.0-165.2; massive homogeneous RHYcf (core of sill or flow), sub euhedral fel

<<Min: 157.6 - 159.9 0.01% Min: Pyrite>>

<<Min: 159.9 - 166 1% Min: Sphalerite>> diss and in <1-10mm folia and bands with py

<<Min: 159.9 - 166 3% Min: Pyrite>> diss and in <1-10 mm qtz folia and bands with sp.

<<Min: 166 - 167.9 1% Min: Sphalerite>> diss and in thin folia - veinlets.

<<Min: 166 - 167.9 3% Min: Pyrrhotite>> diss and in thin folia and one mm wide veinlet.

<<Min: 166.5 - 166.6 0.1% Min: Magnetite>>

<<Alt: 157 - 158 Weak Calcite>>

<<Alt: 158 - 159.8 Moderate-Strong Calcite>> calcite veining 159.5-159.8m

<<Alt: 159.8 - 160.3 Weak-Moderate Calcite>>

<<Alt: 160.3 - 167.95 Weak Calcite>> mostly calcite altered feldspar phenos.

<<Alt: 167.1 - 169.7 Weak Chlorite>> weak chlorite in Mafi and in cores of more intense strain zones.

<<Vein: 159.4 - 159.8 0% Calcite>>

<<Vein: 159.6 - 159.8 100% Quartz>>

<<Vein: 159.9 - 166 2% Quartz-Sulphide>> <1mm-10mm qtz-py-sp foliation parallel veinlets and bands,irregular margins, sulfides also as disseminations.

<<Struc: 157.6 - 160.5 Weak Fault>> zons of broken core, bleached and calcite altered 158-159.8 including 40cm vuggy calcite vein.

167.95 168.40 PEL Equigranular biotite + calcite +/- quartz rock

167.95 - 168.4: two types of dyke, one the usual fine - med calcite rich biotite dyke, other the green calcite replaced med grained qtz-feld-chlorite dyke.

<<Alt: 167.95 - 168.4 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

168.40 172.80 RHYcf Feldspar & feldspar quartz porphyry

168.4 - 172.8: Strained section of RHYcf as described 157-167.95m.

<<Min: 168.4 - 172.8 0.1% Min: Sphalerite>>

<<Min: 168.4 - 172.8 2% Min: Pyrrhotite>>

<<Alt: 168.4 - 172.8 Weak-Moderate Calcite>> diss and as thin discontinuous veinlets - bands.

End of Hole @ 172.8

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K98-198

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/28/2016
UTM Easting	419356.346	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/30/2016
UTM Northing:	6813494.928	Casing Pulled?:		Dip:	-64	Drill Company:	
UTM Elev. (m):	1381.6	Casing Depth (m):	12	Length (m):	249	Drill Rig:	
Local Easting:	9350	Stored?:	Yes	Claims Title		Drill Started:	
Local Northing:	3500	Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):	1381			Hole Completed?:		Purpose:	Exploration
						Parent Hole:	

Comments:

The units logged as mafic dikes contain calcite in matrix and calcite veining but do not show relevant chlorite alteration. They are fin grain unit and most of them could be sedimentary formation. From 133 m to 141 m, significant veins containing QZ/CA/MS/CL/BI/TML are encountered. Similar veins were observed underneath the first mineralized zone. Those veins suggest hydrothermal fluid circulation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-64	180		180	ACID				☑	
20	-64	174		174	ACID				☑	
127	-56	184		184	ACID				☑	
249	-54	180		180	ACID				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 12.20 OVBN Overburden

12.20 23.25 RHY undifferentiated rhyolite

12.2 - 23.25: Oxidized felsic tuff. 12.20-16.00m: Granular texture

<<Min: 12.2 - 105.8 0.1% Min: Pyrrhotite>> Very rare veinlets.

<<Alt: 12.2 - 62.18 Weak Calcite>>

23.25 39.10 RHYva Coarse grained to ash tuff

23.25 - 39.1: Oxidized felsic tuff. 10 cm of CA/BI rich material at lower contact. Approx 26.30-34.10m: sandy texture with 1mm blue QE

<<Struc: 25.1 - 26.6 Weak-Moderate Fault>> Few gouge, mainly broken zone.

<<Struc: 38 - 41 Weak Fault>> Multiple narrow fault and gouge, 3 to 5 cm wide.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

39.10 41.00 RHYv Rhyolite volcaniclastic

39.1 - 41: Silicic-bands.

41.00 42.70 FLZ Fault Zone

41 - 42.7: Gouge. Oxidized.

<<Alt: 42.5 - 43.5 Weak-Moderate Ankerite>> Speck.

<<Struc: 41 - 42.7 Strong Fault>> Fault gouge, oxidized.

42.70 43.50 RHYv Rhyolite volcaniclastic

43.50 50.20 FLZ Fault Zone

<<Struc: 43.5 - 50.2 Strong Fault>> Fault gouge, oxidized

50.20 53.10 RHYv Rhyolite volcaniclastic

50.2 - 53.1: Silicic-bands.

53.10 55.00 FLZ Fault Zone

<<Struc: 53.1 - 55 Strong Fault>> Fault gouge, oxidized

55.00 56.75 RHYv Rhyolite volcaniclastic

55 - 56.75: Silicic-bands.

56.75 62.18 RHYva Coarse grained to ash tuff

56.75 - 62.18: Sampled for GP4F library. Light grey and brownish BI rich bands interbedded. Few lapilli.

62.18 63.23 PEL Equigranular biotite + calcite +/- quartz rock

62.18 - 63.23: CA/BI

<<Alt: 62.18 - 67.19 Strong Calcite>> Mafic dike

63.23 63.56 RHYvx Quartz and/or feldspar crystal tuff

63.56 67.19 PEL Equigranular biotite + calcite +/- quartz rock

63.56 - 67.19: Mafic dike. CA rich on the edge, fine grained. Coaser in the middle without calcite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

67.19 78.22 RHYc Rhyolite coherant volcanics

67.19 - 78.22: Sampled for GP4F library. Aphanitic unit fractured, showing stockwork texture. Probably not intrusive. Possibly RHYi?

78.22 79.70 RHY undifferentiated rhyolite

78.22 - 79.7: Silicic-bands.

<<Struc: 78.3 - 80.3 Weak Fault>> Broken zone.

79.70 81.83 RHYc Rhyolite coherant volcanics

79.7 - 81.83: Aphanitic. Massive flow. Possibly RHYi?

81.83 84.56 RHYc Rhyolite coherant volcanics

81.83 - 84.56: SI rich. Few crystals. Banded. Possibly RHYi?

84.56 85.78 PEL Equigranular biotite + calcite +/- quartz rock

84.56 - 85.78: Low CA in vening. BI rich. Could be siltstone (mafic ash).

<<Alt: 84.56 - 85.19 Moderate Calcite>> Mafic dike.

<<Alt: 84.59 - 200 Weak-Moderate Chlorite>> Associated with dike. Some CA/CL/QZ veins up to 5 cm wide.

85.78 94.42 RHYvx Quartz and/or feldspar crystal tuff

85.78 - 94.42: Sampled for GP4F library. Feldspar porphyroblasts. Grey to brownish color. Mid strained. No QE

<<Alt: 85.78 - 94.42 Weak Calcite>>

<<Struc: 91.3 - 92 Moderate Fault>> Broken and sandy gouge.

94.42 99.29 PEL Equigranular biotite + calcite +/- quartz rock

94.42 - 99.29: Sampled for GP4F library. CA/BI rich. Wavy CA veinlets. Sharp upper contact, gradual lower. CL veins associated with CA/QZ/PO/PY.

<<Min: 94.42 - 178 0.1% Min: Pyrite>> Rare. With QZ/CA/CL veining.

<<Alt: 94.42 - 99.29 Strong Calcite>> Mafic dike.

99.29 100.28 RHYva Coarse grained to ash tuff

99.29 - 100.28: Sampled for GP4F library. Mixed with probably mafic material (CA bands/dark)

<<Alt: 99.29 - 133.08 Moderate Calcite>> CL/CA/QZ vein and mafic material.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

100.28 101.35 RHYvl Lapilli tuff

100.28 - 101.35: Mid strain lapilli tuff containing brown biotite. Some CL veinlets.

<<Vein: 100.28 - 114.94 Quarzt-Chlorite-Carbonate>> QZ/CL/CA veins up to 5 cm wide, about 3 per metre.

101.35 106.20 RHYv Rhyolite volcaniclastic

101.35 - 106.2: Maybe some feldspar crystals.

<<Min: 105.8 - 197.54 0.5% Min: Pyrrhotite>> And disseminated.

106.20 107.60 RHYvl Lapilli tuff

106.2 - 107.6: very few QZ eyes.

107.60 107.88 PEL Equigranular biotite + calcite +/- quartz rock

107.6 - 107.88: Crosscut by QZ vein/CA rich. Bands of Chlorite & biotite

107.88 108.12 RHYvl Lapilli tuff

108.12 109.82 PEL Equigranular biotite + calcite +/- quartz rock

108.12 - 109.82: QZ/TML in vein. CA/CL banded. QZ/CA/CL/PO associated.

109.82 116.32 RHYv Rhyolite volcaniclastic

109.82 - 116.32: Mixed with mafic material. (CA/CL bands). Maybe xtl. Locally lapillitic. Minor PEL-biotite bands.

116.32 117.05 RHYvl Lapilli tuff

116.32 - 117.05: High strain.

117.05 117.44 PEL Equigranular biotite + calcite +/- quartz rock

117.05 - 117.44: Wavy CA vein/veinlet.

117.44 120.87 RHYvl Lapilli tuff

117.44 - 120.87: Mid strain. Maybe few xtl.

120.87 124.49 RHYv Rhyolite volcaniclastic

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

124.49 125.52 PEL Equigranular biotite + calcite +/- quartz rock

124.49 - 125.52: QZ and CL/CA veining.Minor biotite bands with py-po.

125.52 130.10 RHYv Rhyolite volcaniclastic

125.52 - 130.1: Few QZ eyes.

130.10 134.08 RHYvl Lapilli tuff

130.1 - 134.08: dirty' biotite bands +/-py-po. 130.10-141.95m: mixed PEL-RHY package, locally PEL has minor bands of chlorite.

<<Alt: 133.08 - 141.95 Strong Calcite>>

<<Alt: 133.08 - 141.95 Moderate Biotite>> Well developed in vein.

<<Alt: 133.08 - 141.98 Moderate-Strong Chlorite>> CL/Sericite/CA/QZ/TML vein over 30 percent of the unit.

134.08 135.23 PEL Equigranular biotite + calcite +/- quartz rock

134.08 - 135.23: Sampled for GP4F library sampled for GP4F library. Fine grain. CA rich. Crosscut by CA/TML/QZ/Sericite veins, wavy. Sharp upper contact. Lower contact fading out over 50 cm. Speck of TML..

<<Vein: 134.09 - 141.95 Quarzt-Tourmaline-Chlorite>> CA/MS/QZ/CL/TML veins representing 30 to 50 percent of the unit. Crosscut the mafic unit and sheared in the foliation suggesting a late event. Hydrothermal fluid, could be related to mineralization.

135.23 136.32 RHY undifferentiated rhyolite

135.23 - 136.32: Few QZ eyes.. Brownish color.

136.32 139.70 PEL Equigranular biotite + calcite +/- quartz rock

136.32 - 139.7: Beds TML rich. Crosscut by wavy Sericite/QZ./CA.

139.70 140.51 RHYv Rhyolite volcaniclastic

140.51 141.95 PEL Equigranular biotite + calcite +/- quartz rock

140.51 - 141.95: Speck of TML aggregated in bands.

141.95 148.61 RHYv Rhyolite volcaniclastic

141.95 - 148.61: Possibly xtl ghost.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 141.95 - 148.81 Weak Calcite>>

148.61 153.72 PEL Equigranular biotite + calcite +/- quartz rock

148.61 - 153.72: TML speck aggregated in bands. Sericite/CL/CA veins. CA rich.

<<Alt: 148.81 - 153.72 Moderate-Strong Calcite>> And banded.

<<Alt: 150.5 - 153.13 Moderate Chlorite>> CL/Sericite/CA/QZ/TML veins over 10 percent of the unit.

<<Vein: 150.5 - 153.13 Quarzt-Tourmaline-Chlorite>> Ca/Q/Z/MS and concordant calcite veining.

<<Struc: 153.4 - 153.5 Weak Fault>> Minor fault gouge.

153.72 155.56 RHYva Coarse grained to ash tuff

153.72 - 155.56: Less biotite than above unit

<<Alt: 153.72 - 160.68 Weak-Moderate Calcite>>

155.56 160.68 RHYv Rhyolite volcaniclastic

155.56 - 160.68: Maybe some xtl. Granular texture.

160.68 163.28 PEL Equigranular biotite + calcite +/- quartz rock

160.68 - 163.28: CA rich. TML Speck aggregated. CA vening. Wavy CA/QZ/Sericite veins.

<<Alt: 160.68 - 163.28 Moderate-Strong Calcite>>

163.28 174.59 RHYv Rhyolite volcaniclastic

163.28 - 174.59: Feldspar Xtl ghost. Brownish color. TML specks.

<<Alt: 163.28 - 197.34 Weak-Moderate Calcite>>

174.59 176.75 RHYv Rhyolite volcaniclastic

174.59 - 176.75: Feldspar Xtl aggregated over 50 cm every metre. TML locally.

176.75 177.30 PEL Equigranular biotite + calcite +/- quartz rock

176.75 - 177.3: CA rich, banded.

177.30 179.65 RHYvx Quartz and/or feldspar crystal tuff

177.3 - 179.65: Some PO rich bands over 50 cm. Minor feldspar crystals

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 178 - 197.54 0.5% Min: Pyrite>>

179.65 191.43 RHY undifferentiated rhyolite

179.65 - 191.43: Few xtl. Power part of the unit altered muscovite. QZ vein. Some CA rich beds. Few thin PEL-biotite bands

<<Alt: 185 - 191.2 Moderate-Strong Muscovite>>

<<Struc: 180.35 - 180.55 Weak Fault>> Minor fault gouge.

<<Struc: 186.6 - 187.8 Moderate Fault>> Fault gouge over 30 cm.

191.43 192.20 RHY undifferentiated rhyolite

191.43 - 192.2: CL alteration. Garnet. Foliated.

<<Alt: 191.43 - 192.2 Moderate Garnet>>

<<Alt: 191.43 - 203.73 Moderate Chlorite>>

192.20 192.86 RHY undifferentiated rhyolite

192.2 - 192.86: No garnet. Abundant QE, top of blue QE hanging wall unit.

192.86 193.81 RHY undifferentiated rhyolite

192.86 - 193.81: Mafic on the edge of the unit (193.63-193.81m), CA rich.

193.81 197.34 RHY undifferentiated rhyolite

193.81 - 197.34: Sampled for GP4F library. Altered CL. Garnet. Heterogeneous QE size. Moderate biotite ('dirty' unit').

<<Alt: 196.63 - 197.24 Weak-Moderate Garnet>>

197.34 198.19 PEL Equigranular biotite + calcite +/- quartz rock

197.34 - 198.19: CA beds.

<<Min: 197.54 - 203.5 2% Min: Sphalerite>>

<<Min: 197.54 - 203.5 1% Min: Pyrite>>

<<Min: 197.54 - 203.5 2% Min: Pyrrhotite>>

<<Alt: 197.34 - 205.6 Moderate-Strong Calcite>>

198.19 199.00 RHY undifferentiated rhyolite

198.19 - 199: Mineralized SP/PY/POO/GL. PO/SP stringers.

199.00 201.90 RHY undifferentiated rhyolite

199 - 201.9: Weakly mineralized.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

201.90 203.50 PEL Equigranular biotite + calcite +/- quartz rock

201.9 - 203.5: Weak OJ type chlorite alteration

203.50 206.50 OI Heavilly disseminated sulphides in host schist

203.5 - 206.5: Probably felsic tuff. PO/PY/SP/GL. Mix of of OI and OJ Chlorite type alteration. Few garnet.

<<Min: 203.5 - 205.9 3% Min: Pyrite>>

<<Min: 203.5 - 206.9 5% Min: Sphalerite>>

<<Min: 203.5 - 206.9 5% Min: Pyrrhotite>>

<<Min: 203.5 - 206.9 0.5% Min: Galena>>

<<Min: 203.5 - 212.7 0.1% Min: Pyrite>>

<<Min: 203.5 - 212.7 0.1% Min: Pyrrhotite>>

<<Alt: 203.73 - 205.5 Moderate-Strong Chlorite>>

<<Alt: 205.6 - 220.64 Weak-Moderate Calcite>>

206.50 206.95 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 206.9 - 219.23 Moderate-Strong Muscovite>>

206.95 213.40 RHY undifferentiated rhyolite

206.95 - 213.4: Silicic-bands.

<<Min: 212.7 - 215.5 3% Min: Sphalerite>>

<<Min: 212.7 - 215.5 1% Min: Pyrite>>

<<Min: 212.7 - 215.5 5% Min: Pyrrhotite>>

<<Struc: 207 - 218.92 Moderate-Strong Fault>> Large broken zone including fault gouge over 50 cm.

213.40 215.50 PEL Equigranular biotite + calcite +/- quartz rock

213.4 - 215.5: bleached PEL - RHY

215.50 218.00 FLZ Fault Zone

215.5 - 218: Core loss and fault gouge.

<<Min: 215.5 - 234 0.1% Min: Pyrite>>

<<Min: 215.5 - 234 0.1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

218.00 219.23 RHY undifferentiated rhyolite

219.23 219.52 PEL Equigranular biotite + calcite +/- quartz rock

219.23 - 219.52: Sampled for GP4F library. Contains QZ. Andesitic or siltstone.

219.52 220.64 RHYvx Quartz and/or feldspar crystal tuff

219.52 - 220.64: Few xtl. Mid strain. Top of footwall blue QE unit.

220.64 221.40 PEL Equigranular biotite + calcite +/- quartz rock

220.64 - 221.4: CA. Thin foliation. QZ vein at upper contact.

<<Alt: 220.64 - 221.4 Strong Calcite>>

221.40 225.40 RHYv Rhyolite volcaniclastic

221.4 - 225.4: Sampled for GP4F library. CL/Sericite vein at contacts.

<<Alt: 221.4 - 225.6 Weak Calcite>>

225.40 225.97 PEL Equigranular biotite + calcite +/- quartz rock

225.4 - 225.97: 30 cm CL/CA/QZ/sericite vein at upper contact. Same composition, 5cn at lower contact.

<<Alt: 225.6 - 226.94 Moderate-Strong Calcite>>

<<Vein: 225.6 - 226.94 Quarzt-Tourmaline-Chlorite>> QZ/MS/CA/BI/TML hydrothermal veins at contact between each unit.

225.97 226.24 RHYv Rhyolite volcaniclastic

225.97 - 226.24: CL/Sericite vein at lower contact.

226.24 226.91 PEL Equigranular biotite + calcite +/- quartz rock

226.24 - 226.91: CL/TML/Sericite vein at contacts.

226.91 229.43 RHYcf Feldspar & feldspar quartz porphyry

226.91 - 229.43: Locally large rounded clasts (0.5cm), low strained. Bottom of footwall blue QE unit

<<Alt: 226.94 - 240.42 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

229.43 232.00 RHYv Rhyolite volcaniclastic

229.43 - 232: Foliated. Muscovite altered. Weakly sheared over 20 cm.

<<Alt: 229.68 - 234 Moderate-Strong Muscovite>>

<<Struc: 229.43 - 236.4 Moderate-Strong Fault>> Large broken zone including 2 fault gouges over 40 cm each. MU alteration.

232.00 233.60 FLZ Fault Zone

232 - 233.6: Fault gouge, high schistosity.

233.60 238.40 RHYv Rhyolite volcaniclastic

233.6 - 238.4: Weak CL alteration.

<<Min: 234 - 240.12 2% Min: Sphalerite>>

<<Min: 234 - 240.12 1% Min: Pyrite>>

<<Min: 234 - 240.12 3% Min: Pyrrhotite>>

<<Min: 234 - 240.12 0.1% Min: Galena>>

<<Alt: 234 - 238.4 Moderate Chlorite>>

238.40 240.42 OI Heavilly disseminated sulphides in host schist

238.4 - 240.42: Mineralized SP/PO stringers under 20 percent. Altered CL. Foliated. Few garnet. Light green sericite banded, TML bands. PO, maybe some AS.

<<Min: 240.12 - 248.23 3% Min: Pyrrhotite>>

<<Alt: 238.4 - 240.42 Strong Chlorite>>

<<Alt: 238.7 - 239.1 Weak-Moderate Garnet>>

240.42 243.45 PEL Equigranular biotite + calcite +/- quartz rock

240.42 - 243.45: Could be sedimentary. Two differentes texture. CA veining on the upper part, fine grain homogeneous downhole.

<<Min: 242.12 - 248.23 0.5% Min: Sphalerite>>

<<Min: 242.12 - 248.23 3% Min: Pyrite>>

<<Alt: 240.42 - 242.9 Strong Calcite>>

<<Alt: 242.9 - 248.23 Moderate Calcite>>

<<Struc: 243.25 - 243.35 Weak Fault>> Minor fault gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

243.45 244.76 RHYc Rhyolite coherant volcanics

243.45 - 244.76: Mixed with RHYva. Large glassy bands, aphanitic.

244.76 248.23 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock

244.76 - 248.23: Texture obscured by OJ type alteration. Chlorite - biotite bands and weak mineralizaiton.

<<Alt: 244.95 - 246.4 Intense Chlorite>>

<<Alt: 247.2 - 247.6 Strong Chlorite>>

248.23 249.00 PEL Equigranular biotite + calcite +/- quartz rock

248.23 - 249: CA veining. Thin foliation. BI/CA. E.O.H.

<<Alt: 248.23 - 249 Strong Calcite>>

End of Hole @ 249

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K04-199

Prospect:	R15	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	4/19/2016
UTM Easting	420398.6	Core Size:	NQ	Azimuth:	180	Date Logging Complete:	4/20/2016
UTM Northing:	6813522	Casing Pulled?:		Dip:	-60	Drill Company:	
UTM Elev. (m):	1294.08	Casing Depth (m):		Length (m):	246	Drill Rig:	
Local Easting:		Stored?:	Yes	Claims Title	KZK	Drill Started:	
Local Northing:		Cemented?:		Core Storage Loc.:	KZK Camp	Drill Completed:	
Local Elev. (m):				Hole Completed?:		Purpose:	Exploration
Comments:						Parent Hole:	

Hole tests stratigraphy east of GP4F and north of R15. Altered and pyrite-pyrrhotite mineralized volcaniclastic and inter tuff pelitic sediments occur between 70 and 104 m depth and are thought to be distal horizon equivalents to GP4F. Very little felsic flow rocks and no porphyritic rocks were encountered. The hole entered the lower sedimentary sequence around 17 0m depth before crossing a significant fault that may have 60 m of reverse movement such that felsic units are repeated down hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	180		180	UNKN				☑	
245.4	-62	184		184	UNKN				☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 37.50 OVBN Overburden

37.50 42.40 RHYv Rhyolite volcaniclastic

37.5 - 42.4: fine lapilli, bt foliation planes, dirty felsic tuff

<<Vein: 37.6 - 38.1 100% Quartz>>

<<Struc: 38 - 44 Trace Fault>> broken core

42.40 43.20 MAFt Mafic Volcaniclastics green-brown FMG

42.4 - 43.2: epiclastic intermediate rock? Alternative would be SED

<<Alt: 43 - 56 Weak Calcite>>

43.20 44.10 RHYvl Lapilli tuff

<<Alt: 44 - 45 Weak Muscovite>>

<<Alt: 44 - 59.5 Weak Ankerite>> actually porphyroblasts rhomb shapes

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

44.10 44.80 MAFt Mafic Volcaniclastics green-brown FMG

44.1 - 44.8: the MAFi MAFT debate rages on. More likely to be epiclastic, no chilled margins

44.80 47.30 RHYvl Lapilli tuff

<<Min: 45 - 48 1% Min: Pyrite>>

<<Alt: 45 - 51 Weak-Moderate Muscovite>>

47.30 52.70 RHYv Rhyolite volcaniclastic FMG

47.3 - 52.7: MU overprint of BI in matrix, pseudofragmental, could be ashy. Sampled,

<<Min: 48 - 52.7 3% Min: Pyrite>>

<<Alt: 51 - 59.5 Moderate Muscovite>>

<<Struc: 51.2 - 51.4 Weak Fault>> broken core and 10cm gouge

52.70 53.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green-brown FMG

52.7 - 53.1: narrow, sharp contacts

53.10 59.50 RHYvl Lapilli tuff

53.1 - 59.5: variable lapilli size; 55- 55.6 RHYva or RHYc; biotite variably altered to MU

<<Min: 53.1 - 58 2% Min: Pyrite>>

<<Min: 58 - 59.5 4% Min: Pyrite>> associated with calcite bands

<<Alt: 56 - 59.5 Weak-Moderate Calcite>> associated with py min in felsics!

<<Alt: 58.5 - 59.3 Moderate Chlorite>> pervasive to banded regions

<<Struc: 53.3 - 57.7 Trace Fault>> broken and lost core

59.50 60.00 MAFt Mafic Volcaniclastics green-brown FMG

59.5 - 60: gradational contacts. BI,CL,CA. several 30cm scale units like this interbedded with RHYv/vl. Looks like epiclastic mafic or pelitic sediment between pyroclastic events.

60.00 61.20 RHYvl Lapilli tuff

<<Min: 60 - 61.2 1% Min: Pyrite>>

<<Alt: 60 - 64.3 Weak-Moderate Muscovite>>

<<Alt: 61 - 62 Weak-Moderate Calcite>>

61.20 62.00 MAFt Mafic Volcaniclastics green-brown

61.2 - 62: as above

<<Min: 61.2 - 62 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

62.00 64.30 RHYvl Lapilli tuff

<<Min: 62 - 66.4 0.01% Min: Pyrite>>

64.30 65.50 RHYv Rhyolite volcaniclastic green-brown FMG

64.3 - 65.5: MIXTURE of Rhyv/vl and PEL/MAFT.

<<Alt: 65 - 68 Weak Calcite>>

65.50 66.40 RHYvl Lapilli tuff

65.5 - 66.4: minor 1cm scale bands of BI CL rich PEL/MAFT material

66.40 67.40 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

66.4 - 67.4: biotite quartz rock, pelitic sediment

<<Alt: 67 - 72 Weak-Moderate Muscovite>>

<<Struc: 67.2 - 67.4 Trace Fault>> broken core

67.40 79.20 RHYvl Lapilli tuff grey-brown

67.4 - 79.2: consists of several Lapilli tuff units with RHYva mixed with epiclastic mafic and sedimentary material between Lapilli tuff events. Not broken out. 10% banded py mineralization hosted within some of these mixed sediment/ mafic epiclastic ashy units with moderate CL/MU alteration

<<Min: 69 - 71 0.01% Min: Pyrrhotite>>

<<Min: 72 - 74 4% Min: Pyrite>>

<<Min: 72 - 74 3% Min: Pyrrhotite>>

<<Min: 74 - 79.2 0.5% Min: Pyrrhotite>>

<<Alt: 72 - 74 Moderate Muscovite>> foliaform bands as well

<<Alt: 72 - 74 Moderate Chlorite>> cl/bi parts of sedimentary inter tuff layers altered to CL.

<<Alt: 74 - 79.2 Weak Muscovite>>

<<Alt: 76 - 77 Weak-Moderate Calcite>>

79.20 80.70 MAFt Mafic Volcaniclastics green-brown FMG

79.2 - 80.7: gradational contacts over 5cm, epiclastic mafic/pelitic sediment.

<<Min: 79.2 - 80.7 1% Min: Pyrrhotite>>

<<Alt: 79.2 - 80.7 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

80.70 90.90 RHYvl Lapilli tuff grey-brown

80.7 - 90.9: lapilli tuffs with variable bands of lapilli sizes and in frequent decimeter areas with higher biotite (sediment) content. These are also calcareous

<<Min: 80.7 - 83.5 1% Min: Pyrite>>

<<Min: 85.5 - 87 0.5% Min: Pyrite>>

<<Alt: 80.7 - 90.9 Weak Muscovite>>

<<Alt: 80.7 - 90.9 Trace Calcite>> restricted to BI rich bands

<<Struc: 83 - 83.5 Trace Fault>> broken rubbled core

90.90 94.40 PEL Equigranular biotite + calcite +/- quartz rock green-brown FMG

90.9 - 94.4: intercalated with minor RHYva and RHYv, chl also present, mafic epiclastic component

<<Min: 90.9 - 94.4 0.01% Min: Pyrite>>

<<Alt: 90.9 - 94.4 Weak Calcite>>

<<Struc: 92 - 99 Trace Fault>> broken core

94.40 119.30 RHYvl Lapilli tuff grey-brown

94.4 - 119.3: minor 20cm wide intercalated BI CL CA sedimentary rocks with lapilli component. Inter individual tuff beds?

<<Min: 97 - 101 0.5% Min: Pyrite>>

<<Min: 97 - 101 0.01% Min: Pyrrhotite>>

<<Min: 101 - 102 4% Min: Pyrite>> and band

<<Min: 101.2 - 101.3 0.01% Min: Sphalerite>>

<<Min: 102 - 119.3 1% Min: Pyrite>>

<<Min: 102 - 119.3 0.01% Min: Pyrrhotite>>

<<Alt: 94.4 - 101 Weak-Moderate Muscovite>> banded and patchy overprint and OR

<<Alt: 101 - 102 Weak-Moderate Chlorite>>

<<Alt: 101 - 116 Weak-Moderate Muscovite>>

<<Alt: 116 - 119.3 Weak Muscovite>>

<<Alt: 119.2 - 120.2 Moderate Calcite>> and dis

119.30 120.20 PEL Equigranular biotite + calcite +/- quartz rock green-brown FMG

119.3 - 120.2: Bt CA QZ central30cm is RHYvl

<<Min: 119.3 - 120.2 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

120.20 122.80 RHYvl Lapilli tuff grey-brown

120.2 - 122.8: variable lapilli size with 10cm intercalated sedimentary lapilli bands (epiclastic)

<<Alt: 120.2 - 125.3 Weak Muscovite>>

122.80 123.40 MAFt Mafic Volcaniclastics green-brown FMG

122.8 - 123.4: epiclastic mafic rock (t\"tuff")

123.40 125.30 RHYvl Lapilli tuff

<<Min: 125 - 128.3 0.5% Min: Pyrite>>

125.30 126.80 RHYva Coarse grained to ash tuff grey-green FG

125.3 - 126.8: fine grained, massive, with BI CL meta pelitic epiclastic mafic lower margin over 50cm. Stg calcareous matrix

<<Alt: 125.3 - 126.8 Moderate-Strong Calcite>>

126.80 128.30 RHYvx Quartz and/or feldspar crystal tuff

126.8 - 128.3: lapilli tuff with rare feldspar crystal frags and possible qz.

<<Alt: 126.8 - 128.3 Weak Muscovite>>

128.30 129.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green-brown FMG

128.3 - 129.1: banded CA BI CL with 5cm BI margins = chill margins

<<Alt: 128.3 - 129.1 Moderate-Strong Calcite>>

129.10 133.70 RHYva Coarse grained to ash tuff grey FG

129.1 - 133.7: fine grained ash

<<Min: 129.1 - 133.7 0.5% Min: Pyrite>>

<<Alt: 129.1 - 133.7 Weak-Moderate Muscovite>>

<<Struc: 131.2 - 132.9 Moderate Fault>> gouge and Riedel shear fabrics in remaining rock

133.70 136.30 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

133.7 - 136.3: BI CA rock, minor lapilli present @134.9 - 135

<<Alt: 133.7 - 136.3 Moderate-Strong Calcite>>

<<Vein: 134.6 - 134.8 100% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

136.30 138.80 RHYva Coarse grained to ash tuff grey-brown FG

136.3 - 138.8: Really looks like felsic dyke. Siliceous, 10% BI porphyroblasts. However; lower contact is gradational with PEL and upper contact may be silicified over 5cm. Not what a hot rhyolite dyke would do to a calcareous wet sediment. Therefore calling it RHYva

138.80 140.50 PEL Equigranular biotite + calcite +/- quartz rock brown FMG

138.8 - 140.5: as above

<<Alt: 138.8 - 140.5 Moderate-Strong Calcite>>

<<Vein: 140.3 - 140.5 100% Quartz>>

140.50 158.50 RHYvl Lapilli tuff grey-brown

140.5 - 158.5: interbedded with pelitic and mafic epiclastic material. RHYvx @ 142.5 - 142.7, PEL @ 1156.2 - 156.6

<<Vein: 142.9 - 143.2 100% Calcium carbonate/Carbonate>>

<<Struc: 144.7 - 145.2 Moderate Fault>> gouge with slickenslides

158.50 161.80 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FMG

158.5 - 161.8: quartz grains/coarse ash component.

<<Alt: 159.4 - 161.8 Moderate Calcite>>

<<Vein: 158.8 - 159.1 100% Quartz>>

<<Struc: 158.5 - 171 Weak Fault>> broken core, very localized gouge

161.80 163.50 RHYv Rhyolite volcaniclastic grey FMG

161.8 - 163.5: sparse lapilli if any.

163.50 166.40 RHYc Rhyolite coherant volcanics grey VFG

163.5 - 166.4: very siliceous, with 2% BI porphyroblasts. RHYc or very sil ash tuff

166.40 168.40 RHYv Rhyolite volcaniclastic grey-brown FMG

166.4 - 168.4: as above

168.40 172.80 PEL Equigranular biotite + calcite +/- quartz rock green-brown FMG

168.4 - 172.8: BI - CL - CA, minor cm scale bands of felsic material. Epiclastic sediment

<<Min: 170 - 174 0.01% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 168.4 - 175.9 Moderate Calcite>>

172.80 174.10 RHYvl Lapilli tuff grey-green

172.8 - 174.1: mixture of RHYvl and PEL

174.10 175.90 PEL Equigranular biotite + calcite +/- quartz rock green-brown MG

174.1 - 175.9: as above, no felsic input here

175.90 178.80 SEDc calcareous Sediment medium grey FMG

175.9 - 178.8: calcareous siltstone with rare 5cm scale PEL intercalated

<<Alt: 175.9 - 191 Intense Calcite>> NO CA in narrow RHYva sections.

178.80 179.70 RHYva Coarse grained to ash tuff

179.70 182.80 SEDc calcareous Sediment medium grey FMG

179.7 - 182.8: as above with minor intercalated RHYva

182.80 183.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green MCG

182.8 - 183.4: chl bt coarse grained. Equigranular

183.40 186.40 SEDc calcareous Sediment FMG

183.4 - 186.4: intercalated with PEL

186.40 187.60 RHYv Rhyolite volcaniclastic

187.60 189.90 RHYva Coarse grained to ash tuff FG

187.6 - 189.9: rare coarser grained to lapilli

189.90 191.00 SEDc calcareous Sediment

<<Struc: 190.6 - 191 Trace Fault>> broken core

191.00 192.00 RHYva Coarse grained to ash tuff

192.00 199.80 SEDc calcareous Sediment FMG

192 - 199.8: minor biotite PEL component

<<Alt: 192 - 208.5 Strong Calcite>>

<<Struc: 193.9 - 205 Trace Fault>> broken core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

199.80 206.00 PEL Equigranular biotite + calcite +/- quartz rock MG

199.8 - 206: variable BI content, narrow RHYv intervals and coarser SEDc intercalated

206.00 208.50 SEDc calcareous Sediment FMG

206 - 208.5: minor felsic tuff input and PEL

<<Min: 207 - 208.5 1% Min: Pyrrhotite>>

<<Vein: 208 - 208.1 100% Quartz 25 deg. >>

208.50 216.50 RHYvl Lapilli tuff grey-brown

208.5 - 216.5: lapilli tuff intercalated intimately with BI - CA PEL

<<Alt: 208.5 - 223.5 Moderate-Strong Calcite>>

<<Vein: 210.1 - 210.3 100% Quartz>>

<<Struc: 216 - 221 Intense Fault>> gouge, brz, shears in gouge

216.50 221.00 FLZ Fault Zone

216.5 - 221: gouge and brx gouge of likely felsic material

221.00 230.00 RHYc Rhyolite coherant volcanics grey FG

221 - 230: siliceous grey RHYc or possible RHYva. Looks very much like units around 158.5m suggesting a reverse movement on faulting and 65m of movement. This is opposite to the regional map

<<Alt: 223.5 - 230 Weak-Moderate Muscovite>> Fault related?

<<Struc: 221 - 233 Weak-Moderate Fault>> broken, rubbled core, lost recovery

230.00 232.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 232 - 233 Moderate Muscovite>> fault related?

232.40 233.20 RHYv Rhyolite volcaniclastic

<<Alt: 233 - 235.8 Moderate Calcite>>

233.20 235.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown FG

233.2 - 235.8: massive fine grained compared to PEL. Sharp contacts but no chill margins

<<Vein: 234.4 - 234.9 100% Quartz>>

<<Vein: 235.3 - 235.4 100% Quartz>>

<<Struc: 235.3 - 238 Strong Fault>> broken core, dust, gouge, lost recovery.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

235.80 238.10 RHYv Rhyolite volcaniclastic

235.8 - 238.1: in very stg fault zone

<<Alt: 235.8 - 238.1 Moderate Muscovite>> fault related

238.10 241.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown

238.1 - 241.3: as above

<<Alt: 238.1 - 241.3 Weak-Moderate Calcite>>

<<Vein: 240.4 - 240.7 100% Quartz>>

<<Struc: 240.5 - 246 Weak Fault>> broken core poor recovery

241.30 246.00 RHYvl Lapilli tuff

241.3 - 246: cm scale lapilli.

<<Min: 243 - 246 0.01% Min: Pyrite>>

End of Hole @ 246

Appendix E: Airborne LiDAR Survey Report

LiDAR & Orthophoto Report

KZK Project

Data collected and prepared for:

BMC Minerals Ltd.

Suite 530

1130 West Pender Street

Vancouver, B.C.

V6E 4A4

Eagle Mapping Ltd.

#201 2071 Kingsway Ave

Port Coquitlam, BC V3C6N2

1.877.942.5551

EML Project # 16-026

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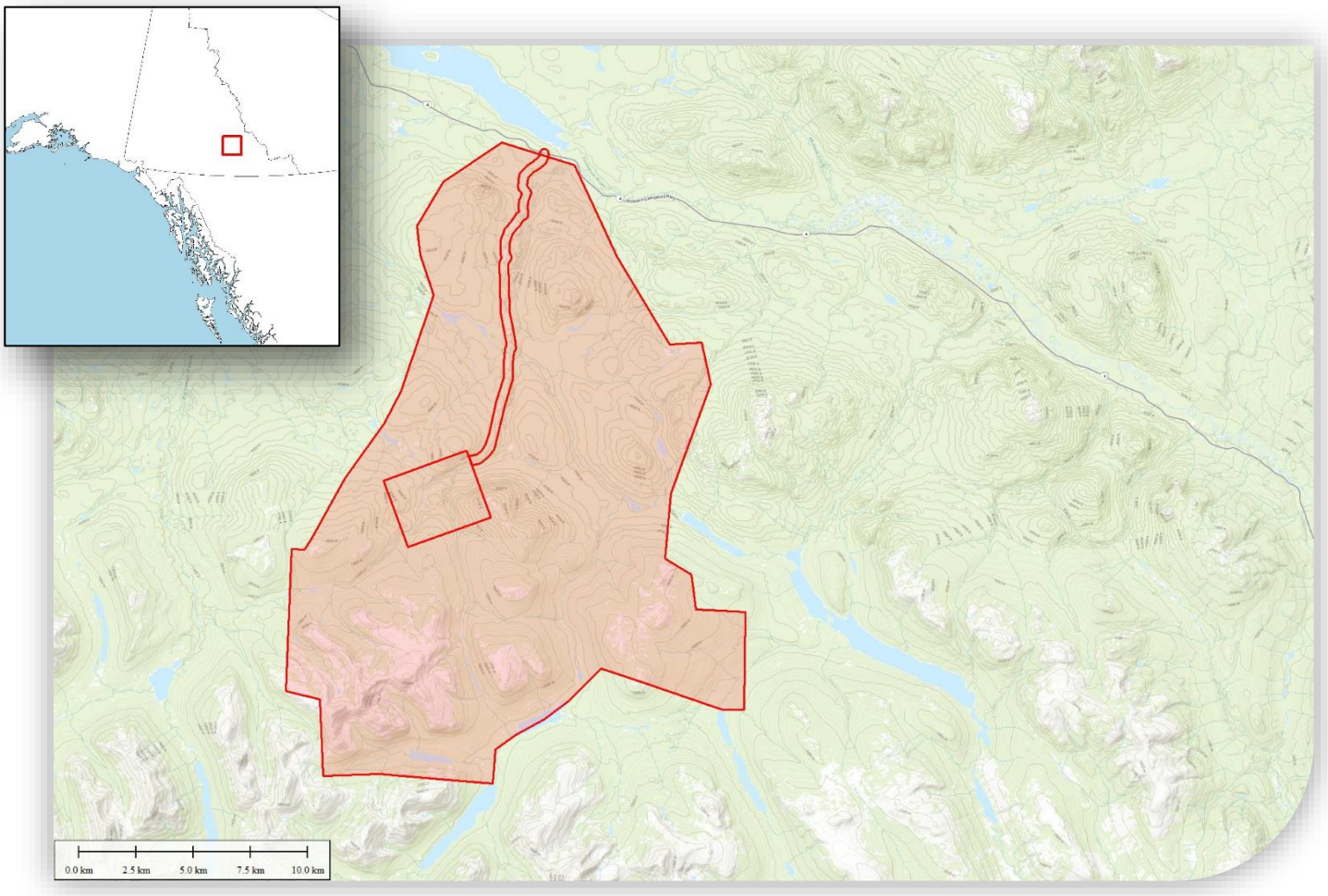
1. Project Overview

1.1 Area of Interest

Eagle Mapping Ltd. collected aerial LiDAR of BMC Minerals' KZK project near Finlayson Lake, YT. The Area of Interest (AOI) for this project covers a total of 341 sq. km. A significant buffer was collected surrounding the project AOI in order to guarantee accuracy and density within the boundary.



1.2 Acquisition Conditions

LiDAR and photo acquisition was completed in a single flight out of Watson Lake, YT on June 10, 2016. Both datasets were collected simultaneously, and equipment was co-mounted in the same aircraft. Weather was mainly clear with scattered clouds at 18000' MSL. The clouds posed no problem for LiDAR acquisition, but resulted in very significant broken shadows in the imagery. After analysis, the images were deemed unfit for delivery and flagged for reflight (as yet unflown).

1.3 File Formats, Units, and Projection

Project deliverables include the following:

Digital Elevation Contours – 1m interval

- ESRI Shapefile format
- Delivered as one file clipped to the AOI

'Bare Earth' Digital Elevation Model – 1m grid

- ArcASCII Grid format
- Delivered as one file clipped to the AOI

'Highest Hit' Digital Surface Model – 1m grid

- ArcASCII Grid format
- Delivered as one file clipped to the AOI

LiDAR Data Report

- Overview of project specifications, methodology and accuracies achieved
- PDF format

Map Projection Information	
Projection	UTM zone 9N
Horizontal Datum	NAD83 (CSRS)
Vertical Datum	CGVD28
Geoid	HTv2.0
Units	Meters
EPSG Code	3156

2. Acquisition & Calibration

2.1 Airborne LiDAR Collection

A Riegl Q1560 dual-channel LiDAR system was used for acquisition of the LiDAR data. This system was installed in a Piper Navajo aircraft operated by Peregrine Aerial Surveys out of Abbotsford, BC. In total, 24 flight lines were required to cover the AOI. Of these, 10 lines covered the tote road corridor and block at 10 ppm point density. Nominal flying height for 2ppm was 1400m above ground level (AGL) and flying speed was approximately 160kts, and 1000m AGL at 140kts for the 10ppm corridor. The scan field of view for the Q1560 is 29° either side of nadir, for a total scan field of view of 58°. The scan rate used for this project was 800 kHz. However, due to the nature of the 4-sided rotating mirror in Riegl scanners only 2/3 of pulses are recorded (533 kHz useable). This yields an average pulse density of 1 pulse per channel per swath (2 pulses per dual-channel flight line). The project was flown with a minimum of 25% side overlap, to ensure seamless coverage of the entire AOI. Note, each pulse may result in one or more returned points as the pulse filters through vegetation, etc. Water or highly absorbent material may result in very few or no LiDAR returns as these materials poorly reflect the laser pulse or may absorb it entirely.

LiDAR Specifications – 10ppm	
Flight Altitude	1400m AGL
Flying Speed	140kts nominal
Scan Rate	800khz (533khz usable)
Scan Field of View	58°
Line Spacing	620m
Minimum Overlap	60%

LiDAR Specifications – 2ppm	
Flight Altitude	2000m AGL
Flying Speed	160kts nominal
Scan Rate	800khz (533khz usable)
Scan Field of View	58°
Line Spacing	1550m
Minimum Overlap	25%

2.2 Aerial Photography Collection

Aerial photography was collected simultaneously with the LiDAR data, using a Trimble IQ-180 80 Megapixel digital camera co-mounted with the Q1560 LiDAR system. A total of 437 images were collected in 14 flight lines, and nominal photo resolution was 30cm.

2.3 Aircraft GNSS Trajectory Processing

GNSS post-processing determines the position and attitude of the aircraft at 200Hz along the entire flight path. This data is logged on the Q1560 via an Applanix POS AV510. Post-processing requires data from the onboard GNSS and Inertial Measurement Unit (IMU) as well as data from one or more static GNSS base station(s) with known coordinates.

Processing is done with Applanix PosPAC MMS software. Here the aircraft GNSS / IMU data is referenced to the base station data to provide adjusted positions for the aircraft in latitude, longitude, and height, roll, pitch, and yaw / heading. The final trajectory is then smoothed, and exported in .pos format for use in RiProcess for LiDAR processing. The resulting flight path is commonly referred to as a Smoothed Best Estimate of Trajectory (SBET).

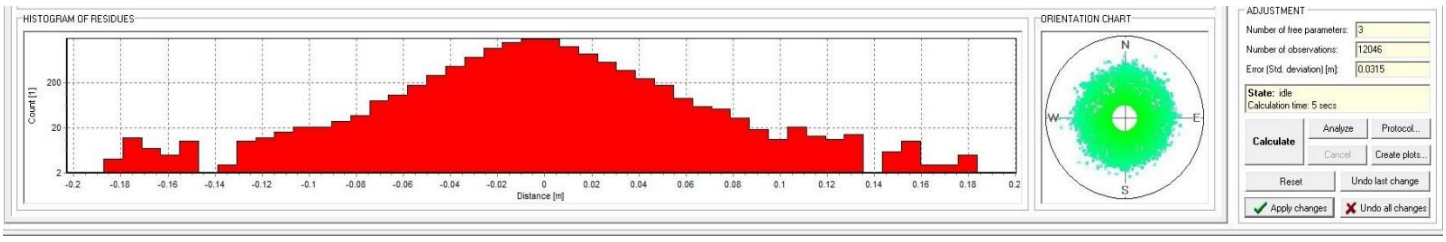
Mission planning ensures the project is flown during a period of good satellite visibility and distribution, resulting here in a minimum PDOP of 1.0 and maximum of 2.5. Statistical accuracy (RMS) of the SBET trajectory is < 2.5cm.

Trimble RTX real-time correction service was used for differential processing of the GPS trajectory. This service is able to converge to within several cm of accuracy, and is very helpful when surveying remote projects with limited base station coverage.

Trajectory Processing Results	
Min. # of Satellites	9
Max. # of Satellites	21
Minimum PDOP	1.0
Maximum PDOP	2.5
RMSE	2.5 cm

2.4 LiDAR Calibration

LiDAR data was calibrated using Riegl RiProcess software. A quality check was performed using matching tie planes which are calculated automatically and analyzed via a least-squares adjustment. Manual cross section checks were also performed to verify the automatic results. Internal accuracy of the LiDAR data was calculated at ±3cm. Once deemed properly calibrated, the LAS data is exported along with individual 'trajectories' for each scan line. All data is projected into UTM and adjusted to the proper geoid (HTv2.0) at this time.

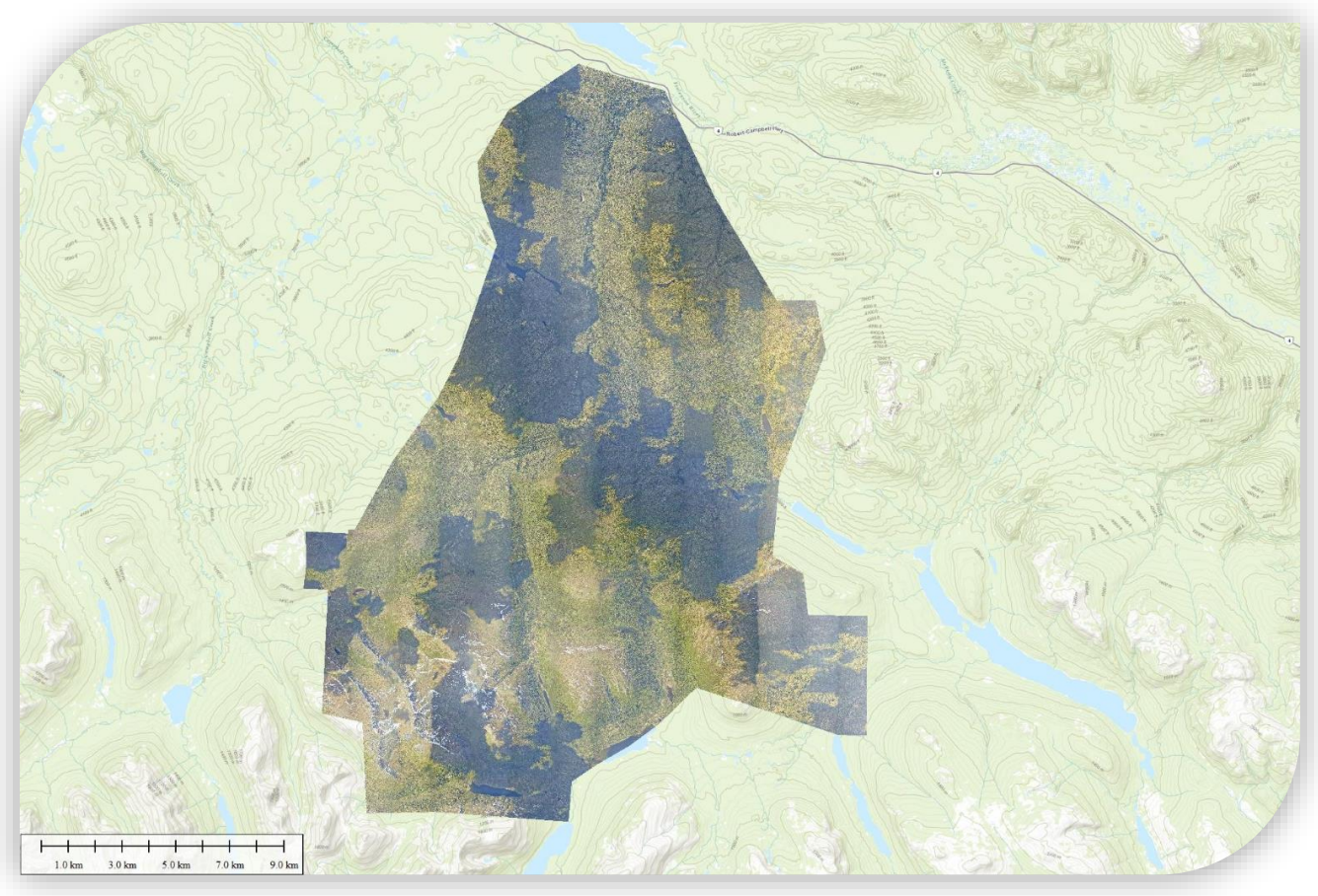


2.5 Photo Processing

Imagery is first colour-balanced to adjust for lighting differences between lines. It is then exported as GeoTiffs for use in the orthorectification process. Ortho processing is performed with Trimble OrthoVista software. With this software, images are aligned geographically (mosaicked) using their time stamp and the position from the SBET which corresponds to this time. The software also references the attitude information from this time stamp, and the LiDAR-derived DEM in order to 'project' the image on the correct ground location depending on where the aircraft was pointing at that moment.

The overall mosaic of all images is then inspected for busts or other discrepancies and image seam lines are adjusted to have the least visual impact. Control points are measured and checked for accuracy. Finally, once approved, the mosaic is cut into tiles and exported in the appropriate deliverable format.

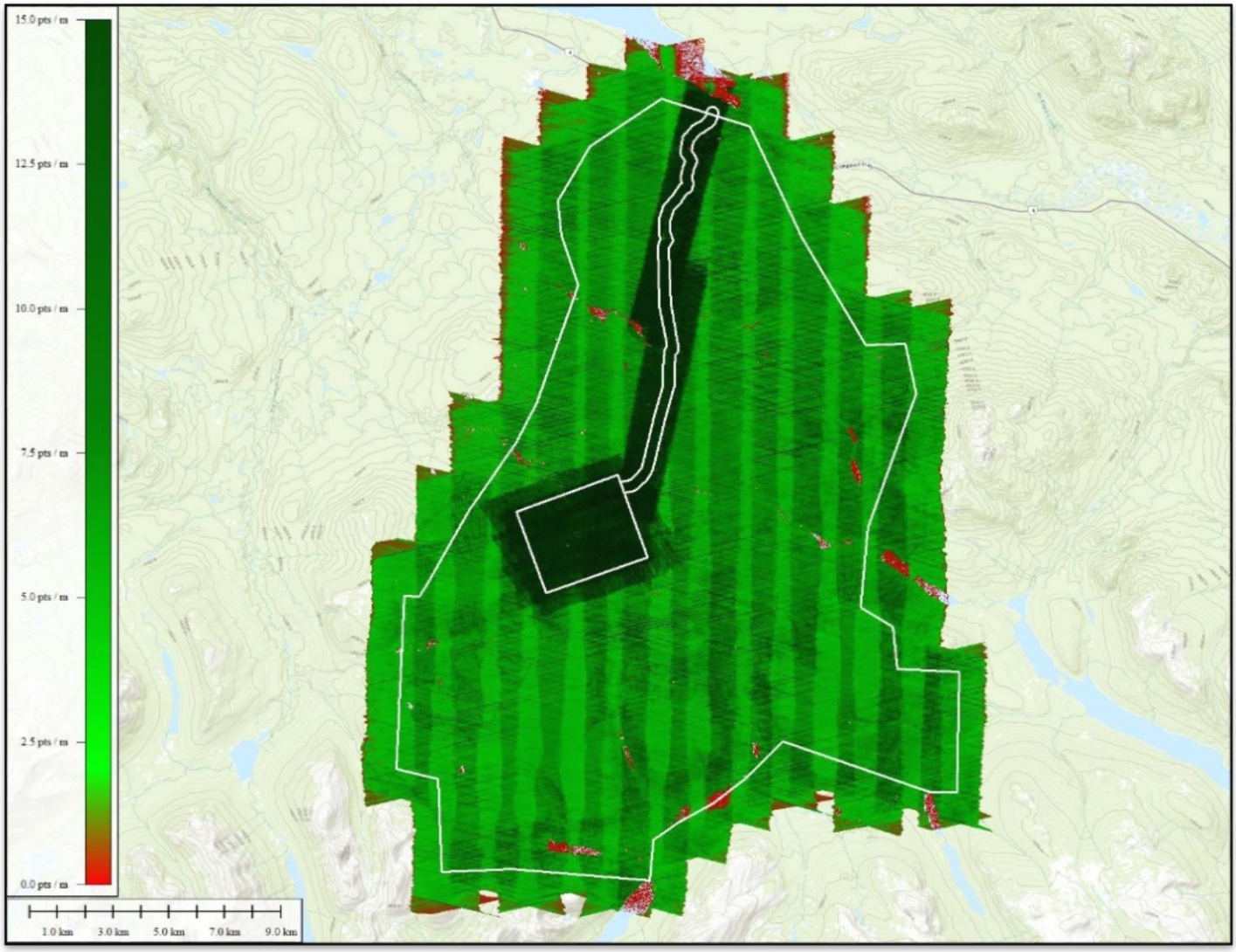
In this case, after delivery of the orthophoto, it was decided that too much cloud shadow was present and that the photos would need to be reflown.



3. Results and Conclusions

3.1 Point Density and Coverage

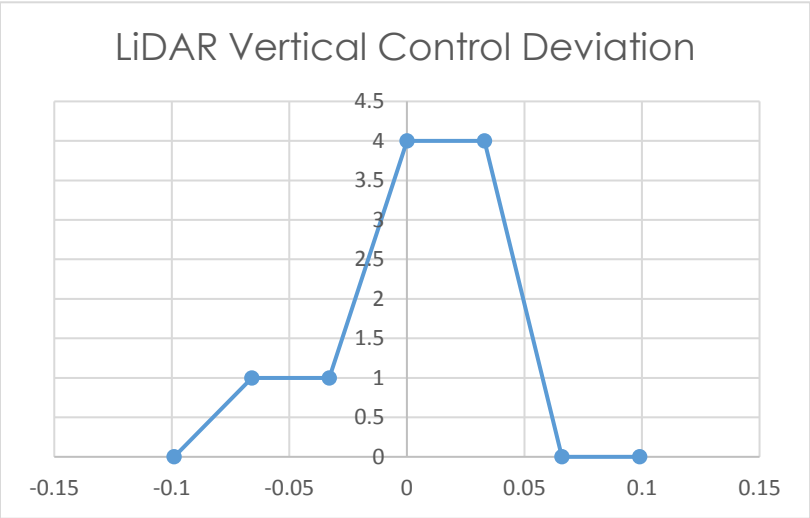
The delivered LiDAR data is positioned with an average density of 4-6 points / sq. meter for all returns, and 2-3 points / sq. meter counting only first-returns. Density for the tote road corridor and block is 12-15 points / sq. meter for all returns. Density is much greater for all returns vs first-returns due to the full waveform analysis performed by the Q1560 laser. By analyzing the full LiDAR waveform, the Q1560 is able to extract many additional points in vegetation, or other terrain where the laser pulse is 'filtered' through many objects in close proximity to each other.



3.2 Accuracy

LiDAR Accuracy

Accuracy of the LiDAR data was determined via comparison to a set of ground control points provided to Eagle Mapping by BMC Minerals. LiDAR data was measured to fit these control points very well – within 3cm and so no adjustment of the data was required. It is Eagle Mapping's conclusion that the LiDAR data is accurate to within <6.7cm vertically, and <30cm horizontally quoted at 95% confidence level as per ASPRS LiDAR vertical accuracy guidelines.



LiDAR Control Statistics	
Average dZ	0.001
Minimum dZ	-0.05
Maximum dZ	0.05
Average magnitude	0.031
Root mean square	0.034
Std deviation	0.034

Orthophoto Accuracy

The orthophoto was rectified using the ground control targets provided to Eagle Mapping, and was referenced against the LiDAR-derived intensity imagery. No busts greater than 1-2 pixels were observed, however more thorough examination was not performed as the orthophoto was rejected due to the cloud cover.

Appendix F: DGPS Survey Report

CHALLENGER GEOMATICS LTD.

CHALLENGER GEOMATICS LTD.

302 Jarvis Street
Whitehorse, Yukon
Y1A 2H2
PHONE: (867) 668-6940
FAX: (867) 668-6950

November 18, 2016

Danielle Mountjoy, P.Geo
Geologist
BMC Minerals (No. 1) Ltd.

Our File:
37034

Dear Ms. Mountjoy;

Re: Survey Methodology and Equipment; Kudz Ze Kayah (KZK), Yukon

Thank you for the opportunity to work on this interesting project. The following outlines our general survey methodology and the technical equipment we use at KZK.

Challenger uses exclusively Leica Geomatics Ltd. survey grade technical equipment. In open areas (almost all of KZK) we use Leica Viva Global Navigation Satellite Systems (GNSS). GNSS includes GPS and other satellite constellations and is more robust than GPS alone. We have used differentially corrected Real Time Kinematic (RTK) GNSS for most measurements at KZK. These measurements are possible when we have radio contact with our base receiver. When we do not have radio contact (ie in GP4F) we post process the GNSS vectors. We have survey control that will reach the GP4F area with radio however the cost to move the GNSS base station with the helicopter is too high unless we are measuring many locations in GP4F.

Challenger also has several total stations available in case GNSS techniques are not appropriate (heavy trees). Thus far we have not used anything other than GNSS on the KZK site. Please find attached a fact sheet for the Leica Viva GS15 GNSS receiver.

Coordinates for our control have been derived using Natural Resources Canada's Precise Point Positioning (PPP) service which uses precise GNSS orbit information to compute the absolute position of a measured point. Uncertainty statistics are provided and are primarily a function of observation time and satellite constellation. Once a PPP solution for our primary control point was obtained we processed static GNSS vectors within our control network to determine the coordinates of all other control. These values were compared against PPP values for these points as a check. Several control stations are located in various areas to allow for checks (performed each day to ensure equipment is performing correctly) and are available in case of destruction of other control points. All check measurements are recorded in hard copy and digitally.

CHALLENGER GEOMATICS LTD.
302 Jarvis Street
Whitehorse, Yukon
Y1A 2H2
PHONE: (867) 668-6940
FAX: (867) 668-6950

All coordinates listed are UTM Zone 9, NAD 83 CSRS. All elevations are orthometric and are based on the HT2 v 2.0 geoid model.

Please contact me with any questions.

George Wilcox, P.Eng.
North 60 Office

Whitehorse, Yukon

Attachments

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	April 27 2016
Prevailing weather conditions including temperature:	Overcaste
Purpose of data collection for that day:	Measure Monitoring Wells and Drill Holes
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	John Usselman, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.005 H, 0.015 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	NA

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
BH95G-30	6816765.75	415437.33	1386.88	Monitoring Well	Leans steeply	Not measured	
BH95G-32	6816133.97	415008.24	1387.46	Monitoring Well			
BH95G31	6816128.51	415199.09	1391.74	Monitoring Well	Leans steeply	Not measured	
K15-285	6813351.48	419649.18	1318.91	Drill Hole Collar	Measured at collar (0.430 down to ground)		1318.48
K15-294	6813497.17	419410.84	1372.30	Drill Hole Collar	Measured at collar (0.215 down to ground)		1372.09
K15-302	6813353.97	419498.26	1349.07	Drill Hole Collar	Measured at collar (0.175 down to ground)		1348.89
K15-306	6813353.39	419498.37	1348.95	Drill Hole			
K15-331	6816410.75	415352.62	1387.81	Drill Hole			
K15-333	6816221.91	415047.23	1381.24	Drill Hole	Measured at PVC, down 0.17 to ground		1381.07
MW03D	6816052.10	416316.79	1466.18	Monitoring Well	Nested	0.96	1465.22
MW03S	6816052.10	416316.76	1466.19	Monitoring Well	Nested	-	1465.22
MW04D	6816155.29	415786.10	1452.07	Monitoring Well	Nested	1.03	1451.04
MW04S	6816155.35	415786.10	1452.06	Monitoring Well	Nested	-	1451.04
MW05D	6816872.04	415851.80	1464.88	Monitoring Well	Nested	1.11	1463.77

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
MW05S	6816871.99	415851.78	1464.88	Monitoring Well	Nested	-	1463.77
MW06	6816721.29	415459.96	1388.56	Monitoring Well-elevation at frost packer flange	Down 0.05 to PVC	1.03	1387.48

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	April 28 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Monitoring Wells and Drill Holes
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	John Usselman, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.005 H, 0.015 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	Unable to find K15-281 or K15-303

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
K15-289	6815648.38	414600.05	1445.53	Drill Hole			
K15-292	6815154.41	415157.49	1410.94	Drill Hole			
K15-293	6815647.58	414599.89	1445.61	Drill Hole			
K15-296	6815377.07	414839.14	1395.27	Drill Hole			
K15-297	6815302.56	415050.34	1385.70	Drill Hole			
K15-304	6815074.21	415152.17	1406.55	Drill Hole	Found wire but no tag		
K15-305	6815156.26	415153.41	1409.77	Drill Hole	Found wire but no tag		
K15-307	6815121.14	415080.52	1386.01	Drill Hole			
K15-308	6815051.36	415158.27	1405.88	Drill Hole			
K15-309	6815156.44	415154.58	1409.75	Drill Hole	Found wire but no tag		
K15-310	6815050.58	415157.74	1405.90	Drill Hole			
K15-311	6815050.50	415154.31	1405.78	Drill Hole			
K15-312	6814946.53	415035.37	1387.59	Drill Hole Top of Collar	Protrudes 0.25		1387.34
K15-315	6815064.64	415109.39	1393.22	Drill Hole			
K15-317	6814948.09	415038.29	1387.53	Drill Hole Top of Collar	Protrudes 0.27		1387.26

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
K15-320	6815121.18	415075.53	1385.75	Drill Hole			
K15-321	6815225.45	415077.83	1388.15	Drill Hole	Tag marked K15-231 in field		
K15-325	6815052.22	415159.20	1405.87	Drill Hole			
K15-327	6815178.05	414639.32	1442.17	Drill Hole			
K15-328	6815210.46	414677.76	1428.84	Drill Hole			
KRAK006	6815057.98	415133.01	1401.15	Staked out geology location	Placed lathe and painted orange		
KRAK018	6815048.98	415055.01	1382.77	Staked out geology location	Placed lathe and painted orange-IN CREEK		
SRK01	6815484.02	414552.09	1456.36	Staked out geotech location	Placed lathe and painted orange		
SRK02	6815763.00	414809.19	1403.47	Staked out geotech location	Placed lathe and painted orange		
SRK04	6814964.00	415100.41	1386.52	Staked out geotech location	Placed lathe and painted orange		
SRK06	6815145.00	415070.58	1385.99	Staked out geotech location	Placed lathe and painted orange		
BH95-129	6815498.37	414600.65	1444.66	Monitoring Well		1.03	1443.64
BH95-146	6815503.74	414898.34	1390.23	Monitoring Well		1.07	1389.16
BH95G-21	6815640.53	414801.51	1403.47	Monitoring Well		1.09	1402.38
BH95G-22	6815729.01	414927.59	1385.52	Monitoring Well		0.91	1384.61
BH95G-24	6815257.92	415037.39	1385.30	Monitoring Well		0.99	1384.32
MW15-01	6816558.87	414472.15	1488.54	Monitoring Well		1.20	1487.34
MW15-11A	6815119.15	415079.04	1387.14	Nested Monitoring Well		1.13	1386.01
MW15-11B	6815119.17	415079.05	1387.07	Nested Monitoring Well			1386.01
WW15-01	6815295.11	414892.85	1390.57	Water well		0.70	1389.87
WW15-02	6815767.23	414839.34	1396.30	Water well		0.84	1395.46

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	April 29 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Monitoring Wells and Drill Holes
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	John Usselman, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.005 H, 0.015 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	re shoot all KRAK exept 006 and 018

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
K15-330	6818695.36	414925.81	1347.13	Drill hole-instrument site	measured ground beside install		
K15-334	6818832.55	414780.24	1319.63	Drill hole-no sign of hole other than pad	measured center of pad		
K15-335	6817327.03	414667.65	1420.07	fd wire and 3 tags, monitoring station, measured at ground	tags marked K15-335, KP15H, K15-05		
K15-336	6819014.33	414792.85	1317.81	Drill hole-instrumnet station	measured ground beside install		
KRAK001	6815013.60	414915.54	1386.08	staked out geology location			
KRAK002	6815023.75	414874.05	1389.89	staked out geology location			
KRAK003	6815005.72	414967.55	1385.68	staked out geology location			
KRAK004	6815007.93	414914.04	1386.40	staked out geology location			
KRAK005	6815065.56	414923.09	1383.79	staked out geology location			
KRAK007	6815186.38	415075.68	1386.64	staked out geology location			
KRAK008	6815074.64	415150.00	1406.63	staked out geology location			
KRAK009	6815182.76	415074.53	1386.58	staked out geology location			
KRAK010	6815074.32	415149.45	1406.59	staked out geology location			

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
KRAK011	6815301.61	415055.33	1385.73	staked out geology location			
KRAK013	6815172.04	415111.28	1396.17	staked out geology location			
KRAK014	6814998.60	414882.30	1390.13	staked out geology location			
KRAK015	6815044.79	414938.31	1384.29	staked out geology location			
KRAK016	6814931.21	414900.75	1393.58	staked out geology location			
KRAK017	6815003.67	414972.39	1385.99	staked out geology location			
KRAK019	6815282.66	415190.59	1418.15	staked out geology location			
KRAK020	6815284.69	415191.43	1417.68	staked out geology location			
100100	6816593.77	414961.32	1405.73	NEW CAT TRAIL			
100101	6816589.55	414952.06	1406.95	NEW CAT TRAIL			
100102	6816585.91	414942.24	1407.69	NEW CAT TRAIL			
100103	6816583.84	414932.19	1408.70	NEW CAT TRAIL			
100104	6816582.06	414921.69	1410.08	NEW CAT TRAIL			
100105	6816580.38	414911.42	1411.60	NEW CAT TRAIL			
100106	6816578.97	414900.95	1412.89	NEW CAT TRAIL			
100107	6816575.55	414890.77	1414.51	NEW CAT TRAIL			
100108	6816571.12	414881.63	1415.63	NEW CAT TRAIL			
100109	6816565.46	414872.62	1416.61	NEW CAT TRAIL			
100110	6816558.96	414863.85	1417.67	NEW CAT TRAIL			
100111	6816553.01	414854.85	1418.92	NEW CAT TRAIL			
100112	6816546.83	414846.13	1419.94	NEW CAT TRAIL			
100113	6816541.04	414837.43	1420.96	NEW CAT TRAIL			
100114	6816534.21	414829.37	1422.60	NEW CAT TRAIL			
100115	6816526.64	414822.11	1424.14	NEW CAT TRAIL			
100116	6816519.25	414814.49	1425.57	NEW CAT TRAIL			
100117	6816511.07	414808.15	1426.78	NEW CAT TRAIL			
100118	6816503.07	414801.20	1428.14	NEW CAT TRAIL			
100119	6816495.41	414794.32	1429.76	NEW CAT TRAIL			
100120	6816488.43	414786.67	1431.43	NEW CAT TRAIL			
100121	6816481.86	414778.55	1433.42	NEW CAT TRAIL			
100122	6816474.08	414771.64	1435.48	NEW CAT TRAIL			
100123	6816466.55	414764.07	1437.66	NEW CAT TRAIL			
100124	6816458.51	414757.12	1439.25	NEW CAT TRAIL			

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
100125	6816451.36	414749.17	1441.42	NEW CAT TRAIL			
100126	6816443.42	414742.51	1443.11	NEW CAT TRAIL			
100127	6816436.34	414734.90	1443.98	NEW CAT TRAIL			
100128	6818901.98	414037.97	1430.43	NEW CAT TRAIL			
100129	6818896.77	414062.91	1428.77	NEW CAT TRAIL			
100130	6818899.42	414088.46	1426.51	NEW CAT TRAIL			
100131	6818893.63	414113.65	1424.86	NEW CAT TRAIL			
100132	6818884.27	414137.77	1422.28	NEW CAT TRAIL			
100133	6818881.61	414163.48	1420.33	NEW CAT TRAIL			
100134	6818891.50	414186.44	1417.84	NEW CAT TRAIL			
100135	6818897.67	414192.61	1416.72	NEW CAT TRAIL			
BH95G-2	6819835.33	414341.42	1349.77	Monitoring Well		1.18	1348.59
BH95G-33A	6816744.41	415129.54	1390.48	Nested Monitoring Well		1.17	1389.31
BH95G-33B	6816744.43	415129.54	1390.48	Nested Monitoring Well		1.17	1389.31
MW15-07A	6817783.88	414921.75	1360.90	Nested Monitoring Well with packer installed	Measured top of packed flange, 0.04 down to PVC	0.88	1359.98
MW15-07B	6817783.89	414921.71	1360.86	Nested Monitoring Well			1359.98
MW15-08D	6818517.57	414904.01	1333.42	Nested Monitoring Well			1332.49
MW15-08S	6818517.54	414904.00	1333.51	Nested Monitoring Well with packer installed	Measured top of packed flange, 0.09 down to PVC	0.93	1332.49
MW15-09D	6819176.59	414709.36	1319.75	Nested Monitoring Well with packer installed	Measured top of packed flange, 0.09 down to PVC	0.50	1319.16
MW15-09S	6819176.62	414709.42	1319.66	Nested Monitoring Well			
MW15-10D	6819202.34	414793.64	1318.89	Nested Monitoring Well			
MW15-10S	6819202.37	414793.61	1318.92	Nested Monitoring Well			

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	April 30 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Monitoring Wells and Drill Holes
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	John Usselman, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.005 H, 0.015 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation
MW15-02	6816269.431	414807.916	1431.185	Monitoring Well-elevation is for frost packer flange	frost packer is 0.145 above PVC	1.245	1429.795

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	June 1 2016
Prevailing weather conditions including temperature:	Cloudy
Purpose of data collection for that day:	Measure Drill Holes, Layout new drill locations
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	Mason Grey, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2800
Other control monuments checked and amount of measured discrepancy:	2800 ΔH=0.004m ΔV=-0.014
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	All Points Measured- Suffix 0106

Point_ID	Northing	Easting	Elevation	Code	Notes
ABM860106	6815763.01	414808.99	1403.44	Layout	
ABM870106	6815763.01	414808.97	1403.46	Layout	
ABM880106	6815750.00	414850.01	1394.56	Layout	
ABM890106	6815880.01	414850.02	1391.15	Layout	
ABM900106	6815474.99	414500.02	1471.88	Layout	
ABM910106	6815425.02	414500.00	1470.57	Layout	
ABM920106	6815600.01	414449.98	1486.78	Layout	
ABM930106	6815350.01	414450.00	1481.12	Layout	
ABM940106	6815524.99	414325.02	1525.23	Layout	
ABM950106	6815350.02	414324.99	1520.62	Layout	
ABM960106	6815490.01	415274.99	1459.62	Layout	
ABM970106	6815590.01	415285.00	1451.79	Layout	
ABM980106	6815799.99	414900.00	1387.08	Layout	
ABM990106	6815799.99	414900.00	1387.09	Layout	
DH-F0106	6817492.00	414697.00	1411.43	Layout	

Point_ID	Northing	Easting	Elevation	Code	Notes
DH-G0106	6816445.99	415825.00	1438.90	Layout	
GT010106	6815085.01	415133.99	1402.51	Layout	
GT020106	6815031.00	414910.00	1385.49	Layout	
GT030106	6815121.00	415075.99	1385.69	Layout	
GT040106	6814959.00	414950.01	1388.39	Layout	
K16-3370106	6815014.07	414917.09	1385.89	Asbuilt Fd Drill Hole	
K16-3380106	6815009.98	414914.90	1386.16	Asbuilt Fd Drill Hole	
K16-3390106	6815008.90	414914.64	1386.36	Asbuilt Fd Drill Hole	
K16-3400106	6814927.34	414973.99	1389.27	Asbuilt Fd Drill Hole	
K16-3410106	6815005.11	414973.08	1385.68	Asbuilt Fd Drill Hole	
K16-3420106	6815005.24	414971.99	1385.61	Asbuilt Fd Drill Hole	
K16-3430106	6815004.71	414973.59	1385.72	Asbuilt Fd Drill Hole	
K16-3440106	6815004.99	414973.40	1385.69	Asbuilt Fd Drill Hole	
K16-3450106	6814949.79	415033.35	1387.21	Asbuilt Fd Drill Hole	
K16-3460106	6814949.60	415033.87	1387.19	Asbuilt Fd Drill Hole	
K16-3470106	6815019.61	415023.12	1384.50	Asbuilt Fd Drill Hole	
K16-3480106	6815043.30	414937.57	1384.22	Asbuilt Fd Drill Hole	
K16-3490106	6815019.61	415023.12	1384.50	Asbuilt Fd Drill Hole	
K16-3500106	6815043.52	414937.06	1384.37	Asbuilt Fd Drill Hole	
K16-3510106	6815043.48	415131.70	1399.02	Asbuilt Fd Drill Hole	
K16-3520106	6815043.91	415131.20	1398.97	Asbuilt Fd Drill Hole	
K16-3530106	6814998.98	414881.53	1389.94	Asbuilt Fd Drill Hole	
MW16-12D0106	6816530.00	415279.00	1368.96	Layout	
MW16-12S0106	6816530.00	415279.00	1368.96	Layout	
MW16-15D0106	6814937.01	414905.98	1393.24	Layout	
MW16-15S 0106	6814937.01	414906.00	1393.22	Layout	
MW16-16D0106	6817427.98	415354.01	1391.62	Layout	
MW16-16S0106	6817427.99	415354.01	1391.62	Layout	
MW16-130106	6817873.00	413997.00	1504.03	Layout	

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	June 2 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes, Layout new drill locations
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Geoff Anderson, Party Chief
Names of other crew members and responsibilities:	Mason Grey, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2801 & 2802
Other control monuments checked and amount of measured discrepancy:	2800 ΔH=0.009m ΔV=-0.024 & 2803 ΔH=0.009 ΔV=0.006
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	All Points Measured- Suffix 0206

Point_ID	Northing	Easting	Elevation	Code	Notes
DH-A0206	6819129.999	414436.006	1382.291	Layout	
DH-B0206	6818720.001	414402.018	1402.621	Layout	
DH-C0206	6818550.002	414845.024	1322.986	Layout	
DH-D0206	6818407.992	414384.003	1415.514	Layout	
DH-E0206	6817985.008	414572.984	1412.254	Layout	
DH-H0206	6814628.012	414965.000	1404.775	Layout	
MW16-14D0206	6818148.017	414873.002	1346.833	Layout	
MW16-14S0206	6818148.016	414873.006	1346.834	Layout	

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	July 1 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes and Collars
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Nathan Conroy, Party Chief
Names of other crew members and responsibilities:	
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2816, 2819
Other control monuments checked and amount of measured discrepancy:	2817 (0.003 H, 0.002 V), 2800 (0.002 H, 0.016 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	

Point_ID	Northing	Easting	Elevation	Code	Notes
GP4F23	6813385.983	419399.999	1365.619	Staked Drill Hole Location	Same as GP4F69
GP4F69	6813385.983	419399.999	1365.619	Staked Drill Hole Location	Same as GP4F23
GP4F63	6813220.008	419505.004	1333.872	Staked Drill Hole Location	Same as GP4F65
GP4F65	6813220.008	419505.004	1333.872	Staked Drill Hole Location	Same as GP4F63
GP4F64	6813455.016	419519.995	1352.453	Staked Drill Hole Location	
GP4F66	6813394.985	419570.013	1337.941	Staked Drill Hole Location	Same as GP4F67
GP4F67	6813394.985	419570.013	1337.941	Staked Drill Hole Location	Same as GP4F66
GP4F68	6813180.025	419649.991	1313.604	Staked Drill Hole Location	
GP4F70	6813208.025	419399.988	1349.278	Staked Drill Hole Location	
K16-354	6815067.709	415149.889	1406.322	Krakatoa	Found no evidence. Driller on site gave location as no mark left
K16-355	6815067.709	415149.889	1406.322	Krakatoa	Found no evidence. Driller on site gave location as no mark left
K16-356		not drilled			Not Drilled- was re-drilled as K16-357
K16-357	6815282.542	415212.134	1426.541	Krakatoa	Dry
K16-358	6815167.039	415104.787	1393.96	Krakatoa	Dry
K16-359	6815283.597	415212.221	1426.484	Krakatoa	Dry

Point_ID	Northing	Easting	Elevation	Code	Notes
K16-360	6815168.31	415104.728	1393.874	Krakatoa	Dry
K16-361	6815308.954	415048.707	1385.429	ABM	Dry
K16-362	6815368.347	415019.128	1384.204	ABM	Dry
K16-363	6815211.979	415239.214	1441.181	Krakatoa	Tied Collar- 0.2m above ground- Dry- Zenith= ±150° @ ±180°
K16-364	6815348.846	414795.816	1400.502	ABM	Wet from drainage
K16-365	6815398.31	414747.648	1409.232	ABM-ABM102	Dry
K16-366	6815345.271	414676.455	1424.284	ABM-ABM100	Dry
K16-367	6815185.899	415073.842	1386.377	Krakatoa-KRAK007	Dry
K16-368	6815015.705	415219.23	1419.274	Sebesi-SEB002	Dry
K16-369	6815212.141	415240.268	1441.236	Krakatoa-KRAK034	*ASSUMED* No # on stake. Tied Collar- Flush with ground- Dry- Zenith= ±150° @ ±180°
K16-370	6815186.12	415074.044	1386.375	Krakatoa-KRAK009	Dry
K16-371	6814957.742	414945.096	1388.696	Krakatoa-GT04	Dry
K16-373	6815031.826	414908.291	1385.435	Krakatoa-GT02	Dry
K16-375	6815417.532	414503.246	1469.364	ABM-ABM91	Dry
K16-376	6815128.282	415074.37	1385.405	Krakatoa-GT03	Dry

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	August 2 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes and Monitoring Wells
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Nathan Conroy, Party Chief
Names of other crew members and responsibilities:	Mason Grey, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2816, 2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.006 H, 0.012 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation (wells)
K16-379	6814627.14	414964.24	1404.93	DH-H		-0.08	1404.85
K16-381	6814702.29	414976.02	1402.53	MW16-15D		-1.05	1401.48
K16-382	6814699.40	414977.14	1402.35	MW16-15S		-0.97	1401.38
K16-383	6817774.19	414010.66	1503.36			-0.79	1502.57
K16-390	6818778.59	414323.13	1408.73	DH-B		-0.11	1408.62
K16-389	6818334.04	414361.29	1421.26	DH-D		-0.08	1421.18
K16-387	6817990.94	414570.90	1411.72	DH-E		-0.06	1411.66
K16-386	6817489.48	414634.11	1417.57	DH-F		-0.79	1416.78
K16-395	6817251.31	414821.81	1405.07	DH-J	Water in PVC. PVC below ground	0.08	1405.15
K16-392	6817471.12	414851.54	1388.71	DH-I		-0.02	1388.69
K16-401	6816530.44	415274.13	1370.47	MW16-12S		-1.12	1369.35
K16-398	6816529.95	415277.78	1370.02	MW16-12D	Flowing Water	-0.80	1369.22
K16-397	6817229.37	415394.76	1393.44	MW16-16D		-0.80	1392.64
K16-402	6816485.06	415844.03	1443.37	DH-G		-0.19	1443.18

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	August 3 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes and Monitoring Wells
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Nathan Conroy, Party Chief
Names of other crew members and responsibilities:	Mason Grey, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2816, 2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.003 H, 0.002 V), 2800 (0.002 H, 0.016 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	K16-391 not found, under active drill

Point_ID	Northing	Easting	Elevation	Code	Notes	Top PVC to ground	Ground Elevation (wells)
K16-405	6818382.92	414780.08	1343.12	MW16-14S		-1.06	1342.06
K16-404	6818386.12	414779.48	1343.11	MW16-14D	Flowing Water	-1.04	1342.07
K16-406	6815521.96	414326.91	1524.15	ABM94	Stake in Drill Hole		
K16-378	6815015.49	414916.29	1386.08	KRAK036	Stake in Drill Hole		
K16-372	6814798.08	415122.46	1390.77	SEB005	Stake in Drill Hole		
K16-377	6815089.79	415150.65	1406.90	GT01	Stake in Drill Hole		
K16-374	6815005.35	415456.03	1512.70	SEB004	Stake in Drill Hole		
K16-384	6815386.44	415660.87	1562.59		Tied Collar		
K16-394	6815387.32	415660.03	1562.57		Tied Collar		
K16-399	6815529.37	415448.35	1518.15	KRAK037	Tied Stake		
K16-385	6815529.43	415447.87	1518.18	KRAK035	Tied Stake		

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	August 4 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes and Monitoring Wells
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Nathan Conroy, Party Chief
Names of other crew members and responsibilities:	Mason Grey, assistant
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2816, 2819
Other control monuments checked and amount of measured discrepancy:	2817 (0.003 H, 0.003 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	

Point_ID	Northing	Easting	Elevation	Code	Notes
K16-388	6813384.98	419400.65	1365.73	GP4F69	Stake in Drill Hole
K16-380	6813385.52	419400.06	1365.63	GP4F23	Tied Stake marked by Geo
K16-407	6813390.31	419399.91	1365.88	GP4F69A	Stake in Drill Hole
K16-403	6813449.77	419512.83	1353.28	GP4F64	Stake in Drill Hole
K16-400	6813207.19	419400.54	1349.14	GP4F70	Tied Stake marked by Geo
K16-393	6813218.93	419505.17	1333.64	GP4F65	Tied Stake marked by Geo
K16-396	6813219.45	419505.14	1333.63	GP4F63	Tied Stake marked by Geo

Item	Metadata
Horizontal Datum:	NAD83 CSRS Epoch 2002
Vertical Datum:	CGVD28 (HT v2.0 Geoid)
Coordinate Projection:	UTM Zone 9 North, metres
Date:	September 30 2016
Prevailing weather conditions including temperature:	Not recorded
Purpose of data collection for that day:	Measure Drill Holes, water well and thermistors
Name of company submitting the data:	Challenger Geomatics Ltd.
Name, license number, and stamp, of the licensed surveyor:	Paul Burbidge, Commission number 1787
Name of field crew chief:	Nathan Conroy, Party Chief
Names of other crew members and responsibilities:	
Type of data collection (GPS RTK, handheld GPS, other):	Leica Viva RTK GNSS
ID of pre-existing control monument used as RTK base station or initial check for handheld:	2819
Other control monuments checked and amount of measured discrepancy:	2800 (0.005 H, 0.013 V)
ID of new control monuments established:	NA
Issues encountered and how they were resolved:	None
Notes from field crew chief;	Thermisters shot at ground level as per Chris (Equity)

Point_ID	Northing	Easting	Elevation	Code	Notes
1	6819675.63	413844.71	NA	Water Well	in building
930001	6819676.91	413848.38	NA	BLDG	corner
930002	6819674.47	413844.10	NA	BLDG	corner
930003	6819679.74	413841.09	NA	BLDG	corner
930004	6819682.20	413845.35	NA	BLDG	corner
930005	6819740.91	413738.34	1402.60	TESTPIT	
930006	6819759.83	413731.89	1401.29	TESTPIT	
930007	6819729.69	413725.15	1403.61	TESTPIT	
K16-408	6815263.24	415428.88	1549.44	STK	tag K16-408
K16-409	6815887.26	414851.23	1392.07	STK	tag K16-409
K16-410	6816445.81	416135.75	1473.00	PVC	elevation at ground
K16-411	6816237.43	415946.89	1446.14	PVC	elevation at ground
K16-412	6816061.13	416070.23	1464.43	PVC	elevation at ground
K16-413	6815165.51	415803.07	1596.45	STK	tag K16-413, 147EOH
K16-414	6815166.40	415803.90	1596.48	STK	tags K16-414, 342.25M, EOH and K16-414W1, 285M, EOH

Point_ID	Northing	Easting	Elevation	Code	Notes
K16-415	6815211.86	413576.19	1710.40	STK	tag K16-415
K16-416	6815280.11	415443.80	1553.05	STK	tags K16-416 and K16-416, 825 EOH
K16-417	6815291.05	415211.51	1426.50	STK	tag K16-417
K16-418	6815332.06	415364.65	1503.59	STK	being drilled at time of survey
K16-419	6815246.71	415241.89	1440.48	STK	no tag writing on stake = K16-419

Appendix G: 2016 and Outstanding 2015 Drill

Hole Collar Coordinates and Orientations

This appendix contains the most up-to-date collar coordinates for all 2016 drill holes (Table G-1) as well as un-surveyed drill holes from the 2015 program and historic monitoring wells (Table G-2). The survey type used to locate the collar is indicated as either differential GPS ("RTK DGPS") or as an integration of LiDAR elevation data with eastings and northings from a handheld GPS ("GPS-LiDAR"), azimuth pointing system ("APS-LiDAR") or the planned co-ordinates ("PLND-LiDAR").

Table G-1: Survey collar information for 2016 diamond drill holes

Hole ID	Easting	Northing	Elevation (m)	Length (m)	Azimuth (°)	Dip (°)	Survey Type
K16-337	414917.09	6815014.07	1385.89	220.0	23.6	-75	RTK DGPS
K16-338	414914.90	6815009.98	1386.16	76.4	31.7	-65	RTK DGPS
K16-339	414914.64	6815008.90	1386.36	240.0	36.3	-65	RTK DGPS
K16-340	414973.99	6814927.34	1389.27	353.0	31.4	-45	RTK DGPS
K16-341	414973.08	6815005.11	1385.68	190.0	24.6	-54	RTK DGPS
K16-342	414971.99	6815005.24	1385.61	51.0	9.0	-74	RTK DGPS
K16-343	414973.59	6815004.71	1385.72	62.7	32.0	-75	RTK DGPS
K16-344	414973.40	6815004.99	1385.69	224.2	31.3	-75	RTK DGPS
K16-345	415033.35	6814949.79	1387.21	90.5	11.0	-55	RTK DGPS
K16-346	415033.87	6814949.60	1387.19	102.2	65.0	-45	RTK DGPS
K16-347	415023.12	6815019.61	1384.50	170.7	48.5	-55	RTK DGPS
K16-348	414937.57	6815043.30	1384.22	129.5	36.1	-54	RTK DGPS
K16-349	415023.12	6815019.61	1384.50	201.0	74.5	-75	RTK DGPS
K16-350	414937.06	6815043.52	1384.37	247.6	354.8	-72	RTK DGPS
K16-351	415131.70	6815043.48	1399.02	198.0	215.7	-59	RTK DGPS
K16-352	415131.20	6815043.91	1398.97	192.0	225.6	-83	RTK DGPS
K16-353	414881.53	6814998.98	1389.94	159.0	211.4	-77	RTK DGPS
K16-354	415149.89	6815067.71	1406.32	39.0	39.7	-80	RTK DGPS
K16-355	415149.89	6815067.71	1406.32	329.7	38.6	-80	RTK DGPS
K16-356	415209.60	6815284.00	1425.00	19.0	212.4	-72	APS-LiDAR
K16-357	415212.13	6815282.54	1426.54	381.0	213.5	-72	RTK DGPS
K16-358	415104.79	6815167.04	1393.96	348.0	74.8	-86	RTK DGPS
K16-359	415212.22	6815283.60	1426.48	390.0	179.9	-73	RTK DGPS
K16-360	415104.73	6815168.31	1393.87	330.0	20.7	-77	RTK DGPS
K16-361	415048.71	6815308.95	1385.43	68.9	360.0	-49	RTK DGPS
K16-362	415019.13	6815368.35	1384.20	165.0	331.9	-52	RTK DGPS
K16-363	415239.21	6815211.98	1441.18	435.0	16.7	-78	RTK DGPS
K16-364	414795.82	6815348.85	1400.50	105.0	0.3	-59	RTK DGPS
K16-365	414747.65	6815398.31	1409.23	183.0	0.9	-54	RTK DGPS
K16-366	414676.46	6815345.27	1424.28	90.0	359.8	-63	RTK DGPS
K16-367	415073.84	6815185.90	1386.38	282.0	215.1	-65	RTK DGPS
K16-368	415219.23	6815015.71	1419.27	145.0	232.8	-65	RTK DGPS
K16-369	415240.27	6815212.14	1441.24	450.0	31.7	-71	RTK DGPS
K16-370	415074.04	6815186.12	1386.38	280.5	216.5	-80	RTK DGPS
K16-371	414945.10	6814957.74	1388.70	117.0	210.0	-45	RTK DGPS
K16-372	415122.46	6814798.08	1390.77	597.0	240.1	-60	RTK DGPS
K16-373	414908.29	6815031.83	1385.44	170.3	290.3	-60	RTK DGPS
K16-374	415456.03	6815005.35	1512.70	801.0	244.5	-60	RTK DGPS
K16-375	414503.25	6815417.53	1469.36	171.0	180.3	-60	RTK DGPS

Hole ID	Easting	Northing	Elevation (m)	Length (m)	Azimuth (°)	Dip (°)	Survey Type
K16-376	415074.37	6815128.28	1385.41	170.2	335.2	-50	RTK DGPS
K16-377	415150.65	6815089.79	1406.90	150.6	72.2	-50	RTK DGPS
K16-378	414916.29	6815015.49	1386.08	162.0	276.0	-84	RTK DGPS
K16-379	414964.24	6814627.14	1404.93	39.7	360.0	-90	RTK DGPS
K16-380	419400.06	6813385.52	1365.63	323.7	180.3	-80	RTK DGPS
K16-381	414976.02	6814702.29	1402.53	42.2	360.0	-90	RTK DGPS
K16-382	414977.14	6814699.40	1402.35	6.0	360.0	-90	RTK DGPS
K16-383	414010.66	6817774.19	1503.36	27.9	360.0	-90	RTK DGPS
K16-384	415660.87	6815386.44	1562.58	400.0	224.9	-65	RTK DGPS
K16-385	415447.87	6815529.43	1518.18	645.0	214.2	-65	RTK DGPS
K16-386	414634.11	6817489.48	1417.57	31.1	360.0	-90	RTK DGPS
K16-387	414570.90	6817990.94	1411.72	34.0	360.0	-90	RTK DGPS
K16-388	419400.65	6813384.98	1365.73	236.8	169.7	-55	RTK DGPS
K16-389	414361.29	6818334.04	1421.26	42.0	360.0	-90	RTK DGPS
K16-390	414323.13	6818778.59	1408.72	38.6	360.0	-90	RTK DGPS
K16-391	415655.00	6815385.00	1568.00	101.0	224.8	-65	PLND-LiDAR
K16-392	414851.54	6817471.12	1388.71	46.2	360.0	-90	RTK DGPS
K16-393	419505.17	6813218.93	1333.64	156.0	180.3	-45	RTK DGPS
K16-394	415660.03	6815387.32	1562.57	953.3	233.0	-65	RTK DGPS
K16-395	414821.81	6817251.31	1405.07	46.2	360.0	-90	RTK DGPS
K16-396	419505.14	6813219.45	1333.63	210.0	180.3	-88	RTK DGPS
K16-397	415394.76	6817229.37	1393.44	40.3	360.0	-90	RTK DGPS
K16-398	415277.78	6816529.95	1370.02	28.2	360.0	-90	RTK DGPS
K16-399	415448.35	6815529.37	1518.15	810.0	203.8	-75	RTK DGPS
K16-400	419400.54	6813207.19	1349.14	98.5	179.9	-60	RTK DGPS
K16-401	415274.13	6816530.44	1370.47	7.5	360.0	-90	RTK DGPS
K16-402	415844.03	6816485.06	1443.36	70.6	360.0	-90	RTK DGPS
K16-403	419512.83	6813449.77	1353.28	343.7	169.3	-81	RTK DGPS
K16-404	414779.48	6818386.12	1343.11	40.2	360.0	-90	RTK DGPS
K16-405	414780.08	6818382.92	1343.12	4.5	360.0	-90	RTK DGPS
K16-406	414326.91	6815521.96	1524.15	299.0	180.3	-70	RTK DGPS
K16-407	419399.91	6813390.31	1365.88	185.0	170.4	-55	RTK DGPS
K16-408	415428.88	6815263.24	1549.44	491.0	228.0	-67	RTK DGPS
K16-409	414851.23	6815887.26	1392.07	300.0	180.0	-80	RTK DGPS
K16-410	416135.75	6816445.81	1473.00	31.0	360.0	-90	RTK DGPS
K16-411	415946.89	6816237.43	1446.14	34.1	360.0	-90	RTK DGPS
K16-412	416070.23	6816061.13	1464.43	38.7	360.0	-90	RTK DGPS
K16-413	415803.07	6815165.51	1596.45	147.0	239.9	-65	RTK DGPS
K16-414	415803.90	6815166.40	1596.48	342.3	245.0	-65	RTK DGPS
K16-414W1	415803.90	6815166.40	1596.48	285.0	245.0	-65	RTK DGPS
K16-415	413576.19	6815211.86	1710.40	854.5	194.8	-60	RTK DGPS
K16-416	415443.80	6815280.11	1553.05	834.0	183.0	-68	RTK DGPS
K16-417	415211.51	6815291.05	1426.50	366.0	222.8	-79	RTK DGPS
K16-418	415364.65	6815332.06	1503.59	475.5	213.8	-77	RTK DGPS
K16-419	415241.89	6815246.71	1440.48	416.2	7.8	-87	RTK DGPS

[1] Easting and Northing coordinates are presented in UTM Zone 9, NAD83 projection

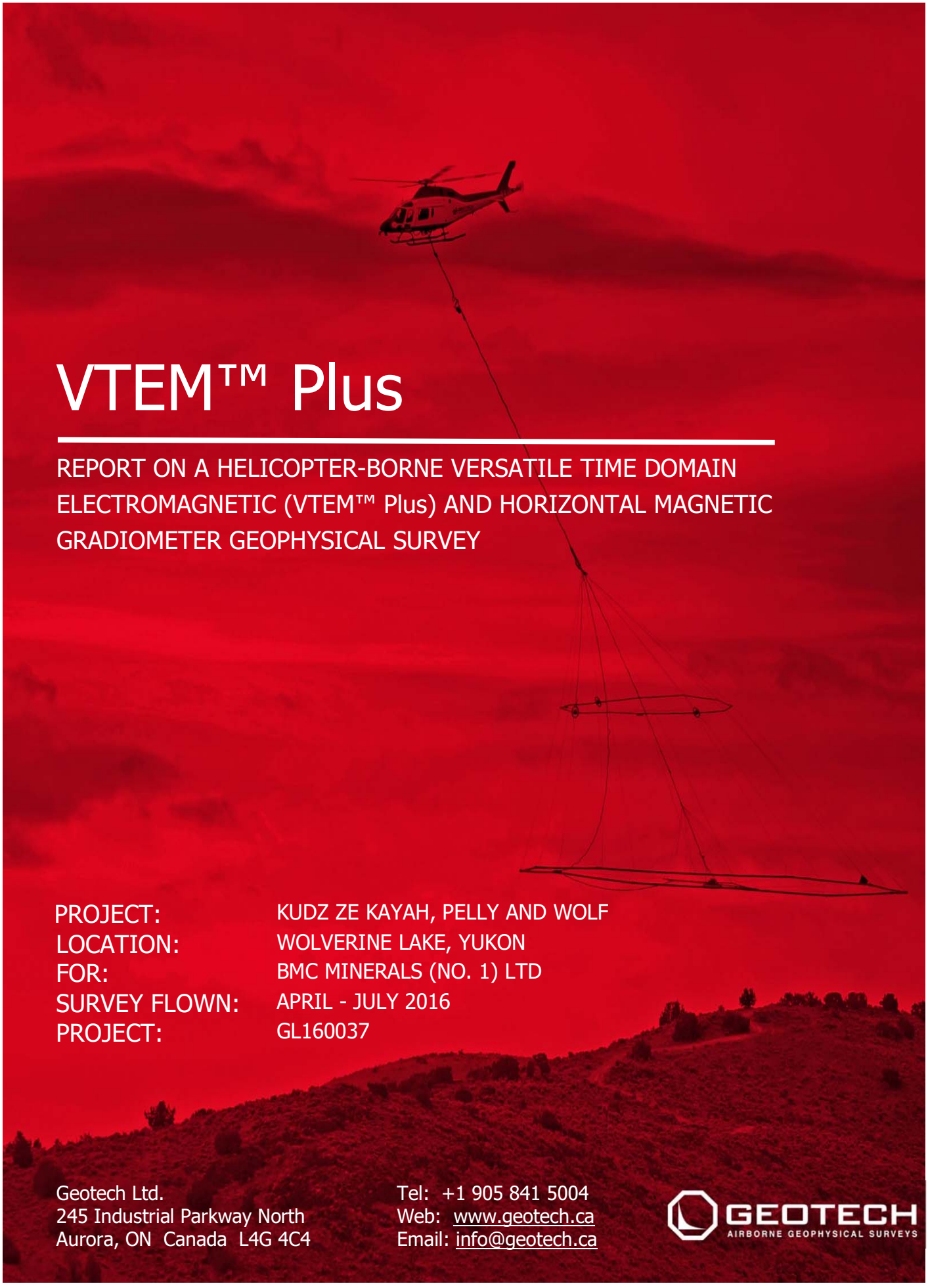
Table G-2: Survey collar information for the un-surveyed 2015 diamond drill holes and historic monitoring wells

Hole ID	Easting	Northing	Elevation (m)	Length (m)	Azimuth (°)	Dip (°)	Survey Type
K15-208	414709.36	6819176.59	1319.75	42	0	-90	RTK DGPS
K15-210	414793.64	6819202.34	1318.89	36	0	-90	RTK DGPS
K15-211	414472.15	6816558.87	1488.54	20	0	-90	RTK DGPS
K15-212	414904.01	6818517.57	1333.42	36	0	-90	RTK DGPS
K15-214	414807.92	6816269.43	1431.19	32	1.4	-90	RTK DGPS
K15-215	414921.71	6817783.89	1360.86	33	1.4	-90	RTK DGPS
K15-217	415459.96	6816721.29	1388.56	10	0	-90	RTK DGPS
K15-219	415851.80	6816872.04	1464.88	30	181.7	-90	RTK DGPS
K15-220	415786.10	6816155.35	1452.06	33	0	-90	RTK DGPS
K15-222	416316.79	6816052.10	1466.18	18	0	-90	RTK DGPS
K15-281	414598.80	6815649.60	1447.51	260	182.78	-55	APS-LiDAR
K15-281W1	414598.80	6815649.60	1447.51	199.6	180	-55	APS-LiDAR
K15-285	419649.18	6813351.48	1318.91	306	180.4	-70	RTK DGPS
K15-289	414600.05	6815648.38	1445.53	236	182.1	-70	RTK DGPS
K15-290	415151.40	6815393.53	1403.71	142	181.9	-65	RTK DGPS
K15-291	415073.83	6815745.05	1386.99	242	217.42	-50	RTK DGPS
K15-292	415157.49	6815154.41	1410.94	312	221.21	-80	RTK DGPS
K15-293	414599.89	6815647.58	1445.61	239	182.1	-86	RTK DGPS
K15-294	419410.84	6813497.17	1372.30	306	181.4	-85	RTK DGPS
K15-295	415051.63	6815660.97	1382.11	201.5	181.37	-60	RTK DGPS
K15-296	414839.14	6815377.07	1395.27	62	181.42	-70	RTK DGPS
K15-297	415050.34	6815302.56	1385.70	350	146.37	-45	RTK DGPS
K15-298	415151.86	6815340.58	1405.64	114	181.14	-75	RTK DGPS
K15-299	415073.60	6815568.38	1383.08	170	206.4	-63	RTK DGPS
K15-300	415252.94	6815492.64	1448.99	200.1	126.65	-45	RTK DGPS
K15-301	415050.28	6815465.29	1385.75	140.1	181.76	-60	RTK DGPS
K15-302	419498.26	6813353.97	1349.07	210	181.4	-60	RTK DGPS
K15-303	415075.00	6815150.00	1386.05	247.8	91.23	-75	APS-LiDAR
K15-304	415152.17	6815074.21	1406.55	254	236.12	-60	RTK DGPS
K15-305	415153.41	6815156.26	1409.77	300	236.22	-45	RTK DGPS
K15-306	419498.37	6813353.39	1348.95	246	181.4	-85	RTK DGPS
K15-307	415080.52	6815121.14	1386.01	277	211.24	-85	RTK DGPS
K15-308	415158.27	6815051.36	1405.88	194	211.62	-79	RTK DGPS
K15-309	415154.58	6815156.44	1409.75	306	211.48	-60	RTK DGPS
K15-310	415157.74	6815050.58	1405.90	191	211.62	-45	RTK DGPS
K15-311	415154.31	6815050.50	1405.78	263	31.11	-80	RTK DGPS
K15-312	415035.37	6814946.53	1387.59	110	211.37	-48	RTK DGPS
K15-313	414927.98	6814966.54	1388.70	153	31.63	-80	RTK DGPS
K15-314	414947.19	6814999.41	1386.39	195	31.03	-78	RTK DGPS
K15-315	415109.39	6815064.64	1393.22	210	212.16	-48	RTK DGPS
K15-316	414987.60	6814978.59	1386.84	181	211.55	-55	RTK DGPS
K15-317	415038.29	6814948.09	1387.53	170.6	30.86	-78	RTK DGPS
K15-318	415075.00	6815120.00	1385.18	35	1.4	-90	APS-LiDAR
K15-319	414947.37	6814999.70	1386.38	254	31.4	-60	RTK DGPS

Hole ID	Easting	Northing	Elevation (m)	Length (m)	Azimuth (°)	Dip (°)	Survey Type
K15-320	415075.53	6815121.18	1385.75	269	211.9	-46.5	RTK DGPS
K15-321	415077.83	6815225.45	1388.15	308	212.41	-45	RTK DGPS
K15-322	414990.69	6814980.96	1386.78	197	31.3	-82	RTK DGPS
K15-323	414944.07	6814996.29	1386.58	229.8	306.16	-55	RTK DGPS
K15-324	415076.01	6815515.12	1386.28	362	181.67	-70	RTK DGPS
K15-325	415159.20	6815052.22	1405.87	404.1	180.34	-60	RTK DGPS
K15-326	415246.88	6815342.86	1442.61	443	181.27	-66	RTK DGPS
K15-327	414639.32	6815178.05	1442.17	221	195.88	-60	RTK DGPS
K15-328	414677.76	6815210.46	1428.84	236	196.2	-60	RTK DGPS
K15-329	414800.40	6814634.09	1423.09	200	181.69	-55	RTK DGPS
K15-330	414925.81	6818695.36	1347.13	50.95	1.4	-90	RTK DGPS
K15-331	415352.62	6816410.75	1387.81	32	1.4	-90	RTK DGPS
K15-332	414797.07	6814633.95	1423.17	182	181.26	-83	RTK DGPS
K15-333	415047.23	6816221.91	1381.24	71	1.4	-90	RTK DGPS
K15-334	414780.24	6818832.55	1319.63	50.5	1.4	-90	RTK DGPS
K15-335	414667.65	6817327.03	1420.06	32.33	1.4	-90	RTK DGPS
K15-336	414792.85	6819014.33	1317.81	50.5	1.4	-90	RTK DGPS
BH95G-33	415129.54	6816744.41	1390.48	-	-	-	RTK DGPS
BH95G-2	414341.42	6819835.33	1349.77	-	-	-	RTK DGPS
BH95G-21	414801.51	6815640.53	1403.47	-	-	-	RTK DGPS
BH95G-22	414927.59	6815729.01	1385.52	-	-	-	RTK DGPS
BH95G-24	415037.39	6815257.92	1385.30	-	-	-	RTK DGPS
BH95G-30	415437.33	6816765.75	1386.88	-	-	-	RTK DGPS
BH95G-31	415199.09	6816128.51	1391.74	-	-	-	RTK DGPS
BH95G-32	415008.24	6816133.97	1387.46	-	-	-	RTK DGPS
BH95-129	414600.65	6815498.37	1444.66	-	-	-	RTK DGPS
BH95-146	414898.34	6815503.74	1390.23	-	-	-	RTK DGPS
WW15-01	414892.85	6815295.11	1390.57	-	-	-	RTK DGPS
WW15-02	414839.34	6815767.23	1396.30	-	-	-	RTK DGPS

[1] Easting and Northing coordinates are presented in UTM Zone 9, NAD83 projection

Appendix H: Airborne VTEM Survey Report



VTEM™ Plus

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM™ Plus) AND HORIZONTAL MAGNETIC GRADIOMETER GEOPHYSICAL SURVEY

PROJECT:	KUDZ ZE KAYAH, PELLY AND WOLF
LOCATION:	WOLVERINE LAKE, YUKON
FOR:	BMC MINERALS (NO. 1) LTD
SURVEY FLOWN:	APRIL - JULY 2016
PROJECT:	GL160037

Geotech Ltd.
245 Industrial Parkway North
Aurora, ON Canada L4G 4C4

Tel: +1 905 841 5004
Web: www.geotech.ca
Email: info@geotech.ca

GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

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EXECUTIVE SUMMARY

KUDZ ZE KAYAH, PELLY AND WOLF - WOLVERINE LAKE, YUKON

During April 23rd to July 31st 2016 Geotech Ltd. carried out a helicopter-borne geophysical survey over Kudz Ze Kayah, Pelly and Wolf situated near Wolverine Lake, Yukon.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEMplus) system and horizontal magnetic gradiometer with two caesium sensors. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 1589 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked profiles of the B-field Z Component,
- Electromagnetic stacked profiles of dB/dt Z Component,
- B-Field Z Component Channel grids,
- dB/dt X Component Fraser Filtered Channel grid,
- Total Magnetic Intensity (TMI),
- Magnetic Total Horizontal Gradient,
- Magnetic Tilt-Angle Derivative of TMI,
- Calculated Time Constant (Tau) with Calculated Vertical Derivative contours and
- Resistivity Depth Images (RDI) sections are presented.

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 GENERAL CONSIDERATIONS

Geotech Ltd. performed a helicopter-borne geophysical survey over Kudz Ze Kayah, Pelly and Wolf situated near Wolverine Lake, Yukon (Figure 1 & Figure 2).

Robin Black represented BMC Minerals (No. 1) Ltd during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEMplus) system with Full-Waveform processing. Measurements consisted of Vertical (Z), In-line Horizontal (X) and Cross-line Horizontal (Y) components of the EM fields using induction coils and the aeromagnetic total field using a magnetic gradiometer. A total of 1589 line-km of geophysical data were acquired during the survey.

The crew was based out of Watson Lake (Figure 2) in Yukon for the acquisition phase of the survey. Survey flying started on April 23rd and was completed on July 31st, 2016.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in October, 2016.

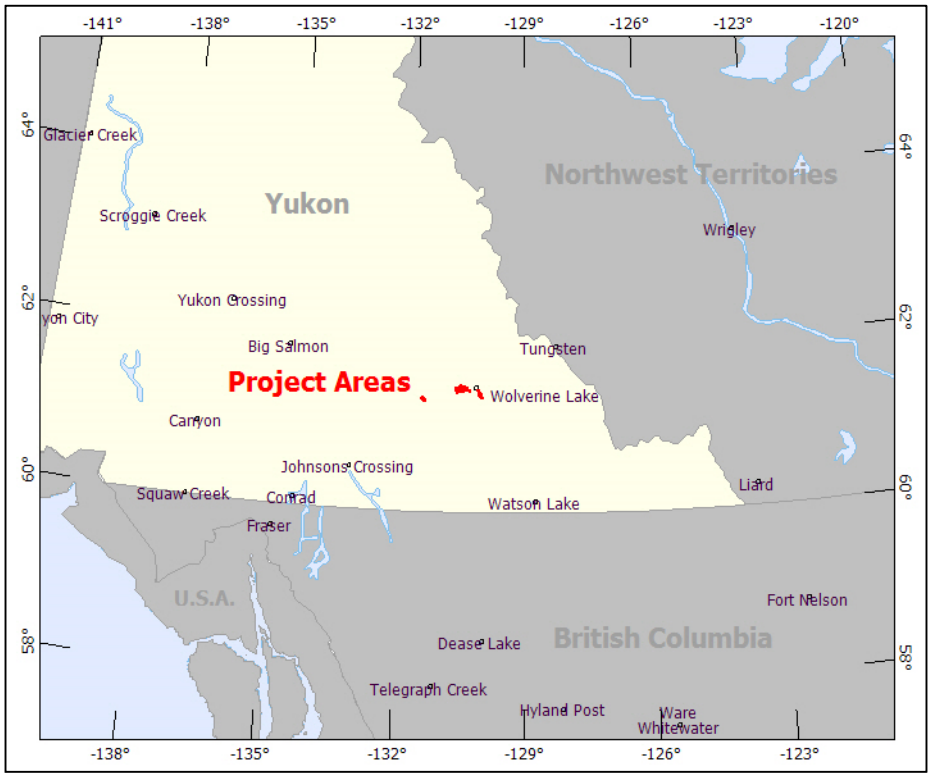

Figure 1: Survey location

1.2 SURVEY AND SYSTEM SPECIFICATIONS

The survey areas, Kudz Ze Kayah, Pelly and Wolf are located approximately 8 kilometres west, 2 kilometres east and 71 kilometres southwest of Wolverine Lake, Yukon respectively (Figure 2).

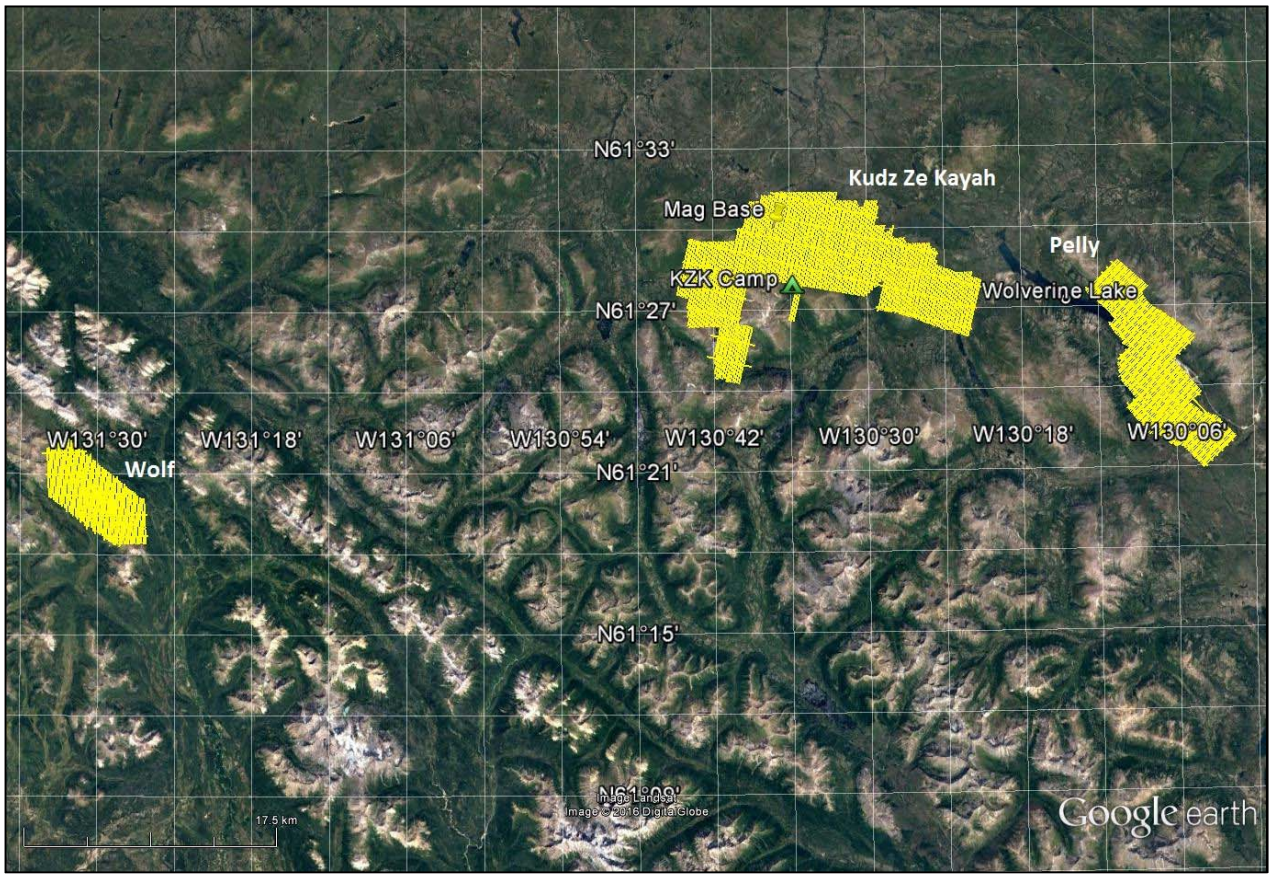

Figure 2: Survey area location on Google Earth.

The block, Kudz Ze Kayah was flown in a northeast to southwest (N 15° E azimuth) direction; Pelly was flown in a southwest to northeast (N48° E azimuth) direction and Wolf was flown in a north to south (N0° E azimuth) direction with traverse line spacing of 150 metres as depicted in Figure 3 to 4. Tie lines were flown perpendicular to the traverse lines at a spacing of 1500 metres respectively. For more detailed information on the flight spacing and direction see Table 1.

1.3 TOPOGRAPHIC RELIEF AND CULTURAL FEATURES

Topographically, the survey areas exhibits an extremely rugged relief with an elevation ranging from 1104 to 2079 metres above mean sea level over an area of 241 square kilometres (Figure 3 to 5).

There are various rivers and streams running through the survey areas which connect various lakes. There are no visible signs of culture such as roads, transmission lines, mining areas and settlements located in the survey areas (Figure 3 to 5).

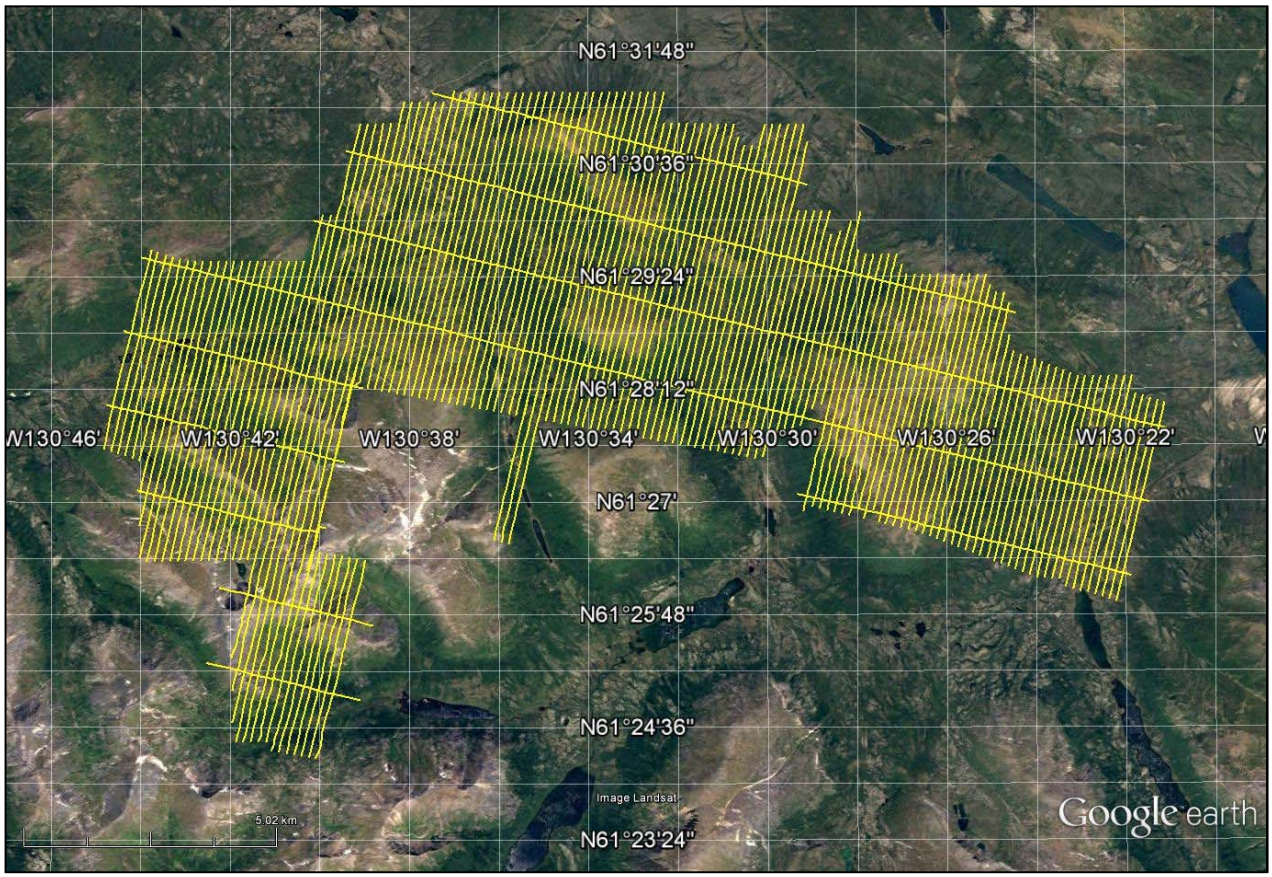

Figure 3: Flight path of Kudz Ze Kayah over a Google Earth Image.

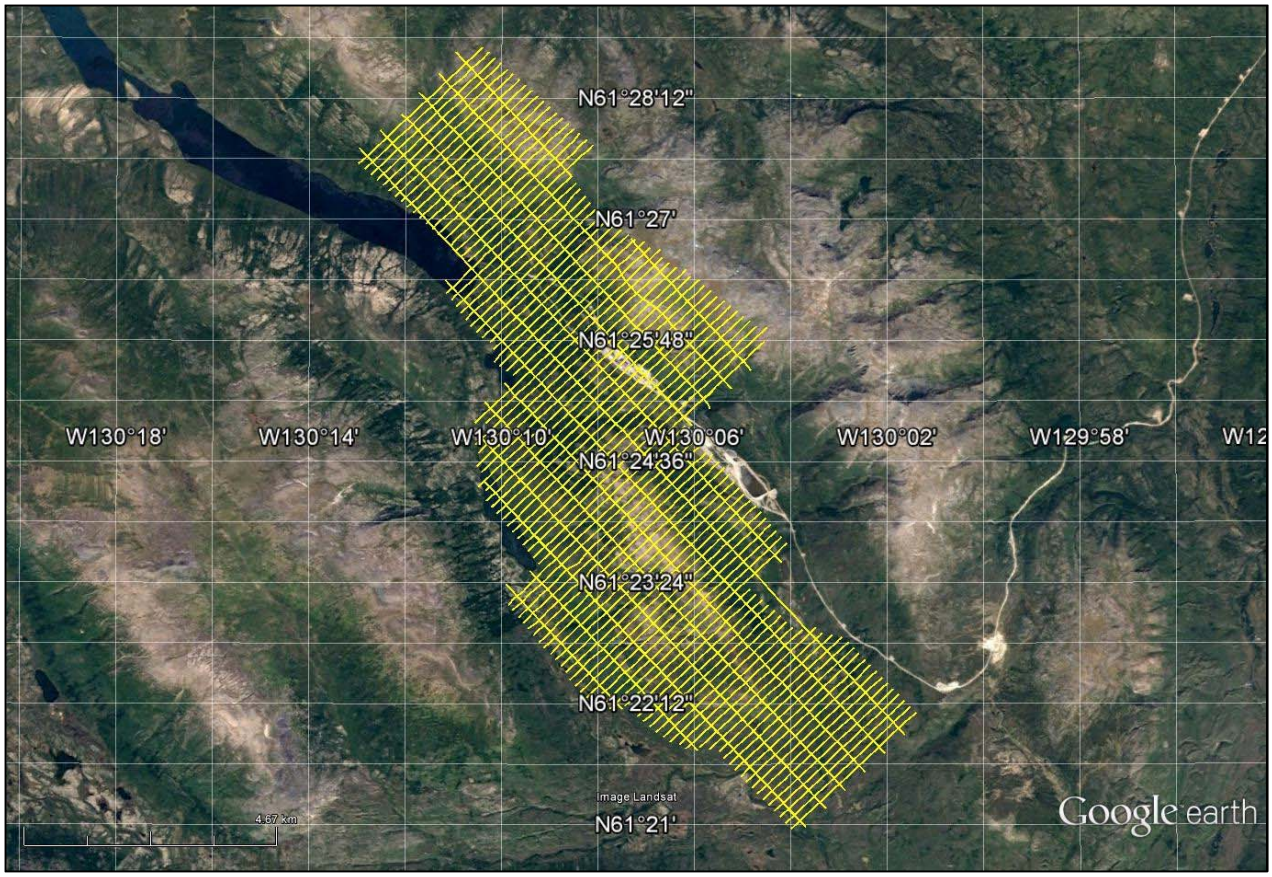

Figure 4: Flight path of Pelly over a Google Earth Image.

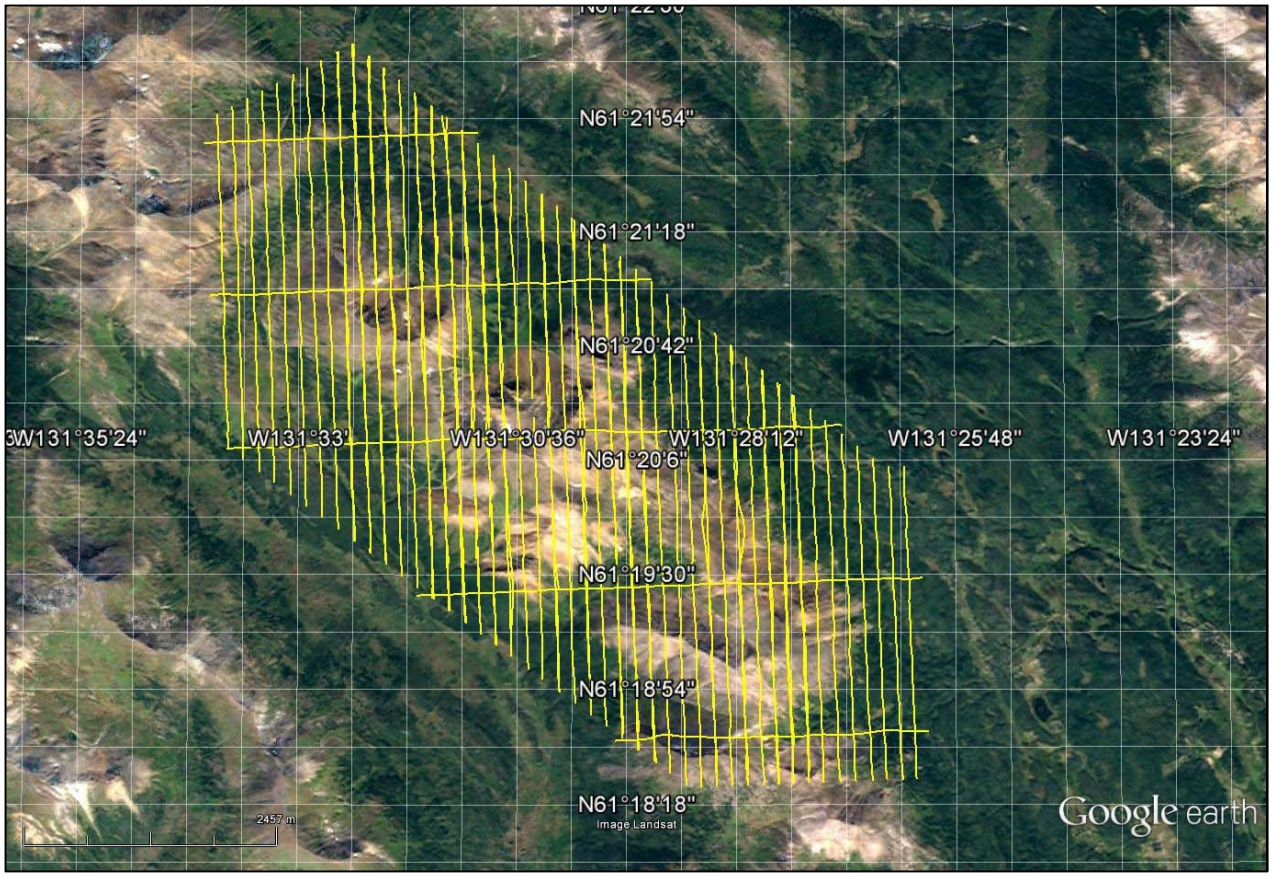

Figure 5: Flight path of Wolf over a Google Earth Image.

2. DATA ACQUISITION

2.1 SURVEY AREA

The survey areas (see Figure 3, Figure 4, Figure 5 and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Kudz Ze Kayah	Traverse: 150	121	902	851.8	N 15° E / N 195° E	L3000 - L4350 L1305 - L1555
	Tie: 1500			86.5	N 105° E / N 285° E	T5000 - T5080
Pelly	Traverse: 150	91	473	370.1	N 48° E / N 228° E	L4000 - L4960
	Tie: 1500			111.5	N 138° E / N 318° E	T5000 - T5040
Wolf	Traverse: 150	29	214	295.5	N 0° E / N 180° E	L6000 - L6440
	Tie: 1500			21.1	N 90° E / N 270° E	T7000 - T7040
TOTAL		241	1589	1736.5		

Survey area boundaries co-ordinates are provided in Appendix B.

2.2 SURVEY OPERATIONS

Survey operations were based out of Watson Lake and Kudz Ze Kayah Camp in Yukon from April 11th until July 31st 2016. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Flight #	Flown km	Block	Crew location	Comments
11-Apr-2016				Watson Lake, Yukon	Crew arrived
12-Apr-2016				Watson Lake, Yukon	System assembly limited due to weather
13-Apr-2016				Watson Lake, Yukon	System assembly
14-Apr-2016				Watson Lake, Yukon	Testing
15-Apr-2016				Watson Lake, Yukon	No production due to technical issues
16-Apr-2016				Watson Lake, Yukon	No production due to technical issues
17-Apr-2016				Watson Lake, Yukon	No production due to technical issues & recon flight
18-Apr-2016				Watson Lake, Yukon	No production due to technical issues
19-Apr-2016				Watson Lake, Yukon	No production due to technical issues
20-Apr-2016				Watson Lake, Yukon	No production due to technical issues & test flight
21-Apr-2016				Watson Lake, Yukon	Mobilized to camp
22-Apr-2016				KZK CAMP, Yukon	Set up & testing – no production

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned Line-km, as indicated in the survey NAV files. However, flying was stopped early as requested by the client.

Date	Flight #	Flown km	Block	Crew location	Comments
					due to weather
23-Apr-2016	1,2,3	280	KZK	KZK CAMP, Yukon	280km flown
24-Apr-2016	4,5	188	KZK	KZK CAMP, Yukon	188km flown
25-Apr-2016	6	25	KZK	KZK CAMP, Yukon	25km flown limited due to weather
26-Apr-2016	7,8,9	247	KZK	KZK CAMP, Yukon	247km flown
27-Apr-2016				KZK CAMP, Yukon	No production due to weather
28-Apr-2016	10,11	149	KZK	KZK CAMP, Yukon	149km flown
29-Apr-2016				KZK CAMP, Yukon	No production due to weather
30-Apr-2016				KZK CAMP, Yukon	No production due to weather
1-May-2016	12	6	Pelly	KZK CAMP, Yukon	6km flown limited due to weather
2-May-2016				KZK CAMP, Yukon	No production due to weather
3-May-2016	13,14	155	KZK	KZK CAMP, Yukon	155km flown – Stopped until July
5-Jul-2016				KZK CAMP, Yukon	Crew arrived
6-Jul-2016				KZK CAMP, Yukon	System set & recon flight
7-Jul-2016	15	56	wolf	KZK CAMP, Yukon	56km flown limited due to technical issues
8-Jul-2016	16,17	106	wolf	KZK CAMP, Yukon	160km flown
9-Jul-2016	18,19,20	52	wolf	KZK CAMP, Yukon	52km flown
10-Jul-2016	21	49	Pelly	KZK CAMP, Yukon	49km flown limited due to weather
11-Jul-2016	22,23,24	123	Pelly	KZK CAMP, Yukon	123km flown
12-Jul-2016	25,26	106	Pelly	KZK CAMP, Yukon	106km flown
13-Jul-2016	27,28,29	110	Pelly	KZK CAMP, Yukon	110km flown
14-Jul-2016	30	35	Pelly	KZK CAMP, Yukon	30km flown & waiting for reflight confirmation
15-Jul-2016			Pelly	KZK CAMP, Yukon	Waiting for reflight confirmation
16-Jul-2016	31,32	77	Pelly	KZK CAMP, Yukon	77km flown
17-Jul-2016	33	50	Pelly	KZK CAMP, Yukon	Remaining kms were flown – flying completed
18-Jul-2016				KZK CAMP, Yukon	Waiting on re-flights
19-Jul-2016				KZK CAMP, Yukon	Waiting on re-flights
20-Jul-2016			wolf	KZK CAMP, Yukon	No production due to weather
21-Jul-2016	34	24	wolf	KZK CAMP, Yukon	24km flown limited due to technical issues
22-Jul-2016				KZK CAMP, Yukon	No production due to weather
23-Jul-2016				KZK CAMP, Yukon	No production due to weather
24-Jul-2016				KZK CAMP, Yukon	No production due to weather
25-Jul-2016				KZK CAMP, Yukon	Flight aborted due to weather
26-Jul-2016				KZK CAMP, Yukon	Flight aborted due to weather
27-Jul-2016				KZK CAMP, Yukon	No production due to weather
28-Jul-2016				KZK CAMP, Yukon	No production due to weather
29-Jul-2016				KZK CAMP, Yukon	No production due to weather
30-Jul-2016		20	wolf	KZK CAMP, Yukon	20km flown
31-Jul-2016		103	wolf	KZK CAMP, Yukon	Remaining kms were flown – flying complete

2.3 FLIGHT SPECIFICATIONS

During the survey the helicopter was maintained at a mean altitude of 101 metres above the ground with an average survey speed of 80 km/hour. This allowed for an actual average Transmitter-receiver loop terrain clearance of 70 metres and a magnetic sensor clearance of 80 metres.

The on board operator was responsible for monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

2.4 AIRCRAFT AND EQUIPMENT

2.4.1 SURVEY AIRCRAFT

The survey was flown using a Eurocopter Aerospatiale (Astar) 350 B3 helicopter, registration C-GTNI and C-FVTM. The helicopter is owned and operated by Trans North Helicopters. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 ELECTROMAGNETIC SYSTEM

The electromagnetic system was a Geotech Time Domain EM (VTEM™Plus) full receiver-waveform streamed data recorded system. The "full waveform VTEM system" uses the streamed half-cycle recording of transmitter and receiver waveforms to obtain a complete system response calibration throughout the entire survey flight. The VTEM™ transmitter current waveform is shown diagrammatically in Figure 6. VTEM with the Serial number 17 and 31 had been used for the survey.

The VTEM™ Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The receiver system for the project also included a coincident-coaxial X-direction coil to measure the in-line dB/dt and calculate B-Field responses. The Transmitter-receiver loop was towed at a mean distance of 31 metres below the aircraft as shown in Figure 7.

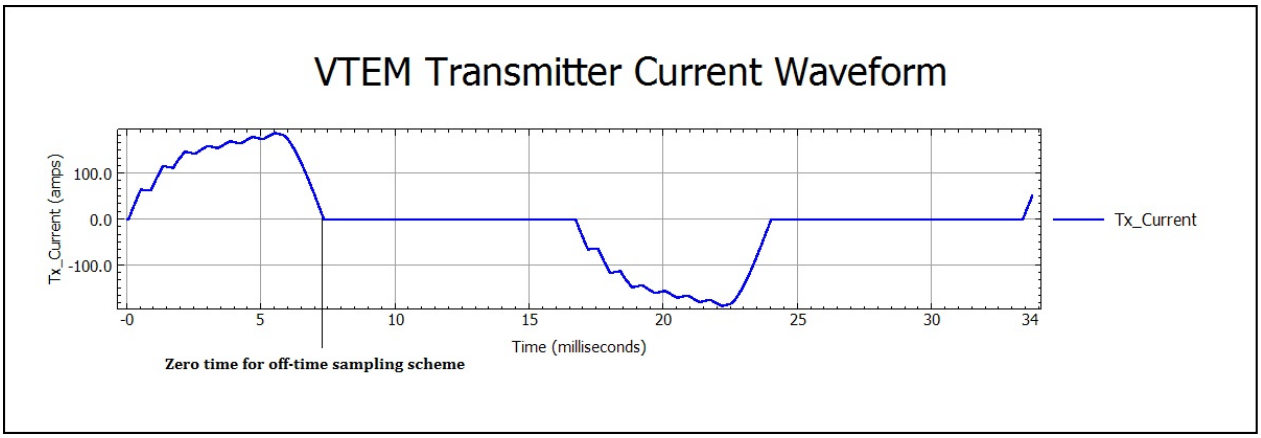

Figure 6: VTEM™ Transmitter Current Waveform

The VTEM™ decay sampling scheme is shown in Table 3 below. Forty-three time measurement gates were used for the final data processing in the range from 0.021 to 8.083 msec. Zero time for the off-time sampling scheme is equal to the current pulse width and is defined as the time near the end of the turn-off ramp where the dI/dt waveform falls to 1/2 of its peak value.

Table 3: Off-Time Decay Sampling Scheme

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
4	0.018	0.023	0.021	0.005
5	0.023	0.029	0.026	0.005
6	0.029	0.034	0.031	0.005
7	0.034	0.039	0.036	0.005
8	0.039	0.045	0.042	0.006
9	0.045	0.051	0.048	0.007
10	0.051	0.059	0.055	0.008
11	0.059	0.068	0.063	0.009
12	0.068	0.078	0.073	0.010
13	0.078	0.090	0.083	0.012
14	0.090	0.103	0.096	0.013
15	0.103	0.118	0.110	0.015
16	0.118	0.136	0.126	0.018
17	0.136	0.156	0.145	0.020
18	0.156	0.179	0.167	0.023
19	0.179	0.206	0.192	0.027
20	0.206	0.236	0.220	0.030
21	0.236	0.271	0.253	0.035
22	0.271	0.312	0.290	0.040
23	0.312	0.358	0.333	0.046
24	0.358	0.411	0.383	0.053
25	0.411	0.472	0.440	0.061
26	0.472	0.543	0.505	0.070
27	0.543	0.623	0.580	0.081
28	0.623	0.716	0.667	0.093
29	0.716	0.823	0.766	0.107
30	0.823	0.945	0.880	0.122
31	0.945	1.086	1.010	0.141
32	1.086	1.247	1.161	0.161
33	1.247	1.432	1.333	0.185
34	1.432	1.646	1.531	0.214
35	1.646	1.891	1.760	0.245
36	1.891	2.172	2.021	0.281
37	2.172	2.495	2.323	0.323
38	2.495	2.865	2.667	0.370

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
39	2.865	3.292	3.063	0.427
40	3.292	3.781	3.521	0.490
41	3.781	4.341	4.042	0.560
42	4.341	4.987	4.641	0.646
43	4.987	5.729	5.333	0.742
44	5.729	6.581	6.125	0.852
45	6.581	7.560	7.036	0.979
46	7.560	8.685	8.083	1.125

Z Component: 4 - 46 time gates
X Component: 20 - 46 time gates
Y Component: 20 - 46 time gates

VTEM™ system specifications:

Transmitter	Receiver
• Transmitter loop diameter: 26 m • Number of turns: 4 • Effective Transmitter loop area: 2123.7 m^2 • Transmitter base frequency: 30 Hz • Peak current: 189 A • Pulse width: 7.34 ms • Waveform shape: Bi-polar trapezoid • Peak dipole moment: 401,382 nIA • Actual average Transmitter-receiver loop terrain clearance: 70 metres above the ground	• X Coil diameter: 0.32 m • Number of turns: 245 • Effective coil area: 19.69 m^2 • Z-Coil and Y-coil diameter: 1.2 m • Number of turns: 100 • Effective coil area: 113.04 m^2

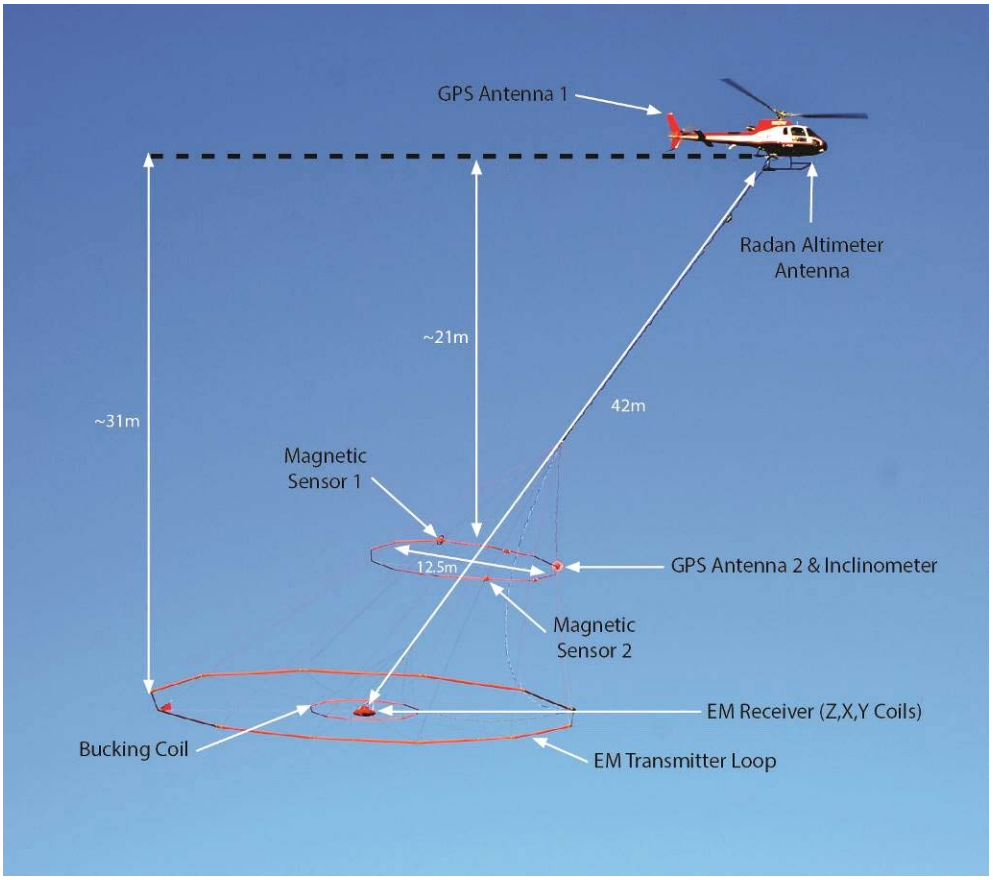

Figure 7: VTEM™Plus System Configuration.

2.4.3 FULL WAVEFORM VTEM™ SENSOR CALIBRATION

The calibration is performed on the complete VTEM™ system installed in and connected to the helicopter, using special calibration equipment.

The procedure takes half-cycle files acquired and calculates a calibration file consisting of a single stacked half-cycle waveform. The purpose of the stacking is to attenuate natural and man-made magnetic signals, leaving only the response to the calibration signal.

2.4.4 HORIZONTAL MAGNETIC GRADIOMETER

The horizontal magnetic gradiometer consists of two Geometrics split-beam field magnetic sensors with a sampling interval of 0.1 seconds. These sensors are mounted 12.5 metres apart on a separate loop, 10 metres above the Transmitter-receiver loop. A GPS antenna and Gyro Inclinometer is installed on the separate loop to accurately record the tilt and position of the magnetic gradiomag bird.

2.4.5 RADAR ALTIMETER

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit (Figure 7).

2.4.6 GPS NAVIGATION SYSTEM

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 7). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with WAAS active, it is 1.0 m. The co-ordinates of the survey area were set-up prior to the survey and the information was fed into the airborne navigation system. The second GPS antenna is installed on the additional magnetic loop together with Gyro Inclinometer.

2.4.7 DIGITAL ACQUISITION SYSTEM

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4.

Table 4: Acquisition Sampling Rates

Data Type	Sampling
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec
Inclinometer	0.1 sec

2.5 BASE STATION

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed at the tree line; back of the camp (61°30.0666'N, 130°37.3108'W); away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

FIELD:

Project Manager:	Darren Tuck (Office)
Data QC:	Nick Venter (Office)
Crew chief:	Jan Dabrowski
Operator:	Jan Dabrowski
	Roger Leblanc

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Trans North Helicopters

Pilot:	Doug Hladun
	Pierre Forand
Mechanical Engineer:	Clayton Whitney

OFFICE:

Preliminary Data Processing:	Nick Venter
Final Data Processing:	Gaurav Nailwal
Final Data QA/QC:	Geoffrey Plastow
Reporting/Mapping:	Liz Mathew

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, and Chief Operating Officer. Processing phase was carried out under the supervision of Geoffrey Plastow, P. Geo, Data Processing Manager. The customer relations were looked after by David Hitz.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

4.1 FLIGHT PATH

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the NAD83 Datum, UTM Zone 9 North coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 ELECTROMAGNETIC DATA

The Full Waveform EM specific data processing operations included:

- Half cycle stacking (performed at time of acquisition);
- System response correction;
- Parasitic and drift removal by deconvolution.

A three stage digital filtering process was used to reject major sferic events and to reduce noise levels. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z and X components. B-field Z component time channel recorded at 2.021 milliseconds after the termination of the impulse is also presented as a colour image. Calculated Time Constant (TAU) with Calculated Vertical Derivative contours is presented in Appendix C and E. Resistivity Depth Image (RDI) is also presented in Appendix F and G.

VTEM has three receiver coil orientations. Z-axis coil is oriented parallel to the transmitter coil axis and both are horizontal to the ground. The X-axis and Y-axis coil is oriented parallel to the ground and along the line-of-flight. This combined three coil configuration provides information on the position, depth, dip and thickness of a conductor. Generalized modeling results of VTEM max data are shown in Appendix D.

In general X-component data produce cross-over type anomalies: from "+ to – "in flight direction of flight for "thin" sub vertical targets and from "- to +" in direction of flight for "thick" targets. Z component data produce double peak type anomalies for "thin" sub vertical targets and single peak for "thick" targets.

The limits and change-over of "thin-thick" depends on dimensions of a TEM system (Appendix D, Figure D-16).

Because of X component polarity is under line-of-flight, convolution Fraser Filter (Figure 8) is applied to X component data to represent axes of conductors in the form of grid map. In this case positive FF anomalies always correspond to "plus-to-minus" X data crossovers independent of the flight direction.

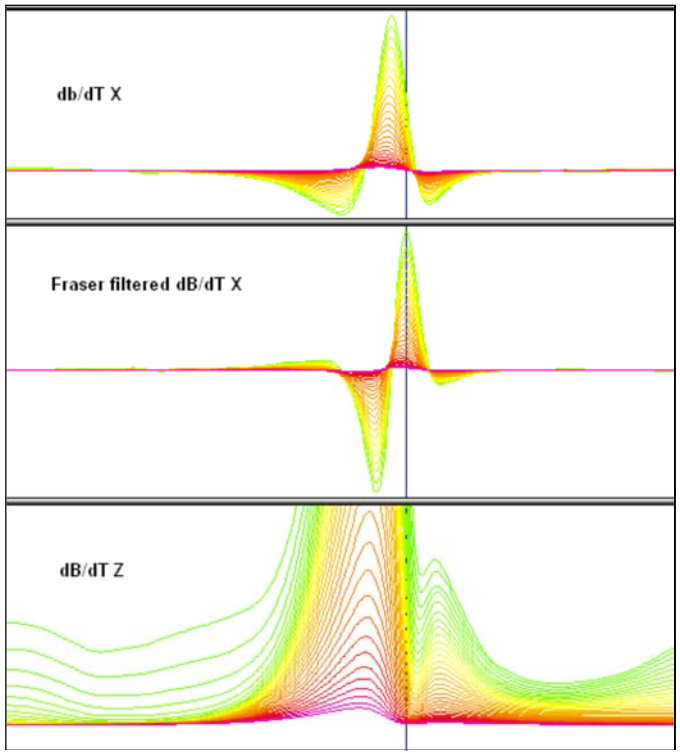

Figure 8: Z, X and Fraser filtered X (FFx) components for "thin" target.

4.3 HORIZONTAL MAGNETIC GRADIOMETER DATA

The horizontal gradients data from the VTEM™Plus are measured by two magnetometers 12.5 m apart on an independent bird mounted10m above the VTEM™ loop. A GPS and a Gyro Inclinometer help to determine the positions and orientations of the magnetometers. The data from the two magnetometers are corrected for position and orientation variations, as well as for the diurnal variations using the base station data.

The position of the centre of the horizontal magnetic gradiometer bird is calculated form the GPS utilizing in-house processing tool in Geosoft. Following that total magnetic intensity is calculated at the center of the bird by calculating the mean values from both sensors. In addition to the total intensity advanced processing is done to calculate the in-line and cross-line (or lateral) horizontal gradient which enhance the understanding of magnetic targets. The in-line (longitudinal) horizontal gradient is calculated from the difference of two consecutive total magnetic field readings divided by the distance along the flight line direction, while the cross-line (lateral) horizontal magnetic gradient is calculated from the difference in the magnetic readings from both magnetic sensors divided by their horizontal separation.

Two advanced magnetic derivative products, the total horizontal derivative (THDR), and tilt angle derivative and are also created. The total horizontal derivative or gradient is defined as:

THDR = sqrt(Hx*Hx+Hy*Hy), where Hx and Hy are cross-line and in-line horizontal gradients.

The tilt angle derivative (TDR) is defined as:

TDR = arctan(Vz/THDR), where THDR is the total horizontal derivative, and Vz is the vertical derivative.

Measured cross-line gradients can help to enhance cross-line linear features during gridding.

5. DELIVERABLES

5.1 SURVEY REPORT

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

5.2 MAPS

Final maps were produced at scale of 1:20,000 (Kudz Ze Kayah and Pelly) and 1:10,000 (Wolf) for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 9 North. All maps show the flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and a colour magnetic TMI contour map.

- Maps at 1:20,000 (Kudz Ze Kayah and Pelly) and 1:10,000 (Wolf) in Geosoft MAP format, as follows:

GL160037_*scale*k _*bb*_dBdtz: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL160037_ *scale*k _*bb*_Bfieldz: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL160037_ *scale*k _*bb*_BFz36: B-field Z Component Channel 36, Time Gate 2.021 ms colour image.
GL160037_ *scale*k _*bb*_SFxFF20: dBdt X Component Fraser Filtered Channel 20, Time Gate 0.220 ms colour image.
GL160037_ *scale*k _*bb*_TMI: Total magnetic intensity (TMI) colour image and contours.
GL160037_ *scale*k _*bb* _TauSF: dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours
GL160037_ *scale*k _*bb*_TotHGrad: Magnetic Total Horizontal Gradient colour image.
GL160037_ *scale*k _*b*b_TiltDrv: Magnetic Tilt-Angle Derivative colour image.

where *scale* represents the scale of the map
bb represents the block name

- Maps are also presented in PDF format.
- The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data, www.geogratis.ca.
- A Google Earth file *GL16*0037_*FP.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

5.3 DIGITAL DATA

Two copies of the data and maps on DVD were prepared to accompany the report. Each DVD contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map and PDF format.

- DVD structure.

Data contains databases, grids and maps, as described below.
Report contains a copy of the report and appendices in PDF format.

Databases in Geosoft GDB format, containing the channels listed in Table 5.

Table 5: Geosoft GDB Data Format

Channel name	Units	Description
X:	metres	UTM Easting NAD83 Zone 9 North
Y:	metres	UTM Northing NAD83 Zone 9 North
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Z:	metres	GPS antenna elevation (above Geoid)
Zb:	metres	EM bird elevation (above Geoid)
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1L:	nT	Measured Total Magnetic field data (left sensor)
Mag1R:	nT	Measured Total Magnetic field data (right sensor)
Basemag:	nT	Magnetic diurnal variation data
Mag2LZ:	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field left mag
Mag2RZ:	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field right mag
TMI2:	nT	Calculated from diurnal corrected total magnetic field intensity of the centre of the loop
TMI3:	nT	Microleveled total magnetic field intensity of the centre of the loop
Hginline:		Calculated in-line gradient
Hgcxline:		measured cross-line gradient
CVG:	nT/m	Calculated Magnetic Vertical Gradient
SFz[4]:	pV/(A*m^4)	Z dB/dt 0.021 millisecond time channel
SFz[5]:	pV/(A*m^4)	Z dB/dt 0.026 millisecond time channel
SFz[6]:	pV/(A*m^4)	Z dB/dt 0.031 millisecond time channel
SFz[7]:	pV/(A*m^4)	Z dB/dt 0.036 millisecond time channel
SFz[8]:	pV/(A*m^4)	Z dB/dt 0.042 millisecond time channel
SFz[9]:	pV/(A*m^4)	Z dB/dt 0.048 millisecond time channel
SFz[10]:	pV/(A*m^4)	Z dB/dt 0.055 millisecond time channel
SFz[11]:	pV/(A*m^4)	Z dB/dt 0.063 millisecond time channel
SFz[12]:	pV/(A*m^4)	Z dB/dt 0.073 millisecond time channel
SFz[13]:	pV/(A*m^4)	Z dB/dt 0.083 millisecond time channel
SFz[14]:	pV/(A*m^4)	Z dB/dt 0.096 millisecond time channel

Channel name	Units	Description
SFz[15]:	pV/(A*m^4)	Z dB/dt 0.110 millisecond time channel
SFz[16]:	pV/(A*m^4)	Z dB/dt 0.126 millisecond time channel
SFz[17]:	pV/(A*m^4)	Z dB/dt 0.145 millisecond time channel
SFz[18]:	pV/(A*m^4)	Z dB/dt 0.167 millisecond time channel
SFz[19]:	pV/(A*m^4)	Z dB/dt 0.192 millisecond time channel
SFz[20]:	pV/(A*m^4)	Z dB/dt 0.220 millisecond time channel
SFz[21]:	pV/(A*m^4)	Z dB/dt 0.253 millisecond time channel
SFz[22]:	pV/(A*m^4)	Z dB/dt 0.290 millisecond time channel
SFz[23]:	pV/(A*m^4)	Z dB/dt 0.333 millisecond time channel
SFz[24]:	pV/(A*m^4)	Z dB/dt 0.383 millisecond time channel
SFz[25]:	pV/(A*m^4)	Z dB/dt 0.440 millisecond time channel
SFz[26]:	pV/(A*m^4)	Z dB/dt 0.505 millisecond time channel
SFz[27]:	pV/(A*m^4)	Z dB/dt 0.580 millisecond time channel
SFz[28]:	pV/(A*m^4)	Z dB/dt 0.667 millisecond time channel
SFz[29]:	pV/(A*m^4)	Z dB/dt 0.766 millisecond time channel
SFz[30]:	pV/(A*m^4)	Z dB/dt 0.880 millisecond time channel
SFz[31]:	pV/(A*m^4)	Z dB/dt 1.010 millisecond time channel
SFz[32]:	pV/(A*m^4)	Z dB/dt 1.161 millisecond time channel
SFz[33]:	pV/(A*m^4)	Z dB/dt 1.333 millisecond time channel
SFz[34]:	pV/(A*m^4)	Z dB/dt 1.531 millisecond time channel
SFz[35]:	pV/(A*m^4)	Z dB/dt 1.760 millisecond time channel
SFz[36]:	pV/(A*m^4)	Z dB/dt 2.021 millisecond time channel
SFz[37]:	pV/(A*m^4)	Z dB/dt 2.323 millisecond time channel
SFz[38]:	pV/(A*m^4)	Z dB/dt 2.667 millisecond time channel
SFz[39]:	pV/(A*m^4)	Z dB/dt 3.063 millisecond time channel
SFz[40]:	pV/(A*m^4)	Z dB/dt 3.521 millisecond time channel
SFz[41]:	pV/(A*m^4)	Z dB/dt 4.042 millisecond time channel
SFz[42]:	pV/(A*m^4)	Z dB/dt 4.641 millisecond time channel
SFz[43]:	pV/(A*m^4)	Z dB/dt 5.333 millisecond time channel
SFz[44]:	pV/(A*m^4)	Z dB/dt 6.125 millisecond time channel
SFz[45]:	pV/(A*m^4)	Z dB/dt 7.036 millisecond time channel
SFz[46]:	pV/(A*m^4)	Z dB/dt 8.083 millisecond time channel
SFx[20]:	pV/(A*m^4)	X dB/dt 0.220 millisecond time channel
SFx[21]:	pV/(A*m^4)	X dB/dt 0.253 millisecond time channel
SFx[22]:	pV/(A*m^4)	X dB/dt 0.290 millisecond time channel
SFx[23]:	pV/(A*m^4)	X dB/dt 0.333 millisecond time channel
SFx[24]:	pV/(A*m^4)	X dB/dt 0.383 millisecond time channel
SFx[25]:	pV/(A*m^4)	X dB/dt 0.440 millisecond time channel
SFx[26]:	pV/(A*m^4)	X dB/dt 0.505 millisecond time channel
SFx[27]:	pV/(A*m^4)	X dB/dt 0.580 millisecond time channel
SFx[28]:	pV/(A*m^4)	X dB/dt 0.667 millisecond time channel
SFx[29]:	pV/(A*m^4)	X dB/dt 0.766 millisecond time channel
SFx[30]:	pV/(A*m^4)	X dB/dt 0.880 millisecond time channel
SFx[31]:	pV/(A*m^4)	X dB/dt 1.010 millisecond time channel
SFx[32]:	pV/(A*m^4)	X dB/dt 1.161 millisecond time channel
SFx[33]:	pV/(A*m^4)	X dB/dt 1.333 millisecond time channel
SFx[34]:	pV/(A*m^4)	X dB/dt 1.531 millisecond time channel
SFx[35]:	pV/(A*m^4)	X dB/dt 1.760 millisecond time channel
SFx[36]:	pV/(A*m^4)	X dB/dt 2.021 millisecond time channel
SFx[37]:	pV/(A*m^4)	X dB/dt 2.323 millisecond time channel

Channel name	Units	Description
SFx[38]:	pV/(A*m^4)	X dB/dt 2.667 millisecond time channel
SFx[39]:	pV/(A*m^4)	X dB/dt 3.063 millisecond time channel
SFx[40]:	pV/(A*m^4)	X dB/dt 3.521 millisecond time channel
SFx[41]:	pV/(A*m^4)	X dB/dt 4.042 millisecond time channel
SFx[42]:	pV/(A*m^4)	X dB/dt 4.641 millisecond time channel
SFx[43]:	pV/(A*m^4)	X dB/dt 5.333 millisecond time channel
SFx[44]:	pV/(A*m^4)	X dB/dt 6.125 millisecond time channel
SFx[45]:	pV/(A*m^4)	X dB/dt 7.036 millisecond time channel
SFx[46]:	pV/(A*m^4)	X dB/dt 8.083 millisecond time channel
SFy[20]:	pV/(A*m^4)	Y dB/dt 0.220 millisecond time channel
SFy[21]:	pV/(A*m^4)	Y dB/dt 0.253 millisecond time channel
SFy[22]:	pV/(A*m^4)	Y dB/dt 0.290 millisecond time channel
SFy[23]:	pV/(A*m^4)	Y dB/dt 0.333 millisecond time channel
SFy[24]:	pV/(A*m^4)	Y dB/dt 0.383 millisecond time channel
SFy[25]:	pV/(A*m^4)	Y dB/dt 0.440 millisecond time channel
SFy[26]:	pV/(A*m^4)	Y dB/dt 0.505 millisecond time channel
SFy[27]:	pV/(A*m^4)	Y dB/dt 0.580 millisecond time channel
SFy[28]:	pV/(A*m^4)	Y dB/dt 0.667 millisecond time channel
SFy[29]:	pV/(A*m^4)	Y dB/dt 0.766 millisecond time channel
SFy[30]:	pV/(A*m^4)	Y dB/dt 0.880 millisecond time channel
SFy[31]:	pV/(A*m^4)	Y dB/dt 1.010 millisecond time channel
SFy[32]:	pV/(A*m^4)	Y dB/dt 1.161 millisecond time channel
SFy[33]:	pV/(A*m^4)	Y dB/dt 1.333 millisecond time channel
SFy[34]:	pV/(A*m^4)	Y dB/dt 1.531 millisecond time channel
SFy[35]:	pV/(A*m^4)	Y dB/dt 1.760 millisecond time channel
SFy[36]:	pV/(A*m^4)	Y dB/dt 2.021 millisecond time channel
SFy[37]:	pV/(A*m^4)	Y dB/dt 2.323 millisecond time channel
SFy[38]:	pV/(A*m^4)	Y dB/dt 2.667 millisecond time channel
SFy[39]:	pV/(A*m^4)	Y dB/dt 3.063 millisecond time channel
SFy[40]:	pV/(A*m^4)	Y dB/dt 3.521 millisecond time channel
SFy[41]:	pV/(A*m^4)	Y dB/dt 4.042 millisecond time channel
SFy[42]:	pV/(A*m^4)	Y dB/dt 4.641 millisecond time channel
SFy[43]:	pV/(A*m^4)	Y dB/dt 5.333 millisecond time channel
SFy[44]:	pV/(A*m^4)	Y dB/dt 6.125 millisecond time channel
SFy[45]:	pV/(A*m^4)	Y dB/dt 7.036 millisecond time channel
SFy[46]:	pV/(A*m^4)	Y dB/dt 8.083 millisecond time channel
BFz	(pV*ms)/(A*m^4)	Z B-Field data for time channels 4 to 46
BFx	(pV*ms)/(A*m^4)	X B-Field data for time channels 20 to 46
BFy:	(pV*ms)/(A*m^4)	Y B-Field data for time channels 20 to 46
SFxFF:	pV/(A*m^4)	Fraser Filtered X dB/dt
NchanBF:		Latest time channels of TAU calculation
TauBF:	ms	Time constant B-Field
NchanSF:		Latest time channels of TAU calculation
TauSF:	ms	Time constant dB/dt
PLM:		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 4 – 46, and X and Y component data from 20 – 46, as described above.

- Database of the Resistivity Depth Images in Geosoft GDB format, containing the following channels:

Table 6: Geosoft Resistivity Depth Image GDB Data Format

Channel name	Units	Description
Xg:	metres	UTM Easting NAD83 Zone 9 North
Yg:	metres	UTM Northing NAD83 Zone 9 North
Dist:	meters	Distance from the beginning of the line
Depth:	meters	array channel, depth from the surface
Z:	meters	array channel, depth from sea level
AppRes:	Ohm-m	array channel, Apparent Resistivity
TR:	meters	EM system height from sea level
Topo:	meters	digital elevation model
Radarb:	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
SF:	pV/(A*m^4)	array channel, dB/dT
MAG:	nT	TMI data
CVG:	nT/m	CVG data
DOI:	metres	Depth of Investigation: a measure of VTEM depth effectiveness
PLM:		60Hz Power Line Monitor

- Database of the VTEM Waveform "GL160037_waveform_final.gdb" in Geosoft GDB format, containing the following channels:

Table 7: Geosoft database for the VTEM waveform

Channel name	Units	Description
Time:	milliseconds	Sampling rate interval, 5.2083 microseconds
Tx_Current:	amps	Output current of the transmitter

- Grids in Geosoft GRD and GeoTIFF format, as follows:

*bb*_BFz36: B-Field Z Component Channel 36 (Time Gate 2.021 ms)
*bb*_CVG: Calculated Vertical Derivative (nT/m)
*bb*_DEM: Digital Elevation Model (metres)
*bb*_Hgcxline: Measured Cross-Line Gradient (nT/m)
*bb*_Hginline: Measured In-Line Gradient (nT/m)
*bb*_PLM: Power Line Monitor (60Hz)
*bb*_SFxFF20: Fraser Filtered dB/dt X Component Channel 20 (Time Gate 0.220ms)
*bb*_SFz15: dB/dt Z Component Channel 15 (Time Gate 0.110 ms)
*bb*_SFz30: dB/dt Z Component Channel 30 (Time Gate 0.880 ms)
*bb*_SFz45: dB/dt Z Component Channel 45 (Time Gate 7.036 ms)
*bb*_TauBF: B-Field Z Component, Calculated Time Constant (ms)
*bb*_TauSF: dB/dt Z Component, Calculated Time Constant (ms)
*bb*_TiltDerivative: Magnetic Tilt derivative (radians)
*bb*_TMI: Total Magnetic Intensity (nT)
*bb*_TotalHorgrad: Magnetic Total Horizontal Gradient (nT/m)

where *bb* represents the block name

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 37.5 metres was used.

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne versatile time domain electromagnetic (VTEMplus) and horizontal magnetic gradiometer geophysical survey has been completed over Kudz Ze Kayah, Pelly and Wolf situated near Wolverine Lake, Yukon.

The total area coverage is 241 km^2. Total survey line coverage 1589 line kilometres. The principal sensors included a Time Domain EM system and a horizontal magnetic gradiometer using two caesium magnetometers. Results have been presented as stacked profiles, and contour colour images at a scale of 1:20,000 (Kudz Ze Kayah and Pelly) and 1:10,000 (Wolf). A formal Interpretation has not been included or requested.

Based on the geophysical results obtained, a number of TEM anomalous zones are identified across the blocks. All of these anomalies are considered to be induced by low to moderate conductive targets. They can be seen overlapping the TAU decay parameter image presented with the calculated vertical magnetic gradient (CVG) contours in the Appendix C.

The main conductive zones in the Kudz Ze Kayah blocks are oriented NE-SW in the western part to NW-SE in the centre part having strong association with the magnetic anomalies. The conductive zone in the southern part of L3252-L3370 oriented NE-SW exhibits AIIP phenomenon and follows the magnetic trend. Most of the conductors can be approximated as “thick” subvertical plates and some as “thin” plates with the inherent double-peak response. Some of the zones being on the edge of the survey boundary are not well defined. Detailed resistivity depth sections were created for all the survey lines. According to the detailed resistivity depth imaging, the top of the EM response sources varies in depth from about 50-80m deep).

The main conductive zones in the Pelly and Wolf blocks are oriented NE-SW and are associated with the magnetic anomalies. Most of the conductors can be approximated as “thick” subvertical plates and some as “thin” plates with the inherent double-peak response. Some of the zones being on the edge of the survey boundary are not well defined. Detailed resistivity depth sections were created for all the survey lines. According to the detailed resistivity depth imaging, the top of the EM response sources varies in depth from about 50-80m deep).

If the conductors correspond to an exploration model, it is recommended picking anomalies with conductance grading and center localization of the targets, detail resistivity depth imaging and Maxwell plate modelling prior to ground follow up and drill testing. Since the EM conductors have close associations with the magnetic anomalies, 3D inversions and detailed structural interpretation for magnetic data are also suggested.

Respectfully submitted[2],

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Geotech Ltd.

Gaurav Nailwal
Geotech Ltd.

Geoffrey Plastow, P. Geo.
Data Processing Manager
Geotech Ltd.

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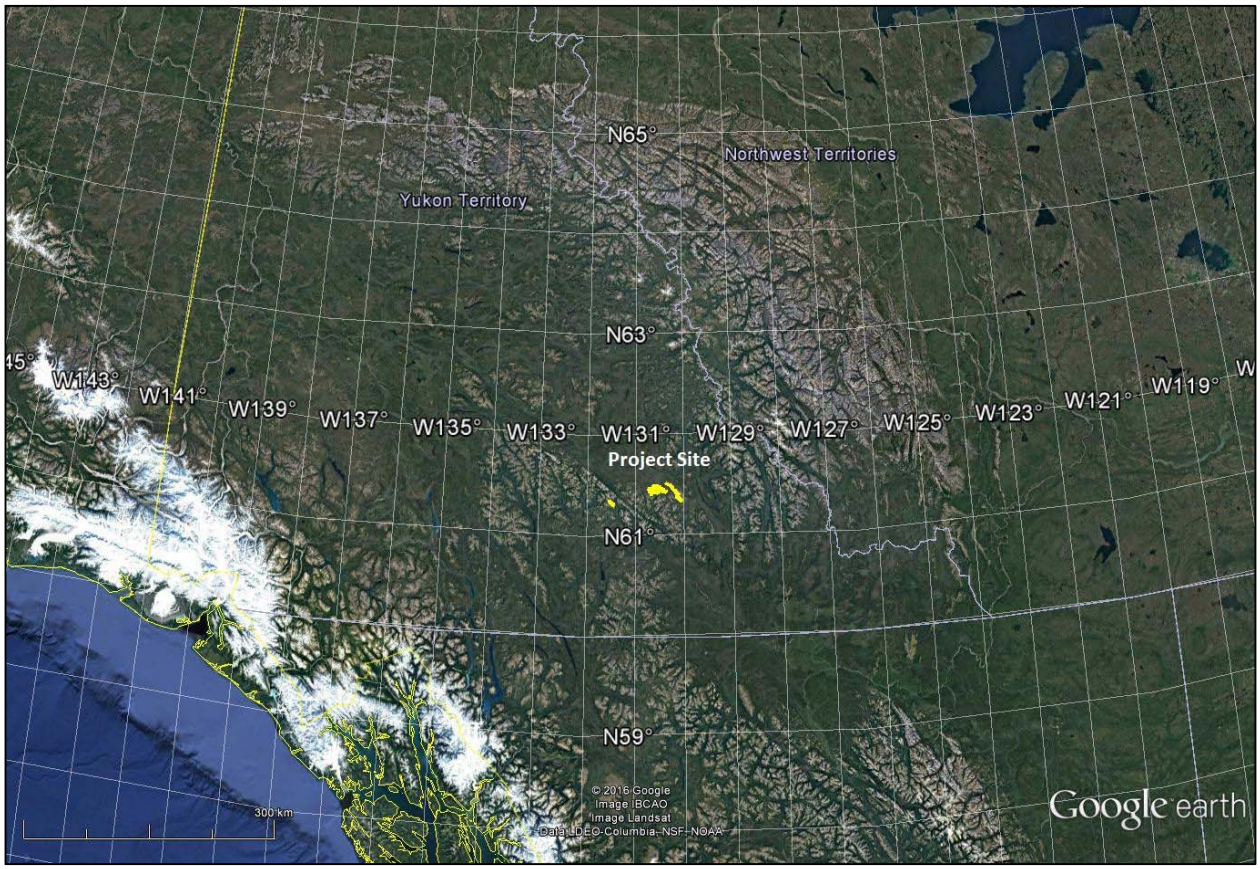
October, 2016

[2] Final data processing of the EM and magnetic data were carried out by Gaurav Nailwal, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Geoffrey Plastow, P.Geo. Data Processing Manager.

APPENDIX A

SURVEY AREA LOCATION MAP



Overview of the Survey Area

APPENDIX B

SURVEY AREA COORDINATES

(WGS 84, UTM Zone 9 North)

Kudz Ze Kayah

X	Y
412005	6816377
411085	6813001
412018	6812815
411005	6809041
410084	6809227
410135	6809405
409300	6809419
409351	6811643
409717	6813012
407553	6813037
407608	6815024
406881	6815278
407894	6819052
408586	6818811
411027	6818759
411277	6819654
411542	6819646
412042	6821440
412810	6821429
412954	6821854
413832	6821826
413873	6822014
418263	6821917
418108	6821307
419619	6821248
419610	6820829
419959	6820821
420088	6821230
420984	6821215
420967	6820356
420720	6819511
421420	6819495
421411	6818924
422192	6819644
421920	6818615
422803	6818606
422796	6818201
424555	6818157
424540	6817946

X	Y
424595	6817942
424592	6817798
424908	6817791
424888	6816652
426229	6816114
427312	6816090
427314	6815756
427981	6815528
426968	6811754
426301	6811982
426225	6811981
425854	6812109
425857	6812241
425392	6812268
425202	6812337
423875	6812878
422249	6813577
422250	6813676
421994	6813681
421820	6813755
421818	6813673
421361	6813681
420907	6813830
420568	6813519
421195	6815893
419970	6814803
419805	6814773
412005	6816377

Wolf

X	Y
364237	6806799
362839	6806136
362839	6802966
362839	6802966
367270	6799467
369510	6799467
369522	6802462
369247	6802459
369187	6802527
364237	6806799

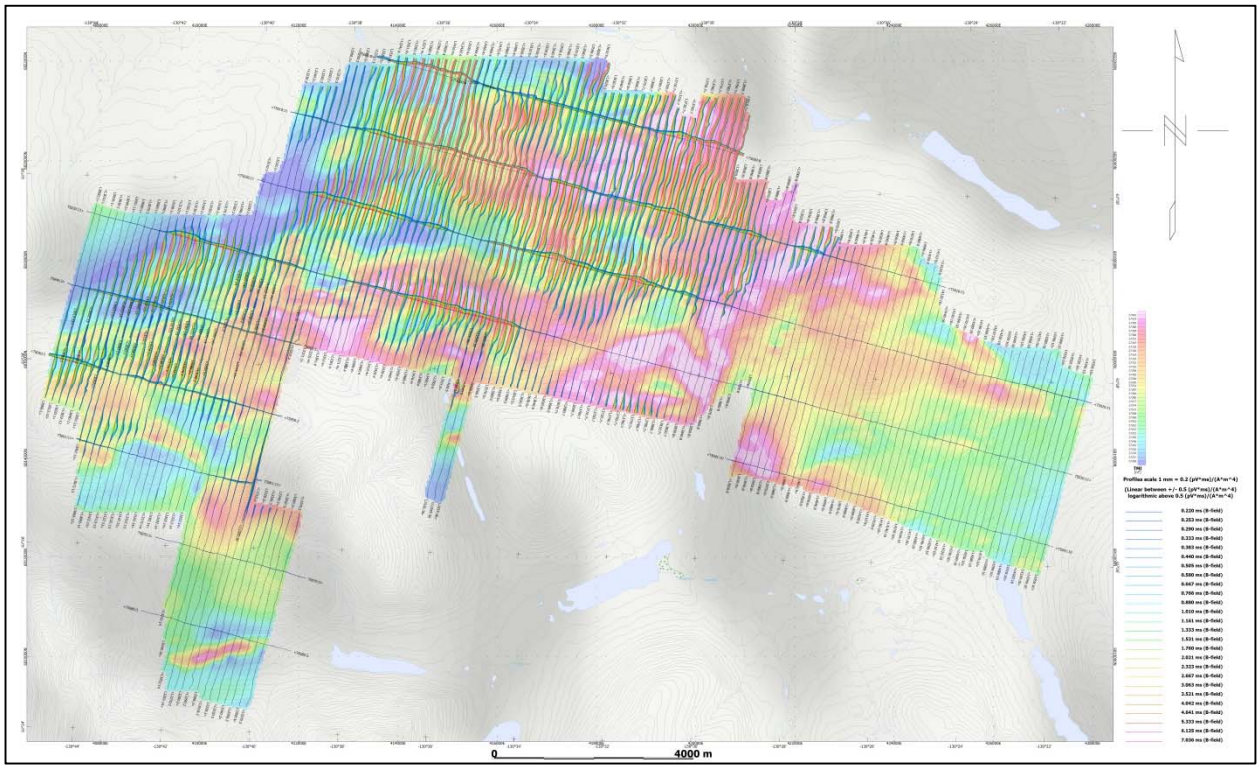
Pelly

X	Y
435126	6814679
437356	6816687
439476	6814734
438973	6814291
439488	6813548
439798	6813298
441018	6812431
441631	6812018
441611	6811991
441705	6811918
441722	6811933
442175	6811564
442440	6811361
442497	6811434
442712	6811256
442320	6810986
442440	6810812
442386	6810743
441065	6809551
441171	6809418
441339	6809288
441315	6809236
441525	6808965
441587	6809012
442719	6807596
443001	6807246
442159	6806577
443015	6805829
443895	6805661
445285	6804164
443055	6802156
441666	6803654
440786	6803821
439926	6804567
439329	6804578
438315	6805839
438033	6806190
437785	6806498
438466	6807113

X	Y
437929	6807783
437474	6808348
437468	6808564
437348	6809053
437438	6809123
437339	6809247
437326	6809424
437402	6809489
437424	6809541
437407	6809597
437427	6809658
437445	6809717
437499	6809764
437474	6809798
437501	6809904
437468	6809978
438112	6810557
438078	6810592
437739	6810834
437548	6810985
437660	6811098
437652	6811217
437567	6811281
437497	6811293
437480	6811331
437258	6811541
437225	6811581
436743	6812284
437246	6812727

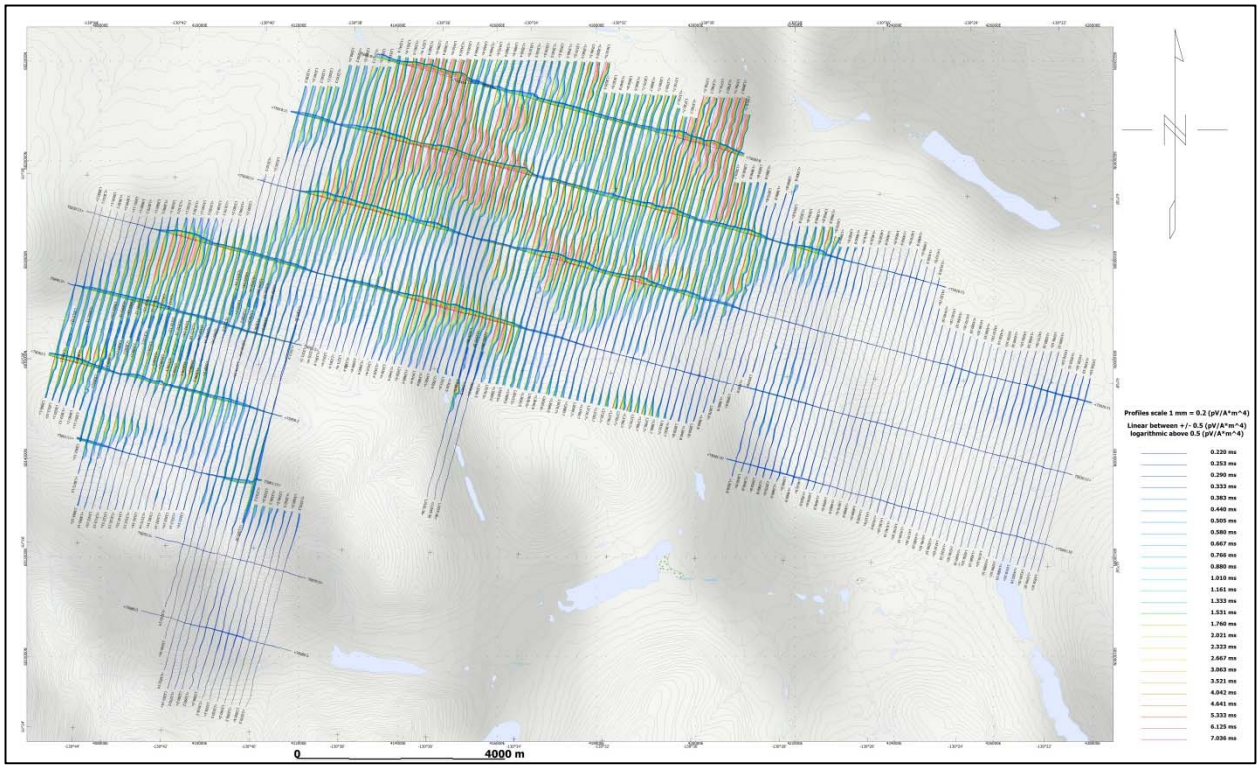
APPENDIX C

GEOPHYSICAL MAPS[1]

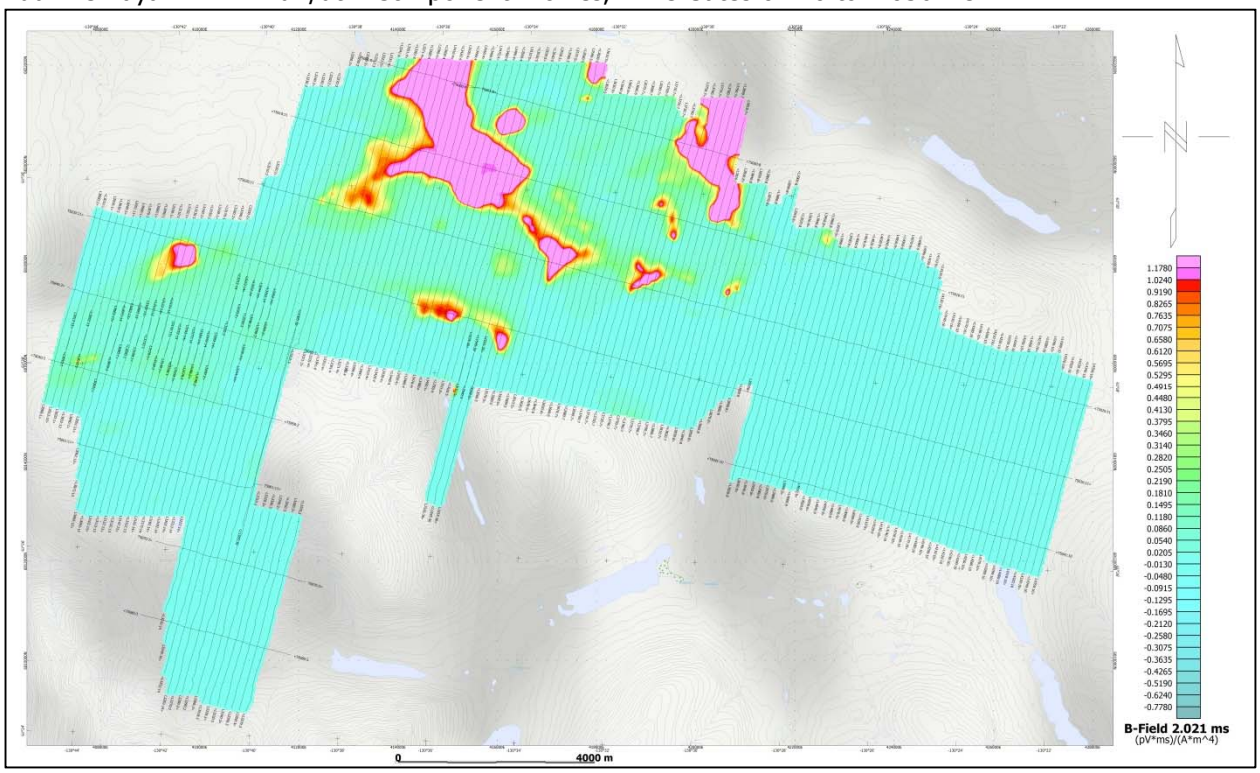


Kudz Ze Kayah - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms

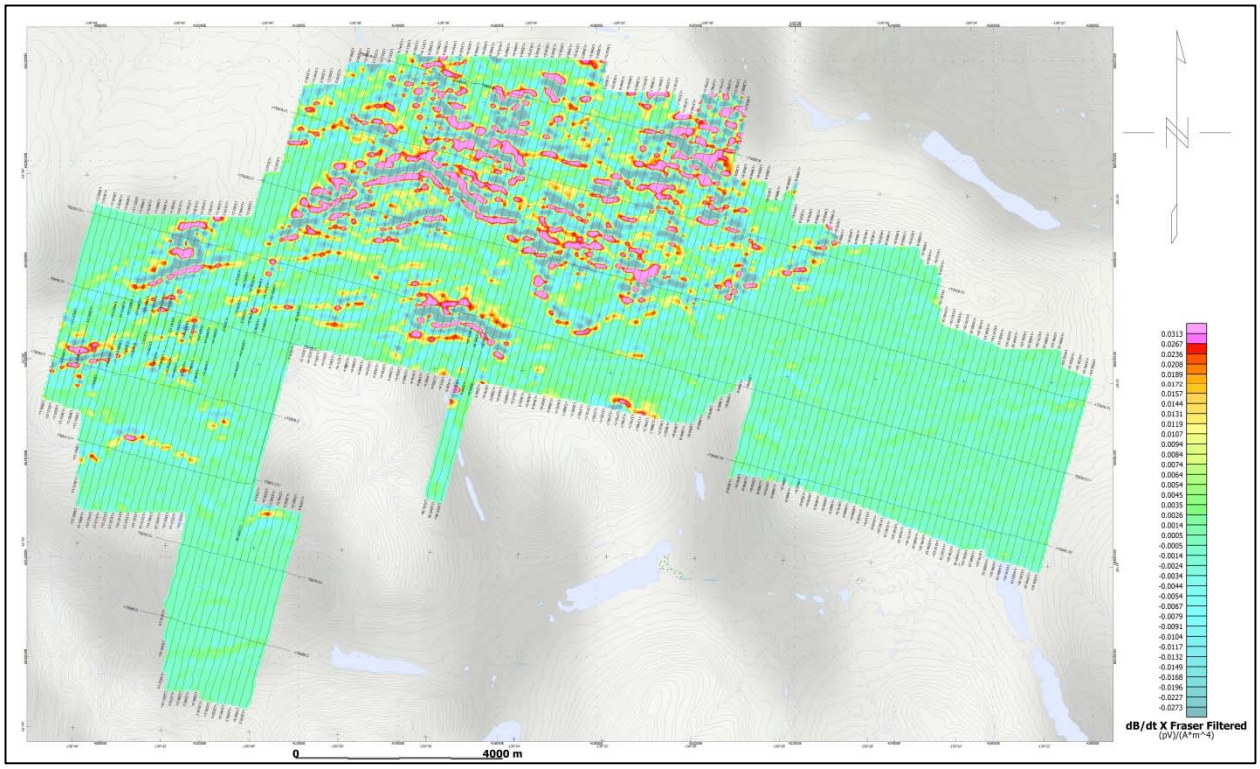
[1] Full size geophysical maps are also available in PDF format on the final DVD



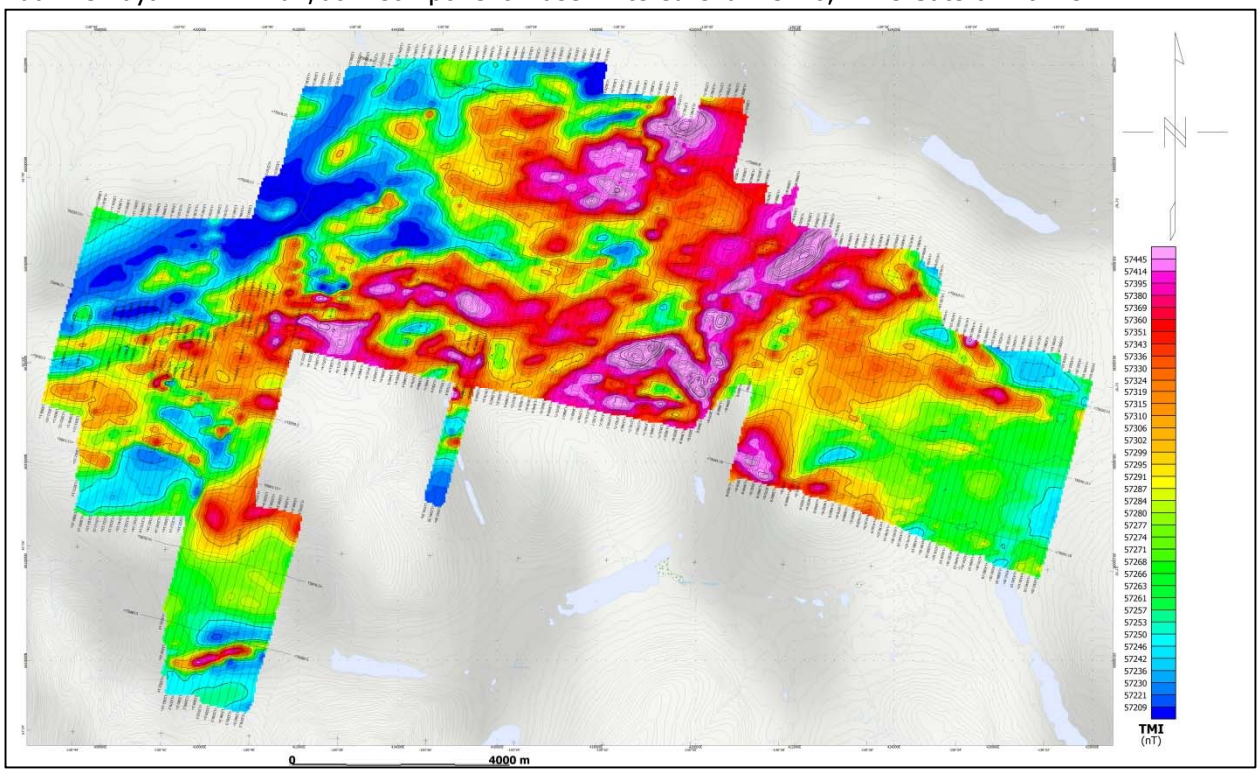
Kudz Ze Kayah - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



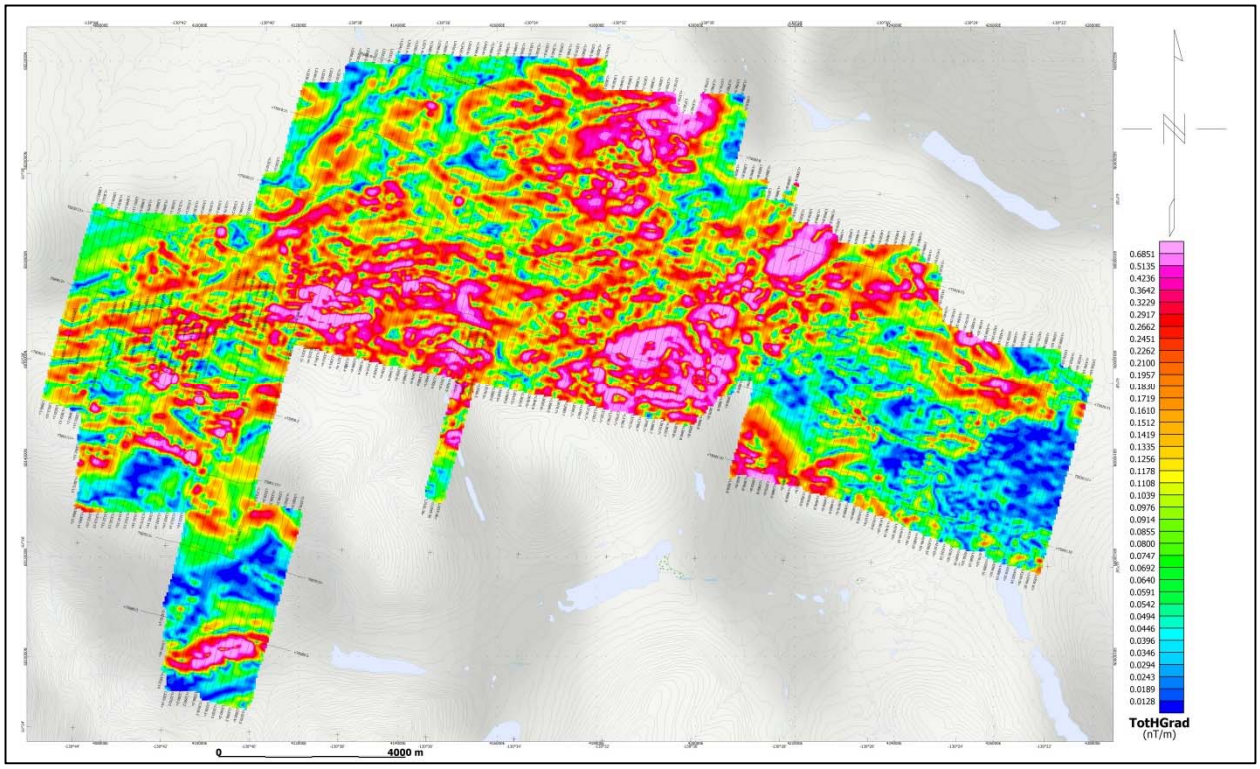
Kudz Ze Kayah - VTEM B-Field Z Component Channel 36, Time Gate 2.021 ms



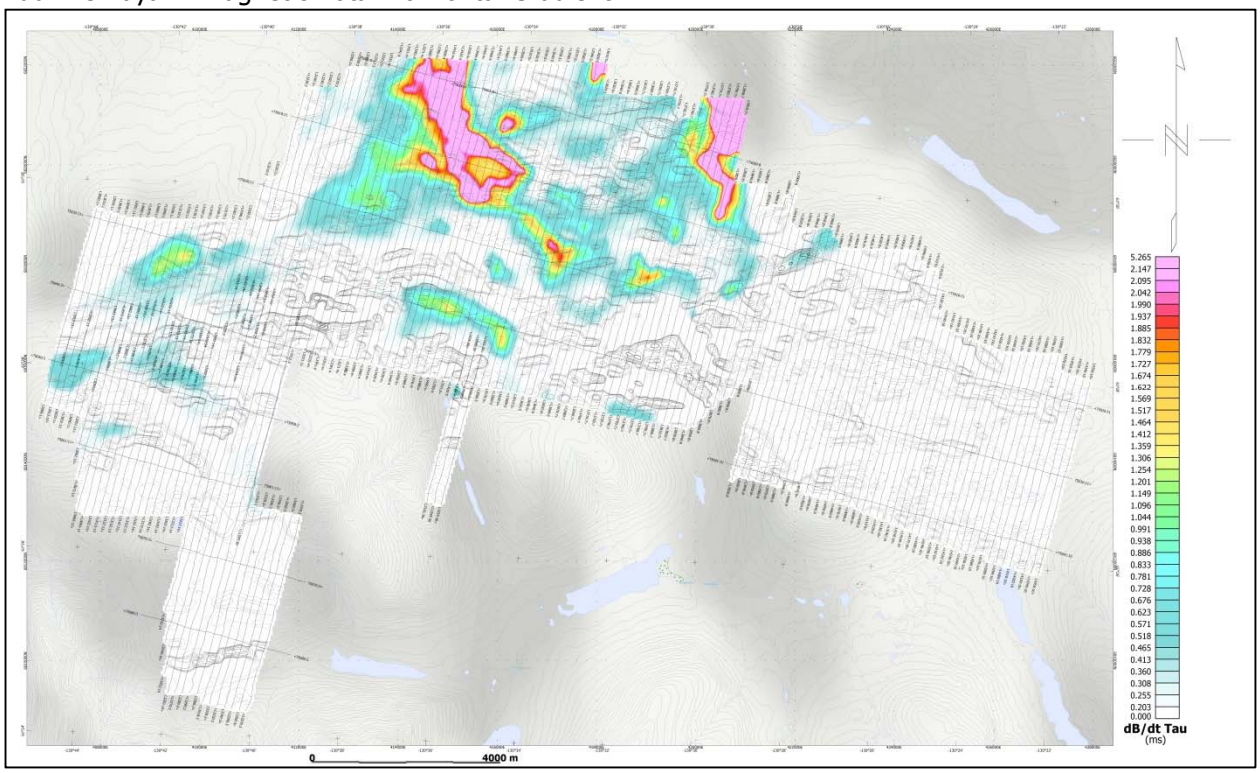
Kudz Ze Kayah - VTEM dB/dt X Component Fraser Filtered Channel 20, Time Gate 0.220 ms



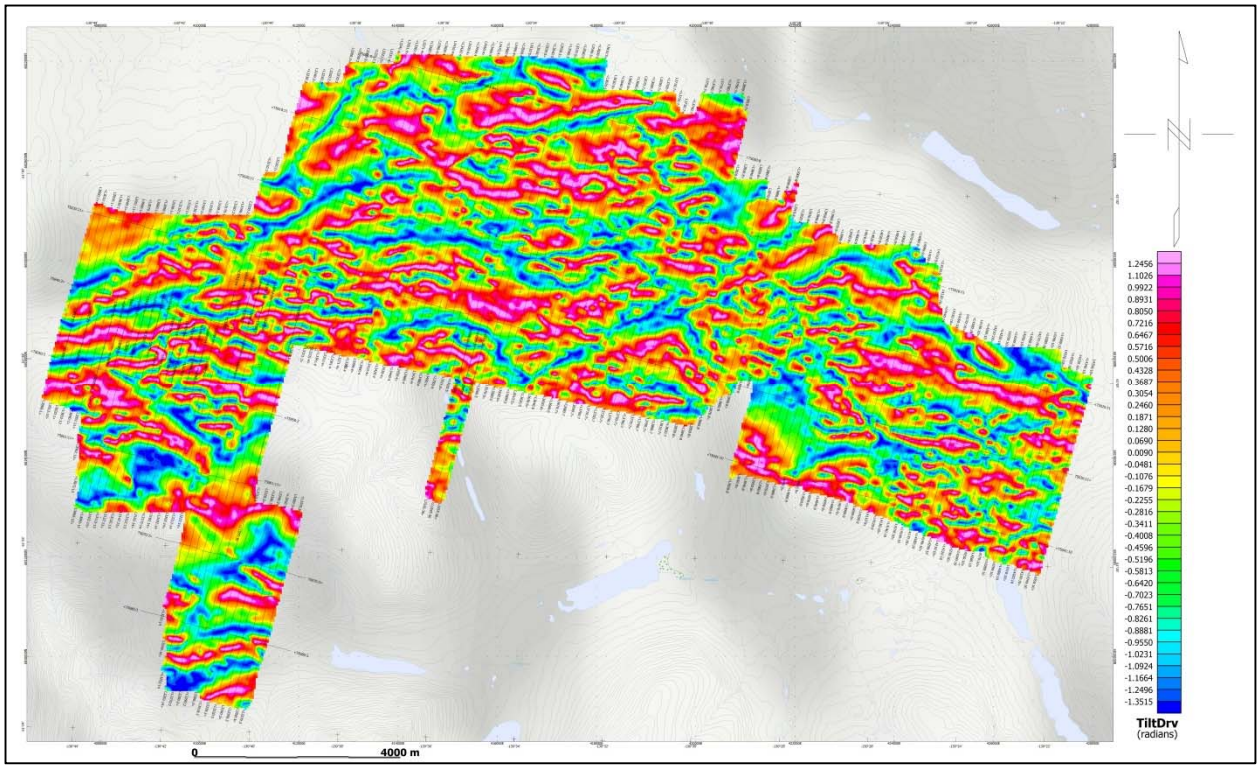
Kudz Ze Kayah - Total Magnetic Intensity (TMI)



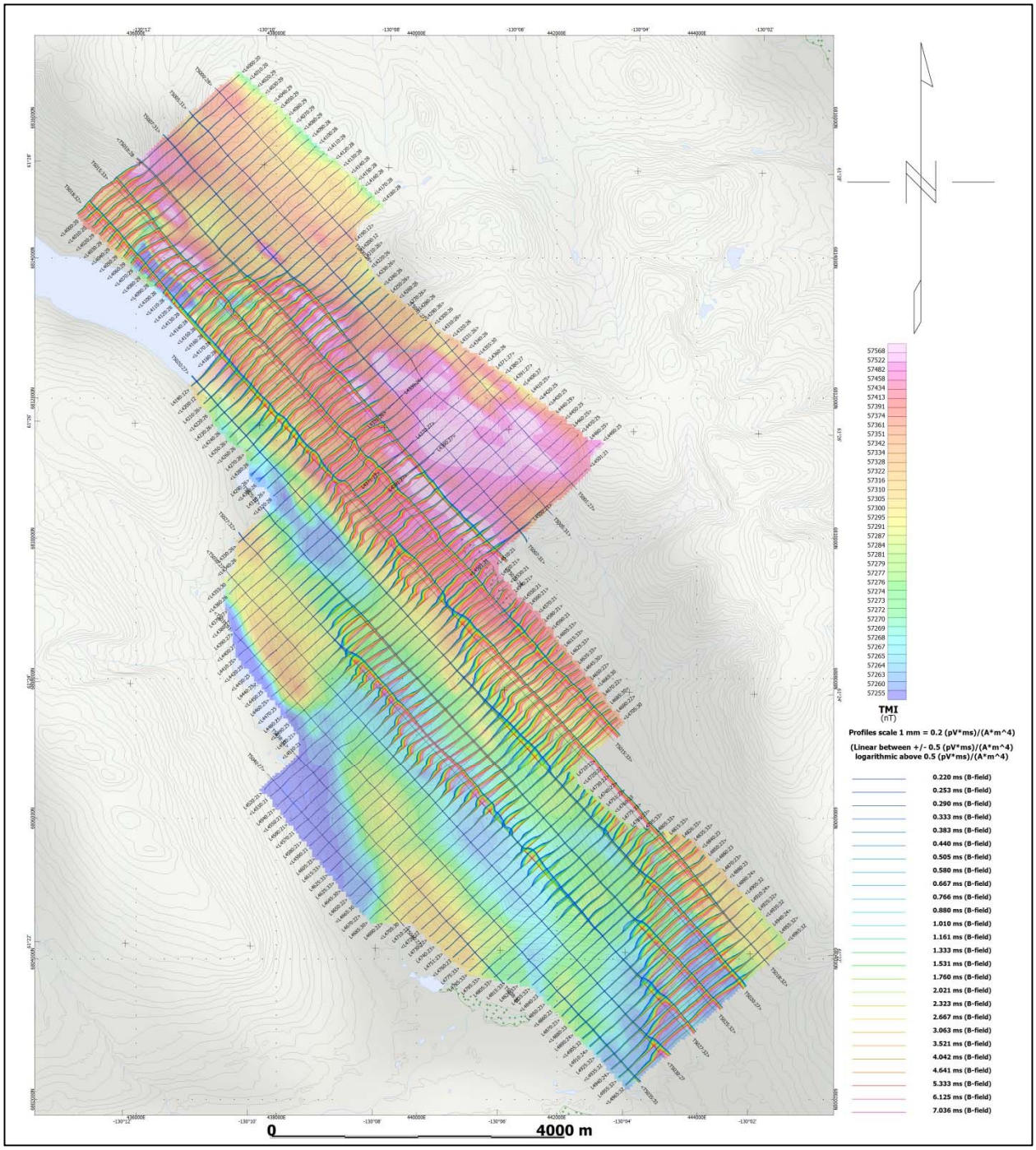
Kudz Ze Kayah - Magnetic Total Horizontal Gradient



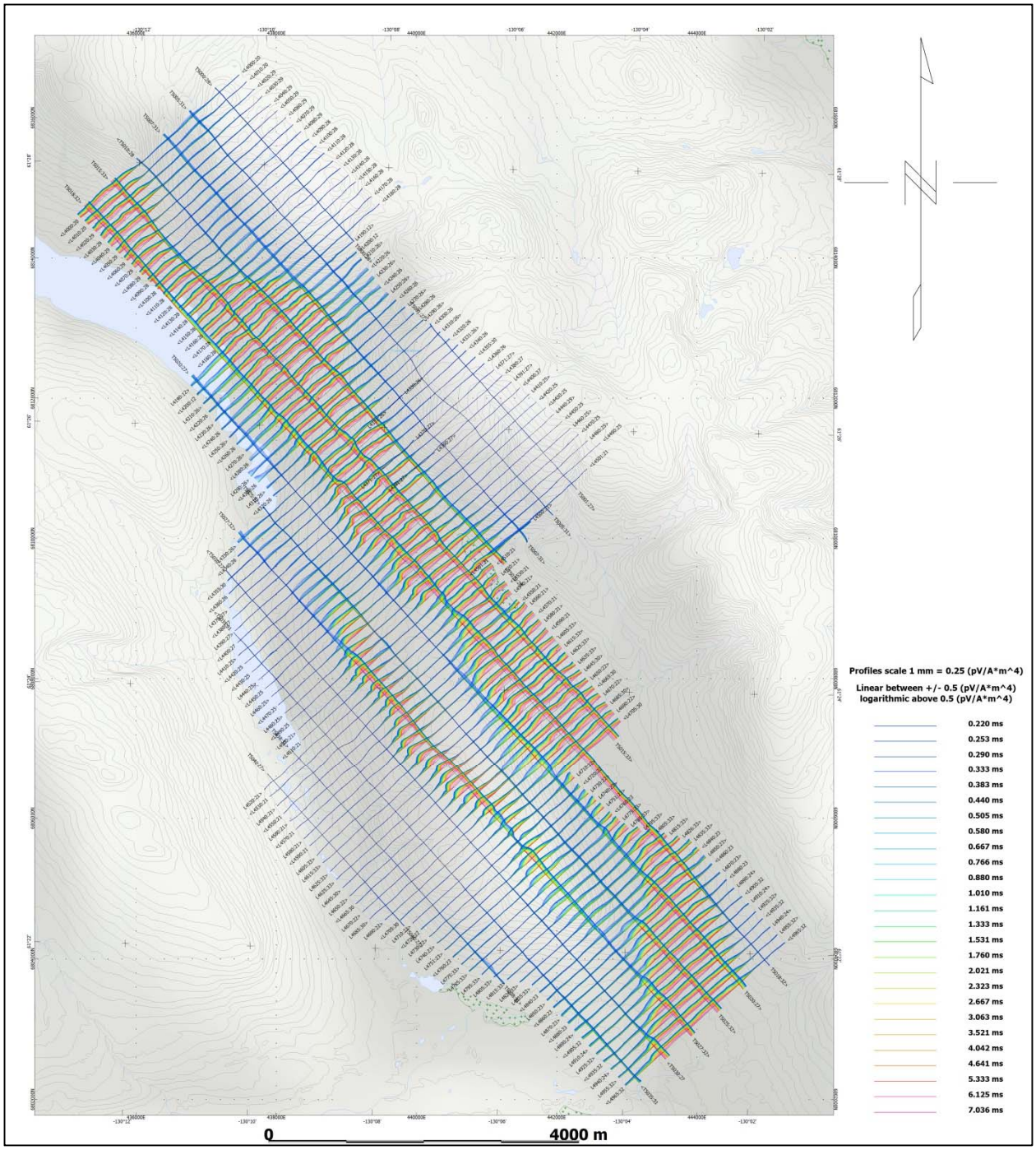
Kudz Ze Kayah - dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours



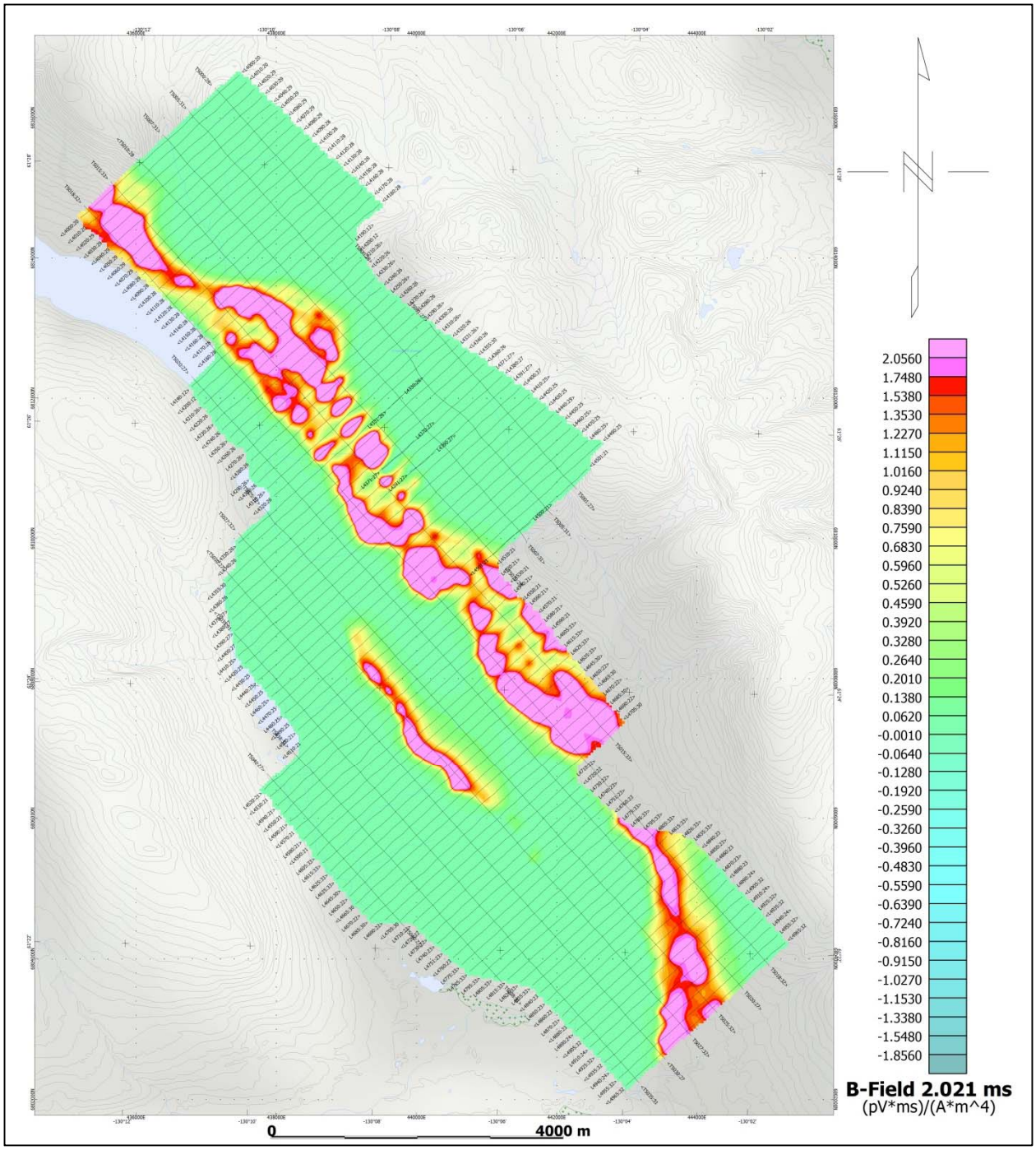
Kudz Ze Kayah - Magnetic Tilt - Angle Derivative



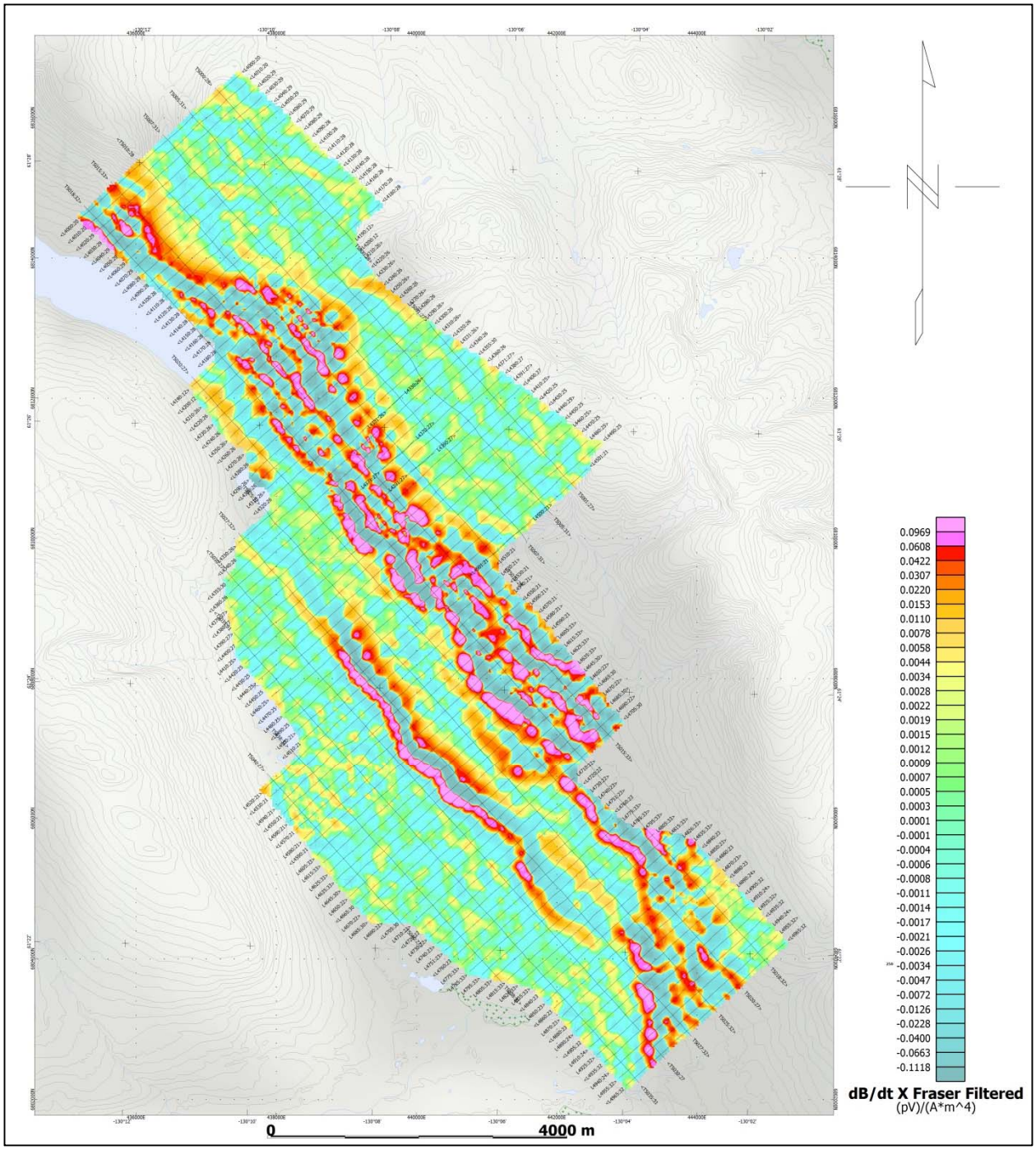
Pelly - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms



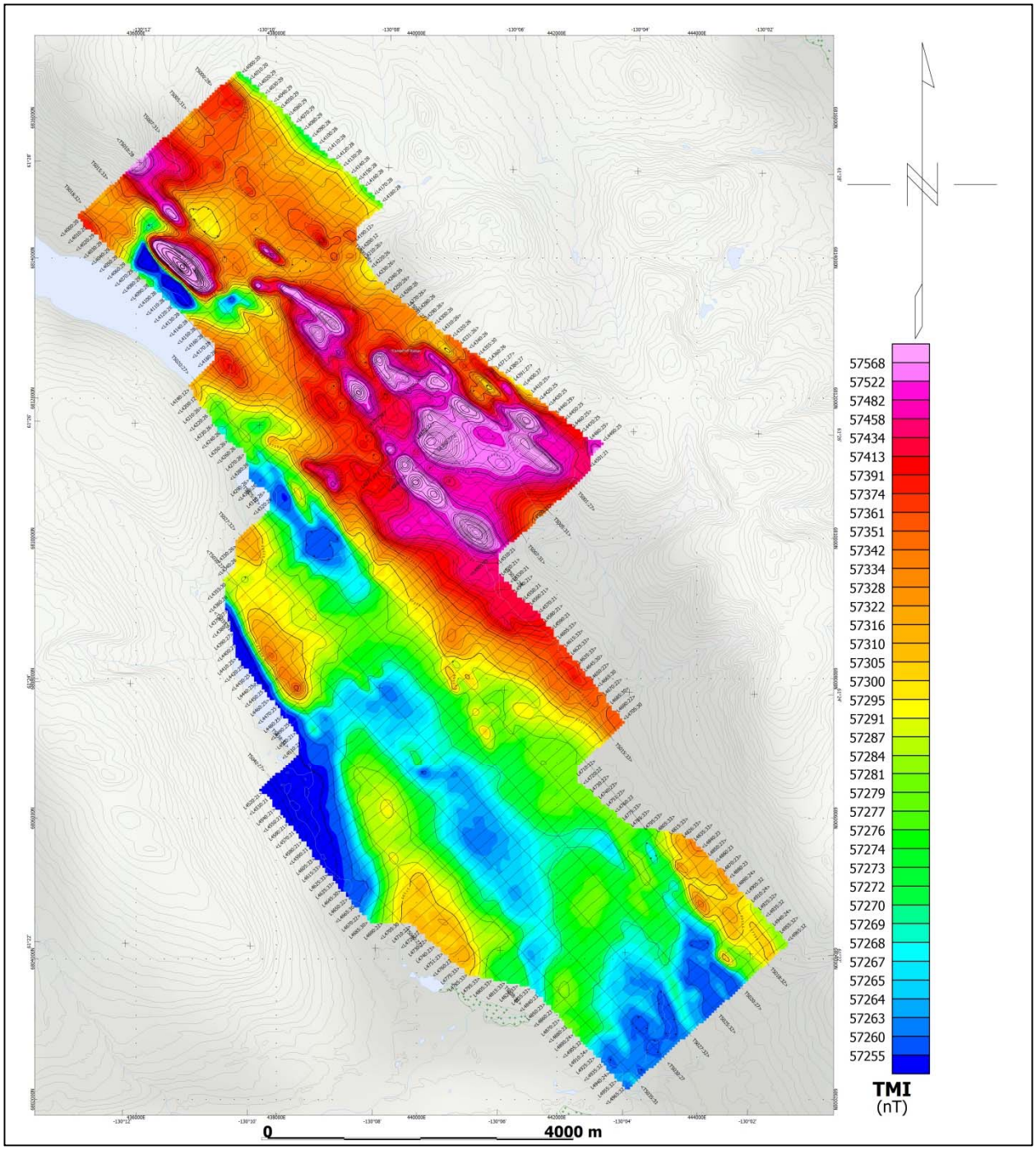
Pelly - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



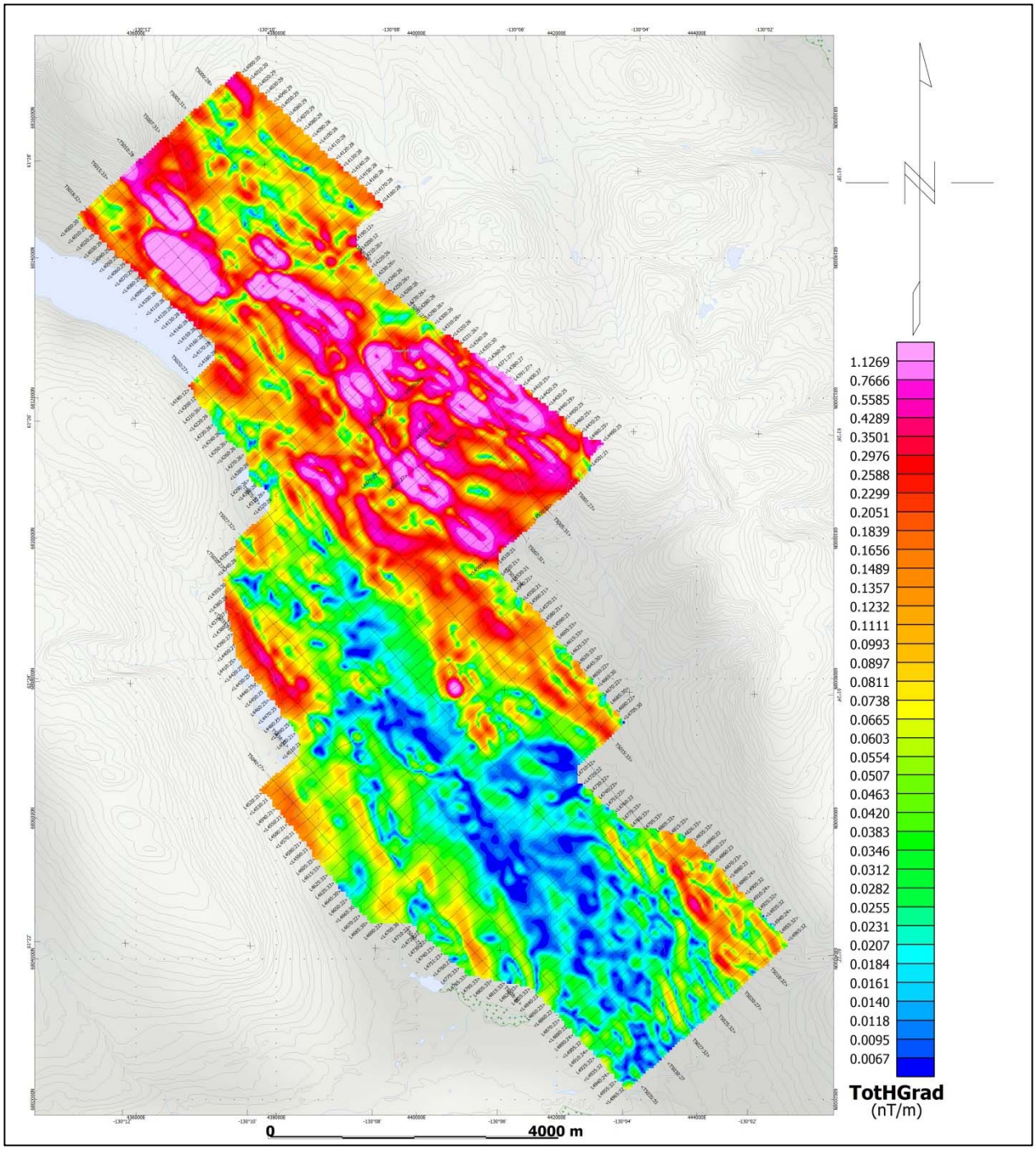
Pelly - VTEM B-Field Z Component Channel 36, Time Gate 2.021 ms



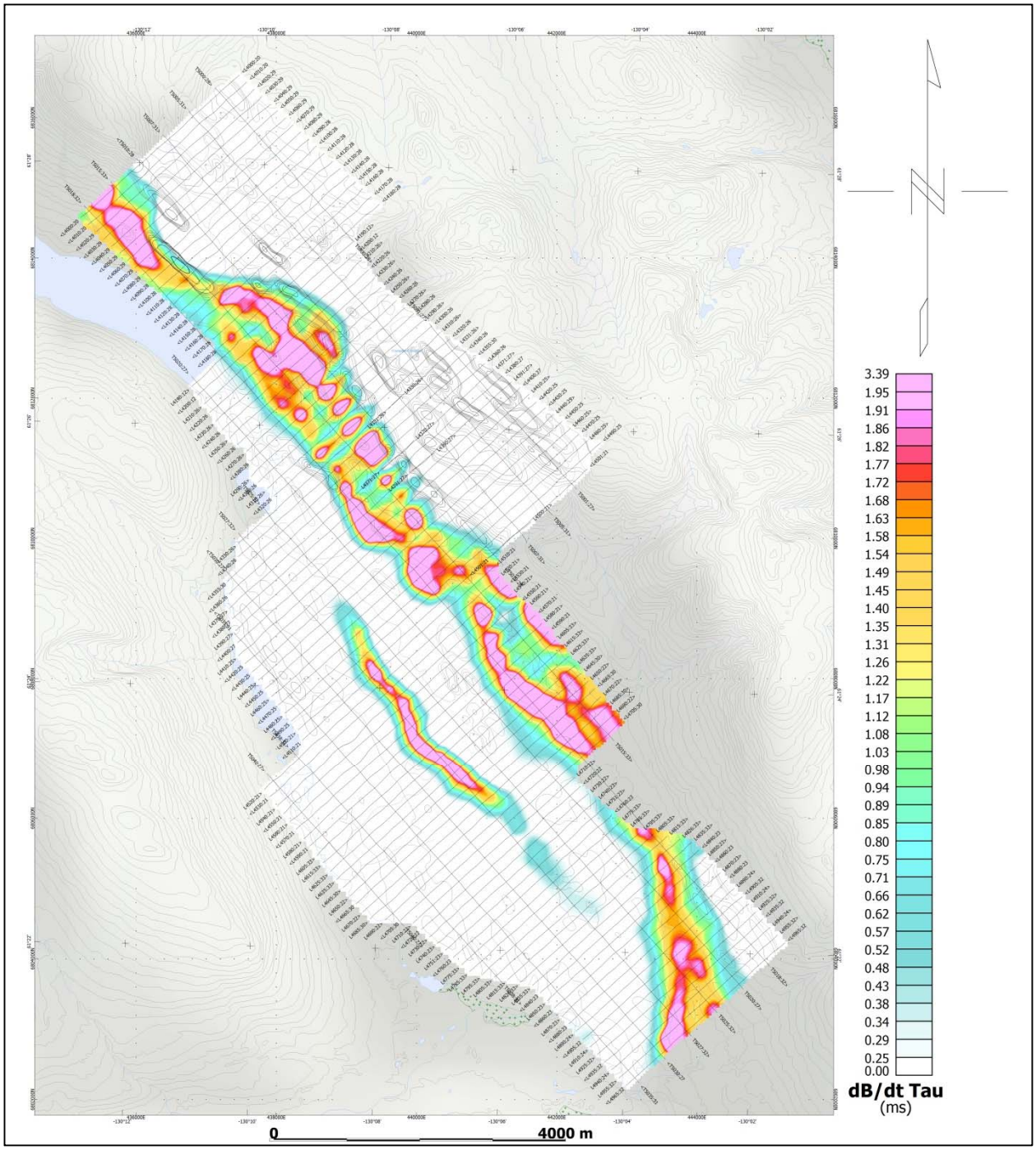
Pelly - VTEM dB/dt X Component Fraser Filtered Channel 20, Time Gate 0.220 ms



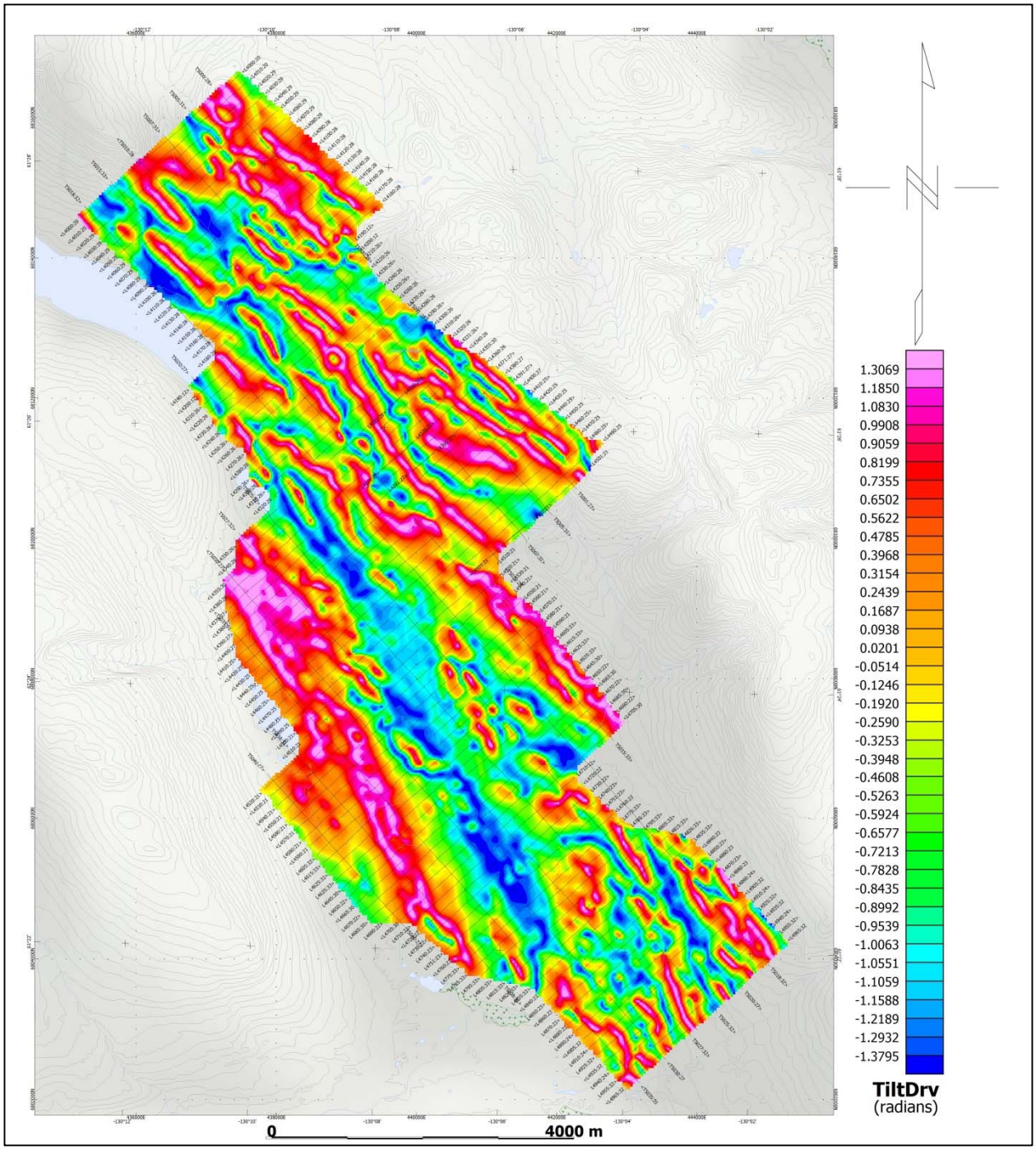
Pelly - Total Magnetic Intensity (TMI)



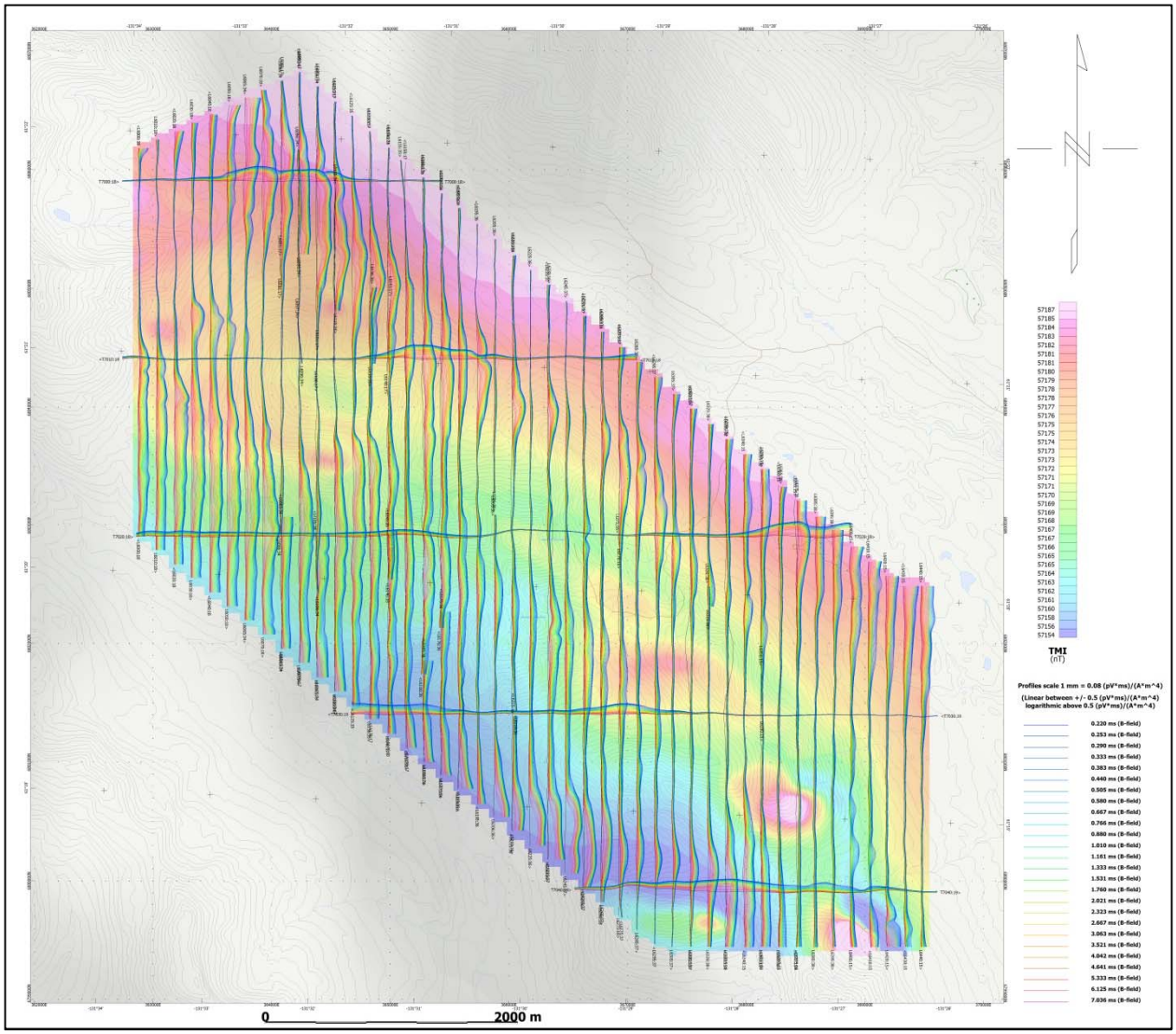
Pelly - Magnetic Total Horizontal Gradient



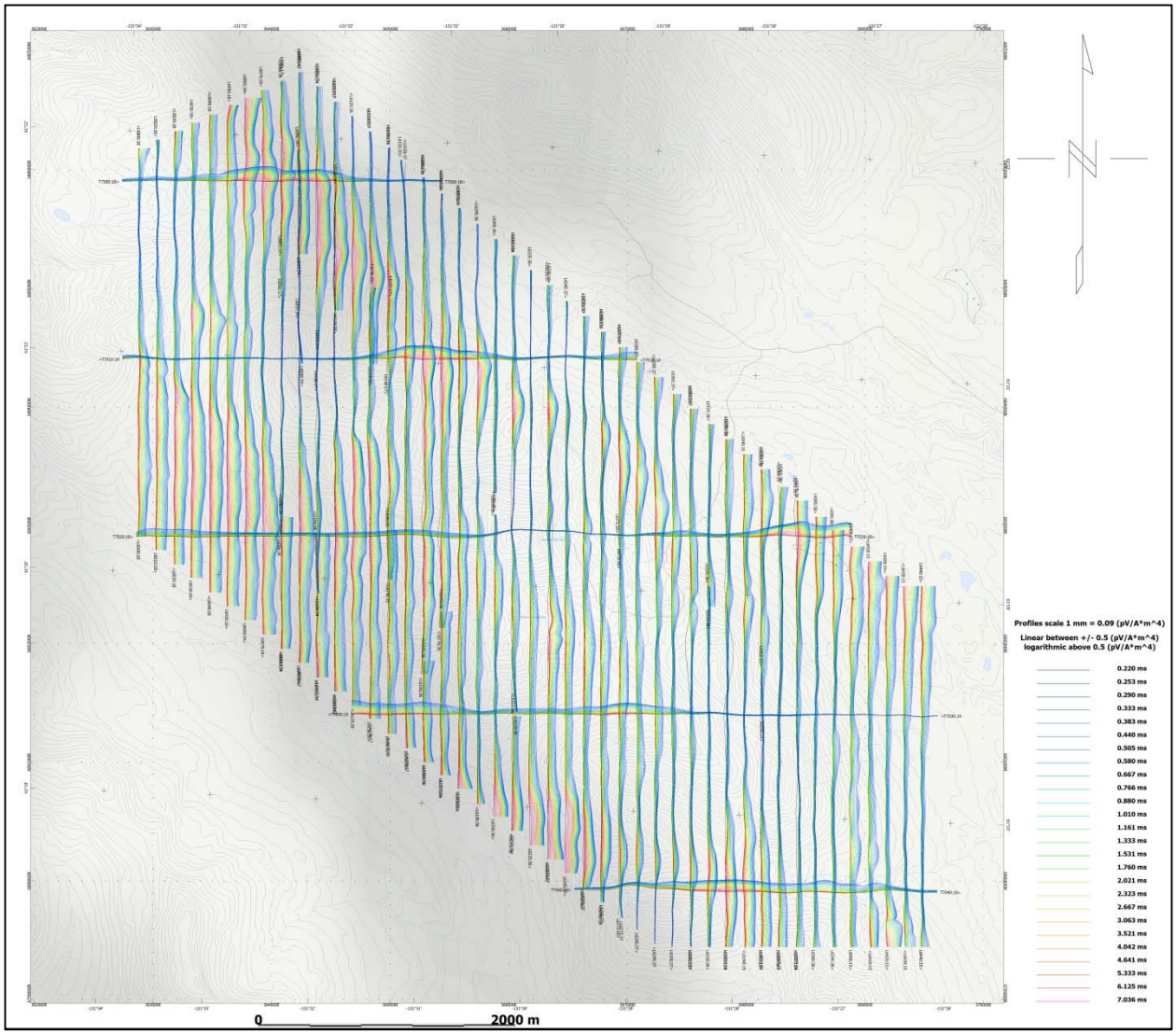
Pelly - dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours



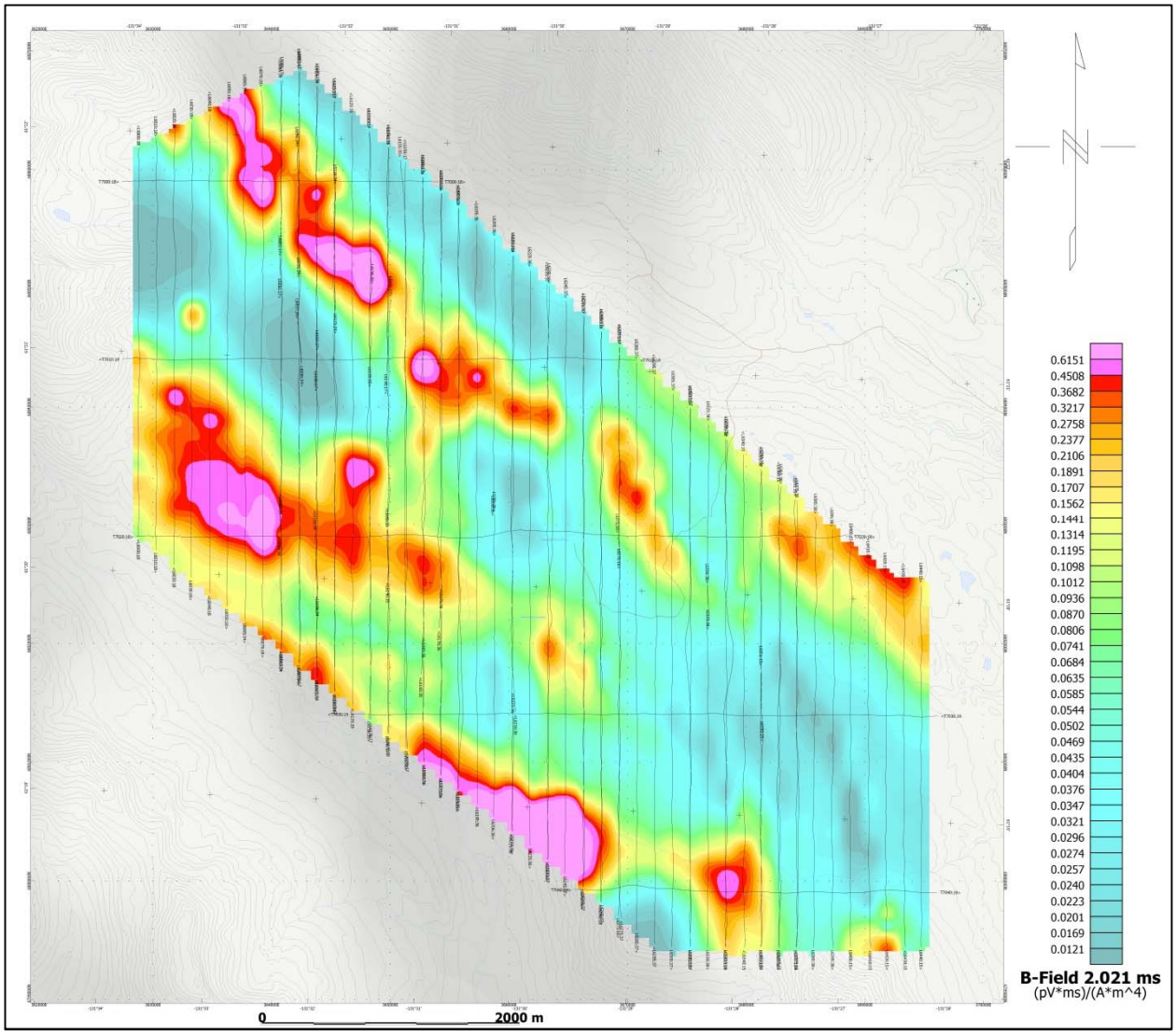
Pelly - Magnetic Tilt - Angle Derivative



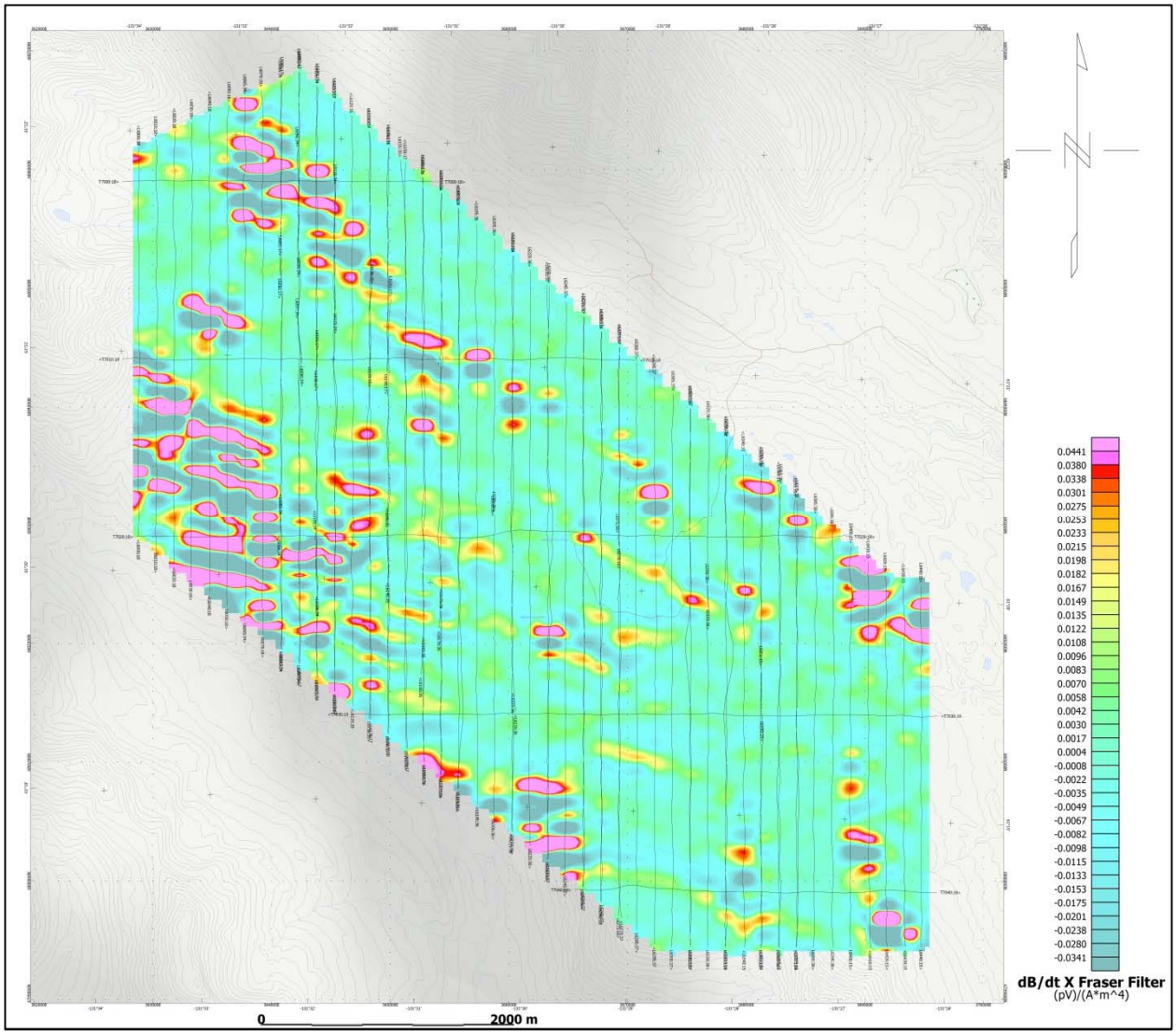
Wolf - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms



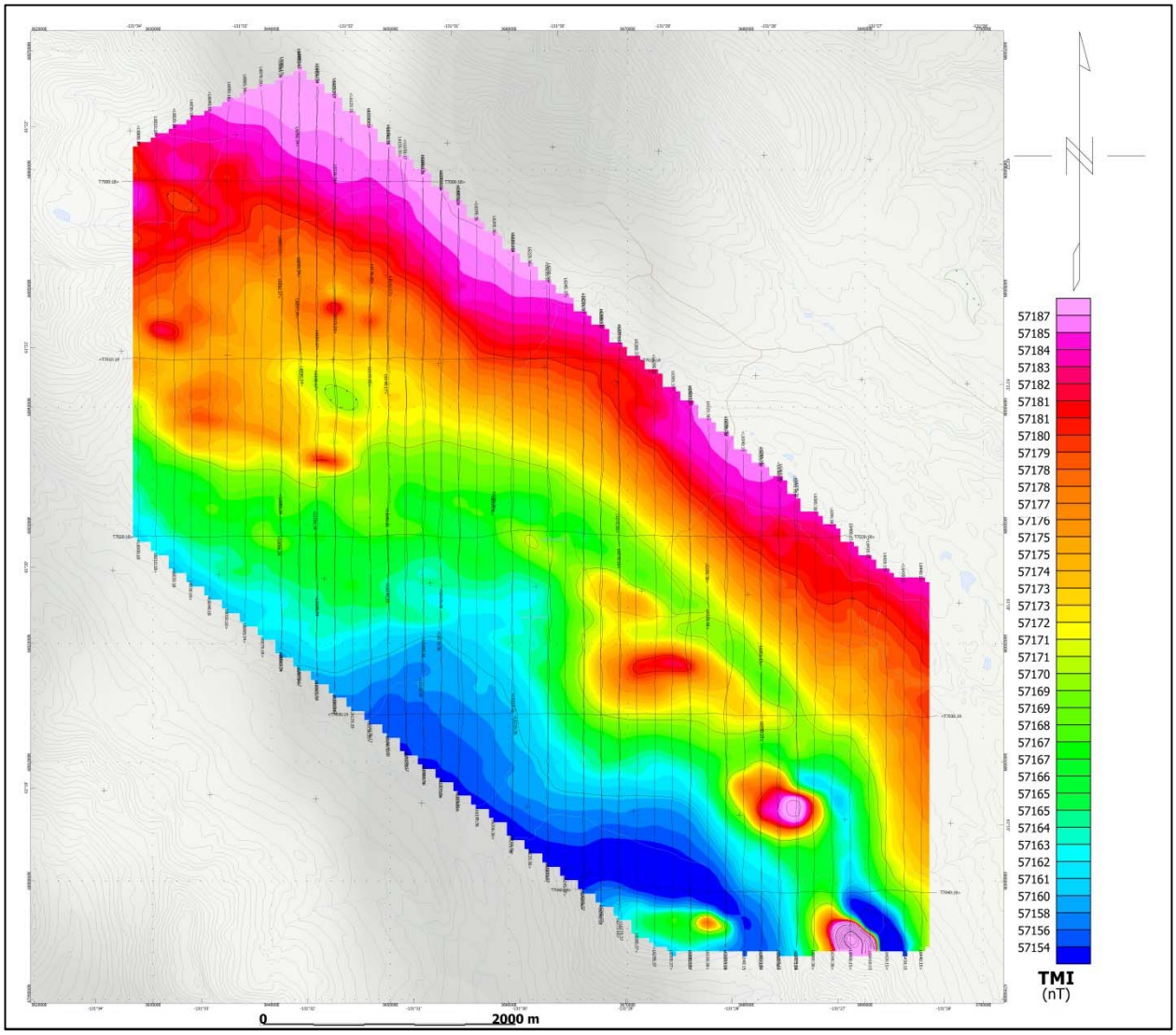
Wolf - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



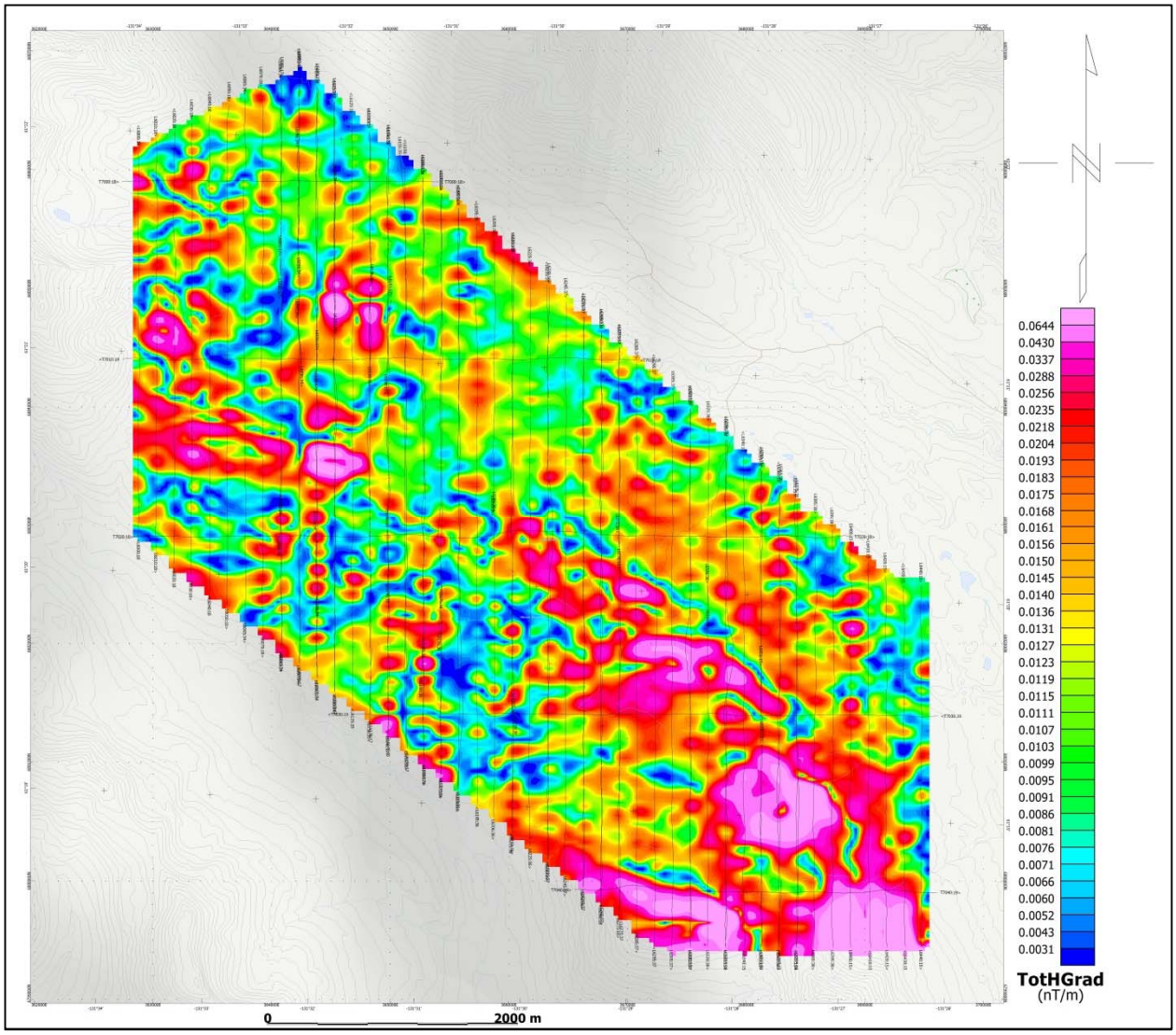
Wolf - VTEM B-Field Z Component Channel 36, Time Gate 2.021 ms



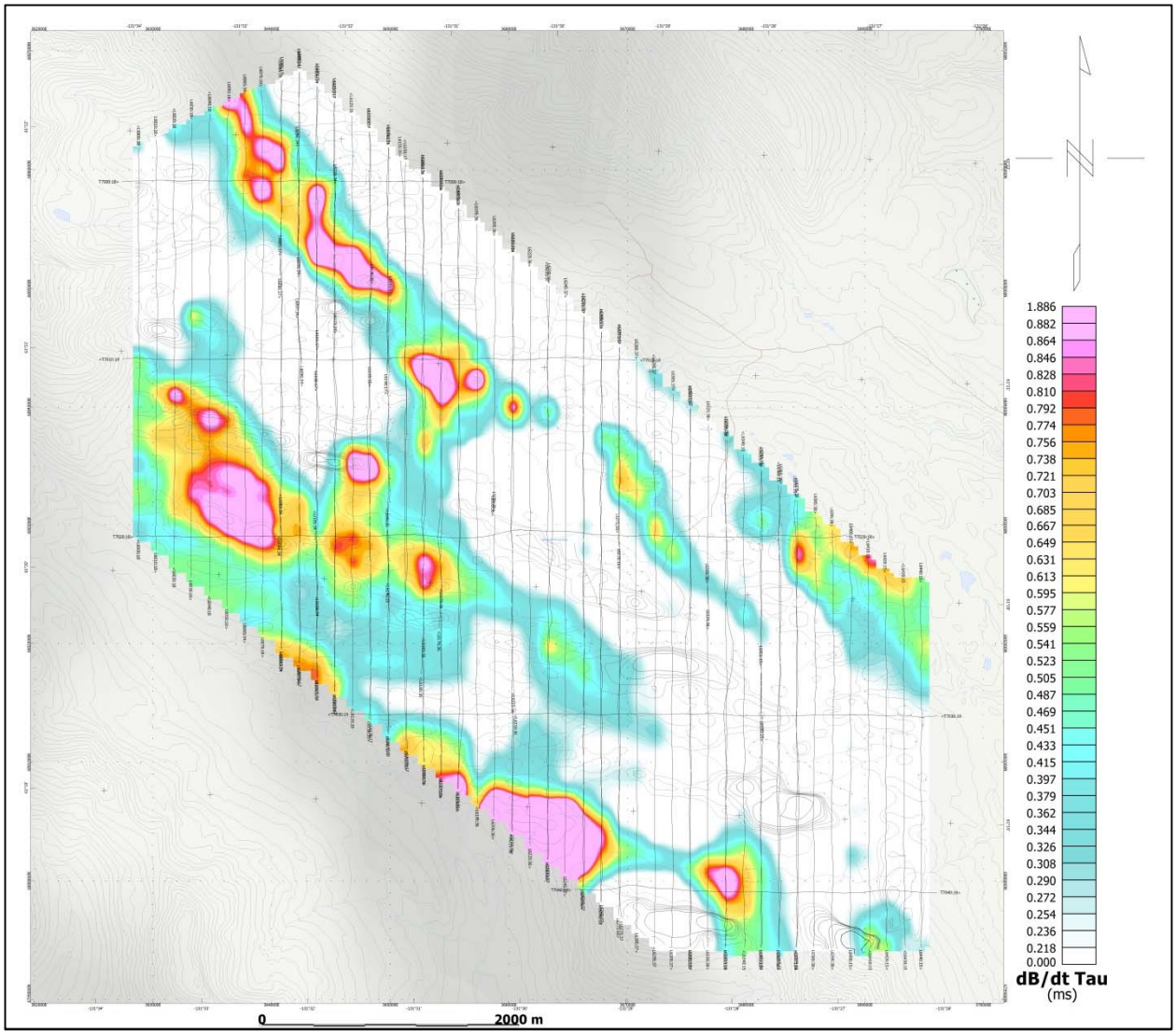
Wolf - VTEM dB/dt X Component Fraser Filtered Channel 20, Time Gate 0.220 ms



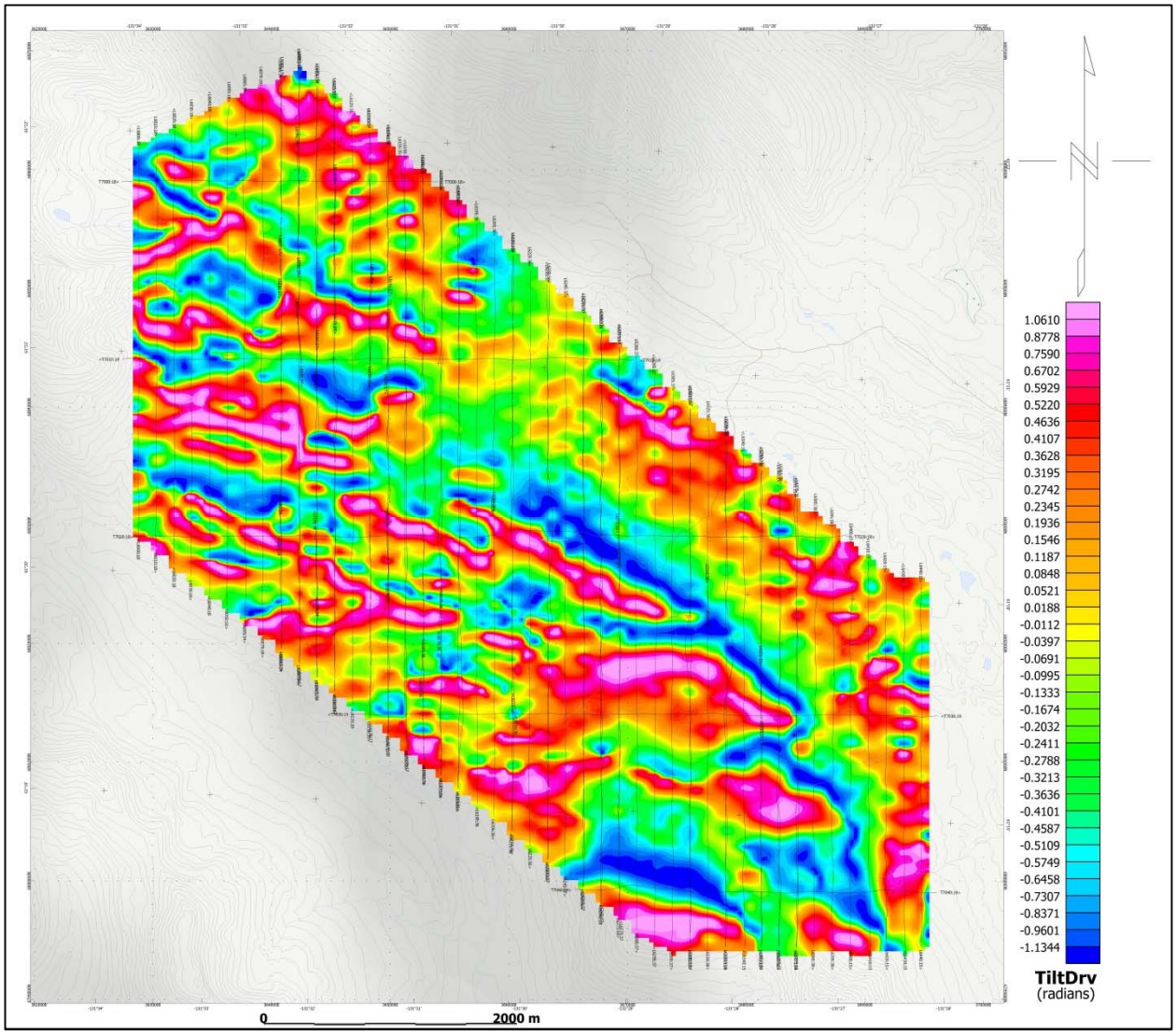
Wolf - Total Magnetic Intensity (TMI)



Wolf - Magnetic Total Horizontal Gradient



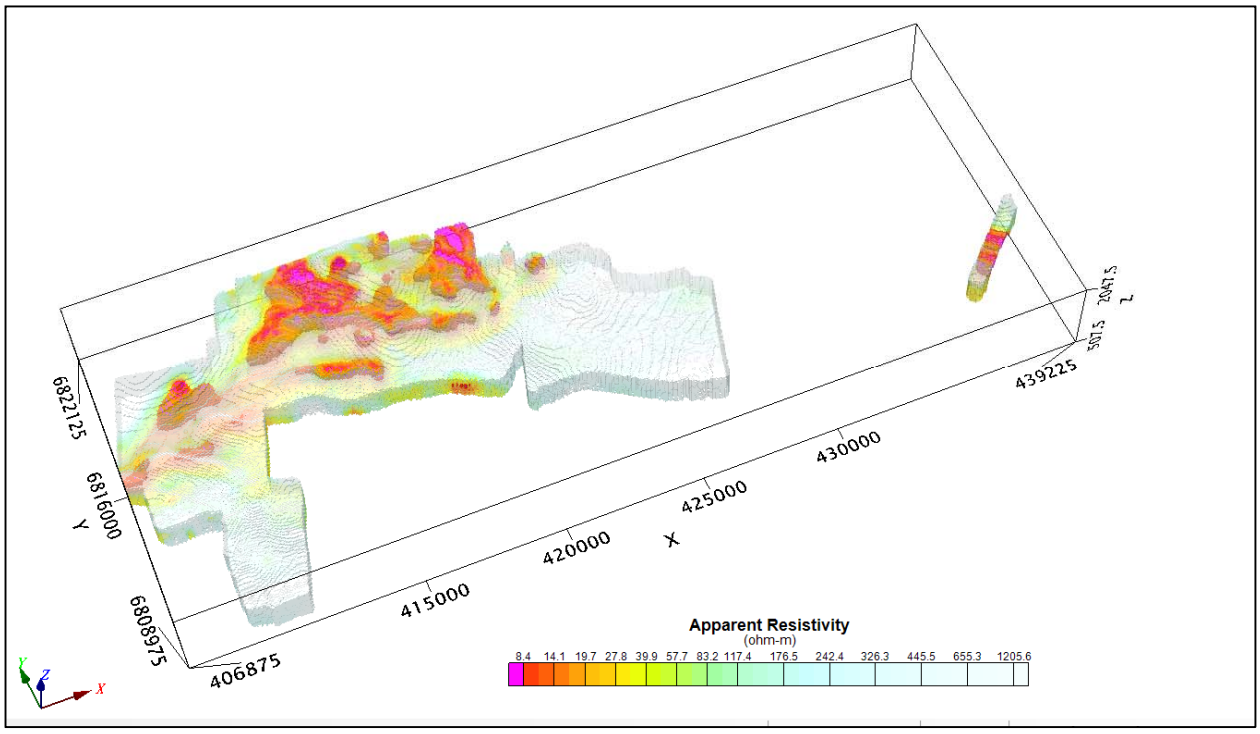
Wolf - dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours



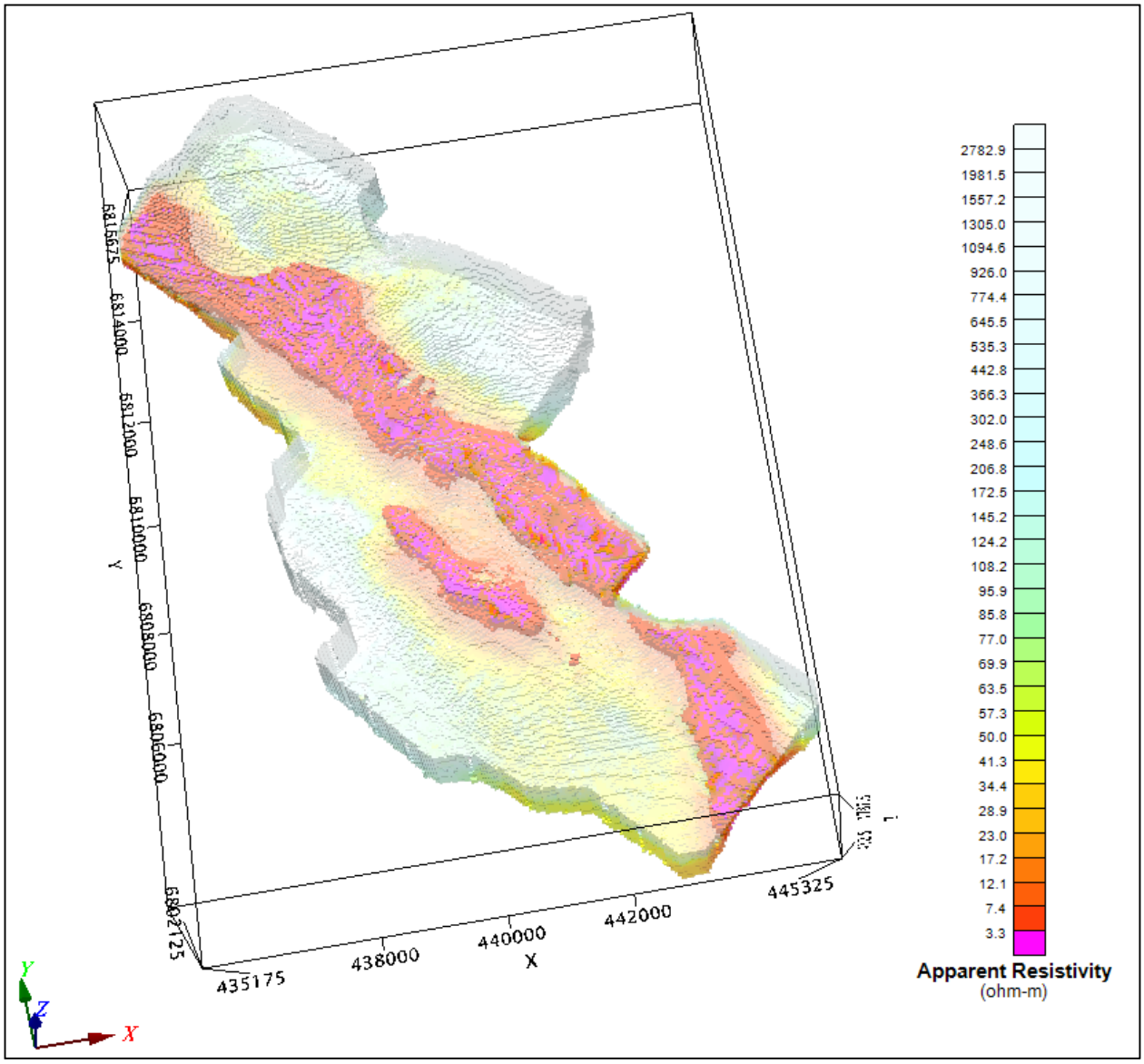
Wolf - Magnetic Tilt - Angle Derivative

RESISTIVITY DEPTH IMAGE (RDI) MAPS

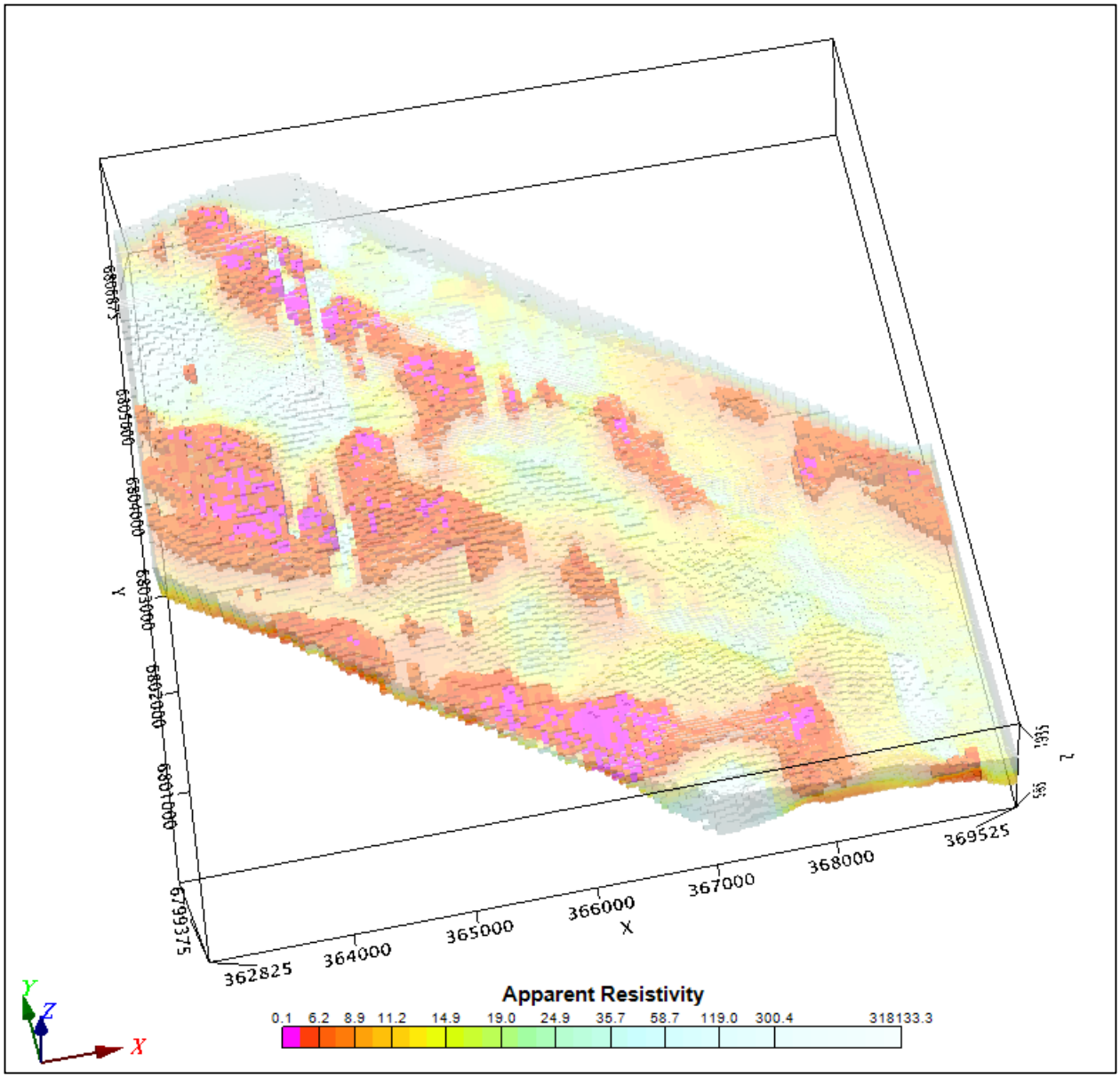
3D Resistivity-Depth Image (RDI)



Kudz Ze Kayah


2782.9
1981.5
1557.2
1305.0
1094.6
926.0
774.4
645.5
535.3
442.8
366.3
302.0
248.6
206.8
172.5
145.2
124.2
108.2
95.9
85.8
77.0
69.9
63.5
57.3
50.0
41.3
34.4
28.9
23.0
17.2
12.1
7.4
3.3
Apparent Resistivity
(ohm-m)
6816675
6814000
6812000
6810000
6808000
6806000
6802725
Y
435175
438000
440000
X
442000
445325
Y
Z
X

Pelly


Apparent Resistivity
0.1 6.2 8.9 11.2 14.9 19.0 24.9 35.7 58.7 119.0 300.4 318133.3
362825
364000
365000
366000
367000
368000
369525
X
6799375
6801000
6802000
6803000
6804000
6805000
6806675
Y
Z
X
Wolf

APPENDIX D

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM
INTRODUCTION

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a transmitter loop that produces a primary field. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

A set of models has been produced for the Geotech VTEM® system dB/dT Z and X components (see models D1 to D15). The Maxwell ™ modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º.

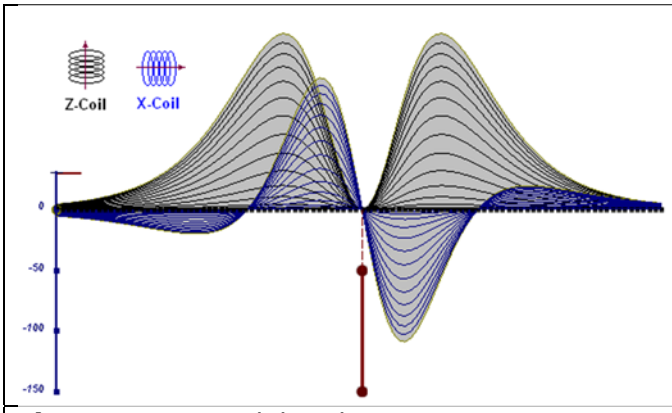


Figure D-1: vertical thin plate

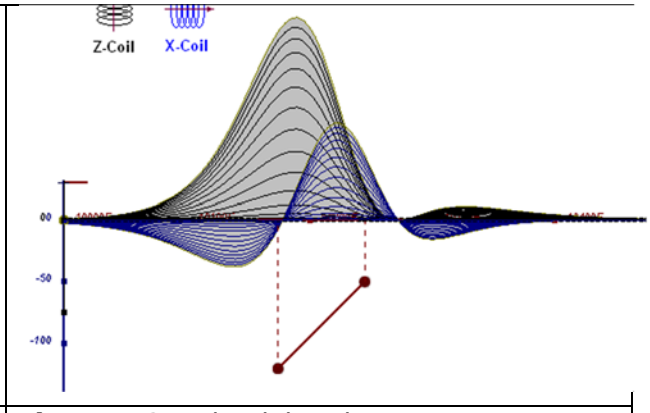


Figure D-2: inclined thin plate

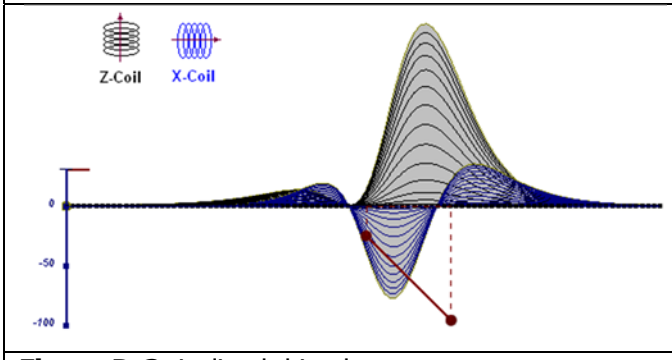


Figure D-3: inclined thin plate

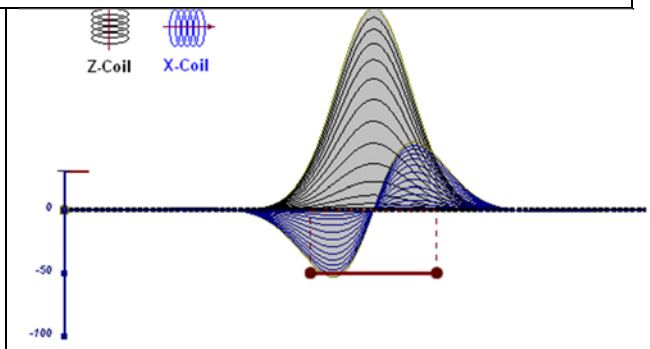


Figure D-4: horizontal thin plate

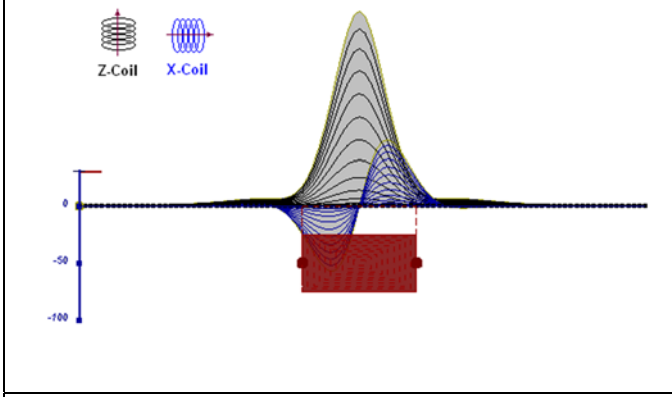


Figure D-5: horizontal thick plate (linear scale of the response)

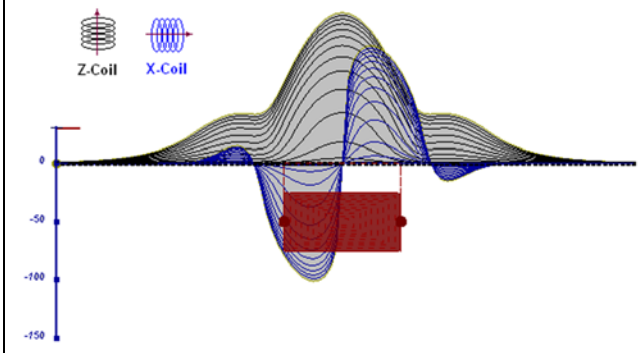


Figure D-6: horizontal thick plate (log scale of the response)

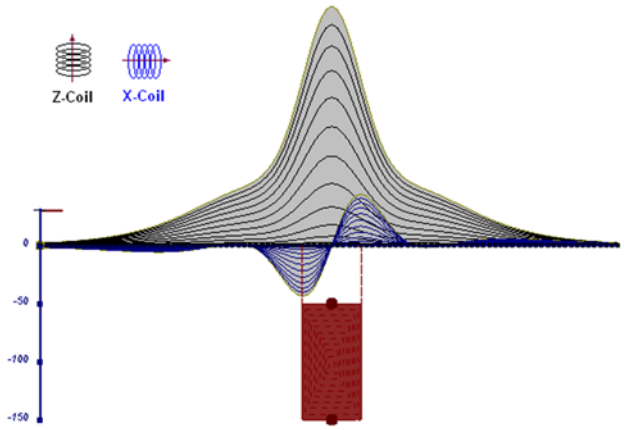


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

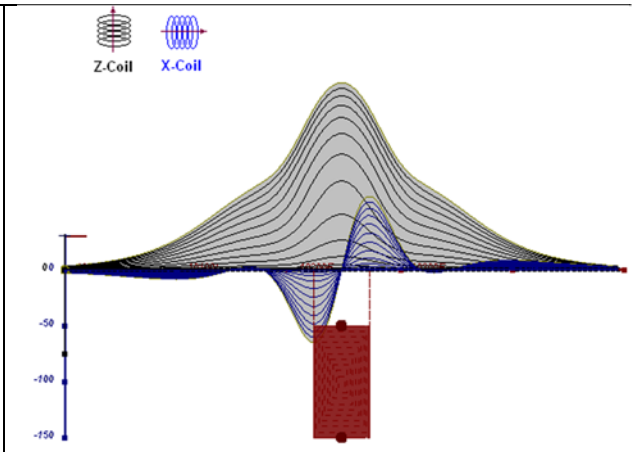


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

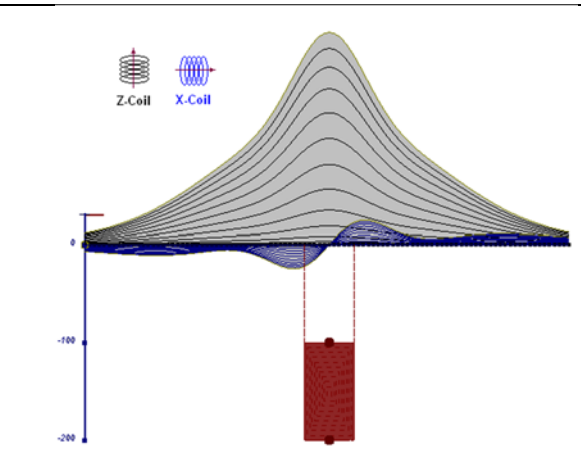


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

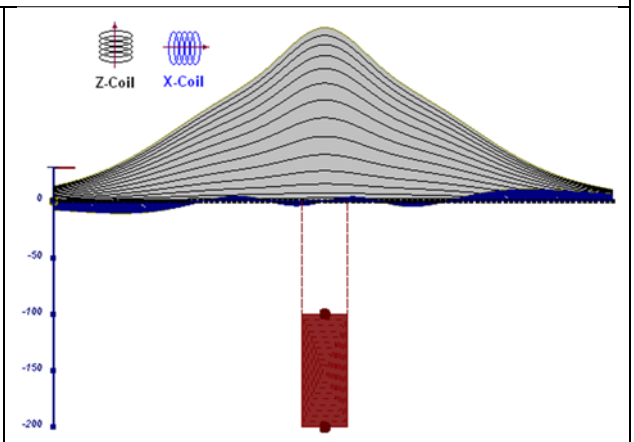


Figure D-10: vertical thick plate (linear scale of the response). Depth / horizontal thickness=2.5

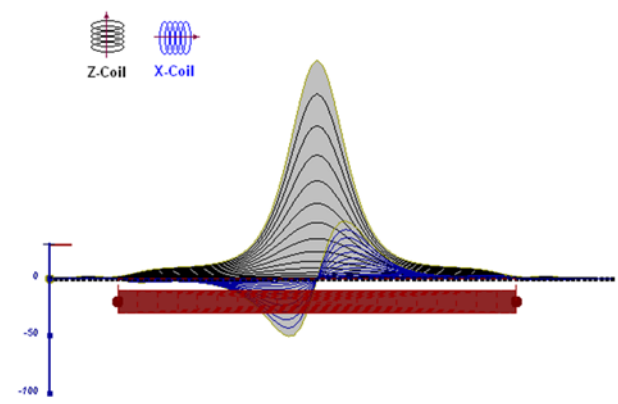


Figure D-11: horizontal thick plate (linear scale of the response)

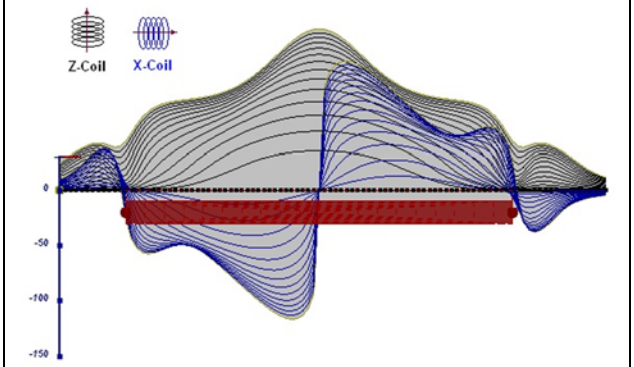


Figure D-12: horizontal thick plate (log scale of the response)

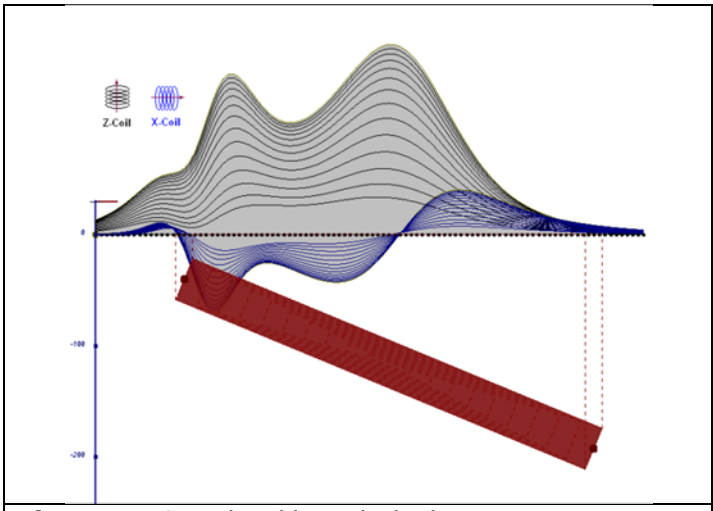


Figure D-13: inclined long thick plate

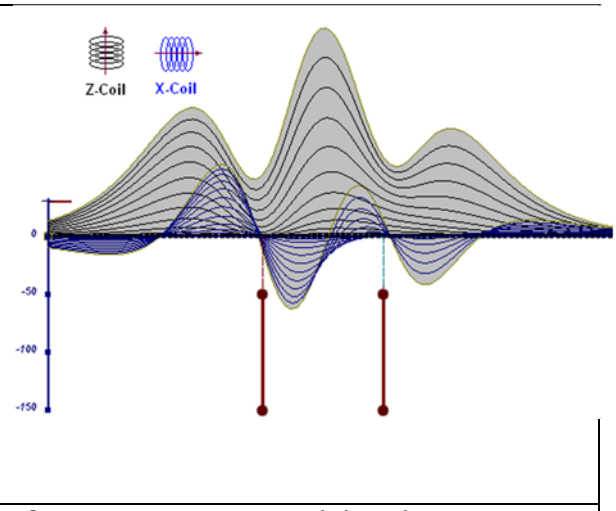


Figure D-14: two vertical thin plates

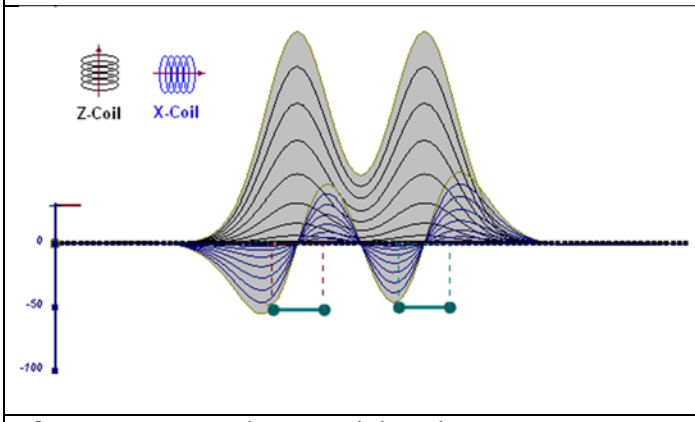


Figure D-15: two horizontal thin plates

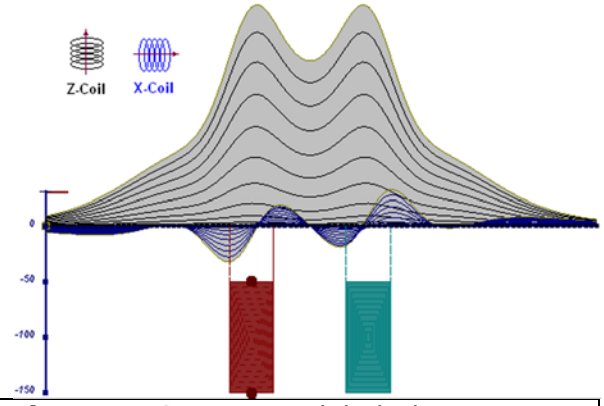


Figure D-16: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:

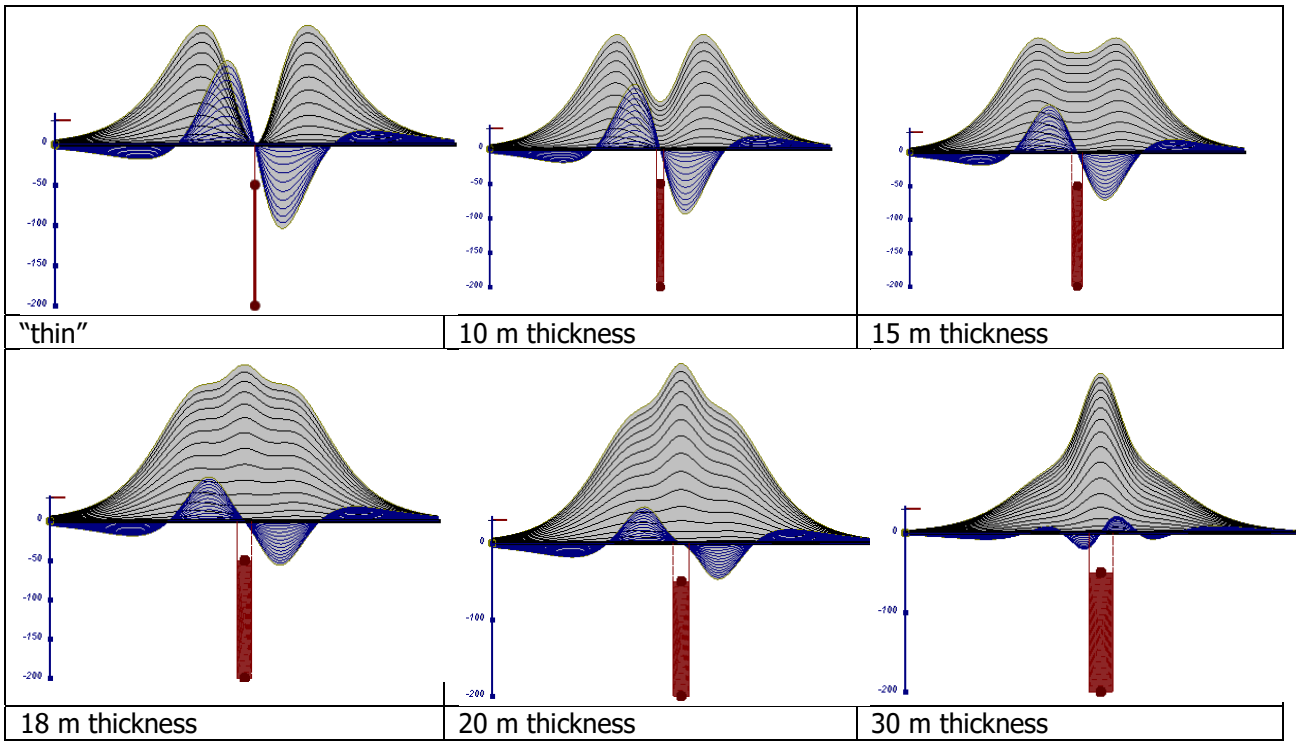


Figure D-17: Conductive vertical plate, depth 50 m, strike length 200 m, depth extends 150 m.

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX E

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductances beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

THEORY

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage ($\mathbf{e_0}$) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \, \alpha \, (1 / \tau) \, e^{-(t/\tau)}$$

Where,
τ = L/R is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and smallτ, have high initial amplitude but decay rapidly with time[1] (Fig. E1).

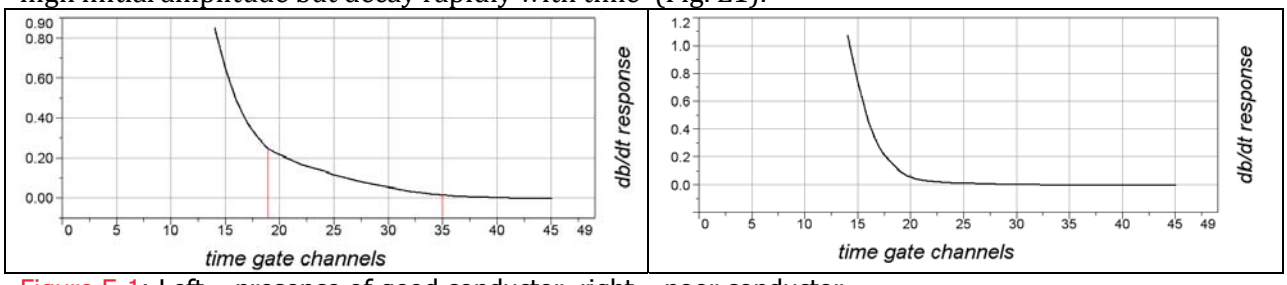


Figure E-1: Left – presence of good conductor, right – poor conductor.

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the "conductance quality" of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

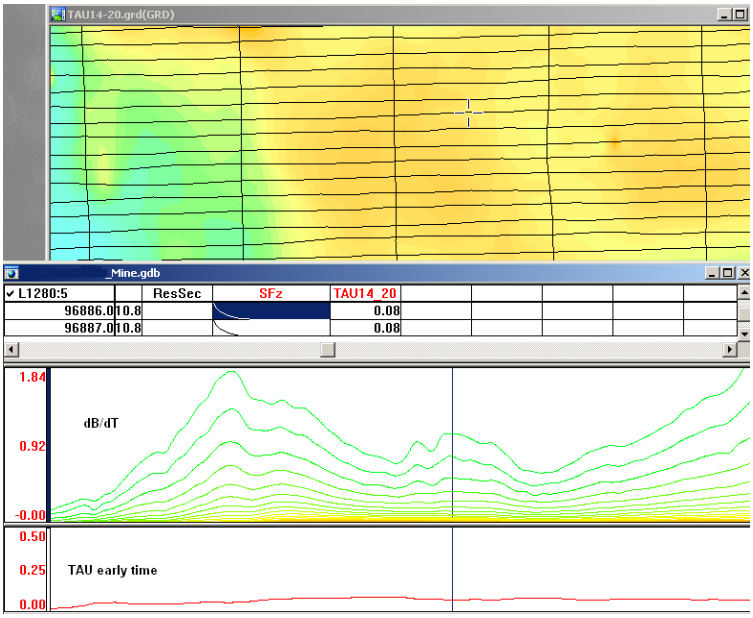


Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

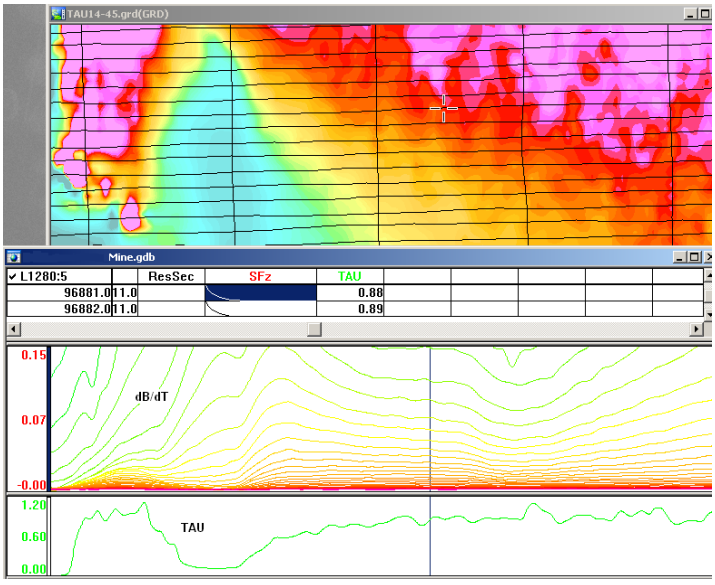


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

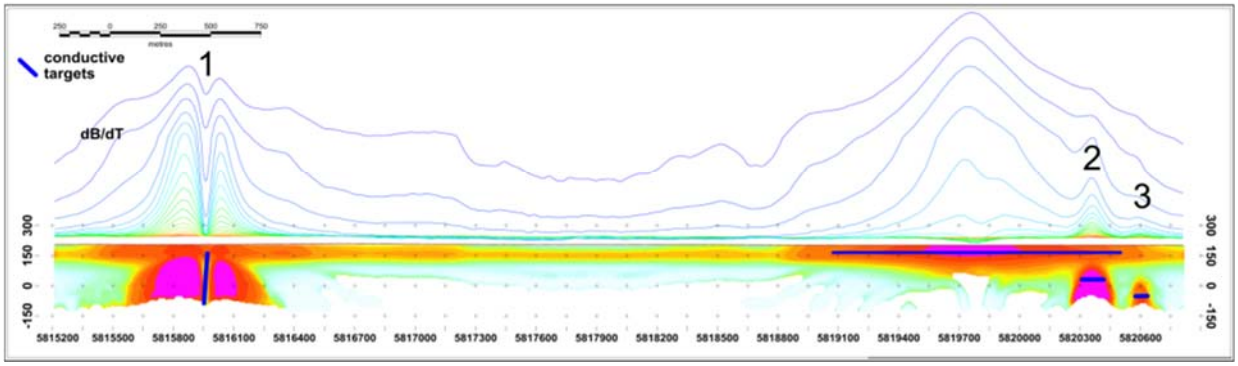


Figure E-4: dB/dt profile and RDI with different depths of targets.

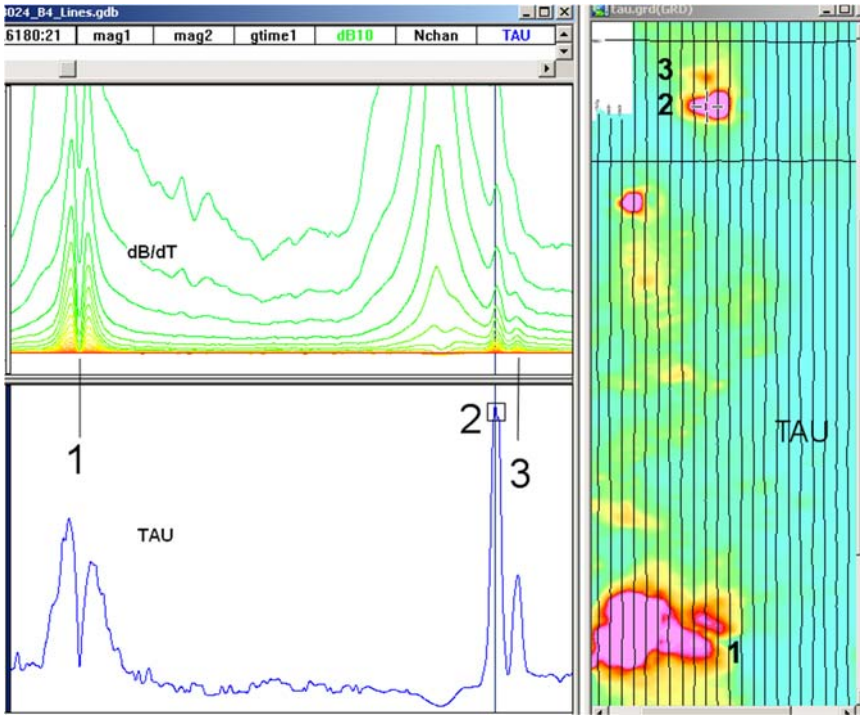


Figure E-5: Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the "sliding Tau" in-house program developed at Geotech2. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the "label" property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of "dummy" by default.

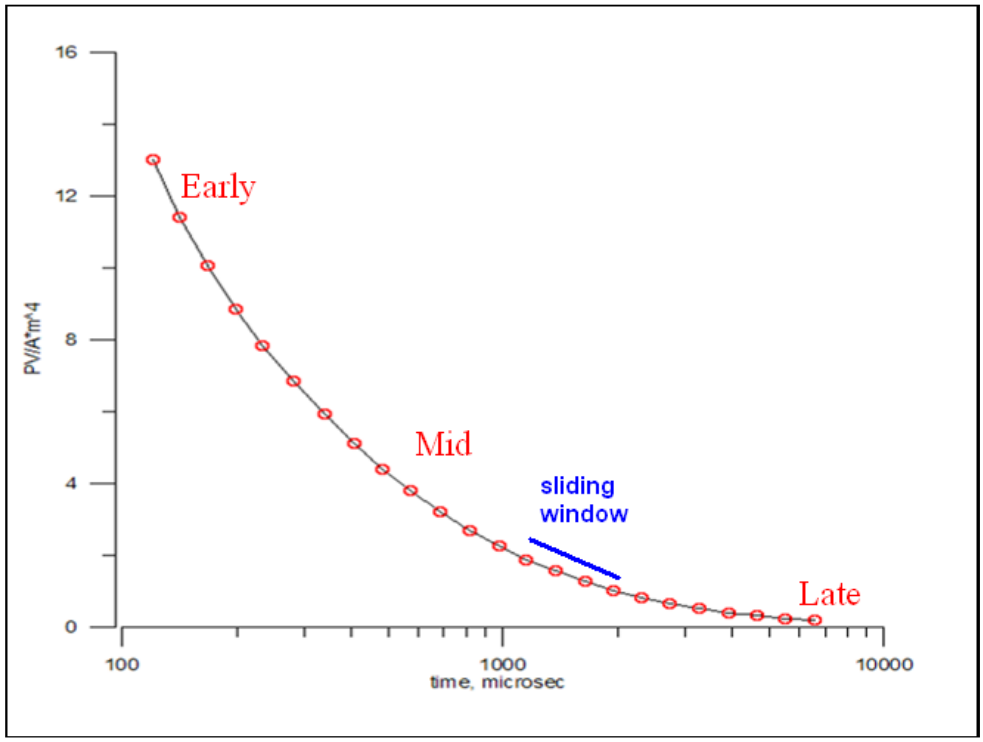


Figure E-6: Typical dB/dt decays of Vtem data

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Geotech Ltd.

September 2010

[2] by A.Prikhodko

APPENDIX F

TEM RESISTIVITY DEPTH IMAGING (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data.
The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system).

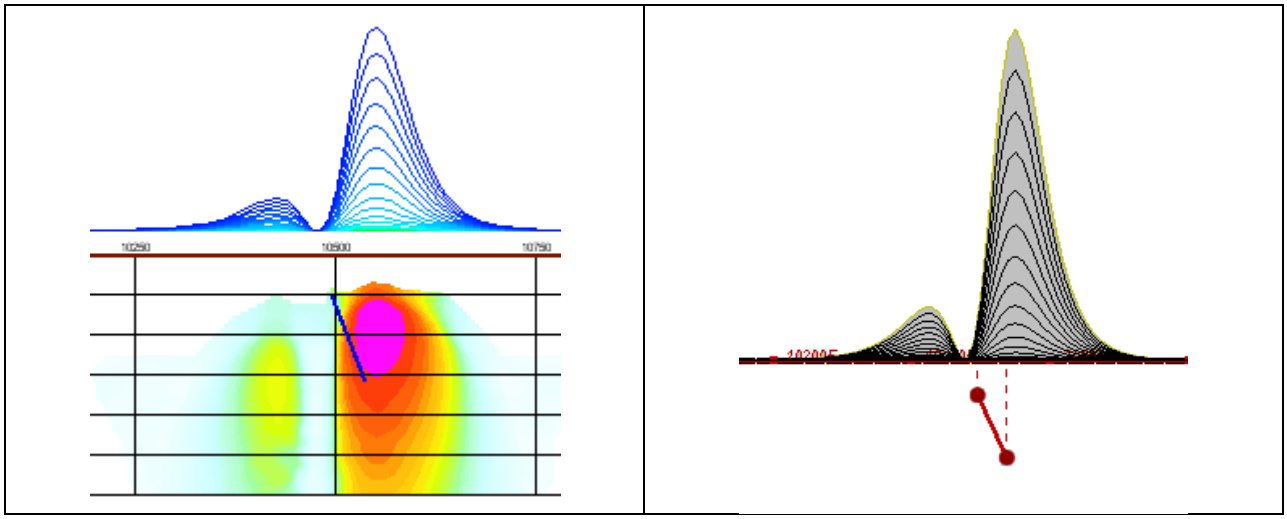


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

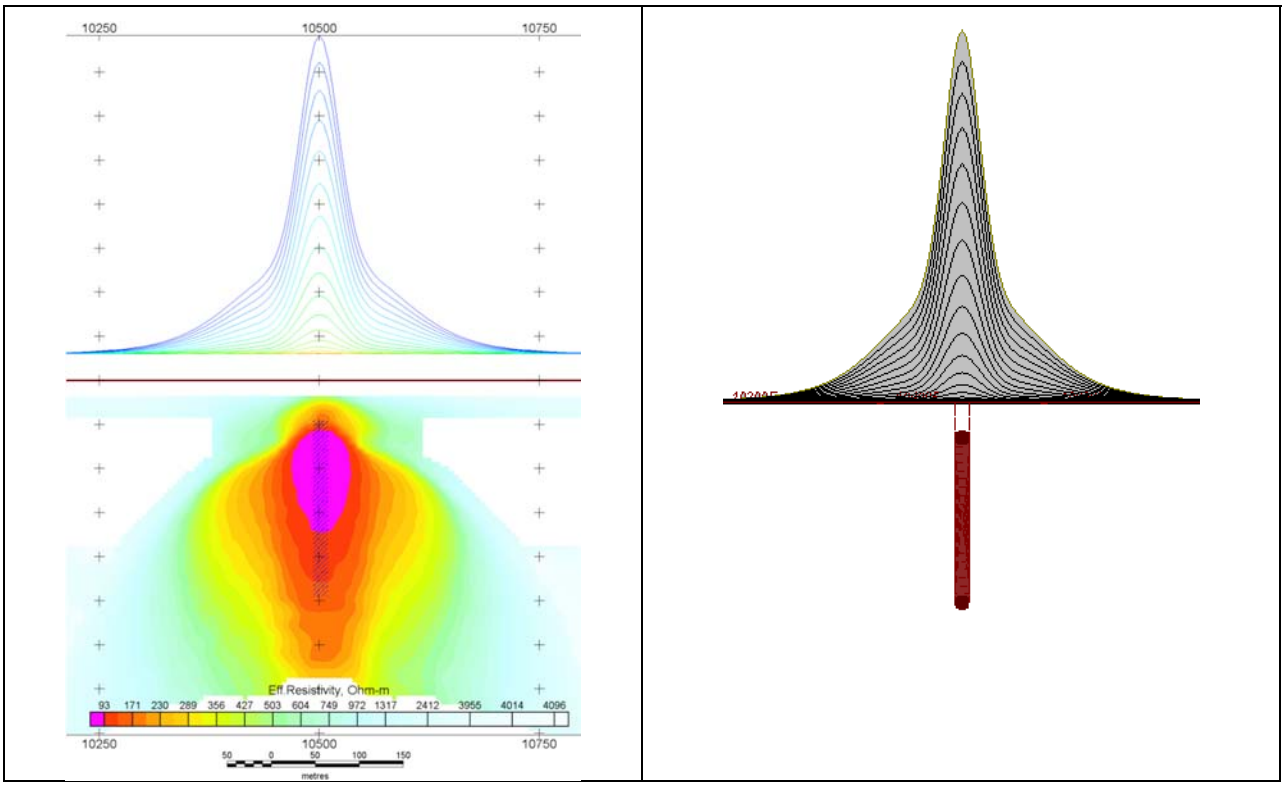


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

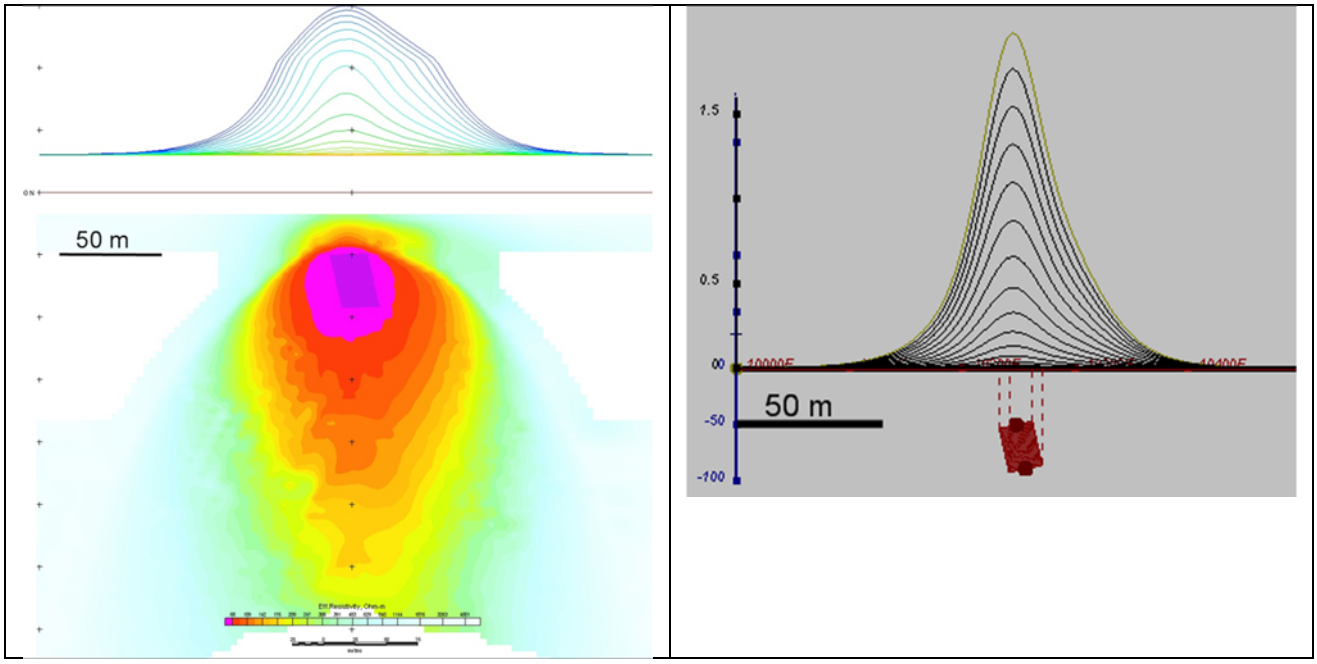


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

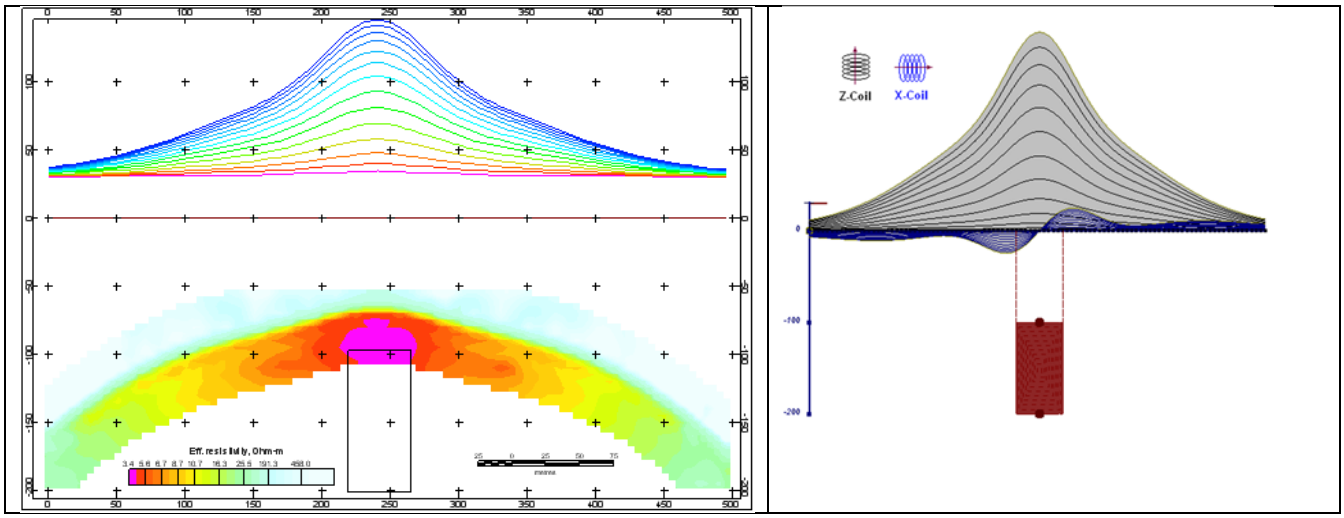


Figure F-4: Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

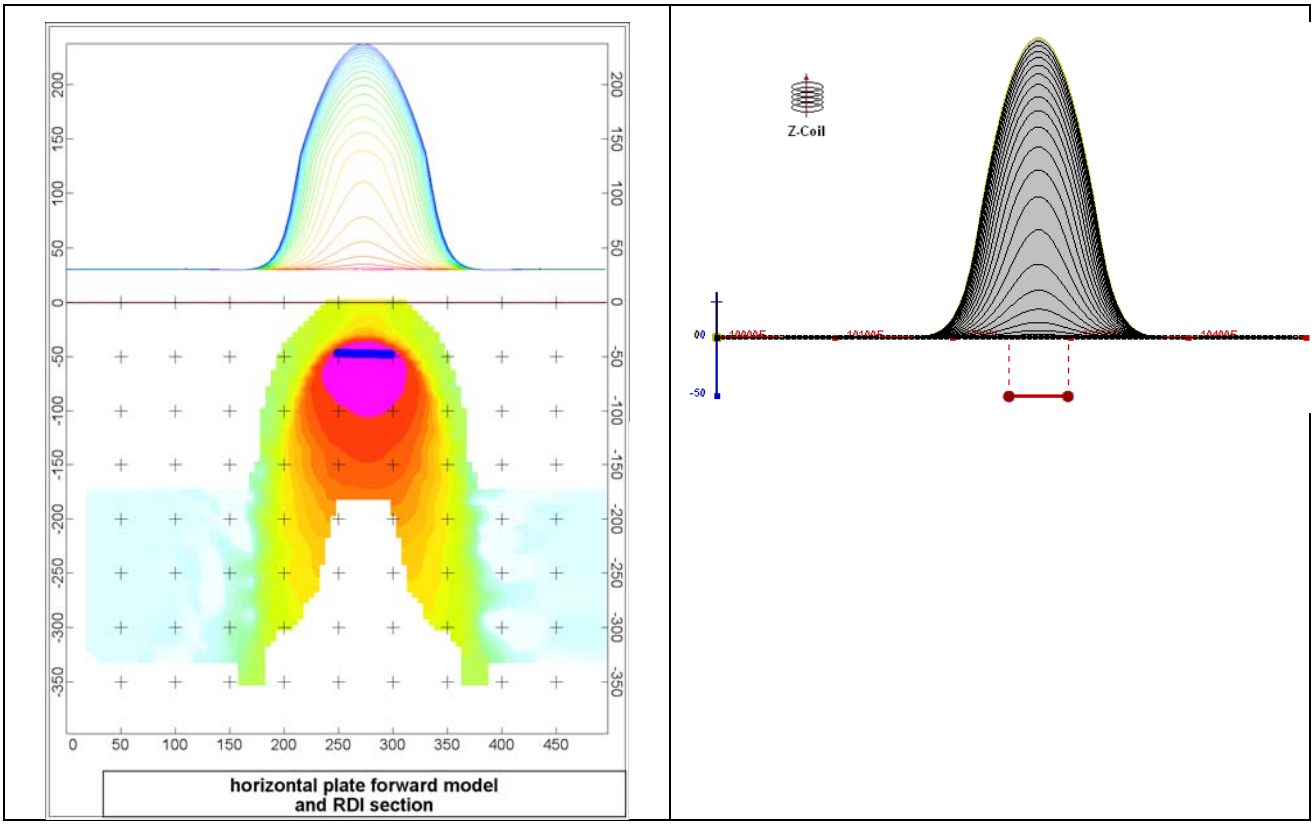


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

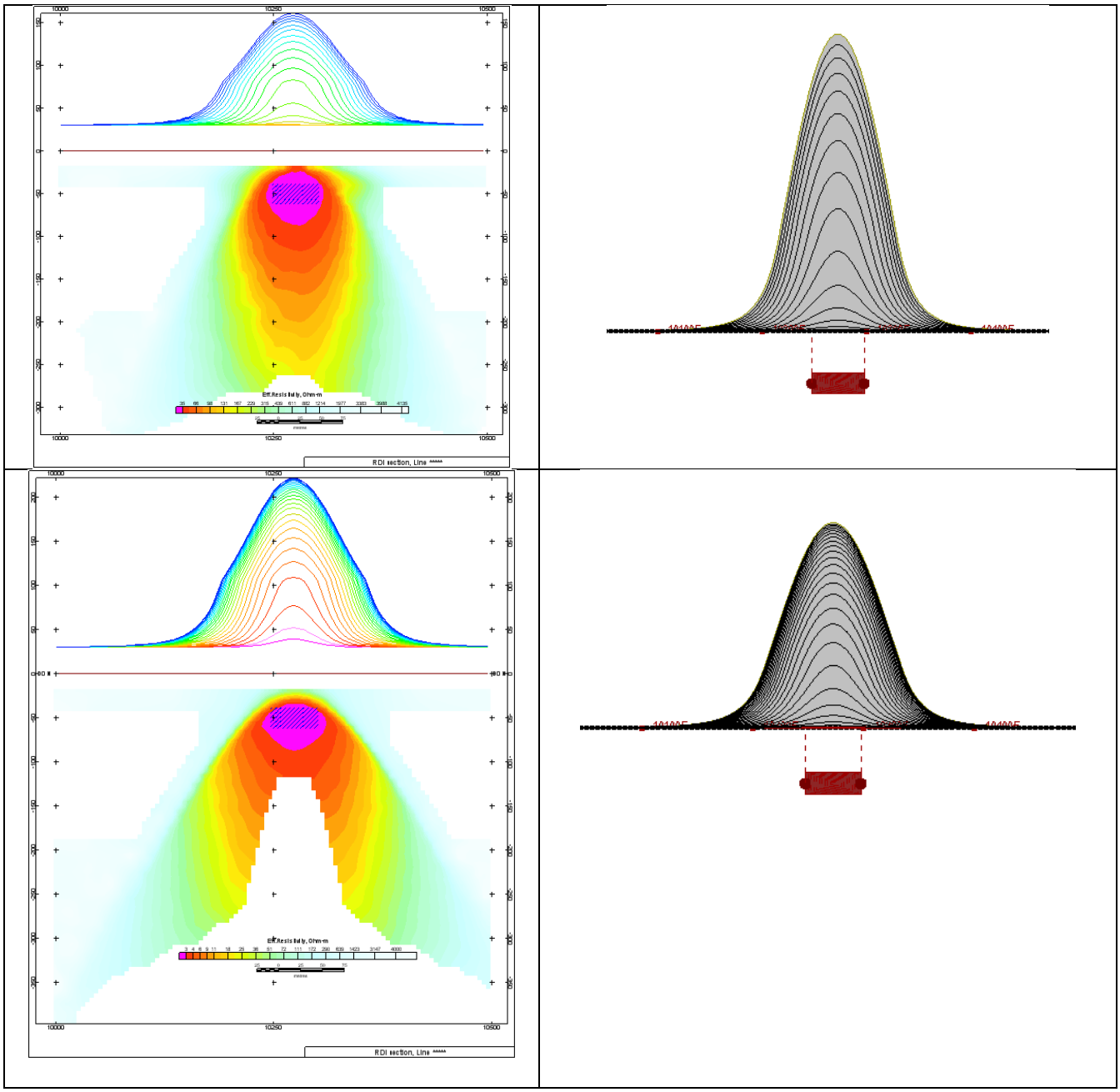


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below).

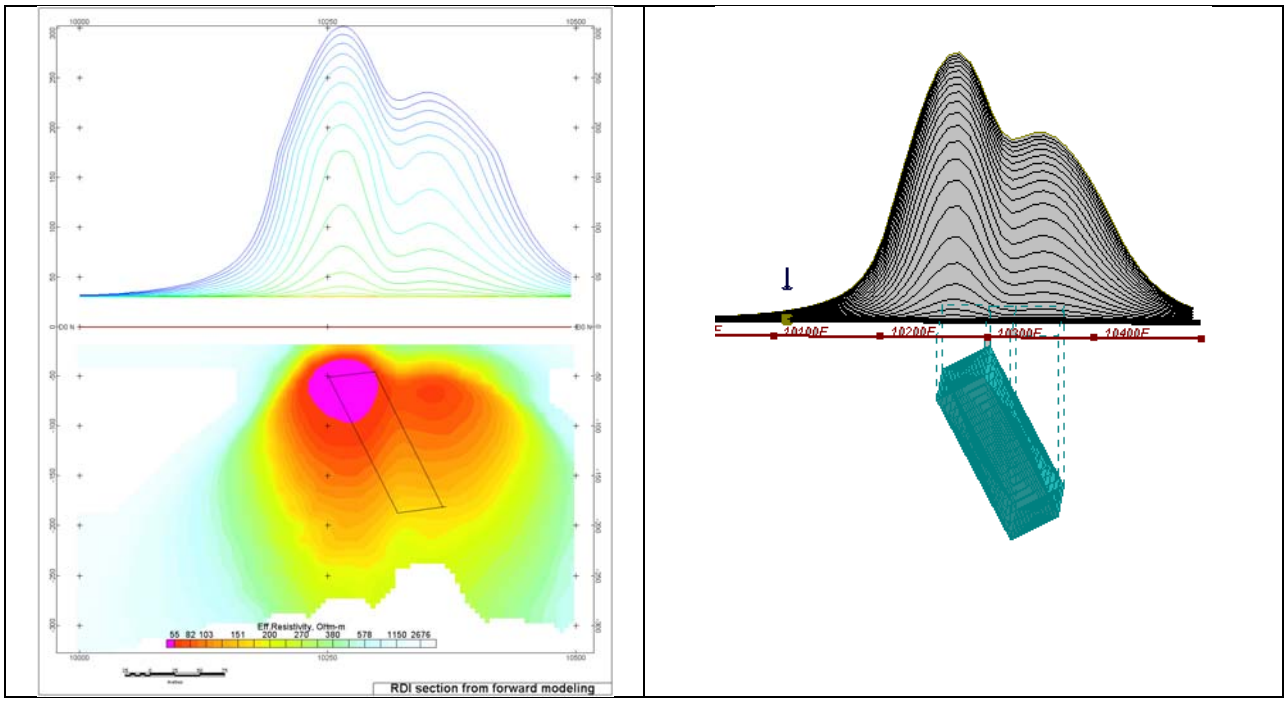


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

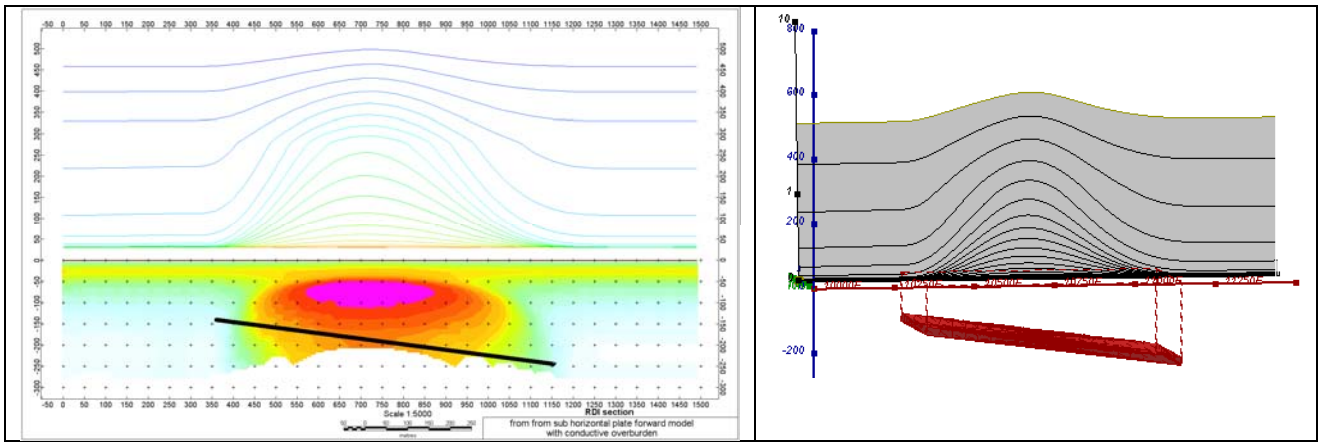


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

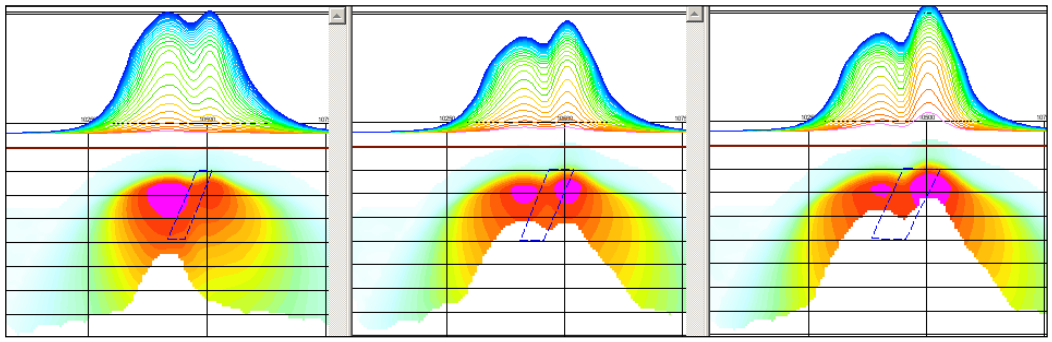


Figure F-9: Maxwell plate models and RDIs from the calculated response for "thick" dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

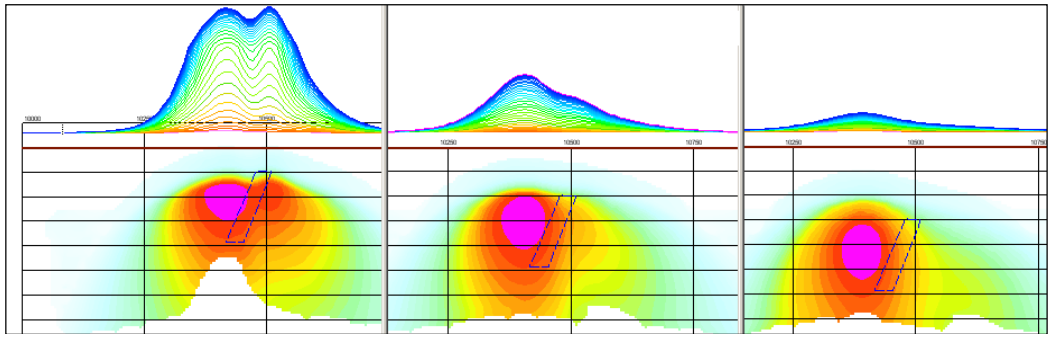
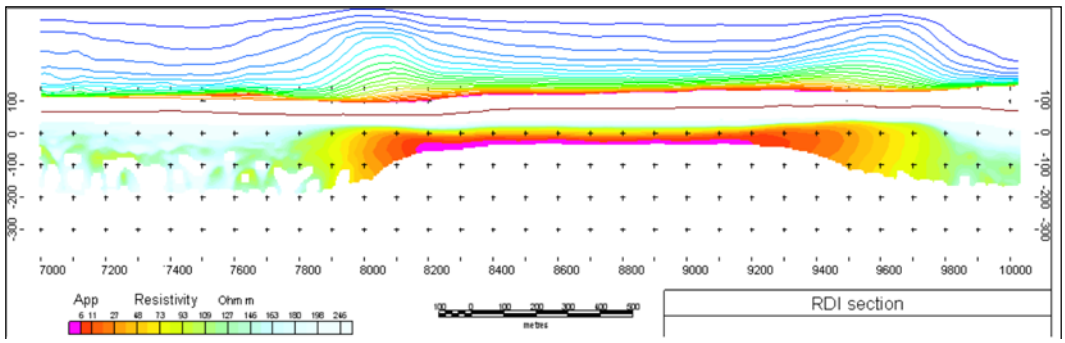


Figure F-10: Maxwell plate models and RDIs from the calculated response for "thick" (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.



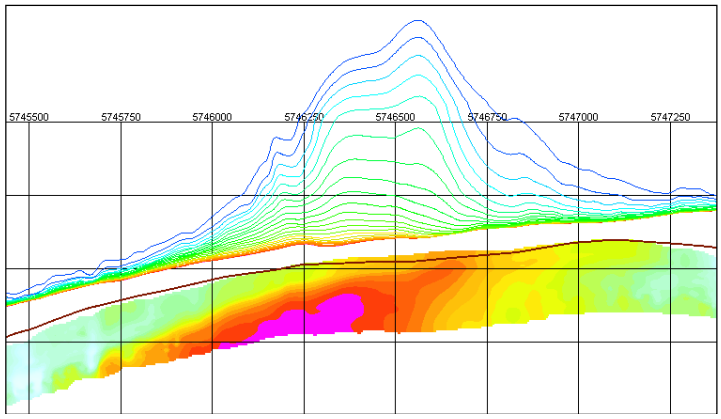
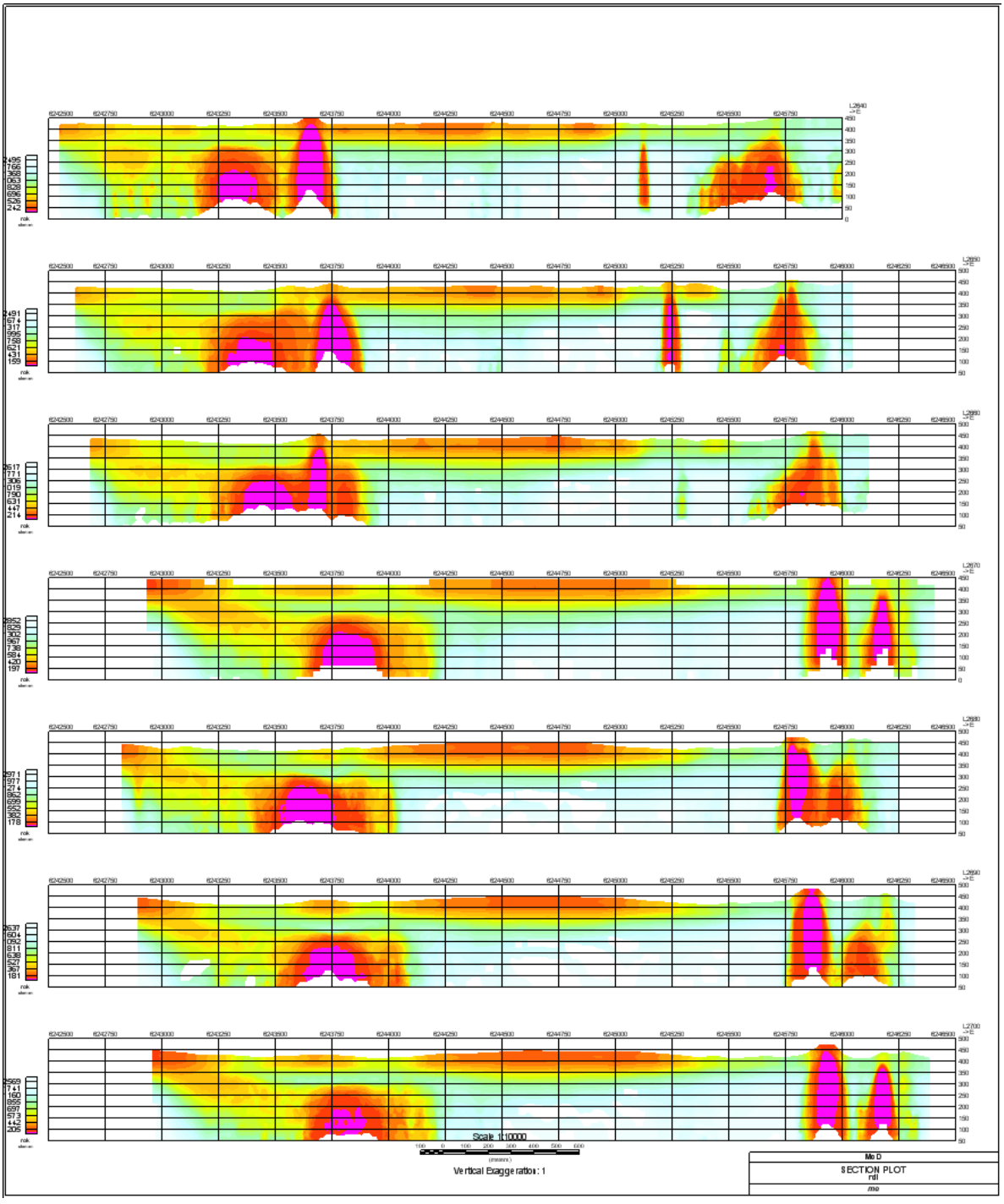


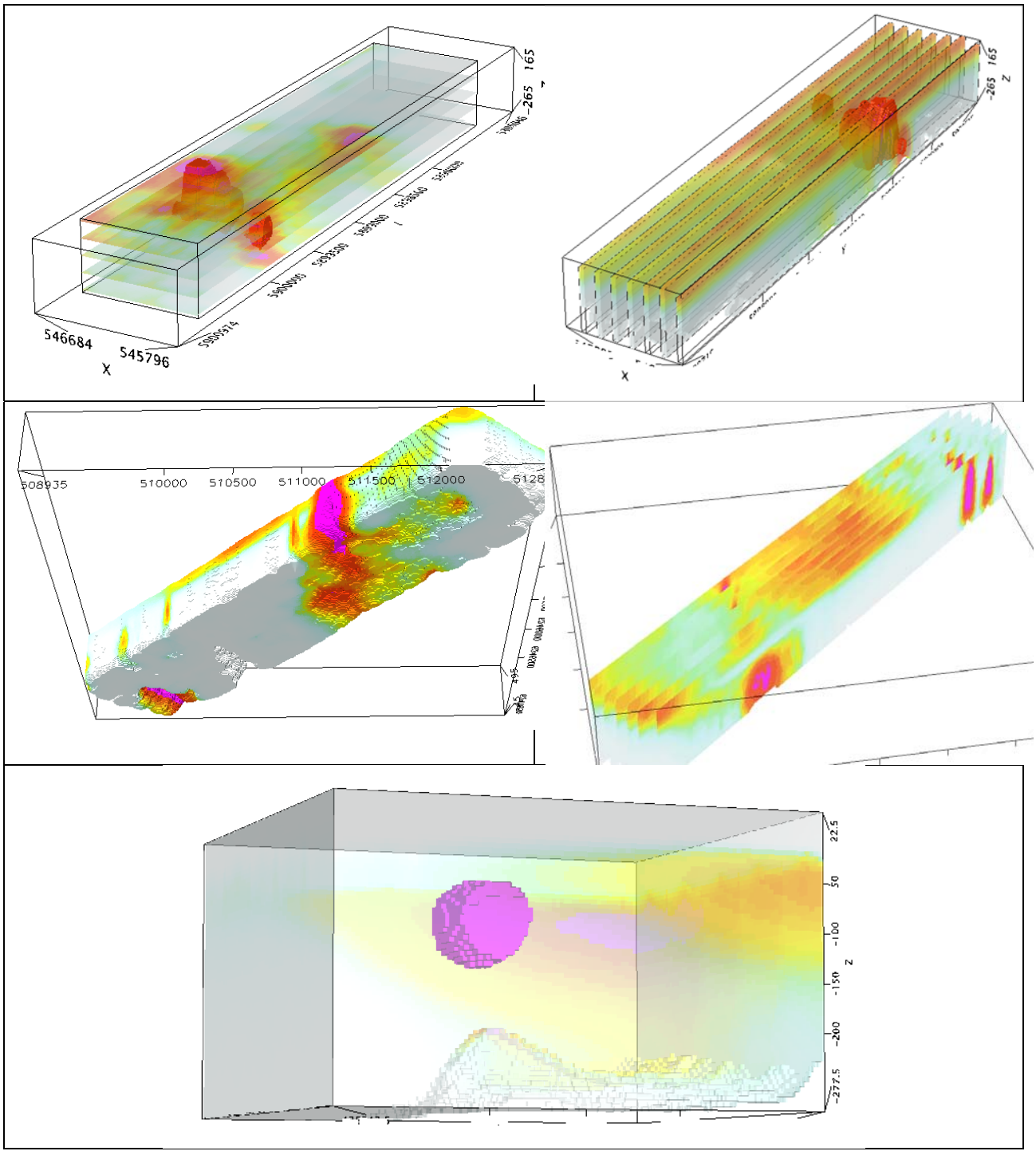
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers

FORMS OF RDI PRESENTATION

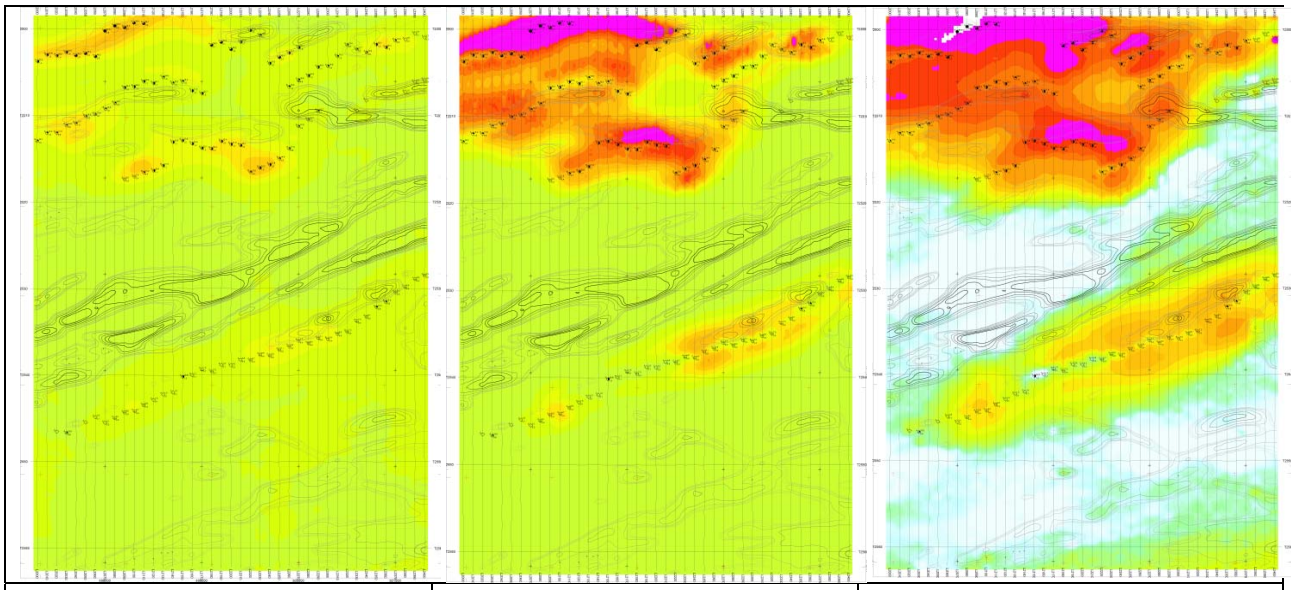
PRESENTATION OF SERIES OF LINES



3D PRESENTATION OF RDIS

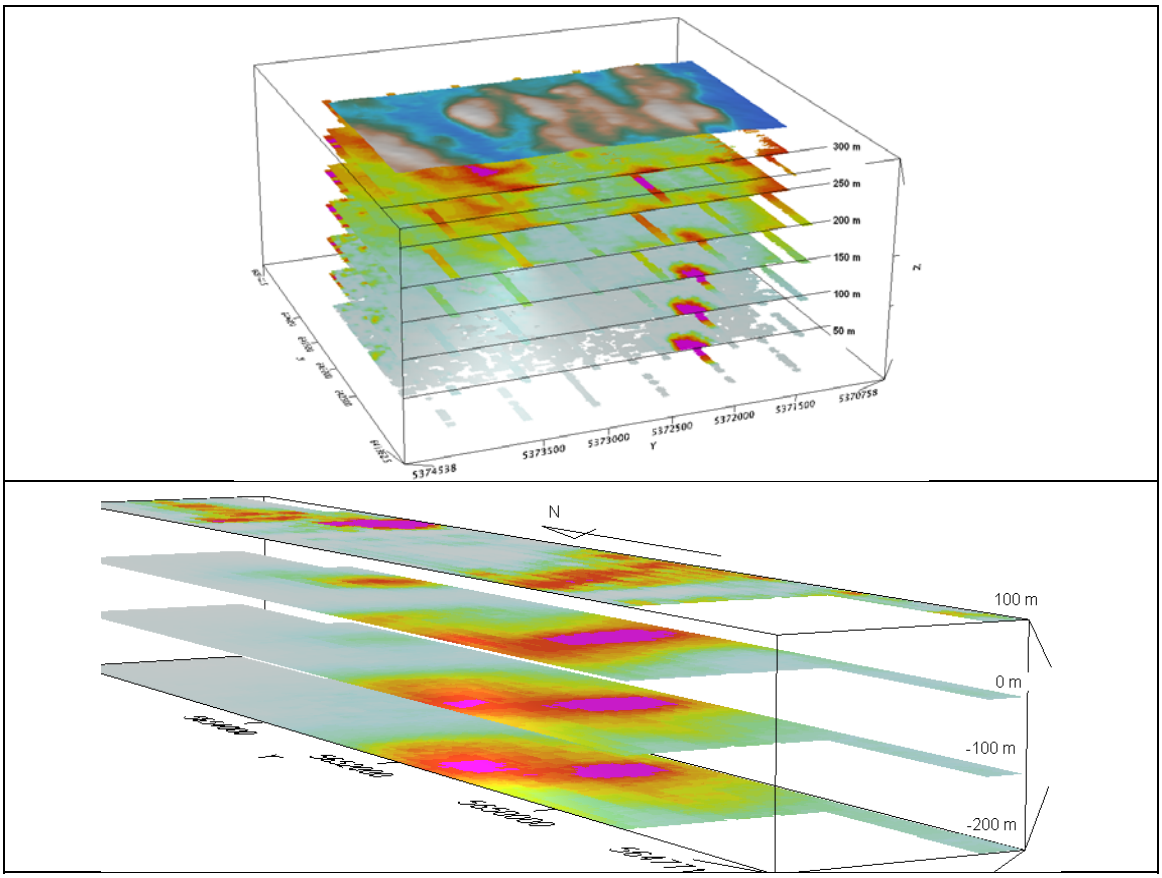


APPARENT RESISTIVITY DEPTH SLICES PLANS:



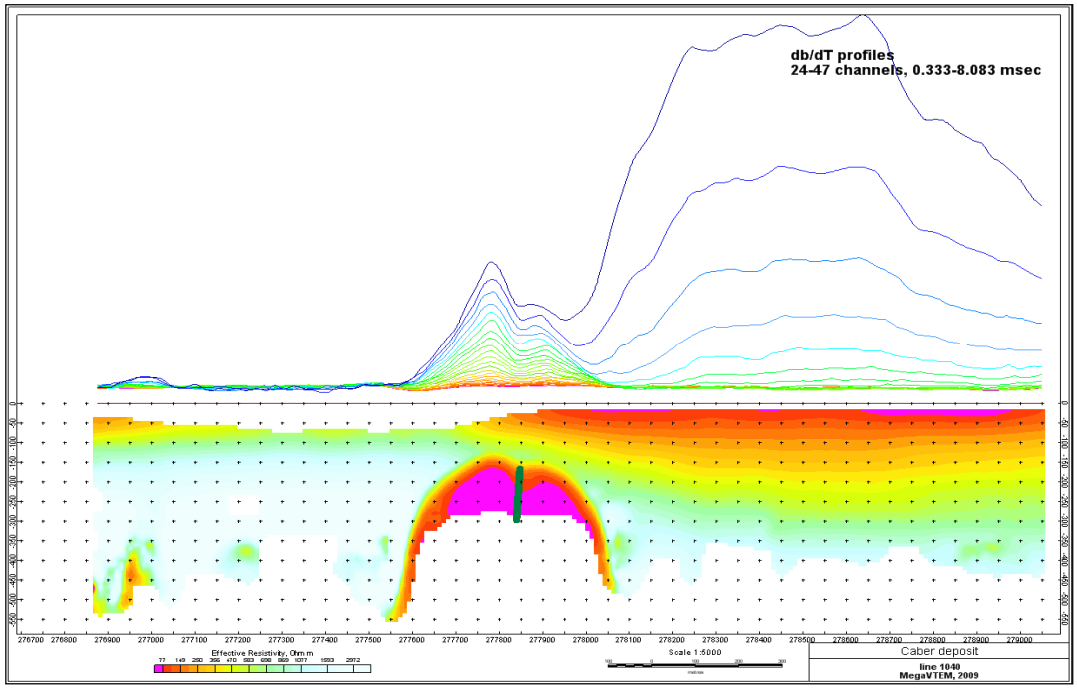
0 m (surface)	-100 m	-200 m

3D VIEWS OF APPARENT RESISTIVITY DEPTH SLICES:

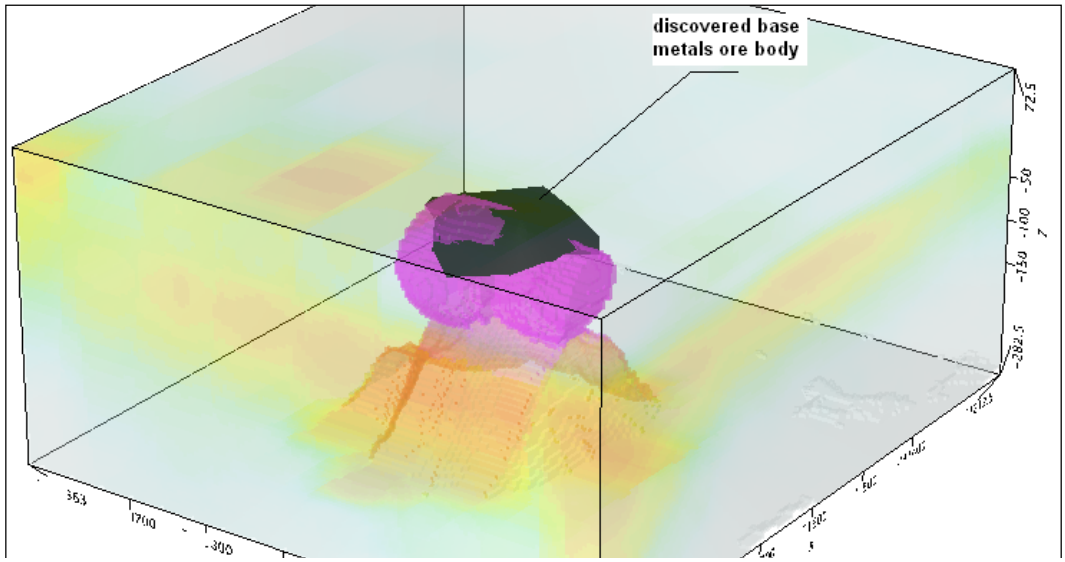


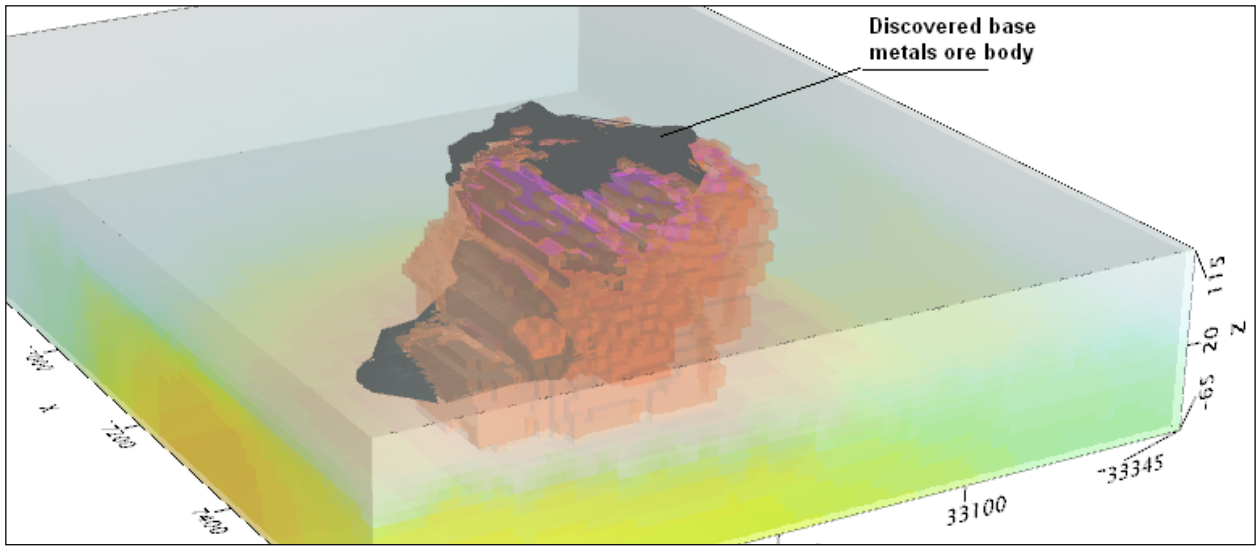
REAL BASE METAL TARGETS IN COMPARISON WITH RDIS:

RDI section of the line over Caber deposit ("thin" subvertical plate target and conductive overburden.



3D RDI VOXELS WITH BASE METALS ORE BODIES (MIDDLE EAST):





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Geotech Ltd.
April 2011

APPENDIX G
RESISTIVITY DEPTH IMAGES (RDI)

Please see attached DVD for the PDF.

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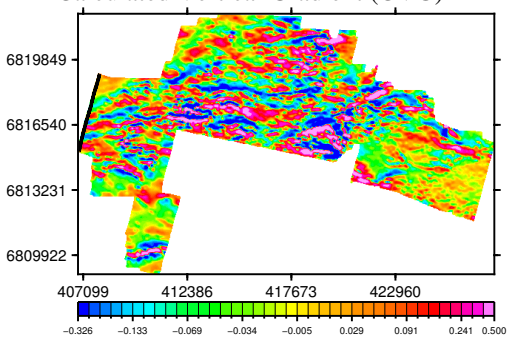
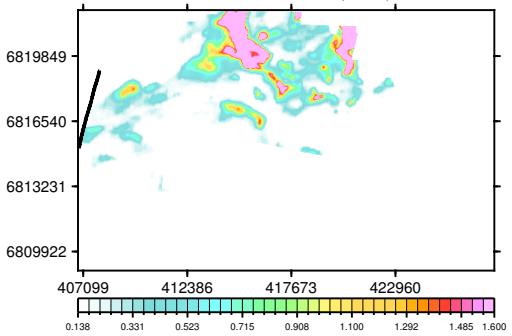
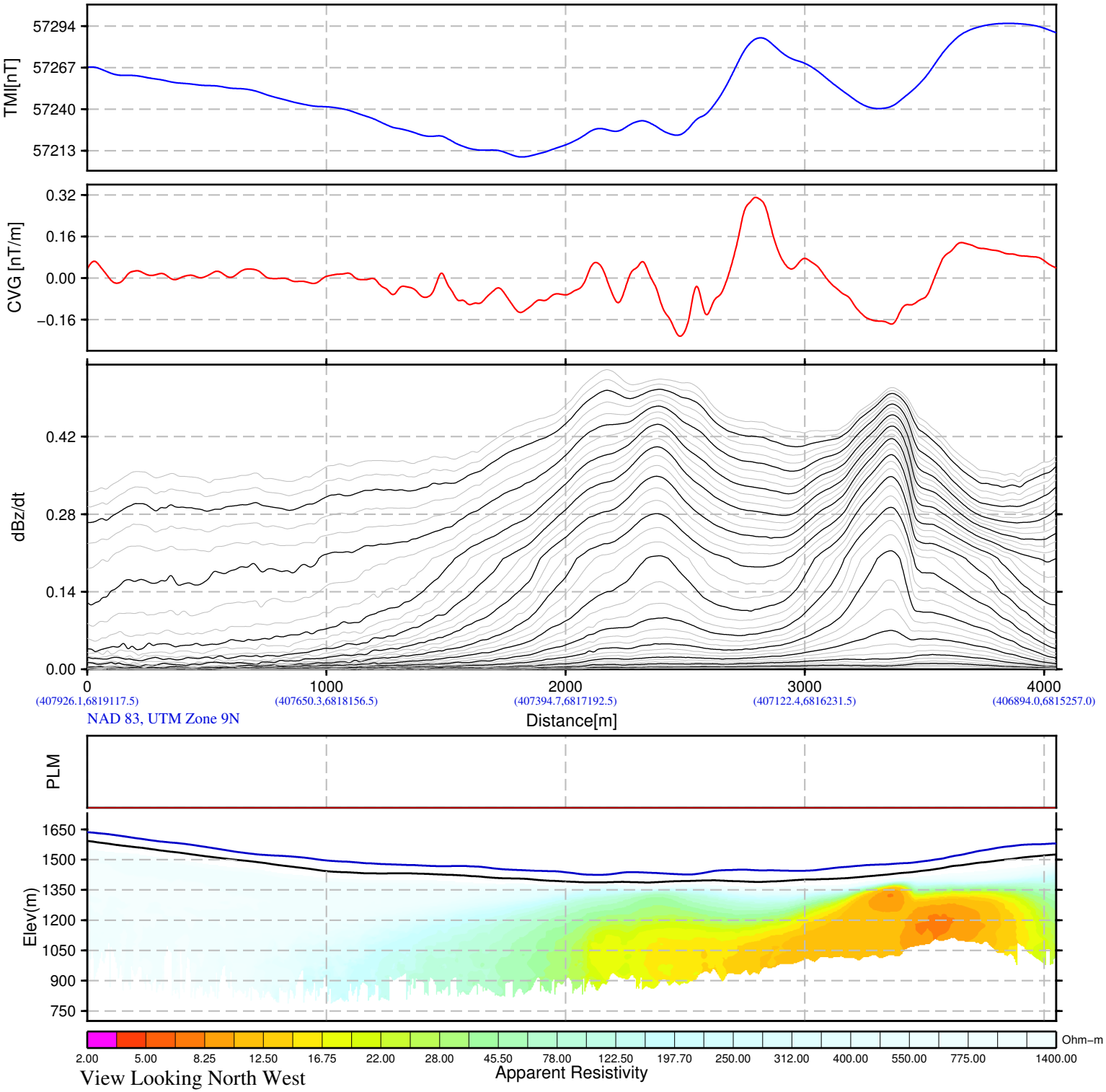
Resistivity Depth Image (RDI) for Line 3000

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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Kudz Ze Kayah Block
Yukon, Canada

VTEM System:VTEM17−Plus
Job Number:GL160037
Resistivity Depth Image (RDI)
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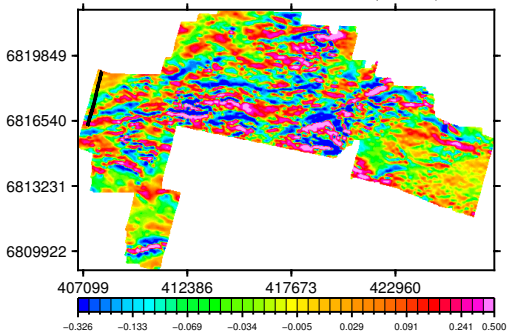
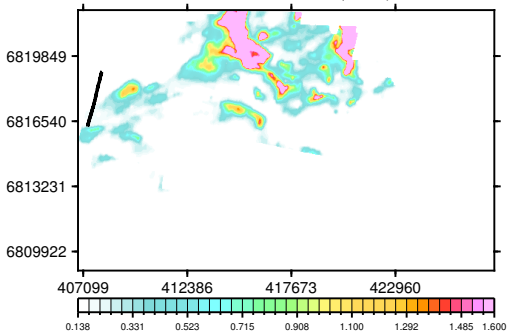
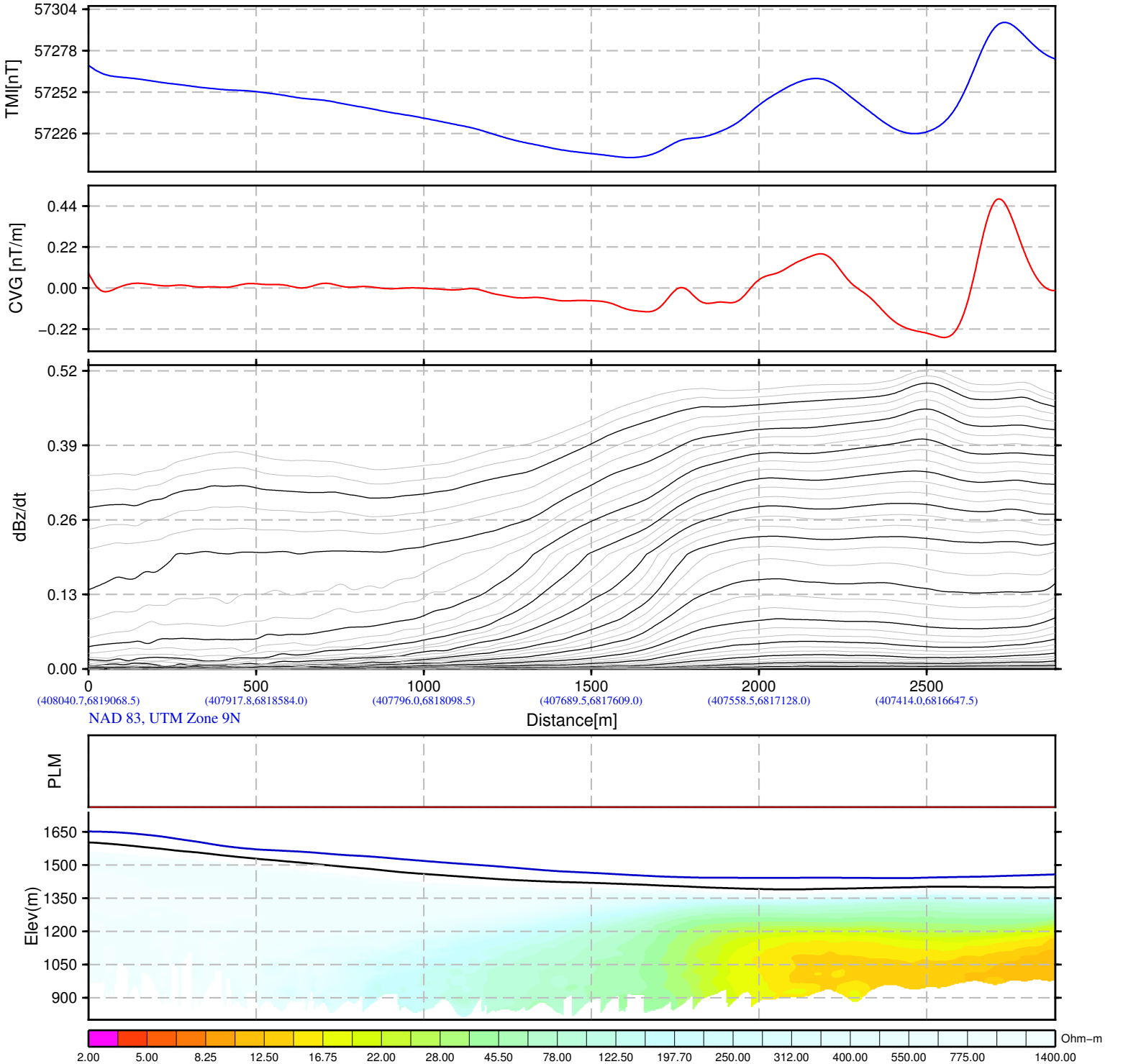
Resistivity Depth Image (RDI) for Line 3010

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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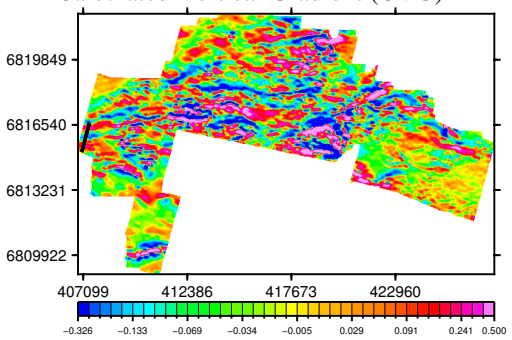
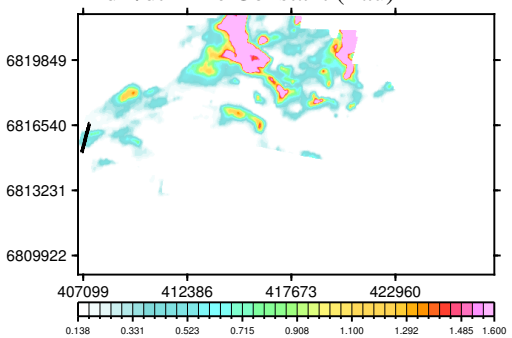
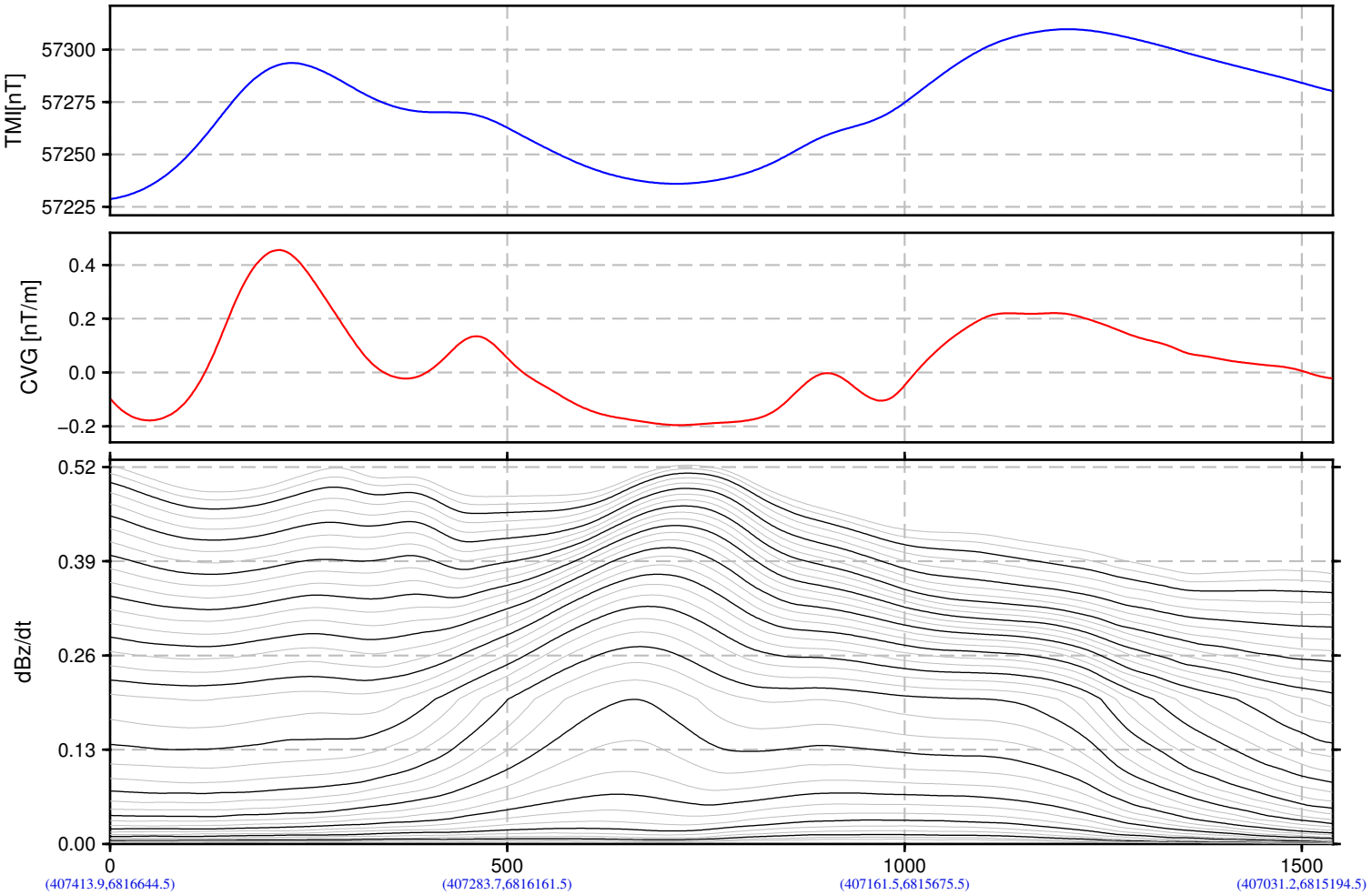
Resistivity Depth Image (RDI) for Line 3012

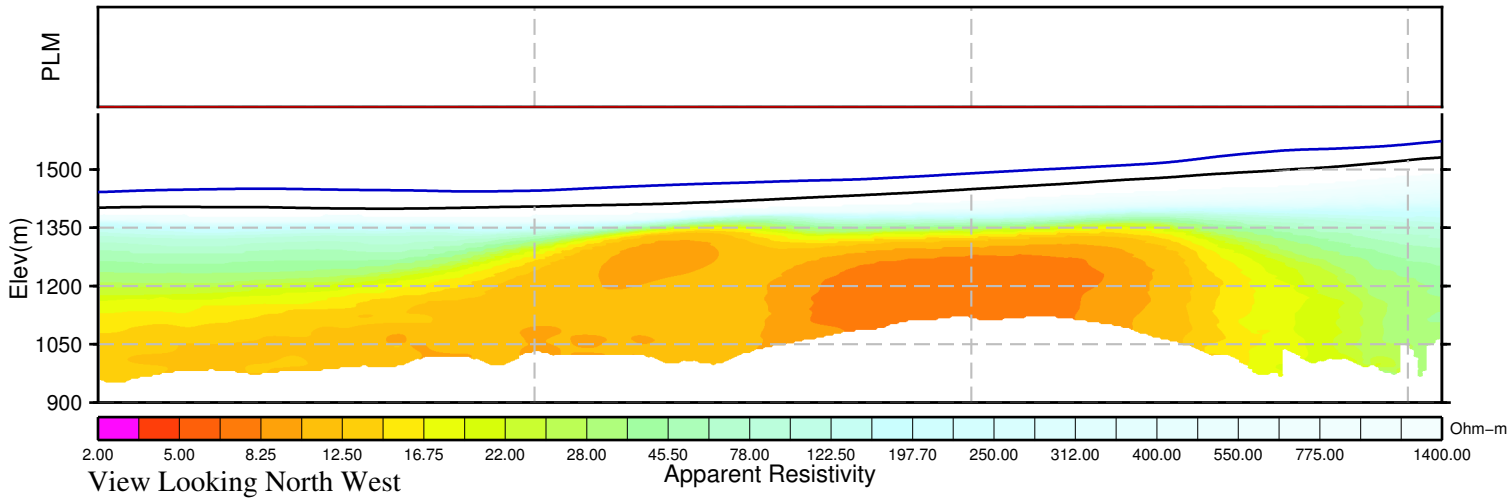
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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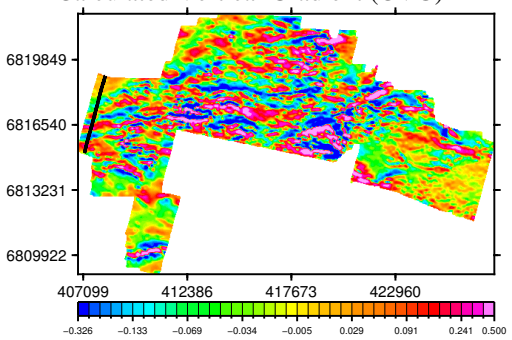
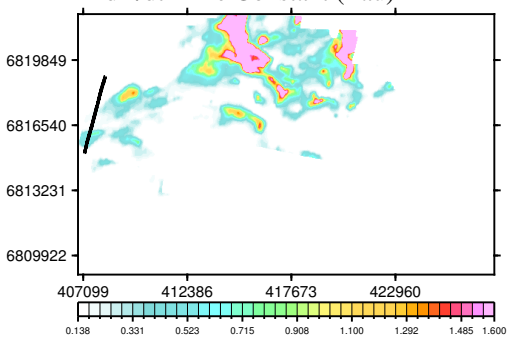
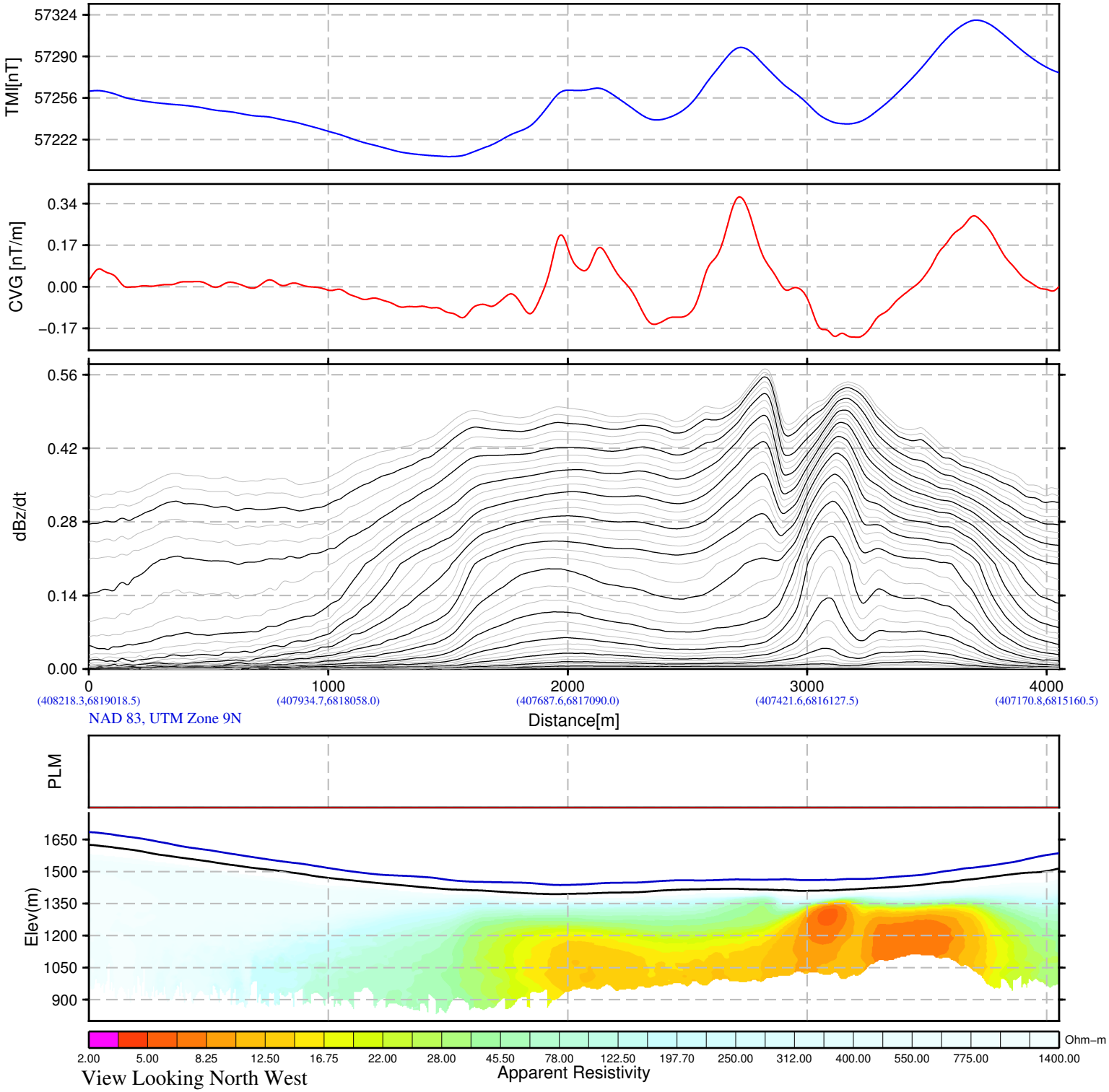
Resistivity Depth Image (RDI) for Line 3020

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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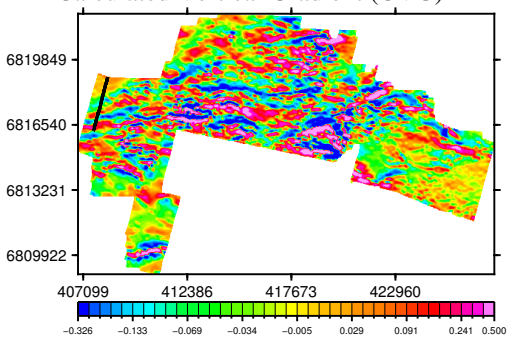
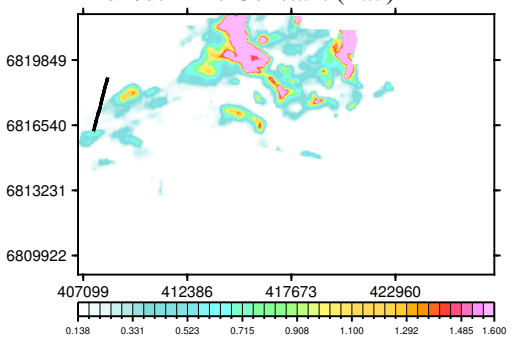
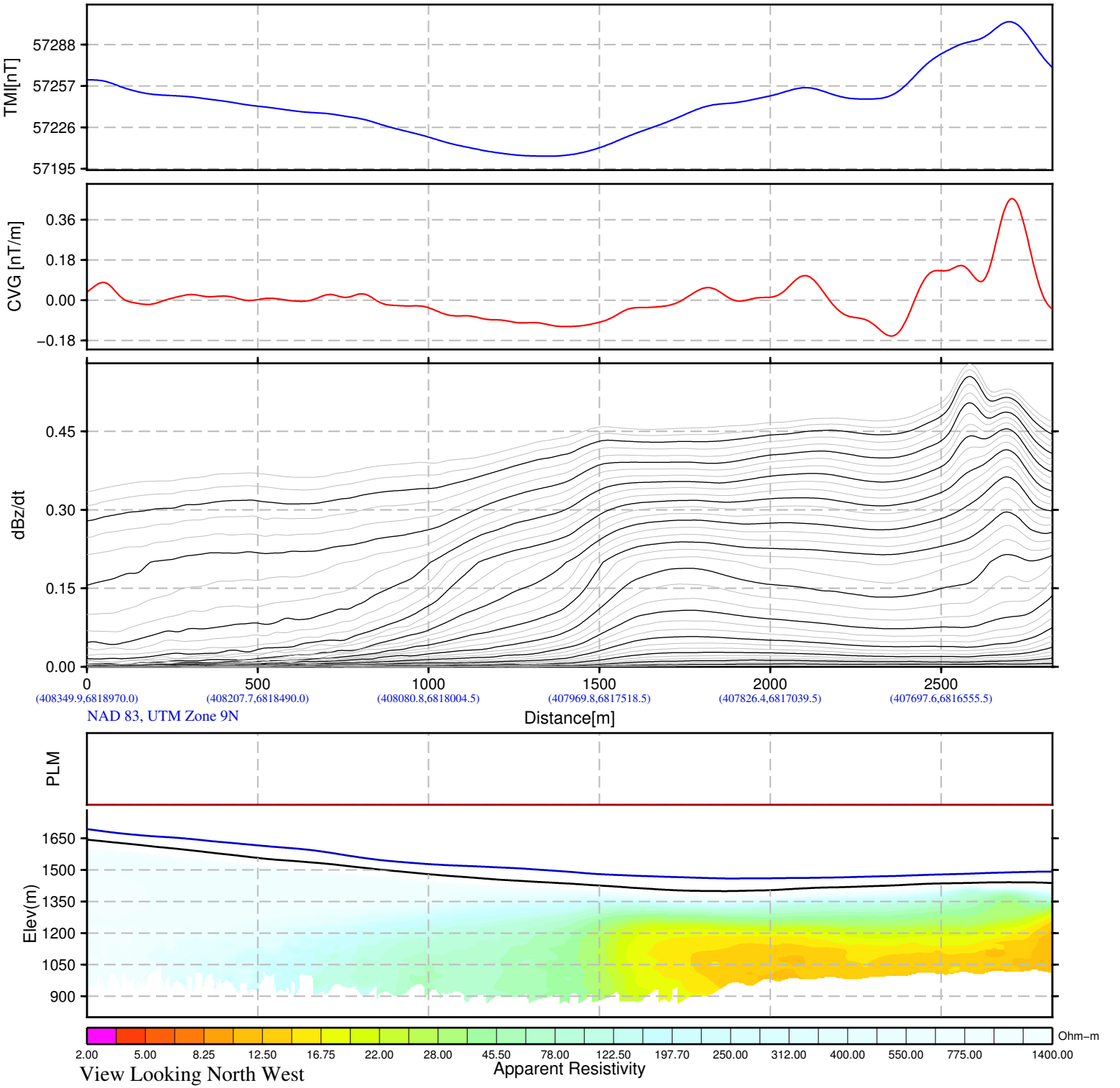
Resistivity Depth Image (RDI) for Line 3030

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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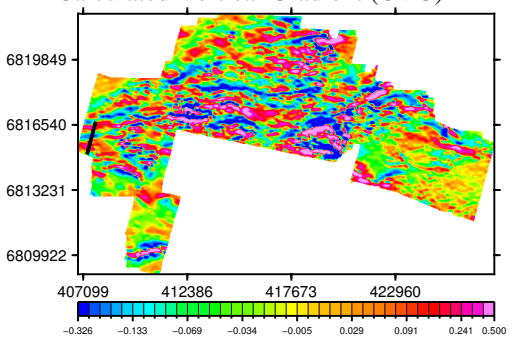
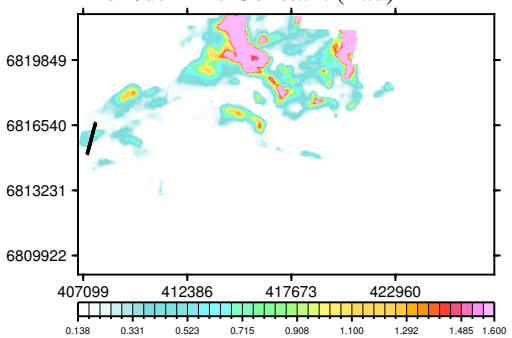
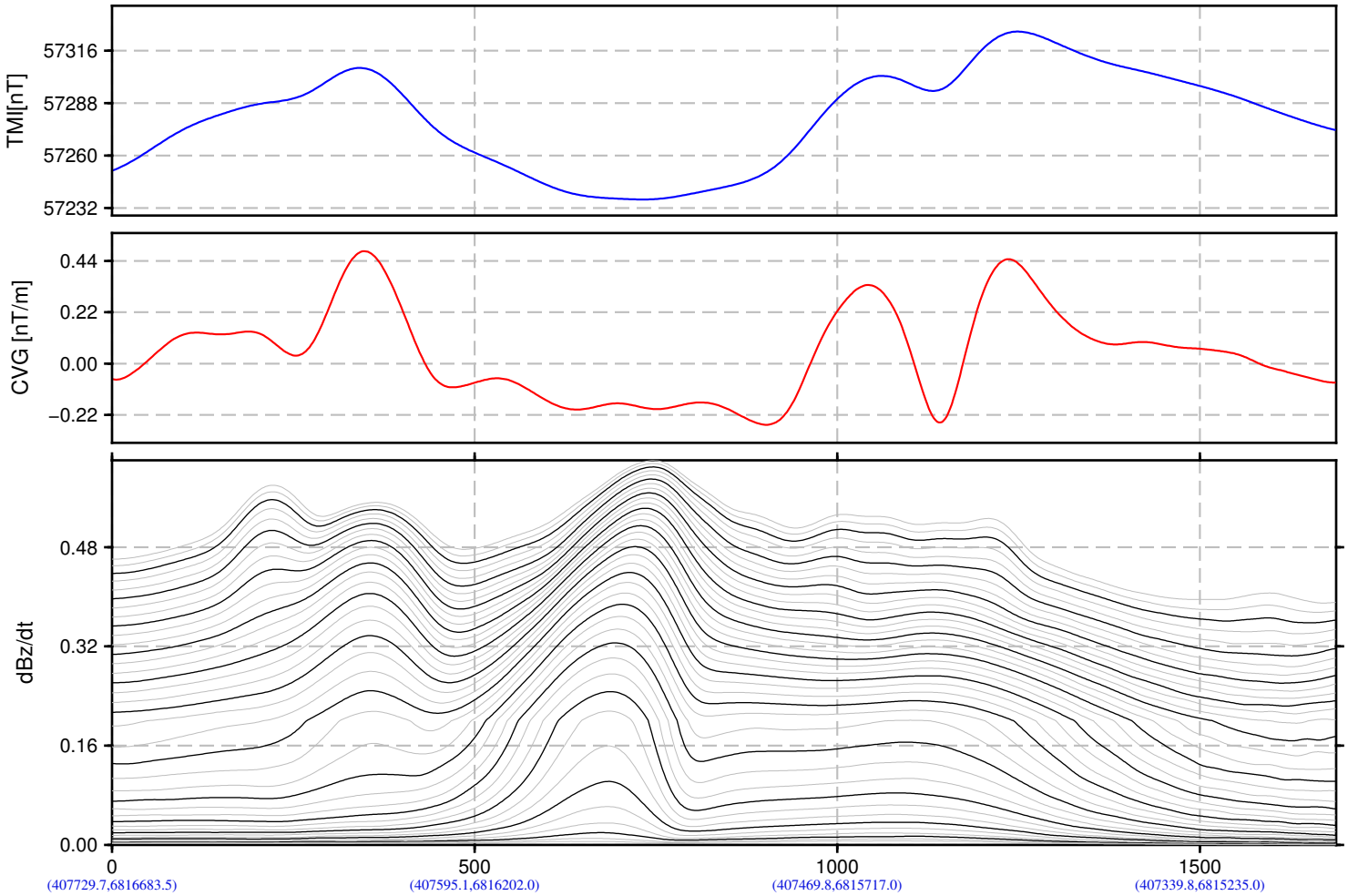
Resistivity Depth Image (RDI) for Line 3032

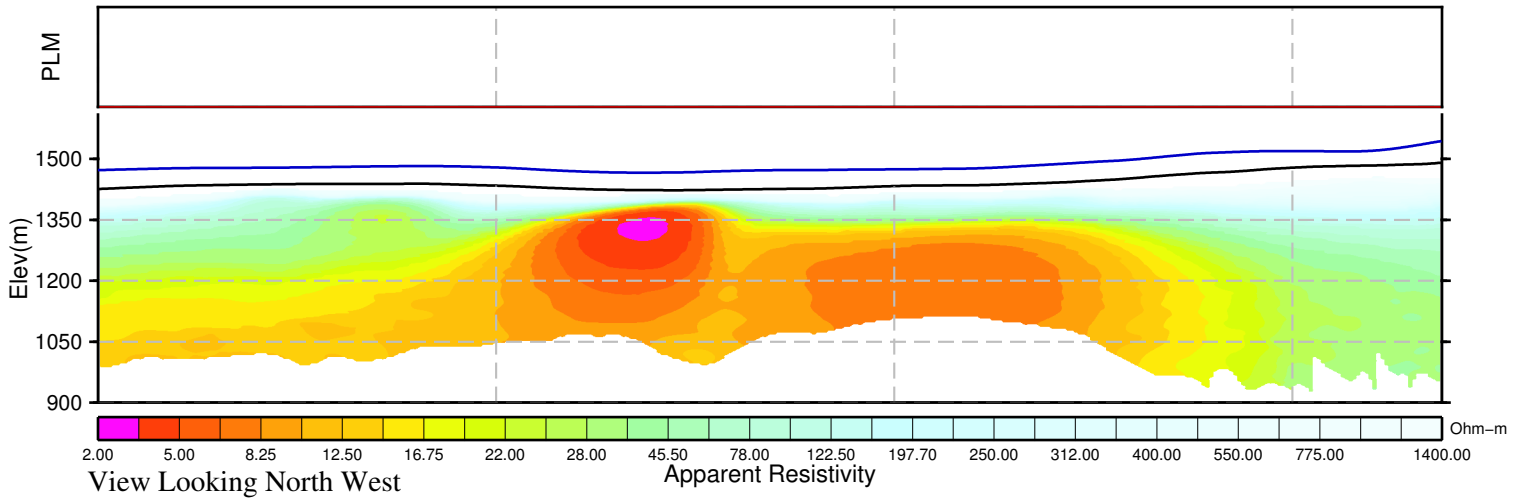
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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Job Number:GL160037
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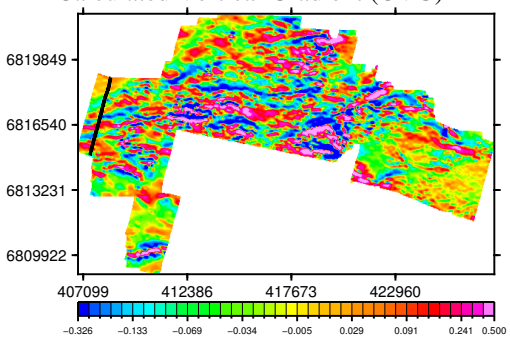
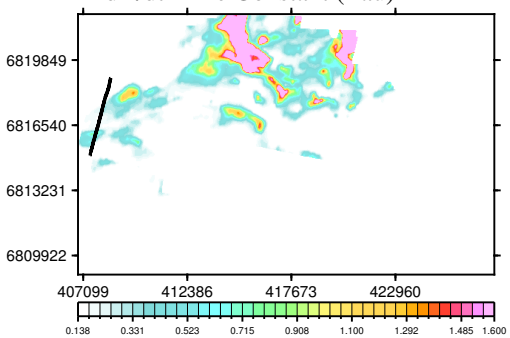
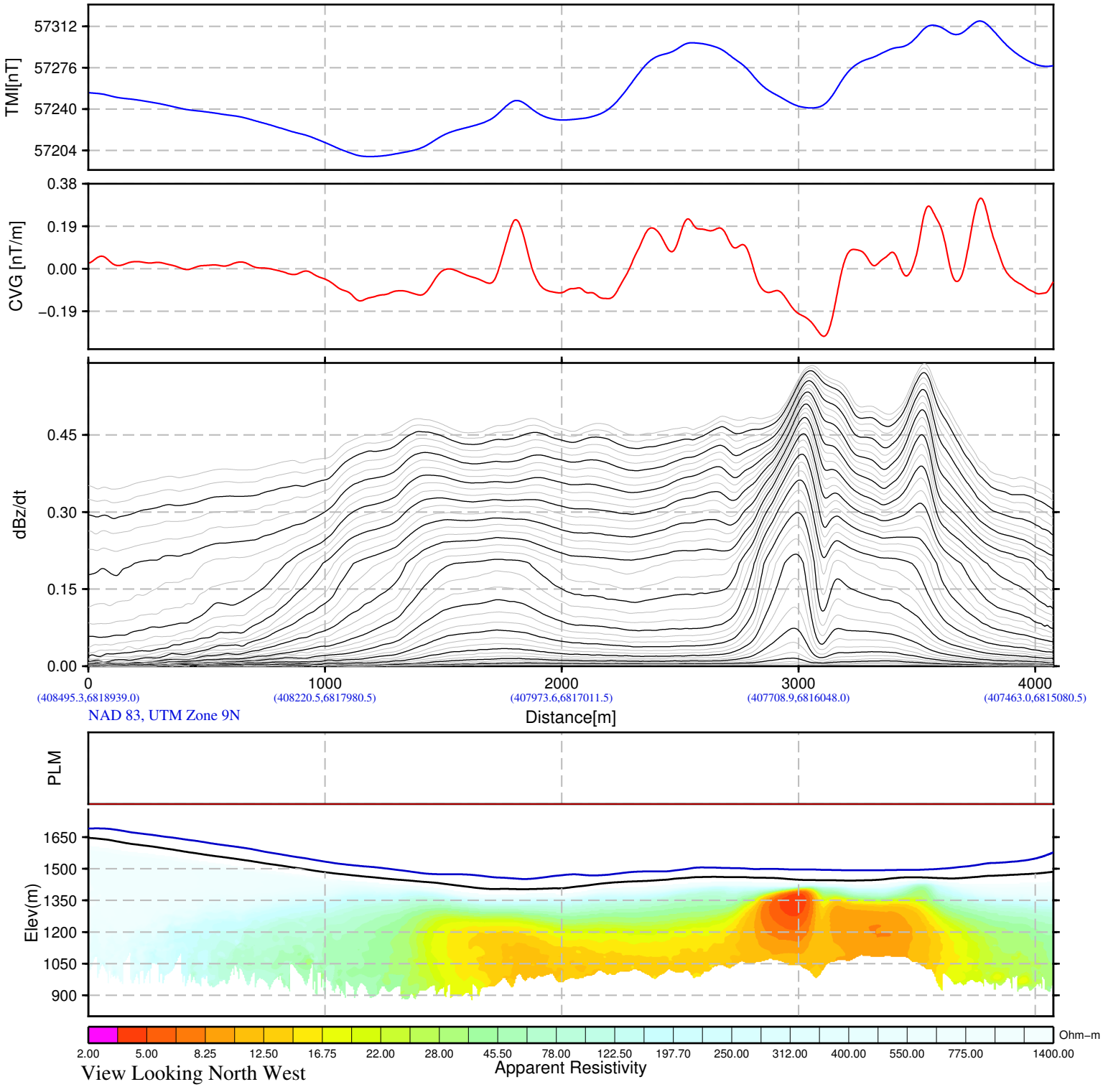
Resistivity Depth Image (RDI) for Line 3040

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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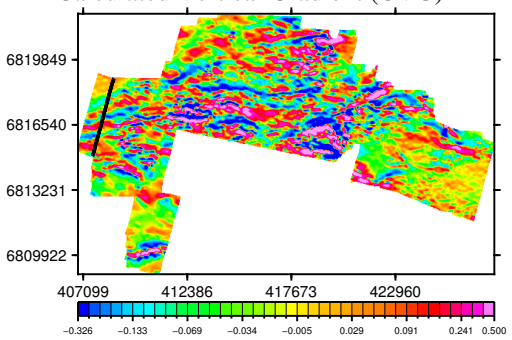
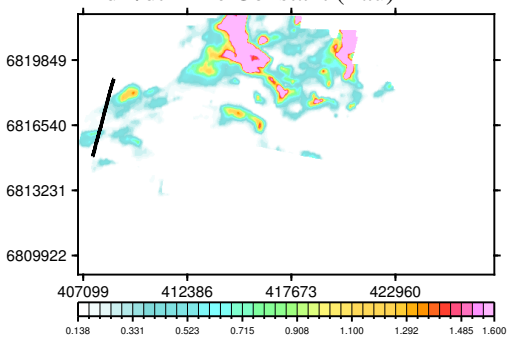
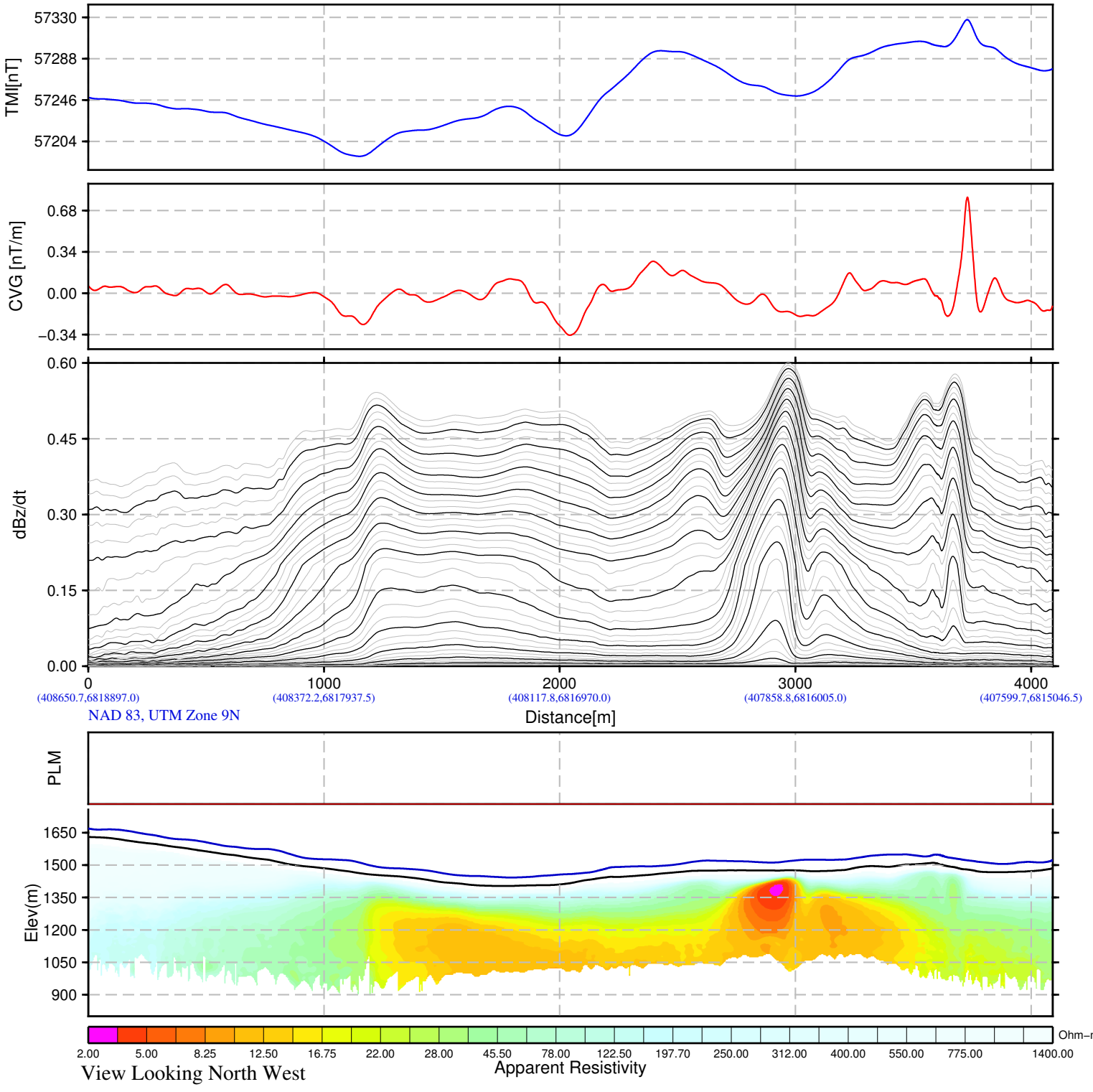
Resistivity Depth Image (RDI) for Line 3051

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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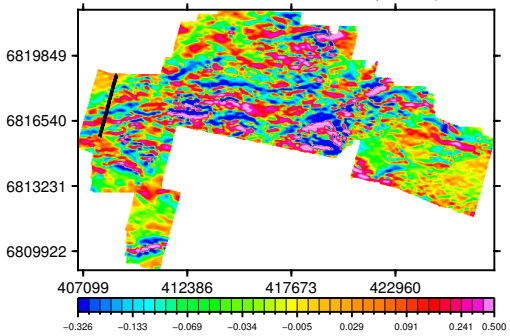
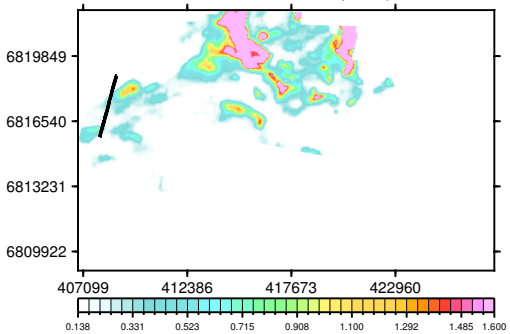
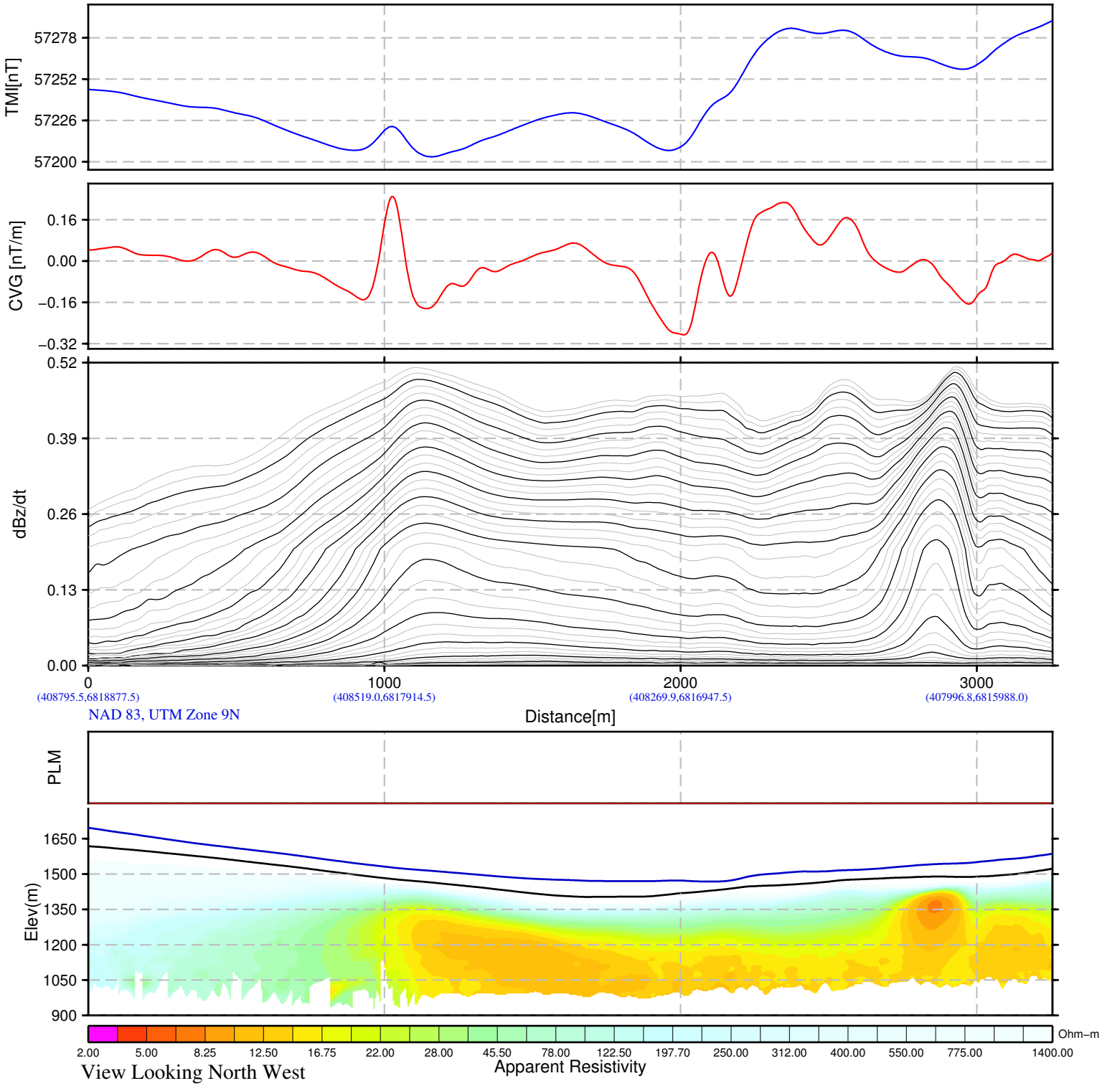
Resistivity Depth Image (RDI) for Line 3060

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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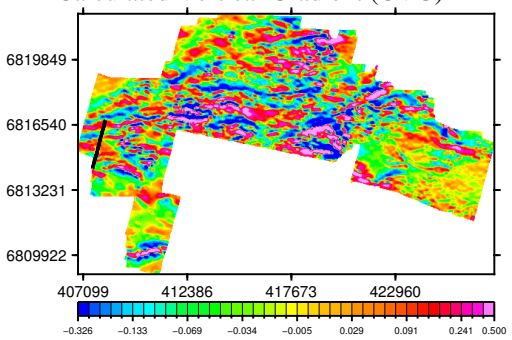
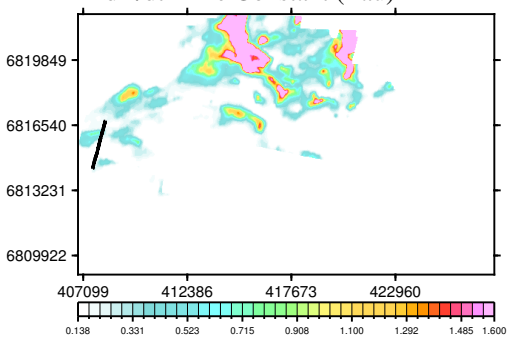
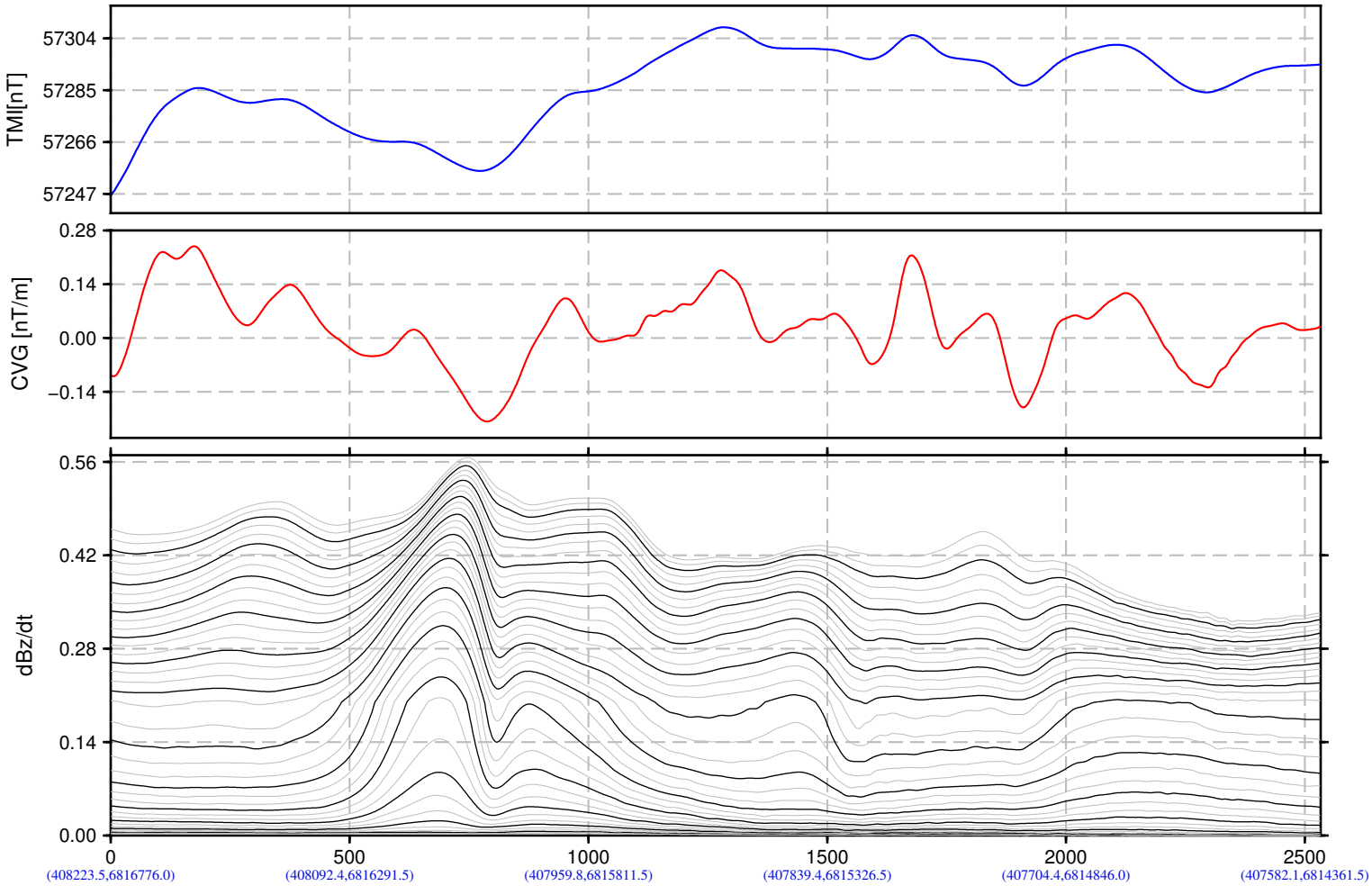
Resistivity Depth Image (RDI) for Line 3062

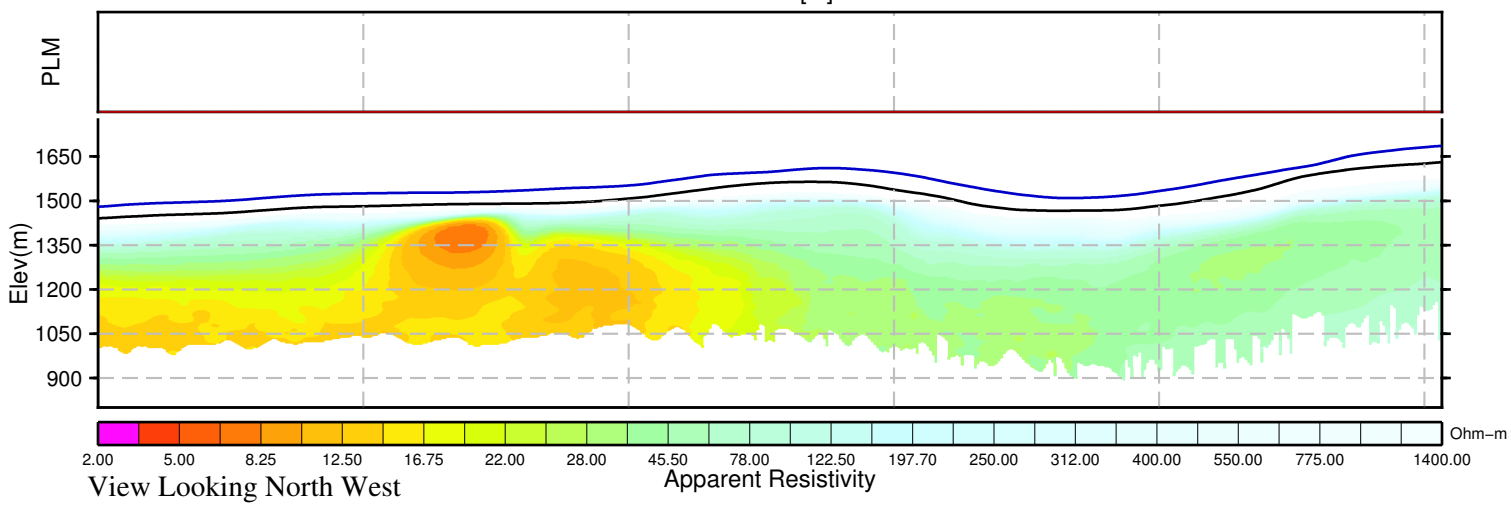
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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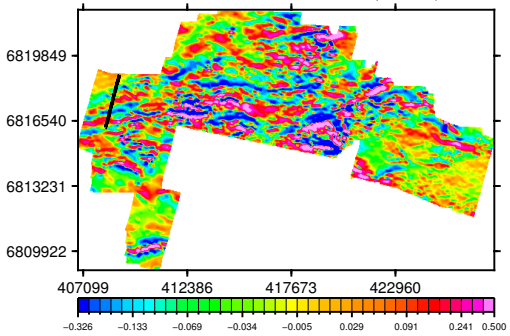
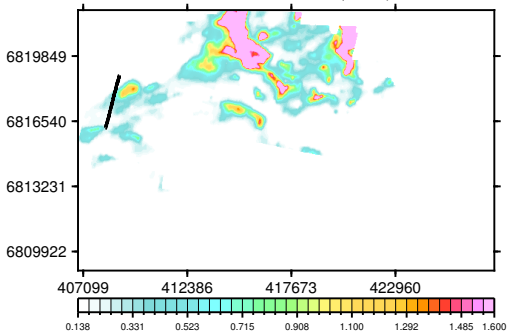
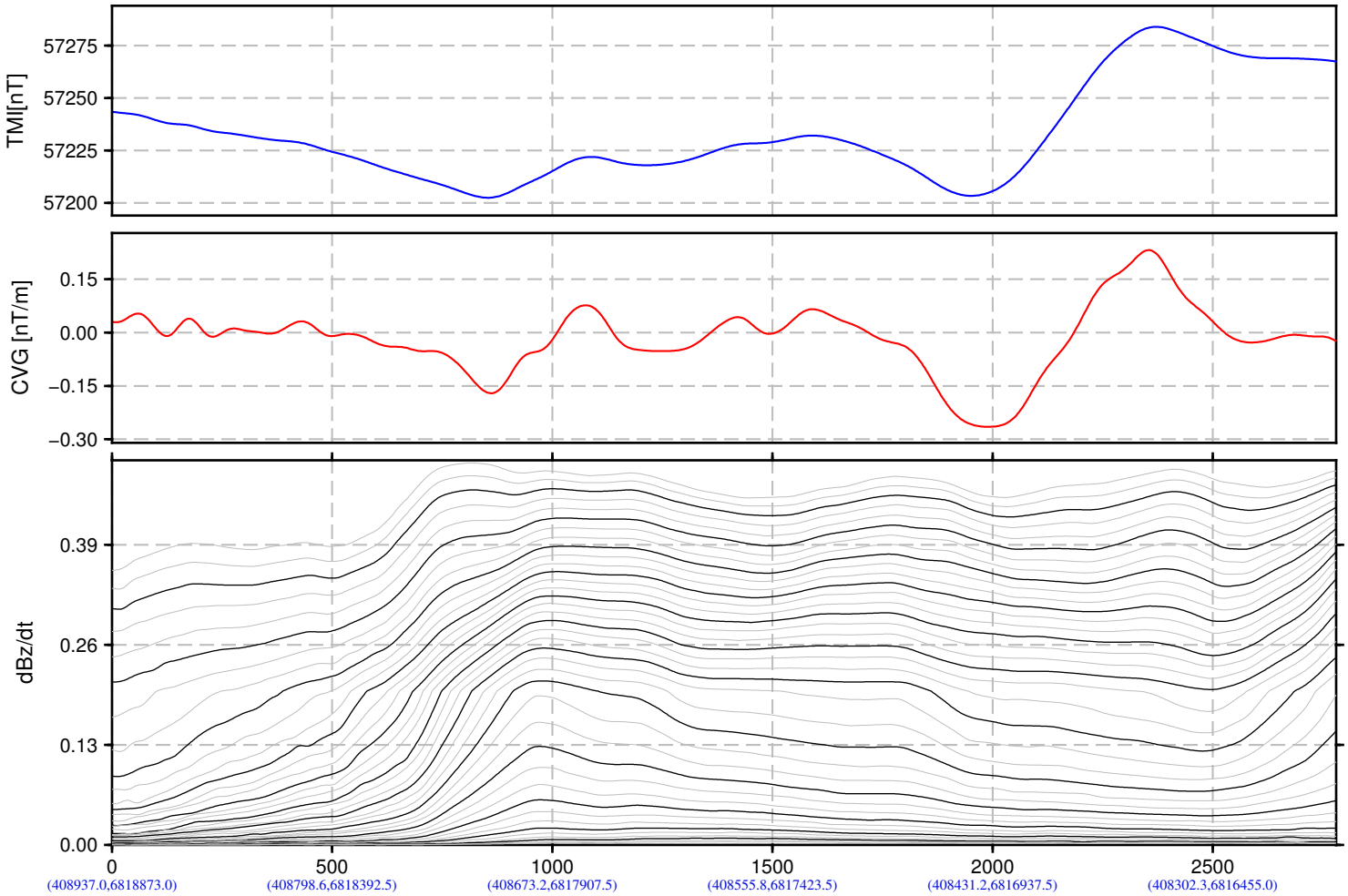
Resistivity Depth Image (RDI) for Line 3070

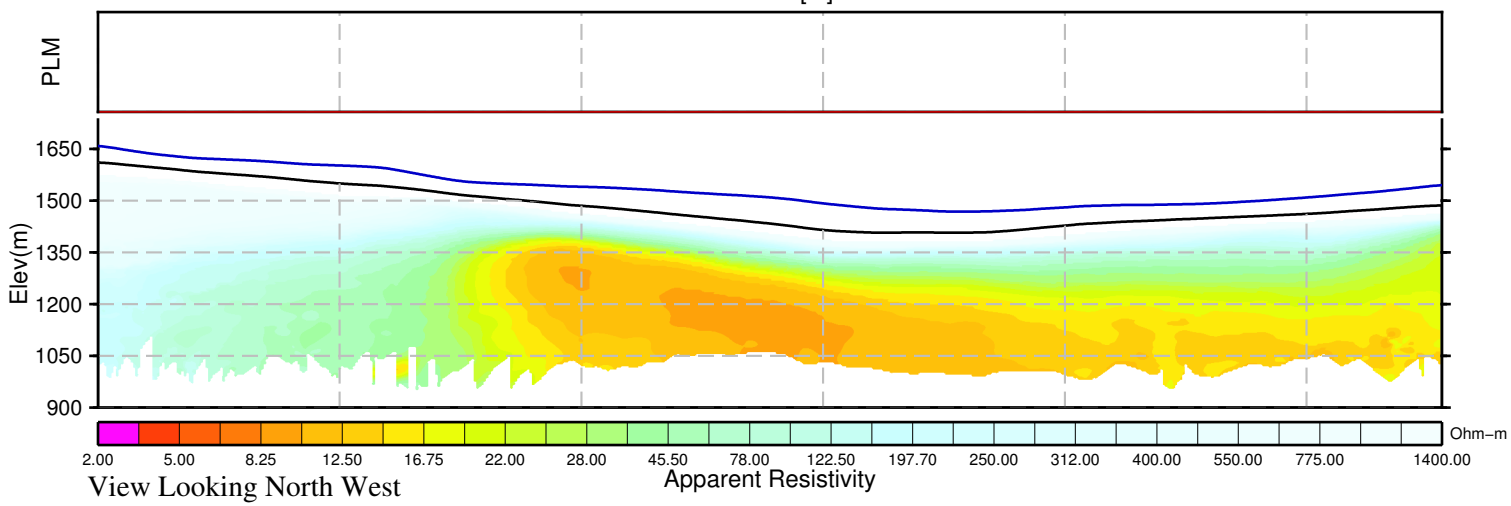
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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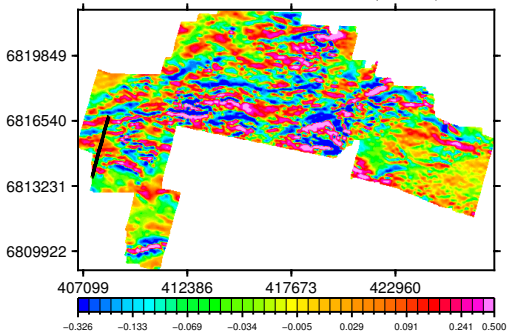
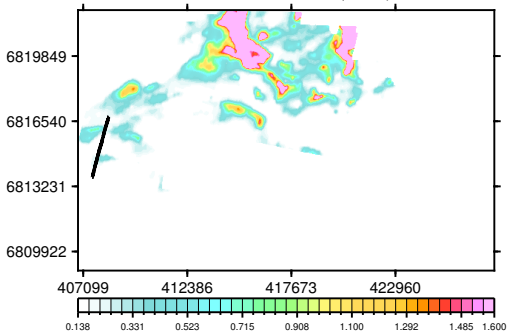
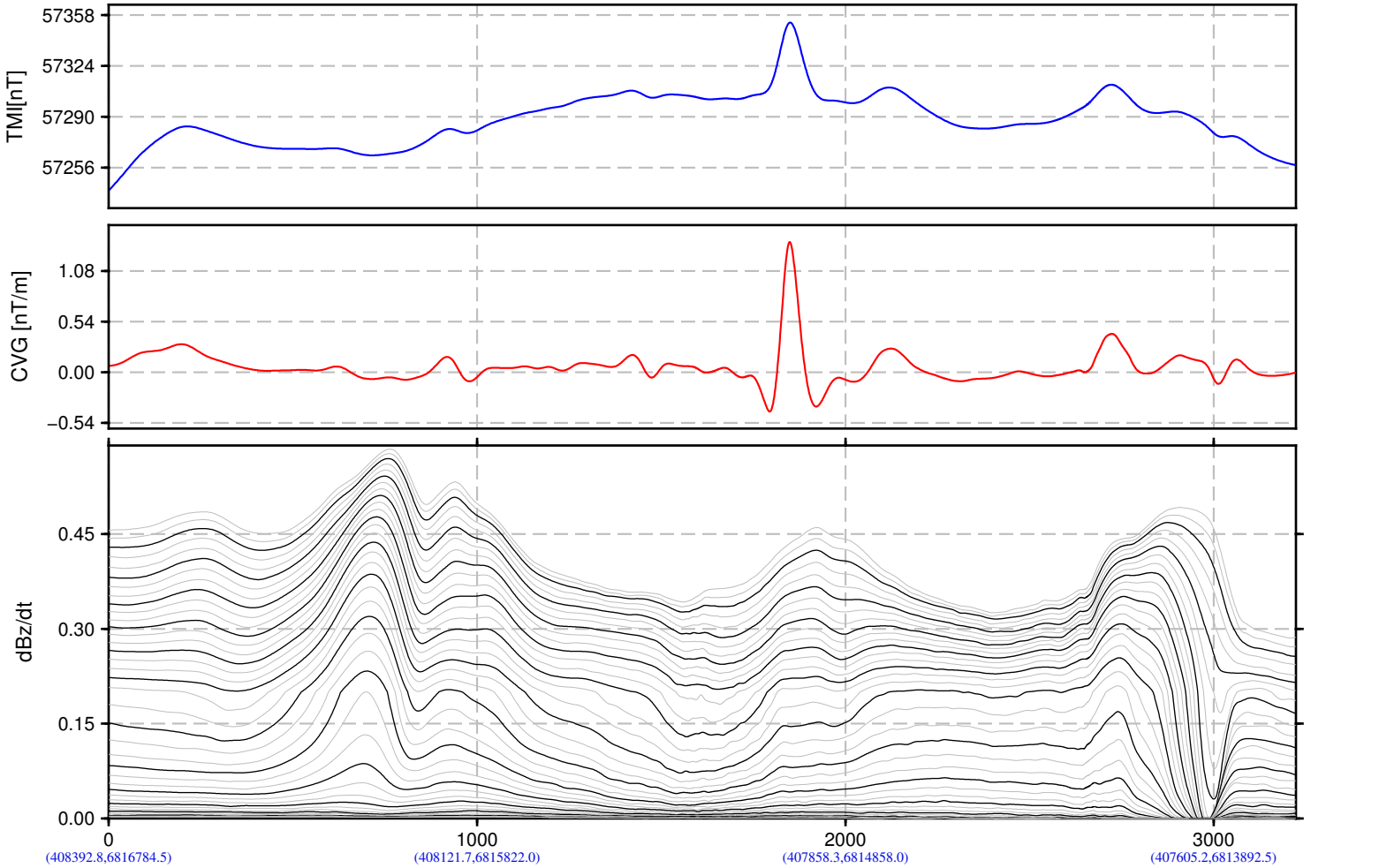
Resistivity Depth Image (RDI) for Line 3072

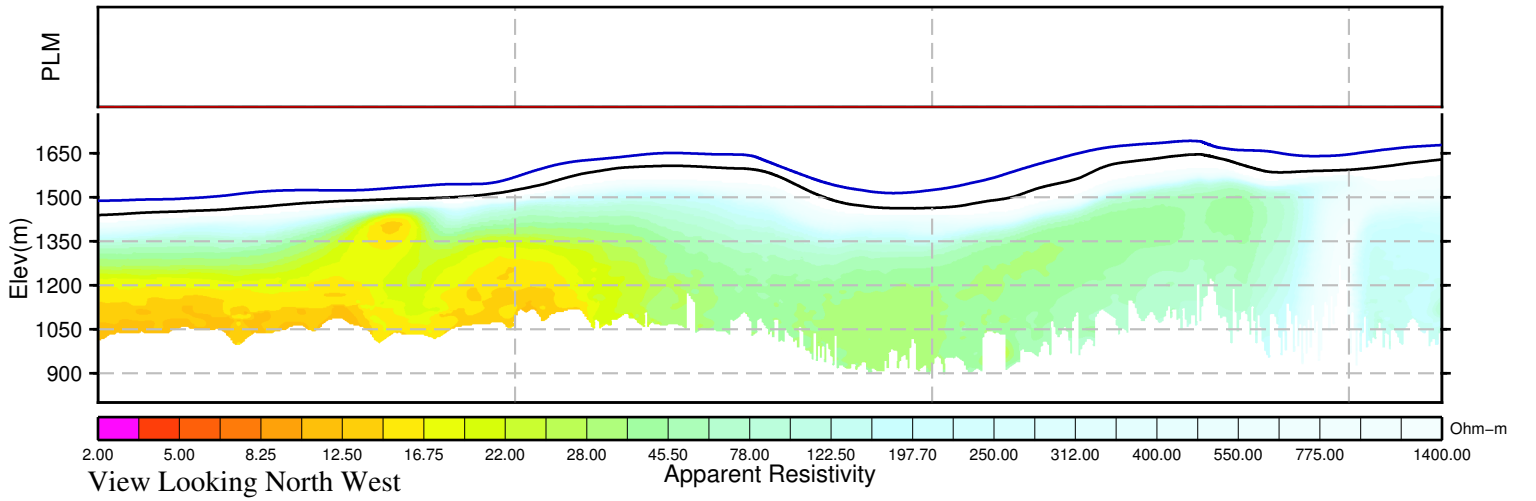
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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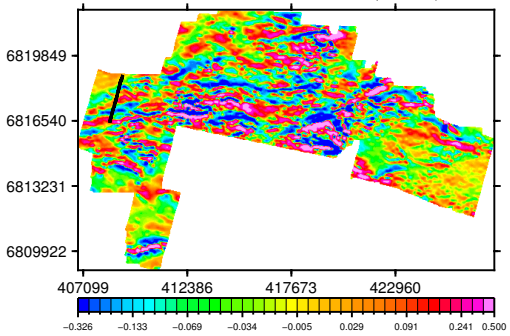
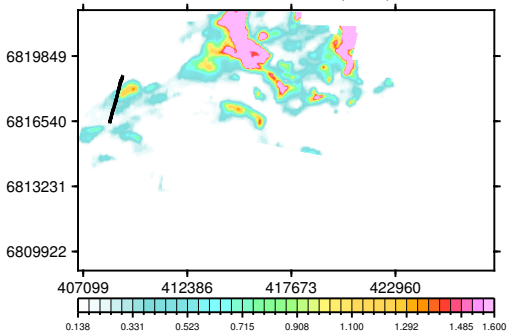
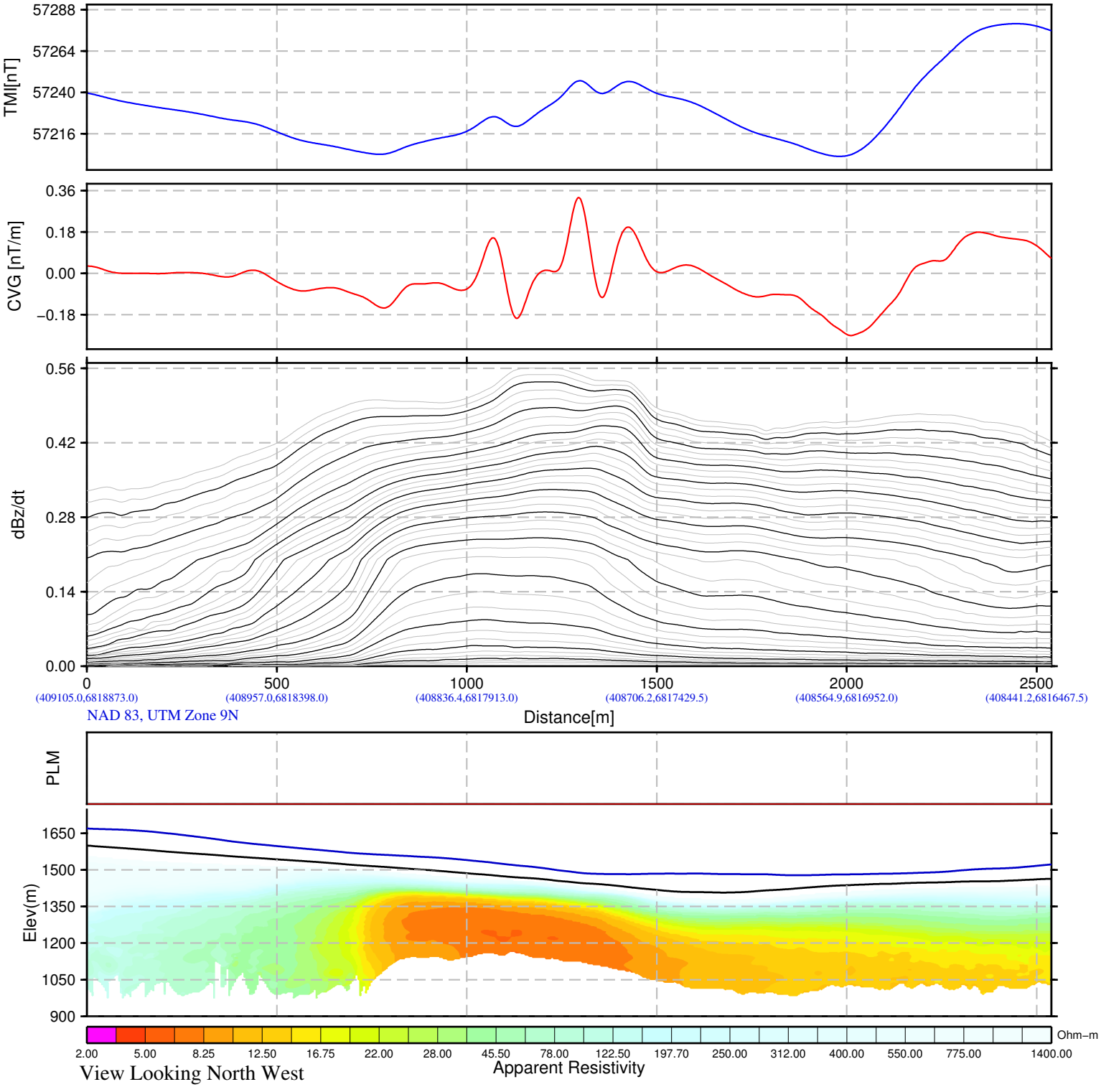
Resistivity Depth Image (RDI) for Line 3080

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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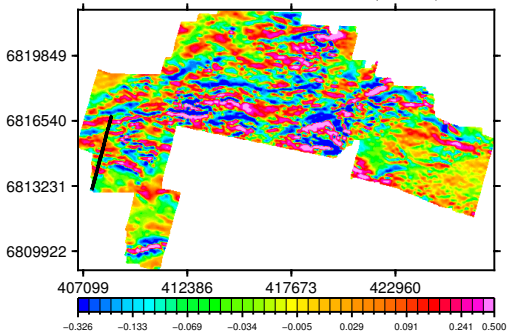
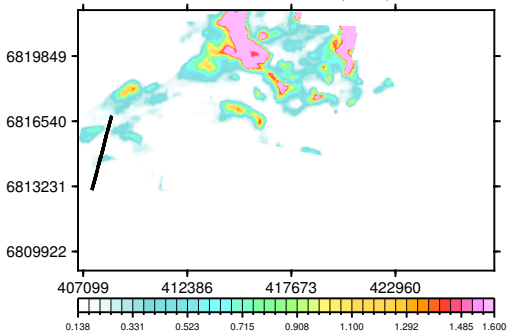
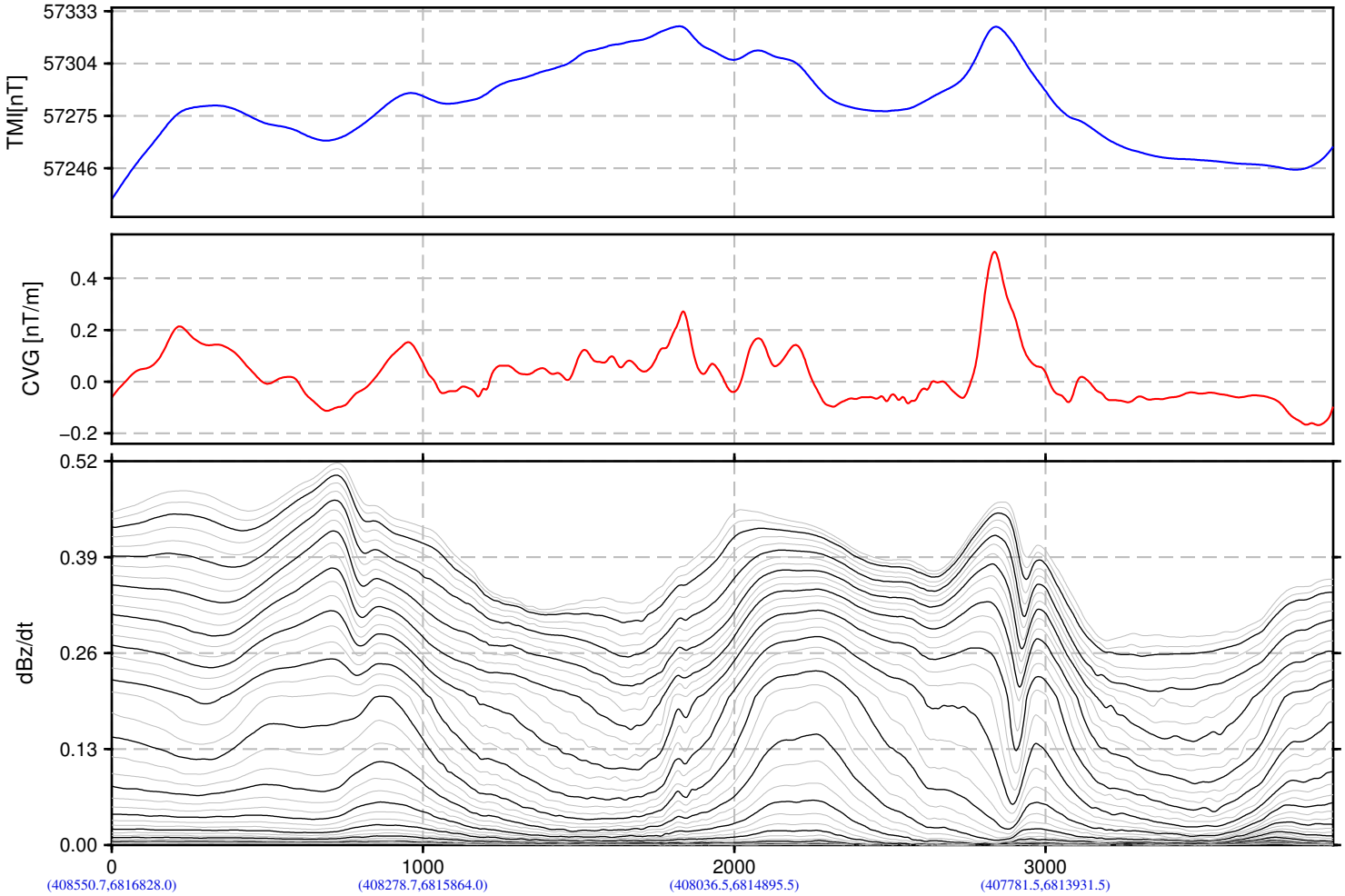
Resistivity Depth Image (RDI) for Line 3082

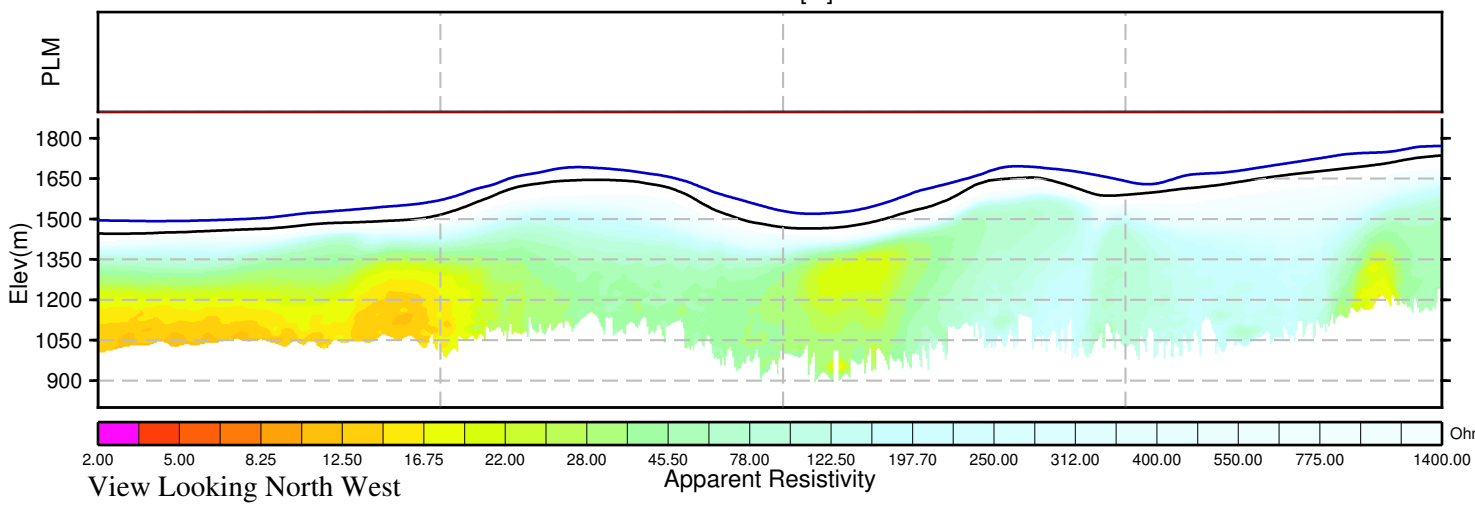
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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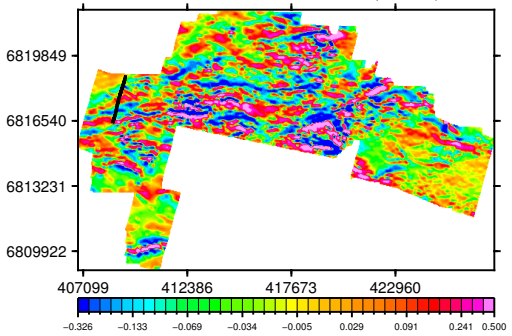
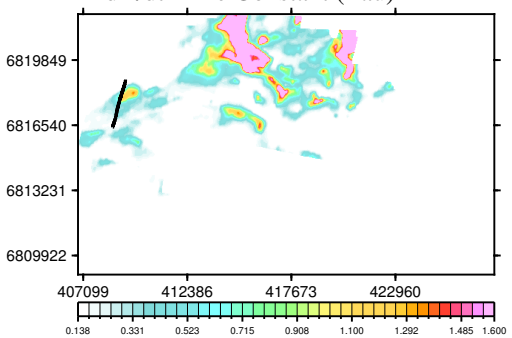
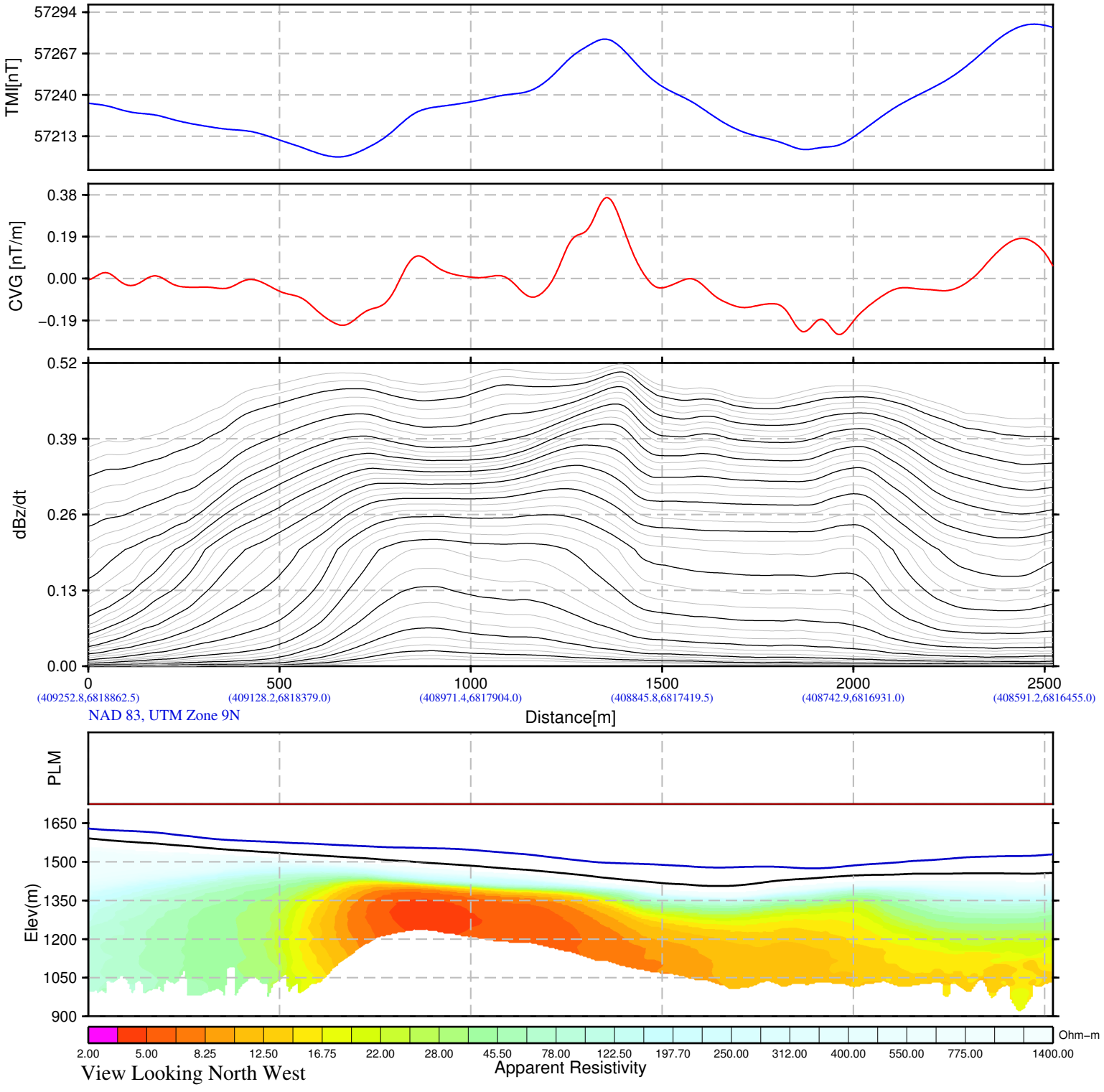
Resistivity Depth Image (RDI) for Line 3090

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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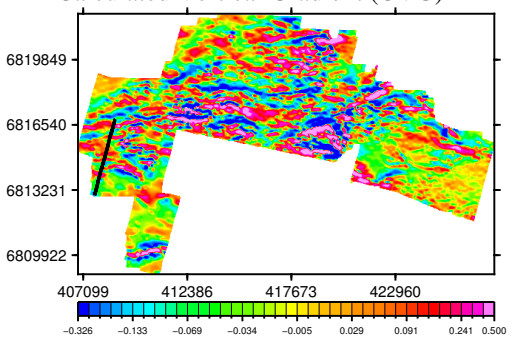
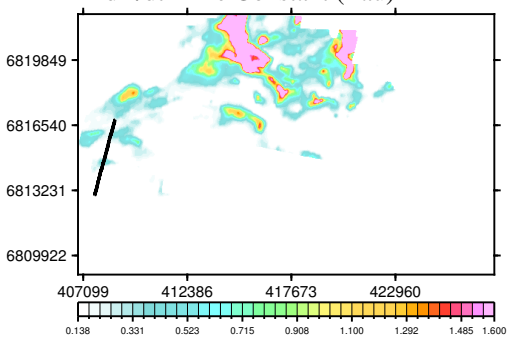
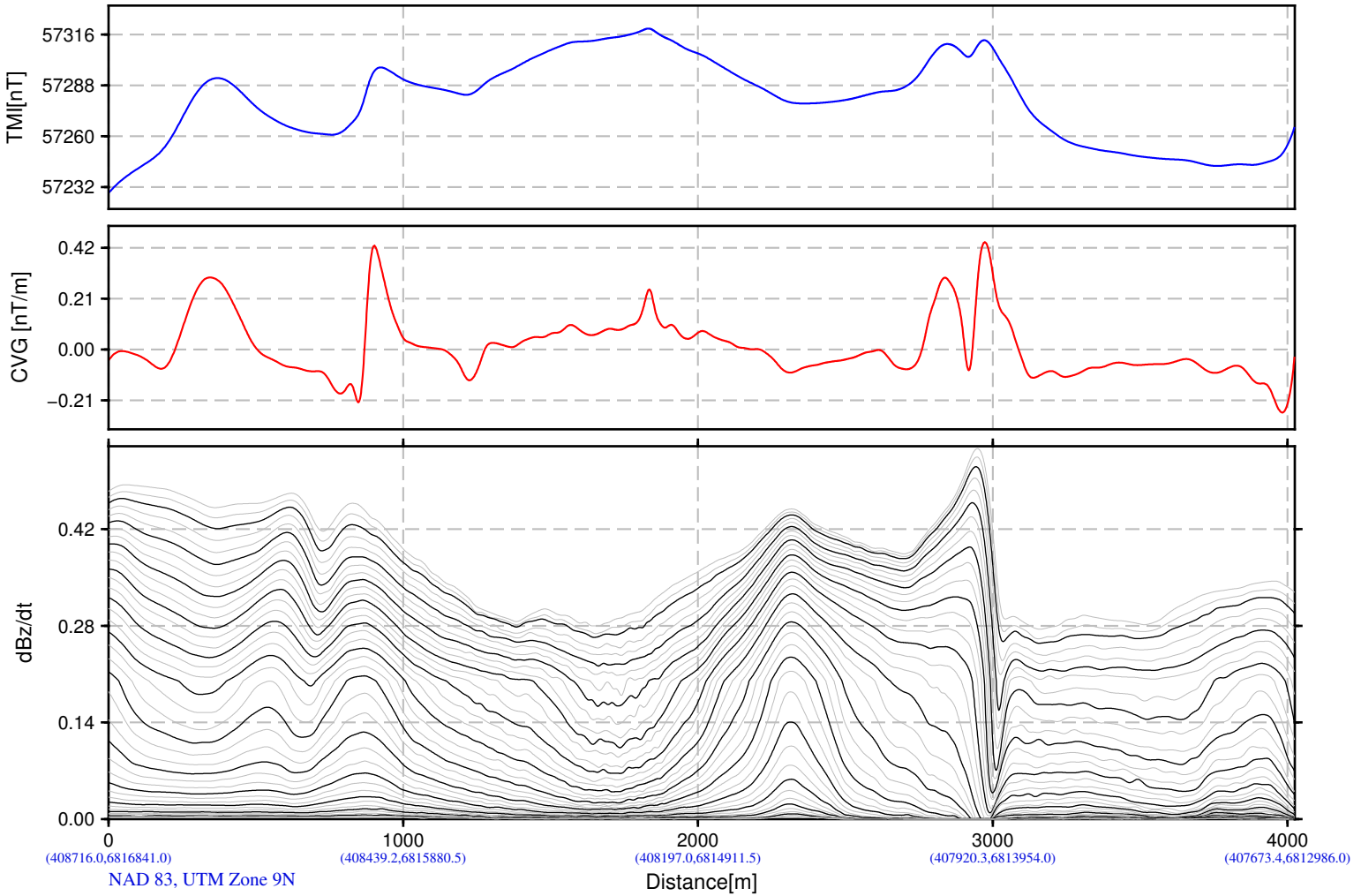
Resistivity Depth Image (RDI) for Line 3092

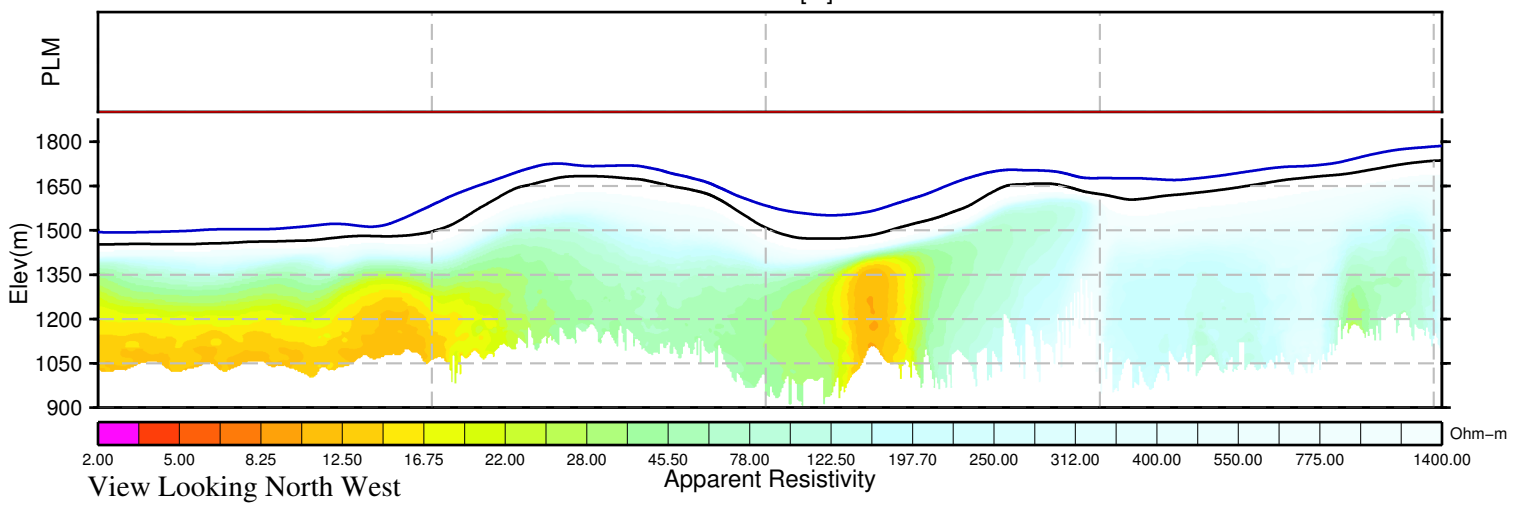
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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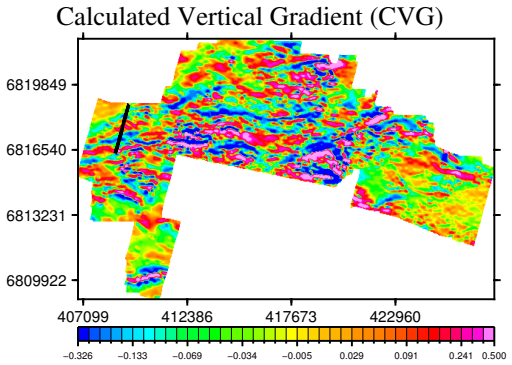
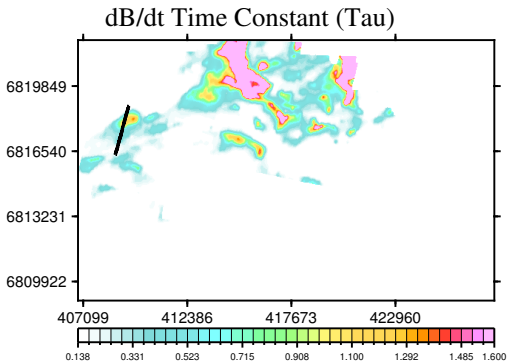
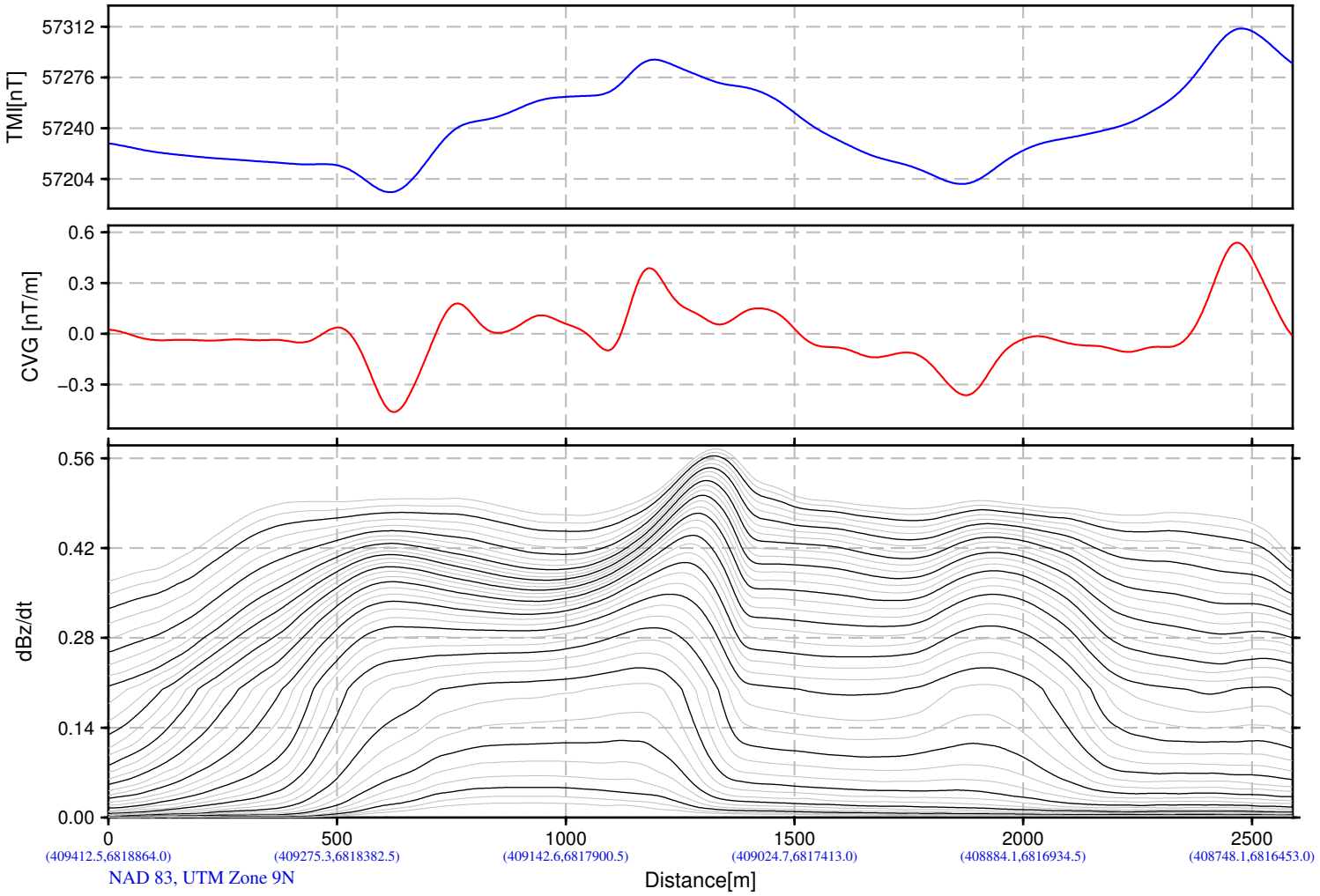
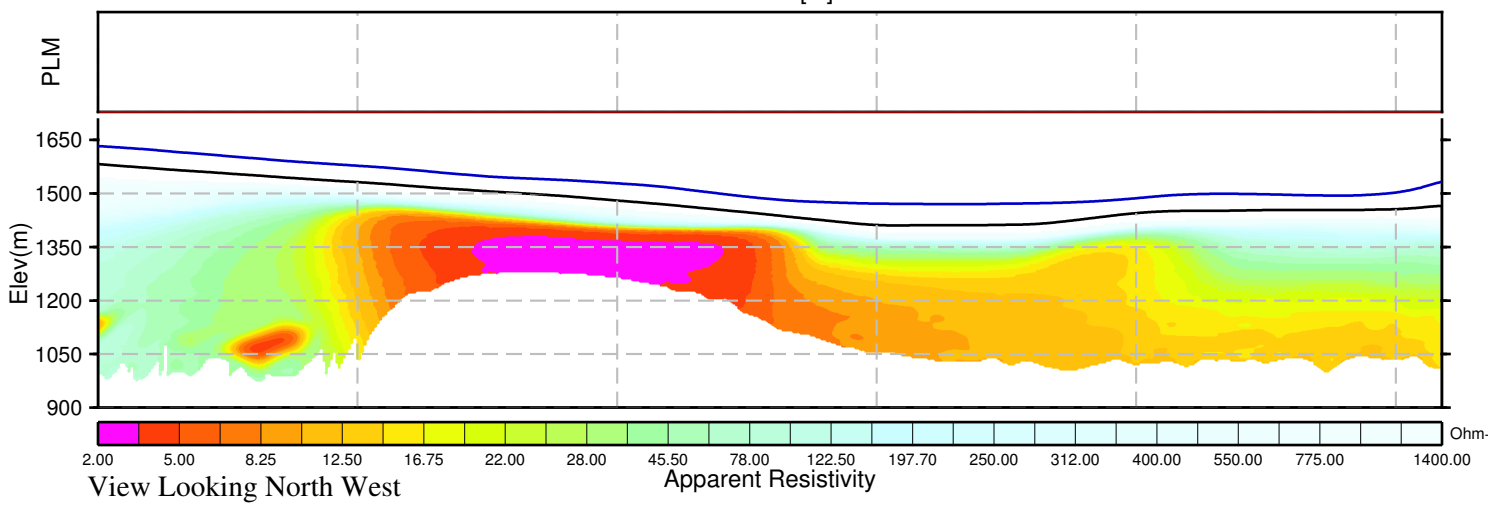
Resistivity Depth Image (RDI) for Line 3100









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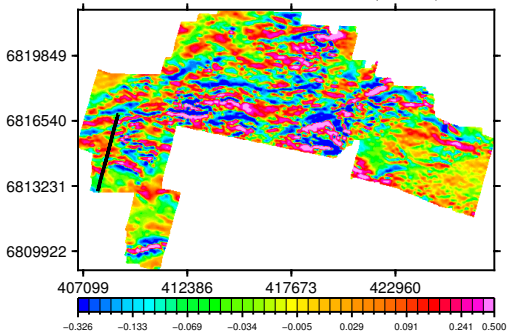
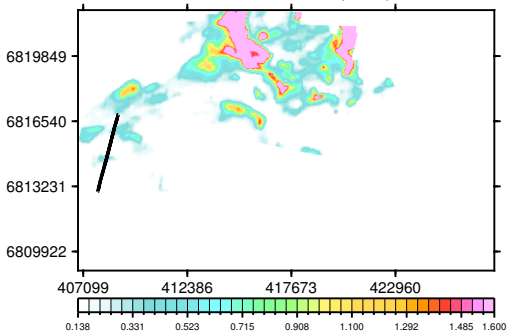
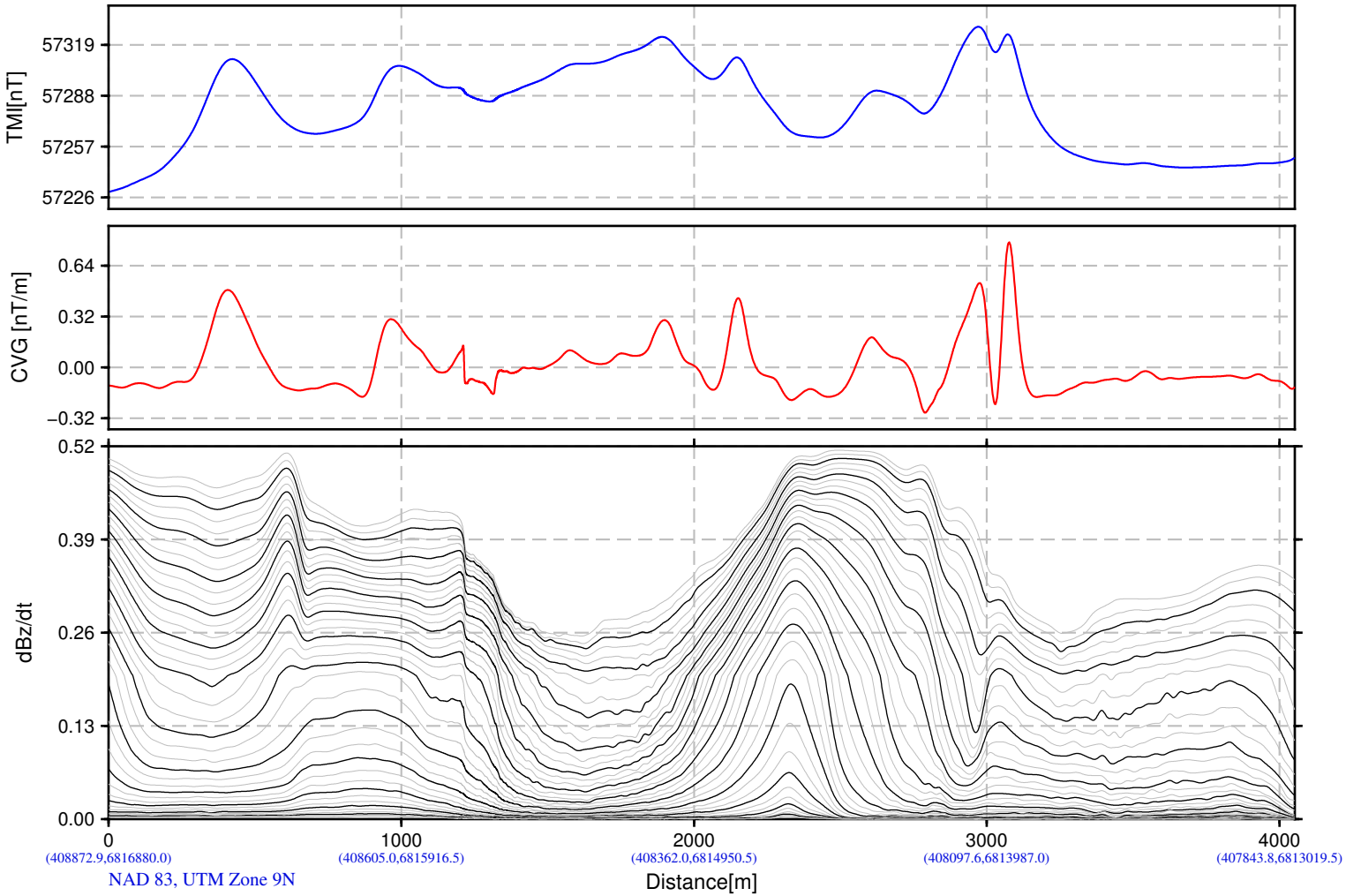
Resistivity Depth Image (RDI) for Line 3102

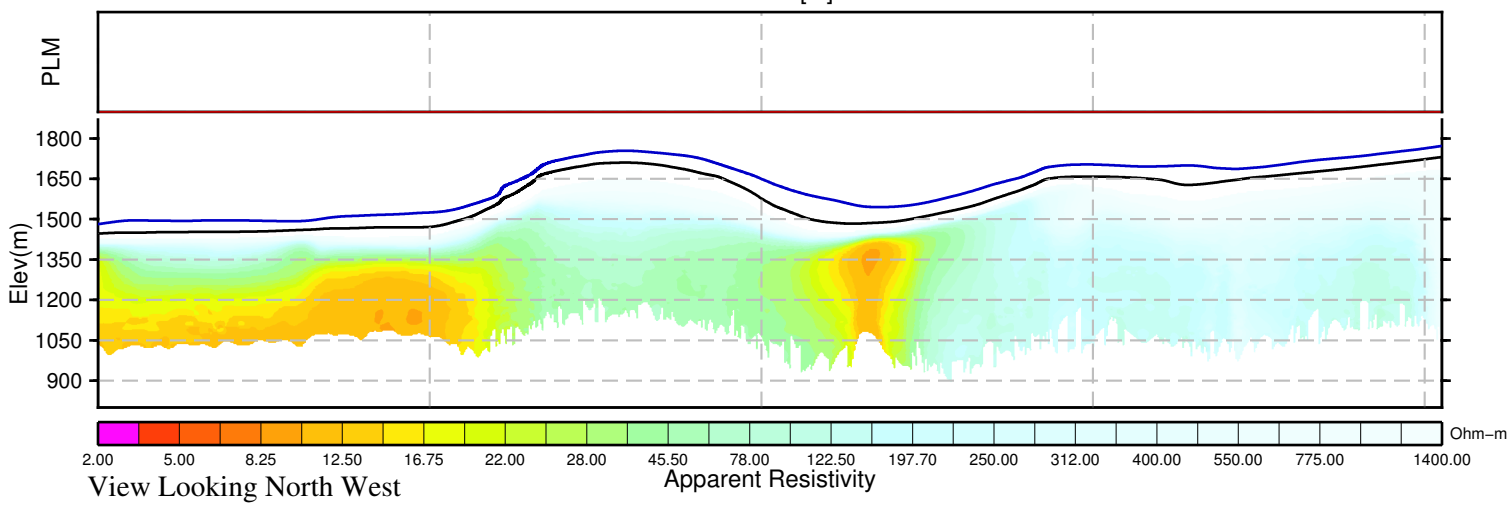
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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Job Number:GL160037
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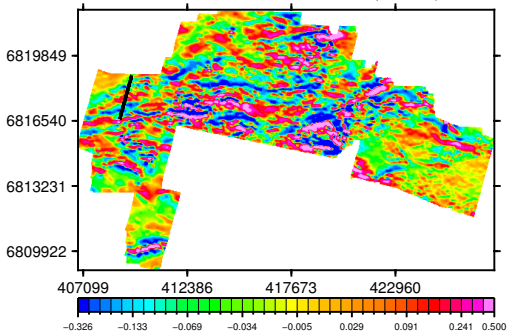
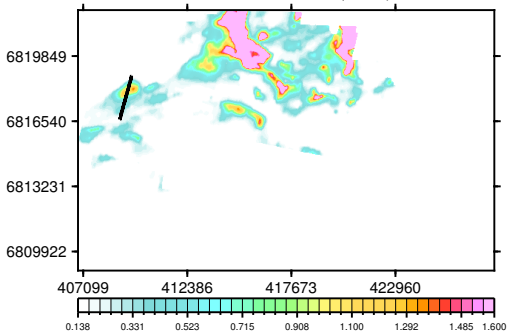
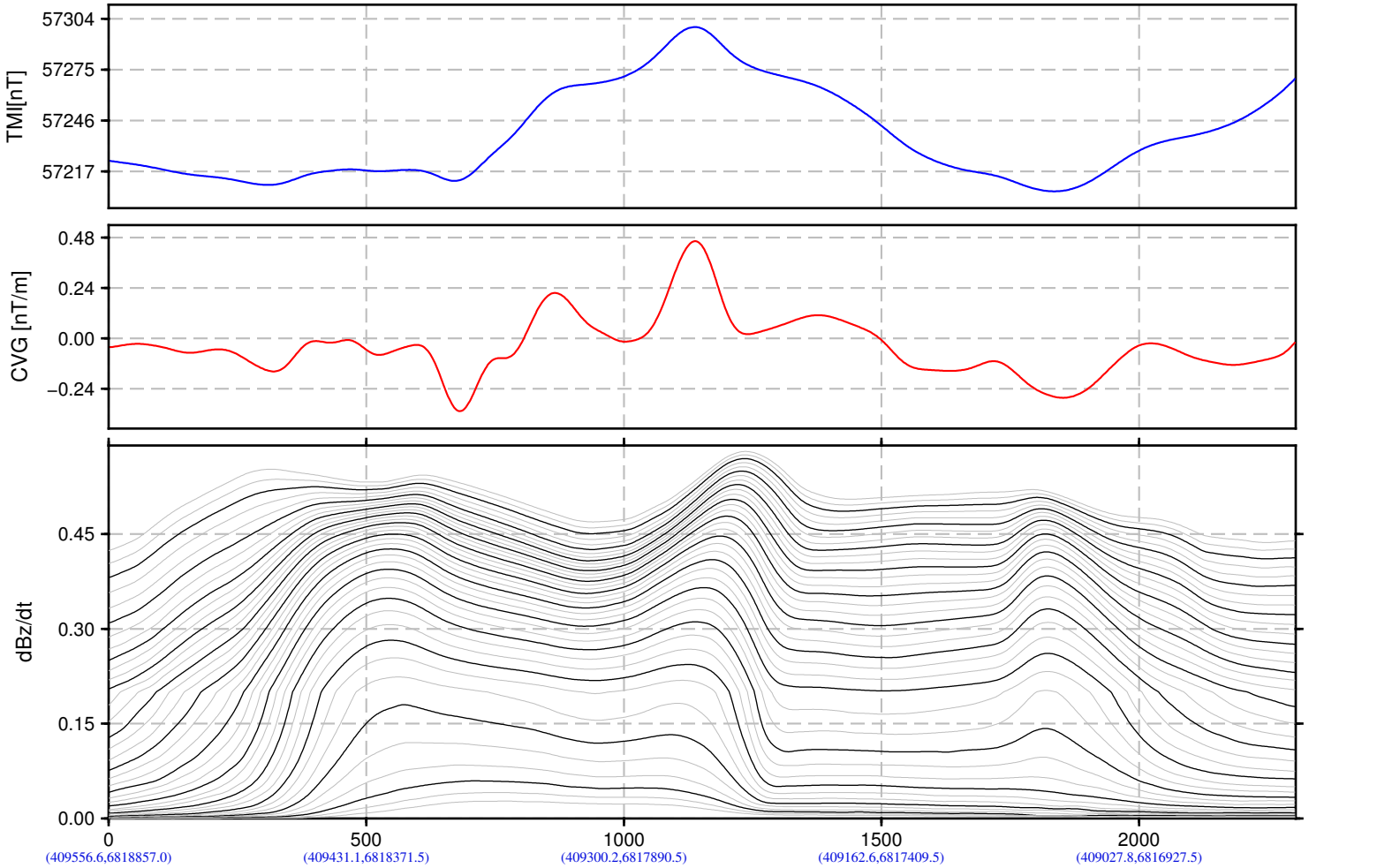
Resistivity Depth Image (RDI) for Line 3110

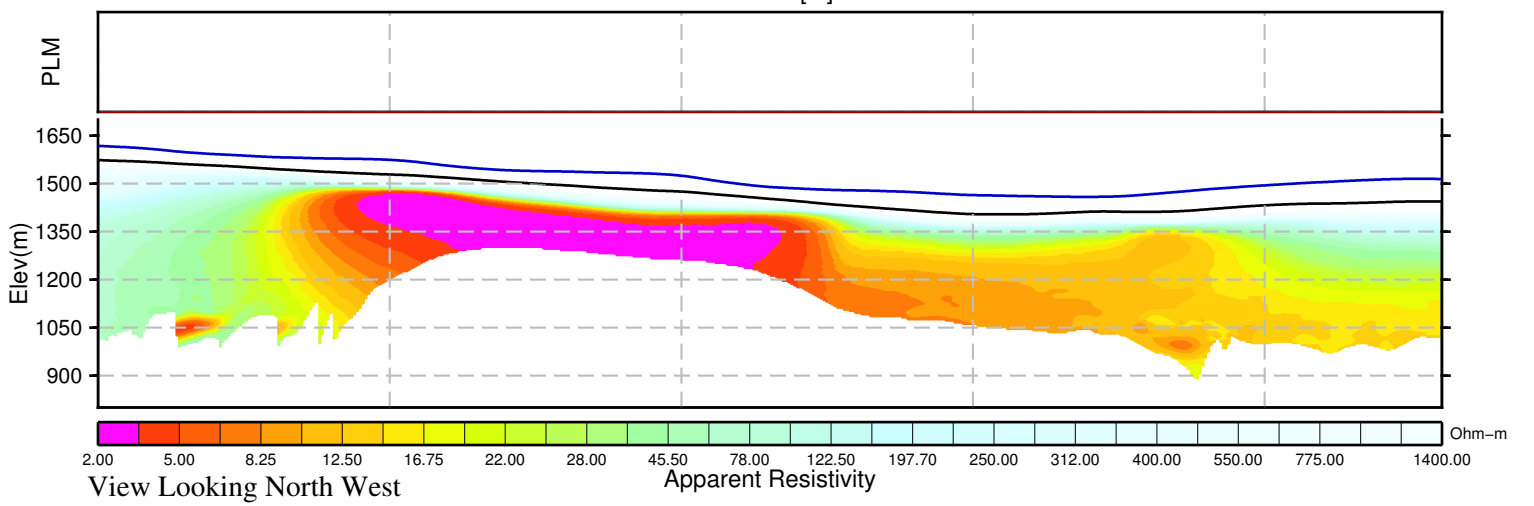
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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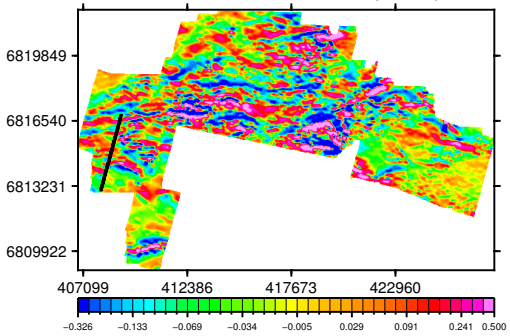
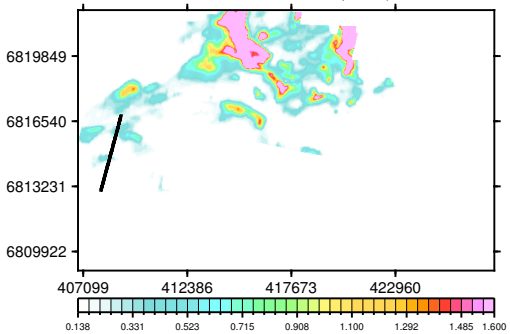
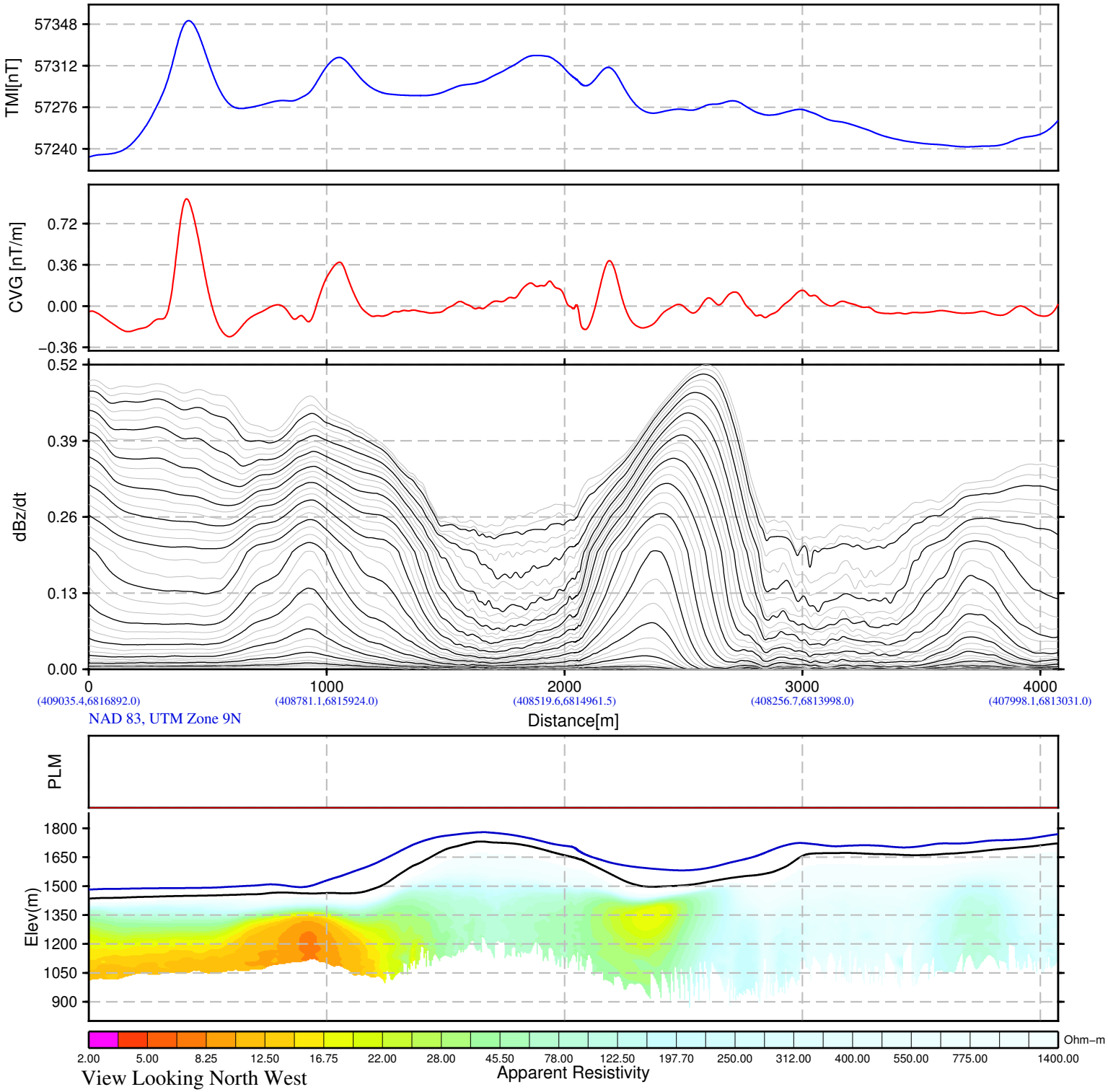
Resistivity Depth Image (RDI) for Line 3112

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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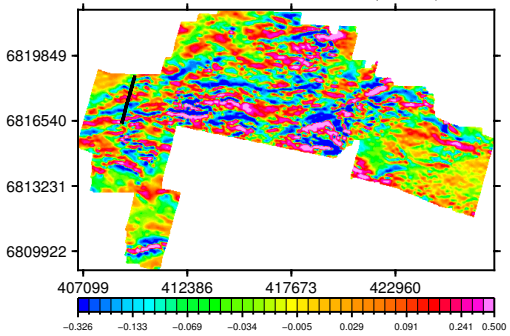
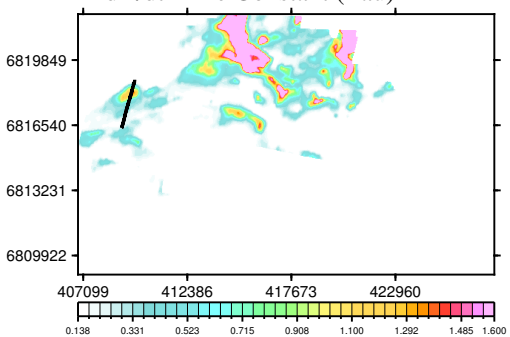
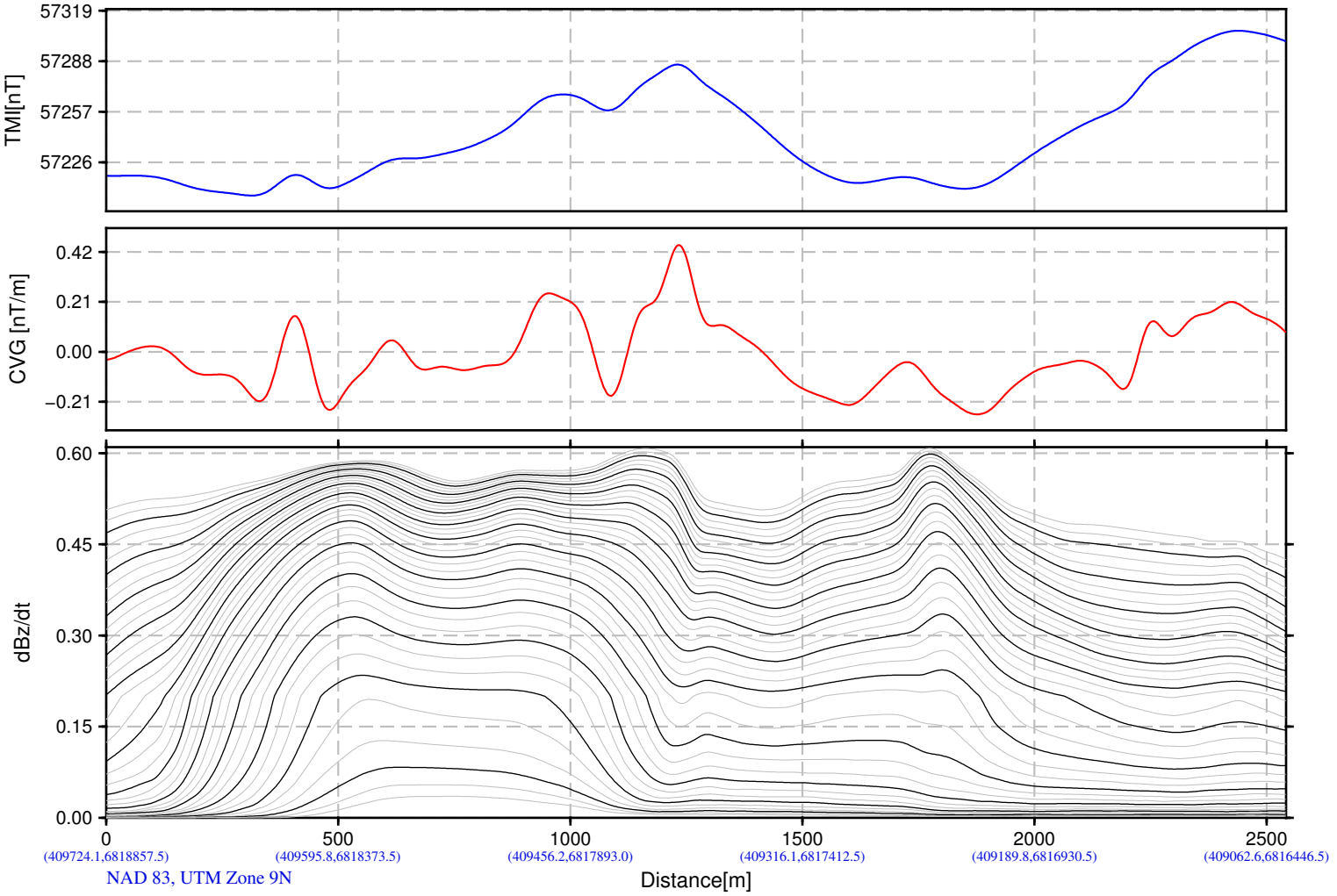
Resistivity Depth Image (RDI) for Line 3120

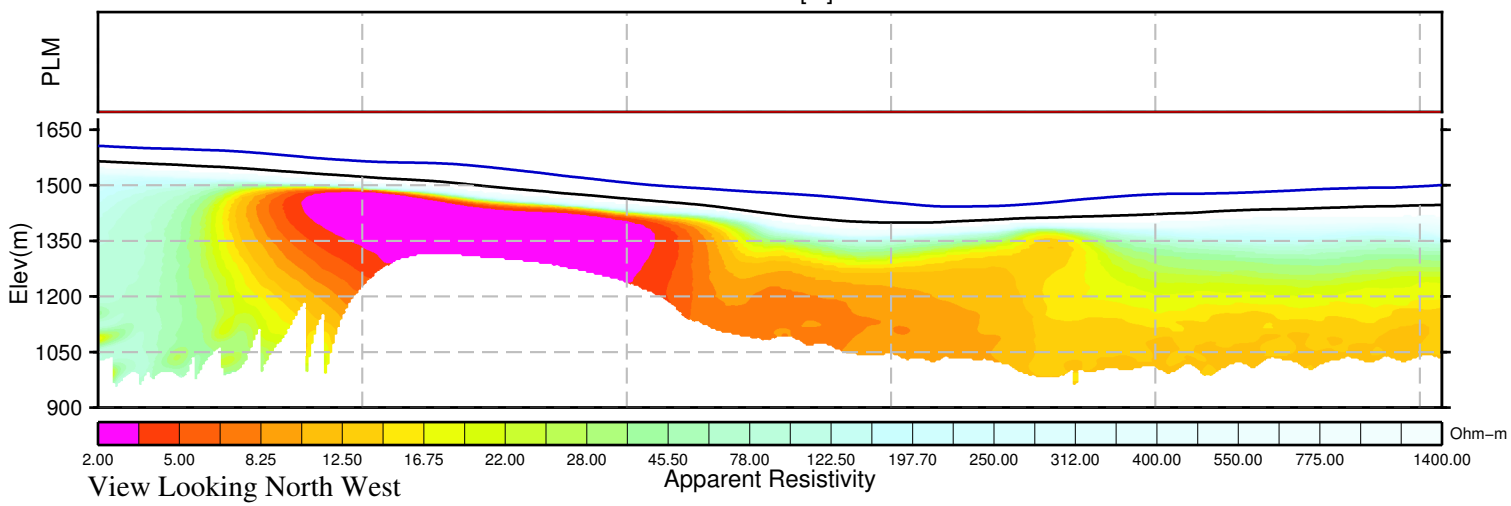
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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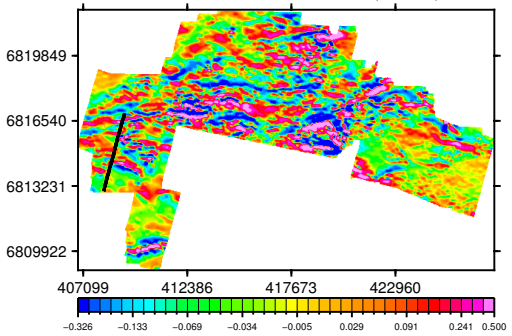
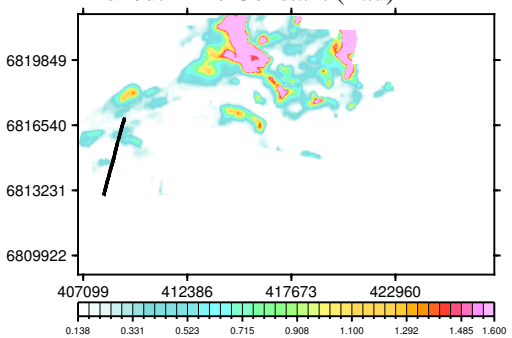
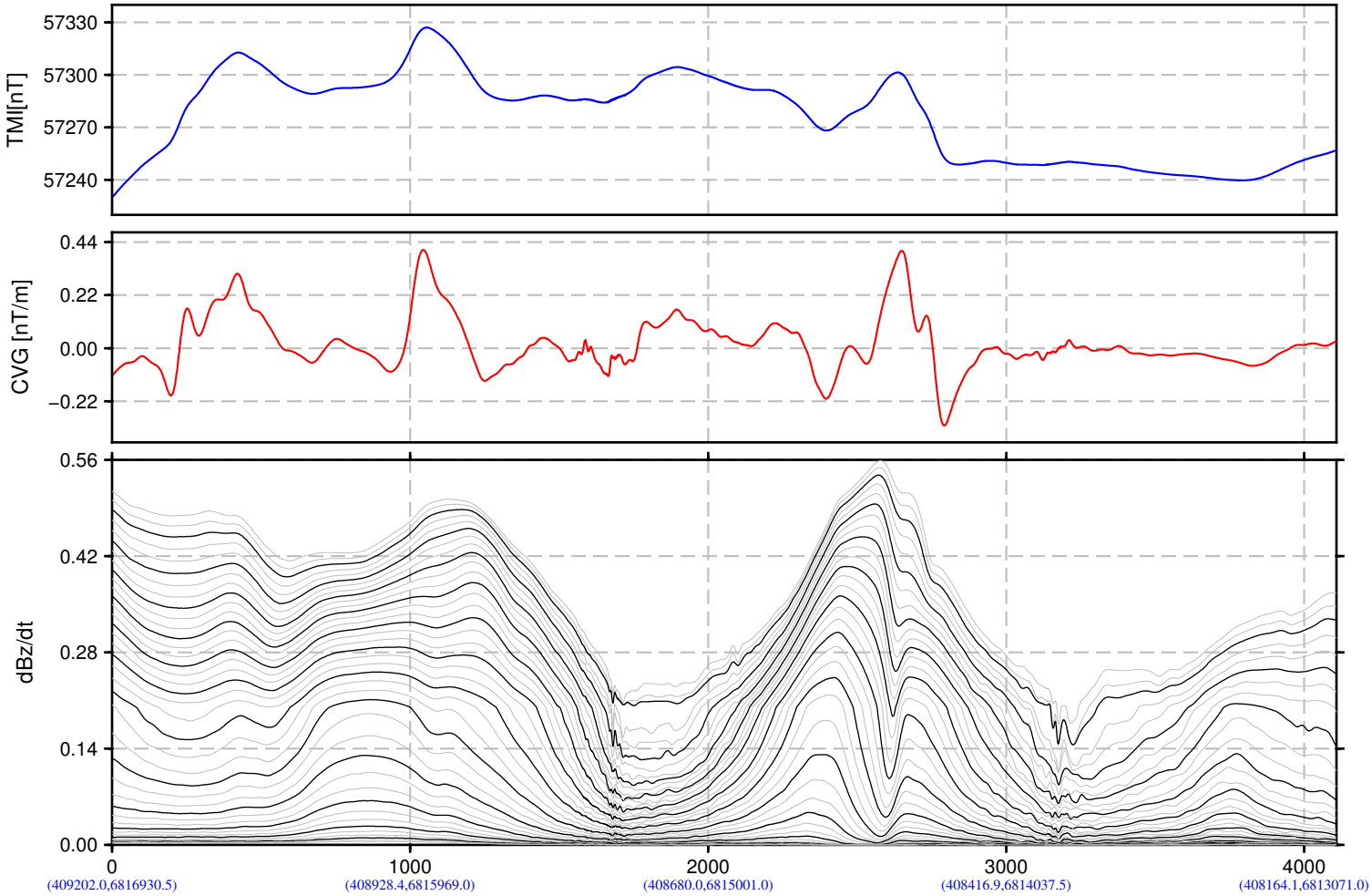
Resistivity Depth Image (RDI) for Line 3122

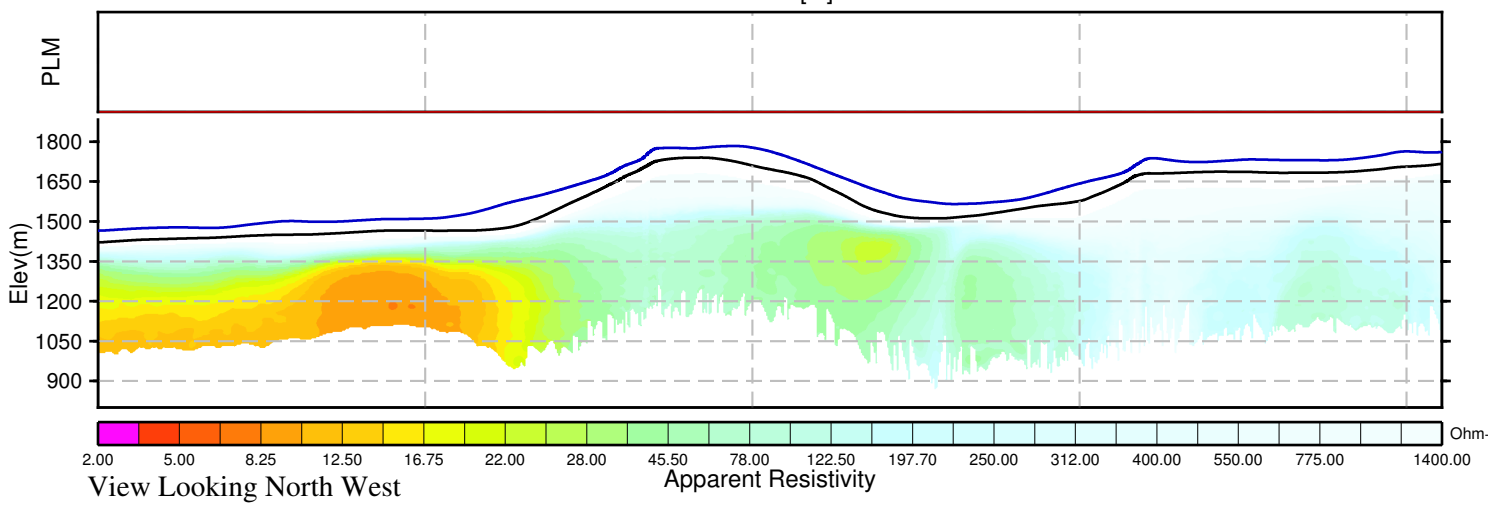
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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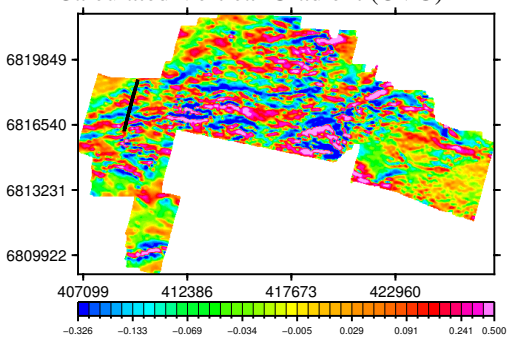
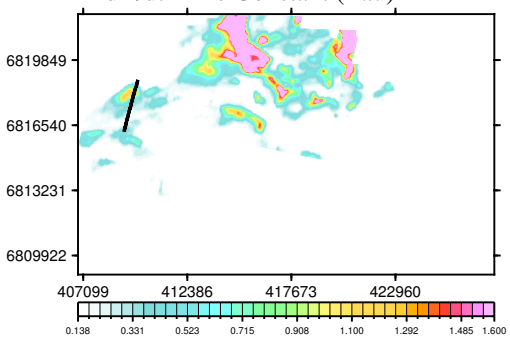
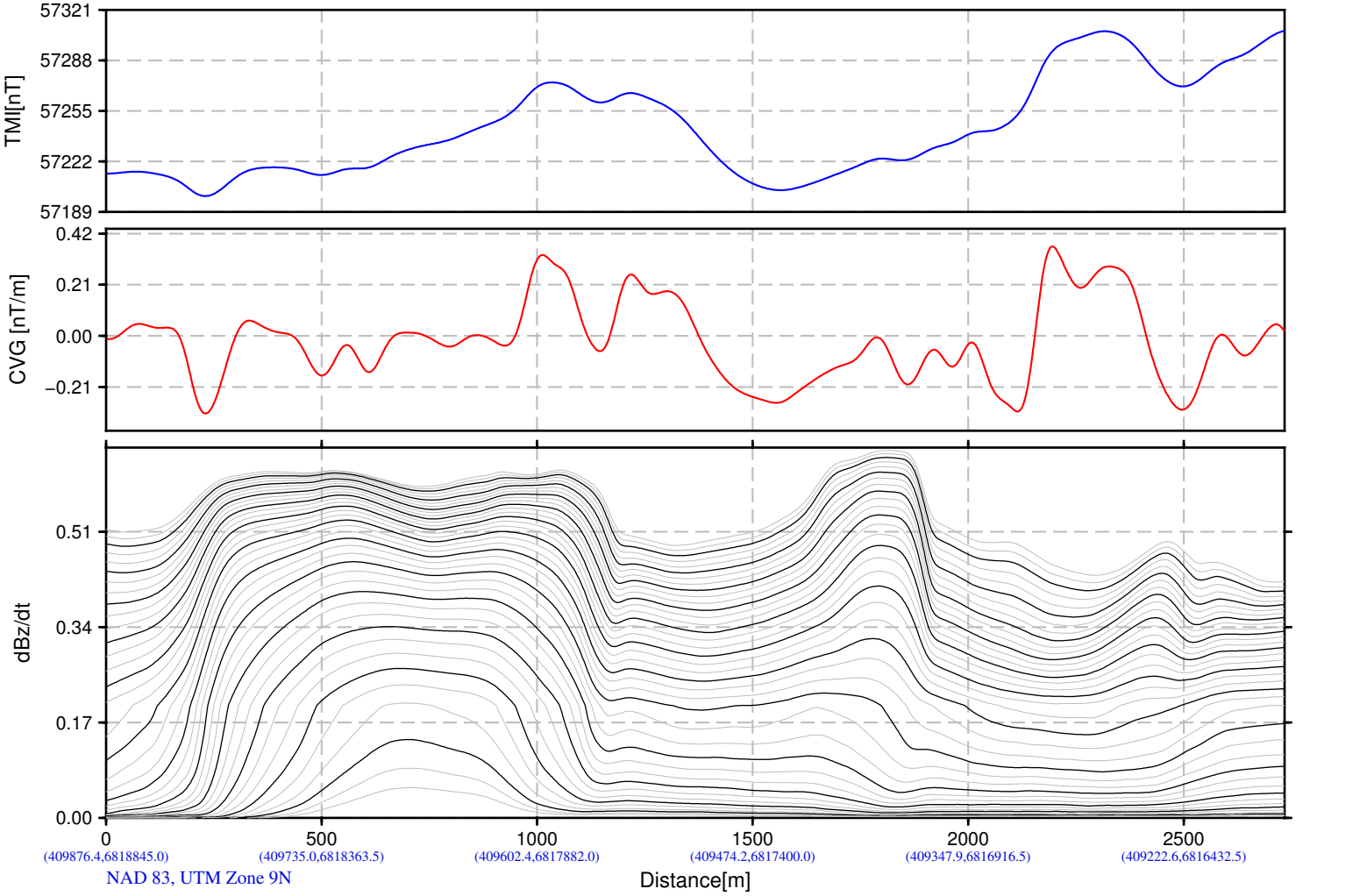
Resistivity Depth Image (RDI) for Line 3130

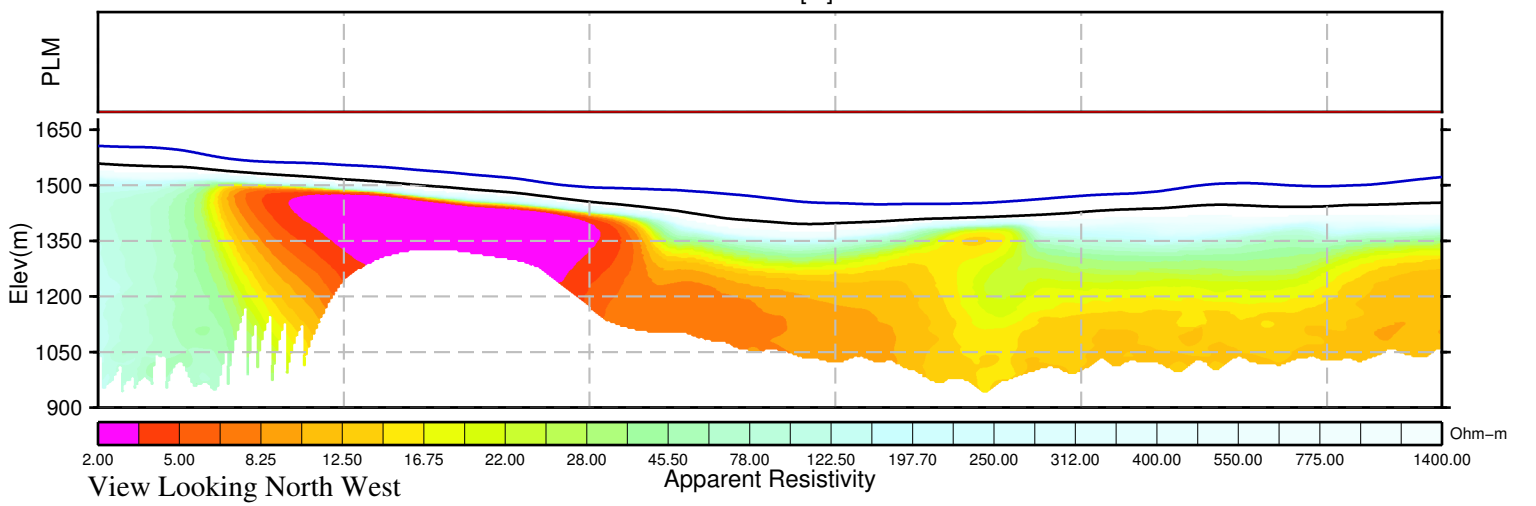
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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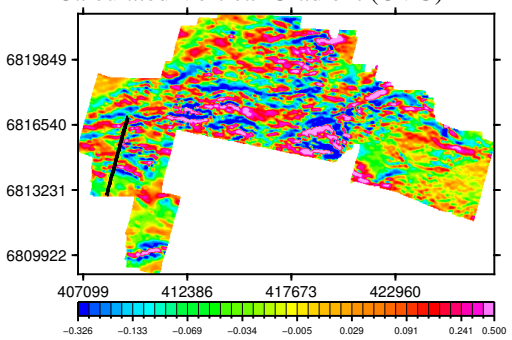
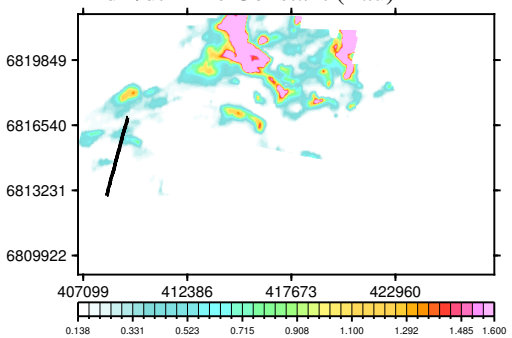
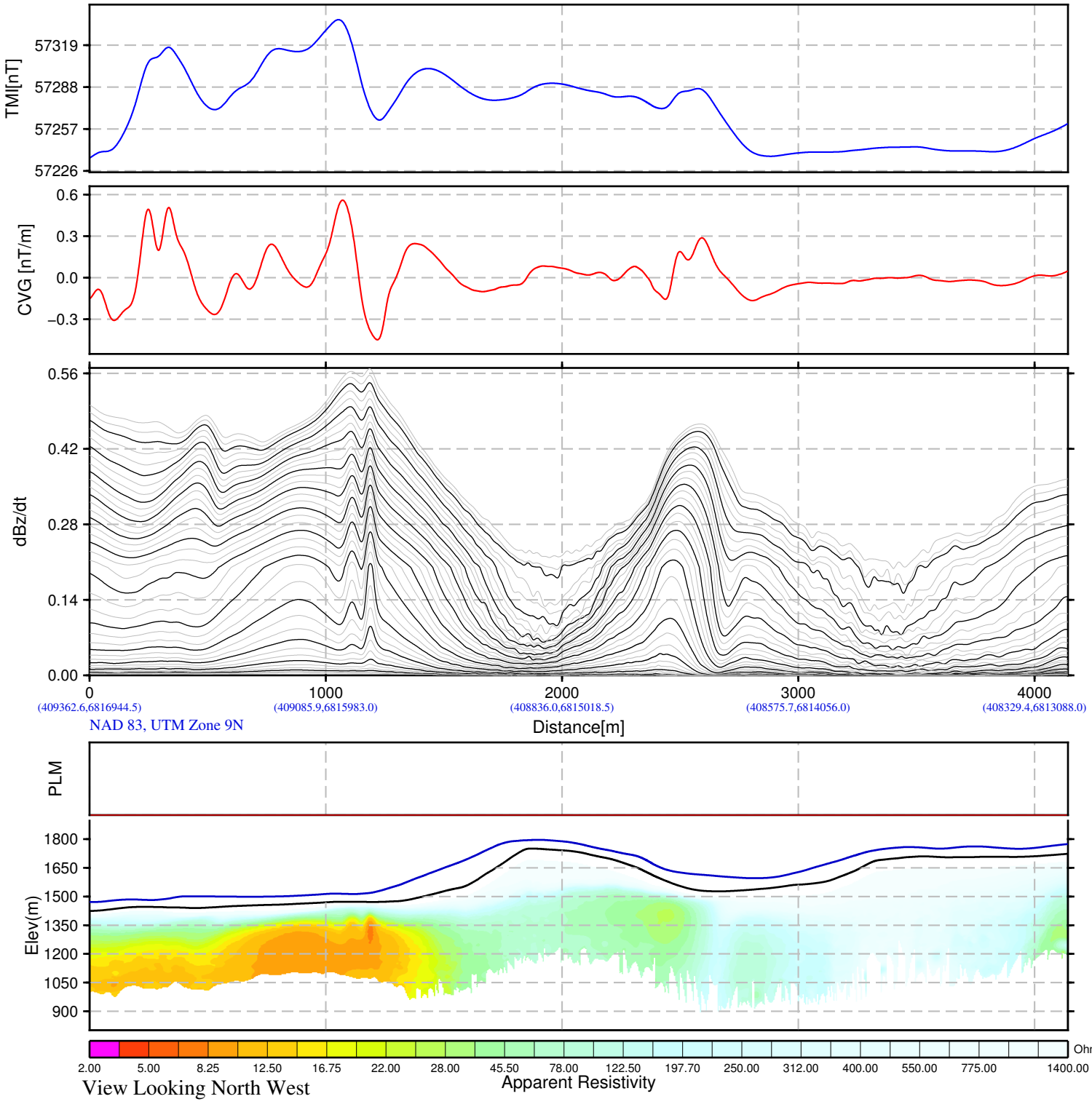
Resistivity Depth Image (RDI) for Line 3132

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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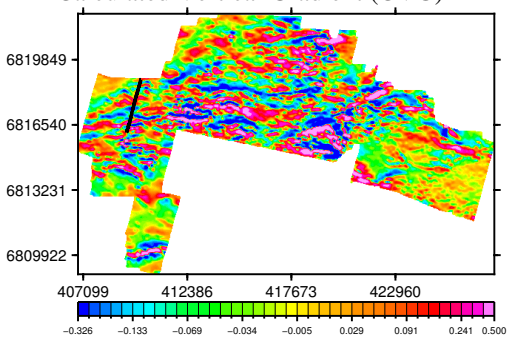
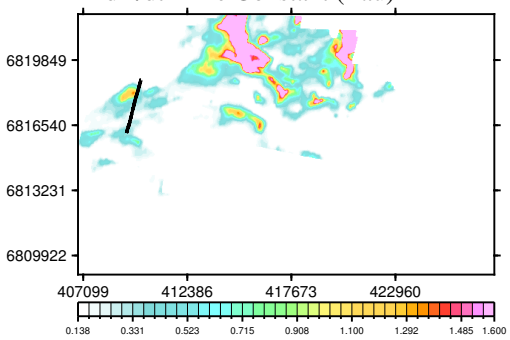
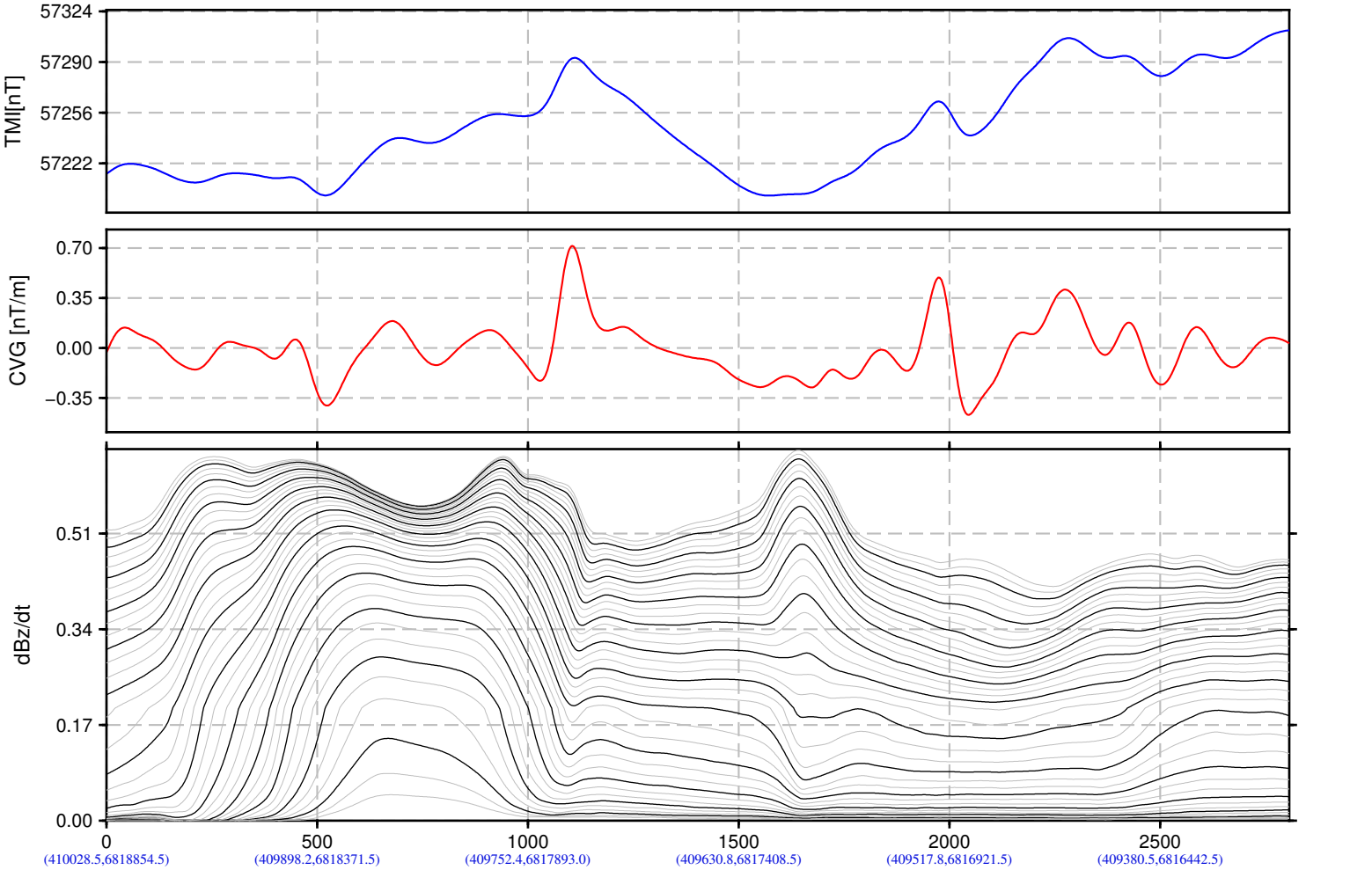
Resistivity Depth Image (RDI) for Line 3140

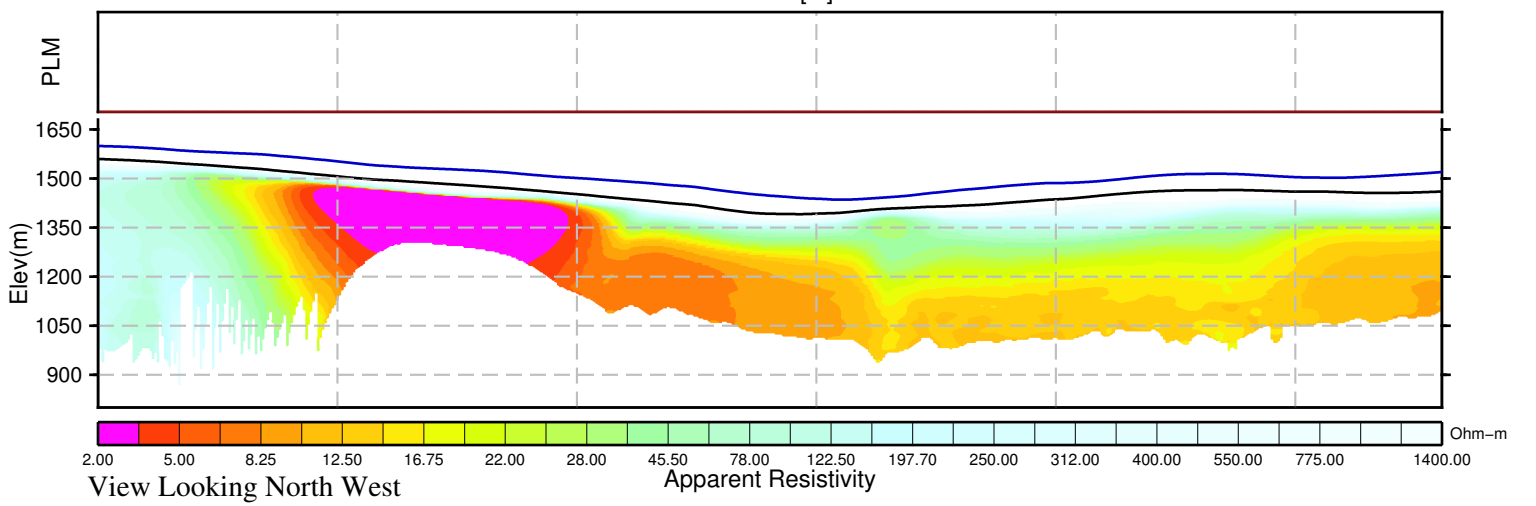
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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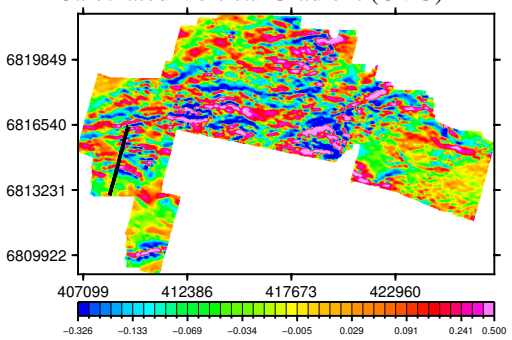
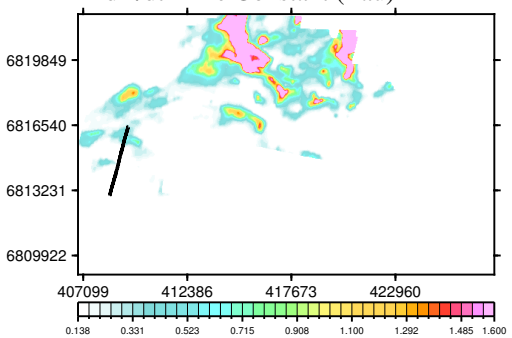
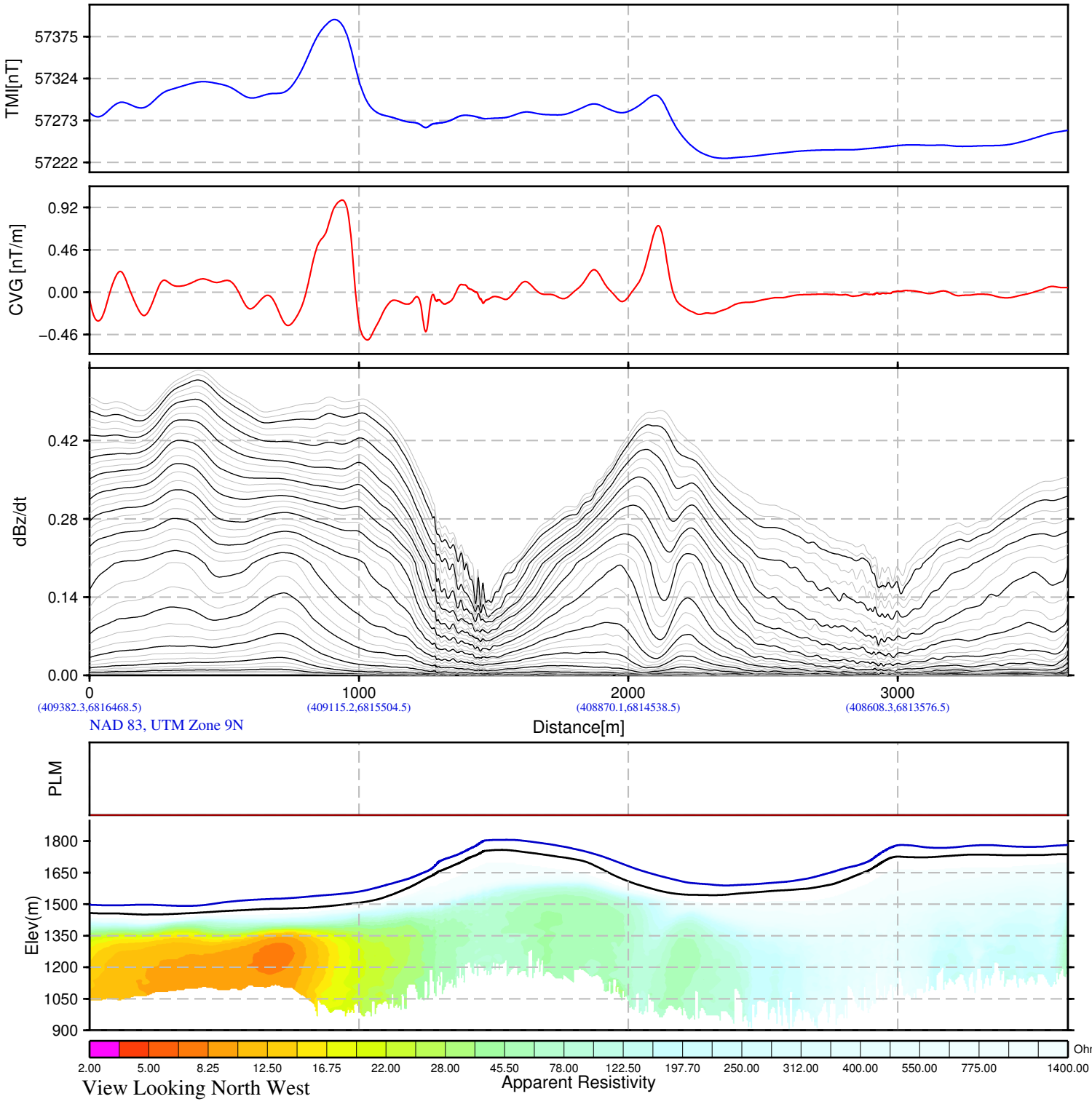
Resistivity Depth Image (RDI) for Line 3142

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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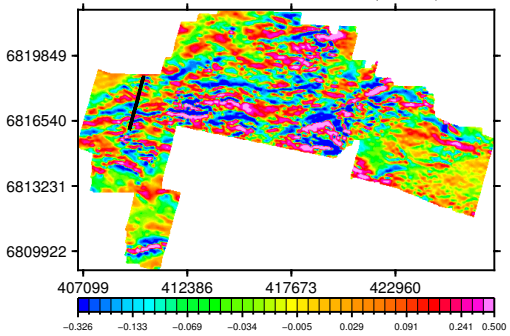
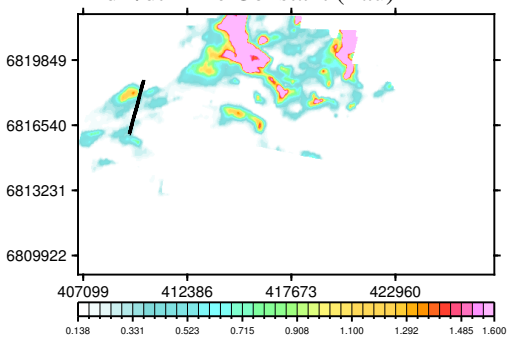
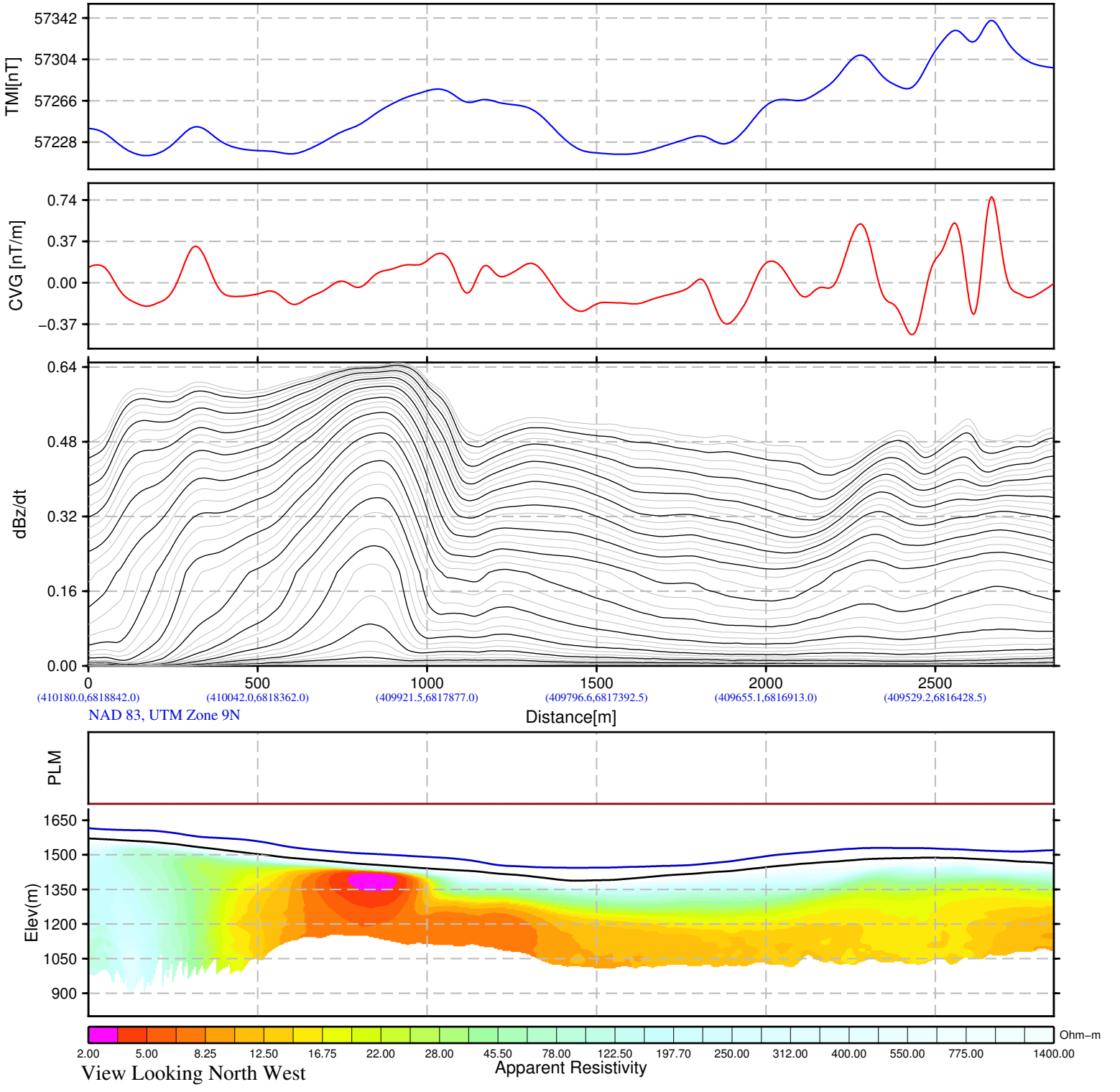
Resistivity Depth Image (RDI) for Line 3150

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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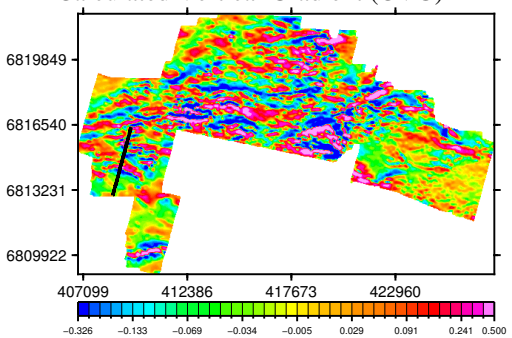
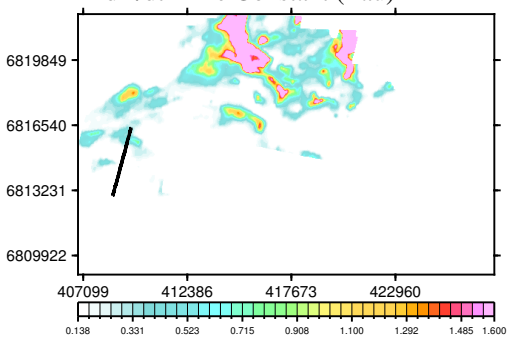
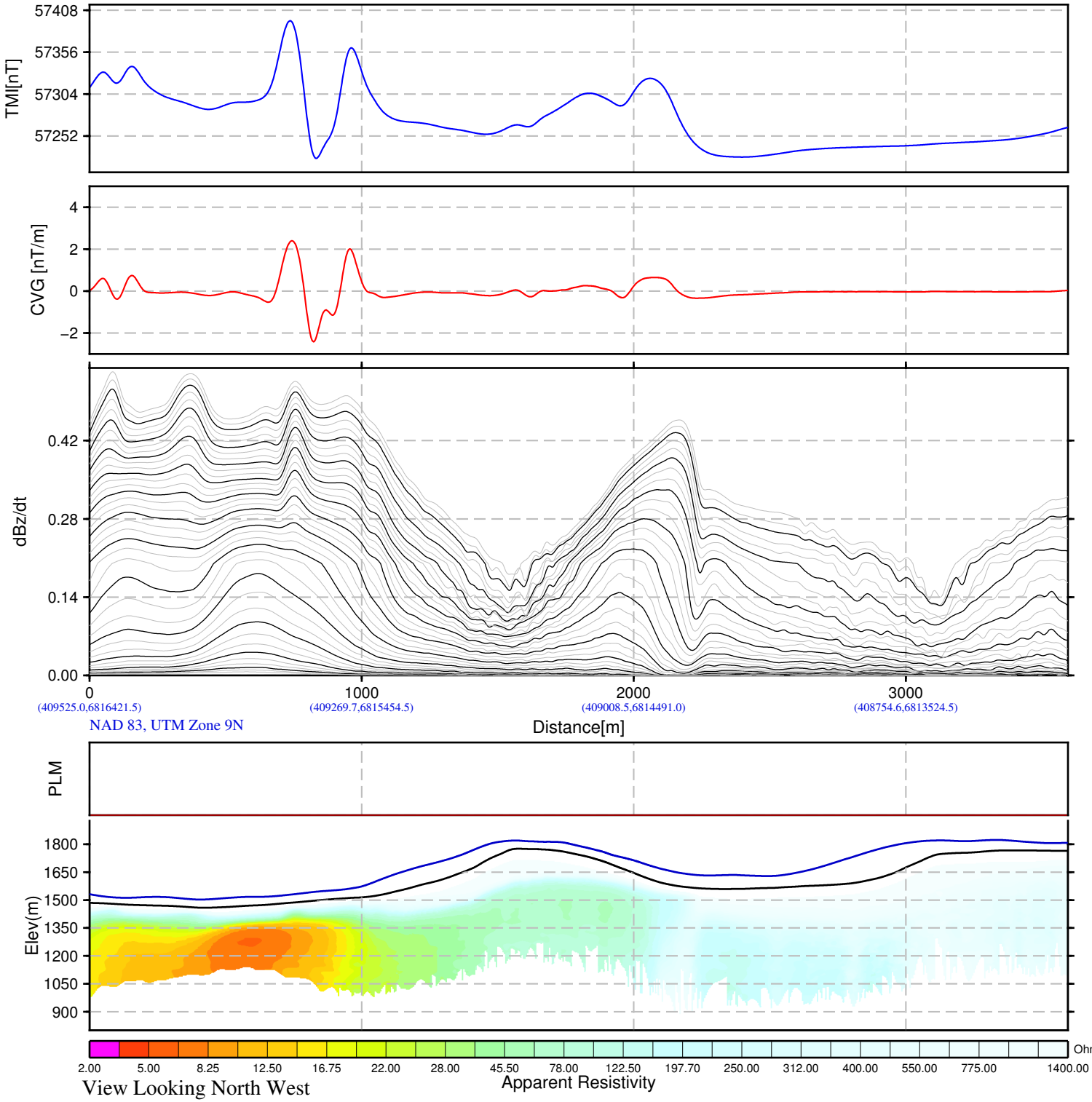
Resistivity Depth Image (RDI) for Line 3152

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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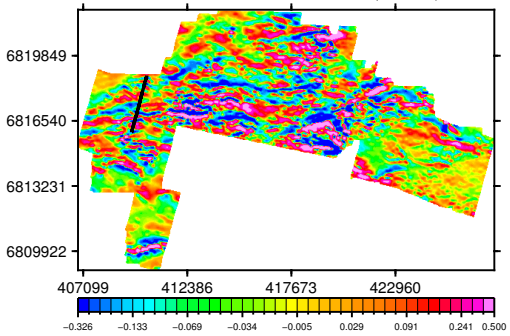
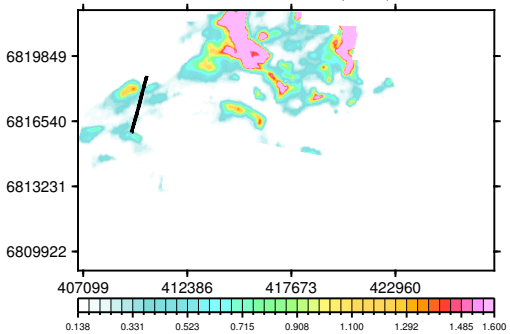
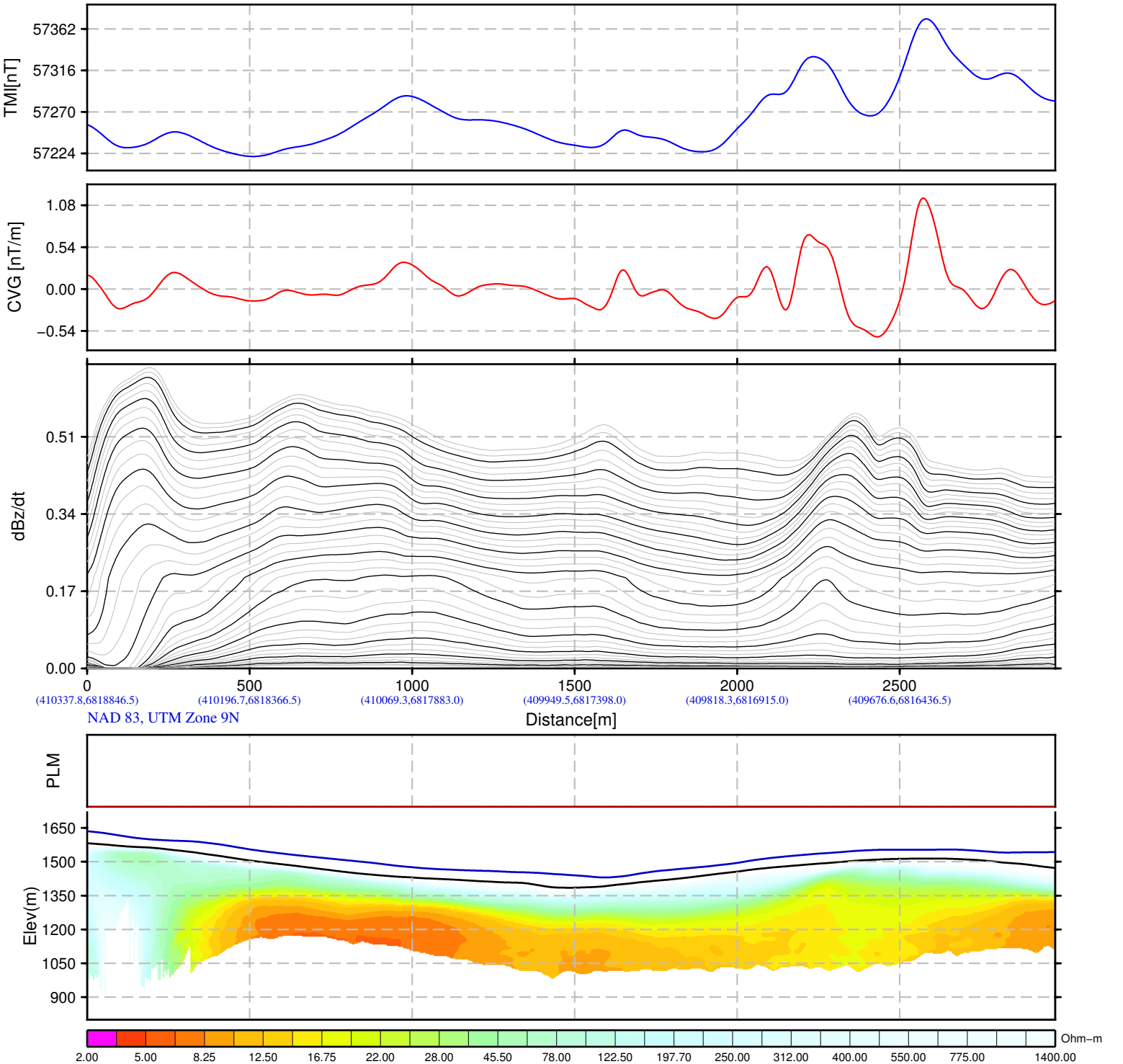
Resistivity Depth Image (RDI) for Line 3160

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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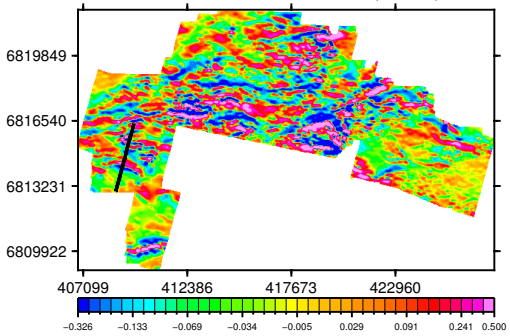
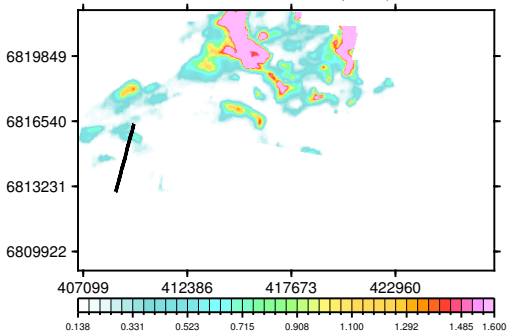
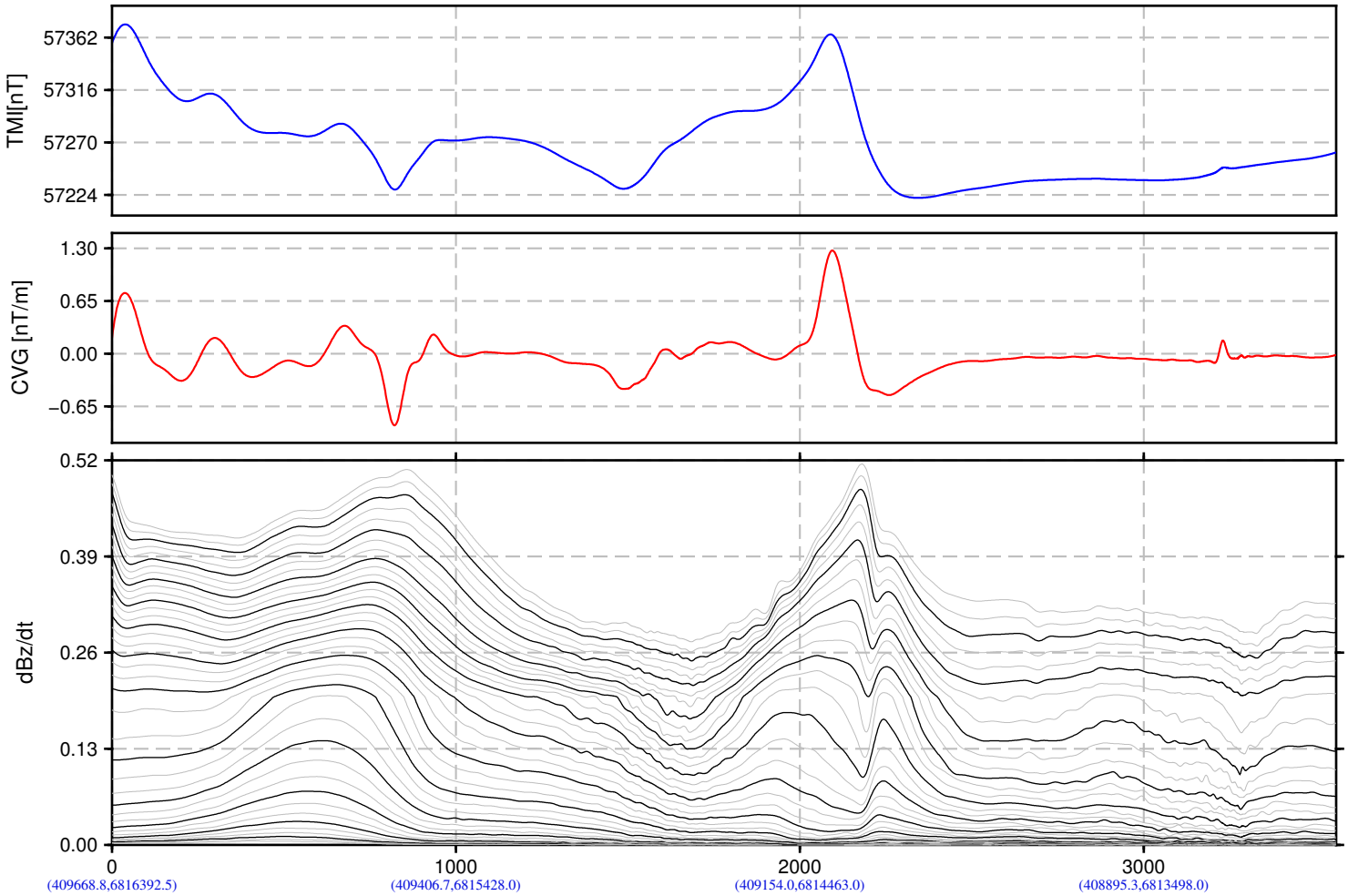
Resistivity Depth Image (RDI) for Line 3162

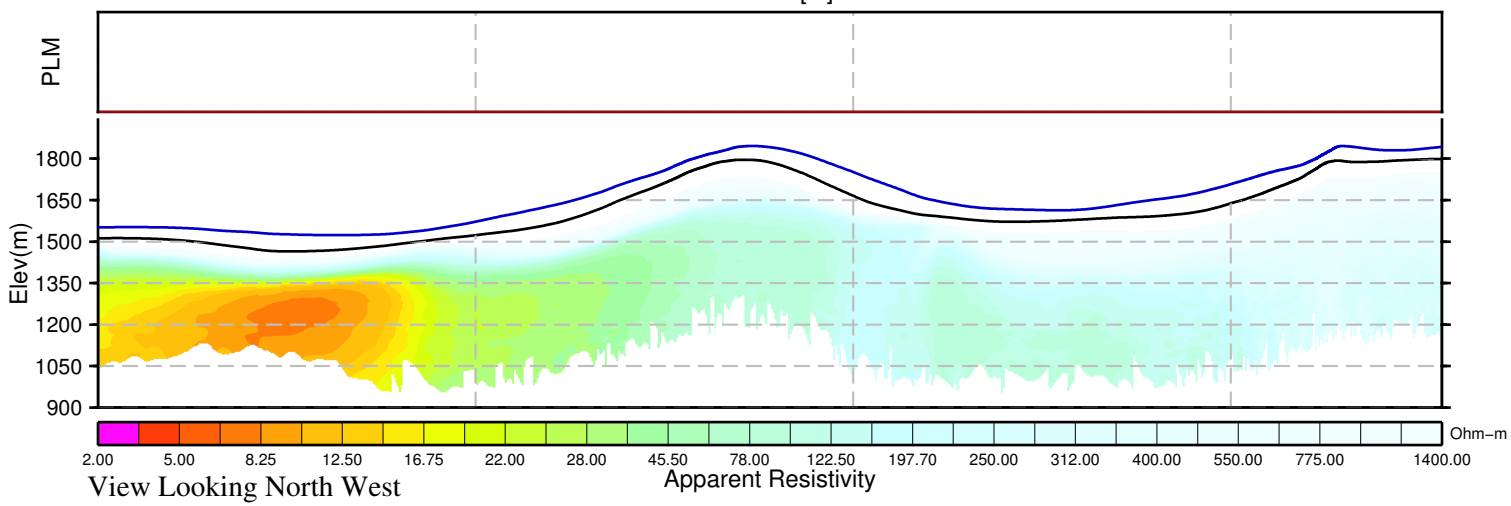
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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Yukon, Canada

VTEM System:VTEM17−Plus
Job Number:GL160037
Resistivity Depth Image (RDI)
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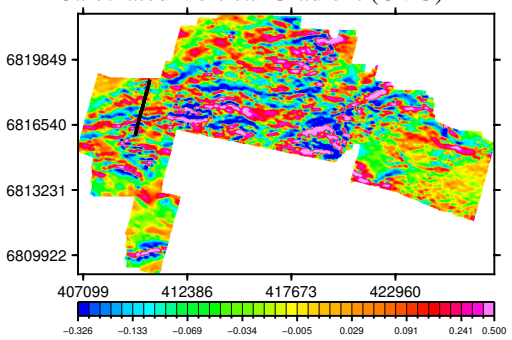
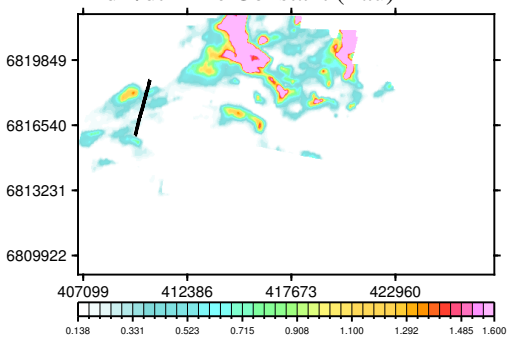
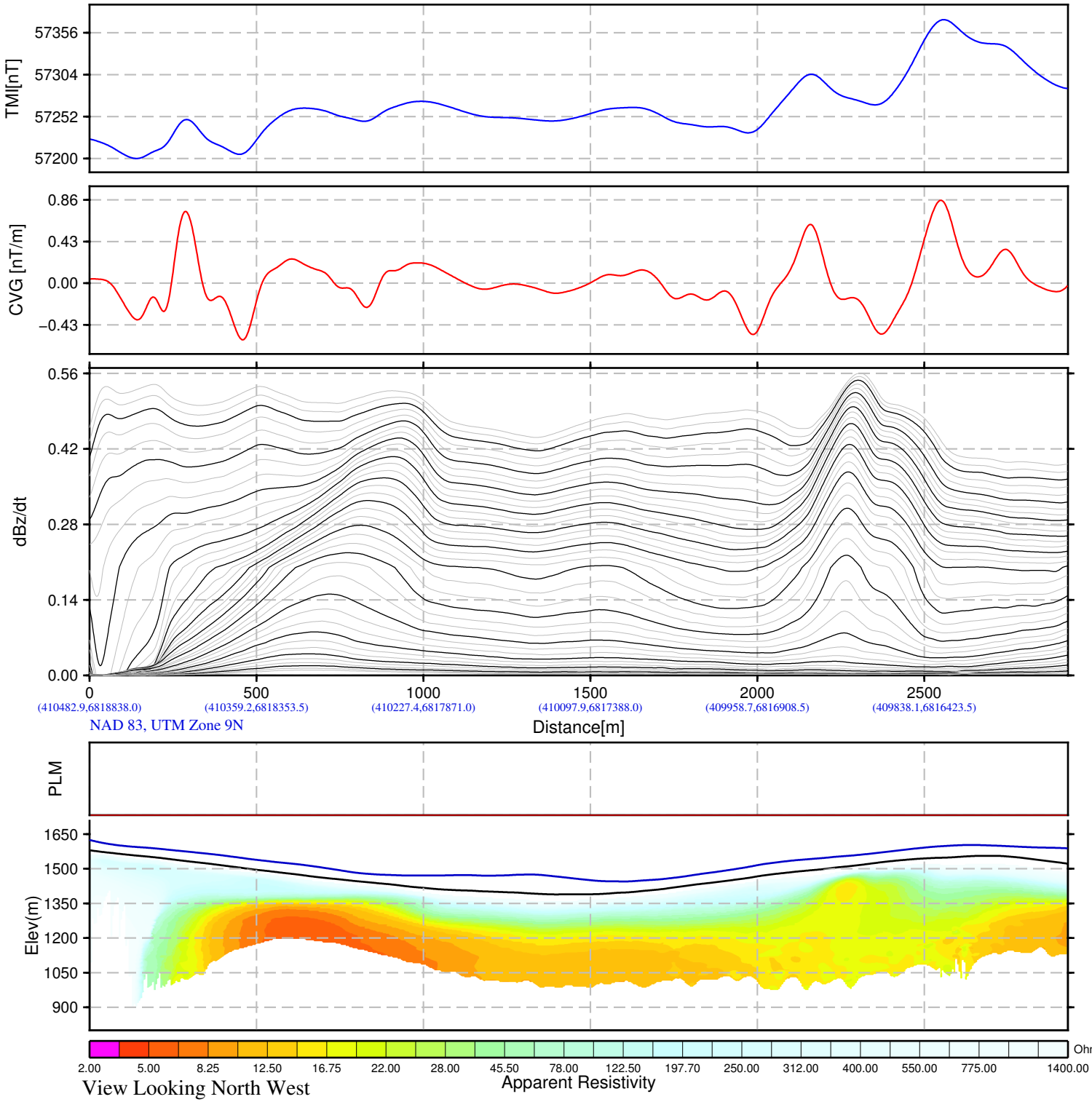
Resistivity Depth Image (RDI) for Line 3170

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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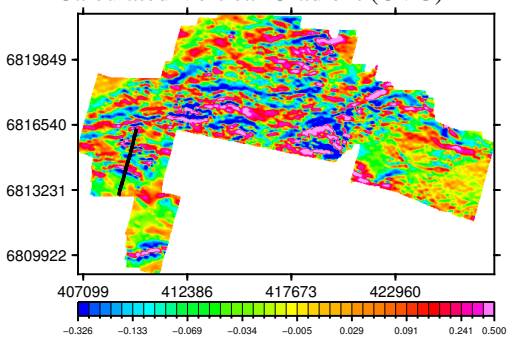
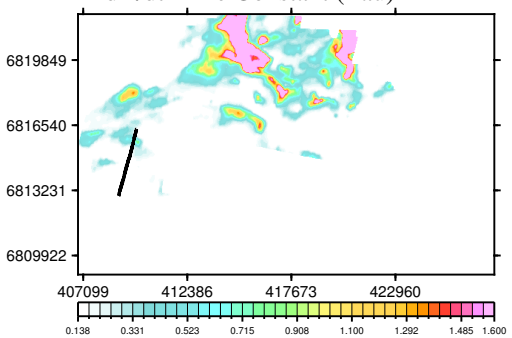
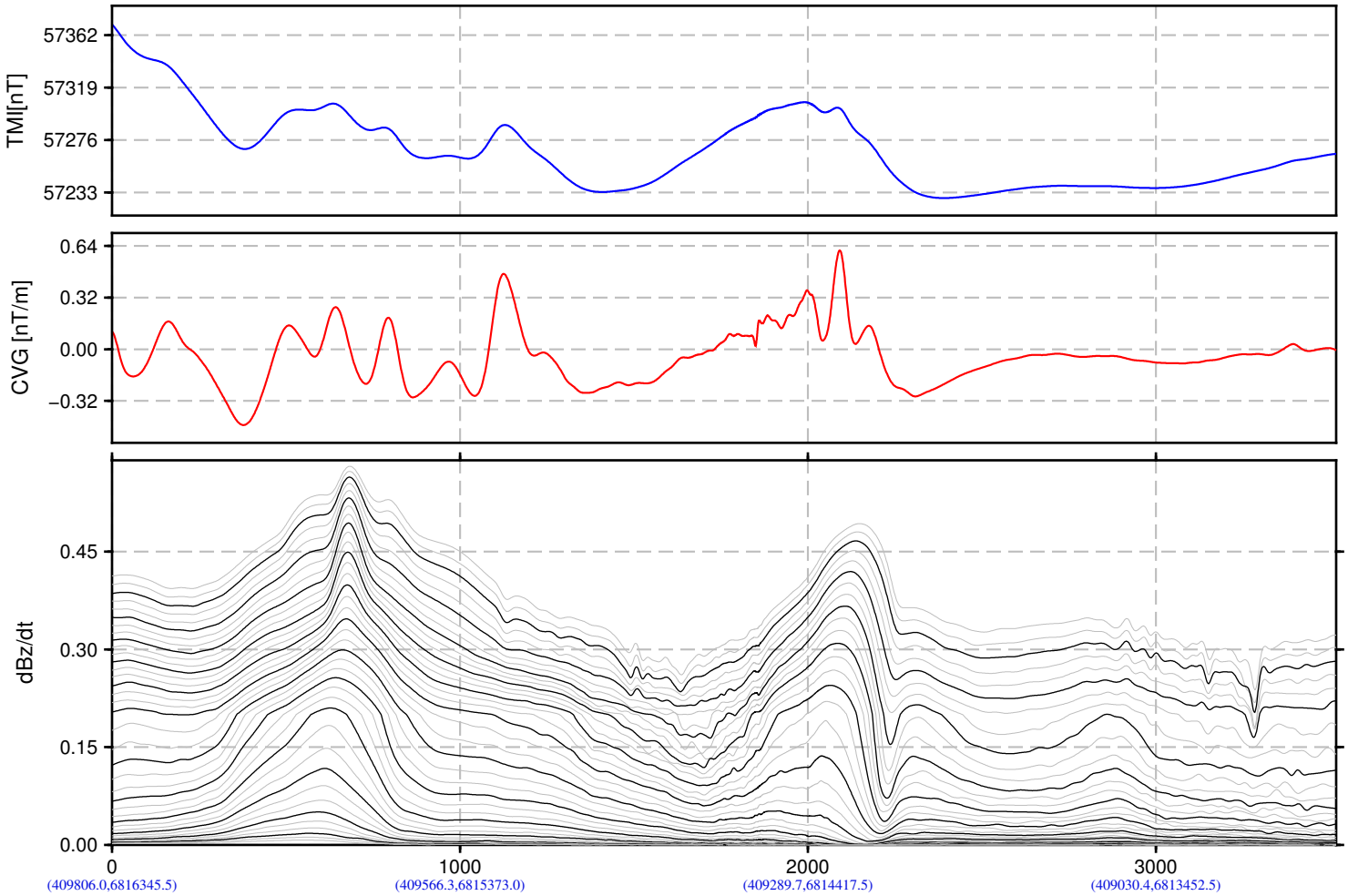
Resistivity Depth Image (RDI) for Line 3172

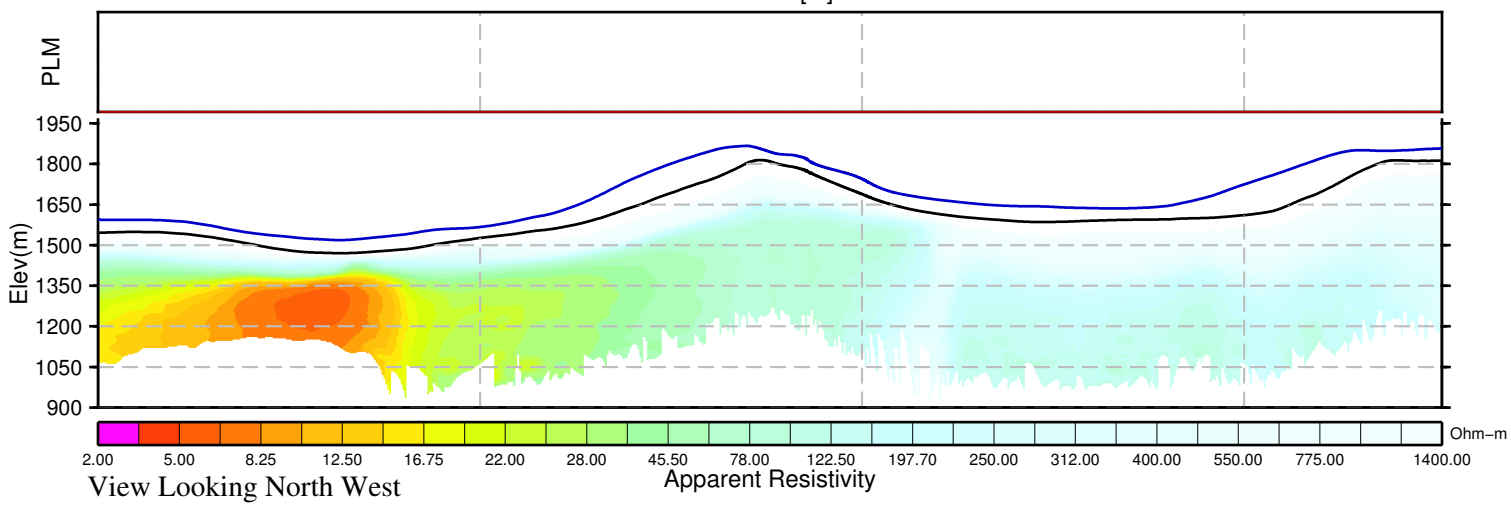
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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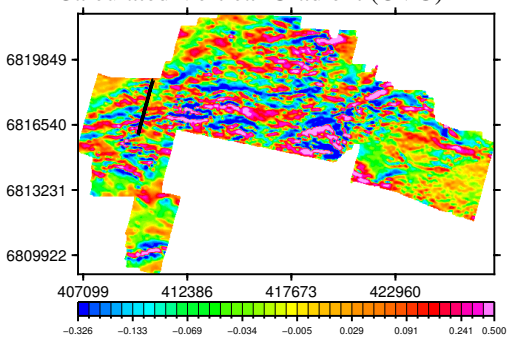
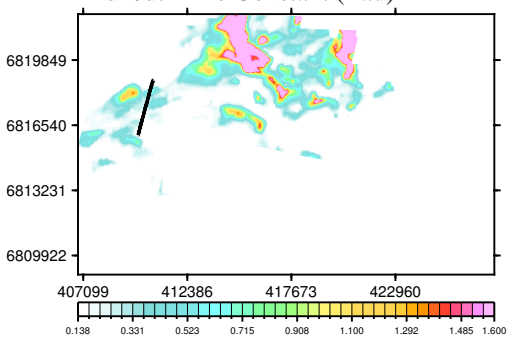
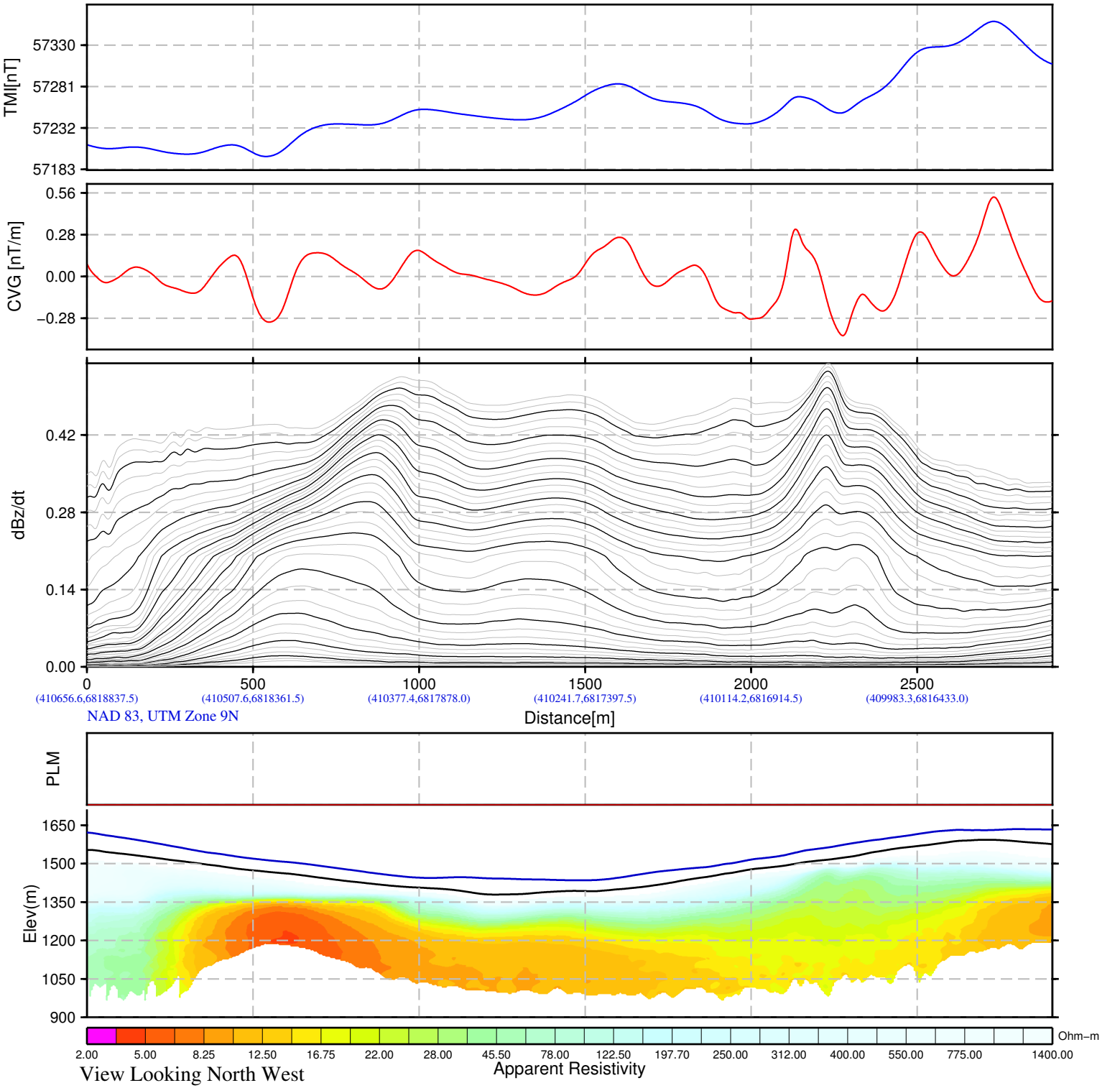
Resistivity Depth Image (RDI) for Line 3180

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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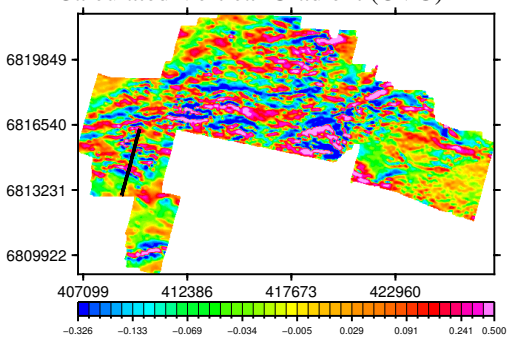
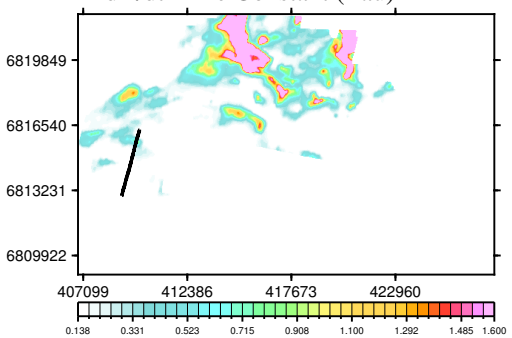
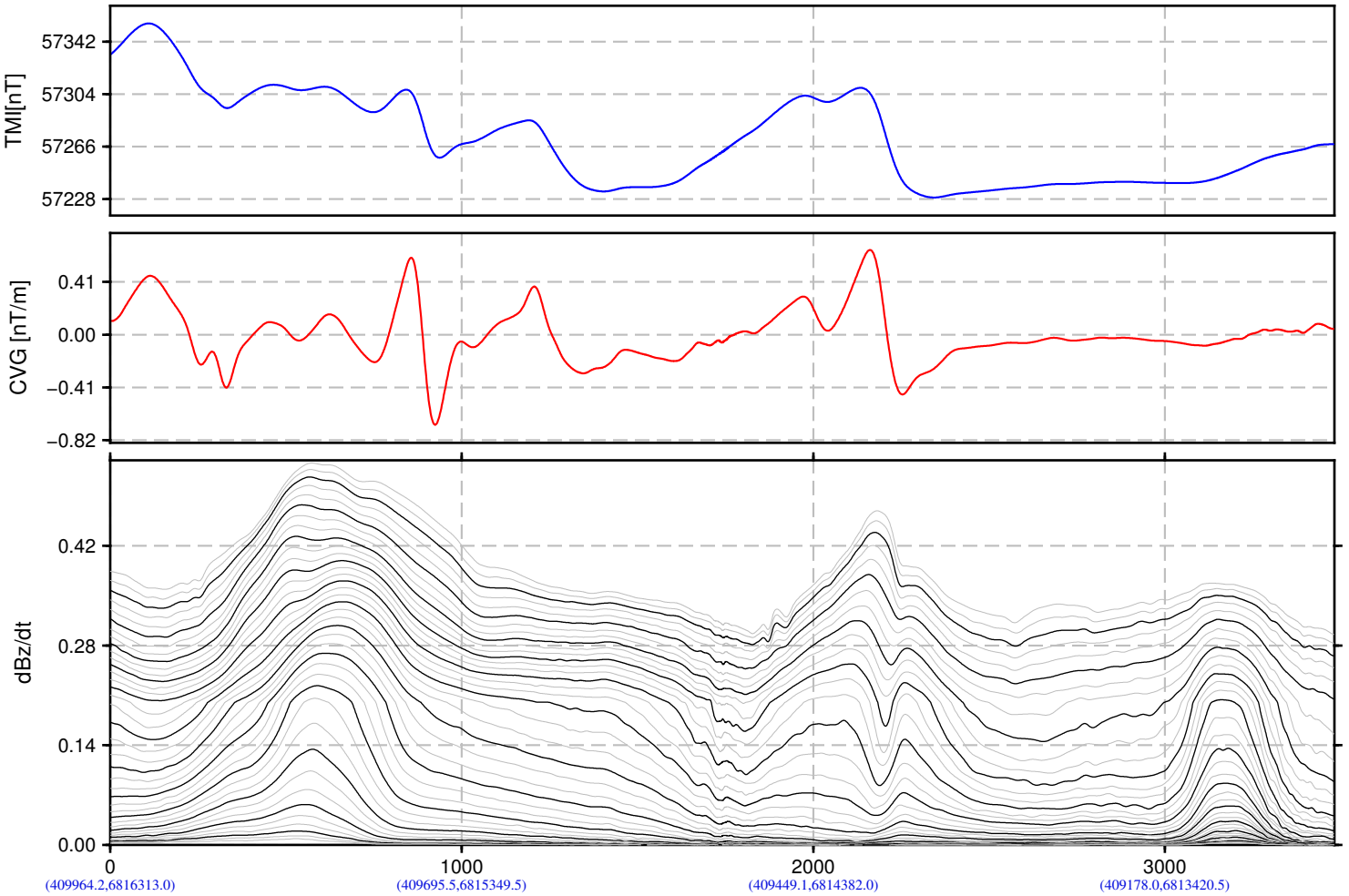
Resistivity Depth Image (RDI) for Line 3182

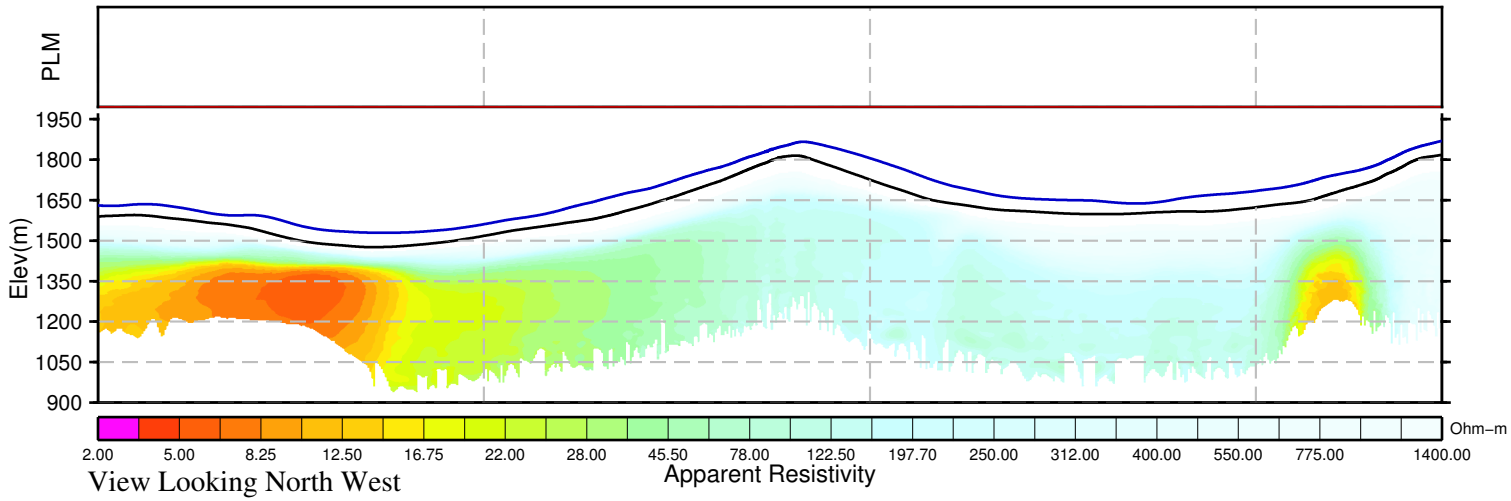
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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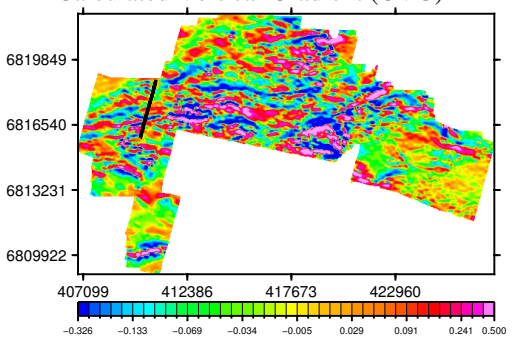
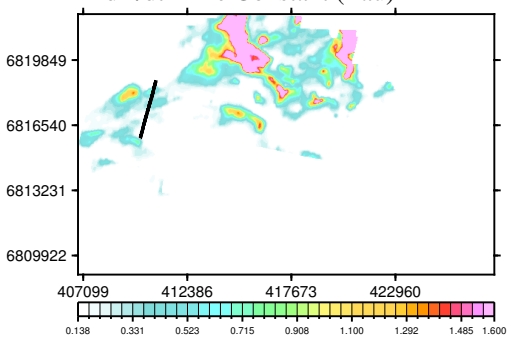
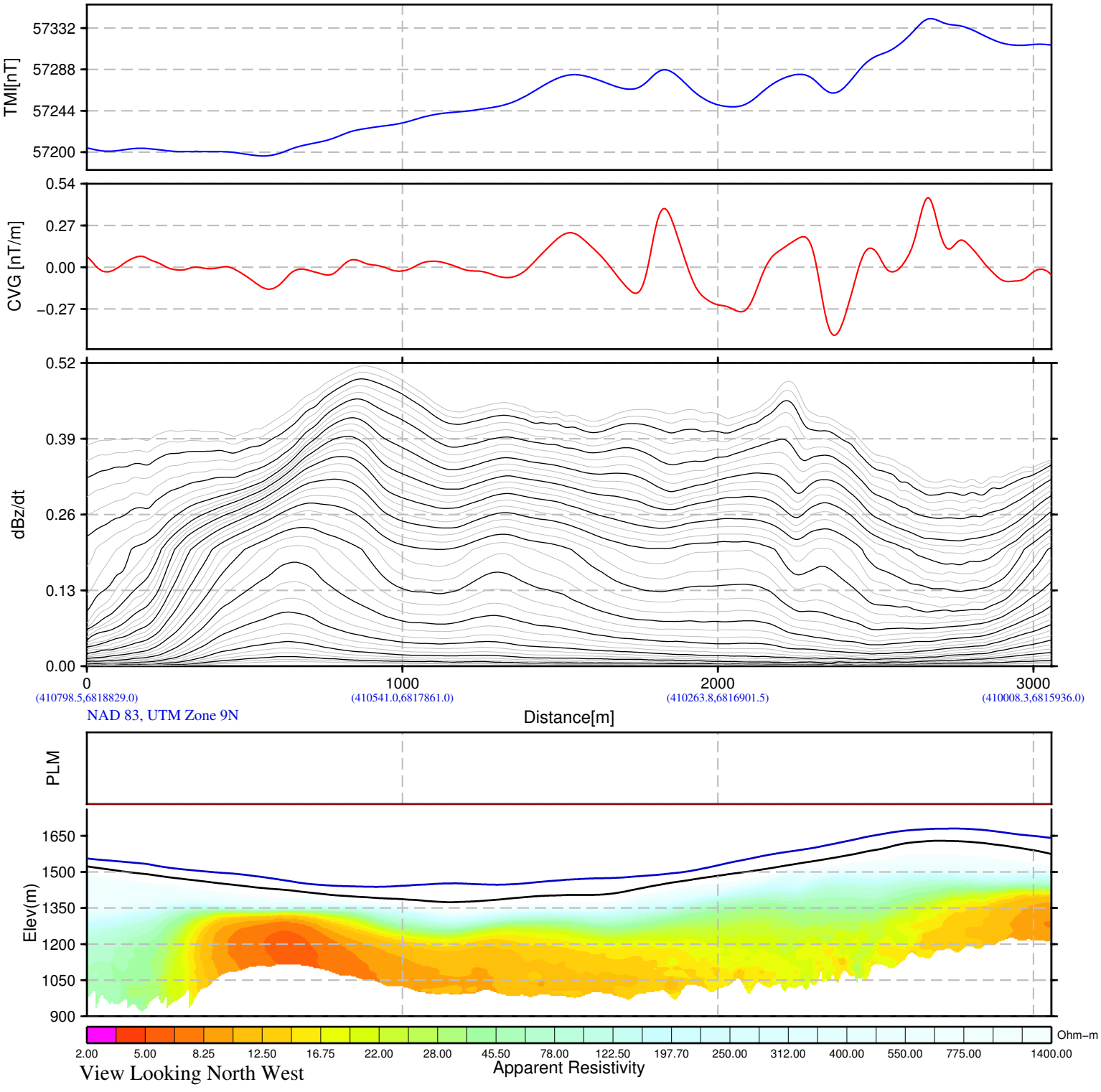
Resistivity Depth Image (RDI) for Line 3190

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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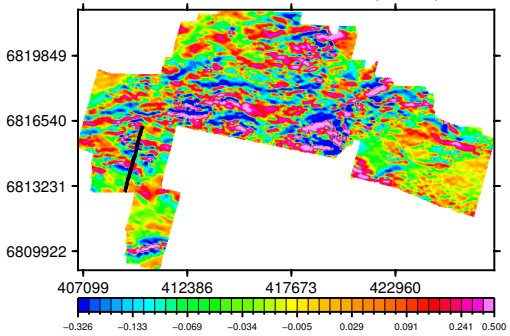
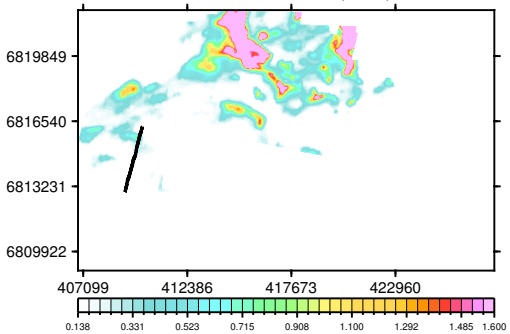
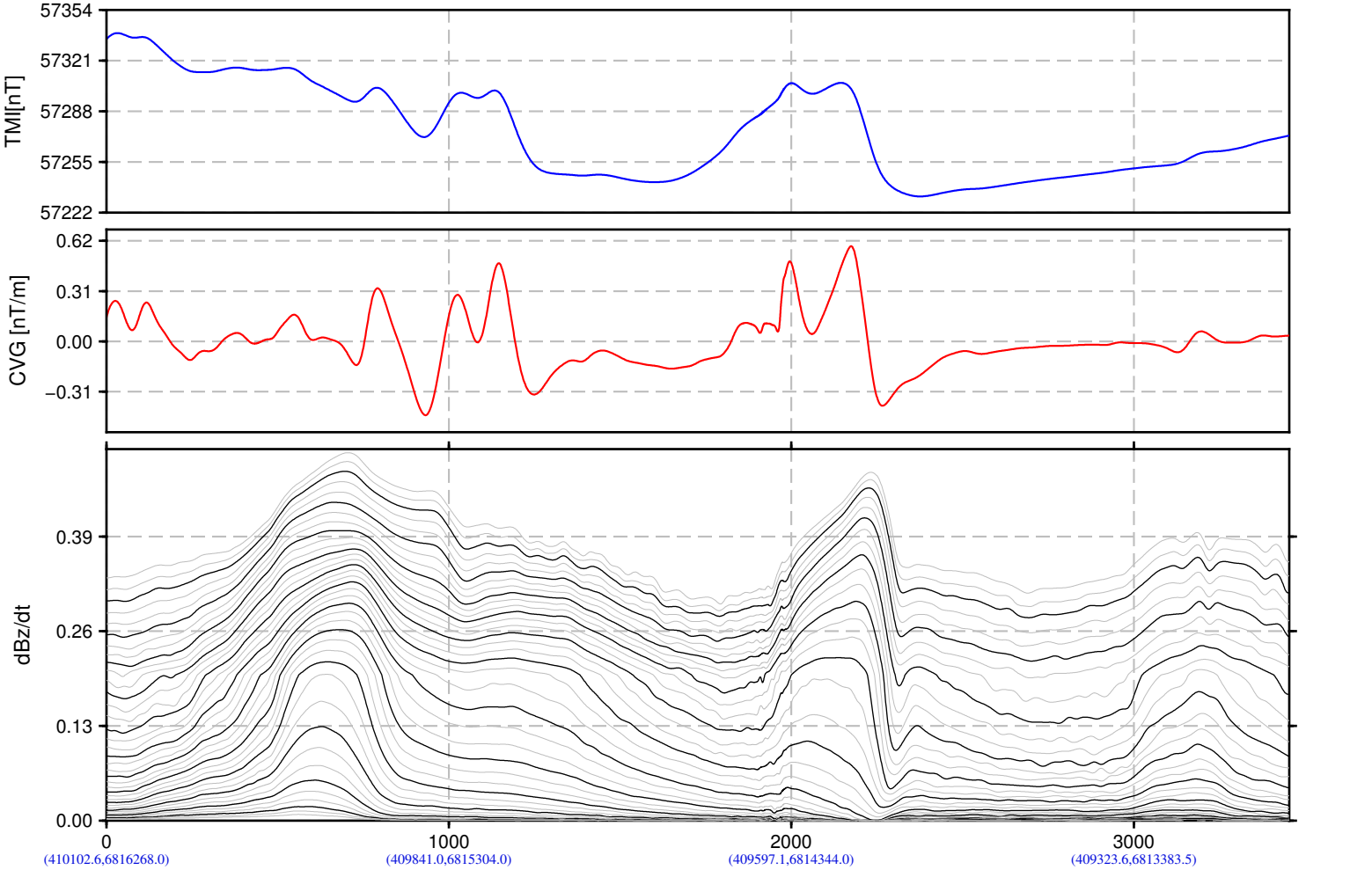
Resistivity Depth Image (RDI) for Line 3192

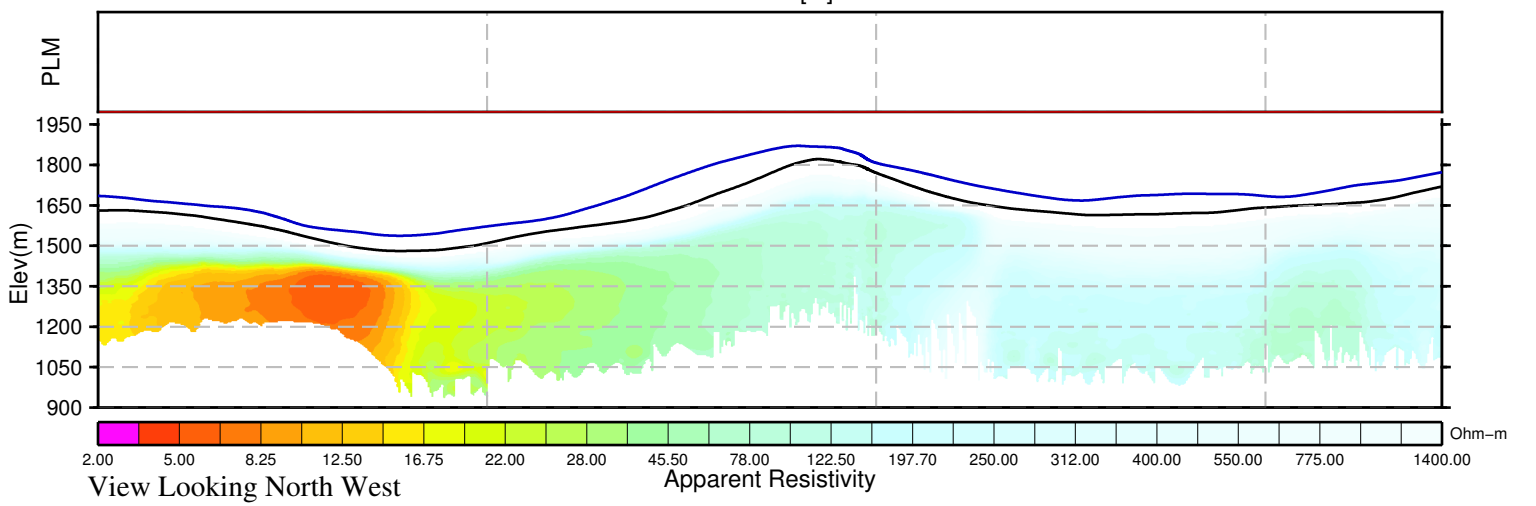
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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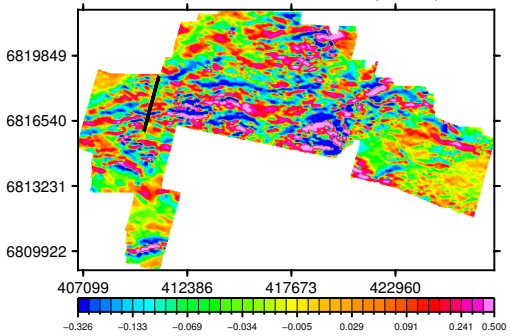
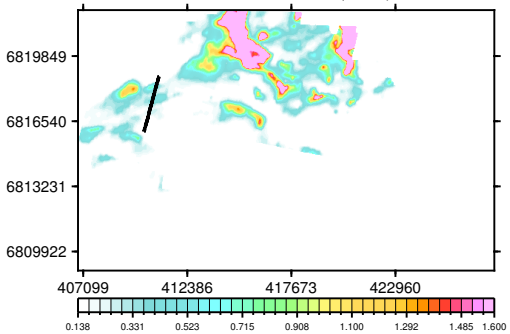
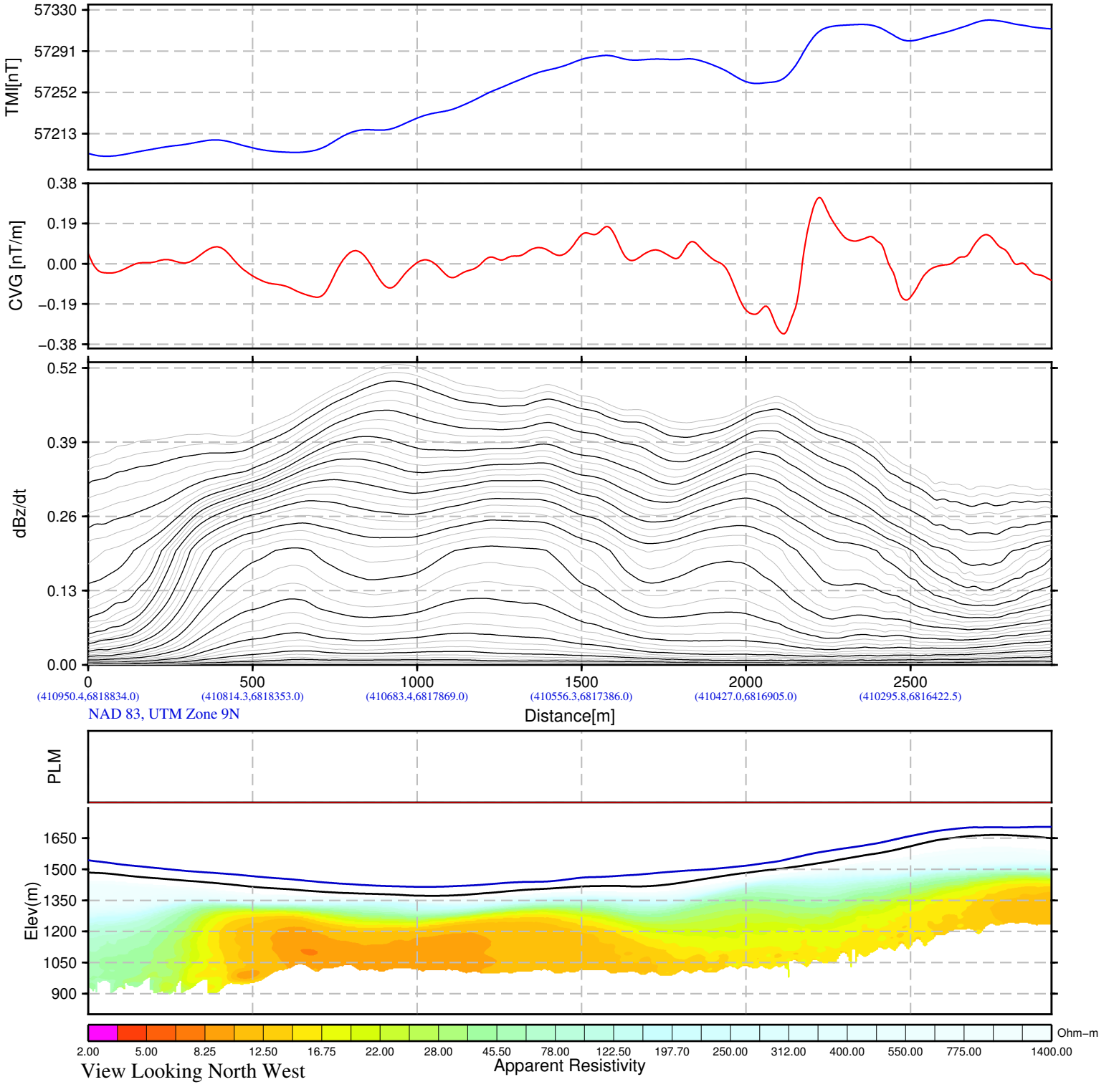
Resistivity Depth Image (RDI) for Line 3200

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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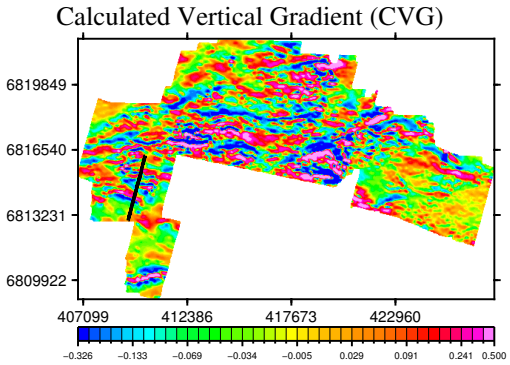
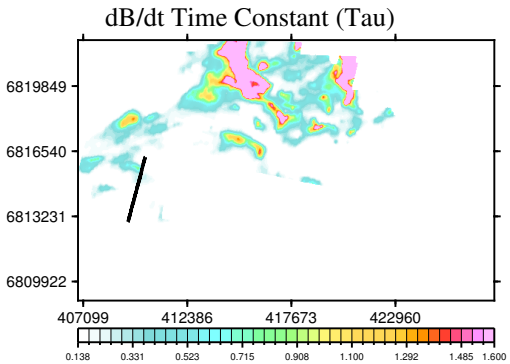
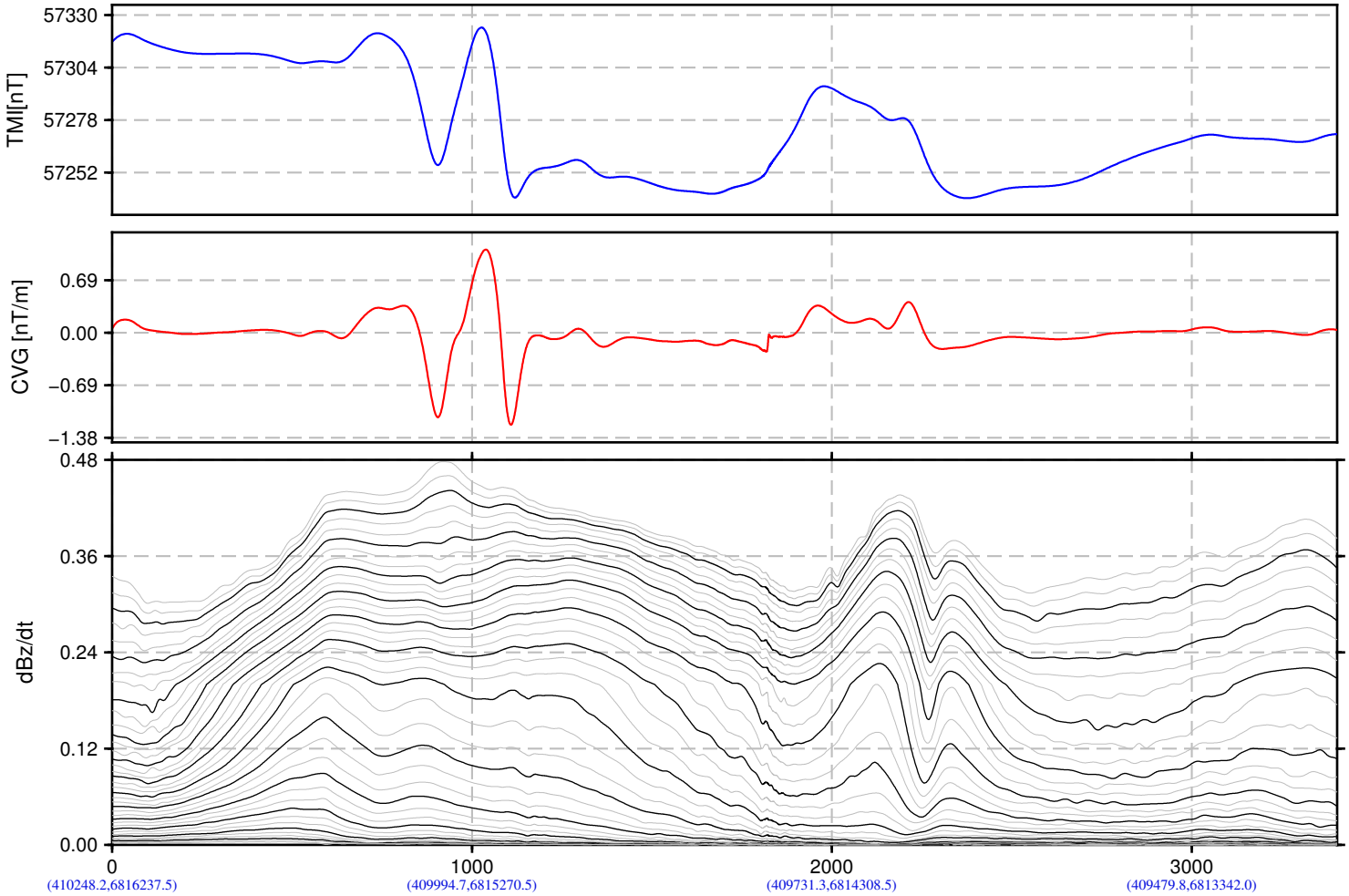
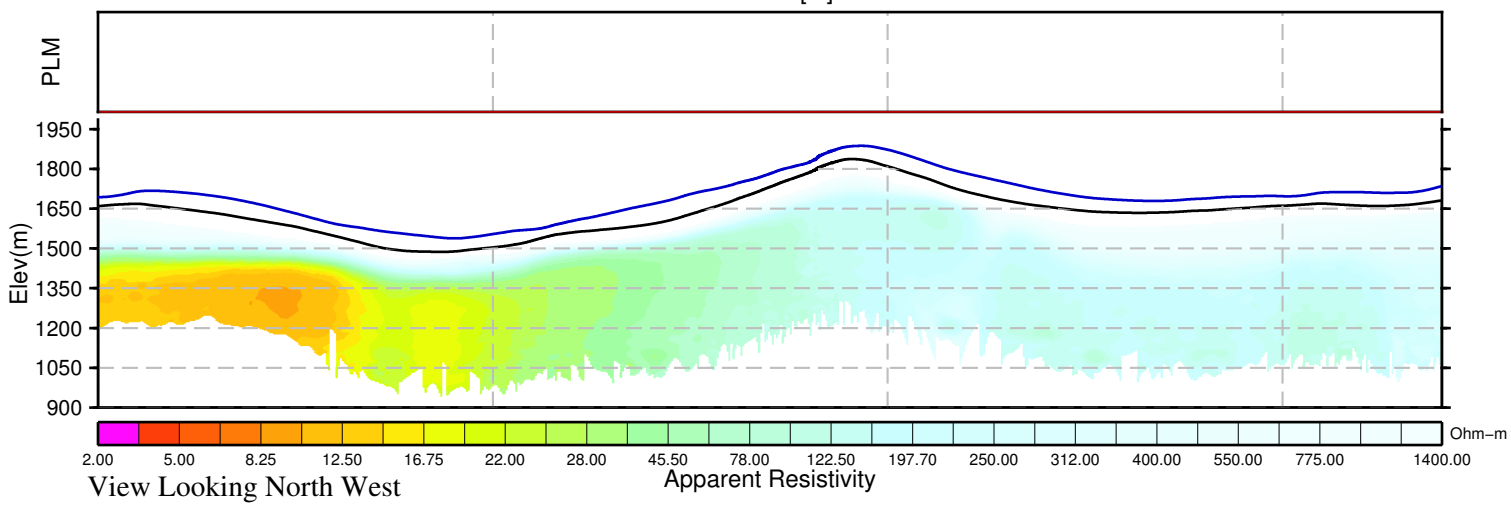
Resistivity Depth Image (RDI) for Line 3202









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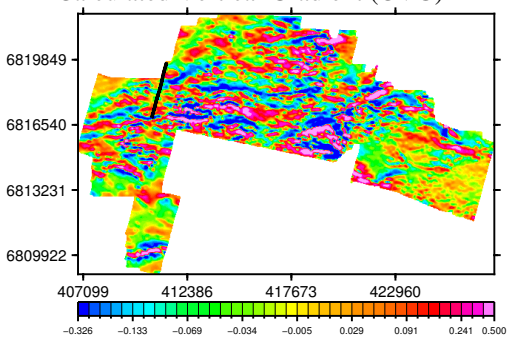
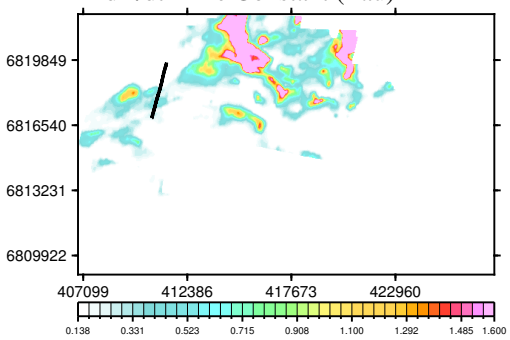
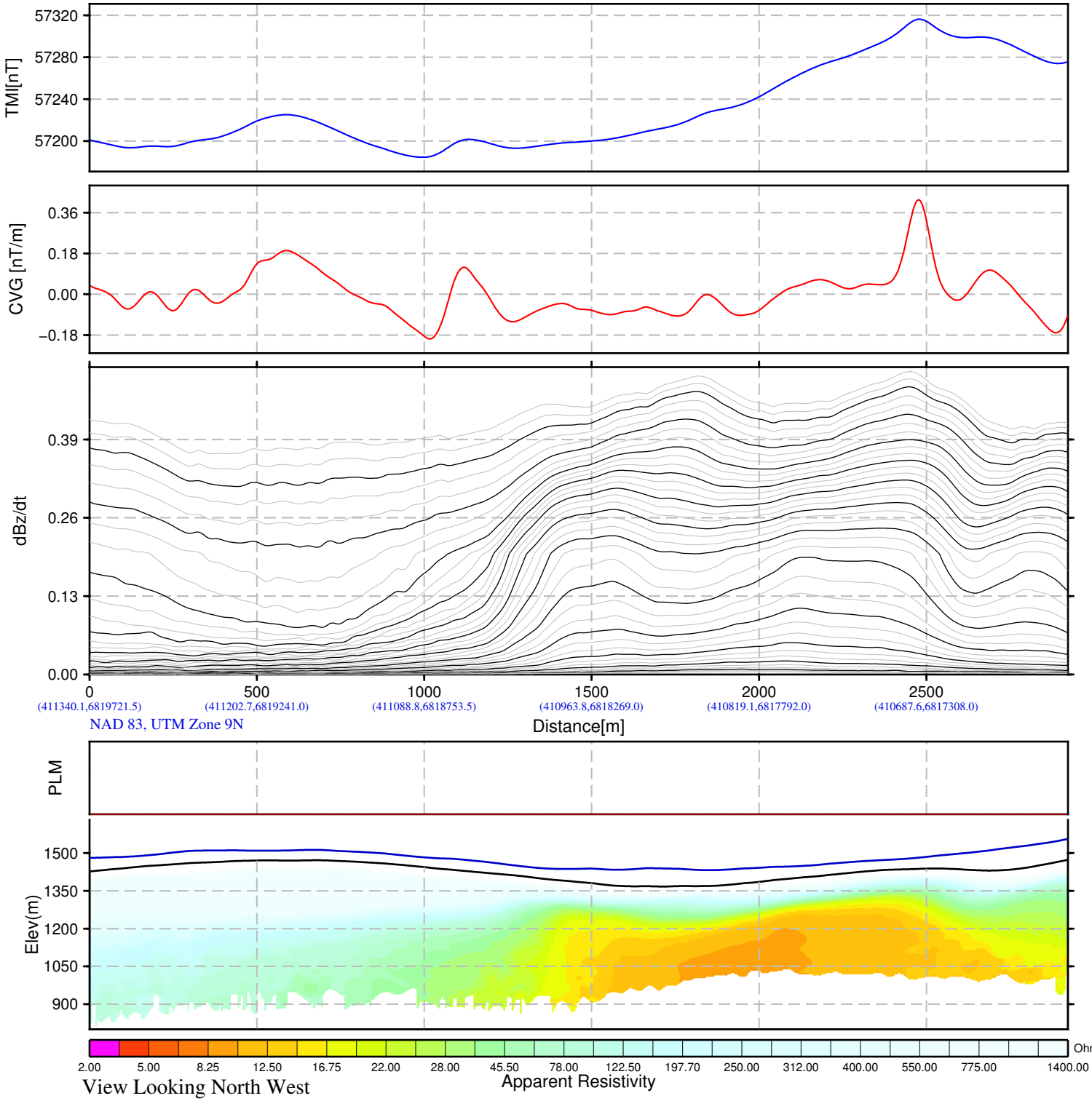
Resistivity Depth Image (RDI) for Line 3210

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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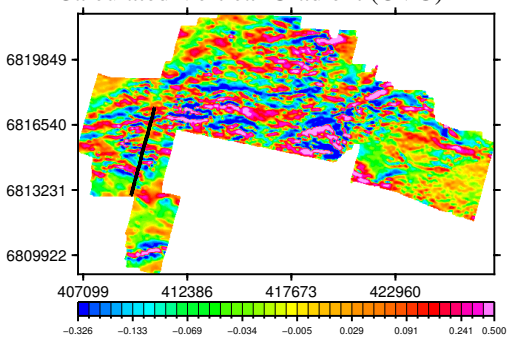
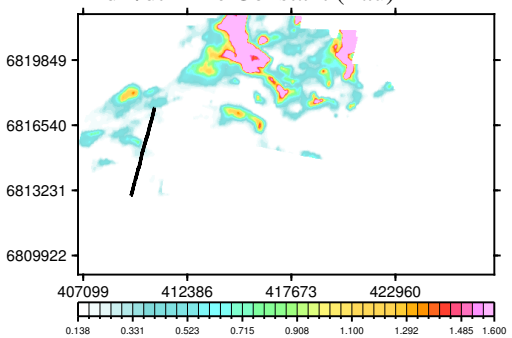
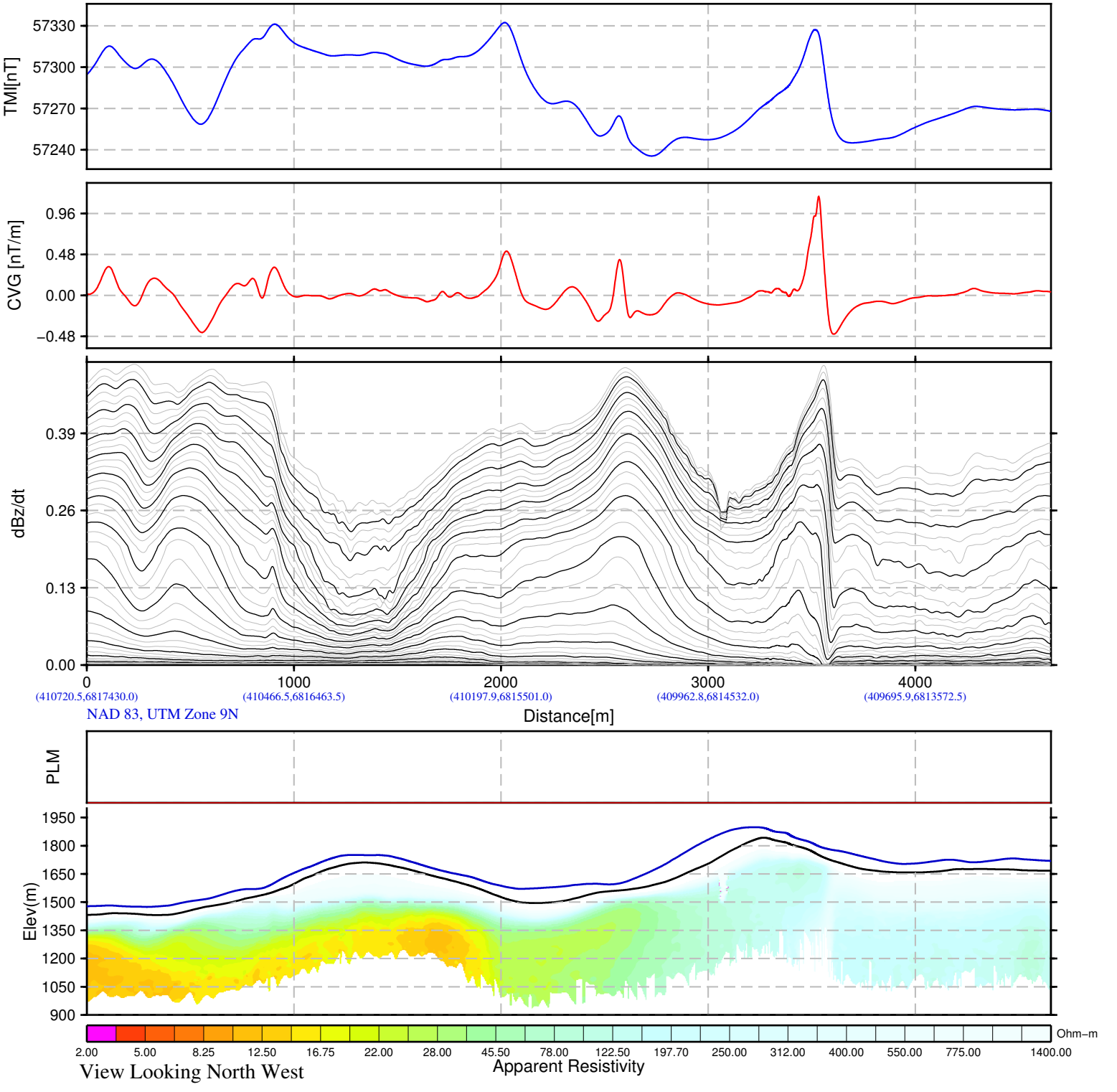
Resistivity Depth Image (RDI) for Line 3212

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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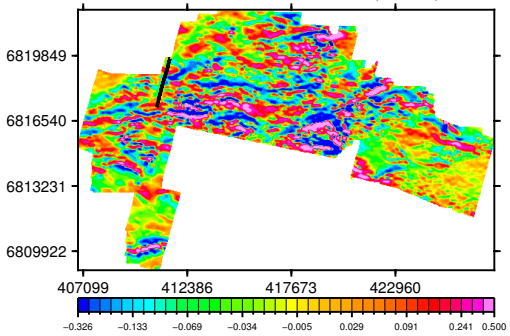
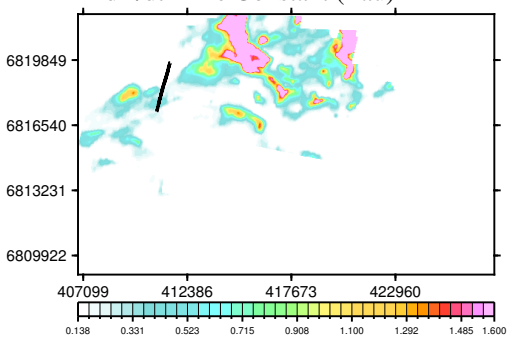
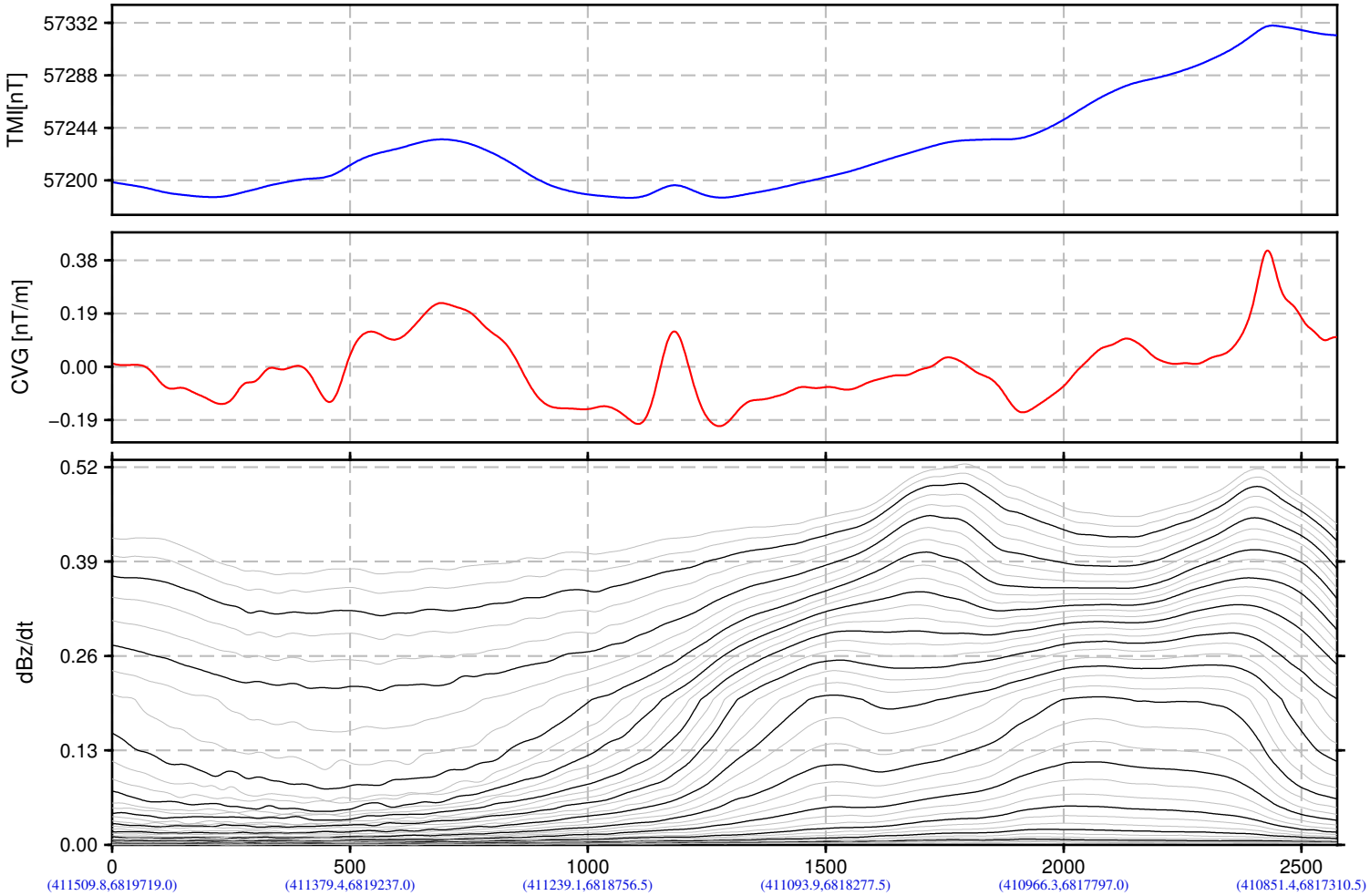
Resistivity Depth Image (RDI) for Line 3220

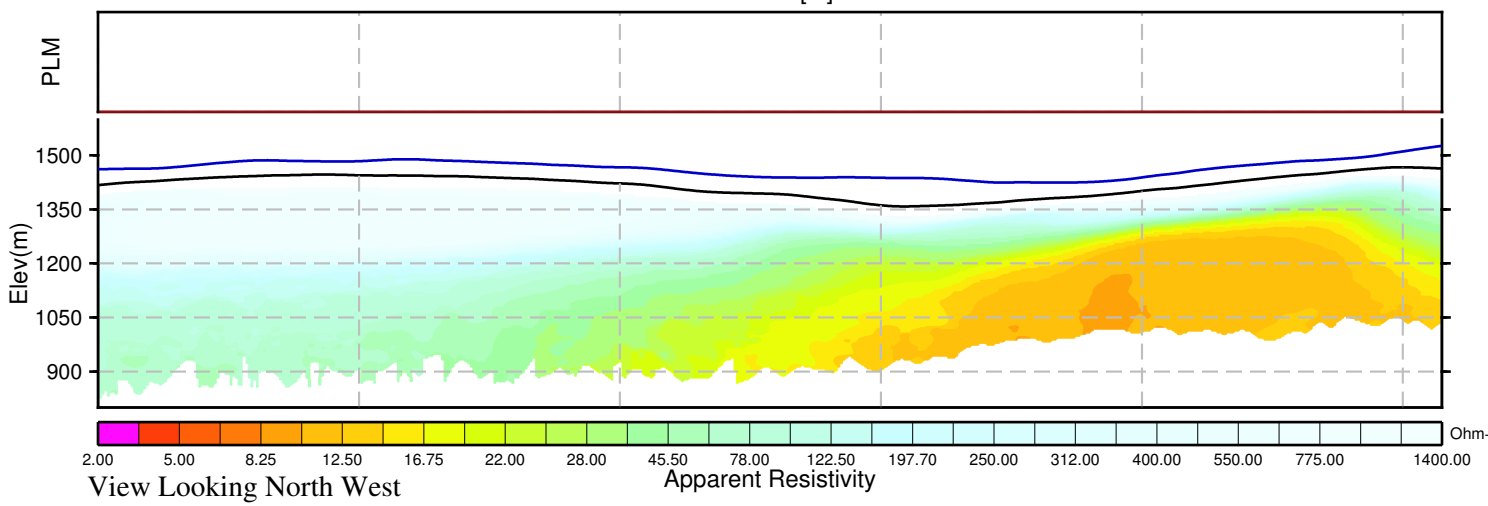
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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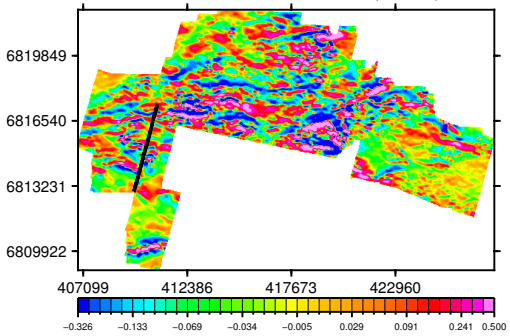
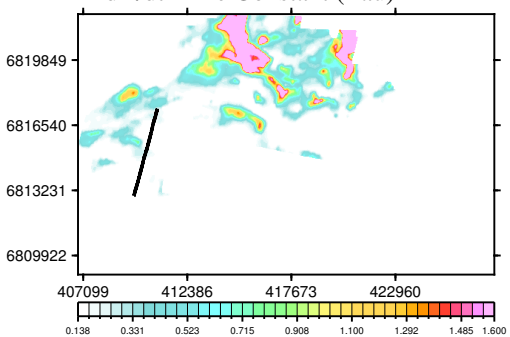
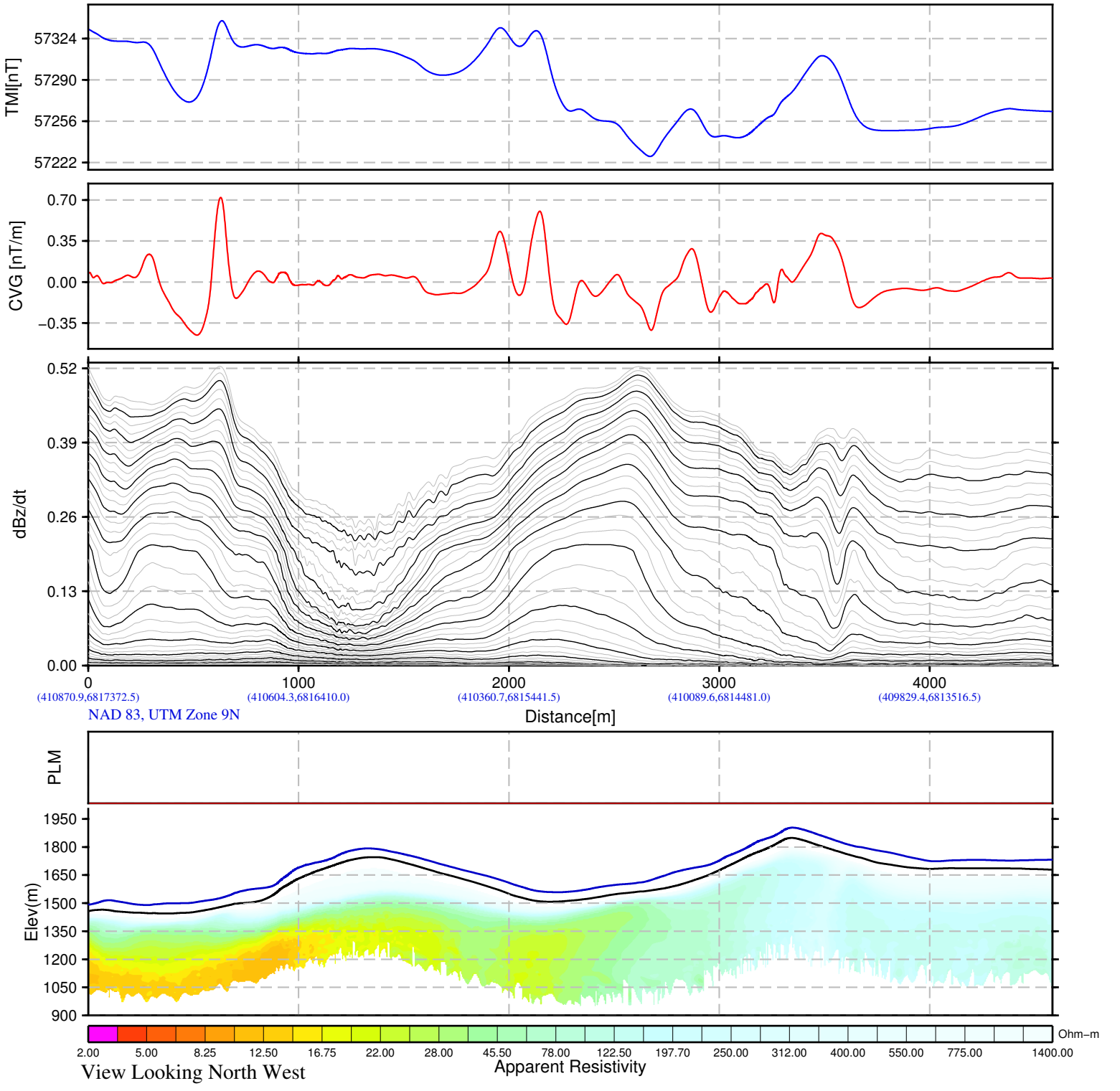
Resistivity Depth Image (RDI) for Line 3222

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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Job Number:GL160037
Resistivity Depth Image (RDI)
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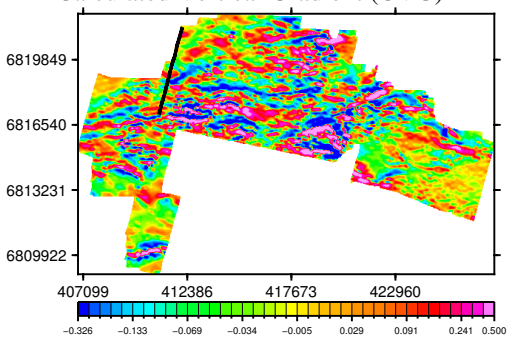
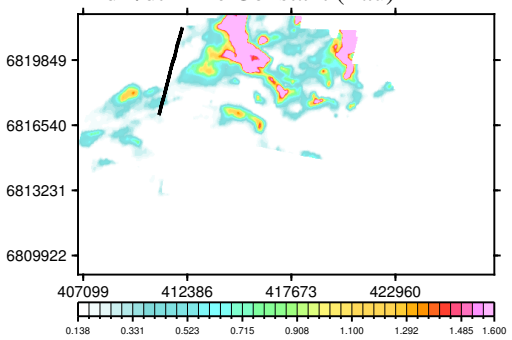
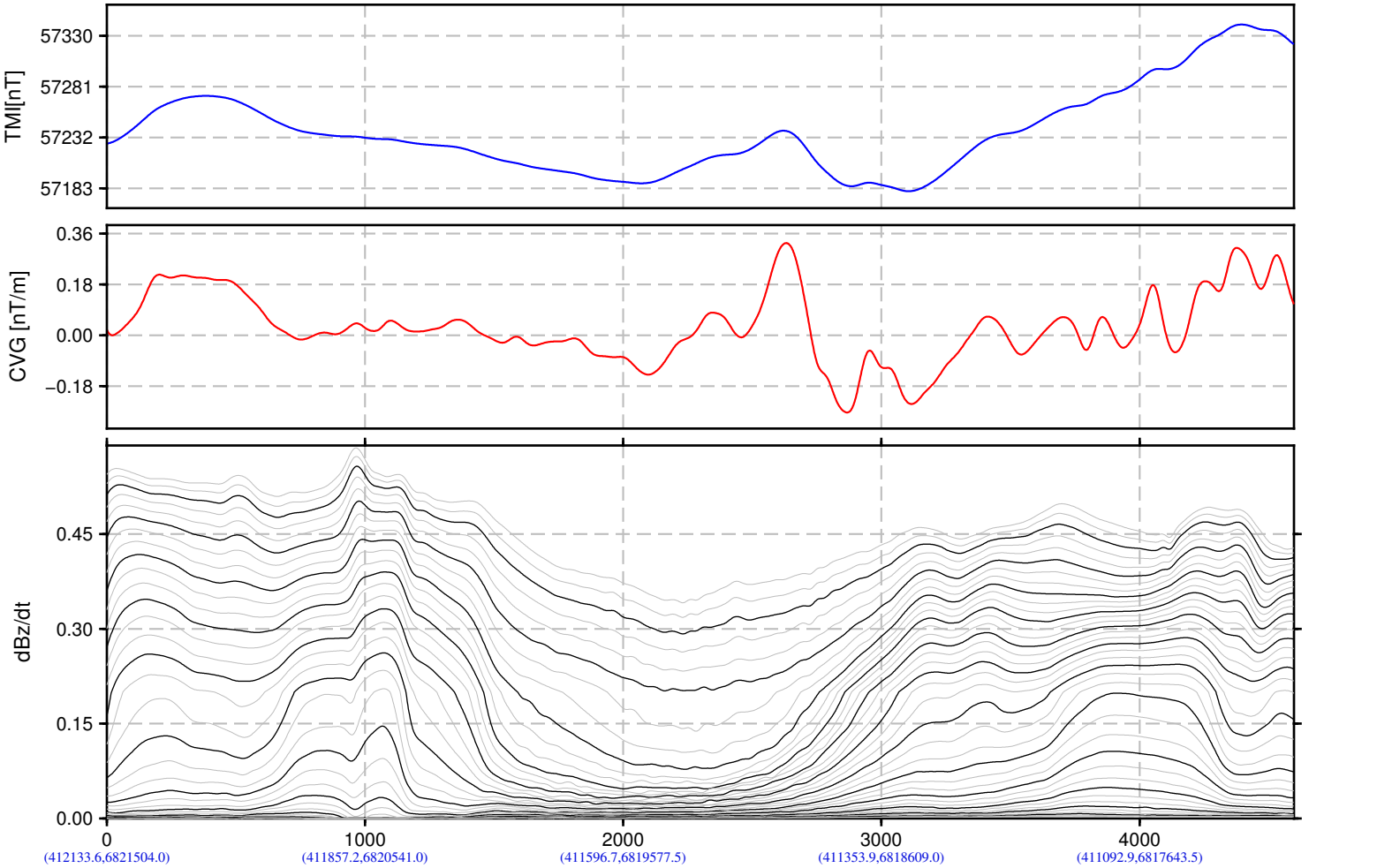
Resistivity Depth Image (RDI) for Line 3230

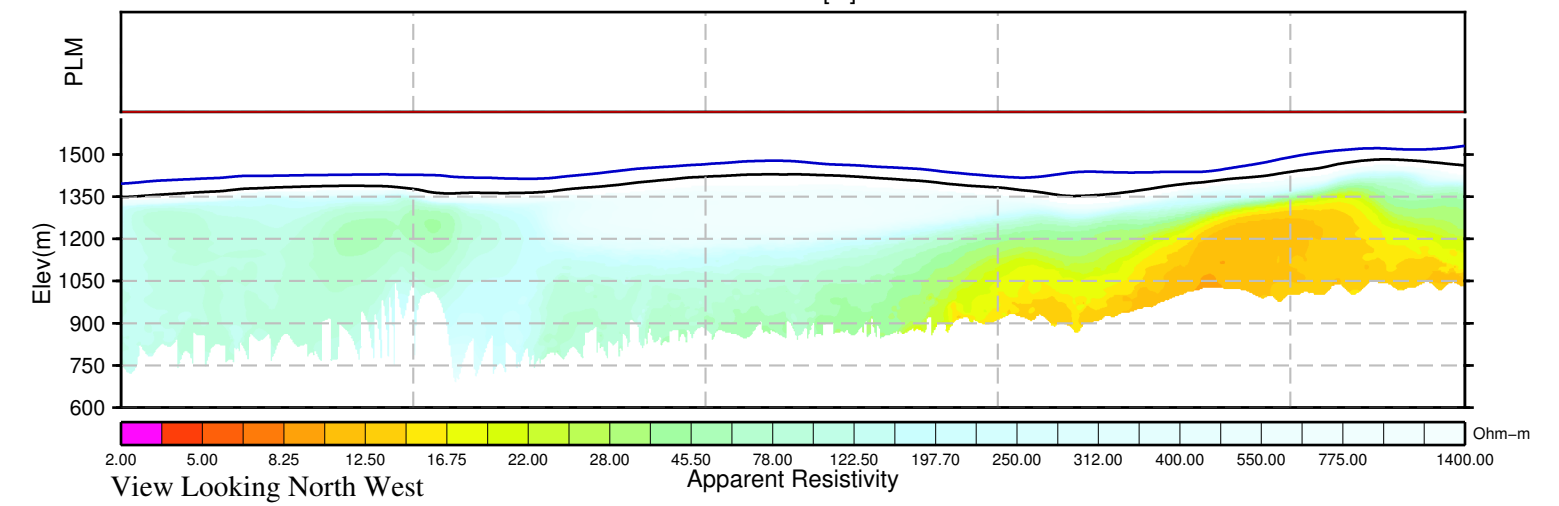
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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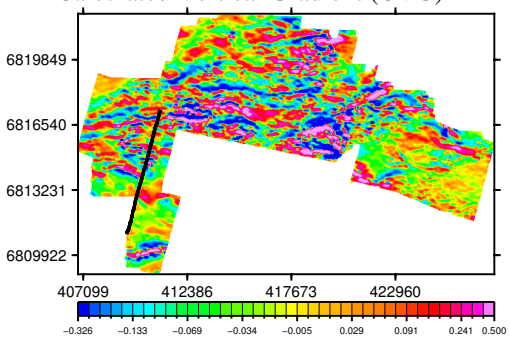
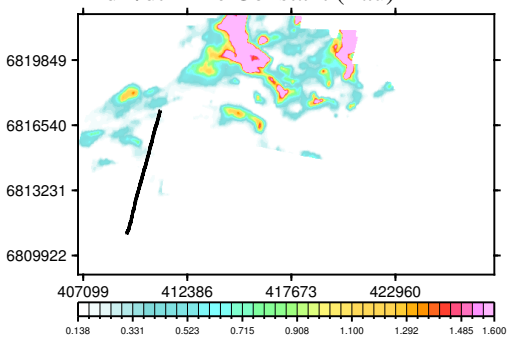
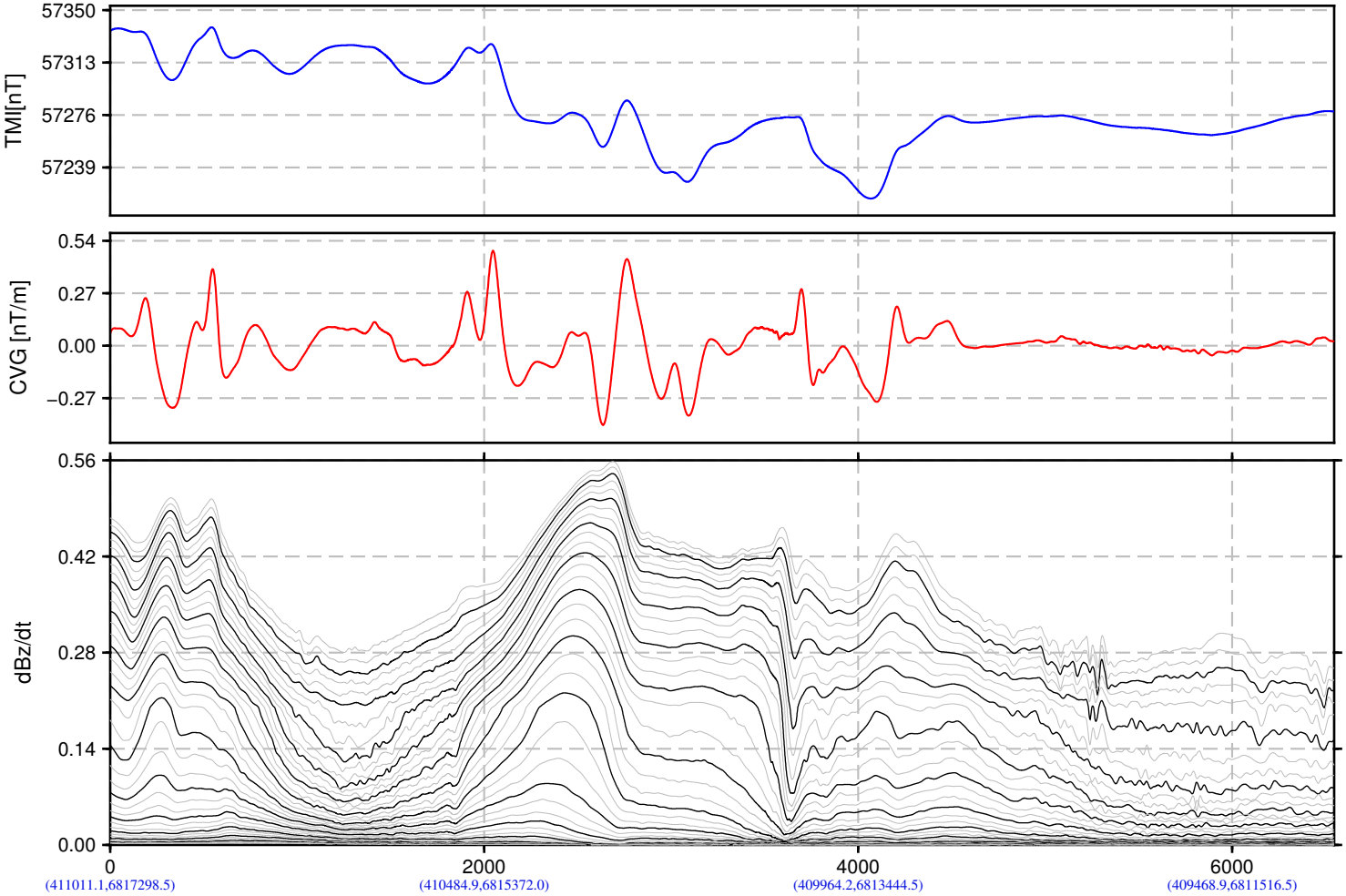
Resistivity Depth Image (RDI) for Line 3232

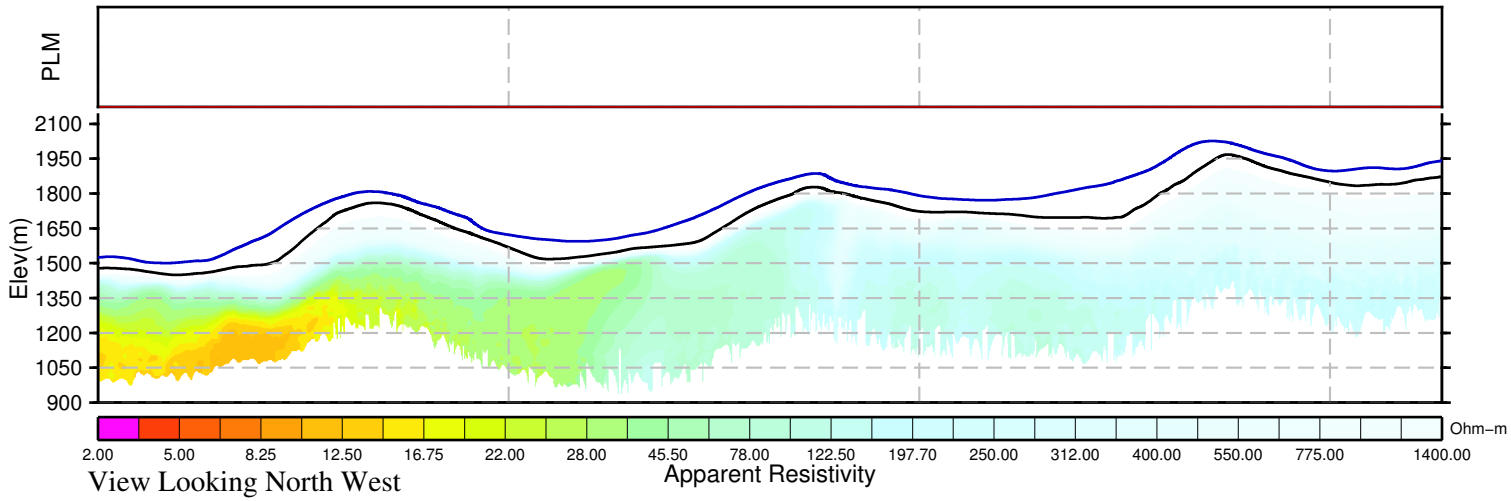
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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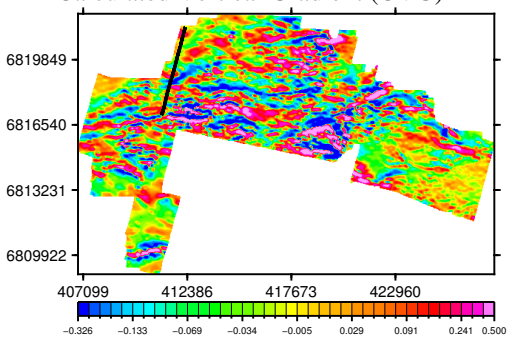
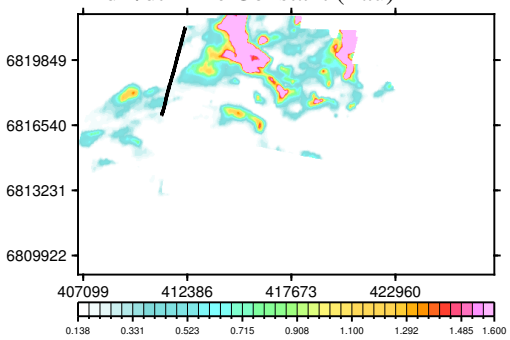
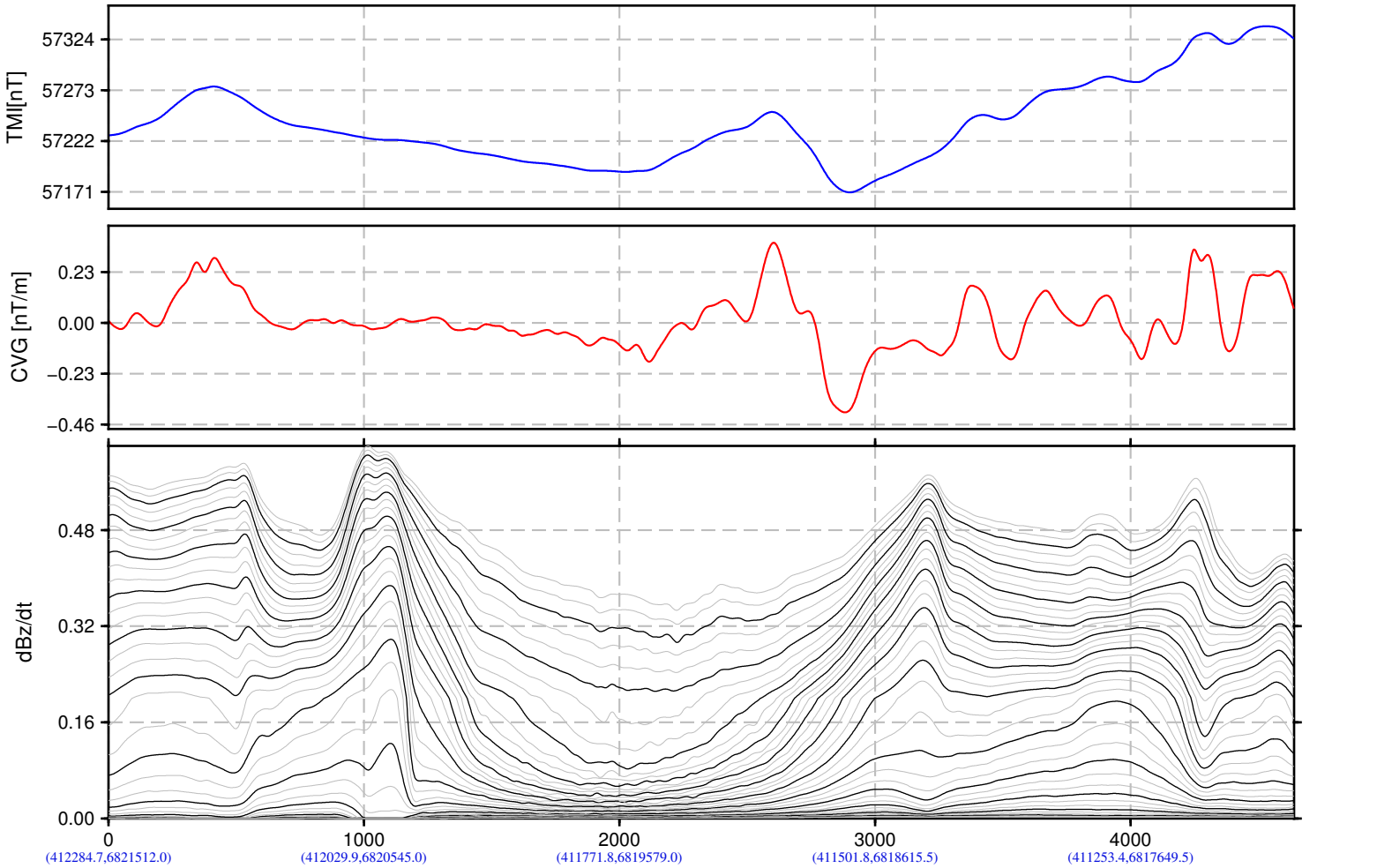
Resistivity Depth Image (RDI) for Line 3240

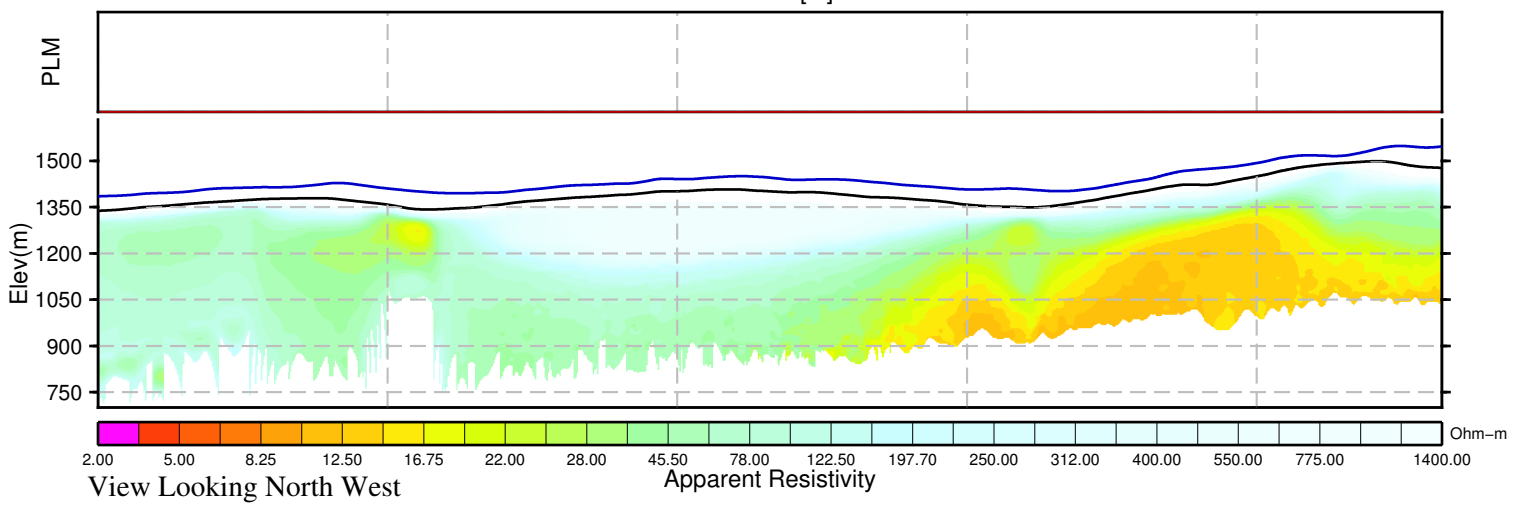
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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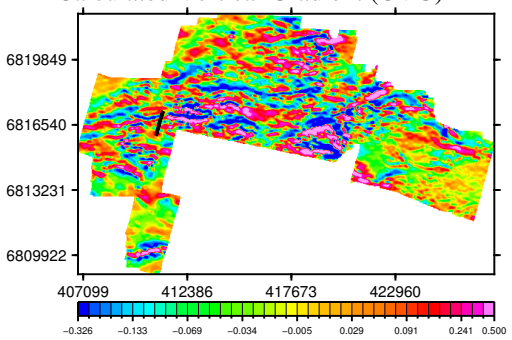
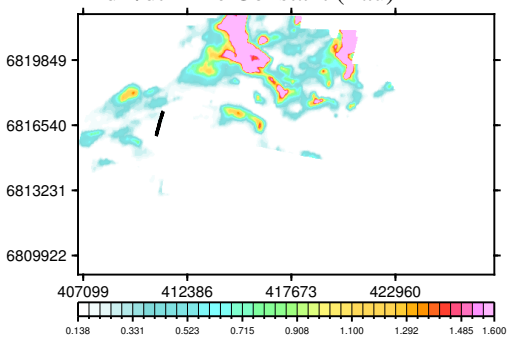
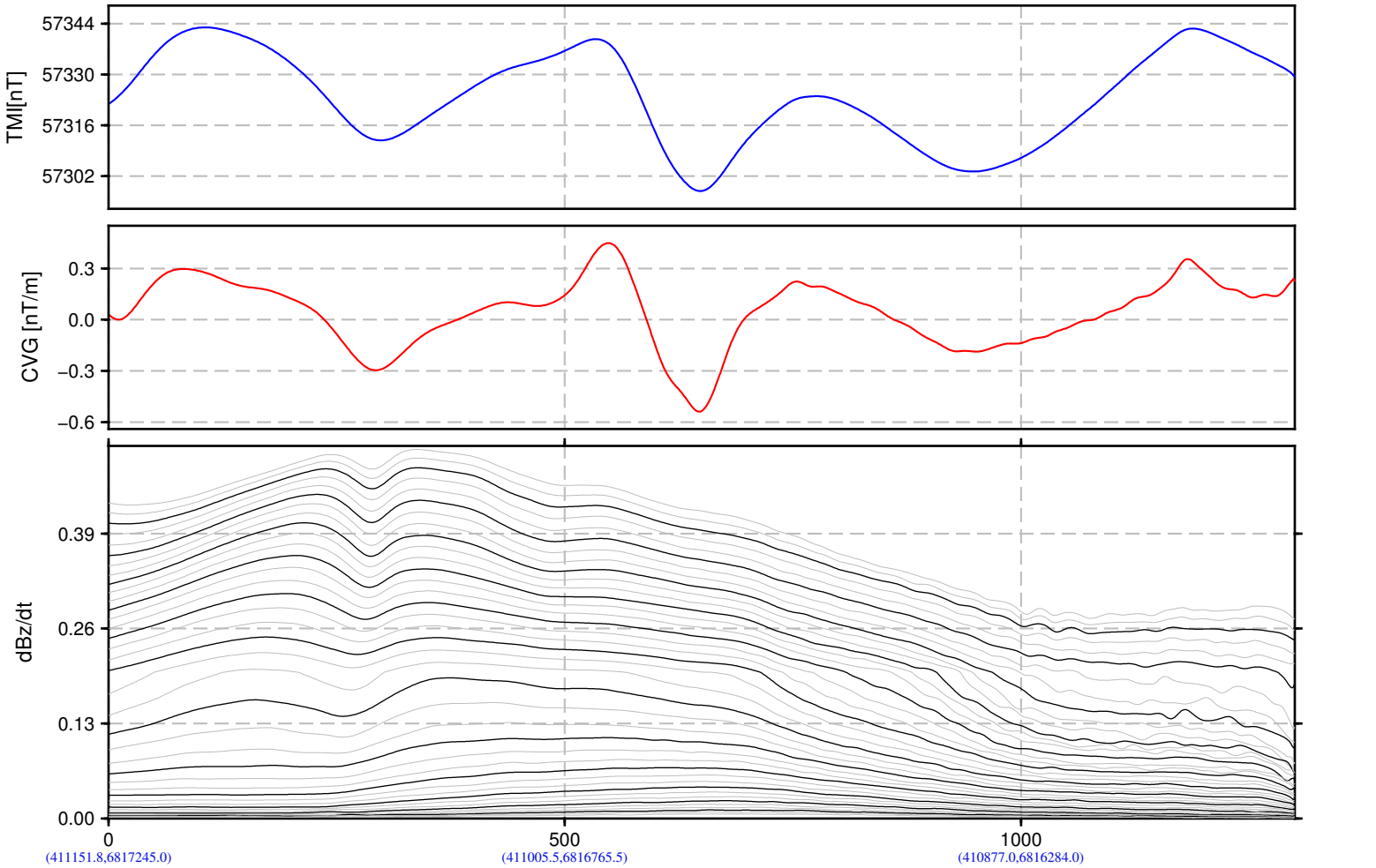
Resistivity Depth Image (RDI) for Line 3244

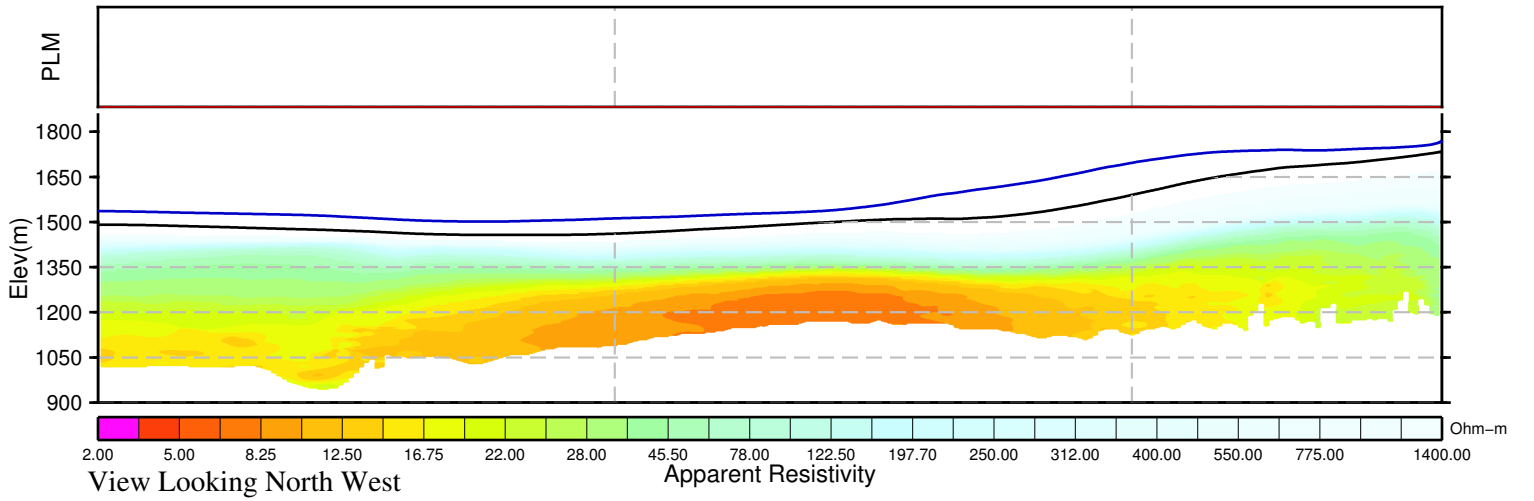
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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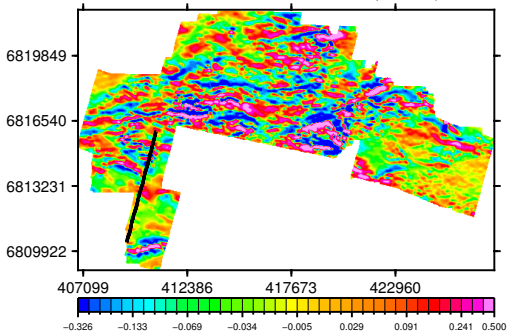
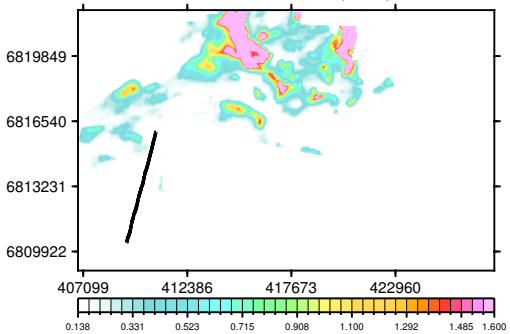
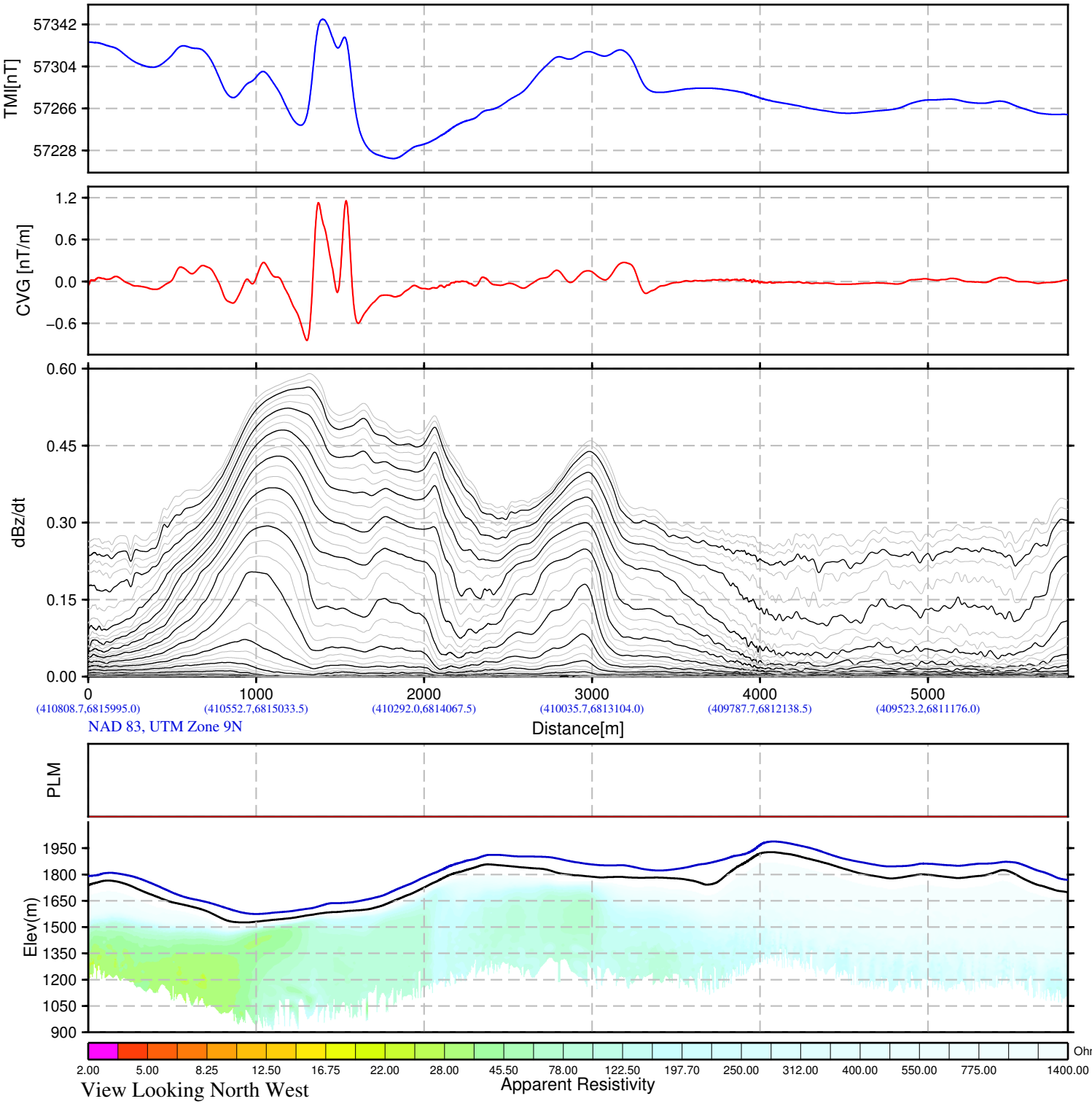
Resistivity Depth Image (RDI) for Line 3245

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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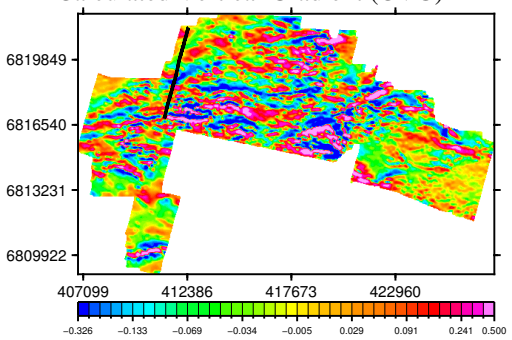
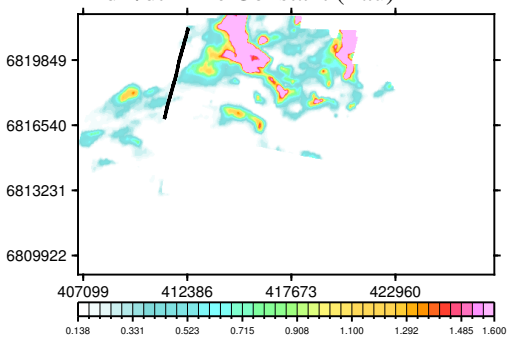
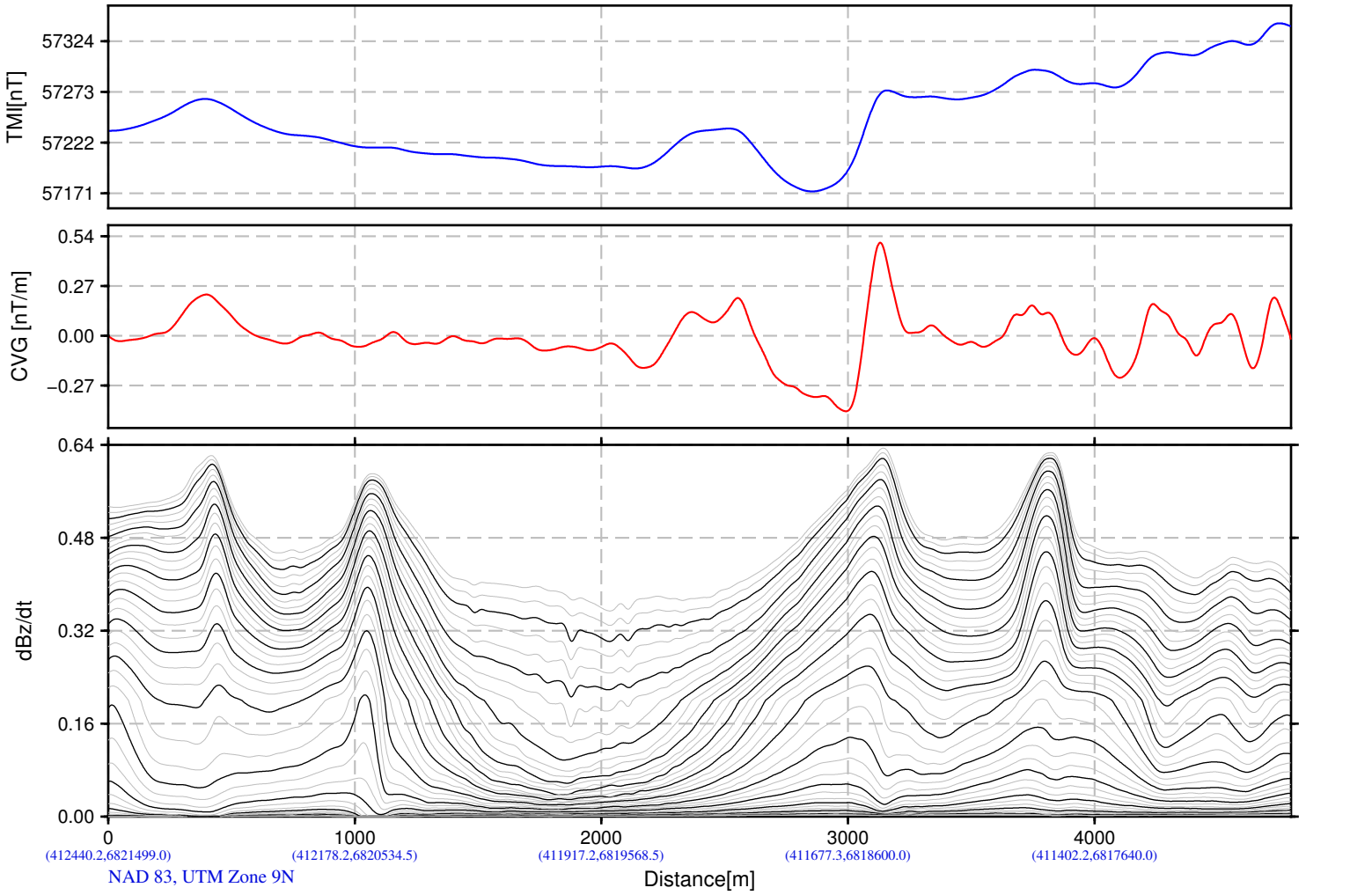
Resistivity Depth Image (RDI) for Line 3250

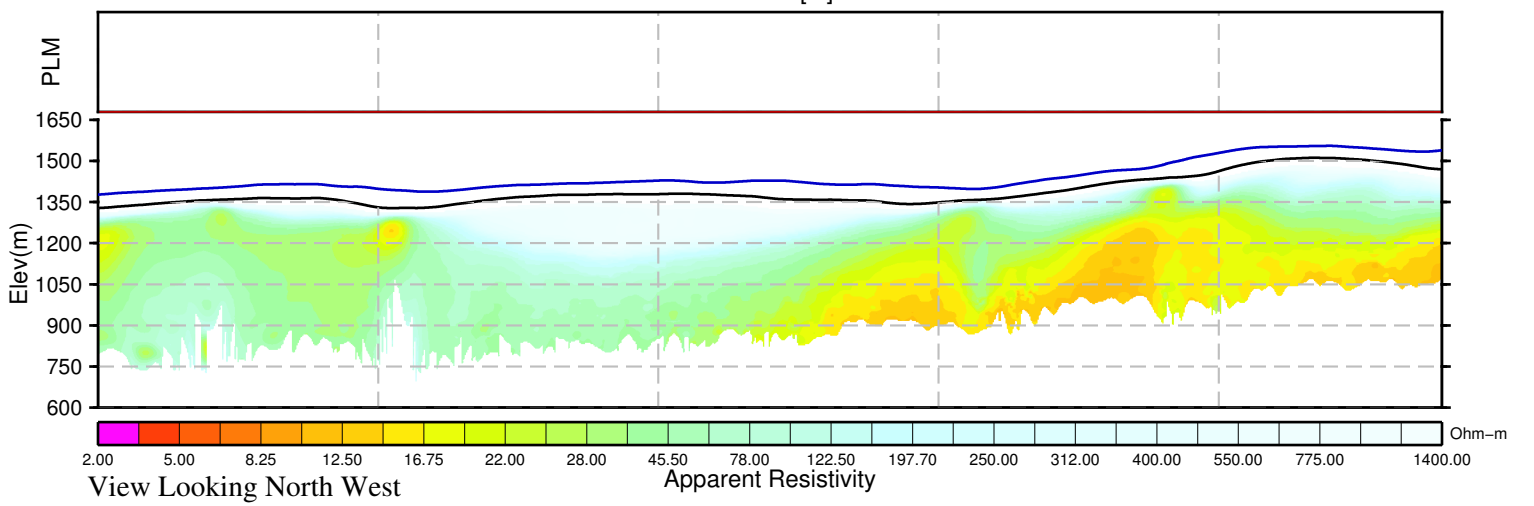
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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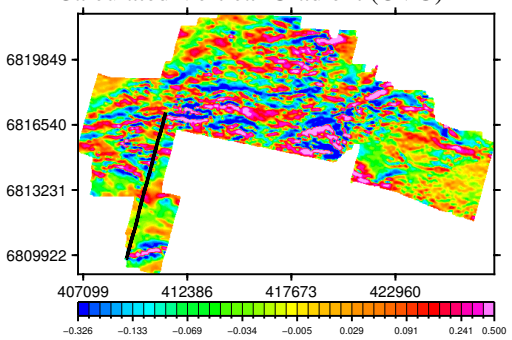
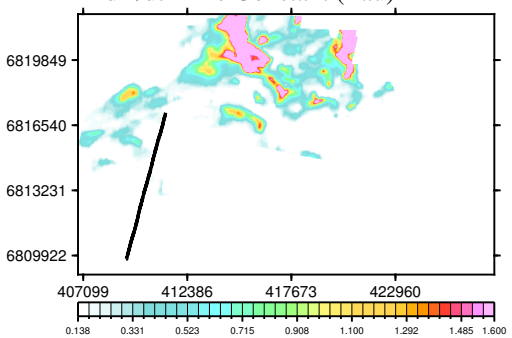
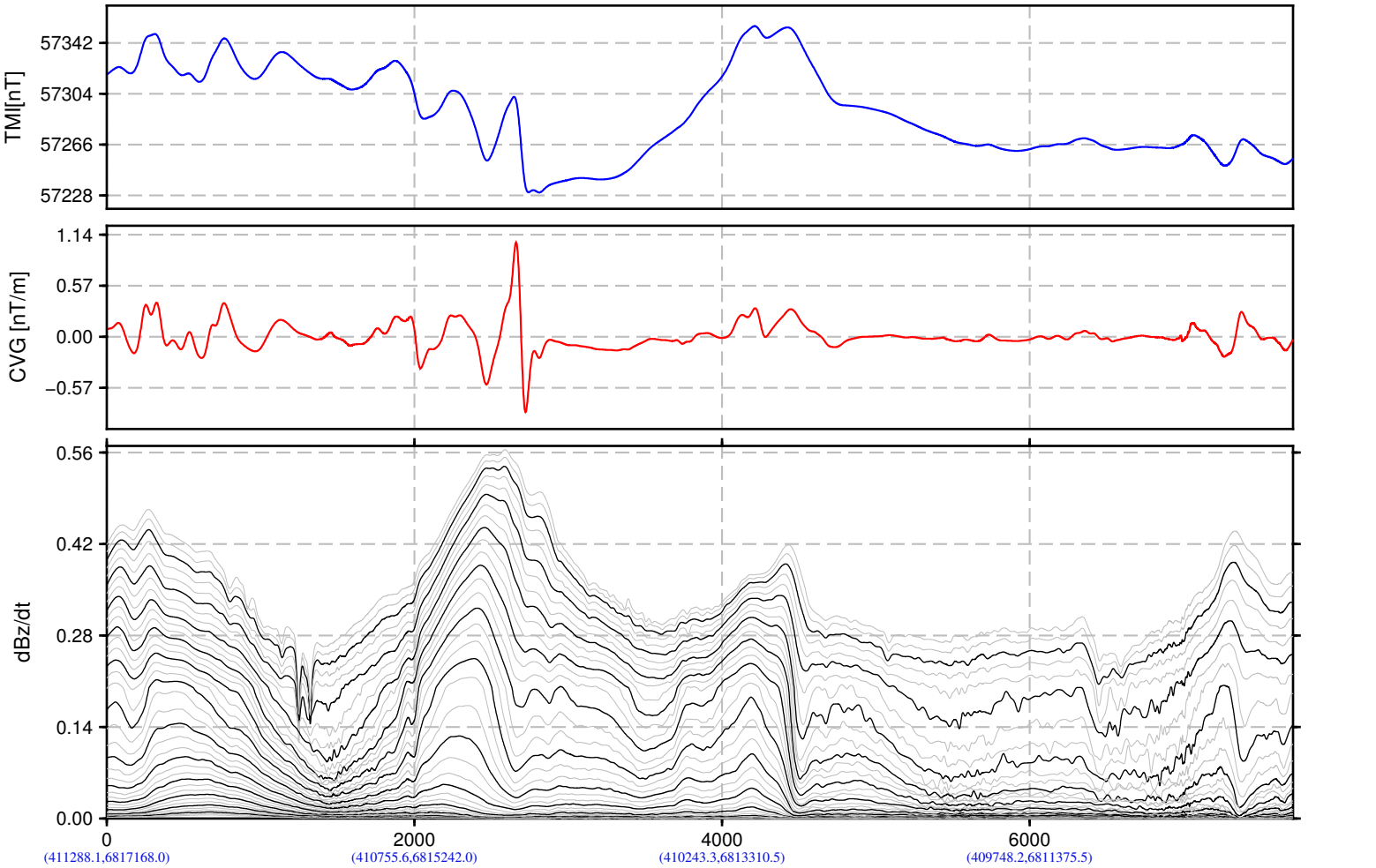
Resistivity Depth Image (RDI) for Line 3252

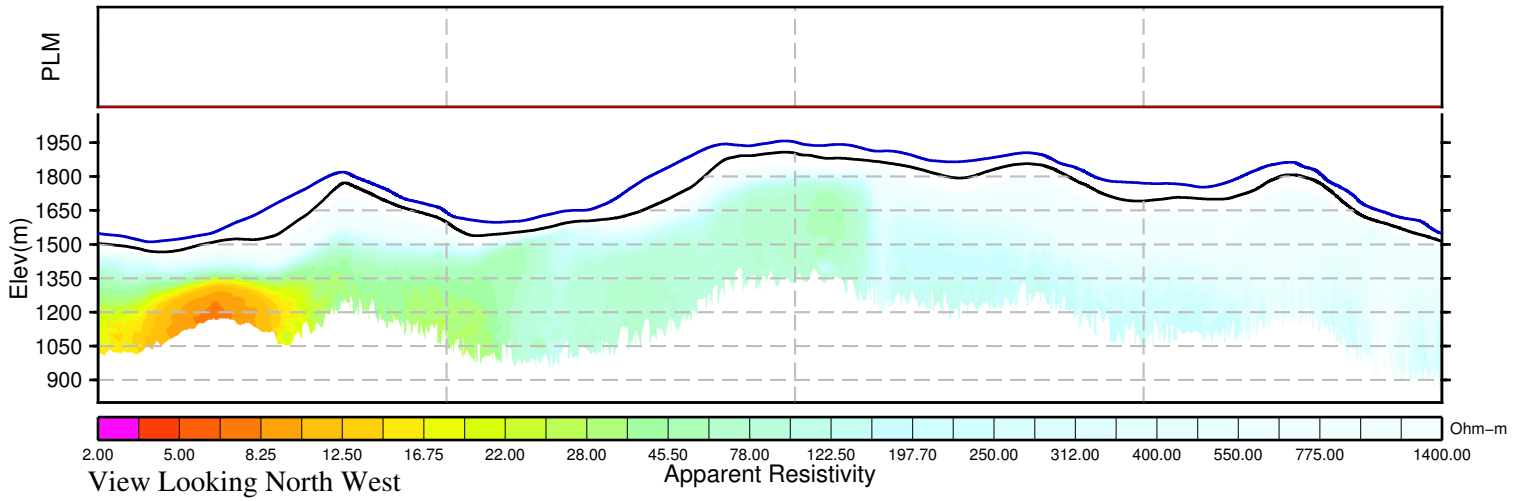
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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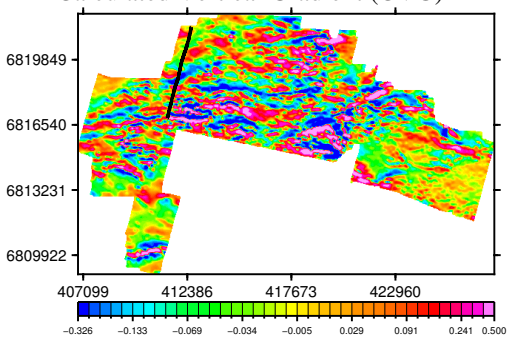
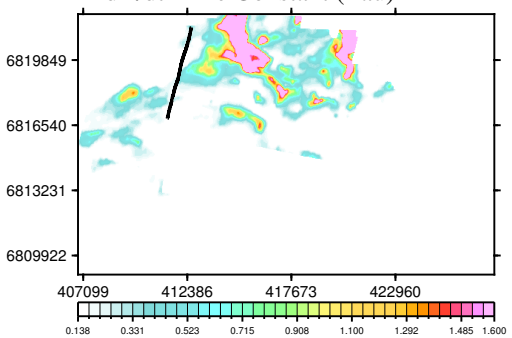
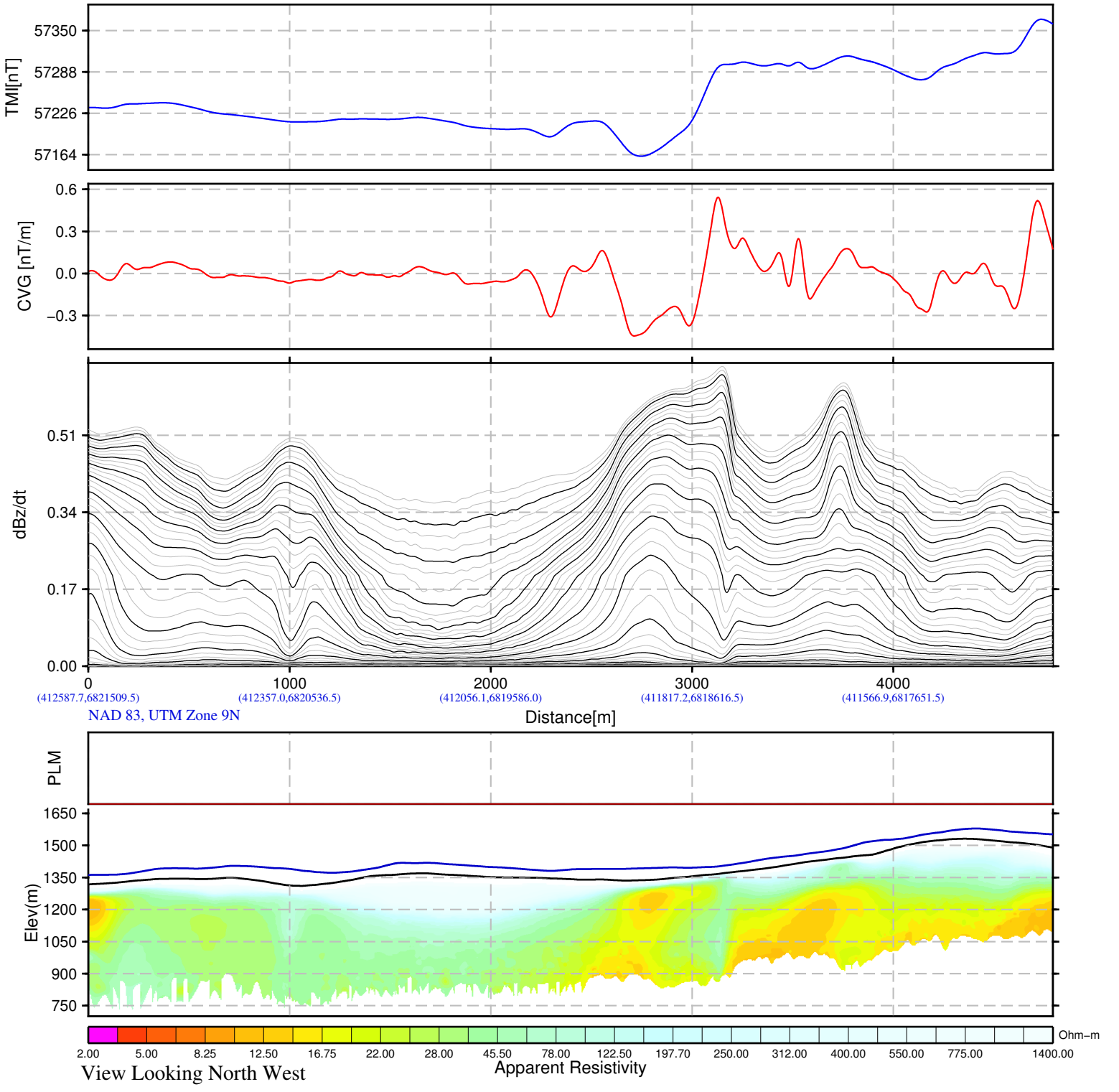
Resistivity Depth Image (RDI) for Line 3260

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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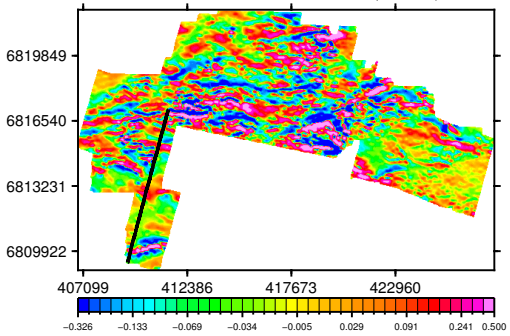
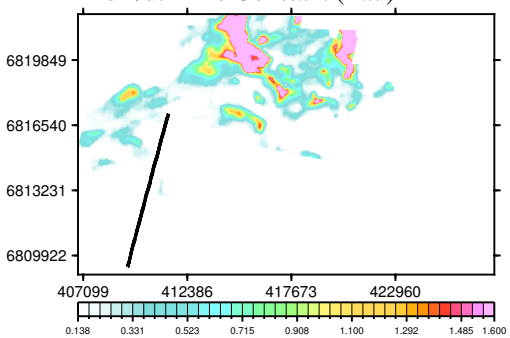
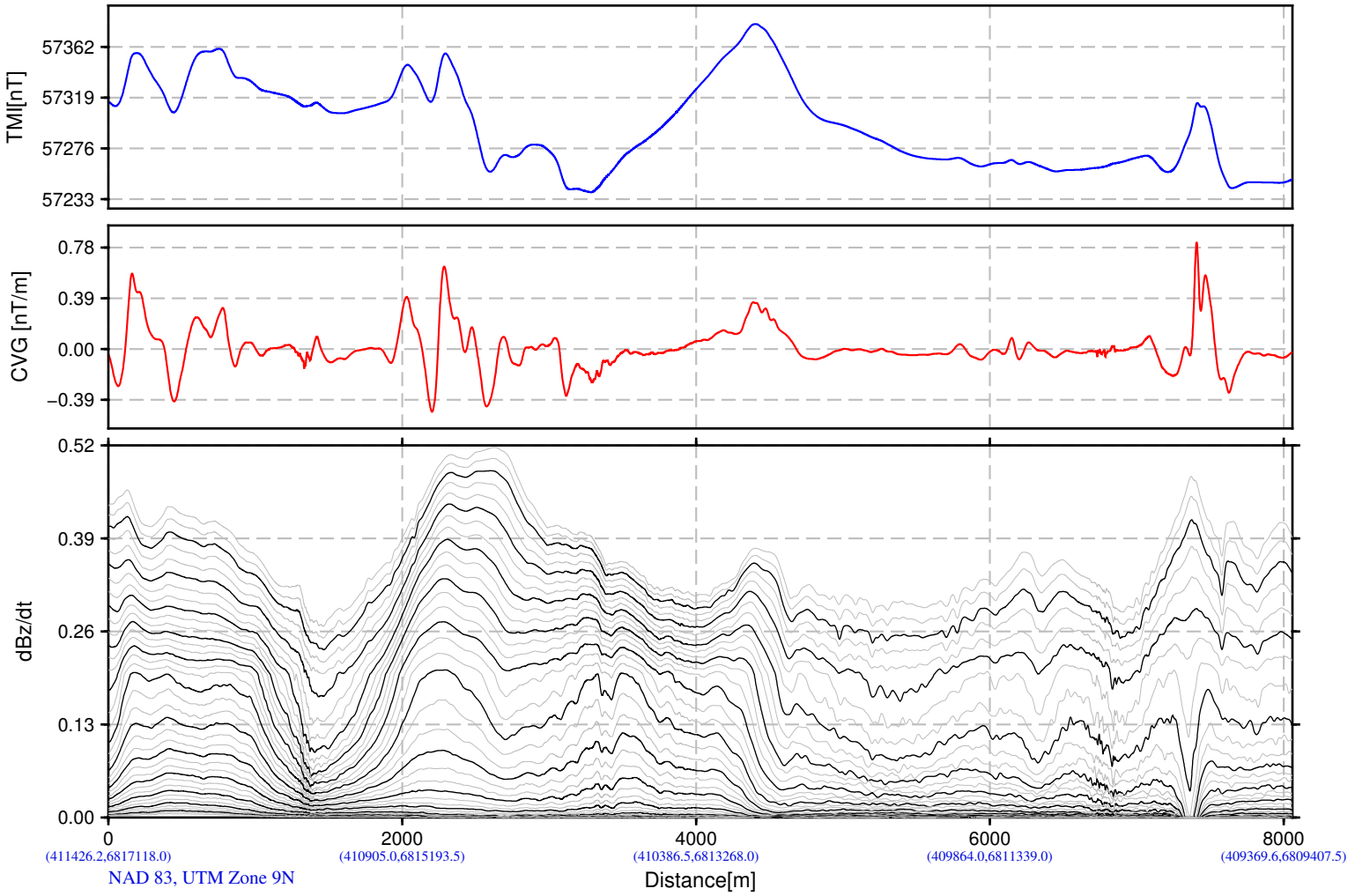
Resistivity Depth Image (RDI) for Line 3262

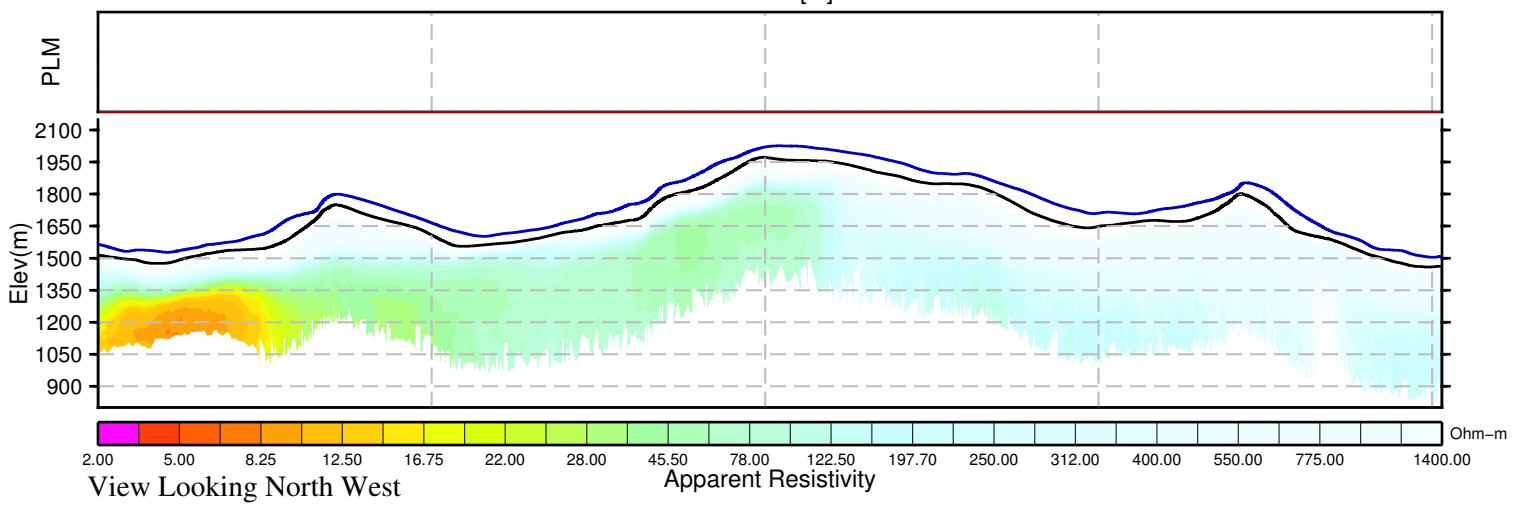
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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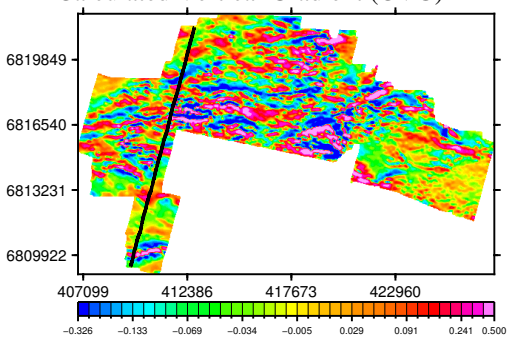
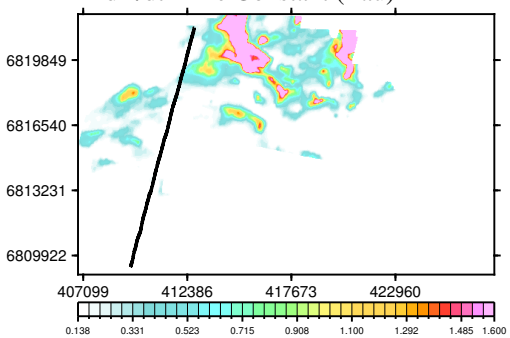
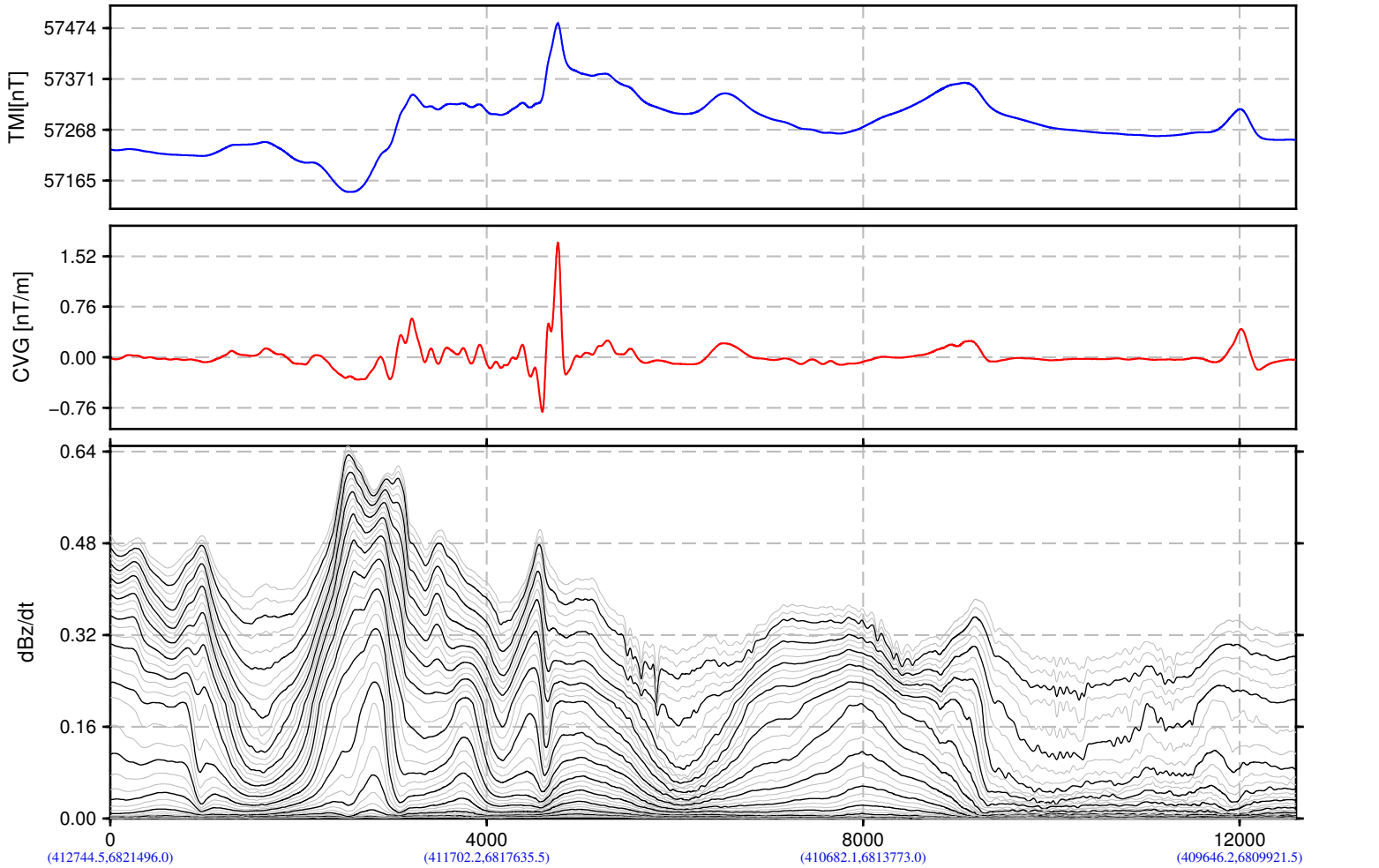
Resistivity Depth Image (RDI) for Line 3270

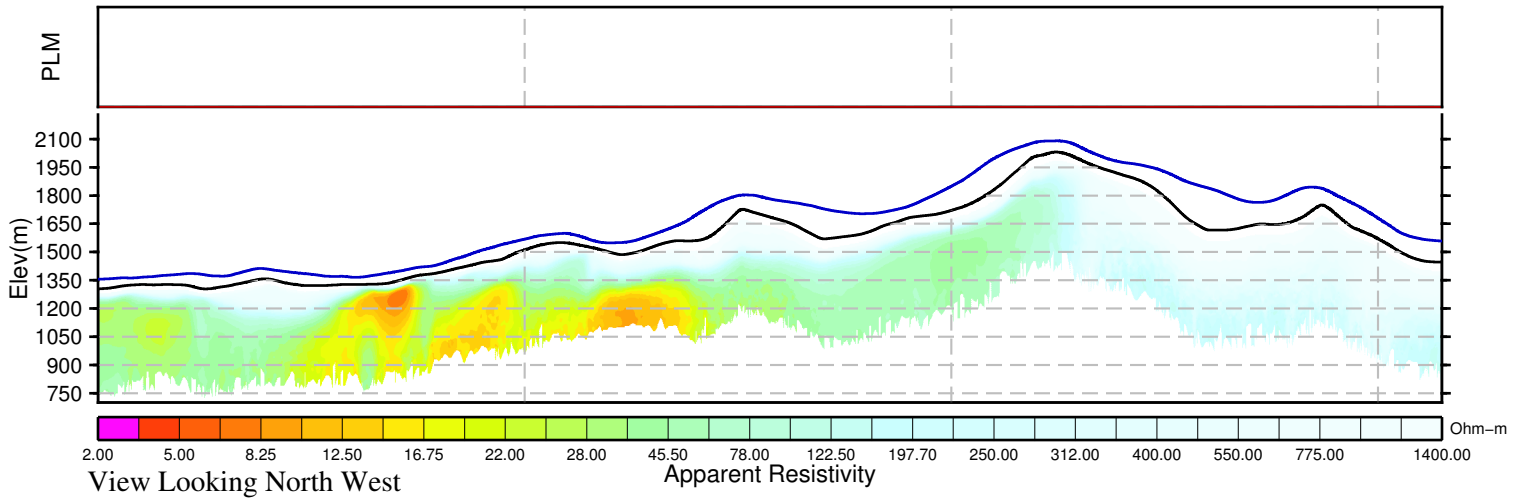
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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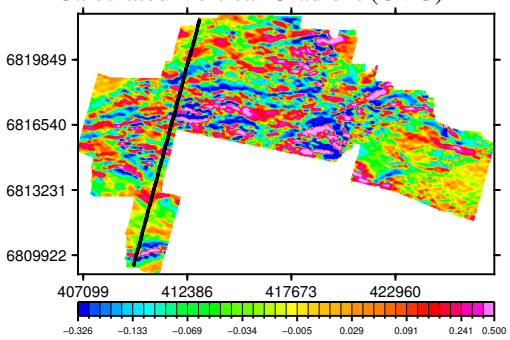
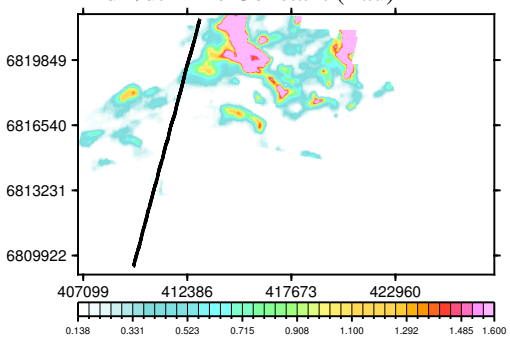
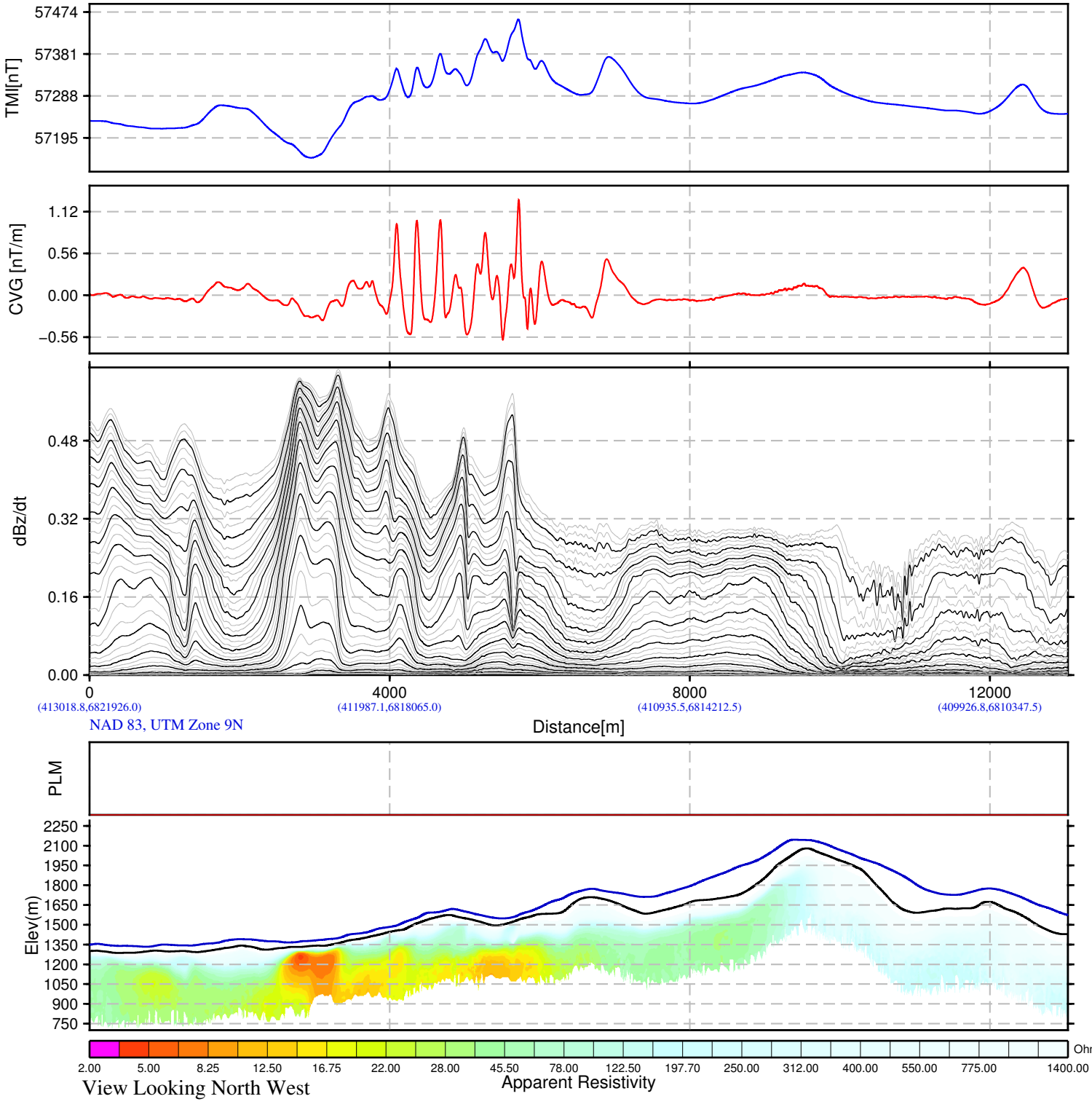
Resistivity Depth Image (RDI) for Line 3280

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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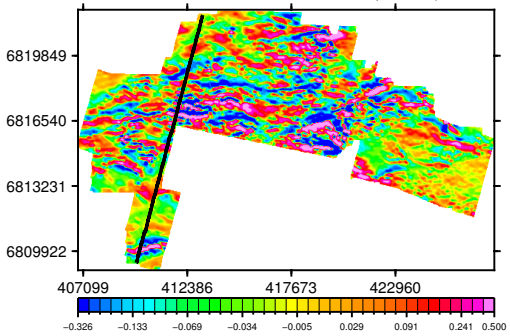
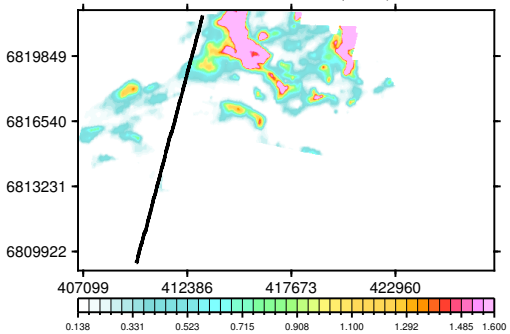
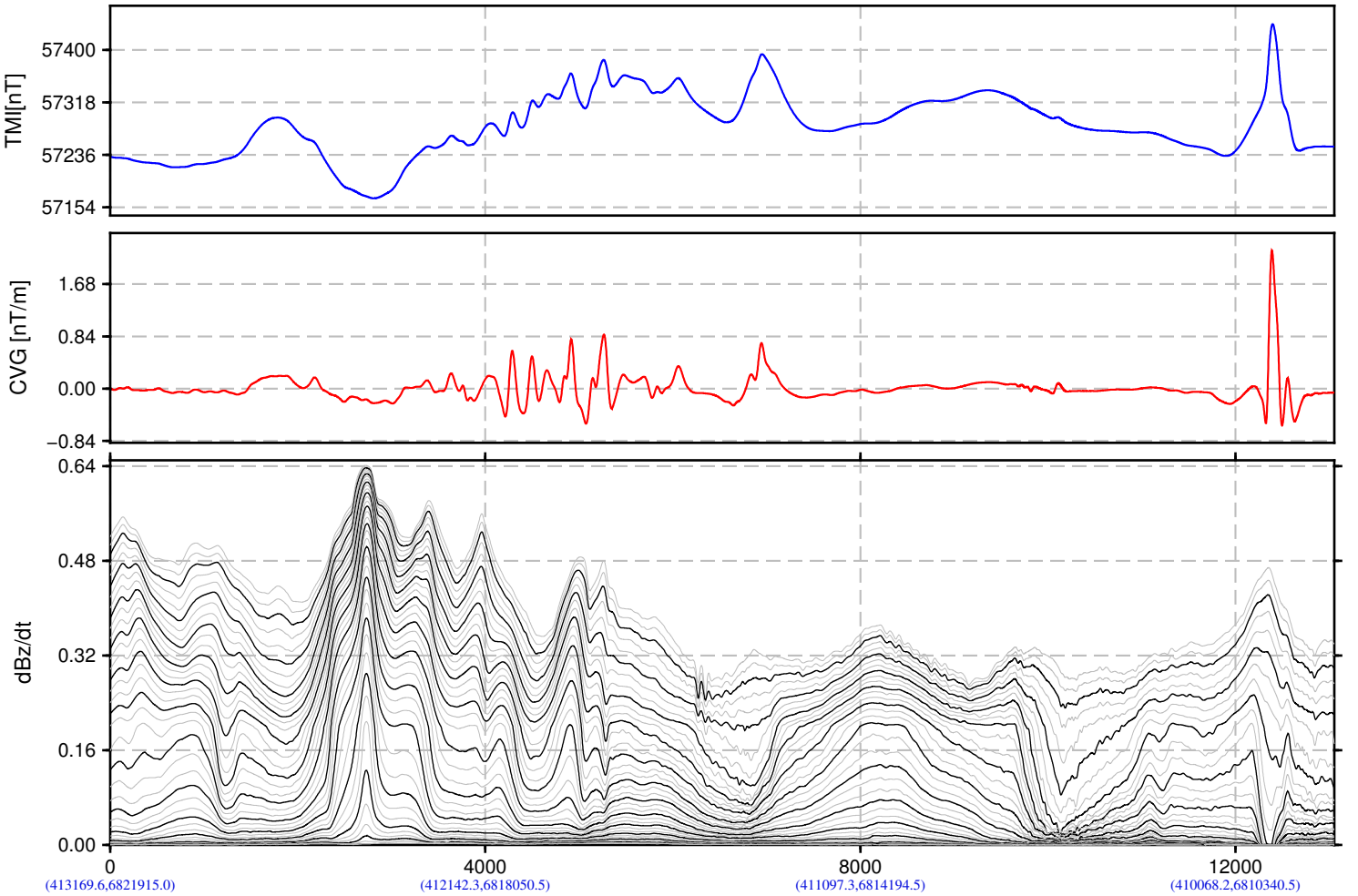
Resistivity Depth Image (RDI) for Line 3290

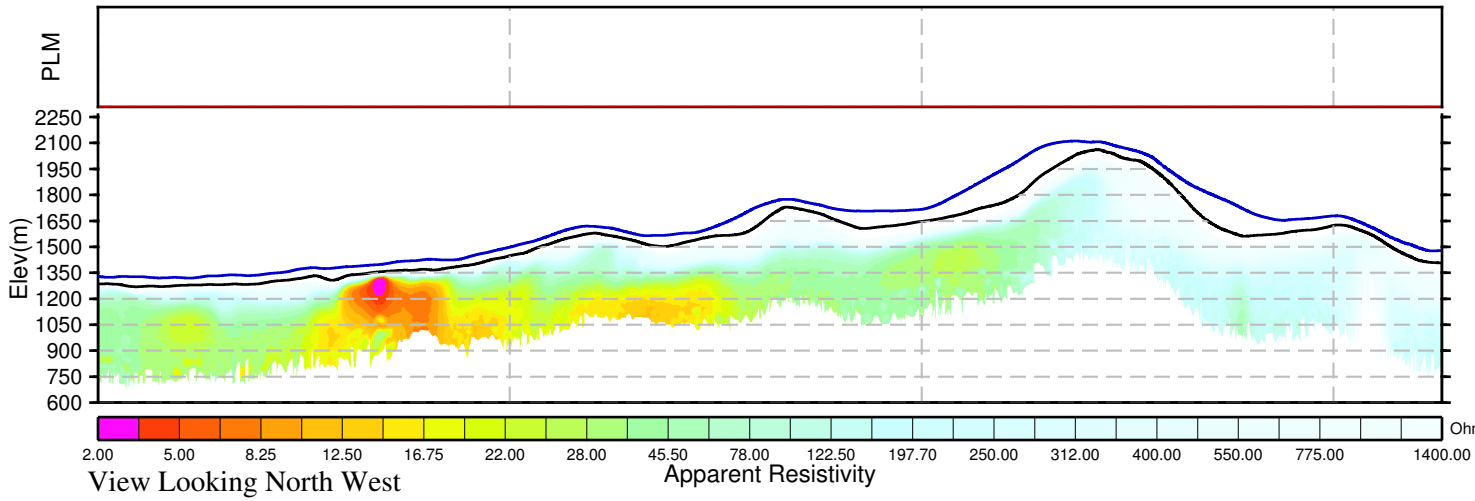
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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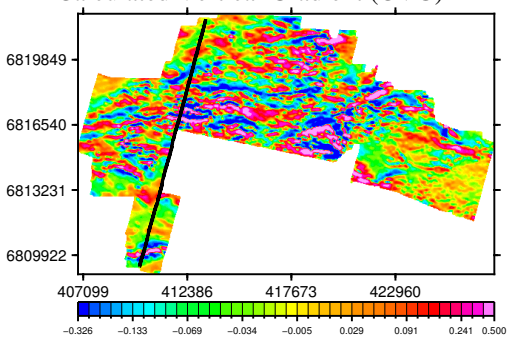
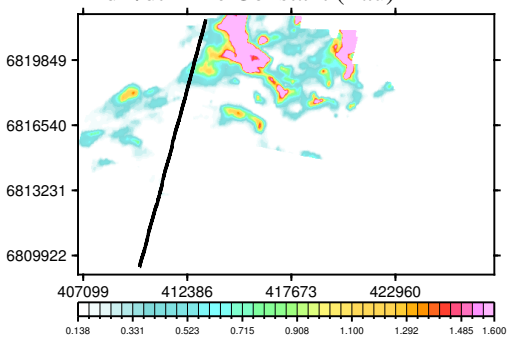
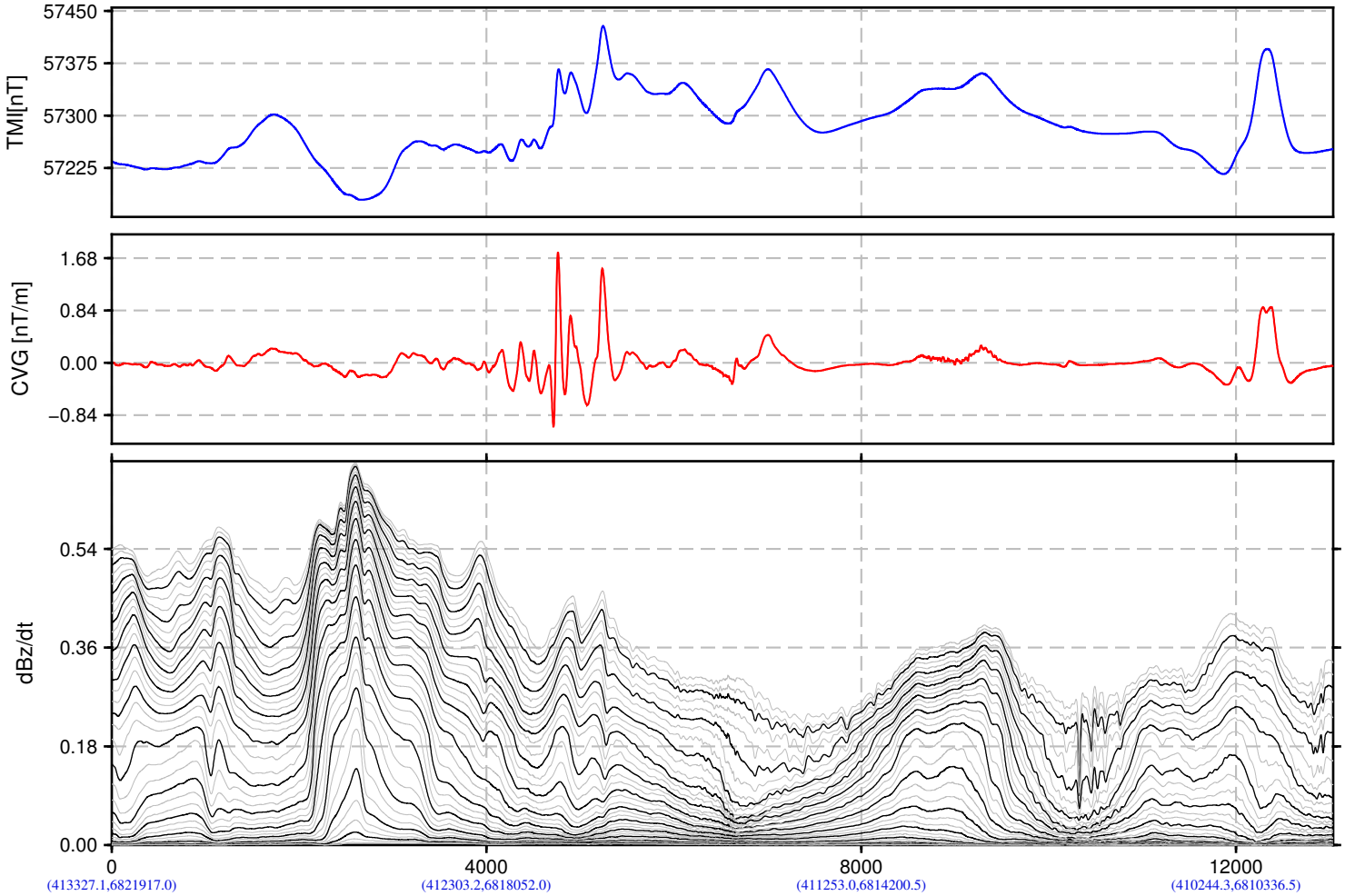
Resistivity Depth Image (RDI) for Line 3300

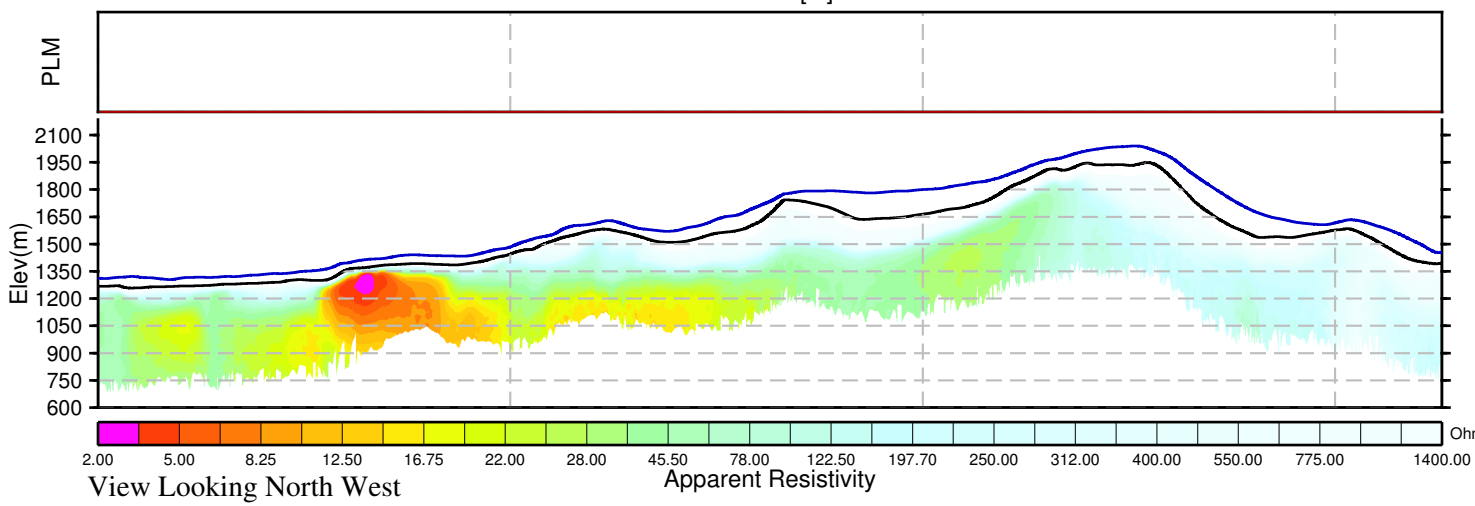
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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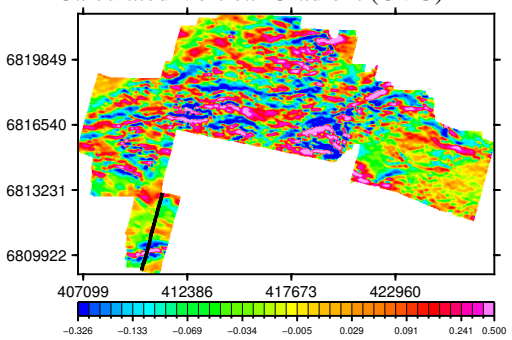
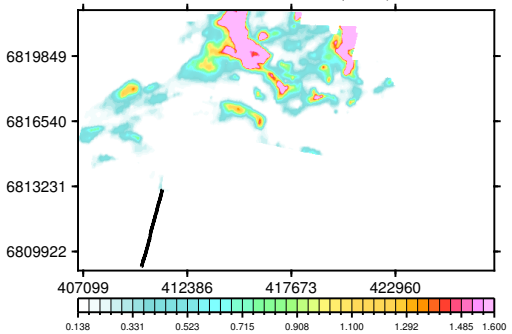
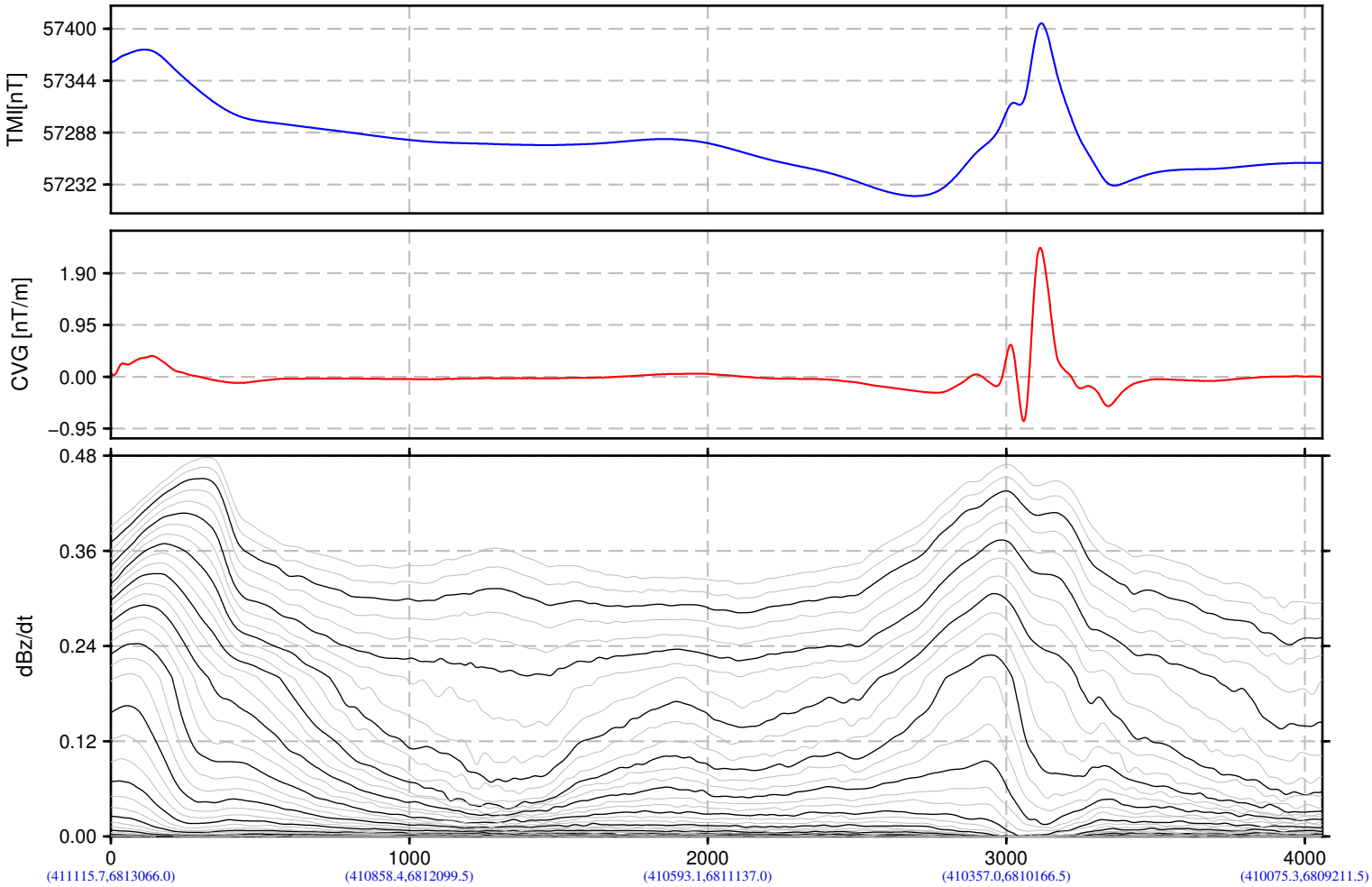
Resistivity Depth Image (RDI) for Line 3310

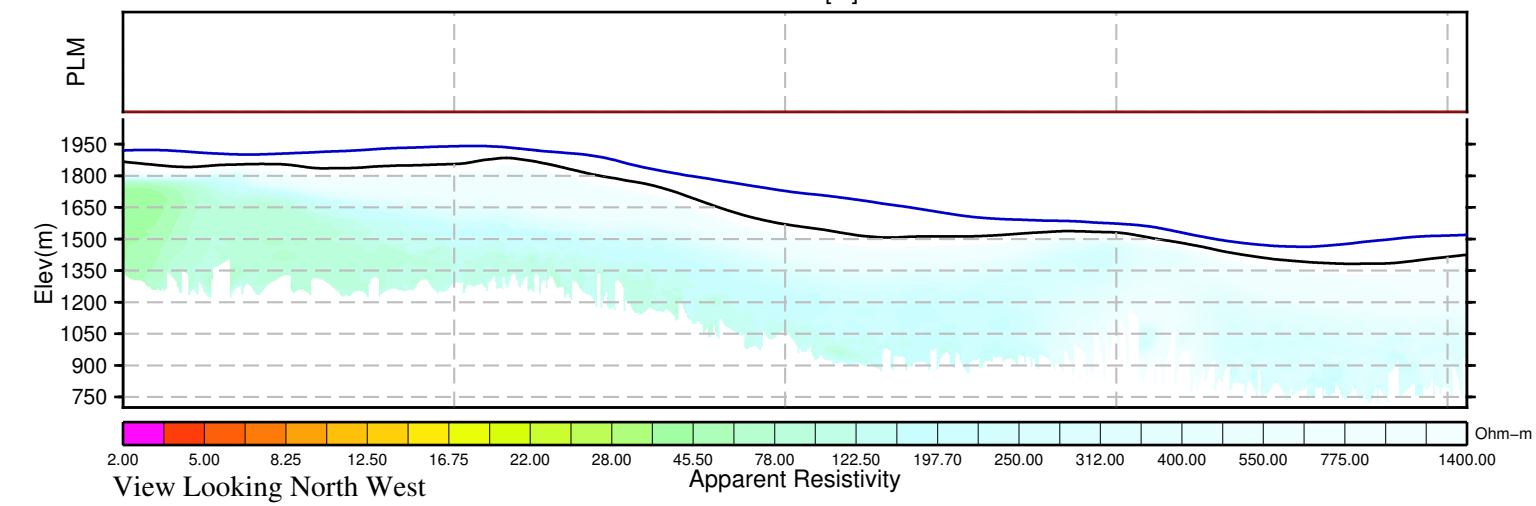
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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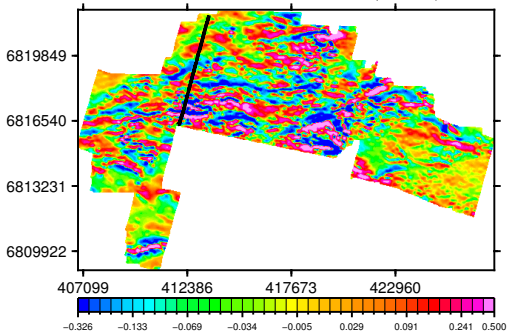
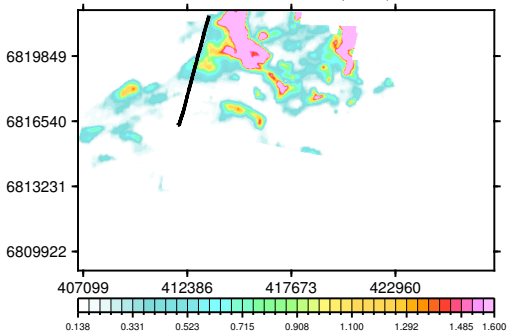
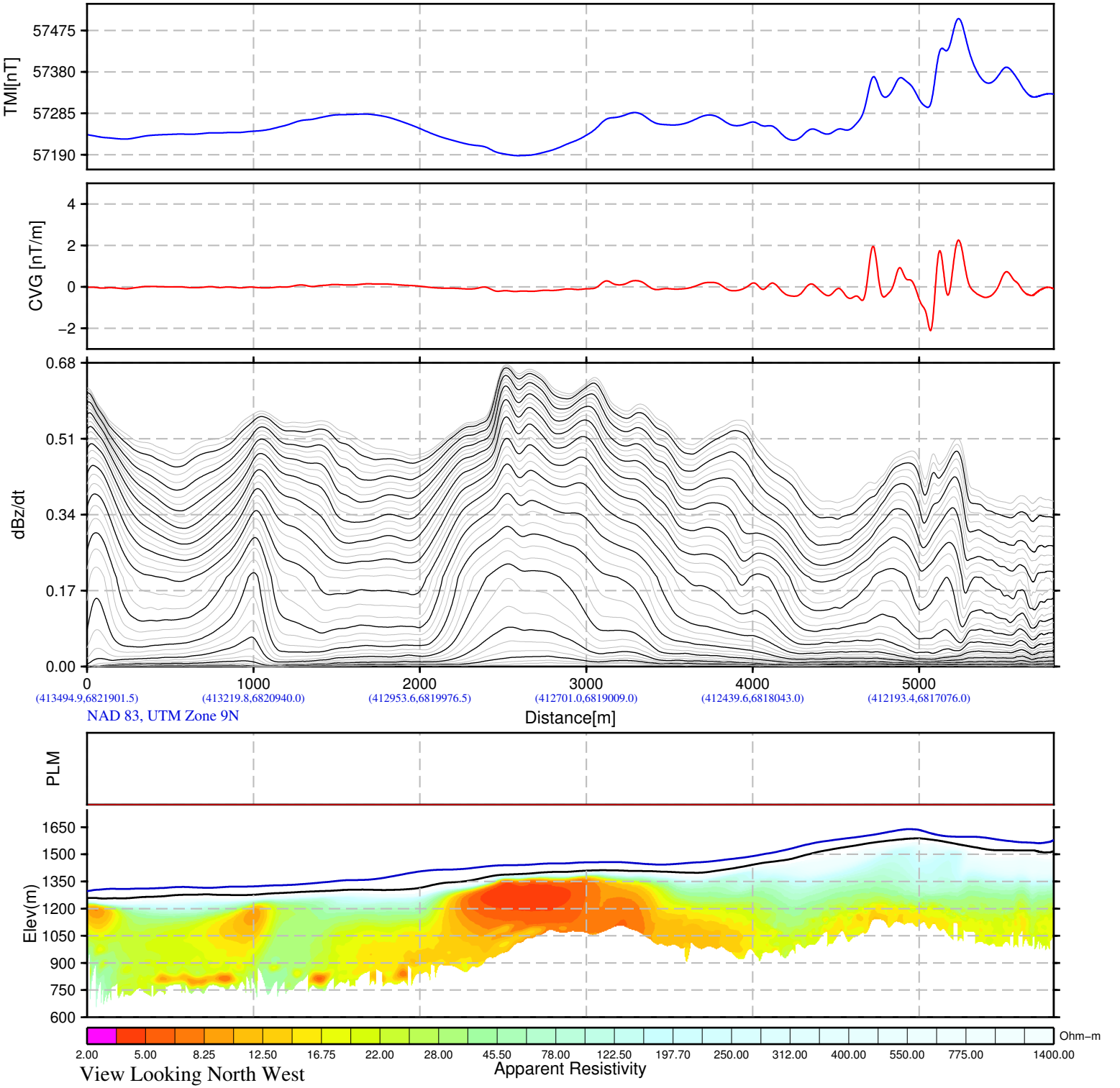
Resistivity Depth Image (RDI) for Line 3312

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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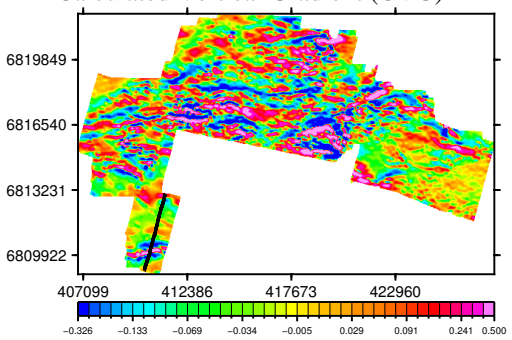
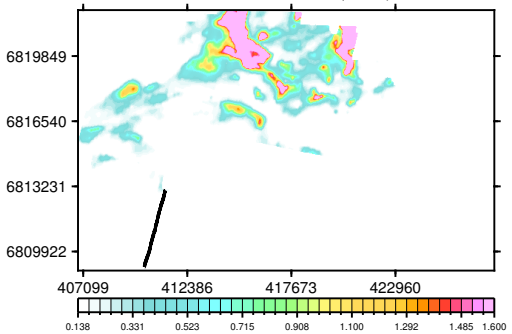
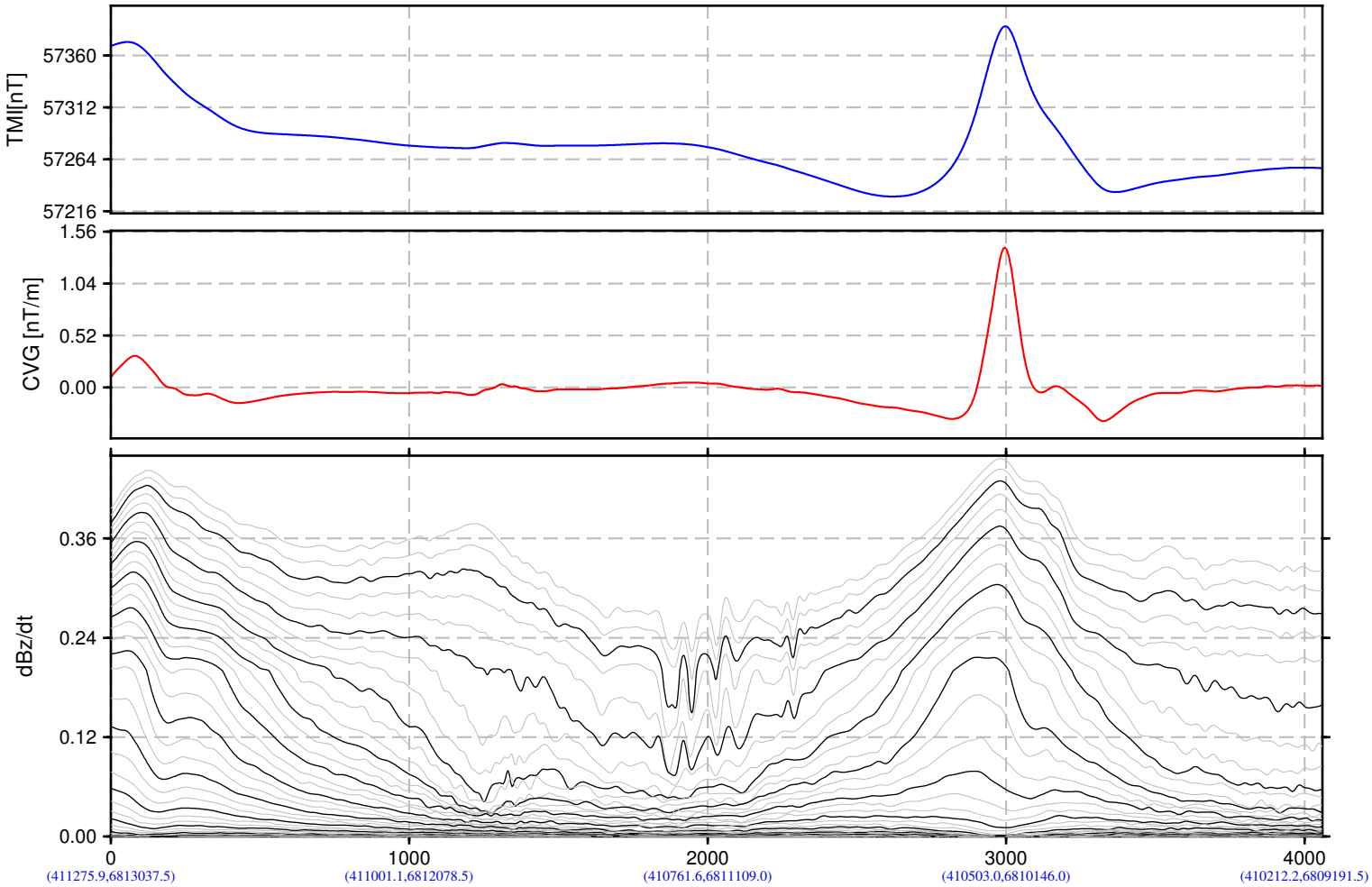
Resistivity Depth Image (RDI) for Line 3320

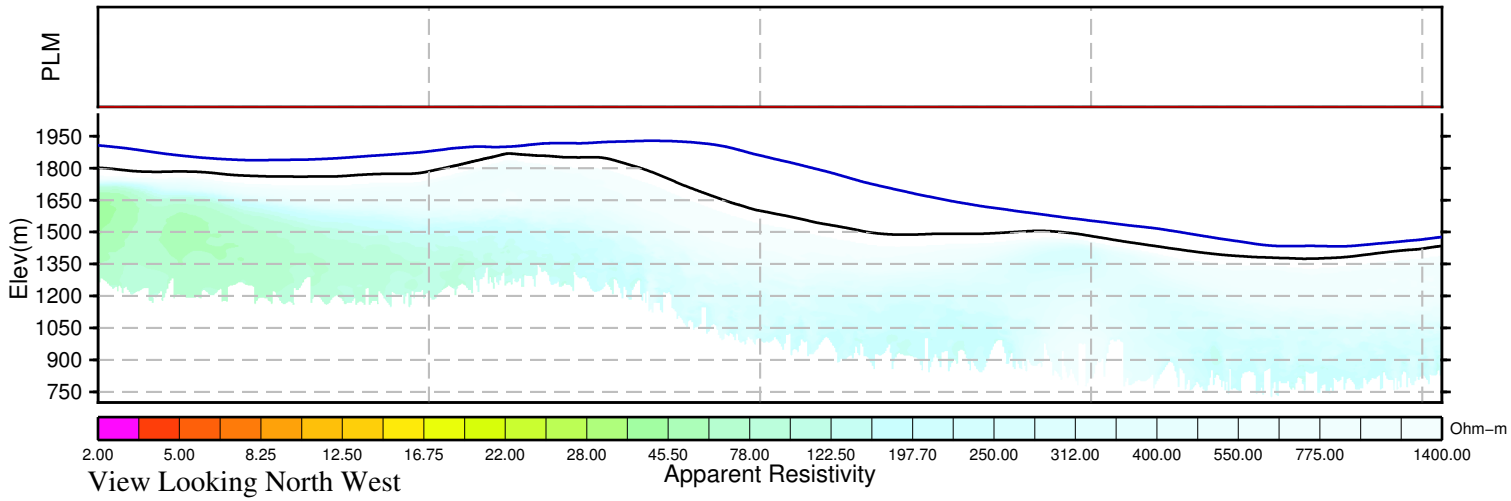
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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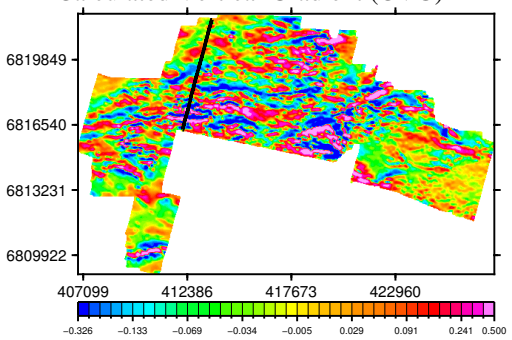
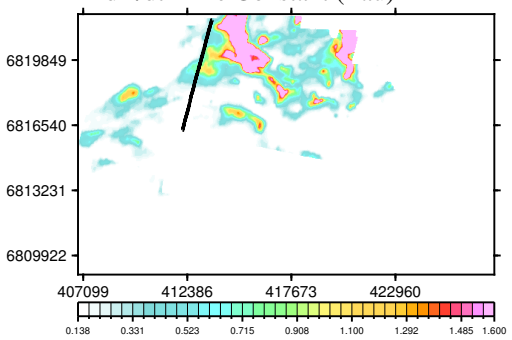
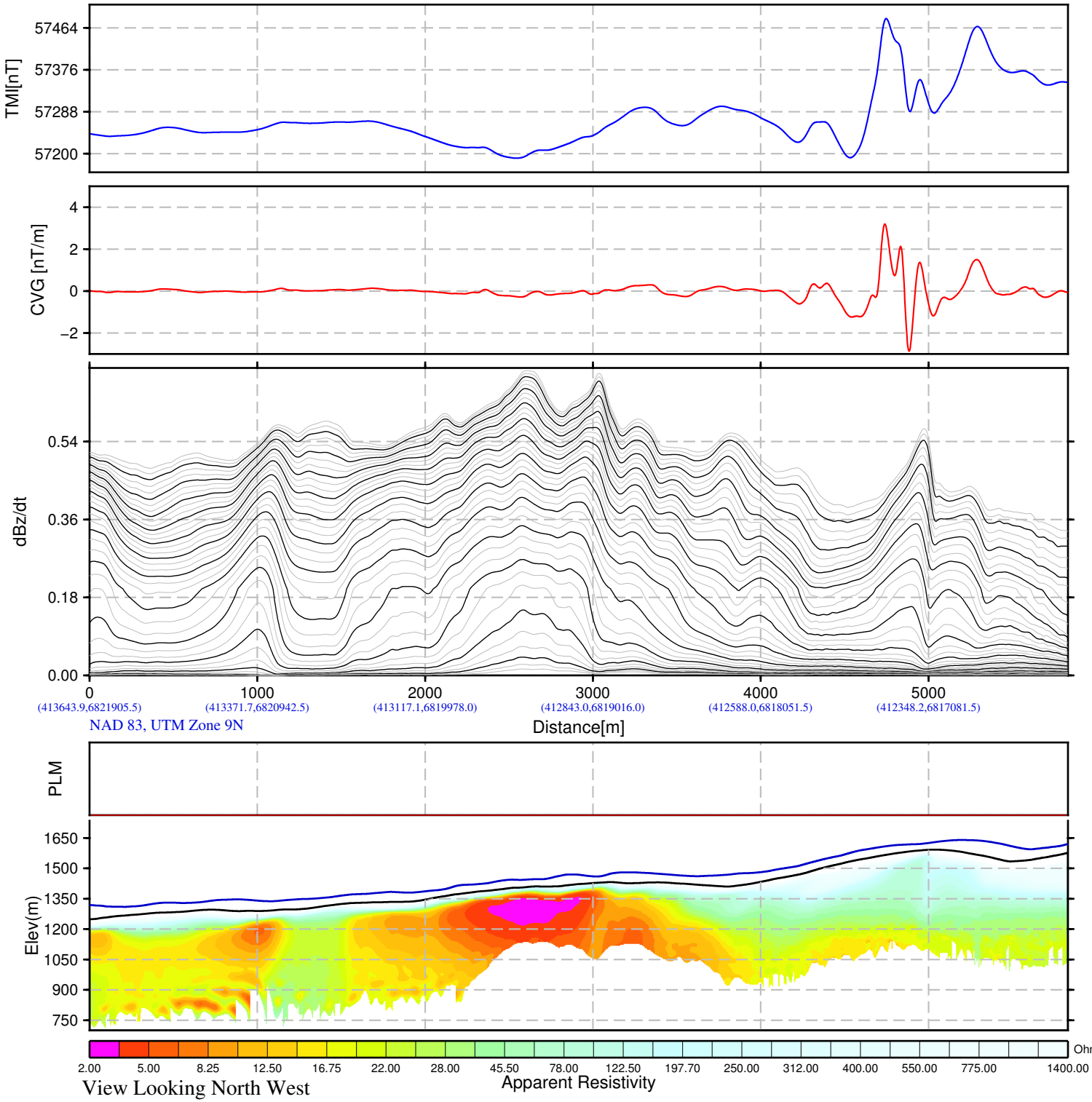
Resistivity Depth Image (RDI) for Line 3321

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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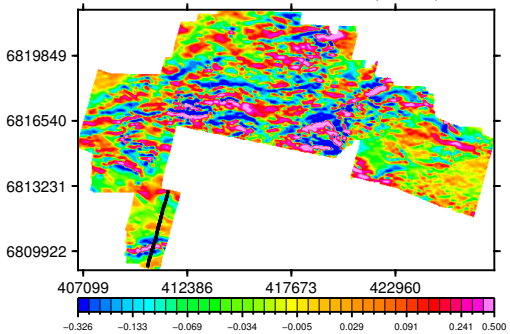
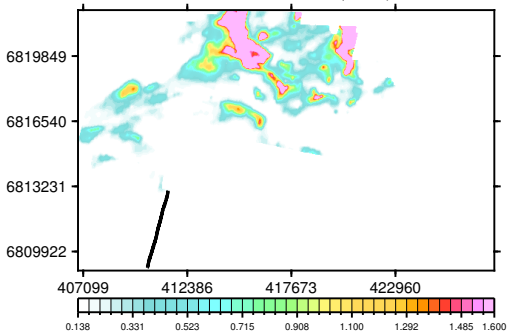
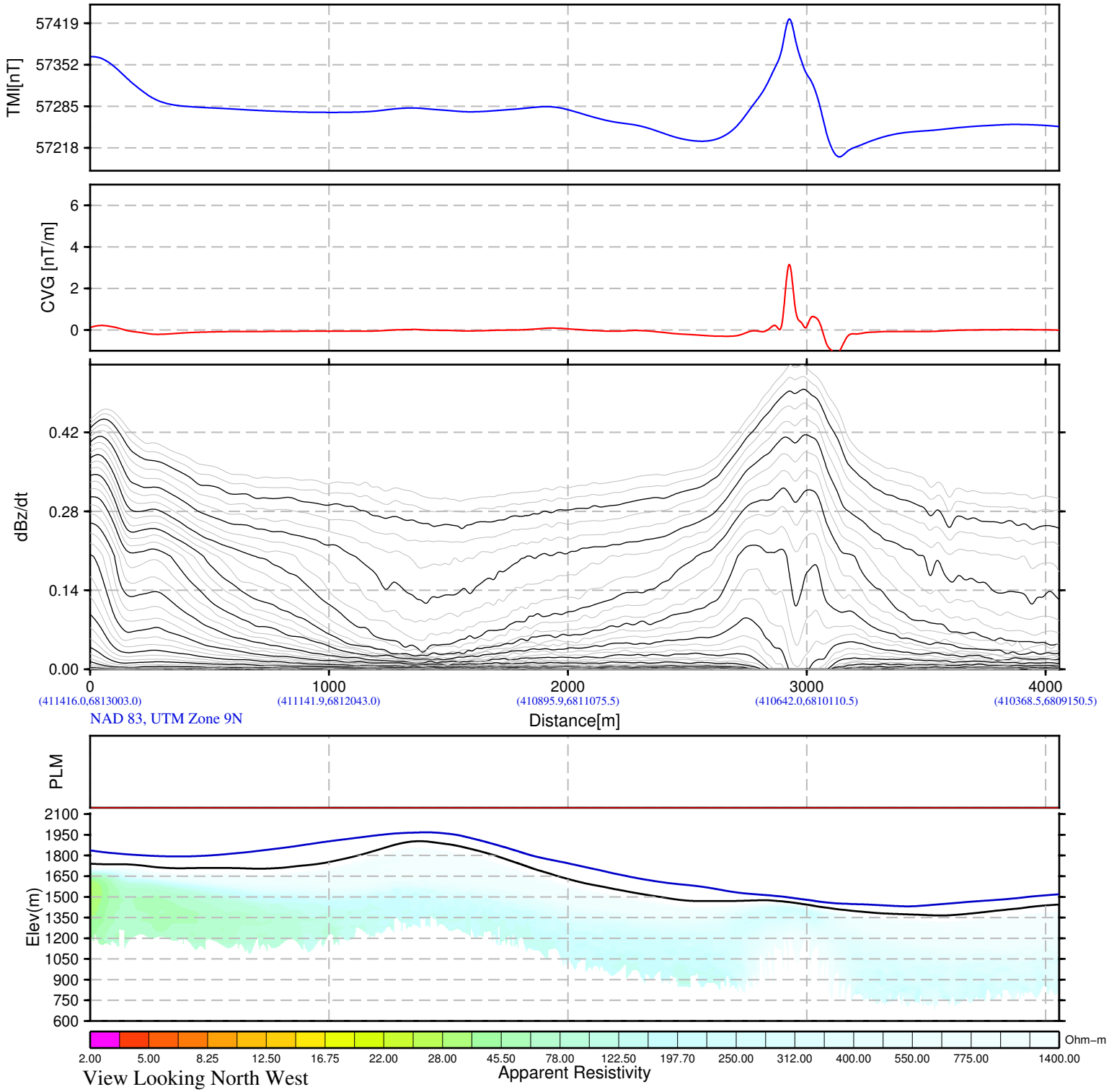
Resistivity Depth Image (RDI) for Line 3330

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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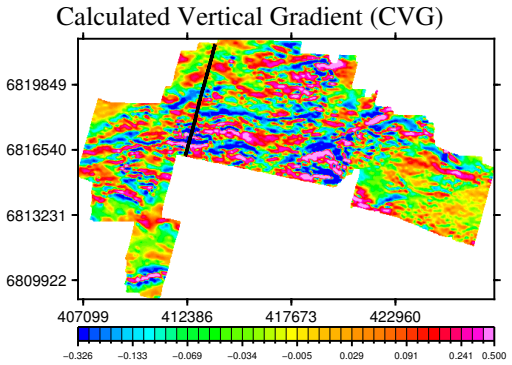
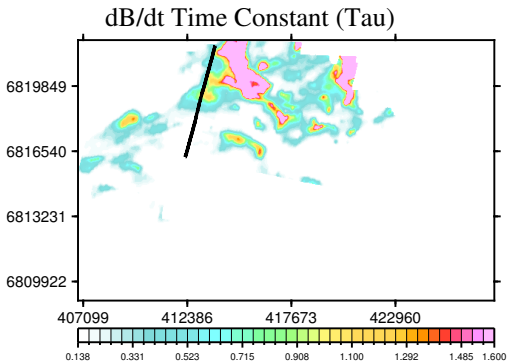
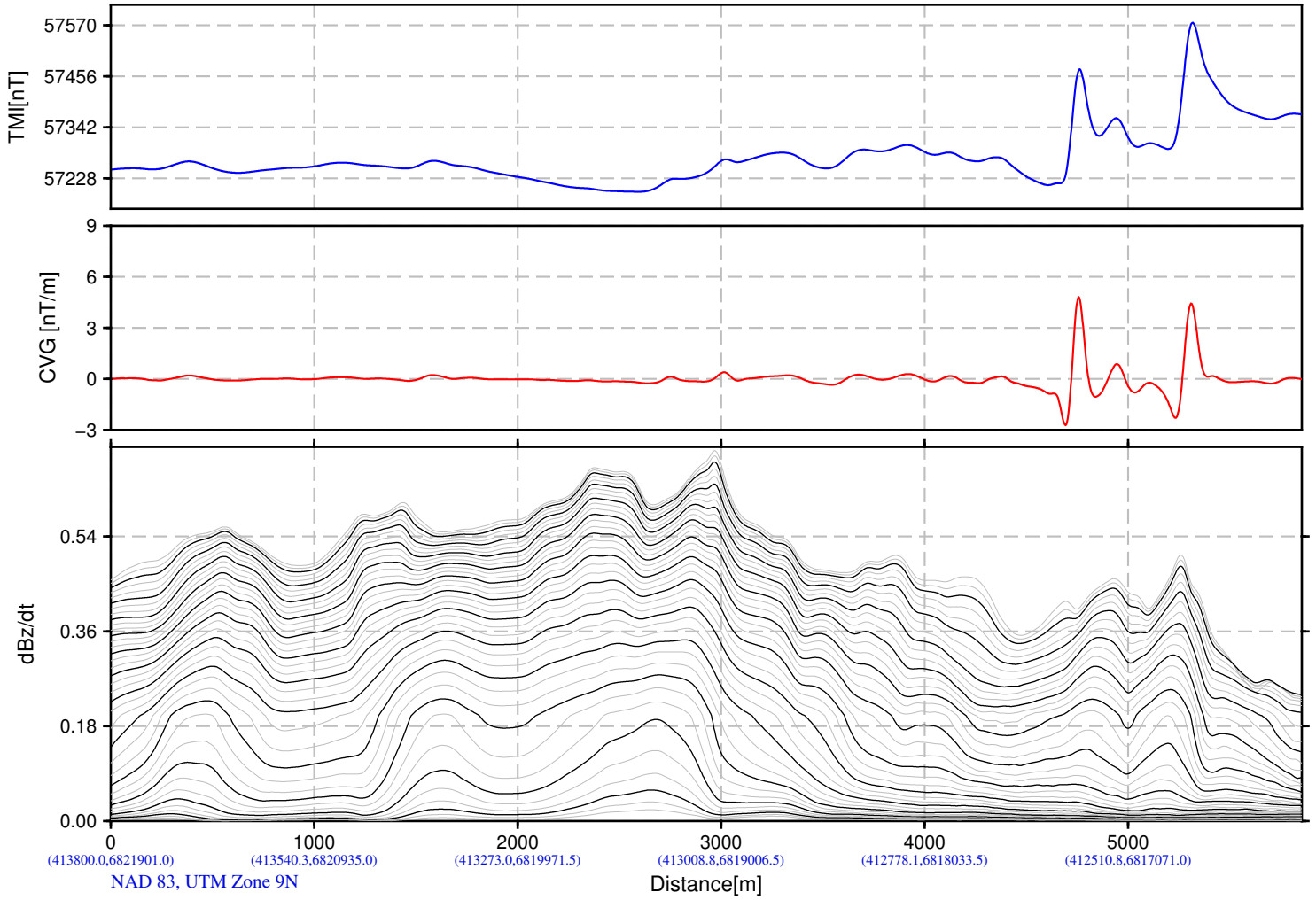
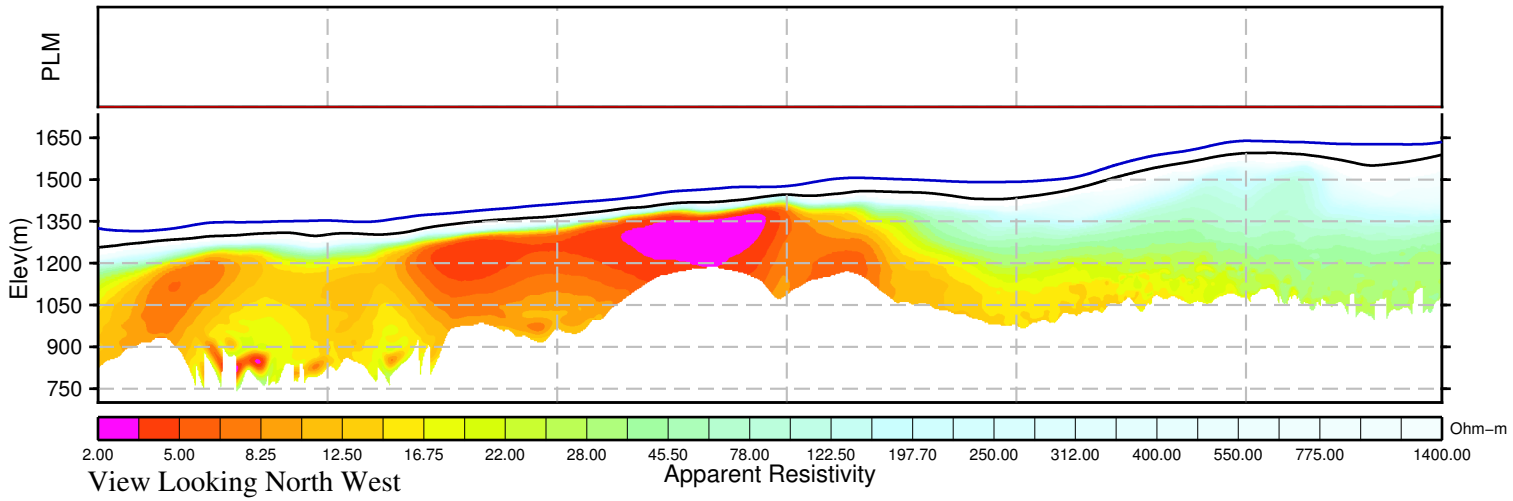
Resistivity Depth Image (RDI) for Line 3331









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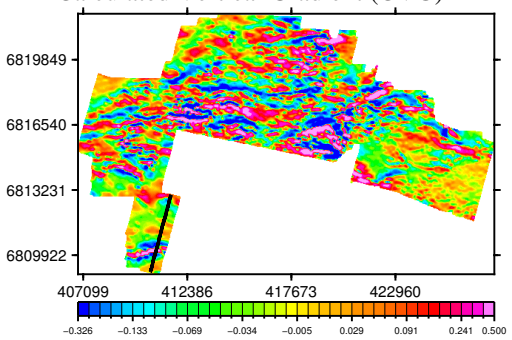
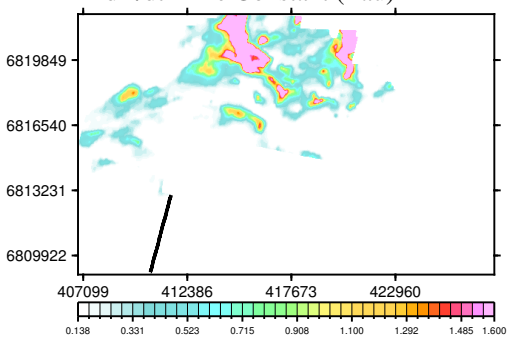
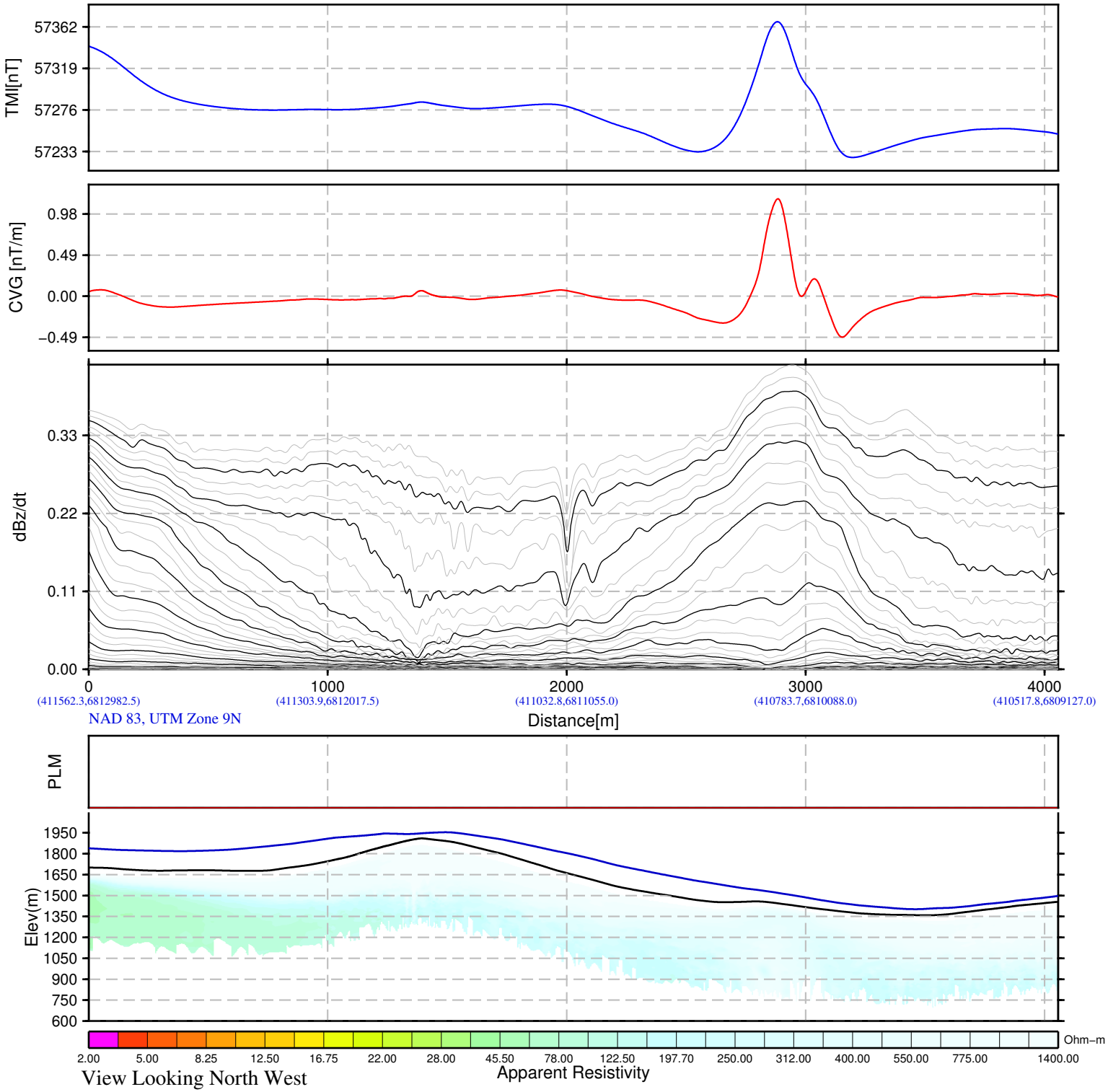
Resistivity Depth Image (RDI) for Line 3340

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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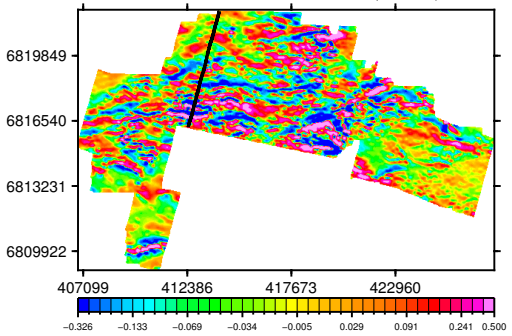
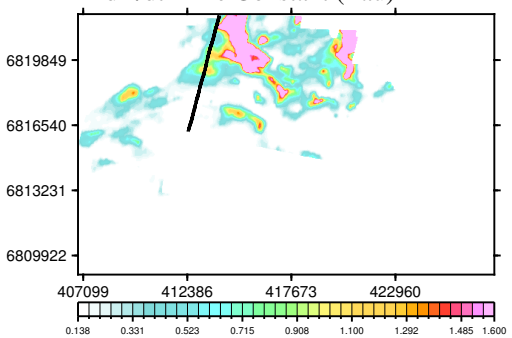
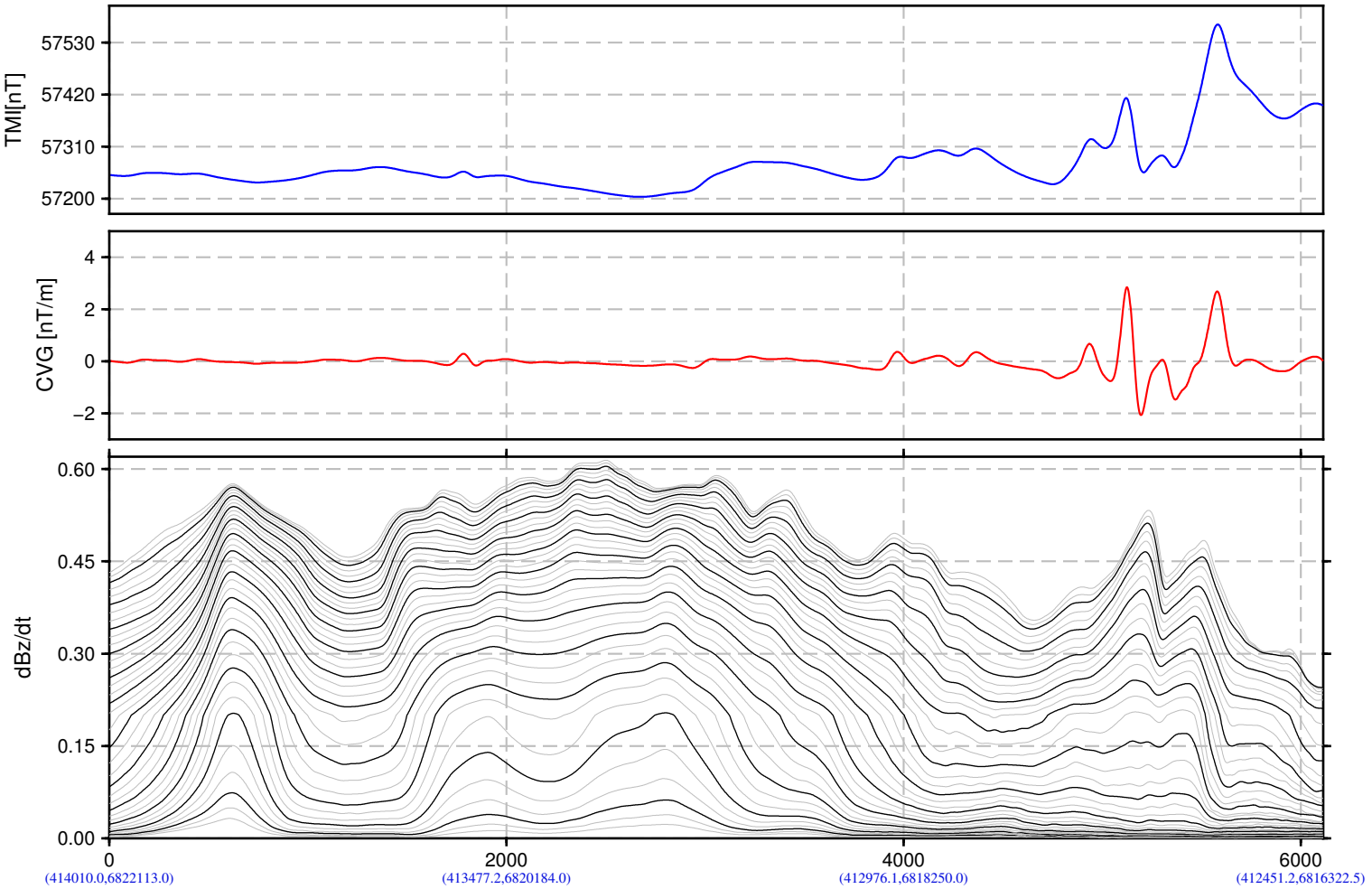
Resistivity Depth Image (RDI) for Line 3341

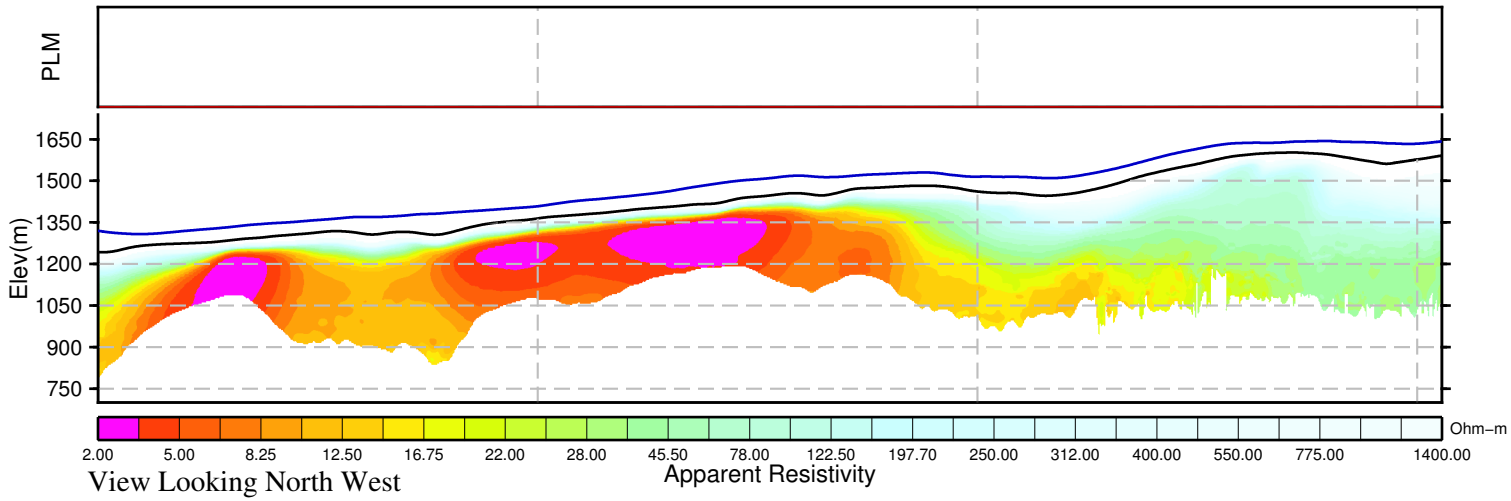
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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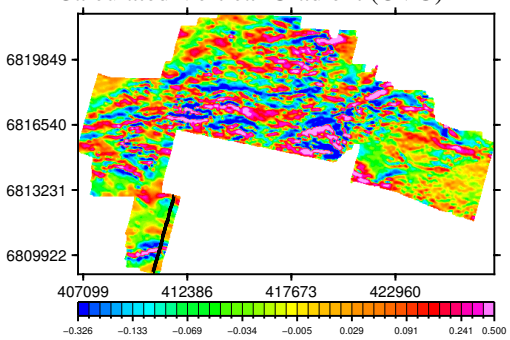
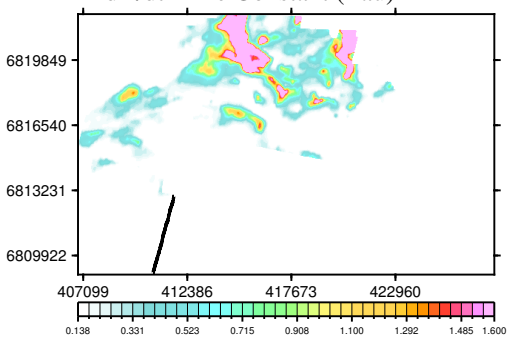
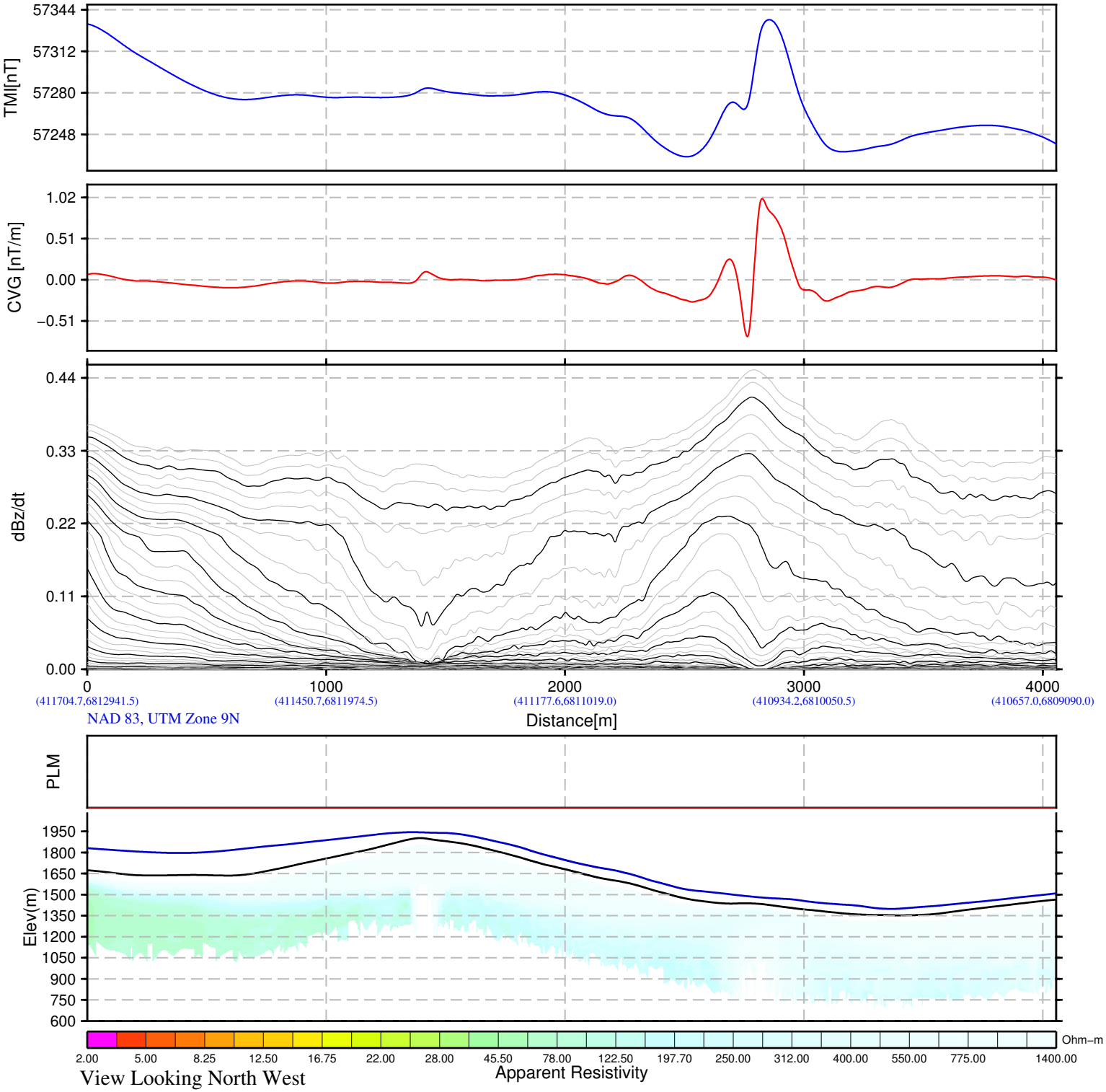
Resistivity Depth Image (RDI) for Line 3350

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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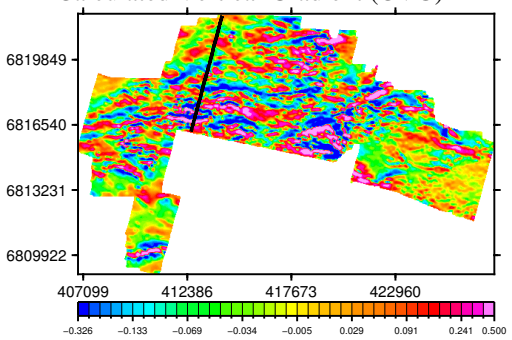
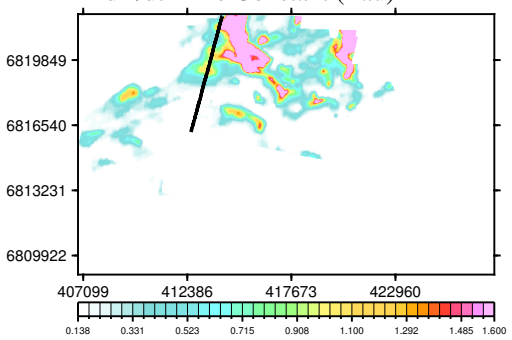
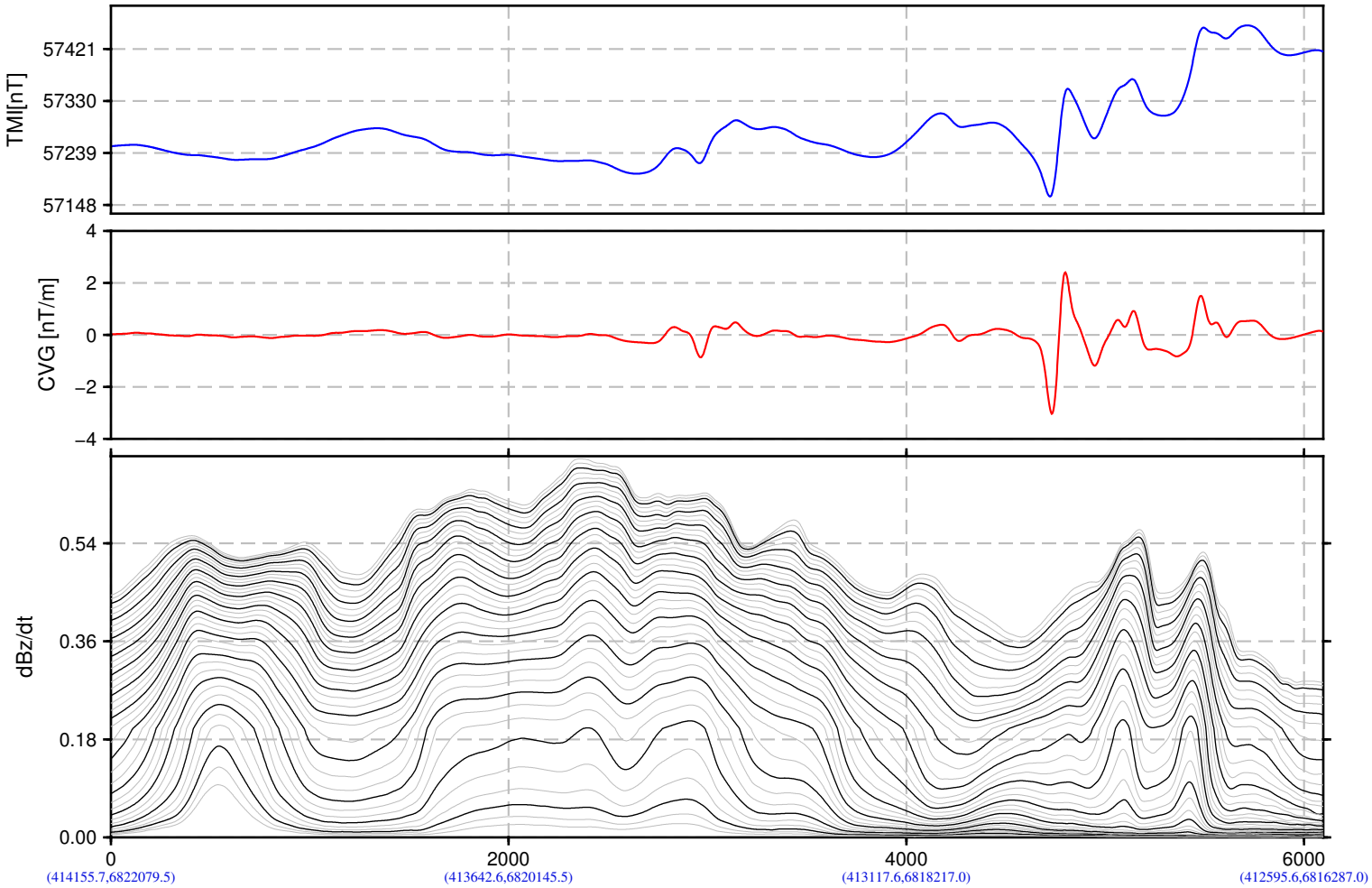
Resistivity Depth Image (RDI) for Line 3351

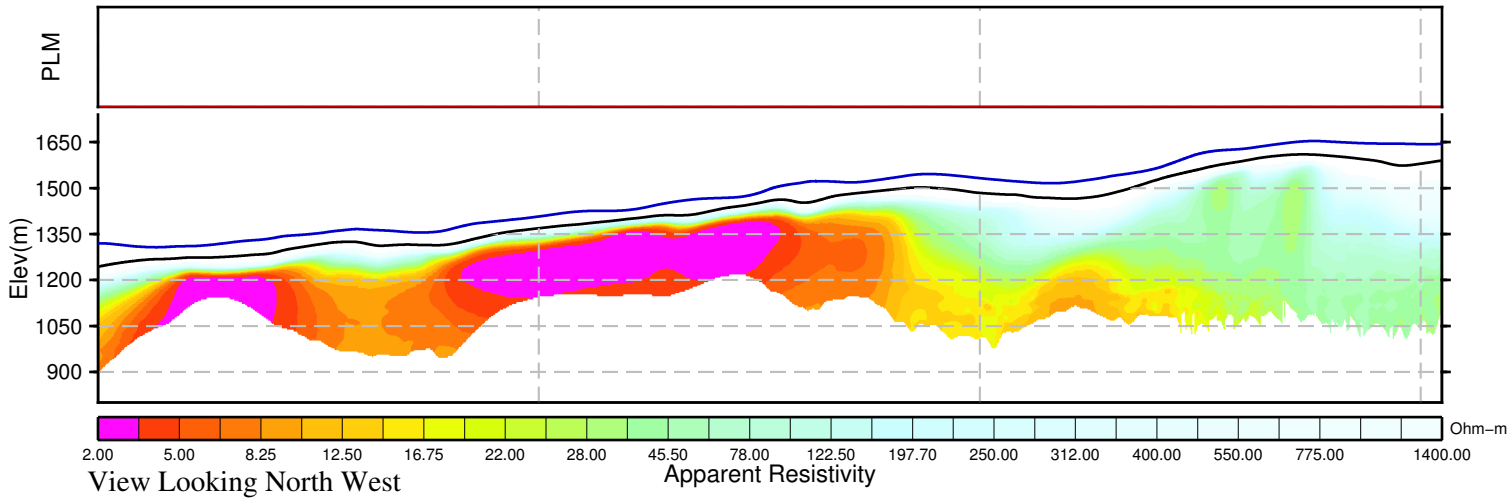
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

BMC Minerals (No.1) Ltd.
Kudz Ze Kayah Block
Yukon, Canada

VTEM System:VTEM17−Plus
Job Number:GL160037
Resistivity Depth Image (RDI)
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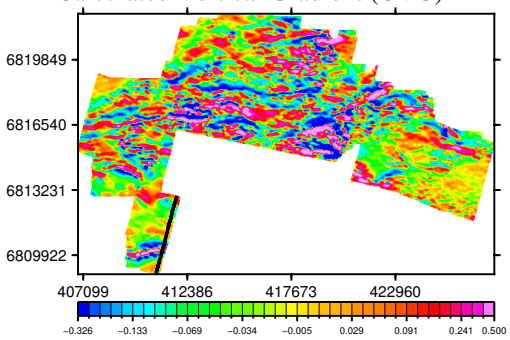
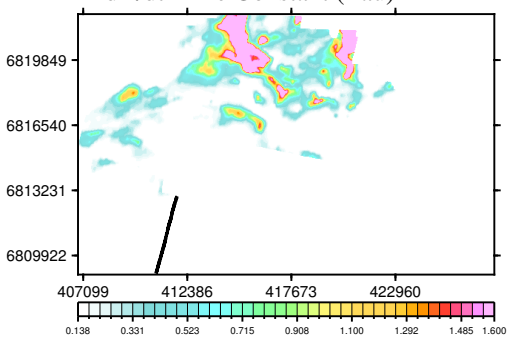
AIRBORNE GEOPHYSICAL SURVEYS

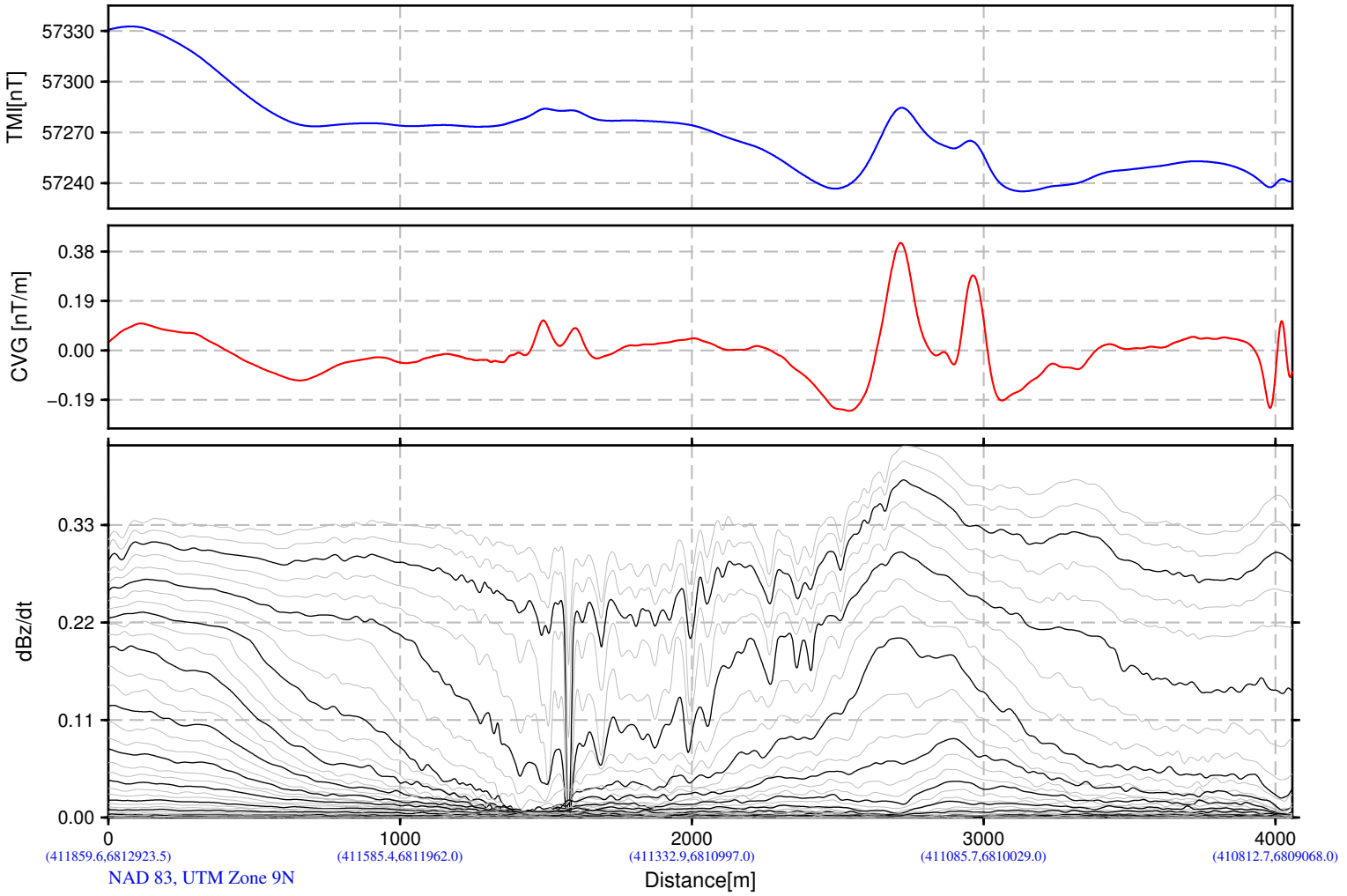
Resistivity Depth Image (RDI) for Line 3360

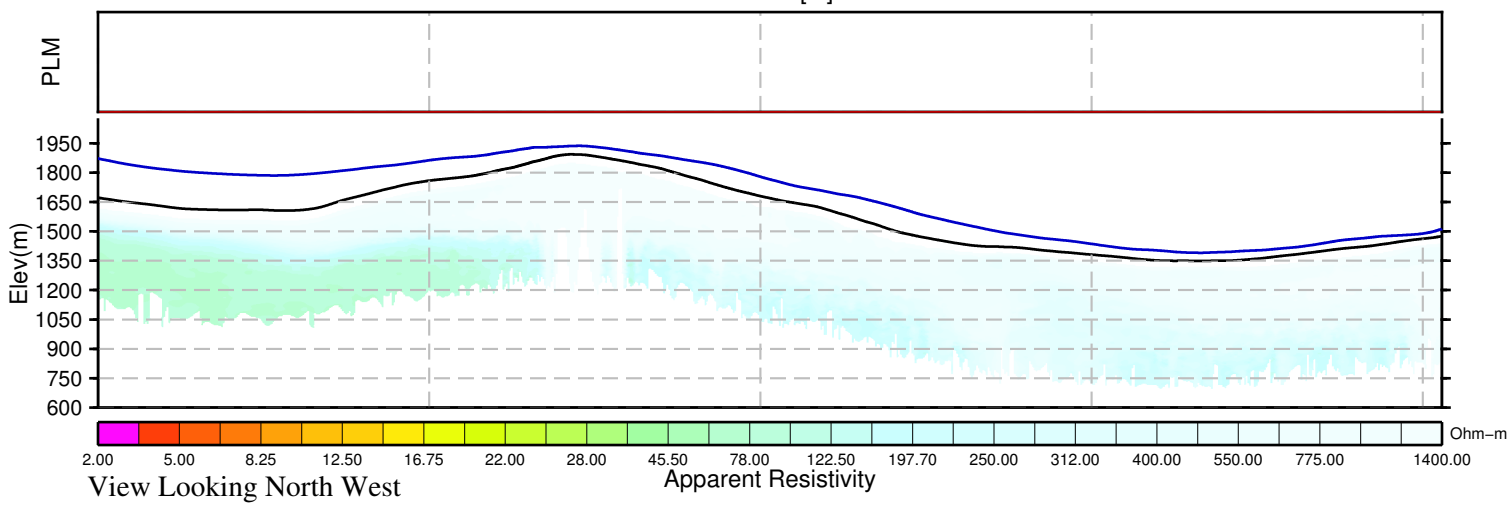
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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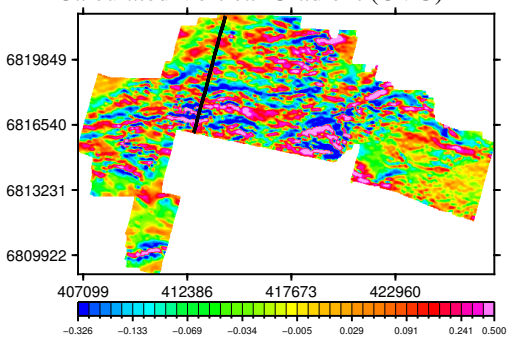
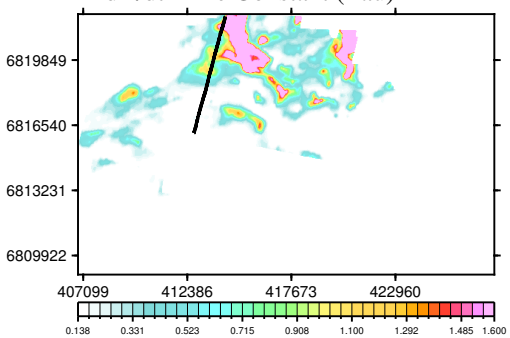
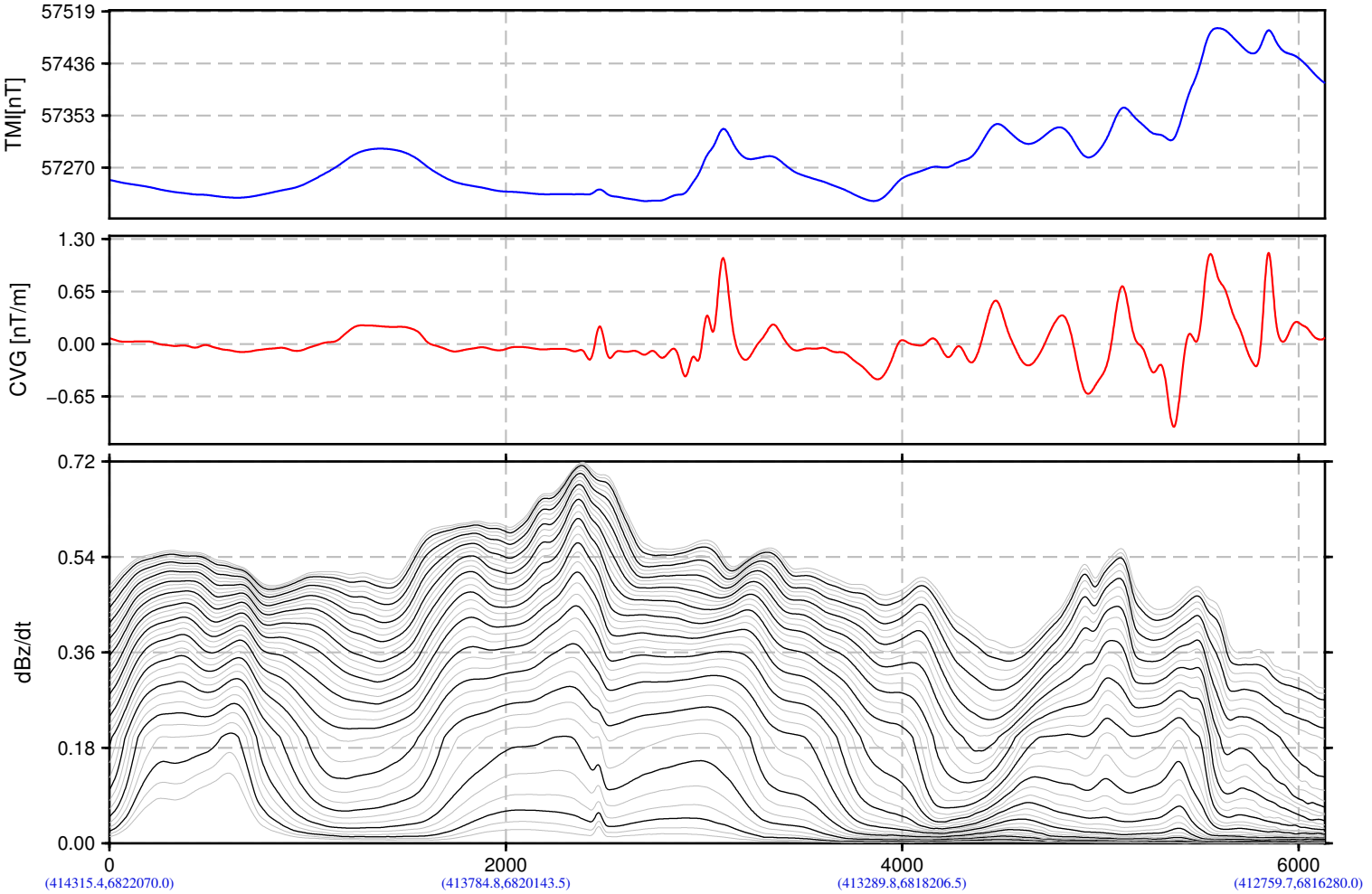
Resistivity Depth Image (RDI) for Line 3361

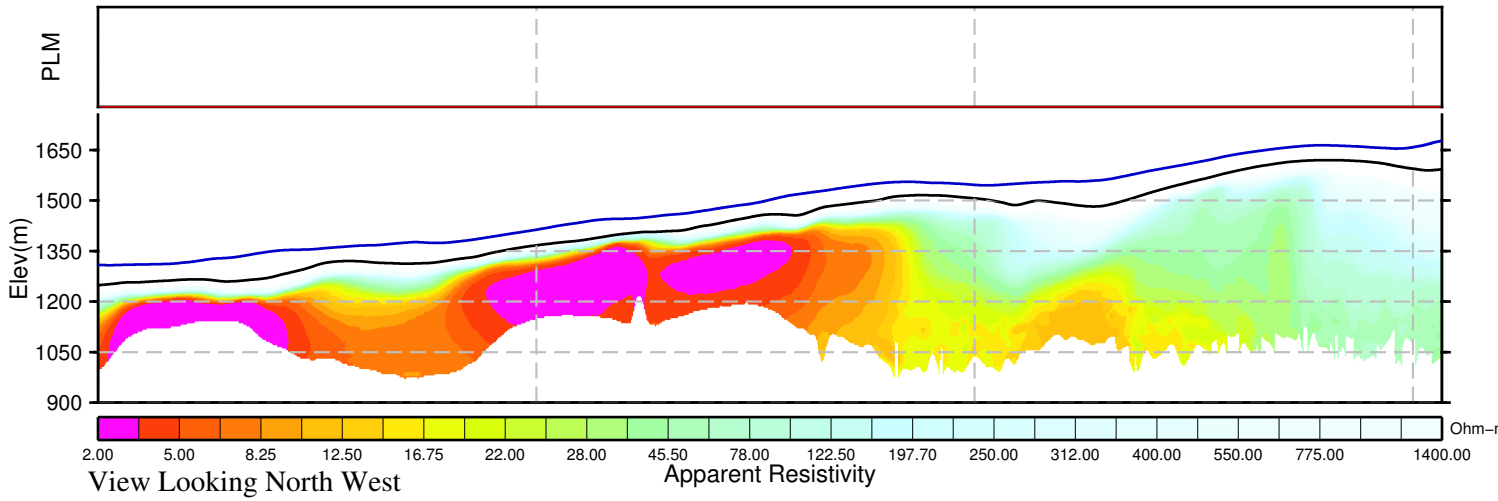
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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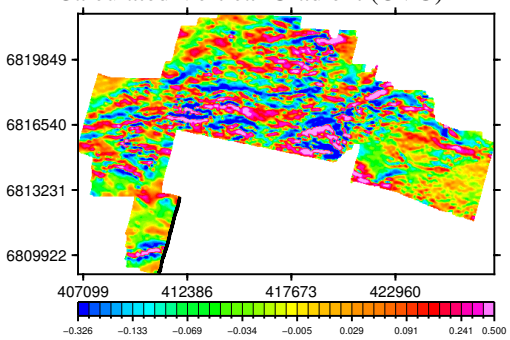
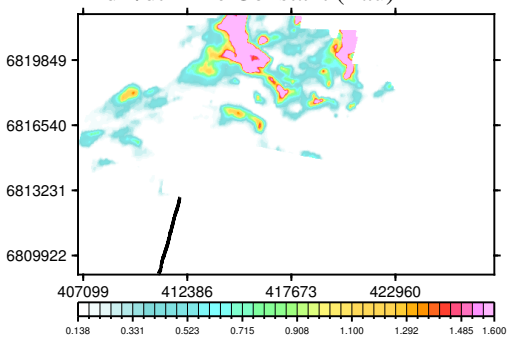
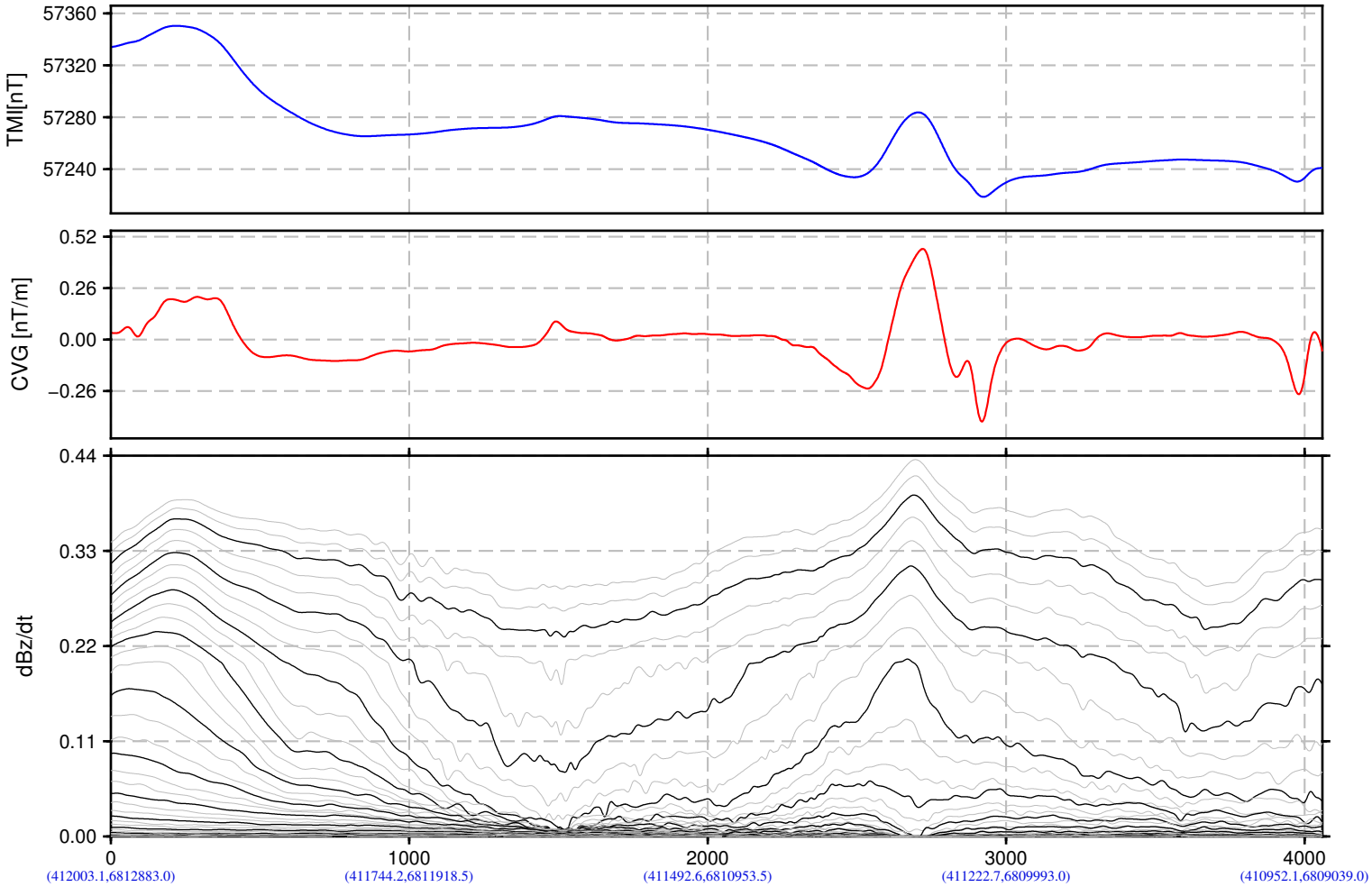
Resistivity Depth Image (RDI) for Line 3370

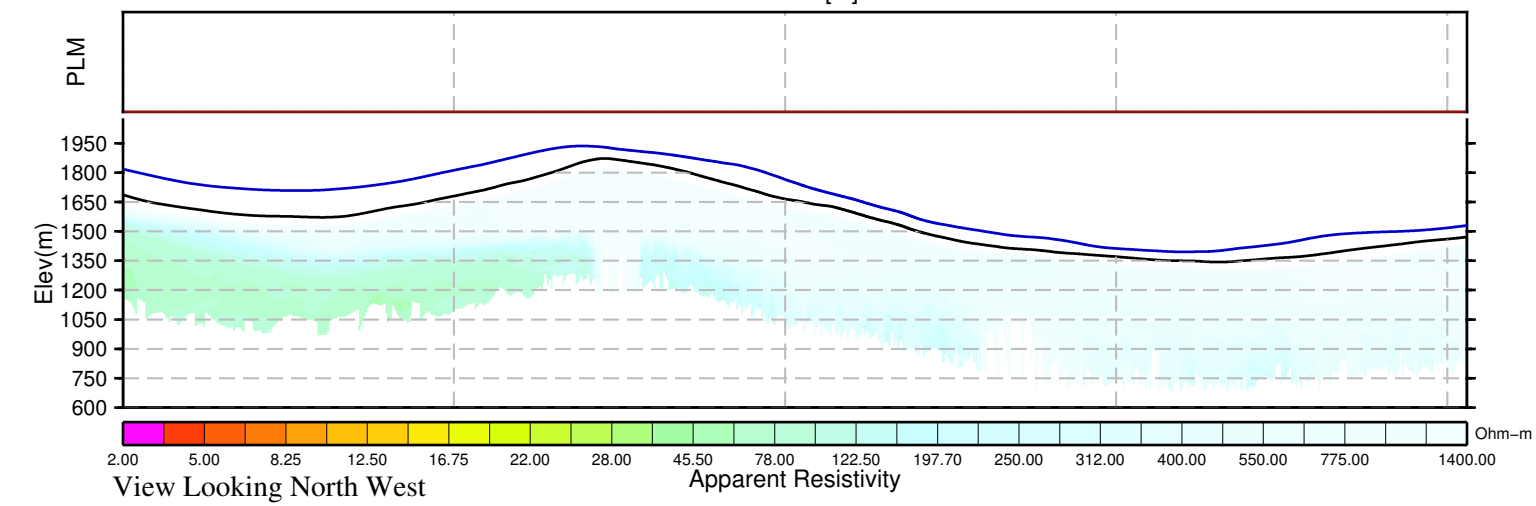
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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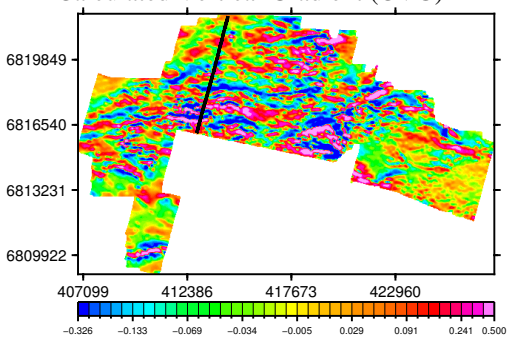
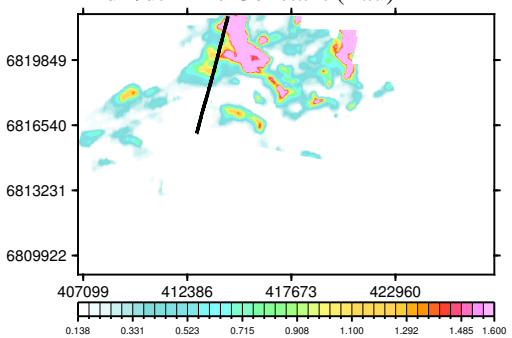
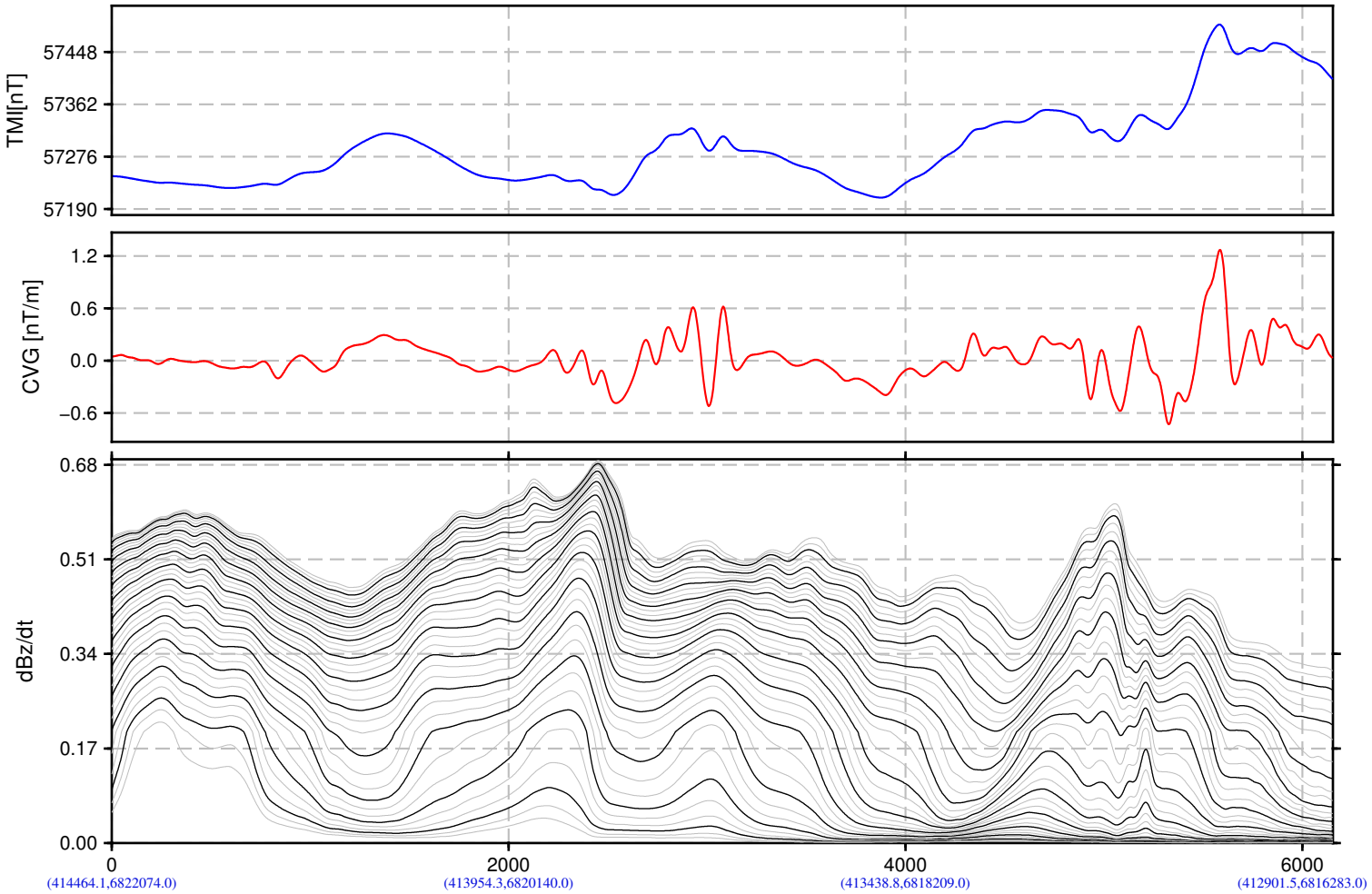
Resistivity Depth Image (RDI) for Line 3371

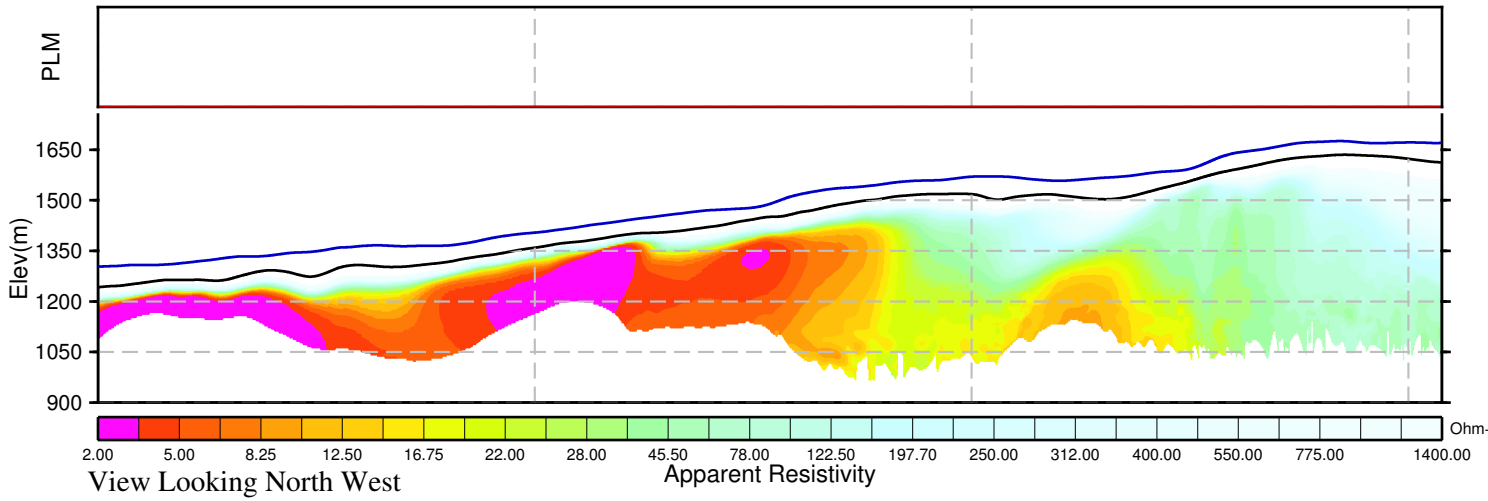
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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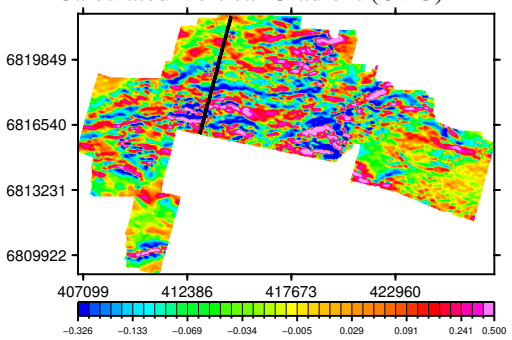
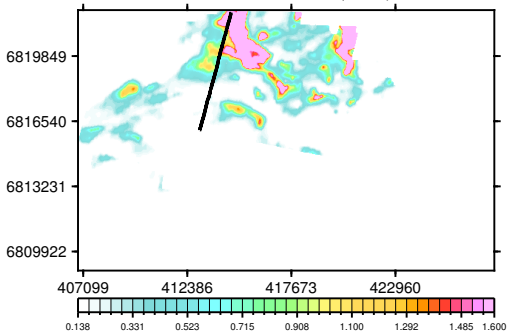
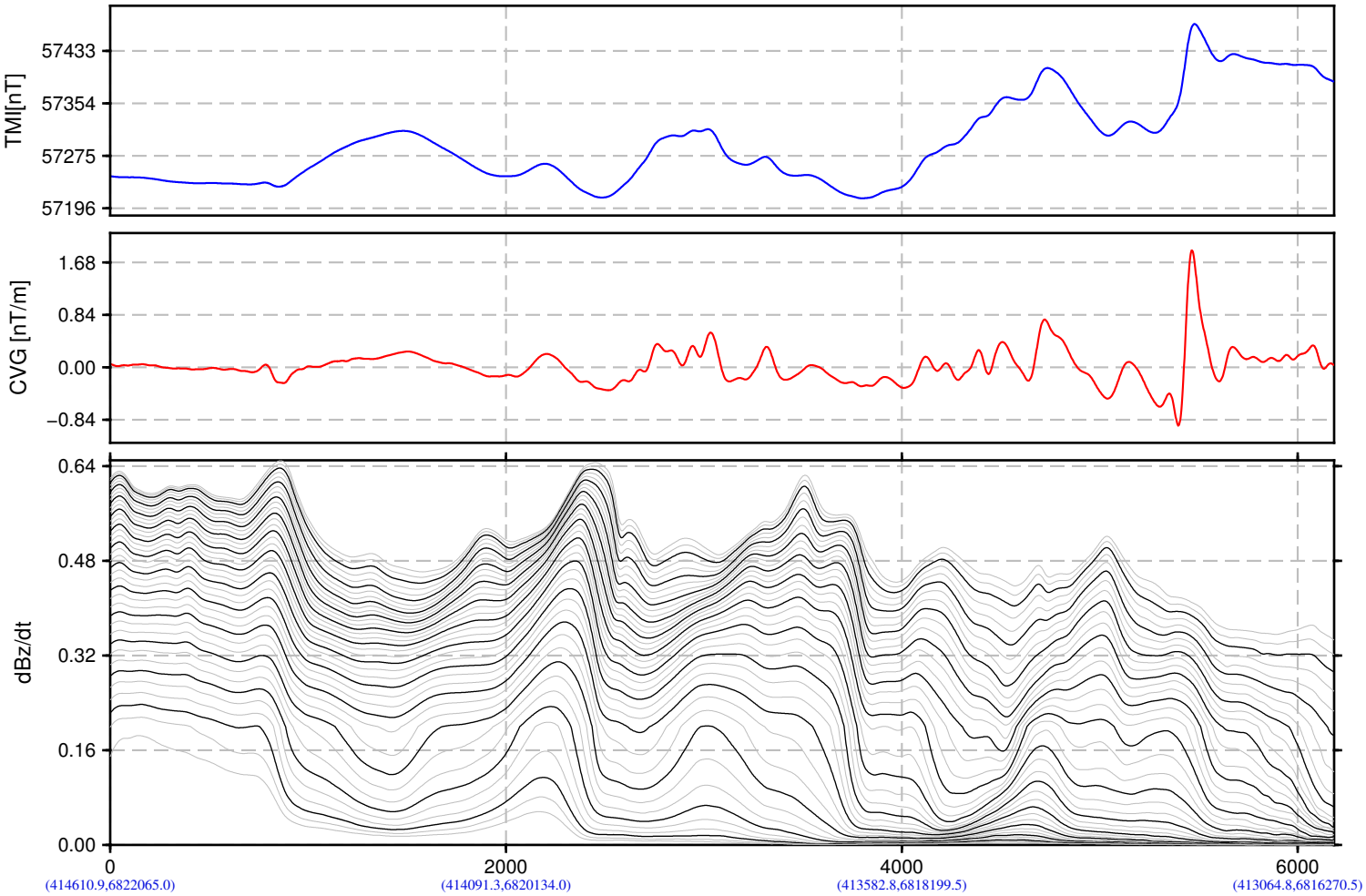
Resistivity Depth Image (RDI) for Line 3380

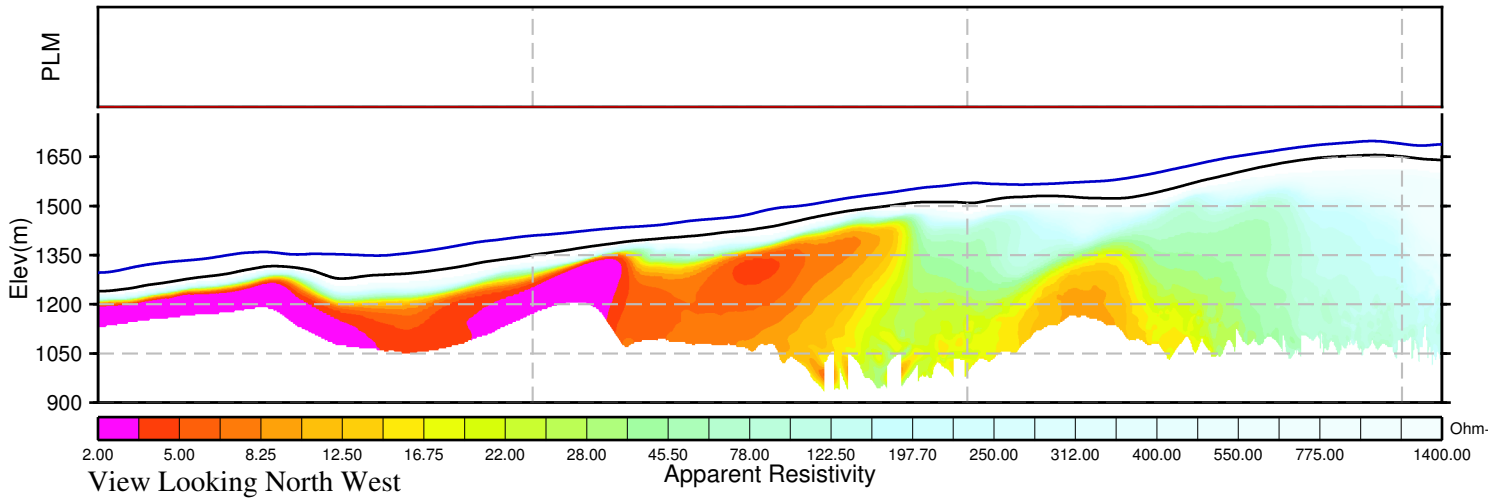
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

BMC Minerals (No.1) Ltd.
Kudz Ze Kayah Block
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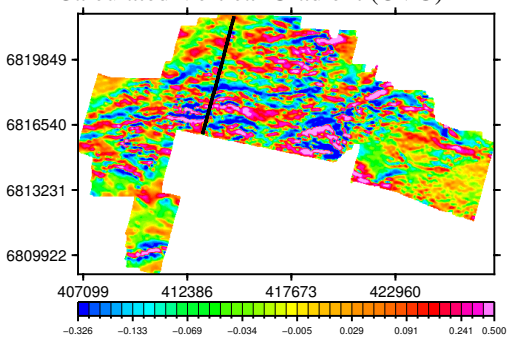
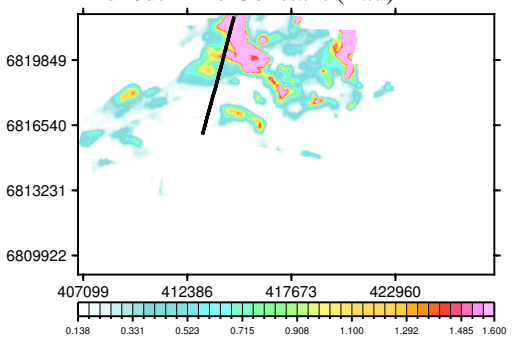
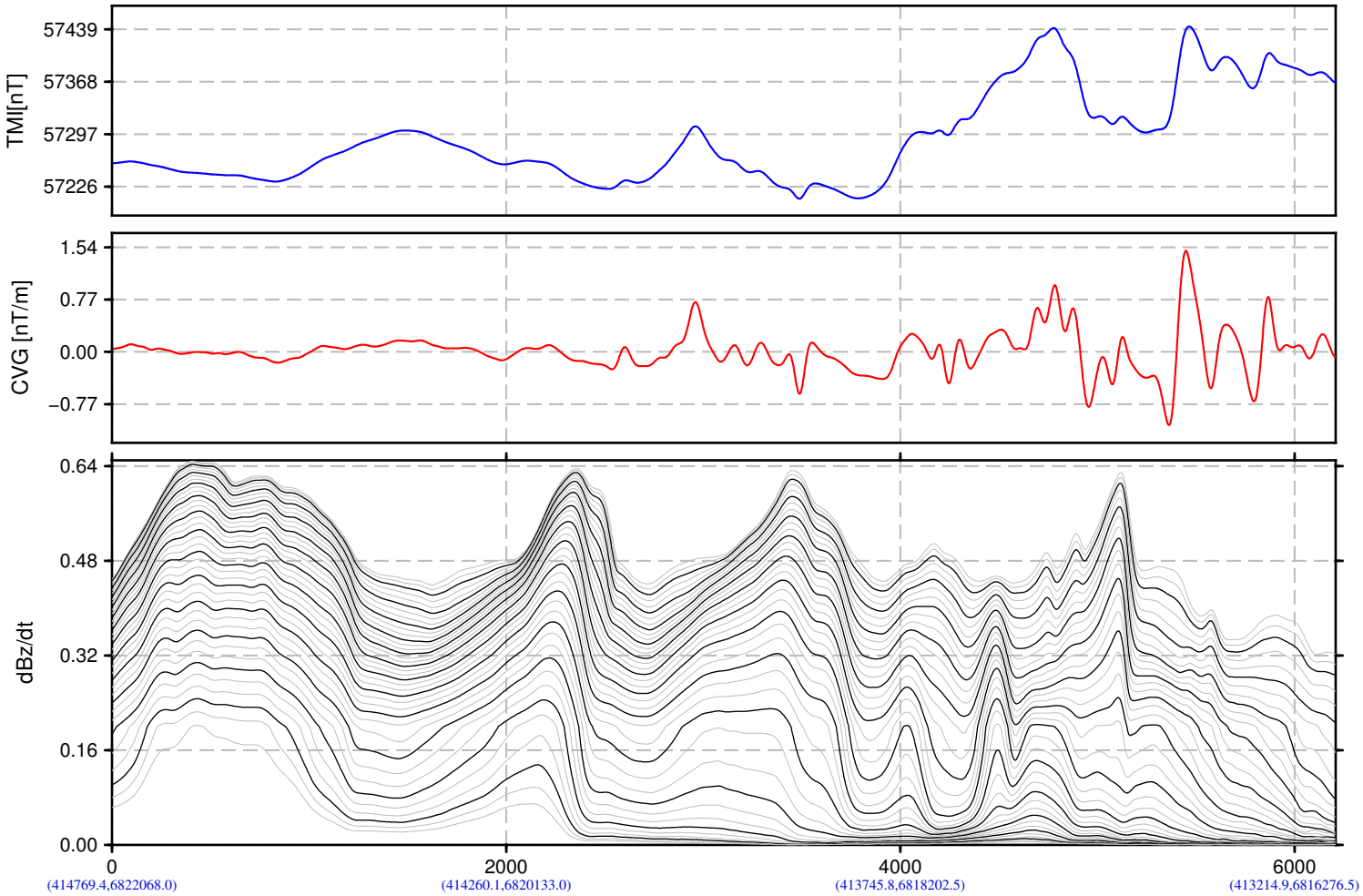
Resistivity Depth Image (RDI) for Line 3390

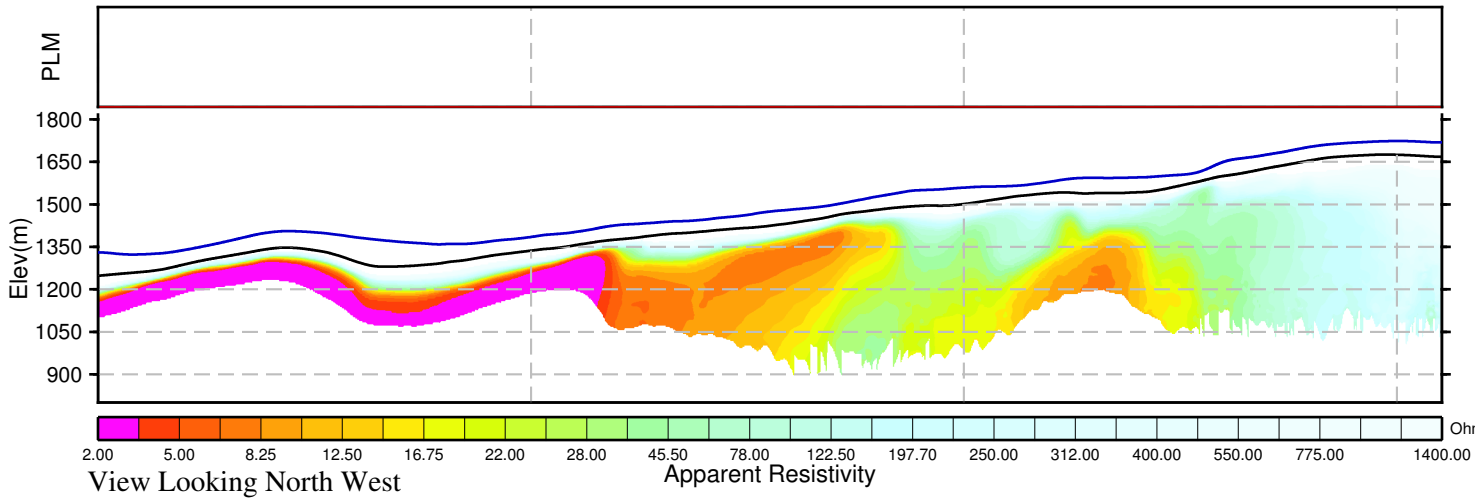
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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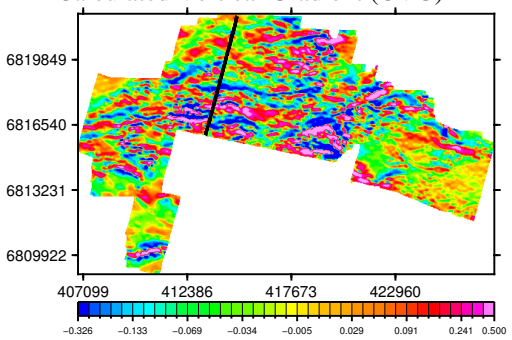
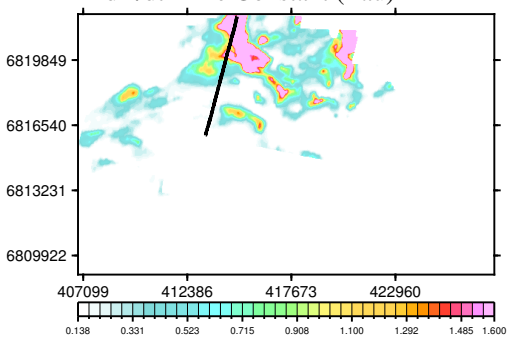
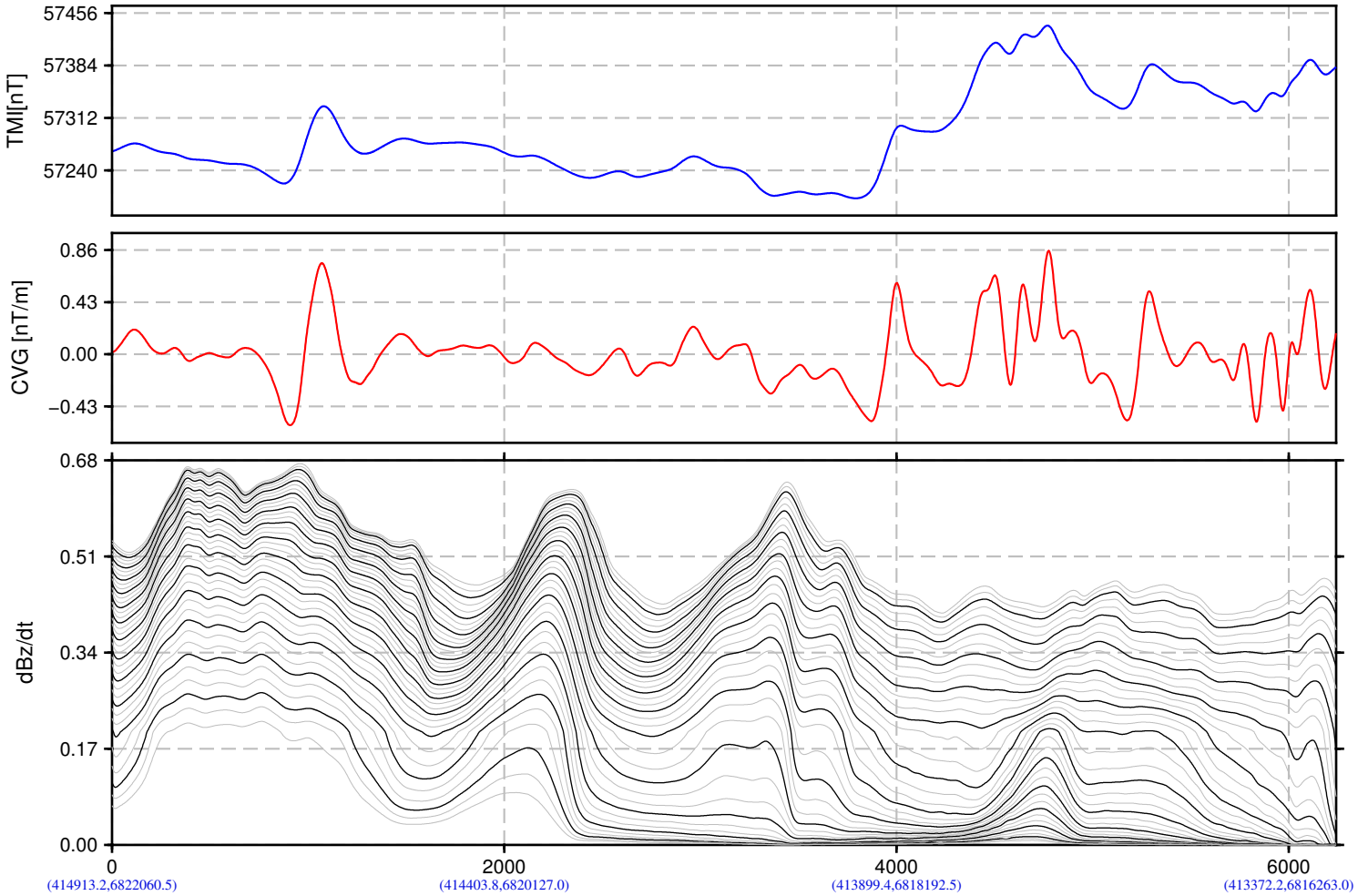
Resistivity Depth Image (RDI) for Line 3400

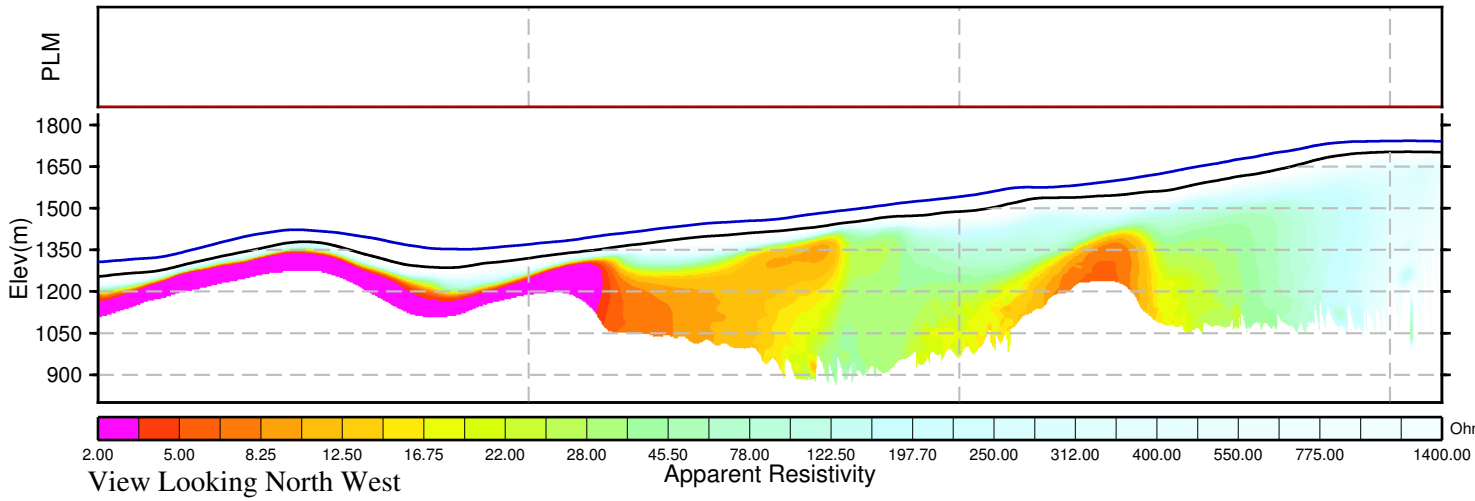
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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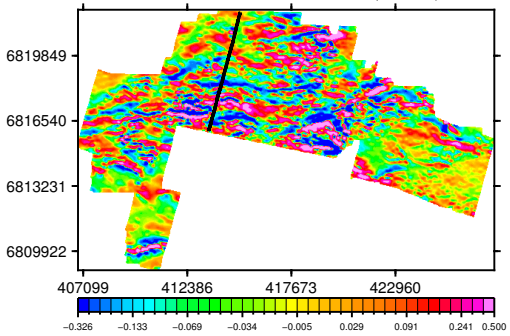
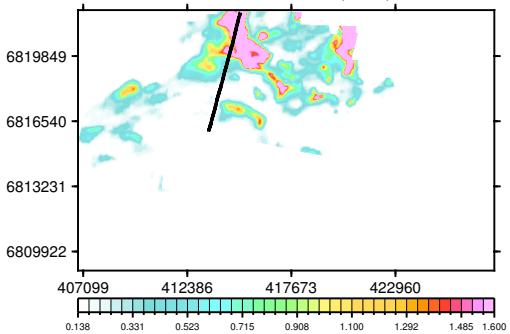
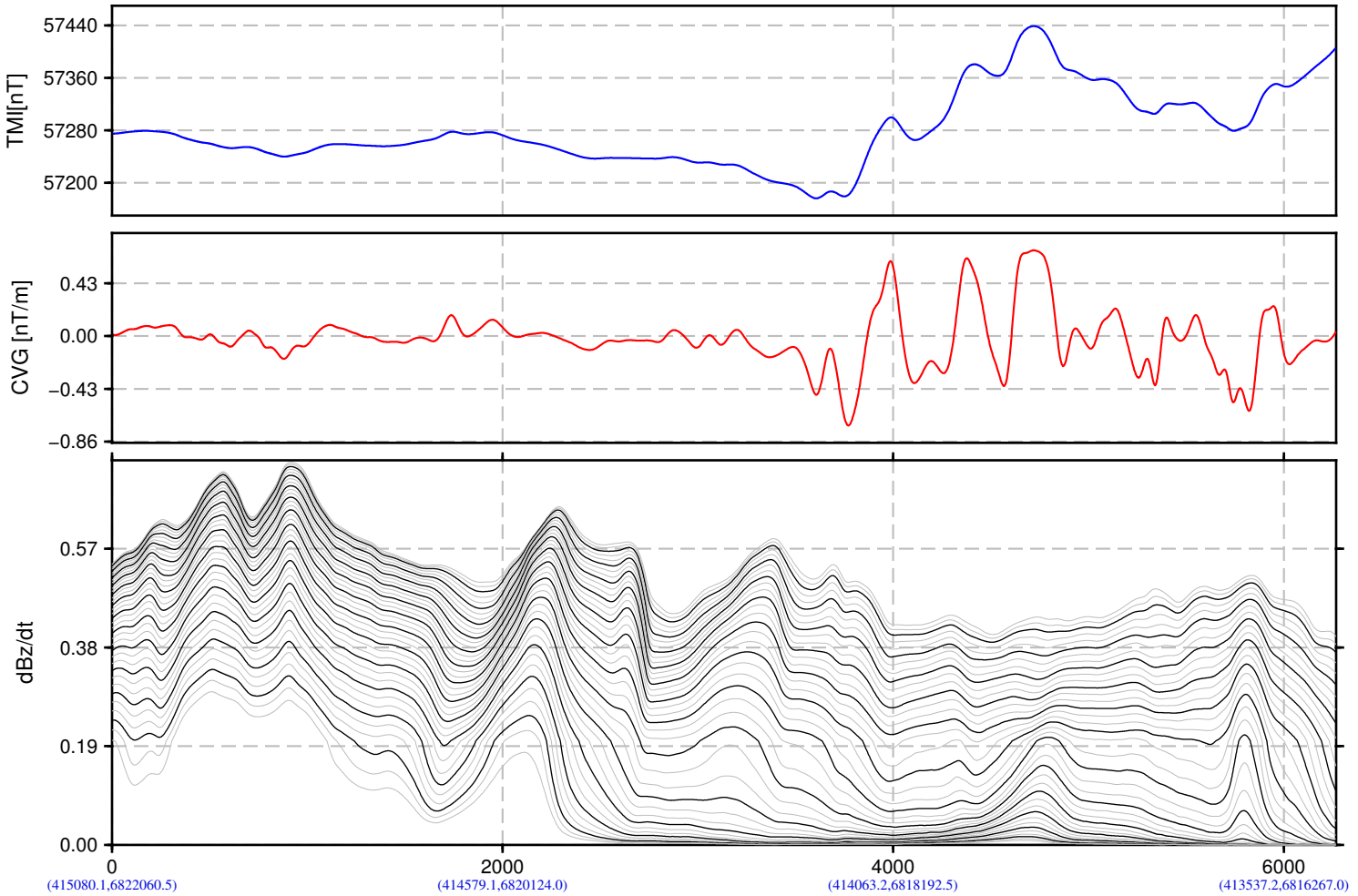
Resistivity Depth Image (RDI) for Line 3410

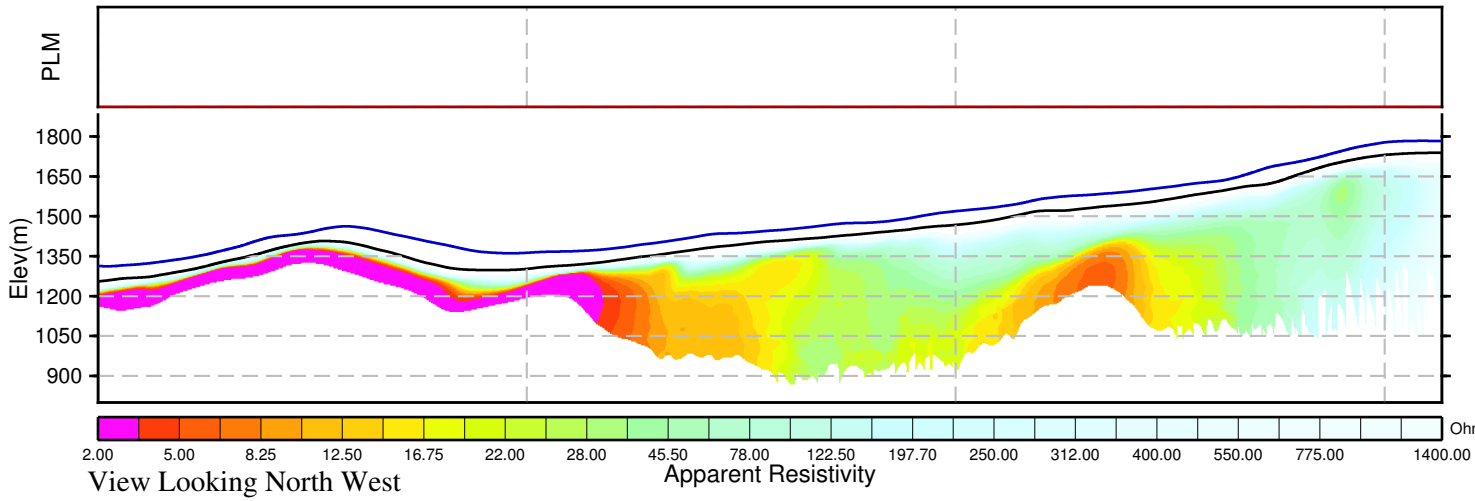
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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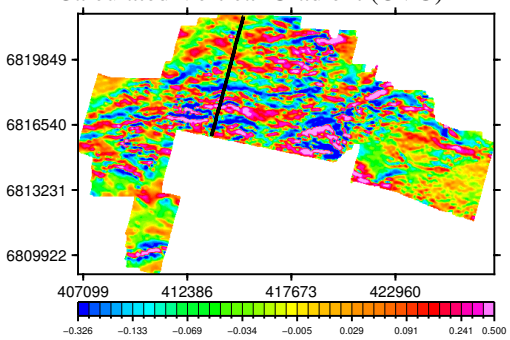
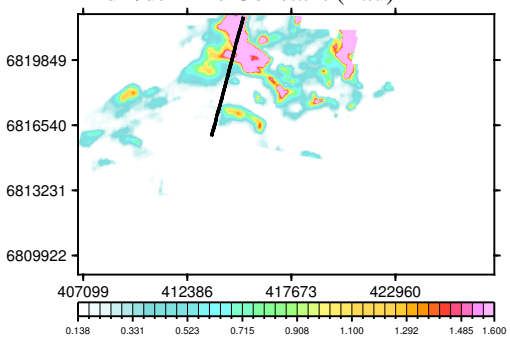
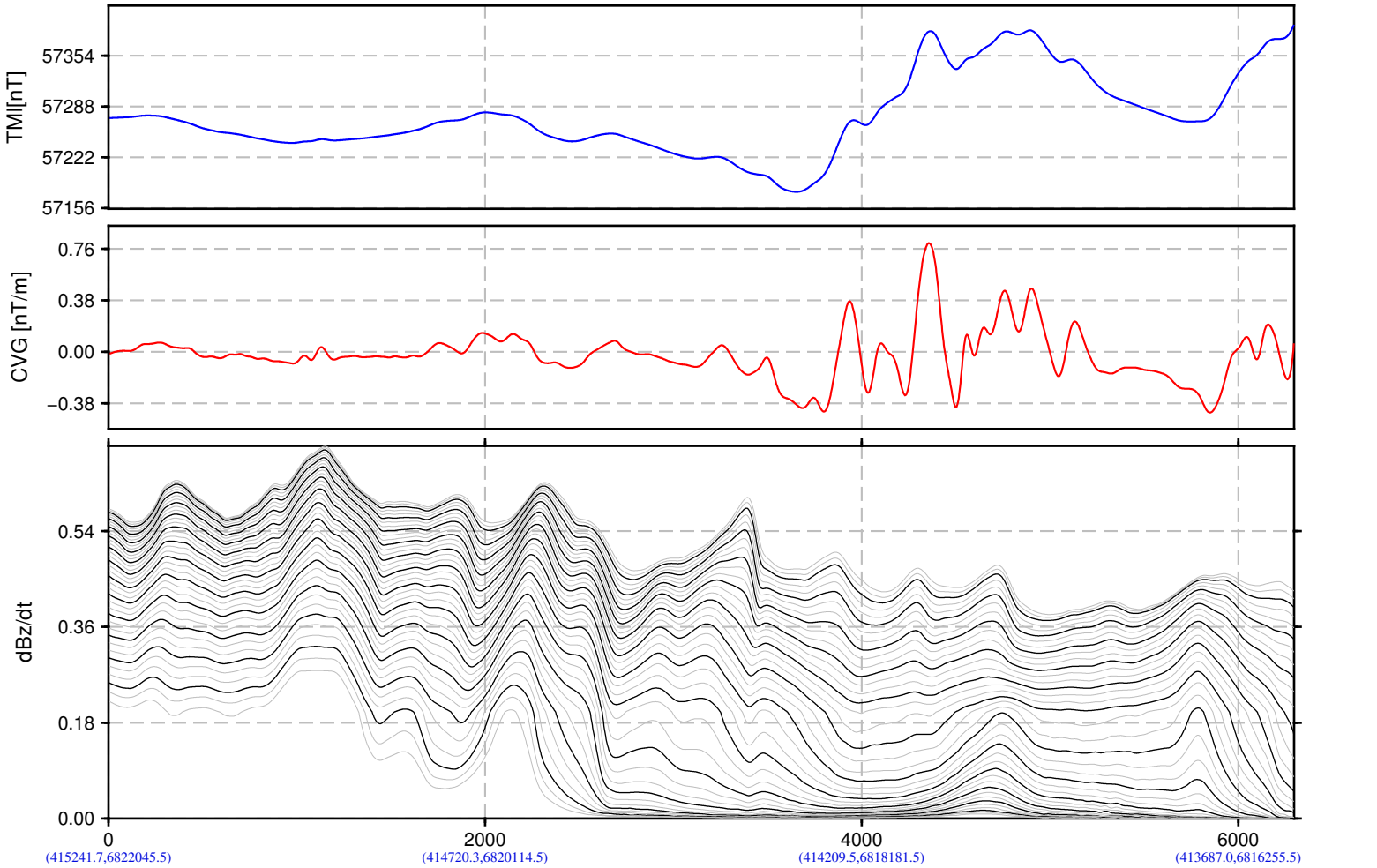
Resistivity Depth Image (RDI) for Line 3420

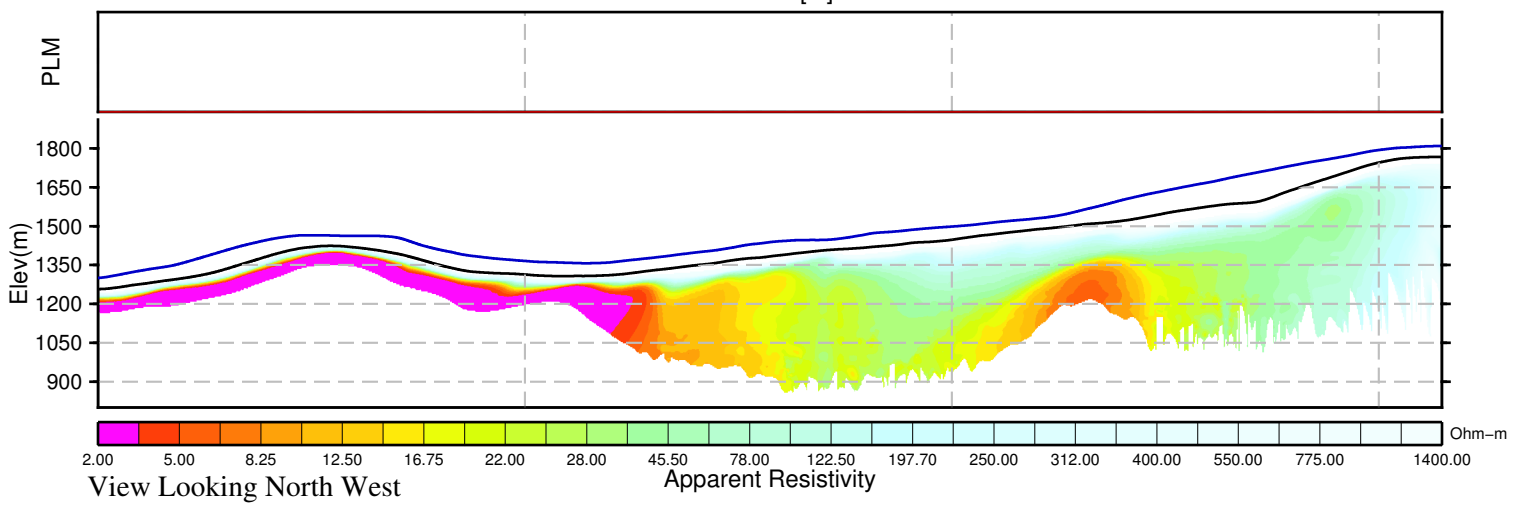
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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Yukon, Canada

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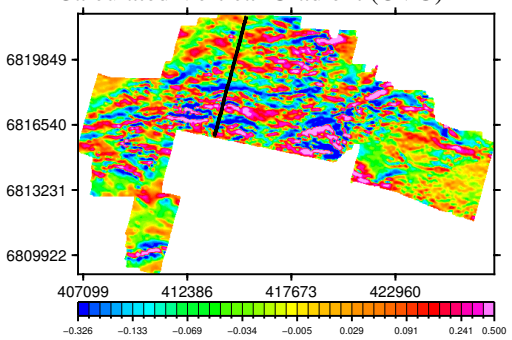
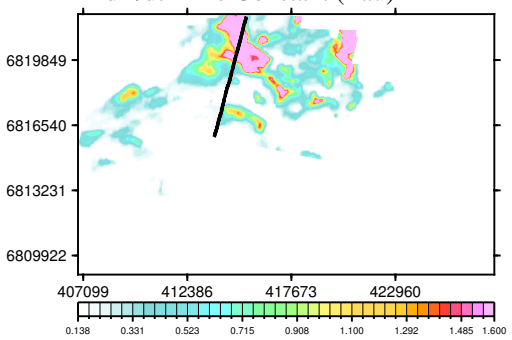
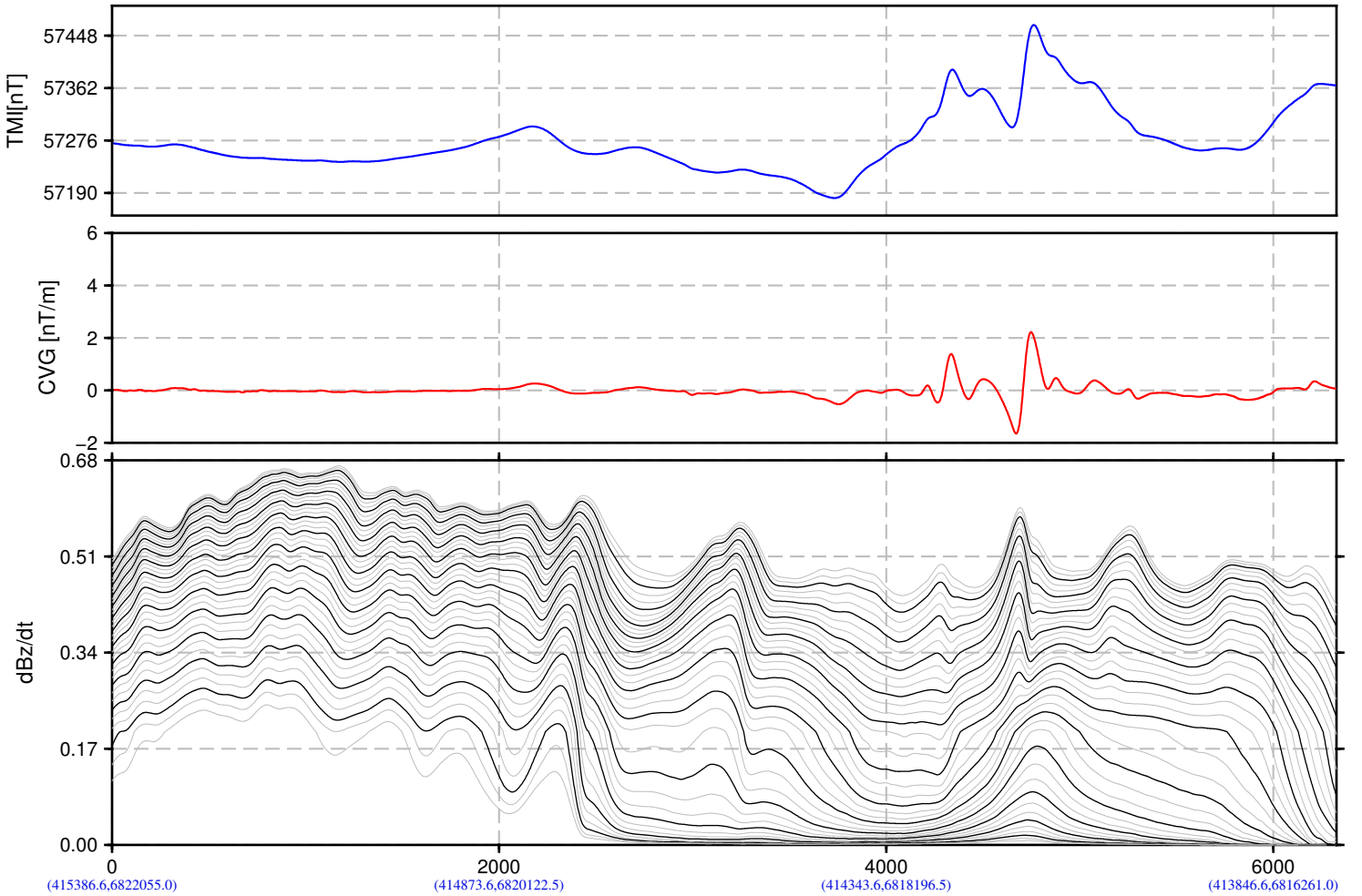
Resistivity Depth Image (RDI) for Line 3430

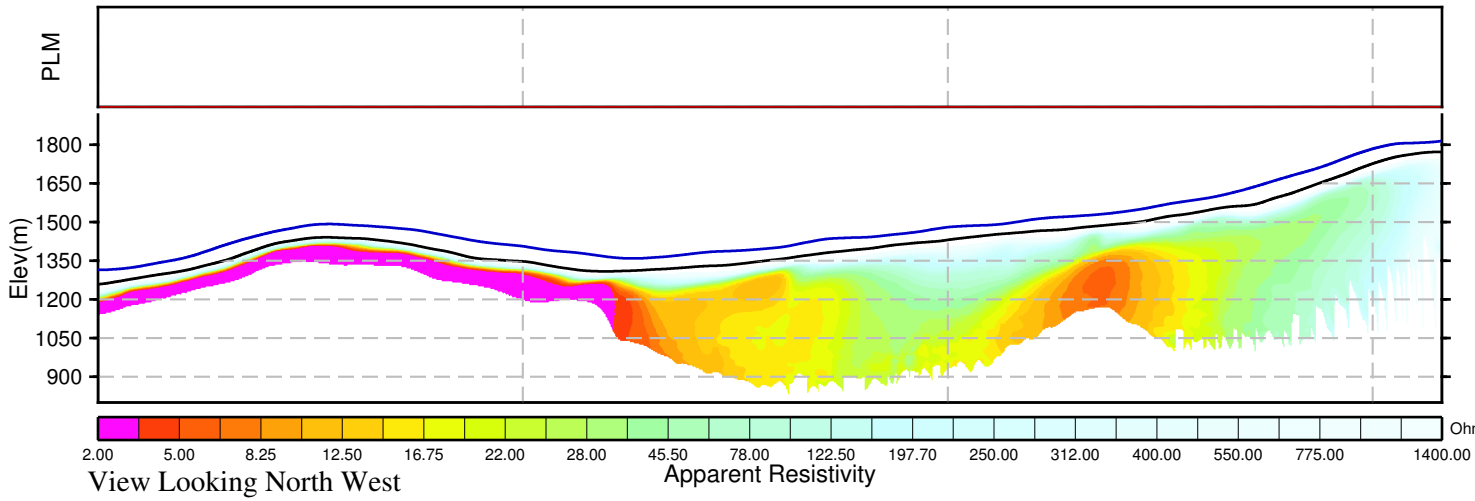
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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Job Number:GL160037
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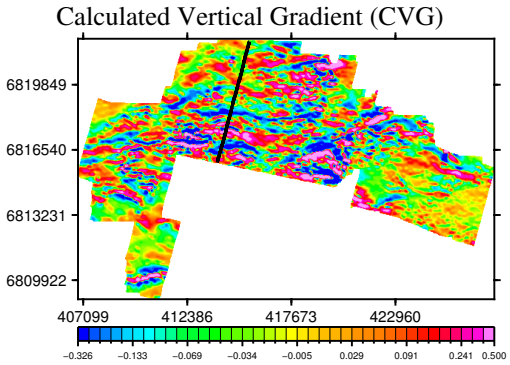
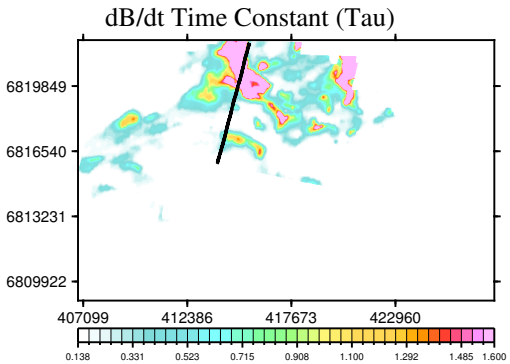
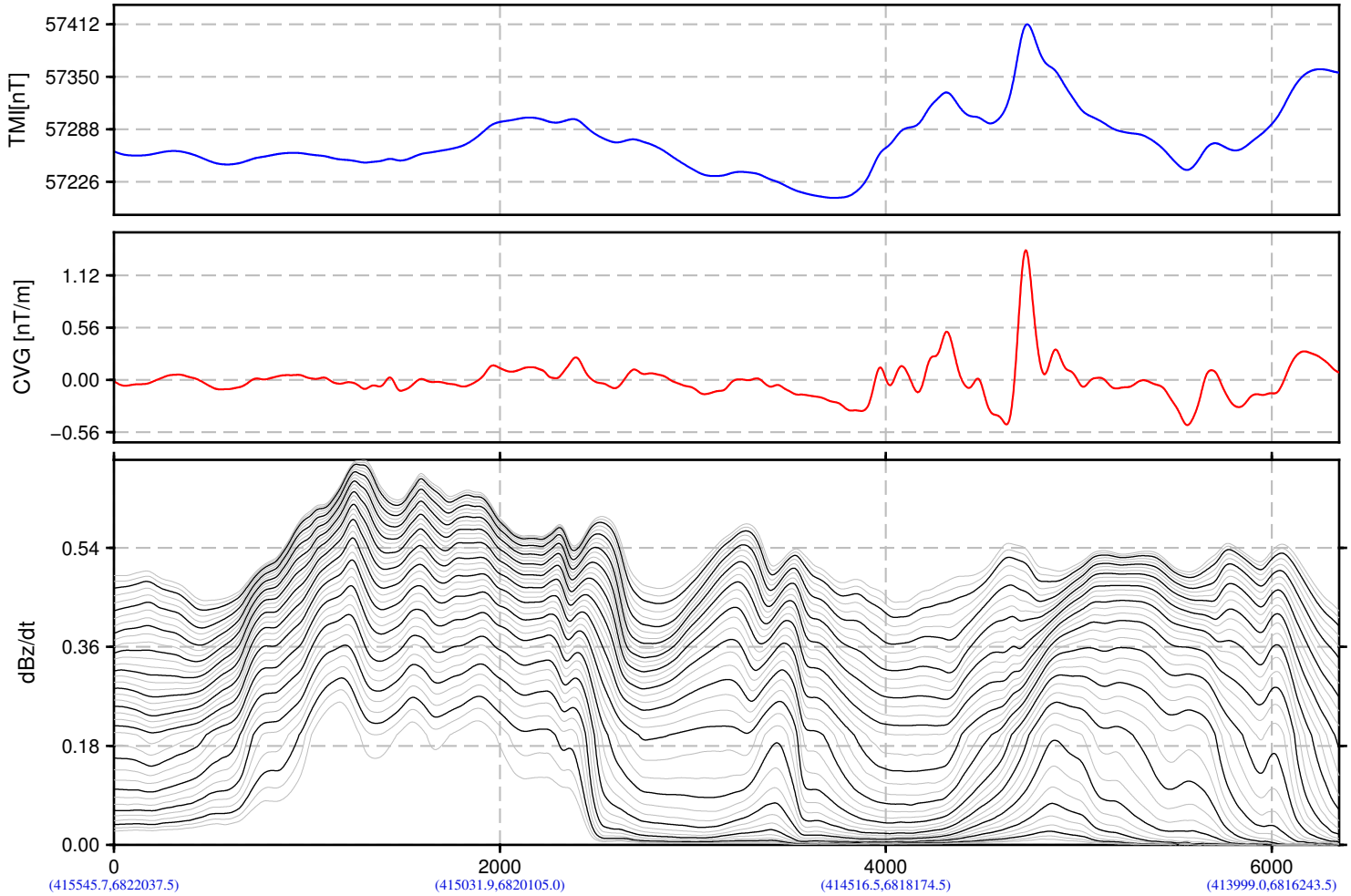
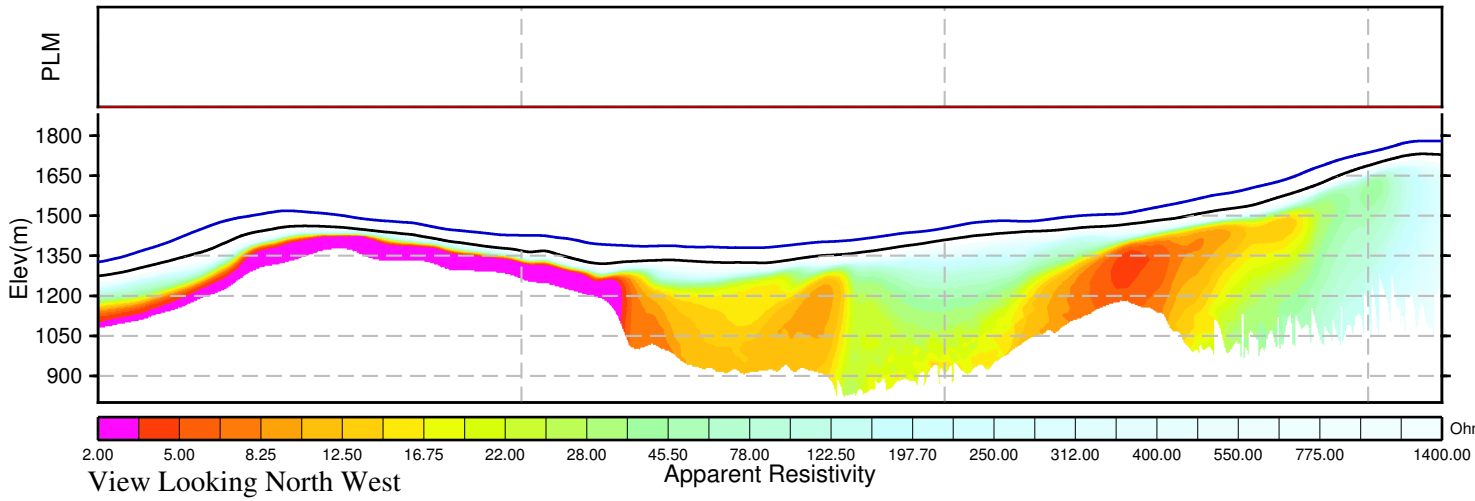
Resistivity Depth Image (RDI) for Line 3440









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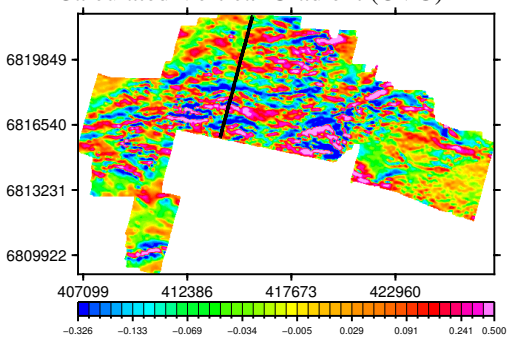
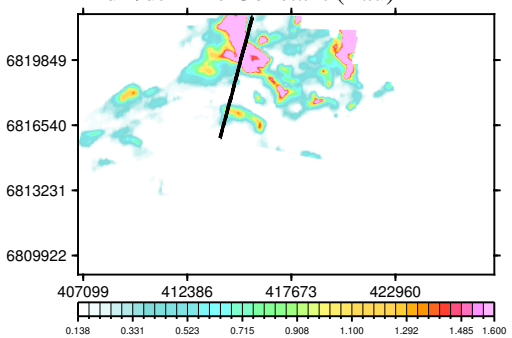
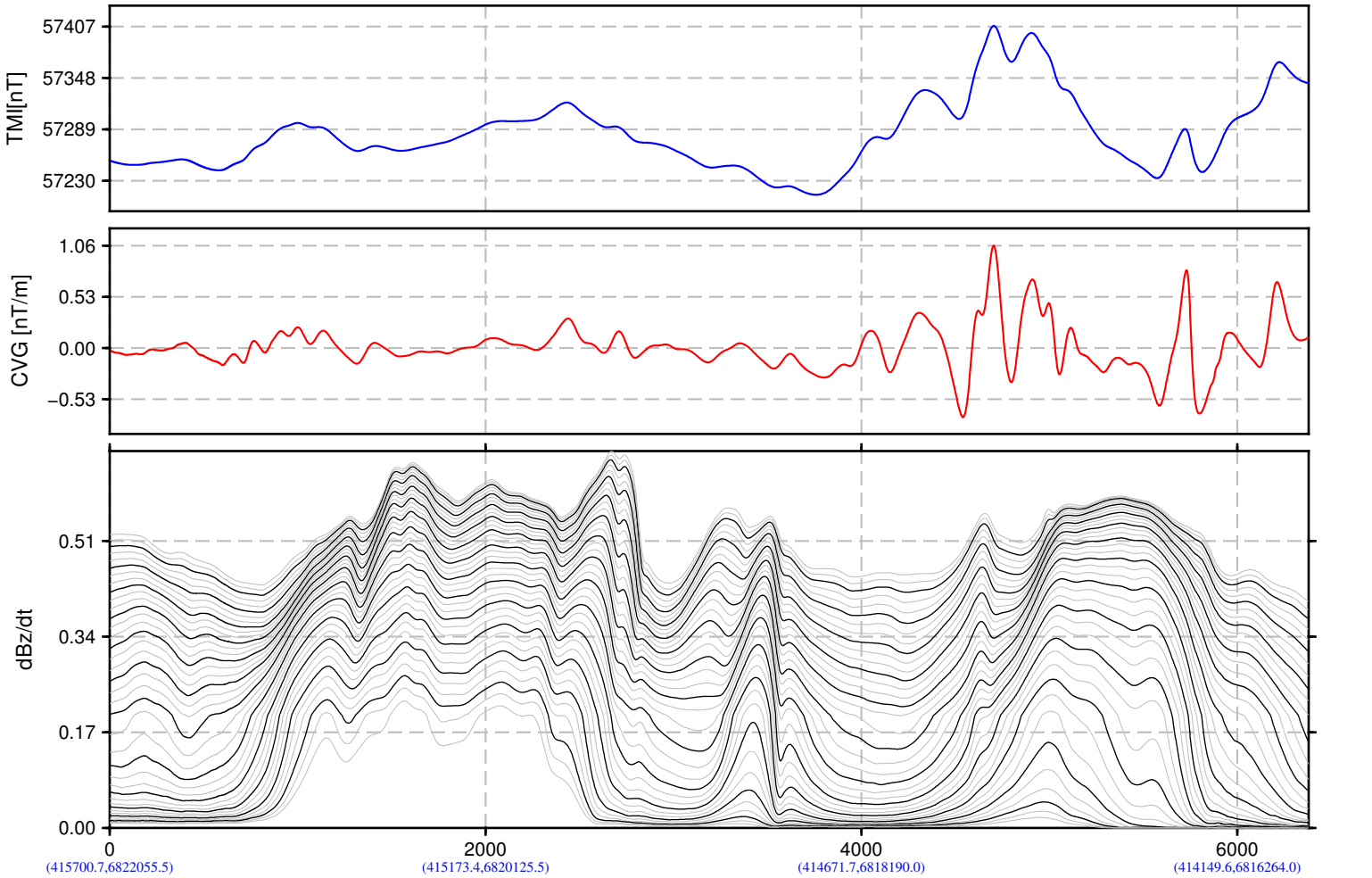
Resistivity Depth Image (RDI) for Line 3450

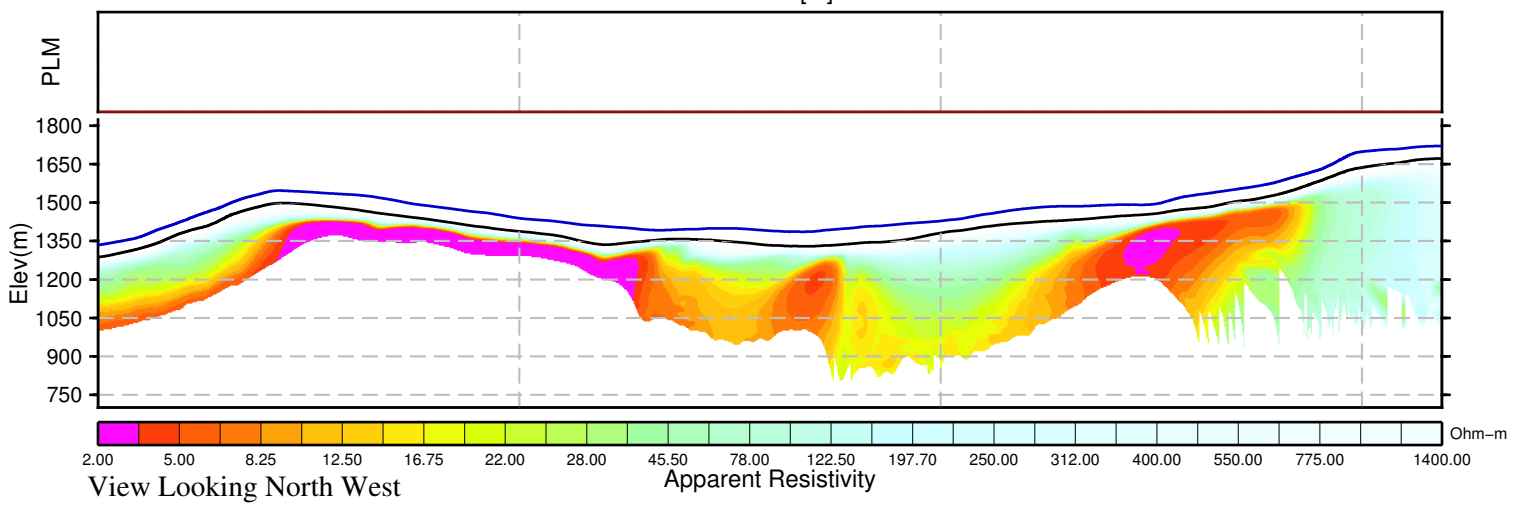
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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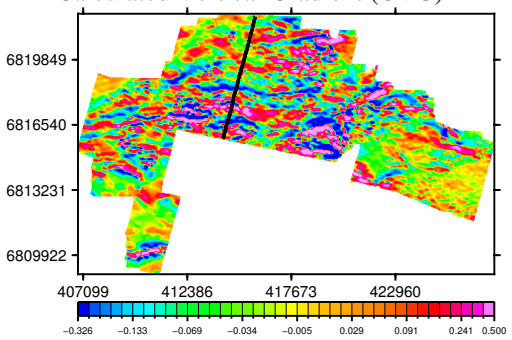
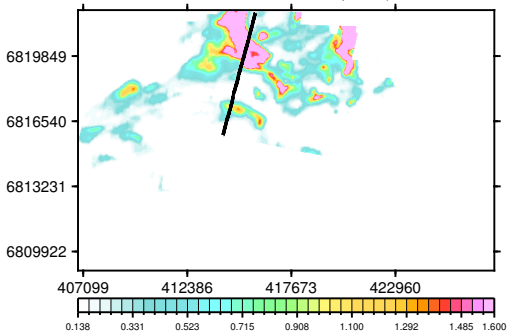
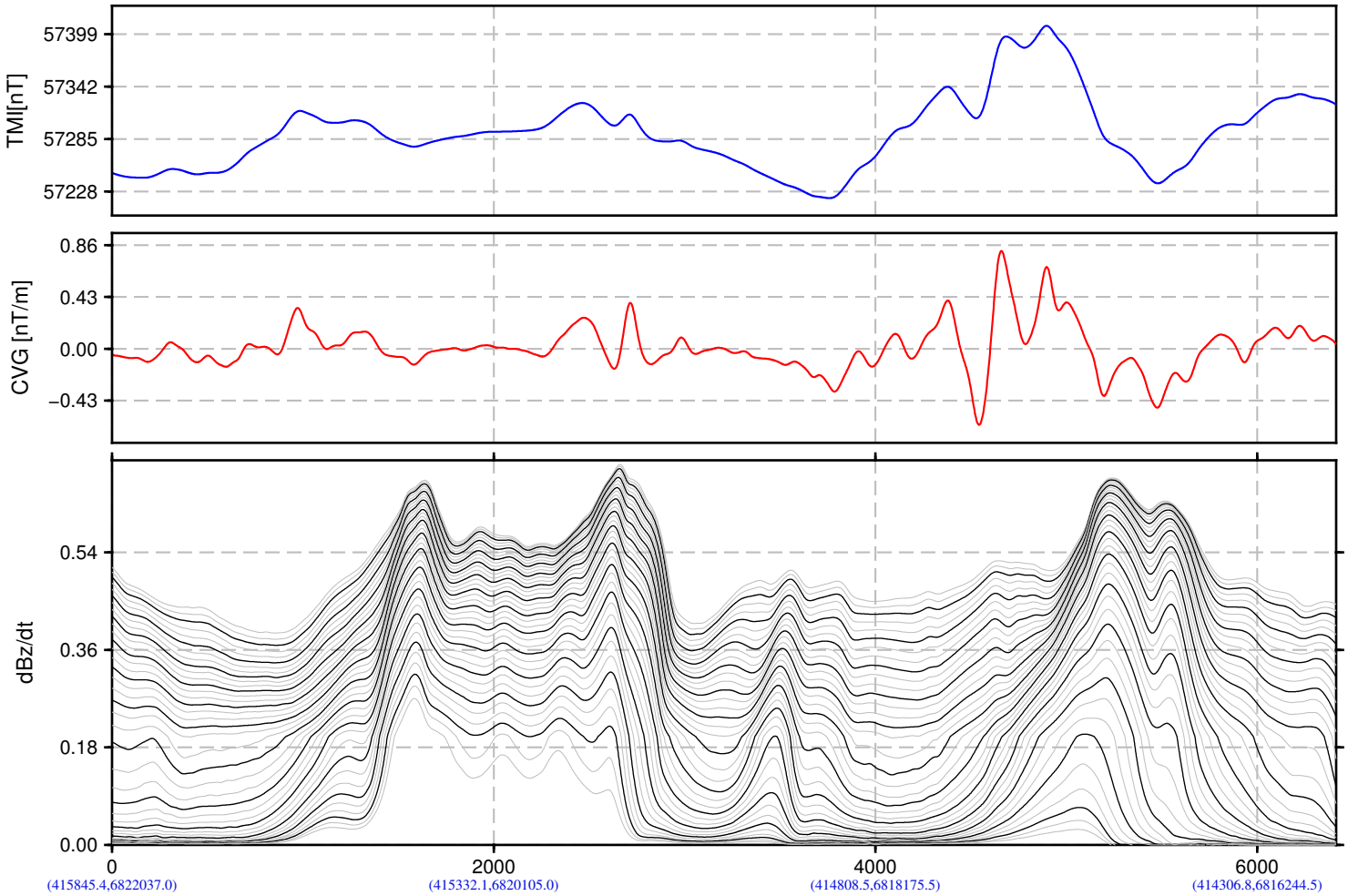
Resistivity Depth Image (RDI) for Line 3460

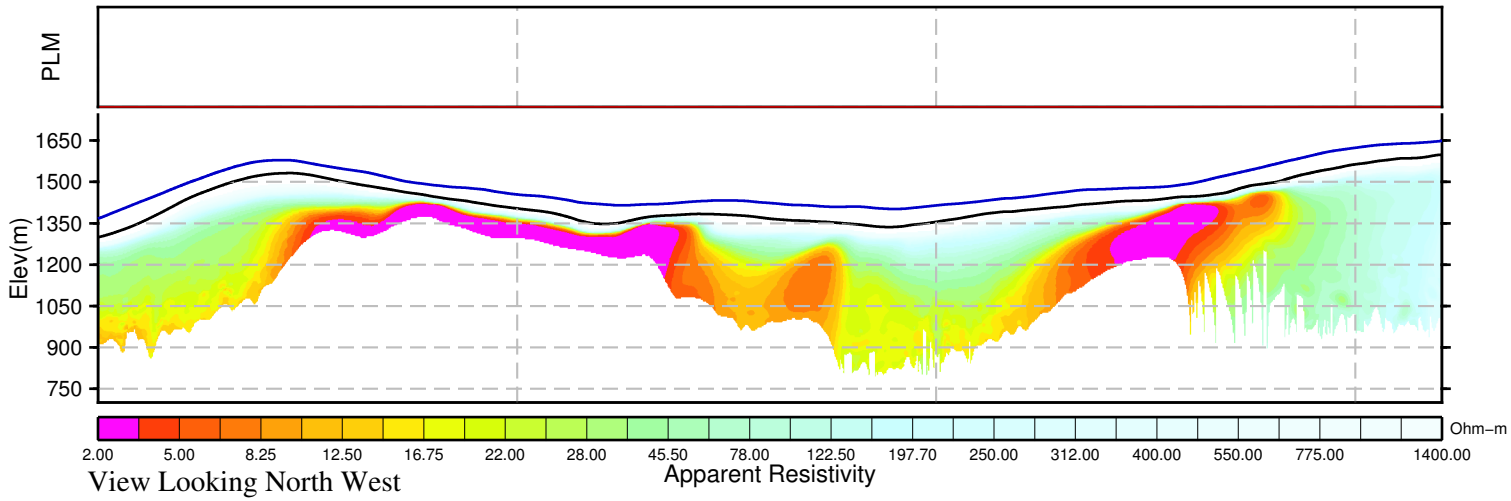
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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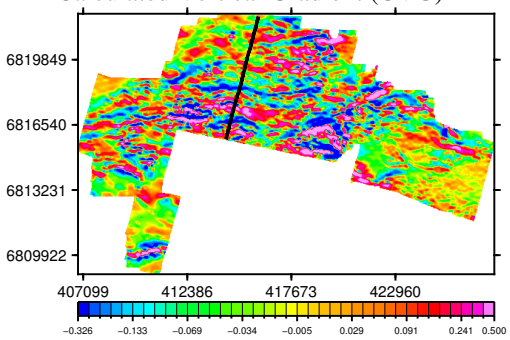
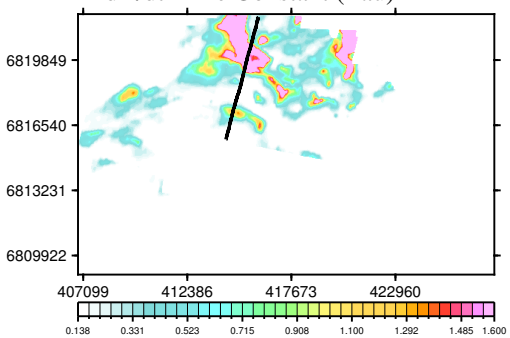
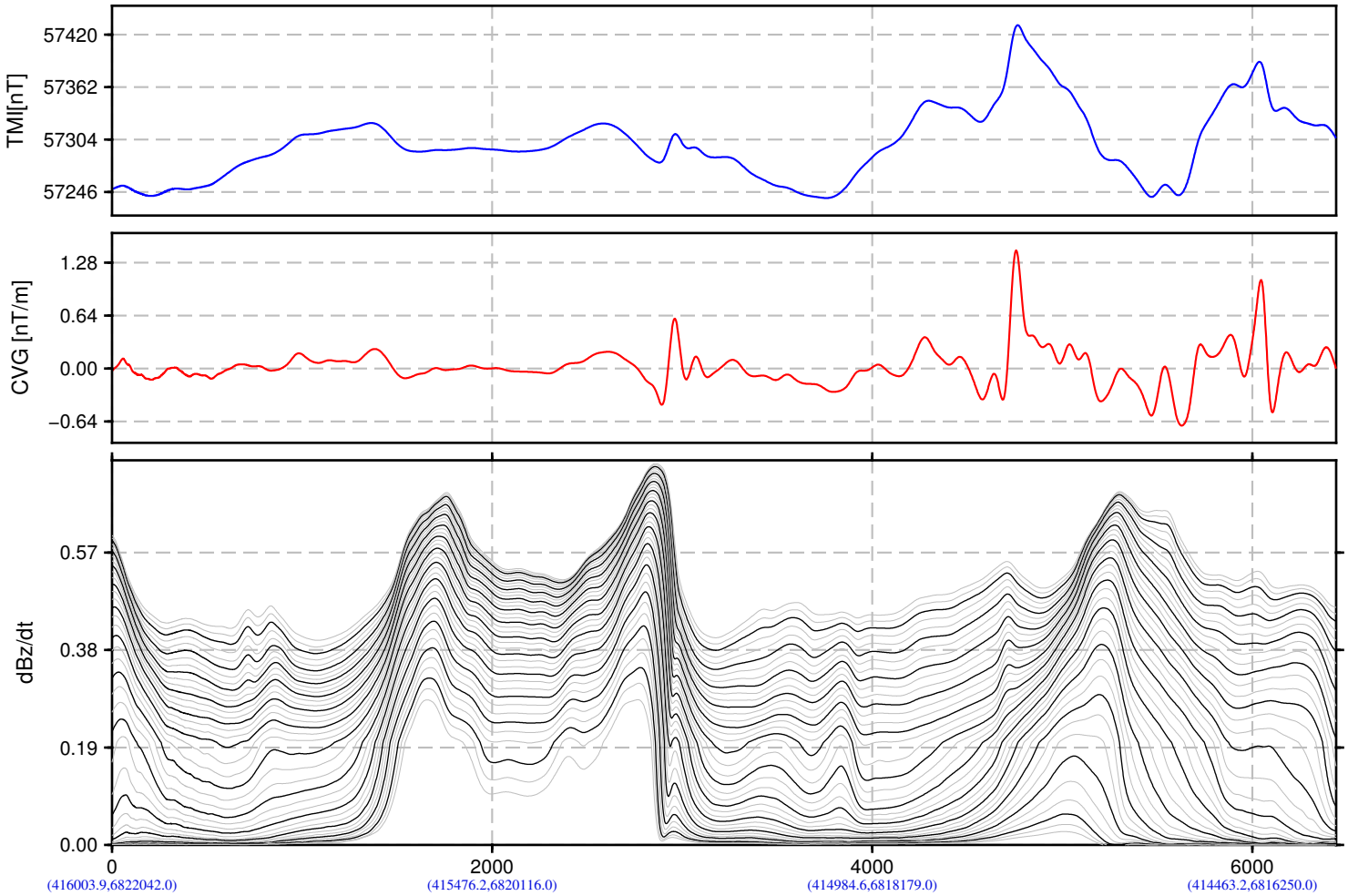
Resistivity Depth Image (RDI) for Line 3470

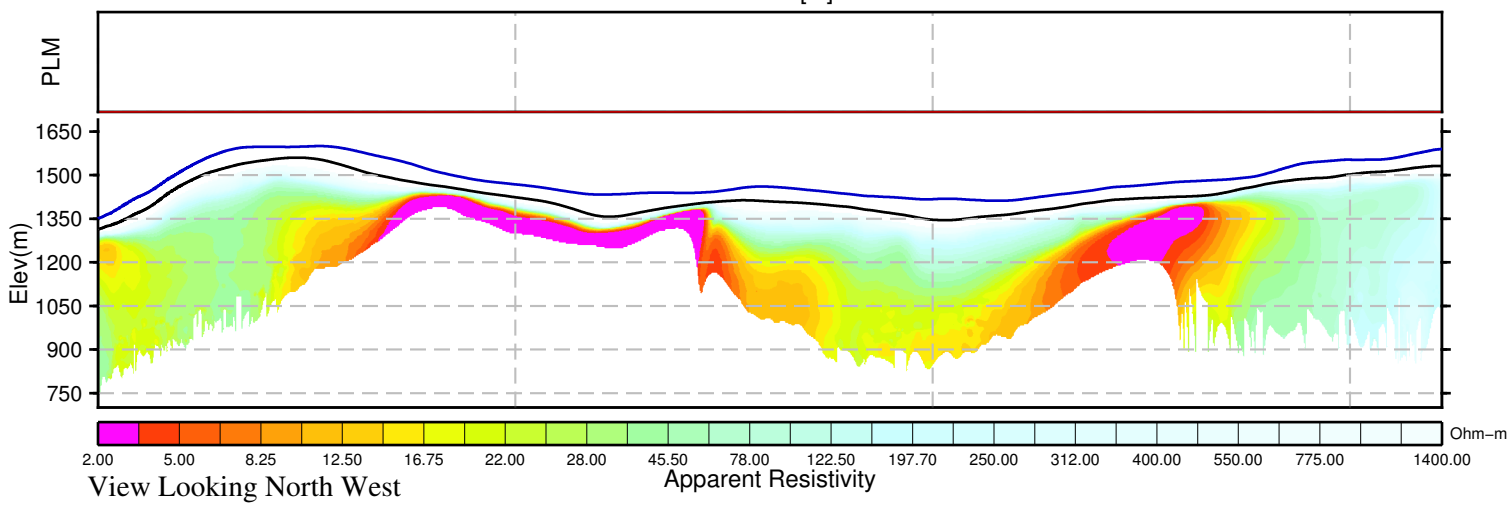
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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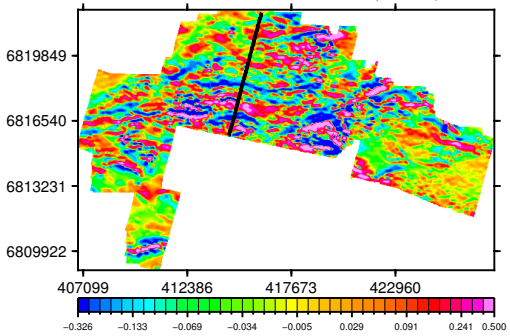
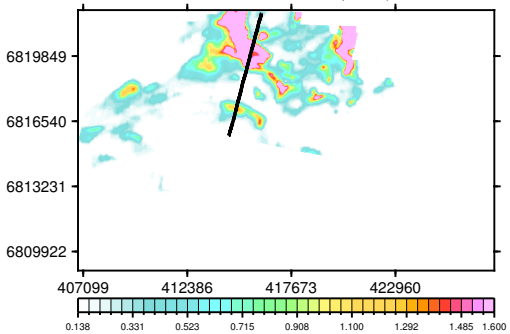
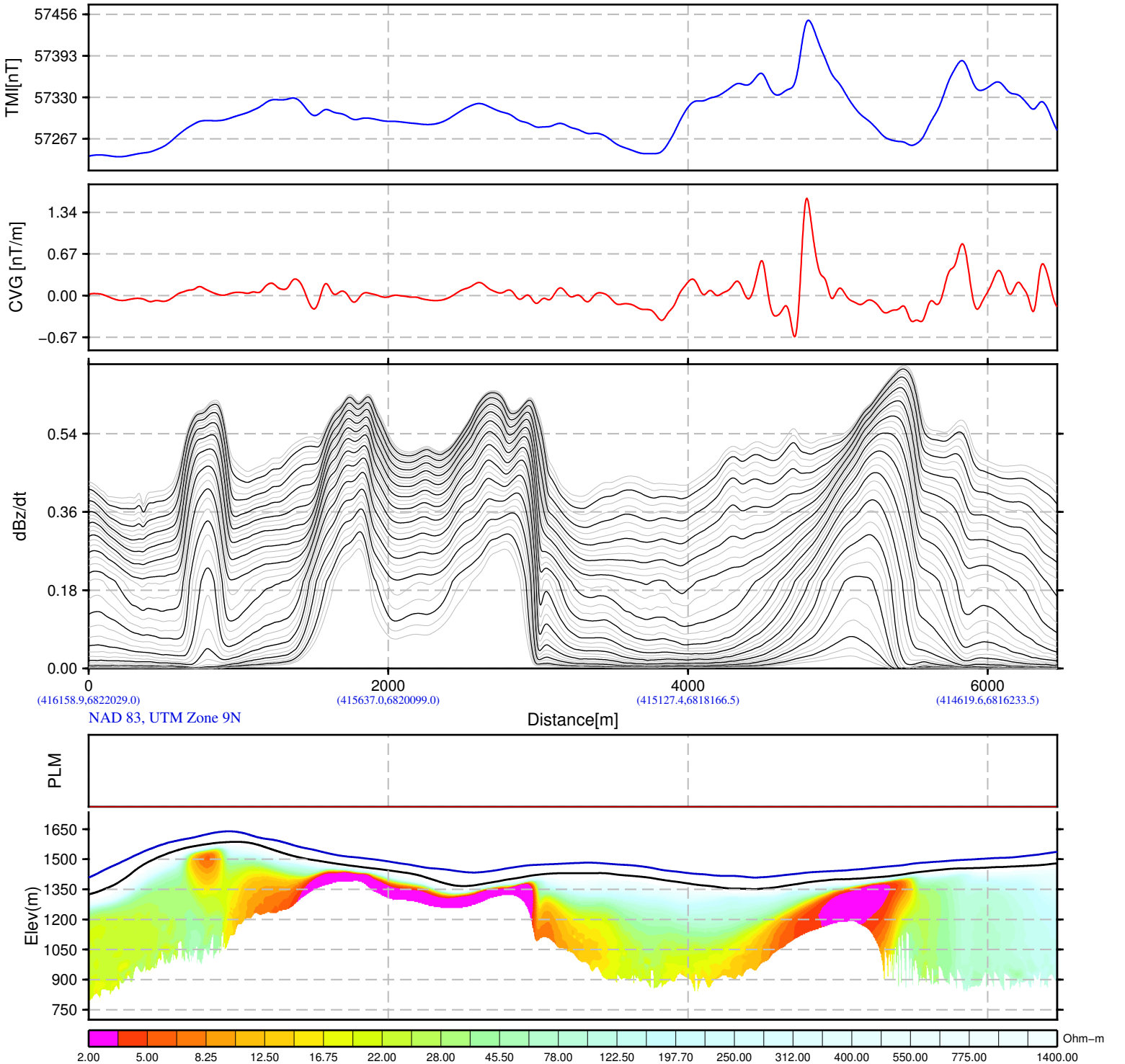
Resistivity Depth Image (RDI) for Line 3480

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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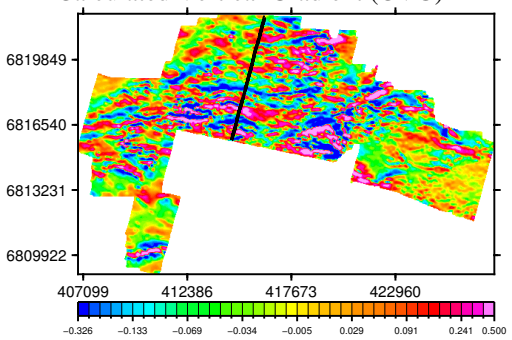
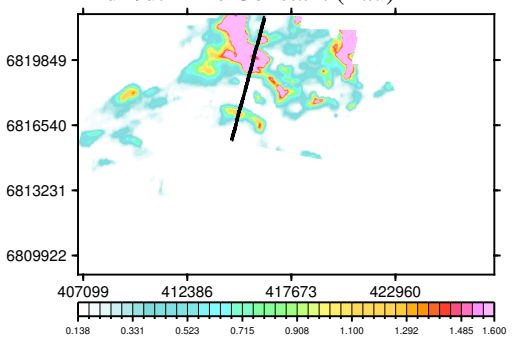
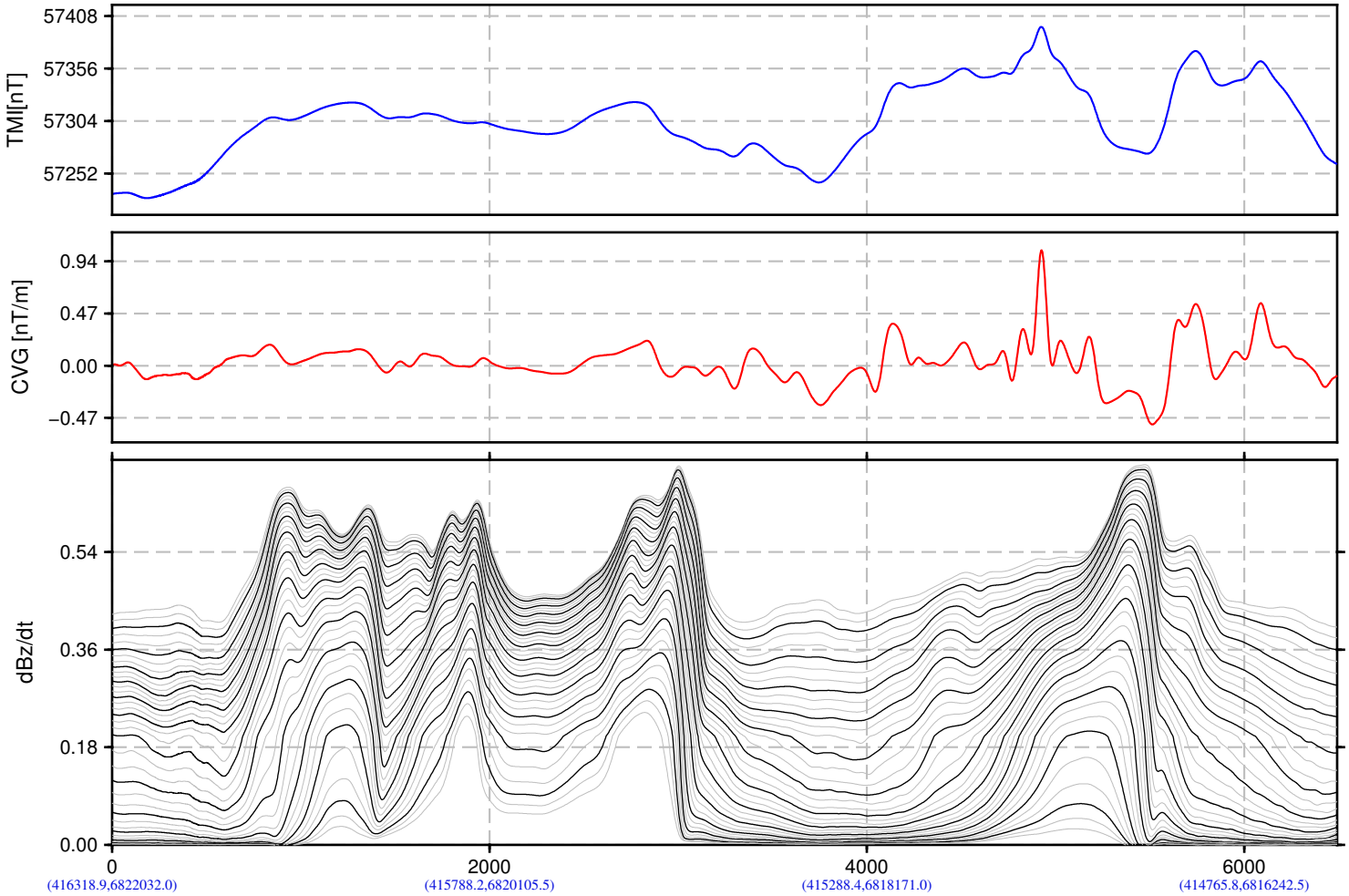
Resistivity Depth Image (RDI) for Line 3490

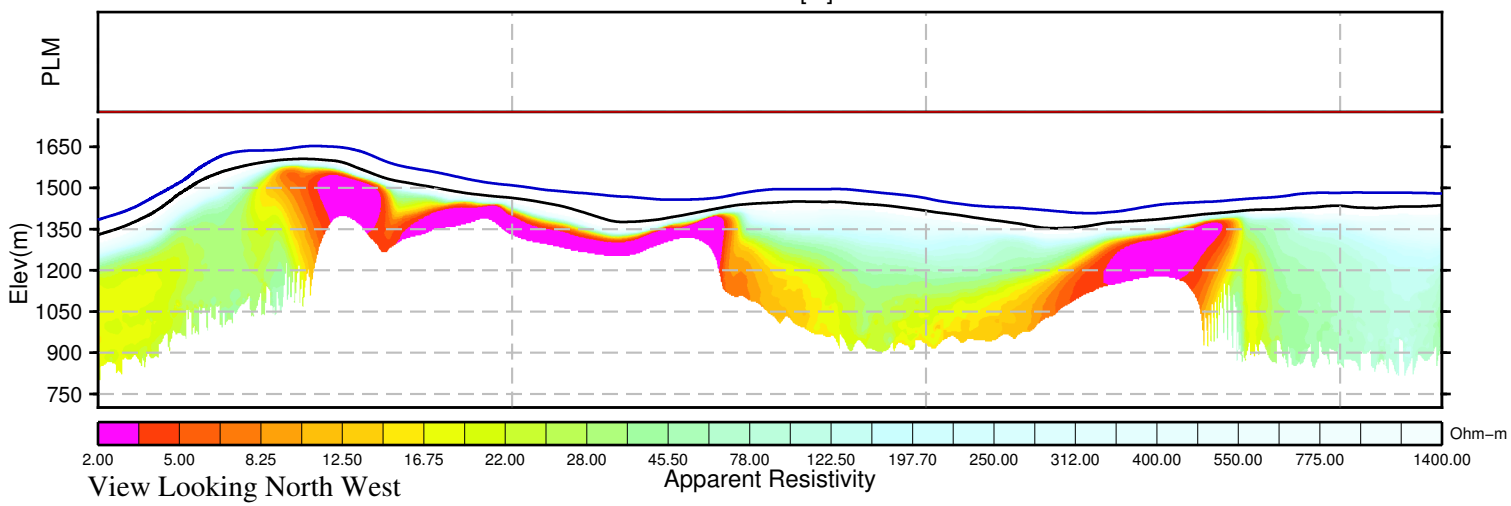
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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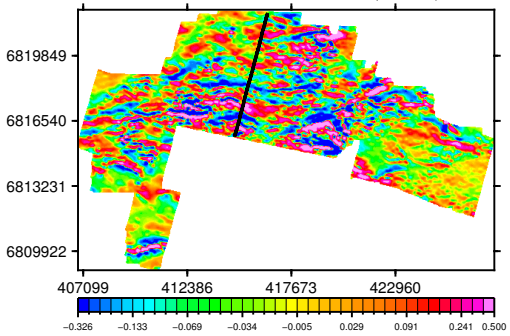
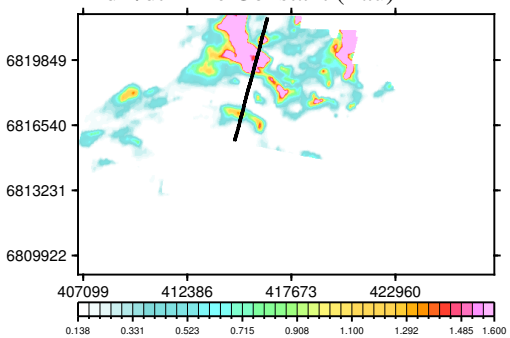
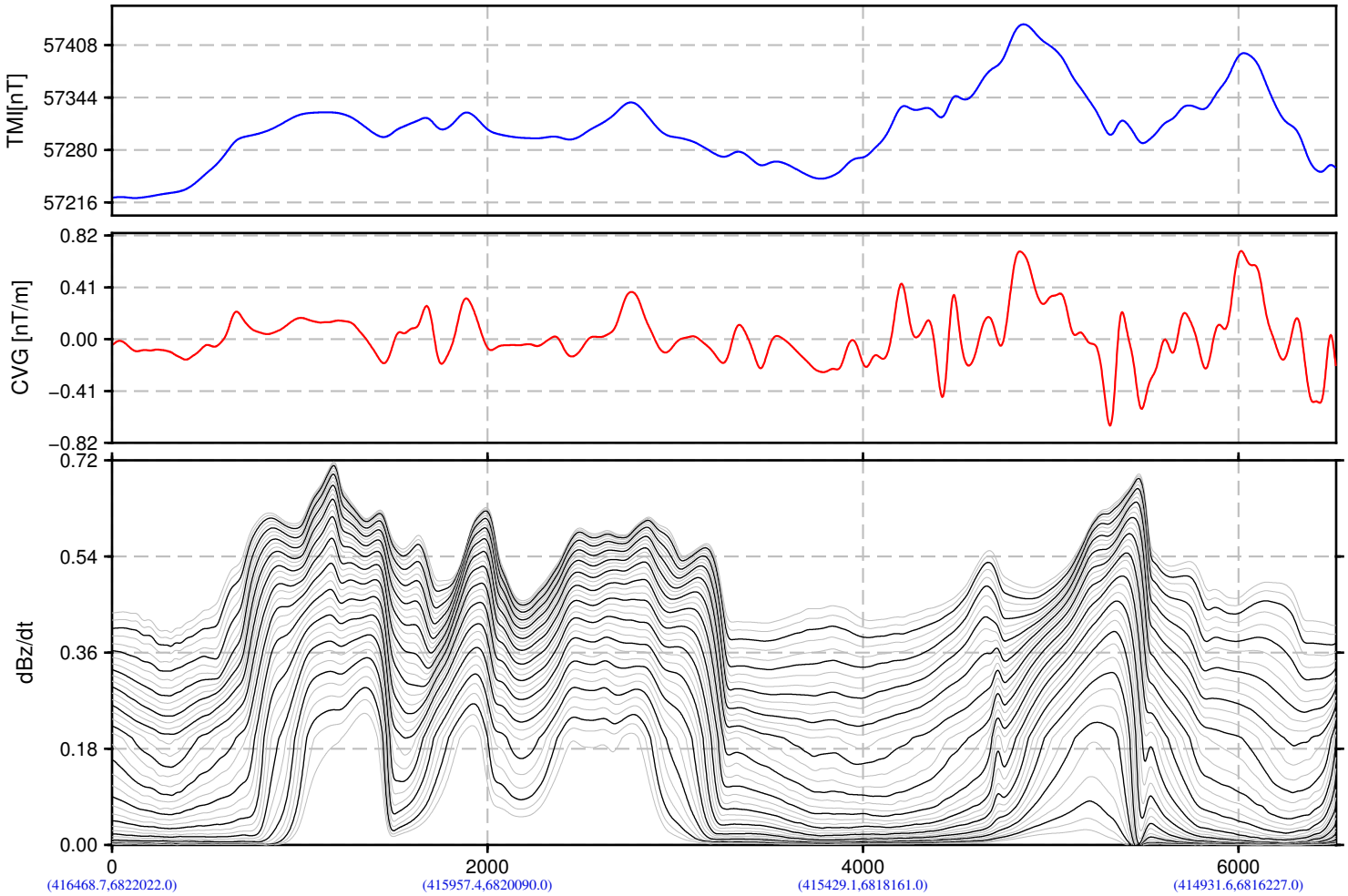
Resistivity Depth Image (RDI) for Line 3500

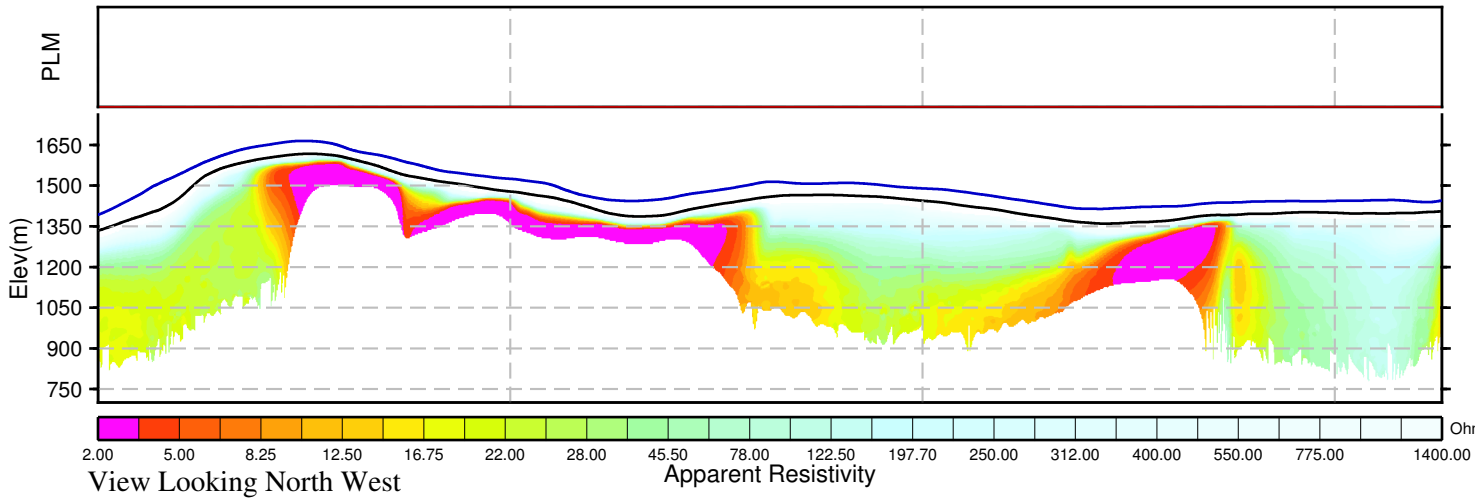
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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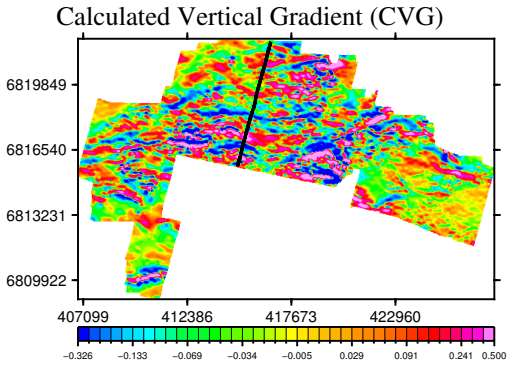
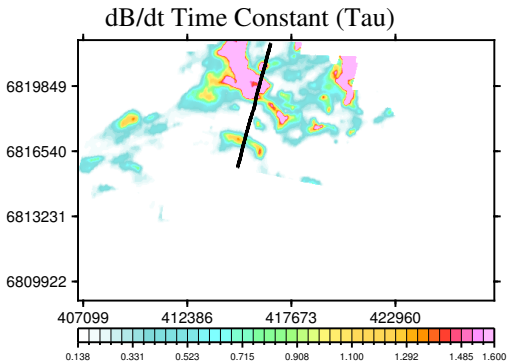
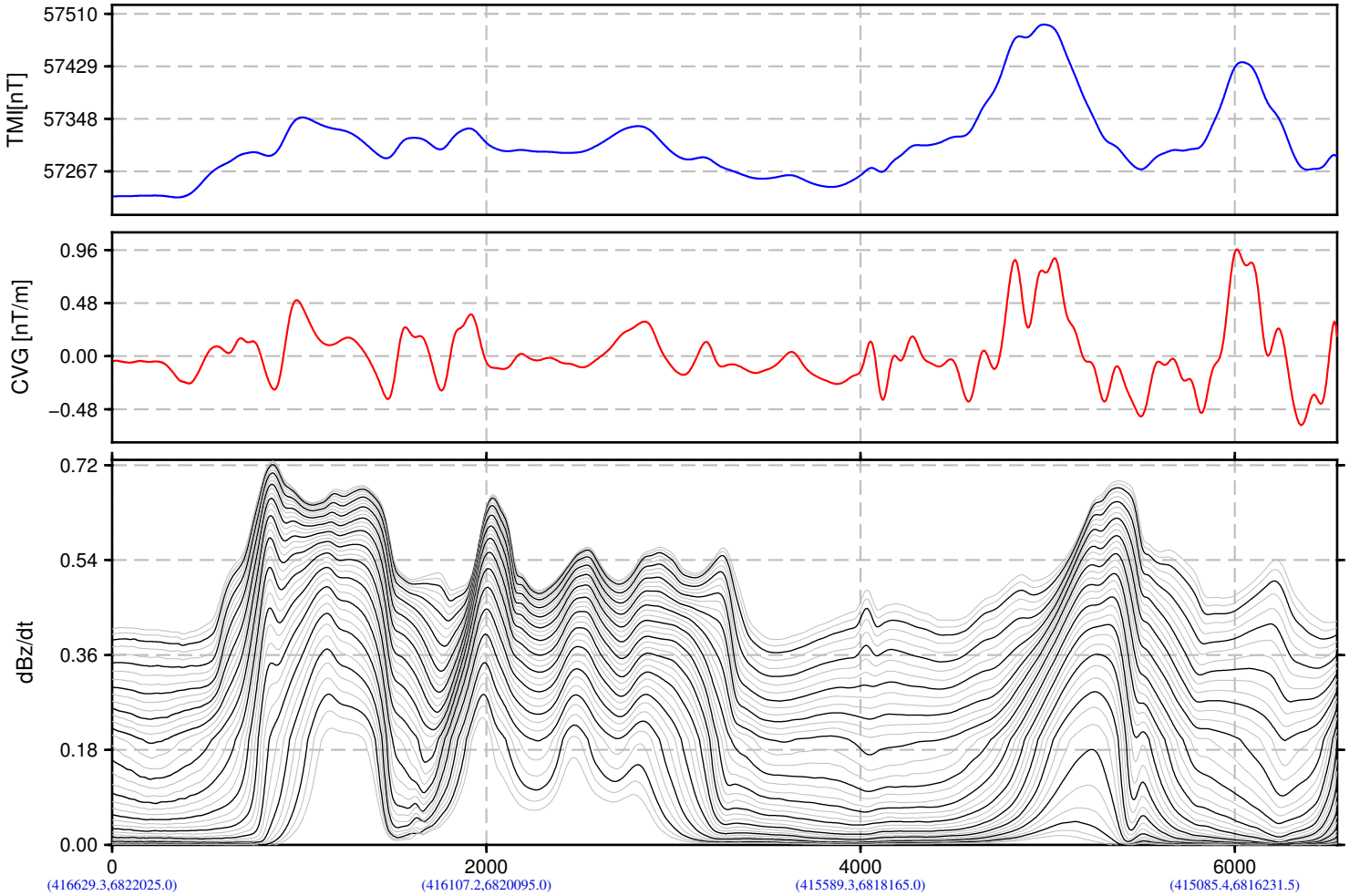
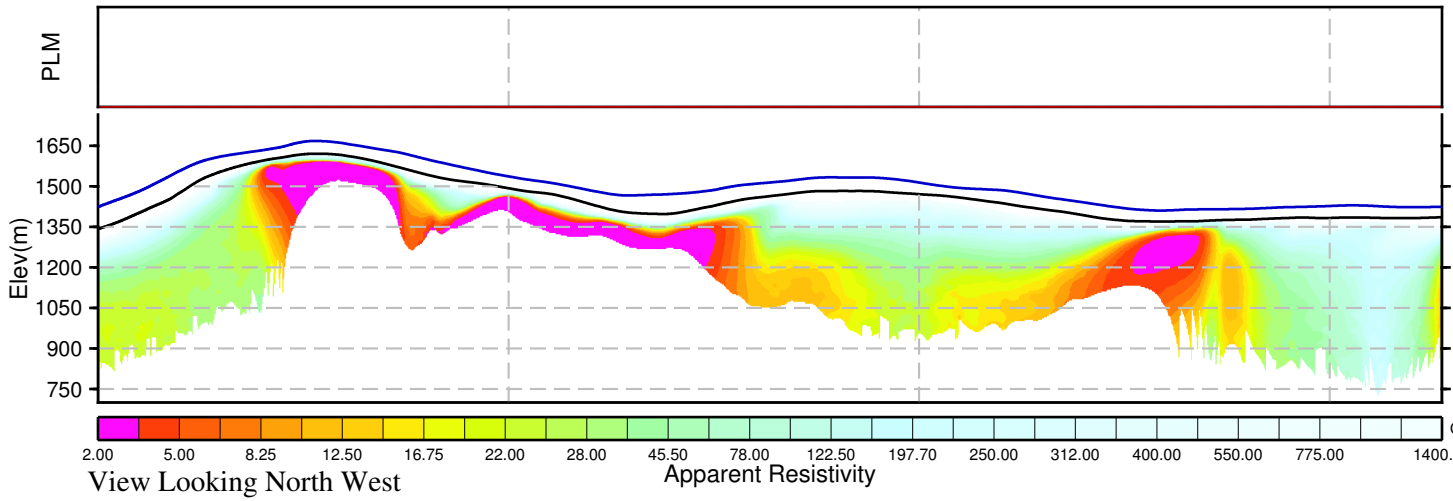
Resistivity Depth Image (RDI) for Line 3510









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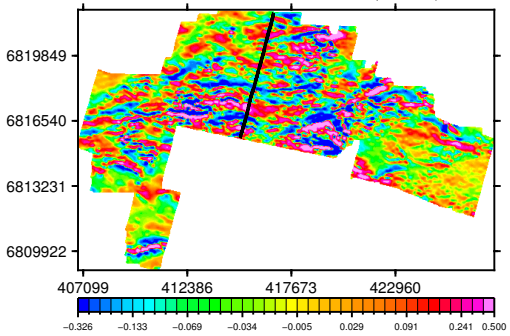
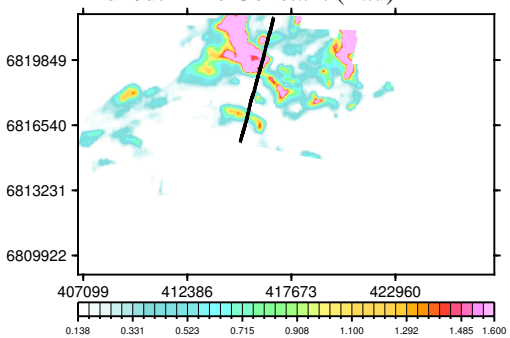
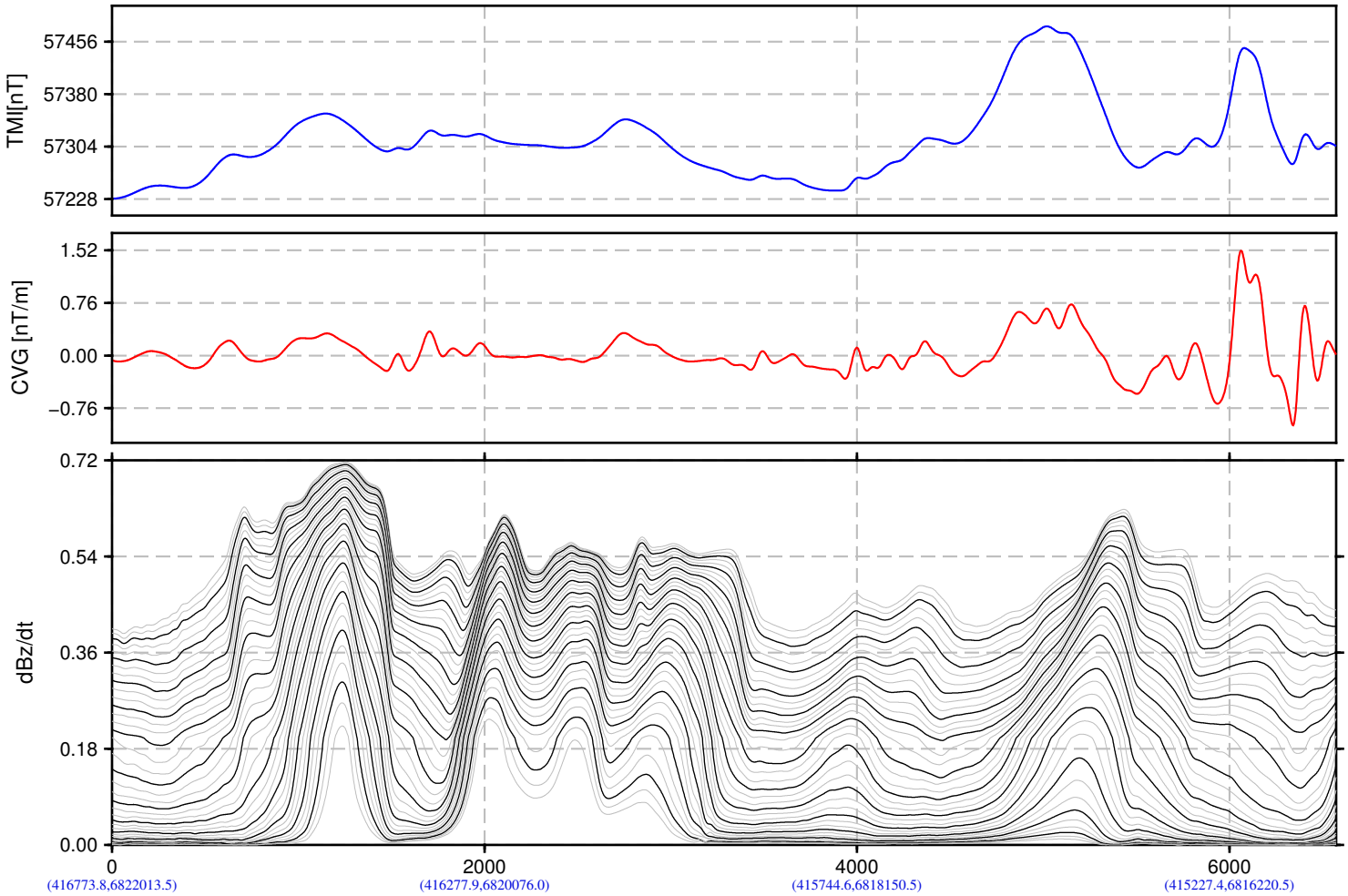
Resistivity Depth Image (RDI) for Line 3520

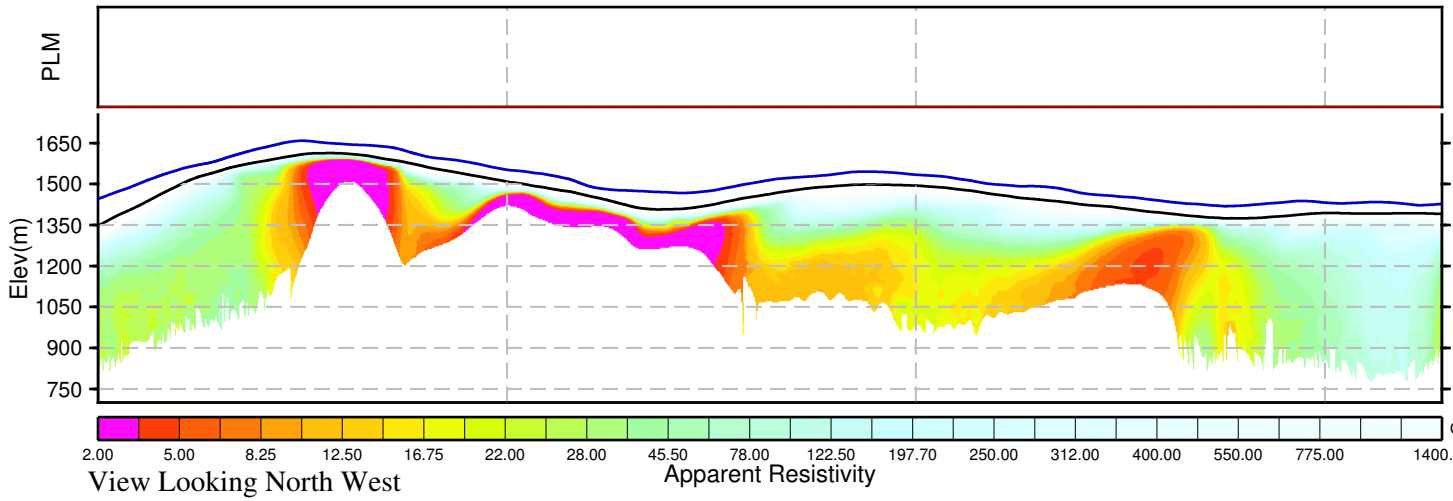
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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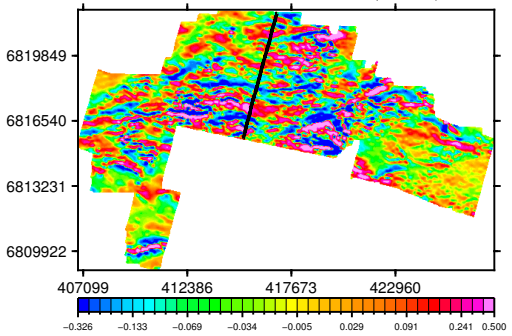
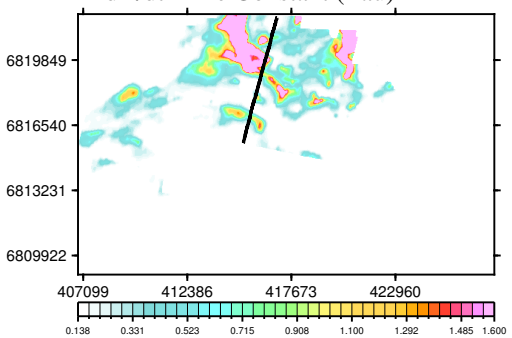
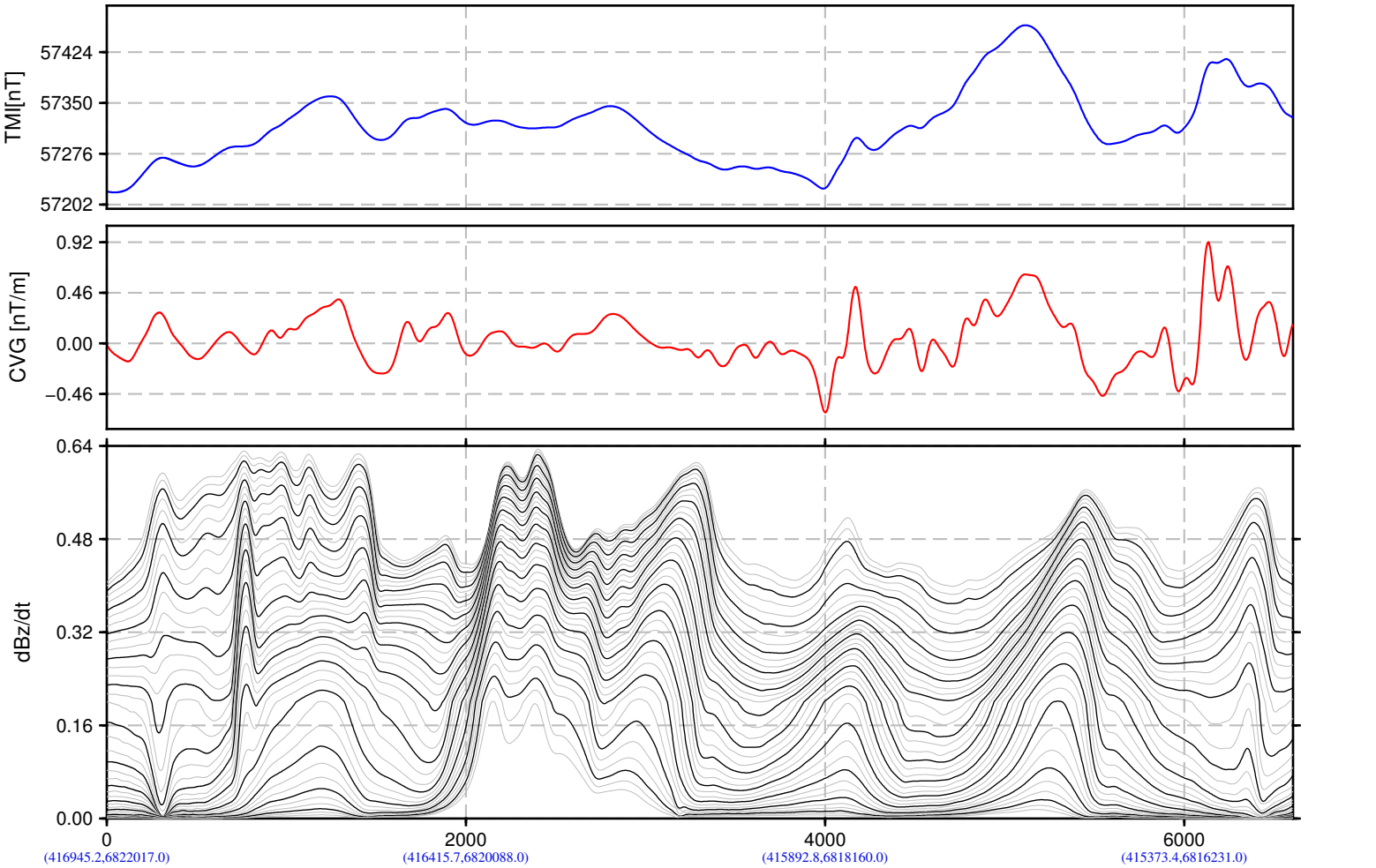
Resistivity Depth Image (RDI) for Line 3530

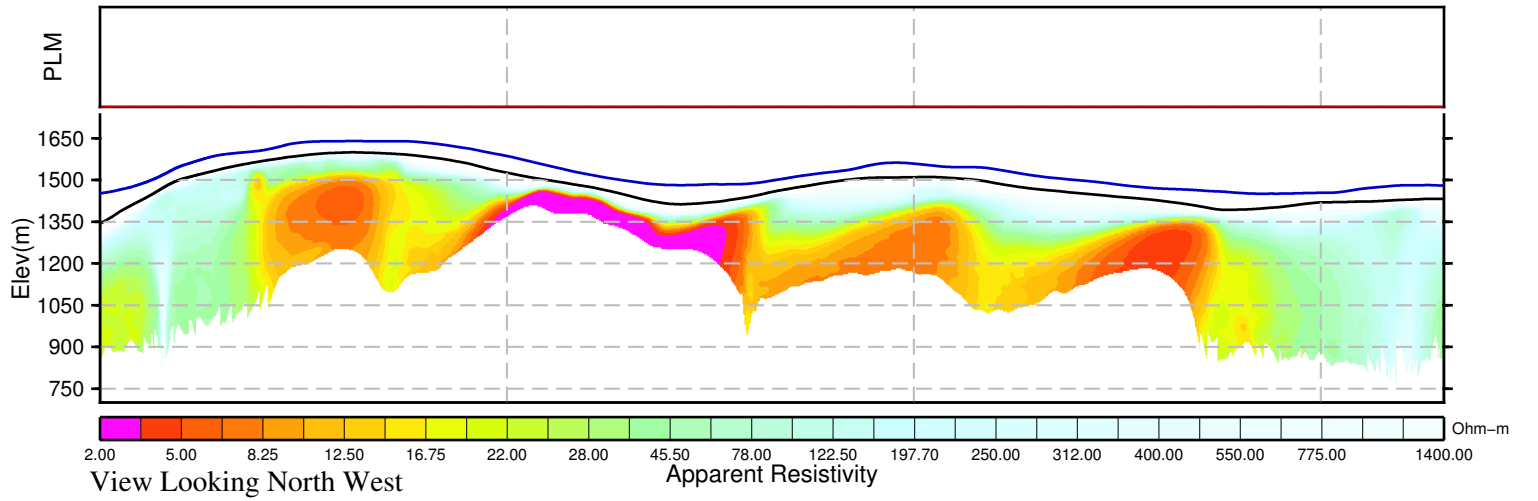
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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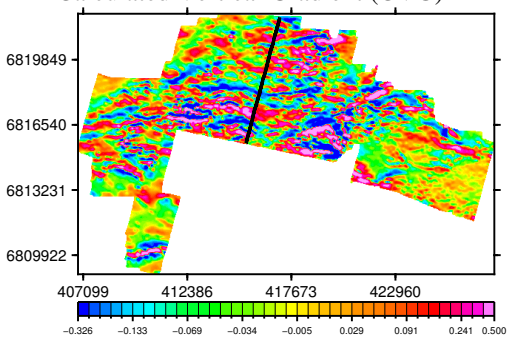
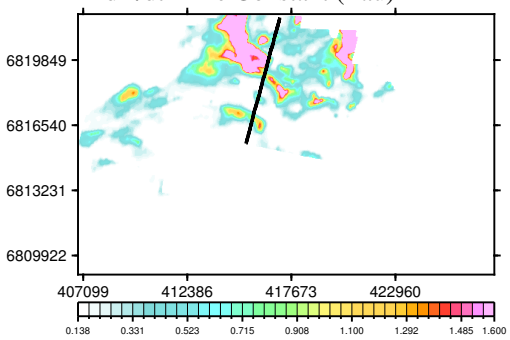
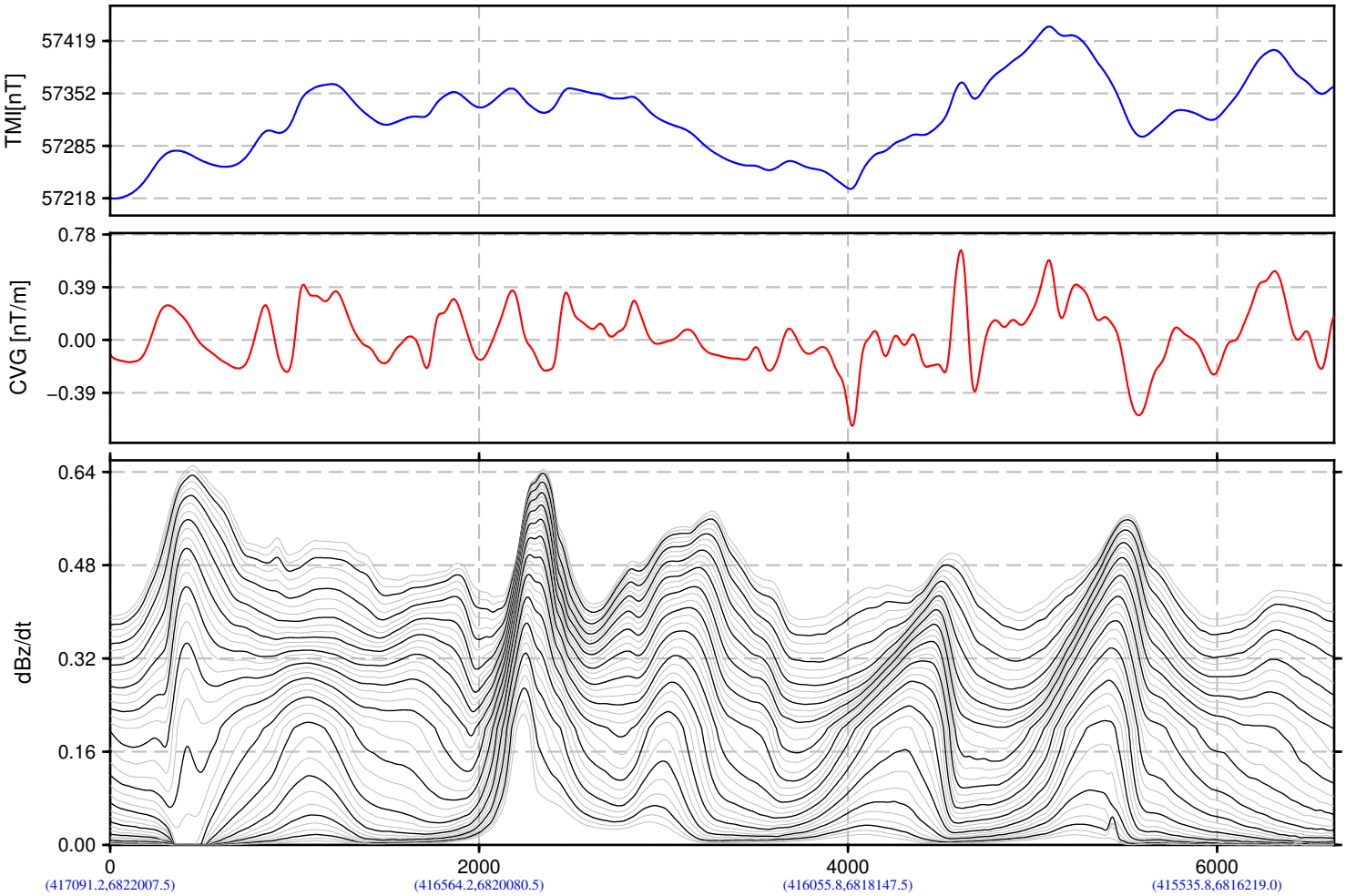
Resistivity Depth Image (RDI) for Line 3540

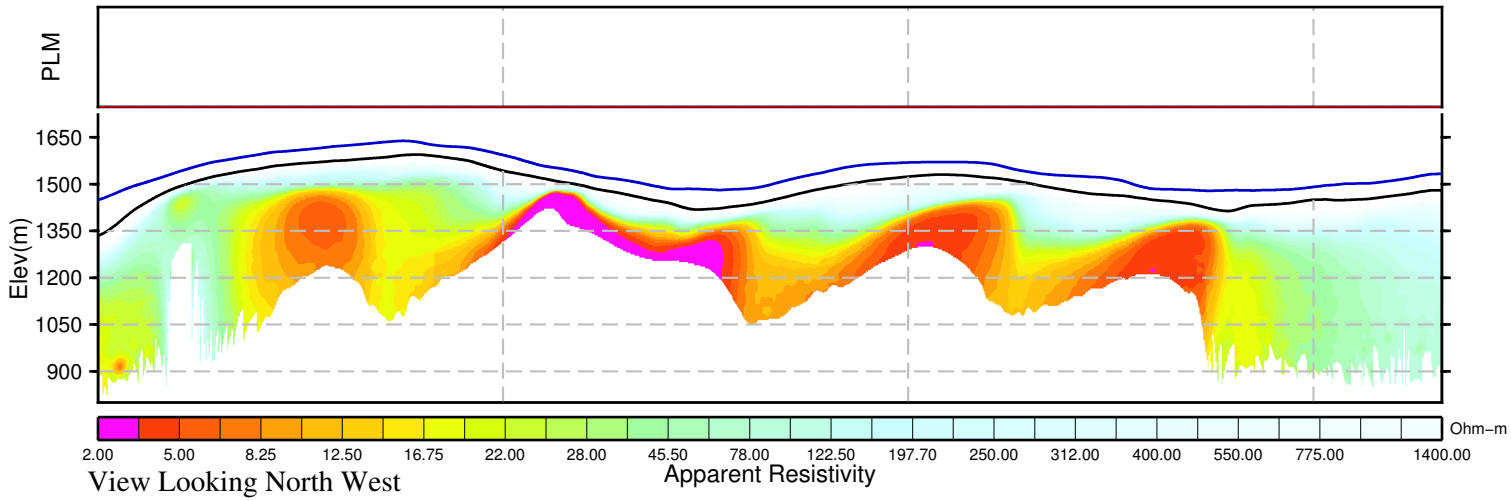
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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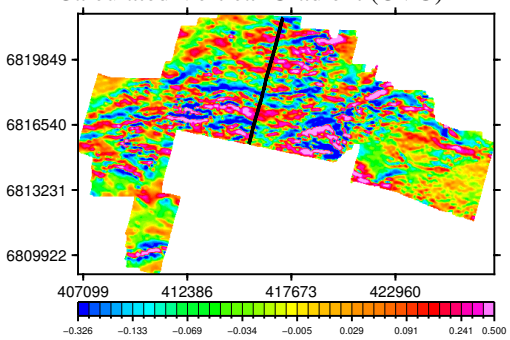
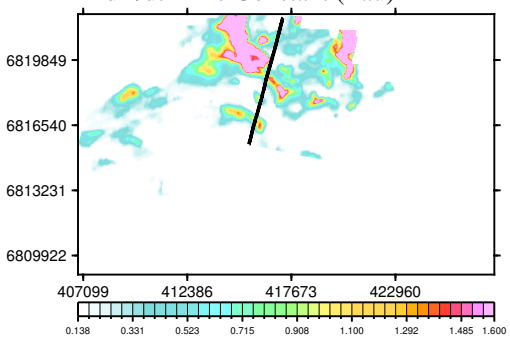
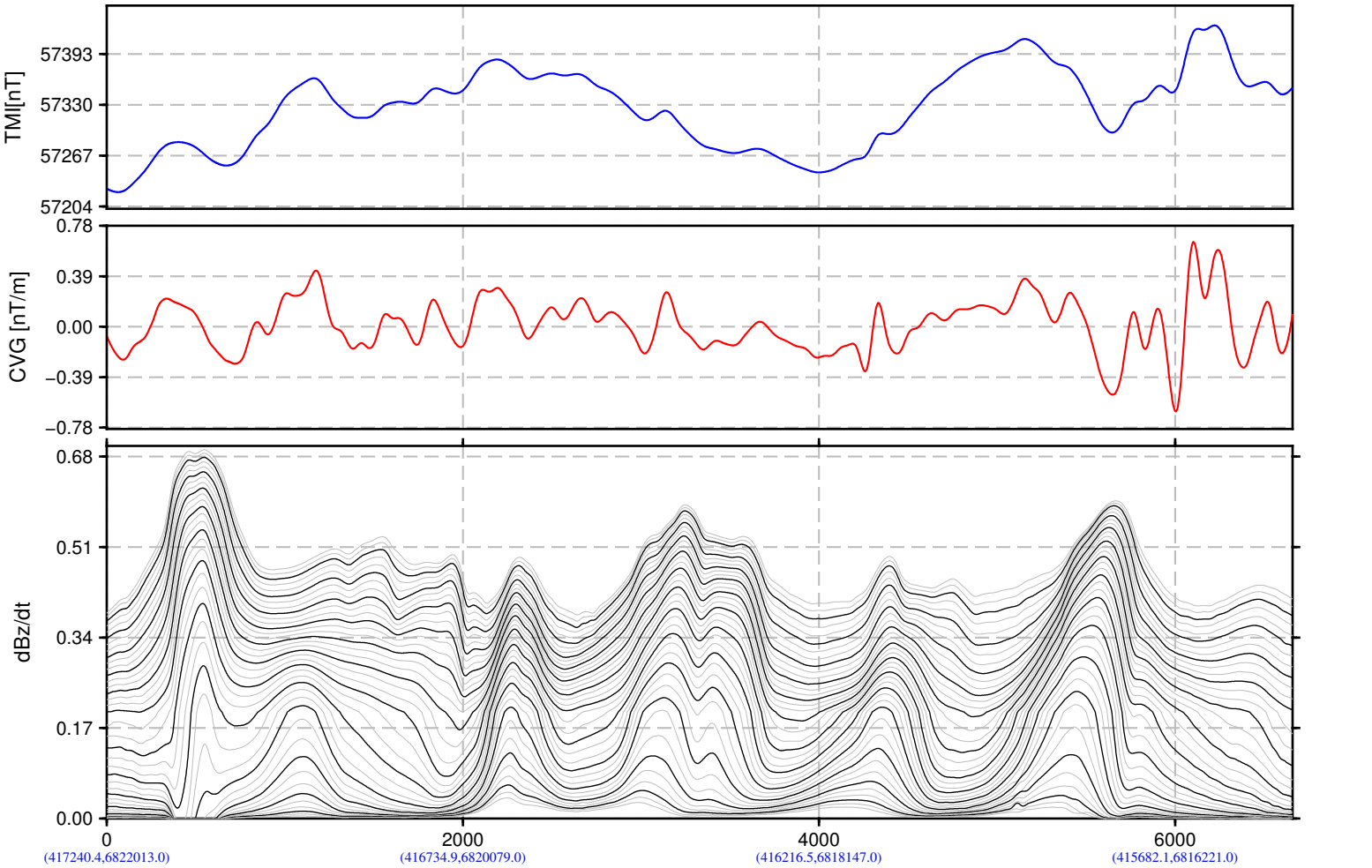
Resistivity Depth Image (RDI) for Line 3550

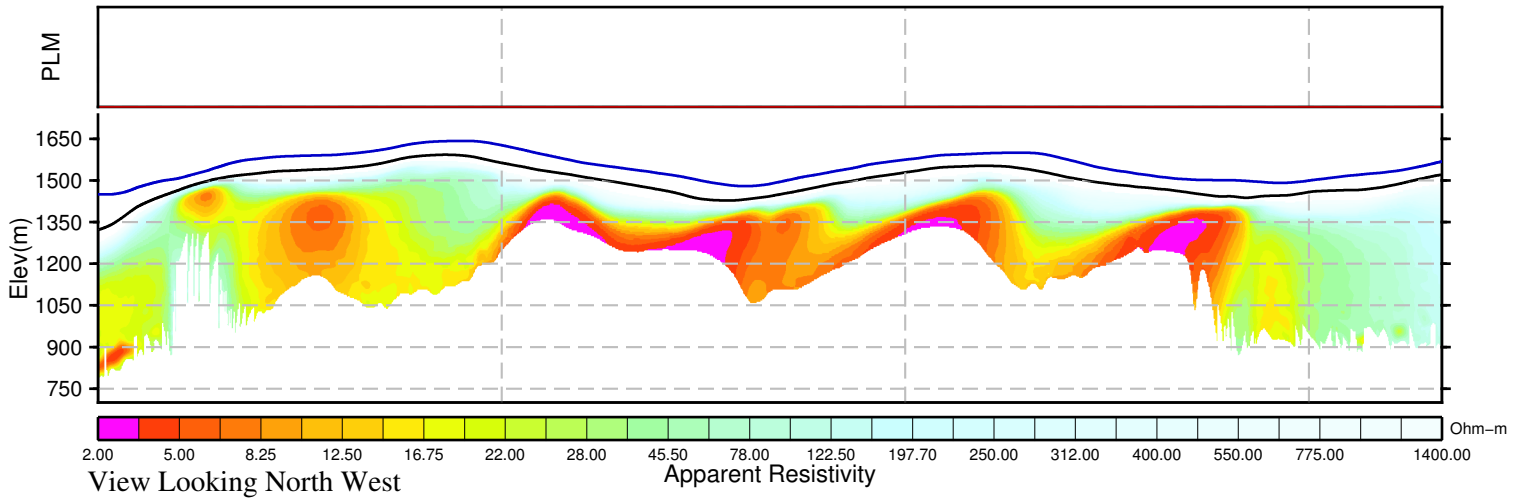
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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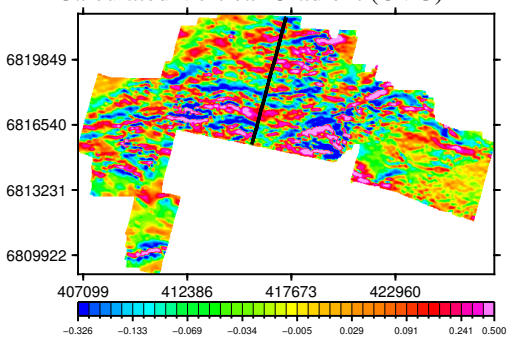
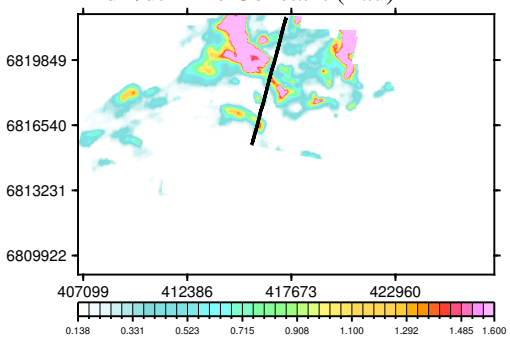
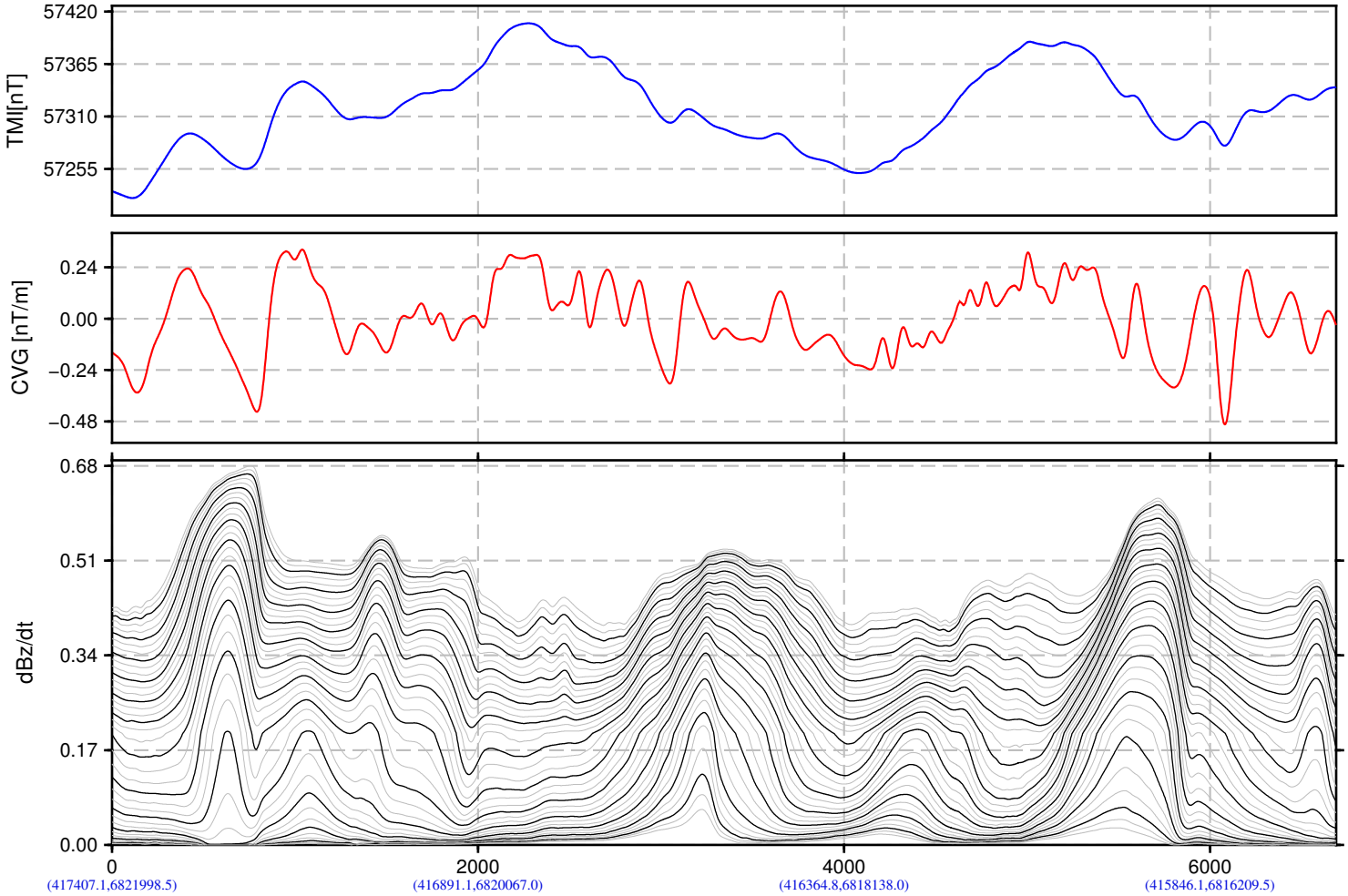
Resistivity Depth Image (RDI) for Line 3560

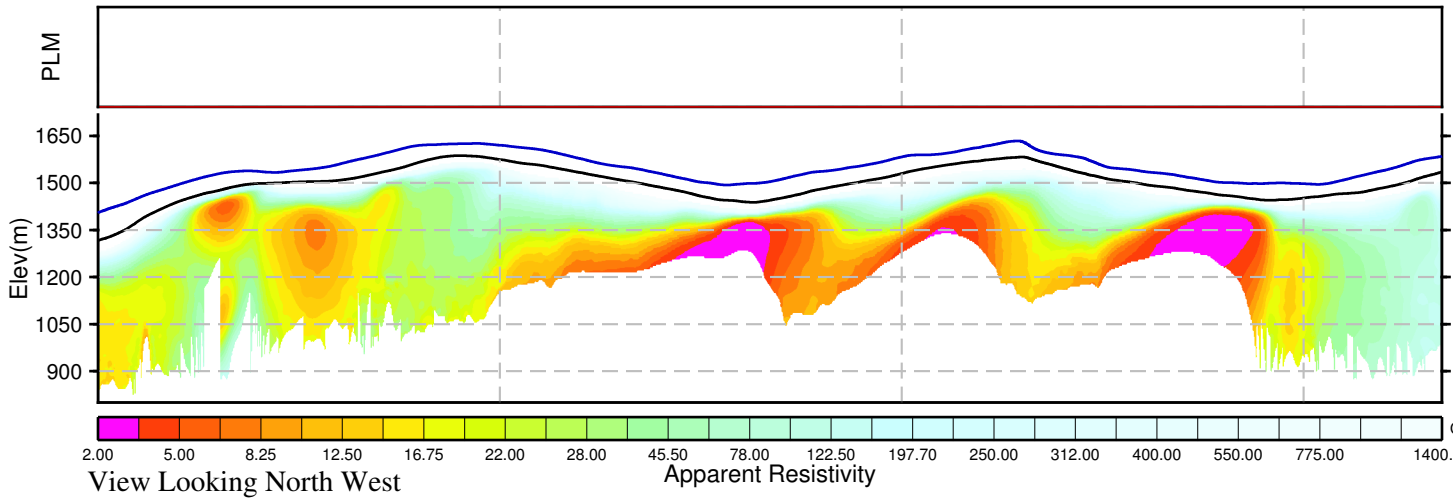
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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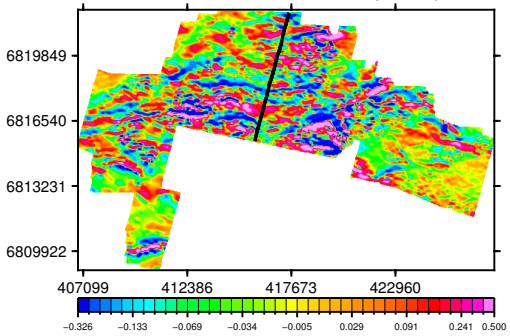
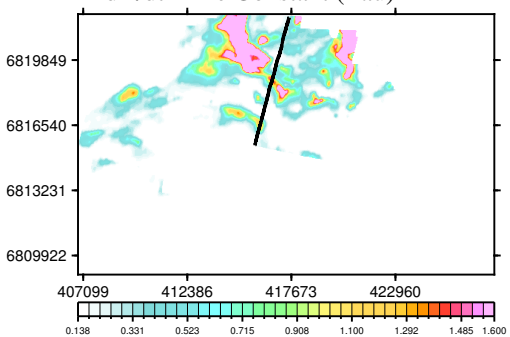
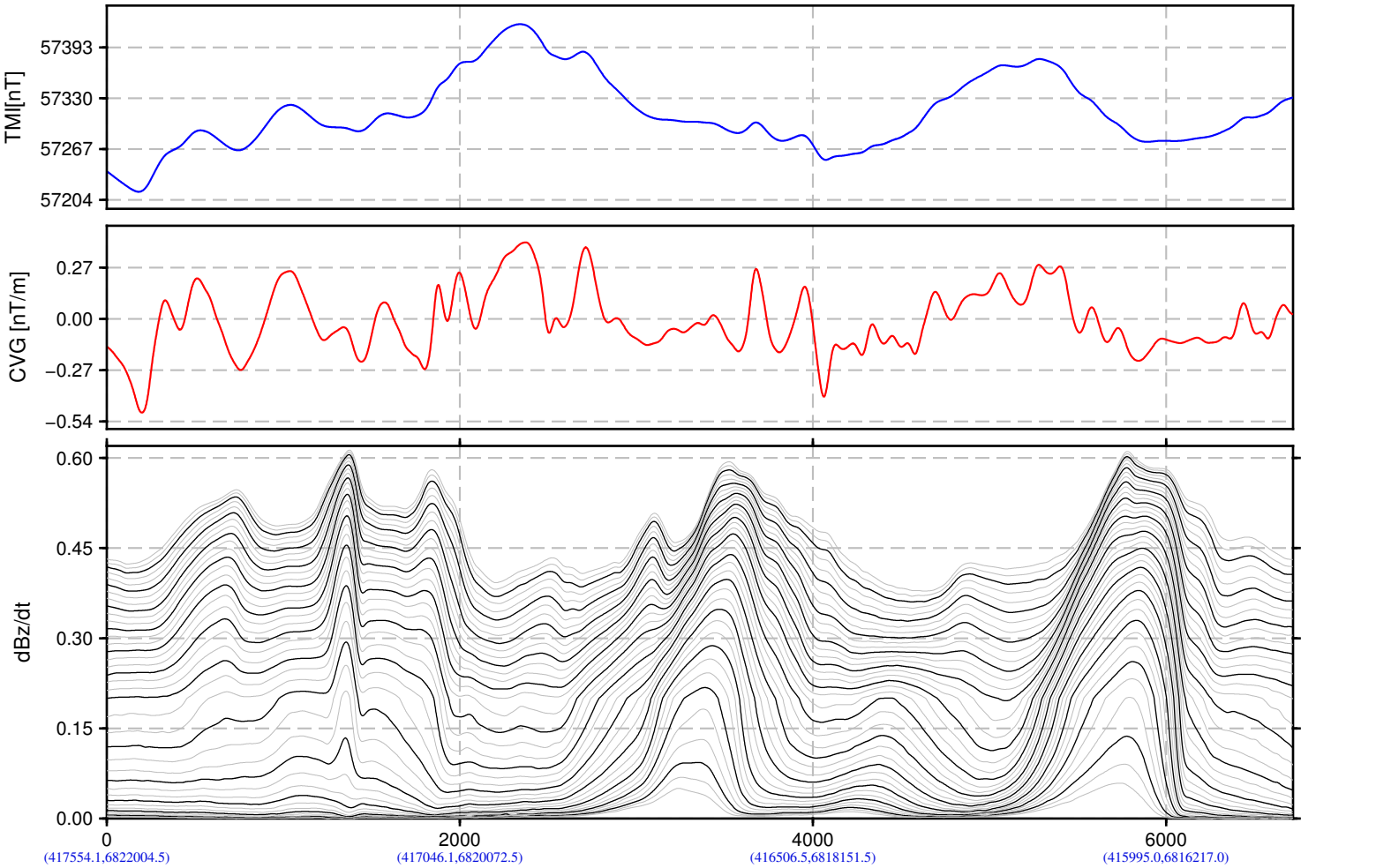
Resistivity Depth Image (RDI) for Line 3570

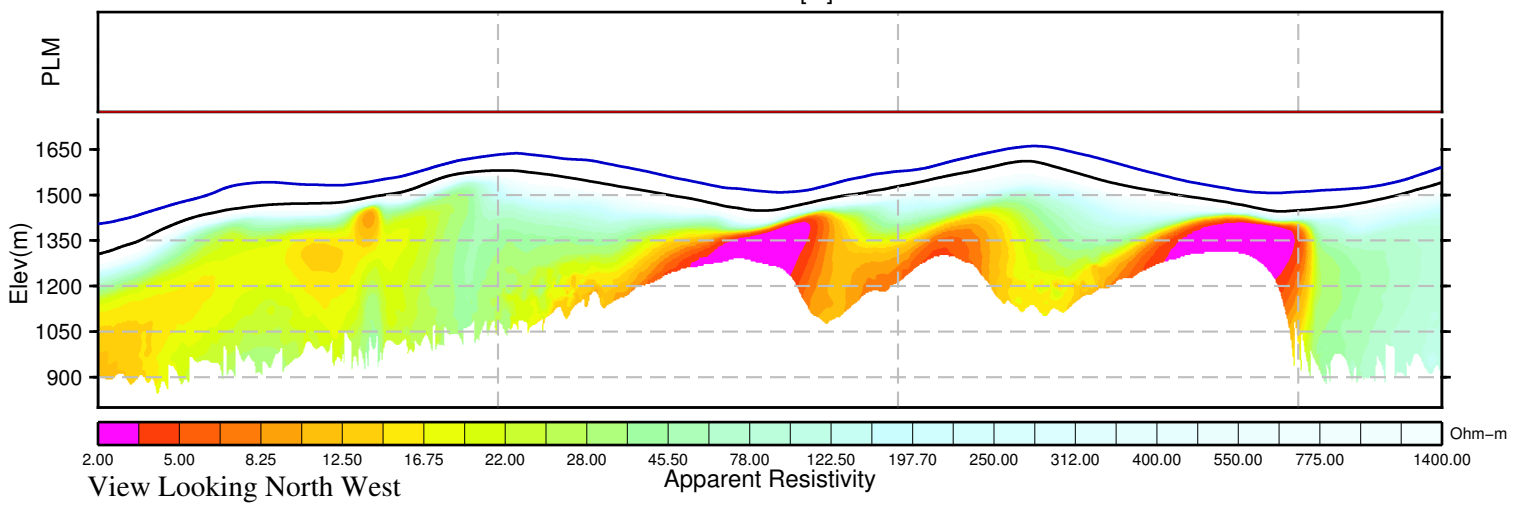
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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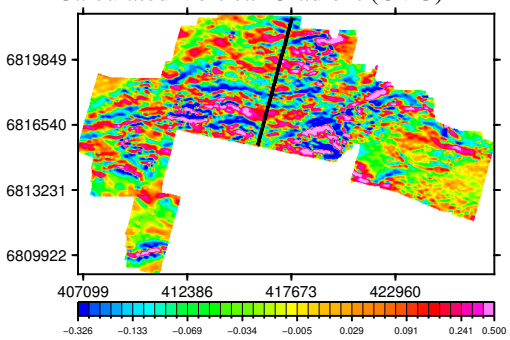
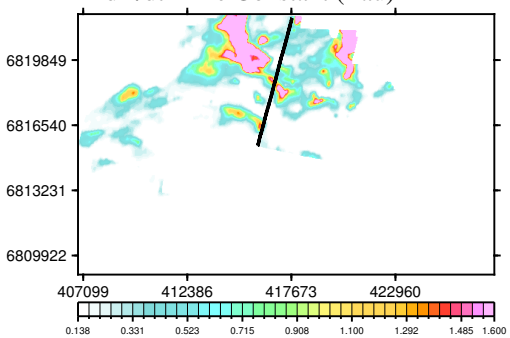
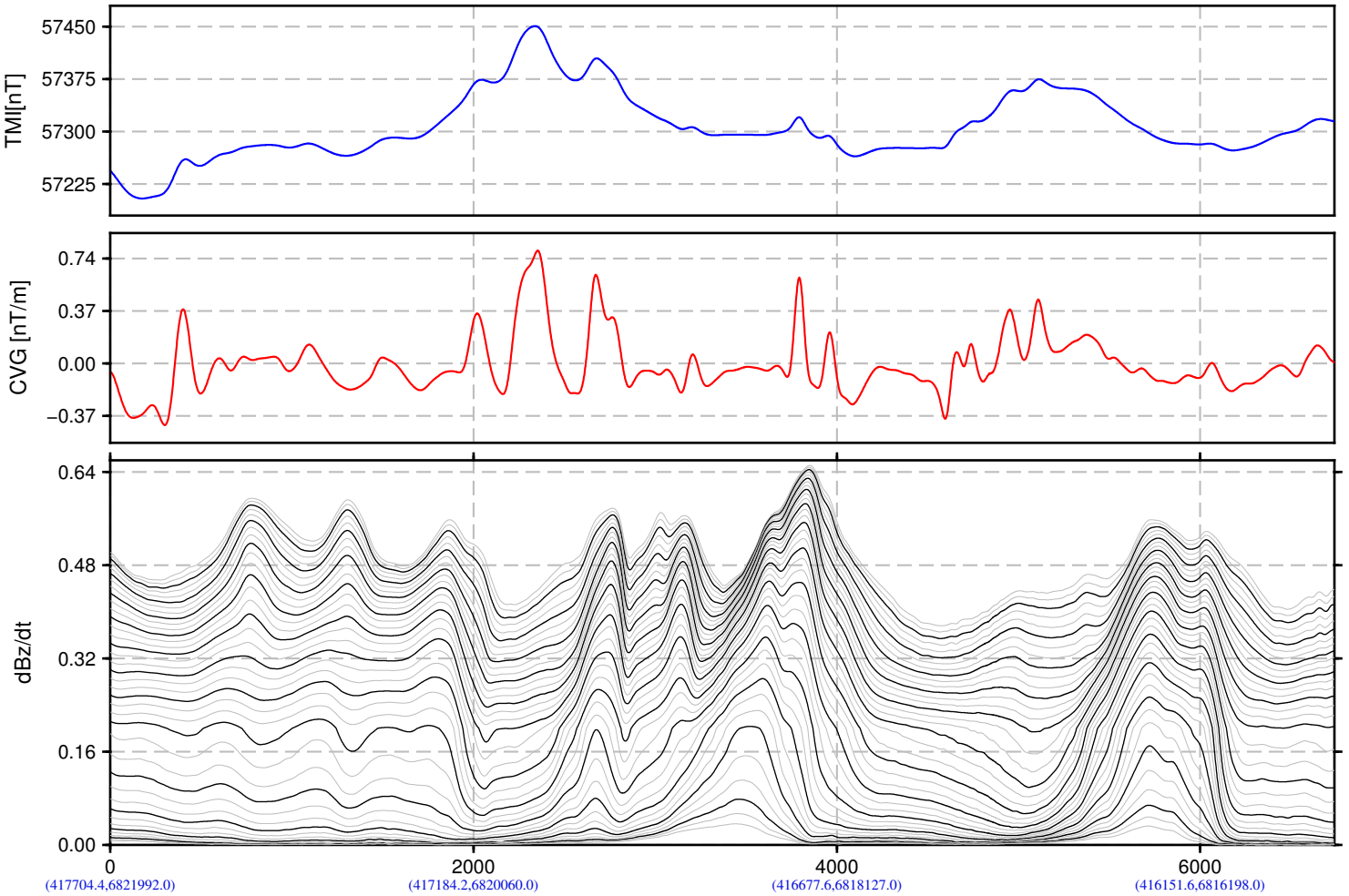
Resistivity Depth Image (RDI) for Line 3580

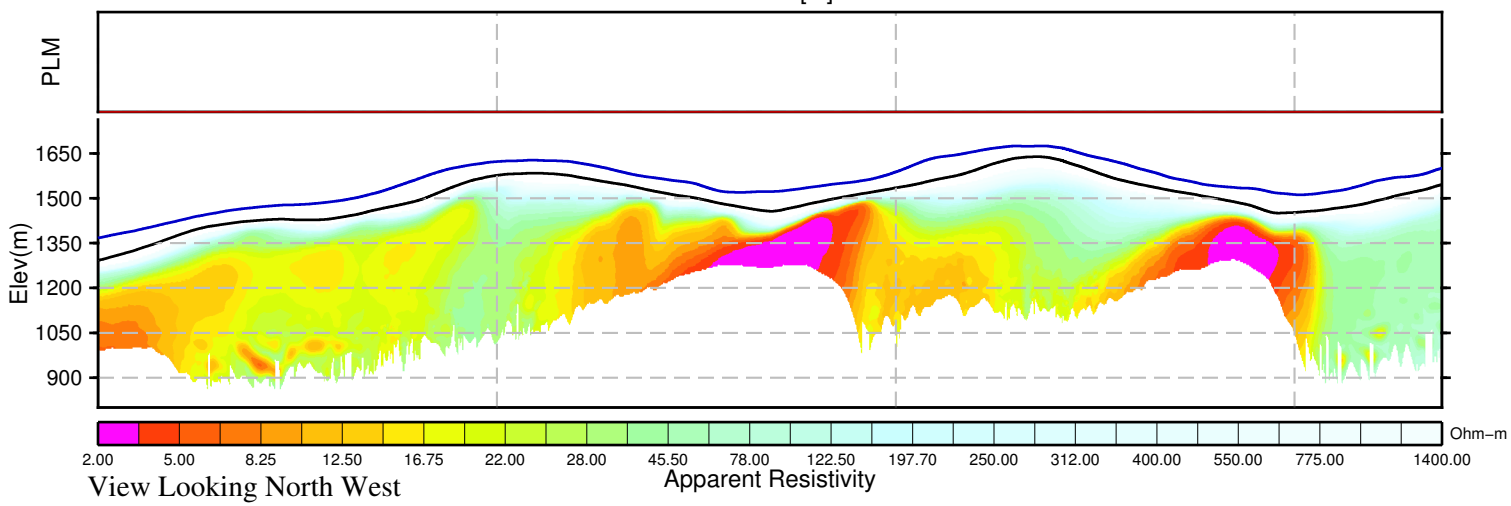
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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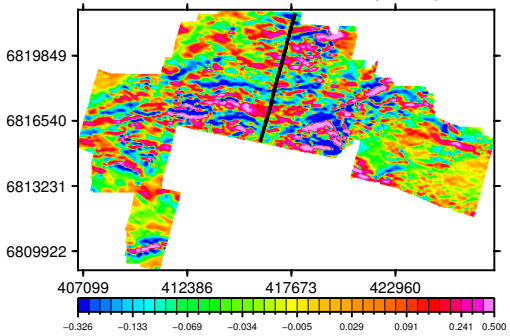
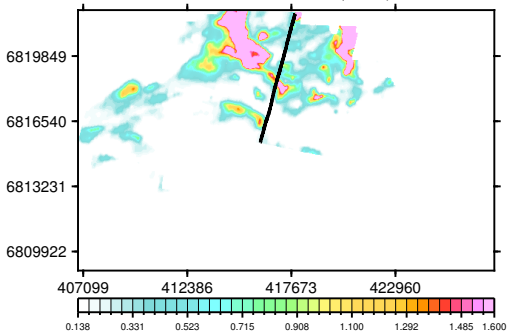
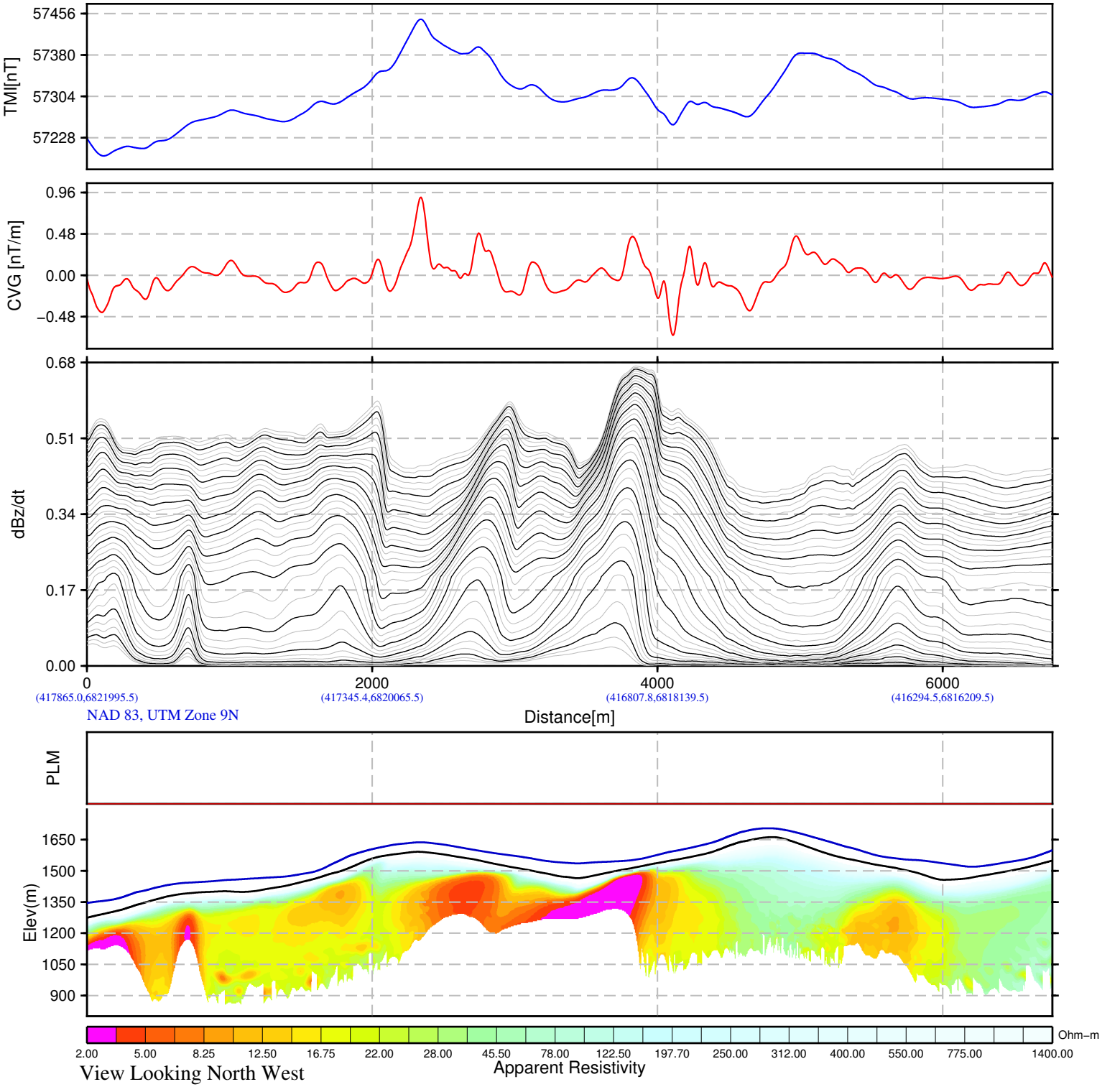
Resistivity Depth Image (RDI) for Line 3590

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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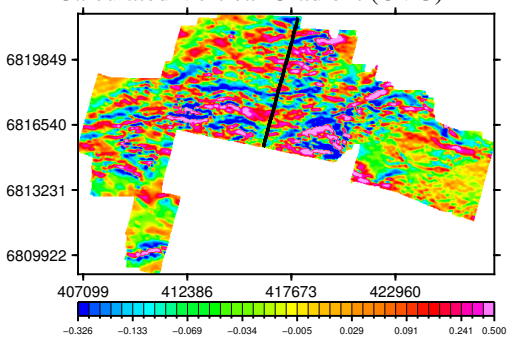
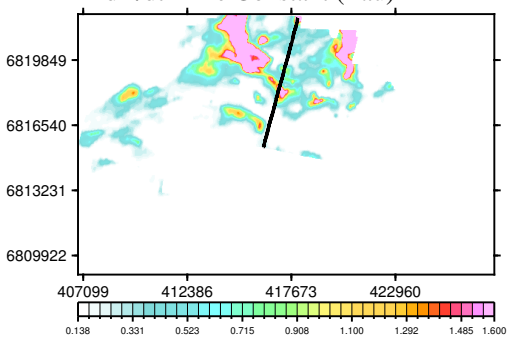
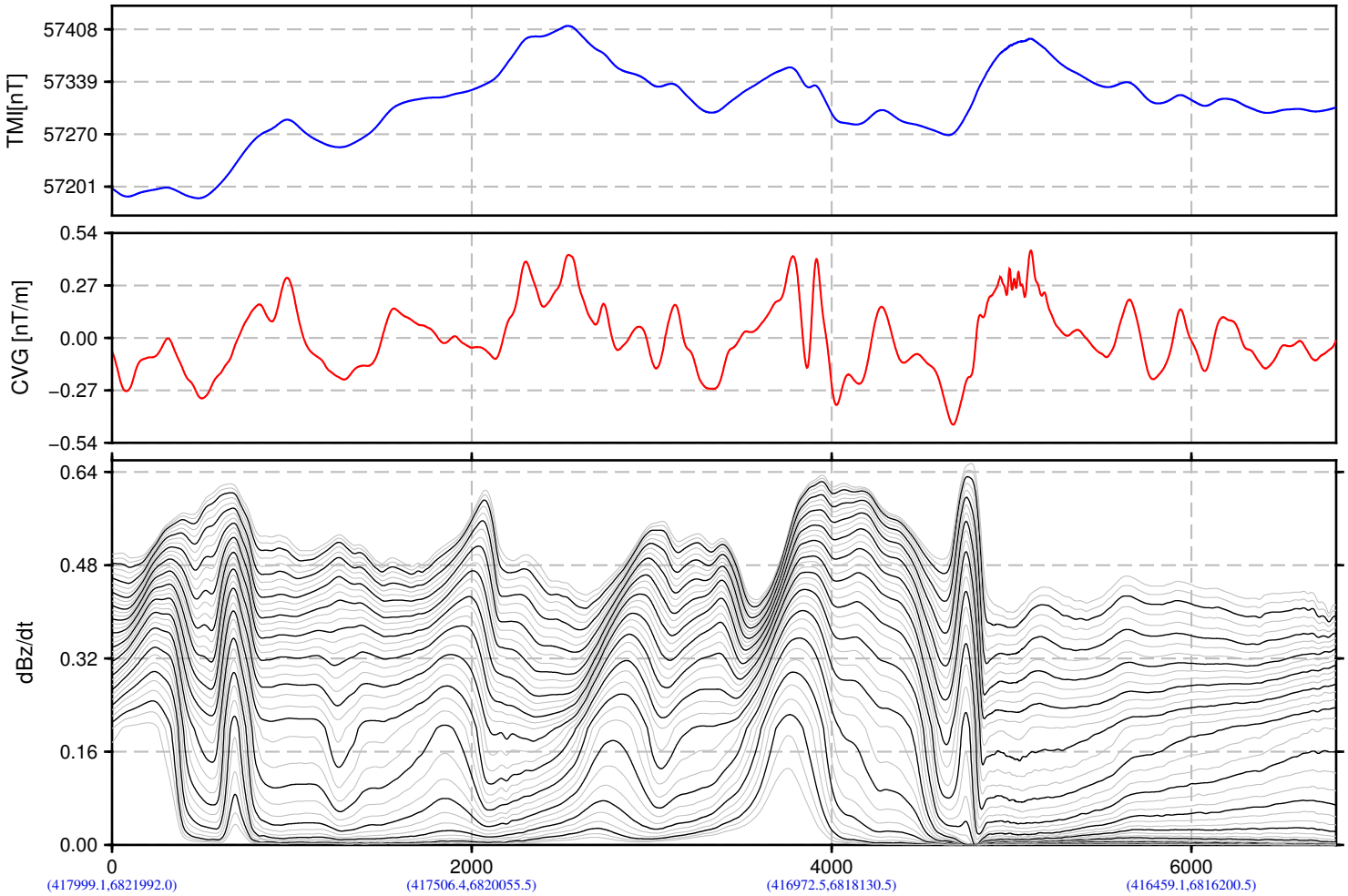
Resistivity Depth Image (RDI) for Line 3600

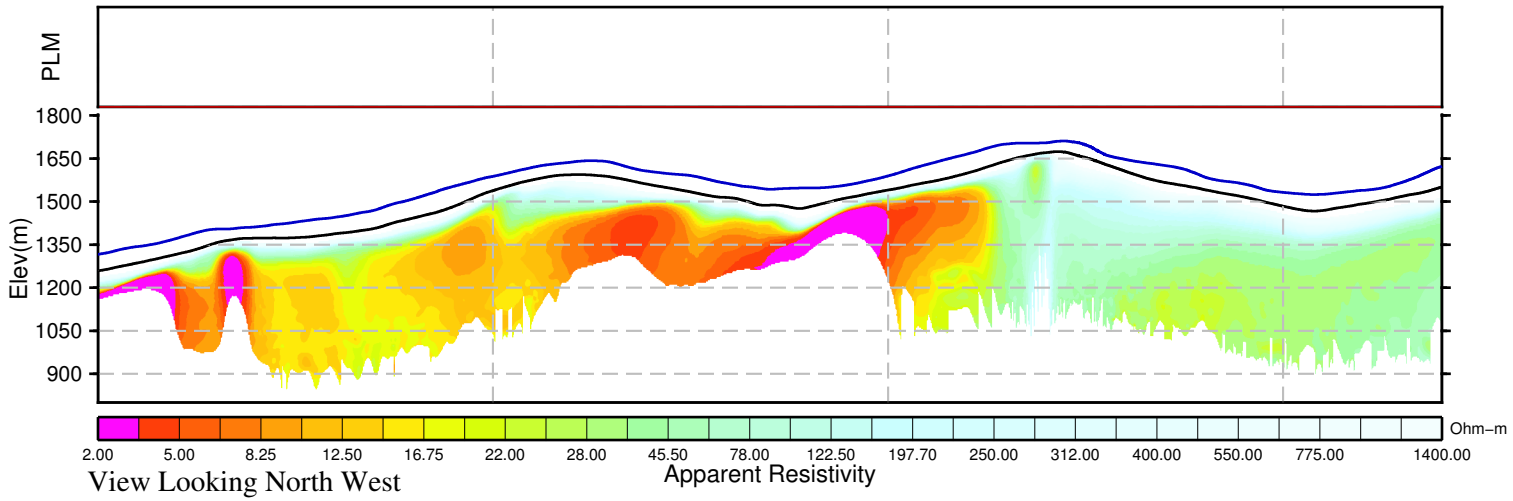
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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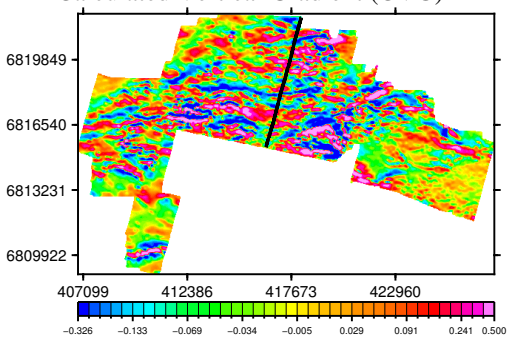
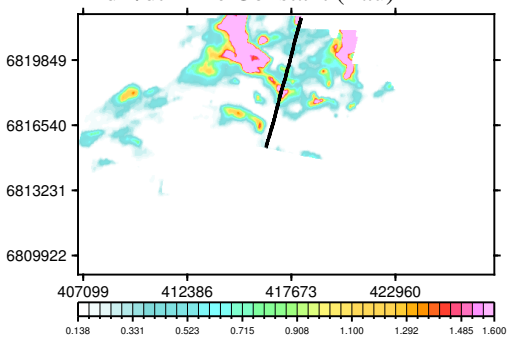
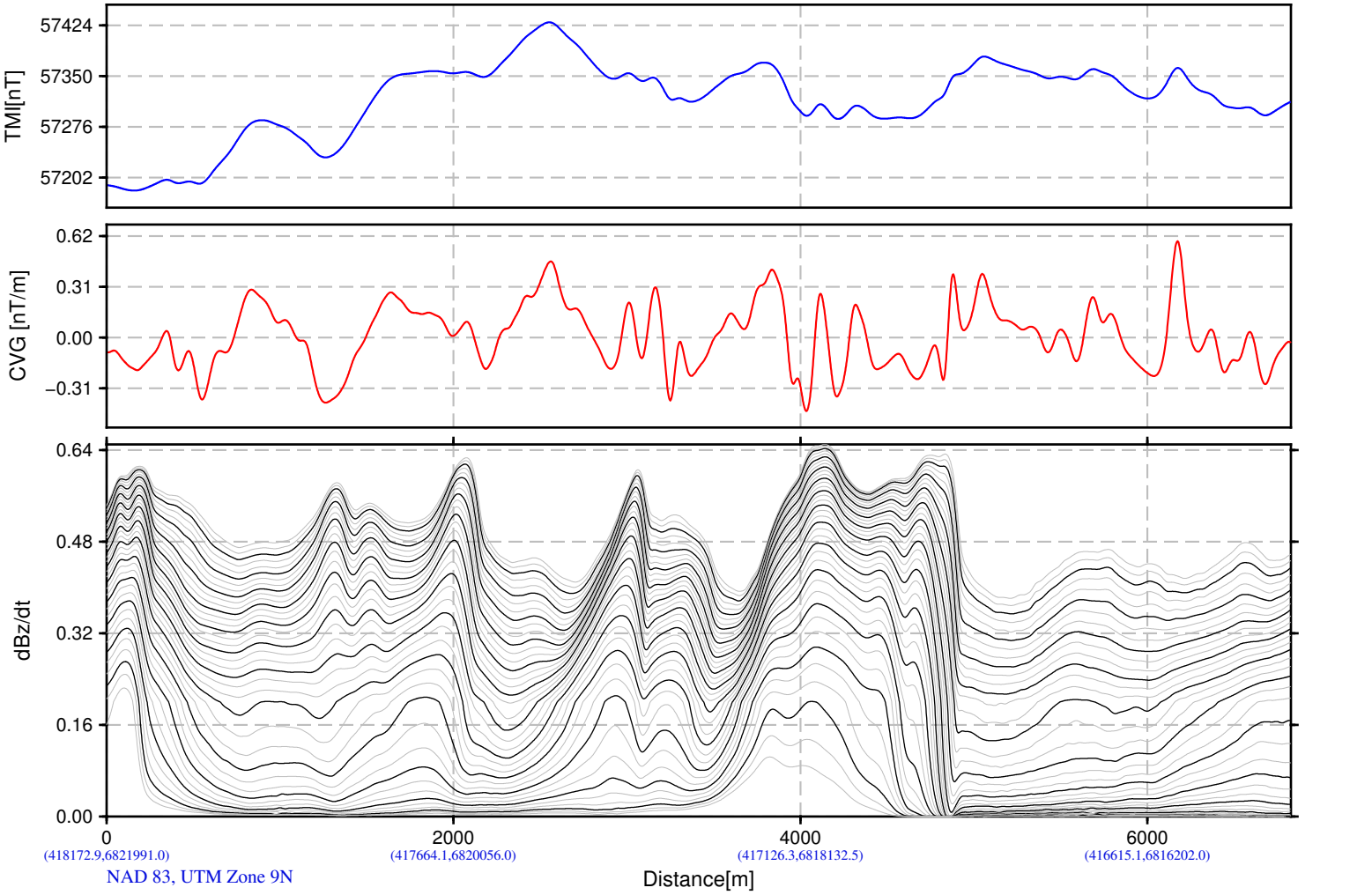
Resistivity Depth Image (RDI) for Line 3610

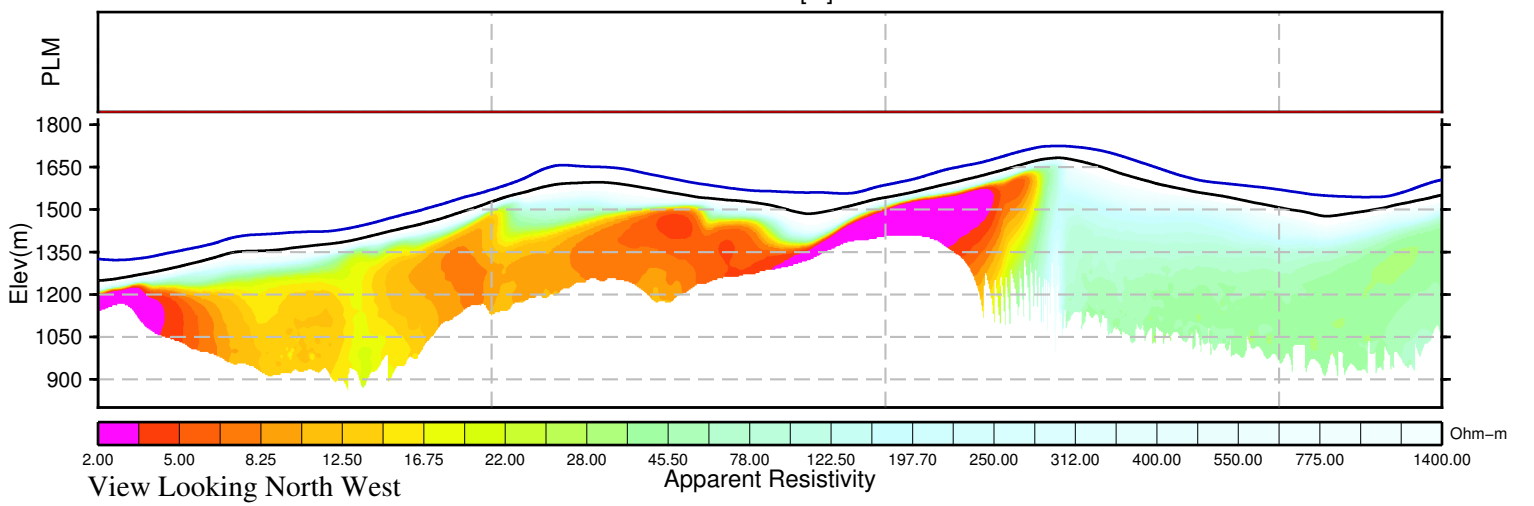
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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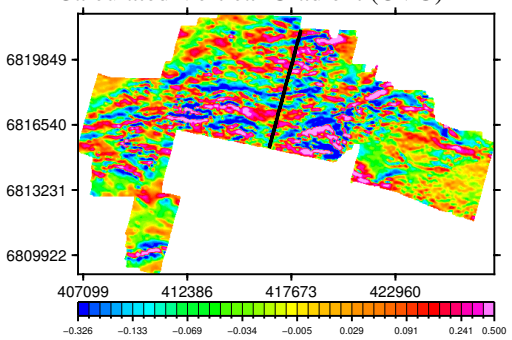
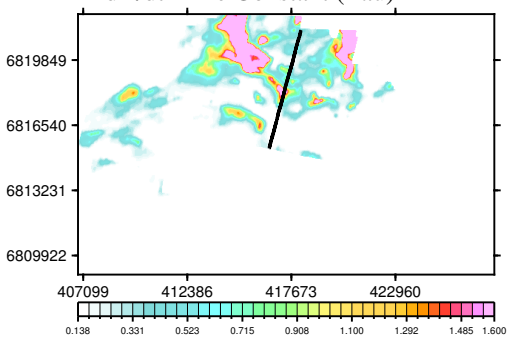
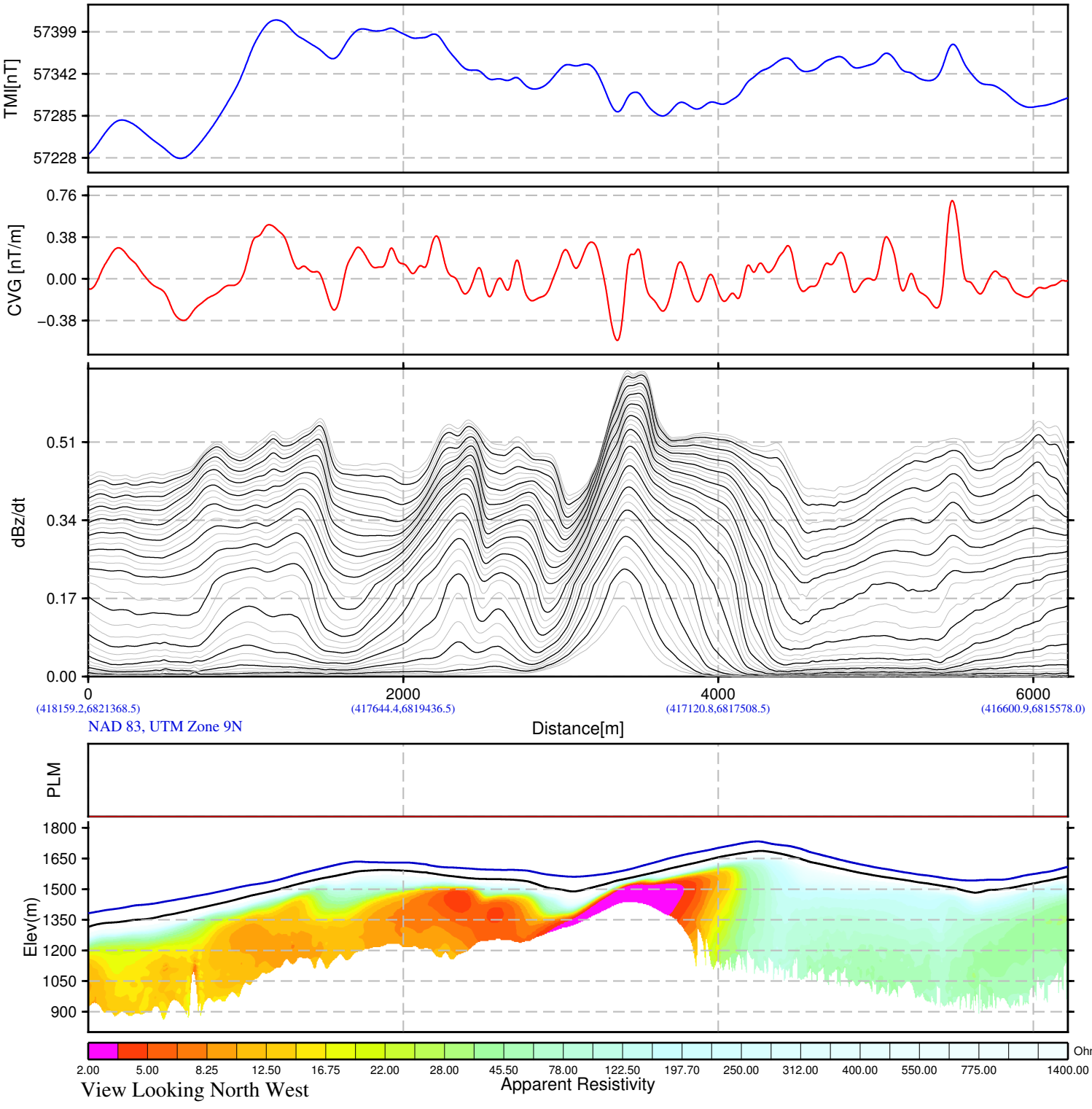
Resistivity Depth Image (RDI) for Line 3620

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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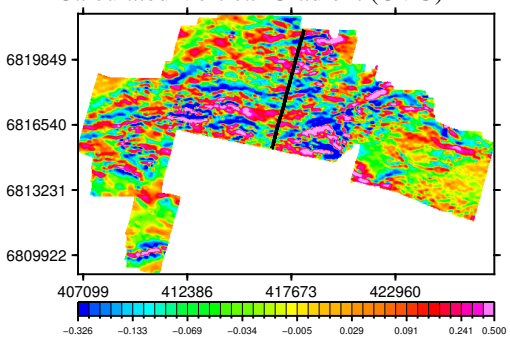
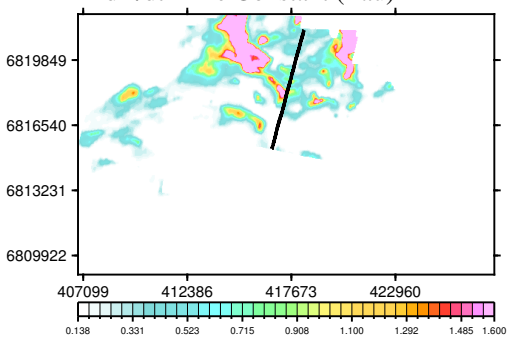
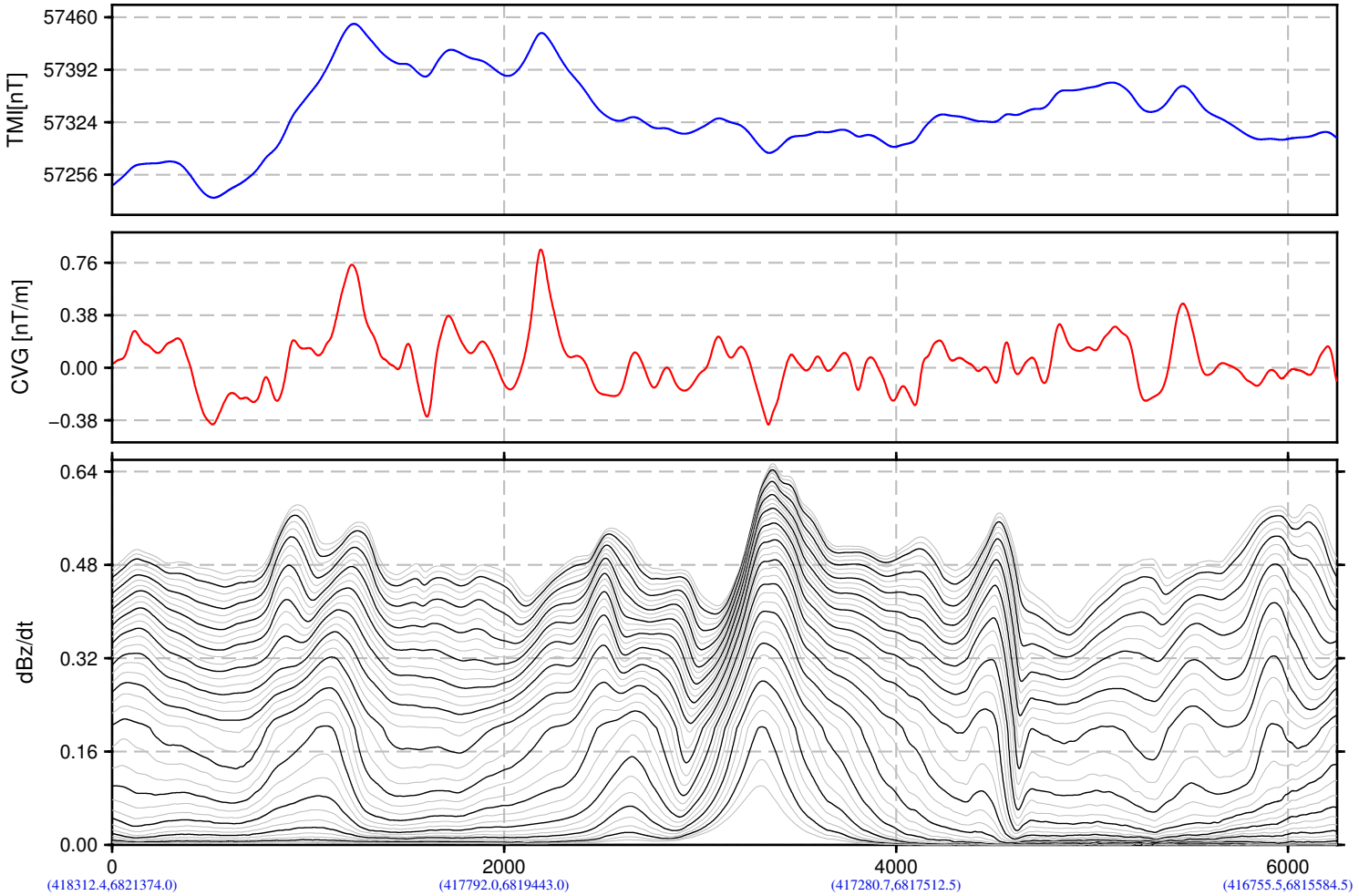
Resistivity Depth Image (RDI) for Line 3630

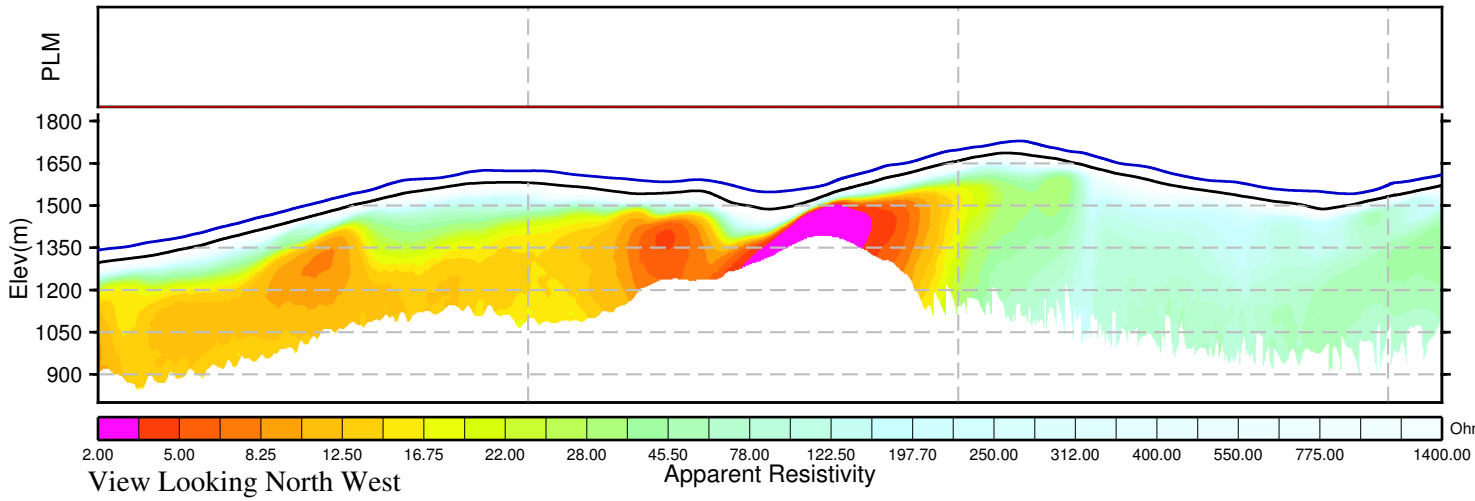
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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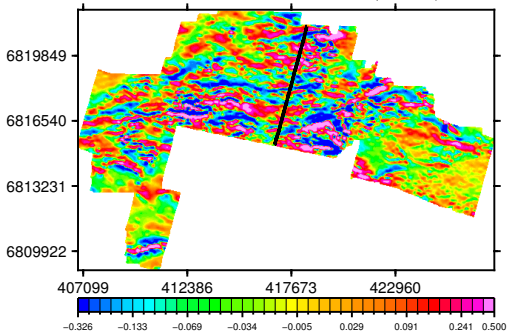
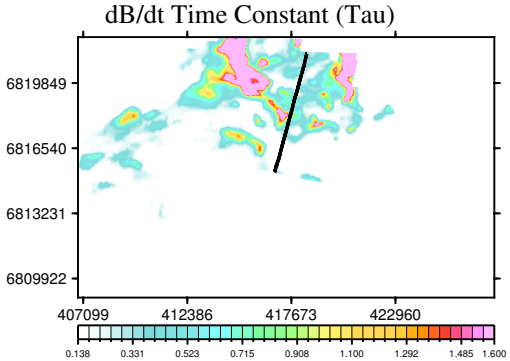
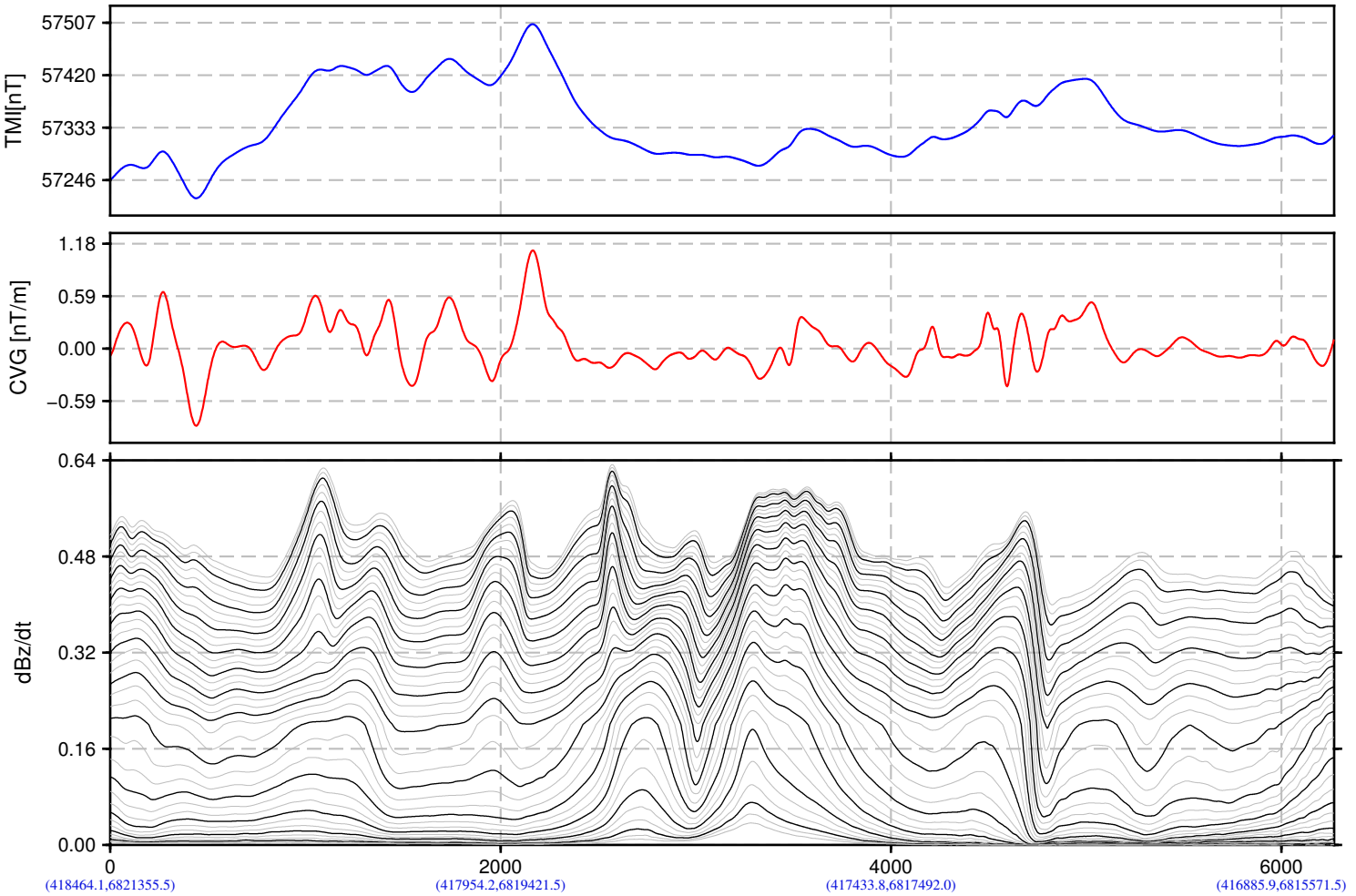
Resistivity Depth Image (RDI) for Line 3640

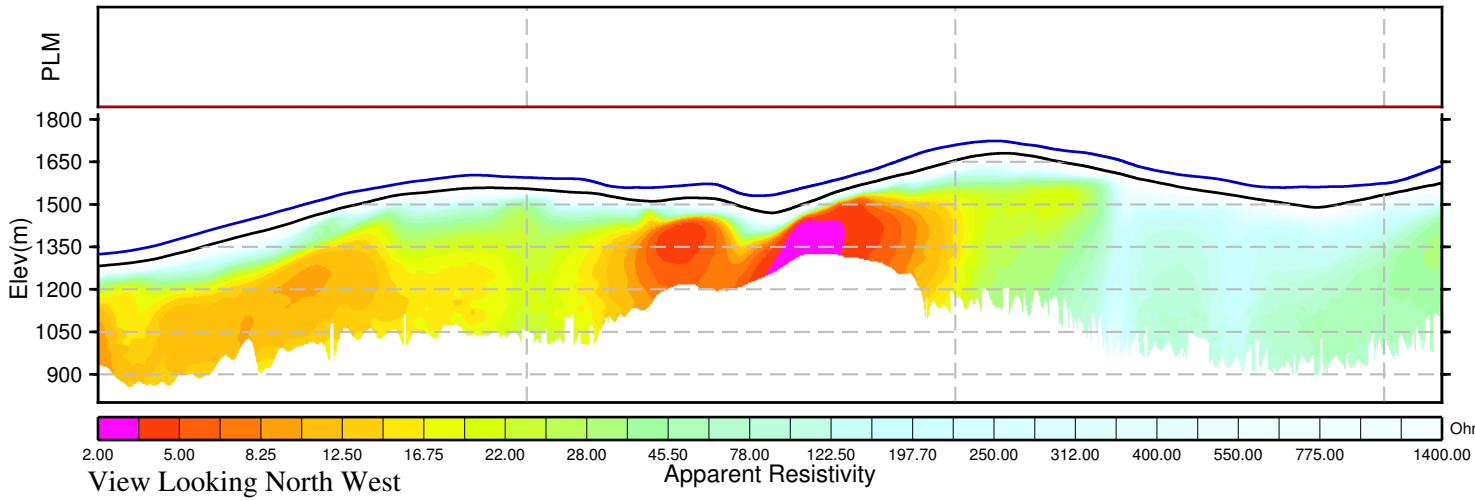
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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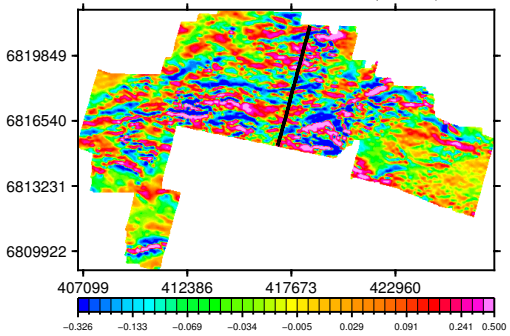
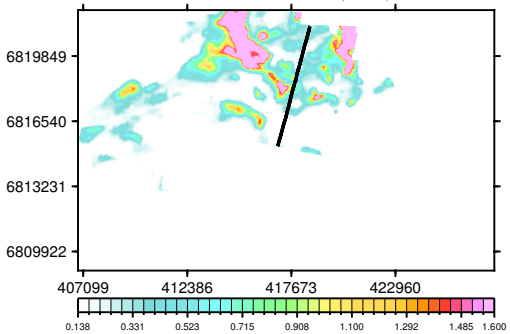
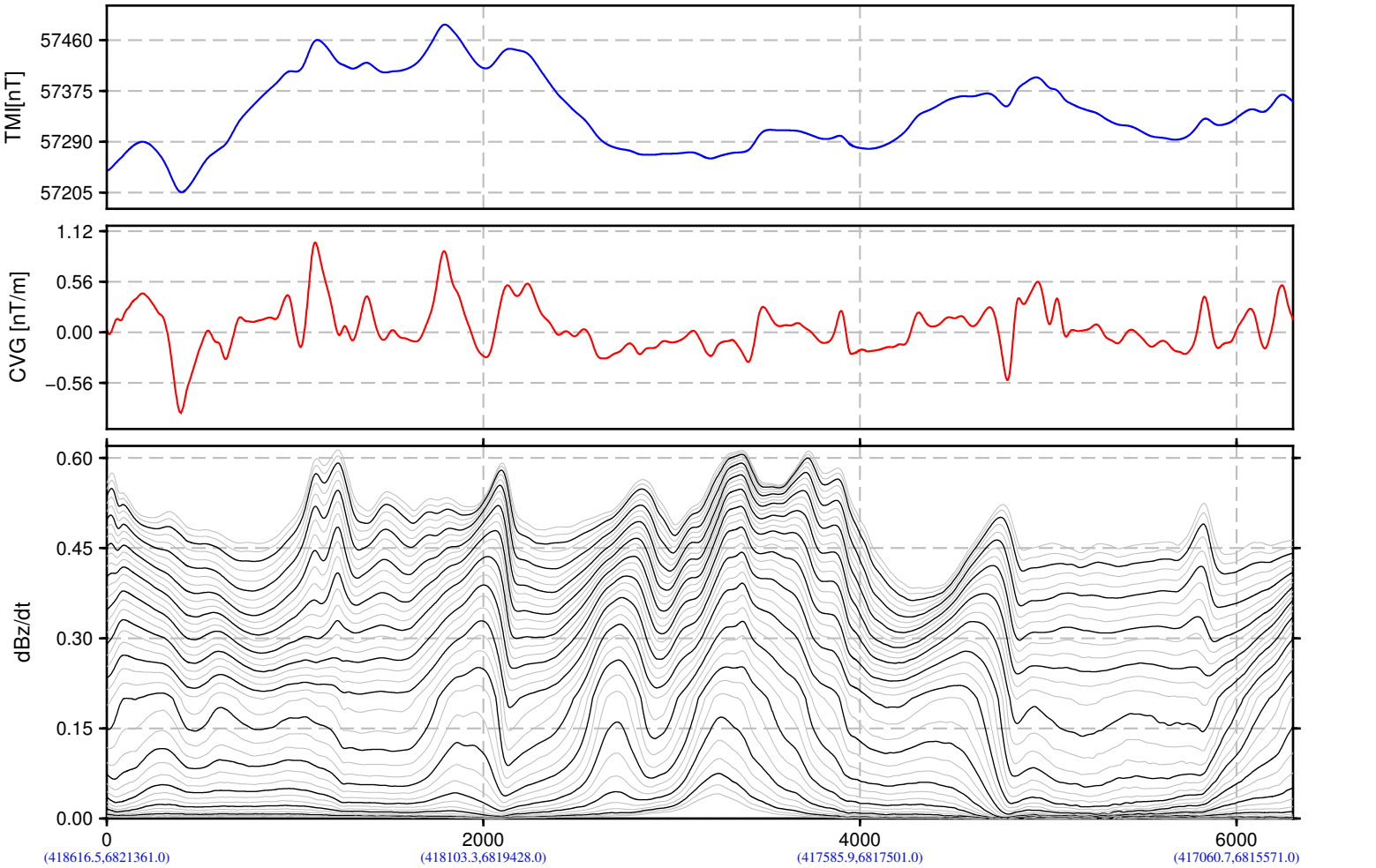
Resistivity Depth Image (RDI) for Line 3650

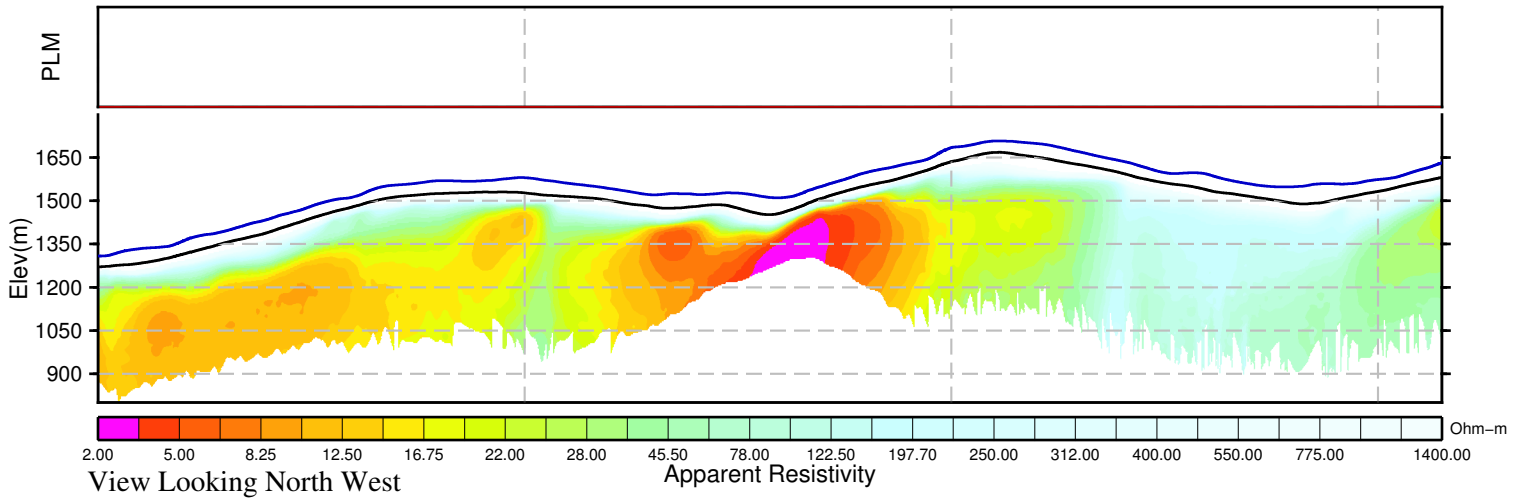
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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Job Number:GL160037
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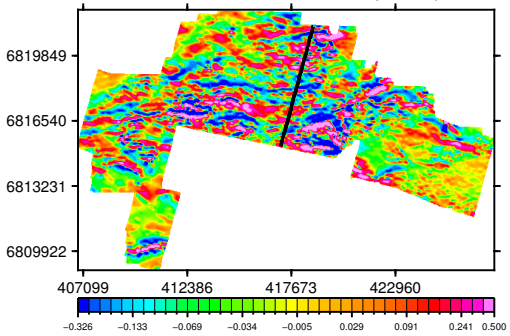
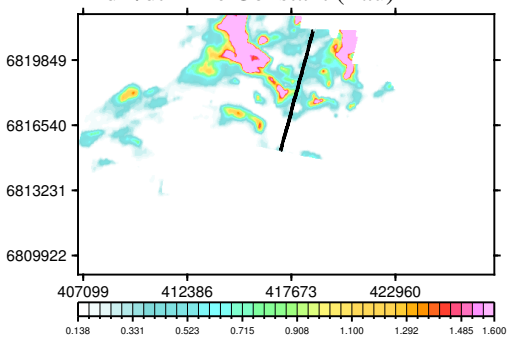
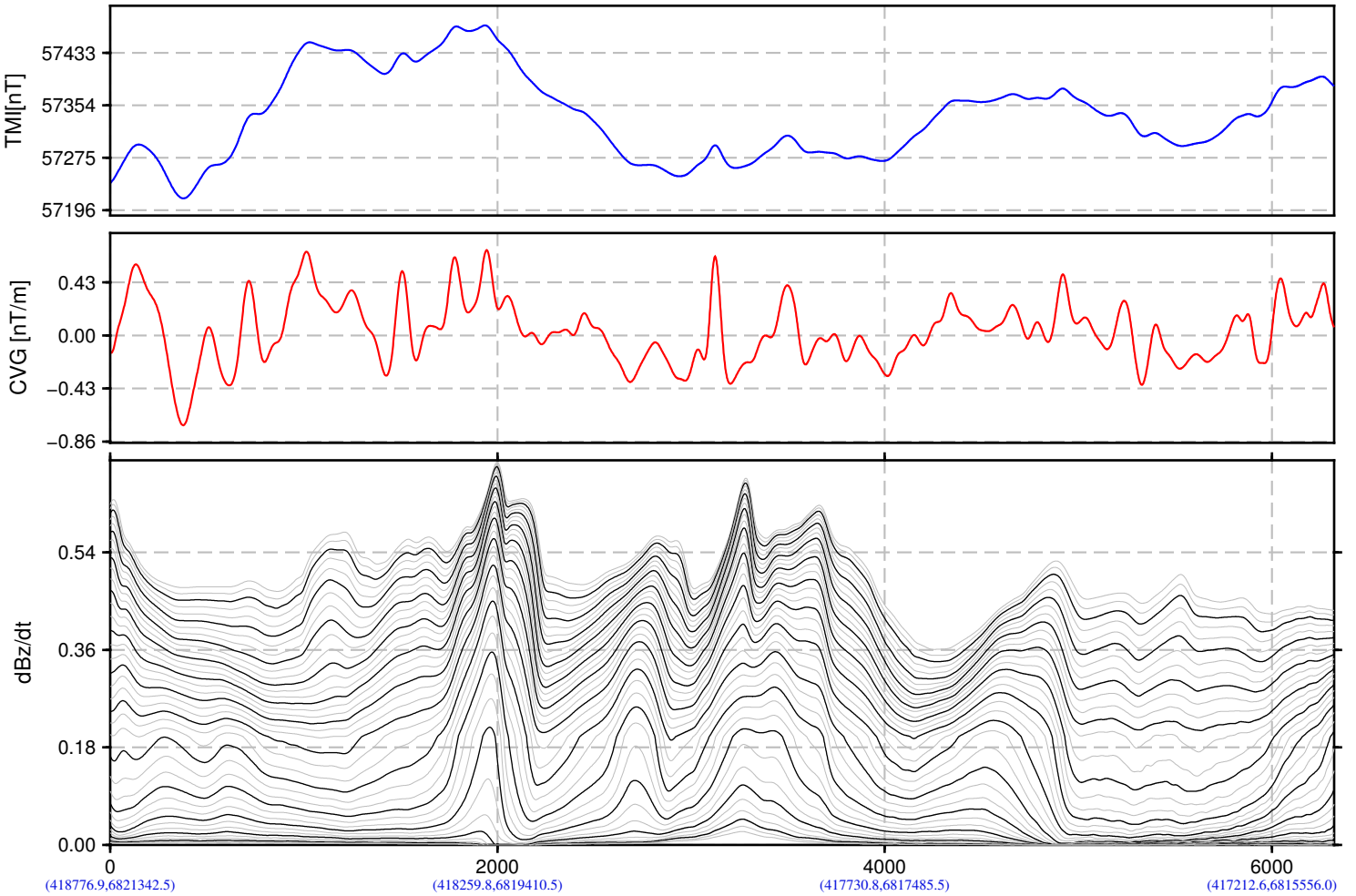
Resistivity Depth Image (RDI) for Line 3660

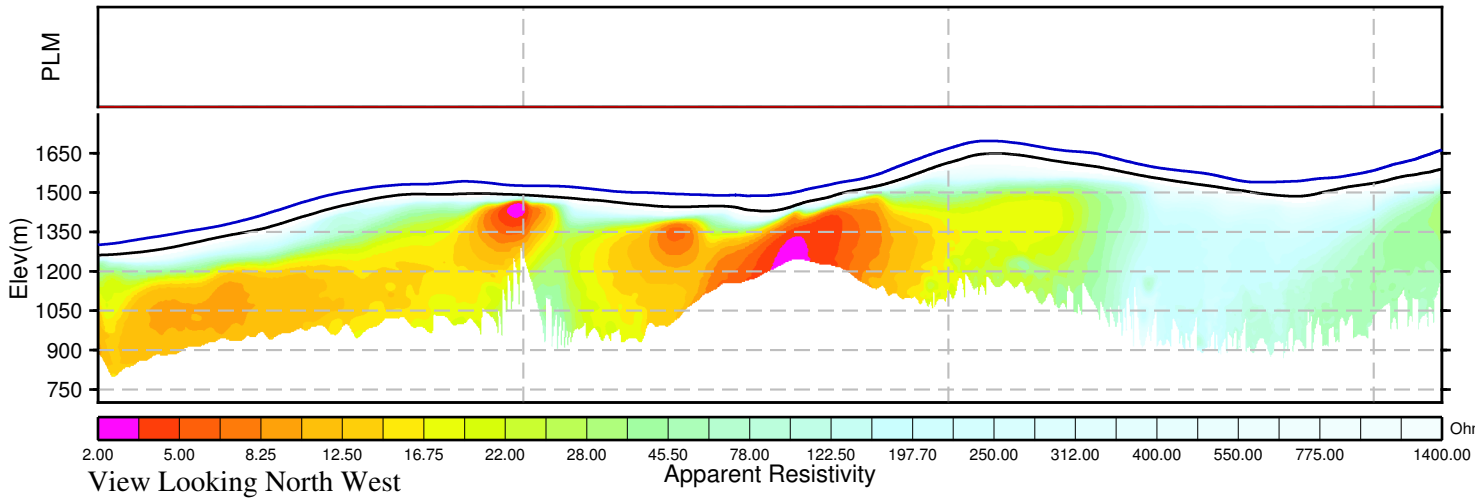
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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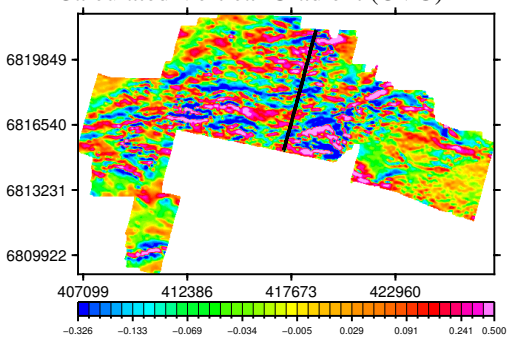
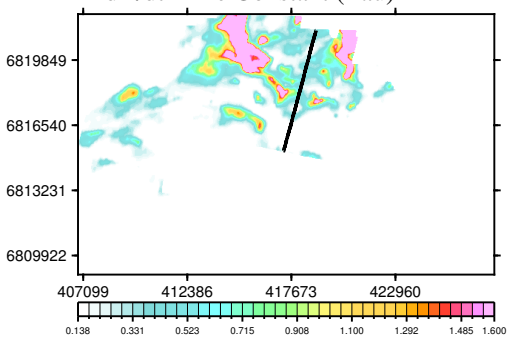
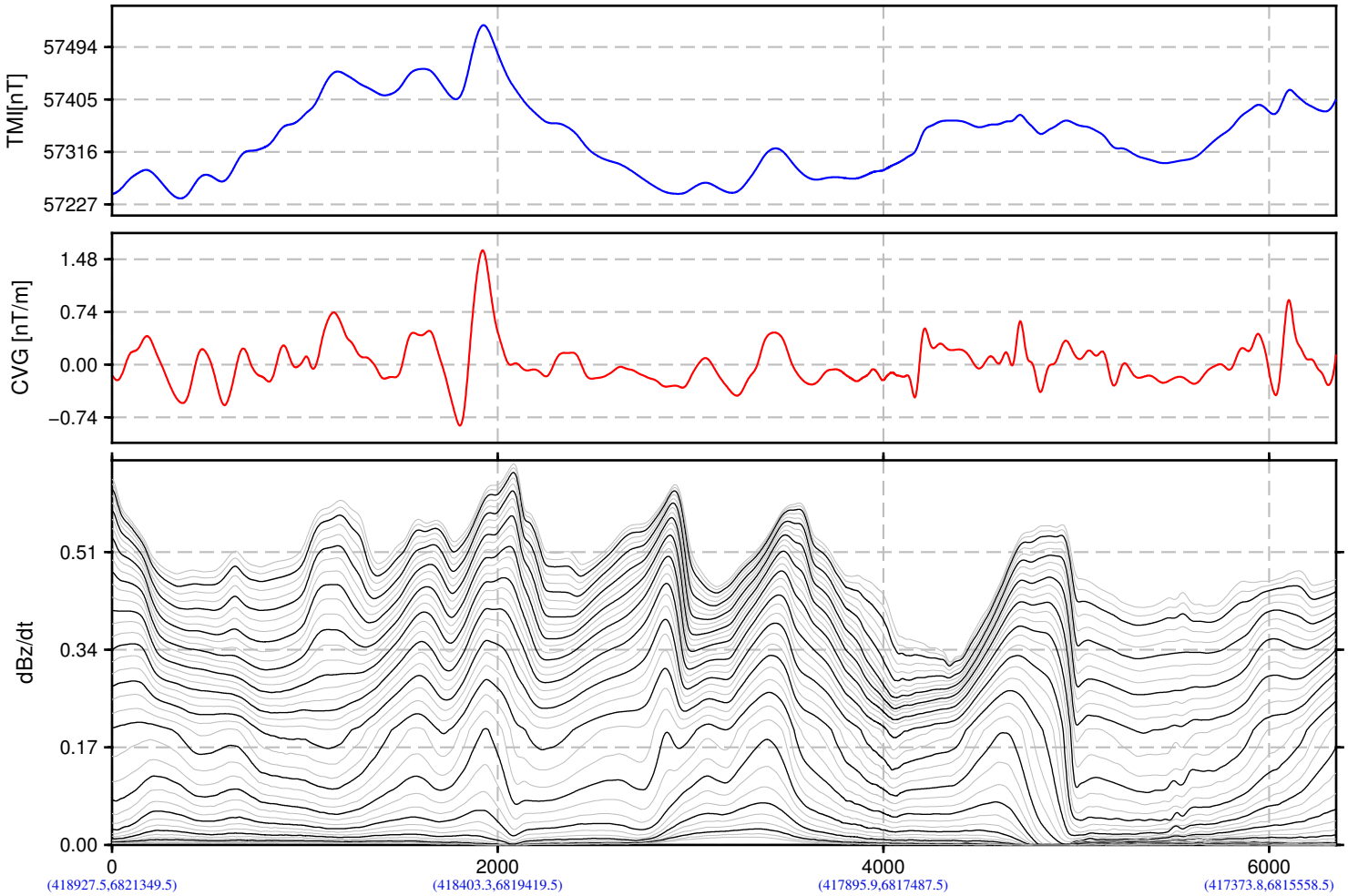
Resistivity Depth Image (RDI) for Line 3670

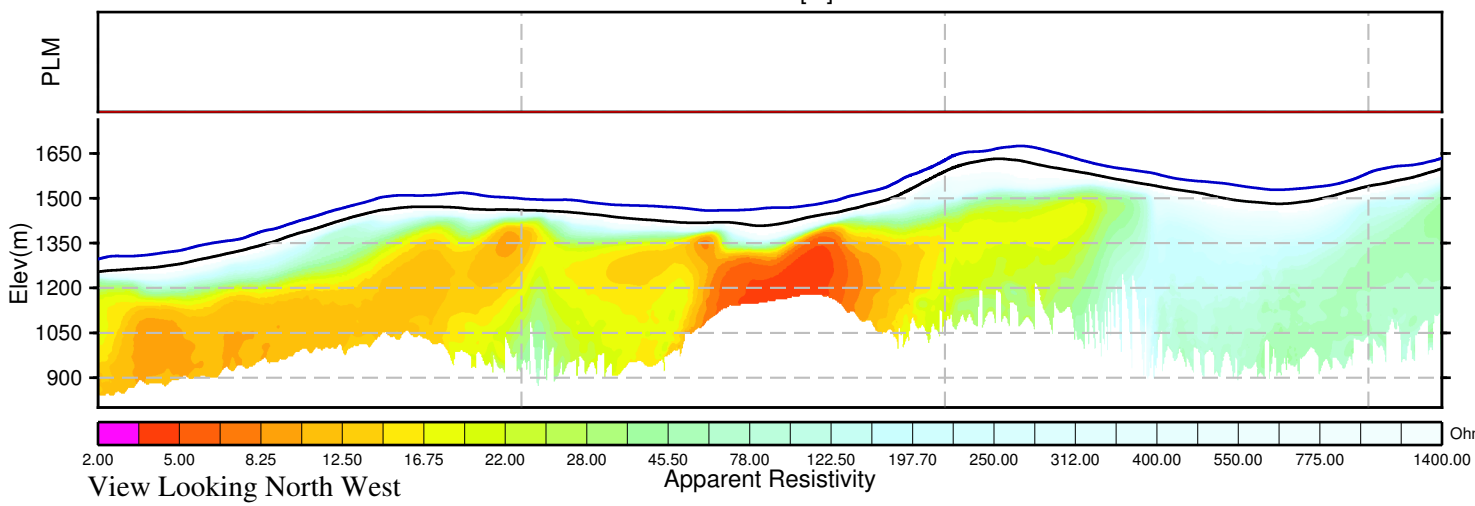
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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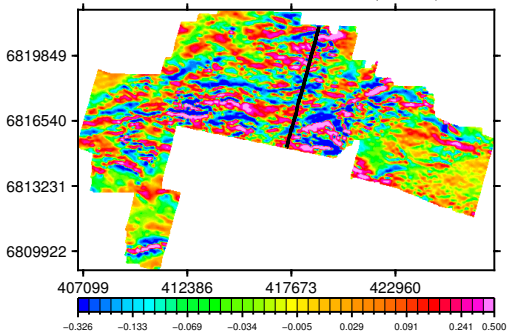
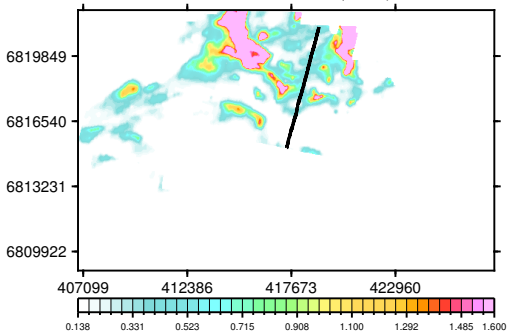
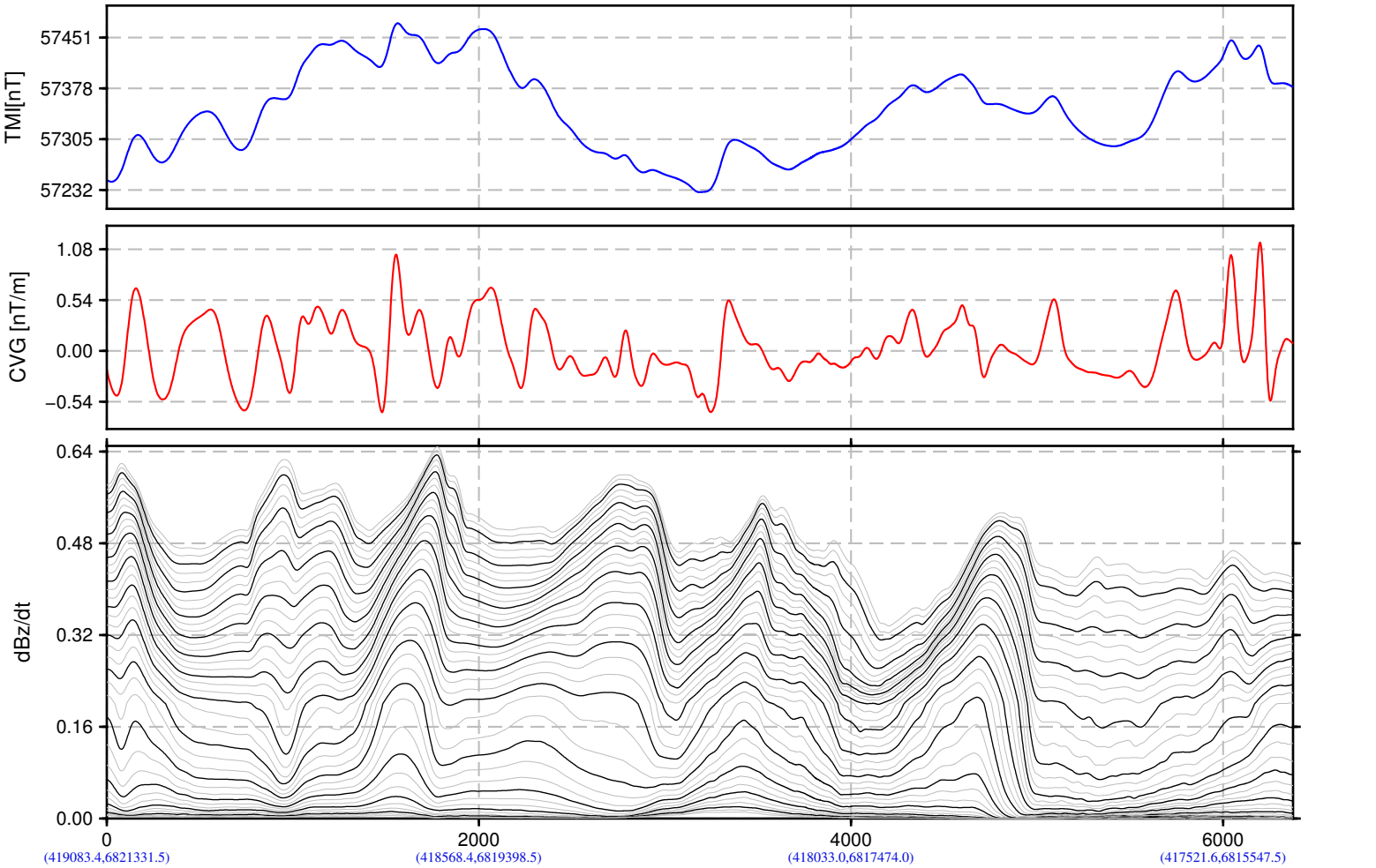
Resistivity Depth Image (RDI) for Line 3680

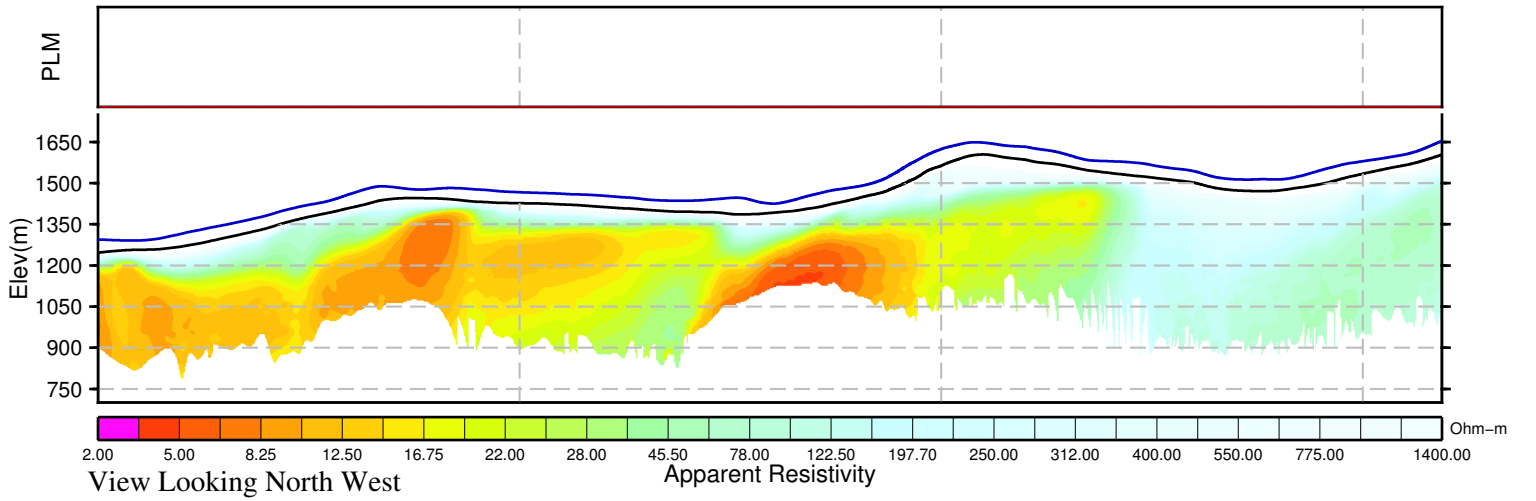
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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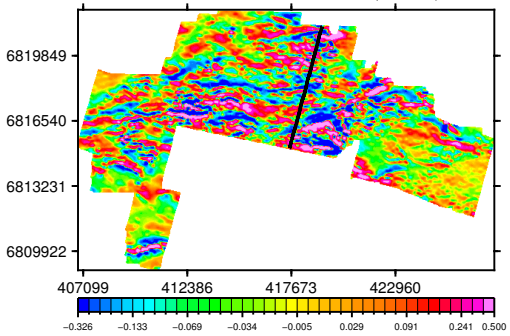
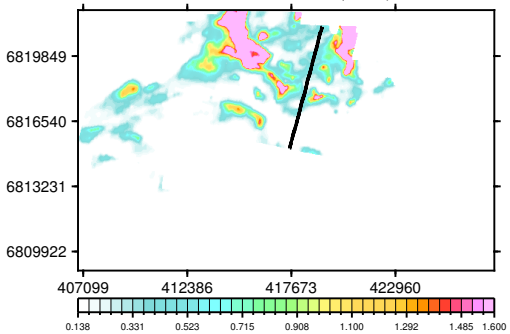
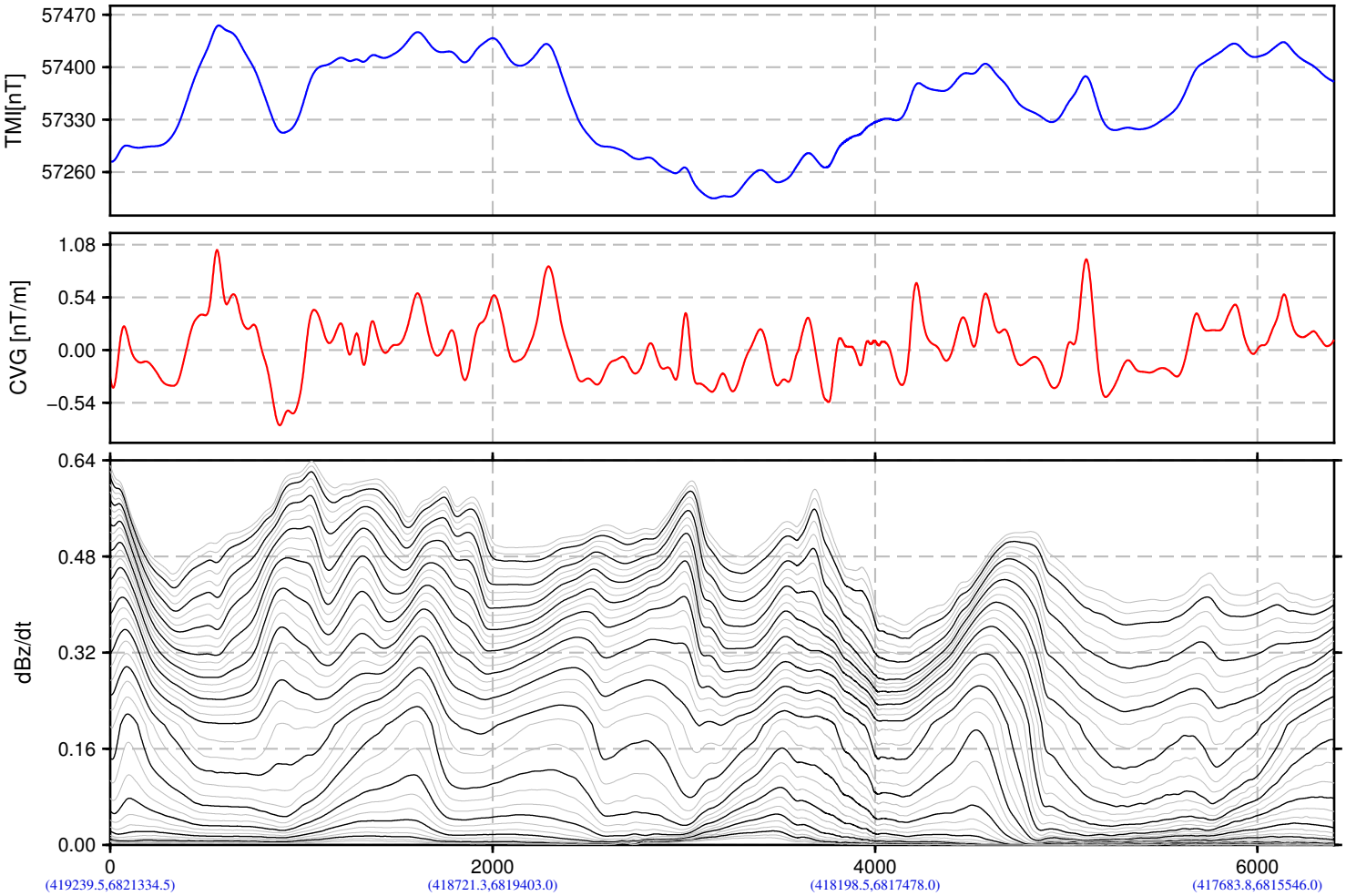
Resistivity Depth Image (RDI) for Line 3690

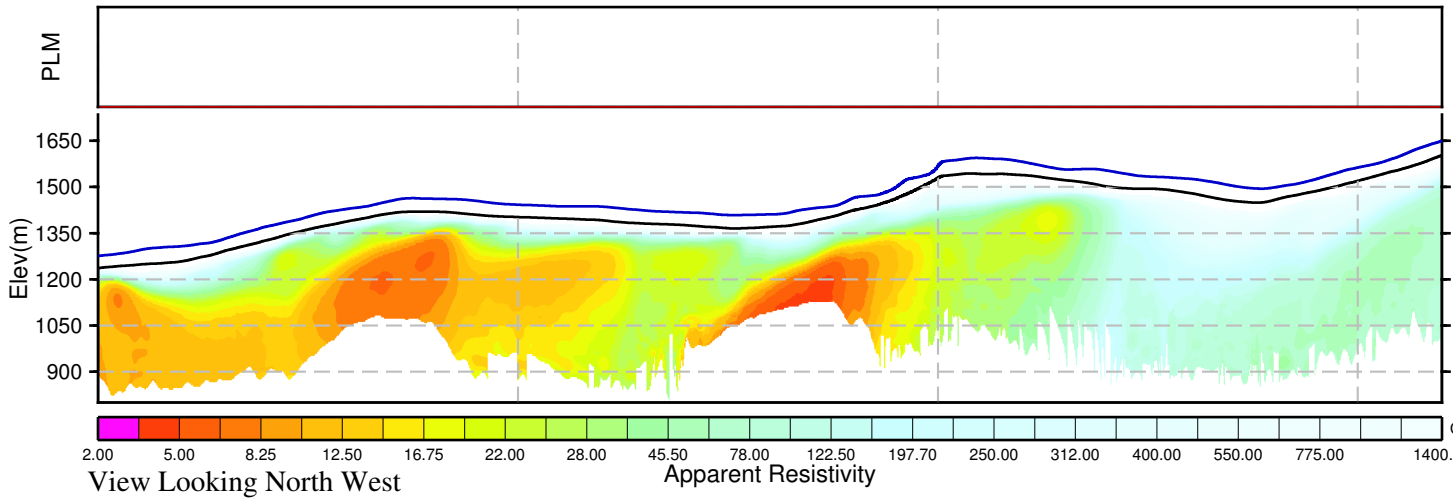
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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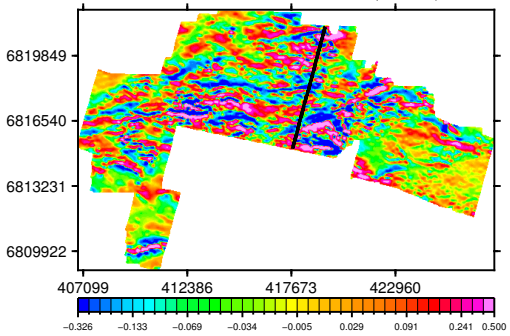
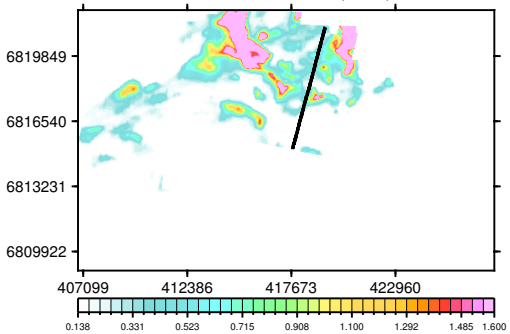
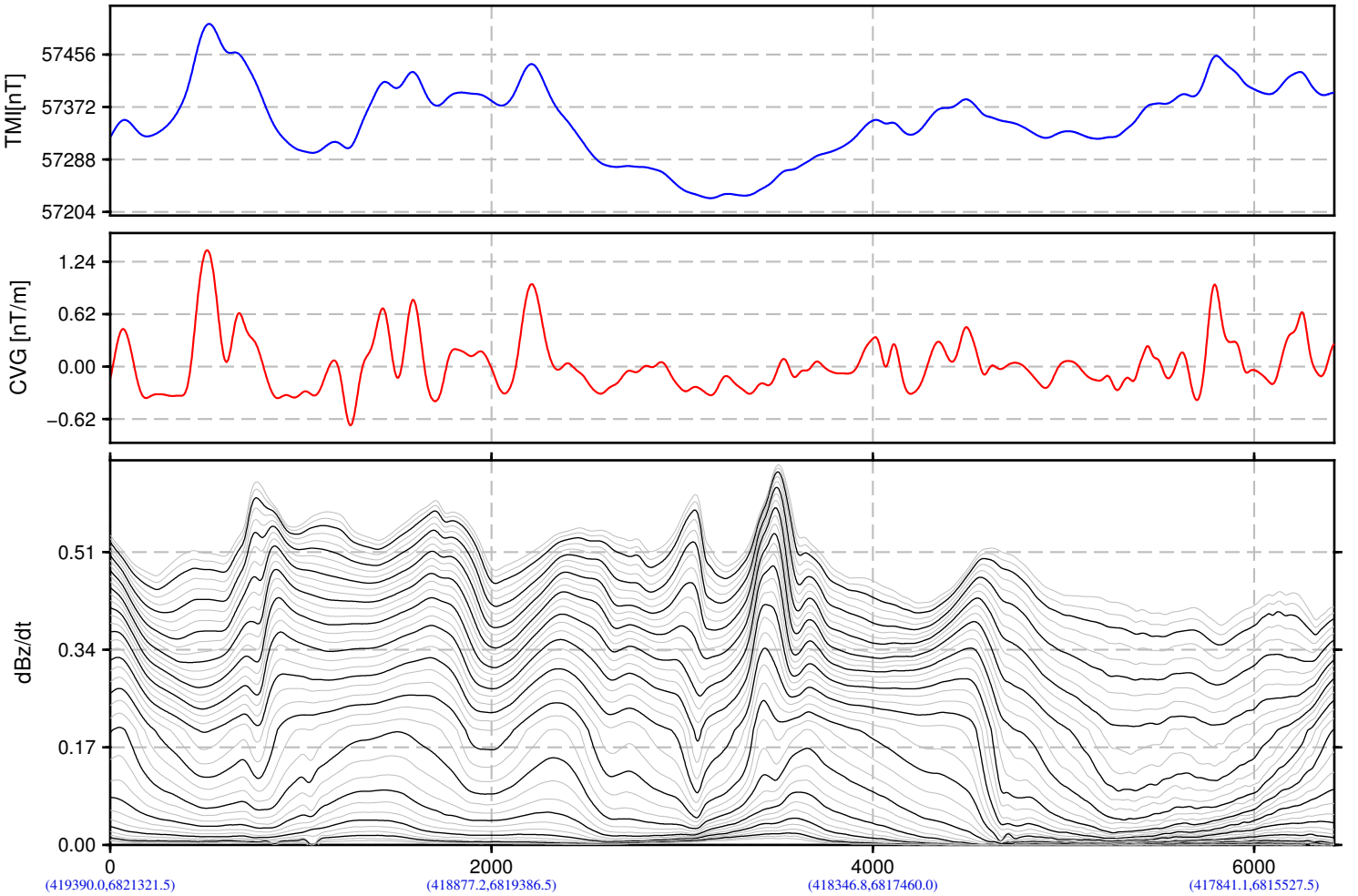
Resistivity Depth Image (RDI) for Line 3700

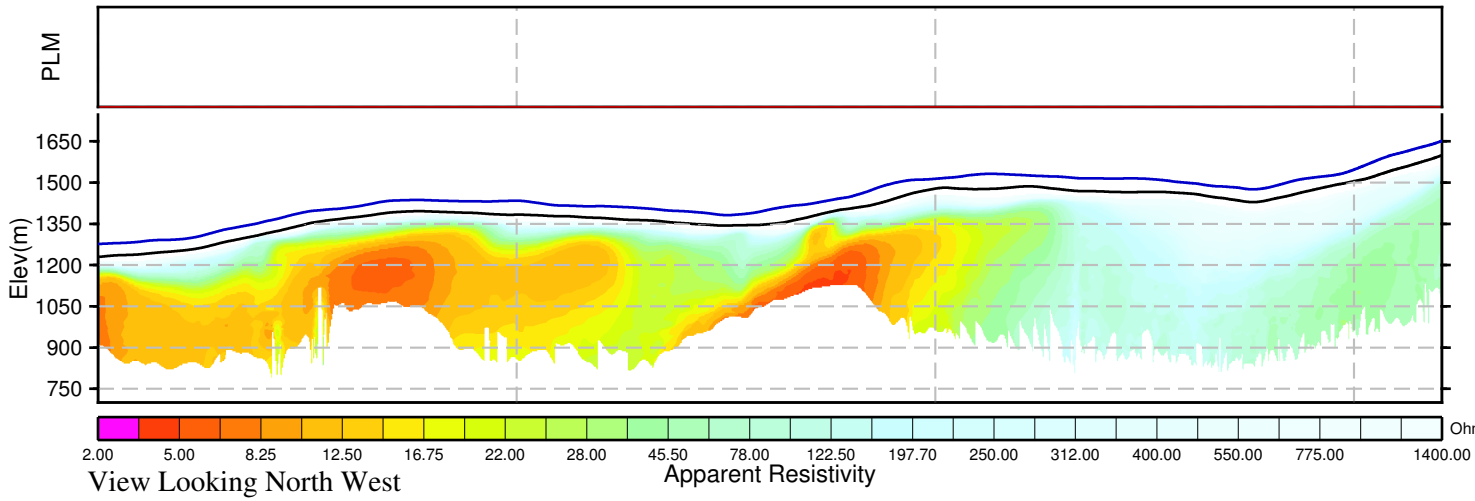
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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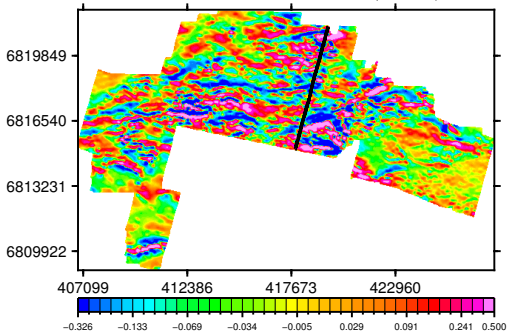
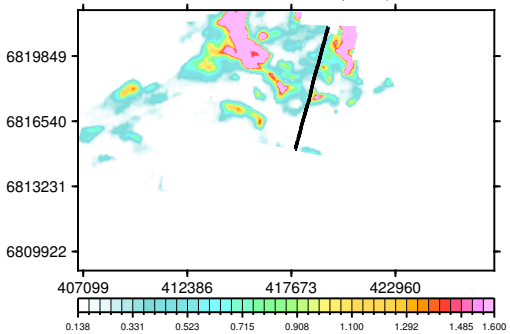
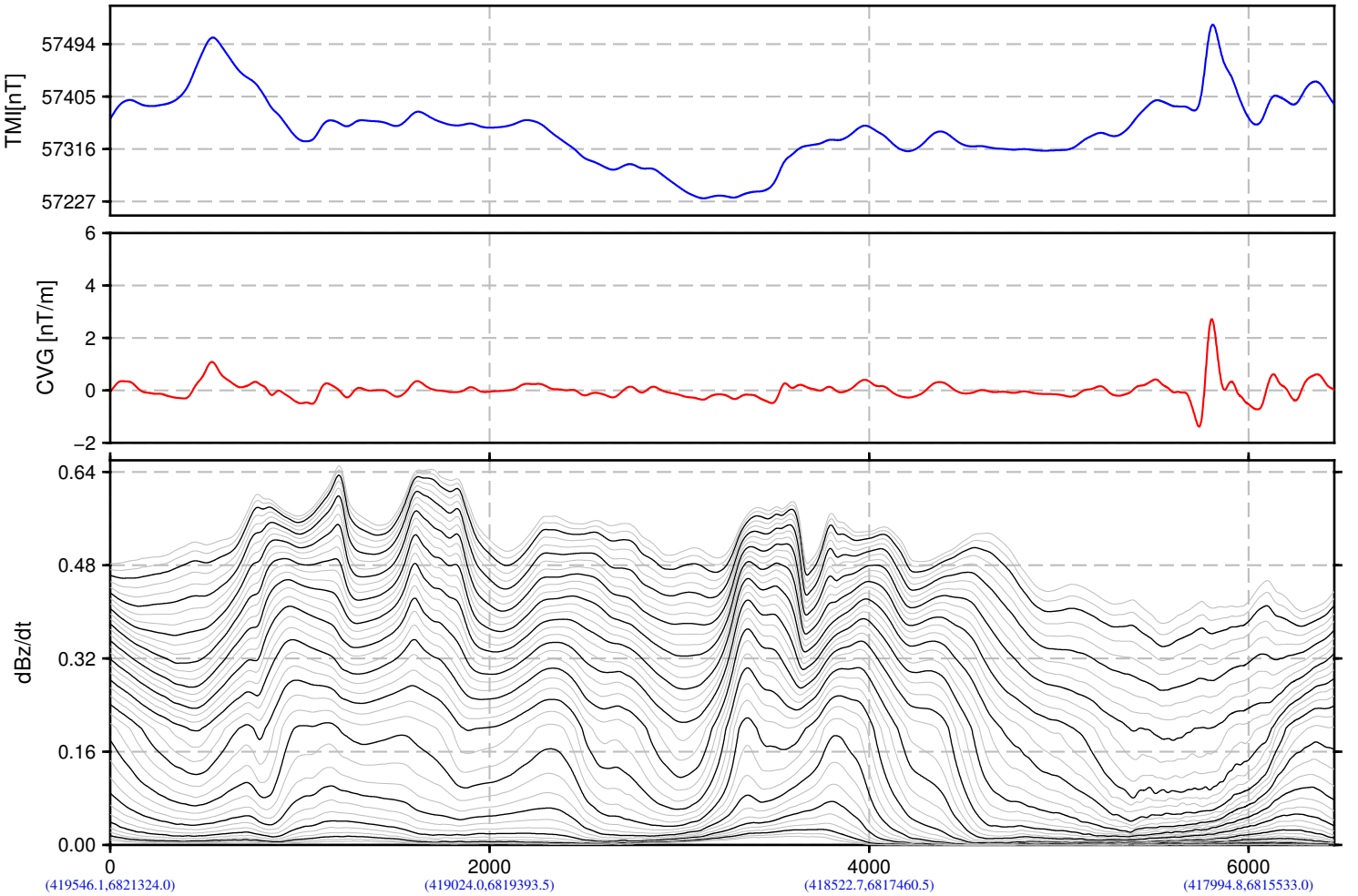
Resistivity Depth Image (RDI) for Line 3710

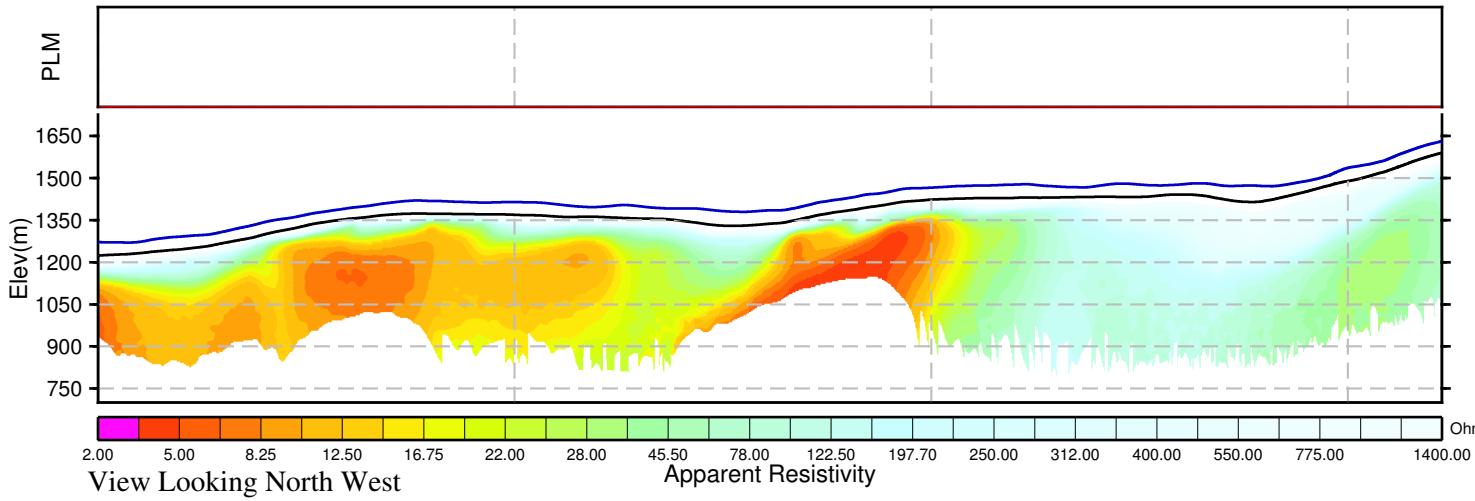
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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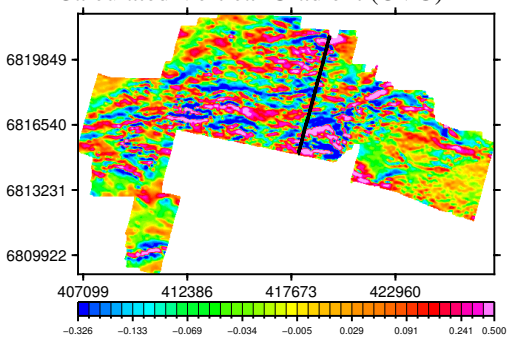
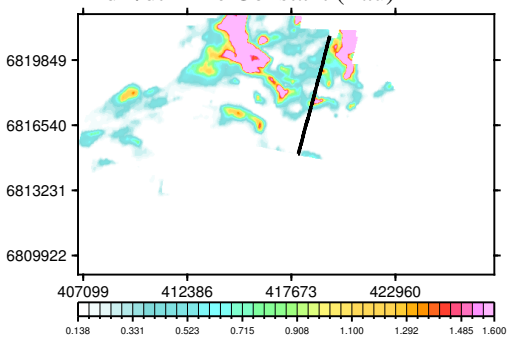
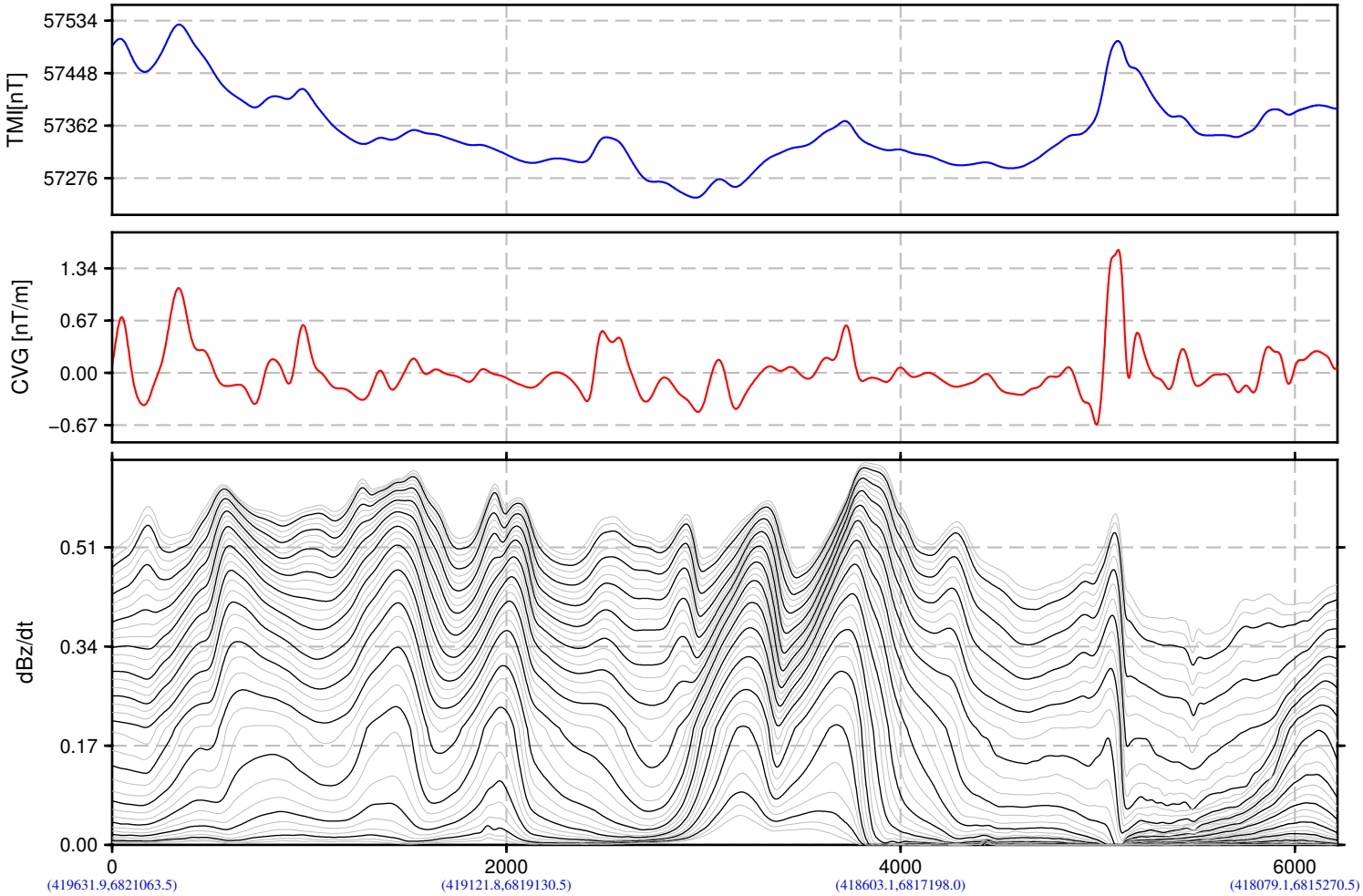
Resistivity Depth Image (RDI) for Line 3720

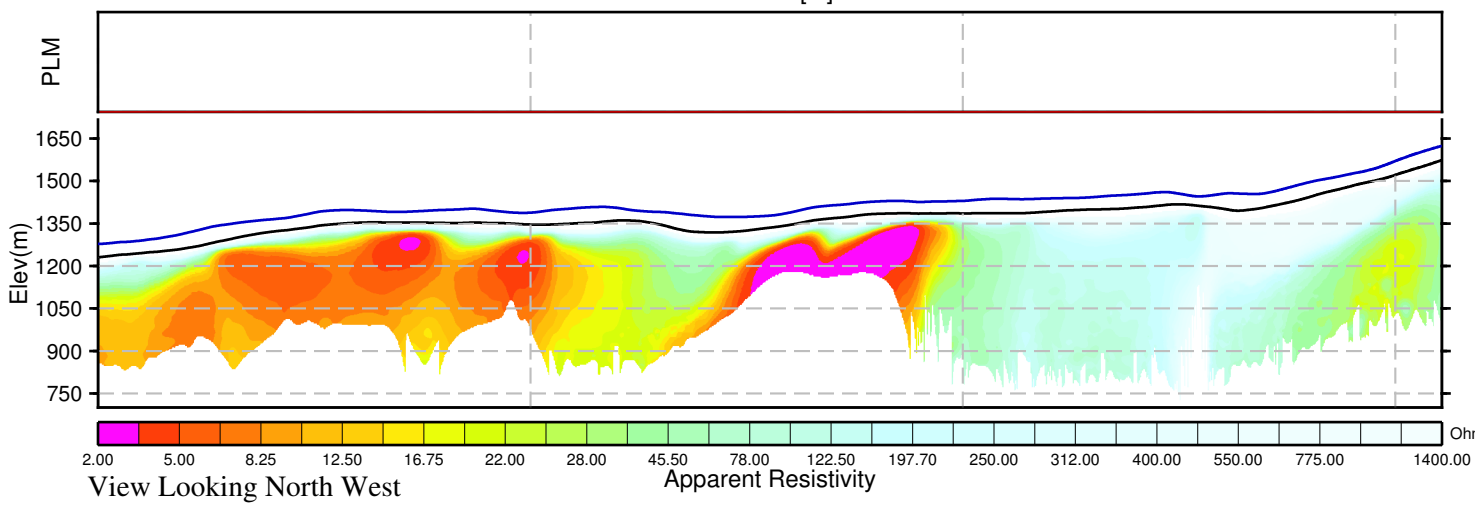
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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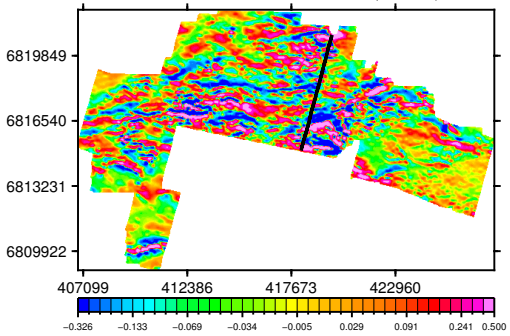
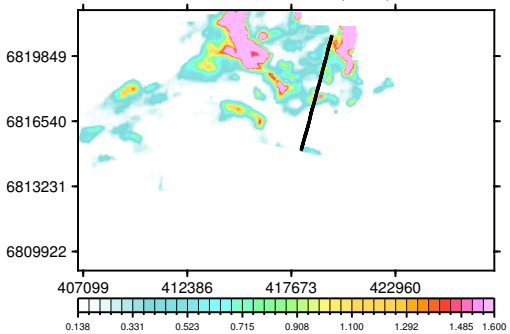
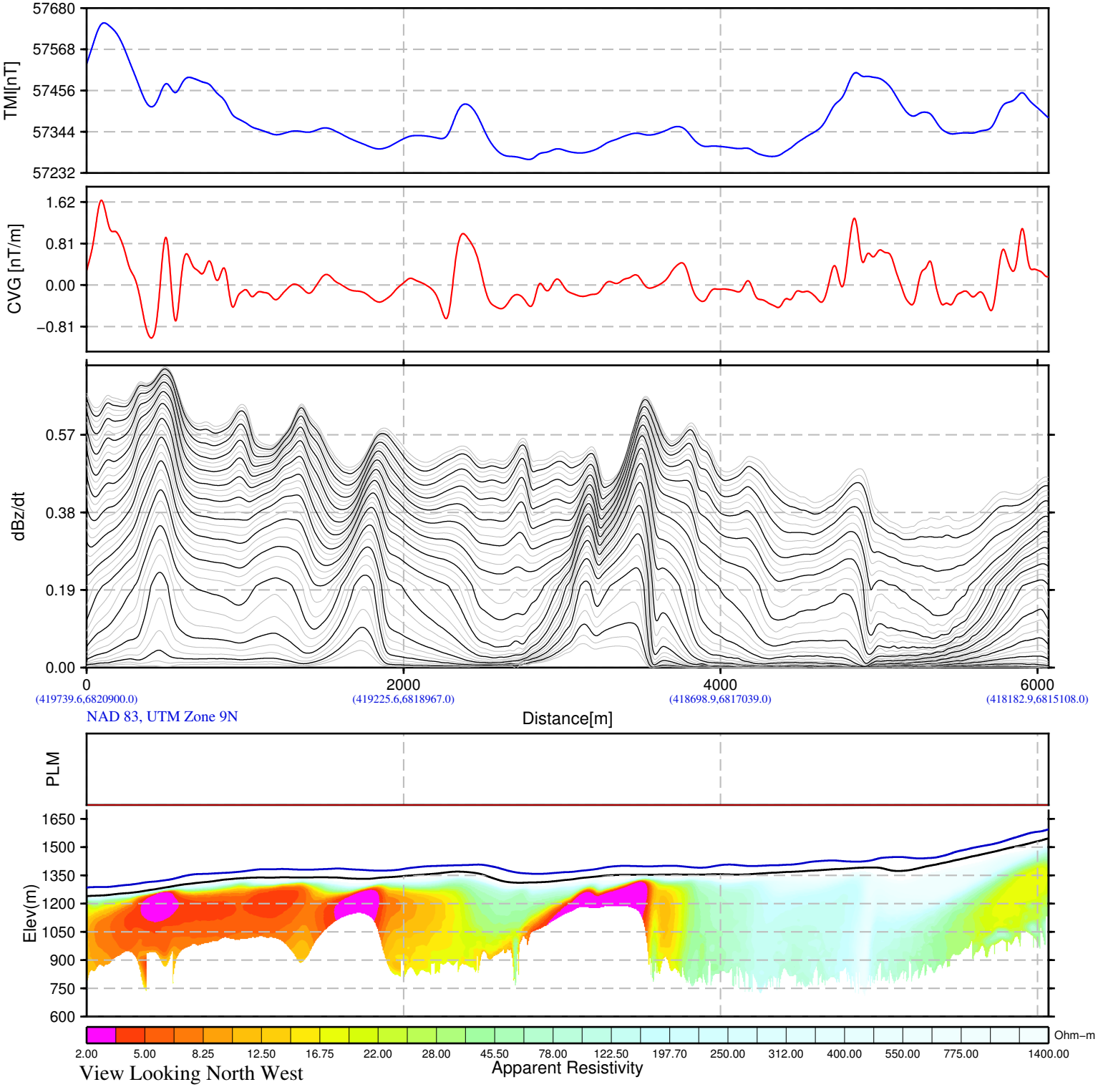
Resistivity Depth Image (RDI) for Line 3730

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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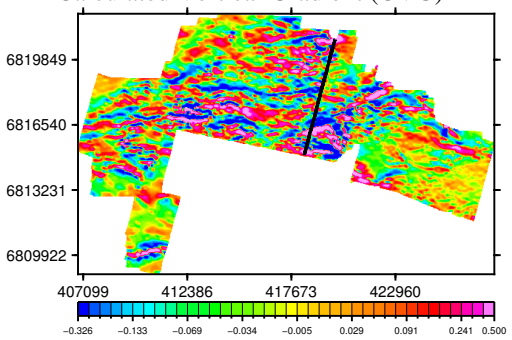
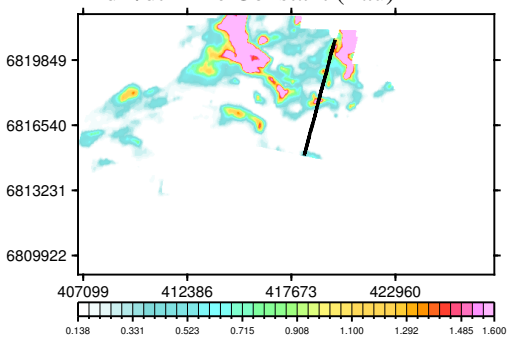
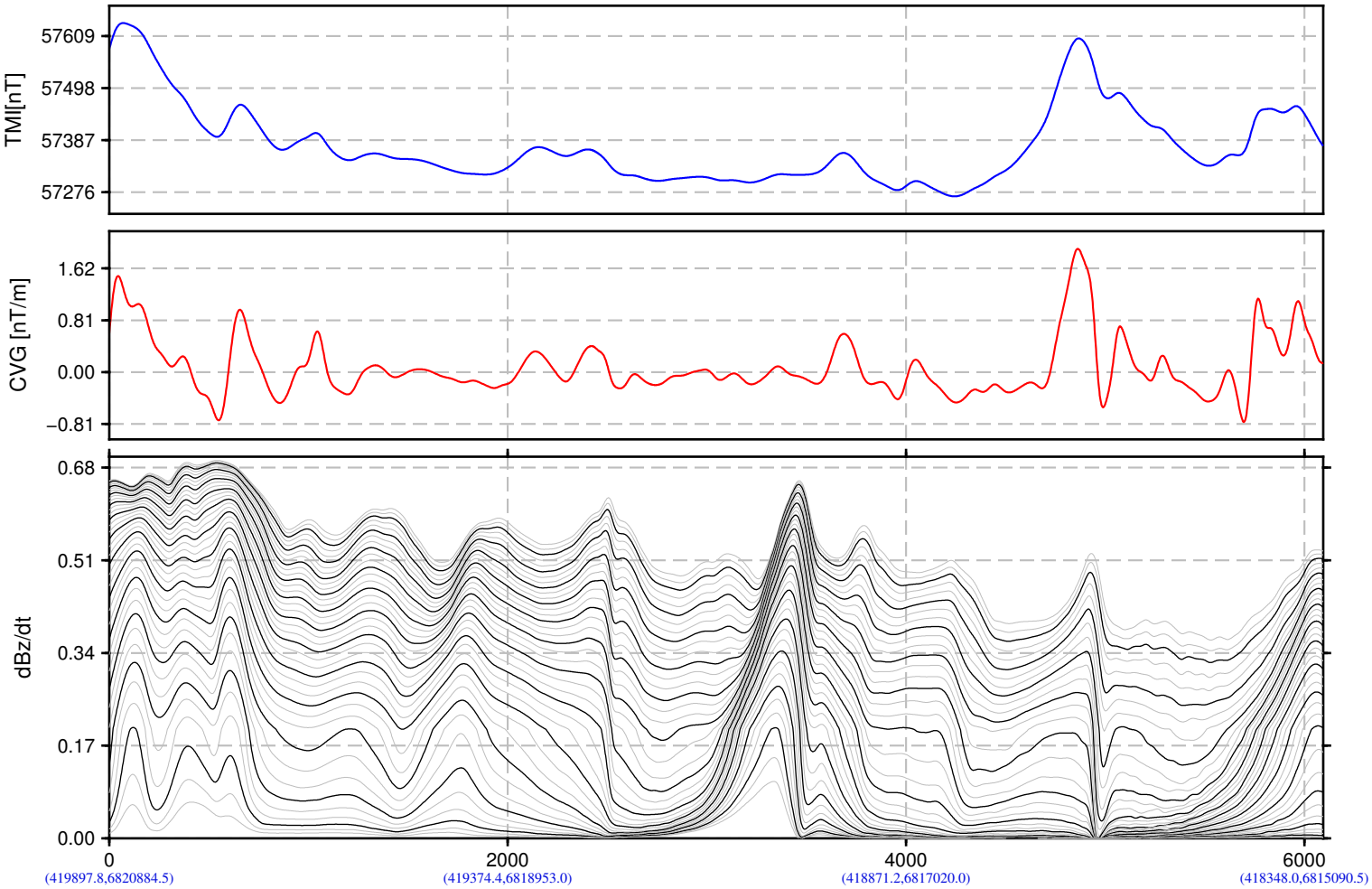
Resistivity Depth Image (RDI) for Line 3740

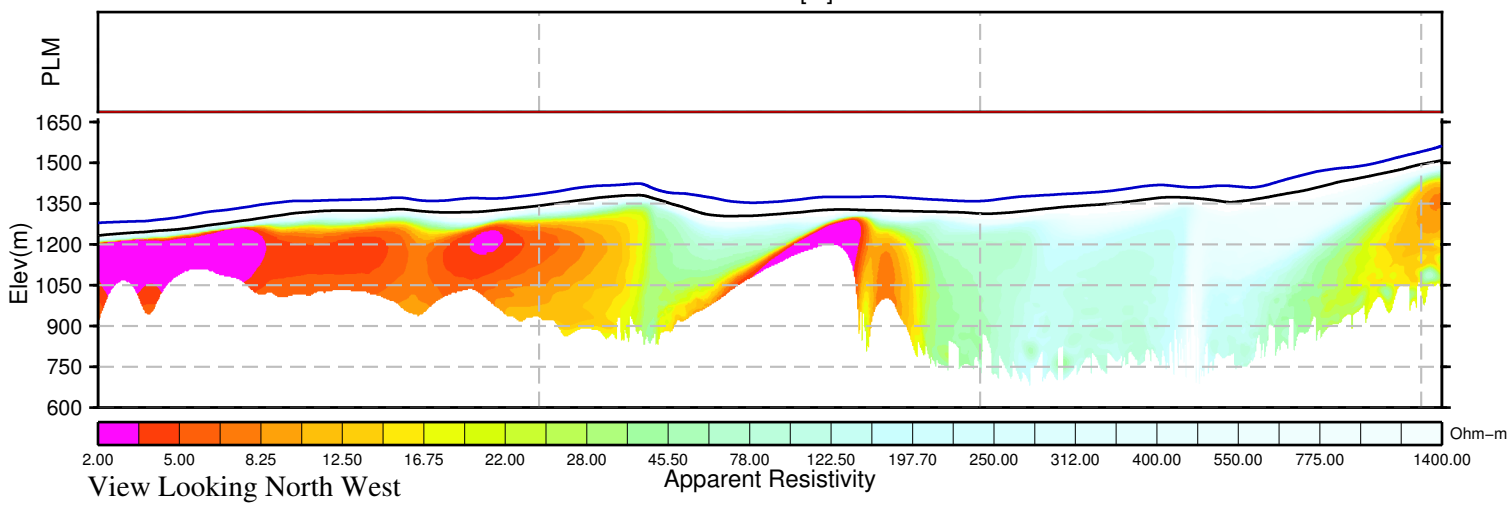
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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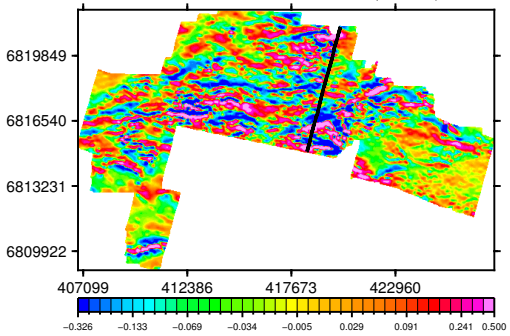
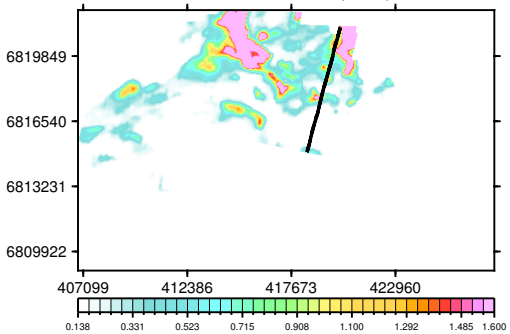
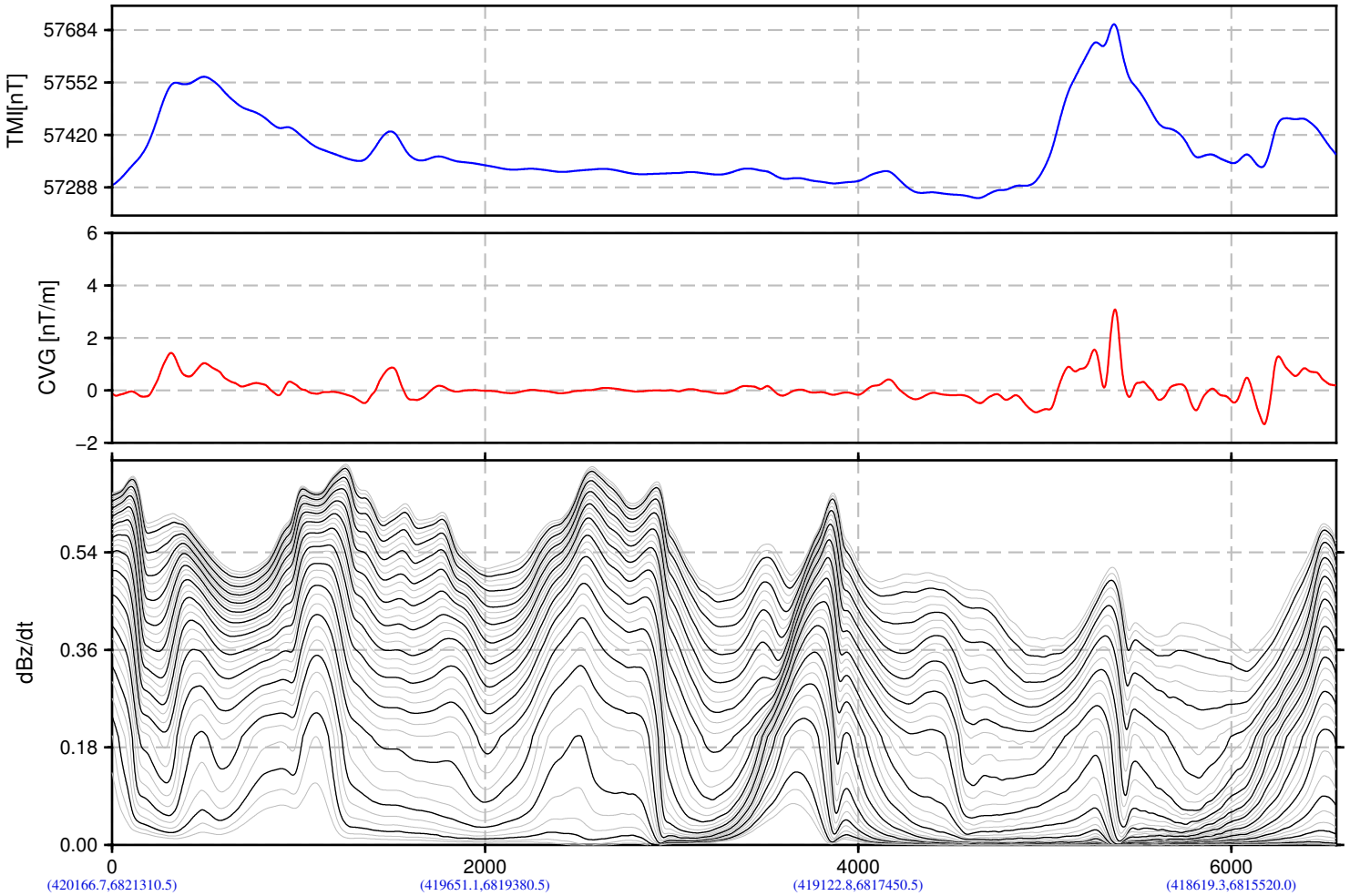
Resistivity Depth Image (RDI) for Line 3750

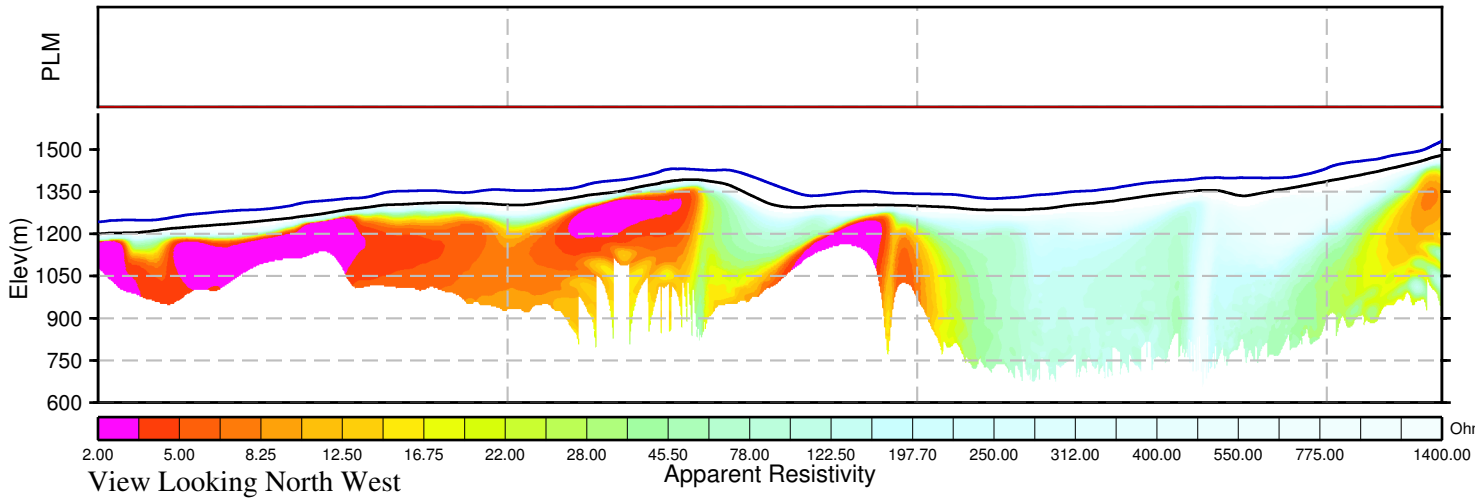
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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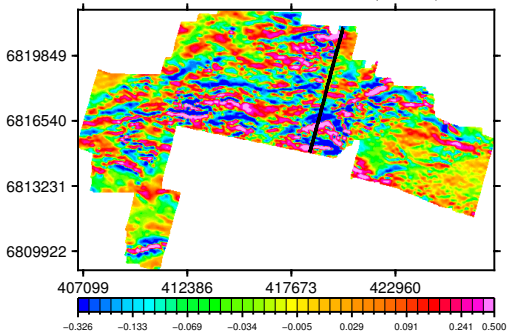
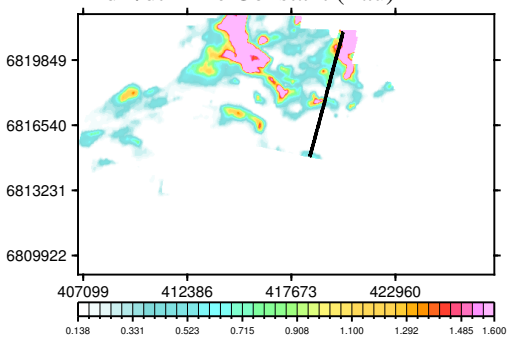
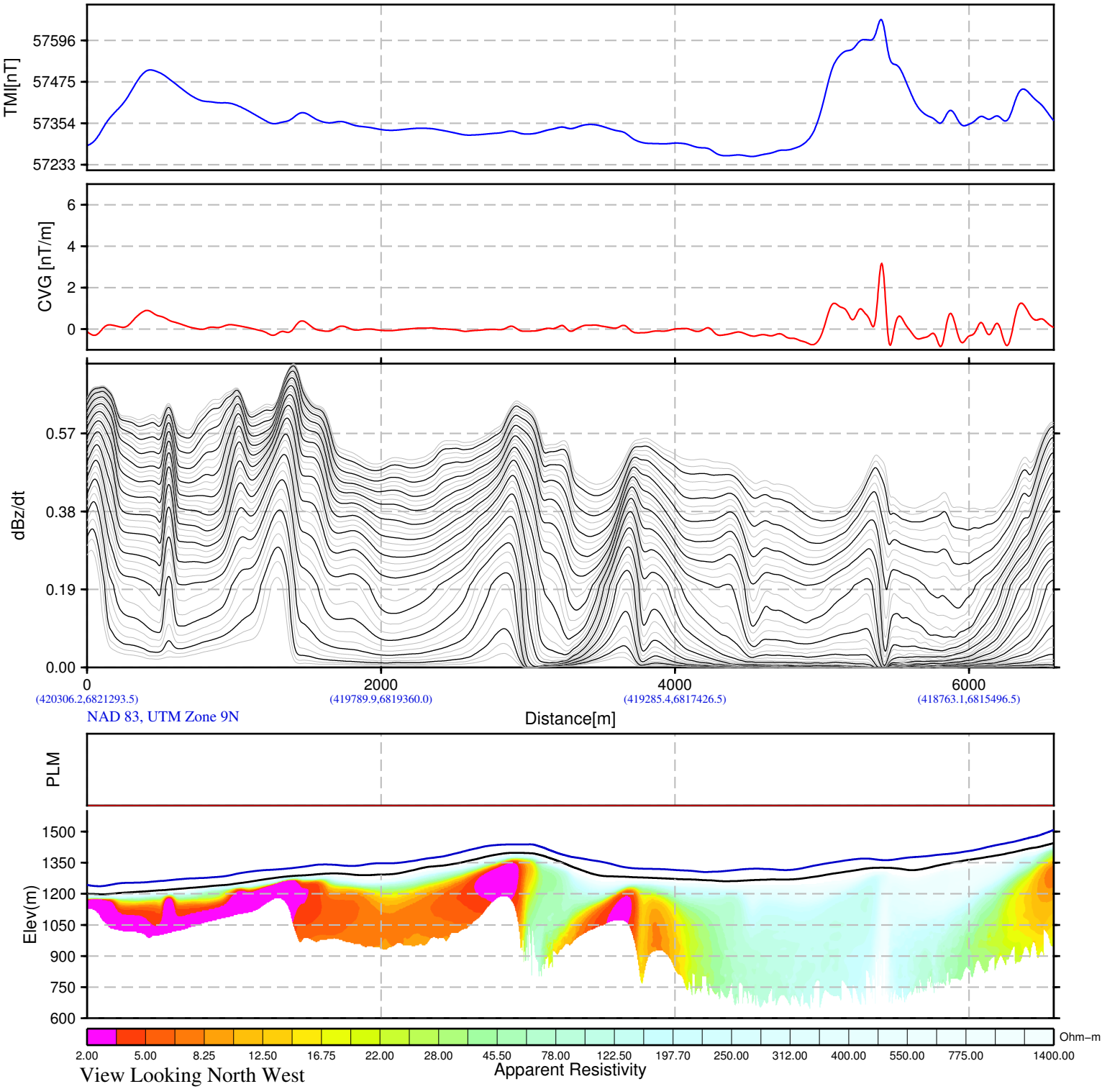
Resistivity Depth Image (RDI) for Line 3760

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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Job Number:GL160037
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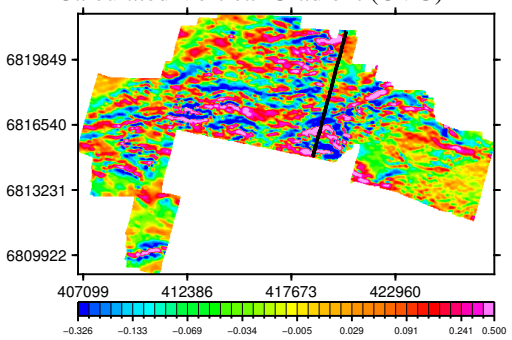
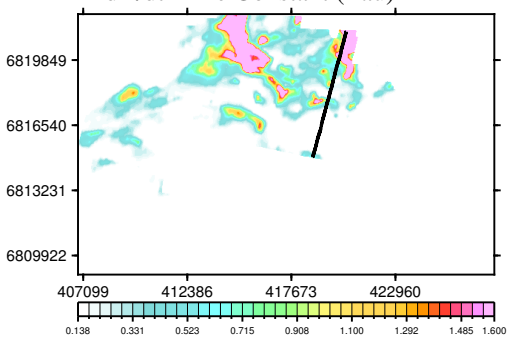
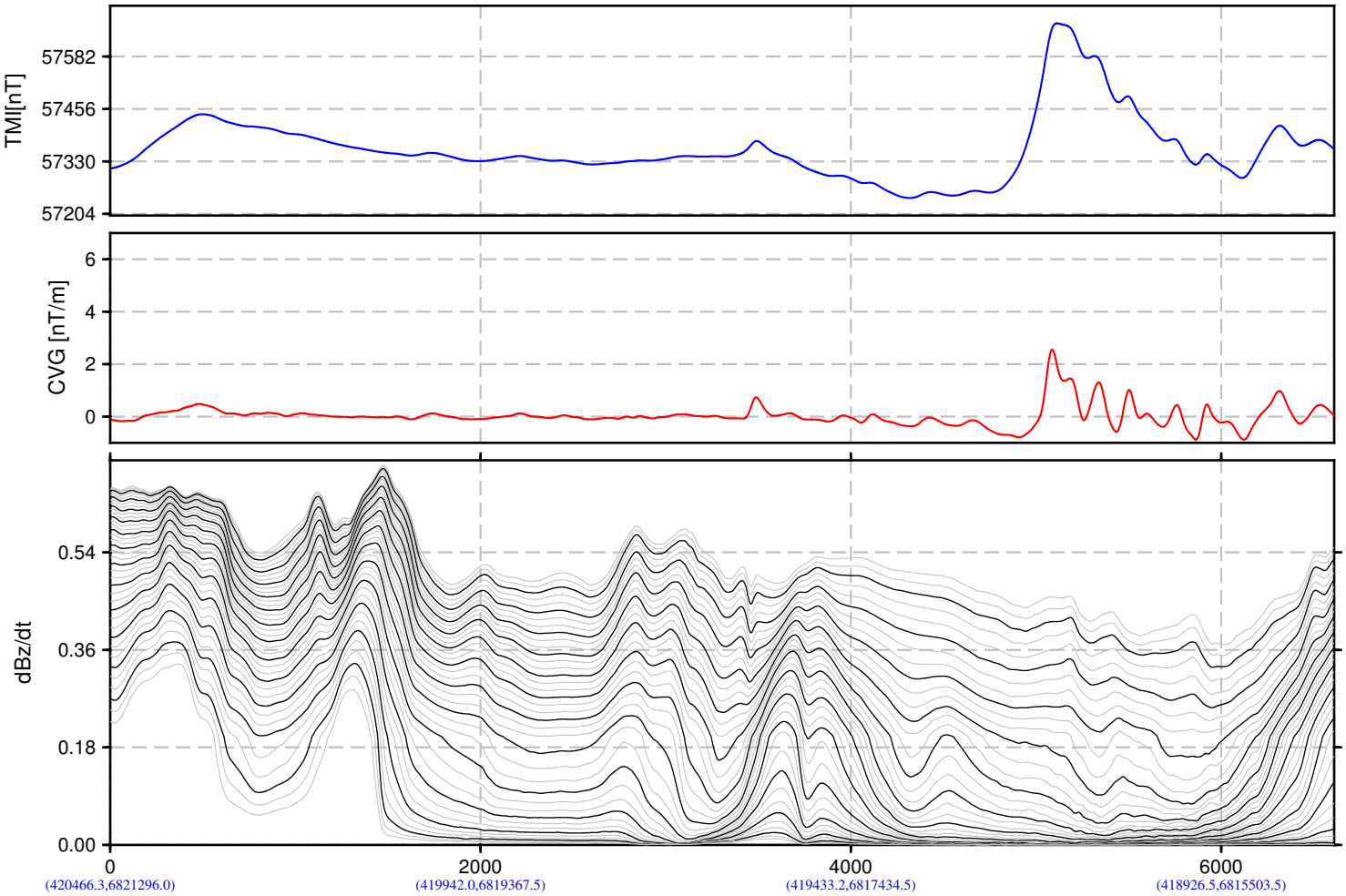
Resistivity Depth Image (RDI) for Line 3770

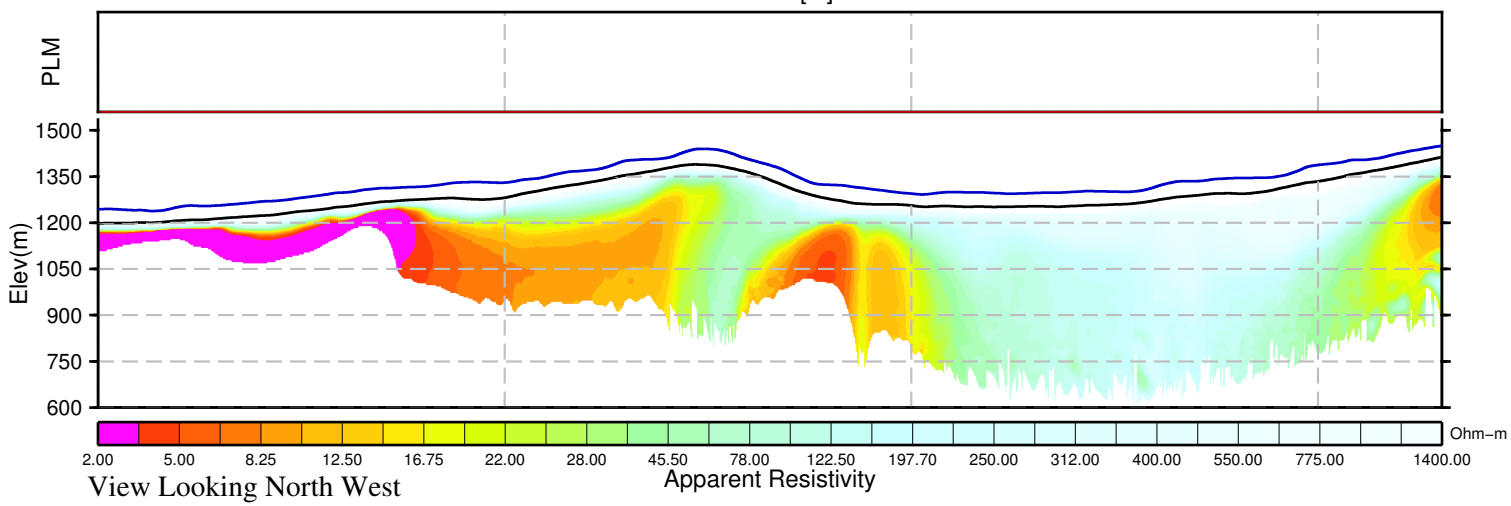
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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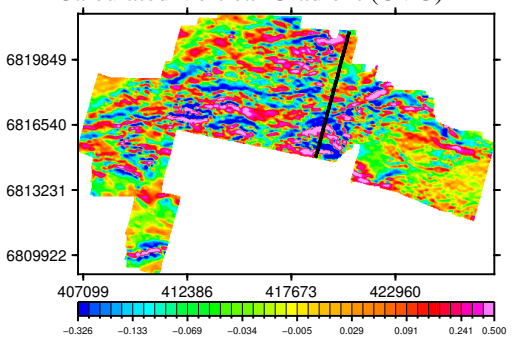
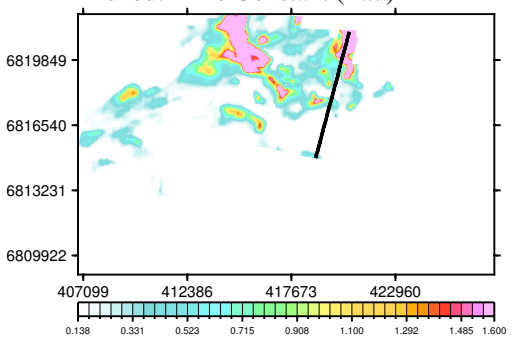
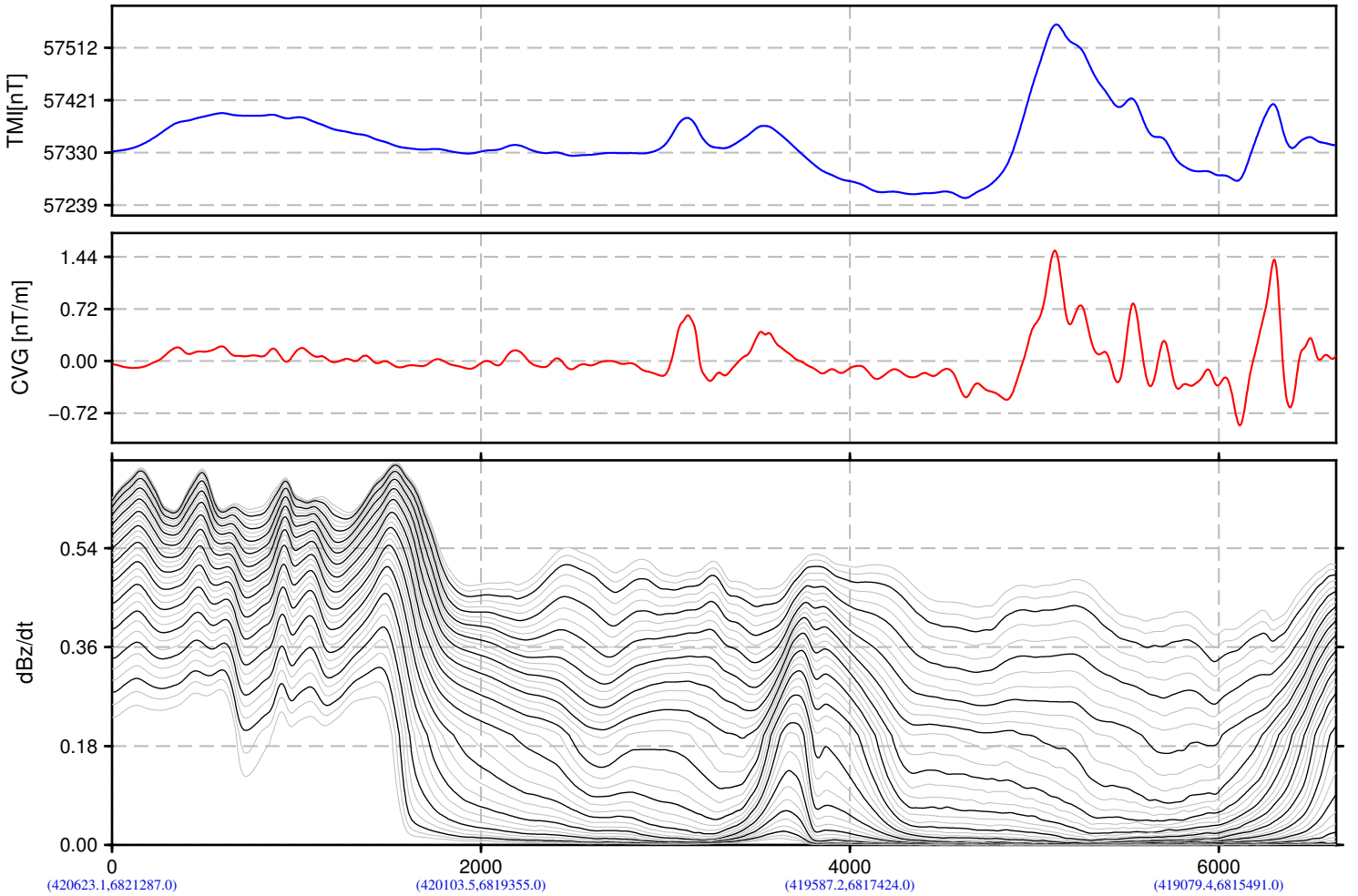
Resistivity Depth Image (RDI) for Line 3780

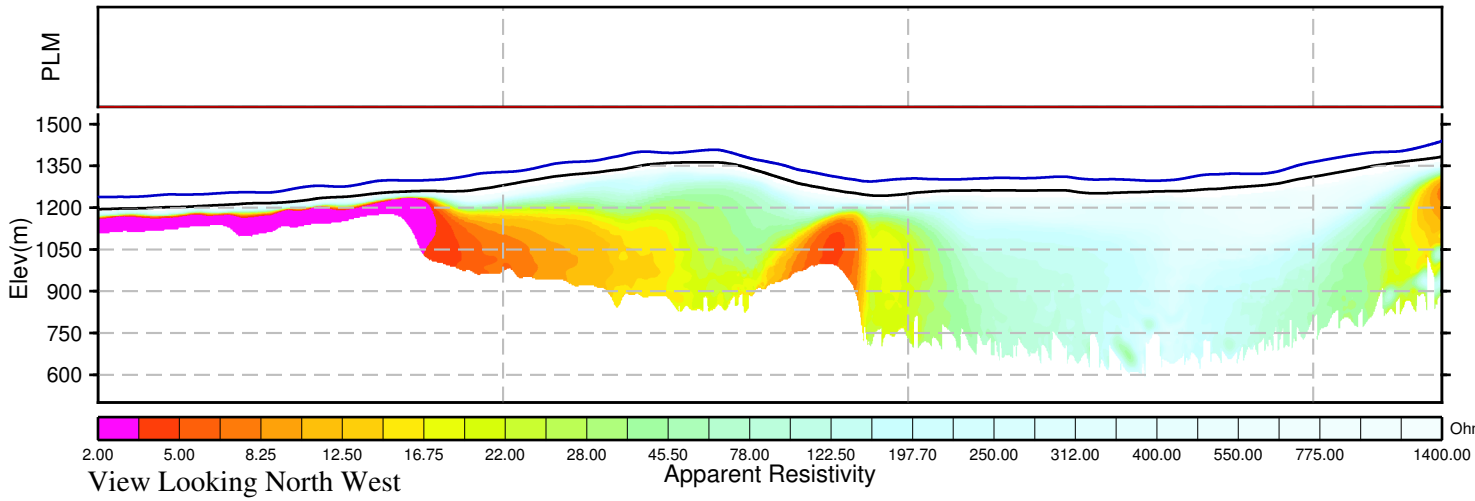
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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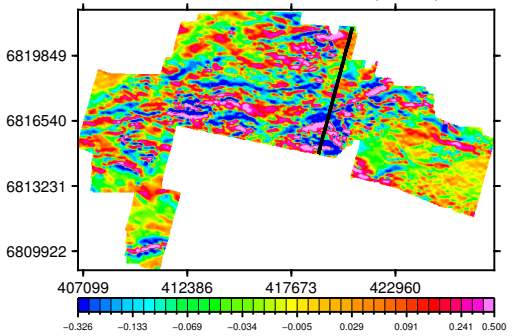
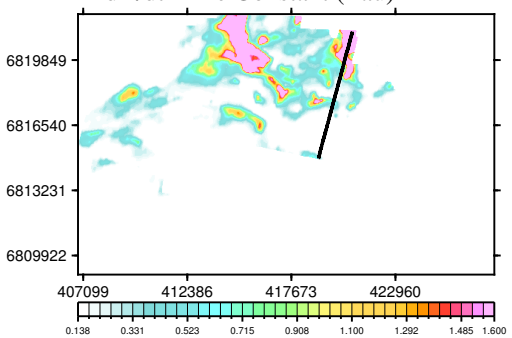
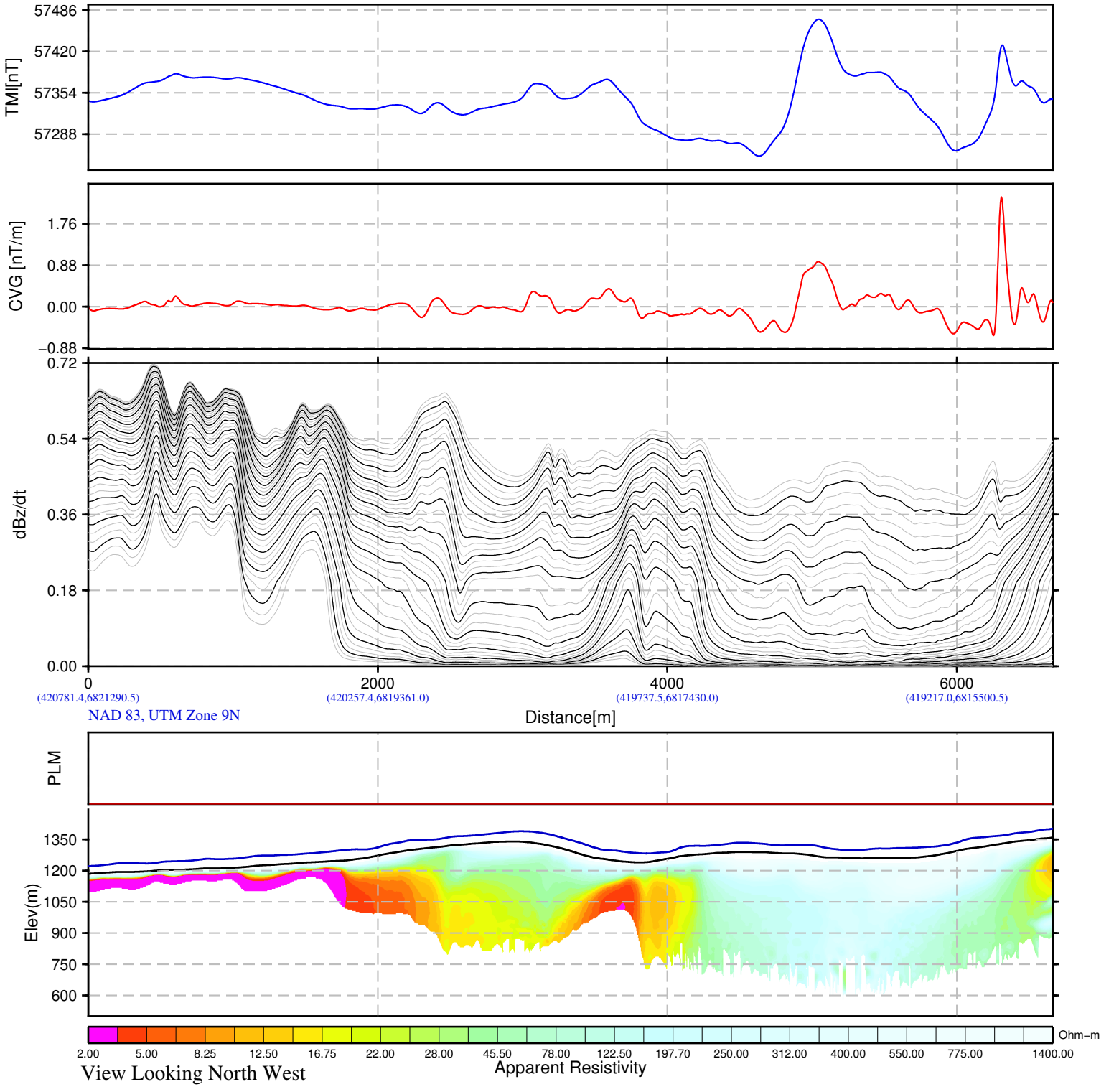
Resistivity Depth Image (RDI) for Line 3790

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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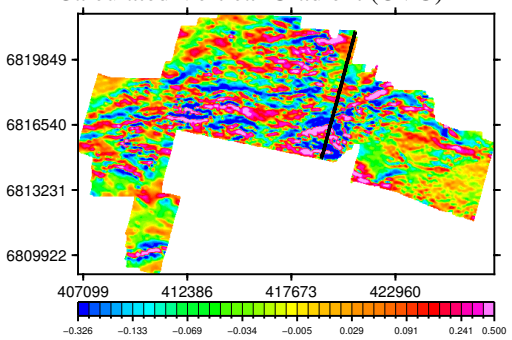
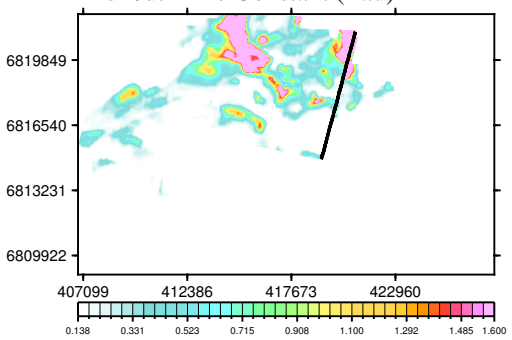
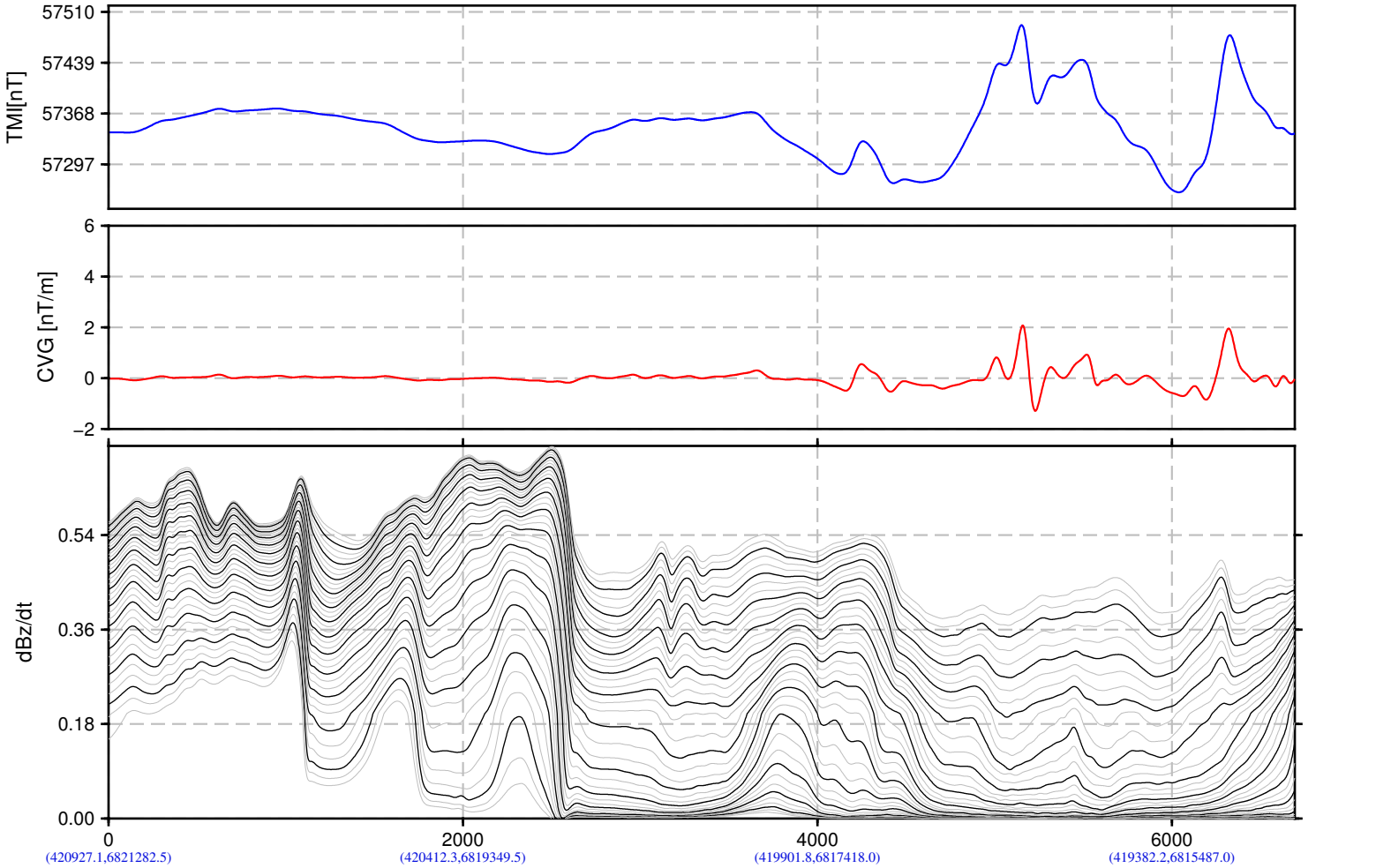
Resistivity Depth Image (RDI) for Line 3800

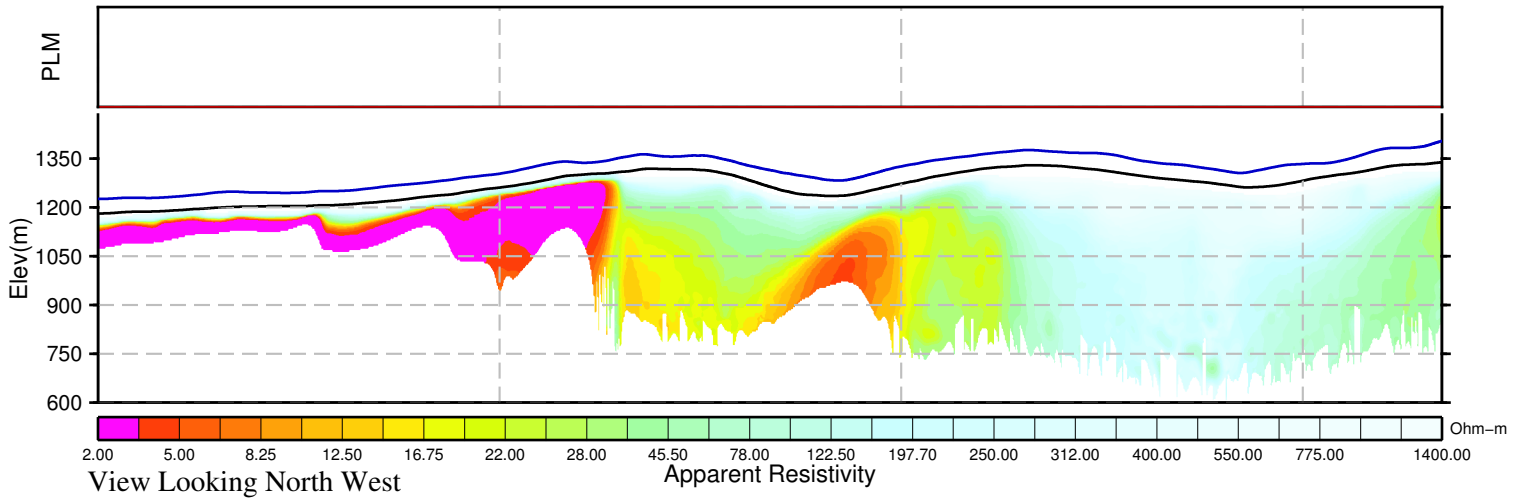
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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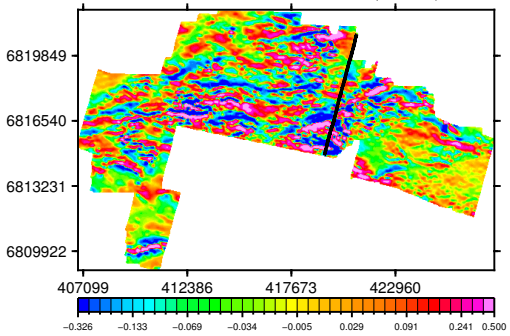
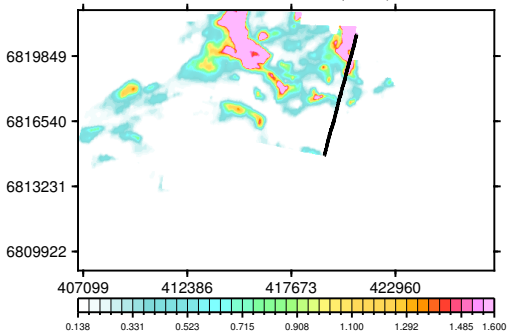
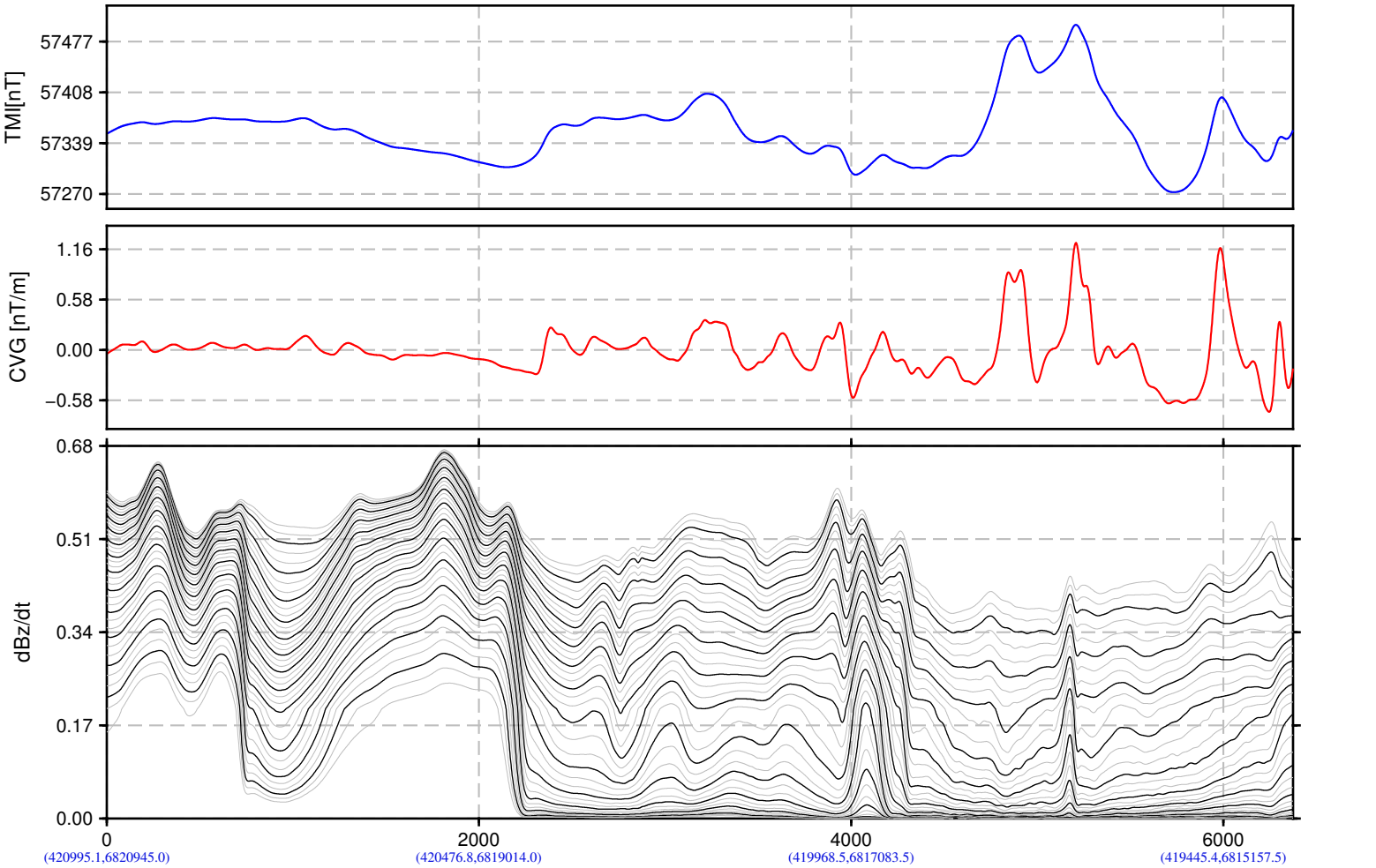
Resistivity Depth Image (RDI) for Line 3810

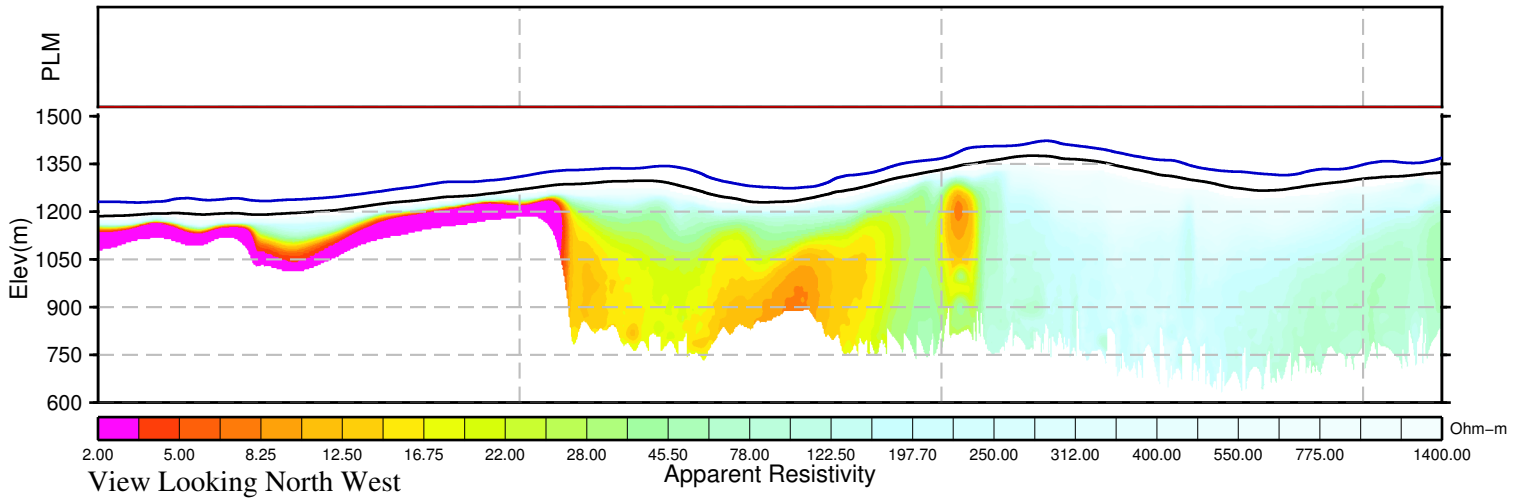
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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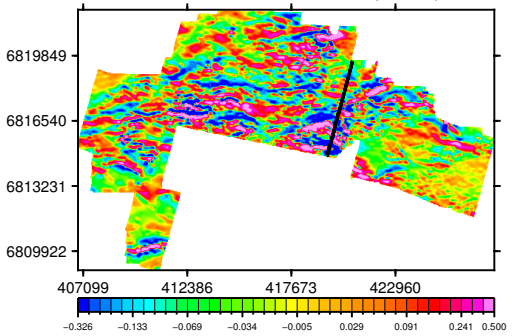
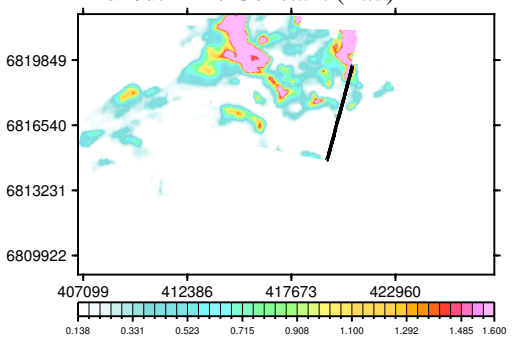
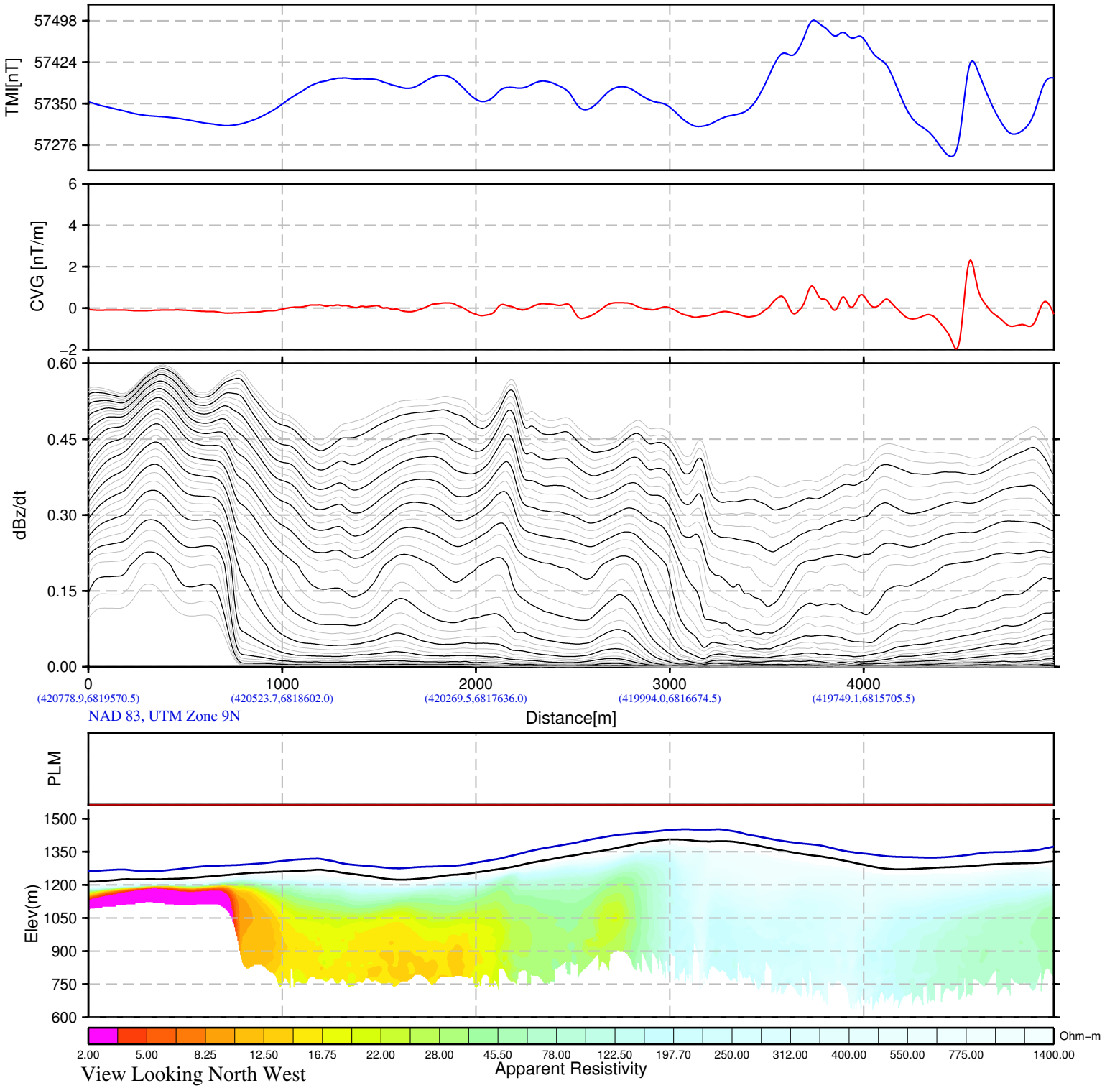
Resistivity Depth Image (RDI) for Line 3820

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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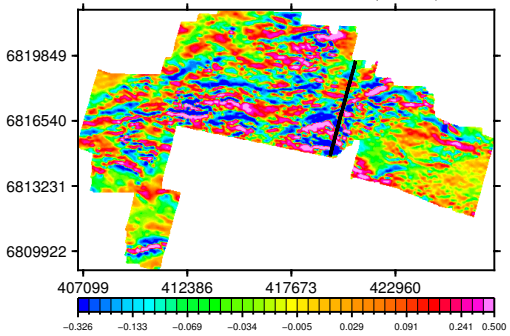
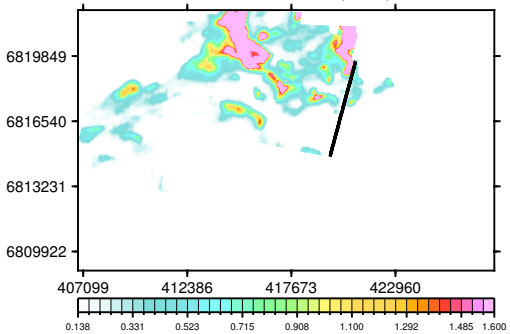
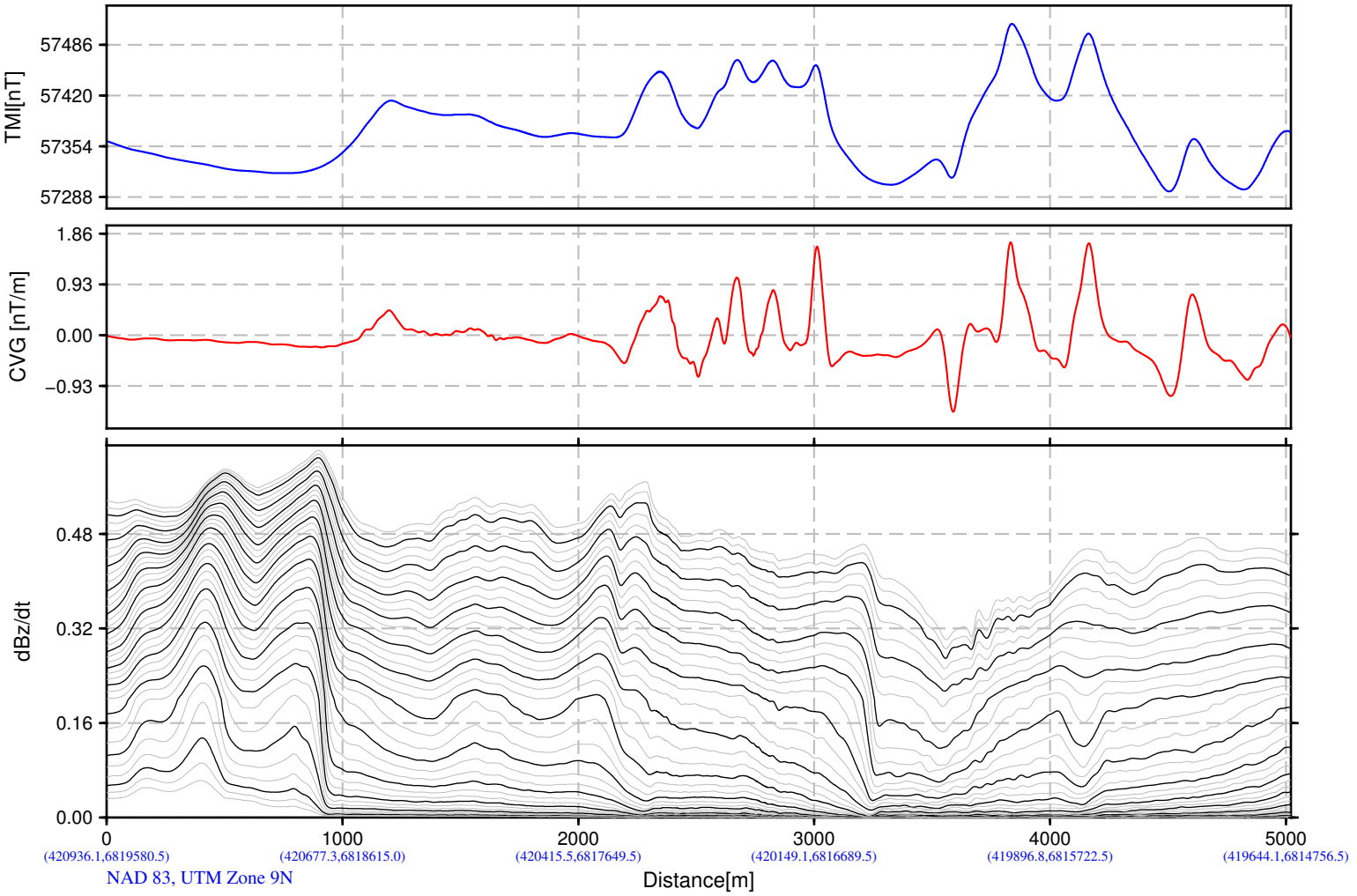
Resistivity Depth Image (RDI) for Line 3830

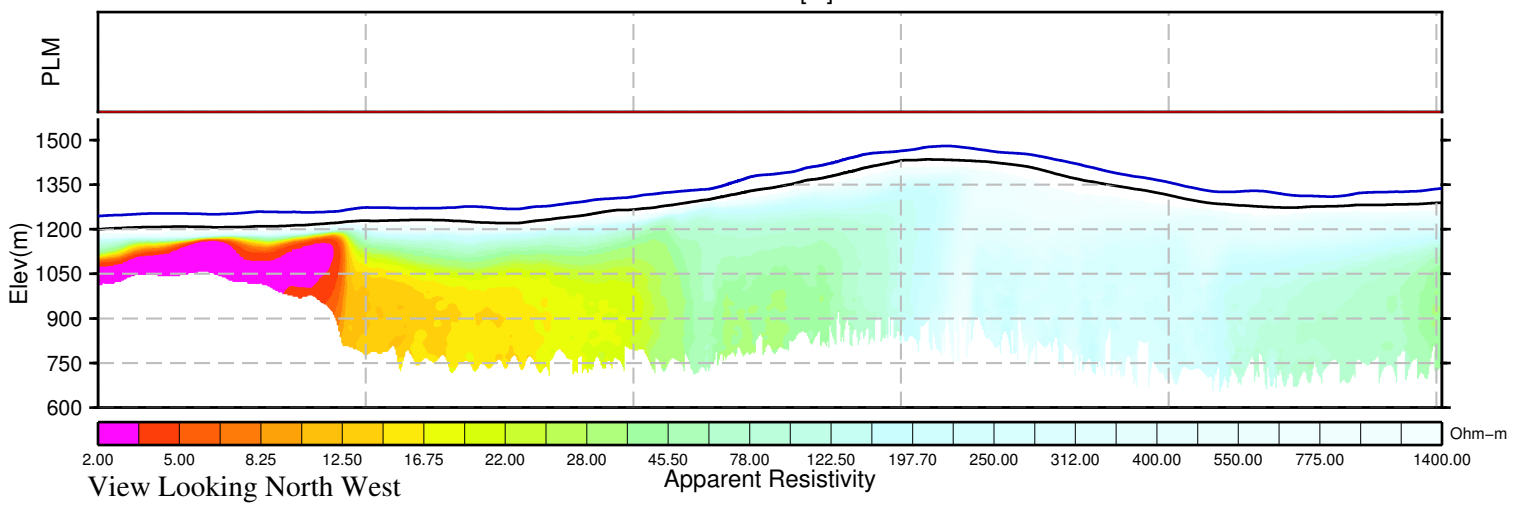
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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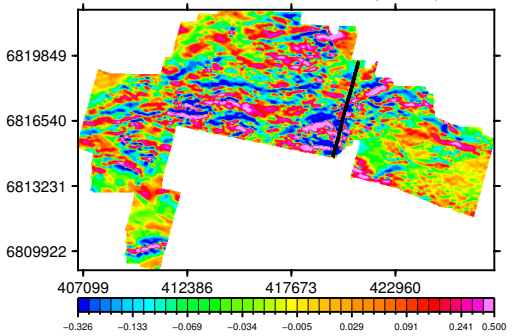
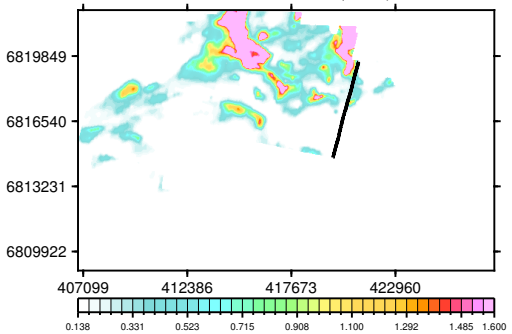
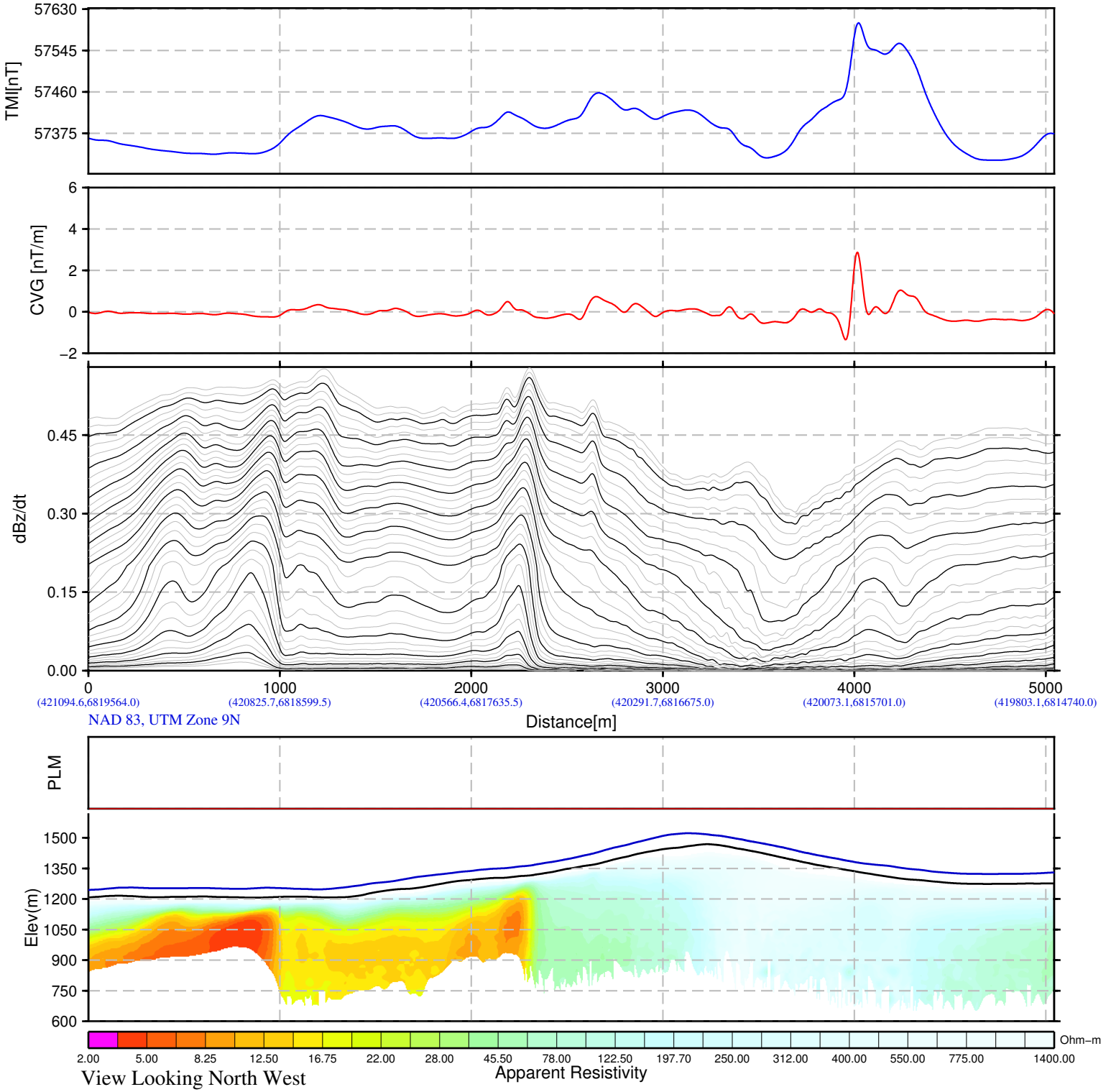
Resistivity Depth Image (RDI) for Line 3840

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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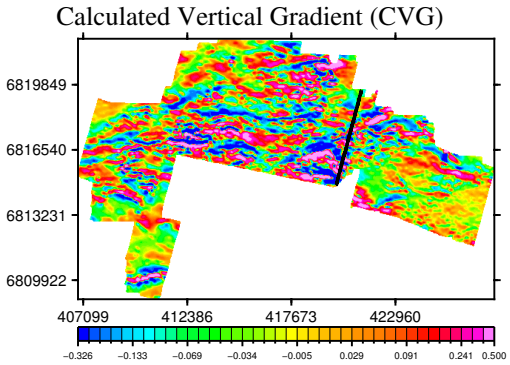
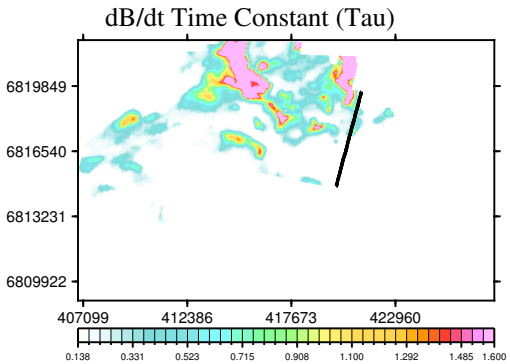
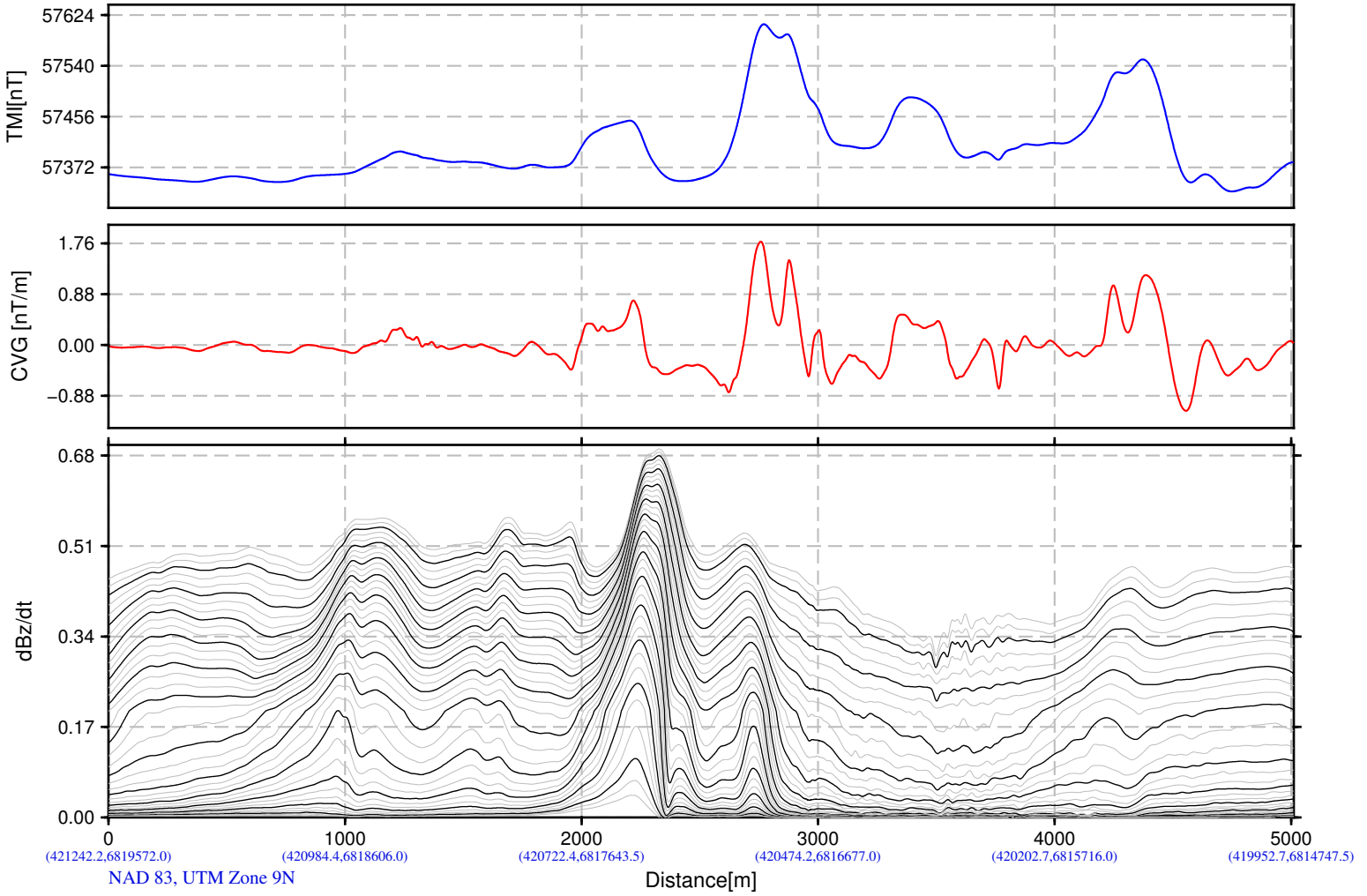
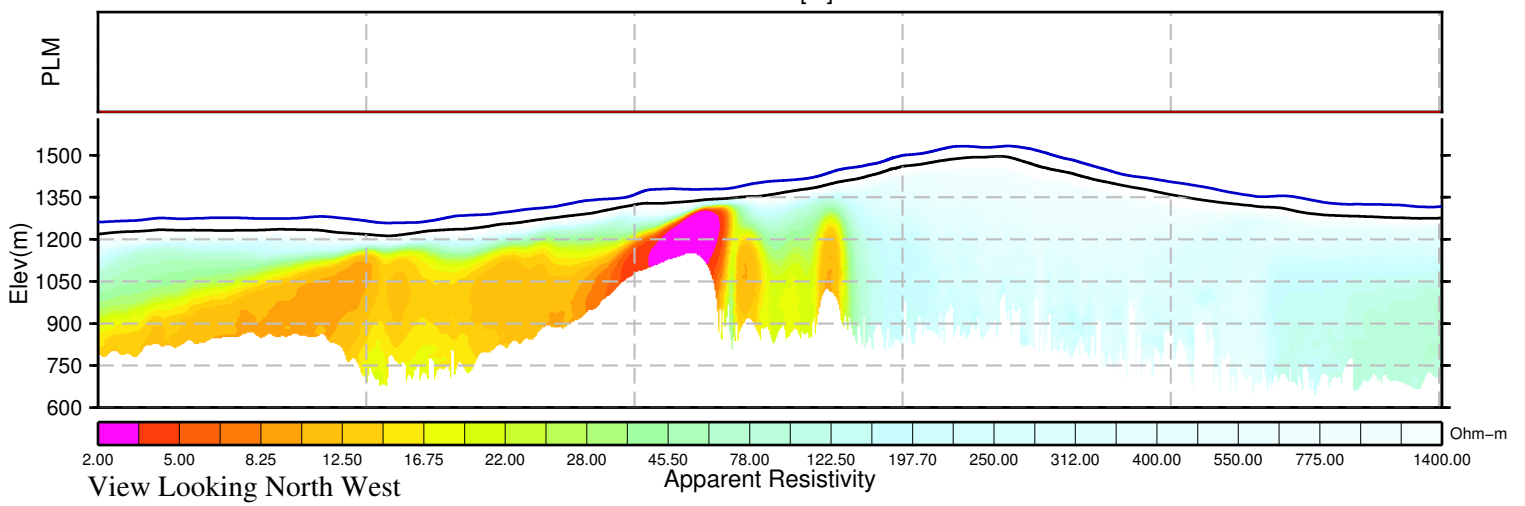
Resistivity Depth Image (RDI) for Line 3850









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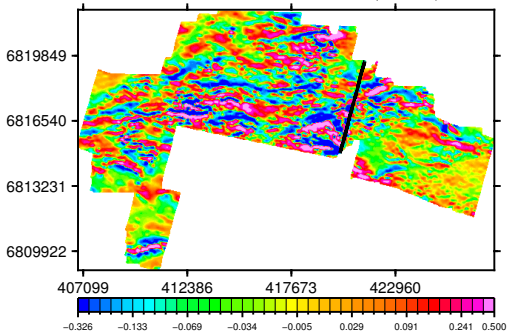
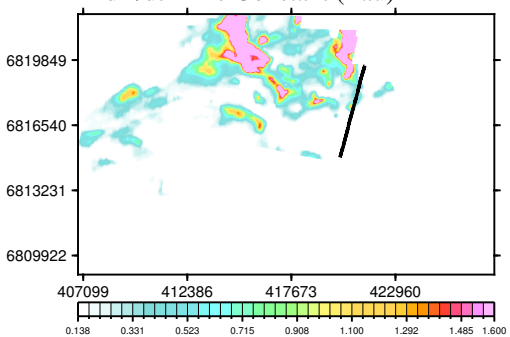
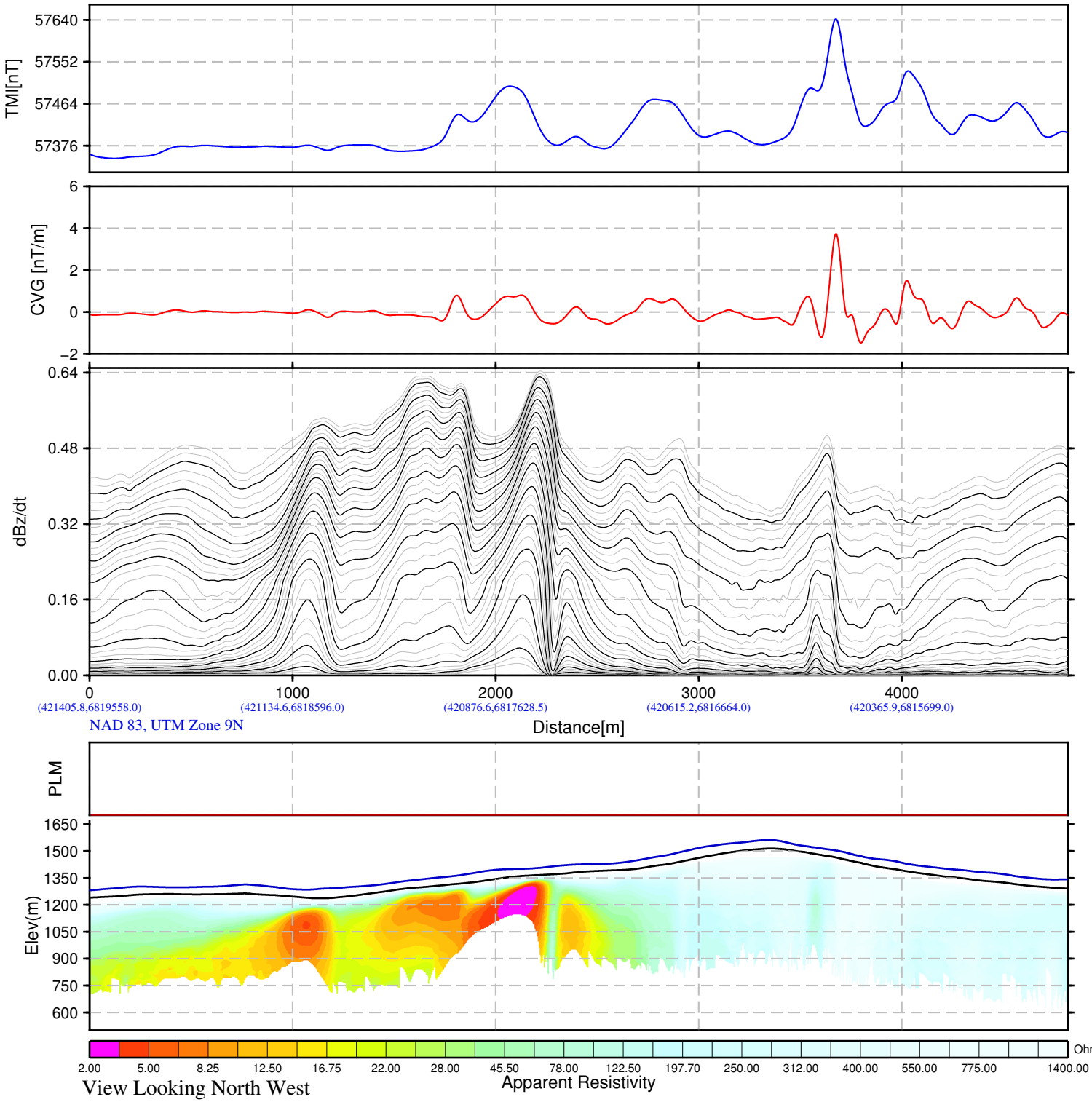
Resistivity Depth Image (RDI) for Line 3860

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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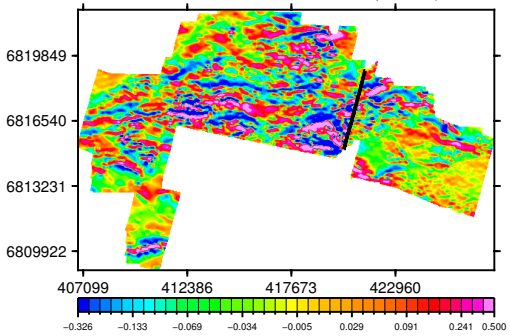
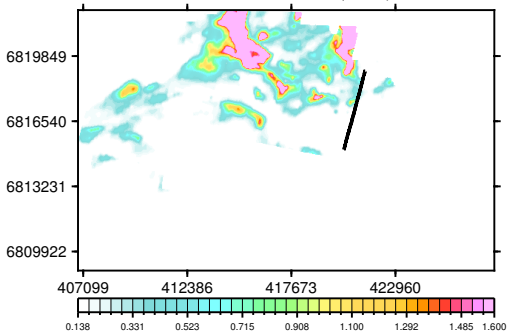
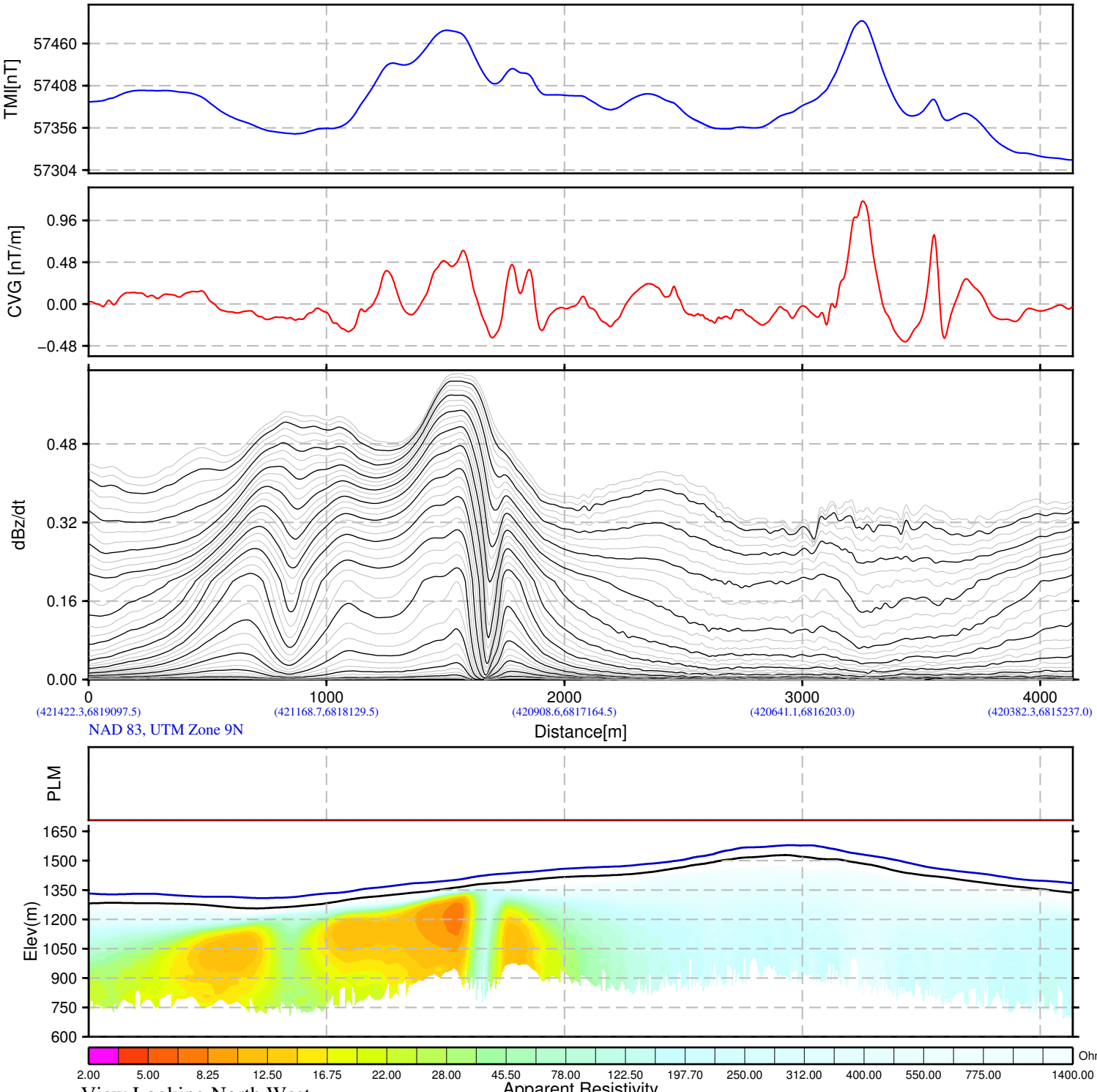
Resistivity Depth Image (RDI) for Line 3870

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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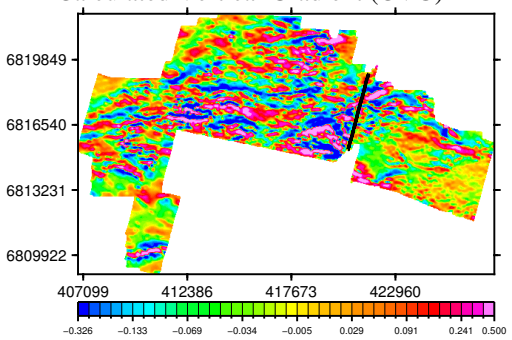
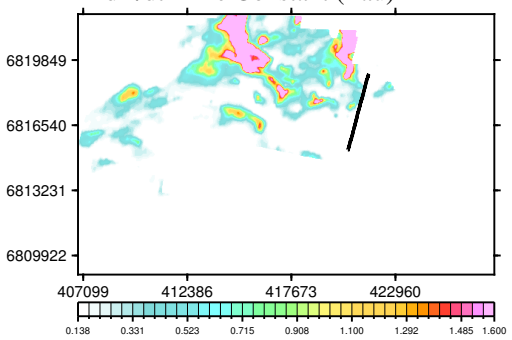
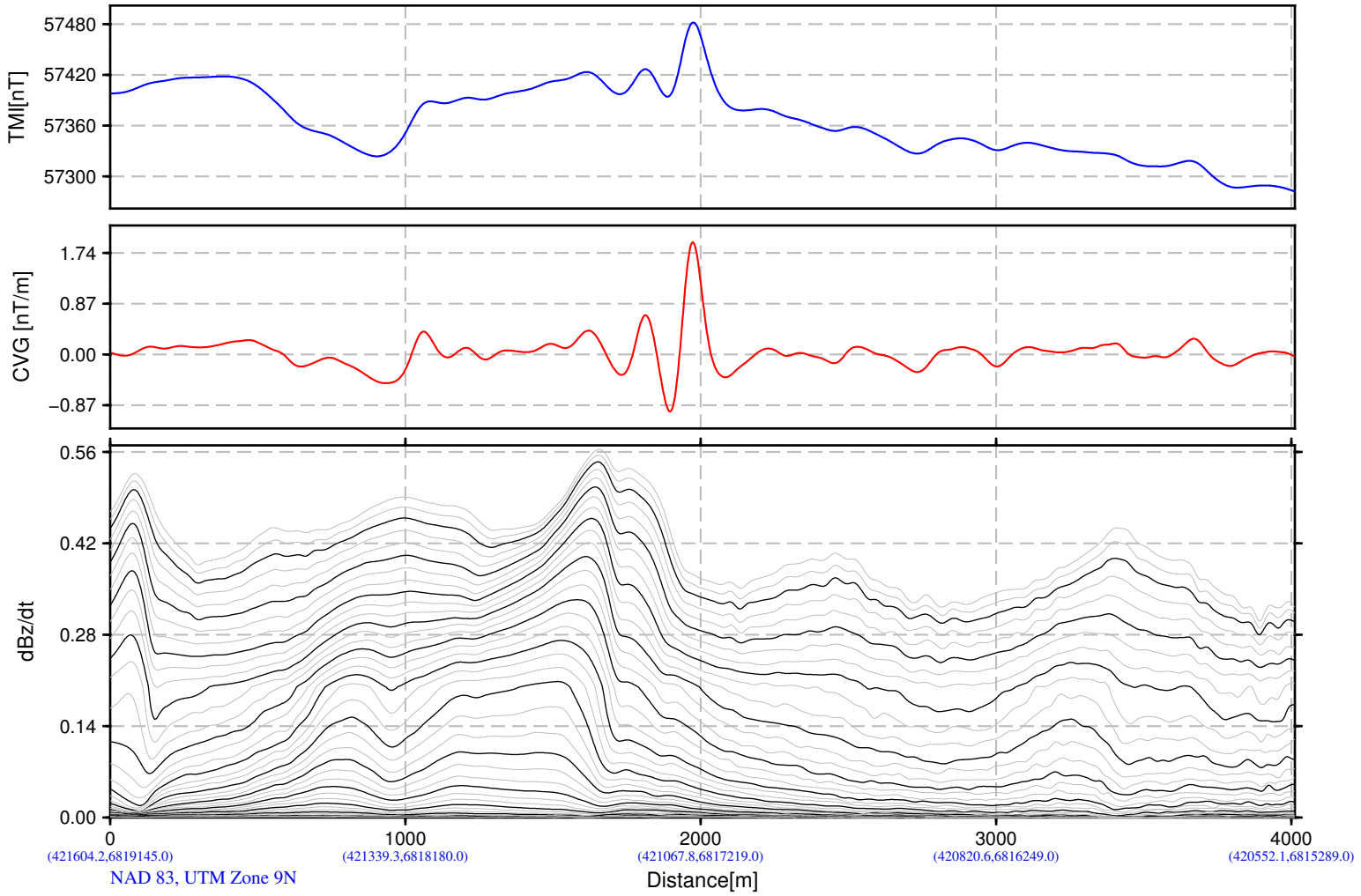
Resistivity Depth Image (RDI) for Line 3880

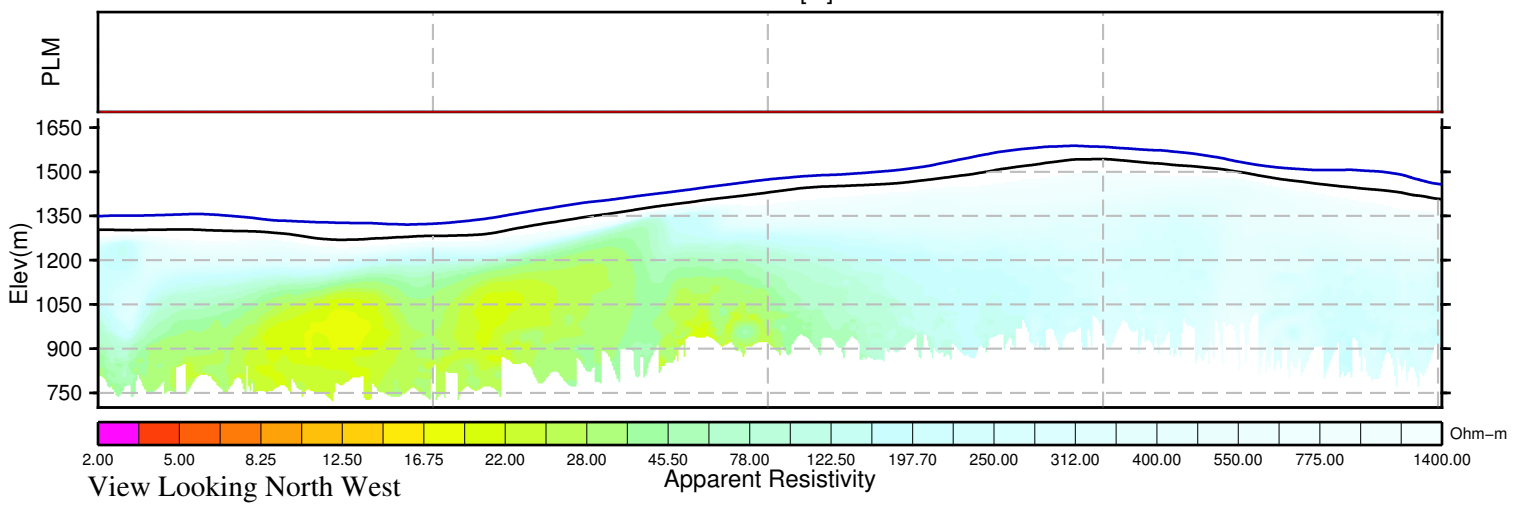
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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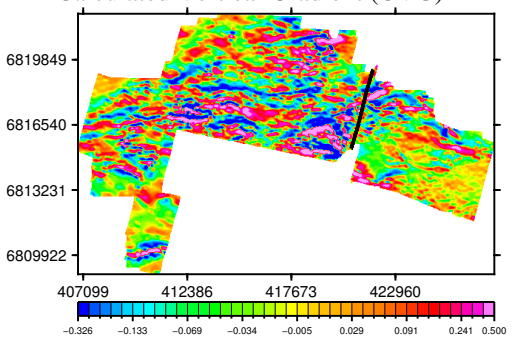
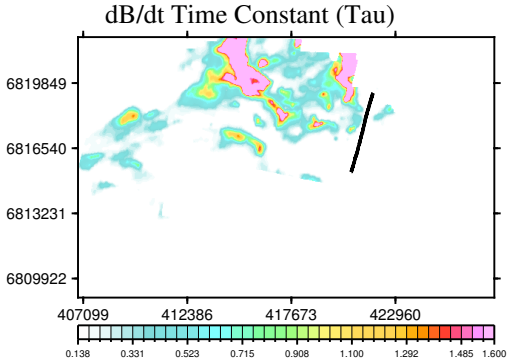
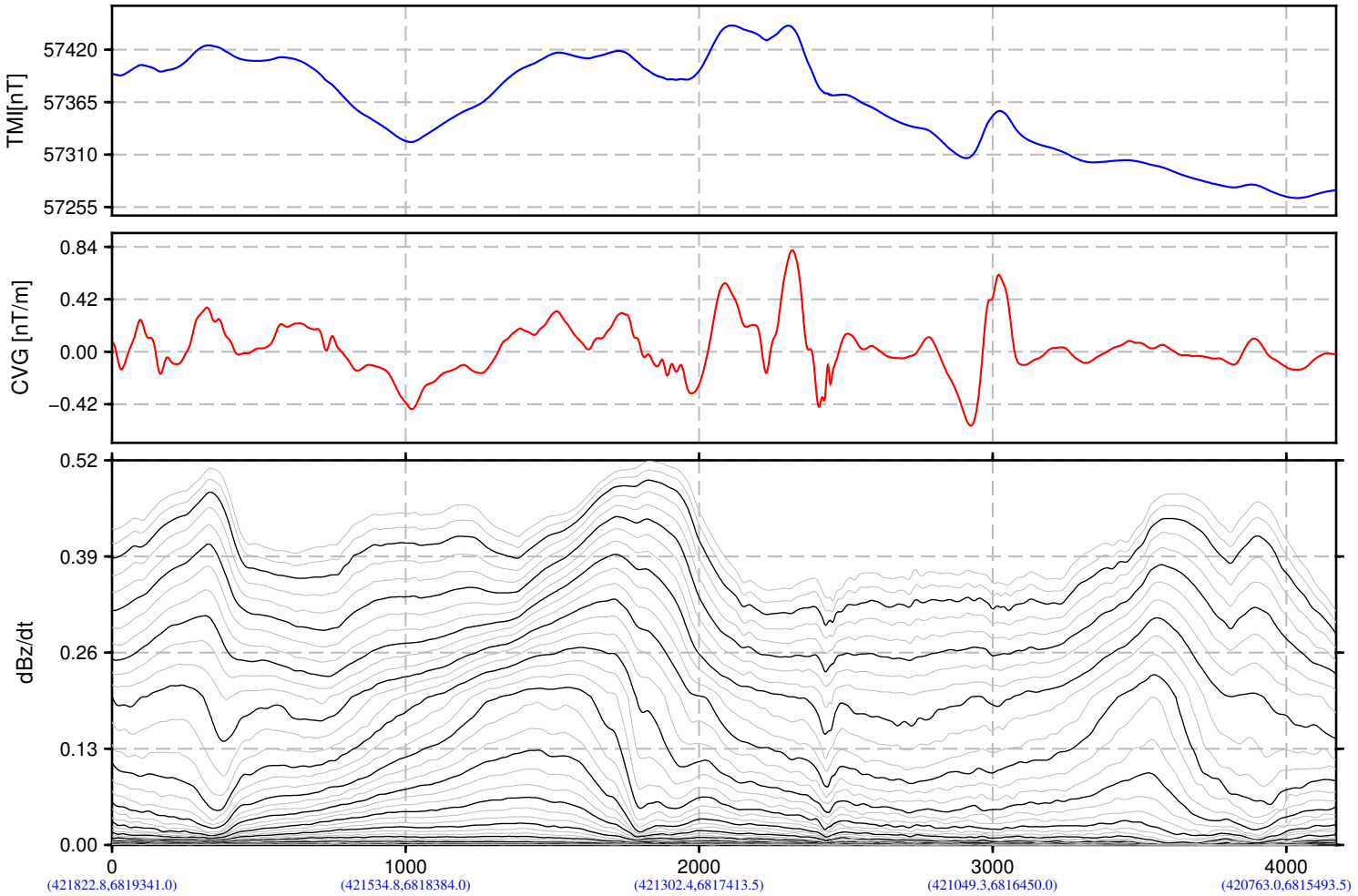
Resistivity Depth Image (RDI) for Line 3890

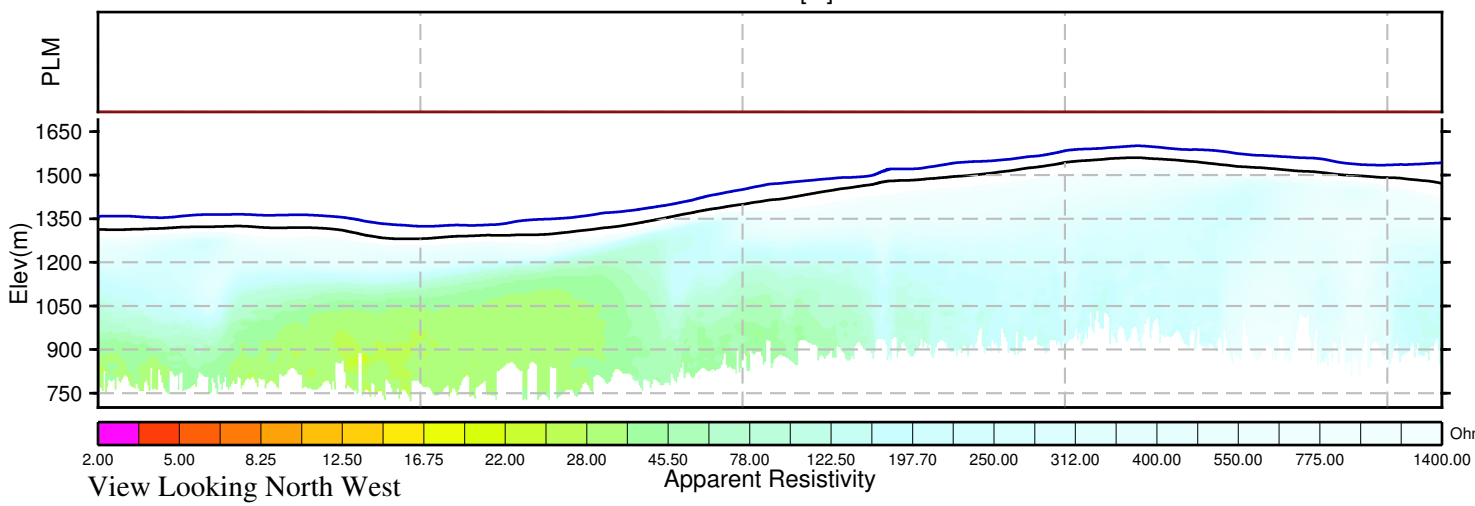
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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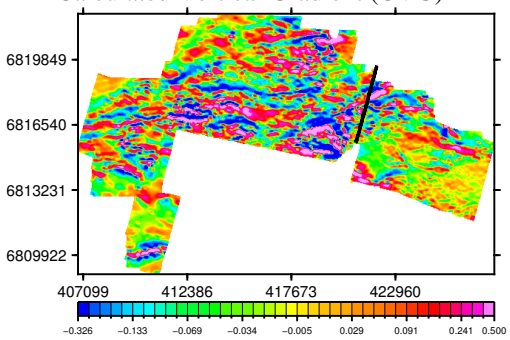
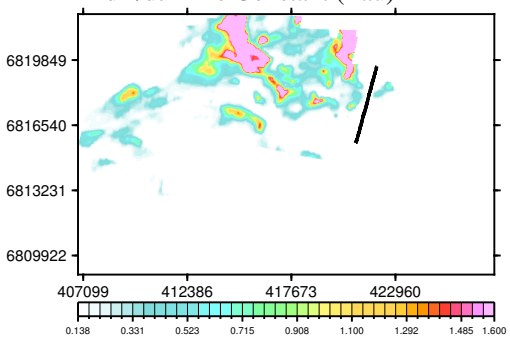
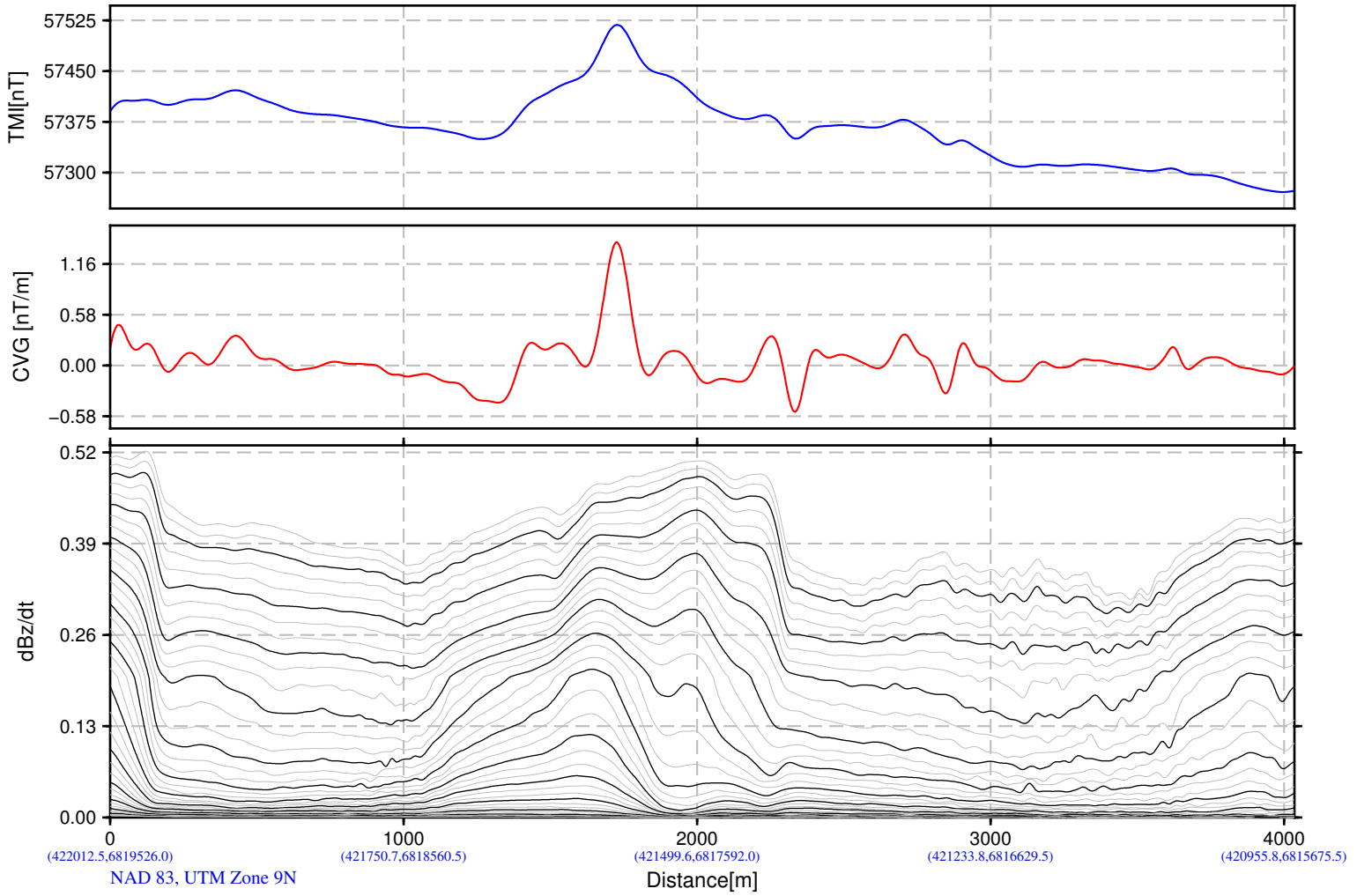
Resistivity Depth Image (RDI) for Line 3900

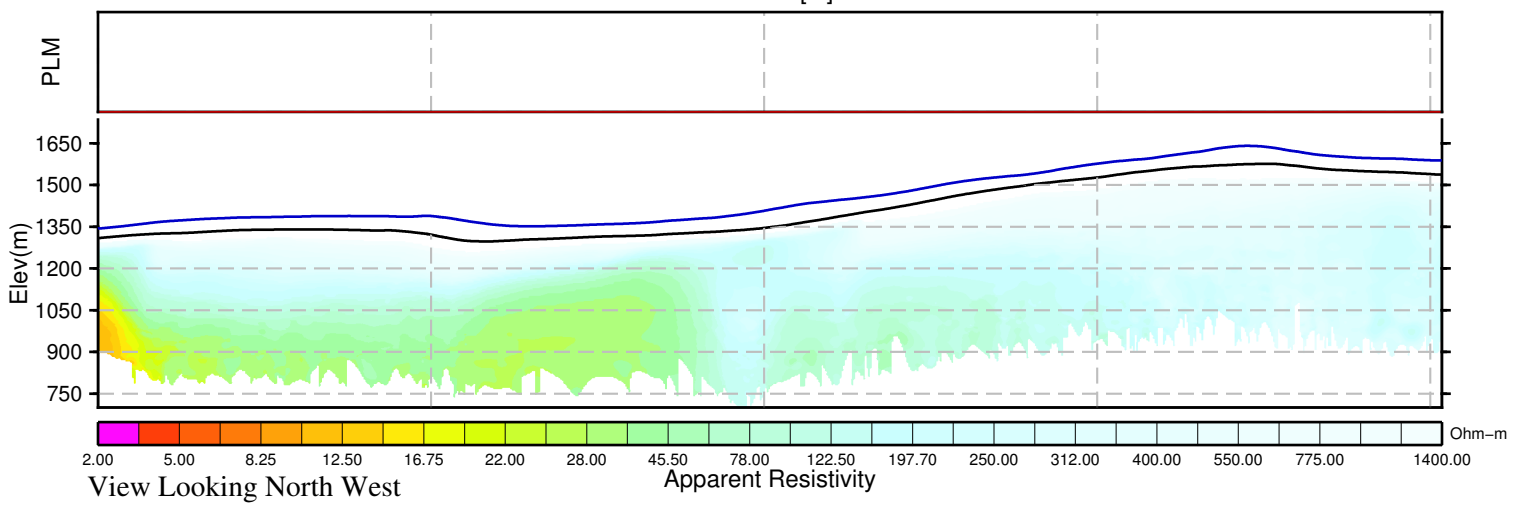
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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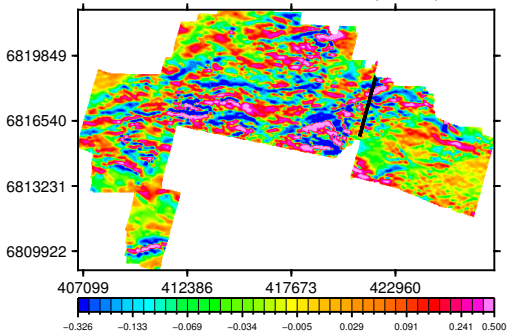
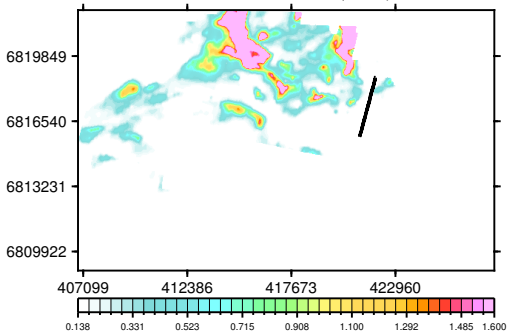
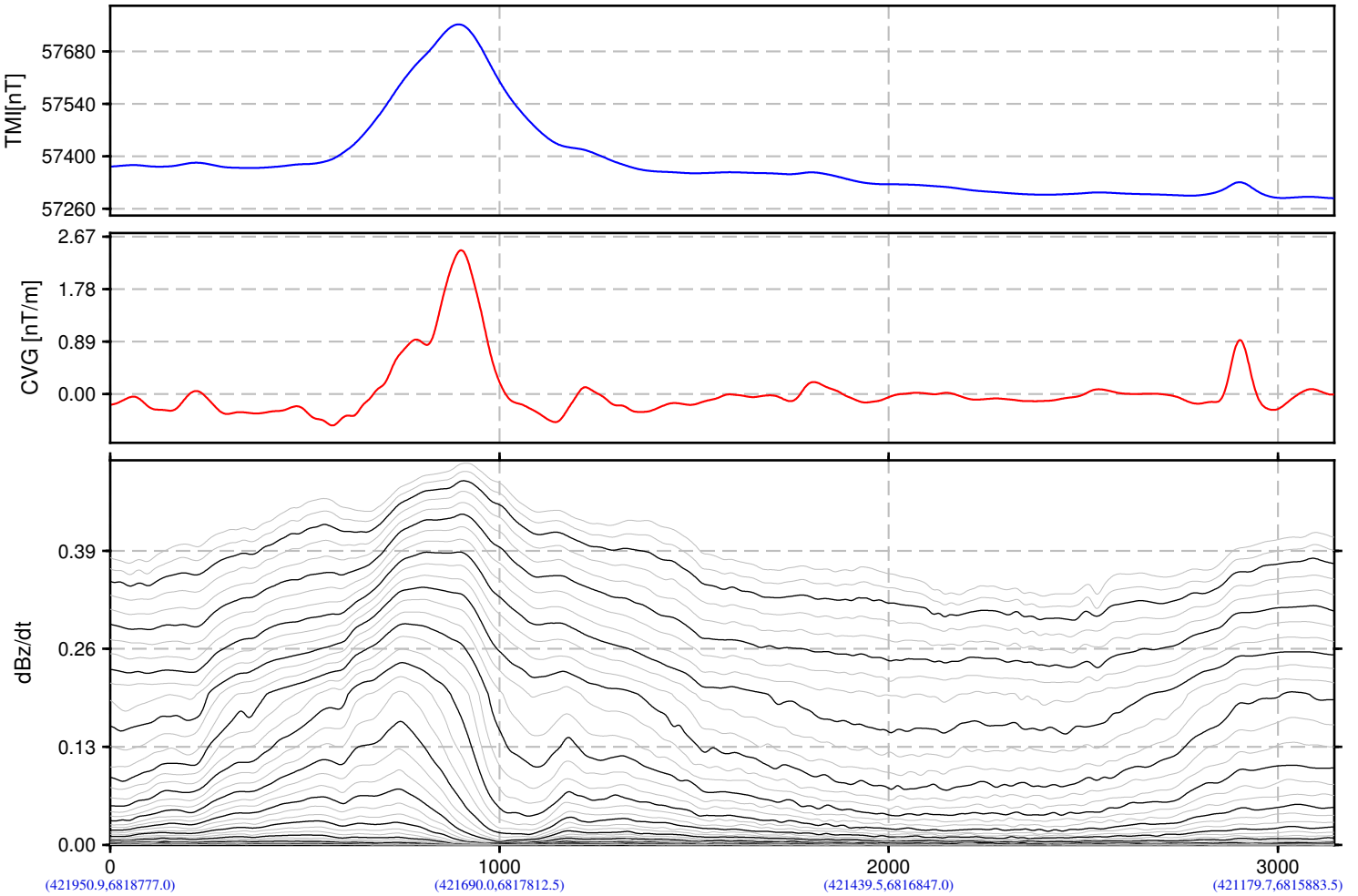
Resistivity Depth Image (RDI) for Line 3910

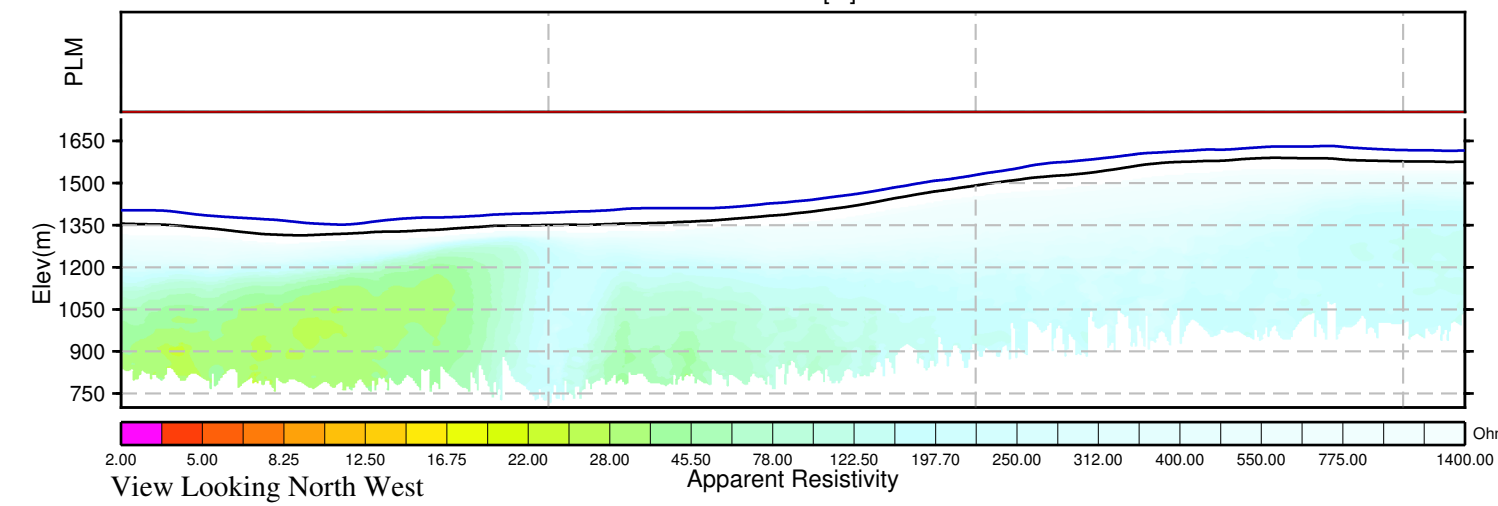
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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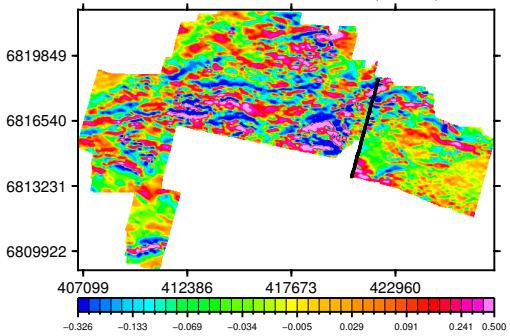
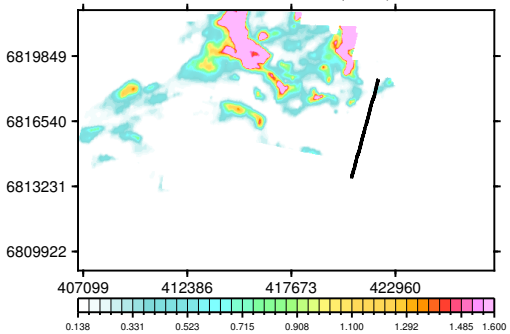
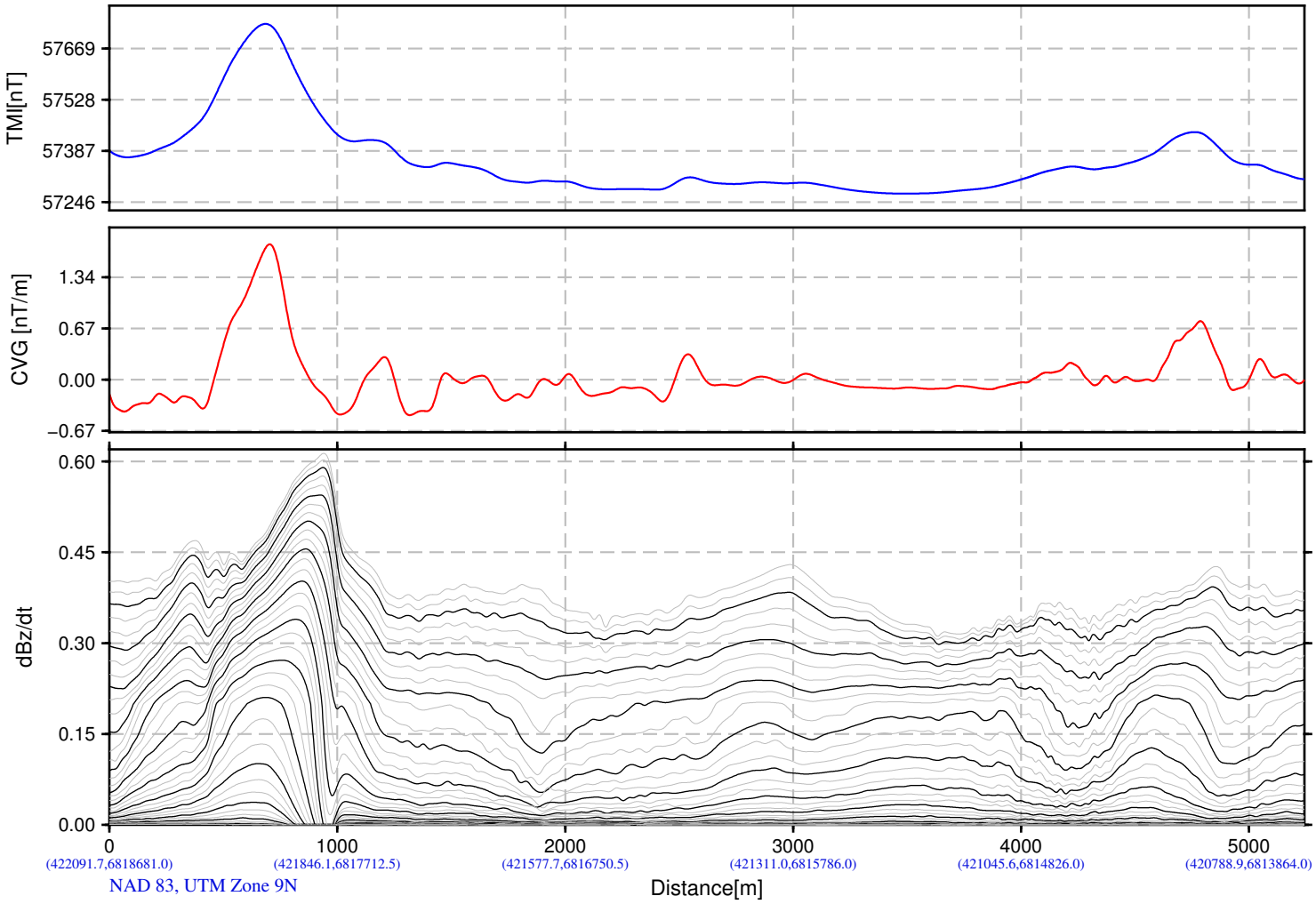
Resistivity Depth Image (RDI) for Line 3920

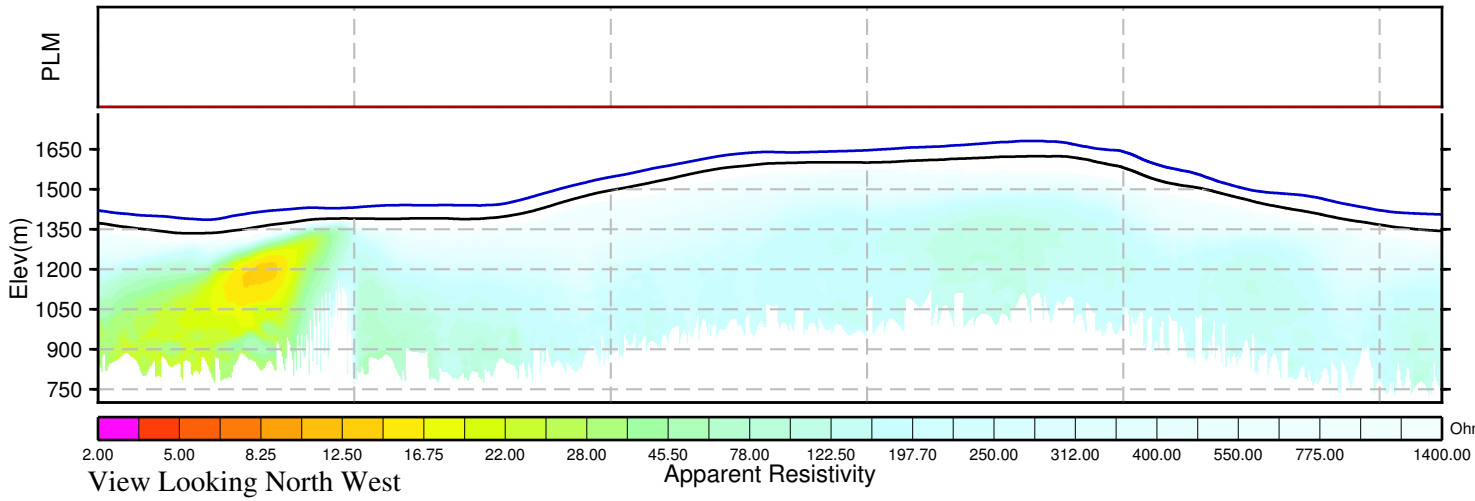
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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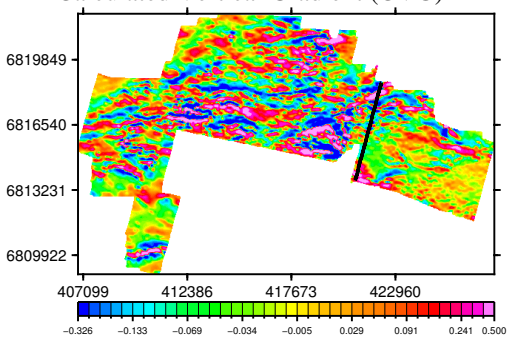
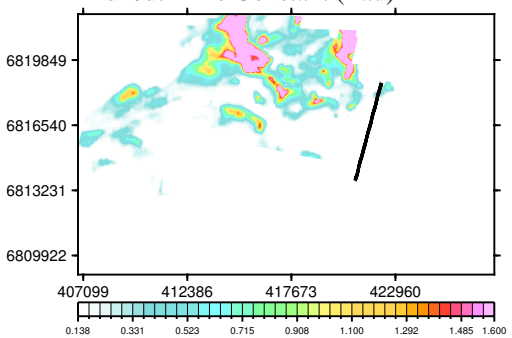
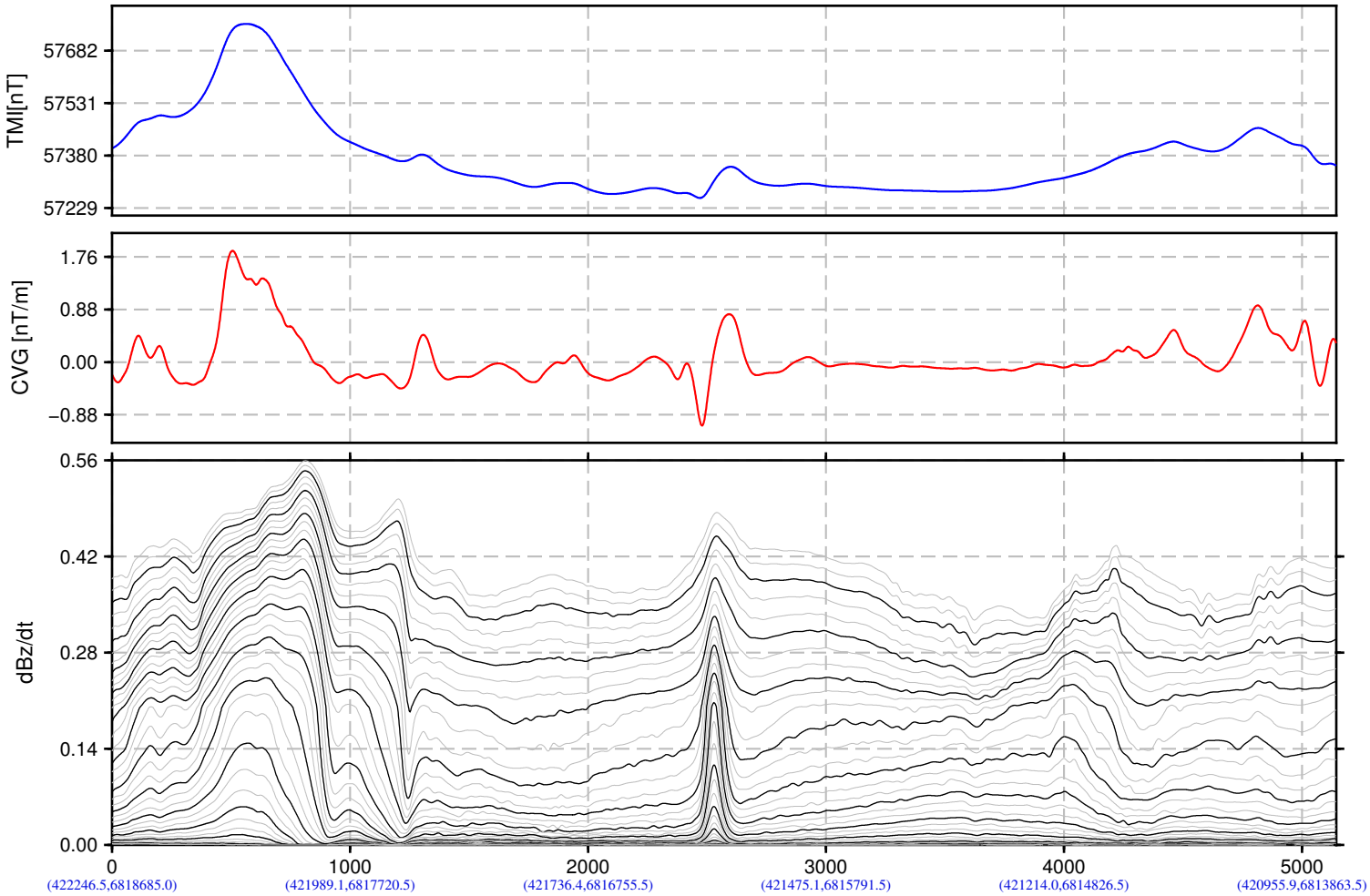
Resistivity Depth Image (RDI) for Line 3930

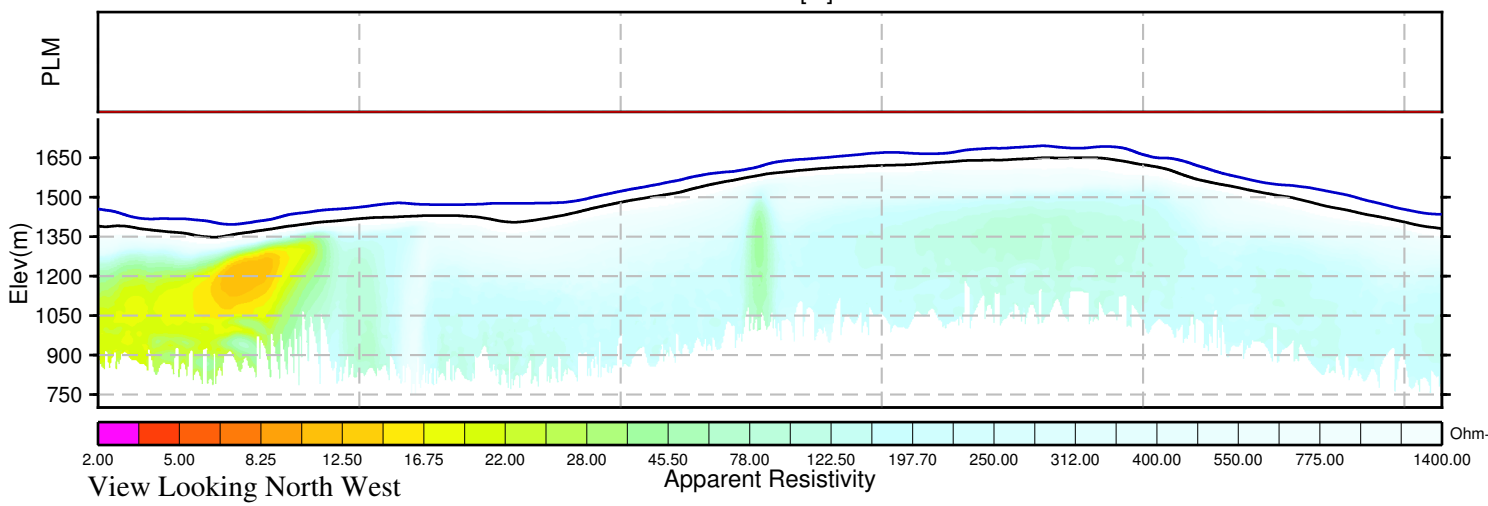
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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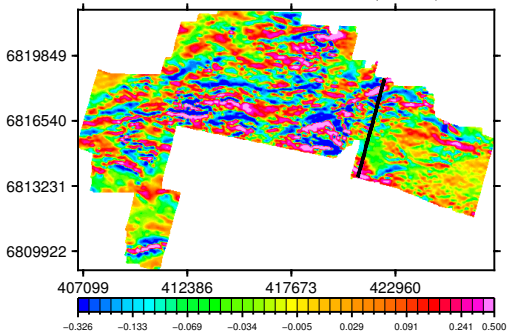
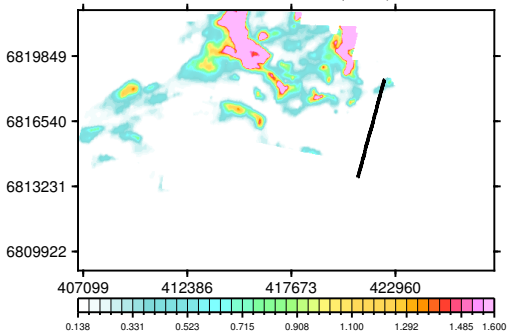
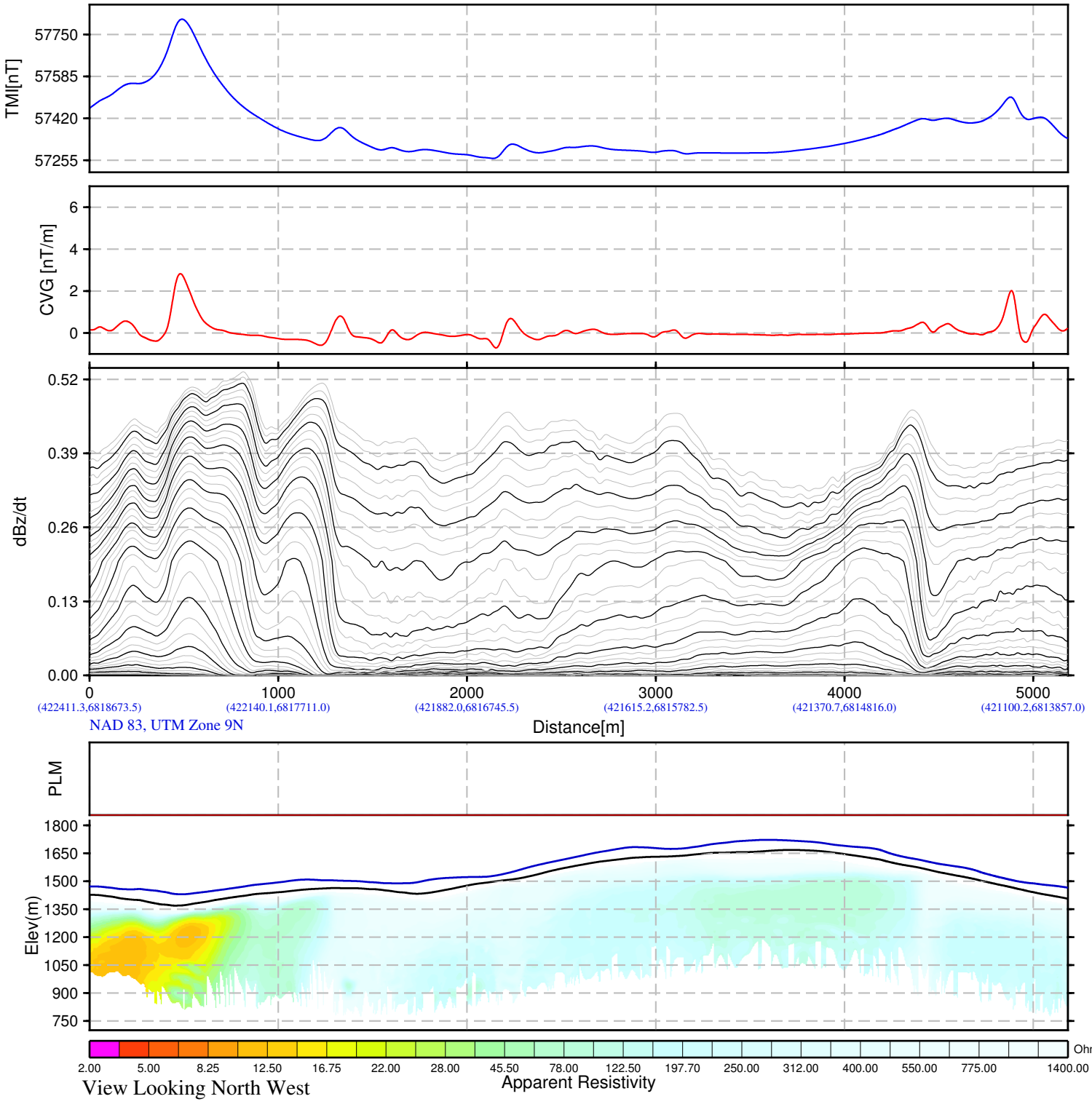
Resistivity Depth Image (RDI) for Line 3940

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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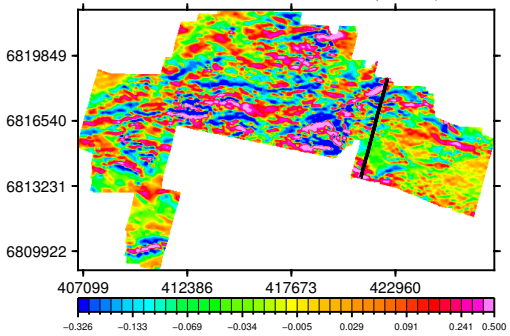
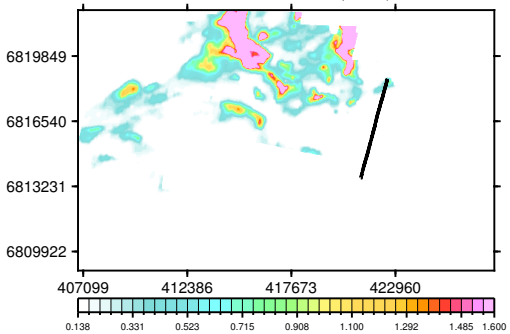
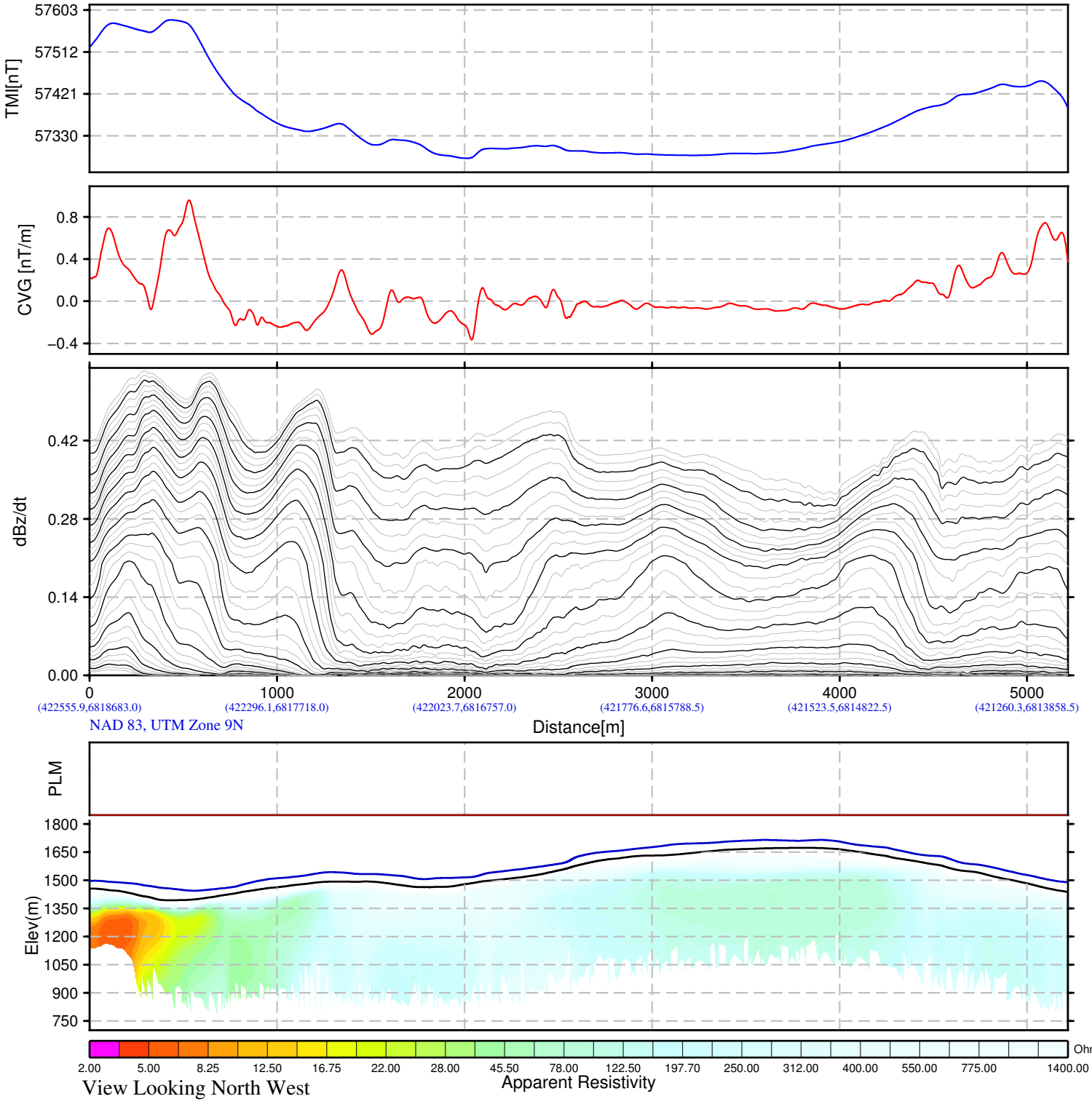
Resistivity Depth Image (RDI) for Line 3950

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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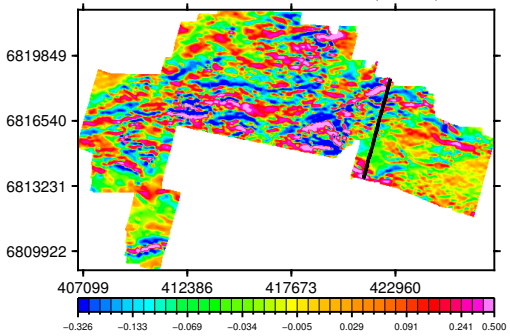
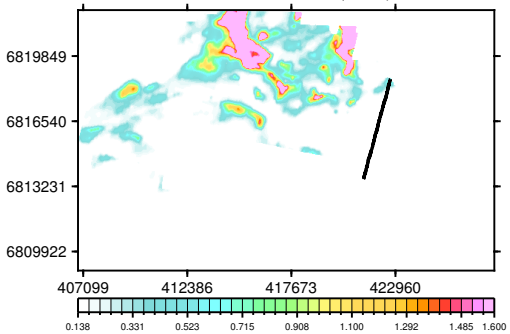
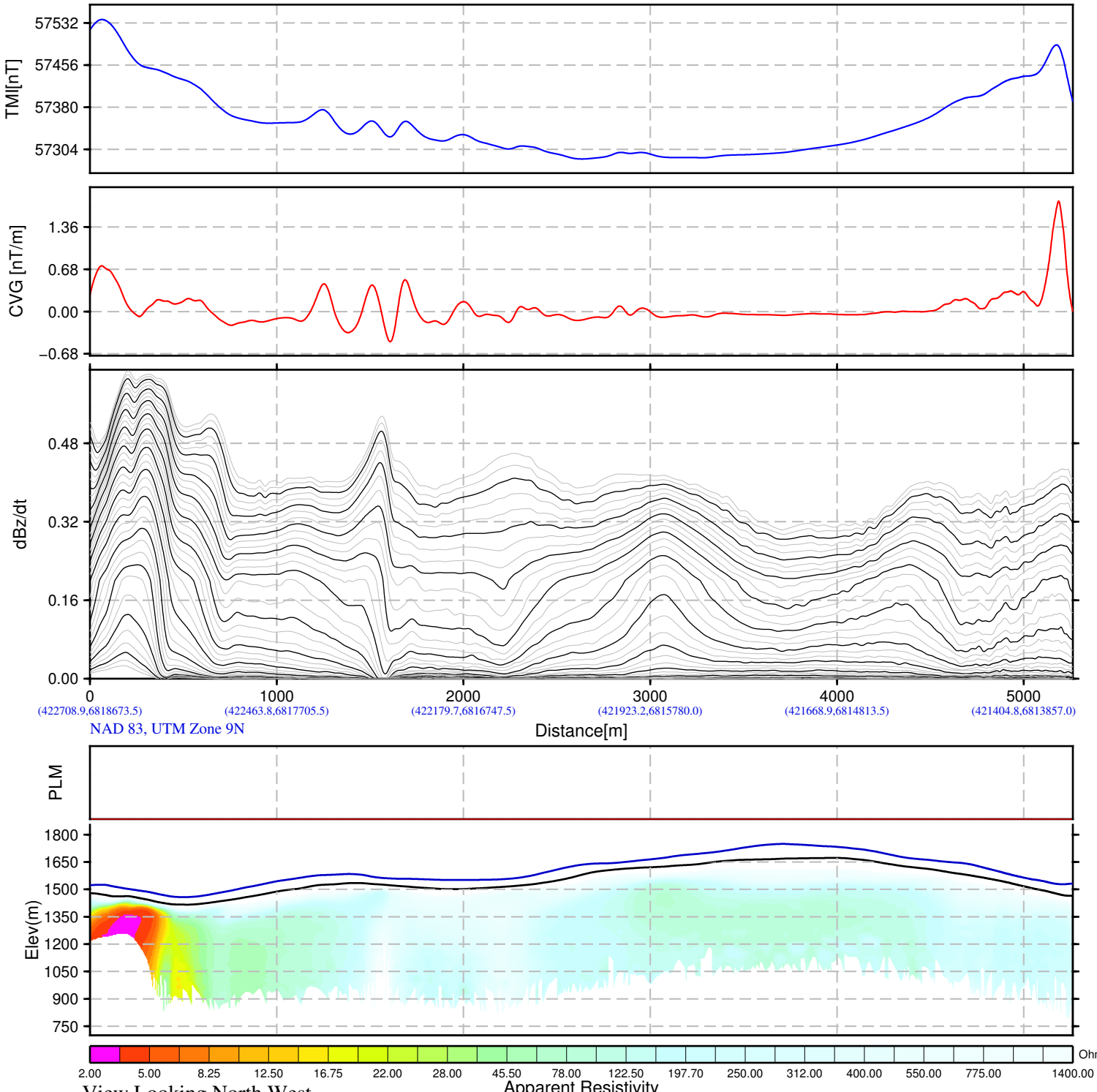
Resistivity Depth Image (RDI) for Line 3960

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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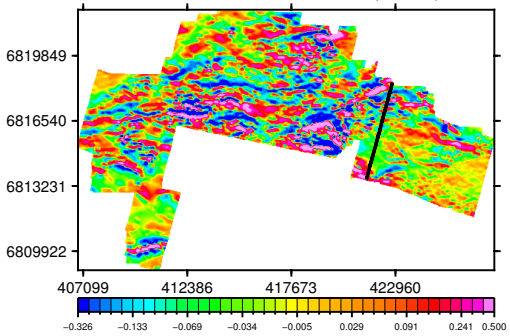
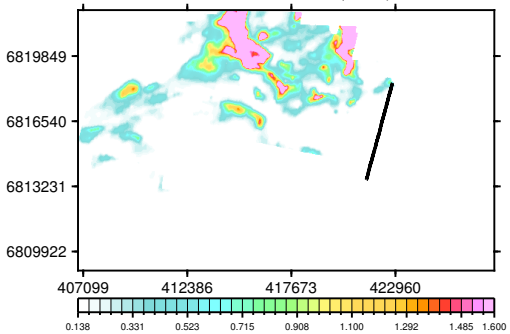
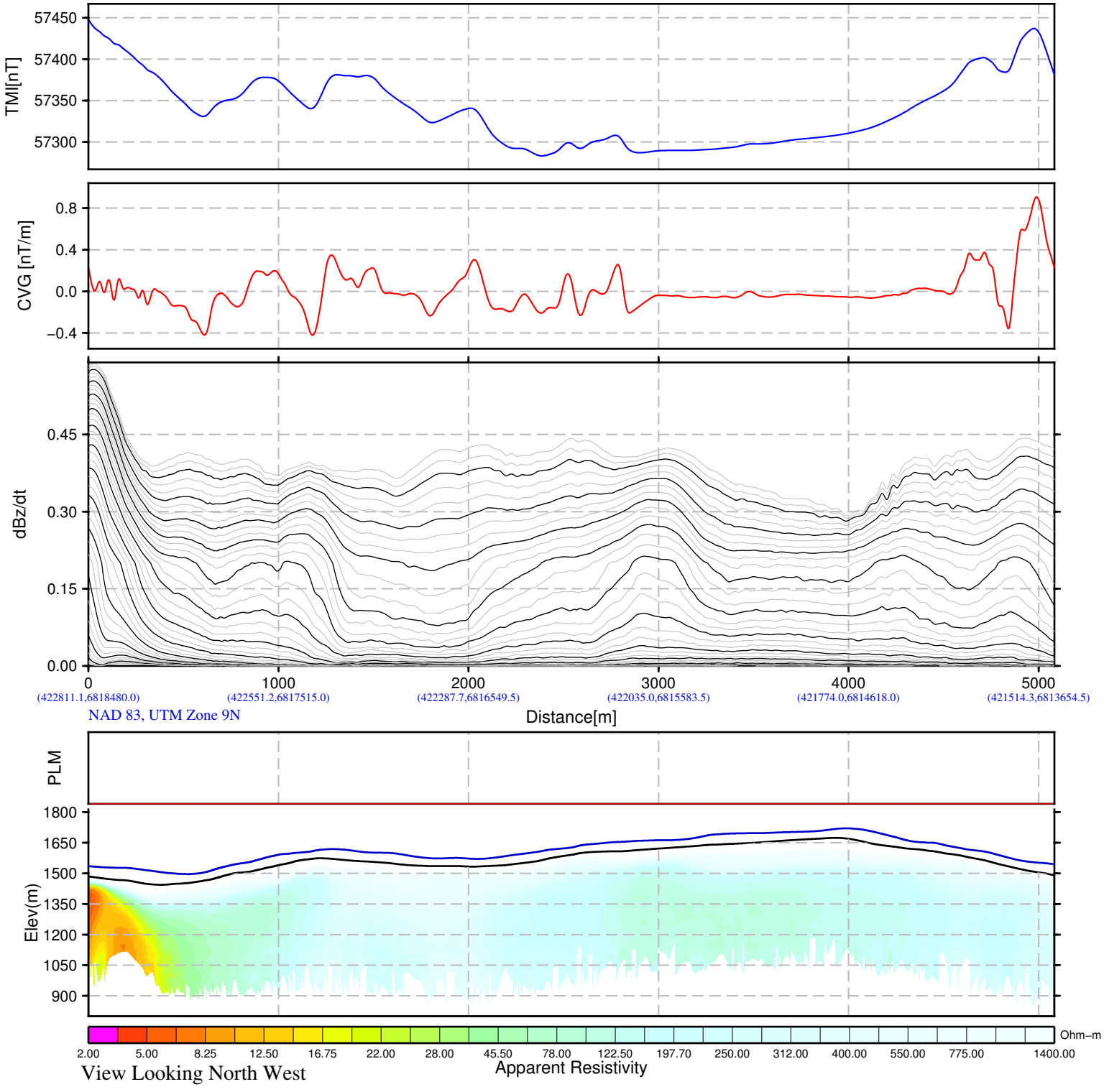
Resistivity Depth Image (RDI) for Line 3970

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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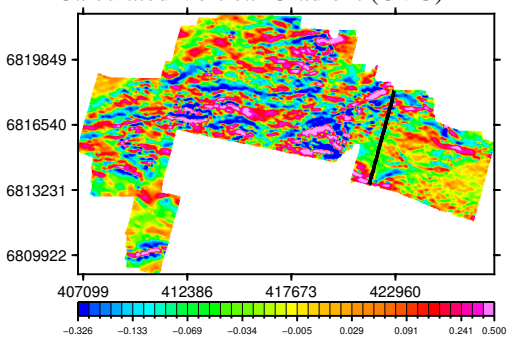
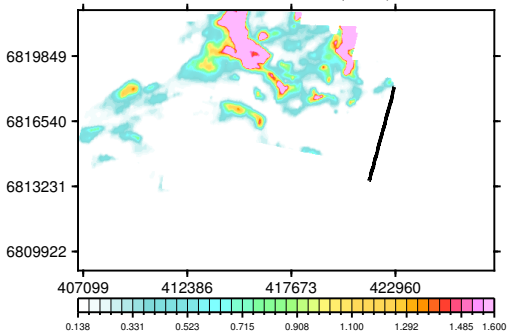
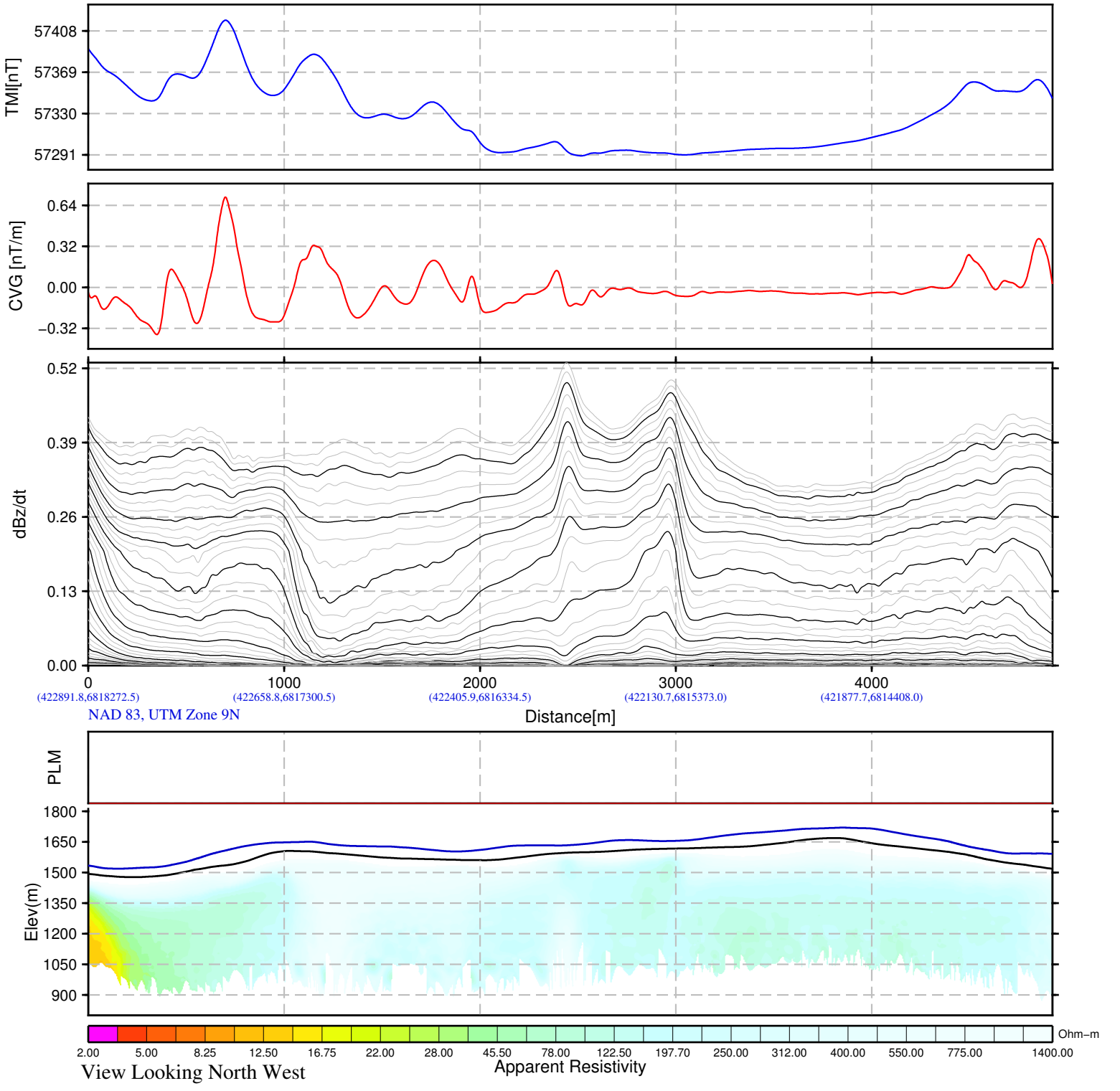
Resistivity Depth Image (RDI) for Line 3980

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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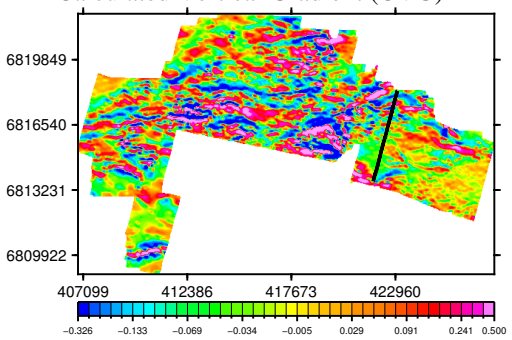
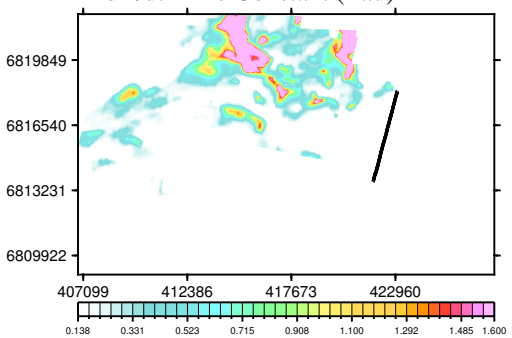
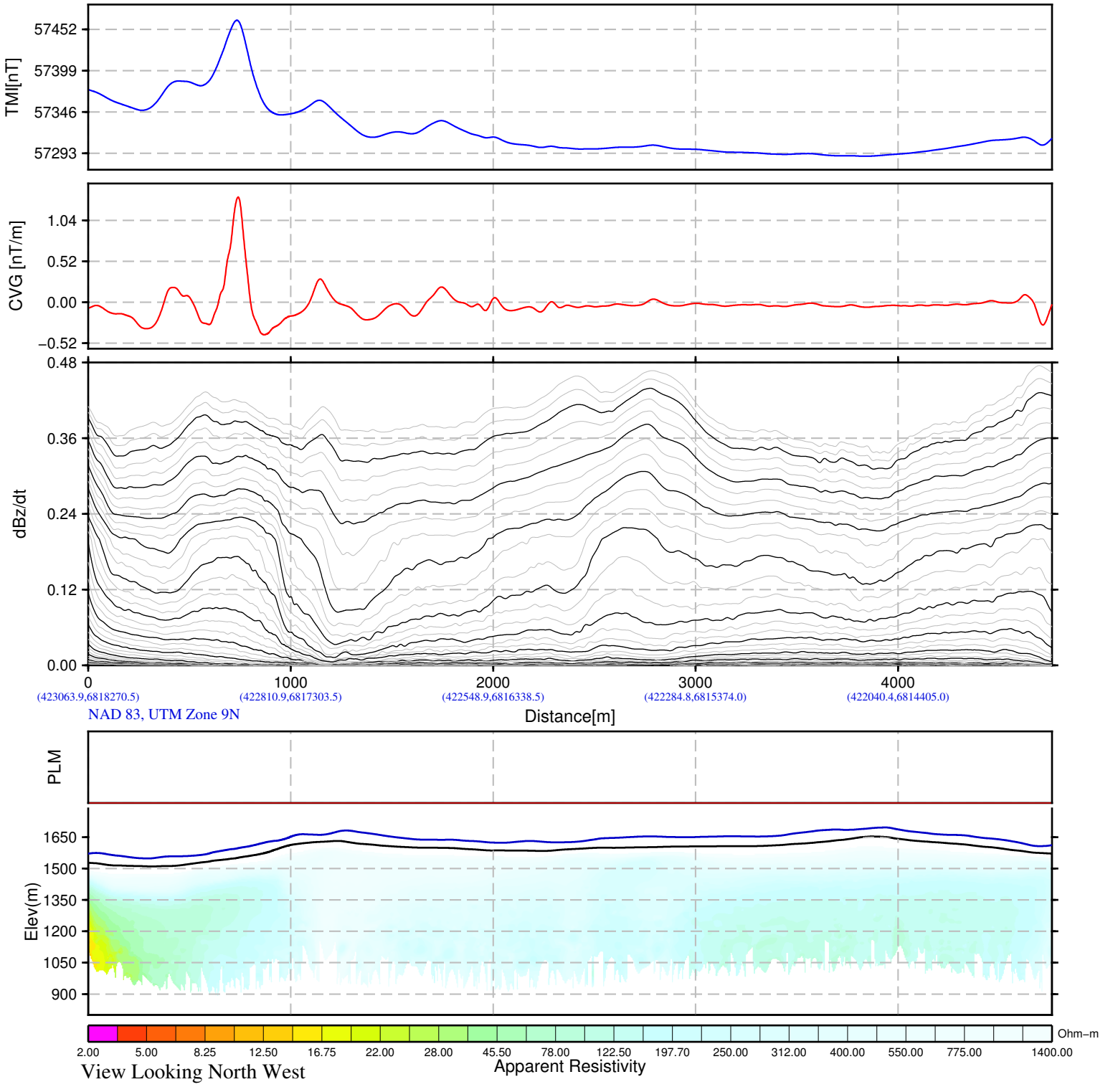
Resistivity Depth Image (RDI) for Line 3990

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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VTEM System:VTEM17−Plus
Job Number:GL160037
Resistivity Depth Image (RDI)
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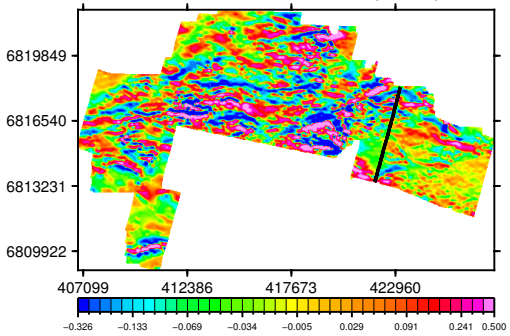
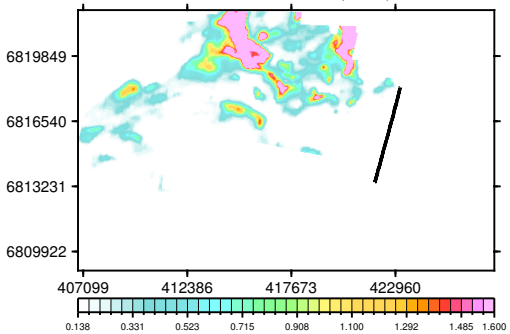
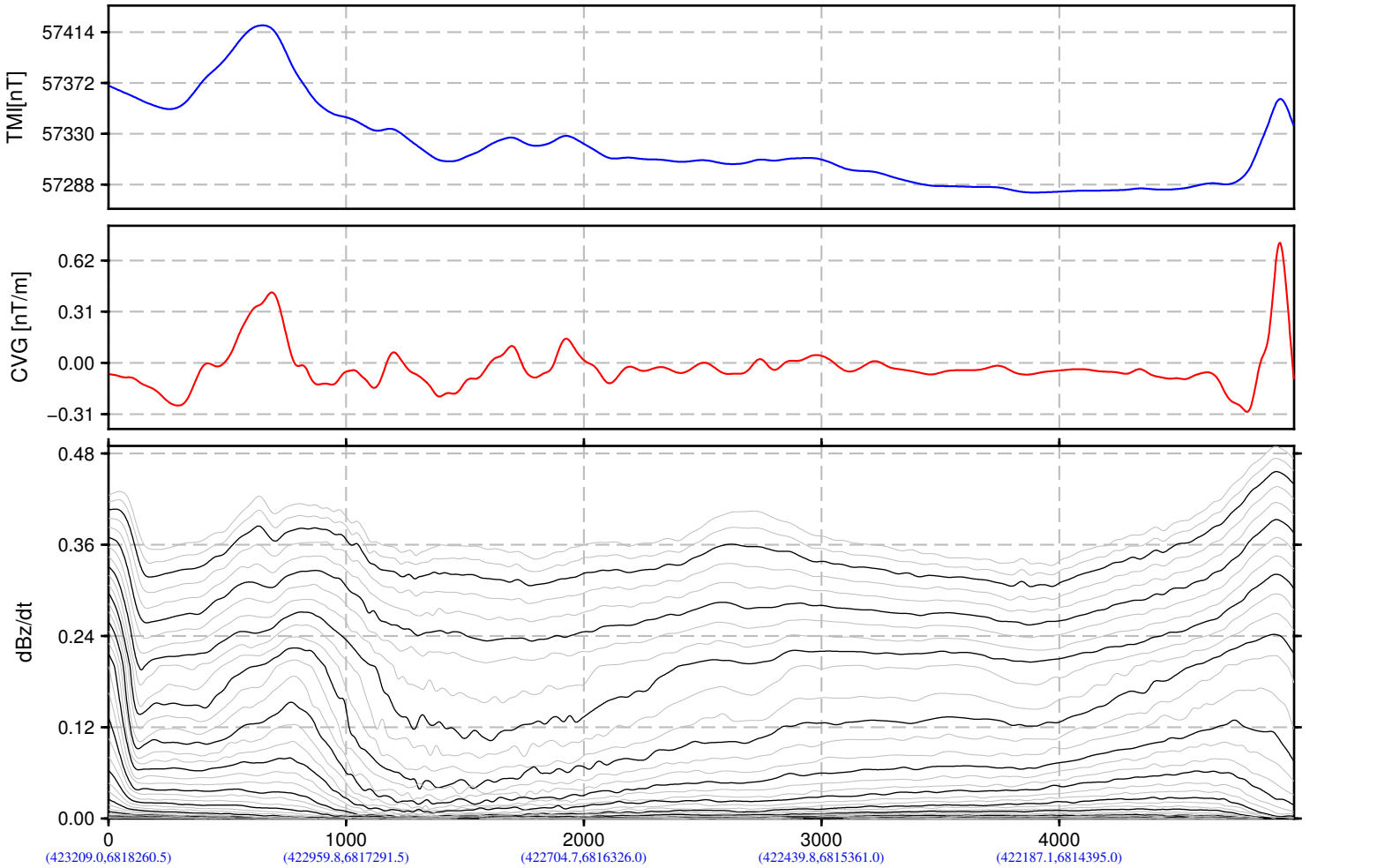
Resistivity Depth Image (RDI) for Line 4000

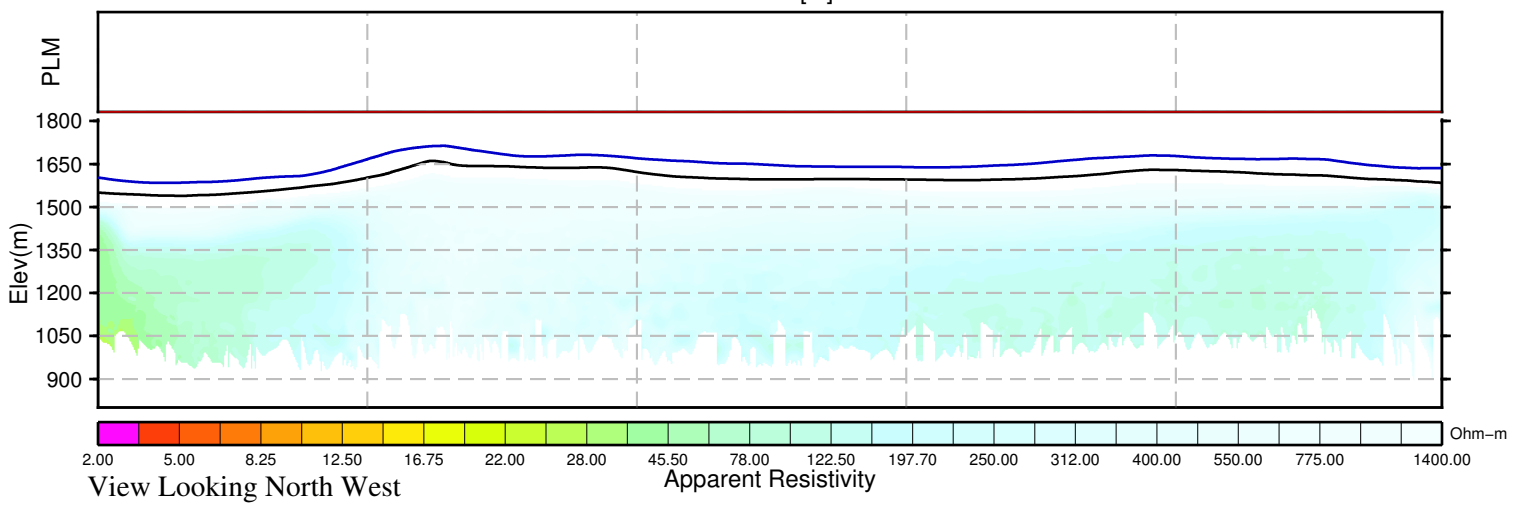
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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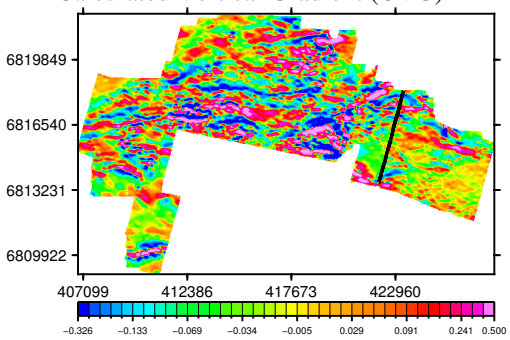
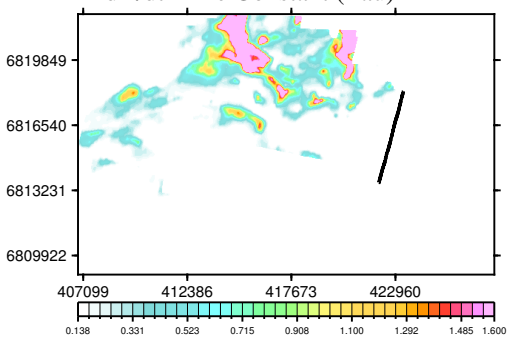
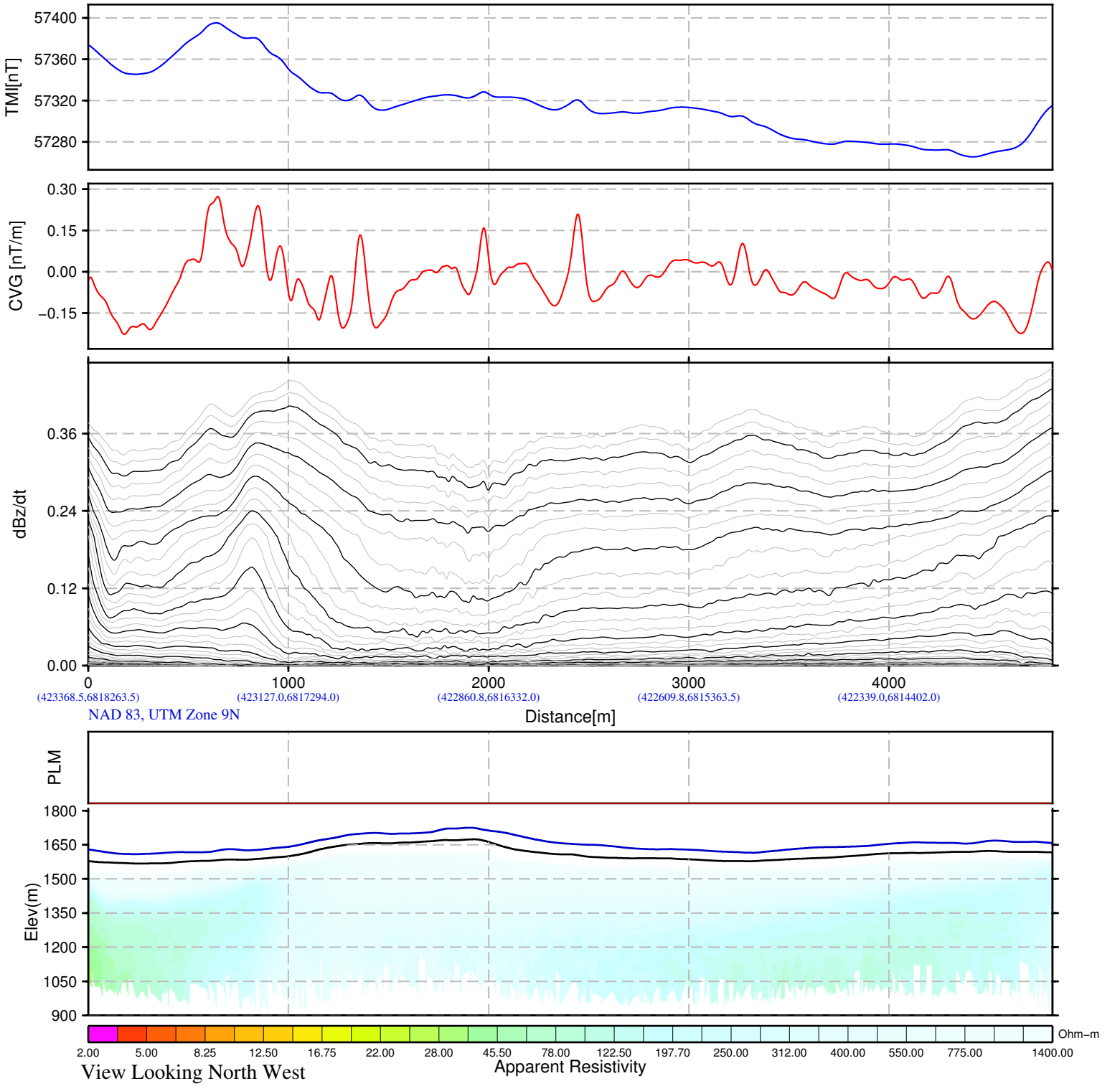
Resistivity Depth Image (RDI) for Line 4010

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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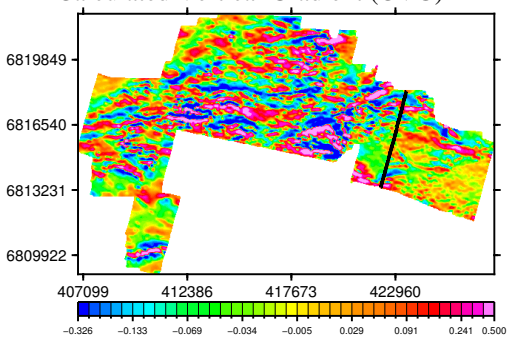
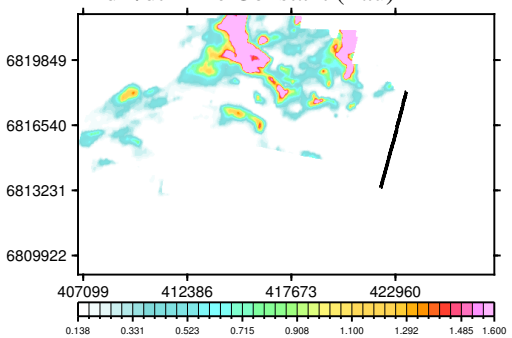
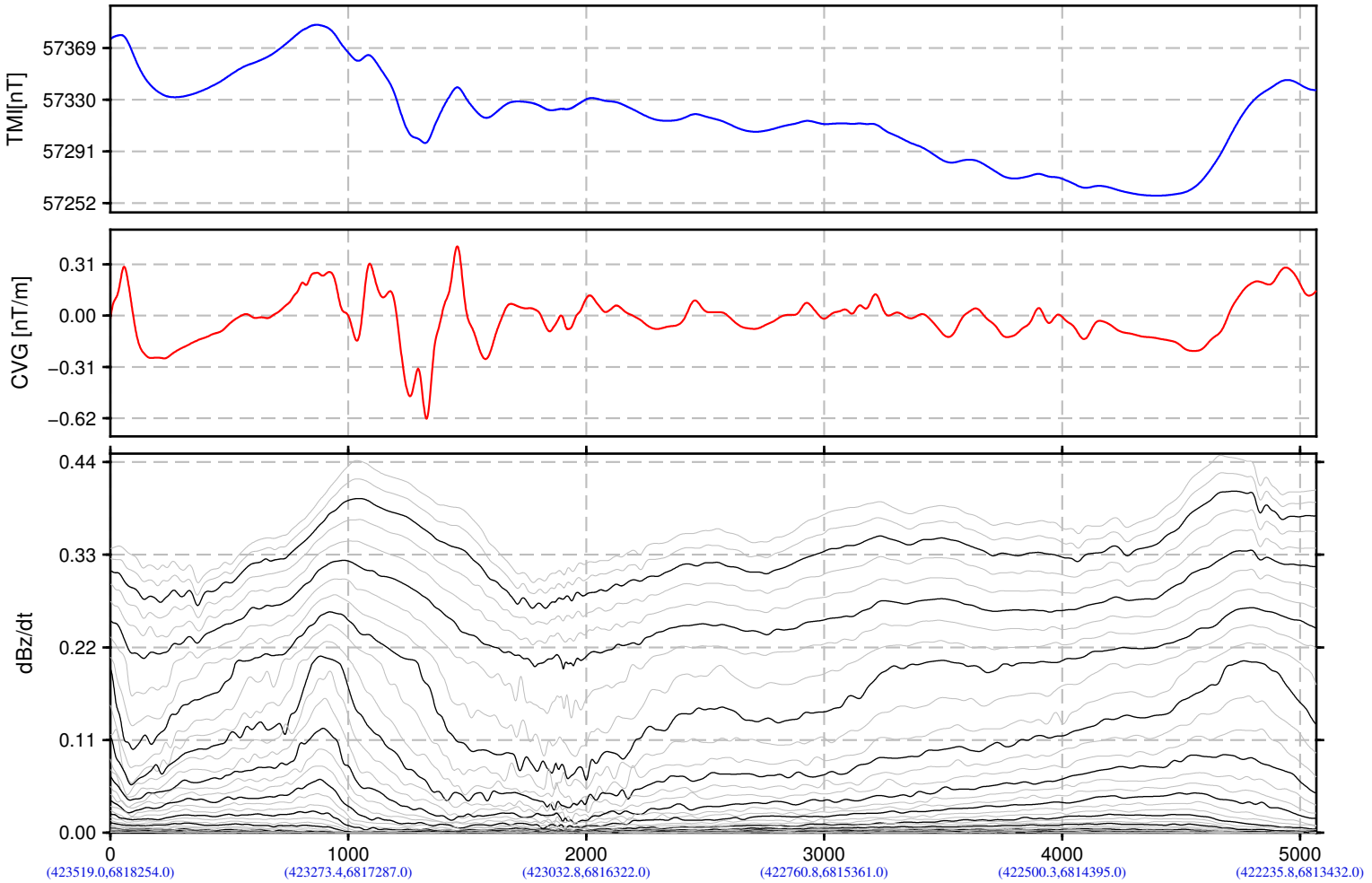
Resistivity Depth Image (RDI) for Line 4020

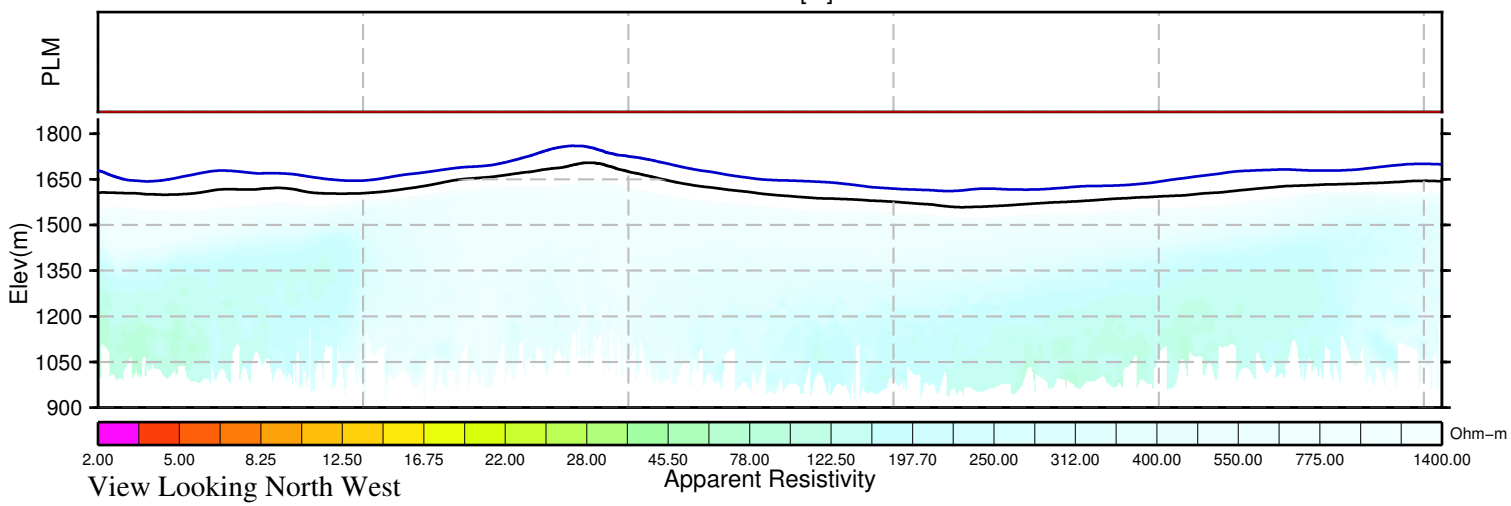
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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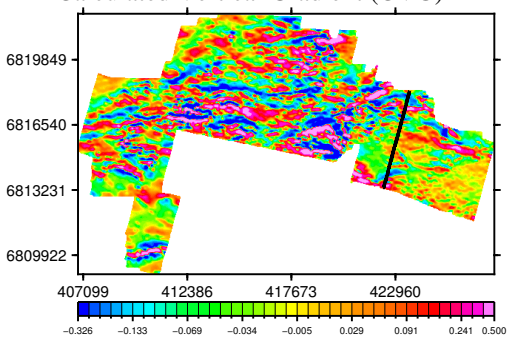
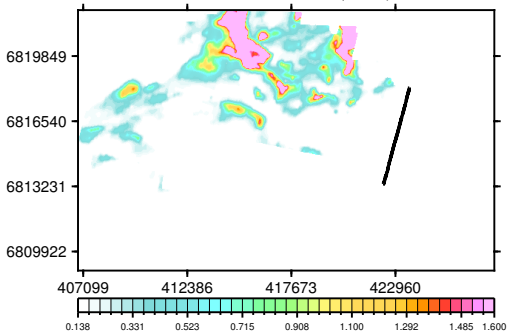
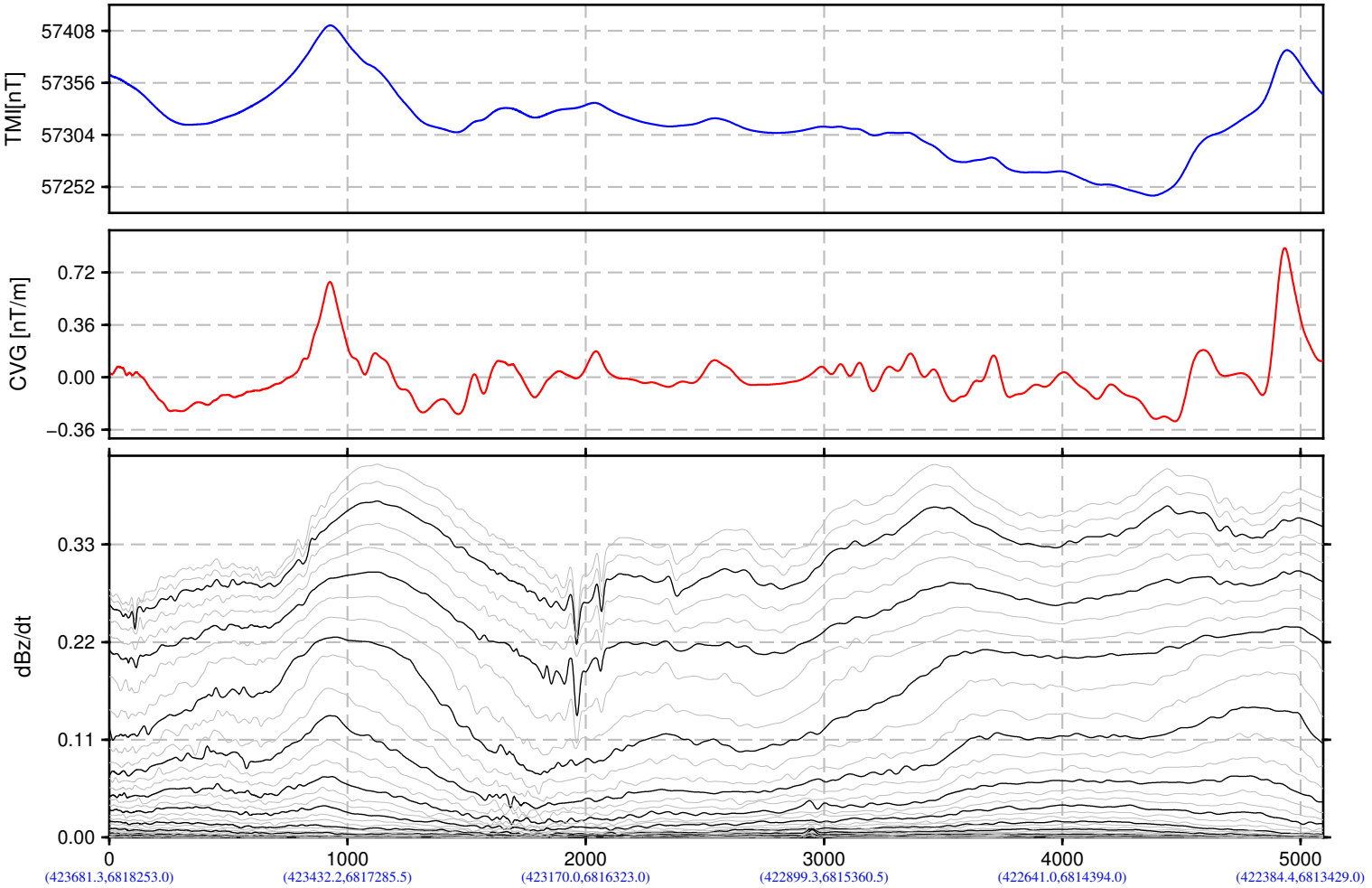
Resistivity Depth Image (RDI) for Line 4030

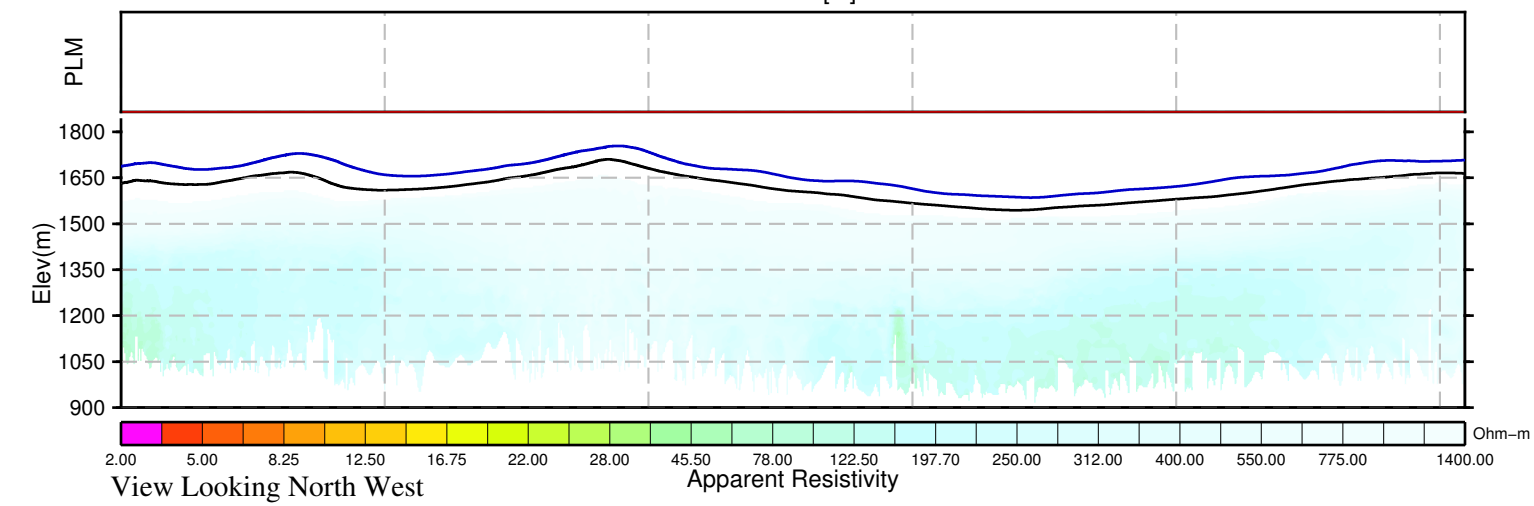
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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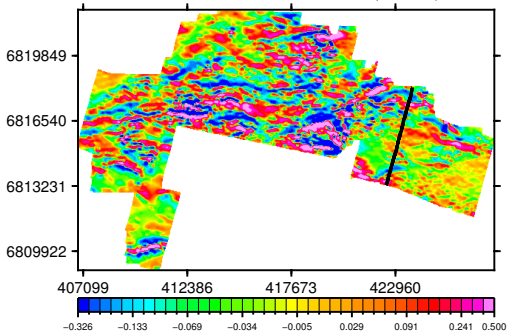
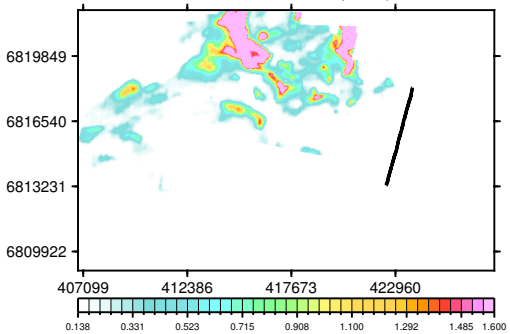
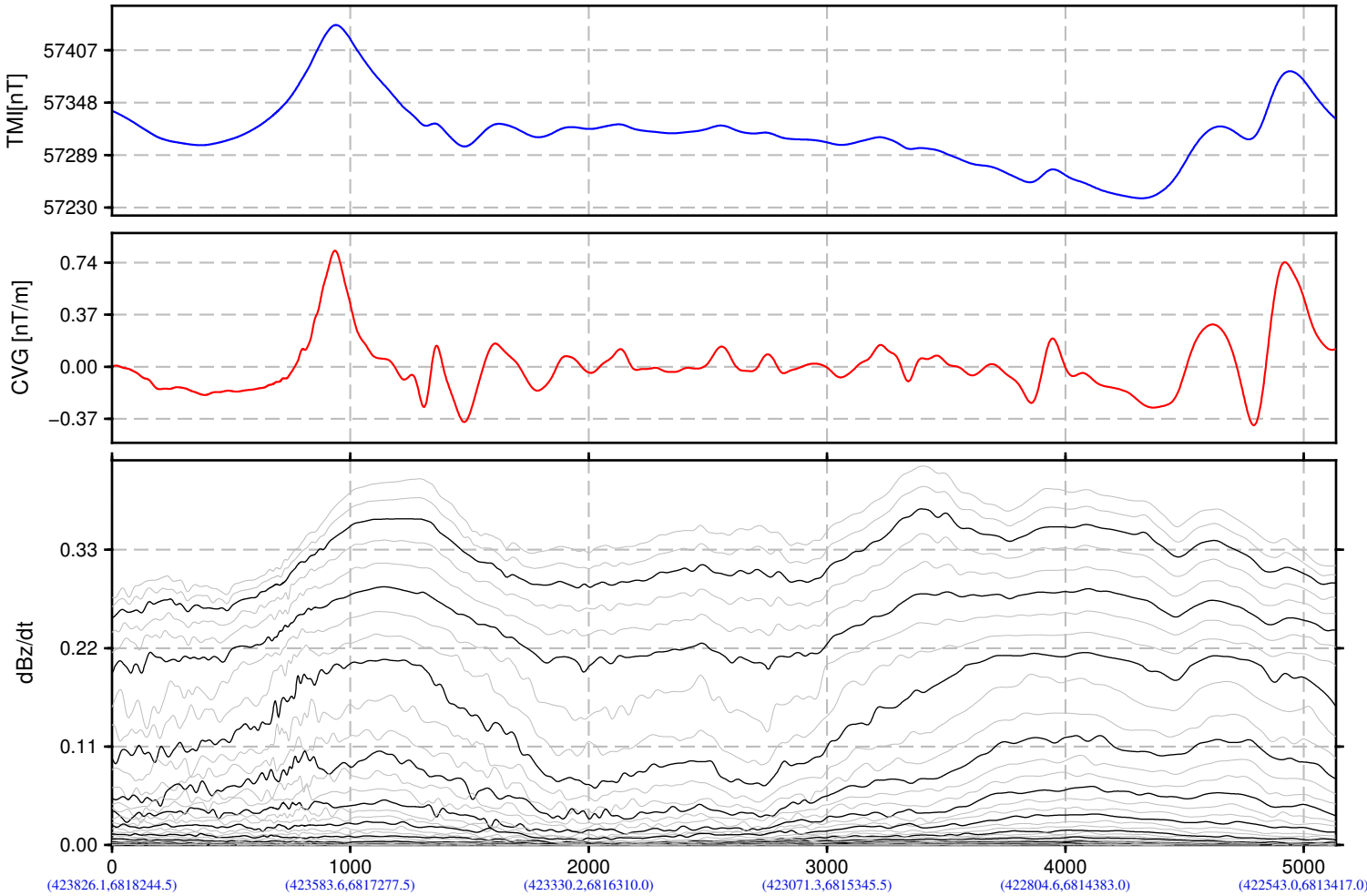
Resistivity Depth Image (RDI) for Line 4040

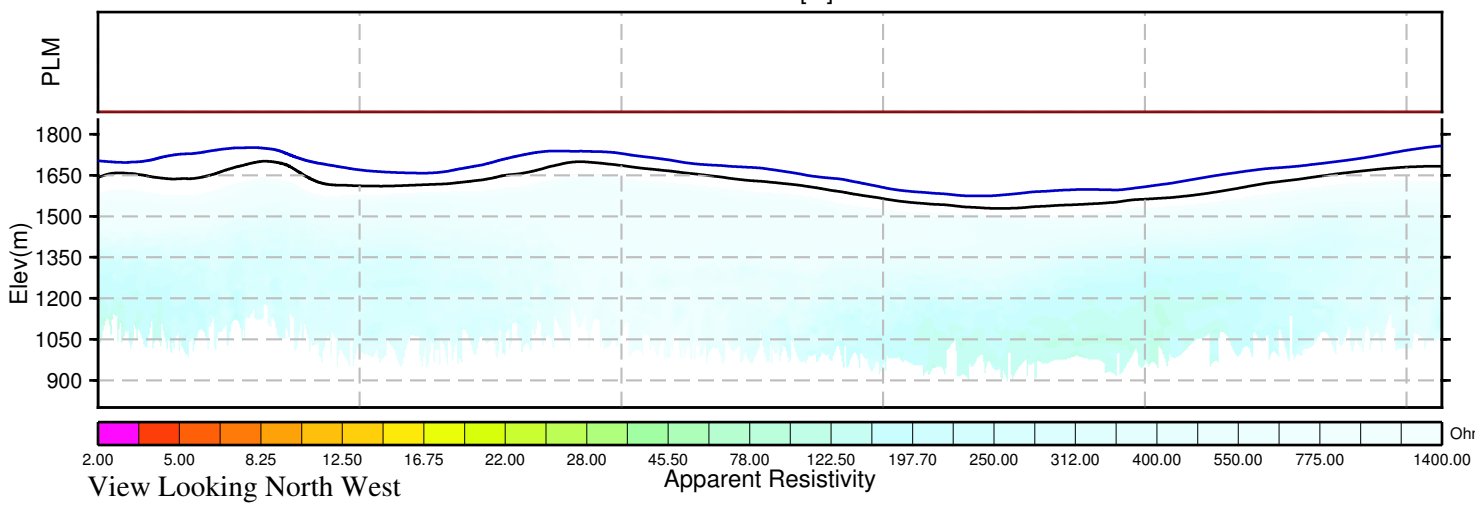
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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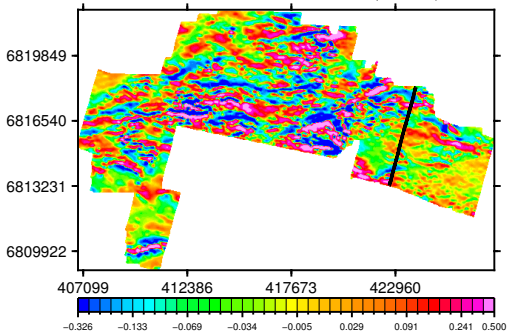
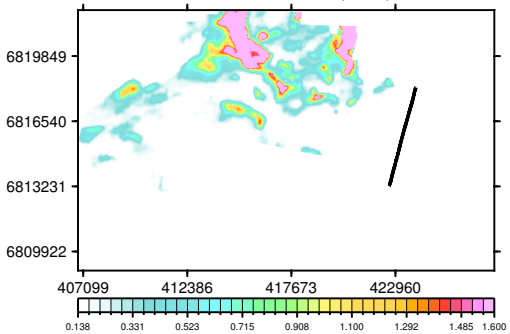
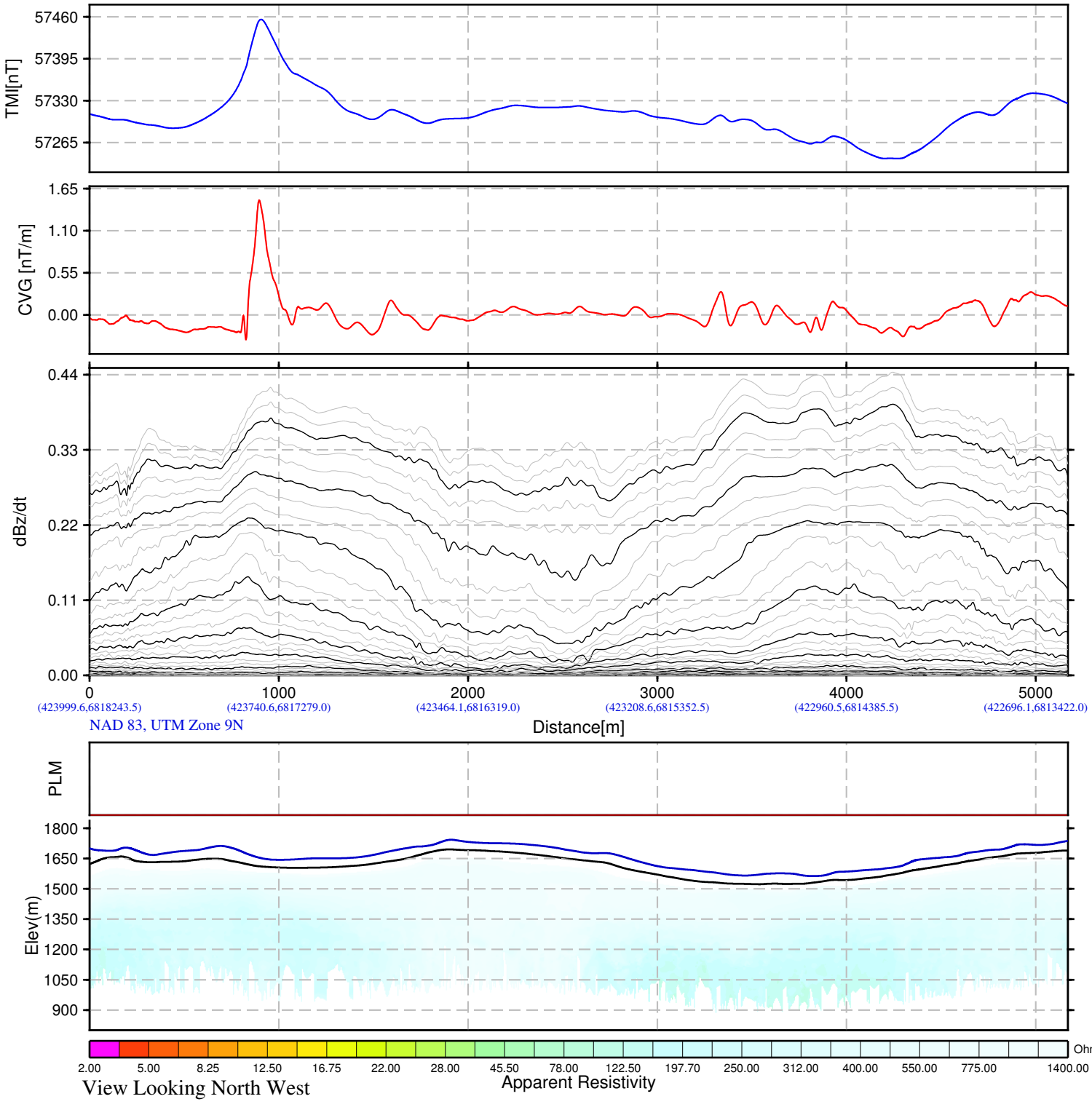
Resistivity Depth Image (RDI) for Line 4050

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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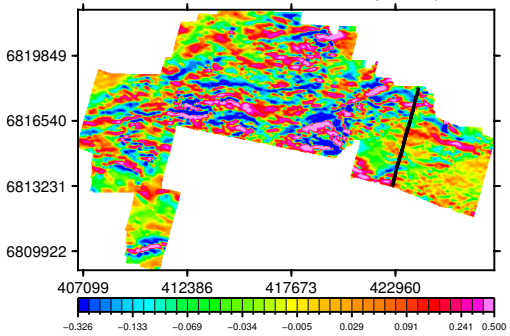
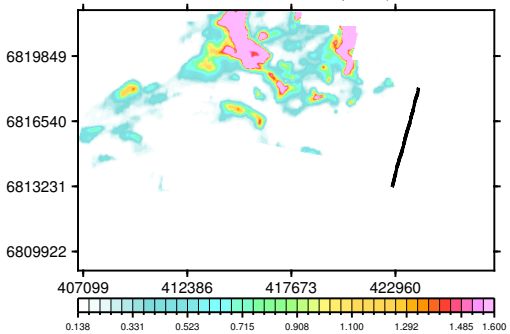
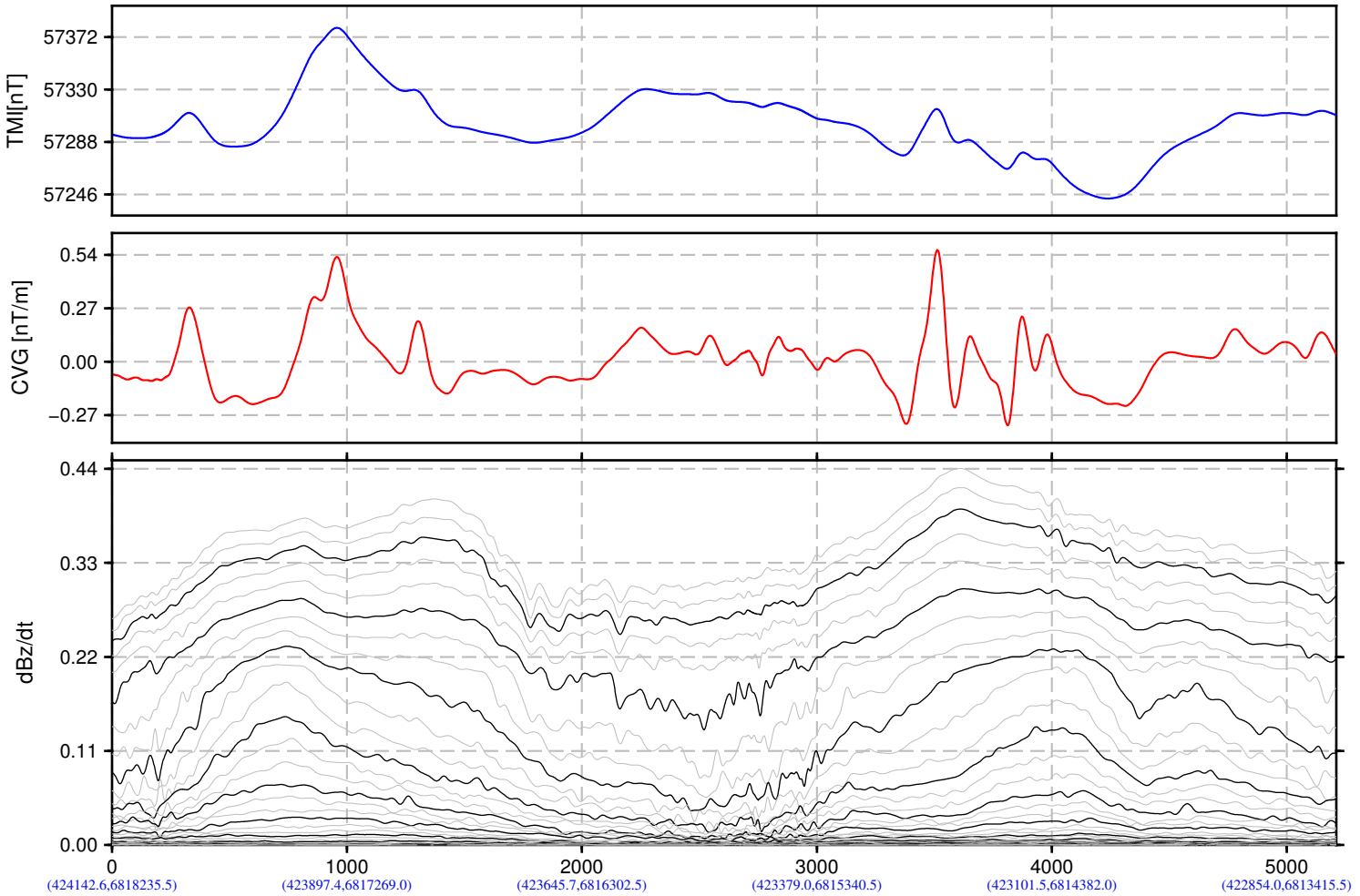
Resistivity Depth Image (RDI) for Line 4060

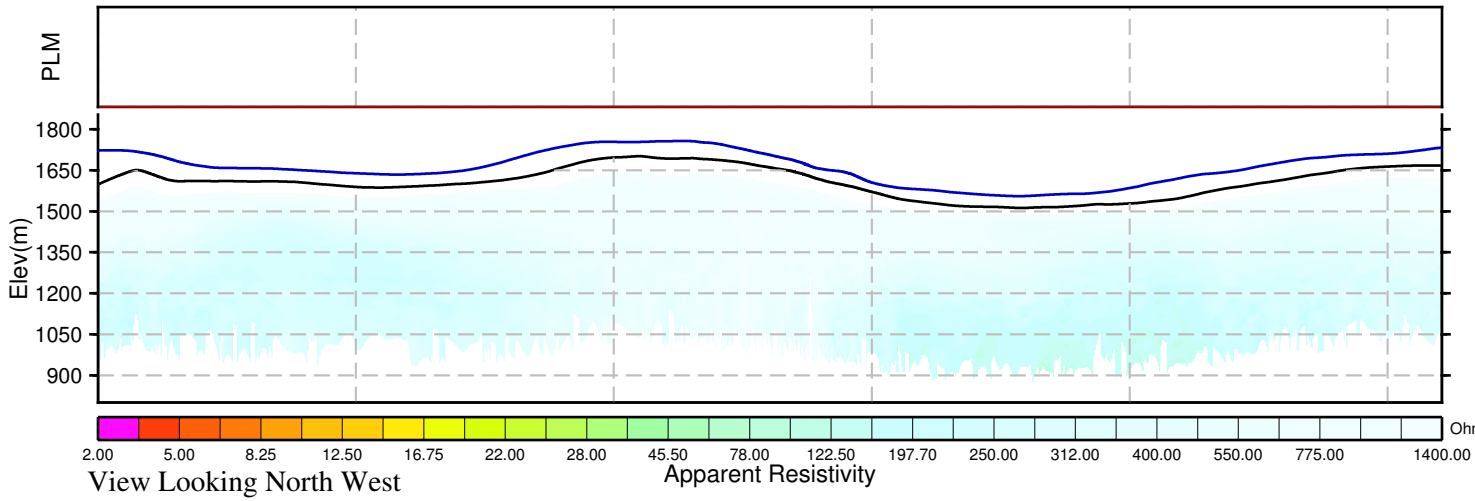
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

BMC Minerals (No.1) Ltd.
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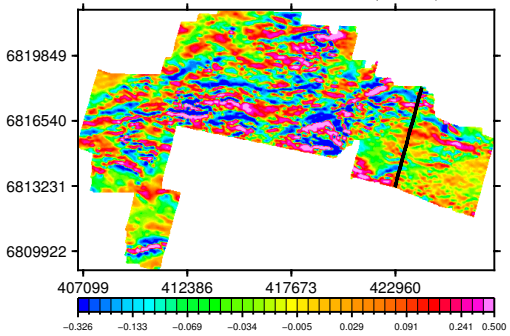
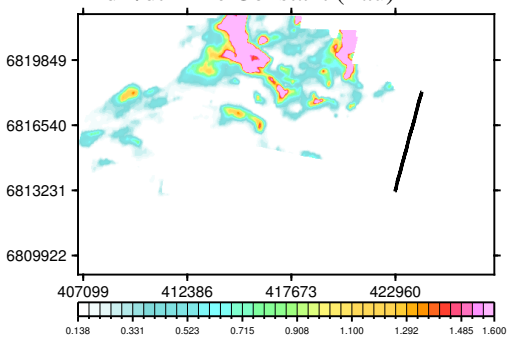
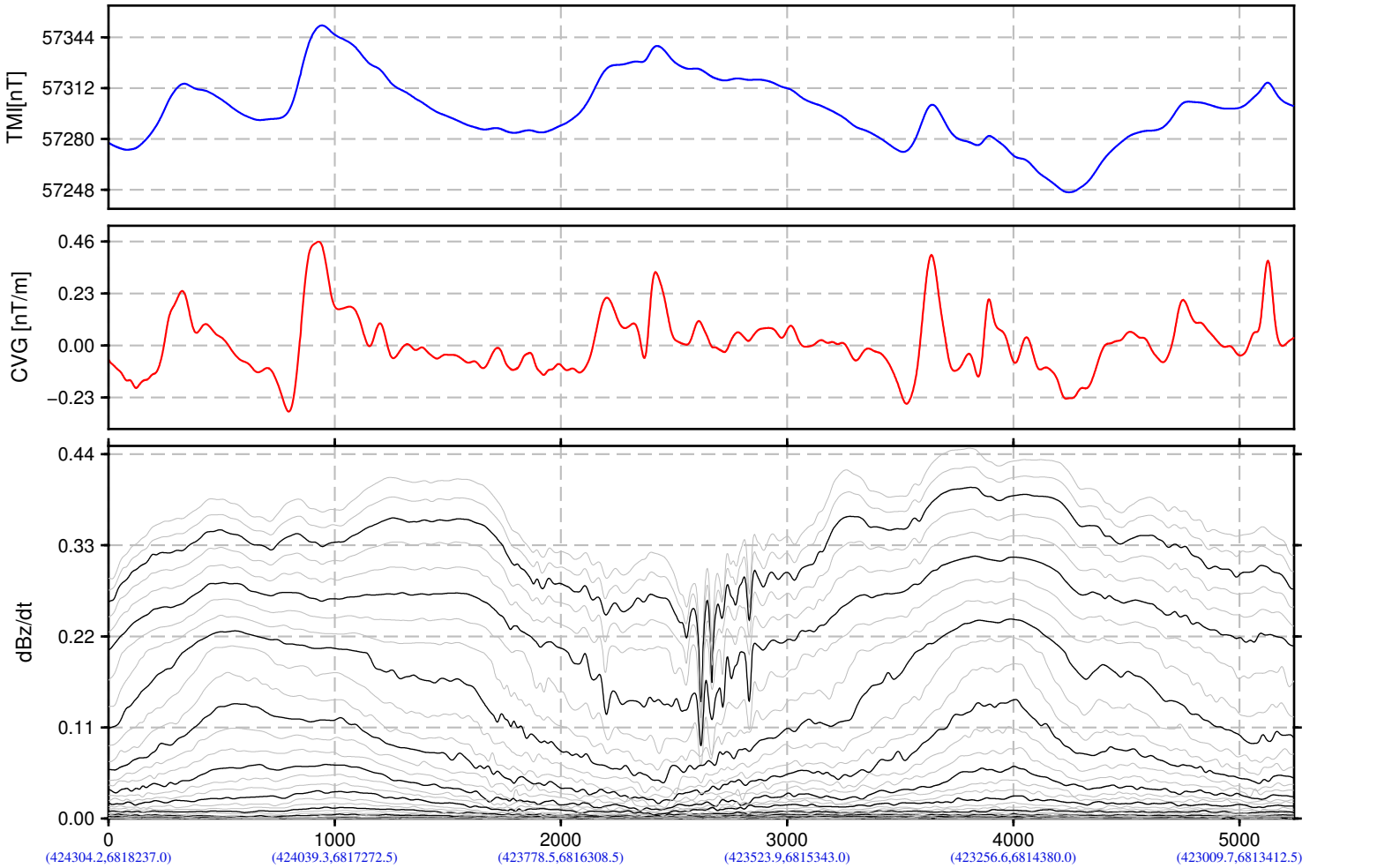
Resistivity Depth Image (RDI) for Line 4070

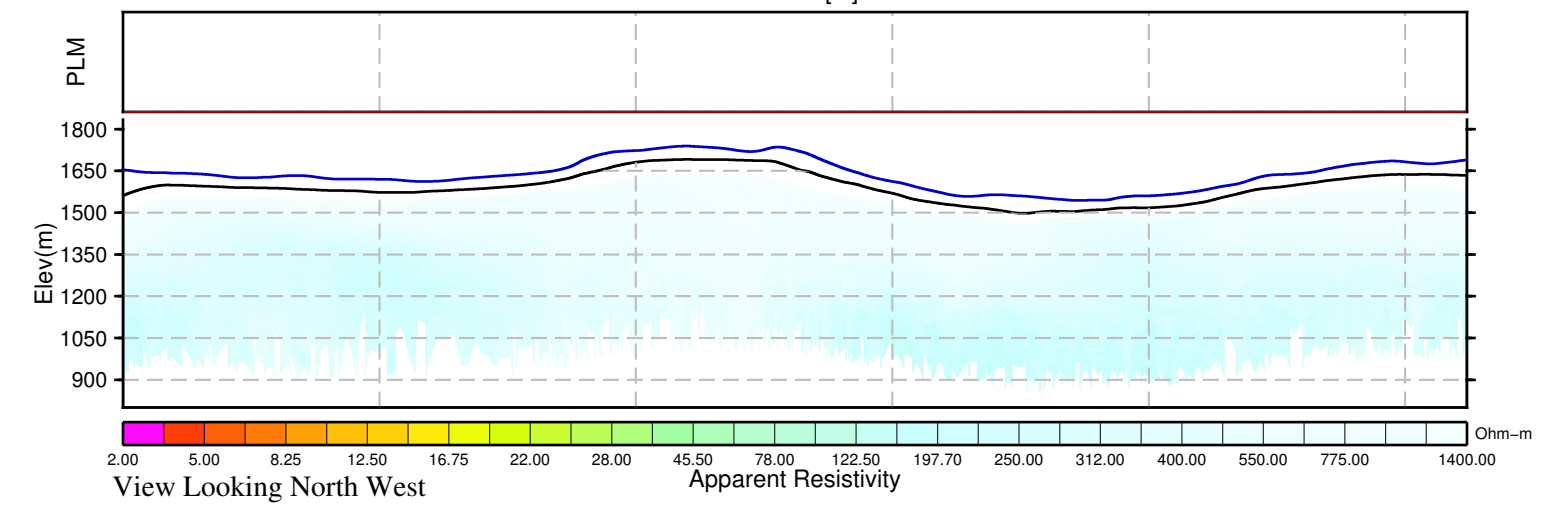
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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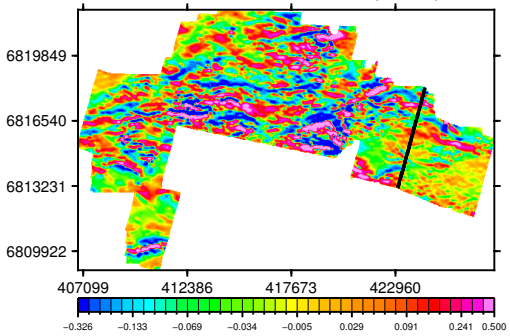
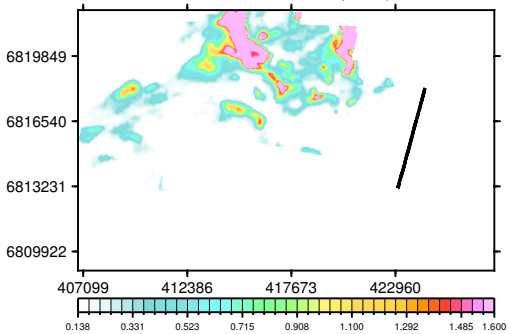
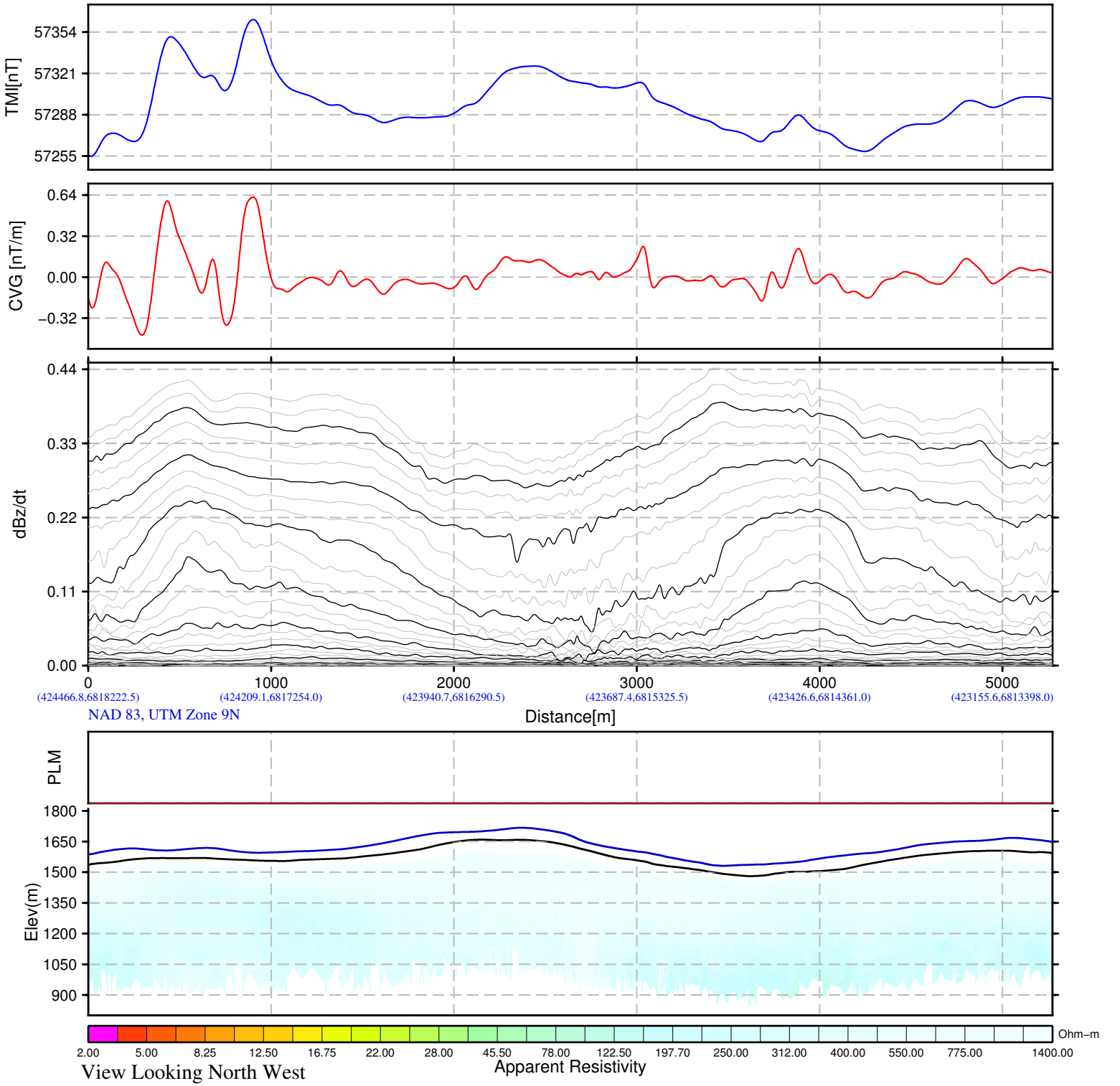
Resistivity Depth Image (RDI) for Line 4080

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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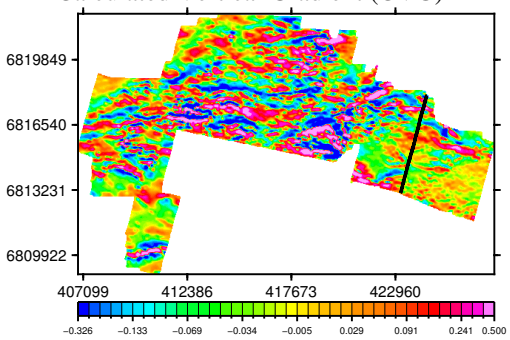
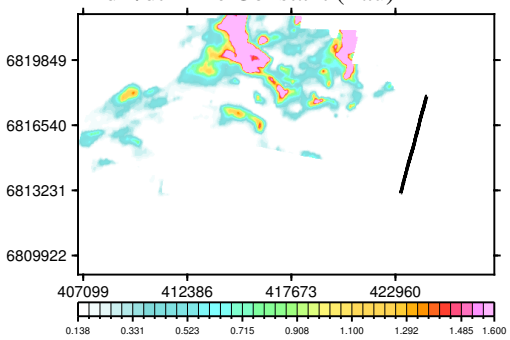
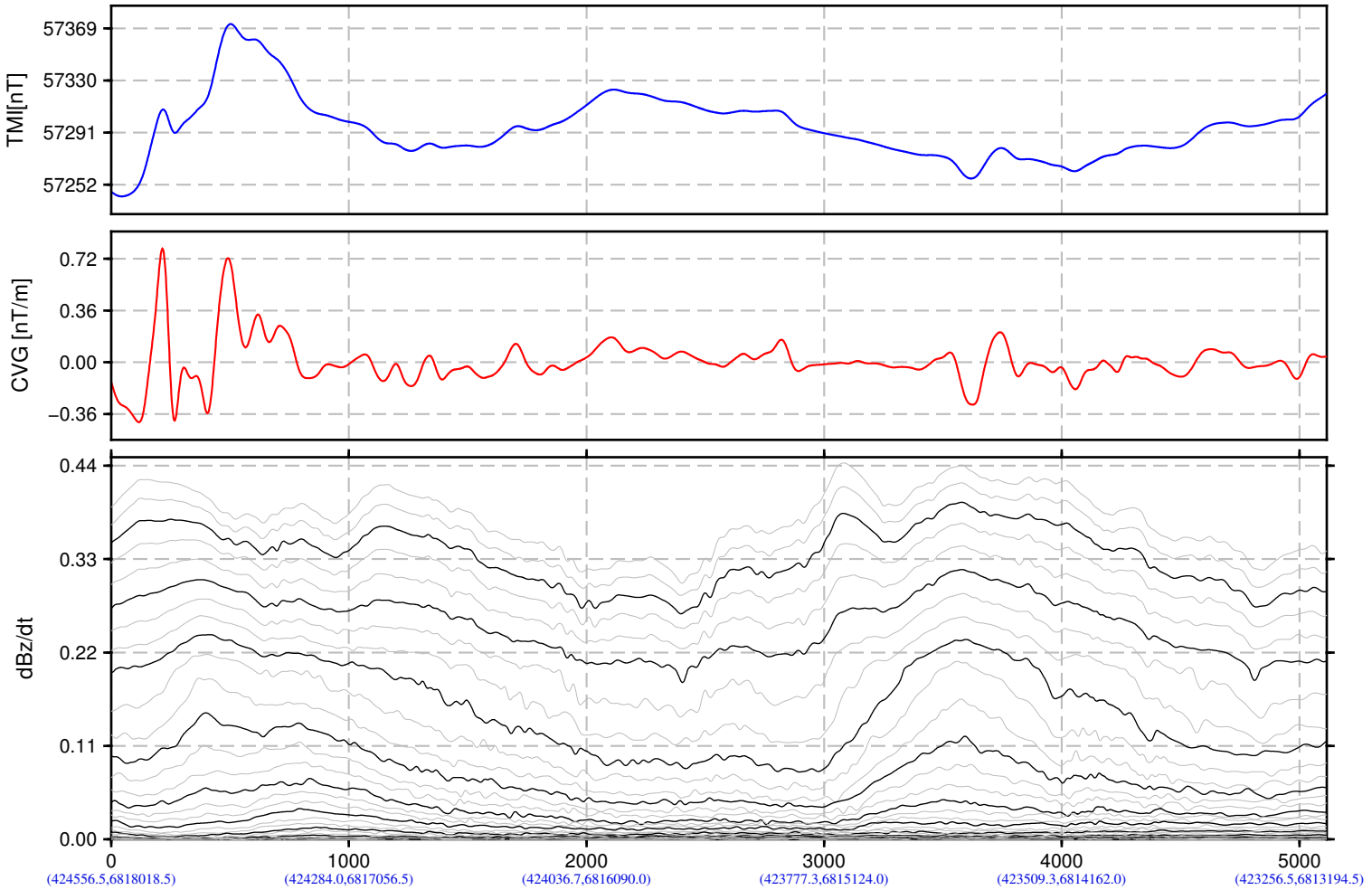
Resistivity Depth Image (RDI) for Line 4090

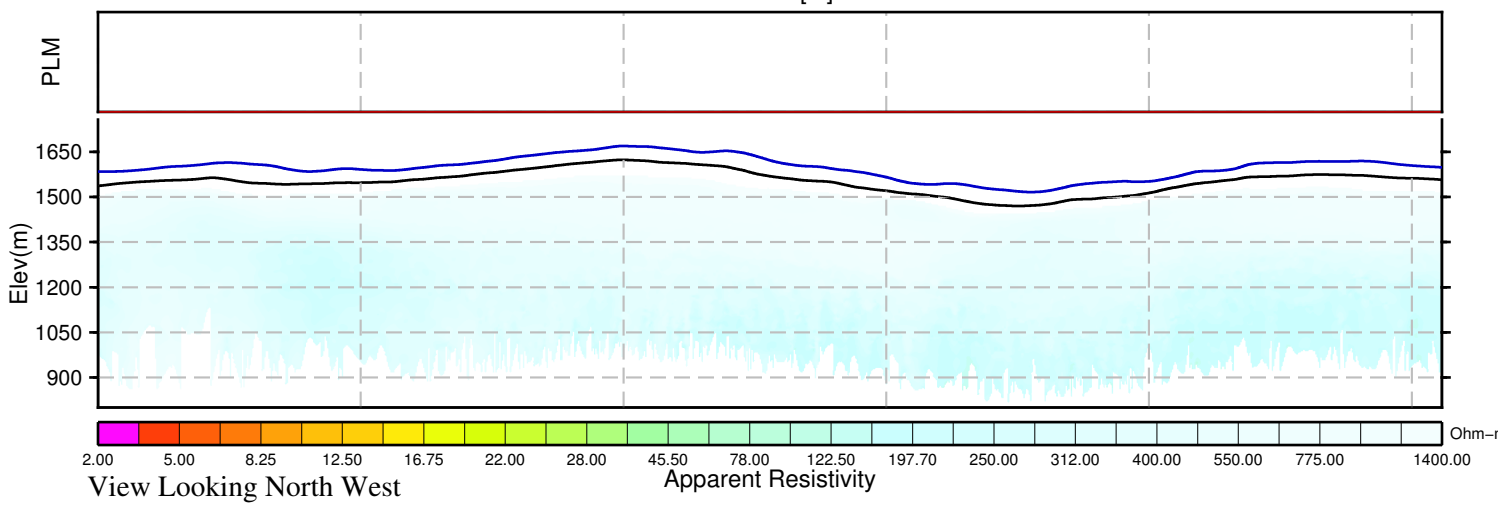
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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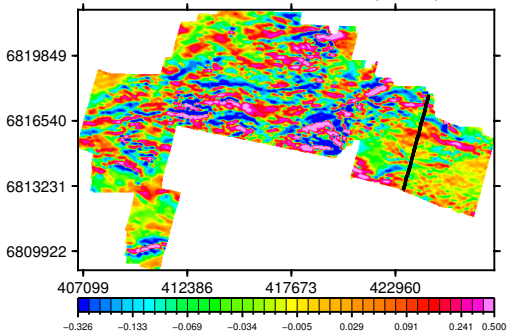
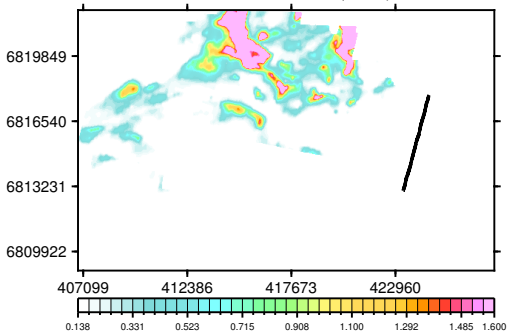
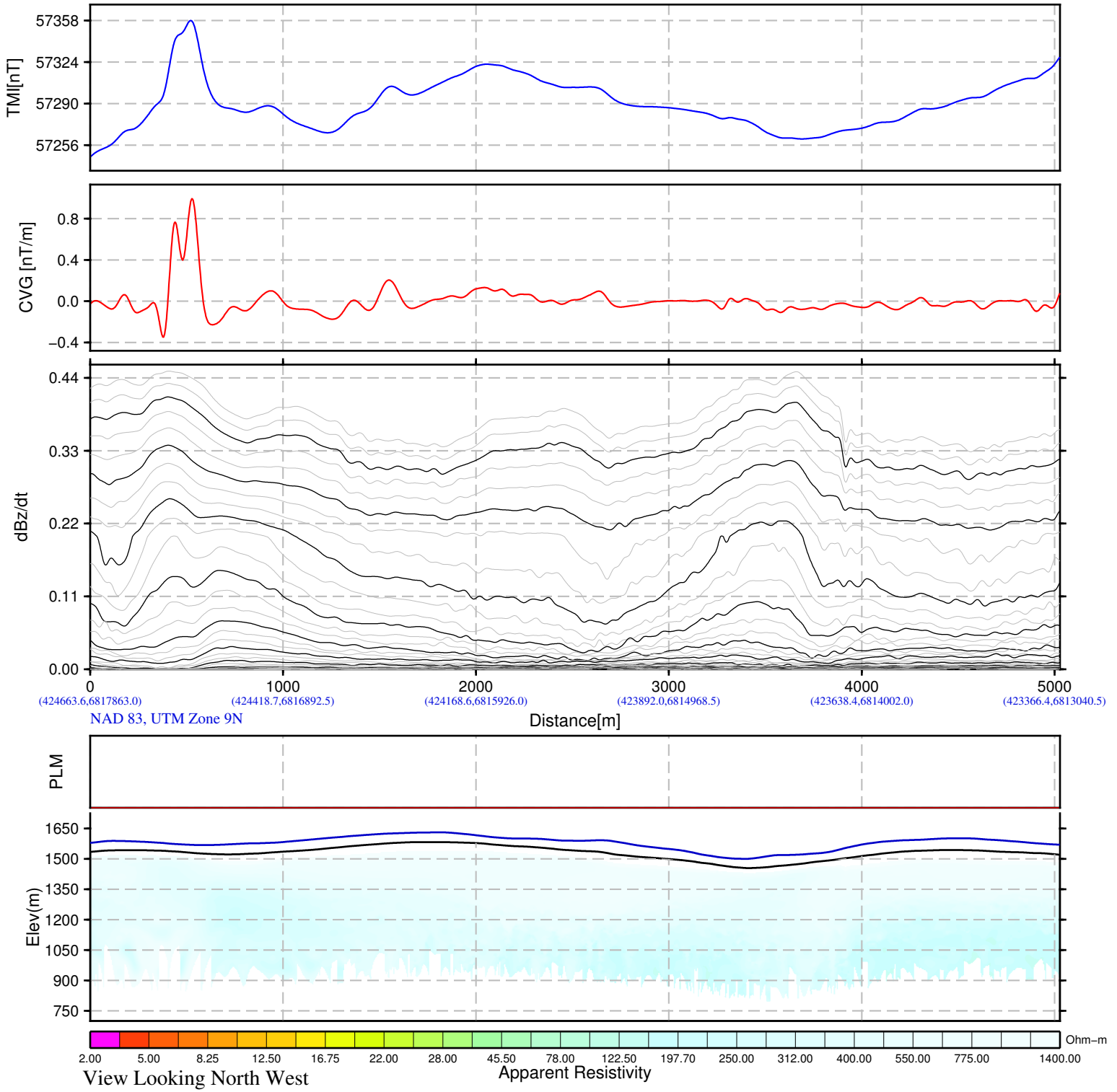
Resistivity Depth Image (RDI) for Line 4100

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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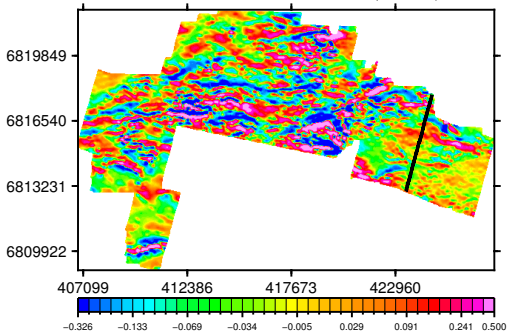
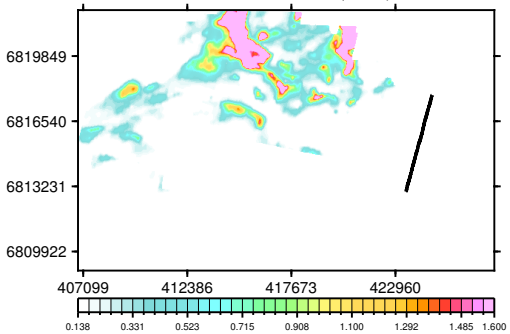
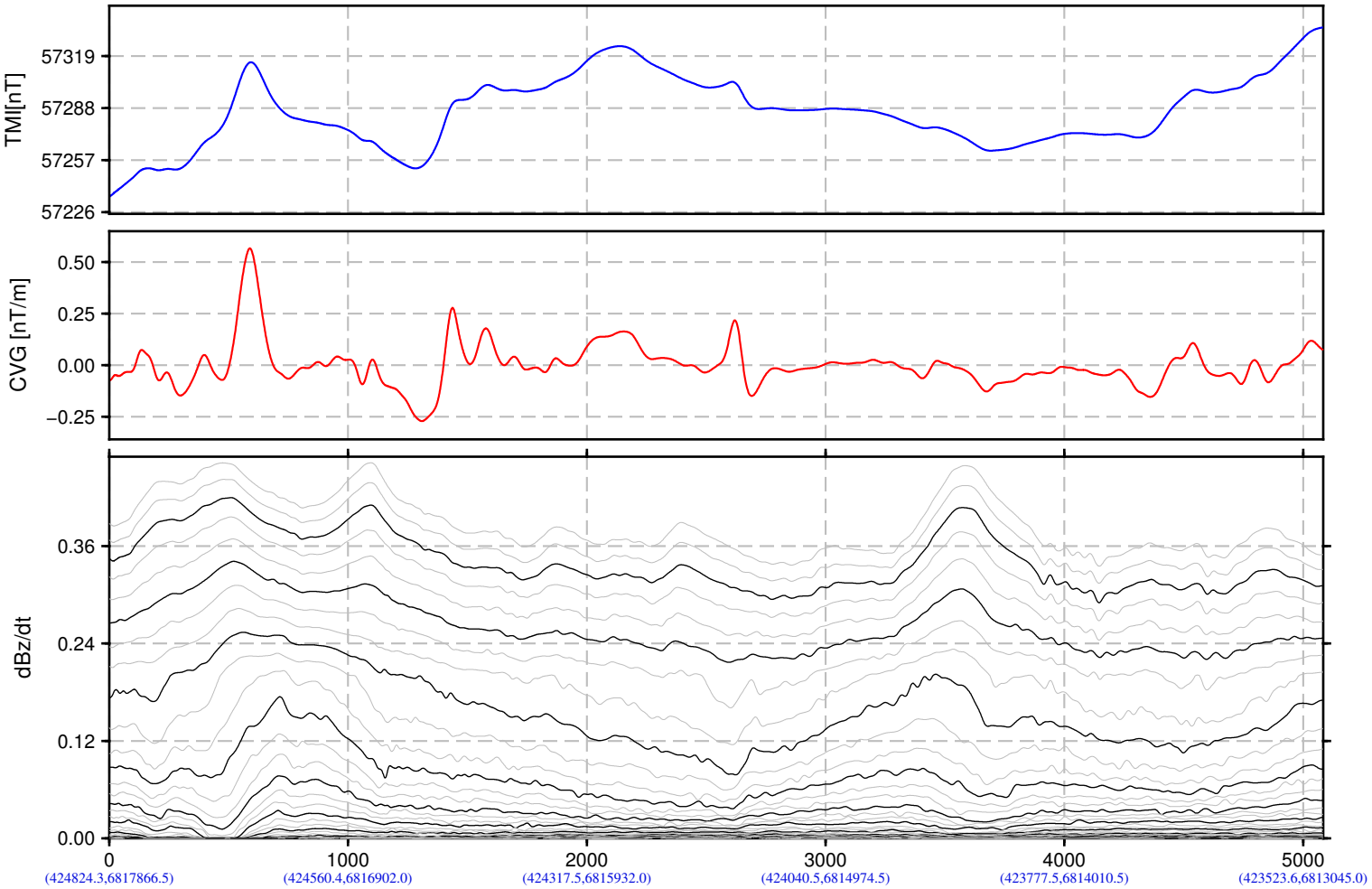
Resistivity Depth Image (RDI) for Line 4110

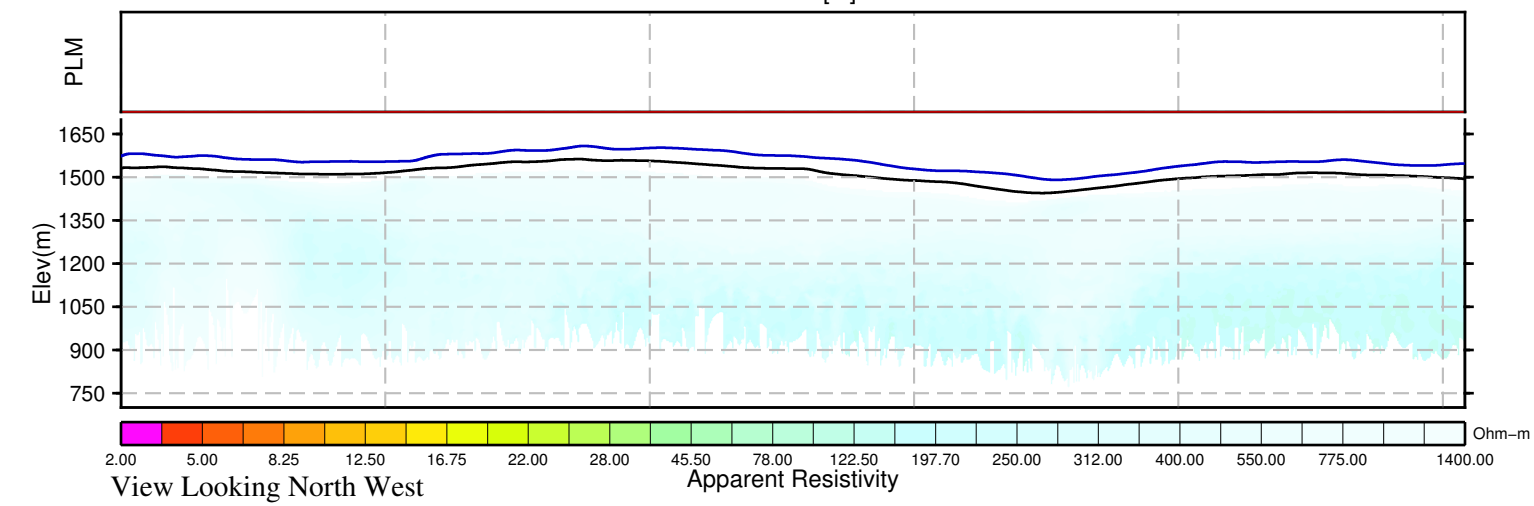
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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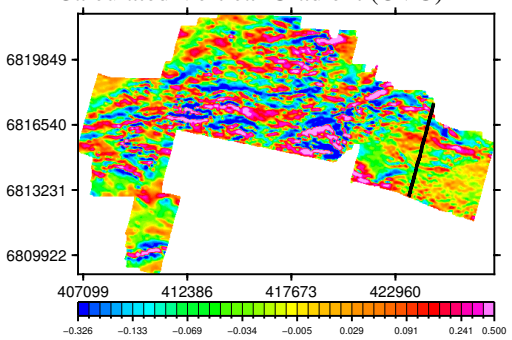
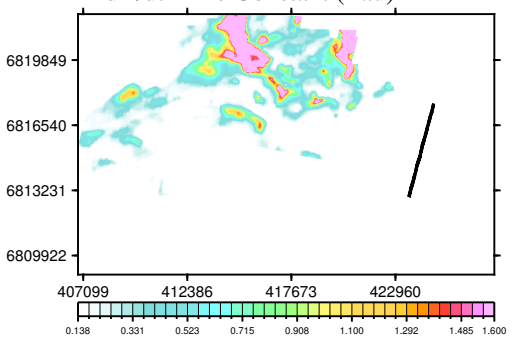
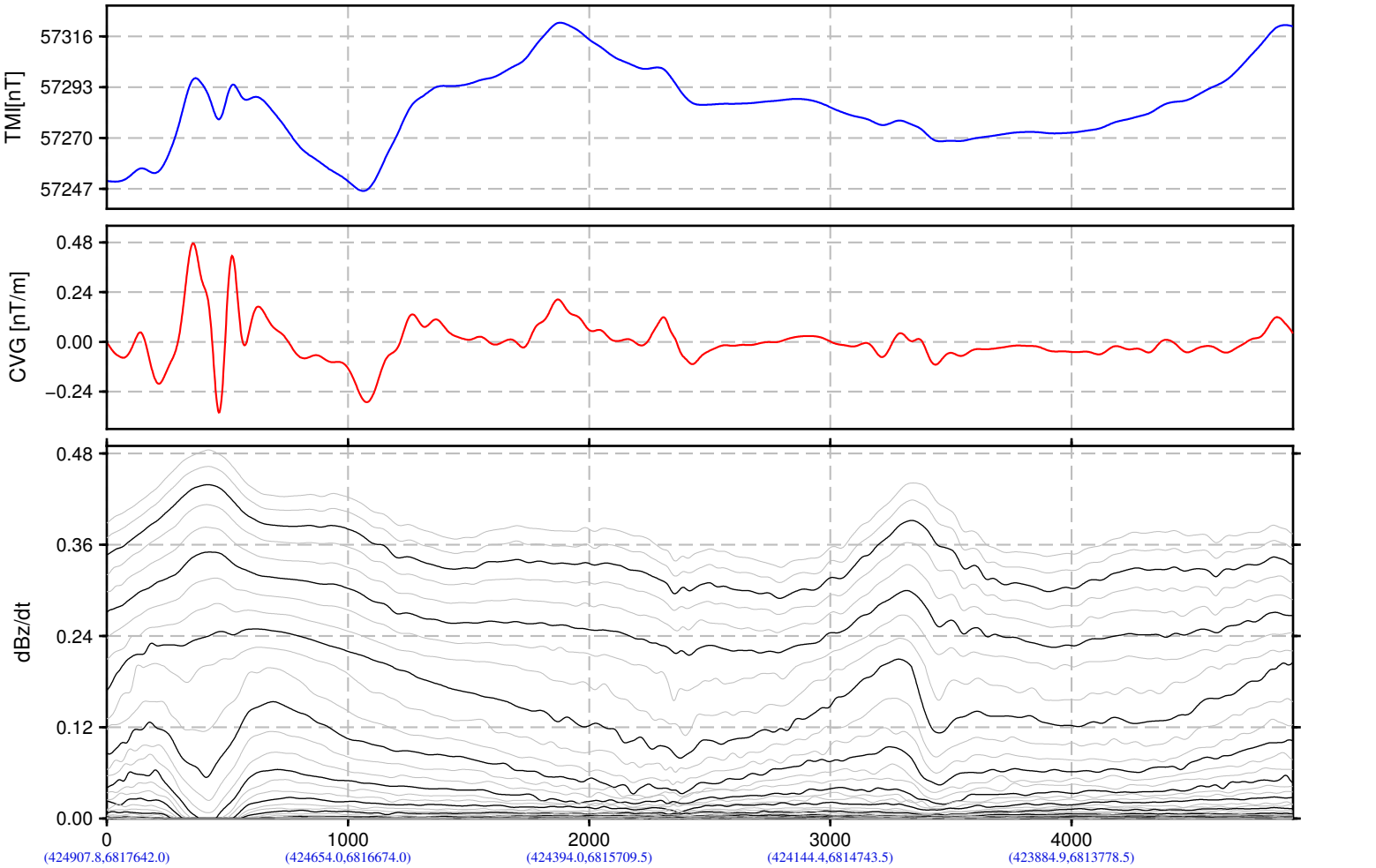
Resistivity Depth Image (RDI) for Line 4120

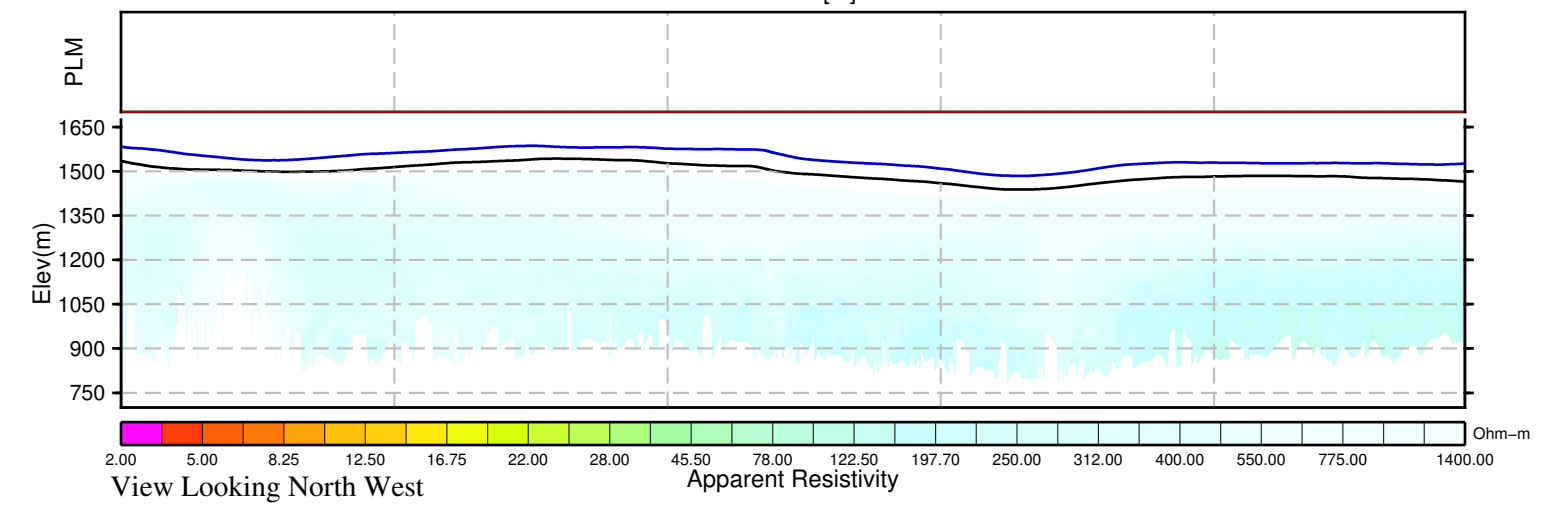
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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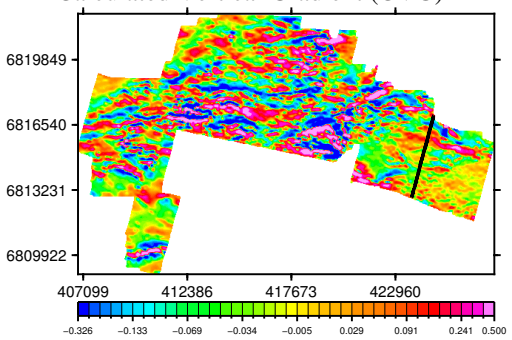
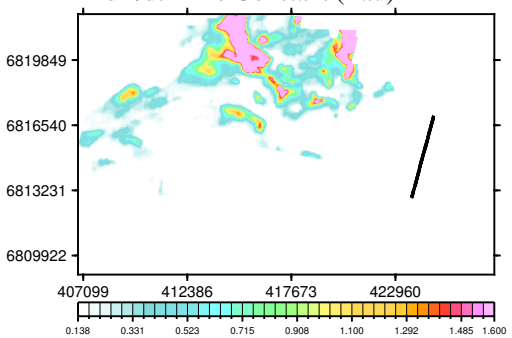
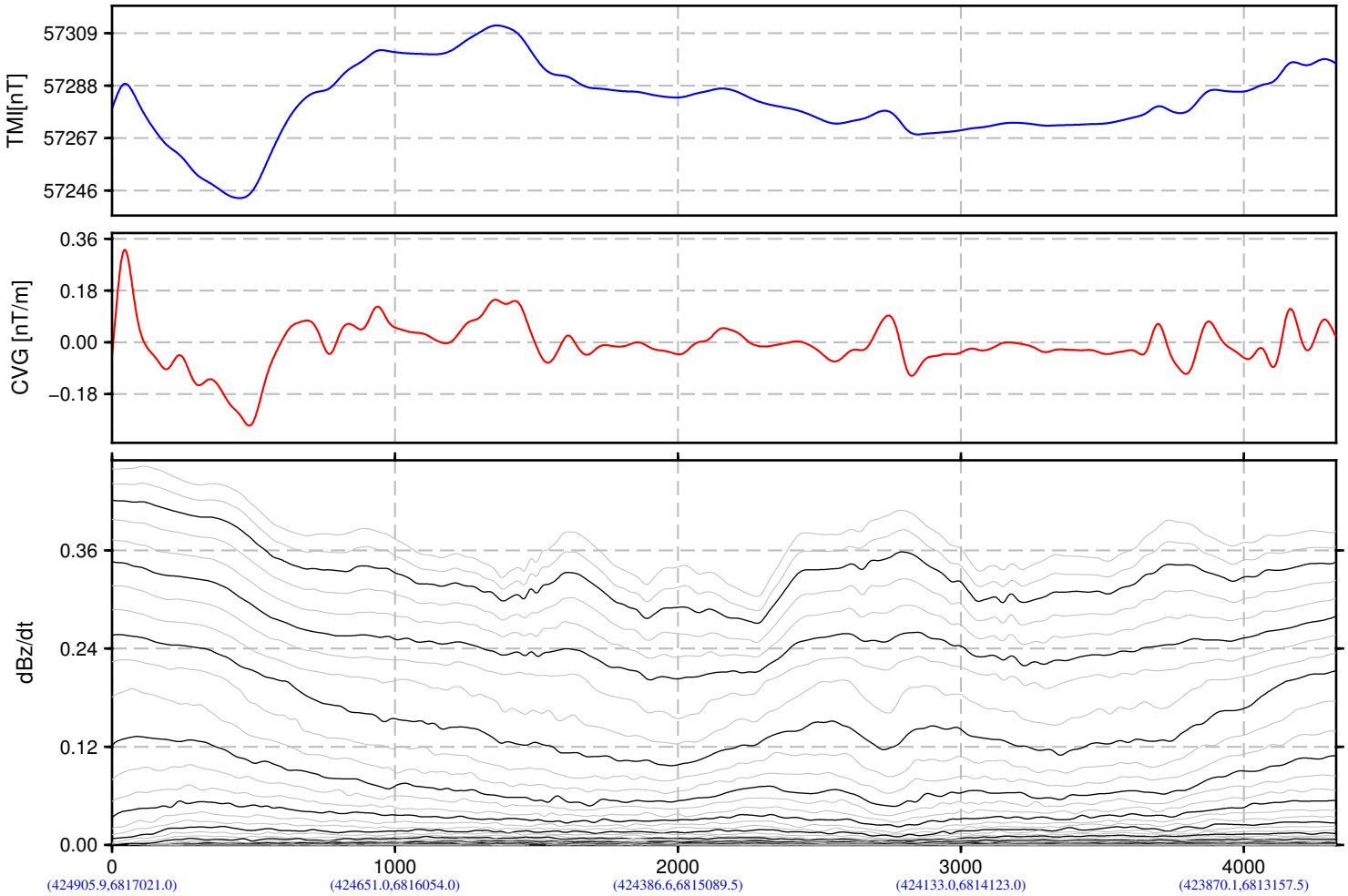
Resistivity Depth Image (RDI) for Line 4130

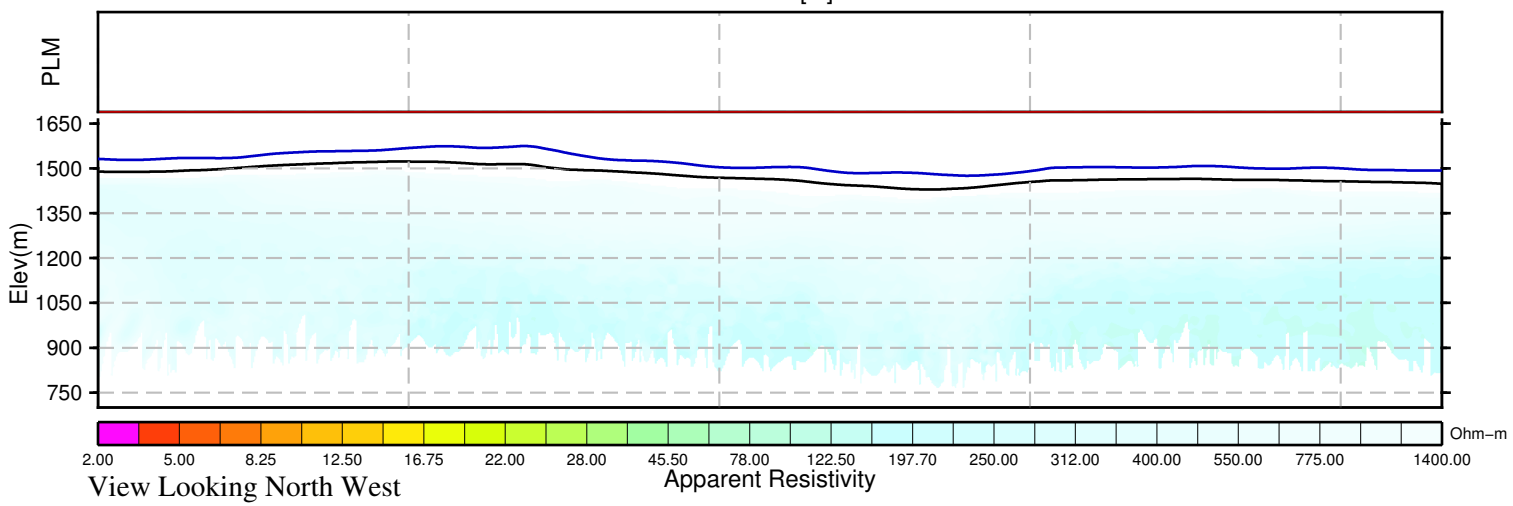
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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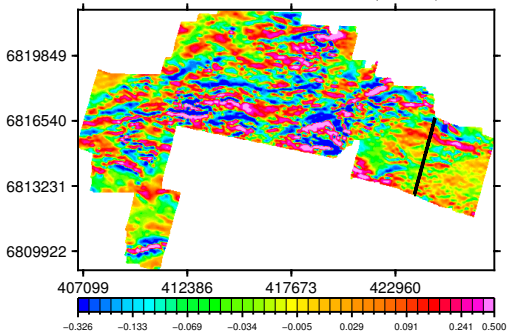
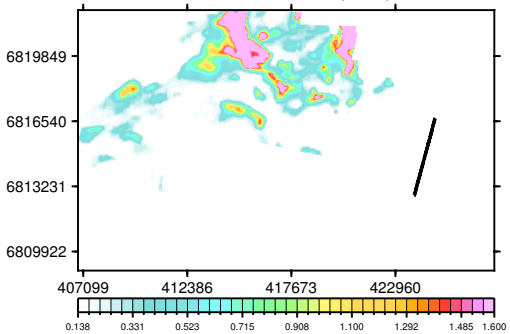
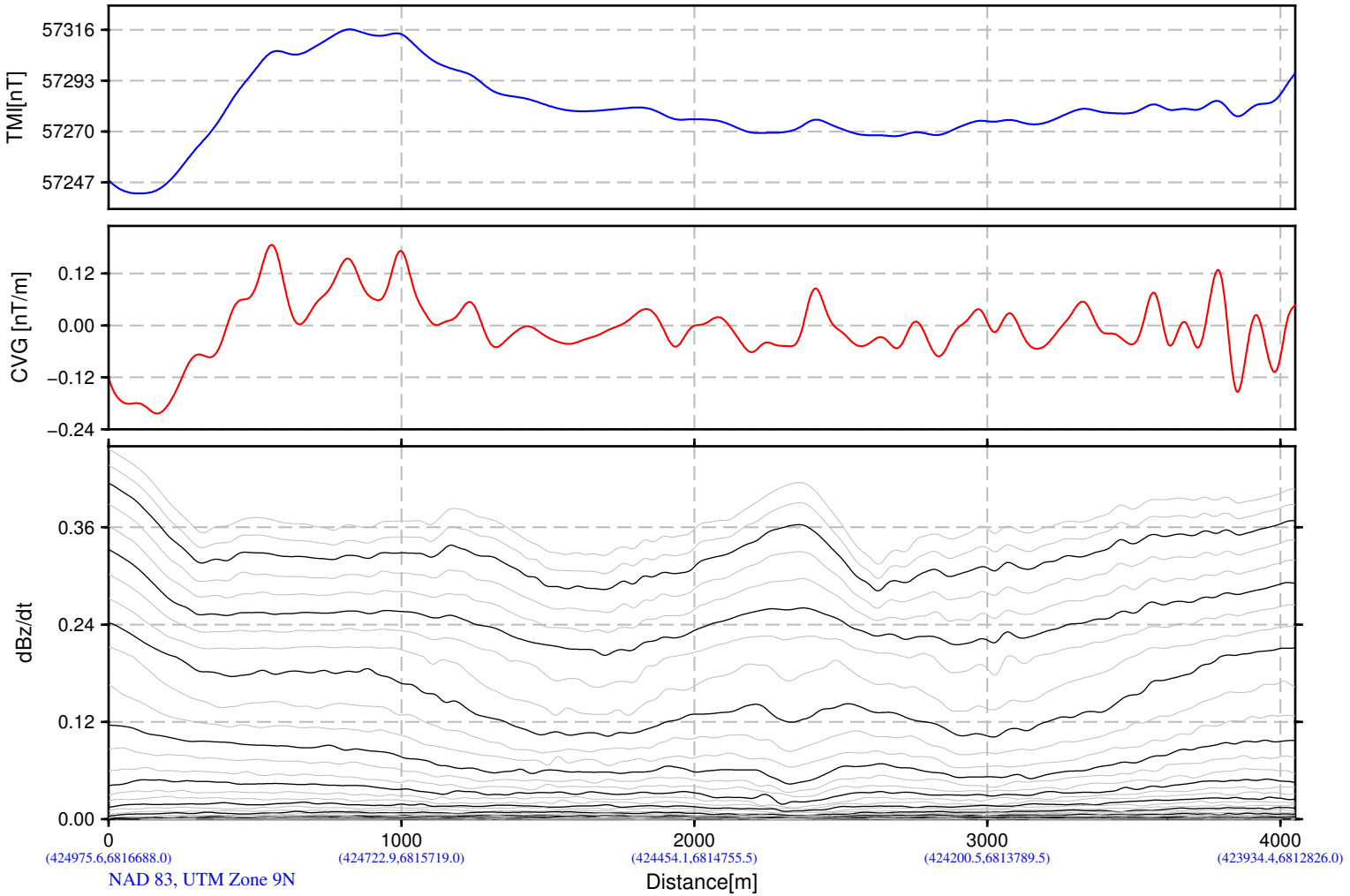
Resistivity Depth Image (RDI) for Line 4140

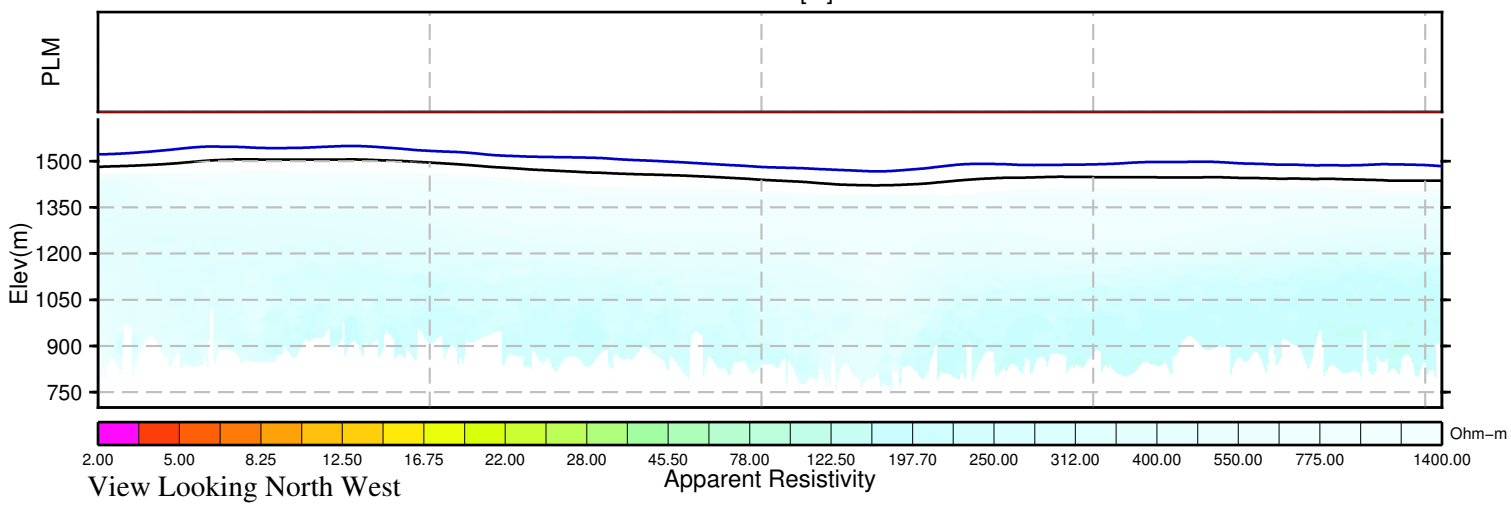
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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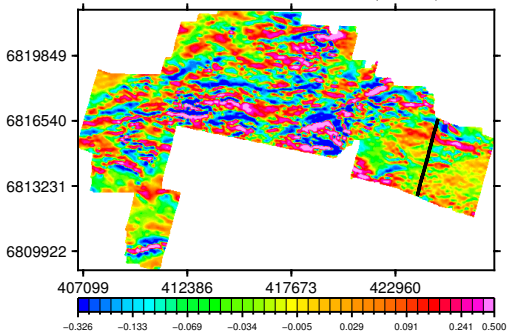
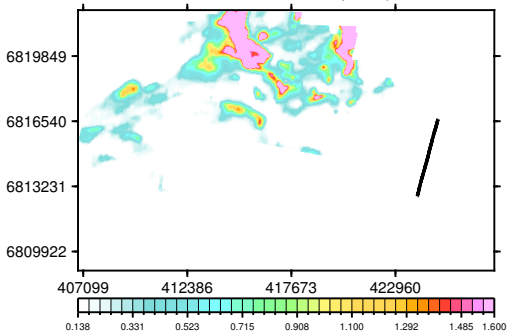
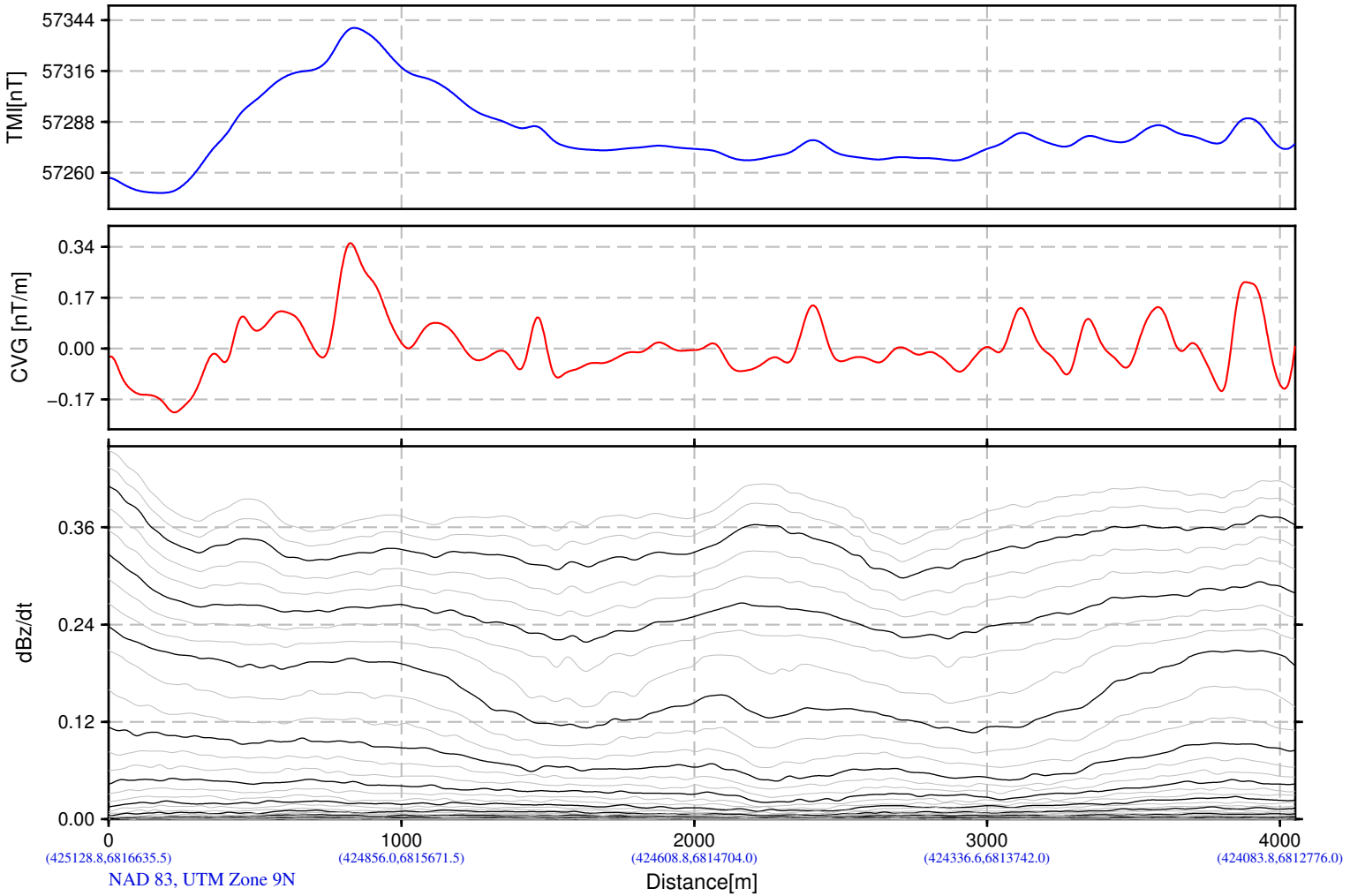
Resistivity Depth Image (RDI) for Line 4150

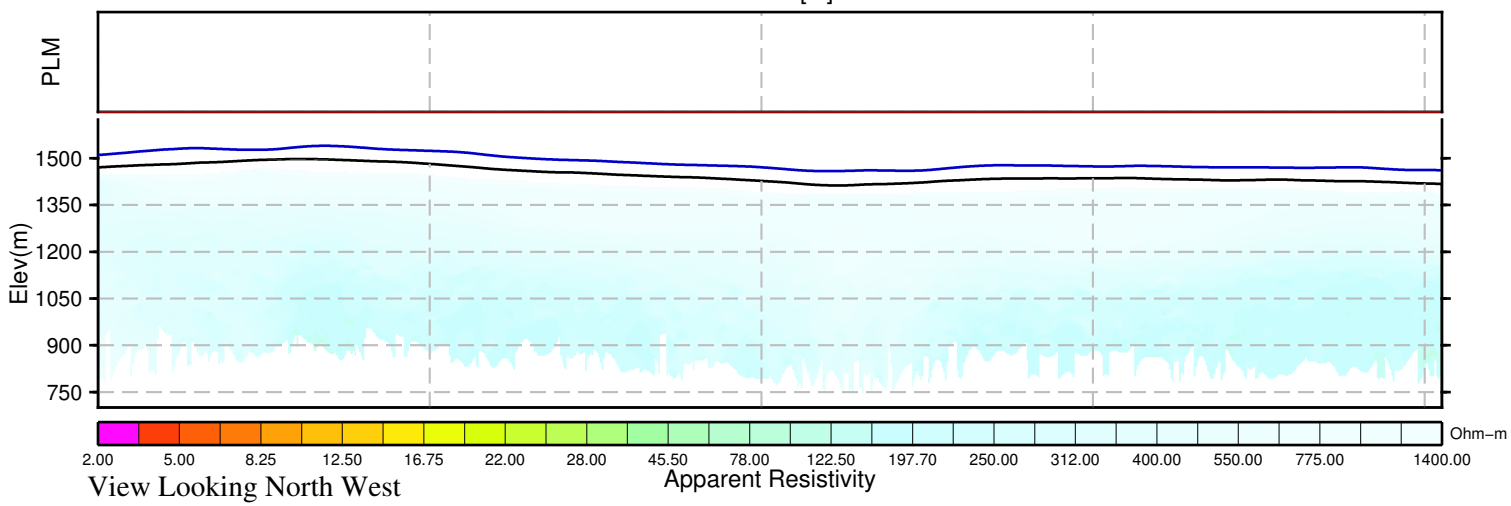
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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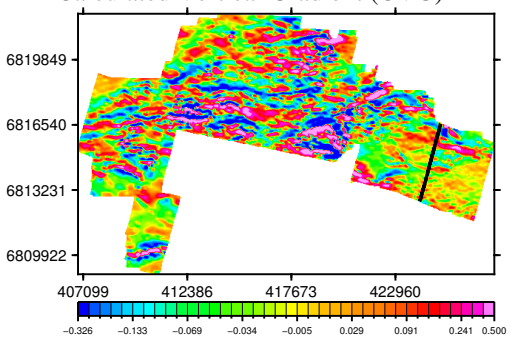
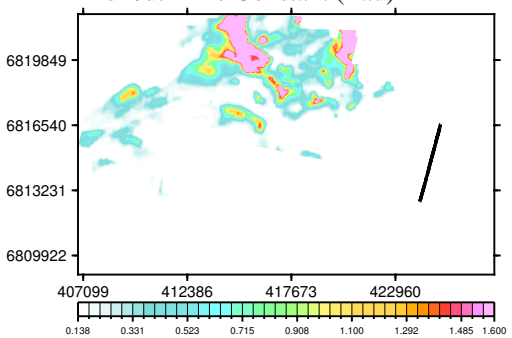
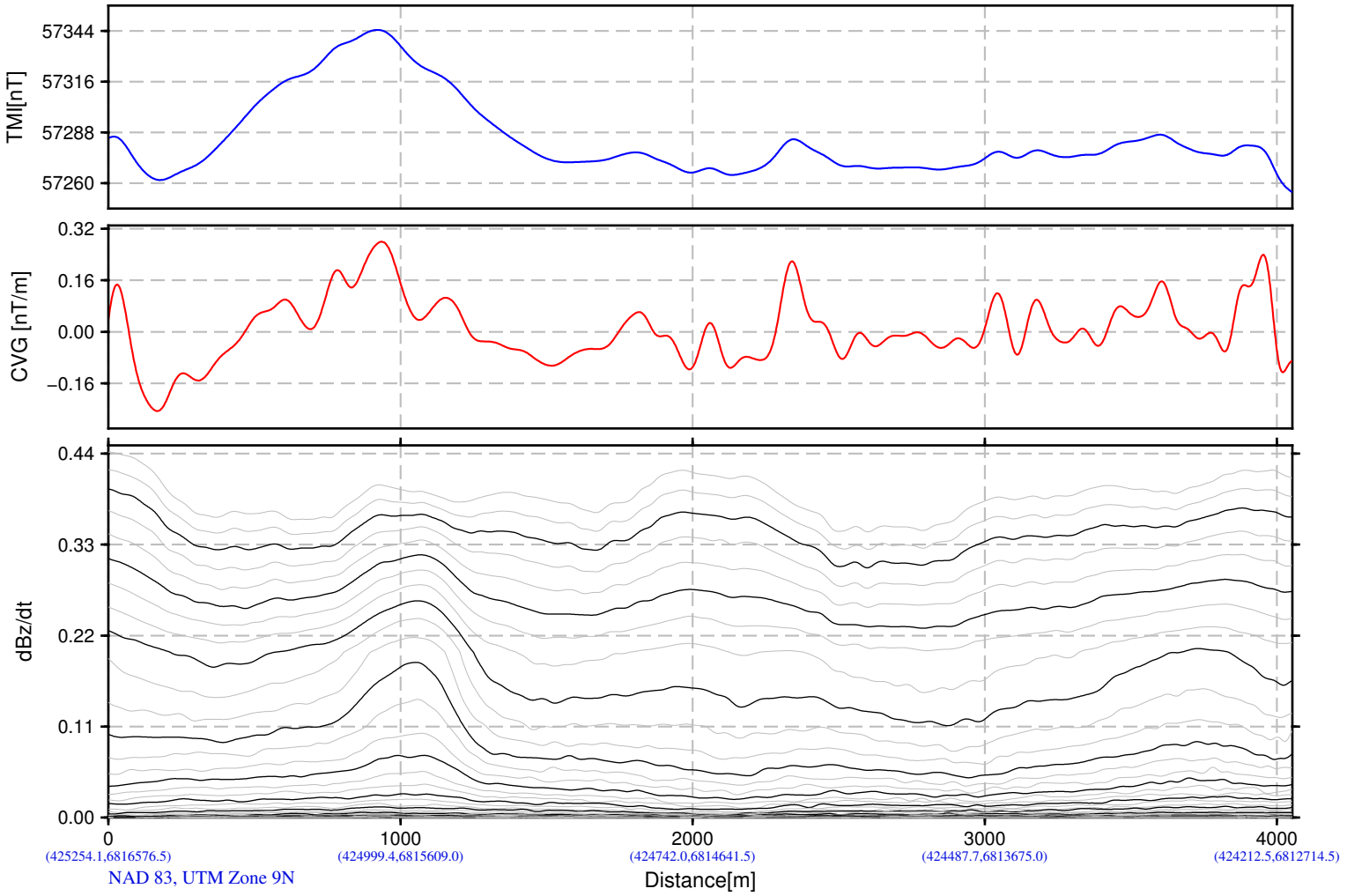
Resistivity Depth Image (RDI) for Line 4160

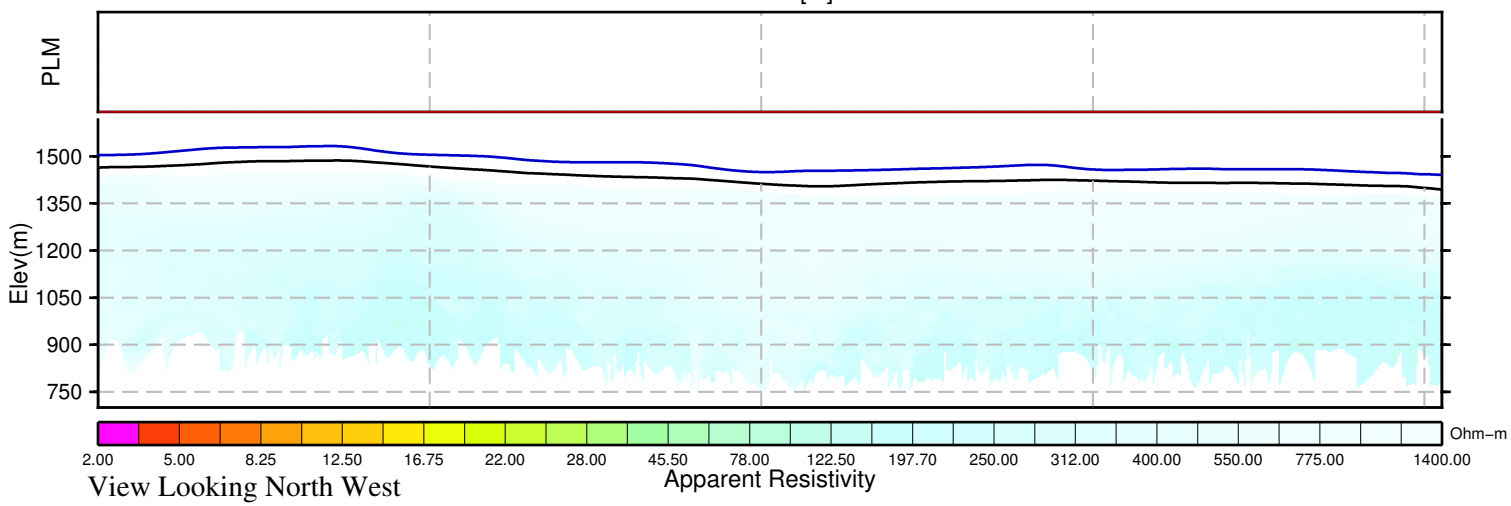
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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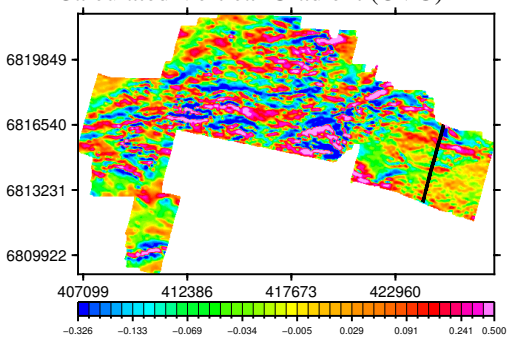
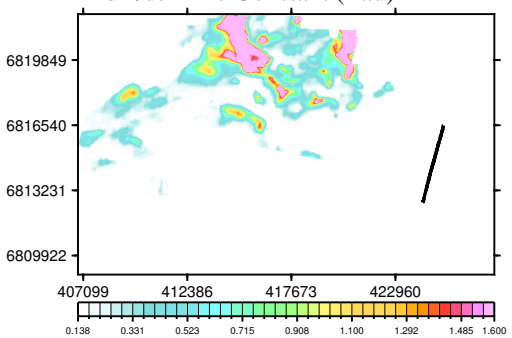
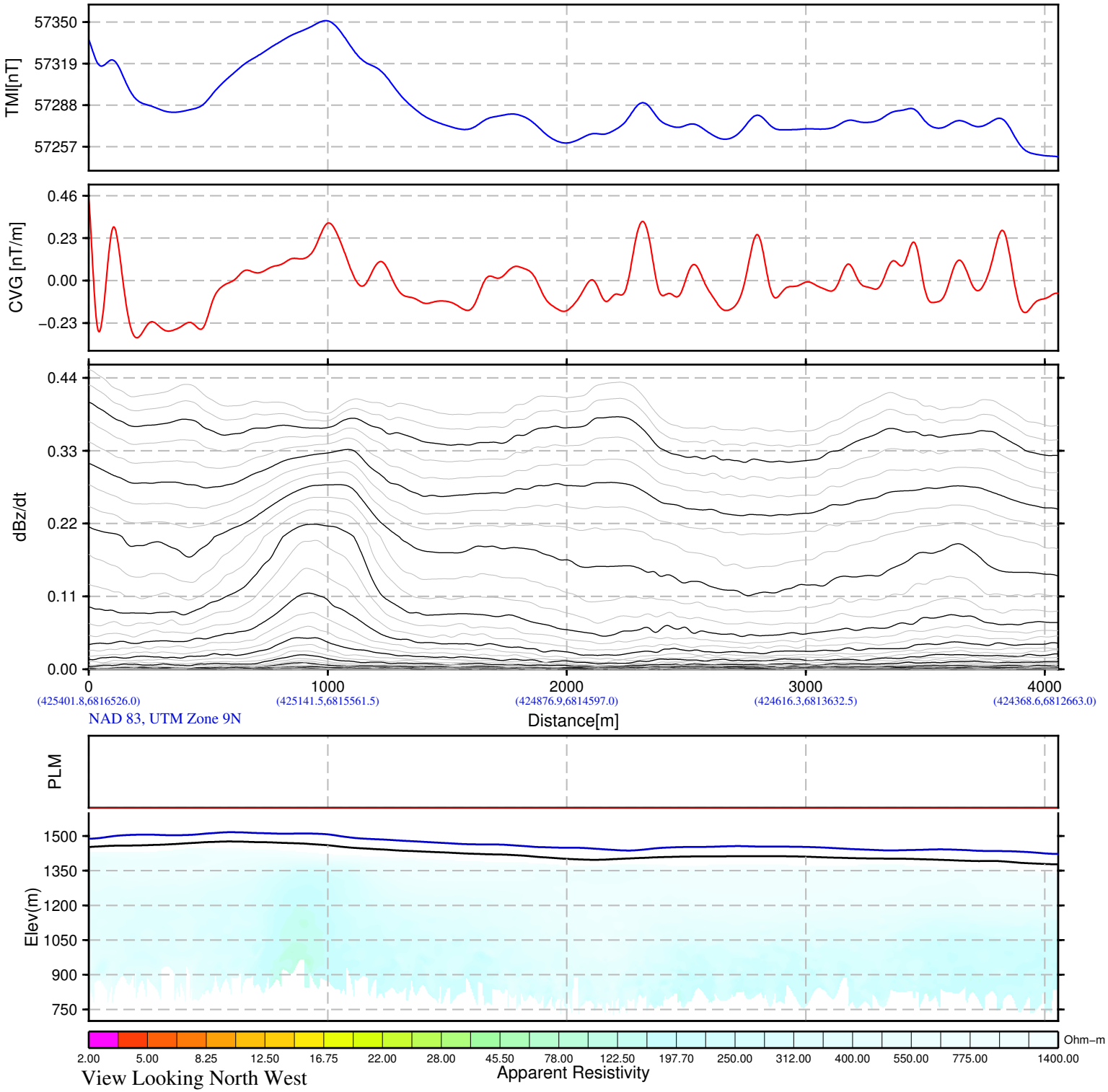
Resistivity Depth Image (RDI) for Line 4170

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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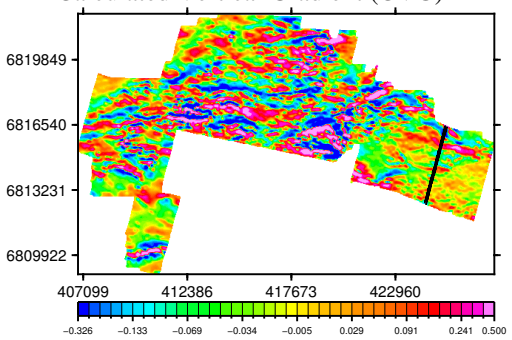
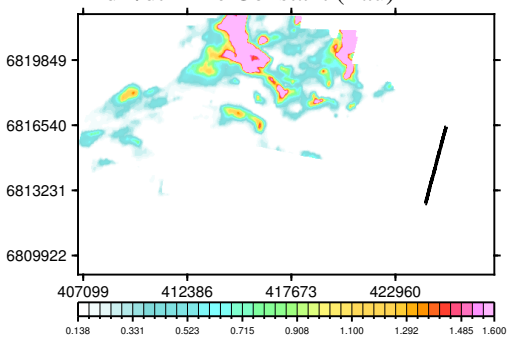
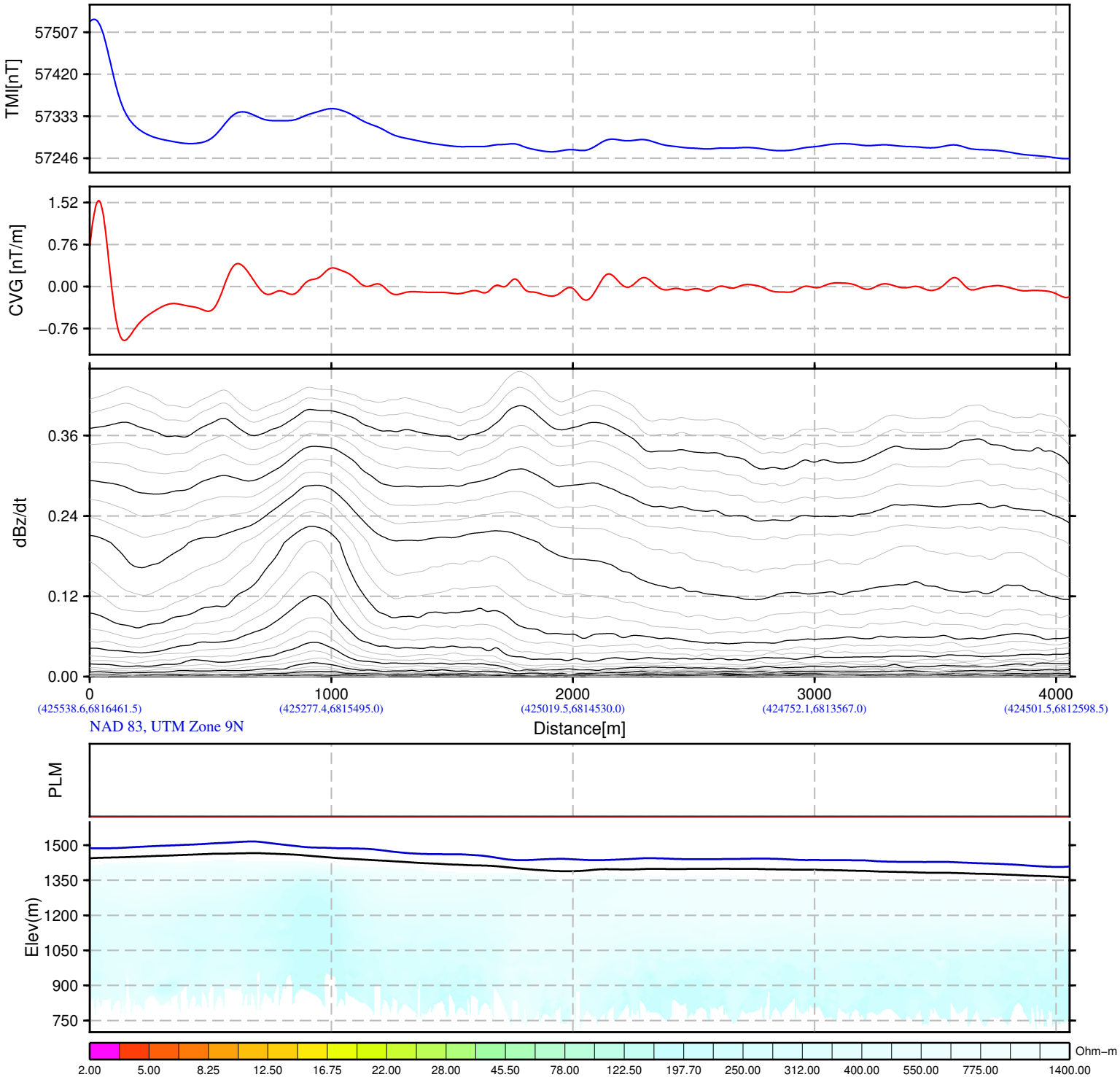
Resistivity Depth Image (RDI) for Line 4180

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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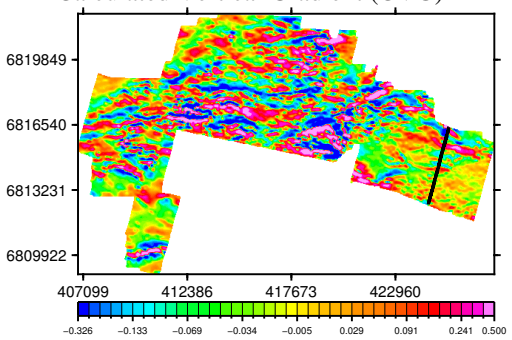
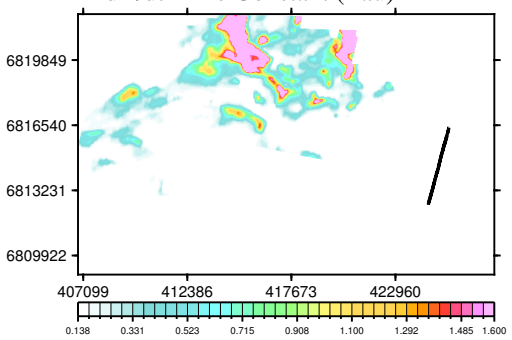
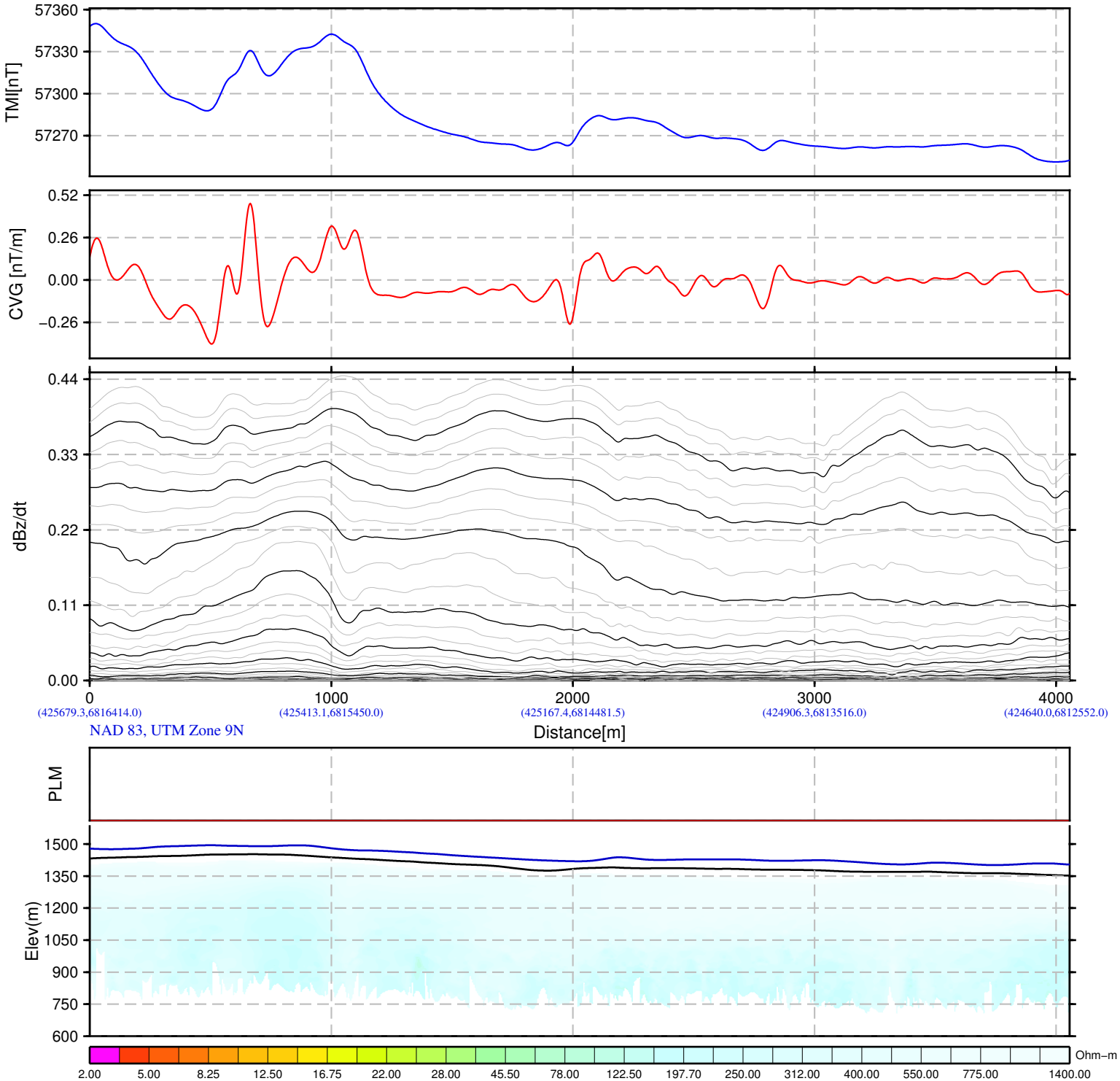
Resistivity Depth Image (RDI) for Line 4190

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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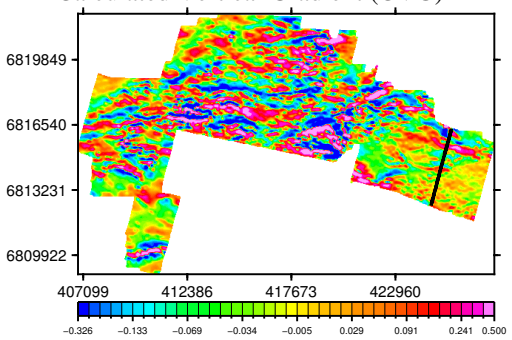
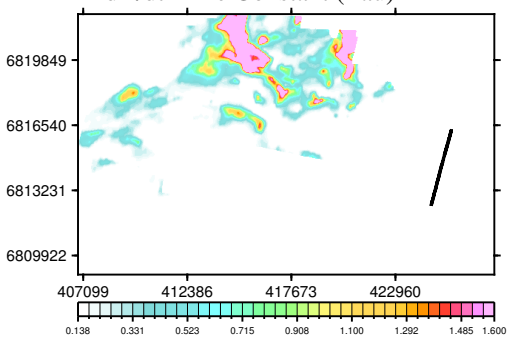
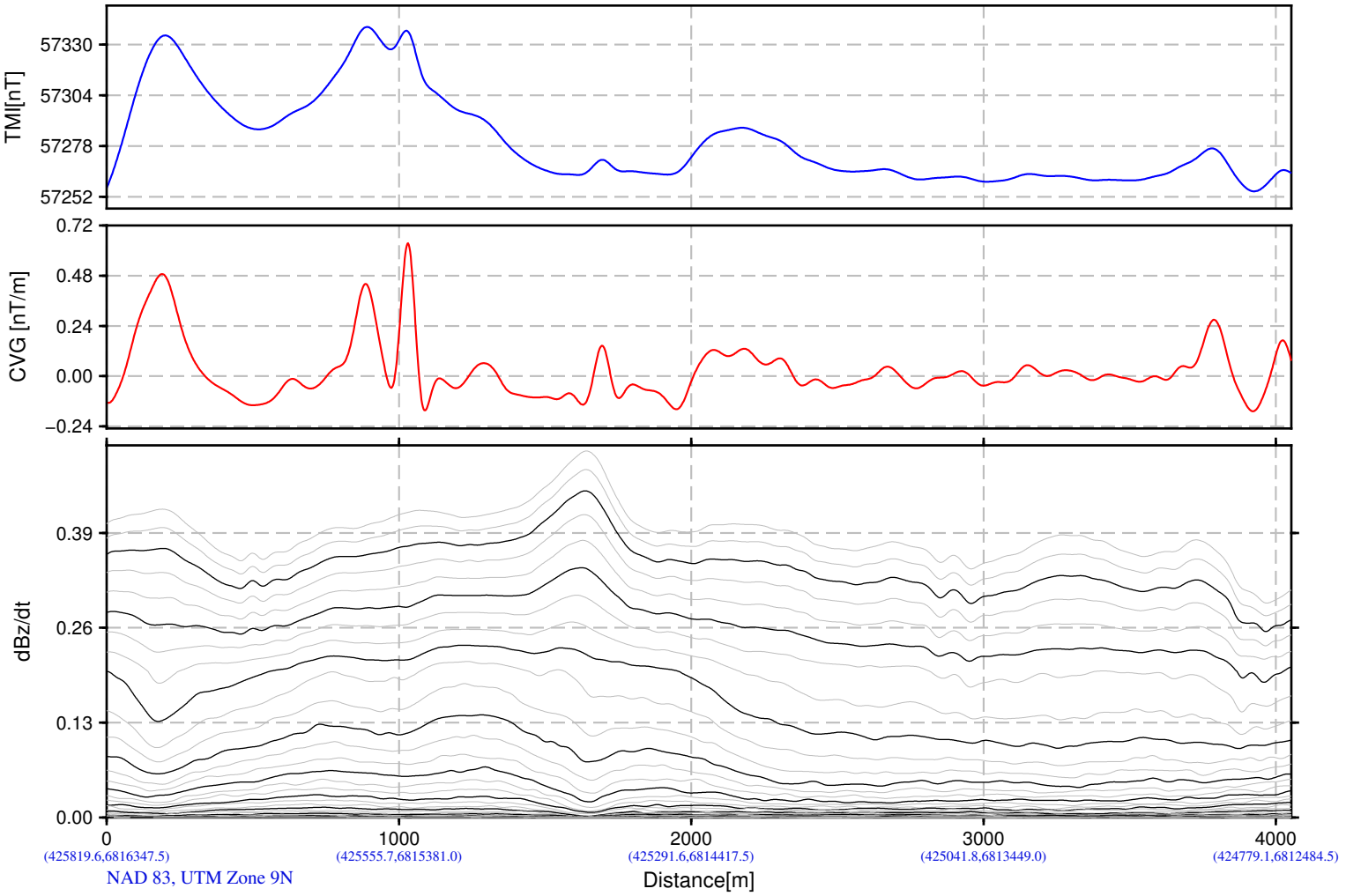
Resistivity Depth Image (RDI) for Line 4200

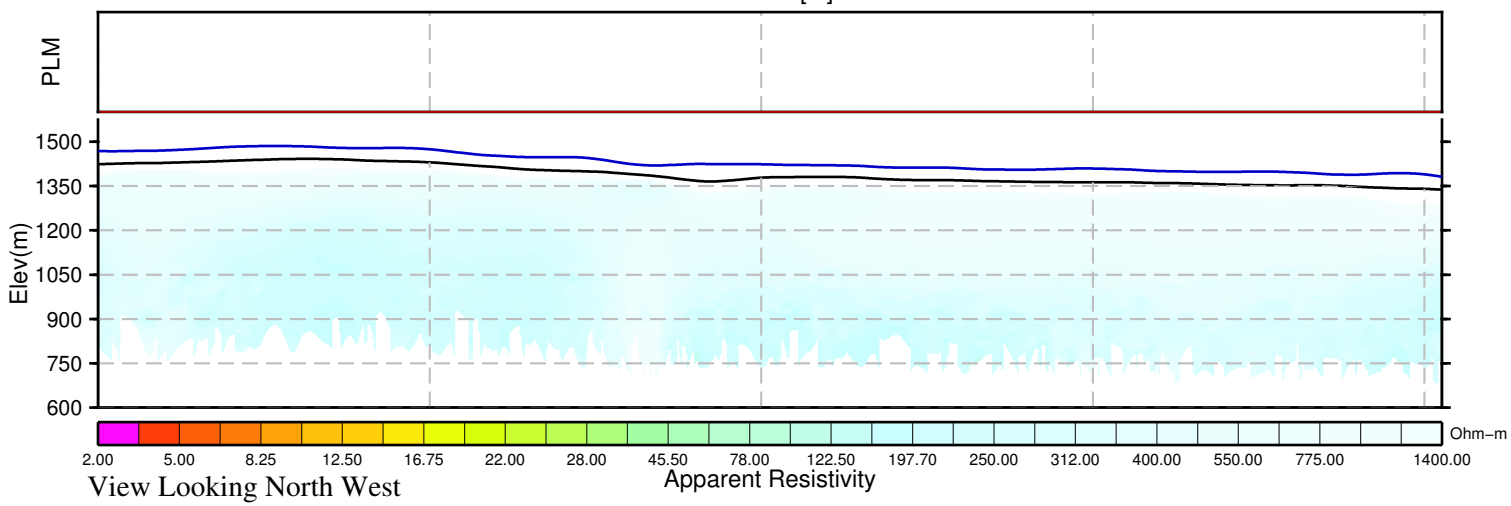
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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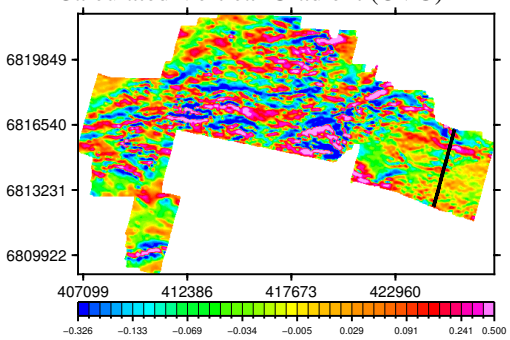
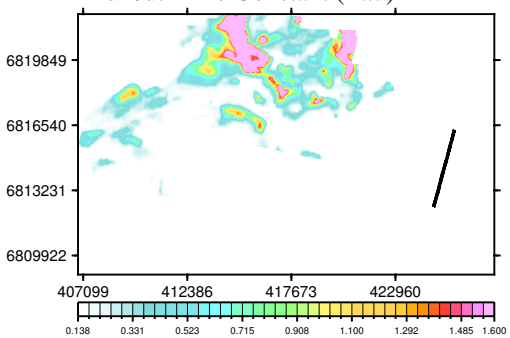
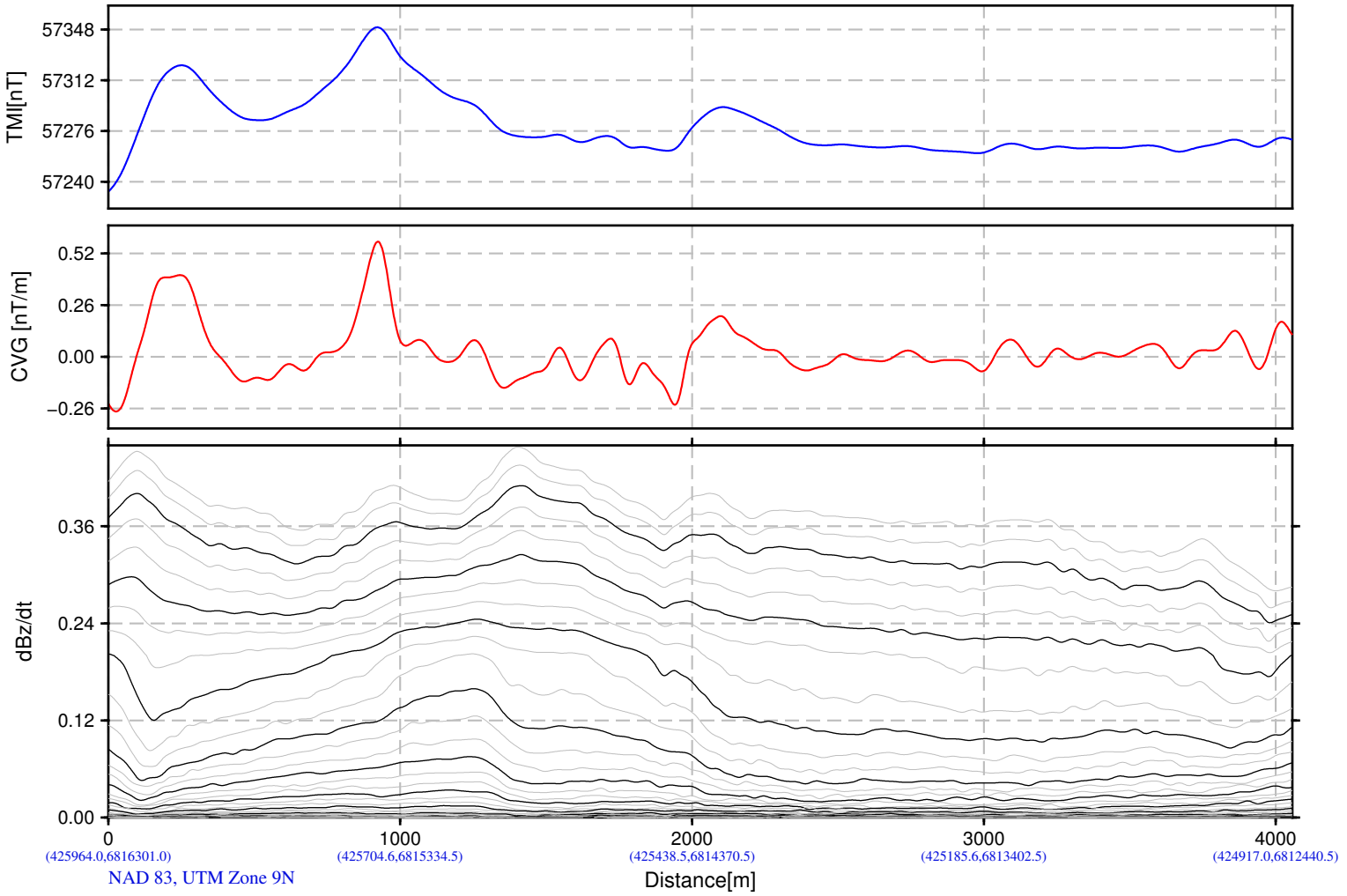
Resistivity Depth Image (RDI) for Line 4210

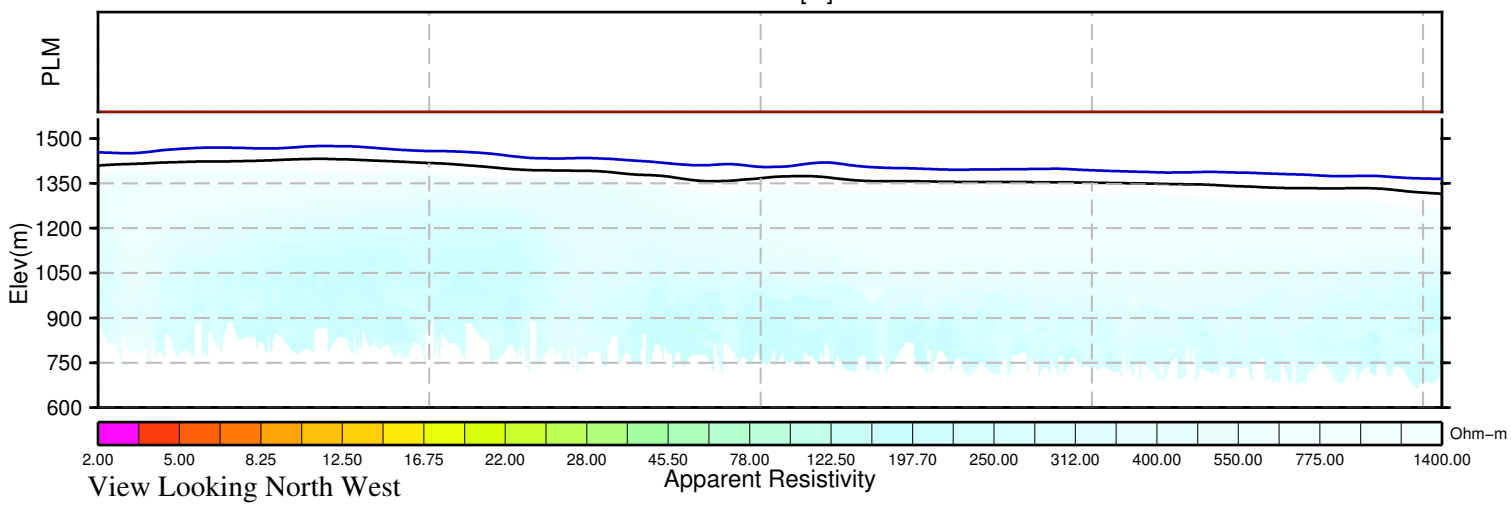
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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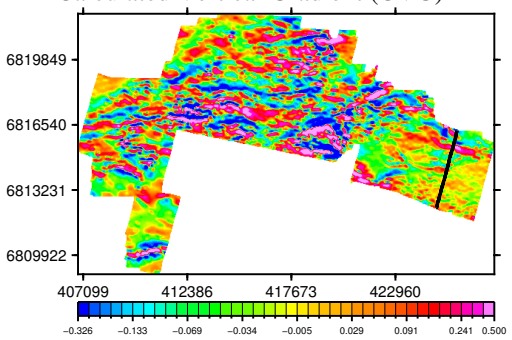
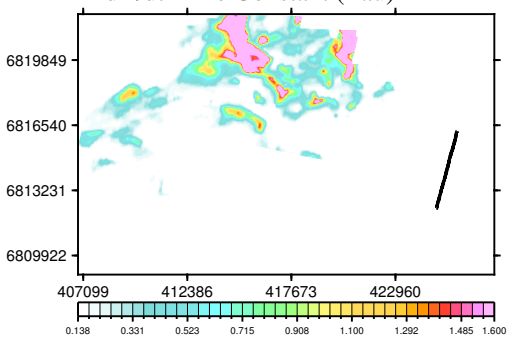
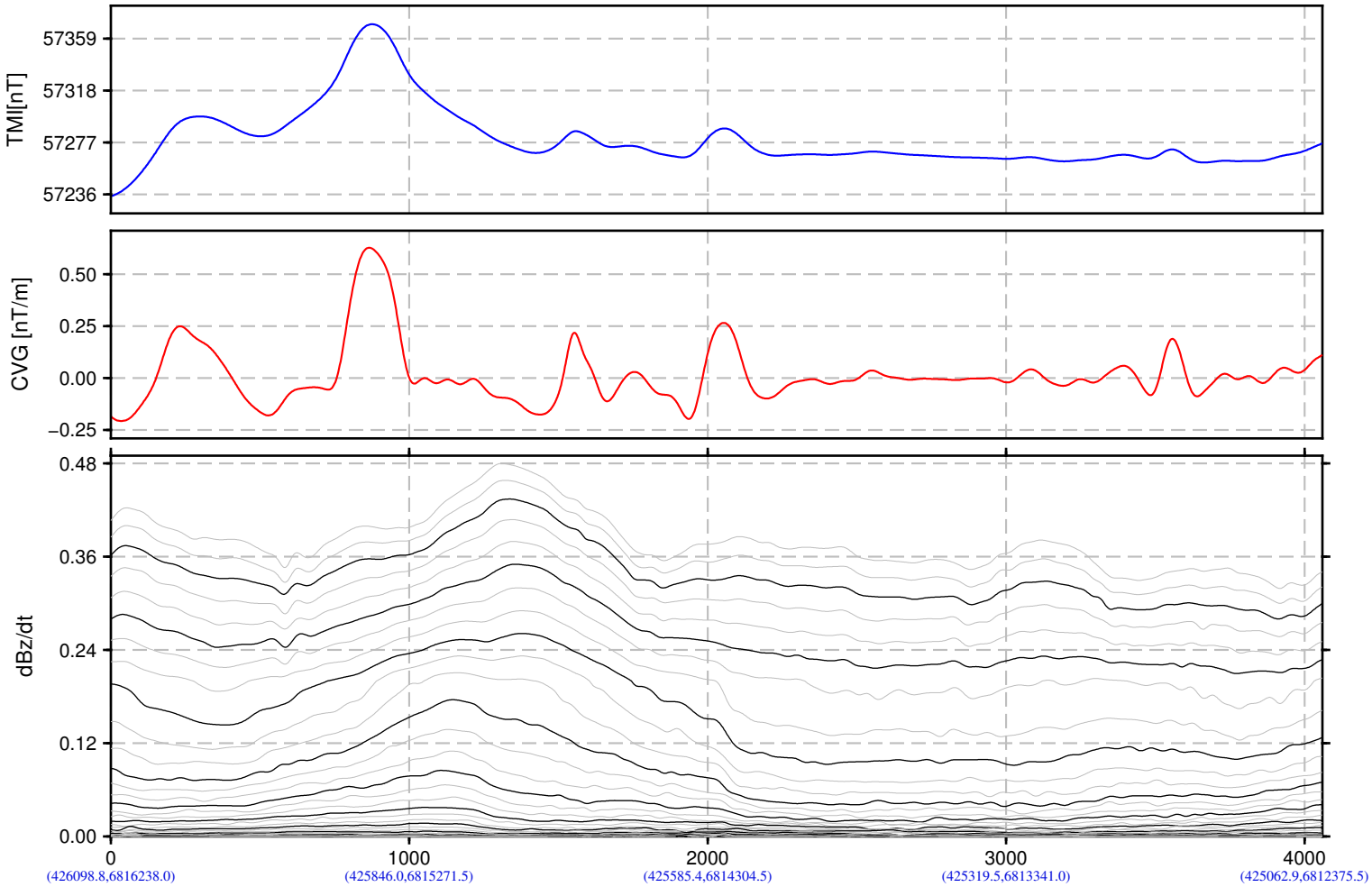
Resistivity Depth Image (RDI) for Line 4220

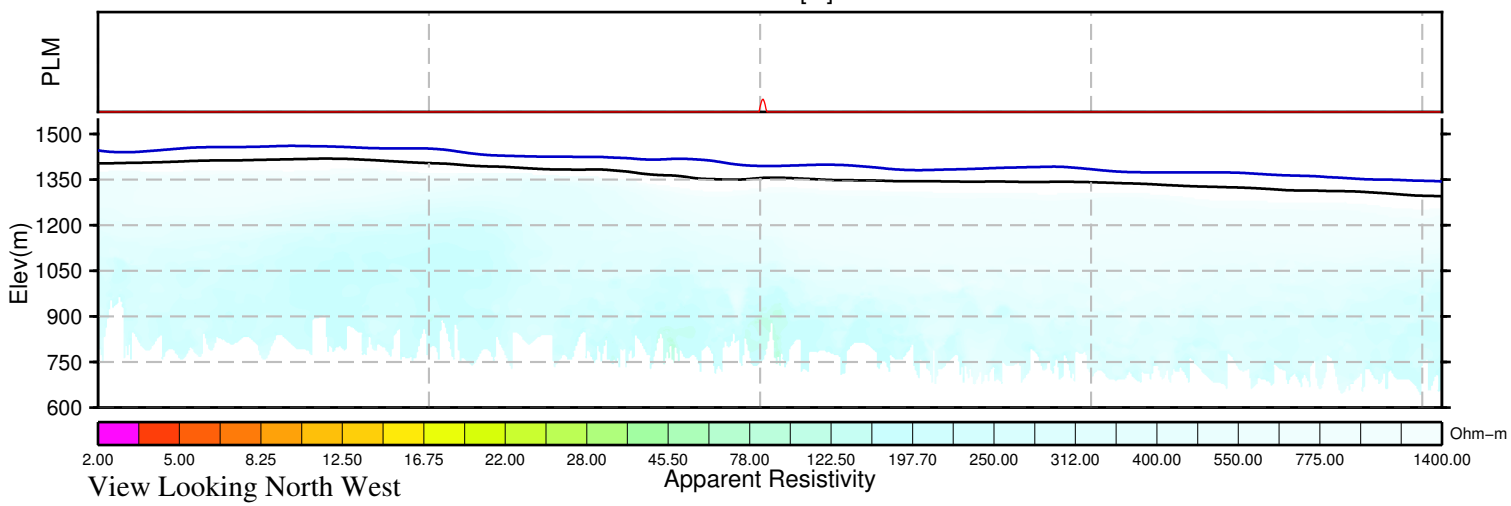
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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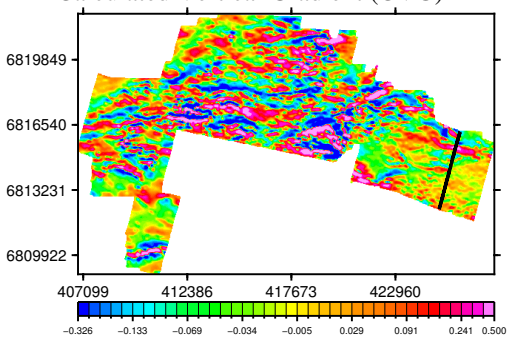
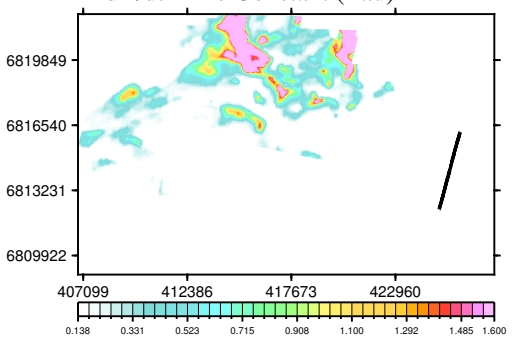
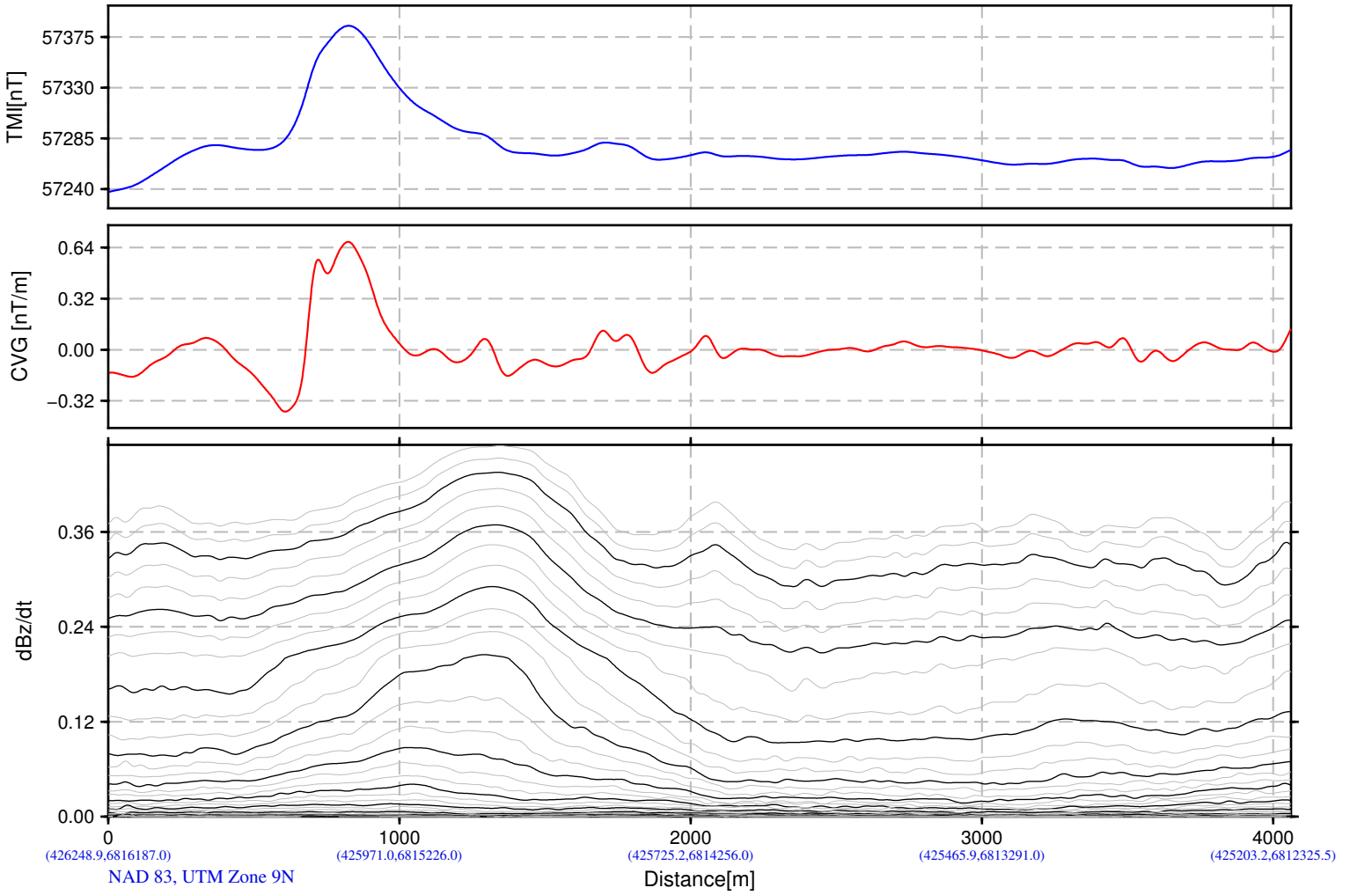
Resistivity Depth Image (RDI) for Line 4230

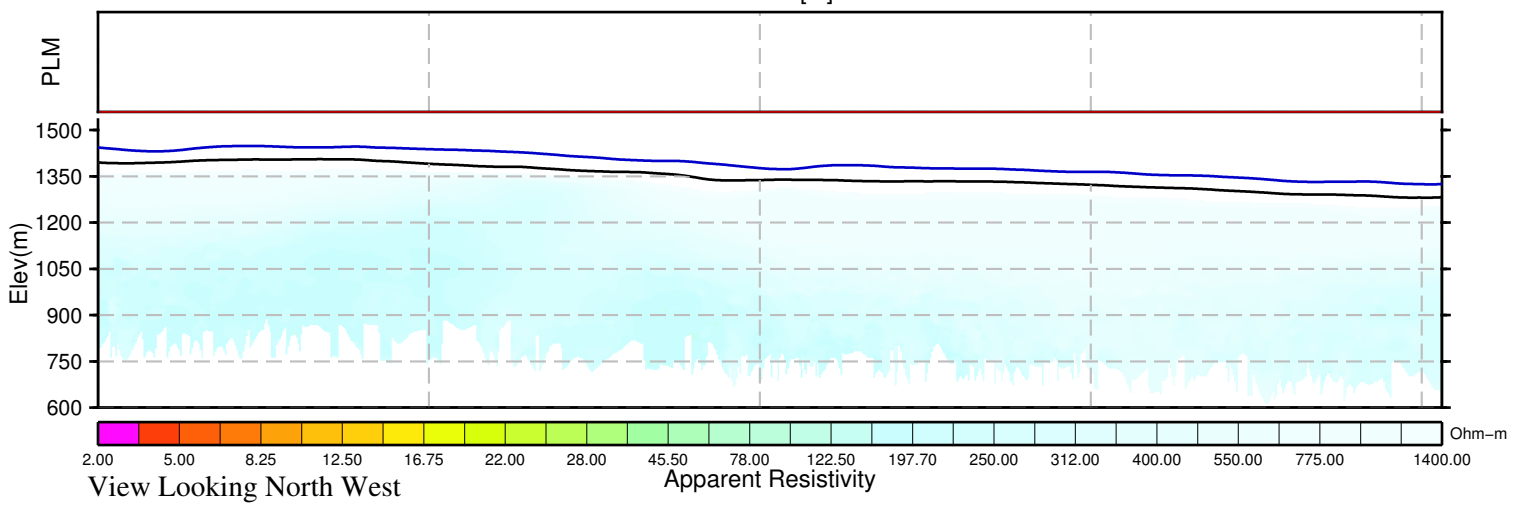
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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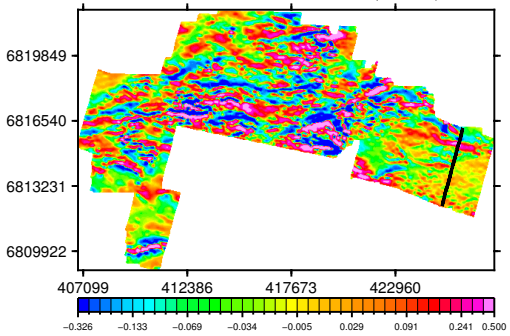
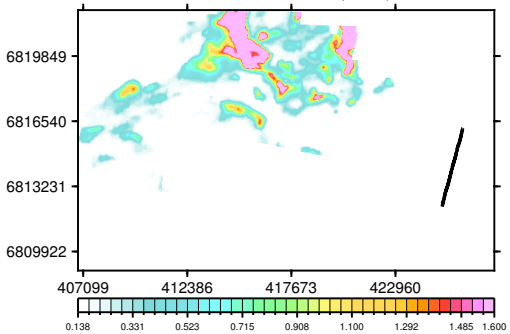
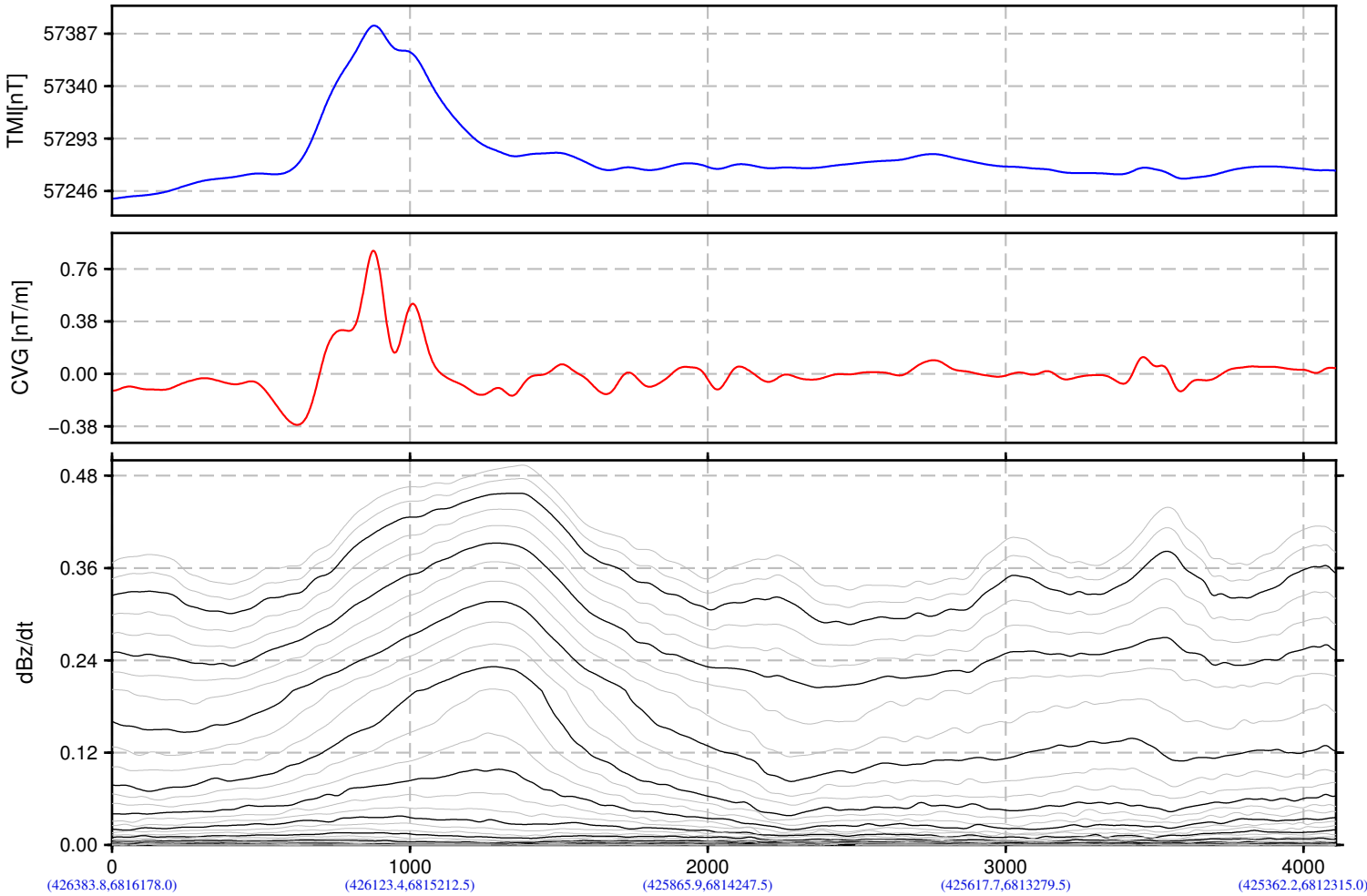
Resistivity Depth Image (RDI) for Line 4240

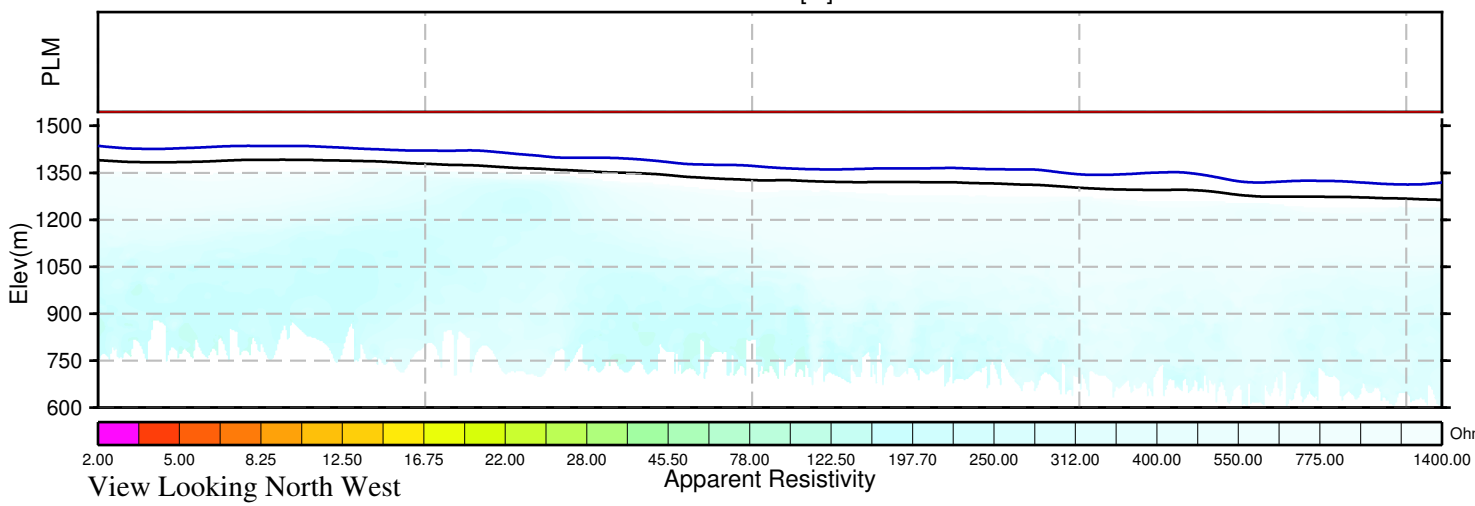
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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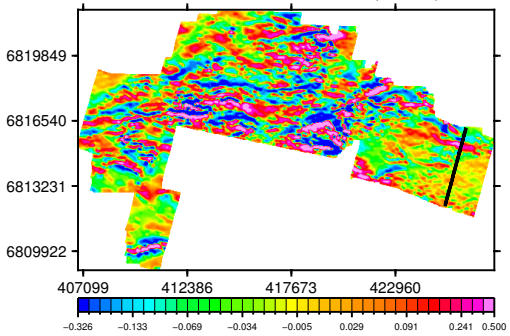
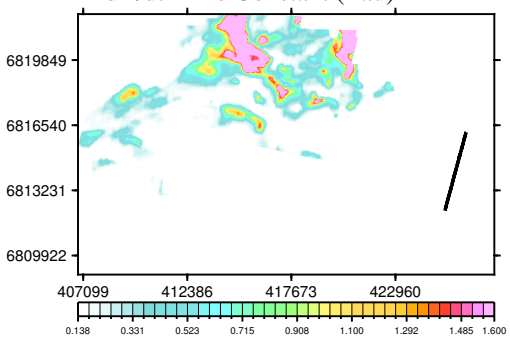
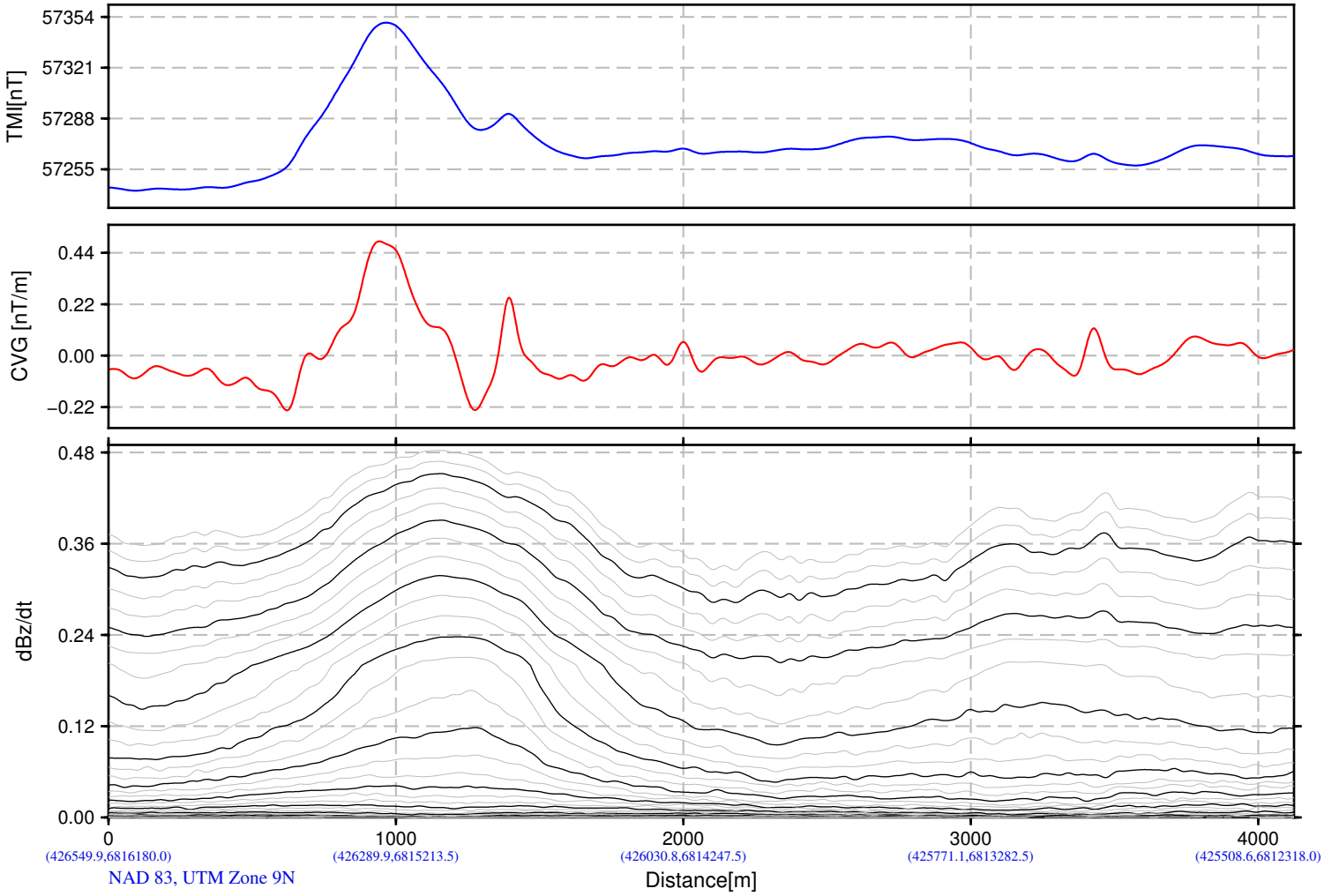
Resistivity Depth Image (RDI) for Line 4250

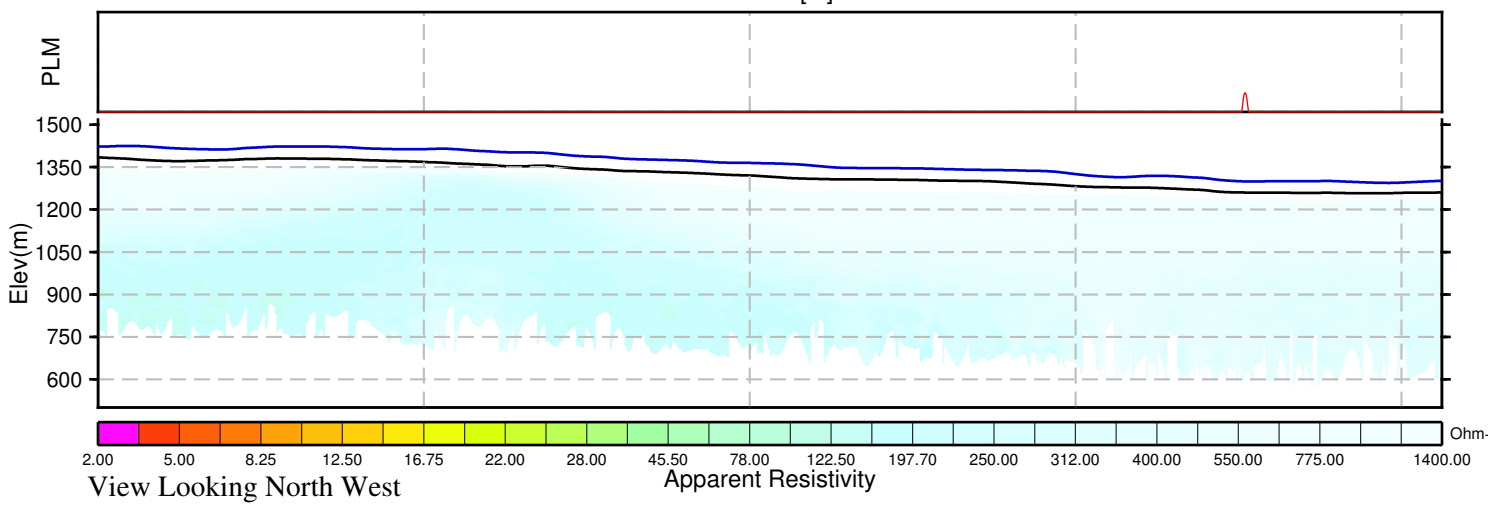
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking North West

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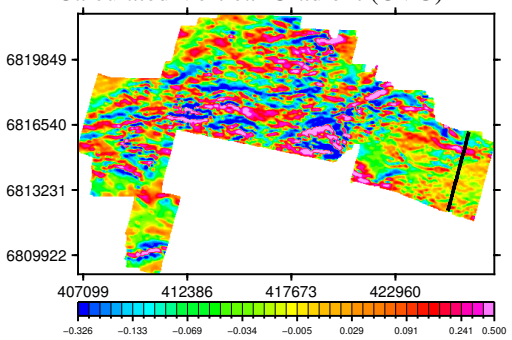
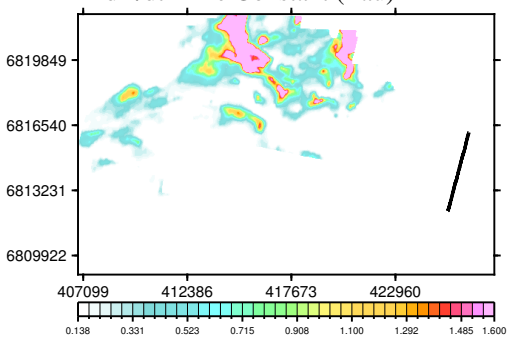
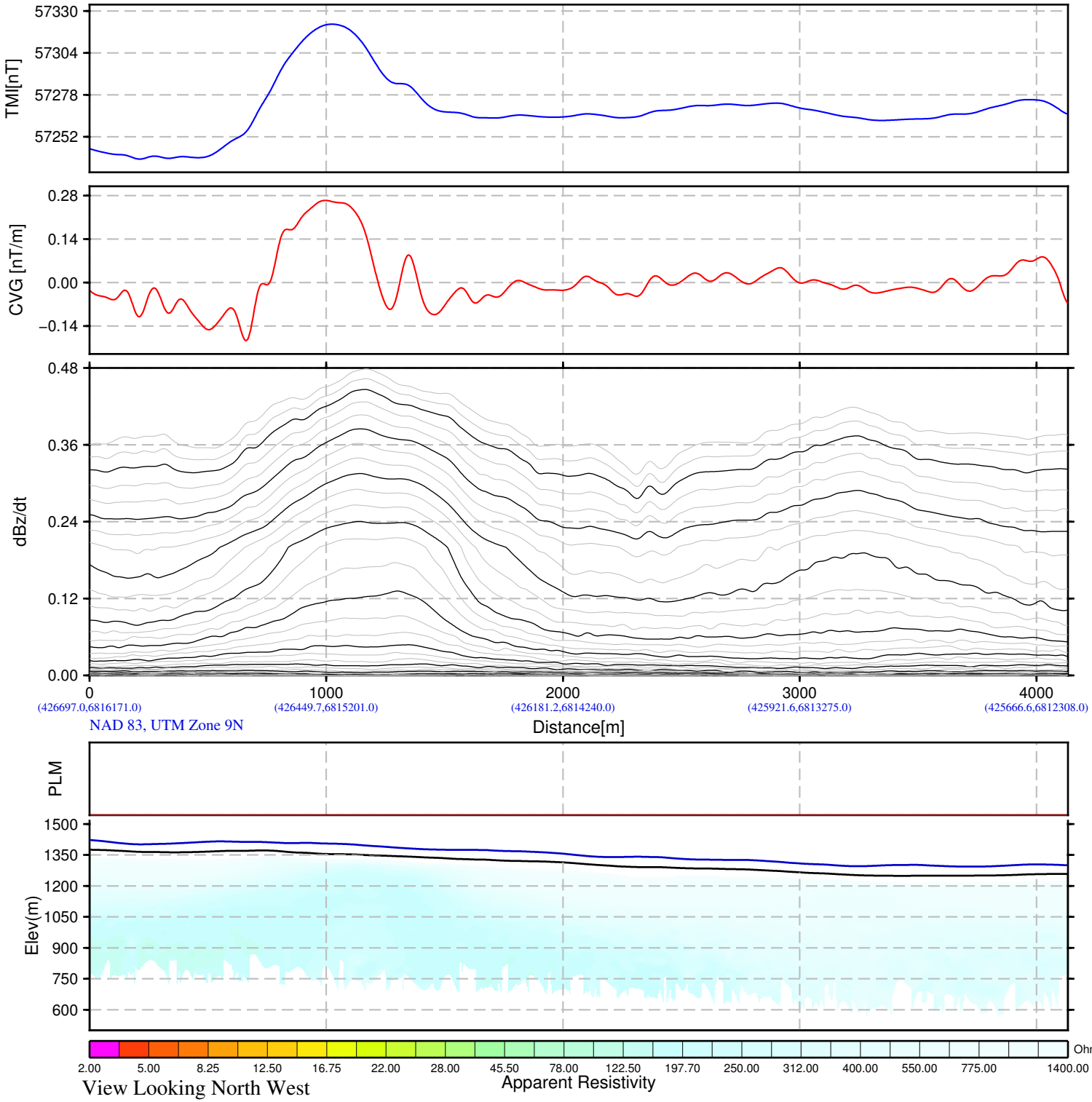
Resistivity Depth Image (RDI) for Line 4260

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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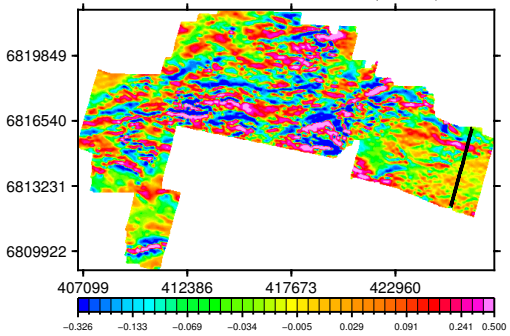
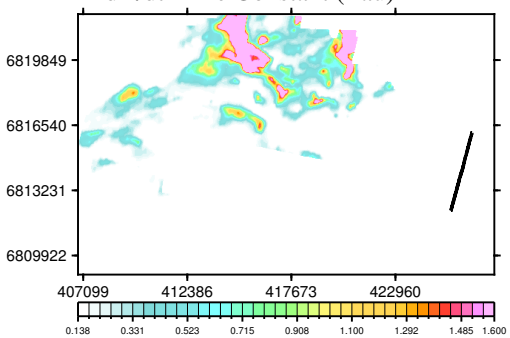
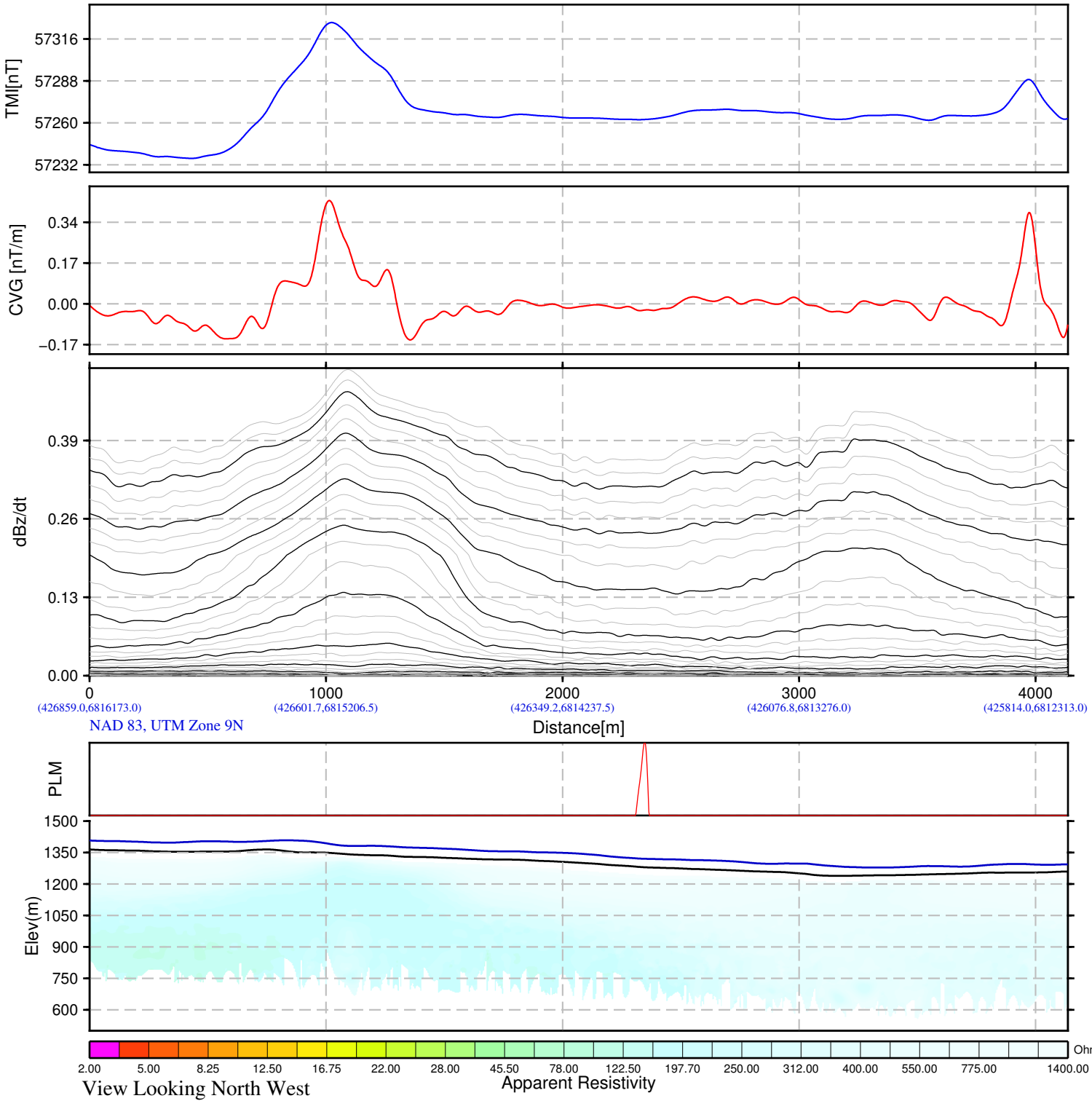
Resistivity Depth Image (RDI) for Line 4270

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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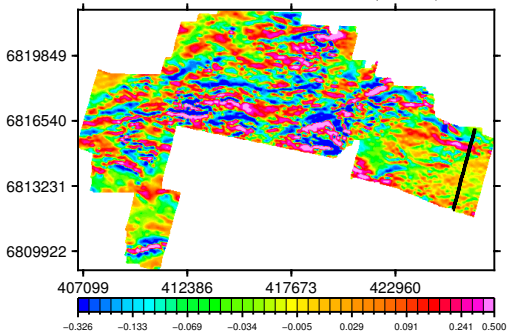
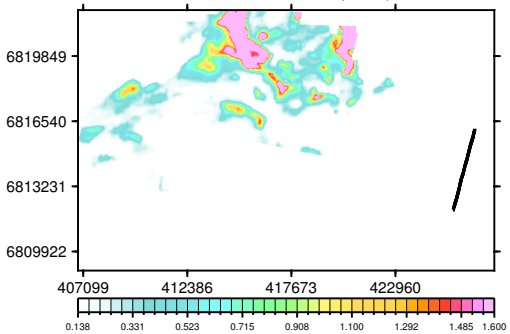
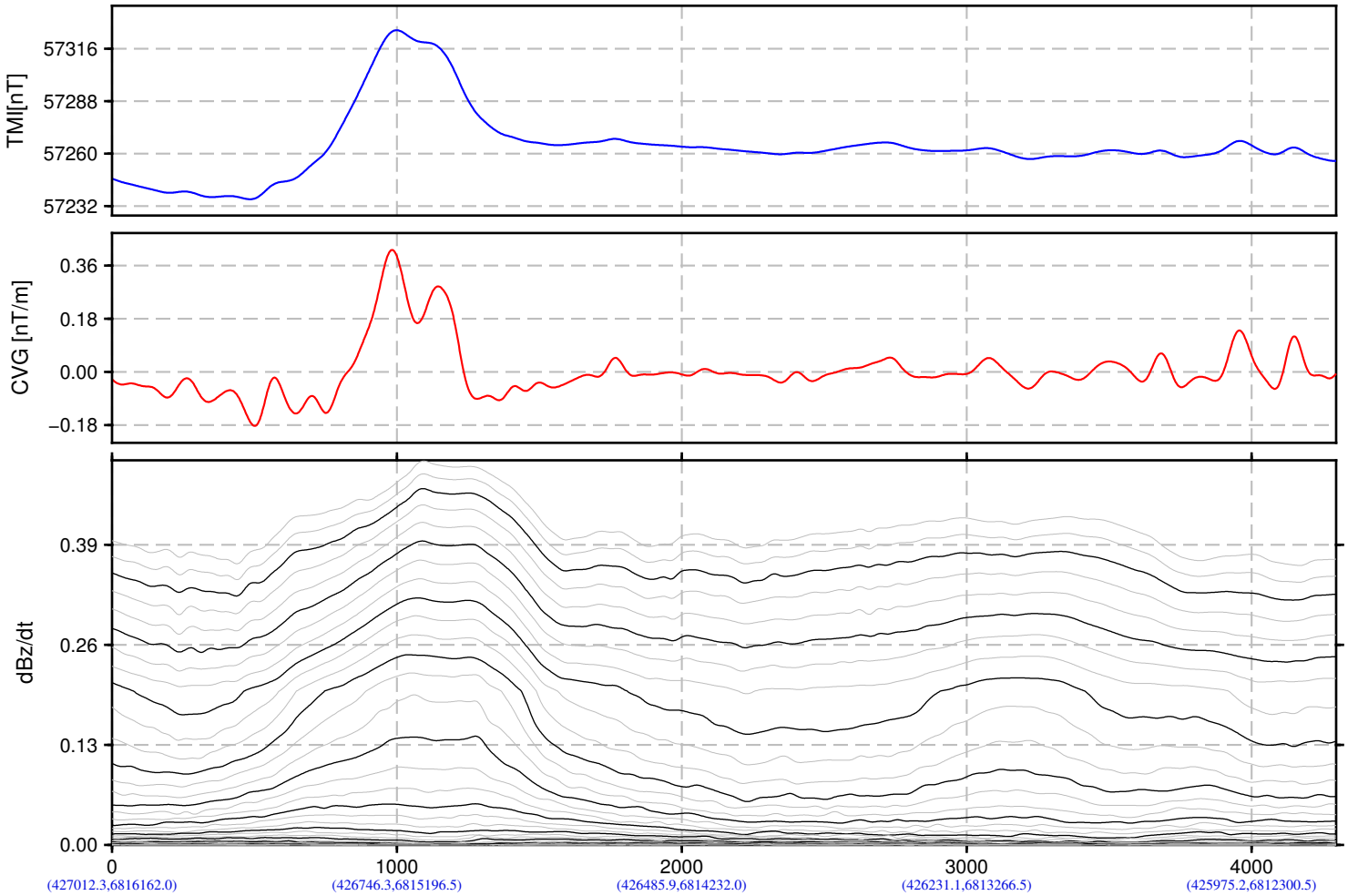
Resistivity Depth Image (RDI) for Line 4280

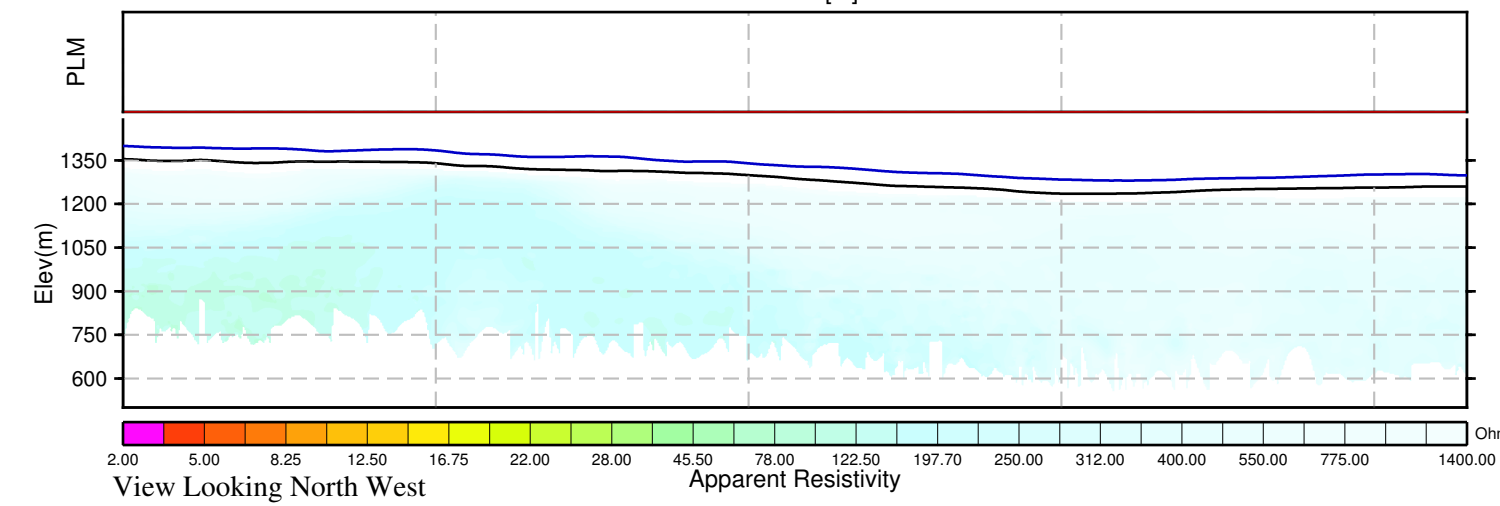
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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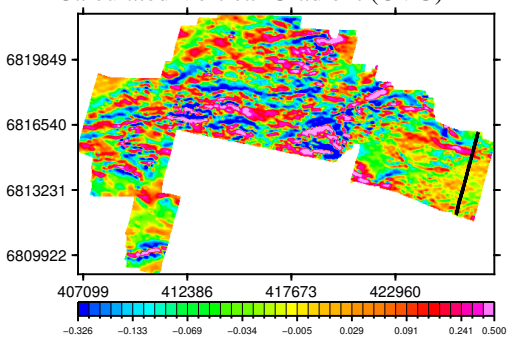
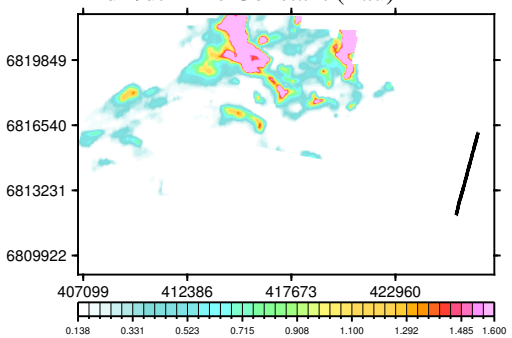
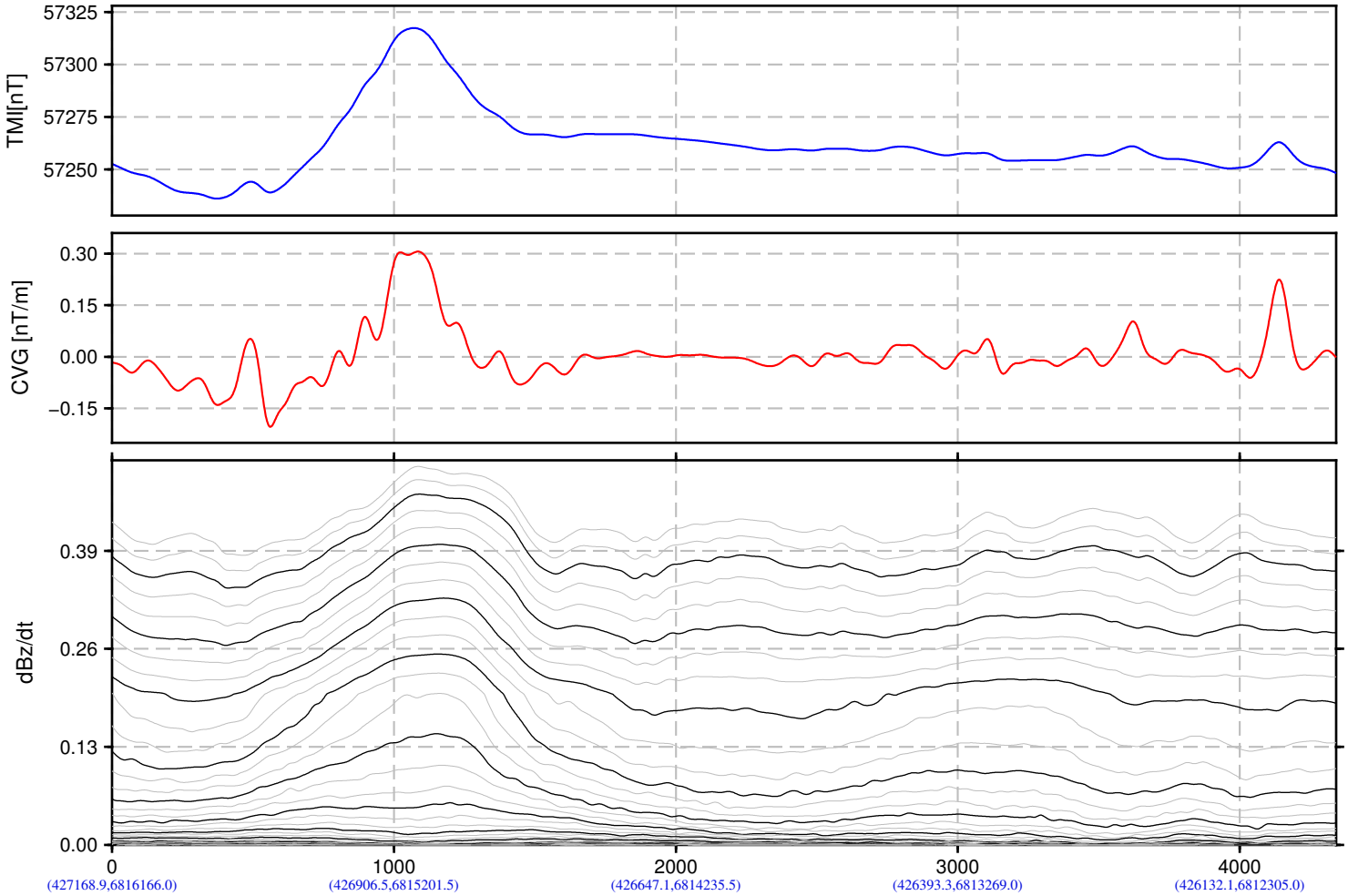
Resistivity Depth Image (RDI) for Line 4290

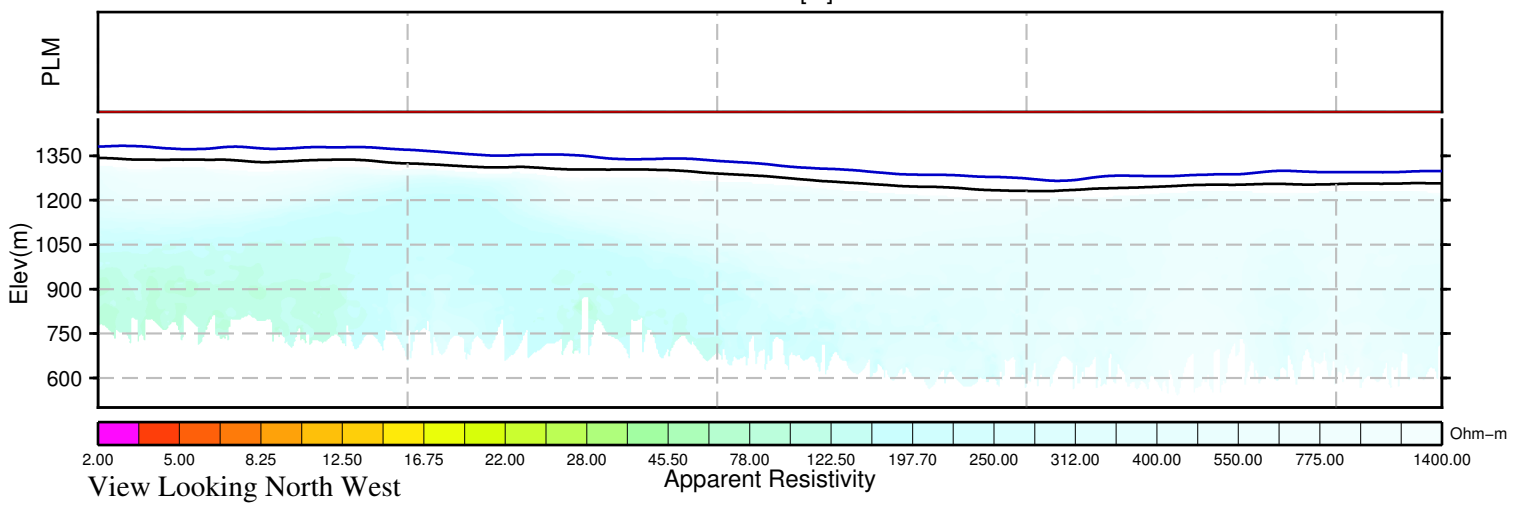
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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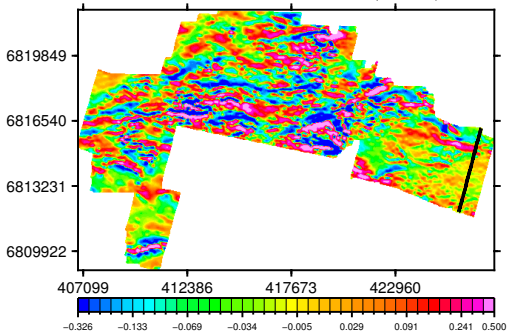
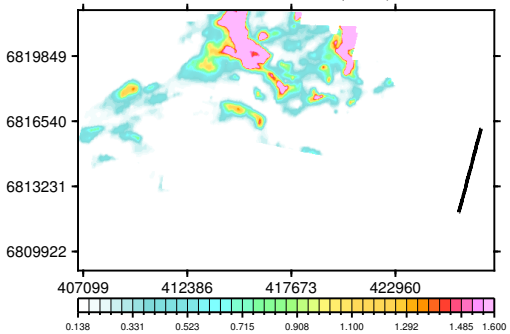
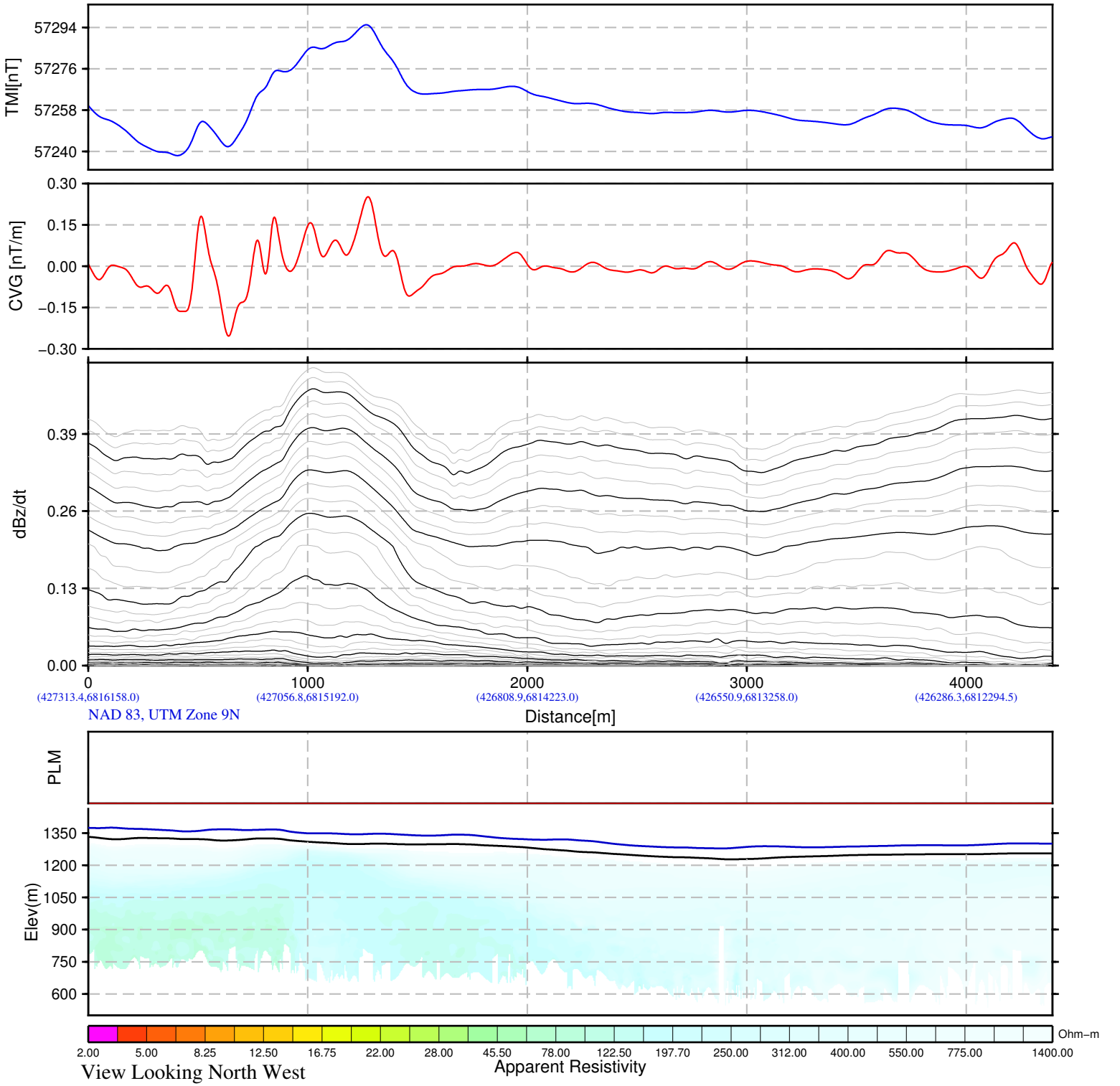
Resistivity Depth Image (RDI) for Line 4300

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





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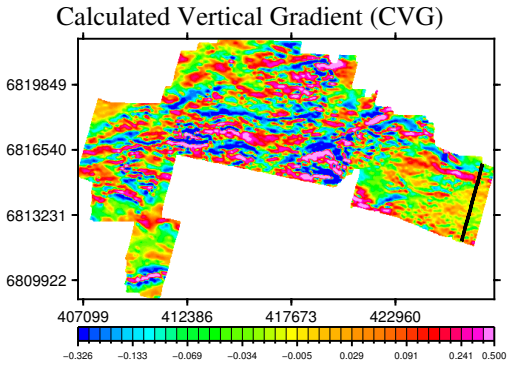
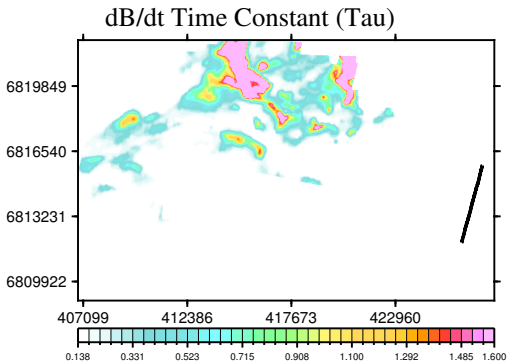
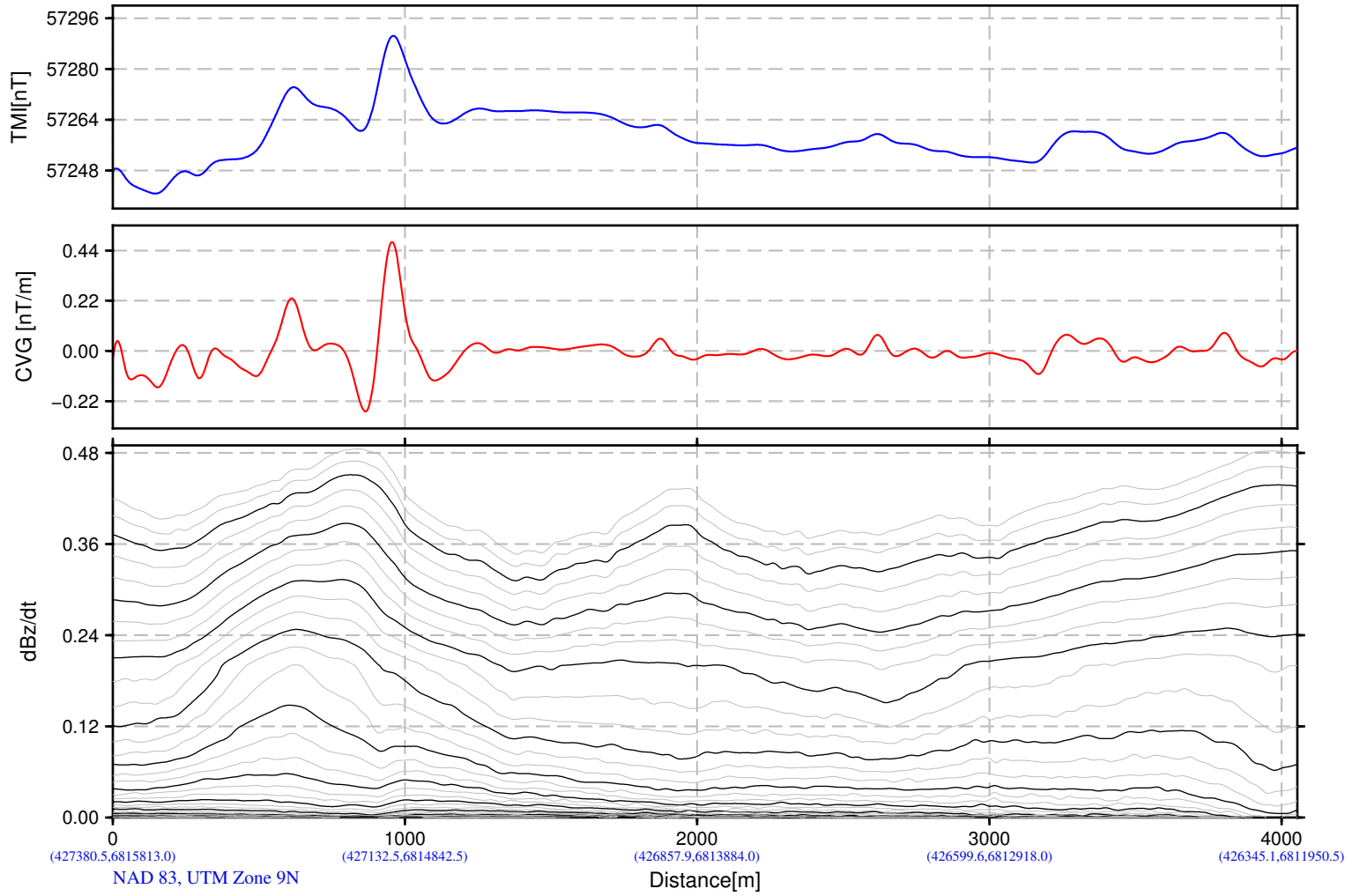
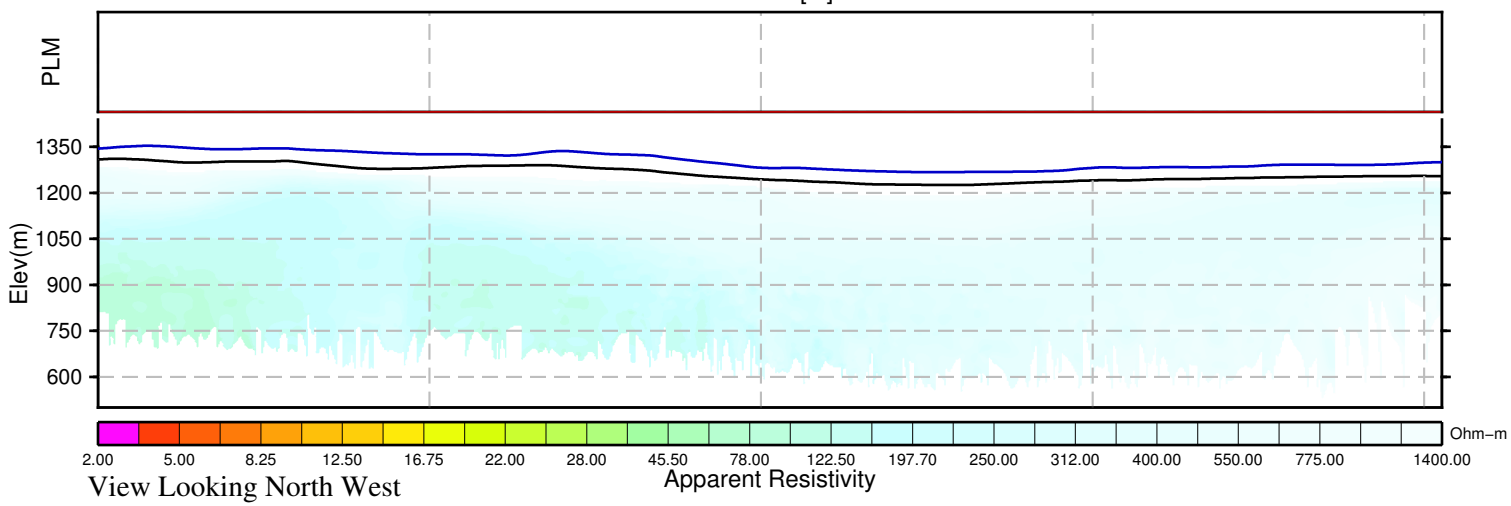
Resistivity Depth Image (RDI) for Line 4310









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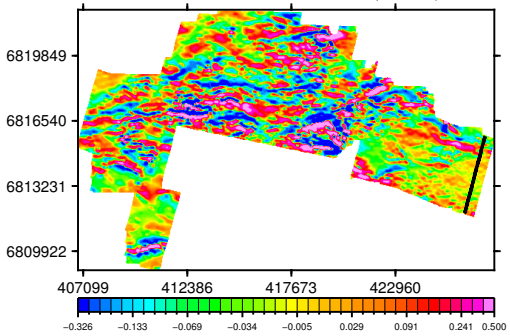
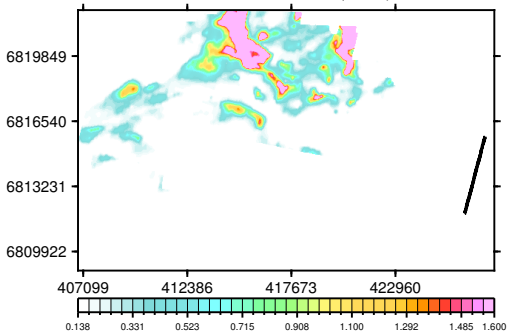
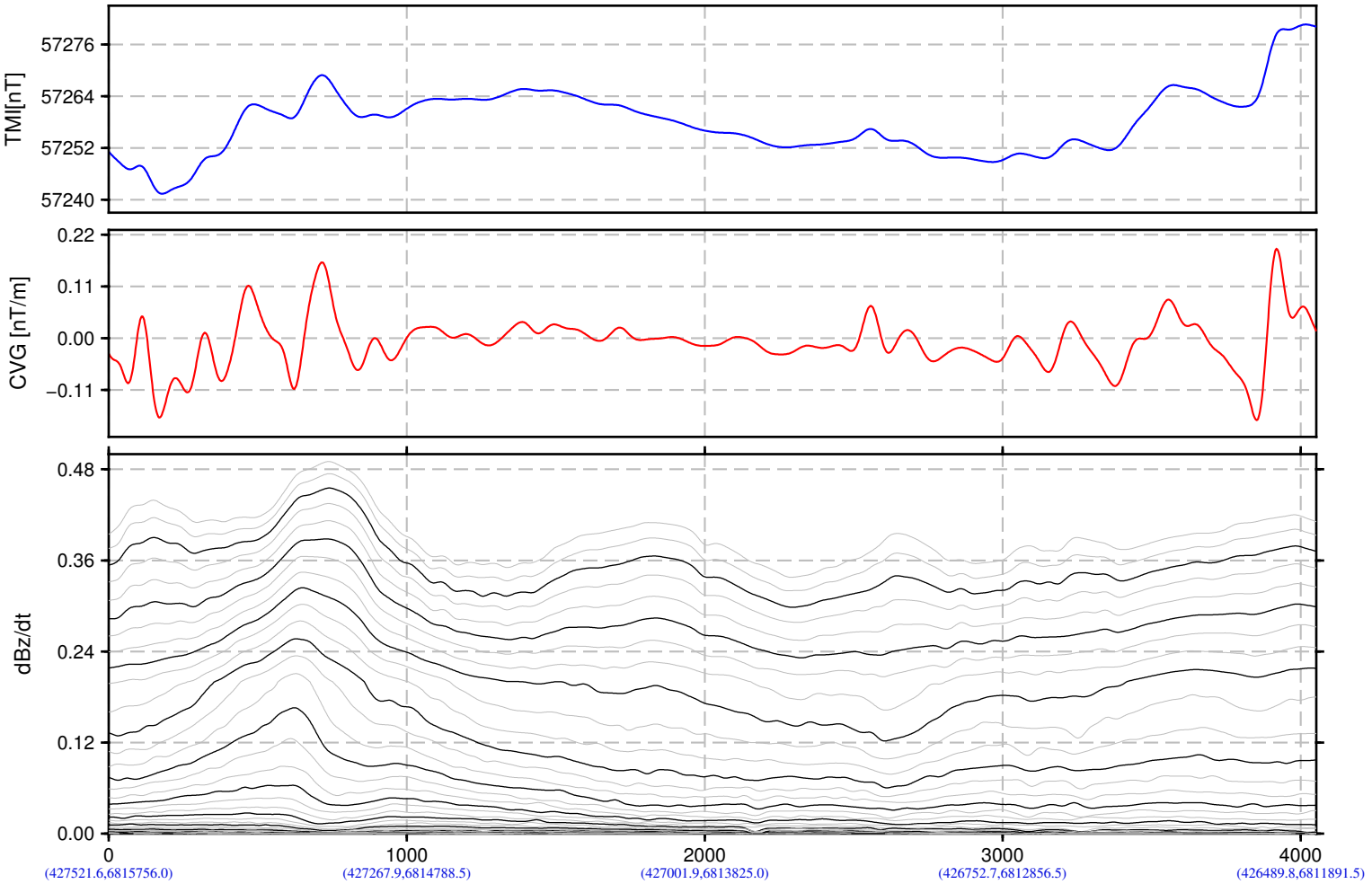
Resistivity Depth Image (RDI) for Line 4320

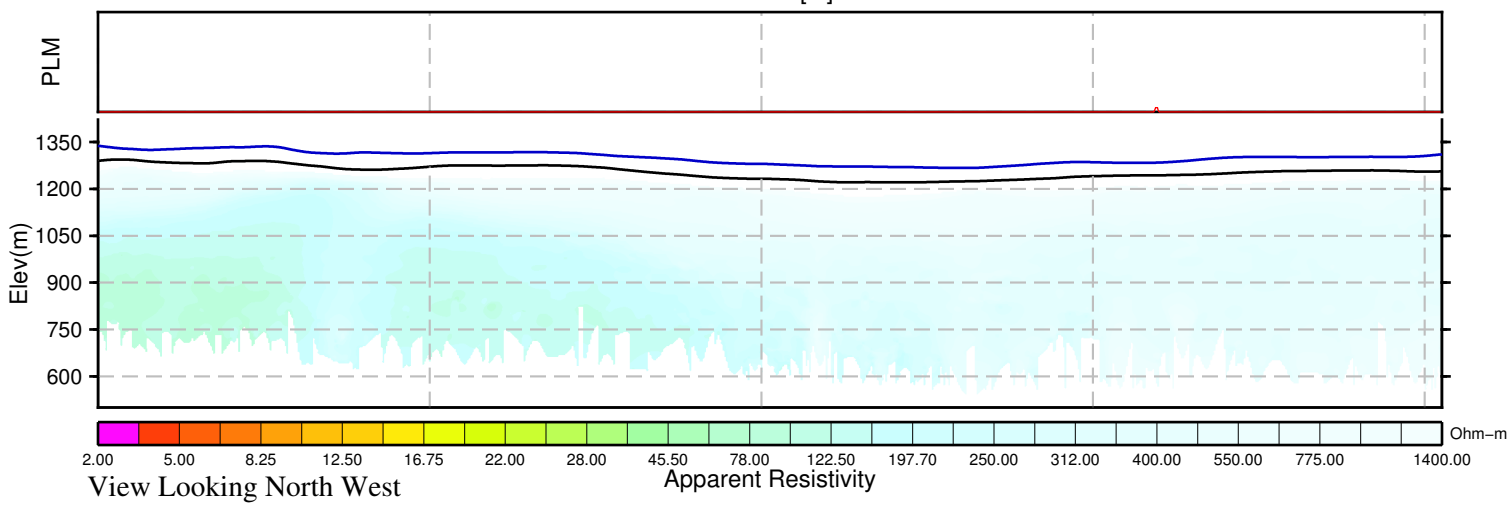
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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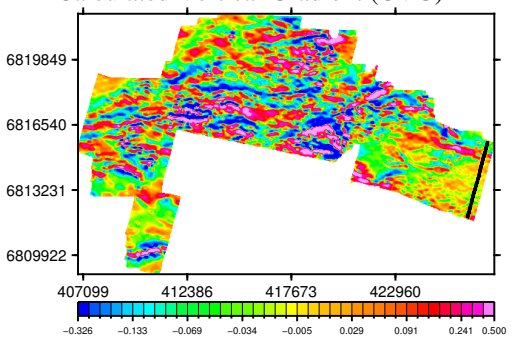
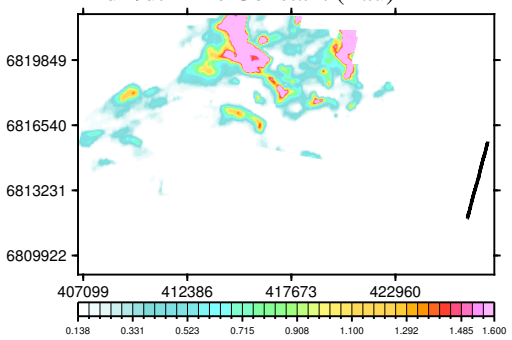
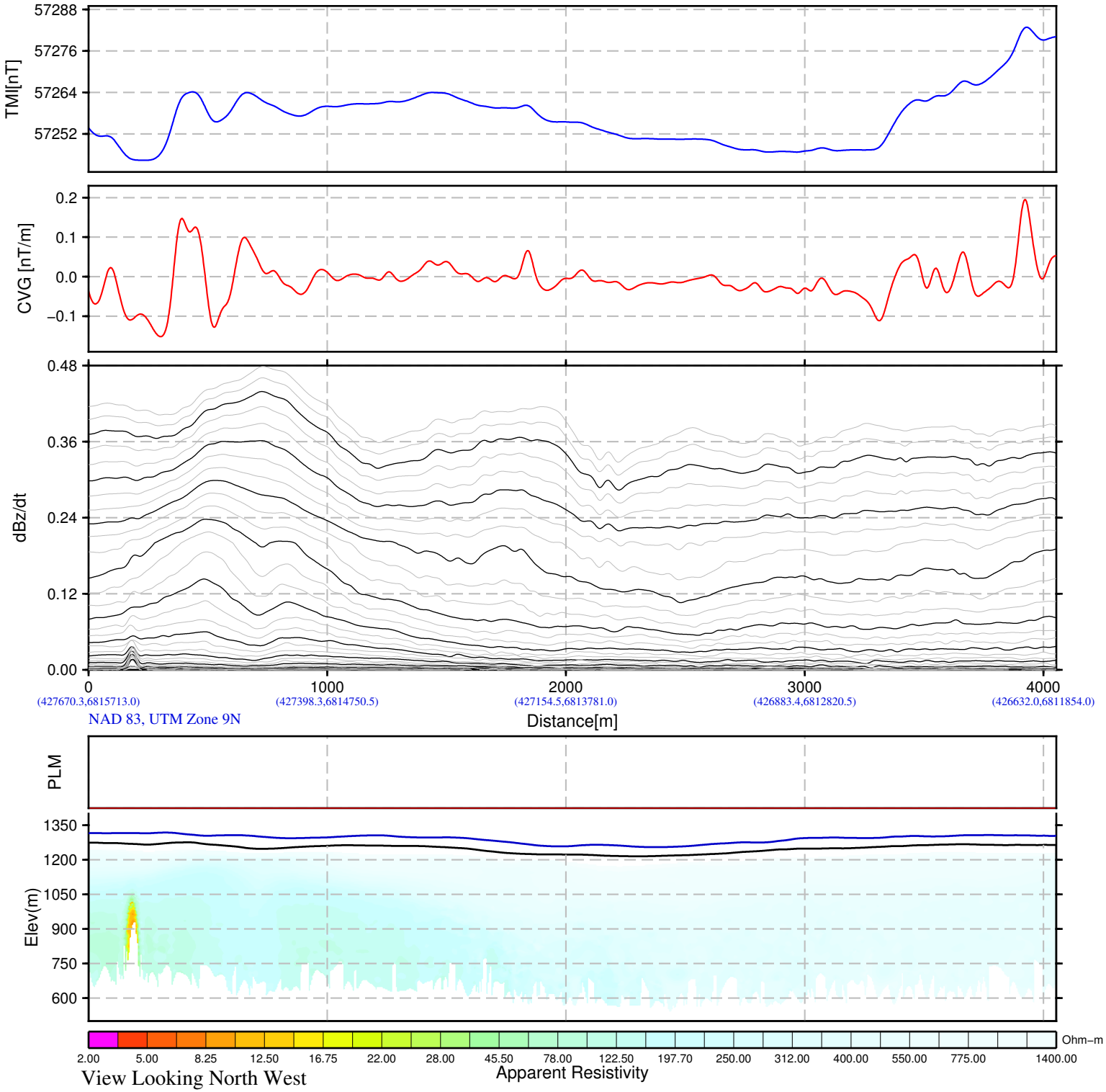
Resistivity Depth Image (RDI) for Line 4330

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





BMC Minerals (No.1) Ltd.
Kudz Ze Kayah Block
Yukon, Canada

VTEM System:VTEM17−Plus
Job Number:GL160037
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
245 Industrial Parkway North
Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

2016/ 5/27

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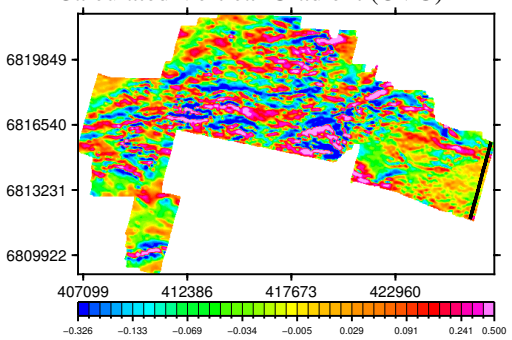
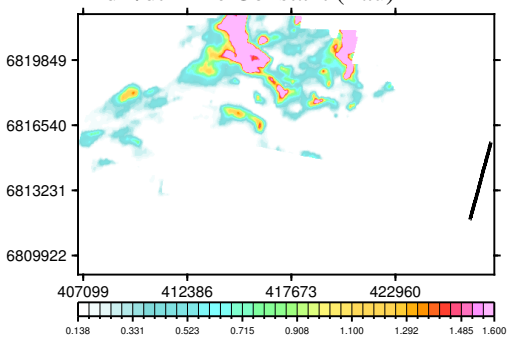
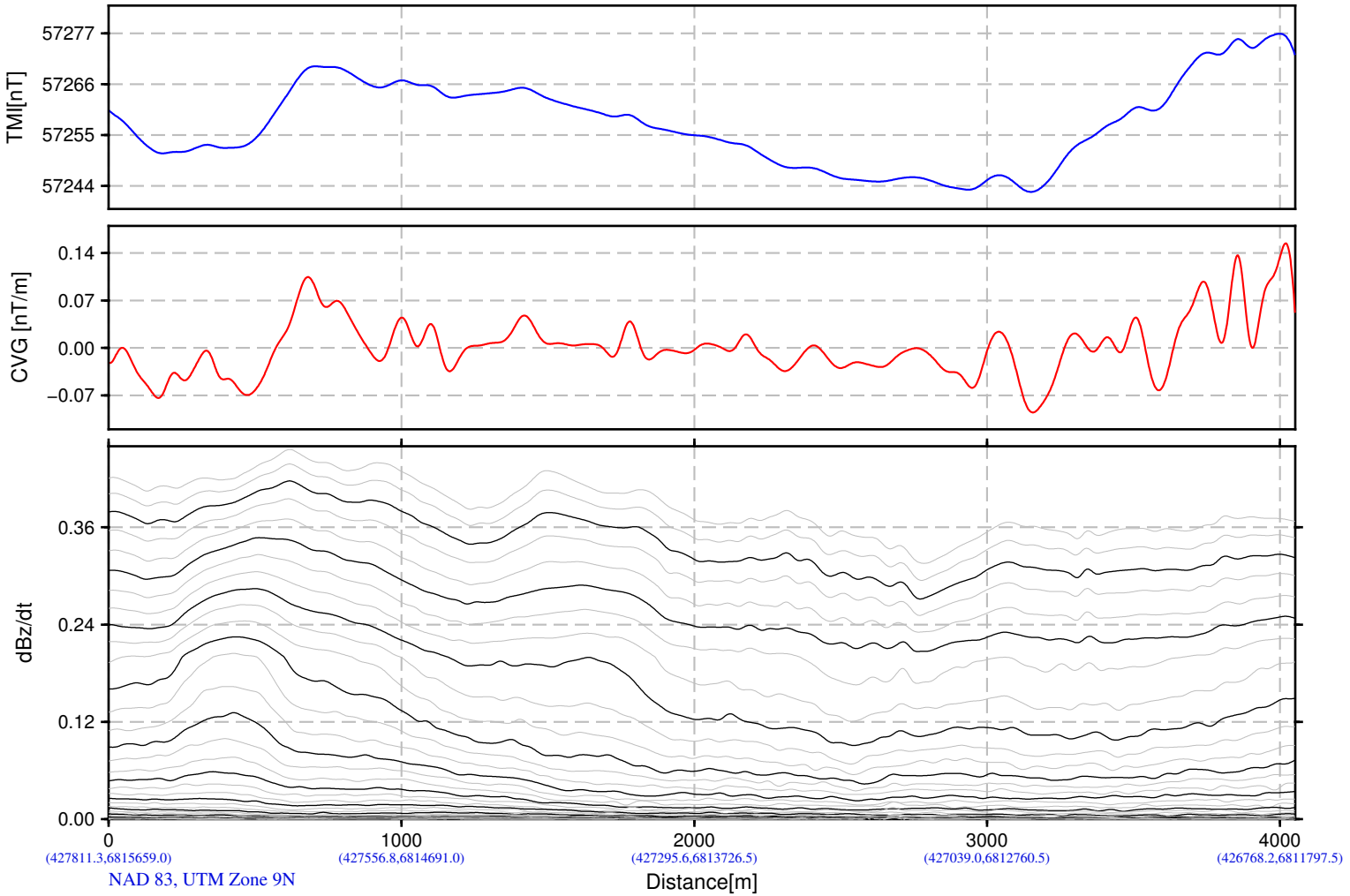
Resistivity Depth Image (RDI) for Line 4340

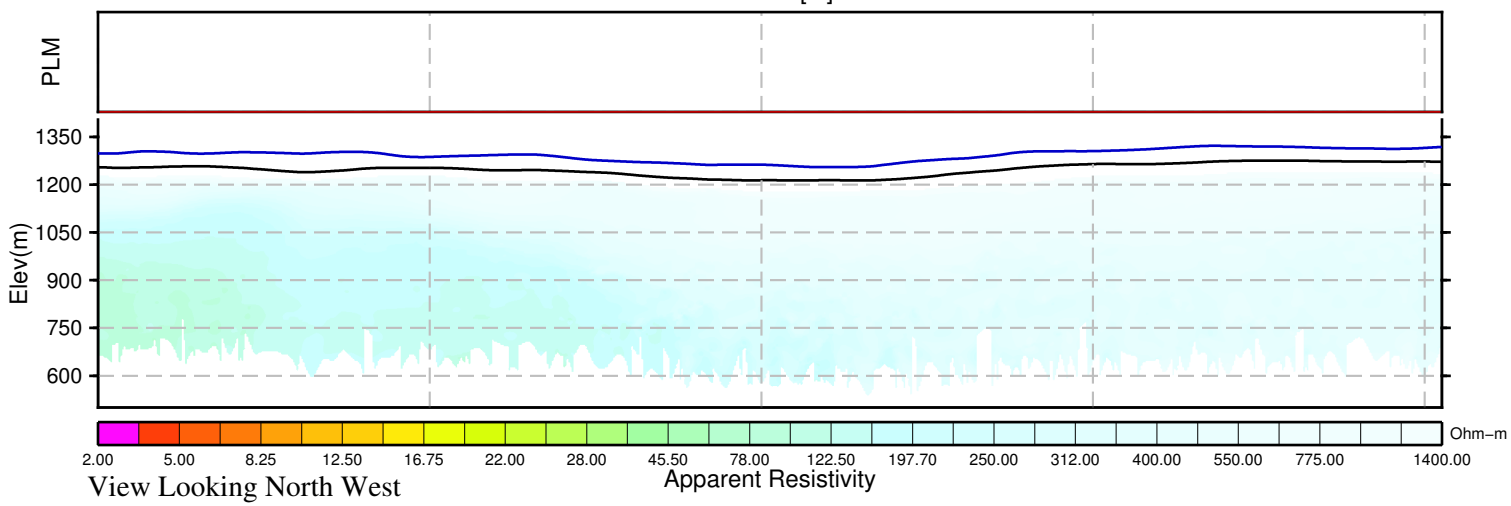
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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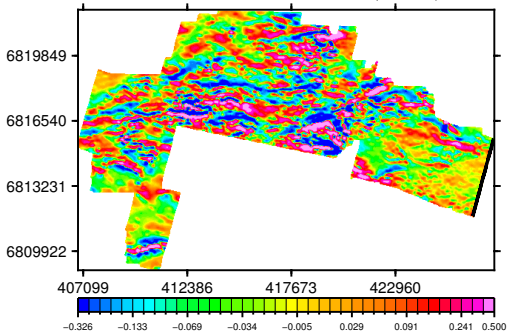
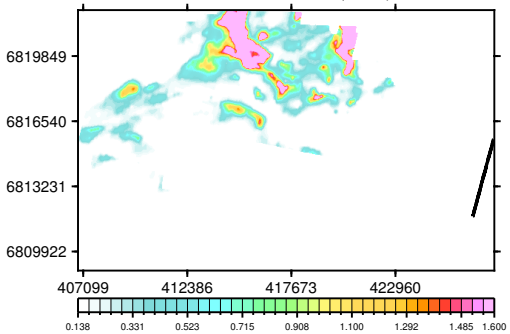
AIRBORNE GEOPHYSICAL SURVEYS

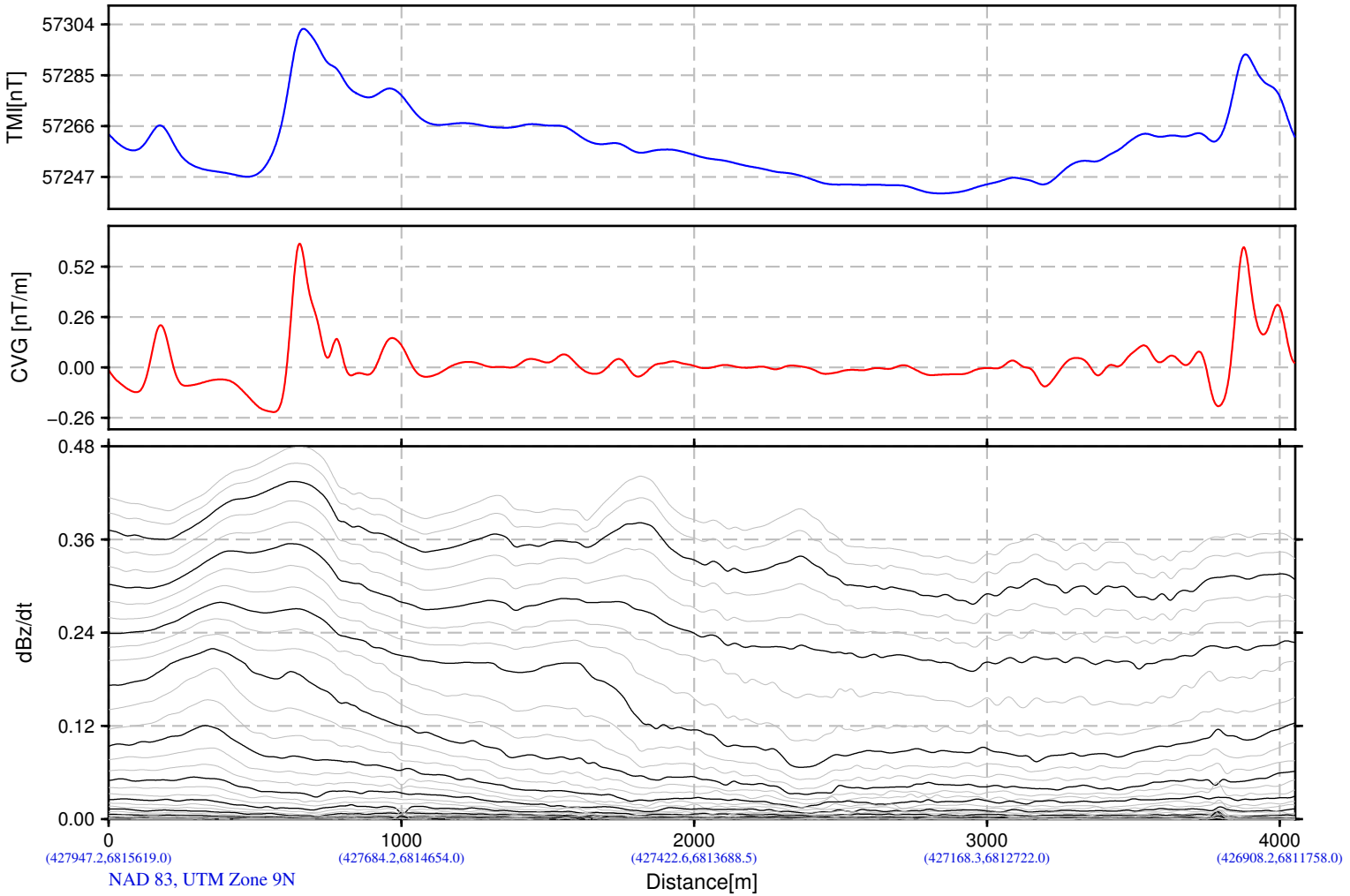
Resistivity Depth Image (RDI) for Line 4350

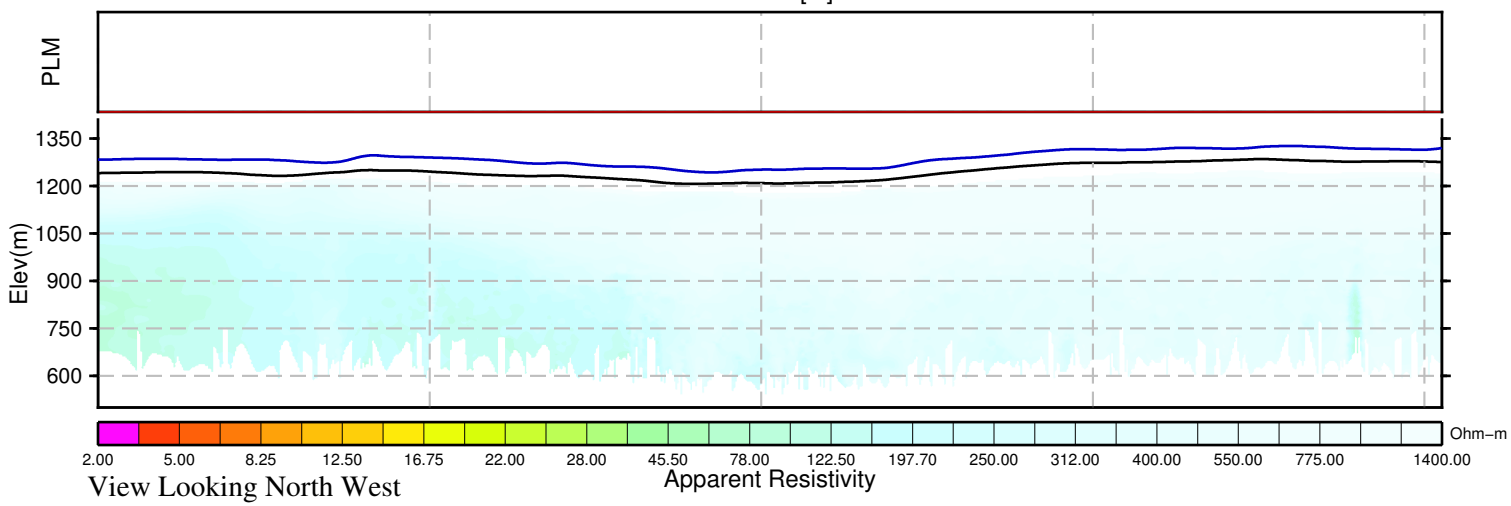
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







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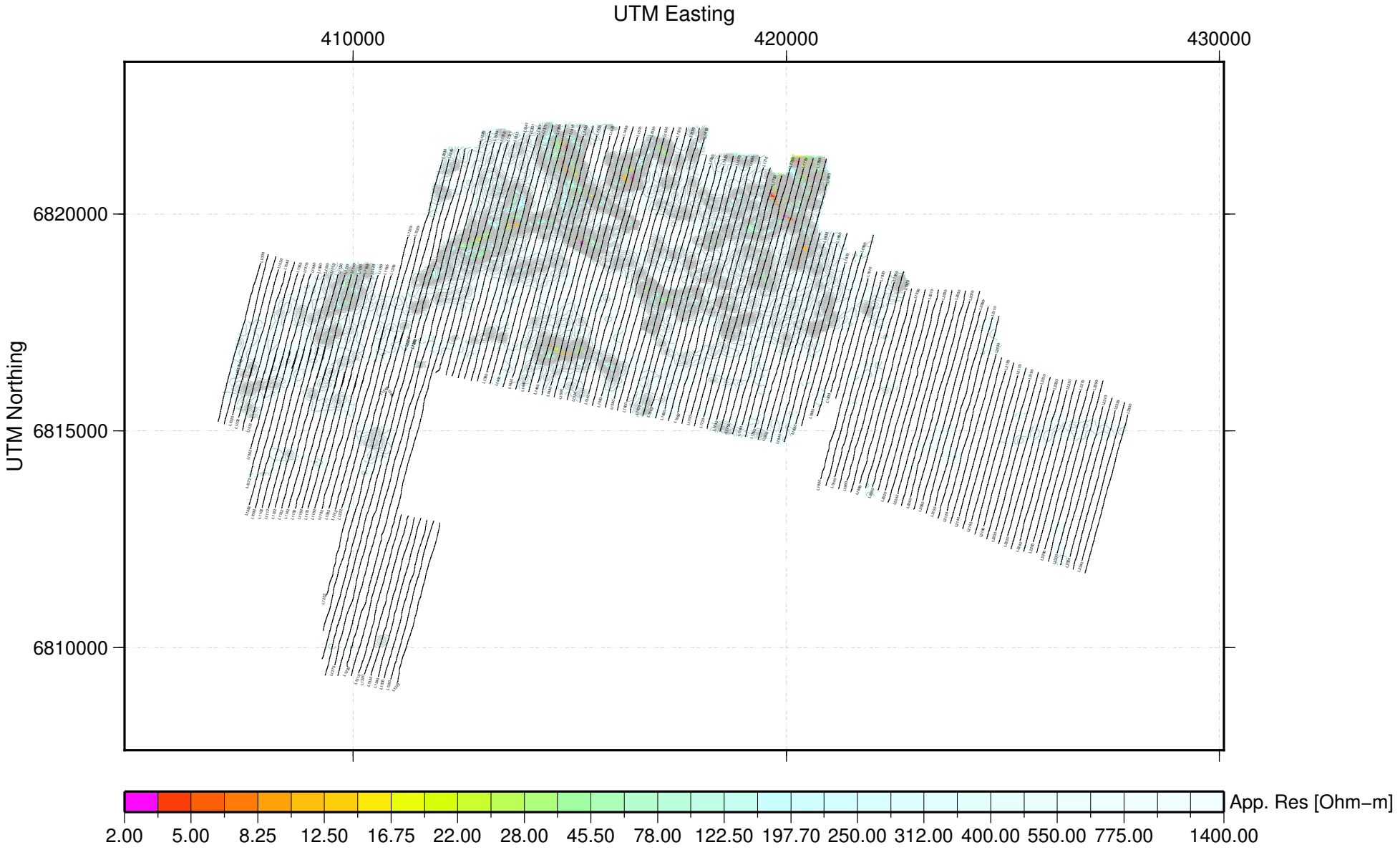
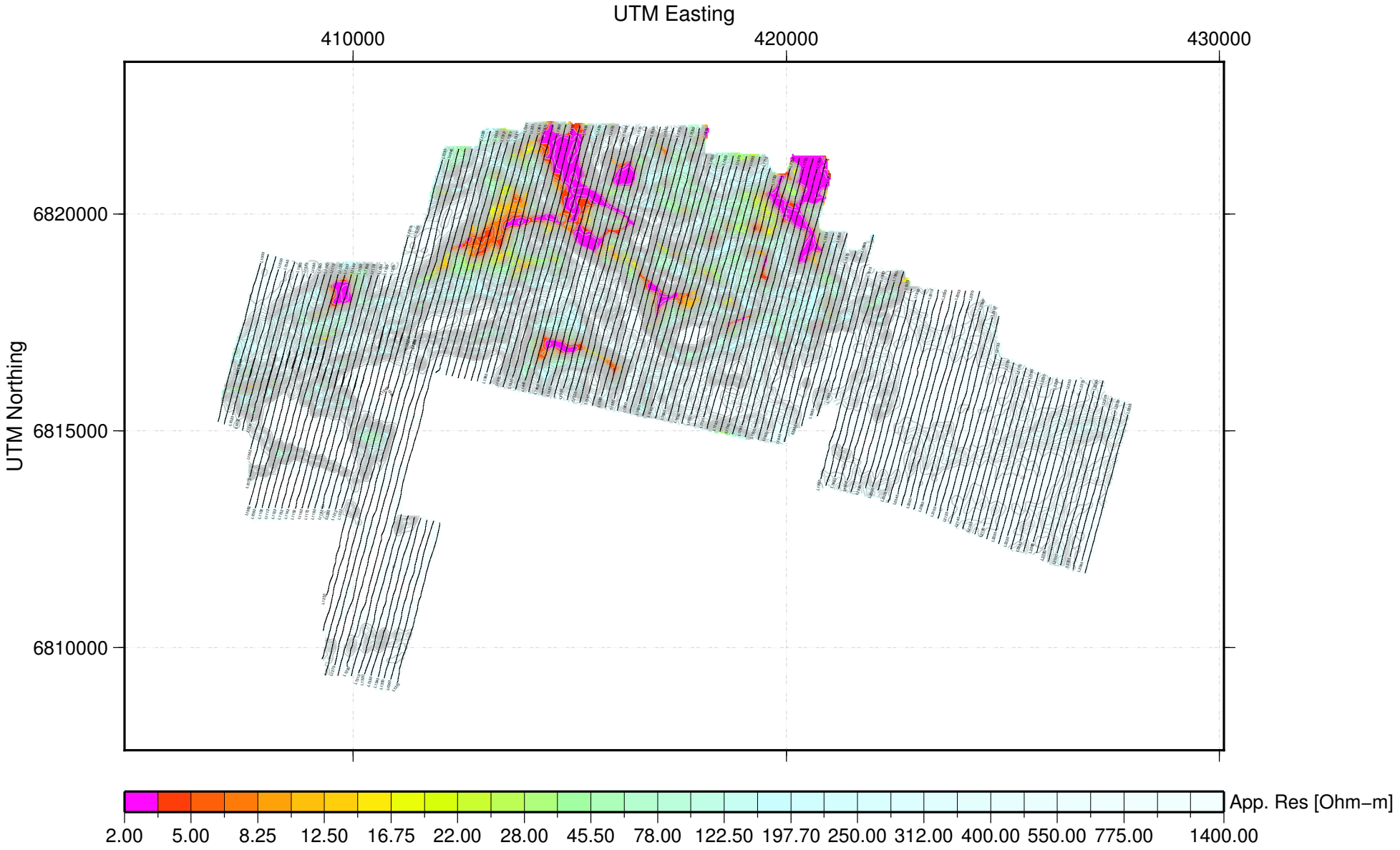
VTEM RDI: Resistivity Depth Slice at 025m of depth



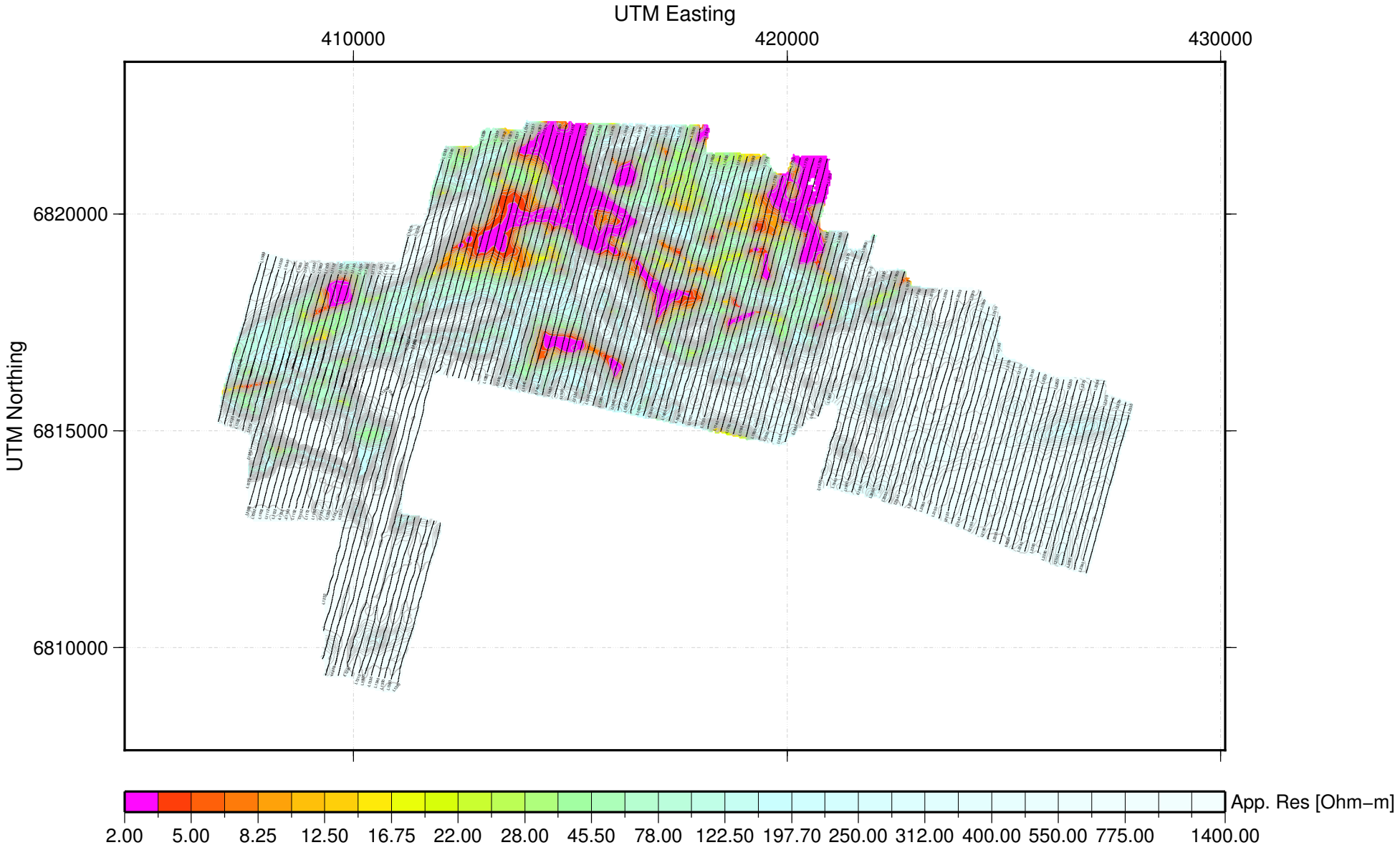
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 050m of depth



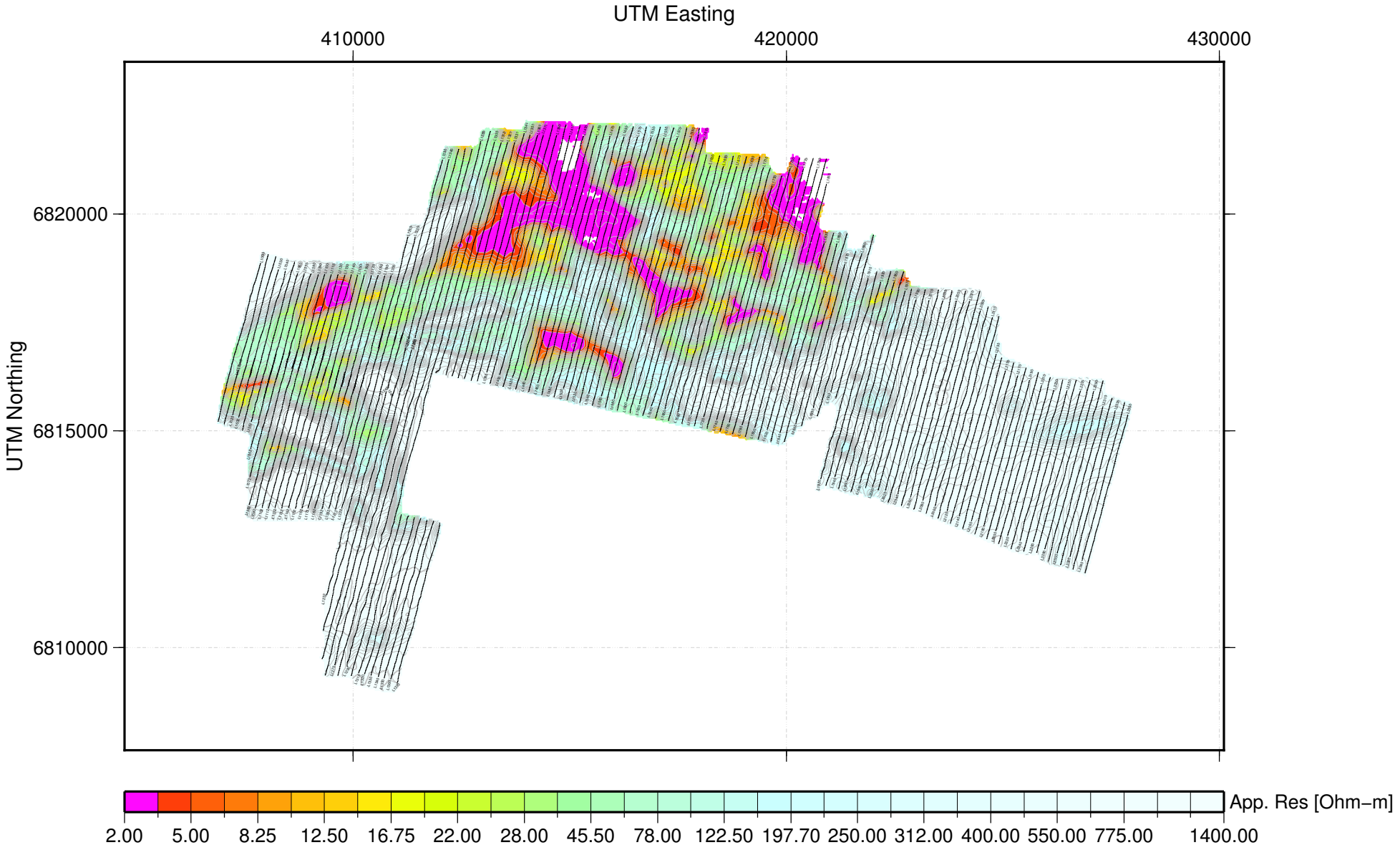
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 075m of depth



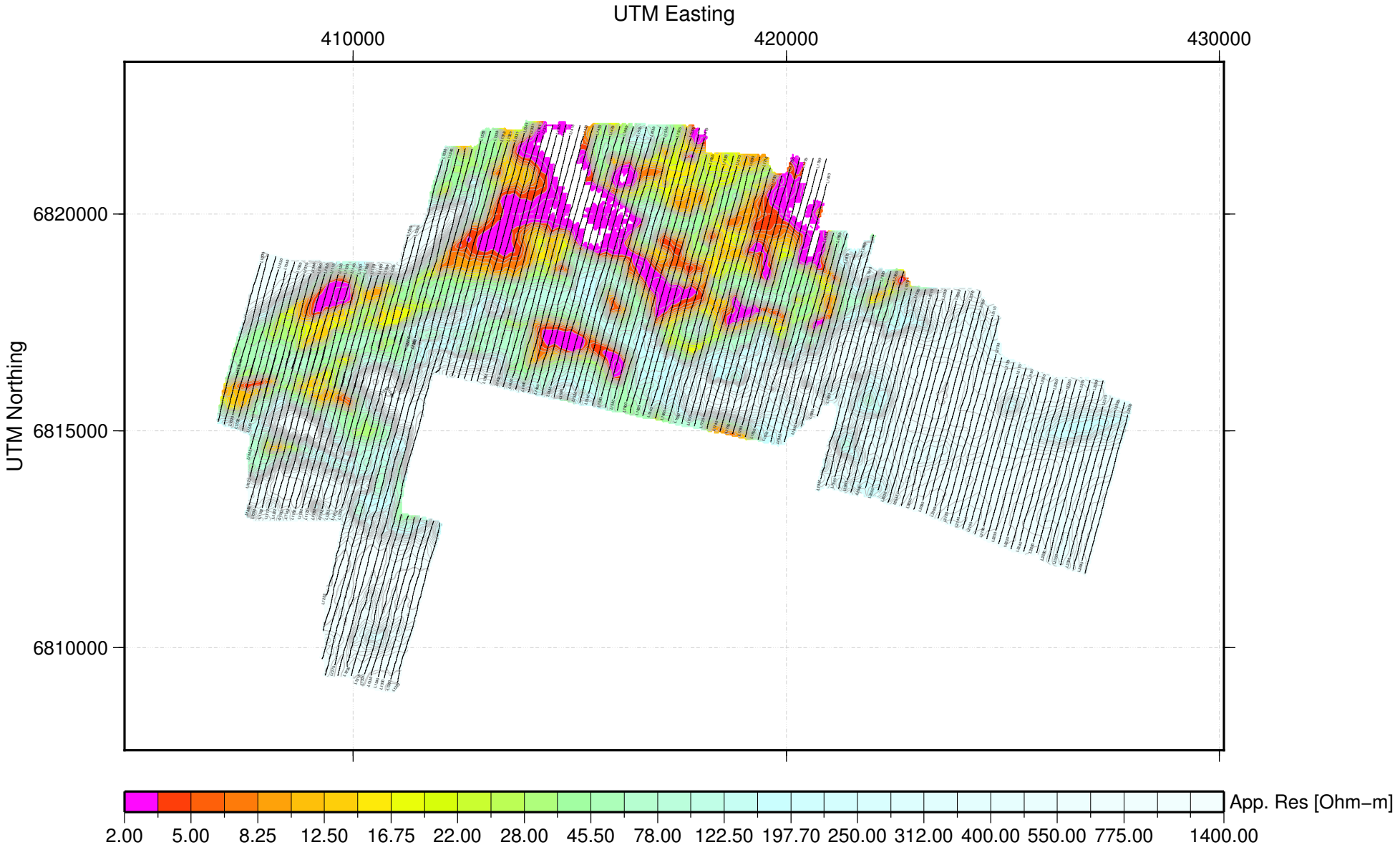
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 100m of depth



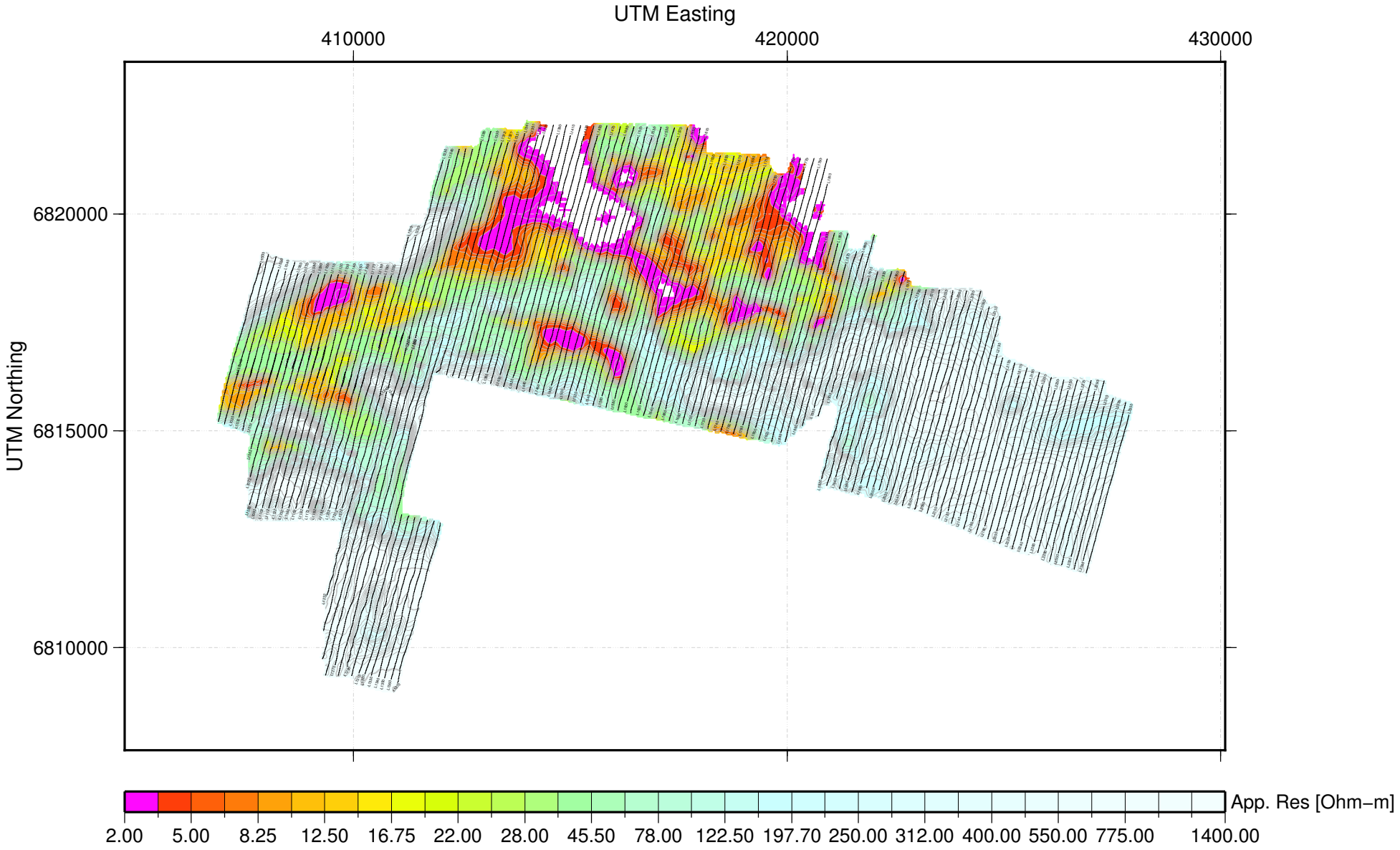
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 125m of depth



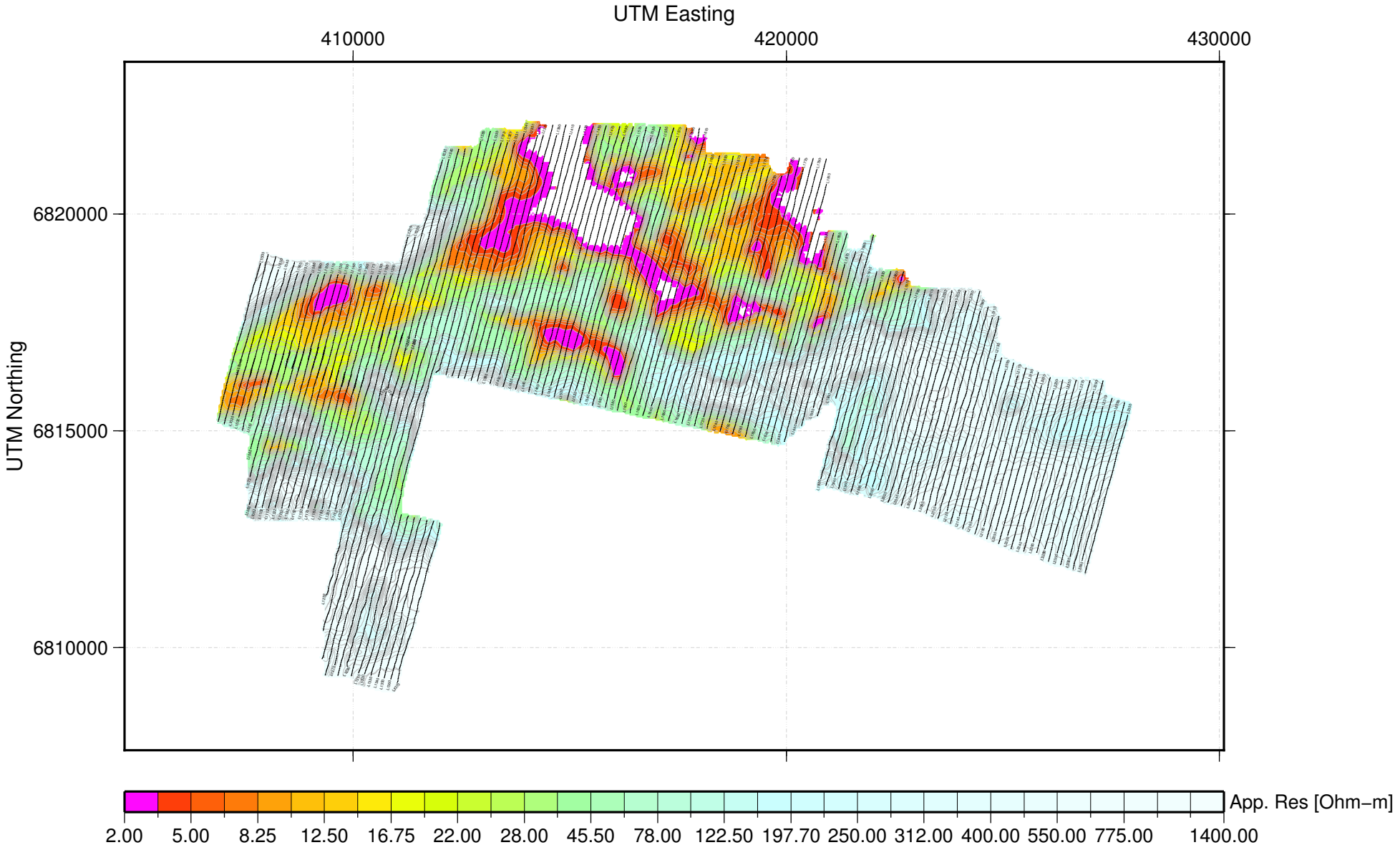
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 150m of depth



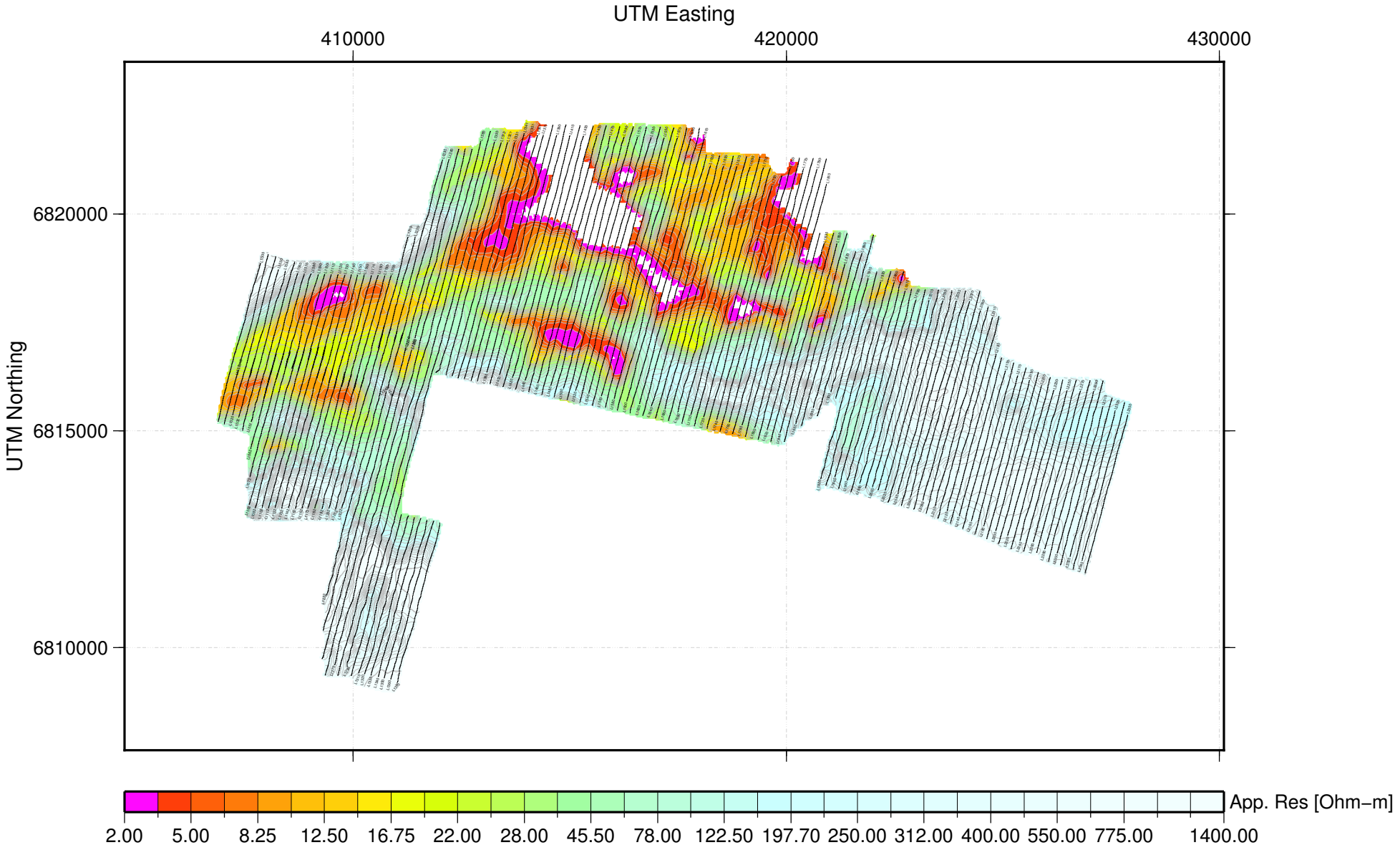
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 175m of depth



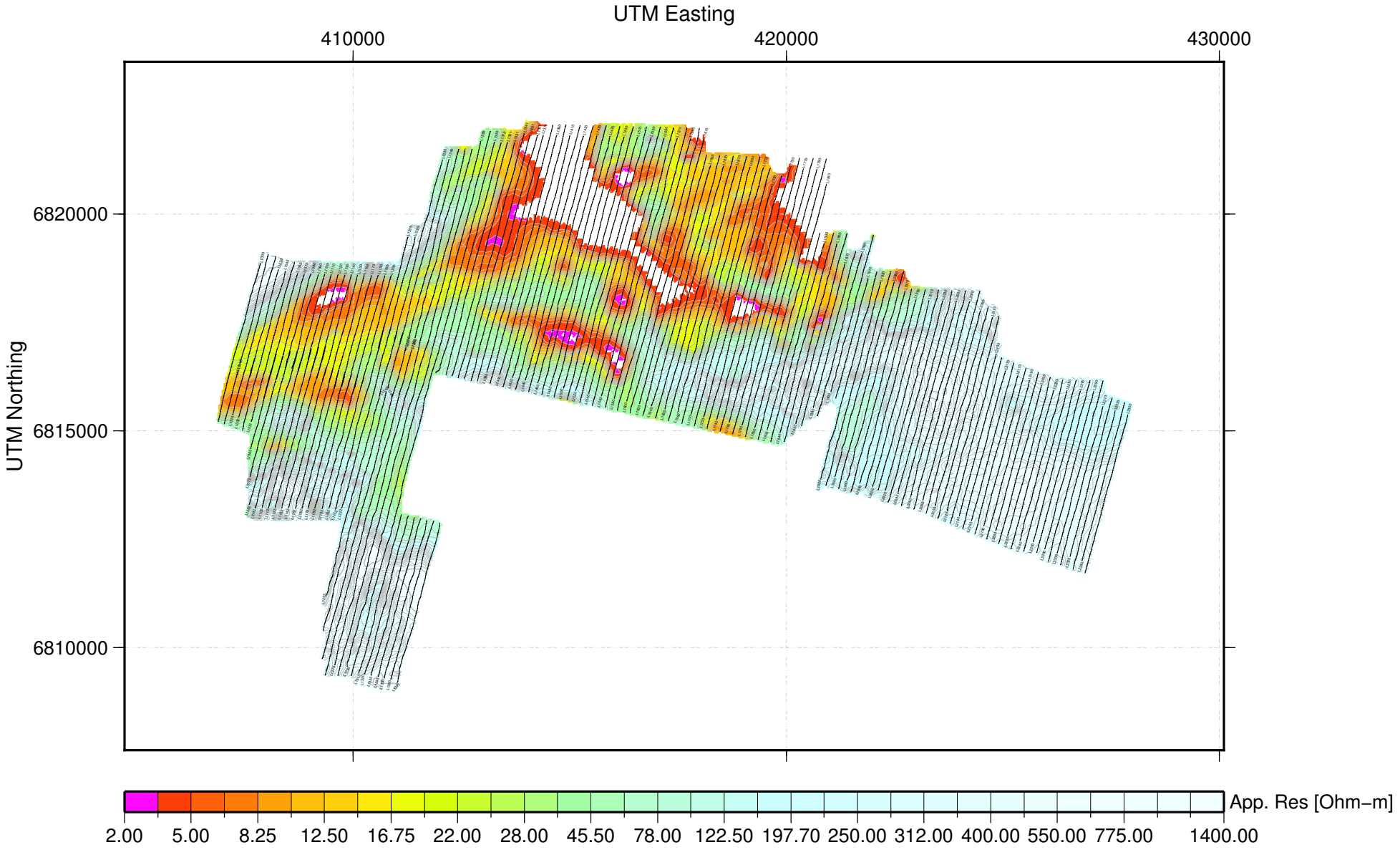
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 200m of depth



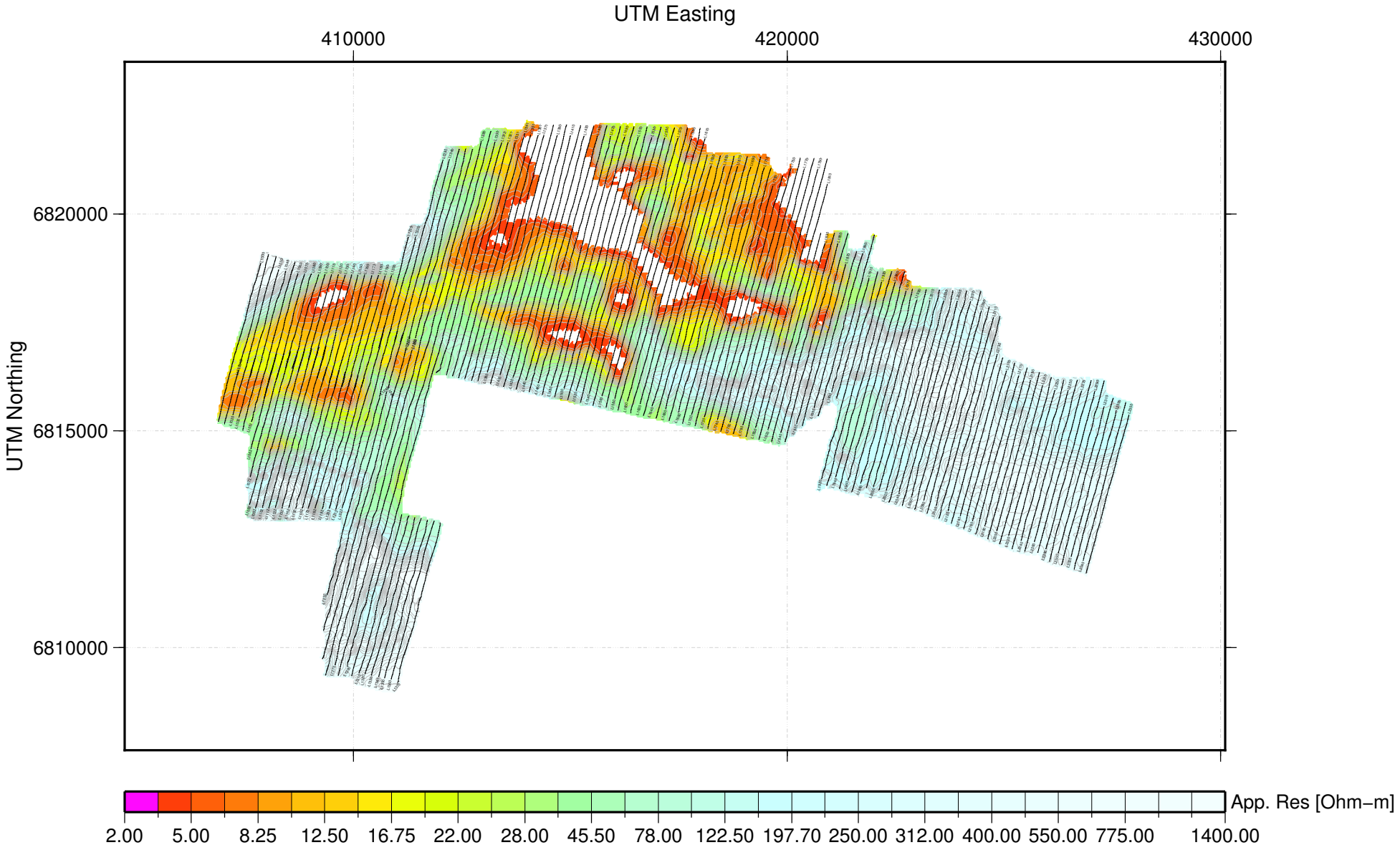
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 225m of depth



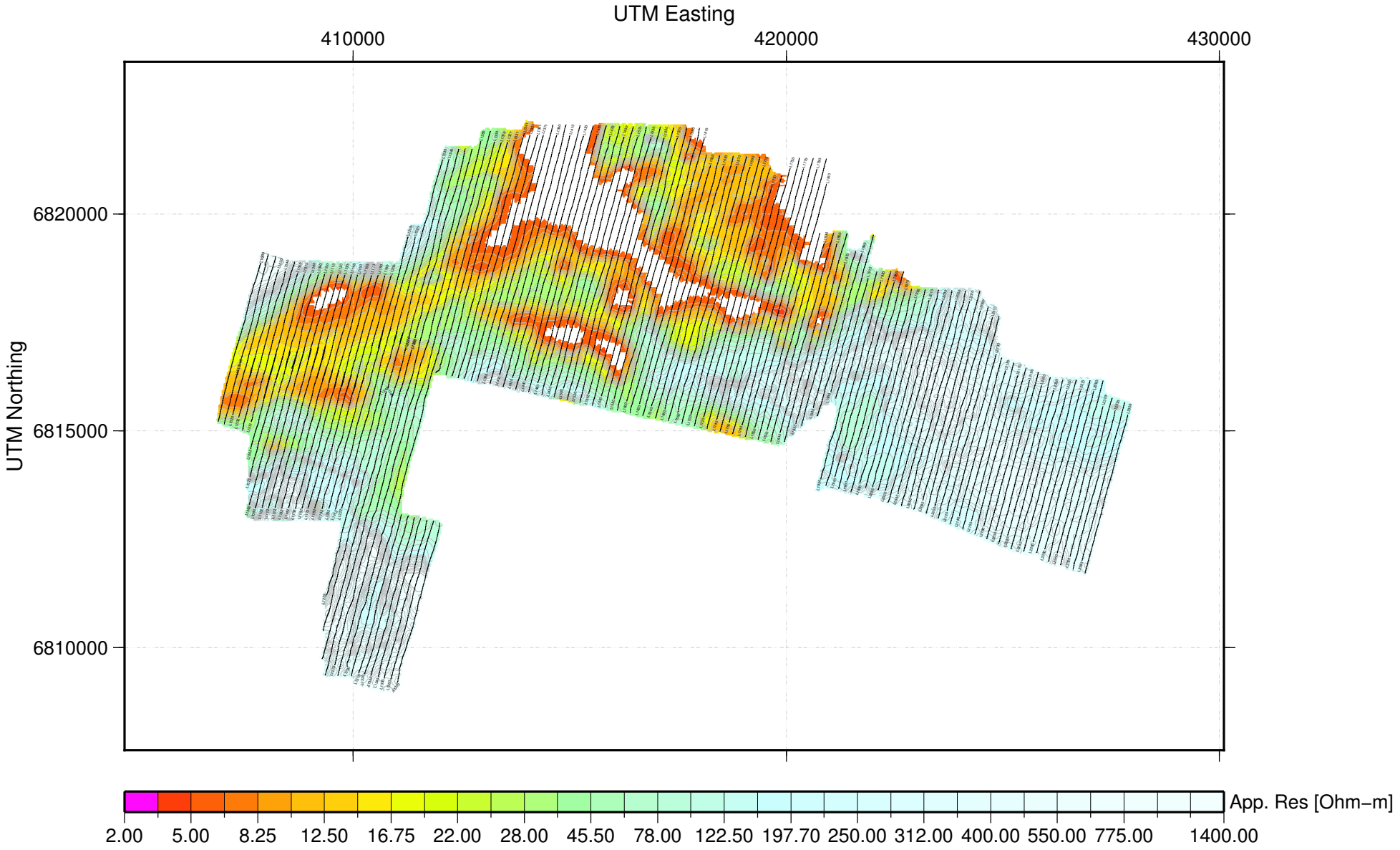
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 250m of depth



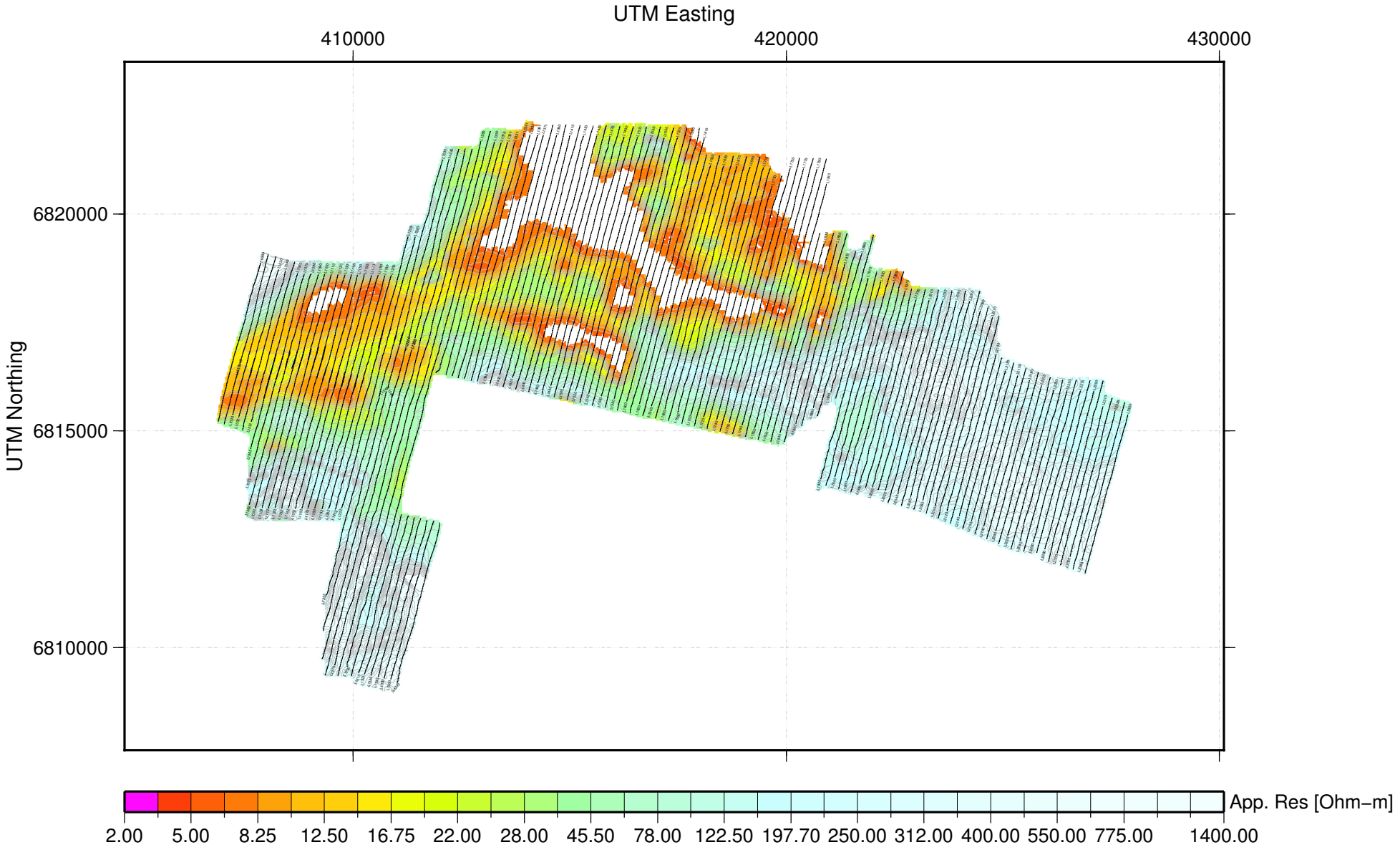
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 275m of depth



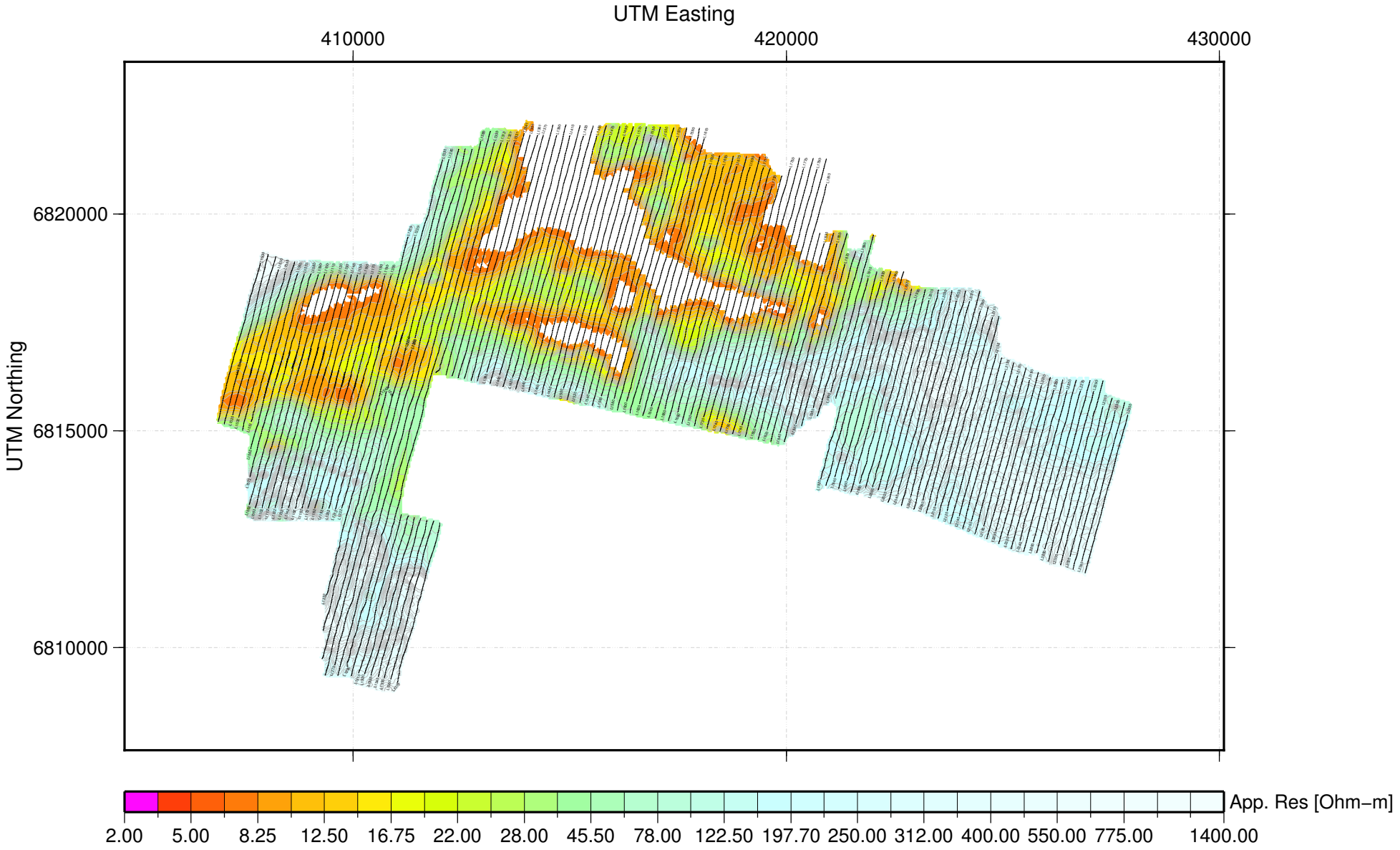
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 300m of depth



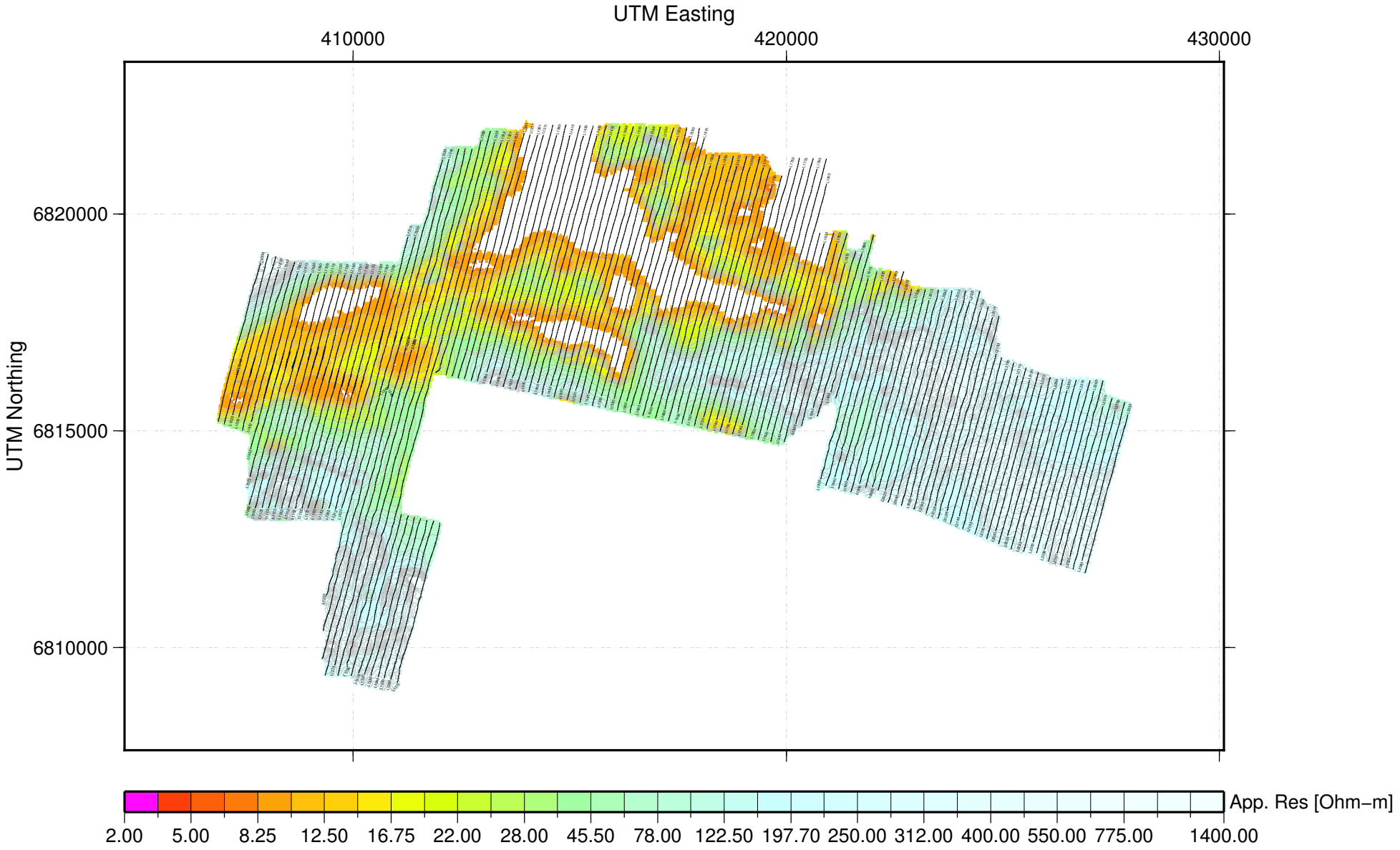
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 325m of depth



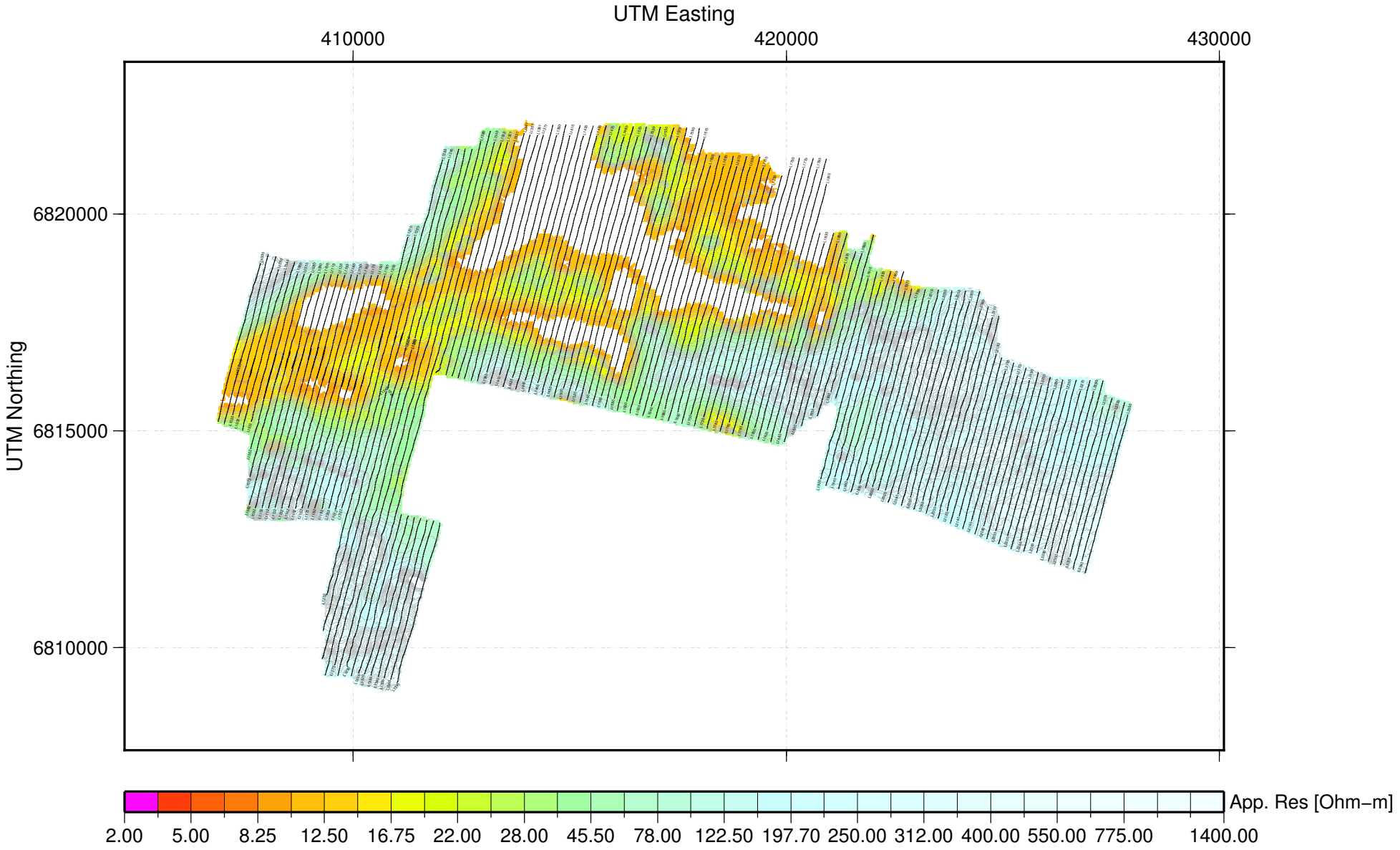
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 350m of depth



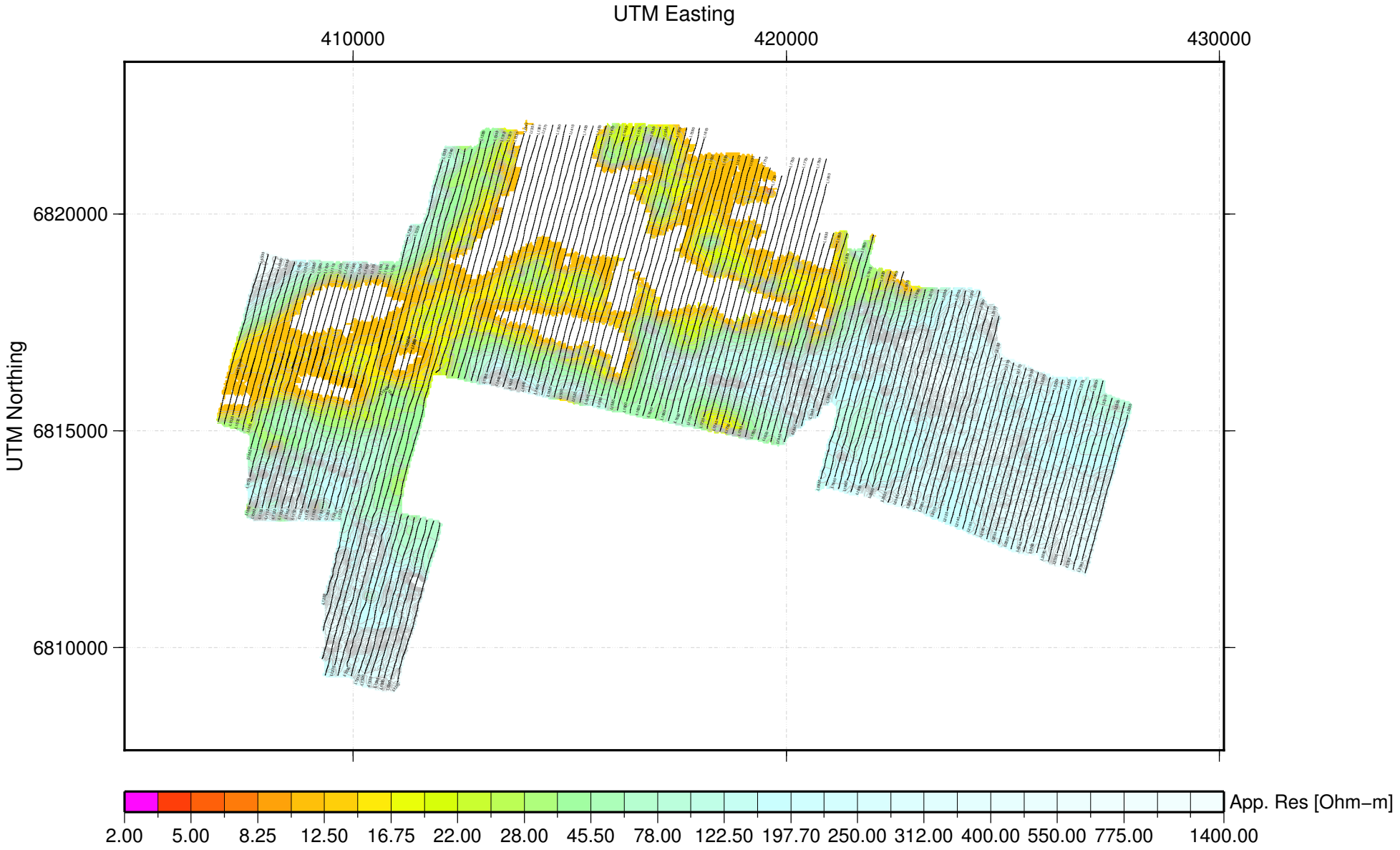
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 375m of depth



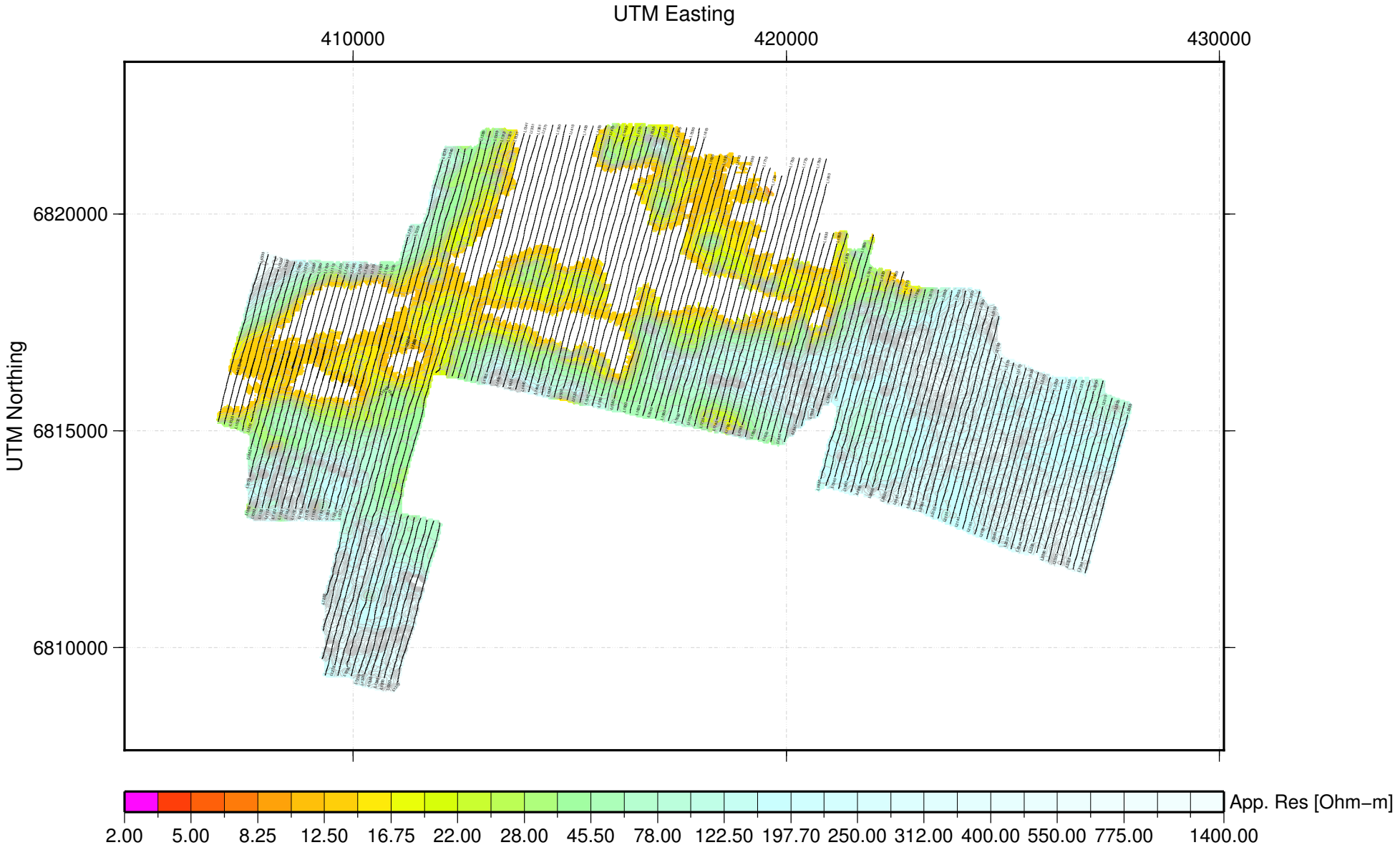
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 400m of depth



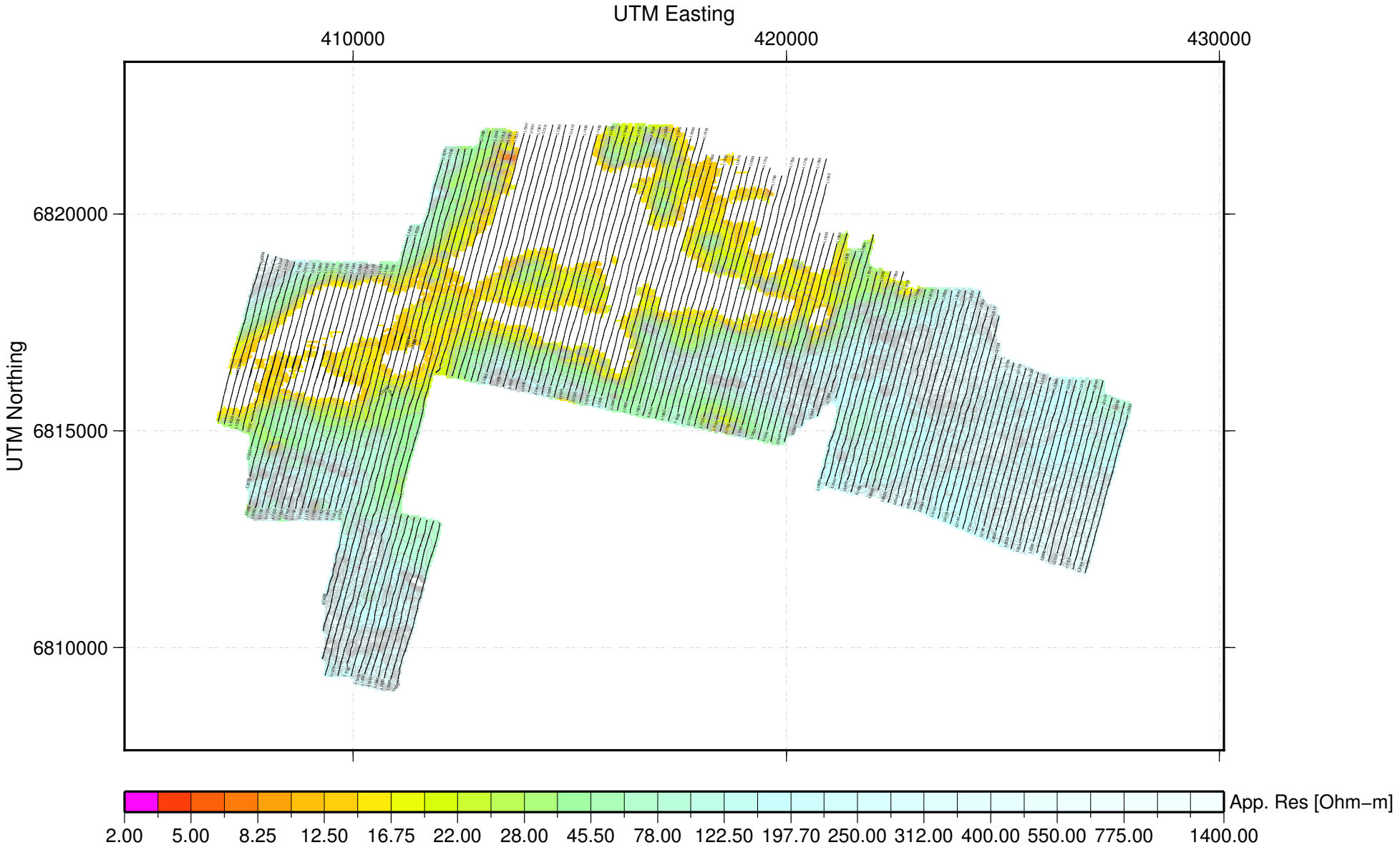
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 425m of depth



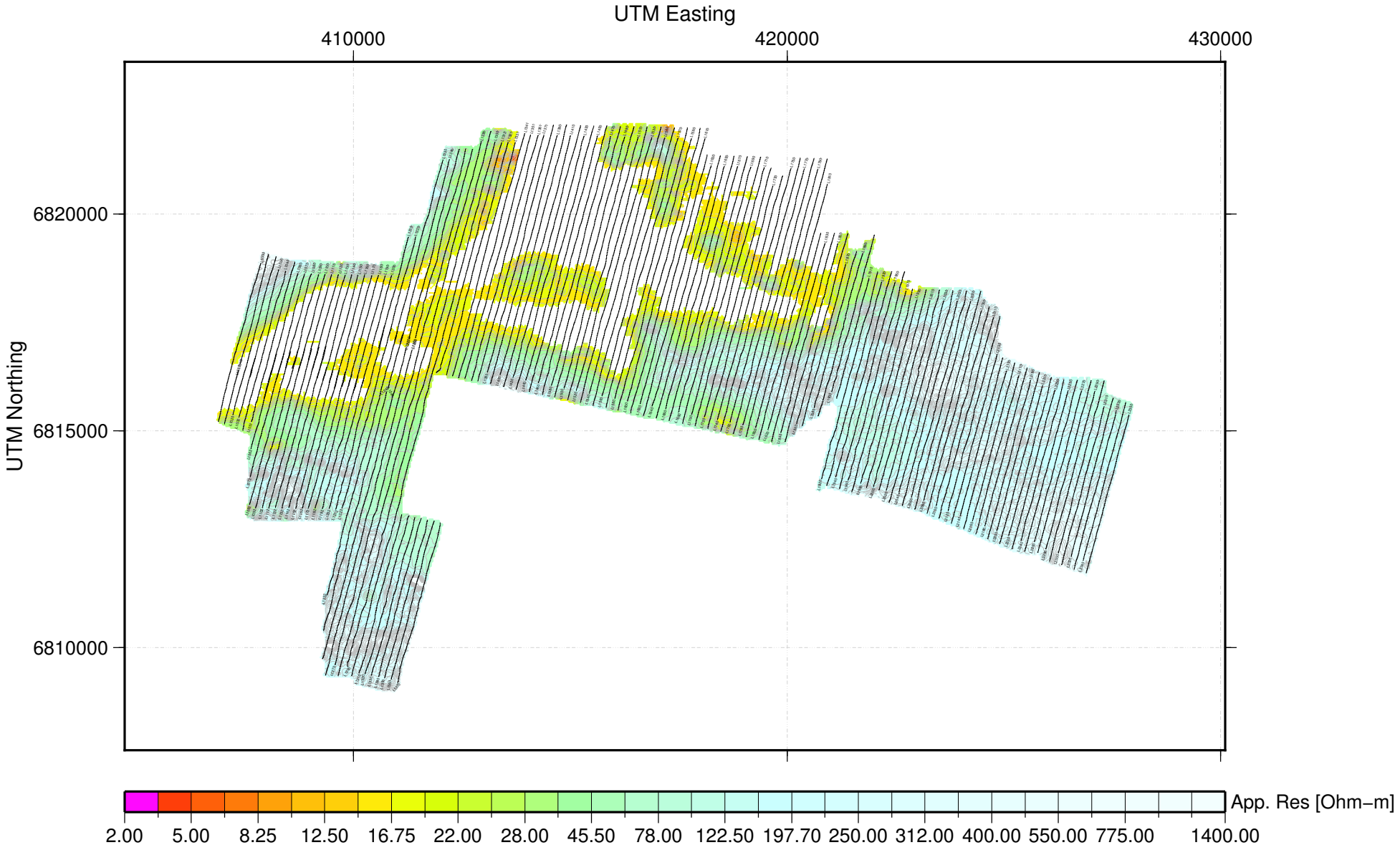
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 450m of depth



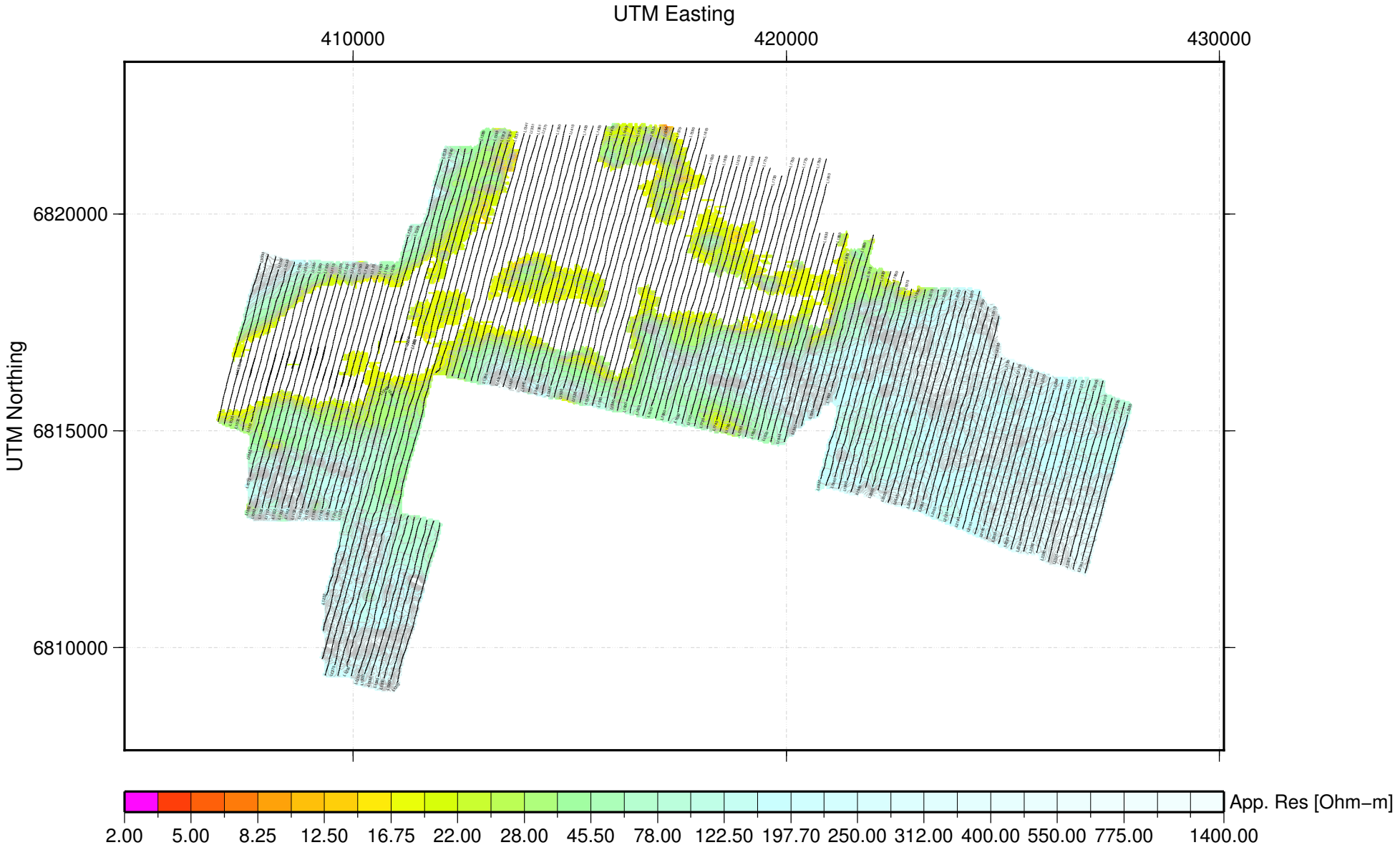
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 475m of depth



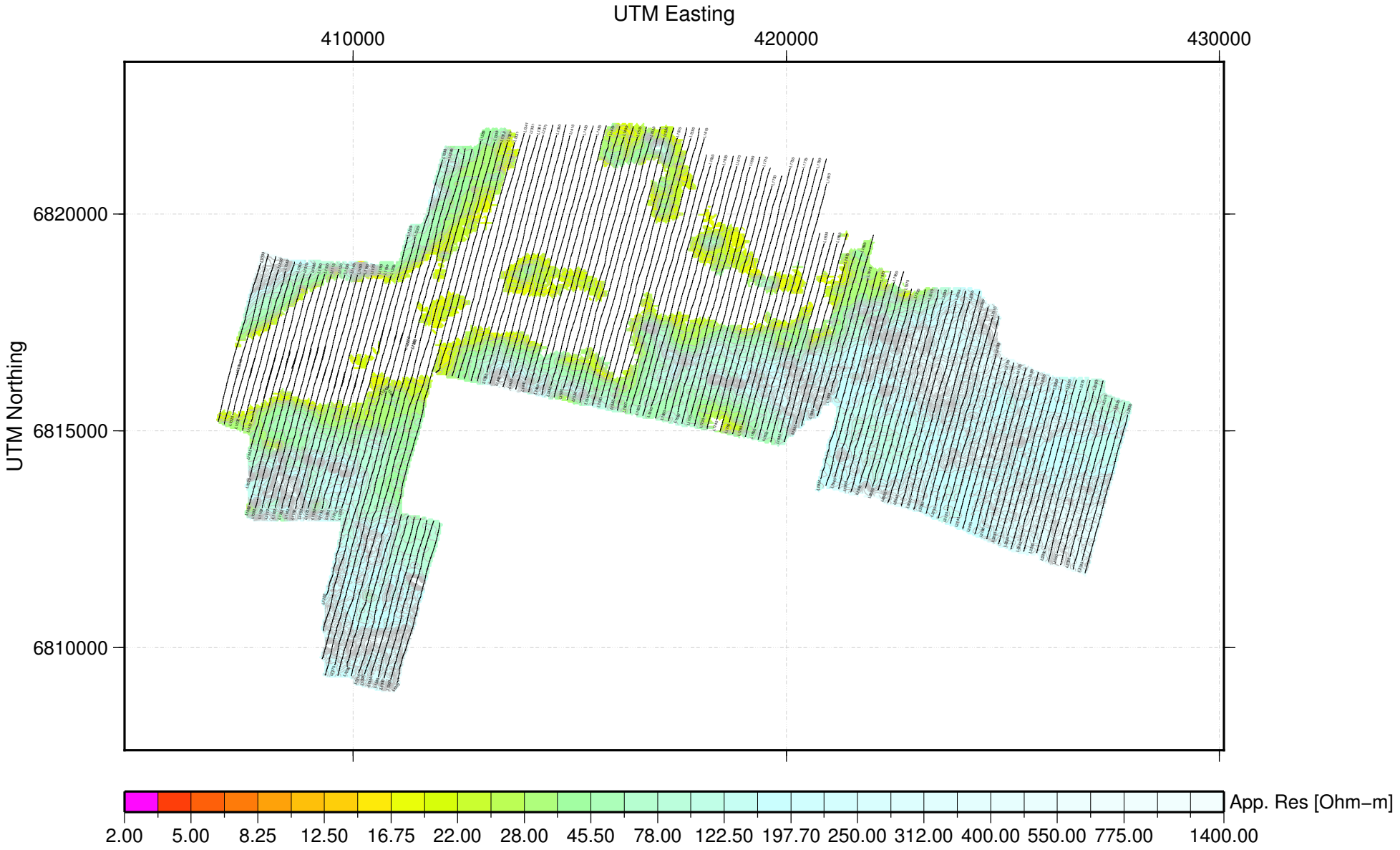
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 500m of depth



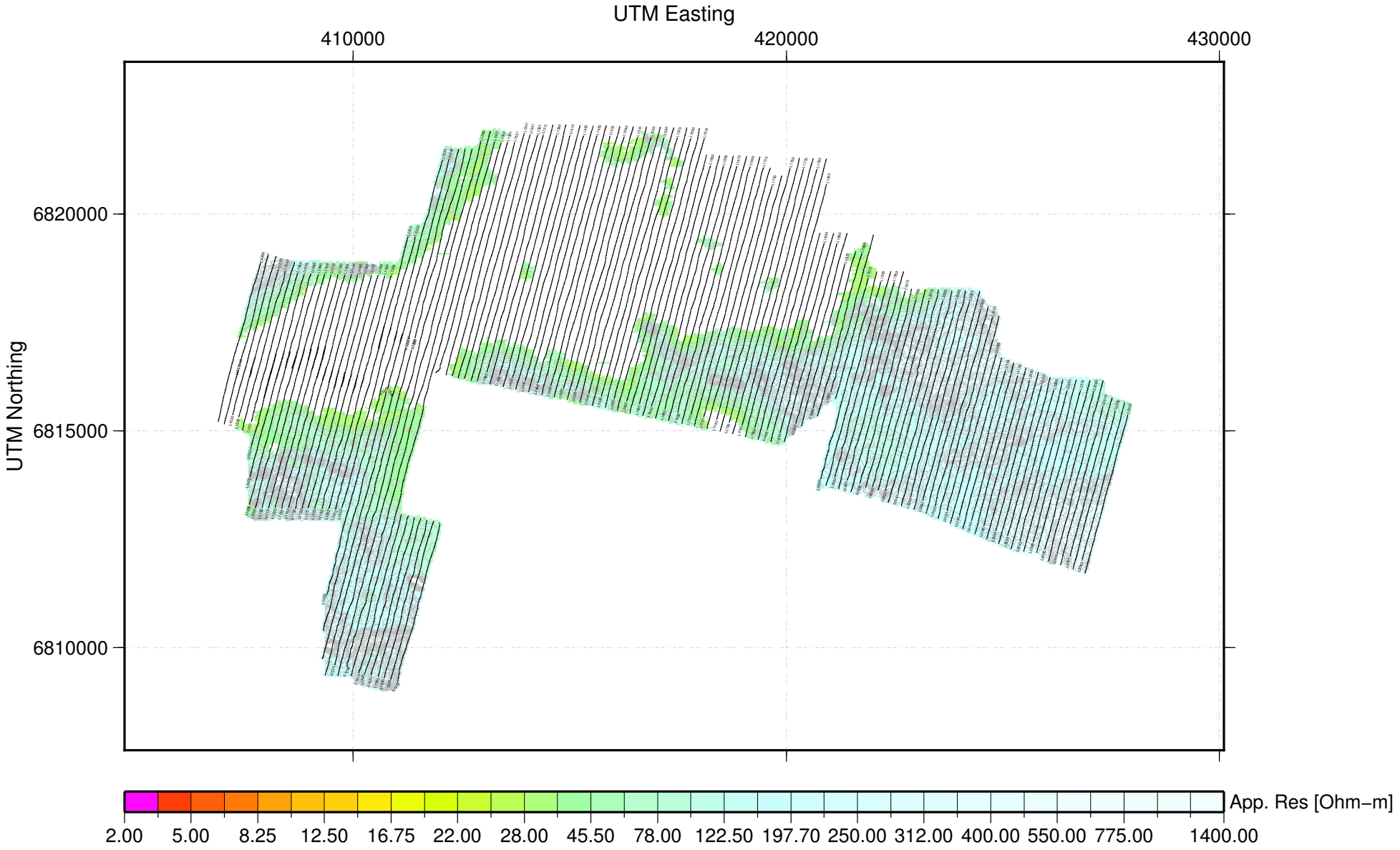
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 525m of depth



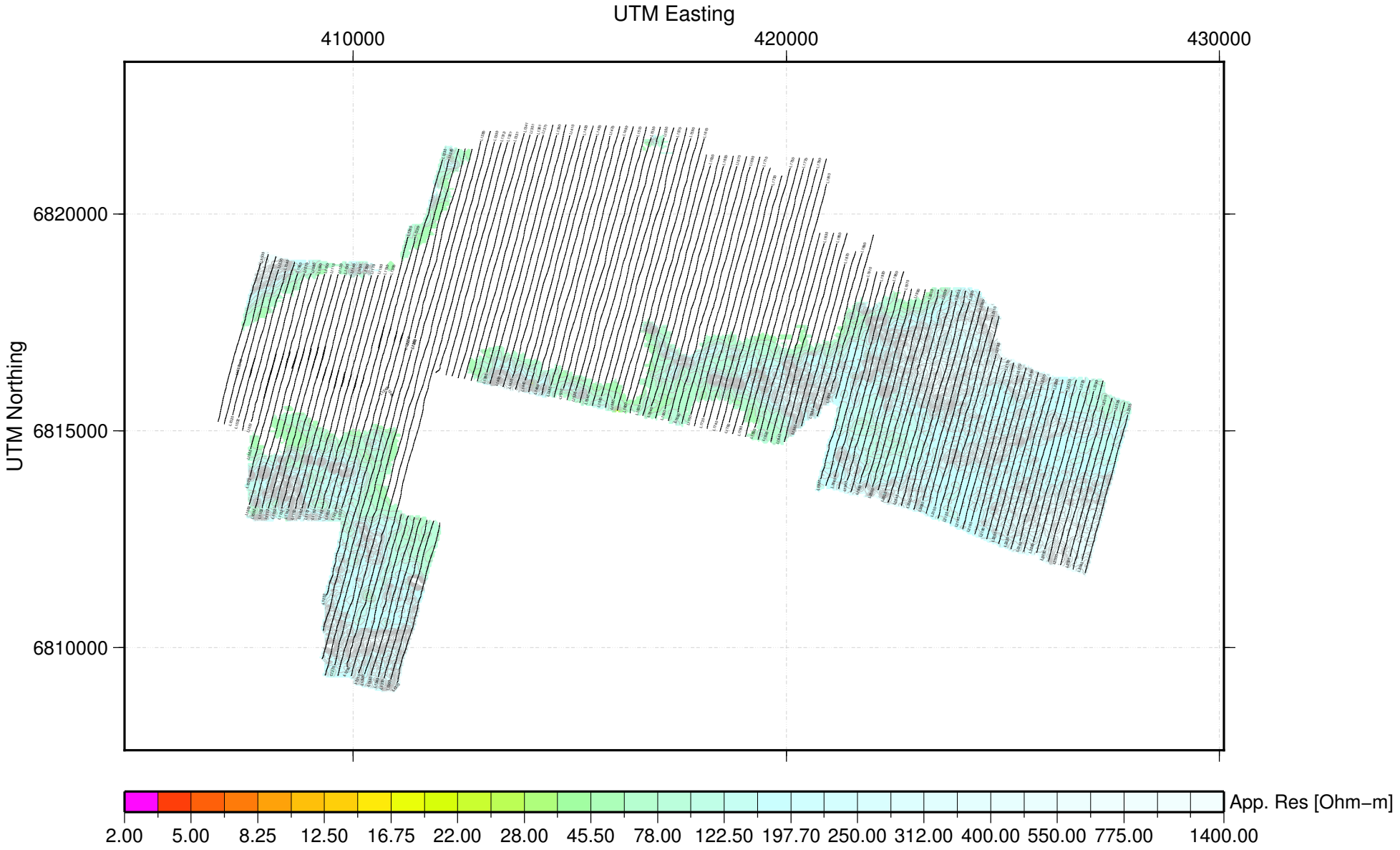
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 550m of depth



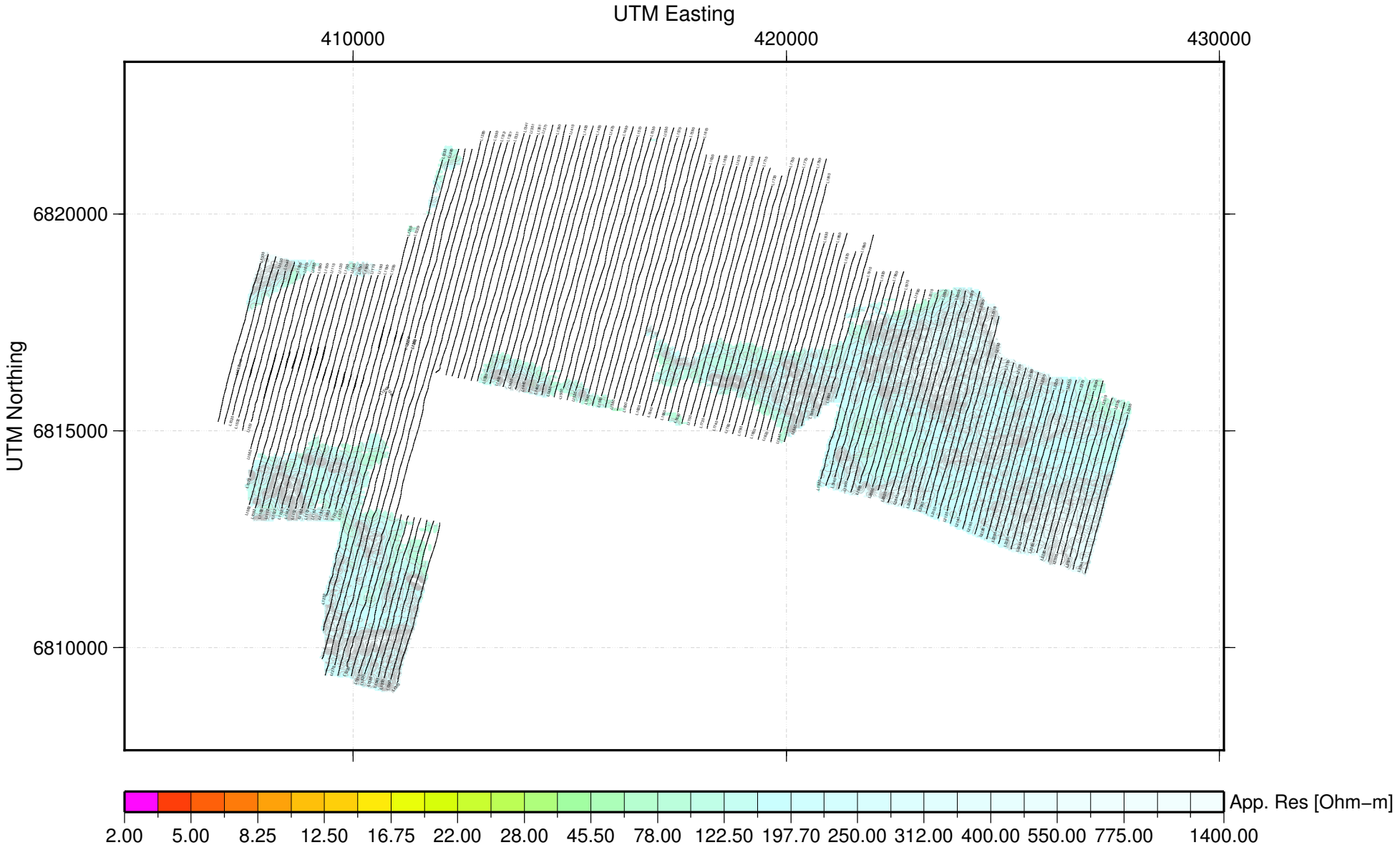
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 575m of depth



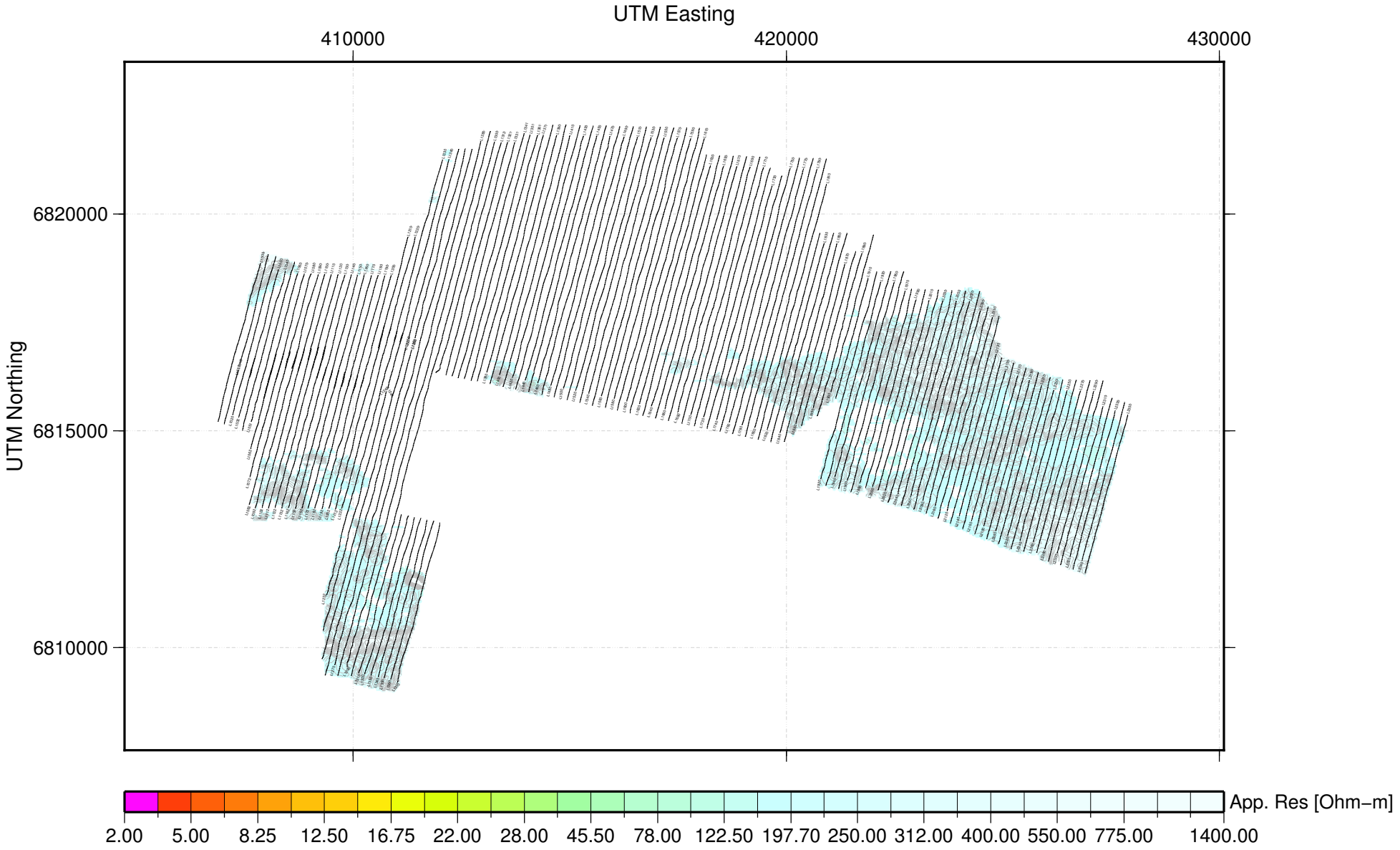
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 600m of depth



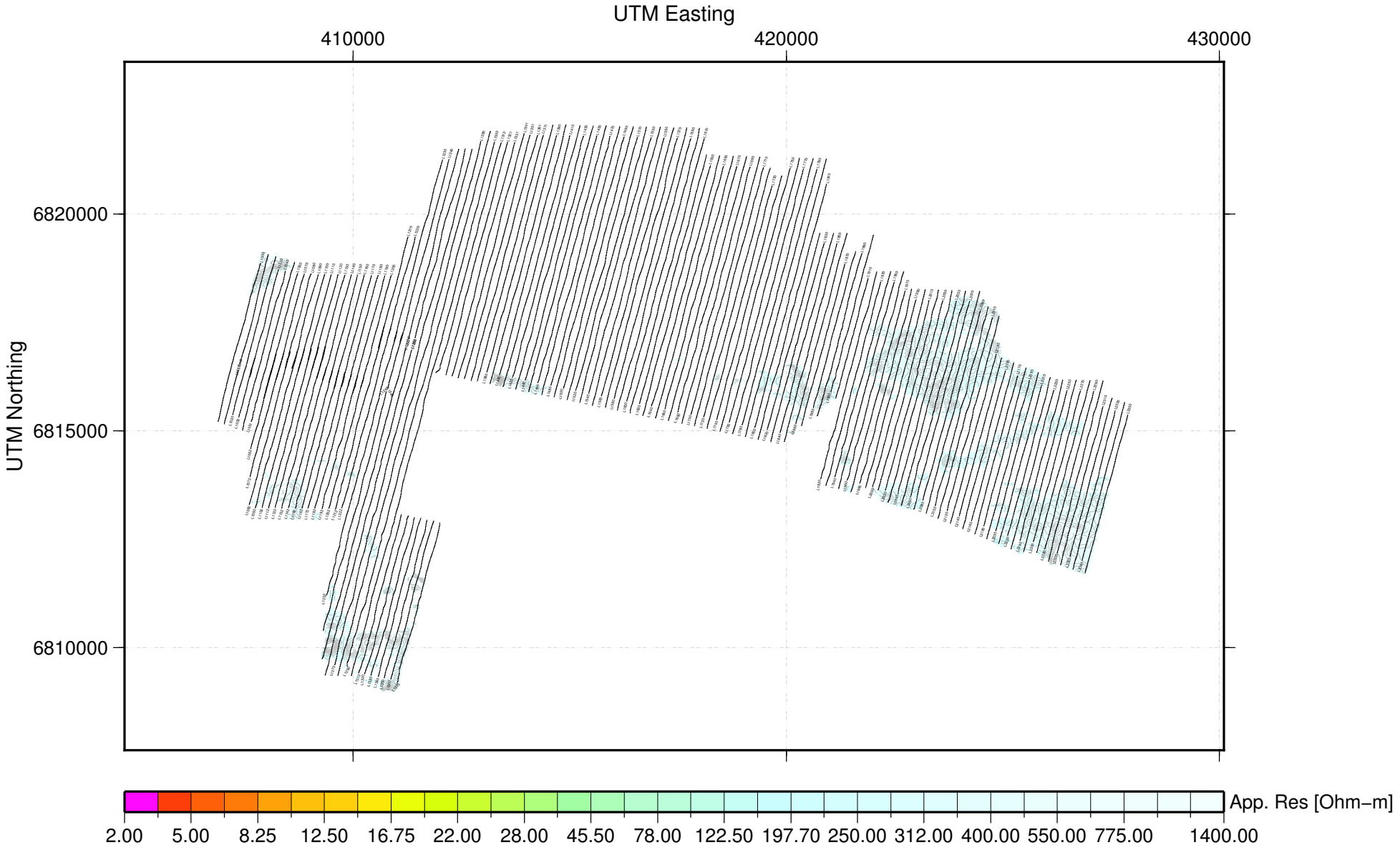
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 625m of depth



GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 650m of depth



Appendix I: Borehole EM Survey Report

The table below (Table I-1) summarizes the contents of this Appendix, which includes a report and BHEM profile plots prepared by Aurora Geosciences.

Table I-1: Table of contents for Appendix I

Item	Hole ID	Target	Data	Page
Contractor report	All surveyed holes	Krakatoa, Sebesi, Tarawera	Title page, TOC	i
			Text	1
Profile plots	K16-369	Krakatoa downdip	Deconvolved A	9
			Deconvolved coil	10
			Deconvolved U	11
			Deconvolved V	12
			Deconvolved Z	13
			Normalized A	14
			Normalized coil	15
			Normalized U	16
			Normalized V	17
			Normalized Z	18
			User aligned A	19
			User aligned coil	20
			User aligned U	21
			User aligned V	22
			User aligned Z	23
Profile plots	K16-372	Sebesi	Deconvolved A	24
			Deconvolved coil	25
			Deconvolved U	26
			Deconvolved V	27
			Normalized A	28
			Normalized coil	29
			Normalized U	30
			Normalized V	31
			User aligned A	32
			User aligned coil	33
			User aligned U	34
			User aligned V	35
Profile plots	K16-374	Sebesi	Deconvolved A	36
			Deconvolved coil	37
			Deconvolved U	38
			Deconvolved V	39
			Normalized A	40
			Normalized coil	41
			Normalized U	42
			Normalized V	43

Item	Hole ID	Target	Data	Page
			User aligned A	44
			User aligned coil	45
			User aligned U	46
			User aligned V	47
Profile plots	K16-394	Sebesi	Normalized A	48
			Normalized coil	49
			Normalized U	50
			Normalized V	51
			User aligned A	52
			User aligned coil	53
			User aligned U	54
			User aligned V	55
Profile plots	K16-399	Krakatoa downdip	Normalized A	56
			Normalized coil	57
			Normalized U	58
			Normalized V	59
			User aligned A	60
			User aligned coil	61
			User aligned U	62
			User aligned V	63
Profile plots	K16-406	ABM West	Deconvolved coil	64
			Normalized coil	65
			User aligned coil	66
Profile plots	K16-409	ABM downdip	Normalized A	67
			Normalized coil	68
			Normalized U	69
			Normalized V	70
			User aligned A	71
			User aligned coil	72
			User aligned U	73
			User aligned V	74
Profile plots	K16-415	Tarawera	Deconvolved A	75
			Deconvolved coil	76
			Deconvolved U	77
			Deconvolved V	78
			Normalized A	79
			Normalized coil	80
			Normalized U	81
			Normalized V	82
			User aligned A	83

Item	Hole ID	Target	Data	Page
			User aligned coil	84
			User aligned U	85
			User aligned V	86
Profile plots	K16-416	Sebesi	Deconvolved A	87
			Deconvolved coil	88
			Deconvolved U	89
			Deconvolved V	90
			Normalized A	91
			Normalized coil	92
			Normalized U	93
			Normalized V	94
			User aligned A	95
			User aligned coil	96
			User aligned U	97
			User aligned V	98
Profile plots	K16-418	Krakatoa downdip	Deconvolved A	99
			Deconvolved coil	100
			Deconvolved U	101
			Deconvolved V	102
			Normalized A	103
			Normalized coil	104
			Normalized U	105
			Normalized V	106
			User aligned A	107
			User aligned coil	108
			User aligned U	109
			User aligned V	110
Profile plots	K16-419	Krakatoa downdip	Normalized A	111
			Normalized coil	112
			Normalized U	113
			Normalized V	114
			User aligned A	115
			User aligned coil	116
			User aligned U	117
			User aligned V	118

Downhole Electromagnetic Survey – Kudz Ze Kayah

105G/07 Yukon, Canada

WORK PERFORMED:
June 28 – September 28, 2016

Prepared for:

BMC Minerals Ltd.

Prepared by:

AURORA GEOSCIENCES

Field Report
BHEM at Kudz Ze Kayah

Prepared for:
BMC Minerals (No.1) Ltd
Suite 530-1130 West Pender Street
Vancouver BC V6E 4A4

Prepared by:
Aurora Geosciences Ltd.
34A Laberge Road, Whitehorse, Yukon, Y1A5Y9
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1 SUMMARY

This report describes the borehole electromagnetic survey (BHEM) conducted for BMC Minerals Ltd. on the Kudz Ze Kayah property, Yukon to assist in locating VMS ore deposits in the near proximity of select diamond drill holes.

The project consisted of 11 BHEM surveys, using 4 transmitter loops on 11 individual drill holes. The majority of drill holes were concentrated in one area allowing them to be surveyed using the Sebesi loop that was set up on the first day of the project. Surveys on holes K16-406, K16-409 and K16-415 each required a new transmitter loop to be built for single-survey use. Most of the drill holes were surveyed through the drill string as the diamond drill crew pulled rods to ensure that the hole did not collapse before the survey could be completed. The crew was prepared for open-hole surveying using a hand-winch but used it only once, on hole K16-369.

Aurora Geosciences completed the work in 5 separate deployments: June 28- July 7, July 29 - August 12, September 2-5, September 16-18 and September26-28. Transportation to the site from Whitehorse was by truck or, when timing allowed, on board scheduled chartered flights. The crew stayed on site in accommodations provided by BMC. The survey drill holes and loops were accessed by truck, all-terrain vehicle or helicopter depending on the proximity of the loops and the survey holes to the access road. The transmitter loops were tested and repaired as required prior to each hole being surveyed. A crew log describing daily operations and production is included with this report.

2 CREW AND EQUIPMENT

Typical surveys were conducted with one Aurora Geosciences technician with help from the drill crew on site. The first deployment had three people on site, including a consultant from the BHEM instrument (Volterra) supplier, allowing multiple people to familiarize themselves with the equipment.

Additional support was provided periodically by BMC and Equity Exploration staff to help set-up, maintain and tear down the transmitter loops.

The following personnel conducted the survey:

Dave Hildes	Senior Geophysicist	June 28- July 5, 2016
Shawn Scott	Geophysical Technician	June 28 – September 28, 2016
Ross Polutnik	Volterra Consultant	June 28- July 5, 2016

Wire intended for use in transmitter loops was shipped to site via Small's Expediting before the project began, all remaining instruments and equipment were brought in by flatbed truck with the first crew rotation. All Volterra related equipment was packed and returned to Whitehorse between rotations in order to qualify for standby rates as per Aurora Geoscience's agreement with the instrument supplier. All other gear was left on-site between rotations.

The crew was equipped with the following instruments and equipment

Volterra BHEM:	1	-	Borehole dabtube s/n 8063 & 8064 (June and July), 8061&8062 (August and September)
	1	-	Borehole magnetometer sensor (s/n 006)
	1	-	Borehole b-field coil sensor (s/n 004)
	2	-	Borehole battery pack (s/n 004 & 006)
	10	-	Extension rods
	2	-	Tablets with Volterra Monitor and EM Timer software (s/n 007 & 029)
	1	-	Asus Laptop with Volterra CSPROC software
	1	-	Zonge coil
	1	-	Volterra transmitter assembly
	3	-	Dabtubes (s/n 8033, 8049, 8057)
	1	-	Toroid current monitor
	1	-	Downhole winch and cable
	1	-	Downhole cable counter
	2	-	Volterra battery chargers
Other Equipment:	1	-	Flatbed truck (depending on rotation)
	1	-	Laptop with Geosoft
	2	-	Honda 2Kw Generators
	1	-	20L gas can
	12	-	Large spools of 10 – 14 gauge wire
	2	-	Backpack wire reel
	1	-	Iridium Satellite Phone
	3	-	Bear spray and bear bangers
	2	-	Handheld Garmin GPS
	1	-	Geonics ProTem Transmitter (back-up)
	1	-	AGL standard Office Box

3 SURVEY LOCATION

The drill holes and BHEM parameters are described in Table 1. Figure 1 is a map showing the drill holes and loop locations. The transmitter loops were located so that the surveyed drill holes were inside the loop and positioned to have good coupling with expected conductor geometry. All loops were slightly modified on the ground to account for waterways, wetlands and other obstacles. All loop modifications were tracked by the operator as they were laid out. Coordinates in this report are in the NAD 83 datum, UTM Zone 9N projection, elevations are height above ellipsoid.

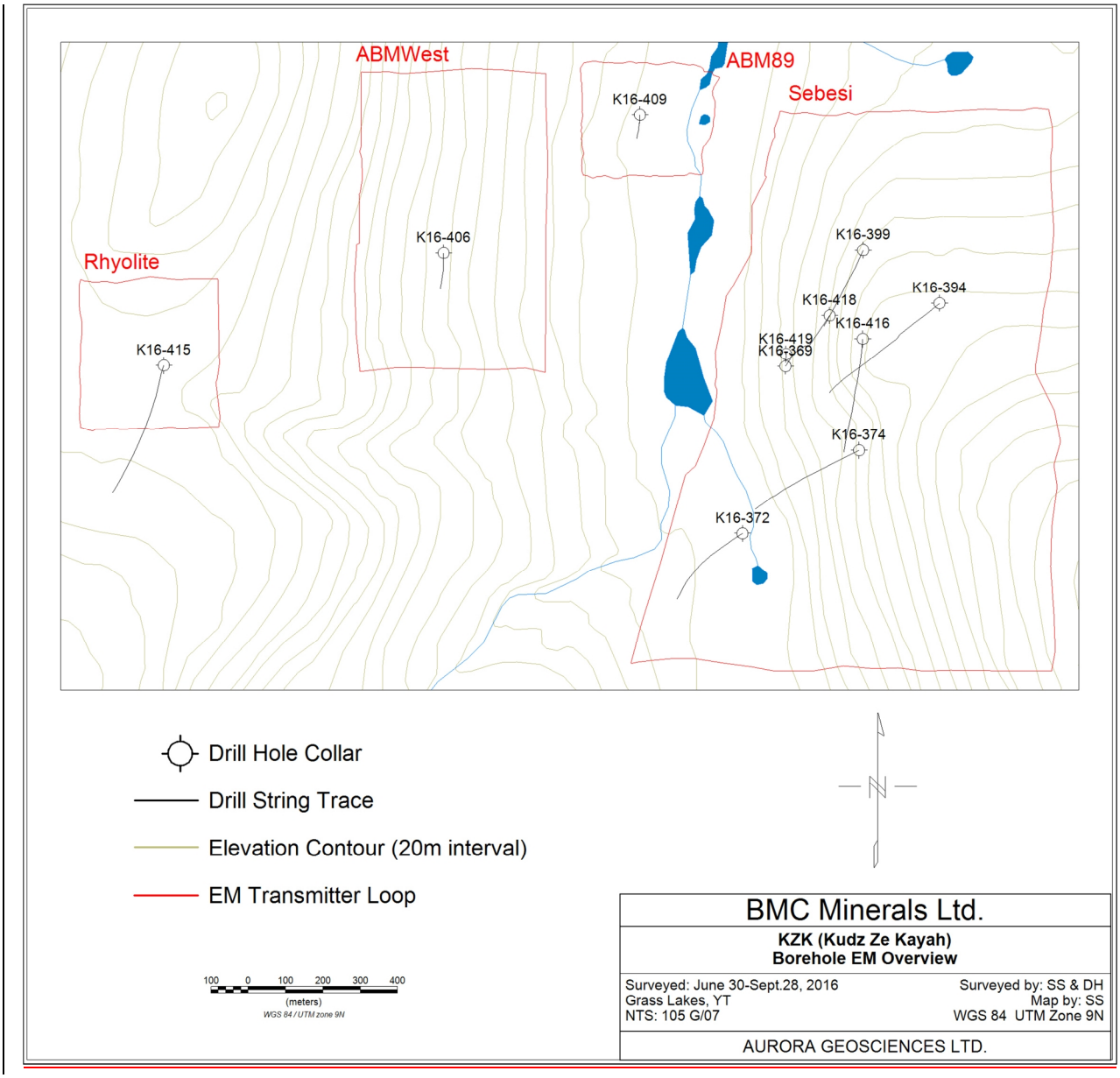

Figure 1: Drill hole and loop locations.

Table 1: Summary of surveys performed.

DDH-ID	UTM Z9N	Az.	Dip	Depth	Readings	Loop used	Date surveyed
K16-369	415239, 6815212	31˚	-72˚	450 m	57	Sebesi	June 30, 2016
K16-372	415140, 6814775	240˚	-60˚	600 m	75	Sebesi	July 2, 2016

K16-374	415540, 6814995	245˚	-60˚	800 m	73	Sebesi	July 6, 2016
K16-406	414325, 6815522	180˚	-70˚	300 m	43	ABMWest	July 29, 2016
K16-399	415450, 6815529	205˚	-76˚	800 m	88	Sebesi	August 2, 2016
K16-409	414851, 6815891	180˚	-80˚	300 m	47	ABM89	August 6, 2016
K16-394	415655, 6815385	233˚	-65˚	860 m	80	Sebesi	August 11, 2016
K16-415	413579, 6815228	195˚	-60˚	855 m	77	Rhyolite	September 4, 2016
K16-416	415448, 6815293	184˚	-68˚	835 m	72	Sebesi	September 17, 2016
K16-418	415362, 6815355	214˚	-77˚	476 m	52	Sebesi	September 29, 2016
K16-419	415242, 6815246	6˚	-87˚	510 m	51	Sebesi	September 28, 2016

4 SURVEY SPECIFICATIONS

Station depth was determined by the length of the drill string, or when necessary by the winch counter. Depths were adjusted to reflect a depth of 0 m when the middle of the Volterra tool was at the top of the drill hole collar. Coordinates of the drill hole collars were supplied by Equity Exploration. Station spacing was set at 5 m for the single open-hole surveys using the winch. Discrepancies between the winch counter and the hole depth supplied by geologists appear to indicate poor calibration of the counter and as a result the final data the assumes a station spacing of 4.6 m. Station spacing for through-the-bit surveys were set at 6 m to account for the intervals available with 3 m drill rods; larger station spacing was used in low-priority parts of the hole to expedite the survey.

The survey was performed with the following specifications:

Geographic datum & projection: NAD83(CSRS) datum, UTM Zone 9N projection

Elevation datum: Height Above Ellipsoid

Station locations:	6 m, 9 m, 12 m or 15 m (tailored to the targets set by geologists) when surveying through the bit, 5 m intervals when using the winch counter.
Frequency:	5.00 Hz
Waveform:	100% duty cycle square wave
Components:	A (axial, down hole), U (transverse to axial, in the vertical plane containing the drill hole), V (transverse to axial, in the horizontal plane containing the drill hole), B-field coil (axial, down hole)
Reading length:	Readings were recorded for 120 seconds following a 20 second settling period at each station.
Synchronisation:	Transmitter and receiver were synchronized via GPS immediately prior to and following the survey.
Sample rate:	32 kHz
Channels:	20 Channels. Channel 20 is early time and channel 1 is late time as detailed in Table 2.

Table 2: Channel times in milliseconds.

Channel	Start (ms)	End (ms)	Width (ms)
20	0.097656	0.138107	0.040451
19	0.138107	0.195313	0.057206
18	0.195313	0.276214	0.080901
17	0.276214	0.390625	0.114411
16	0.390625	0.552428	0.161802
15	0.552428	0.781251	0.228823
14	0.781251	1.104855	0.323605
13	1.104855	1.562501	0.457646
12	1.562501	2.209710	0.647209
11	2.209710	3.125002	0.915292
10	3.125002	4.419420	1.294418
9	4.419420	6.250004	1.830584
8	6.250004	8.838841	2.588837
7	8.838841	12.50001	3.661168
6	12.500009	17.67768	5.177673
5	17.677682	25.00002	7.322336
4	25.000018	35.35536	10.35535
3	35.355364	50.00004	14.64467
2	50.000035	70.71073	20.71069
1	70.710728	99.75599	29.04527

5 DATA COLLECTION

Data was collected over the course of 5 site visits. One hole (K16-369) was surveyed with a hand-cranked winch, all others were surveyed in the presence of a diamond drill through the drill string. When surveying at the drill, 5 drill rods were removed leaving a 15 m gap at the bottom of the hole. The instrument and extension rods were assembled into 3 sets and combined and attached to the latch head as they were lowered into the hole. The full assembly was lowered down the hole using the drill's wire line and released when the latch head was sitting in the landing ring of the core barrel.

The full assembly hung through the core barrel and the bit, extending 9 m from the brill bit to the bottom of the instrument. The elevation of the instrument was considered to be the bit depth plus 7 m, approximately the centre of the instrument. The readings were conducted 20 seconds after the drill crew finished removing rods and had shut down the drill. Readings were at least 120 seconds in length. During the initial survey on the first hole, reading length was set at 270 seconds, allowing the data to be reprocessed using various reading lengths. After several tests it was decided that 120 seconds provided an adequate signal to noise ratio while still allowing a high volume of readings to be recorded on a single battery charge. Station spacings were in multiples of 3 m to account for drill rod length and actual station spacing varied between 6 m and 15 m. High and low priority targets were detailed by Equity or BMC geologists ahead of time and the survey was tailored to best accommodate these targets without fully exhausting the battery life of the instrument.

Instrument failure was responsible for partial loss of data in several instances. On hole K16-406, B-field coil data was properly recorded but all flux-magnetometer data was unrecoverable. This issue could not be resolved in the field and resulted in the instrument being replaced by the supplier on August 2. Toroid data was lost on several occasions: a battery failure caused irregular waveforms to be recorded on holes K16-409 and K16-394 and a corrupt file meant that no toroid data was collected on hole K16-419. In all cases, data collection from a back-up current monitor allowed the timing of the transmitter signal to be faithfully recorded resulting in good quality raw data. The raw data could then be properly aligned and normalized but not deconvolved.

6 DATA PROCESSING

The BHEM data were downloaded from the Volterra receiver dabtubes and from the current monitor dabtubes and reading timing files were downloaded from tablets running Volterra EM Timer software. Loop files were created using waypoints from hand-held Garmin GPS units, hole location files were created from files given by Equity Exploration geologists. All data were imported into Csproc software where all location data was visually inspected and any timing errors were identified and adjusted manually.

All plots were made using TEMplot software. On the plots channel 01 is presented as the HSensor value (measured primary field, in pT) subtracted from the channel 01 values (last time channel, in pT).

Channels 02 through 20 use channel 01 as a reference and are plotted as point normalized to channel 1 (channel X – channel 01 in pT).

Final data is presented in three formats: user-aligned, normalized and deconvolved. User-aligned data is raw data where receiver and transmitter timing has been verified and adjusted by a technician. Normalized data is user-aligned data that has been adjusted to account for the measured transmitter current. Deconvolved data is normalized data that has been adjusted to account for the measured transmitter waveform.

7 PRODUCTS

The following are attached to the digital version of this report:

Folder	File Name	Description of Contents
Documents\	*KZK 2016 BHEM Crew Log.pdf*	Production summary, daily log and personnel tracking sheet in PDF format.
Documents\	*KZK 2016 BHEM Report.pdf*	A copy of this report in PDF format.
Documents\	*KZK 2016 BHEM Map.pdf*	Map showing drill hole and loop locations.
Final Data\K16-*\Use Aligned\	K16-*A.*tem* K16-*U.*tem* K16-*V.*tem* K16-*Coil.*tem*	Processed final databases in ASCII format.
Final Data\K16-*\Normalize\	K16-*A.*tem* K16-*U.*tem* K16-*V.*tem* K16-*Coil.*tem*	Processed final databases in ASCII format.
Final Data\K16-*\Deconvolve\	K16-*A.*tem* K16-*U.*tem* K16-*V.*tem*	Processed final databases in ASCII format.

	K16-*Coil.*tem*	
Final Data\	*Channels.txt*	Describes the data channels
Loops\	*Rhyolite.csv*	Coordinates of loop corners in NAD83 datum, UTM Zone 9N projection with height above ellipsoid elevations.
	Sebesi.csv	
	ABMWest.csv	
	ABM89.csv	
Profile Plots\K16-*\Use Aligned\	K16-*A.*png*	BHEM data profiles in .png format.
	K16-*U.*png*	
	K16-*V.*png*	
	K16-*Coil.*png*	
Profile Plots\K16-*\Normalize\	K16-*A.*png*	BHEM data profiles in .png format.
	K16-*U.*png*	
	K16-*V.*png*	
	K16-*Coil.*png*	
Profile Plots\K16-*\Deconvolve\	K16-*A.*png*	BHEM data profiles in .png format.
	K16-*U.*png*	
	K16-*V.*png*	
	K16-*Coil.*png*	

Respectfully submitted,

Shawn Scott,

Geophysical Technician

Aurora Geosciences Ltd

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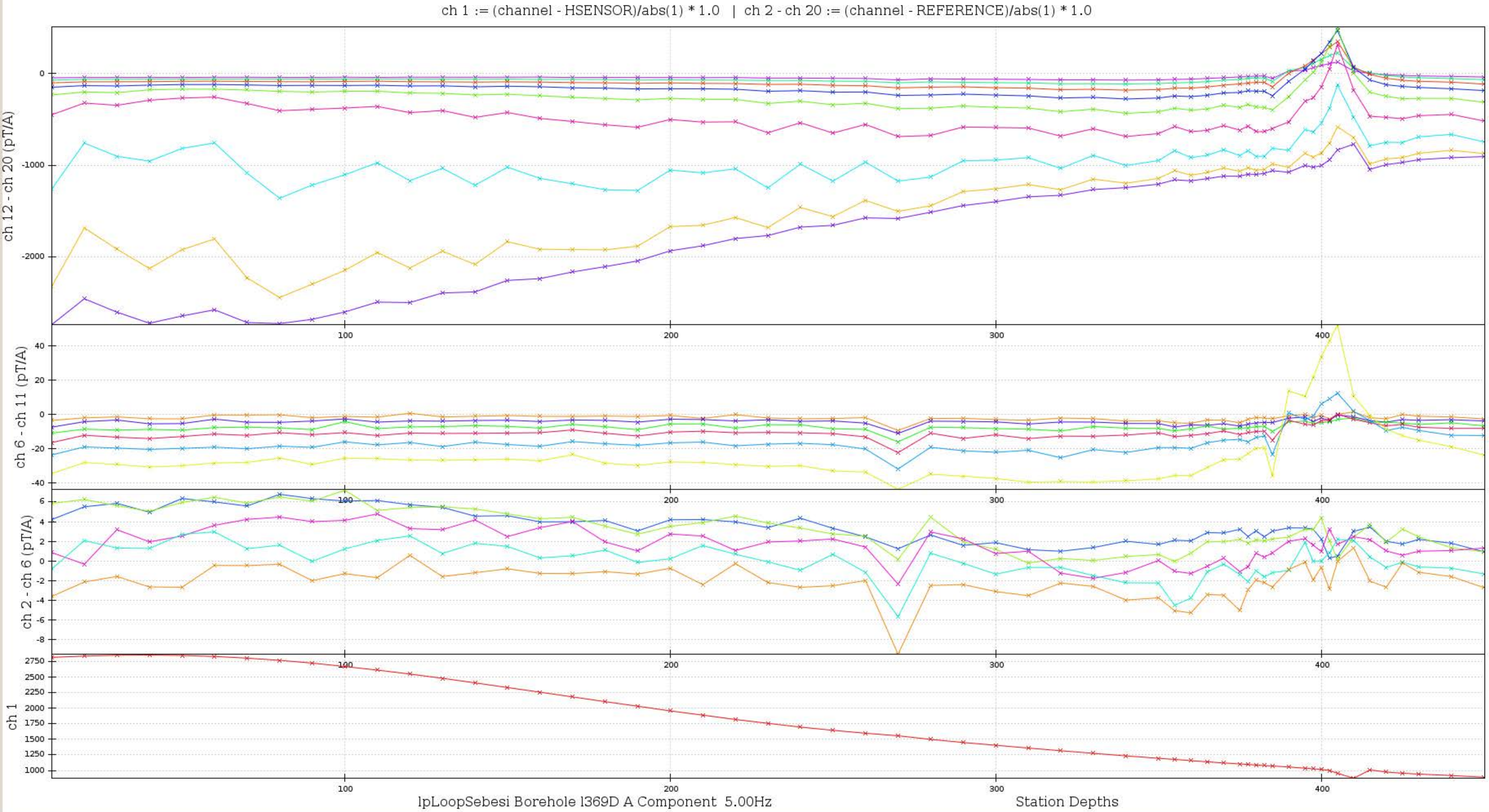
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ch 2 - ch 6 (pT/A)
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Station Depths

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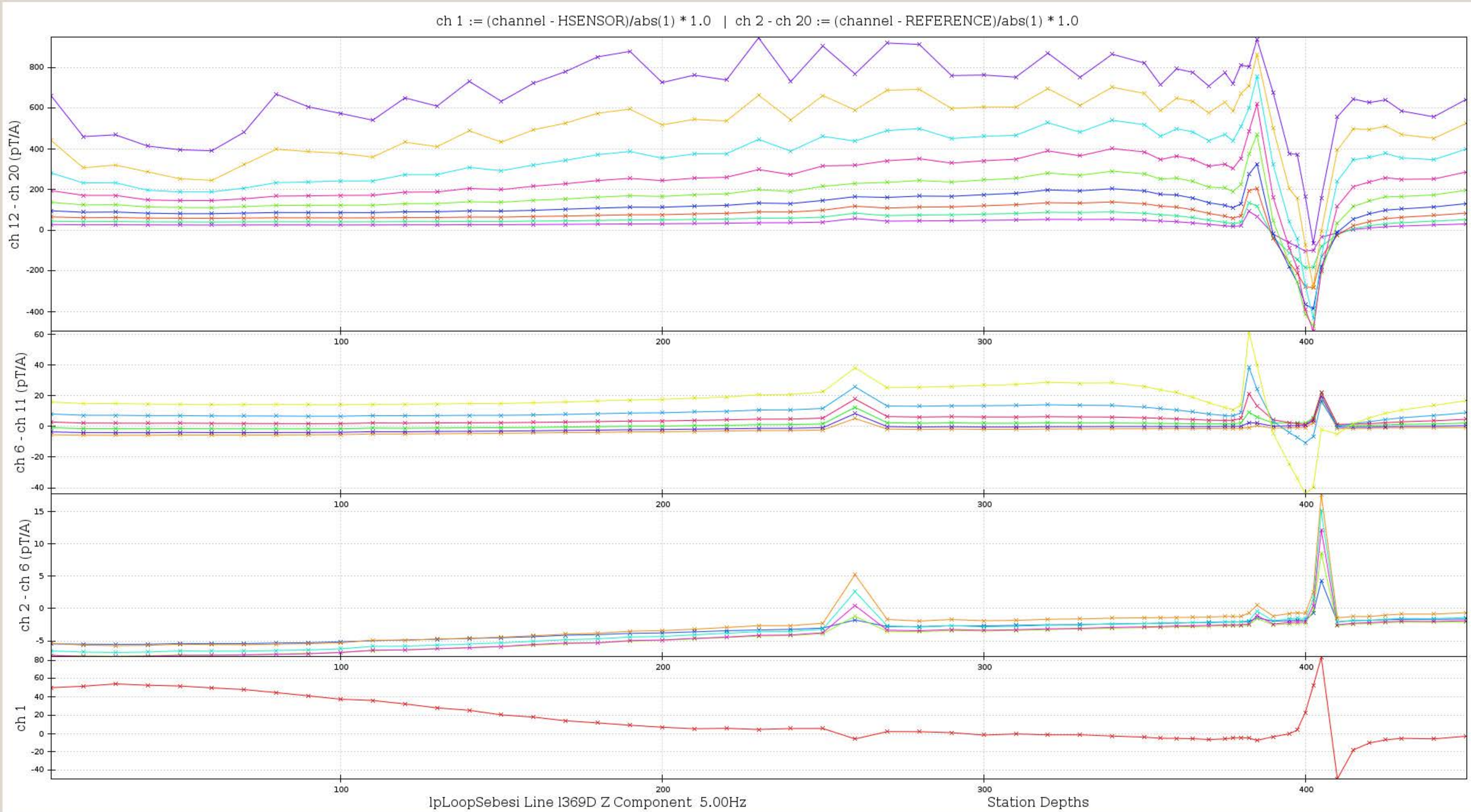
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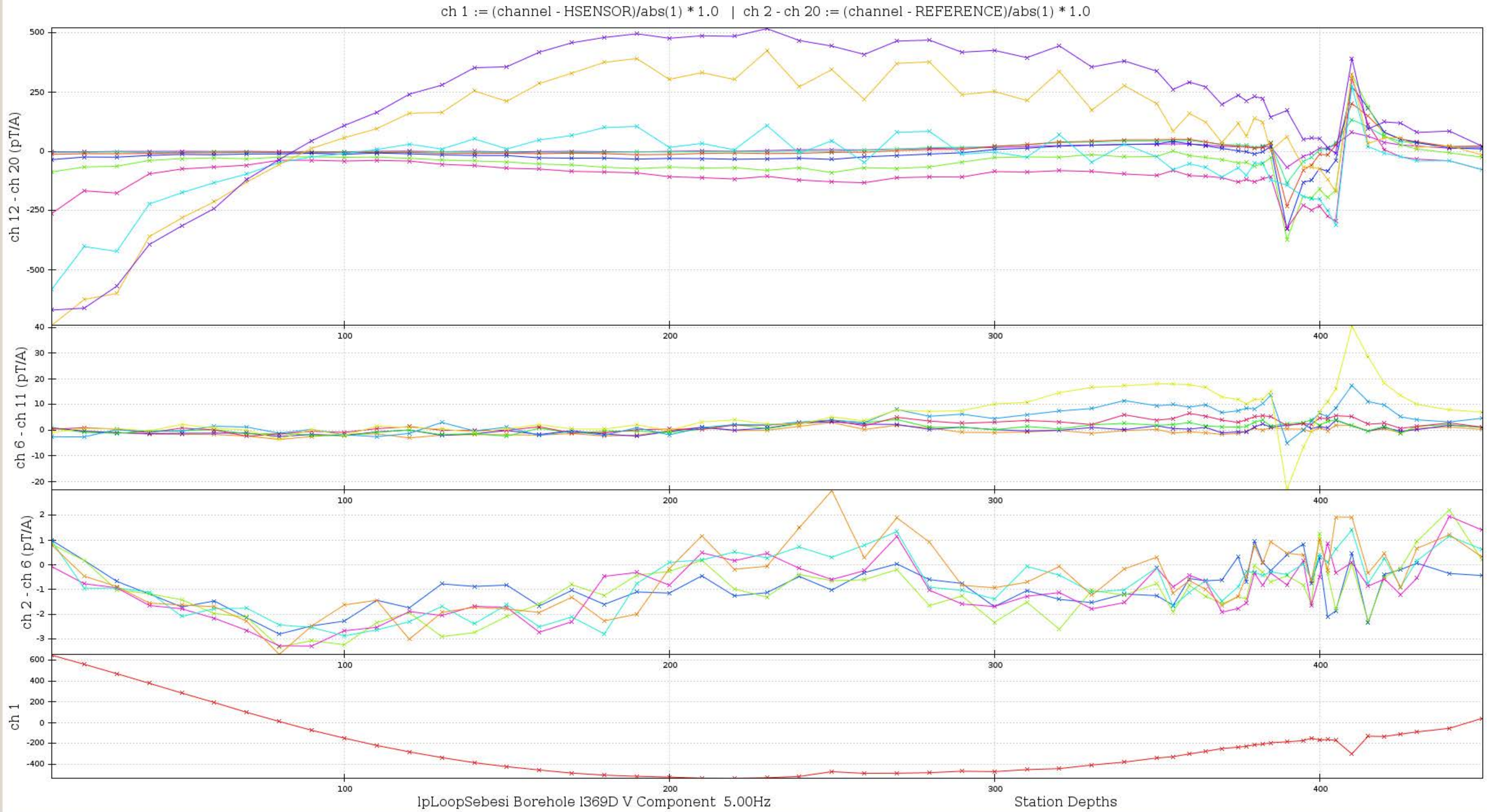
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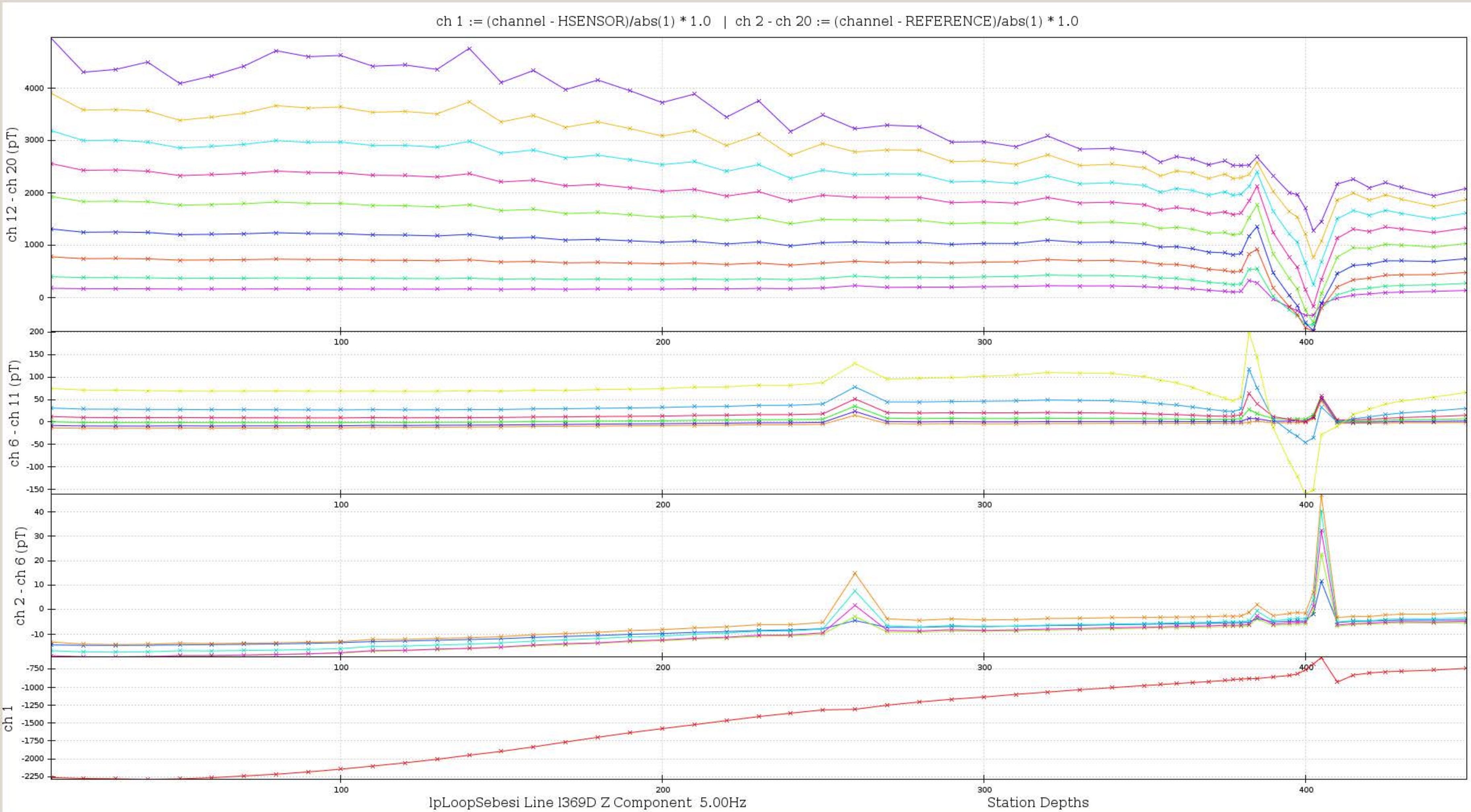
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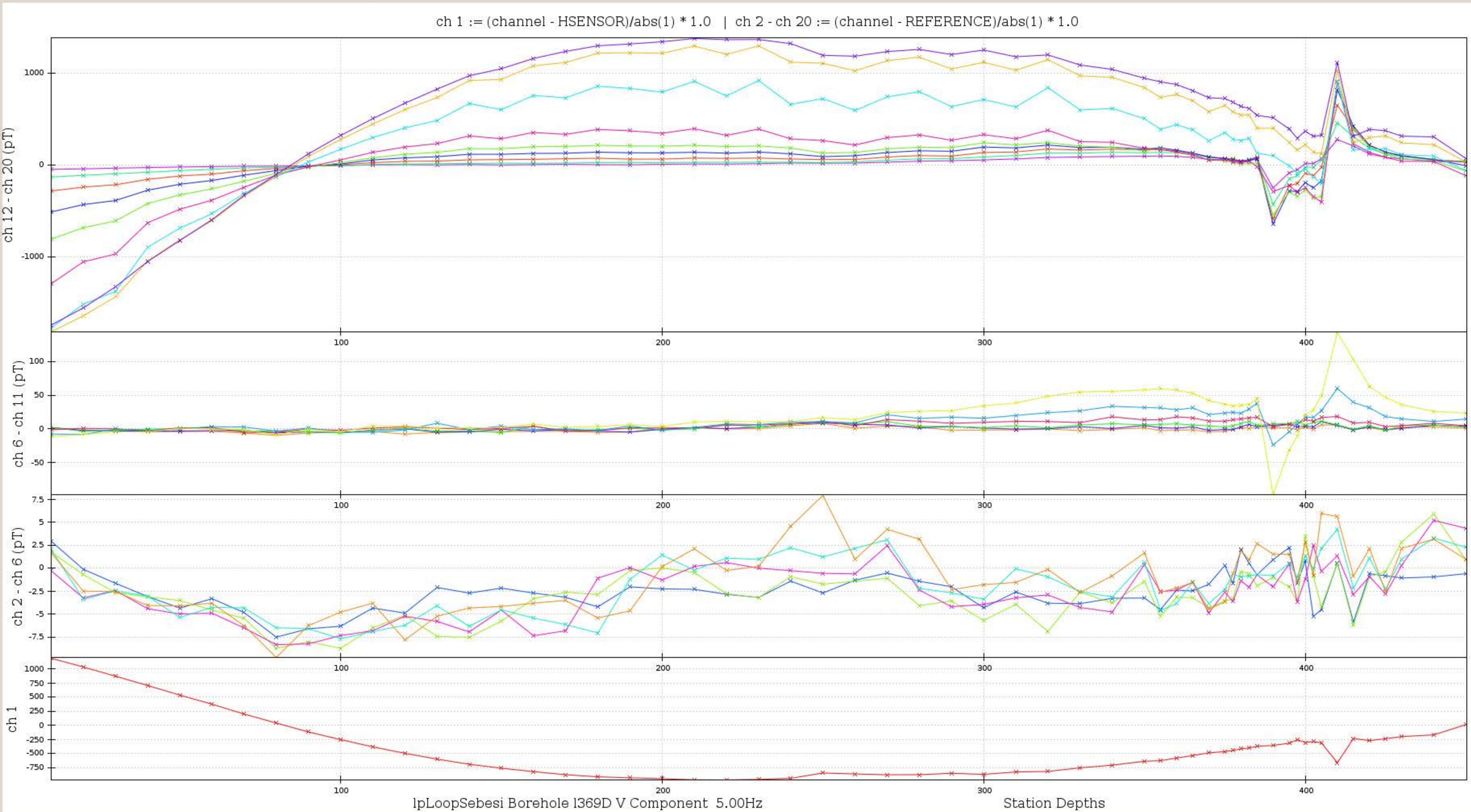
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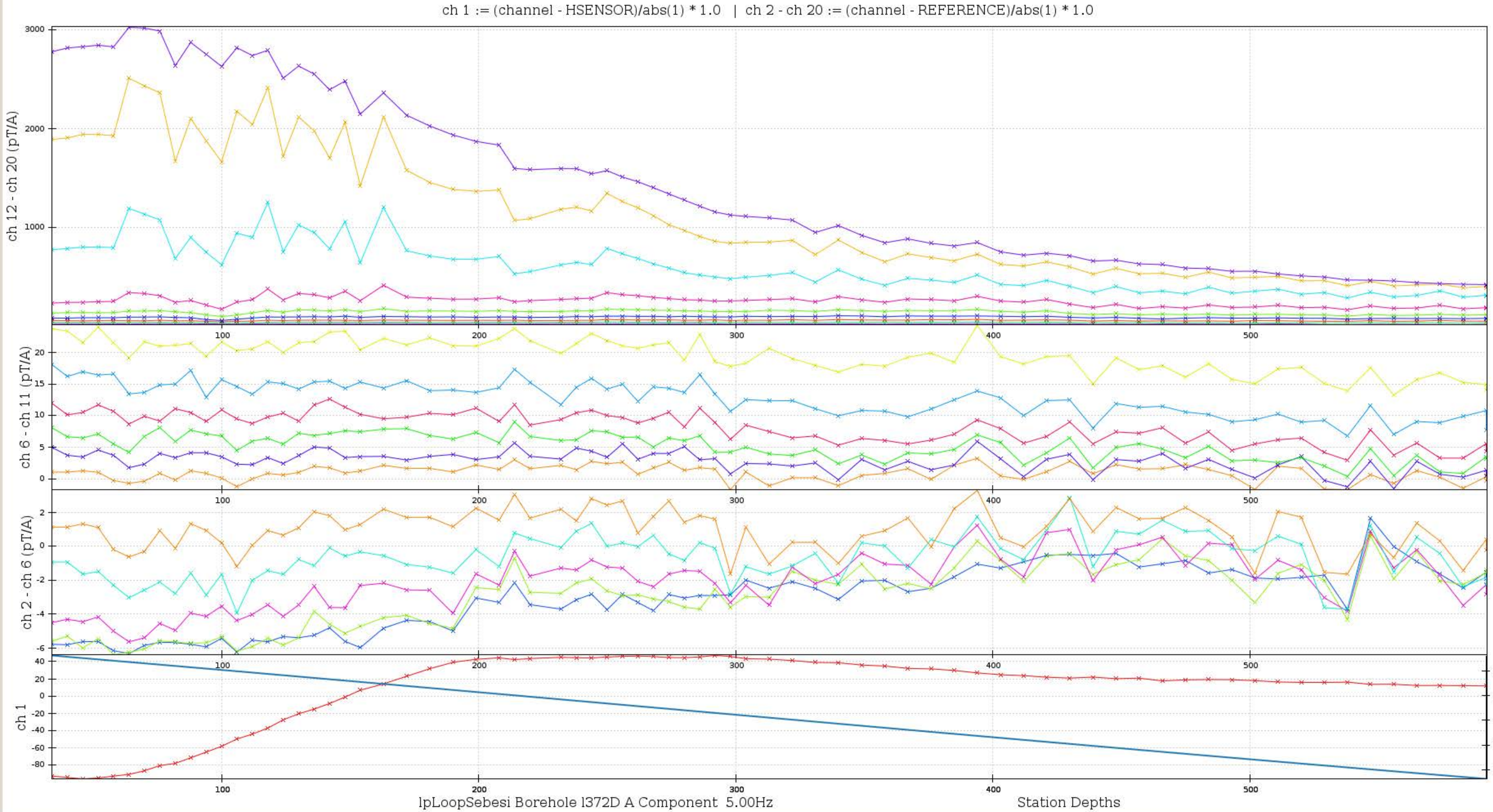
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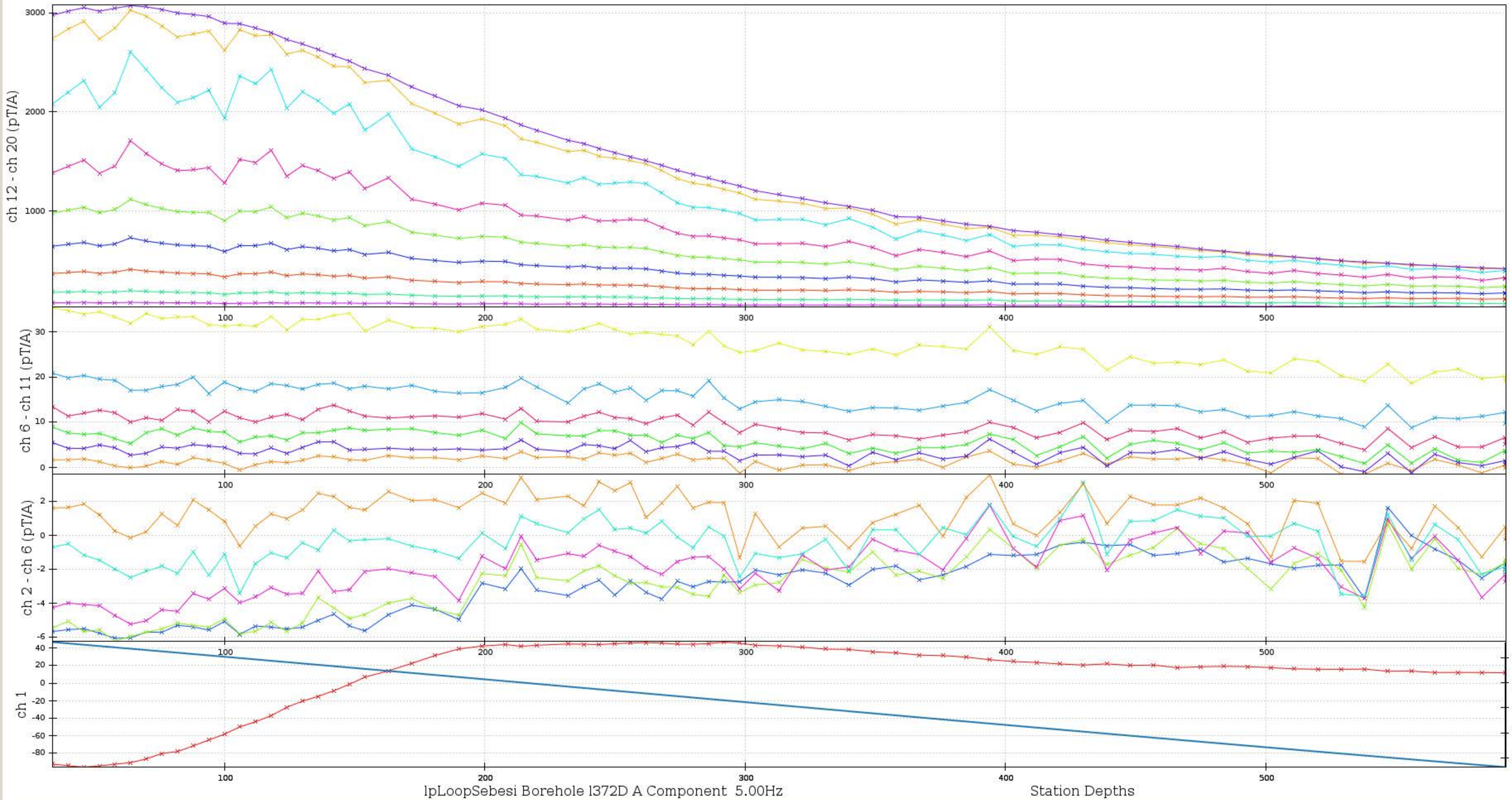

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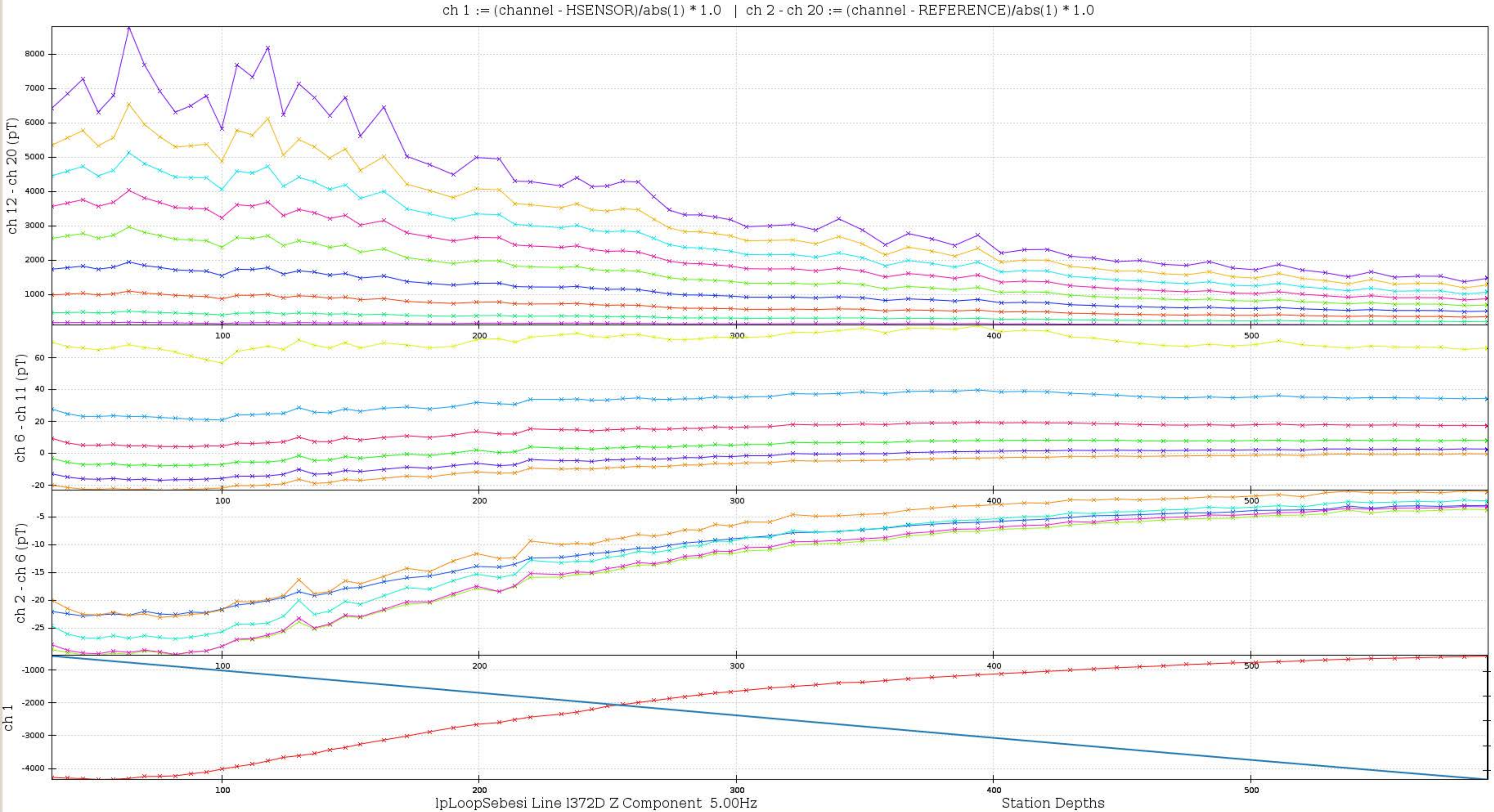
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Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l372D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l374D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l374D Z Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l374D U Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l374D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

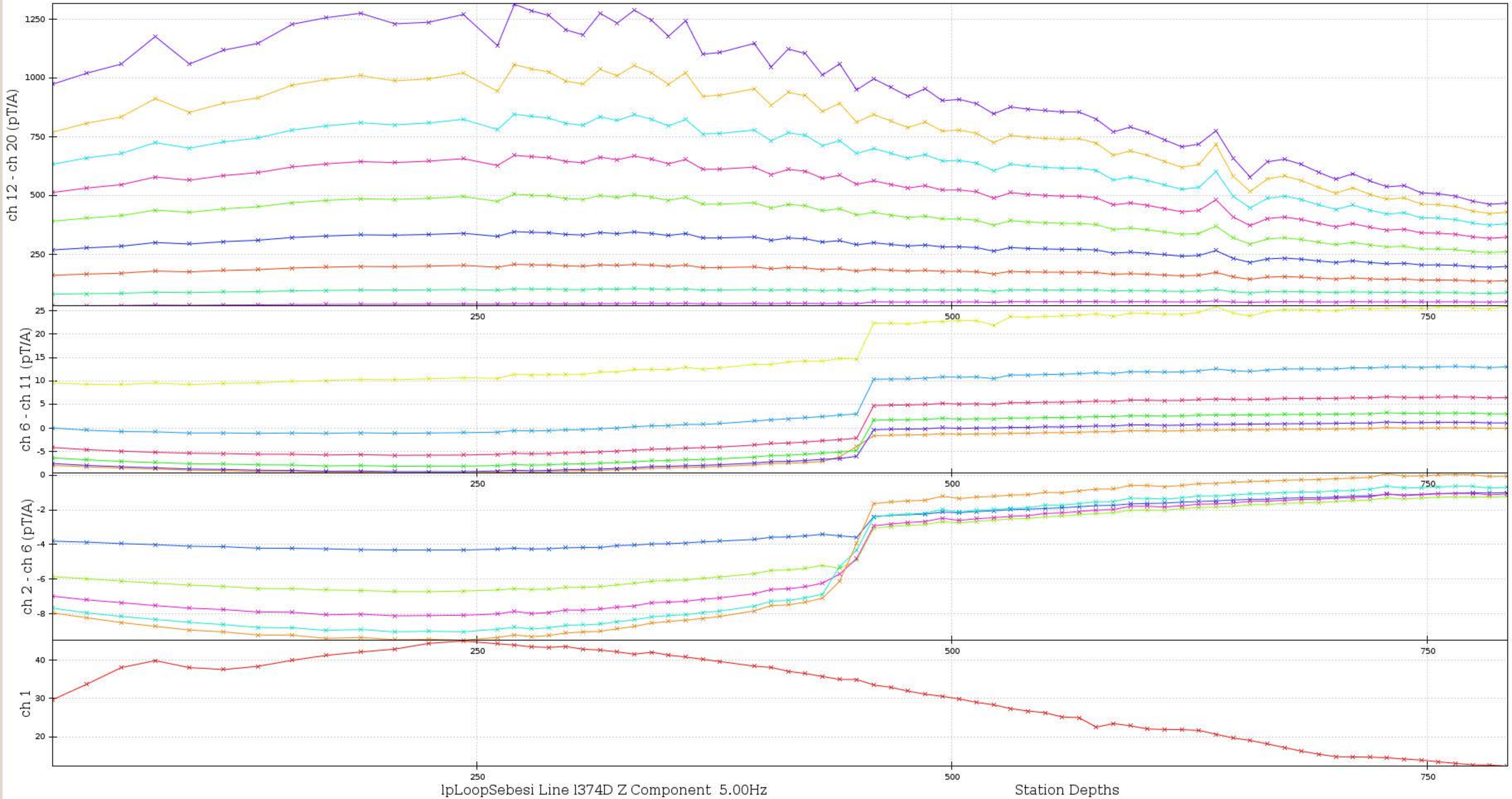
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l374D A Component 5.00Hz

Station Depths

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0



png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

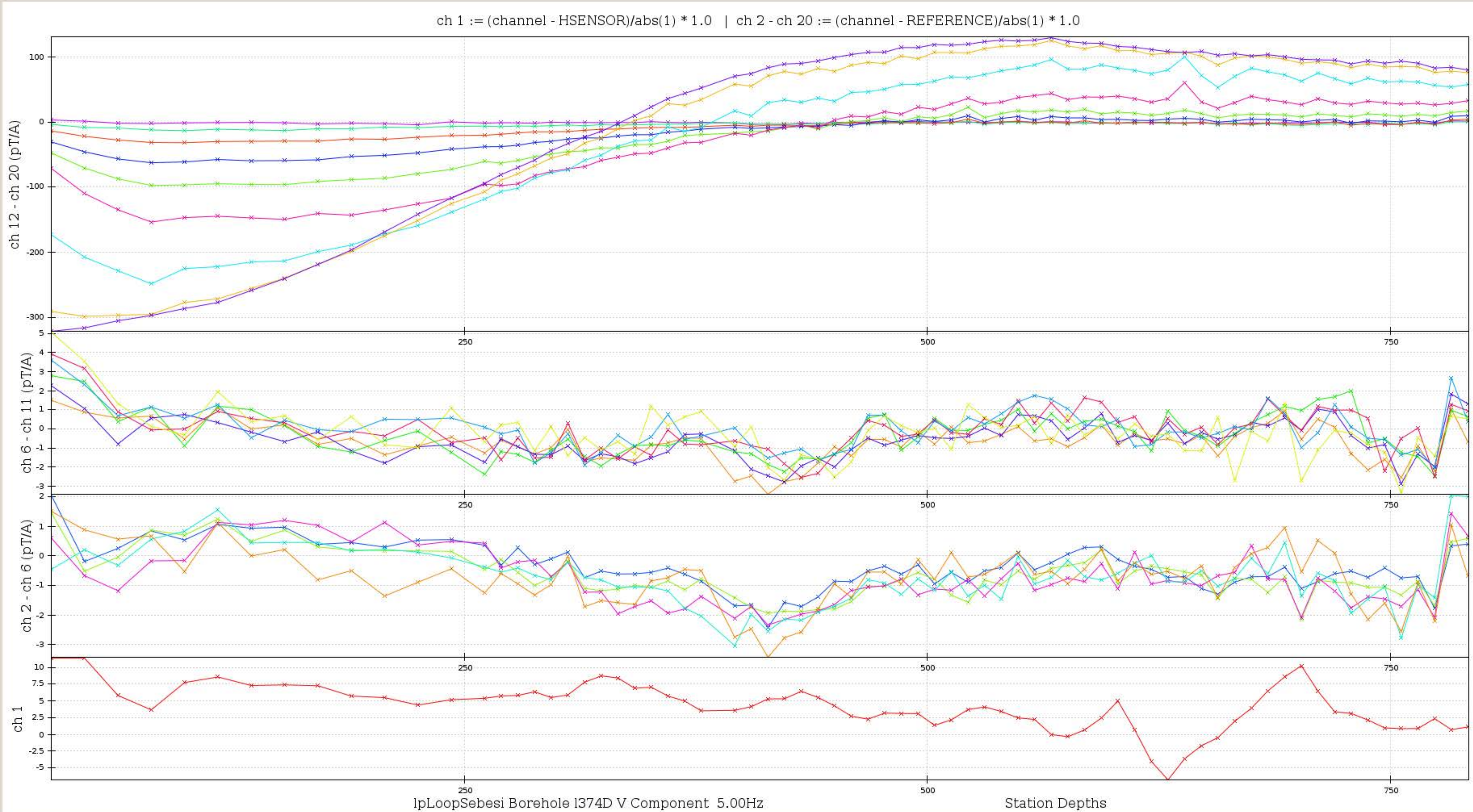
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l374D U Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l374D V Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l374D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

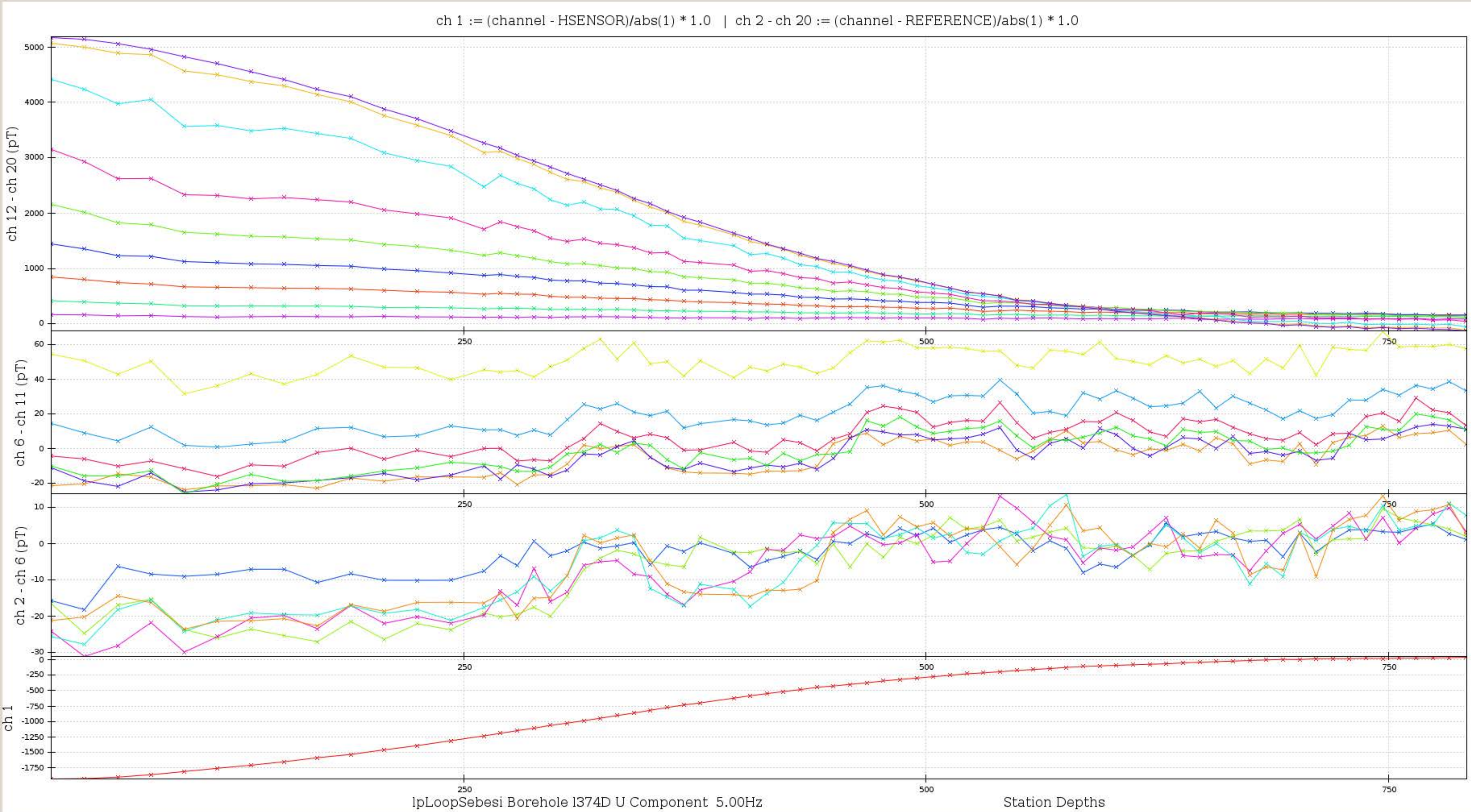
ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Line l374D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l374D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l374D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l394D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l394D Z Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

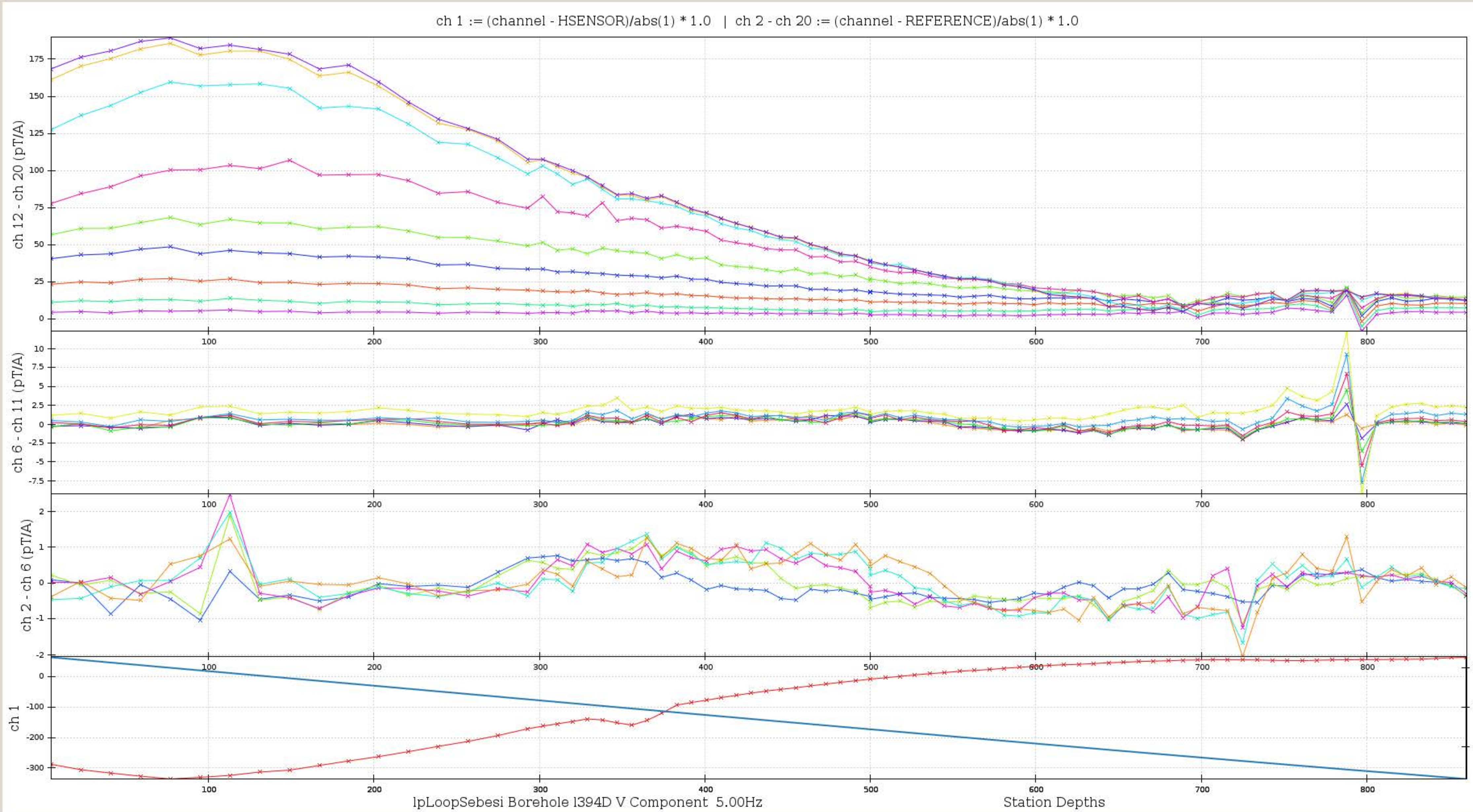
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l394D U Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l394D V Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l394D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

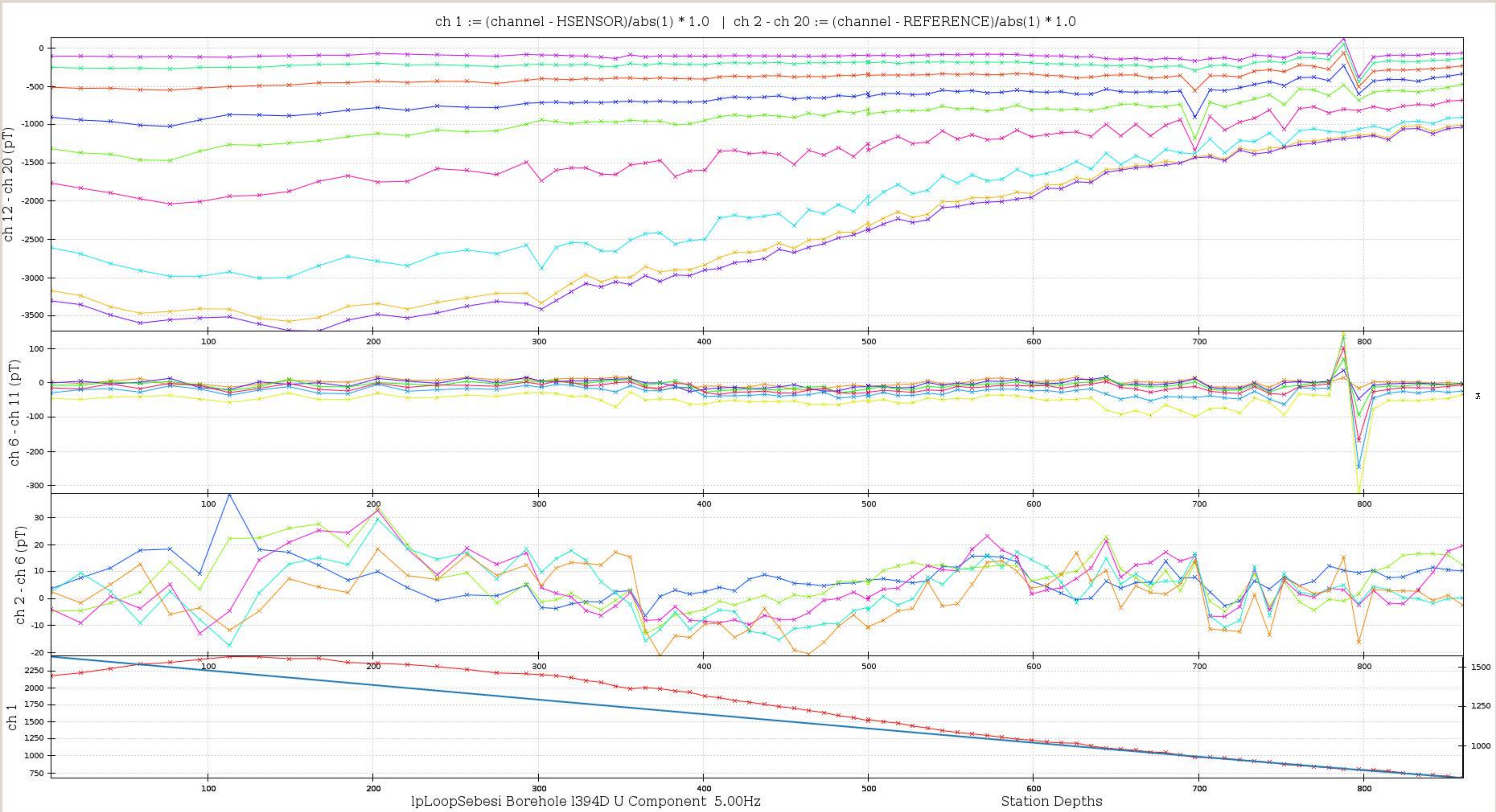
ch 2 - ch 6 (pT)

ch 1

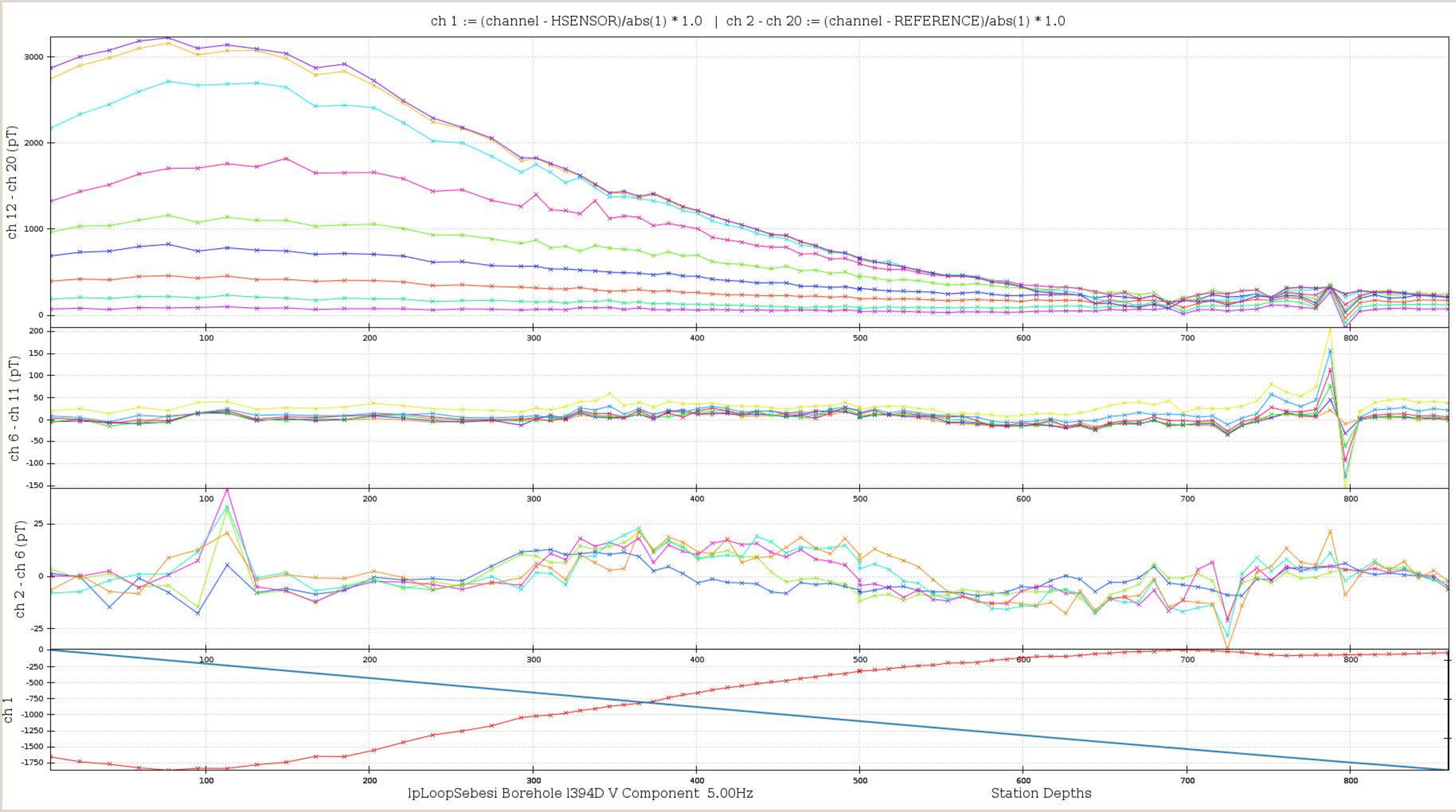
lpLoopSebesi Line l394D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l394D U Component 5.00Hz
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l394D V Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l399D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

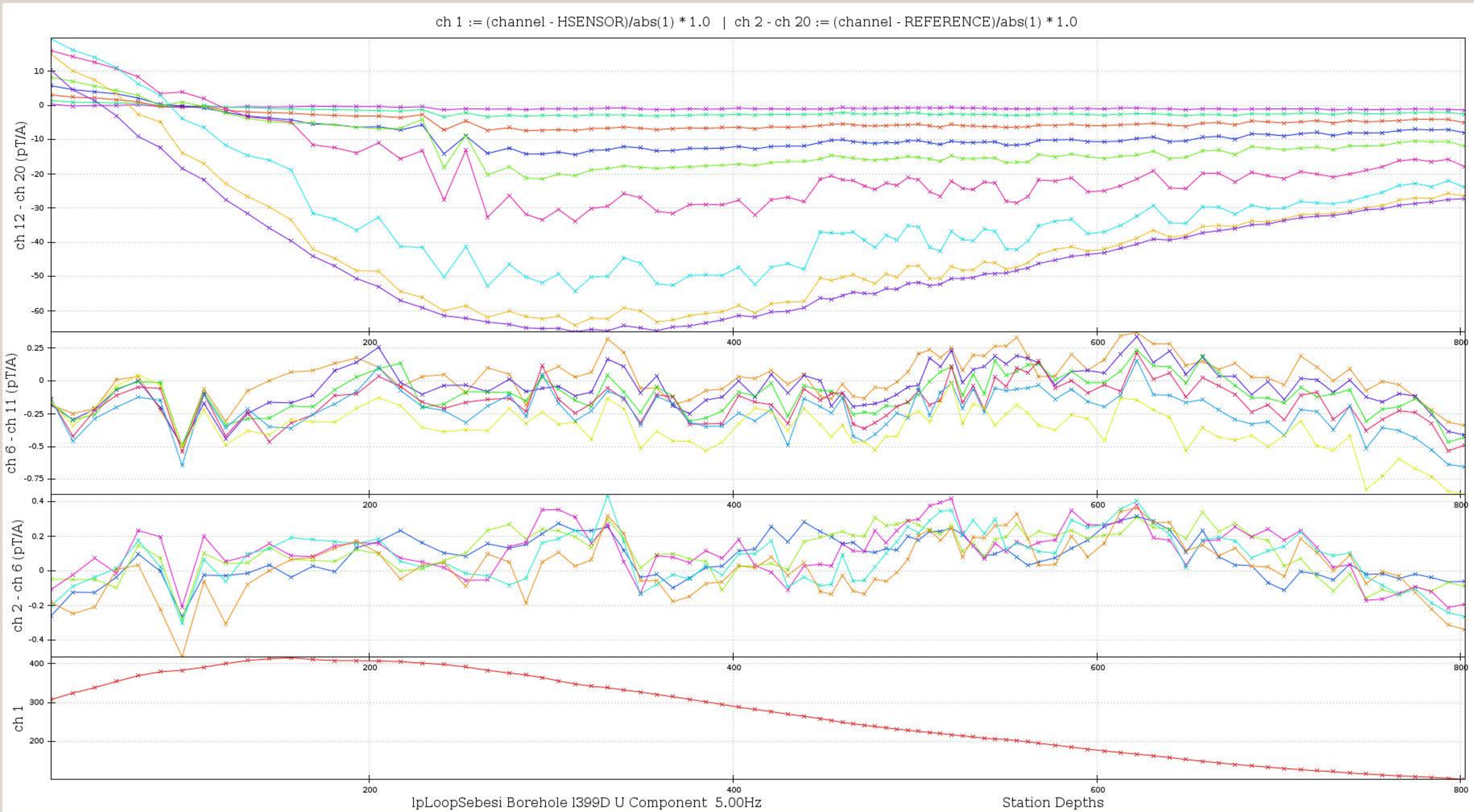
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l399D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l399D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l399D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l399D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Line l399D Z Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

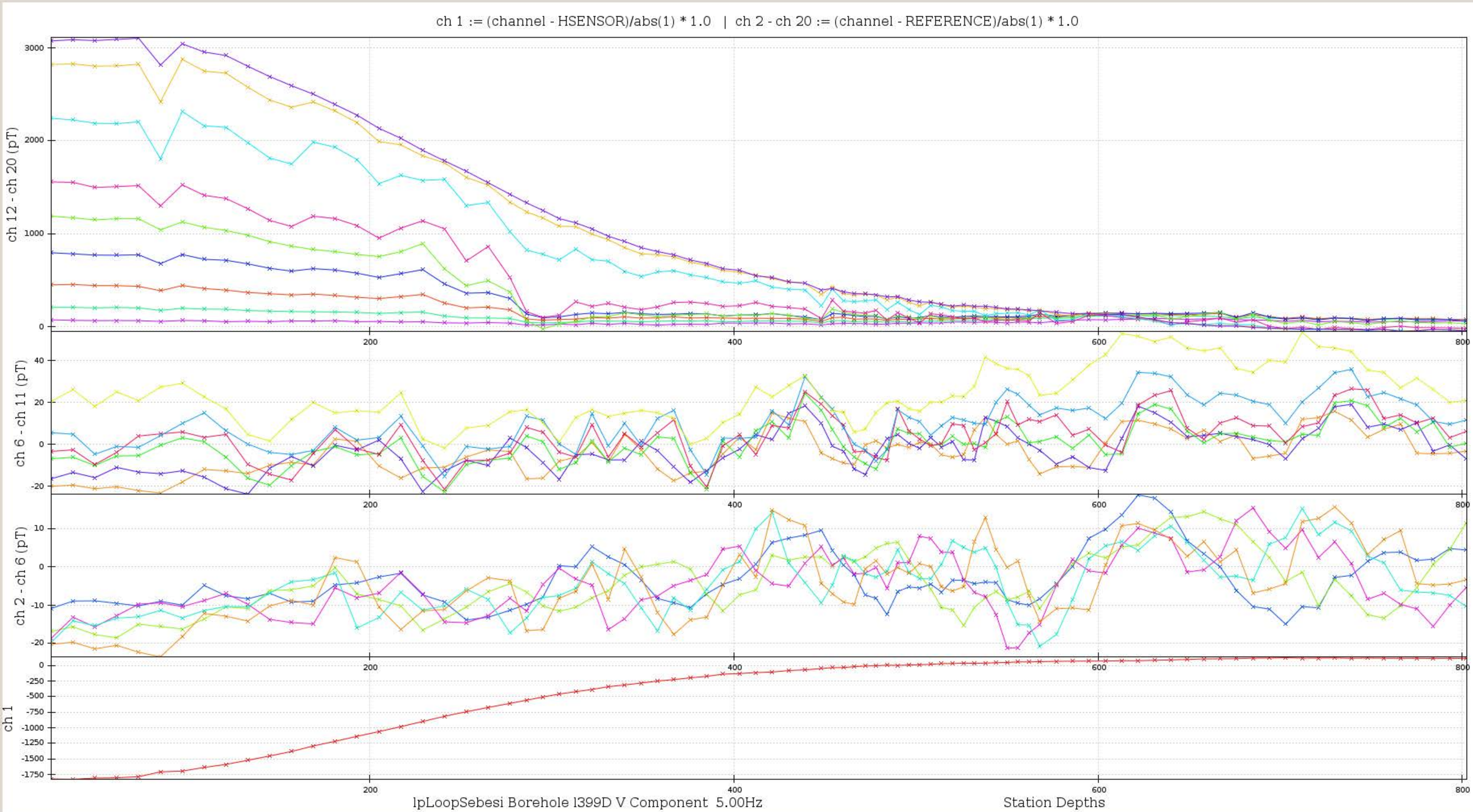
ch 2 - ch 6 (pT)

ch 1

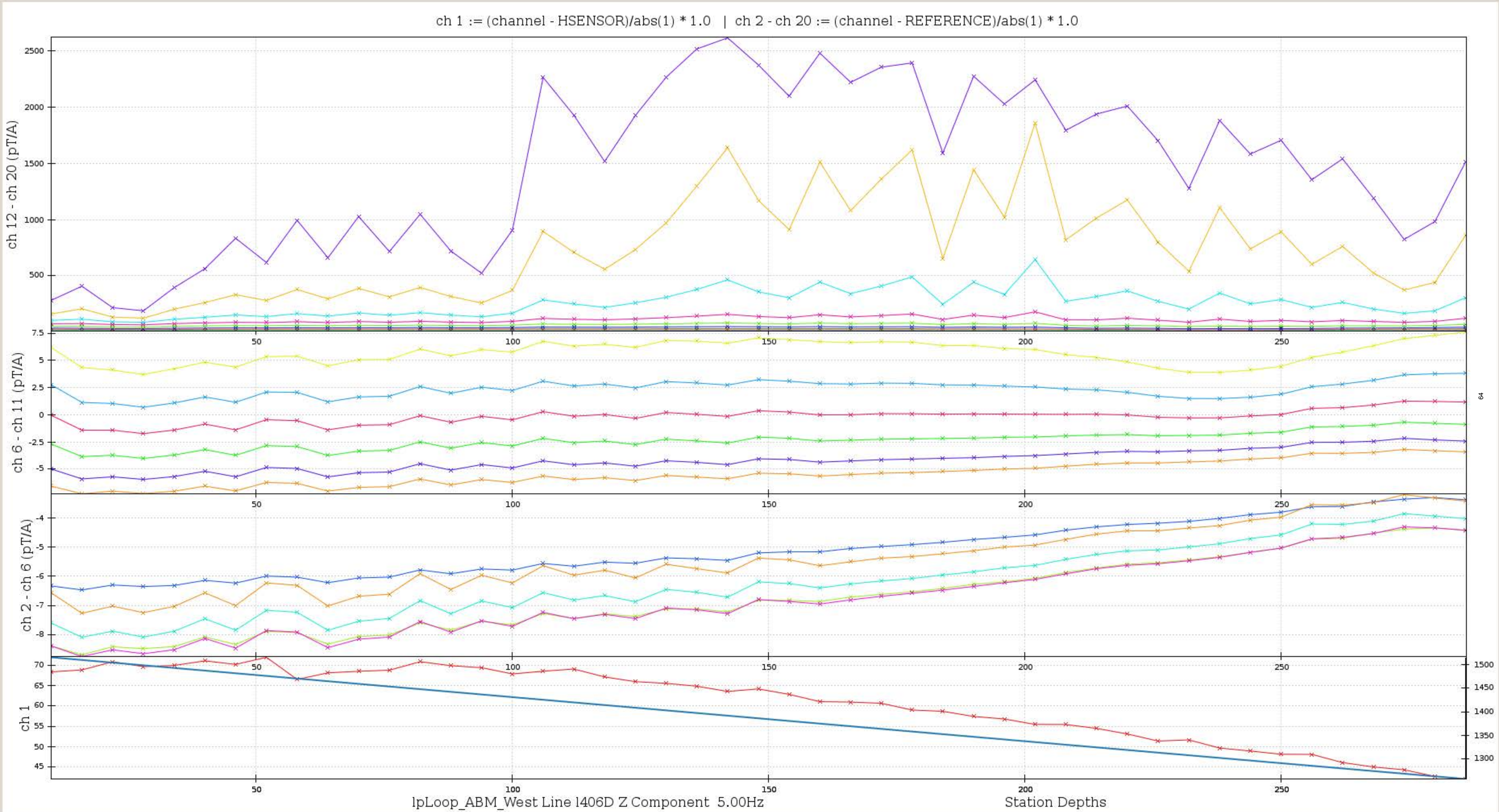
lpLoopSebesi Borehole l399D U Component 5.00Hz

Station Depths

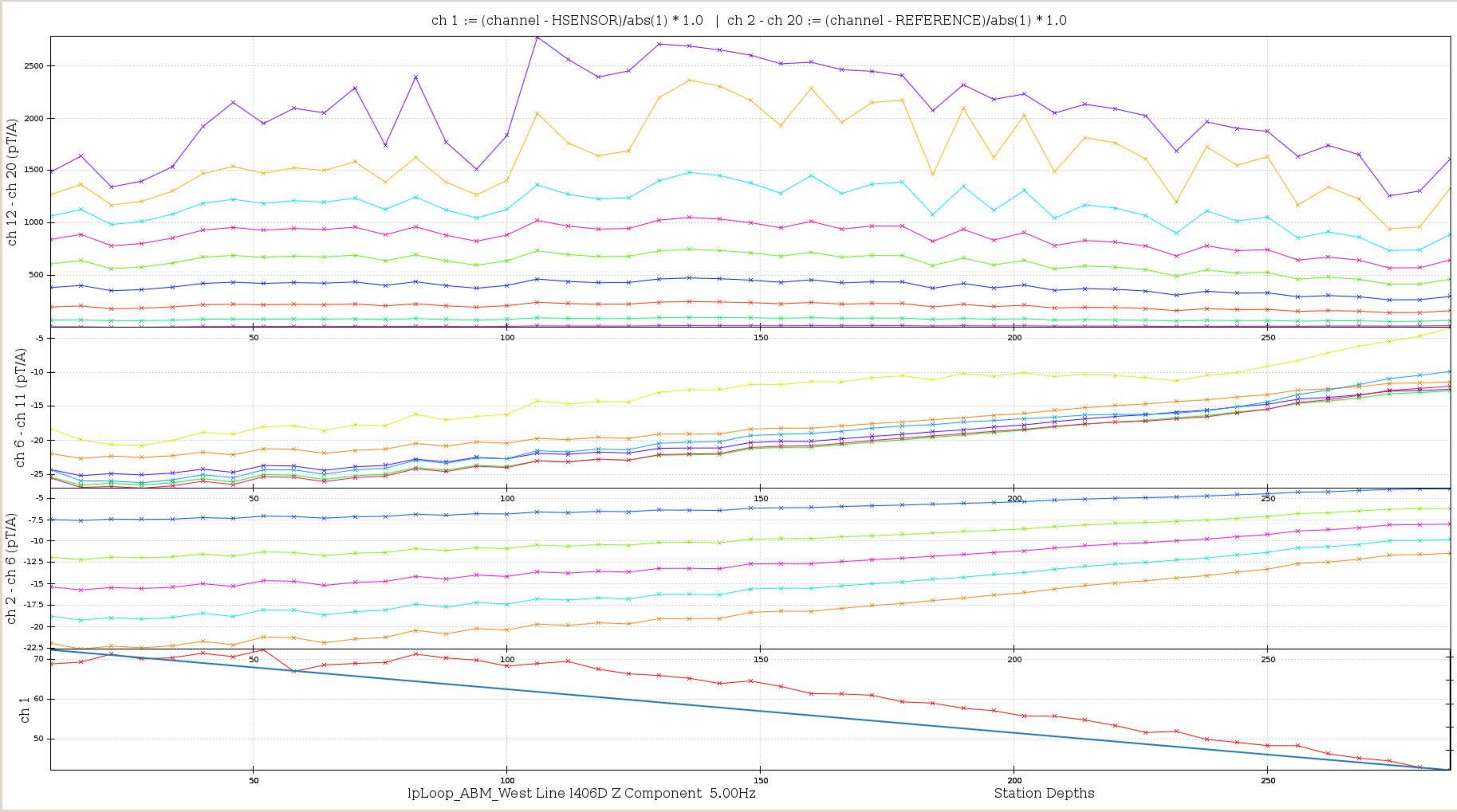
png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l399D V Component 5.00Hz
Station Depths

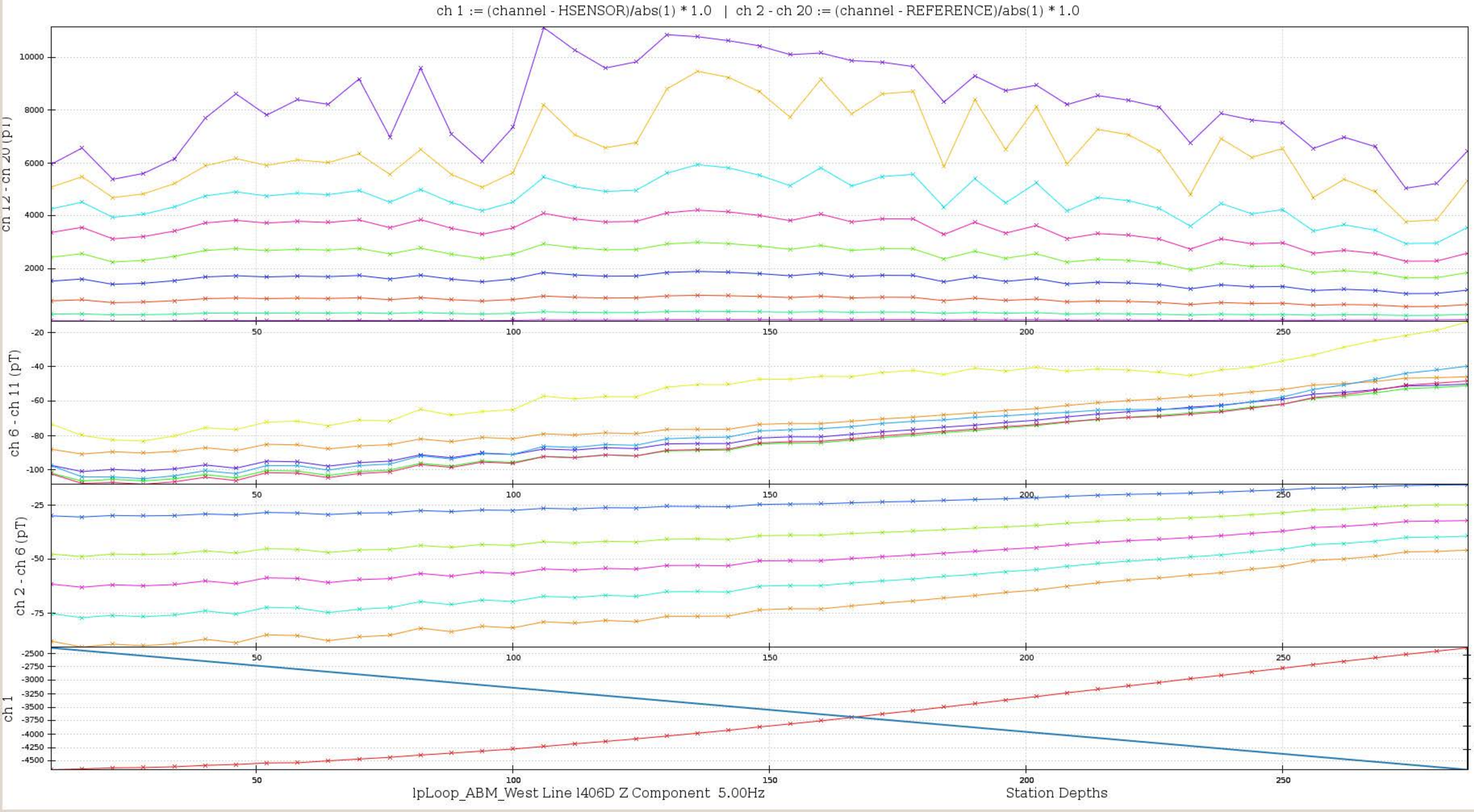
png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoop_ABM_West Line l406D Z Component 5.00Hz
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoop_ABM_West Line l406D Z Component 5.00Hz
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoop_ABM_West Line l406D Z Component 5.00Hz
Station Depths

png_export...

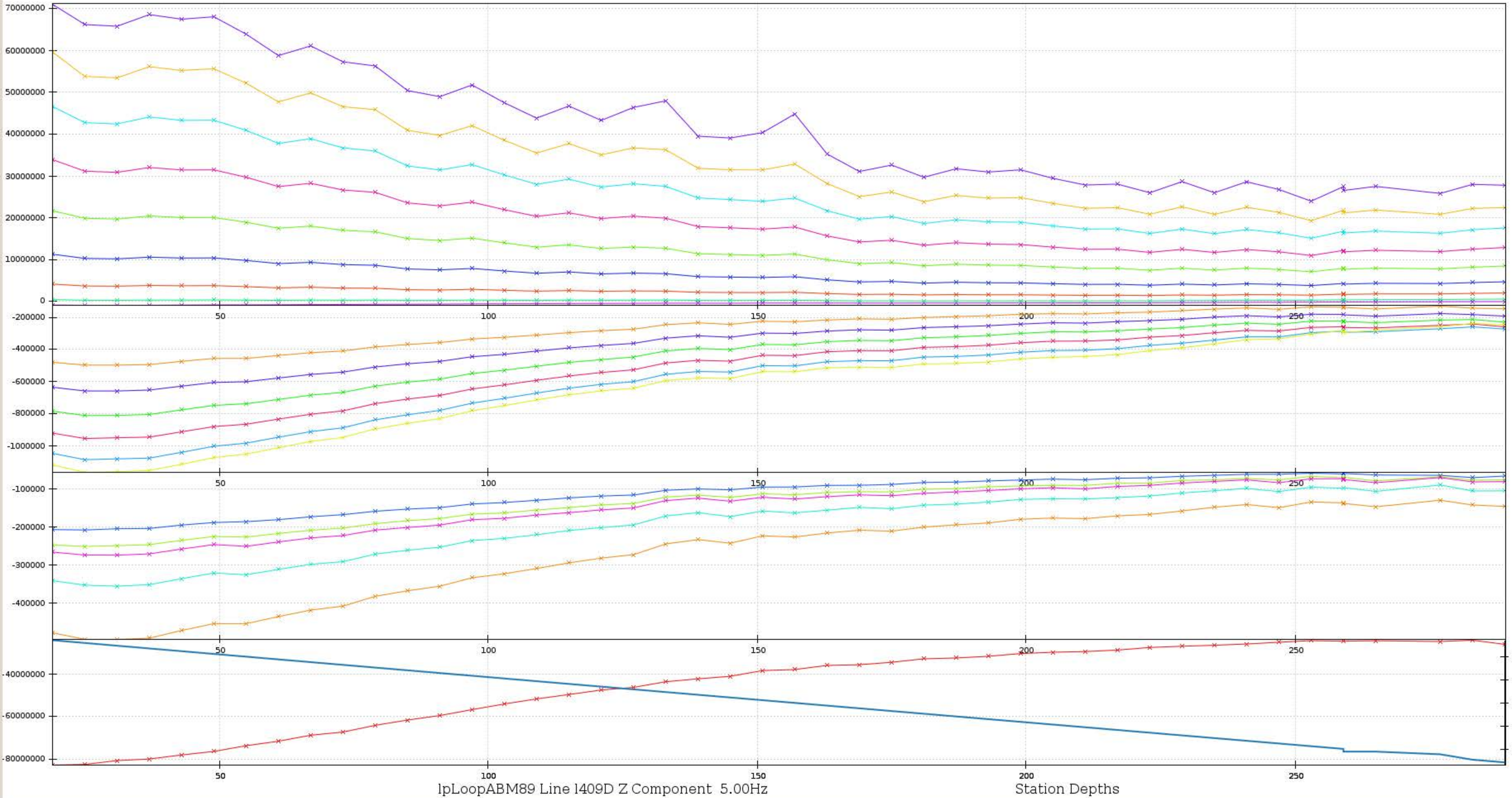
ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

lpLoopABM89 Borehole l409D A Component 5.00Hz

Station Depths

png_export...

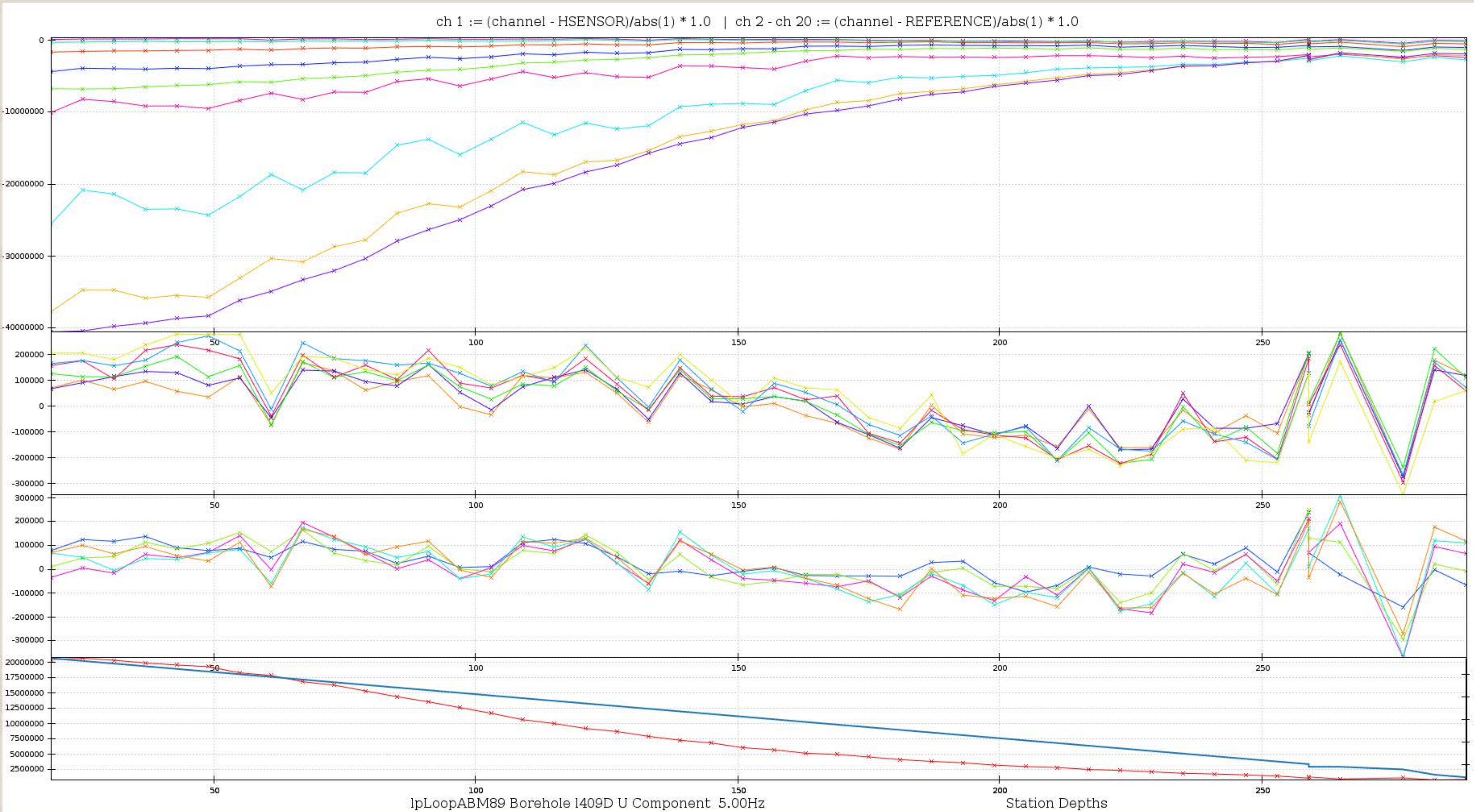
ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0



lpLoopABM89 Line l409D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
0
-10000000
-20000000
-30000000
-40000000
50
100
150
200
250
200000
100000
0
-100000
-200000
-300000
69
300000
20000000
17500000
15000000
12500000
10000000
7500000
5000000
2500000
1350
1300
1250
1200
1150
lpLoopABM89 Borehole l409D U Component 5.00Hz
Station Depths

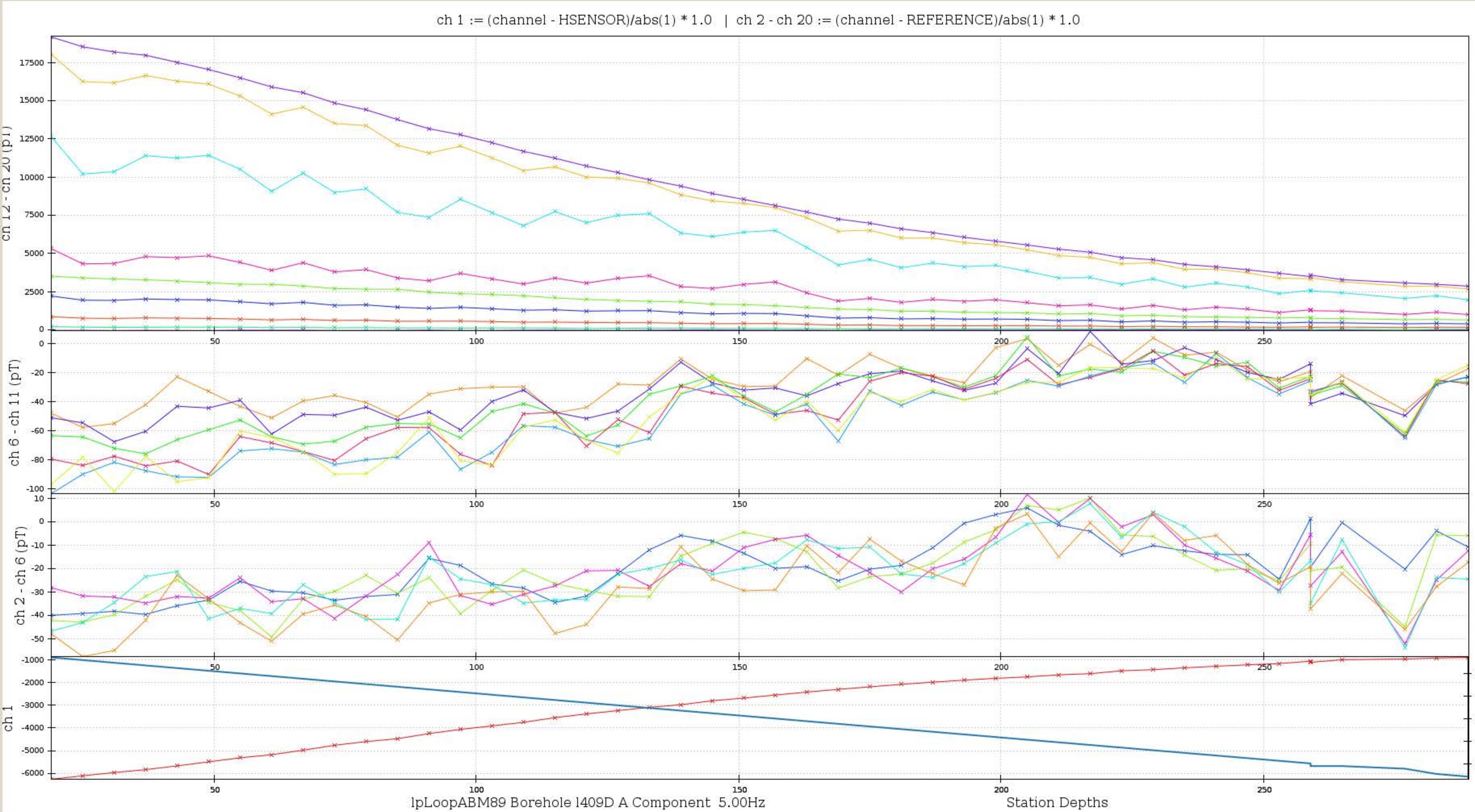
png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

lpLoopABM89 Borehole l409D V Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopABM89 Borehole l409D A Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

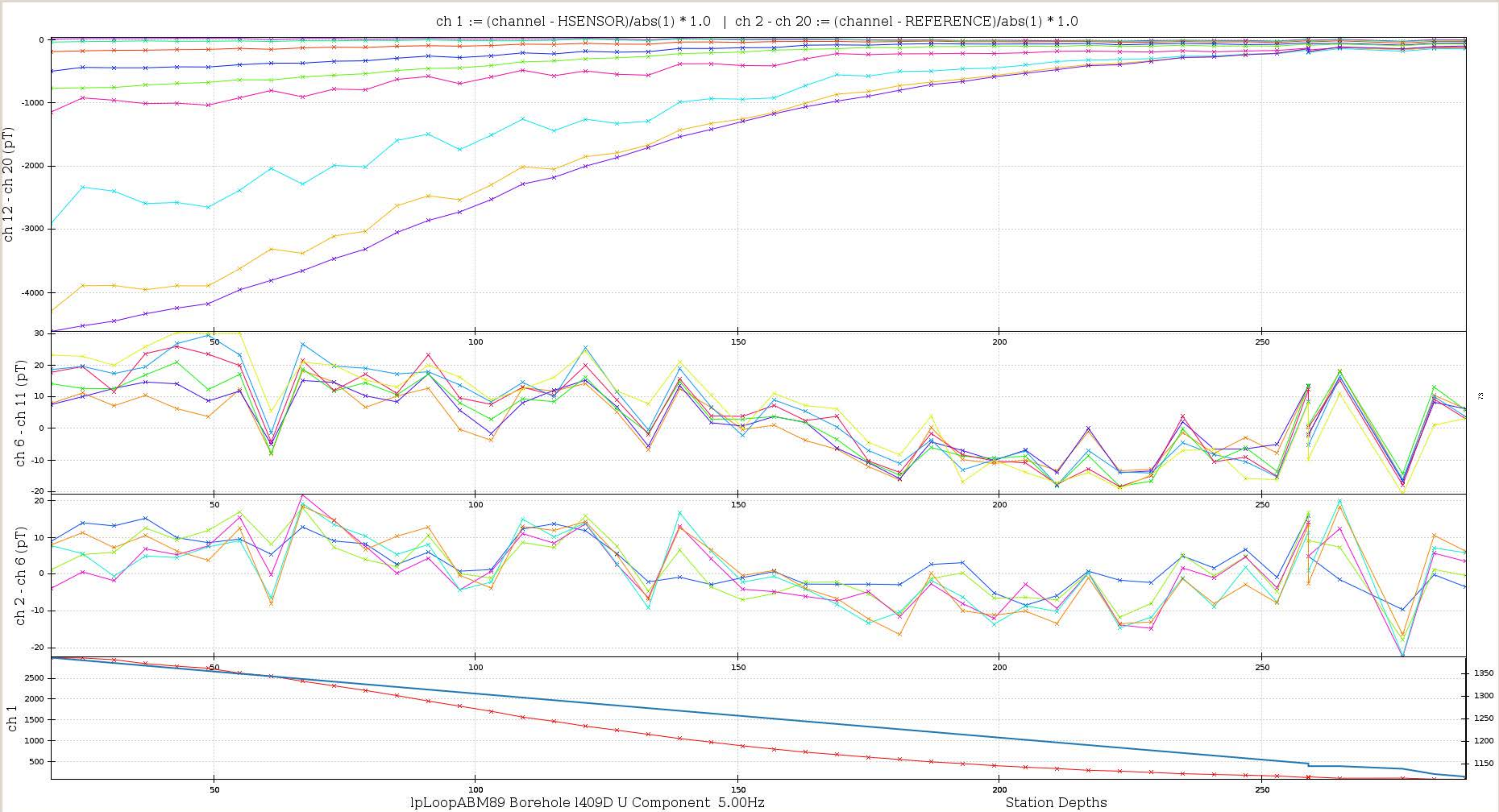
ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopABM89 Line l409D Z Component 5.00Hz

Station Depths


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopABM89 Borehole l409D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopABM89 Borehole l409D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

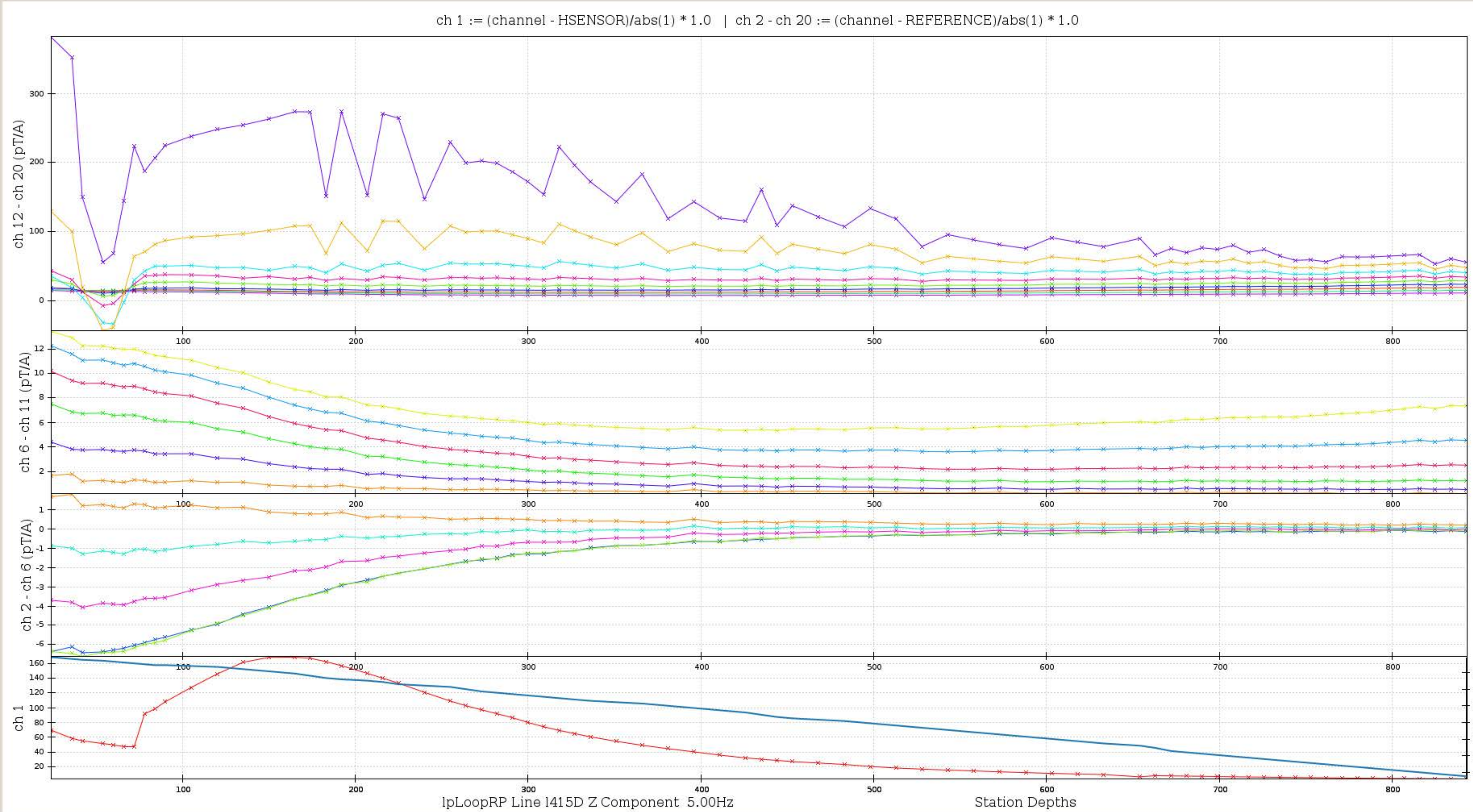
ch 2 - ch 6 (pT/A)

ch 1

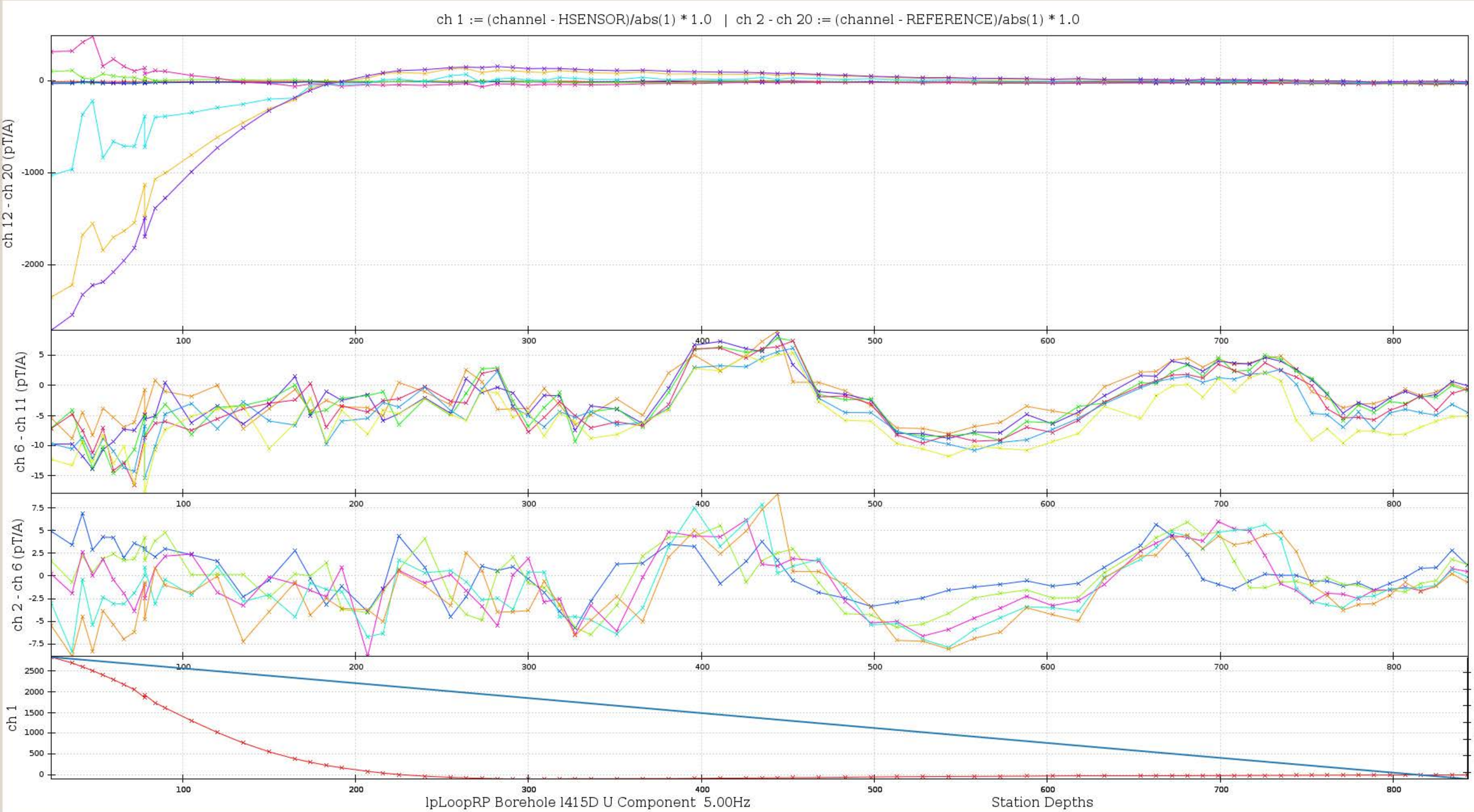
lpLoopRP Borehole l415D A Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopRP Line l415D Z Component 5.00Hz
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopRP Borehole l415D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopRP Borehole l415D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopRP Borehole l415D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

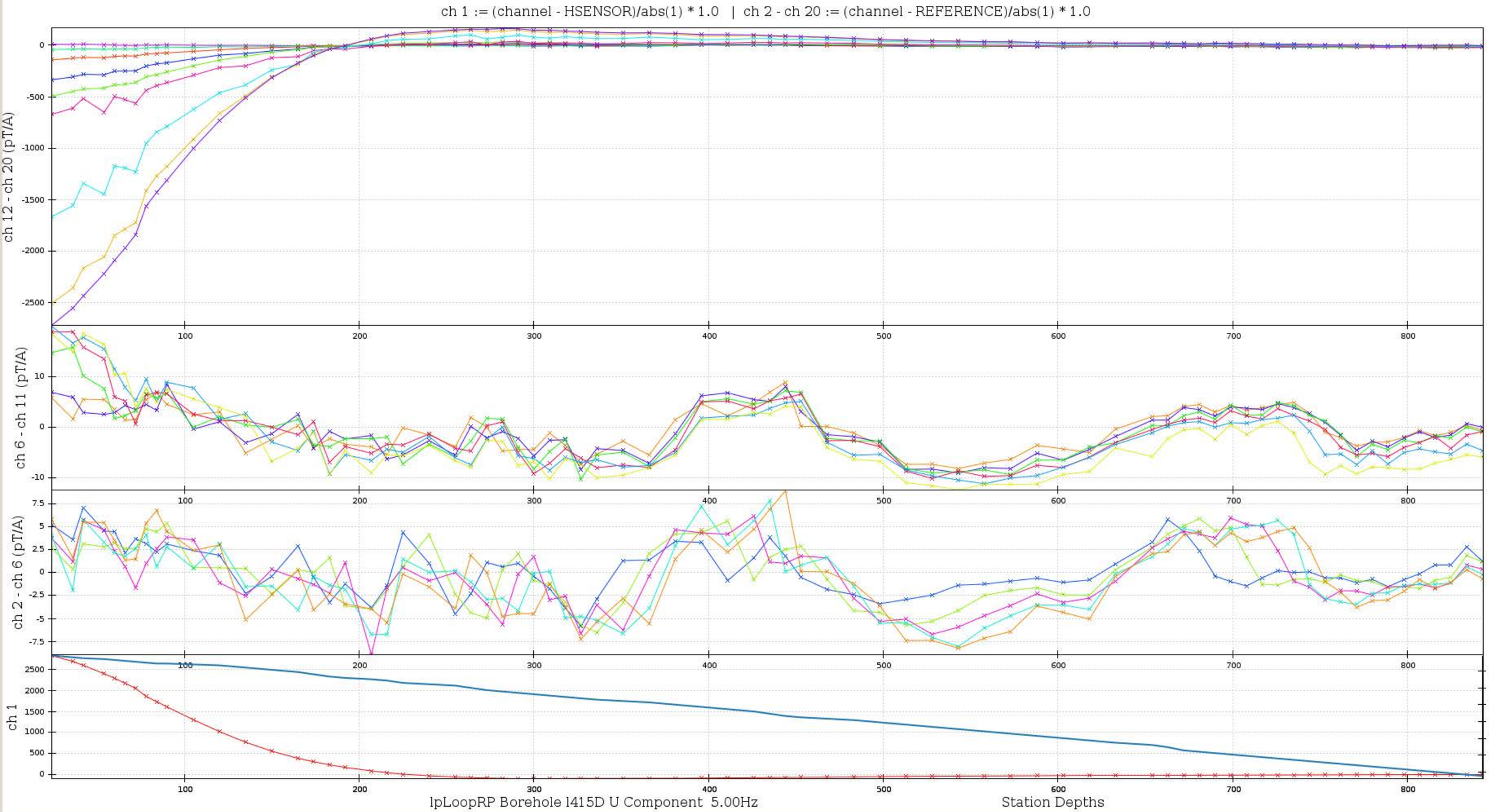
ch 2 - ch 6 (pT/A)

ch 1

lpLoopRP Line l415D Z Component 5.00Hz

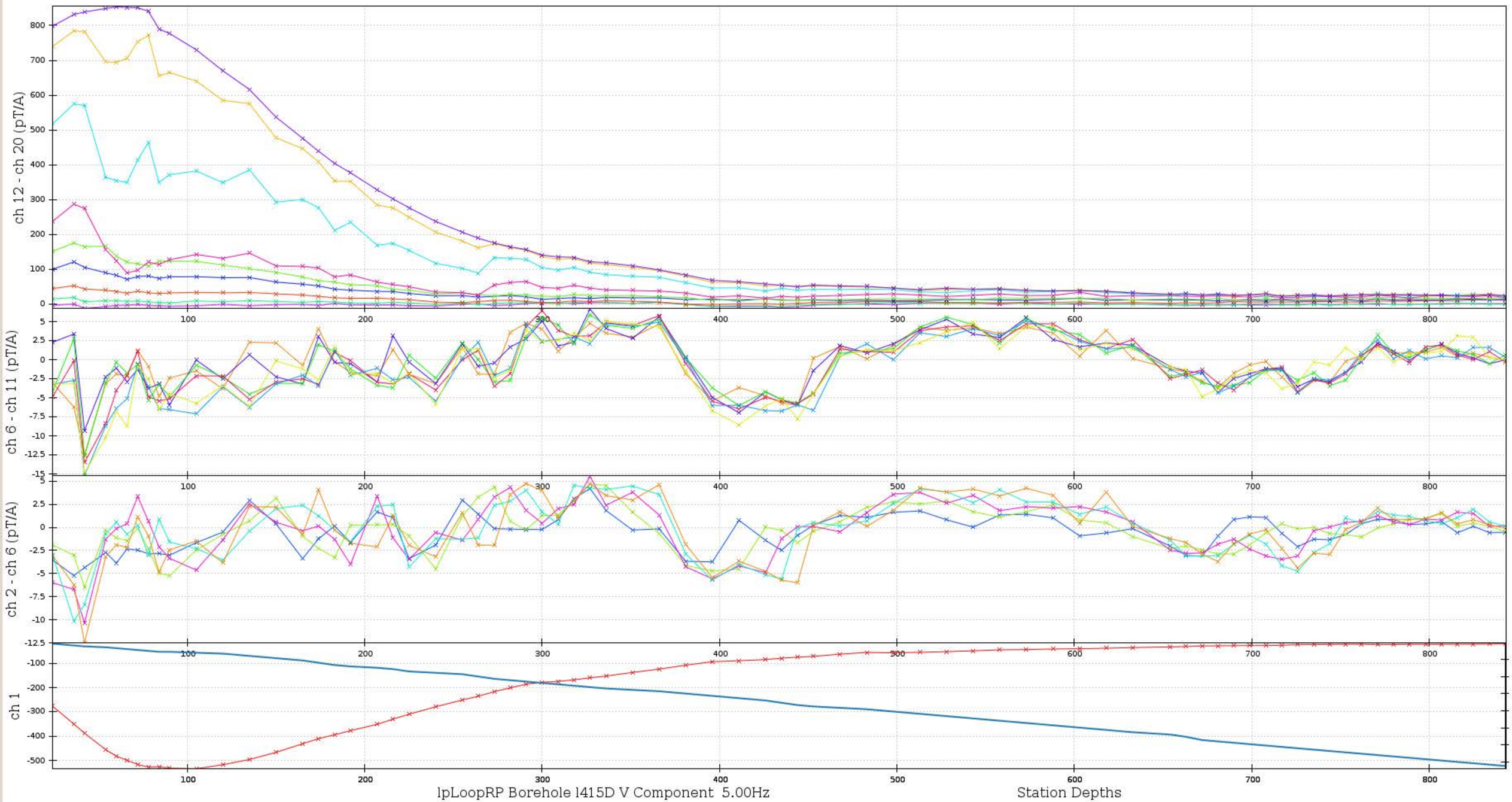
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopRP Borehole l415D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0



ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopRP Borehole l415D A Component 5.00Hz

Station Depths

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopRP Line l415D Z Component 5.00Hz

Station#

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopRP Borehole l415D U Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopRP Borehole l415D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l416D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l416D Z Component 5.00Hz

Station Depths

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l416D U Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l416D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l416D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

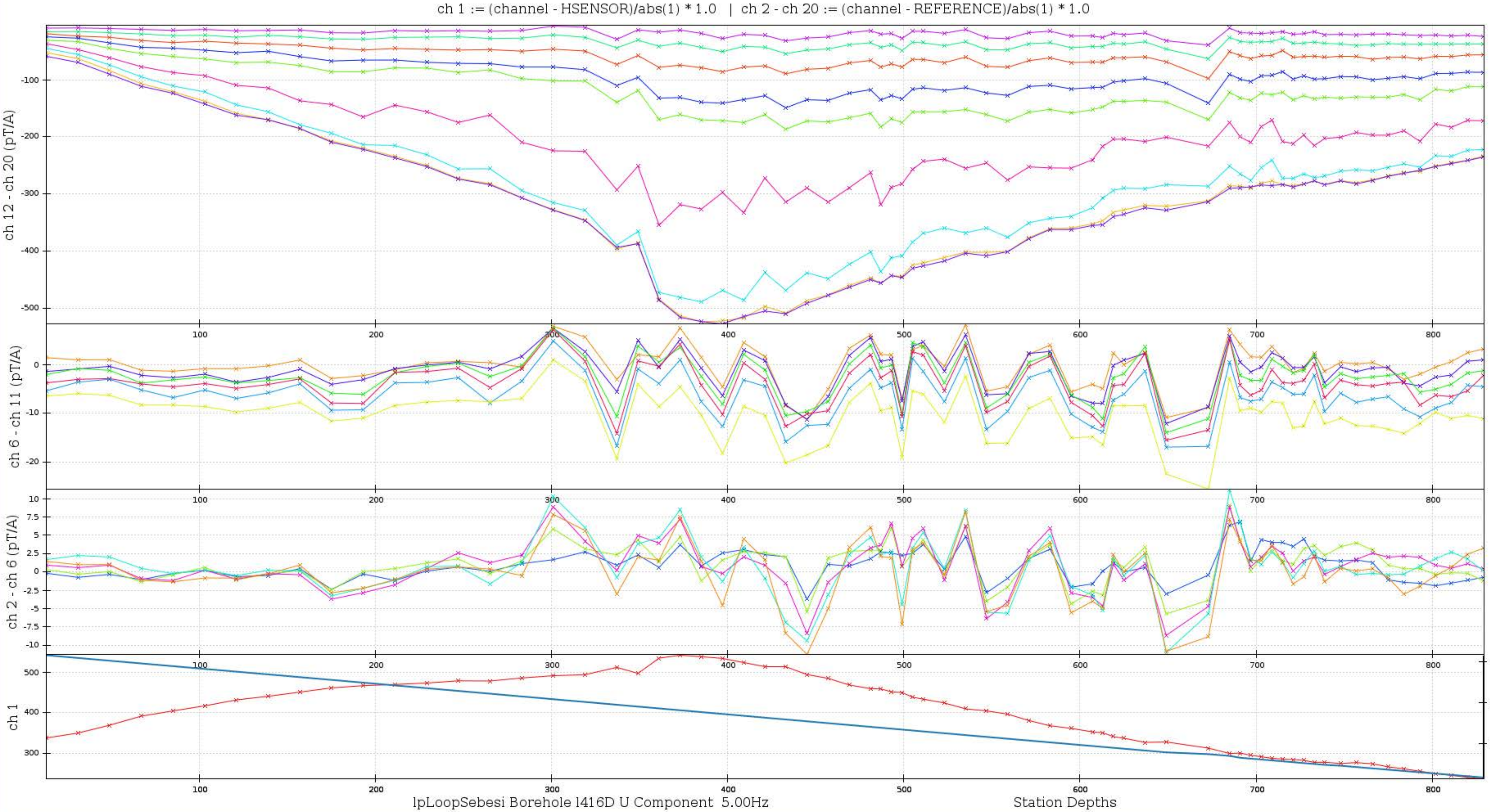
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l416D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l416D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l416D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l416D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Line l416D Z Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

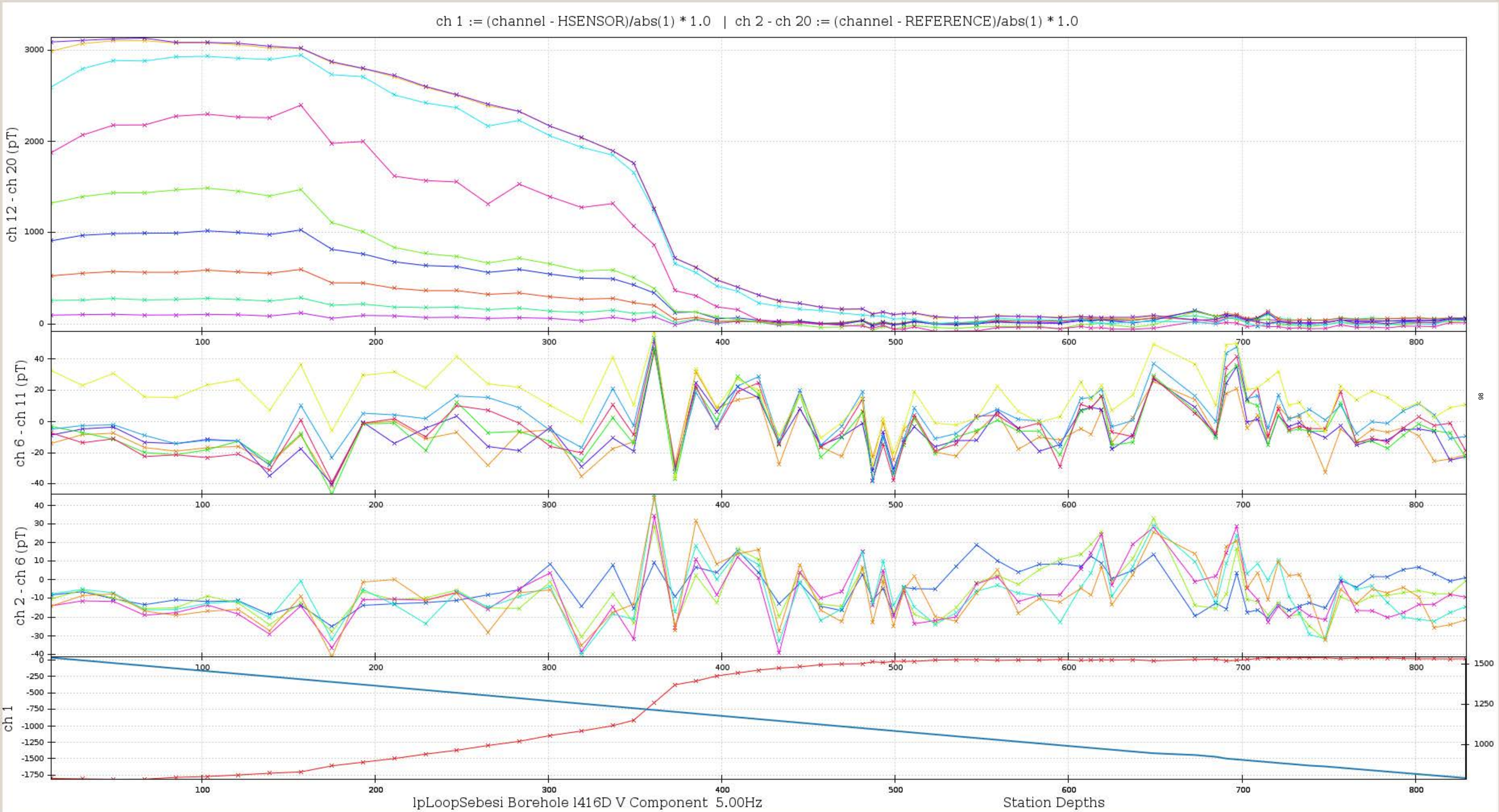
ch 2 - ch 6 (pT)

ch 1

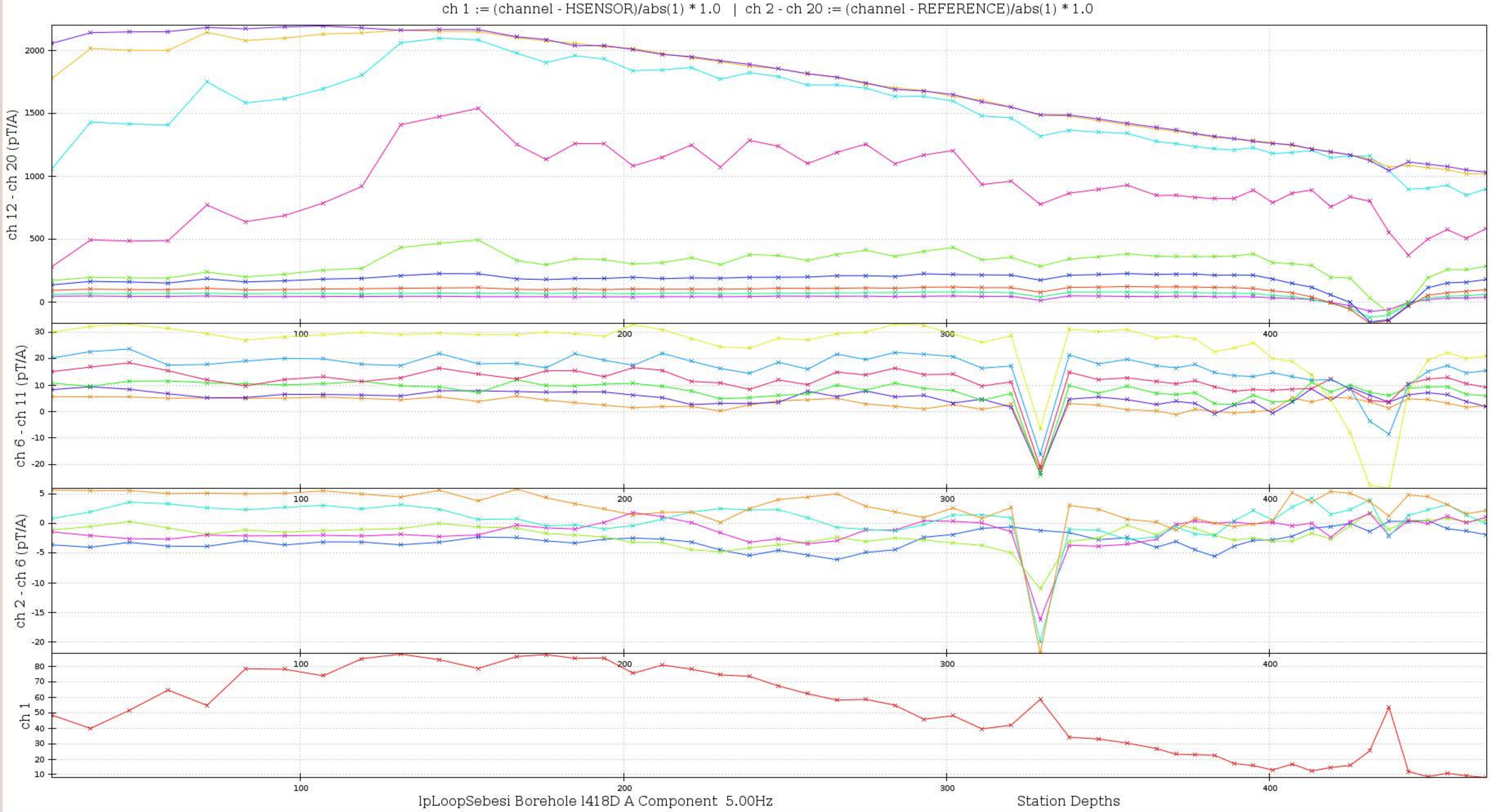
lpLoopSebesi Borehole l416D U Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l416D V Component 5.00Hz
Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l418D A Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

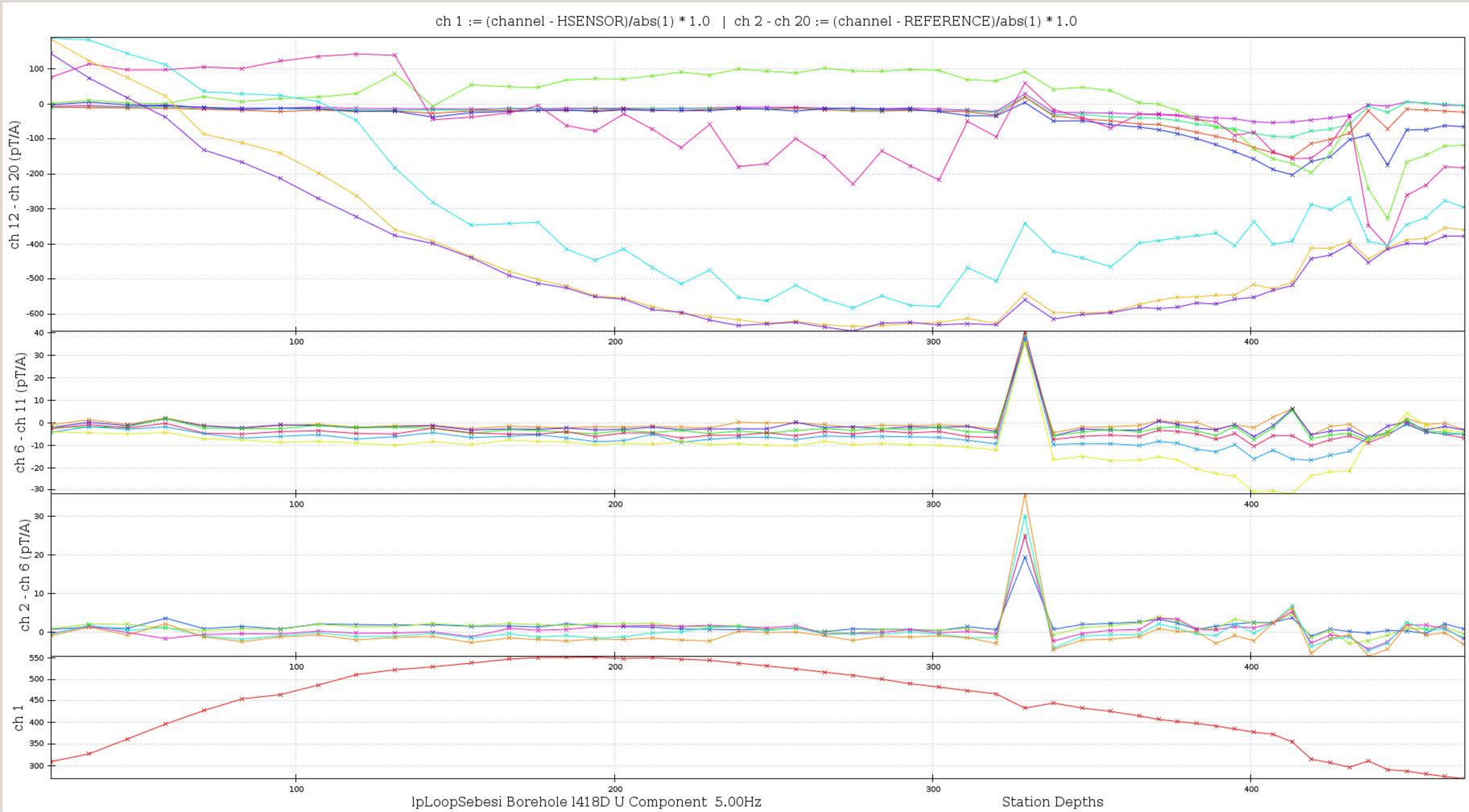
ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l418D Z Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT/A)
ch 6 - ch 11 (pT/A)
ch 2 - ch 6 (pT/A)
ch 1
lpLoopSebesi Borehole l418D U Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l418D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l418D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l418D Z Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l418D U Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l418D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l418D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Line l418D Z Component 5.00Hz

Station Depths

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

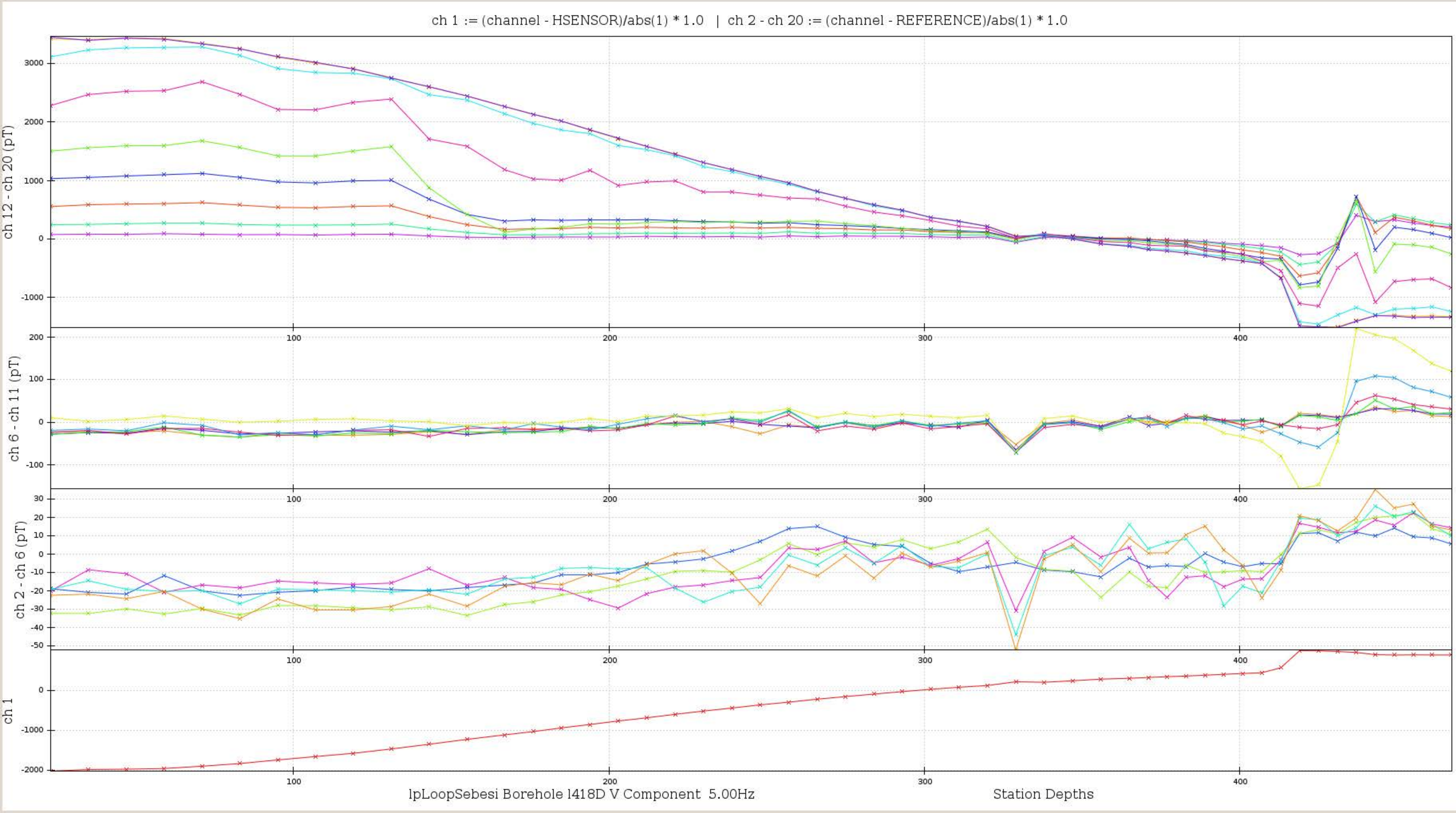
ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l418D U Component 5.00Hz

Station Depths

png_export...


ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0
ch 12 - ch 20 (pT)
ch 6 - ch 11 (pT)
ch 2 - ch 6 (pT)
ch 1
lpLoopSebesi Borehole l418D V Component 5.00Hz
Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l419D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Line l419D Z Component 5.00Hz

Station Depths

112

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l419D U Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT/A)

ch 6 - ch 11 (pT/A)

ch 2 - ch 6 (pT/A)

ch 1

lpLoopSebesi Borehole l419D V Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l419D A Component 5.00Hz

Station Depths

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Line l419D Z Component 5.00Hz

Station Depths

116

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l419D U Component 5.00Hz

Station Depths

117

png_export...

ch 1 := (channel - HSENSOR)/abs(1) * 1.0 | ch 2 - ch 20 := (channel - REFERENCE)/abs(1) * 1.0

ch 12 - ch 20 (pT)

ch 6 - ch 11 (pT)

ch 2 - ch 6 (pT)

ch 1

lpLoopSebesi Borehole l419D V Component 5.00Hz

Station Depths

118

Appendix J: Geological Logs for 2016 Drill Core

This appendix contains all of the drill logs generated from the 2016 drilling program, which includes resource definition, exploration, metallurgical, hydrogeological and geotechnical holes. Drill logs are placed in hole number order with the first page of each log starting on the page number indicated in Table J-1.

Table J-1: Table of contents for 2016 diamond drill hole logs in this appendix

Hole ID	Length (m)	Target	Purpose	Core Storage Location	Page Number	Number of Pages
K16-337	220.00	Krakatoa	Resource Definition	KZK Camp	1	14
K16-338	76.40	Krakatoa	Resource Definition	KZK Camp	15	3
K16-339	240.00	Krakatoa	Resource Definition	KZK Camp	18	15
K16-340	353.00	Krakatoa	Metallurgical	KZK Camp	33	18
K16-341	190.00	Krakatoa	Resource Definition	KZK Camp	51	5
K16-342	51.00	Krakatoa	Resource Definition	KZK Camp	56	2
K16-343	62.70	Krakatoa	Resource Definition	KZK Camp	58	3
K16-344	224.20	Krakatoa	Resource/Metallurgical	KZK Camp	61	8
K16-345	90.50	Krakatoa	Metallurgical	KZK Camp	69	3
K16-346	102.20	Krakatoa	Resource Definition	KZK Camp	72	5
K16-347	170.70	Krakatoa	Resource/Metallurgical	KZK Camp	77	6
K16-348	129.50	Krakatoa	Resource Definition	KZK Camp	83	5
K16-349	201.00	Krakatoa	Resource/Metallurgical	KZK Camp	88	8
K16-350	247.60	Krakatoa	Resource Definition	KZK Camp	96	12
K16-351	198.00	Krakatoa	Resource Definition	KZK Camp	108	8
K16-352	192.00	Krakatoa	Resource Definition	KZK Camp	116	7
K16-353	159.00	Krakatoa	Resource Definition	KZK Camp	123	8
K16-354	39.00	Krakatoa	Resource Definition	KZK Camp	131	2
K16-355	329.70	Krakatoa	Resource Definition	KZK Camp	133	10
K16-356	19.00	Krakatoa	Resource Definition	KZK Camp	143	2
K16-357	381.00	Krakatoa	Resource Definition	KZK Camp	145	16
K16-358	348.00	Krakatoa	Resource Definition	KZK Camp	161	18
K16-359	390.00	Krakatoa	Resource Definition	KZK Camp	179	17
K16-360	330.00	Krakatoa	Resource Definition	KZK Camp	196	16
K16-361	68.90	ABM	Metallurgical	KZK Camp	212	5
K16-362	165.00	ABM	Metallurgical	KZK Camp	217	14
K16-363	435.00	Krakatoa	Resource Definition	KZK Camp	231	21
K16-364	105.00	ABM	Metallurgical	KZK Camp	252	9
K16-365	183.00	ABM	Metallurgical	KZK Camp	261	16
K16-366	90.00	ABM	Metallurgical	KZK Camp	277	7
K16-367	282.00	Krakatoa	Resource Definition	KZK Camp	284	13
K16-368	145.00	Sebesi	Exploration	KZK Camp	297	9
K16-369	450.00	Krakatoa	Exploration	KZK Camp	306	16
K16-370	280.50	Krakatoa	Resource Definition	KZK Camp	322	12
K16-371	117.00	Infrastructure	Geotech	KZK Camp	334	4
K16-372	597.00	Sebesi	Exploration	KZK Camp	338	32
K16-373	170.30	Infrastructure	Geotech	KZK Camp	370	4

Hole ID	Length (m)	Target	Purpose	Core Storage Location	Page Number	Number of Pages
K16-374	801.00	Sebesi	Exploration	KZK Camp	374	24
K16-375	171.00	ABM	Resource Definition	KZK Camp	398	8
K16-376	170.20	Infrastructure	Geotech	KZK Camp	406	6
K16-377	150.60	Infrastructure	Geotech	KZK Camp	412	5
K16-378	162.00	Krakatoa	Resource/Metallurgical	KZK Camp	417	9
K16-379	39.70	Infrastructure	Geotech	KZK Camp	426	3
K16-380	323.70	GP4F	Resource Definition	KZK Camp	429	23
K16-381	42.20	Infrastructure	Hydro	KZK Camp	452	2
K16-382	6.00	Infrastructure	Hydro	KZK Camp	454	1
K16-383	27.90	Infrastructure	Hydro	KZK Camp	455	2
K16-384	400.00	Sebesi	Exploration	KZK Camp	457	19
K16-385	645.00	Krakatoa	Exploration	KZK Camp	476	19
K16-386	31.10	Infrastructure	Geotech	KZK Camp	495	2
K16-387	34.00	Infrastructure	Geotech	KZK Camp	497	2
K16-388	236.80	GP4F	Resource/Metallurgical	KZK Camp	499	19
K16-389	42.00	Infrastructure	Geotech	KZK Camp	518	3
K16-390	38.60	Infrastructure	Geotech	KZK Camp	521	2
K16-391	101.00	Sebesi	Exploration	KZK Camp	523	6
K16-392	46.20	Infrastructure	Geotech	KZK Camp	529	2
K16-393	156.00	GP4F	Resource/Metallurgical	KZK Camp	531	13
K16-394	953.31	Sebesi	Exploration	KZK Camp	544	33
K16-395	46.20	Infrastructure	Geotech	KZK Camp	577	2
K16-396	210.00	GP4F	Resource/Metallurgical	KZK Camp	579	19
K16-397	40.30	Infrastructure	Hydro	KZK Camp	598	2
K16-398	28.20	Infrastructure	Hydro	KZK Camp	600	2
K16-399	810.00	Krakatoa	Exploration	KZK Camp	602	28
K16-400	98.50	GP4F	Resource/Metallurgical	KZK Camp	630	12
K16-401	7.50	Infrastructure	Hydro	KZK Camp	642	1
K16-402	70.60	Infrastructure	Hydro	KZK Camp	643	3
K16-403	343.70	GP4F	Resource Definition	KZK Camp	646	30
K16-404	40.20	Infrastructure	Hydro	KZK Camp	676	3
K16-405	4.50	Infrastructure	Hydro	KZK Camp	679	1
K16-406	299.00	ABM	Exploration	KZK Camp	680	19
K16-407	185.00	GP4F	Metallurgical	KZK Camp	699	13
K16-408	491.00	Sebesi	Exploration	KZK Camp	712	15
K16-409	300.00	ABM	Resource Definition	KZK Camp	727	16
K16-410	31.00	Infrastructure	Geotech	KZK Camp	743	2
K16-411	34.10	Infrastructure	Geotech	KZK Camp	745	2
K16-412	38.70	Infrastructure	Geotech	KZK Camp	747	2
K16-413	147.00	Sebesi	Exploration	KZK Camp	749	7
K16-414	342.25	Sebesi	Exploration	KZK Camp	756	14
K16-414W1	285.00	Sebesi	Exploration	KZK Camp	770	3
K16-415	854.50	Tarawera	Exploration	KZK Camp	773	41

Hole ID	Length (m)	Target	Purpose	Core Storage Location	Page Number	Number of Pages
K16-416	834.00	Sebesi	Exploration	KZK Camp	814	37
K16-417	366.00	Krakatoa	Resource Definition	KZK Camp	851	19
K16-418	475.50	Krakatoa	Resource Definition	KZK Camp	870	23
K16-419	416.22	Krakatoa	Resource Definition	KZK Camp	893	28

Total: 84 Holes 19210.48 m

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-337

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/2/2016
UTM Easting	414917.0864	Core Size:	NQ3	Azimuth:	23.63	Date Logging Complete:	5/6/2016
UTM Northing:	6815014.0669	Casing Pulled?:	Yes	Dip:	-75	Drill Company:	Hytech
UTM Elev. (m):	1385.888	Casing Depth (m):	24	Length (m):	220	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/1/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK camp	Drill Completed:	5/4/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

The drill hole was successful in intersecting the Krakatoa Main lens. The overall stratigraphic package and style of mineralization is very similar to adjacent drill holes Of note is the considerable amount of mineralized calcite within the more typical OB sulfide mineralization. The mineralized calcite occurs as disseminations, blebs and breccia matrix and appears to be a later event remobilizing mineralization. The RHYi unit (122.0-127.7m) has gradational contacts with sericite altered rhyolite on either side. Following cementing, the casing was pulled and the rig moved off the hole. The next day it was noticed that the drill hole was making a small amount of water, in the order of 2-4 liters per minute.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-75	22.23	1.4	23.63	APS	Roger Hulstein	5/2/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
30	-73	4.4	22.1	26.5	ReflexEZS	Hytech	5/2/2016	5841	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
54	-73.5	4	22.1	26.1	ReflexEZS	Hytech	5/2/2016	5784	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
75	-74	4	22.1	26.1	ReflexEZS	Hytech	5/2/2016	5746	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
102	-74.6	3.8	22.1	25.9	ReflexEZS	Hytech	5/2/2016	5754	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
129	-75.8	4.2	22.1	26.3	ReflexEZS	Hytech	5/3/2016	5750	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
156	-76.7	5.4	22.1	27.5	ReflexEZS	Hytech	5/3/2016	5736	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
180	-78.4	4.8	22.1	26.9	ReflexEZS	Hytech	5/3/2016	5784	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
204	-80.1	5.1	22.1	27.2	ReflexEZS	Hytech	5/4/2016	5754	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
220	-81.2	6.6	22.1	28.7	ReflexEZS	Hytech	5/4/2016	5757	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00	**24.00**	**OVBN**	**Overburden**																	
24.00	**84.10**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	**MCG**	74.00	75.50	1.50	B00291001	-0.005	0.9	-0.01	-0.01	0.02

24 - 84.1: Green MAFi similar to adjacent drill holes in area. Homogenous light green white speckled fine mediun grained matrix with elongated chlorite clots (about 20%, 1-2 x 0.5 cm in size) with biotite in core of clots. Foliation, defined by chlorite - biotie averages 45-55 deg (24 - xx m).

<<Min: 24 - 48 0.1% Min: Pyrite>>	75.50	77.00	1.50	B00291002	0.006	1	-0.01	0.01	0.02
<<Min: 48 - 82.1 0.1% Min: Pyrite>>	77.00	78.50	1.50	B00291003	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 82.1 - 82.5 5% Min: Pyrrhotite>> in bleached zone with increase in calcite.	78.50	80.00	1.50	B00291004	0.007	0.5	-0.01	-0.01	0.02
<<Min: 82.5 - 84.1 1% Min: Pyrite>>	80.00	81.50	1.50	B00291005	-0.005	0.4	-0.01	-0.01	0.01
<<Alt: 24 - 30.4 Weak-Moderate Calcite>>	81.50	83.00	1.50	B00291006	0.191	5.2	0.01	0.05	-0.01
<<Alt: 24 - 48 Moderate Chlorite>>	83.00	84.10	1.10	B00291007	0.082	15.4	-0.01	0.1	-0.01

<<Alt: 24 - 57 Weak Biotite>>

<<Alt: 30.4 - 43.5 Weak Calcite>>

<<Alt: 43.5 - 46 Moderate Calcite>> calcite veining as well.

<<Alt: 46 - 58 Weak Calcite>>

<<Alt: 57 - 66 Weak-Moderate Biotite>>

<<Alt: 58 - 64 Moderate Calcite>>

<<Alt: 64 - 80 Weak-Moderate Calcite>>

<<Alt: 66 - 76 Moderate Chlorite>>

<<Alt: 66 - 81.4 Weak-Moderate Biotite>>

<<Alt: 76 - 81.4 Weak Chlorite>> chlorite clots in sections

<<Alt: 80 - 84.1 Moderate Calcite>>

<<Alt: 81.4 - 84 Moderate Silicification>> patchy silicic alteration and minor silicic bands.

<<Alt: 81.4 - 84.1 Weak-Moderate Muscovite>> sericite - MAFi is beached, chl and bio absent.

<<Vein: 26 - 27 10% Calcite 45 deg. >> Three white bull qtz veins 10-20cm

<<Vein: 43.55 - 43.65 30% Calcite 45 deg. >>

<<Vein: 45.2 - 45.5 50% Calcite>>

<<Vein: 60 - 82 3% Calcite>> foliform and crosscutting calcite veinlets

<<Struc: 24 - 38 Moderate-Strong dominant foliation>> avg fol 45 - 55 deg

<<Struc: 38 - 40 Moderate dominant foliation>>

<<Struc: 42 - 45 Moderate dominant foliation>>

<<Struc: 45.1 - 45.6 Strong Vein>>

<<Struc: 46 - 48 Moderate dominant foliation>>

<<Struc: 51 - 54 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 56 - 58 Moderate dominant foliation>>									
		<<Struc: 61 - 64 Moderate dominant foliation>>									
		<<Struc: 64.1 - 67.8 Weak Fault>> 3 zones, each 20-30cm of clay rich - bleached soft 'gougy' MAFi zones, parallel to DFOL. 1.5 m missing core between 64-66m.									
		<<Struc: 72 - 74 Moderate dominant foliation>>									
		<<Struc: 75 - 78 Moderate dominant foliation>>									
		<<Struc: 80.3 - 81.5 Moderate dominant foliation>>									
		<<Struc: 83.2 - 85 Moderate dominant foliation>>									
84.10	**85.10**	**RHY undifferentiated rhyolite grey-green FMG**	84.10	85.10	1.00	B00291008	0.299	71.1	0.1	0.43	1.91
		84.1 - 85.1: RHY may be altered MAFi as it is not very siliceous. It is moderately bleached and lacks the characteristic mottled texture of MAFi. Lower 30m is mod-strong chlorite altered and disseminated pyrite is concentrated on upper and lower 20cm. Alteration and mineralization flanking a thin rhyolite - felsic sill?									
		<<Min: 84.1 - 85.1 2% Min: Sphalerite>>									
		<<Min: 84.1 - 85.1 10% Min: Pyrite>> with chl and sericite altered RHY or MAFi.									
		<<Min: 84.1 - 85.1 0.2% Min: Chalcopyrite>>									
		<<Alt: 84.1 - 85.1 Weak Muscovite>> concentrated in center of interval									
		<<Alt: 84.1 - 85.1 Weak Chlorite>> concentrated in lower 20 cm									
		<<Alt: 84.1 - 85.1 Weak Calcite>>									
		<<Alt: 84.1 - 85.1 Weak-Moderate Biotite>>									
		<<Struc: 84.1 - 84.2 Strong Contact>> sulfide band - schist contact									
85.10	**90.10**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)** green	85.10	87.00	1.90	B00291009	0.013	2.8	-0.01	0.02	0.23
		85.1 - 90.1: Classic chloritic MAFi; 84.9-87.0m broken core and missing core. 88.5-88.9m; gouge and faulted.									
		<<Min: 85.1 - 88.9 0.1% Min: Pyrite>>	87.00	88.00	1.00	B00291010	0.009	1.1	-0.01	0.01	0.05
		<<Min: 88.9 - 89.2 15% Min: Pyrite>> includes one 10cm with 40% py	88.00	88.90	0.90	B00291011	0.019	2.2	0.01	0.03	0.03
		<<Min: 89.2 - 90.1 1% Min: Pyrite>>	88.90	90.10	1.20	B00291012	0.063	7.5	0.04	0.05	0.49
		<<Alt: 85.1 - 88.9 Moderate-Strong Calcite>> and as foliaform bands									
		<<Alt: 85.1 - 90.1 Moderate Muscovite>> sericite									
		<<Alt: 85.1 - 90.1 Trace Chlorite>>									
		<<Alt: 85.1 - 90.1 Weak Biotite>>									
		<<Alt: 88.9 - 90.1 Weak Calcite>>									
		<<Struc: 87 - 89 Moderate dominant foliation>>									
		<<Struc: 88.6 - 88.9 Moderate-Strong Fault>> parallel to foliation and sulfide band									

From (m)	To (m)		Rocktype & Description		
90.10	**91.10**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**grey**	**MCG**

90.1 - 91.1: 90.1-90.3 and 90.6-91.1; massive laminar and buckshot textured pyritic sulfides. 90.3-90.6; foliated, weakly brecciated RHY with diss and laminar pyrite.

<<Min: 90.1 - 91.1 5% Min: Sphalerite>>

<<Min: 90.1 - 91.1 35% Min: Pyrite>>

<<Min: 90.1 - 91.1 1% Min: Galena>>

<<Alt: 90.1 - 91.1 Weak-Moderate Muscovite>> sericite

91.10	**93.80**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**

<<Min: 91.1 - 93.8 0.5% Min: Pyrite>>

<<Alt: 91.1 - 93.8 Moderate Muscovite>> sericite

<<Alt: 91.1 - 93.8 Moderate-Strong Calcite>>

<<Alt: 91.1 - 93.8 Moderate Biotite>>

<<Struc: 91.7 - 93.7 Moderate dominant foliation>>

93.80	**96.10**	**RHY**	**undifferentiated rhyolite**	**grey-green**

93.8 - 96.1: silicic bands, disrupted bands, sericite folia.

<<Min: 93.8 - 96.1 0.1% Min: Pyrrhotite>>

<<Alt: 93.8 - 96.1 Weak-Moderate Muscovite>> sericite

<<Alt: 93.8 - 96.1 Weak Calcite>>

<<Struc: 95.7 - 96.7 Moderate dominant foliation>>

96.10	**96.70**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**

96.1 - 96.7: biotite - chlorite MAFi

<<Min: 96.1 - 96.7 0.5% Min: Pyrite>>

<<Alt: 96.1 - 96.7 Moderate Muscovite>> sericite

<<Alt: 96.1 - 96.7 Strong Calcite>>

<<Alt: 96.1 - 96.7 Moderate Biotite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
90.10	91.10	1.00	B00291013	0.332	91.7	0.08	1.15	3.54
91.10	92.50	1.40	B00291014	0.011	4.4	0.01	0.06	0.16
92.50	93.80	1.30	B00291015	0.007	-0.3	-0.01	-0.01	0.03
93.80	95.00	1.20	B00291016	0.006	1	-0.01	-0.01	0.04
95.00	96.10	1.10	B00291017	0.006	0.7	-0.01	-0.01	0.02
96.10	96.70	0.60	B00291018	1.54	185	0.13	0.06	0.32

From (m)	To (m)	Rocktype & Description
96.70	**97.50**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**
96.7 - 97.5: Banded with sections OB from 96.7-96.95m and 97.2-97.5m. Silicic bands and pyritic sufides 96.95-97.0m.		
<<Min: 96.7 - 97.5 5% Min: Sphalerite>>		
<<Min: 96.7 - 97.5 35% Min: Pyrite>>		
<<Min: 96.7 - 97.5 2% Min: Galena>>		
<<Alt: 96.7 - 97.5 Moderate-Strong Calcite>>		
<<Alt: 96.7 - 98.6 Moderate Muscovite>> sericite		
97.50	**98.60**	**RHY** **undifferentiated rhyolite**
97.5 - 98.6: Sericite altered rhy, silicic bands and from approx. 96.9-98.6m calcite vein and vein breccia in contact with lower MAFi.		
<<Min: 97.5 - 98.6 5% Min: Pyrite>>		
<<Alt: 97.5 - 109.4 Moderate-Strong Calcite>> patchy near center of unit		
<<Vein: 98.3 - 98.6 80% Calcite>> 'Healed' irregular calcite vein - breccia on RHY-MAFi contact.		
<<Struc: 98 - 102 Moderate dominant foliation>>		
98.60	**109.40**	**MAFi** **Mafic Intrusions (primarily green footwall mafic intrusion)**
98.6 - 109.4: Increase in botite 107-109.4, minor clay gouge at lower contact with massive white quartz vein.		
<<Min: 98.6 - 109.4 0.1% Min: Pyrite>>		
<<Alt: 98.6 - 107 Weak-Moderate Chlorite>>		
<<Alt: 98.6 - 107 Moderate Biotite>>		
<<Alt: 107 - 109.4 Moderate-Strong Chlorite>>		
<<Alt: 107 - 109.4 Strong Biotite>>		
<<Struc: 107 - 108 Moderate dominant foliation>>		
<<Struc: 109 - 109.4 Weak Fault>> minor gouge on foliation, broken core		
109.40	**118.90**	**RHY** **undifferentiated rhyolite**
109.4 - 118.9: 109.4 - 114.0 m; massive white qtz vein with minor gouge at sharp upper and lower contacts. Vein contains minor sections of sericite alt rhyolite. 114.0-118.9; zones of broken and missing core, RHY with silicic bands over 1m and 0.3 m section of RHYi. At least 0.3 m of white qtz vein in zone of broken core at lower contact. Very messy unit for both lithology and core recovery.		
<<Min: 109.4 - 114 0.01% Min: Sphalerite>>		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
96.70	97.50	0.80	B00291019	3.44	534	0.2	2.26	7
97.50	98.60	1.10	B00291021	0.046	6.3	-0.01	0.04	0.02
98.60	100.00	1.40	B00291022	0.007	0.5	-0.01	-0.01	0.02
100.00	101.50	1.50	B00291023	0.008	0.9	-0.01	-0.01	0.02
101.50	103.00	1.50	B00291024	0.008	1	-0.01	-0.01	0.01
103.00	104.50	1.50	B00291025	0.005	0.6	0.01	-0.01	0.01
104.50	106.00	1.50	B00291026	0.007	0.4	-0.01	-0.01	0.01
106.00	107.50	1.50	B00291027	-0.005	0.7	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 109.4 - 114 0.01% Min: Pyrite>>									
		<<Min: 109.4 - 114 0.01% Min: Galena>>									
		<<Min: 109.4 - 114 0.01% Min: Chalcopyrite>>									
		<<Min: 114 - 118.9 0.1% Min: Pyrite>>									
		<<Alt: 109.4 - 114 Trace Calcite>>									
		<<Alt: 114 - 120.8 Moderate Muscovite>> sericite replacing chlorite - biotite?									
		<<Alt: 114 - 120.8 Trace Chlorite>>									
		<<Alt: 114 - 120.8 Trace Biotite>>									
		<<Alt: 114 - 123 Weak Calcite>>									
		<<Vein: 109.4 - 114 100% Quartz>> White bull qtz vein.									
		<<Vein: 117 - 121.3 10% Quartz>> 3 white bull qtz veins, >10cm - 20 cm									
		<<Struc: 114 - 114.5 Moderate Fault>> broken core and minor gouge									
		<<Struc: 116.8 - 118.9 Moderate Fault>> broken core and missing core									
118.90	**122.00**	**RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green**	120.00	121.00	1.00	B00291028	-0.005	1.9	-0.01	0.03	0.03
		118.9 - 122: 118.0-120.8; Good RHYcw with spaced silicic bands. 120.8-122.0m; more sericite altered RHY than RHYi but transitional to RHYi below and includes 20 cm qtz vein 121-121.2m.									
		<<Min: 118.9 - 122 0.5% Min: Pyrite>>	121.00	122.00	1.00	B00291029	0.015	1.6	-0.01	0.01	0.08
		<<Alt: 120.8 - 122 Weak-Moderate Muscovite>> green sericite and fine white mica									
		<<Struc: 118.9 - 121 Moderate dominant foliation>>									
		<<Struc: 121.8 - 122.1 Moderate Fault>> broken core and likely zone of missing core.									
122.00	**127.70**	**RHYi Aphanitic Rhyolite (intrusion) grey-green**	122.00	123.50	1.50	B00291030	0.01	2.1	-0.01	0.02	0.05
		122 - 127.7: Good foliated RHYi, upper and lower contacts transitional to stronger foliated and green sericite altered RHY									
		<<Min: 122 - 127.7 0.5% Min: Sphalerite>>	123.50	125.00	1.50	B00291031	0.011	2.1	-0.01	0.02	0.05
		<<Min: 122 - 127.7 3% Min: Pyrite>> diss, wisps and crude bands	125.00	126.50	1.50	B00291032	0.013	1.7	-0.01	0.02	0.03
		<<Min: 122 - 127.7 0.5% Min: Galena>>	126.50	127.70	1.20	B00291033	0.015	2.7	-0.01	0.03	0.05
		<<Min: 122 - 127.7 0.1% Min: Chalcopyrite>>									
		<<Alt: 122 - 127.7 Trace Muscovite>>									
		<<Alt: 123 - 130 Weak Calcite>> fractures and folia									
		<<Struc: 126 - 126.5 Moderate dominant foliation>> spaced sericite foliation									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
127.70	**130.00**	**RHY undifferentiated rhyolite green**	127.70	129.00	1.30	B00291034	0.014	3	-0.01	0.04	0.08
127.7 - 130: Light green sericite altered well foliated RHY, sericite as folia between silica blebs and occasional disrupted bands.Lower contact appears to be knife edge sharp with no change in alteration except slight increase in sericite and 0.5 cm qtz-pyrite foliaform veinlet in last 10cm.											
<<Min: 127.7 - 130 0.5% Min: Sphalerite>>			129.00	130.00	1.00	B00291035	0.041	3.5	-0.01	0.06	0.13
<<Min: 127.7 - 130 3% Min: Pyrite>>											
<<Min: 127.7 - 130 0.5% Min: Galena>>											
<<Min: 127.7 - 130 0.1% Min: Chalcopyrite>>											
<<Struc: 128 - 130 Moderate Fault>> broken core and zone of missing core											
130.00	**131.00**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FG**	130.00	131.00	1.00	B00291036	1.28	168	0.11	3.76	7.18
130 - 131: Homogonous											
<<Min: 130 - 131 15% Min: Sphalerite>>											
<<Min: 130 - 131 40% Min: Pyrite>>											
<<Min: 130 - 131 2% Min: Galena>>											
<<Min: 130 - 131 1% Min: Chalcopyrite>> increases towards lower contact.											
<<Alt: 130 - 131 Strong Calcite>>											
<<Struc: 130 - 130.1 Strong Contact>>											
<<Struc: 130 - 131 Moderate dominant foliation>> banded mineralization											
131.00	**133.25**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	131.00	132.00	1.00	B00291037	2.02	138	0.36	2.19	3.74
131 - 133.25: Brecciated OB, calcite flooded and veined with sulfides in calcite, often coarse grained, likely remobilized mineraization. Locally weakly foliated with parallel calcite blebs and disrupted bands. .											
<<Min: 131 - 133.25 5% Min: Sphalerite>> and as blebs in calcite vein brx filling			132.00	133.25	1.25	B00291038	1.33	136	0.24	2.64	6.05
<<Min: 131 - 133.25 25% Min: Pyrite>> and as blebs in Cacite veins - brx filling											
<<Min: 131 - 133.25 3% Min: Galena>> and as blebs in calcite - brx filling											
<<Min: 131 - 133.25 10% Min: Chalcopyrite>> in Calcite veins - brx filling.											
<<Alt: 131 - 132.25 Moderate-Strong Calcite>>											
<<Alt: 132.25 - 134.7 Weak Calcite>>											
<<Struc: 132 - 133 Weak Foliation>> banded mineralization											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
133.25	**134.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FG**	133.25	134.70	1.45	B00291039	3.4	291	0.62	6.35	8.43
133.25 - 134.7: More or less homogonous OB											
<<Min: 133.25 - 134.7 15% Min: Sphalerite>>											
<<Min: 133.25 - 134.7 40% Min: Pyrite>>											
<<Min: 133.25 - 134.7 0.5% Min: Magnetite>>											
<<Min: 133.25 - 134.7 3% Min: Galena>>											
<<Min: 133.25 - 134.7 1% Min: Chalcopyrite>>											
134.70	**138.60**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	134.70	136.00	1.30	B00291042	2.09	120	0.48	1.94	4.85
134.7 - 138.6: Similar to 130.7-133.25m. Brecciated calcite healed OB with coarse grained sulfides in calcite. 136.7-136.88; foliated rhy with sharp contact on foliation.											
<<Min: 134.7 - 138.6 5% Min: Sphalerite>>			136.00	137.50	1.50	B00291043	1.21	180	0.15	1.9	4.23
<<Min: 134.7 - 138.6 25% Min: Pyrite>>			137.50	138.60	1.10	B00291044	0.982	120	0.35	1.81	4.02
<<Min: 134.7 - 138.6 3% Min: Galena>>											
<<Min: 134.7 - 138.6 1% Min: Chalcopyrite>> in calcite veins and brx filling											
<<Alt: 134.7 - 138.6 Strong Calcite>>											
138.60	**141.00**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	138.60	139.30	0.70	B00291045	1.02	316	0.02	5.52	8.59
138.6 - 141: Low core recovery; cummulatively section composed of 30 cm OB, 22 cm sericite altered rhyolite and 10cm white qtz vein with traces of sheared rhy.											
<<Min: 138.6 - 139.3 15% Min: Sphalerite>>			139.30	141.00	1.70	B00291046	0.668	163	0.07	3.06	5.96
<<Min: 138.6 - 139.3 40% Min: Pyrite>>											
<<Min: 138.6 - 139.3 5% Min: Galena>>											
<<Min: 138.6 - 139.3 5% Min: Chalcopyrite>>											
<<Min: 139.3 - 141 10% Min: Sphalerite>> OB and RHY in interval											
<<Min: 139.3 - 141 20% Min: Pyrite>> OB and RHY in interval											
<<Min: 139.3 - 141 1% Min: Galena>>											
<<Min: 139.3 - 141 2% Min: Chalcopyrite>> OB and RHY in interval											
<<Alt: 138.6 - 139.3 Strong Calcite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 139.3 - 141 Moderate Calcite>> interval of rhy, qtz vein and OB									
		<<Struc: 139.2 - 139.3 Moderate Fault>> fracture showing rock juxtaposition									
		<<Struc: 139.3 - 141 Moderate Fault>> broken core and zone of missing core.									
141.00	**142.25**	**RHY** **undifferentiated rhyolite**	141.00	142.25	1.25	B00291047	0.042	2.8	-0.01	0.04	0.1
		141 - 142.25: Green sericite altered RHY.									
		<<Min: 141 - 142.25 0.5% Min: Sphalerite>>									
		<<Min: 141 - 142.25 3% Min: Pyrite>>									
		<<Alt: 141 - 142.25 Weak Calcite>>									
142.25	**142.90**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	142.25	142.90	0.65	B00291048	0.697	101	0.04	1.69	3.03
		142.25 - 142.9: OB with calcite laminae, 15cm section of foliated sericite altered RHY and 5 cm crosscutting qtz vein.									
		<<Min: 142.25 - 142.9 5% Min: Sphalerite>>									
		<<Min: 142.25 - 142.9 30% Min: Pyrite>>									
		<<Min: 142.25 - 142.9 0.5% Min: Galena>>									
		<<Alt: 142.25 - 145.4 Strong Calcite>>									
		<<Vein: 142.25 - 145.4 10% Calcite>> calcite veins, foliaform and crosscutting, and clacite as matrix in sulfide breccia.									
		<<Struc: 142.25 - 142.3 Strong Contact>> sharp contact parallel to foliation									
		<<Struc: 142.7 - 142.9 Strong Contact>> foliated rhyolite and sulfide contact									
142.90	**145.40**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FG**	142.90	144.00	1.10	B00291049	1.18	102	0.21	1.98	5.21
		142.9 - 145.4: Poorly banded and weakly brecciated OB with clacite filling.									
		<<Min: 142.9 - 145.4 15% Min: Sphalerite>>	144.00	145.40	1.40	B00291050	2.01	168	0.27	3.53	7.87
		<<Min: 142.9 - 145.4 40% Min: Pyrite>>									
		<<Min: 142.9 - 145.4 2% Min: Galena>>									
		<<Min: 142.9 - 145.4 5% Min: Chalcopyrite>>									
		<<Struc: 143.3 - 144 Moderate dominant foliation>> laminated sulfides - calcite									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
145.40	**146.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	145.40	146.70	1.30	B00291051	2.51	201	3.09	3.93	8.07
145.4 - 146.7: OB with cpy up to 25% as diss and in crude bands.145.5-146.6, diss magnetite and up to 10% over about 20cm in middle of section.											
<<Min: 145.4 - 146.7 15% Min: Sphalerite>>											
<<Min: 145.4 - 146.7 20% Min: Pyrite>>											
<<Min: 145.4 - 146.7 5% Min: Magnetite>> and as diss											
<<Min: 145.4 - 146.7 5% Min: Galena>>											
<<Min: 145.4 - 146.7 20% Min: Chalcopyrite>>											
<<Alt: 145.4 - 146.7 Moderate-Strong Calcite>>											
<<Struc: 146 - 148 Moderate dominant foliation>> laminated sulfides											
146.70	**151.10**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	146.70	148.00	1.30	B00291052	4.12	166	0.59	2.9	7.11
146.7 - 151.1: Locally cpy rich, locally brx with calcite filling,discontinuous fine mineral laminae.											
<<Min: 146.7 - 151.1 10% Min: Sphalerite>>			148.00	149.00	1.00	B00291053	2.89	159	0.35	2.33	5.04
<<Min: 146.7 - 151.1 40% Min: Pyrite>>			149.00	150.00	1.00	B00291054	1.62	221	1.52	4.45	7.31
<<Min: 146.7 - 151.1 5% Min: Galena>>			150.00	151.10	1.10	B00291055	2.09	297	1.28	5.72	8.4
<<Min: 146.7 - 151.1 10% Min: Chalcopyrite>> could be greater than 10% as fine gr sx grdmas is greenish…											
<<Alt: 146.7 - 151.8 Moderate-Strong Calcite>>											
<<Vein: 146.7 - 151.1 10% Calcite>> calcite veins, foliaform and crosscutting and calcite as matrix in sulfide breccia.											
<<Struc: 150 - 151.1 Moderate dominant foliation>> laminated sulfides											
151.10	**151.80**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **CG**	151.10	151.80	0.70	B00291056	1.58	274	2.09	3.8	12
151.1 - 151.8: Brecciated with mineralized clacite filling. 5cm sheared sericite rhyolite. Rare chlorite blebs at lower contact - trying to be OJ. Last 10cm is very coarse grained.											
<<Min: 151.1 - 151.8 3% Min: Sphalerite>>											
<<Min: 151.1 - 151.8 20% Min: Pyrite>>											
<<Min: 151.1 - 151.8 1% Min: Galena>>											
<<Min: 151.1 - 151.8 3% Min: Chalcopyrite>>											
<<Alt: 151.2 - 151.8 Trace Chlorite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 151.4 - 151.6 Weak-Moderate Fault>> 6cm gouge									
		<<Struc: 151.6 - 151.8 Weak-Moderate Fault>> slicks on sheared pyrite									
151.80	**155.70**	**RHY undifferentiated rhyolite green**	151.80	153.00	1.20	B00291057	0.009	1.6	-0.01	0.02	0.02
		151.8 - 155.7: Well foliated green sericite altered rhyolite with strong clacite banding and elongated blebs, both parallel to foliation.									
		<<Min: 151.8 - 155.7 0.5% Min: Sphalerite>>	153.00	154.40	1.40	B00291058	0.01	1	-0.01	0.01	0.01
		<<Min: 151.8 - 155.7 5% Min: Pyrite>>	154.40	155.70	1.30	B00291059	0.016	4.5	0.02	0.07	0.25
		<<Min: 151.8 - 155.7 0.1% Min: Galena>>									
		<<Min: 154.8 - 155.7 2% Min: Pyrrhotite>>									
		<<Alt: 151.8 - 155.7 Moderate Muscovite>> sericite, presumably associated with mineralization.									
		<<Alt: 151.8 - 162 Moderate-Strong Calcite>>									
		<<Vein: 151.8 - 155.7 10% Calcite>> foliaform calcite veins and blebs.									
		<<Struc: 151.8 - 153 Weak Fault>> minor gouge <1cm zones parallel to foliation									
		<<Struc: 152 - 153 Strong dominant foliation>>									
		<<Struc: 153 - 154.1 Strong dominant foliation>>									
		<<Struc: 154.3 - 155.7 Strong dominant foliation>>									
155.70	**162.05**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	155.70	157.00	1.30	B00291061	0.009	2.1	-0.01	0.05	0.07
		155.7 - 162.05: 5-10% sub-rounded 1-2mm calcite replaced prophyroblasts from 155.7m to 158.5m. Five cm RHY from 161.75m original massive chlorite from 161.80-162.05.									
		<<Min: 155.7 - 162.05 1% Min: Pyrite>>	157.00	158.50	1.50	B00291062	0.008	0.8	-0.01	0.02	0.03
		<<Alt: 155.7 - 162.05 Moderate Chlorite>>	158.50	160.00	1.50	B00291063	0.008	1.9	-0.01	0.05	0.03
		<<Alt: 162 - 162.45 Moderate Calcite>>	160.00	161.50	1.50	B00291064	0.009	0.8	-0.01	0.01	0.03
		<<Struc: 156 - 156.2 Moderate Fault>> broken and crushed core, minor gouge	161.50	162.05	0.55	B00291065	0.069	13.9	0.03	0.21	0.09
		<<Struc: 156.5 - 161 dominant foliation>>									
		<<Struc: 161.8 - 162 Moderate-Strong dominant foliation>> likely parallel to MAFi - OB contact									
162.05	**162.45**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	162.05	162.45	0.40	B00291066	0.881	129	0.31	2.02	6.19
		162.05 - 162.45: Broken core, 30cm core recovered.									
		<<Min: 162.05 - 162.45 15% Min: Sphalerite>>									
		<<Min: 162.05 - 162.45 40% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 162.05 - 162.45 0.1% Min: Galena>>											
<<Min: 162.05 - 162.45 0.1% Min: Chalcopyrite>>											
162.45	**163.50**	**OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock green**	162.45	162.75	0.30	B00291067	0.025	6.3	0.14	0.06	0.3
162.45 - 163.5: Two bands of OJ at 162.45-162.70 m and 163.20 - 163.50 m seperated by chlorite - sericite altered rhy with about <2% diss pyrite. Alteration and contacts parallel to foliation.											
<<Min: 162.45 - 162.7 5% Min: Pyrrhotite>>			162.75	163.50	0.75	B00291068	0.257	45.5	0.34	0.84	1.57
<<Min: 162.45 - 162.7 1% Min: Chalcopyrite>>											
<<Min: 162.7 - 163.2 0.1% Min: Pyrrhotite>>											
<<Min: 163.2 - 163.5 8% Min: Sphalerite>>											
<<Min: 163.2 - 163.5 1% Min: Pyrrhotite>>											
<<Min: 163.2 - 163.5 1% Min: Galena>>											
<<Min: 163.2 - 163.5 3% Min: Chalcopyrite>>											
<<Alt: 162.45 - 163.5 Weak-Moderate Chlorite>> mostly chlorite bands concentrated at upper and lower contacts.											
<<Alt: 162.45 - 176 Trace Calcite>>											
<<Struc: 163.25 - 163.75 Moderate-Strong dominant foliation>> foliation and sulfide bands											
163.50	**176.00**	**RHY undifferentiated rhyolite cream**	163.50	165.00	1.50	B00291069	0.017	0.6	-0.01	-0.01	0.03
163.5 - 176: Light grey -green altered rhyolite with minor silicic bands and apparent disrupted silicic bands and longer sections of likely RHYvl. Diss py and lesser sp and gl throughout and local zones of sulfide concentration 1-15 cm wide. Lower contact gradational and marked by decrease in bleaching, light green sericite and pyrite and increase in pyrrhotite at expense of py. .											
<<Min: 163.5 - 176 0.1% Min: Sphalerite>>			165.00	166.50	1.50	B00291070	0.006	0.4	-0.01	0.01	0.03
<<Min: 163.5 - 176 3% Min: Pyrite>> Diss and in thin, often diffuse bands with qtz and other sulfides			166.50	168.00	1.50	B00291071	0.007	0.4	-0.01	-0.01	-0.01
<<Min: 163.5 - 176 0.25% Min: Pyrrhotite>>			168.00	169.10	1.10	B00291072	0.005	-0.3	-0.01	-0.01	-0.01
<<Min: 163.5 - 176 0.1% Min: Galena>>			169.10	170.00	0.90	B00291073	0.013	2.6	-0.01	0.11	0.3
<<Alt: 163.5 - 176 Moderate-Strong Muscovite>> white - light green fine muscovite - sericite, presumably related to mineralization.			170.00	171.00	1.00	B00291074	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 169.4 - 176.5 Trace Chlorite>> Remnant chlorite that survived Mu alteration event.			171.00	172.50	1.50	B00291075	-0.005	1.1	-0.01	0.09	0.14
<<Vein: 173 - 173.7 10% Quartz 47 deg. >> foliaform qtz			172.50	174.00	1.50	B00291076	-0.005	-0.3	-0.01	-0.01	0.01
<<Struc: 166.7 - 167.1 Moderate-Strong dominant foliation>>											
<<Struc: 167.1 - 171 Moderate-Strong dominant foliation>>											
<<Struc: 168.8 - 170.7 Moderate Fault>> missing, broken and crushed core, minor gouge											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 172 - 175 Moderate-Strong dominant foliation>>

176.00 220.00 RHYvl Lapilli tuff grey-green

176 - 220: This section is likely same as 163.5-176m but differentiated due to alteration. 211 - 212.5 m minor silicic bands. 176 - 193 m is pyrrhotite bearing and a darker green color (remnant chloritized lappili clasts?). 210.3 - 220 m biotite and remnant chlorite present with pyrite and lesser pyrrhotite. 193 - 210.3 is a lighter sericite green color and pyritic.

<<Min: 176 - 193 3% Min: Pyrrhotite>>

<<Min: 193 - 217 1% Min: Pyrrhotite>>

<<Min: 200 - 203 1% Min: Pyrite>>

<<Min: 203 - 210.3 3% Min: Pyrite>>

<<Min: 210.3 - 217 2% Min: Pyrite>>

<<Min: 217 - 220 2% Min: Pyrite>>

<<Min: 217 - 220 2% Min: Pyrrhotite>>

<<Alt: 176 - 203 Moderate Calcite>>

<<Alt: 176.6 - 215.5 Weak Chlorite>> remnant chlorite

<<Alt: 179 - 220 Weak Biotite>> remnant biotite, varies from trace to weak -moderate patches

<<Alt: 203 - 207 Trace Calcite>>

<<Alt: 207 - 220 Moderate Calcite>>

<<Alt: 215.5 - 220 Weak-Moderate Chlorite>>

<<Vein: 195.4 - 195.6 100% Quarzt-Chlorite-Tourmaline>> tourmaline - chlorite in tight bleached fractured zone

<<Vein: 196.8 - 196.9 100% Quarzt-Chlorite-Tourmaline>> as 195.4-195.6m

<<Struc: 176 - 178 Moderate-Strong dominant foliation>>

<<Struc: 179 - 180 Moderate-Strong dominant foliation>>

<<Struc: 182.5 - 186 Moderate-Strong dominant foliation>>

<<Struc: 188.4 - 189 Moderate dominant foliation>>

<<Struc: 190 - 192 Moderate dominant foliation>>

<<Struc: 194 - 195.5 Moderate dominant foliation>>

<<Struc: 199.3 - 201 Moderate dominant foliation>>

<<Struc: 204 - 205 Moderate dominant foliation>>

<<Struc: 205 - 205.5 Moderate-Strong Shear>> minor gouge, disrupted foliation

<<Struc: 206.8 - 207 Weak-Moderate Fault>> broken and crushed core, trace core

<<Struc: 209 - 211 Moderate dominant foliation>>

<<Struc: 212.4 - 215.2 Weak-Moderate Fault>> three small zones (<20cm) broken and crushed core

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-337

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 220											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-338

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/6/2016
UTM Easting	414914.8969	Core Size:	NQ3	Azimuth:	31.65	Date Logging Complete:	5/7/2016
UTM Northing:	6815009.9844	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	Hytech
UTM Elev. (m):	1386.156	Casing Depth (m):	24	Length (m):	76.4	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/4/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/5/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-338 abandoned at 76.4m after two down hole reflex tests showed downhole deflection greater than acceptable. Immediately below the overburden magnetite bearing OB type mineralization was intersected from 23.88m - 24.24m and OJ chlorite pyrrhotite type from 24.24m - 24.62m. Below the sufides, 7 cm of rhyolite was recovered at the top of the MAFi unit (24.62 - 76.40m EOH). Poor core recovery from 23.88-36.0m. Following abandonment the target was redrilled by K16-339 on a slightly different azimuth and with a HQ drill string to reduce the chance of deflection.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	30.25	1.4	31.65	APS	Rob Duncan	5/4/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
30	-65	14	22.1	36.1	ReflexEZS	Hytech	5/5/2016	5871	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
54	-65.8	13.5	22.1	35.6	ReflexEZS	Hytech	5/5/2016	5765	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**23.88**	**OVBN**	**Overburden**									
23.88	**24.24**	**OA**	**Laminar or heavilly disseminated magnetite bearing massive sulphide** **MG**	23.88	24.62	0.74	B00291077	0.367	51.8	0.53	1.13	8.37

23.88 - 24.24: 'OA' unit below overburden, 0.74m of sulfde recovered. Magnetite rich OA (23.88-24.24) and pyrrhotite-chlorite OJ mineralization (24.24-24.62) and although core recovery is poor it appears to be bedrock mineralization. No allowance is made for missing core within the 0.74 m sulfide unit - unit could be thicker! Underlain by 7cm of RHY core rubble followed by brecciated -faulted MAFI to EOH.

<<Min: 23.88 - 24.24 15% Min: Sphalerite>>

<<Min: 23.88 - 24.24 25% Min: Pyrite>> buckshot

<<Min: 23.88 - 24.24 15% Min: Magnetite>>

From (m)	To (m)	Rocktype & Description
		<<Min: 23.88 - 24.24 3% Min: Galena>>
		<<Min: 23.88 - 24.24 3% Min: Chalcopyrite>> minor mm diss
24.24	**24.62**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**
		<<Min: 24.24 - 24.62 10% Min: Sphalerite>>
		<<Min: 24.24 - 24.62 20% Min: Pyrite>>
		<<Min: 24.24 - 24.62 15% Min: Pyrrhotite>>
		<<Min: 24.24 - 24.62 5% Min: Chalcopyrite>>
		<<Alt: 24.24 - 24.62 Weak-Moderate Chlorite>>
		<<Alt: 24.24 - 24.62 Weak Calcite>>
		<<Vein: 24.24 - 43 5% Calcite>> irregular calcite veinlets and frature filling along with diss cc
24.62	**76.40**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**
		24.62 - 76.4: 24.62 - 36.24m; Chlorite altered (original) below OA unit. Same section also has poor recovery, mostly fault brecciated - sheared with minor gouge, approx 5% irregular calcite veins and veinlets. 36.24-76.4; MAFi with usual chlorite - biotite overprint.
		<<Min: 24.62 - 76.4 0.01% Min: Pyrite>>
		<<Alt: 24.62 - 36.24 Moderate-Strong Chlorite>> dense amorphous chlorite.
		<<Alt: 24.62 - 36.24 Strong Calcite>> or original in part?
		<<Alt: 29.52 - 40.3 Weak Biotite>> most bitite altered to chlorite
		<<Alt: 36.24 - 76.4 Moderate-Strong Chlorite>>
		<<Alt: 36.24 - 76.4 Weak-Moderate Calcite>> varies from weak to strong
		<<Alt: 40.3 - 76.4 Moderate-Strong Biotite>>
		<<Struc: 27 - 29.42 Moderate-Strong Fault>> poor core recovery, broken and crushed core, minor gouge.
		<<Struc: 29.62 - 30 Moderate dominant foliation>> poor foliation due to shearing, fracture zones and chlorite alteration.
		<<Struc: 29.99 - 30 Weak Shear>>
		<<Struc: 31.3 - 36.05 Moderate Fault>> poor core recovery, broken and crushed core, minor gouge. Low angle shears cross cutting foliation.
		<<Struc: 32.8 - 33 Weak-Moderate dominant foliation>>
		<<Struc: 38.3 - 39.3 Moderate dominant foliation>>
		<<Struc: 39.4 - 40.3 Weak Fault>> two <10cm zones of broken core with crushed core, shar planes cross cutting foliation.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
24.62	27.00	2.38	B00291078	-0.005	-0.3	-0.01	-0.01	0.02
27.00	28.93	1.93	B00291079	-0.005	0.4	-0.01	-0.01	0.02
28.93	30.00	1.07	B00291081	-0.005	0.4	-0.01	-0.01	0.02
30.00	31.30	1.30	B00291082	0.007	0.5	-0.01	-0.01	0.01
31.30	32.60	1.30	B00291083	0.007	0.4	-0.01	-0.01	0.01
32.60	34.00	1.40	B00291084	0.005	0.3	-0.01	-0.01	-0.01
34.00	35.00	1.00	B00291085	0.01	5.3	0.03	0.02	-0.01

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-338

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 41.02 - 42.92 Weak-Moderate Shear>> low angle shears displacing foliation. <<Struc: 43 - 47.5 Moderate dominant foliation>> <<Struc: 49.6 - 50.4 Moderate dominant foliation>> <<Struc: 56 - 58.6 Moderate dominant foliation>> <<Struc: 59 - 64 Moderate dominant foliation>> <<Struc: 65 - 67.55 Moderate dominant foliation>> <<Struc: 69.4 - 72.6 Weak-Moderate dominant foliation>> Beta +/- 10 deg <<Struc: 73.2 - 73.5 Moderate dominant foliation>> <<Struc: 73.66 - 74.2 Weak-Moderate dominant foliation>> **End of Hole @ 76.4**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-339

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/7/2016
UTM Easting	414914.6391	Core Size:	HQ3	Azimuth:	36.3	Date Logging Complete:	5/11/2016
UTM Northing:	6815008.8992	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	Hytech
UTM Elev. (m):	1386.364	Casing Depth (m):	24	Length (m):	240	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/6/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/10/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-339 replaces K16-338 which was abandoned at 76.4m due excessive deviation.The drill hole was successful in intersecting the Krakatoa Main lens (145.62 - 173.60 m). The overall stratigraphic package and style of mineralization is very similar to adjacent drill holes although obvious RHYi is absent. A massive quartz vein was intersected from 127.15 - 144.26 m (approx 75% quartz) which may be related to the RHYi unit.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	34.9	1.4	36.3	APS	Chris Hughes	5/6/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
30	-65.8	12.8	22.1	34.9	ReflexEZS	Hytech	5/6/2016	5869	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
54	-66	12	22.1	34.1	ReflexEZS	Hytech	5/6/2016	5781	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
81	-66.6	11	22.1	33.1	ReflexEZS	Hytech	5/7/2016	5777	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
105	-67.5	5.9	22.1	28	ReflexEZS	Hytech	5/7/2016	5859	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth. Aziumth may be off due to magnetotellurics - sulfides at 105 m are not especially magnetic and magnetic field is 'as usual'.
111	-67.6	11.7	22.1	33.8	ReflexEZS	Hytech	5/7/2016	5818	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
135	-68.6	9	22.1	31.1	ReflexEZS	Hytech	5/8/2016	5816	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
159	-69	9.3	22.1	31.4	ReflexEZS	Hytech	5/8/2016	5689	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
183	-69.4	10.8	22.1	32.9	ReflexEZS	Hytech	5/8/2016	5785	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
207	-69.8	10.6	22.1	32.7	ReflexEZS	Hytech	5/8/2016	5782	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
240	-69.6	6.5	22.1	28.6	ReflexEZS	Hytech	5/9/2016	5721	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**24.99**	**OVBN** **Overburden**									
24.99	**25.50**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **green** **FMG**	24.99	25.50	0.51	B00291086	0.911	157	0.5	2.13	7.92
24.99 - 25.5: Core marker interval 24.0-25.5m: 0.93m core recovered of which the upper 0.42 m is considered to be felsic boulders and the lower 0.51m in situ sulfides.Sulfide interval followed by RHY rubble (<10 cm recovered: 25.5-27.0m), followed by MAFI from 27.0m to xx. 24.99-25.06 (2 pieces) is typical OB mineralization with buckshot texture. 25.06-25.50m: more typical OJ mineralization, noncalcareous,10 cm pyrrhotite rich section and most of unit has 10-20% dark chlorite, blebs - diss py and pyrite buckshot texture.										
<<Min: 24.99 - 25.5 3% Min: Sphalerite>> concentrated in 7cm section of typical OB											
<<Min: 24.99 - 25.5 30% Min: Pyrite>> and diss - buckshot											
<<Min: 24.99 - 25.5 4% Min: Pyrrhotite>> wispy bands over 10cm width											
<<Min: 24.99 - 25.5 0.1% Min: Galena>>											
<<Min: 24.99 - 25.5 3% Min: Chalcopyrite>>											
<<Alt: 24.99 - 25.5 Weak-Moderate Chlorite>> crude bands, patches and blebs											
<<Alt: 24.99 - 25.5 Weak Calcite>> 7cm of typical OB mineralization contains calcite, rest of chlorite OJ unit is non calcareous.											
<<Struc: 25.06 - 25.39 Moderate-Strong Foliation>> sulfide banding metallurgical											
25.50	**27.00**	**RHY** **undifferentiated rhyolite** **cream**	25.50	27.00	1.50	B00291087	0.008	0.7	0.01	-0.01	0.03
25.5 - 27: <10 cm core recovered. Same lithological sequence as K16-337: OB-RHY-MAFi.											
<<Min: 25.5 - 27 0.1% Min: Pyrrhotite>> next to no core recovery											
<<Alt: 25.5 - 27 Moderate Calcite>>											
<<Alt: 25.5 - 30.7 Moderate-Strong Chlorite>>											
<<Struc: 25.5 - 28.5 Weak-Moderate Fault>> Poor core recovery; due to proximity to surface, driller error or fault zone??											
27.00	**97.82**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)** **green**	27.00	28.50	1.50	B00291088	0.012	0.8	-0.01	-0.01	0.02
27 - 97.82: 27-31.5: has what was formerly called disseminated 'leucoxene' - 1 to <1mm buff light brown porphroblastic crystals. Lower contact marked by increase in pyrite, texture massive, less banded - foliated and 0.5-1.0cm light green clay gouge contact at 32 degrees. Very sharp contact indeed!											
<<Min: 27 - 97.82 0.01% Min: Pyrite>> trace py!			28.50	30.00	1.50	B00291089	0.009	0.4	-0.01	-0.01	0.02
<<Alt: 27 - 29.8 Trace Biotite>>			30.00	31.50	1.50	B00291090	0.008	0.6	-0.01	-0.01	0.01

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-339

From (m)	To (m)	Rocktype & Description
		<<Alt: 27 - 43.4 Moderate Calcite>>
		<<Alt: 29.8 - 36.45 Moderate Biotite>> biotite increases in chloritic fault zone
		<<Alt: 30.7 - 33.2 Moderate-Strong Chlorite>> Dense dark green chlorite (talc-serpentine?), associated with faulting and calcite veining. Might be original??
		<<Alt: 33.2 - 73.9 Weak-Moderate Biotite>>
		<<Alt: 33.2 - 97.76 Moderate Chlorite>> patchy but always present.
		<<Alt: 43.4 - 57 Weak-Moderate Calcite>>
		<<Alt: 57 - 73.6 Moderate Calcite>>
		<<Alt: 73.6 - 97.82 Moderate-Strong Calcite>>
		<<Alt: 73.9 - 80 Moderate-Strong Biotite>>
		<<Alt: 80 - 81.4 Weak-Moderate Biotite>>
		<<Alt: 81.4 - 84.6 Moderate-Strong Biotite>>
		<<Alt: 84.6 - 97.53 Weak-Moderate Biotite>>
		<<Alt: 97.53 - 97.82 Moderate-Strong Biotite>> Biotite content picks up near lower contact, medium grained
		<<Vein: 29 - 29.15 45% Quartz-Carbonate 45 deg. >>
		<<Vein: 29 - 75 5% Calcite>> occasionally foliaform.
		<<Vein: 33.25 - 33.35 100% Quartz-Carbonate>> in fault zone
		<<Vein: 33.35 - 97.56 5% Calcite>> average of 5% clacite veinlets crosscutting and foliaform, intensity increases within fault - shear zones.
		<<Vein: 80 - 80.6 70% Quartz-Carbonate 35 deg. >> brecciated vein in fault zone. Lower contact at 35 deg.
		<<Struc: 27 - 28.5 Moderate-Strong dominant foliation>>
		<<Struc: 28.5 - 29 Moderate dominant foliation>> unusual steep foliation, due to nearby faulting?
		<<Struc: 29 - 29.15 Weak-Moderate Fault>> Shearing and qtz-calcite vein.
		<<Struc: 29.15 - 33 Moderate-Strong Fault>> moderate and low angle shear planes, locally with slicks on chlorite and or calcite vein surfaces. Zones of core rubble, calcite and fracture and breccia filling. Crushed core but no real gouge recovered. Trace hematite on sheared surfaces.
		<<Struc: 33 - 34.6 Fault>>
		<<Struc: 34 - 35 Moderate dominant foliation>>
		<<Struc: 37.7 - 39 Moderate dominant foliation>>
		<<Struc: 42.1 - 42.4 Moderate Fault>> broken core, missing core, trace hematite on sheared surfaces
		<<Struc: 47 - 48 Weak-Moderate dominant foliation>>
		<<Struc: 49 - 49.55 Weak Fault>> 0.5 cm gouge crushed zones parallel to foliation and at low angle (10deg).
		<<Struc: 52.9 - 54.3 Moderate dominant foliation>>
		<<Struc: 58 - 58.2 Weak Fault>>
		<<Struc: 64.21 - 64.35 Moderate-Strong Fault>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
31.50	33.00	1.50	B00291091	0.007	-0.3	-0.01	-0.01	0.01
33.00	34.00	1.00	B00291092	0.007	2.2	0.01	0.02	-0.01
34.00	35.00	1.00	B00291093	0.007	-0.3	-0.01	-0.01	-0.01
89.20	90.70	1.50	B00291094	0.009	-0.3	-0.01	-0.01	0.01
90.70	92.20	1.50	B00291095	0.007	-0.3	-0.01	-0.01	0.02
92.20	93.50	1.30	B00291096	0.006	0.3	-0.01	-0.01	0.02
93.50	95.00	1.50	B00291097	0.005	-0.3	-0.01	-0.01	0.01
95.00	96.35	1.35	B00291098	0.007	0.3	-0.01	-0.01	0.01
96.35	97.82	1.47	B00291099	0.01	0.6	-0.01	-0.01	0.03

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 79.33 - 81.11 Strong Fault>> Significant fault zone.

<<Struc: 90.61 - 94.87 Moderate-Strong Shear>> Low angle shear, mottled texture is obliterated, calcite veined.

<<Struc: 94.87 - 96.8 Moderate-Strong dominant foliation>>

<<Struc: 97.2 - 97.3 Moderate-Strong dominant foliation>>

<<Struc: 97.75 - 97.85 Intense Contact>>

97.82 100.00 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG

97.82	98.31	0.49	B00291102	1.65	308	0.54	3.16	13.4

97.82 - 100: Typical massive OB, faint - crude banding.Sharp contacts conformabe to foliation. Upper contact marked by 0.5cm gouge.

<<Min: 97.82 - 97.87 5% Min: Pyrrhotite>> at upper contact

98.31	99.00	0.69	B00291103	1.16	262	0.01	2.6	8.49

<<Min: 97.82 - 98.31 25% Min: Sphalerite>>

99.00	100.00	1.00	B00291104	2.03	310	0.76	3.14	8.17

<<Min: 97.82 - 98.31 50% Min: Pyrite>>

<<Min: 97.82 - 98.31 5% Min: Galena>>

<<Min: 98.31 - 100 12% Min: Sphalerite>>

<<Min: 98.31 - 100 60% Min: Pyrite>>

<<Min: 98.31 - 100 2% Min: Galena>>

<<Alt: 97.82 - 98.31 Weak Calcite>> mostly in thin fractures, weakly diss.

<<Alt: 98.31 - 100 Strong Calcite>> cc forms part of the groundmass

<<Struc: 97.85 - 98.06 Weak Foliation>>

100.00 102.23 RHY undifferentiated rhyolite green

100.00	101.00	1.00	B00291105	0.026	1.7	-0.01	-0.01	0.02

100 - 102.23: Bleached, qtz-sericite altered.

<<Min: 100 - 102.23 0.01% Min: Pyrite>>

101.00	102.23	1.23	B00291106	0.027	4.4	-0.01	0.03	0.17

<<Alt: 100 - 102.23 Moderate-Strong Muscovite>> fine muscovite - sericite folia

<<Alt: 100 - 102.23 Trace Calcite>>

<<Struc: 100 - 101.2 Moderate-Strong dominant foliation>>

<<Struc: 101.2 - 102 Moderate Fault>> Miissing core and broken core, trace gouge on foliation.

<<Struc: 102.2 - 102.23 Moderate-Strong Contact>> contact between RHY and OJ

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
102.23	**102.81**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **green** **MG**	102.23	102.81	0.58	B00291107	1.32	99.2	1.04	0.3	5.11

102.23 - 102.81: Green dense chlorite banded OJ with buckshot pyrite. Trace diss pyrrhotite.Contacts parallel with foliation. Lower contact marked by absence of chlorite.

<<Min: 102.23 - 102.81 3% Min: Sphalerite>>

<<Min: 102.23 - 102.81 15% Min: Pyrite>>

<<Min: 102.23 - 102.81 3% Min: Pyrrhotite>>

<<Min: 102.23 - 102.81 3% Min: Chalcopyrite>>

<<Alt: 102.23 - 102.81 Strong Chlorite>>

<<Struc: 102.23 - 102.87 Moderate-Strong dominant foliation>>

<<Struc: 102.8 - 102.82 Moderate Contact>> Contact markd by decrease in chlorite and sulfides

102.81	**103.38**	**RHY** **undifferentiated rhyolite** **green**	102.81	103.38	0.57	B00291108	0.315	47.7	0.11	0.47	1.89

102.81 - 103.38: Light green sericite-muscovite altered rhyolite.

<<Min: 102.81 - 103.38 2% Min: Sphalerite>>

<<Min: 102.81 - 103.38 5% Min: Pyrite>>

<<Min: 102.81 - 103.38 0.1% Min: Galena>>

<<Alt: 102.81 - 103.38 Moderate-Strong Muscovite>>

<<Struc: 102.82 - 103.57 Moderate-Strong dominant foliation>> foliation parallel to banded rhyolite

103.38	**104.81**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	103.38	104.81	1.43	B00291109	1.07	188	0.13	1.94	10

103.38 - 104.81: Typical homogonous OB, sharp contacts, parallel to foliation, with traces of gouge.

<<Min: 103.38 - 104.81 20% Min: Sphalerite>>

<<Min: 103.38 - 104.81 65% Min: Pyrite>>

<<Min: 103.38 - 104.81 3% Min: Galena>>

<<Alt: 103.57 - 104.95 Strong Calcite>> forms part of the groundmass

<<Struc: 103.56 - 103.58 Moderate-Strong Contact>> sharp contact

<<Struc: 103.58 - 104.95 Weak Foliation>> banded sulfides

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
104.81	**107.40**	**OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock green MCG**	104.81	106.00	1.19	B00291110	0.104	14.9	0.1	0.15	2.76
104.81 - 107.4: Predominently OJ but unit is sheared and incorporates clasts of OB (total 30 cm in interval) and MAFi (104.81-105.01m & clasts throughout unit. Unit appears to have been originally MAFI, now sheared, mineralized and chloritized.											
<<Min: 104.81 - 106 5% Min: Sphalerite>>			106.00	107.40	1.40	B00291111	1.02	144	0.91	1.61	6.39
<<Min: 104.81 - 106 10% Min: Pyrite>>											
<<Min: 104.81 - 106 0.5% Min: Chalcopyrite>>											
<<Min: 106 - 108 5% Min: Sphalerite>>											
<<Min: 106 - 108 25% Min: Pyrite>> shear zone with OB clasts in sheared MAFi and OJ											
<<Min: 106 - 108 0.1% Min: Galena>>											
<<Min: 106 - 108 3% Min: Chalcopyrite>>											
<<Alt: 104.81 - 108 Moderate-Strong Chlorite>>											
<<Alt: 104.95 - 105.18 Strong Calcite>>											
<<Alt: 105.18 - 108 Weak Calcite>>											
<<Struc: 104.9 - 105 Moderate-Strong Contact>> sheared contact											
<<Struc: 105 - 105.2 Moderate dominant foliation>>											
<<Struc: 105.4 - 106.6 Weak-Moderate Shear>>											
<<Struc: 106.6 - 108.1 Moderate-Strong Shear>>											
107.40	**108.00**	**No Core No Core**									
108.00	**111.00**	**RHYc Rhyolite coherant volcanics green**	108.00	109.20	1.20	B00291112	0.032	3.6	-0.01	0.04	0.3
108 - 111: Light green sericite - muscovite altered rhyolite, has silicic bands = RHYc.											
<<Min: 108 - 111 0.1% Min: Sphalerite>>			109.20	111.00	1.80	B00291113	0.021	3.3	-0.01	0.04	0.17
<<Min: 108 - 111 5% Min: Pyrite>> concentrated in this bands and wisps along foliation.											
<<Alt: 108 - 111 Moderate-Strong Muscovite>> fine muscovite - sericite alteration											
<<Alt: 108 - 111 Weak-Moderate Calcite>>											
<<Struc: 108.1 - 109.2 Weak-Moderate Shear>>											
<<Struc: 109.2 - 111 Moderate-Strong Foliation>>											
<<Struc: 109.9 - 111 Moderate Fault>> broken and missing core											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
111.00	**111.93**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MCG**	111.00	111.93	0.93	B00291114	1.31	416	0.05	3.82	12.4

111 - 111.93: OB, similar to the two OB units above (up hole).

<<Min: 111 - 111.93 20% Min: Sphalerite>>

<<Min: 111 - 111.93 35% Min: Pyrite>>

<<Min: 111 - 111.93 3% Min: Galena>>

<<Min: 111 - 111.93 3% Min: Chalcopyrite>>

<<Alt: 111 - 113 Strong Calcite>>

<<Struc: 111.92 - 111.94 Moderate-Strong Contact>> sulfide - MAFi contact

111.93	**127.15**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	111.93	113.00	1.07	B00291115	0.157	0.7	-0.01	-0.01	0.03

111.93 - 127.15: Sharp upper contact parallel to foliation. 112.4-113.0 m: aphanitic to fine grained intermediate rock,possible dyke? If so contacts are parallel to foliation. Lower contact is gradational with bleaching starting at about 123.25 and quartz veining - flooding increasing from 126.0 m.

<<Min: 111.93 - 113 3% Min: Pyrite>>

<<Min: 113 - 125.95 0.01% Min: Pyrite>>

<<Min: 125.95 - 126.45 3% Min: Pyrite>>

<<Min: 125.95 - 126.45 0.1% Min: Pyrrhotite>>

<<Min: 126.05 - 144.26 0.01% Min: Sphalerite>> blebs and in thin sulfide bands

<<Min: 126.05 - 144.26 0.01% Min: Galena>> blebs and in thin sulfide veinlets and bands

<<Min: 126.45 - 144.26 0.1% Min: Pyrite>> blebs, diss and in thin sulfide bands

<<Alt: 112.2 - 113 Trace Chlorite>>

<<Alt: 113 - 116.8 Moderate-Strong Calcite>>

<<Alt: 113 - 123.25 Weak Chlorite>>

<<Alt: 116.8 - 126.95 Moderate-Strong Calcite>>

<<Alt: 123.25 - 127.1 Trace Chlorite>> Originally lots of chlorite in MAFi unit but green chlorite now bleached and altered - no longer chlorite, due to close contact with qtz vein (perhaps actually a quartzolite? - fluid inclusions might help)

<<Alt: 126 - 144.4 Weak Muscovite>> Muscovite - sericite altrered rhyolite clasts

<<Struc: 111.94 - 112.76 Moderate-Strong Foliation>> shearing at crosscutting foliation

<<Struc: 112.76 - 114 Moderate dominant foliation>>

<<Struc: 114 - 115.4 Moderate dominant foliation>>

<<Struc: 115.4 - 118.4 Moderate dominant foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
113.00	114.50	1.50	B00291116	0.011	0.4	-0.01	-0.01	0.02
114.50	116.00	1.50	B00291117	0.009	0.4	-0.01	-0.01	0.01
116.00	117.50	1.50	B00291118	0.01	0.4	-0.01	-0.01	-0.01
117.50	119.00	1.50	B00291119	0.009	0.7	-0.01	-0.01	0.01
119.00	120.50	1.50	B00291121	0.01	0.7	-0.01	-0.01	0.01
120.50	122.00	1.50	B00291122	0.007	-0.3	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 118.4 - 121.5 Moderate dominant foliation>>									
		<<Struc: 121.5 - 125 Moderate dominant foliation>>									
		<<Struc: 123.03 - 123.22 Weak-Moderate Shear>>									
		<<Struc: 125 - 126 Moderate dominant foliation>>									
127.15	**144.26**	**RHY** **undifferentiated rhyolite** 127.15 - 144.26: Mostly white quartz vein (quartzolite? - fractionation end member after RHYi?) with clasts of light green - fine - medium grained intermediate 'dyke' rock. 137.0-140.3m: clasts (<20cm) of more typical RHY with silicic bands. Other clasts look very much like RHYi. Quartz has minor clots - patches of cream colored feldspar (?) crystals (ie. 133.2 m). Minor diss and irregular veinlets of py, +/-sp, +/-gn, often in or on margins of chloritized calcarous lithic clasts. Clasts are mostly well foliated with qtz vein parallel to foliation. Qtz not foliated.	135.00	136.50	1.50	B00291123	0.006	0.7	-0.01	-0.01	0.05
		<<Alt: 132 - 134.6 Trace Calcite>>	136.50	138.00	1.50	B00291124	0.006	1.2	-0.01	0.03	0.07
		<<Alt: 134.6 - 145.62 Weak Calcite>>	138.00	139.60	1.60	B00291125	0.011	2	-0.01	0.02	0.07
		<<Vein: 127.15 - 144.26 75% Quartz>> 25% altered rhyolite clasts	139.60	141.00	1.40	B00291126	0.024	14.2	-0.01	0.26	0.22
		<<Vein: 137.3 - 137.31 75% Quartz-Tourmaline>>	141.00	142.00	1.00	B00291127	0.006	0.8	-0.01	-0.01	0.03
		<<Struc: 131.3 - 132 Moderate Contact>> qt vein - rhy contact - qtz invading along foliation	142.00	143.00	1.00	B00291128	0.01	36.4	0.05	0.97	1.81
		<<Struc: 138 - 140.2 Moderate dominant foliation>> foliation in Rhy clast	143.00	144.26	1.26	B00291129	0.005	11.3	0.03	0.25	0.36
144.26	**145.62**	**RHY** **undifferentiated rhyolite** 144.26 - 145.62: 144.43-145.76: non-calcareous strongly muscovite-sericite altered to light grey fine grained siliceous bands and soft dark green chloritic RHY (or MAFi in part?). Includes 34 cm bleached sericite altered weak shear - fault zone.	144.26	145.62	1.36	B00291130	0.005	3	-0.01	0.06	0.06
		<<Min: 144.26 - 145.62 0.01% Min: Pyrite>>									
		<<Alt: 144.4 - 145.62 Moderate Muscovite>>									
		<<Alt: 144.4 - 145.62 Weak Chlorite>>									
		<<Struc: 144.26 - 144.62 Moderate dominant foliation>>									
		<<Struc: 145.04 - 145.34 Moderate Shear>> low angle shear planes (15-25 deg) within zone.									
		<<Struc: 145.52 - 145.62 Moderate Contact>> low angle shears at contact 15-25 deg.									
145.62	**147.06**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **MG** 145.62 - 147.06: calcite - silica bands cutting OB at low angles- transitional to OK	145.62	147.06	1.44	B00291131	0.898	286	0.03	4.97	7.53
		<<Min: 145.62 - 147.05 15% Min: Sphalerite>>									
		<<Min: 145.62 - 147.05 50% Min: Pyrite>>									
		<<Min: 145.62 - 147.05 3% Min: Galena>>									
		<<Min: 147.05 - 148.44 10% Min: Sphalerite>>									

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 147.05 - 148.44 30% Min: Pyrite>>													
<<Min: 147.05 - 148.44 3% Min: Magnetite>>													
<<Min: 147.05 - 148.44 2% Min: Galena>>													
<<Min: 147.05 - 148.44 1% Min: Chalcopyrite>>													
<<Alt: 145.62 - 149.4 Moderate-Strong Calcite>>													
<<Struc: 145.62 - 149 Weak dominant foliation>> soupy low angle mineral banding													
147.06	**148.44**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	**FMG**	147.06	148.44	1.38	B00291132	0.848	176	0.18	3.93	7.74
147.06 - 148.44: 147.06-149.44: silica - calcite flooded and locally brecciated.													
<<Min: 147.06 - 148.3 3% Min: Magnetite>>													
148.44	**151.36**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	148.44	149.50	1.06	B00291133	0.996	218	0.18	6.53	12.2
148.44 - 151.36: 148.44-149.0: siliceous and brecciated, approx 50% non sulfide - transitional to OK. 149.0-149.5: homogonous well mineralized OB. 149.5-151.36: OB, up to 20% grey silica - rhy clasts.													
<<Min: 148.44 - 149 5% Min: Sphalerite>>					149.50	150.00	0.50	B00291134	0.641	137	0.07	3.01	9.16
<<Min: 148.44 - 149 30% Min: Pyrite>>					150.00	151.36	1.36	B00291135	1.04	201	0.22	4.24	10
<<Min: 148.44 - 149 2% Min: Galena>>													
<<Min: 148.44 - 149 1% Min: Chalcopyrite>>													
<<Min: 149 - 149.5 15% Min: Sphalerite>>													
<<Min: 149 - 149.8 10% Min: Galena>>													
<<Min: 149 - 151.6 40% Min: Pyrite>>													
<<Min: 149 - 151.6 5% Min: Galena>>													
<<Min: 149.5 - 151.6 10% Min: Sphalerite>>													
<<Min: 149.5 - 151.6 1% Min: Chalcopyrite>>													
<<Alt: 149.4 - 151.36 Trace Calcite>>													
<<Struc: 150 - 150.7 Weak-Moderate dominant foliation>> Mineral banding													

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
151.36	**153.13**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	151.36	151.80	0.44	B00291136	1.68	196	0.22	4.16	5.85
151.36 - 153.13: Locally brecciated and qtz flooded with occasional blebs chalcopyrite in qtz.													
<<Min: 151.6 - 153.13 10% Min: Sphalerite>>					151.80	153.13	1.33	B00291137	2.6	245	0.65	4.77	7.71
<<Min: 151.6 - 153.13 50% Min: Pyrite>>													
<<Min: 151.6 - 153.13 3% Min: Galena>>													
<<Min: 151.6 - 153.13 3% Min: Chalcopyrite>> And as blebs.													
<<Alt: 151.36 - 156.2 Weak Calcite>>													
<<Struc: 152.95 - 153.55 Weak-Moderate dominant foliation>> Mineral banding													
153.13	**155.29**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	153.13	154.60	1.47	B00291138	1.49	239	0.32	4.91	6.71
153.13 - 155.29: Mostly massive typical OB, minor zones of qtz-calcite (OK type).													
<<Min: 153.13 - 155.29 15% Min: Sphalerite>>					154.60	155.29	0.69	B00291139	0.798	220	0.09	4.67	6.94
<<Min: 153.13 - 155.29 50% Min: Pyrite>>													
<<Min: 153.13 - 155.29 3% Min: Galena>>													
<<Min: 153.13 - 155.29 2% Min: Chalcopyrite>> and as blebs in qtz													
155.29	**158.20**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	**FMG**	155.29	156.81	1.52	B00291142	2.23	206	0.81	2.29	3.71
155.29 - 158.2: OK with zones of qtz-calcite flooding and brecciation.													
<<Min: 155.29 - 158.2 5% Min: Sphalerite>> and as blebs					156.81	158.20	1.39	B00291143	1.55	167	0.71	3.66	6.73
<<Min: 155.29 - 158.2 25% Min: Pyrite>>													
<<Min: 155.29 - 158.2 3% Min: Galena>> and as blebs													
<<Min: 155.29 - 158.2 1% Min: Chalcopyrite>> and as blebs													
<<Alt: 156.2 - 157.8 Weak-Moderate Calcite>>													
<<Alt: 157.8 - 165.6 Weak Calcite>>													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
158.20	**170.58**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	158.20	159.00	0.80	B00291144	4.77	452	3.66	6.66	21.3

158.2 - 170.58: Mostly massive OB. 164.8-167.05m: increase in silica gangue clasts, up to 15%. 169.6-170.58; slight increase in cpy, OC patches or clasts. Poor recovery 158.2-160.2.

<<Min: 158.2 - 159 5% Min: Galena>>

<<Min: 158.2 - 159 25% Min: Pyrite>>

<<Min: 158.2 - 159 35% Min: Sphalerite>>

<<Min: 158.2 - 159 10% Min: Chalcopyrite>> 15cm of OC type min

<<Min: 159 - 160.2 5% Min: Chalcopyrite>>

<<Min: 159 - 160.2 1% Min: Galena>>

<<Min: 159 - 160.2 60% Min: Pyrite>>

<<Min: 159 - 160.2 10% Min: Sphalerite>>

<<Min: 160.2 - 161.4 15% Min: Sphalerite>>

<<Min: 160.2 - 161.4 10% Min: Chalcopyrite>>

<<Min: 160.2 - 161.4 50% Min: Pyrite>>

<<Min: 160.2 - 161.4 3% Min: Galena>>

<<Min: 160.64 - 161.4 3% Min: Magnetite>>

<<Min: 161.4 - 164.8 10% Min: Chalcopyrite>>

<<Min: 161.4 - 164.8 5% Min: Galena>>

<<Min: 161.4 - 164.8 40% Min: Pyrite>>

<<Min: 161.4 - 164.8 15% Min: Sphalerite>>

<<Min: 164.8 - 170.58 15% Min: Sphalerite>>

<<Min: 164.8 - 170.58 5% Min: Chalcopyrite>>

<<Min: 164.8 - 170.58 3% Min: Galena>>

<<Min: 164.8 - 170.58 30% Min: Pyrite>>

<<Alt: 165.6 - 167.6 Moderate Calcite>>

<<Alt: 167.6 - 169.6 Trace Calcite>>

<<Alt: 169.6 - 170.6 Weak Calcite>>

<<Struc: 158.2 - 158.5 Strong Bedding>> pristine mineral (graded?) banding

<<Struc: 168 - 168.3 Weak-Moderate dominant foliation>> mineral banding

159.00	159.70	0.70	B00291145	2.21	232	1.18	6.41	12.7
159.70	160.20	0.50	B00291146	2.5	161	1.51	3.46	7.6
160.20	160.64	0.44	B00291147	1.89	206	1.04	5.54	7.77
160.64	161.40	0.76	B00291148	1.99	222	1.11	5.83	10.6
161.40	162.90	1.50	B00291149	2.22	217	1.05	5.17	10.2
162.90	164.00	1.10	B00291150	3.15	229	1.2	5.25	9.52
164.00	164.80	0.80	B00291151	2.23	199	0.99	4.48	9.02
164.80	165.90	1.10	B00291152	3.42	250	0.8	5.58	10.1
165.90	167.00	1.10	B00291153	3.28	262	0.68	4.28	11.3
167.00	168.40	1.40	B00291154	2.02	294	0.52	6.07	11.5
168.40	169.60	1.20	B00291155	1.88	262	0.55	6.05	13.2
169.60	170.58	0.98	B00291156	1.73	236	0.46	3.97	11

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
170.58	**173.60**	**OC** **Chalcopyrite-pyrrhotite net textured sulphides** **MCG**	170.58	171.33	0.75	B00291157	2.94	334	3.41	4.53	13.3
170.58 - 173.6: High grade! Bands of chalcopyrite rich sulfides 10-30 c wide seperated by sphalerite rich bands of about same width. Locally very nicely banded, especially sphalerite mineralization - looks like original bedding.											
<<Min: 170.58 - 173.6 30% Min: Sphalerite>>			171.33	172.20	0.87	B00291158	4.41	426	5.45	4.94	17.8
<<Min: 170.58 - 173.6 25% Min: Pyrite>>			172.20	173.60	1.40	B00291159	2.7	350	2.97	5.2	18.5
<<Min: 170.58 - 173.6 1% Min: Magnetite>>											
<<Min: 170.58 - 173.6 5% Min: Galena>>											
<<Min: 170.58 - 173.6 30% Min: Chalcopyrite>> Approximately 6 rude bands or patches of CP, each 10 - 30 cm, of up to 50% CP. Intervals between CP rich zones are more OB type and SP rich.											
<<Alt: 170.6 - 173.4 Trace Calcite>>											
<<Alt: 173.4 - 173.6 Moderate-Strong Calcite>>											
<<Struc: 170.7 - 171.3 Moderate-Strong Bedding>> mineral banding											
<<Struc: 172 - 172.5 Moderate-Strong Bedding>> mineral banding											
<<Struc: 173 - 173.5 Moderate-Strong Bedding>> mineral banding											
173.60	**176.35**	**RHY** **undifferentiated rhyolite**	173.60	175.00	1.40	B00291161	0.133	30	0.07	0.35	1.35
173.6 - 176.35: 174.6-176.35; numerous foliaform pyrite bands.											
<<Min: 173.6 - 174.6 1% Min: Pyrite>>			175.00	176.35	1.35	B00291162	0.215	37.7	0.05	0.49	2.18
<<Min: 174.6 - 176.35 20% Min: Pyrite>> diss and bands of py up to 10 cm wide parallel to foliation.											
<<Alt: 173.6 - 176.35 Strong Muscovite>> fine muscovite - sericite											
<<Alt: 173.6 - 176.35 Weak Calcite>>											
<<Struc: 173.75 - 173.85 Moderate-Strong Contact>>											
<<Struc: 175.4 - 176 Moderate dominant foliation>>											
176.35	**178.68**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	176.35	177.30	0.95	B00291163	-0.005	1.5	0.03	0.02	0.05
176.35 - 178.68: Good MAFi											
<<Min: 176.35 - 179.2 0.5% Min: Pyrite>>			177.30	178.68	1.38	B00291164	-0.005	1.2	0.01	0.02	0.06
<<Alt: 176.35 - 178.68 Moderate Chlorite>>											
<<Alt: 176.35 - 178.68 Moderate-Strong Calcite>>											
<<Struc: 177.3 - 178.68 Moderate dominant foliation>>											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
178.68	**179.02**	**OH**	**Fine grained, megascopically homogeneous massive pyrite**	**FMG**	178.68	179.02	0.34	B00291165	0.231	87	0.14	1.56	5.24
178.68 - 179.02: 179.2-179.42: massive py, minor diss sph. Interval is 0.35 cm to conform with minimum sample width.													
<<Min: 178.68 - 178.92 3% Min: Sphalerite>>													
<<Min: 178.68 - 178.92 75% Min: Pyrite>>													
<<Min: 178.92 - 179.7 1% Min: Sphalerite>>													
<<Min: 178.92 - 179.7 5% Min: Pyrite>> also in bands and patchy													
<<Min: 178.92 - 179.7 0.1% Min: Galena>>													
<<Alt: 178.68 - 179.7 Trace Calcite>>													
<<Alt: 178.92 - 179.7 Weak-Moderate Chlorite>> OJ mineralization													
179.02	**179.70**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**FMG**	179.02	179.70	0.68	B00291166	0.046	27.1	0.09	0.43	1.05
179.02 - 179.7: Weak OJ													
179.70	**183.00**	**RHYc**	**Rhyolite coherant volcanics**	**light grey**	179.70	180.20	0.50	B00291167	0.007	0.9	-0.01	0.02	0.01
179.7 - 183: good silicic bands.													
<<Min: 179.7 - 186 2% Min: Pyrite>>					180.20	181.50	1.30	B00291168	-0.005	0.5	-0.01	0.01	-0.01
<<Alt: 179.7 - 197 Moderate-Strong Muscovite>> fine muscovite -sericite, very bleached rock.					181.50	183.00	1.50	B00291169	0.008	1.7	-0.01	0.06	0.1
<<Struc: 179.82 - 179.92 Moderate-Strong Contact>>													
<<Struc: 180 - 181 Moderate dominant foliation>>													
183.00	**196.78**	**RHY**	**undifferentiated rhyolite**	**light grey**	183.00	184.50	1.50	B00291170	-0.005	-0.3	-0.01	-0.01	0.02
183 - 196.78: locally has silicic bands, strongly muscovite - sericte altered and bleached.													
<<Min: 186 - 187.4 0.5% Min: Sphalerite>>					184.50	186.00	1.50	B00291171	-0.005	-0.3	-0.01	-0.01	0.02
<<Min: 186 - 187.4 10% Min: Pyrite>>					186.00	187.50	1.50	B00291172	0.03	1.1	0.01	0.02	0.02
<<Min: 186 - 187.4 5% Min: Pyrrhotite>>					187.50	189.00	1.50	B00291173	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 187.4 - 199.5 3% Min: Pyrrhotite>>					189.00	190.50	1.50	B00291174	-0.005	0.4	-0.01	-0.01	0.01
<<Alt: 184.7 - 187.3 Trace Biotite>>													
<<Alt: 193 - 196.78 Weak Calcite>>													
<<Alt: 195 - 196 Weak Chlorite>>													
<<Struc: 187.2 - 188 Moderate dominant foliation>>													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 188 - 190 Moderate dominant foliation>>

<<Struc: 190 - 191.5 Moderate dominant foliation>>

<<Struc: 194.3 - 195 Moderate dominant foliation>> Suspect Reflex core mark as it doesn't match with 'normal' DFOL of 16-180 deg. All measurements from 194.3 - 197.8m are based on this one measurement.

<<Struc: 195 - 195.5 Moderate dominant foliation>>

<<Struc: 195.55 - 196 Moderate Shear>> shear planes

<<Struc: 196.16 - 196.56 Moderate dominant foliation>> foliation and shear planes

196.78 211.15 FLZ Fault Zone

196.78 - 211.15: Stongly sheared - faulted zone with no original metamorphic fabric remaining. Gouge zones and mssing core. Most shear planes at low angles, 10-40 deg. FLZ lithology is almost all RHY, couple 1x3 cm (avg) clasts of OB sulfde at 197.6m.

<<Min: 199.4 - 214.8 3% Min: Pyrite>>

<<Alt: 196.78 - 211.15 Moderate Calcite>>

<<Alt: 197 - 211.5 Moderate-Strong Muscovite>> fine muscovite - sericite altered rhy clasts - likely OR not OP.

<<Struc: 196.78 - 197 Moderate-Strong Shear>>

<<Struc: 196.78 - 211.15 Intense Fault>> Stong fault zone - East Fault? RHY clasts similar to rhyolite above and below unit but small clasts of OB type mineralization noted at 197.6m. Most shear planes at low angle (<30 deg), numerous gouge and missing core zones 200-210m.

<<Struc: 197 - 197.7 Intense Shear>>

<<Struc: 197.2 - 197.4 Intense Shear>>

<<Struc: 198 - 199 Intense Shear>>

<<Struc: 204 - 207 Intense Shear>>

<<Struc: 210.5 - 210.7 Intense Shear>>

211.15 223.60 RHY undifferentiated rhyolite grey-green

211.15 - 223.6: Possibly ash tuff?

<<Min: 214.8 - 216.7 1% Min: Pyrrhotite>>

<<Min: 216.7 - 220.6 5% Min: Pyrrhotite>> and in thin bands

<<Min: 220.6 - 240 3% Min: Pyrrhotite>>

<<Alt: 211.15 - 231.5 Trace Calcite>>

<<Alt: 211.5 - 240 Moderate Muscovite>> fine muscovite - sericite

<<Alt: 212.2 - 222 Trace Chlorite>>

<<Struc: 211.35 - 212.2 Moderate-Strong dominant foliation>>

<<Struc: 212 - 213.45 Weak-Moderate Fault>>

<<Struc: 213.45 - 215.5 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 215.5 - 217 Moderate dominant foliation>>

<<Struc: 216.75 - 216.8 Weak-Moderate Shear>>

<<Struc: 216.8 - 216.9 Weak-Moderate Shear>>

<<Struc: 217.2 - 221.2 Moderate-Strong Fault>> Fault zone; numerous approx 30 cm zones of intense shearing, wider sections of strong brecciation.

<<Struc: 217.33 - 217.43 Moderate-Strong Shear>>

<<Struc: 217.55 - 217.7 Weak-Moderate Shear>>

<<Struc: 217.7 - 218.2 Moderate-Strong Shear>>

<<Struc: 218.2 - 218.7 Moderate dominant foliation>>

<<Struc: 220.3 - 220.45 Strong Shear>> gouge - brx zone

<<Struc: 221.6 - 222 Moderate-Strong Foliation>> shear planes on foliation

223.60 226.90 RHYc Rhyolite coherant volcanics light grey

223.6 - 226.9: Silicic bands. Could also be sheared siliceous ash tuff… Unit is bracketed by fault - shear zones, what you would expect around a competent body.

<<Struc: 224 - 225 Moderate dominant foliation>>

<<Struc: 225.95 - 226 Strong Shear>>

<<Struc: 226 - 226.9 Moderate Foliation>> shearing along foliation planes.

226.90 240.00 RHYv Rhyolite volcaniclastic grey-green

226.9 - 240: rare silicic bands, ash and lappilli more common.

<<Struc: 230.2 - 230.6 Weak-Moderate dominant foliation>>

<<Struc: 230.7 - 230.8 Weak-Moderate Shear>> shear plane, basically parallel to foliation.

<<Struc: 233 - 236 Moderate dominant foliation>>

<<Struc: 236.6 - 237 Moderate dominant foliation>>

<<Struc: 237 - 240 Moderate dominant foliation>>

End of Hole @ 240

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-340

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/12/2016
UTM Easting	414973.9852	Core Size:	HQ3	Azimuth:	31.38	Date Logging Complete:	5/18/2016
UTM Northing:	6814927.3398	Casing Pulled?:	Yes	Dip:	-45	Drill Company:	Hytech
UTM Elev. (m):	1389.268	Casing Depth (m):	40.5	Length (m):	353	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/10/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/16/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
						Parent Hole:	

Comments:

DDH finished 8 am May 16. Drill hole was largely successful in drilling downdip to collect metallurgical samples from the Krakatoa Main Lens, Mineral (sulfide) banding - foliations in the sulfides were at low angles or parallel to the core axis. Of note was a sequence of RHYi with lesser RHY (164.36 - 232.33 m) between the upper and lower lens. The Upper sulfide lens was intersected from 137.48-164.36 m (26.88 m) and the lower lens from 232.33 - 275.11 m (42.78 m) including 7.01 m of barren MAFi.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-45	29.98	1.4	31.38	APS	Chris Hughes	5/10/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
45	-46.1	8.9	22.1	31	ReflexEZS	Hytech	5/11/2016	58.96	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
69	-47.4	17.1	22.1	39.2	ReflexEZS	Hytech	5/11/2016	5775	☐	Bad reading & redone
69.2	-47.6	8.5	22.1	30.6	ReflexEZS	Hytech	5/11/2016	5802	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
93	-47.8	7.6	22.1	29.7	ReflexEZS	Hytech	5/11/2016	5782	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
117	-49	6.5	22.1	28.6	ReflexEZS	Hytech	5/12/2016	5792	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
141	-49.1	5.9	22.1	28	ReflexEZS	Hytech	5/12/2016	5777	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
165	-49.2	8.2	22.1	30.3	ReflexEZS	Hytech	5/12/2016	5777	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
189	-50	23.1	22.1	45.2	ReflexEZS	Hytech	5/13/2016	2760	☐	Bad reading
191.5	-50	7.8	22.1	29.9	ReflexEZS	Hytech	5/16/2016	5765	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
213	-50.4	6.9	22.1	29	ReflexEZS	Hytech	5/13/2016	5755	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
240	-51.1	4	22.1	26.1	ReflexEZS	Hytech	5/14/2016	5763	☐	240m is in sulfide intersection
264	-51.7	347.8	22.1	9.9	ReflexEZS	Hytech	5/14/2016	5998	☐	In sulfide intersection

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-340

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
270	-51.6	345.3	22.1	7.4	ReflexEZS	Hytech	5/14/2016	5334	☐	In sulfide intersection
288	-51.9	7.3	22.1	29.4	ReflexEZS	Hytech	5/14/2016	5833	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
312	-53	5.2	22.1	27.3	ReflexEZS	Hytech	5/15/2016	5799	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
336	-54.3	3	22.1	25.1	ReflexEZS	Hytech	5/15/2016	5804	☑	Check po content. Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
353	-54.4	4	22.1	26.1	ReflexEZS	Hytech	5/16/2016	5786	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 39.20 OVBN Overburden

0 - 39.2: Felsic igeous boulder of various types intersected from 30.0 m to 39.2 m.

39.20 39.28 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite MG

39.2 - 39.28: 8cm piece of OB type mineralization, could be either in situ or a boulder. No contact or alteration noted in underlying MAFi that implies a relationship with OB. Piece too small to sample.

<<Min: 39.2 - 39.28 5% Min: Sphalerite>>

<<Min: 39.2 - 39.28 60% Min: Pyrite>>

<<Alt: 39.2 - 42.3 Weak-Moderate Calcite>>

<<Alt: 39.2 - 60.3 Moderate-Strong Chlorite>>

<<Alt: 39.2 - 61.5 Moderate Biotite>>

39.28 67.29 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green

<<Min: 39.28 - 67.29 0.01% Min: Pyrite>>

<<Alt: 42.3 - 45.9 Trace Calcite>>

<<Alt: 45.9 - 63 Weak Calcite>>

<<Alt: 61.5 - 67.29 Weak-Moderate Chlorite>> ffiner grained and decreasing towards 67.29m.

<<Alt: 61.5 - 67.29 Moderate Biotite>> finer grained

<<Alt: 63 - 77 Weak-Moderate Calcite>>

<<Vein: 42.12 - 42.25 100% Quartz-Tourmaline 70 deg. >>

<<Vein: 46.45 - 46.69 25% Quartz-Tourmaline 70 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Vein: 47.4 - 50.17 5% Calcite 10 deg. >> filling fault - fracture											
<<Vein: 61.9 - 61.95 100% Quartz-Carbonate 42 deg. >>											
<<Vein: 64.79 - 64.88 100% Quartz-Carbonate 60 deg. >>											
<<Struc: 40.7 - 45 Moderate-Strong dominant foliation>>											
<<Struc: 48.43 - 48.96 Moderate-Strong Vein>>											
<<Struc: 50 - 54 Moderate-Strong dominant foliation>>											
<<Struc: 50.5 - 56 Moderate-Strong dominant foliation>>											
<<Struc: 56.3 - 56.5 Weak Fault>> broken core											
<<Struc: 56.4 - 57.65 Moderate dominant foliation>> fold or bad ori mark											
<<Struc: 62.35 - 63 Moderate dominant foliation>> fold or bad ori mark											
<<Struc: 67.2 - 67.3 Strong Contact>> parallel to foliation											
67.29	**69.40**	**RHY undifferentiated rhyolite grey-green**									
67.29 - 69.4: Banded rhyolite, likely a sill…											
<<Min: 67.29 - 69.4 0.5% Min: Pyrite>>											
<<Alt: 67.29 - 69.4 Weak Muscovite>>											
<<Struc: 67.29 - 69.4 Moderate-Strong dominant foliation>>											
69.40	**93.49**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion) green**	89.00	90.50	1.50	B00291175	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 69.4 - 93.49 0.01% Min: Pyrite>>			90.50	92.00	1.50	B00291176	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 69.4 - 74 Moderate-Strong Biotite>>			92.00	93.49	1.49	B00291177	-0.005	-0.3	0.02	-0.01	0.05
<<Alt: 69.4 - 90 Moderate-Strong Chlorite>>											
<<Alt: 74 - 93.49 Moderate Biotite>>											
<<Alt: 77 - 89 Weak Calcite>>											
<<Alt: 89 - 93.49 Moderate Calcite>>											
<<Alt: 90 - 93.4 Moderate Chlorite>> increases at exense of overprint chlorite towards lower contact.											
<<Struc: 69.4 - 72 Moderate dominant foliation>>											
<<Struc: 80 - 82 Moderate dominant foliation>>											
<<Struc: 84 - 85.6 Moderate dominant foliation>>											
<<Struc: 84.4 - 95.55 Moderate-Strong dominant foliation>>											
<<Struc: 88.4 - 91.5 Moderate dominant foliation>>											
<<Struc: 92 - 93 Moderate dominant foliation>>											
<<Struc: 93 - 93.49 Moderate dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
93.49	**94.63**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **FCG**	93.49	94.63	1.14	B00291178	2.1	45.4	0.78	0.2	2.14
		93.49 - 94.63: Weak OJ, chlorite-mineralization not strong. Includes 0.54 m qtz vein and strong biotite alteration and 0.25m rhyolite.									
		<<Min: 93.49 - 94.6 1% Min: Chalcopyrite>>									
		<<Min: 93.49 - 94.63 3% Min: Sphalerite>>									
		<<Min: 93.49 - 94.63 5% Min: Pyrite>> cpy in qtz vein, py in qtz vein, diss and in thin diss bands. Sphalerite with py in this bands.									
		<<Min: 93.49 - 94.63 0.1% Min: Galena>>									
		<<Alt: 93.49 - 112.93 Weak Calcite>>									
		<<Vein: 93.49 - 94 50% Quartz-Sulphide 33 deg. >> Blebs of cpy, 5%									
		<<Struc: 93.7 - 94.9 Strong Vein>> upper vein contct									
		<<Struc: 93.9 - 94.1 Strong Vein>> lower vein contact									
		<<Struc: 94.1 - 94.8 Moderate-Strong dominant foliation>>									
94.63	**112.93**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)** **light grey**	94.63	95.53	0.90	B00291179	-0.005	0.9	-0.01	-0.01	0.01
		<<Min: 94.63 - 95.53 3% Min: Pyrite>>	95.53	96.00	0.47	B00291181	0.405	128	0.14	1.28	3.17
		<<Min: 95.53 - 95.89 5% Min: Sphalerite>>	96.00	97.80	1.80	B00291182	0.015	5.8	-0.01	0.07	0.11
		<<Min: 95.53 - 95.89 25% Min: Pyrite>> 10cm wide- thick sulfide band at 15 deg to core axis	97.80	99.20	1.40	B00291183	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Min: 95.53 - 95.89 1% Min: Galena>>									
		<<Min: 95.89 - 112.93 0.1% Min: Sphalerite>>									
		<<Min: 95.89 - 112.93 3% Min: Pyrite>>									
		<<Min: 95.89 - 112.93 0.01% Min: Galena>>									
		<<Min: 95.89 - 112.93 0.01% Min: Arsenopyrite>>									
		<<Alt: 94.63 - 112.5 Strong Muscovite>>									
		<<Vein: 112.83 - 112.93 50% Quartz-Sulphide 30 deg. >> Similar to vein at 93.49-94.4. minor diss cpy.									
		<<Struc: 95.55 - 96 Moderate-Strong dominant foliation>> banded diss sulfides									
		<<Struc: 96 - 100.32 Moderate-Strong dominant foliation>>									
		<<Struc: 97.2 - 97.8 Weak Fault>> broken core									
		<<Struc: 100.32 - 102 Moderate Shear>>									
		<<Struc: 102 - 107 Moderate-Strong dominant foliation>> Ori mark on wrong side of core? Or fold?									
		<<Struc: 107 - 111 Moderate-Strong dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 109.5 - 111 Moderate Fault>> broken core and missing core									
		<<Struc: 112.1 - 112.5 Moderate-Strong Fault>> broken core and missing core									
		<<Struc: 112.75 - 113.56 Moderate-Strong Fault>> broken core and missing core									
112.93	**127.14**	**MAFi** **Mafic Intrusions (primarily green footwall mafic intrusion)**	117.00	118.00	1.00	B00291184	-0.005	0.7	-0.01	-0.01	0.03
		112.93 - 127.14: upper contact is sharp in broken core. Lower contact is bleached and finer grained below 125.4m									
		<<Min: 112.93 - 125.67 0.1% Min: Pyrite>>	118.00	119.00	1.00	B00291185	0.007	0.5	-0.01	-0.01	0.03
		<<Min: 112.93 - 127.14 5% Min: Pyrite>> transitional to sulfides	119.00	120.00	1.00	B00291186	0.008	0.8	-0.01	-0.01	0.03
		<<Min: 125.67 - 127.14 0.5% Min: Sphalerite>> clasts of OB in shear	120.00	121.00	1.00	B00291187	-0.005	0.4	-0.01	-0.01	0.03
		<<Min: 125.67 - 127.14 5% Min: Pyrite>> clasts of OB in shear	121.00	122.00	1.00	B00291188	-0.005	0.5	-0.01	-0.01	0.03
		<<Alt: 112.93 - 123 Moderate Calcite>>	122.00	123.00	1.00	B00291189	-0.005	0.5	-0.01	-0.01	0.02
		<<Alt: 112.93 - 125.5 Moderate-Strong Chlorite>>	123.00	124.00	1.00	B00291191	0.009	1.3	-0.01	0.02	0.03
		<<Alt: 112.93 - 125.5 Moderate Biotite>>	124.00	125.00	1.00	B00291192	0.008	0.5	-0.01	-0.01	0.03
		<<Alt: 123 - 127.14 Moderate-Strong Calcite>>	125.00	126.00	1.00	B00291193	0.009	1.2	-0.01	0.02	0.03
		<<Alt: 125.5 - 127.14 Moderate Muscovite>> green sericite	126.00	127.14	1.14	B00291194	0.104	31.3	0.05	0.5	1.22
		<<Struc: 114 - 119 Moderate-Strong dominant foliation>>									
		<<Struc: 121.5 - 123 Moderate-Strong dominant foliation>>									
		<<Struc: 123 - 125 Moderate-Strong dominant foliation>>									
		<<Struc: 125.4 - 127.3 Moderate Shear>> shear plane on contact									
		<<Struc: 125.4 - 127.3 Strong Contact>>									
		<<Struc: 125.9 - 126 Weak Fault>> broken core									
127.14	**134.16**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FG**	127.14	128.00	0.86	B00291195	1.27	264	0.48	3.55	6.87
		<<Min: 127.14 - 127.83 5% Min: Chalcopyrite>>	128.00	129.00	1.00	B00291196	1.71	287	0.04	4.46	6.32
		<<Min: 127.14 - 130.3 10% Min: Sphalerite>>	129.00	130.00	1.00	B00291197	1.86	337	0.13	4.46	6.94
		<<Min: 127.14 - 130.3 50% Min: Pyrite>> and semi massive	130.00	131.00	1.00	B00291198	2.53	370	0.2	4.36	5.78
		<<Min: 127.14 - 130.3 5% Min: Galena>>	131.00	132.00	1.00	B00291199	2.5	234	0.13	3.72	5.35
		<<Min: 127.14 - 130.3 3% Min: Barite>>	132.00	133.00	1.00	B00291202	2.17	328	0.15	4.56	6.05
		<<Min: 130.3 - 132 5% Min: Sphalerite>>	133.00	134.16	1.16	B00291203	2.33	393	0.29	5.02	7.74
		<<Min: 130.3 - 132 40% Min: Pyrite>>									
		<<Min: 130.3 - 132 5% Min: Galena>>									
		<<Min: 130.3 - 132 15% Min: Barite>> with silic in bands									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 132 - 134.16 5% Min: Sphalerite>>											
<<Min: 132 - 134.16 55% Min: Pyrite>>											
<<Min: 132 - 134.16 3% Min: Galena>>											
<<Min: 132 - 134.16 3% Min: Chalcopyrite>>											
<<Min: 132 - 134.16 5% Min: Barite>> barite and silica											
<<Alt: 127.14 - 127.8 Weak-Moderate Calcite>>											
<<Alt: 127.8 - 134.16 Trace Calcite>> filling open spave and fractures											
<<Struc: 127.3 - 128.6 Weak-Moderate Foliation>> mineral banding											
<<Struc: 130.6 - 131.15 Weak-Moderate Foliation>> mineral banding											
<<Struc: 131.2 - 131.24 Moderate Foliation>> fracture - foliation with brx that crosscuts mineral banding											
<<Struc: 132.1 - 132.8 Moderate Foliation>> mineral banding											
134.16	**137.48**	**RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey**	134.16	135.00	0.84	B00291204	0.351	18.2	0.02	0.45	1.01
134.16 - 137.48: 134.16-134.40: Tectonic fault and shear breccia. 136.0-137.48: lithic brx with RHY and RHYi clasts.											
<<Min: 134.16 - 137.48 3% Min: Sphalerite>>			135.00	136.00	1.00	B00291205	0.199	34.8	0.06	0.2	0.31
<<Min: 134.16 - 137.48 5% Min: Pyrite>> diss, bands and wisps			136.00	136.70	0.70	B00291206	2.11	228	0.35	1.19	2.02
<<Alt: 134.16 - 137 Trace Calcite>>			136.70	137.48	0.78	B00291207	0.105	27.2	-0.01	0.35	0.71
<<Alt: 134.16 - 137.48 Moderate-Strong Muscovite>> green sericite											
<<Alt: 137 - 138.38 Weak-Moderate Calcite>>											
<<Struc: 134.16 - 134.4 Moderate Shear>> 134.16-134.4: brecciated contact											
<<Struc: 134.16 - 134.46 Moderate Fault>> broken core and missing core											
<<Struc: 134.4 - 135 Moderate Foliation>> minor shearing with cross cutting foliation.											
<<Struc: 135 - 137.48 Weak-Moderate dominant foliation>>											
137.48	**141.00**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG**	137.48	138.00	0.52	B00291208	1.79	323	0.25	3.81	5.03
<<Min: 137.48 - 141 5% Min: Sphalerite>>			138.00	139.00	1.00	B00291209	0.825	205	0.11	3.02	4.26
<<Min: 137.48 - 141 40% Min: Pyrite>>			139.00	140.00	1.00	B00291211	3.67	339	0.55	4.42	5.57
<<Min: 137.48 - 141 3% Min: Galena>>			140.00	141.00	1.00	B00291212	2.63	316	0.54	4.12	5.37
<<Min: 138.38 - 139.18 5% Min: Magnetite>>											
<<Alt: 138.38 - 148.94 Trace Calcite>>											
<<Struc: 137.48 - 137.6 Weak-Moderate Fault>> broken core											
<<Struc: 138 - 141 Weak-Moderate Foliation>> mineral banding											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
141.00	**144.08**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	**FMG**	141.00	142.00	1.00	B00291213	1.88	200	0.2	3.5	4.34
<<Min: 141 - 144 5% Min: Sphalerite>>					142.00	143.00	1.00	B00291214	2.53	188	0.23	2.48	3.19
<<Min: 141 - 144 30% Min: Pyrite>>					143.00	144.08	1.08	B00291215	2.24	221	0.16	3.07	4.05
<<Min: 141 - 144 3% Min: Galena>>													
<<Min: 141 - 144 20% Min: Barite>> and as diss and wisps													
<<Min: 144 - 146.31 15% Min: Sphalerite>>													
<<Min: 144 - 146.31 50% Min: Pyrite>>													
<<Min: 144 - 146.31 5% Min: Galena>>													
<<Min: 144 - 146.31 10% Min: Barite>>													
<<Struc: 141 - 142 Weak-Moderate Foliation>> mineral banding													
<<Struc: 144 - 145 Moderate Foliation>> mineral banding													
144.08	**146.34**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	144.08	145.00	0.92	B00291216	4.17	404	0.48	4.9	6.86
<<Min: 144.75 - 146.31 0.5% Min: Magnetite>>					145.00	146.00	1.00	B00291217	2.44	309	0.28	3.78	4.84
<<Min: 146.31 - 148.94 10% Min: Sphalerite>>					146.00	146.34	0.34	B00291218	2.07	423	0.18	6.65	6.25
<<Min: 146.31 - 148.94 30% Min: Pyrite>>													
<<Min: 146.31 - 148.94 3% Min: Galena>>													
<<Struc: 145 - 146 Moderate Foliation>> mineral banding													
<<Struc: 146 - 146.7 Moderate Foliation>> mineral banding													
146.34	**148.94**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	**FMG**	146.34	147.00	0.66	B00291219	2.6	356	0.17	6.1	6.22
					147.00	148.00	1.00	B00291221	3.61	272	0.24	3.22	4.33
					148.00	148.94	0.94	B00291222	1.53	191	0.1	2.65	4.09
148.94	**150.20**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MCG**	148.94	149.70	0.76	B00291223	2.7	295	0.29	3.38	5.32

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 148.94 - 149.14 5% Min: Barite>>				149.70	150.20	0.50	B00291224	1.87	220	0.18	2.65	7.64
<<Min: 148.94 - 150.2 10% Min: Sphalerite>>												
<<Min: 148.94 - 150.2 40% Min: Pyrite>>												
<<Min: 148.94 - 150.2 3% Min: Galena>>												
<<Min: 149.14 - 152.32 10% Min: Sphalerite>>												
<<Min: 149.14 - 152.32 50% Min: Pyrite>>												
<<Min: 149.14 - 152.32 3% Min: Galena>>												
<<Min: 149.14 - 152.34 5% Min: Magnetite>> minor faint bands												
<<Alt: 148.94 - 150.2 Weak-Moderate Calcite>>												
<<Struc: 150 - 151 Moderate-Strong Foliation>> mineral banding												
150.20	**152.32**	**OB**	**FMG**	150.20	151.00	0.80	B00291225	1.25	344	0.02	4.57	6.12
		Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite										
150.2 - 152.32: faint bands of magnetite												
<<Min: 150.95 - 152.32 5% Min: Chalcopyrite>>				151.00	151.90	0.90	B00291226	1.97	281	0.26	3.95	5.17
<<Alt: 150.2 - 154.95 Moderate Calcite>>				151.90	152.32	0.42	B00291227	1.96	283	0.21	3.34	4.35
<<Struc: 150.2 - 151 Moderate Foliation>> mineral banding												
<<Struc: 151 - 153 Moderate Foliation>> mineral banding												
152.32	**156.28**	**OB**	**FCG**	152.32	153.00	0.68	B00291228	3.01	357	0.46	3.57	4.98
		Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite										
<<Min: 152.32 - 154.1 3% Min: Chalcopyrite>>				153.00	154.00	1.00	B00291229	1.92	265	0.44	2.89	4.06
<<Min: 152.34 - 156.28 10% Min: Sphalerite>>				154.00	155.00	1.00	B00291231	1.96	285	0.48	3.13	4.05
<<Min: 152.34 - 156.28 50% Min: Pyrite>>				155.00	155.80	0.80	B00291232	1.24	256	0.26	4.32	6.13
<<Min: 152.34 - 156.28 3% Min: Magnetite>> rare faint bands				155.80	156.28	0.48	B00291233	0.816	305	0.23	4.77	5.67
<<Alt: 154.95 - 163.6 Moderate Calcite>>												
<<Struc: 153.7 - 156.28 Weak-Moderate Foliation>> mineral banding												
156.28	**164.36**	**OB**	**FMG**	156.28	157.00	0.72	B00291234	2.23	356	0.33	5.02	6.36
		Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite										
<<Min: 156.28 - 159.4 10% Min: Sphalerite>>				157.00	158.00	1.00	B00291235	7.12	797	0.85	5.27	7.57
<<Min: 156.28 - 159.4 60% Min: Pyrite>>				158.00	159.00	1.00	B00291236	3.04	274	0.03	4.69	6.73
<<Min: 156.28 - 159.4 3% Min: Galena>>				159.00	160.00	1.00	B00291237	0.828	191	0.03	3.6	5.41

From (m)	To (m)	Rocktype & Description
		<<Min: 159.4 - 162.43 10% Min: Sphalerite>>
		<<Min: 159.4 - 162.43 30% Min: Pyrite>>
		<<Min: 159.4 - 162.43 3% Min: Galena>>
		<<Min: 159.4 - 162.43 1% Min: Chalcopyrite>>
		<<Min: 162.43 - 164.36 5% Min: Sphalerite>>
		<<Min: 162.43 - 164.36 60% Min: Pyrite>>
		<<Min: 162.43 - 164.36 3% Min: Galena>>
		<<Alt: 163.9 - 201.57 Weak-Moderate Calcite>> as fracture filling
		<<Vein: 157.3 - 157.45 100% Quartz-Carbonate>> irregular contact - infilling brx more than a vein.
		<<Struc: 161.25 - 161.35 Moderate Vein>> irregular qtz - calcite vein cutting mottled - blotchy sulfide-qtz-calcite
		<<Struc: 161.61 - 262.1 Weak Foliation>> mineral banding
		<<Struc: 164.3 - 164.46 Moderate-Strong Contact>> sharp and conformable
164.36	**201.57**	**RHYi Aphanitic Rhyolite (intrusion)**
		<<Min: 164.36 - 164.77 5% Min: Pyrite>> sulfide clasts caught up in sheared contact and diss in quartz - RHYi.
		<<Min: 164.36 - 164.77 0.5% Min: Chalcopyrite>>
		<<Min: 164.77 - 193.2 3% Min: Pyrite>> and as fine diss
		<<Min: 164.77 - 201.57 0.01% Min: Sphalerite>>
		<<Min: 193.2 - 201.57 5% Min: Pyrite>>
		<<Alt: 183 - 198.5 Weak Albite>> light pink tinge to RHYi
		<<Vein: 165 - 201.57 3% Calcite>> calcite veinlets as fracture filling
		<<Vein: 170.95 - 171.53 100% Quartz 20 deg. >>
		<<Vein: 173.9 - 174.15 100% Quartz 15 deg. >>
		<<Vein: 200.1 - 201.25 70% Quartz>> qtz at RHYi contact
		<<Struc: 164.36 - 165.2 Weak-Moderate Fault>> Missing core, meter blocks are difficult to reconcile. Very fractured RHYi.
		<<Struc: 164.7 - 165.2 Weak Fault>> altered and bleached, cut by shear planes.
		<<Struc: 165.2 - 165.5 Weak Foliation>>
		<<Struc: 166.28 - 171.1 Moderate-Strong Fault>> Lots of missing core, meter block 168 was inserted after the fact (when queried about 4.6 m run at shift change) - exact location uncertain. Very fractured RHYi.
		<<Struc: 172.4 - 174 Weak-Moderate Foliation>> fracture cutting off qtz veinlet at 70 deg to core axis
		<<Struc: 173.8 - 174 Weak-Moderate Vein>> qtz vein along fracture
		<<Struc: 174 - 201.48 Weak Fault>> Siliceous RHYi cut by numerous low angle fracture cleavage planes
		<<Struc: 183.5 - 184.8 Weak-Moderate Foliation>> fracture clevage
		<<Struc: 185.5 - 186 Weak-Moderate Foliation>> fracture cleavage with pyrite - calcite

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
160.00	161.00	1.00	B00291238	1.05	108	0.03	2.04	3.4
161.00	162.00	1.00	B00291239	2.95	421	0.39	2.56	3.73
162.00	163.00	1.00	B00291242	1.02	243	0.11	3.36	5.67
163.00	163.60	0.60	B00291243	0.4	178	0.03	4.11	6.47
163.60	164.36	0.76	B00291244	1.3	306	0.28	3.79	4.73
164.36	165.00	0.64	B00291245	0.957	69.7	0.77	0.92	1.33
165.00	166.00	1.00	B00291246	0.015	1.2	-0.01	0.02	0.02
166.00	167.00	1.00	B00291247	0.012	0.9	-0.01	0.01	0.01
167.00	168.00	1.00	B00291248	0.101	14.6	-0.01	0.26	0.36
168.00	169.50	1.50	B00291249	0.036	0.6	-0.01	-0.01	0.01
169.50	171.00	1.50	B00291251	0.048	0.7	-0.01	0.01	-0.01
171.00	172.00	1.00	B00291252	0.029	8.2	-0.01	0.25	-0.01
172.00	174.00	2.00	B00291253	0.048	1.2	-0.01	0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 188 - 189 Weak-Moderate Foliation>> fracture cleavage with pyrite									
		<<Struc: 194 - 195.5 Weak-Moderate Foliation>> fracture cleavage with pyrite									
		<<Struc: 196.8 - 198 Weak-Moderate Foliation>> fracture cleavage with pyrite									
		<<Struc: 198 - 198.6 Weak-Moderate Shear>> fracture zone									
201.57	**206.66**	**RHY undifferentiated rhyolite**									
		201.57 - 206.66: Could be altered MAFi. Sharp lower contact at 43 deg along foliation plane - 10cm shear zone.									
		<<Min: 201.57 - 206.66 0.1% Min: Pyrite>>									
		<<Alt: 201.57 - 206.66 Moderate Muscovite>> green sericite									
		<<Alt: 201.57 - 206.66 Moderate Calcite>>									
		<<Struc: 203.85 - 206.66 Weak Fault>> shear planes commonly parallel to foliation and minor zones of core rubble.									
		<<Struc: 205.8 - 206.4 Moderate dominant foliation>>									
206.66	**216.91**	**RHYi Aphanitic Rhyolite (intrusion)**									
		<<Min: 206.66 - 216.91 1% Min: Pyrite>>									
		<<Alt: 206.66 - 216.91 Weak Calcite>> as fracture filling									
		<<Vein: 206.66 - 210 10% Quartz-Carbonate>> qtz vein at RHY contact and as veinlets									
		<<Struc: 208.2 - 210 Moderate Fault>> broken and missing core									
		<<Struc: 210.1 - 210.5 Weak-Moderate Foliation>> fracture cleavage with sericite									
		<<Struc: 211.7 - 212.1 Weak-Moderate Fault>>									
		<<Struc: 216.6 - 217.1 Weak-Moderate Foliation>> fracture cleavage with sericite									
216.91	**225.00**	**RHY undifferentiated rhyolite green**	221.00	222.00	1.00	B00291254	0.007	1.3	-0.01	0.01	0.02
		216.91 - 225: green sericite altered RHY, could be an altered varient of RHYi. Progressivley more sheared below 223.6.									
		<<Min: 216.91 - 223.7 1% Min: Pyrite>>	222.00	223.00	1.00	B00291255	-0.005	0.3	-0.01	-0.01	-0.01
		<<Min: 223.7 - 230.8 3% Min: Pyrite>> minor grey pyritic siliceous bands and clasts of pyritic qtz. Py is finely diss in both.	223.00	223.70	0.70	B00291256	0.041	12	-0.01	0.09	0.15
		<<Alt: 216.91 - 225 Moderate Muscovite>> green sericite, intensity increasing down hole.	223.70	225.00	1.30	B00291257	0.021	13	-0.01	0.1	0.04
		<<Alt: 216.91 - 232.33 Weak-Moderate Calcite>>									
		<<Struc: 220.6 - 221 Weak-Moderate Fault>> shear plane									
		<<Struc: 221 - 221.4 Moderate-Strong dominant foliation>>									
		<<Struc: 223.7 - 225 Moderate Shear>> gougy -sericite shear planes									
225.00	**232.33**	**FLZ Fault Zone green**	225.00	226.22	1.22	B00291258	-0.005	1	-0.01	0.01	0.03
		225 - 232.33: low angle shears in strongly sericte altered RHY. Very solf ground! Poor core recovery 228.0 - 231.0m. 231-232.33m brecciated sulfide clasts in shear stringers along low angle shear planes.									

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 230.8 - 232.33 5% Min: Pyrite>> pyrite in siliceous sulfide clasts				226.22	228.00	1.78	B00291259	0.135	10.5	0.01	0.09	0.12
<<Alt: 225 - 232.33 Strong Muscovite>> green sericite, strongly sheared, parallel to foliation, at low angle to core axis.				228.00	231.00	3.00	B00291261	0.138	29.7	0.01	0.18	0.22
<<Vein: 227.7 - 228 100% Quartz>> qtz vein or clast in shear zone				231.00	232.33	1.33	B00291262	0.513	67.9	0.06	0.24	0.35
<<Struc: 225 - 231.33 Strong Fault>> gouge, breccia clasts, strongly sheared at mostly low angles, locally adulatory, missing core.												
<<Struc: 231 - 231.6 Moderate-Strong Shear>>												
<<Struc: 231.6 - 231.9 Moderate-Strong Shear>> shr planes												
<<Struc: 231.9 - 232.05 Moderate-Strong Shear>> shr planes												
<<Struc: 232.05 - 232.3 Moderate-Strong Shear>> shr planes												
<<Struc: 232.3 - 232.33 Moderate-Strong Contact>> sulfide contact with fault zone												
232.33	**235.64**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	232.33	233.00	0.67	B00291263	0.679	46.8	0.02	0.74	2.75
232.33 - 235.64: healed pyrite breccia, good canidate for OD, brecciated OH as grade appears low.												
<<Min: 232.33 - 234.37 5% Min: Sphalerite>>				233.00	234.00	1.00	B00291264	1.4	199	0.24	0.35	1.2
<<Min: 232.33 - 234.37 70% Min: Pyrite>>				234.00	235.00	1.00	B00291265	1.54	240	0.24	1.88	4.59
<<Min: 232.33 - 234.37 1% Min: Galena>>				235.00	235.64	0.64	B00291266	0.689	120	0.02	2.29	7.55
<<Min: 232.33 - 234.37 0.5% Min: Chalcopyrite>>												
<<Min: 233.3 - 242.12 3% Min: Magnetite>> local patches up to 5+%												
<<Min: 234.37 - 235.64 10% Min: Sphalerite>> with silica (and BA?) as breccia filling												
<<Min: 234.37 - 235.64 50% Min: Pyrite>>												
<<Min: 234.37 - 235.64 3% Min: Galena>>												
<<Min: 234.37 - 235.64 3% Min: Chalcopyrite>> mixed with fine grained py - difficult to identify.												
<<Alt: 232.33 - 235.64 Trace Calcite>> minor blebs and infillings												
<<Struc: 232.75 - 233.2 Weak-Moderate Foliation>> mineral banding												
<<Struc: 233.9 - 234.1 Moderate Foliation>> mineral banding												
<<Struc: 235.5 - 237 Moderate Foliation>> mineral banding												
235.64	**238.30**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FCG**	235.64	236.00	0.36	B00291267	0.644	89.6	0.01	1.45	5.95
<<Min: 235.64 - 237.55 0.5% Min: Chalcopyrite>>				236.00	237.00	1.00	B00291268	0.492	118	0.01	1.49	5.09
<<Min: 235.64 - 238.3 10% Min: Sphalerite>>				237.00	237.55	0.55	B00291269	0.597	152	0.02	2.4	7.37
<<Min: 235.64 - 238.3 50% Min: Pyrite>>				237.55	238.30	0.75	B00291271	2.68	139	0.07	2.58	8.52

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 235.64 - 238.3 3% Min: Galena>>									
		<<Min: 235.87 - 236.9 1% Min: Magnetite>>									
		<<Min: 237.55 - 238.3 3% Min: Chalcopyrite>>									
		<<Alt: 235.64 - 240 Weak Calcite>>									
		<<Struc: 238 - 238.5 Moderate Foliation>>									
238.30	**239.30**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	238.30	239.30	1.00	B00291272	0.824	186	0.01	2.46	6.71
		<<Min: 238.3 - 242.12 5% Min: Magnetite>> 238.3-238.8 m up to 10%									
		<<Min: 238.3 - 243 20% Min: Sphalerite>>									
		<<Min: 238.3 - 243 50% Min: Pyrite>>									
		<<Min: 238.3 - 243 3% Min: Galena>>									
		<<Min: 238.3 - 243 3% Min: Chalcopyrite>> Fine grained, mixed with Pyrite?									
239.30	**247.28**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	239.30	240.00	0.70	B00291273	1.45	424	0.18	4.98	9.06
		<<Min: 243 - 247.28 15% Min: Sphalerite>>	240.00	241.00	1.00	B00291274	0.532	157	0.02	1.79	4.69
		<<Min: 243 - 247.28 50% Min: Pyrite>>	241.00	242.00	1.00	B00291275	0.556	128	0.01	1.75	5.71
		<<Min: 243 - 247.28 2% Min: Galena>>	242.00	243.00	1.00	B00291276	0.905	315	0.01	4.21	8.08
		<<Min: 243 - 247.28 1% Min: Chalcopyrite>>	243.00	244.00	1.00	B00291277	2.27	329	0.1	3.9	7.81
		<<Alt: 240 - 247.28 Moderate Calcite>>	244.00	245.00	1.00	B00291278	0.482	72.2	-0.01	0.96	4.74
		<<Struc: 240 - 241.5 Weak-Moderate Foliation>> mineral banding	245.00	246.00	1.00	B00291279	0.466	90.1	-0.01	0.98	4.64
		<<Struc: 241.5 - 242.3 Moderate Foliation>> mineral banding	246.00	246.50	0.50	B00291282	0.475	95.6	-0.01	0.96	5.14
		<<Struc: 242.4 - 243 Moderate Foliation>> mineral banding	246.50	247.28	0.78	B00291283	3.76	416	0.47	2.12	5.89
		<<Struc: 243.5 - 244.4 Moderate Foliation>> mineral banding									
		<<Struc: 244.3 - 244.8 Weak Foliation>> mineral banding									
247.28	**248.00**	**MAFi Mafic Intrusions (primarily green footwall mafic intrusion)**	247.28	248.00	0.72	B00291284	4.92	324	0.55	0.31	1.39
		247.28 - 248: sharp contacts, approximately parallel to foliation in MAFi and marked by about 2 cm of qtz - calcite veining. Could be altered RHY									
		<<Min: 247.28 - 248 1% Min: Pyrite>>									
		<<Alt: 247.28 - 248 Weak Muscovite>> green sericite									
		<<Alt: 247.28 - 248 Weak-Moderate Calcite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 247.28 - 248 5% Quartz-Carbonate 12 deg. >> qtz -calcite on contact									
		<<Vein: 247.9 - 247.95 10% Quartz-Tourmaline 23 deg. >> mm-<0.5cm tourmaline veinlet parallel to foliation									
		<<Struc: 247.28 - 248 Moderate dominant foliation>>									
248.00	**255.32**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FG**	248.00	249.00	1.00	B00291285	1.95	262	0.22	1.81	4.88
		<<Min: 248 - 255.32 1% Min: Chalcopyrite>> really a guess… lots of greenish fine grained pyrite - could be lots of chalcopyrite!	249.00	250.00	1.00	B00291286	3.16	349	0.26	3.03	6.08
		<<Min: 248.7 - 250 5% Min: Sphalerite>>	250.00	251.00	1.00	B00291287	2.97	226	0.36	0.27	1.48
		<<Min: 248.7 - 250 60% Min: Pyrite>>	251.00	252.00	1.00	B00291288	1.48	102	0.15	0.17	1.72
		<<Min: 248.7 - 250 1% Min: Galena>>	252.00	253.00	1.00	B00291289	0.369	9.4	-0.01	0.11	2.24
		<<Min: 248.7 - 252 3% Min: Magnetite>> patchy, no local concentrations >3%.	253.00	254.00	1.00	B00291291	1.43	83.9	0.12	0.15	2.04
		<<Min: 250 - 252 10% Min: Sphalerite>>	254.00	254.50	0.50	B00291292	2.27	164	0.26	0.11	2.21
		<<Min: 250 - 252 3% Min: Galena>>	254.50	255.32	0.82	B00291293	4.93	405	0.47	0.73	4.71
		<<Min: 250 - 255.32 50% Min: Pyrite>>									
		<<Min: 250 - 255.32 2% Min: Galena>>									
		<<Min: 252 - 255.32 5% Min: Sphalerite>>									
		<<Alt: 248 - 255.32 Moderate-Strong Calcite>>									
		<<Struc: 248.4 - 249 Moderate Foliation>> mineral banding									
		<<Struc: 250 - 253.5 Moderate Foliation>> mineral banding									
		<<Struc: 253.5 - 254.4 Moderate Foliation>> mineral banding									
		<<Struc: 254.4 - 255.32 Moderate Foliation>> mineral banding									
		<<Struc: 255.2 - 255.4 Moderate Contact>>									
255.32	**261.61**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion) green**	255.32	256.40	1.08	B00291294	0.09	4.9	0.02	-0.01	0.05
		255.32 - 261.61: both contacts with sulfide units parallel to foliation or foliation - shear in case of lower boundary. Pseudo leucoxene (Fe-carb prophyroblasts), 1mm size..									
		<<Min: 255.32 - 261.61 1% Min: Pyrite>>	256.40	257.40	1.00	B00291295	0.029	2.1	-0.01	-0.01	0.03
		<<Alt: 255.32 - 261.61 Weak Muscovite>>	257.40	258.00	0.60	B00291296	0.036	4.6	-0.01	0.02	0.04
		<<Alt: 255.32 - 261.61 Weak-Moderate Chlorite>> meta chlorite partially altered to sericite. Pseudo leucoxene present throughout.	258.00	259.20	1.20	B00291297	0.021	2.4	-0.01	0.02	0.04
		<<Alt: 255.32 - 261.61 Moderate-Strong Calcite>>	259.20	260.00	0.80	B00291298	0.029	2.7	-0.01	0.03	0.05
		<<Alt: 255.32 - 261.61 Weak Biotite>>	260.00	261.00	1.00	B00291299	0.033	3.8	-0.01	0.03	0.08
		<<Alt: 261 - 261.61 Weak-Moderate Talc-serpentine>> on shear planes	261.00	261.61	0.61	B00291301	0.095	5.3	0.03	0.05	0.14

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 255.32 - 256.4 Moderate dominant foliation>>											
<<Struc: 256.4 - 260 Moderate-Strong dominant foliation>>											
<<Struc: 260 - 260.1 Moderate Fault>> fault gouge zone											
<<Struc: 260.3 - 261 Strong dominant foliation>> almost a shear											
<<Struc: 261 - 261.61 Moderate-Strong Shear>> low angle shear planes											
261.61	**263.63**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FG**	261.61	262.60	0.99	B00291302	0.716	158	0.07	3.53	5.93
261.61 - 263.63: gradational contact with OB-DMG unit.											
<<Min: 261.61 - 263.63 0.5% Min: Chalcopyrite>>			262.60	263.63	1.03	B00291303	0.294	82	0.01	2.55	5.33
<<Min: 261.61 - 264.68 10% Min: Sphalerite>>											
<<Min: 261.61 - 264.68 60% Min: Pyrite>>											
<<Min: 261.61 - 264.68 3% Min: Galena>>											
<<Min: 263.3 - 266.2 5% Min: Magnetite>>											
<<Alt: 261.61 - 268.87 Moderate-Strong Calcite>>											
<<Alt: 263.15 - 269.4 Weak-Moderate Cordierite>> calcite-chlorite-magnetite replaced cordierite. DMG is likley replaced cordierite (content increases downhole											
<<Alt: 263.3 - 268.87 Weak Chlorite>> likely replacing cordierite											
<<Struc: 262.1 - 262.75 Weak-Moderate Foliation>> mineral banding											
263.63	**268.87**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FCG**	263.63	264.60	0.97	B00291304	0.204	48	0.19	1.07	4.59
263.63 - 268.87: chlorite and magnetite replacing cordierite. Gradational contact with OA unit.											
<<Min: 263.63 - 264.68 3% Min: Chalcopyrite>>			264.60	265.60	1.00	B00291305	0.363	84.1	1.5	1.4	3.61
<<Min: 264.68 - 265.75 10% Min: Sphalerite>> also as blebs and in patches.			265.60	266.50	0.90	B00291306	0.147	55.4	0.23	1.33	3.73
<<Min: 264.68 - 265.75 1% Min: Galena>>			266.50	267.50	1.00	B00291307	0.231	58.4	0.74	1.09	4.12
<<Min: 264.68 - 266.55 5% Min: Chalcopyrite>>			267.50	268.40	0.90	B00291308	0.17	38.8	1.15	0.43	4.61
<<Min: 264.68 - 268.87 40% Min: Pyrite>>			268.40	268.87	0.47	B00291309	0.143	57.9	0.58	0.91	5.6
<<Min: 265.75 - 268.87 1% Min: Sphalerite>>											
<<Min: 265.75 - 268.87 0.1% Min: Galena>>											
<<Min: 266.2 - 268.87 10% Min: Magnetite>>											
<<Min: 266.55 - 268.87 10% Min: Chalcopyrite>> veinlets and blebs up to 1 cm wide.											
<<Vein: 266.62 - 266.63 100% Massive Sulphide/Sulphides undifferentiated 40 deg. >> 1cm chalcopyrite veinlet											

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 264 - 264.4 Weak Foliation>> mineral banding												
<<Struc: 264.4 - 264.8 Weak Foliation>> mineral banding												
<<Struc: 266.62 - 266.63 Moderate-Strong Vein>> 1 cm chalcopyrite veinlet												
<<Struc: 267.3 - 267.75 Weak Foliation>> mineral banding												
268.87	**270.19**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FCG**	268.87	269.49	0.62	B00291311	0.143	65.7	0.27	0.91	8.6
268.87 - 270.19: Gradational contact with OF unit over about 20 cm.												
<<Min: 268.87 - 270.19 1% Min: Sphalerite>>				269.49	270.19	0.70	B00291312	0.099	31.2	0.46	0.44	10.5
<<Min: 268.87 - 270.19 50% Min: Pyrite>>												
<<Min: 268.87 - 270.19 25% Min: Magnetite>>												
<<Min: 268.87 - 270.19 1% Min: Chalcopyrite>>												
<<Alt: 268.87 - 269.25 Trace Calcite>>												
<<Alt: 268.87 - 272 Weak-Moderate Chlorite>>												
<<Struc: 268.87 - 269.6 Weak-Moderate Foliation>> mineral banding												
<<Struc: 269.6 - 270 Weak-Moderate Foliation>> mineral banding												
270.19	**273.40**	**OF** **Pyrrhotite rich sulphides**	**FCG**	270.19	271.00	0.81	B00291313	0.052	26.1	0.65	0.33	8.07
270.19 - 273.4: Gradational contact with OJ unit over 40 cm, marked by decrease in PO and increase in chlorite.												
<<Min: 270.19 - 272 70% Min: Pyrrhotite>>				271.00	271.87	0.87	B00291314	0.076	26.1	0.78	0.34	6.78
<<Min: 270.19 - 273.4 15% Min: Chalcopyrite>>				271.87	272.60	0.73	B00291315	0.074	39.8	0.84	0.43	11.2
<<Min: 270.19 - 273.55 10% Min: Magnetite>>				272.60	273.40	0.80	B00291316	0.063	49	0.54	0.55	10.7
<<Min: 272 - 273.4 40% Min: Pyrrhotite>>												
<<Alt: 271.9 - 275.11 Intense Cordierite>> difficult to determine but looks like cordierite and chlorite replacing it.												
<<Alt: 272 - 273.4 Strong Chlorite>> locally banded												
<<Struc: 270.55 - 270.8 Weak Vein>> chlorite - calcite on cross cutting fractures												
273.40	**275.11**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**FCG**	273.40	274.20	0.80	B00291317	0.069	43.4	0.7	0.43	14.2
273.4 - 275.11: sharp foliation conformable contact with RHY.												
<<Min: 273.4 - 275.11 10% Min: Sphalerite>>				274.20	275.11	0.91	B00291318	0.042	49.3	0.72	0.6	17.5
<<Min: 273.4 - 275.11 1% Min: Galena>>												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 273.4 - 275.11 3% Min: Chalcopyrite>>									
		<<Min: 273.7 - 274.3 1% Min: Magnetite>>									
		<<Min: 274.3 - 284.6 0.01% Min: Sphalerite>>									
		<<Min: 274.3 - 293.64 3% Min: Pyrite>>									
		<<Alt: 273.4 - 275.11 Moderate-Strong Muscovite>> locally banded									
		<<Alt: 273.4 - 275.11 Intense Chlorite>>									
		<<Struc: 274 - 275 Weak-Moderate Foliation>> mineral banding parallel to core axis									
		<<Struc: 275 - 275.2 Strong Contact>>									
275.11	**293.64**	**RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey**	275.11	276.00	0.89	B00291319	-0.005	11.9	0.05	0.15	1.8
		275.11 - 293.64: strongly sheared and sericite altered. 287-299: trace fine diss tourmaline.									
		<<Min: 287.9 - 293.64 1% Min: Pyrrhotite>>	276.00	277.50	1.50	B00291322	-0.005	2.5	0.02	0.04	0.12
		<<Alt: 275.11 - 288 Intense Muscovite>> sheared silicic bands with green sericite partings.	277.50	279.00	1.50	B00291323	-0.005	0.5	-0.01	-0.01	0.01
		<<Alt: 276 - 284.7 Trace Calcite>>	279.00	280.50	1.50	B00291324	-0.005	0.7	-0.01	0.01	0.04
		<<Alt: 284.5 - 293.64 Trace Chlorite>>	280.50	282.00	1.50	B00291325	-0.005	0.7	-0.01	0.01	0.08
		<<Alt: 284.7 - 287 Weak Calcite>>	282.00	283.50	1.50	B00291326	-0.005	0.4	-0.01	-0.01	0.01
		<<Alt: 287 - 293.64 Weak-Moderate Calcite>>	283.50	285.00	1.50	B00291327	-0.005	0.6	-0.01	-0.01	0.09
		<<Alt: 287.8 - 293.64 Trace Biotite>> Also tourmaline present.									
		<<Alt: 288 - 291 Moderate-Strong Muscovite>>									
		<<Alt: 291 - 293.64 Weak-Moderate Muscovite>>									
		<<Vein: 275.42 - 276.82 40% Quartz>> disrupted qtz veining									
		<<Struc: 278 - 279 Moderate-Strong dominant foliation>>									
		<<Struc: 279 - 292 Moderate-Strong dominant foliation>> locally foliation steeper at 20 but mostly very low angle									
		<<Struc: 282 - 284 Moderate Foliation>> spaced cleavage (10-20 cm) with stong sericite cutting 00-010 low angle foliation.									
		<<Struc: 282 - 288 Weak Fault>> broken core, Numerous shear planes with sericite and clay both parallel to dominent foliation and cross cutting it. Very soft and crumbly core due to intense sericite alteration.									
		<<Struc: 287.7 - 288 Weak-Moderate Kink bands>> minor fold measured by compass: Fold axis 084 plunging 49E. Axial plane 036/57S, DFOL 056/64S.									
		<<Struc: 287.8 - 288 Moderate-Strong Foliation>>									
		<<Struc: 288 - 293 Moderate dominant foliation>> undulatory foliation; 00 +/- 10.									
293.64	**312.73**	**RHYvl Lapilli tuff medium grey**									
		<<Min: 293.64 - 307 3% Min: Pyrrhotite>>									
		<<Min: 307 - 330.1 3% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 293.64 - 300 Weak-Moderate Muscovite>>

<<Alt: 293.64 - 306 Trace Calcite>>

<<Alt: 293.64 - 353 Trace Biotite>> local diss tourmaline

<<Alt: 300 - 313.3 Weak-Moderate Muscovite>> sericite - muscovite: could be original?

<<Alt: 302 - 353 Trace Chlorite>>

<<Alt: 306 - 307.3 Weak-Moderate Calcite>>

<<Alt: 307.3 - 320 Moderate-Strong Muscovite>> strong sericite on partings

<<Struc: 294 - 297 Moderate dominant foliation>>

<<Struc: 297 - 301 Moderate dominant foliation>>

<<Struc: 301 - 303 Moderate dominant foliation>>

<<Struc: 306 - 308 Moderate dominant foliation>>

<<Struc: 310.5 - 312 Moderate dominant foliation>>

<<Struc: 312 - 312.73 Moderate Shear>> undulatory; shear - foliation dips about 30 deg both uphole and down. Strong sericite and clay.

<<Struc: 312.7 - 312.75 Strong Contact>>

312.73 313.73 FLZ Fault Zone grey

312.73 - 313.73: mulitlithic volcanic clasts in banded - sheared rock flour - gouge. Upper contact at 32 deg.

<<Alt: 313.3 - 328.5 Trace Calcite>>

<<Struc: 312.73 - 313.3 Strong Fault>> multilithic

<<Struc: 313.3 - 319.3 Weak Shear>> numerous gougy - sericite shear planes, mm - <0.5cm, commonly parallel to foliation but also cross cutting DFOL.

313.73 318.46 RHYcw Curdy textured-flow banded (flows, subvolcanics) medium grey

<<Struc: 314.5 - 316 Moderate-Strong dominant foliation>>

<<Struc: 316 - 317.7 Moderate-Strong dominant foliation>>

318.46 322.08 RHYvl Lapilli tuff grey-green

318.46 - 322.08: silicic bands

<<Alt: 320 - 353 Weak-Moderate Muscovite>>

<<Struc: 322 - 323 Moderate-Strong dominant foliation>>

322.08 327.89 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

<<Struc: 324 - 325 Moderate-Strong dominant foliation>>

<<Struc: 325 - 328 Moderate-Strong dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

327.89 334.86 RHYv Rhyolite volcaniclastic grey-green

<<Min: 330.1 - 349 3% Min: Pyrite>>

<<Min: 330.1 - 353 0.5% Min: Pyrrhotite>> Diss and as rare veinlets and blebs.

<<Alt: 328.5 - 348 Weak Calcite>>

<<Struc: 329 - 331 Moderate dominant foliation>>

<<Struc: 331 - 333 Moderate-Strong dominant foliation>>

<<Struc: 334 - 336 Moderate-Strong dominant foliation>>

334.86 336.76 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

<<Struc: 336 - 340 Moderate-Strong dominant foliation>>

336.76 353.00 RHYv Rhyolite volcaniclastic grey-green

336.76 - 353: Numerous sections with silicic bands but not enough to be called RHYcw.

<<Min: 349 - 353 1% Min: Pyrite>>

<<Vein: 349.3 - 352 100% Quartz 30 deg. >> sericite sheared gougy contacts parrallel to foliation at approx 30 deg. Includes 5% sericite alt RHY clasts.

<<Struc: 340 - 341.7 Moderate-Strong dominant foliation>>

<<Struc: 341 - 347 Weak Shear>> calcite healed fractures and thin (mm - <1cm) clay shear planes, commonly parallel but also crosscutting DFOL

<<Struc: 344 - 345 Moderate-Strong dominant foliation>>

<<Struc: 346 - 346.5 Moderate-Strong dominant foliation>>

<<Struc: 346.5 - 348 Moderate-Strong dominant foliation>>

<<Struc: 349.2 - 349.3 Moderate Shear>>

<<Struc: 349.2 - 349.3 Moderate-Strong Contact>>

<<Struc: 351.9 - 352.1 Moderate-Strong Shear>>

<<Struc: 351.9 - 352.1 Moderate-Strong Fault>>

<<Struc: 352.1 - 353 Moderate Fault>> Broken core and core rubble.

End of Hole @ 353

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-341

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/11/2016
UTM Easting	414973.0831	Core Size:	NQ3	Azimuth:	24.58	Date Logging Complete:	5/13/2016
UTM Northing:	6815005.1129	Casing Pulled?:	Yes	Dip:	-54	Drill Company:	Hytech
UTM Elev. (m):	1385.677	Casing Depth (m):	30	Length (m):	190	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/10/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/12/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-341 was drilled to test an inferred portion the Krakatoa upper lens.
Bedrock was encountered at 31.5 m depth and consists of rhyolite to a depth of 56.9 m. Below the rhyolite there is a mudstone unit from 56.9-61 m with a lower faulted contact (61-66 m). Below this fault, rhyolite persists to 144.7 m depth, with moderate MU alteration and an interval of strong pervasive MU alteration (130.2-136.7 m) and patchy BI alteration associated with disseminated sulfides (134-135.8 m). Below the rhyolite unit, the mafic sill occurs from 144.7-162 m. From 162-162.25 m there is a small lens of massive sulfide (OB) above another MU-altered rhyolite (135.8-166.1 m). The lower contact of this rhyolite grades into the mafic sill with disseminated sulfides (166.1-166.6 m). The mafic sill persists from 166.6-190 m (EOH). This hole was terminated before intersecting the Krakatoa main lens in order to avoid drilling a main lens pierce point that will be tested with a subsequent drill hole..

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-54	23.18	1.4	24.58	APS	Chris Hughes	5/10/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
39	-52.4	5.4	22.1	27.5	ReflexEZS	Hytech	5/11/2016	5705	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
56.6	-52.6	5.1	22.1	27.2	ReflexEZS	Hytech	5/11/2016	5718	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
87	-53.1	6.8	22.1	28.9	ReflexEZS	Hytech	5/11/2016	5743	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
118	-53.4	8.7	22.1	30.8	ReflexEZS	Hytech	5/11/2016	5738	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
143	-54	10.6	22.1	32.7	ReflexEZS	Hytech	5/12/2016	5786	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
168	-54.5	12.1	22.1	34.2	ReflexEZS	Hytech	5/12/2016	5731	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
190	-54.7	11.8	22.1	33.9	ReflexEZS	Hytech	5/12/2016	5710	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**31.50**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0 - 31.5: Note small interval of semi-massive sulphide from 29.7-30 m, which may represent in-situ highly fractured rock above solid bedrock or is transported overburden?

31.50 47.00 RHYvl Lapilli tuff

<<Min: 31.5 - 50.6 2% Min: Pyrrhotite>>

<<Alt: 31.5 - 49.4 Weak-Moderate Muscovite>>

<<Alt: 31.5 - 56.9 Trace Calcite>>

<<Struc: 39.3 - 39.31 dominant foliation>> Low angle to core axis foliation

<<Struc: 46.4 - 47 Weak-Moderate Fault>> Clay gouge fault zone with significant core loss. Only ~10 cm of the fault zone remains.

47.00 56.90 RHYc Rhyolite coherant volcanics

47 - 56.9: Siliceous banded rhyolite with zone of patchy pinch-swell and folded semi-massive sulphide layers from 50.6-52 m. Lower contact is gradational with MDSc.

<<Min: 50.6 - 52 7% Min: Pyrite>> Blebby to pinch-swell banded pyrite +/- pyrrhotite

<<Min: 50.6 - 52 1% Min: Pyrrhotite>>

<<Min: 52 - 56.9 2% Min: Pyrrhotite>>

<<Min: 55.6 - 56.9 2% Min: Pyrite>>

<<Alt: 49.4 - 50.6 Strong Muscovite>>

<<Alt: 50.6 - 56.9 Moderate Muscovite>>

56.90 61.00 MDSc Carbonaceous dominant mudstone black

<<Min: 56.9 - 61 3% Min: Pyrite>>

<<Alt: 56.9 - 66 Weak-Moderate Calcite>>

61.00 66.00 MDSc Carbonaceous dominant mudstone

61 - 66: Faulted contact between mudstone and underlying rhyolite with high core loss

<<Min: 61 - 66 1% Min: Pyrite>>

<<Struc: 61 - 66 Moderate Fault>> Faulted contact between mudstone and underlying rhyolite

66.00 96.60 RHYv Rhyolite volcaniclastic

<<Min: 66 - 130.2 2% Min: Pyrite>>

<<Alt: 66 - 130.2 Moderate Muscovite>>

<<Alt: 66 - 134 Weak Calcite>>

<<Struc: 68 - 68.01 dominant foliation>>

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 78.4 - 78.41 dominant foliation>>												
<<Struc: 93.05 - 93.06 dominant foliation>>												
<<Struc: 94.7 - 94.71 dominant foliation>>												
96.60	**130.20**	**RHYcw**	**Curdy textured-flow banded (flows, subvolcanics)**	128.70	130.20	1.50	B00292001	0.02	4.9	-0.01	0.05	0.15
<<Vein: 123.5 - 123.52 100% Quartz 90 deg. >> ~2 cm wide QZ vein with diss cgr SP + PY + GL +/- CP. Formed at high angle to dominant foliation. Late remobilization of sulfides.												
<<Vein: 124.8 - 125.2 100% Quartz-Carbonate>> QZ-Carb veining +/- sulfides. Deformed within foliation												
<<Vein: 129.9 - 130 100% Quartz>> QZ vein												
130.20	**134.00**	**RHY**	**undifferentiated rhyolite**	130.20	131.00	0.80	B00292002	0.073	9.3	0.02	0.1	0.32
130.2 - 134: Strongly MU altered rhyolite												
<<Min: 130.2 - 134 3% Min: Pyrite>>				131.00	132.50	1.50	B00292003	0.011	1.5	-0.01	0.02	0.03
<<Alt: 130.2 - 136.7 Strong Muscovite>>				132.50	134.00	1.50	B00292004	0.009	1.4	-0.01	0.01	0.07
<<Vein: 130.8 - 131.1 5% Quartz-Tourmaline>> QZ-Carb-Tourmaline vein with low angle to core axis												
<<Vein: 131.9 - 132 100% Quartz-Carbonate>> Massive QZ-Carb vein												
134.00	**135.80**	**OI**	**Heavilly disseminated sulphides in host schist**	134.00	134.90	0.90	B00292005	0.319	48.3	0.08	0.39	0.92
134 - 135.8: Zone of disseminated PY +/- SP associated with blebby BI alteration												
<<Min: 134 - 135.8 1% Min: Sphalerite>> Local blebs with higher concentrations of disseminated PY +/- SP and BI alteration				134.90	135.80	0.90	B00292006	0.757	36.8	0.05	0.29	0.43
<<Min: 134 - 135.8 5% Min: Pyrite>> Local blebs with higher concentrations of disseminated PY +/- SP and BI alteration												
<<Alt: 134 - 135.8 Moderate Biotite>> BI alteration associated with patches of disseminated PY +/- SP												
<<Alt: 134 - 144.7 Moderate Calcite>>												
135.80	**144.70**	**RHYc**	**Rhyolite coherant volcanics**	135.80	137.30	1.50	B00292007	0.037	3.3	-0.01	0.03	0.03
135.8 - 144.7: Siliceous banded and MU cleavage coherent rhyolite												
<<Min: 135.8 - 144.7 0.5% Min: Pyrite>> Trace disseminated pyrite				137.30	138.80	1.50	B00292008	0.01	2.3	-0.01	0.02	0.01
<<Vein: 138.2 - 138.25 100% Quartz-Carbonate>> Massive QZ-Carb vein				138.80	140.30	1.50	B00292009	0.007	1.3	-0.01	0.01	-0.01
144.70	**162.00**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	157.50	159.00	1.50	B00292011	0.005	0.8	-0.01	0.01	0.01
<<Min: 144.7 - 162 0.5% Min: Pyrite>>				159.00	160.50	1.50	B00292012	0.006	0.7	-0.01	-0.01	0.01
<<Alt: 144.7 - 162 Strong Chlorite>>				160.50	162.00	1.50	B00292013	-0.005	-0.3	-0.01	-0.01	0.02

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 144.7 - 162 Moderate Calcite>>									
		<<Alt: 144.7 - 162 Moderate Biotite>>									
		<<Struc: 144.7 - 145.6 Weak-Moderate Fault>> Green chloritic fault gouge at contact between MAFi and RHY									
		<<Struc: 147.95 - 147.96 dominant foliation>>									
		<<Struc: 155.37 - 155.38 dominant foliation>>									
162.00	**162.35**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	162.00	162.35	0.35	B00292014	1.53	295	0.53	3.03	6.92
		162 - 162.35: OB mineralization from 162-162.25 m on MAFi and RHY contact. (Unit made larger in order to match minimum sample size)									
		<<Min: 162 - 162.25 2% Min: Sphalerite>>									
		<<Min: 162 - 162.25 85% Min: Pyrite>>									
		<<Min: 162 - 162.25 1% Min: Galena>>									
		<<Min: 162 - 162.25 1% Min: Barite>>									
		<<Alt: 162 - 162.25 Weak Calcite>>									
		<<Alt: 162.25 - 166.3 Moderate-Strong Muscovite>>									
		<<Alt: 162.25 - 166.3 Trace Calcite>>									
162.35	**166.10**	**RHY** **undifferentiated rhyolite**	162.35	163.50	1.15	B00292015	0.02	-0.3	-0.01	0.01	0.02
		<<Vein: 165.8 - 166.1 40% Quartz-Carbonate>> Zone with 3 QZ +/- carb veins	163.50	164.80	1.30	B00292016	0.009	0.8	-0.01	-0.01	-0.01
		<<Struc: 164.16 - 164.17 dominant foliation>>	164.80	166.10	1.30	B00292017	0.009	1.3	-0.01	0.01	-0.01
166.10	**166.60**	**OI** **Heavilly disseminated sulphides in host schist**	166.10	166.60	0.50	B00292018	1.36	86.5	0.03	0.95	1.81
		166.1 - 166.6: Disseminated PY +/- GL +/- SP along RHY and MAFi contact									
		<<Min: 166.1 - 166.6 1% Min: Sphalerite>>									
		<<Min: 166.1 - 166.6 4% Min: Pyrite>>									
		<<Min: 166.1 - 166.6 0.5% Min: Galena>>									
		<<Alt: 166.3 - 166.6 Weak Muscovite>>									
		<<Alt: 166.3 - 166.6 Weak Chlorite>>									
		<<Alt: 166.3 - 166.6 Moderate-Strong Calcite>>									
		<<Alt: 166.3 - 166.6 Weak Biotite>>									
166.60	**190.00**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	166.60	168.10	1.50	B00292019	0.006	0.8	-0.01	0.01	0.05

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-341

From (m)	To (m)	Rocktype & Description
		<<Min: 166.6 - 190 0.5% Min: Pyrite>>
		<<Min: 171.8 - 171.9 0.5% Min: Chalcopyrite>>
		<<Min: 171.8 - 171.9 1% Min: Arsenopyrite>> Disseminated AS +/- CP may be related to a small zone of chloritic alteration, but is quite hard to determine due to the host lithology being the CL-BI schist.
		<<Alt: 166.6 - 169.5 Moderate Calcite>>
		<<Alt: 166.6 - 175.4 Moderate Biotite>>
		<<Alt: 166.6 - 190 Strong Chlorite>>
		<<Alt: 169.5 - 190 Weak-Moderate Calcite>>
		<<Alt: 175.4 - 190 Weak-Moderate Biotite>>
		<<Vein: 178.4 - 178.6 90% Calcium carbonate/Carbonate>> Calcite vein with blebs of chlorite and quartz
		<<Vein: 179 - 179.5 90% Calcium carbonate/Carbonate>> Calcite vein with blebs of chlorite and quartz
		<<Vein: 180.55 - 180.8 95% Calcium carbonate/Carbonate>> Calcite vein with blebs of chlorite and quartz
		<<Struc: 168.19 - 168.2 dominant foliation>>
		<<Struc: 170.7 - 170.71 dominant foliation>>
		<<Struc: 172.55 - 172.56 dominant foliation>>
		<<Struc: 174.79 - 174.8 dominant foliation>>
		<<Struc: 177.17 - 177.18 dominant foliation>>
		<<Struc: 181.37 - 181.38 dominant foliation>>

End of Hole @ 190

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
168.10	169.60	1.50	B00292021	-0.005	0.8	-0.01	0.01	0.03
169.60	171.10	1.50	B00292022	-0.005	1.2	-0.01	-0.01	0.02
171.10	172.60	1.50	B00292023	-0.005	0.7	-0.01	-0.01	0.02

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-342

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/14/2016
UTM Easting	414971.9887	Core Size:	NQ3	Azimuth:	8.95	Date Logging Complete:	5/15/2016
UTM Northing:	6815005.2434	Casing Pulled?:	Yes	Dip:	-74	Drill Company:	Hytech
UTM Elev. (m):	1385.613	Casing Depth (m):	27	Length (m):	51	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/12/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/13/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-342 was intended to be a resource infill hole but was abandoned at 51m due to unacceptable hole deviation, likely a result of hole deflection within the overburden.
The hole collared into bedrock at 28.08m. Below this, the felsic hanging wall package was encountered; the hanging wall consists of weak to moderate muscovite altered RHYv, RHYc, and MDSc.
A moderately-intense fault occurs from 39.49 to 41.1m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-74	7.55	1.4	8.95	APS	Alicia Vainio	5/12/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
33	-71.9	352.2	22.1	14.3	ReflexEZS	Hytech	5/13/2016	5733	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
48	-72.9	351.2	22.1	13.3	ReflexEZS	Hytech	5/13/2016	5748	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 28.08 OVBN Overburden

28.08 33.57 RHYvl Lapilli tuff

<<Min: 28.08 - 37.94 1% Min: Pyrrhotite>>

<<Alt: 28.08 - 37.94 Weak-Moderate Muscovite>>

<<Alt: 28.08 - 51 Trace Calcite>>

33.57 37.94 RHYc Rhyolite coherant volcanics

<<Min: 33.57 - 37.94 0.5% Min: Sphalerite>>

<<Min: 33.57 - 37.94 3% Min: Pyrite>>

37.94 41.10 MDSc Carbonaceous dominant mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 37.94 - 41.1 2% Min: Pyrite>>

<<Struc: 39.49 - 41.1 Moderate Fault>> FLT gouge with RHY and MDS clasts. FLT represents the contact between the MDS (above) and RHY (below).

41.10 43.79 RHYv Rhyolite volcaniclastic

<<Min: 41.1 - 51 3% Min: Pyrite>>

<<Min: 41.1 - 51 0.1% Min: Pyrrhotite>>

<<Alt: 41.1 - 51 Moderate Muscovite>>

<<Struc: 41.1 - 43.79 Weak-Moderate Shear>> Well-foliated unit, appears to grade into the coherent RHY that does not have well-developed foliation. This foliation might represent a shear zone related to the FLT.

<<Struc: 42.61 - 42.62 dominant foliation>>

43.79 51.00 RHYcw Curdy textured-flow banded (flows, subvolcanics)

End of Hole @ 51

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-343

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/15/2016
UTM Easting	414973.5903	Core Size:	NQ3	Azimuth:	32.02	Date Logging Complete:	5/23/2016
UTM Northing:	6815004.7144	Casing Pulled?:	Yes	Dip:	-75	Drill Company:	Hytech
UTM Elev. (m):	1385.719	Casing Depth (m):	27	Length (m):	62.7	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/13/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/14/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-343 was intended to be a resource infill hole,replacing K16-342 but was abandoned at 62.7m due to unacceptable hole deviation. The hole collared into bedrock at 28m; RHYvl, RHYc, and MDSc continued to a depth of 55.4m. OI mineralization occurred from 55.4-57.9m. The OI was characterized with disseminated-patchy pyrite +/- sphalerite, chalcopyrite, and galena within a brecciated RHY unit with strong biotite, albite, and sericite alteration. OB was encountered from 57.9-59.7m; it was composed of massive pyrite +/- sphalerite, galena, and chalcopyrite. The hole was abandoned at 62.7m, within the mafic sill footwall.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-75	30.62	1.4	32.02	APS	Dillon Hume	5/13/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
36	-76.6	12.4	22.1	34.5	ReflexEZS	Hytech	5/14/2016	5758	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
58.3	-77.1	16.8	22.1	38.9	ReflexEZS	Hytech	5/14/2016	5738	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
62.7	-77.1	17.3	22.1	39.4	ReflexEZS	Hytech	5/14/2016	5743	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**28.00**	**OVBN Overburden**									
28.00	**32.80**	**RHYvl Lapilli tuff**									
<<Min: 28 - 33.35 0.5% Min: Pyrite>>											
<<Min: 28 - 36.4 2% Min: Pyrrhotite>>											
<<Alt: 28 - 36.4 Weak-Moderate Muscovite>>											
<<Alt: 28 - 57.9 Trace Calcite>>											
<<Struc: 32.07 - 32.08 dominant foliation>>											
32.80	**36.40**	**RHYc Rhyolite coherant volcanics**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 33.35 - 36.4 5% Min: Pyrite>>									
36.40	**39.00**	**MDSc Carbonaceous dominant mudstone**									
		36.4 - 39: FLT gouge (?) washed away from 37.1 to 39m.									
		<<Min: 36.4 - 39 1% Min: Pyrite>>									
		<<Struc: 37.1 - 39 Weak Fault>> FLT gouge, mostly washed away.									
39.00	**55.40**	**RHYc Rhyolite coherant volcanics**	45.00	46.50	1.50	B00292024	0.011	1.4	-0.01	-0.01	0.03
		39 - 55.4: Silicic banding and localized curdy texture.									
		<<Min: 39 - 55.4 1% Min: Pyrite>>	46.50	48.00	1.50	B00292025	0.006	0.7	-0.01	-0.01	-0.01
		<<Alt: 39 - 42.5 Weak-Moderate Muscovite>>	48.00	49.50	1.50	B00292026	0.008	0.9	-0.01	-0.01	0.01
		<<Alt: 42.5 - 55.4 Moderate Muscovite>>	49.50	51.00	1.50	B00292027	0.022	0.8	-0.01	-0.01	0.02
		<<Struc: 41.7 - 41.71 dominant foliation>>	51.00	52.40	1.40	B00292028	0.013	1	-0.01	-0.01	0.03
		<<Struc: 49.65 - 49.66 dominant foliation>>	52.40	53.90	1.50	B00292029	0.022	0.9	-0.01	-0.01	0.02
		<<Struc: 50.1 - 52.1 Weak Fault>> Brittle RHY, with tight foliation compared to the surrounding RHY. The foliation cleavage has strong sericitic alteration. The start of the unit is FLT gouge; approx 0.9m has washed away.	53.90	55.40	1.50	B00292031	0.038	6.3	0.01	-0.01	0.02
55.40	**57.90**	**OI Heavilly disseminated sulphides in host schist**	55.40	56.90	1.50	B00292032	0.537	68.3	0.35	0.43	1.14
		55.4 - 57.9: Brecciated, fractured, and sheared OI. Biotite (disseminated), albite, and sericite alteration are strong; muscovite is visible on sheared planes. Sulphides occur within fractures, and along clasts. Pyrite (+/- sphalerite, chalcopyrite, and galena) is both disseminated and patchy throughout the unit.									
		<<Min: 55.4 - 57.9 0.1% Min: Sphalerite>> OI consists of disseminated-patchy pyrite, along with traces of chalcopyrite, sphalerite, and galena. Sulphides infill fractures, and surround brecciated clasts.	56.90	57.90	1.00	B00292033	0.328	62.2	0.35	0.42	0.78
		<<Min: 55.4 - 57.9 8% Min: Pyrite>> OI consists of disseminated-patchy pyrite, along with traces of chalcopyrite, sphalerite, and galena. Sulphides infill fractures, and surround brecciated clasts.									
		<<Min: 55.4 - 57.9 0.1% Min: Galena>> OI consists of disseminated-patchy pyrite, along with traces of chalcopyrite, sphalerite, and galena. Sulphides infill fractures, and surround brecciated clasts.									
		<<Min: 55.4 - 57.9 0.5% Min: Chalcopyrite>> OI consists of disseminated-patchy pyrite, along with traces of chalcopyrite, sphalerite, and galena. Sulphides infill fractures, and surround brecciated clasts.									
		<<Alt: 55.4 - 57.9 Strong Muscovite>> Brecciated zone with patchy, yellow-green sericite alteration, and disseminated biotite alteration. Closer to the bottom of the zone, clasts are pervasively albite-altered. Disseminated-patchy pyrite occurs throughout the zone (OI mineralization).									
		<<Alt: 55.4 - 57.9 Moderate-Strong Biotite>> Brecciated zone with patchy, yellow-green sericite alteration, and disseminated biotite alteration. Closer to the bottom of the zone, clasts are pervasively albite-altered. Disseminated-patchy pyrite occurs throughout the zone (OI mineralization).									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 57.13 - 57.9 Strong Albite>> Brecciated zone with patchy, yellow-green sericite alteration, and disseminated biotite alteration. Closer to the bottom of the zone, clasts are pervasively albite-altered. Disseminated-patchy pyrite occurs throughout the zone (OI mineralization).									
		<<Struc: 55.4 - 57.9 Moderate Fault>> Mineralized FLT BRX with a fine-grained sericitic matrix, and biotite-albite altered clasts.									
57.90	**59.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	57.90	58.80	0.90	B00292034	2.53	260	1.01	2.85	9.17
		57.9 - 59.7: Massive pyrite +/- sphalerite and chalcopyrite. Calcite-filling is common within fractures. A white, disseminated gangue mineral (barite?) occurs near the bottom.									
		<<Min: 57.9 - 59.7 3% Min: Sphalerite>> Massive pyrite with disseminated sphalerite, chalcopyrite, and galena.	58.80	59.70	0.90	B00292035	1.63	262	1.02	2.5	5.53
		<<Min: 57.9 - 59.7 90% Min: Pyrite>> Massive pyrite with disseminated sphalerite, chalcopyrite, and galena.									
		<<Min: 57.9 - 59.7 0.5% Min: Galena>> Massive pyrite with disseminated sphalerite, chalcopyrite, and galena.									
		<<Min: 57.9 - 59.7 0.5% Min: Chalcopyrite>> Massive pyrite with disseminated sphalerite, chalcopyrite, and galena.									
		<<Alt: 57.9 - 59.7 Trace Muscovite>>									
		<<Alt: 57.9 - 59.7 Weak Calcite>> Calcite stringers.									
59.70	**62.70**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	59.70	60.70	1.00	B00292036	0.009	1.3	0.01	-0.01	0.05
		59.7 - 62.7: Bleached contact.									
		<<Min: 59.7 - 62.7 0.5% Min: Pyrite>>	60.70	61.70	1.00	B00292037	-0.005	0.8	-0.01	-0.01	0.03
		<<Min: 59.7 - 62.7 0.5% Min: Pyrrhotite>>	61.70	62.70	1.00	B00292038	-0.005	1.8	0.01	0.02	0.04
		<<Alt: 59.7 - 60.69 Weak-Moderate Muscovite>>									
		<<Alt: 59.7 - 60.69 Weak Chlorite>> Bleached MAFi zone.									
		<<Alt: 60.69 - 62.7 Strong Chlorite>>									
		<<Alt: 60.69 - 62.7 Moderate Calcite>>									
		<<Alt: 60.69 - 62.7 Moderate Biotite>>									
		<<Vein: 62.18 - 62.24 100% Quarzt-Chlorite-Tourmaline 45 deg. >> Massive quartz vein with patchy calcite, chlorite, and tourmaline.									
End of Hole @ 62.7											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-344

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/16/2016
UTM Easting	414973.3999	Core Size:	HQ3	Azimuth:	31.26	Date Logging Complete:	5/19/2016
UTM Northing:	6815004.9884	Casing Pulled?:	Yes	Dip:	-75	Drill Company:	Hytech
UTM Elev. (m):	1385.694	Casing Depth (m):	27	Length (m):	224.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/14/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/18/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

K16-344 was drilled to test the inferred resource of the Krakatoa lenses, as well as to collect metallurgical samples of mineralized and wall rock domains.
Due to large drill hole deviation through the overburden, a wedge was set at 45.6 m, thus causing extra core (~1.1 m) in the box from drilling side by side over this distance. Orientation of the core was not marked between 45.6-67.5 m due to use of a 1.5 m drill rod during wedging.
Bedrock was encountered at 26.2 m. From 26.2-56.7 m the felsic hanging wall package occurs, consisting of volcaniclastic rhyolite, coherent rhyolite, and mudstone. From 56.7-61.9 m (5.2 m), disseminated to massive sulfide occurs, consisting of OB surrounded by OI. The OI mineralization was strongly altered and brecciated. Below this mineralization, the mafic sill occurs from 61.9-82.1 m. From 82.1-84.1 m (2 m), massive sulfide (OB) occurs. Below the OB mineralization undifferentiated, faulted, and strongly MU-altered rhyolite occurs from 84.1-89.4 m. From 89.4-94.6 m, the mafic sill occurs. From 94.6-98.7 m (4.1 m) heavily disseminated to semi-massive sulfide occurs in a calcite+silica matrix (OK). Below this mineralization lens, the aphanitic rhyolite (RHYi), with a minor interval of coherent rhyolite, occurs from 94.6-167.6 m. Below the RHYi the mafic sill occurs again from167.6-169.7 m. From 169.7-170.3 m (0.5 m) OJ style mineralization occurs. Below this final mineralization lens, a felsic footwall package occurs to 224.2 m, consisting of coherent rhyolite, volcaniclastic rhyolite, and minor mudstone. Note that weak MU-alteration persists to the bottom of the hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-75	29.86	1.4	31.26	APS	Dillon Hume	5/14/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
36	-75.6	18.2	22.1	40.3	ReflexEZS	Hytech	5/14/2016	5743	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
45.6	-75.5	17.3	22.1	39.4	ReflexEZS	Hytech	5/15/2016	5709	☑	Wedge set at 45.6 m. Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
45.61	-75.9	16.6	22.1	38.7	ReflexEZS	Hytech	5/15/2016	5704	☑	Wedge set at 45.6 m. Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
55.5	-77.4	12.6	22.1	34.7	ReflexEZS	Hytech	5/15/2016	5747	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
69	-78.2	13.4	22.1	35.5	ReflexEZS	Hytech	5/16/2016	5705	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
93	-79.3	9.5	22.1	31.6	ReflexEZS	Hytech	5/16/2016	5704	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
96	-79.1	9.2	22.1	31.3	ReflexEZS	Hytech	5/16/2016	5702	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
117	-79.9	11.3	22.1	33.4	ReflexEZS	Hytech	5/16/2016	5673	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
141	-80.3	11.4	22.1	33.5	ReflexEZS	Hytech	5/16/2016	5672	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
165	-80.7	14.2	22.1	36.3	ReflexEZS	Hytech	5/17/2016	5659	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
189	-81.7	16	22.1	38.1	ReflexEZS	Hytech	5/17/2016	5679	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
213	-82	15.1	22.1	37.2	ReflexEZS	Hytech	5/17/2016	5716	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
224.2	-82.7	15.7	22.1	37.8	ReflexEZS	Hytech	5/18/2016	5698	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 26.20 OVBN Overburden

26.20 33.40 RHYvl Lapilli tuff

26.2 - 33.4: PO lpl in QZ-MU groundmass

<<Min: 26.2 - 37.1 1% Min: Pyrrhotite>>

<<Alt: 26.2 - 33.4 Weak-Moderate Muscovite>>

<<Alt: 26.2 - 56.7 Weak Calcite>>

33.40 37.10 RHYc Rhyolite coherant volcanics

33.4 - 37.1: Siliceous banded rhyolite with 5-10 % disseminated to wispy PY

<<Min: 33.4 - 37.1 8% Min: Pyrite>>

<<Alt: 33.4 - 37.1 Moderate-Strong Muscovite>>

<<Struc: 36.8 - 36.81 dominant foliation>>

37.10 37.70 MDSc Carbonaceous dominant mudstone

<<Min: 37.1 - 39.4 2% Min: Pyrite>>

37.70 39.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

37.7 - 39.4: Sheared/faulted MDS-RHY contact

<<Alt: 37.7 - 56.7 Moderate Muscovite>>

<<Struc: 37.7 - 39.4 Moderate Fault>> Sheared/faulted MDS-RHY contact

From (m)	To (m)	Rocktype & Description
39.40	**56.70**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**
39.4 - 56.7: Flow banded rhyolite with locally well developed spaced MU cleavage		
<<Min: 39.4 - 56.7 2% Min: Pyrite>>		
<<Min: 39.4 - 57.4 0.1% Min: Sphalerite>>		
56.70	**58.60**	**OI** **Heavilly disseminated sulphides in host schist**
56.7 - 58.6: Sub-rounded BI-AB altered clasts within a fine grained sericite matrix. Heavily disseminated to blebby PY + CP +/- SP +/- GL.		
<<Min: 56.7 - 58.6 1% Min: Sphalerite>>		
<<Min: 56.7 - 58.6 5% Min: Pyrite>>		
<<Min: 56.7 - 58.6 0.5% Min: Galena>>		
<<Min: 56.7 - 58.6 1% Min: Chalcopyrite>>		
<<Alt: 56.7 - 58.6 Strong Muscovite>>		
<<Alt: 56.7 - 58.6 Moderate Calcite>>		
<<Alt: 56.7 - 58.6 Moderate-Strong Biotite>>		
<<Alt: 57.9 - 58.6 Strong Albite>>		
<<Struc: 56.7 - 58.6 Moderate Fault>> Strongly alterated brecciated zone, with BI-AB altered clasts in a sericitic matrix. Patchy to disseminated sulfides occur in both matrix and clasts.		
58.60	**60.50**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**
58.6 - 60.5: Massive PY with disseminated to banded SP+GL and patchy CP. Local patches of sericite and minor sericitc matrix. Minor fracture filling calcite.		
<<Min: 58.6 - 60.5 3% Min: Sphalerite>>		
<<Min: 58.6 - 60.5 90% Min: Pyrite>>		
<<Min: 58.6 - 60.5 1% Min: Galena>>		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
47.70	48.70	1.00	B00292051	-0.005	0.3	-0.01	-0.01	-0.01
48.70	49.70	1.00	B00292052	0.01	0.5	-0.01	-0.01	-0.01
49.70	50.70	1.00	B00292053	0.089	4.6	0.02	0.04	0.16
50.70	51.70	1.00	B00292054	0.04	1.4	-0.01	0.01	0.02
51.70	52.70	1.00	B00292055	0.014	1.2	-0.01	-0.01	0.03
52.70	53.70	1.00	B00292056	0.013	0.7	-0.01	-0.01	0.05
53.70	54.70	1.00	B00292057	0.015	1	-0.01	-0.01	-0.01
54.70	55.70	1.00	B00292058	0.065	5.4	0.01	0.02	0.13
55.70	56.70	1.00	B00292059	0.187	12	0.01	0.05	0.11
56.70	57.70	1.00	B00292061	0.847	58.5	0.61	0.26	2.36
57.70	58.60	0.90	B00292062	0.531	56	0.9	0.25	0.41
58.60	59.60	1.00	B00292063	2.59	296	0.97	3.32	11.1
59.60	60.50	0.90	B00292064	2.52	283	1.86	2.84	9.63

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 58.6 - 60.5 0.5% Min: Chalcopyrite>>									
		<<Alt: 58.6 - 59 Weak Muscovite>>									
		<<Alt: 58.6 - 59 Weak Calcite>> FRA CA in MXSX									
60.50	**61.90**	**OI** **Heavilly disseminated sulphides in host schist** 60.5 - 61.9: Heavily disseminated PY +/- SP +/- GL +/- CP in strong pervassive MU-altered groundmass and disseminated BI. Locally brecciated with sericitic matrix.	60.50	61.10	0.60	B00292065	1.5	142	0.72	1.08	3.59
		<<Min: 60.5 - 61.9 0.5% Min: Sphalerite>>	61.10	61.90	0.80	B00292066	0.054	32.5	0.1	0.62	1.81
		<<Min: 60.5 - 61.9 15% Min: Pyrite>>									
		<<Min: 60.5 - 61.9 0.5% Min: Galena>>									
		<<Min: 60.5 - 61.9 0.5% Min: Chalcopyrite>>									
		<<Alt: 60.5 - 61.9 Strong Muscovite>>									
		<<Alt: 60.5 - 61.9 Weak Biotite>>									
		<<Alt: 61 - 62.5 Moderate Calcite>>									
		<<Vein: 61.5 - 61.9 90% Quartz 35 deg. >> QZ-CA with patchy PY+SP+GL+CP (m-cgr)									
		<<Struc: 61.3 - 62.4 Weak-Moderate Fault>> Moderately faulted, mineralized, and altered contact between MXSX (above) and MAFi (below)									
61.90	**82.10**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)** 61.9 - 82.1: Faulted upper and lower contacts with mineralization	61.90	62.90	1.00	B00292067	0.018	3.8	0.03	0.05	0.16
		<<Min: 61.9 - 81.4 0.5% Min: Pyrite>>	62.90	63.90	1.00	B00292068	-0.005	0.4	-0.01	-0.01	0.01
		<<Min: 81.4 - 82.1 10% Min: Pyrite>> Fautled RHY with clast of MXSX	63.90	64.90	1.00	B00292069	-0.005	0.4	-0.01	-0.01	0.01
		<<Alt: 61.9 - 62.9 Weak-Moderate Muscovite>>	64.90	65.90	1.00	B00292071	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 61.9 - 62.9 Weak-Moderate Chlorite>>	65.90	66.90	1.00	B00292072	0.011	0.6	-0.01	-0.01	0.01
		<<Alt: 61.9 - 62.9 Moderate Biotite>>	66.90	67.90	1.00	B00292073	-0.005	0.3	-0.01	-0.01	-0.01
		<<Alt: 62.5 - 82.1 Weak-Moderate Calcite>>	67.90	68.90	1.00	B00292074	-0.005	-0.3	-0.01	-0.01	0.02
		<<Alt: 62.9 - 81.2 Strong Chlorite>>	68.90	69.90	1.00	B00292075	-0.005	0.7	-0.01	-0.01	0.01
		<<Alt: 62.9 - 81.4 Moderate Biotite>>	69.90	70.90	1.00	B00292076	0.005	0.7	-0.01	-0.01	0.01
		<<Alt: 81.2 - 81.4 Weak Chlorite>>	70.90	71.90	1.00	B00292077	-0.005	0.3	-0.01	-0.01	0.01
		<<Alt: 81.2 - 81.4 Moderate-Strong Biotite>>	71.90	73.00	1.10	B00292078	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 81.4 - 82.1 Strong Muscovite>> MU-altered fault zone	73.00	74.10	1.10	B00292079	0.007	-0.3	-0.01	-0.01	0.01
		<<Vein: 77.95 - 78 100% Calcite 50 deg. >> Massive CA-CL vein	74.10	75.20	1.10	B00292081	-0.005	-0.3	-0.01	-0.01	0.01
		<<Struc: 66.4 - 66.5 Weak Fault>>	75.20	76.20	1.00	B00292082	-0.005	-0.3	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 70.16 - 70.17 dominant foliation>>			76.20	77.20	1.00	B00292083	-0.005	0.4	-0.01	-0.01	-0.01
<<Struc: 73.86 - 73.87 dominant foliation>>			77.20	78.20	1.00	B00292084	0.005	1	0.02	-0.01	0.01
<<Struc: 81.4 - 82.1 Weak-Moderate Fault>> Clay gouge fault/shear and altered contact between MAFi (above) and MXSX (below)			78.20	79.20	1.00	B00292085	-0.005	-0.3	-0.01	-0.01	-0.01
			79.20	80.20	1.00	B00292086	-0.005	0.7	-0.01	-0.01	0.01
			80.20	81.20	1.00	B00292087	-0.005	-0.3	-0.01	-0.01	0.01
			81.20	82.10	0.90	B00292088	0.075	23.2	0.07	0.23	1.38
82.10	**84.10 OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	82.10	83.10	1.00	B00292089	1.02	112	0.36	1.19	6.3
82.1 - 84.1: Massive PY+SP+/-GL with disseminated CI+CL+CA											
<<Min: 82.1 - 84.1 2% Min: Sphalerite>>			83.10	84.10	1.00	B00292092	1.05	157	0.67	1.32	7.91
<<Min: 82.1 - 84.1 90% Min: Pyrite>>											
<<Min: 82.1 - 84.1 0.5% Min: Galena>>											
<<Alt: 82.1 - 82.9 Weak Cordierite>> CI porphyroblasts											
<<Alt: 82.1 - 84.1 Weak-Moderate Calcite>>											
84.10	**89.40 RHY**	**undifferentiated rhyolite**	84.10	85.60	1.50	B00292093	0.856	78	0.09	0.1	0.35
84.1 - 89.4: Faulted RHY with local massive QZ+/-sulfide veins											
<<Min: 84.1 - 94.6 0.5% Min: Pyrite>>			85.60	86.70	1.10	B00292094	0.012	2.6	-0.01	0.03	0.02
<<Alt: 84.1 - 89.4 Moderate-Strong Muscovite>>			86.70	88.20	1.50	B00292095	0.045	2.1	-0.01	0.01	0.03
<<Vein: 84.5 - 86.7 15% Quartz>> Faulted rhyolite with 5-30 cm wide QZ veins			88.20	89.40	1.20	B00292096	-0.005	1.2	-0.01	-0.01	-0.01
<<Vein: 89 - 89.1 100% Quarzt-Biotite 45 deg. >> 10 cm wide QZ vein with patchy BI											
<<Struc: 84.1 - 88.4 Moderate Fault>> Clay gouge rhyolite fault breccia											
89.40	**94.60 MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	89.40	90.40	1.00	B00292097	0.009	1.1	-0.01	-0.01	0.03
<<Alt: 89.4 - 94.6 Strong Chlorite>>			90.40	91.90	1.50	B00292098	0.009	0.5	-0.01	-0.01	0.02
<<Alt: 89.4 - 94.6 Moderate Calcite>>			91.90	93.40	1.50	B00292099	0.006	0.3	-0.01	-0.01	0.02
<<Alt: 89.4 - 94.6 Moderate Biotite>>			93.40	94.60	1.20	B00292101	0.015	0.6	-0.01	-0.01	0.02
<<Struc: 93.09 - 93.1 dominant foliation>>											

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
94.60	**98.70**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	94.60	95.60	1.00	B00292102	0.389	24.6	0.02	0.33	1.13
94.6 - 98.7: Patchy to semi-massive PY+SP+GL+/-CP within CA+SI matrix with disseminated MG. Local patches of CL alteration.												
<<Min: 94.6 - 98.7 5% Min: Sphalerite>>				95.60	96.70	1.10	B00292103	2.79	297	0.14	2.84	4.54
<<Min: 94.6 - 98.7 40% Min: Pyrite>>				96.70	97.70	1.00	B00292104	2.99	384	0.23	3.06	4.68
<<Min: 94.6 - 98.7 3% Min: Magnetite>>				97.70	98.70	1.00	B00292105	5.65	424	0.25	3.14	4.06
<<Min: 94.6 - 98.7 2% Min: Galena>>												
<<Alt: 94.6 - 95.6 Weak-Moderate Chlorite>>												
<<Alt: 94.6 - 98.7 Weak-Moderate Silicification>>												
<<Alt: 94.6 - 98.7 Moderate-Strong Calcite>>												
<<Struc: 96.97 - 96.98 dominant foliation>> Sulfide band with ~2 cm of offset along small steep fault plane												
<<Struc: 97 - 97.01 Trace Fault>> Small calcite cemented fault plane with ~2 cm offset of sulfide band. Normal fault with E-side down.												
98.70	**154.30**	**RHYi**	**Aphanitic Rhyolite (intrusion)**	98.70	100.20	1.50	B00292106	0.089	10.2	-0.01	0.07	0.09
98.7 - 154.3: Very siliceous, pink to grey, aphanitic rhyolite. Locally banded and/or FD phenocrystics (fgr).												
<<Min: 98.7 - 167.75 1% Min: Pyrite>>				100.20	101.70	1.50	B00292107	0.014	3	-0.01	0.03	0.05
<<Alt: 98.7 - 154.3 Weak Albite>> Patchy pink albite (?)				101.70	103.20	1.50	B00292108	0.017	2.6	-0.01	0.04	0.06
<<Alt: 98.7 - 167.6 Weak-Moderate Calcite>> FRA CA in RHYi				103.20	104.70	1.50	B00292109	0.009	1.5	-0.01	0.02	0.03
<<Vein: 118.2 - 118.3 100% Quartz>> White QZ vein with minor PY on selvage				104.70	106.20	1.50	B00292111	0.008	1.4	-0.01	0.02	0.07
<<Struc: 123.17 - 123.18 dominant foliation>>				106.20	107.70	1.50	B00292112	0.008	1.2	-0.01	0.02	0.03
<<Struc: 125.1 - 125.11 dominant foliation>>												
<<Struc: 137.96 - 137.97 dominant foliation>>												
154.30	**160.70**	**RHYc**	**Rhyolite coherant volcanics**									
154.3 - 160.7: Silica-MU banded rhyolite within RHYi												
<<Alt: 154.3 - 160.7 Moderate Muscovite>> OP or OR? Within RHYi												
160.70	**167.60**	**RHYi**	**Aphanitic Rhyolite (intrusion)**	160.70	162.00	1.30	B00292113	0.008	-0.3	-0.01	-0.01	-0.01
<<Alt: 166.5 - 169.7 Weak-Moderate Muscovite>> RHYi displays increasing MU alteration downhole (beginning at ~166.5 m). MAFi displays moderate bright green (MU/sericite?) alteration, particularly near upper and lower contact.				162.00	163.50	1.50	B00292114	0.007	-0.3	-0.01	-0.01	-0.01
<<Vein: 165.45 - 165.5 100% Quartz 30 deg. >> Massive white QZ vein with sericitic selvages				163.50	165.00	1.50	B00292115	0.006	0.6	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
165.00	166.50	1.50	B00292116	-0.005	0.4	-0.01	-0.01	-0.01
166.50	167.60	1.10	B00292117	-0.005	0.3	-0.01	-0.01	-0.01
167.60	168.60	1.00	B00292118	0.138	34.9	0.04	0.39	0.96

167.60 169.70 MAFi **Mafic Intrusions (primarily footwall mafic intrusion)**

167.6 - 169.7: MAFi displays moderate bright green (MU/sericite?) alteration, particularly near upper and lower contact. Minor ~5cm wide MXSX near upper contact with RHYi.

<<Min: 167.75 - 167.8 80% Min: Pyrite>>

<<Min: 167.75 - 167.8 1% Min: Galena>>

<<Min: 167.8 - 169.7 0.1% Min: Pyrite>>

<<Alt: 167.6 - 169.7 Moderate Calcite>>

<<Struc: 169.5 - 169.7 Weak Fault>> Faulted contact between MAFi (above) and OJ (below)

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
168.60	169.70	1.10	B00292119	0.023	1.4	-0.01	0.01	0.04

169.70 170.30 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

169.7 - 170.3: Grades from massive (top) PO+PY with diss MG+CP to blebby CP+/-PY

<<Min: 169.7 - 170.3 15% Min: Pyrite>>

<<Min: 169.7 - 170.3 10% Min: Pyrrhotite>>

<<Min: 169.7 - 170.3 5% Min: Magnetite>>

<<Min: 169.7 - 170.3 5% Min: Chalcopyrite>>

<<Alt: 169.7 - 170.3 Moderate-Strong Muscovite>> Cgr silver MU in MIN

<<Alt: 169.7 - 170.3 Weak Calcite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
169.70	170.30	0.60	B00292121	0.333	53.8	2.63	0.04	6.18

170.30 172.70 RHYc **Rhyolite coherant volcanics**

170.3 - 172.7: Flow banded to foliated rhyolite. MU-alteration decreases intensity from the top down.

<<Min: 170.3 - 171.3 3% Min: Pyrite>>

<<Min: 171.3 - 172.7 1% Min: Pyrite>>

<<Alt: 170.3 - 171.3 Moderate Muscovite>>

<<Alt: 170.3 - 172.7 Trace Calcite>>

<<Alt: 171.3 - 172.7 Weak Muscovite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
170.30	171.30	1.00	B00292122	0.028	2.6	0.01	0.04	0.14
171.30	172.70	1.40	B00292123	0.011	-0.3	-0.01	-0.01	-0.01

172.70 173.20 MDSc **Carbonaceous dominant mudstone**

172.7 - 173.2: Faulted upper and lower contacts

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
172.70	173.20	0.50	B00292124	0.006	1.4	0.03	0.01	0.24

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-344

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 172.7 - 173.2 1% Min: Pyrrhotite>>									
		<<Alt: 172.7 - 173.2 Weak Calcite>> FRA CA in MDSc									
		<<Struc: 172.7 - 172.85 Weak Fault>> Fautled contact between RHY (above) and MDS (below)									
173.20	**199.10**	**RHYvl Lapilli tuff**	173.20	174.70	1.50	B00292125	-0.005	-0.3	-0.01	-0.01	-0.01
		173.2 - 199.1: Variable amounts of BCQlpl ranging from 5 to 30%.									
		<<Min: 173.3 - 190.2 1% Min: Pyrrhotite>>	174.70	176.20	1.50	B00292126	-0.005	0.3	-0.01	-0.01	0.02
		<<Min: 190.2 - 224.2 1% Min: Pyrite>>	176.20	177.70	1.50	B00292127	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 173.2 - 224.2 Weak Muscovite>> Weak sericite alteration along clevages throughout footwall. Maybe overprint?	177.70	179.20	1.50	B00292128	-0.005	-0.3	0.02	-0.01	-0.01
		<<Alt: 173.2 - 224.2 Trace Calcite>>	179.20	180.70	1.50	B00292129	-0.005	-0.3	-0.01	-0.01	0.01
		<<Struc: 173.2 - 173.3 Weak Fault>> Faulted contact between MDS (above) and RHY (below)									
		<<Struc: 177.27 - 177.28 dominant foliation>>									
		<<Struc: 186.91 - 186.92 dominant foliation>>									
199.10	**209.60**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**									
		199.1 - 209.6: Curdy to silica banded rhyolite									
209.60	**224.20**	**RHYvl Lapilli tuff**									
		<<Vein: 219.4 - 220 100% Quartz>> Massive white QZ vein with sericite + tourmaline alteration halo									
		<<Struc: 210.72 - 210.73 dominant foliation>>									
		<<Struc: 220.52 - 220.53 Crenulation cleavage>> Axial plane of folded rhyolite. Not a crenulation, but there was no proper code in Geospark for fold or axial plane at the time.									
		<<Struc: 221.13 - 221.14 dominant foliation>>									
End of Hole @ 224.2											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-345

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/18/2016
UTM Easting	415033.3496	Core Size:	HQ3	Azimuth:	11.03	Date Logging Complete:	5/19/2016
UTM Northing:	6814949.7885	Casing Pulled?:	Yes	Dip:	-55	Drill Company:	Hytech
UTM Elev. (m):	1387.207	Casing Depth (m):	36	Length (m):	90.5	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/16/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/18/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
						Parent Hole:	

Comments:

The purpose of the DDH was to obtain a metallurgical sample from the Krakatoa upper lens.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-55	9.63	1.4	11.03	APS	Rob Duncan	5/16/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
42	-55.8	350.4	22.1	12.5	ReflexEZS	Hytech	5/17/2016	5876	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
48	-54.4	4	22.1	26.1	ReflexEZS	Hytech	5/17/2016	5786	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
69	-58	350.9	22.1	13	ReflexEZS	Hytech	5/17/2016	5816	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
90.5	-59	348.6	22.1	10.7	ReflexEZS	Hytech	5/18/2016	5888	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**38.70**	**OVBN Overburden**									
38.70	**54.38**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	44.30	46.10	1.80	B00291328	0.013	0.5	-0.01	-0.01	0.01
<<Min: 38.7 - 44 2% Min: Pyrite>>			46.10	48.00	1.90	B00291329	0.019	1.9	-0.01	0.04	0.03
<<Min: 44 - 54.38 0.1% Min: Sphalerite>>		in blebs with pyrite.	48.00	48.70	0.70	B00291331	0.012	0.7	-0.01	0.02	0.03
<<Min: 44 - 54.38 3% Min: Pyrite>>		and diss	48.70	49.90	1.20	B00291332	0.01	1.1	-0.01	0.02	0.03
<<Min: 44 - 54.38 0.1% Min: Arsenopyrite>>			49.90	51.00	1.10	B00291333	0.012	0.9	-0.01	0.02	0.06
<<Alt: 38.7 - 54.35 Strong Muscovite>>		Sericite partings	51.00	52.50	1.50	B00291334	0.016	1.6	-0.01	0.04	0.1
<<Alt: 38.7 - 54.35 Weak Calcite>>		blebs, diss, bands	52.50	53.70	1.20	B00291335	0.023	5.3	-0.01	0.07	0.12

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 54.35 - 57 Moderate Calcite>>			53.70	54.38	0.68	B00291336	0.037	6.3	-0.01	0.03	0.03
<<Struc: 38.7 - 46 Moderate-Strong dominant foliation>>											
<<Struc: 48 - 48.7 Weak Fault>>											
<<Struc: 51 - 51.8 Moderate-Strong dominant foliation>>											
<<Struc: 54.28 - 54.33 Weak-Moderate Fault>> shear at sulfide contact											
<<Struc: 54.3 - 54.45 Strong Contact>>											
54.38	**57.00**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	54.38	54.99	0.61	B00291337	1.51	291	0.14	3.11	10.1
54.38 - 57: Homogonous unit. Sharp upper and lower contacts at 40 deg, parallel to foliation and mineral banding.											
<<Min: 54.38 - 57 15% Min: Sphalerite>>			54.99	56.00	1.01	B00291338	2.24	426	0.18	4.57	11.2
<<Min: 54.38 - 57 65% Min: Pyrite>>			56.00	57.00	1.00	B00291339	1.25	375	0.02	5.07	10.4
<<Min: 54.38 - 57 3% Min: Galena>>											
<<Struc: 54.5 - 55 Weak-Moderate Foliation>> mineral banding											
<<Struc: 55 - 56.9 Weak-Moderate Foliation>> mineral banding											
<<Struc: 56.95 - 57 Strong Contact>>											
57.00	**62.32**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	57.00	58.50	1.50	B00291342	0.008	2.4	-0.01	0.03	0.02
57 - 62.32: 57.00-58.92: RHY, altered - possibly ash tuff.											
<<Min: 57 - 65.76 0.5% Min: Pyrite>>			58.50	60.00	1.50	B00291343	0.012	4.4	-0.01	0.06	-0.01
<<Min: 60.8 - 62.32 0.1% Min: Sphalerite>> and as rare blebs			60.00	61.50	1.50	B00291344	0.014	6.8	-0.01	0.03	-0.01
<<Alt: 57 - 62.32 Moderate-Strong Muscovite>> sericite partings			61.50	62.32	0.82	B00291345	0.061	37.2	-0.01	0.05	-0.01
<<Alt: 57 - 90.5 Moderate-Strong Calcite>>											
<<Vein: 58.83 - 59 100% Quartz-Carbonate 50 deg. >>											
<<Struc: 57 - 58.8 Weak Fault>> missing core due to fault - shear at lower sulfide contact.											
<<Struc: 58 - 58.8 Moderate dominant foliation>>											
<<Struc: 59.5 - 61.5 Moderate dominant foliation>>											
62.32	**64.08**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	62.32	63.55	1.23	B00291346	0.017	2	0.02	0.01	-0.01
62.32 - 64.08: Bleached and sericite altered with diss and blebby arsenopyrite, unmineralized fresher biotite rich section from 63.55-63.93m.											
<<Min: 62.32 - 63.55 0.1% Min: Chalcopyrite>>			63.55	64.08	0.53	B00291347	-0.005	-0.3	-0.01	-0.01	0.02

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 62.32 - 63.55 3% Min: Arsenopyrite>> and as diss									
		<<Min: 63.55 - 90.5 0.01% Min: Pyrite>>									
		<<Alt: 62.32 - 65.76 Moderate Muscovite>> dense sericite									
		<<Alt: 63.55 - 63.93 Moderate-Strong Biotite>>									
		<<Struc: 62.5 - 63.2 Moderate dominant foliation>>									
		<<Struc: 63.2 - 63.5 Moderate dominant foliation>>									
		<<Struc: 64 - 66 Weak Fault>> broken core and missing core - possible fault zone.									
64.08	**65.76**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	64.08	65.76	1.68	B00291348	0.008	3.2	-0.01	0.03	-0.01
		64.08 - 65.76: Thin band of RHYcw, unit includes pieces of sericite altered and bleached MAFi.									
65.76	**80.00**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
		<<Min: 79.95 - 80.5 0.01% Min: Chalcopyrite>>									
		<<Min: 79.95 - 80.5 0.1% Min: Arsenopyrite>>									
		<<Alt: 65.76 - 80 Moderate-Strong Biotite>>									
		<<Alt: 65.76 - 90.5 Moderate Chlorite>>									
		<<Vein: 79.95 - 81.53 50% Quartz-Carbonate 12 deg. >> trace blebs arsenopyrite and chacopyrite at upper contact									
		<<Struc: 66 - 67.5 Weak-Moderate Vein>> thin calcite veins									
		<<Struc: 66.2 - 67 Weak dominant foliation>> minor fold?									
		<<Struc: 68.5 - 69.5 Weak dominant foliation>>									
		<<Struc: 71 - 73 Weak-Moderate dominant foliation>>									
		<<Struc: 79.95 - 81.93 Weak-Moderate Vein>>									
80.00	**90.50**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
		<<Vein: 84.5 - 89.33 5% Calcite 10 deg. >>									
		<<Struc: 81.6 - 84 Weak-Moderate dominant foliation>>									
		<<Struc: 83 - 88.5 Weak-Moderate Vein>>									
		<<Struc: 87 - 89.6 Weak-Moderate dominant foliation>>									
		<<Struc: 89 - 89.1 Weak-Moderate Vein>>									
		<<Struc: 89.6 - 90.5 Weak-Moderate dominant foliation>>									

End of Hole @ 90.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-346

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/20/2016
UTM Easting	415033.8698	Core Size:	HQ3	Azimuth:	65.01	Date Logging Complete:	5/21/2016
UTM Northing:	6814949.6011	Casing Pulled?:	Yes	Dip:	-45	Drill Company:	Hytech
UTM Elev. (m):	1387.186	Casing Depth (m):	42	Length (m):	102.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/18/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/20/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

Hole K16-346 was collared to test the Krakatoa upper lens.
Hole K16-346 is made up of muscovite altered rhyolitic (hanging wall) unit from 42m to 54.85m. The upper lens is intercepted from 54.95m to 64.97m showing OA, OB (possibly containing BA) and OI domains, mineralized PY/SP/GL/MG/CP.
The footwall, consisting in mafic sill, is encountered from 64.97m to 88.95m and 94.04m to 102.20m. Muscovite altered volcaniclastic and flow rhyolite is seen from 88.95m to 94.02m.
Hole K16-346 ends at 102.20m and confirmed the presence of the upper lens.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-45	63.61	1.4	65.01	APS	Jerome de Pasquale	5/18/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
51	-45.5	39.9	22.1	62	ReflexEZS	Hytech	5/19/2016	5835	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
75	-46.9	41.3	22.1	63.4	ReflexEZS	Hytech	5/20/2016	5815	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
99	-47.6	40.1	22.1	62.2	ReflexEZS	Hytech	5/21/2016	5871	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**42.00**	**OVBN Overburden**									
42.00	**50.80**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	45.00	46.00	1.00	B00291349	0.006	0.3	-0.01	-0.01	-0.01
42 - 50.8: Muscovite altered muscovite, faulted/sheared locally.											
<<Min: 42 - 54.85 1% Min: Pyrite>>			46.00	48.00	2.00	B00291351	0.009	0.6	-0.01	-0.01	-0.01
<<Alt: 42 - 54.85 Moderate-Strong Muscovite>>			48.00	49.50	1.50	B00291352	0.012	0.6	-0.01	-0.01	-0.01
<<Alt: 42 - 61.75 Weak-Moderate Calcite>>			49.50	50.80	1.30	B00291353	0.011	0.6	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 45.8 - 46.4 Moderate Fault>> And sheared.												
<<Struc: 48.8 - 48.81 dominant foliation>>												
50.80	**54.30**	**No Core No Core**		50.80	54.30	3.50	B00291354	0.012	1.2	-0.01	-0.01	0.02
50.8 - 54.3: Core loss. 20 cm of gouge at upper contact suggesting that material has been washed during drilling.												
<<Struc: 50.8 - 54 Weak-Moderate Fault>> Possibly large fault, core loss and fault gouge at upper contact.												
54.30	**54.85**	**RHY undifferentiated rhyolite**		54.30	54.85	0.55	B00291355	0.046	11.6	0.01	0.13	0.29
54.85	**57.05**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	54.85	55.85	1.00	B00291356	1.19	178	0.05	2.05	6.96
54.85 - 57.05: RHY from 55.57 to 55.85.												
<<Min: 54.85 - 58.75 5% Min: Sphalerite>>				55.85	57.05	1.20	B00291357	1.32	144	0.58	1.9	8.1
<<Min: 54.85 - 58.75 2% Min: Galena>>												
<<Min: 54.85 - 62.81 80% Min: Pyrite>>												
57.05	**58.04**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	57.05	58.04	0.99	B00291358	0.859	145	0.38	2.84	7.07
57.05 - 58.04: Locally semi massive, white matrix (CA/BA?).												
<<Alt: 58 - 62 Moderate Chlorite>> Maybe replacement.												
58.04	**58.75**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	58.04	58.75	0.71	B00291359	1.86	212	0.4	4.64	9.96
58.75	**59.92**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	58.75	59.25	0.50	B00291362	2.29	248	0.59	5.87	8.01
58.75 - 59.92: Could be consider as OK. Black chlorite clots.												
<<Min: 58.75 - 59.92 5% Min: Sphalerite>>				59.25	59.92	0.67	B00291363	3.86	273	3.01	3.96	6.2
<<Min: 58.75 - 59.92 5% Min: Magnetite>>												
<<Min: 58.75 - 59.92 3% Min: Galena>>												
<<Min: 58.75 - 59.92 10% Min: Chalcopyrite>>												
<<Min: 58.75 - 64.97 5% Min: Barite>>												

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
59.92	**61.08**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MG**	59.92	61.08	1.16	B00291364	2.84	230	1.28	4.99	6.87
59.92 - 61.08: White matrix, could be consider as OK.													
<<Min: 59.92 - 67.81 5% Min: Sphalerite>>													
<<Min: 59.92 - 67.81 5% Min: Galena>>													
<<Struc: 60.7 - 60.71 dominant foliation>> Lamination in MxSx.													
61.08	**61.80**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	61.08	61.80	0.72	B00291365	3.29	275	0.16	8.32	7.62
<<Alt: 61.75 - 73 Strong Calcite>>													
61.80	**62.81**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	61.80	62.30	0.50	B00291366	0.965	258	0.01	8.24	8.8
61.8 - 62.81: CA rich.													
<<Struc: 62.5 - 62.51 dominant foliation>>					62.30	62.81	0.51	B00291367	1.19	201	0.02	4.96	8.61
62.81	**63.96**	**OI**	**Heavilly disseminated sulphides in host schist**	**MG**	62.81	63.31	0.50	B00291368	0.707	92.5	0.05	2.06	1.07
62.81 - 63.96: In mafic. Possibly talc.													
<<Min: 62.81 - 63.81 15% Min: Pyrite>>					63.31	63.96	0.65	B00291369	1.01	141	0.33	2.99	3.29
<<Min: 62.81 - 63.96 1% Min: Sphalerite>>													
<<Min: 62.81 - 63.96 0.5% Min: Galena>>													
<<Min: 62.81 - 63.96 0.5% Min: Chalcopyrite>>													
<<Min: 62.81 - 64.47 80% Min: Pyrite>>													
63.96	**64.47**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	63.96	64.47	0.51	B00291371	1.32	223	0.01	5.08	11.3
<<Min: 63.96 - 64.97 5% Min: Sphalerite>>													
<<Min: 63.96 - 64.97 2% Min: Galena>>													
64.47	**64.97**	**OI**	**Heavilly disseminated sulphides in host schist**	**MG**	64.47	64.97	0.50	B00291372	1.31	249	0.17	5.63	6.38
<<Min: 64.47 - 64.97 50% Min: Pyrite>>													

From (m)	To (m)	Rocktype & Description
64.97	**88.95**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**

64.97 - 88.95: Muscovite altered at upper contact. BI patch. CL alteration.

<<Min: 67 - 72 0.1% Min: Chalcopyrite>> With As.

<<Min: 67 - 72 0.5% Min: Arsenopyrite>>

<<Alt: 64.97 - 65.77 Moderate Muscovite>>

<<Alt: 64.97 - 67 Weak-Moderate Chlorite>> Lithology.

<<Alt: 64.97 - 72.4 Moderate Biotite>>

<<Alt: 67 - 72 Moderate Chlorite>>

<<Alt: 72 - 99.83 Weak-Moderate Chlorite>>

<<Alt: 72.4 - 87 Weak-Moderate Biotite>>

<<Alt: 73 - 82 Moderate Calcite>>

<<Alt: 82 - 88.95 Strong Calcite>>

<<Alt: 87 - 88.95 Moderate Biotite>>

<<Struc: 64.97 - 64.98 Contact>> Contact MxSx/MAFi.

<<Struc: 80.55 - 80.56 dominant foliation>>

<<Struc: 86 - 86.01 dominant foliation>>

From (m)	To (m)	Rocktype & Description
88.95	**92.05**	**RHYva** **Coarse grained to ash tuff**

88.95 - 92.05: Muscovite altered. Silicic-bands locally. Thin foliation.

<<Min: 88.95 - 94.02 1% Min: Pyrite>>

<<Alt: 88.95 - 92.4 Moderate-Strong Muscovite>>

<<Alt: 88.95 - 93.7 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description
92.05	**94.02**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**

92.05 - 94.02: Flow banded. Mu alteration.

<<Alt: 92.4 - 94.02 Moderate Muscovite>>

<<Alt: 93.7 - 102.2 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description
94.02	**102.20**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**

94.02 - 102.2: Fractured, locally gouge and shearing (foliation changing at 97.70m). CA banded and CA porphyroblasts.
E.O.H.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
64.97	66.20	1.23	B00291373	0.012	1.8	-0.01	0.03	0.07
66.20	67.00	0.80	B00291374	-0.005	1	-0.01	0.01	0.05
67.00	68.00	1.00	B00291375	0.007	0.6	-0.01	-0.01	0.02
68.00	69.00	1.00	B00291376	0.01	0.9	-0.01	0.01	0.03
69.00	70.00	1.00	B00291377	0.009	1	-0.01	-0.01	0.01
70.00	71.00	1.00	B00291378	0.008	1.1	-0.01	-0.01	0.01
71.00	72.00	1.00	B00291379	0.008	1	-0.01	-0.01	0.01
72.00	73.00	1.00	B00291381	-0.005	1.2	-0.01	-0.01	0.01
73.00	74.00	1.00	B00291382	0.007	0.8	-0.01	-0.01	0.01
74.00	75.00	1.00	B00291383	-0.005	0.9	-0.01	-0.01	0.02

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-346

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 94.02 - 95.4 Moderate Biotite>> <<Alt: 99.83 - 102.2 Strong Chlorite>> Obscuring BI and foliation. <<Struc: 96 - 99.83 Weak Fault>> Multiple narrow minor fault. <<Struc: 99.83 - 100.1 Moderate Fault>> Fault gouge, clay. <<Struc: 100.7 - 101 Weak Shear>> Foliation changing. **End of Hole @ 102.2**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-347

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/20/2016
UTM Easting	415023.1158	Core Size:	HQ3	Azimuth:	48.53	Date Logging Complete:	5/27/2016
UTM Northing:	6815019.6137	Casing Pulled?:	Yes	Dip:	-55	Drill Company:	Hytech
UTM Elev. (m):	1384.5	Casing Depth (m):	33	Length (m):	170.7	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/18/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/20/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

The purpose of K16-347 was to test inferred portions of the up-dip, Krakatoa upper lens, and to collect metallurgical samples from the upper lens. The hole collared into bedrock at 31.3 m; the felsic hanging wall consisted of RHYva, RHYvl, and RHYcw. Weak to moderate faulting was prominent to a depth of 60.96 m, followed by a strong fault (60.96 - 69.6 m) characterized with strong sericite alteration, brecciation, and gouge. OI mineralization was encountered at 127.56 m, followed with OB (128.22-135.58 m), and OA (135.58-137.28 m). Sericite alteration was intense within the OI unit. RHY continued to a depth of 148.23 m, and contained moderate to strong sericite alteration and occasional mineralized quartz veins. The mafic footwall was encountered at 148.23 m, with a zone of OJ mineralization from 148.23-151.27 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-55	47.13	1.4	48.53	APS	Dillon Hume	5/18/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
42	-55.1	27.9	22.1	50	ReflexEZS	Hytech	5/19/2016	5767	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
66	-56.7	27.9	22.1	50	ReflexEZS	Hytech	5/19/2016	5736	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
84	-55	17.8	22.1	39.9	ReflexEZS	Hytech	5/20/2016	5760	☐	Suspect wrong azimuth was written.
90	-57.8	28.8	22.1	50.9	ReflexEZS	Hytech	5/19/2016	5727	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
114	-58.3	28.5	22.1	50.6	ReflexEZS	Hytech	5/19/2016	5716	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
146	-60.6	30.4	22.1	52.5	ReflexEZS	Hytech	5/20/2016	5765	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170	-61.6	31	22.1	53.1	ReflexEZS	Hytech	5/20/2016	5736	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**31.30**	**OVBN Overburden**									
31.30	**40.00**	**RHYva Coarse grained to ash tuff**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 31.3 - 43.75 1% Min: Pyrrhotite>>

<<Alt: 31.3 - 45.7 Weak Calcite>>

<<Alt: 31.3 - 55 Weak Muscovite>>

<<Struc: 37.25 - 37.72 Strong Fault>> Fractured RHYva; FLT gouge with sand to pebble-sized clasts from 37.48-37.72m.

<<Struc: 37.72 - 43.5 Weak Fault>> Fractured RHY with poor recovery; clay-coating is visible on fractured surfaces. ~35% recovered.

40.00 42.00 No Core No Core

42.00 43.75 RHYva Coarse grained to ash tuff

43.75 49.10 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Min: 43.75 - 49.1 1% Min: Pyrite>>

<<Min: 43.75 - 49.1 0.1% Min: Pyrrhotite>>

<<Alt: 45.7 - 49.1 Weak-Moderate Calcite>>

<<Struc: 45.64 - 49.1 Weak Fault>> Brecciated RHYcw with moderate sericite alteration. Gouge is localized. ~40% recovered.

49.10 51.85 RHYva Coarse grained to ash tuff

<<Min: 49.1 - 55 1% Min: Pyrrhotite>>

<<Alt: 49.1 - 51.85 Trace Calcite>>

<<Struc: 50.83 - 54.18 Weak Fault>> Fractured RHY with traces of gouge along broken surfaces. ~50% recovered.

51.85 55.00 RHYvl Lapilli tuff

<<Min: 51.85 - 55 0.1% Min: Pyrite>>

<<Alt: 51.85 - 55 Weak-Moderate Calcite>>

<<Vein: 53.93 - 54 50% Quartz-Carbonate-Sericite 15 deg. >> Quartz-carbonate vein with patchy sericite.

55.00 57.85 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Min: 55 - 57.85 1% Min: Pyrite>>

<<Min: 55 - 57.85 2% Min: Pyrrhotite>>

<<Alt: 55 - 57.85 Moderate Muscovite>>

<<Alt: 55 - 96 Weak Calcite>>

57.85 60.96 RHY undifferentiated rhyolite

<<Min: 57.85 - 60.96 0.5% Min: Pyrite>>

<<Min: 57.85 - 60.96 1% Min: Pyrrhotite>>

<<Alt: 57.85 - 67.4 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 57.85 - 57.88 100% Quartz-Carbonate-Sericite 45 deg. >>									
		<<Struc: 57.91 - 59.3 Weak-Moderate Fault>> FLT gouge ~90% core loss.									
60.96	**69.60**	**FLZ Fault Zone**									
		60.96 - 69.6: Undifferentiated RHY fault with intense sericite alteration, brecciation, gouge, and quartz veins.									
		<<Min: 60.96 - 69.6 1% Min: Pyrite>> Within the FLT, pyrite is both disseminated and patchy; the patchy pyrite occurs within the brecciated clasts.									
		<<Min: 60.96 - 69.6 0.5% Min: Pyrrhotite>>									
		<<Alt: 67.4 - 69.6 Strong Muscovite>>									
		<<Vein: 60.96 - 69.6 4% Quartz-Carbonate-Sericite 28 deg. >> Series of fractured quartz veins within a brecciated FLT zone; veins contain patchy carbonate and sericite.									
		<<Struc: 60.96 - 69.6 Strong Fault>> Undifferentiated RHY fault with intense sericite alteration, brecciation, gouge, and quartz veins. ~ 70% core loss.									
69.60	**127.56**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	117.00	118.50	1.50	B00292131	0.011	0.4	-0.01	-0.01	0.01
		69.6 - 127.56: Silicic flow banding, with localized curdy-texture.									
		<<Min: 69.6 - 110.47 0.5% Min: Pyrite>>	118.50	120.00	1.50	B00292132	0.01	0.5	-0.01	-0.01	0.01
		<<Min: 110.47 - 127.56 1% Min: Pyrite>>	120.00	121.50	1.50	B00292133	0.007	0.7	-0.01	-0.01	0.02
		<<Min: 110.47 - 127.56 0.1% Min: Arsenopyrite>>	121.50	123.00	1.50	B00292134	0.012	1.2	-0.01	-0.01	0.06
		<<Alt: 69.6 - 110.47 Moderate Muscovite>>	123.00	124.50	1.50	B00292135	0.01	1.2	-0.01	0.01	0.03
		<<Alt: 96 - 128.55 Trace Calcite>>	124.50	126.00	1.50	B00292136	0.006	1	-0.01	-0.01	0.02
		<<Alt: 110.47 - 127.56 Strong Muscovite>>	126.00	127.56	1.56	B00292137	0.008	2.5	-0.01	0.05	0.1
		<<Struc: 69.6 - 70.62 Weak-Moderate Shear>> Well-foliated RHY with moderate sericite alteration and localized gouge. Shear zone is proximal to FLZ.									
		<<Struc: 70.76 - 70.77 dominant foliation>>									
		<<Struc: 78.37 - 78.75 Moderate Fault>> Clast-supported, gouge BRX.									
		<<Struc: 92.45 - 92.46 Crenulation cleavage>> Wavy, crenulated foliation, sub-parallel TCA that has developed a spaced crenulation cleavage.									
		<<Struc: 95.75 - 95.96 Weak Fault>> Brittle RHY and FLT gouge.									
		<<Struc: 115.83 - 115.84 dominant foliation>>									
		<<Struc: 127.51 - 127.52 dominant foliation>>									
127.56	**128.22**	**OI Heavilly disseminated sulphides in host schist**	127.56	128.22	0.66	B00292138	0.212	51.9	1.16	0.27	0.51
		127.56 - 128.22: Disseminated-patchy pyrite, chalcopyrite, sphalerite, and galena within RHY. Mineralization is most abundant near the quartz vein (127.79-128.06m). The RHY unit has undergone intense sericite alteration.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 127.56 - 128.22 0.5% Min: Sphalerite>>									
		<<Min: 127.56 - 128.22 4% Min: Pyrite>> Disseminated-patchy pyrite, sphalerite, galena,and pyrrhotite. Chalcopyrite and pyrrhotite occurs within the quartz vein.									
		<<Min: 127.56 - 128.22 0.5% Min: Pyrrhotite>>									
		<<Min: 127.56 - 128.22 0.1% Min: Galena>>									
		<<Min: 127.56 - 128.22 6% Min: Chalcopyrite>>									
		<<Alt: 127.56 - 128.55 Intense Muscovite>>									
		<<Vein: 127.77 - 128.08 100% Quartz-Carbonate-Sulphide>> Quartz vein with patches of calcite and chalcopyrite +/- sphalerite, pyrite, and galena.									
128.22	**135.58**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	128.22	129.00	0.78	B00292139	1.05	244	0.05	6.29	8.93
		128.22 - 135.58: Massive pyrite +/- sphalerite and galena. Patches of altered host rock (?) become more prominent down-hole.									
		<<Min: 128.22 - 131.75 5% Min: Sphalerite>> Massive pyrite with disseminated sphalerite, and traces of galena.	129.00	130.00	1.00	B00292141	0.556	194	-0.01	6.37	9.29
		<<Min: 128.22 - 131.75 75% Min: Pyrite>> Massive pyrite with disseminated sphalerite, and traces of galena.	130.00	131.00	1.00	B00292142	1.45	231	0.24	4.64	7.63
		<<Min: 128.22 - 131.75 1% Min: Galena>> Massive pyrite with disseminated sphalerite, and traces of galena.	131.00	131.75	0.75	B00292143	1.71	174	0.17	4.05	7.07
		<<Min: 131.75 - 135.58 3% Min: Sphalerite>> Massive pyrite with disseminated-blebs of sphalerite and galena. Patches of barite (?) are visible within the wallrock.	131.75	132.50	0.75	B00292144	4.96	282	0.78	2.45	5.14
		<<Min: 131.75 - 135.58 65% Min: Pyrite>> Massive pyrite with disseminated-blebs of sphalerite and galena. Patches of barite (?) are visible within the wallrock.	132.50	133.50	1.00	B00292145	1.88	318	0.6	3.76	5.14
		<<Min: 131.75 - 135.58 3% Min: Galena>> Massive pyrite with disseminated-blebs of sphalerite and galena. Patches of barite (?) are visible within the wallrock.	133.50	134.50	1.00	B00292146	1.02	215	0.53	2.34	7.2
		<<Min: 131.75 - 135.58 0.5% Min: Barite>> Massive pyrite with disseminated-blebs of sphalerite and galena. Patches of barite (?) are visible within the gangue.	134.50	135.58	1.08	B00292147	1.12	159	0.08	4.8	8.29
		<<Alt: 128.22 - 131.75 Trace Silicification>>									
		<<Alt: 128.55 - 131.75 Weak Calcite>>									
		<<Alt: 131.75 - 135.58 Weak Silicification>>									
		<<Alt: 131.75 - 135.58 Weak-Moderate Calcite>>									
135.58	**137.28**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	135.58	136.50	0.92	B00292148	1.25	215	0.33	6.31	11.9
		135.58 - 137.28: Coarse-grained, massive pyrite + magnetite, sphalerite, +/- chalcopyrite, and galena. Calcite is patchy, and is common within fractures.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 135.58 - 137.28 10% Min: Sphalerite>> Massive pyrite with disseminated sphalerite and magnetite, and traces of galena and chalcopyrite.	136.50	137.28	0.78	B00292149	5.02	273	1.68	6.15	10.8
		<<Min: 135.58 - 137.28 70% Min: Pyrite>> Massive pyrite with disseminated sphalerite and magnetite, and traces of galena and chalcopyrite.									
		<<Min: 135.58 - 137.28 15% Min: Magnetite>> Massive pyrite with disseminated sphalerite and magnetite, and traces of galena and chalcopyrite.									
		<<Min: 135.58 - 137.28 0.5% Min: Galena>> Massive pyrite with disseminated sphalerite and magnetite, and traces of galena and chalcopyrite.									
		<<Min: 135.58 - 137.28 0.1% Min: Chalcopyrite>> Massive pyrite with disseminated sphalerite and magnetite, and traces of galena and chalcopyrite.									
		<<Alt: 135.58 - 137.28 Weak-Moderate Calcite>>									
137.28	**148.23**	**RHY undifferentiated rhyolite**	137.28	138.50	1.22	B00292152	0.006	2.3	0.02	0.03	0.09
		137.28 - 148.23: Well-foliated, undifferentiated RHY with moderate-strong sericite alteration. Quartz veining occurs from 147.05- 148.2m; quartz veins contain coarse-grained chalcopyrite, and pyrrhotite +/- sphalerite and galena. Sericite alteration is intense within the quartz vein.									
		<<Min: 137.28 - 146.75 0.1% Min: Pyrite>>	138.50	140.00	1.50	B00292153	0.006	0.5	-0.01	-0.01	-0.01
		<<Min: 137.28 - 146.75 0.1% Min: Chalcopyrite>> Blebs of chalcopyrite are within quartz veins.	140.00	141.50	1.50	B00292154	0.006	0.4	-0.01	-0.01	-0.01
		<<Min: 146.75 - 148.23 2% Min: Sphalerite>>	141.50	143.00	1.50	B00292155	-0.005	0.8	-0.01	-0.01	-0.01
		<<Min: 146.75 - 148.23 1% Min: Pyrrhotite>> Pyrrhotite zonation is common around patches of chalcopyrite.	143.00	144.50	1.50	B00292156	-0.005	0.5	-0.01	-0.01	-0.01
		<<Min: 146.75 - 148.23 0.5% Min: Galena>>	144.50	146.00	1.50	B00292157	-0.005	0.5	-0.01	-0.01	-0.01
		<<Min: 146.75 - 148.23 3% Min: Chalcopyrite>> Mineralization is patchy-blebby within the quartz veins.	146.00	146.75	0.75	B00292158	-0.005	0.5	-0.01	-0.01	-0.01
		<<Alt: 137.28 - 146.75 Moderate-Strong Muscovite>>	146.75	148.23	1.48	B00292159	0.385	27.3	0.8	0.01	0.19
		<<Alt: 137.28 - 146.75 Trace Calcite>>									
		<<Alt: 146.75 - 148.23 Intense Muscovite>>									
		<<Alt: 146.75 - 148.23 Weak Calcite>>									
		<<Vein: 137.28 - 137.46 100% Quartz-Carbonate>> Quartz vein with patches of calcite.									
		<<Vein: 138.1 - 138.33 20% Quartz-Carbonate-Sulphide>> Quartz veins within RHY; veins contain blebs of chalcopyrite, and minor calcite within the fractures.									
		<<Vein: 146.75 - 148.23 70% Quartz-Carbonate-Sulphide>> Massive quartz vein within an intense-sericite altered RHY unit. The vein contains patchy calcite, chalcopyrite, sphalerite, and chlorite (?) Pyrrhotite zonation is common around the patches of chalcopyrite.									
		<<Struc: 143.27 - 143.28 dominant foliation>>									
		<<Struc: 146.35 - 146.36 dominant foliation>>									

From (m)	To (m)	Rocktype & Description
148.23	**151.27**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**
148.23 - 151.27: Mafic sill host. Localized patches of intense chlorite alteration. Coarse-grained, intergrown chalcopyrite-pyrrhotite disseminated blebs.		
<<Min: 148.23 - 151.27 2% Min: Pyrite>> Coarse-grained, intergrown chalcopyrite-pyrrhotite-pyrite disseminated blebs.		
<<Min: 148.23 - 151.27 2% Min: Pyrrhotite>> Coarse-grained, intergrown chalcopyrite-pyrrhotite-pyrite disseminated blebs.		
<<Min: 148.23 - 151.27 2% Min: Chalcopyrite>> Coarse-grained, intergrown chalcopyrite-pyrrhotite-pyrite disseminated blebs.		
<<Alt: 148.23 - 151.27 Strong Chlorite>>		
<<Alt: 148.23 - 155.2 Moderate Calcite>>		
<<Alt: 148.23 - 170.7 Moderate Biotite>>		
<<Vein: 149.45 - 149.59 100% Quartz-Carbonate 45 deg. >> Quartz vein with patches of calcite.		
151.27	**170.70**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**
151.27 - 170.7: Chlorite-rich groundmass with blebby biotite and minor, patchy calcite.		
<<Min: 151.27 - 170.7 0.1% Min: Pyrite>>		
<<Min: 151.27 - 170.7 0.1% Min: Pyrrhotite>>		
<<Alt: 151.27 - 170.7 Moderate Chlorite>>		
<<Alt: 155.2 - 170.7 Weak-Moderate Calcite>> FRA		
<<Struc: 153.57 - 153.58 dominant foliation>>		
<<Struc: 156.82 - 156.83 dominant foliation>>		
<<Struc: 160.58 - 160.59 dominant foliation>>		
<<Struc: 165.27 - 165.28 dominant foliation>>		
<<Struc: 168.43 - 168.44 dominant foliation>>		
<<Struc: 168.6 - 168.61 Vein>> Calcite stringer.		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
148.23	149.00	0.77	B00292161	0.301	23.9	0.83	-0.01	0.37
149.00	150.00	1.00	B00292162	0.229	26.6	0.65	0.04	0.78
150.00	151.27	1.27	B00292163	0.908	76.7	1.81	0.09	0.89
151.27	152.50	1.23	B00292164	0.006	2	0.02	0.02	0.04
152.50	154.00	1.50	B00292165	-0.005	1.2	-0.01	0.02	0.04
154.00	155.50	1.50	B00292166	-0.005	1.3	-0.01	0.02	0.03
155.50	157.00	1.50	B00292167	-0.005	0.7	-0.01	0.02	0.03
157.00	158.50	1.50	B00292168	-0.005	1.2	-0.01	0.02	0.03
158.50	160.00	1.50	B00292169	-0.005	1	-0.01	0.02	0.03
160.00	161.50	1.50	B00292171	-0.005	1	-0.01	-0.01	0.02

End of Hole @ 170.7

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-348

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	5/21/2016
UTM Easting	414937.5724	Core Size:	NQ3	Azimuth:	36.13	Date Logging Complete:	5/23/2016
UTM Northing:	6815043.2954	Casing Pulled?:	Yes	Dip:	-54	Drill Company:	Hytech
UTM Elev. (m):	1384.219	Casing Depth (m):	30	Length (m):	129.5	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/20/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/22/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-348 was collared to test the upper Krakatoa lenses.
Hole K16-348 is made up of strongly muscovite altered rhyolitic (hanging wall) foliated along the core axis showing two narrow zones mineralized PY/PY, trace of CP (from 51.22 m to 52.26 m and from 60.00 to 61,00 m). No massive sulfide was intercepted except for 40 cm of mineralization (PY/SP/GL) at the base of the overburden, which may be interpreted as a boulder. Note, however, that a similar "lens" is seen in hole K16-339.
The hole is marked by a fault zone extending from 83.40 m to 93.80 m at contact between the felsic sequence and the mafic sill. This fault might be correlated to the one observed deeper in hole K16-339. PY clasts are present within the fault gouge. The hole was shutdown at 129.50 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-54	34.73	1.4	36.13	APS	Jerome de Pasquale	5/20/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
36	-53.4	15.8	22.1	37.9	ReflexEZS	Hytech	5/21/2016	5682	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
60	-54.7	15.4	22.1	37.5	ReflexEZS	Hytech	5/21/2016	5781	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
84	-55	17.8	22.1	39.9	ReflexEZS	Hytech	5/21/2016	5760	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
108	-56	17.6	22.1	39.7	ReflexEZS	Hytech	5/22/2016	5764	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
129	-56.8	17.4	22.1	39.5	ReflexEZS	Hytech	5/22/2016	5832	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**29.60**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
29.60	**30.00**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	29.60	30.00	0.40	B00291384	1.79	285	0.19	3.2	9.73
29.6 - 30: Possibly boulder on top of the overburden.											
<<Min: 29.6 - 30 15% Min: Sphalerite>>											
<<Min: 29.6 - 30 60% Min: Pyrite>>											
<<Min: 29.6 - 30 5% Min: Galena>>											
30.00	**51.22**	**RHY** **undifferentiated rhyolite**	30.00	31.50	1.50	B00291385	0.006	0.4	-0.01	-0.01	-0.01
30 - 51.22: Strongly muscovite altered, strong schistosity along the core axis, locally narrow gouge up to 20 cm wide. PY/QZ discontinuous veins/stringers.											
<<Min: 30 - 51.22 3% Min: Pyrite>>			31.50	33.00	1.50	B00291386	0.006	0.6	-0.01	-0.01	-0.01
<<Min: 30 - 51.22 0.5% Min: Pyrrhotite>>			33.00	34.50	1.50	B00291387	0.008	-0.3	-0.01	-0.01	-0.01
<<Alt: 30.03 - 32.3 Moderate Calcite>>			46.72	48.22	1.50	B00291388	0.006	0.4	-0.01	-0.01	-0.01
<<Alt: 30.03 - 41.86 Strong Muscovite>> Locally intense alteration.			48.22	49.72	1.50	B00291389	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 32.3 - 34.6 Moderate-Strong Calcite>>			49.72	51.22	1.50	B00291391	-0.005	0.7	-0.01	-0.01	-0.01
<<Alt: 34.6 - 45.05 Weak Calcite>>											
<<Alt: 41.86 - 46 Moderate Muscovite>>											
<<Alt: 45.05 - 51.22 Moderate-Strong Calcite>>											
<<Alt: 46 - 50.3 Moderate-Strong Muscovite>>											
<<Alt: 50.3 - 60 Moderate Muscovite>>											
<<Vein: 43.5 - 60 Pyrite 40 deg. >> PY dominant/few PO stringers (3 per metre).											
<<Struc: 30 - 43.5 dominant foliation>> Foliation along the core axis, less than 10 degrees.											
<<Struc: 39.2 - 39.5 Moderate Shear>> Foliation changing from 0 to 60 to 0 degrees in a short interval.											
<<Struc: 45.7 - 45.7 dominant foliation>>											
51.22	**52.26**	**OI** **Heavilly disseminated sulphides in host schist** **FMG**	51.22	51.72	0.50	B00291392	0.007	4.1	0.03	0.02	0.01
51.22 - 52.26: 30 percent of sulfide in CA rich matrix. Mostly PO.											
<<Min: 51.22 - 52.26 10% Min: Pyrite>>			51.72	52.26	0.54	B00291393	-0.005	1.9	0.03	-0.01	-0.01
<<Min: 51.22 - 52.26 10% Min: Pyrrhotite>>											
<<Alt: 51.22 - 52.26 Strong Calcite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
52.26	**60.00**	**RHY undifferentiated rhyolite**	52.26	53.03	0.77	B00291394	0.008	0.5	-0.01	-0.01	-0.01
52.26 - 60: Possibly RHYc. Strong muscovite alteration. QZ/PY stringers, few PO. CA rich. Porphyroblasts or lapilli from 58.80 to 59.80m.											
<<Min: 52.26 - 60 5% Min: Pyrite>> Discontinuous PY/QZ vein-stringers.			53.03	54.00	0.97	B00291395	0.012	0.4	0.01	-0.01	-0.01
<<Min: 52.26 - 60 1% Min: Pyrrhotite>>			54.00	55.05	1.05	B00291396	0.006	0.5	-0.01	-0.01	-0.01
<<Min: 52.26 - 60 0.1% Min: Chalcopyrite>>			55.05	55.70	0.65	B00291397	0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 52.26 - 54.87 Moderate-Strong Calcite>>			55.70	57.00	1.30	B00291398	0.008	0.6	-0.01	-0.01	-0.01
<<Alt: 54.87 - 55.95 Moderate Calcite>>			57.00	58.02	1.02	B00291399	0.006	0.8	-0.01	-0.01	-0.01
<<Alt: 55.95 - 59.2 Weak-Moderate Calcite>>			58.02	59.20	1.18	B00291401	-0.005	0.5	-0.01	-0.01	-0.01
<<Alt: 59.2 - 63.3 Moderate-Strong Calcite>>			59.20	60.00	0.80	B00291402	0.009	-0.3	-0.01	-0.01	-0.01
<<Struc: 53.94 - 53.94 dominant foliation>>											
<<Struc: 59.1 - 59.1 dominant foliation>>											
60.00	**61.00**	**OI Heavilly disseminated sulphides in host schist** **FMG**	60.00	61.00	1.00	B00291403	0.033	0.5	0.01	-0.01	-0.01
60 - 61: 40 percent of sulfides, PY mostly, wispy laminated, QZ/CA matrix.											
<<Min: 60 - 61 40% Min: Pyrite>>											
<<Alt: 60 - 63.74 Weak-Moderate Muscovite>>											
<<Alt: 60 - 63.74 Weak Chlorite>>											
61.00	**63.93**	**RHY undifferentiated rhyolite**	61.00	62.00	1.00	B00291404	-0.005	0.8	0.01	-0.01	0.13
61 - 63.93: Altered Mu and CL. Patch of PO/PY, trace of CP and GL. Almost stockwork texture locally.											
<<Min: 61 - 63.93 3% Min: Pyrite>>			62.00	63.00	1.00	B00291405	0.008	2.8	0.02	0.01	0.08
<<Min: 61 - 63.93 10% Min: Pyrrhotite>>			63.00	63.93	0.93	B00291406	0.006	4.1	0.02	0.01	0.03
<<Min: 61 - 63.93 0.1% Min: Chalcopyrite>>											
<<Alt: 63.3 - 70 Weak Calcite>>											
<<Alt: 63.74 - 71.53 Moderate-Strong Muscovite>>											
63.93	**75.16**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	63.93	65.00	1.07	B00291407	-0.005	1.3	0.01	-0.01	-0.01
63.93 - 75.16: altered muscovite. PO/QZ stringers, PY disseminated, wavy foliation, silica banded.											
<<Min: 63.93 - 65.6 1% Min: Pyrite>>			65.00	66.00	1.00	B00291408	0.007	0.6	-0.01	-0.01	-0.01
<<Min: 63.93 - 65.6 5% Min: Pyrrhotite>> Stringers.			66.00	67.50	1.50	B00291409	0.008	0.4	-0.01	-0.01	-0.01
<<Min: 65.6 - 70.8 3% Min: Pyrite>> Stringers.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 70.8 - 75 0.5% Min: Pyrite>>

<<Min: 75 - 93.8 1% Min: Pyrrhotite>> Clasts observed in fault gouge and rare PY disseminated.

<<Alt: 70 - 72 Strong Calcite>>

<<Alt: 71.53 - 73.32 Strong Muscovite>> Locally intense.

<<Alt: 72 - 91.1 Weak Calcite>>

<<Alt: 73.32 - 91.1 Moderate-Strong Muscovite>>

<<Vein: 63.93 - 71 Pyrrhotite 40 deg. >> PO dominant/PY stringers (3 per metre)

75.16 76.40 RHY undifferentiated rhyolite

75.16 - 76.4: Sheared/faulted. QZ vein showing boudinage. Strong muscovite alteration.

76.40 84.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

76.4 - 84.3: Strongly MU altered, fragmental locally.

<<Struc: 78.52 - 80.64 Moderate-Strong Fault>> Fault gouge.

<<Struc: 83.4 - 91.15 Strong Fault>> Fault gouge and highly fragmented rhyolite.

84.30 87.00 No Core No Core

84.3 - 87: Washed gouge.

<<Struc: 84.3 - 87 Fault>> No core, Gouge washed while drilling.

87.00 88.15 RHYcw Curdy textured-flow banded (flows, subvolcanics)

87 - 88.15: Altered Mu. QZ class, fault gouge.

88.15 91.15 RHY undifferentiated rhyolite

88.15 - 91.15: Altered Mu. QZ clasts, fault gouge.

<<Alt: 91.1 - 93.5 Moderate Calcite>>

91.15 93.80 FLZ Fault Zone

91.15 - 93.8: Polymictic. QZ clots/MAFi/RHY and few PY clasts, light blue /grey gouge.

<<Alt: 93.5 - 101.58 Moderate-Strong Calcite>>

<<Struc: 91.15 - 93.8 Intense Fault>> Light grey clay containing RHY/QZ/MAFi and PY clasts.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

93.80 129.50 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

93.8 - 129.5: CL/CA/BI. Patchy BI alteration. E.O.H.

<<Min: 93.8 - 129.5 0.5% Min: Pyrite>>
<<Min: 93.8 - 129.5 0.5% Min: Pyrrhotite>>
<<Alt: 93.8 - 129.5 Moderate Chlorite>>
<<Alt: 101.58 - 109.7 Strong Biotite>>
<<Alt: 101.58 - 118.92 Moderate Albite>>
<<Alt: 118.92 - 126 Weak-Moderate Calcite>>
<<Alt: 126 - 129.5 Moderate Calcite>>
<<Struc: 100.05 - 102.6 Weak-Moderate Fault>> Fault gouge and weak to moderate shearing.
<<Struc: 109.3 - 109.31 dominant foliation>>
<<Struc: 112 - 112.01 dominant foliation>>
<<Struc: 118 - 118.01 dominant foliation>>
<<Struc: 123.5 - 123.51 dominant foliation>>
<<Struc: 129 - 129.01 dominant foliation>>

End of Hole @ 129.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-349

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/22/2016
UTM Easting	415023.1173	Core Size:	HQ3	Azimuth:	74.52	Date Logging Complete:	5/26/2016
UTM Northing:	6815019.6122	Casing Pulled?:	Yes	Dip:	-75	Drill Company:	Hytech
UTM Elev. (m):	1384.497	Casing Depth (m):	28.5	Length (m):	201	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/21/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/23/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
Comments:						Parent Hole:	

K16-349 was drilled to test inferred portions of up-dip Krakatoa upper and main lenses. HQ half core metallurgical samples were collected of the upper, main, and lower lenses. K16-349 encountered bedrock at 27.1 m. The hanging wall package (27.1-78 m) consists of rhyolite and mudstone, with a minor section of elevated pyrite content (OI) in the rhyolite from 40.1-41.4 m. Below the mudstone a fault occurs, which has been observed in surrounding holes at the same stratigraphic horizon. The upper lens occurs from 74-82.2 m and consists of OB mineralization with a minor interval of rhyolite in the middle (79.3-80 m). The stratigraphy between the upper and main lenses consists of interlayered rhyolite and mafic sill. The main lens occurs from 104.4-117.3 m and consists of OB, OA, OI, and OK mineralization. The interval (117.3-168.8 m) between the main and lower lenses consists of RHY, RHYi, and MAFi. The lower lens occurs from 168.8-169.8 m, consisting of OJ mineralization. From 169.8-201 m (EOH), the felsic footwall package occurs.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-75	73.12	1.4	74.52	APS	Dillon Hume	5/21/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
36	-75.3	56.4	22.1	78.5	ReflexEZS	Hytech	5/21/2016	5733	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
60	-75.7	57.9	22.1	80	ReflexEZS	Hytech	5/21/2016	5720	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
90	-76	57.9	22.1	80	ReflexEZS	Hytech	5/22/2016	5736	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
123	-76.3	60.1	22.1	82.2	ReflexEZS	Hytech	5/22/2016	5688	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
147	-77	60.6	22.1	82.7	ReflexEZS	Hytech	5/22/2016	5699	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
171	-77.3	64.3	22.1	86.4	ReflexEZS	Hytech	5/23/2016	5664	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
201	-78	68	22.1	90.1	ReflexEZS	Hytech	5/23/2016	5688	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**27.10**	**OVBN Overburden**									

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
27.10	**40.10**	**RHYv**	**Rhyolite volcaniclastic**	37.10	38.60	1.50	B00292039	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 27.1 - 40.1 1% Min: Pyrrhotite>>				38.60	40.10	1.50	B00292041	0.007	-0.3	-0.01	-0.01	-0.01
<<Alt: 27.1 - 35 Weak-Moderate Calcite>>												
<<Alt: 27.1 - 37.7 Weak Muscovite>>												
<<Alt: 35 - 74 Weak Calcite>>												
<<Alt: 37.7 - 45.1 Moderate Muscovite>>												
<<Struc: 35.49 - 35.5 dominant foliation>>												
40.10	**41.40**	**OI**	**Heavilly disseminated sulphides in host schist**	40.10	41.40	1.30	B00292042	0.007	0.4	-0.01	-0.01	0.02
40.1 - 41.4: ~5-10% disseminated PY in coherent rhyolite. Similar unit and stratigraphy (overlying the MDSc) in holes K16-341, K16-342, K16-343, and K16-344, however maybe only recorded in mineralization table in those holes.												
<<Min: 40.1 - 41.4 10% Min: Pyrite>> Wispy to disseminated PY												
41.40	**45.10**	**RHYc**	**Rhyolite coherant volcanics**	41.40	42.90	1.50	B00292043	0.029	2.1	-0.01	0.04	0.07
<<Min: 41.4 - 45.1 3% Min: Pyrite>>				42.90	44.40	1.50	B00292044	0.01	0.5	-0.01	-0.01	0.03
45.10	**48.00**	**MDSc**	**Carbonaceous dominant mudstone**									
<<Min: 45.1 - 48 1% Min: Pyrite>>												
48.00	**49.10**	**FLZ**	**Fault Zone**									
48 - 49.1: Intense fault with sand-pebble sized QZ clasts in gouge matrix												
<<Struc: 48 - 49.1 Strong Fault>> Sand-pebble sized clasts in fault gouge												
49.10	**54.40**	**RHYc**	**Rhyolite coherant volcanics**									
49.1 - 54.4: Flow banded to straight silica bands with MU-altered cleavages												
<<Min: 49.1 - 74 2% Min: Pyrite>>												
<<Min: 49.1 - 74 0.1% Min: Arsenopyrite>>												
<<Alt: 49.1 - 74 Moderate Muscovite>>												
<<Struc: 52.2 - 57.3 Weak Fault>> Zone with weak faulting, local zones of minor gouge and broken rock with poor recovery												
54.40	**74.00**	**RHYv**	**Rhyolite volcaniclastic**	64.60	66.10	1.50	D00004001	0.007	0.4	-0.01	-0.01	-0.01
54.4 - 74: Well foliated rhyolite with local lpl (?) and silica bands (developed due to shearing?). Disseminated PO+/-PY blebs. Hard to determine whether it is coherent or volcaniclastic.												
<<Struc: 60 - 62.8 Weak Fault>> Zone with weak faulting, local zones of minor gouge and broken rock with poor recovery				66.10	67.60	1.50	D00004002	0.007	-0.3	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
			67.60	69.00	1.40	D00004003	0.013	1.2	-0.01	-0.01	0.04
			69.00	71.00	2.00	D00004004	0.008	0.5	-0.01	-0.01	0.01
			71.00	72.50	1.50	D00004005	0.072	2.2	-0.01	0.03	0.05
			72.50	74.00	1.50	D00004006	0.119	3.8	0.02	0.07	0.14
74.00	**78.00**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	74.00	75.00	1.00	D00004007	2.56	271	0.77	3.3	7.79
74 - 78: Fine to medium grained massive and foliated PY+SP+/-GL with local blebby CP											
<<Min: 74 - 79.3 5% Min: Sphalerite>>			75.00	76.00	1.00	D00004008	5.13	475	0.28	5.71	8.03
<<Min: 74 - 79.3 85% Min: Pyrite>>			76.00	77.00	1.00	D00004009	3.31	305	0.2	4.12	7.59
<<Min: 74 - 79.3 1% Min: Galena>>			77.00	78.00	1.00	D00004012	0.708	128	0.13	1.78	8.43
<<Min: 74 - 79.3 0.1% Min: Chalcopyrite>>											
<<Alt: 74 - 79.3 Weak-Moderate Calcite>>											
<<Struc: 74 - 74.2 Weak-Moderate Fault>> Weak-moderate faulting at RHY-MXSX contact											
78.00	**79.30**	**No Core** **No Core**									
78 - 79.3: Missing Core											
<<Struc: 78 - 79.5 Moderate Fault>> Missing core with minor cuttings and fault gouge remaining											
79.30	**80.00**	**RHY** **undifferentiated rhyolite**	79.30	80.00	0.70	D00004013	0.094	16.7	0.09	0.2	0.39
79.3 - 80: Rhyolite between MXSX lenses with disseminated PY+SP+GL and local blebby CP											
<<Min: 79.3 - 80 1% Min: Sphalerite>>											
<<Min: 79.3 - 80 5% Min: Pyrite>>											
<<Min: 79.3 - 80 0.5% Min: Galena>>											
<<Min: 79.3 - 80 1% Min: Chalcopyrite>>											
<<Alt: 79.3 - 80 Weak Muscovite>>											
<<Alt: 79.3 - 80 Trace Calcite>>											
80.00	**82.20**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	80.00	81.10	1.10	D00004014	1.92	279	0.18	4	9.84
80 - 82.2: Massive and foliated PY+SP+GL with local blebby CP near the upper contact.											
<<Min: 80 - 82.2 5% Min: Sphalerite>>			81.10	82.20	1.10	D00004015	1.34	205	0.19	4.18	10.3
<<Min: 80 - 82.2 90% Min: Pyrite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 80 - 82.2 1% Min: Galena>>									
		<<Min: 80 - 82.2 0.5% Min: Chalcopyrite>>									
		<<Alt: 80 - 82.2 Weak-Moderate Calcite>>									
82.20	**86.60**	**RHY** **undifferentiated rhyolite**	82.20	83.70	1.50	D00004016	0.018	1.8	-0.01	0.02	0.02
		82.2 - 86.6: Banded MU and CA. Very similar texture to MAFi. Gradational lower contact with MAFi. Altered MAFi??									
		<<Min: 82.2 - 92.4 0.1% Min: Pyrite>>	83.70	85.20	1.50	D00004017	0.02	2.8	-0.01	0.03	0.05
		<<Alt: 82.2 - 86.6 Moderate Muscovite>>	85.20	86.60	1.40	D00004018	-0.005	0.5	-0.01	-0.01	0.01
		<<Alt: 82.2 - 92.4 Moderate Calcite>>									
		<<Alt: 86.2 - 86.6 Weak Chlorite>> CL from MAFi due to gradational contact with RHY									
		<<Struc: 82.7 - 86.6 Weak Fault>> Zone with weak faulting, local zones of minor gouge and broken rock with poor recovery									
		<<Struc: 84.72 - 84.73 Foliation>> Foliation in RHY (altered MAFi?)									
86.60	**92.40**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	86.60	88.00	1.40	D00004019	-0.005	0.4	-0.01	-0.01	0.02
		86.6 - 92.4: Gradational upper contact with RHY									
		<<Struc: 88.58 - 88.59 dominant foliation>>	88.00	89.50	1.50	D00004021	-0.005	-0.3	-0.01	-0.01	0.01
		<<Struc: 91.6 - 93.7 Weak-Moderate Fault>> Zone with weak faulting, local zones of minor gouge and broken rock with poor recovery	89.50	91.00	1.50	D00004022	-0.005	-0.3	-0.01	-0.01	0.02
			91.00	92.40	1.40	D00004023	-0.005	-0.3	-0.01	-0.01	0.05
92.40	**95.60**	**RHY** **undifferentiated rhyolite**	94.10	95.60	1.50	D00004024	0.007	0.7	-0.01	-0.01	0.01
		92.4 - 95.6: Well foliated, QZ-MU schist with sericitic cleavages. Difficult to determine protolith.									
		<<Min: 92.4 - 95.6 0.1% Min: Sphalerite>>									
		<<Min: 92.4 - 95.6 0.5% Min: Pyrite>>									
		<<Min: 92.4 - 95.6 0.1% Min: Arsenopyrite>>									
		<<Alt: 92.4 - 95.6 Weak-Moderate Muscovite>>									
		<<Alt: 92.4 - 95.6 Weak Calcite>>									
95.60	**104.40**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	95.60	97.00	1.40	D00004025	-0.005	0.5	-0.01	-0.01	0.04
		<<Min: 95.6 - 104.4 0.1% Min: Pyrite>>	97.00	98.50	1.50	D00004026	0.015	-0.3	-0.01	-0.01	0.01
		<<Alt: 95.6 - 104.4 Moderate Calcite>>	98.50	100.00	1.50	D00004027	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 104 - 104.4 Moderate Biotite>> Minor increase of BI content near MAFi-MXSX contact	100.00	101.50	1.50	D00004028	-0.005	-0.3	-0.01	-0.01	0.02
		<<Struc: 97.56 - 97.57 dominant foliation>>	101.50	103.00	1.50	D00004029	0.011	2.3	-0.01	0.03	0.01

From (m)	To (m)	Rocktype & Description
<<Struc: 100.72 - 100.73 dominant foliation>>		
104.40	**106.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**
104.4 - 106.7: Massive PY+SP+CP+GL with local disseminated MG. Minor patchy CA+SI gangue.		
<<Min: 104.4 - 106.7 5% Min: Sphalerite>>		
<<Min: 104.4 - 106.7 85% Min: Pyrite>>		
<<Min: 104.4 - 106.7 1% Min: Galena>>		
<<Min: 104.4 - 106.7 1% Min: Chalcopyrite>>		
<<Min: 104.9 - 105.65 5% Min: Magnetite>>		
<<Alt: 104.4 - 105.4 Moderate Cordierite>>		
<<Alt: 104.4 - 106.7 Weak Calcite>>		
106.70	**109.20**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**
106.7 - 109.2: Massive PY+SP+GL with wispy and buckshot MG and trace blebby CP. Minor CA+SI gangue		
<<Min: 106.7 - 109.2 5% Min: Sphalerite>>		
<<Min: 106.7 - 109.2 70% Min: Pyrite>>		
<<Min: 106.7 - 109.2 15% Min: Magnetite>>		
<<Min: 106.7 - 109.2 2% Min: Galena>>		
<<Min: 106.7 - 109.2 0.5% Min: Chalcopyrite>>		
<<Min: 106.7 - 109.2 2% Min: Barite>>		
109.20	**110.10**	**OI** **Heavilly disseminated sulphides in host schist**
109.2 - 110.1: Intensely MU-altered with disseminated CI. QZ+CA vein within that contains blebby interstitial TT+PY+GL+SP.		
<<Min: 109.2 - 110.1 3% Min: Tetrahedrite>>		
<<Min: 109.2 - 110.1 0.5% Min: Sphalerite>>		
<<Min: 109.2 - 110.1 2% Min: Pyrite>>		
<<Min: 109.2 - 110.1 0.1% Min: Galena>>		
<<Alt: 109.2 - 110.1 Intense Muscovite>>		
<<Alt: 109.2 - 110.1 Weak Chlorite>>		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
103.00	104.40	1.40	D00004031	0.103	8.6	0.08	0.14	0.16
104.40	105.50	1.10	D00004032	1.86	131	1.57	3.6	9.79
105.50	106.70	1.20	D00004033	1.82	146	0.38	4.85	9.66
106.70	107.20	0.50	D00004034	1.14	115	0.42	5.01	10.1
107.20	108.20	1.00	D00004035	0.851	136	0.44	5.1	10.7
108.20	109.20	1.00	D00004036	1.31	120	0.3	5.54	10.1
109.20	110.10	0.90	D00004037	1.36	52	0.28	0.15	0.27

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 109.2 - 110.1 Moderate Cordierite>>									
		<<Alt: 109.2 - 110.1 Moderate Calcite>>									
		<<Vein: 109.6 - 110 Quartz-Carbonate>> Coarse grained QZ+CA+CI(?) vein with blebby interstitial TT+PY+SP+GL. With uneven vein margins. May be intense alteration (replacement vein) rather than a dilatational vein.									
110.10	**117.30**	**OK** **Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	110.10	111.10	1.00	D00004038	1.73	158	0.36	3.82	5.66
		110.1 - 117.3: Massive PY+GL+SP with minor blebby CP. ~20% CA+SI+BA gangue. May be logged as OB but has characteristic OK gangue.									
		<<Min: 110.1 - 117.3 0.5% Min: Sphalerite>>	111.10	112.10	1.00	D00004039	2.79	196	0.26	4.37	5.44
		<<Min: 110.1 - 117.3 75% Min: Pyrite>>	112.10	113.10	1.00	D00004041	2.07	173	0.48	3.77	6.56
		<<Min: 110.1 - 117.3 0.5% Min: Galena>>	113.10	114.10	1.00	D00004042	1.86	163	0.55	4.46	7.04
		<<Min: 110.1 - 117.3 1% Min: Chalcopyrite>>	114.10	115.10	1.00	D00004043	1.48	181	0.3	4.56	6.3
		<<Min: 110.1 - 117.3 2% Min: Barite>>	115.10	116.20	1.10	D00004044	2.18	208	0.17	3.61	5.08
		<<Min: 117.2 - 122.9 1% Min: Pyrite>>	116.20	117.30	1.10	D00004045	7.66	512	0.98	4.4	6.28
		<<Alt: 110.1 - 117.3 Moderate Calcite>> Patchy gangue (CA+SI+/-BA) and disseminated CA in matrix.									
		<<Struc: 110.77 - 110.78 Moderate dominant foliation>>									
		<<Struc: 114.26 - 114.27 Weak-Moderate dominant foliation>>									
117.30	**122.90**	**RHY** **undifferentiated rhyolite**	117.30	118.80	1.50	D00004046	0.033	2.9	-0.01	0.04	0.06
		117.3 - 122.9: Strongly MU-altered RHY(?) (maybe altered MAFi??). Brecciated and faulted below MXSX to well foliated. Local patches of cross-cutting RHYi. Gradational lower contact with RHYi.									
		<<Alt: 117.3 - 119.2 Strong Muscovite>>	118.80	120.30	1.50	D00004047	0.016	1.8	-0.01	0.02	0.03
		<<Alt: 117.3 - 123.8 Weak-Moderate Calcite>>	120.30	121.80	1.50	D00004048	0.007	0.8	-0.01	-0.01	-0.01
		<<Alt: 119.2 - 122.9 Moderate Muscovite>>	121.80	122.90	1.10	D00004049	-0.005	0.5	-0.01	-0.01	-0.01
		<<Struc: 117.3 - 119.2 Moderate Fault>> Moderate faulted and brecciated strong MU-altered rock, with local pebble sized RHY clasts in sericite-gouge matrix.									
122.90	**155.10**	**RHYi** **Aphanitic Rhyolite (intrusion)**	122.90	124.00	1.10	D00004051	0.019	6.5	-0.01	0.03	0.08
		<<Min: 122.9 - 155.1 3% Min: Pyrite>>	124.00	125.50	1.50	D00004052	0.064	10.9	-0.01	0.13	0.17
		<<Alt: 122.9 - 123.8 Weak Muscovite>> Gradational boundary between MU-alteration and silicified RHYi	125.50	127.00	1.50	D00004053	0.044	3	-0.01	0.02	0.1
		<<Alt: 123.8 - 155.1 Weak-Moderate Calcite>> CA FRA in RHYi									
		<<Alt: 133.5 - 138.9 Moderate Muscovite>> MU-alteration associated with QZ-vein?									
		<<Vein: 122.9 - 155.1 3% Calcite>> FRA CA in RHYi									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 135 - 136.5 100% Quartz 50 deg. >> Massive QZ vein with sericitic alteration halo									
		<<Struc: 123.27 - 123.28 Moderate dominant foliation>>									
155.10	**163.00**	**RHY** **undifferentiated rhyolite**									
		155.1 - 163: Foliated RHY with blebby CA (altered MAFi??)									
		<<Min: 155.1 - 163 1% Min: Pyrite>>									
		<<Alt: 155.1 - 158.7 Moderate Muscovite>> Associated with RHYi?									
		<<Alt: 155.1 - 163 Weak Calcite>>									
		<<Alt: 159.8 - 163 Moderate Muscovite>> Associated with RHYi?									
		<<Struc: 155.1 - 155.11 Contact>> Minor fault contact between RHYi and RHY. Fault is ~.5 cm wide									
		<<Struc: 155.75 - 155.76 Moderate dominant foliation>>									
163.00	**168.80**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	164.50	166.00	1.50	D00004054	-0.005	0.8	-0.01	-0.01	0.03
		163 - 168.8: BI-CL-EP-CA schist to greenstone with local ~equigranular texture.									
		<<Min: 163 - 168.8 0.1% Min: Pyrite>>	166.00	167.50	1.50	D00004055	0.005	0.4	-0.01	-0.01	0.02
		<<Alt: 163 - 167 Weak Epidote>>	167.50	168.80	1.30	D00004056	-0.005	1.4	-0.01	0.03	0.04
		<<Alt: 163 - 167 Moderate-Strong Biotite>> Higher content of BI in MAFi than typical									
		<<Alt: 163 - 168.8 Moderate Calcite>>									
		<<Alt: 168.7 - 168.8 Moderate-Strong Biotite>> Increase of BI content next to MXSX									
		<<Struc: 164.9 - 164.91 Weak dominant foliation>>									
168.80	**169.80**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	168.80	169.80	1.00	D00004057	0.122	65.4	0.75	0.68	11.5
		168.8 - 169.8: Patchy massive PO+PY+/-SP+/-CP to disseminated and blebby CP+PY+PO in intensely CL+CI altered rock. CI appears as vcgr porphyroblasts.									
		<<Min: 168.8 - 169.8 1% Min: Sphalerite>>									
		<<Min: 168.8 - 169.8 5% Min: Pyrite>>									
		<<Min: 168.8 - 169.8 20% Min: Pyrrhotite>>									
		<<Min: 168.8 - 169.8 1% Min: Magnetite>>									
		<<Min: 168.8 - 169.8 3% Min: Chalcopyrite>>									
		<<Min: 168.8 - 169.8 2% Min: Barite>>									
		<<Alt: 168.8 - 169.8 Strong Chlorite>>									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-349

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 168.8 - 169.8 Moderate Cordierite>> Vcgr Cl porphyroblasts									
		<<Alt: 168.8 - 169.8 Trace Calcite>>									
169.80	**175.70**	**RHYc Rhyolite coherant volcanics**	169.80	171.00	1.20	D00004058	-0.005	0.4	-0.01	-0.01	0.01
		169.8 - 175.7: Sericite altered RHYc with local QZ+tourmaline veining									
		<<Min: 169.8 - 201 1% Min: Pyrite>>	171.00	173.00	2.00	D00004059	-0.005	0.5	-0.01	-0.01	0.04
		<<Min: 169.8 - 201 1% Min: Pyrrhotite>>	173.00	174.50	1.50	D00004061	-0.005	2.1	-0.01	0.02	0.04
		<<Alt: 169.8 - 175.7 Trace Calcite>>									
		<<Alt: 169.8 - 176 Weak-Moderate Muscovite>>									
		<<Vein: 172 - 197 1% Quartz-Tourmaline 30 deg. >> Minor QZ-tourmaline veins with tourmaline selvages. ~1-2 cm wide varying from ~45 TCA to ~15 TCA. Occur every ~5m (variable spacing).									
		<<Struc: 171 - 173 Moderate Fault>> Moderate faulting with sheared rhyolite and local fault gouge									
175.70	**201.00**	**RHYvl Lapilli tuff**									
		<<Alt: 175.7 - 201 Weak-Moderate Calcite>>									
		<<Alt: 176 - 201 Weak Muscovite>>									
		<<Struc: 179.11 - 179.12 Moderate dominant foliation>>									
		<<Struc: 185.3 - 186.3 Weak Fault>> Local fault gouge									
		<<Struc: 187.16 - 187.17 Moderate dominant foliation>>									
		<<Struc: 193 - 193.4 Weak Fault>>									
		<<Struc: 196.72 - 196.73 Moderate dominant foliation>>									
		<<Struc: 200 - 200.1 Weak-Moderate Fault>> Zone of fault gouge									
		End of Hole @ 201									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-350

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/24/2016
UTM Easting	414937.0643	Core Size:	HQ3	Azimuth:	354.79	Date Logging Complete:	5/31/2016
UTM Northing:	6815043.5229	Casing Pulled?:	Yes	Dip:	-72	Drill Company:	Hytech
UTM Elev. (m):	1384.367	Casing Depth (m):	21	Length (m):	247.6	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/22/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/27/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-350 was collared to test Krakatoa upper lens in proximity to east fault.
Hole K16-50 is made up of upper volcaniclastic rhyolite sequence following by a mafic sill and lower felsic sequence. The upper lens is intercepted within the mafic sill from 105.40m to 113.21m.
Mineralization consists in OB, OJ and OI domains (PY/SP/GL/minor CP and PO, trace of AS).
The contact between the mafic sill and the lower rhyolitic sequence is marked by a fault breccia zone from 152.30m to 155.20m. Two graphitic silicified mudstones are observed underneath the fault and may represent potential marker units.
The bottom of the hole consists in highly fractured to faulted volcaniclastic units.
Hole K16-350 ends at 247.6m on a distinctive feldspar porphyry quartz eyes unit.
The main lens has not been intercepted.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-72	353.39	1.4	354.79	APS	Jerome de Pasquale	5/22/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
27	-73.4	338.7	22.1	0.8	ReflexEZS	Hytech	5/23/2016	5871	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
51	-74.1	337.2	22.1	359.3	ReflexEZS	Hytech	5/23/2016	5779	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
75	-74.8	336.6	22.1	358.7	ReflexEZS	Hytech	5/23/2016	5780	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
102	-76	333.6	22.1	355.7	ReflexEZS	Hytech	5/24/2016	5781	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
129	-76.6	332.7	22.1	354.8	ReflexEZS	Hytech	5/24/2016	5787	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
154	-77.2	333.6	22.1	355.7	ReflexEZS	Hytech	5/24/2016	5760	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
177	-77.7	326.8	22.1	348.9	ReflexEZS	Hytech	5/24/2016	5764	☑	Fault zone from 152m to 155m. Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
201	-78.7	320.7	22.1	342.8	ReflexEZS	Hytech	5/26/2016	5780	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-350

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
225	-79	313.1	22.1	335.2	ReflexEZS	Hytech	5/26/2016	5766	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
241.5	-79	309	22.1	331.1	ReflexEZS	Hytech	5/26/2016	5757	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**21.00**	**OVBN Overburden**									
0 - 21: Feldspar porphyry boulder and bulk QZ vein.											
21.00	**29.23**	**RHYv Rhyolite volcaniclastic**	26.60	28.00	1.40	B00291411	-0.005	-0.3	-0.01	-0.01	0.02
21 - 29.23: Strong thin foliation, shallow angle, altered muscovite. Fault gouge from 27.88m to 28.30m.											
<<Min: 21 - 29.23 0.5% Min: Pyrite>>			28.00	29.23	1.23	B00291412	0.011	-0.3	-0.01	-0.01	-0.01
<<Min: 21 - 29.23 1% Min: Pyrrhotite>> Foliation oriented.											
<<Alt: 24.5 - 31 Weak-Moderate Muscovite>>											
<<Struc: 25.4 - 25.41 dominant foliation>>											
<<Struc: 27.88 - 28.3 Weak-Moderate Fault>> Fault gouge. Light grey clay.											
29.23	**30.24**	**OI Heavilly disseminated sulphides in host schist**	29.23	30.24	1.01	B00291413	0.056	1.3	-0.01	0.02	-0.01
29.23 - 30.24: Rhyolite PY rich,											
<<Min: 29.23 - 30.21 25% Min: Pyrite>>											
<<Min: 30.21 - 31.1 0.5% Min: Pyrite>>											
<<Min: 30.21 - 31.1 2% Min: Pyrrhotite>>											
30.24	**31.10**	**RHY undifferentiated rhyolite**	30.24	31.10	0.86	B00291414	-0.005	-0.3	-0.01	-0.01	0.01
30.24 - 31.1: Possibly coherent rhyolite fragmented. PY/PO disseminated.											
31.10	**32.10**	**OI Heavilly disseminated sulphides in host schist**	31.10	32.10	1.00	B00291415	0.005	1.1	-0.01	0.01	0.14
31.1 - 32.1: PY rich rhyolite. Specks of tourmaline.											
<<Min: 31.1 - 32.1 2% Min: Pyrite>>											
<<Min: 31.1 - 32.1 15% Min: Pyrrhotite>>											
32.10	**34.24**	**RHY undifferentiated rhyolite**	32.10	33.00	0.90	B00291416	-0.005	-0.3	-0.01	-0.01	0.01
32.1 - 34.24: Possibly RHYc fractured.											

From (m)	To (m)	Rocktype & Description
		<<Min: 32.1 - 34.27 0.5% Min: Pyrite>>
		<<Min: 32.1 - 34.27 2% Min: Pyrrhotite>>
		<<Struc: 32.2 - 32.21 dominant foliation>>
34.24	**37.80**	**OI** **Heavilly disseminated sulphides in host schist**
		34.24 - 37.8: PY rich rhyolite, wavy veining.
		<<Min: 34.27 - 37.8 10% Min: Pyrite>>
		<<Min: 34.27 - 37.8 1% Min: Pyrrhotite>>
37.80	**39.60**	**RHYv** **Rhyolite volcaniclastic**
		37.8 - 39.6: Foliated, progressive lower contact.
		<<Min: 37.8 - 39.6 1% Min: Pyrite>>
		<<Min: 37.8 - 39.8 0.5% Min: Pyrrhotite>>
39.60	**41.77**	**MDSc** **Carbonaceous dominant mudstone**
		39.6 - 41.77: Graphitic mudstone, non calcareous. Wavy bands deformed, crenulated, feldspar (?). Locally unfoliated. Progressive lower contact. Late PY.
		<<Min: 39.6 - 41.77 5% Min: Pyrite>> Late PY.
		<<Min: 39.6 - 41.77 0.5% Min: Pyrrhotite>>
		<<Struc: 40 - 40.01 dominant foliation>>
41.77	**43.48**	**MDSw** **Coherent rhyolite flow with carbonaceous content**
		41.77 - 43.48: Mudstone bands locally. Deformed an fractured at lower contact.
		<<Min: 41.77 - 43.48 0.5% Min: Pyrite>>
		<<Min: 41.77 - 43.48 0.5% Min: Pyrrhotite>>
43.48	**45.60**	**MDSc** **Carbonaceous dominant mudstone**
		43.48 - 45.6: Late PY rich, wavy foliation, gouge at lower contact.
		<<Min: 43.48 - 45.6 5% Min: Pyrite>> Late PY.
		<<Min: 43.48 - 45.6 0.5% Min: Pyrrhotite>>
		<<Struc: 45.5 - 45.6 Weak-Moderate Fault>> Fault gouge at contact between graphitic mudstone and rhyolite unit.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
33.00	34.24	1.24	B00291417	-0.005	-0.3	-0.01	-0.01	-0.01
34.24	35.45	1.21	B00291418	0.05	1.1	-0.01	-0.01	-0.01
35.45	36.00	0.55	B00291419	0.08	1	-0.01	0.01	-0.01
36.00	37.00	1.00	B00291421	0.045	0.9	-0.01	-0.01	0.02
37.00	37.80	0.80	B00291422	0.014	0.7	-0.01	0.01	0.05
37.80	39.00	1.20	B00291423	-0.005	0.7	-0.01	-0.01	0.01
39.00	39.60	0.60	B00291424	0.03	0.3	-0.01	-0.01	0.02
39.60	40.50	0.90	B00291425	0.033	0.6	-0.01	-0.01	0.14

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
45.60	**51.50**	**RHYv Rhyolite volcaniclastic**	49.90	51.50	1.60	B00291426	0.007	0.6	-0.01	-0.01	0.03
45.6 - 51.5: Muscovite altered rhyolite, few PY veins or aggregated, foliated, disaggregated at lower contact, narrow fault gouge zone.											
<<Min: 45.6 - 60.53 1% Min: Pyrite>>											
<<Min: 45.6 - 60.53 0.5% Min: Pyrrhotite>>											
<<Min: 45.6 - 60.53 0.1% Min: Arsenopyrite>>											
<<Alt: 47.7 - 55.5 Moderate Muscovite>>											
<<Struc: 45.7 - 45.71 dominant foliation>>											
<<Struc: 48 - 48.7 Weak Fault>> Multiple minor faults with gouge.											
<<Struc: 48.9 - 48.91 dominant foliation>>											
51.50	**53.30**	**RHY undifferentiated rhyolite**	51.50	52.60	1.10	B00291427	0.007	0.7	-0.01	-0.01	-0.01
51.5 - 53.3: Interval includes 25 cm of QZ vein. Light grey clay over 70 cm.											
<<Vein: 52.7 - 52.9 Quartz>> QZ vein, CA in fracture. In fault zone.			52.60	53.30	0.70	B00291428	0.01	1.2	-0.01	-0.01	0.01
<<Struc: 51.5 - 53.4 Moderate-Strong Fault>> Fault gouge.											
53.30	**54.00**	**RHYv Rhyolite volcaniclastic**	53.30	54.00	0.70	B00291429	0.011	2	-0.01	-0.01	0.01
53.3 - 54: Bleached texture.											
54.00	**54.70**	**RHY undifferentiated rhyolite**	54.00	54.70	0.70	B00291431	0.01	1.9	-0.01	-0.01	0.01
54 - 54.7: Light grey fault gouge.											
<<Struc: 54 - 59.7 Moderate Fault>> Fractured, altered CL, up to 35 c of gouge.											
54.70	**60.53**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	54.70	55.60	0.90	B00291432	0.014	2.9	-0.01	0.03	0.05
54.7 - 60.53: Strongly CL altered mafic sill, sheared locally.											
<<Min: 59.4 - 59.7 0.1% Min: Pyrrhotite>>			55.60	56.50	0.90	B00291433	0.051	21.9	0.03	0.25	0.62
<<Min: 60.52 - 61.6 1% Min: Sphalerite>>			56.50	57.30	0.80	B00291434	-0.005	0.4	-0.01	-0.01	0.03
<<Min: 60.52 - 61.6 0.5% Min: Galena>>			57.30	58.40	1.10	B00291435	0.091	16.9	0.05	0.19	0.35
<<Alt: 54.7 - 61.6 Moderate-Strong Calcite>>			58.40	59.70	1.30	B00291436	0.064	17.4	0.09	0.18	0.28
<<Alt: 55.5 - 58.5 Strong Chlorite>>			59.70	60.53	0.83	B00291437	0.01	1.7	0.02	0.02	0.06
<<Alt: 58.5 - 69.9 Strong Chlorite>>											
<<Struc: 59.9 - 59.91 dominant foliation>> In sheared zone											
<<Struc: 60.35 - 62.3 Strong Fault>> Including MxSx. Sheared, gouge.											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
60.53	**61.60**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	60.53	61.60	1.07	B00291438	0.324	58.7	0.04	0.65	3.72
60.53 - 61.6: Including MAFi gouge from 60.82m to 61.30m. MxSx in fault zone.													
<<Min: 60.53 - 61.6 50% Min: Pyrite>>													
61.60	**62.71**	**FLZ**	**Fault Zone**		61.60	62.71	1.11	B00291439	0.178	23.8	0.08	0.3	1.53
61.6 - 62.71: Sheared mafic sill containing 20 percent of disseminated to semi massive sulfides, could be interpreted as OI.													
<<Min: 61.6 - 62.71 10% Min: Pyrite>> Wispy to semi massive. In fault .													
<<Alt: 61.6 - 62.71 Weak Calcite>>													
62.71	**69.90**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		62.71	64.00	1.29	B00291441	0.03	1.9	0.01	0.02	0.13
62.71 - 69.9: Texture obscured. Large late PY porphyroblasts from 64.70m to 65.70m. Interval includes CA vein from 66.50m to 66.75m. Locally sheared.													
<<Min: 63.5 - 65.7 1% Min: Pyrrhotite>> Foliation oriented.					64.00	65.00	1.00	B00291442	0.007	0.5	0.02	-0.01	0.03
<<Min: 64.6 - 65.2 3% Min: Pyrite>> Late PY, euhedral (up to 2 cm wide), oriented along the foliation.					65.00	66.00	1.00	B00291443	0.076	8.7	0.03	0.12	0.02
<<Alt: 62.71 - 67.86 Moderate Calcite>>					66.00	67.30	1.30	B00291444	0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 67.86 - 69.9 Weak Calcite>>					67.30	68.50	1.20	B00291445	0.006	-0.3	-0.01	-0.01	0.03
<<Vein: 66.5 - 66.75 Calcite>> CA vein.					68.50	69.90	1.40	B00291446	-0.005	-0.3	-0.01	-0.01	0.04
<<Struc: 65.2 - 69.9 Moderate-Strong Shear>> Gouge locally, disturbed schistosity.													
<<Struc: 67 - 67.01 dominant foliation>> In sheared zone													
69.90	**104.39**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		69.90	70.80	0.90	B00291447	0.007	-0.3	-0.01	-0.01	0.02
69.9 - 104.39: Low BI content, CA/CL.													
<<Min: 69.9 - 105.4 0.1% Min: Pyrrhotite>>					70.80	72.00	1.20	B00291448	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 69.9 - 99.4 Moderate Calcite>>					95.00	96.00	1.00	B00291449	0.007	-0.3	-0.01	-0.01	0.01
<<Alt: 99.4 - 104.39 Strong Calcite>>					96.00	97.00	1.00	B00291451	-0.005	-0.3	0.01	-0.01	0.01
<<Struc: 75.4 - 75.41 dominant foliation>>					97.00	98.00	1.00	B00291452	-0.005	-0.3	-0.01	-0.01	0.01
<<Struc: 81.05 - 81.06 dominant foliation>>					98.00	99.00	1.00	B00291453	-0.005	-0.3	0.01	-0.01	0.01
<<Struc: 92.8 - 92.81 dominant foliation>>					99.00	100.00	1.00	B00291454	-0.005	-0.3	-0.01	-0.01	0.01
<<Struc: 98.6 - 98.61 dominant foliation>>					100.00	101.00	1.00	B00291455	-0.005	-0.3	-0.01	-0.01	0.01
<<Struc: 103.95 - 103.96 dominant foliation>>					101.00	102.00	1.00	B00291456	0.01	0.7	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
				102.00	103.00	1.00	B00291457	0.006	0.9	-0.01	-0.01	0.02
				103.00	103.75	0.75	B00291458	0.051	6.2	-0.01	0.08	-0.01
				103.75	104.39	0.64	B00291459	0.11	10.4	0.01	0.05	-0.01
104.39	**105.40**	**RHYv** **Rhyolite volcaniclastic**		104.39	105.40	1.01	B00291461	0.667	82.6	0.04	0.61	1.83
104.39 - 105.4: Could be strongly altered MAFi, CA content drop dramatically from strong to no CA at 104.39m.												
<<Alt: 104.39 - 113.45 Moderate Muscovite>>												
105.40	**106.73**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	105.40	106.10	0.70	B00291462	2.55	377	0.13	2.14	9.23
<<Min: 105.4 - 106.73 10% Min: Sphalerite>>				106.10	106.73	0.63	B00291463	2.48	235	0.25	1.84	5.85
<<Min: 105.4 - 106.73 70% Min: Pyrite>>												
<<Min: 105.4 - 106.73 0.1% Min: Pyrrhotite>> At lower contact.												
<<Min: 105.4 - 106.73 3% Min: Galena>>												
<<Min: 105.4 - 106.73 0.1% Min: Chalcopyrite>> At lower contact.												
106.73	**107.65**	**OI** **Heavilly disseminated sulphides in host schist**	**MG**	106.73	107.65	0.92	B00291464	0.787	99.9	0.52	0.53	1.85
106.73 - 107.65: From 106.86m to 107.22m, OJ-strong to intense CL proximal alteration showing CP stringers).												
<<Min: 106.86 - 107.22 1% Min: Sphalerite>>												
<<Min: 106.86 - 107.22 1% Min: Pyrite>>												
<<Min: 106.86 - 107.22 0.5% Min: Pyrrhotite>>												
<<Min: 106.86 - 107.22 0.1% Min: Galena>>												
<<Min: 106.86 - 107.22 3% Min: Chalcopyrite>>												
<<Min: 106.86 - 107.22 0.1% Min: Arsenopyrite>>												
<<Min: 107.22 - 107.65 1% Min: Sphalerite>>												
<<Min: 107.22 - 107.65 10% Min: Pyrite>>												
<<Min: 107.22 - 107.65 0.1% Min: Galena>>												
<<Alt: 106.86 - 107.22 Strong Chlorite>>												
<<Struc: 107.3 - 108.4 Weak Fault>> Narrow gouge zones, minor .												
107.65	**108.70**	**RHYv** **Rhyolite volcaniclastic**		107.65	108.15	0.50	B00291465	0.039	5.4	0.02	0.02	0.04
107.65 - 108.7: Altered MU.												
				108.15	108.70	0.55	B00291466	0.034	2.4	-0.01	0.02	0.02

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
108.70	**110.55**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**MG**	108.70	109.22	0.52	B00291467	0.956	96.6	0.47	0.79	2.41
<<Min: 108.7 - 110.55 5% Min: Sphalerite>>					109.22	110.05	0.83	B00291468	0.747	104	0.17	1.18	3.58
<<Min: 108.7 - 110.55 30% Min: Pyrite>>					110.05	110.55	0.50	B00291469	0.747	160	0.24	2.13	5.93
<<Min: 108.7 - 110.55 0.1% Min: Pyrrhotite>>													
<<Min: 108.7 - 110.55 1% Min: Galena>>													
<<Min: 108.7 - 110.55 2% Min: Arsenopyrite>>													
<<Alt: 108.8 - 112.64 Strong Chlorite>>													
110.55	**111.85**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		110.55	111.18	0.63	B00291471	0.018	3.3	-0.01	0.03	0.14
<<Vein: 111.62 - 111.85 Quarzt-Chlorite-Carbonate>> QZ vein including CL (host rock).					111.18	111.85	0.67	B00291472	0.01	1.6	-0.01	0.01	0.08
111.85	**113.21**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**MG**	111.85	112.64	0.79	B00291473	0.647	104	0.12	1.2	4.81
111.85 - 113.21: CL and MU alteration.													
<<Min: 111.85 - 113.21 3% Min: Sphalerite>>					112.64	113.21	0.57	B00291474	1.64	196	0.11	1.45	3.98
<<Min: 111.85 - 113.21 20% Min: Pyrite>>													
<<Min: 111.85 - 113.21 3% Min: Galena>>													
<<Min: 111.85 - 113.21 1% Min: Arsenopyrite>>													
113.21	**122.02**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		113.21	114.02	0.81	B00291475	0.013	3.1	-0.01	0.04	0.1
113.21 - 122.02: CL/CA schist. Epidote patch, fine grain BI locally.													
<<Min: 113.21 - 113.45 1% Min: Pyrrhotite>> At contact with mineralized zone.					114.02	114.98	0.96	B00291476	0.009	0.7	-0.01	-0.01	0.02
<<Min: 113.45 - 124.12 0.1% Min: Chalcopyrite>> Associated with PO in epidote altered MAFi.					114.98	116.00	1.02	B00291477	-0.005	0.8	-0.01	-0.01	0.02
<<Min: 113.45 - 126 0.5% Min: Pyrrhotite>> Observed in epidote altered MAFi.					116.00	117.00	1.00	B00291478	-0.005	0.5	-0.01	-0.01	0.01
<<Alt: 113.21 - 121.7 Moderate Calcite>>					117.00	118.00	1.00	B00291479	0.006	0.6	-0.01	-0.01	0.01
<<Alt: 120.12 - 120.73 Moderate Epidote>> Could be original.					118.00	119.00	1.00	B00291481	0.011	0.6	-0.01	-0.01	0.01
<<Alt: 121.7 - 144.8 Strong Calcite>>					119.00	120.00	1.00	B00291482	0.007	0.5	-0.01	-0.01	0.01
					120.00	121.00	1.00	B00291483	0.006	0.8	-0.01	-0.01	0.02

From (m)	To (m)	Rocktype & Description

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
121.00	122.02	1.02	B00291484	0.009	1.1	-0.01	-0.01	0.02
122.02	123.00	0.98	B00291485	-0.005	0.6	-0.01	-0.01	0.01

122.02 127.24 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

122.02 - 127.24: Fine grain CA/BI schist. Low CL.

<<Min: 126 - 168.75 0.1% Min: Pyrrhotite>>

<<Alt: 122.38 - 144.68 Moderate-Strong Biotite>> Fine grain BI up from 122.38m to 127.24m.

<<Struc: 123.67 - 123.68 dominant foliation>>

127.24 144.68 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

127.24 - 144.68: Chlorite altered. Patch of hematite and epidote, frequent narrow fault gouge.

<<Alt: 132.92 - 141.3 Moderate-Strong Chlorite>>

<<Alt: 138.8 - 139.48 Moderate Epidote>> Could be original.

<<Struc: 131.3 - 131.31 dominant foliation>>

<<Struc: 132 - 133.8 Weak Shear>> Low intensity shearing in MAFi.

<<Struc: 137.65 - 137.66 dominant foliation>>

<<Struc: 139.8 - 141.5 Moderate Fault>> Fault gouge.

144.68 147.20 RHY undifferentiated rhyolite

144.68 - 147.2: Could strongly muscovite altered MAFi. Gougy upper contact. Muscovite altered, low chlorite, no biotite. Wavy foliation, CA, crenulated. PY/PO.

<<Alt: 144.68 - 147.2 Moderate Muscovite>>

<<Alt: 144.8 - 152.3 Weak-Moderate Calcite>>

<<Struc: 144.68 - 145.5 Weak-Moderate Fault>> Fault gouge and strongly altered contact between MAFi and probably RHY.

<<Struc: 145.52 - 145.53 dominant foliation>>

147.20 152.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

147.2 - 152.3: CA/CL schist, strongly altered CL, no biotite.

<<Alt: 147.2 - 153.45 Strong Chlorite>>

<<Struc: 147.9 - 147.91 dominant foliation>>

<<Struc: 150 - 152.3 Moderate-Strong Shear>> Sheared, disaggregated MAFi.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

152.30 155.20 FLZ Fault Zone

152.3 - 155.2: Brecciated, Subrounded clasts, MU altered, QZ clasts containing GL. Clasts up to 20 cm. Mafic and felsic material in gouge.

<<Alt: 152.3 - 201 Weak Calcite>>

<<Alt: 153.45 - 162.23 Moderate-Strong Muscovite>>

<<Struc: 152.3 - 155.2 Intense Fault>> Polymictic fault /breccia, clasts up to 10 cm wide. QZ containing GL. Strong chlorite alteration. Contact between MAFi and RHY.

155.20 158.07 RHY undifferentiated rhyolite

155.2 - 158.07: Fragmented rhyolite, sheared, boudinage.

<<Struc: 155.2 - 158.3 Moderate-Strong Shear>> Sheared, disaggregated rhyolite, locally brecciated.

<<Struc: 156.95 - 156.96 dominant foliation>>

158.07 158.23 MDSc Carbonaceous dominant mudstone

158.07 - 158.23: Graphitic silicified mudstone containing PO/PY.

158.23 162.23 RHY undifferentiated rhyolite

158.23 - 162.23: Fragmented rhyolitic schist.

<<Struc: 158.3 - 162.23 Moderate Shear>> Sheared to locally brecciated/gougy rhyolite.

<<Struc: 160.2 - 160.21 dominant foliation>>

<<Struc: 161.3 - 161.31 dominant foliation>>

162.23 162.85 RHYv Rhyolite volcaniclastic

162.23 - 162.85: Strongly foliated, BI in foliation, light blue, probably carbonaceous material (MDSw).

162.85 163.50 MDSc Carbonaceous dominant mudstone

162.85 - 163.5: Graphitic silicified mudstone..

163.50 168.04 RHYv Rhyolite volcaniclastic

163.5 - 168.04: BI in foliation, light blue rhyolite, probably some carbonaceous material (MDSw). Strong crenulation, undulated silicic bands, possible flow..

<<Struc: 165.87 - 165.88 dominant foliation>> Crenulated foliation

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

168.04 171.36 MDSc Carbonaceous dominant mudstone

168.04 - 171.36: Graphitic silicified mudstone.

<<Min: 168.75 - 185.7 0.5% Min: Pyrite>> And few in discontinuous veins.

<<Min: 168.75 - 185.7 1% Min: Pyrrhotite>> And few patches.

171.36 177.26 RHYvl Lapilli tuff

171.36 - 177.26: PY/PO in foliation. Mid to high strain.

<<Struc: 172.2 - 172.21 dominant foliation>>

177.26 178.66 RHYvx Quartz and/or feldspar crystal tuff

177.26 - 178.66: Crystal up to 0.5cm,

178.66 179.95 RHYv Rhyolite volcaniclastic

178.66 - 179.95: MU altered.

179.95 182.50 RHYvx Quartz and/or feldspar crystal tuff

179.95 - 182.5: Could be porphyroblasts 2 to 5 mm wide.

<<Struc: 182.2 - 182.5 Weak Fault>> Fault gouge.

182.50 188.16 RHYv Rhyolite volcaniclastic

182.5 - 188.16: Altered MU rhyolite, strong foliation, weak CL alteration.

<<Min: 185.7 - 194.9 2% Min: Pyrrhotite>> Possibly GL trace associated.

<<Min: 185.7 - 247.6 1% Min: Pyrite>>

<<Alt: 185.7 - 187.5 Weak-Moderate Muscovite>>

<<Alt: 187.5 - 194.9 Weak-Moderate Chlorite>> Lapilli replacement.

<<Struc: 185.6 - 185.61 dominant foliation>>

188.16 194.90 RHYvl Lapilli tuff

188.16 - 194.9: Light green, specks of tourmaline, ashes at lower contact.

194.90 201.30 RHY undifferentiated rhyolite

194.9 - 201.3: Dominantly coherent rhyolite. Fractured, locally disaggregated rhyolite flow and crystal ash interbedded.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 194.9 - 247.6 1% Min: Pyrrhotite>>

<<Alt: 194.9 - 201 Moderate-Strong Muscovite>> Associated with fractured flow disaggregated.

<<Alt: 201 - 244 Weak-Moderate Muscovite>>

<<Alt: 201 - 247.6 Trace Calcite>>

<<Struc: 198.8 - 201 Weak-Moderate Shear>> Boudinage and breccia in rhyolite flow.

201.30 201.62 RHYva Coarse grained to ash tuff

201.3 - 201.62: Fine grain, homogeneous groundmass ash tuff, few PY/PO..

201.62 210.40 RHYcw Curdy textured-flow banded (flows, subvolcanics)

201.62 - 210.4: Pseudo fragmental. Pink/orange color from 208.50 to 210.50, could be albitization. Locally flow banded.

<<Struc: 204.5 - 204.51 dominant foliation>>

<<Struc: 207.5 - 218.7 Weak-Moderate Fault>> Multiple narrow fault, one per metre, Locally gouge, highly fractured.

210.40 233.00 RHY undifferentiated rhyolite

210.4 - 233: Probably volcaniclastic. Patch of tourmaline, PY clots, few reddish bands (hematite?), locally xtl. Unit fractured and sheared.

<<Struc: 216.55 - 216.56 >> Dominant shearing/fracture angle.

<<Struc: 218.7 - 228 Moderate Fault>> Fractured, sheared and gougy rhyolite. Less the 30 percent of solid rock.

<<Struc: 224.5 - 224.51 >> Dominant shearing/fracture angle.

<<Struc: 229 - 229.01 dominant foliation>>

<<Struc: 232 - 232.01 Vein>> QZ/PY/L vein, offfsetted by discordant fracture.

233.00 235.20 FLZ Fault Zone

233 - 235.2: Clay matrix, QZ/maybe silicified mudstone containing PY/rhyolite clasts. Dark grey bands (carbonaceous bands relics?).

<<Struc: 233 - 235.2 Strong Fault>> Fault gouge, clay, QZ clasts and boudinage. Dark gray clay bands (carbonaceous material?). Possibly clasts of PY rich mudstone.

<<Struc: 234.2 - 234.21 >> Dominant lamination angle within fault gouge.

235.20 247.60 RHYcf Feldspar & feldspar quartz porphyry

235.2 - 247.6: Fractured up 240.50m, locally gouge up to 50 cm, feldspar porphyroblasts (0.5 cm wide), blue QZ eyes. Fine grain ground mass (ash). QZ pods. E.O.H.

<<Alt: 244 - 247.6 Weak Muscovite>>

<<Struc: 237 - 240.5 Moderate Fault>> Less than 50 percent of competent rock. Gougy, highly fracture sericite filled.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 239 - 239.01 >> Dominant fracture/shearing angle.											
End of Hole @ 247.6											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-351

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/26/2016
UTM Easting	415131.7035	Core Size:	HQ3	Azimuth:	215.7	Date Logging Complete:	5/27/2016
UTM Northing:	6815043.4774	Casing Pulled?:	Yes	Dip:	-59	Drill Company:	Hytech
UTM Elev. (m):	1399.016	Casing Depth (m):	9	Length (m):	198	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/24/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/25/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-351 was drilled to confirm the resource of the Krakatoa lenses near the Sunda Fault.
K16-351 encountered bedrock at 9.3 m. The hanging wall package consists of mixed PEL, RHYv, RHYi, RHYc, and minor MAFi to a depth of ~110.9 m, where the upper contact of the MAFi occurs. Within this hanging wall package moderate to strong MU-alteration occurs from 73-110.9m, with a zone of intense alteration from 93-94.6 m. This intense alteration occurs near where the upper lens mineralization has been modelled from surrounding drill holes. The MAFi occurs from 110.9-131.8 m. From 131.8-133.4 m, OJ mineralization occurs as bands of strong chlorite alteration with stringer style mineralization within the MAFi. From 133.4-140.2 m, MXSX occurs, consisting of OB and OK style mineralization. The footwall zone consists of mixed MU-altered RHY and RHYi from 140.2-163.2 m. From 163.2-198 m (EOH), an intense fault with polylithic clasts in a gouge matrix occurs. This fault is believed to be the Sunda Fault.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-59	214.3	1.4	215.7	APS	Dillon Hume	5/24/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
15	-59.8	196.7	22.1	218.8	ReflexEZS	Hytech	5/24/2016	5862	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
31	-60.1	195.1	22.1	217.2	ReflexEZS	Hytech	5/24/2016	5750	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
57	-60.2	194.7	22.1	216.8	ReflexEZS	Hytech	5/24/2016	5737	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
81	-60.3	195.3	22.1	217.4	ReflexEZS	Hytech	5/24/2016	5741	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
105	-60.4	193.7	22.1	215.8	ReflexEZS	Hytech	5/24/2016	5709	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
129	-60	192.9	22.1	215	ReflexEZS	Hytech	5/25/2016	5702	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
153	-60.5	192.6	22.1	214.7	ReflexEZS	Hytech	5/25/2016	5732	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
177	-60.3	199.4	22.1	221.5	ReflexEZS	Hytech	5/25/2016	5776	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
198	-60.3	193.4	22.1	215.5	ReflexEZS	Hytech	5/25/2016	5717	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 9.30 OVBN Overburden

9.30 9.90 RHYc Rhyolite coherant volcanics

<<Min: 9.3 - 19.8 1% Min: Pyrite>>

<<Alt: 9.3 - 9.9 Weak Calcite>>

9.90 14.50 PEL Equigranular biotite + calcite +/- quartz rock

9.9 - 14.5: Sharp upper contact and gradational lower contact with RHYvl. Same unit logged as MAFi (mineral: BI) in surrounding holes. Appears stratigraphically controlled in cross-section.

<<Alt: 9.9 - 14.5 Moderate Calcite>>

14.50 17.30 RHYvl Lapilli tuff

14.5 - 17.3: lpl tuff with minor patches of coherent rhyolite

<<Alt: 14.5 - 19.8 Weak-Moderate Calcite>>

<<Vein: 14.7 - 14.8 100% Quartz-Carbonate>> Massive QZ-CA vein

17.30 19.80 RHYva Coarse grained to ash tuff

17.3 - 19.8: Ash dominated tuff with minor lpl and disseminated BI (sedimentary input?)

<<Struc: 18.07 - 18.08 Weak dominant foliation>>

19.80 32.10 RHYi Aphanitic Rhyolite (intrusion)

19.8 - 32.1: Light grey to pink aphanitic siliceous rhyolite. Appears to grade from coherent rhyolite at the top to aphanitic over ~50 cm.

<<Min: 19.8 - 32.1 2% Min: Pyrite>>

<<Alt: 19.8 - 32.1 Weak Calcite>> CA FRA in RHYi

<<Struc: 21.36 - 21.37 Weak dominant foliation>>

<<Struc: 26.23 - 26.24 Weak dominant foliation>>

32.10 34.40 RHYva Coarse grained to ash tuff

32.1 - 34.4: Minor lpl and patches of coherent RHY (blocks or bombs?)

<<Min: 32.1 - 43.8 0.5% Min: Pyrite>>

<<Alt: 32.1 - 34.4 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

34.40 36.30 PEL Equigranular biotite + calcite +/- quartz rock

34.4 - 36.3: Same unit logged as MAFi (mineral: BI) in surrounding holes. Appears stratigraphically controlled in cross-section.

<<Alt: 34.4 - 36.3 Moderate Calcite>>

36.30 37.00 RHYv Rhyolite volcaniclastic

36.3 - 37: Dominantly ashy with minor lpl and coherent clasts (?)

<<Alt: 36.3 - 37 Weak-Moderate Calcite>>

37.00 37.50 PEL Equigranular biotite + calcite +/- quartz rock

37 - 37.5: Same unit logged as MAFi (mineral: BI) in surrounding holes. Appears stratigraphically controlled in cross-section.

<<Alt: 37 - 37.5 Moderate Calcite>>

37.50 38.90 RHYc Rhyolite coherant volcanics

37.5 - 38.9: Silica banded rhyolite

<<Alt: 37.5 - 73 Weak-Moderate Calcite>>

38.90 53.60 RHYvl Lapilli tuff

38.9 - 53.6: Variable total content of lpl, from locally ash dominant to lpl-rich (>50%)

<<Min: 43.8 - 68 0.1% Min: Pyrite>>

<<Min: 43.8 - 68 0.5% Min: Pyrrhotite>>

<<Vein: 53.2 - 53.4 100% Quartz-Tourmaline>> QZ vein with patchy tourmaline

<<Struc: 42.25 - 42.26 Weak dominant foliation>>

<<Struc: 47.95 - 47.96 Weak-Moderate dominant foliation>>

<<Struc: 49.3 - 49.6 Weak Fault>>

53.60 54.80 No Core No Core

54.80 68.00 RHYvl Lapilli tuff

54.8 - 68: Variable total content of lpl, from locally ash dominant to lpl-rich (>50%)

<<Alt: 66 - 73 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
68.00	**93.00**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	87.00	88.50	1.50	B00292201	0.006	0.6	-0.01	-0.01	-0.01
68 - 93: Flow banded and altered rhyolite											
<<Min: 68 - 93 2% Min: Pyrite>>			88.50	90.00	1.50	B00292202	-0.005	0.9	-0.01	-0.01	-0.01
<<Alt: 73 - 93 Moderate Muscovite>>			90.00	91.50	1.50	B00292203	0.006	0.5	-0.01	-0.01	-0.01
<<Alt: 73 - 93 Weak Calcite>>			91.50	93.00	1.50	B00292204	-0.005	0.4	-0.01	-0.01	-0.01
<<Vein: 86.6 - 86.8 80% Quartz-Carbonate>> Deformed QZ-CA vein within RHYcw											
<<Struc: 68 - 69.6 Weak Fault>> Broken ground with minor fault gouge											
<<Struc: 76.1 - 76.3 Weak Fault>> Broken ground with minor gouge											
93.00	**94.60**	**RHY** **undifferentiated rhyolite**	93.00	93.80	0.80	B00292205	-0.005	-0.3	-0.01	-0.01	0.02
93 - 94.6: UPPER LENS: Intensely MU-altered RHY? With minor disseminated sulfides. Located near where upper lens was anticipated to be intercepted.											
<<Min: 93 - 94.6 2% Min: Pyrite>>			93.80	94.60	0.80	B00292206	0.028	2.6	0.04	-0.01	0.07
<<Alt: 93 - 94.6 Intense Muscovite>> Completely sericite altered. Located near where the Upper Lens was anticipated to be intercepted.											
<<Alt: 93 - 94.6 Weak-Moderate Calcite>>											
<<Alt: 93 - 94.6 Weak Biotite>>											
<<Struc: 93.5 - 93.6 Weak Fault>> Minor faulting in intensely altered RHY											
94.60	**95.60**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	94.60	95.60	1.00	B00292207	0.012	0.8	0.01	-0.01	0.08
94.6 - 95.6: BI-rich MAFi due to alteration (?)											
<<Alt: 94.6 - 95.6 Moderate-Strong Calcite>>											
<<Alt: 94.6 - 96.6 Strong Biotite>> Related to alteration of MAFi ??											
<<Struc: 94.6 - 94.9 Weak-Moderate Fault>> Faulting with some gouge matrix and minor clasts											
95.60	**101.90**	**RHYva** **Coarse grained to ash tuff**	95.60	97.10	1.50	B00292208	0.015	1.1	-0.01	-0.01	0.02
95.6 - 101.9: Well foliated and moderate-strong altered rhyolite											
<<Min: 95.6 - 101.9 1% Min: Pyrite>>			97.10	98.60	1.50	B00292209	0.012	1	-0.01	-0.01	0.03
<<Alt: 95.6 - 101.9 Weak Calcite>>			98.60	100.10	1.50	B00292211	0.008	0.6	-0.01	-0.01	0.01
<<Alt: 96.6 - 101.9 Moderate-Strong Muscovite>>											
<<Vein: 101.7 - 101.9 100% Calcite 60 deg. >> Massive CA-QZ vein											
101.90	**103.00**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 101.9 - 110.9 1% Min: Pyrite>>									
		<<Alt: 101.9 - 103 Moderate Calcite>>									
103.00	**110.90**	**RHYv** **Rhyolite volcaniclastic**									
		103 - 110.9: Well foliated and moderate-strong altered rhyolite (volcaniclastic?)									
		<<Alt: 103 - 110.9 Moderate-Strong Muscovite>>									
		<<Alt: 103 - 110.9 Weak-Moderate Calcite>>									
		<<Struc: 107.7 - 110.9 Moderate Fault>> Highly broken with fault gouge contact between RHY and MAFi									
110.90	**131.80**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	121.30	122.80	1.50	B00292212	-0.005	0.6	-0.01	-0.01	0.02
		<<Min: 110.9 - 131.8 0.1% Min: Pyrite>>	122.80	124.30	1.50	B00292213	-0.005	-0.3	-0.01	-0.01	0.02
		<<Alt: 110.9 - 124.3 Weak-Moderate Calcite>>	124.30	125.80	1.50	B00292214	-0.005	0.7	-0.01	-0.01	0.02
		<<Alt: 124.3 - 133.4 Moderate Calcite>>	125.80	127.30	1.50	B00292215	0.007	-0.3	-0.01	-0.01	0.01
		<<Struc: 122.16 - 122.17 Moderate dominant foliation>>	127.30	128.80	1.50	B00292216	0.006	-0.3	-0.01	-0.01	0.01
			128.80	130.30	1.50	B00292217	0.007	-0.3	-0.01	-0.01	0.01
			130.30	131.80	1.50	B00292218	-0.005	-0.3	-0.01	-0.01	0.01
131.80	**133.40**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	131.80	133.40	1.60	B00292219	1.06	13.9	0.94	0.02	0.4
		131.8 - 133.4: MAFI with minor bands of intense CL-alteration (~2 cm thick) with CP+PO+PY disseminated to blebby mineralization. Stringer zone.									
		<<Min: 131.8 - 133.4 0.5% Min: Sphalerite>>									
		<<Min: 131.8 - 133.4 0.5% Min: Pyrite>>									
		<<Min: 131.8 - 133.4 0.5% Min: Pyrrhotite>>									
		<<Min: 131.8 - 133.4 2% Min: Chalcopyrite>>									
		<<Alt: 131.8 - 133.4 Strong Chlorite>> Bands of strong Chlorite alteration associated with stringer style mineralization									
133.40	**135.60**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	133.40	134.50	1.10	B00292221	1.97	197	0.9	7.26	8.82
		133.4 - 135.6: Massive laminated PY+SP+/-GL with local blebby CP+PO near upper contact. ~5% SI+CA gangue patches									
		<<Min: 133.4 - 135.6 5% Min: Sphalerite>>	134.50	135.60	1.10	B00292222	1.64	154	0.06	6	7.52
		<<Min: 133.4 - 135.6 85% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 133.4 - 135.6 0.5% Min: Pyrrhotite>>											
<<Min: 133.4 - 135.6 1% Min: Galena>>											
<<Min: 133.4 - 135.6 0.5% Min: Chalcopyrite>>											
<<Alt: 133.4 - 135.6 Weak Calcite>>											
135.60	**140.20**	**OK Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	135.60	136.20	0.60	B00292223	2.5	110	0.28	3.73	5.6
135.6 - 140.2: Massive laminated PY+SP+/-GL with local blebby CP+PO+/-SP. ~20% SI+CA+/-BA gangue patches.											
<<Min: 135.6 - 140.2 3% Min: Sphalerite>>			136.20	137.20	1.00	B00292224	1.91	138	0.2	4.61	6.54
<<Min: 135.6 - 140.2 60% Min: Pyrite>>			137.20	138.20	1.00	B00292225	2.7	164	0.22	5.01	8.22
<<Min: 135.6 - 140.2 1% Min: Magnetite>>			138.20	139.20	1.00	B00292226	2.93	164	0.13	4.2	6.48
<<Min: 135.6 - 140.2 1% Min: Galena>>			139.20	140.20	1.00	B00292227	4.89	208	0.32	3.79	4.79
<<Min: 135.6 - 140.2 2% Min: Chalcopyrite>>											
<<Min: 135.6 - 140.2 2% Min: Barite>>											
<<Alt: 135.6 - 140.2 Moderate Calcite>>											
<<Struc: 136.46 - 136.47 Weak-Moderate dominant foliation>>											
140.20	**146.90**	**RHYv Rhyolite volcaniclastic**	140.20	141.70	1.50	B00292228	0.031	4.6	-0.01	0.09	0.11
140.2 - 146.9: Strongly MU-altered unit with similar blebby CA texture to MAFi, but also closely resembles RHYvl… Local disseminated BI and QZ. Very hard to determine whether it is altered RHYvl or MAFi. Maybe trace element geochemistry can help?											
<<Min: 140.2 - 163.2 1% Min: Pyrite>>			141.70	142.90	1.20	B00292229	0.014	1.6	-0.01	0.03	0.04
<<Alt: 140.2 - 146.9 Strong Muscovite>> Pervasive MU alteration, may be OR near upper contact due to hydrothermal alteration associated with MXSX and OP for the majority of unit due to alteration associated with RHYi???			142.90	143.90	1.00	B00292231	0.006	0.3	-0.01	-0.01	0.02
<<Struc: 144.2 - 145 Weak Fault>>			143.90	145.40	1.50	B00292232	0.006	0.6	-0.01	-0.01	0.02
<<Struc: 146.3 - 146.4 Weak-Moderate Fault>>			145.40	146.90	1.50	B00292233	-0.005	0.9	-0.01	-0.01	-0.01
146.90	**147.50**	**RHYi Aphanitic Rhyolite (intrusion)**	146.90	147.50	0.60	B00292234	0.005	1.2	-0.01	-0.01	-0.01
<<Vein: 147 - 147.5 10% Quartz>> Minor QZ-veining. Appears to be cross-cut by contact at 147.5 m											
147.50	**149.60**	**RHYv Rhyolite volcaniclastic**	147.50	148.60	1.10	B00292235	-0.005	0.5	-0.01	-0.01	-0.01
147.5 - 149.6: Strongly MU-altered unit with similar blebby CA texture to MAFi, but also closely resembles RHYvl… Local disseminated BI and QZ. Very hard to determine whether it is altered RHYvl or MAFi. Maybe trace element geochemistry can help?											

From (m)	To (m)	Rocktype & Description
		<<Alt: 147.5 - 149.6 Strong Muscovite>> OP alteration of unit due to alteration associated with RHYi???
149.60	**152.00**	**RHYi Aphanitic Rhyolite (intrusion)**
		<<Alt: 149.6 - 152 Moderate Muscovite>> OP alteration of unit due to alteration associated with RHYi???
152.00	**153.40**	**RHY undifferentiated rhyolite**
		152 - 153.4: Strongly MU-altered unit with similar blebby CA texture to MAFi, but also closely resembles RHYvl… Local disseminated BI and QZ. Very hard to determine whether it is altered RHYvl or MAFi. Maybe trace element geochemistry can help?
		<<Alt: 152 - 153.4 Strong Muscovite>> OP alteration of unit due to alteration associated with RHYi???
153.40	**155.10**	**RHYi Aphanitic Rhyolite (intrusion)**
		<<Alt: 153.4 - 155.1 Moderate Muscovite>> OP alteration of unit due to alteration associated with RHYi???
155.10	**156.90**	**RHY undifferentiated rhyolite**
		155.1 - 156.9: Strongly MU-altered unit with similar blebby CA texture to MAFi, but also closely resembles RHYvl… Local disseminated BI and QZ. Very hard to determine whether it is altered RHYvl or MAFi. Maybe trace element geochemistry can help?
		<<Alt: 155.1 - 156.9 Strong Muscovite>> OP alteration of unit due to alteration associated with RHYi???
156.90	**161.10**	**RHYi Aphanitic Rhyolite (intrusion)**
		<<Alt: 156.9 - 161.1 Moderate Muscovite>> OP alteration of unit due to alteration associated with RHYi???
		<<Vein: 160.6 - 161 25% Quartz-Carbonate 45 deg. >> QZ-CA veining in RHYi
		<<Struc: 159 - 161.2 Moderate Fault>> Moderate faulting of RHYi and RHY with local brecciated texture with RHYi clasts in sericitic matrix
161.10	**163.20**	**RHY undifferentiated rhyolite**
		161.1 - 163.2: Strongly MU-altered unit with similar blebby CA texture to MAFi, but also closely resembles RHYvl… Local disseminated BI and QZ. Very hard to determine whether it is altered RHYvl or MAFi. Maybe trace element geochemistry can help?
		<<Alt: 161.1 - 163.2 Strong Muscovite>> OP alteration of unit due to alteration associated with RHYi???
		<<Struc: 161.66 - 161.67 Moderate dominant foliation>>
163.20	**198.00**	**FLZ Fault Zone**
		163.2 - 198: Sunda Fault: Intensely faulted zone dominated by fault gouge, with sericite, chlorite, silica, and carbonaceous components. Polylithic clasts include RHYi, MDS, MXSX, RHY, and MAFi.
		<<Min: 163.2 - 198 2% Min: Pyrite>> Local clasts of PY-rich rocks
		<<Alt: 163.2 - 198 Trace Calcite>>
		<<Struc: 163.2 - 198 Intense Fault>> Intense polytlithic fault breccia with gouge matrix. Locally clasts of RHYi and MDSc occur as larger blocks ranging from 40 cm to 1.5 m in size.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
148.60	149.60	1.00	B00292236	-0.005	0.6	-0.01	-0.01	-0.01
149.60	150.60	1.00	B00292237	0.009	1.2	-0.01	-0.01	0.01

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-351

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 198											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-352

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/28/2016
UTM Easting	415131.198	Core Size:	HQ3	Azimuth:	225.59	Date Logging Complete:	5/30/2016
UTM Northing:	6815043.9116	Casing Pulled?:	Yes	Dip:	-83	Drill Company:	Hytech
UTM Elev. (m):	1398.971	Casing Depth (m):	1.5	Length (m):	192	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/26/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/28/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-352 was drilled to test inferred portions of the Krakatoa upper and Krakatoa main lenses. Drill rods became stuck at 192 m, and were cut free at a depth of 153 m, leaving ~39 m of drill rods in the ground.
K16-352 encountered bedrock at 1.5 m. The felsic hanging wall package was encountered from 1.5-124 m, consisting of mixed coherent rhyolite, volcaniclastic rhyolite, pelitic sediments, and mudstones. Moderate to strong MU-alteration occurs from 77.5-126.3 m, continuing into the MAFi. MAFi occurred from 124-152.9 m, with strong MU-alteration occurring at 146.1-152.9 m (continues into underlying RHY as well). From 147.5-149.3 m, banded chlorite alteration associated with disseminated to stringer style mineralization occurs. Below the MAFi, strongly MU-altered RHY occurs (152.9-164.7 m) with a zone of semi-massive to patchy mineralization (OI) from 155.1-156 m. Underlying the RHY, brecciated RHYi occurs to 173.5 m, where intense faulting occurs. This fault persists to the bottom of the hole, consisting of matrix-supported polylithic clasts (RHY, MAFi, MXSX, MDS, QZ-vein, etc.) with sericite-chlorite-clay gouge matrix. Both horizons where mineralization was anticipated to be intercepted contained zones of strong alteration plus or minus disseminated to semi-massive sulfide, and potentially represent the extent of mineralization in their respective lenses.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-83	224.19	1.4	225.59	APS	Dillon Hume	5/26/2016		☑	Drill rig alignment
12	-81.6	203.4	22.1	225.5	ReflexEZS	Hytech	5/26/2016	5733	☑	
36	-80.3	196.4	22.1	218.5	ReflexEZS	Hytech	5/26/2016	5768	☑	
60	-79.1	193.2	22.1	215.3	ReflexEZS	Hytech	5/26/2016	5764	☑	
84	-78.8	189.7	22.1	211.8	ReflexEZS	Hytech	5/26/2016	5750	☑	
105	-77.8	189.9	22.1	212	ReflexEZS	Hytech	5/26/2016	5758	☑	
129	-77.1	187	22.1	209.1	ReflexEZS	Hytech	5/26/2016	5769	☑	
153	-76.7	185.9	22.1	208	ReflexEZS	Hytech	5/27/2016	5755	☑	
177	-76.4	184.7	22.1	206.8	ReflexEZS	Hytech	5/27/2016	5744	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**1.50**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

1.50 10.40 RHYc Rhyolite coherant volcanics

1.5 - 10.4: Unit varies from RHYi near the center to flow-banded and silica banded outward. Potentially representing a flow with more flow movement along edges ??

<<Min: 1.5 - 10.4 2% Min: Pyrite>>

<<Alt: 1.5 - 10.4 Trace Calcite>>

10.40 12.70 PEL Equigranular biotite + calcite +/- quartz rock

10.4 - 12.7: BI-CA schist with heterogeneous composition. Interpreted to be a pelitic sedimentary horizon.

<<Alt: 10.4 - 12.7 Moderate Calcite>>

12.70 20.10 RHYvl Lapilli tuff

12.7 - 20.1: Volcaniclastic rhyolite with variable amounts of lpl, local flow textures, and BI content (sediment input?)

<<Min: 12.7 - 20.1 0.5% Min: Pyrite>>

<<Min: 12.7 - 20.1 0.1% Min: Pyrrhotite>>

<<Alt: 12.7 - 20.1 Weak-Moderate Calcite>>

<<Struc: 16.5 - 16.8 Weak Fault>> Minor fault gouge and wash away

20.10 33.30 RHYi Aphanitic Rhyolite (intrusion)

20.1 - 33.3: Aphanitic rhyolite with silica banded texture near upper contact and ~gradational lower contact

<<Min: 20.1 - 33.3 1% Min: Pyrite>>

<<Alt: 20.1 - 33.3 Weak Calcite>>

<<Struc: 30.7 - 30.71 Weak-Moderate dominant foliation>>

33.30 34.00 RHYvl Lapilli tuff

<<Min: 33.3 - 72.2 0.5% Min: Pyrite>>

<<Alt: 33.3 - 34 Weak-Moderate Calcite>>

<<Struc: 33.5 - 33.51 Weak-Moderate dominant foliation>>

34.00 37.40 PEL Equigranular biotite + calcite +/- quartz rock

34 - 37.4: Black to olive green BI-CA-CL schist with heterogeneous texture and composition

<<Alt: 34 - 37.4 Moderate Calcite>>

37.40 38.50 RHYcw Curdy textured-flow banded (flows, subvolcanics)

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 37.4 - 38.5 Weak Calcite>>

<<Struc: 37.4 - 37.6 Weak Fault>> Broken ground and minor fault gouge at PEL/RHYcw contact

38.50 38.80 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 38.5 - 38.8 Moderate Calcite>>

38.80 40.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Alt: 38.8 - 40.3 Weak Calcite>>

40.30 65.80 RHYvl Lapilli tuff

40.3 - 65.8: Dominated by lpl tuff, with variable composition of lpl from BI-CL-CA to felsic lpl.

<<Alt: 40.3 - 75.3 Weak-Moderate Calcite>>

<<Alt: 60.7 - 77.5 Weak Muscovite>>

<<Vein: 42 - 42.2 100% Quartz-Sericite/White mica>> Broken QZ-Sericite vein in fault zone

<<Vein: 64.6 - 64.8 20% Quartz>> Minor folded and deformed (ptigmatic) QZ veins

<<Struc: 41.3 - 44.1 Weak-Moderate Fault>> Zone of fault planes with gouge every ~15 cm. Minor veining within zone. Wash away also recorded in zone.

<<Struc: 44.94 - 44.95 Moderate dominant foliation>>

<<Struc: 52.89 - 52.9 Moderate dominant foliation>>

<<Struc: 54.6 - 62.7 Weak-Moderate Fault>> Zone of fault planes with some gouge every ~20-50 cm. Minor wash away recorded in zone.

65.80 66.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

65.8 - 66.2: Small Ca-phyric mafic dyke

66.20 73.00 RHYvl Lapilli tuff

<<Min: 72.2 - 73 1% Min: Pyrrhotite>>

<<Vein: 67.4 - 71.6 5% Quartz 70 deg. >> Zone with White QZ-veining and poor recovery (faulting?)

<<Struc: 67.3 - 78.7 Moderate Fault>> Zone of many fault planes with gouge surfaces and high core loss. Zone appears to have low RQD rating. As well, a transposition foliation appears to be superimposed on the original foliation. This can be seen where a crenulation cleavage is oveperprinting the original foliation at a high angle.

73.00 75.30 MDSw Coherent rhyolite flow with carbonaceous content

73 - 75.3: Flow banded rhyolite with minor carbonaceous material

<<Min: 73 - 77.5 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
75.30	**77.50**	**MDSc Carbonaceous dominant mudstone** 75.3 - 77.5: Argillaceous mudstone									
77.50	**107.90**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)** 77.5 - 107.9: Good flow banded texture. Local crenulation cleavage appears to transpose original foliation. Maybe the dominant foliation in other units (i.e. RHYv) is this transposed foliation. <<Min: 77.5 - 107.9 2% Min: Pyrite>> <<Alt: 77.5 - 116.5 Moderate Muscovite>> <<Alt: 77.5 - 116.5 Weak Calcite>> <<Vein: 93.2 - 93.3 100% Quartz 60 deg. >> Massive QZ vein with cross-cutting cleavage of MU-GL-PY <<Struc: 84.28 - 84.29 Weak-Moderate dominant foliation>> <<Struc: 85.2 - 85.3 Moderate-Strong Fault>> Narrow zone of strongly faulted material with milled clasts in a gouge matrix <<Struc: 91.24 - 91.25 Weak-Moderate dominant foliation>> <<Struc: 100.69 - 100.7 Weak-Moderate dominant foliation>> <<Struc: 101.8 - 103.4 Weak-Moderate Fault>> Zone of broken rock with fault gouge. Clasts supported zone.									
107.90	**121.80**	**RHYvl Lapilli tuff** 107.9 - 121.8: Felsic and pyrite lpl <<Min: 107.9 - 124 2% Min: Pyrite>> <<Alt: 116.5 - 121.8 Weak-Moderate Calcite>> <<Alt: 116.5 - 124 Strong Muscovite>> <<Vein: 114 - 114.03 90% Quartz 75 deg. >> QZ vein <<Vein: 117.5 - 118 30% Quartz 50 deg. >> Zone with massive QZ veining in strong MU-alteration. Minor blebby SP+PY near vein margin <<Struc: 118 - 120 Weak Fault>> Local fault surfaces with minor gouge	120.30	121.80	1.50	B00292238	0.006	0.7	-0.01	-0.01	0.01
121.80	**124.00**	**RHYc Rhyolite coherent volcanics** 121.8 - 124: Strongly sericite altered with silicic banding resembling coherent rhyolite. Local QZ-veining may mimic the silicic bands. Faulted and folded lower contact with MAFi. <<Alt: 121.8 - 124 Moderate Calcite>> <<Vein: 122.3 - 122.7 90% Quartz-Sericite/White mica 70 deg. >> Massive QZ veining with MU-cleavages and faulted margins. In strong Mu-alteration <<Vein: 122.7 - 124 80% Quartz-Carbonate 60 deg. >> Laminated QZ-veining or silicic banded due to lithology ???	121.80	122.50	0.70	B00292239	-0.005	0.4	-0.01	-0.01	-0.01
			122.50	124.00	1.50	B00292241	-0.005	0.4	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 121.9 - 125.7 Moderate Fault>> Faulting near contact between RHY and MAFi. Note that the actual contact is folded and faulted as well. Patches of fault gouge material.									
124.00	**147.50**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	124.00	125.20	1.20	B00292242	-0.005	0.6	-0.01	-0.01	0.02
		124 - 147.5: Strong Mu-alteration occurs at top and bottom contacts with rhyolite. Potentially distal extents of the ore horizons. Lower contact grades into OJ mineralization.									
		<<Min: 124 - 146.1 0.1% Min: Pyrite>>	125.20	126.50	1.30	B00292243	-0.005	0.5	-0.01	-0.01	0.01
		<<Min: 146.1 - 147.5 0.5% Min: Sphalerite>>	126.50	128.00	1.50	B00292244	0.005	0.5	-0.01	-0.01	0.02
		<<Min: 146.1 - 147.5 0.1% Min: Pyrite>>	128.00	129.50	1.50	B00292245	-0.005	0.5	-0.01	-0.01	0.01
		<<Min: 146.1 - 147.5 0.5% Min: Chalcopyrite>>	129.50	131.00	1.50	B00292246	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 124 - 125.2 Moderate-Strong Calcite>>	137.10	138.60	1.50	B00292247	-0.005	0.5	-0.01	-0.01	0.02
		<<Alt: 124 - 125.2 Moderate Biotite>>	138.60	140.10	1.50	B00292248	-0.005	0.3	-0.01	-0.01	0.01
		<<Alt: 125.2 - 126.3 Strong Muscovite>>	140.10	141.60	1.50	B00292249	0.052	0.8	-0.01	-0.01	0.01
		<<Alt: 125.2 - 126.3 Weak Biotite>>	141.60	143.10	1.50	B00292251	0.006	-0.3	-0.01	-0.01	0.01
		<<Alt: 125.2 - 128.3 Moderate Calcite>>	143.10	144.60	1.50	B00292252	0.009	0.6	-0.01	-0.01	0.01
		<<Alt: 126.3 - 126.5 Moderate-Strong Biotite>>	144.60	146.10	1.50	B00292253	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 128.3 - 139.4 Weak Calcite>>	146.10	147.50	1.40	B00292254	0.009	1.2	0.03	-0.01	0.07
		<<Alt: 139.4 - 152.9 Moderate Calcite>>									
		<<Alt: 146.1 - 147.5 Strong Muscovite>> Strong pervasive alteration of MAFi groundmass									
		<<Vein: 127 - 133 3% Calcite>> Zone with minor thin CA veinlets in MAFi cross-cutting foliation									
		<<Struc: 129.85 - 129.86 Moderate dominant foliation>>									
		<<Struc: 146.3 - 147.2 Weak-Moderate Fault>> Minor zones of faulting with gouge material ove ~5 cm									
147.50	**149.30**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	147.50	148.40	0.90	B00292255	0.075	32.3	0.48	0.33	1.52
		147.5 - 149.3: Strongly MU-altered MAFi with local bands of chlorite + PO+CP+PY+/-SP mineralization.									
		<<Min: 147.5 - 149.3 5% Min: Sphalerite>>	148.40	149.30	0.90	B00292256	0.378	43.3	1.7	0.68	3.32
		<<Min: 147.5 - 149.3 2% Min: Pyrite>>									
		<<Min: 147.5 - 149.3 5% Min: Pyrrhotite>>									
		<<Min: 147.5 - 149.3 2% Min: Chalcopyrite>>									
		<<Alt: 147.5 - 148 Moderate Muscovite>> Moderate MU alteration of MAFi groundmass									
		<<Alt: 147.5 - 148 Moderate Chlorite>> Bands of CL alteration associated with PO+CP+PY+SP stringer mineralization									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 148 - 152.9 Strong Muscovite>> Strong pervasive alteration of MAFi groundmass									
		<<Struc: 148.8 - 150 Weak-Moderate Fault>> Zone with 2 patches of fault gouge									
149.30	**152.90**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	149.30	150.50	1.20	B00292257	0.023	1.8	0.05	0.04	0.11
		149.3 - 152.9: Strong Mu-alteration of groundmass of MAFi, with patches of relict (?) CA+BI									
		<<Min: 149.3 - 155.1 0.1% Min: Sphalerite>>	150.50	151.70	1.20	B00292258	0.096	4.4	0.11	0.06	0.2
		<<Min: 149.3 - 155.1 0.5% Min: Pyrite>>	151.70	152.90	1.20	B00292259	0.145	4.2	0.1	0.06	0.22
		<<Min: 149.3 - 155.1 0.1% Min: Chalcopyrite>>									
		<<Min: 149.3 - 155.1 1% Min: Arsenopyrite>>									
		<<Struc: 152 - 158 Moderate Fault>> Moderate faulting displayed as brecciated sulfide, gouge zones, and folding of foliation. Local core loss. Core has very low strength.									
152.90	**155.10**	**RHY undifferentiated rhyolite**	152.90	154.00	1.10	B00292261	0.172	14.1	0.1	0.11	0.33
		152.9 - 155.1: Strongly MU-altered and foliated rhyolite									
		<<Alt: 152.9 - 164.7 Strong Muscovite>> Strong pervasive alteration of RHY	154.00	155.10	1.10	B00292262	0.023	4.3	-0.01	0.06	0.15
		<<Alt: 152.9 - 164.7 Weak-Moderate Calcite>>									
155.10	**156.00**	**OI Heavilly disseminated sulphides in host schist**	155.10	156.00	0.90	B00292263	0.054	114	0.33	2.05	2.76
		155.1 - 156: Brecciated to patchy massive PO+CP+PY+CA within massive MU-SI alteration									
		<<Min: 155.1 - 156 2% Min: Pyrite>>									
		<<Min: 155.1 - 156 20% Min: Pyrrhotite>>									
		<<Min: 155.1 - 156 1% Min: Chalcopyrite>>									
156.00	**164.70**	**RHY undifferentiated rhyolite**	156.00	157.50	1.50	B00292264	-0.005	2.3	0.01	0.03	0.05
		156 - 164.7: Strong MU-alteration or undifferentiated rhyolite. Strongly foliated. Proximal to Sunda fault. Local kink folding.									
		<<Min: 156 - 173.5 1% Min: Pyrite>>	157.50	159.00	1.50	B00292265	-0.005	0.5	-0.01	-0.01	-0.01
		<<Vein: 160.7 - 161 10% Quartz>> Folded ~1 cm wide QZ vein in intense sericite alteration	159.00	160.50	1.50	B00292266	-0.005	0.6	-0.01	-0.01	-0.01
		<<Struc: 158.9 - 162 Moderate Fault>> Moderate faulting shown by strong alteration with folded to broken foliation with minor gouge zones	160.50	162.00	1.50	B00292267	-0.005	0.6	-0.01	-0.01	-0.01
		<<Struc: 160.95 - 160.96 Moderate-Strong >> Axial plane of tight folded vein in strong altered zone and fault zone	162.00	163.50	1.50	B00292268	-0.005	0.5	-0.01	-0.01	-0.01
			163.50	164.70	1.20	B00292269	-0.005	0.4	-0.01	-0.01	-0.01
164.70	**173.50**	**RHYi Aphanitic Rhyolite (intrusion)**	164.70	166.20	1.50	B00292271	0.006	0.8	-0.01	-0.01	-0.01
		164.7 - 173.5: Grey to yellowish beige brecciated aphanitic rhyolite.									

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-352

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 164.7 - 173.5 Weak Calcite>>									
		<<Vein: 166 - 166.5 20% Quartz>> Zone of patchy QZ-veins									
		<<Struc: 164.7 - 173.5 Weak-Moderate Fault>> Brecciated and fractured RHYi with minor cementation of fractures									
173.50	**187.20**	**FLZ** **Fault Zone**	184.50	186.00	1.50	B00292272	0.005	0.6	-0.01	-0.01	0.01
		173.5 - 187.2: Intense fault zone, with polylithic clasts (MAFi, MDS, RHY, QZ-vein, MXSX) within sericite-chlorite gouge matrix. Gouge-supported.									
		<<Min: 173.5 - 192 3% Min: Pyrite>> Clasts of MXSX and heavily disseminated sulfide within fault zone	186.00	187.20	1.20	B00292273	0.013	1.3	-0.01	0.02	0.25
		<<Alt: 173.5 - 182 Strong Muscovite>> Intense sericitic alteration of gouge material in fault zone									
		<<Alt: 173.5 - 192 Weak-Moderate Calcite>>									
		<<Struc: 173.5 - 192 Intense Fault>> Intense faulting with matrix-supported, polylithic clasts in sericite-chlorite-clay gouge matrix.									
187.20	**188.90**	**OI** **Heavilly disseminated sulphides in host schist**	187.20	188.00	0.80	B00292274	0.011	1.7	-0.01	0.02	0.12
		187.2 - 188.9: Clast of heavily disseminated pyrite in siliceous and MU-altered groundmass. Clast/clasts within fault zone									
		<<Min: 187.2 - 188.9 15% Min: Pyrite>> Clast of heavily disseminated pyrite in siliceous and MU-altered groundmass. Clast/clasts within fault zone	188.00	188.90	0.90	B00292275	0.008	0.9	-0.01	-0.01	0.01
188.90	**192.00**	**FLZ** **Fault Zone**	188.90	190.40	1.50	B00292276	-0.005	0.6	-0.01	-0.01	0.01
		188.9 - 192: Intense fault zone, with polylithic clasts (MAFi, MDS, RHY, QZ-vein, MXSX) within sericite-chlorite gouge matrix. Gouge-supported.									
			190.40	192.00	1.60	B00292277	-0.005	0.5	-0.01	-0.01	0.02
End of Hole @ 192											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-353

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/29/2016
UTM Easting	414881.5319	Core Size:	HQ3	Azimuth:	211.41	Date Logging Complete:	6/1/2016
UTM Northing:	6814998.9818	Casing Pulled?:	Yes	Dip:	-77	Drill Company:	Hytech
UTM Elev. (m):	1389.944	Casing Depth (m):	9	Length (m):	159	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/27/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/30/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-353 was collared to test up-dip exploration potential of lower Krakatoa lens and collect HQ half core met sample of lower main lens.
The top of K16-353 is made up of volcaniclastic rhyolite sequence intruded by a mafic sill from 21.10m to 34.10 m. Above the mafic unit the lithology consists in volcaniclastic rhyolite crosscut by aphanitic rhyolite unit showing varying thickness and containing 3% of pyrite in veinlets.
Mineralization encountered at the top of the hole are made up of OA domain probably in the overburden and OB in the bed rock from 11.40m to 12.80m. OJ domain (PY/PO stringers-CL/CI alteration) is intercepted from 129.77m to 132.77m and could be correlated to the Main lens.
From 106.95m to 108.43m, a unit interpreted as mafic dike shows CL/AK and fuchsite. This unit could be an alteration zone.
Hole K16-353 ends at 159.00m in volcaniclastic rhyolite.
No massive sulfide were intercepted where the Main lens was projected. No MET samples has been collected.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-77	210.01	1.4	211.41	APS	Jerome de Pasquale	5/27/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
18	-76.1	189.7	22.1	211.8	ReflexEZS	Hytech	5/28/2016	5832	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
42	-74.7	189.2	22.1	211.3	ReflexEZS	Hytech	5/28/2016	5781	☑	
66	-74.1	188.5	22.1	210.6	ReflexEZS	Hytech	5/28/2016	5763	☑	
90	-73.7	190.8	22.1	212.9	ReflexEZS	Hytech	5/29/2016	5766	☑	
114	-72.9	191.7	22.1	213.8	ReflexEZS	Hytech	5/29/2016	5783	☑	
117	-72.9	191.7	22.1	213.8	ReflexEZS	Hytech	5/29/2016	5783	☑	
141	-73	194.3	22.1	216.4	ReflexEZS	Hytech	5/29/2016	5739	☑	
159	-72.8	195	22.1	217.1	ReflexEZS	Hytech	5/30/2016	5746	☑	

From (m)	To (m)	Rocktype & Description
0.00	**11.40**	**OVBN Overburden**
0 - 11.4: Containing massive sulfide boulder, OA domain/mafic sill/gravel and rubble in sandy clay at contact with the bedrock.		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
8.85	10.00	1.15	B00291486	0.304	83.8	0.07	2.1	4.23

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 8.95 - 9.4 3% Min: Magnetite>> Probably boulder (overburden).	10.00	11.40	1.40	B00291487	0.069	10.3	0.02	0.19	0.48
		<<Min: 8.95 - 9.5 3% Min: Sphalerite>> Probably boulder (overburden).									
		<<Min: 8.95 - 9.5 40% Min: Pyrite>> Probably boulder (overburden).									
		<<Min: 8.95 - 9.5 2% Min: Galena>> Probably boulder (overburden).									
11.40	**12.80**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	11.40	12.00	0.60	B00291488	2.24	296	0.2	1.52	5.14
		11.4 - 12.8: Strong muscovite alteration over 10 cm at upper contact.									
		<<Min: 11.4 - 12.8 5% Min: Sphalerite>>	12.00	12.80	0.80	B00291489	2.5	369	0.26	1.22	8.6
		<<Min: 11.4 - 12.8 60% Min: Pyrite>>									
		<<Min: 11.4 - 12.8 0.5% Min: Galena>>									
		<<Alt: 11.4 - 11.5 Moderate-Strong Muscovite>> At contact between RHYv and MxSx.									
12.80	**21.10**	**RHYvl** **Lapilli tuff**	12.80	14.00	1.20	B00291491	0.269	23.5	0.02	0.07	0.21
		12.8 - 21.1: Light grey, fine grain groundmass.									
		<<Min: 12.8 - 40.3 0.1% Min: Pyrite>>	14.00	15.00	1.00	B00291492	0.011	1.8	-0.01	0.01	0.03
		<<Min: 12.8 - 40.3 0.5% Min: Pyrrhotite>> Rare veinlets in the foliation.	15.00	16.02	1.02	B00291493	-0.005	0.7	-0.01	-0.01	0.02
		<<Alt: 12.8 - 21.1 Moderate Calcite>>									
		<<Struc: 15.2 - 15.21 dominant foliation>>									
		<<Struc: 15.5 - 21 Weak Fault>> Multiple narrow fault gouge zones in rhyolite altered MU.									
21.10	**34.10**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**									
		21.1 - 34.1: Dark green, banded CL/BI/CA schist. Sharp upper contact, faulted lower contact. CL intensity decreases at lower contact, finer grain.									
		<<Alt: 21.1 - 30 Strong Calcite>>									
		<<Alt: 21.1 - 34.1 Moderate Biotite>>									
		<<Alt: 30 - 34 Moderate Calcite>>									
		<<Alt: 34 - 34.1 Strong Calcite>>									
		<<Struc: 21.2 - 21.21 Contact>> Contact RHYvl/MAFi.									
		<<Struc: 22.5 - 22.66 dominant foliation>>									
		<<Struc: 29.8 - 29.81 dominant foliation>>									
		<<Struc: 33.85 - 40.3 Weak Fault>> Multiple narrow fault gouge zones in rhyolite altered MU.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
34.10	**40.30**	**RHYva Coarse grained to ash tuff**									
		34.1 - 40.3: Containing locally RHYi bands (10 cm wide). Light grey, homogeneous, weakly foliated, moderate fault (gouge).									
		<<Alt: 34.1 - 40.3 Weak Calcite>>									
		<<Struc: 34.5 - 34.51 dominant foliation>>									
		<<Struc: 39.95 - 39.96 dominant foliation>>									
40.30	**43.35**	**RHYi Aphanitic Rhyolite (intrusion)**	40.30	41.00	0.70	B00291494	0.039	10.3	0.05	0.14	0.36
		40.3 - 43.35: RHYv at upper contact., sharp lower contact. Aphanitic , fractured, PY veinlets, pink/orange patch (albite?), PY patch.									
		<<Min: 40.3 - 48.95 0.1% Min: Sphalerite>>	41.00	42.00	1.00	B00291495	0.066	5.7	0.02	0.04	0.06
		<<Min: 40.3 - 48.95 1% Min: Pyrite>>	42.00	43.35	1.35	B00291496	0.014	1.9	-0.01	0.06	0.08
		<<Alt: 40.3 - 48.95 Trace Calcite>>									
		<<Vein: 40.3 - 43.35 Pyrite>> PY veinlets									
		<<Struc: 43.2 - 43.21 dominant foliation>>									
43.35	**45.00**	**RHYva Coarse grained to ash tuff**	43.35	45.00	1.65	B00291497	0.006	0.9	-0.01	0.01	0.05
		43.35 - 45: Core missing from 44m to 45m. Light grey, homogeneous, fine grain ash tuff.									
45.00	**48.95**	**RHYi Aphanitic Rhyolite (intrusion)**									
		45 - 48.95: Aphanitic fractured, beige/orange/pinkish patch. Massive QZ vein containing SP/PY/GL, CA in fracture. Calcareous patch from 47.97m to 48.17m, whitish alteration (dolomite?). PY in veinlets.									
		<<Vein: 45.45 - 46.1 Quartz>> QZ vein, patch of SP/GL/PY, CA in fracture.									
		<<Vein: 47.2 - 47.4 Quartz>> QZ vein-core missing.									
		<<Struc: 47.8 - 47.81 dominant foliation>>									
48.95	**52.14**	**RHYva Coarse grained to ash tuff**									
		48.95 - 52.14: Fine grain, light grey groundmass, mid to high strained lapilli. Narrow RHYi band (20 cm), CA bands and MU alteration at lower contact. Sharp lower contact.									
		<<Min: 48.95 - 52.14 0.1% Min: Pyrite>>									
		<<Alt: 48.95 - 52.14 Weak-Moderate Calcite>>									
		<<Alt: 50 - 52.14 Moderate Muscovite>>									
		<<Struc: 50.7 - 50.71 dominant foliation>>									

From (m)	To (m)	Rocktype & Description
52.14	**75.10**	**RHYi Aphanitic Rhyolite (intrusion)**
52.14 - 75.1: Pink/orange aphanitic. PY/SP/GL in veinlets and fractures. From 72.20m to 72.67m light grey, possibly fine grain ash tuff containing RHYi (clasts or discontinuous veins, could be lapilli replacement). Brecciated RHYi crosscut by large QZ vein. Sharp lower contact.		
<<Min: 52.14 - 105 0.5% Min: Sphalerite>> Associated with RHYi.		
<<Min: 52.14 - 105 3% Min: Pyrite>> Associated with RHYi.		
<<Min: 52.14 - 105 0.1% Min: Galena>> Associated with RHYi.		
<<Alt: 52.14 - 142.7 Trace Calcite>>		
<<Alt: 62 - 69 Moderate-Strong Silicification>> Possibly RHYva silicified (altered by RHYi).		
<<Alt: 72.3 - 105 Moderate-Strong Silicification>> Possibly RHYva silicified (altered by RHYi).		
<<Vein: 52.14 - 105 Pyrite>> PY/SP veinlets (stringers. Irregular intensity.		
<<Vein: 54.03 - 54.43 Quartz>> QZ vein.		
<<Vein: 74.16 - 74.94 Quartz-Carbonate>> QZ/CA vein crosscutting and fracturing RHYi. Possibly late CA.		
<<Struc: 52.14 - 105 Trace Fault>> Highly fractured due to high silicification.		
<<Struc: 54.5 - 54.51 dominant foliation>>		
<<Struc: 64.2 - 64.21 dominant foliation>>		
<<Struc: 72.15 - 72.16 Vein>> PY veinlets set.		
75.10	**78.00**	**RHY undifferentiated rhyolite**
75.1 - 78: RHYi/RHY mixed. Elongated clasts or truncated veins giving a conglomerate aspect. PY/SP/GL stringers, few SP/PY in foliation, fine grain in groundmass.		
<<Alt: 75.16 - 106.95 Moderate Muscovite>> Could be overprint. Late silicification obscuring texture.		
<<Struc: 76 - 76.01 dominant foliation>>		
<<Struc: 77.6 - 77.61 dominant foliation>>		
78.00	**78.70**	**RHYi Aphanitic Rhyolite (intrusion)**
78 - 78.7: Fractured, brecciated but by QZ vein.		
<<Vein: 78 - 78.46 Quartz>> QZ veining crosscutting RHYi.		
78.70	**79.95**	**RHY undifferentiated rhyolite**
78.7 - 79.95: Light green, MU altered, fine grain, gradual lower contact, faulted lower contact.		
79.95	**81.36**	**RHYi Aphanitic Rhyolite (intrusion)**
79.95 - 81.36: Grey, banded orange/pink, aphanitic, PY veinets.		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
58.00	59.00	1.00	B00291498	0.011	1.2	-0.01	0.02	0.03
59.00	60.00	1.00	B00291499	0.027	3.1	-0.01	0.06	0.21
60.00	61.08	1.08	B00291501	0.025	4.3	-0.01	0.05	0.42
61.08	62.00	0.92	B00291502	0.021	2	-0.01	0.02	0.02
62.00	63.00	1.00	B00291503	0.011	0.8	-0.01	-0.01	0.01
69.50	71.00	1.50	B00291504	0.027	2.5	-0.01	0.03	0.06
71.00	72.30	1.30	B00291505	0.086	9.6	0.02	0.18	0.46
72.30	73.30	1.00	B00291506	0.016	0.7	-0.01	-0.01	0.02
73.30	74.72	1.42	B00291507	0.01	0.5	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

81.36 85.60 RHY undifferentiated rhyolite

81.36 - 85.6: Light green, foliated, CA bands, locally pinkish (RHYi intrusion), altered MU.

<<Struc: 82.7 - 82.71 Contact>> Contact between pinkish (albite?) and grey RHYi.

<<Struc: 85.2 - 85.21 dominant foliation>>

85.60 86.07 RHYi Aphanitic Rhyolite (intrusion)

85.6 - 86.07: Grey, aphanitic, gradual upper contact, sericite in joint at lower contact.

86.07 87.21 RHY undifferentiated rhyolite

86.07 - 87.21: Containing RHYi "clasts", light green, MU altered, gradual lower contact.

87.21 87.60 RHYi Aphanitic Rhyolite (intrusion)

87.21 - 87.6: PY stringers/discontinuous veinlets at upper contact. Aphanitic.

87.60 88.95 RHYva Coarse grained to ash tuff

87.6 - 88.95: Light grey, fine grain, PY disseminated.

88.95 91.00 RHYi Aphanitic Rhyolite (intrusion)

88.95 - 91: Grey, aphanitic.

91.00 97.90 RHYv Rhyolite volcaniclastic

91 - 97.9: Light green, NU altered, locally pinkish bands (RHYi), fine grain, CA bands, PY stringers.

<<Struc: 93 - 93.01 dominant foliation>>

<<Struc: 95.5 - 95.51 dominant foliation>>

97.90 98.08 RHYi Aphanitic Rhyolite (intrusion)

97.9 - 98.08: Grey, aphanitic.

98.08 100.90 RHY undifferentiated rhyolite

98.08 - 100.9: Silicified, PY veinlets.

100.90 101.80 RHYi Aphanitic Rhyolite (intrusion)

100.9 - 101.8: Pinkish, PY veinlets (stringers).

101.80 105.70 RHY undifferentiated rhyolite

101.8 - 105.7: MU altered, light green/yellow, locally silicic bands.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 105.2 - 105.21 dominant foliation>>									
105.70	**106.95**	**RHY undifferentiated rhyolite** 105.7 - 106.95: PY veinlets/patch, strong MU alteration, fractured along the core axis, dolomite bands. <<Alt: 105.7 - 106.95 Strong Muscovite>> Could be original or altered by dike. <<Alt: 106 - 108.43 Weak-Moderate Dolomite>> <<Alt: 106.85 - 108.43 Moderate-Strong Ankerite>> Porphyroblasts in mafic dike.									
106.95	**108.43**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)** 106.95 - 108.43: Strongly altered mafic dike, fuchsite, AK porphyroblasts. Could be related to original alteration (MU alteration increasing above).									
108.43	**121.10**	**RHYv Rhyolite volcaniclastic** 108.43 - 121.1: Light grey, weak foliation, weak MU alteration. Rare QE. <<Min: 108.43 - 129.77 0.1% Min: Sphalerite>> <<Min: 108.43 - 129.77 0.5% Min: Pyrite>> rare veinlets. <<Min: 108.43 - 129.77 0.1% Min: Galena>> <<Alt: 121 - 129.77 Weak Chlorite>> <<Struc: 109.7 - 109.71 dominant foliation>> <<Struc: 113.3 - 113.31 dominant foliation>>									
121.10	**122.40**	**RHY undifferentiated rhyolite** 121.1 - 122.4: Breccia texture, QZ fragmented veins, weak CL alteration.									
122.40	**129.77**	**RHYv Rhyolite volcaniclastic** 122.4 - 129.77: Light grey, locally clasts, sericite bands (talc?), rare QZ eyes. Sheared from 126.70m to 127.00m.	127.00	127.90	0.90	B00291508	-0.005	-0.3	-0.01	-0.01	-0.01
			127.90	129.00	1.10	B00291509	-0.005	-0.3	-0.01	-0.01	0.04
			129.00	129.77	0.77	B00291511	-0.005	-0.3	-0.01	-0.01	0.01
129.77	**132.77**	**OJ Heavily disseminated sulphides and/or stringer style mineralization in proximal altered rock** 129.77 - 132.77: CL altered rhyolite. PY "spider web" texture, PO, CA patch, TML, CI aggregated. <<Min: 129.77 - 132.77 10% Min: Pyrite>>	129.77	130.68	0.91	B00291512	-0.005	0.4	-0.01	-0.01	0.03
			130.68	132.00	1.32	B00291513	0.007	0.6	0.03	-0.01	0.41

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 129.77 - 132.77 2% Min: Pyrrhotite>>	132.00	132.77	0.77	B00291514	0.006	1.1	0.01	-0.01	0.07
		<<Alt: 129.77 - 132.77 Moderate-Strong Chlorite>>									
		<<Alt: 130.08 - 130.68 Moderate-Strong Cordierite>>									
132.77	**138.51**	**RHYv Rhyolite volcaniclastic**	132.77	134.00	1.23	B00291515	-0.005	-0.3	-0.01	-0.01	0.02
132.77 - 138.51: Light grey, fine grain groundmass.											
		<<Min: 132.77 - 138.51 0.1% Min: Pyrite>>	134.00	135.00	1.00	B00291516	-0.005	0.3	-0.01	-0.01	0.01
		<<Alt: 132.77 - 134 Weak-Moderate Chlorite>>	135.00	136.00	1.00	B00291517	0.005	-0.3	-0.01	-0.01	-0.01
			136.00	137.32	1.32	B00291518	-0.005	-0.3	-0.01	-0.01	0.01
			137.32	138.51	1.19	B00291519	-0.005	0.4	-0.01	-0.01	0.02
138.51	**139.60**	**RHY undifferentiated rhyolite**	138.51	139.10	0.59	B00291521	-0.005	-0.3	-0.01	-0.01	0.09
138.51 - 139.6: Weakly altered CL, QZ/CA vein (10 cm wide) associated with SP/PY/GL. Few TML.											
		<<Min: 138.51 - 139.6 2% Min: Sphalerite>>	139.10	139.60	0.50	B00291522	0.005	1.1	-0.01	0.01	2.19
		<<Min: 138.51 - 139.6 0.5% Min: Pyrite>> Few veinlets.									
		<<Min: 138.51 - 139.6 0.1% Min: Galena>>									
		<<Alt: 138.51 - 139 Weak Tourmaline>>									
		<<Alt: 138.51 - 139 Weak-Moderate Chlorite>>									
139.60	**143.94**	**RHYva Coarse grained to ash tuff**	139.60	141.00	1.40	B00291523	-0.005	-0.3	-0.01	-0.01	-0.01
139.6 - 143.94: Light grey, fine grain.											
		<<Min: 139.6 - 159 1% Min: Pyrite>> And disseminated.	141.00	142.00	1.00	B00291524	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Min: 139.6 - 159 1% Min: Pyrrhotite>>	142.00	142.70	0.70	B00291525	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 142.7 - 159 Weak-Moderate Calcite>>									
		<<Struc: 140.3 - 140.31 dominant foliation>>									
143.94	**149.95**	**RHYv Rhyolite volcaniclastic**									
143.94 - 149.95: Light grey/brownish. Gouge at lower contact (30 cm wide).											
149.95	**152.82**	**RHYv Rhyolite volcaniclastic**									
149.95 - 152.82: Light grey, few PO disseminated, few CL.											
152.82	**154.70**	**RHYva Coarse grained to ash tuff**									
152.82 - 154.7: Light grey, mid strain, weak foliation, gradual upper and lower contact.											
		<<Struc: 154 - 154.01 dominant foliation>>									
		<<Struc: 154.3 - 154.31 dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
154.70	**159.00**	**RHYv Rhyolite volcaniclastic** 154.7 - 159: Light grey. TML vein, selvage. Weak foliation. E.O.H. <<Vein: 156.54 - 156.62 Tourmaline>> CA/TML vein **End of Hole @ 159**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-354

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/31/2016
UTM Easting	415149.889	Core Size:	HQ3	Azimuth:	39.71	Date Logging Complete:	5/31/2016
UTM Northing:	6815067.709	Casing Pulled?:	Yes	Dip:	-80	Drill Company:	Hytech
UTM Elev. (m):	1406.322	Casing Depth (m):	4.5	Length (m):	39	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/29/2016
Local Northing:		Cemented?:	No	Core Storage Loc.:	KZK Camp	Drill Completed:	5/29/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-354 was drilled to test inferred portions of the Krakatoa upper and Krakatoa main lens near the Sunda Fault. The hole was abandonded at 39 m due to excess deviation toward the Sunda Fault.
K16-354 intersects the felsic hanging wall package from 3.5-39 m, consisting of layered volcaniclastic rhyolite, coherent rhyolite, pelitic sediments, and RHYi (maybe extrusive here or sub-volcanic intrusion). No significant alteration or mineralization was observed.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-80	38.31	1.4	39.71	APS	Dillon Hume	5/29/2016		☑	Drill rig alignment
15	-79.4	22.6	22.1	44.7	ReflexEZS	Hytech	5/29/2016	5795	☑	
29	-79.5	22.5	22.1	44.6	ReflexEZS	Hytech	5/29/2016	5796	☑	
39	-79.6	23.8	22.1	45.9	ReflexEZS	Hytech	5/29/2016	5793	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 3.50 OVBN Overburden

0 - 3.5: Overburden may extend deeper, but is composed of mainly broken bedrock below 3.5 m.

3.50 11.70 RHYvl Lapilli tuff

3.5 - 11.7: Light grey felsic lpl in medium-dark grey ash matrix. Grades upward from coherent rhyolite to ~curdy-lpl rich to ~10% lpl in ashy matrix.

<<Min: 3.5 - 12.6 0.5% Min: Pyrite>>

<<Alt: 3.5 - 12.6 Weak-Moderate Calcite>>

<<Vein: 6 - 7.5 10% Calcium carbonate/Carbonate 60 deg. >> 7 ~5 cm wide QZ-carb veins in rubble and broken zone in RHYvl

11.70 12.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

12.30 12.60 RHYvl Lapilli tuff

12.60 14.00 PEL Equigranular biotite + calcite +/- quartz rock

12.6 - 14: ~sharp crenulated contacts. Varies from BI-CA dominant to local ashy grey dominant (Heterogenous).

<<Alt: 12.6 - 14 Moderate Calcite>>

14.00 28.10 RHYcw Curdy textured-flow banded (flows, subvolcanics)

14 - 28.1: Good flow banded texture. High density of massive QZ-veining. Both upper and lower contacts appear to grade from PEL to RHYva +/- diss BI to RHYcw.

<<Min: 27.6 - 32.5 0.1% Min: Pyrite>>

<<Alt: 14 - 28.1 Weak-Moderate Calcite>>

<<Vein: 14 - 28.6 30% Quartz>> RHYcw with abundant massive QZ-veining with local patchy carbonate and tourmaline blebs. Veins vary from 10-90 cm and appear to be folded/deformed without sharp contacts.

<<Struc: 26.81 - 26.82 Moderate dominant foliation>>

28.10 32.50 PEL Equigranular biotite + calcite +/- quartz rock

28.1 - 32.5: Heterogenous BI-CA meta-pelite with a gradational upper contact and sharp lower contact with RHYva that grades into RHYcw over ~15 cm and RHYi over another ~15cm.

<<Alt: 28.1 - 32.5 Moderate Calcite>>

<<Vein: 31 - 31.1 60% Quartz-Carbonate 65 deg. >> ~5 cm wide QZ-CA vein

<<Struc: 31.2 - 31.4 Weak Fault>>

<<Struc: 32.28 - 32.29 Moderate dominant foliation>>

32.50 39.00 RHYi Aphanitic Rhyolite (intrusion)

32.5 - 39: Upper contact grades from RHYva into RHYcw over ~15 cm and RHYi over another ~15cm. Suggests that RHYi is extrusive with a carapice ??? No brecciated RHYi clasts along contact…

<<Min: 32.5 - 39 1% Min: Pyrite>>

<<Alt: 32.5 - 39 Weak Calcite>>

<<Struc: 35.6 - 35.7 Weak Fault>>

End of Hole @ 39

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-355

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/1/2016
UTM Easting	415149.889	Core Size:	HQ3	Azimuth:	38.6	Date Logging Complete:	6/4/2016
UTM Northing:	6815067.709	Casing Pulled?:	Yes	Dip:	-80	Drill Company:	Hytech
UTM Elev. (m):	1406.322	Casing Depth (m):	7.5	Length (m):	329.7	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/29/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/2/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-355 was drilled to test inferred portions of the Krakatoa upper and Krakatoa main lenses.
K16-355 encountered bedrock at 4.5 m depth. The hanging wall felsic package consists of mixed coherent rhyolite, volcaniclastic rhyolite, aphanitic rhyolite, and pelitic sedimentary horizons, to a depth of 185.3 m. Moderate to strong MU-alteration is pervasive from 133.8-187 m. The mafic sill occurs from 185.3-247.5 m. Below the mafic sill the felsic footwall package occurs to the end of the hole (329.7 m), consisting of volcaniclastic rhyolite, sheared BI-MU schist, and fault zones. Below the mafic sill, moderate MU-alteration is pervasive from 244.7-254.6 m. No significant mineralization was encountered in K16-355. Faulting in the footwall may be the Sunda fault zone.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-80	37.2	1.4	38.6	APS	Ron Voordouw	5/29/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-79.68514	36.90022	1.4	38.30022	Gyro	Dillon Hume	6/2/2016		☑	
10	-79.79974	37.20772	1.4	38.60772	Gyro	Dillon Hume	6/2/2016		☑	
15	-79.96768	37.04451	1.4	38.44451	Gyro	Dillon Hume	6/2/2016		☑	
15.1	-79.9	18.6	22.1	40.7	ReflexEZS	Hytech	5/29/2016	5810	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
20	-80.08885	37.95396	1.4	39.35396	Gyro	Dillon Hume	6/2/2016		☑	
25	-80.20201	37.97158	1.4	39.37158	Gyro	Dillon Hume	6/2/2016		☑	
30	-80.64838	38.66261	1.4	40.06261	Gyro	Dillon Hume	6/2/2016		☑	
35	-80.70428	38.87214	1.4	40.27214	Gyro	Dillon Hume	6/2/2016		☑	
39	-80.8	19.6	22.1	41.7	ReflexEZS	Hytech	5/29/2016	5789	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
40	-80.73887	38.95605	1.4	40.35605	Gyro	Dillon Hume	6/2/2016		☑	
45	-80.82762	38.71763	1.4	40.11763	Gyro	Dillon Hume	6/2/2016		☑	
50	-80.86514	38.57149	1.4	39.97149	Gyro	Dillon Hume	6/2/2016		☑	
55	-80.94743	38.9269	1.4	40.3269	Gyro	Dillon Hume	6/2/2016		☑	
60	-80.94087	39.30036	1.4	40.70036	Gyro	Dillon Hume	6/2/2016		☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-355

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
63	-77	10	22.1	32.1	ReflexEZS	Hytech	5/30/2016	5886	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
65	-80.94721	39.34521	1.4	40.74521	Gyro	Dillon Hume	6/2/2016		☑	
69	-81.1	19.9	22.1	42	ReflexEZS	Hytech	5/30/2016	5789	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
70	-81.08431	39.60178	1.4	41.00178	Gyro	Dillon Hume	6/2/2016		☑	
75	-81.41433	39.99559	1.4	41.39559	Gyro	Dillon Hume	6/2/2016		☑	
80	-81.6501	40.52421	1.4	41.92421	Gyro	Dillon Hume	6/2/2016		☑	
85	-81.95118	41.85211	1.4	43.25211	Gyro	Dillon Hume	6/2/2016		☑	
90	-81.90062	42.97544	1.4	44.37544	Gyro	Dillon Hume	6/2/2016		☑	
93	-82.2	25.9	22.1	48	ReflexEZS	Hytech	5/30/2016	5793	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
95	-82.36353	43.51544	1.4	44.91544	Gyro	Dillon Hume	6/2/2016		☑	
100	-82.44968	44.3735	1.4	45.7735	Gyro	Dillon Hume	6/2/2016		☑	
105	-82.60638	45.53607	1.4	46.93607	Gyro	Dillon Hume	6/2/2016		☑	
110	-82.47891	46.58557	1.4	47.98557	Gyro	Dillon Hume	6/2/2016		☑	
115	-82.75152	47.47227	1.4	48.87227	Gyro	Dillon Hume	6/2/2016		☑	
117	-83	27	22.1	49.1	ReflexEZS	Hytech	5/30/2016	5758	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
120	-82.88125	48.02396	1.4	49.42396	Gyro	Dillon Hume	6/2/2016		☑	
125	-82.99185	48.07442	1.4	49.47442	Gyro	Dillon Hume	6/2/2016		☑	
130	-83.08441	48.48308	1.4	49.88308	Gyro	Dillon Hume	6/2/2016		☑	
135	-83.03324	48.02027	1.4	49.42027	Gyro	Dillon Hume	6/2/2016		☑	
140	-83.17175	47.72379	1.4	49.12379	Gyro	Dillon Hume	6/2/2016		☑	
141	-83.2	27.2	22.1	49.3	ReflexEZS	Hytech	5/30/2016	5778	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
145	-83.24911	48.44087	1.4	49.84087	Gyro	Dillon Hume	6/2/2016		☑	
150	-83.4229	47.81061	1.4	49.21061	Gyro	Dillon Hume	6/2/2016		☑	
155	-83.48578	47.87299	1.4	49.27299	Gyro	Dillon Hume	6/2/2016		☑	
160	-83.49995	47.70193	1.4	49.10193	Gyro	Dillon Hume	6/2/2016		☑	
165	-83.60156	48.39151	1.4	49.79151	Gyro	Dillon Hume	6/2/2016		☑	
165.1	-84.1	29.2	22.1	51.3	ReflexEZS	Hytech	5/31/2016	5780	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170	-83.83089	48.67277	1.4	50.07277	Gyro	Dillon Hume	6/2/2016		☑	
175	-83.94712	49.2698	1.4	50.6698	Gyro	Dillon Hume	6/2/2016		☑	
180	-84.00465	49.17771	1.4	50.57771	Gyro	Dillon Hume	6/2/2016		☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-355

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
185	-84.26893	49.67405	1.4	51.07405	Gyro	Dillon Hume	6/2/2016		☑	
189	-84.4	29.9	22.1	52	ReflexEZS	Hytech	5/31/2016	5727	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
190	-84.17067	50.88591	1.4	52.28591	Gyro	Dillon Hume	6/2/2016		☑	
195	-84.46483	49.55555	1.4	50.95555	Gyro	Dillon Hume	6/2/2016		☑	
200	-84.48406	49.75597	1.4	51.15597	Gyro	Dillon Hume	6/2/2016		☑	
205	-84.59371	50.15643	1.4	51.55643	Gyro	Dillon Hume	6/2/2016		☑	
210	-84.6556	50.12006	1.4	51.52006	Gyro	Dillon Hume	6/2/2016		☑	
213	-84.9	33.6	22.1	55.7	ReflexEZS	Hytech	5/31/2016	5782	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
215	-84.77835	50.38743	1.4	51.78743	Gyro	Dillon Hume	6/2/2016		☑	
220	-84.88989	50.2027	1.4	51.6027	Gyro	Dillon Hume	6/2/2016		☑	
225	-84.98982	50.39135	1.4	51.79135	Gyro	Dillon Hume	6/2/2016		☑	
230	-85.02108	50.89151	1.4	52.29151	Gyro	Dillon Hume	6/2/2016		☑	
235	-85.11611	52.10795	1.4	53.50795	Gyro	Dillon Hume	6/2/2016		☑	
237	-85.3	31.4	22.1	53.5	ReflexEZS	Hytech	6/1/2016	5780	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
240	-85.23067	52.75184	1.4	54.15184	Gyro	Dillon Hume	6/2/2016		☑	
245	-85.39148	56.49993	1.4	57.89993	Gyro	Dillon Hume	6/2/2016		☑	
250	-85.73998	57.78477	1.4	59.18477	Gyro	Dillon Hume	6/2/2016		☑	
255	-85.96002	59.3674	1.4	60.7674	Gyro	Dillon Hume	6/2/2016		☑	
260	-86.13512	59.86758	1.4	61.26758	Gyro	Dillon Hume	6/2/2016		☑	
261	-86.5	43.2	22.1	65.3	ReflexEZS	Hytech	6/1/2016	5739	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
265	-86.35349	58.70677	1.4	60.10677	Gyro	Dillon Hume	6/2/2016		☑	
270	-86.45703	57.17631	1.4	58.57631	Gyro	Dillon Hume	6/2/2016		☑	
275	-86.55296	53.98662	1.4	55.38662	Gyro	Dillon Hume	6/2/2016		☑	
280	-86.63754	53.13527	1.4	54.53527	Gyro	Dillon Hume	6/2/2016		☑	
285	-86.47682	52.50374	1.4	53.90374	Gyro	Dillon Hume	6/2/2016		☑	
290	-86.83645	48.07636	1.4	49.47636	Gyro	Dillon Hume	6/2/2016		☑	
295	-86.83825	48.40587	1.4	49.80587	Gyro	Dillon Hume	6/2/2016		☑	
300	-86.81083	45.7806	1.4	47.1806	Gyro	Dillon Hume	6/2/2016		☑	
305	-86.77721	44.64701	1.4	46.04701	Gyro	Dillon Hume	6/2/2016		☑	
309	-87.1	25.6	22.1	47.7	ReflexEZS	Hytech	6/2/2016	5748	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
310	-87.11249	43.2128	1.4	44.6128	Gyro	Dillon Hume	6/2/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.50 OVBN Overburden

4.50 12.00 RHYvl Lapilli tuff

4.5 - 12: Lpl content increases toward the lower contact with RHYcw. Upper portion of unit may be considered overburden, but is broken/rubbly rock of same lithology as bedrock.

<<Min: 4.5 - 32.5 0.5% Min: Pyrite>>

<<Alt: 4.5 - 12.6 Weak-Moderate Calcite>>

<<Vein: 6 - 8 10% Quartz>> QZ-vein in rubble section near overburden-bedrock interface

12.00 12.40 RHYcw Curdy textured-flow banded (flows, subvolcanics)

12.40 12.60 RHYvl Lapilli tuff

12.60 14.30 PEL Equigranular biotite + calcite +/- quartz rock

12.6 - 14.3: Heterogeneous foliated pelitic sediments

<<Alt: 12.6 - 14.3 Moderate Calcite>>

14.30 27.80 RHYcw Curdy textured-flow banded (flows, subvolcanics)

14.3 - 27.8: Well developed flow banded texture with abundant MU-cleavages (non-alteration) which resembles ashy material. Peperitic texture? Abundant massive QZ-veins.

<<Alt: 14.3 - 27.8 Weak Calcite>>

<<Vein: 15.8 - 28.5 35% Quartz-Carbonate>> Zone with abundant massive QZ+/-CA veins varying from 10 cm to 1.5 m wide (core length). Trace disseminated PY+PO in veins.

<<Struc: 27.53 - 27.54 Weak dominant foliation>>

27.80 32.50 PEL Equigranular biotite + calcite +/- quartz rock

27.8 - 32.5: Heterogeneous pelitic sediment with well developed gradational margins, grading from RHYcw to RHYva to PEL.

<<Alt: 27.8 - 32.5 Moderate Calcite>>

<<Struc: 32.4 - 32.41 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

32.50 66.60 RHYi Aphanitic Rhyolite (intrusion)

32.5 - 66.6: Light grey to pink, aphanitic rhyolite, with abundant randomly oriented cemented fractures. Upper contact appears to grade from silicic banded to aphanitic. Lower contact is gradational to interlayered with RHYcw (brecciated margin? Flow top breccia on RHYcw with RHYi flowing in pore space??).

<<Min: 32.5 - 66.6 1% Min: Pyrite>>

<<Alt: 32.5 - 70.5 Weak Calcite>>

66.60 70.50 RHYc Rhyolite coherant volcanics

66.6 - 70.5: Dominated by flow banded texture, but with local patches of fine grained ash (?) material and RHYi.

<<Min: 66.6 - 107.7 0.5% Min: Pyrite>>

70.50 77.20 PEL Equigranular biotite + calcite +/- quartz rock

70.5 - 77.2: ~gradational contacts

<<Alt: 70.5 - 77.2 Moderate Calcite>>

<<Vein: 72.27 - 72.3 100% Quartz-Carbonate 65 deg. >> Small QZ-CA vein

<<Struc: 71.2 - 71.6 Weak Fault>>

<<Struc: 71.35 - 71.5 Weak Fault>> Fault or zone of alteration? Disseminated QZ grains in light brown clay alteration

77.20 81.30 RHYc Rhyolite coherant volcanics

77.2 - 81.3: Grades from RHYvl at upper contact to RHYcw over ~30 cm, then into aphanitic rhyolite (RHYi). Broken and foliated lower margin.

<<Min: 77.2 - 81.3 0.5% Min: Pyrrhotite>>

<<Alt: 77.2 - 185.3 Weak Calcite>>

<<Vein: 78 - 81.3 20% Quartz-Sulphide>> Diffuse QZ-CA veining/alteration with minor thin QZ+/-PY veinlets

81.30 81.90 SED undifferentiated Sediment

81.3 - 81.9: PEL? or MAFi? Dark purple-olive green fine grained layer with minor wispy CA. Maybe RHYva. May be similar to WCK in K16-357?

<<Struc: 81.8 - 83.7 Weak Fault>> Zone of broken ground with minor gouge fault planes

81.90 87.20 RHYva Coarse grained to ash tuff

81.9 - 87.2: Fine grained medium grey ash tuff with minor lpl

<<Vein: 84.1 - 85.1 2% Quartz-Carbonate 75 deg. >> Minor thin QZ+CA+/-blebby tourmaline

<<Struc: 86.4 - 86.5 Weak Fault>> Minor gouge fault plane

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
87.20	**105.20**	**RHYvl Lapilli tuff**									
87.2 - 105.2: Unit is dominated by felsic lpl in ash matrix, with local zones of CL-BI lpl or ash-dominant layers.											
		<<Vein: 92.5 - 93 5% Quartz>> Minor folded/ptigmatic (?) QZ-veins in fault/shear zone									
		<<Struc: 89.07 - 89.13 Weak Fault>> Minor gouge fault plane									
		<<Struc: 90.7 - 93.65 Weak-Moderate Fault>> Zone with weak-moderate fault density									
		<<Struc: 95.6 - 95.7 Weak Fault>> Minor gouge fault plane									
		<<Struc: 96.55 - 96.56 Weak-Moderate dominant foliation>>									
		<<Struc: 96.7 - 96.75 Weak Fault>> Minor gouge fault plane									
		<<Struc: 99 - 101 Moderate Fault>> Zone of moderate fault intensity and density with core of clast supported fault gouge breccia									
105.20	**123.20**	**RHYva Coarse grained to ash tuff**	105.20	106.20	1.00	B00292278	-0.005	-0.3	-0.01	-0.01	-0.01
105.2 - 123.2: Fine grained ash tuff with minor blebs of siliceous material and disseminated PY											
		<<Min: 107.7 - 116.8 2% Min: Pyrite>>	106.20	107.70	1.50	B00292279	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Min: 116.8 - 119.7 1% Min: Pyrrhotite>>	107.70	109.20	1.50	B00292281	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Min: 119.7 - 167.1 0.5% Min: Pyrite>>	109.20	110.70	1.50	B00292282	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 107.7 - 116.8 Weak Muscovite>>	110.70	112.20	1.50	B00292283	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 119.7 - 133.8 Weak Muscovite>>	112.20	113.70	1.50	B00292284	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Struc: 108.62 - 108.63 Strong dominant foliation>>	113.70	115.20	1.50	B00292285	-0.005	0.3	-0.01	-0.01	0.01
		<<Struc: 111.73 - 111.74 Moderate-Strong dominant foliation>>	115.20	116.00	0.80	B00292286	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Struc: 113.9 - 113.91 Moderate dominant foliation>>	116.00	116.80	0.80	B00292287	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Struc: 116.08 - 116.09 Moderate dominant foliation>>	116.80	118.30	1.50	B00292288	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Struc: 119.3 - 121.8 Weak Fault>>	118.30	119.70	1.40	B00292289	-0.005	0.3	-0.01	-0.01	-0.01
123.20	**126.40**	**RHYvl Lapilli tuff**									
		<<Struc: 125.24 - 125.25 Moderate dominant foliation>>									
126.40	**133.80**	**RHYv Rhyolite volcaniclastic**									
126.4 - 133.8: Zone of shearing and moderate MU-alteration from ~128-133 m obscures the original texture											
		<<Struc: 128 - 129.8 Weak Fault>> Weak faulting in zone of shearing									
		<<Struc: 128 - 185.3 Moderate Shear>> Moderate to strong shearing of rhyolite, making original texture hard to determine. Locally coherent textures are preserved. Zones of brittle faulting within zone.									
133.80	**138.10**	**RHY undifferentiated rhyolite**									
		<<Alt: 133.8 - 146.4 Moderate Muscovite>>									
		<<Struc: 133.8 - 137 Weak Fault>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

138.10 140.10 FLZ Fault Zone

138.1 - 140.1: Strong MU-alteration and faulting of rhyolite

<<Struc: 138.1 - 140.5 Strong Fault>> Clast-supported fault gouge breccia, with clasts of RHY and QZ-vein in sericitic matrix.

<<Struc: 138.8 - 143.3 Weak Fault>>

140.10 155.60 RHY undifferentiated rhyolite

140.1 - 155.6: Moderate-strong MU-alteration and shearing have obscured the original texture

<<Alt: 146.4 - 167.1 Strong Muscovite>>

<<Struc: 148.9 - 149.9 Moderate Fault>>

<<Struc: 151.5 - 155.6 Moderate-Strong Fault>>

155.60 157.30 FLZ Fault Zone

<<Struc: 155.6 - 157.3 Strong Fault>> Gouge-supported fault breccia, with clasts of RHY

157.30 181.40 RHY undifferentiated rhyolite

157.3 - 181.4: Well developed continuous transposition foliation. Strong MU-alteration and shearing obscures the texture making the lithology hard to determine (RHYc vs RHYv). Local coherent texture is preserved.

<<Min: 167.1 - 185.3 0.1% Min: Sphalerite>>

<<Min: 167.1 - 185.3 1% Min: Pyrite>>

<<Alt: 167.1 - 176.8 Moderate Muscovite>>

<<Alt: 176.8 - 185.6 Strong Muscovite>>

<<Vein: 179 - 179.2 40% Quartz>> Zone with patchy QZ-veining

<<Struc: 161.2 - 161.4 Moderate-Strong Fault>> Fault gouge

<<Struc: 163 - 163.2 Moderate-Strong Fault>> Fault gouge

<<Struc: 166 - 167.5 Weak-Moderate Fault>> Minor fault planes with ~5 cm of fault gouge

<<Struc: 169.3 - 169.6 Moderate-Strong Fault>> Fault gouge

<<Struc: 172.9 - 173.1 Moderate-Strong Fault>> Fault gouge

<<Struc: 176.2 - 176.21 Strong dominant foliation>>

<<Struc: 176.8 - 180.2 Weak-Moderate Fault>> Zone with weak-moderate faulting. Many sericitic cleavages with minor gouge.

181.40 185.30 RHYc Rhyolite coherant volcanics

181.4 - 185.3: Silica banded rhyolite with MU cleavages. Strong MU-alteration.

<<Min: 181.4 - 185.3 0.5% Min: Pyrrhotite>>

<<Struc: 182.4 - 182.5 Weak-Moderate Fault>> Minor fault gouge surface

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
185.30	**247.50**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	244.70	246.00	1.30	B00292291	-0.005	0.5	0.01	-0.01	0.02
185.3 - 247.5: Both the upper and lower contacts show Moderate-Strong MU-alteration											
<<Min: 185.3 - 247.5 0.1% Min: Pyrite>>			246.00	247.50	1.50	B00292292	-0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 185.3 - 185.6 Weak Biotite>>											
<<Alt: 185.3 - 194 Moderate-Strong Calcite>>											
<<Alt: 185.6 - 186 Moderate Muscovite>>											
<<Alt: 185.6 - 186 Moderate-Strong Biotite>>											
<<Alt: 186 - 187 Strong Muscovite>>											
<<Alt: 186 - 187 Weak Biotite>>											
<<Alt: 187 - 188.2 Moderate-Strong Biotite>>											
<<Alt: 194 - 235 Weak Calcite>>											
<<Alt: 235 - 247.5 Moderate Calcite>>											
<<Alt: 244.7 - 247.5 Weak-Moderate Muscovite>> Weak to moderate MU-alteration (bleached colour) of MAFi near contact with RHY											
<<Vein: 185.3 - 194 3% Calcite>> Abundant CA veinlets in MAFi near contact with altered RHY											
<<Vein: 205 - 205.1 40% Calcite>> ~4 cm wide massive CA vein											
<<Vein: 235 - 247.5 2% Calcite>> Zone patchy deformed CA veinlets											
<<Struc: 185.42 - 185.43 Moderate dominant foliation>>											
<<Struc: 188.9 - 188.91 Moderate dominant foliation>>											
<<Struc: 196.63 - 196.64 Moderate dominant foliation>>											
<<Struc: 207.26 - 207.27 Weak dominant foliation>>											
<<Struc: 212.06 - 212.07 Weak-Moderate dominant foliation>>											
<<Struc: 215.26 - 215.37 Weak-Moderate dominant foliation>>											
<<Struc: 231.14 - 231.15 Weak-Moderate dominant foliation>>											
<<Struc: 240.15 - 240.16 Moderate dominant foliation>>											
247.50	**275.90**	**RHYv** **Rhyolite volcaniclastic**	247.50	248.50	1.00	B00292293	0.007	0.4	-0.01	0.02	0.01
247.5 - 275.9: Moderate to weakly altered rhyolite with local lpl. Strong deformation (faulting and shearing) make the original texture difficult to determine.											
<<Min: 247.5 - 265.4 1% Min: Pyrite>>			248.50	249.50	1.00	B00292294	0.01	0.7	-0.01	0.02	0.02
<<Min: 247.5 - 265.4 0.5% Min: Pyrrhotite>>			249.50	251.00	1.50	B00292295	0.008	0.7	-0.01	0.01	0.02
<<Min: 251 - 261 0.1% Min: Sphalerite>>			251.00	252.50	1.50	B00292296	0.018	3.5	-0.01	0.07	0.1
<<Min: 251 - 261 0.1% Min: Galena>>			252.50	254.00	1.50	B00292297	0.007	0.4	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description
		<<Min: 265.4 - 267.7 2% Min: Pyrite>> Clasts of sulfide in fault zone
		<<Min: 267.7 - 285.4 1% Min: Pyrrhotite>>
		<<Alt: 247.5 - 254.6 Moderate Muscovite>>
		<<Alt: 247.5 - 285.4 Weak Calcite>>
		<<Alt: 254.6 - 329.7 Weak Muscovite>> MU cleavages throughout interval. May transition from original to overprint, but is difficult to determine.
		<<Vein: 249.84 - 249.92 80% Quartz-Carbonate 50 deg. >> Small white QZ-CA vein
		<<Vein: 251 - 261 5% Quartz 80 deg. >> Zone with spaced 5-25 cm wide massive QZ-veins with minor disseminated PY +/- SP +/- GL +/- PO.
		<<Vein: 272.55 - 272.65 100% Quarzt-Chlorite-Carbonate>> Massive QZ vein with patchy CL+CA and disseminated PY+PO
		<<Struc: 247.5 - 265.4 Weak Fault>>
		<<Struc: 262.16 - 262.17 Weak-Moderate dominant foliation>>
		<<Struc: 265.4 - 268.6 Moderate Fault>>
		<<Struc: 268.6 - 275.9 Weak Fault>>
275.90	**283.50**	**FLZ Fault Zone**
		275.9 - 283.5: Brecciated and faulted RHY
		<<Min: 279.5 - 283.5 1% Min: Pyrite>> Clasts of sulfide in fault zone
		<<Vein: 276 - 278.5 2% Quartz-Tourmaline>> QZ-TML veins with vuggy TML cores and a QZ selvage in a FLZ
		<<Struc: 275.9 - 283.5 Moderate-Strong Fault>>
283.50	**285.20**	**RHYvx Quartz and/or feldspar crystal tuff**
		283.5 - 285.2: FD mgr crystals in rhyolite tuff. FD are fractured from faulting.
		<<Min: 283.5 - 312.4 0.5% Min: Pyrrhotite>>
		<<Struc: 283.5 - 285.4 Weak Fault>>
285.20	**292.70**	**SED undifferentiated Sediment**
		285.2 - 292.7: Strongly sheared BI-MU-CA-QZ schist with CA-QZ fgr augen porphyrclasts. Foliation locally displays buckle folding. Unit appears to have similar composition to BCQlpl.
		<<Alt: 285.4 - 312.4 Moderate Calcite>>
		<<Vein: 287 - 288 10% Quarzt-Chlorite-Carbonate>> Patchy deformed QZ veins with patchy CL+CA, disseminated PY+PO and CA fracture fill
		<<Struc: 285.4 - 293 Strong Shear>> Strongly sheared unit with variable foliation and buckle folding. Difficult to determine original texture due to deformation.
		<<Struc: 287 - 288.2 Weak Fault>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
254.00	255.50	1.50	B00292298	0.008	-0.3	-0.01	-0.01	0.02
255.50	257.00	1.50	B00292299	0.006	-0.3	-0.01	-0.01	-0.01
257.00	258.50	1.50	B00292301	-0.005	-0.3	-0.01	-0.01	-0.01
262.50	264.00	1.50	B00292302	0.005	-0.3	-0.01	-0.01	0.01
264.00	265.40	1.40	B00292303	-0.005	-0.3	-0.01	-0.01	0.01
265.40	266.90	1.50	B00292304	0.014	-0.3	-0.01	-0.01	0.01
266.90	267.70	0.80	B00292305	0.005	-0.3	-0.01	-0.01	-0.01
267.70	269.00	1.30	B00292306	-0.005	-0.3	-0.01	-0.01	0.01
269.00	270.50	1.50	B00292307	-0.005	-0.3	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 291.7 - 297 Moderate Fault>>									
292.70	**296.30**	**RHYvl Lapilli tuff** 292.7 - 296.3: Appears to be a disaggregated version of the SED logged above and below with a more sericitic groundmass.									
		<<Min: 293.7 - 293.75 5% Min: Pyrite>> Clasts of sulfide in fault zone									
296.30	**298.00**	**SED undifferentiated Sediment** 296.3 - 298: Well foliated and sheared BI-MU-CA-QZ schist.									
298.00	**312.40**	**RHYvl Lapilli tuff** 298 - 312.4: Very similar to SED logged above but with more pervasive sericitic foliation with the BI-CA domains resembling lpl. Locally brecciated.	309.00	310.40	1.40	B00292308	-0.005	-0.3	-0.01	-0.01	0.01
		<<Vein: 308 - 308.2 80% Quartz-Tourmaline>> QZ-TML-CA vein. Patchy radiating TML with minor laths of CA in QZ groundmass	310.40	311.40	1.00	B00292309	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Vein: 310.3 - 311.3 100% Quartz 30 deg. >> Massive QZ-vein with blebs of TML and PO	311.40	312.40	1.00	B00292311	-0.005	-0.3	-0.01	-0.01	0.01
		<<Struc: 303 - 305 Moderate Fault>>									
		<<Struc: 305 - 312.4 Weak Fault>>									
312.40	**329.70**	**FLZ Fault Zone** 312.4 - 329.7: Strong faulting dominated by zones of breccia. Clasts consist of RHY and minor massive PY.	312.40	313.90	1.50	B00292312	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Min: 312.4 - 329.7 1% Min: Pyrite>> Clasts of sulfide in fault zone	313.90	315.40	1.50	B00292313	0.016	-0.3	-0.01	-0.01	-0.01
		<<Alt: 312.4 - 329.7 Weak-Moderate Calcite>>	315.40	316.90	1.50	B00292314	0.006	-0.3	-0.01	-0.01	-0.01
		<<Vein: 316.5 - 321.6 2% Quartz>> Minor QZ-vein +/- blebs of CL+CA and disseminated PY. Some vein material appears as clasts in the fault zone.	316.90	318.40	1.50	B00292315	0.017	0.4	-0.01	-0.01	-0.01
		<<Struc: 312.4 - 329.7 Moderate-Strong Fault>> Clast-supported fault breccia with gouge matrix. Clasts are dominantly RHY with minor massive PY (~1-2 cm). Sunda Fault?									
End of Hole @ 329.7											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-356

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	APS-LiDAR	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Jerome de Pasquale	Date Logging Start:	5/1/2016
UTM Easting	415209.6	Core Size:	HQ3	Azimuth:	212.36	Date Logging Complete:	6/1/2016
UTM Northing:	6815284	Casing Pulled?:	Yes	Dip:	-72	Drill Company:	Hytech
UTM Elev. (m):	1425	Casing Depth (m):	12	Length (m):	19	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/30/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/31/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-356 was collared to test down-dip inferred portions of Krakatoa upper lens and explore potential of down-dip Krakatoa main lens. The lithology consists in graphitic calcareous mudstone and mafic ash tuff interlayered in the Wind Lake formation. The hole was abandoned due to unacceptable deviation at low depth, realigned and restarted as K15-357.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-72	210.96	1.4	212.36	APS	Jerome de Pasquale	5/30/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
18	-70.7	198.7	22.1	220.8	ReflexEZS	Hytech	5/31/2016	5927	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
19	-70.6	197.7	22.1	219.8	ReflexEZS	Hytech	5/31/2016	5829	☑	Survey redo for confirmation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**12.00**	**OVBN** **Overburden**									
12.00	**14.50**	**MAFt** **Mafic Volcaniclastics** **FMG**									
12 - 14.5: Fine grain, light green, homogeneous, carbonaceous mafic tuff.											
<<Alt: 12 - 19 Moderate-Strong Calcite>> And pervassive in mafic tuff units.											
14.50	**15.50**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone** **FG**									
14.5 - 15.5: Blue/black graphitic carbonaceous mudstone, crenulated foliation, sharp upper and lower contacts.											
<<Min: 14.5 - 19 0.1% Min: Pyrite>>											
15.50	**15.90**	**MAFt** **Mafic Volcaniclastics**									
15.5 - 15.9: Light green, CA veining, fine grain mafic ash tuff.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
15.90	**19.00**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone** 15.9 - 19: Blue/black graphitic carbonaceous mudstone, crenulated foliation, sharp upper and lower contacts. Highly fractured. E.O.H. **End of Hole @ 19**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-357

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/1/2016
UTM Easting	415212.134	Core Size:	HQ3	Azimuth:	213.5	Date Logging Complete:	6/7/2016
UTM Northing:	6815282.542	Casing Pulled?:	Yes	Dip:	-72	Drill Company:	Hytech
UTM Elev. (m):	1426.541	Casing Depth (m):	13.5	Length (m):	381	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/31/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/6/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-357 was planned to test the down-dip inferred portions of Krakatoa upper lens and, in addition, to test the exploration potential of down-dip Krakatoa main lens.
Interlayered mafic tuff and graphitic calcareous mudstone of the Wind Lake formation occur to 42.82 m. From 42.82 m the KZK formation occurs and looks to be in a conformable contact with the Wind Lake formation. KZK formation hanging wall consists of volcaniclastic and coherent units that show increasing muscovite alteration from 159.00m to 253.26m. The upper lens occurs as 3 horizons from 252.24 - 257.27 m and comprises a total of 2.51 m of OB ore type (PY/SP/GL/CP/TT/PO). The mafic sill occurs at 257.27m.
Two distinctive units were observed in the hanging wall. A pelite, biotite rich, from 114.12m to 118.89m and a narrow calcareous wacke from 185.90m to 185.65m which may be marker units.
The Main lens has not been intercepted.
Hole K16-357 ends at 381.00m in volcaniclastic units showing weak chlorite alteration and patchy PY/PO up to 3% in some intervals.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-71.82994	212.1	1.4	213.5	TN14	Oscar Nielsen	6/5/2016		☑	100. Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth
0.01	-72	210.91	1.4	212.31	APS	Jerome de Pasquale	5/31/2016		☐	Surveyed with Gyrocompass at the end of the hole : 212.1
5	-71.74328	212.65163	1.4	214.05163	Gyro	Oscar Nielsen	6/5/2016		☑	99.7571335665728
10	-71.97259	212.4309	1.4	213.8309	Gyro	Oscar Nielsen	6/5/2016		☑	100
15	-72.13706	211.9294	1.4	213.3294	Gyro	Oscar Nielsen	6/5/2016		☑	100
18	-72.7	192.2	22.1	214.3	ReflexEZS	Hytech	6/1/2016	5904	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
20	-72.23569	211.58799	1.4	212.98799	Gyro	Oscar Nielsen	6/5/2016		☑	100
21	-72.4	191.9	22.1	214	ReflexEZS	Hytech	6/1/2016	5835	☐	
25	-72.33366	210.94721	1.4	212.34721	Gyro	Oscar Nielsen	6/5/2016		☑	100
30	-72.46156	210.96764	1.4	212.36764	Gyro	Oscar Nielsen	6/5/2016		☑	100
35	-72.52742	210.62022	1.4	212.02022	Gyro	Oscar Nielsen	6/5/2016		☑	99.7212211306112
40	-72.59754	210.43378	1.4	211.83378	Gyro	Oscar Nielsen	6/5/2016		☑	99.8633572872536
45	-72.49617	210.5614	1.4	211.9614	Gyro	Oscar Nielsen	6/5/2016		☑	99.7325316761694
45.01	-72.8	192	22.1	214.1	ReflexEZS	Hytech	6/1/2016	5740	☐	
50	-72.43265	210.73	1.4	212.13	Gyro	Oscar Nielsen	6/5/2016		☑	99.133671756923

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-357

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
55	-72.4874	210.35828	1.4	211.75828	Gyro	Oscar Nielsen	6/5/2016		☑	98.2668183714338
60	-72.28736	210.13499	1.4	211.53499	Gyro	Oscar Nielsen	6/5/2016		☑	98.633590631495
65	-72.18015	209.96058	1.4	211.36058	Gyro	Oscar Nielsen	6/5/2016		☑	96.9841889783541
69	-72.5	187.8	22.1	209.9	ReflexEZS	Hytech	6/1/2016	5782	☐	
70	-71.86072	209.80516	1.4	211.20516	Gyro	Oscar Nielsen	6/5/2016		☑	99.51129412101
75	-71.65776	209.44547	1.4	210.84547	Gyro	Oscar Nielsen	6/5/2016		☑	99.510926927343
80	-71.49791	209.37659	1.4	210.77659	Gyro	Oscar Nielsen	6/5/2016		☑	97.333527760388
85	-71.2871	209.39211	1.4	210.79211	Gyro	Oscar Nielsen	6/5/2016		☑	97.0545696482208
90	-71.14329	209.74118	1.4	211.14118	Gyro	Oscar Nielsen	6/5/2016		☑	97.9905643827761
93	-71.2	187.7	22.1	209.8	ReflexEZS	Hytech	6/1/2016	5773	☐	
95	-70.85008	209.86458	1.4	211.26458	Gyro	Oscar Nielsen	6/5/2016		☑	98.832399458249
100	-70.6931	210.17263	1.4	211.57263	Gyro	Oscar Nielsen	6/5/2016		☑	96.4008805571904
105	-70.57335	210.28052	1.4	211.68052	Gyro	Oscar Nielsen	6/5/2016		☑	96.9607383555908
110	-70.36806	210.40335	1.4	211.80335	Gyro	Oscar Nielsen	6/5/2016		☑	98.1871866695974
115	-70.24197	210.57828	1.4	211.97828	Gyro	Oscar Nielsen	6/5/2016		☑	98.9850261754688
117	-70.3	189.4	22.1	211.5	ReflexEZS	Hytech	6/1/2016	5765	☐	
120	-70.01232	210.6969	1.4	212.0969	Gyro	Oscar Nielsen	6/5/2016		☑	98.12600461056
125	-69.88354	210.77531	1.4	212.17531	Gyro	Oscar Nielsen	6/5/2016		☑	97.3667826617088
130	-69.74256	210.64224	1.4	212.04224	Gyro	Oscar Nielsen	6/5/2016		☑	97.1110282666915
135	-69.64026	210.51325	1.4	211.91325	Gyro	Oscar Nielsen	6/5/2016		☑	97.11003502736
140	-69.59297	210.52125	1.4	211.92125	Gyro	Oscar Nielsen	6/5/2016		☑	97.00814640284
141	-69.7	187.1	22.1	209.2	ReflexEZS	Hytech	6/2/2016	5783	☐	
145	-69.45559	210.43418	1.4	211.83418	Gyro	Oscar Nielsen	6/5/2016		☑	97.3731044688554
150	-69.25269	210.69427	1.4	212.09427	Gyro	Oscar Nielsen	6/5/2016		☑	97.232676212864
155	-69.09055	211.13919	1.4	212.53919	Gyro	Oscar Nielsen	6/5/2016		☑	96.5814467641024
160	-69.13615	211.19221	1.4	212.59221	Gyro	Oscar Nielsen	6/5/2016		☑	96.5629576860653
165	-69.05867	211.11901	1.4	212.51901	Gyro	Oscar Nielsen	6/5/2016		☑	97.51655945164
168	-69.6	189.2	22.1	211.3	ReflexEZS	Hytech	6/3/2016	5797	☐	
170	-68.90619	211.3613	1.4	212.7613	Gyro	Oscar Nielsen	6/5/2016		☑	97.179797986661
175	-68.813	211.56865	1.4	212.96865	Gyro	Oscar Nielsen	6/5/2016		☑	98.0133890975867
180	-68.79683	211.53789	1.4	212.93789	Gyro	Oscar Nielsen	6/5/2016		☑	97.545219650471
185	-68.62049	211.94307	1.4	213.34307	Gyro	Oscar Nielsen	6/5/2016		☑	97.36889614628
190	-68.43276	212.11731	1.4	213.51731	Gyro	Oscar Nielsen	6/5/2016		☑	98.0353304266688
192	-68.1	187.6	22.1	209.7	ReflexEZS	Hytech	6/3/2016	5804	☐	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-357

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
195	-68.18134	212.34366	1.4	213.74366	Gyro	Oscar Nielsen	6/5/2016		☑	99.556743430019
200	-68.00125	212.60258	1.4	214.00258	Gyro	Oscar Nielsen	6/5/2016		☑	98.168087246891
205	-67.77169	212.40857	1.4	213.80857	Gyro	Oscar Nielsen	6/5/2016		☑	100
210	-67.68279	212.58618	1.4	213.98618	Gyro	Oscar Nielsen	6/5/2016		☑	100
215	-67.46643	212.22402	1.4	213.62402	Gyro	Oscar Nielsen	6/5/2016		☑	99.3680884143254
216	-67.4	189	22.1	211.1	ReflexEZS	Hytech	6/3/2016	5762	☐	
220	-67.31661	212.38445	1.4	213.78445	Gyro	Oscar Nielsen	6/5/2016		☑	99.4669798116839
225	-67.08539	212.38539	1.4	213.78539	Gyro	Oscar Nielsen	6/5/2016		☑	99.639740843672
230	-66.85754	212.38377	1.4	213.78377	Gyro	Oscar Nielsen	6/5/2016		☑	98.8700082849632
235	-66.65317	212.54775	1.4	213.94775	Gyro	Oscar Nielsen	6/5/2016		☑	100
240	-66.36088	212.56559	1.4	213.96559	Gyro	Oscar Nielsen	6/5/2016		☑	99.4865238113096
240.01	-66.5	188.18	22.1	210.28	ReflexEZS	Hytech	6/3/2016	5773	☐	
245	-66.24274	212.34687	1.4	213.74687	Gyro	Oscar Nielsen	6/5/2016		☑	99.8626344143723
250	-66.31981	212.29778	1.4	213.69778	Gyro	Oscar Nielsen	6/5/2016		☑	99.4822281230976
255	-66.26829	212.04904	1.4	213.44904	Gyro	Oscar Nielsen	6/5/2016		☑	98.9259967020371
260	-66.13013	212.04261	1.4	213.44261	Gyro	Oscar Nielsen	6/5/2016		☑	99.456733377791
264	-66.4	188.9	22.1	211	ReflexEZS	Hytech	6/4/2016	5761	☐	
265	-66.00824	211.94981	1.4	213.34981	Gyro	Oscar Nielsen	6/5/2016		☑	100
270	-66.07166	212.16828	1.4	213.56828	Gyro	Oscar Nielsen	6/5/2016		☑	99.2347421131241
275	-65.96026	212.31456	1.4	213.71456	Gyro	Oscar Nielsen	6/5/2016		☑	100
280	-65.84603	212.43833	1.4	213.83833	Gyro	Oscar Nielsen	6/5/2016		☑	98.849336042936
285	-65.70081	212.67308	1.4	214.07308	Gyro	Oscar Nielsen	6/5/2016		☑	99.59698138703
288	-65.7	190.6	22.1	212.7	ReflexEZS	Hytech	6/4/2016	5761	☐	
290	-65.56721	212.91665	1.4	214.31665	Gyro	Oscar Nielsen	6/5/2016		☑	99.6909912269315
295	-65.511	213.1612	1.4	214.5612	Gyro	Oscar Nielsen	6/5/2016		☑	98.852701347839
300	-65.42633	213.36946	1.4	214.76946	Gyro	Oscar Nielsen	6/5/2016		☑	98.770622057312
305	-65.33959	213.52176	1.4	214.92176	Gyro	Oscar Nielsen	6/5/2016		☑	98.352738190622
310	-65.33271	213.46827	1.4	214.86827	Gyro	Oscar Nielsen	6/5/2016		☑	98.7503533577817
312	-65.5	190.5	22.1	212.6	ReflexEZS	Hytech	6/4/2016	5752	☐	
315	-65.22561	213.5945	1.4	214.9945	Gyro	Oscar Nielsen	6/5/2016		☑	99.3978256795471
320	-65.19909	213.60576	1.4	215.00576	Gyro	Oscar Nielsen	6/5/2016		☑	99.75700085216
325	-65.11264	213.61994	1.4	215.01994	Gyro	Oscar Nielsen	6/5/2016		☑	99.8867630905277
330	-65.01558	214.03294	1.4	215.43294	Gyro	Oscar Nielsen	6/5/2016		☑	99.6839706380069
336	-65.3	191.1	22.1	213.2	ReflexEZS	Hytech	6/4/2016	5747	☑	

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
350	-64.4	190.8	22.1	212.9	ReflexEZS	Hytech	6/4/2016	5766	☑	
381	-62.9	190.3	22.1	212.4	ReflexEZS	Hytech	6/6/2016	5744	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 12.00 OVBN Overburden

12.00 12.84 MAFta Coarse grained to ash tuff

12 - 12.84: Mafic ash tuff. Fine grain, light green, calcareous, homogeneous.

<<Min: 12 - 43.42 0.1% Min: Pyrite>>

<<Min: 12 - 147.44 0.5% Min: Pyrrhotite>> Associated with mafic tuff units.

<<Alt: 12 - 18 Moderate-Strong Calcite>> Pervasive in mafic unit.

12.84 21.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

12.84 - 21.2: Graphitic mudstone, wavy CA veining, dark blue, thinly foliated crenulated.

<<Alt: 18 - 42.82 Moderate Calcite>>

21.20 22.44 MAFta Coarse grained to ash tuff

21.2 - 22.44: Mafic ash tuff. Light green, fine grain, calcareous.

22.44 25.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

22.44 - 25.65: Graphitic mudstone. CA veining, thinly foliated, crenulated.

<<Struc: 24.34 - 24.35 dominant foliation>>

25.65 27.52 MAFt Mafic Volcaniclastics

25.65 - 27.52: Mafic ash tuff. Light green, fine grain, calcareous.

27.52 33.47 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

27.52 - 33.47: Graphitic mudstone, locally highly graphitic, gougy. Core missing, washed during drilling.

<<Struc: 27.9 - 33 Weak Fault>> Probably not an intense structure but gouge washed during drilling and poor recovery.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

33.47 37.60 MAFt Mafic Volcaniclastics

33.47 - 37.6: Core loss. Mafic tuff, light green, fractured.

37.60 42.82 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

37.6 - 42.82: Graphitic mudstone, dark blue, QZ vein/rhyolite locally, large fine grain TML vein (30cm) at lower contact.

<<Min: 42.42 - 81.81 0.5% Min: Pyrite>> Locally aggregated.

<<Vein: 42.1 - 42.52 Quartz-Tourmaline>> QZ,/TML,/CA foliated vein.

42.82 43.48 SEDc calcareous Sediment

42.82 - 43.48: Contact between Wind Lake and KZK formation marked by highly calcareous narrow unit, possibly RHY altered CA.

<<Alt: 42.82 - 43.48 Strong Calcite>> Calcareous interval at contact between Wind Lake and KZK formations.

<<Vein: 42.82 - 58.37 Quartz>> Multiple massive QZ veins (up to 80 cm wide) consisting in about 30 percent of the interval. Contact unit between Wind Lake and KZK formations.

43.48 69.00 RHYva Coarse grained to ash tuff

43.48 - 69: Unit showing large massive QZ veins from 42.82m to 58.37m representing about 30% of the interval). Heterogeneous, high strain lapilli. Some CA rich/brown beds, possibly CA sediments, could be mafic material (from 52.50m to 53.20m, faulted lower contact).

<<Alt: 43.48 - 106.78 Weak-Moderate Calcite>> Lapilli replacement and veining.

<<Struc: 47.5 - 47.51 dominant foliation>>

<<Struc: 52 - 67.5 Trace Fault>> Narrow gouge in joints.

<<Struc: 61.3 - 61.31 dominant foliation>>

<<Struc: 65.3 - 65.31 dominant foliation>>

69.00 69.69 RHYcw Curdy textured-flow banded (flows, subvolcanics)

69 - 69.69: Curdy texture, wavy QZ bands in fin grain bluish matrix.

69.69 75.22 RHYva Coarse grained to ash tuff

69.69 - 75.22: Light grey. Fine grain matrix. Locally angular clasts or crystals, possibly reworked material.

<<Struc: 72.4 - 72.41 dominant foliation>>

75.22 81.81 RHYvl Lapilli tuff

75.22 - 81.81: Fine grain, light grey, mid strain.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 78.2 - 78.21 dominant foliation>>

81.81 93.29 RHYi Aphanitic Rhyolite (intrusion)

81.81 - 93.29: Aphanitic rhyolite, sharp upper contact, texture flow banded/curdy on the edge, locally granular texture. Probably extrusive, large RHYc unit.

<<Min: 81.81 - 92.29 0.5% Min: Pyrite>>

<<Min: 92.29 - 164.45 1% Min: Pyrite>> and in vein associated with QZ.

<<Alt: 81.81 - 93.29 Moderate-Strong Silicification>> RHYi or silicified/albitized zone.

<<Alt: 89.3 - 89.5 Weak Chlorite>> Associated with QZ vein.

<<Alt: 91 - 93.29 Moderate Muscovite>> Silicified MU altered.

93.29 97.46 RHYvl Lapilli tuff

93.29 - 97.46: Light grey, mid strain.

97.46 99.20 RHYcw Curdy textured-flow banded (flows, subvolcanics)

97.46 - 99.2: Flow banded.

99.20 103.00 RHYvl Lapilli tuff

99.2 - 103: Locally BI rich bands (pelitic), high strain, QZ vein (10cm), heterogeneous unit, narrow gouge zone.

<<Alt: 99.2 - 103 Weak Chlorite>>

103.00 106.78 RHYcw Curdy textured-flow banded (flows, subvolcanics)

103 - 106.78: Could be interpreted as RHYi locally. Large QZ vein at lower contact, massive aphanitic to silica banded/ash interbedded. Similar to RHYi seen at 75.22m, different scale.

<<Vein: 105.95 - 106.6 Quartz>> Massive QZ vein.

<<Vein: 106.6 - 106.8 Quarzt-Tourmaline-Sulphide>> QZ vein, fractured, brecciated containing PY/TML.

106.78 108.08 RHYva Coarse grained to ash tuff

106.78 - 108.08: Fine grain, light grain, BI rich (15%).

<<Alt: 106.78 - 108.08 Strong Calcite>> Pelitic material.

108.08 109.27 RHYcw Curdy textured-flow banded (flows, subvolcanics)

108.08 - 109.27: Silica bands/ash interbedded.

<<Alt: 108.08 - 114.12 Weak-Moderate Calcite>> and veining.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

109.27 114.12 RHYvx Quartz and/or feldspar crystal tuff

109.27 - 114.12: Light grey, low to mid strain, some angular clasts, narrow fault gouge zones.

114.12 118.89 PEL Equigranular biotite + calcite +/- quartz rock

114.12 - 118.89: Bluish, highly calcareous fine grain, BI rich, possibly TML bands, gradual upper and lower contacts, Locally BI bands in foliation associated with PO.

<<Alt: 114.12 - 118.89 Strong Calcite>> Pelitic unit.

118.89 120.72 RHYvl Lapilli tuff

118.89 - 120.72: Light grey, mid strain.

<<Alt: 118.89 - 144.98 Weak-Moderate Calcite>> Lapilli replacement and veining.

120.72 138.00 RHYv Rhyolite volcaniclastic

120.72 - 138: Dominantly ash, containing BI porphyroblasts suggesting pelitic material. Low to mid strain.

<<Struc: 135 - 137.4 Weak-Moderate Fault>> 50% gouge, sandy/silty.

138.00 141.24 RHYvl Lapilli tuff

138 - 141.24: Dominantly lapillitic, light grey, mid strain. Could contain crystals.

141.24 141.48 RHYva Coarse grained to ash tuff

141.24 - 141.48: BI porphyroblasts in fine grain, light grey groundmass.

141.48 144.48 RHYvl Lapilli tuff

141.48 - 144.48: Dominantly lapillitic, light grey, mid strain, heterogeneous.

144.48 147.44 RHYcw Curdy textured-flow banded (flows, subvolcanics)

144.48 - 147.44: Curdy flow.

<<Alt: 144.98 - 147.44 Strong Calcite>> Mafic dike.

147.44 148.93 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

147.44 - 148.93: Highly calcareous, fie grain BI, homogeneous, sharp contacts, brownish, PO/PY associated with CA veining, possibly amygdule.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 147.44 - 148.93 2% Min: Pyrrhotite>>											
<<Alt: 147.44 - 155.9 Weak Calcite>>											
148.93	**150.56**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**									
148.93 - 150.56: Silica bands, wavy, irregular, CA and vuggy texture at lower contact. Could be interpreted as peperite.											
<<Min: 148.93 - 221.28 0.5% Min: Pyrrhotite>>											
150.56	**155.30**	**RHYi Aphanitic Rhyolite (intrusion)**									
150.56 - 155.3: Aphanitic unit, fracture, locally brecciate containing PY, QZ vein, Very similar to RHYi but could be silicification and/or albitization.											
<<Alt: 150.56 - 155.3 Moderate-Strong Silicification>> Considered as RHYi but could be intense silicified zone.											
<<Vein: 154 - 154.2 Quartz>> QZ vein in silicified zone.											
155.30	**161.81**	**RHYvl Lapilli tuff**	161.00	161.81	0.81	B00291526	-0.005	0.4	-0.01	-0.01	-0.01
155.3 - 161.81: Fragmented, heterogeneous, fractured zone containing lapilli patches and QZ veins.											
<<Alt: 155.9 - 156.24 Weak-Moderate Muscovite>> Weakly faulted zone.											
<<Alt: 155.9 - 185.66 Moderate-Strong Calcite>> Calcareous sediment.											
<<Alt: 156.8 - 161.3 Weak Chlorite>> Associated with PY.											
<<Struc: 157 - 161.3 Weak Fault>> Multiple narrow gouge up to 20cm wide.											
<<Struc: 157.6 - 157.61 dominant foliation>> CA veinlets in foliation, in MAFi.											
<<Struc: 157.8 - 157.81 dominant foliation>>											
161.81	**163.78**	**RHYv Rhyolite volcaniclastic**	161.81	163.00	1.19	B00291527	-0.005	-0.3	-0.01	-0.01	-0.01
161.81 - 163.78: Heterogeneous volcaniclastic units, ash layer at lower contact, PY.											
			163.00	163.78	0.78	B00291528	-0.005	-0.3	-0.01	-0.01	-0.01
163.78	**164.65**	**RHYvl Lapilli tuff**	163.78	164.65	0.87	B00291529	-0.005	-0.3	-0.01	-0.01	-0.01
163.78 - 164.65: Lapilli aggregated, low to mid strain. Could be interpreted as curdy flow.											
<<Min: 164.45 - 168 5% Min: Pyrite>> Up to 10% in short intervals.											
<<Alt: 163.79 - 169 Weak-Moderate Muscovite>>											
164.65	**167.14**	**RHYv Rhyolite volcaniclastic**	164.65	165.35	0.70	B00291531	-0.005	0.8	-0.01	-0.01	-0.01
164.65 - 167.14: Sequence lapilli/ash over 50cm containing PY/QZ patch. Angular clasts in ash layers (lapilli fragments or xtl). Low strain. Possibly reworked RHYv. Could be considered locally as short intervals of OI domain.											
			165.35	166.23	0.88	B00291532	0.005	0.3	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
			166.23	167.14	0.91	B00291533	-0.005	-0.3	-0.01	-0.01	0.01
167.14	**179.41**	**RHYvl Lapilli tuff**	167.14	168.00	0.86	B00291534	-0.005	-0.3	-0.01	-0.01	0.01
167.14 - 179.41: Texture varying from almost curdy (wavy silica) to wavy, weakly sheared ashes. Possibly originally unconsolidated ash.											
<<Min: 168 - 179.8 2% Min: Pyrite>>			168.00	169.00	1.00	B00291535	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 169 - 179 Weak Muscovite>>			169.00	170.08	1.08	B00291536	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 179 - 189.73 Weak-Moderate Muscovite>>			176.98	178.00	1.02	B00291537	-0.005	-0.3	-0.01	-0.01	-0.01
<<Vein: 172.7 - 172.82 Quartz>> QZ vein and gougy zone around.			178.00	179.41	1.41	B00291538	-0.005	-0.3	-0.01	-0.01	-0.01
<<Struc: 168.4 - 168.41 dominant foliation>>											
<<Struc: 169.8 - 169.81 dominant foliation>>											
<<Struc: 172 - 173.6 Weak Fault>> Multiple narrow gouge up to 10cm wide.											
<<Struc: 179.05 - 179.06 dominant foliation>>											
179.41	**184.42**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	179.41	180.00	0.59	B00291539	-0.005	0.4	-0.01	-0.01	-0.01
179.41 - 184.42: Chaotic unit showing multiple flow banded interlayered with muscovite/PY/QZ/few CL, mixed with ash/lapilli and QZ veins. Interpreted as peperite.											
<<Min: 179.8 - 184.42 5% Min: Pyrite>>			180.00	180.95	0.95	B00291541	-0.005	-0.3	-0.01	-0.01	-0.01
<<Vein: 183.58 - 183.9 Quartz-Sulphide>> QZ vein containing rhyolite and sulfides. Chaotic zone possibly peperite.			180.95	181.99	1.04	B00291542	-0.005	-0.3	-0.01	-0.01	-0.01
			181.99	183.00	1.01	B00291543	-0.005	0.5	-0.01	-0.01	-0.01
			183.00	183.80	0.80	B00291544	-0.005	0.5	-0.01	-0.01	-0.01
			183.80	184.42	0.62	B00291545	-0.005	-0.3	-0.01	-0.01	-0.01
184.42	**185.90**	**RHYvl Lapilli tuff**	184.42	184.94	0.52	B00291546	-0.005	-0.3	-0.01	-0.01	-0.01
184.42 - 185.9: Low strain, light grey, progressive lower contact from lapilli to fine grain. Angular lapilli or xtl (?).											
<<Min: 184.42 - 221.28 3% Min: Pyrite>>			184.94	185.90	0.96	B00291547	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 185.66 - 186.65 Strong Calcite>>											
<<Struc: 185.3 - 185.31 dominant foliation>>											
185.90	**186.65**	**SED undifferentiated Sediment**	185.90	186.65	0.75	B00291548	-0.005	-0.3	-0.01	-0.01	-0.01
185.9 - 186.65: Calcareous fine grain, blue sediment. BI rich. Very fine grain/grey ash at lower contact. Few rounded QZ clasts, elongated fine grain PO (replacement?). Distinctive unit.											
<<Struc: 186.1 - 186.11 dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

186.65 189.73 RHYvl Lapilli tuff

186.65 - 189.73: Light green, altered MU, QZ/TML vein and possibly albite altered patch.

<<Alt: 186.65 - 189.73 Weak Chlorite>>

<<Alt: 186.65 - 252.24 Trace Calcite>>

<<Struc: 189.1 - 189.11 dominant foliation>>

189.73 190.40 SEDc calcareous Sediment

189.73 - 190.4: CA/BI/MU. Calcareous brownish, banded. Intense MU alteration, gradual lower contact, CA veining.

<<Alt: 189.73 - 190.4 Intense Muscovite>> Narrow interval and lithology changing.

190.40 191.82 RHYv Rhyolite volcaniclastic

190.4 - 191.82: Light grey, weakly foliated.

<<Alt: 190.4 - 227.3 Weak-Moderate Muscovite>>

191.82 205.43 RHYc Rhyolite coherant volcanics

191.82 - 205.43: Light grey, silica rich., heterogeneous texture from silicic banded to massive. PY/QZ dark discontinuous veins over 1 metre.

<<Struc: 191.95 - 191.96 dominant foliation>>

<<Struc: 193.3 - 193.31 dominant foliation>>

<<Struc: 194.2 - 194.21 dominant foliation>>

<<Struc: 201.7 - 202.6 Weak-Moderate Fault>>

205.43 216.80 RHYvl Lapilli tuff

205.43 - 216.8: Light green, MU altered, speck of probably TML, dark QZ/PY clots.

<<Struc: 206.8 - 206.81 dominant foliation>>

<<Struc: 210.3 - 212.4 Weak-Moderate Fault>>

216.80 221.26 RHYc Rhyolite coherant volcanics

216.96	218.00	1.04	B00291549	-0.005	0.4	-0.01	-0.01	-0.01

216.8 - 221.26: Heterogeneous texture, locally silica bands (flow?), light green, altered MU, speck of TML, PY disseminated or aggregated (PY/QZ clots).

<<Struc: 218.4 - 218.41 dominant foliation>>

218.00	219.00	1.00	B00291551	-0.005	-0.3	-0.01	-0.01	0.01
219.00	220.00	1.00	B00291552	0.01	-0.3	-0.01	-0.01	-0.01
220.00	221.26	1.26	B00291553	-0.005	0.5	-0.01	-0.01	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
221.26	**225.26**	**OI** **Heavilly disseminated sulphides in host schist** **MG**	221.26	221.89	0.63	B00291554	-0.005	0.7	-0.01	-0.01	0.05
221.26 - 225.26: Rhyolite hosted. Wispy PY/PO up to 20% in some intervals. Regular foliation from 223.20m to 224.55m. CL/maybe TML associated with mineralization.											
<<Min: 221.28 - 225.26 10% Min: Pyrite>>			221.89	223.00	1.11	B00291555	-0.005	0.7	-0.01	-0.01	0.03
<<Min: 221.28 - 225.26 10% Min: Pyrrhotite>>			223.00	223.55	0.55	B00291556	-0.005	0.9	-0.01	-0.01	0.02
<<Struc: 223.75 - 223.76 dominant foliation>> Wispy lamination PY/PO in mineralized zone.			223.55	224.10	0.55	B00291557	0.015	0.7	-0.01	0.01	0.01
			224.10	224.75	0.65	B00291558	-0.005	0.9	-0.01	0.01	0.01
			224.75	225.26	0.51	B00291559	-0.005	0.9	-0.01	-0.01	0.11
225.26	**230.61**	**RHYc** **Rhyolite coherant volcanics**	225.26	226.00	0.74	B00291561	-0.005	0.4	-0.01	-0.01	-0.01
225.26 - 230.61: Light green, heterogeneous texture, weakly faulted and sheared.											
<<Min: 225.26 - 230.61 2% Min: Pyrite>>			226.00	227.00	1.00	B00291562	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 227.3 - 230.51 Strong Muscovite>>			227.00	228.00	1.00	B00291563	-0.005	0.5	-0.01	-0.01	-0.01
<<Alt: 230.51 - 231.6 Moderate Muscovite>>			228.00	229.00	1.00	B00291564	-0.005	0.3	-0.01	-0.01	-0.01
<<Struc: 226.7 - 229 Weak-Moderate Shear>> and faulted. Rapid changing in foliation, sharp contact with unsheared rhyolite.			229.00	230.01	1.01	B00291565	-0.005	0.5	-0.01	-0.01	0.02
<<Struc: 227.28 - 227.29 Shear>> Contact between sheared and unsheared rhyolite.			230.01	230.61	0.60	B00291566	0.007	0.8	-0.01	0.02	0.07
230.61	**231.60**	**RHY** **undifferentiated rhyolite**	230.61	231.60	0.99	B00291567	0.015	0.9	-0.01	0.02	0.02
230.61 - 231.6: Similar to OI above but less developed. Few PO/PY (3 to 5%).											
<<Min: 230.61 - 231.6 5% Min: Pyrite>>											
231.60	**240.35**	**RHY** **undifferentiated rhyolite**	231.60	233.00	1.40	B00291568	-0.005	0.4	-0.01	-0.01	-0.01
231.6 - 240.35: Strongly MU altered, silicic bands, light grey/green.											
<<Min: 231.6 - 252.24 3% Min: Pyrite>>			233.00	234.00	1.00	B00291569	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 231.6 - 243 Moderate-Strong Muscovite>>			234.00	235.20	1.20	B00291571	-0.005	0.4	-0.01	-0.01	-0.01
<<Struc: 235.7 - 235.71 dominant foliation>>											
<<Struc: 237.55 - 237.56 dominant foliation>>											
<<Struc: 239.3 - 239.31 dominant foliation>>											
240.35	**243.00**	**RHYc** **Rhyolite coherant volcanics**	242.00	243.00	1.00	B00291572	-0.005	0.5	-0.01	-0.01	-0.01
240.35 - 243: Silica rich, fractured. Could be RHYv with crenulated silicic bands. PY/QZ clots.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
243.00	**246.00**	**RHY** **undifferentiated rhyolite**	243.00	244.90	1.90	B00291573	-0.005	0.8	-0.01	-0.01	-0.01
243 - 246: Strongly foliated, locally fault gouge, strongly MU altered.											
<<Alt: 243 - 252.24 Strong Muscovite>>			244.90	246.00	1.10	B00291574	-0.005	0.5	-0.01	-0.01	-0.01
<<Struc: 243 - 246 Weak-Moderate Fault>> Fractured, weakly sheared, gouge over 30 cm.											
246.00	**252.24**	**RHY** **undifferentiated rhyolite**	246.00	247.00	1.00	B00291575	0.008	0.5	-0.01	-0.01	0.01
246 - 252.24: Silicic bands. Strongly MU altered, PY?QZ veinlets, green/yellow.											
<<Struc: 248.95 - 248.96 dominant foliation>>			247.00	248.00	1.00	B00291576	0.011	0.7	-0.01	-0.01	0.04
			248.00	249.00	1.00	B00291577	0.021	2	-0.01	0.05	0.11
			249.00	251.20	2.20	B00291578	0.015	2.8	-0.01	0.05	0.1
			251.20	252.24	1.04	B00291579	0.086	7.7	0.03	0.07	0.18
252.24	**252.74**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	252.24	252.74	0.50	B00291582	0.931	211	0.23	2.02	5.75
252.24 - 252.74: Sharp contacts. CA in gangue.											
<<Min: 252.24 - 252.74 10% Min: Sphalerite>>											
<<Min: 252.24 - 252.74 75% Min: Pyrite>>											
<<Min: 252.24 - 252.74 1% Min: Pyrrhotite>> At upper contact.											
<<Min: 252.24 - 252.74 2% Min: Galena>>											
<<Min: 252.24 - 252.74 0.5% Min: Chalcopyrite>>											
<<Min: 252.24 - 252.74 2% Min: Barite>>											
<<Alt: 252.24 - 252.74 Moderate-Strong Calcite>>											
252.74	**253.26**	**RHYv** **Rhyolite volcaniclastic**	252.74	253.26	0.52	B00291583	0.182	13	0.01	0.12	0.24
252.74 - 253.26: Strong MU alteration, light green/grey, weakly sheared, QZ vein associated with PY/CL.											
<<Min: 252.74 - 253.26 2% Min: Pyrite>>											
<<Alt: 252.74 - 253.26 Intense Muscovite>>											
<<Alt: 252.74 - 253.26 Trace Calcite>>											
253.26	**254.60**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	253.26	253.90	0.64	B00291584	1.47	170	1.02	1.54	5.22
253.26 - 254.6: OB domain containing OI interlayered from 253.57m to 253.90m MU altered, CA/MU/CL in groundmass, specks of TML, BI, sharp contacts.											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 253.26 - 253.55 80% Min: Pyrite>>					253.90	254.60	0.70	B00291585	11.22	828	0.86	3.28	7.42
<<Min: 253.26 - 253.56 5% Min: Sphalerite>>													
<<Min: 253.26 - 253.56 2% Min: Galena>>													
<<Min: 253.56 - 253.9 2% Min: Sphalerite>>													
<<Min: 253.56 - 253.9 20% Min: Pyrite>>													
<<Min: 253.56 - 253.9 0.5% Min: Galena>>													
<<Min: 253.9 - 254.6 1% Min: Tetrahedrite>>													
<<Min: 253.9 - 254.6 5% Min: Sphalerite>>													
<<Min: 253.9 - 254.6 60% Min: Pyrite>>													
<<Min: 253.9 - 254.6 1% Min: Galena>>													
<<Min: 253.9 - 254.6 0.5% Min: Chalcopyrite>>													
<<Alt: 253.26 - 254.6 Moderate Calcite>>													
254.60	**256.60**	**RHYvl**	**Lapilli tuff**		254.60	255.42	0.82	B00291586	0.009	1.6	-0.01	-0.01	0.02
254.6 - 256.6: Weak to moderate M altered, foliated, light grey, few PY.													
<<Min: 254.6 - 256.6 2% Min: Pyrite>>					255.42	255.95	0.53	B00291587	0.007	1.6	-0.01	-0.01	0.01
<<Alt: 254.6 - 256.6 Moderate Muscovite>>					255.95	256.60	0.65	B00291588	0.019	2.8	-0.01	0.02	0.02
<<Alt: 254.6 - 256.6 Trace Calcite>>													
256.60	**257.27**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MG**	256.60	257.27	0.67	B00291589	2.63	417	0.32	4.02	8.74
256.6 - 257.27: CL altered, CA in groundmass.													
<<Min: 256.6 - 257.27 15% Min: Sphalerite>>													
<<Min: 256.6 - 257.27 50% Min: Pyrite>>													
<<Min: 256.6 - 257.27 5% Min: Galena>>													
<<Alt: 256.6 - 257.27 Moderate Calcite>>													
257.27	**259.37**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**		257.27	258.30	1.03	B00291591	0.595	82.1	0.24	1.53	0.2
257.27 - 259.37: Disseminated sulfides, GL/PY stringers, patchy silicification at upper contact, BI altered.													
<<Min: 257.27 - 259.37 5% Min: Pyrite>>					258.30	259.37	1.07	B00291592	0.804	79.6	0.09	0.57	0.61
<<Min: 257.27 - 259.37 2% Min: Galena>>													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 257.27 - 258.04 Moderate-Strong Muscovite>>									
		<<Alt: 257.27 - 259.08 Moderate Silicification>>									
		<<Alt: 257.27 - 259.37 Moderate-Strong Calcite>>									
		<<Alt: 257.27 - 259.37 Intense Biotite>>									
259.37	**304.44**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	259.37	260.00	0.63	B00291593	0.037	7.1	-0.01	0.1	0.08
		259.37 - 304.44: CL altered at upper contact. CA content decreasing downhole.									
		<<Min: 259.37 - 331.7 0.1% Min: Pyrite>>	260.00	261.00	1.00	B00291594	0.052	9.7	-0.01	0.15	0.06
		<<Alt: 259.37 - 260.6 Moderate-Strong Chlorite>>	261.00	262.00	1.00	B00291595	0.047	9.2	-0.01	0.14	0.07
		<<Alt: 259.37 - 262.53 Moderate Calcite>>	262.00	262.97	0.97	B00291596	0.029	6.1	-0.01	0.08	0.07
		<<Alt: 262.53 - 328 Weak Calcite>>	262.97	264.00	1.03	B00291597	0.018	4.5	-0.01	0.05	0.06
		<<Struc: 281 - 281.01 dominant foliation>>	264.00	264.98	0.98	B00291598	-0.005	1.9	-0.01	0.02	0.06
		<<Struc: 299.5 - 299.51 dominant foliation>>	264.98	266.06	1.08	B00291599	0.018	4	-0.01	0.06	0.05
			266.06	267.00	0.94	B00291601	0.016	3.7	-0.01	0.07	0.05
304.44	**306.24**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**									
		304.44 - 306.24: Possibly patchy EP alteration and texture changing/unfoliated.									
		<<Alt: 304.44 - 306.24 Moderate Epidote>> Could be original.									
306.24	**331.00**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	329.00	330.00	1.00	B00291602	0.008	2	-0.01	0.04	0.06
		306.24 - 331: Low CA content.									
		<<Alt: 328 - 331.7 Moderate Calcite>> CA content increase at lower contact.	330.00	331.00	1.00	B00291603	0.021	5.8	-0.01	0.11	0.05
		<<Struc: 308.7 - 308.71 dominant foliation>>									
		<<Struc: 328.6 - 328.61 dominant foliation>>									
		<<Struc: 329.4 - 329.41 dominant foliation>>									
331.00	**332.23**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	331.00	331.70	0.70	B00291604	0.031	11.6	0.01	0.22	0.06
		331 - 332.23: PO/CP, brown BI.									
		<<Min: 331.7 - 332.23 2% Min: Pyrite>> Lower contact MAFi/RHY	331.70	332.23	0.53	B00291605	0.124	38.3	0.52	0.47	1.14
		<<Min: 331.7 - 332.23 3% Min: Pyrrhotite>> Lower contact MAFi/RHY									
		<<Min: 331.7 - 332.23 1% Min: Chalcopyrite>> Lower contact MAFi/RHY									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 331.7 - 332.23 Moderate-Strong Biotite>>									
		<<Alt: 331.7 - 340.27 Trace Calcite>>									
332.23	**340.27**	**RHYvl Lapilli tuff**	332.23	333.00	0.77	B00291606	0.028	3.2	0.07	-0.01	-0.01
		332.23 - 340.27: Light grey, fine/medium grain, weakly MU altered									
		<<Min: 332.23 - 340.23 1% Min: Pyrite>>	333.00	334.00	1.00	B00291607	0.005	0.8	-0.01	-0.01	0.01
		<<Min: 340.23 - 381 3% Min: Pyrite>>	334.00	335.16	1.16	B00291608	0.006	0.4	-0.01	-0.01	-0.01
		<<Min: 340.23 - 381 2% Min: Pyrrhotite>>									
		<<Alt: 332.23 - 349.5 Moderate Muscovite>>									
		<<Alt: 332.23 - 381 Trace Chlorite>>									
		<<Vein: 334.58 - 335 Quartz-Carbonate-Sulphide>> QZ/CL/CA/PY/PO vein									
		<<Struc: 339.6 - 340.27 Weak Shear>> Sheared and silicified, fractured. Gouge at lower contact.									
340.27	**347.12**	**RHYvl Lapilli tuff green-brown**									
		340.27 - 347.12: Possibly SED. MU/CLBI/Q/few CA. PY/PO rich bands									
		<<Alt: 340.27 - 347.12 Weak Calcite>>									
		<<Struc: 342 - 342.01 dominant foliation>>									
347.12	**369.94**	**RHYv Rhyolite volcaniclastic**									
		347.12 - 369.94: Light blue MU/QZ, weakly CL altered, heterogeneous,									
		<<Alt: 347.12 - 381 Trace Calcite>>									
		<<Alt: 349.5 - 381 Weak Muscovite>>									
		<<Vein: 366.6 - 366.64 Tourmaline>> TML vein with selvage.									
		<<Struc: 362.1 - 362.2 Trace Fault>> Fault gouge, grey clay.									
		<<Struc: 366 - 366.01 dominant foliation>>									
369.94	**371.58**	**RHYva Coarse grained to ash tuff**									
		369.94 - 371.58: Fine grain, blue/green. CL/MU, speck of TML, few QZ vein/bands, weak foliation.									
371.58	**377.69**	**RHYvl Lapilli tuff**									
		371.58 - 377.69: Dark blue, clasts high stained, CL altered. Could be SED. Light shearing at upper contact, foliated, speck of TML. PY/PO bands.									
		<<Struc: 377.5 - 377.51 dominant foliation>>									
377.69	**381.00**	**RHYv Rhyolite volcaniclastic**									
		377.69 - 381: Blue, weakly CL alteration, PY/PO in foliation. Fine grain, few white clasts. E.O.H.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 381											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-358

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/5/2016
UTM Easting	415104.787	Core Size:	HQ3	Azimuth:	74.8	Date Logging Complete:	6/8/2016
UTM Northing:	6815167.039	Casing Pulled?:	Yes	Dip:	-86.2	Drill Company:	Hytech
UTM Elev. (m):	1393.96	Casing Depth (m):	7.5	Length (m):	348	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/2/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/6/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-358 was drilled to test an inferred portion of the down-dip Krakatoa upper, main, and lower lenses. All three lenses were successfully intersected. The planned drill hole length was extended by 20 m to test alteration noted in the footwall. Driller core meter marker block error at 269m (originally labelled by drillers as 266m); all block markers changed below 269m by adding 3m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-86.20238	73.4	1.4	74.8	TN14	Oscar Nielsen	6/6/2016		☑	100. Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-86.41454	72.76978	1.4	74.16978	Gyro	Oscar Nielsen	6/6/2016		☑	92.1332541786914
10	-86.56106	73.80721	1.4	75.20721	Gyro	Oscar Nielsen	6/6/2016		☑	86.8881110648276
12	-86.5	53.5	22.1	75.6	ReflexEZS	Hytech	6/2/2016	9161	☐	Suspect measurement due to high magnetic field value. Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
15	-86.76667	76.25576	1.4	77.65576	Gyro	Oscar Nielsen	6/6/2016		☑	88.8972380515789
20	-87.03162	83.22284	1.4	84.62284	Gyro	Oscar Nielsen	6/6/2016		☑	85.9133756074079
25	-87.09252	88.17519	1.4	89.57519	Gyro	Oscar Nielsen	6/6/2016		☑	97.6847711854574
30	-87.45801	97.88998	1.4	99.28998	Gyro	Oscar Nielsen	6/6/2016		☑	96.4522134738528
35	-87.57887	105.60074	1.4	107.00074	Gyro	Oscar Nielsen	6/6/2016		☑	93.037624201056
36	-87.3	70.7	22.1	92.8	ReflexEZS	Hytech	6/3/2016	5760	☐	big change in azimuth to measurement at 60m.
40	-87.61414	110.48156	1.4	111.88156	Gyro	Oscar Nielsen	6/6/2016		☑	94.4697023898214
45	-87.44286	110.27811	1.4	111.67811	Gyro	Oscar Nielsen	6/6/2016		☑	97.665614295986
50	-87.6653	120.1566	1.4	121.5566	Gyro	Oscar Nielsen	6/6/2016		☑	94.130965416155
55	-87.72756	130.66417	1.4	132.06417	Gyro	Oscar Nielsen	6/6/2016		☑	99.0239933436672
60	-87.6198	135.5306	1.4	136.9306	Gyro	Oscar Nielsen	6/6/2016		☑	93.3185181462067
60.01	-87.5	94.1	22.1	116.2	ReflexEZS	Hytech	6/3/2016	5757	☐	
65	-87.43888	136.15081	1.4	137.55081	Gyro	Oscar Nielsen	6/6/2016		☑	98.7661485696466
70	-87.38467	139.34214	1.4	140.74214	Gyro	Oscar Nielsen	6/6/2016		☑	99.784542382048

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-358

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-87.3041	145.14875	1.4	146.54875	Gyro	Oscar Nielsen	6/6/2016		☑	93.2895747768233
80	-86.99499	145.43148	1.4	146.83148	Gyro	Oscar Nielsen	6/6/2016		☑	98.2126577809082
84	-87.2	268.8	22.1	290.9	ReflexEZS	Hytech	6/3/2016	6355	☐	Driller comments: "Assume test out due to high magnetics. Maybe not all the way through the core barrel."
85	-87.00104	147.22139	1.4	148.62139	Gyro	Oscar Nielsen	6/6/2016		☑	91.7786227084211
90	-86.78482	148.84889	1.4	150.24889	Gyro	Oscar Nielsen	6/6/2016		☑	98.2150369123584
90.01	-86.9	112.2	22.1	134.3	ReflexEZS	Hytech	6/3/2016	5763	☐	
95	-86.60006	154.94698	1.4	156.34698	Gyro	Oscar Nielsen	6/6/2016		☑	92.1203409894488
100	-86.64096	160.16993	1.4	161.56993	Gyro	Oscar Nielsen	6/6/2016		☑	94.5898646190976
105	-86.44441	161.95126	1.4	163.35126	Gyro	Oscar Nielsen	6/6/2016		☑	99.7033045342968
110	-86.15352	164.27644	1.4	165.67644	Gyro	Oscar Nielsen	6/6/2016		☑	90.887409475508
114	-85.9	135.9	22.1	158	ReflexEZS	Hytech	6/3/2016	5757	☐	
115	-85.87407	166.45278	1.4	167.85278	Gyro	Oscar Nielsen	6/6/2016		☑	99.0776403074495
120	-85.40838	166.50861	1.4	167.90861	Gyro	Oscar Nielsen	6/6/2016		☑	95.6755793898368
125	-85.29598	169.78992	1.4	171.18992	Gyro	Oscar Nielsen	6/6/2016		☑	89.5980149684477
130	-85.1862	173.08516	1.4	174.48516	Gyro	Oscar Nielsen	6/6/2016		☑	99.1991167116448
135	-84.89064	174.04669	1.4	175.44669	Gyro	Oscar Nielsen	6/6/2016		☑	96.0682048203799
138	-85.1	142.5	22.1	164.6	ReflexEZS	Hytech	6/3/2016	6099	☐	
140	-84.90653	176.35907	1.4	177.75907	Gyro	Oscar Nielsen	6/6/2016		☑	89.2454823049024
145	-84.90814	178.4529	1.4	179.8529	Gyro	Oscar Nielsen	6/6/2016		☑	99.4434129440536
150	-84.85834	179.21348	1.4	180.61348	Gyro	Oscar Nielsen	6/6/2016		☑	99.611856761765
155	-84.69997	180.58109	1.4	181.98109	Gyro	Oscar Nielsen	6/6/2016		☑	91.3744971005918
160	-84.60763	181.93666	1.4	183.33666	Gyro	Oscar Nielsen	6/6/2016		☑	99.826267260743
162	-84.5	150.6	22.1	172.7	ReflexEZS	Hytech	6/4/2016	5777	☐	
165	-84.45539	182.13912	1.4	183.53912	Gyro	Oscar Nielsen	6/6/2016		☑	98.293428982654
170	-84.59694	183.74978	1.4	185.14978	Gyro	Oscar Nielsen	6/6/2016		☑	86.7775579451294
175	-84.57395	184.72747	1.4	186.12747	Gyro	Oscar Nielsen	6/6/2016		☑	99.935315928416
180	-84.49415	184.98876	1.4	186.38876	Gyro	Oscar Nielsen	6/6/2016		☑	100
185	-84.39744	185.95208	1.4	187.35208	Gyro	Oscar Nielsen	6/6/2016		☑	99.8428080215793
186	-84.3	152.1	22.1	174.2	ReflexEZS	Hytech	6/4/2016	5523	☐	
190	-84.28676	185.93027	1.4	187.33027	Gyro	Oscar Nielsen	6/6/2016		☑	97.9460201892762
195	-84.37517	188.29739	1.4	189.69739	Gyro	Oscar Nielsen	6/6/2016		☑	87.7946404285595
200	-84.24675	189.55259	1.4	190.95259	Gyro	Oscar Nielsen	6/6/2016		☑	99.733435774019
205	-84.17217	190.67162	1.4	192.07162	Gyro	Oscar Nielsen	6/6/2016		☑	99.3784925042993
210	-84.06978	192.27147	1.4	193.67147	Gyro	Oscar Nielsen	6/6/2016		☑	99.4290624945458

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-358

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
210.01	-84.1	159	22.1	181.1	ReflexEZS	Hytech	6/4/2016	5753	☐	
215	-83.98121	193.20749	1.4	194.60749	Gyro	Oscar Nielsen	6/6/2016		☑	99.468576294482
220	-83.89133	194.47626	1.4	195.87626	Gyro	Oscar Nielsen	6/6/2016		☑	98.5065940872386
225	-83.77575	195.96793	1.4	197.36793	Gyro	Oscar Nielsen	6/6/2016		☑	99.2965482709042
230	-83.60073	195.69105	1.4	197.09105	Gyro	Oscar Nielsen	6/6/2016		☑	100
234	-83.5	158.8	22.1	180.9	ReflexEZS	Hytech	6/4/2016	5774	☐	
235	-83.38233	196.41747	1.4	197.81747	Gyro	Oscar Nielsen	6/6/2016		☑	99.272262088763
240	-83.23145	196.6581	1.4	198.0581	Gyro	Oscar Nielsen	6/6/2016		☑	99.4286988249005
245	-83.0365	197.48729	1.4	198.88729	Gyro	Oscar Nielsen	6/6/2016		☑	99.9980137162496
250	-82.87286	197.36377	1.4	198.76377	Gyro	Oscar Nielsen	6/6/2016		☑	100
255	-82.56246	198.34527	1.4	199.74527	Gyro	Oscar Nielsen	6/6/2016		☑	99.4286408334804
258	-81.6	168.1	22.1	190.2	ReflexEZS	Hytech	6/5/2016	5703	☐	
260	-81.93064	199.42854	1.4	200.82854	Gyro	Oscar Nielsen	6/6/2016		☑	99.265355374208
265	-81.41271	200.32593	1.4	201.72593	Gyro	Oscar Nielsen	6/6/2016		☑	99.235318435989
270	-81.00619	200.88232	1.4	202.28232	Gyro	Oscar Nielsen	6/6/2016		☑	99.7371209304668
275	-80.83578	201.53718	1.4	202.93718	Gyro	Oscar Nielsen	6/6/2016		☑	99.1632153112629
280	-80.60108	201.41962	1.4	202.81962	Gyro	Oscar Nielsen	6/6/2016		☑	99.6927184851988
282	-80.5	170.5	22.1	192.6	ReflexEZS	Hytech	6/5/2016	5787	☐	
285	-80.48758	201.74506	1.4	203.14506	Gyro	Oscar Nielsen	6/6/2016		☑	99.7973534179904
290	-80.26403	202.07255	1.4	203.47255	Gyro	Oscar Nielsen	6/6/2016		☑	99.3641133450601
295	-80.11594	202.49506	1.4	203.89506	Gyro	Oscar Nielsen	6/6/2016		☑	99.5913690873714
300	-80.04525	202.64668	1.4	204.04668	Gyro	Oscar Nielsen	6/6/2016		☑	92.3435042031875
305	-79.90742	203.25641	1.4	204.65641	Gyro	Oscar Nielsen	6/6/2016		☑	99.07418419837
306	-79.6	165.5	22.1	187.6	ReflexEZS	Hytech	6/5/2016	5805	☐	
310	-79.72607	203.59288	1.4	204.99288	Gyro	Oscar Nielsen	6/6/2016		☑	99.9413975047682
315	-79.55919	203.985	1.4	205.385	Gyro	Oscar Nielsen	6/6/2016		☑	99.8016821056293
320	-79.41761	204.39139	1.4	205.79139	Gyro	Oscar Nielsen	6/6/2016		☑	100
325	-79.29206	204.97427	1.4	206.37427	Gyro	Oscar Nielsen	6/6/2016		☑	99.379693802526
330	-79.20646	205.41774	1.4	206.81774	Gyro	Oscar Nielsen	6/6/2016		☑	99.2616170158919
330.01	-79	174	22.1	196.1	ReflexEZS	Hytech	6/5/2016	5739	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**6.30**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

6.30 10.00 RHYvl Lapilli tuff

6.3 - 10: Varies from local coherent flow banded rhyolite to more abundant felsic lpl in ash matrix. Appears to have a gradational lower contact with RHYva (Bl-r).

<<Min: 6.3 - 10 0.5% Min: Pyrite>>

<<Alt: 6.3 - 10 Weak-Moderate Calcite>>

10.00 11.90 RHYva Coarse grained to ash tuff

10 - 11.9: Fine grained grey ash tuff with disseminated Bl and CA porphyroblasts. May correlate with PEL horizons in other holes.

<<Min: 10 - 27.2 0.5% Min: Pyrrhotite>>

<<Alt: 10 - 11.9 Moderate Calcite>>

11.90 13.50 RHYvl Lapilli tuff

<<Alt: 11.9 - 65.5 Weak-Moderate Calcite>>

13.50 14.60 RHYva Coarse grained to ash tuff

13.5 - 14.6: Fine grained grey ash tuff with disseminated Bl and minor rounded silicic clasts

14.60 33.50 RHYvl Lapilli tuff

<<Min: 27.2 - 54.6 0.5% Min: Pyrite>>

<<Struc: 16.1 - 24 Weak Fault>> Zone with moderate fracturing and local fault planes with gouge surfaces

<<Struc: 26.07 - 26.08 Moderate dominant foliation>>

<<Struc: 31.5 - 37 Moderate-Strong Fault>> Moderate to strong fault zone, dominated by gouge-supported fault breccia

33.50 54.60 RHYva Coarse grained to ash tuff

33.5 - 54.6: Local lpl

<<Vein: 44 - 50.6 15% Quartz>> Zone with masive QZ-veining

<<Struc: 37 - 45.7 Weak Fault>> Highly fractured (damage zone) with weak-moderate density of fault planes with gouge

54.60 63.80 RHYi Aphanitic Rhyolite (intrusion)

54.6 - 63.8: Light grey very siliceous (silicified?) unit with locally schistosity and zones of massive aphanitic rhyolite. Where schistosity is present minor disseminated Q-eyes, with disseminated CL+PO+PY can be found.

<<Min: 54.6 - 57.2 2% Min: Pyrite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Min: 54.6 - 57.2 1% Min: Pyrrhotite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 57.2 - 65.5 0.5% Min: Pyrite>>

<<Min: 57.2 - 65.5 1% Min: Pyrrhotite>>

<<Alt: 54.6 - 57.2 Weak Chlorite>>

<<Vein: 54.7 - 55.2 100% Quartz>> Massive QZ vein with disseminated CL-CA blebs

<<Vein: 58.5 - 63.8 20% Quartz-Carbonate>> Thin (~1 cm) to wide (~50 cm) massive QZ-CA veins. Cross-cut all fabrics

<<Struc: 58.2 - 58.4 Weak Fault>>

63.80 65.50 RHY undifferentiated rhyolite

63.8 - 65.5: Local zone of brecciated RHYv (?) between RHYi zones.

<<Alt: 63.8 - 65.5 Moderate Muscovite>>

<<Struc: 64.38 - 64.39 Weak-Moderate dominant foliation>>

65.50 78.00 RHYif feldspar and quartz porphyry intrusions

65.5 - 78: Light grey, apahanitic siliceous groundmass, QZ-FD phyric, rhyolite. Upper margin is brecciated with PO+PY stringers. Lower contact appears to grade into silicified RHYv into PEL.

<<Min: 65.5 - 66.2 2% Min: Pyrite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Min: 65.5 - 66.2 1% Min: Pyrrhotite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Min: 66.2 - 75.4 0.5% Min: Pyrite>>

<<Min: 66.2 - 75.4 1% Min: Pyrrhotite>>

<<Min: 75.4 - 78 2% Min: Pyrite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Min: 75.4 - 78 1% Min: Pyrrhotite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Alt: 65.5 - 66.2 Weak Muscovite>>

<<Alt: 65.5 - 66.2 Weak Chlorite>>

<<Alt: 65.5 - 78 Weak Calcite>>

<<Vein: 76.3 - 76.4 100% Quartz>> Fractured massive QZ vein

<<Struc: 76.4 - 76.5 Weak-Moderate Fault>>

78.00 78.60 PEL Equigranular biotite + calcite +/- quartz rock

78 - 78.6: Purple-brown, BI phyric, metapelite or mafic dyke (?). Contact are cooling margins or gradational?

<<Min: 78 - 85.2 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 78 - 85.2 1% Min: Pyrrhotite>>

<<Alt: 78 - 78.6 Moderate Calcite>>

78.60 81.90 RHYvl Lapilli tuff

78.6 - 81.9: Abundant FD and QZ crystal clasts in well foliated ash matrix. Local pathes of CL-alteration with diss PO+PY.

<<Alt: 78.6 - 100.1 Weak Calcite>>

<<Alt: 81.1 - 81.9 Weak Muscovite>> Intense MU-CL alteration at bottom portion of interval next to RHYi

<<Alt: 81.1 - 81.9 Weak Chlorite>>

<<Vein: 80.1 - 84.8 20% Quartz-Carbonate>> Thin (~1 cm) to wide (~50 cm) massive QZ-CA veins. Cross-cut all fabrics

81.90 86.30 RHYi Aphanitic Rhyolite (intrusion)

81.9 - 86.3: Light grey, aphanitic, siliceous rhyolite. Internal brecciated contact between two (flows or dykes) that resembles a fow top breccia. (at 85.2 m). This breccia is right way up grading from massive RHYi to brecciated RHYi. Stringers of PO+PY have cemented the breccia.

<<Min: 85.2 - 86.3 2% Min: Pyrite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Min: 85.2 - 86.3 2% Min: Pyrrhotite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/- Muscovite alteration

<<Alt: 86.2 - 86.7 Weak Chlorite>>

86.30 91.00 RHYvl Lapilli tuff

<<Min: 86.3 - 92.4 3% Min: Pyrrhotite>> Associated with weak-moderate MU-alteration around RHYi

<<Alt: 86.3 - 86.7 Strong Muscovite>> Alteration from RHYi?

<<Alt: 86.7 - 92.4 Weak Muscovite>>

<<Struc: 89.1 - 91.9 Moderate Fault>> Moderate fault intensity with moderate MU-alteration and massive QZ-veining

91.00 96.50 RHYva Coarse grained to ash tuff

91 - 96.5: Lower contact displays soft sediment deformation. Flame and load structures, which indicate a right way up direction.

<<Min: 92.4 - 105 1% Min: Pyrrhotite>>

<<Vein: 91.3 - 92.5 50% Quartz-Carbonate>> Massive QZ-CA veining in zone of moderate to strong alteration and faulting

96.50 100.10 RHYva Coarse grained to ash tuff

<<Struc: 98.91 - 98.92 Weak dominant foliation>>

<<Struc: 99 - 200 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

100.10 100.50 PEL Equigranular biotite + calcite +/- quartz rock

100.1 - 100.5: Zone with two ~15 cm thick layers of pelitic sediment with sharp lower contacts and gradational upper contacts.

<<Alt: 100.1 - 100.5 Moderate Calcite>>

100.50 125.60 RHYva Coarse grained to ash tuff

100.5 - 125.6: Weak to moderately ash tuff

<<Min: 105 - 125.6 1% Min: Pyrrhotite>> Stringers of PY+PO in fractured/foliated RHYi associted with minor Chlorite+/-Muscovite alteration

<<Alt: 100.5 - 148.9 Weak Calcite>>

<<Alt: 105 - 123.6 Weak Muscovite>>

<<Alt: 123.6 - 135.4 Moderate Muscovite>>

<<Vein: 110.8 - 110.9 100% Quartz>> Massive QZ-vein

<<Struc: 100.5 - 100.51 Moderate-Strong Contact>> Sharp contact between overlyine PEL and underlying RHYva

<<Struc: 102.99 - 103 Weak-Moderate dominant foliation>>

<<Struc: 104.8 - 105 Weak Fault>>

<<Struc: 108 - 108.3 Moderate Fault>> Fault breccia

<<Struc: 113.3 - 115 Weak Fault>>

<<Struc: 117 - 117.2 Moderate Fault>>

<<Struc: 118 - 119.3 Moderate Fault>> Moderate faulting with fault gouge. Local clasts of PY rich RHY.

<<Struc: 120.31 - 120.32 Moderate dominant foliation>>

<<Struc: 123.45 - 123.55 Moderate Fault>> Fault gouge breccia with minor PY-rich clasts

125.60 135.40 RHYvl Lapilli tuff

132.50	134.00	1.50	B00292316	0.007	0.3	-0.01	-0.01	0.01
134.00	135.40	1.40	B00292317	0.009	0.6	-0.01	-0.01	0.01
135.40	136.70	1.30	B00292318	0.036	1.2	-0.01	-0.01	0.02

125.6 - 135.4: Abundant PO lpl and minor felsic lpl in strong MU-altered host

<<Min: 125.6 - 135.4 2% Min: Pyrite>>

<<Alt: 125.6 - 148.9 Trace Tourmaline>>

<<Vein: 134.6 - 135.4 100% Quartz>> Massive QZ-vein with blebby Carb+CL+PO

135.40 136.70 OI Heavilly disseminated sulphides in host schist

135.4 - 136.7: ~10-15% patchy/aggregates of PY+PO in RHY

<<Min: 135.4 - 136.7 10% Min: Pyrite>>

<<Min: 135.4 - 136.7 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 135.4 - 148.7 Strong Muscovite>>									
136.70	**148.90**	**RHYv Rhyolite volcaniclastic**	136.70	138.20	1.50	B00292319	0.006	0.5	-0.01	-0.01	0.03
		136.7 - 148.9: Moderate to strongly MU-altered. Lower contact with MXSX displays intense MU+CI alteration.									
		<<Min: 136.7 - 148.9 2% Min: Pyrite>>	138.20	140.00	1.80	B00292321	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 148.7 - 148.9 Intense Muscovite>>	140.00	141.50	1.50	B00292322	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 148.7 - 148.9 Moderate Cordierite>>	141.50	143.00	1.50	B00292323	0.009	0.3	-0.01	-0.01	-0.01
		<<Vein: 142.5 - 148.5 2% Quartz-Carbonate 65 deg. >> 5-10 cm wide QZ-CA veins with trace disseminated sulfide	143.00	144.50	1.50	B00292324	0.009	0.3	-0.01	-0.01	-0.01
		<<Struc: 137 - 137.4 Moderate-Strong Fault>>	144.50	146.00	1.50	B00292325	0.01	0.3	-0.01	-0.01	-0.01
		<<Struc: 137.4 - 142.5 Weak-Moderate Fault>>	146.00	147.40	1.40	B00292326	0.011	0.4	-0.01	-0.01	0.02
		<<Struc: 143.8 - 143.9 Weak-Moderate Fault>>	147.40	148.90	1.50	B00292327	-0.005	0.8	-0.01	-0.01	0.01
		<<Struc: 147 - 147.4 Moderate Fault>>									
		<<Struc: 148.5 - 148.7 Moderate-Strong Fault>>									
148.90	**150.10**	**OF Pyrrhotite rich sulphides**	148.90	150.10	1.20	B00292328	0.36	166	1.1	1.11	4.14
		148.9 - 150.1: OF from 148.9-149.3 m, OJ from 149.3-149.5 m, OF from 149.5-149.7 m, and OB from 149.7-150.1 m. Faulted lower contact.									
		<<Min: 148.9 - 149.3 95% Min: Pyrrhotite>>									
		<<Min: 148.9 - 149.3 1% Min: Chalcopyrite>>									
		<<Min: 149.3 - 149.5 5% Min: Pyrrhotite>>									
		<<Min: 149.3 - 149.5 1% Min: Chalcopyrite>>									
		<<Min: 149.5 - 149.7 3% Min: Pyrite>>									
		<<Min: 149.5 - 149.7 92% Min: Pyrrhotite>>									
		<<Min: 149.5 - 149.7 1% Min: Chalcopyrite>>									
		<<Min: 149.7 - 150.1 2% Min: Sphalerite>>									
		<<Min: 149.7 - 150.1 90% Min: Pyrite>>									
		<<Min: 149.7 - 150.1 5% Min: Pyrrhotite>>									
		<<Min: 149.7 - 150.1 1% Min: Chalcopyrite>>									
		<<Alt: 148.9 - 150.1 Weak-Moderate Calcite>> Blebs and FRA CA in MXSX									
		<<Alt: 149.3 - 149.5 Intense Muscovite>>									
		<<Alt: 149.3 - 149.5 Strong Cordierite>>									
		<<Struc: 150 - 150.3 Moderate-Strong Fault>>									

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
150.10	**151.40**	**RHYcw**	**Curdy textured-flow banded (flows, subvolcanics)**	150.10	151.40	1.30	B00292329	0.131	13.9	-0.01	0.09	0.05
150.1 - 151.4: Strongly MU-altered with patchy CL and flow banded silica-calcite bands.												
<<Min: 150.1 - 151.4 3% Min: Pyrite>>												
<<Alt: 150.1 - 151.4 Strong Muscovite>>												
<<Alt: 150.1 - 151.4 Moderate Chlorite>>												
<<Alt: 150.1 - 151.4 Moderate Calcite>> CA flow-bands in RHY												
151.40	**152.00**	**OI**	**Heavilly disseminated sulphides in host schist**	151.40	152.00	0.60	B00292332	1.52	128	0.64	0.66	2.39
151.4 - 152: MXSX (OA) from 151.4-151.7 m, followed by heavily disseminated sulfides (OI) in strong MU-altered host.												
<<Min: 151.4 - 151.7 90% Min: Pyrite>>												
<<Min: 151.4 - 151.7 2% Min: Pyrrhotite>>												
<<Min: 151.4 - 151.7 2% Min: Magnetite>>												
<<Min: 151.4 - 151.7 1% Min: Chalcopyrite>>												
<<Min: 151.7 - 152 10% Min: Pyrite>>												
<<Alt: 151.4 - 152 Weak-Moderate Calcite>>												
<<Alt: 151.7 - 153.5 Strong Muscovite>>												
152.00	**156.40**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	152.00	153.50	1.50	B00292333	0.104	6.5	0.02	0.05	0.01
152 - 156.4: Strong MU-alteration near top of unit. Grades into less-altered MAFi, with sharp lower contact with RHY.												
<<Min: 152 - 156.4 1% Min: Pyrite>>				153.50	155.00	1.50	B00292334	0.007	0.4	-0.01	-0.01	0.01
<<Min: 152 - 156.4 0.5% Min: Pyrrhotite>>				155.00	156.40	1.40	B00292335	0.006	0.5	-0.01	-0.01	0.02
<<Alt: 152 - 156.4 Moderate Calcite>>												
<<Alt: 153.5 - 154.5 Moderate Muscovite>>												
<<Alt: 154.5 - 156.4 Weak Muscovite>>												
<<Struc: 154 - 154.2 Moderate Fault>>												
156.40	**165.80**	**RHYcw**	**Curdy textured-flow banded (flows, subvolcanics)**	156.40	157.90	1.50	B00292336	0.012	0.8	-0.01	-0.01	0.01
<<Min: 156.4 - 165.3 2% Min: Pyrite>>				157.90	159.00	1.10	B00292337	0.016	1.4	-0.01	-0.01	0.02
<<Min: 156.4 - 165.3 0.1% Min: Arsenopyrite>>				159.00	160.50	1.50	B00292338	0.007	1.3	-0.01	-0.01	0.02
<<Min: 165.3 - 165.8 1% Min: Sphalerite>>				160.50	162.00	1.50	B00292339	-0.005	0.7	-0.01	-0.01	0.02
<<Min: 165.3 - 165.8 5% Min: Pyrite>>				162.00	163.50	1.50	B00292341	0.013	0.6	-0.01	-0.01	0.02

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 156.4 - 157.4 Moderate Chlorite>>			163.50	165.00	1.50	B00292342	0.027	1.5	-0.01	-0.01	0.03
<<Alt: 156.4 - 165.3 Strong Muscovite>>			165.00	165.80	0.80	B00292343	1.23	41.1	-0.01	0.47	0.59
<<Alt: 156.4 - 165.8 Weak Calcite>>											
<<Alt: 165.3 - 165.8 Intense Muscovite>>											
<<Vein: 164.5 - 164.6 100% Quartz-Carbonate>> QZ-Carb vein in fault											
<<Struc: 161 - 163 Weak Fault>>											
<<Struc: 164.4 - 164.5 Weak-Moderate Fault>>											
165.80	**167.30**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	165.80	166.40	0.60	B00292344	3.2	395	0.48	5.49	7.19
<<Min: 165.8 - 166.4 5% Min: Sphalerite>>			166.40	167.30	0.90	B00292345	3.12	413	2.71	4.65	6.39
<<Min: 165.8 - 166.4 85% Min: Pyrite>>											
<<Min: 165.8 - 166.4 5% Min: Magnetite>>											
<<Min: 165.8 - 166.4 1% Min: Chalcopyrite>>											
<<Min: 166.4 - 167.3 75% Min: Pyrite>>											
<<Min: 166.4 - 167.3 10% Min: Pyrrhotite>>											
<<Min: 166.4 - 167.3 10% Min: Magnetite>>											
<<Min: 166.4 - 167.3 3% Min: Chalcopyrite>>											
<<Alt: 165.8 - 168.2 Weak Calcite>> FRA CA in MXSX											
167.30	**168.20**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	167.30	168.20	0.90	B00292346	2.02	175	0.39	2.4	11.5
<<Min: 167.3 - 168.2 5% Min: Sphalerite>>											
<<Min: 167.3 - 168.2 90% Min: Pyrite>>											
168.20	**169.30**	**OI** **Heavilly disseminated sulphides in host schist**	168.20	169.30	1.10	B00292347	2.21	179	0.39	1.05	3.47
<<Min: 168.2 - 169.3 2% Min: Sphalerite>>											
<<Min: 168.2 - 169.3 20% Min: Pyrite>>											
<<Min: 168.2 - 169.3 2% Min: Chalcopyrite>>											
<<Alt: 168.2 - 169.3 Strong Muscovite>>											
<<Alt: 168.2 - 169.3 Weak Chlorite>>											
<<Alt: 168.2 - 169.3 Moderate Cordierite>>											
<<Alt: 168.2 - 169.3 Moderate-Strong Calcite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 169.1 - 169.2 Weak-Moderate Fault>>									
169.30	**169.90**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	169.30	169.90	0.60	B00292348	1.74	247	0.04	3.44	11.4
		<<Min: 169.3 - 169.9 10% Min: Sphalerite>>									
		<<Min: 169.3 - 169.9 80% Min: Pyrite>>									
		<<Min: 169.3 - 169.9 2% Min: Magnetite>>									
		<<Min: 169.3 - 169.9 1% Min: Galena>>									
		<<Alt: 169.3 - 169.9 Weak-Moderate Calcite>>									
169.90	**170.40**	**OI** **Heavilly disseminated sulphides in host schist**	169.90	170.40	0.50	B00292349	5.32	359	0.35	0.9	1.67
		<<Min: 169.9 - 170.4 5% Min: Sphalerite>>									
		<<Min: 169.9 - 170.4 15% Min: Pyrite>>									
		<<Min: 169.9 - 170.4 1% Min: Galena>>									
		<<Alt: 169.9 - 170.4 Moderate Muscovite>>									
		<<Alt: 169.9 - 170.4 Strong Calcite>>									
170.40	**217.60**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	170.40	171.50	1.10	B00292352	-0.005	-0.3	-0.01	-0.01	0.02
		170.4 - 217.6: Upper and lower contacts display massive CL over 1-2 m with disseminated BI. Difficult to see the difference between metamorphic/background minerals and the alteration mineral assemblage.									
		<<Min: 170.4 - 173.8 1% Min: Pyrite>>	171.50	172.60	1.10	B00292353	-0.005	-0.3	-0.01	-0.01	0.02
		<<Min: 170.4 - 173.8 0.5% Min: Pyrrhotite>>	172.60	173.80	1.20	B00292354	-0.005	-0.3	-0.01	-0.01	0.02
		<<Min: 170.4 - 173.8 0.1% Min: Chalcopyrite>>	173.80	175.00	1.20	B00292355	-0.005	0.5	-0.01	-0.01	0.02
		<<Min: 173.8 - 180 0.1% Min: Pyrrhotite>>	175.00	176.50	1.50	B00292356	-0.005	0.8	-0.01	-0.01	0.01
		<<Min: 180 - 217.6 0.1% Min: Pyrite>>	176.50	178.00	1.50	B00292357	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 170.4 - 172.9 Moderate Calcite>>	178.00	179.50	1.50	B00292358	-0.005	-0.3	-0.01	-0.01	0.01
		<<Alt: 170.4 - 173.8 Moderate Chlorite>> Local bands of massive CL	207.60	209.00	1.40	B00292359	0.005	0.5	-0.01	-0.01	0.01
		<<Alt: 170.4 - 173.8 Weak-Moderate Biotite>> Disseminated BI porphyroblasts. Associated with hydrothermal alteration??	209.00	210.25	1.25	B00292361	0.005	0.6	-0.01	-0.01	-0.01
		<<Alt: 173.8 - 180 Weak Calcite>>	210.25	211.50	1.25	B00292362	-0.005	0.5	-0.01	0.01	0.01
		<<Alt: 180 - 187.5 Weak Calcite>>	211.50	212.75	1.25	B00292363	0.007	1.2	-0.01	0.01	-0.01
		<<Alt: 187.5 - 195.3 Weak-Moderate Calcite>>	212.75	214.00	1.25	B00292364	0.01	1.1	-0.01	-0.01	-0.01
		<<Alt: 195.3 - 210.6 Moderate Calcite>> and as fracture veinlets	214.00	215.25	1.25	B00292365	0.01	0.8	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 210.6 - 217.6 Strong Calcite>> diss, blebs, bands and veinlets			215.25	216.50	1.25	B00292366	0.011	2.4	-0.01	-0.01	0.02
<<Alt: 214.8 - 217.6 Weak Chlorite>>			216.50	217.60	1.10	B00292367	0.013	3.1	-0.01	-0.01	0.02
<<Alt: 217.13 - 217.6 Weak Biotite>>											
<<Vein: 172.4 - 172.8 40% Calcite>> Blebby CA veins											
<<Vein: 181.15 - 181.19 100% Quartz-Carbonate 20 deg. >>											
<<Vein: 196 - 199.5 5% Calcite 5 deg. >>											
<<Vein: 210.34 - 216.8 5% Calcite 75 deg. >>											
<<Vein: 216.8 - 217.6 10% Calcite 65 deg. >>											
<<Struc: 171.68 - 171.69 Weak-Moderate dominant foliation>>											
<<Struc: 179.34 - 179.35 Moderate dominant foliation>>											
<<Struc: 183 - 184 Moderate dominant foliation>>											
<<Struc: 186 - 187.5 Moderate dominant foliation>>											
<<Struc: 193 - 195 Moderate dominant foliation>>											
<<Struc: 195.95 - 196.1 Moderate Vein>>											
<<Struc: 213 - 214 Moderate Foliation>>											
217.60	**224.30**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	217.60	218.60	1.00	B00292368	1.02	102	0.32	1.44	5.62
217.6 - 224.3: OB unit with variable sulfide - gangue content. 218.65-218.88m DMG is up to 10%. 220.44-224.00m, unit is almost OK as barely 50% sulfide and calcite gangue is 15+%. Mostly well foliated - mineral banding. Barite not observed but looks like it should be present. 219.8-219.9: irregular calcite vein with blebs diss sp and cp. 224.0-224.3: more massive OB.											
<<Min: 217.6 - 218.65 5% Min: Magnetite>>			218.60	219.45	0.85	B00292369	2.08	219	1.54	2.96	10.7
<<Min: 217.6 - 219.45 5% Min: Sphalerite>>			219.45	220.44	0.99						
<<Min: 217.6 - 219.45 60% Min: Pyrite>>			220.44	221.50	1.06	B00292373	2.24	229	0.53	2.58	7.39
<<Min: 218.65 - 218.88 10% Min: Magnetite>>			221.50	222.50	1.00	B00292374	1.03	132	0.18	2.57	7.03
<<Min: 218.88 - 219.45 5% Min: Magnetite>>			222.50	223.50	1.00	B00292375	1.72	125	0.62	1.33	4.48
<<Min: 219.45 - 220.44 10% Min: Sphalerite>>			223.50	224.30	0.80	B00292376	1.03	222	0.08	5.07	8.19
<<Min: 219.45 - 220.44 50% Min: Pyrite>>											
<<Min: 219.45 - 220.44 5% Min: Magnetite>>											
<<Min: 219.45 - 220.44 2% Min: Chalcopyrite>>											
<<Min: 220.44 - 224 15% Min: Sphalerite>>											
<<Min: 220.44 - 224 40% Min: Pyrite>>											
<<Min: 220.44 - 224 5% Min: Magnetite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 224 - 224.3 20% Min: Sphalerite>>											
<<Min: 224 - 224.3 3% Min: Pyrrhotite>>											
<<Min: 224 - 224.3 5% Min: Chalcopyrite>>											
<<Alt: 217.6 - 221 Trace Chlorite>>											
<<Alt: 217.6 - 223.8 Strong Calcite>> and as diss, and disrupted bands.											
<<Alt: 221 - 221.95 Weak Chlorite>>											
<<Alt: 223.8 - 225.72 Trace Calcite>>											
<<Struc: 217.6 - 217.65 Moderate Contact>>											
<<Struc: 217.65 - 217.85 Moderate Foliation>> mineral banding											
<<Struc: 219 - 219.75 Moderate Foliation>> mineral banding											
<<Struc: 221 - 222 Moderate Foliation>> mineral banding											
<<Struc: 222.9 - 223.2 Moderate Foliation>> mineral banding											
224.30	**224.98**	**OC** **Chalcopyrite-pyrrhotite net textured sulphides**	224.30	224.98	0.68	B00292377	3.11	477	4.43	7.22	22.6
224.3 - 224.98: Mostly sp and cpy, doesn't have good net texture.											
<<Min: 224.3 - 224.98 30% Min: Sphalerite>>											
<<Min: 224.3 - 224.98 5% Min: Pyrite>>											
<<Min: 224.3 - 224.98 10% Min: Pyrrhotite>>											
<<Min: 224.3 - 224.98 1% Min: Magnetite>>											
<<Min: 224.3 - 224.98 25% Min: Chalcopyrite>>											
<<Struc: 224.95 - 225 Moderate Contact>> sharp contact											
224.98	**225.72**	**OI** **Heavilly disseminated sulphides in host schist**	224.98	225.72	0.74	B00292378	0.248	28.3	0.1	0.39	1.47
224.98 - 225.72: Dense fine grained rhyolite. Diss py, minor cordierite. Unit could be silicified MAFi in part. Sharp contacts.											
<<Min: 224.98 - 225.7 10% Min: Pyrite>>											
<<Min: 224.98 - 225.72 1% Min: Sphalerite>>											
<<Alt: 224.98 - 225.72 Weak Cordierite>>											
<<Struc: 225.3 - 225.42 Fault>>											
<<Struc: 225.65 - 225.75 Moderate Contact>> sharp contact defined by biotite alteration											
225.72	**245.46**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	225.72	227.00	1.28	B00292379	0.015	2.1	-0.01	0.03	0.05
<<Min: 225.72 - 231 0.5% Min: Pyrite>>			227.00	228.25	1.25	B00292381	0.024	2.8	-0.01	0.04	0.04

From (m)	To (m)	Rocktype & Description
		<<Min: 231 - 234.5 0.5% Min: Pyrrhotite>>
		<<Min: 234.5 - 242.6 0.5% Min: Pyrite>>
		<<Min: 242.6 - 245.46 1% Min: Pyrite>> coincides with increase in calcite.
		<<Alt: 225.72 - 226.1 Moderate Biotite>>
		<<Alt: 226.1 - 229.4 Moderate-Strong Calcite>> could be original
		<<Alt: 229.4 - 234.5 Weak-Moderate Calcite>>
		<<Alt: 234.5 - 242.4 Weak Calcite>>
		<<Alt: 242.4 - 245.46 Weak-Moderate Chlorite>>
		<<Alt: 242.4 - 245.46 Strong Calcite>> could be original
		<<Alt: 242.4 - 245.46 Trace Biotite>>
		<<Vein: 242.4 - 245.4 15% Calcite>> blebby CA veinlets
		<<Struc: 227.5 - 228 Moderate dominant foliation>>
		<<Struc: 231.58 - 232 Moderate dominant foliation>>
		<<Struc: 234 - 234.3 Moderate dominant foliation>>
		<<Struc: 235 - 236.5 Moderate dominant foliation>>
		<<Struc: 243 - 244 Moderate dominant foliation>>
		<<Struc: 245.45 - 245.47 Strong Contact>>
245.46	**246.46**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **MG**

245.46 - 246.46: Good OB with few blebs and cm size aggregates of barite. Lower 11 cm is coarse grained with diss magnetite.

<<Min: 245.46 - 246.46 15% Min: Sphalerite>> in mineral bands
<<Min: 245.46 - 246.46 60% Min: Pyrite>>
<<Min: 245.46 - 246.46 0.5% Min: Galena>>
<<Min: 245.46 - 246.46 10% Min: Barite>>
<<Min: 246.35 - 246.46 5% Min: Magnetite>>
<<Alt: 245.46 - 246.35 Trace Chlorite>>
<<Alt: 245.46 - 246.35 Moderate-Strong Calcite>>
<<Alt: 246.35 - 247.16 Strong Chlorite>>
<<Alt: 246.35 - 247.16 Weak Calcite>>
<<Struc: 246 - 246.35 Moderate-Strong Foliation>>
<<Struc: 246.45 - 246.47 Strong Foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
228.25	229.50	1.25	B00292382	0.012	2.7	-0.01	0.04	0.05
229.50	230.75	1.25	B00292383	0.011	2.3	-0.01	0.03	0.05
230.75	232.00	1.25	B00292384	-0.005	0.6	-0.01	0.01	0.02
232.00	233.25	1.25	B00292385	-0.005	0.3	-0.01	-0.01	0.01
233.25	234.50	1.25	B00292386	-0.005	0.4	-0.01	-0.01	0.02
234.50	235.75	1.25	B00292387	-0.005	0.4	-0.01	-0.01	0.02
235.75	237.00	1.25	B00292388	-0.005	0.3	-0.01	-0.01	0.02
237.00	238.25	1.25	B00292389	-0.005	0.5	-0.01	-0.01	0.02
238.25	239.50	1.25	B00292391	-0.005	-0.3	-0.01	-0.01	0.02
239.50	240.75	1.25	B00292392	0.011	0.8	-0.01	-0.01	0.02
240.75	242.00	1.25	B00292393	0.009	1.3	-0.01	0.01	0.03
242.00	243.25	1.25	B00292394	0.011	1.5	-0.01	0.02	0.03
243.25	244.50	1.25	B00292395	0.016	1.2	-0.01	0.02	0.03
244.50	245.46	0.96	B00292396	0.028	6.9	-0.01	0.1	0.05
245.46	246.46	1.00	B00292397	0.563	133	0.55	2.03	8.64

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
246.46	**247.16**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **CG**	246.46	247.16	0.70	B00292398	0.078	81.4	0.25	1.78	3.88
246.46 - 247.16: OJ unit includes 20 cm section of massive pyrrhotite and a 5cm band of sp-gn in dense chlorite. Sharp contacts											
<<Min: 246.46 - 246.66 1% Min: Pyrite>>											
<<Min: 246.46 - 247.16 10% Min: Sphalerite>> diss in bands											
<<Min: 246.46 - 247.16 30% Min: Pyrrhotite>> and as diss											
<<Min: 246.46 - 247.16 5% Min: Galena>> diss in bands											
<<Min: 247.1 - 247.84 1% Min: Pyrrhotite>>											
247.16	**250.51**	**RHY** **undifferentiated rhyolite**	247.16	247.84	0.68	B00292399	-0.005	0.5	0.02	-0.01	0.01
247.16 - 250.51: Silic bands. Unit includes qtz vein and shear - gougy zones but appears to be RHYcw unit.											
<<Min: 247.16 - 247.84 0.1% Min: Magnetite>>			247.84	249.00	1.16	B00292401	-0.005	1.1	0.01	-0.01	-0.01
<<Min: 247.84 - 249 1% Min: Pyrite>>			249.00	250.51	1.51	B00292402	0.005	-0.3	-0.01	-0.01	0.01
<<Min: 247.84 - 249 0.5% Min: Arsenopyrite>>											
<<Min: 249 - 250.51 0.5% Min: Arsenopyrite>> and in gouge											
<<Alt: 247.16 - 247.84 Strong Muscovite>>											
<<Alt: 247.16 - 254.4 Trace Calcite>>											
<<Alt: 249.4 - 250.9 Weak Biotite>>											
<<Alt: 249.5 - 250.51 Moderate Muscovite>> sericite, gougy RHY											
<<Vein: 247.84 - 249 90% Quartz-Carbonate>> Brecciated qtz - calcite vein with minor feldspar and 10cm of fault gouge.											
<<Struc: 248.17 - 248.27 Moderate-Strong Fault>> fault gouge											
<<Struc: 249 - 250.51 Strong Fault>> fault zone, sheared and gougy rhyolite											
250.51	**266.71**	**RHYvl** **Lapilli tuff**	250.51	252.00	1.49	B00292403	0.007	-0.3	-0.01	-0.01	-0.01
250.51 - 266.71: Locally bleached and sericite altered, minor <10cm thick pelite bands +/- weak chlorite alteration. Cross cut by high angle tourmaline - qtz veinlets with bleached envelopes and traces of diss tourmaline bellow 254m.											
<<Min: 250.51 - 254.1 1% Min: Pyrrhotite>>			252.00	253.25	1.25	B00292404	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 254.1 - 259 3% Min: Pyrrhotite>>			253.25	254.60	1.35	B00292405	-0.005	-0.3	-0.01	-0.01	-0.01
<<Min: 259 - 286.39 2% Min: Pyrite>>			254.60	256.00	1.40	B00292406	-0.005	-0.3	-0.01	-0.01	-0.01
<<Min: 259 - 286.39 2% Min: Pyrrhotite>>			256.00	257.25	1.25	B00292407	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 250.51 - 266.71 Weak Muscovite>> weakly bleached, Mu - sericite on partings											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 254.4 - 263 Weak-Moderate Calcite>> pelite bands are most calcareous

<<Alt: 263 - 266.71 Trace Calcite>>

<<Vein: 253.9 - 254.1 10% Quartz-Tourmaline>> qtz - tour flooding

<<Vein: 256.2 - 256.6 5% Quartz-Tourmaline 10 deg. >>

<<Struc: 257.7 - 260.4 Moderate dominant foliation>>

<<Struc: 262.3 - 263.84 Weak Fault>> brokn core, minor shear zones with gouge

<<Struc: 263.84 - 264.5 Moderate-Strong Fault>>

<<Struc: 264.5 - 266.71 Weak Fault>> broken core

266.71 274.49 RHYvl Lapilli tuff

266.71 - 274.49: Crosscut by minor tourmaline veinlets, unit has trace diss tourmaline.

<<Alt: 266.71 - 272.43 Moderate-Strong Calcite>>

<<Alt: 266.71 - 274.49 Weak-Moderate Chlorite>>

<<Alt: 266.71 - 274.49 Weak-Moderate Biotite>>

<<Alt: 272.43 - 274.49 Weak Calcite>>

274.49 286.39 RHYvl Lapilli tuff

274.49 - 286.39: 273-274.5; weak pinkish biotitealteration, remnants of BCQlpl alteration. Tourmaline veins and diss tourmaline.

<<Alt: 274.49 - 286.39 Weak-Moderate Calcite>> tourmaline veined are non-calcareous to trace calcite while sections with remnant BCQlpl alteration are moderately calcareous.

<<Alt: 274.49 - 296 Trace Chlorite>>

<<Alt: 274.49 - 296 Weak Biotite>>

<<Vein: 278.8 - 279.6 5% Quartz-Tourmaline 5 deg. >>

<<Struc: 278.8 - 279.7 Moderate Vein>> qtz-tourmaline vein

286.39 290.66 RHYcw Curdy textured-flow banded (flows, subvolcanics)

286.39 - 290.66: unit is bleached and contains a series of narrow fault zones and a 29cm qtz vein.

<<Min: 286.39 - 290.66 1% Min: Pyrite>>

<<Min: 286.39 - 290.66 0.05% Min: Pyrrhotite>>

<<Alt: 286.39 - 290.66 Moderate Muscovite>> is it overprint?

<<Alt: 286.39 - 290.66 Trace Calcite>>

<<Vein: 290.09 - 290.38 100% Quartz-Albite>>

<<Struc: 288.45 - 289.55 Moderate Fault>> gougy sheared bleached sericite altered rhy

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 290 - 290.66 Weak Fault>> broken core, two <5cm minor gouge zones.

290.66 303.72 RHYvl Lapilli tuff

290.66 - 303.72: weak BCQlpl alteration

<<Min: 290.66 - 303.72 1% Min: Pyrite>>
<<Min: 290.66 - 303.72 3% Min: Pyrrhotite>>
<<Alt: 290.66 - 293.4 Trace Calcite>>
<<Alt: 293.4 - 296 Weak Calcite>>
<<Alt: 296 - 303.4 Weak Chlorite>>
<<Alt: 296 - 303.4 Weak Biotite>>
<<Alt: 296 - 308 Trace Calcite>>
<<Alt: 303.4 - 320.88 Weak-Moderate Chlorite>>
<<Alt: 303.4 - 320.88 Weak-Moderate Biotite>>
<<Vein: 297.25 - 297.45 100% Quartz-Albite>>
<<Struc: 296.5 - 297 Moderate dominant foliation>>
<<Struc: 300 - 300.2 Moderate dominant foliation>>

303.72 305.92 RHYvl Lapilli tuff

303.72 - 305.92: Bleached, seicite clay altered, silicic bands, cut by thin (<5cm) clay gouge zones.

<<Min: 303.72 - 306.92 2% Min: Pyrite>>
<<Min: 303.72 - 306.92 2% Min: Pyrrhotite>>
<<Alt: 303.72 - 306.92 Weak Muscovite>>
<<Struc: 305.8 - 306.92 Weak Fault>> broken core, crushed rhyolite

305.92 320.88 RHYvl Lapilli tuff

<<Min: 306.92 - 320.88 2% Min: Pyrrhotite>>
<<Min: 306.92 - 348 0.1% Min: Pyrite>>
<<Alt: 308 - 320 Weak Calcite>>
<<Alt: 320 - 348 Trace Calcite>>
<<Struc: 308.5 - 308.8 Moderate dominant foliation>>
<<Struc: 317.8 - 318 Weak-Moderate dominant foliation>>

320.88 348.00 RHYvl Lapilli tuff

320.88 - 348: locally remnant BCQlpl alteration. 341.37-342.32 m: silicic bands, almost a RHYcw.

<<Min: 320.88 - 348 1% Min: Pyrrhotite>>

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-358

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 320.88 - 330.6 Trace Chlorite>>									
		<<Alt: 320.88 - 330.6 Trace Biotite>>									
		<<Alt: 330.6 - 335.1 Weak-Moderate Chlorite>>									
		<<Alt: 335.1 - 348 Weak Muscovite>> fine grained muscovite and sericite on partings									
		<<Alt: 335.1 - 348 Trace Chlorite>>									
		<<Vein: 329.8 - 329.95 100% Quartz-Albite>>									
		<<Vein: 344.2 - 344.4 100% Quartz-Chlorite>>									
		<<Struc: 327.5 - 327.95 Moderate dominant foliation>>									
		<<Struc: 334.8 - 336 Weak Fault>> broken core, minor gouge on breaks									
		<<Struc: 343 - 343.5 Weak Fault>> broken core, crushed rhyolite									
		End of Hole @ 348									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-359

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/7/2016
UTM Easting	415212.221	Core Size:	HQ3	Azimuth:	179.9	Date Logging Complete:	6/13/2016
UTM Northing:	6815283.597	Casing Pulled?:	Yes	Dip:	-73.34	Drill Company:	Hytech
UTM Elev. (m):	1426.484	Casing Depth (m):	12	Length (m):	390	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/6/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/11/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

Collared to test the inferred portion of Krakatoa Main lens 50 m down-dip of K15-297.
The top of the hole K16-359 consists in Wind Lake formations characterized by calcareous graphitic mudstone and mafic tuff interlayered. The contact with KZK formations lays at 48.40m. From 48.80m to 258.00m the lithology in made up of coherent and volcaniclastic rhyolite with local pelitic content. A fault zone is observed from 188.70m to 191,10m.
Several massive sulfide lens containing PY/SP/GL/MG/CP are intercepted from 249.10m to 267.86m (upper lens) for a total of 10.67m of OB and OI domains. Muscovite alteration increases progressively on top of the mineralization.
The mafic sill is encountered right underneath the first mineralized zone. The lower (main?) lens-OB/OA/OF domains- is intercepted at 339.90m at contact with volcaniclastic rhyolite muscovite altered.
Hole K16-359 ends at 390.00m in sedimentary unit containing cordierite.
The lower/main lens is not well developed (1.77m thick).

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-73.1	178.5	1.4	179.9	TN14	Jerome de Pasquale	6/6/2016		☑	Azimuth aligned drill tower at dip 50 degrees.
5	-73.51111	178.94806	1.4	180.34806	Gyro	Jerome de Pasquale	6/11/2016		☑	100
10	-73.65057	178.10088	1.4	179.50088	Gyro	Jerome de Pasquale	6/11/2016		☑	99.9177668820109
15	-73.72142	177.41383	1.4	178.81383	Gyro	Jerome de Pasquale	6/11/2016		☑	100
20	-73.67067	176.93422	1.4	178.33422	Gyro	Jerome de Pasquale	6/11/2016		☑	100
21	-73.9	156.2	22.1	178.3	ReflexEZS	Hytech	6/7/2016	5817	☐	
25	-73.69404	176.59053	1.4	177.99053	Gyro	Jerome de Pasquale	6/11/2016		☑	100
30	-73.66147	176.45634	1.4	177.85634	Gyro	Jerome de Pasquale	6/11/2016		☑	100
35	-73.59432	176.63902	1.4	178.03902	Gyro	Jerome de Pasquale	6/11/2016		☑	100
40	-73.43109	176.85301	1.4	178.25301	Gyro	Jerome de Pasquale	6/11/2016		☑	100
45	-73.33458	177.12821	1.4	178.52821	Gyro	Jerome de Pasquale	6/11/2016		☑	100
45.01	-73.2	155.9	22.1	178	ReflexEZS	Hytech	6/7/2016	5780	☐	
50	-73.24894	177.22921	1.4	178.62921	Gyro	Jerome de Pasquale	6/11/2016		☑	100
55	-73.14314	177.69788	1.4	179.09788	Gyro	Jerome de Pasquale	6/11/2016		☑	100
60	-73.11675	177.82345	1.4	179.22345	Gyro	Jerome de Pasquale	6/11/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-359

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
65	-72.87544	177.80391	1.4	179.20391	Gyro	Jerome de Pasquale	6/11/2016		☑	100
69	-73	157.6	22.1	179.7	ReflexEZS	Hytech	6/7/2016	5797	☐	
70	-72.73578	177.89199	1.4	179.29199	Gyro	Jerome de Pasquale	6/11/2016		☑	100
75	-72.52484	177.91855	1.4	179.31855	Gyro	Jerome de Pasquale	6/11/2016		☑	100
80	-72.41681	178.22276	1.4	179.62276	Gyro	Jerome de Pasquale	6/11/2016		☑	100
85	-72.2345	178.6799	1.4	180.0799	Gyro	Jerome de Pasquale	6/11/2016		☑	100
90	-72.08768	178.87353	1.4	180.27353	Gyro	Jerome de Pasquale	6/11/2016		☑	100
93	-71.9	159.9	22.1	182	ReflexEZS	Hytech	6/8/2016	5805	☐	
95	-71.79824	179.18688	1.4	180.58688	Gyro	Jerome de Pasquale	6/11/2016		☑	100
100	-71.50698	179.35462	1.4	180.75462	Gyro	Jerome de Pasquale	6/11/2016		☑	100
105	-71.4104	179.7522	1.4	181.1522	Gyro	Jerome de Pasquale	6/11/2016		☑	100
110	-71.13265	179.4833	1.4	180.8833	Gyro	Jerome de Pasquale	6/11/2016		☑	100
115	-71.03424	179.9392	1.4	181.3392	Gyro	Jerome de Pasquale	6/11/2016		☑	100
117	-70.9	160.1	22.1	182.2	ReflexEZS	Hytech	6/8/2016	5727	☐	
120	-70.9154	180.00041	1.4	181.40041	Gyro	Jerome de Pasquale	6/11/2016		☑	100
125	-70.73623	180.22426	1.4	181.62426	Gyro	Jerome de Pasquale	6/11/2016		☑	100
130	-70.57397	180.46067	1.4	181.86067	Gyro	Jerome de Pasquale	6/11/2016		☑	100
135	-70.46716	180.92541	1.4	182.32541	Gyro	Jerome de Pasquale	6/11/2016		☑	100
140	-70.47583	181.03079	1.4	182.43079	Gyro	Jerome de Pasquale	6/11/2016		☑	100
141	-70.4	161.8	22.1	183.9	ReflexEZS	Hytech	6/8/2016	5771	☐	
145	-70.42002	181.32977	1.4	182.72977	Gyro	Jerome de Pasquale	6/11/2016		☑	100
150	-70.40023	181.50608	1.4	182.90608	Gyro	Jerome de Pasquale	6/11/2016		☑	100
155	-70.43842	181.59883	1.4	182.99883	Gyro	Jerome de Pasquale	6/11/2016		☑	100
160	-70.35523	181.65996	1.4	183.05996	Gyro	Jerome de Pasquale	6/11/2016		☑	100
165	-70.26472	181.61311	1.4	183.01311	Gyro	Jerome de Pasquale	6/11/2016		☑	100
165.01	-70.3	161.2	22.1	183.3	ReflexEZS	Hytech	6/8/2016	5767	☐	
170	-70.17835	181.60631	1.4	183.00631	Gyro	Jerome de Pasquale	6/11/2016		☑	100
175	-70.03269	181.6927	1.4	183.0927	Gyro	Jerome de Pasquale	6/11/2016		☑	100
180	-69.95957	182.05332	1.4	183.45332	Gyro	Jerome de Pasquale	6/11/2016		☑	100
185	-69.87251	182.08752	1.4	183.48752	Gyro	Jerome de Pasquale	6/11/2016		☑	100
189	-69.9	163.2	22.1	185.3	ReflexEZS	Hytech	6/8/2016	5768	☐	
190	-69.80194	182.38637	1.4	183.78637	Gyro	Jerome de Pasquale	6/11/2016		☑	100
195	-69.84523	182.48447	1.4	183.88447	Gyro	Jerome de Pasquale	6/11/2016		☑	100
200	-69.68517	182.59199	1.4	183.99199	Gyro	Jerome de Pasquale	6/11/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-359

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
205	-69.43388	182.63771	1.4	184.03771	Gyro	Jerome de Pasquale	6/11/2016		☑	100
210	-69.20296	183.24459	1.4	184.64459	Gyro	Jerome de Pasquale	6/11/2016		☑	100
213	-69	162.9	22.1	185	ReflexEZS	Hytech	6/10/2016	5799	☐	
215	-69.11695	183.53094	1.4	184.93094	Gyro	Jerome de Pasquale	6/11/2016		☑	100
220	-68.99965	183.71911	1.4	185.11911	Gyro	Jerome de Pasquale	6/11/2016		☑	100
225	-68.83762	184.15169	1.4	185.55169	Gyro	Jerome de Pasquale	6/11/2016		☑	100
230	-68.73961	184.43899	1.4	185.83899	Gyro	Jerome de Pasquale	6/11/2016		☑	100
235	-68.73082	184.58364	1.4	185.98364	Gyro	Jerome de Pasquale	6/11/2016		☑	100
237	-68.6	164.4	22.1	186.5	ReflexEZS	Hytech	6/9/2016	5774	☐	
240	-68.61361	184.79071	1.4	186.19071	Gyro	Jerome de Pasquale	6/11/2016		☑	100
245	-68.52097	185.02412	1.4	186.42412	Gyro	Jerome de Pasquale	6/11/2016		☑	100
250	-68.38074	185.31434	1.4	186.71434	Gyro	Jerome de Pasquale	6/11/2016		☑	100
255	-68.29871	185.53292	1.4	186.93292	Gyro	Jerome de Pasquale	6/11/2016		☑	100
260	-68.32125	185.81177	1.4	187.21177	Gyro	Jerome de Pasquale	6/11/2016		☑	100
261	-68.3	167	22.1	189.1	ReflexEZS	Hytech	6/9/2016	5782	☐	
265	-68.31807	185.63825	1.4	187.03825	Gyro	Jerome de Pasquale	6/11/2016		☑	100
270	-68.33599	185.75232	1.4	187.15232	Gyro	Jerome de Pasquale	6/11/2016		☑	100
275	-68.31511	185.96755	1.4	187.36755	Gyro	Jerome de Pasquale	6/11/2016		☑	100
280	-68.29205	186.2702	1.4	187.6702	Gyro	Jerome de Pasquale	6/11/2016		☑	100
285	-68.28409	186.70979	1.4	188.10979	Gyro	Jerome de Pasquale	6/11/2016		☑	100
285.01	-68.3	166.2	22.1	188.3	ReflexEZS	Hytech	6/10/2016	5775	☐	
290	-68.25752	187.0353	1.4	188.4353	Gyro	Jerome de Pasquale	6/11/2016		☑	100
295	-68.27978	187.33105	1.4	188.73105	Gyro	Jerome de Pasquale	6/11/2016		☑	100
300	-68.22068	187.7415	1.4	189.1415	Gyro	Jerome de Pasquale	6/11/2016		☑	100
305	-68.16649	187.6851	1.4	189.0851	Gyro	Jerome de Pasquale	6/11/2016		☑	100
309	-68.2	167.1	22.1	189.2	ReflexEZS	Hytech	6/10/2016	5776	☐	
310	-68.17156	188.16388	1.4	189.56388	Gyro	Jerome de Pasquale	6/11/2016		☑	100
315	-68.1618	188.3509	1.4	189.7509	Gyro	Jerome de Pasquale	6/11/2016		☑	100
320	-68.10408	188.66502	1.4	190.06502	Gyro	Jerome de Pasquale	6/11/2016		☑	100
325	-68.03179	188.92841	1.4	190.32841	Gyro	Jerome de Pasquale	6/11/2016		☑	100
330	-67.97321	189.23269	1.4	190.63269	Gyro	Jerome de Pasquale	6/11/2016		☑	100
333	-67.9	169	22.1	191.1	ReflexEZS	Hytech	6/10/2016	5774	☐	
335	-67.97843	189.32109	1.4	190.72109	Gyro	Jerome de Pasquale	6/11/2016		☑	100
340	-67.99351	189.82274	1.4	191.22274	Gyro	Jerome de Pasquale	6/11/2016		☑	100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
345	-68.03153	189.92109	1.4	191.32109	Gyro	Jerome de Pasquale	6/11/2016		☑	100
350	-68.06492	190.40931	1.4	191.80931	Gyro	Jerome de Pasquale	6/11/2016		☑	100
355	-67.90064	191.03177	1.4	192.43177	Gyro	Jerome de Pasquale	6/11/2016		☑	100
357	-67.8	170.7	22.1	192.8	ReflexEZS	Hytech	6/10/2016	5793	☐	
360	-67.77592	191.47196	1.4	192.87196	Gyro	Jerome de Pasquale	6/11/2016		☑	100
365	-67.51655	191.95031	1.4	193.35031	Gyro	Jerome de Pasquale	6/11/2016		☑	100
370	-67.35604	192.42938	1.4	193.82938	Gyro	Jerome de Pasquale	6/11/2016		☑	100
375	-67.14834	192.65551	1.4	194.05551	Gyro	Jerome de Pasquale	6/11/2016		☑	100
380	-66.99247	192.91314	1.4	194.31314	Gyro	Jerome de Pasquale	6/11/2016		☑	100
381	-66.8	169.3	22.1	191.4	ReflexEZS	Hytech	6/11/2016	5759	☐	
389.9	-64.4	172.2	22.1	194.3	ReflexEZS	Hytech	6/11/2016	5777	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 12.00 OVBN Overburden

12.00 21.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

12 - 21.1: Dark blue, fine grain, wavy CA veining. Calcareous graphitic mudstone. Thin foliation. QZ/CA veins.

<<Min: 12 - 80.7 1% Min: Pyrrhotite>> Along the foliation in MAFt.

<<Alt: 12 - 43.67 Moderate Calcite>> And veining. Locally strong in SED and weak in MAFt units.

<<Struc: 21 - 21.01 dominant foliation>>

21.10 22.12 MAFta Coarse grained to ash tuff

21.1 - 22.12: Calcareous mafic tuff, fine grain, light green, CA in foliation, elongated PO, sharp contacts. QZ/CA veins.

22.12 24.34 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

22.12 - 24.34: Dark blue, fine grain, wavy CA veining. Calcareous graphitic mudstone. Thin foliation. QZ/CA veins and pods. Locally silica banded.

<<Struc: 23 - 23.01 dominant foliation>>

24.34 27.03 MAFta Coarse grained to ash tuff

24.34 - 27.03: Calcareous mafic tuff, fine grain, light green, CA in foliation, elongated PO, sharp contacts.

<<Struc: 26.6 - 26.61 dominant foliation>> CA veinlets in foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

27.03 34.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

27.03 - 34: Dark blue, fine grain, wavy CA veining. Calcareous graphitic mudstone. Thin foliation. Locally strongly graphitic.

<<Struc: 32.7 - 32.71 Contact>> Contact mudstone/mafic tuff bed (dominant foliation?).

34.00 36.23 CHT Chert

34 - 36.23: Light green, silicified, banded.

36.23 41.64 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

36.23 - 41.64: Dark blue, wavy CA bands. Calcareous wacke from 37.66m to 38.00m, fine grain. QZ/CA veins. Silica/carbonaceous/CA bands, could be bedding.

<<Struc: 36.85 - 36.86 dominant foliation>>

<<Struc: 37.45 - 37.46 dominant foliation>>

41.64 42.87 SEDc calcareous Sediment

41.64 - 42.87: Banded brown biotite/CA/MU. Sharp lower contact marked by QZ vein and muscovite patch.

<<Min: 41.9 - 80.7 0.1% Min: Pyrite>>

<<Struc: 41.71 - 41.72 dominant foliation>>

42.87 43.67 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

42.87 - 43.67: Wavy, crenulated CA veining. Dark blue, fine grain.

43.67 48.40 MAFt Mafic Volcaniclastics

43.67 - 48.4: Containing 30% of carbonaceous material. Singular CL altered pod showing pillow style structure, thinly laminated, SI veinlets/PY, possibly fold nose.

<<Alt: 43.67 - 80.7 Weak-Moderate Calcite>> Strong in narrow SED bands.

<<Struc: 46.7 - 46.71 dominant foliation>>

48.40 57.90 RHYva Coarse grained to ash tuff

48.4 - 57.9: Unit showing contact between Wind Lake and KZK formation marked by large massive QZ vein (bout 3.00m wide) at upper contact and faulted at lower contact. Mix of MAFt and RHYva (intermediated composition, low silica content). QZ/ferrocarbonate/sulfide veins.

<<Vein: 48.8 - 51.8 Quartz>> Massive QZ vein at contact between Wind Lake and KZK formations. Containing TML/PO/PY, vuggy.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 52.43 - 52.44 dominant foliation>>

<<Struc: 55 - 57.5 Moderate Fault>>

57.90 78.11 RHYva Coarse grained to ash tuff

57.9 - 78.11: Blue/grey, probably biotite rich, epiclastic sediments. Intermediate composition ash tuff. Locally mixed with narrow SEDc layers (banded, BI/CA/MU). Possibly amygdules locally. Low silica content, foliated. Rare carbonaceous bands, could be interpreted as MDSt.

<<Struc: 61.28 - 61.29 dominant foliation>>

<<Struc: 62.97 - 62.98 dominant foliation>>

<<Struc: 64.46 - 64.47 dominant foliation>>

<<Struc: 75.74 - 75.75 dominant foliation>>

78.11 80.70 RHYvl Lapilli tuff

78.11 - 80.7: Blue/grey, locally BI or carbonaceous in foliation. Mid strain.BI content decreases downhole. Locally brecciated texture associated with weak shearing.

<<Struc: 78.82 - 78.83 dominant foliation>>

80.70 93.07 RHYi Aphanitic Rhyolite (intrusion)

80.7 - 93.07: Aphanitic, beige/grey unit containing elongated pebble size clasts, fractured. Marked by a large massive QZ vein at upper contact.

<<Min: 82.9 - 93.07 2% Min: Pyrite>> In RHYi.

<<Min: 82.9 - 93.07 0.1% Min: Pyrrhotite>> In RHYi.

<<Alt: 80.7 - 93.07 Trace Calcite>>

<<Vein: 80.7 - 80.9 Quartz>> Massive QZ vein at RHYi upper contact.

<<Struc: 86.55 - 86.56 Vein>> PY veinlets in RHYi.

<<Struc: 88.4 - 89.5 Weak-Moderate Shear>> Brecciated, in RHYi. Angle of the main fracture set.

93.07 99.17 RHYvl Lapilli tuff

93.07 - 99.17: Light grey, mid strain, narrow gouge zone, BI content increases at lower downhole.

<<Min: 93.07 - 145.15 0.1% Min: Pyrite>>

<<Min: 93.07 - 145.15 1% Min: Pyrrhotite>> Concentrated in fine grain, contact with ash/pelite and few veinlets.

<<Alt: 93.07 - 141.43 Weak-Moderate Calcite>> Lapilli replacement and veining.

<<Struc: 93.4 - 93.41 dominant foliation>>

99.17 103.28 RHY undifferentiated rhyolite

99.17 - 103.28: Silicic bands and weak curdy texture locally to unfoliated. Light grey,

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

103.28 103.75 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

103.28 - 103.75: Mafic dike. Sharp contacts, medium to coarse grain, finer on the edge, BI/MU/AK.

103.75 107.02 RHYv Rhyolite volcaniclastic

103.75 - 107.02: Containing few BI. Light grey , foliated, some silicic bands locally, fine grain homogeneous groundmass at upper contact, clastic at lower contact.

<<Struc: 105.1 - 105.11 dominant foliation>>

107.02 108.68 PEL Equigranular biotite + calcite +/- quartz rock

107.02 - 108.68: Dark grey to black, fine grain BI, thin foliation, CA veinlets, gradual contact with ash layer interbedded.

108.68 111.45 RHYvl Lapilli tuff

108.68 - 111.45: Possibly xtl, subangular clasts. Could be low strained lapilli. Heterogeneous, ash a upper contact, fine grain at lower contact. Light grey.

111.45 113.00 PEL Equigranular biotite + calcite +/- quartz rock

111.45 - 113: Pelitic material content increases downhole. Fine grain BI, speck of ferrocarbonate mineral, gradual contacts.

<<Struc: 112.8 - 112.81 >>

113.00 113.68 RHYva Coarse grained to ash tuff

113 - 113.68: Ash tuff, light grey containing few BI, homogeneous, light grey.

113.68 118.03 PEL Equigranular biotite + calcite +/- quartz rock

113.68 - 118.03: Fie to medium grain, heterogeneous. Dark grey to black. Two foliation observed. PY and CA content.

118.03 120.49 PEL Equigranular biotite + calcite +/- quartz rock

118.03 - 120.49: Biotite rich, containing 40 % of ash mixed.

120.49 124.85 RHYva Coarse grained to ash tuff

120.49 - 124.85: Biotite rich, coarse grain on the edge, fading out at lower contact., Fine grain groundmass.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

124.85 128.49 RHYvl Lapilli tuff

124.85 - 128.49: Light gray, mid strain, CA replacing lapilli, specks of BI in fine grain (ash) groundmass.

128.49 134.11 RHYc Rhyolite coherant volcanics

128.49 - 134.11: Heterogeneous unit, grey/gray, MU altered, locally flow banded.

<<Alt: 128.49 - 134.11 Moderate Muscovite>>

134.11 141.43 RHYcw Curdy textured-flow banded (flows, subvolcanics)

134.11 - 141.43: Strongly siliceous, containing massive QZ veins consisting in 20% of the unit. Light green groundmass altered MU. PY/PO in fracture.

<<Alt: 134.11 - 141.43 Moderate-Strong Muscovite>>

<<Vein: 137.8 - 140 Quartz>> Multiple massive QZ veins consisting in 70% of the interval crosscutting rhyolite flow.

141.43 142.98 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

141.43 - 142.98: Calcareous, fine grain on the edge, sharp upper and lower contacts (QZ vein).Grey to black in its center, possibly amygdules. CA banded.

<<Alt: 141.43 - 142.98 Strong Calcite>> Mafic dike.

142.98 146.90 RHYcw Curdy textured-flow banded (flows, subvolcanics)

From (m)	To (m)	Width
144.00	145.00	1.00

142.98 - 146.9: Locally CL altered, MU altered, greenish to yellow, PY/PO in fracture.

<<Min: 145.15 - 146.64 2% Min: Pyrite>>

From (m)	To (m)	Width
145.00	146.00	1.00

<<Min: 145.15 - 146.64 1% Min: Pyrrhotite>>

From (m)	To (m)	Width
146.00	146.90	0.90

<<Min: 146.64 - 184 0.5% Min: Pyrrhotite>> Fine grain, elongated.

<<Min: 146.64 - 188.7 0.1% Min: Pyrite>>

<<Alt: 142.98 - 143.5 Moderate-Strong Muscovite>>

<<Alt: 142.98 - 221 Weak-Moderate Calcite>> Lapilli replacement and veining.

<<Alt: 146.15 - 146.75 Moderate-Strong Chlorite>>

146.90 149.69 RHYc Rhyolite coherant volcanics

From (m)	To (m)	Width
146.90	148.00	1.10

146.9 - 149.69: Large SI/feldspar (?) bands (1 to 2cm wide), Fractured, PY/PO infill. Possibly rhyolite dome.

From (m)	To (m)	Width
148.00	149.00	1.00

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

149.69 153.92 RHYcw Curdy textured-flow banded (flows, subvolcanics)

149.69 - 153.92: Silicic bands, altered MU, light green, heterogeneous. Dark PY/QZ wavy clots, patchy RHYcw interlayered.

153.92 160.54 RHYvl Lapilli tuff

153.92 - 160.54: Light grey, low to mid strain lapilli, patchy CA in fine grain, light gray layers (possibly mud) containing fine elongated PO. Locally secondary foliation/pseudo fragmental (?).Upper contact marked by dramatic MU alteration decreasing.

<<Alt: 153.92 - 173.1 Moderate Muscovite>>

<<Struc: 155.3 - 155.75 Weak Shear>>

160.54 164.24 RHYva Coarse grained to ash tuff

160.54 - 164.24: Light grey, large lapilli up to 4 cm wide/silica rich, mid strain.

164.24 173.10 RHYva Coarse grained to ash tuff

164.24 - 173.1: Light grey/heterogeneous, low to mid strain, wavy dark QZ/PY clots/patch concentrated at lower contact.

173.10 174.53 RHYva Coarse grained to ash tuff

173.1 - 174.53: Low CL content. Mid strain, grey/banded. Mixed with ash. Medium to large lapilli.

174.53 178.76 RHYva Coarse grained to ash tuff

174.53 - 178.76: Heterogeneous texture, dominantly ash (fine grain/light grey). Some PY/QZ dark patch. Rare QE.

178.76 181.15 RHYvl Lapilli tuff

178.76 - 181.15: Low CL content.

<<Struc: 180.09 - 180.1 dominant foliation>>

181.15 184.77 RHYvl Lapilli tuff

181.15 - 184.77: Light grey, low lapilli content, fine grain groundmass.

184.77 185.88 RHYva Coarse grained to ash tuff

184.77 - 185.88: Light grey, homogeneous, fine grain, planar foliation.

<<Struc: 185.65 - 185.66 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

185.88 188.70 RHYcw Curdy textured-flow banded (flows, subvolcanics)

185.88 - 188.7: Strong muscovite alteration, QZ veins at lower contact, wavy silica flow bands, gradual upper contact.

<<Alt: 185.88 - 190.56 Moderate-Strong Muscovite>>

188.70 190.10 FLZ Fault Zone

188.7 - 190.1: Fault breccia. Polylithic. QZ/rhyolite/PY clasts. MU alteration. Pinkish mineral associated, could be feldspar

<<Min: 188.7 - 190.1 1% Min: Pyrite>> Clasts in fault breccia.

<<Struc: 188.7 - 190.1 Moderate-Strong Fault>> Fault breccia containing PY/rhyolite/QZ clasts and moderate shearing.

190.10 191.92 RHYv Rhyolite volcaniclastic

190.1 - 191.92: Light grey, weak MU alteration. Possibly calcareous sediments or ash from 191 to 191,40m (maybe mafic dike).

<<Min: 190.1 - 195.3 0.1% Min: Pyrite>>

<<Alt: 190.56 - 202.4 Weak-Moderate Muscovite>>

191.92 193.30 RHY undifferentiated rhyolite

191.92 - 193.3: Faulted/sheared rhyolite, 40 cm of gouge.

<<Struc: 191.92 - 195.3 Moderate-Strong Fault>> Fault gouge over 40 cm, shearing in rhyolite unit.

193.30 213.75 RHYvl Lapilli tuff

193.3 - 213.75: Light grey, dark patch of PY/QZ (locally wavy, deformed along the foliation. Brecciated texture from 209.05m to 210.51m, sub angular clasts, weak CL alteration/weak shearing. Locally patch of BI/CL/QZ altered lapilli. Heterogeneous texture. Trace of late muscovite alteration in secondary foliation.

<<Min: 195.3 - 210 5% Min: Pyrite>> QZ/PY patch and disseminated.

<<Min: 195.3 - 236.65 2% Min: Pyrrhotite>> Fine grain, elongated along the foliation.

<<Min: 210 - 236.65 0.5% Min: Pyrite>>

<<Struc: 203.52 - 203.53 dominant foliation>>

<<Struc: 206.04 - 206.05 dominant foliation>>

213.75 221.14 RHYvl Lapilli tuff

213.75 - 221.14: Weak to moderate CL alteration. Mid strain.

<<Alt: 213.75 - 227.25 Moderate Chlorite>> Lapilli replacement.

<<Alt: 221 - 249.1 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
221.14	**227.25**	**RHYvl Lapilli tuff**									
221.14 - 227.25: Well marked foliation, high strain. Weak original muscovite alteration.											
<<Struc: 225 - 225.01 dominant foliation>>											
227.25	**229.34**	**RHY undifferentiated rhyolite**									
227.25 - 229.34: Dark blue, BI rich unit, possibly carbonaceous content. Gradual contacts. Foliation weakly crenulated											
229.34	**231.83**	**RHYc Rhyolite coherant volcanics**									
229.34 - 231.83: High silica content, sharp texture changing at lower contact.											
231.83	**236.65**	**RHYvl Lapilli tuff**									
231.83 - 236.65: Light grey, weak muscovite alteration, large massive QZ vein at lower contact.											
<<Vein: 236.06 - 236.65 Quartz>> Massive QZ vein, containing muscovite altered rhyolite. Mark the beginning of the original muscovite alteration as well as PO content drop down.											
<<Struc: 232.42 - 232.43 dominant foliation>>											
236.65	**239.69**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	239.00	239.69	0.69						
236.65 - 239.69: Strong muscovite alteration, large silica bands. PO content drop dramatically at upper contact.											
<<Min: 236.65 - 249.1 1% Min: Pyrite>>											
<<Alt: 236.65 - 243 Moderate Muscovite>>											
<<Struc: 237.57 - 237.58 dominant foliation>>											
<<Struc: 239.26 - 239.27 dominant foliation>>											
239.69	**249.10**	**RHYc Rhyolite coherant volcanics**	239.69	241.00	1.31						
239.69 - 249.1: Silicic bands. Possibly RHYcw as above. Strong muscovite alteration.											
<<Alt: 243 - 249.1 Moderate-Strong Muscovite>>			241.00	242.00	1.00						
			242.00	243.00	1.00						
			243.00	244.00	1.00						
			244.00	245.02	1.02	B00291621	0.012	0.3	-0.01	-0.01	-0.01
			245.02	246.02	1.00	B00291622	0.019	0.7	-0.01	-0.01	-0.01
			246.02	247.00	0.98	B00291623	0.028	0.9	-0.01	-0.01	0.01
			247.00	248.03	1.03	B00291624	0.021	1.1	-0.01	-0.01	0.05
			248.03	249.10	1.07	B00291625	0.07	10.3	0.03	0.16	0.29

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
249.10	**252.75**	**OB FMG Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	249.10	250.04	0.94	B00291626	2.04	189	0.38	1.75	7.58
249.1 - 252.75: CA in groundmass. QZ/CL vein at upper contact, QZ vein at lower contact. Coarser grain and more gangue downhole as well as MU bands, CP associated with QZ/CA (remobilization)											
<<Min: 249.1 - 252.75 10% Min: Sphalerite>>			250.04	251.02	0.98	B00291627	2.59	261	0.4	2.29	7.26
<<Min: 249.1 - 252.75 70% Min: Pyrite>>			251.02	252.04	1.02	B00291628	1.8	191	0.59	1.9	6.68
<<Min: 249.1 - 252.75 3% Min: Galena>>			252.04	252.75	0.71	B00291629	1.21	203	0.08	2.36	5.94
<<Min: 249.1 - 252.75 1% Min: Chalcopyrite>> Remobilized, associated with QZ/CA patch.											
<<Alt: 249.1 - 252.75 Moderate-Strong Calcite>> Massive sulfide.											
<<Struc: 249.3 - 249.31 Foliation>> SP lamination in MxSx.											
<<Struc: 249.85 - 249.86 Foliation>> SP lamination in MxSx.											
<<Struc: 252.45 - 252.46 Foliation>> Possibly remnant schistosity in MxSx.											
252.75	**255.00**	**RHYc Rhyolite coherant volcanics**	252.75	253.90	1.15	B00291631	0.072	11	0.02	-0.01	0.01
252.75 - 255: Silicic bands. Weak muscovite alteration.											
<<Min: 252.75 - 255 0.5% Min: Pyrite>>			253.90	255.00	1.10	B00291632	0.013	0.5	-0.01	-0.01	-0.01
<<Alt: 252.75 - 258 Moderate Muscovite>>											
<<Alt: 252.75 - 258 Weak Calcite>>											
<<Struc: 253.38 - 253.39 dominant foliation>>											
255.00	**258.00**	**RHY undifferentiated rhyolite**	255.00	256.00	1.00	B00291633	0.018	0.8	-0.01	-0.01	0.01
255 - 258: Faulted, brecciated rhyolite. Gouge, strong muscovite alteration, RHY clasts, sulfide at lower contact.											
<<Min: 255 - 258 0.5% Min: Sphalerite>>			256.00	257.00	1.00	B00291634	0.024	0.9	-0.01	-0.01	-0.01
<<Min: 255 - 258 3% Min: Pyrite>>			257.00	258.00	1.00	B00291635	0.157	27.2	0.01	0.33	1.17
<<Min: 255 - 258 0.1% Min: Galena>>											
<<Struc: 255 - 258 Moderate Fault>> Gouge and breccia in strongly MU altered rhyolite.											
258.00	**258.50**	**OB FMG Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	258.00	258.50	0.50	B00291636	3.46	125	1.04	1.2	8.97
258 - 258.5: CA in matrix.											
<<Min: 258 - 258.5 25% Min: Sphalerite>>											
<<Min: 258 - 258.5 65% Min: Pyrite>>											

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 258 - 258.5 5% Min: Galena>>												
<<Alt: 258 - 258.5 Moderate-Strong Calcite>>												
258.50	**260.37**	**Ol Heavilly disseminated sulphides in host schist**	**FMG**	258.50	259.50	1.00	B00291637	0.467	78.6	0.2	0.72	2.56
258.5 - 260.37: Intensively altered rhyolite containing massive sulfide bands of OB domains to 20 cm wide.												
<<Min: 258.5 - 260.37 10% Min: Sphalerite>> Narrow massive sulfide intervals.				259.50	260.37	0.87	B00291638	0.868	181	0.19	2.21	5.83
<<Min: 258.5 - 260.37 50% Min: Pyrite>> Narrow massive sulfide intervals.												
<<Min: 258.5 - 260.37 3% Min: Galena>> Narrow massive sulfide intervals.												
<<Alt: 258.5 - 260.37 Intense Muscovite>>												
<<Alt: 258.5 - 260.37 Weak-Moderate Calcite>>												
260.37	**261.41**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	260.37	261.41	1.04	B00291639	1.96	356	0.46	3.87	10.2
260.37 - 261.41: CA in matrix.												
<<Min: 260.37 - 261.41 15% Min: Sphalerite>>												
<<Min: 260.37 - 261.41 75% Min: Pyrite>>												
<<Min: 260.37 - 261.41 5% Min: Galena>>												
<<Min: 261.37 - 264.25 0.5% Min: Pyrite>>												
<<Alt: 260.37 - 261.41 Moderate-Strong Calcite>>												
<<Alt: 261.25 - 264.25 Moderate Muscovite>>												
261.41	**264.25**	**RHYc Rhyolite coherant volcanics**		261.41	262.50	1.09	B00291642	0.018	1.8	-0.01	0.01	0.04
261.41 - 264.25: Silicic bands, strong MU alteration.												
<<Alt: 261.41 - 264.25 Weak-Moderate Calcite>>				262.50	263.46	0.96	B00291643	0.029	0.7	-0.01	-0.01	0.01
				263.46	264.25	0.79	B00291644	0.071	5.1	0.01	-0.01	0.02
264.25	**264.75**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	264.25	264.75	0.50	B00291645	1.37	157	0.08	2.2	5.39
264.25 - 264.75: CA/CL vein at lower contact.												
<<Min: 264.25 - 264.75 10% Min: Sphalerite>>												
<<Min: 264.25 - 264.75 60% Min: Pyrite>>												
<<Min: 264.25 - 264.75 3% Min: Galena>>												

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 264.25 - 264.75 Moderate-Strong Calcite>>													
<<Alt: 264.6 - 268.5 Moderate-Strong Chlorite>>													
<<Alt: 264.6 - 268.5 Moderate-Strong Biotite>>													
264.75	**266.90**	**OI**	**Heavilly disseminated sulphides in host schist**	**FMG**	264.75	266.00	1.25	B00291646	0.499	52.5	0.09	1.04	2.31
264.75 - 266.9: In MAFi altered CL/BI. CA banded, folded. Including 40 cm of massive sulfide (OB domains) within two intervals and 30 cm of massive CA vein.													
<<Min: 264.75 - 266.9 3% Min: Sphalerite>> Narrow massive sulfide intervals.					266.00	266.90	0.90	B00291647	2.25	17	0.05	0.27	0.62
<<Min: 264.75 - 266.9 30% Min: Pyrite>> Narrow massive sulfide intervals.													
<<Min: 264.75 - 266.9 1% Min: Galena>> Narrow massive sulfide intervals.													
<<Alt: 264.75 - 266.9 Moderate-Strong Calcite>>													
<<Vein: 265.76 - 266.1 Calcite>> Massive CA vein.													
<<Struc: 265.32 - 265.33 dominant foliation>> Edge of fold nose (top hole).													
<<Struc: 265.42 - 265.43 dominant foliation>> Edge of fold nose (bottom hole).													
<<Struc: 266.48 - 266.49 dominant foliation>>													
266.90	**267.86**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MCG**	266.90	267.86	0.96	B00291648	3.7	244	0.35	5.12	8.03
266.9 - 267.86: Few CA, possibly BI lamination, CL altered, magnetite over 30 cm at upper contact. CP at lower contact.													
<<Min: 266.9 - 267.86 10% Min: Sphalerite>>													
<<Min: 266.9 - 267.86 65% Min: Pyrite>>													
<<Min: 266.9 - 267.86 2% Min: Pyrrhotite>>													
<<Min: 266.9 - 267.86 3% Min: Magnetite>>													
<<Min: 266.9 - 267.86 5% Min: Galena>>													
<<Min: 266.9 - 267.86 1% Min: Chalcopyrite>> At lower contact.													
<<Alt: 266.9 - 267.86 Moderate Calcite>>													
267.86	**338.13**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		267.86	269.00	1.14	B00291649	0.066	9.1	0.01	0.17	0.1
267.86 - 338.13: BI at upper contact fading out over 5 metres downhole.													
<<Min: 267.86 - 338.13 0.5% Min: Pyrite>> Late PY, euhedral, up to 0.5cm wide.					269.00	270.04	1.04	B00291651	0.073	8.9	-0.01	0.15	0.07
<<Alt: 267.86 - 273.7 Moderate-Strong Calcite>>					270.04	271.00	0.96	B00291652	0.041	5.1	-0.01	0.08	0.06
<<Alt: 273.7 - 299 Moderate Calcite>>					271.00	272.04	1.04	B00291653	0.026	2.7	-0.01	0.04	0.05

From (m)	To (m)	Rocktype & Description
		<<Alt: 299 - 333.25 Weak Calcite>>
		<<Alt: 333.25 - 338.7 Moderate Calcite>>
		<<Alt: 337.4 - 340.4 Moderate Chlorite>>
		<<Vein: 273.25 - 273.5 Quartz-Tourmaline>> Massive QZ vein, CA in fracture.
		<<Struc: 267.98 - 267.99 dominant foliation>>
		<<Struc: 274.79 - 274.8 dominant foliation>>
		<<Struc: 285.78 - 285.79 dominant foliation>>
338.13	**338.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**

338.13 - 338.7: Sharp upper contact marked by 5cm of intense CL alteration.

<<Min: 338.13 - 338.7 5% Min: Sphalerite>>
<<Min: 338.13 - 338.7 80% Min: Pyrite>>
<<Min: 338.13 - 338.7 1% Min: Galena>>
<<Alt: 338.52 - 338.64 Intense Cordierite>> Small crystals sized.

From (m)	To (m)		
338.70	**339.40**	**OA**	**Laminar or heavily disseminated magnetite bearing massive sulphide**

338.7 - 339.4: High MG content, laminated. Cl groundmass.

<<Min: 338.7 - 339.4 3% Min: Sphalerite>>
<<Min: 338.7 - 339.4 5% Min: Pyrite>>
<<Min: 338.7 - 339.4 35% Min: Magnetite>> Banded.
<<Min: 338.7 - 339.4 1% Min: Galena>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
272.04	273.00	0.96	B00291654	0.02	2.3	-0.01	0.03	0.05
273.00	274.06	1.06						
274.06	274.94	0.88						
274.94	276.00	1.06						
276.00	277.00	1.00						
277.00	278.04	1.04						
328.00	329.00	1.00						
329.00	330.00	1.00						
330.00	331.00	1.00						
331.00	331.95	0.95						
331.95	333.00	1.05						
333.00	334.00	1.00						
334.00	335.00	1.00	B00291667	-0.005	2.1	-0.01	0.03	0.05
335.00	336.00	1.00	B00291668	0.012	1.5	-0.01	0.03	0.05
336.00	337.00	1.00	B00291669	-0.005	1.1	-0.01	0.02	0.05
337.00	338.13	1.13	B00291671	0.02	4.6	-0.01	0.08	0.06
338.13	338.70	0.57	B00291672	1.02	337	0.24	4.07	8.24
338.70	339.40	0.70	B00291673	0.367	41.8	1.05	0.06	7.27

From (m)	To (m)	Rocktype & Description
339.40	**339.90**	**OF Pyrrhotite rich sulphides**
		339.4 - 339.9: Sharp lower contact marked by massive PO.
		<<Min: 339.4 - 339.9 20% Min: Pyrite>>
		<<Min: 339.4 - 339.9 40% Min: Pyrrhotite>>
		<<Min: 339.4 - 339.9 10% Min: Magnetite>>
		<<Min: 339.4 - 339.9 2% Min: Chalcopyrite>>
		<<Alt: 339.5 - 390 Weak Calcite>> Replacement and disseminated.
339.90	**352.00**	**RHYvl Lapilli tuff**
		339.9 - 352: High strain, strong MU alteration, TML specks, calcareous sediment patch.
		<<Min: 339.9 - 350 1% Min: Pyrite>>
		<<Min: 339.9 - 350 0.5% Min: Pyrrhotite>>
		<<Min: 350 - 390 3% Min: Pyrite>> And patch.
		<<Min: 350 - 390 2% Min: Pyrrhotite>>
		<<Alt: 339.9 - 361 Moderate Muscovite>>
		<<Alt: 350 - 390 Weak-Moderate Tourmaline>>
352.00	**374.51**	**RHYvl Lapilli tuff**
		352 - 374.51: High strain, rare 0.5cm wide QZ eyes, weak CL alteration, lapilli replacement. Possibly intermediate composition or mixed with sediments.
		<<Alt: 352 - 374.51 Weak Chlorite>> Lapilli replacement.
		<<Alt: 361 - 375.51 Weak-Moderate Muscovite>>
		<<Struc: 355.45 - 355.46 dominant foliation>>
		<<Struc: 364.27 - 364.28 dominant foliation>>
		<<Struc: 367.45 - 367.46 dominant foliation>>
374.51	**382.38**	**RHY undifferentiated rhyolite**
		374.51 - 382.38: Rare QZ eyes. Light grey, heterogeneous, BI/MU, speck of TML. Medium strained clasts. QZ/TML/GL trace vein. Narrow fault breccia from 380.45m to 380.55m. Overprint MU alteration.
		<<Vein: 378.5 - 379.3 Tourmaline>> TML/QZ large patch or vein, QZ/GL trace.
		<<Struc: 375.32 - 375.33 dominant foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
339.40	339.90	0.50	B00291674	0.283	36	1.35	0.03	6.34
339.90	341.00	1.10	B00291675	0.006	1.8	0.04	-0.01	0.06
341.00	342.00	1.00	B00291676	-0.005	0.5	-0.01	-0.01	0.04
342.00	343.00	1.00	B00291677	-0.005	0.7	-0.01	-0.01	0.01
343.00	344.08	1.08	B00291678	-0.005	0.7	-0.01	-0.01	0.07
344.08	345.00	0.92						
345.00	346.03	1.03						
346.03	347.00	0.97						
347.00	348.02	1.02						
348.02	349.03	1.01						
349.03	350.00	0.97						

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

382.38 390.00 SED undifferentiated Sediment

382.38 - 390: Heterogeneous, dark blue, weak CL alteration/BI. Locally granular but possibly volcaniclastic intermediate composition, TML. Dirty, could be epiclastic. Maybe CA replacing cordierite showing pressure shadow. E.O.H.

<<Alt: 382.38 - 390 Weak Chlorite>>

<<Vein: 386.37 - 386.95 Quarzt-Tourmaline-Sulphide>> QZ/TML/PY vein.

<<Struc: 389.95 - 389.96 dominant foliation>>

End of Hole @ 390

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-360

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/9/2016
UTM Easting	415104.728	Core Size:	HQ3	Azimuth:	20.65	Date Logging Complete:	6/13/2016
UTM Northing:	6815168.31	Casing Pulled?:	Yes	Dip:	-77.18	Drill Company:	Hytech
UTM Elev. (m):	1393.874	Casing Depth (m):	9	Length (m):	330	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/6/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/9/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

Succesfull test upper, main and lower Krakatoa lens. Footwall below thin lower lens (OC) was remarkably uniform RHYvl. 274.40-275.60: Thin unit of qtz-calcite of unknown origin (related to mineralization?) below lower lens. Three sections of RHYcf between 49.80-89.12m and typical RHYcw unit, about 7 m thick (core length), above upper lens.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-77.18	19.25	1.4	20.65	TN14	Oscar Nielsen	6/6/2016		☑	
5	-77.1882	19.25167	1.4	20.65167	Gyro	Oscar Nielsen	6/9/2016		☑	97.8696012936486
10	-77.53915	20.69151	1.4	22.09151	Gyro	Oscar Nielsen	6/9/2016		☑	98.7815229126016
15	-77.89142	21.42426	1.4	22.82426	Gyro	Oscar Nielsen	6/9/2016		☑	99.7773918444672
18	-78	2.1	22.1	24.2	ReflexEZS	Hytech	6/6/2016	5888	☐	
20	-78.31511	21.30822	1.4	22.70822	Gyro	Oscar Nielsen	6/9/2016		☑	98.7140013105538
25	-78.70265	22.02151	1.4	23.42151	Gyro	Oscar Nielsen	6/9/2016		☑	99.940731104001
30	-79.0146	21.6018	1.4	23.0018	Gyro	Oscar Nielsen	6/9/2016		☑	99.5843270161596
35	-79.30266	22.37966	1.4	23.77966	Gyro	Oscar Nielsen	6/9/2016		☑	100
40	-79.65832	22.33721	1.4	23.73721	Gyro	Oscar Nielsen	6/9/2016		☑	100
42	-79.9	3.1	22.1	25.2	ReflexEZS	Hytech	6/6/2016	6022	☐	high magnetic value but azimuth seems consistent.
45	-79.85939	22.63625	1.4	24.03625	Gyro	Oscar Nielsen	6/9/2016		☑	99.4590906241058
50	-80.08642	22.55897	1.4	23.95897	Gyro	Oscar Nielsen	6/9/2016		☑	100
55	-80.17298	22.81068	1.4	24.21068	Gyro	Oscar Nielsen	6/9/2016		☑	100
60	-80.24972	23.02904	1.4	24.42904	Gyro	Oscar Nielsen	6/9/2016		☑	100
65	-80.30379	23.10802	1.4	24.50802	Gyro	Oscar Nielsen	6/9/2016		☑	100
66	-80.6	5.9	22.1	28	ReflexEZS	Hytech	6/7/2016	5802	☐	
70	-80.51932	23.8935	1.4	25.2935	Gyro	Oscar Nielsen	6/9/2016		☑	100
75	-80.73142	24.5105	1.4	25.9105	Gyro	Oscar Nielsen	6/9/2016		☑	100
80	-80.99772	25.1876	1.4	26.5876	Gyro	Oscar Nielsen	6/9/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-360

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
85	-81.2143	26.10316	1.4	27.50316	Gyro	Oscar Nielsen	6/9/2016		☑	100
90	-81.31426	26.40004	1.4	27.80004	Gyro	Oscar Nielsen	6/9/2016		☑	100
90.01	-81.7	7.4	22.1	29.5	ReflexEZS	Hytech	6/7/2016	5797	☐	
95	-81.47757	26.87232	1.4	28.27232	Gyro	Oscar Nielsen	6/9/2016		☑	100
100	-81.66027	27.71728	1.4	29.11728	Gyro	Oscar Nielsen	6/9/2016		☑	100
105	-81.87908	27.97617	1.4	29.37617	Gyro	Oscar Nielsen	6/9/2016		☑	100
110	-82.12317	28.75393	1.4	30.15393	Gyro	Oscar Nielsen	6/9/2016		☑	100
114	-82.5	10.6	22.1	32.7	ReflexEZS	Hytech	6/7/2016	5798	☐	
115	-82.33788	29.92135	1.4	31.32135	Gyro	Oscar Nielsen	6/9/2016		☑	100
120	-82.5348	30.85677	1.4	32.25677	Gyro	Oscar Nielsen	6/9/2016		☑	100
125	-82.79221	32.72055	1.4	34.12055	Gyro	Oscar Nielsen	6/9/2016		☑	100
130	-83.03394	34.21635	1.4	35.61635	Gyro	Oscar Nielsen	6/9/2016		☑	100
135	-83.22449	36.00504	1.4	37.40504	Gyro	Oscar Nielsen	6/9/2016		☑	100
138	-83.6	18.2	22.1	40.3	ReflexEZS	Hytech	6/7/2016	5801	☐	
140	-83.41242	37.95012	1.4	39.35012	Gyro	Oscar Nielsen	6/9/2016		☑	100
145	-83.59491	39.66134	1.4	41.06134	Gyro	Oscar Nielsen	6/9/2016		☑	100
150	-83.70654	42.16813	1.4	43.56813	Gyro	Oscar Nielsen	6/9/2016		☑	100
155	-83.77999	42.79132	1.4	44.19132	Gyro	Oscar Nielsen	6/9/2016		☑	100
160	-84.03909	43.85926	1.4	45.25926	Gyro	Oscar Nielsen	6/9/2016		☑	100
162	-84.5	27	22.1	49.1	ReflexEZS	Hytech	6/7/2016	5737	☐	
165	-84.19324	44.99675	1.4	46.39675	Gyro	Oscar Nielsen	6/9/2016		☑	100
170	-84.32299	46.7898	1.4	48.1898	Gyro	Oscar Nielsen	6/9/2016		☑	100
175	-84.46496	49.00303	1.4	50.40303	Gyro	Oscar Nielsen	6/9/2016		☑	100
180	-84.65358	51.73245	1.4	53.13245	Gyro	Oscar Nielsen	6/9/2016		☑	100
185	-84.76294	53.03498	1.4	54.43498	Gyro	Oscar Nielsen	6/9/2016		☑	99.7436253657566
186	-85	35.2	22.1	57.3	ReflexEZS	Hytech	6/8/2016	5790	☐	
190	-84.84897	54.22914	1.4	55.62914	Gyro	Oscar Nielsen	6/9/2016		☑	100
195	-84.88032	55.17512	1.4	56.57512	Gyro	Oscar Nielsen	6/9/2016		☑	100
200	-84.97249	56.15138	1.4	57.55138	Gyro	Oscar Nielsen	6/9/2016		☑	100
205	-85.05042	57.6003	1.4	59.0003	Gyro	Oscar Nielsen	6/9/2016		☑	99.8570158440064
210	-85.14487	58.37755	1.4	59.77755	Gyro	Oscar Nielsen	6/9/2016		☑	100
210.01	-85.4	43.1	22.1	65.2	ReflexEZS	Hytech	6/8/2016	5795	☐	
215	-85.24364	59.36444	1.4	60.76444	Gyro	Oscar Nielsen	6/9/2016		☑	100
220	-85.337	60.48287	1.4	61.88287	Gyro	Oscar Nielsen	6/9/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-360

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
225	-85.51104	62.43158	1.4	63.83158	Gyro	Oscar Nielsen	6/9/2016		☑	100
230	-85.5898	63.95622	1.4	65.35622	Gyro	Oscar Nielsen	6/9/2016		☑	100
234	-85.8	53.2	22.1	75.3	ReflexEZS	Hytech	6/8/2016	5801	☐	
235	-85.70061	66.30168	1.4	67.70168	Gyro	Oscar Nielsen	6/9/2016		☑	100
240	-85.78129	67.41908	1.4	68.81908	Gyro	Oscar Nielsen	6/9/2016		☑	100
245	-85.84051	69.42432	1.4	70.82432	Gyro	Oscar Nielsen	6/9/2016		☑	99.8275389382586
250	-85.92226	69.83587	1.4	71.23587	Gyro	Oscar Nielsen	6/9/2016		☑	100
255	-85.95715	71.22931	1.4	72.62931	Gyro	Oscar Nielsen	6/9/2016		☑	99.9136279539155
258	-86.5	48.9	22.1	71	ReflexEZS	Hytech	6/8/2016	5801	☐	
260	-86.03824	72.42565	1.4	73.82565	Gyro	Oscar Nielsen	6/9/2016		☑	99.946275841762
265	-86.0713	74.58793	1.4	75.98793	Gyro	Oscar Nielsen	6/9/2016		☑	99.8638384210368
270	-86.14867	74.33952	1.4	75.73952	Gyro	Oscar Nielsen	6/9/2016		☑	100
275	-86.20733	75.82479	1.4	77.22479	Gyro	Oscar Nielsen	6/9/2016		☑	100
280	-86.36607	76.49179	1.4	77.89179	Gyro	Oscar Nielsen	6/9/2016		☑	100
282	-86.9	68.4	22.1	90.5	ReflexEZS	Hytech	6/8/2016	5768	☐	
285	-86.85538	85.98815	1.4	87.38815	Gyro	Oscar Nielsen	6/9/2016		☑	95.1576271812916
290	-86.78506	81.74501	1.4	83.14501	Gyro	Oscar Nielsen	6/9/2016		☑	79.880481818498
295	-86.7887	86.08149	1.4	87.48149	Gyro	Oscar Nielsen	6/9/2016		☑	91.5284514164403
300	-87.25905	100.02686	1.4	101.42686	Gyro	Oscar Nielsen	6/9/2016		☑	87.62504702275
305	-87.124	106.60518	1.4	108.00518	Gyro	Oscar Nielsen	6/9/2016		☑	84.1042825788928
306	-87.2	95.6	22.1	117.7	ReflexEZS	Hytech	6/8/2016	5795	☐	
310	-87.20582	117.21792	1.4	118.61792	Gyro	Oscar Nielsen	6/9/2016		☑	87.288660654894
315	-87.02579	114.46397	1.4	115.86397	Gyro	Oscar Nielsen	6/9/2016		☑	88.272401200241
320	-86.8701	118.34867	1.4	119.74867	Gyro	Oscar Nielsen	6/9/2016		☑	98.6358981318395
329.99	-86.7	121.3	22.1	143.4	ReflexEZS	Hytech	6/8/2016	5844	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**7.50**	**OVBN Overburden**									
7.50	**10.40**	**RHYv Rhyolite volcaniclastic**									
<<Min: 7.5 - 14.65 1% Min: Pyrrhotite>>											
<<Alt: 7.5 - 10.4 Weak-Moderate Calcite>>											
<<Vein: 8.05 - 9.6 30% Quartz-Carbonate>>											
<<Struc: 9.69 - 10.4 Moderate dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 10.35 - 10.45 Moderate Contact>> parallel to foliation

10.40 14.65 MAFt Mafic Volcaniclastics

10.4 - 14.65: chill margins and calcite amygdules. 11.53-12.94; fine grained, could be biotite ash tuff and includes 20 cm section of RHYvl.

<<Alt: 10.4 - 14.65 Moderate-Strong Calcite>> and as pervasive diss

<<Alt: 10.45 - 14.65 Moderate Biotite>>

<<Vein: 10.4 - 15.8 5% Calcite>> stringers and veinlets

<<Struc: 10.4 - 12 Moderate dominant foliation>>

14.65 22.36 RHYvl Lapilli tuff grey-green

<<Min: 14.65 - 22.36 0.5% Min: Pyrite>>

<<Min: 14.65 - 22.36 1% Min: Pyrrhotite>>

<<Alt: 14.65 - 22.36 Weak Muscovite>> fine muscovite and sericite

<<Alt: 14.65 - 22.36 Moderate Calcite>>

<<Struc: 18 - 18.96 Moderate dominant foliation>>

22.36 23.02 RHYcw Curdy textured-flow banded (flows, subvolcanics) cream

<<Min: 22.36 - 23.02 3% Min: Pyrite>>

<<Alt: 22.36 - 47.21 Weak Muscovite>> fine muscovite and sericite - Cominco's grey green.

<<Alt: 22.36 - 48.09 Weak-Moderate Calcite>>

<<Struc: 22.38 - 29.5 Moderate-Strong Fault>> crushed core, broken core and minor gouge

<<Struc: 22.46 - 23 Weak Fault>> 2 narrow (<4cm fracture - gouge zones)

23.02 28.38 RHYv Rhyolite volcaniclastic grey-green

23.02 - 28.38: 24.61-25.00: RHYcw. 27.4-28.38: RHYva - feldspar phyric.

<<Min: 23.02 - 30.55 3% Min: Pyrite>>

<<Vein: 27.3 - 62 5% Quartz-Carbonate>> qtz or clacite or qtz-calcite stringers and veinlets, mostly parallel to foliation.

<<Struc: 23.2 - 27 Moderate dominant foliation>>

28.38 29.50 RHY undifferentiated rhyolite grey-green

28.38 - 29.5: sheared - broken core - fault zone

29.50 30.55 RHYva Coarse grained to ash tuff grey-green

29.5 - 30.55: silicic bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

30.55 31.38 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

<<Min: 30.55 - 31.38 1% Min: Pyrrhotite>>

31.38 35.00 RHYva Coarse grained to ash tuff grey-green

<<Min: 31.38 - 37 1% Min: Pyrite>>

<<Struc: 31.39 - 32 Moderate dominant foliation>>

<<Struc: 32.55 - 33.4 Weak Fault>> narrow fracture - gouge zones

<<Struc: 34.7 - 37.5 Moderate Fault>> crushed core, broken core and minor gouge

35.00 37.87 RHYvl Lapilli tuff grey-green

<<Min: 37 - 43.2 0.5% Min: Pyrite>>

<<Min: 37 - 43.2 0.5% Min: Pyrrhotite>>

37.87 43.68 RHYva Coarse grained to ash tuff grey-green

<<Min: 43.2 - 47.06 0.5% Min: Pyrite>>

<<Min: 43.2 - 47.06 0.5% Min: Pyrrhotite>>

<<Vein: 38.68 - 38.7 100% Quarzt-Biotite-Sulphides 20 deg. >>

<<Struc: 39 - 42 Moderate dominant foliation>>

<<Struc: 42 - 45 Moderate dominant foliation>>

<<Struc: 42.2 - 43.7 Weak-Moderate Fault>> crushed core, broken core

43.68 44.67 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

44.67 47.06 RHYva Coarse grained to ash tuff grey-green			46.00	47.06	1.06						
47.06 48.09 RHYv Rhyolite volcaniclastic medium grey			47.06	48.09	1.03						

47.06 - 48.09: silicic bands, biotite, qtz flooded, diss po. Looks like distal or proto mineralized zone.

<<Min: 47.06 - 48.09 10% Min: Pyrrhotite>> and thin bands and as diss

<<Alt: 47.06 - 48.09 Weak-Moderate Silicification>> Med grey fine grained rhy, white and grey qtz bands, diss pyrrhotite. Well banded, especially on margins.

<<Alt: 47.06 - 48.09 Weak Biotite>>

<<Struc: 47.56 - 48 Moderate dominant foliation>>

48.09 49.80 RHYva Coarse grained to ash tuff grey-green | 48.09 | 49.20 | 1.11 |

48.09 - 49.8: very fine grained, finely banded, almost laminated in spots.

<<Min: 48.09 - 53.5 3% Min: Pyrite>>

<<Alt: 48.09 - 49.8 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 48.09 - 49.8 Weak Biotite>>

<<Alt: 48.09 - 62 Weak Muscovite>> cominco's grey green alt.

49.80 62.00 RHYcf Feldspar & feldspar quartz porphyry grey-green

49.8 - 62: Lower contact sheared and sericite altered in contact with qtz vein on margin RHYi.Local silicic bands.

<<Min: 53.5 - 62 5% Min: Pyrite>>

<<Min: 53.5 - 62 1% Min: Pyrrhotite>>

<<Alt: 49.88 - 62 Moderate Calcite>>

<<Struc: 51 - 54 Moderate dominant foliation>>

<<Struc: 60 - 62 Weak Shear>>

<<Struc: 61.75 - 62 Weak-Moderate Fault>> sericite altered, weakly sheared contact

62.00 64.65 RHYi Aphanitic Rhyolite (intrusion) grey-green

63.40	64.65	1.25

<<Min: 62 - 64.65 3% Min: Pyrite>>

<<Alt: 62 - 82.5 Weak Calcite>> calcite replacing feldspars and in fractures

<<Alt: 62 - 82.6 Trace Muscovite>>

<<Vein: 62 - 62.22 100% Quartz>> on margin of RHYi

<<Vein: 62.22 - 64.65 7% Quartz-Carbonate-Sulphide>>

64.65 82.60 RHYcf Feldspar & feldspar quartz porphyry light grey

64.65	65.05	0.40

64.65 - 82.6: feldspars phenos up to 7mm.

<<Min: 64.65 - 70.65 1% Min: Pyrite>>

65.05	66.50	1.45

<<Min: 64.65 - 70.65 3% Min: Pyrrhotite>>

66.50	68.00	1.50

<<Min: 70.65 - 80.5 3% Min: Pyrite>>

68.00	69.15	1.15

<<Min: 80.5 - 81.1 3% Min: Pyrrhotite>>

69.15	70.10	0.95

<<Min: 81.1 - 86.1 3% Min: Pyrite>>

70.10	71.25	1.15

<<Alt: 82.5 - 83.2 Strong Calcite>>

71.25	72.40	1.15

<<Struc: 68.3 - 70 Moderate dominant foliation>> foliation and py-po bands

82.60 83.33 MAFi Mafic Intrusions (primarily footwall mafic intrusion) grey-brown

<<Alt: 82.6 - 83.35 Moderate Biotite>>

<<Alt: 83.2 - 89.12 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

83.33 89.12 RHYcf Feldspar & feldspar quartz porphyry light grey

<<Min: 86.1 - 87.45 5% Min: Pyrite>>

<<Min: 87.45 - 89.12 3% Min: Pyrite>>

<<Alt: 83.35 - 89.12 Weak Muscovite>>

89.12 89.97 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 89.12 - 89.97 5% Min: Pyrrhotite>>

<<Alt: 89.12 - 89.97 Strong Calcite>>

<<Struc: 89.12 - 90 Moderate Foliation>> mafic dyke

<<Struc: 89.9 - 90 Moderate Contact>>

89.97 93.55 RHYv Rhyolite volcaniclastic grey-green

89.97 - 93.55: Sheared and weakly sericte altered RHYcf at least in part.

<<Min: 89.97 - 103.2 3% Min: Pyrite>>

<<Alt: 89.97 - 96 Weak Calcite>>

<<Alt: 89.98 - 92.63 Weak-Moderate Muscovite>>

<<Alt: 92.63 - 97 Weak Muscovite>>

<<Vein: 93.36 - 96.35 8% Quartz>>

<<Struc: 90.57 - 90.67 Weak-Moderate Fault>> crushed rhyolite, trace gouge

<<Struc: 93.2 - 93.35 Moderate dominant foliation>>

93.55 96.00 RHYi Aphanitic Rhyolite (intrusion) grey-green

93.55 - 96: Lower 1 m incorporates some RHYva

96.00 110.16 RHYva Coarse grained to ash tuff grey-green

<<Min: 103.2 - 123.6 3% Min: Pyrrhotite>>

<<Alt: 96 - 103.3 Trace Calcite>>

<<Alt: 99.95 - 104.8 Weak Muscovite>> fine muscovite-sericite and clays related to fractures

<<Alt: 103.3 - 118.16 Weak-Moderate Calcite>>

<<Alt: 104.8 - 118.16 Trace Muscovite>>

<<Vein: 101.2 - 105.6 4% Quartz>>

<<Struc: 99 - 99.5 Moderate dominant foliation>>

<<Struc: 100.1 - 103.7 Weak Fault>> narrow fracture - gouge zones, broken core

<<Struc: 103.1 - 103.5 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 103.5 - 103.55 Moderate Shear>>

<<Struc: 103.63 - 103.66 Moderate Shear>>

<<Struc: 106 - 109 Moderate dominant foliation>>

110.16 114.34 RHYvl Lapilli tuff

110.16 - 114.34: silicic bands near lower contact.

<<Alt: 110.16 - 119.2 Weak Biotite>>

<<Struc: 111.55 - 112.83 Weak Fault>> crushed rhyolite, trace gouge

<<Struc: 113 - 114 Moderate dominant foliation>>

114.34 118.16 RHYcw Curdy textured-flow banded (flows, subvolcanics)

114.34 - 118.16: weak BCQ alteration

<<Struc: 115 - 115.25 Moderate Fault>> crushed, minor gouge

118.16 123.95 RHYvl Lapilli tuff grey-green

118.16 - 123.95: silicic bands, approaching RHYc

<<Min: 123.6 - 124.56 5% Min: Pyrrhotite>>

<<Alt: 118.16 - 123.95 Weak Muscovite>>

<<Struc: 118.85 - 120.1 Weak-Moderate Fault>> crushed, minor gouge

<<Struc: 121.38 - 123.8 Moderate dominant foliation>>

123.95 129.20 RHYvl Lapilli tuff

<<Min: 124.56 - 138.96 3% Min: Pyrrhotite>>

<<Alt: 123.95 - 124.96 Moderate Calcite>>

<<Alt: 123.95 - 138.69 Weak Muscovite>>

<<Alt: 123.95 - 138.69 Trace Chlorite>>

<<Alt: 123.95 - 138.69 Weak Biotite>>

<<Alt: 124.96 - 130 Weak Calcite>>

<<Struc: 125.6 - 126.5 Moderate dominant foliation>>

<<Struc: 128.6 - 129 Moderate dominant foliation>>

129.20 130.70 RHYvl Lapilli tuff grey-green

<<Alt: 130 - 132.2 Weak-Moderate Calcite>>

130.70 132.20 RHYvl Lapilli tuff

<<Vein: 130.7 - 130.8 100% Quarzt-Biotite-Sulphides 45 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 130.75 - 130.95 Moderate Fault>>

132.20 133.47 RHYvl Lapilli tuff grey-green

<<Alt: 132.2 - 133.47 Trace Calcite>>

133.47 139.69 RHYvl Lapilli tuff

133.47 - 139.69: cut by several Qtz-tournmaline veins with sericite - bleached envelopes.

<<Min: 138.96 - 149.58 5% Min: Pyrite>>

<<Min: 138.96 - 149.58 3% Min: Pyrrhotite>>

<<Alt: 133.47 - 148.6 Weak-Moderate Calcite>>

<<Vein: 134.93 - 135.1 Quartz>>

<<Vein: 136.23 - 138.65 2% Quartz-Tourmaline 45 deg. >>

<<Struc: 135 - 138.47 Moderate-Strong dominant foliation>>

<<Struc: 138.47 - 138.69 Moderate-Strong dominant foliation>> minor Z fold

<<Struc: 138.69 - 147 Strong dominant foliation>>

139.69 150.20 RHYvl Lapilli tuff grey-green

139.69 - 150.2: sheared -faulted gougy rhyolite

<<Min: 149.58 - 150 5% Min: Pyrrhotite>>

<<Min: 150 - 150.2 3% Min: Pyrrhotite>>

<<Alt: 139.69 - 145 Weak-Moderate Muscovite>>

<<Alt: 145 - 169.07 Moderate Muscovite>> upper contact is gradational over about 3 m either side of 145.

<<Alt: 148.6 - 150.2 Trace Calcite>>

<<Vein: 149.74 - 154 5% Quartz-Carbonate>>

<<Struc: 147 - 150.2 Strong dominant foliation>>

150.20 151.65 RHY undifferentiated rhyolite

150.2 - 151.65: sheared -faulted gougy rhyolite

<<Min: 150.2 - 159 3% Min: Pyrite>>

<<Alt: 150.2 - 151.45 Weak-Moderate Calcite>>

<<Vein: 150.2 - 150.4 100% Quartz 45 deg. >> Brx vein on margin of fault zone, includes black siliceous 'argillite'.

<<Struc: 150.2 - 150.4 Strong Vein>>

<<Struc: 150.4 - 151.8 Strong Fault>>

151.65 163.00 RHYvl Lapilli tuff grey-green

<<Min: 159 - 165.05 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 151.65 - 156 Weak Calcite>>									
		<<Alt: 156 - 159.23 Trace Calcite>>									
		<<Vein: 159.67 - 167 5% Quartz>>									
		<<Struc: 155.83 - 156.28 Moderate Fault>>									
		<<Struc: 158.35 - 159.23 Moderate-Strong Fault>>									
		<<Struc: 159.57 - 162 Moderate-Strong dominant foliation>>									
		<<Struc: 162 - 165 Moderate-Strong dominant foliation>>									
163.00	**169.07**	**RHYvl Lapilli tuff grey-green**	165.00	166.25	1.25						
		163 - 169.07: silicic bands, local sections of RHYcw. 168.2-169.07: qtz veined and flooded, weak po-py, approx 5-10%. - marks contact with RHYcw?									
		<<Min: 165.05 - 166.68 5% Min: Pyrrhotite>>	166.25	167.50	1.25						
		<<Min: 166.68 - 168.8 1% Min: Pyrite>>	167.50	168.33	0.83						
		<<Min: 166.68 - 168.8 1% Min: Pyrrhotite>>	168.33	169.07	0.74						
		<<Min: 168.8 - 169.07 3% Min: Pyrite>>									
		<<Min: 168.8 - 169.07 3% Min: Pyrrhotite>>									
		<<Vein: 168.2 - 170.67 30% Quartz>> trace py, sp, gn									
		<<Struc: 167.3 - 167.39 Moderate-Strong Fault>>									
169.07	**176.64**	**RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey**	169.07	170.30	1.23						
		169.07 - 176.64: upper contact defined by 12 cm band of muscovite - clay altered rhyolite followed by 8 cm band of strong chlorite alteration. 274.60-275.60: mostly brecciated calcite - qtz (looks original - definitley not your typical vein) with minor slivers or muscovite altered rhyolite on shear planes.									
		<<Min: 169.07 - 172.5 3% Min: Pyrrhotite>>	170.30	171.48	1.18	B00292426	0.005	0.7	-0.01	-0.01	0.01
		<<Min: 172.5 - 176.64 1% Min: Pyrite>>	171.48	172.51	1.03	B00292427	0.018	1.6	0.01	-0.01	-0.01
		<<Alt: 169.07 - 172.51 Weak-Moderate Muscovite>>	172.51	174.00	1.49	B00292428	0.013	0.9	-0.01	-0.01	-0.01
		<<Alt: 172.4 - 175.3 Weak Calcite>>	174.00	175.30	1.30	B00292429	0.014	0.9	-0.01	-0.01	-0.01
		<<Alt: 172.51 - 175.3 Moderate Muscovite>>	175.30	175.74	0.44	B00292431	0.015	0.6	-0.01	-0.01	-0.01
		<<Alt: 175.3 - 176.64 Strong Muscovite>>	175.74	176.64	0.90	B00292432	0.033	1.8	0.02	-0.01	-0.01
		<<Vein: 176.15 - 176.64 15% Quartz>>									
		<<Struc: 174 - 175.3 Moderate-Strong Fault>>									
		<<Struc: 176.11 - 176.64 Weak-Moderate dominant foliation>>									

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
176.64	**177.15**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	176.64	177.15	0.51	B00292433	1.1	23.8	0.86	2.53	8.52
<<Min: 176.64 - 177.15 5% Min: Sphalerite>>													
<<Min: 176.64 - 177.15 70% Min: Pyrite>>													
<<Min: 176.64 - 177.15 1% Min: Galena>>													
<<Min: 176.85 - 177 5% Min: Chalcopyrite>>													
<<Min: 177 - 178.26 0.1% Min: Sphalerite>>													
<<Min: 177 - 178.26 3% Min: Pyrite>>													
<<Alt: 176.64 - 177.15 Weak-Moderate Calcite>>													
<<Alt: 176.85 - 177 Weak Chlorite>>													
<<Struc: 176.64 - 176.7 Strong Contact>>													
177.15	**178.26**	**RHY**	**undifferentiated rhyolite**		177.15	178.26	1.11	B00292434	0.187	21.9	0.03	0.13	0.24
<<Alt: 177.15 - 178.26 Strong Muscovite>>													
<<Struc: 177.15 - 177.2 Strong Contact>>													
<<Struc: 177.15 - 177.3 Weak-Moderate Foliation>> cross cutting foliation													
<<Struc: 177.15 - 178.26 Weak-Moderate dominant foliation>>													
178.26	**179.51**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	178.26	179.51	1.25	B00292435	1.34	118	0.56	1.38	5
<<Min: 178.26 - 179.51 5% Min: Sphalerite>>													
<<Min: 178.26 - 179.51 70% Min: Pyrite>>													
<<Min: 179.26 - 179.51 1% Min: Galena>>													
<<Alt: 178.27 - 180.13 Weak-Moderate Calcite>>													
179.51	**180.03**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**FMG**	179.51	180.03	0.52	B00292436	1.28	171	0.2	3.31	5.65
<<Min: 179.51 - 180.03 20% Min: Pyrite>>													
<<Min: 179.51 - 180.03 5% Min: Pyrrhotite>>													
<<Min: 179.52 - 179.93 5% Min: Magnetite>>													
<<Min: 179.52 - 180.03 3% Min: Sphalerite>>													
<<Alt: 179.51 - 180.03 Moderate-Strong Chlorite>>													

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
180.03	**181.04**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	180.03	181.04	1.01	B00292437	1.72	161	0.07	2.84	8.47
<<Min: 180.03 - 181.04 15% Min: Sphalerite>>													
<<Min: 180.03 - 181.04 80% Min: Pyrite>>													
<<Struc: 180.03 - 180.05 Strong Contact>>													
<<Struc: 180.3 - 180.55 Weak-Moderate Foliation>> mineral banding													
181.04	**182.66**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**MCG**	181.04	182.00	0.96	B00292438	2.41	134	0.39	2.49	6.71
<<Min: 181.04 - 182.66 10% Min: Sphalerite>>					182.00	182.66	0.66	B00292439	4.04	338	0.47	3.02	7.75
<<Min: 181.04 - 182.66 20% Min: Pyrite>>													
<<Min: 181.04 - 182.66 10% Min: Arsenopyrite>>													
<<Min: 181.58 - 182.16 10% Min: Magnetite>>													
<<Min: 181.66 - 185 0.5% Min: Pyrite>>													
<<Min: 181.66 - 185 0.5% Min: Pyrrhotite>>													
<<Min: 182.65 - 183.15 0.5% Min: Galena>>													
<<Alt: 181.04 - 182.34 Moderate-Strong Chlorite>>													
<<Alt: 181.5 - 181.98 Moderate Calcite>>													
<<Alt: 181.98 - 183.15 Strong Calcite>>													
182.66	**273.12**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**		182.66	183.15	0.49	B00292441	0.978	84.2	0.14	0.33	0.23
182.66 - 273.12: 182.66-182.82; calcite veined, 5% py, 2 % sp diss and in mm bands.													
<<Min: 182.66 - 183.15 1% Min: Sphalerite>>					183.15	184.66	1.51	B00292442	0.012	-0.3	-0.01	-0.01	-0.01
<<Min: 182.66 - 183.15 5% Min: Pyrite>>					184.66	186.00	1.34	B00292443	0.016	0.4	-0.01	-0.01	0.02
<<Min: 184.66 - 185.2 0.5% Min: Pyrrhotite>>					186.00	187.25	1.25	B00292444	0.01	0.3	-0.01	-0.01	0.01
<<Min: 185.2 - 203.08 0.1% Min: Pyrrhotite>> replacing chlorite					187.25	188.50	1.25	B00292445	0.013	1.6	-0.01	0.02	0.03
<<Min: 203.08 - 269 0.1% Min: Pyrite>>					188.50	189.75	1.25						
<<Min: 269 - 273.12 0.5% Min: Pyrite>>					189.75	191.00	1.25						
<<Alt: 182.82 - 183.15 Weak-Moderate Muscovite>> sericite					191.00	192.25	1.25						
<<Alt: 182.82 - 183.15 Weak-Moderate Chlorite>>					192.25	193.50	1.25						
<<Alt: 183.15 - 184.66 Trace Calcite>> fracture filling					263.00	264.25	1.25						

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-360

From (m)	To (m)	Rocktype & Description
		<<Alt: 184.66 - 185.5 Moderate-Strong Chlorite>>
		<<Alt: 184.66 - 187 Strong Calcite>>
		<<Alt: 184.66 - 199 Weak Biotite>>
		<<Alt: 185.5 - 187.4 Weak-Moderate Chlorite>>
		<<Alt: 187 - 198 Weak-Moderate Calcite>>
		<<Alt: 198 - 221.3 Weak Calcite>>
		<<Alt: 199 - 227.15 Trace Biotite>>
		<<Alt: 221.3 - 268 Weak-Moderate Calcite>>
		<<Alt: 227.15 - 227.33 Weak-Moderate Biotite>>
		<<Alt: 268 - 273.08 Strong Calcite>>
		<<Alt: 269.03 - 273.08 Moderate-Strong Chlorite>>
		<<Vein: 183.15 - 184.66 100% Quartz-Carbonate>>
		<<Vein: 184.66 - 192.1 10% Quartz-Carbonate>> series of low angle veinlets
		<<Vein: 192.48 - 195.2 70% Calcite>>
		<<Vein: 198.8 - 199.3 20% Quarzt-Chlorite-Carbonate>> diss biotite envelope
		<<Vein: 200.5 - 213 2% Calcite>>
		<<Vein: 222.76 - 222.97 100% Carbonate-Chlorite 60 deg. >> with mafic clasts
		<<Vein: 223.3 - 223.39 Quartz-Carbonate 80 deg. >> Qtz-calcite-biotite veining
		<<Vein: 227 - 227.8 5% Quarzt-Chlorite-Carbonate 30 deg. >> Biotite envelope
		<<Struc: 188 - 191 Weak-Moderate dominant foliation>>
		<<Struc: 191 - 194 Weak-Moderate dominant foliation>>
		<<Struc: 194 - 200 Weak-Moderate dominant foliation>>
		<<Struc: 198.75 - 198.85 Strong Vein>>
		<<Struc: 200 - 205 Weak-Moderate dominant foliation>>
		<<Struc: 208 - 213 Weak-Moderate dominant foliation>>
		<<Struc: 219 - 224.13 Weak-Moderate dominant foliation>>
		<<Struc: 224.13 - 225 Weak-Moderate dominant foliation>>
		<<Struc: 228 - 228.5 Moderate dominant foliation>>
		<<Struc: 230.5 - 232.1 Moderate dominant foliation>>
		<<Struc: 234.76 - 236 Moderate dominant foliation>>
		<<Struc: 241.7 - 246.78 Moderate dominant foliation>>
		<<Struc: 246.78 - 255 Moderate dominant foliation>>
		<<Struc: 257 - 264.5 Moderate dominant foliation>>
		<<Struc: 257.72 - 276 Moderate-Strong dominant foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
264.25	265.50	1.25						
265.50	267.00	1.50						
267.00	268.25	1.25	B00292454	0.011	1.3	-0.01	0.03	0.05
268.25	269.50	1.25	B00292455	0.026	4.4	-0.01	0.08	0.05
269.50	270.75	1.25	B00292456	0.046	6.7	0.01	0.14	0.05
270.75	272.00	1.25	B00292457	0.025	6.2	0.02	0.11	0.06
272.00	273.12	1.12	B00292458	0.04	13.1	0.02	0.2	0.07

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 266.5 - 267.1 Moderate Fault>>									
		<<Struc: 267.7 - 270 Moderate dominant foliation>>									
		<<Struc: 270 - 271.2 Moderate-Strong dominant foliation>>									
273.12	**274.40**	**OC Chalcopyrite-pyrrhotite net textured sulphides**	273.12	274.40	1.28	B00292459	2.2	243	4.97	1.62	3.77
		273.12 - 274.4: Tourmaline replacing cordierite. Net textured chalcopyrite and irregular - discontinuous bands of pyrrhotite in chlorite - qtz. 7cm bands of fine grained OB at upper and lower contact.									
		<<Min: 273.12 - 274 10% Min: Pyrite>>									
		<<Min: 273.12 - 274 10% Min: Pyrrhotite>>									
		<<Min: 273.12 - 274.4 3% Min: Sphalerite>>									
		<<Min: 273.2 - 274.33 20% Min: Chalcopyrite>>									
		<<Alt: 273.12 - 274.4 Weak-Moderate Tourmaline>>									
		<<Alt: 273.12 - 274.4 Strong Chlorite>>									
		<<Alt: 273.12 - 274.4 Moderate Cordierite>> mostly altered to chlorite and or replaced by tourmaline									
		<<Alt: 273.12 - 274.52 Weak Calcite>> OB bands on margin of OC are calcareous									
274.40	**275.60**	**RHY undifferentiated rhyolite MCG**	274.40	275.60	1.20	B00292461	0.02	4.7	0.12	-0.01	0.06
		274.4 - 275.6: Unusual unit. Strong chlorite alteration over 8-12 cm at upper and lower contacts. Light grey silica - calcite, rounded <cm - +cm clots blebs of what was possibly massive coarse grained cordierite alteration. Weakly brecciated. Or possibly a peperite? Least likely theory is that it is OK type gangue.									
		<<Min: 274.4 - 275.6 1% Min: Pyrite>>									
		<<Alt: 274.4 - 275.6 Weak Muscovite>> slivers of MU altered RHY									
		<<Alt: 274.52 - 275.6 Strong Silicification>> Grey fine grained silica									
		<<Alt: 274.52 - 275.6 Trace Cordierite>> Possible remanant CI and possibly abundant silica and calicte are replacing CI.									
		<<Alt: 274.52 - 275.6 Moderate-Strong Calcite>> Calcite mixed with silica and minor barite.									
275.60	**276.59**	**RHY undifferentiated rhyolite**	275.60	276.59	0.99	B00292462	0.08	20.2	0.57	0.16	0.95
		275.6 - 276.59: 275.60-275.72: OJ, 275.72-276.59: Rhy with bands of original chlorite alteration.									
		<<Min: 275.6 - 275.72 3% Min: Pyrite>>									
		<<Min: 275.6 - 275.72 3% Min: Pyrrhotite>> py rimmed and replaced by po									
		<<Min: 275.6 - 275.72 5% Min: Chalcopyrite>>									
		<<Min: 275.72 - 276.59 0.5% Min: Pyrrhotite>>									
		<<Alt: 275.6 - 276.59 Moderate-Strong Chlorite>> intensity decreases downhole									
		<<Alt: 275.6 - 279.2 Trace Calcite>>									

From (m)	To (m)	Rocktype & Description
276.59	**330.00**	**RHYvl Lapilli tuff grey-green**

276.59 - 330: Overall a remarkably uniform intersection of RHYvl. Some variation due to lpl size and local rare or absent lpl. Alteration vaires due to presence, absence and differing intensity of bio+/-chl+/-tourmaline+/-bleaching alteration.

<<Min: 276.59 - 285.8 1% Min: Pyrrhotite>>

<<Min: 276.59 - 292.25 1% Min: Pyrite>>

<<Min: 285.8 - 292.25 3% Min: Pyrrhotite>>

<<Min: 292.25 - 297 5% Min: Pyrite>>

<<Min: 292.5 - 297 3% Min: Pyrrhotite>>

<<Min: 297 - 300 1% Min: Pyrrhotite>>

<<Min: 297 - 330 3% Min: Pyrite>>

<<Min: 300 - 330 3% Min: Pyrrhotite>> Po replacing py cubes.

<<Alt: 276.59 - 289.6 Weak Muscovite>>

<<Alt: 279.2 - 284.9 Weak Calcite>>

<<Alt: 284.9 - 287 Moderate Calcite>>

<<Alt: 285 - 289.7 Weak Chlorite>>

<<Alt: 287 - 313 Weak Calcite>>

<<Alt: 289.6 - 292.4 Weak-Moderate Muscovite>> more MU at bleached -sericite zone with minor foliaform gouge zones

<<Alt: 292.4 - 300 Weak Muscovite>>

<<Alt: 300 - 301.35 Weak-Moderate Muscovite>>

<<Alt: 301.35 - 330 Weak Muscovite>>

<<Alt: 303.25 - 312.2 Weak Chlorite>>

<<Alt: 313 - 327 Weak-Moderate Calcite>>

<<Alt: 313.8 - 330 Weak Tourmaline>>

<<Alt: 321.2 - 330 Trace Chlorite>>

<<Alt: 322.4 - 327.65 Weak Biotite>>

<<Alt: 324.1 - 330 Trace Silicification>>

<<Alt: 327 - 330 Trace Calcite>>

<<Alt: 327.4 - 330 Trace Cordierite>> possible replaced cordierite (white 1-3mm), now angular to subrounded crystals or patches of Qtz - calcite-pyrite. Coincides with bleaching and possible weak silicification

<<Vein: 297.5 - 328.5 1% Quartz-Tourmaline 35 deg. >> sparse mm scale qtz - tourmaline veinlets crosscutting foliation with tourmaline envelope.

<<Vein: 302.24 - 302.27 100% Quartz-Chlorite 15 deg. >>

<<Vein: 314.8 - 320.16 100% Tourmaline>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
276.59	278.00	1.41	B00292463	-0.005	-0.3	-0.01	-0.01	0.02
278.00	279.25	1.25	B00292464	0.006	-0.3	-0.01	-0.01	-0.01
279.25	280.50	1.25	B00292465	-0.005	0.3	-0.01	-0.01	-0.01
280.50	281.50	1.00						
281.50	283.00	1.50						
283.00	284.40	1.40						

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Project: KZK **Hole Number:** K16-360

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 277.9 - 278.55 Moderate Fault>>
<<Struc: 281.2 - 281.3 Weak-Moderate Fault>>
<<Struc: 281.5 - 281.6 Moderate dominant foliation>>
<<Struc: 285.37 - 285.52 Weak-Moderate Fault>> parallel to foliation
<<Struc: 289.67 - 292.55 Weak Fault>> mostly gouge - clay zones parallel to foliation
<<Struc: 294 - 297 Moderate-Strong dominant foliation>>
<<Struc: 300.5 - 301.1 Weak Fault>>
<<Struc: 300.5 - 303.25 Moderate-Strong dominant foliation>>
<<Struc: 302 - 302.8 Weak Shear>>
<<Struc: 302.25 - 302.28 Moderate-Strong Vein>>
<<Struc: 302.65 - 302.7 Weak Shear>>
<<Struc: 302.65 - 302.9 Weak-Moderate Fault>>
<<Struc: 319.97 - 320 Weak-Moderate Fault>>
<<Struc: 321 - 324 Moderate-Strong dominant foliation>>
<<Struc: 329.9 - 330 Moderate dominant foliation>>

End of Hole @ 330

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-361

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/15/2016
UTM Easting	415048.707	Core Size:	HQ3	Azimuth:	359.95	Date Logging Complete:	6/16/2016
UTM Northing:	6815308.954	Casing Pulled?:	Yes	Dip:	-48.8	Drill Company:	Hytech
UTM Elev. (m):	1385.429	Casing Depth (m):	9	Length (m):	68.9	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/9/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/10/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
Comments:						Parent Hole:	

K16-361 was designed to intersect the up-dip near surface portion of the ABM deposit to provide a sample suitable for metallurgical testing. The hole was drilled down the dip of the ABM lens. The hole intersected OB mineralization of the ABM lens at the overburden bedrock interface @ 7.57m and continued to 39.48m with a narrow interval of weakly developed OA mineralization from 21.45 - 22.79 m; RHYva from 27.77 - 30.78m; and muscovite altered RHY from 34.00 - 36.28m.
Below the massive sulphide lens, muscovite +/- chlorite altered RHYvl was encountered to 48.42m followed by the MAFi footwall mafic to the E.O.H at 68.9m

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-48.8	358.55	1.4	359.95	Gyro	Oscar Nielsen	6/10/2016		☑	100
5	-48.79657	358.54649	1.4	359.94649	Gyro	Oscar Nielsen	6/10/2016		☑	100
10	-48.97359	358.60767	1.4	0.00767	Gyro	Oscar Nielsen	6/10/2016		☑	100
15	-49.07945	358.63668	1.4	0.03668	Gyro	Oscar Nielsen	6/10/2016		☑	100
18	-49.2	338.6	22.1	0.7	ReflexEZS	Hytech	6/9/2016	5722	☐	
20	-49.16161	358.47105	1.4	359.87105	Gyro	Oscar Nielsen	6/10/2016		☑	100
25	-49.21853	358.43356	1.4	359.83356	Gyro	Oscar Nielsen	6/10/2016		☑	100
30	-49.34963	358.36418	1.4	359.76418	Gyro	Oscar Nielsen	6/10/2016		☑	100
35	-49.52326	358.35497	1.4	359.75497	Gyro	Oscar Nielsen	6/10/2016		☑	100
40	-49.71739	358.44721	1.4	359.84721	Gyro	Oscar Nielsen	6/10/2016		☑	100
42	-50.2	336.7	22.1	358.8	ReflexEZS	Hytech	6/9/2016	5744	☐	
45	-49.94989	358.37144	1.4	359.77144	Gyro	Oscar Nielsen	6/10/2016		☑	100
50	-50.14171	358.40091	1.4	359.80091	Gyro	Oscar Nielsen	6/10/2016		☑	100
55	-50.23048	358.46076	1.4	359.86076	Gyro	Oscar Nielsen	6/10/2016		☑	100
60	-50.36044	358.39511	1.4	359.79511	Gyro	Oscar Nielsen	6/10/2016		☑	100
66	-50.8	339	22.1	1.1	ReflexEZS	Hytech	6/10/2016	5777	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00	**7.53**	**OVBN**	**Overburden**																	
7.53	**7.57**	**RHYv**	**Rhyolite volcaniclastic**																	
<<Alt: 7.53 - 7.57 Weak Muscovite>> weak for in contact with MXSX.																				
7.57	**21.45**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	7.57	8.57	1.00	B00267401	0.608	111	0.06	2.02	9.88							
7.57 - 21.45: significant patchesof silica,carb, barite masses, veinlets where sulpide (GA, SP) become coarse grained. Particularly 17.5 - 21.0m. Here it isclose to OK																				
<<Min: 7.57 - 15 5% Min: Sphalerite>> andcoasre 5mm patches associated with CA, sil, BA					8.57	9.57	1.00	B00267402	1.16	97.7	0.09	1.62	9.21							
<<Min: 7.57 - 15 70% Min: Pyrite>>					9.57	10.57	1.00	B00267403	1.47	102	0.35	0.45	6.71							
<<Min: 7.57 - 15 2% Min: Galena>> coaser around sil, CA, BA					10.57	11.57	1.00	B00267404	1.84	223	0.63	0.86	6.87							
<<Min: 7.57 - 15 1% Min: Chalcopyrite>> rare visible as coarse gr around sil, CA, BA					11.57	12.57	1.00	B00267405	3.19	353	1.05	0.91	5.35							
<<Min: 7.57 - 15 1% Min: Barite>> with sil, CA agr					12.57	13.57	1.00	B00267406	1.6	156	0.43	0.93	6.3							
<<Min: 15 - 21.45 10% Min: Sphalerite>> andasabove					13.57	14.57	1.00	B00267407	2.11	227	0.59	1.22	3.53							
<<Min: 15 - 21.45 65% Min: Pyrite>>					14.57	15.57	1.00	B00267408	1.59	226	0.52	1.6	6.76							
<<Min: 15 - 21.45 5% Min: Galena>> as above					15.57	16.57	1.00	B00267409	2.45	206	0.65	0.8	4.85							
<<Min: 15 - 21.45 2% Min: Chalcopyrite>> visible with sil, ca, ba					16.57	17.57	1.00	B00267411	1.89	163	0.51	0.69	3.77							
<<Min: 15 - 21.45 2% Min: Barite>> With SIL, CA AGR					17.57	18.57	1.00	B00267412	1.4	121	0.46	0.48	6.05							
<<Alt: 7.57 - 13 Weak-Moderate Calcite>> In OB, veinlet + AGR					18.57	19.57	1.00	B00267413	2.79	275	0.78	0.84	4.73							
<<Alt: 13 - 17 Weak Calcite>> InOB, Veinlets too					19.57	20.57	1.00	B00267414	1.83	282	0.74	0.77	4.39							
<<Alt: 17 - 21.45 Weak-Moderate Calcite>> asabove					20.57	21.45	0.88	B00267415	0.69	60.6	0.28	0.32	2.38							
21.45	**22.79**	**OA**	**Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	21.45	22.79	1.34	B00267416	0.677	49.8	0.55	0.38	1.93							
21.45 - 22.79: weakly developedMG laminations, lower CNT 300/005																				
<<Min: 21.45 - 22.79 10% Min: Sphalerite>> black coarse and more concentrated towards lower contact																				
<<Min: 21.45 - 22.79 65% Min: Pyrite>>																				
<<Min: 21.45 - 22.79 10% Min: Magnetite>> forming weak laminae																				
<<Min: 21.45 - 22.79 2% Min: Galena>>																				
<<Min: 21.45 - 22.79 1% Min: Chalcopyrite>>																				
<<Alt: 22.5 - 27.77 Weak Calcite>> as above																				
<<Struc: 21.45 - 22.5 dominant foliation>> mg laminations define fabric																				

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
22.79	**27.77**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	22.79	23.79	1.00	B00267417	1.17	138	1.2	1.1	5.78
22.79 - 27.77: as OB above close to OK in composition. Sharp lower contact alpha= 25. 25.20 - 25.30m core intersects old drill hole!													
<<Min: 22.79 - 27.77 7% Min: Sphalerite>> some coarser bands					23.79	24.79	1.00	B00267418	1.91	159	0.15	1.93	6.34
<<Min: 22.79 - 27.77 5% Min: Galena>>					24.79	25.79	1.00	B00267419	0.907	204	0.37	2.38	6.57
<<Min: 22.79 - 27.77 2% Min: Chalcopyrite>>					25.79	26.79	1.00	B00267422	1.21	161	0.33	2.03	5.76
<<Min: 22.79 - 27.77 2% Min: Barite>> associated with Sil, CA masses					26.79	27.77	0.98	B00267423	1.08	208	0.33	1.64	3.83
<<Min: 23.5 - 23.6 5% Min: Arsenopyrite>> in sil/CA replacement bands													
<<Struc: 22.79 - 22.79 Contact>>													
27.77	**30.78**	**RHYva**	**Coarse grained to ash tuff**		27.77	29.40	1.63	B00267424	1.34	158	0.33	0.06	0.09
<<Min: 27.77 - 30.78 1% Min: Sphalerite>> same as PY					29.40	30.78	1.38	B00267425	0.083	3.8	0.1	0.02	0.05
<<Min: 27.77 - 30.78 10% Min: Pyrite>> foliaform dis bands													
<<Min: 27.77 - 30.78 0.5% Min: Galena>>													
<<Alt: 27.77 - 30.78 Strong Muscovite>>													
<<Alt: 27.77 - 30.78 Trace Calcite>>													
<<Struc: 28.8 - 30.3 Moderate Fault>> gouge and healed gouge													
30.78	**31.50**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MG**	30.78	31.50	0.72	B00267426	0.803	150	0.6	3.51	10.3
30.78 - 31.5: calcite viening brrx to 31m													
<<Min: 30.78 - 31.5 15% Min: Sphalerite>>													
<<Min: 30.78 - 31.5 60% Min: Pyrite>>													
<<Min: 30.78 - 31.5 5% Min: Galena>>													
<<Min: 30.78 - 31.5 0.5% Min: Chalcopyrite>>													
<<Alt: 30.78 - 31 Weak-Moderate Calcite>> In OB in veinlets													
31.50	**32.76**	**OC**	**Chalcopyrite-pyrrhotite net textured sulphides**	**FMG**	31.50	32.76	1.26	B00267427	3.9	192	6	1.84	14.6
31.5 - 32.76: MXSX with significant PO, CP. Not stringer style.													
<<Min: 31.5 - 32.76 7% Min: Sphalerite>>													
<<Min: 31.5 - 32.76 50% Min: Pyrite>>													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 31.5 - 32.76 15% Min: Pyrrhotite>> to banded net textured with CP									
		<<Min: 31.5 - 32.76 1% Min: Magnetite>>									
		<<Min: 31.5 - 32.76 3% Min: Galena>>									
		<<Min: 31.5 - 32.76 7% Min: Chalcopyrite>> to banded net textured									
32.76	**34.00 OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	32.76	34.00	1.24	B00267428	1.91	246	2.73	5.06	14.1
		<<Min: 32.76 - 34 15% Min: Sphalerite>> to SMAS over lower 30cm									
		<<Min: 32.76 - 34 70% Min: Pyrite>>									
		<<Min: 32.76 - 34 2% Min: Magnetite>>									
		<<Min: 32.76 - 34 4% Min: Galena>>									
		<<Min: 32.76 - 34 4% Min: Chalcopyrite>> weak banding									
		<<Alt: 32.76 - 34 Weak Calcite>> and vienlets									
34.00	**36.28 RHY**	**undifferentiated rhyolite**	34.00	35.48	1.48	B00267429	0.06	7.2	0.05	0.1	0.37
		34 - 36.28: altered + 2 areasof fault gouge									
		<<Min: 34 - 36.28 1% Min: Sphalerite>>	35.48	36.28	0.80	B00267431	0.311	51.6	0.54	0.99	2.31
		<<Min: 34 - 36.28 4% Min: Pyrite>>									
		<<Min: 34 - 36.28 0.5% Min: Galena>>									
		<<Min: 35.58 - 35.73 1% Min: Chalcopyrite>>									
		<<Alt: 34 - 36.28 Moderate-Strong Muscovite>>									
		<<Vein: 35.38 - 35.73 100% Quartz-Albite 30 deg. >> massive undeformed white QV, CNT upper and lower @ 30 CA									
		<<Struc: 34 - 34 Contact>> sharp contact									
		<<Struc: 34.2 - 34.6 Moderate Fault>> gouge, broken missing core									
		<<Struc: 35.73 - 36.28 Moderate Fault>> healed gouge									
36.28	**39.48 OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	36.28	37.28	1.00	B00267432	0.848	137	1.61	2.92	5.95
		36.28 - 39.48: low angle cockcomb carbonate vein lets									
		<<Min: 36.28 - 39.48 8% Min: Sphalerite>>	37.28	38.28	1.00	B00267433	0.656	118	0.26	2.73	6.63
		<<Min: 36.28 - 39.48 70% Min: Pyrite>>	38.28	39.00	0.72	B00267434	0.557	161	0.1	4.29	7.53
		<<Min: 36.28 - 39.48 2% Min: Magnetite>> coarse grained	39.00	39.48	0.48	B00267435	0.386	179	0.23	4.09	9.68
		<<Min: 36.28 - 39.48 5% Min: Galena>>									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-361

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 36.28 - 39.48 Weak-Moderate Calcite>> carb veinlets									
		<<Vein: 37 - 38.8 15% Calcium carbonate/Carbonate 5 deg. >> 5mm brittle low angle tensional carbonate veinlet mass									
39.48	**48.42**	**RHYvl Lapilli tuff**	39.48	40.48	1.00	B00267436	0.03	5.2	0.07	0.07	0.65
		39.48 - 48.42: silicic bands and low angle make some sections look like possible RHYc. broken contact with MAFi below									
		<<Min: 39.48 - 46.5 2% Min: Pyrite>> Foliaform weak bands	40.48	42.00	1.52	B00267437	-0.005	1.5	0.01	0.02	0.06
		<<Min: 46.5 - 48.2 1% Min: Sphalerite>>	42.00	43.20	1.20	B00267438	-0.005	0.3	-0.01	-0.01	0.02
		<<Min: 46.5 - 48.2 10% Min: Pyrite>> weakbands with CL MU alt	43.20	44.20	1.00	B00267439	0.012	0.7	-0.01	-0.01	0.01
		<<Min: 46.5 - 48.2 5% Min: Pyrrhotite>> weak bands	44.20	45.20	1.00	B00267441	0.044	6.5	-0.01	0.11	0.21
		<<Min: 46.5 - 48.2 1% Min: Galena>>	45.20	46.50	1.30	B00267442	0.035	8.5	0.23	0.02	0.12
		<<Min: 46.5 - 48.2 1% Min: Chalcopyrite>>	46.50	48.42	1.92	B00267443	0.412	52.1	0.27	0.81	2.47
		<<Alt: 39.48 - 40 Intense Muscovite>>									
		<<Alt: 39.48 - 40 Weak-Moderate Chlorite>>									
		<<Alt: 40 - 48.2 Moderate Chlorite>> rare 4mm massive CL stringer bands									
		<<Alt: 40 - 48.42 Moderate-Strong Muscovite>> Int 7 in cm bands									
		<<Alt: 48.2 - 68.9 Moderate-Strong Calcite>> in MAFi									
		<<Struc: 40 - 46.5 Trace Fault>> broken core zone									
48.42	**68.90**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	48.42	49.42	1.00	B00267444	-0.005	-0.3	-0.01	-0.01	0.02
		48.42 - 68.9: fine grained 53.50 - 57.60m: Mottled Leopard rock 59 - 68.9m									
		<<Min: 53 - 57.7 0.5% Min: Pyrrhotite>>									
		<<Struc: 59.7 - 68.9 dominant foliation>>									
		End of Hole @ 68.9									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-362

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/16/2016
UTM Easting	415019.128	Core Size:	HQ3	Azimuth:	331.9	Date Logging Complete:	6/22/2016
UTM Northing:	6815368.347	Casing Pulled?:	Yes	Dip:	-52	Drill Company:	Hytech
UTM Elev. (m):	1384.204	Casing Depth (m):	24	Length (m):	165	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/10/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/11/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
						Parent Hole:	

Comments:

The purpose of K16-362 was to collect metallurgical samples of the up-dip portion of the ABM lens. The hole collared into bedrock at 22.72m; the hanging wall consisted of RHY and MDSt. Mineralization was first encountered at 60.28m, and continued to a depth of 89.08m; the lens consisted of alternating OA and OB, with small zones of OH, OF, and OJ. RHY continued to a depth of 146.91m, with OC mineralization encountered between 118.8-121.48m. Banded sulphides surrounded the lens, with mineralization visible from 118.16-122.92m. A MAFi sill occurred from 124.47-133.79m, with a zone of OJ (127.3-128.1m). RHYi was encountered at 146.91m, and ended at 152.88m where the second MAFi sill began.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-52	330.5	1.4	331.9	TN14	Roger Hulstein	6/10/2016		☑	
5	-50.70827	330.83701	1.4	332.23701	Gyro	Alicia Vainio	6/11/2016		☑	100
10	-50.60722	331.25126	1.4	332.65126	Gyro	Alicia Vainio	6/11/2016		☑	100
15	-50.51076	331.12883	1.4	332.52883	Gyro	Alicia Vainio	6/11/2016		☑	100
20	-50.49012	330.99406	1.4	332.39406	Gyro	Alicia Vainio	6/11/2016		☑	100
25	-50.67234	330.94979	1.4	332.34979	Gyro	Alicia Vainio	6/11/2016		☑	100
30	-50.8951	330.70625	1.4	332.10625	Gyro	Alicia Vainio	6/11/2016		☑	100
35	-51.20281	330.51321	1.4	331.91321	Gyro	Alicia Vainio	6/11/2016		☑	100
36	-51.1	310.6	22.1	332.7	ReflexEZS	Hytech	6/10/2016	5868	☐	
40	-51.42946	330.56148	1.4	331.96148	Gyro	Alicia Vainio	6/11/2016		☑	100
45	-51.7026	330.43662	1.4	331.83662	Gyro	Alicia Vainio	6/11/2016		☑	100
50	-52.02647	330.43162	1.4	331.83162	Gyro	Alicia Vainio	6/11/2016		☑	100
55	-52.3508	330.39771	1.4	331.79771	Gyro	Alicia Vainio	6/11/2016		☑	100
60	-52.51195	330.29109	1.4	331.69109	Gyro	Alicia Vainio	6/11/2016		☑	100
60.01	-52.6	312.9	22.1	335	ReflexEZS	Hytech	6/11/2016	5080	☐	
65	-52.66892	330.3093	1.4	331.7093	Gyro	Alicia Vainio	6/11/2016		☑	100
70	-52.71522	330.22466	1.4	331.62466	Gyro	Alicia Vainio	6/11/2016		☑	100
75	-52.84729	330.29909	1.4	331.69909	Gyro	Alicia Vainio	6/11/2016		☑	100
80	-52.94931	330.28763	1.4	331.68763	Gyro	Alicia Vainio	6/11/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-362

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
85	-53.04754	330.30646	1.4	331.70646	Gyro	Alicia Vainio	6/11/2016		☑	100
90	-53.22664	330.28022	1.4	331.68022	Gyro	Alicia Vainio	6/11/2016		☑	100
90.01	-53.5	305.1	22.1	327.2	ReflexEZS	Hytech	6/11/2016	5672	☐	
95	-53.54291	330.17681	1.4	331.57681	Gyro	Alicia Vainio	6/11/2016		☑	100
100	-53.88084	329.96708	1.4	331.36708	Gyro	Alicia Vainio	6/11/2016		☑	100
105	-54.28137	329.84139	1.4	331.24139	Gyro	Alicia Vainio	6/11/2016		☑	100
110	-54.53798	329.5701	1.4	330.9701	Gyro	Alicia Vainio	6/11/2016		☑	100
114	-54.9	304.4	22.1	326.5	ReflexEZS	Hytech	6/11/2016	5760	☐	
115	-54.75683	329.20226	1.4	330.60226	Gyro	Alicia Vainio	6/11/2016		☑	100
120	-55.04809	329.04219	1.4	330.44219	Gyro	Alicia Vainio	6/11/2016		☑	100
125	-55.22434	328.97244	1.4	330.37244	Gyro	Alicia Vainio	6/11/2016		☑	100
130	-55.30109	329.14299	1.4	330.54299	Gyro	Alicia Vainio	6/11/2016		☑	100
135	-55.28148	329.22333	1.4	330.62333	Gyro	Alicia Vainio	6/11/2016		☑	100
138	-55.6	308.6	22.1	330.7	ReflexEZS	Hytech	6/11/2016	5817	☐	
140	-55.545	329.16808	1.4	330.56808	Gyro	Alicia Vainio	6/11/2016		☑	100
145	-55.72956	329.05178	1.4	330.45178	Gyro	Alicia Vainio	6/11/2016		☑	100
150	-55.9374	329.03189	1.4	330.43189	Gyro	Alicia Vainio	6/11/2016		☑	100
162	-56.8	308.2	22.1	330.3	ReflexEZS	Hytech	6/11/2016	5804	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**22.72**	**OVBN** **Overburden**									
22.72	**33.00**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**									

<<Min: 22.72 - 33 0.1% Min: Pyrite>>

<<Min: 22.72 - 33 0.5% Min: Pyrrhotite>>

<<Alt: 22.72 - 56.48 Moderate Muscovite>>

<<Alt: 22.72 - 58.93 Trace Calcite>>

<<Vein: 23.3 - 23.42 Quartz-Carbonate 43 deg. >> Quartz vein with patches of carbonate.

<<Vein: 25.24 - 25.38 Quartz-Carbonate 35 deg. >> Fractured quartz vein with carbonate infill.

<<Vein: 32.1 - 32.16 Quartz-Carbonate 35 deg. >> Quartz vein with carbonate-blebs.

<<Struc: 25.59 - 25.6 dominant foliation>>

<<Struc: 30.72 - 31.36 dominant foliation>>

<<Struc: 32.89 - 32.9 dominant foliation>>

From (m)	To (m)	Rocktype & Description
33.00	**58.93**	**MDSt Rhyolite tuff dominant mudstone**

33 - 58.93: 4 main lenses of MDSc occur between 33.6-34.2m, 35.64-36.07m, 41.97-42.4m, and 54.72-55.02m. Chlorite-altered, cordierite porphyroblasts appear around 56.7m.

<<Min: 33 - 57.15 1% Min: Pyrite>>

<<Min: 33 - 57.15 0.1% Min: Pyrrhotite>>

<<Min: 57.15 - 58.93 1% Min: Sphalerite>>

<<Min: 57.15 - 58.93 0.1% Min: Pyrite>>

<<Min: 57.15 - 58.93 1% Min: Pyrrhotite>>

<<Min: 57.15 - 58.93 0.1% Min: Galena>>

<<Alt: 56.48 - 58.93 Weak Chlorite>> Chlorite alteration within cordierite.

<<Alt: 56.48 - 58.93 Moderate Cordierite>>

<<Alt: 56.48 - 61.35 Strong Muscovite>> Localized zones with strong-intense sericite alteration.

<<Vein: 55.22 - 55.53 Quartz-Carbonate>> DEF quartz veins with patches of carbonate, and traces of pyrrhotite.

<<Vein: 56.36 - 56.39 Quartz-Carbonate 35 deg. >>

<<Struc: 34.52 - 34.53 dominant foliation>>

<<Struc: 43.25 - 43.26 dominant foliation>>

<<Struc: 45.52 - 45.53 dominant foliation>>

From (m)	To (m)	Rocktype & Description
58.93	**60.28**	**RHY undifferentiated rhyolite**

58.93 - 60.28: Strongly-altered, carbonate-rich RHY with disseminated sulfides.

<<Min: 58.93 - 60.28 3% Min: Sphalerite>>

<<Min: 58.93 - 60.28 1% Min: Pyrite>>

<<Min: 58.93 - 60.28 0.1% Min: Pyrrhotite>>

<<Min: 58.93 - 60.28 0.1% Min: Galena>>

<<Min: 58.93 - 60.28 0.5% Min: Chalcopyrite>>

<<Alt: 58.93 - 60.28 Strong Cordierite>> Localized zones with strong cordierite alteration.

<<Alt: 58.93 - 60.28 Moderate-Strong Calcite>>

<<Alt: 58.93 - 62.5 Moderate Chlorite>>

<<Vein: 58.93 - 60.85 Quartz-Carbonate-Sulphide 50 deg. >> Quartz-carbonate veins with minor sulfides.

<<Struc: 60.05 - 60.06 dominant foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
50.80	52.00	1.20	D00004062	0.006	0.7	-0.01	0.01	0.02
52.00	53.70	1.70	D00004063	0.008	1	-0.01	0.02	-0.01
53.70	55.00	1.30	D00004064	0.007	0.3	-0.01	-0.01	-0.01
55.00	56.00	1.00	D00004065	0.008	2.4	-0.01	0.08	0.11
56.00	57.50	1.50	D00004066	0.063	23.4	0.01	1.18	0.14
57.50	58.93	1.43	D00004067	0.021	2.3	0.06	0.01	0.29
58.93	60.28	1.35	D00004068	0.07	6.2	0.17	-0.01	1.86

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
60.28	**61.54**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	60.28	61.00	0.72	D00004069	0.983	121	2.98	0.18	3.26
60.28 - 61.54: Banded sulfides within strongly-altered RHY host. Pyrrhotite-rich zone from 61.34-61.54m.											
<<Min: 60.28 - 61.35 6% Min: Sphalerite>> Patchy sphalerite, localized within pyrrhotite-rich zones.			61.00	61.54	0.54	D00004072	0.609	74.1	0.76	0.65	10.2
<<Min: 60.28 - 61.35 2% Min: Pyrite>> Disseminated-blebs of coarse-grained, sub-angular pyrite. Fine-grained, fracture infill.											
<<Min: 60.28 - 61.35 10% Min: Pyrrhotite>> Patchy-disseminated pyrrhotite. Most common around chalcopyrite-rich zones. Disseminated-lenses of pyrrhotite occur along foliation.											
<<Min: 60.28 - 61.35 0.1% Min: Galena>>											
<<Min: 60.28 - 61.35 3% Min: Chalcopyrite>> Patchy-disseminated chalcopyrite-pyrrhotite.											
<<Min: 61.35 - 61.54 15% Min: Sphalerite>> Semi-massive pyrite with disseminated sphalerite and pyrrhotite.											
<<Min: 61.35 - 61.54 40% Min: Pyrite>> Semi-massive pyrite with disseminated sphalerite and pyrrhotite.											
<<Min: 61.35 - 61.54 10% Min: Pyrrhotite>> Semi-massive pyrite with disseminated sphalerite and pyrrhotite.											
<<Alt: 60.28 - 78.73 Trace Calcite>>											
<<Alt: 61.35 - 62.5 Moderate Muscovite>> Sericite laminations within the banded OA.											
<<Struc: 60.28 - 60.29 Contact>> RHY-OJ CNT											
<<Struc: 61.34 - 61.35 Contact>> OJ-OF CNT											
61.54	**62.50**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	61.54	62.50	0.96	D00004073	0.759	111	1.34	1.97	10.8
61.54 - 62.5: Banded sulfides and carbonate-rich gangue. Well-foliated, sericite alteration is visible at the end of the unit.											
<<Min: 61.54 - 62.5 1% Min: Sphalerite>> Semi-massive pyrite with bands of disseminated-blebby magnetite and pyrrhotite, +/- chalcopyrite and sphalerite.											
<<Min: 61.54 - 62.5 40% Min: Pyrite>> Semi-massive pyrite with bands of disseminated-blebby magnetite and pyrrhotite, +/- chalcopyrite and sphalerite.											
<<Min: 61.54 - 62.5 5% Min: Pyrrhotite>> Semi-massive pyrite with bands of disseminated-blebby magnetite and pyrrhotite, +/- chalcopyrite and sphalerite.											
<<Min: 61.54 - 62.5 20% Min: Magnetite>> Semi-massive pyrite with bands of disseminated-blebby magnetite and pyrrhotite, +/- chalcopyrite and sphalerite.											
<<Min: 61.54 - 62.5 2% Min: Chalcopyrite>> Semi-massive pyrite with bands of disseminated-blebby magnetite and pyrrhotite, +/- chalcopyrite and sphalerite.											
<<Struc: 61.88 - 61.89 dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
62.50	**63.97**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	62.50	63.32	0.82	D00004074	0.762	131	0.17	1.24	8.07
62.5 - 63.97: Massive pyrite with disseminated sphalerite, chalcopyrite, and pyrrhotite. Carbonate gangue occurs within patches, and as fracture infill.											
<<Min: 62.5 - 63.32 10% Min: Sphalerite>> Disseminated-banded sphalerite, occasional FRA.			63.32	63.97	0.65	D00004075	0.296	108	0.16	1.09	11.6
<<Min: 62.5 - 63.32 50% Min: Pyrite>> Semi-massive to banded.											
<<Min: 62.5 - 63.32 1% Min: Pyrrhotite>> Disseminated within pyrite.											
<<Min: 62.5 - 63.32 0.5% Min: Magnetite>> Disseminated blebs.											
<<Min: 62.5 - 63.32 1% Min: Galena>> Disseminated blebs proximal to quartz and sphalerite.											
<<Min: 62.5 - 63.32 1% Min: Chalcopyrite>> Rare FRA.											
<<Min: 63.32 - 63.97 5% Min: Sphalerite>> Disseminated blebs.											
<<Min: 63.32 - 63.97 50% Min: Pyrite>> Semi-massive to banded.											
<<Min: 63.32 - 63.97 3% Min: Pyrrhotite>> Patchy-disseminated pyrrhotite, proximal to chalcopyrite.											
<<Min: 63.32 - 63.97 1% Min: Magnetite>> Subrounded, disseminated blebs.											
<<Min: 63.32 - 63.97 0.1% Min: Galena>>											
<<Min: 63.32 - 63.97 3% Min: Chalcopyrite>> Disseminated blebs to patches.											
63.97	**65.45**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	63.97	64.71	0.74	D00004076	0.265	123	0.11	1.11	12.4
63.97 - 65.45: Banded pyrite and magnetite with disseminated sphalerite. Foliation is wavy, and sub-parallel TCA. Minor carbonate gangue occurs within patches, and as fracture infill.											
<<Min: 63.97 - 65.45 5% Min: Sphalerite>> Disseminated-banded sphalerite proximal to pyrite.			64.71	65.45	0.74	D00004077	0.207	72	0.11	0.68	7.69
<<Min: 63.97 - 65.45 30% Min: Pyrite>> Wispy-bands to semi-massive.											
<<Min: 63.97 - 65.45 1% Min: Pyrrhotite>>											
<<Min: 63.97 - 65.45 20% Min: Magnetite>> Disseminated blebs-banded magnetite.											
<<Min: 63.97 - 65.45 2% Min: Chalcopyrite>> Disseminated CP within PY.											
65.45	**67.69**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	65.45	66.25	0.80	D00004078	0.22	46.9	0.22	0.35	8.87
65.45 - 67.69: Massive pyrite with disseminated-patchy pyrrhotite and sphalerite +/- magnetite, and subrounded clasts of silica gangue.											
<<Min: 65.45 - 67.69 15% Min: Sphalerite>> Disseminated blebs proximal to gangue; banding within PY-rich zones.			66.25	67.00	0.75	D00004079	0.305	66.3	0.62	0.37	8.68

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 65.45 - 67.69 40% Min: Pyrite>> Semi-massive PY. Subrounded blebs of PY occur within silica gangue.	67.00	67.69	0.69	D00004081	0.855	131	2.1	0.39	10.4
		<<Min: 65.45 - 67.69 15% Min: Pyrrhotite>>									
		<<Min: 65.45 - 67.69 2% Min: Magnetite>>									
		<<Min: 65.45 - 67.69 3% Min: Chalcopyrite>> Proximal to PO.									
67.69	**68.09**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	67.69	68.09	0.40	D00004082	0.839	212	2.86	0.92	8.5
		67.69 - 68.09: Banded - patchy sulfides within an altered RHY host. Sulfides are pyrrhotite and chalcopyrite-dominant, and contain small-subrounded clasts of chlorite.									
		<<Min: 67.69 - 68.09 5% Min: Sphalerite>>									
		<<Min: 67.69 - 68.09 5% Min: Pyrite>> Disseminated within PO and CP.									
		<<Min: 67.69 - 68.09 25% Min: Pyrrhotite>> Banded to patchy PO; disseminated blebs are visible within the CP.									
		<<Min: 67.69 - 68.09 15% Min: Chalcopyrite>> Patchy CP; net-like texture around chloritic-blebs.									
		<<Min: 67.69 - 68.09 15% Min: Barite>> BA lense with disseminated sulfides, and cm-size blebs.									
		<<Alt: 67.69 - 68.09 Moderate-Strong Chlorite>>									
		<<Struc: 67.78 - 67.79 dominant foliation>>									
68.09	**69.83**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	68.09	69.00	0.91	D00004083	0.7	181	0.92	1.21	12.9
		68.09 - 69.83: Massive pyrite with localized patches of sphalerite and disseminated magnetite.									
		<<Min: 68.09 - 69.83 25% Min: Sphalerite>>	69.00	69.83	0.83	D00004084	0.291	62.9	0.34	0.38	17.8
		<<Min: 68.09 - 69.83 60% Min: Pyrite>> Massive to banded.									
		<<Min: 68.09 - 69.83 5% Min: Pyrrhotite>>									
		<<Min: 68.09 - 69.83 1% Min: Magnetite>> Disseminated blebs.									
		<<Min: 68.09 - 69.83 0.5% Min: Galena>>									
		<<Min: 68.09 - 69.83 2% Min: Chalcopyrite>>									
		<<Struc: 69.15 - 69.16 dominant foliation>>									
69.83	**72.52**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	69.83	70.83	1.00	D00004085	0.626	97.5	1.29	0.4	12.8
		69.83 - 72.52: Banded (and disseminated) magnetite and pyrite. OA alternates with small lenses of pyrite-dominant OB; OB accounts for approx 35% of the unit.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 69.83 - 72.52 3% Min: Sphalerite>>			70.83	71.60	0.77	D00004086	0.41	170	0.51	1.6	16.2
<<Min: 69.83 - 72.52 50% Min: Pyrite>> Semi-massive to banded.			71.60	72.52	0.92	D00004087	0.206	62.7	0.48	0.58	12.3
<<Min: 69.83 - 72.52 5% Min: Pyrrhotite>>											
<<Min: 69.83 - 72.52 25% Min: Magnetite>> Disseminated blebs to banded MG within PY.											
<<Min: 69.83 - 72.52 2% Min: Galena>> Disseminated GL proximal to silica gangue.											
<<Min: 69.83 - 72.52 5% Min: Chalcopyrite>> Disseminated CP proximal to PO.											
72.52	**73.10**	**OF** **Pyrrhotite rich sulphides**	72.52	73.10	0.58	D00004088	0.066	118	0.21	1.59	8.69
72.52 - 73.1: Massive pyrrhotite with patches of pyrite, and rare clasts of silicous gangue.											
<<Min: 72.52 - 73.1 10% Min: Pyrite>> Disseminated to patchy.											
<<Min: 72.52 - 73.1 80% Min: Pyrrhotite>>											
<<Min: 72.52 - 73.1 0.5% Min: Magnetite>> Disseminated blebs.											
<<Min: 72.52 - 73.1 0.5% Min: Galena>> Disseminated GL within gangue.											
<<Min: 72.52 - 73.1 0.1% Min: Chalcopyrite>>											
73.10	**78.73**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	73.10	74.00	0.90	D00004089	0.19	40.9	0.61	0.36	6.42
73.1 - 78.73: Banded-blebby pyrite and magnetite +/- sphalerite. Clasts of silica-gangue increase near the end of the unit.											
<<Min: 73.1 - 78.73 5% Min: Sphalerite>>			74.00	75.00	1.00	D00004092	0.226	94.4	0.44	1.53	7.61
<<Min: 73.1 - 78.73 50% Min: Pyrite>> Semi-massive PY with banded MG.			75.00	76.00	1.00	D00004093	0.15	38.8	0.46	0.31	5.19
<<Min: 73.1 - 78.73 10% Min: Pyrrhotite>> Patchy-banded.			76.00	77.00	1.00	D00004094	0.12	30.8	0.58	0.16	6.79
<<Min: 73.1 - 78.73 20% Min: Magnetite>> Banded MG blebs.			77.00	78.00	1.00	D00004095	0.162	34.8	0.47	0.2	8.58
<<Min: 73.1 - 78.73 1% Min: Galena>>			78.00	78.73	0.73	D00004096	0.299	76.3	0.8	0.88	5.98
<<Min: 73.1 - 78.73 2% Min: Chalcopyrite>> Patchy CP; most abundant within gangue.											
<<Struc: 74.56 - 74.57 dominant foliation>>											
<<Struc: 78.6 - 78.61 dominant foliation>>											
78.73	**87.42**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	78.73	79.50	0.77	D00004097	0.358	109	0.15	1.62	5.51
78.73 - 87.42: Semi-massive-disseminated pyrite, with disseminated sphalerite, and rare magnetite-rich bands. Pyrite, sphalerite +/- galena, and carbonate fracture infill is common; vugs within cemented fractures are rare. Silica-carbonate-rich gangue is most abundant from 80.4- 86.4m.											
<<Min: 78.73 - 80.38 10% Min: Sphalerite>> Disseminated banding.			79.50	80.38	0.88	D00004098	2.61	236	0.2	1.81	9.25

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 78.73 - 80.38 50% Min: Pyrite>> Semi-massive to banded.	80.38	81.50	1.12	D00004099	2.71	306	0.37	2.95	9.67
		<<Min: 78.73 - 80.38 0.5% Min: Magnetite>>	81.50	82.50	1.00	D00004101	2.41	346	0.15	4.84	13.1
		<<Min: 78.73 - 80.38 0.5% Min: Galena>> Disseminated within gangue.	82.50	83.50	1.00	D00004102	2.84	406	0.3	4.68	14
		<<Min: 78.73 - 80.38 1% Min: Barite>> Subrounded blebs.	83.50	84.50	1.00	D00004103	3.43	415	0.37	4.47	6.81
		<<Min: 80.38 - 86.5 10% Min: Sphalerite>>	84.50	85.50	1.00	D00004104	3.46	289	0.47	1.97	6.4
		<<Min: 80.38 - 87.42 40% Min: Pyrite>> Semi-massive to banded PY.	85.50	86.50	1.00	D00004105	4.21	348	0.52	2.2	9.33
		<<Min: 80.38 - 87.42 0.5% Min: Pyrrhotite>>	86.50	87.42	0.92	D00004106	1.44	383	0.09	5.2	14.6
		<<Min: 80.38 - 87.42 3% Min: Galena>> Disseminated and FRA.									
		<<Min: 80.38 - 87.42 1% Min: Chalcopyrite>> Disseminated - patchy; proximal to gangue.									
		<<Min: 80.38 - 87.42 5% Min: Barite>> Blebs of BA within gangue.									
		<<Min: 86.5 - 87.42 20% Min: Sphalerite>> Sphalerite-rich banding.									
		<<Alt: 78.73 - 89.08 Weak-Moderate Calcite>> Calcite blebs and fracture infill.									
		<<Vein: 84.37 - 84.38 Quartz-Carbonate 40 deg. >> Carbonate-rich veinlet.									
87.42	**89.08**	**OH** **Fine grained, megascopically homogeneous massive pyrite**	87.42	88.08	0.66	D00004107	3	299	0.61	2.19	4.94
		87.42 - 89.08: Massive pyrite with disseminated sphalerite, and carbonate-rich gangue.									
		<<Min: 87.42 - 89.08 3% Min: Sphalerite>> Disseminated sphalerite within localized zones.	88.08	89.08	1.00	D00004108	1.47	306	0.3	2.29	7.63
		<<Min: 87.42 - 89.08 85% Min: Pyrite>> Massive PY with disseminated sphalerite, and carbonate gangue.									
		<<Struc: 88.4 - 88.41 Foliation>>									
89.08	**105.95**	**RHY** **undifferentiated rhyolite**	89.08	90.50	1.42	D00004109	0.016	13.9	-0.01	0.22	0.65
		89.08 - 105.95: Undifferentiated RHY with strong muscovite, ankerite, and silica alteration; and silicic bands.									
		<<Min: 89.08 - 98 0.1% Min: Arsenopyrite>>	90.50	92.00	1.50	D00004111	0.007	0.6	-0.01	-0.01	0.02
		<<Min: 89.08 - 104.14 0.5% Min: Pyrite>>	92.00	93.50	1.50	D00004112	0.006	1.3	-0.01	0.01	0.04
		<<Min: 104.14 - 105.95 2% Min: Pyrite>> Banded-disseminated PY.	93.50	95.00	1.50	D00004113	0.008	-0.3	-0.01	-0.01	-0.01
		<<Alt: 89.08 - 103.68 Weak Calcite>> Disseminated calcite; patchy within quartz veins.	95.00	96.50	1.50	D00004114	0.009	-0.3	-0.01	-0.01	-0.01
		<<Alt: 89.08 - 118.16 Strong Muscovite>> Patchy-muscovite alteration within the OA.	96.50	98.00	1.50	D00004115	-0.005	0.4	-0.01	-0.01	0.02
		<<Alt: 91 - 94.3 Weak-Moderate Ankerite>> Disseminated, euhedral ankerite or dolomite?	101.00	102.50	1.50	D00004116	0.007	-0.3	-0.01	-0.01	-0.01
		<<Alt: 94.3 - 96.5 Moderate-Strong Silicification>> Silicification within RHY unit; decreasing intensity downhole.	102.50	104.00	1.50	D00004117	0.011	0.4	-0.01	-0.01	-0.01
		<<Alt: 94.3 - 97.37 Trace Ankerite>>	104.00	105.00	1.00	D00004118	0.063	2.2	-0.01	0.02	0.02
		<<Alt: 97.37 - 98.72 Weak Ankerite>>	105.00	105.95	0.95	D00004119	0.337	47.7	0.1	0.5	1.09
		<<Alt: 103.68 - 124.47 Trace Calcite>> Weak, disseminated calcite; patches occur within the quartz veins.									
		<<Vein: 101.13 - 101.54 Quartz-Carbonate 40 deg. >> Quartz vein with patchy-carbonate, and traces of pyrite.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 91.44 - 91.45 Foliation>> Ankerite banding.

<<Struc: 93.74 - 93.75 Vein>> Unmineralized stringer.

<<Struc: 94.5 - 94.51 dominant foliation>>

<<Struc: 98.63 - 98.64 dominant foliation>>

<<Struc: 102.37 - 102.38 dominant foliation>>

<<Struc: 103.9 - 103.91 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
105.95	**107.22**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	105.95	107.22	1.27	D00004121	1.15	83.9	0.61	0.96	6.62

105.95 - 107.22: Semi-massive pyrite with disseminated magnetite, and carbonate-rich blebs.

<<Min: 105.95 - 107.22 3% Min: Sphalerite>>

<<Min: 105.95 - 107.22 65% Min: Pyrite>> Semi-massive to massive PY with disseminated-banded MG, and disseminated SP, PO, CP +/- GL.

<<Min: 105.95 - 107.22 3% Min: Pyrrhotite>>

<<Min: 105.95 - 107.22 8% Min: Magnetite>> Disseminated blebs-banded MG.

<<Min: 105.95 - 107.22 0.1% Min: Galena>> Finely-disseminated within the massive PY.

<<Min: 105.95 - 107.22 1% Min: Chalcopyrite>>

<<Min: 105.95 - 107.22 1% Min: Barite>> Localized blebs of BA proximal to gangue.

<<Struc: 106.43 - 106.44 Foliation>> Mineralized banding within OA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
107.22	**108.17**	**OI** **Heavilly disseminated sulphides in host schist**	107.22	108.17	0.95	D00004122	0.413	29.9	0.46	0.26	0.88

107.22 - 108.17: Disseminated - banded sulfides within muscovite-altered RHY. Pockets of sulfides are common within the quartz vein (107.84-108.17m).

<<Min: 107.22 - 108.17 0.5% Min: Sphalerite>> Disseminated within the PY bands, and blebby within the quartz vein.

<<Min: 107.22 - 108.17 3% Min: Pyrite>> Banded PY adjacent to OA.

<<Min: 107.22 - 108.17 1% Min: Pyrrhotite>> Banded PO associated with the banded PY. Disseminated-blebs of PO are proximal to the CP, within the quartz vein.

<<Min: 107.22 - 108.17 0.1% Min: Galena>> Trace GL within the quartz vein.

<<Min: 107.22 - 108.17 2% Min: Chalcopyrite>> Blebby-CP within the quartz vein.

<<Vein: 107.84 - 108.17 Quartz-Carbonate-Sulphide 30 deg. >> Deformed-brecciated quartz vein with patchy-carbonate, and coarse-grained, blebby sulphides. Muscovite is visible on fractured surfaces.

<<Struc: 107.48 - 107.49 Foliation>> Mineralized banding within OI.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
108.17	**118.16**	**RHY — undifferentiated rhyolite**	108.17	109.50	1.33	D00004123	-0.005	0.8	-0.01	-0.01	0.05
108.17 - 118.16: Undifferentiated RHY with strong muscovite alteration, and silicic banding.											
<<Min: 108.17 - 118.16 0.5% Min: Pyrite>>			109.50	111.00	1.50	D00004124	-0.005	0.4	0.01	-0.01	0.01
<<Min: 108.17 - 118.16 0.1% Min: Pyrrhotite>> Disseminated throughout RHY; and within CP stringer.			111.00	112.50	1.50	D00004125	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 117.72 - 118.16 2% Min: Chalcopyrite>> CP stringer.			112.50	114.00	1.50	D00004126	-0.005	-0.3	-0.01	-0.01	0.01
<<Vein: 117.77 - 117.78 Massive Sulphide/Sulphides undifferentiated 35 deg. >> Chalcopyrite veinlet with disseminated pyrrhotite.			114.00	115.50	1.50	D00004127	-0.005	-0.3	-0.01	-0.01	0.01
<<Struc: 109.42 - 109.43 dominant foliation>>			115.50	117.00	1.50	D00004128	-0.005	-0.3	-0.01	-0.01	-0.01
<<Struc: 114.3 - 114.31 dominant foliation>>			117.00	118.16	1.16	D00004129	0.009	3	0.11	-0.01	0.04
118.16	**118.80**	**OI — Heavilly disseminated sulphides in host schist**	118.16	118.80	0.64	D00004131	0.1	52.7	0.51	0.68	4
118.16 - 118.8: Banded sulfides and silicic bands within heavily-altered RHY.											
<<Min: 118.16 - 118.8 6% Min: Sphalerite>> Disseminated-banded SP.											
<<Min: 118.16 - 118.8 3% Min: Pyrite>>											
<<Min: 118.16 - 118.8 15% Min: Pyrrhotite>>											
<<Min: 118.16 - 118.8 0.5% Min: Magnetite>>											
<<Min: 118.16 - 118.8 0.5% Min: Galena>>											
<<Min: 118.16 - 118.8 2% Min: Chalcopyrite>>											
<<Alt: 118.16 - 118.8 Moderate-Strong Albite>>											
<<Alt: 118.16 - 121.48 Weak Muscovite>> Banded within OI; patchy-alteration within OC.											
<<Struc: 118.51 - 118.52 dominant foliation>> Mineralized banding within OI.											
118.80	**121.48**	**OC — Chalcopyrite-pyrrhotite net textured sulphides**	118.80	119.70	0.90	D00004132	2.69	277	7.82	1.14	6.35
118.8 - 121.48: Semi-massive, net-textured chalcopyrite-dominant OC with clasts of quartz and barite. Sharp upper and lower contacts.											
<<Min: 118.8 - 121.48 2% Min: Sphalerite>>			119.70	120.60	0.90	D00004133	4.11	268	8.87	0.82	7.64
<<Min: 118.8 - 121.48 5% Min: Pyrite>> Localized zones of disseminated PY.			120.60	121.48	0.88	D00004134	4.49	304	11.9	0.32	4.52
<<Min: 118.8 - 121.48 10% Min: Pyrrhotite>> Net-textured CP + PO.											
<<Min: 118.8 - 121.48 0.5% Min: Galena>>											
<<Min: 118.8 - 121.48 30% Min: Chalcopyrite>> Net-textured CP + PO.											
<<Min: 118.8 - 121.48 1% Min: Barite>> Isolated blebs of BA proximal to gangue.											
<<Struc: 118.8 - 118.81 Contact>> OI-OC upper contact.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
121.48	**122.92**	**OI** **Heavilly disseminated sulphides in host schist**	121.48	122.92	1.44	D00004135	0.19	75.8	0.27	1.24	3.9
		121.48 - 122.92: Semi-massive - banded sulfide mineralization within altered RHY. Quartz veining is prominent from approx 122-122.45m; veins contain blebs of sulfides.									
		<<Min: 121.48 - 122.92 2% Min: Sphalerite>> Localized within PY-rich zones.									
		<<Min: 121.48 - 122.92 5% Min: Pyrite>> Disseminated-blebby PY.									
		<<Min: 121.48 - 122.92 10% Min: Pyrrhotite>> Disseminated-banded PO within the schist host; blebs are visible within the quartz veins proximal to the CP.									
		<<Min: 121.48 - 122.92 1% Min: Chalcopyrite>> Blebs of CP within the quartz veins.									
		<<Alt: 121.48 - 124.47 Strong Muscovite>>									
		<<Vein: 122.05 - 122.43 Quartz-Sulphide>> Fractured quartz vein with blebs of sulphides (~3%).									
		<<Struc: 121.48 - 121.49 Contact>> OC-OI lower contact.									
122.92	**124.47**	**RHY** **undifferentiated rhyolite**	122.92	123.46	0.54	D00004136	0.071	18.3	0.71	0.03	0.12
		122.92 - 124.47: Undifferentiated RHY with muscovite and chlorite alteration. Quartz veining is common. Sulfide mineralization is patchy, and rare.									
		<<Min: 122.92 - 124.47 0.1% Min: Sphalerite>>	123.46	124.47	1.01	D00004137	0.008	1.1	0.03	0.01	0.08
		<<Min: 122.92 - 124.47 0.5% Min: Pyrite>> Disseminated PY; trace PY within stringers.									
		<<Min: 122.92 - 124.47 0.5% Min: Pyrrhotite>>									
		<<Min: 122.92 - 124.47 1% Min: Chalcopyrite>> CP stringer.									
		<<Alt: 122.92 - 124.47 Moderate Chlorite>>									
		<<Vein: 123.35 - 123.7 Quarzt-Chlorite-Carbonate>> Quartz veins with patchy-carbonate, chlorite, and traces of sulphides.									
		<<Vein: 123.78 - 124.45 Quartz>> Fractured quartz vein with traces of sulphides proximal to the upper and lower contacts.									
		<<Struc: 123.23 - 123.24 dominant foliation>>									
124.47	**127.30**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	124.47	125.90	1.43	D00004138	0.009	4.8	0.04	0.05	0.27
		124.47 - 127.3: Chlorite-sericite altered MAFi. Quartz veining is most prominent between 125.35-126m, followed with a sheared zone to the end of the unit. Could be a chlorite-altered RHY?									
		<<Min: 124.47 - 127.3 0.5% Min: Sphalerite>>	125.90	127.30	1.40	D00004139	-0.005	1.7	0.02	0.01	0.24
		<<Min: 124.47 - 127.3 0.5% Min: Pyrite>>									
		<<Alt: 124.47 - 128.1 Weak-Moderate Calcite>> Weak to moderate, pervasive calcite; more intense within quartz veins.									
		<<Alt: 124.47 - 129.13 Strong Chlorite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 124.47 - 131.52 Moderate-Strong Muscovite>> Patchy-alteration within the massive quartz vein.									
		<<Vein: 124.86 - 124.95 Quartz-Carbonate 63 deg. >> Quartz vein with patchy-carbonate.									
		<<Vein: 125.4 - 126 Quartz-Carbonate>> Brecciated quartz veins with patchy-carbonate.									
		<<Struc: 124.75 - 124.76 dominant foliation>>									
		<<Struc: 126 - 127.3 Weak-Moderate Shear>>									
127.30	**128.10**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	127.30	128.10	0.80	D00004141	0.032	11.1	0.22	0.09	1.1
		127.3 - 128.1: Disseminated-banded sulfide mineralization and patchy, carbonate-rich gangue within MAFi.									
		<<Min: 127.3 - 128.1 5% Min: Pyrite>> Disseminated-banded PY.									
		<<Min: 127.3 - 128.1 3% Min: Pyrrhotite>> Disseminated-banded blebs of PO.									
		<<Min: 127.3 - 128.1 0.1% Min: Chalcopyrite>>									
		<<Alt: 127.3 - 131.52 Moderate Biotite>> Biotite alteration with MAFi; FRA within quartz vein.									
		<<Struc: 127.35 - 127.36 dominant foliation>> Mineralized banding within OJ.									
128.10	**133.79**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	128.10	129.13	1.03	D00004142	-0.005	1.6	0.06	-0.01	0.19
		128.1 - 133.79: Biotite and muscovite-altered MAFi; heavily-altered up to quartz vein (129.1-131.1m). The quartz vein contains patchy carbonate, and coarse-grained, blebs of sulfides. More quartz-veining occurs between 132.29-133.13m, followed by the more typical MAFi.									
		<<Min: 128.1 - 146.91 1% Min: Pyrite>> Coarse-grained, disseminated blebs within quartz vein and MAFi. FRA within altered MAFi (128.1-129.13m).	129.13	130.00	0.87	D00004143	-0.005	-0.3	-0.01	-0.01	0.01
		<<Min: 128.1 - 146.91 0.1% Min: Pyrrhotite>>	130.00	131.00	1.00	D00004144	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 128.1 - 129.13 Trace Calcite>>	131.00	132.29	1.29	D00004145	0.006	-0.3	-0.01	-0.01	0.05
		<<Alt: 128.1 - 131.52 Strong Tourmaline>> Patchy-zones within the MAFi and the massive quartz vein.	132.29	133.79	1.50	D00004146	0.006	0.3	0.01	-0.01	0.02
		<<Alt: 129.13 - 133.79 Moderate Calcite>> Patchy-calcite within quartz veins; pervasive within MAFi.									
		<<Alt: 131.52 - 133.79 Moderate-Strong Biotite>> Patchy-pervasive; more pervasive within the MAFi. FRA within the quartz vein.									
		<<Vein: 129.1 - 131.1 Quarzt-Tourmaline-Sulphide 43 deg. >> Massive quartz vein with a series of fractures, and rare brecciated clasts. Tourmaline and biotite FRA (< 10%) and patchy-carbonate.									
		<<Vein: 131.16 - 131.54 Quartz-Carbonate-Sulphide>> Quartz-carbonate veins with coarse-grained pyrite.									
		<<Vein: 132.29 - 133.13 Quartz-Carbonate-Sulphide>> Brecciated quartz-carbonate vein with biotite FRA.									
		<<Struc: 129.14 - 129.15 Vein>>									
		<<Struc: 131.78 - 131.79 dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 133.23 - 133.24 Vein>> Quartz stringers.									
		<<Struc: 133.59 - 133.6 dominant foliation>>									
133.79	**146.91**	**RHY undifferentiated rhyolite**	133.79	135.00	1.21	D00004147	0.005	-0.3	-0.01	-0.01	0.01
		133.79 - 146.91: Undifferentiated RHY with med-strong muscovite alteration, and silicic banding. Quartz veining is common to approx 137.65m. RHYi lenses within the RHY begin to appear around 143m, and continue to 143.8m.									
		<<Alt: 133.79 - 146.91 Strong Muscovite>>	135.00	136.50	1.50	D00004148	-0.005	2.1	-0.01	0.03	0.02
		<<Alt: 133.79 - 146.91 Weak-Moderate Calcite>>	136.50	138.00	1.50	D00004149	0.009	0.3	-0.01	-0.01	0.01
		<<Vein: 133.84 - 133.97 Quartz-Carbonate 50 deg. >> Quartz veins with patchy-carbonate.	146.00	146.91	0.91	D00004151	0.012	0.5	-0.01	-0.01	-0.01
		<<Vein: 133.97 - 134.03 Calcite 43 deg. >>									
		<<Vein: 135.15 - 135.25 Quartz-Carbonate 45 deg. >> Quartz vein with patchy-carbonate, and hairline fractures.									
		<<Vein: 136.38 - 137.55 Quartz-Carbonate 40 deg. >> Series of DEF quartz-carbonate veins.									
		<<Struc: 141.72 - 141.73 Foliation>> Pyrite banding.									
		<<Struc: 143.73 - 143.74 dominant foliation>> Silicic banding.									
146.91	**152.88**	**RHYi Aphanitic Rhyolite (intrusion)**	146.91	148.40	1.49	D00004152	0.037	2.3	-0.01	0.04	0.14
		146.91 - 152.88: Siliceous, aphanitic RHY with weak-mod muscovite alteration, disseminated sulfides and stringer mineralization. Gradational upper and lower contacts.									
		<<Min: 146.91 - 152.88 2% Min: Sphalerite>> Disseminated-banded, and FRA within RHYi.	148.40	149.90	1.50	D00004153	0.037	3.2	-0.01	0.07	0.05
		<<Min: 146.91 - 152.88 5% Min: Pyrite>> Disseminated-banded, and FRA within RHYi.	149.90	151.40	1.50	D00004154	0.081	4	-0.01	0.05	0.43
		<<Min: 146.91 - 152.88 1% Min: Pyrrhotite>> Disseminated and FRA within RHYi.	151.40	152.88	1.48	D00004155	0.062	11.3	-0.01	0.12	0.43
		<<Min: 146.91 - 152.88 1% Min: Galena>> Disseminated and FRA within RHYi.									
		<<Alt: 146.91 - 148.85 Moderate Muscovite>>									
		<<Alt: 146.91 - 152.88 Weak Calcite>>									
		<<Alt: 148.85 - 152.33 Weak Muscovite>>									
		<<Alt: 152.33 - 153 Moderate Muscovite>>									
		<<Vein: 148.93 - 150.5 Massive Sulphide/Sulphides undifferentiated 15 deg. >> Sulphide stringers low angle TCA.									
		<<Struc: 149.26 - 149.27 Vein>> Mineralized stringer.									
		<<Struc: 152.51 - 152.52 dominant foliation>>									
152.88	**165.00**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	152.88	154.00	1.12	D00004156	0.045	0.7	-0.01	-0.01	0.01
		152.88 - 165: Bleached within final 25cm.									
		<<Min: 152.88 - 165 1% Min: Pyrite>>									
		<<Min: 152.88 - 165 0.1% Min: Pyrrhotite>>									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-362

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 164.76 - 165 Moderate Muscovite>> Bleached MAFi. <<Struc: 154.39 - 154.4 dominant foliation>> <<Struc: 157.72 - 157.73 dominant foliation>> <<Struc: 160.64 - 160.65 dominant foliation>> <<Struc: 163.08 - 163.09 Vein>> Carbonate stringer. **End of Hole @ 165**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-363

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/14/2016
UTM Easting	415239.214	Core Size:	HQ3	Azimuth:	16.7	Date Logging Complete:	6/19/2016
UTM Northing:	6815211.979	Casing Pulled?:	Yes	Dip:	-78	Drill Company:	Hytech
UTM Elev. (m):	1441.181	Casing Depth (m):	4.5	Length (m):	435	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/12/2016
Local Northing:		Cemented?:	No	Core Storage Loc.:	KZK Camp	Drill Completed:	6/17/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
Comments:						Parent Hole:	

K16-363 is a 75m step out from K15-277 that tests the down-dip potential of the Krakatoa upper lens under the hypothesis that the upper lens is equivalent to the ABM lens. Two significant massive sulphide lenses were intersected from 285.58 - 288.45 m and 323.17 - 344.00 m respectively consisting of OA and OB style mineralisation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-78	15.3	1.4	16.7	TN14	Jerome de Pasquale	6/12/2016		☑	
5	-78.05274	15.91496	1.4	17.31496	Gyro	Steve Bultitude	6/24/2016		☑	100
10	-78.41203	16.42676	1.4	17.82676	Gyro	Steve Bultitude	6/24/2016		☑	100
11	-78.3	357.2	22.1	19.3	ReflexEZS	Hytech	6/12/2016	5976	☐	
15	-78.62976	16.87767	1.4	18.27767	Gyro	Steve Bultitude	6/24/2016		☑	100
18	-78.5	357.7	22.1	19.8	ReflexEZS	Hytech	6/12/2016	5797	☐	
20	-79.10265	16.99431	1.4	18.39431	Gyro	Steve Bultitude	6/24/2016		☑	100
25	-79.5537	17.32534	1.4	18.72534	Gyro	Steve Bultitude	6/24/2016		☑	100
30	-79.79221	17.52497	1.4	18.92497	Gyro	Steve Bultitude	6/24/2016		☑	100
35	-79.97236	17.70002	1.4	19.10002	Gyro	Steve Bultitude	6/24/2016		☑	100
40	-80.51078	18.3004	1.4	19.7004	Gyro	Steve Bultitude	6/24/2016		☑	100
42	-80.4	358.2	22.1	20.3	ReflexEZS	Hytech	6/12/2016	5688	☐	
45	-81.01627	18.77442	1.4	20.17442	Gyro	Steve Bultitude	6/24/2016		☑	100
50	-81.42053	18.62496	1.4	20.02496	Gyro	Steve Bultitude	6/24/2016		☑	100
55	-81.92755	18.36415	1.4	19.76415	Gyro	Steve Bultitude	6/24/2016		☑	100
60	-82.35018	17.75349	1.4	19.15349	Gyro	Steve Bultitude	6/24/2016		☑	100
65	-82.80067	16.27193	1.4	17.67193	Gyro	Steve Bultitude	6/24/2016		☑	100
66	-82.8	357.4	22.1	19.5	ReflexEZS	Hytech	6/12/2016	5756	☐	
70	-83.11082	15.03832	1.4	16.43832	Gyro	Steve Bultitude	6/24/2016		☑	100
75	-83.46438	15.90819	1.4	17.30819	Gyro	Steve Bultitude	6/24/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-363

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
80	-83.67241	16.46198	1.4	17.86198	Gyro	Steve Bultitude	6/24/2016		☑	100
85	-83.99018	17.11858	1.4	18.51858	Gyro	Steve Bultitude	6/24/2016		☑	100
90	-84.3214	18.55871	1.4	19.95871	Gyro	Steve Bultitude	6/24/2016		☑	100
90.01	-84.5	355.9	22.1	18	ReflexEZS	Hytech	6/13/2016	5751	☐	
93	-84.6	356.6	22.1	18.7	ReflexEZS	Hytech	6/13/2016	5862	☐	
95	-84.58494	20.38677	1.4	21.78677	Gyro	Steve Bultitude	6/24/2016		☑	100
100	-84.79264	21.49806	1.4	22.89806	Gyro	Steve Bultitude	6/24/2016		☑	100
105	-84.9866	22.33129	1.4	23.73129	Gyro	Steve Bultitude	6/24/2016		☑	100
110	-85.08298	23.0521	1.4	24.4521	Gyro	Steve Bultitude	6/24/2016		☑	100
114	-85.3	1.4	22.1	23.5	ReflexEZS	Hytech	6/13/2016	5789	☐	
115	-85.10469	23.18746	1.4	24.58746	Gyro	Steve Bultitude	6/24/2016		☑	100
120	-85.2283	24.75204	1.4	26.15204	Gyro	Steve Bultitude	6/24/2016		☑	100
125	-85.27634	25.48031	1.4	26.88031	Gyro	Steve Bultitude	6/24/2016		☑	100
130	-85.30521	25.5452	1.4	26.9452	Gyro	Steve Bultitude	6/24/2016		☑	100
135	-85.26655	25.24329	1.4	26.64329	Gyro	Steve Bultitude	6/24/2016		☑	100
138	-85.7	3.5	22.1	25.6	ReflexEZS	Hytech	6/13/2016	5778	☐	
140	-85.39279	24.93623	1.4	26.33623	Gyro	Steve Bultitude	6/24/2016		☑	100
145	-85.41594	24.91378	1.4	26.31378	Gyro	Steve Bultitude	6/24/2016		☑	100
150	-85.54579	24.62525	1.4	26.02525	Gyro	Steve Bultitude	6/24/2016		☑	100
155	-85.74429	24.85765	1.4	26.25765	Gyro	Steve Bultitude	6/24/2016		☑	100
160	-85.96642	25.64184	1.4	27.04184	Gyro	Steve Bultitude	6/24/2016		☑	100
165	-86.07814	26.26713	1.4	27.66713	Gyro	Steve Bultitude	6/24/2016		☑	100
170	-86.18336	27.5908	1.4	28.9908	Gyro	Steve Bultitude	6/24/2016		☑	100
175	-86.33443	27.38181	1.4	28.78181	Gyro	Steve Bultitude	6/24/2016		☑	100
180	-86.52132	29.51337	1.4	30.91337	Gyro	Steve Bultitude	6/24/2016		☑	100
185	-86.73414	31.74944	1.4	33.14944	Gyro	Steve Bultitude	6/24/2016		☑	100
186	-86.9	8.7	22.1	30.8	ReflexEZS	Hytech	6/13/2016	5784	☐	
190	-86.94329	34.33674	1.4	35.73674	Gyro	Steve Bultitude	6/24/2016		☑	100
195	-87.00205	37.7739	1.4	39.1739	Gyro	Steve Bultitude	6/24/2016		☑	100
200	-87.01708	40.54029	1.4	41.94029	Gyro	Steve Bultitude	6/24/2016		☑	100
205	-86.90363	39.76518	1.4	41.16518	Gyro	Steve Bultitude	6/24/2016		☑	100
210	-86.88248	39.79017	1.4	41.19017	Gyro	Steve Bultitude	6/24/2016		☑	100
210.01	-87.3	15.7	22.1	37.8	ReflexEZS	Hytech	6/13/2016	5777	☐	
215	-87.01809	41.55889	1.4	42.95889	Gyro	Steve Bultitude	6/24/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-363

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
220	-87.13474	43.79465	1.4	45.19465	Gyro	Steve Bultitude	6/24/2016		☑	100
225	-87.30877	47.02733	1.4	48.42733	Gyro	Steve Bultitude	6/24/2016		☑	100
230	-87.43183	52.45416	1.4	53.85416	Gyro	Steve Bultitude	6/24/2016		☑	100
234	-88	38.5	22.1	60.6	ReflexEZS	Hytech	6/14/2016	5772	☐	
235	-87.54804	57.55457	1.4	58.95457	Gyro	Steve Bultitude	6/24/2016		☑	100
240	-87.64865	62.11953	1.4	63.51953	Gyro	Steve Bultitude	6/24/2016		☑	100
245	-87.87338	67.52905	1.4	68.92905	Gyro	Steve Bultitude	6/24/2016		☑	100
250	-87.9674	70.43681	1.4	71.83681	Gyro	Steve Bultitude	6/24/2016		☑	100
255	-88.06898	75.05113	1.4	76.45113	Gyro	Steve Bultitude	6/24/2016		☑	100
258	-88.3	65.2	22.1	87.3	ReflexEZS	Hytech	6/14/2016	5780	☐	
260	-88.20368	81.33198	1.4	82.73198	Gyro	Steve Bultitude	6/24/2016		☑	100
265	-88.21196	81.6471	1.4	83.0471	Gyro	Steve Bultitude	6/24/2016		☑	100
270	-88.29985	83.82076	1.4	85.22076	Gyro	Steve Bultitude	6/24/2016		☑	100
275	-88.31229	89.54955	1.4	90.94955	Gyro	Steve Bultitude	6/24/2016		☑	100
280	-88.23733	94.11572	1.4	95.51572	Gyro	Steve Bultitude	6/24/2016		☑	100
282	-88.3	79.7	22.1	101.8	ReflexEZS	Hytech	6/14/2016	5802	☐	
285	-88.16586	101.33138	1.4	102.73138	Gyro	Steve Bultitude	6/24/2016		☑	100
290	-87.87864	101.2632	1.4	102.6632	Gyro	Steve Bultitude	6/24/2016		☑	100
295	-87.68548	103.7511	1.4	105.1511	Gyro	Steve Bultitude	6/24/2016		☑	100
300	-87.54262	106.80806	1.4	108.20806	Gyro	Steve Bultitude	6/24/2016		☑	100
305	-87.56852	111.90399	1.4	113.30399	Gyro	Steve Bultitude	6/24/2016		☑	100
306	-87.9	101.1	22.1	123.2	ReflexEZS	Hytech	6/15/2016	5825	☐	
310	-87.55771	119.37455	1.4	120.77455	Gyro	Steve Bultitude	6/24/2016		☑	100
315	-87.34608	125.63141	1.4	127.03141	Gyro	Steve Bultitude	6/24/2016		☑	100
320	-87.18507	129.38455	1.4	130.78455	Gyro	Steve Bultitude	6/24/2016		☑	100
325	-86.92486	135.76598	1.4	137.16598	Gyro	Steve Bultitude	6/24/2016		☑	100
330	-86.77234	137.11547	1.4	138.51547	Gyro	Steve Bultitude	6/24/2016		☑	100
330.01	-87.1	105.3	22.1	127.4	ReflexEZS	Hytech	6/15/2016	5929	☐	
335	-86.79213	136.8318	1.4	138.2318	Gyro	Steve Bultitude	6/24/2016		☑	100
340	-86.78682	138.56844	1.4	139.96844	Gyro	Steve Bultitude	6/24/2016		☑	100
345	-86.90898	138.19873	1.4	139.59873	Gyro	Steve Bultitude	6/24/2016		☑	100
350	-86.88929	140.92394	1.4	142.32394	Gyro	Steve Bultitude	6/24/2016		☑	100
354	-86.9	134.5	22.1	156.6	ReflexEZS	Hytech	6/15/2016	5801	☐	
355	-86.75252	146.69186	1.4	148.09186	Gyro	Steve Bultitude	6/24/2016		☑	100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
360	-86.63424	151.15553	1.4	152.55553	Gyro	Steve Bultitude	6/24/2016		☑	100
365	-86.40952	156.22506	1.4	157.62506	Gyro	Steve Bultitude	6/24/2016		☑	100
370	-86.2612	162.04656	1.4	163.44656	Gyro	Steve Bultitude	6/24/2016		☑	100
375	-85.79176	168.9832	1.4	170.3832	Gyro	Steve Bultitude	6/24/2016		☑	100
378	-85.8	153.9	22.1	176	ReflexEZS	Hytech	6/16/2016	5766	☐	
380	-85.41304	170.80467	1.4	172.20467	Gyro	Steve Bultitude	6/24/2016		☑	100
385	-85.26716	175.05175	1.4	176.45175	Gyro	Steve Bultitude	6/24/2016		☑	100
390	-85.07403	178.37921	1.4	179.77921	Gyro	Steve Bultitude	6/24/2016		☑	100
393	-84.8	169.3	22.1	191.4	ReflexEZS	Hytech	6/16/2016	5696	☐	
395	-84.73401	185.57335	1.4	186.97335	Gyro	Steve Bultitude	6/24/2016		☑	100
400	-84.1938	190.39724	1.4	191.79724	Gyro	Steve Bultitude	6/24/2016		☑	100
405	-84.06782	192.86631	1.4	194.26631	Gyro	Steve Bultitude	6/24/2016		☑	100
410	-84.07256	194.82514	1.4	196.22514	Gyro	Steve Bultitude	6/24/2016		☑	100
415	-83.9003	195.54111	1.4	196.94111	Gyro	Steve Bultitude	6/24/2016		☑	100
417	-83.7	172.7	22.1	194.8	ReflexEZS	Hytech	6/17/2016	5740	☐	
420	-83.8196	196.20933	1.4	197.60933	Gyro	Steve Bultitude	6/24/2016		☑	100
425	-83.64904	197.11217	1.4	198.51217	Gyro	Steve Bultitude	6/24/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.50 OVBN Overburden

4.50 10.70 MAFt Mafic Volcaniclastics

4.5 - 10.7: interbedded mafic tuff and mudstone

<<Alt: 4.5 - 6.6 Moderate-Strong Calcite>>

<<Alt: 6.6 - 22 Weak Calcite>>

<<Vein: 4.6 - 10.3 5% Quartz-Carbonate 40 deg. >>

<<Struc: 4.5 - 21 Moderate-Strong dominant foliation>>

<<Struc: 4.5 - 26.27 Weak Fault>> broken core, shear planes and local gouge on foliation.

10.70 16.07 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

16.07 23.90 MAFt Mafic Volcaniclastics

16.07 - 23.9: 16.07-21.00; bleached - oxidized, mostly qtz vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 19.2 - 21 Weak Muscovite>> bleached, fine muscovite on partings

<<Vein: 16.16 - 19 100% Quartz>>

<<Vein: 20.22 - 20.85 100% Quartz>>

<<Struc: 21 - 25.9 Moderate-Strong dominant foliation>>

23.90 31.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 23.9 - 26.27 Moderate-Strong Calcite>>

<<Alt: 26.27 - 31.9 Weak Calcite>>

<<Struc: 25.9 - 26.7 Moderate dominant foliation>>

<<Struc: 26.27 - 27 Moderate-Strong Fault>> broken and crushed core, trace gouge

<<Struc: 27.06 - 32.94 Weak-Moderate Fault>> broken core, shear planes and local gouge on foliation.

31.90 57.80 RHYvl Lapilli tuff

31.9 - 57.8: significant ash component

<<Min: 33.5 - 61.8 1% Min: Pyrrhotite>>

<<Alt: 31.9 - 39.7 Weak Calcite>>

<<Alt: 31.9 - 52.2 Weak Muscovite>>

<<Alt: 33.65 - 40.8 Weak Biotite>>

<<Alt: 39.7 - 50.6 Moderate Calcite>> and diss

<<Alt: 50.6 - 55.3 Weak Calcite>>

<<Alt: 51 - 52.3 Weak Chlorite>>

<<Alt: 52.2 - 71.82 Weak-Moderate Muscovite>>

<<Alt: 55.3 - 61.1 Weak-Moderate Calcite>>

<<Vein: 33.86 - 33.96 100% Quartz-Chlorite-Sulphide>>

<<Vein: 34.4 - 34.85 70% Quartz-Chlorite-Sulphide>>

<<Struc: 34.4 - 38.1 Weak-Moderate Fault>> broken core, shear planes and local gouge on foliation and margins of qtz veins

<<Struc: 38.1 - 49.7 Trace Fault>> Occasional zones of broken core, shear planes and local gouge on foliation.

<<Struc: 43 - 43.3 Weak-Moderate dominant foliation>>

<<Struc: 51 - 52 Weak-Moderate dominant foliation>>

57.80 71.82 RHYvl Lapilli tuff

<<Min: 61.8 - 85.81 0.5% Min: Pyrite>>

<<Alt: 61.1 - 71.2 Moderate Calcite>>

<<Alt: 62.2 - 64.5 Trace Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 71.2 - 85.81 Trace Calcite>> fracture filling

<<Vein: 68.87 - 68.88 100% Quartz-Sulphide>>

<<Struc: 59.88 - 59.98 Moderate Fault>>

<<Struc: 62.6 - 62.7 Weak Fault>>

<<Struc: 65.16 - 66 Moderate dominant foliation>>

<<Struc: 70 - 71.2 Moderate dominant foliation>>

71.82 85.81 RHYi Aphanitic Rhyolite (intrusion)

<<Vein: 72.25 - 80.78 3% Quartz>> irregular, often diffuse, bodies of white and grey qtz, <1-10cm

<<Vein: 85.64 - 91 5% Quartz>> mostly foliaform veinlets

<<Struc: 84.1 - 84.55 Weak Fault>>

85.81 88.60 RHYvl Lapilli tuff

<<Min: 85.81 - 88.6 0.5% Min: Pyrite>>

<<Min: 85.81 - 88.6 1% Min: Pyrrhotite>>

<<Alt: 85.81 - 88.6 Strong Silicification>> silicified RHY between two bodies of RHYi

<<Alt: 85.81 - 88.8 Weak Calcite>>

<<Struc: 86.78 - 86.9 Weak-Moderate Fault>>

88.60 91.00 RHYi Aphanitic Rhyolite (intrusion)

<<Min: 88.6 - 105.05 1% Min: Pyrrhotite>>

<<Alt: 88.8 - 91 Trace Calcite>>

91.00 105.05 RHYvl Lapilli tuff

<<Alt: 91 - 98 Weak-Moderate Calcite>>

<<Alt: 91 - 131.2 Weak Muscovite>>

<<Alt: 91.7 - 105 Weak Biotite>>

<<Alt: 98 - 104 Weak Calcite>>

<<Alt: 105 - 107.75 Moderate Biotite>>

<<Alt: 105 - 110 Trace Calcite>>

<<Vein: 94.33 - 107.9 3% Quartz-Carbonate>>

<<Struc: 92.7 - 93 Weak-Moderate dominant foliation>>

<<Struc: 93.37 - 94 Weak Fault>>

<<Struc: 101 - 105.2 Weak Fault>> Occasional zones of broken core, shear planes and local gouge on foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

105.05 107.90 PEL Equigranular biotite + calcite +/- quartz rock

105.05 - 107.9: gradational from very dark (biotite) pelite to grey ash tuff going down hole.

<<Min: 105.05 - 107.9 0.1% Min: Pyrrhotite>>

<<Struc: 107 - 107.4 Moderate dominant foliation>>

107.90 109.41 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 107.9 - 109.28 0.5% Min: Pyrite>>

<<Min: 109.28 - 109.41 10% Min: Pyrite>>

109.41 113.60 RHYcf Feldspar & feldspar quartz porphyry

109.41 - 113.6: rare blue qtz eyes and crowded feldspar porphyry- felds up to 1 cm.

<<Min: 109.41 - 113.6 5% Min: Pyrite>> mostly diss, diss in thin bands and as qtz-py fracture vein filling

<<Alt: 110 - 127.4 Weak Calcite>>

113.60 115.74 RHYvl Lapilli tuff

113.6 - 115.74: very rare blue qtz eyes and sparse strained feldspar phenos.

<<Min: 113.6 - 115.3 3% Min: Pyrite>>

<<Min: 115.3 - 116.8 0.5% Min: Pyrite>>

<<Min: 115.3 - 116.8 3% Min: Pyrrhotite>>

<<Struc: 115 - 115.6 Weak-Moderate dominant foliation>>

115.74 118.45 RHYcf Feldspar & feldspar quartz porphyry

115.74 - 118.45: as above RHYcf

<<Min: 116.8 - 131.2 0.5% Min: Pyrite>>

118.45 129.30 RHYvl Lapilli tuff

118.45 - 129.3: as above RHYvl. 127.40-129.30: ash and silicic bands dominate

<<Alt: 127.4 - 131.2 Trace Calcite>>

<<Struc: 125.4 - 127.4 Weak Fault>> broken and crushed core

<<Struc: 129 - 131.9 Weak Fault>> broken and crushed core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

129.30 131.20 RHYcw Curdy textured-flow banded (flows, subvolcanics)

131.20 133.41 PEL Equigranular biotite + calcite +/- quartz rock

131.2 - 133.41: Biotite decreases down hole

<<Min: 131.2 - 133.41 1% Min: Pyrite>>

<<Alt: 131.2 - 133.61 Moderate Calcite>>

133.41 134.96 RHYva Coarse grained to ash tuff

<<Min: 133.41 - 147.6 0.5% Min: Pyrite>>

<<Alt: 133.41 - 142.5 Weak Muscovite>>

<<Alt: 133.61 - 149.2 Weak Calcite>>

<<Struc: 134.9 - 136.7 Moderate dominant foliation>>

134.96 137.47 RHYvl Lapilli tuff

<<Struc: 136.7 - 137.2 Trace Fault>> broken core

137.47 140.90 RHYcf Feldspar & feldspar quartz porphyry

137.47 - 140.9: rare blue qtz eyes and strained feldspar phenos.

140.90 141.80 RHYva Coarse grained to ash tuff

141.80 143.33 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Alt: 142.5 - 150.1 Moderate Muscovite>> sericite-muscovte in fault zones

<<Struc: 142.6 - 145.7 Weak Fault>> crushed core, shear planes and local gouge

143.33 150.96 RHYcf Feldspar & feldspar quartz porphyry

143.33 - 150.96: rare blue qtz eyes and strained feldspar phenos.

<<Min: 147.6 - 155.3 1% Min: Pyrite>>

<<Min: 147.6 - 155.3 1% Min: Pyrrhotite>>

<<Alt: 149.2 - 158 Weak-Moderate Calcite>>

<<Alt: 150.1 - 159.5 Weak Muscovite>>

<<Vein: 144.1 - 145.6 5% Quartz-Carbonate>>

<<Vein: 149.2 - 149.8 50% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 145.7 - 149.45 Moderate-Strong Fault>> broken & crushed core, shear planes and local gouge

150.96 152.09 RHYvl Lapilli tuff

152.09 153.18 RHYcf Feldspar & feldspar quartz porphyry

152.09 - 153.18: silicic bands

<<Struc: 152.5 - 153.3 Moderate dominant foliation>>

153.18 157.00 RHYcf Feldspar & feldspar quartz porphyry

<<Min: 155.3 - 165 1% Min: Pyrite>>

157.00 158.00 RHYvl Lapilli tuff

157 - 158: rare blue qtz eyes

158.00 161.63 RHYcf Feldspar & feldspar quartz porphyry

158 - 161.63: rare blue qtz eyes and feldspar porphyry- felds up to 1 cm.

<<Alt: 158 - 161.63 Trace Calcite>>

<<Alt: 159.5 - 162 Moderate Muscovite>> sericite-muscovte in fault zones

<<Struc: 159.95 - 161.63 Strong Fault>>

161.63 167.52 RHYvl Lapilli tuff

<<Min: 165 - 168 0.5% Min: Pyrite>>

<<Min: 165 - 168 0.5% Min: Pyrrhotite>>

<<Alt: 161.63 - 182 Weak Calcite>>

<<Alt: 162 - 196.7 Weak Muscovite>>

<<Struc: 161.63 - 164.5 Weak Fault>> minor zones of crushed core, 6 gougy shears 1-3cm.

<<Struc: 164.5 - 166 Moderate dominant foliation>>

167.52 172.27 RHYcf Feldspar & feldspar quartz porphyry

167.52 - 172.27: feldspar phenos 0.2- <1cm

<<Min: 168 - 176.25 2% Min: Pyrite>>

<<Struc: 172 - 172.7 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

172.27 176.25 RHYv Rhyolite volcaniclastic

172.27 - 176.25: several short sequences of RHYcf (boulders?), RHYva and Ryvl. 173.52-174.33: silicic bands with blebs and stringers of qtz-py.

<<Struc: 174.5 - 175.3 Moderate dominant foliation>>

176.25 181.98 RHYvl Lapilli tuff

176.25 - 181.98: rare blue qtz eyes

<<Min: 176.25 - 181.98 1% Min: Pyrite>>

<<Min: 180.7 - 181.98 0.5% Min: Pyrrhotite>>

<<Vein: 181.93 - 182.56 25% Calcite>>

<<Struc: 180.07 - 180.24 Weak Fault>>

181.98 182.56 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 181.98 - 182.56 3% Min: Pyrite>>

<<Min: 181.98 - 182.56 3% Min: Pyrrhotite>>

<<Alt: 182 - 182.56 Strong Calcite>>

182.56 196.71 RHYvx Quartz and/or feldspar crystal tuff

182.56 - 196.71: rare blue qtz eyes and sparse strained feldspar phenos up to 1 cm.

<<Min: 182.56 - 190.6 0.5% Min: Pyrite>>

<<Min: 190.6 - 196.71 1% Min: Pyrite>>

<<Min: 190.6 - 196.71 1% Min: Pyrrhotite>>

<<Alt: 182.56 - 196.71 Weak Calcite>>

<<Struc: 186 - 193.5 Moderate-Strong dominant foliation>>

196.71 197.78 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 196.71 - 198 0.1% Min: Pyrite>>

<<Alt: 196.71 - 197.6 Strong Calcite>>

<<Alt: 197.05 - 197.78 Weak Muscovite>>

<<Alt: 197.6 - 199.4 Weak Calcite>> fracture filling

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
197.78	**203.65**	**RHYi Aphanitic Rhyolite (intrusion)**	197.78	199.00	1.22						
197.78 - 203.65: 199.40-202.25: brecciated and qtz flooded RHYi with chlorite aggregates - replacement at upper contact and in cm size altered clasts. White calcite (replacing feldspar?) filling - pegmatitic 'brain rock' in appearance. Blebs, stringers and local zones of pyrite breccia matrix. Fluid - pyrite rich RHYi differentiate? 202.25-203.65: brecciated, silicified and weakly pyritized RHY - intensity decreases down hole.											
<<Min: 198 - 200.65 1% Min: Pyrite>>			199.00	199.63	0.63						
<<Min: 198 - 200.65 1% Min: Pyrrhotite>>			199.63	200.12	0.49						
<<Min: 200.65 - 211.25 3% Min: Pyrite>>			200.12	201.28	1.16						
<<Alt: 199.4 - 203.65 Moderate Calcite>>			201.28	202.70	1.42						
<<Alt: 199.7 - 199.96 Weak-Moderate Chlorite>> partly altered to sericite			202.70	203.65	0.95						
<<Alt: 200.45 - 203.5 Weak Chlorite>>											
<<Alt: 202.8 - 214.6 Weak Muscovite>>											
<<Vein: 198.49 - 202.13 20% Quartz-Carbonate-Sulphide>> qtz - carb - py veins cutting and filling (as matrix) brecciated RHYi with chlorite alteration.											
203.65	**234.09**	**RHYvl Lapilli tuff**									
<<Min: 211.25 - 216.7 1% Min: Pyrite>>											
<<Min: 216.7 - 220.3 3% Min: Pyrite>>											
<<Min: 216.7 - 225 1% Min: Pyrrhotite>>											
<<Min: 216.7 - 231 2% Min: Pyrite>>											
<<Min: 216.7 - 231 2% Min: Pyrrhotite>>											
<<Min: 231 - 233.95 3% Min: Pyrite>>											
<<Min: 231 - 260.82 3% Min: Pyrrhotite>> occasional blebs and wispy bands.											
<<Alt: 203.65 - 234 Weak Calcite>> trace to weak, diss, rare bands and veinlets and blebs.											
<<Alt: 214.6 - 253.8 Weak Muscovite>> waxy - silver muscovite - sericite coated foliation											
<<Alt: 234 - 250 Trace Calcite>>											
<<Vein: 203.9 - 206.57 10% Quartz-Carbonate>>											
<<Vein: 213.3 - 214.4 5% Quartz-Tourmaline>>											
<<Struc: 206.5 - 207 Weak Fault>>											
<<Struc: 207.3 - 207.95 Moderate dominant foliation>>											
<<Struc: 208.27 - 208.37 Moderate Fault>>											
<<Struc: 216 - 216.3 Weak-Moderate dominant foliation>>											
<<Struc: 225 - 227.25 Moderate dominant foliation>>											
<<Struc: 227.25 - 227.35 Moderate-Strong Fault>>											
<<Struc: 229.8 - 231.8 Moderate dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 231 - 232.7 Weak-Moderate dominant foliation>>

234.09 234.83 MDSt Rhyolite tuff dominant mudstone

234.83 239.60 RHYvl Lapilli tuff

234.83 - 239.6: silic bands

239.60 253.80 RHYvl Lapilli tuff

239.6 - 253.8: sections with <1-2 mm feldspar phenos. Local sections with silic bands.

<<Alt: 250 - 250.9 Weak-Moderate Calcite>>

<<Alt: 250.9 - 283 Weak Calcite>>

<<Vein: 247.21 - 247.24 100% Carbonate-Chlorite 50 deg. >>

<<Struc: 240.17 - 242.2 Weak-Moderate dominant foliation>>

<<Struc: 244.8 - 246.6 Moderate dominant foliation>>

253.80 260.82 RHYc Rhyolite coherant volcanics

253.8 - 260.82: Weakly sheared, disrupted silic bands. Lowermost meter is sheared dismembered RHYc that now consists of qtz-rhy clasts, containing encapsulated and preserved py, surrounded by muscovite - weak sericite altered and sheared rhy lithons.

<<Min: 254.9 - 260.82 1% Min: Pyrite>> py encapsulated in qtz clasts

<<Alt: 253.8 - 269.4 Moderate Muscovite>>

<<Vein: 253.8 - 254.6 40% Quartz>>

<<Struc: 256.7 - 257.35 Weak-Moderate Shear>>

260.82 261.65 MDSt Rhyolite tuff dominant mudstone

<<Min: 260.82 - 261.65 5% Min: Pyrite>>

<<Min: 260.82 - 261.65 3% Min: Pyrrhotite>>

<<Struc: 261 - 261.8 Moderate dominant foliation>>

261.65 269.55 RHYvl Lapilli tuff

<<Min: 261.65 - 267.1 3% Min: Pyrite>>

<<Min: 261.65 - 267.1 3% Min: Pyrrhotite>>

<<Min: 267.1 - 276 3% Min: Pyrite>>

<<Min: 267.1 - 276 1% Min: Pyrrhotite>>

<<Alt: 269.4 - 272.56 Strong Muscovite>> sericite

<<Vein: 263 - 263.6 30% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 267.28 - 267.64 70% Quartz>>									
		<<Struc: 265.35 - 265.4 Moderate dominant foliation>>									
269.55	**285.58**	**RHYv Rhyolite volcaniclastic**	280.10	281.60	1.50	B00291693	-0.005	0.4	-0.01	-0.01	0.01
269.55 - 285.58: numerous sections with silic bands											
		<<Min: 276 - 282.1 1% Min: Pyrite>>	281.60	283.10	1.50	B00291694	0.011	1.3	-0.01	0.02	0.12
		<<Min: 276 - 282.1 1% Min: Pyrrhotite>>	283.10	284.00	0.90	B00291695	0.008	0.7	-0.01	0.01	0.03
		<<Min: 282.1 - 285.58 3% Min: Pyrite>>	284.00	285.00	1.00	B00291696	0.06	3.2	0.02	0.12	0.22
		<<Alt: 272.56 - 285.58 Strong Muscovite>> sericite	285.00	285.58	0.58	B00291697	0.056	11.8	0.02	0.21	0.38
		<<Alt: 283 - 285.58 Moderate-Strong Calcite>>									
		<<Vein: 269.55 - 272.66 10% Quartz>>									
		<<Vein: 278.25 - 279.3 25% Quartz>>									
		<<Struc: 273.5 - 277.6 Moderate dominant foliation>>									
		<<Struc: 283 - 285.58 Weak-Moderate Shear>> Sheared rhy, mostly along foliation. 7cm sheared contact at 285.58 m.									
		<<Struc: 284.1 - 284.7 Moderate-Strong dominant foliation>> strong sericite partings									
		<<Struc: 285.57 - 285.59 Moderate-Strong Contact>>									
285.58	**288.45**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG**	285.58	286.50	0.92	B00291698	1.32	195	0.59	2.76	7.21
		<<Min: 285.58 - 288.45 5% Min: Sphalerite>>	286.50	288.00	1.50	B00291699	1.64	121	1.46	0.73	4.68
		<<Min: 285.58 - 288.45 70% Min: Pyrite>>	288.00	288.45	0.45	B00291702	0.7	62.5	0.51	0.45	7.44
		<<Min: 285.58 - 288.45 0.5% Min: Galena>>									
		<<Min: 285.58 - 288.45 1% Min: Arsenopyrite>>									
		<<Alt: 285.58 - 288.45 Trace Calcite>>									
		<<Struc: 286.1 - 286.7 Weak-Moderate Foliation>> mineral banding									
288.45	**317.58**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	288.45	288.90	0.45	B00291703	0.298	62.7	0.22	0.87	1.09
		<<Min: 288.45 - 288.83 5% Min: Pyrite>>	288.90	290.20	1.30	B00291704	0.015	1.7	-0.01	0.01	0.04
		<<Min: 288.45 - 288.83 5% Min: Arsenopyrite>>	290.20	291.55	1.35	B00291705	0.007	0.7	-0.01	-0.01	0.03
		<<Min: 288.83 - 322.52 1% Min: Pyrite>>	291.55	293.00	1.45	B00291706	0.007	0.9	-0.01	-0.01	0.01
		<<Min: 288.83 - 322.52 0.5% Min: Arsenopyrite>> and as DIS, including rare euhedral 5mm crystals.	293.00	294.25	1.25	B00291707	-0.005	0.4	-0.01	-0.01	-0.01
		<<Alt: 288.45 - 323.17 Trace Calcite>> patchy diss	294.25	295.60	1.35						
		<<Alt: 288.5 - 319.5 Strong Muscovite>>	295.60	297.00	1.40						
		<<Struc: 288.58 - 288.83 Moderate-Strong Fault>> brecciated with brecciated qtz-py-aspy veining	315.00	316.25	1.25						

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 289.53 - 290.4 Moderate Fault>> 290.2-290.4; broken core, crushed			316.25	317.58	1.33						
<<Struc: 289.65 - 291.15 Moderate Fault>>											
<<Struc: 291.1 - 291.9 Moderate-Strong dominant foliation>>											
<<Struc: 291.15 - 297.1 Weak Fault>>											
<<Struc: 297.1 - 300.1 Moderate Fault>>											
<<Struc: 298 - 299.4 Weak-Moderate Shear>>											
<<Struc: 300 - 300.75 Weak-Moderate dominant foliation>>											
<<Struc: 300.5 - 330.7 Weak Shear>>											
<<Struc: 305.5 - 305.7 Moderate-Strong Crenulation cleavage>>											
<<Struc: 311.8 - 312.8 Moderate Foliation>> foliation cut by crenulation cleavage											
<<Struc: 311.8 - 312.8 Moderate-Strong Crenulation cleavage>>											
317.58	**323.17**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	317.58	319.00	1.42	B00291713	0.007	1	-0.01	-0.01	-0.01
317.58 - 323.17: Cbppo looks like cordierite, 1mm and sparse at 317.58 to 4mm and abundant at 322.52m, but is soft, doesn't glint or fizz with HCl.											
<<Min: 323 - 323.17 1% Min: Sphalerite>>			319.00	320.30	1.30	B00291714	0.033	2	-0.01	-0.01	-0.01
<<Min: 323 - 323.17 1% Min: Pyrite>>			320.30	321.46	1.16	B00291715	0.014	0.5	-0.01	-0.01	-0.01
<<Min: 323 - 323.17 0.5% Min: Chalcopyrite>>			321.46	322.52	1.06	B00291716	0.029	0.5	-0.01	-0.01	0.01
<<Min: 323 - 323.17 1% Min: Arsenopyrite>>			322.52	323.17	0.65	B00291717	0.057	14.7	0.09	0.04	0.34
<<Alt: 317.58 - 322.52 Weak-Moderate Cordierite>> cordierite replaced by Fe carbonate - calcite											
<<Alt: 319.5 - 322.52 Moderate Muscovite>>											
<<Struc: 318.5 - 319.15 Weak-Moderate dominant foliation>>											
<<Struc: 319.75 - 320.5 Moderate dominant foliation>>											
<<Struc: 321.2 - 321.24 Strong Vein>>											
<<Struc: 321.38 - 321.49 Moderate-Strong Fault>>											
<<Struc: 322.5 - 322.54 Strong Vein>>											
<<Struc: 323.15 - 323.19 Strong Vein>> 322.52-323.17: qtz vein											
323.17	**332.35**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	323.17	324.00	0.83	B00291718	2.07	409	0.16	4.4	10.8
323.17 - 332.35: 329.06-323.21 & 331.92-332.35: DMG.											
<<Min: 323.17 - 327 50% Min: Pyrite>>			324.00	325.25	1.25	B00291719	1.9	227	0.48	3.93	8.77
<<Min: 323.17 - 327 10% Min: Sphalerite>>			325.25	326.50	1.25	B00291722	1.33	191	0.2	3.18	8.62

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 323.17 - 327 5% Min: Galena>>	326.50	327.75	1.25	B00291723	3.42	312	0.47	2.99	7.06
		<<Min: 327 - 329.06 1% Min: Galena>>	327.75	329.06	1.31	B00291724	1.38	185	0.18	2.71	6.47
		<<Min: 327 - 329.06 50% Min: Pyrite>>	329.06	330.00	0.94	B00291725	2.32	179	0.18	2.9	6.63
		<<Min: 327 - 329.06 10% Min: Sphalerite>>	330.00	331.00	1.00	B00291726	2.91	206	0.36	3.55	6.89
		<<Min: 327 - 331.7 10% Min: Barite>>	331.00	331.92	0.92	B00291727	2.53	184	0.23	4.19	10.2
		<<Min: 329.06 - 329.21 5% Min: Magnetite>>	331.92	332.35	0.43	B00291728	1.87	129	0.37	3	6.91
		<<Min: 329.06 - 331.92 50% Min: Pyrite>>									
		<<Min: 329.06 - 331.92 15% Min: Sphalerite>> concentrated in bands									
		<<Min: 329.06 - 331.92 3% Min: Galena>>									
		<<Min: 331.92 - 335.95 3% Min: Galena>> and dis with CP									
		<<Min: 331.92 - 335.95 3% Min: Pyrrhotite>> and blebs with CP									
		<<Min: 331.92 - 335.95 50% Min: Pyrite>>									
		<<Min: 331.95 - 335.95 10% Min: Magnetite>> dis in bands									
		<<Min: 331.95 - 335.95 3% Min: Chalcopyrite>>									
		<<Alt: 323.17 - 326 Moderate Calcite>>									
		<<Alt: 326 - 327 Moderate-Strong Calcite>>									
		<<Alt: 327 - 328.5 Trace Calcite>>									
		<<Alt: 328.5 - 328.95 Weak-Moderate Calcite>>									
		<<Alt: 328.95 - 344 Trace Calcite>>									
		<<Struc: 323.17 - 323.2 Strong Contact>> sheared - brecciated qtz vein - OB contact.									
		<<Struc: 327 - 328.19 Moderate Foliation>> mineral banding									
332.35	**335.95**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	332.35	333.50	1.15	B00291729	0.656	165	0.35	4.27	9.66
		<<Struc: 333 - 334 Weak-Moderate Foliation>> mineral banding	333.50	334.75	1.25	B00291731	0.818	176	0.14	5.95	10.1
		<<Struc: 334 - 335 Weak-Moderate Foliation>> mineral banding	334.75	335.95	1.20	B00291732	0.853	168	0.29	4.73	7.29
335.95	**337.82**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	335.95	337.00	1.05	B00291733	1.83	125	0.26	1.84	4.95
		<<Min: 335.95 - 337.82 15% Min: Sphalerite>>	337.00	337.82	0.82	B00291734	2.33	140	0.14	2.6	7.29
		<<Min: 335.95 - 337.82 40% Min: Pyrite>> and semi MAS									
		<<Min: 335.95 - 337.82 1% Min: Galena>>									
		<<Min: 335.95 - 337.82 10% Min: Barite>> bands and blebs									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
337.82	**339.63**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	337.82	339.00	1.18	B00291735	2.92	226	0.17	3.78	8.07
<<Min: 337.82 - 339 3% Min: Galena>>			339.00	339.63	0.63	B00291736	2.75	399	0.23	6.1	13.9
<<Min: 337.82 - 339.63 20% Min: Sphalerite>> diss in bands											
<<Min: 337.82 - 339.63 40% Min: Pyrite>>											
<<Min: 337.82 - 339.63 5% Min: Magnetite>>											
<<Min: 337.82 - 339.63 10% Min: Barite>> bands and blebs											
<<Min: 339 - 341.86 5% Min: Galena>>											
<<Struc: 338 - 339.5 Weak-Moderate Foliation>> mineral banding											
339.63	**341.86**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	339.63	340.70	1.07	B00291737	2.67	396	0.16	6.29	10.8
339.63 - 341.86: a weak looking OK											
<<Min: 339.63 - 341.86 20% Min: Sphalerite>>			340.70	341.86	1.16	B00291738	4.04	372	0.46	4.48	9.87
<<Min: 339.63 - 341.86 5% Min: Barite>> and as diss											
<<Struc: 341.8 - 343 Weak-Moderate Foliation>> mineral banding											
341.86	**344.00**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	341.86	343.00	1.14	B00291739	0.632	116	0.4	2.32	11.3
<<Min: 341.86 - 344 3% Min: Sphalerite>>			343.00	344.00	1.00	B00291742	0.65	76.2	0.86	1.16	8.83
<<Min: 341.86 - 344 60% Min: Pyrite>>											
<<Min: 341.86 - 344 20% Min: Magnetite>>											
<<Min: 341.86 - 344 0.5% Min: Galena>>											
<<Alt: 342.68 - 375.64 Weak Chlorite>>											
<<Struc: 343 - 344 Weak-Moderate Foliation>> mineral banding											
344.00	**345.74**	**RHY** **undifferentiated rhyolite**	344.00	345.15	1.15	B00291743	0.013	1.9	-0.01	0.02	0.05
344 - 345.74: 5 - 10 cm of chlorite alteration at upper nd lower contacts and at 345.15-345.30 m (OJ mineralization).											
<<Min: 344 - 345.15 1% Min: Pyrite>>			345.15	345.74	0.59	B00291744	0.012	3.6	0.03	0.04	0.3
<<Min: 344.9 - 345.15 3% Min: Pyrrhotite>>											
<<Min: 345.15 - 345.3 3% Min: Pyrite>>											
<<Min: 345.15 - 345.3 5% Min: Pyrrhotite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 345.3 - 346.65 1% Min: Tetrahedrite>>											
<<Min: 345.3 - 346.65 3% Min: Sphalerite>>											
<<Min: 345.3 - 346.65 5% Min: Pyrite>>											
<<Min: 345.3 - 346.65 10% Min: Pyrrhotite>>											
<<Min: 345.3 - 346.65 1% Min: Galena>>											
<<Min: 345.3 - 346.65 3% Min: Chalcopyrite>>											
<<Alt: 344 - 345.15 Weak Chlorite>>											
<<Alt: 344 - 345.15 Trace Cordierite>>											
<<Alt: 345.15 - 345.3 Strong Chlorite>>											
<<Alt: 345.15 - 345.3 Moderate Cordierite>>											
<<Alt: 345.3 - 345.74 Trace Chlorite>>											
<<Alt: 345.3 - 345.74 Trace Cordierite>>											
<<Struc: 344 - 344.1 Moderate-Strong Contact>>											
<<Struc: 345.5 - 346.5 Moderate dominant foliation>>											
345.74	**346.65**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	345.74	346.65	0.91	B00291745	0.047	23.7	0.42	0.1	5.38
<<Alt: 345.74 - 346.65 Moderate-Strong Chlorite>>											
<<Alt: 345.74 - 346.65 Moderate-Strong Cordierite>>											
346.65	**354.60**	**RHYvl** **Lapilli tuff**	346.65	348.00	1.35	B00291746	-0.005	1.7	0.02	-0.01	0.03
<<Min: 346.65 - 347.24 3% Min: Pyrite>>			348.00	349.25	1.25	B00291747	-0.005	1.7	-0.01	0.01	0.02
<<Min: 347.24 - 354.6 0.5% Min: Pyrite>>			349.25	350.50	1.25	B00291748	-0.005	0.8	-0.01	-0.01	0.03
<<Min: 347.3 - 354.6 3% Min: Pyrrhotite>> diss and diss in bands			350.50	352.00	1.50	B00291749	-0.005	0.5	-0.01	-0.01	-0.01
<<Min: 352.4 - 353.58 0.5% Min: Arsenopyrite>>			352.00	353.23	1.23						
<<Alt: 346.65 - 347.2 Trace Chlorite>>			353.23	354.60	1.37						
<<Alt: 346.65 - 347.2 Trace Biotite>>											
<<Alt: 346.75 - 354.6 Moderate Muscovite>>											
<<Vein: 348.17 - 348.18 Quartz-Tourmaline>>											
<<Struc: 347.3 - 347.5 Weak-Moderate dominant foliation>>											
<<Struc: 349.5 - 350.5 Moderate dominant foliation>>											
<<Struc: 351.4 - 351.7 Moderate dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

354.60 355.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 354.6 - 355.5 3% Min: Pyrrhotite>>

<<Alt: 354.6 - 355.15 Weak Muscovite>>

<<Alt: 354.6 - 355.5 Strong Calcite>>

<<Alt: 355.15 - 364.46 Weak-Moderate Muscovite>>

355.50 358.30 RHYvl Lapilli tuff

<<Min: 355.5 - 357.8 1% Min: Pyrite>>

<<Min: 355.5 - 357.82 1% Min: Pyrrhotite>>

<<Min: 357.8 - 360.25 1% Min: Pyrite>> fault zone

<<Alt: 355.5 - 358.3 Weak-Moderate Calcite>>

<<Struc: 357.85 - 360.2 Moderate Fault>>

358.30 359.00 PEL Equigranular biotite + calcite +/- quartz rock

358.3 - 359: in fault zone

<<Alt: 358.3 - 359 Strong Calcite>>

359.00 364.46 RHYvl Lapilli tuff

<<Min: 360.25 - 364.46 1% Min: Pyrite>>

<<Min: 360.25 - 364.46 1% Min: Pyrrhotite>>

<<Alt: 359 - 372.07 Moderate-Strong Calcite>>

<<Alt: 360.2 - 364.46 Weak Chlorite>>

<<Vein: 361 - 361.31 100% Quartz 45 deg. >>

<<Struc: 360.2 - 362 Weak Fault>>

<<Struc: 363.65 - 365 Moderate dominant foliation>>

364.46 372.07 RHYvl Lapilli tuff

<<Min: 364.46 - 372.07 1% Min: Pyrite>>

<<Min: 364.46 - 372.07 1% Min: Pyrrhotite>>

<<Alt: 364.46 - 372.07 Weak Muscovite>> MU on foliation between Bio - Chl clots

<<Struc: 370.7 - 372.07 Moderate dominant foliation>>

372.07 375.64 RHYva Coarse grained to ash tuff

<<Min: 372.07 - 375.64 1% Min: Pyrite>>

<<Min: 372.07 - 375.64 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 372.07 - 375.64 Weak Muscovite>>

<<Alt: 372.07 - 375.64 Trace Calcite>>

<<Vein: 372.12 - 372.69 100% Quartz-Albite>> 97% qtz

375.64 379.75 RHYvl Lapilli tuff

<<Min: 375.64 - 377 1% Min: Pyrite>>

<<Min: 375.64 - 377 3% Min: Pyrrhotite>>

<<Min: 377 - 380.45 1% Min: Pyrite>>

<<Alt: 375.64 - 379.75 Weak Muscovite>> MU on foliation between Bio - Chl clots

<<Alt: 375.64 - 379.75 Moderate-Strong Calcite>>

<<Vein: 377.87 - 378.1 100% Quartz>>

<<Struc: 376.5 - 377 Moderate dominant foliation>>

379.75 380.50 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 380.45 - 405.31 1% Min: Pyrite>>

<<Min: 380.45 - 405.31 3% Min: Pyrrhotite>>

<<Alt: 379.75 - 380.5 Strong Calcite>>

<<Vein: 379.75 - 384.26 100% Calcite>> includes foliaform veinlets

<<Struc: 380.49 - 380.51 Moderate-Strong Contact>>

380.50 382.12 RHYvl Lapilli tuff

<<Alt: 380.5 - 382.12 Weak Muscovite>> MU on foliation between Bio - Chl clots

<<Alt: 380.5 - 382.12 Moderate-Strong Calcite>>

<<Struc: 381 - 382 Weak-Moderate dominant foliation>>

382.12 384.26 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

382.12 - 384.26: might be a fine ash - pelite (without the biotite).

<<Alt: 382.12 - 384.26 Strong Calcite>>

<<Struc: 382.8 - 383 Moderate Foliation>> banding in 'MAFi dyke' (possibly a PEL-ash unit)

384.26 395.10 RHYvl Lapilli tuff

<<Alt: 384.26 - 393.36 Moderate-Strong Calcite>>

<<Alt: 384.26 - 395.1 Weak Muscovite>> MU on foliation between Bio - Chl clots.

<<Alt: 393.36 - 405.31 Trace Calcite>>

<<Vein: 391.65 - 391.69 100% Quartz-Tourmaline>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 386.6 - 387 Weak-Moderate Fault>>

<<Struc: 390.46 - 390.66 Weak Fault>>

<<Struc: 394.9 - 395 Weak Fault>>

395.10 405.31 RHYvl Lapilli tuff

<<Min: 404.31 - 412.28 2% Min: Pyrite>>

<<Alt: 395.1 - 405.31 Weak-Moderate Muscovite>> fine white muscovite

<<Alt: 395.1 - 405.31 Trace Chlorite>>

<<Alt: 395.1 - 405.31 Trace Biotite>>

<<Vein: 395.25 - 395.4 Quartz>> in fault zone

<<Struc: 397.35 - 397.45 Weak Fault>>

<<Struc: 398.06 - 398.63 Weak Fault>>

<<Struc: 401.55 - 402.65 Moderate-Strong Fault>>

405.31 412.28 RHYvl Lapilli tuff

405.31 - 412.28: feldspar phyric - weak

<<Min: 405.31 - 412.28 3% Min: Pyrrhotite>>

<<Alt: 405.31 - 420.32 Weak-Moderate Muscovite>>

<<Alt: 405.31 - 420.32 Trace Chlorite>>

<<Alt: 405.31 - 420.32 Trace Biotite>>

<<Struc: 406.5 - 407.07 Weak-Moderate dominant foliation>>

412.28 420.32 RHYvl Lapilli tuff

<<Min: 412.28 - 420.32 3% Min: Pyrite>>

<<Struc: 412.36 - 412.57 Weak-Moderate Fault>>

<<Struc: 414 - 420 Weak Fault>> small fault - shear zones (10-20 cm wide), spaced about 1 m, with MU alteration +/- mm's clay gouge that destroy BCQlpl alteration.

420.32 423.94 RHYvl Lapilli tuff

<<Min: 420.32 - 423.94 1% Min: Pyrite>>

<<Min: 420.32 - 423.94 3% Min: Pyrrhotite>>

<<Alt: 420.32 - 423.94 Weak Muscovite>> MU on foliation between Bio - Chl clots.

<<Vein: 422.36 - 422.37 100% Quarzt-Chlorite-Tourmaline 57 deg. >>

423.94 425.00 RHYvl Lapilli tuff

<<Min: 423.94 - 425 1% Min: Pyrite>>

<<Min: 423.94 - 425 0.1% Min: Pyrrhotite>>

<<Alt: 423.94 - 425 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

425.00 432.00 RHYvl Lapilli tuff

<<Min: 425 - 435 3% Min: Pyrrhotite>>

<<Alt: 425 - 435 Weak Muscovite>> MU on foliation between Bio - Chl clots.

<<Vein: 431.17 - 431.25 100% Quartz-Tourmaline 15 deg. >>

<<Struc: 427.6 - 429 Moderate dominant foliation>>

432.00 432.20 PEL Equigranular biotite + calcite +/- quartz rock

432.20 433.12 RHYvl Lapilli tuff

433.12 433.27 PEL Equigranular biotite + calcite +/- quartz rock

433.27 435.00 RHYvl Lapilli tuff

<<Struc: 434.5 - 435 Moderate dominant foliation>>

End of Hole @ 435

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-364

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/17/2016
UTM Easting	414795.816	Core Size:	HQ3	Azimuth:	0.3	Date Logging Complete:	6/19/2016
UTM Northing:	6815348.846	Casing Pulled?:	Yes	Dip:	-59	Drill Company:	Hytech
UTM Elev. (m):	1400.502	Casing Depth (m):	6	Length (m):	105	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/12/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/13/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
Comments:						Parent Hole:	

K16-364 was designed to provide a metallurgical sample for the up - dip edge of the ABM deposit. The hole successfuly intersected two main stacked lenses of OB/OA massive sulphides from 5.65- 36.28m with narrow intervals of RHYv and RHYva between @ 26.05 - 26.70m; 29.26 - 30.42m; 33.37 - 34.84m and 35.31 - 35.84m.
Below the massive sulphides, a sequence of MAFi intruded by RHYi was encountered. Sections of MAFi exhibited foliaform replacement by PY - SP and were sampled such as 103.5 - 105m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-59	358.9	1.4	0.3	TN14	Roger Hulstein	6/12/2016		☑	
5	-58.55883	359.07288	1.4	0.47288	Gyro	Oscar Nielsen	6/13/2016		☑	100
10	-58.64204	359.26716	1.4	0.66716	Gyro	Oscar Nielsen	6/13/2016		☑	100
15	-58.63941	359.2214	1.4	0.6214	Gyro	Oscar Nielsen	6/13/2016		☑	100
15.01	-58.8	337.2	22.1	359.3	ReflexEZS	Hytech	6/12/2016	5998	☐	
20	-58.91319	359.267	1.4	0.667	Gyro	Oscar Nielsen	6/13/2016		☑	100
25	-59.05853	359.3394	1.4	0.7394	Gyro	Oscar Nielsen	6/13/2016		☑	100
30	-59.12448	359.50469	1.4	0.9047	Gyro	Oscar Nielsen	6/13/2016		☑	100
35	-59.29826	359.7012	1.4	1.1012	Gyro	Oscar Nielsen	6/13/2016		☑	100
39	-59.2	339.1	22.1	1.2	ReflexEZS	Hytech	6/12/2016	5685	☐	
40	-59.58145	359.52138	1.4	0.92138	Gyro	Oscar Nielsen	6/13/2016		☑	100
45	-59.76482	359.65326	1.4	1.05326	Gyro	Oscar Nielsen	6/13/2016		☑	100
50	-59.78102	359.79565	1.4	1.19565	Gyro	Oscar Nielsen	6/13/2016		☑	100
55	-59.95971	359.89633	1.4	1.29633	Gyro	Oscar Nielsen	6/13/2016		☑	99.9482033795034
60	-60.11905	0.0766	1.4	1.4766	Gyro	Oscar Nielsen	6/13/2016		☑	100
63	-60.1	340.4	22.1	2.5	ReflexEZS	Hytech	6/12/2016	5780	☐	
65	-60.25246	0.27884	1.4	1.67884	Gyro	Oscar Nielsen	6/13/2016		☑	100
70	-60.47564	0.42745	1.4	1.82745	Gyro	Oscar Nielsen	6/13/2016		☑	100
75	-60.78934	0.47039	1.4	1.87039	Gyro	Oscar Nielsen	6/13/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-364

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
80	-61.10843	0.39612	1.4	1.79612	Gyro	Oscar Nielsen	6/13/2016		☑	100
85	-61.35727	0.53321	1.4	1.93321	Gyro	Oscar Nielsen	6/13/2016		☑	100
87	-61.3	340.7	22.1	2.8	ReflexEZS	Hytech	6/12/2016	5761	☐	
90	-61.77788	0.42879	1.4	1.82879	Gyro	Oscar Nielsen	6/13/2016		☑	100
95	-62.13235	0.50023	1.4	1.90023	Gyro	Oscar Nielsen	6/13/2016		☑	100
105	-62.7	338.8	22.1	0.9	ReflexEZS	Hytech	6/13/2016	5744	☑	

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**5.65**	**OVBN** **Overburden**										
5.65	**6.26**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	5.65	6.26	0.61	B00267445	2.64	152	0.23	3.3	14.5
5.65 - 6.26: collared in OB; casing to 6m												
<<Min: 5.65 - 6.26 10% Min: Sphalerite>>												
<<Min: 5.65 - 6.26 80% Min: Pyrite>>												
<<Min: 5.65 - 6.26 2% Min: Galena>>												
6.26	**8.05**	**OA** **Laminar or heavily disseminated magnetite bearing massive sulphide**	**FMG**	6.26	7.10	0.84	B00267446	1.28	200	2.36	3.37	8.68
6.26 - 8.05: well developed laminations 7-7.5m												
<<Min: 6.26 - 8.05 15% Min: Sphalerite>>				7.10	8.05	0.95	B00267447	1.74	233	3.78	2.74	10.1
<<Min: 6.26 - 8.05 55% Min: Pyrite>>												
<<Min: 6.26 - 8.05 10% Min: Magnetite>>												
<<Min: 6.26 - 8.05 3% Min: Galena>>												
<<Min: 6.26 - 8.05 3% Min: Chalcopyrite>>												
<<Struc: 7 - 8 dominant foliation>>												
8.05	**13.86**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	8.05	9.05	1.00	B00267448	2.04	136	0.7	2.23	7.41
8.05 - 13.86: 11.23- 11.63m OA weakly developed mg laminations												
<<Min: 8.05 - 13.86 2% Min: Tetrahedrite>> fg associated with si ca patches				9.05	10.05	1.00	B00267449	3.02	159	1.42	0.6	3.49

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 8.05 - 13.86 10% Min: Sphalerite>>				10.05	11.05	1.00	B00267451	0.684	48.4	0.49	0.46	4.68
<<Min: 8.05 - 13.86 50% Min: Pyrite>>				11.05	12.05	1.00	B00267452	1.47	61.9	0.65	0.83	3.28
<<Min: 8.05 - 13.86 4% Min: Magnetite>>				12.05	13.15	1.10	B00267453	1.24	114	0.35	2.21	7.6
<<Min: 8.05 - 13.86 3% Min: Galena>>				13.15	13.86	0.71	B00267454	1.26	88	0.32	0.89	4.7
<<Min: 8.05 - 13.86 1% Min: Chalcopyrite>>												
13.86	**16.42**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	13.86	14.86	1.00	B00267455	1.09	133	1.03	2.49	7.47
13.86 - 16.42: well developed MG laminations												
<<Min: 13.86 - 16.42 15% Min: Sphalerite>>				14.86	15.60	0.74	B00267456	0.83	93.2	1.01	1.14	9.28
<<Min: 13.86 - 16.42 50% Min: Pyrite>>				15.60	16.42	0.82	B00267457	1.62	169	1.29	3.05	10.9
<<Min: 13.86 - 16.42 20% Min: Magnetite>> laminations												
<<Min: 13.86 - 16.42 3% Min: Galena>>												
<<Min: 13.86 - 16.42 3% Min: Chalcopyrite>>												
<<Struc: 14 - 15 dominant foliation>>												
16.42	**18.10**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	16.42	17.20	0.78	B00267458	1.3	91	0.21	1.14	12.6
<<Min: 16.42 - 18.1 15% Min: Sphalerite>>				17.20	18.10	0.90	B00267459	0.985	91.4	0.1	1.46	8.07
<<Min: 16.42 - 18.1 55% Min: Pyrite>>												
<<Min: 16.42 - 18.1 5% Min: Galena>> and patchy with ca - sil patches												
<<Min: 16.42 - 18.1 2% Min: Chalcopyrite>>												
18.10	**18.58**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	18.10	18.58	0.48	B00267462	0.795	180	0.6	3.51	10.7
18.1 - 18.58: short, but well developed mg laminatio. Therefore broken out												
<<Min: 18.1 - 18.58 10% Min: Sphalerite>>												
<<Min: 18.1 - 18.58 60% Min: Pyrite>>												
<<Min: 18.1 - 18.58 15% Min: Magnetite>> andas laminations												
<<Min: 18.1 - 18.58 3% Min: Galena>>												
<<Min: 18.1 - 18.58 2% Min: Chalcopyrite>>												
<<Alt: 18.48 - 19.87 Weak Calcite>>												

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
18.58	**19.87**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	18.58	19.87	1.29	B00267463	3.24	351	0.57	4.31	9.61
18.58 - 19.87: CA-SI-agreggate overprint and re-crystalized coarse grained sp, cp , tet gl												
<<Min: 18.58 - 19.87 15% Min: Sphalerite>>												
<<Min: 18.58 - 19.87 55% Min: Pyrite>>												
<<Min: 18.58 - 19.87 5% Min: Galena>>												
<<Min: 18.58 - 19.87 2% Min: Chalcopyrite>>												
19.87	**25.40**	**RHYva** **Coarse grained to ash tuff**	**FG**	19.87	21.00	1.13	B00267464	0.024	2.1	-0.01	0.02	0.15
19.87 - 25.4: finely laminated in sections, coarser grained RHYv as well												
<<Min: 19.87 - 25.4 1% Min: Sphalerite>>				21.00	22.50	1.50	B00267465	0.03	2.4	-0.01	-0.01	0.04
<<Min: 19.87 - 25.4 5% Min: Pyrite>>				22.50	24.00	1.50	B00267466	0.077	6	-0.01	0.04	0.05
<<Alt: 19.87 - 25.4 Strong Muscovite>> laminated between silica ash layers and pervasive in ground mass				24.00	25.40	1.40	B00267467	0.482	37	0.01	0.27	0.51
<<Struc: 20 - 24 dominant foliation>>												
<<Struc: 24.3 - 24.5 Weak-Moderate Fault>> gouge healed												
25.40	**26.05**	**OI** **Heavilly disseminated sulphides in host schist**	**MG**	25.40	26.05	0.65	B00267468	3.59	381	0.76	2.52	5.42
25.4 - 26.05: OI to OB mineralization but large masses of si - ca and recrystalized sulphide drop overall content to OI status												
<<Min: 25.4 - 26.05 5% Min: Sphalerite>>												
<<Min: 25.4 - 26.05 40% Min: Pyrite>>												
<<Min: 25.4 - 26.05 2% Min: Galena>>												
<<Alt: 25.4 - 26.05 Moderate Calcite>>												
26.05	**26.70**	**RHYv** **Rhyolite volcaniclastic**		26.05	26.70	0.65	B00267469	0.396	54.6	0.08	0.11	0.36
<<Min: 26.05 - 26.7 3% Min: Pyrite>>												
<<Min: 26.05 - 26.7 0.5% Min: Galena>>												
<<Alt: 26.05 - 26.7 Strong Muscovite>>												
<<Alt: 26.05 - 26.7 Moderate Calcite>>												

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
26.70	**28.37**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	26.70	27.53	0.83	B00267471	0.668	155	0.04	5.22	14.1
26.7 - 28.37: 27.53 - 27.72 OA; 27.97 - 28.23: muscovite gouge with remnant Qv/ca material													
<<Min: 26.7 - 28.37 10% Min: Sphalerite>>					27.53	28.37	0.84	B00267472	0.389	144	0.15	5.07	9.26
<<Min: 26.7 - 28.37 60% Min: Pyrite>>													
<<Min: 26.7 - 28.37 3% Min: Galena>>													
<<Min: 26.7 - 28.37 1% Min: Chalcopyrite>>													
<<Min: 27.53 - 27.72 10% Min: Magnetite>>													
28.37	**29.26**	**OA**	**Laminar or heavily disseminated magnetite bearing massive sulphide**		28.37	29.26	0.89	B00267473	0.4	80.2	0.13	1.79	5.51
<<Min: 28.37 - 29.26 5% Min: Sphalerite>>													
<<Min: 28.37 - 29.26 70% Min: Pyrite>>													
<<Min: 28.37 - 29.26 15% Min: Magnetite>> forms laminations													
<<Min: 28.37 - 29.26 4% Min: Galena>>													
<<Min: 28.37 - 29.26 3% Min: Chalcopyrite>>													
<<Struc: 29 - 30 dominant foliation>>													
29.26	**30.42**	**RHYva**	**Coarse grained to ash tuff**		29.26	30.42	1.16	B00267474	0.027	5.8	-0.01	0.11	0.19
<<Alt: 29.26 - 30.42 Strong Muscovite>>													
<<Alt: 29.26 - 30.42 Strong Calcite>>													
<<Struc: 29.9 - 30.42 Moderate Fault>> healed gouge													
30.42	**32.22**	**OA**	**Laminar or heavily disseminated magnetite bearing massive sulphide**	**FMG**	30.42	31.32	0.90	B00267475	0.655	91	0.05	2.25	7.35
<<Min: 30.42 - 32.22 7% Min: Sphalerite>>					31.32	32.22	0.90	B00267476	0.518	103	0.13	1.65	6.77
<<Min: 30.42 - 32.22 70% Min: Pyrite>>													
<<Min: 30.42 - 32.22 10% Min: Magnetite>> forms laminations													
<<Min: 30.42 - 32.22 3% Min: Galena>>													
<<Min: 30.42 - 32.22 2% Min: Chalcopyrite>>													

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
32.22	**33.37**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	32.22	33.37	1.15	B00267477	0.739	88.4	0.25	1.15	4.4
32.22 - 33.37: # 32.9 - 33.37, faulted with clay gouge and MXSX fault BX fragments.												
<<Min: 32.22 - 33.37 5% Min: Sphalerite>>												
<<Min: 32.22 - 33.37 70% Min: Pyrite>>												
<<Min: 32.22 - 33.37 2% Min: Galena>>												
<<Min: 32.22 - 33.37 0.5% Min: Chalcopyrite>>												
<<Alt: 32.9 - 34.84 Moderate Calcite>>												
<<Struc: 32.9 - 34.84 Moderate Fault>> gouge and flt bx frags of rhy and OB												
33.37	**34.84**	**RHY** **undifferentiated rhyolite**		33.37	35.31	1.94	B00267478	0.386	33.7	0.14	0.44	1.91
33.37 - 34.84: fault zone 4												
<<Min: 33.37 - 34.84 2% Min: Pyrite>>												
<<Alt: 33.37 - 34.84 Moderate-Strong Muscovite>>												
34.84	**35.31**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**									
<<Min: 34.84 - 35.31 10% Min: Sphalerite>>												
<<Min: 34.84 - 35.31 60% Min: Pyrite>>												
<<Min: 34.84 - 35.31 5% Min: Magnetite>>												
<<Min: 34.84 - 35.31 2% Min: Galena>>												
<<Min: 34.84 - 35.31 1% Min: Chalcopyrite>>												
35.31	**35.84**	**RHYva** **Coarse grained to ash tuff**		35.31	36.28	0.97	B00267479	1.29	179	0.31	2	6.25
<<Min: 35.31 - 35.84 4% Min: Pyrite>>												
<<Alt: 35.31 - 35.84 Moderate-Strong Muscovite>>												
<<Alt: 35.31 - 35.84 Weak Calcite>>												
35.84	**36.28**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**									
35.84 - 36.28: both contacts with rhy have minor flt gouge												
<<Min: 35.84 - 36.28 15% Min: Sphalerite>>												
<<Min: 35.84 - 36.28 70% Min: Pyrite>>												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 35.84 - 36.28 3% Min: Galena>>											
<<Min: 35.84 - 36.28 0.5% Min: Chalcopyrite>>											
36.28	**37.53**	**RHY undifferentiated rhyolite**	36.28	37.53	1.25	B00267481	1.03	200	0.31	0.57	1.48
36.28 - 37.53: mu alt, flt gouge and OI, type material in flt											
<<Min: 36.28 - 36.7 25% Min: Pyrite>>											
<<Min: 36.7 - 40.2 1% Min: Pyrite>>											
<<Alt: 36.28 - 40.2 Moderate-Strong Muscovite>>											
<<Alt: 36.28 - 40.2 Moderate-Strong Calcite>> in MAFi flooded in RHY due to FLT?											
<<Vein: 36.7 - 36.8 100% Quartz-Albite 40 deg. >> white massive qv in flt area											
<<Struc: 36.28 - 38.8 Moderate-Strong Fault>> rubble and healed gouge											
37.53	**40.20**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	37.53	38.80	1.27	B00267482	-0.005	0.5	-0.01	-0.01	0.01
37.53 - 40.2: highly bleached and mu alt by RHYi and flt influence											
<<Struc: 40 - 44 dominant foliation>>			38.80	40.20	1.40	B00267483	-0.005	0.8	-0.01	-0.01	-0.01
40.20	**53.02**	**RHYi Aphanitic Rhyolite (intrusion)**	40.20	41.70	1.50	B00267484	-0.005	0.9	-0.01	-0.01	0.01
<<Min: 40.2 - 53.02 2% Min: Pyrite>>			41.70	43.20	1.50	B00267485	-0.005	0.7	-0.01	-0.01	-0.01
<<Min: 40.2 - 53.02 0.5% Min: Pyrrhotite>>			43.20	44.70	1.50	B00267486	0.007	1.5	-0.01	-0.01	0.01
<<Alt: 40.2 - 53.02 Weak Muscovite>> patchy ser alt of rhyi			44.70	46.20	1.50	B00267487	-0.005	0.6	-0.01	-0.01	0.08
<<Struc: 53 - 55 dominant foliation>>											
53.02	**55.90**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
53.02 - 55.9: bleached + MU alt due to RHYi											
<<Min: 53.02 - 55.9 0.5% Min: Pyrite>>											
<<Min: 53.02 - 55.9 0.5% Min: Pyrrhotite>>											
<<Alt: 53.02 - 55.9 Moderate Muscovite>>											
<<Alt: 53.02 - 55.9 Moderate Calcite>>											
<<Struc: 55 - 59 dominant foliation>>											
55.90	**59.25**	**RHYi Aphanitic Rhyolite (intrusion)**									
<<Min: 55.9 - 59.25 0.5% Min: Sphalerite>> as above											
<<Min: 55.9 - 59.25 2% Min: Pyrite>> hairline bands											
<<Alt: 57 - 59.25 Weak-Moderate Muscovite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 59 - 61.5 Weak-Moderate Fault>> rubble gouge									
59.25	**62.15**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
		59.25 - 62.15: hard to recognize, bleached and mu altered									
		<<Alt: 59.25 - 61.5 Moderate-Strong Muscovite>> fault related?									
		<<Alt: 59.25 - 62.15 Moderate Calcite>>									
		<<Alt: 61.5 - 62.15 Weak Muscovite>>									
62.15	**63.90**	**RHYi Aphanitic Rhyolite (intrusion)**									
		<<Min: 62.15 - 63.9 1% Min: Sphalerite>> AS ABOVE									
		<<Min: 62.15 - 63.9 3% Min: Pyrite>> as above									
63.90	**65.26**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
		63.9 - 65.26: asabove									
		<<Min: 63.9 - 68.08 1% Min: Pyrite>> and dis									
		<<Alt: 63.9 - 65.26 Moderate Calcite>>									
		<<Alt: 64 - 64.7 Moderate-Strong Silicification>> silicifcation by RHYi									
		<<Struc: 64 - 66 dominant foliation>>									
65.26	**68.08**	**RHYi Aphanitic Rhyolite (intrusion)**									
		<<Struc: 68 - 70.5 dominant foliation>>									
68.08	**80.55**	**RHYv Rhyolite volcaniclastic**	70.20	71.70	1.50	B00267488	0.064	5.1	-0.01	0.26	0.36
		68.08 - 80.55: possible 20 - 50cm intervals of bleached and altered MAFi									
		<<Min: 68.08 - 75.3 2% Min: Sphalerite>> as hairline bands and dis with py in bands.	71.70	73.20	1.50	B00267489	0.06	3.2	-0.01	0.12	0.13
		<<Min: 68.08 - 75.3 5% Min: Pyrite>> dis within 5mm banded concentrations	73.20	74.20	1.00	B00267491	0.034	1.9	-0.01	0.1	0.04
		<<Min: 76 - 78 0.05% Min: Sphalerite>> within py bands									
		<<Min: 76 - 78 3% Min: Pyrite>> dis in bands									
		<<Alt: 68.08 - 80.55 Weak-Moderate Muscovite>>									
		<<Alt: 68.08 - 80.55 Moderate Calcite>>									
80.55	**88.60**	**RHYva Coarse grained to ash tuff**									
		80.55 - 88.6: patchy possible lapilli									
		<<Min: 80.55 - 84 2% Min: Pyrite>>									
		<<Min: 80.55 - 84 4% Min: Pyrrhotite>> with mu stringers									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 80.55 - 84 0.01% Min: Galena>>									
		<<Alt: 80.55 - 83.7 Strong Muscovite>> massive stringers greenish colour after chl?									
		<<Alt: 80.55 - 83.7 Strong Calcite>> with sericite									
		<<Alt: 80.55 - 83.7 Weak-Moderate Biotite>> margins of ca massess									
		<<Alt: 84 - 88.6 Weak-Moderate Calcite>>									
		<<Struc: 87 - 87.5 dominant foliation>>									
88.60	**96.30**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	95.00	96.00	1.00	B00267492	-0.005	3.6	-0.01	0.05	0.23
		<<Min: 88.6 - 94 1% Min: Pyrite>>									
		<<Min: 88.6 - 94 0.5% Min: Pyrrhotite>>									
		<<Min: 95.2 - 95.4 3% Min: Sphalerite>> as below									
		<<Min: 95.2 - 95.4 1% Min: Pyrite>> asbelow harline bands									
		<<Alt: 88.6 - 96.3 Strong Calcite>>									
		<<Alt: 93 - 96.3 Moderate Silicification>>									
		<<Alt: 93 - 96.3 Weak Muscovite>>									
96.30	**99.12**	**RHYv** **Rhyolite volcaniclastic**									
		<<Min: 96.3 - 99.12 1% Min: Pyrite>>									
		<<Alt: 98 - 105 Weak Muscovite>>									
		<<Struc: 97 - 102 dominant foliation>>									
99.12	**105.00**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	99.12	100.50	1.38	B00267493	-0.005	0.8	-0.01	-0.01	0.34
		99.12 - 105: possible RHYi dyklet with intense Sil of Mafi @ 103.6 - 104.20									
		<<Min: 99.12 - 102.5 3% Min: Sphalerite>> as above	100.50	102.00	1.50	B00267494	-0.005	0.4	-0.01	-0.01	0.65
		<<Min: 99.12 - 102.5 2% Min: Pyrite>> as above	102.00	103.50	1.50	B00267495	-0.005	0.4	-0.01	-0.01	0.67
		<<Min: 101.2 - 101.4 0.01% Min: Arsenopyrite>>	103.50	105.00	1.50	B00267496	-0.005	0.5	-0.01	-0.01	1.59
		<<Min: 103 - 105 3% Min: Sphalerite>> 1 - 4mm bandswith py and ca									
		<<Min: 103 - 105 6% Min: Pyrite>> as above									
		<<Min: 103.5 - 104 0.5% Min: Arsenopyrite>>									
		<<Alt: 99.12 - 105 Moderate-Strong Calcite>>									
		<<Alt: 103.5 - 104 Intense Silicification>> SI of mafic by RHYI fluids. Perhapsa core of 5cm of RHYi, contorted bands either pristine flow banding or 1005 SI replacement of contorted foliation in MAFi									

End of Hole @ 105

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-365

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/22/2016
UTM Easting	414747.648	Core Size:	HQ3	Azimuth:	0.9	Date Logging Complete:	6/26/2016
UTM Northing:	6815398.31	Casing Pulled?:	Yes	Dip:	-53.6	Drill Company:	Hytech
UTM Elev. (m):	1409.232	Casing Depth (m):	10.5	Length (m):	183	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/13/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/14/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
Comments:						Parent Hole:	

K16-365 is designed to provide a metallurgical sample from the up-dip portion of the ABM deposit.
K16-365 successfully interesected massive sulphide mineralization consisting of OI/OB/OA styles from 34.64m - 148.76m with numerous narrow RHY/RHYcw layers between MXSX lenses.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-53.6	359.5	1.4	0.9	TN14	Roger Hulstein	6/13/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
18	-53.3	341.3	22.1	3.4	ReflexEZS	Hytech	6/13/2016	5962	☐	Possible magnetic interferance from casing
42	-54.4	339.5	22.1	1.6	ReflexEZS	Hytech	6/13/2016	5882	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
66	-55.3	340.6	22.1	2.7	ReflexEZS	Hytech	6/13/2016	6123	☐	
90	-55.7	338.3	22.1	0.4	ReflexEZS	Hytech	6/14/2016	5579	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
114	-56.2	333.6	22.1	355.7	ReflexEZS	Hytech	6/14/2016	5628	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
138	-56.8	335.7	22.1	357.8	ReflexEZS	Hytech	6/14/2016	5713	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
162	-57.5	336	22.1	358.1	ReflexEZS	Hytech	6/14/2016	5797	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
183	-58	337	22.1	359.1	ReflexEZS	Hytech	6/14/2016	5825	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**9.00**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
9.00	**14.60**	**RHYva** **Coarse grained to ash tuff**									
9 - 14.6: Localized crenulation cleavage obscures texture; small zones contain flow banding.											
<<Min: 9 - 34.64 0.5% Min: Pyrite>>											
<<Alt: 9 - 19.4 Weak Muscovite>> Trace to weak MU alteration.											
<<Struc: 12.53 - 12.54 Crenulation cleavage>>											
14.60	**25.80**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**									
14.6 - 25.8: Foliation low angle TCA. Minor FLT between 19.2 - 21.8m; FLT consists of fractured RHY and sericitic-gouge. Gradational upper and lower CT.											
<<Min: 21.8 - 31.77 0.1% Min: Sphalerite>>											
<<Alt: 19.4 - 25.8 Weak-Moderate Muscovite>> Pervasive MU alteration throughout RHY; sericitic gouge.											
<<Struc: 15.16 - 15.17 Crenulation cleavage>>											
<<Struc: 19.2 - 21.8 Moderate-Strong Fault>> Heavily-fractured, incompetent RHY to 19.4m, followed with sheared RHY and sericitic gouge. ~ 30% recovered.											
<<Struc: 22.6 - 22.61 dominant foliation>>											
<<Struc: 25.2 - 25.21 dominant foliation>>											
25.80	**31.77**	**MDSw** **Coherent rhyolite flow with carbonaceous content**	26.00	27.50	1.50	D00004157	0.014	4.3	-0.01	0.07	0.12
25.8 - 31.77: Foliation low angle TCA.											
<<Alt: 25.8 - 31.77 Trace Muscovite>>			27.50	29.00	1.50	D00004158	0.038	1.2	-0.01	0.01	0.01
<<Struc: 27.5 - 27.51 dominant foliation>>			29.00	30.50	1.50	D00004159	0.035	1.2	-0.01	0.01	0.02
			30.50	31.77	1.27	D00004161	0.116	7.7	-0.01	0.06	0.11
31.77	**34.64**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	31.77	33.15	1.38	D00004162	0.008	1.1	-0.01	-0.01	-0.01
31.77 - 34.64: Silicic flow banding with minor pyrite replacement.											
<<Alt: 31.77 - 34.64 Moderate-Strong Muscovite>>			33.15	34.64	1.49	D00004163	-0.005	0.9	0.01	0.02	0.1
<<Alt: 31.77 - 34.64 Trace Calcite>>											
<<Struc: 34.53 - 34.54 dominant foliation>>											
34.64	**37.94**	**OI** **Heavilly disseminated sulphides in host schist**	34.64	35.70	1.06	D00004164	0.052	12	0.2	0.42	1.2
34.64 - 37.94: Disseminated-banded sulphides within RHYcw. FLT (sericitic gouge) between approx 35.85-36.4m.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 34.64 - 37.94 1% Min: Sphalerite>>	35.70	37.06	1.36	D00004165	0.111	10.9	0.25	0.08	0.06
		<<Min: 34.64 - 37.94 10% Min: Pyrite>> Disseminated-banded PY; coarse-grained disseminated blebs.	37.06	37.94	0.88	D00004166	4.36	417	2.87	0.05	0.38
		<<Min: 34.64 - 37.94 0.1% Min: Arsenopyrite>>									
		<<Min: 37.06 - 37.7 0.5% Min: Chalcopyrite>> Disseminated CP within PY-rich bands.									
		<<Alt: 34.64 - 40.12 Strong Muscovite>> Strong, pervasive MU alteration with patches of intense alteration proximal to mineralization.									
		<<Alt: 34.64 - 40.12 Weak Calcite>> Patchy-calcite associated with mineralized bands.									
		<<Struc: 35.95 - 36.47 Strong Fault>> Soft to semi-soft, sericitic gouge containing sheared RHY, and mm-size quartz clasts.									
		<<Struc: 36.87 - 36.88 Foliation>> Mineralized banding.									
37.94	**38.36**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	37.94	38.36	0.42	D00004167	1.36	502	0.02	8.49	13.1
		37.94 - 38.36: Massive PY with disseminated sulphides.									
		<<Min: 37.94 - 38.36 8% Min: Sphalerite>> Massive PY with disseminated SP +/- GL.									
		<<Min: 37.94 - 38.36 70% Min: Pyrite>> Massive PY with disseminated SP +/- GL.									
		<<Min: 37.94 - 38.36 0.5% Min: Galena>> Massive PY with disseminated SP +/- GL.									
		<<Struc: 37.94 - 37.95 Contact>> RHY(OI) - OB CNT.									
38.36	**40.12**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	38.36	39.25	0.89	D00004168	0.255	51.8	0.04	0.5	0.87
		38.36 - 40.12: Strong-intense sericite alteration.									
		<<Min: 38.36 - 40.12 1% Min: Pyrite>>	39.25	40.12	0.87	D00004169	0.093	12.3	0.01	0.11	0.22
		<<Vein: 39.05 - 39.11 Quartz>> Quartz vein with < 1% sulphide FRA.									
		<<Struc: 38.77 - 38.78 Foliation>>									
40.12	**41.52**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	40.12	41.52	1.40	D00004171	3.54	626	0.6	2.21	3.4
		40.12 - 41.52: Semi-massive to banded PY with disseminated sulphides (> 40% gangue). CL alteration is visible within quartz gangue.									
		<<Min: 40.12 - 41.52 5% Min: Sphalerite>> Semi-massive to banded PY with disseminated SP.									
		<<Min: 40.12 - 41.52 30% Min: Pyrite>> Semi-massive to banded PY with disseminated SP.									
		<<Alt: 40.12 - 41.52 Weak Muscovite>> MU alteration within quartz gangue.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 40.12 - 47.65 Weak-Moderate Calcite>> Localized carbonate-rich zones within gangue; more pervasive within RHY.									
		<<Struc: 40.33 - 40.34 Foliation>>									
41.52	**46.04**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	41.52	43.00	1.48	D00004172	0.175	29.7	0.03	0.22	0.75
		41.52 - 46.04: Silicic flow banding; disseminated and banded sulphides.									
		<<Min: 41.52 - 46.04 2% Min: Sphalerite>> Sphalerite replacement within quartz-rich bands.	43.00	44.00	1.00	D00004173	0.019	0.5	-0.01	-0.01	-0.01
		<<Min: 41.52 - 46.04 4% Min: Pyrite>> PY replacement within quartz-rich, kink bands. Fine-grained FRA.	44.00	45.00	1.00	D00004174	0.125	19.7	0.01	0.09	0.21
		<<Alt: 41.52 - 46.04 Strong Muscovite>>	45.00	46.04	1.04	D00004175	0.047	7.1	-0.01	0.04	0.09
		<<Struc: 42.4 - 42.41 dominant foliation>>									
46.04	**47.16**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	46.04	47.16	1.12	D00004176	1.87	293	0.41	3.12	4.85
		46.04 - 47.16: Semi-massive PY + disseminated sulphides. Minor biotite and sericite alteration.									
		<<Min: 46.04 - 47.16 6% Min: Sphalerite>> Disseminated SP within PY-rich zones. Orangish-brown, sub-angular, brecciated clasts within quartz gangue.									
		<<Min: 46.04 - 47.16 60% Min: Pyrite>> Semi-massive to massive PY with disseminated SP +/- GL.									
		<<Min: 46.04 - 47.16 1% Min: Galena>> Most prominent near quartz gangue.									
		<<Alt: 46.04 - 47.65 Weak Muscovite>> Patchy-zones with sericite alteration.									
		<<Alt: 46.5 - 47.16 Weak Biotite>> Bands of disseminated biotite blebs.									
47.16	**53.50**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	47.16	48.50	1.34	D00004177	0.009	1.8	-0.01	0.05	0.13
		47.16 - 53.5: Sericite-altered RHYcw. Quartz veins are present at the upper and lower contacts of the unit. Strong-intense chlorite alteration is prominent between ~51.75 - 53.5m.									
		<<Min: 47.16 - 49.8 0.5% Min: Sphalerite>>	48.50	50.00	1.50	D00004178	0.026	3.7	-0.01	0.05	0.22
		<<Min: 47.16 - 49.8 3% Min: Pyrite>>	50.00	51.44	1.44	D00004179	-0.005	6.7	0.02	-0.01	0.01
		<<Min: 49.8 - 53.5 0.5% Min: Pyrite>> Disseminated PY throughout RHY; blebs within quartz veins.	51.44	52.43	0.99	D00004181	0.085	48	0.13	0.12	0.11
		<<Min: 51.44 - 52.43 1% Min: Sphalerite>> Orangish-brown, sub-angular blebs of SP within quartz veins.	52.43	53.50	1.07	D00004182	-0.005	7.7	0.03	0.09	0.15
		<<Min: 51.44 - 52.43 3% Min: Galena>> Sub-angular,cm-size blebs of GL within quartz veins.									
		<<Min: 51.44 - 52.43 0.1% Min: Chalcopyrite>>									
		<<Alt: 47.65 - 48.8 Moderate Muscovite>> Sericite-altered bands.									
		<<Alt: 47.65 - 50.26 Weak Calcite>>									
		<<Alt: 48.8 - 50 Weak-Moderate Chlorite>> Chlorite-replacement within mm-size, disseminated pockets.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 48.8 - 53.5 Strong Muscovite>>											
<<Alt: 50.26 - 51.44 Weak-Moderate Calcite>>											
<<Alt: 51.44 - 53.5 Trace Calcite>> Calcite FRA within quartz veins.											
<<Alt: 51.78 - 51.84 Moderate Chlorite>> Pervasive chlorite alteration within RHY; alteration is patchy within quartz.											
<<Vein: 47.16 - 47.65 Quartz-Carbonate 22 deg. >> Fractured quartz vein with patchy-carbonate, and blebby-chlorite and sulphides.											
<<Vein: 51.5 - 52.1 Quartz-Carbonate-Sulphide 20 deg. >> Fractured quartz veins with carbonate FRA, and cm-size, sub-angular blebs of sulphides.											
<<Vein: 52.85 - 53.5 Quarzt-Chlorite-Carbonate>> DEF quartz veins with patchy-FRA carbonate and chlorite, and trace sulphide FRA.											
<<Struc: 47.6 - 47.61 Vein>> Quartz vein lower CNT with RHYcw.											
<<Struc: 48.3 - 48.31 dominant foliation>>											
<<Struc: 50.53 - 50.54 Crenulation cleavage>>											
<<Struc: 52.8 - 52.81 Kink bands>>											
53.50	**59.18**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	53.50	55.00	1.50	D00004183	1.01	369	0.29	5.41	6.93
53.5 - 59.18: Semi-massive to banded PY + disseminated sulphides. Subrounded blebs of barite and quartz-carbonate gangue.											
<<Min: 53.5 - 55 3% Min: Barite>> Sub-rounded barite clasts proximal to quartz-carbonate gangue.			55.00	56.00	1.00	D00004184	1.08	227	0.19	4.02	6.83
<<Min: 53.5 - 59.18 3% Min: Sphalerite>> Disseminated-banded SP within semi-massive PY.			56.00	57.00	1.00	D00004185	1.26	238	0.33	2.06	5.16
<<Min: 53.5 - 59.18 65% Min: Pyrite>> Semi-massive to banded PY with disseminated SP +/- GL, CP, and MG.			57.00	58.00	1.00	D00004186	1.89	230	0.43	2.54	7.46
<<Min: 53.5 - 59.18 0.1% Min: Magnetite>> Rare, banded blebs of MG.			58.00	59.18	1.18	D00004187	1.43	162	0.29	2.53	8.28
<<Min: 53.5 - 59.18 0.5% Min: Galena>>											
<<Min: 53.5 - 59.18 0.1% Min: Chalcopyrite>> Disseminated CP within PY-rich matrix.											
<<Min: 55.4 - 57.55 5% Min: Barite>> Localized zones of banded barite?											
<<Alt: 53.5 - 55 Moderate Calcite>> Sub-rounded, carbonate-rich clasts within PY-rich matrix.											
<<Alt: 53.5 - 58.18 Trace Muscovite>> Patchy-zones of trace alteration within gangue.											
<<Alt: 55 - 59.18 Trace Calcite>> Trace calcite within clasts and FRA.											
<<Alt: 58.18 - 59.18 Weak-Moderate Muscovite>> Banded zones of sericite within gangue.											
<<Alt: 58.8 - 59.18 Weak-Moderate Chlorite>> Localized zones of disseminated blebs.											
<<Struc: 56.55 - 56.56 Foliation>> FOL within OB.											
<<Struc: 57.93 - 57.94 Foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
59.18	**64.62**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**	59.18	60.00	0.82	D00004188	0.917	68.3	0.19	0.31	1.1
59.18 - 64.62: Silicic flow banding with rare sulphide replacement near upper CT. Fractured, incompetent RHY between 63.8 - 64.5m; poor recovery. Sharp lower CT.											
<<Min: 59.18 - 64.62 0.5% Min: Sphalerite>>			60.00	61.50	1.50	D00004189	0.012	1.6	-0.01	-0.01	0.01
<<Min: 59.18 - 64.62 2% Min: Pyrite>> Disseminated-banded PY.			61.50	63.00	1.50	D00004191	0.013	1.5	-0.01	-0.01	-0.01
<<Min: 59.18 - 64.62 0.1% Min: Galena>> Trace disseminated GL within PY-rich bands.			63.00	64.62	1.62	D00004192	0.103	6.2	0.01	0.04	0.12
<<Alt: 59.18 - 61.62 Moderate Muscovite>>											
<<Alt: 59.18 - 79.5 Trace Calcite>> Calcite blebs and FRA.											
<<Struc: 59.18 - 59.19 Contact>> Sharp CNT between OB-RHY.											
64.62	**65.70**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	64.62	65.70	1.08	D00004193	1.99	260	0.67	3.93	11.8
64.62 - 65.7: Banded MG + SP within massive PY. Barite blebs are localized, and follow the foliation.											
<<Min: 64.62 - 65.7 4% Min: Sphalerite>> Banded SP within massive PY.											
<<Min: 64.62 - 65.7 70% Min: Pyrite>> Massive PY with banded MG and SP +/- CP.											
<<Min: 64.62 - 65.7 8% Min: Magnetite>> Bands of blebby-MG.											
<<Min: 64.62 - 65.7 0.5% Min: Chalcopyrite>>											
<<Min: 64.62 - 65.7 2% Min: Barite>> Localized blebs of barite.											
<<Alt: 64.62 - 64.97 Weak Biotite>>											
<<Struc: 64.93 - 64.94 Foliation>>											
65.70	**69.68**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	65.70	66.50	0.80	D00004194	3.13	249	0.86	0.97	7.77
65.7 - 69.68: Massive PY with disseminated sulphides. OB is heavily-fractured and incompetent to 69m.											
<<Min: 65.7 - 69.68 3% Min: Sphalerite>> Banded SP within massive PY.			66.50	68.00	1.50	D00004195	0.911	75.3	0.22	0.68	8.03
<<Min: 65.7 - 69.68 90% Min: Pyrite>> Massive PY with disseminated SP +/- GL and CP.			68.00	69.00	1.00	D00004196	2.08	207	0.54	1.88	5.56
<<Min: 65.7 - 69.68 0.5% Min: Galena>>			69.00	69.68	0.68	D00004197	1.4	202	0.31	2.93	5.79
<<Min: 65.7 - 69.68 0.1% Min: Chalcopyrite>>											
<<Struc: 69.25 - 69.26 Foliation>> Mineralized banding within OB.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
69.68	**85.94**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	69.68	71.00	1.32	D00004198	1.05	122	1.14	1.13	7.01
69.68 - 85.94: Banded to disseminated MG; MG concentration alternates between high and low but generally, decreases downhole.											
<<Min: 69.68 - 79.5 5% Min: Sphalerite>>			71.00	72.00	1.00	D00004199	0.926	50	0.96	0.29	7.59
<<Min: 69.68 - 79.5 65% Min: Pyrite>> Massive PY with banded MG and SP +/- PO.			72.00	73.00	1.00	D00004201	1.83	98.6	1.85	0.38	10.7
<<Min: 69.68 - 79.5 5% Min: Pyrrhotite>>			73.00	74.00	1.00	D00004202	1.57	114	2.34	0.45	5.32
<<Min: 69.68 - 79.5 20% Min: Magnetite>> Disseminated blebs of banded MG within massive PY.			74.00	75.00	1.00	D00004203	0.711	37.3	1.12	0.08	6.24
<<Min: 69.68 - 79.5 0.1% Min: Chalcopyrite>> Localized FRA.			75.00	76.00	1.00	D00004204	0.624	40.6	0.96	0.16	6.16
<<Min: 79.5 - 80 3% Min: Sphalerite>> Disseminated blebs of SP within CP and quartz.			76.00	77.00	1.00	D00004205	0.425	93.9	0.47	1	8.29
<<Min: 79.5 - 80 2% Min: Pyrrhotite>> Blebs of PO within quartz.			77.00	78.00	1.00	D00004206	0.581	138	0.52	1.87	7.89
<<Min: 79.5 - 80 2% Min: Galena>> Disseminated blebs and FRA within quartz.			78.00	79.50	1.50	D00004207	0.959	66.8	0.67	0.84	2.48
<<Min: 79.5 - 80 4% Min: Chalcopyrite>> CP + GL FRA within quartz veins.			79.50	81.00	1.50	D00004208	0.804	55	0.56	0.68	2.98
<<Min: 79.5 - 85.94 75% Min: Pyrite>> Massive PY with banded-blebs of MG, disseminated SP, and localized aggregates of barite.			81.00	82.00	1.00	D00004209	1.06	134	0.69	1.86	6.31
<<Min: 79.5 - 85.94 10% Min: Magnetite>> Disseminated-blebs of banded MG; localized zones with buckshot texture.			82.00	83.00	1.00	D00004212	1.15	158	0.81	2.38	8.02
<<Min: 79.5 - 85.94 2% Min: Barite>> Sub-angular clasts of barite, containing blebs of sulphides.			83.00	84.00	1.00	D00004213	1.05	68.8	0.47	1.15	9.66
<<Min: 80 - 85.94 4% Min: Sphalerite>> Disseminated bands of SP within massive PY.			84.00	85.00	1.00	D00004214	0.826	75.6	0.74	1.15	6.4
<<Min: 80 - 85.94 0.5% Min: Chalcopyrite>>			85.00	85.94	0.94	D00004215	1.06	116	0.39	2.49	8.88
<<Alt: 79.5 - 80 Weak-Moderate Calcite>> Localized carbonate-rich clasts.											
<<Alt: 80 - 85.94 Trace Calcite>> Trace calcite within blebs and FRA.											
<<Struc: 70.25 - 70.26 dominant foliation>> MG banding.											
<<Struc: 74.25 - 74.26 dominant foliation>> MG banding.											
<<Struc: 77.3 - 77.31 dominant foliation>> MG banding.											
<<Struc: 81.2 - 81.21 Foliation>> Banded blebs of disseminated MG.											
<<Struc: 84.93 - 84.94 Foliation>>											
85.94	**98.84**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	85.94	87.08	1.14	D00004216	2.07	224	0.26	4.1	8.78
85.94 - 98.84: Massive PY with disseminated sulphides, and blebs of quartz, carbonate, and barite gangue.											
<<Min: 85.94 - 88.22 3% Min: Sphalerite>> Disseminated bands of SP within massive PY.			87.08	88.22	1.14	D00004217	1.05	168	0.21	3.44	8.42

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 85.94 - 88.22 65% Min: Pyrite>> Semi-massive to massive PY with disseminated bands of SP, and trace GL and CP.	88.22	89.20	0.98	D00004218	2.17	164	0.51	2.24	7.31
		<<Min: 85.94 - 88.22 0.1% Min: Galena>>	89.20	90.20	1.00	D00004219	1.27	103	0.2	1.75	5.16
		<<Min: 85.94 - 88.22 0.1% Min: Chalcopyrite>>	90.20	91.20	1.00	D00004221	1.36	97.5	0.18	1.69	7.49
		<<Min: 85.94 - 88.22 2% Min: Barite>> Subrounded clasts of BA.	91.20	92.20	1.00	D00004222	1.41	172	0.22	1.74	4.51
		<<Min: 88.22 - 98 1% Min: Tetrahedrite>> Blebby-TT and FRA within BA and gangue aggregates.	92.20	93.00	0.80	D00004223	1.05	97.8	0.06	1.3	6.02
		<<Min: 88.22 - 98 5% Min: Sphalerite>> Disseminated bands of SP within massive PY. Blebs occur within BA and gangue aggregates.	93.00	94.00	1.00	D00004224	2.43	238	0.24	2.82	10.6
		<<Min: 88.22 - 98 65% Min: Pyrite>> Semi-massive to massive PY with banded SP, and BA aggregates. BA and quartz-carbonate gangue contain blebby-sulphides including: GL, CP, and TT.	94.00	95.00	1.00	D00004225	2.78	167	0.24	1.03	7.76
		<<Min: 88.22 - 98 1% Min: Galena>> Disseminated GL; generally proximal to gangue.	95.00	96.00	1.00	D00004226	3.41	288	0.44	1.07	6.11
		<<Min: 88.22 - 98 0.5% Min: Chalcopyrite>> Blebs and FRA within gangue.	96.00	97.00	1.00	D00004227	4.15	301	0.4	1.97	8
		<<Min: 88.22 - 98 8% Min: Barite>> BA aggregates hosting sulphides.	97.00	98.00	1.00	D00004228	2.83	204	0.2	2.46	6.89
		<<Min: 98 - 98.84 5% Min: Sphalerite>> Disseminated bands of SP within massive PY.	98.00	98.84	0.84	D00004229	3.13	294	0.38	2.88	7.47
		<<Min: 98 - 98.84 85% Min: Pyrite>> Massive PY with disseminated bands of SP +/- GL and CP.									
		<<Min: 98 - 98.84 0.1% Min: Galena>>									
		<<Min: 98 - 98.84 0.1% Min: Chalcopyrite>>									
		<<Alt: 85.94 - 98.84 Weak-Moderate Calcite>> Carbonate-rich blebs and aggregates; some FRA.									
		<<Struc: 87.45 - 87.46 dominant foliation>>									
		<<Struc: 92.9 - 92.91 dominant foliation>>									
		<<Struc: 97.5 - 97.51 dominant foliation>>									
98.84	**107.96**	**RHY undifferentiated rhyolite**	98.84	100.00	1.16	D00004232	0.42	45.1	0.18	0.21	2.08
		98.84 - 107.96: Undifferentiated RHY with minor sulphide mineralization, and localized silicic banding.									
		<<Min: 98.84 - 101.5 6% Min: Pyrite>> Disseminated bands, and replacement within silicic bands.	100.00	101.50	1.50	D00004233	0.068	13.8	0.02	0.2	0.46
		<<Min: 98.84 - 101.5 0.5% Min: Arsenopyrite>>	101.50	103.00	1.50	D00004234	0.023	4.3	-0.01	0.01	1.33
		<<Min: 98.84 - 103 3% Min: Sphalerite>> SP replacement within silicic bands.	103.00	104.50	1.50	D00004235	0.038	3.9	-0.01	0.01	0.14
		<<Min: 98.84 - 107.96 0.5% Min: Galena>> Disseminated, FRA and replacement within silicic bands.	104.50	106.00	1.50	D00004236	0.037	5.3	-0.01	0.03	0.04
		<<Min: 98.84 - 107.96 0.5% Min: Chalcopyrite>>	106.00	107.00	1.00	D00004237	0.035	6.7	-0.01	0.02	0.07
		<<Min: 101.5 - 107.96 3% Min: Pyrite>> Disseminated bands of pyrite; replacement within silicic bands.	107.00	107.96	0.96	D00004238	0.011	2.6	-0.01	0.02	0.06
		<<Min: 103 - 107.96 0.5% Min: Sphalerite>>									
		<<Alt: 98.84 - 101.42 Trace Calcite>>									
		<<Alt: 98.84 - 108.77 Moderate-Strong Muscovite>>									
		<<Alt: 101.42 - 105.51 Moderate-Strong Calcite>> Pervasive calcite within RHY; calcite is patchy within quartz bands.									
		<<Alt: 105.51 - 107.96 Weak Calcite>> Blebby-calcite within quartz; calcite FRA.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 101.45 - 101.48 Quartz-Carbonate 30 deg. >> Patchy-carbonate, and trace sulphide FRA within quartz vein.									
		<<Vein: 106.9 - 107.15 Quartz-Carbonate-Sulphide 40 deg. >> Brecciated quartz vein with patchy-carbonate, and sulphide FRA.									
		<<Vein: 107.81 - 107.82 Quartz-Chlorite 50 deg. >> Quartz stringer with chloritic-blebs.									
		<<Struc: 103.82 - 103.83 dominant foliation>>									
		<<Struc: 107.71 - 107.72 Vein>> Quartz stringer with chloritic-blebs.									
107.96	**108.36**	**OI** **Heavilly disseminated sulphides in host schist**	107.96	108.36	0.40	D00004239	0.055	4.9	0.02	0.02	0.01
		107.96 - 108.36: Disseminated sulphides within RHY.									
		<<Min: 107.96 - 108.36 0.5% Min: Sphalerite>>									
		<<Min: 107.96 - 108.36 20% Min: Pyrite>> Disseminated bands of PY +/- SP.									
		<<Alt: 107.96 - 111.21 Strong Chlorite>> Patchy-zones with strong chlorite alteration; strongest alteration in zones altered with CI.									
		<<Alt: 107.96 - 113.85 Weak Calcite>>									
108.36	**112.50**	**RHY** **undifferentiated rhyolite**	108.36	109.75	1.39	D00004241	0.018	2.4	0.01	0.04	0.04
		108.36 - 112.5: Undifferentiated RHY with strong chlorite, cordierite, and sericite alteration. FRA has been weakly-oxidized. Small (< 5cm) bands of gouge are localized.									
		<<Min: 108.36 - 112.5 3% Min: Sphalerite>> Sub-angular disseminated blebs of SP within RHY.	109.75	111.00	1.25	D00004242	0.097	18	0.09	0.24	1.47
		<<Min: 108.36 - 112.5 4% Min: Pyrite>>	111.00	112.50	1.50	D00004243	-0.005	14.3	0.1	0.17	2.2
		<<Min: 108.36 - 112.5 0.5% Min: Chalcopyrite>> Proximal to SP.									
		<<Alt: 108.77 - 112.88 Strong Cordierite>> Patchy-zones with strong-intense CI alteration.									
		<<Alt: 108.77 - 114.05 Weak-Moderate Muscovite>> Patchy-zones with weak-moderate MU alteration.									
		<<Vein: 108.36 - 111.3 Quartz>> Series of deformed - brecciated quartz veins with patchy carbonate and chlorite, and traces of sulphides.									
112.50	**114.05**	**OI** **Heavilly disseminated sulphides in host schist**	112.50	113.25	0.75	D00004244	0.089	26	0.03	0.34	1.16
		112.5 - 114.05: Sulphide mineralization within heavily-altered RHY.									
		<<Min: 112.5 - 114.05 2% Min: Sphalerite>> Disseminated in PY-rich bands; blebby within siliceous gangue.	113.25	114.05	0.80	D00004245	0.605	39.4	0.06	0.12	0.47
		<<Min: 112.5 - 114.05 8% Min: Pyrite>> Disseminated-bands of PY.									
		<<Alt: 113.85 - 117 Weak-Moderate Silicification>> Carbonate-rich silica-aggregates with blebs of sulphides.									
		<<Alt: 113.85 - 117 Moderate Calcite>>									
		<<Alt: 113.85 - 117 Weak Biotite>> Blebby-biotite within quartz-carbonate aggregates.									
		<<Vein: 113.07 - 113.16 Quartz 50 deg. >> Quartz vein with blebs of carbonate and sphalerite.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 113.43 - 113.44 dominant foliation>>									
114.05	**117.60**	**RHY undifferentiated rhyolite**	114.05	115.00	0.95	D00004246	0.108	5.6	-0.01	0.07	0.19
		114.05 - 117.6: Undifferentiated RHY with sub-rounded clasts of quartz, carbonate, and barite; pyrite replacement within clasts is rare.									
		<<Min: 114.05 - 117 6% Min: Barite>>	115.00	116.50	1.50	D00004247	0.196	4.8	0.02	0.02	0.1
		<<Min: 114.05 - 117.6 0.5% Min: Sphalerite>> Disseminated within gangue aggregates.	116.50	117.60	1.10	D00004248	0.241	16.1	0.07	0.02	0.03
		<<Min: 114.05 - 117.6 2% Min: Pyrite>>									
		<<Min: 114.05 - 117.6 0.1% Min: Chalcopyrite>> CP visible within quartz vein; trace within aggregate gangue.									
		<<Alt: 114.05 - 117.6 Moderate-Strong Muscovite>>									
		<<Vein: 115.25 - 115.26 Quartz-Sulphide 50 deg. >> Quartz stringer with blebby-sulphides (~20%).									
		<<Struc: 115.25 - 115.26 Vein>> Quartz stringer with sulphide blebs.									
117.60	**119.72**	**OI Heavilly disseminated sulphides in host schist**	117.60	118.65	1.05	D00004249	1.96	60.3	1.2	0.16	0.5
		117.6 - 119.72: Minor sulphide mineralization and barite (?) clasts within RHY host.									
		<<Min: 117.6 - 118.65 0.5% Min: Pyrrhotite>> Disseminated blebs within CP.	118.65	119.72	1.07	D00004252	1.09	38.4	0.7	0.16	1.01
		<<Min: 117.6 - 118.65 2% Min: Chalcopyrite>> CP stringers.									
		<<Min: 117.6 - 118.65 2% Min: Barite>>									
		<<Min: 117.6 - 119.72 0.5% Min: Sphalerite>>									
		<<Min: 117.6 - 119.72 20% Min: Pyrite>> Disseminated PY banding.									
		<<Alt: 117.6 - 118.65 Weak Biotite>>									
		<<Alt: 117.6 - 118.65 Weak-Moderate Albite>>									
		<<Alt: 117.6 - 119.72 Weak Muscovite>>									
		<<Alt: 117.6 - 119.72 Trace Calcite>>									
		<<Vein: 118.44 - 118.45 Massive Sulphide/Sulphides undifferentiated 40 deg. >> CP stringer.									
		<<Struc: 117.78 - 117.79 dominant foliation>>									
119.72	**120.45**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	119.72	120.45	0.73	D00004253	2.33	73.8	2.07	0.25	0.77
		119.72 - 120.45: Banded MG within massive PY.									
		<<Min: 119.72 - 120.45 2% Min: Sphalerite>> Disseminated banding within PY.									
		<<Min: 119.72 - 120.45 65% Min: Pyrite>> Semi-massive to massive PY with banded MG +/- SP.									
		<<Min: 119.72 - 120.45 15% Min: Magnetite>> Disseminated bands of MG within massive PY.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 119.72 - 120.45 0.5% Min: Chalcopyrite>>									
		<<Alt: 119.72 - 127.5 Weak Silicification>>									
		<<Alt: 119.72 - 127.5 Weak-Moderate Calcite>>									
		<<Alt: 119.72 - 127.5 Weak Albite>>									
		<<Struc: 119.9 - 119.91 dominant foliation>>									
120.45	**127.50**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	120.45	121.50	1.05	D00004254	1.07	146	0.27	3.51	10.3
		120.45 - 127.5: Massive PY with disseminated sulphides, and rare barite (?) clasts.									
		<<Min: 120.45 - 127.5 2% Min: Tetrahedrite>> TT blebs within gangue aggregates.	121.50	122.50	1.00	D00004255	1.97	135	0.59	1.92	8.43
		<<Min: 120.45 - 127.5 8% Min: Sphalerite>> Disseminated-bands within massive PY.	122.50	123.50	1.00	D00004256	4.01	232	1.31	2.24	7.31
		<<Min: 120.45 - 127.5 75% Min: Pyrite>> Massive PY with disseminated-bands of SP, and trace MG. Gangue aggregates contain BA, TT, GL, and CP.	123.50	124.50	1.00	D00004257	3.27	171	1.03	1.74	5.21
		<<Min: 120.45 - 127.5 0.5% Min: Magnetite>> Trace MG disseminated throughout massive PY.	124.50	125.50	1.00	D00004258	1.48	116	0.49	2.19	6.74
		<<Min: 120.45 - 127.5 0.5% Min: Galena>> Proximal to gangue.	125.50	126.50	1.00	D00004259	0.61	26	0.12	0.54	8.41
		<<Min: 120.45 - 127.5 2% Min: Barite>>	126.50	127.50	1.00	D00004261	0.606	53.5	0.13	1.02	9.41
		<<Min: 120.45 - 127.6 0.5% Min: Chalcopyrite>> Proximal to gangue.									
		<<Struc: 124.11 - 124.12 dominant foliation>>									
127.50	**129.19**	**OA Laminar or heavily disseminated magnetite bearing massive sulphide**	127.50	128.50	1.00	D00004262	0.266	24.1	0.04	0.58	10.2
		127.5 - 129.19: Massive PY with disseminated MG (buckshot texture).									
		<<Min: 127.5 - 129.19 8% Min: Sphalerite>> Disseminated-banding.	128.50	129.19	0.69	D00004263	0.839	63.2	0.23	1.59	4.9
		<<Min: 127.5 - 129.19 75% Min: Pyrite>> Massive PY with disseminated-bands of MG and SP; localized zones have a MG buckshot texture.									
		<<Min: 127.5 - 129.19 15% Min: Magnetite>> Disseminated-banding and buckshot texture within massive PY.									
		<<Alt: 127.5 - 135.2 Trace Calcite>> Carbonate aggregates and FRA.									
129.19	**131.91**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	129.19	130.00	0.81	D00004264	0.857	62.9	0.14	1.18	4.77
		129.19 - 131.91: Massive PY; localized bands of disseminated sphalerite.									
		<<Min: 129.19 - 131 3% Min: Sphalerite>>	130.00	131.00	1.00	D00004265	0.729	33.2	0.09	0.76	2.35
		<<Min: 129.19 - 131 95% Min: Pyrite>> Massive PY with disseminated-bands of SP. PY blebs within siliceous gangue.	131.00	131.91	0.91	D00004266	0.856	59.4	-0.01	1.96	9.27

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 131 - 131.91 6% Min: Sphalerite>> Disseminated SP banding within massive PY.											
<<Min: 131 - 131.91 85% Min: Pyrite>> Massive PY with disseminated-bands of SP.											
<<Alt: 130 - 135.2 Weak Albite>>											
<<Struc: 131.72 - 131.73 dominant foliation>>											
131.91	**132.80**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	131.91	132.80	0.89	D00004267	0.418	98.8	0.43	4.62	11.8
131.91 - 132.8: Disseminated blebs-banded MG within massive PY.											
<<Min: 131.91 - 132.8 6% Min: Sphalerite>> Disseminated-bands of SP within massive PY.											
<<Min: 131.91 - 132.8 70% Min: Pyrite>> Massive PY with blebby-bands of MG, and disseminated SP +/- GL.											
<<Min: 131.91 - 132.8 20% Min: Magnetite>> Banded MG blebs.											
<<Min: 131.91 - 132.8 0.5% Min: Galena>> Disseminated within banded SP.											
<<Struc: 132.1 - 132.11 dominant foliation>>											
132.80	**135.20**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	132.80	134.00	1.20	D00004268	0.559	93.8	0.12	2.75	11.2
132.8 - 135.2: Massive PY with disseminated sulphides.											
<<Min: 132.8 - 135.2 10% Min: Sphalerite>> Disseminated bands of SP within massive PY.			134.00	135.20	1.20	D00004269	1.12	136	0.35	2.83	8.96
<<Min: 132.8 - 135.2 65% Min: Pyrite>> Massive PY with disseminated SP banding, and trace CP and GL.											
<<Min: 132.8 - 135.2 0.1% Min: Galena>>											
<<Min: 132.8 - 135.2 0.5% Min: Chalcopyrite>>											
<<Struc: 134.34 - 134.35 Vein>> Quartz-carb stringer.											
135.20	**139.70**	**RHY** **undifferentiated rhyolite**	135.20	136.70	1.50	D00004272	1.31	32.2	0.63	0.13	0.18
135.2 - 139.7: Localized biotite alteration.											
<<Min: 135.2 - 135.5 8% Min: Pyrite>>			136.70	138.20	1.50	D00004273	0.021	4.4	0.09	0.03	0.04
<<Min: 135.2 - 135.5 4% Min: Chalcopyrite>>			138.20	139.70	1.50	D00004274	0.132	28.1	0.39	0.29	0.62
<<Min: 135.5 - 138.2 2% Min: Pyrite>>											
<<Min: 135.5 - 138.2 0.5% Min: Arsenopyrite>>											
<<Min: 138.2 - 139.3 1% Min: Sphalerite>>											
<<Min: 138.2 - 139.3 1% Min: Galena>> Disseminated blebs of GL within quartz veins, and altered RHY.											
<<Min: 138.2 - 139.3 1% Min: Chalcopyrite>>											
<<Min: 138.2 - 139.7 2% Min: Pyrite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 135.2 - 135.5 Weak Biotite>>											
<<Alt: 135.2 - 138.2 Moderate-Strong Muscovite>>											
<<Alt: 135.2 - 138.2 Moderate Calcite>>											
<<Alt: 138.2 - 139.09 Moderate Chlorite>>											
<<Alt: 138.2 - 139.09 Moderate-Strong Cordierite>>											
<<Alt: 138.2 - 139.7 Strong Muscovite>> Patchy-alteration within vein; pervasive within RHY.											
<<Alt: 138.2 - 146.89 Trace Calcite>>											
<<Vein: 138.26 - 139 Quarzt-Chlorite-Carbonate>> Quartz-carbonate vein with blebby-chlorite, and brecciated, sub-angular clasts of RHY.											
<<Struc: 135.2 - 135.21 Contact>> Sharp CT between OB-RHY.											
<<Struc: 135.6 - 135.61 dominant foliation>>											
139.70 148.76 OB	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**		139.70	140.70	1.00	D00004275	2.07	177	0.67	2.96	8.45
139.7 - 148.76: Massive PY with disseminated sulphides, and quartz-carbonate gangue.											
<<Min: 139.7 - 143.7 20% Min: Sphalerite>> Disseminated SP banding within massive PY; blebs within gangue aggregates.			140.70	141.70	1.00	D00004276	3.07	191	0.56	3.45	10.6
<<Min: 139.7 - 143.7 60% Min: Pyrite>>			141.70	142.70	1.00	D00004277	1.99	171	0.34	5.01	14.5
<<Min: 139.7 - 148.76 2% Min: Tetrahedrite>> Disseminated-blebs localized within aggregate gangue.			142.70	143.70	1.00	D00004278	1.86	161	0.49	2.62	9.79
<<Min: 139.7 - 148.76 2% Min: Galena>> Blebs are localized within aggregate gangue.			143.70	144.70	1.00	D00004279	1.44	142	0.43	1.5	6.11
<<Min: 139.7 - 148.76 0.5% Min: Chalcopyrite>>			144.70	145.70	1.00	D00004281	1.53	142	0.48	1.78	5.43
<<Min: 139.7 - 148.76 3% Min: Barite>>			145.70	146.70	1.00	D00004282	2.25	153	0.63	1.57	5.91
<<Min: 143.7 - 144.7 3% Min: Sphalerite>> Disseminated SP banding.			146.70	147.70	1.00	D00004283	1.12	120	0.36	2.24	5.15
<<Min: 143.7 - 144.7 90% Min: Pyrite>>			147.70	148.76	1.06	D00004284	1.46	155	0.36	2.97	8.46
<<Min: 144.7 - 148.76 10% Min: Sphalerite>> Disseminated SP banding.											
<<Min: 144.7 - 148.76 70% Min: Pyrite>>											
<<Alt: 139.7 - 146.89 Weak Silicification>>											
<<Alt: 139.7 - 146.89 Weak-Moderate Albite>>											
<<Alt: 146.89 - 148.02 Weak-Moderate Silicification>>											
<<Alt: 146.89 - 148.02 Moderate Calcite>>											
<<Alt: 146.89 - 148.02 Moderate Albite>>											
<<Alt: 148.02 - 148.76 Trace Calcite>>											
<<Struc: 143.3 - 143.31 dominant foliation>>											

From (m)	To (m)	Rocktype & Description
148.76	**152.05**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**
<<Min: 148.76 - 156 0.5% Min: Pyrite>>		
<<Alt: 148.76 - 152.05 Weak-Moderate Muscovite>> Patchy muscovite-altered zones within MAFi.		
<<Struc: 148.76 - 148.77 Contact>> Sharp CNT between OB-MAFi.		
<<Struc: 150.15 - 150.16 dominant foliation>>		
152.05	**155.70**	**RHY** **undifferentiated rhyolite**
152.05 - 155.7: Silica-alteration within first 40cm.		
<<Alt: 152.05 - 152.4 Moderate Silicification>>		
<<Alt: 152.05 - 156 Moderate-Strong Muscovite>>		
<<Alt: 152.05 - 156 Moderate Calcite>> Banded calcite within RHY.		
<<Vein: 153.4 - 153.85 Quartz-Carbonate 35 deg. >> Deformed-brecciated quartz vein with patchy-carbonate.		
<<Struc: 152.05 - 152.06 Contact>> MAFi-RHY CNT.		
<<Struc: 154.8 - 154.81 dominant foliation>>		
155.70	**161.04**	**OI** **Heavilly disseminated sulphides in host schist**
155.7 - 161.04: Sulphide and calcite FRA within RHYi.		
<<Min: 156 - 158.5 2% Min: Pyrite>>		
<<Min: 156 - 159.44 12% Min: Sphalerite>> Red to orangish-brown SP FRA.		
<<Min: 158.5 - 161.35 6% Min: Pyrite>> PY FRA and vuggy, veinlets.		
<<Min: 159.44 - 161.35 2% Min: Sphalerite>>		
<<Alt: 156 - 160 Strong Calcite>> Patchy-calcite FRA.		
<<Alt: 156 - 169.2 Weak-Moderate Muscovite>> Patchy-pervasive MU alteration within RHYi.		
<<Alt: 159.44 - 161.04 Weak-Moderate Chlorite>>		
<<Alt: 160 - 169.2 Weak Calcite>> Disseminated and FRA calcite.		
<<Vein: 156 - 159.5 Carbonate-Sulphide>> Calcite and sulphide FRA (20-25%) within RHYi.		
<<Vein: 159.5 - 161.6 Quartz-Carbonate-Sulphide>> Quartz stringers-veinlets containing patchy-calcite, and traces of sulphides. Mass sulphide replacement has occurred within rare veinlets.		
<<Struc: 155.7 - 155.71 Contact>> RHY-RHYi (OI) CNT.		
<<Struc: 156.75 - 156.76 dominant foliation>> Mineralized banding.		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
148.76	149.70	0.94	D00004285	0.036	19.8	-0.01	0.49	1.69
149.70	151.00	1.30	D00004286	-0.005	-0.3	-0.01	-0.01	0.02
151.00	152.05	1.05	D00004287	-0.005	-0.3	-0.01	-0.01	0.01
152.05	153.00	0.95	D00004288	0.01	0.6	-0.01	0.01	0.02
153.00	154.50	1.50	D00004289	-0.005	-0.3	-0.01	-0.01	0.01
154.50	155.70	1.20	D00004291	0.009	1.1	-0.01	-0.01	0.02
155.70	157.00	1.30	D00004292	0.013	1.4	-0.01	0.02	3.44
157.00	158.00	1.00	D00004293	0.01	2	0.01	0.04	4.75
158.00	159.00	1.00	D00004294	0.011	1.6	0.01	0.03	1.91
159.00	160.00	1.00	D00004295	-0.005	2.5	0.02	0.05	2.5
160.00	161.04	1.04	D00004296	-0.005	1.5	0.01	0.05	1.48

From (m)	To (m)	Rocktype & Description
161.04	**169.20**	**RHYi Aphanitic Rhyolite (intrusion)**
161.04 - 169.2: Aphanitic RHY with sub-rounded quartz vesicles, weak-moderate sericite alteration, and minor sulphide FRA.		
<<Min: 161.35 - 169.2 3% Min: Sphalerite>>		
<<Min: 161.35 - 169.2 2% Min: Pyrite>>		
<<Min: 161.35 - 169.2 1% Min: Pyrrhotite>> Elongated-blebs, disseminated along foliation.		
<<Vein: 163.5 - 163.72 Quartz-Carbonate-Sulphide 35 deg. >> Patchy-calcite and blebby-sulphides within quartz vein.		
<<Struc: 161.75 - 161.76 dominant foliation>>		
<<Struc: 164.1 - 164.11 dominant foliation>>		
<<Struc: 166.12 - 166.13 dominant foliation>>		
169.20	**178.20**	**RHY undifferentiated rhyolite**
169.2 - 178.2: Massive quartz-carbonate vein from 173-174.28m.		
<<Min: 169.2 - 178.2 1% Min: Sphalerite>> Disseminated SP banding.		
<<Min: 169.2 - 178.2 1% Min: Pyrite>> Disseminated PY banding.		
<<Min: 169.2 - 178.2 2% Min: Pyrrhotite>> Disseminated PO banding.		
<<Alt: 169.2 - 178.2 Moderate-Strong Calcite>>		
<<Alt: 169.2 - 178.3 Moderate-Strong Muscovite>>		
<<Alt: 174.36 - 177.85 Moderate Silicification>>		
<<Vein: 170.56 - 170.57 Massive Sulphide/Sulphides undifferentiated 25 deg. >> Sulphide veinlet with brecciated, sub-angular clasts of quartz.		
<<Vein: 173 - 173.45 Quartz-Carbonate 55 deg. >> Massive quartz vein; calcite and chlorite blebs and FRA.		
<<Vein: 173.45 - 174.28 Calcite 45 deg. >> Massive calcite vein with patches of quartz.		
<<Struc: 169.2 - 169.21 Contact>> RHYi-RHY CNT.		
<<Struc: 172.3 - 172.31 dominant foliation>>		
<<Struc: 173 - 173.01 Vein>> RHY-quartz vein CNT.		
<<Struc: 175.55 - 175.56 dominant foliation>>		
<<Struc: 176.6 - 176.61 dominant foliation>>		
178.20	**183.00**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**
178.2 - 183: Localized bleached zones.		
<<Min: 178.2 - 183 0.1% Min: Pyrite>>		
<<Min: 178.2 - 183 0.5% Min: Pyrrhotite>>		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
161.04	162.50	1.46	D00004297	-0.005	0.9	-0.01	0.02	0.19
162.50	164.00	1.50	D00004298	-0.005	1.3	-0.01	0.05	0.08
164.00	165.50	1.50	D00004299	0.005	2	-0.01	0.03	0.16
165.50	167.00	1.50	D00004301	0.016	1.9	-0.01	0.06	0.62
167.00	168.50	1.50	D00004302	0.015	0.4	-0.01	-0.01	0.19

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-365

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 179 - 183 Weak-Moderate Muscovite>> Patchy-zones of muscovite alteration within MAFi. <<Vein: 181.5 - 181.54 Quartz-Carbonate 25 deg. >> Quartz vein with patchy-carbonate. <<Struc: 179.93 - 179.94 dominant foliation>> **End of Hole @ 183**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-366

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/22/2016
UTM Easting	414676.455	Core Size:	HQ3	Azimuth:	359.8	Date Logging Complete:	6/23/2016
UTM Northing:	6815345.271	Casing Pulled?:	Yes	Dip:	-62.9	Drill Company:	Hytech
UTM Elev. (m):	1424.284	Casing Depth (m):	9	Length (m):	90	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/15/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/15/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Metallurgical
Comments:						Parent Hole:	

K16-366 was designed to provide material for metallurgical testng from the up-dip portions of the ABM lens.
The hole succesfully intersected MXSX mineralization from beneath the OVBN @ 8.57m to 16.57m consisting of OB and OA ore types. Additional MXSX was intersected from 30.94 - 36.49m; 40.71 - 51.35m; 63.77 - 64.86m and 65.70 - 66.00m, all consisting of the OB ore type.
A thick intersection of RHYi was intersected below mineralization and intrudes into possible RHYva. The upper contact of RHYi shows possible replacement by sulphides to form OI. RHYi also exhibits silica and cabonate filled vesicles including remnant crystal forms indicating exsolution of volatiles.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-62.9	358.4	1.4	359.8	TN14	Rob Duncan	6/15/2016		☑	
15	-62.7	341.2	22.1	3.3	ReflexEZS	Hytech	6/15/2016	5905	☑	
39	-63.7	341.1	22.1	3.2	ReflexEZS	Hytech	6/15/2016	5860	☑	
63	-63.7	340.5	22.1	2.6	ReflexEZS	Hytech	6/15/2016	5755	☑	
87	-64.3	341.1	22.1	3.2	ReflexEZS	Hytech	6/15/2016	5748	☑	

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**8.57**	**OVBN**	**Overburden**									
8.57	**10.46**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	8.57	9.57	1.00	D00006001	2.12	314	0.48	4.38	12.5
8.57 - 10.46: recovered at the ovbn bedrock interface. Some oxidation												
<<Min: 8.57 - 10.46 13% Min: Sphalerite>>					9.57	10.46	0.89	D00006002	1.48	170	0.14	1.95	5.32
<<Min: 8.57 - 10.46 70% Min: Pyrite>>												
<<Min: 8.57 - 10.46 2% Min: Galena>>												
<<Min: 8.57 - 10.46 1% Min: Chalcopyrite>>												

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 10 - 11 dominant foliation>>												
10.46	**12.81**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FG**	10.46	11.46	1.00	D00006003	1.34	143	0.29	1.63	6.13
10.46 - 12.81: rubbly core. Poorly developed MG laminations												
<<Min: 10.46 - 12.81 10% Min: Sphalerite>>				11.46	12.81	1.35	D00006004	2.69	157	0.09	2.12	11.5
<<Min: 10.46 - 12.81 70% Min: Pyrite>>												
<<Min: 10.46 - 12.81 6% Min: Magnetite>> poor laminations												
<<Min: 10.46 - 12.81 2% Min: Galena>>												
<<Min: 10.46 - 12.81 2% Min: Chalcopyrite>>												
<<Struc: 12.8 - 13.1 Weak Fault>> rubble core												
12.81	**16.57**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	12.81	13.81	1.00	D00006005	2.59	212	0.31	1.86	7.89
<<Min: 12.81 - 16.57 20% Min: Sphalerite>>				13.81	14.81	1.00	D00006006	1.99	156	0.3	0.78	1.59
<<Min: 12.81 - 16.57 50% Min: Pyrite>>				14.81	16.00	1.19	D00006007	1.1	140	0.14	2.09	6.12
<<Min: 12.81 - 16.57 3% Min: Galena>>				16.00	16.57	0.57	D00006008	2.52	279	0.24	4.33	11
<<Min: 12.81 - 16.57 1% Min: Chalcopyrite>>												
<<Struc: 14 - 15 dominant foliation>>												
<<Struc: 15 - 16 dominant foliation>>												
16.57	**26.60**	**RHYv Rhyolite volcaniclastic**		16.57	17.62	1.05	D00006009	0.172	25.1	0.07	0.13	0.57
16.57 - 26.6: intense MU alt on either end of large QV's, silic bands possible RHYcw24.09 - 24.39m												
<<Min: 17 - 17.3 1% Min: Sphalerite>>				17.62	18.61	0.99	D00006011	-0.005	0.4	-0.01	-0.01	0.08
<<Min: 18.6 - 24.05 2% Min: Sphalerite>> associated with py				18.61	20.00	1.39	D00006012	0.105	17.4	0.03	0.17	0.89
<<Min: 18.6 - 24.05 8% Min: Pyrite>> cm scale bands/stringers				20.00	21.50	1.50	D00006013	0.122	19.4	0.02	0.18	0.75
<<Min: 18.6 - 24.05 0.5% Min: Galena>> associated with py				21.50	22.75	1.25	D00006014	0.096	18.2	0.02	0.14	0.33
<<Min: 26.1 - 26.6 3% Min: Pyrite>>				22.75	24.00	1.25	D00006015	0.038	3	0.03	0.01	0.09
<<Alt: 16.57 - 26.1 Moderate-Strong Muscovite>>				24.00	25.00	1.00	D00006016	-0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 19.7 - 20 Moderate Cordierite>>				25.00	26.10	1.10	D00006017	0.022	9	0.03	0.02	-0.01
<<Alt: 21 - 23 Weak-Moderate Calcite>>				26.10	26.60	0.50	D00006018	-0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 24.49 - 24.9 Weak-Moderate Ankerite>> 3mm porphyroblasts												
<<Alt: 26.1 - 26.6 Intense Muscovite>>												

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-366

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Vein: 16.7 - 18.61 100% Quartz 35 deg. >> massive white qtz vein trace sp												
<<Vein: 25 - 26.1 100% Quartz 35 deg. >> massive white qtzvein												
<<Struc: 21 - 24 dominant foliation>>												
26.60	**30.94**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**		26.60	28.00	1.40	D00006019	-0.005	-0.3	-0.01	-0.01	0.02
<<Min: 26.6 - 30.94 3% Min: Pyrite>>				28.00	29.50	1.50	D00006021	0.034	2.1	-0.01	0.02	0.02
<<Min: 30.6 - 30.7 2% Min: Sphalerite>> blebs				29.50	30.94	1.44	D00006022	0.083	5.9	0.01	0.07	0.16
<<Min: 30.6 - 30.7 0.5% Min: Galena>> margin of sp blebs												
<<Alt: 26.6 - 30.94 Intense Muscovite>>												
30.94	**34.66**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	30.94	31.94	1.00	D00006023	1.94	183	0.29	3.42	8.82
30.94 - 34.66: short patches of FG pyritic and rare evidence of sulphide fragments												
<<Min: 30.94 - 34.66 20% Min: Sphalerite>> bands				31.94	32.94	1.00	D00006024	3.34	156	0.47	2.04	9.72
<<Min: 30.94 - 34.66 60% Min: Pyrite>>				32.94	33.94	1.00	D00006025	2.94	172	0.27	3.13	8
<<Min: 30.94 - 34.66 5% Min: Galena>>				33.94	34.66	0.72	D00006026	1.7	146	0.14	3.57	10.5
<<Min: 30.94 - 34.66 1% Min: Chalcopyrite>>												
34.66	**36.49**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	34.66	35.51	0.85	D00006027	1.61	105	0.22	2.44	10.3
34.66 - 36.49: 35.5 - 36.39 extremely well laminated MG.												
<<Min: 34.66 - 36.49 10% Min: Sphalerite>>				35.51	36.49	0.98	D00006028	0.79	99.4	0.17	2.13	8.19
<<Min: 34.66 - 36.49 15% Min: Magnetite>> laminations												
<<Min: 34.66 - 36.49 3% Min: Galena>>												
<<Min: 34.66 - 36.49 1% Min: Chalcopyrite>>												
<<Struc: 35 - 36.49 dominant foliation>>												
36.49	**37.56**	**RHYvl** **Lapilli tuff**		36.49	37.56	1.07	D00006029	0.787	108	0.28	0.04	0.36
<<Min: 36.49 - 37.56 1% Min: Pyrite>>												
<<Alt: 36.49 - 37.56 Moderate-Strong Muscovite>>												
<<Alt: 37.08 - 37.56 Moderate Calcite>>												
<<Vein: 36.85 - 36.93 100% Quartz 55 deg. >> massive white grey qtz vein												
<<Struc: 36.85 - 36.93 Vein>> cross cutting qtz vein												

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-366

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
37.56	**39.09**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**		37.56	39.09	1.53	D00006031	0.099	10.8	0.02	0.12	0.32
<<Min: 37.56 - 39.09 3% Min: Pyrite>> in silica bands												
<<Alt: 37.56 - 39.09 Moderate-Strong Muscovite>>												
39.09	**40.71**	**OI** **Heavilly disseminated sulphides in host schist**	**FMG**	39.09	40.00	0.91	D00006032	1.68	148	0.22	1.96	8.65
39.09 - 40.71: in host RHY, concentrates into near OB MXSX @ 39.37 - 39.72 m & 40.10 - 40.25m												
<<Min: 39.09 - 40.71 5% Min: Sphalerite>>				40.00	40.71	0.71	D00006033	7.91	1031	2.87	2.43	4.91
<<Min: 39.09 - 40.71 35% Min: Pyrite>>												
<<Min: 39.09 - 40.71 1% Min: Galena>>												
<<Min: 39.09 - 40.71 1% Min: Chalcopyrite>>												
<<Alt: 39.09 - 40.71 Moderate-Strong Muscovite>>												
40.71	**51.35**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	40.71	42.50	1.79	D00006034	1.97	234	0.54	4.22	11.3
40.71 - 51.35: increasing amount of gange and CA from 49 - 51.35m												
<<Min: 40.71 - 51.35 20% Min: Sphalerite>>				42.50	43.50	1.00	D00006035	0.984	131	0.18	3.76	11.4
<<Min: 40.71 - 51.35 55% Min: Pyrite>>				43.50	44.50	1.00	D00006036	1.54	175	0.41	3.19	7.64
<<Min: 40.71 - 51.35 5% Min: Galena>>				44.50	45.50	1.00	D00006037	1.5	144	0.46	3.72	7.65
<<Min: 40.71 - 51.35 1% Min: Chalcopyrite>>				45.50	46.50	1.00	D00006038	1.48	108	0.43	2.39	9.06
<<Alt: 49 - 51.35 Moderate Calcite>>				46.50	47.50	1.00	D00006039	2.49	210	0.76	4.61	12.3
<<Struc: 40.71 - 41.3 Weak Fault>>				47.50	48.50	1.00	D00006041	1.3	145	0.44	5.61	16.3
<<Struc: 43.5 - 47 dominant foliation>>				48.50	49.50	1.00	D00006042	1.24	211	0.29	8.13	14.6
				49.50	50.50	1.00	D00006043	1.82	216	0.59	3.25	6.06
				50.50	51.35	0.85	D00006044	0.43	85.7	0.09	2.65	4.78
51.35	**62.33**	**RHYi** **Aphanitic Rhyolite (intrusion)**		51.35	52.50	1.15	D00006045	0.101	15	0.05	0.16	0.83
<<Min: 51.35 - 62.33 1% Min: Sphalerite>>				52.50	54.00	1.50	D00006046	0.014	0.6	-0.01	0.03	0.01
<<Min: 51.35 - 62.33 5% Min: Pyrite>> wispy stringer blebs in Rhyi, sp and gl associated				54.00	55.50	1.50	D00006047	0.04	0.7	-0.01	0.02	0.02
<<Min: 51.35 - 62.33 0.5% Min: Galena>>				55.50	57.00	1.50	D00006048	0.047	2.8	-0.01	0.12	0.2
<<Alt: 51.35 - 62.33 Weak Muscovite>>				57.00	58.50	1.50	D00006049	0.014	1.6	-0.01	0.06	0.1
<<Struc: 54 - 62 dominant foliation>>				58.50	60.00	1.50	D00006051	0.01	-0.3	-0.01	0.01	0.08
				60.00	61.33	1.33	D00006052	0.009	0.3	-0.01	0.02	-0.01

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
					61.33	62.33	1.00	D00006053	0.005	-0.3	-0.01	-0.01	0.01
62.33	**63.77**	**OI**	**Heavilly disseminated sulphides in host schist**	**FMG**	62.33	63.77	1.44	D00006054	0.029	1	-0.01	0.03	0.04

62.33 - 63.77: Hosted witih RHYcw or RHYi

<<Min: 62.33 - 63.77 5% Min: Sphalerite>>

<<Min: 62.33 - 63.77 35% Min: Pyrite>>

<<Min: 62.33 - 63.77 2% Min: Galena>>

<<Alt: 62.33 - 63.77 Moderate Calcite>>

63.77	**64.86**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MG**	63.77	64.86	1.09	D00006055	2.1	638	1.26	3.13	7.39

<<Min: 63.77 - 64.86 15% Min: Sphalerite>>

<<Min: 63.77 - 64.86 60% Min: Pyrite>> slight buckshot

<<Min: 63.77 - 64.86 3% Min: Galena>>

<<Min: 63.77 - 64.86 1% Min: Chalcopyrite>>

<<Alt: 63.77 - 64.86 Moderate-Strong Calcite>>

64.86	**65.70**	**RHY**	**undifferentiated rhyolite**		64.86	65.70	0.84	D00006056	0.146	9.8	0.11	0.19	0.34

64.86 - 65.7: in fault zone, likely RHYcw

<<Min: 64.86 - 65.7 1% Min: Sphalerite>>

<<Min: 64.86 - 65.7 3% Min: Pyrite>>

<<Alt: 64.86 - 65.7 Moderate-Strong Muscovite>> and OP FLT related

<<Struc: 64.86 - 64.86 Contact>>

<<Struc: 64.86 - 65.7 Moderate Fault>> healed gouge flz of RHYi or RHYcw

65.70	**66.00**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**MG**	65.70	66.00	0.30	D00006057	1.6	564	1.71	2.59	6.42

<<Min: 65.7 - 66 15% Min: Sphalerite>>

<<Min: 65.7 - 66 50% Min: Pyrite>>

<<Min: 65.7 - 66 3% Min: Galena>>

<<Min: 65.7 - 66 1% Min: Chalcopyrite>>

<<Alt: 65.7 - 66 Trace Calcite>>

<<Struc: 65.7 - 66 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
66.00	**66.69**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	66.00	66.69	0.69	D00006058	0.047	14.5	0.07	0.31	0.57
66 - 66.69: hard to determine, in fault zone											
<<Min: 66 - 66.9 2% Min: Sphalerite>> with py in bands											
<<Min: 66 - 66.9 6% Min: Pyrite>>											
<<Min: 66 - 66.9 0.5% Min: Galena>> with py in bands											
<<Min: 66 - 66.9 1% Min: Chalcopyrite>> with py in bands											
<<Alt: 66 - 66.69 Moderate Muscovite>> and OP FLT related											
<<Alt: 66 - 66.69 Moderate Calcite>>											
<<Struc: 66 - 66 Contact>>											
<<Struc: 66 - 66.69 Moderate Fault>> as above											
66.69	**68.48**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	66.69	67.50	0.81	D00006059	-0.005	0.7	-0.01	0.02	0.07
66.69 - 68.48: Silicified by underying RHYi											
<<Min: 66.9 - 68.48 2% Min: Sphalerite>> with PY			67.50	68.48	0.98	D00006061	-0.005	1.9	-0.01	0.07	0.41
<<Min: 66.9 - 68.48 5% Min: Pyrite>> bands											
<<Alt: 66.69 - 68.48 Moderate-Strong Silicification>>											
<<Alt: 66.69 - 68.48 Weak-Moderate Muscovite>>											
<<Alt: 66.69 - 68.48 Weak-Moderate Calcite>>											
68.48	**70.38**	**RHYi Aphanitic Rhyolite (intrusion)**	68.48	69.48	1.00	D00006062	0.037	5.2	0.03	0.1	0.81
68.48 - 70.38: Looks to be narrower with SI RHYvl between											
<<Min: 68.48 - 69.8 1% Min: Sphalerite>> wit hpy			69.48	70.38	0.90	D00006063	-0.005	1.4	-0.01	0.07	0.16
<<Min: 68.48 - 69.8 3% Min: Pyrite>> bnads											
<<Min: 69.8 - 70.38 0.5% Min: Pyrite>>											
<<Alt: 68.48 - 70.38 Weak Muscovite>>											
<<Struc: 69 - 70 dominant foliation>>											
70.38	**75.75**	**RHYvl Lapilli tuff**	70.38	71.80	1.42	D00006064	0.006	1.6	-0.01	0.13	0.11
70.38 - 75.75: narrow intervals of RHYi @ 72.5 and 75. Possible pepperitic textures											
<<Min: 70.38 - 75.75 1% Min: Pyrite>>			71.80	73.30	1.50	D00006065	-0.005	0.5	-0.01	-0.01	0.01
<<Alt: 70.38 - 75.75 Moderate-Strong Silicification>> from RHYi			73.30	74.50	1.20	D00006066	0.01	0.5	-0.01	-0.01	0.01
<<Alt: 72.5 - 74.5 Weak-Moderate Calcite>>			74.50	75.75	1.25	D00006067	-0.005	-0.3	-0.01	-0.01	-0.01

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-366

From (m)	To (m)	Rocktype & Description
		<<Struc: 72 - 76 dominant foliation>>
75.75	**87.47**	**RHYi Aphanitic Rhyolite (intrusion)**
		75.75 - 87.47: pepperitic textures at 80.5 - 81m intruding into Ash? However, vesicles in RHYi and possible RHYva filled with quartz and carbonate crystal forms. Others filled with silica. Therefore, ash is probably not ash but a different tecture in RHYi. Pictures taken.
		<<Min: 79 - 87 1% Min: Pyrite>>
		<<Min: 79 - 87 0.5% Min: Pyrrhotite>>
		<<Min: 79 - 87 0.01% Min: Arsenopyrite>>
		<<Alt: 75.75 - 86 Weak Calcite>> within vesicles!!
		<<Alt: 75.75 - 87.47 Weak Muscovite>>
		<<Alt: 78 - 81 Moderate-Strong Silicification>> from RHYi
		<<Struc: 87 - 89 dominant foliation>>
87.47	**88.49**	**RHYvl Lapilli tuff**
		<<Alt: 87.47 - 88.49 Weak-Moderate Silicification>> from RHYi
88.49	**90.00**	**RHYi Aphanitic Rhyolite (intrusion)**
		<<Min: 88.49 - 90 0.5% Min: Pyrite>>
		End of Hole @ 90

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
75.75	77.00	1.25	D00006068	-0.005	-0.3	-0.01	-0.01	-0.01

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-367

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/20/2016
UTM Easting	415073.842	Core Size:	HQ3	Azimuth:	215.1	Date Logging Complete:	6/23/2016
UTM Northing:	6815185.899	Casing Pulled?:	Yes	Dip:	-65.1	Drill Company:	Hytech
UTM Elev. (m):	1386.377	Casing Depth (m):	9	Length (m):	282	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/15/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/18/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-367 was drilled to test inferred portions of the Krakatoa upper and main lenses. As well as detailed geotechnical logging for proposed underground mine.
K16-367 encountered bedrock at 8.7 m. From 8.7-118.2 m, the felsic hanging wall package is encountered, with a zone of OJ mineralization from 107.8-111.5 m. The mafic sill occurs from 118.2-173.1 m, with zones of mineralization from 147.5-148.2 (OJ), 151.9-152.8 (OJ and OB), and 155.1-156.1 (OK). Below the mafic sill three lenses of massive sulfide occur: OK from 173.1-177.1 m (OK), 178.8-180 m (OK), and 184.3-188.8 m (OB). Each lens is separate by strongly MU-altered rhyolite. Below these lenses the mafic sill occurs again (188.8-207.6 m), with minor OJ mineralization at the lower contact (207.6-207.9 m). Below the OJ mineralization the felsic footwall package persists to 273.1 m with decreasing MU-alteration. From 273.1-282 m (EOH) a moderately to strongly faulted CL-BI unit (SED?) occurs.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65.1	213.7	1.4	215.1	TN14	Roger Hulstein	6/15/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-64.98253	214.04192	1.4	215.44192	Gyro	Steve Bultitude	6/20/2016		☑	100
10	-64.91103	214.14876	1.4	215.54876	Gyro	Steve Bultitude	6/20/2016		☑	100
15	-64.83167	214.14953	1.4	215.54953	Gyro	Steve Bultitude	6/20/2016		☑	100
18	-64.8	195.9	22.1	218	ReflexEZS	Hytech	6/16/2016	5813	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
20	-64.82456	214.24541	1.4	215.64541	Gyro	Steve Bultitude	6/20/2016		☑	100
25	-64.71746	214.47121	1.4	215.87121	Gyro	Steve Bultitude	6/20/2016		☑	100
30	-64.72376	214.56892	1.4	215.96892	Gyro	Steve Bultitude	6/20/2016		☑	100
35	-64.54737	214.60352	1.4	216.00352	Gyro	Steve Bultitude	6/20/2016		☑	100
40	-64.34348	214.5172	1.4	215.9172	Gyro	Steve Bultitude	6/20/2016		☑	100
42	-64.3	197.2	22.1	219.3	ReflexEZS	Hytech	6/16/2016	5780	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
45	-64.23034	214.62345	1.4	216.02345	Gyro	Steve Bultitude	6/20/2016		☑	100
50	-64.14508	214.52602	1.4	215.92602	Gyro	Steve Bultitude	6/20/2016		☑	100
55	-64.18501	214.74925	1.4	216.14925	Gyro	Steve Bultitude	6/20/2016		☑	100
60	-64.07473	214.86724	1.4	216.26724	Gyro	Steve Bultitude	6/20/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-367

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
65	-64.02132	215.04588	1.4	216.44588	Gyro	Steve Bultitude	6/20/2016		☑	100
66	-63.8	201.2	22.1	223.3	ReflexEZS	Hytech	6/16/2016	5921	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
70	-63.92178	215.20261	1.4	216.60261	Gyro	Steve Bultitude	6/20/2016		☑	100
75	-63.84413	215.30366	1.4	216.70366	Gyro	Steve Bultitude	6/20/2016		☑	100
80	-63.8309	215.2783	1.4	216.6783	Gyro	Steve Bultitude	6/20/2016		☑	100
85	-63.80513	215.1155	1.4	216.5155	Gyro	Steve Bultitude	6/20/2016		☑	100
90	-63.76278	215.30343	1.4	216.7	Gyro	Steve Bultitude	6/20/2016		☑	100
90.1	-63.7	194.7	22.1	216.8	ReflexEZS	Hytech	6/16/2016	5770	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
95	-63.65657	215.01118	1.4	216.41118	Gyro	Steve Bultitude	6/20/2016		☑	100
100	-63.48829	215.05524	1.4	216.45524	Gyro	Steve Bultitude	6/20/2016		☑	100
105	-63.43991	214.8836	1.4	216.2836	Gyro	Steve Bultitude	6/20/2016		☑	100
110	-63.36054	215.13108	1.4	216.53108	Gyro	Steve Bultitude	6/20/2016		☑	100
114	-63.4	198.6	22.1	220.7	ReflexEZS	Hytech	6/16/2016	5781	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
115	-63.39326	215.16745	1.4	216.56745	Gyro	Steve Bultitude	6/20/2016		☑	100
120	-63.51277	215.10273	1.4	216.50273	Gyro	Steve Bultitude	6/20/2016		☑	100
125	-63.46391	215.22444	1.4	216.62444	Gyro	Steve Bultitude	6/20/2016		☑	100
130	-63.42857	215.27928	1.4	216.67928	Gyro	Steve Bultitude	6/20/2016		☑	100
135	-63.40644	215.2711	1.4	216.6711	Gyro	Steve Bultitude	6/20/2016		☑	100
138	-63.5	197.1	22.1	219.2	ReflexEZS	Hytech	6/16/2016	5782	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
140	-63.37059	215.32533	1.4	216.72533	Gyro	Steve Bultitude	6/20/2016		☑	100
145	-63.36455	215.53303	1.4	216.93303	Gyro	Steve Bultitude	6/20/2016		☑	100
150	-63.41541	215.60737	1.4	217.00737	Gyro	Steve Bultitude	6/20/2016		☑	100
155	-63.49027	215.74927	1.4	217.14927	Gyro	Steve Bultitude	6/20/2016		☑	100
160	-63.45642	215.94169	1.4	217.34169	Gyro	Steve Bultitude	6/20/2016		☑	100
162	-63.4	196.8	22.1	218.9	ReflexEZS	Hytech	6/17/2016	5823	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
165	-63.45221	216.07295	1.4	217.47295	Gyro	Steve Bultitude	6/20/2016		☑	100
170	-63.36168	216.30094	1.4	217.70094	Gyro	Steve Bultitude	6/20/2016		☑	100
175	-63.30024	216.54184	1.4	217.94184	Gyro	Steve Bultitude	6/20/2016		☑	100
180	-63.25478	216.57821	1.4	217.97821	Gyro	Steve Bultitude	6/20/2016		☑	100
182	-63.1	196.4	22.1	218.5	ReflexEZS	Hytech	6/17/2016	5758	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
185	-63.25893	216.54696	1.4	217.94696	Gyro	Steve Bultitude	6/20/2016		☑	100
190	-63.1657	216.53521	1.4	217.93521	Gyro	Steve Bultitude	6/20/2016		☑	100
195	-63.06626	216.06002	1.4	217.46002	Gyro	Steve Bultitude	6/20/2016		☑	100
200	-62.98168	215.92249	1.4	217.32249	Gyro	Steve Bultitude	6/20/2016		☑	100
205	-62.9545	215.82319	1.4	217.22319	Gyro	Steve Bultitude	6/20/2016		☑	100
210	-62.97675	215.31816	1.4	216.72	Gyro	Steve Bultitude	6/20/2016		☑	100
210.1	-63.1	196.8	22.1	218.9	ReflexEZS	Hytech	6/17/2016	5754	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
215	-63.15896	214.53187	1.4	215.93187	Gyro	Steve Bultitude	6/20/2016		☑	100
220	-63.17801	214.15136	1.4	215.55136	Gyro	Steve Bultitude	6/20/2016		☑	100
225	-63.1643	214.04942	1.4	215.44942	Gyro	Steve Bultitude	6/20/2016		☑	100
230	-63.18372	214.01103	1.4	215.41103	Gyro	Steve Bultitude	6/20/2016		☑	100
234	-63.3	196.5	22.1	218.6	ReflexEZS	Hytech	6/17/2016	5773	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
235	-63.20591	213.83624	1.4	215.23624	Gyro	Steve Bultitude	6/20/2016		☑	100
240	-63.25408	213.56896	1.4	214.96896	Gyro	Steve Bultitude	6/20/2016		☑	100
245	-63.30792	213.54007	1.4	214.94007	Gyro	Steve Bultitude	6/20/2016		☑	100
250	-63.27608	213.61221	1.4	215.01221	Gyro	Steve Bultitude	6/20/2016		☑	100
255	-63.21593	213.79392	1.4	215.19392	Gyro	Steve Bultitude	6/20/2016		☑	100
258	-63	195.7	22.1	217.8	ReflexEZS	Hytech	6/17/2016	5762	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
260	-63.11693	213.78947	1.4	215.18947	Gyro	Steve Bultitude	6/20/2016		☑	100
275	-63	194.4	22.1	216.5	ReflexEZS	Hytech	6/17/2016	5757	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**8.70**	**OVBN** **Overburden**									
8.70	**16.30**	**RHYif** **feldspar and quartz porphyry intrusions**									

8.7 - 16.3: Light grey, QZ-FD phyric rhyolite. Groundmass is aphanitic and glassy. FD crystals range from fine grained to coarse grained, are fractured, and locally partially altered to sericite. QZ eyes are fine grained and blue. Potentially welded crystal tuff or coherent flow.

<<Min: 8.7 - 16.3 2% Min: Pyrite>>

<<Alt: 8.7 - 16.3 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

16.30 19.40 RHYva Coarse grained to ash tuff

16.3 - 19.4: Medium grey, fine grained ash tuff with local lpl.

<<Min: 16.3 - 19.4 1% Min: Pyrite>>

<<Alt: 16.3 - 19.4 Weak-Moderate Calcite>>

19.40 29.00 RHYif feldspar and quartz porphyry intrusions

19.4 - 29: Light grey, QZ-FD phyric rhyolite. Groundmass is aphanitic and glassy. FD crystals range from fine grained to coarse grained, are fractured, and locally partially altered to sericite. QZ eyes are fine grained and blue. Potentially welded crystal tuff or coherent flow.

<<Min: 19.4 - 29 3% Min: Pyrite>>

<<Alt: 19.4 - 29 Trace Calcite>>

29.00 29.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

29 - 29.8: Light olive green to purple, Cl-BI-CA-QZ schist, with chill margins or altered margins. Mafic dyke or altered pelite?

<<Min: 29 - 29.8 0.5% Min: Pyrite>>

<<Alt: 29 - 29.8 Moderate Calcite>>

<<Struc: 29.6 - 31.3 Weak-Moderate Fault>>

29.80 48.30 RHYif feldspar and quartz porphyry intrusions

29.8 - 48.3: Light grey, QZ-FD phyric rhyolite. Groundmass is siliceous, aphanitic and glassy. FD crystals range from fine grained to coarse grained, are fractured, and locally partially altered to sericite. QZ eyes are fine grained and blue. Potentially welded crystal tuff or coherent flow. Local patchy sulfide +/- minor chlorite alteration. Lower margin displays flow banding.

<<Min: 29.8 - 48.4 3% Min: Pyrite>>

<<Min: 40.7 - 46.3 0.1% Min: Sphalerite>>

<<Min: 40.7 - 46.3 1% Min: Pyrrhotite>>

<<Min: 40.7 - 46.3 0.1% Min: Galena>>

<<Alt: 29.8 - 48.4 Trace Calcite>>

<<Alt: 45.85 - 46.3 Weak Chlorite>> Minor chlorite alteration of FD(?) phenocrysts. Related with disseminated PY+PO.

<<Struc: 38 - 38.2 Weak Fault>>

48.30 49.55 RHYvl Lapilli tuff

<<Min: 48.4 - 49.55 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 48.4 - 83.85 Weak Calcite>>

49.55 52.70 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Min: 49.55 - 67.5 2% Min: Pyrite>>

52.70 56.60 RHYva Coarse grained to ash tuff

52.7 - 56.6: ash tuff with local bands of pelitic material and disseminated lpl

56.60 57.35 RHYcw Curdy textured-flow banded (flows, subvolcanics)

57.35 67.50 RHYvx Quartz and/or feldspar crystal tuff

57.35 - 67.5: Variable unit ranging from ash tuff to curdy coherent rhyolite. Dominated by QZ-eye and FD-phyric lpl tuff with siliceous blebby lpl. Local bands with lpl altered to chlorite with disseminated sulfides.

<<Min: 64.7 - 67.7 1% Min: Pyrrhotite>>

<<Alt: 62.9 - 63 Weak Chlorite>> Minor chlorite alteration of FD(?) phenocrysts. Related with disseminated PY+PO.

<<Alt: 64.3 - 64.4 Weak Chlorite>> Minor chlorite alteration of FD(?) phenocrysts. Related with disseminated PY+PO.

<<Alt: 66.6 - 66.85 Weak Chlorite>> Minor chlorite alteration of FD(?) phenocrysts. Related with disseminated PY+PO.

67.50 69.75 RHYva Coarse grained to ash tuff

67.5 - 69.75: Ash tuff with minor bands of pelitic material.

<<Min: 67.5 - 69.75 0.5% Min: Pyrite>>

69.75 83.85 RHYv Rhyolite volcaniclastic

69.75 - 83.85: Alternating gradational horizons of RHYva and RHYvl and local siliceous banding

<<Min: 69.75 - 83.85 0.5% Min: Pyrite>>

<<Min: 69.75 - 83.85 1% Min: Pyrrhotite>>

<<Struc: 72 - 72.1 Weak Fault>>

83.85 86.90 SED undifferentiated Sediment

83.85 - 86.9: MU-BI-CA-QZ schist with disseminated PY and well developed foliation

<<Min: 83.85 - 86.9 0.5% Min: Pyrrhotite>>

<<Alt: 84.15 - 86.9 Moderate Calcite>>

86.90 91.40 RHYva Coarse grained to ash tuff

86.9 - 91.4: Minor layers with lpl. Horizon of SED from 88.6-88.85 m.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 86.9 - 91.4 0.5% Min: Pyrrhotite>>

<<Alt: 86.9 - 107.8 Weak Calcite>>

<<Struc: 90 - 90.4 Weak Fault>>

91.40 107.80 RHYvl Lapilli tuff

91.4 - 107.8: Moderate MU-altered lpl volcaniclastic with felsic and PO lpl.

<<Min: 91.4 - 107.8 1% Min: Pyrrhotite>>

<<Alt: 91.4 - 93 Weak Muscovite>>

<<Alt: 93 - 107.8 Moderate Muscovite>>

<<Vein: 104.3 - 108 15% Quartz 90 deg. >> Massive white QZ-veining (7x 10-15 cm) wide with minor blebby carbonate +/- CL +/- sulfide

<<Struc: 94.4 - 96 Weak Fault>>

<<Struc: 105 - 105.8 Weak-Moderate Fault>>

107.80 111.50 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock

107.8 - 111.5: Heavily disseminated CL(-after-CI?) porphyroblasts with disseminated to patchy PO+PY

<<Min: 107.8 - 111.5 5% Min: Pyrite>>

<<Min: 107.8 - 111.5 5% Min: Pyrrhotite>>

<<Alt: 107.8 - 111.5 Moderate Chlorite>> Chlorite phenocrysts (replacing CI?)

<<Alt: 107.8 - 111.5 Weak Cordierite>>

<<Alt: 107.8 - 111.5 Trace Calcite>>

111.50 118.20 RHYc Rhyolite coherant volcanics

111.5 - 118.2: Moderate-strong MU-alteration with moderate faulting and QZ-veining. Note intense MU-alteration at lower contact proximal to massive QZ-vein.

<<Min: 111.5 - 118.2 0.1% Min: Sphalerite>>

<<Min: 111.5 - 118.2 1% Min: Pyrite>>

<<Min: 111.5 - 118.2 2% Min: Pyrrhotite>>

<<Alt: 111.5 - 115.5 Moderate-Strong Muscovite>>

<<Alt: 111.5 - 118.2 Trace Calcite>>

<<Alt: 115.5 - 118.1 Intense Muscovite>> Massive sericite. Proximal to massive QZ-veining.

<<Alt: 118.1 - 121.8 Moderate Muscovite>> MU-alteration of MAFi

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 112.85 - 113 100% Quartz>> Massive QZ-vein									
		<<Vein: 115 - 118 80% Quartz-Sericite/White mica>> Massive QZ-veining with patchy carbonate and sericite. Intense sericite alteration around veining.									
		<<Struc: 113 - 114.6 Weak-Moderate Fault>>									
		<<Struc: 117 - 118.2 Weak-Moderate Fault>>									
118.20	**147.50**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	144.50	146.00	1.50	B00291773	-0.005	0.4	-0.01	-0.01	0.02
		118.2 - 147.5: MU-alteration at upper contact, patchy CL+/-MU alteration near the center of the unit, and MU-BI-CL alteration nearing lower contact with mineralization.									
		<<Min: 118.2 - 147.5 0.1% Min: Pyrite>>	146.00	147.50	1.50	B00291774	1.8	22.9	0.05	0.22	0.03
		<<Min: 118.2 - 147.5 0.1% Min: Pyrrhotite>>									
		<<Alt: 118.2 - 173.1 Moderate Calcite>>									
		<<Alt: 121.8 - 124.5 Weak Muscovite>> MU-alteration of MAFi									
		<<Alt: 136.7 - 138.2 Weak Chlorite>>									
		<<Alt: 136.7 - 138.3 Strong Muscovite>>									
		<<Alt: 138.3 - 142.3 Moderate-Strong Chlorite>>									
		<<Alt: 142.3 - 147.5 Weak Chlorite>>									
		<<Alt: 146.3 - 146.8 Strong Muscovite>>									
		<<Alt: 146.3 - 146.8 Moderate Biotite>>									
		<<Struc: 119.9 - 121.5 Moderate Fault>>									
		<<Struc: 123.6 - 123.8 Weak Fault>>									
		<<Struc: 143.2 - 143.8 Trace Fault>>									
147.50	**148.20**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	147.50	148.20	0.70	B00291775	0.597	114	0.2	1.68	2.59
		147.5 - 148.2: Heavily disseminated to patchy massive sulfides in MU-CL alteration									
		<<Min: 147.5 - 148.2 3% Min: Sphalerite>>									
		<<Min: 147.5 - 148.2 10% Min: Pyrite>>									
		<<Min: 147.5 - 148.2 1% Min: Galena>>									
		<<Alt: 147.5 - 148.2 Strong Muscovite>>									
		<<Alt: 147.5 - 148.2 Weak Chlorite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
148.20	**151.90**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	148.20	149.50	1.30	B00291776	0.008	0.8	-0.01	0.01	0.02
148.2 - 151.9: Patchy CL-MU alteration											
<<Min: 148.2 - 151.9 1% Min: Pyrite>>			149.50	150.70	1.20	B00291777	-0.005	-0.3	-0.01	-0.01	0.03
<<Min: 148.2 - 151.9 1% Min: Pyrrhotite>>			150.70	151.90	1.20	B00291778	0.464	1.9	0.05	-0.01	0.04
<<Min: 148.2 - 151.9 0.1% Min: Chalcopyrite>>											
<<Vein: 150.8 - 151.4 60% Calcite>> Massive CA-QZ veining											
<<Struc: 149.3 - 150 Weak Fault>>											
151.90	**152.50**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	151.90	152.50	0.60	B00291779	0.47	56.1	0.19	0.69	2.36
151.9 - 152.5: Patchy buckshot PY and fgr SP in strong CL-alteration											
<<Min: 151.9 - 152.5 2% Min: Sphalerite>>											
<<Min: 151.9 - 152.5 1% Min: Galena>>											
<<Min: 151.9 - 152.5 1% Min: Chalcopyrite>>											
<<Min: 151.9 - 152.9 7% Min: Pyrite>>											
<<Alt: 151.9 - 152.5 Moderate Chlorite>>											
<<Alt: 151.9 - 155.1 Strong Muscovite>>											
152.50	**152.80**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	152.50	152.80	0.30	B00291782	1.01	123	0.47	1.28	4.44
<<Min: 152.5 - 152.8 3% Min: Sphalerite>>											
<<Min: 152.5 - 152.8 90% Min: Pyrite>>											
<<Min: 152.5 - 152.8 0.5% Min: Galena>>											
152.80	**155.10**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	152.80	154.00	1.20	B00291783	0.005	1	-0.01	0.01	0.04
152.8 - 155.1: Patchy MU-BI+/-CL alteration. Local RHYc from 153.1-153.25 m.											
<<Min: 152.8 - 155.1 1% Min: Pyrite>>			154.00	155.10	1.10	B00291784	0.076	10.4	0.02	0.08	0.05
<<Alt: 152.8 - 155.1 Moderate-Strong Biotite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
155.10	**156.10**	**OK** **Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	155.10	156.10	1.00	B00291785	0.197	48.8	0.04	0.73	6.77
155.1 - 156.1: Semi-massive to massive PY+SP+/-GL with minor disseminated MG. Local buckshot PY. 10-15% silica-calcite+/-barite(?) gangue.											
<<Min: 155.1 - 156.1 5% Min: Sphalerite>>											
<<Min: 155.1 - 156.1 70% Min: Pyrite>>											
<<Min: 155.1 - 156.1 1% Min: Galena>>											
<<Min: 155.1 - 156.1 1% Min: Barite>>											
156.10	**173.10**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	156.10	157.10	1.00	B00291786	0.025	3.5	0.01	0.06	0.27
156.1 - 173.1: Large zones of moderate-strong BI-CL-alteration and local EP-alteration											
<<Min: 156.1 - 173.1 0.5% Min: Pyrrhotite>>			157.10	158.60	1.50	B00291787	-0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 156.1 - 158.6 Weak-Moderate Epidote>>			169.10	170.60	1.50	B00291796	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 156.1 - 158.6 Moderate Biotite>>			170.60	172.10	1.50	B00291797	-0.005	-0.3	-0.01	-0.01	0.01
<<Alt: 161.2 - 170.2 Moderate-Strong Biotite>> Dark green-black MAFi with fgr pervasive BI			172.10	173.10	1.00	B00291798	0.039	2.6	0.02	0.04	0.02
<<Alt: 170.2 - 173.1 Moderate Chlorite>>											
<<Alt: 170.2 - 173.1 Moderate Biotite>>											
<<Vein: 161.2 - 170.2 5% Calcite 30 deg. >> Minor 2mm-1.5 cm wide CA veins											
<<Struc: 158.8 - 158.81 Weak-Moderate dominant foliation>>											
<<Struc: 171.2 - 171.4 Weak Fault>>											
173.10	**177.10**	**OK** **Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	173.10	174.10	1.00	B00291799	2.48	177	0.51	4.28	7.19
173.1 - 177.1: ~30% calcite-silica-barite(?) gangue with wispy to semi-massive PY+SP+GL+/-CP+/-PO and disseminated MG. Local buckshot PY near upper contact.											
<<Min: 173.1 - 177.1 5% Min: Sphalerite>>			174.10	175.10	1.00	B00291802	2.01	96.3	0.22	2.29	3.99
<<Min: 173.1 - 177.1 60% Min: Pyrite>>			175.10	176.10	1.00	B00291803	2.55	75.3	0.13	1.66	3.22
<<Min: 173.1 - 177.1 0.5% Min: Pyrrhotite>>			176.10	177.10	1.00	B00291804	1.33	138	0.32	2.54	4.22

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 173.1 - 177.1 3% Min: Magnetite>>									
		<<Min: 173.1 - 177.1 1% Min: Galena>>									
		<<Min: 173.1 - 177.1 0.5% Min: Chalcopyrite>>									
		<<Min: 173.1 - 177.1 1% Min: Barite>>									
		<<Alt: 173.1 - 177.1 Moderate Calcite>>									
177.10	**178.80**	**RHY undifferentiated rhyolite**	177.10	178.00	0.90	B00291805	0.015	2.1	-0.01	0.03	0.04
		177.1 - 178.8: Strongly MU-altered rhyolite									
		<<Min: 177.1 - 178.8 1% Min: Pyrite>>	178.00	178.80	0.80	B00291806	0.008	2.2	-0.01	0.04	0.07
		<<Alt: 177.1 - 178.8 Strong Muscovite>>									
		<<Alt: 177.1 - 178.8 Weak Calcite>>									
		<<Vein: 177.25 - 177.4 50% Quartz>> Minor ~5 cm wide QZ-veins									
		<<Vein: 178.5 - 178.6 100% Quartz>> Massive QZ-vein									
		<<Struc: 178.7 - 178.8 Weak Fault>>									
178.80	**180.00**	**OK Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	178.80	180.00	1.20	B00291807	0.611	115	0.07	2.06	4.62
		178.8 - 180: ~40% silica-calcite-muscovite+/-barite+/-chlorite gangue with semi-massive PY+SP+GL									
		<<Min: 178.8 - 180 5% Min: Sphalerite>>									
		<<Min: 178.8 - 180 60% Min: Pyrite>>									
		<<Min: 178.8 - 180 1% Min: Galena>>									
		<<Min: 178.8 - 180 1% Min: Barite>>									
		<<Alt: 178.8 - 180 Moderate Calcite>>									
		<<Vein: 179.5 - 180.1 80% Quartz>> Massive QZ-carb vein with disseminated Cgr PY									
180.00	**184.30**	**RHY undifferentiated rhyolite**	180.00	181.50	1.50	B00291808	0.014	1.8	-0.01	0.02	0.04
		180 - 184.3: Strongly MU-altered									
		<<Min: 180 - 184.3 0.5% Min: Tetrahedrite>>	181.50	183.00	1.50	B00291809	0.108	3.9	-0.01	0.04	0.05
		<<Min: 180 - 184.3 1% Min: Pyrite>>	183.00	184.30	1.30	B00291811	0.028	3.4	-0.01	0.06	0.06
		<<Alt: 180 - 184.3 Strong Muscovite>>									
		<<Alt: 180 - 184.3 Weak Calcite>>									
		<<Vein: 181.3 - 181.8 60% Quartz>> Deformed massive QZ-veining in strong MU-alteration									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 181.8 - 182.1 Moderate Fault>>									
184.30	**188.80**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	184.30	185.80	1.50	B00291812	0.866	165	0.66	3.79	9.05
		184.3 - 188.8: Massive banded PY+SP+GL+/-CP. Local PY buckshot texture particularly in SP-rich bands. Minor disseminated MG.									
		<<Min: 184.3 - 188.8 10% Min: Sphalerite>>	185.80	187.30	1.50	B00291813	1.1	217	0.7	3.79	9.36
		<<Min: 184.3 - 188.8 80% Min: Pyrite>>	187.30	188.80	1.50	B00291814	1.21	222	0.86	3.7	10.1
		<<Min: 184.3 - 188.8 2% Min: Galena>>									
		<<Min: 184.3 - 188.8 2% Min: Chalcopyrite>>									
		<<Alt: 184.3 - 188.8 Weak-Moderate Calcite>>									
		<<Struc: 188.52 - 188.53 Moderate dominant foliation>> SP band									
		<<Struc: 188.6 - 188.8 Moderate Fault>>									
188.80	**207.60**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	188.80	190.30	1.50	B00291815	0.051	10.1	0.08	0.14	0.37
		188.8 - 207.6: Patchy CL-BI alteration near upper portion of unit and patchy CL-MU-alteration near lower contact.									
		<<Min: 188.8 - 207.6 0.5% Min: Pyrrhotite>>	190.30	191.80	1.50	B00291816	0.023	4.9	0.01	0.08	0.14
		<<Alt: 188.8 - 189.9 Moderate Muscovite>>	191.80	193.30	1.50	B00291817	0.008	2.9	0.01	0.06	0.06
		<<Alt: 188.8 - 192.7 Moderate Calcite>>	204.60	206.10	1.50	B00291824	-0.005	1.5	0.01	0.03	0.04
		<<Alt: 192.7 - 201.5 Weak Calcite>> FRA	206.10	207.60	1.50	B00291825	0.005	2.2	0.01	0.04	0.1
		<<Alt: 201.5 - 207.2 Moderate Calcite>>									
		<<Alt: 207.2 - 207.6 Strong Muscovite>>									
		<<Alt: 207.2 - 251 Trace Calcite>>									
		<<Vein: 206.5 - 206.6 80% Quartz>> QZ-CL vein									
		<<Struc: 207.3 - 207.6 Weak Fault>>									
207.60	**207.90**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	207.60	207.90	0.30	B00291826	0.552	56.4	4.7	0.09	1.46
		207.6 - 207.9: Patchy CP+PO+PY in chlorite alteration									
		<<Min: 207.6 - 207.9 5% Min: Pyrite>>									
		<<Min: 207.6 - 207.9 2% Min: Pyrrhotite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 207.6 - 207.9 5% Min: Chalcopyrite>>									
		<<Alt: 207.6 - 207.9 Strong Chlorite>>									
207.90	**210.30**	**RHYc Rhyolite coherant volcanics**	207.90	209.10	1.20	B00291827	-0.005	0.4	-0.01	-0.01	0.04
		207.9 - 210.3: MU-altered, silica banded rhyolite									
		<<Min: 207.9 - 210.3 0.5% Min: Pyrite>>									
		<<Alt: 207.9 - 210.3 Strong Muscovite>>									
		<<Struc: 207.9 - 208.1 Weak Fault>>									
210.30	**211.10**	**MDSt Rhyolite tuff dominant mudstone**									
		<<Min: 210.3 - 211.1 1% Min: Pyrite>>									
		<<Struc: 210.4 - 213 Trace Fault>>									
211.10	**223.10**	**RHYv Rhyolite volcaniclastic**									
		<<Min: 211.1 - 223.1 2% Min: Pyrrhotite>>									
		<<Alt: 211.1 - 223.1 Weak Muscovite>>									
		<<Vein: 219.2 - 220.8 50% Quartz-Carbonate>> Brittle deformed QZ+CA vein with patchy interstitial CL and disseminated PO+PY									
		<<Struc: 219.4 - 220.8 Weak Fault>>									
		<<Struc: 222.6 - 223.5 Moderate Fault>>									
223.10	**223.50**	**OI Heavilly disseminated sulphides in host schist**									
		223.1 - 223.5: Disseminated PY in coherent blocks within strong MU-altered fault zone									
		<<Min: 223.1 - 223.5 15% Min: Pyrite>>									
		<<Alt: 223.1 - 223.5 Strong Muscovite>>									
223.50	**247.40**	**RHYvl Lapilli tuff**									
		<<Min: 223.5 - 243 1% Min: Pyrite>>									
		<<Min: 223.5 - 243 0.5% Min: Pyrrhotite>>									
		<<Min: 243 - 256.7 1% Min: Pyrrhotite>>									
		<<Alt: 223.5 - 229.5 Weak Muscovite>>									
		<<Struc: 225.3 - 225.6 Weak-Moderate Fault>>									
		<<Struc: 226 - 228 Trace Fault>>									
		<<Struc: 232.9 - 233.1 Weak Fault>>									
		<<Struc: 235.8 - 236 Weak Fault>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

247.40 256.70 RHYvl Lapilli tuff

247.4 - 256.7: Minor disseminated TML and PO

<<Alt: 251 - 256.7 Trace Chlorite>>

<<Alt: 251 - 256.7 Weak-Moderate Calcite>>

<<Alt: 251 - 273.1 Trace Tourmaline>>

256.70 266.90 RHYv Rhyolite volcaniclastic

<<Min: 256.7 - 282 0.1% Min: Pyrrhotite>>

<<Alt: 256.7 - 273.1 Weak Calcite>>

<<Alt: 257.2 - 273.1 Weak Muscovite>>

<<Struc: 262 - 273.1 Weak-Moderate Fault>>

266.90 273.10 RHYvl Lapilli tuff

<<Vein: 269.6 - 269.8 80% Quartz-Tourmaline>> QZ-TML vein

273.10 278.70 SED undifferentiated Sediment

273.1 - 278.7: Moderately faulted CL-BI(brown)-CA-QZ-MU schist

<<Alt: 273.1 - 282 Moderate Calcite>>

<<Struc: 273.1 - 278.7 Moderate Fault>>

278.70 282.00 FLZ Fault Zone

278.7 - 282: Fault gouge-supported breccia dominated by fgr chloritic gouge

<<Struc: 278.7 - 282 Strong Fault>>

End of Hole @ 282

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-368

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/19/2016
UTM Easting	415219.23	Core Size:	HQ3	Azimuth:	232.8	Date Logging Complete:	6/21/2016
UTM Northing:	6815015.705	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	New Age
UTM Elev. (m):	1419.274	Casing Depth (m):	34.5	Length (m):	145	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/17/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/20/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
Comments:						Parent Hole:	

K16-368 is designed to test for ABM and Krakatoa mineralization fault offset down and to the south east of the Sunda and Fault Creek Faults.
K16-368 intersected fault damaged rocks from the collar. A gross stratigraphy of MDS followed by MU altered RHY followed by MAFi is observed and preserved to 118.25m despite faulting. From 118.25 - 145m E.O.H, FLZ with milled fragments of RHY within a clay gouge matrix of MDS and RHY persists.
Massive sulphide OB mineralization was intersected from 100.74 - 101.35m, 103.9 - 105.42m and 108.4 - 108.73m hosted within and at the edge of blocks of MAFi. These are interpreted as possible faulted blocks of Krakatoa between the Sunda and Fault Creek Faults. If correct, these occur approximately 40m shallower than Krakatoa itself.
A boulder and cobbles of OB mineralization are encountered within the fault from 125.00 - 128.00m.

The hole was abandoned at 145.00m after the hole got stuck due to extensive faulting and swelling clays.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	231.4	1.4	232.8	TN14	Rob Duncan	6/17/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
36	-62.6	211.8	22.1	233.9	ReflexEZS	New Age	6/17/2016	5771	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
69	-63.1	212.2	22.1	234.3	ReflexEZS	New Age	6/19/2016	5733	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
93	-63.7	212.3	22.1	234.4	ReflexEZS	New Age	6/19/2016	5743	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
117	-69.1	212.4	22.1	234.5	ReflexEZS	New Age	6/20/2016	5756	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
144	-64.4	211.4	22.1	233.5	ReflexEZS	New Age	6/20/2016	5730	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**13.00**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

13.00 15.30 FLZ Fault Zone

13 - 15.3: RHY protolith.

<<Min: 13 - 15.3 3% Min: Pyrite>> pyritic fragments of RHY in fault

<<Alt: 13 - 21 Weak-Moderate Calcite>>

<<Struc: 13 - 15.5 Intense Fault>>

15.30 21.00 RHYv Rhyolite volcaniclastic

15.3 - 21: Still strongly faulted, but protolith can be determined. 3 pyritic fragments seen in Flt, one appears to be MXSX @ 16.0m

<<Min: 15.3 - 21 2% Min: Pyrite>>

<<Alt: 15.5 - 21 Weak-Moderate Muscovite>> in primary foliation, not flt related

<<Struc: 15.5 - 21 Moderate-Strong Fault>>

<<Struc: 19 - 20 dominant foliation>>

21.00 31.80 FLZ Fault Zone

21 - 31.8: RHY - RHYv protolith

<<Struc: 21 - 31.8 Intense Fault>>

31.80 33.00 RHYv Rhyolite volcaniclastic

31.8 - 33: calcareous OP

<<Alt: 31.8 - 33 Moderate Calcite>>

33.00 33.90 FLZ Fault Zone

<<Struc: 33 - 33.9 Intense Fault>>

33.90 34.60 RHYv Rhyolite volcaniclastic

<<Alt: 33.9 - 37.5 Weak Muscovite>> weak

<<Alt: 33.9 - 37.5 Weak Calcite>> late veinlets

34.60 35.00 MAFi Mafic Intrusions (primarily footwall mafic intrusion) FG

34.6 - 35: homogeneous, sharp contacts, po bearing = MAFi

<<Min: 34.6 - 35.1 1% Min: Pyrrhotite>>

35.00 37.50 RHYc Rhyolite coherent volcanics

35 - 37.5: possible RHYcw,too hard to determine in the rubble

<<Struc: 36 - 37.5 Weak-Moderate Fault>> broken lost recovery

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

37.50 40.00 FLZ Fault Zone

37.5 - 40: RHY - RHYvl protolith

<<Struc: 37.5 - 40 Intense Fault>>

40.00 44.90 RHYvl Lapilli tuff

40 - 44.9: still in FLZ but can determine protolith

<<Min: 40.7 - 43 1% Min: Pyrite>>

<<Min: 40.7 - 43 0.5% Min: Pyrrhotite>>

<<Alt: 40 - 44.9 Weak-Moderate Muscovite>> within rock after washing clay gouge out

<<Alt: 40 - 44.9 Weak-Moderate Calcite>>

<<Struc: 40 - 44.9 Moderate-Strong Fault>>

44.90 45.90 FLZ Fault Zone

44.9 - 45.9: RHY protolith.

<<Struc: 44.9 - 45.9 Intense Fault>>

45.90 52.30 RHYvl Lapilli tuff

45.9 - 52.3: still in FLZ.

<<Alt: 45.9 - 52.3 Moderate Muscovite>> looking within preserved domains.

<<Alt: 45.9 - 52.3 Weak-Moderate Calcite>> faulting related?

<<Struc: 45.9 - 56.9 Moderate-Strong Fault>>

52.30 56.90 RHYi Aphanitic Rhyolite (intrusion)

52.3 - 56.9: 10cm of RHYvl caught in fault within @ 53.90 - 54.00m
Feldspar crystals @ 56.70m;
Fault gouge and rubble through out

<<Min: 56 - 56.9 1% Min: Pyrite>>

<<Alt: 52.3 - 56.9 Weak Muscovite>>

<<Alt: 52.3 - 56.9 Weak Calcite>>

56.90 57.05 FLZ Fault Zone

56.9 - 57.05: RHY protolith

<<Alt: 56.9 - 60 Moderate-Strong Muscovite>> partial fault related but also OR

<<Alt: 56.9 - 60 Weak Calcite>>

<<Struc: 56.9 - 57.05 Intense Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

57.05 60.00 RHYc Rhyolite coherant volcanics

57.05 - 60: faulted and dissagregated, but was RHYc

<<Min: 59 - 60 0.5% Min: Pyrite>>

<<Struc: 57.05 - 60 Moderate-Strong Fault>>

60.00 70.25 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

60 - 70.25: MDSc with tuffaceous section from 61.50 - 63.00m.
Could be Wind Lake Formation Mudstone dragged into FLZ or KZK
All within strong fault zone

<<Min: 60 - 70.25 0.1% Min: Pyrite>>

<<Alt: 61.5 - 63 Weak-Moderate Muscovite>> in tuffaceous section of mudstone

<<Struc: 60 - 70.25 Strong Fault>> broken lost recovery, gouge damage zone

70.25 78.60 FLZ Fault Zone

70.25 - 78.6: Weak developed milled breccia fragments of RHY protolith.
Short intervals of RHYv - vl recognizible with OR MU Int 4 alteration

<<Min: 70.25 - 78.6 0.1% Min: Pyrite>>

<<Alt: 70.25 - 75 Weak Calcite>> fault and ca vein fragment related

<<Alt: 70.25 - 78.6 Moderate Muscovite>> looking past the fault matrix clay ser gouge

<<Struc: 70.25 - 78.6 Intense Fault>>

78.60 89.75 RHY undifferentiated rhyolite

78.6 - 89.75: Silic bands can be seen. Possible RHYc or vl. MU alteration can be seen. Still in strong influence of fault zone with clay gouge and mudstone gouge incorporated

<<Min: 80 - 84.2 2% Min: Pyrite>> pyritic fragments and dissagregated bands in RHY

<<Alt: 78.6 - 89.75 Moderate-Strong Muscovite>> looking through fault related ser gouge to earlier MU alt.

<<Alt: 87.5 - 89.75 Weak-Moderate Calcite>>

<<Struc: 78.6 - 89.75 Moderate-Strong Fault>> gouge matrix and foliation planes throughout RHY.

<<Struc: 79 - 80 dominant foliation>>

89.75 100.74 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

89.75 - 100.74: Forms a much stronger bock of rock until 98.30 - 100.74 where it could be classified as FLZ. DFOL @ 40 within coherant blocks and slickensided joint planes @ 90 to DFOL

<<Min: 92.7 - 98.3 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 98 - 98.3 5% Min: Pyrite>> smas vein related fragments

<<Alt: 89.75 - 100.74 Weak-Moderate Chlorite>> fault overprint in developed shear/ fault bands

<<Alt: 89.75 - 100.74 Strong Calcite>>

<<Struc: 89.75 - 98.3 Moderate Fault>>

<<Struc: 94 - 96.5 dominant foliation>>

<<Struc: 96.48 - 96.48 Shear>> 90 degrees to DFOL @ 40

<<Struc: 98.3 - 100.74 Intense Fault>> Fault breccia matrix pieces but all MAFi composition

100.74 101.35 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG

100.74 - 101.35: dmg over bottom 10cm, not enough to classify as OB

<<Min: 100.74 - 101.35 10% Min: Sphalerite>>

<<Min: 100.74 - 101.35 70% Min: Pyrite>>

<<Min: 100.74 - 101.35 5% Min: Magnetite>>

<<Min: 100.74 - 101.35 2% Min: Galena>>

<<Min: 100.74 - 101.35 1% Min: Chalcopyrite>>

<<Alt: 100.74 - 101.35 Moderate-Strong Calcite>> CA patches and veinlets in OB

101.35 103.90 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

101.35 - 103.9: @101.65 - 101.75 OI. In fault zone but MAFi protolith. stg CL alteration with py NOT fault related

<<Min: 101.35 - 103 10% Min: Pyrite>> pebble fragments of OB in Mafi and dissem in MAFi and bands in MAFi

<<Min: 103 - 103.9 3% Min: Pyrite>> one OB fragment at contact dragged into MAFi & dissem in MAFi

<<Alt: 101.35 - 103.9 Strong Chlorite>> NOT fault related.

<<Alt: 101.35 - 103.9 Moderate Calcite>>

<<Struc: 101.35 - 103.9 Strong Fault>>

103.90 104.58 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG

<<Min: 103.9 - 104.58 20% Min: Sphalerite>>

<<Min: 103.9 - 104.58 50% Min: Pyrite>>

<<Min: 103.9 - 104.58 4% Min: Galena>>

<<Min: 103.9 - 104.58 1% Min: Chalcopyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 103.9 - 105.42 Strong Calcite>>

<<Struc: 103.9 - 103.9 Contact>>

104.58 105.42 OA Laminar or heavilly disseminated magnetite bearing massive sulphide MG

<<Min: 104.58 - 105.42 8% Min: Sphalerite>>

<<Min: 104.58 - 105.42 60% Min: Pyrite>>

<<Min: 104.58 - 105.42 10% Min: Magnetite>> crude lamination

<<Min: 104.58 - 105.42 4% Min: Galena>>

<<Min: 104.58 - 105.42 1% Min: Chalcopyrite>>

<<Struc: 104.9 - 105.42 Moderate-Strong Fault>> broken MXSX one piece sickensided

105.42 108.40 FLZ Fault Zone

105.42 - 108.4: dominantly RHY protolith, but also MDS dragged into FLZ, numerous RHY-CA clasts with dissem PY - CP

<<Min: 105.42 - 108.4 5% Min: Pyrite>> dissem pyritic fragments in RHY

<<Min: 106.3 - 106.5 2% Min: Chalcopyrite>> dissem band of CP in RHY-CA fragment

<<Alt: 105.42 - 108.4 Moderate Muscovite>> looking through clay ser gouge from FLZ

<<Alt: 105.42 - 108.4 Weak-Moderate Calcite>> Ca - RHY fragments OR and fault related OP

<<Struc: 105.42 - 108.4 Intense Fault>> gouge clay matrix with breccia fragments

108.40 108.73 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FG

<<Min: 108.4 - 108.73 15% Min: Sphalerite>>

<<Min: 108.4 - 108.73 70% Min: Pyrite>>

<<Min: 108.4 - 108.73 3% Min: Galena>>

<<Min: 108.4 - 108.73 1% Min: Chalcopyrite>>

108.73 111.61 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

108.73 - 111.61: FLZ

<<Min: 109 - 110 5% Min: Pyrite>> in felsic fragment

<<Alt: 108.73 - 111.6 Moderate-Strong Chlorite>>

<<Alt: 108.73 - 111.6 Moderate Calcite>>

<<Alt: 111.6 - 112 Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 108.73 - 112 Intense Fault>>

111.61 112.00 RHY undifferentiated rhyolite

111.61 - 112: FLZ

112.00 112.50 OI Heavilly disseminated sulphides in host schist

112 - 112.5: hosted in RHY. A solid block within FLZ

<<Min: 112 - 112.5 4% Min: Sphalerite>> dissem patches

<<Min: 112 - 112.5 6% Min: Pyrite>> patchy disem bands, fragments

<<Min: 112 - 112.5 10% Min: Pyrrhotite>> dissem bands 2cm wide

<<Min: 112 - 112.5 1% Min: Magnetite>>

<<Min: 112 - 112.5 2% Min: Chalcopyrite>>

<<Alt: 112 - 112.5 Intense Calcite>>

112.50 112.90 FLZ Fault Zone

112.5 - 112.9: clay gouge and breccia fragments of RHY and MDS

<<Struc: 112.5 - 112.9 Intense Fault>> mied breccia matrix rhy and mds inputs

112.90 114.17 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 112.9 - 114.17 1% Min: Pyrrhotite>>

<<Alt: 112.9 - 114.17 Moderate Calcite>>

114.17 115.93 FLZ Fault Zone

114.17 - 115.93: RHY dominant protolith with some MDS entrained. @ 115 - 115.30 intact block of MAFi

<<Alt: 114.17 - 115.93 Moderate Calcite>>

<<Struc: 114.17 - 115.93 Intense Fault>>

<<Struc: 115 - 115.5 dominant foliation>>

115.93 118.25 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

115.93 - 118.25: largely intact block of MAFi in fault.

<<Alt: 115.93 - 118.25 Moderate Chlorite>> fault related

<<Alt: 115.93 - 118.25 Moderate-Strong Calcite>>

<<Struc: 115.93 - 118.25 Moderate-Strong Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 118 - 118.1 dominant foliation>>

118.25 126.63 FLZ Fault Zone

118.25 - 126.63: Milled fault breccia matrix consists of white and dark grey material thought to represent various felsic rocks and MDS dragged into fault zone. Milled fragments of RHY from pebble to cobble sized.
@ 125.00 - 125.30 OB cobble sheared apart

<<Min: 125 - 125.3 5% Min: Sphalerite>> in the sheared fragment of OB

<<Min: 125 - 125.3 40% Min: Pyrite>> Sheared fragment of OB within FLZ

<<Alt: 118.25 - 126.63 Weak Muscovite>> remnant in rhy fragments

<<Alt: 118.25 - 126.63 Weak-Moderate Calcite>> fault related

<<Struc: 118.25 - 126.63 Intense Fault>>

126.63 127.12 OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite FMG

126.63 - 127.12: faulted lower contact over 10cm @ 20m.

<<Min: 126.63 - 127.12 8% Min: Sphalerite>>

<<Min: 126.63 - 127.12 70% Min: Pyrite>>

<<Min: 126.63 - 127.12 2% Min: Galena>>

<<Min: 126.63 - 127.12 2% Min: Chalcopyrite>>

<<Alt: 126.63 - 127.12 Moderate-Strong Calcite>> in matrix of OB

<<Struc: 127.05 - 127.12 Contact>>

127.12 141.65 FLZ Fault Zone

127.12 - 141.65: as above: OB cobble fragments @ 127.60 and 128.0m.

<<Min: 127.5 - 127.6 5% Min: Sphalerite>>

<<Min: 127.5 - 127.6 25% Min: Pyrite>> 1/2 cobble of OB

<<Min: 127.5 - 127.6 1% Min: Chalcopyrite>>

<<Min: 127.95 - 128.15 10% Min: Sphalerite>>

<<Min: 127.95 - 128.15 60% Min: Pyrite>> 8/10 of OB cobble

<<Min: 127.95 - 128.15 1% Min: Chalcopyrite>>

<<Min: 129 - 131 1% Min: Pyrite>> both in matrix of FLZ and RHY fragments

<<Min: 136.5 - 137 0.5% Min: Pyrite>> in large patch of RHY in FLZ

<<Alt: 127.12 - 141.65 Weak Muscovite>> looking past fault gouge, in remnant RHY fragments

<<Alt: 127.12 - 141.65 Moderate Calcite>> concentrated in carbonate fragments.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 127.12 - 141.65 Intense Fault>>

141.65 144.00 RHY undifferentiated rhyolite

141.65 - 144: relict protolith in FLZ

<<Min: 141.65 - 144 1% Min: Pyrite>>

<<Alt: 141.65 - 144 Moderate Muscovite>> looking past fault related clay.

<<Struc: 141.65 - 144 Strong Fault>>

<<Struc: 142 - 144 dominant foliation>>

144.00 145.00 FLZ Fault Zone

144 - 145: as above

<<Min: 144 - 145 0.5% Min: Pyrite>> in RHY cobbles

<<Alt: 144 - 145 Weak Muscovite>> looking past fault related clays and gouge into RHY fragments

<<Alt: 144 - 145 Moderate Calcite>> fault related

<<Struc: 144 - 145 Intense Fault>>

End of Hole @ 145

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-369

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/27/2016
UTM Easting	415240.268	Core Size:	HQ3	Azimuth:	31.7	Date Logging Complete:	7/1/2016
UTM Northing:	6815212.141	Casing Pulled?:	Yes	Dip:	-70.9	Drill Company:	Hytech
UTM Elev. (m):	1441.236	Casing Depth (m):	4.5	Length (m):	450	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/17/2016
Local Northing:		Cemented?:	No	Core Storage Loc.:	KZK Camp	Drill Completed:	6/23/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
Comments:						Parent Hole:	

K16-369 was drilled as a step out from K15-263 and tests the down-dip potential of the Krakatoa upper lens under the hypothesis that the upper lens is the equivalent of the ABM lens.
K16-369 encountered bedrock at 4.5 m, where it collared into the Wind Lake Formation, which persists from 4.5-33.3 m, consisting of mudstones and mafic tuffs. Below the Wind Lake Formation, the felsic hanging wall (Kudz Ze Kayah Formation) was encountered to a depth of 369.2 m, where massive sulfide was first encountered. Moderate to strong MU-alteration is encountered from 301-369.2 m. From 369.2-372.8 m, heavily disseminated to massive mineralization was encountered, consisting of OF, OJ, and OI. From 372.8-385 m, strongly MU+/-CL altered rhyolite occurs. From 385-392.9 m massive and minor heavily disseminated sulfide was encountered, consisting of OA, OJ, and chalcopyrite-rich OC mineralization styles. Below the massive sulfide weak to moderately altered felsic volcaniclastics occur to the end of the hole (450 m).
Note that no CL-BI-CA schist (MAFi) was encountered within this hole, yet the hanging wall and footwall are very similar to that observed elsewhere at Krakatoa and ABM.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70.9	30.3	1.4	31.7	TN14	Steve Bultitude	6/17/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-71.03851	30.28047	1.4	31.68047	Gyro	Steve Bultitude	6/23/2016		☑	100
10	-71.13068	30.43471	1.4	31.83471	Gyro	Steve Bultitude	6/23/2016		☑	100
15	-71.34472	30.66865	1.4	32.06865	Gyro	Steve Bultitude	6/23/2016		☑	100
15.1	-71.5	11.7	22.1	33.8	ReflexEZS	Hytech	6/17/2016	5797	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
20	-71.38057	30.81234	1.4	32.21234	Gyro	Steve Bultitude	6/23/2016		☑	100
25	-71.60077	30.59639	1.4	31.99639	Gyro	Steve Bultitude	6/23/2016		☑	100
30	-72.02669	30.84625	1.4	32.24625	Gyro	Steve Bultitude	6/23/2016		☑	100
35	-72.08936	30.97576	1.4	32.37576	Gyro	Steve Bultitude	6/23/2016		☑	100
39	-72.4	11.2	22.1	33.3	ReflexEZS	Hytech	6/18/2016	5793	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
40	-72.19951	30.74048	1.4	32.14048	Gyro	Steve Bultitude	6/23/2016		☑	100
45	-72.40082	30.84672	1.4	32.24672	Gyro	Steve Bultitude	6/23/2016		☑	100
50	-72.55657	31.21169	1.4	32.61169	Gyro	Steve Bultitude	6/23/2016		☑	100
55	-72.77492	31.3398	1.4	32.7398	Gyro	Steve Bultitude	6/23/2016		☑	100
60	-72.918	31.55377	1.4	32.95377	Gyro	Steve Bultitude	6/23/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-369

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
63	-73.4	13.2	22.1	35.3	ReflexEZS	Hytech	6/18/2016	5756	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
65	-73.09213	31.89491	1.4	33.29491	Gyro	Steve Bultitude	6/23/2016		☑	100
70	-73.3507	32.1773	1.4	33.5773	Gyro	Steve Bultitude	6/23/2016		☑	100
75	-73.61475	32.62928	1.4	34.02928	Gyro	Steve Bultitude	6/23/2016		☑	100
80	-73.85801	32.95085	1.4	34.35085	Gyro	Steve Bultitude	6/23/2016		☑	100
85	-74.00857	33.25993	1.4	34.65993	Gyro	Steve Bultitude	6/23/2016		☑	100
87	-74.4	12.6	22.1	34.7	ReflexEZS	Hytech	6/18/2016	5785	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
90	-74.13384	33.37655	1.4	34.77655	Gyro	Steve Bultitude	6/23/2016		☑	100
95	-74.26418	33.78295	1.4	35.18295	Gyro	Steve Bultitude	6/23/2016		☑	100
100	-74.35838	33.82604	1.4	35.22604	Gyro	Steve Bultitude	6/23/2016		☑	100
105	-74.56237	33.73238	1.4	35.13238	Gyro	Steve Bultitude	6/23/2016		☑	100
110	-74.8762	33.96636	1.4	35.36636	Gyro	Steve Bultitude	6/23/2016		☑	100
111	-74.8	14.3	22.1	36.4	ReflexEZS	Hytech	6/18/2016	5779	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
115	-75.04633	35.07927	1.4	36.47927	Gyro	Steve Bultitude	6/23/2016		☑	100
120	-75.36986	35.50944	1.4	36.90944	Gyro	Steve Bultitude	6/23/2016		☑	100
125	-75.67408	36.455	1.4	37.855	Gyro	Steve Bultitude	6/23/2016		☑	100
130	-75.86377	37.24467	1.4	38.64467	Gyro	Steve Bultitude	6/23/2016		☑	100
135	-75.96922	37.73599	1.4	39.13599	Gyro	Steve Bultitude	6/23/2016		☑	100
135.1	-76.1	17.6	22.1	39.7	ReflexEZS	Hytech	6/18/2016	5788	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
140	-76.1123	38.04675	1.4	39.44675	Gyro	Steve Bultitude	6/23/2016		☑	100
145	-76.17968	38.3732	1.4	39.7732	Gyro	Steve Bultitude	6/23/2016		☑	100
150	-76.17385	38.69636	1.4	40.09636	Gyro	Steve Bultitude	6/23/2016		☑	100
155	-76.36944	39.47531	1.4	40.87531	Gyro	Steve Bultitude	6/23/2016		☑	100
159	-76.6	18.2	22.1	40.3	ReflexEZS	Hytech	6/19/2016	5790	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
160	-76.56198	40.1876	1.4	41.5876	Gyro	Steve Bultitude	6/23/2016		☑	100
165	-76.68183	40.46913	1.4	41.86913	Gyro	Steve Bultitude	6/23/2016		☑	100
170	-76.71694	41.19836	1.4	42.59836	Gyro	Steve Bultitude	6/23/2016		☑	100
175	-76.82612	41.72949	1.4	43.12949	Gyro	Steve Bultitude	6/23/2016		☑	100
180	-76.93936	42.42482	1.4	43.82482	Gyro	Steve Bultitude	6/23/2016		☑	100
183	-77	21.6	22.1	43.7	ReflexEZS	Hytech	6/19/2016	5788	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-369

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
185	-76.97674	42.76669	1.4	44.16669	Gyro	Steve Bultitude	6/23/2016		☑	100
190	-77.02928	43.49009	1.4	44.89009	Gyro	Steve Bultitude	6/23/2016		☑	100
195	-77.05851	44.38987	1.4	45.78987	Gyro	Steve Bultitude	6/23/2016		☑	100
200	-77.11172	44.91155	1.4	46.31155	Gyro	Steve Bultitude	6/23/2016		☑	100
205	-77.2526	45.20865	1.4	46.60865	Gyro	Steve Bultitude	6/23/2016		☑	100
207	-77.6	25	22.1	47.1	ReflexEZS	Hytech	6/19/2016	5788	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
210	-77.34684	45.75938	1.4	47.15938	Gyro	Steve Bultitude	6/23/2016		☑	100
215	-77.46252	46.42105	1.4	47.82105	Gyro	Steve Bultitude	6/23/2016		☑	100
220	-77.62468	46.4912	1.4	47.8912	Gyro	Steve Bultitude	6/23/2016		☑	100
225	-77.79075	47.45238	1.4	48.85238	Gyro	Steve Bultitude	6/23/2016		☑	100
230	-77.94517	48.0428	1.4	49.4428	Gyro	Steve Bultitude	6/23/2016		☑	100
231	-78	26.9	22.1	49	ReflexEZS	Hytech	6/19/2016	5812	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
235	-78.24769	48.99533	1.4	50.39533	Gyro	Steve Bultitude	6/23/2016		☑	100
240	-78.85291	51.01327	1.4	52.41327	Gyro	Steve Bultitude	6/23/2016		☑	100
245	-79.66593	53.08647	1.4	54.48647	Gyro	Steve Bultitude	6/23/2016		☑	100
250	-80.31416	55.96863	1.4	57.36863	Gyro	Steve Bultitude	6/23/2016		☑	100
255	-80.13673	52.11894	1.4	53.51894	Gyro	Steve Bultitude	6/23/2016		☑	100
255.1	-80.9	37.6	22.1	59.7	ReflexEZS	Hytech	6/20/2016	5774	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
260	-80.49578	50.50639	1.4	51.90639	Gyro	Steve Bultitude	6/23/2016		☑	100
264	-81.3	34.2	22.1	56.3	ReflexEZS	Hytech	6/20/2016	5776	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
265	-80.9798	52.15673	1.4	53.55673	Gyro	Steve Bultitude	6/23/2016		☑	100
270	-81.32236	53.01428	1.4	54.41428	Gyro	Steve Bultitude	6/23/2016		☑	100
275	-81.41224	53.95768	1.4	55.35768	Gyro	Steve Bultitude	6/23/2016		☑	100
276	-81.7	29.7	22.1	51.8	ReflexEZS	Hytech	6/20/2016	5754	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
280	-81.65922	54.80182	1.4	56.20182	Gyro	Steve Bultitude	6/23/2016		☑	100
285	-81.85617	55.1459	1.4	56.5459	Gyro	Steve Bultitude	6/23/2016		☑	100
290	-81.87922	56.27361	1.4	57.67361	Gyro	Steve Bultitude	6/23/2016		☑	100
295	-81.96795	56.56943	1.4	57.96943	Gyro	Steve Bultitude	6/23/2016		☑	100
300	-81.95525	56.74354	1.4	58.14354	Gyro	Steve Bultitude	6/23/2016		☑	100
300.1	-82.4	37.8	22.1	59.9	ReflexEZS	Hytech	6/21/2016	5793	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-369

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
303	-82.3	38	22.1	60.1	ReflexEZS	Hytech	6/21/2016	5794	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
305	-82.09243	56.87879	1.4	58.27879	Gyro	Steve Bultitude	6/23/2016		☑	100
309	-82.2	37.2	22.1	59.3	ReflexEZS	Hytech	6/21/2016	5790	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
310	-82.25399	57.19964	1.4	58.59964	Gyro	Steve Bultitude	6/23/2016		☑	100
315	-82.32126	58.14341	1.4	59.54341	Gyro	Steve Bultitude	6/23/2016		☑	100
320	-82.48674	58.99015	1.4	60.39015	Gyro	Steve Bultitude	6/23/2016		☑	100
325	-82.72025	61.19595	1.4	62.59595	Gyro	Steve Bultitude	6/23/2016		☑	100
330	-82.89695	62.76594	1.4	64.16594	Gyro	Steve Bultitude	6/23/2016		☑	100
335	-82.99474	64.77516	1.4	66.17516	Gyro	Steve Bultitude	6/23/2016		☑	100
339	-83.4	48	22.1	70.1	ReflexEZS	Hytech	6/21/2016	5770	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
340	-83.0864	66.71295	1.4	68.11295	Gyro	Steve Bultitude	6/23/2016		☑	100
345	-83.20777	69.03396	1.4	70.43396	Gyro	Steve Bultitude	6/23/2016		☑	100
350	-83.25206	71.5177	1.4	72.9177	Gyro	Steve Bultitude	6/23/2016		☑	100
355	-83.33805	74.93805	1.4	76.33805	Gyro	Steve Bultitude	6/23/2016		☑	100
360	-83.45913	78.65414	1.4	80.05414	Gyro	Steve Bultitude	6/23/2016		☑	100
363	-83.8	64.4	22.1	86.5	ReflexEZS	Hytech	6/21/2016	5733	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
365	-83.51663	81.41515	1.4	82.81515	Gyro	Steve Bultitude	6/23/2016		☑	100
370	-83.47705	84.76902	1.4	86.16902	Gyro	Steve Bultitude	6/23/2016		☑	100
375	-83.55964	86.28744	1.4	87.68744	Gyro	Steve Bultitude	6/23/2016		☑	100
380	-83.72151	87.8876	1.4	89.2876	Gyro	Steve Bultitude	6/23/2016		☑	100
385	-83.85211	88.96603	1.4	90.36603	Gyro	Steve Bultitude	6/23/2016		☑	100
387	-83.9	60.4	22.1	82.5	ReflexEZS	Hytech	6/21/2016	6018	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
390	-83.86259	90.24789	1.4	91.64789	Gyro	Steve Bultitude	6/23/2016		☑	100
395	-83.79393	88.47271	1.4	89.87271	Gyro	Steve Bultitude	6/23/2016		☑	100
400	-83.83877	88.54874	1.4	89.94874	Gyro	Steve Bultitude	6/23/2016		☑	100
405	-83.78474	88.27314	1.4	89.67314	Gyro	Steve Bultitude	6/23/2016		☑	100
410	-83.85685	89.59012	1.4	90.99012	Gyro	Steve Bultitude	6/23/2016		☑	100
411	-83.9	70.5	22.1	92.6	ReflexEZS	Hytech	6/22/2016	5844	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
415	-83.73671	92.58932	1.4	93.98932	Gyro	Steve Bultitude	6/23/2016		☑	100
420	-83.82345	97.26138	1.4	98.66138	Gyro	Steve Bultitude	6/23/2016		☑	100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
425	-83.88616	101.77847	1.4	103.17847	Gyro	Steve Bultitude	6/23/2016		☑	100
430	-84.02896	104.46737	1.4	105.86737	Gyro	Steve Bultitude	6/23/2016		☑	100
435	-84.07609	108.69515	1.4	110.09515	Gyro	Steve Bultitude	6/23/2016		☑	100
435.1	-84.6	121.8	22.1	143.9	ReflexEZS	Hytech	6/22/2016	5626	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
450	-84.4	108.1	22.1	130.2	ReflexEZS	Hytech	6/22/2016	5784	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.50 OVBN Overburden

4.50 6.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 4.5 - 33.3 0.5% Min: Pyrite>>

<<Alt: 4.5 - 19.4 Moderate-Strong Calcite>>

6.80 8.40 MAFt Mafic Volcaniclastics

8.40 19.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 10.8 - 10.9 100% Quartz-Carbonate>> Deformed QZ-CA vein

<<Vein: 12.2 - 12.4 100% Quartz-Carbonate 60 deg. >> Massive QZ-CA vein

<<Struc: 14.5 - 15.1 Moderate-Strong Fault>>

19.40 26.00 RHY undifferentiated rhyolite

19.4 - 26: Large interval of a massive QZ-vein with 2 (50 cm and 1 m wide) intervals of RHYva and RHYcw respectively

<<Alt: 19.4 - 26 Weak Calcite>>

<<Vein: 19.4 - 20 100% Quartz 50 deg. >> Massive QZ vein

<<Vein: 20.7 - 23.5 100% Quartz>> Massive QZ vein

<<Vein: 24.4 - 26 100% Quartz>> Massive QZ vein

<<Struc: 20 - 20.15 Weak-Moderate Fault>>

<<Struc: 23.5 - 23.6 Weak-Moderate Fault>>

26.00 33.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 26 - 33.9 Trace Calcite>>

<<Struc: 33.2 - 33.9 Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

33.30 33.90 MDSt Rhyolite tuff dominant mudstone

33.3 - 33.9: Faulted and ~gradational contact with the overlying Wind Lake?

<<Min: 33.3 - 80.8 0.5% Min: Pyrrhotite>>

33.90 64.20 RHYva Coarse grained to ash tuff

33.9 - 64.2: Local zones of RHYvl and SED, but too small to note

<<Alt: 33.9 - 80.8 Weak-Moderate Calcite>>

<<Vein: 36.3 - 36.9 80% Quartz>> Massive clear QZ vein

<<Struc: 33.9 - 34.7 Weak Fault>>

<<Struc: 34.7 - 37 Moderate-Strong Fault>>

<<Struc: 39.7 - 40 Weak Fault>>

<<Struc: 46.5 - 46.6 Weak Fault>>

<<Struc: 52.3 - 52.4 Weak Fault>>

<<Struc: 56.6 - 56.8 Weak Fault>>

<<Struc: 58.3 - 60.7 Weak Fault>>

64.20 65.80 RHYc Rhyolite coherant volcanics

65.80 80.80 RHYvl Lapilli tuff

65.8 - 80.8: Gradational lower margin with RHYi

<<Vein: 66.6 - 66.7 80% Quartz>> Deformed QZ vein in fault with minor smeared PY

<<Struc: 66.5 - 67.7 Weak-Moderate Fault>>

<<Struc: 71.06 - 71.07 Moderate dominant foliation>>

<<Struc: 76.5 - 76.6 Weak Fault>>

<<Struc: 78.2 - 78.21 Moderate dominant foliation>>

80.80 95.50 RHYi Aphanitic Rhyolite (intrusion)

<<Min: 80.8 - 102.3 1% Min: Pyrite>>

<<Alt: 80.8 - 95.5 Weak Calcite>> FRA

<<Vein: 87 - 89 10% Quartz>> Randomly oriented and deformed QZ veins

<<Struc: 93.8 - 94 Weak Fault>>

95.50 97.20 RHYvl Lapilli tuff

<<Alt: 95.5 - 97.2 Weak-Moderate Calcite>>

97.20 102.30 RHYi Aphanitic Rhyolite (intrusion)

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 97.2 - 102.3 Weak Calcite>> FRA

<<Vein: 100.8 - 101.4 100% Quartz>> Massive QZ vein

102.30 118.80 RHYvl Lapilli tuff

102.3 - 118.8: Patchy disseminated BI

<<Min: 102.3 - 129.7 0.5% Min: Pyrrhotite>>

<<Alt: 102.3 - 129.7 Weak-Moderate Calcite>>

<<Struc: 107.67 - 107.68 Moderate dominant foliation>>

<<Struc: 115.35 - 115.36 Weak-Moderate dominant foliation>>

118.80 121.00 PEL Equigranular biotite + calcite +/- quartz rock

<<Vein: 120.53 - 120.56 100% Quartz-Carbonate>> QZ-CA vein

121.00 129.70 RHYvl Lapilli tuff

121 - 129.7: Gradational contacts

<<Struc: 122.02 - 122.03 Weak-Moderate dominant foliation>>

129.70 131.20 RHYc Rhyolite coherant volcanics

<<Min: 129.7 - 135.4 1% Min: Pyrite>>

<<Alt: 129.7 - 135.4 Weak Calcite>>

<<Vein: 129.85 - 130.2 100% Quartz>> Massive QZ vein

131.20 134.10 RHYi Aphanitic Rhyolite (intrusion)

134.10 135.40 RHYc Rhyolite coherant volcanics

135.40 137.10 RHYv Rhyolite volcaniclastic

<<Min: 135.4 - 147.6 0.5% Min: Pyrite>>

<<Alt: 135.4 - 147.1 Weak-Moderate Calcite>>

137.10 147.10 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Struc: 145.5 - 147 Moderate Fault>>

147.10 151.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 147.6 - 151.9 1% Min: Pyrite>>

<<Alt: 147.1 - 151.9 Moderate Calcite>>

<<Vein: 147.8 - 148.5 100% Quartz>> Massive QZ vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 149.11 - 149.12 Moderate dominant foliation>>

151.90 160.50 RHYvl Lapilli tuff

<<Min: 151.9 - 161.9 0.5% Min: Pyrite>>

<<Alt: 151.9 - 160.5 Weak-Moderate Calcite>>

<<Vein: 152 - 153.3 10% Quartz>> Deformed/folded QZ veins

<<Struc: 152.3 - 154.1 Weak Fault>>

<<Struc: 158.2 - 158.4 Weak Fault>>

160.50 161.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 160.5 - 161.9 Moderate Calcite>>

161.90 163.20 RHYc Rhyolite coherant volcanics

<<Min: 161.9 - 233.6 1% Min: Pyrite>>

<<Min: 161.9 - 233.6 0.5% Min: Pyrrhotite>>

<<Alt: 161.9 - 264.1 Weak Calcite>>

163.20 167.00 RHYif feldspar and quartz porphyry intrusions

<<Vein: 164.3 - 167 30% Quartz>> Massive QZ vein with minor QZ-veins around it

167.00 172.80 RHYvx Quartz and/or feldspar crystal tuff

<<Struc: 167.38 - 167.39 Weak dominant foliation>>

172.80 178.80 RHYcf Feldspar & feldspar quartz porphyry

178.80 184.40 RHYvl Lapilli tuff

<<Struc: 179 - 179.8 Weak Fault>>

<<Struc: 181 - 181.4 Weak-Moderate Fault>>

184.40 184.90 RHYvl Lapilli tuff

184.90 186.95 RHYvl Lapilli tuff

186.95 187.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

187.40 190.40 RHYvl Lapilli tuff

190.40 194.60 RHYc Rhyolite coherant volcanics

194.60 202.50 RHYvl Lapilli tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 195 - 195.01 Moderate dominant foliation>>

<<Struc: 196.7 - 201.1 Weak-Moderate Fault>>

<<Struc: 202.02 - 202.03 Moderate dominant foliation>>

202.50 202.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

202.80 207.20 RHYvl Lapilli tuff

207.20 207.70 RHYc Rhyolite coherant volcanics

207.70 218.00 RHYvl Lapilli tuff

<<Struc: 213.87 - 213.88 Moderate dominant foliation>>

<<Struc: 216.8 - 216.9 Weak Fault>>

218.00 224.10 RHYv Rhyolite volcaniclastic

<<Struc: 218.79 - 218.8 Moderate dominant foliation>>

<<Struc: 222.5 - 222.51 Moderate dominant foliation>>

224.10 225.30 PEL Equigranular biotite + calcite +/- quartz rock

225.30 230.10 RHYva Coarse grained to ash tuff

<<Struc: 226.4 - 226.9 Weak Fault>>

230.10 230.50 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

230.50 233.00 RHYvl Lapilli tuff

233.00 233.60 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

233.60 264.10 RHYvl Lapilli tuff

<<Min: 233.6 - 264.1 0.5% Min: Pyrite>>

<<Min: 233.6 - 264.1 2% Min: Pyrrhotite>>

<<Alt: 233.6 - 286 Weak Muscovite>>

<<Struc: 236.63 - 236.64 Weak dominant foliation>>

<<Struc: 243.3 - 243.5 Weak Fault>>

<<Struc: 246.52 - 246.53 Weak-Moderate dominant foliation>>

<<Struc: 249.3 - 250.1 Weak Fault>>

<<Struc: 251.8 - 254.2 Weak Fault>>

<<Struc: 255.9 - 255.91 Weak-Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 256.1 - 256.8 Weak-Moderate Fault>>

<<Struc: 256.6 - 257.3 Weak-Moderate Fault>>

<<Struc: 259.8 - 260.1 Weak Fault>>

<<Struc: 260.6 - 260.8 Weak Fault>>

264.10 275.30 RHYva Coarse grained to ash tuff

<<Min: 264.1 - 275.3 5% Min: Pyrrhotite>>

<<Struc: 272.57 - 272.58 Weak dominant foliation>>

275.30 276.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown

<<Min: 275.3 - 331.2 2% Min: Pyrrhotite>>

276.30 278.30 RHYvl Lapilli tuff

278.30 278.90 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown

278.90 279.80 RHYvl Lapilli tuff

279.80 280.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown

280.20 289.70 RHYv Rhyolite volcaniclastic

280.2 - 289.7: Altered fine grained volcaniclastic (?) rhyolite

<<Alt: 286 - 301 Weak Muscovite>>

<<Struc: 281.26 - 281.27 Weak-Moderate dominant foliation>>

<<Struc: 282.2 - 283.9 Moderate Fault>>

<<Struc: 289 - 290 Moderate Fault>>

289.70 301.00 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Struc: 292.5 - 292.8 Weak Fault>>

<<Struc: 298.78 - 298.79 Weak-Moderate dominant foliation>>

301.00 331.20 RHYv Rhyolite volcaniclastic

301 - 331.2: Altered rhyolite with pervasive MU-cleavages and siliceous microlithons

<<Alt: 301 - 368.5 Moderate-Strong Muscovite>>

<<Vein: 302.5 - 303.1 100% Quartz>> Massive QZ vein

<<Vein: 311.4 - 312.2 5% Quartz>> Minor QZ veins

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 314.4 - 314.6 20% Quartz>> Randomly oriented QZ veins									
		<<Vein: 322.2 - 322.4 80% Quartz>> Massive QZ vein									
		<<Struc: 301 - 307 Weak-Moderate Fault>>									
		<<Struc: 307.3 - 307.31 Moderate dominant foliation>>									
		<<Struc: 316.48 - 316.49 Moderate dominant foliation>>									
		<<Struc: 320.76 - 320.77 Moderate-Strong dominant foliation>>									
331.20	**334.10**	**OI Heavilly disseminated sulphides in host schist**									
		331.2 - 334.1: Heavily disseminated PY in altered rhyolite host									
		<<Min: 331.2 - 334.1 15% Min: Pyrite>>									
334.10	**338.00**	**RHYc Rhyolite coherant volcanics**									
		334.1 - 338: MU-altered rhyolite with blebby to wavy siliceous bands									
		<<Min: 334.1 - 368.5 5% Min: Pyrrhotite>>									
338.00	**353.10**	**RHYvl Lapilli tuff**									
		338 - 353.1: Strongly MU-altered rhyolite with MU-cleavages, siliceous microlithons, and PO lpl									
		<<Struc: 339.46 - 339.47 Moderate dominant foliation>>									
		<<Struc: 346.4 - 346.41 Moderate dominant foliation>>									
		<<Struc: 349.17 - 349.18 Moderate dominant foliation>>									
		<<Struc: 352.82 - 352.83 Moderate dominant foliation>>									
353.10	**369.20**	**RHYc Rhyolite coherant volcanics**	366.20	367.70	1.50	B00291899	-0.005	1	0.01	0.01	0.06
		353.1 - 369.2: Blebby to wavy siliceous bands with MU-groundmass/cleavages.									
		<<Min: 368.5 - 369.2 2% Min: Sphalerite>>	367.70	369.20	1.50	B00291901	0.012	2.1	0.08	0.01	0.12
		<<Min: 368.5 - 369.2 1% Min: Pyrite>>									
		<<Min: 368.5 - 369.2 2% Min: Pyrrhotite>>									
		<<Min: 368.5 - 369.2 2% Min: Chalcopyrite>>									
		<<Alt: 368.5 - 369.2 Intense Muscovite>>									
		<<Alt: 368.5 - 372.8 Trace Calcite>>									
		<<Vein: 366.45 - 366.6 100% Quartz-Carbonate>> Massive QZ-carb vein with minor disseminated GL+SP+CP									
		<<Vein: 368.7 - 369.1 100% Quartz>> Massive QZ-carbonate vein with recrystalized blebby cgr SP+PO+CP									
		<<Struc: 358.23 - 358.24 Moderate dominant foliation>>									
		<<Struc: 363.35 - 363.36 Weak dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 367.55 - 367.56 Moderate dominant foliation>>									
369.20	**369.70**	**OF** **Pyrrhotite rich sulphides**	369.20	369.70	0.50	B00291902	0.013	57.7	0.76	0.85	8.86
		369.2 - 369.7: Massive PO with blebby CP and disseminated MG+CL+MU									
		<<Min: 369.2 - 369.7 5% Min: Sphalerite>>									
		<<Min: 369.2 - 369.7 5% Min: Pyrite>>									
		<<Min: 369.2 - 369.7 75% Min: Pyrrhotite>>									
		<<Min: 369.2 - 369.7 5% Min: Magnetite>>									
		<<Min: 369.2 - 369.7 1% Min: Galena>>									
		<<Min: 369.2 - 369.7 2% Min: Chalcopyrite>>									
		<<Alt: 369.2 - 369.7 Moderate Muscovite>>									
		<<Alt: 369.2 - 372.8 Moderate Chlorite>>									
369.70	**370.20**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	369.70	370.20	0.50	B00291903	-0.005	10.3	0.14	0.18	0.88
		369.7 - 370.2: Disseminated CL-after-CI in intensely MU-altered rhyolite (?) with disseminated PO+PY.									
		<<Min: 369.7 - 370.2 5% Min: Pyrite>>									
		<<Min: 369.7 - 370.2 10% Min: Pyrrhotite>>									
		<<Min: 369.7 - 370.2 1% Min: Chalcopyrite>>									
		<<Alt: 369.7 - 370.2 Intense Muscovite>>									
370.20	**370.65**	**OF** **Pyrrhotite rich sulphides**	370.20	370.65	0.45	B00291904	0.011	44.4	0.22	0.87	8.23
		370.2 - 370.65: Massive PO with disseminated CL+MU+MG and blebby PY+/-CP.									
		<<Min: 370.2 - 370.65 5% Min: Sphalerite>>									
		<<Min: 370.2 - 370.65 10% Min: Pyrite>>									
		<<Min: 370.2 - 370.65 70% Min: Pyrrhotite>>									
		<<Min: 370.2 - 370.65 2% Min: Magnetite>>									
		<<Min: 370.2 - 370.65 1% Min: Galena>>									
		<<Min: 370.2 - 370.65 1% Min: Chalcopyrite>>									
		<<Alt: 370.2 - 370.65 Moderate Muscovite>>									
		<<Vein: 370.4 - 372.8 20% Quartz-Carbonate>> Zone with fractured QZ-carb +/- disseminated sulfides veins									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
370.65	**372.80**	**OI** **Heavilly disseminated sulphides in host schist**	370.65	372.00	1.35	B00291905	-0.005	21.4	0.08	0.35	4.38
370.65 - 372.8: Heavily disseminated to blebby PO+PY+/-CP with disseminated CL-after-CI and intense MU-alteration.											
<<Min: 370.65 - 372.8 3% Min: Sphalerite>>			372.00	372.80	0.80	B00291906	-0.005	3.5	0.04	0.06	0.8
<<Min: 370.65 - 372.8 10% Min: Pyrite>>											
<<Min: 370.65 - 372.8 20% Min: Pyrrhotite>>											
<<Min: 370.68 - 372.8 0.5% Min: Chalcopyrite>>											
<<Alt: 370.65 - 372.8 Strong Muscovite>>											
372.80	**385.00**	**RHY** **undifferentiated rhyolite**	372.80	374.30	1.50	B00291907	-0.005	0.5	-0.01	-0.01	0.02
372.8 - 385: Strongly MU and/or CL-CI altered undifferentiated rhyolite											
<<Min: 372.8 - 381.3 1% Min: Pyrite>>			374.30	375.80	1.50	B00291908	-0.005	-0.3	-0.01	-0.01	0.01
<<Min: 372.8 - 381.3 1% Min: Pyrrhotite>>			379.00	380.50	1.50	B00291909	-0.005	-0.3	-0.01	-0.01	-0.01
<<Min: 381.3 - 385 0.5% Min: Sphalerite>>			380.50	382.00	1.50	B00291911	0.063	6.2	0.18	0.05	2.1
<<Min: 381.3 - 385 2% Min: Pyrite>>			382.00	383.50	1.50	B00291912	0.02	12.4	0.05	0.28	0.88
<<Min: 381.3 - 385 2% Min: Pyrrhotite>>			383.50	385.00	1.50	B00291913	-0.005	3	0.01	0.06	0.21
<<Alt: 372.8 - 382.8 Strong Muscovite>>											
<<Alt: 372.8 - 392.7 Trace Calcite>>											
<<Alt: 381.3 - 385 Weak Chlorite>>											
<<Alt: 382.8 - 385 Intense Muscovite>>											
<<Vein: 375 - 375.9 100% Quartz>> Massive QZ vein with patchy TML											
<<Vein: 383.4 - 383.6 20% Quartz>> Minor QZ veins with diss sulfides											
<<Struc: 379.7 - 379.8 Weak Fault>>											
<<Struc: 380 - 380.8 Moderate Fault>>											
385.00	**386.00**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	385.00	386.00	1.00	B00291914	0.159	79.9	0.57	0.44	7.75
<<Min: 385 - 386 60% Min: Pyrite>>											
<<Min: 385 - 386 20% Min: Pyrrhotite>>											
<<Min: 385 - 386 15% Min: Magnetite>>											
<<Min: 385 - 386 3% Min: Chalcopyrite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
386.00	**386.75**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	386.00	386.75	0.75	B00291915	0.373	30.2	0.65	0.13	5.96
386 - 386.75: Cgr disseminated sulfides in intense CL alteration with cgr Cl porphyroblasts											
<<Min: 386 - 386.75 10% Min: Pyrite>>											
<<Min: 386 - 386.75 2% Min: Chalcopyrite>>											
<<Alt: 386 - 386.75 Strong Chlorite>>											
<<Alt: 386 - 386.75 Moderate Cordierite>>											
386.75	**387.75**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	386.75	387.75	1.00	B00291916	2.03	115	2.74	0.47	18.5
<<Min: 386.75 - 387.75 5% Min: Sphalerite>>											
<<Min: 386.75 - 387.75 70% Min: Pyrite>>											
<<Min: 386.75 - 387.75 20% Min: Magnetite>>											
<<Min: 386.75 - 387.75 3% Min: Chalcopyrite>>											
<<Alt: 386.75 - 388.25 Strong Chlorite>>											
<<Struc: 387.66 - 387.67 Moderate dominant foliation>>											
387.75	**388.25**	**OC** **Chalcopyrite-pyrrhotite net textured sulphides**	387.75	388.25	0.50	B00291917	3.35	221	7.78	0.48	19
387.75 - 388.25: CP-PO massive sulfide with local CL and net-texture. Heavily disseminated MG throughout.											
<<Min: 387.75 - 388.25 5% Min: Sphalerite>>											
<<Min: 387.75 - 388.25 15% Min: Pyrite>>											
<<Min: 387.75 - 388.25 25% Min: Pyrrhotite>>											
<<Min: 387.75 - 388.25 10% Min: Magnetite>>											
<<Min: 387.75 - 388.25 15% Min: Chalcopyrite>>											
<<Alt: 387.75 - 388.25 Weak Cordierite>>											
388.25	**392.90**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	388.25	389.50	1.25	B00291918	1.27	245	2.27	1.63	11.9
388.25 - 392.9: Wispy Magnetite OA. Local band of OF at lower contact (~20 cm).											
<<Min: 388.25 - 392.7 2% Min: Sphalerite>>			389.50	390.60	1.10	B00291919	0.341	34.9	0.57	0.17	14.2

From (m)	To (m)	Rocktype & Description
<<Min: 388.25 - 392.7 70% Min: Pyrite>>		
<<Min: 388.25 - 392.7 20% Min: Magnetite>>		
<<Min: 388.25 - 392.7 1% Min: Chalcopyrite>>		
<<Min: 392.7 - 392.9 95% Min: Pyrrhotite>>		
<<Min: 392.7 - 392.9 2% Min: Chalcopyrite>>		
<<Alt: 392.7 - 415.4 Weak Calcite>>		
<<Struc: 391.1 - 391.11 Moderate dominant foliation>>		
392.90	**415.40**	**RHYv Rhyolite volcaniclastic**
392.9 - 415.4: Mixed fgr ashy (?) tuff and lpl tuff. Weak-moderate MU-alteration.		
<<Min: 392.9 - 450 0.5% Min: Pyrite>>		
<<Min: 392.9 - 450 1% Min: Pyrrhotite>>		
<<Alt: 392.9 - 399 Moderate Muscovite>>		
<<Alt: 399 - 413.7 Weak Muscovite>>		
<<Alt: 413.7 - 418 Moderate Muscovite>>		
<<Vein: 396 - 396.5 50% Quartz-Albite>> Fractured massive QZ-carb vein		
<<Vein: 406.5 - 407.8 10% Quartz-Carbonate>> Massive QZ-carb veins in fault gouge		
<<Struc: 393.3 - 393.6 Weak-Moderate Fault>>		
<<Struc: 394 - 394.5 Weak-Moderate Fault>>		
<<Struc: 396.8 - 397.1 Moderate Fault>>		
<<Struc: 399.3 - 400 Weak Fault>>		
<<Struc: 406.4 - 407 Weak-Moderate Fault>>		
<<Struc: 413.35 - 413.36 Weak-Moderate dominant foliation>>		
415.40	**428.00**	**RHYvx Quartz and/or feldspar crystal tuff**
415.4 - 428: QZ eyes and BI-CL-CA lpl tuff. Weak MU-alteration.		
<<Alt: 415.4 - 428 Weak-Moderate Calcite>>		
<<Struc: 425.26 - 425.27 Weak-Moderate dominant foliation>>		
428.00	**430.50**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion) brown**
<<Alt: 428 - 430.5 Moderate Calcite>>		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
390.60	391.70	1.10	B00291921	0.223	54.3	0.46	0.22	7.69
391.70	392.90	1.20	B00291922	0.139	59.7	0.41	0.3	14.5
392.90	394.40	1.50	B00291923	-0.005	1.5	-0.01	0.01	0.07
394.40	395.90	1.50	B00291924	-0.005	-0.3	0.06	0.01	0.03
395.90	397.40	1.50	B00291925	-0.005	0.8	-0.01	0.02	0.01
397.40	398.90	1.50	B00291926	-0.005	0.6	-0.01	0.02	0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
430.50	**450.00**	**RHYvx** **Quartz and/or feldspar crystal tuff**									
430.5 - 450: QZ eyes and BI-CL-CA lpl tuff. Weak MU-alteration.											
<<Alt: 430.5 - 450 Weak-Moderate Calcite>>											
<<Struc: 446.29 - 446.3 Weak dominant foliation>>											
<<Struc: 447 - 448.2 Moderate Fault>>											
End of Hole @ 450											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-370

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/24/2016
UTM Easting	415074.044	Core Size:	HQ3	Azimuth:	216.5	Date Logging Complete:	6/26/2016
UTM Northing:	6815186.12	Casing Pulled?:	Yes	Dip:	-80	Drill Company:	Hytech
UTM Elev. (m):	1386.375	Casing Depth (m):	6	Length (m):	280.5	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/18/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/20/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-370 was drilled to test inferred portions of the Krakatoa main and upper lenses. As well K16-370 was used for detailed geotechnical logging for the proposed underground mine.
K16-370 intercepted bedrock at 6.8 m. The felsic hanging wall package occurs from 6.8-130 m, consisting of mixed rhyolites and pelitic sediments. The mafic sill was encountered from 130 m to 139.1 m, followed by OJ mineralization from 139.1-140.6 m. Undifferentiated rhyolite was encountered from 140.6-145.7, with heavily disseminated sulfides (OI) from 141.7-142.3 m. Below this rhyolite massive sulfide (OA) occurs from 145.7-146.9 m. Another horizon of undifferentiated and altered rhyolite occurs from 146.9-148.4 m. Below this rhyolite another massive sulfide (OB) lens occurs from 148.4-150.7 m. The mafic sill occurs from 150.7-224.2 m, with 3 more lense of heavily disseminated to massive sulfide lenses, consisting of OJ (174.6-175.1 m), OF (180.8-181.7 m), and OB (198.1-199.4 m and 200.1-200.45 m). There is one more massive sulfide (OB) lens at the lower contact of the mafic sill from 224.2-224.6 m. Below this lens the felsic footwall package persists to the end of the hole (280.5 m) with weak alteration.
K16-370 intersected 9 separate horizons of mineralization with a total thickness of 9.05 m of ore mineralization.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-80	215.1	1.4	216.5	TN14	Roger Hulstein	6/18/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-79.87551	216.03805	1.4	217.43805	Gyro	Steve Bultitude	6/21/2016		☑	100
10	-79.9353	215.96911	1.4	217.36911	Gyro	Steve Bultitude	6/21/2016		☑	100
15	-79.91293	215.99591	1.4	217.39591	Gyro	Steve Bultitude	6/21/2016		☑	100
15.1	-79.8	3.7	22.1	25.8	ReflexEZS	Hytech	6/18/2016	4073	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
18	-79.7	199.9	22.1	222	ReflexEZS	Hytech	6/18/2016	5847	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
20	-79.79485	215.70939	1.4	217.10939	Gyro	Steve Bultitude	6/21/2016		☑	100
25	-79.81768	216.2979	1.4	217.6979	Gyro	Steve Bultitude	6/21/2016		☑	100
30	-79.7265	215.71671	1.4	217.11671	Gyro	Steve Bultitude	6/21/2016		☑	100
35	-79.73866	215.72938	1.4	217.12938	Gyro	Steve Bultitude	6/21/2016		☑	100
40	-79.62902	215.9759	1.4	217.3759	Gyro	Steve Bultitude	6/21/2016		☑	100
42	-79.6	197.4	22.1	219.5	ReflexEZS	Hytech	6/18/2016	5801	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
45	-79.62748	216.62464	1.4	218.02464	Gyro	Steve Bultitude	6/21/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-370

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
50	-79.60838	216.26883	1.4	217.66883	Gyro	Steve Bultitude	6/21/2016		☑	100
55	-79.50732	216.67122	1.4	218.07122	Gyro	Steve Bultitude	6/21/2016		☑	100
60	-79.46066	216.34871	1.4	217.74871	Gyro	Steve Bultitude	6/21/2016		☑	100
65	-79.36639	216.54536	1.4	217.94536	Gyro	Steve Bultitude	6/21/2016		☑	100
66	-79.5	199.9	22.1	222	ReflexEZS	Hytech	6/19/2016	5738	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
70	-79.31034	216.00217	1.4	217.40217	Gyro	Steve Bultitude	6/21/2016		☑	100
75	-79.31559	215.97868	1.4	217.37868	Gyro	Steve Bultitude	6/21/2016		☑	100
80	-79.37918	215.73408	1.4	217.13408	Gyro	Steve Bultitude	6/21/2016		☑	100
85	-79.40551	215.398	1.4	216.798	Gyro	Steve Bultitude	6/21/2016		☑	100
90	-79.39041	215.4867	1.4	216.8867	Gyro	Steve Bultitude	6/21/2016		☑	100
90.1	-79.3	199	22.1	221.1	ReflexEZS	Hytech	6/19/2016	5838	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
95	-79.37169	215.47641	1.4	216.87641	Gyro	Steve Bultitude	6/21/2016		☑	100
100	-79.35329	215.775	1.4	217.175	Gyro	Steve Bultitude	6/21/2016		☑	100
105	-79.28392	214.67927	1.4	216.07927	Gyro	Steve Bultitude	6/21/2016		☑	100
110	-79.27937	214.539	1.4	215.939	Gyro	Steve Bultitude	6/21/2016		☑	100
115	-79.15708	214.18068	1.4	215.58068	Gyro	Steve Bultitude	6/21/2016		☑	100
117	-79.1	193.2	22.1	215.3	ReflexEZS	Hytech	6/19/2016	5822	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
120	-79.11369	214.17738	1.4	215.57738	Gyro	Steve Bultitude	6/21/2016		☑	100
125	-78.98172	214.15924	1.4	215.55924	Gyro	Steve Bultitude	6/21/2016		☑	100
130	-78.82323	213.87663	1.4	215.27663	Gyro	Steve Bultitude	6/21/2016		☑	100
135	-78.71507	213.38349	1.4	214.78349	Gyro	Steve Bultitude	6/21/2016		☑	100
140	-78.71338	212.42183	1.4	213.82183	Gyro	Steve Bultitude	6/21/2016		☑	100
141	-79	193.1	22.1	215.2	ReflexEZS	Hytech	6/19/2016	5783	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
145	-78.69961	211.61965	1.4	213.01965	Gyro	Steve Bultitude	6/21/2016		☑	100
150	-78.805	211.70115	1.4	213.10115	Gyro	Steve Bultitude	6/21/2016		☑	100
155	-78.90405	211.85983	1.4	213.25983	Gyro	Steve Bultitude	6/21/2016		☑	100
160	-78.95393	212.00947	1.4	213.40947	Gyro	Steve Bultitude	6/21/2016		☑	100
165	-78.95209	212.54215	1.4	213.94215	Gyro	Steve Bultitude	6/21/2016		☑	100
165.1	-79.1	192.7	22.1	214.8	ReflexEZS	Hytech	6/19/2016	5777	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170	-78.9832	213.06859	1.4	214.46859	Gyro	Steve Bultitude	6/21/2016		☑	100
175	-78.95402	213.13601	1.4	214.53601	Gyro	Steve Bultitude	6/21/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-370

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
180	-78.88761	213.50032	1.4	214.90032	Gyro	Steve Bultitude	6/21/2016		☑	100
185	-78.81031	213.44877	1.4	214.84877	Gyro	Steve Bultitude	6/21/2016		☑	100
189	-78.9	194.1	22.1	216.2	ReflexEZS	Hytech	6/19/2016	5765	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
190	-78.7431	213.17054	1.4	214.57054	Gyro	Steve Bultitude	6/21/2016		☑	100
195	-78.65411	213.5032	1.4	214.9032	Gyro	Steve Bultitude	6/21/2016		☑	100
200	-78.58463	213.50062	1.4	214.90062	Gyro	Steve Bultitude	6/21/2016		☑	100
205	-78.55216	213.45509	1.4	214.85509	Gyro	Steve Bultitude	6/21/2016		☑	100
210	-78.42539	213.27068	1.4	214.67068	Gyro	Steve Bultitude	6/21/2016		☑	100
213	-78.7	196.4	22.1	218.5	ReflexEZS	Hytech	6/20/2016	5800	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
215	-78.30222	212.86464	1.4	214.26464	Gyro	Steve Bultitude	6/21/2016		☑	100
220	-78.23053	212.90547	1.4	214.30547	Gyro	Steve Bultitude	6/21/2016		☑	100
225	-78.19261	212.73908	1.4	214.13908	Gyro	Steve Bultitude	6/21/2016		☑	100
230	-78.18234	212.94286	1.4	214.34286	Gyro	Steve Bultitude	6/21/2016		☑	100
235	-78.10493	212.87845	1.4	214.27845	Gyro	Steve Bultitude	6/21/2016		☑	100
237	-78.2	187.2	22.1	209.3	ReflexEZS	Hytech	6/20/2016	5670	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
240	-78.05516	212.70824	1.4	214.10824	Gyro	Steve Bultitude	6/21/2016		☑	100
245	-78.02642	212.2314	1.4	213.6314	Gyro	Steve Bultitude	6/21/2016		☑	100
250	-78.03809	212.16958	1.4	213.56958	Gyro	Steve Bultitude	6/21/2016		☑	100
255	-77.98568	211.80336	1.4	213.20336	Gyro	Steve Bultitude	6/21/2016		☑	100
260	-77.96666	211.73707	1.4	213.13707	Gyro	Steve Bultitude	6/21/2016		☑	100
261	-78	190.7	22.1	212.8	ReflexEZS	Hytech	6/20/2016	5776	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
265	-77.91954	211.69893	1.4	213.09893	Gyro	Steve Bultitude	6/21/2016		☑	100
270	-77.89238	211.60042	1.4	213.00042	Gyro	Steve Bultitude	6/21/2016		☑	100
280.5	-77.8	191.8	22.1	213.9	ReflexEZS	Hytech	6/20/2016	5786	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**6.80**	**OVBN** **Overburden**									
6.80	**16.60**	**RHYif** **feldspar and quartz porphyry intrusions**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 6.8 - 42.5 2% Min: Pyrite>>

<<Alt: 6.8 - 16.6 Trace Calcite>>

16.60 18.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 16.6 - 18.9 Moderate Calcite>>

18.90 30.20 RHYif feldspar and quartz porphyry intrusions

18.9 - 30.2: Pepperitic margins

<<Alt: 18.9 - 30.2 Trace Calcite>>

<<Struc: 25 - 25.2 Weak Fault>>

30.20 30.75 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 30.2 - 30.75 Moderate Calcite>>

<<Struc: 30.3 - 31.1 Weak Fault>>

30.75 53.10 RHYif feldspar and quartz porphyry intrusions

30.75 - 53.1: Pepperitic margins

<<Min: 42.5 - 70.3 2% Min: Pyrrhotite>>

<<Alt: 30.75 - 53.1 Trace Calcite>>

<<Vein: 44.8 - 46.3 5% Quartz>> Massive QZ-veining

<<Vein: 52.1 - 57.6 10% Quartz>> Massive QZ-carb veining

53.10 55.50 RHYc Rhyolite coherant volcanics

<<Alt: 53.1 - 57.6 Weak-Moderate Calcite>>

55.50 57.60 PEL Equigranular biotite + calcite +/- quartz rock

<<Struc: 56.8 - 57 Weak Fault>>

57.60 70.30 RHYvx Quartz and/or feldspar crystal tuff

57.6 - 70.3: Siliceous crystal-lpl tuff

<<Alt: 57.6 - 70.3 Weak Calcite>>

<<Vein: 62.3 - 64.1 10% Quartz>> Massive QZ-carb veining

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 69.9 - 70 Weak Fault>>

70.30 71.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 70.3 - 100.7 1% Min: Pyrrhotite>>

<<Alt: 70.3 - 71.5 Moderate Calcite>>

71.50 83.70 RHYva Coarse grained to ash tuff

71.5 - 83.7: Interbedded ash and lpl tuffs

<<Alt: 71.5 - 83.7 Trace Calcite>>

<<Struc: 72.4 - 74.1 Weak Fault>>

<<Struc: 75.1 - 76.7 Trace Fault>>

<<Struc: 78.5 - 78.8 Weak-Moderate Fault>>

<<Struc: 82.2 - 82.5 Weak Fault>>

<<Struc: 83.6 - 83.7 Weak Fault>>

83.70 100.70 RHYv Rhyolite volcaniclastic

<<Alt: 83.7 - 100.7 Weak Calcite>>

<<Vein: 98.9 - 99.1 50% Tourmaline>> TML-CA-QZ vein

<<Struc: 87.3 - 87.9 Weak-Moderate Fault>>

<<Struc: 91.6 - 91.9 Weak Fault>>

<<Struc: 92.3 - 92.6 Weak-Moderate Fault>>

<<Struc: 95.6 - 95.7 Weak Fault>>

<<Struc: 99.6 - 99.7 Weak Fault>>

100.70 124.30 RHYvl Lapilli tuff

100.7 - 124.3: Weak to moderate MU-alteration with felsic and PO lpl

<<Min: 100.7 - 122.3 1% Min: Pyrrhotite>>

<<Min: 122.3 - 122.6 5% Min: Pyrite>>

<<Min: 122.3 - 122.6 10% Min: Pyrrhotite>>

<<Min: 122.6 - 124.3 1% Min: Pyrrhotite>>

<<Alt: 100.7 - 113 Weak Muscovite>>

<<Alt: 100.7 - 130 Trace Calcite>>

<<Alt: 113 - 124.3 Moderate Muscovite>>

<<Alt: 121.5 - 122.3 Weak Chlorite>>

<<Vein: 104.1 - 104.3 80% Quartz>> Massive QZ-carb vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 120.2 - 120.3 100% Quartz>> Massive QZ-vein

<<Vein: 121.6 - 127.5 5% Quartz 70 deg. >> Deformed massive QZ-veins with local blebs of carbonate and disseminated PO+PY. Veins vary from 2-10 cm wide.

<<Struc: 101.4 - 101.5 Weak-Moderate Fault>>

<<Struc: 103.2 - 110.2 Weak-Moderate Fault>>

<<Struc: 118.4 - 118.5 Trace Fault>>

<<Struc: 119.3 - 121 Weak Fault>>

124.30 130.00 RHYcw Curdy textured-flow banded (flows, subvolcanics)

124.3 - 130: Moderate to strong MU-alteration with flow banded, locally obscured due to alteration.

<<Min: 124.3 - 127 1% Min: Pyrite>>

<<Min: 124.3 - 127 2% Min: Pyrrhotite>>

<<Min: 124.3 - 127 0.5% Min: Arsenopyrite>>

<<Min: 127 - 130 1% Min: Pyrrhotite>>

<<Alt: 124.3 - 127 Strong Muscovite>>

<<Alt: 127 - 130 Moderate Muscovite>>

<<Struc: 129.6 - 129.7 Weak Fault>>

130.00 139.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

			133.90	135.40	1.50	B00291837	-0.005	0.9	-0.01	0.02	0.03

130 - 139.1: Altered and gradational (?)/unclear contact with overlying RHYcw. Internal texture varies from well foliated to patchy leopard spotted CA-CL to massive CL-MU.

<<Min: 130 - 132 0.5% Min: Chalcopyrite>>

			135.40	136.90	1.50	B00291838	-0.005	0.7	-0.01	0.02	0.03

<<Min: 130 - 139.1 1% Min: Pyrrhotite>>

			136.90	138.00	1.10	B00291839	0.012	4.6	0.04	0.05	0.09

<<Min: 136.9 - 139.1 0.5% Min: Chalcopyrite>>

			138.00	139.10	1.10	B00291841	0.26	32.4	0.25	0.02	0.16

<<Alt: 130 - 132 Weak-Moderate Muscovite>>

<<Alt: 130 - 132 Moderate Chlorite>>

<<Alt: 130 - 132 Weak-Moderate Calcite>>

<<Alt: 132 - 132.6 Moderate Calcite>>

<<Alt: 132.6 - 136.9 Moderate-Strong Calcite>>

<<Alt: 136.9 - 139.1 Strong Chlorite>>

<<Alt: 136.9 - 139.1 Weak Calcite>>

<<Struc: 132 - 132.2 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
139.10	**140.60**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	139.10	140.60	1.50	B00291842	0.288	53.4	0.27	0.71	1.78
139.1 - 140.6: Bands of disseminated PY+PO+/-CP+/-SP+/-GL in strong banded CL-CA alteration											
<<Min: 139.1 - 140.6 2% Min: Sphalerite>>											
<<Min: 139.1 - 140.6 10% Min: Pyrite>>											
<<Min: 139.1 - 140.6 10% Min: Pyrrhotite>>											
<<Min: 139.1 - 140.6 0.5% Min: Galena>>											
<<Min: 139.1 - 140.6 1% Min: Chalcopyrite>>											
<<Alt: 139.1 - 140.6 Moderate Chlorite>>											
<<Alt: 139.1 - 140.6 Moderate-Strong Calcite>>											
140.60	**141.70**	**RHY** **undifferentiated rhyolite**	140.60	141.70	1.10	B00291843	0.072	7.1	0.02	0.06	0.05
<<Min: 140.6 - 141.7 2% Min: Pyrite>>											
<<Alt: 140.6 - 142.7 Weak-Moderate Calcite>>											
<<Alt: 140.6 - 145.7 Strong Muscovite>>											
141.70	**142.30**	**OI** **Heavilly disseminated sulphides in host schist**	141.70	142.30	0.60	B00291844	0.428	101	0.15	0.45	3.37
141.7 - 142.3: Disseminated to patches of semi-massive PY+SP+/-GL+/-CP											
<<Min: 141.7 - 142.3 3% Min: Sphalerite>>											
<<Min: 141.7 - 142.3 10% Min: Pyrite>>											
<<Min: 141.7 - 142.3 1% Min: Galena>>											
<<Struc: 142 - 143 Moderate Fault>>											
142.30	**145.70**	**RHY** **undifferentiated rhyolite**	142.30	143.50	1.20	B00291845	-0.005	-0.3	-0.01	-0.01	-0.01
142.3 - 145.7: Strongly MU-altered											
<<Min: 142.3 - 145.7 2% Min: Pyrite>>			143.50	144.70	1.20	B00291846	-0.005	0.3	-0.01	-0.01	-0.01
<<Alt: 142.7 - 145.7 Trace Calcite>>			144.70	145.70	1.00	B00291847	0.334	17.9	0.64	0.01	0.05
<<Struc: 145.4 - 145.7 Moderate Fault>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
145.70	**146.90**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	145.70	146.90	1.20	B00291848	0.98	58	0.41	0.69	10.1
145.7 - 146.9: Semi-massive to massive, grading from patchy PO+CP+PY+SP (top) to banded PY+SP+MG+/-GL (bottom)											
<<Min: 145.7 - 146.05 10% Min: Pyrite>>											
<<Min: 145.7 - 146.05 20% Min: Pyrrhotite>>											
<<Min: 145.7 - 146.05 4% Min: Chalcopyrite>>											
<<Min: 145.7 - 146.9 2% Min: Sphalerite>>											
<<Min: 146.05 - 146.9 80% Min: Pyrite>>											
<<Min: 146.05 - 146.9 5% Min: Pyrrhotite>>											
<<Min: 146.05 - 146.9 5% Min: Magnetite>>											
<<Alt: 145.7 - 146.9 Weak Calcite>>											
146.90	**148.40**	**RHY** **undifferentiated rhyolite**	146.90	148.40	1.50	B00291849	0.08	3.2	0.01	-0.01	0.03
146.9 - 148.4: Well foliated banded QZ-MU gneiss to CL-CA gneiss. Variable mineralogical composition due to alteration makes it difficult to determine whether the protolith is RHY or MAFi.											
<<Min: 146.9 - 148.4 2% Min: Pyrite>>											
<<Alt: 146.9 - 147.85 Strong Muscovite>>											
<<Alt: 146.9 - 147.85 Weak Chlorite>>											
<<Alt: 146.9 - 148.4 Moderate Calcite>>											
<<Alt: 147.85 - 148.15 Strong Chlorite>>											
<<Alt: 148.15 - 148.4 Strong Muscovite>>											
<<Alt: 148.15 - 148.4 Weak Chlorite>>											
<<Vein: 147 - 147.1 100% Quartz>> Massive QZ-vein											
<<Struc: 147.1 - 148.4 Weak Fault>>											
148.40	**150.70**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	148.40	149.50	1.10	B00291852	0.927	124	0.3	1.53	8.68
148.4 - 150.7: Banded PY+SP+/-GL+/-CP											
<<Min: 148.4 - 150.7 3% Min: Sphalerite>>			149.50	150.70	1.20	B00291853	1.18	193	0.27	1.79	5.54
<<Min: 148.4 - 150.7 85% Min: Pyrite>>											
<<Min: 148.4 - 150.7 0.5% Min: Galena>>											
<<Min: 148.4 - 150.7 0.5% Min: Chalcopyrite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 148.4 - 150.7 Weak-Moderate Calcite>>									
150.70	**174.60**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	150.70	152.20	1.50	B00291854	0.026	3.4	0.06	0.05	0.05
		150.7 - 174.6: Strongly altered and veined upper contact. Lower contact grades into a mineralized CL-alteration zone (OJ)									
		<<Min: 150.7 - 174.6 0.1% Min: Pyrite>>	152.20	153.00	0.80	B00291855	0.017	42.4	0.04	1.07	0.06
		<<Alt: 150.7 - 152.2 Strong Muscovite>> Bleached MAFi with patchy BI altered to bright apple green fuchsite(?) and chloritic groundmass altered to fine grained sericite/clay	153.00	153.90	0.90	B00291856	-0.005	-0.3	-0.01	-0.01	-0.01
		<<Alt: 150.7 - 152.2 Weak-Moderate Calcite>>	153.90	155.40	1.50	B00291857	-0.005	-0.3	-0.01	-0.01	0.02
		<<Alt: 152.2 - 173.3 Weak Calcite>> FRA	155.40	156.90	1.50	B00291858	0.005	0.3	-0.01	-0.01	0.02
		<<Alt: 173.3 - 180.3 Moderate Calcite>>									
		<<Alt: 174.3 - 175.1 Weak Muscovite>>									
		<<Vein: 152.2 - 153.9 100% Quartz>> Massive white QZ-vein									
		<<Vein: 154 - 173 3% Calcite>> ~1-2 CA veinlets (2 mm to 2 cm wide) per meter									
		<<Struc: 150.7 - 150.8 Weak-Moderate Fault>>									
		<<Struc: 151.9 - 152.2 Moderate Fault>>									
174.60	**175.10**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**									
		174.6 - 175.1: Disseminated to semi-massive PY+PO+/-CP in zone with weak-moderate CL-alteration									
		<<Min: 174.6 - 174.9 2% Min: Pyrite>>									
		<<Min: 174.9 - 175 5% Min: Sphalerite>>									
		<<Min: 174.9 - 175 20% Min: Pyrite>>									
		<<Min: 174.9 - 175 5% Min: Pyrrhotite>>									
		<<Alt: 175 - 175.1 Weak Chlorite>>									
		<<Alt: 175 - 175.1 Moderate Biotite>>									
175.10	**180.80**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	178.00	179.30	1.30	B00291865	-0.005	-0.3	-0.01	-0.01	-0.01
		175.1 - 180.8: Lower contact has 5-10 cm alteration zone									
		<<Alt: 180.7 - 180.8 Moderate-Strong Biotite>>	179.30	180.80	1.50	B00291866	0.009	-0.3	-0.01	0.01	0.02

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
180.80	**181.70**	**OF**	**Pyrrhotite rich sulphides**	180.80	181.70	0.90	B00291867	1.51	257	1.1	5.01	11.6
180.8 - 181.7: Semi-massive to massive PO with disseminated PY, minor blebby CP, patchy CL and CA gangue.												
<<Min: 180.8 - 181.7 15% Min: Pyrite>>												
<<Min: 180.8 - 181.7 50% Min: Pyrrhotite>>												
<<Min: 180.8 - 181.7 2% Min: Chalcopyrite>>												
<<Alt: 180.8 - 181.7 Weak-Moderate Calcite>>												
181.70	**198.10**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	181.70	183.10	1.40	B00291868	0.008	0.5	0.02	-0.01	0.01
<<Min: 181.7 - 198.1 0.1% Min: Arsenopyrite>>				183.10	184.60	1.50	B00291869	-0.005	-0.3	-0.01	-0.01	-0.01
<<Alt: 181.7 - 182.1 Strong Muscovite>>				195.10	196.60	1.50	B00291875	-0.005	-0.3	-0.01	-0.01	0.02
<<Alt: 182.1 - 183.1 Weak Muscovite>>				196.60	198.10	1.50	B00291876	0.009	2.6	0.02	0.07	0.17
<<Alt: 183.1 - 198.1 Moderate Calcite>>												
<<Vein: 181.7 - 198.1 3% Calcite>> ~1-2 CA veinlets (2 mm to 1 cm wide) per meter												
<<Struc: 181.7 - 182 Weak-Moderate Fault>>												
198.10	**199.40**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	198.10	199.40	1.30	B00291877	1.26	115	1.31	1.61	7.15
<<Min: 198.1 - 199.4 3% Min: Sphalerite>>												
<<Min: 198.1 - 199.4 85% Min: Pyrite>>												
<<Min: 198.1 - 199.4 1% Min: Magnetite>>												
<<Min: 198.1 - 199.4 1% Min: Galena>>												
<<Min: 198.1 - 199.4 1% Min: Chalcopyrite>>												
<<Alt: 198.1 - 199.4 Weak-Moderate Calcite>>												
<<Alt: 199.2 - 200.1 Strong Muscovite>>												
<<Alt: 199.2 - 200.1 Moderate Biotite>>												
<<Struc: 198.8 - 199.5 Moderate Fault>>												
199.40	**200.10**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	199.40	200.10	0.70	B00291878	0.17	6.9	0.19	0.07	0.59
<<Alt: 199.4 - 200.1 Moderate Calcite>>												
200.10	**200.45**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	200.10	200.45	0.35	B00291879	3.09	81.4	2	0.69	6.26
<<Min: 200.1 - 200.45 3% Min: Sphalerite>>												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 200.1 - 200.45 40% Min: Pyrite>>											
<<Min: 200.1 - 200.45 5% Min: Chalcopyrite>>											
<<Alt: 200.1 - 200.45 Weak-Moderate Calcite>>											
200.45	**224.20**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	200.45	202.00	1.55	B00291881	0.09	1.7	0.05	-0.01	0.05
<<Min: 200.45 - 224.2 0.5% Min: Pyrite>>			202.00	203.50	1.50	B00291882	0.009	0.7	-0.01	0.01	0.01
<<Alt: 200.45 - 201 Moderate Chlorite>>			222.70	224.20	1.50	B00291888	0.03	11.8	0.06	0.2	0.18
<<Alt: 200.45 - 201 Moderate Biotite>>											
<<Alt: 200.45 - 224.2 Weak-Moderate Calcite>>											
<<Vein: 223 - 223.2 20% Quartz-Carbonate>> CA-QZ veins											
224.20	**224.60**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	224.20	224.60	0.40	B00291889	1.56	207	2.27	2.97	12.3
<<Min: 224.2 - 224.6 70% Min: Pyrite>>											
<<Min: 224.2 - 224.6 1% Min: Galena>>											
<<Min: 224.2 - 244.6 10% Min: Sphalerite>>											
<<Alt: 224.2 - 224.6 Weak-Moderate Calcite>>											
224.60	**232.40**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**	224.60	225.60	1.00	B00291892	0.126	15.3	0.27	0.21	0.88
224.6 - 232.4: Strongly altered with local carbonaceous material. Flow banded.											
<<Min: 224.6 - 231.4 1% Min: Sphalerite>>											
<<Min: 224.6 - 231.4 1% Min: Pyrite>>											
<<Min: 224.6 - 231.4 0.5% Min: Arsenopyrite>>											
<<Min: 231.4 - 232.4 2% Min: Pyrrhotite>>											
<<Alt: 224.6 - 231.4 Moderate Muscovite>>											
<<Alt: 224.6 - 280.5 Trace Calcite>>											
<<Alt: 231.4 - 232.4 Weak Chlorite>>											
<<Alt: 231.4 - 235.6 Weak Muscovite>>											
<<Vein: 229.9 - 230.7 10% Quartz 10 deg. >> Thin QZ-vein at low angle to core axis											
<<Struc: 225.2 - 226.9 Weak-Moderate Fault>>											
<<Struc: 227.9 - 228.1 Weak-Moderate Fault>>											
<<Struc: 229 - 229.9 Weak Fault>>											
232.40	**261.40**	**RHYvl Lapilli tuff**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 232.4 - 261.4 3% Min: Pyrrhotite>>

<<Struc: 234.5 - 234.6 Weak Fault>>

<<Struc: 241.6 - 241.7 Weak Fault>>

<<Struc: 243.2 - 243.3 Weak Fault>>

<<Struc: 253.4 - 253.5 Weak Fault>>

261.40 280.50 RHYva Coarse grained to ash tuff

261.4 - 280.5: Green colour. Weak CL+SI alteration with disseminated PO+PY.

<<Min: 261.4 - 280.5 1% Min: Pyrite>>

<<Min: 261.4 - 280.5 1% Min: Pyrrhotite>>

<<Alt: 261.4 - 280.5 Trace Chlorite>>

<<Vein: 261.4 - 280.5 2% Quartz>> ~5 cm wide QZ-CL vein every ~3-5 m

<<Struc: 262.2 - 262.3 Weak Fault>>

<<Struc: 265 - 265.1 Weak Fault>>

<<Struc: 270 - 270.5 Weak-Moderate Fault>>

<<Struc: 277.9 - 278.3 Weak Fault>>

End of Hole @ 280.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-371

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/26/2016
UTM Easting	414945.096	Core Size:	HQ3	Azimuth:	210	Date Logging Complete:	6/26/2016
UTM Northing:	6814957.742	Casing Pulled?:	Yes	Dip:	-45	Drill Company:	Hytech
UTM Elev. (m):	1388.696	Casing Depth (m):	18	Length (m):	117	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/21/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/23/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

K16-371 is designed to provide detailed geotechnical information for the pit wall at Krakatoa.
K16-371 intersected the expected package of RHYi amd MAFi rock units followed by muscovite altered RHYv from 75.22 - 97.88m above another MAFi unit from 97.88 - 100.55m. Below this, an interval of OB style mineralization was intersected from 100.55 - 100.73m and is interpreted to be equivalent to the Krakatoa Lower lens. Beneath this mineralization, RHYc with 5% PY was intersected until the E.O.H at 117m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-45	208.6	1.4	210	TN14	Dillon Hume	6/21/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
28.5	-45.6	191.2	22.1	213.3	ReflexEZS	Hytech	6/21/2016	5746	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
52.5	-46.5	191.2	22.1	213.3	ReflexEZS	Hytech	6/22/2016	5713	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
76.5	-46.6	192.1	22.1	214.2	ReflexEZS	Hytech	6/23/2016	5725	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
100.5	-47.2	191.6	22.1	213.7	ReflexEZS	Hytech	6/23/2016	5723	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
117	-47.4	190.5	22.1	212.6	ReflexEZS	Hytech	6/23/2016	5733	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**21.34**	**OVBN Overburden**									
21.34	**22.70**	**RHYi Aphanitic Rhyolite (intrusion)**									
21.34 - 22.7: possible narrow silicificed RHYva as well, broken core											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

22.70 34.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 22.7 - 23.1 0.5% Min: Pyrite>>

<<Min: 32.1 - 34.4 0.5% Min: Pyrrhotite>>

<<Alt: 22.7 - 23.5 Moderate-Strong Muscovite>> contact effects from RHYi

<<Alt: 22.7 - 25.3 Moderate-Strong Calcite>>

<<Alt: 25.3 - 32.25 Weak-Moderate Calcite>>

<<Alt: 32.25 - 34.4 Moderate-Strong Calcite>>

<<Vein: 23.4 - 23.5 100% Calcium carbonate/Carbonate 80 deg. >> Massive deformed calcite vein

<<Struc: 24.5 - 29 dominant foliation>>

34.40 38.80 RHYc Rhyolite coherant volcanics

34.4 - 38.8: Almost white, close to possible RHYi, very rhythmic bands.

<<Min: 34.4 - 38.8 0.5% Min: Pyrite>>

<<Min: 34.4 - 38.8 0.1% Min: Pyrrhotite>>

<<Alt: 34.4 - 38.8 Weak-Moderate Muscovite>> foliation planes between RHYc silicic bands

<<Struc: 35 - 38 dominant foliation>>

38.80 39.09 RHYi Aphanitic Rhyolite (intrusion)

<<Alt: 38.8 - 41.75 Moderate Silicification>> silicified by RHYi

39.09 41.75 RHYva Coarse grained to ash tuff FG

39.09 - 41.75: fine grained homogenious, silicified by RHYi

<<Min: 40 - 40.5 1% Min: Pyrite>> in one silica band 4mm wide

41.75 47.95 RHYi Aphanitic Rhyolite (intrusion)

41.75 - 47.95: with sulphide facture network

<<Min: 41.75 - 47.95 1% Min: Sphalerite>>

<<Min: 41.75 - 47.95 4% Min: Pyrite>>

<<Alt: 47.5 - 49.95 Moderate Silicification>> silicified by RHYi

<<Alt: 47.5 - 49.95 Weak Muscovite>>

<<Struc: 46.5 - 47.5 dominant foliation>>

47.95 49.95 RHYvl Lapilli tuff

47.95 - 49.95: silicified by surrounding RHYi

<<Alt: 48.5 - 48.65 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

49.95 50.70 RHYi Aphanitic Rhyolite (intrusion)

<<Min: 49.95 - 50.7 1% Min: Sphalerite>>

<<Min: 49.95 - 50.7 4% Min: Pyrite>>

50.70 53.70 RHYvl Lapilli tuff

50.7 - 53.7: lower contact becoming more ashy

<<Min: 52 - 55.7 0.5% Min: Sphalerite>> with py

<<Min: 52 - 55.7 3% Min: Pyrite>> and bands

<<Alt: 50.7 - 53.7 Weak-Moderate Silicification>> silicified by RHYi

53.70 54.60 RHYi Aphanitic Rhyolite (intrusion)

54.60 56.72 RHYv Rhyolite volcaniclastic

<<Alt: 54.6 - 56.72 Weak-Moderate Silicification>> silicified by RHYi

<<Struc: 55 - 57 dominant foliation>>

56.72 75.22 RHYi Aphanitic Rhyolite (intrusion)

<<Min: 58 - 74.5 1% Min: Sphalerite>> with py

<<Min: 58 - 74.5 4% Min: Pyrite>>

<<Struc: 60 - 70 dominant foliation>>

75.22 97.88 RHYv Rhyolite volcaniclastic

75.22 - 97.88: frequent ashy sections. Rare lapilli like 97.60 - 97.88
Possible Rhyi 79.35 - 79.50m

<<Min: 79 - 85 2% Min: Pyrite>> and weak 3mm bands with silica

<<Min: 86 - 94.5 3% Min: Pyrite>> and weak 3mm bands with silica

<<Min: 94 - 94.5 1% Min: Pyrrhotite>>

<<Min: 94.5 - 97.88 4% Min: Pyrite>> and dis

<<Alt: 75.22 - 79.6 Weak Silicification>> silicified by RHYi

<<Alt: 76 - 81 Weak Calcite>>

<<Alt: 81 - 85.5 Weak-Moderate Muscovite>> increasing around 5cm flt gouges

<<Alt: 85.8 - 86.3 Moderate Muscovite>>

<<Alt: 85.8 - 94.5 Weak-Moderate Calcite>>

<<Alt: 86.3 - 94.5 Weak-Moderate Muscovite>>

<<Alt: 94.5 - 97.88 Moderate Muscovite>>

<<Vein: 78.02 - 78.09 100% Quartz 80 deg. >> qtz vein foliaform

<<Struc: 81 - 82.5 Weak-Moderate Fault>> variable alpha 40 - 70

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-371

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 93.5 - 94.5 dominant foliation>>									
		<<Struc: 95.2 - 96.1 Weak Fault>> weak broken zones with minor mu gouge									
97.88	**100.55**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**	100.23	100.73	0.50	D00005522	0.398	42.9	0.14	0.28	0.48
		<<Min: 100.45 - 100.5 0.5% Min: Pyrite>>									
		<<Alt: 97.88 - 100.55 Strong Calcite>>									
		<<Alt: 98.6 - 100.55 Moderate Chlorite>> texture destructive, colour change as bands									
		<<Struc: 99 - 99.5 dominant foliation>>									
100.55	**100.73**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**									
		<<Min: 100.55 - 100.73 10% Min: Sphalerite>>									
		<<Min: 100.55 - 100.73 70% Min: Pyrite>>									
		<<Min: 100.55 - 100.73 2% Min: Galena>>									
		<<Min: 100.55 - 100.73 1% Min: Chalcopyrite>>									
		<<Alt: 100.55 - 100.73 Weak-Moderate Calcite>>									
100.73	**117.00**	**RHYc** **Rhyolite coherant volcanics**									
		100.73 - 117: rare RHYcw textures @ 101 - 102 m,107m and 115 - 117m									
		<<Min: 100.73 - 117 5% Min: Pyrite>> as deformed foliaform bands with silica and dissem in Rhyc									
		<<Min: 113 - 117 0.5% Min: Sphalerite>> with PY									
		<<Alt: 100.73 - 117 Weak Muscovite>> foliation planes patchy									
		<<Struc: 107 - 112 dominant foliation>>									
		<<Struc: 112.5 - 113.85 Moderate Fault>>									
End of Hole @ 117											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-372

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/27/2016
UTM Easting	415122.459	Core Size:	HQ3	Azimuth:	240.1	Date Logging Complete:	7/4/2016
UTM Northing:	6814798.081	Casing Pulled?:	Yes	Dip:	-60.1	Drill Company:	New Age
UTM Elev. (m):	1390.765	Casing Depth (m):	18	Length (m):	597	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/21/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/2/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
						Parent Hole:	

Comments:

K16-372 is designed to test a package of KZK Formation stratigraphy located on the south - east side of the Sunda and Fault Creek Fault. K16-372 is collared in the vicinity of the "Core Rack" VTEM anomaly.

K16-372 successfuly drilled volcano-sedimetary stratigraphy of the KZK Formation and is thought to have returned feldspar augen diorite of the North Lakes Formation @ 582.84m to 597m E.O.H.

K16.372 collared in felsic rocks immediately followed by the MAFi footwall sill to 39.26m. At this location it is only approximately 25m thick and was not host to any mineralization; however, very weak BI destructive alteration was observed. A sequence of muscovite altered and py-po bearing RHYv/vl/vx are encountered to approximately 225m depth and broadly correlate to similar altered and pyritic rocks encountered in the footwall of Krakatoa.

Chlorite altered and po mineralized RHYva is encountered in short intervals from approximately 260 - 280m and may represent significant distal alteration horizons to economic mineralization.

Various volcaniclastic units (RHYv, vx, vl) continue with minor pelitic sediments (PEL) and mafic dykes (MAFi) to 416.7m where mudstones are encountered (MDS, MDSc, CHT) and are thought to correlate with the "Lower Sedimentary Sequence" of the KZK formation as depicted on property maps and on GP4F drill sections.

Disseminated to wispy stringer style po, cp mineralization is encountered within a chert encountered at 423.17 - 425m depth and wispy stringer py-po-cp-sp-gl mineralization in chlorite altered RHYvl is encountered above @ 412.40 - 412.57m. These occurences at, or near, a significant time horizon may be important vectors for more extensive mineralization elsewhere at or near this horizon.

A mixed package of RHYvl and PEL with felsic dyke intrusions, coded as RHYi with "FELSIC DYKE" in the commetns field, begins @ 523.7m with an increasing component of PEL to 582.84m down hole where a feldspar augen Bippo diorite is encountered and may correlate with deformed intrusive rocks of the North Lakes Formation. Alternatively, it could be a diorite intrusion deep within the KZK formation.

Summary conversations with the geophysists indicate that the downhole EM survey picks up some early time results that correlates well with the pyritic volcaniclastic rocks at the top of the hole, bu no significant off hole conductors were encountered here or elsewhere down the hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60.1	238.7	1.4	240.1	TN14	Rob Duncan	6/21/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
30	-60.9	218.1	22.1	240.2	ReflexEZS	New Age	6/22/2016	5747	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
57	-61.4	215.9	22.1	238	ReflexEZS	New Age	6/22/2016	5713	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-372

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
72	-61.6	187.2	22.1	209.3	ReflexEZS	New Age	6/22/2016	4113	☐	Very low magnetic field reading Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
96	-62.7	213.5	22.1	235.6	ReflexEZS	New Age	6/22/2016	5735	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
123	-63.6	212.1	22.1	234.2	ReflexEZS	New Age	6/23/2016	5732	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
150	-63.9	211.4	22.1	233.5	ReflexEZS	New Age	6/23/2016	5746	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
172	-64.2	213.1	22.1	235.2	ReflexEZS	New Age	6/23/2016	5738	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
201	-64.6	215.9	22.1	238	ReflexEZS	New Age	6/24/2016	5722	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
234	-65.1	210	22.1	232.1	ReflexEZS	New Age	6/24/2016	5605	☑	Somewhat lower than surrounding measurements Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
264	-65.3	210.6	22.1	232.7	ReflexEZS	New Age	6/24/2016	5741	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
289	-65.1	208.5	22.1	230.6	ReflexEZS	New Age	6/24/2016	5748	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
306	-64.9	203.7	22.1	225.8	ReflexEZS	New Age	6/25/2016	5755	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
357	-65.4	202.6	22.1	224.7	ReflexEZS	New Age	6/26/2016	5728	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
381	-64.2	200.4	22.1	222.5	ReflexEZS	New Age	6/26/2016	5745	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
408	-63.6	198	22.1	220.1	ReflexEZS	New Age	6/27/2016	5731	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
432	-63.4	197.2	22.1	219.3	ReflexEZS	New Age	6/27/2016	5727	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
455	-62.7	195.3	22.1	217.4	ReflexEZS	New Age	6/27/2016	5731	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
480	-61.6	193.1	22.1	215.2	ReflexEZS	New Age	6/28/2016	5750	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
507	-61.2	342.2	22.1	4.3	ReflexEZS	New Age	6/29/2016	2078	☐	Very low magnetic field reading Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
510	-60.4	188.3	22.1	210.4	ReflexEZS	New Age	6/29/2016	5750	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
543	-59.4	184.8	22.1	206.9	ReflexEZS	New Age	7/1/2016	5747	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
570	-57.9	184.7	22.1	206.8	ReflexEZS	New Age	7/1/2016	5738	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
597	-56.1	184.7	22.1	206.8	ReflexEZS	New Age	7/1/2016	5737	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 21.00 OVBN Overburden

21.00 22.54 RHYvl Lapilli tuff

21 - 22.54: moderate MU alteration and weak CA ateration, in contact with ABM footwall MAFi just below. Therefore collared at or close to ABM horion and drilling Foot wall stratigraphy.

<<Min: 21 - 23.54 0.5% Min: Pyrrhotite>>

<<Alt: 21 - 22.54 Weak-Moderate Muscovite>>

<<Alt: 21 - 22.54 Weak Calcite>>

<<Struc: 21 - 23 dominant foliation>>

22.54 39.26 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

22.54 - 39.26: bleachedmarginover 50cm. sections where BI is destroyed/absent and chlorite colour is paler. This could be weak alteration

<<Min: 23.54 - 39.26 0.01% Min: Pyrite>> associated with PO aggregates

<<Min: 23.54 - 39.26 0.5% Min: Pyrrhotite>> sparse 1mm dis and 5mm agregates

<<Alt: 23.5 - 39.26 Moderate-Strong Calcite>>

<<Alt: 34 - 36 Trace Chlorite>> absence of BI, possible alteration?

<<Alt: 36.65 - 36.95 Weak-Moderate Chlorite>> certain alteration. 3 2 - 4cm bands of texture destructive CL alteration

<<Alt: 38 - 39 Trace Chlorite>> absence of BI, possible alteration?

<<Struc: 33 - 36 dominant foliation>>

39.26 67.00 RHYv Rhyolite volcaniclastic

39.26 - 67: very similar to Rhyv encountered beneath Mafi at Krakatoa. Foliation controlled MU alteration with domains of BI - Clpreserved. Sections could be called BCQlpl

<<Min: 39.26 - 53.5 1% Min: Pyrite>> and band and dis

<<Min: 39.26 - 53.5 0.5% Min: Pyrrhotite>> and dis

<<Min: 53.75 - 56 0.01% Min: Sphalerite>> possible with py in bands

<<Min: 53.75 - 56 7% Min: Pyrite>> also in deformed silica bands with PO

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 53.75 - 56 4% Min: Pyrrhotite>> with py and dis in groundmass where fine grained BI is preserved

<<Min: 56 - 61 1% Min: Pyrite>> and BL

<<Min: 56 - 61 0.5% Min: Pyrrhotite>> and FD

<<Min: 65.7 - 67 3% Min: Pyrite>> bands and dis

<<Min: 65.7 - 67 1% Min: Pyrrhotite>> and BL

<<Alt: 39.26 - 41 Moderate Muscovite>>

<<Alt: 39.26 - 41 Weak Calcite>> CA is present in preserved BI domains. The stronger the MU alteration the weaker the CA

<<Alt: 41 - 47.5 Weak-Moderate Muscovite>>

<<Alt: 41 - 47.5 Weak-Moderate Calcite>>

<<Alt: 47.5 - 50 Moderate Muscovite>>

<<Alt: 47.5 - 50 Weak Calcite>>

<<Alt: 50 - 63 Weak-Moderate Muscovite>>

<<Alt: 50 - 63 Moderate Calcite>>

<<Alt: 63 - 67 Weak-Moderate Calcite>>

<<Vein: 53.55 - 53.62 100% Quartz 70 deg. >> massive quartz vein crossin foliation

<<Struc: 42 - 43.7 Weak-Moderate Fault>> fault broken core, 4cm of gouge crosses foliation CA 20

<<Struc: 59.5 - 60 dominant foliation>>

<<Struc: 64 - 67 dominant foliation>>

67.00 73.00 RHYvx Quartz and/or feldspar crystal tuff

67 - 73: coarse lapilli tuff with concentrated lapilli towardscentre of unit. Rare clear QE <1% and 6% cloudy clear silica. Rare ghosts of broken feldspar(?) x-tals around 70m

<<Min: 67 - 73 0.5% Min: Pyrite>> with PO

<<Min: 67 - 73 3% Min: Pyrrhotite>> bands, deformed, stringers

<<Alt: 67 - 73 Weak Muscovite>>

<<Alt: 72 - 76 Weak-Moderate Calcite>>

<<Vein: 68.04 - 68.23 100% Quartz 60 deg. >> as above

<<Struc: 67 - 73 dominant foliation>>

<<Struc: 68.04 - 68.23 Vein>>

73.00 76.35 RHYvl Lapilli tuff

75.85	76.35	0.50	B00291974	-0.005	4.8	-0.01	0.11	0.07

73 - 76.35: sparse possible lapilli

<<Min: 75.9 - 76.35 30% Min: Pyrrhotite>> forming bands

From (m)	To (m)	Rocktype & Description

<<Alt: 73 - 76.35 Weak Muscovite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
76.35	77.10	0.75	B00291975	-0.005	1.8	-0.01	0.02	0.01

76.35 79.15 RHYcf Feldspar & feldspar quartz porphyry

76.35 - 79.15: 3-5%3-5mm feldspar crystals.

<<Min: 76.35 - 79.15 2% Min: Pyrite>> patchy bands

<<Min: 76.35 - 79.15 3% Min: Pyrrhotite>> dis and patchy bands

<<Alt: 76.35 - 79.15 Moderate Muscovite>>

<<Struc: 78 - 79.5 dominant foliation>>

79.15 80.37 RHYv Rhyolite volcaniclastic

<<Min: 79.15 - 80.37 3% Min: Pyrite>> in foliaform bands

<<Alt: 79.15 - 80.37 Weak-Moderate Calcite>>

<<Alt: 79.15 - 82.8 Weak-Moderate Muscovite>>

80.37 107.50 RHYcf Feldspar & feldspar quartz porphyry

80.37 - 107.5: thick unit with some internal variablity. Cw texture seen @ 86m.
Short sections very siliceous and couldbecalled RHYif @ 95.7 - 96.0m; transitions into RHYvx at lower contact possibly from 104.5 - 107.5m

<<Min: 80.47 - 94 5% Min: Pyrite>> in foliaform bands

<<Min: 94 - 107.5 3% Min: Pyrite>> in foliaform bands

<<Min: 100 - 102 1% Min: Pyrrhotite>> occurs with PY in foliaform bands

<<Alt: 80.37 - 90 Weak Calcite>> calcite veinlets and with PY bands

<<Alt: 82.8 - 85.5 Weak Muscovite>>

<<Alt: 85.5 - 90 Moderate Muscovite>>

<<Alt: 91.5 - 94.3 Weak Muscovite>>

<<Alt: 93 - 94.5 Weak Calcite>> asabove

<<Alt: 94.3 - 95 Weak-Moderate Muscovite>>

<<Alt: 97 - 100 Weak Calcite>> as above

<<Alt: 97.2 - 99.1 Weak Muscovite>>

<<Alt: 101 - 107.5 Weak Calcite>> as above

<<Struc: 87 - 90 dominant foliation>>

<<Struc: 100 - 106 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

107.50 110.72 RHYvx Quartz and/or feldspar crystal tuff

107.5 - 110.72: sparse 1% milky white QE not CA

<<Min: 107.5 - 111.58 1% Min: Pyrite>>
<<Min: 107.5 - 111.58 1% Min: Pyrrhotite>>
<<Alt: 107.5 - 111.58 Weak Muscovite>>
<<Alt: 107.5 - 111.58 Weak-Moderate Calcite>>
<<Vein: 108.83 - 109.1 70% Quartz-Albite 70 deg. >> collection of 4 2 - 5cm wide QZ veinsand calcite veins
<<Struc: 107.5 - 111 dominant foliation>>

110.72 111.58 RHYvl Lapilli tuff

111.58 112.07 MAFi Mafic Intrusions (primarily footwall mafic intrusion) dark grey

111.58 - 112.07: stg calcareous, FG, FG BI - CA

<<Min: 111.58 - 112.07 2% Min: Pyrrhotite>> very fine grained
<<Alt: 111.58 - 112.07 Strong Calcite>>

112.07 118.36 RHYvl Lapilli tuff

<<Min: 112.07 - 118.36 1% Min: Pyrite>> patchy foliaform bands
<<Min: 115 - 116 0.5% Min: Pyrrhotite>>
<<Alt: 112.07 - 118.36 Weak Muscovite>>
<<Alt: 112.07 - 118.36 Weak-Moderate Calcite>>
<<Struc: 113 - 117 dominant foliation>>

118.36 126.95 RHYcf Feldspar & feldspar quartz porphyry

118.36 - 126.95: variable and patchy feldsapr content 1 - 4% 2-4mm white. @ 124.8- 125.5 looks more like RHYi(f)

<<Min: 118.5 - 122 2% Min: Pyrite>>
<<Min: 122 - 123 4% Min: Pyrite>>
<<Min: 123.6 - 131.57 3% Min: Pyrite>> dis in foliaform bands with silica and CB
<<Min: 125 - 126.95 2% Min: Pyrite>>
<<Min: 125 - 126.95 0.5% Min: Pyrrhotite>>
<<Alt: 118.36 - 126.95 Weak Calcite>>
<<Vein: 121.4 - 121.8 100% Quartz 30 deg. >> grey white quartz vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

126.95 128.60 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

126.95 - 128.6: 10cm chill bleach marginsboth contacts. BI rich bu vfg compared to PEL. Very clacareous, massive texture

<<Alt: 126.95 - 128.6 Strong Calcite>>

128.60 131.57 RHYvx Quartz and/or feldspar crystal tuff

128.6 - 131.57: 3-4mm milky white QE 1-3% distributed in bands. lower contact no QE

<<Min: 128.6 - 131.57 3% Min: Pyrite>>

<<Alt: 128.6 - 131.57 Weak Muscovite>>

<<Alt: 128.6 - 131.57 Weak-Moderate Calcite>>

<<Struc: 129 - 131 dominant foliation>>

131.57 132.02 RHYi Aphanitic Rhyolite (intrusion)

131.57 - 132.02: pink hue

<<Min: 131.57 - 132.02 1% Min: Pyrite>>

132.02 133.52 RHYv Rhyolite volcaniclastic

132.02 - 133.52: indications of lapilli

<<Min: 132.02 - 133.52 0.5% Min: Pyrrhotite>>

<<Alt: 132.02 - 133.52 Weak Calcite>>

133.52 137.20 RHYi Aphanitic Rhyolite (intrusion)

133.52 - 137.2: minor RHYvx fine graine @ 136.3 - 136.5

<<Min: 136.5 - 137.2 5% Min: Pyrite>> foliaform masses, crude bands

<<Vein: 133.82 - 134.29 100% Quartz 70 deg. >>

<<Vein: 134.8 - 135.26 100% Quartz 55 deg. >>

137.20 140.80 RHYvx Quartz and/or feldspar crystal tuff

137.2 - 140.8: lapilli QE 2-3% 1-3mm blue clear.

<<Min: 137.2 - 138 3% Min: Pyrite>> as above

<<Min: 138 - 142.4 1% Min: Pyrite>> as above

<<Alt: 137.2 - 147.53 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 137.2 - 147.53 Weak-Moderate Calcite>>

<<Struc: 139 - 141 dominant foliation>>

140.80 147.53 RHYvl Lapilli tuff

140.8 - 147.53: gradually lose QE to define upper contact. Otherwise same rock unit as above

<<Min: 142.4 - 147.53 3% Min: Pyrite>> asabove

<<Min: 142.8 - 147.53 0.5% Min: Pyrrhotite>> rarely with py

<<Vein: 145.63 - 145.79 100% Quartz 60 deg. >> grey white qz vein

147.53 148.92 PEL Equigranular biotite + calcite +/- quartz rock FG

147.53 - 148.92: crude banding, fine grained, gradational margins, no chill = sediment

<<Min: 147.53 - 148.92 3% Min: Pyrrhotite>>

<<Alt: 147.53 - 148.92 Strong Calcite>>

148.92 163.60 RHYv Rhyolite volcaniclastic

148.92 - 163.6: rare short intervals of possible lapilli.

<<Min: 148.92 - 153 0.5% Min: Pyrite>>

<<Min: 148.92 - 153 1% Min: Pyrrhotite>>

<<Min: 155.7 - 163.6 2% Min: Pyrrhotite>>

<<Min: 161 - 162 1% Min: Pyrite>>

<<Alt: 148.92 - 151.6 Weak-Moderate Muscovite>>

<<Alt: 148.92 - 154 Weak Calcite>>

<<Alt: 151.6 - 158 Moderate Muscovite>>

<<Alt: 154 - 155.7 Moderate Silicification>>

<<Alt: 154 - 155.7 Moderate-Strong Calcite>>

<<Alt: 154 - 155.7 Weak-Moderate Biotite>>

<<Alt: 155.7 - 163.6 Weak-Moderate Calcite>>

<<Alt: 158 - 163.6 Weak-Moderate Muscovite>>

<<Vein: 154.13 - 154.29 100% Quartz 65 deg. >> grey white qz

<<Struc: 155 - 156 dominant foliation>>

163.60 166.99 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

163.6 - 166.99: possible leucoxine as well

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 163.6 - 169.99 3% Min: Pyrrhotite>>

<<Alt: 163.6 - 169.99 Moderate-Strong Calcite>> and bands

<<Struc: 163.6 - 167 dominant foliation>>

166.99 175.35 RHYvl Lapilli tuff

166.99 - 175.35: strange cw texture @173.2 - 174m

<<Min: 169.99 - 175.35 2% Min: Pyrrhotite>> and bl bands

<<Alt: 169.99 - 173 Weak Muscovite>>

<<Alt: 169.99 - 175.35 Weak-Moderate Calcite>>

<<Alt: 173 - 175.35 Weak-Moderate Muscovite>>

<<Struc: 174 - 174.1 Weak-Moderate Fault>> gouge

175.35 176.92 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

175.35 - 176.92: sparse Fe carbonate ppo. chill margiins

<<Min: 175.35 - 176.92 3% Min: Pyrrhotite>> vfg

<<Alt: 175.35 - 176.92 Moderate-Strong Calcite>> and bands

176.92 184.04 RHYvl Lapilli tuff

<<Min: 176.92 - 184.04 1% Min: Pyrite>> and bl foliaformbands with CA

<<Min: 176.92 - 184.04 1% Min: Pyrrhotite>> and bl

<<Alt: 176.92 - 183 Weak Calcite>>

<<Alt: 176.92 - 184.04 Weak-Moderate Muscovite>>

<<Alt: 183 - 184.04 Weak-Moderate Calcite>>

<<Struc: 182 - 184 dominant foliation>>

184.04 188.44 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 184.04 - 188.44 2% Min: Pyrrhotite>> fg

<<Alt: 184.04 - 188.44 Moderate-Strong Calcite>> and bands

188.44 196.71 RHYvl Lapilli tuff

188.44 - 196.71: 192.77 - 195.5 finer grained, highly contorted ash band? higher degree of alteration?

<<Min: 188.44 - 191.5 1% Min: Pyrite>>

<<Min: 188.44 - 191.5 0.5% Min: Pyrrhotite>>

<<Min: 191.5 - 195.5 3% Min: Pyrite>> dis andfoliaform bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 195.5 - 196.71 1% Min: Pyrite>>

<<Alt: 188.44 - 192.77 Weak Calcite>>

<<Alt: 188.44 - 196.2 Moderate Muscovite>>

<<Alt: 192.77 - 195.5 Moderate-Strong Calcite>>

<<Alt: 195.5 - 196.71 Weak-Moderate Calcite>>

<<Vein: 195.05 - 195.1 100% Quartz 70 deg. >> grey quartz creamcarbonate vein

196.71 198.77 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

196.71 - 198.77: prominant chill margin over 50cm with bleaching and CB-QZ vein development

<<Min: 196.71 - 202.78 2% Min: Pyrrhotite>>

<<Alt: 196.71 - 202.78 Moderate Calcite>>

<<Vein: 196.71 - 197.31 45% Calcium carbonate/Carbonate 60 deg. >> carbonate quartz veining foliaform with altered mafic

198.77 199.00 RHYvl Lapilli tuff

198.77 - 199: looks likeRHYvl but bleaching of mafic may suggest a felsic dyke?

199.00 202.78 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

199 - 202.78: welldeveloped chill margins

<<Min: 201.9 - 201.93 20% Min: Pyrite>>

<<Vein: 201.7 - 201.93 100% Quartz 50 deg. >> quartz carbonateveinwith py selvage massive nod

<<Struc: 200.5 - 201 dominant foliation>>

202.78 203.69 RHYc Rhyolite coherant volcanics

202.78 - 203.69: again, could be felsic dyke intruding mafi

<<Min: 202.78 - 203.69 1% Min: Pyrite>>

<<Alt: 202.78 - 203.69 Weak Muscovite>>

<<Vein: 203.55 - 203.64 100% Quartz 80 deg. >> qzcb

203.69 204.51 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

203.69 - 204.51: chill margins

<<Min: 203.69 - 204.51 1% Min: Pyrrhotite>>

<<Alt: 203.69 - 204.51 Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

204.51 213.37 RHYvl Lapilli tuff

204.51 - 213.37: variable between Rhyv and vl. 10cmsections of possible vaor fine gained pale brown sediment for example 211.05 - 211.17m

<<Min: 204.51 - 213.37 2% Min: Pyrite>> dis andinfoliaform deformed bands

<<Min: 207.25 - 211.2 1% Min: Pyrrhotite>> associated with possible sed bands

<<Alt: 204.51 - 213.37 Weak-Moderate Calcite>>

<<Alt: 207.25 - 211 Weak-Moderate Muscovite>>

<<Struc: 206.9 - 207.3 Moderate-Strong Fault>> healed rubble gouge

213.37 214.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

213.37 - 214.3: chill margin on upper cnt

<<Min: 213.37 - 218.7 2% Min: Pyrrhotite>>

<<Alt: 213.37 - 218.7 Strong Calcite>>

214.30 214.46 RHYc Rhyolite coherant volcanics

214.3 - 214.46: Felsic dyke?

<<Struc: 214.3 - 216 dominant foliation>>

214.46 218.70 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

214.46 - 218.7: chill margins

<<Min: 215.5 - 216 1% Min: Pyrite>>

<<Min: 215.7 - 215.9 5% Min: Pyrrhotite>>

<<Vein: 215.7 - 215.9 70% Quartz 0 deg. >> qz vein re-mobilized po onselvage from mafi

218.70 234.60 RHYvl Lapilli tuff

218.7 - 234.6: possible feldspar crystals225 - 226.50 (vx). Short 10cmintervalsof Bippo and fine BI suggesting dirty ash tuff to PEL sediment @ 222.5 - 222.6 and 230.17 - 230.6

<<Min: 218.7 - 234.6 3% Min: Pyrite>> and dis and in foliformdeformed bands

<<Min: 223.45 - 223.65 2% Min: Pyrrhotite>>

<<Min: 230.17 - 232.2 2% Min: Pyrrhotite>>

<<Alt: 218.7 - 234.6 Weak Muscovite>>

<<Alt: 225 - 234.6 Weak Calcite>>

<<Struc: 224.5 - 225 Weak-Moderate Fault>> lost core rubble over last 10cm

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 230 - 231.2 Weak-Moderate Fault>> 3 discreet 5-10cm FLTs, CA35, CA 85									
234.60	**235.73**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**									
		234.6 - 235.73: BI chill margins									
		<<Min: 234.6 - 235.73 1% Min: Pyrrhotite>>									
		<<Alt: 234.6 - 235.73 Strong Calcite>> and cb bands									
		<<Struc: 235.69 - 237 dominant foliation>>									
235.73	**240.90**	**RHYv** **Rhyolite volcaniclastic**	237.00	238.50	1.50	B00291976	-0.005	1.4	0.01	0.02	0.59
		235.73 - 240.9: short sectionswith lapilli also. severalquartz veinswithcarbonate alteration zones obscuring protolith									
		<<Min: 235.73 - 240.91 2% Min: Pyrite>>									
		<<Min: 237 - 238.32 1% Min: Sphalerite>> and bleb with vein and wispy foliaform bands									
		<<Min: 237.6 - 240.91 1% Min: Pyrrhotite>> and vein									
		<<Alt: 235.73 - 240.91 Moderate-Strong Calcite>> from veins and dis									
		<<Vein: 237 - 237.3 100% Quartz 60 deg. >> qz cb vein									
		<<Vein: 237.55 - 237.65 100% Quartz 80 deg. >> qz cb po vein									
240.90	**242.05**	**MAFi** **Mafic Intrusions (primarily footwall mafic intrusion)**									
		<<Min: 240.91 - 242.05 1% Min: Pyrrhotite>>									
		<<Alt: 240.91 - 242.05 Moderate-Strong Calcite>>									
242.05	**243.50**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		242.05 - 243.5: fine grained peliticsediment with beer bottle brown BI mixed with RHYva, first 20cm is RHYvl									
		<<Min: 242.45 - 242.65 1% Min: Sphalerite>>									
		<<Min: 242.8 - 243.5 1% Min: Pyrrhotite>>									
		<<Alt: 242.05 - 243.5 Weak-Moderate Calcite>>									
243.50	**246.65**	**RHYvl** **Lapilli tuff**									
		<<Min: 244 - 246 1% Min: Pyrrhotite>>									
		<<Min: 244.5 - 245.5 1% Min: Sphalerite>>									
		<<Min: 245.5 - 246 1% Min: Pyrite>>									
		<<Alt: 243.5 - 246.65 Weak-Moderate Calcite>>									
		<<Struc: 244 - 245 dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

246.65 267.00 RHYva Coarse grained to ash tuff

246.65 - 267: fine grained patchey Bippo. From 259.5 - 267 several QZ veins and CL alteration andFLT. After this zone, coarser gr, possibble lapilli = RHYv - vl

<<Min: 250.5 - 258 0.5% Min: Pyrrhotite>>

<<Min: 262.2 - 262.8 2% Min: Pyrrhotite>>

<<Min: 264.3 - 266.5 1% Min: Pyrrhotite>>

<<Min: 266.3 - 266.5 1% Min: Pyrite>>

<<Alt: 246.65 - 248.5 Moderate Calcite>> perhapsstart of VA is PEL

<<Alt: 259.6 - 261.25 Weak Chlorite>> perhaps vein and fault related,possible OR

<<Alt: 261.25 - 262.1 Moderate Chlorite>> as above

<<Alt: 261.25 - 262.8 Weak-Moderate Biotite>> as above

<<Alt: 262.1 - 262.8 Strong Chlorite>> as above

<<Alt: 264 - 266.5 Moderate Chlorite>> as above

<<Vein: 256 - 266.5 10% Quartz 80 deg. >> 7, 5 - 10cm widequartz cb veinswith bleaching around and cl bi ateration

<<Struc: 258 - 258.8 dominant foliation>>

<<Struc: 262.8 - 264.1 Moderate Fault>> broken rubble gouge, missing core

<<Struc: 266.7 - 267 Weak-Moderate Fault>> broken rubble gouge, missing core

267.00 277.18 RHYv Rhyolite volcaniclastic

267 - 277.18: variable short sections with lapilli. sparse QE from 273 - 274
Bippo 274 - 275.5

<<Min: 275.7 - 276 1% Min: Pyrite>> foliaform band

<<Min: 275.7 - 276 0.5% Min: Pyrrhotite>> as above

<<Min: 277.1 - 277.18 1% Min: Pyrrhotite>>

<<Alt: 269.8 - 272.4 Weak-Moderate Muscovite>> fault related

<<Alt: 274.1 - 277 Weak-Moderate Muscovite>>

<<Alt: 274.5 - 276.1 Weak-Moderate Calcite>>

<<Vein: 277 - 277.5 100% Quartz 80 deg. >> qz cb vein

<<Struc: 269.8 - 271.7 Moderate Fault>> broken core, gouge, DFOL changes from 80 to 10 to 80

277.18 280.86 RHYva Coarse grained to ash tuff

277.18 - 280.86: Same as RHYva above including CL and QV's

COULD THIS AND RHYva ABOVE CORRESPOND TO CL ALTERED RHYva AT FAULT CREEK ZONE AND HOLE TO SOUTH OF FCZ

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 278.1 - 280.7 2% Min: Pyrrhotite>>

<<Alt: 277.18 - 280.86 Moderate-Strong Chlorite>> could be OP fault related. However, bleaching around QV's so perhaps OR

<<Alt: 278.7 - 279 Weak-Moderate Biotite>> Bippo

<<Vein: 277.4 - 278.2 60% Quartz 60 deg. >> qz cb veins

280.86 284.18 RHYv Rhyolite volcaniclastic

280.86 - 284.18: quite coarse, almost a vl. Lower contact is gradational with appearance of QE blue

<<Min: 283 - 283.5 1% Min: Pyrrhotite>>

<<Alt: 280.86 - 284.18 Weak-Moderate Muscovite>>

<<Alt: 280.86 - 284.18 Weak Chlorite>> patchy bands

<<Vein: 283.5 - 283.6 100% Calcium carbonate/Carbonate 70 deg. >> qz cb vein

<<Struc: 282 - 282.33 Weak-Moderate Fault>> gouge healed

284.18 300.51 RHYvx Quartz and/or feldspar crystal tuff

284.18 - 300.51: unifrom lapilli texture as well, structural? stg patchy CL BI alteration developed without QV or FLT sggsting OR. These zones and in RHYva become important for MIN vectors.
1%, 2 - 3mm blue - clear quartz crystals. sparse but present throughout.
lower contact Bippo over 50cm

<<Min: 287.5 - 296.5 0.5% Min: Pyrite>> bands with CL

<<Min: 287.5 - 296.5 2% Min: Pyrrhotite>> bands with CL alt

<<Min: 297 - 297.2 1% Min: Pyrite>> bands

<<Min: 297 - 297.2 5% Min: Pyrrhotite>> bands

<<Min: 297 - 297.2 2% Min: Magnetite>> bands

<<Min: 299 - 300 1% Min: Pyrite>> foliaform blebs with silica

<<Alt: 284.18 - 290.7 Weak-Moderate Chlorite>> numerous 1cm to 5cm alteration bandswith BI +/- PO rare py. narrow cross cutting stringers?

<<Alt: 284.18 - 290.7 Weak Biotite>> with cl

<<Alt: 290 - 296.6 Weak-Moderate Muscovite>>

<<Alt: 290.7 - 291.1 Strong Chlorite>> semi massive band, only sparse sx stopping from being OJ?

<<Alt: 290.7 - 291.1 Moderate Biotite>>

<<Alt: 291.1 - 294 Moderate Chlorite>> same as 284.18 - 290.7

<<Alt: 291.1 - 294 Weak Biotite>> with CL

<<Alt: 296.2 - 296.5 Weak Chlorite>>

<<Vein: 292.4 - 292.5 100% Quartz 70 deg. >> qz cb cl vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 290.3 - 291 dominant foliation>>

<<Struc: 300 - 301.3 dominant foliation>>

300.51 302.34 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

300.51 - 302.34: chill marginsandBIppo of surrounding felsic units

<<Min: 300.54 - 302.34 1% Min: Pyrrhotite>> and bleb near upper contact

<<Alt: 300.51 - 302.34 Moderate-Strong Calcite>> and cb bands

302.34 307.79 RHYvx Quartz and/or feldspar crystal tuff

302.34 - 307.79: 4% 2-4mm blue qe in lapilli tuff. Bippo at upper contact for 30cm

<<Min: 302.5 - 307.5 0.5% Min: Pyrite>>

<<Min: 302.5 - 307.5 0.5% Min: Pyrrhotite>>

<<Alt: 302.34 - 307.79 Weak-Moderate Calcite>>

<<Struc: 305 - 309 dominant foliation>>

307.79 326.84 RHYva Coarse grained to ash tuff

307.79 - 326.84: fine grained ash variable Bippo throughout and patchy fine grained BI masses that looks like alteration, or sedimentary component. BI is missing 307.79 - 310.1m and 322.3m - 325.3m and rock is clearly RHYva and the same rocktype.

<<Min: 311.2 - 311.5 1% Min: Pyrrhotite>>

<<Min: 312.5 - 322.3 2% Min: Pyrrhotite>> wispy foliaform disseminations

<<Min: 323 - 326.2 2% Min: Pyrrhotite>> as above

<<Min: 326.2 - 326.84 0.5% Min: Pyrite>>

<<Alt: 310.1 - 322.3 Moderate Biotite>> Bippo and patchy masses fine grained

<<Alt: 311.2 - 311.3 Moderate Chlorite>>

<<Alt: 320 - 321 Weak-Moderate Chlorite>>

<<Alt: 324.5 - 326.84 Moderate Biotite>> as above

<<Alt: 325.5 - 326.84 Weak-Moderate Muscovite>>

<<Vein: 309.87 - 310.07 100% Quartz 60 deg. >> qz cb vein

<<Vein: 310.52 - 310.84 100% Quartz 70 deg. >> qz cb vein

<<Vein: 313.5 - 313.6 100% Quartz 70 deg. >> qz cb vein

<<Vein: 313.8 - 313.95 100% Quartz 60 deg. >> qz cb vein

<<Vein: 325.33 - 325.48 100% Quartz 80 deg. >> qz cb vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 317 - 322 dominant foliation>>

326.84 328.49 RHYvl Lapilli tuff

326.84 - 328.49: silicic bands

<<Min: 326.84 - 328 0.1% Min: Pyrite>>

<<Alt: 326.84 - 328.49 Weak Muscovite>>

328.49 345.00 RHYv Rhyolite volcaniclastic

328.49 - 345: Increasing Bippo towards lower contact with PEL ash; BI increasing in ground mass as well. Patchy Cbppo. short 50cm sections of RHYva grading in and out of coarser RHYv and very rare lapilli.

<<Min: 328.49 - 330.5 0.1% Min: Pyrrhotite>>

<<Min: 330.5 - 334.5 0.1% Min: Pyrite>>

<<Min: 338 - 345 0.1% Min: Pyrite>>

<<Min: 338 - 345 0.1% Min: Pyrrhotite>>

<<Min: 339.36 - 339.45 2% Min: Galena>>

<<Alt: 328.49 - 345 Weak Muscovite>> patches of mu where groundmass bi decreases? and forms more Bippo, trace py

<<Alt: 328.49 - 345 Weak Biotite>> alteration? but see above

<<Vein: 328.92 - 329.27 75% Quartz 65 deg. >> qz cb cl vein

<<Vein: 331.85 - 331.96 100% Quartz 65 deg. >> qz cb cl bi vein

<<Vein: 332.21 - 332.28 100% Quartz 70 deg. >> qz cb cl vein

<<Vein: 332.75 - 333.6 90% Quartz 45 deg. >> qz cb cl vein

<<Vein: 338.27 - 339 85% Quartz 60 deg. >> qz cb tml vein

<<Vein: 339.36 - 339.45 100% Quartz 80 deg. >> qz vein

<<Struc: 338 - 339 dominant foliation>>

345.00 349.56 PEL Equigranular biotite + calcite +/- quartz rock

345 - 349.56: mottled banding of mu - bi - cl with BI mm bands as selvage to deformed silica bands.

<<Min: 345 - 349.56 0.1% Min: Pyrite>>

<<Min: 345 - 349.56 1% Min: Pyrrhotite>>

<<Alt: 345 - 349.56 Weak Muscovite>>

<<Alt: 345 - 349.56 Weak-Moderate Biotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

349.56 354.85 RHYv Rhyolite volcaniclastic

349.56 - 354.85: silicic bands and sil from RHYi below. Gradational contact with Rhyva for 30cm and increasing lpl and silicic bands

<<Min: 349.56 - 352.5 2% Min: Pyrite>>

<<Min: 352.5 - 354.85 0.5% Min: Pyrite>>

<<Alt: 349.56 - 354.85 Weak-Moderate Silicification>>

<<Alt: 349.56 - 354.85 Trace Calcite>> in veins

<<Vein: 349.8 - 354.8 20% Quartz 80 deg. >> qz cb veins each 7 - 15cm wide,

354.85 367.77 RHYi Aphanitic Rhyolite (intrusion)

354.85 - 367.77: pink hue, deformed qz cb sweats

<<Min: 357 - 367 0.5% Min: Pyrrhotite>>

<<Min: 357 - 367.77 1% Min: Pyrite>> and DIS

<<Alt: 354.85 - 367.77 Weak-Moderate Calcite>> in CB sweats agr

<<Vein: 362.24 - 362.26 100% Quartz 80 deg. >> qz cb vein

<<Vein: 363.4 - 364.9 30% Quartz 80 deg. >> qz cb vein

<<Struc: 358 - 362 dominant foliation>>

367.77 371.02 RHYva Coarse grained to ash tuff

367.77 - 371.02: silicic bands

<<Alt: 367.77 - 371.02 Weak-Moderate Silicification>>

<<Alt: 367.77 - 371.02 Weak-Moderate Calcite>>

<<Struc: 371 - 477 Weak dominant foliation>>

371.02 375.74 RHYv Rhyolite volcaniclastic

371.02 - 375.74: Bippo, BI in groundmass and short sections of likely RHYva. Two patches of 4-6 CL alt with PO @ 373.15 - 373.30 and 375.30 Possible proximal stringer alt??

<<Min: 373.15 - 373.3 4% Min: Pyrrhotite>>

<<Min: 373.3 - 375.3 1% Min: Pyrrhotite>>

<<Min: 375.3 - 375.4 4% Min: Pyrrhotite>>

<<Min: 375.4 - 375.74 0.5% Min: Pyrrhotite>>

<<Alt: 371.02 - 375.74 Weak-Moderate Calcite>>

<<Alt: 372.3 - 375.74 Moderate Biotite>>

<<Alt: 373.15 - 373.3 Moderate Chlorite>>

<<Alt: 375.3 - 375.4 Strong Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 375 - 378 dominant foliation>>

375.74 389.75 SED undifferentiated Sediment

375.74 - 389.75: Dark grey black mottled FMG rock with clear quartz domains like lpl in felsic or silicic bands. Patchy Bippo and BI in groundmass plus short sections of Cbppo.
Possible TML in groundmass as well (supports sedimentary origin).

Amount of silica may indicate early silicification event, now highly deformed?

<<Min: 376.1 - 389.75 1% Min: Pyrrhotite>>

<<Alt: 376 - 378.3 Moderate Silicification>> possible SI or just comp of rock

<<Alt: 378.3 - 378.8 Weak Muscovite>>

<<Alt: 379.9 - 380 Moderate Ankerite>> Cbppo

<<Alt: 382.5 - 384 Moderate Tourmaline>> from vein

<<Alt: 389 - 389.75 Moderate Calcite>>

<<Vein: 375.74 - 376.1 100% Quartz 60 deg. >> qz cb vein

<<Vein: 381.45 - 381.6 100% Quartz 80 deg. >> qz cb vein

389.75 390.18 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

389.75 - 390.18: could be a MAFt in the sed package

<<Min: 389.75 - 390.18 0.5% Min: Pyrrhotite>>

<<Alt: 389.75 - 390.18 Moderate-Strong Calcite>>

390.18 399.11 SED undifferentiated Sediment

390.18 - 399.11: Dark grey black mottled FMG rock with clear quartz domains like lpl in felsic or silicic bands. Patchy Bippo and BI in groundmass plus short sections of Cbppo.
Possible TML in groundmass as well (supports sedimentary origin).

Amount of silica may indicate early silicification event, now highly deformed?

<<Min: 391.5 - 397.75 0.5% Min: Pyrrhotite>>

<<Min: 398 - 398.5 0.5% Min: Pyrite>>

<<Alt: 390.18 - 390.7 Weak-Moderate Muscovite>> bleaching from MAFi contact?

<<Alt: 391 - 399.11 Moderate Calcite>> bi domains

<<Alt: 394.9 - 395.7 Moderate Tourmaline>> from tml hairline vein bleaches host

<<Struc: 397 - 399 dominant foliation>>

399.11 403.08 RHYvl Lapilli tuff

399.11 - 403.08: gradational upper contact over 50cm of ash. Rare patchy Bippo

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 399.11 - 402 0.5% Min: Pyrrhotite>>

403.08 403.96 MAFt Mafic Volcaniclastics

403.08 - 403.96: no chill margins but mafic

<<Min: 403.08 - 403.96 1% Min: Pyrrhotite>>

<<Alt: 403.08 - 403.96 Moderate Calcite>>

403.96 416.70 RHYvl Lapilli tuff

403.96 - 416.7: cleaner, no Bippo, no PEL input

<<Min: 405 - 410 0.5% Min: Pyrrhotite>>

<<Min: 412.4 - 412.57 1% Min: Sphalerite>> could be vein related or significant replacement related with CL alt. 2cm qz cb veinlet MFOL NOD

<<Min: 412.4 - 412.57 1% Min: Pyrite>>

<<Min: 412.4 - 412.57 2% Min: Pyrrhotite>>

<<Min: 412.4 - 412.57 0.5% Min: Galena>>

<<Min: 412.4 - 412.57 0.5% Min: Chalcopyrite>>

<<Min: 416 - 417 1% Min: Pyrrhotite>>

<<Alt: 403.96 - 416.7 Trace Muscovite>>

<<Alt: 411 - 414 Weak Calcite>> with veins

<<Alt: 412.4 - 412.57 Moderate-Strong Chlorite>> could be vein related orsignificant replacement style alt.

<<Vein: 411.4 - 411.5 100% Quartz 75 deg. >> qz cb

<<Vein: 414.02 - 414.17 100% Quartz 80 deg. >> qz cb cl vein

<<Vein: 414.52 - 414.54 100% Quartz 80 deg. >> qz cb vein close to CL alt with po/py/sp/cp/gl MIN

<<Struc: 411 - 414 dominant foliation>>

416.70 417.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

416.7 - 417: Tuffaceous sediment, on set oftheLower sedimentary sequence?

417.00 417.78 RHYva Coarse grained to ash tuff

417 - 417.78: Top contact is also silicic bands or lpl over 30cm.

<<Min: 417 - 417.78 0.5% Min: Pyrrhotite>>

<<Alt: 417 - 417.78 Trace Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
417.78	**423.17**	**MDSc Carbonaceous dominant mudstone**									
417.78 - 423.17: Tuffaceous sediment, on set oftheLower sedimentary sequence?											
<<Min: 417.78 - 418.38 2% Min: Pyrrhotite>>											
<<Min: 418.38 - 418.52 1% Min: Pyrite>>											
<<Min: 418.38 - 418.52 2% Min: Pyrrhotite>>											
<<Min: 418.52 - 420.5 1% Min: Pyrrhotite>>											
<<Alt: 418.38 - 418.52 Moderate Chlorite>> could be significant alteration horizon											
<<Alt: 419 - 431 Weak-Moderate Calcite>> in cb portionsof mudstone, late veinlets and sweats											
<<Struc: 422.5 - 423 Moderate Fault>> rubble, mds gouge											
423.17	**425.00**	**CHT Chert**	423.17	424.00	0.83	B00291977	0.146	18.3	0.7	0.04	0.23
423.17 - 425: Also Tuffaceous. Significant asit contains up to 2% po/cp/py											
<<Min: 423.17 - 423.67 0.5% Min: Pyrite>>			424.00	425.00	1.00	B00291978	-0.005	1.1	0.03	-0.01	0.16
<<Min: 423.17 - 423.67 2% Min: Pyrrhotite>>											
<<Min: 423.67 - 423.77 4% Min: Pyrrhotite>>											
<<Min: 423.67 - 423.77 3% Min: Chalcopyrite>>											
<<Min: 423.77 - 425 0.5% Min: Pyrite>>											
<<Min: 423.77 - 425 1% Min: Pyrrhotite>>											
425.00	**425.54**	**RHYva Coarse grained to ash tuff**									
425 - 425.54: MDs component to this ash tuff											
<<Min: 425 - 425.54 0.5% Min: Pyrite>>											
<<Min: 425 - 425.54 1% Min: Pyrrhotite>>											
<<Struc: 425 - 426 dominant foliation>>											
425.54	**431.06**	**MDSc Carbonaceous dominant mudstone**									
425.54 - 431.06: finegrained silica teardrop cm scale lenes, possible minor CHT component											
<<Min: 426.2 - 429.8 1% Min: Pyrite>>											
<<Min: 426.2 - 429.8 1% Min: Pyrrhotite>>											
<<Struc: 430.7 - 431.3 Moderate Fault>> rubble , gouge missing core											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

431.06 445.05 RHYv Rhyolite volcaniclastic

431.06 - 445.05: with very minor MDS component at top contact. Contact is sharp. short section of RHYva 436.3- 436.5 and 438.5 - 339. Section beneath this is very silicious, silicified?

<<Min: 444.1 - 444.4 0.5% Min: Pyrite>>

<<Min: 444.1 - 444.4 0.5% Min: Pyrrhotite>>

<<Alt: 431.06 - 436 Weak-Moderate Muscovite>>

<<Alt: 436 - 445.05 Weak-Moderate Silicification>>

<<Alt: 437.5 - 438 Moderate Calcite>> perhaps a very short MAFt

<<Alt: 439 - 440.5 Weak Biotite>> fg brown in patches in groundmass, alteration?

<<Alt: 445 - 447 Weak-Moderate Calcite>>

<<Vein: 442.9 - 443 100% Quartz 60 deg. >> qz cb vein

<<Struc: 440 - 441 dominant foliation>>

<<Struc: 442.7 - 443.5 Weak Fault>> broken core

445.05 453.97 MDSc Carbonaceous dominant mudstone

445.05 - 453.97: Mudstone ofthe Lower Sequence with some tuffaceousRHY input, possible silica bands cherty over 10cm intervals

<<Min: 445.05 - 447 0.1% Min: Pyrite>>

<<Min: 445.05 - 447 0.5% Min: Pyrrhotite>>

<<Min: 449 - 450.3 0.5% Min: Pyrite>>

<<Min: 449 - 450.3 0.5% Min: Pyrrhotite>>

<<Min: 450.7 - 452.5 1% Min: Pyrite>>

<<Min: 450.7 - 452.5 0.5% Min: Pyrrhotite>>

<<Alt: 452 - 454.97 Moderate Calcite>> and PAT

<<Vein: 450.37 - 450.7 100% Quartz 60 deg. >> qz cb cl vein

<<Struc: 448.2 - 448.3 Weak-Moderate Fault>> narrow rubble gouge, real brittle flt

<<Struc: 449.2 - 449.3 Weak-Moderate Fault>> same as above

453.97 454.83 RHYva Coarse grained to ash tuff

453.97 - 454.83: Light grey va with homogeneous MDS component in the middle

<<Alt: 454 - 454.7 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

454.83 457.72 MDSc Carbonaceous dominant mudstone

454.83 - 457.72: minor ashy intervals decreasing to lower contact

<<Min: 456 - 457.72 1% Min: Pyrite>>

<<Min: 456 - 457.72 1% Min: Pyrrhotite>>

<<Alt: 455.3 - 456 Moderate Calcite>> and PAT

<<Struc: 455 - 456 dominant foliation>>

457.72 459.00 MDSt Rhyolite tuff dominant mudstone FG

457.72 - 459: Fine ash with mudstone in matrix

<<Min: 457.72 - 459 0.1% Min: Pyrrhotite>>

459.00 463.99 MDSc Carbonaceous dominant mudstone

459 - 463.99: patchy intervalof calcareousMDS 463 onwards

<<Min: 459 - 467.93 1% Min: Pyrrhotite>> and DIS

<<Alt: 463 - 466 Weak-Moderate Calcite>>

<<Struc: 463.5 - 467.5 dominant foliation>>

463.99 464.50 RHYv Rhyolite volcaniclastic

463.99 - 464.5: roughgrading? fining down hole, lowercontact is gradational over a meter

464.50 467.93 MDSc Carbonaceous dominant mudstone

464.5 - 467.93: higher homogeneous ash component. Rock starting to look massive. Could define it as MDSt

467.93 478.38 RHYv Rhyolite volcaniclastic

467.93 - 478.38: lapilli silicic bands 468.4 - 469.5

<<Min: 467.93 - 470.62 1% Min: Pyrrhotite>>

<<Min: 470.62 - 474.3 1% Min: Pyrrhotite>>

<<Alt: 470.5 - 475.7 Weak-Moderate Biotite>> fg in groundmass and patches

<<Alt: 475.7 - 478.38 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

478.38 478.89 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

478.38 - 478.89: No chill margins but sharp contacts.

<<Min: 478.38 - 478.89 1% Min: Pyrrhotite>> and foliaform band

<<Alt: 478.38 - 478.89 Moderate-Strong Calcite>> and PAT

478.89 482.20 RHYvl Lapilli tuff

478.89 - 482.2: lapilli concentrated at upper contact

<<Struc: 482 - 485 dominant foliation>>

482.20 482.42 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

482.2 - 482.42: could be a MAFt

<<Min: 482.2 - 482.42 1% Min: Pyrrhotite>>

<<Alt: 482.2 - 482.42 Moderate-Strong Calcite>> and PAT

482.42 483.86 RHYvl Lapilli tuff

<<Min: 483 - 483.86 0.1% Min: Pyrrhotite>>

483.86 484.61 PEL Equigranular biotite + calcite +/- quartz rock

483.86 - 484.61: bioitite metapelite.

<<Min: 483.86 - 484.61 3% Min: Pyrrhotite>>

<<Alt: 483.86 - 484.61 Strong Calcite>>

484.61 487.10 RHYv Rhyolite volcaniclastic

484.61 - 487.1: sparse lpl. gradational contact with increasing sed input below

<<Min: 484.61 - 487.1 1% Min: Pyrrhotite>>

<<Alt: 485 - 489 Weak-Moderate Calcite>>

487.10 489.00 RHYvl Lapilli tuff

487.1 - 489: also Bippo, PEL component increases down hole

<<Min: 487.9 - 488.5 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

489.00 494.80 PEL Equigranular biotite + calcite +/- quartz rock

489 - 494.8: Heterogeneous unit, BI rich portionswith narrow intervals with felsic lapilli, 498.24 - 489.42 = Felsic Dyke, also CL-CB- mafic tuff like interval 493.40 - 493.5

<<Min: 489.8 - 494.8 1% Min: Pyrrhotite>>

<<Alt: 489.5 - 494.8 Moderate Calcite>>

<<Struc: 493 - 494 dominant foliation>>

494.80 498.82 RHYvl Lapilli tuff

494.8 - 498.82: same as 487.1 - 489.0m

<<Min: 494.8 - 496.2 1% Min: Pyrite>>

<<Min: 494.8 - 496.2 0.5% Min: Pyrrhotite>>

<<Alt: 496.2 - 498.82 Weak Muscovite>>

<<Alt: 496.2 - 498.82 Weak Chlorite>>

<<Alt: 496.2 - 498.82 Weak Biotite>> light brown

498.82 504.24 RHYvx Quartz and/or feldspar crystal tuff

498.82 - 504.24: Light grey fine lapilli with 4% 2-3mm clear pale blue QZ crystals.

<<Min: 502.8 - 503 3% Min: Pyrite>>

<<Alt: 498.82 - 502.8 Weak Muscovite>>

<<Alt: 498.82 - 504.24 Trace Calcite>>

<<Vein: 501.95 - 502.05 100% Quartz 70 deg. >> qz cb vein

<<Vein: 502.87 - 503.12 100% Quartz 55 deg. >> qz cb vein

<<Struc: 503.15 - 504 dominant foliation>>

504.24 510.10 RHYvl Lapilli tuff

504.24 - 510.1: quite granular middle grey, but ooks similar in texture to VX above

<<Min: 505.95 - 506.1 2% Min: Pyrite>>

<<Min: 507 - 508 0.1% Min: Pyrite>>

<<Alt: 507 - 509 Weak Muscovite>>

510.10 512.20 MDSc Carbonaceous dominant mudstone

510.1 - 512.2: 511.06 - 511.25 buff RHYva

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 510.7 - 510.8 3% Min: Pyrite>> in ashy layers

<<Alt: 511.7 - 512.1 Moderate Calcite>>

<<Vein: 511.4 - 511.65 100% Quartz 50 deg. >> qz cb vein

<<Struc: 510.1 - 510.1 Contact>>

<<Struc: 511.8 - 512.1 Weak-Moderate Fault>> gouge

512.20 513.00 RHYva Coarse grained to ash tuff buff

<<Struc: 512.4 - 513.4 Weak Fault>> zone of broken core, minor gouge

513.00 517.22 RHYvx Quartz and/or feldspar crystal tuff

513 - 517.22: dark grey, 2% 1mm blue quartz crystals

<<Min: 516 - 532 0.1% Min: Pyrrhotite>>

517.22 517.45 RHYi Aphanitic Rhyolite (intrusion)

517.22 - 517.45: FELSIC DYKE

517.45 522.22 RHYvx Quartz and/or feldspar crystal tuff

517.45 - 522.22: same as 513 - 517.22

522.22 523.70 RHYi Aphanitic Rhyolite (intrusion)

522.22 - 523.7: FELSIC DYKE

523.70 525.75 RHYv Rhyolite volcaniclastic

523.7 - 525.75: handful of sparse QZ crystals 1-2mm

<<Min: 524.5 - 525.5 0.1% Min: Pyrite>>

<<Alt: 524 - 525 Weak Muscovite>>

<<Struc: 524.25 - 525 dominant foliation>>

525.75 525.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 525.75 - 526.26 Moderate Calcite>>

525.90 526.08 RHYi Aphanitic Rhyolite (intrusion)

525.9 - 526.08: FELSIC DYKE

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

526.08 526.42 PEL Equigranular biotite + calcite +/- quartz rock

526.42 527.43 RHYvl Lapilli tuff

527.43 527.60 RHYi Aphanitic Rhyolite (intrusion)

527.43 - 527.6: FELSIC DYKE

527.60 528.12 RHYvl Lapilli tuff

528.12 528.32 RHYi Aphanitic Rhyolite (intrusion)

528.12 - 528.32: FELSIC DYKE

528.32 529.90 RHYvl Lapilli tuff

529.90 530.03 RHYi Aphanitic Rhyolite (intrusion)

529.9 - 530.03: FELSIC DYKE

530.03 531.09 RHYvl Lapilli tuff

531.09 531.26 RHYi Aphanitic Rhyolite (intrusion)

531.09 - 531.26: FELSIC DYKE

531.26 532.11 RHYvl Lapilli tuff

532.11 532.20 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 532.11 - 532.78 Weak-Moderate Calcite>>

532.20 532.32 RHYi Aphanitic Rhyolite (intrusion)

532.2 - 532.32: FELSIC DYKE

532.32 532.78 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 532.32 - 532.78 0.5% Min: Pyrrhotite>>

532.78 535.65 RHYvl Lapilli tuff

<<Min: 533 - 534 0.1% Min: Pyrite>>

<<Struc: 535 - 537 dominant foliation>>

535.65 536.04 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 535.65 - 536.05 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 535.65 - 538.42 Weak-Moderate Calcite>> 0 in Felsic dykes

536.04 536.28 RHYi Aphanitic Rhyolite (intrusion)

536.04 - 536.28: FELSIC DYKE

536.28 536.91 PEL Equigranular biotite + calcite +/- quartz rock

536.28 - 536.91: intervalcontainstwo narrow RHYi felsic dykes

536.91 537.22 RHYi Aphanitic Rhyolite (intrusion)

536.91 - 537.22: FELSIC DYKE

537.22 537.90 PEL Equigranular biotite + calcite +/- quartz rock

537.22 - 537.9: Cbppo

537.90 538.37 RHYi Aphanitic Rhyolite (intrusion)

537.9 - 538.37: FELSIC DYKE

538.37 538.46 PEL Equigranular biotite + calcite +/- quartz rock

538.46 539.46 RHYvl Lapilli tuff

<<Min: 538.46 - 539.46 0.1% Min: Pyrrhotite>>

539.46 539.60 RHYi Aphanitic Rhyolite (intrusion)

539.46 - 539.6: FELSIC DYKE

539.60 540.07 PEL Equigranular biotite + calcite +/- quartz rock

539.6 - 540.07: biotite groundmass with cloudy white quartz lapilli 20%

540.07 540.59 RHYi Aphanitic Rhyolite (intrusion)

540.07 - 540.59: FELSIC DYKE; 3 dykes with RHYvl Bippo between

540.59 541.56 RHYvl Lapilli tuff

<<Struc: 541 - 543 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

541.56 541.78 RHYi Aphanitic Rhyolite (intrusion)

541.56 - 541.78: FELSIC DYKE

541.78 543.69 RHYvl Lapilli tuff

<<Min: 541.78 - 543.69 0.1% Min: Pyrrhotite>>

543.69 544.26 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 543.69 - 544.26 Moderate Calcite>> and PAT

<<Struc: 543.69 - 543.69 Contact>>

544.26 544.51 RHYi Aphanitic Rhyolite (intrusion)

544.26 - 544.51: FELSIC DYKE

<<Min: 544.26 - 544.51 3% Min: Galena>> agr in vein centre line

<<Vein: 544.26 - 544.51 10% Quarzt-Biotite 15 deg. >> qz cb bi gl vein 2cm true thickness

544.51 544.65 PEL Equigranular biotite + calcite +/- quartz rock

544.51 - 544.65: gradational intercalated contact with RHYvl Bippo below. Indicates PEL is a sediment and RHYvl Bippo is a tuffaceous volcanic and not a porphyry

<<Min: 544.63 - 546.07 0.1% Min: Pyrrhotite>>

544.65 546.07 RHYvl Lapilli tuff

546.07 546.32 RHYi Aphanitic Rhyolite (intrusion)

546.07 - 546.32: FELSIC DYKE

<<Alt: 546.07 - 548 Weak Calcite>>

546.32 548.05 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 546.32 - 548 0.1% Min: Pyrrhotite>>

548.05 549.86 RHYvl Lapilli tuff

548.05 - 549.86: coarser grained BI, looks a little more intrusive in nature

549.86 550.79 PEL Equigranular biotite + calcite +/- quartz rock

549.86 - 550.79: RHYv input

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 549.86 - 551 Weak Calcite>>

<<Struc: 550 - 555 dominant foliation>>

550.79 551.54 RHYvl Lapilli tuff

550.79 - 551.54: Bipo in RHYvl, mixed unit

<<Min: 551 - 554 0.1% Min: Pyrrhotite>>

551.54 551.66 RHYi Aphanitic Rhyolite (intrusion)

551.54 - 551.66: FELSIC DYKE

551.66 552.87 RHYvl Lapilli tuff

551.66 - 552.87: Bipo in RHYvl, mixed unit

552.87 553.04 RHYi Aphanitic Rhyolite (intrusion)

552.87 - 553.04: FELSIC DYKE

553.04 554.82 PEL Equigranular biotite + calcite +/- quartz rock

553.04 - 554.82: and BI-r

554.82 555.59 RHYi Aphanitic Rhyolite (intrusion)

554.82 - 555.59: FELSIC DYKE?

<<Struc: 554.82 - 554.82 Contact>>

555.59 556.63 PEL Equigranular biotite + calcite +/- quartz rock

555.59 - 556.63: Felsic lapilli minor input and some ash

556.63 557.03 RHYvl Lapilli tuff

557.03 557.14 RHYi Aphanitic Rhyolite (intrusion)

557.03 - 557.14: FELSIC DYKE

557.14 562.00 RHYvl Lapilli tuff

<<Alt: 557.98 - 558.32 Weak-Moderate Muscovite>> BI destructive

<<Alt: 561.3 - 561.4 Weak-Moderate Muscovite>> BI destructive

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

562.00 562.21 RHYi Aphanitic Rhyolite (intrusion)

562 - 562.21: FELSIC DYKE

562.21 563.82 RHYvl Lapilli tuff

562.21 - 563.82: and Bippo

<<Min: 562.21 - 564.83 1% Min: Pyrrhotite>>

<<Alt: 562.21 - 564.83 Weak Muscovite>>

563.82 565.95 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 563.83 - 568.34 Moderate Calcite>>

<<Struc: 565 - 568 dominant foliation>>

565.95 566.07 RHYi Aphanitic Rhyolite (intrusion)

565.95 - 566.07: FELSIC DYKE

566.07 566.58 PEL Equigranular biotite + calcite +/- quartz rock

566.58 566.67 RHYif feldspar and quartz porphyry intrusions

566.58 - 566.67: FELSIC DYKE; feldspars 5%, 3mm

566.67 568.34 PEL Equigranular biotite + calcite +/- quartz rock

566.67 - 568.34: and Cbppo

568.34 568.49 RHYi Aphanitic Rhyolite (intrusion)

568.34 - 568.49: FELSIC DYKE

568.49 569.85 PEL Equigranular biotite + calcite +/- quartz rock

568.49 - 569.85: bleach alteration front starting at 569.12 relate to fault and felsic dyke at 570.35 - 570.68m

<<Alt: 568.49 - 576.63 Moderate-Strong Calcite>>

<<Alt: 569.12 - 571.5 Weak-Moderate Muscovite>> BI destruction and bleach of PEL around fault and felsic dyke

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

569.85 570.07 RHYi Aphanitic Rhyolite (intrusion)

569.85 - 570.07: FELSIC DYKE

570.07 570.58 PEL Equigranular biotite + calcite +/- quartz rock

570.07 - 570.58: bleached as above BI destruction

<<Struc: 570.38 - 570.58 Moderate Fault>>

570.58 570.68 RHYi Aphanitic Rhyolite (intrusion)

570.58 - 570.68: FELSIC DYKE

570.68 576.63 PEL Equigranular biotite + calcite +/- quartz rock

570.68 - 576.63: bleached BI destructionzoneendsat 571.50m

<<Vein: 573.9 - 574 100% Calcium carbonate/Carbonate 80 deg. >> cb qz vein

<<Vein: 574.83 - 574.9 100% Calcium carbonate/Carbonate 80 deg. >> cb qz vein

576.63 577.00 RHYi Aphanitic Rhyolite (intrusion)

576.63 - 577: FELSIC DYKE

577.00 580.53 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 577 - 582.84 0.5% Min: Pyrrhotite>>

<<Alt: 579 - 582.84 Weak-Moderate Calcite>>

<<Struc: 577.5 - 579 dominant foliation>>

580.53 580.81 RHYvl Lapilli tuff

580.53 - 580.81: feldspar xtals at top contact 4%, 5mm

580.81 582.84 PEL Equigranular biotite + calcite +/- quartz rock

582.84 588.77 DIOf Feldspar augen diorite intrusion

582.84 - 588.77: Possible NLF unit?

<<Vein: 583.78 - 583.88 100% Calcium carbonate/Carbonate 75 deg. >> cb vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

588.77 588.87 RHYi **Aphanitic Rhyolite (intrusion)**

588.77 - 588.87: FELSIC DYKE

588.87 597.00 DIOf **Feldspar augen diorite intrusion**

588.87 - 597: Possible NLF unit?

<<Alt: 590.7 - 597 Weak Muscovite>> structurally controlled

<<Vein: 593 - 593.3 10% Tourmaline 30 deg. >> tml veinlet low angle

<<Struc: 589 - 594 dominant foliation>>

End of Hole @ 597

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-373

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/25/2016
UTM Easting	414908.291	Core Size:	HQ3	Azimuth:	290.3	Date Logging Complete:	6/29/2016
UTM Northing:	6815031.826	Casing Pulled?:	Yes	Dip:	-60.1	Drill Company:	Hytech
UTM Elev. (m):	1385.435	Casing Depth (m):	18.8	Length (m):	170.3	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/23/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/26/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

K16-373 is designed to provide detailed geotechnical information of the East fault structure and north wall stability as well as the footwall conditions.
The expected stratigraphy consisting of MAFi, Rhyva and RHYi was interesected.
The East Fault was first encountered at 115.68m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60.1	288.9	1.4	290.3	TN14	Dillon Hume	6/23/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
30.8	-60.2	270.5	22.1	292.6	ReflexEZS	Hytech	6/24/2016	5747	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
78.8	-60.4	269.7	22.1	291.8	ReflexEZS	Hytech	6/24/2016	5750	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
102.8	-61	268.9	22.1	291	ReflexEZS	Hytech	6/24/2016	5728	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
126.8	-61	269.7	22.1	291.8	ReflexEZS	Hytech	6/25/2016	5721	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
150.8	-60.8	270.2	22.1	292.3	ReflexEZS	Hytech	6/25/2016	5721	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170.3	-60.6	270.7	22.1	292.8	ReflexEZS	Hytech	6/26/2016	5719	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**18.80**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

18.80 48.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green FMG

18.8 - 48.2: Strongly foliated calcareous fine to medium grained mafic cut by several zones of fault gouge and two significant QZ+CA veins. Strongly calcareous up hole with patchy pale green calcareous domains, white granular calcite rhombs to 5mm and thin calcite veinlets. Calcareous alteration gives way down hole to stronger biotite and muscovite alteration with biotite defining foliation and muscovite occuring as patchy pale green to buff coloured alteration in the groundmass. Both biotite and muscovite bleaching increase in intensity towards underlying contact with OJ.

<<Alt: 18.8 - 28.4 Moderate Calcite>> Patchy pale green domains react in the groundmass, granular rhombs to 5mm thin chaotic veinlets along fractures

<<Alt: 28.4 - 46.2 Weak Calcite>>

<<Alt: 35.4 - 38.9 Weak Biotite>> appears to define a foliation due to previously foliated mafic domains. 2-3 mm laths oriented randomly in up to 1 cm aggregates.

<<Alt: 37.8 - 47.3 Weak Muscovite>> patchy "bleaching of the groundmass to pale yellow

<<Alt: 38.9 - 46.2 Moderate-Strong Biotite>> Similar texture as above increasing in intensity downhole toward contact with OJ.

<<Alt: 46.2 - 48.2 Moderate Calcite>>

<<Alt: 47.3 - 48.8 Moderate-Strong Muscovite>> pervasive through groundmass of mafic

<<Vein: 21.1 - 21.8 Calcite>>

<<Vein: 31.3 - 32.2 Quartz-Carbonate>>

<<Struc: 21.1 - 24.8 Moderate-Strong Fault>> Geotech Hole, more detailed information can be found in the geotech lof

<<Struc: 34.2 - 35.3 Weak-Moderate Fault>>

48.20 53.45 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock grey-green VFG

48.2 - 53.45: Pale green grey chalky well foliated with increasing sulphides toward lower contact with the Mafic. Gradation of muscovite alteration through groundmass of the mafic to intensely altered OJ.

<<Min: 48.2 - 50.3 1% Min: Pyrite>>

<<Min: 50.3 - 52 3% Min: Pyrite>>

<<Min: 52 - 52.4 5% Min: Pyrite>>

<<Min: 52.4 - 52.6 5% Min: Sphalerite>>

<<Min: 52.4 - 52.6 20% Min: Pyrite>> 20 cm band of fine to medium grained equigranular semi-massive sulphide

<<Min: 52.4 - 52.6 2% Min: Pyrrhotite>>

<<Min: 52.4 - 52.6 1% Min: Galena>>

<<Min: 52.4 - 52.6 1% Min: Chalcopyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 52.6 - 53.1 3% Min: Pyrrhotite>> Contaned in calcareous domains 1-10mm wide within intense grey green alteration

<<Alt: 48.2 - 69.5 Trace Calcite>>

<<Alt: 48.8 - 53.4 Intense Muscovite>>

<<Alt: 53.4 - 74.6 Weak Biotite>>

53.45 78.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green-brown FMG

53.45 - 78.1: Fine to medium grained MAFi, biotite alteration increases downhole, with patchy MU and CA alteratio throughout. Locally CC domains contain PO clots.

<<Alt: 69.5 - 71.8 Weak-Moderate Calcite>> domainal CA-CB alteration imparts pseudo granular texture

<<Alt: 71.8 - 78.1 Weak Muscovite>>

<<Alt: 74.6 - 78.1 Moderate Biotite>>

78.10 81.80 RHYi Aphanitic Rhyolite (intrusion) grey pink

78.1 - 81.8: Mottled pink and green, aphanitic siliceous rock with abundant foliation parallel pyrite and phyrrotite veins to 5 mm wide. Contains fine grained disseminated ahedral pyrite

<<Min: 78.1 - 81.8 3% Min: Pyrite>>

<<Min: 78.1 - 81.8 1% Min: Pyrrhotite>> with PY in thin folia parallel QZ-CA veins

<<Alt: 78.1 - 83.6 Weak Muscovite>>

81.80 86.10 RHYva Coarse grained to ash tuff grey-green FG

<<Min: 81.8 - 107.5 1% Min: Pyrite>>

<<Alt: 83.6 - 103.7 Moderate Muscovite>>

86.10 103.90 RHYi Aphanitic Rhyolite (intrusion)

<<Alt: 103.7 - 107.5 Weak Muscovite>>

103.90 109.50 RHYva Coarse grained to ash tuff

<<Min: 107.5 - 108.1 3% Min: Pyrite>>

<<Min: 108.1 - 170.3 0.1% Min: Pyrite>> Trace pyrite through fault zone occuring as fine grained disseminated or clots to 1 cm. they do not look like MXSX

<<Alt: 107.5 - 108.5 Weak Chlorite>>

109.50 114.10 RHYi Aphanitic Rhyolite (intrusion)

<<Alt: 111.1 - 170.3 Moderate-Strong Muscovite>>

114.10 115.68 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Struc: 114.1 - 170.3 Strong Fault>>

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-373

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
115.68	**123.80**	**FLZ** **Fault Zone**									
123.80	**126.80**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
126.80	**138.80**	**FLZ** **Fault Zone**									
138.80	**142.90**	**RHYvx** **Quartz and/or feldspar crystal tuff**									
142.90	**170.30**	**FLZ** **Fault Zone**									

End of Hole @ 170.3

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-374

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	David Nuttal
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/1/2016
UTM Easting	415456.033	Core Size:	HQ3	Azimuth:	244.5	Date Logging Complete:	7/9/2016
UTM Northing:	6815005.345	Casing Pulled?:	Yes	Dip:	-59.9	Drill Company:	Hytech
UTM Elev. (m):	1512.696	Casing Depth (m):	8.75	Length (m):	801	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/24/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/6/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
						Parent Hole:	

Comments:

The purpose of hole K16-374 was for exploration of the Sebesi target south of Krakatoa. Total hole depth is 801m.
Neither strong alteration or massive sulphide was intersected in this hole.
A massive carbonate vein with 15-20% PO and traces of SP was found between 578.53-581.77 m. Alteration proximal to this vein is trace to weak muscovite and/or chlorite.
A pelite unit from 591.23-59.05 m is moderately to strongly chlorite altered and contains sub-rounded quartz grains, as well as biotite rimmed euhedral (square-shaped) possible cordierite porphyroblasts replaced by carbonate.
The drill hole collared into the Wind Lake formation at 8.7 m depth, which consists of intercalated calcareous mafic tuffs and mudstone down to 51 m core depth. The contact between the Wind Lake formation and the KZK formation is marked by a fault. The KZK formation consists of felsic volcanics stretching from 51m to EOH at 800m depth. Felsic volcanic rocks consist mostly of unaltered to weakly altered (muscovite and or chlorite) ash and or lapilli tuff with lesser abundances of coherent rhyolite, mixed ash and pelite.
Sets of narrow rhyolite dikes (RHYi) occur between 163-187 m, 290-324 m, 365-375 m and 750-800 m, and are each associated with silicification, weak to moderate muscovite alteration (intensity 2-4) and pyrite (up to 5-15% in short intervals usually less than 20 cm).
Weak to moderate chlorite alteration is present from 590m to 801m and is stronger in intervals proximal to RHYi dikes. Trace amounts of CP, SP, Py and PO commonly occur within finer-grained chlorite-altered units, which appear to have been subjected to a higher intensity of chlorite alteration.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-59.9	243.1	1.4	244.5	TN14	Hytech	6/24/2016		☑	
27	-61	223.1	22.1	245.2	ReflexEZS	Hytech	6/23/2016	5873	☑	No station depth recorded on paper record. 25m is assumed depth.
51	-61.3	222.8	22.1	244.9	ReflexEZS	Hytech	6/24/2016	5768	☑	
75	-62.2	220.2	22.1	242.3	ReflexEZS	Hytech	6/24/2016	5780	☑	
99	-62.7	221.9	22.1	244	ReflexEZS	Hytech	6/25/2016	5776	☑	
123	-63	221.6	22.1	243.7	ReflexEZS	Hytech	6/25/2016	5796	☑	
147	-63.4	221.3	22.1	243.4	ReflexEZS	Hytech	6/25/2016	5775	☑	
171	-63.9	221.3	22.1	243.4	ReflexEZS	Hytech	6/25/2016	5771	☑	
195	-63.9	221.3	22.1	243.4	ReflexEZS	Hytech	6/26/2016	5768	☑	No depth recorded on paper record. Assumed depth ~195m
219	-64.3	220.6	22.1	242.7	ReflexEZS	Hytech	6/26/2016	5777	☑	
243	-64.6	221.6	22.1	243.7	ReflexEZS	Hytech	6/26/2016	5782	☑	
267	-64.6	221	22.1	243.1	ReflexEZS	Hytech	6/26/2016	5756	☑	
291	-64.7	221.4	22.1	243.5	ReflexEZS	Hytech	6/26/2016	5783	☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-374

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
300	-64.7	221.3	22.1	243.4	ReflexEZS	Hytech	6/27/2016	5773	☑	
339	-64.8	220.4	22.1	242.5	ReflexEZS	Hytech	6/27/2016	5771	☑	
363	-65.3	218.5	22.1	240.6	ReflexEZS	Hytech	6/27/2016	5763	☑	
387	-65.2	220.4	22.1	242.5	ReflexEZS	Hytech	6/28/2016	5759	☑	No depth recorded on paper record. Assumed depth
411	-65.6	218.6	22.1	240.7	ReflexEZS	Hytech	6/28/2016	5774	☑	
435	-65.8	218	22.1	240.1	ReflexEZS	Hytech	6/28/2016	5774	☑	
459	-65.8	218.7	22.1	240.8	ReflexEZS	Hytech	6/28/2016	5771	☑	
483	-65.9	218	22.1	240.1	ReflexEZS	Hytech	6/29/2016	5759	☑	
507	-66	217.5	22.1	239.6	ReflexEZS	Hytech	6/29/2016	5766	☑	
531	-66.2	216.2	22.1	238.3	ReflexEZS	Hytech	6/30/2016	5766	☑	
555	-66.5	215.7	22.1	237.8	ReflexEZS	Hytech	6/30/2016	5788	☑	
579	-65.5	216.2	22.1	238.3	ReflexEZS	Hytech	6/30/2016	5789	☑	
603	-66.5	214.3	22.1	236.4	ReflexEZS	Hytech	6/1/2016	5794	☑	
627	-66.7	219	22.1	241.1	ReflexEZS	Hytech	7/2/2016	6058	☑	
651	-66.7	216.3	22.1	238.4	ReflexEZS	Hytech	6/2/2016	5759	☑	
675	-66.8	213.8	22.1	235.9	ReflexEZS	Hytech	7/3/2016	5774	☑	
699	-67.1	210.6	22.1	232.7	ReflexEZS	Hytech	7/4/2016	5865	☑	
723	-67.1	212.9	22.1	235	ReflexEZS	Hytech	7/4/2016	5761	☑	
771	-65.6	333.8	22.1	355.9	ReflexEZS	Hytech	7/5/2016		☐	Sheet indicated there was a mag error
774	-67	211.7	22.1	233.8	ReflexEZS	Hytech	7/6/2016	5744	☑	
801	-67	211.3	22.1	233.4	ReflexEZS	Hytech	7/6/2016	5732	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 8.75 OVBN Overburden

0 - 8.75: Casing depth 8.75m

<<Min: 8.54 - 65.25 0.5% Min: Pyrrhotite>>

8.75 13.90 MAFt Mafic Volcaniclastics

8.75 - 13.9: Fine grained dull/pale green muscovite/biotite bearing, calcareous, mafic volcaniclastic.

<<Min: 8.75 - 136 0.1% Min: Pyrite>>

<<Alt: 8.75 - 50.9 Moderate Calcite>>

<<Struc: 13.3 - 16.16 Weak Fault>> Zone of brittle failure. Rock is rubbly through interval, minor gouge present.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

13.90 17.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

13.9 - 17.2: Fissile/rubbly, medium grey, well foliated, calcareous mud/siltstone.

<<Vein: 15 - 15.3 30% Quartz-Carbonate>>

<<Struc: 17 - 17.11 Weak-Moderate Fault>>

17.20 18.70 MAFt Mafic Volcaniclastics

18.70 45.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

18.7 - 45: Interval pervasively exhibits rubble, gouge and brittle fractures. Expected fault damage zone in proximity.

<<Struc: 18.7 - 18.9 Weak-Moderate Fault>>

<<Struc: 21.52 - 21.72 Weak Fault>>

<<Struc: 25.3 - 25.68 Weak Fault>>

<<Struc: 26.7 - 26.8 Weak Fault>>

<<Struc: 27.25 - 47.3 Moderate Fault>> Large interval exhibiting moderate to locally strong fault intensity

45.00 46.86 MAFt Mafic Volcaniclastics

46.86 49.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Struc: 47.3 - 49.5 Strong Fault>> dominantly clay gouge.

49.20 49.89 MAFt Mafic Volcaniclastics

49.89 50.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Struc: 50.6 - 51.6 Moderate Fault>>

50.90 58.94 RHYvx Quartz and/or feldspar crystal tuff

50.9 - 58.94: Contact at top of interval is the start of KZK formation. Unit is grey, coarse to ash grained felsic volcaniclastic rock, bearing quartz eyes and sparsly quartz +/- feldspar sub-rounded crystals.

<<Alt: 50.9 - 90.83 Weak Calcite>>

58.94 59.36 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

58.94 - 59.36: Fe-carbonate porphyroblasts.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

59.36 65.25 RHYv Rhyolite volcaniclastic

59.36 - 65.25: Texturally complex and variable, appearing volcaniclastic and coherent. Interval is pervasively faulted and oxidized.

<<Struc: 61.7 - 64.5 Weak-Moderate Fault>>

65.25 67.49 MAFt Mafic Volcaniclastics

<<Min: 65.25 - 73.96 1% Min: Pyrrhotite>>

67.49 90.83 RHYvl Lapilli tuff

<<Min: 73.96 - 146.45 0.5% Min: Pyrrhotite>>

<<Vein: 73.83 - 74.72 10% Quartz>>

<<Vein: 75.65 - 77.44 5% Quartz>>

<<Vein: 90.48 - 96.27 Quartz>> 1-8cm wide veins, predominantly foliation parallel with weak to moderate alteration envelope

<<Struc: 69.94 - 71.2 Moderate-Strong Fault>> clay gouge and unsupported mixed gravel/pebble clasts.

<<Struc: 73.4 - 73.55 Weak-Moderate Fault>> Gouge and gravel

<<Struc: 74.73 - 75.05 Weak Fault>>

<<Struc: 76.1 - 76.11 Moderate dominant foliation>>

<<Struc: 79.7 - 79.92 Trace Fault>>

<<Struc: 81.5 - 90.83 Moderate Fault>>

90.83 92.53 RHYvl Lapilli tuff

90.83 - 92.53: Moderate faulting in felsic lpl tuff

<<Alt: 90.83 - 91.53 Weak-Moderate Calcite>>

<<Alt: 91.53 - 95.3 Moderate Calcite>>

<<Struc: 91.4 - 92.15 Moderate Fault>>

92.53 95.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

92.53 - 95.3: Cl-BI-CA-QZ schist. Possible pelite?

95.30 116.60 RHYvl Lapilli tuff

95.3 - 116.6: Mixed ash and lpl tuff

<<Alt: 95.3 - 116.6 Weak-Moderate Calcite>>

<<Struc: 106.7 - 106.95 Weak Fault>>

<<Struc: 107.2 - 108.1 Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

116.60 117.80 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

116.6 - 117.8: CL-CA-QZ-BI schist with AK porphyroblasts

<<Alt: 116.6 - 117.8 Moderate Calcite>>

<<Struc: 116.8 - 116.81 Weak-Moderate dominant foliation>>

117.80 143.07 RHYvl Lapilli tuff

117.8 - 143.07: Grey ash-supported calcareous lapilli tuff. Disseminated biotite (~5-7%) is present throughout the interval; suspected pelitic input?

<<Alt: 117.8 - 145.07 Weak-Moderate Calcite>>

<<Vein: 132.7 - 133.22 100% Quartz>>

<<Struc: 118.19 - 118.29 Weak Fault>>

<<Struc: 121.5 - 121.6 Weak-Moderate Fault>>

<<Struc: 122.62 - 122.86 Weak-Moderate Fault>>

<<Struc: 134.96 - 134.97 Moderate dominant foliation>>

<<Struc: 140.2 - 140.21 Moderate dominant foliation>>

143.07 146.45 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

143.07 - 146.45: green, biotite/chlorite, fine-grained mafic intrusive with narrow closely spaced calcite bands and disseminated 5-7% biotite.

<<Min: 145.07 - 146.45 0.5% Min: Pyrite>>

<<Alt: 145.07 - 146.45 Strong Calcite>> 15-20%

146.45 154.61 RHYvl Lapilli tuff

146.45 - 154.61: Calcareous, grey lapilli tuff with disseminated biotite ~5% through interval.

<<Min: 146.45 - 166.33 0.1% Min: Pyrrhotite>>

<<Alt: 146.45 - 164.04 Weak Calcite>>

154.61 154.92 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

154.61 - 154.92: green, biotite chlorite schist, thin calcite bands narrowly spaced. Contacts are gradational - pelite?

<<Min: 154.61 - 154.92 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

154.92 163.31 RHYvl Lapilli tuff

154.92 - 163.31: Biotite porphyroblasts ~5%, Carbonate 5-7% in thin bands or within lapilli.

163.31 164.04 RHYc Rhyolite coherant volcanics

163.31 - 164.04: white to cream colored with curdy to flow banded textures

164.04 166.33 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 164.04 - 166.33 Strong Calcite>>

<<Struc: 164.4 - 164.41 Weak-Moderate Foliation>> 2nd foliation

<<Struc: 164.4 - 164.41 Moderate dominant foliation>>

166.33 170.52 RHYi Aphanitic Rhyolite (intrusion)

166.33 - 170.52: Typical RHYi lithology. Locally exhibits curdy to flow-like textures usually common to RHYc.

<<Min: 166.33 - 170.52 1% Min: Pyrite>>

<<Alt: 166.33 - 170.52 Weak Calcite>>

<<Struc: 168.2 - 169.3 Weak Fault>> faulted zone containing gravel, sand and rock rubble.

170.52 171.91 PEL Equigranular biotite + calcite +/- quartz rock

170.52 - 171.91: Biotite content is highly concentrated locally.

<<Min: 170.52 - 174.4 0.5% Min: Pyrite>>

<<Min: 170.52 - 174.4 0.5% Min: Pyrrhotite>>

<<Alt: 170.52 - 171.91 Moderate-Strong Calcite>>

171.91 174.40 RHYv Rhyolite volcaniclastic

171.91 - 174.4: Siliceous

<<Alt: 171.91 - 187.3 Weak Calcite>>

174.40 187.30 RHYi Aphanitic Rhyolite (intrusion)

174.4 - 187.3: Typical RHYi lithology. Margins exhibit curdy to flow-like textures usually common to RHYc.

<<Min: 174.4 - 187.3 1% Min: Pyrite>>

<<Struc: 185.75 - 185.76 Moderate-Strong dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

187.30 188.09 PEL Equigranular biotite + calcite +/- quartz rock

187.3 - 188.09: disseminated fine-grained carbonate is pervasive

<<Min: 187.3 - 219.28 0.1% Min: Pyrite>>

<<Min: 187.3 - 257 0.5% Min: Pyrrhotite>>

<<Min: 187.4 - 254 0.5% Min: Pyrrhotite>>

<<Alt: 187.3 - 188.09 Strong Calcite>>

<<Struc: 188 - 188.12 Weak-Moderate Fault>> clay gouge.

188.09 199.00 RHYvl Lapilli tuff

188.09 - 199: Ash supported grey, calcareous (5-7%) lapilli tuff with 2-3% disseminated biotite through interval.

<<Alt: 188.09 - 217.04 Weak-Moderate Calcite>>

<<Struc: 193.45 - 193.46 Moderate-Strong dominant foliation>>

199.00 199.50 PEL Equigranular biotite + calcite +/- quartz rock

199.50 202.65 RHYva Coarse grained to ash tuff

199.5 - 202.65: Muscovite sericite alteration is moderate. Interval contains abundance of 0.5cm-3cm wide foliation parallel quartz veins spaced 1cm-10cm.

<<Vein: 199.5 - 207.15 10% Quartz>> vein zone cuts is present through PEL and RHYv units. In PEL units the veins are occasionally ptygmatic/wormy. In RHYv the veins are lined by biotite.

202.65 203.42 PEL Equigranular biotite + calcite +/- quartz rock

203.42 204.65 RHYvl Lapilli tuff

204.65 209.30 PEL Equigranular biotite + calcite +/- quartz rock

204.65 - 209.3: Biotite/carbonate rich with disseminated pyrite.

<<Struc: 208.7 - 208.71 Weak dominant foliation>>

209.30 217.04 RHYvl Lapilli tuff

217.04 219.28 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 217.04 - 225.76 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

219.28 221.94 RHYvl Lapilli tuff

219.28 - 221.94: felsic ash to pelitic sediment supported lapilli tuff. Rock is dark grey due to biotite content.

<<Min: 219.28 - 225.76 2% Min: Pyrite>>

221.94 225.76 PEL Equigranular biotite + calcite +/- quartz rock

221.94 - 225.76: Fine grained mixed sediment rock. Suspected pelitic sediments and volcanic ash. Light cream to brown color. Contains ptygmatic/wormy quartz carbonate veins. Mineralogy changes are gradational within the rock.

<<Vein: 225.18 - 225.4 90% Quartz>>

225.76 246.12 RHYvl Lapilli tuff

225.76 - 246.12: disseminated biotite is less present than other RHYvl units higher up in the hole (~1-2%).

<<Min: 225.76 - 254 0.1% Min: Pyrite>>

<<Alt: 225.76 - 254 Weak Calcite>>

<<Vein: 244.28 - 252.52 5% Quartz>>

<<Struc: 225.76 - 226.2 Moderate Fault>>

<<Struc: 227.1 - 227.2 Weak Fault>>

<<Struc: 238.9 - 239.3 Moderate Fault>>

<<Struc: 242.5 - 242.51 Weak-Moderate dominant foliation>>

246.12 248.62 RHYva Coarse grained to ash tuff

246.12 - 248.62: Mixed grain size, felsic volcaniclastic unit, minor pelitic sediment input occurs locally.

<<Struc: 247.83 - 248 Weak-Moderate Fault>>

248.62 286.70 RHYvl Lapilli tuff

248.62 - 286.7: Light grey, disseminated biotite ~0.5-1%.

<<Min: 254 - 261 1% Min: Pyrite>>

<<Min: 257 - 260 2% Min: Pyrrhotite>>

<<Min: 260 - 304 0.5% Min: Pyrrhotite>>

<<Min: 261 - 267 2% Min: Pyrite>>

<<Min: 267 - 276 0.5% Min: Pyrite>>

<<Min: 276 - 286.7 0.1% Min: Pyrite>>

<<Alt: 254 - 299 Weak-Moderate Calcite>>

<<Vein: 259.27 - 259.38 100% Quartz>>

<<Struc: 253.4 - 253.75 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 260.05 - 260.06 Moderate dominant foliation>>

<<Struc: 266.72 - 266.73 Moderate dominant foliation>>

<<Struc: 274.09 - 274.29 Trace Fault>> interval contains 2 narrow 1-2cm wide clay gouge filled faults spaced 10cm apart.

<<Struc: 280.98 - 291.05 Weak Fault>>

<<Struc: 285.27 - 286.5 Weak Fault>> faulted zone. 1-4cm gouge filled intervals spaced 3-15cm apart.

286.70 288.41 RHYc Rhyolite coherant volcanics

286.7 - 288.41: Noticable increase in pyrite. Occurs as concentrated foliation parallel bands.

<<Min: 286.7 - 320.45 3% Min: Pyrite>>

<<Struc: 286.7 - 286.71 Moderate-Strong Contact>>

288.41 290.40 RHYvl Lapilli tuff

<<Struc: 289.25 - 289.33 Weak-Moderate Fault>>

<<Struc: 289.5 - 289.51 Weak-Moderate dominant foliation>>

290.40 295.00 RHYi Aphanitic Rhyolite (intrusion)

295.00 304.29 RHYvl Lapilli tuff

295 - 304.29: Finely disseminated biotite ~3%

<<Min: 304 - 310 0.1% Min: Pyrrhotite>>

<<Alt: 299 - 312 Weak Calcite>>

<<Struc: 302.93 - 302.94 Moderate dominant foliation>>

304.29 305.37 RHYi Aphanitic Rhyolite (intrusion)

305.37 310.59 RHYvl Lapilli tuff

<<Alt: 305.37 - 313.54 Weak-Moderate Muscovite>>

<<Vein: 306.89 - 307.53 100% Quartz>>

<<Struc: 305.37 - 309.7 Weak Fault>> Fault zone. Interval contains many irregularly spaced fault gouge filled joints 0.5cm-3cm wide.

310.59 311.43 RHYi Aphanitic Rhyolite (intrusion)

311.43 313.54 RHYvl Lapilli tuff

<<Alt: 312 - 341.4 Weak-Moderate Calcite>>

<<Struc: 312.3 - 314.8 Weak Fault>>

313.54 323.82 RHYi Aphanitic Rhyolite (intrusion)

320.00	321.50	1.50	B00266304	0.006	-0.3	-0.01	-0.01	-0.01

313.54 - 323.82: Interval contains higher than background levels of pyrite 3-5%. Two lenses have highly concentrated levels of pyrite (up to 20%) between 320.5m to 321.2m.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 320.45 - 321.3 10% Min: Pyrite>> Interval contains two 10-12cm lenses of semi-massive disseminated pyrite.

<<Min: 321.3 - 365.41 1% Min: Pyrite>>

<<Vein: 314.1 - 314.5 100% Quartz>>

<<Vein: 314.5 - 322.9 3% Quartz>>

323.82 340.37 RHYvl Lapilli tuff

<<Alt: 323.82 - 339.8 Weak Muscovite>>

<<Vein: 339 - 339.12 100% Quartz>>

<<Struc: 323.9 - 323.9 Weak-Moderate dominant foliation>>

<<Struc: 334.3 - 335.2 Moderate Fault>>

<<Struc: 339.82 - 339.96 Weak Fault>>

340.37 341.47 RHYc Rhyolite coherant volcanics

<<Alt: 341.4 - 344.8 Moderate Calcite>>

341.47 344.80 SED undifferentiated Sediment

344.80 365.41 RHYvl Lapilli tuff

<<Alt: 344.8 - 365.41 Weak Muscovite>>

<<Alt: 344.8 - 407.33 Weak-Moderate Calcite>>

<<Vein: 359.32 - 360.58 90% Quartz>> Moderate to strong mu alteration along vein envelope

<<Struc: 346.48 - 346.61 Weak Fault>>

<<Struc: 350.6 - 350.71 Weak Fault>>

<<Struc: 352.94 - 352.97 Weak Fault>>

<<Struc: 354.85 - 354.86 Moderate dominant foliation>>

<<Struc: 364.55 - 364.56 Weak-Moderate dominant foliation>>

365.41 374.70 RHYi Aphanitic Rhyolite (intrusion)

365.41 - 374.7: Contains 0.5-1cm sub-rounded feldspar phenocrysts, partially replaced be Cb.

<<Min: 365.41 - 381.88 3% Min: Pyrite>>

<<Alt: 365.41 - 399 Weak Muscovite>>

<<Vein: 372.23 - 372.5 100% Quartz>>

<<Vein: 372.89 - 373.07 100% Quartz>>

374.70 376.46 RHYvl Lapilli tuff

374.7 - 376.46: siliceous

<<Struc: 376.27 - 376.28 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

376.46 381.88 RHYc Rhyolite coherant volcanics

376.46 - 381.88: Contains 0.5-1cm sub-rounded Qz/carbonate replaced phenocrysts. Difficult to distinguish volcaniclastic or coherent textures.

<<Min: 379.65 - 379.7 2% Min: Sphalerite>>

<<Vein: 381.61 - 381.67 100% Quartz>>

381.88 384.62 RHYvl Lapilli tuff

381.88 - 384.62: Lapilli consist of qz/cb (larger light colored) and or qz/py (smaller and dark colored).

<<Min: 381.88 - 405.47 0.1% Min: Pyrrhotite>>

<<Min: 381.88 - 407.33 1% Min: Pyrite>>

384.62 385.08 RHYc Rhyolite coherant volcanics

384.62 - 385.08: Diffuse contacts.

385.08 399.14 RHYvl Lapilli tuff

385.08 - 399.14: Unit appears to be mixed volcaniclastic/coherent textures. Lapilli clasts are consistent through interval. Rounded/strained Qz/Cb replaced xtls and QE's are sparse.

<<Struc: 388.43 - 388.52 Trace Fault>>

<<Struc: 392.41 - 392.54 Weak Fault>>

<<Struc: 395.33 - 396.14 Weak-Moderate Fault>>

399.14 399.40 RHYc Rhyolite coherant volcanics

399.40 403.65 RHYvl Lapilli tuff

399.4 - 403.65: Felsic tuff with dominant lpl texture and minor xtl tuff component. Also contains feldspar and qz/cb phenocrysts.

<<Struc: 402.65 - 402.71 Trace Fault>>

403.65 404.30 RHYva Coarse grained to ash tuff

404.30 405.47 RHYvl Lapilli tuff

405.47 407.33 RHYva Coarse grained to ash tuff

405.47 - 407.33: Sparsely contains Qz/Cb lpl, dominantly RHYva with minor disseminated biotite component that increases in abundance towards bottom of the unit.

<<Min: 405.47 - 407.33 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

407.33 409.95 PEL Equigranular biotite + calcite +/- quartz rock

407.33 - 409.95: Coarse grained, Bi/Cb/Qz/Py

<<Min: 407.33 - 409.95 0.1% Min: Pyrrhotite>>

<<Alt: 407.33 - 409.95 Moderate Calcite>>

409.95 415.35 RHYvl Lapilli tuff

409.95 - 415.35: Felsic tuff with dominant lpl texture and minor xtl tuff component. Also contains feldspar and qz/cb phenocrysts.

<<Min: 409.95 - 429.4 1% Min: Pyrite>>

<<Alt: 409.95 - 419.21 Weak-Moderate Calcite>>

<<Alt: 415 - 434 Weak Muscovite>>

<<Struc: 410.69 - 410.7 Moderate dominant foliation>>

415.35 419.21 RHYc Rhyolite coherant volcanics

415.35 - 419.21: Mixed coherent and volcaniclastic textures.

419.21 420.28 RHYva Coarse grained to ash tuff

419.21 - 420.28: Sparsely contains flatened small Qz/Cb lpl, dominantly RHYva with minor disseminated biotite component at top of the interval. Base of the interval is strongly silicified.

<<Alt: 419.21 - 420.28 Moderate Calcite>>

420.28 420.81 RHYi Aphanitic Rhyolite (intrusion)

420.28 - 420.81: Possibly continuation of intensly silicified ash from unit above.

<<Alt: 420.28 - 434.35 Weak Calcite>>

<<Vein: 420.28 - 424.6 7% Quartz>>

420.81 424.25 RHYc Rhyolite coherant volcanics

<<Struc: 420.81 - 420.82 Trace Fault>>

424.25 426.00 RHYv Rhyolite volcaniclastic

424.25 - 426: Felsic volcaniclastic with sparse lapilli present.

426.00 431.13 RHYvl Lapilli tuff

426 - 431.13: Mixed volcaniclastic unit. Lpl/ash

<<Min: 429.4 - 431.98 0.1% Min: Sphalerite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 429.4 - 431.98 3% Min: Pyrite>>

<<Min: 429.4 - 431.98 2% Min: Pyrrhotite>>

<<Min: 429.4 - 431.98 0.1% Min: Galena>>

<<Vein: 427.97 - 443.15 5% Quartz>>

431.13 431.98 RHYc Rhyolite coherant volcanics

431.98 434.35 RHYvl Lapilli tuff

<<Min: 431.98 - 462.58 1% Min: Pyrite>>

<<Struc: 433.44 - 433.5 Weak Fault>>

434.35 437.23 RHYva Coarse grained to ash tuff

434.35 - 437.23: Sparsely contains flatened small Qz/Cb lpl, dominantly RHYva with minor pel (disseminated fine-medium grained biotite and fine grained MS/Mu) component. Also present is disseminated fine grained orange-pink Fe-crb.

<<Min: 434.35 - 454.44 0.5% Min: Pyrrhotite>>

<<Alt: 434.35 - 437.23 Moderate Calcite>>

437.23 439.75 RHYvl Lapilli tuff

<<Alt: 437.35 - 449 Weak Calcite>>

<<Struc: 439.27 - 439.28 Moderate dominant foliation>>

439.75 440.21 RHYva Coarse grained to ash tuff

439.75 - 440.21: Minor sed component.

440.21 449.00 RHYvl Lapilli tuff

<<Struc: 441.81 - 442.72 Moderate Fault>> faulted interval, contains mixture of clay, sand, gravel gouge.

<<Struc: 446 - 446.03 Trace Fault>>

<<Struc: 447.96 - 449 Moderate Fault>> faulted zone with rock breccia, clay and sand gouge. Coherent rock in interval is rubbly and friable

449.00 454.44 RHYv Rhyolite volcaniclastic

449 - 454.44: Package of volvaniclastics (ash - lpl) with mixed pel/sed. Top 40cm of interval has strong pel characteristics (coarse Bi/Qz/Cb).

<<Alt: 449 - 465.88 Weak-Moderate Calcite>>

454.44 461.10 RHYc Rhyolite coherant volcanics

454.44 - 461.1: Traces of chlorite along fractures and veins.

<<Struc: 454.44 - 455.44 Weak-Moderate Fault>> faulted zone, contains rock breccia, gouge, and coherent rock.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

461.10 462.58 RHYvl Lapilli tuff

461.1 - 462.58: Ash is a prominent component of composition.

<<Struc: 461.46 - 461.47 Moderate-Strong dominant foliation>>

462.58 465.88 RHYva Coarse grained to ash tuff

462.58 - 465.88: Fine grained felsic volcaniclastic, with minor intervals of fine-medium grained biotite and Ms (gradational influence)

<<Min: 462.58 - 472 0.5% Min: Pyrite>>

<<Vein: 462.58 - 465.88 3% Quartz>>

465.88 468.10 PEL Equigranular biotite + calcite +/- quartz rock

465.88 - 468.1: Strong pelitic component (coarse grained Bi/Cb) with minor fine-medium grained felsic volcaniclastic ash. Base of interval has stronger pel characteristics.

<<Alt: 465.88 - 468.1 Strong Calcite>>

<<Vein: 466.19 - 468.1 10% Quartz>>

468.10 475.28 RHYva Coarse grained to ash tuff

468.1 - 475.28: Siliceous rock unit, exhibits short strongly siliceous intervals with coherent textures. Pyrite is concentrated with carbonate minerals in deformed wisps and bands that cross the core.

<<Min: 468.1 - 475 0.5% Min: Pyrrhotite>>

<<Min: 472 - 475.28 3% Min: Pyrite>> Concentrated in deformed lenses and bands that cut the core. Associated with locally high concentrations of Cb/Qz.

<<Min: 475 - 500.78 1% Min: Pyrrhotite>>

<<Alt: 468.1 - 480.5 Weak Muscovite>> Intensity increase proximal to large Qz veins and fault zones. Pyrite abundance is higher where alteration picks up.

<<Alt: 468.1 - 480.5 Weak Calcite>>

<<Struc: 468.65 - 468.67 Weak Fault>>

<<Struc: 470.85 - 471.2 Weak Fault>> Zone consisting of several 1-2cm wide faults.

475.28 478.80 RHYc Rhyolite coherent volcanics

475.28 - 478.8: Unit contains sparse feldspar phenocrysts replaced by carbonate minerals

<<Min: 475.28 - 497.19 1% Min: Pyrite>>

<<Vein: 476.6 - 478 95% Quartz>> Py and Po

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

478.80 480.50 RHYvx Quartz and/or feldspar crystal tuff

478.8 - 480.5: trace pelitic component (Bi porphyroblasts)

<<Vein: 480.17 - 480.27 100% Quartz>>

<<Struc: 480.14 - 480.17 Weak Fault>>

480.50 486.08 PEL Equigranular biotite + calcite +/- quartz rock

480.5 - 486.08: Coarse grained Bi, Cb unit with thin ptygmatic/wormy Qz/Cb veins. Minor rhyolitic ash component. Contains discrete rounded (bluish) quartz domains that may be quartz eyes pulled from adjacent quartz eye bearing ash.

<<Alt: 480.5 - 486.08 Strong Calcite>>

<<Vein: 480.5 - 486.08 15% Quartz>>

486.08 487.34 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 486.08 - 497.19 Trace Calcite>>

487.34 490.70 RHYva Coarse grained to ash tuff

487.34 - 490.7: Pelitic component is intermittent. Interval is freckled by Bi porphyroblasts.

<<Vein: 487.85 - 487.99 80% Quartz>>

<<Struc: 487.34 - 487.35 Moderate-Strong dominant foliation>>

490.70 497.19 RHYc Rhyolite coherent volcanics

497.19 500.78 PEL Equigranular biotite + calcite +/- quartz rock

497.19 - 500.78: Minor rhyolite ash component.

<<Min: 497.19 - 503 0.1% Min: Pyrite>>

<<Alt: 497.19 - 500.78 Strong Calcite>>

<<Vein: 497.19 - 500.78 15% Quartz>>

500.78 527.01 RHYc Rhyolite coherent volcanics

<<Min: 500.78 - 537.42 0.1% Min: Pyrrhotite>>

<<Min: 503 - 554.9 3% Min: Pyrite>> Concentrated in deformed lenses and bands that cut the core. Associated with locally high concentrations of Cb/Qz.

<<Min: 519.5 - 520 0.1% Min: Sphalerite>> Associated with locally high concentration of disseminated pyrite/cb and muscovite.

<<Alt: 500.78 - 537.42 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 501 - 537.42 Weak Muscovite>> Intensity increase proximal to large Qz veins and fault zones. Pyrite abundance is higher where alteration picks up.

<<Vein: 505 - 505.1 100% Quartz>>

<<Vein: 505.76 - 505.94 100% Quartz>>

<<Vein: 524.1 - 524.25 100% Quartz>>

<<Struc: 508.2 - 508.4 Moderate Fault>>

<<Struc: 518.5 - 518.86 Moderate Fault>>

<<Struc: 521.58 - 521.59 Moderate dominant foliation>>

527.01 530.69 RHYcf Feldspar & feldspar quartz porphyry

530.69 537.42 RHYc Rhyolite coherent volcanics

530.69 - 537.42: Interval contains textures of volcaniclastic and coherent rock types. Pyrite mineralization is concentrated in large wisps and thin deformed foliation parallel quartz/carbonate bands that cross the core.

<<Vein: 531.5 - 531.6 100% Quartz>>

<<Vein: 533.25 - 533.53 100% Quartz>>

<<Struc: 533 - 533.25 Weak-Moderate Fault>>

537.42 539.15 MAFi Mafic Intrusions (primarily grey-green footwall mafic intrusion)

537.42 - 539.15: Green-grey color, Bi porphyroblasts, thin planar - foliation parallel qz/cb veining, finely disseminated calcite in groundmass, symmetrical fine grained margins. Visually similar to PEL units.

<<Min: 537.42 - 547.14 1% Min: Pyrrhotite>>

<<Alt: 537.42 - 539.15 Strong Calcite>>

<<Vein: 537.42 - 539.15 10% Calcium carbonate/Carbonate>>

539.15 542.94 RHYva Coarse grained to ash tuff

<<Alt: 539.15 - 542.94 Weak-Moderate Calcite>>

542.94 547.14 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

542.94 - 547.14: Green-grey color, Bi porphyroblasts, thin planar - foliation parallel qz/cb veining, finely disseminated calcite in groundmass, symmetrical fine grained margins. Visually similar to PEL units.

<<Alt: 542.94 - 547.14 Moderate Calcite>>

<<Vein: 544 - 544.4 100% Quartz>>

<<Vein: 544.4 - 547.14 10% Calcium carbonate/Carbonate>>

547.14 553.84 RHYvl Lapilli tuff

From (m)	To (m)	Rocktype & Description

<<Alt: 547.14 - 553.84 Weak-Moderate Calcite>>

<<Alt: 547.14 - 595.74 Weak Muscovite>> Intensity increase proximal to large Qz veins and fault zones. Pyrite abundance is higher where alteration picks up.

<<Vein: 549.27 - 549.6 80% Quartz>>

553.84 554.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 553.84 - 554.9 1% Min: Pyrrhotite>>

<<Alt: 553.84 - 554.9 Strong Calcite>>

<<Vein: 553.84 - 555 5% Calcium carbonate/Carbonate>>

554.90 574.57 RHYva Coarse grained to ash tuff

554.9 - 574.57: Sparsely contains crystal phenocrysts (Qz/Fsp/Cb).Unit has a fine dusting of disseminated pyrite as well as concentrated foliation parallel bands of Qz/Cb/Py that cut through entire core.

<<Min: 554.9 - 574.5 3% Min: Pyrite>> Disseminated pyrite throughout interval as well as high concentrations occuring locally in lenses and or foliation parallel bands that cross core

<<Min: 556 - 556.4 10% Min: Pyrrhotite>> Vein hosted

<<Min: 561.43 - 562.6 3% Min: Pyrrhotite>> vein hosted

<<Min: 568 - 577 5% Min: Pyrrhotite>>

<<Min: 574.5 - 578.53 1% Min: Pyrite>>

<<Alt: 554.9 - 574.57 Weak-Moderate Calcite>>

<<Vein: 561.43 - 562.6 60% Quartz>>

<<Vein: 570.55 - 570.98 100% Quartz>>

<<Struc: 559.5 - 559.91 Moderate dominant foliation>>

<<Struc: 564.47 - 564.57 Weak-Moderate Fault>>

574.57 575.72 RHYva Coarse grained to ash tuff

<<Alt: 574.57 - 578.53 Moderate-Strong Calcite>>

<<Vein: 574.57 - 577.23 5% Calcium carbonate/Carbonate>>

575.72 577.23 RHYc Rhyolite coherant volcanics

<<Struc: 575.95 - 575.96 Moderate dominant foliation>>

577.23 579.05 RHYv Rhyolite volcaniclastic grey

<<Min: 578.53 - 581.77 0.1% Min: Sphalerite>> Zone of heavily disseminated PO in fine-coarse grained calcareous matrix.

<<Min: 578.53 - 581.77 15% Min: Pyrrhotite>> Zone of heavily disseminated PO in fine-coarse grained calcareous matrix.

<<Alt: 578.53 - 581.75 Intense Calcite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
578.53	579.05	0.52	B00266301	-0.005	1.9	-0.01	0.13	0.1

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 578.53 - 581.75 90% Calcium carbonate/Carbonate>>									
579.05	**582.22**	**RHYc Rhyolite coherant volcanics**	579.05	580.55	1.50	B00266302	-0.005	0.3	-0.01	0.02	0.03
		579.05 - 582.22: Interval is cut by large 1m wide Cb/Qz veins bearing heavily disseminated sulphides (PO-SP-PY)									
		<<Min: 581.75 - 680 0.1% Min: Chalcopyrite>> % ranges from 0 to 0.1 in large package of weakly chlorite altered ash/pelite rocks. Cp is not seen in dark fine grained biotite-rich intervals.	580.55	581.77	1.22	B00266303	-0.005	0.7	-0.01	0.05	0.03
		<<Min: 581.77 - 680 0.1% Min: Pyrite>> % ranges between 0 to 0.5 across large interval. In more pelitic rocks pyrite is absent.									
		<<Min: 581.77 - 705.15 1% Min: Pyrrhotite>> % ranges between 1-2% through large interval of ash and pel.									
		<<Alt: 581.75 - 591.23 Weak-Moderate Calcite>>									
582.22	**582.33**	**RHYva Coarse grained to ash tuff**									
		582.22 - 582.33: Dark brown-black color, Bi-porphyroblasts, fine grained calcite/Fe-crb groundmass, sharp margins.									
582.33	**590.20**	**RHYc Rhyolite coherant volcanics**									
		<<Vein: 589.74 - 590.04 100% Quartz>>									
		<<Struc: 587.21 - 587.22 Moderate dominant foliation>>									
590.20	**591.23**	**RHYva Coarse grained to ash tuff**									
591.23	**593.05**	**PEL Equigranular biotite + calcite green +/- quartz rock**									
		591.23 - 593.05: Green, Crb/Bi/(possible cordierite), chlorite alteration that intensifies towards middle of interval, thin foliation parallel carbonate rich veins. Ground mass is composed of fine grained carbonate, biotite, chlorite, qz. Possibility of this being a sediment as there are sub-rounded 0.5 cm diameter blue-ish quartz domains sparsely and randomly situated within the ground mass. Also possible this could be a MAFi.									
		<<Alt: 591.23 - 593.05 Moderate Chlorite>>									
		<<Alt: 591.23 - 593.05 Moderate Cordierite>> suspected carbonate-altered cordierite; possible restricted alteration?									
		<<Alt: 591.23 - 593.05 Moderate Calcite>>									
593.05	**595.35**	**RHYva Coarse grained to ash tuff**									
		593.05 - 595.35: Trace chalcopyrite. Foliation is defined more dominantly by Bi than Mu, giving the rock a dark color. Trace chlorite in veins that cross cut this unit. Dominantly ash.									
		<<Alt: 593.05 - 613.66 Moderate Calcite>>									
595.35	**595.74**	**RHYc Rhyolite coherant volcanics**									
		595.35 - 595.74: Minor porphyritic textures. Biotite is concentrated in dominant foliation planes. Minor chlorite alteration.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

595.74 596.77 RHYva Coarse grained to ash tuff

595.74 - 596.77: Dark brown - black pelitic rock with minro ash component. Biotite rich, fine grained carbonate/biotite ground mass.

596.77 601.30 RHYva Coarse grained to ash tuff

596.77 - 601.3: Ash dominant pelite. Unit has trace CP, SP, PO

<<Alt: 596.77 - 724.17 Trace Chlorite>> concentrated in patches within ash units and lapilli

<<Vein: 599 - 600.22 50% Quarzt-Chlorite-Carbonate>>

<<Struc: 600.07 - 600.25 Moderate Fault>> Contains gravel, sand, gouge

601.30 601.82 RHYc Rhyolite coherant volcanics

601.82 610.62 RHYva Coarse grained to ash tuff

601.82 - 610.62: Felsic fine-grained ash/pel bearing trace sub-round to round silicious xtals/lapilli. Chlorite alteration is trace.

610.62 611.48 RHYc Rhyolite coherant volcanics

611.48 613.66 RHYva Coarse grained to ash tuff

613.66 617.08 RHYc Rhyolite coherant volcanics

613.66 - 617.08: Trace PEL

<<Min: 615.64 - 617.12 1% Min: Sphalerite>> Appears to be associated with locallized qz veins.

<<Min: 615.64 - 617.12 0.5% Min: Galena>> Appears to be associated with locallized qz veins.

<<Alt: 613.66 - 640.03 Weak-Moderate Calcite>> concentrated inmore pelitic units

<<Vein: 615.64 - 617.12 30% Quartz>> Galena and Sphalerite sulphides.

617.08 645.53 RHYva Coarse grained to ash tuff

617.08 - 645.53: Dominantly RHYva with minor components of lapilli and pelite. Chlorite alteration is patchy and weak through interval. Fine-medium grained biotite porphyroblasts are disseminated through interval and a consistent constituent of the ground mass.

<<Alt: 640.03 - 656.11 Moderate Calcite>> concentrated inmore pelitic units

<<Struc: 622.81 - 623.2 Moderate Fault>> sand and clay gouge.

645.53 646.03 RHYcf Feldspar & feldspar quartz porphyry

646.03 648.44 RHYva Coarse grained to ash tuff

<<Vein: 647.42 - 647.56 100% Quartz>>

648.44 656.11 RHYva Coarse grained to ash tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 650.76 - 650.8 100% Quartz-Carbonate>>

<<Vein: 652.73 - 652.78 100% Quarzt-Chlorite-Carbonate>>

<<Struc: 648.44 - 648.49 Weak Fault>>

<<Struc: 650.86 - 650.87 Weak-Moderate dominant foliation>>

656.11 664.21 RHYvl Lapilli tuff

656.11 - 664.21: Minor pel mixing; Bi-porphyroblasts, weak chlorite.

<<Alt: 656.11 - 669.43 Weak-Moderate Calcite>> concentrated inmore pelitic units

<<Struc: 656.8 - 656.81 Weak-Moderate dominant foliation>>

664.21 664.61 RHYva Coarse grained to ash tuff

664.21 - 664.61: Dark, biotite-rich, fine-grained, well foliated, no alteration at margins.

664.61 669.53 RHYvl Lapilli tuff

<<Alt: 669.43 - 681.51 Moderate Calcite>> concentrated inmore pelitic units

<<Vein: 667.92 - 669.21 40% Quarzt-Chlorite-Carbonate>> 2 massive veins 20cm and 40cm wide. Small veins of similar composition occur proximally within 50cm above and below.

669.53 671.26 RHYva Coarse grained to ash tuff

669.53 - 671.26: Foliation defined by dark biotite rich hairline thick bands.

671.26 674.15 RHYvl Lapilli tuff

674.15 675.39 RHYvx Quartz and/or feldspar crystal tuff

674.15 - 675.39: Crystals are sub-round to round and composed of various compositions of the following: Qz - Cb - Cl - Bi - Py.

675.39 675.64 RHYcw Curdy textured-flow banded (flows, subvolcanics)

675.64 677.35 RHYva Coarse grained to ash tuff

<<Vein: 676.11 - 676.44 100% Quartz>>

677.35 680.88 RHYvl Lapilli tuff

<<Vein: 678.33 - 678.44 100% Quartz>>

<<Struc: 680.75 - 680.76 Moderate dominant foliation>>

680.88 681.51 RHYva Coarse grained to ash tuff

681.51 705.08 RHYvl Lapilli tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 705 - 712 5% Min: Pyrite>>

<<Alt: 681.51 - 705 Weak-Moderate Calcite>>

<<Alt: 705 - 712.8 Weak Calcite>>

<<Vein: 684.17 - 687.1 20% Quartz>>

<<Vein: 696.49 - 696.65 100% Quartz>>

<<Vein: 704.5 - 704.8 10% Tourmaline>> Thin 1cm wide vein, cuts folitaion at a high angle ~80 degrees. Vein is filled with massive pyrite and zone around the vein is minerallized by foliation parallel tourmaline growing distally from the vein envelope.

<<Vein: 704.5 - 710.55 5% Quartz>>

705.08 707.26 RHYva Coarse grained to ash tuff

<<Min: 705.15 - 724 0.1% Min: Pyrrhotite>>

707.26 707.91 RHYcw Curdy textured-flow banded (flows, subvolcanics)

707.91 710.39 RHYva Coarse grained to ash tuff

710.39 712.66 RHYva Coarse grained to ash tuff

710.39 - 712.66: Muscovite/sericite - rich, biotite porphyroblasts and fine-grained biotite in groundmass.

712.66 724.17 RHYvl Lapilli tuff

712.66 - 724.17: Biotite porphyroblasts are pervasive through interval.

<<Min: 724 - 726.26 1% Min: Pyrite>>

<<Min: 724 - 726.26 1% Min: Pyrrhotite>>

<<Alt: 712.8 - 724.17 Trace Calcite>>

<<Vein: 721.07 - 721.18 100% Quarzt-Chlorite-Carbonate>>

<<Struc: 713.1 - 713.11 Moderate-Strong dominant foliation>>

<<Struc: 721 - 721.07 Weak-Moderate Fault>>

724.17 726.20 RHYva Coarse grained to ash tuff green VFG

724.17 - 726.2: Green, fine-grained, foliated, moderately chlorite altered, felsic ash bearing porphyroblastic magnetite (<1mm grain size), and Qz/Cb crystals (Cb is replacing siliceous material in crystals). Possible to have been cordierite?

<<Alt: 724.17 - 741 Weak-Moderate Chlorite>>

<<Alt: 724.17 - 782 Weak Calcite>>

726.20 744.37 RHYva Coarse grained to ash tuff grey-green

726.2 - 744.37: Trace magnetite grains and isolated blebs of CP.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 726.26 - 754.9 0.1% Min: Pyrite>>

<<Min: 726.26 - 754.9 0.1% Min: Pyrrhotite>>

<<Alt: 741 - 783 Trace Chlorite>>

<<Vein: 734.17 - 739.82 10% Quarzt-Chlorite-Carbonate>>

<<Struc: 727.73 - 727.8 Trace Fault>>

<<Struc: 731.9 - 731.91 Moderate dominant foliation>>

<<Struc: 739.53 - 739.62 Weak Fault>>

<<Struc: 743.64 - 743.67 Trace Fault>>

744.37 745.32 RHYvl Lapilli tuff

745.32 754.00 RHYva Coarse grained to ash tuff

<<Vein: 746.52 - 756.47 5% Quartz>>

<<Struc: 746.58 - 746.59 Strong dominant foliation>>

754.00 754.90 RHYi Aphanitic Rhyolite (intrusion)

<<Struc: 754.38 - 754.46 Weak Fault>>

754.90 758.00 MDSw Coherent rhyolite flow with carbonaceous content

754.9 - 758: Minor carbonaceous component.

<<Min: 754.9 - 778.33 0.5% Min: Pyrite>>

<<Min: 754.9 - 778.33 1% Min: Pyrrhotite>>

758.00 758.18 RHYi Aphanitic Rhyolite (intrusion)

758.18 762.67 MDSw Coherent rhyolite flow with carbonaceous content

758.18 - 762.67: Minor carbonaceous component.

<<Min: 762 - 778.33 0.1% Min: Sphalerite>>

<<Min: 762 - 778.33 0.1% Min: Chalcopyrite>>

<<Struc: 761.92 - 762 Weak Fault>>

762.67 767.88 MDSt Rhyolite tuff dominant mudstone

762.67 - 767.88: dominantly ash, minor mudstone component.

<<Vein: 765.25 - 772.34 5% Quartz>>

<<Struc: 766.04 - 766.07 Trace Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

767.88 772.28 RHYva Coarse grained to ash tuff

767.88 - 772.28: Dominantly ash, minor carbonaceous mudstone component.

<<Vein: 771.14 - 771.17 100% Calcium carbonate/Carbonate>> Proximally chorite altered, sulphides contained include CP, SP, PO

<<Struc: 767.88 - 768.14 Weak-Moderate Fault>>

<<Struc: 768 - 768.56 Moderate-Strong Fault>>

<<Struc: 768.86 - 768.94 Weak Fault>>

<<Struc: 769.12 - 769.29 Weak-Moderate Fault>>

<<Struc: 772.04 - 772.12 Weak Fault>>

772.28 773.43 RHYva Coarse grained to ash tuff

773.43 778.33 MDSt Rhyolite tuff dominant mudstone

<<Struc: 774 - 778 Weak Fault>> Faulted zone consisiting of fissile, graphitic mudstone rock. Faults are spaced 30cm-1m apart and range from 5 - 20cm. Faults are filled with clay to sand gouge.

778.33 784.55 RHYva Coarse grained to ash tuff

<<Min: 778.33 - 801 0.5% Min: Pyrrhotite>> Localized in mixed ash/mudstone units.

<<Alt: 782 - 790.3 Trace Calcite>>

<<Alt: 783 - 801 Weak Chlorite>>

<<Vein: 778.46 - 784.35 10% Quartz>>

784.55 786.00 RHYc Rhyolite coherant volcanics

786.00 791.47 RHYva Coarse grained to ash tuff

786 - 791.47: Siliceous fine-grained tuff, contains laminations of Bi making the rock fissile; suspected minor pelitic/mudstone component. Chlorite alteration is weak.

<<Min: 789 - 801 0.5% Min: Pyrite>> Localized in narrow (<1m) RHYi dikes.

<<Alt: 790.3 - 791.47 Moderate-Strong Calcite>>

<<Vein: 787.22 - 799.34 5% Quartz>>

<<Vein: 788.5 - 788.94 95% Quartz>>

<<Vein: 790.44 - 790.58 100% Quartz>>

791.47 793.30 RHYi Aphanitic Rhyolite (intrusion)

<<Alt: 791.47 - 801 Weak Calcite>>

<<Struc: 792.8 - 793.2 Vein>> Thin Tourmaline vein. Azimuth is approximate due to poor orientation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

793.30 795.59 RHYva Coarse grained to ash tuff

793.3 - 795.59: Siliceous fine-grained tuff, contains laminations of Bi making the rock fissile; suspected minor pelitic/mudstone component. Chlorite alteration is weak.

<<Vein: 793.3 - 793.41 100% Quartz>>

<<Struc: 794.6 - 794.61 Weak dominant foliation>>

795.59 795.84 RHYi Aphanitic Rhyolite (intrusion)

795.84 800.44 RHYva Coarse grained to ash tuff

795.84 - 800.44: Siliceous fine-grained tuff, contains laminations of Bi making the rock fissile; suspected minor pelitic/mudstone component. Chlorite alteration is weak.

800.44 800.64 RHYi Aphanitic Rhyolite (intrusion)

800.64 801.00 RHYva Coarse grained to ash tuff

End of Hole @ 801

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-375

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/28/2016
UTM Easting	414503.246	Core Size:	HQ3	Azimuth:	180.3	Date Logging Complete:	6/29/2016
UTM Northing:	6815417.532	Casing Pulled?:	Yes	Dip:	-60	Drill Company:	Hytech
UTM Elev. (m):	1469.364	Casing Depth (m):	12	Length (m):	171	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/26/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/27/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

Collared in order to test lens continuity 50 m step out from last intersected ore horizon, West of ABM deposit.
From 12.00m to 98.54m, K16-375 is made up of volcaniclastic and flow banded rhyolitic units containing varying carbonaceous content. At 98.54m, K16-375 intercepts a fractured/pyrite rich (up to 10%) aphanitic unit (minor sphalerite/pyrrhotite, chalcopyrite trace). A mafic sill interrupts this unit from 135.16m to 149.08m. The contact is marked by silica/muscovite alteration (fuchsite).
The end of the hole consists in mafic tuff and flow banded rhyolite.
Muscovite alteration, considered as original, is observed from 25.58m to 135.16m.
No ore horizon was intercepted.
The hole was shut down at 171.00m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	178.9	1.4	180.3	TN14	Dillon Hume	6/26/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
5	-59.86793	178.41969	1.4	179.81969	Gyro	Steve Bultitude	6/28/2016		☑	100
10	-60.09566	177.99707	1.4	179.39707	Gyro	Steve Bultitude	6/28/2016		☑	100
15	-60.05902	177.77653	1.4	179.17653	Gyro	Steve Bultitude	6/28/2016		☑	100
20	-60.07584	177.53508	1.4	178.93508	Gyro	Steve Bultitude	6/28/2016		☑	100
25	-60.13183	177.37603	1.4	178.77603	Gyro	Steve Bultitude	6/28/2016		☑	100
27	-60.1	157.7	22.1	179.8	ReflexEZS	Hytech	6/26/2016	5825	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
30	-60.29532	177.19267	1.4	178.59267	Gyro	Steve Bultitude	6/28/2016		☑	100
35	-60.42595	176.94829	1.4	178.34829	Gyro	Steve Bultitude	6/28/2016		☑	100
40	-60.48855	176.90475	1.4	178.30475	Gyro	Steve Bultitude	6/28/2016		☑	100
45	-60.49855	177.01241	1.4	178.41241	Gyro	Steve Bultitude	6/28/2016		☑	100
50	-60.22476	177.17192	1.4	178.57192	Gyro	Steve Bultitude	6/28/2016		☑	100
51	-60.5	159.8	22.1	181.9	ReflexEZS	Hytech	6/26/2016	5824	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
55	-60.1009	177.26439	1.4	178.66439	Gyro	Steve Bultitude	6/28/2016		☑	100
60	-59.98308	177.37731	1.4	178.77731	Gyro	Steve Bultitude	6/28/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-375

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
65	-59.95944	177.77864	1.4	179.17864	Gyro	Steve Bultitude	6/28/2016		☑	100
70	-59.90039	177.97263	1.4	179.37263	Gyro	Steve Bultitude	6/28/2016		☑	100
75	-59.72088	178.15824	1.4	179.55824	Gyro	Steve Bultitude	6/28/2016		☑	100
75.01	-59.5	157.9	22.1	180	ReflexEZS	Hytech	6/26/2016	5753	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
80	-59.55505	178.46735	1.4	179.86735	Gyro	Steve Bultitude	6/28/2016		☑	100
85	-59.38113	178.59363	1.4	179.99363	Gyro	Steve Bultitude	6/28/2016		☑	100
90	-59.31836	178.67141	1.4	180.07141	Gyro	Steve Bultitude	6/28/2016		☑	100
95	-59.18576	178.76936	1.4	180.16936	Gyro	Steve Bultitude	6/28/2016		☑	100
99	-59.2	159.8	22.1	181.9	ReflexEZS	Hytech	6/27/2016	5749	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
100	-59.12665	179.01528	1.4	180.41528	Gyro	Steve Bultitude	6/28/2016		☑	100
105	-58.99814	179.1698	1.4	180.5698	Gyro	Steve Bultitude	6/28/2016		☑	100
110	-58.87847	179.46938	1.4	180.86938	Gyro	Steve Bultitude	6/28/2016		☑	100
115	-58.79079	179.81512	1.4	181.21512	Gyro	Steve Bultitude	6/28/2016		☑	100
120	-58.65624	180.08361	1.4	181.48361	Gyro	Steve Bultitude	6/28/2016		☑	100
123	-58.4	162	22.1	184.1	ReflexEZS	Hytech	6/27/2016	5749	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
125	-58.52622	180.45719	1.4	181.85719	Gyro	Steve Bultitude	6/28/2016		☑	100
130	-58.43392	180.67888	1.4	182.07888	Gyro	Steve Bultitude	6/28/2016		☑	100
135	-58.32448	180.92276	1.4	182.32276	Gyro	Steve Bultitude	6/28/2016		☑	100
140	-58.39577	181.14066	1.4	182.54066	Gyro	Steve Bultitude	6/28/2016		☑	100
145	-58.3592	181.45495	1.4	182.85495	Gyro	Steve Bultitude	6/28/2016		☑	100
150	-58.37093	181.63048	1.4	183.03048	Gyro	Steve Bultitude	6/28/2016		☑	100
150.01	-58.5	162.4	22.1	184.5	ReflexEZS	Hytech	6/27/2016	5744	☐	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
155	-58.36101	181.91987	1.4	183.31987	Gyro	Steve Bultitude	6/28/2016		☑	100
160	-58.30533	182.17165	1.4	183.57165	Gyro	Steve Bultitude	6/28/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**12.00**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

12.00 20.44 MDSw Coherent rhyolite flow with carbonaceous content light grey FG

12 - 20.44: Wavy flow bands, folded/crenulated, heterogeneous texture, carbonaceous banded.

<<Min: 20.38 - 76.7 0.5% Min: Pyrrhotite>> Associated with QZ/PY patch and rare disseminated PO.

20.44 22.19 MDSc Carbonaceous dominant mudstone black FG

20.44 - 22.19: Fine grain, black, silicified mudstone (glassy), folded.

<<Alt: 20.44 - 22.19 Moderate-Strong Silicification>>

22.19 25.32 MDSt Rhyolite tuff dominant mudstone light grey FMG

22.19 - 25.32: Thinly foliated, light to medium grey.

<<Min: 22.19 - 40.77 0.5% Min: Pyrite>>

<<Alt: 22.19 - 44 Weak Calcite>>

<<Struc: 24.32 - 24.33 dominant foliation>>

25.32 36.50 RHYc Rhyolite coherant volcanics

25.32 - 36.5: Texture obscured, MU altered, brecciated from 30.0m to 31.80m. Patch mineralization (SP/CP/GL/PY-possibly AS (silvery mineral)).

<<Min: 28.38 - 44.15 0.5% Min: Sphalerite>> Associated with QZ/PY patch.

<<Min: 28.38 - 44.15 0.1% Min: Galena>> Associated with QZ/PY patch.

<<Min: 28.38 - 44.15 0.1% Min: Chalcopyrite>> Associated with QZ/PY patch.

<<Alt: 25.58 - 52.72 Moderate-Strong Muscovite>>

<<Struc: 27 - 29.5 Weak-Moderate Fault>>

<<Struc: 29.5 - 32 Moderate Fault>> Brecciated.

36.50 46.05 RHY undifferentiated rhyolite

36.5 - 46.05: Texture obscured by MU alteration, possibly volcaniclastic unit. Weak CL alteration locally, QZ/PY patch and few SP/GL, rare PO. Massive QZ vein at lower contact.

<<Min: 40.77 - 46.05 1% Min: Pyrite>>

<<Alt: 43 - 45 Moderate Silicification>>

<<Alt: 44 - 50 Weak-Moderate Calcite>>

<<Vein: 45.61 - 45.94 Quartz>> QZ few CA in fracture

<<Struc: 42 - 42.36 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

46.05 47.73 RHYcw Curdy textured-flow banded (flows, subvolcanics)

46.05 - 47.73: Flow banded, MU altered, light green. Gradual lower contact.

<<Min: 46.05 - 82 3% Min: Pyrite>>

47.73 48.78 RHYvl Lapilli tuff light grey

47.73 - 48.78: Mu altered, gradual lower contact.

48.78 49.81 RHYcw Curdy textured-flow banded (flows, subvolcanics)

48.78 - 49.81: Flow banded, almost curdy. Altered MU, few PO. Gradual contacts.

49.81 57.97 RHY undifferentiated rhyolite

49.81 - 57.97: MU altered, locally fault gouge/breccia containing RHY clasts up to 5 cm wide in grey clay/sandy matrix.

<<Alt: 50 - 64 Weak Calcite>>

<<Alt: 52.72 - 57.97 Moderate Muscovite>>

<<Struc: 53.8 - 55.1 Weak-Moderate Fault>> Fault gouge and fault breccia, clay and rhyolite clasts.

57.97 70.14 RHYcw Curdy textured-flow banded (flows, subvolcanics)

57.97 - 70.14: Possibly carbonaceous content. Flow banded. Weakly faulted at lower contact.

<<Alt: 64 - 82 Trace Calcite>>

70.14 83.79 MDSw Coherent rhyolite flow with carbonaceous content light grey

70.14 - 83.79: Flow banded, light grey, containing mineralized patch (PY/PO/CP/GL/SP). Locally fault gouge, sandy clay. Lower contact marked by TML/QZ/MU over 1.50 and granular texture.

<<Min: 70.7 - 81.7 0.5% Min: Sphalerite>>

<<Min: 70.7 - 81.7 2% Min: Pyrrhotite>>

<<Min: 70.7 - 81.7 0.1% Min: Galena>> Possibly some ASPY.

<<Min: 70.7 - 81.7 0.5% Min: Chalcopyrite>>

<<Min: 76.07 - 150 0.5% Min: Pyrrhotite>>

<<Min: 82 - 99.15 2% Min: Pyrite>>

<<Alt: 81.74 - 83.79 Strong Muscovite>> Associated with TML vein.

<<Alt: 82 - 83.5 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 83.5 - 98.5 Trace Calcite>>

<<Vein: 82.1 - 83.28 Quartz-Tourmaline>> TML/QZ in strongly muscovite altered rhyolite

<<Struc: 70.14 - 72.5 Weak-Moderate Fault>> Multiple narrow fault and gouge. Highly sericitic.

83.79 88.12 RHYcw Curdy textured-flow banded (flows, subvolcanics)

83.79 - 88.12: Altered MU (moderate to strong). Light grey/green. Possibly some carbonaceous material and locally flow.

<<Alt: 83.79 - 85 Moderate Muscovite>>

<<Alt: 85 - 89.93 Weak Muscovite>>

88.12 90.44 RHYv Rhyolite volcaniclastic

88.12 - 90.44: Gradual contacts.

90.44 96.38 RHYcw Curdy textured-flow banded (flows, subvolcanics)

90.44 - 96.38: Altered MU, flow banded.

<<Alt: 93.63 - 95.95 Moderate-Strong Muscovite>>

<<Alt: 95.95 - 98.54 Weak Muscovite>>

96.38 98.54 MDSt Rhyolite tuff dominant mudstone

96.38 - 98.54: Or RHYv BI rich, fine to medium grain. Medium grey to blue. Marked by lack of MU alteration.

<<Alt: 98.5 - 135.16 Weak-Moderate Calcite>> And in RHYi fractured with QZ/PY.

98.54 116.60 RHYi Aphanitic Rhyolite (intrusion)

98.54 - 116.6: Aphanitic texture, possibly extrusive (RHYc). Silica rich fractured filled by QZ/PY up to 10%, few SP/GL. Locally MU bands and pinkish color suggesting feldspar alteration. Silica patch showing amygdular silica "tear drop". Possibly rhyolitic dome.

<<Min: 99.15 - 101.7 5% Min: Pyrite>>

<<Min: 101.7 - 113.93 8% Min: Pyrite>>

<<Min: 113.93 - 116.07 5% Min: Pyrite>>

<<Min: 116.07 - 120.83 3% Min: Pyrite>>

<<Alt: 98.54 - 103.66 Moderate Muscovite>>

<<Alt: 103.66 - 135.16 Moderate Silicification>> Locally cherty.

<<Alt: 103.66 - 135.16 Weak-Moderate Muscovite>>

<<Vein: 98.54 - 135.16 Pyrite>> PY stringer with rare SP/GL in fractured RHYi or RHYc

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

116.60 118.57 RHYva Coarse grained to ash tuff

116.6 - 118.57: Greenish color, fine to medium grain, possibly intermediate composition, MU altered.

<<Struc: 117.26 - 117.27 dominant foliation>>

118.57 118.83 CHT Chert

118.57 - 118.83: Highly silicified, banded, translucent silica showing cherty aspect (exhalite?).

118.83 120.87 RHYva Coarse grained to ash tuff

118.83 - 120.87: Greenish color, fine/med grain, possibly mafic content.

<<Min: 120.83 - 130.14 5% Min: Pyrite>>

120.87 130.14 RHYi Aphanitic Rhyolite (intrusion)

120.87 - 130.14: Fractured, PY filling, possibly RHYc. Color from grey to pinkish.

130.14 130.94 RHYva Coarse grained to ash tuff

130.14 - 130.94: RHYva mixed with RHYi, marked by local granular texture. Greenish color, gradual contacts.

<<Struc: 130.63 - 130.64 dominant foliation>>

130.94 135.16 RHYi Aphanitic Rhyolite (intrusion)

130.94 - 135.16: Strong MU alteration in fracture, PY/SP stringers. Could be interpreted as RHYc.

<<Min: 130.94 - 135.16 2% Min: Sphalerite>>

<<Min: 130.94 - 135.16 5% Min: Pyrite>>

<<Struc: 133.76 - 133.77 dominant foliation>>

135.16 149.08 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

135.16 - 149.08: Or MAFt. Pervasive CA alteration at upper contact turning to CA banded. CL/MU altered. BI overprint. Green/grey alteration at lower contact/fuchsite. Specks of ferro-carbonate (pseudo leucoxene).

<<Min: 135.16 - 149.08 1% Min: Pyrrhotite>>

<<Alt: 135.16 - 149.09 Moderate-Strong Calcite>> And banded.

<<Alt: 139.35 - 148.06 Moderate-Strong Biotite>>

<<Alt: 147.54 - 155.38 Moderate Silicification>> Green/grey alteration/proximity of RHYi.

<<Alt: 147.54 - 170 Moderate Muscovite>>

<<Struc: 138.16 - 138.17 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

149.08 151.20 RHYc Rhyolite coherant volcanics

149.08 - 151.2: Fractured, PY/SP stringers, few PY, CP trace. Strong MU in fracture.

<<Min: 149.08 - 155.38 3% Min: Pyrite>>

<<Min: 149.08 - 155.38 3% Min: Pyrrhotite>> Mostly concentrated at upper contact with MAFi.

<<Min: 149.08 - 155.38 0.1% Min: Chalcopyrite>>

<<Alt: 149.09 - 165.49 Moderate Calcite>> Veining.

151.20 152.39 MAFt Mafic Volcaniclastics

151.2 - 152.39: Fine grain, QZ/CA veining. MU altered.

152.39 155.38 RHYcw Curdy textured-flow banded (flows, subvolcanics)

152.39 - 155.38: Large silica bands, PY/SP stringers. Could be interpreted as RHYi.

<<Min: 152.39 - 155.38 0.5% Min: Sphalerite>>

155.38 157.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

155.38 - 157.3: Locally flow banded. Possibly intermediate composition. MU altered.

<<Min: 155.38 - 171 1% Min: Pyrite>>

<<Min: 155.38 - 171 0.5% Min: Pyrrhotite>>

157.30 165.49 MAFt Mafic Volcaniclastics

157.3 - 165.49: Or RHYva. Texture obscured. CA veining suggesting mafic content or intermediate composition.

<<Struc: 158.36 - 158.37 dominant foliation>>

<<Struc: 165.3 - 165.31 dominant foliation>>

165.49 166.70 RHYcw Curdy textured-flow banded (flows, subvolcanics)

165.49 - 166.7: Flow banded. Greenish color/MU alteration.

<<Alt: 165.49 - 171 Weak Calcite>>

166.70 170.15 MAFt Mafic Volcaniclastics

166.7 - 170.15: Or RHYva. Texture obscured.

<<Struc: 167.26 - 167.27 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
170.15	**171.00**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**									
170.15 - 171: Flow banded, greenish color, MU altered. E.O.H.											
End of Hole @ 171											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-376

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/30/2016
UTM Easting	415074.37	Core Size:	HQ3	Azimuth:	335.2	Date Logging Complete:	7/1/2016
UTM Northing:	6815128.282	Casing Pulled?:	Yes	Dip:	-50	Drill Company:	Hytech
UTM Elev. (m):	1385.405	Casing Depth (m):	9	Length (m):	170.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/27/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/30/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

Geotechnical borehole GT03. Collared in order to investigate East fault and north-east wall stability including footwall and saddle area of ABM and Krakatoa, about 40m offset from north-east mid-wall and projected fault. Ongoing geotechnical logging was processed at the drill rig.
K16-376 is made up of volcaniclastic and coherent rhyolite, felsic KZK formations sequence.
From 132.26m to 157.20, fault zone (locally brecciated) and sheared rhyolite are intercepted. Weak to moderate muscovite alteration is observed from top to bottom.
No mineralization zone is encountered. K16-376 was shut down on engineer call.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-50	333.8	1.4	335.2	TN14	Dillon Hume	6/27/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
18.7	-50.7	314.1	22.1	336.2	ReflexEZS	Hytech	6/28/2016	5797	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
42.7	-51	312.9	22.1	335	ReflexEZS	Hytech	6/28/2016	5749	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
66.7	-52.6	313.6	22.1	335.7	ReflexEZS	Hytech	6/28/2016	5730	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
90.7	-53.6	313.5	22.1	335.6	ReflexEZS	Hytech	6/29/2016	5730	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
114.7	-53.6	312.1	22.1	334.2	ReflexEZS	Hytech	6/29/2016	5699	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
139	-54.1	314.1	22.1	336.2	ReflexEZS	Hytech	6/29/2016	5702	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170.2	-54.5	311.7	22.1	333.8	ReflexEZS	Hytech	6/29/2016	5707	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**9.20**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

9.20 29.00 RHYvl Lapilli tuff

9.2 - 29: Green/grey, locally MU altered. Mid strain. Thin foliation. Lapilli/crystal concentration increases at lower contact (pressure shadow ?). Locally narrow possibly SEDc or calcareous ash intervals.

<<Min: 9.2 - 25.75 0.5% Min: Pyrrhotite>>

<<Min: 9.2 - 35.8 2% Min: Pyrite>>

<<Min: 25.75 - 29 2% Min: Pyrrhotite>>

<<Alt: 9.2 - 24.3 Weak-Moderate Muscovite>>

<<Alt: 9.2 - 77.96 Weak-Moderate Calcite>> and lapilli replacement.

<<Alt: 24.3 - 24.8 Moderate Muscovite>>

<<Alt: 24.8 - 29 Weak Muscovite>>

<<Struc: 17 - 17.01 dominant foliation>>

<<Struc: 22.6 - 23.2 Weak-Moderate Fault>> Narrow fault gouge, partially washed away during drilling.

<<Struc: 27.6 - 27.61 dominant foliation>>

29.00 35.80 RHYcf Feldspar & feldspar quartz porphyry

29 - 35.8: Few quartz eyes. Locally aphanitic texture in the groundmass, Feldspar up to 1cm long, mid strained. Heterogeneous texture, narrow fault gouge interval.

<<Struc: 31.3 - 31.9 Weak-Moderate Fault>> Narrow gouge interval.

35.80 45.81 RHYc Rhyolite coherant volcanics

35.8 - 45.81: Dark green/grey. Fspar phenos, non-deformed, 1cm long, aggregated. Possibly TML alteration responsible of the color. Locally aphanitic (RHYi), peperitic or hyaloclastic texture. QZ vein from 39.52m to 41.70m. This unit could also be sedimentary, coarse grain/conglomerate.

<<Min: 35.8 - 49.21 3% Min: Pyrite>>

<<Min: 35.8 - 49.21 5% Min: Pyrrhotite>>

<<Alt: 36.58 - 46.2 Weak-Moderate Tourmaline>>

<<Vein: 39.6 - 41.7 Quartz>> QZ vein, in and out, Ca in fracture.

<<Struc: 45.4 - 45.41 dominant foliation>>

45.81 47.93 RHYcw Curdy textured-flow banded (flows, subvolcanics)

45.81 - 47.93: Flow banded rhyolite.

<<Alt: 47.83 - 63.6 Weak Muscovite>>

<<Struc: 47.8 - 47.81 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

47.93 63.30 RHYva Coarse grained to ash tuff

47.93 - 63.3: Grey/green, foliated, mid strain, dominantly fine grain/ash.

<<Min: 49.21 - 58.75 2% Min: Pyrrhotite>>

<<Min: 49.21 - 62.7 0.5% Min: Pyrite>>

<<Min: 58.75 - 71.1 0.5% Min: Pyrrhotite>>

<<Min: 62.7 - 75.7 5% Min: Pyrite>>

<<Vein: 50.2 - 50.9 Quartz>> Massive QZ vein.

<<Struc: 52.26 - 52.27 dominant foliation>>

<<Struc: 60.2 - 60.21 dominant foliation>>

63.30 74.04 RHYcf Feldspar & feldspar quartz porphyry

63.3 - 74.04: Locally flow banded, abundant quartz eyes. From 71.10m to 72.05m, texture obscured, dirty interval, QE preserved, phenoblasts replaced by black mineral (possibly TML).

<<Min: 71.1 - 77.36 2% Min: Pyrrhotite>>

<<Alt: 63.6 - 75.7 Moderate Muscovite>>

<<Struc: 66.8 - 66.81 dominant foliation>>

74.04 77.96 RHYva Coarse grained to ash tuff

74.04 - 77.96: Dominantly fine grain/ash. MU altered.

<<Min: 75.7 - 85.75 1% Min: Pyrite>>

<<Min: 77.36 - 85.75 5% Min: Pyrrhotite>>

<<Alt: 75.7 - 85.75 Weak Muscovite>>

<<Struc: 75.65 - 75.66 dominant foliation>>

77.96 85.75 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

77.96 - 85.75: Heterogeneous, foliated, containing amygdule/brown biotite, weakly altered MU. Cain veinlets and groundmass. Large chill margins (partly due to drilling dip). Few CL. Crosscut by a 5cm large QZ/dolomite vein-breccia texture).

<<Alt: 77.96 - 85.75 Moderate-Strong Calcite>> Mafic dike.

<<Vein: 79.55 - 79.61 Quartz-Carbonate>> Brecciated QZ/dolomite/few BI vein, foliation oriented. Unusual.

<<Struc: 82 - 82.01 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

85.75 95.60 RHYv Rhyolite volcaniclastic

85.75 - 95.6: Heterogeneous, probably volcaniclastic.

<<Min: 85.75 - 102.7 0.5% Min: Pyrrhotite>>

<<Min: 85.75 - 132.6 0.1% Min: Pyrite>>

<<Alt: 85.75 - 95.6 Weak-Moderate Calcite>>

<<Alt: 85.75 - 131.2 Weak-Moderate Muscovite>>

<<Struc: 87.3 - 87.31 dominant foliation>>

<<Struc: 92.2 - 93.7 Weak-Moderate Fault>> Broken zone, weak shearing, narrow gouge interval.39.6

95.60 111.67 RHYv Rhyolite volcaniclastic

95.6 - 111.67: Heterogeneous, showing dark weakly altered possibly lapilli. Fractured, weakly MU altered matrix. From 107.46m to 107.85m, biotite rich interval (pelite?). Possibly coherent rhyolite locally, disaggregated flow bands.

<<Min: 102.7 - 132.6 1% Min: Pyrrhotite>> Locally elongated along the foliation. Irregular repartition.

<<Alt: 95.6 - 111.67 Weak Calcite>>

<<Struc: 98.27 - 98.28 dominant foliation>>

<<Struc: 100.32 - 100.66 Moderate Fault>>

<<Struc: 107.66 - 107.67 dominant foliation>>

<<Struc: 111.6 - 111.61 dominant foliation>>

111.67 114.00 RHYva Coarse grained to ash tuff

111.67 - 114: Very fine grain, light brown, homogeneous matrix. Gradual upper contact (few lapilli), sharpe lower contact. Dark band fading out.

<<Alt: 111.67 - 114 Moderate Calcite>> Associated with fin e grain volcaniclastic unit.

114.00 116.31 RHY undifferentiated rhyolite

114 - 116.31: Elongated PO in foliation few PY. Possibly coherent rhyolite, wavy QZ bands over 50 cm.

<<Alt: 114 - 170.2 Weak Calcite>>

<<Struc: 115.8 - 115.81 dominant foliation>>

116.31 119.10 RHYvl Lapilli tuff

116.31 - 119.1: Possibly lapilli (dark/elongated locally banded).

119.10 120.20 RHYv Rhyolite volcaniclastic

119.1 - 120.2: Narrow interval marking the heterogeneity of the entire sequence.

<<Struc: 120.08 - 120.09 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

120.20 129.60 RHYvl Lapilli tuff

120.2 - 129.6: Mid strain, elongated clasts, banded texture locally, CL alteration well marked.

<<Alt: 120.2 - 129.6 Weak-Moderate Chlorite>> Lapilli replacement.

<<Vein: 127.3 - 127.35 Tourmaline>> TML "spider web" style vein

<<Struc: 128.36 - 128.37 Shear>> Also DFOL.

129.60 132.26 RHY undifferentiated rhyolite

129.6 - 132.26: MU altered, texture obscured. Partially faulted, 3 to 5 cm QZ veins.

<<Alt: 131.2 - 132.26 Moderate Muscovite>>

<<Struc: 129.6 - 132.26 Moderate Shear>>

132.26 134.42 FLZ Fault Zone

132.26 - 134.42: Dominantly RHY/QZ clasts. PY as vein relic (or clasts). Gouge at upper contact.

<<Min: 132.6 - 157.2 2% Min: Pyrite>> Clasts or disaggregated veins.

<<Min: 132.6 - 157.2 0.1% Min: Pyrrhotite>>

<<Alt: 132.26 - 170.2 Weak Muscovite>>

<<Struc: 132.26 - 134.42 Moderate-Strong Fault>>

134.42 136.91 RHYv Rhyolite volcaniclastic

134.42 - 136.91: Silicic bands. Weakly to moderately sheared, texture obscured.

<<Struc: 134.52 - 136.91 Moderate Shear>>

<<Struc: 135.15 - 135.16 Shear>> Also DFOL.

136.91 137.50 MDSc Carbonaceous dominant mudstone

136.91 - 137.5: Strongly graphitic. Faulted at lower contact., foliated (white bands in foliation, non calcareous-Fspar?).
Foliation differs from RHY surrounding, upper contact suggests allochthone material.

137.50 144.02 FLZ Fault Zone

137.5 - 144.02: Sheared and brecciated, locally CL alteration picking up.

<<Alt: 141.6 - 145 Weak-Moderate Chlorite>> Associated with fault zone.

<<Struc: 137.5 - 144.02 Moderate-Strong Fault>>

144.02 146.02 RHY undifferentiated rhyolite

144.02 - 146.02: Sheared, locally silicic bands, quick changes in foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 145.7 - 145.9 Quartz-Tourmaline>> QZ/TML remnant vein in sheared zone.

<<Struc: 144.02 - 146.02 Moderate Shear>>

<<Struc: 144.25 - 144.26 dominant foliation>> Preserved RHY in sheared zone.

<<Struc: 145.55 - 145.56 Vein>> Remnant QZ/TML/PY vein in sheared zone.

146.02 147.30 RHYc Rhyolite coherant volcanics

146.02 - 147.3: Aphanitic (RHYi) to silica banded on the edge.

147.30 151.30 FLZ Fault Zone

147.3 - 151.3: Brecciated, containing dark (possibly graphitic bands). Angular and sub rounded clasts (mostly rhyolite/quartz).

<<Struc: 147.3 - 151.3 Moderate-Strong Fault>>

<<Struc: 149 - 149.01 Shear>> Main shearing orientation, in gouge.

151.30 157.20 RHY undifferentiated rhyolite

151.3 - 157.2: Sheared rhyolite, texture obscured.

<<Struc: 151.3 - 157.2 Weak-Moderate Shear>>

157.20 170.20 RHY undifferentiated rhyolite

157.2 - 170.2: Possibly sedimentary. Conglomeritic texture from 160m to 161.50m. Heterogeneous suggesting mixing with sediment, epiclastic formation. E.O.H.

<<Min: 157.2 - 170.2 1% Min: Pyrite>> And patchy.

<<Min: 157.2 - 170.2 0.5% Min: Pyrrhotite>> Rare patches.

<<Struc: 162.26 - 162.27 dominant foliation>>

<<Struc: 167.5 - 167.51 dominant foliation>>

End of Hole @ 170.2

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-377

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/1/2016
UTM Easting	415150.652	Core Size:	HQ3	Azimuth:	72.2	Date Logging Complete:	7/3/2016
UTM Northing:	6815089.79	Casing Pulled?:	Yes	Dip:	-49.8	Drill Company:	Hytech
UTM Elev. (m):	1406.901	Casing Depth (m):	4.5	Length (m):	150.6	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/30/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/2/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

Collared in order to investigate Sunda fault and south wall stability, located 50m offset from projected fault and south mid-wall.
K16-377 is dominantly made up coherent and thick aphanitic rhyolite as well as pelite and possibly mafic dikes.
The fault zone is intercepted from 124.45m to 128.00m. Surrounding the fault zone, the units are gougy and weakly sheared. The fractured zone extents from 124.45m to 150.60m -End Of Hole- showing a moderate intensity.
Detail geoteching was carried out at drill site.
Drill shut down at 150.60m upon engineer call.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-49.8	70.8	1.4	72.2	TN14	Dillon Hume	6/30/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
15.8	-50.6	52.4	22.1	74.5	ReflexEZS	Hytech	6/30/2016	5772	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
39.8	-50.6	53.7	22.1	75.8	ReflexEZS	Hytech	6/30/2016	5732	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
63.8	-50.3	55	22.1	77.1	ReflexEZS	Hytech	7/1/2016	5712	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
87.8	-49.8	55.9	22.1	78	ReflexEZS	Hytech	7/1/2016	5723	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
111	-49.4	56.1	22.1	78.2	ReflexEZS	Hytech	7/1/2016	5724	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
135.8	-49.9	57.8	22.1	79.9	ReflexEZS	Hytech	7/2/2016	5716	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
150.6	-50	56.8	22.1	78.9	ReflexEZS	Hytech	7/2/2016	5716	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.00**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

4.00 7.23 RHYvl Lapilli tuff

4 - 7.23: Aphanitic groundmass, Fspar phenos automorph. Fractured. Gradual upper contact marked by SI bands (flow?).

<<Min: 4 - 14.15 0.5% Min: Pyrite>>

<<Min: 4 - 14.15 1% Min: Pyrrhotite>>

<<Alt: 4 - 7.23 Weak-Moderate Calcite>> Veining and lapilli replacement.

7.23 12.65 RHYi Aphanitic Rhyolite (intrusion)

7.23 - 12.65: Grey, aphanitic, Flow banded at upper and lower contact. Containing Fspar phenos automorph. Fractured, PY infill.

<<Alt: 7.23 - 35.38 Weak Calcite>> Fractures and veins.

12.65 14.15 RHY undifferentiated rhyolite

12.65 - 14.15: Probably volcaniclastic at upper contact, flow banded from 13.20m to 14.15m. Gradual lower contact.@% cm of PEL/SED.

14.15 32.80 RHYi Aphanitic Rhyolite (intrusion)

14.15 - 32.8: Fractured RHYi containing low density of Fspar automorph. PY infill (5%).

<<Min: 14.15 - 24.8 3% Min: Pyrite>> Fracture infill.

<<Min: 24.8 - 32.8 5% Min: Pyrite>> Fracture infill.

32.80 33.57 RHY undifferentiated rhyolite

32.8 - 33.57: Probably volcaniclastic (lapilli and/or xtl). Sharpe upper contact, faulted lower contact. QZ/CA veining. PY in carbonate veinlets.

<<Min: 32.8 - 33.57 0.5% Min: Pyrite>>

33.57 35.58 RHYcw Curdy textured-flow banded (flows, subvolcanics)

33.57 - 35.58: Flow banded, crenulated, gradual lower contact.

<<Alt: 35.38 - 40.42 Moderate-Strong Calcite>>

35.58 40.42 PEL Equigranular biotite + calcite +/- quartz rock

35.58 - 40.42: Foliated, sharpe contacts. CA rich. Could be mafic dike. RHY at lower contact foliated over 40 cm.

<<Min: 35.88 - 40.42 1% Min: Pyrrhotite>>

<<Min: 38.38 - 40.42 0.1% Min: Pyrite>>

<<Struc: 38.25 - 38.26 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

40.42 43.67 RHYc Rhyolite coherant volcanics

40.42 - 43.67: Foliated RHY (v) at upper contact. SI rich unit, almost curdy texture.

<<Alt: 40.42 - 111.75 Weak Calcite>> Fractures and veins.

<<Struc: 42.3 - 42.31 dominant foliation>>

43.67 65.45 RHYi Aphanitic Rhyolite (intrusion)

43.67 - 65.45: Pinkish to grey, fractured, PY infill, containing Fspar automorph (up to 4 mm long).

<<Min: 43.67 - 65.45 3% Min: Pyrite>> Fracture infill.

<<Struc: 60 - 60.01 dominant foliation>>

65.45 67.13 RHY undifferentiated rhyolite

65.45 - 67.13: Weakly foliated. Heterogeneous unit containing 30 cm of PEL/SED. Curdy texture at lower contact.

<<Min: 65.45 - 67.13 5% Min: Pyrite>>

<<Struc: 66.9 - 66.91 dominant foliation>>

67.13 72.60 RHYi Aphanitic Rhyolite (intrusion)

67.13 - 72.6: Pinkish to grey, fractured, PY infill, containing Fspar automorph.

<<Min: 67.13 - 111.75 3% Min: Pyrite>> Fracture infill.

<<Struc: 70.25 - 70.26 Foliation>> Main foliation in RHYi.

<<Struc: 70.3 - 70.31 >> Mineralized PY fracture in RHYi.

72.60 74.54 RHYv Rhyolite volcaniclastic

72.6 - 74.54: Containing RHYi clasts up to 10 cm wide.

<<Vein: 73.05 - 73.2 Quartz>> QZ/brecciated vein. Translucent (late) and milky QZ.

74.54 111.75 RHYi Aphanitic Rhyolite (intrusion)

74.54 - 111.75: Pinkish to grey, fractured, PY infill. Rare xtl. Locally brecciated texture rhyolite supported and narrow interval of RHYv from 84.53 m to 85.23 m.

111.75 121.27 RHYcf Feldspar & feldspar quartz porphyry

111.75 - 121.27: Texture obscured/broken zone/heterogeneous. Wavy silica bands I groundmass suggesting coherent rhyolite. Containing crystal (up to 5mm long) Sharp contacts.

<<Min: 111.75 - 124.45 0.1% Min: Pyrite>>

<<Alt: 111.75 - 121.27 Weak-Moderate Calcite>>

<<Alt: 111.75 - 150.6 Weak Chlorite>> Proximity of fault zone.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 116.4 - 116.41 dominant foliation>>

121.27 124.45 PEL Equigranular biotite + calcite +/- quartz rock

121.27 - 124.45: Foliated pelite, locally sheared. Carbonaceous, fine grain, brown biotite.

<<Min: 121.27 - 128 0.5% Min: Pyrrhotite>>

<<Alt: 121.27 - 128 Moderate-Strong Calcite>> And veining.

<<Struc: 122.5 - 124.45 Moderate Shear>>

<<Struc: 122.6 - 122.61 dominant foliation>>

124.45 128.00 FLZ Fault Zone

124.45 - 128: MAFi/RHY mixed or discordant contacts. Sub rounded clasts in gouge as well as grey clay gouge over 50 cm.

<<Min: 124.45 - 128 0.5% Min: Pyrite>> Associated with QZ, late mineralization..

<<Struc: 124.45 - 128 Moderate-Strong Fault>>

128.00 132.95 RHYcf Feldspar & feldspar quartz porphyry

128 - 132.95: Flow banded rhyolite containing Fspar crystal pseudo automorph. Locally narrow gougy intervals (5cm large).

<<Min: 128 - 133.57 0.1% Min: Pyrite>>

<<Alt: 128 - 133.57 Weak-Moderate Calcite>>

<<Struc: 128 - 137.38 Weak-Moderate Fault>> Multiple narrow gouge intervals.

<<Struc: 132.55 - 132.56 dominant foliation>>

132.95 133.57 RHY undifferentiated rhyolite

132.95 - 133.57: BI specks. Could suggest gradual contact (mixed with pelitic material).

133.57 146.30 PEL Equigranular biotite + calcite +/- quartz rock

133.57 - 146.3: Interpreted as pelite regarding the presence of biotite porphyroblasts of the units surrounding at contact. Carbonaceous (matrix and veining), locally weakly altered MU/CL, grain size heterogeneous. Including 15 to 25 cm of rhyolite intervals.

<<Min: 133.57 - 146.3 0.5% Min: Pyrite>> Along the foliation.

<<Min: 133.57 - 146.3 2% Min: Pyrrhotite>>

<<Alt: 133.57 - 146.3 Moderate Calcite>>

<<Struc: 133.57 - 133.58 Contact>> RHY/PEL contact.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 134.4 - 134.41 dominant foliation>>

<<Struc: 136.05 - 136.07 dominant foliation>>

<<Struc: 137.2 - 137.21 dominant foliation>>

<<Struc: 137.38 - 146.4 Moderate Fault>> 30% gouge in the interval. Foliation randomly oriented, locally sheared (folded).

146.30 150.60 RHY undifferentiated rhyolite

146.3 - 150.6: Possibly mixed with pelitic material (Bl porphyroblasts). Texture obscured. Milky clasts interpreted as Fspar crystals. E.O.H.

<<Min: 146.3 - 150.6 0.1% Min: Pyrite>>

<<Alt: 146.3 - 150.6 Weak Calcite>> Few veinlets.

<<Struc: 146.4 - 150.6 Weak-Moderate Fault>> Multiple gougy intervals over 20 cm.

<<Struc: 149 - 149.01 dominant foliation>>

End of Hole @ 150.6

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-378

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/5/2016
UTM Easting	414916.286	Core Size:	HQ3	Azimuth:	276	Date Logging Complete:	7/7/2016
UTM Northing:	6815015.491	Casing Pulled?:	Yes	Dip:	-84.1	Drill Company:	New Age
UTM Elev. (m):	1386.081	Casing Depth (m):	21	Length (m):	162	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/3/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/5/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

Short Krakatoa hole targetting CSA pierce point #3. Drill hole intersected two narrow sulfide lenses at 85.31-85.73m and 89.70-90.13m below a sequence of MAFi and RHYi - RHY. The main lens at 127.98-129.77m was intersected below a thick RHYi unit. Strongly muscovite altered RHY, below the main lense to the contact with MDSc at 151.5m, contains disseminated tetrahedrite - sulphosalts.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-84.1	274.6	1.4	276	TN14	David Nuttal	7/3/2016		☑	Surveyed with GyroCompas and adjusted with compass at 275 (dip>80 degrees).
5	-83.21733	273.60971	1.4	275.00971	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
10	-83.42186	275.00353	1.4	276.40353	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
15	-83.51087	276.33083	1.4	277.73083	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
20	-83.6069	274.94952	1.4	276.34952	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
25	-83.66775	274.36181	1.4	275.76181	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
27	-84.2	258	22.1	280.1	ReflexEZS	New Age	7/3/2016	5849	☐	
30	-83.66498	274.84988	1.4	276.24988	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
35	-83.60808	275.21845	1.4	276.61845	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
40	-83.44211	275.41565	1.4	276.81565	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
45	-83.46529	274.58443	1.4	275.98443	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
50	-83.34751	274.03042	1.4	275.43042	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
55	-83.32607	273.3599	1.4	274.7599	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
60	-83.24973	271.00929	1.4	272.40929	Gyro	Steve Bultitude	7/5/2016	5797	☑	Motion Quality = 100
60.01	-83.6	252.9	22.1	275	ReflexEZS	New Age	7/4/2016	5797	☐	
65	-83.22199	269.33124	1.4	270.73124	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
70	-83.22457	266.9534	1.4	268.3534	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
75	-83.39429	264.18729	1.4	265.58729	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
80	-83.35248	263.04437	1.4	264.44437	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
85	-83.32774	262.6254	1.4	264.0254	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
90	-83.25644	262.94823	1.4	264.34823	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
93	-83.2	246.8	22.1	268.9	ReflexEZS	New Age	7/4/2016	5795	☐	
95	-83.15683	262.27868	1.4	263.67868	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
100	-83.00582	261.33005	1.4	262.73005	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
105	-82.77258	260.62619	1.4	262.02619	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
110	-82.65026	260.77339	1.4	262.17339	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
114	-82.9	241.6	22.1	263.7	ReflexEZS	New Age	7/4/2016	5796	☐	
115	-82.67487	260.22442	1.4	261.62442	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
120	-82.66266	258.794	1.4	260.194	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
125	-82.67922	258.32614	1.4	259.72614	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
130	-82.6696	257.36873	1.4	258.76873	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
135	-82.65986	256.18525	1.4	257.58525	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
140	-82.54038	254.72687	1.4	256.12687	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
141	-82.8	233.3	22.1	255.4	ReflexEZS	New Age	7/5/2016	5873	☐	
145	-82.36122	252.72863	1.4	254.12863	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
150	-82.08066	251.84886	1.4	253.24886	Gyro	Steve Bultitude	7/5/2016		☑	Motion Quality = 100
159	-82.1	251.6	22.1	273.7	ReflexEZS	New Age	7/5/2016	5793	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 20.20 OVBN Overburden

0 - 20.2: 18 cm boulder of Massive Sulfide between 16.0 - 17.5m

20.20 66.77 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

20.2 - 66.77: Bippo; 39.1-52.5 & 65.08-66.77m.

<<Min: 20.2 - 66.77 0.01% Min: Pyrite>>

<<Alt: 20.2 - 25.35 Moderate Calcite>>

<<Alt: 25.35 - 38.9 Weak Calcite>>

<<Alt: 38.9 - 44.1 Moderate-Strong Calcite>>

<<Alt: 39.1 - 52.5 Weak-Moderate Biotite>> patches - halo of diss biotite alteration around fault zones and qtz vein

<<Alt: 42.1 - 43 Weak Muscovite>> bleaching in fault zone

<<Alt: 44.1 - 66.77 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 52.65 - 54 Weak Muscovite>> bleaching in fault zone

<<Alt: 58.2 - 65.38 Weak-Moderate Chlorite>> also as clots and blebs

<<Alt: 65.07 - 66.77 Moderate Biotite>>

<<Vein: 39 - 56 2% Calcite>> also cross cutting stringers

<<Vein: 42.3 - 42.43 100% Quartz 65 deg. >>

<<Struc: 24 - 25 Weak-Moderate Fault>>

<<Struc: 32.8 - 33 Moderate dominant foliation>>

<<Struc: 35.4 - 36.1 Moderate Fault>>

<<Struc: 36.8 - 37 Weak-Moderate Fault>>

<<Struc: 37.4 - 39 Moderate dominant foliation>>

<<Struc: 41 - 43 Moderate Fault>>

<<Struc: 43 - 44 Weak Fault>>

<<Struc: 49.4 - 51 Moderate dominant foliation>>

<<Struc: 52.5 - 54 Moderate-Strong Fault>> missing core and gouge

<<Struc: 59.4 - 59.6 Weak-Moderate Fault>>

<<Struc: 59.7 - 61.25 Moderate dominant foliation>>

<<Struc: 65 - 66.6 Moderate dominant foliation>>

<<Struc: 66.6 - 69 Weak Fault>> broken core, fractured

<<Struc: 66.7 - 66.75 Strong Contact>> sharp contact with banded RHY

66.77 68.90 RHYva Coarse grained to ash tuff

66.77 - 68.9: siliceous bands, banded ash. 1cm wide band of sulfide at 66.81 -66.82m.

<<Min: 66.77 - 66.97 10% Min: Pyrite>>

<<Min: 66.97 - 68.9 3% Min: Pyrite>>

<<Alt: 66.77 - 68.9 Moderate Muscovite>>

<<Alt: 66.77 - 68.9 Weak-Moderate Calcite>>

<<Struc: 66.77 - 67.4 Moderate-Strong dominant foliation>>

68.90 72.71 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 68.9 - 73.71 0.01% Min: Pyrite>>

<<Alt: 68.9 - 72.71 Strong Calcite>>

<<Alt: 68.9 - 72.71 Moderate-Strong Biotite>>

<<Struc: 69 - 72 Moderate dominant foliation>>

72.71 73.33 RHYi Aphanitic Rhyolite (intrusion)

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 72.71 - 73.33 0.3% Min: Pyrite>>									
		<<Alt: 72.71 - 73.33 Weak Calcite>>									
73.33	**74.23**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
		<<Min: 73.33 - 74.22 5% Min: Pyrrhotite>>									
		<<Alt: 73.33 - 74.23 Moderate-Strong Muscovite>> bleached MAFi									
		<<Alt: 73.33 - 74.23 Strong Calcite>>									
		<<Alt: 73.33 - 74.23 Weak Biotite>>									
74.23	**76.70**	**RHYva Coarse grained to ash tuff**									
		<<Min: 74.23 - 74.24 10% Min: Sphalerite>>									
		<<Min: 74.23 - 74.24 10% Min: Pyrite>>									
		<<Min: 74.23 - 74.24 10% Min: Magnetite>>									
		<<Min: 74.24 - 76.7 0.01% Min: Sphalerite>>									
		<<Min: 74.24 - 76.7 5% Min: Pyrite>>									
		<<Alt: 74.23 - 76.7 Weak-Moderate Muscovite>>									
		<<Alt: 74.23 - 76.7 Moderate-Strong Calcite>>									
		<<Struc: 74.23 - 75 Moderate Fault>> crushed, broken, missing core									
76.70	**84.96**	**RHYi Aphanitic Rhyolite (intrusion)**	82.54	84.00	1.46	D00004321	0.007	0.6	-0.01	-0.01	0.02
		76.7 - 84.96: rare fine, <1mm feldspar crystals. Minor orange - pink 'albite'. Unit includes small section of fine grained (morecalcareous and softer) RHY.									
		<<Min: 76.7 - 84.96 3% Min: Pyrite>>	84.00	85.31	1.31	D00004303	0.006	2.2	-0.01	0.02	0.02
		<<Min: 76.7 - 84.96 0.1% Min: Galena>>									
		<<Alt: 76.7 - 84.96 Weak Muscovite>>									
		<<Alt: 76.7 - 85.31 Weak-Moderate Calcite>>									
		<<Struc: 76.7 - 77 Moderate dominant foliation>>									
		<<Struc: 77.3 - 78.3 Weak Fault>> fractured, minor foliaform zones of rock flour and crushed core.									
		<<Struc: 81 - 81.5 Moderate dominant foliation>>									
		<<Struc: 82 - 84.2 Weak Fault>> fractured, minor shear planes									
84.96	**85.31**	**RHYva Coarse grained to ash tuff**									
		<<Min: 84.96 - 85.31 3% Min: Pyrite>>									
		<<Alt: 84.96 - 85.31 Weak-Moderate Muscovite>>									

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
85.31	**85.73**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	85.31	85.73	0.42	D00004304	0.371	176	0.04	3.42	7.08
85.31 - 85.73: Fine grained, calcite rich matrix, cut by qtz veining totalling 9cm at lower contact.												
<<Min: 85.31 - 85.73 15% Min: Sphalerite>>												
<<Min: 85.31 - 85.73 40% Min: Pyrite>>												
<<Min: 85.31 - 85.73 1% Min: Galena>>												
<<Alt: 85.31 - 85.73 Strong Calcite>> calcite matrix - groundmass.												
<<Vein: 85.68 - 86.12 78% Quartz>> qtz vein interfingers along OB-RHY contact												
85.73	**89.70**	**RHYc** **Rhyolite coherant volcanics**		85.73	87.22	1.49	D00004305	0.008	1	-0.01	0.01	0.03
85.73 - 89.7: RHYc tectonically dismembered and brecciated. Rare silic bands.												
<<Min: 86.1 - 89.5 3% Min: Pyrite>>				87.22	88.20	0.98	D00004306	-0.005	1.4	-0.01	-0.01	0.17
<<Min: 89.5 - 89.7 10% Min: Pyrite>>				88.20	89.70	1.50	D00004307	0.014	9.2	-0.01	0.16	0.41
<<Alt: 85.73 - 89.7 Trace Calcite>>												
<<Alt: 86.1 - 89.7 Moderate Muscovite>> ser-musc and clay on folia.												
<<Struc: 88.9 - 95.6 Weak-Moderate Fault>> fractured, crushed zones, core rubble												
89.70	**90.13**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	89.70	90.13	0.43	D00004308	0.714	208	0.14	2.21	5.99
89.7 - 90.13: includes 0.13m OI at lower contact												
<<Min: 89.7 - 90 20% Min: Sphalerite>>												
<<Min: 89.7 - 90 30% Min: Pyrite>>												
<<Min: 89.7 - 90 5% Min: Galena>>												
<<Min: 90 - 90.13 5% Min: Sphalerite>>												
<<Min: 90 - 90.13 10% Min: Pyrite>>												
<<Min: 90 - 90.13 1% Min: Galena>>												
<<Alt: 89.7 - 90.13 Moderate-Strong Calcite>>												
<<Struc: 89.99 - 90 Strong Contact>> parallel to DFOL												
<<Struc: 90 - 90.5 Moderate-Strong dominant foliation>>												
90.13	**93.35**	**RHY** **undifferentiated rhyolite**		90.13	91.00	0.87	D00004309	0.008	1.9	-0.01	0.02	0.04
90.13 - 93.35: includes 1.1m qtz vein												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 90.13 - 91.7 3% Min: Pyrite>>	91.00	92.50	1.50	D00004322	0.009	2.5	-0.01	0.04	0.07
		<<Min: 91.7 - 93.35 0.1% Min: Pyrite>>									
		<<Alt: 90.13 - 97.3 Trace Calcite>>									
		<<Alt: 90.13 - 98.76 Weak Muscovite>> muscovite - sericite in fracture - fault zone and in folia.									
		<<Vein: 91.75 - 93.38 90% Quartz>> brittle fractured qtz vein. Vein likely related to adjacent RHYi.									
93.35	**97.00**	**RHYi Aphanitic Rhyolite (intrusion)**									
		<<Min: 93.35 - 96.61 3% Min: Pyrite>>									
		<<Min: 96.61 - 98.76 1% Min: Pyrite>>									
		<<Struc: 96.7 - 97.3 Weak Fault>> fractured, brecciated									
97.00	**98.76**	**RHYva Coarse grained to ash tuff**									
		<<Alt: 97.3 - 98.76 Weak Calcite>>									
		<<Vein: 98.07 - 98.86 15% Quartz-Carbonate>>									
98.76	**107.50**	**RHYi Aphanitic Rhyolite (intrusion)**									
		98.76 - 107.5: gradational contacts. Sections with a pink hue. RHYi unit incorporates partially assimilated RHY.									
		<<Min: 98.76 - 99.5 0.5% Min: Sphalerite>>									
		<<Min: 98.76 - 107.5 3% Min: Pyrite>> and as diss									
		<<Alt: 98.76 - 107.5 Trace Muscovite>> on fractures									
		<<Alt: 98.76 - 107.5 Trace Calcite>>									
107.50	**110.07**	**RHYva Coarse grained to ash tuff**									
		107.5 - 110.07: includes approx 25 cm RHYi unit.									
		<<Min: 107.5 - 110.07 3% Min: Pyrite>>									
		<<Alt: 107.5 - 110.07 Weak Muscovite>>									
		<<Alt: 107.5 - 110.07 Weak-Moderate Calcite>>									
		<<Struc: 107.5 - 110.07 Weak-Moderate dominant foliation>>									
110.07	**120.29**	**RHYi Aphanitic Rhyolite (intrusion)**									
		110.07 - 120.29: gradational contacts. Sections with a pink hue. RHYi unit incorporates partially assimilated RHY. Locally RHYi appears internally brecciated giving the appearance of <1-3 mm qtz phenocrysts.									
		<<Min: 110.07 - 120.29 3% Min: Pyrite>>									
		<<Alt: 110.07 - 120.29 Weak Calcite>> fracture filling									
120.29	**121.87**	**RHYv Rhyolite volcaniclastic**	120.85	121.20	0.35	D00004311	7.89	604	2.11	0.11	0.34
		<<Min: 120.29 - 120.95 3% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 120.95 - 121.1 15% Min: Sulphosalts>>											
<<Min: 120.95 - 121.1 3% Min: Sphalerite>>											
<<Min: 120.95 - 121.1 5% Min: Pyrite>>											
<<Min: 120.95 - 121.1 3% Min: Chalcopyrite>>											
<<Min: 121.1 - 121.87 3% Min: Pyrite>>											
<<Alt: 120.29 - 121.87 Moderate Calcite>>											
<<Alt: 120.29 - 122.15 Moderate-Strong Muscovite>> sericite strongest at fracture zones and in vein envelope.											
<<Vein: 120.95 - 121.1 90% Quartz-Sulphide>> more or less confromable to DFOL. Irregular sulphosalts as matrix filling in weakly breciated rhyolite and in qtz vein as fracture filling.											
121.87	**127.30**	**RHYi** **Aphanitic Rhyolite (intrusion)**	124.30	125.80	1.50	D00004312	0.012	1.4	-0.01	-0.01	-0.01
121.87 - 127.3: RHYi incorporates sections of partly assimilated RHY.											
<<Min: 121.87 - 127.98 3% Min: Pyrite>>			125.80	127.30	1.50	D00004313	0.025	3.9	-0.01	-0.01	0.03
<<Min: 127 - 127.98 0.5% Min: Tetrahedrite>>											
<<Alt: 121.87 - 127.3 Weak Calcite>> fracture filling											
<<Alt: 123 - 127.1 Trace Muscovite>>											
<<Alt: 127.1 - 127.98 Moderate Muscovite>> intensity increases downhole.											
<<Struc: 122.7 - 123 Weak-Moderate dominant foliation>>											
<<Struc: 126 - 126.7 Weak-Moderate dominant foliation>>											
127.30	**127.98**	**RHY** **undifferentiated rhyolite**	127.30	127.98	0.68	D00004314	0.035	7.3	-0.01	0.03	0.08
<<Alt: 127.3 - 129.47 Moderate-Strong Calcite>>											
<<Struc: 127.3 - 127.9 Moderate dominant foliation>>											
<<Struc: 127.97 - 127.98 Moderate-Strong Contact>>											
127.98	**129.77**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite** **FMG**	127.98	129.00	1.02	D00004315	1.12	224	0.61	3.82	7.28
<<Min: 127.98 - 129.77 15% Min: Sphalerite>>			129.00	129.77	0.77	D00004316	1.24	229	1.1	4.11	13.1
<<Min: 127.98 - 129.77 60% Min: Pyrite>>											
<<Min: 127.98 - 129.77 3% Min: Galena>>											
<<Min: 127.98 - 129.77 3% Min: Chalcopyrite>> and as diss											
<<Struc: 129 - 129.77 Moderate-Strong Foliation>> mineral banding											
129.77	**130.37**	**RHYva** **Coarse grained to ash tuff** **VFG**	129.77	131.00	1.23	D00004317	0.032	3.2	-0.01	0.04	0.1
<<Min: 129.77 - 130.37 0.1% Min: Pyrite>>											
<<Alt: 129.77 - 133.3 Moderate-Strong Muscovite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 130.03 - 135 Moderate-Strong Calcite>>

<<Struc: 129.77 - 129.78 Moderate-Strong Contact>>

130.37	**133.30**	**RHYv**	**Rhyolite volcaniclastic**	131.00	132.50	1.50	D00004318	0.014	1.4	-0.01	-0.01	0.04

<<Min: 130.37 - 133.33 0.1% Min: Sulphosalts>>

<<Min: 130.37 - 133.33 0.1% Min: Sphalerite>>

<<Min: 130.37 - 133.33 3% Min: Pyrite>>

<<Struc: 130.37 - 130.47 Moderate Fault>> gouge parallel to foliation

133.30 136.10 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

133.3 - 136.1: Abundant calcite veining, banded chlorite alteration. 135-136.1: disseminated py-po-cpy-sph (<3% total).

<<Min: 133.33 - 135 0.1% Min: Pyrite>>

<<Min: 135 - 136.1 0.5% Min: Sphalerite>>

<<Min: 135 - 136.1 3% Min: Pyrite>>

<<Min: 135 - 136.1 0.5% Min: Chalcopyrite>>

<<Alt: 133.3 - 136.1 Moderate Chlorite>>

<<Alt: 135 - 151.1 Trace Calcite>> next to no calcite

<<Vein: 133.3 - 135 10% Calcite>>

<<Vein: 135 - 136.1 20% Quarzt-Chlorite-Carbonate>>

<<Struc: 134.5 - 135.8 Moderate Fault>> gouge zones, missing core

136.10	**151.50**	**RHYv**	**Rhyolite volcaniclastic**	142.63	143.50	0.87	D00004319	-0.005	-0.3	-0.01	-0.01	0.06

136.1 - 151.5: local lapilli zones. Weakly chl, but strong-sericite altered. Pyrrhotite and TT-SS diss and in fractures.

<<Min: 136.1 - 137.73 3% Min: Pyrite>>

<<Min: 137.73 - 138.09 5% Min: Sphalerite>>

<<Min: 137.73 - 138.09 3% Min: Pyrite>>

<<Min: 137.73 - 138.09 3% Min: Pyrrhotite>>

<<Min: 137.73 - 138.09 3% Min: Chalcopyrite>>

<<Min: 138.09 - 151.5 3% Min: Pyrrhotite>>

<<Min: 141.4 - 151.5 1% Min: Tetrahedrite>> and or SS

<<Min: 141.4 - 151.5 0.1% Min: Sphalerite>>

<<Alt: 136.1 - 137.73 Moderate-Strong Muscovite>>

<<Alt: 137.73 - 138.09 Moderate Chlorite>>

<<Alt: 138.09 - 142.7 Trace Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 138.09 - 151.5 Moderate-Strong Muscovite>>

<<Alt: 142.7 - 143.7 Weak Chlorite>>

<<Alt: 143.7 - 148 Trace Chlorite>>

<<Alt: 148 - 151.1 Weak Chlorite>>

<<Alt: 151.1 - 153.73 Weak Calcite>>

<<Vein: 141.7 - 141.75 100% Quartz-Carbonate-Sulphide>> Trace diss galena, TT - SS

<<Struc: 136.45 - 136.55 Weak-Moderate Fault>> gouge zone

<<Struc: 141.5 - 142.5 Weak-Moderate dominant foliation>>

<<Struc: 143 - 144 Weak-Moderate dominant foliation>>

<<Struc: 146.5 - 147 Weak-Moderate dominant foliation>>

<<Struc: 150.4 - 150.85 Weak Fault>>

151.50 153.73 MDSc Carbonaceous dominant mudstone

151.5 - 153.73: gougy-brecciated MDSc and RHY-Qtz-carbonate veining. Sharp contacts.

<<Min: 151.5 - 153.73 0.5% Min: Pyrite>>

<<Vein: 151.75 - 153.73 20% Quartz-Carbonate>> Qtz clasts with minor carbonate surrounded by gougy MDSc and lesser sheared RHY

<<Struc: 151.5 - 153.73 Moderate Fault>> gougy, sheared and brecciated.

153.73 162.00 RHYvl Lapilli tuff

<<Min: 153.73 - 162 0.5% Min: Tetrahedrite>> diss and with py in discontinuous stringers.

<<Min: 153.73 - 162 1% Min: Pyrite>>

<<Min: 153.73 - 162 1% Min: Pyrrhotite>>

<<Alt: 153.73 - 162 Moderate Muscovite>>

<<Alt: 153.73 - 162 Trace Chlorite>>

<<Alt: 153.73 - 162 Weak-Moderate Calcite>>

<<Struc: 154.15 - 155.46 Weak Fault>> sheared, minor gougy zones.

<<Struc: 158.9 - 160.78 Weak Fault>> gougy shear zones.

End of Hole @ 162

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-379

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/8/2016
UTM Easting	414964.243	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/9/2016
UTM Northing:	6814627.138	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1404.927	Casing Depth (m):	6	Length (m):	39.7	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/2/2016
Local Northing:		Cemented?:	VWP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/3/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

The purpose of drillhole K16-379 was to collect geotechnical and hydrological information for a potential site of infrastructure. The drillhole collared into bedrock at 5.67 m; the bedrock consisted of alternating coherent and volcaniclastic rhyolite, with a small mafic dyke (32.17-32.43m). Weak to moderate biotite and chlorite alteration was prominent between 11.53-23.06 m, with chlorite alteration ending at 2 0m. Wisps of sulphosalts (?) were encountered within the undifferentiated-altered rhyolite (7.71-8.25 m).

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/2/2016		☑	

From (m)	To (m)	Rocktype & Description
0.00	**5.67**	**OVBN Overburden**
5.67	**7.71**	**RHYcw Curdy textured-flow banded (flows, subvolcanics)**

5.67 - 7.71: Silicic banding; well-developed crenulation cleavage.

<<Min: 5.67 - 7.71 0.1% Min: Pyrite>>

<<Alt: 5.67 - 7.71 Moderate Muscovite>>

<<Alt: 5.67 - 7.71 Trace Calcite>>

<<Struc: 7.51 - 7.52 Crenulation cleavage>>

From (m)	To (m)	Rocktype & Description
7.71	**8.25**	**RHYv Rhyolite volcaniclastic**

7.71 - 8.25: Volcaniclastic RHY with strong sericite alteration, and wisps of sulphosalts. Banding has been contorted, and the original texture is obscure.

<<Min: 7.71 - 8.25 0.1% Min: Sulphosalts>> Wisps of SS within MU and Bi altered RHYv.

<<Min: 7.71 - 8.25 1% Min: Pyrite>> Wispy-disseminated PY.

<<Min: 7.71 - 8.25 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
7.71	8.25	0.54	D00004323	-0.005	0.9	-0.01	-0.01	0.03

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 7.71 - 8.25 Weak Calcite>>

<<Alt: 7.71 - 8.25 Weak Biotite>> Disseminated-wispy Bi.

<<Vein: 7.71 - 7.75 Quartz-Carbonate 65 deg. >> Quartz vein with carbonate-rich blebs.

8.25 23.06 RHYvl Lapilli tuff

8.25 - 23.06: Localized silicic bands around 12.8m. Mod-strong chlorite and biotite alteration begins at approx 11.6m, and continues to the end of the unit.

<<Min: 8.25 - 11.53 1% Min: Pyrrhotite>> Elongated blebs of PO, disseminated along foliation.

<<Min: 8.25 - 23.06 0.1% Min: Pyrite>>

<<Min: 11.53 - 23.06 0.1% Min: Pyrrhotite>>

<<Alt: 8.25 - 11.53 Moderate-Strong Muscovite>>

<<Alt: 8.25 - 11.53 Weak Calcite>>

<<Alt: 11.53 - 20 Weak-Moderate Muscovite>> Weaker MU alteration within CL-BI altered zone.

<<Alt: 11.53 - 20 Weak-Moderate Chlorite>> Disseminated blebs-clots.

<<Alt: 11.53 - 23.06 Weak-Moderate Biotite>> Disseminated-banded Bi.

<<Alt: 11.53 - 32.17 Weak-Moderate Calcite>> Disseminated-banded CA.

<<Alt: 20 - 32.17 Moderate Muscovite>>

<<Vein: 16.17 - 16.25 Quartz-Tourmaline 45 deg. >> Sub-angular quartz clasts brecciated by tourmaline; the vein is weakly-oxidized.

<<Vein: 21.61 - 23.21 Quartz-Carbonate>> Deformed quartz-carbonate veins within RHY.

<<Struc: 9.03 - 9.04 dominant foliation>>

<<Struc: 11.77 - 11.78 dominant foliation>>

<<Struc: 13.87 - 13.88 dominant foliation>>

<<Struc: 16.68 - 16.69 dominant foliation>>

<<Struc: 19.33 - 19.34 dominant foliation>>

<<Struc: 21.4 - 21.7 Weak Fault>> Crushed-healed FLT zone with subrounded, brecciated clasts. Cm-size band of gouge at the start of the FLT.

<<Struc: 22.7 - 22.71 dominant foliation>>

23.06 27.92 RHYcf Feldspar & feldspar quartz porphyry

23.06 - 27.92: Dismembered RHYcf with cm-size, subrounded feldspar. QTZ-PY bands are irregular and deformed.

<<Min: 23.06 - 29.48 3% Min: Pyrite>> Disseminated PY localized within deformed quartz bands.

<<Min: 23.06 - 29.48 1% Min: Pyrrhotite>> Disseminated PO localized within deformed quartz bands.

<<Vein: 25.77 - 25.8 Quartz-Carbonate>> Quartz vein with CA blebs.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 25.15 - 25.16 dominant foliation>>

27.92 32.17 RHYvx Quartz and/or feldspar crystal tuff

27.92 - 32.17: QE and elongated-LPL within fine-grained tuff.

<<Min: 29.48 - 32.17 0.5% Min: Pyrite>>

<<Min: 29.48 - 32.17 0.1% Min: Pyrrhotite>>

<<Vein: 29.48 - 29.6 Quartz-Carbonate>> Deformed quartz veins with CA blebs.

<<Vein: 32 - 32.02 Quartz-Carbonate 45 deg. >> Quartz vein with CA blebs.

<<Struc: 28.47 - 28.48 dominant foliation>>

<<Struc: 30.58 - 30.59 dominant foliation>>

<<Struc: 31.04 - 31.05 dominant foliation>>

32.17 32.43 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

32.17 - 32.43: Fine-grained, carbonate-rich MAFi dyke with well-developed foliation and crenulation cleavage. Sharp upper and lower CNT.

<<Min: 32.17 - 32.43 1% Min: Pyrite>>

<<Min: 32.17 - 32.43 1% Min: Pyrrhotite>>

<<Alt: 32.17 - 32.43 Moderate-Strong Calcite>> Carbonate-rich MAFi.

<<Struc: 32.25 - 32.26 Crenulation cleavage>>

<<Struc: 32.37 - 32.38 dominant foliation>>

32.43 39.70 RHYvl Lapilli tuff

32.43 - 39.7: Localized zones of quartz eyes, with random-singular QE throughout the unit.

<<Min: 32.43 - 34.39 0.1% Min: Pyrite>>

<<Min: 34.39 - 39.7 3% Min: Pyrite>> Disseminated-bands of PY +/- PO.

<<Min: 34.39 - 39.7 0.1% Min: Pyrrhotite>>

<<Alt: 32.43 - 39.7 Weak Muscovite>> Weak MU alteration within RHY; alteration visible on fractured surfaces.

<<Alt: 32.43 - 39.7 Weak-Moderate Calcite>> Disseminated blebs-bands of CA.

<<Struc: 32.43 - 32.44 Contact>> Sharp lower CNT.

<<Struc: 35.31 - 35.32 dominant foliation>>

<<Struc: 38.65 - 38.66 dominant foliation>>

End of Hole @ 39.7

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-380

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Rob Duncan
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	7/5/2016
UTM Easting	419400.06	Core Size:	NQ3	Azimuth:	180.3	Date Logging Complete:	7/10/2016
UTM Northing:	6813385.518	Casing Pulled?:	Yes	Dip:	-80.1	Drill Company:	New Age
UTM Elev. (m):	1365.627	Casing Depth (m):	7.5	Length (m):	323.7	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/4/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/9/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-380 was designed to infill between existing GP4F drill holes to provide confidence for upgrading the resource. The drillhole intersected the main GP4F lens as predicted from 153.26-159.70 m, below the blue qtz eye marker unit. Mineralization, with the exception of one thin band of OF type mineralization, consisted of OJ type proximal alteration with minor sulfides. A thin lens of OB mineralization (164.3-164.77 m) was intersected below a PEL unit that separates the two lens. Discontinuous disseminated and thin foliaform qtz - sulfide bands (typically <0.5 cm thick and spaced 0.25-0.5 m) was intersected from 229.50-250.00 m. Intensely chlorite altered units, with sharp contacts were intersected at 282.91-284.31 m, 287.67-288.30 m and 308.90-314.53 m. The lowermost unit contains garnets and traces of chalcopyrite. These chlorite units are thought to be altered pelitic horizons based on the presence of calcite and remnant biotite. The drill hole ends in faulted rhyolite with minor mudstone (and missing core).

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-80.1	178.9	1.4	180.3	TN14	Rob Duncan	7/4/2016		☑	
5	-79.31787	177.43153	1.4	178.83153	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
10	-79.16366	178.13539	1.4	179.53539	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
15	-79.06379	178.97673	1.4	180.37673	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
20	-78.95216	179.63126	1.4	181.03126	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
21	-79.5	160.1	22.1	182.2	ReflexEZS	New Age	7/5/2016	5743	☐	
25	-78.92341	179.74013	1.4	181.14013	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
30	-78.88871	179.42295	1.4	180.82295	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
35	-78.84928	179.14298	1.4	180.54298	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
40	-78.80321	179.35273	1.4	180.75273	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
45	-78.78297	179.74336	1.4	181.14336	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
50	-78.78192	179.8039	1.4	181.2039	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
54	-78.9	158	22.1	180.1	ReflexEZS	New Age	7/5/2016	5740	☐	
55	-78.72972	179.80197	1.4	181.20197	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
60	-78.60363	179.5	1.4	180.9	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
65	-78.46751	179.00349	1.4	180.40349	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
70	-78.48407	179.27195	1.4	180.67195	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-380

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-78.37516	179.03588	1.4	180.43588	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
80	-78.17629	179.18584	1.4	180.58584	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
85	-78.1216	179.7669	1.4	181.1669	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
87	-77.3	158.8	22.1	180.9	ReflexEZS	New Age	7/6/2016	5755	☐	
90	-78.00147	179.92046	1.4	181.32046	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
95	-77.78286	180.24439	1.4	181.64439	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
100	-77.51326	179.97877	1.4	181.37877	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
105	-77.25423	180.42381	1.4	181.82381	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
105.01	-77.3	157.1	22.1	179.2	ReflexEZS	New Age	7/6/2016	5734	☐	
110	-77.22148	180.04727	1.4	181.44727	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
115	-77.11946	179.87405	1.4	181.27405	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
120	-76.87913	180.04715	1.4	181.44715	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
125	-76.68212	180.21372	1.4	181.61372	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
130	-76.5222	180.16415	1.4	181.56415	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
132	-76.5	156.8	22.1	178.9	ReflexEZS	New Age	7/6/2016	5755	☐	
135	-76.06961	180.27197	1.4	181.67197	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
140	-75.69857	180.30758	1.4	181.70758	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
145	-75.15982	180.63972	1.4	182.03972	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
150	-74.76458	180.83175	1.4	182.23175	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
155	-74.34967	180.85476	1.4	182.25476	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
156	-74.3	159.2	22.1	181.3	ReflexEZS	New Age	7/6/2016	5724	☐	
160	-74.23491	180.84838	1.4	182.24838	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
165	-74.26443	180.87132	1.4	182.27132	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
170	-74.32309	181.65342	1.4	183.05342	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
175	-74.26761	181.75852	1.4	183.15852	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
180	-74.08649	181.87496	1.4	183.27496	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
185	-73.91151	182.08307	1.4	183.48307	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
186	-74	161.2	22.1	183.3	ReflexEZS	New Age	7/7/2016	5730	☐	
190	-73.73351	181.90075	1.4	183.30075	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
195	-73.41382	181.26914	1.4	182.66914	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
200	-73.31288	181.22313	1.4	182.62313	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
205	-73.14526	181.09877	1.4	182.49877	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
210	-72.96691	181.49223	1.4	182.89223	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
215	-72.76981	181.54547	1.4	182.94547	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-380

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
216	-73.1	157.2	22.1	179.3	ReflexEZS	New Age	7/7/2016	5628	☐	
220	-72.51138	182.10215	1.4	183.50215	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
225	-72.29997	182.23516	1.4	183.63516	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
230	-72.05199	182.46121	1.4	183.86121	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
235	-71.78889	182.67433	1.4	184.07433	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
240	-71.7288	182.93498	1.4	184.33498	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
245	-71.49579	182.84012	1.4	184.24012	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
250	-71.16692	182.86322	1.4	184.26322	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
255	-70.75365	182.83182	1.4	184.23182	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
260	-70.31602	182.99453	1.4	184.39453	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
261	-70.3	159.7	22.1	181.8	ReflexEZS	New Age	7/8/2016	5741	☐	
265	-69.84633	183.71035	1.4	185.11035	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
270	-69.5979	184.37966	1.4	185.77966	Gyro	Steve Bultitude	7/10/2016		☑	Motion quality = 100
285	-69	164	22.1	186.1	ReflexEZS	New Age	7/8/2016	5702	☑	
323.7	-69	167.1	22.1	189.2	ReflexEZS	New Age	7/9/2016	5740	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.00 OVBN Overburden

6.00 27.77 RHYvl Lapilli tuff

6 - 27.77: patchy bl in groundmass between lapilli to approximately 15.6m, sheeted qz veining 11- 14m

<<Min: 10.75 - 15.55 0.1% Min: Pyrrhotite>>

<<Min: 25 - 27 0.1% Min: Pyrrhotite>> partially oxidized @ 25m

<<Alt: 19 - 25 Weak-Moderate Calcite>>

<<Vein: 8.43 - 8.95 90% Quartz 80 deg. >> massive white qz veining

<<Vein: 11.2 - 13.5 30% Quartz 80 deg. >> massive qz sheeted veins 1cm - 10cm wide

<<Vein: 15.69 - 16.14 100% Quartz 70 deg. >> massive qz, lower contact in rubble core

<<Struc: 12 - 15 dominant foliation>>

<<Struc: 16 - 28.5 Weak-Moderate Fault>> numerous10cm long 0 broken and missing core with oxidation

<<Struc: 17.5 - 21 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

27.77 29.20 PEL Equigranular biotite + calcite +/- quartz rock

27.77 - 29.2: Cbppo

<<Min: 27.77 - 29.2 1% Min: Pyrrhotite>>

<<Alt: 27.77 - 29.2 Strong Calcite>>

29.20 37.35 RHYvl Lapilli tuff

29.2 - 37.35: short interval around 33.10 - 33.4 could be RHYc; sheeted CA veinlets with BI selvage 3mm @ 33.5 - 37m. Gradational contact over 50cm with PEL below.
32.21- 32.48 = PEL (lpl)

<<Alt: 30.5 - 37.35 Weak-Moderate Calcite>> in CA-BI veinlets

<<Vein: 30.5 - 37 5% Carbonate-Biotite 65 deg. >> 3mm CA veinlets with 1-2mm BI selvage sheeted

<<Struc: 33.5 - 36 dominant foliation>>

37.35 38.13 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 37.35 - 38.13 0.5% Min: Pyrrhotite>>

<<Alt: 37.35 - 38.13 Moderate-Strong Calcite>>

38.13 54.85 RHYvl Lapilli tuff

38.13 - 54.85: BI in groundmass between lapilli in short intervals like 52 - 52.4m strong enough for PEL modifier. Minor BI with CA throughout indicating minor sedimentary input / mixing in thisRHYvl.

<<Alt: 38.13 - 54.85 Weak-Moderate Calcite>> in BI groundmass of RHYvl

<<Vein: 54.8 - 54.85 100% Quartz 80 deg. >> qz vein

<<Struc: 42 - 51 Weak Fault>> numerous 5cm broken core, lost core, rubble with oxidation

<<Struc: 53.5 - 54.5 Moderate Fault>> gouge and fault bx pieces, brittle

54.85 55.96 PEL Equigranular biotite + calcite +/- quartz rock

54.85 - 55.96: poor recovery

<<Alt: 54.85 - 55.96 Strong Calcite>>

<<Vein: 55.2 - 55.55 100% Calcium carbonate/Carbonate 80 deg. >> cb veins 10 and 5cm wide

<<Struc: 55 - 61 Weak-Moderate Fault>> brittle fracture, poor recovery missing core

55.96 57.00 RHYvl Lapilli tuff

<<Alt: 55.96 - 57 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

57.00 57.57 RHYc Rhyolite coherant volcanics

57 - 57.57: silicious, more massive domains, could be very narrow RHYi

57.57 58.20 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 57.57 - 58.2 Strong Calcite>>

58.20 61.15 RHYvl Lapilli tuff

58.2 - 61.15: weak PEL input as FG BI

<<Min: 61 - 63 0.1% Min: Pyrrhotite>>

61.15 66.67 PEL Equigranular biotite + calcite +/- quartz rock

61.15 - 66.67: finer grained BI sections, some indication of felsic ash.

<<Min: 66 - 66.67 0.5% Min: Pyrite>>

<<Alt: 61.15 - 62.6 Strong Calcite>>

<<Alt: 62.6 - 66.67 Weak Calcite>>

<<Struc: 65.1 - 68.5 Weak-Moderate Fault>> as above

66.67 67.00 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 66.67 - 67 1% Min: Pyrrhotite>>

<<Alt: 66.67 - 67 Strong Calcite>>

67.00 73.46 RHYvl Lapilli tuff

67 - 73.46: sig BI domains and FG BI in RHYvl

<<Alt: 72.5 - 74.27 Moderate Calcite>>

<<Struc: 69.15 - 72.5 Strong Fault>> flt gouge signficant amount of lost core and oxidized flt material.

73.46 73.68 RHYc Rhyolite coherant volcanics

73.46 - 73.68: Very siliceous massive rhyolite domains 1cm scale with BI between. Very narrow pepperitic RHYi or RHYc

73.68 74.27 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 74 - 74.27 0.5% Min: Pyrite>>

<<Min: 74 - 74.27 0.1% Min: Pyrrhotite>>

<<Struc: 73.8 - 74 Moderate Fault>> flt gouge, missing core, rubble

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

74.27 74.78 RHYc Rhyolite coherant volcanics

74.27 - 74.78: Very siliceous massive rhyolite domains 1cm scale with BI between. Very narrow pepperitic RHYi or RHYc

<<Struc: 74.5 - 75.4 dominant foliation>>

74.78 75.52 RHYvl Lapilli tuff

74.78 - 75.52: sig BI domains and FG BI in RHYvl

<<Struc: 75.32 - 75.42 Weak-Moderate Fault>> crushed core, minor gouge

75.52 76.01 RHYc Rhyolite coherant volcanics

75.52 - 76.01: Very siliceous massive rhyolite domains 1cm scale with BI between. Very narrow pepperitic RHYi or RHYc

76.01 78.33 PEL Equigranular biotite + calcite +/- quartz rock

76.01 - 78.33: BI-r

<<Min: 77 - 78.33 0.5% Min: Pyrrhotite>>

<<Min: 78 - 78.33 0.5% Min: Pyrite>>

<<Alt: 76.01 - 78.33 Moderate Calcite>> and PAT

78.33 78.62 RHYvl Lapilli tuff

78.33 - 78.62: minor BI between some lapilli

<<Alt: 78.33 - 78.62 Weak-Moderate Calcite>> in BI groundmass

78.62 80.51 PEL Equigranular biotite + calcite +/- quartz rock

78.62 - 80.51: pure pelite, no felsic component

<<Min: 78.62 - 80.51 1% Min: Pyrrhotite>>

<<Alt: 78.62 - 80.51 Moderate-Strong Calcite>> and PER

80.51 82.45 PEL Equigranular biotite + calcite +/- quartz rock

80.51 - 82.45: pelite sediment with felsic ash component. development of recrystalized calcite and chlorite, BI deformed domains. Also Cbppo

<<Min: 80.51 - 82.9 0.5% Min: Pyrrhotite>>

<<Alt: 81.4 - 82.9 Moderate-Strong Calcite>>

<<Alt: 81.45 - 93 Weak Muscovite>> fine white muscovite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 81.4 - 82 30% Carbonate-Chlorite>> deformed calcite -chl veins and bands

82.45 93.00 RHYvl Lapilli tuff

82.45 - 93: lapilli contet and size increase downhole. Weak BI and decreasing downhole.

<<Min: 82.9 - 93 1% Min: Pyrite>>

<<Min: 82.9 - 93 1% Min: Pyrrhotite>>

<<Alt: 82.9 - 93 Weak-Moderate Calcite>>

<<Struc: 82.45 - 86.3 Weak-Moderate Fault>> broken core, crushed zones

<<Struc: 89 - 90 Moderate-Strong dominant foliation>>

<<Struc: 91 - 91.65 Moderate-Strong dominant foliation>>

93.00 94.16 PEL Equigranular biotite + calcite +/- quartz rock

93 - 94.16: Minor development of folded bands and stringers (mm to cm) of recrystalized calcite with chlorite.

<<Alt: 93 - 94.16 Moderate-Strong Calcite>>

<<Vein: 93 - 94.16 10% Carbonate-Chlorite 80 deg. >> deformed calcite - chl veins and bands

94.16 95.32 RHYvl Lapilli tuff

94.16 - 95.32: Biotite folia, deformed calcite - chlorite clots, blebs and bands.

<<Alt: 94.16 - 95.32 Weak Muscovite>> fine white muscovite

<<Alt: 94.16 - 95.32 Weak-Moderate Calcite>>

95.32 97.25 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

95.32 - 97.25: Dyke. 95.90-97.07: Abundant chlorite bands, clots & dissiminations, lesser biotite. Includes 5 cm felsic dyke

<<Min: 95.9 - 97.1 0.5% Min: Pyrrhotite>> with chlorite alteration

<<Alt: 95.32 - 95.9 Moderate-Strong Calcite>>

<<Alt: 95.9 - 97.06 Moderate Chlorite>>

<<Alt: 95.9 - 97.06 Trace Calcite>>

<<Alt: 95.9 - 97.06 Weak Biotite>>

<<Alt: 97.06 - 107.02 Weak-Moderate Calcite>>

<<Struc: 95.5 - 96 Moderate dominant foliation>>

97.25 107.02 RHYvl Lapilli tuff

<<Min: 97.25 - 107.02 0.5% Min: Pyrite>>

<<Min: 97.25 - 107.02 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 97.25 - 107.02 Weak-Moderate Muscovite>> minor sericite

<<Vein: 105.85 - 107 5% Quartz-Tourmaline 10 deg. >> low angle qtz-tou-cal veinlet

<<Struc: 105.5 - 106 Moderate dominant foliation>>

<<Struc: 105.8 - 106.1 Weak Vein>> qtz-tour veinlet

107.02 112.10 PEL Equigranular biotite + calcite +/- quartz rock

107.02 - 112.1: Deformed calcite-chlorite veins and bands. Minor chlorite alteration near center of unit.

<<Min: 107.02 - 112.1 1% Min: Pyrrhotite>>

<<Alt: 107.02 - 112.1 Moderate-Strong Calcite>>

<<Vein: 107.7 - 108.2 30% Carbonate-Chlorite>>

<<Struc: 108.2 - 112 Weak-Moderate Fault>> numerous zones broken and crushed core.

112.10 122.29 RHYvl Lapilli tuff

112.1 - 122.29: Gradational contact with overlying PEL, upper 65 cm contains PEL, decreasing downhole.

<<Min: 112.1 - 122.29 2% Min: Pyrite>>

<<Min: 112.1 - 122.29 1% Min: Pyrrhotite>>

<<Alt: 112.1 - 122.29 Weak Muscovite>>

<<Alt: 112.1 - 122.29 Trace Calcite>>

<<Struc: 116 - 119 Weak-Moderate dominant foliation>>

<<Struc: 122 - 122.35 Weak-Moderate dominant foliation>>

122.29 123.25 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

122.29 - 123.25: Minor deformed calcite - chlorite bands and veins.

<<Min: 122.29 - 123.25 3% Min: Pyrrhotite>>

<<Alt: 122.29 - 123.25 Moderate-Strong Calcite>>

123.25 126.17 RHYvl Lapilli tuff

<<Min: 123.25 - 126.17 2% Min: Pyrrhotite>>

<<Alt: 123.25 - 126.17 Trace Calcite>> minor fracture filling

126.17 126.57 PEL Equigranular biotite + calcite +/- quartz rock

126.17 - 126.57: contains deformed calcite-chlorite bands.

<<Min: 126.17 - 126.57 3% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 126.17 - 126.57 Weak-Moderate Calcite>>

126.57 135.79 RHYvl Lapilli tuff

126.57 - 135.79: at upper and lower contacts alteration approaches BCQlpl (but no chlorite)

<<Min: 126.57 - 129.2 1% Min: Pyrrhotite>>

<<Min: 129.2 - 135.79 3% Min: Pyrite>>

<<Alt: 126.57 - 135.79 Weak-Moderate Muscovite>>

<<Alt: 126.57 - 135.79 Trace Calcite>> minor fracture filling and occasional diss.

<<Vein: 127.2 - 127.3 10% Quartz-Tourmaline 20 deg. >>

<<Struc: 131.75 - 132 Moderate dominant foliation>>

135.79 140.50 PEL Equigranular biotite + calcite +/- quartz rock

135.79 - 140.5: Ash rich sections. Unit is cut by qtz veins and deformed qtz-chlorite veins (no calicte-chlorite as in upper PEL units. Unit is locally bleached and silicified - qtz flooded (looks like and could also be in part ash rich sections. Bl-r at upper and lower contacts.

<<Min: 135.79 - 139.2 3% Min: Pyrrhotite>>

<<Min: 139.2 - 139.7 3% Min: Pyrite>>

<<Min: 139.7 - 142.62 1% Min: Pyrite>>

<<Alt: 135.79 - 136.25 Moderate-Strong Calcite>>

<<Alt: 136.25 - 139.8 Trace Calcite>> calcite veining and filling

<<Alt: 136.9 - 140.5 Weak Muscovite>> associated with bleaching

<<Alt: 136.92 - 139 Moderate-Strong Silicification>>

<<Alt: 137.9 - 151.84 Weak Chlorite>> also as diss, thin mm bands, wisps

<<Alt: 139.8 - 140.5 Moderate Calcite>>

<<Vein: 136.28 - 136.66 100% Quartz>>

<<Vein: 136.4 - 139 30% Quarzt-Chlorite-Carbonate>> deformed and brecciated qtz vein with minor calcite and chlorite

140.50 142.62 RHYv Rhyolite volcaniclastic

<<Alt: 140.5 - 150 Weak-Moderate Calcite>> as blebs, fracture filling, veinlets and diss.

<<Alt: 140.5 - 151.84 Weak Muscovite>> associated with bleached PEL, fine white muscovite on RHY folia and rare sericite on fractures and folia.

<<Vein: 141.5 - 148.55 5% Quartz-Chlorite>> Deformed qtz veinlets approximately parallel to foliation, locally as qtz floodig with irregular margins.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

142.62 149.95 RHYvx Quartz and/or feldspar crystal tuff

142.62 - 149.95: Upper Qtz eye marker unit. Minor PEL sections (BI-r). Bands of qtz-calcite-chlorite alteration, commonly deformed. Likely bleaching of PEL along folia.

<<Min: 142.62 - 144.6 3% Min: Pyrite>>

<<Min: 143.4 - 143.9 0.1% Min: Sphalerite>>

<<Min: 143.4 - 143.9 0.5% Min: Chalcopyrite>>

<<Min: 144.6 - 145 0.5% Min: Pyrrhotite>>

<<Min: 145 - 151.55 0.5% Min: Pyrite>>

<<Vein: 148 - 148.5 40% Calcite 80 deg. >> foliform brx cal veining

<<Struc: 144 - 144.4 Moderate dominant foliation>>

<<Struc: 145.15 - 145.25 Weak-Moderate Fault>>

149.95 150.38 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 150 - 150.4 Moderate-Strong Calcite>>

<<Struc: 150 - 150.9 Moderate dominant foliation>>

150.38 151.84 RHYvx Quartz and/or feldspar crystal tuff

150.38 - 151.84: Upper Qtz eye marker unit. Minor PEL sections (BI-r), locally bleached.

<<Min: 151.55 - 153.26 3% Min: Pyrrhotite>>

<<Alt: 150.4 - 151.5 Weak Calcite>>

<<Alt: 151.5 - 151.84 Weak-Moderate Calcite>> thin bands - folia.

151.84 153.26 PEL Equigranular biotite + calcite +/- quartz rock

151.84	153.26	1.42	D00005529	-0.005	1.2	0.05	0.06	0.21

151.84 - 153.26: Mixed PEL - RHYva unit, possible BI destruction.

<<Alt: 151.84 - 153 Weak-Moderate Chlorite>>

<<Alt: 151.84 - 153.26 Moderate Calcite>>

<<Alt: 153 - 155.13 Moderate-Strong Chlorite>>

<<Struc: 152 - 153 Moderate-Strong dominant foliation>>

From (m)	To (m)	Rocktype & Description
153.26	**159.70**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

153.26 - 159.7: Weak to strong OJ (minor to semi massive chlorite) with minor sections of PEL and RHYva, variable amounts of diss and minor bands of py-po-cp-sp-gn.158.58-158.84m: semi-massive po with blebs cpy (almost OF).159.06-159.40m: mostly RHYva.

<<Min: 153.26 - 155.13 5% Min: Pyrrhotite>>
<<Min: 153.26 - 155.13 5% Min: Pyrite>>
<<Min: 153.26 - 155.13 3% Min: Sphalerite>>
<<Min: 153.26 - 155.13 0.5% Min: Galena>>
<<Min: 155.13 - 156.63 3% Min: Pyrrhotite>> diss
<<Min: 155.13 - 156.63 3% Min: Pyrite>> diss
<<Min: 156.63 - 158.41 5% Min: Pyrrhotite>>
<<Min: 156.63 - 158.41 1% Min: Galena>>
<<Min: 156.63 - 158.41 3% Min: Sphalerite>>
<<Min: 156.63 - 158.41 3% Min: Chalcopyrite>>
<<Min: 158.41 - 158.84 3% Min: Chalcopyrite>>
<<Min: 158.41 - 158.84 15% Min: Pyrrhotite>>
<<Min: 158.41 - 158.84 15% Min: Sphalerite>>
<<Min: 158.84 - 159.7 5% Min: Pyrite>>
<<Min: 158.84 - 159.7 1% Min: Chalcopyrite>>
<<Min: 158.84 - 159.7 1% Min: Pyrrhotite>>
<<Alt: 153.26 - 159.7 Moderate Biotite>>
<<Alt: 153.4 - 154 Moderate Cordierite>>
<<Alt: 155.13 - 156.63 Moderate Chlorite>>
<<Alt: 156 - 160.6 Trace Silicification>>
<<Alt: 156.63 - 158.58 Strong Chlorite>>
<<Alt: 156.7 - 158.84 Moderate Cordierite>> diss, well developed 158.58-158.84m.
<<Alt: 158.58 - 158.84 Weak Garnet>> up to .5cm size, light brn
<<Alt: 158.58 - 159.7 Moderate-Strong Chlorite>>
<<Alt: 159.1 - 160 Weak Calcite>>
<<Vein: 158.41 - 158.58 100% Quartz-Chlorite-Sulphide 75 deg. >> Chlorite margins, qtz-sulfide center
<<Struc: 155.3 - 156 Moderate dominant foliation>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
153.26	155.13	1.87	D00005531	0.03	9.2	0.06	1.04	1.91
155.13	156.63	1.50	D00005532	-0.005	0.5	-0.01	0.06	0.06
156.63	158.41	1.78	D00005533	0.088	12.1	0.15	1.63	3.13
158.41	158.85	0.44	D00005534	0.137	23.7	0.3	1.01	13.8
158.85	159.70	0.85	D00005535	0.206	4.8	0.38	0.02	1.56

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 158 - 165.5 Weak Fault>> minor zones of broken - fractured core, locally cemented by calcite.									
		<<Struc: 158.58 - 158.84 Strong Contact>> average of sulfide band contacts									
159.70	**164.30**	**RHYva Coarse grained to ash tuff**	159.70	161.70	2.00	D00005536	0.025	4	0.03	0.14	0.4
		159.7 - 164.3: Minor PEL as thin BI bands, might be more but BI destroyed. Best section 160.00-160.30. Diss py increasing over lower 20 cm.									
		<<Min: 159.7 - 163.5 3% Min: Pyrite>>	161.70	163.30	1.60	D00005537	0.092	11.5	0.03	0.3	0.88
		<<Min: 163.5 - 164.3 5% Min: Pyrite>>	163.30	164.30	1.00	D00005538	0.295	37.1	0.05	0.67	1.04
		<<Alt: 159.7 - 161.7 Weak Chlorite>>									
		<<Alt: 160 - 162.15 Moderate Calcite>>									
		<<Alt: 160.6 - 165.85 Weak-Moderate Silicification>>									
		<<Struc: 164.29 - 164.3 Strong Contact>> upper sulfide band contact									
164.30	**164.74**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	164.30	164.74	0.44	D00005539	3	298	0.28	8.03	15
		164.3 - 164.74: Approx 20% buckshot PY, 30+% semi massive SP.									
		<<Min: 164.3 - 164.74 25% Min: Sphalerite>> semi massive po-sp									
		<<Min: 164.3 - 164.74 15% Min: Pyrite>>									
		<<Min: 164.3 - 164.74 10% Min: Pyrrhotite>> semi massive po-sp									
		<<Min: 164.3 - 164.74 5% Min: Galena>>									
		<<Alt: 164.6 - 165.87 Trace Calcite>>									
164.74	**165.87**	**RHYva Coarse grained to ash tuff**	164.74	165.87	1.13	D00005541	0.012	1.3	0.02	-0.01	0.02
		<<Min: 164.74 - 165.87 0.5% Min: Pyrite>>									
165.87	**169.53**	**PEL Equigranular biotite + calcite +/- quartz rock**	165.87	167.40	1.53	D00005542	0.086	3.9	0.02	0.04	0.12
		165.87 - 169.53: Middle of unit ash rich, more BI-r.									
		<<Min: 165.87 - 169.53 3% Min: Pyrrhotite>>	167.91	169.41	1.50	D00005543	0.09	1.4	0.01	-0.01	0.02
		<<Alt: 165.87 - 169.53 Weak-Moderate Calcite>>									
		<<Alt: 166.4 - 172.51 Weak-Moderate Silicification>>									
		<<Vein: 166.1 - 166.36 20% Quartz-Tourmaline 30 deg. >>									
		<<Vein: 167.19 - 168.34 75% Quartz 80 deg. >>									
		<<Vein: 169.3 - 169.5 40% Quartz 15 deg. >> low angle									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 167.5 - 185.3 Weak Fault>> numerou zone of broken - cruhed core, clay-calcite on fractue, several zones of 'wash' noted by drillers (no core recovery).

169.53 172.51 RHYva Coarse grained to ash tuff

<<Min: 169.53 - 172.51 3% Min: Pyrite>>

<<Alt: 169.53 - 172.4 Weak Muscovite>>

<<Alt: 169.53 - 172.51 Trace Calcite>>

<<Vein: 170.75 - 172.5 10% Quartz 80 deg. >> veins <10cm wide

172.51 173.68 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 172.51 - 173.68 3% Min: Pyrrhotite>>

<<Alt: 172.51 - 173.68 Moderate-Strong Calcite>>

173.68 174.52 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 173.68 - 185.3 3% Min: Pyrite>> commonly diss in discrete bands

<<Min: 173.68 - 186 1% Min: Pyrrhotite>>

<<Alt: 173.68 - 181.48 Moderate Silicification>>

<<Alt: 173.68 - 181.48 Trace Calcite>>

<<Alt: 173.8 - 199.33 Weak Muscovite>> fine muscovite, MU replacing BI in PEL units.

174.52 175.88 No Core No Core

175.88 181.47 RHYvx Quartz and/or feldspar crystal tuff

<<Vein: 176.96 - 177.86 70% Quartz 80 deg. >> rare blebs SP

<<Vein: 179.51 - 179.75 90% Quartz 80 deg. >>

<<Struc: 178 - 179.7 Moderate-Strong dominant foliation>>

181.47 182.72 No Core No Core

<<Alt: 181.48 - 183.4 Moderate Calcite>>

182.72 183.80 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 183.4 - 186.1 Trace Calcite>>

183.80 185.30 No Core No Core

From (m)	To (m)	Rocktype & Description
185.30	**199.33**	**RHYva Coarse grained to ash tuff**

185.3 - 199.33: minor sections and thin bands of PEL (ie. 187.98-188.46 m largest but not strong BI). Wisps and dis of PY PO starting at 188.65 along with silicification which grades into intermittant almost looking calc-silicate alteration plus local bands of chl-biotite alteration +/- py-po-sp-cp.

<<Min: 185.3 - 187 5% Min: Pyrite>>

<<Min: 186 - 186.9 5% Min: Pyrrhotite>>

<<Min: 187 - 187.78 3% Min: Pyrite>>

<<Min: 187.78 - 188.66 1% Min: Pyrite>>

<<Min: 187.88 - 188.75 3% Min: Pyrrhotite>>

<<Min: 188.66 - 193.6 5% Min: Pyrite>>

<<Min: 188.75 - 193.6 3% Min: Pyrrhotite>>

<<Min: 193.6 - 196.7 3% Min: Pyrrhotite>>

<<Min: 193.6 - 199.33 1% Min: Pyrite>>

<<Min: 196.7 - 198.5 3% Min: Pyrrhotite>>

<<Min: 196.97 - 198.55 3% Min: Sphalerite>> SP concentrated in 3 chlorite pyrite bands about 10 cm wide.

<<Min: 199.3 - 201.7 5% Min: Pyrrhotite>>

<<Alt: 185.3 - 220.34 Moderate Silicification>> SI associated with RHY units, sulfide concentrations and forms what look like bands and patches of weak calc silicate alteration. Thicker PEL units are are rarely silicified.

<<Alt: 186 - 186.94 Trace Chlorite>> associated with sulfides, bleaching and SI.

<<Alt: 186.1 - 186.8 Weak-Moderate Calcite>> PEL rich zone

<<Alt: 186.8 - 187.98 Trace Calcite>>

<<Alt: 187.98 - 188.46 Moderate Calcite>>

<<Alt: 188.46 - 197.1 Trace Calcite>>

<<Alt: 193.2 - 198.2 Weak Chlorite>>

<<Alt: 193.25 - 209.7 Weak Biotite>>

<<Alt: 197.1 - 203.8 Weak Calcite>> CA associated with alteration and mineraization

<<Alt: 198.2 - 204 Weak-Moderate Chlorite>> patchy blebs-clots, diss and rare bands

<<Vein: 191.7 - 191.8 25% Quartz-Pyrrhotite 20 deg. >> in ground core

<<Vein: 195.2 - 197.1 35% Quartz 70 deg. >> up to 25cm wide

<<Struc: 189 - 190 Moderate dominant foliation>>

<<Struc: 190.2 - 190.3 Weak-Moderate Fault>>

<<Struc: 193.9 - 196.7 Weak Fault>> zones of broken core, minor gouge, parallel to foliation

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
197.00	198.50	1.50	D00005544	0.015	14.4	0.01	0.39	2.2
198.50	199.33	0.83	D00005545	-0.005	-0.3	-0.01	-0.01	0.02

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
199.33	**201.70**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	199.33	200.50	1.17	D00005546	0.012	7.2	0.03	0.28	1.41
199.33 - 201.7: 199.33-200.20: Weak (chlorite -sulfide) OJ, 200.20-201.70: very weak chlorite - sulfides, locally siliceous. Bippo												
<<Min: 199.33 - 201.7 3% Min: Sphalerite>>				200.50	201.70	1.20	D00005547	0.012	7.7	0.06	0.65	2.83
<<Min: 199.33 - 201.7 3% Min: Pyrite>>												
<<Min: 199.33 - 201.7 0.1% Min: Chalcopyrite>>												
<<Struc: 201.3 - 201.6 Moderate dominant foliation>>												
201.70	**204.00**	**RHYva**	**Coarse grained to ash tuff**	201.70	204.00	2.30	D00005548	0.01	8.5	0.01	0.19	0.79
<<Min: 201.7 - 204 1% Min: Pyrite>> PAT diss												
<<Min: 201.7 - 204 1% Min: Pyrrhotite>>												
<<Min: 203.48 - 204 1% Min: Sphalerite>>												
<<Alt: 203.8 - 210.34 Moderate Calcite>> CA associated with alteration and weak mineralization												
<<Struc: 201.7 - 204.4 Moderate Fault>> 2 zone of gouge 10-20 cm and smaller plus intervening zone of broken core.												
204.00	**206.14**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**	204.00	206.14	2.14	D00005549	0.007	2.7	-0.01	0.09	0.19
204 - 206.14: bleached - biotite destroyed bands, grey bands of silicification - almost calc silicate.												
<<Min: 204 - 206.14 3% Min: Pyrrhotite>>												
<<Min: 206.1 - 207.1 3% Min: Sphalerite>>												
<<Min: 206.1 - 207.1 0.5% Min: Chalcopyrite>>												
<<Min: 206.1 - 207.21 3% Min: Pyrite>>												
<<Min: 206.1 - 207.21 3% Min: Pyrrhotite>>												
206.14	**207.21**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	206.14	207.21	1.07	D00005551	0.007	5.8	0.02	0.62	1.26
<<Min: 207.1 - 210.34 0.5% Min: Sphalerite>> PAT diss												
<<Min: 207.1 - 210.34 1% Min: Pyrite>> PAT diss												
<<Min: 207.1 - 210.34 3% Min: Pyrrhotite>> PAT diss												
<<Min: 207.1 - 210.34 0.1% Min: Chalcopyrite>> PAT diss												
<<Alt: 206.14 - 207.21 Moderate Chlorite>>												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 206.5 - 207.8 Weak Fault>>									
207.21	**210.34**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	207.21	208.71	1.50	D00005552	-0.005	4.9	0.02	0.4	0.94
		207.21 - 210.34: Very similar to above OJ but chlorite-sulfides overall weaker. Lowermost 0.5m is PEL, next to no alteration.									
		<<Alt: 207.21 - 209.7 Weak Chlorite>>	208.71	210.21	1.50	D00005553	-0.005	3.4	0.02	0.26	1.02
		<<Struc: 208 - 209.1 Moderate-Strong dominant foliation>>									
210.34	**211.44**	**RHYc** **Rhyolite coherent volcanics**									
		210.34 - 211.44: block of RHYc in PEL									
		<<Min: 210.34 - 211.44 1% Min: Pyrrhotite>> PAT diss									
		<<Min: 210.34 - 212.3 1% Min: Pyrite>> PAT diss									
		<<Min: 210.34 - 212.3 1% Min: Pyrrhotite>> PAT diss									
		<<Min: 210.34 - 212.3 0.1% Min: Chalcopyrite>> PAT diss									
		<<Alt: 210.34 - 211.44 Weak Calcite>>									
		<<Vein: 211.4 - 220.15 5% Quartz 70 deg. >> thin foliaform veinlets, locally bleached envelopes									
211.44	**212.31**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		211.44 - 212.31: center portion of unit is ash rich.									
		<<Alt: 211.44 - 212.3 Moderate-Strong Calcite>>									
		<<Struc: 212.3 - 212.37 Weak Fault>>									
212.31	**214.90**	**RHYc** **Rhyolite coherent volcanics**									
		212.31 - 214.9: Mostly coherent but sections with ash and lapilli.									
		<<Min: 213.3 - 222.9 1% Min: Pyrrhotite>> and as wisps									
		<<Alt: 213.3 - 214.9 Weak Calcite>>									
		<<Struc: 214.6 - 216 Moderate dominant foliation>>									
214.90	**218.21**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		214.9 - 218.21: Bl-r, ash increaeses down section.									
		<<Alt: 214.9 - 218.21 Moderate Calcite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
218.21	**220.40**	**RHYvl Lapilli tuff** 218.21 - 220.4: minor PEL bands and biotite folia, Silicic bands <<Alt: 218.21 - 220.4 Trace Calcite>> <<Struc: 219.5 - 220.6 Moderate dominant foliation>>									
220.40	**222.90**	**PEL Equigranular biotite + calcite +/- quartz rock** 220.4 - 222.9: BI-r <<Alt: 220.4 - 224.1 Moderate Calcite>> <<Struc: 220.6 - 222.9 Moderate dominant foliation>> defined by foliaform calcite veinlets in PEL <<Struc: 220.7 - 223.05 Weak Fault>>									
222.90	**225.68**	**RHYva Coarse grained to ash tuff** 222.9 - 225.68: Bleached by veining and SIL, BI destroyed <<Min: 222.9 - 224.2 3% Min: Pyrrhotite>> <<Min: 224.2 - 226 1% Min: Pyrrhotite>> <<Alt: 222.9 - 240.41 Weak Muscovite>> fine white mica <<Alt: 224.1 - 225.68 Weak-Moderate Calcite>> <<Vein: 224.75 - 225.17 20% Quartz-Albite 25 deg. >> low angle, irregular Qtz - feld vein - not necessarily albite	229.45	230.95	1.50	D00005554	0.007	3.6	0.03	0.13	1.03
225.68	**232.48**	**RHYcf Feldspar & feldspar quartz porphyry** 225.68 - 232.48: 225.68 - 227.44: Gradational contact with PEL and ash decreasing downhole, Feldspar - qtz phenos increasing downhole, also several foliaform biotite - pyrite strain zones 10-15cm, or they could be PEL - ash bands. <<Min: 226 - 232.25 0.5% Min: Sphalerite>> Diss py-sp+/-gl+/-po+/-cpy bands and wisps commonly 1-3cm wide, spaced 0.25-1.0m apart. <<Min: 226 - 232.25 3% Min: Pyrite>> Diss py-sp+/-gl+/-po+/-cpy bands and wisps commonly 1-3cm wide, spaced 0.25-1.0m apart. <<Min: 226 - 232.25 0.5% Min: Galena>> Diss py-sp+/-gl+/-po+/-cpy bands and wisps commonly 1-3cm wide, spaced 0.25-1.0m apart. <<Min: 226 - 232.25 0.1% Min: Chalcopyrite>> Diss py-sp+/-gl+/-po+/-cpy bands and wisps commonly 1-3cm wide, spaced 0.25-1.0m apart. <<Alt: 225.68 - 239.7 Trace Calcite>> <<Alt: 228.9 - 240.21 Weak Silicification>> SI with bands of diss sulfides <<Struc: 229.7 - 231 Weak-Moderate dominant foliation>> sulfide band and foliation	230.95	232.48	1.53	D00005555	-0.005	0.8	0.02	0.04	0.33

From (m)	To (m)	Rocktype & Description
232.48	**238.47**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)**
232.48 - 238.47: gradational lower contact. Marked by decrease of silica bands - bleb and increase in ash.		
<<Min: 234.35 - 236.2 3% Min: Pyrrhotite>>		
<<Min: 236.2 - 240.21 5% Min: Pyrite>>		
<<Struc: 233.5 - 233.8 Weak-Moderate Fault>> muscovite altered weakly brecciated flt zone		
<<Struc: 235.52 - 236.2 Weak-Moderate Fault>> muscovite altered weakly brecciated flt zone		
<<Struc: 237 - 237.7 Weak-Moderate dominant foliation>>		
238.47	**240.21**	**RHYva** **Coarse grained to ash tuff**
238.47 - 240.21: lower contact is gradational over about 30 cm. 238.90-239.23m: Chl-Bi alt with sulfides.		
<<Min: 238.9 - 240.21 1% Min: Sphalerite>> with weak chl - biotite alteration		
<<Alt: 238.9 - 240.21 Weak Chlorite>> with sulfides		
<<Alt: 238.9 - 240.21 Weak-Moderate Biotite>> with increase in sulfides		
<<Alt: 239.7 - 240.83 Moderate-Strong Calcite>>		
<<Vein: 238.47 - 238.51 100% Quartz>>		
<<Struc: 238.73 - 238.9 Weak-Moderate dominant foliation>>		
<<Struc: 238.89 - 238.9 Moderate-Strong Contact>> alteration contact parallel to 0.5cm gouge zone, alt on downhole side.		
240.21	**240.83**	**PEL** **Equigranular biotite + calcite +/- quartz rock**
<<Min: 240.21 - 241.2 0.5% Min: Pyrite>>		
240.83	**250.22**	**RHYvl** **Lapilli tuff**
<<Min: 241.2 - 245 3% Min: Sphalerite>> dis SP commonly concentrated in thin diffuse bands witg py, rare cp and gl.		
<<Min: 241.2 - 245 5% Min: Pyrite>>		
<<Min: 245 - 246.19 1% Min: Pyrite>>		
<<Min: 246.19 - 249.93 3% Min: Sphalerite>> dis SP commonly concentrated in thin diffuse bands witg py, rare cp and gl.		
<<Min: 246.19 - 249.93 10% Min: Pyrite>>		
<<Min: 246.19 - 249.93 0.5% Min: Galena>>		
<<Min: 246.19 - 249.93 0.5% Min: Chalcopyrite>>		
<<Min: 249.93 - 253.2 3% Min: Pyrite>>		
<<Min: 249.93 - 265.25 0.1% Min: Sphalerite>>		
<<Alt: 240.83 - 250.2 Weak Biotite>> BI with increase in sulfides		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
237.25	238.75	1.50	D00005556	-0.005	1.5	0.04	0.09	0.3
238.75	240.25	1.50	D00005557	0.019	2.5	0.18	0.03	1.62
241.20	242.70	1.50	D00005558	0.008	1.9	0.08	0.04	0.79
242.70	244.20	1.50	D00005559	0.007	1.9	0.09	0.06	0.68
244.20	245.70	1.50	D00005561	0.007	2.1	0.07	0.06	0.97
245.70	247.20	1.50	D00005562	0.011	2.6	0.1	0.09	0.75
247.20	248.70	1.50	D00005563	0.013	2.3	0.22	0.08	2.95
248.70	250.22	1.52	D00005564	0.008	3.2	0.02	0.56	0.52

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 240.83 - 253.2 Moderate Muscovite>> fine white mica, bleached, only remnant BI.

<<Alt: 240.83 - 282.8 Weak Calcite>> CA in fractures, diss in PEL bands and with clots - bands of sulfides.

<<Alt: 243 - 250.22 Weak-Moderate Silicification>>

<<Alt: 250.2 - 267.45 Trace Biotite>> BI with minor diss sulfide bands

<<Struc: 241 - 241.3 Weak Fault>>

<<Struc: 244 - 245 Moderate dominant foliation>> foliation an sulfide bands

<<Struc: 244.9 - 244.95 Weak-Moderate Fault>> gouge

<<Struc: 246.03 - 246.2 Weak-Moderate Fault>> minor gouge

<<Struc: 249.36 - 249.42 Weak-Moderate Fault>> gouge

<<Struc: 249.75 - 249.8 Weak-Moderate Fault>> gouge

250.22 255.88 RHYva Coarse grained to ash tuff

250.22 - 255.88: minor PEL 253.4-254.7, more siliceou with silic bands 254.7-255.88.

<<Min: 253.2 - 254 3% Min: Pyrrhotite>>

<<Min: 254 - 257.2 1% Min: Pyrite>>

<<Min: 254 - 269.25 1% Min: Pyrrhotite>> scattered patches of diss PO in thin mm qtz-sulfide bands and diss in thin sections with remnant brown BI.

<<Alt: 253.2 - 254 Weak Muscovite>>

<<Alt: 254 - 282.92 Weak-Moderate Muscovite>>

<<Struc: 252.3 - 252.9 Weak-Moderate Fault>> broken core

<<Struc: 254.05 - 254.15 Weak-Moderate Fault>> minor gouge

255.88 258.68 RHYvl Lapilli tuff

255.88 - 258.68: gradational contact, silic bands

<<Min: 257.2 - 263.5 3% Min: Pyrite>>

<<Vein: 256.9 - 257.1 90% Quartz>> qtz vein and qtz flooding

<<Struc: 256.65 - 256.68 Weak Fault>> gouge

<<Struc: 257.23 - 257.27 Weak-Moderate Fault>> gouge

258.68 265.25 RHYva Coarse grained to ash tuff

258.68 - 265.25: minor PEL bands, local lpl. Hetergeneous unit!

<<Min: 263.5 - 265.25 10% Min: Pyrite>>

<<Struc: 258.94 - 259.22 Weak Fault>> minor gouge

<<Struc: 260.25 - 260.7 Moderate-Strong dominant foliation>>

<<Struc: 261.35 - 263 Weak Fault>> broken core, calcite healed fractures

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 263 - 263.9 Moderate-Strong dominant foliation>>

265.25 266.47 RHYvl Lapilli tuff

265.25 - 266.47: silic bands

<<Min: 265.25 - 267.5 3% Min: Pyrite>>

<<Struc: 266.36 - 266.47 Moderate Fault>> gouge - broken core

266.47 267.00 RHYva Coarse grained to ash tuff

266.47 - 267: beached? Bi partially destroyed.

<<Struc: 266.47 - 267 Moderate dominant foliation>>

267.00 269.70 RHYvl Lapilli tuff

<<Min: 267.5 - 272.9 1% Min: Pyrite>>

<<Struc: 269.57 - 269.7 Moderate Fault>> gouge

269.70 273.51 RHYvl Lapilli tuff

269.7 - 273.51: minor silic bands

<<Min: 272.9 - 281.1 0.5% Min: Pyrite>>

<<Struc: 270 - 270.1 Weak-Moderate Fault>> gouge

<<Struc: 273.5 - 281.1 Strong Fault>> gouge, missing core, crushed and broken core

273.51 281.10 RHY undifferentiated rhyolite

273.51 - 281.1: Faulted and sheared RHY with 1/3 missing core.

281.10 282.91 RHYvl Lapilli tuff

281.1 - 282.91: bleached, siliceous

<<Min: 281.1 - 282.91 0.1% Min: Pyrite>>

<<Alt: 282.8 - 284 Weak-Moderate Calcite>>

<<Alt: 282.81 - 284.31 Moderate-Strong Chlorite>> possibly a chlorite altered PEL-ash band

<<Struc: 282.65 - 282.75 Weak Fault>> broken core

282.91 284.31 PEL Equigranular biotite + calcite +/- quartz rock			282.91	284.31	1.40	D00005565	-0.005	-0.3	-0.01	-0.01	0.04

282.91 - 284.31: intense chlorite alteration, remnant bands and wisps of light brown biotite. More like skarn type alteration.

<<Min: 282.91 - 284.31 1% Min: Pyrrhotite>>

<<Alt: 284 - 291.9 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 283.5 - 284 Moderate-Strong dominant foliation>>

<<Struc: 284.3 - 284.31 Strong Contact>>

284.31 287.67 RHYvl Lapilli tuff

284.31 - 287.67: blebby, dismembered silic bands, possible qtz eye's.

<<Min: 284.31 - 291.9 0.1% Min: Pyrite>>

<<Min: 284.31 - 291.9 0.5% Min: Pyrrhotite>>

<<Alt: 284.31 - 287.67 Weak-Moderate Muscovite>>

<<Vein: 287.58 - 287.82 70% Quartz-Carbonate 75 deg. >> qtz 80% - Calcite 20% veining at contact

287.67 288.30 PEL Equigranular biotite + calcite +/- quartz rock

287.67 - 288.3: intense chlorite alteration, remnant bands and wisps of light brown biotite. More like a skarn type alteration.

<<Alt: 287.67 - 288.3 Moderate Chlorite>> possibly a chlorite altered PEL-ash band

<<Struc: 287.67 - 287.68 Strong Contact>> parallel to DFOL

288.30 291.90 RHYvx Quartz and/or feldspar crystal tuff

288.3 - 291.9: increase in fine white muscovite

<<Alt: 288.3 - 291.9 Moderate Muscovite>> abundant fine white mica

<<Struc: 288.3 - 293.75 Weak-Moderate Fault>> broken core, minor crushed zones, missing core.

291.90 296.57 MDSc Carbonaceous dominant mudstone

291.9 - 296.57: MDSt near contacts, stronger MDSc center. 295.44-295.59m: CHTc.

<<Min: 291.9 - 296.7 0.5% Min: Pyrite>>

<<Min: 291.9 - 296.7 1% Min: Pyrrhotite>>

<<Alt: 291.9 - 296.57 Weak Calcite>>

<<Alt: 291.9 - 298.08 Weak Muscovite>>

<<Struc: 295 - 296 Moderate-Strong dominant foliation>>

296.57 300.40 RHYva Coarse grained to ash tuff

296.57 - 300.4: Mixed unit; ash-PEL-lpl. 298.80 - 300.40m: Increase in chl and biotite (Bippo) plus qtz - calcite veined, sheared.

<<Min: 296.7 - 298.61 0.1% Min: Pyrite>>

<<Min: 296.7 - 298.61 3% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 298.61 - 304.85 0.5% Min: Pyrite>>

<<Alt: 296.57 - 298.08 Weak-Moderate Calcite>> veins, bands, fracture filling and diss in PEL band.

<<Alt: 298.08 - 298.61 Moderate Calcite>>

<<Alt: 298.08 - 304.85 Moderate Chlorite>> diss, blebs-clots and rare bands.

<<Alt: 298.08 - 304.85 Weak-Moderate Biotite>>

<<Alt: 298.61 - 300.4 Weak-Moderate Calcite>> veinlets in shear zone

<<Vein: 296.57 - 297.33 50% Quartz-Carbonate 75 deg. >> qtz and calcite plus qtz-calcite veining in altered zone at contact

<<Struc: 296.75 - 296.95 Weak-Moderate Fault>> minor gouge

<<Struc: 298.81 - 300.4 Moderate-Strong Fault>> gouge zone, contorted foliation

300.40 304.85 RHYva Coarse grained to ash tuff

300.4 - 304.85: Heterogeneous unit: variable biotite (Bippo) - chl alteration, local bleaching, section of MDSt (303.37-303.60).

<<Alt: 300.4 - 304.87 Weak Calcite>>

<<Vein: 300.4 - 300.87 100% Quartz-Chlorite>> white qtz, 10% chlorite bands, 5% biotite band

<<Vein: 303.7 - 304 10% Quartz 80 deg. >>

<<Struc: 301 - 314 Moderate dominant foliation>>

<<Struc: 302.8 - 302.9 Weak-Moderate Fault>> crushed core

<<Struc: 303.9 - 310 Moderate Fault>> numerous zone of crushed, broken and gouge zones, missing core.

304.85 305.30 MDSc Carbonaceous dominant mudstone

304.85 - 305.3: fault zone brx, calcite vein clasts.

<<Min: 304.85 - 308.8 1% Min: Pyrite>>

<<Alt: 304.87 - 309.73 Weak-Moderate Calcite>> veins, bands and diss

<<Vein: 305.05 - 306.9 20% Calcite 80 deg. >> very poor rec'y in zone

305.30 308.90 MDSt Rhyolite tuff dominant mudstone

305.3 - 308.9: tectonic sheared and brecciated

<<Min: 308.8 - 309 1% Min: Pyrrhotite>>

<<Vein: 307.5 - 307.8 15% Quartz-Carbonate 75 deg. >> fault zone

From (m)	To (m)	Rocktype & Description
308.90	**314.53**	**PEL** **Equigranular biotite + calcite +/- quartz rock**

308.9 - 314.53: green intensely chl altered, up to 5%light brown garnets avg 0.5cm across. Trace diss cpy and very fine grained silver sulfide.

<<Min: 308.9 - 314.33 0.1% Min: Sphalerite>> rare hairlne bands, very rare diss.

<<Min: 309 - 314.3 0.5% Min: Pyrite>> and as blebs

<<Min: 311 - 312.8 0.1% Min: Chalcopyrite>>

<<Min: 314.3 - 323.7 0.5% Min: Pyrite>>

<<Alt: 308.9 - 314.33 Moderate Garnet>>

<<Alt: 308.9 - 314.33 Strong Chlorite>>

<<Alt: 308.9 - 314.33 Weak-Moderate Biotite>>

<<Alt: 309.73 - 313 Trace Calcite>>

<<Alt: 313 - 314.3 Trace Calcite>>

<<Alt: 314.3 - 317.9 Weak-Moderate Calcite>> calcite veins

<<Struc: 310 - 316 Weak-Moderate Fault>> abundant thin gouge - clay zones on foliation, minor crushed zones, locally weakly brx.

From (m)	To (m)	Rocktype & Description
314.53	**323.70**	**RHY** **undifferentiated rhyolite**

314.53 - 323.7: Unit is tectonic brx-faulted-sheared, minor gouge zones, missing core and abundant broken core (all causing drilling difficulties). 10cm section of MDSc at 316m, siliceous sections 311-323.7m, possibly banded chert. Calcite vein 317.5-317.9m. Locally abundant black Bippo on folia.

<<Alt: 314.53 - 315.8 Weak Chlorite>>

<<Alt: 314.53 - 323.7 Weak-Moderate Biotite>>

<<Alt: 317.9 - 323.7 Trace Calcite>>

<<Vein: 317.5 - 317.9 90% Calcite>> vein in fault zone, brecciated

<<Struc: 316 - 323.7 Strong Fault>> Missing core, broken core, numerous gouge zones.

End of Hole @ 323.7

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
310.00	311.50	1.50	D00005566	-0.005	0.8	0.04	0.01	0.15
311.50	313.00	1.50	D00005567	0.01	2.1	0.18	0.01	0.59
313.00	314.53	1.53	D00005568	-0.005	-0.3	-0.01	-0.01	0.05

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-381

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/7/2016
UTM Easting	414976.017	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/9/2016
UTM Northing:	6814702.293	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1402.532	Casing Depth (m):	6	Length (m):	42.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/4/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/5/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
						Parent Hole:	

Comments:

This hole was drilled for the prupose of installing a deep monitoring well.

Drilling collared into 50 cm of semi-massive sulphide at 5.7 m depth, followed by volcaniclastic and coherent rhyolite from 5.7-28.2 m, volcaniclastic mudstone from 28.2-35.8 m and then more volcaniclastic rhyolite to the EOH at 42.2 m depth. Semi-massive sulphide consists mostly of pyrite. Notable alteration includes a short interval of strongly silicified mudstone as well as chlorite alteration at the bottom of the hole.

Knight Piésold conducted 5 SPT tests in overburden and 3 packer tests in bedrock, and then installed a monitoring well.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/4/2016		☑	No survey done; drill rig simply placed on collar picket

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 5.70 OVBN Overburden

5.70 6.17 OI Heavilly disseminated sulphides in host schist

<<Min: 5.7 - 6.17 30% Min: Pyrite>>

<<Alt: 5.7 - 17.04 Weak-Moderate Muscovite>> relict patches ranging from trace to moderate in intensity

<<Alt: 5.7 - 42.2 Strong Muscovite>>

<<Alt: 5.7 - 42.2 Moderate Ankerite>> occurs in wisps and clots

6.17 17.04 RHYv Rhyolite volcaniclastic

6.17 - 17.04: Includes ash-rich layers

<<Min: 6.17 - 8 0.5% Min: Pyrite>>

<<Min: 8 - 9.1 1% Min: Pyrrhotite>> in association with stronger QZ-CB alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 9.1 - 12.8 0.5% Min: Pyrrhotite>>

<<Min: 12.8 - 17.04 0.1% Min: Pyrite>>

<<Min: 12.8 - 17.04 0.1% Min: Pyrrhotite>>

<<Vein: 9.77 - 11.1 5% Quartz-Carbonate 60 deg. >> Massive aphaitic quartz +/- carbonate veins; 5 cm inTT

<<Vein: 14.17 - 14.61 5% Tourmaline 30 deg. >> Thin tournaline vieins that leak into host cleavage, creating stitch-like appearance

<<Struc: 8.8 - 8.8 Moderate Foliation>>

17.04 24.15 RHYc Rhyolite coherant volcanics

<<Min: 17.04 - 24.15 2% Min: Pyrite>> predominantly within foliation-parallel quartz-pyrite veins

<<Alt: 17.04 - 24.15 Moderate Muscovite>> better-preserved MU OR alteration in RHYc unit

<<Struc: 17.04 - 17.04 Contact>> FOL-parallel contact between RHYc and RHYv

<<Struc: 19.85 - 20.2 Strong Fault>>

<<Struc: 22.75 - 22.75 Moderate Foliation>>

24.15 28.21 RHYv Rhyolite volcaniclastic

<<Min: 24.15 - 28.21 0.5% Min: Pyrite>>

<<Min: 24.15 - 42.2 0.5% Min: Pyrrhotite>>

<<Alt: 24.15 - 42.2 Weak-Moderate Muscovite>> relict patches ranging from trace to moderate in intensity

<<Struc: 27.1 - 27.1 Weak-Moderate Foliation>>

28.21 35.84 MDSt Rhyolite tuff dominant mudstone

<<Min: 33.55 - 34.15 3% Min: Pyrite>> in foliation-parallel bands associated with carbonate

<<Alt: 32.85 - 35.84 Moderate-Strong Silicification>> band-like to clotty; ranges from strong to moderate

<<Struc: 31.5 - 31.5 Moderate >> lower angle fabric that cuts across predominant one

<<Struc: 33.75 - 33.75 Strong Foliation>> associated with strong silicification and pyrite mineralization

35.84 42.20 RHYv Rhyolite volcaniclastic

<<Alt: 40.55 - 42.2 Moderate Chlorite>> forms bands with quartz

<<Struc: 37.8 - 37.8 Weak-Moderate Foliation>>

End of Hole @ 42.2

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-382

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/15/2016
UTM Easting	414977.135	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/15/2016
UTM Northing:	6814699.401	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1402.353	Casing Depth (m):	6	Length (m):	6	Drill Rig:	Tech 5000
Local Easting:		Stored?:	No	Claims Title		Drill Started:	7/5/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	N/A	Drill Completed:	7/5/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
						Parent Hole:	

Comments:

Hole drilled and stopped in overburden to install a shallow monitoring well. No core was returned.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/5/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**6.00**	**OVBN Overburden**									
End of Hole @ 6											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-383

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Steve Bultitude
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/14/2016
UTM Easting	414010.664	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/14/2016
UTM Northing:	6817774.191	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1503.364	Casing Depth (m):	1.5	Length (m):	27.9	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/6/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/7/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
						Parent Hole:	

Comments:

The purpose of hole K16-383 was to conduct a geotechnical investigation pertaining to the construction of a class B storage facility in the area. 1 SPT test and 3 packer tests were executed in overburden and bedrock respectively. A monitoring well was also installed. The stratigraphy covered in the area consists of mainly calcareous and carbonaceous mudstone interbedded with ash-rich mafic tuffs. The mudstone/tuff package is underlain by a fine-grained mafic dyke. Weak to moderate muscovite and calcite alteration is present within the mudstone units, with weak biotite and strong calcite alteration characterization the mafic units. Sulphide mineralization is mainly PO, reaching 2% between 12.9 and 20.4 metres depth within the mudstone unit. Py is minor, occurring mainly as small blebs and disseminations.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/6/2016		☑	

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
1.50	**5.08**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**green-brown** **VFG**									
<<Alt: 1.5 - 3.65 Moderate Muscovite>>													
<<Alt: 1.5 - 3.65 Weak-Moderate Biotite>>													
<<Alt: 3.5 - 5.08 Weak-Moderate Calcite>>													
<<Alt: 3.65 - 5.08 Trace Muscovite>>													
5.08	**5.68**	**MAFta**	**Coarse grained to ash tuff**	**green** **FG**									
<<Alt: 5.08 - 5.68 Moderate Calcite>>													
<<Alt: 5.08 - 5.68 Weak Biotite>>													
5.68	**10.97**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**VFG**									
<<Alt: 5.68 - 10.97 Trace Muscovite>>													
<<Alt: 5.68 - 10.97 Weak Calcite>>													

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-383

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
10.97	**11.64**	**MAFta**	**Coarse grained to ash tuff**	**dark grey** **MG**									
<<Alt: 10.97 - 11.64 Moderate Calcite>>													
<<Vein: 11.47 - 11.64 70% Quartz-Carbonate>>													
11.64	**26.78**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**	**grey-green** **FMG**									
<<Min: 12.9 - 20.4 0.1% Min: Pyrite>>													
<<Min: 12.9 - 20.4 2% Min: Pyrrhotite>> Also occurs as coarse-grained disseminations and blebs													
<<Alt: 11.64 - 26.78 Weak Calcite>>													
<<Alt: 21.11 - 26.78 Weak-Moderate Muscovite>>													
<<Alt: 21.75 - 27.9 Weak Biotite>>													
<<Vein: 23.89 - 24.78 35% Quartz-Carbonate 25 deg. >>													
<<Vein: 26.68 - 27.17 40% Carbonate-Chlorite>>													
<<Struc: 16.65 - 16.65 Moderate dominant foliation>>													
<<Struc: 22 - 22 Weak-Moderate dominant foliation>>													
<<Struc: 24.2 - 24.2 Moderate-Strong Vein>>													
26.78	**27.90**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**grey** **FG**									
<<Min: 26.78 - 27.17 1% Min: Pyrite>> Also occursin large (2 cm) dissemination													
<<Alt: 26.78 - 27.9 Moderate-Strong Calcite>>													
<<Vein: 27.65 - 27.85 80% Quartz-Carbonate>>													
End of Hole @ 27.9													

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-384

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/7/2016
UTM Easting	415660.865	Core Size:	HQ3	Azimuth:	224.9	Date Logging Complete:	7/15/2016
UTM Northing:	6815386.44	Casing Pulled?:	Yes	Dip:	-65.1	Drill Company:	New Age
UTM Elev. (m):	1562.585	Casing Depth (m):	4.5	Length (m):	400	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/6/2016
Local Northing:		Cemented?:	No	Core Storage Loc.:	KZK Camp	Drill Completed:	7/12/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
Comments:						Parent Hole:	

Drill hole K16-384 was designed to test prospective stratigraphy on the south-east side of the Sunda fault and also to provide a deep conduit for downhole geophysics. Due to excessive azimuth deviation, the hole was cancelled at 400 m. Casing was left in and the hole was not cemented to allow for potential re-entry with a wedge. CASING SHOULD BE PULLED AND HOLE PLUGGED PRIOR TO LEAVING THIS SITE.
Mafic tuffs, mudstones, and conglomerates of the Wind Lake Formation are present from surface to 292.71 m. Two groups of samples were taken within the Wind Lake Formation. The first covers a fault zone with pyrite, chalcopyrite, galena, and a dark sooty mineral interpreted to be a sulphosalt. The second group of samples covers a zone of increased pyrrhotite and chalcopyrite content. The Kudz Ze Kayah Formation was encountered following a faulted contact from 292.71 m to 296.82 m. Immediately following the fault, a distinctive unit of crowded, quartz eye-feldspar bearing crystal tuff was encountered. If it is extensive, this unit may be a valuable marker horizon. Below this unit are the typical lapilli and crystal bearing tuffaceous sedimentary rocks of the Kudz Ze Kayah Formation. From 229-244 m there are three ~1m long cordierite-biotite bearing intervals of ashy volcaniclastic rocks though this likely represents a distal expression of the mineralizing event rather than the restricted, ore-proximal cordierite-'chlorite alteration.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65.1	223.5	1.4	224.9	TN14	Oscar Nielsen	7/7/2016		☑	
5	-64.83718	223.12905	1.4	224.53	Gyro	Steve Bultitude	7/12/2016		☑	100
10	-64.97346	222.62263	1.4	224.02	Gyro	Steve Bultitude	7/12/2016		☑	100
13.01	-65.3	202.1	22.1	224.2	ReflexEZS	New Age	7/7/2016	5854	☐	
15	-65.22539	222.82044	1.4	224.22	Gyro	Steve Bultitude	7/12/2016		☑	100
20	-65.228	222.92517	1.4	224.33	Gyro	Steve Bultitude	7/12/2016		☑	100
25	-65.13314	223.0579	1.4	224.46	Gyro	Steve Bultitude	7/12/2016		☑	100
30	-65.17623	223.06635	1.4	224.47	Gyro	Steve Bultitude	7/12/2016		☑	100
35	-65.27907	222.78502	1.4	224.19	Gyro	Steve Bultitude	7/12/2016		☑	100
40	-65.43521	222.27111	1.4	223.67	Gyro	Steve Bultitude	7/12/2016		☑	100
45	-65.49691	222.25305	1.4	223.65	Gyro	Steve Bultitude	7/12/2016		☑	100
46	-65.7	203.7	22.1	225.8	ReflexEZS	New Age	7/7/2016	5791	☐	
50	-65.57391	222.35028	1.4	223.75	Gyro	Steve Bultitude	7/12/2016		☑	100
55	-65.55682	222.6087	1.4	224.01	Gyro	Steve Bultitude	7/12/2016		☑	100
60	-65.53958	222.26409	1.4	223.66	Gyro	Steve Bultitude	7/12/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-384

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
65	-65.58054	222.10309	1.4	223.5	Gyro	Steve Bultitude	7/12/2016		☑	100
70	-65.72388	221.78307	1.4	223.18	Gyro	Steve Bultitude	7/12/2016		☑	100
73	-66.1	202.5	22.1	224.6	ReflexEZS	New Age	7/7/2016	5801	☐	
75	-65.88219	221.61381	1.4	223.01	Gyro	Steve Bultitude	7/12/2016		☑	100
80	-65.93995	221.25916	1.4	222.66	Gyro	Steve Bultitude	7/12/2016		☑	100
85	-66.00522	220.83803	1.4	222.24	Gyro	Steve Bultitude	7/12/2016		☑	100
90	-66.00622	220.16343	1.4	221.56	Gyro	Steve Bultitude	7/12/2016		☑	100
95	-66.02863	219.59841	1.4	221	Gyro	Steve Bultitude	7/12/2016		☑	100
98	-65.6	203.2	22.1	225.3	ReflexEZS	New Age	7/7/2016	5761	☐	
100	-66.04429	219.52824	1.4	220.93	Gyro	Steve Bultitude	7/12/2016		☑	100
105	-66.09686	219.50809	1.4	220.91	Gyro	Steve Bultitude	7/12/2016		☑	100
110	-65.85773	219.8793	1.4	221.28	Gyro	Steve Bultitude	7/12/2016		☑	100
113	-65.3	204.3	22.1	226.4	ReflexEZS	New Age	7/8/2016	5792	☐	
115	-65.67744	220.63684	1.4	222.04	Gyro	Steve Bultitude	7/12/2016		☑	100
120	-65.47423	221.36436	1.4	222.76	Gyro	Steve Bultitude	7/12/2016		☑	100
125	-65.39727	222.3967	1.4	223.8	Gyro	Steve Bultitude	7/12/2016		☑	100
130	-65.2859	223.28108	1.4	224.68	Gyro	Steve Bultitude	7/12/2016		☑	100
135	-65.21981	223.46552	1.4	224.87	Gyro	Steve Bultitude	7/12/2016		☑	100
139	-65	205	22.1	227.1	ReflexEZS	New Age	7/8/2016	5783	☐	
140	-65.19622	223.3528	1.4	224.75	Gyro	Steve Bultitude	7/12/2016		☑	100
145	-65.17907	223.29316	1.4	224.69	Gyro	Steve Bultitude	7/12/2016		☑	100
150	-65.17029	223.25626	1.4	224.66	Gyro	Steve Bultitude	7/12/2016		☑	100
155	-65.47226	222.69818	1.4	224.1	Gyro	Steve Bultitude	7/12/2016		☑	100
160	-65.8184	222.49141	1.4	223.89	Gyro	Steve Bultitude	7/12/2016		☑	100
160.01	-65.8	204.6	22.1	226.7	ReflexEZS	New Age	7/8/2016	5820	☐	
165	-66.07276	222.97447	1.4	224.37	Gyro	Steve Bultitude	7/12/2016		☑	100
170	-66.20183	223.37722	1.4	224.78	Gyro	Steve Bultitude	7/12/2016		☑	100
175	-66.25745	223.46798	1.4	224.87	Gyro	Steve Bultitude	7/12/2016		☑	100
180	-66.36596	223.2061	1.4	224.61	Gyro	Steve Bultitude	7/12/2016		☑	100
185	-66.50774	222.72931	1.4	224.13	Gyro	Steve Bultitude	7/12/2016		☑	100
190	-66.66293	222.35497	1.4	223.75	Gyro	Steve Bultitude	7/12/2016		☑	100
190.01	-66.9	203.1	22.1	225.2	ReflexEZS	New Age	7/8/2016	5796	☐	
195	-66.74735	221.90977	1.4	223.31	Gyro	Steve Bultitude	7/12/2016		☑	100
200	-66.79194	221.298	1.4	222.7	Gyro	Steve Bultitude	7/12/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-384

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
205	-66.82617	220.58635	1.4	221.99	Gyro	Steve Bultitude	7/12/2016		☑	100
210	-66.90532	219.9532	1.4	221.35	Gyro	Steve Bultitude	7/12/2016		☑	100
215	-66.936	218.938	1.4	220.34	Gyro	Steve Bultitude	7/12/2016		☑	100
217	-67	201	22.1	223.1	ReflexEZS	New Age	7/8/2016	5818	☐	
220	-66.99099	218.26414	1.4	219.66	Gyro	Steve Bultitude	7/12/2016		☑	100
225	-67.0568	217.58966	1.4	218.99	Gyro	Steve Bultitude	7/12/2016		☑	100
230	-67.23805	216.65796	1.4	218.06	Gyro	Steve Bultitude	7/12/2016		☑	100
235	-67.41613	215.67491	1.4	217.07	Gyro	Steve Bultitude	7/12/2016		☑	100
240	-67.43568	215.24373	1.4	216.64	Gyro	Steve Bultitude	7/12/2016		☑	100
244	-67.7	195.2	22.1	217.3	ReflexEZS	New Age	7/9/2016	5780	☐	
245	-67.41627	214.53347	1.4	215.93	Gyro	Steve Bultitude	7/12/2016		☑	100
250	-67.23609	213.73924	1.4	215.14	Gyro	Steve Bultitude	7/12/2016		☑	100
255	-67.12153	213.04028	1.4	214.44	Gyro	Steve Bultitude	7/12/2016		☑	100
260	-66.97654	212.39732	1.4	213.8	Gyro	Steve Bultitude	7/12/2016		☑	100
265	-66.77293	211.43754	1.4	212.84	Gyro	Steve Bultitude	7/12/2016		☑	100
270	-66.55234	210.77331	1.4	212.17	Gyro	Steve Bultitude	7/12/2016		☑	100
271	-66.9	190.4	22.1	212.5	ReflexEZS	New Age	7/9/2016	5716	☐	
275	-66.46953	210.32769	1.4	211.73	Gyro	Steve Bultitude	7/12/2016		☑	100
280	-66.43252	210.39194	1.4	211.79	Gyro	Steve Bultitude	7/12/2016		☑	100
285	-66.31804	209.62726	1.4	211.03	Gyro	Steve Bultitude	7/12/2016		☑	100
290	-65.94959	208.9932	1.4	210.39	Gyro	Steve Bultitude	7/12/2016		☑	100
295	-65.4758	208.00361	1.4	209.4	Gyro	Steve Bultitude	7/12/2016		☑	100
298	-65.7	188.3	22.1	210.4	ReflexEZS	New Age	7/9/2016	5762	☐	
300	-65.1513	207.36579	1.4	208.77	Gyro	Steve Bultitude	7/12/2016		☑	100
305	-65.07333	207.23064	1.4	208.63	Gyro	Steve Bultitude	7/12/2016		☑	100
310	-64.94642	207.25362	1.4	208.65	Gyro	Steve Bultitude	7/12/2016		☑	100
315	-64.44504	206.94677	1.4	208.35	Gyro	Steve Bultitude	7/12/2016		☑	100
320	-63.97116	206.45153	1.4	207.85	Gyro	Steve Bultitude	7/12/2016		☑	100
320.01	-64.1	187.1	22.1	209.2	ReflexEZS	New Age	7/9/2016	5783	☐	
325	-63.80537	206.13451	1.4	207.53	Gyro	Steve Bultitude	7/12/2016		☑	100
330	-63.90726	206.31848	1.4	207.72	Gyro	Steve Bultitude	7/12/2016		☑	100
335	-63.78889	206.15325	1.4	207.55	Gyro	Steve Bultitude	7/12/2016		☑	100
340	-63.6346	205.88742	1.4	207.29	Gyro	Steve Bultitude	7/12/2016		☑	100
345	-63.60389	205.80933	1.4	207.21	Gyro	Steve Bultitude	7/12/2016		☑	100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
350	-63.62311	205.94143	1.4	207.34	Gyro	Steve Bultitude	7/12/2016		☑	100
352	-63.4	187.3	22.1	209.4	ReflexEZS	New Age	7/11/2016	5778	☐	
355	-63.41556	206.0453	1.4	207.45	Gyro	Steve Bultitude	7/12/2016		☑	100
360	-63.35171	206.22596	1.4	207.63	Gyro	Steve Bultitude	7/12/2016		☑	100
365	-63.17531	206.3402	1.4	207.74	Gyro	Steve Bultitude	7/12/2016		☑	100
370	-63.05158	206.54751	1.4	207.95	Gyro	Steve Bultitude	7/12/2016		☑	100
375	-62.93031	206.56368	1.4	207.96	Gyro	Steve Bultitude	7/12/2016		☑	100
379	-63.3	187.4	22.1	209.5	ReflexEZS	New Age	7/11/2016	5791	☐	
380	-63.01287	206.56026	1.4	207.96	Gyro	Steve Bultitude	7/12/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 3.30 OVBN Overburden

3.30 7.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey

3.3 - 7.2: Dark grey to black, banded unit consisting of interbedded fine grained carbonaceous mudstone and medium to light grey-green,coarse grined mafic tuff.

<<Alt: 3.3 - 16 Weak-Moderate Calcite>> Calcite bands in both mudstone and Mafic tuff

<<Alt: 3.3 - 73.22 Moderate Chlorite>> Green bands of chlorite within the Mafic tuff beds and units of the Wind Lake Fm.

<<Struc: 6.27 - 6.35 Weak Fault>>

7.20 12.61 MAFta Coarse grained to ash tuff grey-green

7.2 - 12.61: Medium grey-green, well foliated medium to fine grained chlorite bearing mafic (to intermediate) tuff. Less deformed areas have round carbonate bearing clasts (?) in a fine carbonate poor matrix.

<<Min: 7.2 - 12.61 0.5% Min: Pyrrhotite>> Fine pyrrhotite blebs less than 5mm long, present along the foliation planes

12.61 16.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

12.61 - 16: Thin, finely banded, dark grey-black and white carbonaceous mudstone.

<<Struc: 13.6 - 16 Moderate Fault>>

16.00 19.00 MAFta Coarse grained to ash tuff grey-green

16 - 19: Fine grey green, banded mafic ash tuff. There is a patch of light coloured fine, non-calcite bearing zone, with a lobate shape, suggesting a volcanic bomb?

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 18.48 - 19.27 Weak-Moderate Calcite>> Calcite bands in mafic tuff

<<Struc: 18.8 - 18.8 Weak-Moderate dominant foliation>>

19.00 37.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

19 - 37.65: Finely laminated, banded, carbonaceous mudstone, with sub 1 m interbeds of fine, grey-green ashy mafic volcanicalstic sediment, Bands show tight to isoclinal folding around an axis that defines the foliation of the rock.

<<Min: 31.1 - 48.98 0.5% Min: Pyrite>>

<<Min: 31.1 - 48.98 0.5% Min: Pyrrhotite>>

<<Alt: 23.69 - 58.7 Weak-Moderate Calcite>> Calcite bands in both mudstone and Mafic tuff

<<Vein: 19 - 19.27 100% Quartz>>

<<Struc: 28.57 - 29.13 Moderate Fault>>

37.65 40.39 MAFt Mafic Volcaniclastics grey-green

<<Struc: 37.85 - 41.68 Strong Fault>> Gougy

40.39 42.47 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey

<<Vein: 42.15 - 42.47 70% Quartz-Carbonate>>

42.47 46.64 MAFta Coarse grained to ash tuff

42.47 - 46.64: Sedimentary sequence dominated by fine grey green mafic tuffs with thin interbeds of dark grey mud-siltstone. Brown biotite growing alonng floiation planes

46.64 48.98 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey

46.64 - 48.98: Dark grey to black carbonaceous mudstone and bands of white carbonate material, with minor interbeds of grey green, fine grained mafic ash tuff.

<<Struc: 47.07 - 47.4 Moderate Fault>>

48.98 53.94 MAFta Coarse grained to ash tuff grey-green FG

48.98 - 53.94: Light grey green fine grained ashy mafic to intermediate tuff.

<<Min: 48.98 - 52 1% Min: Pyrite>>

<<Min: 48.98 - 52 1% Min: Pyrrhotite>>

<<Min: 50.37 - 50.54 0.01% Min: Chalcopyrite>> A clot of Py-Po-Cp within a quartz-carbonate vein

<<Min: 52 - 73.22 0.5% Min: Pyrite>>

<<Min: 52 - 73.22 0.5% Min: Pyrrhotite>>

<<Vein: 52.59 - 53.06 50% Quartz-Carbonate>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 51.05 - 51.05 Weak-Moderate dominant foliation>>

53.94 70.15 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

53.94 - 70.15: Dark grey-black and white, foliated fine grained carbonaceous mudstone, with minor interbeds 10-50cm of grey-green fine grained mafic ash tuff.

<<Min: 55.1 - 55.2 2% Min: Galena>> Fine well formed galena in a light coloured carbonate band within MDS

<<Alt: 53.97 - 73.22 Weak Biotite>> Patchy biotite growth on along foliation planes

<<Alt: 58.7 - 70.15 Trace Calcite>> Rare calcite bands in MDS and MAFt

<<Vein: 55.38 - 56.54 90% Quartz-Carbonate>> Quartz dominant with ~5% carbonate

<<Vein: 59.11 - 59.59 50% Quartz-Carbonate>>

<<Vein: 63.18 - 63.26 100% Quartz-Carbonate>>

<<Struc: 55.6 - 56.5 Weak-Moderate Fault>>

<<Struc: 62.58 - 62.83 Weak-Moderate Fault>>

<<Struc: 63.9 - 63.9 Weak-Moderate dominant foliation>> Perpendicular to core axis

70.15 73.22 MAFt Mafic Volcaniclastics grey-green

70.15 - 73.22: Light grey green fine grained, well banded, calcitic mafic tuff with patchy zones of coarse grained euhedral black biotite porphyroblasts.

<<Alt: 70.15 - 88.05 Weak Calcite>> Calcite bands in MAFt

73.22 79.92 FLZ Fault Zone grey

73.22 - 79.92: Grey crushed rock, gouge, and rock fragments.

<<Struc: 73.22 - 79.92 Strong Fault>> Gougy

79.92 82.51 MAFt Mafic Volcaniclastics grey-green FG

79.92 - 82.51: Light grey green fine grained ashy mafic to intermediate tuff.

<<Min: 79.92 - 82.51 0.5% Min: Pyrite>>

<<Struc: 81.3 - 82.05 Moderate Fault>> crushed rock

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
82.51	83.35	0.84	B00291951	0.005	0.7	0.02	0.02	0.01

82.51 84.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey

82.51 - 84.85: Dark grey and white, finely banded, strongly faulted carbonaceous mudstone

<<Min: 82.51 - 84.85 0.5% Min: Sulphosalts>> Dark, sooty mineralization associated with the galena.

<<Min: 82.51 - 84.85 2% Min: Pyrite>>

<<Min: 82.51 - 84.85 1% Min: Galena>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
83.35	84.85	1.50	B00291952	-0.005	2.8	-0.01	0.26	0.14

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 82.51 - 84.85 0.5% Min: Chalcopyrite>>									
		<<Struc: 84.3 - 84.85 Moderate Fault>> Minor gouge, crushed rock									
84.85	**85.76**	**MAFt Mafic Volcaniclastics grey-green FG**	84.85	85.76	0.91	B00291953	-0.005	0.4	0.01	-0.01	0.01
		<<Min: 84.85 - 87 1% Min: Pyrite>>									
		<<Min: 84.85 - 87 0.5% Min: Chalcopyrite>>									
85.76	**88.05**	**MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG**	86.00	87.09	1.09	B00291954	-0.005	0.5	-0.01	-0.01	0.02
		85.76 - 88.05: Dark grey and white, finely banded, moderately faulted carbonaceous mudstone									
		<<Vein: 87.09 - 87.85 100% Quartz-Carbonate>> Some clast of wallrock eithin the vein have been altered to brown biotite									
		<<Struc: 87.85 - 88.05 Strong Fault>> Gougy fault									
88.05	**92.85**	**MAFta Coarse grained to ash tuff grey-green FG**									
		88.05 - 92.85: Medium grey green fine grained ash tuff, strong carbonate									
		<<Alt: 88.05 - 97.05 Moderate Calcite>> Pervasive carbonate alteration throughout the MAFt unit, especially strong in the bands of cacite.									
		<<Struc: 92.33 - 92.57 Moderate-Strong Fault>> Gougy w/ crushed rock									
92.85	**108.50**	**FLZ Fault Zone buff**									
		92.85 - 108.5: Well developed, gougy fault zone. Some gouge zones have developed a foiation. Some parts have been healed with quartz.									
		<<Vein: 98.1 - 106.67 85% Quartz-Carbonate>> Quartz vein running up and healing a fault/ being faulted									
		<<Struc: 92.85 - 94.79 Strong Fault>> Gouge rich fault , possible consolidated gouge zone (or very alteered wall rock) in the middle									
		<<Struc: 95.28 - 96.4 Moderate-Strong Fault>> Gouge and crushed rock									
		<<Struc: 96.5 - 108.5 Strong Fault>> Gougy zones, qtz healed zones, zones of crushed rock									
108.50	**116.71**	**MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG**									
		108.5 - 116.71: Strongly carbonaceous, dark grey to black,finely laminated mudstone.									
		<<Min: 108.5 - 127.04 2% Min: Pyrite>>									
		<<Alt: 110.25 - 116.71 Weak Calcite>> Fine calcite bands in the mudstone									
		<<Struc: 110.6 - 112 Weak Fault>> Zone of crushed rock in MDS (weak)									
		<<Struc: 114 - 114.83 Weak Fault>> Zone of crushed rock in MDS (weak)									
		<<Struc: 114.83 - 114.83 Moderate-Strong dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

116.71 117.82 MAFt Mafic Volcaniclastics beige FMG

116.71 - 117.82: Light grey green with orange oxide zones, lower 30 cm has a strong crystal component as well as possible lithic fragments

<<Alt: 116.71 - 117.82 Trace Calcite>>

<<Struc: 116.71 - 117.01 Trace Fault>> Zone of crushed rock

117.82 127.04 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

117.82 - 127.04: Dark grey to black with white streaks/layers, fine mudstone with small ashy MAFt

<<Alt: 117.82 - 127.12 Weak Calcite>> Fine calcite bands somewhat rarely in the MDS

<<Struc: 118 - 119.05 Trace Fault>> Zone of weakly crushed mudstone

<<Struc: 121.95 - 122.3 Weak Fault>> Moderately crushed rock and minor gouge

<<Struc: 122.65 - 122.92 Weak Fault>> Zone of strongly crushed rock

<<Struc: 124.3 - 124.7 Trace Fault>> Weakly crushed MDS

127.04 128.00 MAFt Mafic Volcaniclastics grey-green FG

127.04 - 128: Fine ashy chlorite altered mafic tuff

<<Alt: 127.12 - 154.31 Moderate-Strong Calcite>> Calcite both pervasive and especially strong in calcite bands

<<Struc: 127.66 - 127.87 Moderate Fault>> Gougy fault zone

128.00 129.85 MAFt Mafic Volcaniclastics grey-green FG

128 - 129.85: Fine mafic tuff with well defined calcitic banding.

<<Struc: 128.17 - 128.37 Weak-Moderate Fault>> Gougy fault zone

129.85 147.76 MAFt Mafic Volcaniclastics grey-green

129.85 - 147.76: Well banded grey-green-brown (and white) epiclastic rock containing pelitic bands, evidenced by strong biotite bands, surrounding streched and flattened lithic fragments, including clasts that appear to be derived from the KZK formation (feldspar phyric rhyolite, fine mafic rock), some sort of debris flow?

<<Struc: 132.2 - 132.22 Weak Fault>> Coarse-fine crushed rock

<<Struc: 139.51 - 142 Moderate Fault>> Multiple zones of gouge and crushed rock

<<Struc: 145.36 - 145.85 Moderate Fault>> Gouge and crushed rock

147.76 151.70 FLZ Fault Zone light grey

147.76 - 151.7: Strongly crushed rock and gouge. Some sections are consolidated into a coherent fault breccia

<<Struc: 147.76 - 151.7 Strong Fault>> Strong zone of gouge, with a minor component of crushed rock

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

151.70 153.56 MAFt Mafic Volcaniclastics grey-green

151.7 - 153.56: Biotite porphyroblastic fine grey green ash tuff.

<<Alt: 151.7 - 153.23 Moderate-Strong Biotite>> Coarse grained, euhedral, equigranular black biotite porphyroblasts, with no relationship to the foiation.

<<Alt: 153.23 - 154.34 Moderate Biotite>> Brown biotite porphyroblasts growing alon the foliation planes

153.56 154.34 MAFt Mafic Volcaniclastics grey-green FG

153.56 - 154.34: Fine grained grey green mafic tuff, abundant carbonate and biotite alteration lends a mottled appearance

<<Alt: 154.31 - 160.46 Weak Calcite>> Calcite bands in MDS, and strongly in rare 'MAFt interbeds

154.34 160.46 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

154.34 - 160.46: Fine grained, finely laminated dark grey and white mudstone. Rare black patchy biotite porphyroblasts.

<<Alt: 154.34 - 174.64 Weak-Moderate Biotite>> Black coarse grained euhedral biotite porphyroblasts in patches and bandsthroughought the MAFt and the MDS

<<Vein: 158.32 - 160.51 5% Quartz-Carbonate>> Approximately 50/50 Qz vs Carb

<<Struc: 154.7 - 155.92 Weak-Moderate Fault>> Zone of broken/crushed MDS with minor gouge

<<Struc: 157.48 - 157.54 Weak Fault>> Gougy fault zone

160.46 174.64 MAFt Mafic Volcaniclastics dark grey FG

160.46 - 174.64: Fine grained grey green-black mafic ash tuff with bands and patches of black coarse grained biotite porphyroblasts (pelitic input?)

<<Min: 166.28 - 174.64 1% Min: Pyrite>>

<<Min: 167.59 - 168.28 5% Min: Pyrite>>

<<Alt: 160.46 - 181.66 Weak-Moderate Calcite>> Calcite bands in MAFt and calcite weakly disseminated in the ashy beds

<<Alt: 167.49 - 168.28 Moderate Albite>> A zone of white, bleachd rock, spatially coincident with a zone of pyrite-chlorite veining.

<<Vein: 164.7 - 165.36 40% Quartz-Carbonate>> Brown biotite growing on the margins

<<Vein: 167.49 - 168.28 5% Pyrite>> spatially coincident with a bleached alteration zone

<<Vein: 171.48 - 171.65 100% Quartz-Carbonate>>

<<Struc: 160.58 - 160.94 Moderate Fault>> Three bands of gouge 1 cm true thickness

<<Struc: 166.3 - 166.3 Weak dominant foliation>>

<<Struc: 166.5 - 166.61 Weak Fault>> Small zone of crushed rock and minor gouge

<<Struc: 171.63 - 171.73 Weak Fault>> Small zone of crushed rock and minor gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

174.64 175.96 FLZ Fault Zone medium grey

174.64 - 175.96: Strongly crushed rock and gouge.

<<Struc: 174.64 - 176.96 Moderate-Strong Fault>> Zone of strongly crushed rock and gouge

175.96 181.66 MAFt Mafic Volcaniclastics green FG

175.96 - 181.66: Grey-green fine grained ashy mafic tuff with bands and clots and streaks of coarse equigranular porphyroblastic biotite.

<<Min: 175.96 - 181.66 1% Min: Pyrite>>

<<Min: 175.96 - 181.66 0.5% Min: Pyrrhotite>>

<<Alt: 175.96 - 186 Weak Biotite>> Black coarse grained euhedral biotite porphyroblasts in patches and bandsthroughought the MAFt and the MDS

<<Vein: 176.36 - 177.08 20% Quartz-Carbonate>> Some veins are not through-going,possibly boudinaged?

<<Vein: 179.98 - 180.36 100% Quartz-Carbonate>> Wall rock clasts and margins have been completely altered to biotite

<<Struc: 180.36 - 180.58 Moderate Fault>> Zone of gouge

<<Struc: 181 - 181 Moderate dominant foliation>>

181.66 182.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

181.66 - 182.85: Fine grained black and white carbonaceous mudstone with bands of white carbonate material

<<Min: 181.66 - 182.85 2% Min: Pyrite>>

<<Min: 181.66 - 182.85 0.5% Min: Pyrrhotite>>

<<Alt: 181.66 - 182.85 Weak Calcite>> Fine bands of calcite in the MDS

182.85 193.57 MAFt Mafic Volcaniclastics grey-green FG

182.85 - 193.57: Fine grained grey green-black mafic ash tuff with bands and patches of black coarse grained biotite porphyroblasts (pelitic input?)

<<Alt: 182.85 - 183.57 Trace Calcite>> Rare calcite zones within quartz veins and MAFt

<<Alt: 183.57 - 197.57 Weak-Moderate Calcite>> Patchy zones of calcite within the BI altered mafic tuff/volcaniclastic

<<Alt: 187.57 - 194.71 Moderate-Strong Biotite>> Patchy aggregates of euhedral black biotite, with no preferential orientation

<<Vein: 183.49 - 183.61 100% Quartz-Carbonate>>

<<Vein: 184.3 - 186.52 50% Quartz-Carbonate>> Walllrock clasts altered to biotite,is Galena

<<Struc: 186.34 - 186.59 Weak Fault>> Zone of crushed rock

<<Struc: 191.4 - 191.6 Weak Fault>> Broken rock and minor gouge

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
193.57	**203.19**	**MAFt** **Mafic Volcaniclastics**	**grey-green**	**FG**	202.13	203.19	1.06	B00291955	0.01	1.2	0.04	-0.01	0.45

193.57 - 203.19: Fine grained grey green mafic ash tuff

<<Min: 196.49 - 202.13 0.5% Min: Pyrite>>

<<Min: 196.49 - 202.13 0.01% Min: Pyrrhotite>>

<<Min: 202.13 - 207.69 2% Min: Pyrrhotite>>

<<Min: 202.13 - 207.69 0.5% Min: Chalcopyrite>>

<<Alt: 196.49 - 197.1 Moderate Biotite>> Patchy aggregates of euhedral black biotite, with no preferential orientation

<<Alt: 197.1 - 207.69 Weak Biotite>> Patchy aggregates of euhedral black biotite, with no preferential orientation

<<Alt: 197.57 - 210.43 Weak Calcite>> Thin calcite bands within the MDS and MAFt

<<Vein: 193.77 - 196 65% Quartz-Carbonate>> Wall rock altered to black biotite

<<Struc: 194.71 - 196 Moderate Fault>> Predominantly rubbly rock, with gouge and a warped foliation

<<Struc: 196 - 196.49 Strong Fault>> Strong gouge development

<<Struc: 199.2 - 200.04 Moderate-Strong Fault>> Upper 30 cm contain strong gouge, lower portion is predominantly broken/rubbly rock

<<Struc: 201.43 - 201.46 Moderate Fault>> Small gougy fault, following foliation

<<Struc: 201.5 - 201.5 Weak-Moderate dominant foliation>> Moderate foliation defined by chloritic parting planes and carbonate bands

203.19	**207.94**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**	**dark grey**	**FG**	203.19	204.69	1.50	B00291956	-0.005	1.1	0.03	-0.01	0.15

203.19 - 207.94: Fine grained finely laminated black-grey and white mudstone with zones of chaotic foliation (bedding?)

<<Min: 204.69 - 206.19 0.01% Min: Galena>>

					204.69	206.19	1.50	B00291957	-0.005	1.5	0.03	0.02	0.26

<<Min: 204.69 - 207.69 0.5% Min: Pyrite>>

					206.19	207.69	1.50	B00291958	-0.005	0.5	-0.01	-0.01	0.02

207.94	**210.43**	**MAFta** **Coarse grained to ash tuff**	**grey-green**	**FG**

207.94 - 210.43: Fine grey green ash tuff with weak carbonate banding

210.43	**255.89**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**	**dark grey**	**FG**

210.43 - 255.89: Fine grained black and white carbonaceous mudstone with bands of white carbonate material, minor thin beds (?) of fine grey-green MAFt, less than 50 cm

<<Min: 214 - 214.85 0.5% Min: Pyrrhotite>> Mineralization associated with patches of carbonate alteration

<<Min: 214 - 214.85 0.01% Min: Chalcopyrite>> Mineralization associated with patches of carbonate alteration

<<Min: 214.85 - 278.62 0.5% Min: Pyrrhotite>> Patches of mm sized blebs, usually associated with carbonate alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 210.43 - 292.71 Moderate Calcite>> Moderate calcite banding and mineral pseudomorphing clcite alteration throughout the MAFt and MDS units.

<<Vein: 217.55 - 217.8 100% Quartz-Carbonate>> Open vugs with euhedral quartz crystals

<<Vein: 224.85 - 225.1 50% Quartz-Carbonate>>

<<Vein: 243.54 - 244.57 80% Quartz-Carbonate>> A cm sized clot of fine grained galena

<<Vein: 250.4 - 250.95 75% Quartz-Carbonate>> Cutting fault zone

<<Struc: 211 - 211 Moderate-Strong dominant foliation>> Strong foliation defined by Micaceous parting planes and carbonate bands

<<Struc: 223 - 223 Moderate-Strong dominant foliation>> Moderate foliation defined by Micaceous parting planes and carbonate bands

<<Struc: 223.8 - 223.85 Weak Fault>> Small fault with crushed rock and minor gouge, parallel to the dominant foliation and local fold axes

<<Struc: 226.24 - 226.27 Weak-Moderate Fault>> Small fault, gouge dominant with a minor crushed rock component

<<Struc: 228.58 - 228.6 Weak-Moderate Fault>> Small fault, gouge dominant with a minor crushed rock component

<<Struc: 231.37 - 231.66 Moderate Fault>> Strong zone of faulting, strong gouge development (60%), with a lessser crushed rock component (40%)

<<Struc: 232.7 - 232.9 Weak Fault>> Zone of weak faulting, predominantly broken rock, with minor crushed rock and gouge

<<Struc: 237.04 - 237.07 Weak Fault>> Zone of weak faulting, predominantly broken rock, with minor crushed rock and gouge

<<Struc: 238.87 - 238.97 Moderate-Strong Fault>> Strong zone of faulting, strong gouge development (60%), with a lessser crushed rock component (40%)

<<Struc: 244.84 - 247.47 Moderate Fault>> Long interval of weak to moderate faulting, the interval is primarily broken rock, with smallintervals of crushed rock/gouge development

<<Struc: 249.6 - 249.6 Moderate dominant foliation>> Foliation defined by chloritic partings

<<Struc: 250.28 - 250.53 Moderate-Strong Fault>> Zone of intense gouge development, 80% gouge, 20% crushed rock. Parallel to the local foliation

255.89 256.89 MAFt Mafic Volcaniclastics grey-green FMG

255.89 - 256.89: Fine to medium grained grey-green well sorted mafic volcanislastic

256.89 266.68 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

256.89 - 266.68: Fine grained black and white carbonaceous mudstone with bands of white carbonate material, minor thin beds (?) of fine grey-green MAFt, less than 50 cm

<<Struc: 259.34 - 259.35 Weak-Moderate Fault>> Small zone of faulting, predominantly gouge

<<Struc: 259.65 - 259.71 Moderate Fault>> Small zone of faulting, predominantly gouge

<<Struc: 260.47 - 261.32 Moderate-Strong Fault>> Interval of multiple 5-10 cm gougy faults,

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

266.68 267.29 MAFt Mafic Volcaniclastics grey-green FMG

266.68 - 267.29: Fine to medium grained grey-green well sorted mafic volcanislastic

267.29 276.53 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

267.29 - 276.53: Fine grained black and white carbonaceous mudstone with bands of white carbonate material, minor thin beds (?) of fine grey-green MAFt, less than 50 cm

<<Min: 267.29 - 296.82 0.01% Min: Pyrite>> Patches of mm sized blebs, usually associated with carbonate alteration

<<Vein: 271.83 - 272.22 90% Quartz-Carbonate>>

<<Struc: 270.9 - 271 Weak-Moderate Fault>> Interval containing 5 small sub-10cm gouge-crushed rock faults

<<Struc: 274.34 - 275.25 Strong Shear>> Interval of strong shearing, fabric is deformed withiin the shear zone, gouge development on the margins of the shear

276.53 278.62 MAFt Mafic Volcaniclastics grey-green FMG

276.53 - 278.62: Fine to medium grained grey-green well sorted mafic volcanislastic

278.62 286.23 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

278.62 - 286.23: Fine grained black and white carbonaceous mudstone with bands of white carbonate material, minor thin beds (?) of fine grey-green MAFt, less than 50 cm

<<Min: 278.62 - 296.82 0.01% Min: Pyrrhotite>> Patches of mm sized blebs, usually associated with carbonate alteration

<<Struc: 281.9 - 284.55 Moderate-Strong Fault>> Zone of broken rock including 4 2-30 cm intervals of gouge and broken rock

286.23 292.71 MAFt Mafic Volcaniclastics grey-green FMG

286.23 - 292.71: Fine to medium grained grey-green well sorted mafic volcanislastic interlayered with thin layers (beds?) of fine grained black carbonaceous mudstone 1-5 cm thick

292.71 296.82 FLZ Fault Zone light grey

292.71 - 296.82: Thick, intense fault zone, composed predominantly of rubbly/crushed rock with 4 20-30 cm zones of crushed rock and gouge

<<Alt: 292.71 - 296.82 Trace Calcite>> Weak calcite within the fault zone

<<Struc: 292.71 - 296.82 Strong Fault>> Thick, intense fault zone, composed predominantly of rubbly/crushed rock with 4 20-30 cm zones of crushed rock and gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

296.82 304.91 RHYvx Quartz and/or feldspar crystal tuff light grey MCG

296.82 - 304.91: Light grey medium to coarse grained, clast rich, moderately to poorly sorted grit. The clasts present are dominantly angular crystal forms which have been pseudomorphed by quartz and calcite as well as abundant quartz eyes. Within the unit, there are two 5-20 cm ashy beds that grade in to the crystal rich portions. Common 1-4 cm black bands, oriented parallel to the foliation may represent welded (and flattened) pumice fragments.

<<Min: 296.82 - 307.43 0.01% Min: Pyrite>>

<<Alt: 296.82 - 329.23 Weak Calcite>> Weak calcite within the KZK ashy volcaniclastic rocks.

<<Vein: 297.41 - 298.84 20% Quartz-Carbonate>>

<<Struc: 299.68 - 300 Moderate Fault>> Zone of gouge andcrushed rock in equal parts, upper contact is at 45 degrees tca

<<Struc: 302.75 - 303.8 Weak-Moderate Fault>> Small interval of gouge and crushed rock

304.91 307.43 RHYvl Lapilli tuff light grey MG

304.91 - 307.43: Light to dark grey, poorly sorted lapilli bearing volcaniclastic conglomorate with rare quartz eyes. The lapilli have been pseudomorphed by quartz and calcite (quartz dominant).

<<Vein: 306.92 - 307.43 30% Quartz-Carbonate>>

<<Struc: 306.85 - 306.85 Moderate-Strong dominant foliation>> foliation defined by micaceous partings

307.43 308.05 FLZ Fault Zone light grey

307.43 - 308.05: light to medium grey fault zone comprising 30% gouge,30% crushed rock,and 40% rubbly/broken rock.

<<Struc: 307.43 - 308.05 Moderate-Strong Fault>> Intensely deformed foliation and development of gouge and crushed rock

308.05 309.80 RHYvl Lapilli tuff light grey MCG

308.05 - 309.8: light to mediu grey poorly sorted, lapilli and crystal (fragment?) bearing heterolithic tuffaceous conglomerate.

<<Min: 308.05 - 315 0.5% Min: Pyrite>>

<<Struc: 308.05 - 313.3 Weak-Moderate Fault>> Zone of broken rock with small (<5 cm) zones of crushed rock and minor gouge

309.80 311.03 RHYva Coarse grained to ash tuff grey-green FMG

309.8 - 311.03: light grey, moderately to well sorted, layered, tuffaceous siltstone, with rare (~1%) round lapilli clasts.

311.03 322.76 RHYva Coarse grained to ash tuff medium grey FCG

311.03 - 322.76: light grey rhyolitic vocaniclastic (resedimented?) with sections of scarce lapilli and sections containing what appear to be subrounded lithic fragments (crystalline, replaced by calcite and quartz, and crystal fragments.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 315 - 322.76 0.01% Min: Pyrrhotite>>

<<Vein: 322.66 - 322.76 80% Quartz-Carbonate>>

<<Struc: 316.27 - 316.37 Moderate Fault>> Small zone of gouge devolpment

<<Struc: 322 - 322 Weak-Moderate dominant foliation>> foliation defined by pooly develope micaceous partings

322.76 329.23 RHYvl Lapilli tuff medium grey FMG

322.76 - 329.23: Grey green biotite porpyroblast bearing tuffaceous lapilli bearing conglomorate, with bands (beds?) of lapilli poor tuffaceous siltstone

<<Min: 322.76 - 325.85 0.5% Min: Pyrrhotite>>

<<Min: 325.85 - 330.45 0.01% Min: Pyrrhotite>>

<<Alt: 322.76 - 338.57 Weak-Moderate Biotite>> Euhedral black biotite porpyroblasts in patches and bands, possibly representing a pelitic input.

<<Vein: 323.45 - 325.85 20% Quartz-Carbonate>>

<<Struc: 323.25 - 323.25 Weak-Moderate dominant foliation>> Foliation defined by micaceous partings

<<Struc: 324.8 - 324.8 Weak-Moderate Vein>> Foliation parallel vein

<<Struc: 327.6 - 327.6 Moderate dominant foliation>> Foliation defined by micaceous partings

329.23 330.45 RHYva Coarse grained to ash tuff grey-green FG

329.23 - 330.45: Grey green fine grained, well laminated tuffaceous siltstone with 0.2-1 cm porphyroblasts of cordierite (partially pseudomorphed by calcite) and biotite porphyroblasts.

<<Alt: 329.23 - 329.88 Moderate Cordierite>> Porphyroblasts of cordierite grown in the pelitic ash tuff

<<Alt: 329.23 - 333.99 Moderate-Strong Calcite>> Pervasive calcitewithin the RHYva with pelitic input.

330.45 331.00 RHYvl Lapilli tuff medium grey

330.45 - 331: Grey green biotite porpyroblast bearing tuffaceous lapilli bearing conglomorate.

<<Min: 330.45 - 335.5 0.5% Min: Pyrite>>

<<Vein: 330.45 - 331 0.5% Pyrite>>

331.00 333.99 RHYva Coarse grained to ash tuff grey-green FG

331 - 333.99: Grey green fine grained, well laminated tuffaceous siltstone with 0.2-1 cm porphyroblasts of cordierite (partially pseudomorphed by calcite) and biotite porphyroblasts.

<<Alt: 333.41 - 333.77 Weak-Moderate Cordierite>> Porphyroblasts of cordierite grown in the pelitic ash tuff

333.99 338.57 RHYvl Lapilli tuff medium grey MCG

333.99 - 338.57: Poorly sorted medium grey, lapilli poor (strongly matrix supported) tuffaceous conglomerate.

<<Min: 335 - 344.42 0.01% Min: Pyrrhotite>>

<<Alt: 333.99 - 338.57 Weak Calcite>> Weak calcite within the KZK ashy volcaniclastic rocks.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

338.57 339.90 RHYva Coarse grained to ash tuff beige FG

338.57 - 339.9: Beige-green fine grained, well laminated tuffaceous siltstone.

<<Alt: 338.57 - 344.89 Moderate Calcite>> Strong patchy and vein calcite through the pelitic RHYva units and local RHYvl

<<Struc: 339.7 - 339.82 Moderate Fault>> Zone of gouge (dominant) and crushed rock

339.90 343.83 RHYvl Lapilli tuff medium grey

339.9 - 343.83: Poorly sorted medium grey, lapilli poor (strongly matrix supported) tuffaceous conglomerate.

<<Alt: 339.9 - 350.93 Weak-Moderate Biotite>> Euhedral black biotite porpyroblasts in patches and bands, possibly representing a pelitic input.

<<Alt: 343.82 - 344.89 Moderate-Strong Cordierite>> Porphyroblasts of cordierite grown in the pelitic ash tuff

<<Struc: 343 - 343 Moderate dominant foliation>> Foliation defined by micaceous partings

343.83 344.99 RHYva Coarse grained to ash tuff grey-green FG

343.83 - 344.99: Grey green fine grained, well laminated tuffaceous siltstone with 0.2-1 cm porphyroblasts of cordierite (partially pseudomorphed by calcite) and biotite porphyroblasts.

<<Alt: 344.89 - 360.13 Weak Calcite>> Weak calcite alteration of clasts within the RHYvl units,and rare veins/bands of calcite

344.99 346.00 RHYvl Lapilli tuff medium grey MCG

344.99 - 346: Poorly sorted medium grey, lapilli poor (strongly matrix supported) tuffaceous conglomerate.

346.00 350.93 RHYva Coarse grained to ash tuff medium grey MCG

346 - 350.93: Poorly sorted medium grey crystal (fragment?) and rarae lapilli bearing, matrix supported tuffaceous conglomerate.

350.93 360.13 RHYvl Lapilli tuff dark grey FCG

350.93 - 360.13: Poorly sorted dark grey green lapilli rich, matrix supported tuffaceous conglomerate.

<<Alt: 350.93 - 360.13 Moderate-Strong Biotite>> Black, foliation parallel bands-pervasive biotite alteration within the sedimentary matrix of the tuffaceous conglomorate units.

<<Struc: 352.65 - 352.83 Moderate Fault>> Small zones of gouge (dominant) and crushed rock within an interval of broken rock

<<Struc: 354.05 - 354.05 Moderate-Strong dominant foliation>> Foliation defined by micaceous partings

<<Struc: 355.2 - 355.2 Weak-Moderate dominant foliation>> Foliation defined by micaceous partings

360.13 363.80 FLZ Fault Zone light grey

360.13 - 363.8: light to medium grey fault zone comprising 30% gouge,30% crushed rock,and 40% rubbly/broken rock.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 360.13 - 363.8 Weak-Moderate Calcite>> Moderate amountsof calcite presentint eh fault zone

<<Struc: 360.13 - 363.8 Strong Fault>> Thick, intense fault zone, composed predominantly of rubbly/crushed rock with 4 20-30 cm zones of crushed rock and gouge, with some zones of weakly broken competent rock

363.80 368.31 RHYvl Lapilli tuff light grey MG

363.8 - 368.31: Poorly sorted medium grey crystal (fragment?) and rarae lapilli bearing, matrix supported tuffaceous conglomerate.

<<Alt: 363.8 - 376.35 Moderate Biotite>> Black, banded-pervasive biotite alteration within the sedimentary matrix of the tuffaceous conglomorate units.

<<Alt: 363.8 - 380.6 Weak Calcite>> Weak calcite alteration of clasts are veins

368.31 369.20 RHYvx Quartz and/or feldspar crystal tuff light grey CG

368.31 - 369.2: Feldspar crystal supported conglomerate, white feldspar crystals and crystal fragments in a medium grey micaceous, pyritic matrix. The contacts, where preserved show a gradation into RHYva, and the matrix is a gritty,biotite bearing material, similar to the surrounding RHYva material.

369.20 376.35 RHYvl Lapilli tuff medium grey FCG

369.2 - 376.35: Poorly sorted medium grey crystal (fragment?) and rarae lapilli bearing, matrix supported tuffaceous conglomerate.

<<Struc: 375.85 - 381.1 Weak-Moderate Fault>> A zone of small (<8cm) gougy faults, spaced at 1-2m

376.35 377.04 RHYva Coarse grained to ash tuff medium grey FMG

376.35 - 377.04: Massive,medium grey, well sorted ash tuff layer, gradational upper contact with the lapilli conglomorate

377.04 380.60 RHYvx Quartz and/or feldspar crystal tuff light grey CG

377.04 - 380.6: Feldspar crystal supported conglomerate, white feldspar crystals and crystal fragments in a medium grey micaceous, pyritic matrix. The contacts, where preserved show a gradation into RHYva, and the matrix is a gritty,biotite bearing material, similar to the surrounding RHYva material.

<<Min: 377.04 - 386.07 0.01% Min: Pyrite>> Rare pyrite-carbonate veins

<<Alt: 377.2 - 386.07 Moderate Biotite>> Black, banded-pervasive biotite alteration within the sedimentary matrix of the tuffaceous conglomorate units.

380.60 386.07 RHYva Coarse grained to ash tuff grey-green FMG

380.6 - 386.07: Moderately sorted medium grey, rare lapilli bearing, matrix supported tuff.

<<Alt: 380.6 - 386.07 Trace Calcite>> Very weak alteration of clasts

<<Vein: 380.6 - 381 100% Quartz-Carbonate>> Pyrite and galena in equal proportions

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 384.25 - 384.28 100% Quartz-Carbonate>>

<<Struc: 384 - 384 Moderate dominant foliation>> Foliation defined by micaceous partings

<<Struc: 384.6 - 384.6 Weak Kink bands>>

<<Struc: 385.95 - 386.07 Weak-Moderate Fault>> A small gougy fault

386.07 389.18 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

386.07 - 389.18: Well banded, siliceous, light grey, rhyolite flow. Siliceous bands cross the core, and are in spots, chaotically folded.

<<Struc: 387.88 - 387.91 Weak Fault>> A small gougy fault

389.18 389.72 PEL Equigranular biotite + calcite +/- quartz rock brown FG

389.18 - 389.72: Well laminated, well sorted brown, biotite bearing Pelitic sediment

<<Min: 389.18 - 393.1 0.5% Min: Pyrrhotite>> Pyrrhotite appears to be asociated with the pelite - Sulphur source?

<<Alt: 389.18 - 389.72 Moderate-Strong Biotite>> Dark brown pervasive foliation parallel (and defining) biotite

<<Vein: 389.32 - 389.48 25% Carbonate-Kaolinite/White clay>>

389.72 390.40 FLZ Fault Zone light grey

389.72 - 390.4: Fault zone is composed of well consolidated, non swelling clay gouge and granule to cobble sied rock fragments that, based on colour may be derived from the RHYcw

<<Struc: 389.72 - 390.4 Fault>> Fault zone is composed of well consolidated, non swelling clay gouge and granule to cobble sied rock fragments

390.40 393.55 PEL Equigranular biotite + calcite +/- quartz rock brown FG

390.4 - 393.55: Well laminated, well sorted brown, biotite bearing Pelitic sediment

<<Alt: 390.4 - 393.1 Strong Biotite>> Dark brown pervasive foliation parallel (and defining) biotite

<<Alt: 390.4 - 393.55 Moderate-Strong Calcite>> Strong calcite within the rown biotite bearing pelite

<<Vein: 390.45 - 391.17 65% Quartz-Carbonate>>

<<Vein: 393.1 - 393.32 90% Quartz-Carbonate>>

<<Struc: 392.5 - 392.5 Moderate-Strong dominant foliation>> Foliation defined by micaceous partings and calcitic bands

393.55 400.00 RHYva Coarse grained to ash tuff light grey FCG

393.55 - 400: Massive to moderatley laminated lapilli and crystal fragment bearing, ashy-tuffaceous volcaniclastic grit, with some 20-50 cm zones of finer grained ash materialand weak zones of euhedral black biotite alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 393.82 - 393.95 5% Min: Pyrite>> Patch of moderate disseminated/patchy pyrite, adjacent to a fault

<<Min: 396.46 - 400 0.01% Min: Pyrrhotite>>

<<Alt: 393.55 - 397.45 Moderate Biotite>> Black, banded-pervasive biotite alteration within the sedimentary matrix of the tuffaceous conglomorate units.

<<Alt: 393.55 - 400 Weak Calcite>> weak calcite within the ashy crystal/lapilli bearing volcaniclastic rocks

<<Alt: 397.45 - 398 Moderate Biotite>> Euhedral black biotite porpyroblasts in patches and bands, possibly representing a pelitic input.

<<Alt: 398 - 400 Weak Biotite>> Black, banded-pervasive biotite alteration within the sedimentary matrix of the tuffaceous conglomorate units.

<<Vein: 395.94 - 396.3 80% Quartz-Carbonate>>

<<Struc: 395.18 - 396.46 Moderate-Strong Fault>> Fault zone comprising several gouge-crushed rock zones with larger fragments of intact rock 5-20 cm long

End of Hole @ 400

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-385

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	David Nuttal
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/9/2016
UTM Easting	415447.872	Core Size:	HQ3	Azimuth:	214.2	Date Logging Complete:	7/20/2016
UTM Northing:	6815529.427	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	Hytech
UTM Elev. (m):	1518.179	Casing Depth (m):	5	Length (m):	645	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/8/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/18/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
						Parent Hole:	

Comments:

The purpose of hole K16-385 was to test the down dip extension of the Krakatoa ore bodies. Total hole depth is 645 m.
The upper Krakatoa lens is thought to have been intersected as moderate-strong muscovite alteration and narrow intervals of pyrite-rich (with trace CP/SP) semi-massive sulphide was found along strike of upper lens mineralization in K16-369 (K16-385 depth 493-508 m).
The lower Krakatoa lens was not intersected in this hole, though moderate to moderate-strong muscovite alteration is present along strike of K16-369 lower lens mineralization (K16-385 depth 525-560 m).
Moderate muscovite alteration is continuous between 460-625 m. Trace-weak chlorite alteration is found between 530-645 m and is concentrated in lapilli of the RHYvl units.
The drill hole collared into the Wind Lake formation at 5 m depth, which consists of intercalated calcareous mafic tuffs and mudstone down to 269 m core depth. The contact between the Wind Lake formation and the KZK formation is conformable. The KZK formation consists of felsic volcanics stretching from 269 m to EOH at 645 m depth. Felsic volcanic rocks consist mostly of unaltered to weakly altered (muscovite and or chlorite) ash and or lapilli tuff with lesser abundances of coherent rhyolite, mixed ash and pelite.
Large rhyolite dikes (RHYi) occur between 309.45-328 m and 430-442 m, and are each associated with silicification, weak to moderate muscovite alteration (intensity 2-4) and pyrite (up to 5-10% in short intervals usually less than 20 cm).
Large fault zones are observed between 39-48 m, 61-66 m and 417-425 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	212.8	1.4	214.2	TN14	David Nuttal	7/8/2016		☑	Issues getting accurate reading with TN-14
10	-65.14019	213.69503	1.4	215.09503	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
20	-65.42384	213.26965	1.4	214.66965	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
24	-65.5	192.2	22.1	214.3	ReflexEZS	Hytech	7/8/2016	5866	☐	
30	-65.47901	212.83031	1.4	214.23031	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
39	-65.6	190	22.1	212.1	ReflexEZS	Hytech	7/8/2016	5779	☐	
40	-65.65652	212.62188	1.4	214.02188	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
50	-65.62884	212.65652	1.4	214.05652	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
60	-65.52195	212.72859	1.4	214.12859	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
63	-65.4	190.8	22.1	212.9	ReflexEZS	Hytech	7/8/2016	5783	☐	
70	-65.29151	212.81015	1.4	214.21015	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
80	-65.06259	213.19868	1.4	214.59868	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
87	-65	192.2	22.1	214.3	ReflexEZS	Hytech	7/8/2016	5789	☐	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-385

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
90	-64.80063	213.56205	1.4	214.96205	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
100	-64.69388	213.71398	1.4	215.11398	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
110	-64.36868	213.94458	1.4	215.34458	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
111	-64.6	191.8	22.1	213.9	ReflexEZS	Hytech	7/8/2016	5743	☐	
120	-64.2289	214.02423	1.4	215.42423	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
130	-64.00356	213.99057	1.4	215.39057	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
135	-64	192.7	22.1	214.8	ReflexEZS	Hytech	7/9/2016	5792	☐	
140	-64.00842	214.30534	1.4	215.70534	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
150	-63.59844	215.07737	1.4	216.47737	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
159	-63.2	194.4	22.1	216.5	ReflexEZS	Hytech	7/9/2016	5833	☐	
160	-63.10411	216.0644	1.4	217.4644	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
170	-62.78903	217.01695	1.4	218.41695	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
180	-62.55955	217.64952	1.4	219.04952	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
183	-62.7	194.9	22.1	217	ReflexEZS	Hytech	7/9/2016	5810	☐	
190	-62.5124	217.95267	1.4	219.35267	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
200	-62.28908	218.22843	1.4	219.62843	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
207	-62.3	197.4	22.1	219.5	ReflexEZS	Hytech	7/9/2016	5775	☐	
210	-62.22297	218.35874	1.4	219.75874	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
220	-62.07346	218.63492	1.4	220.03492	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
230	-61.9697	219.02787	1.4	220.42787	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
231	-62	197.4	22.1	219.5	ReflexEZS	Hytech	7/10/2016	5765	☐	
240	-61.75958	219.63978	1.4	221.03978	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
250	-61.5917	220.02543	1.4	221.42543	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
255	-61.7	197.6	22.1	219.7	ReflexEZS	Hytech	7/10/2016	5766	☐	
260	-61.55937	220.44999	1.4	221.84999	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
270	-61.37461	220.84675	1.4	222.24675	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
280	-61.37503	221.64353	1.4	223.04353	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
290	-61.10996	222.05947	1.4	223.45947	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
300	-61.00306	222.14099	1.4	223.54099	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
303	-61	200	22.1	222.1	ReflexEZS	Hytech	7/11/2016	5781	☐	
310	-61.13319	222.12421	1.4	223.52421	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
320	-60.80956	222.09276	1.4	223.49276	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
330	-60.6254	222.40167	1.4	223.80167	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
330.01	-60.6	199.9	22.1	222	ReflexEZS	Hytech	7/11/2016	5847	☐	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-385

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
336	-62	197.8	22.1	219.9	ReflexEZS	Hytech	7/12/2016	5794	☐	
340	-60.18569	222.56417	1.4	223.96417	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
342	-62.6	197.8	22.1	219.9	ReflexEZS	Hytech	7/12/2016	5789	☐	
350	-59.41683	222.03594	1.4	223.43594	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
360	-59.23204	221.25225	1.4	222.65225	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
360.01	-62.8	196.2	22.1	218.3	ReflexEZS	Hytech	7/12/2016	5721	☐	
370	-59.39844	220.59743	1.4	221.99743	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
380	-59.34867	220.1162	1.4	221.5162	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
384	-62.4	196.4	22.1	218.5	ReflexEZS	Hytech	7/12/2016	5887	☐	
390	-59.36939	219.99594	1.4	221.39594	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
400	-59.45214	219.63998	1.4	221.03998	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
408	-62	196.1	22.1	218.2	ReflexEZS	Hytech	7/13/2016	5782	☐	
410	-59.77909	219.62337	1.4	221.02337	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
420	-59.6662	219.62261	1.4	221.02261	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
430	-59.73034	219.61276	1.4	221.01276	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
432	-61.9	197.2	22.1	219.3	ReflexEZS	Hytech	7/13/2016	5781	☐	
440	-59.76718	219.25212	1.4	220.65212	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
450	-60.49754	218.94403	1.4	220.34403	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
456	-60.5	195.5	22.1	217.6	ReflexEZS	Hytech	7/14/2016	5747	☐	
460	-59.83133	218.79708	1.4	220.19708	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
470	-60.06672	218.63081	1.4	220.03081	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
480	-60.03118	218.48699	1.4	219.88699	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
480.01	-60.2	196	22.1	218.1	ReflexEZS	Hytech	7/15/2016	5757	☐	
490	-59.89575	218.082	1.4	219.482	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
500	-60.04336	218.112	1.4	219.512	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
504	-60.4	195.4	22.1	217.5	ReflexEZS	Hytech	7/17/2016	5736	☐	
510	-60.18801	217.82341	1.4	219.22341	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
520	-60.308	217.34753	1.4	218.74753	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
528	-60.4	192.1	22.1	214.2	ReflexEZS	Hytech	7/16/2016	5754	☐	
530	-60.35337	217.07776	1.4	218.47776	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
540	-60.38524	217.19037	1.4	218.59037	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
550	-60.32493	217.16112	1.4	218.56112	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
552	-60.4	192.4	22.1	214.5	ReflexEZS	Hytech	7/17/2016	5847	☐	
560	-60.28684	217.05143	1.4	218.45143	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-385

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
570	-60.32542	216.88585	1.4	218.28585	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
576	-60.4	193.5	22.1	215.6	ReflexEZS	Hytech	7/17/2016	5689	☐	
580	-60.31838	217.10537	1.4	218.50537	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
590	-60.23364	217.44528	1.4	218.84528	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
600	-60.24561	217.77972	1.4	219.17972	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
600.01	-60.3	195.6	22.1	217.7	ReflexEZS	Hytech	7/17/2016	5768	☐	
610	-60.22001	218.06652	1.4	219.46652	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
620	-60.13343	218.22035	1.4	219.62035	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
624	-60.2	194	22.1	216.1	ReflexEZS	Hytech	7/18/2016	5868	☐	
630	-60.04477	217.95371	1.4	219.35371	Gyro	Alicia Vainio	7/18/2016		☑	Motion quality = 100
645	-60.3	193.6	22.1	215.7	ReflexEZS	Hytech	7/18/2016	5777	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 5.00 OVBN Overburden

5.00 9.00 MAFt Mafic Volcaniclastics

<<Min: 5 - 14.69 0.1% Min: Pyrrhotite>>

<<Min: 5 - 24.44 0.1% Min: Pyrite>>

<<Alt: 5 - 14 Moderate Calcite>>

<<Alt: 5 - 264.81 Weak Chlorite>> Pervasive through mafic units of windlake formation.

<<Vein: 6.91 - 15.7 2% Quartz-Carbonate>>

<<Struc: 8.23 - 8.95 Weak Fault>>

9.00 9.47 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

9.47 14.69 MAFta Coarse grained to ash tuff

<<Alt: 14 - 48 Weak-Moderate Calcite>>

<<Struc: 13.62 - 13.71 Weak Fault>>

14.69 24.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

14.69 - 24.4: Intercalated with MAFta (fine-grained olive green mafic ash). Interval hosts CP, PO and PY mineralization (all below 1%)

<<Min: 14.69 - 24.44 0.5% Min: Pyrrhotite>>

<<Min: 14.69 - 36 0.1% Min: Chalcopyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 22.58 - 22.62 Trace Fault>>

24.40 26.19 MAFta Coarse grained to ash tuff

<<Min: 24.44 - 39.2 0.5% Min: Pyrite>>

<<Min: 24.44 - 39.2 2% Min: Pyrrhotite>> higher intensity in mafic units.

26.19 28.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

28.00 39.20 MAFta Coarse grained to ash tuff

28 - 39.2: Locally interbedded with short <30cm intervals of black MDS.

<<Vein: 33.7 - 34.3 80% Quartz>>

<<Struc: 29.95 - 29.96 Weak dominant foliation>>

<<Struc: 36.45 - 57.28 Strong Fault>>

39.20 47.28 FLZ Fault Zone

39.2 - 47.28: Fault zone, mixed MAFt/MDS liths found in gouge.

47.28 53.92 MAFta Coarse grained to ash tuff

<<Min: 47.28 - 53.92 0.1% Min: Pyrite>>

<<Min: 47.28 - 53.92 0.1% Min: Pyrrhotite>>

<<Alt: 48 - 53.5 Trace Calcite>>

<<Alt: 53.5 - 58.82 Moderate-Strong Calcite>>

53.92 61.05 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

53.92 - 61.05: From 58.82 - 61.05 is a large Qz Cb vein.

<<Min: 53.92 - 73.5 1% Min: Pyrite>>

<<Min: 53.92 - 73.5 1% Min: Pyrrhotite>>

<<Alt: 58.82 - 73.5 Weak-Moderate Calcite>>

<<Vein: 58.82 - 61.05 100% Quartz-Albite>>

61.05 65.57 FLZ Fault Zone

61.05 - 65.57: Mixed MAFt/MDS liths.

<<Struc: 61.05 - 66.74 Strong Fault>>

65.57 68.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

68.90 70.53 MAFt Mafic Volcaniclastics

70.53 73.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

73.50 86.56 MAFt Mafic Volcaniclastics

<<Min: 73.5 - 80.9 0.1% Min: Pyrite>>

<<Min: 73.5 - 80.9 0.1% Min: Pyrrhotite>>

<<Min: 80.9 - 87 1% Min: Pyrite>>

<<Min: 80.9 - 87 1% Min: Pyrrhotite>>

<<Alt: 73.5 - 86.5 Moderate Calcite>>

<<Alt: 86.5 - 91 Weak Calcite>>

<<Vein: 80.9 - 82.8 50% Quarzt-Chlorite-Carbonate>>

<<Vein: 84.29 - 86.56 100% Quarzt-Chlorite-Carbonate>> Vein hosted trace CP, PO, PY, GL

<<Struc: 73.65 - 73.66 Moderate-Strong dominant foliation>>

<<Struc: 75 - 75.45 Weak Fault>>

<<Struc: 81.3 - 81.77 Moderate Fault>>

86.56 96.00 MAFta Coarse grained to ash tuff

<<Alt: 91 - 100.82 Weak-Moderate Calcite>>

96.00 98.14 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

98.14 99.70 MAFt Mafic Volcaniclastics

<<Struc: 98.77 - 99.1 Moderate Fault>>

99.70 100.82 MAFt Mafic Volcaniclastics

99.7 - 100.82: Pseudo coherent textures. Mafic fine grained, thick foliation planes bisect white siliceous domains. Possible older deformed quartz vein?

100.82 117.70 MAFt Mafic Volcaniclastics

<<Min: 100.82 - 133 1% Min: Pyrite>>

<<Min: 100.82 - 133 1% Min: Pyrrhotite>>

<<Alt: 100.82 - 117.7 Moderate Calcite>>

<<Struc: 103.4 - 103.58 Weak-Moderate Fault>>

<<Struc: 110.66 - 112.44 Moderate-Strong Fault>>

<<Struc: 116.9 - 117.7 Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

117.70 122.95 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 117.7 - 139 Weak Calcite>>

122.95 124.25 MAFt Mafic Volcaniclastics

<<Vein: 123.47 - 126.14 30% Quarzt-Chlorite-Carbonate>>

124.25 134.27 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 133 - 138.95 0.1% Min: Pyrite>>

<<Min: 133 - 155.44 0.5% Min: Pyrrhotite>>

<<Struc: 124.72 - 125.65 Moderate Fault>>

<<Struc: 128.6 - 144.28 Weak-Moderate Fault>> Large interval localized crumbly/weak rock and narrow faults localized in MDS units.

134.27 138.95 MAFt Mafic Volcaniclastics

138.95 147.64 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 138.95 - 155.44 0.5% Min: Pyrite>>

<<Min: 142.08 - 143.83 0.1% Min: Chalcopyrite>>

<<Alt: 139 - 176 Moderate Calcite>>

<<Vein: 142.08 - 143.83 80% Calcium carbonate/Carbonate>> PO - PY - CP sulphides

147.64 155.44 MAFt Mafic Volcaniclastics

147.64 - 155.44: Interbedded MAFt and MDS

<<Min: 155.4 - 176 1% Min: Pyrite>>

<<Min: 155.4 - 233 1% Min: Pyrrhotite>> higher abundances of PO in MDS units. Occurs as thin wisps along foliation planes. In MAFt PO is concentrated in calcareous domains.

<<Struc: 147.64 - 147.77 Weak Fault>>

<<Struc: 151 - 151.01 Moderate dominant foliation>>

155.44 204.56 MAFt Mafic Volcaniclastics

<<Min: 176 - 183 3% Min: Pyrite>> Clots of PY 3-5 cm across are found in this interval.

<<Min: 183 - 215.82 1% Min: Pyrite>>

<<Min: 191 - 192.5 1% Min: Sphalerite>> Found along rims of carbonate domains.

<<Alt: 176 - 192.5 Moderate-Strong Calcite>>

<<Alt: 192.5 - 205.41 Moderate Calcite>>

<<Struc: 166 - 183.8 Weak-Moderate Fault>> large interval of narrow faults and rubbly rock.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 190 - 190.38 Weak Fault>>

<<Struc: 192.8 - 193 Weak Fault>>

<<Struc: 195.86 - 196.44 Weak-Moderate Fault>>

204.56 205.41 MAFt Mafic Volcaniclastics

204.56 - 205.41: light colored, calcareous/siliceous unit with Sharp contacts and coherent textures.

205.41 209.45 MAFt Mafic Volcaniclastics

<<Alt: 205.41 - 222 Weak-Moderate Calcite>>

209.45 211.67 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

211.67 215.82 MAFt Mafic Volcaniclastics

215.82 221.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 215.82 - 221.3 2% Min: Pyrite>>

<<Min: 218 - 219 0.5% Min: Chalcopyrite>>

<<Struc: 216.4 - 222.1 Weak-Moderate Fault>> 10-90 cm faults spaced <1 m apart. Dominantly a weak Mudstone unit

221.30 236.41 MAFt Mafic Volcaniclastics

<<Min: 221.3 - 281.67 0.1% Min: Pyrite>>

<<Min: 233 - 269 0.5% Min: Pyrrhotite>>

<<Alt: 222 - 243.77 Moderate Calcite>>

<<Struc: 222.1 - 233 Trace Fault>> Large interval of narrow faults and rubbly rock.

236.41 241.05 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 237.33 - 237.44 100% Quartz>>

<<Struc: 236.71 - 236.75 Weak Fault>>

<<Struc: 238 - 241.7 Trace Fault>> Interval contains narrow (<5cm wide) faults filled with gouge, spaced 10-100 cm apart.

241.05 241.91 MAFt Mafic Volcaniclastics

241.91 242.26 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

242.26 243.77 MAFt Mafic Volcaniclastics

<<Struc: 242.5 - 242.51 Weak dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

243.77 247.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 243.77 - 269 Moderate-Strong Calcite>>

247.40 255.18 MAFt Mafic Volcaniclastics

<<Min: 254.86 - 255.18 2% Min: Sphalerite>> Located on margin of vein

<<Min: 254.86 - 255.18 0.1% Min: Galena>>

<<Vein: 248.3 - 248.75 80% Quartz>>

<<Vein: 254.86 - 260.51 40% Quartz>> 2% PO, 2% PY, 1% SP, Trace of GL

<<Struc: 252.48 - 252.88 Moderate Fault>>

255.18 262.18 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Struc: 255.18 - 255.22 Weak Fault>>

<<Struc: 258.18 - 259.47 Moderate Fault>> 3 narrow faults, approximately 10-20 cm wide, spaced <30 cm apart.

262.18 264.81 MAFt Mafic Volcaniclastics

264.81 269.02 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 269 - 274.86 1% Min: Pyrrhotite>>

<<Alt: 264.81 - 433 Trace Muscovite>>

<<Alt: 269 - 282 Weak Calcite>>

269.02 274.86 RHYc Rhyolite coherant volcanics

269.02 - 274.86: Contact is believed to be the start of the KZK formation.

<<Struc: 272.35 - 272.36 Weak dominant foliation>>

274.86 278.27 MDSt Rhyolite tuff dominant mudstone

<<Min: 274.86 - 290.2 0.5% Min: Pyrrhotite>>

<<Vein: 277.42 - 277.6 100% Quartz>> PO/PY

278.27 279.30 RHYva Coarse grained to ash tuff

279.30 281.67 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

279.3 - 281.67: Interval is mostly fault gouge.

<<Struc: 279.87 - 281.67 Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

281.67 289.70 RHYv Rhyolite volcaniclastic

281.67 - 289.7: Minor biotite and chlorite.

<<Min: 281.67 - 290.2 0.5% Min: Pyrite>>

<<Alt: 282 - 295.23 Weak-Moderate Calcite>>

<<Struc: 289.4 - 289.48 Weak Fault>>

289.70 290.20 PEL Equigranular biotite + calcite +/- quartz rock

290.20 295.23 RHYvl Lapilli tuff

<<Min: 290.2 - 316.41 0.1% Min: Pyrite>>

<<Min: 290.2 - 316.41 0.1% Min: Pyrrhotite>>

295.23 302.27 PEL Equigranular biotite + calcite +/- quartz rock

295.23 - 302.27: Chlorite and biotite abundance intensity varies through interval. Small biotite rimmed, blue-white porphyroblasts thought to be cordierite replaced by carbonate (crystal faces flash under light)

<<Alt: 295.23 - 302.27 Moderate-Strong Calcite>>

<<Struc: 298.2 - 298.21 Weak dominant foliation>>

302.27 309.45 RHYvl Lapilli tuff

<<Alt: 302.27 - 327.95 Weak-Moderate Calcite>>

<<Vein: 305.78 - 305.98 100% Quarzt-Chlorite-Carbonate>> PO/PY

<<Vein: 309.35 - 309.45 100% Calcium carbonate/Carbonate>>

<<Struc: 308.19 - 308.27 Weak Fault>>

<<Struc: 309.32 - 309.35 Weak Fault>>

309.45 326.11 RHYi Aphanitic Rhyolite (intrusion)

<<Min: 316.41 - 316.52 10% Min: Pyrite>>

<<Min: 316.52 - 339 0.1% Min: Pyrite>>

<<Vein: 316.41 - 316.52 75% Calcium carbonate/Carbonate>>

326.11 327.95 RHYif feldspar and quartz porphyry intrusions

326.11 - 327.95: Appears to be a pseudofragmental contact of RHYi unit above.

<<Min: 327.46 - 327.5 1% Min: Sphalerite>>

<<Min: 327.46 - 327.5 0.1% Min: Galena>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 327.46 - 327.5 100% Quartz-Carbonate-Sulphide>> SP disseminated in carbonate

<<Struc: 327.38 - 327.42 Weak Fault>>

327.95 328.30 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 327.95 - 330.85 0.1% Min: Pyrrhotite>>

<<Alt: 327.95 - 328.3 Moderate-Strong Calcite>>

328.30 329.14 RHYvl Lapilli tuff

<<Alt: 328.3 - 334.07 Weak-Moderate Calcite>>

329.14 330.85 RHYc Rhyolite coherant volcanics

330.85 331.15 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Min: 330.85 - 339 0.5% Min: Pyrrhotite>>

331.15 333.46 RHYc Rhyolite coherant volcanics

<<Vein: 332.45 - 333.46 30% Quartz>>

333.46 334.07 PEL Equigranular biotite + calcite +/- quartz rock grey-brown

<<Alt: 334 - 351.26 Weak Biotite>>

334.07 339.00 RHYvl Lapilli tuff grey-green

<<Alt: 334.07 - 351.26 Trace Chlorite>>

<<Alt: 334.07 - 351.26 Weak Calcite>>

339.00 340.50 RHYc Rhyolite coherant volcanics

<<Min: 339 - 384 1% Min: Pyrite>> Aggregates of pyrite are found in and along edges of narrow carbonate-rich veins.

<<Min: 339 - 384 1% Min: Pyrrhotite>> Higher abundances are found in units with stronger intensity of chlorite alteration.

<<Vein: 339.29 - 339.41 100% Quartz>>

340.50 351.26 RHYvl Lapilli tuff grey-green

<<Vein: 349.15 - 350.4 20% Quartz>>

<<Struc: 348.1 - 348.33 Weak-Moderate Fault>>

351.26 353.75 PEL Equigranular biotite + calcite +/- quartz rock green

<<Alt: 351.26 - 353.75 Moderate-Strong Calcite>>

<<Alt: 351.26 - 353.95 Weak Chlorite>>

<<Alt: 351.26 - 362 Weak-Moderate Biotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 353.6 - 353.61 Moderate dominant foliation>>

353.75 363.35 RHYvl Lapilli tuff grey-green

<<Min: 360.1 - 368.28 0.5% Min: Sphalerite>>

<<Alt: 353.75 - 363.65 Weak-Moderate Calcite>>

<<Alt: 353.95 - 370.66 Trace Chlorite>>

<<Alt: 362 - 378.5 Moderate Biotite>>

363.35 364.86 PEL Equigranular biotite + calcite +/- quartz rock green

<<Alt: 363.65 - 364.58 Moderate-Strong Calcite>>

<<Alt: 364.58 - 381.97 Moderate Calcite>>

<<Struc: 364.4 - 364.41 Moderate dominant foliation>>

364.86 370.66 RHYvl Lapilli tuff grey

364.86 - 370.66: pegmatitic cordierite along vein margins

<<Vein: 366.01 - 368.42 60% Quartz>> Sphalerite mineralization is localized along margins of the vein. Unidentified siliceous, greenish-grey, pegmatitic (1-3 cm) crystals form at margins (Cordierite is best guess). Biotite is fine grained and mixed with unidentified splintery, blue mineral.

370.66 372.04 PEL Equigranular biotite + calcite +/- quartz rock green

<<Alt: 370.66 - 381.97 Weak Chlorite>>

372.04 372.83 RHYvl Lapilli tuff grey

372.83 374.45 PEL Equigranular biotite + calcite +/- quartz rock green

374.45 378.74 RHYvl Lapilli tuff dark grey

<<Alt: 378.5 - 381.97 Weak-Moderate Biotite>>

378.74 379.04 PEL Equigranular biotite + calcite +/- quartz rock green

379.04 379.37 RHYvl Lapilli tuff grey-brown

379.37 381.97 PEL Equigranular biotite + calcite +/- quartz rock green

<<Struc: 380.65 - 380.66 Weak-Moderate dominant foliation>>

381.97 405.42 RHYvl Lapilli tuff grey

<<Min: 384 - 415.88 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 384 - 430 0.5% Min: Pyrite>>

<<Alt: 381.97 - 383 Trace Biotite>>

<<Alt: 381.97 - 405.42 Weak-Moderate Calcite>>

<<Struc: 386.98 - 387.45 Moderate Fault>>

<<Struc: 389.25 - 389.26 Moderate dominant foliation>>

<<Struc: 401.7 - 401.71 Weak-Moderate dominant foliation>>

405.42 406.68 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

<<Alt: 405.42 - 415.83 Moderate Calcite>>

406.68 411.54 RHYv Rhyolite volcaniclastic

406.68 - 411.54: Rock is texturally obscure due to faulting. Portions of rock that are competent appear to be ash-rich and bear quartz eyes sparsly.

<<Vein: 406.68 - 417 2% Quartz-Carbonate>>

<<Struc: 407.92 - 408 Weak Fault>>

<<Struc: 409.26 - 409.89 Moderate Fault>>

411.54 415.83 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

<<Struc: 415.51 - 415.66 Trace Fault>>

415.83 417.38 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 415.88 - 445.35 0.1% Min: Pyrrhotite>>

<<Alt: 415.83 - 460.3 Weak-Moderate Calcite>>

417.38 425.58 FLZ Fault Zone

417.38 - 425.58: Suspected lithology is RHYi.

<<Struc: 417.38 - 425.58 Moderate Fault>> Faulted interval, rock textures are destructed and obscured. Intensity ranges from 4 (rubbly minor clay gouge with gravel and pieces of coherent rock) to 6 (dominantly fine clay gouge and protolith undistinguishable) through interval.

425.58 430.84 RHYv Rhyolite volcaniclastic

<<Min: 430 - 456.08 3% Min: Pyrite>>

430.84 433.10 RHYi Aphanitic Rhyolite (intrusion)

<<Struc: 431.9 - 431.9 Weak-Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

433.10 433.77 FLZ Fault Zone

433.1 - 433.77: Suspected to be a mix of RHYi and RHYv.

<<Struc: 433.1 - 433.7 Moderate-Strong Fault>>

433.77 434.20 RHYva Coarse grained to ash tuff

434.20 434.70 FLZ Fault Zone

434.2 - 434.7: Fault gouge is clay supported breccia. Lithology undetermined.

<<Struc: 434.2 - 434.7 Moderate-Strong Fault>> Alpha angles oppose each other. Upper contact beta is ~160, lower contact beta is approximately 240.

434.70 436.07 RHYv Rhyolite volcaniclastic

<<Struc: 434.8 - 434.8 Trace dominant foliation>>

436.07 436.74 FLZ Fault Zone

436.07 - 436.74: Gouge is clay supported breccia. Siliceous clasts.

<<Struc: 436.07 - 436.74 Moderate-Strong Fault>> Alpha angles oppose each other. Upper contact beta is ~160, lower contact beta is approximately 240. Semi-massive pyrite mineralization along lower fault contact.

436.74 442.32 RHYi Aphanitic Rhyolite (intrusion)

<<Struc: 437.3 - 437.77 Weak Fault>>

<<Struc: 438.79 - 439.91 Weak Fault>>

442.32 445.35 RHYv Rhyolite volcaniclastic

445.35 456.08 RHYc Rhyolite coherent volcanics

<<Min: 445.35 - 456.08 2% Min: Pyrrhotite>>

<<Vein: 446.68 - 446.71 90% Quartz>>

<<Struc: 450.42 - 450.5 Trace Fault>>

<<Struc: 451.18 - 455.84 Moderate Fault>> Faulted interval. Any partially coherent rock is strongly foliated or rubbly.

456.08 457.15 RHYva Coarse grained to ash tuff grey-brown

456.08 - 457.15: Fine grained biotite gives rock a grey-brown colour. Calcite is fine grained and pervasive through this interval.

<<Min: 456.08 - 486 0.1% Min: Pyrite>>

<<Min: 456.08 - 495.7 2% Min: Pyrrhotite>>

<<Struc: 457.05 - 457.05 Trace dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
457.15	**458.70**	**RHYva Coarse grained to ash tuff leucocratic FG**									
457.15 - 458.7: Light grey-cream colored, fine-grained, siliceous rhyolite tuff with disseminated PO flattened into foliation. Bi occurs locally, forming along foliation.											
		<<Struc: 457.15 - 460.3 Moderate Fault>>									
458.70	**460.30**	**No Core No Core**									
460.30	**486.00**	**RHYva Coarse grained to ash tuff**									
		<<Alt: 460.3 - 499.5 Weak Muscovite>>									
		<<Alt: 460.3 - 543.96 Trace Calcite>>									
		<<Vein: 470.7 - 471 95% Quartz-Carbonate>>									
		<<Vein: 475.16 - 475.26 100% Quartz-Carbonate>>									
		<<Struc: 460.89 - 461.04 Weak Fault>>									
		<<Struc: 461.85 - 463.1 Moderate-Strong Fault>>									
		<<Struc: 463.4 - 464.85 Weak-Moderate Fault>>									
		<<Struc: 470.7 - 470.77 Trace Fault>>									
		<<Struc: 477.04 - 477.35 Weak Fault>> Two faults ~10cm spaced 5cm apart.									
		<<Struc: 480.7 - 480.85 Trace Fault>>									
		<<Struc: 483.5 - 483.85 Weak Fault>>									
		<<Struc: 485.7 - 485.7 Trace dominant foliation>>									
486.00	**493.17**	**RHYva Coarse grained to ash tuff dark grey FG**	491.65	493.17	1.52	B00266306	0.013	1.8	-0.01	0.04	0.03
486 - 493.17: Dark grey, fine-grained Rhyolite ash with minor biotite along foliation. Unit bears heavily disseminated, fine-grained pyrite and aggregates of pyrite forming in bands.											
		<<Min: 486 - 493.17 5% Min: Pyrite>> Finely disseminated through interval and also occurs locally in aggregated bands that cross the core.									
		<<Struc: 488.6 - 488.6 Weak dominant foliation>>									
		<<Struc: 491.68 - 491.76 Trace Fault>>									
493.17	**495.70**	**Ol Heavilly disseminated sulphides in host schist dark grey FG**	493.17	494.20	1.03	B00266307	0.018	0.3	-0.01	-0.01	-0.01
493.17 - 495.7: Dark grey RHYva with high concentration (~15-20%) of finely disseminated PY. Minor carbonaceous compnent.											
		<<Min: 493.17 - 495.7 20% Min: Pyrite>>	494.20	495.70	1.50	B00266308	0.018	0.7	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
495.70	**501.82**	**RHYv Rhyolite volcaniclastic cream**									
495.7 - 501.82: Siliceous cream colored QE bearing rhyolite with disseminated PY/PO. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.											
<<Min: 495.7 - 501.82 3% Min: Pyrite>>											
<<Min: 495.7 - 504 1% Min: Pyrrhotite>>											
<<Alt: 499.5 - 562.3 Moderate Muscovite>> Intensity of Mu alteration increases in proximity to faults.											
<<Struc: 500.13 - 500.3 Weak Fault>>											
501.82	**506.33**	**MDSt Rhyolite tuff dominant mudstone dark grey FG**	501.82	502.23	0.41	B00266309	0.013	0.6	-0.01	0.01	0.02
501.82 - 506.33: Dark grey RHYva with high concentration (~10-15%) of finely disseminated PY. Minor carbonaceous component.											
<<Min: 501.82 - 502.23 10% Min: Pyrite>>			502.23	504.00	1.77	B00266311	0.007	0.4	-0.01	-0.01	0.01
<<Min: 502.23 - 504 1% Min: Pyrite>>			504.00	505.40	1.40	B00266312	0.026	0.6	-0.01	0.01	0.01
<<Min: 504 - 506.33 10% Min: Pyrite>>			505.40	506.33	0.93	B00266313	0.04	0.9	-0.01	0.01	0.01
<<Min: 504 - 510.67 2% Min: Pyrrhotite>>											
506.33	**507.25**	**RHYv Rhyolite volcaniclastic**	506.33	507.36	1.03	B00266314	0.079	4.5	0.25	-0.01	2.14
506.33 - 507.25: Siliceous cream colored QE bearing rhyolite with disseminated PY/PO. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.											
<<Min: 506.33 - 507.36 3% Min: Sphalerite>>											
<<Min: 506.33 - 507.36 2% Min: Chalcopyrite>>											
<<Min: 506.33 - 510.67 0.5% Min: Pyrite>>											
507.25	**507.36**	**OI Heavilly disseminated sulphides in host schist**									
507.25 - 507.36: Thick band disseminated SP (5%), PO (5%) and CP (3%) cross cutting host schist.											
507.36	**510.67**	**RHYv Rhyolite volcaniclastic light grey**									
507.36 - 510.67: Siliceous cream colored QE bearing rhyolite with disseminated PY/PO. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.											
510.67	**513.00**	**MDSt Rhyolite tuff dominant mudstone dark grey FG**	510.67	512.00	1.33	B00266315	0.034	0.5	-0.01	0.01	0.04
510.67 - 513: Dark grey RHYva with high concentration (~10-15%) of finely disseminated PY. Minor carbonaceous component.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 510.67 - 519 1% Min: Pyrrhotite>>	512.00	513.60	1.60	B00266316	0.01	0.5	0.02	-0.01	0.28
		<<Min: 510.67 - 526.52 3% Min: Pyrite>>									
		<<Struc: 512.75 - 512.75 Weak dominant foliation>>									
513.00	**526.52**	**RHYv Rhyolite volcaniclastic light grey**	513.60	514.50	0.90	B00266317	-0.005	0.5	-0.01	-0.01	0.03
		513 - 526.52: Siliceous cream colored QE bearing rhyolite with disseminated PY/PO. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.									
		<<Min: 514.5 - 515.1 0.5% Min: Sphalerite>>	514.50	515.10	0.60	B00266318	0.232	17.5	0.94	-0.01	0.35
		<<Min: 514.5 - 515.1 2% Min: Chalcopyrite>>									
		<<Min: 519 - 542 0.1% Min: Pyrrhotite>>									
		<<Struc: 521.93 - 522.72 Moderate Fault>>									
526.52	**527.25**	**CHT Chert FG**	526.52	527.25	0.73	B00266319	0.307	6	0.06	0.15	0.47
		526.52 - 527.25: Very hard, siliceous, blue chert (?). Thin carbonaceous bands are present through unit.									
		<<Min: 526.52 - 527.25 7% Min: Pyrite>>									
527.25	**536.87**	**RHYv Rhyolite volcaniclastic light grey**	530.73	531.73	1.00	B00266321	0.018	1.1	0.01	-0.01	0.34
		527.25 - 536.87: Siliceous light grey colored QE bearing rhyolite with disseminated PY/PO. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.									
		<<Min: 527.25 - 542 2% Min: Pyrite>>	531.73	532.85	1.12	B00266322	-0.005	1.3	-0.01	-0.01	0.22
		<<Struc: 536.86 - 536.86 Weak-Moderate dominant foliation>>									
536.87	**543.96**	**RHYv Rhyolite volcaniclastic light grey**	542.00	543.00	1.00	B00266323	0.02	0.6	-0.01	-0.01	0.04
		536.87 - 543.96: Siliceous light grey colored QE bearing rhyolite with lapilli present sparsely. Silicification indicates possibility of RHYc, though no definitive coherent textures are present.									
		<<Min: 542 - 543 3% Min: Pyrite>>									
		<<Min: 542 - 548 2% Min: Pyrrhotite>>									
		<<Min: 543 - 552 1% Min: Pyrite>>									
		<<Struc: 538.98 - 539.13 Weak Fault>>									
		<<Struc: 539.95 - 539.95 Weak-Moderate dominant foliation>>									
543.96	**552.00**	**RHYvl Lapilli tuff dark grey**									
		543.96 - 552: Siliceous dark grey lapilli tuff with trace biotite/chlorite in lapilli.									
		<<Min: 548 - 553 1% Min: Pyrrhotite>>									
		<<Alt: 543.96 - 558 Weak Calcite>>									
		<<Alt: 543.96 - 621 Trace Biotite>> Trace locally within lapilli.									

From (m)	To (m)	Rocktype & Description

<<Alt: 543.96 - 640.86 Trace Chlorite>> Trace locally within lapilli.

552.00 565.56 RHYvl Lapilli tuff grey-green

552 - 565.56: Large interval of felic lapilli tuff. Lapilli are observed to host chlorite, biotite, quartz and pyrite. Unit is pervasively weakly-moderately muscovite altered.

<<Min: 552 - 581 1% Min: Pyrite>>

<<Min: 553 - 573 0.1% Min: Pyrrhotite>>

<<Alt: 558 - 624 Trace Calcite>>

<<Alt: 562.3 - 573.25 Weak-Moderate Muscovite>>

<<Vein: 556.95 - 557.1 100% Quartz-Carbonate>>

<<Vein: 557.5 - 557.75 95% Quartz>>

<<Struc: 555.3 - 558 Moderate Fault>> Interval of rubbly rock, clay gouge and remobilized foliation. No large (>30cm) clay gouge zones.

<<Struc: 562.7 - 563.8 Moderate Fault>> Clay and sand gouge mixed with rubbly rock

565.56 573.45 RHYva Coarse grained to ash tuff cream

<<Min: 573 - 594 0.5% Min: Pyrrhotite>>

<<Alt: 573.25 - 575 Moderate Muscovite>>

<<Struc: 571.75 - 580.3 Weak Fault>> Interval with several small, low intensity faults (<15 cm) spaced 0.5-1 m apart.

573.45 582.75 RHYvl Lapilli tuff grey-green

<<Min: 581 - 604.46 0.5% Min: Pyrite>>

<<Alt: 575 - 612.3 Weak-Moderate Muscovite>>

582.75 585.70 RHYva Coarse grained to ash tuff light grey

<<Struc: 584.4 - 585 Moderate Fault>>

<<Struc: 585.4 - 588 Moderate Fault>>

585.70 601.08 RHYvl Lapilli tuff grey-green

<<Min: 594 - 612 1% Min: Pyrrhotite>>

<<Struc: 590.45 - 590.6 Weak Fault>>

<<Struc: 591 - 591.5 Moderate Fault>>

<<Struc: 592 - 593.25 Moderate-Strong Fault>>

<<Struc: 594.3 - 600.2 Trace Fault>> Narrow (<10cm) clay gouge filled faults spaced 0.5-1 m apart.

601.08 603.38 RHYva Coarse grained to ash tuff cream

603.38 640.86 RHYvl Lapilli tuff grey-green

<<Min: 604.46 - 605.62 5% Min: Pyrite>>

<<Min: 605.62 - 645 0.5% Min: Pyrite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
604.46	605.62	1.16	B00266324	-0.005	-0.3	-0.01	-0.01	0.02

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 609 - 616.5 2% Min: Pyrrhotite>>

<<Min: 616.5 - 645 1% Min: Pyrrhotite>>

<<Alt: 612.3 - 619.15 Moderate-Strong Muscovite>>

<<Alt: 619.15 - 625 Weak-Moderate Muscovite>>

<<Alt: 624 - 638 Weak Calcite>>

<<Alt: 625 - 645 Weak Muscovite>>

<<Alt: 638 - 640.86 Weak-Moderate Calcite>>

<<Vein: 606.66 - 606.83 100% Quartz>>

<<Struc: 605.55 - 605.8 Weak Fault>>

<<Struc: 613.2 - 613.3 Trace Fault>>

<<Struc: 614.8 - 614.95 Weak Fault>>

<<Struc: 619.2 - 619.3 Weak Fault>>

<<Struc: 624.25 - 624.48 Weak-Moderate Fault>>

<<Struc: 639.62 - 639.71 Trace Fault>>

640.86 642.39 MAFi Mafic Intrusions (primarily footwall mafic intrusion) green-brown

<<Alt: 640.86 - 642.9 Weak Chlorite>>

<<Alt: 640.86 - 645 Moderate Calcite>>

642.39 645.00 RHYvl Lapilli tuff grey-green

<<Alt: 642.9 - 645 Trace Chlorite>>

End of Hole @ 645

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-386

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Steve Bultitude
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/10/2016
UTM Easting	414634.106	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/12/2016
UTM Northing:	6817489.475	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1417.566	Casing Depth (m):	1.5	Length (m):	31.1	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/7/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/8/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

The purpose of hole K16-386 was to conduct a geotechnical investigation pertaining to the construction of a Class A storage facility in the area. 1 SPT test and 3 packer tests were conducted in overburden and bedrock respectively. A standpipe piezometer was also installed. The stratigraphy covered in the hole consisted of Wind Lake Formation ash-rich mafic volcaniclastic underlain by calcareous and carbonaceous mudstone. Local concentrations of PY and PO reached 3 and 5% respectively within the mudstone unit, with trace CP being present within some qtz-carb veins. No significant alteration was observed in this hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/7/2016		☑	

From (m)	To (m)	Rocktype & Description
0.00	**1.50**	**OVBN** **Overburden**
1.50	**15.15**	**MAFt** **Mafic Volcaniclastics** **medium grey** **VFG**
<<Min: 1.5 - 15.15 1% Min: Pyrrhotite>>		
15.15	**31.10**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**
<<Min: 15.15 - 21.15 1% Min: Pyrite>>		
<<Min: 21.15 - 22.1 1% Min: Pyrite>>		
<<Min: 21.15 - 22.1 3% Min: Pyrrhotite>> PO occurs as 1-3 cm lenses.		
<<Min: 22.1 - 27.4 1% Min: Pyrite>>		
<<Min: 27.4 - 27.65 5% Min: Pyrite>> Large PY bleb 3-5 cm across occurs in heavily deformed and fractured interval.		
<<Min: 27.65 - 31.1 1% Min: Pyrite>>		
<<Min: 27.65 - 31.1 1% Min: Pyrrhotite>>		
<<Alt: 21.18 - 22.1 Moderate Muscovite>> Muscovite-sericite alteration present with quartz-carbonate-sulphides.		

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
21.15	22.10	0.95	B00266305	-0.005	0.8	0.02	-0.01	0.02

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-386

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 19.82 - 20.04 50% Quartz-Carbonate>> Biotite present on periphery of vein. PO occurs as stringers and blebs. Quartz-Sulphide contains CP and PY.

<<Vein: 24 - 31.1 30% Quartz-Carbonate-Sulphide>> Sulphides are 3% Py and 2% PO.

<<Struc: 16.4 - 16.4 Moderate-Strong dominant foliation>>

<<Struc: 23.5 - 23.5 Moderate dominant foliation>>

<<Struc: 27.02 - 28.19 Weak-Moderate Fault>> Brittle fault running nearly parallel to core axis.

End of Hole @ 31.1

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-387

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	David Nuttal
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/14/2016
UTM Easting	414570.896	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/15/2016
UTM Northing:	6817990.94	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1411.718	Casing Depth (m):	4.3	Length (m):	34	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/8/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/9/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

The purpose of hole K16-387 was for engineering infrastructure purposes, specifically pertaining to the Class A storage facility, south-extent. Knight Piesold conducted one SPT test in overburden and three packer tests in bedrock; a thermistor was installed. K16-387 did not intercept massive sulphide or strong alteration. The hole is composed of interbedded mudstone, fine-coarse grained mafic tuff and coarse grain mafic intrusive lithologies. Pyrite and pyrrhotite mineralization does not exceed 1%. Carbonate mineralization intensity is on average a 4 (moderate) from top to bottom of hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	4/8/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.30**	**OVBN** **Overburden**									
4.30	**16.00**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
<<Min: 4.3 - 26.38 0.1% Min: Pyrrhotite>>											
<<Min: 4.3 - 28.87 1% Min: Pyrite>>											
<<Alt: 4.3 - 13.6 Moderate-Strong Calcite>>											
<<Alt: 13.6 - 18.68 Weak Calcite>>											
16.00	**20.10**	**MAFt** **Mafic Volcaniclastics**									
<<Alt: 16 - 18.68 Weak Chlorite>>											
<<Alt: 18.68 - 34 Moderate-Strong Calcite>>											
<<Vein: 16.3 - 20.1 50% Quartz 55 deg. >> clots of PO and PY sulphides.											
20.10	**26.38**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
26.38	**27.40**	**MAFt** **Mafic Volcaniclastics**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-387

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 26.38 - 27.4 1% Min: Pyrrhotite>>											
<<Alt: 26.38 - 27.4 Weak Chlorite>>											
27.40	**28.87**	**MDS Carbonaceous Mudstone & Tuffaceous Mudstone**									
<<Min: 27.4 - 34 0.1% Min: Pyrrhotite>>											
28.87	**34.00**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**									
28.87 - 34: E.O.H.											
<<Min: 28.87 - 34 0.5% Min: Pyrite>>											
<<Alt: 28.87 - 34 Moderate Chlorite>>											
<<Struc: 32.68 - 32.83 Trace Fault>>											
End of Hole @ 34											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-388

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/11/2016
UTM Easting	419400.645	Core Size:	HQ3	Azimuth:	169.7	Date Logging Complete:	7/15/2016
UTM Northing:	6813384.983	Casing Pulled?:	Yes	Dip:	-55.2	Drill Company:	New Age
UTM Elev. (m):	1365.729	Casing Depth (m):	7.5	Length (m):	236.8	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/9/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/13/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

The purpose of the drill hole is resource infill confirmation and to collect a metallurgical sample of GP4F main lens mineralization. The DDH intersected a good looking lens of upper (GP4F) mineralization with sections of OF and OL plus OJ from 157.20-166.90m. The lower lens, consisting of intermittent OJ type mineralization, was intersected from 220.66-230.65m. It consists of three weakly to moderately OJ horizons surrounded by weaker alteration and minor disseminated sulfides. The lower lens is skarny looking (due to a nearby granite?), has maroon - brown biotite in irregular bands, local strong qtz-tourmaline veins, mineralization is possibly replacing upper portion of a calcareous horizon. No sign of proximal yellow - white muscovite alteration near mineralization as noted at ABM and Krakatoa but there is fine white muscovite near mineralization and concentrated in and near fractures, faults, and qtz veins, this muscovite was more abundant near the lower lens.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-55.2	168.3	1.4	169.7	TN14	Roger Hulstein	7/9/2016		☑	
5	-54.64095	168.1891	1.4	169.5891	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
10	-54.65728	168.49824	1.4	169.89824	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
15	-54.69173	168.52777	1.4	169.92777	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
20	-54.84618	168.55775	1.4	169.95775	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
21	-54.9	148.3	22.1	170.4	ReflexEZS	New Age	7/10/2016	5776	☐	
25	-55.07861	168.54419	1.4	169.94419	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
30	-55.31239	168.51659	1.4	169.91659	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
35	-55.52459	168.48176	1.4	169.88176	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
40	-55.61459	168.32102	1.4	169.72102	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
45	-55.54729	168.20412	1.4	169.60412	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
50	-55.38289	168.23934	1.4	169.63934	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
51	-55.2	201.3	22.1	223.4	ReflexEZS	New Age	7/11/2016	717	☐	
55	-55.39077	168.4721	1.4	169.8721	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
60	-55.43265	168.40145	1.4	169.80145	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
65	-55.40974	168.40122	1.4	169.80122	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
70	-55.3898	168.33282	1.4	169.73282	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-388

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-55.4048	168.36343	1.4	169.76343	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
80	-55.45664	168.50177	1.4	169.90177	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
84	-55.4	149.2	22.1	171.3	ReflexEZS	New Age	7/11/2016	5718	☐	
85	-55.43549	168.76459	1.4	170.16459	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
90	-55.27152	168.87127	1.4	170.27127	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
95	-55.089	168.95952	1.4	170.35952	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
100	-55.01799	169.02154	1.4	170.42154	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
105	-55.06827	169.15283	1.4	170.55283	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
110	-55.04288	169.27975	1.4	170.67975	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
115	-55.0641	169.41735	1.4	170.81735	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
117	-55	148.6	22.1	170.7	ReflexEZS	New Age	7/12/2016	5766	☐	
120	-55.14214	169.61428	1.4	171.01428	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
125	-55.22284	169.73934	1.4	171.13934	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
130	-55.23017	169.99086	1.4	171.39086	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
135	-55.29027	170.16785	1.4	171.56785	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
136.7	-57.3	153.6	22.1	175.7	ReflexEZS	New Age	7/13/2016	5789	☐	
140	-55.33055	170.44098	1.4	171.84098	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
145	-55.38884	170.66398	1.4	172.06398	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
147	-55.3	151.6	22.1	173.7	ReflexEZS	New Age	7/12/2016	5756	☐	suspect reading
150	-55.5108	170.77702	1.4	172.17702	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
155	-55.57989	170.94678	1.4	172.34678	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
160	-55.64134	171.17146	1.4	172.57146	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
165	-55.62547	171.24232	1.4	172.64232	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
170	-55.75204	171.27894	1.4	172.67894	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
175	-55.84811	171.27246	1.4	172.67246	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
180	-55.98261	171.50925	1.4	172.90925	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
183	-56.1	150.6	22.1	172.7	ReflexEZS	New Age	7/12/2016	5759	☐	
185	-56.12716	171.61004	1.4	173.01004	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
190	-56.10193	171.88212	1.4	173.28212	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
195	-56.07997	172.17918	1.4	173.57918	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
200	-56.10116	172.61309	1.4	174.01309	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
205	-56.30028	173.09042	1.4	174.49042	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
210	-56.45864	173.3047	1.4	174.7047	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
215	-56.60766	173.47767	1.4	174.87767	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
220	-56.84011	173.65273	1.4	175.05273	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100
222	-57	155.2	22.1	177.3	ReflexEZS	New Age	7/13/2016	5696	☐	
225	-56.98076	173.93567	1.4	175.33567	Gyro	Steve Bultitude	7/13/2016		☑	Motion Quality=100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.00 OVBN Overburden

6.00 28.40 RHYvl Lapilli tuff

6 - 28.4: Patchy BI Bippo on folia,surrouding lpl, sparse below 14m. Qtz veins approx. 7-16.3m. 24.2-28.4: Fault zone, broken and missing core.

<<Alt: 6 - 18.3 Weak Calcite>>

<<Alt: 18.3 - 28.4 Weak Calcite>> also calcite stringers

<<Vein: 6 - 16.3 8% Quartz 70 deg. >> mostly qtz vein rubble but some 1cm 'sheeted' veinlets as well.

<<Vein: 21.15 - 22.5 10% Quartz-Carbonate 80 deg. >> qtz-calcite veinlets, BI selvege.

<<Struc: 6 - 18.38 Weak-Moderate Fault>> numerous zones of broken and missing core, 0.3-1.3m long, commonly associated with qtz veining.

<<Struc: 17 - 18 Moderate-Strong dominant foliation>>

<<Struc: 18.38 - 24 Weak Fault>> broken core, steep (low angle to core axis) fractures with clay and Fe oxide - limonite coatings.

<<Struc: 23.7 - 24.25 Moderate-Strong dominant foliation>>

<<Struc: 24 - 28.5 Strong Fault>> cor rubble, missing core, fine sand and limonite on steep fractures.

28.40 29.60 PEL Equigranular biotite + calcite +/- quartz rock

28.4 - 29.6: ash-PEL, local silic blebby texture on <1cm scale (29.6-33.5m), felsic fragmental?

<<Alt: 28.4 - 29.6 Moderate-Strong Calcite>>

<<Struc: 28.5 - 29.6 Weak Fault>> broken core, step fractures as above.

29.60 37.70 RHYvl Lapilli tuff

29.6 - 37.7: blebby siliceous lpl. Curdy texture but on mm scale. Likely more a felsic fragmental rock than a lpl tuff.

<<Min: 34.5 - 36.4 0.1% Min: Pyrite>>

<<Alt: 29.6 - 33.8 Weak Calcite>> mostly blebs, fracture filling and veinlets

<<Alt: 33.8 - 37.7 Weak-Moderate Calcite>> mostly blebs, fracture filling and veinlets

<<Struc: 29.6 - 31.7 Moderate Fault>> broken core and core rubble, steep fractures.

<<Struc: 31.7 - 33.55 Trace Fault>> fractures

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 33.55 - 33.8 Weak-Moderate Fault>>

<<Struc: 33.8 - 34.9 Weak Fault>> fractures

<<Struc: 34.9 - 35 Moderate Fault>>

<<Struc: 35 - 36.8 Trace Fault>> fractures

<<Struc: 36.8 - 38.2 Weak Fault>> broken core and rubble

37.70 38.30 PEL Equigranular biotite + calcite brown +/- quartz rock

37.7 - 38.3: Oxidized, proximal to fault zone, biotite destroyed.

<<Alt: 37.7 - 38.3 Moderate Calcite>>

<<Struc: 38.2 - 43.87 Strong Fault>> missing core, minor gouge recovered, broken core and core rubble.

38.30 49.74 RHYva Coarse grained to ash tuff

38.3 - 49.74: proximal to fault zone and oxidized, original textures obscured.

<<Min: 45 - 46 0.1% Min: Pyrite>>

<<Alt: 38.3 - 45.3 Weak Calcite>>

<<Alt: 45.3 - 50.7 Weak-Moderate Calcite>> also calcite stringers and fracture filling

<<Struc: 46.1 - 47 Moderate-Strong Fault>> missing core, minor gouge recovered, broken core and core rubble.

<<Struc: 47 - 49.35 Weak-Moderate Fault>> minor broken, fractured, crushed zones

<<Struc: 49.35 - 49.6 Strong Fault>> clay gouge, missing core

<<Struc: 49.6 - 51.85 Moderate Fault>> rubble, crushed, steep fractures

49.74 51.57 PEL Equigranular biotite + calcite +/- quartz rock

49.74 - 51.57: proximal to fault zone and partially oxidized

<<Alt: 50.7 - 51.57 Moderate-Strong Calcite>>

<<Vein: 50.5 - 51.75 10% Quartz-Carbonate 80 deg. >>

51.57 52.67 RHYvl Lapilli tuff

<<Alt: 51.57 - 54 Moderate-Strong Calcite>>

<<Vein: 52.64 - 54 10% Calcite 75 deg. >>

52.67 54.00 PEL Equigranular biotite + calcite +/- quartz rock

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

54.00 67.20 RHYi Aphanitic Rhyolite (intrusion)

54 - 67.2: Possible RHYc and RHYcw but looks like RHYi, massive,glassy, shattered glassy texture on sub mm scale and no foliation. Rare blebby texture. Very rare blue qtz phenos.

<<Min: 54 - 65 0.1% Min: Pyrite>>

<<Alt: 54 - 57 Weak Muscovite>> on folia

<<Alt: 54 - 57.75 Weak Calcite>> mostly fracture filling

<<Alt: 57 - 59.6 Moderate Muscovite>> sericite - clay with fault zone

<<Alt: 57.75 - 67.2 Trace Calcite>> fracture filling

<<Vein: 59.4 - 60.85 10% Quartz 75 deg. >>

<<Vein: 63.9 - 79.4 5% Quartz>> glassy qtz veins, locally dismembered, irregular margins.looks like Qtz veins in RHYi

<<Struc: 55 - 55.7 Weak-Moderate dominant foliation>>

<<Struc: 58.9 - 59.7 Strong Fault>> gouge, crushed

<<Struc: 64.75 - 66.6 Weak-Moderate Fault>> crushed zones on fractures

67.20 67.50 PEL Equigranular biotite + calcite +/- quartz rock

67.2 - 67.5: strongly oxidized

<<Alt: 67.2 - 67.5 Moderate-Strong Calcite>>

67.50 67.77 RHY undifferentiated rhyolite

67.77 68.00 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Alt: 67.77 - 68 Moderate Calcite>>

68.00 77.60 RHYi Aphanitic Rhyolite (intrusion)

68 - 77.6: locally mm size curdy - blebby texture and in places definitley looks like RHYi. Same as 54.00-67.20m.

<<Min: 68 - 72.1 0.1% Min: Pyrrhotite>>

<<Min: 77.5 - 79.53 0.1% Min: Pyrite>>

<<Alt: 68 - 79.53 Trace Calcite>> fracture filling

<<Alt: 77.1 - 79.53 Weak Biotite>> Bippo

<<Struc: 71.55 - 71.6 Moderate Vein>>

<<Struc: 73 - 75 Weak Fault>>

77.60 79.53 RHY undifferentiated rhyolite

77.6 - 79.53: Grey. Foliated with biotite folia and qtz bands. Missing textures describd for above RHYi.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 78 - 79 Weak-Moderate dominant foliation>>

79.53 81.40 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 79.53 - 81.4 Moderate-Strong Calcite>>

<<Alt: 79.53 - 81.4 Weak Biotite>> Bippo

<<Struc: 79.65 - 79.95 Moderate-Strong Fault>> crushed, minor gouge

81.40 96.50 RHYvl Lapilli tuff

81.4 - 96.5: localy blebby clasts versus more typical flattened stretched lpl. Blue qtz - eyes 81.4-85.0m. Biotile increases downhole from 93.6m. Weak BCQlpl blotchy texture from 94m down.

<<Min: 91.2 - 93.52 0.1% Min: Pyrite>>

<<Min: 93.52 - 96.5 0.5% Min: Pyrite>>

<<Min: 93.52 - 96.5 0.5% Min: Pyrrhotite>>

<<Alt: 81.4 - 96.5 Trace Biotite>>

<<Alt: 81.4 - 99 Weak Muscovite>> on folia

<<Alt: 81.4 - 99.55 Weak Calcite>> almost an intensity 3 in places…

<<Alt: 93 - 96.5 Weak Chlorite>> remnant chl, patchy bleaching, Bi

<<Vein: 86.4 - 86.85 10% Quartz>> glassy qtz veins

<<Vein: 86.56 - 86.71 15% Quartz-Tourmaline>> dismembered qtz - tourmaline vein

<<Struc: 82 - 183 Moderate-Strong dominant foliation>>

<<Struc: 84 - 85 Moderate-Strong dominant foliation>>

<<Struc: 86.15 - 91.15 Moderate Fault>> missing core, minor gouge recovered, broken core and core rubble.

<<Struc: 92.53 - 92.85 Strong Fault>> gouge

96.50 97.16 PEL Equigranular biotite + calcite +/- quartz rock

97.16 99.55 RHYvl Lapilli tuff

97.16 - 99.55: locally blebby clasts and some finer ash rich sections.

<<Min: 97.16 - 99.5 0.5% Min: Pyrrhotite>>

<<Min: 99.5 - 112.76 0.1% Min: Pyrite>>

<<Min: 99.5 - 112.76 0.1% Min: Pyrrhotite>>

<<Alt: 99.25 - 102.63 Moderate Chlorite>> as blebs-clots, bands

<<Alt: 99.25 - 102.63 Moderate Biotite>>

<<Vein: 98.57 - 98.8 80% Quartz 70 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

99.55 102.63 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

99.55 - 102.63: Sharp contacts, fine grained on margins, coarser BI, CHL near center. Has about 25+% qtz in groundmass - not really a MAFi.

<<Alt: 99.55 - 102.63 Weak Calcite>> mostly veinlets .

102.63 112.76 RHYvl Lapilli tuff grey-green

102.63 - 112.76: blebby clasts, fragmental looking in upper part (102.63-106.3m) (or possibly silica replaced feldspar megacrysts?) versus more typical flattened lpl in lower part which is also marked by slight increase in BI.

<<Alt: 102.63 - 112.66 Weak-Moderate Muscovite>> mu-sericite-clay on folia and fracture surfaces.

<<Alt: 102.63 - 112.66 Trace Calcite>> fracture filling

<<Alt: 102.63 - 112.66 Trace Biotite>>

<<Alt: 112.66 - 115.76 Moderate Calcite>> diss, bands, veinlets

112.76 115.76 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 112.76 - 115.5 0.5% Min: Pyrite>>

<<Min: 112.76 - 115.5 0.1% Min: Pyrrhotite>>

<<Vein: 113 - 114.96 15% Carbonate-Chlorite>>

<<Vein: 113 - 115.8 5% Calcite>>

<<Struc: 115.6 - 116 Strong Fault>> gouge

<<Struc: 115.7 - 116 Strong Fault>>

115.76 118.76 RHYvl Lapilli tuff

115.76 - 118.76: weak BCQlpl, bleached sericite-muscovite bands.

<<Min: 116.05 - 118.96 0.1% Min: Pyrite>>

<<Alt: 115.76 - 116.05 Moderate-Strong Muscovite>> fault zone

<<Alt: 115.76 - 119.86 Trace Calcite>>

<<Alt: 116.05 - 118.76 Weak Muscovite>> bleaching along foliation

<<Alt: 116.05 - 123.2 Weak Biotite>>

<<Alt: 117.7 - 122.4 Weak Chlorite>>

<<Vein: 117.2 - 118 30% Quartz 70 deg. >>

118.76 120.55 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 118.96 - 120.55 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 119.86 - 120.55 Moderate-Strong Calcite>>

<<Vein: 119.85 - 120 100% Quartz-Tourmaline 35 deg. >>

<<Struc: 118.92 - 118.98 Moderate-Strong Contact>> parallel to foliatin

120.55 138.96 RHYvl Lapilli tuff

120.55 - 138.96: 120.55-123.1: Blppo decreasing down hole.

<<Min: 120.55 - 122.33 3% Min: Pyrrhotite>>

<<Min: 122.33 - 131.8 3% Min: Pyrite>>

<<Min: 122.33 - 131.8 1% Min: Pyrrhotite>> patchy

<<Min: 131.8 - 138.95 3% Min: Pyrite>> in calcite-pyrite bands and as diss

<<Min: 131.8 - 138.95 1% Min: Pyrrhotite>> in biotite-calcite bands

<<Min: 138.95 - 139.75 3% Min: Pyrite>>

<<Alt: 120.55 - 131.55 Trace Calcite>>

<<Alt: 131.35 - 131.8 Weak Biotite>>

<<Alt: 131.55 - 131.9 Weak-Moderate Calcite>>

<<Alt: 131.8 - 144.5 Moderate Muscovite>> sericite - muscovite on fractures and folia, local bleaching around fractures and mm wide clay shears.

<<Alt: 131.9 - 138.95 Trace Calcite>> calcite veins and fracture filling

<<Alt: 138.95 - 139.8 Moderate Calcite>>

<<Vein: 125.88 - 126 100% Quartz>>

<<Vein: 126.62 - 126.9 15% Quartz-Tourmaline 30 deg. >>

<<Vein: 135.24 - 135.45 20% Quartz-Tourmaline 10 deg. >>

<<Struc: 122 - 122.65 Moderate dominant foliation>>

<<Struc: 130 - 134 Weak-Moderate dominant foliation>>

<<Struc: 133 - 133.5 Moderate dominant foliation>>

<<Struc: 134.4 - 134.6 Weak-Moderate Fault>>

<<Struc: 138.87 - 139.7 Weak Fault>>

138.96 139.89 PEL Equigranular biotite + calcite +/- quartz rock

138.96 - 139.89: lowermost 20cm bleached and ashy.

<<Min: 139.75 - 142 1% Min: Sphalerite>> and in mm foliaform calcite - qtz - sulfide bands.

<<Min: 139.75 - 142 5% Min: Pyrite>> and in mm foliaform calcite - qtz - sulfide bands.

<<Min: 139.75 - 142 0.1% Min: Chalcopyrite>> and in mm foliaform calcite - qtz - sulfide bands.

<<Alt: 139.75 - 156.9 Weak Chlorite>> mostly in blebs, clots and bands with BI and qtz and calcite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 139.75 - 156.9 Weak-Moderate Biotite>> diss but mostly in bands											
<<Alt: 139.8 - 141 Trace Calcite>>											
139.89	**147.98**	**RHYvx Quartz and/or feldspar crystal tuff**	139.89	141.40	1.51	D00004351	0.075	3.6	0.06	0.13	0.45
139.89 - 147.98: 131.40-131.80: Ash-Pel unit, Bippo											
<<Min: 142 - 142.8 0.5% Min: Sphalerite>>			141.40	142.90	1.50	D00004352	0.021	6.4	0.12	0.14	0.77
<<Min: 142 - 142.8 0.1% Min: Chalcopyrite>>											
<<Min: 142 - 144 3% Min: Pyrite>> and as diss and veinlets											
<<Min: 142.8 - 147.98 1% Min: Pyrite>>											
<<Min: 142.8 - 147.98 0.5% Min: Pyrrhotite>>											
<<Alt: 141 - 150.08 Weak-Moderate Calcite>>											
<<Alt: 144.5 - 150.08 Weak-Moderate Muscovite>> strongest around fractures, slight increase of fine white mica on folia											
<<Struc: 141 - 141.5 Moderate dominant foliation>>											
<<Struc: 144 - 144.5 Moderate-Strong dominant foliation>>											
147.98	**149.01**	**PEL Equigranular biotite + calcite +/- quartz rock**									
147.98 - 149.01: Irregular bleached bands.											
<<Min: 147.98 - 149.01 0.1% Min: Pyrite>>											
<<Min: 147.98 - 149.01 0.1% Min: Pyrrhotite>>											
149.01	**150.08**	**RHYvx Quartz and/or feldspar crystal tuff**									
<<Min: 149.01 - 157 3% Min: Pyrite>> and in foliaform sulfide veinlets.											
150.08	**150.55**	**PEL Equigranular biotite + calcite +/- quartz rock**									
<<Alt: 150.08 - 150.55 Strong Calcite>>											
150.55	**152.70**	**RHYvx Quartz and/or feldspar crystal tuff**	151.50	153.00	1.50	D00004353	-0.005	0.7	0.02	-0.01	0.03
<<Alt: 150.55 - 152.7 Weak Calcite>>											
<<Alt: 150.55 - 157.2 Moderate Muscovite>> as above but stronger on folia											
<<Struc: 150.55 - 150.65 Moderate Fault>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
152.70	**153.22**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	153.00	154.50	1.50	D00004354	0.005	0.5	0.03	-0.01	0.37
<<Alt: 152.7 - 153.22 Strong Calcite>>											
<<Struc: 153.2 - 153.25 Moderate-Strong Contact>>											
153.22	**155.97**	**RHYvx** **Quartz and/or feldspar crystal tuff**	154.50	155.97	1.47	D00004355	-0.005	0.6	0.04	-0.01	0.11
<<Alt: 153.22 - 164.23 Trace Calcite>> occasional bands and blebs											
<<Struc: 154.1 - 155.3 Weak Fault>> minor zones of broken core											
155.97	**157.20**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	155.97	157.20	1.23	D00004356	-0.005	4.8	0.04	0.16	1.45
155.97 - 157.2: Bippo, local bleaching											
<<Min: 157 - 159.25 10% Min: Sphalerite>>											
<<Min: 157 - 159.25 10% Min: Pyrite>>											
<<Min: 157 - 159.25 3% Min: Pyrrhotite>>											
<<Min: 157 - 159.25 0.5% Min: Galena>>											
<<Min: 157 - 159.25 0.5% Min: Chalcopyrite>>											
<<Alt: 156.9 - 159.25 Moderate-Strong Chlorite>>											
<<Alt: 156.9 - 159.25 Moderate Biotite>>											
157.20	**159.25**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	157.20	158.00	0.80	D00004357	0.038	19.8	0.09	2.5	4.49
157.2 - 159.25: Weak OJ 157.20-157.43m. Mod-strong Chl-Bio-Gar 157.43-159.25m. Core rubble and minor gouge 159.00-159.24m. Foliaform PY-SP diss, wisps and bands parallel to foliation. 159.00-159.24m: Dense chlorite - biotite, minor diss py in core (fault) rubble.											
<<Alt: 157.2 - 159.25 Moderate Cordierite>>			158.00	159.00	1.00	D00004358	0.049	20.2	0.06	2.48	3.13
<<Alt: 157.45 - 159.25 Weak-Moderate Garnet>>			159.00	159.25	0.25	D00004359	0.013	4.8	0.03	0.31	0.45
<<Struc: 158.7 - 158.86 Weak-Moderate Fault>> broken core											
<<Struc: 159 - 160.85 Moderate-Strong Fault>> broken core, missing core, minor gouge											
159.25	**160.85**	**No Core** **No Core**									
159.25 - 160.85: possibly a fault zone in part.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
160.85	**162.00**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** <<Min: 160.85 - 161.6 5% Min: Pyrite>> <<Min: 160.85 - 162 10% Min: Pyrrhotite>> and as blebs and diss <<Min: 160.85 - 162 1% Min: Galena>> in patches <<Min: 160.85 - 162 3% Min: Chalcopyrite>> <<Alt: 160.85 - 161.6 Weak-Moderate Garnet>> <<Alt: 160.85 - 164.23 Weak Chlorite>> <<Alt: 160.85 - 164.23 Moderate-Strong Cordierite>> <<Alt: 160.85 - 164.23 Moderate Biotite>> <<Struc: 161 - 161.2 Moderate-Strong dominant foliation>> <<Struc: 161.3 - 161.5 Moderate Foliation>> sulfide banding	160.85	162.00	1.15	D00004361	0.264	34.4	0.18	0.89	2.52
162.00	**164.23**	**OC** **Chalcopyrite-pyrrhotite net textured sulphides** 162 - 164.23: Good pyrrhotite rich OC with occasional blebs and fracture filling cpy. Cordierite up to 1cm surrounded by sulfide. Locally banded versus net textured. <<Min: 162 - 164.23 3% Min: Sphalerite>> <<Min: 162 - 164.23 30% Min: Pyrrhotite>> <<Min: 162 - 164.23 5% Min: Galena>> <<Min: 162 - 164.23 5% Min: Chalcopyrite>>	162.00	163.00	1.00	D00004362	1.26	187	0.57	4.85	5.67
			163.00	164.23	1.23	D00004363	1.11	171	0.33	4.3	7.42
164.23	**165.15**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** 164.23 - 165.15: brecciated, healed with calcite veining and flooding. <<Min: 164.23 - 165 0.5% Min: Chalcopyrite>> patchy <<Min: 164.23 - 165.15 3% Min: Sphalerite>> patchy <<Min: 164.23 - 165.15 15% Min: Pyrite>> patchy <<Min: 164.23 - 165.15 3% Min: Pyrrhotite>> patchy <<Alt: 164.23 - 165.15 Weak Garnet>> <<Alt: 164.23 - 165.15 Moderate Chlorite>>	164.23	165.15	0.92	D00004364	0.923	79.1	0.16	1.69	3.76

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 164.23 - 165.15 Weak-Moderate Cordierite>>									
		<<Alt: 164.23 - 165.15 Moderate-Strong Calcite>>									
		<<Alt: 164.23 - 165.15 Weak Biotite>>									
		<<Vein: 164.23 - 165.15 25% Calcite>>									
165.15	**165.83**	**No Core No Core**									
		165.15 - 165.83: Driller error. Core box meter markers do not make sense. Measured up from bottom and down from top after rod count and errror with missing core lies between these blocks. Alternative scenario is that rod count was out and all meter markers move up 3.0 m (									
		<<Alt: 165.15 - 166.17 Moderate Calcite>>									
		<<Struc: 165.15 - 166.03 Moderate-Strong Fault>> broken core an missing core.									
165.83	**166.03**	**OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	165.83	166.40	0.57	D00004365	3.33	101	0.16	2.69	5.53
		165.83 - 166.03: Broken core.									
		<<Min: 165.83 - 166.03 10% Min: Pyrite>>									
		<<Alt: 165.83 - 166.03 Moderate Chlorite>>									
		<<Alt: 165.83 - 166.03 Moderate Biotite>>									
166.03	**166.90**	**OL semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**	166.40	166.90	0.50	D00004366	6.15	379	0.08	9.99	17.6
		166.03 - 166.9: good OB mineralization, locally brx, has qtz vein clasts, qtz vein filling (0.3m long).									
		<<Min: 166.03 - 166.5 10% Min: Sphalerite>> patchy									
		<<Min: 166.03 - 166.5 20% Min: Pyrite>> patchy									
		<<Min: 166.03 - 166.5 3% Min: Pyrrhotite>>									
		<<Min: 166.03 - 166.5 3% Min: Galena>> patchy									
		<<Min: 166.03 - 166.5 0.5% Min: Chalcopyrite>> patchy									
		<<Min: 166.5 - 166.9 30% Min: Sphalerite>>									
		<<Min: 166.5 - 166.9 30% Min: Pyrite>> buckshot									
		<<Min: 166.5 - 166.9 5% Min: Galena>>									
		<<Alt: 166.17 - 167.54 Moderate Calcite>>									
		<<Alt: 166.17 - 177.13 Weak Muscovite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 166.11 - 166.4 75% Quartz 45 deg. >> qtz vein, 5% calcite on margins, contains 5cm clast of OB									
166.90	**167.54**	**PEL Equigranular biotite + calcite +/- quartz rock**	166.90	167.54	0.64	D00004367	0.785	109	0.05	2.48	5.23
		166.9 - 167.54: Bands of soft ashy - Pel, 170.16-170.54: brecciated OB with calcite & clay filling. Thin mm bands and wisps of diss sulfides in PEL - Ash bands.									
		<<Min: 166.9 - 167.54 5% Min: Sphalerite>> patchy									
		<<Min: 166.9 - 167.54 10% Min: Pyrite>> patchy									
		<<Min: 166.9 - 167.54 3% Min: Pyrrhotite>> patchy									
		<<Min: 166.9 - 167.54 1% Min: Galena>> patchy									
		<<Struc: 166.9 - 167.54 Weak Fault>> two 10cm zones of broken core									
167.54	**168.94**	**RHYvx Quartz and/or feldspar crystal tuff**	167.54	168.94	1.40	D00004368	0.012	4.7	-0.01	0.17	0.32
		167.54 - 168.94: Similar to RHYvx-QE unit overlying mineralization.									
		<<Min: 167.54 - 172.15 1% Min: Pyrite>>									
		<<Min: 167.54 - 172.15 0.5% Min: Pyrrhotite>>									
		<<Alt: 167.54 - 169.5 Weak-Moderate Muscovite>>									
		<<Alt: 167.54 - 169.5 Trace Calcite>>									
		<<Alt: 167.54 - 175.6 Trace Biotite>> minor diss									
		<<Struc: 167.54 - 168.9 Moderate-Strong dominant foliation>>									
168.94	**170.21**	**PEL Equigranular biotite + calcite +/- quartz rock**	168.94	170.40	1.46	D00004369	-0.005	0.3	-0.01	-0.01	0.02
		<<Alt: 169.5 - 170.21 Moderate Calcite>>									
170.21	**172.15**	**RHYva Coarse grained to ash tuff**	170.40	171.90	1.50	D00004371	-0.005	2.4	-0.01	0.12	0.1
		170.21 - 172.15: Mixed unit, dominently ash tuff, 15cm section RHYvl with qtz phenos, local lappilli and PEL rich sections.									
		<<Alt: 170.21 - 174.72 Weak Calcite>>	171.90	173.40	1.50	D00004372	0.01	15.2	0.01	0.54	0.78
		<<Struc: 171.16 - 171.46 Weak-Moderate Fault>> fracture zone									
172.15	**173.94**	**RHYvx Quartz and/or feldspar crystal tuff**									
		<<Min: 172.15 - 173.94 0.5% Min: Sphalerite>> concentrated in bands									
		<<Min: 172.15 - 173.94 5% Min: Pyrite>> concentrated in bands									
		<<Min: 172.15 - 173.94 3% Min: Pyrrhotite>> concentrated in bands									
		<<Alt: 172.15 - 173.1 Weak Chlorite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 172.2 - 173.43 Moderate-Strong dominant foliation>> DFOL and sulfide bands.

173.94 174.72 RHYva Coarse grained to ash tuff

<<Min: 173.94 - 174.72 1% Min: Pyrrhotite>>

174.72 177.15 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 174.72 - 177.83 0.5% Min: Sphalerite>>

<<Min: 174.72 - 177.83 3% Min: Pyrite>> concentrated in bands

<<Min: 174.72 - 177.83 1% Min: Pyrrhotite>>

<<Alt: 174.72 - 179.8 Weak-Moderate Calcite>> diss in bands with sulfides

<<Alt: 176 - 179.2 Weak Chlorite>>

<<Alt: 177.13 - 188.04 Weak Muscovite>> fine white mica on folia

<<Struc: 176.96 - 180.8 Weak-Moderate Fault>> 6 fracture zones (10-40cm) with broken core, minor crushed zones.

177.15 177.83 RHYvx Quartz and/or feldspar crystal tuff

177.15 - 177.83: quartz phenos.

177.83 188.49 RHYcf Feldspar & feldspar quartz porphyry

177.83 - 188.49: Feldspar phenos <1cm size. Minor PEL (biotite rich section at 186.23-186.34m, otherwise massive and fairly uniform. Lower contact gradational over 30cm with wisps and bands of PEL

<<Min: 177.83 - 181.88 0.1% Min: Sphalerite>>

<<Min: 177.83 - 181.88 3% Min: Pyrite>>

<<Min: 181.88 - 182.15 0.5% Min: Sphalerite>> concentrated in bands

<<Min: 181.88 - 182.15 5% Min: Pyrite>> concentrated in bands

<<Min: 181.88 - 182.15 0.1% Min: Galena>> concentrated in bands

<<Min: 182.15 - 188.04 0.1% Min: Sphalerite>>

<<Min: 182.15 - 188.04 3% Min: Pyrite>>

<<Min: 182.15 - 188.04 0.1% Min: Pyrrhotite>>

<<Min: 188.04 - 189 3% Min: Pyrite>> concentrated on margins of unit

<<Min: 188.04 - 189 1% Min: Pyrrhotite>> concentrated on margins of unit

<<Alt: 179.8 - 188.04 Trace Calcite>>

<<Alt: 188.04 - 188.95 Moderate-Strong Calcite>>

<<Alt: 188.04 - 192 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 186 - 187.8 Moderate-Strong dominant foliation>>

188.49 188.95 PEL Equigranular biotite + calcite +/- quartz rock

188.95 191.60 RHYcf Feldspar & feldspar quartz porphyry

188.95 - 191.6: Strained, abundant wisps of Biotite - PEL. Qtz eyes and feldspars similar to above RHYcf unit above.

<<Min: 189 - 191.8 0.5% Min: Pyrrhotite>>

<<Min: 189 - 198 3% Min: Pyrite>> patchy diss

<<Alt: 188.95 - 191.6 Trace Calcite>>

191.60 193.25 RHYva Coarse grained to ash tuff

191.6 - 193.25: Mixed unit; Biotite PEL on margins and bleached ash - lpl in center with 10 cm qtz-chl-cal vein and 6 cm of gouge.

<<Min: 192.63 - 194.8 0.5% Min: Pyrrhotite>>

<<Alt: 191.6 - 197.6 Weak Calcite>>

<<Alt: 192 - 194.8 Weak-Moderate Muscovite>>

<<Struc: 192.31 - 192.38 Moderate-Strong Fault>> gouge

193.25 194.80 RHYvx Quartz and/or feldspar crystal tuff

194.80 198.43 RHYva Coarse grained to ash tuff

<<Min: 198 - 207.95 5% Min: Pyrite>>

<<Alt: 194.8 - 198.7 Moderate Muscovite>> fine white mica in and around shear zone

<<Alt: 197.2 - 198.75 Trace Garnet>>

<<Alt: 197.6 - 209 Trace Calcite>>

<<Struc: 195.52 - 195.78 Moderate-Strong Fault>> gouge and altered schist

<<Struc: 196 - 197.4 Weak-Moderate Fault>> fractured with minor gouge

<<Struc: 198.2 - 198.3 Weak-Moderate Fault>> weak shear, crushed

198.43 200.27 RHYvl Lapilli tuff

198.43 - 200.27: garnet bearing

<<Alt: 198.7 - 212.16 Weak Muscovite>> focused around shear zones

<<Alt: 198.75 - 199.5 Weak-Moderate Garnet>>

<<Vein: 200 - 200.25 25% Quartz-Feldspar-Sulphide>> irregular, flooding and replacing, qtz-feldspar-garnet

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

200.27 207.95 RHYva Coarse grained to ash tuff

200.27 - 207.95: variable lpl, locally coarse ash, minor PEL (biotite) bands with increase in pyrite and local diss garnet

<<Min: 203 - 207.95 1% Min: Pyrrhotite>>

<<Alt: 203.1 - 214 Trace Biotite>>

<<Alt: 205.9 - 206.3 Weak-Moderate Garnet>>

<<Struc: 200.37 - 203.07 Weak-Moderate Fault>> 8 zones, <10cm avg, broken crushed core, minor gouge.

<<Struc: 206.53 - 207 Weak-Moderate Fault>> broken core

207.95 209.26 RHYva Coarse grained to ash tuff

207.95 - 209.26: minor diss garnet

<<Min: 207.95 - 210.2 3% Min: Pyrrhotite>>

<<Min: 207.95 - 212.68 0.5% Min: Pyrite>>

<<Alt: 207.95 - 210.62 Weak-Moderate Garnet>>

<<Alt: 209 - 212.68 Weak Calcite>>

209.26 212.16 RHYvl Lapilli tuff

209.26 - 212.16: 213.62-215.16: qtz calcite veining and brx plus fault gouge

<<Min: 210.2 - 212.68 1% Min: Pyrrhotite>>

<<Struc: 210.41 - 212.16 Moderate-Strong Fault>> gouge, broken and crushed core.

212.16 212.68 PEL Equigranular biotite + calcite +/- quartz rock

212.16 - 212.68: 215.16-215.68: PEL, 223.66-

<<Vein: 212.2 - 212.68 10% Calcite 85 deg. >>

212.68 220.66 RHYv Rhyolite volcaniclastic

218.35	219.85	1.50	D00004373	0.173	58.5	-0.01	0.09	0.2
219.85	220.66	0.81	D00004374	0.006	3.1	0.02	0.03	0.42

212.68 - 220.66: Locally PEL wisps and bands, minor lpl. Local skarny looking bands below 222.25.

<<Min: 212.68 - 214 0.3% Min: Pyrite>>

<<Min: 214 - 220.66 1% Min: Pyrite>> diss in patches

<<Min: 214 - 220.66 1% Min: Pyrrhotite>> diss in patches

<<Alt: 212.68 - 216.5 Weak-Moderate Muscovite>>

<<Alt: 212.68 - 219 Weak Calcite>>

<<Alt: 214 - 219.4 Weak Biotite>>

<<Alt: 214.5 - 220.6 Trace Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 216.5 - 219 Strong Muscovite>> fault											
<<Alt: 219 - 220.6 Weak-Moderate Muscovite>>											
<<Alt: 219 - 222.05 Weak-Moderate Calcite>> and as diss and blebs											
<<Alt: 219.4 - 232.1 Moderate Biotite>>											
<<Alt: 220.6 - 221.95 Strong Chlorite>>											
<<Vein: 213.75 - 213.96 50% Quartz-Sulphide 60 deg. >>											
<<Vein: 216.2 - 216.3 75% Quartz>>											
<<Vein: 220.37 - 220.42 100% Quartz-Carbonate 50 deg. >>											
<<Struc: 214.85 - 215 Moderate-Strong Fault>> gouge											
<<Struc: 216.6 - 218.93 Moderate-Strong Fault>> altered schist, and gouge											
220.66	**221.95**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	220.66	221.45	0.79	D00004375	0.039	30	0.03	0.52	1.48
220.66 - 221.95: Unit was a SEDC (PELc according to 2016 loggers guide)? Minor BCQlpl with only rare remnant Bl.Calcite rich and Chlorite bands. 25+% PO-SP 224.50-224.95m.											
<<Min: 220.66 - 221.5 3% Min: Pyrrhotite>>			221.45	222.00	0.55	D00004386	0.131	140	0.12	3.54	9.24
<<Min: 221.66 - 221.95 5% Min: Sphalerite>>											
<<Min: 221.66 - 221.96 15% Min: Pyrrhotite>>											
<<Alt: 220.66 - 221.95 Moderate Cordierite>> replaced by calcite											
221.95	**223.93**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	222.00	223.50	1.50	D00004376	-0.005	3.3	0.02	0.1	0.25
221.95 - 223.93: cut by qtz-calcite-tourmaline veins with tourmaline - biotite envelopes, looks skarny and Bl-tourmaline porphyroblasts are undeformed.											
<<Min: 222.65 - 223.93 3% Min: Pyrite>>			223.50	225.00	1.50	D00004377	0.012	10.4	0.05	0.88	2.78
<<Min: 222.65 - 223.93 3% Min: Pyrrhotite>>											
<<Alt: 221.95 - 223.93 Weak Chlorite>> plus remnant bleached - altered Chlorite											
<<Alt: 222.05 - 225 Weak-Moderate Calcite>>											
<<Vein: 222 - 223.13 100% Quarzt-Tourmaline-Chlorite 60 deg. >> qtz-feldspar veining and flooding											
<<Vein: 223.13 - 223.6 60% Quartz-Tourmaline>> qtz-tour veining and replacement											

From (m)	To (m)	Rocktype & Description
223.93	**226.30**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

223.93 - 226.3: calcite - chlorite blebs and clasts, biotite - chlorite and sulfides on folia ans as fractture filling. Overall it looks like it was a calcareous rich unit that was weakly skarnified and replaced.

<<Min: 223.93 - 225.1 5% Min: Sphalerite>> fracture filling
<<Min: 223.93 - 225.1 1% Min: Pyrite>>
<<Min: 223.93 - 225.1 1% Min: Galena>>
<<Min: 223.93 - 225.1 1% Min: Chalcopyrite>>
<<Min: 223.93 - 225.26 5% Min: Pyrrhotite>>
<<Min: 225.1 - 226.3 5% Min: Sphalerite>>
<<Min: 225.1 - 226.3 3% Min: Pyrite>>
<<Min: 225.1 - 226.3 1% Min: Galena>>
<<Min: 225.1 - 226.3 0.5% Min: Chalcopyrite>>
<<Min: 225.26 - 226 10% Min: Pyrrhotite>>
<<Alt: 223.93 - 225.26 Weak-Moderate Chlorite>>
<<Alt: 225 - 226.3 Moderate Calcite>>
<<Alt: 225.1 - 226.05 Strong Cordierite>>
<<Vein: 224.8 - 225.27 85% Quartz-Tourmaline 50 deg. >> qtz-tour-feldspar

From (m)	To (m)	Rocktype & Description
226.30	**229.73**	**SEDc** **calcareous Sediment**

226.3 - 229.73: PELc (as per 2016 loggers guide)

<<Min: 226.3 - 229.73 1% Min: Sphalerite>>
<<Min: 226.3 - 229.73 1% Min: Pyrite>>
<<Min: 226.3 - 229.73 1% Min: Pyrrhotite>> diss in patches
<<Alt: 226.3 - 229.25 Moderate-Strong Calcite>>
<<Alt: 227.5 - 229.73 Weak Chlorite>>
<<Alt: 228.5 - 228.75 Weak-Moderate Garnet>>
<<Alt: 229.25 - 230.65 Weak Calcite>>
<<Struc: 227.5 - 227.9 Moderate dominant foliation>>
<<Struc: 228 - 228.5 Weak Fault>> fractures with sericite-clay-calcite

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
225.00	226.30	1.30	D00004378	0.035	23.2	0.08	2.91	6.1
226.30	227.50	1.20	D00004379	-0.005	1.6	0.02	0.08	1.02
227.50	228.50	1.00	D00004381	0.01	4.8	0.03	0.27	2.53
228.50	229.73	1.23	D00004382	-0.005	1.8	0.03	0.13	0.52

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-388

From (m)	To (m)	Rocktype & Description
229.73	**230.65**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**
229.73 - 230.65: chlorite bands		
<<Min: 229.73 - 230.65 5% Min: Sphalerite>>		
<<Min: 229.73 - 230.65 5% Min: Pyrite>>		
<<Min: 229.73 - 230.65 1% Min: Galena>>		
<<Alt: 229.73 - 230.65 Moderate-Strong Chlorite>>		
230.65	**232.35**	**SEDc** **calcareous Sediment**
230.65 - 232.35: plus ash		
<<Min: 230.65 - 232.6 1% Min: Pyrite>>		
<<Min: 230.65 - 232.6 1% Min: Pyrrhotite>>		
<<Alt: 230.65 - 232.6 Weak-Moderate Calcite>>		
<<Alt: 230.65 - 233.3 Weak Chlorite>> decreasng down hole		
<<Alt: 232.1 - 236.7 Weak Biotite>> diss		
232.35	**236.80**	**RHYv** **Rhyolite volcaniclastic**
232.35 - 236.8: plus ash and minor PEL (biotite wisps and thin bands).		
<<Min: 232.6 - 233.96 1% Min: Pyrite>>		
<<Min: 232.6 - 233.96 5% Min: Pyrrhotite>>		
<<Min: 233.96 - 236.2 1% Min: Pyrite>>		
<<Min: 233.96 - 236.2 1% Min: Pyrrhotite>> in patches		
<<Min: 234.47 - 234.66 3% Min: Sphalerite>>		
<<Min: 236.2 - 236.8 3% Min: Pyrite>>		
<<Alt: 232.35 - 236.8 Moderate Muscovite>>		
<<Alt: 232.6 - 234.45 Weak Calcite>>		
<<Alt: 234.45 - 236.8 Weak-Moderate Calcite>>		
<<Struc: 232.8 - 233.25 Weak-Moderate Fault>> broken, minor gouge		
<<Struc: 235.42 - 235.44 Moderate Fault>> gouge		

End of Hole @ 236.8

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
229.73	230.65	0.92	D00004383	0.02	10.2	0.04	1.08	1.93
230.65	231.45	0.80	D00004384	0.005	2.8	0.03	0.11	1.95
231.45	232.95	1.50	D00004385	-0.005	1.1	-0.01	0.01	0.11
232.95	234.24	1.29	D00004387	0.011	2.5	0.01	0.03	0.13
234.24	234.80	0.56	D00004388	0.005	9.4	0.01	0.38	0.44

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-389

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/16/2016
UTM Easting	414361.294	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/16/2016
UTM Northing:	6818334.036	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1421.259	Casing Depth (m):	6	Length (m):	42	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/9/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/10/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

Hole K16-389 was planned to test the ground for a class A Storage Facility, north extent; the Knight-Piésold crew conducted 6 SPT tests in overburden, 3 packer tests in bedrock, and installed a 10 node thermistor. Mafic tuffaceous siltstones-sandstones and mudstone containing intervals of conglomerate. No significant mineralized intervals are present in the hole however, there is pyrrhotite and pyrite in minor quantities throughout the majority of the hole and a quartz carbonate vein containing pyrite and galena from 32.56 to 32.68 m depth.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/9/2016		☑	Vertical hole, drill rig set up over the collar picket with no survey.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 11.50 OVBN Overburden

11.50 12.75 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

11.5 - 12.75: Black fine grained carbonaceous mudstone with bands of white calcite

<<Alt: 11.5 - 16.64 Weak-Moderate Biotite>> Upper portion is coarse euhedral black biotite speckled, lower portion is fine black biotite, semi-pervasive

12.75 18.12 MAFt Mafic Volcaniclastics grey-green FMG

12.75 - 18.12: Fine to medium grained grey-green MAFt with minor interbedded MDS (<40cm). Poorly bedded, with a mix of large massive beds and sub-cm beds.

<<Min: 13.7 - 14.66 3% Min: Pyrrhotite>> Possibly associated with the biotite alteration

<<Alt: 17 - 18.12 Weak-Moderate Biotite>> Patches of fine black biotite and small clots ~1mm in size

<<Vein: 15.25 - 16.03 80% Quartz-Carbonate>> Brecciated (?) quartz vein with a matrix of carbonate bearing iron oxide. May originally have been QTZ-CARB-PY?

<<Struc: 18 - 18 Moderate dominant foliation>> Partings along calcite bands and/or chloritic/micaceous surfaces

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

18.12 21.02 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

18.12 - 21.02: Fine grained black-grey, well laminated mudstone (MDS) with lithic (or rip-up) clasts of mudstone showing discordant bedding, with minor beds(<5cm) of MAFt

<<Min: 18.12 - 21.02 0.5% Min: Pyrrhotite>> Associated with carbonate bands and blebs

21.02 28.89 MAFt Mafic Volcaniclastics grey-green FMG

21.02 - 28.89: Fine to medium grained grey-green MAFt with minor interbedded MDS (<40cm). Poorly bedded, with a mix of large massive beds and sub-cm beds. The lower 2m has finely interbedded MDS. Black euhedral foliation parallel and disseminated biotite porphyroblasts are present throughout the unit.

<<Min: 26.2 - 30.9 0.01% Min: Pyrite>> Associated with carbonate bands and blebs

<<Min: 26.2 - 30.9 0.01% Min: Pyrrhotite>> Associated with carbonate bands and blebs

<<Alt: 23.93 - 25.7 Moderate Biotite>> Disseminate 1-2mm porphyroblasts of black biotite

<<Alt: 25.7 - 26.22 Weak Biotite>> Sparsely disseminated coarse black biotite porhphyroblasts

<<Vein: 23.12 - 23.15 100% Quartz-Carbonate>>

<<Vein: 23.27 - 23.94 50% Quartz-Carbonate>> Patches of Muscovite-chlorite are most likely incorporated and altered wall-rock

<<Vein: 24.88 - 24.9 100% Quartz-Carbonate>>

<<Struc: 27 - 27 Moderate dominant foliation>> Partings along calcite bands and/or chloritic/micaceous surfaces

28.89 30.33 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

28.89 - 30.33: Fine grained, finely laminated black-grey carbonaceous mudstone with thin beds of MAFt as well as clasts of mudstone and mafic tuff disrupting bedding

30.33 30.90 MAFt Mafic Volcaniclastics grey-green FMG

30.33 - 30.9: Massive to poorly bedded grey-green ashy (?) mafic tuff unit with fine interbeds of grey and white chaotically bedded mudstone and blebs of carbonate-pyrrhotite.

<<Vein: 30.34 - 30.35 100% Quartz-Carbonate>>

30.90 33.09 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

30.9 - 33.09: Fine grained, finely but chaotically laminated black-grey carbonaceous mudstone with thin beds of MAFt as well as clasts of mudstone disrupting bedding

<<Min: 32.56 - 32.68 4% Min: Pyrite>>

<<Min: 32.56 - 32.68 1% Min: Galena>>

<<Vein: 32.56 - 32.68 60% Quartz-Carbonate>> Sulphides comprise 80% pyrite, 20% galena

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

33.09 34.19 MAFt Mafic Volcaniclastics grey-green MG

33.09 - 34.19: Poorly to well bedded grey-green ashy (?) mafic tuff unit with small black biotite blebs (clasts?)

34.19 41.75 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

34.19 - 41.75: Fine grained, finely but chaotically laminated dark grey carbonaceous mudstone with clasts of mudstone and possibly lapilli disrupting bedding.

<<Min: 34.19 - 42 0.01% Min: Pyrite>> Associated with carbonate bands and blebs

<<Min: 34.19 - 42 0.5% Min: Pyrrhotite>> Associated with carbonate bands and blebs

<<Struc: 36.5 - 36.5 Moderate dominant foliation>> Partings along calcite bands and/or chloritic/micaceous surfaces

<<Struc: 41 - 41 Moderate dominant foliation>> Partings along calcite bands and/or chloritic/micaceous surfaces

41.75 42.00 MAFt Mafic Volcaniclastics grey-green CG

41.75 - 42: Massive to poorly bedded grey-green ashy (?) mafic tuff unit.

End of Hole @ 42

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-390

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	David Nuttal
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/15/2016
UTM Easting	414323.128	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/17/2016
UTM Northing:	6818778.591	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1408.725	Casing Depth (m):	1.5	Length (m):	38.6	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/11/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/12/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

The purpose of K16-390 was to test the overburden and bedrock below the Class A storage facility, north extent. Three SPT tests were conducted in overburden and three packer tests in bedrock. Additionally, a thermistor was installed. Core from K16-390 is observed to be a package of interbedded mudstones and mafic tuffs from the Wind Lake Fm. Several faults intersect K16-390 leaving most of the core rubbly. Weak to partial oxidation was observed from 1.5 m to end of hole. No mineralization or strong alteration was present.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/11/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**1.50**	**OVBN** **Overburden**									
1.50	**2.78**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
<<Min: 1.5 - 38.6 0.5% Min: Pyrite>>											
<<Min: 1.5 - 38.6 0.1% Min: Pyrrhotite>>											
<<Alt: 1.5 - 23.85 Moderate Calcite>>											
<<Struc: 1.5 - 2.78 Weak Fault>>											
2.78	**3.00**	**MAFt** **Mafic Volcaniclastics**									
3.00	**6.80**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
<<Struc: 3 - 3.1 Weak Fault>>											
<<Struc: 4.3 - 6.8 Moderate Fault>>		Rock rubble and gravel, no gouge present.									
6.80	**25.10**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-390

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 23.85 - 32.86 Trace Calcite>>

<<Struc: 10.1 - 12 Moderate Fault>> clay/sand gouge.

<<Struc: 12 - 19.1 Trace Fault>> Rock rubble and remobilized foliation.

<<Struc: 19.1 - 19.4 Moderate Fault>> sand and gravel filled fault,no cement.

<<Struc: 19.4 - 25.1 Trace Fault>> Top and bottom of interval are rubbly rock. Center of interval is disjointed to broken rock. Suspected to be due to faults above and below.

25.10 26.17 MAFt Mafic Volcaniclastics

<<Struc: 25.1 - 25.2 Weak Fault>> Rock Rubble.

26.17 27.15 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 26.8 - 38.19 60% Quartz-Carbonate>>

<<Struc: 27.05 - 27.15 Weak Fault>>

27.15 28.19 MAFt Mafic Volcaniclastics

28.19 32.86 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

32.86 34.00 MAFt Mafic Volcaniclastics

<<Alt: 32.86 - 38.6 Weak-Moderate Calcite>>

34.00 36.86 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 34 - 35.6 35% Quartz-Carbonate>>

<<Struc: 34.15 - 34.35 Weak Fault>>

36.86 37.56 MAFt Mafic Volcaniclastics

<<Struc: 36.86 - 37 Weak Fault>> Rubble to gravel fault gouge, no cement.

37.56 38.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

End of Hole @ 38.6

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-391

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Oscar Nielsen	Date Logging Start:	7/17/2016
UTM Easting	415655	Core Size:	HQ3	Azimuth:	224.8	Date Logging Complete:	7/18/2016
UTM Northing:	6815385	Casing Pulled?:	Yes	Dip:	-64.9	Drill Company:	New Age
UTM Elev. (m):	1568	Casing Depth (m):	4.5	Length (m):	101	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/12/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/13/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
Comments:						Parent Hole:	

Drill Hole K16-391 was drilled as a second attempt at planned hole SEB001 after the abandonment of K16-384 due to excessive azimuth deviation. K16-391 was abandoned at 101m depth due to excessive azimuth deviation. The lithologies in the core comprise the mudstone-conglomerate MDS and the volcaniclastic MAFt of the Wind Lake Formation. No significant mineralized intercepts are present in the core. Two silicified zones near the top and bottom of the hole may indicate syn-mineralization fluids within the Wind Lake Formation however, this inference is tenuous at best.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-64.9	223.4	1.4	224.8	TN14	Oscar Nielsen	7/12/2016		☑	
10	-64.5	200.2	22.1	222.3	ReflexEZS	New Age	7/12/2016	5838	☑	
37	-65	199.1	22.1	221.2	ReflexEZS	New Age	7/12/2016	5803	☑	
64	-65.2	197.2	22.1	219.3	ReflexEZS	New Age	7/12/2016	5786	☑	
91	-65.4	195.9	22.1	218	ReflexEZS	New Age	7/12/2016	5786	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 3.80 OVBN Overburden

3.80 5.98 MDS Carbonaceous Mudstone & Tuffaceous Mudstone **dark grey** **FG**

3.8 - 5.98: Dark grey-black streaky-banded carbonaceous mudstone with minor interbeds of mafic vocaniclastic material.

<<Alt: 3.8 - 19.43 Weak Calcite>> Bands of CA

5.98 12.85 MAFt Mafic Volcaniclastics **grey-green** **FG**

5.98 - 12.85: Fine grained, massive volcaniclastic rock with tectonically dismembered calcite bands throughout with minor beds of conglomeratic mudstone

<<Min: 5.98 - 12.85 0.5% Min: Pyrrhotite>> Whispy pyrrhotite along foliation plane in MAFt

<<Struc: 7.2 - 7.2 Moderate dominant foliation>> Foliation defined by micaceous partings

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

12.85 15.58 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FMG

12.85 - 15.58: Fine to medium grained black and white streaked carbonaceous mud/siltstone

<<Struc: 15 - 19 Moderate Fault>> Zone of broken rock with 5 sub-10 cm zones of gouge and crushed rock.

15.58 19.43 MAFt Mafic Volcaniclastics grey-green MG

15.58 - 19.43: Medium grained grey green, massive unit (ashy) with largerounded lapilli .

<<Min: 15.58 - 19.43 0.5% Min: Pyrrhotite>> Whispy and streaky pyrrhotite in MAFt

19.43 24.22 MDS Carbonaceous Mudstone & Tuffaceous Mudstone light grey FG

19.43 - 24.22: Light grey, hard unit that mimics the textures in the MDS (including pebble sized clasts. Interpreted as a silicified mudstone.

<<Alt: 19.43 - 24.22 Moderate-Strong Silicification>> This has the same textures as the MDS, could it be a sandstone though?\

<<Alt: 19.43 - 24.22 Trace Calcite>> Rare CA in Si altered area

24.22 39.26 MDS Carbonaceous Mudstone & Tuffaceous Mudstone medium grey FG

24.22 - 39.26: Medium grey, fine grained mud/siltstone with abundant calcite bands. This unit contains apparent interbeds (or alteration zones???) of MAFt with diffuse contacts in some cases.

<<Min: 24.22 - 28.86 0.01% Min: Pyrrhotite>> Whispy pyrrhotite along foliation planes

<<Min: 35.38 - 39.26 0.5% Min: Pyrrhotite>> Whispy pyrrhotite in and surrouning interbeds of MAFt within the MDS, along foliation planes

<<Alt: 24.22 - 93.94 Moderate Calcite>> Abundant calcite bands throughout the interval irrespective of lithology, and patches of CA as well

<<Struc: 28.86 - 29.16 Weak Fault>> Zone of rubble and crushed rock

<<Struc: 29.84 - 29.89 Weak-Moderate Fault>> Zone of gouge and crushed rock

<<Struc: 30.98 - 31.02 Weak Fault>> Zone of gouge and crushed rock

<<Struc: 35.7 - 37.5 Moderate-Strong dominant foliation>> Strong foliation defined by well developed micaceous partings and carbonate bands

<<Struc: 37.26 - 40.6 Moderate-Strong Fault>> Thick zone of gouge and crushed rock with deformed foliation

39.26 40.60 FLZ Fault Zone light grey FCG

39.26 - 40.6: thick zone containing predominantly gouge and crushed rock, with a minor component of intact rock.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

40.60 47.05 MAFt Mafic Volcaniclastics grey-green FG

40.6 - 47.05: Light grey-green, fine grained mafic volcaniclastic with abundant dismembered and intact bands of calcitic material

<<Min: 46.5 - 64.7 1% Min: Pyrite>> 0.5-8mm thick bands and discordant veins of pyrite

<<Vein: 41.08 - 41.62 80% Quartz-Carbonate>>

<<Vein: 46.5 - 50.01 1% Pyrite>>

<<Struc: 42.76 - 43.1 Weak Fault>> Zone of wealky crushed rock with minor gouge development

<<Struc: 44.3 - 44.97 Weak-Moderate Fault>> Three zones of weakly crushed rock and minor gouge 5-15 cm long

<<Struc: 46.6 - 46.6 Moderate dominant foliation>> Foliation defined by chloritic partings

47.05 50.01 MDS Carbonaceous Mudstone & Tuffaceous Mudstone medium grey FG

47.05 - 50.01: fine graind medium grey mustone/siltstone with fine laminations/tectonic fabric and some sections brecciated, cemented bycalcite and/or pyrite

<<Vein: 48.78 - 50.96 40% Quartz-Carbonate>>

50.01 55.09 MAFt Mafic Volcaniclastics grey-green FG

50.01 - 55.09: Fine grained grey green mafic volcaniclastic rock with abundant carbonate bands and thin iterbeds of MDS near the bottom

<<Min: 50.69 - 62.25 0.5% Min: Pyrrhotite>> Whispy pyrrhotite along foliation planes

55.09 56.71 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

55.09 - 56.71: Fine grained medium grey mud/siltstone with thin interbeds of mafic volcaniclastic rock and bands of carbonate material

56.71 59.61 MAFt Mafic Volcaniclastics grey-green FG

56.71 - 59.61: Fine grained ashy volcaniclastic rock with bands of carbonate material and disseminate/whispy pyrrhotite

<<Alt: 57.59 - 59.61 Weak-Moderate Biotite>> Coincident with pyrrhotite

<<Vein: 58.6 - 61.14 35% Quartz-Carbonate>>

<<Vein: 58.95 - 59 15% Pyrrhotite>> QBS refers to just biotite

<<Struc: 57.53 - 57.59 Moderate Fault>> Zone of intense gouge development

<<Struc: 58 - 58 Weak-Moderate dominant foliation>> Foliation defined by micaceous/pyritic partings

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

59.61 64.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone medium grey FG

59.61 - 64.7: Fine grained medium grey mud/siltstone with thin interbeds of mafic volcaniclastic rock and bands of carbonate material

<<Struc: 64 - 71.86 Moderate-Strong Fault>> Zone of intense gouge development with a minor component of crushed rock

64.70 76.04 MAFt Mafic Volcaniclastics grey-green FG

64.7 - 76.04: Fine grained ashy volcaniclastic rock with bands of carbonate material and cm-dm scale beds of fine grained grey MDS

<<Min: 75 - 79.09 1% Min: Pyrite>> Broken pyrite in fault zone

<<Alt: 64.7 - 65.93 Weak Biotite>> Coincident with pyrrhotite

<<Vein: 67.22 - 68.01 95% Quartz-Carbonate>>

<<Vein: 71.41 - 71.64 100% Quartz-Carbonate>>

<<Vein: 71.86 - 73.98 15% Quartz-Carbonate>>

<<Vein: 75.3 - 75.35 90% Quartz-Carbonate>>

<<Struc: 70.2 - 70.2 Moderate dominant foliation>> Foliation defined by micaceous/pyritic partings

<<Struc: 75.02 - 75.18 Moderate Fault>> Zone of well consolidated gouge and crushed rock

76.04 79.09 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

76.04 - 79.09: Fine dark grey-black mudstone with thin chaotic bands of carbonate material, brecciated locally by a through-going fault zone.

<<Min: 76.18 - 76.38 0.5% Min: Galena>> Galena bearing quartz-carbonate vein

<<Vein: 76.18 - 76.38 95% Quartz-Carbonate-Sulphide>> <1% Galena

<<Struc: 76.38 - 79.88 Moderate Fault>> Zone of crushed rock with firm gouge as a matrix and intervals of broken rock/rubble

79.09 82.17 MAFt Mafic Volcaniclastics grey-green FMG

79.09 - 82.17: Fine grained, well foliated (bedded?) ashy volcaniclastic rock with bands and flecks of carbonate material

<<Min: 79.09 - 86.72 3% Min: Pyrite>> discodant branching veins of pyrite

<<Vein: 79.09 - 86.72 2% Pyrite>>

<<Struc: 80.5 - 80.5 Weak-Moderate dominant foliation>> Foliation defined by chloritic partings

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

82.17 86.72 MDS Carbonaceous Mudstone & Tuffaceous Mudstone light grey FMG

82.17 - 86.72: Fine to medium grained light grey and black to black and light grey siltstone-sandstone(???). light portions have a granular appearance with minimal carbonate material and bands of black materail that appear to be normal MDS. Interbeds of grey-green MAFt are common. Could be ableached unit

<<Alt: 82.17 - 86.72 Weak-Moderate Silicification>> Texturally very simiar to the typical MDS of the Wind Lake Formation. Carbonate bands replaced by siliceous material

86.72 93.99 FLZ Fault Zone grey-green FCG

86.72 - 93.99: Intense, large fault zone comprises gouge, crushed rock, and rubble. From the colour it is apparent that it cuts the MAFt.

<<Alt: 93.94 - 97.75 Weak Calcite>> Rare patches of calcite in the ashy MAFt

<<Vein: 86.72 - 88 60% Quartz-Carbonate>>

<<Struc: 86.72 - 93.97 Moderate Fault>> Zone primarily composed of rubble with three 40 cm sections of crushed rock consolidated by firm gouge

93.99 97.75 MAFt Mafic Volcaniclastics grey-green MG

93.99 - 97.75: light grey green sandy textured medium grained volcaniclastic rock with carbonate material bands and clots of pyrite.

97.75 99.66 FLZ Fault Zone grey-green FCG

97.75 - 99.66: Fault zone composed exclusively of gouge an pebble-granule sized crushed rock

<<Alt: 97.75 - 99.66 Moderate Calcite>> Abundant calcite throughout the fault interval

<<Struc: 97.75 - 99.66 Strong Fault>> Zone of gouge with minor crushed rock and rubble

99.66 100.22 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

99.66 - 100.22: Fine grained black and white streaked carbonaceous mud/siltstone

<<Min: 99.66 - 100.22 1% Min: Pyrite>> Bleb of pyrite in a quartz-carbonate vein.

<<Alt: 99.66 - 101 Trace Calcite>> Rare patches of calcite in the silicified MDS

100.22 101.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone light grey MG

100.22 - 101: Light and dark grey, massive rock, highly siliceous. cut by calcite veins. Possiblya silicified mudstone or a dirty sandstone (???)

<<Alt: 100.22 - 101 Moderate-Strong Silicification>> This has the same textures as the MDS, could it be a sandstone though?\

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-391

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Vein: 100.22 - 100.4 100% Quartz>>											
<<Struc: 100.22 - 100.6 Moderate Fault>>		Zone of crushed silica/quartz									
End of Hole @ 101											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-392

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/19/2016
UTM Easting	414851.539	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/20/2016
UTM Northing:	6817471.122	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1388.709	Casing Depth (m):	1.6	Length (m):	46.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/13/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/14/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

K16-392 was drilled to test the geotechnical properties of the proposed north extent of the mill site. 4 SPT tests were performed in the overburden, and 4 packer tests in the bedrock. A 10 node thermistor was installed.
K16-392 encounters bedrock at ~4.5 m, and consists of mixed mudstone and mafic tuffs of the Wind Lake Formation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/13/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.00 OVBN Overburden

4.00 5.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 4 - 36.3 2% Min: Pyrrhotite>>

<<Alt: 4 - 39.7 Moderate-Strong Calcite>>

5.00 36.30 MAFt Mafic Volcaniclastics

5 - 36.3: Locally interbedded with MDS. Variable texture from ash to lpl tuff.

<<Vein: 13.8 - 14 50% Quarzt-Biotite 70 deg. >> QZ-CA-BI veining

<<Vein: 14 - 39.2 2% Calcite 75 deg. >> Minor CA-veinlets, ~1-5 per meter, ~.5-1 cm wide

36.30 37.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 36.3 - 37.4 10% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

37.40 39.70 MAFt Mafic Volcaniclastics

37.4 - 39.7: Minor beds of MDS

<<Min: 37.4 - 39.7 3% Min: Pyrrhotite>>

<<Vein: 39.2 - 40 80% Calcite>> 2 massive CA-QZ veins with blebby PO+/-TML

39.70 46.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

39.7 - 46.2: Blebby CA+PO+/-PY which is locally vuggy

<<Min: 39.7 - 46.2 1% Min: Pyrite>>

<<Min: 39.7 - 46.2 10% Min: Pyrrhotite>>

<<Alt: 39.7 - 46.2 Moderate Calcite>>

End of Hole @ 46.2

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-393

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/15/2016
UTM Easting	419505.165	Core Size:	HQ3	Azimuth:	180.3	Date Logging Complete:	7/17/2016
UTM Northing:	6813218.931	Casing Pulled?:	Yes	Dip:	-44.8	Drill Company:	New Age
UTM Elev. (m):	1333.635	Casing Depth (m):	19.5	Length (m):	156	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/14/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/16/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

The purpose of the DDH was resource infill and to collect a metallurgical sample of the GP4F sulfide lens. The drill hole was successful and met the objectives. The GP4F lens was intersected at 76.37-80.12 m, near the anticipated depth, below and within the Qtz eye marker unit. As seen in other holes a 10+m thick RHYcf unit underlies the GP4F lens. A weak set of sheeted calcite-qtz-chlorite-sulfide veinlets, hosted by RHY units, is found in both the hanging wall and footwall of the GP4F. An obvious lower lens was not intersected although from about 120.18-127.3 weak chlorite alteration and trace sp-gl was noted and strong chlorite-biotite alteration and 1-3% pyrite was observed from about 142.2-147.00 m in an area of high core loss. From 133.6-147.00m the PEL and RHY units are weakly to intensely sheared and faulted and from 147.00-156.00m the DDH is in a gouge fault zone with lots of lost core. Rounded core rubble of intense chlorite alteration with Py-Sp-Gl was noted from 154.50-154.80m - could be OJ type mineralization of lower lens or cave material.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-44.8	178.9	1.4	180.3	TN14	Roger Hulstein	7/14/2016		☑	RH and RV aligned rig at 10AM, July 14, 2016
5	-45.52119	178.99821	1.4	180.39821	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
10	-45.60211	179.00106	1.4	180.40106	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
15	-45.59068	179.05776	1.4	180.45776	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
20	-45.53622	179.08164	1.4	180.48164	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
25	-45.61523	179.00081	1.4	180.40081	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.8965805858176
27	-45.4	159.9	22.1	182	ReflexEZS	New Age	7/14/2016	5747	☐	
30	-45.74608	179.20222	1.4	180.60222	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
35	-46.13187	179.32731	1.4	180.72731	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
40	-46.47291	179.44498	1.4	180.84498	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.860670119089
45	-46.68272	179.66316	1.4	181.06316	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.8964379998091
50	-46.89792	179.95845	1.4	181.35845	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
55	-47.17412	180.21241	1.4	181.61241	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
60	-47.37029	180.44467	1.4	181.84467	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
60.01	-47.4	162.6	22.1	184.7	ReflexEZS	New Age	7/14/2016	5743	☐	
65	-47.53983	180.6641	1.4	182.0641	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.8787688605413
70	-47.69701	180.9021	1.4	182.3021	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-393

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-47.79141	181.3015	1.4	182.7015	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
80	-47.91366	181.37857	1.4	182.77857	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
85	-48.03932	181.77353	1.4	183.17353	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
90	-48.13401	182.13258	1.4	183.53258	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
90.01	-47.9	163.8	22.1	185.9	ReflexEZS	New Age	7/15/2016	5722	☐	
95	-48.2112	182.33502	1.4	183.73502	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
100	-48.21684	182.62402	1.4	184.02402	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =98.3628243280145
105	-48.26435	182.83891	1.4	184.23891	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
110	-48.24773	182.93072	1.4	184.33072	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.6896593450452
115	-48.21846	183.16304	1.4	184.56304	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
120	-48.29598	183.30329	1.4	184.70329	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.0121659428948
120.01	-48.2	164.1	22.1	186.2	ReflexEZS	New Age	7/15/2016	5743	☐	
125	-48.53686	183.4713	1.4	184.8713	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =99.9394034540862
130	-48.65913	183.51075	1.4	184.91075	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
135	-48.60797	183.41479	1.4	184.81479	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =97.8893765101896
140	-48.74015	183.51301	1.4	184.91301	Gyro	Alicia Vainio	7/16/2016		☑	Motion Quality =100
150	-48.6	165.5	22.1	187.6	ReflexEZS	New Age	7/15/2016	5756	☐	Hole shut down at 8AM July 16, 2016

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 20.10 OVBN Overburden

20.10 24.07 RHYvl Lapilli tuff

<<Min: 20.1 - 24.07 0.1% Min: Pyrrhotite>>

<<Alt: 20.1 - 24.07 Weak Calcite>> and as fracture filling

<<Struc: 20.5 - 21.7 Weak-Moderate Fault>> broken and crushed core, minor gougecalcite on fractures

24.07 25.40 PEL Equigranular biotite + calcite +/- quartz rock

24.07 - 25.4: Bi - calcite rich PEL with chlorite blebs and bands over 40cm section in middle.

<<Min: 24.07 - 25.4 0.1% Min: Sphalerite>>

<<Min: 24.07 - 25.4 0.5% Min: Pyrite>>

<<Alt: 24.07 - 25.4 Strong Calcite>>

<<Alt: 24.07 - 25.4 Moderate Biotite>>

<<Alt: 24.17 - 25.25 Moderate Chlorite>> chl bands and blebs in center of PEL unit, proto OJ alteration

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

25.40 29.75 RHYvl Lapilli tuff

<<Min: 25.4 - 29.75 3% Min: Pyrite>>

<<Min: 25.4 - 29.75 1% Min: Pyrrhotite>>

<<Alt: 25.4 - 29.75 Weak-Moderate Calcite>> and as diss

<<Alt: 29.65 - 30 Weak-Moderate Chlorite>>

<<Struc: 25.4 - 26.4 Weak Fault>> broken core

<<Struc: 26.4 - 29 Moderate dominant foliation>>

29.75 31.80 PEL Equigranular biotite + calcite +/- quartz rock

29.75 - 31.8: 30.20-3.80: Bleached, biotite destroyed in and around gouge fault zone.

<<Min: 29.75 - 31.8 1% Min: Pyrite>>

<<Alt: 29.75 - 31.8 Strong Calcite>> and as bands

<<Alt: 30 - 41.95 Trace Chlorite>>

<<Vein: 30.22 - 31.8 10% Calcite>> calcite bands and veinlets, vein clasts in fault brx

<<Struc: 30.52 - 31.65 Strong Fault>> gouge and breccia

31.80 41.90 RHYvl Lapilli tuff

31.8 - 41.9: good lpl texture, bleached, remnant BCQlpl texture

<<Min: 31.8 - 37.2 1% Min: Pyrrhotite>>

<<Min: 31.8 - 41.47 3% Min: Pyrite>> locally concentrated in calcite bands

<<Min: 41.47 - 42.82 1% Min: Pyrite>>

<<Min: 41.47 - 42.82 1% Min: Pyrrhotite>>

<<Alt: 31.8 - 37.3 Weak Muscovite>> focused around fracture zones

<<Alt: 31.8 - 41.27 Weak Calcite>> and as diss

<<Alt: 37.3 - 41.95 Weak-Moderate Muscovite>> focused around fracture zones

<<Alt: 41.27 - 42.82 Moderate-Strong Calcite>> diss and as bands

<<Vein: 41.49 - 42.82 5% Quartz-Carbonate>> mostly calcite

<<Struc: 35.1 - 36 Moderate dominant foliation>>

<<Struc: 41.37 - 41.46 Moderate-Strong Fault>>

41.90 42.82 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 41.95 - 43 Weak Biotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

42.82 48.13 RHYva Coarse grained to ash tuff

42.82 - 48.13: trace Bippo, PEL = brown biotite wisps and bands concentrated in upper section of unit. Alteration and minor disseminated sulfides also in upper section of unit (evidence of fluids trapped below overlying PEL? Muscovite alteration increases towards bottom of unit.

<<Min: 42.82 - 45.7 3% Min: Pyrrhotite>> concentratedin qtz-cal-chlorite bands

<<Min: 43.4 - 44 0.1% Min: Sphalerite>>

<<Min: 43.4 - 44 0.1% Min: Galena>>

<<Min: 43.4 - 45.7 3% Min: Pyrite>> mostly diss in bands and blebby patches

<<Min: 45.7 - 47.9 0.1% Min: Sphalerite>>

<<Min: 45.7 - 47.9 3% Min: Pyrite>>

<<Alt: 42.82 - 44 Weak Chlorite>>

<<Alt: 42.82 - 45 Weak-Moderate Calcite>>

<<Alt: 42.82 - 46 Weak Muscovite>>

<<Alt: 45 - 46.4 Weak Calcite>>

<<Alt: 46 - 48.07 Moderate-Strong Muscovite>> bleached, abundant fine muscovite

<<Alt: 46.4 - 47.9 Trace Calcite>>

<<Alt: 47.9 - 48.85 Moderate Calcite>>

<<Struc: 44 - 45 Weak dominant foliation>>

<<Struc: 46 - 47.57 Moderate Fault>> muscovite altered schist

48.13 51.56 RHYvx Quartz and/or feldspar crystal tuff

48.13 - 51.56: First appearance of qtz eye marker unit. Grey color due to diss Bi - Bippo.

<<Min: 48.13 - 49 1% Min: Sphalerite>> concentrated in chl-cal-qtz-py+/-gl bands

<<Min: 48.13 - 49 3% Min: Pyrite>>

<<Min: 48.13 - 49 0.1% Min: Galena>>

<<Min: 48.13 - 49 0.1% Min: Chalcopyrite>>

<<Min: 49 - 51.66 1% Min: Pyrite>>

<<Min: 49 - 51.66 3% Min: Pyrrhotite>>

<<Min: 49.5 - 51.56 0.5% Min: Sphalerite>> in bands with chl-calcite

<<Alt: 48.13 - 51.56 Weak-Moderate Chlorite>> and as rare bands

<<Alt: 48.13 - 51.56 Weak-Moderate Biotite>> as wisps and with chlorite

<<Alt: 48.85 - 54.4 Weak-Moderate Calcite>> diss and minor bands

<<Struc: 49 - 49.5 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 50.8 - 51 Weak Foliation>> sulfide band

<<Struc: 51 - 51.2 Moderate dominant foliation>>

51.56 55.03 RHYva Coarse grained to ash tuff

51.56 - 55.03: Mixed unit, variably bleached, weak muscovite alteration. Minor bands and blebs of qtz-calcite-chlorite

<<Min: 51.66 - 57.72 1% Min: Pyrite>>

<<Alt: 51.56 - 70.5 Weak Biotite>>

<<Alt: 51.76 - 54.4 Weak-Moderate Muscovite>> associated with bleached PEL

<<Alt: 54.3 - 59.5 Weak Chlorite>> often in bands

<<Alt: 54.4 - 55.03 Moderate-Strong Calcite>>

<<Struc: 51.56 - 57 Weak Vein>> cc vinlets in PEL unit

55.03 57.30 RHYvx Quartz and/or feldspar crystal tuff

55.03 - 57.3: marker unit

<<Min: 55.52 - 56.37 1% Min: Sphalerite>> dis in qtz-cal+/-chl bands

<<Alt: 55.03 - 57.3 Weak Calcite>>

57.30 57.72 PEL Equigranular biotite + calcite +/- quartz rock

57.3 - 57.72: Minor bands and blebs of qtz-calcite-chlorite

<<Alt: 57.3 - 57.72 Moderate-Strong Calcite>>

57.72 63.80 RHYvx Quartz and/or feldspar crystal tuff

57.72 - 63.8: marker unit

<<Min: 57.72 - 63.8 3% Min: Pyrite>> diss and in qtz-cal-sp veinlets

<<Min: 58.97 - 63.8 1% Min: Sphalerite>> focused in this foliaform qtz-cal-py+/- chl bands.

<<Min: 58.97 - 63.8 0.1% Min: Galena>>

<<Min: 58.97 - 63.8 0.1% Min: Chalcopyrite>>

<<Alt: 57.72 - 63.8 Weak-Moderate Calcite>> diss and bands

<<Alt: 59.5 - 61.7 Weak-Moderate Muscovite>> bleached zone

<<Alt: 61.7 - 70.5 Weak Chlorite>>

<<Struc: 58.2 - 58.5 Moderate dominant foliation>> biotite bands and wisps defining fol

<<Struc: 61.7 - 62 Moderate Foliation>> sulfide bands appear to crosscut DFOL at slight angle.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Struc: 61.7 - 62 Moderate dominant foliation>>									
63.80	**64.73**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		63.8 - 64.73: Minor bands and blebs of qtz-calcite-chlorite									
		<<Min: 63.8 - 64.73 0.5% Min: Pyrite>>									
		<<Alt: 63.8 - 64.73 Strong Calcite>>									
64.73	**72.00**	**RHYvx** **Quartz and/or feldspar crystal tuff**	70.50	72.00	1.50	D00004389	0.019	8.8	0.02	0.17	1.08
		64.73 - 72: 69.80-69.96: PEL unit or MAFi dyke. Most of RHYvx unit is grey to to Bi content, Bippo.									
		<<Min: 64.73 - 66.2 1% Min: Sphalerite>> in bands as above									
		<<Min: 64.73 - 66.2 3% Min: Pyrite>>									
		<<Min: 64.73 - 66.2 0.1% Min: Chalcopyrite>>									
		<<Min: 66.2 - 70.8 0.1% Min: Sphalerite>> In bands									
		<<Min: 66.2 - 70.8 1% Min: Pyrite>>									
		<<Min: 66.2 - 70.8 0.1% Min: Galena>>									
		<<Min: 70 - 71.45 0.1% Min: Galena>>									
		<<Min: 70.8 - 71.45 0.5% Min: Sphalerite>> in bands as above									
		<<Min: 70.8 - 73.77 3% Min: Pyrite>>									
		<<Alt: 64.73 - 72 Weak Calcite>> and as diss. Often in bands with qtz-chlorite and sulfides									
		<<Vein: 67.65 - 67.85 80% Quartz-Chlorite-Sulphide>> irregular qtz 'vein' or qtz flooding, chlorite on margins, sulfide clasts									
		<<Vein: 69.8 - 70.3 5% Quartz-Carbonate>> margins of PEL unit									
		<<Struc: 71.6 - 71.8 Moderate dominant foliation>>									
72.00	**76.37**	**RHYva** **Coarse grained to ash tuff**	72.00	73.50	1.50	D00004391	0.035	2.2	0.02	0.05	0.14
		72 - 76.37: mixed package of RHYva - PEL with gradational contacts. Ash (light grey sections) mod-strong muscovite altered. Minor calcite-qtz-chlorite+/- biotite blebs and bands in PEL sections. Alteration increases markedly in last 0.5m.									
		<<Min: 73.77 - 75.84 0.1% Min: Sphalerite>>	73.50	75.00	1.50	D00004392	0.009	0.7	-0.01	0.02	0.05
		<<Min: 73.77 - 75.84 1% Min: Pyrite>>	75.00	75.83	0.83	D00004393	-0.005	-0.3	-0.01	-0.01	0.01
		<<Min: 75.84 - 76.37 1% Min: Sphalerite>>	75.83	76.34	0.51	D00004394	0.067	6.5	0.08	0.41	1.33
		<<Min: 75.84 - 76.37 1% Min: Pyrite>>	76.34	77.10	0.76	D00004395	0.203	21.7	0.12	1.03	3.21
		<<Min: 75.84 - 76.37 5% Min: Pyrrhotite>>									
		<<Min: 75.84 - 76.37 0.1% Min: Galena>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 75.84 - 76.37 0.5% Min: Chalcopyrite>>											
<<Alt: 72 - 73.77 Weak Calcite>> PEL bands are calcareous											
<<Alt: 73.77 - 76.14 Moderate Calcite>> PEL bands are calcareous											
<<Alt: 76.14 - 78.25 Trace Calcite>>											
<<Alt: 76.34 - 77.1 Weak Garnet>>											
<<Struc: 73.77 - 75 Moderate dominant foliation>> calcite veins and bleached banding											
76.37	**77.10**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **MCG**									
76.37 - 77.1: Banded and blebs of qtz-chl-biotite-cordierite-sulfides.											
<<Min: 76.37 - 77.1 3% Min: Sphalerite>>											
<<Min: 76.37 - 77.1 1% Min: Pyrite>>											
<<Min: 76.37 - 77.1 5% Min: Pyrrhotite>>											
<<Min: 76.37 - 77.1 0.5% Min: Galena>>											
<<Min: 76.37 - 77.1 1% Min: Chalcopyrite>>											
<<Struc: 76.55 - 76.9 Moderate-Strong dominant foliation>>											
<<Struc: 77.05 - 77.15 Moderate-Strong Contact>>											
77.10	**77.83**	**OF** **Pyrrhotite rich sulphides** **MCG**	77.10	77.83	0.73	D00004396	10.58	161	0.33	5.01	8.42
77.1 - 77.83: Massive to interstitial PO with abundant CI and possibly leucite (Jerome P - Steve Piercy comm.). 10cm qtz at lower contact.											
<<Min: 77.1 - 77.83 3% Min: Sphalerite>>											
<<Min: 77.1 - 77.83 5% Min: Pyrite>>											
<<Min: 77.1 - 77.83 30% Min: Pyrrhotite>>											
<<Min: 77.1 - 77.83 3% Min: Galena>>											
<<Min: 77.1 - 77.83 3% Min: Chalcopyrite>>											
<<Struc: 77.15 - 77.3 Weak-Moderate Foliation>> crude sulfid banding											
77.83	**80.12**	**OL** **semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix** **MCG**	77.83	79.00	1.17	D00004397	2.37	231	0.26	8.22	13.3
77.83 - 80.12: SP-PO matrix with diss buckshot pyrite. Minor cordierite and possibly some large 1-2cm leucite crystals. Lower contact marked by 5cm of qtz and leucite(?) crystals, minor chlorite.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 77.83 - 80.12 20% Min: Sphalerite>> semi mass in places	79.00	80.12	1.12	D00004398	2.42	194	0.16	6.76	11.6
		<<Min: 77.83 - 80.12 20% Min: Pyrite>> buckshot									
		<<Min: 77.83 - 80.12 15% Min: Pyrrhotite>> semi mass in places									
		<<Min: 77.83 - 80.12 10% Min: Galena>>									
		<<Alt: 78.25 - 78.95 Weak Calcite>>									
		<<Alt: 78.95 - 80.16 Moderate-Strong Calcite>> diss in matrix									
		<<Struc: 80.1 - 80.12 Moderate-Strong Contact>>									
80.12	**81.85**	**RHYvx** **Quartz and/or feldspar crystal tuff**	80.12	81.00	0.88	D00004399	0.036	3.6	0.01	0.15	0.22
		80.12 - 81.85: Upper contact to 81.85m is mixed RHYvx (qtz eye) and PEL with Bipppo and qtz - clacite - chlorite blebs and bands.									
		<<Min: 80.12 - 81.85 1% Min: Pyrite>>	81.00	81.85	0.85	D00004401	0.038	173	-0.01	0.03	0.07
		<<Min: 80.12 - 81.85 0.1% Min: Pyrrhotite>>									
		<<Alt: 80.12 - 80.9 Weak-Moderate Chlorite>>									
		<<Alt: 80.12 - 81.85 Weak-Moderate Biotite>>									
		<<Struc: 80.32 - 81 Moderate dominant foliation>>									
81.85	**86.61**	**RHYvx** **Quartz and/or feldspar crystal tuff**	81.85	83.00	1.15	D00004402	0.017	7.5	0.02	0.11	0.22
		81.85 - 86.61: PEL bands and wisps (brown biotite)									
		<<Min: 81.85 - 86.61 0.5% Min: Sphalerite>>	83.00	84.50	1.50	D00004403	-0.005	3.7	0.01	0.19	0.61
		<<Min: 81.85 - 86.61 3% Min: Pyrite>> diss and in sulfid bands	84.50	86.00	1.50	D00004404	0.015	2.4	0.01	0.28	0.47
		<<Min: 81.85 - 86.61 1% Min: Pyrrhotite>> in sulfide bands									
		<<Min: 81.85 - 86.61 0.1% Min: Galena>>									
		<<Alt: 81.85 - 82.61 Weak Muscovite>> fine white muscovite									
		<<Alt: 82.16 - 82.25 Moderate Calcite>>									
		<<Alt: 82.25 - 86.61 Trace Calcite>>									
		<<Struc: 82.6 - 82.85 Weak-Moderate dominant foliation>>									
		<<Struc: 82.79 - 82.8 Moderate-Strong Foliation>> sulfide band									
		<<Struc: 85 - 85.5 Moderate dominant foliation>>									
86.61	**89.11**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		86.61 - 89.11: minor bands of ash - bleaching									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 86.61 - 89.11 0.5% Min: Pyrite>>											
<<Min: 86.61 - 89.11 1% Min: Pyrrhotite>>											
<<Alt: 86.61 - 87.65 Moderate-Strong Calcite>>											
<<Alt: 87.65 - 88.9 Weak Calcite>> diss patches											
<<Alt: 87.65 - 93.6 Weak Muscovite>>											
<<Alt: 88.9 - 89.1 Moderate-Strong Calcite>>											
<<Alt: 89.1 - 96.3 Trace Calcite>>											
<<Struc: 87.7 - 88.3 Moderate dominant foliation>>											
89.11	**101.02**	**RHYvx Quartz and/or feldspar crystal tuff**	94.00	94.43	0.43	D00004405	0.006	13.9	0.01	0.57	0.4
89.11 - 101.02: very similar to marker unit except for presence of 5% decrepitated feldspar phenocrysts (avg 0.5-1.0cm).											
<<Min: 89.11 - 90.2 0.5% Min: Galena>> in sulfide bands											
<<Min: 89.11 - 90.2 3% Min: Pyrrhotite>>											
<<Min: 89.11 - 90.2 1% Min: Pyrite>>											
<<Min: 89.11 - 90.2 0.5% Min: Sphalerite>> in sulfide bands											
<<Min: 89.11 - 90.2 0.1% Min: Chalcopyrite>>											
<<Min: 90.2 - 93 0.1% Min: Galena>>											
<<Min: 90.2 - 93 1% Min: Pyrite>>											
<<Min: 90.2 - 93 0.1% Min: Sphalerite>>											
<<Min: 90.2 - 93.55 1% Min: Pyrrhotite>>											
<<Min: 93 - 93.55 3% Min: Pyrite>> in fractures- sparse bands (<0.5cm avg)											
<<Min: 93 - 93.55 1% Min: Sphalerite>> in fractures- sparse bands (<0.5cm avg)											
<<Min: 93 - 93.55 0.5% Min: Galena>> in fractures- sparse bands (<0.5cm avg)											
<<Min: 94 - 94.43 1% Min: Galena>>											
<<Min: 94 - 94.43 1% Min: Pyrrhotite>>											
<<Min: 94 - 94.43 3% Min: Pyrite>>											
<<Min: 94 - 94.43 1% Min: Sphalerite>>											
<<Min: 94.43 - 100.5 1% Min: Pyrrhotite>> diss in bands											
<<Min: 94.43 - 113.75 1% Min: Pyrite>>											
<<Min: 94.43 - 118.78 0.1% Min: Sphalerite>> in fractures- sparse bands (<0.5cm avg)											
<<Min: 94.43 - 118.78 0.1% Min: Galena>> in fractures - bands											
<<Alt: 90 - 113.75 Trace Chlorite>> patchey and in thin qtz-cal veinlets											
<<Alt: 96.3 - 108 Weak Calcite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 99.5 - 101.9 Weak Muscovite>>

<<Vein: 93.55 - 94.41 95% Quartz-Sulphide>> qtz vein with 5% clasts of biotite alt rhyolite, 94.00-94.42: 3% sp-gl-py, rare cpy and chlorite filling fractures.

<<Struc: 93 - 93.5 Weak Fault>> broken core

<<Struc: 94.4 - 94.45 Strong Vein>>

<<Struc: 98.9 - 99.1 Moderate dominant foliation>>

<<Struc: 99.5 - 100.45 Weak-Moderate Fault>> broken core, minor crushed core

<<Struc: 100.6 - 105.1 Moderate Fault>> zones broken and crushed core, minor gouge, sericite-clay on fractures.

101.02 113.75 RHYcf Feldspar & feldspar quartz porphyry

101.02 - 113.75: massive light grey unit, very little foliaform biotite unlike adjacent RHYvx, 5-10% feldspar phenocrysts, sparse blue qtz eyes (unlike abunadant QE in adjacent RHYvx). Uniform except for rare wispy biotite bands).

<<Alt: 101.9 - 105.2 Weak-Moderate Muscovite>> sericite on fractures

<<Alt: 105.2 - 120.18 Weak Muscovite>>

<<Alt: 108 - 120.18 Weak-Moderate Calcite>>

<<Struc: 107.42 - 108.1 Moderate Fault>> broken, core rubble

<<Struc: 109 - 113.75 Weak Fault>> fractured with clay-sericite

113.75 117.00 RHYvx Quartz and/or feldspar crystal tuff

113.75 - 117: as RNYvx QE above. Feldspar phenocrysts increase increase over last 0.75m.

<<Min: 113.75 - 117 3% Min: Pyrite>>

<<Min: 113.9 - 116.1 1% Min: Pyrrhotite>>

<<Alt: 113.75 - 117 Weak-Moderate Chlorite>>

<<Struc: 113.75 - 114 Moderate dominant foliation>>

117.00 120.18 RHYcf Feldspar & feldspar quartz porphyry

117 - 120.18: similar to RHYcf above but more feldspar phenocrysts.

<<Min: 117 - 139.15 1% Min: Pyrite>>

<<Alt: 119.7 - 125.9 Weak-Moderate Biotite>> PATCHY

<<Struc: 117 - 119 Weak-Moderate Fault>> broken, fractured with clay-sericite

120.18 122.20 RHY undifferentiated rhyolite

120.18 - 122.2: altered, strong sericite zone, some missing core.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 120.18 - 122.2 Moderate Muscovite>> sericite in healed shear zone

<<Alt: 120.18 - 124 Moderate-Strong Calcite>>

<<Struc: 120.25 - 122 Weak-Moderate Fault>> broken, fractured with clay-sericite, missing core

122.20 122.70 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

122.2 - 122.7: med grained qtz-biot-feldspar (dyke?), finer grained on margins.

<<Alt: 122.2 - 129.48 Weak Muscovite>>

122.70 125.96 RHYva Coarse grained to ash tuff

122.7 - 125.96: Messy unit, RHYva-PEL, rare blue qtz eyes in RHYva sections. Unit is approximately where lower lens was expected.

<<Min: 123.4 - 125.4 0.5% Min: Sphalerite>> mm veinlets

<<Min: 123.4 - 125.4 0.5% Min: Galena>>

<<Alt: 124 - 127 Weak Calcite>>

<<Alt: 124.6 - 127.5 Weak-Moderate Chlorite>> PATCHY

<<Vein: 125.6 - 125.75 50% Quartz>> qtz flooding

<<Struc: 122.75 - 124.1 Moderate-Strong Fault>> broken and crushed core, minor gouge, sericite-clay on fractures.

125.96 127.00 RHY undifferentiated rhyolite

125.96 - 127: possibly a partly silicified RHYva.

<<Struc: 126.15 - 126.25 Weak dominant foliation>>

<<Struc: 126.9 - 127 Weak Fault>> broken, fractured with clay-sericite

127.00 132.07 PEL Equigranular biotite + calcite +/- quartz rock

127 - 132.07: Bi-r PEL at margins and bleached PEL in center (128,70-130.06m). Minor qtz-cal-chl bands with trace diss sulphides below 130.06m.

<<Alt: 127 - 132.1 Trace Calcite>>

<<Alt: 128.38 - 128.58 Weak Garnet>>

<<Vein: 127 - 127.3 50% Calcite>> calcite vein breccia, margin of PEL unit

<<Vein: 128.5 - 132.2 5% Calcite>> calcite bands

<<Struc: 128.8 - 129.5 Weak Fault>> broken, fractured with clay-sericite

<<Struc: 129.6 - 129.9 Moderate dominant foliation>> Calcite bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

132.07 136.66 RHYvx Quartz and/or feldspar crystal tuff

132.07 - 136.66: 133.42m; 15cm PEL unit. 133.57-136.34m; fault zone in RHYvx - QE

<<Alt: 132.07 - 139.15 Weak-Moderate Muscovite>> in breccciated fault zone

<<Alt: 132.1 - 133.4 Weak Calcite>>

<<Alt: 133.4 - 138 Moderate Calcite>>

<<Struc: 133.11 - 136 Strong Fault>> missing core, broken and crushed core, minor gouge, sericite-clay on fractures.

136.66 137.50 PEL Equigranular biotite + calcite +/- quartz rock

137.50 139.10 RHYvx Quartz and/or feldspar crystal tuff

137.5 - 139.1: broken, crushed RHYvx - in fault zone, missing core

<<Alt: 138 - 139.15 Weak Calcite>> patchy

<<Struc: 137.5 - 139.15 Strong Fault>> broken and crushed core, minor gouge, sericite-clay on fractures.

139.10 147.00 PEL Equigranular biotite + calcite +/- quartz rock

139.1 - 147: broken, crushed PEL - in fault zone, missing core. Minor RHYvx-QE with abundant biotite at approx.139.7-140.80m.

<<Min: 139.15 - 143.6 0.5% Min: Pyrite>>

<<Min: 143.6 - 147 3% Min: Pyrite>>

<<Alt: 139.14 - 143.4 Weak-Moderate Chlorite>>

<<Alt: 139.15 - 153 Moderate-Strong Calcite>> patchy, minor non calc or wekly calcareous sections. Blebs, veins, diss cc.

<<Alt: 143.4 - 147.3 Moderate Chlorite>> and as diss and blebs. In sheared PEL unit

<<Alt: 143.4 - 147.3 Weak-Moderate Biotite>> with chlorite

<<Vein: 139.15 - 147 10% Calcite>> calcite bands, veins and vein clasts, both foliaform and cross cutting

147.00 156.00 FLZ Fault Zone

147 - 156: Gouge and crushed - broken core, missing core. Pieces of PEL, RHY and possibly weakly mineralized OJ at 154.50-154.80m (Chlorite with minor diss SP and PY). 154.5-156.0m :wash and cave.

<<Min: 154.5 - 154.8 0.5% Min: Sphalerite>>

<<Min: 154.5 - 154.8 10% Min: Pyrite>>

<<Min: 154.5 - 154.8 0.5% Min: Galena>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 153 - 154.2 Trace Calcite>> fault gouge											
<<Alt: 154.5 - 154.8 Strong Chlorite>> could be cave material											
<<Vein: 147.1 - 149.9 20% Quartz-Carbonate>> fault breccia, qtz clasts cemented by calcite											
End of Hole @ 156											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-394

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/15/2016
UTM Easting	415660.026	Core Size:	HQ3	Azimuth:	233	Date Logging Complete:	8/8/2016
UTM Northing:	6815387.316	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	New Age
UTM Elev. (m):	1562.573	Casing Depth (m):	6	Length (m):	953.31	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/13/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/8/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
						Parent Hole:	

Comments:

Northeastern-most of three Sebesi exploration holes designed to test for offset Krakatoa Zone mineralization in between the Sunda and Fault Creek Faults.
The top of the hole consists of calcareous and siliceous mudstone interbedded with mafic tuff units belonging to the Wind Lake Formation. The KZK Formation was intercepted at 293.06 m. A conformal interfingered contact is observed, followed by reworked material -detrital/volcaniclastic-mixed with pelite and muddy ash.
Lapilli and crystal fragments within a fine matrix are observed from 495.05m to 517.50 m, followed by a fault zone from 517.50 m to 562.06 m. Siliceous units are encountered from 615.20 m to 639.70 m, consisting in feldspar porphyry and quartz eyes in aphanitic groundmass.
A second major fault zone occurs from 684.18 m to 746.79 m.
At 769.15 m, interbedded mudstone and mafic tuff occurs, similar to the Wind Lake Formation. A 0.50 m interval of OF type massive sulfide (PO/SP/PY/CP/GL) occurs from 797.38 - 797.88 m and underlies a rhyolite flow. Sedimentary sequences alternating with felsic volcanics occur from 834.30 - 953.31 m.
Weak to moderate muscovite alteration (other than related to faulting) is noticed from 652.37m to 724.80 m, with a maximum intensity between 684.19 m to 703.15 m. This interval is also marked by increasing amount of disseminated PY.
Hole K16-394 ends at 953.31 m in volcaniclastic rhyolite that displays weak to moderate muscovite alteration. The hole was stopped at 953.31 m when the drill string became stuck. Four cuts were completed in order to retrieve the HQ drill string and complete a DHEM survey from ~860 m that includes the massive sulfide mineralization at 797.38m as well as the main muscovite alteration zone.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	231.6	1.4	233	TN14	Oscar Nielsen	7/13/2016		☑	
13	-65.4	207.8	22.1	229.9	ReflexEZS	New Age	7/13/2016	5843	☑	
27	-65.8	208.3	22.1	230.4	ReflexEZS	New Age	7/13/2016	5791	☑	
52	-66.1	209.6	22.1	231.7	ReflexEZS	New Age	7/14/2016	5789	☑	
76	-66.2	206.4	22.1	228.5	ReflexEZS	New Age	7/14/2016	5763	☑	
103	-66	209.8	22.1	231.9	ReflexEZS	New Age	7/14/2016	5792	☑	
128	-65.9	211.5	22.1	233.6	ReflexEZS	New Age	7/15/2016	5805	☑	
158	-66.1	209.5	22.1	231.6	ReflexEZS	New Age	7/15/2016	5761	☑	
183	-66.4	212.4	22.1	234.5	ReflexEZS	New Age	7/16/2016	5878	☑	
208	-66.7	211	22.1	233.1	ReflexEZS	New Age	7/16/2016	5672	☑	
233	-66.9	209.7	22.1	231.8	ReflexEZS	New Age	7/16/2016	5782	☑	
258	-67	209.6	22.1	231.7	ReflexEZS	New Age	7/17/2016	5797	☑	
283	-67.2	210.4	22.1	232.5	ReflexEZS	New Age	7/17/2016	5779	☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-394

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
308	-66.3	211.1	22.1	233.2	ReflexEZS	New Age	7/17/2016	5796	☑	
333	-66.2	210.4	22.1	232.5	ReflexEZS	New Age	7/18/2016	5790	☑	
358	-65.7	184.5	22.1	206.6	ReflexEZS	New Age	7/18/2016	3532	☐	Low magnetic field.
383	-65.1	210.7	22.1	232.8	ReflexEZS	New Age	7/19/2016	5779	☑	
408	-65.3	211.1	22.1	233.2	ReflexEZS	New Age	7/19/2016	5785	☑	
433	-64.9	212	22.1	234.1	ReflexEZS	New Age	7/19/2016	5763	☑	
458	-64.2	210.5	22.1	232.6	ReflexEZS	New Age	7/20/2016	5785	☑	
483	-64.4	210.7	22.1	232.8	ReflexEZS	New Age	7/20/2016	5782	☑	
508	-64.1	210	22.1	232.1	ReflexEZS	New Age	7/20/2016	5775	☑	
533	-64.3	209.8	22.1	231.9	ReflexEZS	New Age	7/21/2016	5791	☑	
560	-63.4	209.8	22.1	231.9	ReflexEZS	New Age	7/21/2016	5730	☑	
585	-63.2	209.6	22.1	231.7	ReflexEZS	New Age	7/22/2016	5761	☑	
610	-62.3	211	22.1	233.1	ReflexEZS	New Age	7/22/2016	5781	☑	
635	-62.2	210.9	22.1	233	ReflexEZS	New Age	7/22/2016	5787	☑	
660	-60.7	211.2	22.1	233.3	ReflexEZS	New Age	7/23/2016	5774	☑	
685	-60.2	211.2	22.1	233.3	ReflexEZS	New Age	7/23/2016	5756	☑	
710	-60.1	211.3	22.1	233.4	ReflexEZS	New Age	7/24/2016	5784	☑	
735	-58.4	211	22.1	233.1	ReflexEZS	New Age	7/24/2016	5771	☑	
760	-58.2	210.9	22.1	233	ReflexEZS	New Age	7/26/2016	5751	☑	
785	-57.6	206.5	22.1	228.6	ReflexEZS	New Age	7/27/2016	5757	☑	
810	-52.4	206	22.1	228.1	ReflexEZS	New Age	7/28/2016	5755	☑	
835	-56.9	203.2	22.1	225.3	ReflexEZS	New Age	7/29/2016	5766	☑	
860	-56.3	187.5	22.1	209.6	ReflexEZS	New Age	7/30/2016	5781	☐	Magnetic field corrected on paper-Not accepted
885	-61	336.7	22.1	358.8	ReflexEZS	New Age	7/30/2016	1381	☐	Low magnetic field.
910	-56.1	198.2	22.1	220.3	ReflexEZS	New Age	7/31/2016	5761	☑	
935	-55.7	192.4	22.1	214.5	ReflexEZS	New Age	8/2/2016	5710	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.00**	**OVBN** **Overburden**									
4.00	**8.02**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
4 - 8.02: Fine grain, CA veinlets, irregular foliation, weakly carbonaceous.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 4 - 41 0.5% Min: Pyrite>>

<<Min: 4 - 41 1% Min: Pyrrhotite>>

<<Alt: 4 - 19.07 Weak-Moderate Calcite>>

8.02 12.34 MAFt Mafic Volcaniclastics

8.02 - 12.34: Light grey/green, containing wavy CA crenulated veinlets (clots/pseudo fragmental texture). Intermediate composition. PO/PY disseminated.

12.34 14.67 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

12.34 - 14.67: CA veined mudstone, weakly graphitic, thinly foliated.

14.67 16.10 RHY undifferentiated rhyolite

14.67 - 16.1: Episclastic intermediate, Silicic bands at contacts, clasts.

16.10 19.07 MAFt Mafic Volcaniclastics

16.1 - 19.07: Oxidized mafic tuff. Locally rounded clasts, possibly reworked sediments.

<<Struc: 16.3 - 16.7 Weak-Moderate Fault>>

<<Struc: 18.4 - 19 Weak Fault>>

19.07 24.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

19.07 - 24.7: "Cherty" mudstone. Crenulated, irregular SI bands.

<<Alt: 19.07 - 24.7 Trace Calcite>>

24.70 48.83 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

24.7 - 48.83: Interbedded with mafic tuff. Calcite veining. Locally silica bands. From 41.00m to 43.00m, few mineralization (CP/SP/PY/PO). Bulk QZ veins and CA veins up to 15cm wide.

<<Min: 41 - 43 0.5% Min: Sphalerite>>

<<Min: 41 - 43 0.5% Min: Pyrite>>

<<Min: 41 - 43 2% Min: Pyrrhotite>>

<<Min: 41 - 43 0.5% Min: Chalcopyrite>>

<<Min: 43 - 120.6 0.5% Min: Pyrite>> and wispy fine grain PY.

<<Min: 43 - 120.6 2% Min: Pyrrhotite>> Mostly in mafic tuff unit.

<<Alt: 24.7 - 48.3 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 48.3 - 85.28 Moderate Calcite>>

<<Vein: 38.8 - 38.9 Calcite>> CA, minor QZ.

<<Vein: 46.1 - 48.37 Quartz-Carbonate>> Massive QZ veins containing fragment of schist and semi massive QZ/CA vein.

<<Struc: 37 - 38 Weak-Moderate Fault>> Fault gouge, folded mudstone.

48.83 50.64 MAFt Mafic Volcaniclastics

48.83 - 50.64: CA veining. Aggregated ferro-carbonate ("pseudo-leucoxene"), PY in fracture.

50.64 73.33 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

50.64 - 73.33: Fractured, locally faulted weakly graphitic mudstone and mafic tuff interbedded containing brown mica in foliation and elongated PO and clots/fine grain PY veinlets. CA veining. Bulk CA/glassy QZ veins up to 60cn wide. Foliation crenulated, Si veining and patch.

<<Vein: 58.92 - 61.15 Quartz-Carbonate>> CA/QZ veins representing 40% of the interval.

<<Vein: 69.49 - 70.14 Quartz-Carbonate>> CA/QZ massive vein containing fragments of mafic tuff.

73.33 85.28 MAFta Coarse grained to ash tuff

73.33 - 85.28: Interbedded with CA veined mudstone. Locally faulted. Patch of brown mica in foliation. Speck of elongated PO. Massive QZ/CA/TML vein.

<<Vein: 82.96 - 84.25 Quartz-Tourmaline>> QZ/TML veins containing fragments of schist.

<<Struc: 79.12 - 80.2 Weak Fault>> Highly fractured.

85.28 91.35 MAFt Mafic Volcaniclastics

85.28 - 91.35: Interbedded with mudstone. Faulted/sheared, locally oxidized. Sharp upper contact.

<<Alt: 85.28 - 120.6 Weak Calcite>>

<<Struc: 85.28 - 88 Moderate Fault>> Core washed. Gouge.

<<Struc: 89 - 100 Moderate-Strong Fault>> Fault gouge, weak shearing.

91.35 97.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

91.35 - 97: Graphitic mudstone disaggregated, gougy. Core washed over 2 m.

97.00 106.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

97 - 106.5: Highly fractured graphitic mudstone, siliceous.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

106.50 109.00 MAFt Mafic Volcaniclastics

106.5 - 109: Fractured/gougy mafic tuff, CA veining.

<<Struc: 107 - 111 Moderate Fault>> Fault gouge, weak shearing.

109.00 116.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

109 - 116: Graphitic gougy/disaggregated mudstone. Locally oxidized (probably mafic tuff interbedded). Siliceous.

<<Alt: 113 - 120.6 Moderate-Strong Silicification>> Silicified mudstone.

<<Struc: 111 - 120.6 Weak-Moderate Fault>> Fault gouge, moderate shearing.

116.00 117.50 MAFta Coarse grained to ash tuff

116 - 117.5: Sheared at lower contact.

117.50 120.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

117.5 - 120.6: Weakly sheared mudstone, lack of CA veining. Sharp upper and lower contacts.

120.60 145.71 MAFt Mafic Volcaniclastics

120.6 - 145.71: CL/CA/BI schist. Strongly CA veined mafic tuff, folded at upper contact. Locally granular texture and possible clasts up to 0.5cm. Partially oxidized from 128.00m to 130.75m. CA alteration obscuring the texture from 140.75m to 143.30m, CA veins and possibly clasts at 142.50m of ablitized mafic tuff or felsic dike fragment.

<<Min: 120.6 - 145 0.1% Min: Pyrite>>

<<Min: 120.6 - 145 0.5% Min: Pyrrhotite>>

<<Min: 145 - 154.75 2% Min: Pyrite>>

<<Min: 145 - 154.75 3% Min: Pyrrhotite>>

<<Alt: 120.6 - 145 Strong Calcite>> Locally intense.

<<Alt: 130.75 - 184.22 Moderate Biotite>>

<<Alt: 145 - 154.75 Weak Chlorite>> Could be original.

<<Alt: 145 - 284.89 Moderate-Strong Calcite>>

<<Vein: 140.65 - 143.3 Calcite>> Intense CA alteration marked by CA veins.

<<Struc: 127.9 - 129.9 Weak-Moderate Shear>> Folded and oxidized sandy gouge.

145.71 154.75 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

145.71 - 154.75: Patchy CL altered , CA veined poorly graphitic mudstone. PO clots and fine grain PY. Fine grain BI bands.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

154.75 169.60 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

154.75 - 169.6: Banded and disseminated BI porphyroblasts. CA veining. Mudstone interbedded.

<<Min: 154.75 - 188.03 1% Min: Pyrite>>

<<Min: 154.75 - 188.03 1% Min: Pyrrhotite>>

169.60 170.35 MAFt Mafic Volcaniclastics

169.6 - 170.35: BI porphyroblasts overprinted. Narrow interval showing silicification or albitization. Sharp upper contact, folding at lower contact. This unit could be interpreted as a felsic intrusion (dike) suggesting proximity of pluton.

<<Alt: 169.6 - 170.35 Strong Albite>>

170.35 184.22 MAFt Mafic Volcaniclastics

170.35 - 184.22: Vein interval from 176.72m to 178.65m (QZ/TML/brown BI and mafic tuff fragments, brecciated at lower contact. Possibly albite altered fragment, similar texture than encountered from 169.90m to 170.35m.

<<Vein: 176.72 - 178.65 Quartz-Tourmaline>> QZ/CA/brown biotite/TML/mafic tuff fragments.

<<Vein: 181.98 - 182.25 Quartz-Chlorite>> QZ/CA/CL/brown biotite vein.

<<Struc: 181.7 - 182 Weak-Moderate Shear>> Folded.193.80

184.22 188.03 MAFta Coarse grained to ash tuff

184.22 - 188.03: Unfoliated, fine grain, rare wavy CA veining, strong CA in matrix.

188.03 190.70 MAFt Mafic Volcaniclastics

188.03	189.00	0.97	D00005601	-0.005	1.3	0.03	0.01	0.1

188.03 - 190.7: BI banded. Possibly clasts up to 5cm wide showing primary wavy lamination "pillow style". Weak CL alteration (original?). PY/PO/CP associated in disseminated patch.

<<Min: 188.03 - 190.7 5% Min: Pyrite>>

189.00	190.00	1.00	D00005602	-0.005	2.3	0.05	0.02	0.22

<<Min: 188.03 - 190.7 3% Min: Pyrrhotite>>

190.00	190.70	0.70	D00005603	-0.005	1.5	0.03	-0.01	0.07

<<Min: 188.03 - 190.7 1% Min: Chalcopyrite>>

<<Alt: 188.03 - 190.7 Moderate Chlorite>> Could be original.

190.70 199.04 MAFta Coarse grained to ash tuff

190.7 - 199.04: Low CA content upper part. Heterogeneous texture and faulted (marked by 5cm QZ vein) at lower contact. Locally folded, QZ pods. Large QZ/CA irregular vein from 192.32m to 193.00m.

<<Min: 190.7 - 199.66 2% Min: Pyrite>> and locally wispy.

<<Min: 190.7 - 199.66 0.5% Min: Pyrrhotite>>

<<Struc: 193.8 - 194.55 Moderate Fault>> Multiple fold noses-shearing?

<<Struc: 197 - 199.04 Weak Fault>> 3 narrow fault gouge zones (10 to 20 cm wide within the interval and folding.

From (m)	To (m)		Rocktype & Description
199.04	**202.50**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**

199.04 - 202.5: Chaotic/crenulated CA veining at upper part. Consistent foliation at lower part, CA veining. 12 cm wide semi massive PY/PO/CP mineralization vein and fine grain PY stringers, possibly CL alteration associated.

<<Min: 199.66 - 201.34 5% Min: Pyrite>> 12 cm of semi-massive sulfide and stringers within the interval.

<<Min: 199.66 - 201.34 5% Min: Pyrrhotite>> 12 cm of semi-massive sulfide and stringers within the interval.

<<Min: 199.66 - 201.34 1% Min: Chalcopyrite>> 12 cm of semi-massive sulfide and stringers within the interval.

<<Min: 201.34 - 293.26 0.5% Min: Pyrite>>

<<Min: 201.34 - 297.7 2% Min: Pyrrhotite>>

From (m)	To (m)		Rocktype & Description
202.50	**205.23**	**MAFt**	**Mafic Volcaniclastics**

202.5 - 205.23: Strong CA veining, regular foliation.

From (m)	To (m)		Rocktype & Description
205.23	**209.07**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**

205.23 - 209.07: Chaotic foliation/CA veining (crenulated). 30cm mafic tuff intercaled.

From (m)	To (m)		Rocktype & Description
209.07	**210.75**	**MAFt**	**Mafic Volcaniclastics**

209.07 - 210.75: Sharp transition between wavy CA veining and regular foliation within the interval. PO clots and rare PY in fracture.

From (m)	To (m)		Rocktype & Description
210.75	**250.12**	**MDS**	**Carbonaceous Mudstone & Tuffaceous Mudstone**

210.75 - 250.12: Chaotic CA veining, probably lithic fragments.

<<Struc: 228.7 - 230.65 Moderate Fault>> Fault gouge, folded at upper contact.

<<Struc: 244.8 - 245.6 Weak Fault>> Minor fault gouge.

From (m)	To (m)		Rocktype & Description
250.12	**259.00**	**MAFta**	**Coarse grained to ash tuff**

250.12 - 259: Light green, fine grain mafic tuff. Containing rare mudstone beds up to 5 cm wide. CA veining locally folded. Gradual contacts.

<<Vein: 254.07 - 254.47 Quartz>> Massive QZ vein.

<<Struc: 253.25 - 253.26 Vein>> Main CA vein set. In Wind Lake formation,

<<Struc: 256.7 - 259 Fault>> Minor fault gouge.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
199.66	200.44	0.78	D00005604	-0.005	3.3	0.06	0.06	0.39
200.44	201.34	0.90	D00005605	0.015	2.7	0.08	0.02	0.42

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

259.00 267.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

259 - 267.65: Blue/grey, fine grain, containing rare mafic tuff beds and PO clots.

<<Vein: 260.32 - 260.74 Quartz-Carbonate>> QZ/CA massive vein.

<<Vein: 266 - 266.34 Quartz-Carbonate>> QZ/CA massive vein.

<<Struc: 262.86 - 262.87 dominant foliation>> CA veining, foliation. In Wind Lake formation,

267.65 271.00 MAFta Coarse grained to ash tuff

267.65 - 271: Light green, fine grain, weakly foliated. CA veining/xtl. Sharp upper contact. Massive QZ/CA vein containing mudstone fragment at lower contact.

<<Struc: 270.45 - 270.46 dominant foliation>> CA veining, foliation. In Wind Lake formation,

271.00 277.82 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

271 - 277.82: Blue/grey, fine grain, CA veining crenulated/folded. Rare mafic tuff narrow beds.

277.82 279.88 MAFt Mafic Volcaniclastics

277.82 - 279.88: Light green, CA veining.

279.88 281.08 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

279.88 - 281.08: Blue/grey, fine grain, CA veining.

281.08 283.27 MAFt Mafic Volcaniclastics

281.08 - 283.27: Light green, CA veining.

283.27 291.93 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

283.27 - 291.93: Blue/grey, siliceous mudstone, containing rare mafic tuff beds.

<<Alt: 284.89 - 291.93 Moderate-Strong Silicification>>

<<Alt: 284.89 - 291.93 Weak Calcite>>

<<Vein: 290.06 - 290.91 Quartz>> Massive QZ vein. Containing trace PO/PY/CP in fracture

291.93 293.06 MAFt Mafic Volcaniclastics

291.93 - 293.06: Light green, CA veining. Sharp upper contact, gradual conformable lower contact with KZK formation.

<<Alt: 291.93 - 293.06 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

293.06 296.26 RHYvx Quartz and/or feldspar crystal tuff

293.06 - 296.26: Gradual upper contact. Some mafic interval interbedded. From 295.22 m to 295.83 m, mafic tuff containing 10 cm interval of cherty mudstone-Wind Lake.

<<Min: 293.26 - 363.24 0.1% Min: Pyrite>> and rare fractures.

<<Alt: 293.06 - 302.2 Weak Calcite>>

296.26 297.77 MAFt Mafic Volcaniclastics

296.26 - 297.77: Light green, containing possibly AK crystal. Sharp contacts. Interpreted as Wind Lake unit interfingered.

<<Min: 297.7 - 299.4 5% Min: Pyrrhotite>>

297.77 300.90 RHYvx Quartz and/or feldspar crystal tuff

297.77 - 300.9: Some 3 to 10 cm wide light grey/fine grain (ash).

<<Min: 299.4 - 363.24 1% Min: Pyrrhotite>>

<<Struc: 300.05 - 300.06 dominant foliation>> In KZK formation.

<<Struc: 300.55 - 300.56 dominant foliation>> In KZK formation.

300.90 302.20 MDSc Carbonaceous dominant mudstone

300.9 - 302.2: Strongly graphitic mudstone, could be associated with Wind Lake Formation. Disaggregated/faulted/gougy.

<<Struc: 301.15 - 302.2 Weak-Moderate Fault>> Gougy and highly fractured graphitic mudstone.

302.20 305.30 MDSt Rhyolite tuff dominant mudstone

302.2 - 305.3: Possibly carbonaceous content or BI giving dark blue color. Gradual lower contact, coarser grain at upper contact, possibly lithic fragments. Foliated. Rare QE at upper contact.

<<Alt: 302.2 - 313.54 Moderate Calcite>>

305.30 312.57 SED undifferentiated Sediment

305.3 - 312.57: "Dirty rhyolite" (?) containing calcareous pelitic interval from 306.36 m to 306.64 m as well as thin brownish beds. Elongated clasts possibly lapilli. Granular/gritty texture suggesting meta sandstone. Banded chlorite or green sericite locally, discordant QZ/TML veins.

<<Alt: 308.66 - 309.5 Moderate Chlorite>> Or green sericite-Halo associated with QZ/TML veins.

<<Vein: 306.64 - 310 Quartz-Tourmaline 20 deg. >> 3 large QZ/TML or TML deformed veins, shallow angle, alteration halo penetrating foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

312.57 318.96 RHYvl Lapilli tuff

312.57 - 318.96: Light grey, well sorted lapilli tuff. Few BI porphyroblasts.

<<Alt: 313.54 - 314.27 Strong Calcite>>

<<Alt: 314.27 - 318.96 Moderate Calcite>>

<<Struc: 315.9 - 315.91 dominant foliation>>

<<Struc: 318 - 318.94 Weak-Moderate Fault>> Fault gouge, washed during drilling. Possibly moderate intensity.

318.96 319.95 MAFt Mafic Volcaniclastics

318.96 - 319.95: Light green, fine grain, faulted at upper contact. Probably pelite input.

<<Alt: 318.96 - 319.95 Strong Calcite>>

319.95 322.30 RHYva Coarse grained to ash tuff

319.95 - 322.3: Fine grain, dark grey, containing BI porphyroblasts.

<<Alt: 319.95 - 323.58 Weak-Moderate Calcite>>

322.30 326.77 MAFt Mafic Volcaniclastics

322.3 - 326.77: Fine grain, light green, CL/CA banded and CA in matrix. Including two narrow RHYvl intervals, 10 cm wide, sharp contacts.

<<Alt: 323.58 - 326.77 Moderate-Strong Calcite>>

326.77 328.09 RHYvl Lapilli tuff

326.77 - 328.09: Light grey, well sorted. Including 10cm wide MAFt interval (light green).

<<Alt: 326.77 - 328.09 Weak-Moderate Calcite>>

<<Struc: 326.8 - 326.81 dominant foliation>>

328.09 329.80 MAFt Mafic Volcaniclastics

328.09 - 329.8: Fine grain, CA banded, CL in matrix, locally fine biotite bands. Diamond shape white porphyroblasts (ankerite?). Sharp contacts.

<<Alt: 328.09 - 329.8 Strong Calcite>>

329.80 337.18 RHYvl Lapilli tuff

329.8 - 337.18: Light grey, well sorted lapilli tuff.

<<Alt: 329.8 - 349.39 Moderate Calcite>>

<<Struc: 333.75 - 333.76 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

337.18 338.30 RHYva Coarse grained to ash tuff

337.18 - 338.3: Biotite porphyroblasts disseminated suggesting pelitic input. Fine grain, light grey. Lapilli content increases at lower contact. Rare white, mm size possibly crystals.

338.30 339.39 PEL Equigranular biotite + calcite +/- quartz rock

338.3 - 339.39: Light brown, banded (grading?). Sharp upper contact marked by 0.5 cm wide CL band. Gradual lower contact, biotite porphyroblasts in the unit bellow.

339.39 341.88 RHYvl Lapilli tuff

339.39 - 341.88: Blue-green, ash supported. Rare crystals. CL altered blebs interpreted as lapilli.

<<Alt: 339.39 - 341.88 Weak-Moderate Chlorite>> Altered lapilli.

341.88 351.07 RHYv Rhyolite volcaniclastic

341.88 - 351.07: Well sorted volcaniclastic ash/lapilli sequences. Few biotite patches. Possibly weak CL alteration (or biotite calcite quartz altered lapilli) from 349.39 m to 350.62 m.

<<Alt: 349.39 - 355.3 Weak-Moderate Chlorite>> Altered lapilli.

<<Alt: 349.39 - 358.02 Weak-Moderate Calcite>>

<<Struc: 346.8 - 346.81 dominant foliation>>

351.07 354.34 RHYvl Lapilli tuff

351.07 - 354.34: Blue-green. Rare crystals.

354.34 358.02 RHYvl Lapilli tuff

354.34 - 358.02: Grey, fine grain matrix. Large discordant QZ/TML vein at lower contact.

<<Struc: 356 - 363.5 Weak-Moderate Fault>> Highly fractured zone accentuated by texture, QZ/TML veins and multiple narrow faults.

358.02 363.24 RHYvx Quartz and/or feldspar crystal tuff

358.02 - 363.24: Light grey, heterogeneous, poorly sorted, fragmental. Could be crystals and/or lapilli fragments, possibly reworked material. Unit fractured/highly broken on its top.

<<Alt: 358.02 - 378.25 Weak Calcite>>

<<Vein: 358.1 - 358.77 Quartz-Tourmaline 10 deg. >> Large QZ/TML in fracture, shallow angle vein.

<<Vein: 359.3 - 360 Tourmaline 28 deg. >> TML vein set associated with QZ in fracture zone.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

363.24 370.45 RHYvx Quartz and/or feldspar crystal tuff

363.24 - 370.45: Light grey, poorly sorted, containing crystal and/or lapilli fragments.

<<Min: 363.24 - 370.45 3% Min: Pyrrhotite>>

<<Min: 363.26 - 370.45 2% Min: Pyrite>>

<<Struc: 366.8 - 366.81 dominant foliation>>

370.45 374.40 RHY undifferentiated rhyolite

370.45 - 374.4: Silicic bands and locally wavy (curdy like texture). Possibly RHYcw. Gradual contacts.

<<Min: 370.45 - 378.25 0.1% Min: Pyrite>>

<<Min: 370.45 - 386.49 1% Min: Pyrrhotite>>

<<Alt: 370.45 - 375.08 Weak Muscovite>>

374.40 377.05 RHY undifferentiated rhyolite

374.4 - 377.05: Texture obscured. MU altered, folded. QZ veins. Narrow pelitic interval from 374.84 m to 375.08 m.

<<Alt: 375.08 - 377.05 Moderate Muscovite>>

<<Vein: 375.22 - 375.78 Quartz>> QZ vein surrounded by muscovite altered zone.

<<Struc: 375.6 - 377 Weak-Moderate Shear>> Folded, broken zone marked by QZ veins.

377.05 380.24 PEL Equigranular biotite + calcite +/- quartz rock

377.05 - 380.24: Very fine grain BI, dark grey to black, foliated on the edge. Rhyolite fragments or beds altered MU as evidence of sedimentary sequence but rounded white specks (amygdule like) observed on the upper part suggesting mafic dike.

<<Min: 378.25 - 379 3% Min: Pyrite>> Narrow interval containing PO and PY.

<<Min: 379 - 438.12 0.1% Min: Pyrite>>

<<Alt: 378.25 - 380.24 Moderate-Strong Calcite>>

380.24 383.46 RHYva Coarse grained to ash tuff

380.24 - 383.46: Light grey-green, fine grain, moderately altered MU.

<<Alt: 380.24 - 382.65 Moderate Muscovite>>

<<Alt: 380.24 - 383.95 Weak Calcite>>

<<Alt: 382.65 - 386.49 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

383.46 386.49 RHYv Rhyolite volcaniclastic

383.46 - 386.49: Grey-blue, BI porphyroblasts heavily disseminated. Weakly MU altered.

<<Alt: 383.95 - 390.39 Strong Calcite>>

386.49 390.39 PEL Equigranular biotite + calcite +/- quartz rock

386.49 - 390.39: Dark brown to black, fine grain Patchy locally strong CA content. CA veining. BI from porphyroblastic to thinly banded along the foliation. Beige specks (ferro carbonate).

<<Min: 386.49 - 390.39 2% Min: Pyrrhotite>>

<<Alt: 386.49 - 404.71 Weak Muscovite>>

<<Struc: 387.95 - 387.96 Foliation>>

390.39 402.97 RHYva Coarse grained to ash tuff

390.39 - 402.97: Patchy BI enrichment. Few lapilli. Weak patchy MU alteration, halo along fracture.

<<Min: 390.39 - 402.97 1% Min: Pyrrhotite>>

<<Alt: 390.39 - 402.97 Weak Calcite>>

<<Struc: 390.92 - 390.93 dominant foliation>>

<<Struc: 396.3 - 396.31 dominant foliation>>

<<Struc: 399.7 - 399.71 dominant foliation>>

402.97 404.71 PEL Equigranular biotite + calcite +/- quartz rock

402.97 - 404.71: Dark brown-black, fine grain biotite rich. Grading on the lower part, showing locally MU bands (ash beds?). White specks on the upper part (amygdule like)-possibly mafic dike.

<<Min: 402.97 - 404.71 2% Min: Pyrrhotite>>

<<Alt: 402.97 - 404.71 Strong Calcite>>

404.71 415.71 RHYv Rhyolite volcaniclastic

404.71 - 415.71: Lapilli from 412.50 m to 413.25 m. Weakly altered MU, halo in fracture and joints.

<<Min: 404.71 - 423.85 1% Min: Pyrrhotite>>

<<Alt: 404.71 - 409.21 Weak-Moderate Muscovite>>

<<Alt: 404.71 - 415.38 Weak Calcite>>

<<Alt: 409.21 - 413.34 Moderate Muscovite>>

<<Alt: 413.34 - 415.38 Weak-Moderate Muscovite>>

<<Alt: 415.38 - 426.13 Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 405.92 - 405.93 dominant foliation>>

415.71 423.85 MAFw mafic volcanic flows

415.71 - 423.85: CL/BI/CA. Fine to medium grain. Homogeneous texture. Possibly andesite/propylitic alteration.

<<Alt: 416.22 - 423.85 Moderate Chlorite>> Altered andesite.

<<Alt: 423.7 - 438.12 Weak-Moderate Muscovite>>

<<Struc: 418.3 - 418.35 Weak Shear>> Light shearing, fold.

<<Struc: 423.7 - 423.8 Weak Shear>> Narrow sheared interval, brecciated and altered MU.

423.85 427.30 PEL Equigranular biotite + calcite +/- quartz rock

423.85 - 427.3: Fine grain, BI rich, containing ash beds altered MU (locally intense alteration). Possiby mafic and felsic material interfingered.

<<Min: 423.85 - 438.12 2% Min: Pyrrhotite>> and aggregated along the foliation.

<<Alt: 423.85 - 495.05 Weak-Moderate Chlorite>> Altered lapilli.

<<Alt: 426.13 - 438.12 Weak Calcite>>

427.30 430.05 RHYvx Quartz and/or feldspar crystal tuff

427.3 - 430.05: Light grey, containing xtl and/or lapilli fragments.

430.05 434.72 RHYvl Lapilli tuff

430.05 - 434.72: Light grey, few crystals. Possible calcareous sediment from 333.72 m to 333.93 m. Very rare quartz eyes. Few BI porphyroblasts.

<<Struc: 431.65 - 431.66 dominant foliation>>

<<Struc: 431.8 - 432.15 Weak Shear>> Light shearing, fold.

434.72 436.39 SEDc calcareous Sediment

434.72 - 436.39: Blue-grey, fine grain, calcareous, foliated, locally CA banded. Sharp contacts.

436.39 438.12 RHYvx Quartz and/or feldspar crystal tuff

436.39 - 438.12: Fragmental, clasts/crystals heterogeneous size. Ash at upper (sharp) contact.

438.12 441.96 RHYi Aphanitic Rhyolite (intrusion)

438.12 - 441.96: Grey-yellow, aphanitic, MU altered, siliceous, strongly fractured at upper contact, PY/PO/muscovite in fracture. Gradual contacts. Possibly rhyolitic dome.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 438.12 - 441.96 1% Min: Pyrite>> In RHYi.

<<Alt: 438.12 - 441.96 Strong Silicification>> RHYi could strong silicification.

<<Alt: 438.12 - 441.96 Moderate Muscovite>> In RHYi-Yellow color, overprinted by silicification.

<<Alt: 438.12 - 441.96 Trace Calcite>> In fracture.

441.96 444.35 RHYvl Lapilli tuff

441.96 - 444.35: Light grey, fine to very fine grain at upper contact (ash) as well as narrow calcareous interval (SEDc). Foliated. Rare small crystals, weak MU alteration.

<<Min: 441.96 - 452.51 0.1% Min: Pyrite>>

<<Min: 441.96 - 452.51 2% Min: Pyrrhotite>>

<<Alt: 441.96 - 444.35 Weak Calcite>>

444.35 446.52 RHYvl Lapilli tuff

444.35 - 446.52: Dark grey-purple. Sharp upper contact. Possibly meta sediment or intermediate composition. Silicified, calcareous.

<<Alt: 444.35 - 446.52 Weak-Moderate Calcite>>

<<Struc: 444.9 - 444.91 Foliation>>

446.52 452.51 RHYv Rhyolite volcaniclastic

446.52 - 452.51: Heterogeneous unit, fractured. Locally clasts up to 2 cm wide. Weakly MU altered.

<<Alt: 446.52 - 452.51 Weak Calcite>>

<<Vein: 448.9 - 451.4 Quartz>> QZ veins and pods in fractured zone, representing 15% of the interval.

<<Struc: 447 - 449.9 Weak Fault>> Broken zone marked by QZ veins and narrow clay gouge intervals.

452.51 463.86 RHYvl Lapilli tuff

452.51 - 463.86: Dark grey-purple. Sharp upper contact. Possibly meta sediment or intermediate composition. Siliceous/calcareous.

<<Min: 452.51 - 478.05 2% Min: Pyrrhotite>> And veinlets.

<<Min: 452.51 - 503.42 0.5% Min: Pyrite>> QZ?PY patch

<<Alt: 452.51 - 463.86 Moderate Silicification>> Or meta sandstone, SI rich protolith.

<<Alt: 452.51 - 463.86 Weak-Moderate Calcite>>

<<Struc: 454.25 - 454.5 Weak Fault>> Light shearing, MU (halo) alteration in fracture.

463.86 467.36 RHYvl Lapilli tuff

463.86 - 467.36: Light grey, containing white elongated fragment, possibly lapilli.

<<Alt: 463.86 - 478.05 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

467.36 470.03 RHYv Rhyolite volcaniclastic

467.36 - 470.03: Light blue, fine grain, homogeneous, weakly banded. Fine grain BI. Could be sedimentary/epiclastic.

470.03 478.05 SED undifferentiated Sediment

470.03 - 478.05: Bluish/purple, heterogeneous texture, granular band or patch (QZ blebs 2 to 5 mm) aggregated) possibly sorted. beds. Sedimentary unit mixed with intermediate composition volcaniclastic ash material. Weakly calcareous. Chlorite fine wavy bands and blebs disseminated, BI, MU. Rare TML veinlet. PO and PY disseminated.

<<Struc: 474.15 - 474.15 Foliation>>

478.05 478.65 SEDc calcareous Sediment

478.05 - 478.65: Dark grey to black, strongly calcareous. Medium to fine grain, sorted.

<<Min: 478.05 - 478.65 5% Min: Pyrrhotite>>

<<Min: 478.05 - 503.42 1% Min: Pyrrhotite>>

<<Alt: 478.05 - 478.65 Moderate-Strong Calcite>>

478.65 485.42 RHYv Rhyolite volcaniclastic

478.65 - 485.42: Sedimentary sequence lapilli to ash, light grey volcaniclastic, containing few QE mainly concentrated in lapilli aggregated bands. Interval showing conglomeritic texture, poorly sorted as well as chlorite blebs (altered lapilli?). Ash on top of the unit.

<<Alt: 478.65 - 485.42 Trace Calcite>>

<<Vein: 484.83 - 484.84 Tourmaline>> TML veinlet.

<<Struc: 480.8 - 480.81 dominant foliation>>

<<Struc: 483.4 - 483.41 Foliation>>

485.42 495.05 SED undifferentiated Sediment

485.42 - 495.05: Bluish/purple, heterogeneous texture, granular band or patch (QZ blebs 2 to 5 mm) aggregated) possibly sorted. Beds. Sedimentary unit mixed with intermediate composition volcaniclastic ash material. Weakly calcareous. Chlorite fine wavy bands and blebs disseminated, BI, MU. Rare TML veinlet. PO and PY disseminated. Could be RHYva/BCQlpl.

<<Alt: 485.42 - 503.42 Weak Calcite>>

<<Vein: 491.57 - 492.6 Quartz>> QZ veins and pods representing 60 % of the interval.

<<Struc: 489.9 - 490.91 dominant foliation>>

<<Struc: 494.05 - 494.06 dominant foliation>>

495.05 502.15 RHYvl Lapilli tuff

495.05 - 502.15: Light grey, poorly sorted, fragmental (lapilli/crystal).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

502.15 503.42 RHYva Coarse grained to ash tuff

502.15 - 503.42: Light blue, fine/medium grain, siliceous, containing rare granular interval.

503.42 517.50 RHYvl Lapilli tuff

503.42 - 517.5: Light grey, poorly sorted, fragmental (lapilli/crystals angular to sub rounded) probably reworked material (sliding) Sheared at lower contact.

<<Min: 503.42 - 516.4 2% Min: Pyrite>>

<<Min: 503.42 - 532 0.5% Min: Pyrrhotite>>

<<Min: 516.4 - 520.38 5% Min: Pyrite>> Clasts and QZ/PY relic veins in fault zone.

<<Alt: 503.42 - 512.8 Weak-Moderate Calcite>> Fragment replacement and bands.

<<Alt: 505 - 516.4 Weak Muscovite>>

<<Alt: 512.8 - 578 Weak Calcite>>

<<Alt: 516.4 - 556.6 Moderate-Strong Muscovite>> In fault zone.

<<Struc: 514.65 - 517.5 Weak-Moderate Shear>>

517.50 520.38 FLZ Fault Zone

517.5 - 520.38: Sheared and brecciated rhyolite. Some QZ/PY clasts and vein relics. Moderate to strong muscovite alteration.

<<Struc: 517.5 - 520.38 Strong Fault>>

520.38 528.45 RHY undifferentiated rhyolite

520.38 - 528.45: Sheared and disaggregated rhyolite. Competent interval showing fragmental texture.

<<Min: 520.38 - 570 1% Min: Pyrite>> associated with dark grey QZ.

<<Vein: 526.7 - 631.25 Quartz-Carbonate-Sulphide>> QZ/PY/CA/PO vein set. 5% of the interval.

<<Struc: 520.38 - 528.45 Moderate-Strong Shear>>

528.45 531.53 FLZ Fault Zone

528.45 - 531.53: Brecciated, disaggregated unit, QZ and rhyolite clasts. Weakly gougy. QE observed in clasts.

<<Struc: 528.45 - 531.53 Strong Fault>> And shearing.

531.53 532.40 RHY undifferentiated rhyolite

531.53 - 532.4: Brittled rhyolite. QZ/PO patch.

<<Min: 532 - 561 1% Min: Pyrrhotite>>

<<Struc: 531.53 - 536.45 Weak-Moderate Shear>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

532.40 535.00 No Core No Core

532.4 - 535: Poor recovery explained by washed core after reaming rods from 516m to 531m.

535.00 555.40 RHY undifferentiated rhyolite

535 - 555.4: MU altered rhyolite, sheared at lower contact, QZ/PY/PO patch (stringers?). Siliceous. One QE observed.

<<Struc: 536.45 - 537.38 Strong Fault>>

<<Struc: 537.38 - 551.3 Weak-Moderate Shear>>

<<Struc: 551.3 - 555.4 Moderate-Strong Shear>>

<<Struc: 554.4 - 555.85 Moderate-Strong Fault>>

555.40 555.84 FLZ Fault Zone

555.4 - 555.84: Gougy, brecciated. QZ and QZ/PO clasts.

555.84 557.60 RHY undifferentiated rhyolite

555.84 - 557.6: Weakly sheared RHY altered MU.QZ/PO pods.

<<Alt: 556.6 - 566 Weak-Moderate Muscovite>> Related to faulting.

<<Struc: 555.85 - 558.28 Weak-Moderate Shear>>

557.60 559.30 MDSt Rhyolite tuff dominant mudstone

557.6 - 559.3: Sheared, wavy mudstone containing PO mixed with rhyolite altered MU.

<<Struc: 558.28 - 562.06 Moderate-Strong Shear>>

559.30 564.55 RHY undifferentiated rhyolite

559.3 - 564.55: Sheared rhyolite altered MU, one QE observed. PO ad QZ/PO bands.

<<Min: 561 - 570 3% Min: Pyrrhotite>> and patch.

564.55 566.60 MDSt Rhyolite tuff dominant mudstone

564.55 - 566.6: Weakly carbonaceous, siliceous blue mudstone containing about 5% of PO. Mixed with rhyolite.

566.60 571.00 RHYvl Lapilli tuff

566.6 - 571: Siliceous tuffaceous rhyolite containing PO, possibly carbonaceous content and/or fine grain BI (bluish band, heterogeneous composition). Whitish elongated clasts "lapilli like". Tourmaline specks patch.

<<Min: 570 - 598 0.1% Min: Pyrite>>

<<Min: 570 - 615.2 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 568.53 - 571.13 Weak Tourmaline>>

571.00 572.50 SED undifferentiated Sediment

571 - 572.5: Fine grain, banded grey/black. Faulted at lower contact. Crosscut by QZ/TML veinlets as well as TML speck aggregated. Heterogeneous texture. White clasts/crystal, rounded.

572.50 588.04 RHYv Rhyolite volcaniclastic

572.5 - 588.04: Grey to bluish. Dirty unit, containing BI and muscovite in fractures. Siliceous bands.

<<Alt: 574 - 581 Weak-Moderate Muscovite>>

<<Alt: 578 - 583 Weak-Moderate Calcite>>

<<Alt: 581 - 598 Weak Muscovite>> Related to faulting.

<<Alt: 583 - 598 Weak Calcite>>

<<Struc: 572.5 - 573 Weak-Moderate Fault>> Fault gouge, and shearing. PY clasts.

<<Struc: 582.95 - 582.96 Foliation>>

<<Struc: 585.68 - 585.69 Foliation>>

<<Struc: 587.97 - 587.98 Foliation>>

588.04 593.80 RHYva Coarse grained to ash tuff

588.04 - 593.8: Light grey, fine grin, weakly MU altered.

<<Struc: 593 - 593.8 Weak Fault>> Broken zone, sandy gouge.

593.80 598.00 RHYva Coarse grained to ash tuff

593.8 - 598: Fine grain, light grey, siliceous, weakly MU altered.

<<Vein: 595 - 595.28 Quartz>> QZ vein, fractured.

<<Struc: 596.4 - 597.8 Weak Fault>> Narrow gouge zone.

598.00 601.70 RHYva Coarse grained to ash tuff

598 - 601.7: Homogeneous groundmass, light blue (BI?), fine grain. PO disseminated and locally banded. Siltstone texture. White clasts, possibly crystals.

<<Min: 598 - 615.2 0.5% Min: Pyrite>>

<<Alt: 598 - 608.18 Weak-Moderate Garnet>> Locally moderate.

<<Alt: 598 - 622.15 Moderate Silicification>> Or SI in lithology.

601.70 608.18 RHYva Coarse grained to ash tuff

601.7 - 608.18: Fine grain, light blue, siltstone texture (siliceous groundmass). Strong muscovite (regional metamorphic-overprint) from 605.60m.

<<Struc: 602.08 - 602.09 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 604.6 - 604.61 dominant foliation>>

608.18 613.35 RHYva Coarse grained to ash tuff

608.18 - 613.35: Fine grain, light grey-green, white "clasts" (1 to 3mm), replaced CA, poorly sorted (probably crystals). Muscovite rich (metamorphic-overprint).

<<Alt: 608.18 - 622.15 Weak-Moderate Calcite>> Replacing feldspar porphyroblasts.

<<Struc: 609.95 - 609.95 dominant foliation>>

613.35 615.20 RHYva Coarse grained to ash tuff

613.35 - 615.2: Blue/black, containing BI porphyroblasts. Intermediate composition or pelitic input. Sharp contacts-could be dike. CA crystals.

615.20 622.16 RHYcf Feldspar & feldspar quartz porphyry

615.2 - 622.16: Porphyritic texture (1 to 3 cm wide crystal), probably feldspar CA replaced, randomly oriented, siliceous groundmass supported, low to mid strain.MU altered.

<<Min: 615.2 - 622.15 0.1% Min: Pyrrhotite>>

<<Min: 615.2 - 622.16 1% Min: Pyrite>> and disseminated.

<<Min: 622.15 - 632.5 3% Min: Pyrrhotite>> QZ/CA/PO/PY veins in RHYcf/RHYif.

<<Alt: 615.2 - 622.15 Trace Muscovite>>

<<Alt: 622.15 - 639.23 Weak Muscovite>>

<<Alt: 622.15 - 639.9 Strong Silicification>> Strongly siliceous unit, glassy RHYcf.

<<Alt: 622.15 - 639.9 Weak Calcite>> and CA veins associated with PY/PO/QZ.

622.16 626.70 RHYif feldspar and quartz porphyry intrusions

622.16 - 626.7: Siliceous, containing 0.5 to 2cm wide crystals, randomly oriented. Gradual upper contact. Same unit than above but SI saturated (QE/glassy groundmass). MU altered. Heterogranular QE/high density, Possibly weakly MU altered (yellow/original?).

<<Min: 622.16 - 639.9 3% Min: Pyrite>> Aggregated/banded.

<<Struc: 626.31 - 626.32 dominant foliation>>

626.70 632.48 RHYcf Feldspar & feldspar quartz porphyry

626.7 - 632.48: QZ/PY and QZ/PO/CA veining, Altered MU. Texture obscured, glassy texture fading out locally but same unit than above and bellow.

<<Struc: 629.1 - 629.11 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

632.48 639.70 RHYif feldspar and quartz porphyry intrusions

632.48 - 639.7: Aphanitic groundmass. QZ/PY veining, feldspar phenocrysts altered CA and QE eyes.

<<Min: 632.5 - 674 0.5% Min: Pyrrhotite>>

<<Alt: 639.23 - 652.37 Moderate Muscovite>>

<<Struc: 634.13 - 634.14 dominant foliation>>

<<Struc: 638.73 - 639.28 Weak Shear>> and faulted.

639.70 652.84 RHYvl Lapilli tuff

639.7 - 652.84: Bleached texture, PY/QZ banded, MU altered. Lapilli replaced CA,. Heterogeneous texture. Rare QE. Locally folded to weakly sheared.

<<Min: 639.9 - 652.84 3% Min: Pyrite>>

<<Alt: 639.9 - 652.37 Weak-Moderate Calcite>> Lapilli replacement.

<<Alt: 652.37 - 664 Weak-Moderate Muscovite>>

<<Alt: 652.37 - 690 Trace Calcite>>

<<Vein: 649.8 - 649.9 Quartz-Albite>> QZ vein containing few PY/PO, strong MU alteration surrounding, CA patch, green mineral (CL?).

<<Struc: 639.95 - 639.96 dominant foliation>>

<<Struc: 643 - 643.92 Weak Shear>>

<<Struc: 644.95 - 644.96 dominant foliation>>

<<Struc: 645.75 - 646.2 Weak-Moderate Shear>> Folded from 645.30m to 645.75m.

652.84 685.30 RHYv Rhyolite volcaniclastic

652.84 - 685.3: Patchy granular texture, Strongly PY/QZ/MU banded to ribboned (up to 15% PY). Some very fine grain beds, grey (mud or ash?). Rare PO associated with PY/QZ veins. Possibly reworked volcaniclastic material .

<<Min: 652.84 - 681 10% Min: Pyrite>> Ribboned QZ/PY veins

<<Min: 674 - 685 1% Min: Pyrrhotite>>

<<Min: 681 - 691.35 5% Min: Pyrite>>

<<Alt: 664 - 684.19 Weak Muscovite>>

<<Alt: 684.19 - 703.15 Moderate Muscovite>> Fault zone.

<<Struc: 666.1 - 666.11 dominant foliation>>

<<Struc: 684.18 - 685.5 Weak-Moderate Fault>> and sheared. Gouge containing QZ/PY clasts and/or vein relics.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

685.30 691.93 RHYcf Feldspar & feldspar quartz porphyry

685.3 - 691.93: Granular texture, phenocrysts aggregated (possiby clasts), micro fractured, MU altered.

<<Min: 691.35 - 703.15 0.1% Min: Pyrite>>

<<Alt: 690 - 693.71 Moderate Calcite>>

<<Struc: 687.22 - 691.93 Moderate-Strong Fault>> Micro fractured, brecciaed texture, indured fault zone.

691.93 694.43 FLZ Fault Zone

691.93 - 694.43: Fault breccia, black/grey layers intercaled, gougy (mudstone?). Rounded clasts. CA in matrix and clasts-mylonitic texture.

<<Alt: 693.71 - 721.63 Weak Calcite>>

<<Struc: 691.93 - 694.43 Intense Fault>> Fault breccia, rounded clasts, dark matrix, indured.

694.43 703.15 FLZ Fault Zone

694.43 - 703.15: Dominantly rhyolite (RHYcf) clasts, crackobrecciated, cataclastic. Healed fault, indured.

<<Struc: 694.43 - 703.15 Strong Fault>> Brecciated, fracture and microfracture, indured fault, healed.

703.15 719.86 RHYcf Feldspar & feldspar quartz porphyry

703.15 - 719.86: Shattered, strongly siliceous. Feldspar phenos relics. Rare QE.

<<Min: 703.15 - 705 3% Min: Pyrite>> Fracture in siliceous feldspar porphyry.

<<Min: 705 - 718 0.5% Min: Pyrite>>

<<Min: 718 - 723.64 3% Min: Pyrite>> and finely disseminated.

<<Alt: 703.15 - 716.86 Strong Silicification>> Silicified RHYcf.

<<Alt: 703.15 - 721 Weak-Moderate Muscovite>>

<<Struc: 703.15 - 716.86 Moderate Fault>> Solid rock intervals and shattered rhyolite (feldspar porphyry), brecciated in some intervals. Large block within healed fault. Possibly under estimated intensity.

<<Struc: 716.86 - 719.86 Moderate-Strong Fault>> Solid rock/micro fractured and sandy gouge.

719.86 723.64 RHYvx Quartz and/or feldspar crystal tuff

719.86 - 723.64: Light blue, medium grain, siliceous. QE highly concentrated. Microfracture containing clay. Possibly preserved unit in larger fracture zone

<<Alt: 721 - 724.8 Weak Muscovite>>

<<Alt: 721.63 - 723.64 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 719.86 - 729.4 Weak-Moderate Fault>> Micro fracture, brittle and friable intervals/solid rock intercaled. Probably preserved block within fault zone.

723.64 724.80 MDSc Carbonaceous dominant mudstone

723.64 - 724.8: Possibly preserved unit in larger fault zone. Fine grain, black, siliceous (or silicified). Sharpe, faulted lower contact.

<<Min: 723.64 - 727.3 1% Min: Pyrite>> Elongated, in ash (?) beds.

<<Alt: 723.64 - 729.4 Weak-Moderate Calcite>>

724.80 727.30 RHYv Rhyolite volcaniclastic

724.8 - 727.3: Microfractured/shattered. Mid strain CA altered possibly lapilli and interval showing finer grain (ash?) containing elongated PY disseminated.

<<Alt: 724.8 - 729.4 Moderate-Strong Muscovite>>

727.30 729.40 RHYcw Curdy textured-flow banded (flows, subvolcanics)

727.3 - 729.4: Flow banded, microfractured, locally breccia texture.

<<Min: 727.37 - 745 0.5% Min: Pyrite>> Rare veins.

729.40 733.02 FLZ Fault Zone

729.4 - 733.02: Fault breccia, black, grey bands (rhyolitic) intercaled. Rounded clasts dominantly Qz/CA. Mylonitic texture.

<<Alt: 729.4 - 732.63 Moderate Calcite>>

<<Alt: 729.4 - 733.5 Weak Muscovite>> In rhyolite interval.

<<Alt: 732.63 - 741.02 Weak Calcite>>

<<Struc: 729.4 - 733 Strong Fault>> Fault breccia, polymictique, gougy. Dominant black matrix (mudstone).

733.02 733.50 RHY undifferentiated rhyolite

733.02 - 733.5: Narrow rhyolitic interval, grey, poorly aggregated/friable.

733.50 734.81 CHT Chert

733.5 - 734.81: 1 to 3mm translucent QZ bands in siliceous mudstone unit.

<<Alt: 733.5 - 757.7 Moderate Muscovite>> Proximity of fault. But could be original.

734.81 735.70 RHY undifferentiated rhyolite

734.81 - 735.7: Texture bleached, grey, friable, containing mudstone intercaled. 5cm QZ vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

735.70 741.02 FLZ Fault Zone

735.7 - 741.02: Fine grain, black, graphitic mudstone dominant in fault zone, gougy in some interval. White bands (CA and possibly feldspar. Sheared/friable. Containing possibly beached mafic unit, BI porphyroblasts rich.

<<Struc: 735.7 - 742 Moderate-Strong Fault>>

741.02 746.79 RHY undifferentiated rhyolite

741.02 - 746.79: Beige, bleached rhyolite, possibly flow banded, gougy over 50 cm, microfractured to sheared. QZ/PY vein relics.

<<Min: 745 - 753.26 1% Min: Pyrite>> Associated with QZ and PO.

<<Alt: 741.02 - 758 Weak-Moderate Calcite>>

<<Struc: 742 - 746.79 Moderate Fault>> Friable rhyolite, fault gouge intervals over 50cm.

746.79 753.26 RHY undifferentiated rhyolite

746.79 - 753.26: Mu altered rhyolite, QZ/PY veins and blebs, partly silicified.

<<Alt: 750.86 - 751.8 Weak-Moderate Silicification>>

753.26 754.02 SED undifferentiated Sediment

753.26 - 754.02: Brownish, PY/PO rich, QE concentrated at lower contact. Possibly "dirty" rhyolite.

<<Min: 753.26 - 754 5% Min: Pyrite>> In possibly sediment.

<<Min: 754 - 758.5 0.5% Min: Pyrite>>

<<Alt: 754 - 755.1 Moderate Silicification>>

754.02 755.76 RHYvl Lapilli tuff

754.02 - 755.76: Locally "dirty" (brown BI bands). PO rich. Silicified at upper contact.

<<Struc: 754.55 - 754.56 Foliation>>

755.76 756.70 SED undifferentiated Sediment

755.76 - 756.7: BI bands, calcareous.

<<Struc: 756.58 - 756.59 Foliation>>

756.70 758.00 RHYv Rhyolite volcaniclastic

756.7 - 758: Locally "dirty bands" (brown BI rich). Granular texture observed in some narrow interval showing medium to coarse grain,

From (m)	To (m)	Rocktype & Description
758.00	**762.00**	**RHY** **undifferentiated rhyolite**

758 - 762: QZ/BI/CL. Mineralized unit containing PO stringers associated with CP, PY disseminated, SP/GL wispy. Specks of with mineral-possibly fine cordierite. Weak CL alteration.

<<Min: 758.5 - 762 0.5% Min: Sphalerite>>

<<Min: 758.5 - 762 2% Min: Pyrite>>

<<Min: 758.5 - 762 10% Min: Pyrrhotite>>

<<Min: 758.5 - 762 0.1% Min: Galena>> Associated with SP.

<<Min: 758.5 - 762 0.5% Min: Chalcopyrite>>

<<Alt: 758 - 762.5 Moderate Silicification>>

<<Alt: 758 - 765.2 Weak Calcite>>

<<Alt: 758.5 - 762 Weak Chlorite>> Associated with PO stringers.

From (m)	To (m)	Rocktype & Description
762.00	**764.68**	**RHY** **undifferentiated rhyolite**

762 - 764.68: Silicified rhyolite partially muscovite altered. Some brown BI/CA rich bands.

<<Min: 762 - 783.82 1% Min: Pyrrhotite>>

<<Min: 762 - 797.38 0.5% Min: Pyrite>>

<<Alt: 762 - 772.85 Weak-Moderate Muscovite>>

<<Struc: 762.95 - 762.96 Foliation>>

From (m)	To (m)	Rocktype & Description
764.68	**766.58**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**

764.68 - 766.58: Fine grain, blue, CA banded, patchy Biotite porphyroblasts.

<<Alt: 765.2 - 770.66 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description
766.58	**768.02**	**RHYv** **Rhyolite volcaniclastic**

766.58 - 768.02: Bleached, sharp contacts. BI porphyroblasts rich interval over 20 cm at lower contact.

From (m)	To (m)	Rocktype & Description
768.02	**769.15**	**RHYva** **Coarse grained to ash tuff**

768.02 - 769.15: Fine grain, homogeneous texture, few BI porphyroblasts. Chloritic interval from 768.94m to 769.13m (mafic?). Possibly siltstone.

<<Alt: 768.02 - 768.94 Trace Chlorite>>

<<Alt: 768.94 - 769.14 Moderate-Strong Chlorite>>

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
758.50	759.53	1.03	D00005606	-0.005	1.3	0.12	-0.01	0.04
759.53	760.42	0.89	D00005607	-0.005	5.7	0.21	0.1	0.36
760.42	761.26	0.84	D00005608	-0.005	3.6	0.09	0.04	0.24
761.26	762.00	0.74	D00005609	-0.005	6.2	0.11	0.05	0.61

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

769.15 770.16 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

769.15 - 770.16: Blue, fine grain, siliceous. CA bands/blebs.

770.16 772.85 RHYvl Lapilli tuff

770.16 - 772.85: Silicified rhyolite containing brown biotite beds intercaled (sediment?). Locally lapillitic.

<<Alt: 770.66 - 772.85 Weak Calcite>>

<<Alt: 771.7 - 772.85 Moderate-Strong Silicification>>

772.85 775.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

772.85 - 775.85: Fine grain, blue, CA banded, foliated/crenulated. Narrow mafic tuff interval intercaled.

<<Alt: 772.85 - 775.83 Moderate-Strong Calcite>>

<<Alt: 775.83 - 777.85 Moderate-Strong Silicification>> Or part of the lithology.

<<Alt: 775.83 - 779.14 Trace Calcite>>

775.85 779.14 MAFt Mafic Volcaniclastics

775.85 - 779.14: Partly silicified, green, fine to medium grain. Some mudstone bands intercaled.

<<Struc: 777.27 - 777.28 Foliation>>

<<Struc: 778.12 - 778.13 Foliation>>

<<Struc: 779.1 - 779.11 Foliation>>

779.14 780.39 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

779.14 - 780.39: Fine grain, blue, calcareous, CA banded.

<<Alt: 779.14 - 793.82 Strong Calcite>> and in matrix.

780.39 781.93 MAFt Mafic Volcaniclastics

780.39 - 781.93: Possibly intermediate composition or pelite input., green to blue. Sharp contact.

781.93 783.82 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

781.93 - 783.82: Fine grain, blue to light blue, foliated, calcareous. PO disseminated. CA bands and in matrix, light blue bands strongly CA rich.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
783.82	**797.38**	**MDS Carbonaceous Mudstone & Tuffaceous Mudstone**	796.00	797.38	1.38	D00005611	0.013	7.9	0.2	0.15	1.81
783.82 - 797.38: Possibly RHYva with intermediate composition. Blue, homogeneous, fine grain, siliceous, weak CL, non calcareous.											
<<Min: 783.82 - 797.38 3% Min: Pyrrhotite>>											
<<Min: 793.82 - 797.38 0.1% Min: Chalcopyrite>>											
<<Alt: 793.82 - 800.5 Moderate Muscovite>>											
<<Alt: 793.82 - 828.08 Trace Calcite>>											
<<Struc: 783.95 - 783.96 Foliation>>											
<<Struc: 785.8 - 790 Weak Fault>> Multiple narrow fault gouge intervals.											
<<Struc: 793.45 - 793.46 dominant foliation>>											
797.38	**797.88**	**OF Pyrrhotite rich sulphides**	797.38	797.88	0.50	D00005612	0.024	8.1	0.49	0.15	9.27
797.38 - 797.88: PO dominant, PY/SP/CP/GL, CA in groundmass, clots of CL											
<<Min: 797.38 - 797.78 10% Min: Sphalerite>>											
<<Min: 797.38 - 797.78 15% Min: Pyrite>>											
<<Min: 797.38 - 797.78 40% Min: Pyrrhotite>>											
<<Min: 797.38 - 797.78 5% Min: Galena>>											
<<Min: 797.38 - 797.78 3% Min: Chalcopyrite>>											
<<Min: 797.78 - 806.4 0.5% Min: Tetrahedrite>>											
<<Min: 797.78 - 806.4 2% Min: Sphalerite>>											
<<Min: 797.78 - 806.4 0.5% Min: Pyrite>>											
<<Min: 797.78 - 806.4 2% Min: Pyrrhotite>>											
<<Min: 797.78 - 806.4 0.1% Min: Chalcopyrite>>											
797.88	**800.50**	**MDS Carbonaceous Mudstone & Tuffaceous Mudstone**	797.88	799.00	1.12	D00005613	-0.005	2.2	0.03	0.01	0.6
797.88 - 800.5: Fine grain, dark blue, silicified. Containing QZ veins, gradual contacts.											
<<Vein: 797.88 - 797.96 Quartz>> Massive QZ vein at lower contact with mineralized interval (OF).			799.00	800.50	1.50	D00005614	-0.005	-0.3	-0.01	-0.01	0.02
800.50	**806.40**	**RHYc Rhyolite coherant volcanics**	800.50	802.00	1.50	D00005615	-0.005	0.4	0.01	-0.01	0.04
800.5 - 806.4: Silica bands, brown biotite intercaled,. CP/SP/PO/PY-possibly TT in veinlets. Massive flow (?).											
<<Alt: 800.5 - 822.32 Strong Muscovite>> Strong muscovite in between silicic bands-Could be original.			802.00	803.50	1.50	D00005616	-0.005	2.3	0.03	0.02	0.52
<<Struc: 804.82 - 804.83 dominant foliation>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

806.40 818.69 RHYc Rhyolite coherant volcanics

806.4 - 818.69: Lack of brown biotite, replaced by strong muscovite alteration in between silica bands. Sulfide disseminated. Locally greenish (CL?).

<<Min: 806.4 - 858.7 0.5% Min: Pyrite>>

<<Min: 806.4 - 858.7 1% Min: Pyrrhotite>>

<<Struc: 814.25 - 814.26 dominant foliation>>

818.69 822.32 RHYcw Curdy textured-flow banded (flows, subvolcanics)

818.69 - 822.32: Flow banded (1 cm wide silica bands). PO/SP-CP trace. @) cm QZ vein at lower contact, sharp.

<<Vein: 822 - 822.3 Quartz>> Massive QZ vein at contact between flow and mudstone/sed.

822.32 827.11 MDSt Rhyolite tuff dominant mudstone

822.32 - 827.11: Heterogeneous texture (foliated to massive/siliceous), fine grain, dark blue, non calcareous.

827.11 828.08 RHYc Rhyolite coherant volcanics

827.11 - 828.08: Silica banded, sharp contacts. Probably mixed with pelitic material.

828.08 828.50 PEL Equigranular biotite + calcite +/- quartz rock

828.08 - 828.5: Siliceous and calcareous. Biotite porphyroblasts. Gradual lower contact. Several sequences of flow/ash-pelite are observed from 826.47m to 834.30m.

<<Alt: 828.08 - 828.5 Weak-Moderate Calcite>>

828.50 832.03 RHYcw Curdy textured-flow banded (flows, subvolcanics)

828.5 - 832.03: Heterogeneous. Ash at lower contact. Locally PO/PY-CP trace in between silica bands.

<<Alt: 828.5 - 846.09 Strong Silicification>> Or silica part of the lithology.

<<Struc: 830.8 - 830.81 dominant foliation>>

832.03 834.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

832.03 - 834.3: Flow banded and pelite intercaled (biotite porphyroblasts-calcareous). Possibly interfingered contact or peperite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

834.30 838.54 MDSw Coherent rhyolite flow with carbonaceous content

834.3 - 838.54: Flow banded, containing blebs or lithic fragments of mudstone. Almost cherty texture.

<<Struc: 836.4 - 836.41 dominant foliation>>

838.54 840.68 PEL Equigranular biotite + calcite +/- quartz rock

838.54 - 840.68: Fine grain, black, calcareous, thin CA bands. Gradual contacts.

<<Struc: 839.49 - 839.49 dominant foliation>>

840.68 842.51 RHY undifferentiated rhyolite

840.68 - 842.51: Silicic bands. QZ/CA pods. Heterogeneous texture. Muscovite rich.

842.51 844.82 CHT Chert

842.51 - 844.82: Fine silica bands (1 to 4mm wide) and carbonaceous mudstone intercaled Could be interpreted as MDSw.

<<Struc: 843.45 - 843.46 dominant foliation>>

844.82 846.09 RHYva Coarse grained to ash tuff

844.82 - 846.09: Fine grain, light grey, muscovite rich,

846.09 873.94 SED undifferentiated Sediment black

846.09 - 873.94: Bluish, dark color dominant. Heterogeneous unit, CA/QZ banded, dominantly fine grain (mudstone), mafic tuffaceous material (possibly reworked), and coarse grain beds. Wispy PO/CP/PY-possibly AS, QZ/CA veins. Brown biotite in foliation and locally disseminated. Weak chlorite content.

<<Min: 854.6 - 858.7 0.5% Min: Pyrite>>

<<Min: 854.6 - 858.7 0.1% Min: Chalcopyrite>>

<<Min: 854.6 - 858.7 0.1% Min: Arsenopyrite>>

<<Min: 858.7 - 873.94 3% Min: Pyrrhotite>>

<<Min: 858.7 - 873.94 0.5% Min: Chalcopyrite>>

<<Min: 858.7 - 900.93 0.5% Min: Pyrite>>

<<Alt: 846.09 - 873.94 Trace Chlorite>> Could be original.

<<Alt: 846.09 - 875.35 Moderate Calcite>>

<<Vein: 854.2 - 854.5 Quartz-Carbonate>> QZ/CA massive vein.

<<Vein: 855 - 858 Quartz-Carbonate>> Multiple QZ/CA veins and pods, 10 cm wide, representing 10% of the interval.

<<Struc: 850 - 850.7 Weak-Moderate Fault>> Washed material.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 853.55 - 853.9 Moderate Shear>> Partially brecciated.

<<Struc: 855.85 - 855.86 dominant foliation>>

<<Struc: 860.85 - 860.86 dominant foliation>>

<<Struc: 861 - 861.01 dominant foliation>>

<<Struc: 864.35 - 864.36 dominant foliation>>

<<Struc: 865.1 - 865.25 Weak Shear>> Brecciated, healed shearing.

<<Struc: 867.95 - 867.96 dominant foliation>>

<<Struc: 868.9 - 868.91 dominant foliation>>

<<Struc: 872.31 - 872.32 dominant foliation>>

873.94 880.94 SED undifferentiated Sediment dark grey

873.94 - 880.94: Greenish/light blue color dominant (sericite/possibly chlorite). CA/QZ banded interlayered with fine grain carbonaceous and fine grain green (mafic?) material containing BI porphyroblasts disseminated. Locally 10cm fine grain (ash/pelite) green homogeneous bands.

<<Min: 873.94 - 898.5 1% Min: Pyrrhotite>>

<<Alt: 873.94 - 892.05 Weak Chlorite>> Could be original.

<<Alt: 875.35 - 882.19 Weak Calcite>>

<<Vein: 874.2 - 874.35 Quartz-Pyrite>> QZ/fine grain PY, brecciated contact with host rock.

<<Struc: 876 - 879 Weak Shear>> weak shearing and deformed foliation.

<<Struc: 879.95 - 879.96 dominant foliation>>

880.94 882.19 RHYv Rhyolite volcaniclastic

880.94 - 882.19: Felsic domain, large CA/QZ bands. Fine grain at (chill) margin.

882.19 892.05 PEL Equigranular biotite + calcite +/- quartz rock

882.19 - 892.05: Greenish color dominant. Heterogeneous. Few CA/QZ bands. Fine grain, green bands, 10cm wide, BI porphyroblasts disseminated, brown biotite in foliation. PO/PY disseminated, CP-SP trace, associated with carbonate. Probably chloritic layers.

<<Min: 882.19 - 895.41 0.1% Min: Sphalerite>>

<<Min: 882.19 - 898.5 0.1% Min: Chalcopyrite>>

<<Alt: 882.19 - 891.62 Weak-Moderate Calcite>>

<<Alt: 891.62 - 899.03 Trace Calcite>>

892.05 893.43 RHYva Coarse grained to ash tuff

892.05 - 893.43: Narrow interval, grey, fine grain, containing QZ/MS/MU-maybe CL. Biotite replacing white/orange mineral aggregated specks (maybe Kspar). Sharp lower contact.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 893.2 - 893.35 Quartz-Pyrite>> QZ/fine grain PY, weakly sheared zone.

<<Struc: 893 - 893.35 Weak-Moderate Fault>> QZ/PY veins at lower contact.-Moderate shearing

893.43 899.03 RHYcw Curdy textured-flow banded (flows, subvolcanics)

893.43 - 899.03: Flow banded, large silicic bands. MU/MS intercaled. QZ veins containing CP/SP/PY-GL trace. Ash interlayered containing QE.

<<Min: 895.41 - 895.66 2% Min: Sphalerite>> QZ vein/bands.

<<Min: 895.41 - 895.66 2% Min: Pyrrhotite>> QZ vein/bands.

<<Min: 895.41 - 895.66 0.1% Min: Galena>> QZ vein/bands.

<<Min: 895.41 - 895.66 0.5% Min: Chalcopyrite>> QZ vein/bands.

<<Min: 895.41 - 898.66 1% Min: Pyrite>> QZ vein/bands.

<<Min: 895.66 - 898.5 0.1% Min: Chalcopyrite>>

<<Min: 898.95 - 902.29 0.1% Min: Galena>> and patchy.

<<Min: 898.95 - 902.29 0.5% Min: Chalcopyrite>> and patchy.

<<Min: 898.95 - 902.29 0.1% Min: Arsenopyrite>> Associated with other sulfides.

<<Min: 898.95 - 907.35 1% Min: Pyrite>> and patchy.

<<Min: 898.95 - 907.35 3% Min: Pyrrhotite>> and patchy.

<<Vein: 895.41 - 895.66 Quartz-Sulphide>> QZ band containing sulfides PO/CP/SP/PY-GL trace.

899.03 906.32 SED undifferentiated Sediment

899.03	900.00	0.97	B00291972	0.024	4.4	0.06	0.03	0.38

899.03 - 906.32: Heterogeneous, CA bands, CL bands containing bi porphyroblasts, Best mineralized interval from 898.95m to 902.29m-CP/PO/PY patch and veinlets (wispy). Rhyolite (QE) interval intercaled from 900.93m to 901.32m.

<<Min: 902.29 - 907 0.1% Min: Chalcopyrite>>

900.00	900.93	0.93	B00291973	0.058	4.7	0.04	0.15	0.29

<<Alt: 899.03 - 907.35 Weak-Moderate Calcite>>

<<Alt: 901.32 - 906.32 Weak Chlorite>> Probably related to mineral composition.

906.32 907.35 RHYva Coarse grained to ash tuff

906.32 - 907.35: Light grey, CA bands at upper contact.

907.35 909.41 RHY undifferentiated rhyolite

907.35 - 909.41: Bleached/altered interval containing crystal aggregated and numerous specks of beige/orange rounded mineral garnet (?) shape), granular texture (sandy?). Could be fine grain margin of porphyry.

<<Min: 907.35 - 911 0.5% Min: Pyrite>>

<<Min: 907.35 - 914.33 1% Min: Pyrrhotite>>

<<Alt: 907.35 - 921.53 Weak Calcite>> and banded.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 908.54 - 911 Moderate Muscovite>> Could be original.

909.41 910.92 RHYvl Lapilli tuff

909.41 - 910.92: Poorly sorted, possibly Fspar fragments. Large clasts. Mid to high strain. Matrix altered MU.

910.92 916.17 PEL Equigranular biotite + calcite +/- quartz rock

910.92 - 916.17: Green/grey, heterogeneous. Biotite porphyroblasts path. Probably ash interlayered (QE observed). CP/PO-maybe AS trace (silvery mineral). Patchy CL alteration from 913.10m to 916.57m. Gradual lower contact.

<<Min: 910.92 - 914.33 0.5% Min: Chalcopyrite>> Rare stringers and rare disseminated.

<<Min: 910.92 - 914.33 0.1% Min: Arsenopyrite>> Observed silvery mineral specks, possibly AS.

<<Min: 911 - 921.53 0.1% Min: Pyrite>>

<<Min: 914.33 - 918.99 2% Min: Pyrrhotite>> Associated with CP and CL alteration bands and disseminated.

<<Min: 914.33 - 918.99 2% Min: Chalcopyrite>> Associated with CP and CL alteration bands.

<<Alt: 913.1 - 914.33 Weak-Moderate Chlorite>>

<<Alt: 914.33 - 918.38 Weak Chlorite>> Associated with stringers CP/PO

<<Struc: 913.15 - 913.16 dominant foliation>>

916.17 921.53 RHYvl Lapilli tuff

916.17 - 921.53: Dark grey, large lapilli, medium strain. CP/PO stringers altered CL. Biotite porphyroblasts overprinted and biotite in foliation. From 919.98m to 920.60, rare QE, green/grey, fragmental, poorly sorted, large clasts. Gradual ashy lower contact.

<<Min: 918.99 - 921.53 1% Min: Pyrrhotite>> and disseminated.

<<Min: 918.99 - 921.53 0.5% Min: Chalcopyrite>>

<<Struc: 918.1 - 918.11 Vein>> CP/PO stringers-Beta angle averaging 200 degrees.

<<Struc: 918.63 - 918.64 dominant foliation>>

<<Struc: 918.9 - 918.91 dominant foliation>>

921.53 923.50 PEL Equigranular biotite + calcite +/- quartz rock

921.53 - 923.5: Dark green. BI/CL/CA, QZ vein. Rare CP stringers. Locally assemblage similar as GP4F pelite unite (CL/BI/CA/TML/Sulfides). Fine grain BI patches.

<<Min: 921.53 - 932.66 1% Min: Pyrite>>

<<Min: 921.53 - 932.66 3% Min: Pyrrhotite>>

<<Min: 921.53 - 932.66 0.1% Min: Galena>> Associated with other sulfides.

<<Min: 921.53 - 932.66 1% Min: Chalcopyrite>> Stringers and remobilized.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 921.53 - 932.66 0.1% Min: Arsenopyrite>> Associated with other sulfides.

<<Alt: 921.53 - 932.66 Weak-Moderate Chlorite>> Probably related to mineral composition.

<<Alt: 921.53 - 932.66 Weak-Moderate Calcite>>

<<Vein: 923.15 - 923.33 Quarzt-Chlorite-Tourmaline>> QZ/CA/CL/BI/TML assemblage similar to GP4F.

<<Struc: 921.58 - 921.69 dominant foliation>>

923.50 932.66 SED undifferentiated Sediment

923.5 - 932.66: Dark blue/dark green. CL/BI/fine grain bands. Clasts and blebs, interpreted as lithic fragments (1 to 5cm wide). Heterogeneous/chaotic texture. CP/PO/PY/SP-maybe as well as CP remobilized in thin fractures. Conglomerate texture from 931.69m to 932.31m.

<<Vein: 926.58 - 928.42 Quartz-Carbonate>> Multiple QZ/CA veins representing 30% of the interval.

932.66 949.00 RHYv Rhyolite volcaniclastic

932.66 - 949: Rare QE/rare biotite porphyroblasts. Light grey, texture obscured. PO patch and disseminated representing up to 5%. Rare PY disseminated. QZ vein associated with possibly sediment interval.

<<Min: 932.66 - 949 5% Min: Pyrrhotite>> and disseminated.

<<Min: 932.66 - 953.31 0.1% Min: Pyrite>>

<<Alt: 932.66 - 953.31 Weak Calcite>>

<<Struc: 933.95 - 933.96 dominant foliation>>

<<Struc: 939.95 - 939.96 dominant foliation>>

<<Struc: 945.52 - 945.53 dominant foliation>>

949.00 953.31 RHYvl Lapilli tuff

949 - 953.31: Showing MU weak to moderate banded alteration. PO disseminated and oriented along the foliation. Rare PY. Silica clasts (1 to 3cm wide) , low strain, probably lapilli.

<<Min: 949 - 953.31 3% Min: Pyrrhotite>>

<<Alt: 949 - 953.31 Weak-Moderate Muscovite>> EOH

<<Struc: 952.82 - 952.82 dominant foliation>>

End of Hole @ 953.31

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-395

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/20/2016
UTM Easting	414821.807	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/21/2016
UTM Northing:	6817251.308	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1405.071	Casing Depth (m):	2.2	Length (m):	46.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/15/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/16/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

K16-395 was drilled to test the geotechnical properties of the proposed south extent of the mill site. 2 SPT tests were performed in the overburden, and 4 packer tests in the bedrock. A 10 node thermistor was installed.
K16-395 encounters bedrock at ~2 m, and consists of mixed mudstone and mafic tuffs of the Wind Lake Formation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/15/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 2.00 OVBN Overburden

2.00 3.80 MAFt Mafic Volcaniclastics

2 - 3.8: Locally interbedded with MDS

<<Min: 2 - 32 3% Min: Pyrrhotite>>

<<Alt: 2 - 46.2 Moderate Calcite>>

<<Vein: 2 - 46.2 10% Quartz-Carbonate>> 1-5 ~10-50 cm QZ-CA veins per 3 m.

3.80 7.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

3.8 - 7.6: Carbonaceous mudstone with blebby CA. Local interbedded MAFt.

7.60 9.60 MAFt Mafic Volcaniclastics

7.6 - 9.6: Gradational lower contact with MDS

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

9.60 29.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

9.6 - 29.3: Carbonaceous mudstone, locally interbedded with MAFt

<<Min: 19.3 - 26 3% Min: Pyrite>>

<<Struc: 22.2 - 23.7 Weak-Moderate Fault>>

29.30 32.00 MAFt Mafic Volcaniclastics

32.00 46.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

32 - 46.2: Carbonaceous mudstone with local bands of MAFt

<<Min: 32 - 46.2 2% Min: Pyrite>>

<<Min: 32 - 46.2 5% Min: Pyrrhotite>>

<<Struc: 33.3 - 33.7 Moderate-Strong Fault>>

End of Hole @ 46.2

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-396

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/17/2016
UTM Easting	419505.137	Core Size:	HQ3	Azimuth:	180.3	Date Logging Complete:	7/21/2016
UTM Northing:	6813219.449	Casing Pulled?:	Yes	Dip:	-88	Drill Company:	New Age
UTM Elev. (m):	1333.63	Casing Depth (m):	10.5	Length (m):	210	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/16/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/19/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
Comments:						Parent Hole:	

The purpose of this DDH is resource infill and to collect a metallurgical sample from the GP4F sulfide lens. Both objectives were accomplished. The GP4F lens was intersected at 83.74-90-90.53m (with minor interval of rhyolite) and consisted mainly of OJ type mineralization and lesser OF type. Sphalerite was up to 20% in some sections of OF. The lower lens was intersected from 160.57-167.72 and consisted of OJ type mineralization with strong cordierite alteration. Sphalerite content was up to 10% in one short interval but otherwise sulfides of interest were low. A major fault zone was intersected from 190.00-208.00m. Minor MDSt and MDS was recovered below 206.40m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-88	178.9	1.4	180.3	TN14	Roger Hulstein	7/16/2016		☑	The azimuth was set by R.Hulstein and R.Voordouw on July 14, 2016 for DDH K16-393 using the TN14 gyrocompass which has the same azimuth. New Age Drilling set the dip for K16-396 on July 16, 2016.
5	-87.88264	178.45332	1.4	179.85332	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
10	-87.92045	174.88075	1.4	176.28075	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
15	-87.8262	169.12185	1.4	170.52185	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
18	-87.7	164.9	22.1	187	ReflexEZS	New Age	7/16/2016	5801	☐	
20	-87.52176	164.74818	1.4	166.14818	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
25	-87.14496	160.85967	1.4	162.25967	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
30	-86.7193	157.82749	1.4	159.22749	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
35	-86.35194	156.56072	1.4	157.96072	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
40	-85.97162	154.46769	1.4	155.86769	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
45	-85.48331	152.52641	1.4	153.92641	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
45.01	-85.4	155.9	22.1	178	ReflexEZS	New Age	7/17/2016	5766	☐	
50	-85.02555	150.26248	1.4	151.66248	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
55	-84.53368	149.40855	1.4	150.80855	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
60	-84.18829	150.09329	1.4	151.49329	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
65	-83.6703	150.4755	1.4	151.8755	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
70	-83.26613	151.37982	1.4	152.77982	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-396

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-82.9294	152.43909	1.4	153.83909	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
75.01	-83.3	156.2	22.1	178.3	ReflexEZS	New Age	7/17/2016	5758	☐	
80	-82.71528	152.68983	1.4	154.08983	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
85	-82.57495	153.29184	1.4	154.69184	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
90	-82.606	153.09753	1.4	154.49753	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
95	-82.47108	153.95787	1.4	155.35787	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
100	-82.36601	155.63654	1.4	157.03654	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
102	-82.3	160.5	22.1	182.6	ReflexEZS	New Age	7/17/2016	5719	☐	
105	-82.16221	155.76944	1.4	157.16944	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
110	-81.8883	156.80775	1.4	158.20775	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
115	-81.6502	157.48017	1.4	158.88017	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
120	-81.43425	158.80017	1.4	160.20017	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
123	-81.2	164.3	22.1	186.4	ReflexEZS	New Age	7/17/2016	5741	☐	
125	-81.35493	159.90796	1.4	161.30796	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
130	-81.19214	160.69613	1.4	162.09613	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
135	-80.99011	161.43494	1.4	162.83494	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
140	-80.902	162.69777	1.4	164.09777	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
145	-80.76447	163.55184	1.4	164.95184	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
150	-80.62718	164.14116	1.4	165.54116	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
155	-80.56389	163.86989	1.4	165.26989	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
159	-80.2	168	22.1	190.1	ReflexEZS	New Age	7/18/2016	5904	☐	
160	-80.43309	163.36987	1.4	164.76987	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
165	-80.24616	163.31847	1.4	164.71847	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
170	-80.18889	163.57638	1.4	164.97638	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
175	-80.11233	164.21735	1.4	165.61735	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
180	-80.00056	165.09501	1.4	166.49501	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
180.01	-79.8	170.4	22.1	192.5	ReflexEZS	New Age	7/19/2016	5766	☐	
185	-79.87056	165.68224	1.4	167.08224	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
190	-79.722	166.13853	1.4	167.53853	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
195	-79.60287	165.16825	1.4	166.56825	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
200	-79.56115	164.9032	1.4	166.3032	Gyro	David Nuttal	7/19/2016		☑	Motion Quality = 100
210	-79.6	170	22.1	192.1	ReflexEZS	New Age	7/19/2016	5747	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 11.10 OVBN Overburden

11.10 19.00 RHYva Coarse grained to ash tuff

<<Alt: 11.1 - 19 Moderate-Strong Calcite>> also abundant calcite veinlets

<<Vein: 16 - 18 5% Calcite 60 deg. >> cross cutting and foliaform (at 60deg) calcite veinlets

<<Struc: 11.1 - 16 Moderate-Strong dominant foliation>>

<<Struc: 15 - 20 Moderate Fault>> broken and crushed core, missing core.

19.00 24.15 SED undifferentiated Sediment light grey

19 - 24.15: biotite and weak calcite on folia

<<Min: 20 - 27.45 0.1% Min: Pyrite>> trace!

<<Alt: 19 - 27.45 Weak Calcite>> fracture filling, veinlets and diss

<<Struc: 23 - 31 Weak Fault>> broken core, minor crushed zones (<10cm wide)

24.15 27.45 RHYva Coarse grained to ash tuff

27.45 28.75 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 27.45 - 28.75 3% Min: Pyrite>>

<<Min: 27.45 - 28.75 0.5% Min: Pyrrhotite>>

<<Alt: 27.45 - 28.75 Moderate Chlorite>>

<<Alt: 27.45 - 28.75 Moderate-Strong Calcite>>

<<Alt: 27.45 - 29.75 Weak-Moderate Biotite>>

28.75 33.82 RHYvl Lapilli tuff

<<Min: 28.75 - 33.85 3% Min: Pyrite>>

<<Min: 33.24 - 35.6 1% Min: Pyrrhotite>>

<<Min: 33.24 - 40.6 1% Min: Pyrite>>

<<Min: 33.7 - 45 3% Min: Pyrite>>

<<Alt: 28.75 - 33.4 Trace Chlorite>>

<<Alt: 29.75 - 33.82 Weak-Moderate Calcite>>

<<Alt: 33.24 - 53.62 Trace Biotite>>

<<Struc: 32.6 - 33 Weak-Moderate Fault>> broken core, minor crushed zones (<10cm wide)

33.82 34.24 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 33.82 - 34.24 Moderate-Strong Calcite>>

34.24 46.63 RHYvl Lapilli tuff

<<Min: 40.6 - 44.7 5% Min: Pyrite>> in qtz bands (foliaform veinlets) and as diss

<<Min: 45 - 46.63 3% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 34.24 - 39.6 Weak Calcite>>

<<Alt: 39.6 - 46.63 Trace Calcite>>

<<Vein: 39.44 - 41.23 20% Quartz 50 deg. >> foliaform bull qtz

<<Vein: 44 - 45 25% Quartz-Tourmaline>> foliaform and croscutting

<<Struc: 34.24 - 35 Moderate-Strong dominant foliation>>

46.63 48.30 PEL Equigranular biotite + calcite +/- quartz rock

46.63 - 48.3: gradational interfingering contacts

<<Min: 46.63 - 48.3 3% Min: Pyrrhotite>> in qtz-cal-chl bands

<<Alt: 46.63 - 48.3 Strong Calcite>>

<<Alt: 46.63 - 48.6 Weak-Moderate Chlorite>>

<<Vein: 46.7 - 48.53 10% Quarzt-Chlorite-Carbonate 65 deg. >> calcite, and qtz-calcite-chlorite veinlets

48.30 53.62 RHYva Coarse grained to ash tuff

48.3 - 53.62: some streaky biotite sections could be lpl

<<Min: 48.3 - 53.62 3% Min: Pyrite>>

<<Min: 48.3 - 54.6 1% Min: Pyrrhotite>>

<<Alt: 48.3 - 57.61 Weak Calcite>> patchy diss

<<Alt: 48.6 - 53.62 Trace Chlorite>>

<<Struc: 53.4 - 53.8 Moderate-Strong dominant foliation>>

53.62 57.61 RHYvx Quartz and/or feldspar crystal tuff

53.62 - 57.61: 53.82-54.52: RHYva, as above unit. Qtz marker unit

<<Min: 53.62 - 69.78 3% Min: Pyrite>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets, also as diss

<<Min: 56.1 - 57.61 0.5% Min: Sphalerite>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets

<<Min: 56.1 - 57.61 0.1% Min: Galena>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets

<<Min: 56.1 - 57.61 0.1% Min: Chalcopyrite>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets

<<Alt: 53.62 - 69.78 Moderate Chlorite>>

<<Alt: 53.62 - 69.78 Weak Biotite>>

<<Struc: 54.93 - 56.75 Weak-Moderate Fault>> broken and crushed core

57.61 59.45 RHYva Coarse grained to ash tuff

57.61 - 59.45: gradational biotite-calcite PEL on margins with green-grey RHYva in center.

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
			<<Min: 57.61 - 59.45 0.1% Min: Chalcopyrite>>									
			<<Alt: 57.61 - 59.45 Moderate Calcite>>									
59.45	**69.68**	**RHYvx**	**Quartz and/or feldspar crystal tuff**	60.00	61.50	1.50	D00004406	0.029	6.2	0.26	0.09	0.3
			59.45 - 69.68: marker unit. 68.50-69.68m: increaseingly blebby, decrease in % qtz eyes, possible coarse prophyry clasts (white-light pink with rare blue qtz eyes) or 'clasts' may be albite alteration. Blebbly feldspar phenos also 'albite' altered.									
			<<Min: 59.45 - 62.7 0.5% Min: Sphalerite>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets, also as diss	61.50	63.00	1.50	D00004407	0.009	1.9	0.04	0.17	0.4
			<<Min: 59.45 - 62.7 0.1% Min: Galena>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets									
			<<Min: 59.45 - 62.7 0.1% Min: Chalcopyrite>> mostly in thin qtz-chl-py-sp-cp foliaform veinlets									
			<<Alt: 59.45 - 69.78 Weak Calcite>>									
			<<Vein: 63.74 - 65.9 15% Quartz-Chlorite>> qtz vns, trace chl									
			<<Struc: 60.7 - 61 Moderate Fault>> broken and crushed core									
			<<Struc: 62.2 - 62.3 Weak-Moderate Fault>> crushed and gouge									
			<<Struc: 63.47 - 64 Moderate dominant foliation>> parallel to qtz-chl-sulfide veinlets									
			<<Struc: 64.13 - 64.53 Moderate-Strong Vein>> parallel to DFOL									
			<<Struc: 67.65 - 67.7 Moderate-Strong Contact>>									
69.68	**70.66**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**									
			<<Min: 69.78 - 72 1% Min: Pyrite>> and in thin qtz-chl-py-sp-cp foliaform veinlets									
			<<Alt: 69.78 - 70.66 Trace Chlorite>>									
			<<Alt: 69.78 - 70.66 Moderate-Strong Calcite>>									
70.66	**76.74**	**RHYvx**	**Quartz and/or feldspar crystal tuff**									
			70.66 - 76.74: mod-strong chl-bio alt, minor sufide in foliaform qtz-cal mm bands (<05cm wide)									
			<<Min: 72 - 76.74 0.5% Min: Pyrite>>									
			<<Alt: 70.66 - 76.72 Weak Calcite>>									
			<<Alt: 70.66 - 76.74 Moderate-Strong Chlorite>>									
			<<Alt: 76.72 - 80.6 Trace Calcite>>									
			<<Struc: 72 - 73.3 Weak Fault>> broken and crushed core, minor gouge									
76.74	**80.60**	**RHYva**	**Coarse grained to ash tuff**	76.74	78.00	1.26	D00004408	0.01	2.4	0.02	0.05	0.16
			76.74 - 80.6: pyritic, fine white muscovite altered below 78.25									
			<<Min: 76.74 - 77.18 0.1% Min: Sphalerite>>	78.00	79.20	1.20	D00004409	0.036	3.4	-0.01	0.05	0.05

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 76.74 - 77.18 3% Min: Pyrite>>			79.20	80.60	1.40	D00004411	0.031	4.2	-0.01	0.07	0.06
<<Min: 76.74 - 77.18 0.1% Min: Galena>>											
<<Min: 76.74 - 77.18 0.5% Min: Chalcopyrite>>											
<<Min: 77.18 - 80.6 3% Min: Pyrite>>											
<<Alt: 76.74 - 78 Weak-Moderate Muscovite>> bleaching, fine white musc											
<<Alt: 78 - 80.6 Strong Muscovite>> bleaching, fine white musc											
<<Struc: 78 - 83.37 Moderate Fault>> broken and crushed core, minor gouge											
80.60	**82.21**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	80.60	82.21	1.61	D00004412	0.009	0.3	-0.01	-0.01	0.07
80.6 - 82.21: contains qtz-calcite-chlorite bands											
<<Min: 80.6 - 82.21 1% Min: Pyrite>>											
<<Alt: 80.6 - 82.21 Moderate-Strong Calcite>>											
<<Alt: 80.6 - 82.31 Moderate-Strong Biotite>>											
<<Alt: 80.6 - 83.74 Weak Chlorite>>											
82.21	**83.74**	**RHYva** **Coarse grained to ash tuff**	82.21	83.74	1.53	D00004413	0.305	1.9	0.03	0.09	0.62
<<Min: 82.21 - 83.74 3% Min: Pyrite>>											
<<Min: 83 - 83.74 0.5% Min: Sphalerite>> diss in 0.5cm qtz bands											
<<Min: 83.54 - 85.91 3% Min: Pyrrhotite>>											
<<Alt: 82.21 - 85.91 Trace Calcite>>											
<<Alt: 82.31 - 83.74 Weak Muscovite>> bleached, weak sericite											
<<Alt: 82.31 - 86 Weak-Moderate Biotite>> on folia											
<<Struc: 83.5 - 86 Moderate-Strong dominant foliation>>											
83.74	**85.91**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** **MCG**	83.74	85.09	1.35	D00004414	0.478	23.8	0.1	2.15	3.19
83.74 - 85.91: well banded OJ with about 20% total sulfides as diss, blebs and bands. Chlorite -biotite bands, blebs and diss											
<<Min: 83.74 - 85.09 5% Min: Sphalerite>>			85.09	85.91	0.82	D00004415	0.305	8	0.08	0.26	0.42
<<Min: 83.74 - 85.09 1% Min: Galena>>											
<<Min: 83.74 - 85.09 1% Min: Chalcopyrite>>											
<<Min: 83.74 - 85.91 5% Min: Pyrite>>											
<<Min: 85.09 - 85.91 1% Min: Sphalerite>>											

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 85.09 - 85.91 0.5% Min: Chalcopyrite>>												
<<Alt: 83.74 - 86 Weak Muscovite>> bleaching and fine muscovite												
<<Alt: 83.74 - 86 Moderate Garnet>>												
<<Alt: 83.74 - 86.83 Moderate-Strong Chlorite>>												
85.91	**86.50 OD**	**Brecciated sulphides**	**CG**	85.91	86.50	0.59	D00004416	1.6	164	0.62	5.3	5.94
85.91 - 86.5: breccia with OJ ,qtz (-leucite) clasts in qtz-sulfide-chlorite matrix.												
<<Min: 85.91 - 86.5 10% Min: Sphalerite>>												
<<Min: 85.91 - 86.5 10% Min: Pyrrhotite>>												
<<Min: 85.91 - 86.5 3% Min: Galena>>												
<<Min: 85.91 - 86.5 5% Min: Chalcopyrite>>												
<<Alt: 85.91 - 87.58 Weak-Moderate Calcite>> calcite clasts, diss and filling.												
86.50	**87.75 OF**	**Pyrrhotite rich sulphides**	**CG**	86.50	87.75	1.25	D00004417	2.83	179	0.42	5.84	8.2
86.5 - 87.75: 86.69-87.23: pyrrhotite approx 40%, section brx with OJ - qtz clasts (qtz-chl-sulfide matrix)												
<<Min: 86.5 - 87.75 20% Min: Sphalerite>>												
<<Min: 86.5 - 87.75 3% Min: Pyrite>>												
<<Min: 86.5 - 87.75 40% Min: Pyrrhotite>>												
<<Min: 86.5 - 87.75 5% Min: Galena>>												
<<Min: 86.5 - 87.75 3% Min: Chalcopyrite>>												
<<Alt: 86.6 - 88.8 Moderate Cordierite>>												
<<Alt: 86.83 - 88.8 Weak-Moderate Chlorite>> blebs, repacements, rare bands												
<<Alt: 87.58 - 88.28 Trace Calcite>>												
87.75	**88.80 OF**	**Pyrrhotite rich sulphides**	**CG**	87.75	88.80	1.05	D00004418	1.34	64.2	0.22	2.47	5.9
87.75 - 88.8: bands and blebs of sulfides												
<<Min: 87.75 - 88 1% Min: Chalcopyrite>>												
<<Min: 87.75 - 88.8 10% Min: Sphalerite>>												
<<Min: 87.75 - 88.8 5% Min: Pyrite>>												
<<Min: 87.75 - 88.8 5% Min: Pyrrhotite>>												
<<Min: 87.75 - 88.8 3% Min: Galena>>												
<<Min: 88 - 88.8 0.5% Min: Chalcopyrite>>												
<<Alt: 88.28 - 88.8 Moderate Calcite>> diss, in matrix and as replacement												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
88.80	**90.00**	**RHY undifferentiated rhyolite MCG**	88.80	89.16	0.36	D00004419	0.121	7.8	0.01	0.22	0.17
88.8 - 90: sections chlorite -biotite altered, 89.16-89.30: banded sulfides. Locally siliceous.											
<<Min: 88.8 - 89.16 1% Min: Pyrite>>			89.16	90.00	0.84	D00004421	0.796	57.8	0.11	2.04	2.18
<<Min: 89.16 - 89.3 10% Min: Sphalerite>>											
<<Min: 89.16 - 89.3 20% Min: Pyrite>>											
<<Min: 89.16 - 89.3 5% Min: Pyrrhotite>>											
<<Min: 89.16 - 89.3 5% Min: Galena>>											
<<Min: 89.3 - 90 3% Min: Pyrite>>											
<<Min: 89.3 - 90 0.1% Min: Chalcopyrite>>											
<<Alt: 88.8 - 89.16 Weak Calcite>>											
<<Alt: 88.8 - 90 Moderate-Strong Silicification>>											
<<Alt: 88.8 - 90 Weak Muscovite>> bleached and silicified											
<<Alt: 88.8 - 90 Weak Chlorite>>											
<<Alt: 88.8 - 90 Weak Biotite>> minor non bleached - silicified sections.											
<<Alt: 89.16 - 89.5 Weak-Moderate Calcite>> in sufide band and as calcareous bands in RHYva.											
<<Alt: 89.5 - 90.53 Trace Calcite>>											
<<Struc: 88.8 - 89.25 Weak Fault>> broken core											
<<Struc: 89.5 - 90 Weak-Moderate Fault>> broken core											
90.00	**90.53**	**OF Pyrrhotite rich sulphides CG**	90.00	90.53	0.53	D00004422	2.96	150	0.24	4.86	11.3
90 - 90.53: Graditional from OF at 90.00m to OL at 90.53m. 90.30-90.53: Buckshot pyrite in pyrrhotite - sphalerite groundmass.											
<<Min: 90 - 90.25 0.5% Min: Chalcopyrite>>											
<<Min: 90 - 90.53 10% Min: Sphalerite>>											
<<Min: 90 - 90.53 15% Min: Pyrite>>											
<<Min: 90 - 90.53 30% Min: Pyrrhotite>>											
<<Min: 90 - 90.53 3% Min: Galena>>											
<<Alt: 90 - 90.53 Weak-Moderate Chlorite>>											
<<Alt: 90 - 90.53 Trace Biotite>>											
90.53	**91.58**	**RHY undifferentiated rhyolite**	90.53	91.42	0.89	D00004423	0.069	3	0.01	0.07	0.06
90.53 - 91.58: 91.50-91.58: Med-coarse grained sulfide band at contact with PEL. Rhy has qtz clasts and blebby appearance.											
<<Min: 90.53 - 90.73 3% Min: Pyrrhotite>>			91.42	92.68	1.26	D00004424	0.192	35.2	0.03	1.39	2.2

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 90.73 - 91.42 0.1% Min: Pyrite>>									
		<<Min: 91.42 - 91.58 5% Min: Sphalerite>>									
		<<Min: 91.42 - 91.58 5% Min: Pyrite>>									
		<<Min: 91.42 - 91.58 20% Min: Pyrrhotite>>									
		<<Alt: 90.53 - 90.7 Moderate-Strong Calcite>> calcareous band									
		<<Alt: 90.53 - 90.73 Moderate-Strong Biotite>>									
		<<Alt: 90.7 - 91.5 Trace Calcite>>									
		<<Alt: 90.73 - 91.43 Moderate-Strong Muscovite>> sericite-muscovite and bleached									
		<<Alt: 90.73 - 91.43 Trace Chlorite>>									
		<<Alt: 91.43 - 95.6 Weak-Moderate Chlorite>> patchy									
		<<Alt: 91.43 - 97.96 Weak Muscovite>> local bleaching and sericite on fractures.									
		<<Alt: 91.5 - 92.5 Moderate Calcite>>									
		<<Struc: 90.73 - 92.74 Weak-Moderate Fault>> broken and crushed core, minor gouge									
91.58	**92.94**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	92.68	94.10	1.42	D00004425	0.018	8.6	-0.01	0.39	0.79
		91.58 - 92.94: gougy, 92.45-92.65: minor sulfides, bleaching around Qtz-tourmaline vein.									
		<<Min: 91.58 - 92.45 0.5% Min: Pyrite>>									
		<<Min: 92.45 - 95.6 0.1% Min: Sphalerite>> in qtz-chl-cal veins and selveges									
		<<Min: 92.45 - 95.6 1% Min: Pyrite>> plus trace diss py in RHY									
		<<Min: 92.45 - 95.6 0.1% Min: Galena>> in qtz-chl-cal veins and selveges									
		<<Alt: 92.5 - 95.6 Weak-Moderate Calcite>> bands, diss, blebs and veinlets									
		<<Struc: 92.8 - 95.5 Moderate-Strong dominant foliation>>									
92.94	**95.60**	**RHYvx** **Quartz and/or feldspar crystal tuff**	94.10	95.60	1.50	D00004426	0.014	12.3	0.01	0.42	0.7
		92.94 - 95.6: contains PLE sections as wisps and up to 20cm wide.									
		<<Vein: 93.17 - 96.56 5% Quartz 30 deg. >> qtz veins, mostly at low angle									
		<<Struc: 93.9 - 94.15 Moderate-Strong Vein>>									
		<<Struc: 95.5 - 95.65 Moderate-Strong Contact>>									
95.60	**97.96**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	95.60	97.00	1.40	D00004427	0.011	-0.3	-0.01	-0.01	0.08
		95.6 - 97.96: local ash and bleached sections around qtz veining.									
		<<Min: 95.6 - 96.48 0.5% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 96.38 - 96.46 3% Min: Sphalerite>> qtz vein

<<Min: 96.38 - 96.46 5% Min: Pyrite>> qtz vein

<<Min: 96.38 - 96.48 1% Min: Galena>> qtz vein

<<Min: 96.48 - 97.96 0.1% Min: Pyrite>>

<<Alt: 95.6 - 97.96 Weak-Moderate Calcite>>

<<Vein: 96.38 - 96.46 100% Quartz-Sulphide 50 deg. >> qtz vein - diss sulfides, 15cm bleached envelope

97.96 103.37 RHYvx Quartz and/or feldspar crystal tuff

97.96 - 103.37: minor PEL bands and wisps, minor qtz-biot-sulfide bands

<<Min: 97.96 - 98.88 0.1% Min: Sphalerite>> rare diss and in rare veinlets

<<Min: 97.96 - 98.88 1% Min: Pyrite>> rare diss and in rare veinlets

<<Min: 98.88 - 100.75 1% Min: Sphalerite>> in qtz-chl-cal veins and selveges

<<Min: 98.88 - 100.75 5% Min: Pyrite>> in qtz-chl-cal veins and selveges

<<Min: 98.88 - 100.75 3% Min: Pyrrhotite>>

<<Min: 98.88 - 100.75 0.1% Min: Galena>> in qtz-chl-cal veins and selveges

<<Min: 100.75 - 103.37 1% Min: Pyrite>>

<<Min: 103 - 108 2% Min: Pyrrhotite>>

<<Alt: 97.96 - 103.37 Weak Calcite>>

<<Vein: 98.28 - 98.31 100% Quartz-Tourmaline 40 deg. >> 10cm bleached siliceous envelope

<<Vein: 98.88 - 101.12 5% Quartz-Sulphide 65 deg. >> mm- <4 cm bands of diss sulfides with qtz +/- calcite

<<Struc: 100 - 100.5 Moderate dominant foliation>>

<<Struc: 100.69 - 100.75 Moderate-Strong Foliation>> foliaform qtz-sulfide vein

103.37 104.46 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 103.37 - 104.46 Moderate-Strong Calcite>>

104.46 108.28 RHYvx Quartz and/or feldspar crystal tuff

104.46 - 108.28: minor PEL bands and wisps, minor qtz-biot-sulfide bands

<<Min: 104.46 - 108.28 1% Min: Pyrite>> minor veinlets and as diss

<<Alt: 104.46 - 108.28 Weak-Moderate Calcite>>

<<Vein: 106.55 - 107 10% Quartz 55 deg. >>

<<Struc: 104.46 - 105 Moderate-Strong dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 106.4 - 106.65 Moderate-Strong dominant foliation>>

<<Struc: 107.9 - 108.1 Weak-Moderate Fault>> broken and crushed core

108.28 118.30 RHYcf Feldspar & feldspar quartz porphyry

108.28 - 118.3: feldspar and qtz eye porphyritic. Same as RHYcf unit in K16-393, massive and fairly homogeneous.

<<Min: 108.28 - 118.3 0.5% Min: Sphalerite>> diss on fractures and thin diffuse qtz-sulfide veinlets

<<Min: 108.28 - 118.3 1% Min: Pyrite>>

<<Min: 108.28 - 118.3 0.01% Min: Pyrrhotite>>

<<Alt: 108.28 - 118.3 Weak Calcite>>

<<Alt: 114 - 129.53 Weak-Moderate Muscovite>> fine white musc on folia and sericite on fractures. Musc also in qtz vein envelopes

<<Vein: 114.15 - 114.32 70% Quartz 60 deg. >> qtz, minor sulfides on margins

<<Struc: 108.34 - 113.05 Weak-Moderate Fault>> broken and crushed core

118.30 128.48 RHYvx Quartz and/or feldspar crystal tuff

118.3 - 128.48: Minor PEL zones

<<Min: 118.3 - 119.8 0.1% Min: Sphalerite>>

<<Min: 118.3 - 119.8 3% Min: Pyrite>>

<<Min: 118.3 - 119.8 1% Min: Pyrrhotite>>

<<Min: 119.8 - 127.7 1% Min: Pyrite>>

<<Min: 119.8 - 127.8 0.01% Min: Sphalerite>>

<<Min: 119.8 - 127.8 0.01% Min: Galena>>

<<Min: 127.8 - 127.85 10% Min: Sphalerite>>

<<Min: 127.8 - 127.85 5% Min: Galena>>

<<Min: 127.8 - 128.48 3% Min: Pyrite>>

<<Alt: 118.3 - 118.8 Moderate Calcite>>

<<Alt: 118.8 - 129.53 Weak Calcite>>

<<Alt: 126.24 - 128.48 Weak-Moderate Chlorite>>

<<Vein: 120.1 - 120.3 10% Quartz-Tourmaline 30 deg. >> bleached musc envelope

<<Struc: 121 - 123.2 Moderate Fault>> broken and crushed core, missing core

<<Struc: 124.2 - 128 Moderate Fault>> broken and crushed core, missing core, sericite & clay on foliation and fractures

128.48 129.00 RHYva Coarse grained to ash tuff

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 128.48 - 129.53 0.1% Min: Sphalerite>>

<<Min: 128.48 - 129.53 3% Min: Pyrite>>

<<Alt: 128.48 - 129.8 Trace Chlorite>>

129.00 129.53 RHYc Rhyolite coherant volcanics

<<Struc: 129.2 - 136.5 Weak Fault>> fractured with sericte - clay on fractures, local thn (cm) gouge zones

129.53 132.81 PEL Equigranular biotite + calcite +/- quartz rock

129.53 - 132.81: bleaching and/or ash rich over 20cm at upper contact.

<<Min: 129.53 - 132.81 0.5% Min: Pyrrhotite>> and bleb in qtz veinlet

<<Alt: 129.53 - 132.81 Moderate-Strong Calcite>>

132.81 135.04 RHYvx Quartz and/or feldspar crystal tuff

<<Min: 132.81 - 136.53 0.1% Min: Sphalerite>>

<<Min: 132.81 - 136.53 0.5% Min: Pyrrhotite>>

<<Alt: 132.81 - 135.04 Weak Calcite>>

<<Vein: 134.82 - 135.08 40% Quartz>> irregular qtz veining

<<Struc: 134.2 - 145.35 Moderate Fault>> gougy schist

135.04 136.07 PEL Equigranular biotite + calcite +/- quartz rock

135.04 - 136.07: pel and ash

<<Alt: 135.05 - 136.07 Moderate-Strong Calcite>>

136.07 136.53 RHYvx Quartz and/or feldspar crystal tuff

136.07 - 136.53: ashy

<<Alt: 136.07 - 136.53 Weak Calcite>>

<<Alt: 136.07 - 139.06 Weak Muscovite>>

<<Alt: 136.07 - 139.34 Weak Chlorite>>

136.53 138.94 PEL Equigranular biotite + calcite +/- quartz rock

136.53 - 138.94: 138.30-138.6: RHYvx-QE, Pelitic and weakly chlorite altered.

<<Min: 136.53 - 139.2 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 136.53 - 139.26 0.5% Min: Pyrite>>

<<Alt: 136.53 - 138.94 Moderate Calcite>>

<<Vein: 136.57 - 137.08 95% Quartz-Carbonate>> mostly qtz vein

<<Vein: 137.08 - 139.56 10% Quartz-Carbonate>> mostly qtz

<<Struc: 137.1 - 137.8 Moderate Fault>> broken and crushed core, minor gouge

138.94 139.26 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 138.94 - 142.45 Trace Calcite>>

<<Alt: 139.06 - 143.3 Moderate Muscovite>> envelope around qtz-tour vein

139.26 143.30 RHYva Coarse grained to ash tuff

139.26 - 143.3: Ash-Pel unit cut by qtz-tourmaline vein 141.15-142.68m with a fine grained muscovite envelope (139.26-145.3m). Might all be altered bleached PEL and not a RHYva at all.

<<Min: 139.26 - 140.5 5% Min: Pyrite>>

<<Min: 140.5 - 142.75 0.1% Min: Pyrite>>

<<Alt: 142.45 - 142.8 Moderate Calcite>>

<<Alt: 142.8 - 150.25 Trace Calcite>>

<<Vein: 141.18 - 142.76 Quartz-Tourmaline>> mostly white bull qtz

<<Struc: 140.6 - 141.2 Weak-Moderate Fault>> broken, minor gouge

143.30 143.95 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 143.85 - 151.3 3% Min: Pyrrhotite>>

<<Min: 143.9 - 146.18 3% Min: Pyrite>>

<<Alt: 143.5 - 146.19 Weak Chlorite>>

<<Alt: 143.88 - 147.87 Weak Muscovite>>

<<Struc: 143.9 - 148.07 Moderate Fault>> broken, minor gouge

143.95 148.93 RHYvl Lapilli tuff

<<Min: 146.18 - 147.44 3% Min: Pyrite>>

<<Min: 147.44 - 150.57 1% Min: Pyrite>>

<<Alt: 146.19 - 153.42 Weak-Moderate Chlorite>>

<<Alt: 147.87 - 160.57 Moderate Muscovite>> locally Mu alteration has been obliterated by later silicifiction in Qtz-tour vein envelopes.

<<Struc: 146.33 - 148 Weak Fault>> four 2-10cm gouge zones

From (m)	To (m)	Rocktype & Description
148.93	**160.57**	**RHYva Coarse grained to ash tuff**

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
159.10	160.57	1.47	D00004428	0.024	1.9	0.02	0.03	0.02

148.93 - 160.57: Mostly RHYva, OP qtz-tour-musc bleaching alteration due to cross cutting QTz-Tour veins obscures original textures. Original chl-biot-qtz alt 153.40-154.12m does the same.

<<Min: 150.57 - 151 5% Min: Pyrite>> QT vein envelope

<<Min: 151 - 155.26 1% Min: Pyrite>> rare blebs

<<Min: 152.3 - 158 3% Min: Pyrrhotite>>

<<Min: 155.26 - 157 3% Min: Pyrite>>

<<Min: 156.4 - 157.15 0.1% Min: Sphalerite>>

<<Min: 156.4 - 157.15 0.1% Min: Galena>>

<<Min: 157 - 160.57 1% Min: Pyrite>>

<<Min: 157.55 - 157.65 0.1% Min: Sphalerite>>

<<Min: 157.55 - 157.65 0.1% Min: Galena>>

<<Min: 159 - 159.24 0.5% Min: Sphalerite>>

<<Alt: 150.1 - 151.3 Moderate-Strong Silicification>> envelope to qtz-tour vein

<<Alt: 150.25 - 153.36 Weak Calcite>>

<<Alt: 153.2 - 154.5 Moderate Biotite>> in bands

<<Alt: 153.36 - 154.15 Weak-Moderate Calcite>>

<<Alt: 153.42 - 154.36 Moderate-Strong Chlorite>>

<<Alt: 154.15 - 158.6 Trace Calcite>>

<<Alt: 154.5 - 156.25 Weak Biotite>>

<<Alt: 156.85 - 158.6 Moderate Silicification>> envelope to qtz-tour vein

<<Alt: 158 - 159.6 Weak Chlorite>>

<<Alt: 158.6 - 161.25 Weak-Moderate Calcite>>

<<Alt: 160.27 - 161.36 Moderate Biotite>>

<<Vein: 150.57 - 151.3 20% Quartz-Tourmaline>>

<<Vein: 153.48 - 154.2 25% Quartz-Carbonate 70 deg. >> banded qtz and lesser calcite

<<Vein: 157.33 - 157.36 75% Quartz-Tourmaline 20 deg. >>

<<Struc: 149.3 - 149.6 Weak-Moderate Fault>> broken, minor gouge

<<Struc: 151.4 - 152 Moderate dominant foliation>>

<<Struc: 152 - 152.04 Moderate Fault>> fault gouge, crosscuts foliation

<<Struc: 154.3 - 156.64 Weak Fault>> 4 intense muscovite altered zones avg 10cm

<<Struc: 157 - 157.75 Moderate dominant foliation>>

<<Struc: 157.28 - 157.56 Moderate Vein>> qtz - tour vein

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
160.57	**161.16**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**MCG**	160.57	161.16	0.59	D00004429	0.17	9.4	0.1	0.1	3.61
160.57 - 161.16: sharp contacts defined by cordierite - biotite-chlorite-tourmaline alteration and increase in sulfides													
<<Min: 160.57 - 161.16 3% Min: Sphalerite>>													
<<Min: 160.57 - 161.16 3% Min: Pyrite>>													
<<Min: 160.57 - 161.16 5% Min: Pyrrhotite>>													
<<Alt: 160.57 - 161.16 Weak Chlorite>>													
<<Alt: 160.57 - 161.16 Strong Cordierite>>													
161.16	**162.01**	**RHY**	**undifferentiated rhyolite**	**light grey**	161.16	162.01	0.85	D00004432	-0.005	1.2	0.04	0.01	0.04
<<Min: 161.16 - 162.01 1% Min: Pyrite>>													
<<Min: 161.16 - 162.01 3% Min: Pyrrhotite>>													
<<Alt: 161.16 - 162.01 Weak-Moderate Chlorite>>													
<<Alt: 161.29 - 164.72 Weak Calcite>>													
<<Struc: 161.29 - 161.8 Moderate dominant foliation>>													
162.01	**164.72**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	**MCG**	162.01	162.46	0.45	D00004433	0.015	7.8	0.15	0.09	11.9
162.01 - 164.72: sharp contacts defined by cordierite - biotite-chlorite-tourmaline-garnet alteration and increase in sulfides													
<<Min: 162.01 - 162.46 10% Min: Sphalerite>>					162.46	163.70	1.24	D00004434	0.013	6.8	0.05	0.17	2.14
<<Min: 162.01 - 162.46 20% Min: Pyrrhotite>>					163.70	164.72	1.02	D00004435	0.01	7.2	0.1	0.38	2.8
<<Min: 162.46 - 163.7 1% Min: Sphalerite>>													
<<Min: 162.46 - 163.7 5% Min: Pyrrhotite>>													
<<Min: 162.46 - 163.7 0.1% Min: Chalcopyrite>>													
<<Min: 163.7 - 164.72 5% Min: Sphalerite>>													
<<Min: 163.7 - 167.72 1% Min: Pyrite>>													
<<Min: 163.7 - 167.72 10% Min: Pyrrhotite>>													
<<Min: 163.7 - 167.72 0.1% Min: Galena>>													
<<Min: 163.7 - 167.72 1% Min: Chalcopyrite>>													
<<Alt: 162.01 - 164.72 Weak-Moderate Chlorite>> diss, blebs and rare bands													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 162.01 - 164.72 Moderate Biotite>>

<<Alt: 162.21 - 164.72 Trace Tourmaline>>

<<Alt: 162.21 - 164.72 Moderate-Strong Cordierite>>

<<Alt: 163 - 164.05 Weak-Moderate Garnet>>

<<Vein: 163.66 - 166.65 5% Quartz-Chlorite>>

164.72 167.75 PEL **Equigranular biotite + calcite +/- quartz rock**			164.72	166.20	1.48	D00004436	-0.005	-0.3	-0.01	-0.01	0.08

164.72 - 167.75: crossed by minor qtz-calcite-chlorite veins

<<Min: 167.72 - 167.75 3% Min: Pyrrhotite>>

<<Alt: 164.72 - 167.8 Moderate-Strong Calcite>> and bands

<<Alt: 164.95 - 171.77 Weak Chlorite>> commonly in calcite veins-bands

<<Struc: 166.8 - 167.3 Moderate dominant foliation>>

<<Struc: 167.46 - 167.7 Trace Fault>> fractures with clay

167.75 170.13 PEL **Equigranular biotite + calcite +/- quartz rock**

167.75 - 170.13: Altered PEL, Chlorite -calcite bands and blebs, calicte angular blebs 1-2mm (replacing cordierite?) containing chlorite & pyrite. Diss py and pyrrhotite. No vis sp or gl.

<<Min: 167.75 - 171.87 3% Min: Pyrite>>

<<Min: 167.75 - 171.87 5% Min: Pyrrhotite>>

<<Alt: 167.75 - 170.13 Weak-Moderate Tourmaline>>

<<Alt: 167.8 - 173.7 Weak-Moderate Calcite>>

<<Struc: 167.9 - 169.8 Moderate-Strong dominant foliation>> chlorite banding

170.13 187.36 RHYva **Coarse grained to ash tuff**

170.13 - 187.36: Variably bleached - muscovite altered PEL and RHYva. Brown - maroon biotite in wispy bands. Locally finer 'ash' bands and rare sections with coarser qtz blebs and discontinuous bands (likely lapilli). Unit cross cut by several intensely bleached muscovite rich zones. Alteration looks similar to that of a hornfels zone adjacent to granite body.

<<Min: 171.87 - 187.36 3% Min: Pyrite>> increases downhole with increase in musc alt

<<Min: 171.87 - 187.36 3% Min: Pyrrhotite>> decreases downhole

<<Alt: 171 - 174 Weak Muscovite>>

<<Alt: 173.7 - 179 Weak Calcite>> diss, rare veinlets

<<Alt: 174 - 181.74 Moderate Muscovite>>

<<Alt: 179 - 187.36 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 181.74 - 191.5 Moderate-Strong Muscovite>> increasing down section and more intense around local fault zones

<<Vein: 176.45 - 177.03 40% Quartz-Albite>>

<<Vein: 180.87 - 181.2 100% Quartz-Tourmaline>>

<<Struc: 173 - 174 Moderate-Strong dominant foliation>>

<<Struc: 174.9 - 175 Weak Fault>> broken, minor gouge

<<Struc: 176 - 176.1 Weak Fault>> broken, minor gouge

<<Struc: 177.29 - 177.4 Trace Fault>> broken, minor gouge

<<Struc: 178.1 - 178.25 Trace Fault>> broken, minor gouge

<<Struc: 180 - 180.3 Moderate-Strong dominant foliation>>

<<Struc: 180.85 - 181.1 Moderate Vein>> irregular qtz-tour vein

<<Struc: 182 - 182.5 Moderate-Strong dominant foliation>>

<<Struc: 183 - 184.6 Moderate Fault>> fault - shear zone, abundant gouge zones

<<Struc: 184.6 - 187.6 Weak Fault>> broken and minor crushed core

<<Struc: 185.5 - 186.15 Moderate-Strong dominant foliation>>

<<Struc: 187 - 188.1 Weak-Moderate Fault>> broken core, minor shearing planes with fine breccia

187.36 188.10 RHYc Rhyolite coherant volcanics

187.36 - 188.1: silic bands, muscovite rich folia.

<<Min: 187.36 - 188.2 3% Min: Pyrite>>

188.10 191.10 RHYva Coarse grained to ash tuff

188.1 - 191.1: strongly sheared and faulted; fault gouge & crushed core and muscovite - sericite rich gouge and tectonic breccia zones. Minor remnant chlorite bands and blebs. Tourmaline porphyroblasts in minor siliceous zone. Lots of missing core.

<<Min: 188.2 - 190 3% Min: Pyrrhotite>>

<<Min: 190 - 193.1 1% Min: Pyrite>>

<<Alt: 189 - 189.76 Weak Tourmaline>>

<<Alt: 191 - 194.15 Weak Chlorite>>

<<Struc: 188.1 - 196.7 Strong Fault>> fault - shear zone, abundant gouge zones, missing core

191.10 192.00 SEDc calcareous Sediment

191.1 - 192: 0.5-1cm banded calcite with chlorite - clay - muscovite-sericite folia

<<Alt: 191.1 - 195.5 Moderate Calcite>> patchy; CA veins and fault breccia

<<Alt: 191.5 - 208.1 Moderate Muscovite>> sericite - mucovite with clay in fault - shear zones

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
192.00	**194.15**	**FLZ** **Fault Zone** 192 - 194.15: Fault zone with gouge, crushed schist and tectonic breccia clasts of PEL, rare dark grey carbonaceous mudstone clasts and chlorite altered RHY(?), calcite vein clasts, chlorite schist with garnet and strong musc-sericite-clay altered rock of unknown protolith <<Min: 192 - 193.1 0.1% Min: Pyrrhotite>> <<Min: 193.1 - 195.67 0.1% Min: Pyrite>>									
194.15	**196.55**	**SEDc** **calcareous Sediment** 194.15 - 196.55: Dark grey carbonaceous and moderately siliceous, variably brecciated, includes white-brown banded calcareous rich sections, (hence SEDc), local garnets. Unit is interpreted to be a brecciated silicified carbonaceous SEDc could also be a calcareous mudstone. Chlorite-pyrite on shears and interstitial pyrrhotite in more competent brecciated - silicified sections (195.77-196.33m). <<Min: 195.67 - 196.55 3% Min: Pyrite>> <<Min: 195.67 - 196.55 5% Min: Pyrrhotite>> <<Alt: 194.15 - 195 Weak Garnet>> <<Alt: 194.15 - 196.55 Trace Tourmaline>> <<Alt: 194.15 - 196.55 Weak-Moderate Chlorite>> <<Alt: 194.15 - 196.55 Weak-Moderate Biotite>> <<Alt: 196.4 - 197.87 Weak Calcite>> <<Struc: 196.25 - 208.25 Strong Fault>> fault - shear zone, abundant gouge zones, missing core	195.70	196.33	0.63	D00004437	-0.005	1.1	-0.01	0.01	0.05
196.55	**200.80**	**FLZ** **Fault Zone** 196.55 - 200.8: Fault zone, lots of missing core, broken and crushed core, minor gouge. Clasts of vairablly chl-muscovite-sericite altered RHYva and/or bleached PEL, qtz vein clasts, with chlorite bands and blebs on fractures and shear planes. <<Min: 196.55 - 210 1% Min: Pyrite>> occasional blebs <<Min: 198 - 202.75 1% Min: Pyrrhotite>> occasional blebs <<Alt: 196.55 - 201.15 Weak Chlorite>>									
200.80	**201.15**	**RHYvx** **Quartz and/or feldspar crystal tuff** 200.8 - 201.15: 33cm core recovered in interval. Lower contact gradational over 3 cm.									
201.15	**203.10**	**PEL** **Equigranular biotite + calcite +/- quartz rock** 201.15 - 203.1: PEL cut by foliaform qtz-calcite veins with chlorite envelope. Also more massive med grained equigranular qtz-chl-biotite 'PEL'. Approx 55cm core recovered in interval. <<Alt: 201.15 - 205.6 Moderate Chlorite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

203.10 206.40 RHYva Coarse grained to ash tuff

203.1 - 206.4: Fault zone with lots of missing core.Isolated setions of altered, faulted-sheared,brecciated interbanded RHYva-PEL . Variably chloritized - biotie altered, minor silicifcation near lower contact, Between 204.00m - 205.50m; 37cm section of argillic alteration with remnant brown biotite giving a mottled appearance.Carbonaceous wisps at 204.00-204.20m(?). Calcite banding and wisps (SEDc like?) between 205.50 -206.40m.

<<Vein: 205.2 - 205.6 5% Quartz-Carbonate 50 deg. >>

206.40 209.15 MDSt Rhyolite tuff dominant mudstone

206.4 - 209.15: core rubble. Weak chlorite.

<<Vein: 208.2 - 208.75 100% Quartz>>

209.15 210.00 RHYvl Lapilli tuff

209.15 - 210: BIppo, sheared biotite - chlorite altered, minor garnet. Wisps carbonaceous material.

<<Alt: 209.15 - 210 Weak Garnet>>

<<Alt: 209.15 - 210 Weak Chlorite>>

<<Alt: 209.15 - 210 Moderate-Strong Biotite>>

<<Struc: 209.7 - 210 Moderate-Strong dominant foliation>>

End of Hole @ 210

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-397

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/21/2016
UTM Easting	415394.756	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/22/2016
UTM Northing:	6817229.369	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1393.44	Casing Depth (m):	1.8	Length (m):	40.3	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/18/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/20/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
Comments:						Parent Hole:	

K16-397 was drilled to test the geotechnical properties of the proposed overburden stockpile. 3 SPT tests were performed in the overburden, and 4 packer tests in the bedrock. A monitoring well was installed.
K16-397 encounters bedrock at 3.9 m, and consists of mixed mudstone and mafic tuffs of the Wind Lake Formation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/18/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 3.90 OVBN Overburden

3.90 12.70 MAFt Mafic Volcaniclastics

3.9 - 12.7: Light green, fine grained Cl+BI+CA, mafic tuff. Local CA lpl and disseminated PO. Locally interbedded with MDS.

<<Min: 3.9 - 12.7 1% Min: Pyrrhotite>>

<<Alt: 3.9 - 12.7 Moderate-Strong Calcite>>

<<Vein: 3.9 - 40.3 2% Calcite 75 deg. >> ~3 .5-1 cm CA veinlets per metre

12.70 16.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

12.7 - 16.6: Black carbonaceous mudstone with banded CA and local vuggy texture.

<<Min: 12.7 - 16.6 5% Min: Pyrite>>

<<Min: 12.7 - 16.6 2% Min: Pyrrhotite>>

<<Alt: 12.7 - 16.6 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

16.60 22.20 MAFt Mafic Volcaniclastics

16.6 - 22.2: Light green, fine grained, CL-BI-CA mafic tuff with minor blebby to banded CA.

<<Min: 16.6 - 22.2 1% Min: Pyrrhotite>>

<<Alt: 16.6 - 22.2 Moderate-Strong Calcite>>

22.20 32.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

22.2 - 32.3: Black carbonaceous mudstone with banded CA and local vuggy texture. Lower contact show interbedding with MAFt and a sandstone unit?

<<Min: 22.2 - 40.3 5% Min: Pyrite>>

<<Min: 22.2 - 40.3 5% Min: Pyrrhotite>>

<<Alt: 22.2 - 32.3 Moderate Calcite>>

32.30 35.40 MAFt Mafic Volcaniclastics

32.3 - 35.4: Light green mafic tuff interbedded with MDS and grey sandstone unit.

<<Min: 34.9 - 35 1% Min: Chalcopyrite>>

<<Alt: 32.3 - 35.4 Moderate-Strong Calcite>>

35.40 40.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

35.4 - 40.3: Black carbonaceous mudstone with banded CA and local vuggy texture. Locally interbedded with MAFt.

<<Alt: 35.4 - 40.3 Moderate Calcite>>

<<Struc: 39.7 - 39.9 Weak Fault>>

End of Hole @ 40.3

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-398

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/23/2016
UTM Easting	415277.776	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/24/2016
UTM Northing:	6816529.951	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1370.016	Casing Depth (m):	6.4	Length (m):	28.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/20/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/21/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
Comments:						Parent Hole:	

K16-398 was drilled to test the geotechnical properties of the proposed Class B Storage Facility. Five SPT tests were performed in the overburden, 2 packer tests in the bedrock and then a deep monitoring well was installed.
Drilling collared into bedrock at 7.2 m, which consists of intercalated mudstone and mafic tuffs of the Wind Lake Formation to EOH.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/23/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 7.20 OVBN Overburden

7.20 13.10 MAFt Mafic Volcaniclastics

7.2 - 13.1: Interbedded lpl to ash mafic tuff with carbonaceous mudstone. Blebby CA throughout.

<<Min: 7.2 - 22.5 1% Min: Pyrite>>

<<Alt: 7.2 - 28.2 Moderate-Strong Calcite>>

13.10 14.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

13.1 - 14.6: Interbedded with MAFt

14.60 21.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

14.6 - 21.2: Interbedded with carbonaceous mudstone

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

21.20 26.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

21.2 - 26.2: Carbonaceous mudstone with blebby CA and PY+/-PO

<<Min: 22.5 - 26.2 3% Min: Pyrite>>

<<Min: 22.5 - 26.2 3% Min: Pyrrhotite>>

26.20 28.20 MAFt Mafic Volcaniclastics

26.2 - 28.2: Mafic tuff with minor interbedded carbonaceous mudstone

<<Min: 26.2 - 28.2 5% Min: Pyrrhotite>>

End of Hole @ 28.2

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-399

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	David Nuttal
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/20/2016
UTM Easting	415448.345	Core Size:	HQ3	Azimuth:	203.8	Date Logging Complete:	8/1/2016
UTM Northing:	6815529.371	Casing Pulled?:	Yes	Dip:	-75.4	Drill Company:	Hytech
UTM Elev. (m):	1518.146	Casing Depth (m):	6	Length (m):	810	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/19/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/1/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
Comments:						Parent Hole:	

The purpose of hole K16-399 was to test the down dip extension of the Krakatoa lens, approximately 80-100 m down dip from the intercept in K16-385. Total hole depth is 810 m.
No Massive sulphide was intersected in hole K16-399. Patchy to pervasive, moderate to strong muscovite alteration is observed from 483-548 m. Aggregates of pyrite (up to 5% modal abundance) and a 13 cm band of massive pyrite are found between 497-537 m.
Trace-weak chlorite alteration is found concentrated in lapilli of the RHYvl units between 283-449 m and 549-670 m. Weak-moderate chlorite and biotite porphyroblasts are present within (as well as proximal to) narrow pelitic intervals throughout the stratigraphy.
The drill hole intersects the Wind Lake formation at 6 m depth, which consists of intercalated calcareous mafic tuffs and mudstone down to 283.5 m. The contact between the Wind Lake formation and the KZK formation is faulted. The KZK formation consists of felsic volcanics and narrow biotite and/or pelitic sediments stretching from 283.5 m to EOH at 810 m depth. Felsic volcanic rocks consist mostly of unaltered to weakly altered (muscovite and or chlorite) ash, crystal and or lapilli tuffs with lesser abundances of coherent rhyolite.
An aphanitic rhyolite dike is present between 450.2-452.62 m. Significant faulting is noted between 40-87 m, 97-112 m and 707-737 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-75.4	202.4	1.4	203.8	TN14	David Nuttal	7/19/2016		☑	
0.01	-75.65513	203.2	1.4	204.6	Gyro	Alicia Vainio	8/1/2016		☑	100
10	-75.63005	202.85775	1.4	204.25775	Gyro	Alicia Vainio	8/1/2016		☑	100
15	-75.5	184.4	22.1	206.5	ReflexEZS	Hytech	7/19/2016	5848	☐	
20	-75.64642	201.83036	1.4	203.23036	Gyro	Alicia Vainio	8/1/2016		☑	100
30	-75.46734	200.99452	1.4	202.39452	Gyro	Alicia Vainio	8/1/2016		☑	100
39	-75.3	179.2	22.1	201.3	ReflexEZS	Hytech	7/19/2016	5648	☐	
40	-75.23587	200.42649	1.4	201.82649	Gyro	Alicia Vainio	8/1/2016		☑	100
50	-75.31105	200.88833	1.4	202.28833	Gyro	Alicia Vainio	8/1/2016		☑	100
60	-75.28507	201.73311	1.4	203.13311	Gyro	Alicia Vainio	8/1/2016		☑	100
63	-75.2	182.6	22.1	204.7	ReflexEZS	Hytech	7/20/2016	5771	☐	
70	-75.23638	202.41903	1.4	203.81903	Gyro	Alicia Vainio	8/1/2016		☑	100
80	-75.33247	202.65807	1.4	204.05807	Gyro	Alicia Vainio	8/1/2016		☑	100
87	-75.5	181.9	22.1	204	ReflexEZS	Hytech	7/20/2016	5783	☐	
90	-75.33674	202.57211	1.4	203.97211	Gyro	Alicia Vainio	8/1/2016		☑	100

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-399

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
100	-75.36402	202.73325	1.4	204.13325	Gyro	Alicia Vainio	8/1/2016		☑	100
110	-75.31185	202.87525	1.4	204.27525	Gyro	Alicia Vainio	8/1/2016		☑	100
111	-75.3	184.7	22.1	206.8	ReflexEZS	Hytech	7/20/2016	5783	☐	
120	-75.19128	203.36246	1.4	204.76246	Gyro	Alicia Vainio	8/1/2016		☑	100
130	-75.00944	203.93843	1.4	205.33843	Gyro	Alicia Vainio	8/1/2016		☑	100
135	-75	184	22.1	206.1	ReflexEZS	Hytech	7/20/2016	5783	☐	
140	-74.96574	203.99942	1.4	205.39942	Gyro	Alicia Vainio	8/1/2016		☑	100
150	-74.8194	204.25751	1.4	205.65751	Gyro	Alicia Vainio	8/1/2016		☑	100
159	-74.9	186	22.1	208.1	ReflexEZS	Hytech	7/21/2016	5749	☐	
160	-74.82242	204.53873	1.4	205.93873	Gyro	Alicia Vainio	8/1/2016		☑	100
170	-74.98231	204.87179	1.4	206.27179	Gyro	Alicia Vainio	8/1/2016		☑	100
180	-75.02689	205.01342	1.4	206.41342	Gyro	Alicia Vainio	8/1/2016		☑	100
183	-75.1	186.4	22.1	208.5	ReflexEZS	Hytech	7/21/2016	5820	☐	
190	-74.94589	205.07971	1.4	206.47971	Gyro	Alicia Vainio	8/1/2016		☑	100
200	-74.74509	205.0654	1.4	206.4654	Gyro	Alicia Vainio	8/1/2016		☑	100
207	-74.6	184.9	22.1	207	ReflexEZS	Hytech	7/21/2016	5788	☐	
210	-74.55581	205.10836	1.4	206.50836	Gyro	Alicia Vainio	8/1/2016		☑	100
220	-74.43412	205.51194	1.4	206.91194	Gyro	Alicia Vainio	8/1/2016		☑	100
230	-74.27183	205.73299	1.4	207.13299	Gyro	Alicia Vainio	8/1/2016		☑	100
231	-74.2	186	22.1	208.1	ReflexEZS	Hytech	7/21/2016	5779	☐	
240	-74.06117	205.81801	1.4	207.21801	Gyro	Alicia Vainio	8/1/2016		☑	100
250	-73.98622	206.04507	1.4	207.44507	Gyro	Alicia Vainio	8/1/2016		☑	100
255	-73.9	187.6	22.1	209.7	ReflexEZS	Hytech	7/22/2016	5771	☐	
260	-74.02894	205.84302	1.4	207.24302	Gyro	Alicia Vainio	8/1/2016		☑	100
270	-73.99385	206.2585	1.4	207.6585	Gyro	Alicia Vainio	8/1/2016		☑	100
279	-73.7	187.7	22.1	209.8	ReflexEZS	Hytech	7/22/2016	5776	☐	
280	-73.79706	206.19487	1.4	207.59487	Gyro	Alicia Vainio	8/1/2016		☑	100
290	-73.739	206.32272	1.4	207.72272	Gyro	Alicia Vainio	8/1/2016		☑	100
300	-73.63852	207.43832	1.4	208.83832	Gyro	Alicia Vainio	8/1/2016		☑	100
303	-73.6	187.2	22.1	209.3	ReflexEZS	Hytech	7/22/2016	5778	☐	
310	-73.73465	207.54343	1.4	208.94343	Gyro	Alicia Vainio	8/1/2016		☑	100
320	-73.57462	207.63933	1.4	209.03933	Gyro	Alicia Vainio	8/1/2016		☑	100
327	-73.4	187.7	22.1	209.8	ReflexEZS	Hytech	7/23/2016	5786	☐	
330	-73.34836	207.56431	1.4	208.96431	Gyro	Alicia Vainio	8/1/2016		☑	100

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-399

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
340	-73.23548	207.49209	1.4	208.89209	Gyro	Alicia Vainio	8/1/2016		☑	100
350	-73.12637	207.11897	1.4	208.51897	Gyro	Alicia Vainio	8/1/2016		☑	100
351	-73.1	186.6	22.1	208.7	ReflexEZS	Hytech	7/23/2016	5786	☐	
360	-73.09085	206.78516	1.4	208.18516	Gyro	Alicia Vainio	8/1/2016		☑	100
370	-72.97889	206.50429	1.4	207.90429	Gyro	Alicia Vainio	8/1/2016		☑	100
375	-72.9	185.3	22.1	207.4	ReflexEZS	Hytech	7/23/2016	5804	☐	
380	-72.96765	206.38439	1.4	207.78439	Gyro	Alicia Vainio	8/1/2016		☑	100
390	-72.85701	206.44524	1.4	207.84524	Gyro	Alicia Vainio	8/1/2016		☑	100
399	-72.9	186.9	22.1	209	ReflexEZS	Hytech	7/24/2016	5798	☐	
400	-72.86166	206.4587	1.4	207.8587	Gyro	Alicia Vainio	8/1/2016		☑	100
410	-72.8852	206.33748	1.4	207.73748	Gyro	Alicia Vainio	8/1/2016		☑	100
420	-72.79477	206.04123	1.4	207.44123	Gyro	Alicia Vainio	8/1/2016		☑	100
423	-72.5	183	22.1	205.1	ReflexEZS	Hytech	7/24/2016	5642	☐	
430	-72.80414	206.09062	1.4	207.49062	Gyro	Alicia Vainio	8/1/2016		☑	100
440	-72.6282	206.3043	1.4	207.7043	Gyro	Alicia Vainio	8/1/2016		☑	100
447	-72.6	180.2	22.1	202.3	ReflexEZS	Hytech	7/24/2016	5704	☐	
450	-72.58148	206.3262	1.4	207.7262	Gyro	Alicia Vainio	8/1/2016		☑	100
460	-72.63208	206.66241	1.4	208.06241	Gyro	Alicia Vainio	8/1/2016		☑	100
470	-72.58602	206.5438	1.4	207.9438	Gyro	Alicia Vainio	8/1/2016		☑	100
471	-72.6	190.8	22.1	212.9	ReflexEZS	Hytech	7/24/2016	5867	☐	
480	-72.49041	206.39535	1.4	207.79535	Gyro	Alicia Vainio	8/1/2016		☑	100
490	-72.50044	206.10851	1.4	207.50851	Gyro	Alicia Vainio	8/1/2016		☑	100
495	-72.3	184.9	22.1	207	ReflexEZS	Hytech	7/25/2016	5765	☐	
500	-72.46721	205.64348	1.4	207.04348	Gyro	Alicia Vainio	8/1/2016		☑	100
510	-72.37386	205.37025	1.4	206.77025	Gyro	Alicia Vainio	8/1/2016		☑	100
519	-72.2	291.7	22.1	313.8	ReflexEZS	Hytech	7/25/2016	5782	☐	
520	-72.27469	205.17748	1.4	206.57748	Gyro	Alicia Vainio	8/1/2016		☑	100
530	-72.20954	205.14583	1.4	206.54583	Gyro	Alicia Vainio	8/1/2016		☑	100
540	-72.14211	205.38926	1.4	206.78926	Gyro	Alicia Vainio	8/1/2016		☑	100
543	-71.8	184.1	22.1	206.2	ReflexEZS	Hytech	7/26/2016	5785	☐	
550	-71.89159	204.6133	1.4	206.0133	Gyro	Alicia Vainio	8/1/2016		☑	100
560	-71.83511	204.54966	1.4	205.94966	Gyro	Alicia Vainio	8/1/2016		☑	100
567	-71.8	186.5	22.1	208.6	ReflexEZS	Hytech	7/26/2016	5626	☐	
570	-71.81841	204.7868	1.4	206.1868	Gyro	Alicia Vainio	8/1/2016		☑	100

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-399

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
580	-71.79737	204.78954	1.4	206.18954	Gyro	Alicia Vainio	8/1/2016		☑	100
590	-71.81548	204.99422	1.4	206.39422	Gyro	Alicia Vainio	8/1/2016		☑	100
591	-71.7	185.7	22.1	207.8	ReflexEZS	Hytech	7/26/2016	5795	☐	
600	-71.78421	205.31109	1.4	206.71109	Gyro	Alicia Vainio	8/1/2016		☑	100
610	-71.76586	205.32496	1.4	206.72496	Gyro	Alicia Vainio	8/1/2016		☑	100
615	-71.6	184	22.1	206.1	ReflexEZS	Hytech	7/27/2016	5753	☐	
620	-71.73054	205.41424	1.4	206.81424	Gyro	Alicia Vainio	8/1/2016		☑	100
630	-71.61025	205.72429	1.4	207.12429	Gyro	Alicia Vainio	8/1/2016		☑	100
639	-71.5	184.9	22.1	207	ReflexEZS	Hytech	7/28/2016	5813	☐	
640	-71.59901	206.02849	1.4	207.42849	Gyro	Alicia Vainio	8/1/2016		☑	100
650	-71.56556	206.69245	1.4	208.09245	Gyro	Alicia Vainio	8/1/2016		☑	100
660	-71.47944	207.2087	1.4	208.6087	Gyro	Alicia Vainio	8/1/2016		☑	100
663	-71.3	182.3	22.1	204.4	ReflexEZS	Hytech	7/28/2016	5816	☐	
670	-71.4148	207.86451	1.4	209.26451	Gyro	Alicia Vainio	8/1/2016		☑	100
680	-71.29109	208.26075	1.4	209.66075	Gyro	Alicia Vainio	8/1/2016		☑	100
687	-71.2	187.8	22.1	209.9	ReflexEZS	Hytech	7/28/2016	5839	☐	
690	-71.2243	208.46189	1.4	209.86189	Gyro	Alicia Vainio	8/1/2016		☑	100
700	-71.16856	208.73621	1.4	210.13621	Gyro	Alicia Vainio	8/1/2016		☑	100
710	-71.08808	208.73288	1.4	210.13288	Gyro	Alicia Vainio	8/1/2016		☑	100
711	-71	189.1	22.1	211.2	ReflexEZS	Hytech	7/29/2016	5779	☐	
720	-71.07844	208.65507	1.4	210.05507	Gyro	Alicia Vainio	8/1/2016		☑	100
730	-71.01492	208.52893	1.4	209.92893	Gyro	Alicia Vainio	8/1/2016		☑	100
735	-71.1	187.7	22.1	209.8	ReflexEZS	Hytech	7/30/2016	5782	☐	
740	-71.09926	208.63174	1.4	210.03174	Gyro	Alicia Vainio	8/1/2016		☑	100
750	-70.99442	208.48874	1.4	209.88874	Gyro	Alicia Vainio	8/1/2016		☑	100
760	-71.05576	208.36196	1.4	209.76196	Gyro	Alicia Vainio	8/1/2016		☑	100
770	-70.94383	208.21379	1.4	209.61379	Gyro	Alicia Vainio	8/1/2016		☑	100
780	-70.63488	208.39154	1.4	209.79154	Gyro	Alicia Vainio	8/1/2016		☑	100
790	-70.55249	208.31012	1.4	209.71012	Gyro	Alicia Vainio	8/1/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**6.00**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

6.00 14.71 MAFt Mafic Volcaniclastics green

6 - 14.71: Mixed unit of dominantly calcareous grey-green MAFt with narrow intercalations of MDS.

<<Min: 6 - 22 0.5% Min: Pyrrhotite>>

<<Min: 6 - 40.7 0.5% Min: Pyrite>> Pyrite mineralization is found to have higher modal abundance in MDS units.

<<Alt: 6 - 40 Moderate Calcite>>

<<Struc: 8.8 - 8.8 Moderate dominant foliation>>

14.71 23.06 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

14.71 - 23.06: Dark grey, calcareous, well foliated mudstone.

<<Min: 22 - 25.3 1% Min: Pyrrhotite>>

23.06 23.68 MAFt Mafic Volcaniclastics green

23.68 32.22 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Min: 24.5 - 25.3 0.1% Min: Sphalerite>>

<<Min: 25.3 - 40.7 0.5% Min: Pyrrhotite>>

<<Struc: 26.6 - 26.6 Moderate dominant foliation>> no orientation

32.22 34.00 MAFt Mafic Volcaniclastics green

32.22 - 34: Minor mudstone component

34.00 34.68 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

34.68 40.70 MAFt Mafic Volcaniclastics green

34.68 - 40.7: Conglomerate bearing subround lithic fragments/clast (0.5-4 cm across) present from 37.4-40.7 m.

<<Alt: 40 - 87 Weak-Moderate Calcite>>

<<Struc: 39.2 - 40.7 Moderate Shear>> Sheared margin of fault zone below.

40.70 41.82 FLZ Fault Zone

40.7 - 41.82: Lithologies expected to be MDS and MAFt.

<<Min: 40.7 - 105 0.1% Min: Pyrrhotite>>

<<Min: 40.7 - 123.16 0.1% Min: Pyrite>>

<<Struc: 40.7 - 52.65 Strong Fault>> Strongly faulted interval with vestiges of sheared MAFt/MDS units.

41.82 42.62 MAFt Mafic Volcaniclastics green

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

42.62 46.08 FLZ Fault Zone

42.62 - 46.08: Lithology suspected to be MAFt.

46.08 48.62 MAFt Mafic Volcaniclastics grey-green

46.08 - 48.62: Sheared interval between large faults.

48.62 52.65 MAFt Mafic Volcaniclastics green

48.62 - 52.65: Faulted and sheared interval.

52.65 54.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

52.65 - 54.5: Sheared and faulted interval

<<Struc: 52.65 - 55.26 Moderate Shear>> Sheared margin of fault zone above.

54.50 55.26 MAFt Mafic Volcaniclastics green

<<Vein: 54.85 - 65.79 90% Quartz-Carbonate>> Large interval of massive foliation parallel Qz vein.

55.26 58.90 INT undifferentiated (granitic) intrusive rocks leucocratic

55.26 - 58.9: Massive quartz vein

58.90 59.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

59.40 63.19 INT undifferentiated (granitic) intrusive rocks leucocratic

59.4 - 63.19: Massive quartz vein.

<<Struc: 62.89 - 64 Moderate Shear>> Sheared margin of fault zone below.

63.19 64.20 MAFt Mafic Volcaniclastics green

63.19 - 64.2: Sheared margin of fault.

<<Struc: 64 - 67.24 Moderate-Strong Fault>> Strongly faulted interval with vestiges of sheared MAFt/MDS units.

64.20 66.74 FLZ Fault Zone

64.2 - 66.74: Lithology is suspected to be mixed MDS and MAFt.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

66.74 70.05 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

66.74 - 70.05: Sheared margin to large fault

<<Struc: 67.24 - 74.7 Moderate-Strong Shear>> Sheared margin of fault zone above and below.

70.05 73.70 MAFt Mafic Volcaniclastics green

70.05 - 73.7: Sheared interval along fault margin.

73.70 80.80 FLZ Fault Zone grey-green

73.7 - 80.8: Intense faulting. Lith is suspected to be dominantly MAFt.

<<Vein: 74.45 - 74.7 100% Quartz-Carbonate>>

<<Struc: 74.7 - 80.8 Strong Fault>> Strongly faulted interval with vestiges of sheared MAFt/MDS units.

80.80 108.96 MAFt Mafic Volcaniclastics green

80.8 - 108.96: Interval is pervasively sheared and or faulted.

<<Min: 105 - 131.57 0.5% Min: Pyrrhotite>>

<<Alt: 87 - 97 Moderate Calcite>>

<<Alt: 97 - 112 Weak-Moderate Calcite>>

<<Vein: 85.83 - 86.15 80% Quartz-Carbonate>>

<<Vein: 100.06 - 100.58 70% Quartz>> Brecciated by faulting

<<Struc: 80.8 - 86 Strong Shear>> Sheared margin of fault zone above.

<<Struc: 86.65 - 87 Weak-Moderate Fault>>

<<Struc: 88.2 - 88.2 Moderate dominant foliation>>

<<Struc: 94.5 - 102.77 Moderate Fault>> Interval of several moderate faults (10-50 cm wide) spaced 0.5-1.5 m apart. Rock rubble and shearing is present between faults and along margins of fault zone.

<<Struc: 107 - 107 Moderate dominant foliation>>

<<Struc: 107.78 - 109.69 Weak-Moderate Fault>> Four weak-moderate clay gouge-filled faults (<30cm) spaced <40 cm apart with proximal rock rubble.

108.96 111.97 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

108.96 - 111.97: Interbedded MDS and MAFt. Dominantly MDS.

<<Struc: 111.25 - 111.4 Weak-Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

111.97 113.27 MAFt Mafic Volcaniclastics green

111.97 - 113.27: Interbedded MDS and MAFt. Dominantly MAFt

<<Alt: 112 - 238 Moderate-Strong Calcite>> intensity slightly higher in mafic tuffs than mudstones.

113.27 114.06 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Min: 113.27 - 114.06 0.1% Min: Chalcopyrite>>

114.06 115.60 MAFt Mafic Volcaniclastics green

<<Struc: 114.29 - 114.58 Trace Fault>>

115.60 117.10 MAFt Mafic Volcaniclastics grey-green

117.10 118.80 MAFta Coarse grained to ash tuff grey-green FG

118.80 123.16 MAFt Mafic Volcaniclastics green

123.16 124.54 MAFta Coarse grained to ash tuff grey-green FG

<<Min: 123.16 - 129.48 0.1% Min: Chalcopyrite>>

<<Min: 123.16 - 133.43 0.5% Min: Pyrite>>

124.54 127.63 MAFt Mafic Volcaniclastics green

<<Struc: 125.15 - 125.75 Weak Fault>>

127.63 131.57 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Vein: 129.48 - 130.36 95% Quartz 50 deg. >> PY/PO clots

131.57 133.43 MAFt Mafic Volcaniclastics green

<<Min: 131.57 - 133.43 1% Min: Pyrrhotite>>

<<Vein: 132.02 - 132.09 100% Quartz-Carbonate 45 deg. >>

<<Vein: 133.2 - 133.43 100% Quartz-Carbonate 60 deg. >>

133.43 142.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Min: 133.43 - 156.26 0.1% Min: Chalcopyrite>>

<<Min: 133.43 - 166.82 1% Min: Pyrite>> Also commonly found as a fracture filling mineral.

<<Min: 133.43 - 166.82 0.5% Min: Pyrrhotite>>

<<Vein: 134.43 - 134.51 100% Quartz-Carbonate 55 deg. >>

<<Vein: 137.41 - 137.51 90% Quartz-Carbonate 50 deg. >>

<<Struc: 134.8 - 135 Trace Fault>>

<<Struc: 136.2 - 136.4 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 137.83 - 138 Weak-Moderate Fault>>

142.40 146.67 MAFt Mafic Volcaniclastics green

142.4 - 146.67: Contains rounded lithic clasts. Narrow (1-3 cm wide qz/cb bands host disseminated Py and Sp.

<<Min: 142.4 - 156.26 0.1% Min: Sphalerite>>

146.67 156.26 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Vein: 151.13 - 151.21 90% Quartz-Carbonate>>

<<Struc: 150.92 - 151.07 Weak Fault>>

<<Struc: 152.43 - 152.6 Weak Fault>>

156.26 159.00 MAFt Mafic Volcaniclastics green

<<Struc: 158.93 - 159 Weak Fault>>

159.00 160.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

160.80 161.82 MAFt Mafic Volcaniclastics green

161.82 168.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Min: 166.82 - 176.35 0.1% Min: Pyrrhotite>>

<<Min: 166.82 - 184 0.5% Min: Pyrite>>

<<Vein: 167.7 - 167.93 90% Quartz-Carbonate 15 deg. >> PY/PO clots.

<<Struc: 166.82 - 174 Weak-Moderate Shear>> Mix of low angle (to core axis) shearing and faulting.

168.00 176.30 MAFt Mafic Volcaniclastics green

<<Vein: 169.71 - 170.05 100% Quartz 40 deg. >>

<<Vein: 173.3 - 173.56 70% Quartz-Carbonate 10 deg. >>

<<Struc: 174.68 - 174.81 Weak Fault>> Clay gouge

176.30 195.24 MAFt Mafic Volcaniclastics grey-green

176.3 - 195.24: Interval of thinly bedded MAFt and MDS, mixed MAFt/MDS and short intervals matrix supported MAFt/MDS conglomerate.

<<Min: 176.35 - 189 2% Min: Pyrrhotite>>

<<Min: 184 - 189 1% Min: Pyrite>>

<<Min: 189 - 192.6 0.1% Min: Pyrite>>

<<Min: 189 - 216 1% Min: Pyrrhotite>>

<<Min: 192.6 - 196.68 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 192.6 - 232.38 0.1% Min: Pyrite>>

<<Struc: 179.92 - 180.43 Weak Fault>> Interval of rock rubble; no gouge.

<<Struc: 183 - 183.05 Weak Fault>> Clay gouge

<<Struc: 190.48 - 190.6 Trace Fault>> Rock rubble fault

<<Struc: 193.05 - 193.2 Weak Fault>> Rock rubble and clay gouge filled fault

195.24 196.68 MAFt Mafic Volcaniclastics green

195.24 - 196.68: Mafic tuff with white-cream colored siliceous/calcareous bands.

<<Struc: 196.31 - 196.68 Weak Fault>> Rock breccia and minor clay gouge.

196.68 207.38 MAFta Coarse grained to ash tuff grey-green FG

196.68 - 207.38: Fine grained, grey-green, siliceous-calcareous mafic (ash) tuff.

<<Min: 196.68 - 228.96 0.1% Min: Pyrrhotite>>

<<Struc: 200.2 - 200.2 Weak-Moderate dominant foliation>> 2 foliations visible

<<Struc: 200.25 - 200.25 Weak Foliation>> 2nd foliation

<<Struc: 203.9 - 203.9 Weak dominant foliation>>

<<Struc: 206 - 206.34 Weak Fault>> Rock rubble and clay gouge filled fault

<<Struc: 206.67 - 206.84 Trace Fault>> Rock rubble and clay gouge filled fault

207.38 209.81 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

207.38 - 209.81: Mudstone with rounded clasts occurring locally.

<<Struc: 208.48 - 208.58 Weak Fault>> Clay gouge

209.81 217.02 MAFt Mafic Volcaniclastics green

209.81 - 217.02: Fine-medium grained green mafic tuff, with fine-grained disseminated biotite and calcite bands.

<<Vein: 213.66 - 214.24 60% Quartz-Carbonate>>

<<Struc: 215.33 - 215.75 Weak-Moderate Fault>>

217.02 228.96 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Struc: 217.13 - 217.41 Weak-Moderate Fault>> Rock rubble and clay gouge filled fault

228.96 232.04 MAFt Mafic Volcaniclastics green FG

228.96 - 232.04: calcite banded mafic tuff.

<<Vein: 231.55 - 232.38 80% Quartz>> PY/PO 1%

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 230.7 - 230.7 Moderate dominant foliation>>

232.04 233.96 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

232.04 - 233.96: 3-5% PY/PO are present as interstitial clots and also as bands along foliation planes.

<<Min: 232.38 - 234.39 3% Min: Pyrite>>

<<Min: 232.38 - 234.39 1% Min: Pyrrhotite>>

233.96 234.39 MAFt Mafic Volcaniclastics green

234.39 238.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

<<Min: 234.39 - 238.98 0.1% Min: Pyrite>>

<<Min: 234.39 - 238.98 0.1% Min: Pyrrhotite>>

<<Alt: 238 - 245 Moderate Calcite>>

<<Struc: 235.54 - 235.76 Weak Fault>> Rock rubble and clay gouge filled fault

<<Struc: 236.62 - 237.22 Moderate Fault>> Rock rubble and clay gouge filled fault

238.20 238.98 MAFt Mafic Volcaniclastics green

238.98 244.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

238.98 - 244.5: 5-7% clots and bands of PY, 2-3% clots/blebs of PO, trace CP

<<Min: 238.98 - 244.5 1% Min: Pyrrhotite>>

<<Min: 238.98 - 244.5 0.1% Min: Chalcopyrite>>

<<Min: 238.98 - 247.38 5% Min: Pyrite>>

<<Struc: 238.98 - 238.98 Moderate-Strong Contact>>

<<Struc: 240 - 244.08 Weak-Moderate Shear>> Shearing and weak faulting; Larger fault structurally below.

<<Struc: 244.08 - 248 Moderate-Strong Fault>> Faulted zone with sheared quartz/carbonate vein from 245.72-247.58 m. Rocks proximal, above and below show signs of shearing and minor faulting.

244.50 248.03 MAFt Mafic Volcaniclastics grey-green

244.5 - 248.03: Faulted and veined. Py 3-5% disseminated/vein hosted.

<<Min: 244.5 - 272 0.1% Min: Pyrrhotite>>

<<Min: 247.38 - 256 0.1% Min: Pyrite>>

<<Alt: 245 - 267.4 Weak-Moderate Calcite>>

<<Vein: 245.22 - 247.38 75% Quartz>> 5% PY

<<Struc: 248 - 249 Trace Fault>> Localized weak faulting and rubbly rock.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

248.03 249.77 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey

248.03 - 249.77: faulted, calcareous MDS

249.77 253.91 MAFt Mafic Volcaniclastics green FG

253.91 263.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

253.91 - 263.1: 3-5% PY (fracture filling, clots, aggregates)

<<Min: 256 - 260 3% Min: Pyrite>>

<<Min: 260 - 265.37 1% Min: Pyrite>>

<<Vein: 260.68 - 264.06 15% Quartz-Carbonate 80 deg. >>

<<Struc: 255.6 - 256 Moderate Fault>> Clay gouge and minor rock rubble fault.

<<Struc: 259.31 - 264.79 Moderate Fault>> Three <30 cm clay gouge filled faults and rock rubble spaced >1m apart

263.10 264.00 No Core No Core

263.1 - 264: Faulted interval

264.00 265.37 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

264 - 265.37: Faulted mudstone.

265.37 266.87 MAFt Mafic Volcaniclastics grey-green

<<Min: 265.37 - 283.53 0.5% Min: Pyrite>>

266.87 267.42 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

266.87 - 267.42: Siliceous bedded mudstone.

<<Alt: 267.4 - 276.15 Trace Calcite>>

267.42 273.18 CHT Chert leucocratic VFG

267.42 - 273.18: Very siliceous, very fine-grained, silica-rich rock; generally non-foliated. Vestiges of thin bedding visible near mudstone contact at top and bottom of interval. Mixing of MDS and CHT visible in over/underlying units MDS units. Can also be considered RHYc

<<Min: 272 - 276 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

273.18 283.53 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

273.18 - 283.53: Siliceous bedded mudstone. Base of interval is faulted and cross cut by large qz veins and is pervasively muscovite altered.

<<Min: 276 - 290.89 0.1% Min: Pyrrhotite>>

<<Min: 279 - 280 0.1% Min: Galena>> Isolated crystals in quartz vein.

<<Alt: 276.15 - 290.89 Weak-Moderate Calcite>>

<<Vein: 276.45 - 276.99 90% Quartz 80 deg. >>

<<Vein: 279.16 - 281.3 100% Quartz>> Galena as sulphide

<<Struc: 274 - 274 Moderate dominant foliation>>

<<Struc: 279 - 279.16 Weak-Moderate Fault>> Gravel and rock rubble with minor clay gouge.

<<Struc: 281.3 - 285.33 Weak-Moderate Fault>> Faulted interval; several clay-gravel gouge filled faults <20 cm, spaced <50 cm apart.

283.53 290.89 RHYvx Quartz and/or feldspar crystal tuff grey CG

283.53 - 290.89: Top of interval is suspected to be the top of the KZK formation. Unit is grey, coarse-grained, poorly sorted QE bearing crystal tuff.

<<Min: 283.53 - 433.15 0.1% Min: Pyrite>>

<<Struc: 285.59 - 285.59 Weak dominant foliation>>

290.89 292.45 PEL Equigranular biotite + calcite +/- quartz rock grey-brown VFG

290.89 - 292.45: very fine grained, grey-brown BI/MU banded calcareous pelitic ash.

<<Min: 290.89 - 292.45 1% Min: Pyrrhotite>>

<<Alt: 290.89 - 292.45 Strong Calcite>>

<<Vein: 291.35 - 291.42 100% Calcium carbonate/Carbonate 70 deg. >>

292.45 309.80 RHYvl Lapilli tuff grey-green FCG

292.45 - 309.8: Qz,CL,BI lapilli.

<<Min: 292.45 - 354 0.1% Min: Pyrrhotite>>

<<Alt: 292.45 - 310.04 Moderate Calcite>>

<<Struc: 293.7 - 293.7 Moderate dominant foliation>>

<<Struc: 305.57 - 306.04 Weak-Moderate Fault>> Sand and clay gouge filled fault.

<<Struc: 307.06 - 308.06 Moderate Fault>> Sand and clay gouge filled fault.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

309.80 313.25 PEL Equigranular biotite + calcite +/- quartz rock grey-green FMG

309.8 - 313.25: Green-grey pelite with fine-coarse grained biotite disseminated porphyroblasts.

<<Alt: 310.04 - 314.74 Moderate-Strong Calcite>>

313.25 318.69 RHYvl Lapilli tuff dark grey

313.25 - 318.69: Dark grey lapilli tuff with minor fine grained disseminated biotite (locally).

<<Alt: 314.74 - 364.4 Weak-Moderate Calcite>>

<<Vein: 314.74 - 315.78 100% Quartz>>

<<Struc: 315.8 - 316.02 Weak-Moderate Fault>> Pebble, sand and clay gouge filled fault

318.69 319.30 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

318.69 - 319.3: Pelitic ash with coarse grained carbonate/biotite porphyroblasts.

319.30 339.05 RHYvl Lapilli tuff light grey

319.3 - 339.05: Large quartz vein with faulted contacts between 325.47-330.85 m

<<Vein: 326.45 - 330.85 100% Quartz>> Pyrite as sulphide

<<Struc: 322.7 - 322.8 Trace Fault>> Rock rubble and minor clay

<<Struc: 323.48 - 323.78 Weak Fault>> Rock rubble, sand and minor clay gouge

<<Struc: 325.12 - 325.47 Moderate Fault>> Sand and clay gouge

<<Struc: 337 - 337 Weak-Moderate dominant foliation>>

339.05 342.84 RHYva Coarse grained to ash tuff grey-brown FG

339.05 - 342.84: Dominantly RHYva with biotite-rich fine grained pelite locally.

<<Struc: 341.55 - 342.09 Weak Fault>> Rock rubble and minor clay gouge.

342.84 350.40 RHYvl Lapilli tuff dark grey

342.84 - 350.4: RHYvl with minor well foliated, carbonaceous mudstone

<<Struc: 343.74 - 345.63 Weak-Moderate Shear>> Shearing around fault at 345.15-345.25 m

<<Struc: 345.15 - 345.25 Moderate-Strong Fault>> Clay gouge fault (high intensity over short distance) Proximal rock shows signs of brittle failure and shearing.

<<Struc: 346.05 - 347.2 Weak Fault>> Four rock rubble faults with minor clay gouge <15 cm wide, spaced <30 cm apart.

<<Struc: 348.81 - 351.31 Moderate-Strong Fault>> Clay gouge faulting and shearing.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

350.40 354.11 RHYc Rhyolite coherant volcanics light grey

350.4 - 354.11: Light grey, siliceous, muscovite altered Rhyolite. Upper margin is faulted. Coherent "curdy" textures are present sparsely.

<<Min: 354 - 359.5 1% Min: Pyrrhotite>>

354.11 359.50 RHYvl Lapilli tuff grey

354.11 - 359.5: Grey ash supported lapilli tuff. Weak-moderate muscovite alteration.

<<Alt: 354.11 - 401.79 Weak-Moderate Biotite>> Coarser grain size and higher abundances and more disseminated than patchy in pelitic rocks. Felsic volcaniclastic rocks are more patchy and the biotite grains are generally fine-medium grained.

<<Struc: 356.68 - 356.84 Moderate Fault>> Clay gouge fault

359.50 363.05 PEL Equigranular biotite + calcite +/- quartz rock grey-green FCG

359.5 - 363.05: BI/CL Pelitic ash with biotite porphyroblasts and pervasive/banded calcite. Grain size decreases towards bottom of interval.

<<Min: 359.5 - 367.57 0.1% Min: Pyrrhotite>>

<<Alt: 359.5 - 363 Trace Chlorite>>

<<Vein: 362.4 - 362.9 98% Quartz-Carbonate>>

<<Struc: 361.76 - 361.86 Trace Fault>>

363.05 364.42 RHYvl Lapilli tuff light grey

363.05 - 364.42: Rhyolite lapilli tuff. Unit is better sorted at base.

<<Alt: 364.4 - 367.2 Moderate Calcite>>

364.42 367.57 PEL Equigranular biotite + calcite +/- quartz rock grey-green FG

364.42 - 367.57: Chloritic pelitic ash with fine-medium grained biotite porphyroblasts. Grain size coarsens towards top of interval.

<<Alt: 364.42 - 367.57 Trace Chlorite>>

<<Alt: 367.2 - 413.2 Weak-Moderate Calcite>>

367.57 383.39 RHYvl Lapilli tuff dark grey

367.57 - 383.39: Dark grey, rhyolite lapilli tuff with biotite porphyroblasts and trace carbonaceous mudstone forming dark foliation parallel bands.

<<Min: 367.57 - 383.39 0.5% Min: Pyrrhotite>>

<<Struc: 372.62 - 372.73 Trace Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 376.2 - 376.2 Moderate dominant foliation>>

383.39 387.41 PEL Equigranular biotite + calcite +/- quartz rock grey-green FG

383.39 - 387.41: Grey-green chloritic ash/pelite. Pervasive and banded calcite. Calcite band spacing narrows towards bottom of the interval.

<<Min: 383.39 - 407.09 0.1% Min: Pyrrhotite>>

<<Alt: 383.39 - 387.41 Trace Chlorite>>

<<Struc: 384.97 - 384.97 Moderate dominant foliation>>

387.41 397.80 RHYvl Lapilli tuff grey

<<Vein: 389.57 - 401.79 15% Calcium carbonate/Carbonate 80 deg. >> Large >30cm Cb/Qz veins, foliation parallel, spaced meters apart.

<<Struc: 390.73 - 390.83 Weak Fault>> clay, sand gravel fault

<<Struc: 394.23 - 394.49 Weak Fault>> Sand and gravel with minor clay gouge.

397.80 401.78 PEL Equigranular biotite + calcite +/- quartz rock green-brown CG

397.8 - 401.78: Biotite-rich chloritic pelite with coarse grained carbonate porphyroblasts. Possible magnetite (high mpp value). Minor felsic ash/muscovite component.

<<Struc: 398.02 - 398.02 Moderate dominant foliation>>

401.78 407.09 RHYvl Lapilli tuff grey FCG

401.78 - 407.09: Rhyolite lapilli tuff with biotite porphyroblasts. Grain size coarsens towards top of interval where lith is dominantly ash.

<<Vein: 404.11 - 404.72 100% Quartz>>

407.09 413.19 RHYva Coarse grained to ash tuff dark grey FCG

407.09 - 413.19: Ash supported lapilli tuff with carbonate and biotite porphyroblasts. No noticeable grain-size grading pattern

<<Min: 407.09 - 413.2 1% Min: Pyrrhotite>>

<<Alt: 407.09 - 413.2 Weak-Moderate Biotite>>

413.19 417.83 PEL Equigranular biotite + calcite +/- quartz rock dark grey FCG

413.19 - 417.83: Siliceous ash-pelite. Grain size variations from fine to coarse suggest layering. Bi and Cb porphyroblasts are present throughout but more coarse grained at top of interval.

<<Min: 413.2 - 442.95 0.1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 413.2 - 417.83 Moderate-Strong Calcite>>

<<Alt: 413.2 - 417.83 Moderate-Strong Biotite>>

417.83 421.88 RHYva Coarse grained to ash tuff FG

417.83 - 421.88: Fine grained, weakly muscovite altered Rhyolite ash with Bi porphyroblasts.

<<Alt: 417.83 - 423 Trace Biotite>>

<<Alt: 417.83 - 433.15 Moderate Calcite>>

<<Alt: 417.83 - 453.61 Weak Muscovite>>

<<Struc: 419.4 - 419.4 Weak dominant foliation>>

421.88 423.78 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

421.88 - 423.78: Abundance of ash increases towards bottom of interval.

423.78 425.16 RHYv Rhyolite volcaniclastic grey-green FCG

425.16 433.15 RHYvl Lapilli tuff dark grey FCG

425.16 - 433.15: Ash supported lapilli tuff.

<<Struc: 428.4 - 430.04 Moderate-Strong Fault>> Clay fault gouge and rock rubble. Proximal coherent rock showing signs of shear.

433.15 434.62 PEL Equigranular biotite + calcite +/- quartz rock FCG

433.15 - 434.62: Grain size coarsens towards top of interval. Bi and Cb porphyroblasts present and stronger at top of interval.

<<Min: 433.15 - 442.46 0.5% Min: Pyrite>>

<<Alt: 433.15 - 435.2 Moderate Biotite>>

<<Alt: 433.15 - 440.83 Moderate-Strong Calcite>>

434.62 436.14 RHYvl Lapilli tuff FCG

434.62 - 436.14: Ash supported lapilli tuff. Minor fine-grained Bi porphyroblasts.

<<Alt: 435.2 - 437 Weak Biotite>>

436.14 436.66 RHYc Rhyolite coherant volcanics leucocratic

436.66 437.00 RHYvl Lapilli tuff grey FCG

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

437.00 440.82 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FCG

437 - 440.82: Calcite banded siliceous ash pelite with Bi porphyroblasts. Grain-size coarsens towards top of interval

<<Alt: 437 - 440.83 Moderate Biotite>>

440.82 442.10 RHYvl Lapilli tuff

<<Alt: 440.83 - 443.89 Trace Biotite>>

<<Alt: 440.83 - 483 Weak-Moderate Calcite>>

442.10 442.46 RHYc Rhyolite coherant volcanics leucocratic

442.46 443.39 RHYvl Lapilli tuff

<<Min: 442.46 - 453.61 1% Min: Pyrite>>

<<Min: 442.95 - 443.39 0.5% Min: Sphalerite>>

<<Min: 442.95 - 443.39 1% Min: Galena>>

<<Min: 442.95 - 453.61 3% Min: Pyrrhotite>>

<<Vein: 442.95 - 452.62 65% Quartz>> Massive veins, dominantly QZ/CB and bearing 1-5% PO locally, up to 1% PY locally, and trace GL/SP. Large portions of the veined interval resemble RHYi in composition and texture. Interval is logged as RHYi in lith table.

443.39 445.46 PEL Equigranular biotite + calcite +/- quartz rock FCG

443.39 - 445.46: Interval contains mixed PEL and RHYv (xtal, lpl and ash)

<<Alt: 443.89 - 445.46 Weak-Moderate Biotite>>

445.46 449.37 RHYi Aphanitic Rhyolite (intrusion) leucocratic

<<Min: 445.46 - 453.27 0.1% Min: Sphalerite>>

<<Min: 445.46 - 453.27 0.1% Min: Galena>>

449.37 449.83 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FMG

<<Alt: 449.37 - 449.83 Weak-Moderate Biotite>>

449.83 450.20 RHYv Rhyolite volcaniclastic

<<Struc: 450.08 - 450.08 Moderate Foliation>>

450.20 452.62 RHYi Aphanitic Rhyolite (intrusion) leucocratic

450.2 - 452.62: Mixed interval of RHYi and massive QZ/CB veins.

452.62 453.27 RHYv Rhyolite volcaniclastic grey

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

453.27 453.61 RHYc Rhyolite coherant volcanics

453.27 - 453.61: Possibly RHYi.

453.61 463.00 RHYvl Lapilli tuff

453.61 - 463: Lapilli appear sparsely. Unit is pervasively silicified and exhibits weak-moderate muscovite alteration; RHYi nearby?

<<Min: 453.61 - 466.95 5% Min: Pyrite>>

<<Min: 453.61 - 476.4 0.5% Min: Pyrrhotite>>

<<Alt: 453.61 - 483 Weak-Moderate Muscovite>>

<<Alt: 454.4 - 467.4 Weak Biotite>>

<<Struc: 459.9 - 459.9 Moderate Foliation>>

<<Struc: 461.8 - 461.8 Weak-Moderate Foliation>>

463.00 466.96 RHYv Rhyolite volcaniclastic

463 - 466.96: Silicified and weak-moderate Mu alteration. Narrow intervals (<30 cm) exhibit coherent rhyolite textures.

<<Min: 466.95 - 470.15 1% Min: Pyrite>>

466.96 470.15 MDSt Rhyolite tuff dominant mudstone dark grey

466.96 - 470.15: Well foliated, carbonaceous-tuffaceous mudstone.

<<Alt: 467.4 - 470.15 Weak-Moderate Biotite>>

470.15 474.11 RHYv Rhyolite volcaniclastic

<<Min: 470.15 - 482 0.5% Min: Pyrite>>

<<Vein: 471.53 - 472.05 100% Quartz>>

474.11 474.50 MDSt Rhyolite tuff dominant mudstone dark grey

474.11 - 474.5: Well foliated, carbonaceous-tuffaceous mudstone.

474.50 482.40 RHYv Rhyolite volcaniclastic grey

474.5 - 482.4: Muscovite altered, quartz-eye bearing rhyolite volcaniclastic. Texturally obscured by alteration.

<<Min: 476.4 - 483 3% Min: Pyrrhotite>>

<<Min: 482 - 501.03 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

482.40 488.00 RHYvl Lapilli tuff cream FCG

482.4 - 488: Muscovite altered lapilli tuff.

<<Min: 483 - 501.03 1% Min: Pyrrhotite>>

<<Alt: 483 - 484 Moderate Muscovite>>

<<Alt: 483 - 559 Weak-Moderate Calcite>>

<<Alt: 484 - 488 Moderate-Strong Muscovite>> Locallized around fault structure

<<Struc: 485.7 - 486.02 Moderate Fault>> Sand and clay gouge filled fault.

488.00 492.09 RHYv Rhyolite volcaniclastic cream

488 - 492.09: Muscovite altered

<<Alt: 488 - 500 Weak-Moderate Muscovite>>

492.09 495.25 RHYv Rhyolite volcaniclastic cream FMG

492.09 - 495.25: Muscovite altered

<<Alt: 495 - 499 Weak Silicification>>

495.25 514.61 RHYv Rhyolite volcaniclastic cream

495.25 - 514.61: Muscovite altered. Volcaniclastic textures obscured by alteration.

<<Min: 501.03 - 514.16 5% Min: Pyrite>> Siliceous, banded aggregates of pyrite. 13 cm wide massive pyrite lens at 510.77-510.9 m

<<Min: 501.03 - 537 0.1% Min: Pyrrhotite>>

<<Min: 514.16 - 537 2% Min: Pyrite>>

<<Alt: 499 - 512 Moderate Silicification>>

<<Alt: 500 - 505.3 Moderate Muscovite>>

<<Alt: 505.3 - 508 Moderate-Strong Muscovite>>

<<Alt: 508 - 517.75 Moderate Muscovite>>

<<Alt: 512 - 527 Strong Silicification>>

<<Vein: 512.94 - 514.61 95% Quartz>>

<<Struc: 500.62 - 501.03 Weak-Moderate Fault>> Three <5 cm clay gouge filled faults, spaced <10 cm apart.

<<Struc: 507.7 - 507.7 Weak-Moderate dominant foliation>>

<<Struc: 513 - 513.77 Weak-Moderate Fault>> Faulted quartz vein. Gravel, sand and minor clay gouge filled fault.

514.61 524.87 RHYv Rhyolite volcaniclastic cream FMG

514.61 - 524.87: QE bearing. Muscovite altered. Volcaniclastic textures obscured by alteration.

<<Alt: 517.75 - 527 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 516.87 - 517.41 90% Quartz>>

<<Vein: 523.26 - 524.87 90% Quartz 75 deg. >>

524.87 539.77 RHYvl Lapilli tuff cream FCG

524.87 - 539.77: QE bearing. Muscovite altered. Volcaniclastic textures obscured by alteration. Lapilli appear sparsely.

<<Min: 537 - 548.43 1% Min: Pyrrhotite>>

<<Min: 537 - 559 0.5% Min: Pyrite>>

<<Alt: 527 - 530.2 Moderate-Strong Muscovite>>

<<Alt: 527 - 548.43 Moderate Silicification>>

<<Alt: 530.2 - 542 Moderate Muscovite>>

<<Struc: 532.94 - 533.4 Weak-Moderate Fault>> Minor clay gouge and weak broken rock.

<<Struc: 534.4 - 538.42 Weak Fault>> Several narrow <10cm faults spaced 10-90 cm apart.

539.77 548.43 RHYc Rhyolite coherant volcanics cream

539.77 - 548.43: QE bearing , muscovite altered coherent rhyolite exhibiting curdy/flow textures.

<<Alt: 542 - 548.43 Weak-Moderate Muscovite>>

<<Struc: 540.85 - 541.6 Moderate Fault>> Hardened gouge, possibly an old fault, healed or recemented fault.

<<Struc: 545.05 - 545.05 Weak-Moderate dominant foliation>>

548.43 559.00 RHYvl Lapilli tuff grey-green FCG

<<Min: 548.43 - 559 1% Min: Pyrrhotite>>

<<Alt: 548.43 - 559 Weak Silicification>>

<<Alt: 548.43 - 580 Weak Muscovite>>

<<Alt: 548.43 - 589.71 Trace Chlorite>> Locallized along fractures and lapilli.

<<Vein: 555.49 - 555.65 100% Quartz>>

<<Struc: 548.8 - 548.8 Moderate dominant foliation>>

<<Struc: 552 - 552.22 Weak-Moderate Fault>> Clay gouge, sand and rock rubble fault

<<Struc: 558.3 - 558.3 Weak-Moderate Foliation>>

<<Struc: 558.35 - 558.35 Weak-Moderate Foliation>>

559.00 561.00 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

<<Min: 559 - 561 5% Min: Pyrite>>

<<Min: 559 - 561 2% Min: Pyrrhotite>>

<<Min: 559 - 561 0.1% Min: Galena>>

<<Alt: 559 - 561 Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 559.76 - 559.96 100% Quartz 20 deg. >>

<<Struc: 559.21 - 559.21 Weak-Moderate Foliation>>

<<Struc: 559.36 - 559.36 Moderate Foliation>>

561.00 565.21 RHYvl Lapilli tuff grey-green FCG

<<Min: 561 - 565.21 1% Min: Pyrite>>

<<Min: 561 - 569.33 3% Min: Pyrrhotite>>

<<Alt: 561 - 565.21 Weak-Moderate Calcite>>

565.21 569.33 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

565.21 - 569.33: Siliceous, carbonate/biotite rich pelitic ash.

<<Min: 565.21 - 569.33 5% Min: Pyrite>>

<<Alt: 565.21 - 569.33 Strong Calcite>>

<<Struc: 566.47 - 566.56 Weak Fault>> clay gouge

569.33 569.62 RHYc Rhyolite coherant volcanics cream

569.33 - 569.62: Aphanitic, siliceous, foliated cream colored rock. RHYc or RHYi is undifferentiated.

<<Min: 569.33 - 583.43 1% Min: Pyrite>>

<<Min: 569.33 - 583.43 0.5% Min: Pyrrhotite>>

<<Alt: 569.33 - 583.43 Weak-Moderate Calcite>>

569.62 583.42 RHYvl Lapilli tuff grey-brown FCG

<<Struc: 579.94 - 582.4 Moderate Fault>> Clay gouge, gravel and rock fill fault with fractured proximal rock

583.42 585.84 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FCG

583.42 - 585.84: Siliceous, carbonate/biotite rich pelitic ash.

<<Min: 583.43 - 585.43 2% Min: Pyrrhotite>>

<<Min: 583.43 - 585.84 5% Min: Pyrite>>

<<Min: 585.43 - 608 0.5% Min: Pyrite>>

<<Min: 585.43 - 620.96 0.5% Min: Pyrrhotite>>

<<Alt: 583.43 - 585.84 Moderate-Strong Calcite>>

585.84 589.71 RHYv Rhyolite volcaniclastic grey

<<Alt: 585.84 - 620.96 Weak-Moderate Calcite>>

<<Vein: 586.2 - 586.51 40% Quartz 0 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

589.71 606.77 RHYv Rhyolite volcaniclastic grey

589.71 - 606.77: Siliceous, grey, muscovite altered rhyolite volcaniclastic with sparse quartz eyes and ash supported lapilli.

<<Struc: 591.74 - 592.2 Moderate Fault>> Clay gouge, pebble and gravel filled fault

<<Struc: 592.7 - 592.7 Moderate dominant foliation>>

<<Struc: 601.59 - 601.93 Moderate-Strong Fault>> Clay gouge fault with shattered/fractured proximal rock.

606.77 620.96 RHYvl Lapilli tuff grey-brown FCG

<<Min: 608 - 620.96 1% Min: Pyrite>>

<<Alt: 606.77 - 620.96 Weak Muscovite>>

<<Alt: 620.95 - 630 Moderate Muscovite>>

<<Vein: 617.81 - 617.93 100% Quartz>>

<<Struc: 608.76 - 608.94 Moderate-Strong Fault>> Indurated (hardened and cemented) clay gouge and pebble filled fault. Possibly old fault.

<<Struc: 613.56 - 613.6 Weak Fault>> Clay gouge.

<<Struc: 614.7 - 614.78 Trace Fault>>

620.96 624.65 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

<<Min: 620.96 - 624.65 2% Min: Pyrite>>

<<Min: 620.96 - 624.65 1% Min: Pyrrhotite>>

<<Alt: 620.96 - 624.65 Moderate-Strong Calcite>>

<<Vein: 621.34 - 621.51 100% Quartz>> Massive euhedral tourmaline. PO as sulphide.

624.65 634.98 RHYvl Lapilli tuff leucocratic FCG

<<Min: 624.65 - 634.98 2% Min: Pyrite>>

<<Min: 624.65 - 634.98 0.5% Min: Pyrrhotite>>

<<Alt: 624.65 - 634.98 Weak Calcite>>

<<Alt: 630 - 669.91 Weak Muscovite>>

<<Struc: 627.8 - 628.22 Trace Fault>> Three faults <5cm wide, spaced <20 cm apart.

<<Struc: 628.5 - 628.79 Moderate Fault>> Clay gouge, gravel and sand filled fault.

<<Struc: 633.5 - 633.57 Weak Fault>> Clay gouge and gravel fault

<<Struc: 633.62 - 633.83 Weak Fault>> Clay gouge

634.98 642.01 RHYvl Lapilli tuff grey-brown FCG

634.98 - 642.01: Biotite, carbonate, pyrite and trace chlorite ash-supported lapilli tuff with weak-moderate muscovite alteration.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 634.98 - 642.01 1% Min: Pyrite>>

<<Min: 634.98 - 642.01 0.1% Min: Pyrrhotite>>

<<Alt: 634.98 - 642.01 Weak-Moderate Calcite>>

<<Alt: 634.98 - 669.91 Trace Chlorite>>

<<Struc: 639.2 - 639.25 Weak Fault>>

642.01 643.47 PEL Equigranular biotite + calcite +/- quartz rock grey-brown VFG

<<Min: 642.01 - 643.47 0.1% Min: Pyrite>>

<<Min: 642.01 - 643.47 1% Min: Pyrrhotite>>

<<Alt: 642.01 - 643.47 Strong Calcite>>

643.47 649.60 RHYvl Lapilli tuff grey-brown FCG

<<Min: 643.47 - 656.57 1% Min: Pyrite>>

<<Min: 643.47 - 669.91 2% Min: Pyrrhotite>>

<<Alt: 643.47 - 656.57 Weak Calcite>>

<<Struc: 643.89 - 643.93 Trace Fault>>

649.60 656.57 RHYv Rhyolite volcaniclastic grey FG

<<Struc: 650.88 - 651.12 Weak-Moderate Fault>> Clay gouge fault with proximal rock rubble.

<<Struc: 655.29 - 655.4 Weak-Moderate Fault>> Clay gouge and sand fault

656.57 669.91 RHYvl Lapilli tuff grey-brown FCG

<<Min: 656.57 - 669.91 0.5% Min: Pyrite>>

<<Alt: 656.57 - 669.91 Weak-Moderate Calcite>>

<<Struc: 666.18 - 666.43 Weak-Moderate Fault>>

<<Struc: 669.75 - 669.91 Moderate Fault>> Clay gouge, sand and pebble filled fault.

669.91 674.68 MDSc Carbonaceous dominant mudstone black VFG

669.91 - 674.68: Black carbonaceous mudstone with siliceous/carbonate bands.

<<Min: 669.91 - 689.07 1% Min: Pyrrhotite>>

<<Min: 669.91 - 749.9 0.1% Min: Pyrite>>

<<Alt: 669.91 - 706.01 Trace Calcite>>

<<Alt: 669.91 - 712 Weak Silicification>> Silicification of mudstone unit, proximal to fault at 686m.

<<Struc: 672.8 - 681.45 Weak Fault>> Several low-intensity rock rubble faults <20cm wide, spaced 0.5-2 m apart.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

674.68 689.07 MDSt Rhyolite tuff dominant mudstone dark grey VFG

674.68 - 689.07: Dark grey-grey/green tuffaceous mudstone. Blue-green alteration found in narrow bands 3-10 cm wide with sharp contacts.

<<Alt: 678 - 712 Trace Chlorite>>

<<Struc: 681.54 - 681.89 Moderate Fault>> Clay gouge, sand and rock rubble fault.

<<Struc: 683.6 - 686.1 Moderate Fault>> Sand, rock rubble and minor clay gouge, faulted interval. Approximately 1 m of wash away.

<<Struc: 686.95 - 687.11 Weak-Moderate Fault>> Clay gouge and gravel filled fault. Rock in proximity shows signs of shear.

<<Struc: 688.5 - 688.84 Moderate Fault>> Clay and sand filled fault. Approximately 10-15 cm wash away.

689.07 703.45 RHYv Rhyolite volcaniclastic leucocratic FG

689.07 - 703.45: Siliceous, quartz eye bearing felsic volcanic rock. Localized faulting, silicification and muscovite alteration obscures primary rock textures.

<<Min: 689.07 - 706.01 0.1% Min: Pyrrhotite>>

<<Alt: 689.07 - 752 Trace Muscovite>>

<<Struc: 691.5 - 691.7 Weak-Moderate Fault>> Clay gouge and gravel filled fault.

<<Struc: 696.87 - 697.26 Moderate Fault>> Clay gouge, sand and pebble filled fault.

<<Struc: 697.98 - 697.98 Moderate dominant foliation>>

<<Struc: 700.08 - 707.29 Weak-Moderate Fault>> Shatter-brecciated interval with minor clay gouge filled faulting. Rock is strongly silicified, brittle and locally sheared.

703.45 704.79 MDSt Rhyolite tuff dominant mudstone dark grey FG

703.45 - 704.79: Silicified biotite banded mudstone. Rock exhibits narrow alternating bands of biotite +/- carbonaceous mud and quartz.

704.79 706.01 RHYvx Quartz and/or feldspar crystal tuff light grey FG

704.79 - 706.01: Silicified quartz-eye bearing rhyolite. Fine-grained biotite porphyroblasts present locally.

<<Struc: 704.97 - 704.97 Moderate dominant foliation>>

706.01 707.29 PEL Equigranular biotite + calcite +/- quartz rock green-brown FG

706.01 - 707.29: Silicified biotite/chlorite - ash pelite. Strongly altered proximal to fault zone starting at base of unit.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 706.01 - 707.29 1% Min: Pyrrhotite>>

<<Alt: 706.01 - 707.29 Weak-Moderate Calcite>>

707.29 715.28 FLZ Fault Zone light grey FCG

707.29 - 715.28: Shatter brecciated, faulted and sheared zone. Lith appears felsic and silica/musc. Altered.

<<Min: 707.29 - 758.55 0.1% Min: Pyrrhotite>>

<<Alt: 707.29 - 794.8 Trace Calcite>>

<<Struc: 707.29 - 714.8 Strong Fault>> Shatter-brecciated interval with moderate to strong fault brecciation, clay-sand gouge and shearing in any interstitial semi-coherent rock

715.28 749.90 RHYv Rhyolite volcaniclastic grey-green FCG

715.28 - 749.9: Grey-green, siliceous, volcaniclastic with sparse quartz eyes. Interval is pervasively faulted, brecciated and or sheared; interpreted as fault damage zone.

<<Alt: 715.28 - 752 Trace Silicification>>

<<Vein: 734 - 744.41 10% Quartz>>

<<Struc: 715.28 - 715.8 Weak-Moderate Shear>>

<<Struc: 717.49 - 717.89 Moderate Fault>> Clay gouge filled fault.

<<Struc: 720 - 720.6 Moderate-Strong Fault>> Clay gouge, sand and pebble filled fault

<<Struc: 728.32 - 729.02 Moderate Fault>> Clay gouge, sand and pebble filled fault

<<Struc: 729.89 - 729.97 Weak-Moderate Fault>> Clay gouge, sand and pebble filled fault

<<Struc: 731.31 - 732 Moderate-Strong Fault>> Clay gouge, sand and pebble filled fault

<<Struc: 732.2 - 732.28 Weak-Moderate Fault>> Clay gouge, sand and pebble filled fault

<<Struc: 732.28 - 733.77 Moderate Shear>>

<<Struc: 733.77 - 734.53 Moderate Fault>> Clay gouge, sand, gravel and pebble filled fault

<<Struc: 736.8 - 737.28 Moderate Fault>> Clay gouge, sand, gravel and pebble filled fault

<<Struc: 743.48 - 743.48 Moderate dominant foliation>>

<<Struc: 746.09 - 746.19 Weak-Moderate Fault>> Clay gouge, sand and pebble filled fault

749.90 758.55 RHYvx Quartz and/or feldspar crystal tuff grey-brown FCG

749.9 - 758.55: Quartz eye bearing rhyolite ash tuff.

<<Min: 749.9 - 776.78 0.1% Min: Chalcopyrite>>

<<Alt: 757.28 - 757.49 Weak Chlorite>>

<<Vein: 758.45 - 770.16 5% Quartz>>

<<Struc: 752.45 - 753.15 Weak-Moderate Fault>> Several faults 5-40cm wide spaced <30 cm apart. Clay gouge, sand and pebble filled fault

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 756.6 - 756.63 Trace Fault>>

<<Struc: 756.67 - 756.67 Moderate dominant foliation>>

758.55 767.91 MDSt Rhyolite tuff dominant mudstone dark grey FG

758.55 - 767.91: Dark grey to black, well foliated, calcite/quartz banded tuffaceous mudstone.

<<Min: 758.55 - 776.78 0.5% Min: Pyrrhotite>>

<<Alt: 766.1 - 766.37 Weak Chlorite>>

<<Struc: 767.8 - 767.91 Weak-Moderate Fault>> Clay gouge fille fault

767.91 776.58 RHYvx Quartz and/or feldspar crystal tuff grey-green FMG

767.91 - 776.58: Grey-green, quartz-eye bearing, fine-medium grained, siliceous ash tuff.

<<Struc: 768.28 - 768.38 Weak Fault>>

776.58 796.00 RHYva Coarse grained to ash tuff grey-green FCG

776.58 - 796: Grey-green ash-tuff with sparse siliceous lapilli. Unit has a mixed trace component of very-fine grained chlorite.

<<Min: 776.78 - 799.34 0.1% Min: Pyrrhotite>>

<<Alt: 776.84 - 796 Trace Chlorite>>

<<Alt: 794.8 - 798.05 Weak-Moderate Calcite>>

<<Struc: 776.67 - 776.77 Weak-Moderate Fault>> Clay gouge fille fault

<<Struc: 776.95 - 776.95 Moderate dominant foliation>>

<<Struc: 785.79 - 785.83 Trace Fault>>

<<Struc: 788.7 - 788.87 Weak-Moderate Fault>> Clay gouge fille fault

796.00 798.05 MDSt Rhyolite tuff dominant mudstone black VFG

796 - 798.05: Black to dark grey, well foliated, calcite/quartz banded, carbonaceous/tuffaceous mudstone.

<<Min: 796 - 799.34 0.1% Min: Chalcopyrite>>

<<Struc: 796.45 - 796.65 Weak-Moderate Fault>> Clay gouge and sand fille fault

798.05 801.25 SED undifferentiated Sediment grey-green FCG

798.05 - 801.25: matrix supported conglomerate with chloritic pelite groundmass and tuffaceous clasts ranging from 1-4 cm across. Interval is graded coarse to fine from top to bottom.

<<Min: 799.34 - 799.8 5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 799.34 - 799.8 0.5% Min: Chalcopyrite>>

<<Min: 799.8 - 801.25 0.1% Min: Chalcopyrite>>

<<Min: 799.8 - 810 0.5% Min: Pyrrhotite>>

<<Alt: 798.05 - 801.25 Moderate Calcite>>

801.25 805.31 RHYvx Quartz and/or feldspar crystal tuff grey FCG

801.25 - 805.31: Quartz eye bearing crystal tuff

<<Alt: 801.25 - 805.31 Weak Calcite>>

<<Struc: 803.9 - 803.9 Weak-Moderate Foliation>>

805.31 805.68 PEL Equigranular biotite + calcite +/- quartz rock green FMG

805.31 - 805.68: Green, chloritic pelite with medium-coarse grained biotite porphyroblasts.

<<Alt: 805.31 - 805.68 Weak-Moderate Chlorite>>

<<Alt: 805.31 - 805.68 Moderate-Strong Calcite>>

<<Alt: 805.31 - 805.68 Moderate Biotite>>

805.68 807.98 RHYvx Quartz and/or feldspar crystal tuff grey-green FCG

805.68 - 807.98: Quartz eye bearing crystal tuff

<<Alt: 805.68 - 807.98 Weak Calcite>>

<<Struc: 806.97 - 806.97 Weak-Moderate Foliation>>

807.98 810.00 PEL Equigranular biotite + calcite +/- quartz rock green FMG

807.98 - 810: Green, chloritic pelite with medium-coarse grained biotite porphyroblasts. EOH

<<Alt: 807.98 - 810 Moderate Chlorite>>

<<Alt: 807.98 - 810 Moderate-Strong Calcite>>

<<Alt: 807.98 - 810 Weak-Moderate Biotite>>

End of Hole @ 810

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-400

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/21/2016
UTM Easting	419400.538	Core Size:	HQ3	Azimuth:	179.9	Date Logging Complete:	7/23/2016
UTM Northing:	6813207.191	Casing Pulled?:	Yes	Dip:	-60	Drill Company:	New Age
UTM Elev. (m):	1349.139	Casing Depth (m):	4.5	Length (m):	98.5	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/19/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/22/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
						Parent Hole:	

Comments:

The purpose of this DDH is resource infill and to collect a metallurgical sample from the GP4F sulfide lens. Both objectives were accomplished. The GP4F lens was intersected at 46.14-57.82m (including minor to significant sections of altered rhyolite) and consisted mainly of OJ and OI type mineralization. Short, <30cm sections of semi-massive mineralization are included in the wider OI and OJ units. Sphalerite content was up to 15% in some sections. The DDH did not go deep enough to intersect the lower lens. A major fault zone was intersected from 26.50-34.70m with poor to no core recovery. There was also missing and poor core recovery between 34.70 - 50.20 m due to faulting and/or possibly poor drilling technique (lots of rounded pebbles and evidence of ground core). After shift change at 50.2 m core recovery and quality improved markedly.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-60	178.5	1.4	179.9	TN14	Roger Hulstein	7/19/2016		☑	drill aligned at 8:30pm July 19, 2016.
5	-60.61123	178.89739	1.4	180.29739	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
10	-60.60472	179.02508	1.4	180.42508	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
15	-60.62847	178.85157	1.4	180.25157	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
20	-60.75103	179.30431	1.4	180.70431	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
25	-60.64492	179.61811	1.4	181.01811	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
30	-60.52335	179.33215	1.4	180.73215	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
35	-60.7883	179.52226	1.4	180.92226	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
40	-60.8539	179.70058	1.4	181.10058	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
44	-60	158	22.1	180.1	ReflexEZS	New Age	7/20/2016	5755	☐	
45	-60.81393	179.42777	1.4	180.82777	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
50	-60.82919	179.1675	1.4	180.5675	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
55	-61.00248	179.1727	1.4	180.5727	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
60	-61.13631	179.01989	1.4	180.41989	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
65	-61.20796	179.21373	1.4	180.61373	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
70	-61.2948	179.31903	1.4	180.71903	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
74.5	-61.3	162.8	22.1	184.9	ReflexEZS	New Age	7/21/2016	5752	☐	
75	-61.54015	179.55217	1.4	180.95217	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-400

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
80	-61.75236	179.65103	1.4	181.05103	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
85	-61.9793	180.01612	1.4	181.41612	Gyro	Dillon Hume	7/23/2016		☑	Motion quality = 100
98.5	-62.3	159.1	22.1	181.2	ReflexEZS	New Age	7/22/2016	5736	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.10 OVBN Overburden

4.10 6.85 PEL Equigranular biotite + calcite +/- quartz rock

4.1 - 6.85: PEL unit could be a dyke but no direct evidence either way although BIppo in observed in RHYvl at lower (PEL) contact.

<<Min: 4.1 - 9.3 0.01% Min: Pyrite>>

<<Alt: 4.1 - 6.8 Moderate-Strong Calcite>>

<<Alt: 6.8 - 10.7 Trace Calcite>>

6.85 10.70 RHYvl Lapilli tuff

6.85 - 10.7: weak BCQlpl

<<Min: 9.3 - 10.7 1% Min: Pyrite>>

<<Min: 9.3 - 10.7 1% Min: Pyrrhotite>>

<<Alt: 9.3 - 13.15 Weak Chlorite>> and as diss

<<Struc: 7.7 - 9.3 Weak Shear>> fracture - shear, minor clay

<<Struc: 7.7 - 9.3 Weak-Moderate Fault>> broken core, fractured, minor gouge

10.70 12.98 PEL Equigranular biotite + calcite +/- quartz rock

10.7 - 12.98: Bi-r

<<Min: 10.7 - 12.93 1% Min: Pyrite>>

<<Min: 12.93 - 18.31 3% Min: Pyrite>>

<<Alt: 10.7 - 12.98 Moderate-Strong Calcite>>

12.98 18.31 RHYvl Lapilli tuff

12.98 - 18.31: bleached, biotite & chlorite destroyed

<<Alt: 12.98 - 16.03 Trace Calcite>>

<<Alt: 13.15 - 18.31 Weak Muscovite>> at expense of biotite and chlorite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 16.03 - 16.6 Weak Calcite>>

<<Alt: 16.6 - 18.31 Trace Calcite>>

<<Struc: 13 - 14.5 Moderate dominant foliation>>

<<Struc: 17 - 18 Moderate dominant foliation>>

<<Struc: 17.4 - 17.6 Weak Shear>> fracture with clay - calcite

18.31 19.40 PEL Equigranular biotite + calcite +/- quartz rock

18.31 - 19.4: 10cm calcite banding with weak chlorite at lower contact

<<Min: 18.31 - 19.5 0.01% Min: Pyrite>>

<<Alt: 18.31 - 19.49 Moderate-Strong Calcite>>

<<Struc: 18.31 - 18.32 Moderate-Strong Contact>>

19.40 26.50 RHYvl Lapilli tuff

19.4 - 26.5: bleached. Rare foliaform and crosscutting sulfide veins (<1cm wide).

<<Min: 19.5 - 20.5 1% Min: Pyrrhotite>>

<<Min: 19.5 - 26.5 3% Min: Pyrite>>

<<Alt: 19.43 - 26.5 Weak Muscovite>> at expense of biotite and chlorite.

<<Alt: 19.49 - 25.1 Trace Calcite>>

<<Alt: 25.1 - 26.5 Weak-Moderate Calcite>>

<<Struc: 19.85 - 19.86 Weak Shear>> fracture with clay - calcite

<<Struc: 22.85 - 23 Moderate dominant foliation>>

<<Struc: 24.81 - 26.5 Weak-Moderate Fault>> missing core, broken core with clay on fractures

26.50 29.50 RHYvl Lapilli tuff

26.5 - 29.5: Fault zone starting at 26.50m. Gougy and argillic alter RHYvl. Missing core.

<<Min: 26.5 - 32.5 3% Min: Pyrite>>

<<Min: 26.5 - 32.5 0.5% Min: Galena>>

<<Alt: 26.5 - 27 Moderate Calcite>> in clay gouge

<<Alt: 26.5 - 32.5 Moderate-Strong Muscovite>> sericite-muscovite alteration.

<<Alt: 27 - 36.2 Trace Calcite>>

<<Vein: 29.15 - 29.25 100% Quartz>>

<<Struc: 26.5 - 32.5 Strong Fault>> missing core, gouge, strong musc - argillic alt, broken core with clay on fractures, core rubble.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
29.50	**32.50**	**RHYvl Lapilli tuff** 29.5 - 32.5: Fault zone, as above but wrse corerecovery and only RHYvl pebbles (fault brx clasts) recovered									
32.50	**34.70**	**FLZ Fault Zone** 32.5 - 34.7: Fault zone, only bleached (muscovite - sericite altered) RHY pebbles recovered. Two full core boxes of caved and washed material recovered between 32.50-34.70m. Essentially no core 32.5-34.7 m. <<Struc: 32.5 - 34.7 Strong Fault>> missing core, gouge, strong musc - argillic alt, broken core with clay on fractures, core rubble.									
34.70	**36.20**	**RHYc Rhyolite coherant volcanics** 34.7 - 36.2: silic bands with muscovite & diss pyrite on folia. Poor core recovery. <<Min: 34.7 - 36.2 5% Min: Pyrite>> <<Min: 34.7 - 40.25 0.1% Min: Arsenopyrite>> <<Alt: 34.7 - 36.2 Moderate Muscovite>> fine white muscovite on folia. <<Struc: 34.7 - 43.9 Strong Fault>> missing core, ground core, pebbles, no gouge recovered. Possible driller problem and not fault zone.	34.70	36.20	1.50	D00004438	0.101	24.8	-0.01	0.02	0.02
36.20	**37.20**	**PEL Equigranular biotite + calcite +/- quartz rock** 36.2 - 37.2: Missing core. Coarse grained biotite-muscovite-qtz schist, local 0.5cm silic bands, 8cm piece of bleached RHYvl (similar to above unit). <<Min: 36.2 - 37.9 0.5% Min: Sphalerite>> <<Min: 36.2 - 37.9 3% Min: Pyrite>> <<Min: 36.2 - 37.9 0.5% Min: Galena>> <<Alt: 36.2 - 37.9 Moderate Calcite>> with botite rich bands and units. <<Alt: 36.2 - 44.5 Moderate Muscovite>>	36.20	37.90	1.70	D00004439	0.074	18.5	0.03	0.8	1.34
37.20	**40.45**	**RHYvl Lapilli tuff** 37.2 - 40.45: Poor core recovery. 10cm piece fault brx at 40.20m. RHYvl with silic and PEL (brown biotite - calcareous rich) bands. 39.80-40.13m: assuming no core loss, 30cm of recovered core with thin (3-5mm) qtz-cal-sulfide bands. <<Min: 37.9 - 40.2 0.5% Min: Sphalerite>> and in this sulfide veinlets <<Min: 37.9 - 40.2 5% Min: Pyrite>> <<Min: 37.9 - 40.2 0.5% Min: Galena>> and in thin sulfide veinlets <<Alt: 37.9 - 46.14 Weak Calcite>> in fault brx, as fracture filling, rare Ca rich bands and diss.	37.90	40.20	2.30	D00004441	0.034	4.4	0.02	0.2	0.46
40.45	**43.20**	**No Core No Core**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
43.20	**44.50**	**RHYvx** **Quartz and/or feldspar crystal tuff**	43.20	43.90	0.70	D00004442	-0.005	3.8	0.02	0.09	1.17
43.2 - 44.5: Qtz eye marker unit. Chloritization increasing down hole.											
<<Min: 43.2 - 44.5 0.1% Min: Sphalerite>>			43.90	44.50	0.60	D00004443	-0.005	1.5	0.05	0.02	0.37
<<Min: 43.2 - 44.5 3% Min: Pyrrhotite>>											
<<Min: 43.2 - 44.5 0.1% Min: Galena>>											
<<Min: 43.2 - 44.5 0.02% Min: Chalcopyrite>>											
<<Alt: 43.2 - 44.5 Weak-Moderate Chlorite>>											
<<Alt: 43.2 - 44.5 Trace Biotite>>											
<<Struc: 43.9 - 50.2 Moderate-Strong Fault>> missing core, ground core, pebbles, no gouge recovered. Possible driller problem and not fault zone. Recovery and core quality improves after shift change at 50.20m.											
44.50	**46.14**	**RHY** **undifferentiated rhyolite**	44.50	46.14	1.64	D00004444	-0.005	0.5	0.03	-0.01	0.94
44.5 - 46.14: Not RHY at all! 44.50-46.14 is a quartz vein. Includes 6cm piece of OJ and minor blebs diss sulfides.											
<<Min: 44.5 - 46.14 0.01% Min: Sphalerite>> in chl alt											
<<Min: 44.5 - 46.14 1% Min: Pyrite>>											
<<Min: 44.5 - 46.14 0.01% Min: Galena>> in chl alt											
<<Min: 46.12 - 47.52 1% Min: Pyrrhotite>>											
<<Min: 46.12 - 47.52 5% Min: Galena>>											
<<Vein: 45.5 - 46.14 90% Quartz>> bull qtz vein with minor wallrock(chloritized with sp and py blebs), chl, tourmaline											
46.14	**47.52**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	46.14	47.00	0.86	D00004445	0.03	10.7	0.19	0.11	5.97
46.14 - 47.52: banded and diss mineralization and chlorite - muscovite alteration											
<<Min: 46.16 - 47.52 15% Min: Sphalerite>>			47.00	47.52	0.52	D00004446	0.047	19.5	0.24	0.24	10.2
<<Min: 46.16 - 47.52 15% Min: Pyrite>>											
<<Alt: 46.14 - 47.52 Moderate Chlorite>> and diss											
<<Alt: 46.14 - 47.52 Moderate Calcite>> In healed fault brx, as fracture filling, Ca rich bands and diss.											
<<Alt: 46.14 - 47.52 Weak-Moderate Biotite>>											
<<Vein: 46.68 - 46.75 100% Quartz-Chlorite-Sulphide>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
47.52	**49.34**	**RHY** **undifferentiated rhyolite**	47.52	49.34	1.82	D00004447	0.016	10.3	0.14	0.39	3.14
47.52 - 49.34: weak - mod. diss chlorite - biotite -muscovite alteration. Minor diss and blebs of sulfide (mainly pyrite). Assigned core loss to the interval 47.00-50.20m. Recovered 0.88m in 1.82m length (47.52-49.34m) for 48% recovery.											
<<Min: 47.52 - 49.34 1% Min: Sphalerite>>											
<<Min: 47.52 - 49.34 5% Min: Pyrite>>											
<<Min: 47.52 - 49.34 0.1% Min: Galena>>											
<<Alt: 47.52 - 49.34 Weak Chlorite>>											
<<Alt: 47.52 - 49.34 Weak-Moderate Calcite>>											
<<Alt: 47.52 - 49.34 Weak-Moderate Biotite>>											
49.34	**50.45**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	49.34	50.45	1.11	D00004448	0.054	18.3	0.23	0.96	6.25
49.34 - 50.45: 49.20m was determined assuming no core loss from 50.20m. Locally siliceous - possible cherty bands. Diss chlorite-biotite alteration and diss mineralization.											
<<Min: 49.34 - 50.34 10% Min: Galena>>											
<<Min: 49.34 - 50.34 0.5% Min: Chalcopyrite>>											
<<Min: 49.34 - 50.45 15% Min: Sphalerite>>											
<<Min: 49.34 - 50.45 15% Min: Pyrite>>											
<<Min: 50.34 - 52.16 1% Min: Pyrite>>											
<<Alt: 49.34 - 49.64 Moderate Cordierite>>											
<<Alt: 49.34 - 50.45 Weak Chlorite>>											
<<Alt: 49.34 - 50.45 Weak Calcite>>											
<<Alt: 49.34 - 50.45 Weak Biotite>>											
<<Vein: 50.1 - 50.2 100% Quartz-Carbonate>>											
<<Struc: 50.12 - 50.2 Moderate Foliation>> sulfide banding											
50.45	**52.16**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	50.45	51.00	0.55	D00004449	0.034	4.1	0.07	0.2	0.48
50.45 - 52.16: Variably bleached, muscovite altered PEL.											
<<Alt: 50.45 - 51.4 Weak Calcite>>			51.00	52.16	1.16	D00004451	0.015	5.2	0.02	0.28	1.12
<<Alt: 50.45 - 52.9 Weak Chlorite>>											
<<Alt: 50.45 - 54.8 Weak-Moderate Muscovite>> at expense of biotite and chlorite											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 50.45 - 56.07 Weak Biotite>>									
		<<Alt: 51.4 - 52.16 Moderate Calcite>>									
		<<Vein: 51.73 - 52 20% Quartz-Tourmaline 60 deg. >>									
52.16	**52.83**	**OI** **Heavilly disseminated sulphides in host schist**	52.16	52.83	0.67	D00004452	0.161	31.4	0.12	2.58	7.11
		52.16 - 52.83: Rare chlorite, minor biotite, alteration, diss, wisps, fracture filling and one 5cm band of sulfides. Host rock is light gre fine grained PEL - ash.									
		<<Min: 52.16 - 52.46 5% Min: Sphalerite>>									
		<<Min: 52.16 - 52.48 3% Min: Galena>>									
		<<Min: 52.16 - 52.83 10% Min: Pyrite>>									
		<<Min: 52.48 - 52.83 20% Min: Sphalerite>>									
		<<Min: 52.48 - 52.83 5% Min: Galena>>									
		<<Min: 52.48 - 54.92 3% Min: Pyrrhotite>>									
		<<Alt: 52.73 - 56.61 Weak Calcite>>									
52.83	**54.82**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	52.83	53.30	0.47	D00004453	0.048	7.6	0.05	0.54	0.39
		52.83 - 54.82: Variably bleached, muscovite altered PEL. Biotite alteration.									
		<<Min: 52.83 - 56.07 1% Min: Sphalerite>> And in thin bands.	53.30	54.82	1.52	D00004454	0.121	8.3	0.03	0.37	0.51
		<<Min: 52.83 - 56.07 1% Min: Galena>> And in thin bands									
		<<Min: 52.83 - 56.4 5% Min: Pyrite>>									
		<<Struc: 54.75 - 56 Weak-Moderate Fault>> zones of broken core, low angle fractures, two (<10cm) gouge zones.									
54.82	**56.07**	**OI** **Heavilly disseminated sulphides in host schist**	54.82	56.07	1.25	D00004455	0.829	29.7	0.03	1.11	1.83
		54.82 - 56.07: 54.82-56.40: weak OI, approx 10% diss and banded sulfides. 56.40-56.61: OF band of sulfide. Too small to break out separately.									
		<<Alt: 54.82 - 56.07 Strong Muscovite>>									
56.07	**56.61**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	56.07	56.61	0.54	D00004456	0.168	49.4	0.1	3.05	6.91
		56.07 - 56.61: 56.07-56.40: OI, variably bleached, muscovite altered PEL with diss and banded sulfide. Locally weakly brecciated with qtz-cal filling and fractures.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 56.07 - 56.4 5% Min: Sphalerite>>

<<Min: 56.07 - 56.4 3% Min: Galena>>

<<Min: 56.4 - 56.61 30% Min: Sphalerite>>

<<Min: 56.4 - 56.61 5% Min: Pyrite>>

<<Min: 56.4 - 56.61 5% Min: Pyrrhotite>>

<<Min: 56.4 - 56.61 10% Min: Galena>>

<<Alt: 56.07 - 57.7 Moderate Biotite>>

<<Alt: 56.07 - 57.8 Trace Chlorite>>

<<Alt: 56.07 - 57.82 Weak-Moderate Muscovite>>

<<Struc: 56.07 - 56.4 Moderate-Strong Foliation>> sulfide banding

<<Struc: 56.6 - 56.62 Strong Contact>>

56.61	**57.42**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**	56.61	57.42	0.81	D00004457	-0.005	-0.3	0.02	0.02	0.06

56.61 - 57.42: PEL, minor ash?, weakly brecciated and fractured with qtz-cal filling.

<<Min: 56.61 - 57.42 0.5% Min: Pyrite>>

<<Min: 56.61 - 57.42 3% Min: Pyrrhotite>>

<<Alt: 56.61 - 57.82 Moderate-Strong Calcite>>

<<Vein: 56.61 - 57.62 20% Quarzt-Chlorite-Tourmaline>>

<<Struc: 56.61 - 56.8 Moderate dominant foliation>>

57.42	**57.82**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	57.42	57.82	0.40	D00004458	0.077	61.6	0.11	2.58	3.62

57.42 - 57.82: Minor bleached PEL bands, includes 10cm brx qtz vein with pyrite filling fractures. Diss, blebs and banded sulfides. Weak chlorite alteration.

<<Min: 57.42 - 57.82 3% Min: Sphalerite>>

<<Min: 57.42 - 57.82 3% Min: Pyrite>>

<<Min: 57.42 - 57.82 10% Min: Pyrrhotite>>

<<Min: 57.42 - 57.82 5% Min: Galena>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
57.82	**59.45**	**RHYvx** **Quartz and/or feldspar crystal tuff**	57.82	58.55	0.73	D00004459	0.057	6.1	0.02	0.38	0.85
57.82 - 59.45: Has muscovite altered PEL (does have remnant biotite) and likely an ash component. Rare blue qtz phenos. 57.82-58.55: bands and diss sulfides.											
<<Min: 57.82 - 58.55 1% Min: Sphalerite>> in thin qtz-calcite sulfide bands			58.55	59.45	0.90	D00004461	-0.005	-0.3	-0.01	-0.01	0.65
<<Min: 57.82 - 58.55 5% Min: Pyrite>>											
<<Min: 57.82 - 58.55 0.5% Min: Galena>>											
<<Min: 58.55 - 59.5 1% Min: Pyrite>>											
<<Alt: 57.82 - 59.45 Weak-Moderate Muscovite>> at expense of biotite											
<<Alt: 57.82 - 59.45 Weak Calcite>>											
<<Struc: 58.3 - 58.85 Moderate dominant foliation>> parallel to sulfide banding											
59.45	**60.62**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	59.45	60.62	1.17	D00004462	0.013	0.7	0.02	0.02	0.04
59.45 - 60.62: varibaly bleached, minor ash and lpl component.											
<<Min: 59.5 - 60.62 0.5% Min: Pyrite>>											
<<Min: 59.5 - 60.62 3% Min: Pyrrhotite>>											
<<Alt: 59.45 - 60.82 Moderate Calcite>>											
<<Vein: 59.97 - 60.17 100% Quartz-Carbonate-Sulphide>>											
60.62	**62.50**	**RHYvx** **Quartz and/or feldspar crystal tuff**	60.62	62.00	1.38	D00004463	0.008	3.7	0.01	0.21	0.42
60.62 - 62.5: minor PEL bnds and wisps											
<<Min: 60.62 - 61.6 0.5% Min: Sphalerite>>			62.00	62.50	0.50	D00004464	-0.005	-0.3	-0.01	0.02	0.09
<<Min: 60.62 - 61.6 0.1% Min: Galena>>											
<<Min: 60.62 - 62.5 0.5% Min: Pyrrhotite>>											
<<Min: 60.62 - 63.3 0.5% Min: Pyrite>>											
<<Alt: 60.82 - 61 Weak Calcite>>											
<<Alt: 61 - 62.5 Weak Calcite>>											
62.50	**63.60**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	62.50	63.60	1.10	D00004465	-0.005	0.4	0.02	-0.01	0.03
<<Min: 63.3 - 63.6 3% Min: Pyrrhotite>>											
<<Alt: 62.5 - 63.6 Moderate Calcite>>											
<<Struc: 62.7 - 62.9 Moderate Fault>> minor gouge											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

63.60 65.25 RHYvx Quartz and/or feldspar crystal tuff

63.6 - 65.25: 'dirty RHYvx', PEL, biotite wisps.

<<Min: 63.6 - 65.25 0.1% Min: Pyrrhotite>>

<<Alt: 63.6 - 65.25 Trace Calcite>>

65.25 67.93 SED undifferentiated Sediment

65.25 - 67.93: thin and mostly discontinuous siliceous bands, elongated qtz clasts and granuales. Biotite - calcite rich PEL for about 30cm at upper and lower contacts.

<<Min: 65.25 - 67.93 1% Min: Pyrrhotite>>

<<Min: 66.93 - 72.19 0.5% Min: Pyrite>>

<<Alt: 65.25 - 67.98 Weak-Moderate Calcite>> weaker cA in middle of unit

<<Alt: 66 - 69 Trace Chlorite>>

67.93 72.19 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 67.98 - 72.19 Weak Calcite>>

<<Vein: 68.82 - 68.99 100% Quartz>>

<<Struc: 68.4 - 68.5 Moderate dominant foliation>>

<<Struc: 69 - 69.6 Weak Shear>> fracture with clay - calcite

<<Struc: 69 - 69.6 Moderate Foliation>> sulfide veinlets - banding

<<Struc: 72 - 72.05 Weak Shear>> fracture with clay - calcite

<<Struc: 72.15 - 72.9 Moderate-Strong dominant foliation>>

<<Struc: 72.18 - 72.2 Strong Contact>>

72.19 73.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 72.19 - 75.6 0.5% Min: Sphalerite>> thin qtz -calcite-sulfide bands and diss

<<Min: 72.19 - 75.6 3% Min: Pyrite>> thin qtz -calcite-sulfide bands

<<Min: 72.19 - 75.6 0.1% Min: Galena>>

<<Min: 72.19 - 76.02 3% Min: Pyrrhotite>>

<<Alt: 72.19 - 73.7 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

73.70 75.60 RHYvx Quartz and/or feldspar crystal tuff

73.7 - 75.6: Blue qtz and feldspar phenos. Upper contact gradational over 5 cm. lower contact sharp with 8cm qtz vein between units.

<<Alt: 73.7 - 75.6 Trace Calcite>>

75.60 76.02 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 75.6 - 78.23 Weak Calcite>>

<<Struc: 75.8 - 76 Weak dominant foliation>>

76.02 77.40 MDSt Rhyolite tuff dominant mudstone

76.02 - 77.4: Black fine grained biotite on folia between silicic bands- looks like a MDSt or even a MDSc but no conclusive carbonaceous material observed. Medium gray - green cherty - siliceous disaggregated bands and fragments, mm to cm scale, between biotite folia. Siliceous unit.

<<Min: 76.02 - 78 1% Min: Pyrrhotite>>

<<Vein: 76.25 - 76.45 40% Quartz>> bleached envelope

<<Struc: 77 - 77.4 Weak dominant foliation>>

77.40 78.23 PEL Equigranular biotite + calcite +/- quartz rock

77.4 - 78.23: includes 13 cm qtz vein at lower contact with rare blebs pyrite and sphalerite.

<<Min: 78 - 85.6 3% Min: Pyrrhotite>>

<<Vein: 78.11 - 78.23 100% Quartz-Chlorite-Sulphide>>

78.23 87.83 RHYcf Feldspar & feldspar quartz porphyry

78.23 - 87.83: Euhedral feldspar phenos up to 1cm. Same unit observed in K19-396.

<<Min: 85.6 - 89 3% Min: Pyrite>>

<<Min: 86.42 - 89 0.5% Min: Sphalerite>>

<<Min: 86.42 - 89 0.1% Min: Galena>>

<<Alt: 78.23 - 91.56 Trace Calcite>>

<<Struc: 85.4 - 85.75 Moderate Vein>>

<<Struc: 87.8 - 88 Moderate Foliation>> sulfide banding

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

87.83 92.92 RHYvx Quartz and/or feldspar crystal tuff

87.83 - 92.92: Unit is grey brown color, brown due to variable amounts of diss and locally banded biotite (PEL component). Lower 0.5m looks very clastic - coarse sandstone. Foliaform sulfide veinlets (approx 5% total) 87.83-88.90m.

<<Min: 89 - 91.56 0.1% Min: Sphalerite>>

<<Min: 89 - 94 0.5% Min: Pyrite>>

<<Min: 90.85 - 93.22 3% Min: Pyrrhotite>>

<<Alt: 91.56 - 93.55 Weak-Moderate Calcite>>

<<Vein: 92.05 - 93.38 10% Quartz-Carbonate>>

92.92 93.32 PEL Equigranular biotite + calcite +/- quartz rock

92.92 - 93.32: 5cm calcite and weak chlorite at upper contact. PEL units marks hiatis in deposition?

<<Min: 93.22 - 98.5 1% Min: Pyrrhotite>> diss and in thin qtz-cal-sulfide veinlets-bands

93.32 98.50 RHYvx Quartz and/or feldspar crystal tuff

93.32 - 98.5: Siliceous, cut by foliaform qtz-calcite-sulfide+/- chlorite veinlets (<1cm wide) from 94.08-98.50m (<5% total). Rare fine sulfide diss. Locally thin bands of PEL including band at 96.80-96.98m.

<<Min: 94 - 96.8 0.5% Min: Sphalerite>> thin qtz -calcite-sulfide bands and diss

<<Min: 94 - 96.8 3% Min: Pyrite>>

<<Min: 94 - 98.5 0.1% Min: Galena>>

<<Min: 96.8 - 98.5 0.1% Min: Sphalerite>>

<<Min: 96.8 - 98.5 5% Min: Pyrite>>

<<Alt: 93.55 - 96.1 Trace Calcite>>

<<Alt: 96.1 - 97 Weak Calcite>> couple <10cm PEL sections.

<<Alt: 97 - 98.5 Weak Calcite>>

<<Vein: 95.5 - 95.58 100% Quartz>>

<<Vein: 96.76 - 96.8 100% Quartz>>

<<Vein: 97.1 - 97.25 50% Quartz>> bleached envelope

<<Struc: 96.35 - 96.8 Moderate dominant foliation>> parallel to thin sulfide bands - veinlets

End of Hole @ 98.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-401

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/22/2016
UTM Easting	415274.129	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/22/2016
UTM Northing:	6816530.444	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1370.471	Casing Depth (m):	7.5	Length (m):	7.5	Drill Rig:	Tech 5000
Local Easting:		Stored?:	No	Claims Title		Drill Started:	7/21/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	N/A	Drill Completed:	7/21/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
						Parent Hole:	

Comments:

K16-401 was drilled to test the geotechnical properties of the Class B Storage Facility and to install a shallow monitoring well.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/21/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**7.50**	**OVBN Overburden**									
End of Hole @ 7.5											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-402

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/24/2016
UTM Easting	415844.03	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/25/2016
UTM Northing:	6816485.059	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1443.365	Casing Depth (m):	6.3	Length (m):	70.6	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/22/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	7/24/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
						Parent Hole:	

Comments:

K16-402 was drilled to test the geotechnical properties of the proposed Class C Storage Facility. 4 SPT tests were performed in the overburden, and 6 packer tests in the bedrock. A thermistor was installed.
K16-402 encounters bedrock at 6.3 m, and consists of intercalated mudstone, wackes, and mafic tuffs of the Wind Lake Formation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/22/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**6.30**	**OVBN** **Overburden**									
6.30	**22.30**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
6.3 - 22.3: Minor interbedded tuffaceous horizons											
<<Min: 6.3 - 22.3 1% Min: Pyrite>>											
<<Alt: 6.3 - 22.3 Moderate Calcite>>											
22.30	**23.20**	**SED** **undifferentiated Sediment**									
22.3 - 23.2: Beige, fine grained, QZ-sericite-PY sandstone/siltstone											
<<Min: 22.3 - 23.2 3% Min: Pyrite>>											
<<Alt: 22.3 - 23.2 Weak Calcite>>											
23.20	**24.80**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									
<<Min: 23.2 - 24.8 1% Min: Pyrite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 23.2 - 42.7 Moderate Calcite>>

24.80 30.40 MAFt Mafic Volcaniclastics

24.8 - 30.4: Light green to beige mafic tuff/flow (?) partially sericite altered. Disseminated BI+CA phenocrysts.

<<Min: 24.8 - 30.4 3% Min: Pyrite>>

30.40 35.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 30.4 - 35.1 2% Min: Pyrite>>

35.10 36.10 SED undifferentiated Sediment

35.1 - 36.1: Beige, fine grained, QZ-sericite-PY sandstone/siltstone

<<Min: 35.1 - 36.1 5% Min: Pyrite>>

<<Vein: 35.7 - 35.8 100% Quartz-Carbonate 60 deg. >> QZ-CA vein with carbonaceous material

36.10 42.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 36.1 - 42.7 2% Min: Pyrite>>

<<Vein: 38.1 - 38.5 100% Quartz-Carbonate 70 deg. >> Massive QZ-Carb vein with blebby PY

42.70 43.60 SED undifferentiated Sediment

42.7 - 43.6: Beige, fine grained, QZ-sericite-PY sandstone/siltstone

<<Min: 42.7 - 43.6 10% Min: Pyrite>>

<<Alt: 42.7 - 43.6 Weak Calcite>>

43.60 49.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 43.6 - 49.1 3% Min: Pyrite>>

<<Alt: 43.6 - 64.4 Moderate Calcite>>

49.10 52.70 MAFt Mafic Volcaniclastics

49.1 - 52.7: Strong-intense sericitic alteration associated with QZ-veining. Poor recovery and RQD.

<<Min: 49.1 - 68 5% Min: Pyrite>> Maybe associated with veining??

<<Alt: 49.1 - 50 Strong Muscovite>> Massive sericite, associated with faulting and veining?

<<Vein: 50 - 54 40% Quartz-Carbonate>> Zone of massive QZ-carb+/-blebby PY veining

<<Struc: 49.1 - 54.1 Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

52.70 58.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 56.7 - 56.9 80% Quartz-Carbonate>> Massive QZ-carb vein with minor sericite+/-PY blebs

58.60 61.00 MAFt Mafic Volcaniclastics

58.6 - 61: Strong sericite alteration with minor bands of PY. Associated with massive QZ+/-vuggy CA veins.

<<Alt: 58.6 - 61 Strong Muscovite>> Massive sericite, associated with faulting/veining?

<<Vein: 59 - 62.3 50% Quartz-Carbonate>> Zone with massive QZ-Carb (locally vuggy) veins with blebby carbonceous material and trace specular hematite

<<Struc: 58.6 - 62.7 Moderate Fault>>

61.00 64.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

64.40 65.80 MAFt Mafic Volcaniclastics

64.4 - 65.8: Moderately altered to fuchsite.

<<Alt: 64.4 - 65.8 Moderate Muscovite>> Fuchsite alteration

<<Alt: 64.4 - 65.8 Weak Calcite>>

65.80 66.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 65.8 - 70.6 Moderate Calcite>>

66.80 70.60 MAFt Mafic Volcaniclastics

66.8 - 70.6: Upper ~1 m has weak-moderate sericite alteration (wacke?)

<<Min: 68 - 70.6 1% Min: Pyrite>>

<<Alt: 66.8 - 68.4 Moderate Muscovite>> Sericite alteration of MAFt

<<Vein: 66.8 - 67.1 100% Quartz-Carbonate>> Massive QZ-carb vein with blebby pyrite

End of Hole @ 70.6

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-403

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	75.7	Survey By:	Challenger_Survey	Date Logging Start:	7/24/2016
UTM Easting	419512.828	Core Size:	NQ3	Azimuth:	169.3	Date Logging Complete:	7/28/2016
UTM Northing:	6813449.77	Casing Pulled?:	Yes	Dip:	-81	Drill Company:	New Age
UTM Elev. (m):	1353.282	Casing Depth (m):	20.5	Length (m):	343.7	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/22/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/27/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-403 was drilled as a resource definition hole at GP4F.
Bedrock was encountered at 6 m. K16-403 intersected a large sequence of intercalated sedimentary and felsic volcanic rocks. Within this package there are thick intervals of alteration with smaller intervals of mineralization and a few significant marker horizons (QZ-eye rhyolites and a carbonaceous mudstone).
A large zone of pervasive alteration (MU and/or CL-BI-GA) with disseminated sulfides occurs from 201.4-265.84 m. Within this alteration zone there are 6 horizons of heavily disseminated to semi-massive sulfide: OJ (217.77-218.6 m), OL (221.5-222.8 m), OL (236.8-238 m), OJ (250.27-250.54 m), OJ (253.08-253.22 m), and OJ (256.94-257.32 m). A second zone of alteration (without any mineralized horizons) occurs from ~294.5-298 m. Finally, a third zone of alteration with 2 horizons of mineralization occurs at ~324.14-337.65 m. The mineralized horizons occur from 326.4-326.75 m (OJ) and 334.6-334.78 m (OJ) respectively.
The QZ-eye rhyolites (marker horizons?) were encountered from 193.12-200.53 m and 222.8-233.5 m, with the upper horizon being in the hanging wall of main lens and alteration zone, and the later being in the footwall. A carbonaceous mudstone was intersected at the end of the hole, from 336.6-343.7 m (EOH).
R. Hulstein logged 0.00-167.50 m.
D. Hume logged 167.50-343.70 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-81	167.9	1.4	169.3	TN14	Roger Hulstein	7/22/2016		☑	Drill aligned at 8pm July 22, 2016.
5	-79.76885	168.95017	1.4	170.35	Gyro	Jerome de Pasquale	7/27/2016		☑	
10	-79.406	169.50253	1.4	170.9	Gyro	Jerome de Pasquale	7/27/2016		☑	
15	-79.38867	169.97903	1.4	171.38	Gyro	Jerome de Pasquale	7/27/2016		☑	
20	-79.17523	169.80549	1.4	171.21	Gyro	Jerome de Pasquale	7/27/2016		☑	
20.5	-79.6	149.5	22.1	171.6	ReflexEZS	New Age	7/23/2016	5802	☐	
25	-79.08088	169.51789	1.4	170.92	Gyro	Jerome de Pasquale	7/27/2016		☑	
30	-78.97648	169.60043	1.4	171	Gyro	Jerome de Pasquale	7/27/2016		☑	
35	-78.98288	170.1473	1.4	171.55	Gyro	Jerome de Pasquale	7/27/2016		☑	
40	-79.02975	170.65508	1.4	172.06	Gyro	Jerome de Pasquale	7/27/2016		☑	
44.5	-78.9	150	22.1	172.1	ReflexEZS	New Age	7/24/2016	5765	☐	
45	-78.78093	170.98565	1.4	172.39	Gyro	Jerome de Pasquale	7/27/2016		☑	
50	-78.65376	171.39175	1.4	172.79	Gyro	Jerome de Pasquale	7/27/2016		☑	
55	-78.47794	171.03524	1.4	172.44	Gyro	Jerome de Pasquale	7/27/2016		☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-403

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
60	-78.3073	171.50302	1.4	172.9	Gyro	Jerome de Pasquale	7/27/2016		☑	
65	-78.15962	171.27184	1.4	172.67	Gyro	Jerome de Pasquale	7/27/2016		☑	
68.5	-78.3	147.3	22.1	169.4	ReflexEZS	New Age	7/24/2016	5755	☐	
70	-78.18657	171.31562	1.4	172.72	Gyro	Jerome de Pasquale	7/27/2016		☑	
75	-78.17651	171.73545	1.4	173.14	Gyro	Jerome de Pasquale	7/27/2016		☑	
80	-78.36053	171.80609	1.4	173.21	Gyro	Jerome de Pasquale	7/27/2016		☑	
85	-78.29109	172.66745	1.4	174.07	Gyro	Jerome de Pasquale	7/27/2016		☑	
90	-78.18349	172.76822	1.4	174.17	Gyro	Jerome de Pasquale	7/27/2016		☑	
92.5	-78.4	154.2	22.1	176.3	ReflexEZS	New Age	7/24/2016	5752	☐	
95	-78.12917	172.25708	1.4	173.66	Gyro	Jerome de Pasquale	7/27/2016		☑	
100	-78.07247	172.65297	1.4	174.05	Gyro	Jerome de Pasquale	7/27/2016		☑	
105	-78.01933	173.39729	1.4	174.8	Gyro	Jerome de Pasquale	7/27/2016		☑	
110	-77.80705	173.75298	1.4	175.15	Gyro	Jerome de Pasquale	7/27/2016		☑	
115	-77.58713	174.63733	1.4	176.04	Gyro	Jerome de Pasquale	7/27/2016		☑	
119.5	-78	153.2	22.1	175.3	ReflexEZS	New Age	7/24/2016	5764	☐	
120	-77.48349	174.91354	1.4	176.31	Gyro	Jerome de Pasquale	7/27/2016		☑	
125	-77.39306	175.20476	1.4	176.6	Gyro	Jerome de Pasquale	7/27/2016		☑	
130	-77.34807	175.51341	1.4	176.91	Gyro	Jerome de Pasquale	7/27/2016		☑	
135	-77.33044	175.63375	1.4	177.03	Gyro	Jerome de Pasquale	7/27/2016		☑	
140	-77.37716	175.87569	1.4	177.28	Gyro	Jerome de Pasquale	7/27/2016		☑	
143.5	-77.6	155.5	22.1	177.6	ReflexEZS	New Age	7/24/2016	5759	☐	
145	-77.43734	175.73415	1.4	177.13	Gyro	Jerome de Pasquale	7/27/2016		☑	
150	-77.42361	176.65782	1.4	178.06	Gyro	Jerome de Pasquale	7/27/2016		☑	
155	-77.23917	176.27801	1.4	177.68	Gyro	Jerome de Pasquale	7/27/2016		☑	
160	-77.07242	175.77078	1.4	177.17	Gyro	Jerome de Pasquale	7/27/2016		☑	
165	-76.9493	175.57227	1.4	176.97	Gyro	Jerome de Pasquale	7/27/2016		☑	
167.5	-76.9	154.5	22.1	176.6	ReflexEZS	New Age	7/24/2016	5685	☐	
170	-76.75375	175.90788	1.4	177.31	Gyro	Jerome de Pasquale	7/27/2016		☑	
175	-76.62973	176.22867	1.4	177.63	Gyro	Jerome de Pasquale	7/27/2016		☑	
180	-76.66516	176.40363	1.4	177.8	Gyro	Jerome de Pasquale	7/27/2016		☑	
185	-76.50918	176.87015	1.4	178.27	Gyro	Jerome de Pasquale	7/27/2016		☑	
190	-76.35582	176.92987	1.4	178.33	Gyro	Jerome de Pasquale	7/27/2016		☑	
191.5	-76.5	155.2	22.1	177.3	ReflexEZS	New Age	7/25/2016	5721	☐	
195	-76.16085	177.16869	1.4	178.57	Gyro	Jerome de Pasquale	7/27/2016		☑	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-403

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
200	-75.95135	177.68255	1.4	179.08	Gyro	Jerome de Pasquale	7/27/2016		☑	
205	-75.82571	177.68773	1.4	179.09	Gyro	Jerome de Pasquale	7/27/2016		☑	
210	-75.77495	177.79328	1.4	179.19	Gyro	Jerome de Pasquale	7/27/2016		☑	
215	-75.63257	177.85172	1.4	179.25	Gyro	Jerome de Pasquale	7/27/2016		☑	
215.5	-75.7	158.5	22.1	180.6	ReflexEZS	New Age	7/25/2016	5694	☐	
220	-75.70304	177.90187	1.4	179.3	Gyro	Jerome de Pasquale	7/27/2016		☑	
225	-75.6316	177.61219	1.4	179.01	Gyro	Jerome de Pasquale	7/27/2016		☑	
230	-75.57434	177.50835	1.4	178.91	Gyro	Jerome de Pasquale	7/27/2016		☑	
235	-75.3809	177.12386	1.4	178.52	Gyro	Jerome de Pasquale	7/27/2016		☑	
239	-75.7	155.3	22.1	177.4	ReflexEZS	New Age	7/25/2016	5718	☐	
240	-75.42445	177.5609	1.4	178.96	Gyro	Jerome de Pasquale	7/27/2016		☑	
245	-75.53013	178.25942	1.4	179.66	Gyro	Jerome de Pasquale	7/27/2016		☑	
250	-75.56816	178.41032	1.4	179.81	Gyro	Jerome de Pasquale	7/27/2016		☑	
255	-75.39915	179.10101	1.4	180.5	Gyro	Jerome de Pasquale	7/27/2016		☑	
260	-75.08937	179.80804	1.4	181.21	Gyro	Jerome de Pasquale	7/27/2016		☑	
263	-74.5	156.5	22.1	178.6	ReflexEZS	New Age	7/26/2016	5718	☐	
265	-74.80044	180.04676	1.4	181.45	Gyro	Jerome de Pasquale	7/27/2016		☑	
270	-74.57599	179.98286	1.4	181.38	Gyro	Jerome de Pasquale	7/27/2016		☑	
275	-74.37506	180.33266	1.4	181.73	Gyro	Jerome de Pasquale	7/27/2016		☑	
280	-74.29714	180.44364	1.4	181.84	Gyro	Jerome de Pasquale	7/27/2016		☑	
285	-74.04606	180.69132	1.4	182.09	Gyro	Jerome de Pasquale	7/27/2016		☑	
287.5	-74.2	160.1	22.1	182.2	ReflexEZS	New Age	7/26/2016	5762	☐	
290	-73.82925	180.71694	1.4	182.12	Gyro	Jerome de Pasquale	7/27/2016		☑	
295	-73.62096	180.62378	1.4	182.02	Gyro	Jerome de Pasquale	7/27/2016		☑	
300	-73.37537	180.30174	1.4	181.7	Gyro	Jerome de Pasquale	7/27/2016		☑	
305	-73.09545	180.16339	1.4	181.56	Gyro	Jerome de Pasquale	7/27/2016		☑	
310	-72.78975	180.41243	1.4	181.81	Gyro	Jerome de Pasquale	7/27/2016		☑	
311	-72.7	150.8	22.1	172.9	ReflexEZS	New Age	7/26/2016	5764	☐	
315	-72.66653	180.5534	1.4	181.95	Gyro	Jerome de Pasquale	7/27/2016		☑	
320	-72.54108	180.86004	1.4	182.26	Gyro	Jerome de Pasquale	7/27/2016		☑	
325	-72.28345	181.2203	1.4	182.62	Gyro	Jerome de Pasquale	7/27/2016		☑	
330	-71.99508	181.03207	1.4	182.43	Gyro	Jerome de Pasquale	7/27/2016		☑	
330.1	-71.5	152.6	22.1	174.7	ReflexEZS	New Age	7/26/2016	5406	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.00 OVBN Overburden

0 - 6: Casing to 21.5m

<<Struc: 1 - 13.3 Weak Fault>> broken core, low angle fractures

6.00 11.16 RHYva Coarse grained to ash tuff medium grey

6 - 11.16: Likely a RHYva with minor PEL component manifesting as biotite rich bands. Below 9.10 m brecciated - fragmental in appearance (mm - cm scale), likely clastic texture, has calcite 'clasts', blebs and brecciated & silicified due to proximity to RHYi.

<<Alt: 6 - 9.1 Trace Calcite>>

<<Alt: 9.1 - 9.8 Moderate Calcite>>

<<Alt: 9.8 - 13.2 Trace Calcite>>

11.16 13.15 RHYi Aphanitic Rhyolite (intrusion) light grey

11.16 - 13.15: RHYi or RHYc? Brecciated - pepperite texture, minor biotite in fractures. Could be silicified RHYva - sed in part.

13.15 24.06 SEDc calcareous Sediment grey-brown

13.15 - 24.06: variably bleached and silicified. Maroon - brown biotite. Lenticular grey calcareous clasts and bands up to 0.5cm thick.

<<Alt: 13.2 - 23.07 Moderate Calcite>> calcareous sed

<<Alt: 23.07 - 25.9 Weak Calcite>> patchy

<<Struc: 14 - 20.06 Weak Fault>> five 10-20cm sections with broken core

<<Struc: 16.8 - 17.1 Moderate dominant foliation>>

<<Struc: 23.35 - 30.65 Weak Fault>> 10 sections, avg <10cm, with broken core and minor gouge - clay on fractures.

24.06 24.17 RHYi Aphanitic Rhyolite (intrusion)

24.06 - 24.17: dykelet, altering PEL on margins.

24.17 25.90 SED undifferentiated Sediment

24.17 - 25.9: Silicified, minor calcite -chlorite veinlets, biotite on fractures and folia

25.90 29.64 RHYi Aphanitic Rhyolite (intrusion)

25.9 - 29.64: RHYi and silicified wallrock - gradational contacts. Unit does not have well developed foliation. Has a blebby fragmental texture with biotite - calcite on fractures. Likely a good portion of the unit is silicified sediment and not RHYi.

<<Alt: 25.9 - 34 Trace Calcite>> and as diss and veinlets

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

29.64 36.07 CHT Chert

29.64 - 36.07: 29.64-32.5; foliated, silica (chert) bands separated by biotite -calcite folia and fractures and this section could be a silicified fine grained sediment - volcaniclastic. 36.07-36.07: well foliated - banded (<1-4mm) silica and fine maroon biotite and muscovite on folia. Bleached and limonite stained from 34.90-35.90m around 10cm clay gouge fault zone at 35.40-35.50m.

<<Min: 31.5 - 76 0.01% Min: Pyrite>> sulfide deficient!

<<Alt: 34 - 36 Weak Calcite>>

<<Alt: 36 - 41.4 Moderate-Strong Calcite>>

36.07 41.50 PEL Equigranular biotite + calcite +/- quartz rock

36.07 - 41.5: Typical PEL but well foliated, with mm calcite folia, maroon biotite. Chlorite - calcite alteration at lower contact.

<<Alt: 41.4 - 45.25 Weak-Moderate Calcite>> and as diss and veinlets

<<Vein: 38.2 - 38.5 100% Quartz>>

<<Vein: 40.1 - 46.6 5% Quartz-Carbonate 62 deg. >> mostly calcite

<<Struc: 38.15 - 38.5 Weak Fault>> qtz vein with 5cm gouge on contacts

41.50 44.37 PEL Equigranular biotite + calcite +/- quartz rock

41.5 - 44.37: Mixed sediment unit; PEL, chert and possibly RHYa or equivalent epiclastic. Variably bleached and silicified, cut by qtz - calcite bands, Also weakly limonite stained - oxidized, due to

<<Alt: 41.5 - 46.7 Weak Muscovite>> associated with RHYi

44.37 44.78 RHYi Aphanitic Rhyolite (intrusion)

44.37 - 44.78: RHYi dykelet

44.78 45.85 PEL Equigranular biotite + calcite +/- quartz rock

44.78 - 45.85: Variably silicified and bleached, cut by abundant calcite veining.

<<Alt: 45.25 - 46.35 Trace Calcite>>

45.85 46.35 RHYi Aphanitic Rhyolite (intrusion)

45.85 - 46.35: RHYi dykelet, likely includes adjacent silicified PEL.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

46.35 47.85 PEL Equigranular biotite + calcite +/- quartz rock

46.35 - 47.85: PEL unit with grey silicified sections

<<Alt: 46.35 - 46.7 Moderate-Strong Calcite>>

<<Alt: 47.05 - 47.8 Moderate Calcite>>

<<Alt: 47.8 - 77.85 Trace Calcite>> mostly veinlets - fracture filling

<<Struc: 46.35 - 47.5 Weak-Moderate Fault>> broken core, minor gouge

47.85 52.45 RHYi Aphanitic Rhyolite (intrusion)

47.85 - 52.45: Massive grey - green RHYi with crackled texture, locally minor biotite in fractures. At upper contact RHYi is foliated and is likely silicified PEL for first 30cm. 51.25-52.45m; RHYi has maroon biotite on fractures, blebby - brx texture with indistinct biotite bands - likely representing assimilated PEL.

<<Alt: 48 - 51 Weak Chlorite>> diffuse, fine grained

<<Vein: 50.25 - 50.4 5% Quartz>>

52.45 54.13 PEL Equigranular biotite + calcite +/- quartz rock

52.45 - 54.13: Marron biotite PEL, silicified, little calcite left. Partly assimilated by surrounding RHYi.

54.13 73.77 RHYi Aphanitic Rhyolite (intrusion)

54.13 - 73.77: Massive grey - green RHYi with local crackled texture, biotite on fractures. At upper contact RHYi is locally foliated and banded and is likely silicified PEL, partly assimilated PEL to 57.7 m. Below 57.7 m RHYi blebby - brx texture is common along with moderately siliceous foliated sections & bands (likely representing partly assimilated RHYva?).

<<Alt: 62.8 - 73.77 Trace Chlorite>> diffuse, fine grained

<<Vein: 59.85 - 73.7 3% Quartz>> white - light grey qtz veins and qtz vein fragments

<<Struc: 54.65 - 56 Weak-Moderate dominant foliation>>

<<Struc: 70 - 70.3 Weak dominant foliation>>

<<Struc: 71.6 - 73 Weak-Moderate Fault>> broken core, missing core, fracture at low angle to core axis.

73.77 77.85 SLT Siltstone - fine-grained sedimentary rock

73.77 - 77.85: Med grey, maroon biotite, muscovite and calcite on folia and fractures. Blebby bands, rarely calcareous (limestone component). Not chert as originally thought as not siliceous enough and fine grains are identifiable with hand lens.

<<Alt: 73.77 - 77.85 Moderate Silicification>>

<<Struc: 74.5 - 75.5 Trace Fault>> low angle fractures with clay - calcite - local Fe stain.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 77.75 - 77.85 Weak Fault>>

77.85 79.90 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 77.85 - 79.9 Strong Calcite>>

<<Vein: 79.83 - 85.35 5% Quarzt-Chlorite-Carbonate>> white qtz, qtz-calcite +/- chlorite

<<Struc: 77.9 - 81.6 Weak Fault>> 5 zones, <10 broken core-crushed.

79.90 85.44 SLT Siltstone - fine-grained sedimentary rock

79.9 - 85.44: as previous SLT

<<Alt: 79.9 - 85.2 Weak Calcite>> limy blebs and calcite on fractures

<<Alt: 79.9 - 85.44 Moderate Silicification>>

<<Alt: 85.2 - 95.2 Trace Calcite>>

<<Struc: 85.1 - 85.5 Weak Fault>> 2 zones, <10 broken core-crushed.

85.44 89.80 RHYi Aphanitic Rhyolite (intrusion)

85.44 - 89.8: Crackle brecciated. Chlorite and calcite on fractures

<<Alt: 85.44 - 89.8 Weak Muscovite>> musc - sericite on fractures

<<Vein: 89.2 - 93.4 70% Quartz>> white qtz - related to RHYi contact

<<Struc: 86.6 - 94.1 Weak-Moderate Fault>> broken core, crushed, minor gouge, missing core

89.80 102.05 RHY undifferentiated rhyolite

89.8 - 102.05: Brecciated, sericite - argillic altered, non siliceous, rhyolite. 189.80-193.15m: Qtz veining (quartzolite?). Locally banded and not brecciated.

<<Min: 97.72 - 98.75 0.5% Min: Pyrite>>

<<Min: 97.72 - 98.75 0.01% Min: Arsenopyrite>> AS or some other fine grained silver sulfide

<<Min: 99.5 - 102.5 0.1% Min: Pyrite>> dirty 'grey' pyrite

<<Alt: 91.3 - 102.05 Moderate Muscovite>> musc - sericite

<<Alt: 95.2 - 102.05 Weak-Moderate Calcite>>

<<Struc: 100.5 - 113.3 Weak-Moderate Fault>> numerous zones broken core, crushed, minor gouge

102.05 104.50 RHYi Aphanitic Rhyolite (intrusion)

102.05 - 104.5: Incorporates altered RHY.

<<Min: 103.82 - 104.35 0.1% Min: Pyrite>>

<<Alt: 102.05 - 104.5 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 102.05 - 105 Weak Muscovite>> musc - sericite on fractures

104.50 111.47 PEL Equigranular biotite + calcite +/- quartz rock

104.5 - 111.47: bleached at contacts and adjacent to small shear zones around 107m.

<<Min: 108.9 - 113.3 0.1% Min: Pyrite>>

<<Min: 108.9 - 113.3 0.1% Min: Pyrrhotite>>

<<Alt: 104.5 - 111.47 Moderate Calcite>> pervasive to diss and fracture filling.

<<Alt: 106.6 - 107.5 Moderate-Strong Muscovite>> musc - sericite with fault zone

<<Alt: 111.2 - 115.6 Weak Muscovite>> musc - sericite on fractures and in fault - brx zones

<<Vein: 105.55 - 105.81 70% Carbonate-Chlorite>>

111.47 115.50 RHYi Aphanitic Rhyolite (intrusion)

111.47 - 115.5: incorporates bleached -silicified PEL. 30cm qtz veining at upper contact.

<<Alt: 111.47 - 115.5 Weak Calcite>> diss to blebs

<<Vein: 111.47 - 111.91 60% Quartz>>

<<Vein: 112.25 - 112.43 80% Quartz>>

<<Vein: 113.2 - 114.9 30% Quartz>>

<<Struc: 113.3 - 115.5 Moderate-Strong Fault>> broken core, crushed, minor gouge, missing core

115.50 116.34 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 115.5 - 116.37 Moderate-Strong Calcite>>

116.34 116.69 RHY undifferentiated rhyolite

116.34 - 116.69: 50% qtz vein and 4 cm shear zone

<<Alt: 116.37 - 116.69 Trace Calcite>>

<<Vein: 116.4 - 116.55 100% Quartz>>

116.69 118.20 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 118.1 - 127.58 0.5% Min: Pyrite>>

<<Min: 118.1 - 127.58 0.1% Min: Pyrrhotite>>

<<Alt: 116.69 - 118.2 Moderate-Strong Calcite>>

<<Vein: 116.72 - 118.16 20% Quartz-Carbonate>> also crosscutting stringers

<<Struc: 117.6 - 117.75 Moderate Vein>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

118.20 118.80 RHYvl Lapilli tuff

<<Alt: 118.2 - 118.8 Weak-Moderate Calcite>>

<<Struc: 118.5 - 118.8 Moderate dominant foliation>>

118.80 119.39 RHYcw Curdy textured-flow banded (flows, subvolcanics)

<<Alt: 118.8 - 119.39 Weak Muscovite>> in bands

<<Alt: 118.8 - 119.39 Weak Calcite>>

<<Vein: 118.8 - 119 40% Quartz>> silicified envelope

119.39 127.58 RHYvl Lapilli tuff

119.39 - 127.58: contains variable amounts of biotite, including thin (<20cm) biotite rich PEL bands. 125.80-125.30: minor silic bands, RHYcw.

<<Alt: 119.39 - 120.55 Weak-Moderate Calcite>> calcareous PEL bands

<<Alt: 120 - 126.65 Weak Muscovite>> in minor fault - brx zones with clay - sericite, and on fractures

<<Alt: 120.55 - 127.58 Weak Calcite>> rare bands, fracture filling and diss

<<Alt: 122.2 - 127 Weak-Moderate Silicification>>

<<Alt: 127 - 128.4 Weak Biotite>>

<<Alt: 127.55 - 128.6 Weak-Moderate Chlorite>>

<<Vein: 122.22 - 124.36 3% Quartz>>

<<Vein: 125 - 125.1 10% Quartz-Sulphide 20 deg. >> bleached - silicified envelope

<<Struc: 124.85 - 126.51 Trace Fault>> low angle fractures

127.58 129.10 PEL Equigranular biotite + calcite +/- quartz rock

127.58 - 129.1: lower contact bleached and silicified over 30cm

<<Min: 127.58 - 128.7 1% Min: Pyrrhotite>>

<<Alt: 127.58 - 129.1 Moderate-Strong Calcite>>

<<Vein: 128.07 - 128.47 50% Quarzt-Chlorite-Carbonate>> <3% PY -PO

129.10 134.32 RHYi Aphanitic Rhyolite (intrusion)

129.1 - 134.32: includes RHYvl

<<Min: 129.1 - 134.32 1% Min: Pyrite>>

<<Alt: 129.1 - 134.32 Trace Calcite>>

<<Alt: 129.35 - 134.32 Weak Muscovite>> in minor fault - brx zones with clay - sericite, and on fractures

<<Struc: 129.2 - 132 Moderate-Strong Fault>> broken core, crushed, minor gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 132 - 134.4 Weak Fault>> fractures with clay

134.32 139.94 PEL Equigranular biotite + calcite +/- quartz rock

134.32 - 139.94: Chlorite altered and calcite banded.

<<Min: 136.75 - 139.9 0.5% Min: Pyrrhotite>>

<<Alt: 134.32 - 138.55 Moderate-Strong Chlorite>> and in bands

<<Alt: 134.32 - 139.9 Moderate Biotite>>

<<Alt: 134.32 - 140.04 Weak-Moderate Calcite>>

<<Vein: 134.32 - 136.2 20% Quarzt-Chlorite-Carbonate>>

<<Vein: 136.4 - 140.04 5% Quarzt-Chlorite-Carbonate>>

139.94 141.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)

139.94 - 141.3: includes 70 cm qtz vein

<<Alt: 140 - 140.5 Moderate-Strong Silicification>>

<<Alt: 140.04 - 142.25 Moderate Calcite>>

<<Vein: 140.4 - 141.5 90% Quartz>>

141.30 145.00 PEL Equigranular biotite + calcite +/- quartz rock

141.3 - 145: chlorite alteration

<<Min: 141.3 - 141.5 0.5% Min: Pyrite>>

<<Min: 144 - 145 0.5% Min: Pyrrhotite>>

<<Alt: 141.3 - 141.5 Moderate Tourmaline>> tourmaline and related alteration (assoc with granite) overprints black OR biotite alteration.

<<Alt: 141.9 - 144.8 Moderate Biotite>>

<<Alt: 141.9 - 144.9 Moderate-Strong Chlorite>>

<<Alt: 142.25 - 145 Weak Calcite>> and as rare bands

<<Vein: 142.7 - 143.63 7% Quartz-Carbonate>>

<<Struc: 143.2 - 143.5 Moderate dominant foliation>>

145.00 154.81 RHYv Rhyolite volcaniclastic

145 - 154.81: light green, sericite-muscovite altered. Weak patchy silicification. Overall original textures have been obliterated.

<<Min: 145 - 148.8 3% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 147.7 - 150.7 0.1% Min: Pyrrhotite>>

<<Min: 148.8 - 154.81 1% Min: Pyrite>>

<<Min: 150.7 - 153.1 1% Min: Pyrrhotite>>

<<Min: 153.1 - 160.82 0.5% Min: Pyrrhotite>>

<<Alt: 145 - 148.6 Moderate Muscovite>> Green sericite in silicified RHY plus musc - sericite in minor fault - brx zones with clay and on fractures

<<Alt: 145 - 155.2 Weak Silicification>>

<<Alt: 145 - 173.4 Trace Calcite>> fracture filling

<<Alt: 148.6 - 155.2 Weak Muscovite>> pervasive, on folia and focused on minor fault - shear brx zones and on fractures.

<<Vein: 151 - 151.6 30% Quartz-Carbonate>>

<<Vein: 154.35 - 154.45 10% Quartz-Tourmaline>>

<<Struc: 145.8 - 146.2 Moderate Fault>> fractured at low angle, clay, muscovite alteration

<<Struc: 148 - 150.83 Weak Fault>> fractures with clay, minor calcite, 2 cm crush zone.

<<Struc: 151.8 - 152 Weak-Moderate dominant foliation>>

<<Struc: 153.27 - 154.7 Trace Fault>> low angle fractures with sand.

154.81 160.82 RHYvl Lapilli tuff

154.81 - 160.82: Possible feldspar crystals, <0.5cm. Bands and blebs of blebby silica - lpl? Muscovite folia.

<<Min: 154.81 - 160.82 0.5% Min: Pyrite>>

<<Alt: 155.2 - 167.5 Strong Silicification>>

<<Vein: 159.16 - 159.22 100% Quartz-Carbonate>> minor PO in silicified bleached envelope

<<Struc: 156.8 - 157 Weak-Moderate dominant foliation>>

160.82 161.59 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

160.82 - 161.59: Dark green and black, dense granular, biotite-chlorite-feldspar (calcite) dyke. Chilled margins.

<<Min: 160.82 - 161.59 0.1% Min: Pyrrhotite>>

161.59 173.40 RHYvl Lapilli tuff

161.59 - 173.4: Possible feldspar crystals, <0.5cm. Bands of blebby silica - lpl? Silcification obliterating original texture.

<<Min: 161.59 - 167.5 0.5% Min: Pyrite>>

<<Min: 161.59 - 167.5 3% Min: Pyrrhotite>>

<<Min: 167.5 - 173.4 1% Min: Pyrite>>

<<Min: 167.5 - 173.4 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

173.40 176.14 PEL Equigranular biotite + calcite +/- quartz rock

173.4 - 176.14: Gradational upper and lower margin with the volcaniclastic rhyolites

<<Min: 173.4 - 176.14 0.5% Min: Pyrite>>

<<Alt: 173.4 - 176.14 Moderate Calcite>>

<<Vein: 173.9 - 174.5 3% Calcite 20 deg. >> CA fracture filling veins, crosscutting all foliation and nondeformed.

176.14 182.72 RHYv Rhyolite volcaniclastic

176.14 - 182.72: Weak MU-alteration. Disseminated PY. 'Dirty' volcaniclastic rhyolite, with disseminated patches of BI (sediment?). Minor small blebs of CL alteration.

<<Min: 176.14 - 182.72 2% Min: Pyrite>>

<<Alt: 176.14 - 182.72 Weak Calcite>>

<<Struc: 182.35 - 182.36 Weak-Moderate dominant foliation>>

182.72 184.65 PEL Equigranular biotite + calcite +/- quartz rock

182.72 - 184.65: Purplish-brown BI-CA+/-CL schist, with ptygmatic CA veins. Well foliated/laminated.

<<Min: 182.72 - 184.65 1% Min: Pyrite>>

<<Alt: 182.72 - 184.65 Moderate Calcite>>

184.65 190.74 RHYv Rhyolite volcaniclastic

184.65 - 190.74: Weak MU alteration with disseminated PY. Light grey, fine grained, with local lpl, volcaniclastic rhyolite.

<<Min: 184.65 - 191.68 5% Min: Pyrite>>

<<Alt: 184.65 - 191.68 Trace Calcite>>

<<Alt: 184.65 - 195.9 Weak Muscovite>>

<<Struc: 188.2 - 191 Weak Fault>>

190.74 191.68 RHYc Rhyolite coherant volcanics

190.74 - 191.68: Silica banded rhyolite

191.68 191.88 PEL Equigranular biotite + calcite +/- quartz rock

191.68 - 191.88: Purplish-brown BI-CA+/-CL schist, with ptigmatic CA veins. Well foliated/laminated.

<<Min: 191.68 - 191.88 0.5% Min: Pyrite>>

<<Alt: 191.68 - 191.88 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

191.88 193.12 RHYvl Lapilli tuff

191.88 - 193.12: Weak to moderate MU alteration. Local lpl and silicic bands.

<<Min: 191.88 - 195.9 1% Min: Pyrite>>

<<Alt: 191.88 - 193.12 Trace Calcite>>

<<Vein: 192.8 - 192.85 100% Quartz>> Massive QZ vein

193.12 193.94 PEL Equigranular biotite + calcite +/- quartz rock

193.12 - 193.94: Two layers of pelitic sediments with minor rhyolite between. The lower layer some silicic lpl and QZ-eyes within.

<<Min: 193.93 - 195.9 0.5% Min: Sphalerite>>

<<Alt: 193.12 - 193.94 Moderate Calcite>>

<<Alt: 193.6 - 193.94 Weak Chlorite>>

<<Alt: 193.6 - 193.94 Moderate Biotite>>

193.94 195.90 RHYvx Quartz and/or feldspar crystal tuff

193.94 - 195.9: QZ-eyes in weak-moderate MU-altered groundmass. Local band with pelitic sediment material. Minor wisps of SP.

<<Alt: 193.94 - 195.9 Weak Calcite>>

<<Struc: 195.5 - 197.5 Weak-Moderate Fault>>

195.90 196.38 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 195.9 - 196.38 0.1% Min: Pyrite>>

<<Alt: 195.9 - 196.3 Moderate Calcite>>

<<Alt: 196.3 - 198.51 Trace Calcite>>

196.38 198.51 RHYvx Quartz and/or feldspar crystal tuff

196.38 - 198.51: QZ-eyes and siliceous lpl in fine ashy to sediment matrix. Appears to fine downward into a pelitic sediment.

<<Min: 196.38 - 198.51 0.5% Min: Sphalerite>>

<<Min: 196.38 - 198.51 1% Min: Pyrite>>

<<Alt: 196.38 - 198.51 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

198.51 199.30 PEL Equigranular biotite + calcite +/- quartz rock

198.51 - 199.3: Gradational (fining downward) upper contact and sharp lower contact

<<Min: 198.51 - 199.3 0.1% Min: Pyrite>>

<<Alt: 198.51 - 199.3 Moderate Calcite>>

<<Alt: 198.51 - 199.3 Strong Biotite>>

199.30 200.53 RHYvx Quartz and/or feldspar crystal tuff

199.3 - 200.53: QZ-eyes and siliceous lpl in fine ashy matrix. Grades (fining downward) into a pelitic sediment unit.

<<Min: 199.3 - 200.53 1% Min: Pyrite>>

<<Alt: 199.3 - 200.53 Weak Muscovite>>

<<Alt: 199.3 - 200.53 Weak Calcite>>

200.53 201.40 PEL Equigranular biotite + calcite +/- quartz rock

200.53 - 201.4: Partially CL-altered (?), BI-CL-CA schist with gradational margins.

<<Min: 200.53 - 201.4 0.5% Min: Pyrite>>

<<Alt: 200.53 - 201.4 Weak Chlorite>>

<<Alt: 200.53 - 201.4 Moderate Calcite>>

<<Alt: 200.53 - 201.4 Strong Biotite>>

201.40 205.60 RHYc Rhyolite coherant volcanics

201.4 - 205.6: Moderate MU alteration. Light-medium grey, silicic banded rhyolite, with local patches of pelitic and ashy material.

<<Min: 201.4 - 205.6 1% Min: Sphalerite>>

<<Min: 201.4 - 205.6 1% Min: Pyrite>>

<<Min: 201.4 - 205.6 1% Min: Pyrrhotite>>

<<Min: 201.4 - 205.6 0.1% Min: Galena>>

<<Alt: 201.4 - 205.6 Moderate Silicification>>

<<Alt: 201.4 - 205.6 Moderate Muscovite>>

<<Alt: 201.4 - 205.6 Weak-Moderate Calcite>>

<<Alt: 201.4 - 205.6 Weak-Moderate Biotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
205.60	**206.30**	**PEL** **Equigranular biotite + calcite +/- quartz rock** <<Min: 205.6 - 206.3 0.1% Min: Pyrrhotite>> <<Alt: 205.6 - 206.3 Weak Muscovite>> <<Alt: 205.6 - 206.3 Moderate Calcite>> <<Alt: 205.6 - 206.3 Strong Biotite>> May have hydrothermal BI too <<Struc: 206.22 - 206.23 Weak-Moderate dominant foliation>>									
206.30	**207.08**	**RHY** **undifferentiated rhyolite** 206.3 - 207.08: Siliceous and CL-BI altered rhyolite with disseminated to wispy PY+SP+PO+/-CP. Minor disseminated Garnet porphyroblasts. <<Min: 206.3 - 207.08 2% Min: Sphalerite>> <<Min: 206.3 - 207.08 2% Min: Pyrite>> <<Alt: 206.3 - 214.07 Moderate Silicification>> <<Alt: 206.3 - 214.07 Weak Muscovite>> <<Alt: 206.3 - 214.07 Weak Garnet>> <<Alt: 206.3 - 214.07 Moderate Chlorite>> <<Alt: 206.3 - 214.07 Weak-Moderate Calcite>> <<Alt: 206.3 - 214.07 Weak-Moderate Biotite>>									
207.08	**207.43**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock** 207.08 - 207.43: Semi-massive to wispy SP+PY+PY+/-CP in CL-MU-GA alteration zone <<Min: 207.08 - 207.43 7% Min: Sphalerite>> <<Min: 207.08 - 207.43 3% Min: Pyrite>> <<Min: 207.08 - 207.43 1% Min: Pyrrhotite>> <<Min: 207.08 - 207.43 0.5% Min: Chalcopyrite>>	207.08	207.43	0.35	D00004466	0.021	8	0.12	0.03	7.93
207.43	**208.60**	**RHY** **undifferentiated rhyolite** 207.43 - 208.6: Siliceous and CL-BI altered rhyolite with disseminated to wispy PY+SP+PO+/-CP. Minor disseminated Garnet porphyroblasts. <<Min: 207.43 - 214.07 2% Min: Sphalerite>> <<Min: 207.43 - 214.07 3% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 207.43 - 214.07 1% Min: Pyrrhotite>>									
		<<Min: 207.43 - 214.07 0.1% Min: Chalcopyrite>>									
208.60	**208.94**	**PEL** **Equigranular biotite + calcite +/- quartz rock**									
		208.6 - 208.94: BI schist with moderate CL-alteration. Ptygmatic calcite veins. Disseminated PY+SP+/-CP.									
208.94	**214.07**	**RHY** **undifferentiated rhyolite**	212.75	214.07	1.32	D00004467	0.073	9.3	0.09	0.54	1.68
		208.94 - 214.07: CL-SI-BI-GA altered rhyolite with disseminated to blebby PY+SP+PO+/-CP									
		<<Struc: 212.5 - 212.75 Moderate Fault>>									
214.07	**214.78**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	214.07	214.78	0.71	D00004468	0.01	2.3	0.05	0.04	0.57
		214.07 - 214.78: BI-CA banded schist. Almost appears unaltered.									
		<<Min: 214.07 - 214.5 0.5% Min: Pyrite>>									
		<<Min: 214.5 - 216.04 4% Min: Sphalerite>>									
		<<Min: 214.5 - 216.04 2% Min: Pyrite>>									
		<<Alt: 214.07 - 214.78 Moderate Calcite>>									
		<<Alt: 214.07 - 214.78 Strong Biotite>> May have hydrothermal BI too									
214.78	**216.04**	**RHY** **undifferentiated rhyolite**	214.78	216.04	1.26	D00004469	0.053	19.1	0.14	0.27	1.81
		214.78 - 216.04: CL-SI-BI-GA altered rhyolite with disseminated to blebby PY+SP+PO+/-CP									
		<<Alt: 214.78 - 216.04 Moderate Muscovite>>									
		<<Alt: 214.78 - 216.04 Weak-Moderate Calcite>>									
		<<Vein: 215.15 - 215.3 50% Quartz 5 deg. >> Massive QZ-vein with disseminated cgr PY+SP+GL									
216.04	**216.94**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	216.04	216.94	0.90	D00004471	-0.005	0.4	-0.01	-0.01	0.02
		<<Min: 216.04 - 216.94 1% Min: Pyrite>>									
		<<Alt: 216.04 - 216.94 Moderate Calcite>>									
		<<Alt: 216.04 - 216.94 Strong Biotite>> May have hydrothermal BI too									
216.94	**217.77**	**RHY** **undifferentiated rhyolite**	216.94	217.77	0.83	D00004472	0.131	23.3	0.04	0.43	0.81
		216.94 - 217.77: Moderate-strong MU-alteration of fine grained rhyolite with minor disseminated PY.									
		<<Min: 216.94 - 217.77 1% Min: Sphalerite>>									
		<<Min: 216.94 - 217.77 2% Min: Pyrite>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 216.94 - 217.77 Moderate Muscovite>>											
<<Alt: 216.94 - 218.6 Weak Calcite>>											
<<Vein: 217.35 - 217.6 5% Calcite>> Stockwork CA veinlets											
217.77	**218.60**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	217.77	218.60	0.83	D00004473	0.71	94.2	0.13	3.61	6.12
217.77 - 218.6: Heavily disseminated to semi-massive SP+PO+PY+/-GL+/-CP.											
<<Min: 217.77 - 218.6 7% Min: Sphalerite>>											
<<Min: 217.77 - 218.6 7% Min: Pyrite>>											
<<Min: 217.77 - 218.6 7% Min: Pyrrhotite>>											
<<Min: 217.77 - 218.6 0.5% Min: Galena>>											
<<Min: 217.77 - 218.6 0.5% Min: Chalcopyrite>>											
<<Alt: 217.77 - 218.6 Moderate-Strong Muscovite>>											
<<Alt: 217.77 - 218.6 Weak-Moderate Chlorite>>											
<<Alt: 217.77 - 218.6 Moderate Biotite>>											
<<Struc: 218.4 - 218.41 Moderate dominant foliation>>											
218.60	**218.76**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	218.60	219.60	1.00	D00004474	0.043	-0.3	-0.01	0.01	0.02
218.6 - 218.76: PEL below semi-massive sulfide horizon											
<<Min: 218.6 - 218.76 0.1% Min: Pyrite>>											
<<Alt: 218.6 - 218.76 Weak Muscovite>>											
<<Alt: 218.6 - 218.76 Moderate Calcite>>											
<<Alt: 218.6 - 218.76 Strong Biotite>> May have hydrothermal BI too											
218.76	**220.78**	**RHYvl** **Lapilli tuff**	219.60	220.78	1.18	D00004475	0.083	-0.3	-0.01	-0.01	0.01
218.76 - 220.78: MU-altered groundmass with siliceous lpl											
<<Min: 218.76 - 220.78 1% Min: Pyrrhotite>>											
<<Alt: 218.76 - 220.78 Moderate Muscovite>>											
<<Alt: 218.76 - 220.78 Weak-Moderate Calcite>>											
<<Vein: 219.4 - 220.7 2% Quartz-Carbonate>> ~1 2-5 cm wide QZ-carb vein per metre											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
220.78	**221.50**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	220.78	221.50	0.72	D00004476	10.72	1.3	0.03	-0.01	0.03
220.78 - 221.5: No strongly noticeable difference from unaltered PEL. Has weak sericitic alteration, but still dominated by BI.											
<<Min: 220.78 - 221.5 0.5% Min: Pyrite>>											
<<Alt: 220.78 - 221.5 Weak Muscovite>>											
<<Alt: 220.78 - 221.5 Moderate Calcite>>											
<<Alt: 220.78 - 221.5 Strong Biotite>> May have hydrothermal BI too											
221.50	**222.80**	**OL** **semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**	221.50	222.80	1.30	D00004477	0.937	329	0.1	4.26	7.65
221.5 - 222.8: Semi-massive PO+PY+SP+/-GL+/-CP in strongly MU-BI alteration. PY displays buckshot texture in patchy SP.											
<<Min: 221.5 - 222.8 10% Min: Sphalerite>>											
<<Min: 221.5 - 222.8 10% Min: Pyrite>>											
<<Min: 221.5 - 222.8 10% Min: Pyrrhotite>>											
<<Min: 221.5 - 222.8 1% Min: Galena>>											
<<Min: 221.5 - 222.8 0.5% Min: Chalcopyrite>>											
<<Alt: 221.5 - 222.8 Strong Muscovite>>											
<<Alt: 221.5 - 222.8 Weak-Moderate Calcite>>											
<<Alt: 221.5 - 222.8 Strong Biotite>>											
<<Vein: 221.8 - 222.4 5% Quartz>> 2 small QZ veins/blebby silica with recrystallized sulfides											
222.80	**233.50**	**RHYvx** **Quartz and/or feldspar crystal tuff**	222.80	224.30	1.50	D00004478	0.065	12.3	-0.01	0.15	0.25
222.8 - 233.5: QZ-eye rhyolite with moderate-strong MU-alteration. Minor diss to patchy PY+/-PO+/-SP associated with patchy CL+BI+/-GA alteration.											
<<Min: 222.8 - 228.6 1% Min: Sphalerite>>			224.30	225.80	1.50	D00004479	0.044	11.8	-0.01	0.16	0.28
<<Min: 222.8 - 228.6 3% Min: Pyrite>>			225.80	227.30	1.50	D00004481	0.102	30.1	-0.01	0.37	0.47
<<Min: 222.8 - 228.6 0.1% Min: Galena>>			230.50	232.00	1.50	D00004482	0.168	53.7	0.05	0.54	1.05
<<Min: 228.6 - 232.3 3% Min: Sphalerite>>			232.00	233.50	1.50	D00004483	0.082	27.6	0.01	0.29	1.07
<<Min: 228.6 - 232.3 2% Min: Pyrite>>											
<<Min: 228.6 - 232.3 2% Min: Pyrrhotite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 232.3 - 233.5 1% Min: Sphalerite>>											
<<Alt: 222.8 - 227 Weak Muscovite>>											
<<Alt: 222.8 - 227 Weak Calcite>>											
<<Alt: 227 - 230.4 Moderate Muscovite>>											
<<Alt: 227 - 236.8 Trace Calcite>>											
<<Alt: 230.4 - 233.5 Moderate-Strong Muscovite>>											
<<Alt: 230.4 - 233.5 Weak Biotite>>											
<<Vein: 228 - 231.5 2% Quartz-Carbonate>> ~1 2-5 cm wide QZ-carb vein per metre											
233.50	**236.80**	**OI Heavilly disseminated sulphides in host schist**	233.50	234.60	1.10	D00004484	0.484	172	0.05	0.93	1.54
233.5 - 236.8: Disseminated PY+SP+/-PO in strongly MU-altered rhyolite.											
<<Min: 233.5 - 236.8 5% Min: Pyrite>>			234.60	235.70	1.10	D00004485	1.98	242	-0.01	0.23	0.71
<<Min: 233.5 - 236.8 0.1% Min: Galena>>			235.70	236.80	1.10	D00004486	0.241	25	-0.01	0.07	0.1
<<Min: 233.6 - 236.8 5% Min: Sphalerite>>											
<<Min: 233.6 - 236.8 5% Min: Pyrrhotite>>											
<<Alt: 233.5 - 238 Strong Muscovite>>											
236.80	**238.00**	**OL semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**	236.80	238.00	1.20	D00004487	1.38	360	0.22	2.65	6.68
236.8 - 238: Semi massive SP+PO+buckshot PY+/-disseminated CP. Displays dissolution breccia wallrock clasts in sulfide matrix.											
<<Min: 236.8 - 238 30% Min: Sphalerite>>											
<<Min: 236.8 - 238 5% Min: Pyrite>>											
<<Min: 236.8 - 238 10% Min: Pyrrhotite>>											
<<Min: 236.8 - 238 0.5% Min: Chalcopyrite>>											
<<Alt: 236.8 - 238 Moderate-Strong Calcite>>											
238.00	**243.20**	**RHY undifferentiated rhyolite**	238.00	239.50	1.50	D00004488	0.063	14	0.08	0.1	1.27
238 - 243.2: Strong CL-BI+/-GA alteration with disseminated to wispy PY+PO+SP+/-CP. Cl is pervasive, BI occurs as cleavages, and GA appears as local anhedral porphyroblasts.											
<<Min: 238 - 243.2 3% Min: Sphalerite>>			239.50	241.00	1.50	D00004489	0.058	9.9	0.06	0.17	0.7
<<Min: 238 - 243.2 2% Min: Pyrite>>			241.00	242.50	1.50	D00004491	0.03	10.5	0.1	0.28	2.63

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 238 - 243.2 3% Min: Pyrrhotite>>

<<Alt: 238 - 243.2 Weak-Moderate Garnet>>

<<Alt: 238 - 243.2 Moderate Chlorite>>

<<Alt: 238 - 243.2 Moderate Biotite>>

<<Alt: 238 - 243.75 Trace Calcite>>

<<Vein: 241.87 - 242.7 80% Quartz>> Massive QZ-vein with altered wall rock clasts and blebby sulfide

243.20 243.75 RHYc Rhyolite coherant volcanics

243.2 - 243.75: Massive siliceous rhyolite with MU+/-BI wavy cleavage (flow banding?)

<<Min: 243.2 - 243.75 1% Min: Pyrrhotite>>

<<Alt: 243.2 - 243.75 Strong Silicification>>

<<Alt: 243.2 - 243.75 Moderate Muscovite>>

243.75 244.90 PEL Equigranular biotite + calcite +/- quartz rock

243.75 - 244.9: CL-altered pelite with minor diss PY+PO

<<Min: 243.75 - 244.9 2% Min: Sphalerite>>

<<Min: 243.75 - 244.9 1% Min: Pyrrhotite>>

<<Min: 243.75 - 244.9 1% Min: Galena>>

<<Alt: 243.75 - 248.9 Moderate Calcite>>

<<Alt: 243.75 - 259.1 Moderate Chlorite>>

<<Alt: 243.75 - 259.1 Moderate Biotite>>

244.90 245.75 RHY undifferentiated rhyolite

244.9 - 245.75: Strong Mu+CL+/-BI altered rhyolite

<<Min: 244.9 - 248.9 0.5% Min: Pyrite>>

<<Min: 244.9 - 248.9 1% Min: Pyrrhotite>>

<<Min: 244.9 - 248.9 0.5% Min: Chalcopyrite>>

245.75 247.53 PEL Equigranular biotite + calcite +/- quartz rock

245.75 - 247.53: BI-CL-CA schist, with continuous foliation. CA appears as ptygmatic veins. CL appears to be an alteration mineral. Minor diss PY+PO.

247.53 248.90 RHY undifferentiated rhyolite

247.53 - 248.9: Strong MU-alteration. Much of the unit is composed as fault gouge and brecciated QZ-carbonate vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Vein: 248 - 248.95 80% Quartz-Carbonate 20 deg. >> QZ-carbonate vein in fault zone. Vein is brecciated.									
		<<Struc: 247.53 - 248.9 Moderate Fault>>									
248.90	**250.27**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	248.90	250.19	1.29	D00004492	0.008	3.2	0.07	0.14	0.71
		248.9 - 250.27: Strong banded CL-alteration, with cgr BI bands and diss to wispy PY+PO+/-SP+/-CP									
		<<Min: 248.9 - 250.27 2% Min: Sphalerite>>	250.19	250.54	0.35	D00004493	0.011	6.5	0.25	0.15	3.39
		<<Min: 248.9 - 250.27 2% Min: Pyrite>>									
		<<Min: 248.9 - 250.27 5% Min: Pyrrhotite>>									
		<<Alt: 248.9 - 251.9 Weak Calcite>>									
250.27	**250.54**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**									
		250.27 - 250.54: Semi-massive to disseminated SP-PY-GL-CP-PO in strong CL-TML-CA alteration									
		<<Min: 250.27 - 250.54 10% Min: Sphalerite>>									
		<<Min: 250.27 - 250.54 3% Min: Pyrite>>									
		<<Min: 250.27 - 250.54 3% Min: Pyrrhotite>>									
		<<Min: 250.27 - 250.54 1% Min: Galena>>									
		<<Min: 250.27 - 250.54 1% Min: Chalcopyrite>>									
		<<Alt: 250.27 - 250.54 Strong Tourmaline>> Patchy TML matrix to disseminated sulfide									
250.54	**251.90**	**RHY** **undifferentiated rhyolite**	250.54	251.90	1.36	D00004494	0.006	3.8	0.02	0.28	0.9
		250.54 - 251.9: Strong CL-BI alteration. ~10 cm patch of SP-PY-GL near upper contact.									
		<<Min: 250.54 - 253.08 5% Min: Sphalerite>>									
		<<Min: 250.54 - 253.08 2% Min: Pyrite>>									
		<<Min: 250.54 - 253.08 2% Min: Galena>>									
251.90	**253.08**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	251.90	252.98	1.08	D00004495	-0.005	1	0.02	0.06	0.21
		251.9 - 253.08: Strongly CL-BI altered pelite. Zone of patchy to semi-massive SP-GL-PY from 253.08 to 253.22 m.									
		<<Alt: 251.9 - 254.22 Moderate Calcite>>	252.98	253.33	0.35	D00004496	0.011	20	0.07	0.31	5.91
		<<Vein: 252 - 254 1% Calcite>> Minor CA veinlets cross-cutting foliation									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
253.08	**253.22**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**									
253.08 - 253.22: Semi-massive SP+GL+PY+/-CP											
<<Min: 253.08 - 253.22 10% Min: Sphalerite>>											
<<Min: 253.08 - 253.22 2% Min: Pyrite>>											
<<Min: 253.08 - 253.22 5% Min: Galena>>											
253.22	**254.22**	**PEL** **Equigranular biotite + calcite +/- quartz rock**	253.33	254.22	0.89	D00004497	-0.005	1.6	0.04	0.07	0.66
253.22 - 254.22: Strongly CL-BI altered pelite. Zone of patchy to semi-massive SP-GL-PY from 253.08 to 253.22 m.											
<<Min: 253.22 - 256.94 3% Min: Sphalerite>>											
<<Min: 253.22 - 256.94 2% Min: Pyrite>>											
<<Min: 253.22 - 256.94 2% Min: Galena>>											
<<Min: 253.22 - 256.94 0.5% Min: Chalcopyrite>>											
254.22	**256.94**	**RHY** **undifferentiated rhyolite**	254.22	255.44	1.22	D00004498	0.006	1.8	0.02	0.13	0.36
254.22 - 256.94: Strong CL-BI alteration of rhyolite? With disseminated to wispy PY+SP+GL+/-CP.											
<<Alt: 254.22 - 259.1 Weak Calcite>>			255.44	256.94	1.50	D00004499	0.015	7.4	0.07	0.67	1.71
<<Vein: 256.2 - 256.37 100% Quartz>> Massive QZ vein											
256.94	**257.32**	**OJ** **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	256.94	257.32	0.38	D00004324	0.038	25.9	0.07	2.24	2.07
256.94 - 257.32: Wispy to patchy SP+GL+/-CP+/-PY in strong CL-BI+/-GA alteration zone											
<<Min: 256.94 - 257.32 5% Min: Sphalerite>>											
<<Min: 256.94 - 257.32 2% Min: Pyrite>>											
<<Min: 256.94 - 257.32 5% Min: Galena>>											
<<Min: 256.94 - 257.32 1% Min: Chalcopyrite>>											

From (m)	To (m)	Rocktype & Description
257.32	**262.00**	**PEL** **Equigranular biotite + calcite +/- quartz rock**

257.32 - 262: Pink, mint green, and dark brown banded, CL+CA-MU+KSP(?)-BI schist. Resembles skarn-like alteration. Local bands and wisps of SP+GL+PY+/-CP+/-PO.

<<Min: 257.32 - 259.1 3% Min: Sphalerite>>

<<Min: 257.32 - 259.1 1% Min: Chalcopyrite>>

<<Min: 257.32 - 265.84 1% Min: Pyrite>>

<<Min: 257.32 - 268.54 3% Min: Pyrrhotite>>

<<Min: 259.1 - 265.84 1% Min: Sphalerite>>

<<Alt: 259.1 - 265.9 Moderate Muscovite>> Skarn-like alteration

<<Alt: 259.1 - 265.9 Weak-Moderate Chlorite>> Skarn-like alteration

<<Alt: 259.1 - 281.02 Moderate Calcite>>

<<Vein: 259.1 - 261.8 1% Calcite>> Brittle CA vein cross-cutting foliation

262.00	**263.33**	**RHY**	**undifferentiated rhyolite**

262 - 263.33: Skarn-like alteration showing interbedded pelite (?) and RHYv (?) textures. Strong banded pink MU-KSP(?), mint green CL-CA, and dark brown BI alteration.

<<Vein: 262.13 - 263.33 3% Quartz>> 3 blebby siliceous veins with CL-BI blebs

<<Struc: 262.4 - 262.41 Moderate dominant foliation>>

263.33	**273.43**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**

263.33 - 273.43: Moderate CL-CA alteration near upper contact. Moderate shear zone in middle of unit. Interbedded with RHY at bottom of the unit.

<<Min: 265.84 - 294.5 0.5% Min: Pyrite>>

<<Min: 265.84 - 294.5 0.5% Min: Pyrrhotite>>

<<Alt: 268.54 - 273.43 Weak Chlorite>>

<<Vein: 267.6 - 280 1% Calcite>> Minor brittle CA-veinlets cross-cutting foliation

<<Struc: 265.93 - 267.3 Moderate Shear>>

273.43	**274.08**	**RHYc**	**Rhyolite coherant volcanics**

273.43 - 274.08: Sharp lower contact with PEL. Grades from silicic banded rhyolite to RHYva at top, with a gradational upper contact (Fining upward).

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
257.32	258.80	1.48	D00004325	0.011	3	0.07	0.22	0.47

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

274.08 275.65 PEL Equigranular biotite + calcite +/- quartz rock

274.08 - 275.65: Banded BI-CA schist with minor patchy CL-alteration.

275.65 276.71 RHYva Coarse grained to ash tuff

275.65 - 276.71: Grades from silicic banded rhyolite at bottom to fine grained ash tuff to pelite at the top (Fining upward).

276.71 277.45 PEL Equigranular biotite + calcite +/- quartz rock

276.71 - 277.45: Laminated BI-CA schist

277.45 278.98 RHYc Rhyolite coherant volcanics

277.45 - 278.98: Silicic banded to curdy rhyolite, with fine grained ash tuff at top of unit (Fining upward).

278.98 281.02 PEL Equigranular biotite + calcite +/- quartz rock

<<Vein: 280.1 - 285.7 10% Quartz>> 5 spaced massive QZ-vein (5-50 cm wide)

<<Struc: 280.4 - 280.6 Weak Fault>>

281.02 283.80 RHYc Rhyolite coherant volcanics

281.02 - 283.8: Silicic banded to massive siliceous rhyolite. Center of the unit almost resembles RHYi. Sharp upper and peperitic/altered lower contact, suggests right way up.

<<Alt: 281.02 - 283.8 Weak Calcite>>

283.80 284.38 PEL Equigranular biotite + calcite +/- quartz rock

283.8 - 284.38: Pink & Green (CL-BI) skarn-like alteration near upper peperitic contact with RHYc. Suggests that hot RHYc flowed on top of the pelite causing contact metamorphism ?? Right way up.

<<Alt: 283.8 - 284.17 Weak-Moderate Chlorite>> Skarn-like alteration from overlying RHYc?

<<Alt: 283.8 - 284.17 Moderate-Strong Biotite>> Skarn-like alteration from overlying RHYc?

<<Alt: 283.8 - 284.38 Moderate Calcite>>

284.38 285.10 RHY undifferentiated rhyolite

284.38 - 285.1: Moderate Mu-altered rhyolite

<<Alt: 284.38 - 286.33 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

285.10 286.33 PEL Equigranular biotite + calcite +/- quartz rock

285.1 - 286.33: Weak to moderate CL-MU alteration

<<Struc: 285.1 - 295.13 Trace Fault>>

286.33 290.00 RHYvx Quartz and/or feldspar crystal tuff

286.33 - 290: QZ-eye in ash matrix with BI porphyroblasts (sediment input?)

<<Alt: 286.33 - 290 Weak-Moderate Calcite>>

290.00 290.73 PEL Equigranular biotite + calcite +/- quartz rock

290 - 290.73: Weak patchy MU-alteration

<<Alt: 290 - 290.73 Moderate Calcite>>

<<Struc: 290.6 - 290.61 Weak-Moderate dominant foliation>>

290.73 293.90 RHYva Coarse grained to ash tuff

290.73 - 293.9: Weak-moderate faulting, moderate MU-alteration. Ash tuff with BI porphyroblasts.

<<Alt: 290.73 - 293.9 Moderate Muscovite>>

<<Alt: 290.73 - 293.9 Trace Calcite>>

293.90 294.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 293.9 - 294.5 Moderate Calcite>>

<<Alt: 293.9 - 294.5 Strong Biotite>> May have hydrothermal BI too

294.50 296.00 RHYv Rhyolite volcaniclastic

294.5 - 296: BI porphyroblastic, Mu-altered volcaniclastic rhyolite. Upper contact displays moderate CL-alteration.

<<Min: 294.5 - 296 1% Min: Pyrrhotite>>

<<Min: 294.5 - 296 0.5% Min: Chalcopyrite>>

<<Alt: 294.5 - 295.13 Moderate Chlorite>>

<<Alt: 294.5 - 298.95 Trace Calcite>>

<<Alt: 295.13 - 298.95 Weak-Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

296.00 298.95 RHYvx Quartz and/or feldspar crystal tuff

296 - 298.95: QZ-eye and siliceous lpl tuff with local CL-alteration

<<Min: 296 - 324.14 0.5% Min: Pyrrhotite>>

<<Alt: 297.65 - 298.95 Weak-Moderate Chlorite>>

<<Struc: 297.5 - 298.6 Weak Fault>>

298.95 299.60 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 298.95 - 299.6 Moderate Calcite>>

299.60 300.87 RHYvx Quartz and/or feldspar crystal tuff

<<Alt: 299.6 - 303.47 Trace Calcite>>

300.87 303.47 RHYcw Curdy textured-flow banded (flows, subvolcanics)

300.87 - 303.47: Curdy rhyolite

303.47 303.79 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 303.47 - 305.28 Moderate Calcite>>

303.79 304.10 RHYc Rhyolite coherant volcanics

303.79 - 304.1: silicic banded rhyolite

304.10 305.28 PEL Equigranular biotite + calcite +/- quartz rock

<<Struc: 304.4 - 304.5 Weak Fault>>

305.28 308.10 RHYva Coarse grained to ash tuff

305.28 - 308.1: Ash dominated tuff with disseminated to banded pelitic material

<<Alt: 305.28 - 310.83 Weak Calcite>>

308.10 309.23 RHYvl Lapilli tuff

309.23 309.76 PEL Equigranular biotite + calcite +/- quartz rock

<<Vein: 309.23 - 324.14 1% Calcite>> Minor brittle CA-veinlets crosscutting foliation. Appear to be more dense in PEL.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

309.76 310.83 RHYva Coarse grained to ash tuff

309.76 - 310.83: Ash dominated tuff with disseminated to banded pelitic material

310.83 311.76 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 310.83 - 311.76 Moderate Calcite>>

311.76 315.88 RHYva Coarse grained to ash tuff

311.76 - 315.88: Ash dominated tuff with disseminated to banded pelitic material

<<Alt: 311.76 - 315.88 Weak-Moderate Calcite>>

<<Struc: 313 - 313.2 Weak Fault>>

<<Struc: 314.3 - 314.31 Weak-Moderate dominant foliation>>

315.88 316.46 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 315.88 - 316.46 Moderate Calcite>>

316.46 318.40 RHYvl Lapilli tuff

316.46 - 318.4: 'Dirty' rhyolite with siliceous lpl

<<Alt: 316.46 - 318.4 Weak-Moderate Calcite>>

318.40 319.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 318.4 - 319.7 Moderate Calcite>>

319.70 321.42 RHYvl Lapilli tuff

319.7 - 321.42: 'Dirty' rhyolite with abundant siliceous lpl

<<Alt: 319.7 - 321.42 Weak Calcite>>

321.42 322.50 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 321.42 - 322.5 Weak Chlorite>>

<<Alt: 321.42 - 322.5 Moderate Calcite>>

322.50 323.23 RHYvl Lapilli tuff

322.5 - 323.23: Weak MU-alteration

<<Alt: 322.5 - 323.23 Weak Calcite>>

<<Alt: 322.5 - 324.14 Weak Muscovite>>

From (m)	To (m)		Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
323.23	**324.14**	**PEL**	**Equigranular biotite + calcite +/- quartz rock**									
<<Alt: 323.23 - 324.14 Moderate Calcite>>												
324.14	**326.40**	**RHYv**	**Rhyolite volcaniclastic**	324.90	326.40	1.50	D00004326	-0.005	3.4	0.05	0.01	0.04
324.14 - 326.4: Moderately altered and faulted. 'Dirty' mixed pelitic and volcaniclastic material.												
<<Min: 324.15 - 326.4 0.5% Min: Pyrite>>												
<<Min: 324.15 - 326.4 1% Min: Pyrrhotite>>												
<<Min: 324.15 - 326.4 0.1% Min: Arsenopyrite>>												
<<Alt: 324.14 - 326.4 Weak-Moderate Muscovite>>												
<<Alt: 324.14 - 326.4 Weak Calcite>>												
<<Struc: 324.85 - 325.15 Weak-Moderate Fault>>												
326.40	**326.75**	**OJ**	**Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**	326.40	326.75	0.35	D00004327	0.027	80.5	0.22	1.68	3.62
326.4 - 326.75: Semi-massive sulfide matrix supporting strongly altered wall rock clasts. Displays dissolution breccia textures. Semi-massive sulfide include ~20% SP, ~7% PO, and ~2% GL with disseminated CP (~1%).												
<<Min: 326.4 - 326.75 20% Min: Sphalerite>>												
<<Min: 326.4 - 326.75 7% Min: Pyrrhotite>>												
<<Min: 326.4 - 326.75 2% Min: Galena>>												
<<Min: 326.4 - 326.75 1% Min: Chalcopyrite>>												
<<Alt: 326.4 - 326.75 Strong Muscovite>> Strongly Mu-altered wall rock clasts within sulfide matrix												
<<Alt: 326.4 - 326.75 Moderate Chlorite>>												
<<Alt: 326.4 - 326.75 Moderate Calcite>>												
<<Vein: 326.4 - 326.45 100% Quartz>> Thin QZ vein next to semi-massive sulfide												
326.75	**327.60**	**RHY**	**undifferentiated rhyolite**	326.75	327.60	0.85	D00004328	0.233	34.8	0.05	0.31	0.59
326.75 - 327.6: Moderately MU-altered rhyolite.												
<<Min: 326.75 - 327.6 3% Min: Pyrrhotite>>												
<<Alt: 326.75 - 327.6 Moderate Muscovite>>												
<<Alt: 326.75 - 327.6 Trace Calcite>>												

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

327.60 328.00 PEL Equigranular biotite + calcite +/- quartz rock

327.6 - 328: Patchy CL alteration. Bottom of unit is a fault zone.

<<Min: 327.6 - 328 1% Min: Pyrite>>

<<Alt: 327.6 - 328 Weak Chlorite>>

<<Alt: 327.6 - 328 Moderate Calcite>>

328.00 333.45 FLZ Fault Zone

328 - 333.45: Strongly faulted CL-BI gouge. Significant core loss through fault zone

<<Alt: 328 - 333.45 Strong Chlorite>> Strong CL-alteration in fault zone

<<Alt: 328 - 335.24 Weak-Moderate Calcite>>

<<Struc: 328 - 333.45 Moderate-Strong Fault>>

333.45 334.60 RHY undifferentiated rhyolite

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
334.42	334.78	0.36	D00004329	0.353	107	0.04	0.73	1.48

333.45 - 334.6: Strong pervasive MU alteration with CL porphyroblasts and local BI bands. Minor disseminated sulfide.

<<Min: 333.45 - 334.6 1% Min: Sphalerite>>

<<Min: 333.45 - 334.6 2% Min: Pyrrhotite>>

<<Min: 333.45 - 334.6 0.5% Min: Chalcopyrite>>

<<Alt: 333.45 - 335.24 Strong Muscovite>>

<<Alt: 333.45 - 335.24 Weak-Moderate Chlorite>> CL porphyroblasts

<<Vein: 333.5 - 336 2% Quartz>> 3 Massive QZ veins (~3-10 cm wide). One is within the mineralization at ~334.7 and has some sulfide stringers.

334.60 334.78 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock

334.6 - 334.78: Small band of semi-massive replacement style mineralization.

<<Min: 334.6 - 334.78 10% Min: Sphalerite>>

<<Min: 334.6 - 334.78 30% Min: Pyrrhotite>>

<<Min: 334.6 - 334.78 1% Min: Chalcopyrite>>

334.78 335.24 RHY undifferentiated rhyolite

334.78 - 335.24: Strongly faulted and altered rhyolite. Significant core loss.

<<Struc: 334.8 - 335.2 Weak-Moderate Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

335.24 335.70 SED undifferentiated Sediment

335.24 - 335.7: BI-QZ schist with ~5% disseminated PO

<<Min: 335.24 - 335.7 5% Min: Pyrrhotite>>

<<Alt: 335.24 - 343.7 Trace Calcite>>

335.70 336.60 RHY undifferentiated rhyolite

335.7 - 336.6: Strong pervasive MU-alteration with and BI-CL porphyroblasts

<<Min: 335.7 - 336.6 2% Min: Pyrrhotite>>

<<Alt: 335.7 - 336.6 Moderate-Strong Muscovite>>

<<Alt: 335.7 - 336.6 Moderate Biotite>> BI porphyroblasts

336.60 343.70 MDSc Carbonaceous dominant mudstone

336.6 - 343.7: Carbonaceous mudstone with weak to moderate alteration at top contact. Poor recovery and rubbly core.

<<Min: 336.6 - 343.7 1% Min: Pyrite>>

<<Min: 336.6 - 343.7 1% Min: Pyrrhotite>>

<<Alt: 336.6 - 337.65 Weak-Moderate Cordierite>> CI porphyroblasts

<<Struc: 336.6 - 336.8 Weak Fault>>

End of Hole @ 343.7

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-404

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/26/2016
UTM Easting	414779.478	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/27/2016
UTM Northing:	6818386.115	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1343.106	Casing Depth (m):	9	Length (m):	40.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/24/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	KZK Camp	Drill Completed:	7/25/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
Comments:						Parent Hole:	

Collared at Class A Storage Facility projected site. Four SPT tests were conducted in overburden, three packer tests in bedrock as well as deep monitoring well install. Hole K16-404 consists of mafic tuff and interbedded calcareous mudstone units recognized as Wind Lake Formation. Trace oxidation is visible from 4.80m to 16.50m. Fine grain disseminated pyrrhotite is observed in the mafic horizons. The hole was completed at 40.20m (Engineer's call) in mafic ash tuff showing massive calcite/quartz vein.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/24/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 8.40 OVBN Overburden

<<Alt: 3.3 - 21.65 Strong Calcite>> and banded.

8.40 12.30 MAFt Mafic Volcaniclastics

8.4 - 12.3: Fine grain, light green, weak CA banded, CA in groundmass.

<<Min: 8.4 - 15.95 0.5% Min: Pyrrhotite>>

12.30 13.20 No Core No Core

13.20 15.95 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

13.2 - 15.95: Dark grey, fine grain, CA bands and blebs. BI in foliation.

<<Vein: 15.8 - 16.4 Quartz-Carbonate>> QZ/TML and CA veins. Rubbly interval, locally vuggy.

15.95 16.25 MAFt Mafic Volcaniclastics

15.95 - 16.25: Fine grain, light green. Rubbly interval containing QZ and CA veins showing locally vuggy texture.

<<Min: 15.95 - 21.65 0.1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

16.25 21.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

16.25 - 21.65: Fine grain, dark grey, gradual lower contact. Rare mafic ash beds intercaled, up to 10cm wide. BI in foliaton

21.65 28.35 MAFt Mafic Volcaniclastics

21.65 - 28.35: Medium grain, calcareous. Rare ash layer intercaled (3 to 5cm wide). Gradual lower contact. BI porphyroblasts, low density. CA banded down hole.

<<Min: 21.65 - 28.55 0.5% Min: Pyrrhotite>>

<<Alt: 21.65 - 28 Moderate Calcite>>

<<Alt: 28 - 35.75 Moderate-Strong Calcite>>

28.35 31.95 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

28.35 - 31.95: Dark green chloritic layers interbedded with light blue strongly calcareous fine grain homogeneous layers. CA banded, BI in foliation. Gradual upper contact. Unit consists in mafic and carbonaceous material, dominantly mudstone.

<<Min: 28.55 - 31.95 0.1% Min: Pyrrhotite>>

<<Alt: 28.35 - 31.95 Trace Chlorite>>

31.95 35.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

31.95 - 35.7: Fine grain, black, CA banded, rare chlorite rich bands, moderately siliceous.

<<Min: 31.95 - 35.7 0.1% Min: Pyrrhotite>>

35.70 36.14 MAFta Coarse grained to ash tuff

35.7 - 36.14: Fine grain, green, homogeneous texture, low CA content.

<<Min: 35.7 - 36.14 1% Min: Pyrrhotite>>

<<Alt: 35.75 - 38.35 Weak Calcite>>

36.14 38.35 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

36.14 - 38.35: Fine grain, black, CA banded, containing some moderately siliceous layers. Gradual lower contact.

<<Min: 36.14 - 39.3 0.5% Min: Pyrrhotite>>

<<Struc: 37.46 - 37.6 Weak Fault>> Narrow fault gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

38.35 40.20 MAFt Mafic Volcaniclastics

38.35 - 40.2: Fine grain, light green, CA banded at upper contact hole, possibly highly strain lapilli CA replaced. Finer grain down hole. Massive CA/QZ vein from 39.30 to 39.88m. EOH.

<<Alt: 38.35 - 39.3 Moderate-Strong Calcite>> CA content decreases as the size of the grain decreases.

<<Alt: 39.3 - 40.2 Intense Calcite>> Massive CA veins.

<<Vein: 39.3 - 39.88 Calcite>> QZ/CA vein containing mafic tuff, massive.

End of Hole @ 40.2

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-405

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Ron Voordouw
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/26/2016
UTM Easting	414780.077	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	7/26/2016
UTM Northing:	6818382.919	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1343.116	Casing Depth (m):	4.5	Length (m):	4.5	Drill Rig:	Tech 5000
Local Easting:		Stored?:	No	Claims Title		Drill Started:	7/25/2016
Local Northing:		Cemented?:	SP	Core Storage Loc.:	N/A	Drill Completed:	7/25/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Hydro
Comments:						Parent Hole:	

K16-405 was drilled to install a shallow monitoring well in overburden at 4.5 m depth. This hole was the last one of the 2016 KP geotechnical and hydrogeolgocial program.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	7/25/2016		☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.50**	**OVBN Overburden**									
End of Hole @ 4.5											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-406

Prospect:	ABM	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/29/2016
UTM Easting	414326.912	Core Size:	HQ3	Azimuth:	180.3	Date Logging Complete:	8/2/2016
UTM Northing:	6815521.959	Casing Pulled?:	Yes	Dip:	-70	Drill Company:	Hytech
UTM Elev. (m):	1524.151	Casing Depth (m):	3	Length (m):	299	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/26/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/29/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
						Parent Hole:	

Comments:

This drill hole cuts a volcano-sedimentary package including flows, volcaniclastic rocks and epiclastic rocks. No economic intervals of mineralization are present in this hole however, several sub-economic zones do occur. At 96 m there is a 0.1 m semi-massive zone of bedding parallel pyrite-pyrrhotite-sphalerite mineralization with no significant associated alteration. A wide zone of moderate to strong muscovite alteration is present from 152-219 m. At the lower end of this alteration interval from 211 m there is a Po-Cp-Py-Sp bearing breccia-vein and below this from 213-225 m there is a zone of weak chlorite alteration with weak spalerite and chalcopyrite mineralization, associated with a tuffaceous mudstone unit. Mineralisation was not considered significant enough to be sampled. A DHEM survey was completed on this drill hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-70	178.9	1.4	180.3	TN14	Jerome de Pasquale	7/26/2016		☑	
0.01	-70.01196	178.9	1.4	180.3	Gyro	Oscar Nielsen	7/29/2016		☑	100
5	-69.95924	179.16033	1.4	180.56033	Gyro	Oscar Nielsen	7/29/2016		☑	99.9896069842759
9	-69.9	158.6	22.1	180.7	ReflexEZS	Hytech	7/27/2016	5804	☐	
10	-69.99284	178.86154	1.4	180.26154	Gyro	Oscar Nielsen	7/29/2016		☑	99.934758892228
15	-69.98747	178.69389	1.4	180.09389	Gyro	Oscar Nielsen	7/29/2016		☑	100
20	-70.01161	178.55966	1.4	179.95966	Gyro	Oscar Nielsen	7/29/2016		☑	100
25	-70.07051	178.71806	1.4	180.11806	Gyro	Oscar Nielsen	7/29/2016		☑	100
30	-70.02691	179.12914	1.4	180.52914	Gyro	Oscar Nielsen	7/29/2016		☑	100
33	-70.1	159.9	22.1	182	ReflexEZS	Hytech	7/27/2016	5696	☐	
35	-70.05432	179.27226	1.4	180.67226	Gyro	Oscar Nielsen	7/29/2016		☑	100
40	-69.93213	179.63762	1.4	181.03762	Gyro	Oscar Nielsen	7/29/2016		☑	100
45	-69.93621	179.76484	1.4	181.16484	Gyro	Oscar Nielsen	7/29/2016		☑	100
50	-69.8725	179.99365	1.4	181.39365	Gyro	Oscar Nielsen	7/29/2016		☑	100
55	-69.89819	180.21078	1.4	181.61078	Gyro	Oscar Nielsen	7/29/2016		☑	100
57	-69.8	158	22.1	180.1	ReflexEZS	Hytech	7/27/2016	5780	☐	
60	-69.84068	180.57973	1.4	181.97973	Gyro	Oscar Nielsen	7/29/2016		☑	100
65	-69.78856	180.64526	1.4	182.04526	Gyro	Oscar Nielsen	7/29/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-406

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
70	-69.74155	181.00682	1.4	182.40682	Gyro	Oscar Nielsen	7/29/2016		☑	100
75	-69.74451	181.18236	1.4	182.58236	Gyro	Oscar Nielsen	7/29/2016		☑	100
80	-69.75684	181.37473	1.4	182.77473	Gyro	Oscar Nielsen	7/29/2016		☑	100
85	-69.71386	181.74892	1.4	183.14892	Gyro	Oscar Nielsen	7/29/2016		☑	100
90	-69.7325	181.74953	1.4	183.14953	Gyro	Oscar Nielsen	7/29/2016		☑	100
95	-69.64944	182.09067	1.4	183.49067	Gyro	Oscar Nielsen	7/29/2016		☑	100
100	-69.70683	182.00095	1.4	183.40095	Gyro	Oscar Nielsen	7/29/2016		☑	100
105	-69.67255	182.34288	1.4	183.74288	Gyro	Oscar Nielsen	7/29/2016		☑	100
110	-69.65862	182.52941	1.4	183.92941	Gyro	Oscar Nielsen	7/29/2016		☑	100
115	-69.57594	182.75051	1.4	184.15051	Gyro	Oscar Nielsen	7/29/2016		☑	100
120	-69.51951	182.92494	1.4	184.32494	Gyro	Oscar Nielsen	7/29/2016		☑	100
125	-69.47286	183.12296	1.4	184.52296	Gyro	Oscar Nielsen	7/29/2016		☑	100
130	-69.47105	183.32083	1.4	184.72083	Gyro	Oscar Nielsen	7/29/2016		☑	100
135	-69.46728	183.47606	1.4	184.87606	Gyro	Oscar Nielsen	7/29/2016		☑	100
140	-69.51153	183.59418	1.4	184.99418	Gyro	Oscar Nielsen	7/29/2016		☑	100
145	-69.52716	183.70869	1.4	185.10869	Gyro	Oscar Nielsen	7/29/2016		☑	100
150	-69.50503	183.88241	1.4	185.28241	Gyro	Oscar Nielsen	7/29/2016		☑	100
155	-69.43994	184.28168	1.4	185.68168	Gyro	Oscar Nielsen	7/29/2016		☑	100
160	-69.43632	184.23274	1.4	185.63274	Gyro	Oscar Nielsen	7/29/2016		☑	100
165	-69.40799	184.38949	1.4	185.78949	Gyro	Oscar Nielsen	7/29/2016		☑	100
170	-69.35228	184.69773	1.4	186.09773	Gyro	Oscar Nielsen	7/29/2016		☑	100
175	-69.29474	184.81599	1.4	186.21599	Gyro	Oscar Nielsen	7/29/2016		☑	100
180	-69.2303	185.03484	1.4	186.43484	Gyro	Oscar Nielsen	7/29/2016		☑	100
185	-69.15342	185.37304	1.4	186.77304	Gyro	Oscar Nielsen	7/29/2016		☑	100
190	-69.08486	185.51424	1.4	186.91424	Gyro	Oscar Nielsen	7/29/2016		☑	100
195	-69.03068	185.76584	1.4	187.16584	Gyro	Oscar Nielsen	7/29/2016		☑	100
200	-68.9906	186.12785	1.4	187.52785	Gyro	Oscar Nielsen	7/29/2016		☑	100
200.01	-69	166	22.1	188.1	ReflexEZS	Hytech	7/28/2016	5757	☐	
205	-68.90729	186.34617	1.4	187.74617	Gyro	Oscar Nielsen	7/29/2016		☑	100
210	-68.88105	186.45238	1.4	187.85238	Gyro	Oscar Nielsen	7/29/2016		☑	100
215	-68.84668	186.85902	1.4	188.25902	Gyro	Oscar Nielsen	7/29/2016		☑	100
220	-68.8497	186.96558	1.4	188.36558	Gyro	Oscar Nielsen	7/29/2016		☑	100
225	-68.90965	187.43144	1.4	188.83144	Gyro	Oscar Nielsen	7/29/2016		☑	100
230	-68.93818	187.71431	1.4	189.11431	Gyro	Oscar Nielsen	7/29/2016		☑	100

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
235	-68.96563	188.19005	1.4	189.59005	Gyro	Oscar Nielsen	7/29/2016		☑	100
240	-68.92276	188.36698	1.4	189.76698	Gyro	Oscar Nielsen	7/29/2016		☑	100
245	-68.84254	188.86153	1.4	190.26153	Gyro	Oscar Nielsen	7/29/2016		☑	100
250	-68.76456	189.29761	1.4	190.69761	Gyro	Oscar Nielsen	7/29/2016		☑	100
255	-68.67829	189.62653	1.4	191.02653	Gyro	Oscar Nielsen	7/29/2016		☑	100
260	-68.56815	189.83985	1.4	191.23985	Gyro	Oscar Nielsen	7/29/2016		☑	100
265	-68.45957	190.05488	1.4	191.45488	Gyro	Oscar Nielsen	7/29/2016		☑	100
270	-68.35437	190.39231	1.4	191.79231	Gyro	Oscar Nielsen	7/29/2016		☑	100
275	-68.2939	190.7933	1.4	192.1933	Gyro	Oscar Nielsen	7/29/2016		☑	100
280	-68.22206	191.28319	1.4	192.68319	Gyro	Oscar Nielsen	7/29/2016		☑	100
285	-68.21527	191.56547	1.4	192.96547	Gyro	Oscar Nielsen	7/29/2016		☑	100
290	-68.21407	191.80866	1.4	193.20866	Gyro	Oscar Nielsen	7/29/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.49 OVBN Overburden

4.49 9.44 RHYvx Quartz and/or feldspar crystal tuff dark grey FMG

4.49 - 9.44: Fine to medium grained micaceous, weakly foliated rock with medium grained, angular, white fragments and moderate to abundant quartz eyes

<<Min: 4.49 - 9.44 1% Min: Pyrite>>

<<Min: 4.49 - 9.44 0.5% Min: Pyrrhotite>>

<<Alt: 4.49 - 22.26 Weak-Moderate Calcite>> Veins, blebs, bands,

9.44 10.04 RHYcw Curdy textured-flow banded (flows, subvolcanics) cream FG

9.44 - 10.04: Fine grained, light grey-green-cream coloured banded (irregular, micaceous bands) rock with a brecciated margin and small xenoliths (?)

<<Min: 9.44 - 10.04 0.5% Min: Pyrite>>

10.04 22.61 RHYvx Quartz and/or feldspar crystal tuff medium grey MCG

10.04 - 22.61: "Thick, massive unit of quartz eye and rare lithic fragment bearing crystal tuff.

<<Min: 10.04 - 22.61 0.01% Min: Sphalerite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 10.04 - 22.61 3% Min: Pyrite>>

<<Min: 10.04 - 22.61 0.5% Min: Pyrrhotite>>

<<Alt: 16.4 - 22.61 Weak Muscovite>>

<<Alt: 20.14 - 22.61 Weak Silicification>>

<<Alt: 22.26 - 24.82 Trace Calcite>> With Ankerite

<<Struc: 16.25 - 16.4 Weak-Moderate Fault>> zone of broken rock

<<Struc: 17 - 17.21 Weak Fault>> Zone of rubble, possibly due to the start of the run?

22.61 27.34 RHYva Coarse grained to ash tuff medium grey FG

22.61 - 27.34: Massive, fine grained, light grey unit with zones of moderate to intense euhedral black medium to coarse grained biotite porphyroblasts, and carbonate porphyroblasts with the areas of intense biotite growth.

<<Min: 22.61 - 27.34 1% Min: Pyrrhotite>>

<<Min: 23 - 23.18 0.5% Min: Sulphosalts>>

<<Alt: 23.26 - 23.6 Weak Biotite>> Black, euhedral biotite

<<Alt: 23.6 - 25.05 Moderate Biotite>> Black, euhedral biotite

<<Alt: 24.29 - 24.82 Weak-Moderate Ankerite>> Cream-coloured diamond shaped crystals (euhedral)

<<Alt: 24.82 - 27.34 Moderate Calcite>> Veins, blebs, bands

<<Alt: 25.05 - 27.34 Weak-Moderate Biotite>> Black, euhedral biotite

<<Vein: 23 - 23.18 75% Quartz-Carbonate 32 deg. >> Vein contains an unidentified metallic black-silver mineral with a black streak and a hardness of approximately 4. It forms thin acicular crystals in the quartz-carbonate dominated vein.

<<Vein: 24.82 - 24.91 100% Quartz-Carbonate>>

27.34 30.92 RHYcf Feldspar & feldspar quartz porphyry cream CG

27.34 - 30.92: Cream-green quartz-feldspar phyric coherent rhyolite with rare wavy siliceous bands-curds.

<<Min: 27.34 - 30.92 0.5% Min: Sphalerite>> A band of disseminated sphalerite

<<Min: 27.34 - 30.92 3% Min: Pyrrhotite>>

<<Alt: 27.34 - 30.92 Weak Muscovite>>

<<Alt: 27.34 - 51 Trace Calcite>> Rare veins and disseminations

30.92 31.79 RHYva Coarse grained to ash tuff medium grey MCG

30.92 - 31.79: Medium to coarse grained banded (bedded?) felsic volcaniclastic rock with ~1% 1-2mm white crystals (likely fragments) amongst a sandy matrix.

<<Min: 30.92 - 31.97 5% Min: Pyrrhotite>> predominantly bedding parallel blebs

<<Struc: 31.3 - 31.3 Weak Foliation>> banding, possibly bedding in the RHYva

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

31.79 35.12 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FCG

31.79 - 35.12: Quartz-eye and rare feldspar phyric flow banded siliceous coherent rhyolite

<<Min: 31.97 - 35.12 3% Min: Pyrrhotite>>

<<Alt: 31.79 - 51 Weak-Moderate Silicification>>

<<Alt: 31.79 - 51 Weak Muscovite>>

<<Vein: 35 - 35.12 100% Quartz-Carbonate>>

35.12 37.93 RHYva Coarse grained to ash tuff medium grey FCG

35.12 - 37.93: 1-3mm quartz eye bearing siliceous/micaceous ashy volcaniclastic rock

<<Min: 35.12 - 37.93 5% Min: Pyrrhotite>>

<<Min: 37.4 - 37.93 3% Min: Pyrite>>

<<Min: 37.4 - 37.93 1% Min: Pyrrhotite>>

<<Vein: 37.4 - 37.93 35% Quartz-Carbonate>> approximately half of the carbonate is pink rhodocrosite

37.93 51.00 RHYvl Lapilli tuff medium grey FCG

37.93 - 51: Heterolithic but lapilli dominated volcaniclastic conglomerate. A variety of clasts (crystal fragment, lithic fragments, lapilli) are present in varying proportions. Clasts are predominantly pebble to small cobble in size and oriented along the dominant foliation plane.

<<Min: 37.93 - 46.04 0.01% Min: Pyrite>>

<<Min: 37.93 - 46.04 1% Min: Pyrrhotite>>

<<Min: 46.04 - 51 0.5% Min: Sphalerite>> Increase in muscovite alteration

<<Min: 46.04 - 51 3% Min: Pyrrhotite>> Increase in muscovite alteration

<<Min: 46.04 - 51 0.5% Min: Chalcopyrite>> Increase in muscovite alteration

51.00 51.91 RHYva Coarse grained to ash tuff dark grey FMG

51 - 51.91: Moderately sorted, banded (bedded?) dark grey-brown fine to medium grained volcaniclastic rock (fine sandy texture with bands of coarse sand sized grains)

<<Min: 51 - 51.91 1% Min: Pyrrhotite>>

<<Alt: 51 - 51.91 Moderate Calcite>>

<<Alt: 51 - 51.91 Moderate Biotite>> Fine brown shreddy biotite

51.91 52.81 RHYvl Lapilli tuff medium grey FCG

51.91 - 52.81: Poorly sorted lapilli bearing tuff. contacts are gradational with the over and underlying ash tuffs

<<Min: 51.91 - 52.81 0.5% Min: Sphalerite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 51.91 - 52.81 1% Min: Pyrrhotite>>

<<Min: 51.91 - 52.81 0.5% Min: Chalcopyrite>>

<<Alt: 51.91 - 53.4 Trace Calcite>>

52.81 53.73 RHYva Coarse grained to ash tuff dark grey FG

52.81 - 53.73: Fine grained ashy tuff unit with rare lapilli

<<Min: 52.81 - 53.73 0.5% Min: Sphalerite>>

<<Min: 52.81 - 53.73 3% Min: Pyrrhotite>>

<<Min: 52.81 - 53.73 0.5% Min: Chalcopyrite>> With PO

<<Alt: 53.4 - 53.73 Moderate-Strong Calcite>>

<<Alt: 53.4 - 53.73 Moderate Biotite>> Fine brown shreddy biotite

53.73 54.26 INT undifferentiated (granitic) intrusive rocks light grey FG

53.73 - 54.26: Light, fine grained, silica and feldspar(-->mica) bearing unit. sharp contacts with the surrounding sediments but little in the way of a baked margin. Possibly a small aplitic dyke?

<<Min: 53.73 - 54.26 0.5% Min: Sphalerite>>

<<Min: 53.73 - 54.26 0.5% Min: Pyrite>>

<<Min: 53.73 - 54.26 0.5% Min: Pyrrhotite>>

54.26 55.29 RHYvl Lapilli tuff medium grey FCG

54.26 - 55.29: 1-2 cm flattened white clasts (lapilli) in a matrix of fine grey ashy material

<<Min: 54.26 - 55.29 1% Min: Sphalerite>>

<<Min: 54.26 - 55.29 0.5% Min: Pyrrhotite>>

<<Alt: 54.26 - 73.16 Weak-Moderate Calcite>> Veins and bands and blebs of calcite

55.29 56.76 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

55.29 - 56.76: aphanitic white-light grey bands separated by green micaceous bands.

<<Min: 55.29 - 56.76 1% Min: Sphalerite>>

<<Min: 55.29 - 56.76 0.5% Min: Pyrite>>

<<Alt: 55.29 - 56.76 Weak Muscovite>>

<<Struc: 55.5 - 55.5 Moderate dominant foliation>> Rhyolite flow banding

56.76 58.02 RHYva Coarse grained to ash tuff dark grey FCG

56.76 - 58.02: fine to medium grained volcaniclastic material with rare flattened siliceous clasts.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 56.76 - 58.02 1% Min: Sphalerite>>

<<Min: 56.76 - 58.02 0.5% Min: Pyrite>>

<<Min: 56.76 - 58.02 0.01% Min: Chalcopyrite>>

<<Alt: 56.76 - 57.24 Weak Biotite>> Fine brown shreddy biotite

58.02 58.82 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

58.02 - 58.82: aphanitic white-light grey bands separated by green micaceous bands. Some bands composed of pyrrhotite

<<Min: 58.02 - 58.82 0.5% Min: Sphalerite>>

<<Min: 58.02 - 58.82 5% Min: Pyrrhotite>>

<<Min: 58.27 - 58.82 0.5% Min: Pyrite>>

<<Alt: 58.02 - 58.82 Weak Muscovite>>

<<Vein: 58.02 - 58.27 20% Pyrrhotite>>

58.82 62.10 RHYva Coarse grained to ash tuff medium grey FMG

58.82 - 62.1: interbedded fine ashy siltstone and fine sand sized volcanic material

<<Min: 58.82 - 62.1 1% Min: Sphalerite>>

<<Min: 58.82 - 62.1 1% Min: Pyrite>>

<<Min: 58.82 - 62.1 3% Min: Pyrrhotite>>

62.10 71.60 RHYva Coarse grained to ash tuff medium grey MG

62.1 - 71.6: predominantly composed of medium grained sand sized particles of volcanic derived material with patches and bands of up to 15% flattened white siliceous lapilli.

<<Min: 62.1 - 71.6 0.5% Min: Sphalerite>>

<<Min: 62.1 - 71.6 1% Min: Pyrite>>

<<Min: 62.1 - 71.6 0.5% Min: Pyrrhotite>>

<<Alt: 64.73 - 65.37 Weak-Moderate Biotite>> Fine brown shreddy biotite

<<Vein: 63.42 - 63.53 100% Quartz-Carbonate>> Sulphides comprise 1% Galena and 2% sphalerite

<<Struc: 62.9 - 62.9 Weak-Moderate dominant foliation>> Micaceous parting/lapilli flattening direction in RHYva lpl

71.60 78.84 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

71.6 - 78.84: Fine grained, light coloured unit with wavy banding in the centre and curdy texture on the margins, poorly defined upper and lower contacts at a high angle to core axis

<<Min: 71.6 - 78.4 1% Min: Pyrite>> Along wavy "flow" bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 71.6 - 78.4 1% Min: Pyrrhotite>> Along wavy "flow" bands

<<Min: 78.4 - 79.95 1% Min: Pyrite>> bands of pyrite

<<Alt: 71.6 - 78.84 Weak Muscovite>>

<<Alt: 73.16 - 78.84 Weak Calcite>> Bands parallel to the flow banding

<<Struc: 71.6 - 71.6 Contact>> Contact between RHYcw and RHYv

78.84 84.58 RHYva Coarse grained to ash tuff medium grey FMG

78.84 - 84.58: Fine to medium grained volcaniclastic material in moderately sorted bands with rare areas of lapilli. Some bands have black biotite porphyroblasts

<<Min: 79.95 - 84.58 0.01% Min: Sphalerite>>

<<Min: 79.95 - 84.58 1% Min: Pyrrhotite>>

<<Min: 79.95 - 84.58 0.01% Min: Chalcopyrite>>

<<Alt: 78.84 - 88.93 Weak-Moderate Calcite>> Foliation parallel bands and in lapilli, often associated with pyrrhotite

<<Alt: 79.95 - 84.58 Weak Biotite>> Fine brown shreddy biotite

<<Struc: 83.06 - 83.06 Moderate dominant foliation>> Micaceous parting with a slight crenulation

84.58 85.47 RHYva Coarse grained to ash tuff dark grey FG

84.58 - 85.47: Fine grained volcaniclastic material with common black euhedral biotite porphyroblasts, likely due to a pelitic input

<<Min: 84.58 - 85.47 0.5% Min: Pyrrhotite>>

<<Alt: 84.58 - 85.47 Weak-Moderate Biotite>> Black, euhedral biotite

85.47 92.95 RHYva Coarse grained to ash tuff medium grey FMG

85.47 - 92.95: Fine to medium grained volcaniclastic material in moderately sorted bands with rare areas of white siliceous material that may be lapilli. Some bands have black biotite porphyroblasts

<<Min: 85.47 - 88.93 0.5% Min: Sphalerite>>

<<Min: 85.47 - 88.93 3% Min: Pyrrhotite>> Wisps may coalesces into bands

<<Min: 89.04 - 91.42 1% Min: Pyrrhotite>>

<<Min: 91.42 - 92.95 0.01% Min: Sphalerite>>

<<Min: 91.42 - 92.95 1% Min: Pyrite>>

<<Alt: 89.04 - 93.73 Weak-Moderate Calcite>> Foliation parallel bands and in lapilli, often associated with pyrrhotite

<<Struc: 87.6 - 87.6 Moderate dominant foliation>> Micaceous parting

<<Struc: 88.93 - 89.04 Moderate-Strong Fault>> This gougy fault seems suspicious, it is at the end/beginning of a run. Possible ground rock from the drill?

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

92.95 93.73 RHYva Coarse grained to ash tuff dark grey FG

92.95 - 93.73: Fine grained volcaniclastic material with common black euhedral biotite and white subhedral carbonate porphyroblasts, likely due to a pelitic input

<<Alt: 92.95 - 93.73 Weak-Moderate Biotite>> Black, euhedral biotite

<<Alt: 92.95 - 93.73 Weak Ankerite>> Cream-coloured diamond shaped crystals (euhedral)

93.73 95.49 RHYva Coarse grained to ash tuff medium grey FMG

93.73 - 95.49: Fine to medium grained volcaniclastic material in poorly sorted bands with moderately common zones of white siliceous clasts (?) which may be lapilli.

<<Min: 93.73 - 95.49 1% Min: Pyrrhotite>>

<<Min: 93.73 - 96.32 0.5% Min: Sphalerite>>

<<Alt: 93.73 - 110.28 Weak Calcite>> in lapilli, some foliation parallel bands, veins

<<Vein: 93.86 - 93.91 100% Quartz-Carbonate>>

95.49 96.23 Ol Heavilly disseminated sulphides in host schist medium grey MG

95.49 - 96.23: Two bands of strongly disseminated pyrite (50%), approximately 20cm thick each with an intervening band of less well disseminated (5-10%) pyrite. the upper pyrite band also contains a significant (20%) percentage of sphalerite and pyrrhotite. The host rock is preserved and consists of a fine to medium grained ashy felsic volcaniclastic rock without any lapilli

<<Min: 95.49 - 96.23 5% Min: Sphalerite>>

<<Min: 95.49 - 96.23 25% Min: Pyrite>>

<<Min: 95.49 - 96.23 5% Min: Pyrrhotite>>

96.23 98.35 RHYvl Lapilli tuff medium grey FCG

96.23 - 98.35: 1-2 cm white siliceous lapilli in a fine siliceous matrix with rare white polycrystalline lithic fragments. "lapilli" may just be siliceous zones?

<<Min: 96.23 - 98.34 0.5% Min: Sphalerite>>

<<Min: 96.23 - 98.34 1% Min: Pyrrhotite>>

<<Min: 96.23 - 98.34 0.01% Min: Chalcopyrite>>

<<Min: 98.34 - 99.19 0.5% Min: Pyrite>>

<<Min: 98.34 - 99.19 1% Min: Pyrrhotite>>

<<Min: 98.34 - 99.19 0.5% Min: Chalcopyrite>>

98.35 99.19 RHYva Coarse grained to ash tuff dark grey FG

98.35 - 99.19: dark grey well sorted, well bedded (?) volcanic tuffaceous siltstone with bands of fine to medium grained biotite porphyroblasts, likely representing pelitic input

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 98.35 - 99.19 Weak Biotite>> Fine brown shreddy biotite

<<Vein: 99.01 - 99.04 50% Carbonate-Chlorite>>

99.19 101.09 RHYvl Lapilli tuff medium grey FCG

99.19 - 101.09: 0.5-3 cm flattened, white, lapilli in a fine grained ashy matrix. lapilli compose 15-25%of the rock

<<Min: 99.19 - 101.09 0.5% Min: Pyrite>>

<<Min: 99.19 - 101.09 0.5% Min: Pyrrhotite>>

<<Struc: 100.25 - 100.25 Weak-Moderate dominant foliation>> Micaceous parting

101.09 102.05 RHYva Coarse grained to ash tuff medium grey FMG

101.09 - 102.05: A unit of crystal bearing tuffaceous grit, that grades upwards into a fine ashy siltstone

<<Min: 101.09 - 102.05 0.5% Min: Pyrrhotite>>

102.05 103.91 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

102.05 - 103.91: A unit of crystal bearing tuffaceous grit, the 2-7mm crystals comprise sericitized feldspar and

<<Min: 102.05 - 103.91 0.5% Min: Pyrrhotite>>

<<Min: 102.05 - 103.91 0.01% Min: Chalcopyrite>> with pyrrhotite

103.91 110.28 RHYvl Lapilli tuff medium grey FCG

103.91 - 110.28: 0.5-3 cm flattened, white, lapilli in a fine grained ashy matrix. lapilli compose 20-35% of the unit.

<<Min: 103.91 - 110.28 1% Min: Pyrite>>

<<Min: 103.91 - 110.28 1% Min: Pyrrhotite>> patchy disseminations and wisps

<<Vein: 105.5 - 105.98 60% Quartz-Carbonate>>

110.28 111.51 RHYva Coarse grained to ash tuff dark grey MG

110.28 - 111.51: Fine to medium grained (sandstone texture) tuffaceous volcaniclastic rock, well banded (bedded) with rare 0.5-1mm lithic fragments.

<<Min: 110.28 - 111.51 1% Min: Pyrrhotite>>

<<Alt: 110.28 - 111.51 Moderate Calcite>>

<<Alt: 110.28 - 111.51 Trace Biotite>> Fine brown shreddy biotite

<<Struc: 111.2 - 111.2 Moderate dominant foliation>> Bedding?

111.51 120.79 RHYvl Lapilli tuff medium grey FCG

111.51 - 120.79: 1-2cm round flattened white lapilli clasts in a fine grained grey ashy matrix

<<Min: 111.51 - 120.79 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 111.51 - 137.86 Trace Calcite>> Rare disseminated carbonate

<<Struc: 120.1 - 120.1 Weak-Moderate dominant foliation>> Lapilli flattening plane

120.79 129.84 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

120.79 - 129.84: Chaotic silica-mica domain banding, some sections of curd textured silica in a micaceous matrix

<<Min: 120.79 - 129.84 0.5% Min: Pyrrhotite>>

<<Struc: 129.24 - 129.25 Weak-Moderate Fault>> Thin gougy fault

<<Struc: 129.38 - 129.4 Weak-Moderate Fault>> Thin gougy fault

129.84 134.22 RHYva Coarse grained to ash tuff medium grey FCG

129.84 - 134.22: Area of ashy conglomeratic rock, incorporating ~10 cm zones of RHYcw, likely small autobreccia blocks from the surrounding RHYcw bodies. This are also includes 1-2 cm siliceous flattened lapilli (?) and a minor component of crystals

<<Min: 129.84 - 134.22 0.5% Min: Pyrite>>

<<Min: 129.84 - 134.22 0.5% Min: Pyrrhotite>>

<<Min: 129.84 - 134.22 0.01% Min: Chalcopyrite>>

<<Vein: 131.41 - 133.33 1% Chlorite-Sulphides>> Pyrite and minor chalcopyrite

134.22 134.48 RHYcw Curdy textured-flow banded (flows, subvolcanics) medium grey FG

134.22 - 134.48: Small, likely clast of RHYcw, spalled off a flow into the surrounding RHYv

<<Min: 134.22 - 134.48 1% Min: Pyrite>>

<<Min: 134.22 - 134.48 1% Min: Pyrrhotite>>

134.48 137.86 RHYvl Lapilli tuff medium grey FCG

134.48 - 137.86: 1 cm round, white, flattened clasts (lapilli) and 1-2cm dark grey, angular clasts in a fine to medium grained grey matrix

<<Min: 134.48 - 137.86 0.5% Min: Pyrite>> Localized in dark patches (pseudo? clasts)

<<Min: 134.48 - 137.86 1% Min: Pyrrhotite>>

137.86 138.24 RHYva Coarse grained to ash tuff medium grey FMG

137.86 - 138.24: An interval of the gritty matrix from the overlying lapilli tuff, with bands of very fine grained ashy, material

<<Min: 137.86 - 138.24 0.01% Min: Sphalerite>>

<<Min: 137.86 - 138.24 1% Min: Pyrite>>

<<Min: 137.86 - 138.24 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 137.86 - 138.24 Weak-Moderate Calcite>> Carbonate veins/bands

<<Struc: 138.1 - 138.1 Moderate Bedding>> bedding

138.24 147.71 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

138.24 - 147.71: A thick interval of chaotically banded and curdy textured coherent (?) rhyolite, curdy clots and bands are siliceous

<<Min: 138.24 - 147.71 1% Min: Pyrite>>

<<Min: 138.24 - 147.71 3% Min: Pyrrhotite>>

<<Alt: 138.24 - 139.95 Weak Muscovite>>

<<Alt: 138.24 - 147.71 Weak Calcite>>

147.71 150.27 RHYvl Lapilli tuff dark grey FCG

147.71 - 150.27: 0.5-1 cm white, siliceous flattened lapilli in a fine grained ashy matrix

<<Min: 147.71 - 150.27 1% Min: Pyrrhotite>> Bedding? parallel wisps

<<Alt: 147.71 - 150.27 Weak-Moderate Calcite>> Carbonate in lapilli

150.27 150.72 RHYva Coarse grained to ash tuff brown FG

150.27 - 150.72: Fine grained ashy tuff, with pervasive brown biotite porphyroblasts, especially strong in some bands

<<Min: 150.27 - 150.72 0.5% Min: Pyrrhotite>>

<<Alt: 150.27 - 150.72 Moderate Calcite>>

<<Alt: 150.27 - 150.72 Moderate Biotite>> Fine brown shreddy biotite

150.72 152.14 RHYva Coarse grained to ash tuff medium grey MCG

150.72 - 152.14: Medium grained gritty/ashy matrix with ~10% white round lapilli and 1-5 mm dark subangular lithic fragments

<<Min: 150.72 - 152.14 1% Min: Pyrrhotite>>

<<Alt: 150.72 - 152.14 Weak Muscovite>>

<<Alt: 150.72 - 181.97 Weak Calcite>> Carbonate bearing veins

<<Struc: 151 - 151 Weak dominant foliation>>

152.14 152.73 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green FG

152.14 - 152.73: Chaotic bands of muscovite and silica over a 0.5 m interval, possibly a clast of RHYcw sitting in the ashy/gritty sedimentary rock?

<<Min: 152.14 - 152.73 0.01% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 152.14 - 152.73 0.5% Min: Pyrrhotite>>

<<Alt: 152.14 - 154.16 Weak-Moderate Muscovite>> Muscovite replacing non-siliceous bands in rhyolite flow

152.73 181.97 RHYva Coarse grained to ash tuff grey-green FG

152.73 - 181.97: Fine grained, predominantly massive unit of featureless ash tuff. The top 3 m has a banding that is chaotically folded

<<Min: 152.73 - 155.11 1% Min: Pyrrhotite>>

<<Min: 155.55 - 166.21 1% Min: Pyrite>>

<<Min: 166.21 - 166.5 0.5% Min: Sphalerite>>

<<Min: 166.21 - 166.5 5% Min: Pyrite>>

<<Min: 166.21 - 166.5 0.5% Min: Chalcopyrite>>

<<Min: 166.5 - 175.67 0.01% Min: Pyrite>>

<<Min: 166.5 - 175.67 1% Min: Pyrrhotite>>

<<Min: 166.5 - 175.67 0.01% Min: Chalcopyrite>>

<<Min: 175.67 - 181.97 0.5% Min: Pyrite>>

<<Alt: 154.16 - 162.19 Moderate Muscovite>> Pervasive muscovite (but not texture destructive) through RHYva

<<Alt: 162.19 - 175.67 Weak-Moderate Muscovite>> Patchy muscovite alteration through the RHYva, textures well preserved

<<Alt: 175.67 - 181.97 Moderate Muscovite>> Pervasive muscovite (but not texture destructive) through RHYva

<<Vein: 155 - 156.95 10% Quartz-Carbonate>>

<<Vein: 161.23 - 161.24 100% Quartz-Carbonate>>

<<Vein: 165.22 - 166.21 90% Quartz-Carbonate-Sulphide>> Sulphides comprise sphalerite 1%, galena 0.5% and pyrite 0.5%

<<Vein: 179.47 - 179.56 100% Quartz-Carbonate-Sulphide 80 deg. >> Pyrite 0.5%, Sphalerite 0.5%

<<Vein: 181.8 - 181.85 100% Quartz-Carbonate>>

<<Struc: 155.11 - 155.35 Weak-Moderate Fault>> Small fault zone comprising micaceous gouge and crushed rock

<<Struc: 162.4 - 162.4 Moderate dominant foliation>> micaceous parting

<<Struc: 172.5 - 172.5 Weak-Moderate Bedding>> Well defined bedding

<<Struc: 176.6 - 176.6 Moderate-Strong dominant foliation>> micaceous parting

<<Struc: 180.56 - 180.63 Weak-Moderate Fault>> Zone of micaceous gouge and crushed rock

181.97 184.28 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

181.97 - 184.28: Chaotic bands of muscovite and silica

<<Min: 181.97 - 184.28 0.5% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 181.97 - 212.73 Trace Calcite>> Rare carbonate blebs

184.28 195.47 RHY undifferentiated rhyolite grey-green

184.28 - 195.47: Strongly muscovite altered interval with fine, chaotically folded to planar banding and a small component of silica. Possibly a mudstone (???) but more likely some mixture of ash tuff and coherent flow

<<Min: 184.28 - 195.47 0.5% Min: Sphalerite>>

<<Min: 184.28 - 195.47 1% Min: Pyrite>>

<<Min: 184.28 - 195.47 0.01% Min: Galena>>

<<Alt: 184.28 - 194.75 Moderate Muscovite>> Pervasive muscovite, most textures are destroyed

<<Alt: 194.75 - 200.39 Moderate-Strong Muscovite>> Pervasive muscovite (but not texture destructive) through MDS and RHYva

<<Vein: 185.48 - 192.44 35% Quartz-Carbonate>> Pyrite 0.25%, Sphalerite 0.5%, Galena 0.25%

<<Vein: 195.12 - 204.08 50% Quartz-Carbonate>> Py 0.9%, GL 0.1%

<<Struc: 187.6 - 187.7 Moderate Fault>> Zone of micaceous gouge and crushed rock

195.47 197.20 MDSt Rhyolite tuff dominant mudstone grey-green FG

195.47 - 197.2: Predominantly strongly muscovite altered with chaotically folded bands, however, on interval remains relatively unaltered, showing the alternating white and black banding of the typical mudstone. Interval is cut by thick, massive quartz veins

<<Min: 195.47 - 197.2 0.5% Min: Pyrite>>

<<Struc: 196.1 - 197.6 Moderate Fault>> Zone of micaceous slip planes and minor micaceous gouge development

197.20 202.22 RHYva Coarse grained to ash tuff grey-green FMG

197.2 - 202.22: Poorly banded, fine grained, muscovite altered unit. Rare white, round lapilli.

<<Min: 197.2 - 202.22 0.5% Min: Pyrite>>

<<Alt: 200.39 - 202.22 Weak-Moderate Muscovite>> Muscovite in certain layers/bands of the RHYva, not texturally destructive

<<Struc: 200.34 - 200.37 Weak-Moderate Fault>> Zone of micaceous gouge

202.22 210.52 RHYcw Curdy textured-flow banded (flows, subvolcanics) medium grey FG

202.22 - 210.52: Poorly developed alternating silica and muscovite bands on the cm scale. Banding is chaotically folded. Some zones have a more "curdy" texture. Zone is cut by brecciating veins of sulphide material, forming matrix supported (sulphide) brecciated veins-zones. This unit was likely impermeable to sulphide fluids, and therefore was brecciated rather than replaced

<<Min: 202.22 - 205.88 0.5% Min: Pyrite>>

<<Min: 205.88 - 209.85 1% Min: Sphalerite>> fine aggregates and patchy disseminations

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 205.88 - 209.85 1% Min: Pyrite>>

<<Min: 205.88 - 209.85 0.5% Min: Pyrrhotite>>

<<Min: 209.85 - 211.23 0.5% Min: Sphalerite>> Replacing some bands in the ashy material, as part of the breccia matrix

<<Min: 209.85 - 211.23 3% Min: Pyrite>> Breccia matrix and band replacement

<<Min: 209.85 - 211.23 15% Min: Pyrrhotite>> Breccia matrix and band replacement

<<Min: 209.85 - 211.23 0.01% Min: Galena>> Breccia matrix

<<Min: 209.85 - 211.23 5% Min: Chalcopyrite>> Breccia matrix and band replacement

<<Alt: 202.22 - 204.15 Moderate Muscovite>> Pervasive bands of muscovite alteration in the RHYcw, replacing non-siliceous material

<<Alt: 204.15 - 205.88 Moderate-Strong Muscovite>> Very intense alteration of non-siliceous domains within the RHYcw

<<Alt: 205.88 - 211.01 Moderate Muscovite>> Pervasive bands of muscovite alteration in the RHYcw, replacing non-siliceous material

<<Alt: 208.35 - 212.73 Weak-Moderate Tourmaline>> Aggregates and veins of tourmaline

<<Vein: 209.85 - 210.36 35% Pyrrhotite 32 deg. >> Brecciating vein, sulphide form the dominant matrix of the breccia. SUL (CP 10%, SP 0.25%, GL 0.1)

<<Struc: 204.25 - 205.33 Weak-Moderate Fault>> Zone of broken rock and strong muscovite alteration

<<Struc: 210.21 - 210.36 Moderate-Strong Vein>> Thick sulphide rich vein

210.52 212.73 RHYva Coarse grained to ash tuff medium grey FG

210.52 - 212.73: Chaotically folded banding in an otherwise featureless volcaniclastic rock

<<Min: 211.23 - 212.73 1% Min: Sphalerite>>

<<Min: 211.23 - 212.73 3% Min: Pyrrhotite>>

<<Min: 211.23 - 212.73 0.01% Min: Chalcopyrite>>

<<Alt: 211.01 - 212.73 Weak-Moderate Muscovite>> Patchy replacement of the amenable layers/bands in RHYcw and RHYva

212.73 213.04 RHYva Coarse grained to ash tuff light grey FG

212.73 - 213.04: Strongly silicified unit, textures are destroyed

<<Min: 212.73 - 213.04 3% Min: Sphalerite>> Blebby veins cutting a highly silicified zone

<<Alt: 212.73 - 213.04 Strong Silicification>> Intense, texturally destructive silica alteration.

<<Vein: 212.73 - 213.04 15% Massive Sulphide/Sulphides undifferentiated 45 deg. >> SUL (SP 75%, CP 5%)

<<Struc: 212.73 - 212.73 Weak-Moderate Contact>> Contact between RHYva, and a strongly silicified zone of ???

<<Struc: 212.73 - 213.04 Moderate Vein>> Sphalerite-pyrite-chalcopyrite veins

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

213.04 222.32 MDSt Rhyolite tuff dominant mudstone medium grey FCG

213.04 - 222.32: Well banded sequence of ash tuff/resedimented layers containing diverse clasts including lithic fragments and quartz eyes.

<<Min: 213.04 - 222.32 0.5% Min: Sphalerite>> Associated with chloritic layers

<<Min: 213.04 - 222.32 0.5% Min: Pyrite>>

<<Min: 213.04 - 222.32 0.5% Min: Pyrrhotite>>

<<Min: 213.04 - 222.32 0.01% Min: Chalcopyrite>> Associated with chloritic layers\

<<Alt: 213.04 - 215.76 Weak Chlorite>> Thin bands of chlorite in a weakly carbonaceous mudstone, chlorite bands are associated with sphalerite and chalcopyrite mineralization.

<<Alt: 215.76 - 219.81 Weak-Moderate Muscovite>> Altering non-siliceous domains

<<Alt: 218.83 - 219.81 Weak Chlorite>> Thin bands of chlorite in a weakly carbonaceous mudstone, chlorite bands are associated with sphalerite and chalcopyrite mineralization.

<<Struc: 215.1 - 215.1 Moderate dominant foliation>> Dominant foliation and orientation of chloritic banding

<<Struc: 218.2 - 218.2 Moderate dominant foliation>> Dominant foliation and orientation of chloritic banding

222.32 250.29 RHYva Coarse grained to ash tuff medium grey FG

222.32 - 250.29: A unit of fine grained ashy tuff with rare quartz eye clasts

<<Min: 222.32 - 225.05 0.5% Min: Sphalerite>> Associated with bands and foliation parallel wisps

<<Min: 222.32 - 225.05 0.5% Min: Pyrrhotite>> Foliation parallel wisps

<<Min: 225.05 - 228.06 0.01% Min: Sphalerite>>

<<Min: 225.05 - 228.06 0.5% Min: Pyrite>>

<<Min: 225.05 - 228.06 0.01% Min: Pyrrhotite>>

<<Min: 225.05 - 228.06 0.01% Min: Galena>>

<<Min: 228.06 - 250.29 0.01% Min: Sphalerite>> Finely disseminated in foliation parallel bands

<<Min: 228.08 - 250.29 1% Min: Pyrite>>

<<Alt: 228.06 - 231.18 Moderate Silicification>> Pervasive silica alteration related to the adjacent quartz vein

<<Alt: 228.06 - 235.88 Weak Muscovite>> Uncertain if OR OP. Seems to be associated with weak sphalerite mineralization. Somewhat stronger in fine grained bands (beds?) within the RHYva

<<Alt: 242 - 246.93 Moderate Silicification>> Pervasive silicification related to the local quartz veining

<<Alt: 249.32 - 252.5 Weak Calcite>> Small rare blebs of calcite

<<Vein: 225.05 - 228.06 90% Quartz>> SUL (Py 60%, Po 15%, Sp 10% Gl 15%)

<<Vein: 241.34 - 241.41 100% Quartz-Carbonate>>

<<Vein: 242 - 242.59 5% Pyrite>> SUL (SP 100%)

<<Vein: 242 - 246.93 10% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 232.8 - 232.8 Moderate-Strong Bedding>> Fine grained bands

<<Struc: 239.88 - 239.92 Weak-Moderate Fault>> 100% gouge, smooth walls

<<Struc: 242.1 - 242.1 Weak-Moderate Vein>> Pyrite-sphalerite vein

<<Struc: 247.9 - 247.9 Weak dominant foliation>> Possibly bedding?

250.29 252.50 RHYvl Lapilli tuff grey-green FCG

250.29 - 252.5: Silicified unit (diffuse) of lapilli bearing (0.5-3 cm, siliceous, flattened) tuff with a matrix of alteration muscovite

<<Min: 250.29 - 252.5 0.5% Min: Pyrite>>

<<Alt: 250.29 - 252.5 Weak Muscovite>> Weak muscovite alteration within the non-siliceous domains of the RHYvl

<<Alt: 252.08 - 252.5 Weak Biotite>> Euhedral black flakes of biotite aligned parallel to the dominant foliation plane

<<Vein: 251.14 - 252.5 10% Quartz-Carbonate>>

252.50 253.37 PEL Equigranular biotite + calcite +/- quartz rock brown FG

252.5 - 253.37: Dark brown fine grained unit of pelitic sediment with strong biotite porphyroblast development.

<<Min: 252.5 - 253.37 0.01% Min: Pyrite>>

<<Alt: 252.5 - 253.37 Moderate-Strong Calcite>> Semi-pervasive blebs of calcite, oriented parallel to the dominant foliation

<<Alt: 252.5 - 253.37 Moderate-Strong Biotite>> Pervasive, foliation defining brown shreddy biotite

<<Alt: 252.5 - 255.75 Weak Ankerite>> 1-5mm euhedral diamond shaped porphyroblasts

253.37 255.72 RHYvl Lapilli tuff medium grey FCG

253.37 - 255.72: 1-3 cm white, flattened lapilli in a matrix of fine to medium grained ashy material

<<Min: 253.37 - 255.72 0.01% Min: Pyrite>>

<<Alt: 253.37 - 257.3 Moderate Calcite>> Blebs and rare bands of calcite

<<Alt: 253.37 - 258.06 Weak Chlorite>> Patches of chloritic fine grained ashy/pelitic material, possible of a more intermediate composition?

<<Alt: 253.37 - 259.59 Weak-Moderate Biotite>> Patches of black euhedral biotite, predominantly aligned parallel to the dominant foliation

<<Vein: 255.27 - 255.31 100% Quartz 45 deg. >>

255.72 257.30 PEL Equigranular biotite + calcite +/- quartz rock medium grey FG

255.72 - 257.3: Well banded fine grained pelitic-tuffaceous material, some bands have weak chlorite alteration and black euhedral biotite porphyroblasts

<<Min: 255.72 - 257.3 0.01% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 255.75 - 257.3 Moderate Ankerite>> 1-5mm euhedral diamond shaped porphyroblasts

<<Vein: 255.88 - 255.91 100% Quartz-Carbonate 90 deg. >>

257.30 258.06 RHYvl Lapilli tuff medium grey FCG

257.3 - 258.06: 1-3 cm white, flattened lapilli in a matrix of fine to medium grained ashy material

<<Min: 257.3 - 258.06 0.5% Min: Pyrite>> foliation parallel lenses/blebs and coarse dissemination

<<Alt: 257.3 - 258.06 Trace Ankerite>> 1-5mm euhedral diamond shaped porphyroblasts

258.06 276.12 RHYva Coarse grained to ash tuff medium grey FMG

258.06 - 276.12: Moderately tuffaceous sedimentary unit with layers of varying coarseness. Lithic fragments are common within this unit, and rare lapilli may also be present

<<Min: 258.06 - 262.5 0.5% Min: Pyrite>>

<<Min: 262.5 - 263.5 0.5% Min: Pyrite>>

<<Min: 262.5 - 263.5 0.5% Min: Pyrrhotite>>

<<Min: 263.5 - 276.12 0.5% Min: Pyrrhotite>> foliation parallel wisps

<<Alt: 258.06 - 276.12 Weak Calcite>> rare blebs and hairline veins of calcite

<<Alt: 259.59 - 276.12 Weak Chlorite>> Patches of weak chlorite if a lithic fragment rich, likely resedimented tuffaceous grit.

<<Struc: 258.08 - 258.1 Weak-Moderate Fault>> Smooth chloritic walls, 100% gouge

<<Struc: 259.1 - 259.1 Moderate dominant foliation>> Micaceous parting

<<Struc: 268.1 - 268.2 Weak Fault>> gouge rich fault, semiconsolidated

<<Struc: 270.7 - 270.7 Trace Fault>> Thin, gouge lined fracture

276.12 282.79 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FG

276.12 - 282.79: Siliceous unit with mottled siliceous patched separated by micaceous material.

<<Min: 276.12 - 289.42 0.5% Min: Pyrite>>

<<Min: 276.12 - 289.42 0.5% Min: Pyrrhotite>>

<<Struc: 277.4 - 277.4 Weak dominant foliation>> Micaceous parting plane

282.79 288.25 RHYva Coarse grained to ash tuff medium grey FCG

282.79 - 288.25: Fine tuffaceous material surrounding fragments (10-40cm) of RHYcw and bands of very fine beige material.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

288.25 289.42 RHYcw Curdy textured-flow banded (flows, subvolcanics) medium grey FG

288.25 - 289.42: Small flow or clast of mottled, siliceous rhyolitic material

289.42 295.55 RHYva Coarse grained to ash tuff medium grey FCG

289.42 - 295.55: Unit of fine grained tuffaceous material with rare rounded, white, flattened lapilli

<<Min: 289.42 - 295.55 0.5% Min: Pyrite>> blebs and rare bands of pyrite

<<Alt: 289.42 - 292 Trace Calcite>> Rare fine disseminations of calcite

<<Struc: 290.6 - 290.6 Weak dominant foliation>> Lapilli flattening plane

295.55 299.00 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

295.55 - 299: A unit of fine grained tuffaceous material with 1-3 mm euhedral to subhedral feldspar crystals in bands.

<<Min: 295.55 - 299 1% Min: Pyrite>>

<<Struc: 295.87 - 299 Moderate Fault>> Faulted zone with multiple 5-20 cm faults. Clasts are dominant, making up 70-80% of the zone, the remainder is gouge.

End of Hole @ 299

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-407

Prospect:	GP4F	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	7/30/2016
UTM Easting	419399.91	Core Size:	HQ3	Azimuth:	170.4	Date Logging Complete:	8/1/2016
UTM Northing:	6813390.305	Casing Pulled?:	Yes	Dip:	-54.5	Drill Company:	New Age
UTM Elev. (m):	1365.88	Casing Depth (m):	6	Length (m):	185	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	7/28/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	7/31/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource/Met
Comments:						Parent Hole:	

K16-407 is a twin of K16-388, in order to gain more sample material from the main ore zone and resolve an issue of no core recovery through the zone in K16-388.
K16-407 encountered bedrock at 5.3 m, consisting of intercalated felsic volcanics and pelitic sediments. The quartz-eye bearing marker units occur from 141.3-158 m, and from 169.7-185 m, where they host the mineralized zone. Mineralization occurs from 159.94-169.7 m, consisting of intercalated OJ, strongly altered wallrock, and OL ore types. The alteration halo surrounding mineralization is not very strong, continuous or pervasive.
Core was sampled as whole core metallurgical samples.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-54.5	169	1.4	170.4	TN14	Dillon Hume	7/31/2016		☑	
5	-54.24791	168.84757	1.4	170.24757	Gyro	Dillon Hume	7/31/2016		☑	
10	-54.13892	168.97185	1.4	170.37185	Gyro	Dillon Hume	7/31/2016		☑	
14	-53.8	147.2	22.1	169.3	ReflexEZS	New Age	7/29/2016	5836	☐	
15	-54.00253	169.08056	1.4	170.48056	Gyro	Dillon Hume	7/31/2016		☑	
20	-53.94646	169.11146	1.4	170.51146	Gyro	Dillon Hume	7/31/2016		☑	
25	-53.85727	169.40015	1.4	170.80015	Gyro	Dillon Hume	7/31/2016		☑	
30	-53.80609	169.55218	1.4	170.95218	Gyro	Dillon Hume	7/31/2016		☑	
35	-53.84209	169.81323	1.4	171.21323	Gyro	Dillon Hume	7/31/2016		☑	
40	-53.95151	170.00048	1.4	171.40048	Gyro	Dillon Hume	7/31/2016		☑	
41	-53.7	149.9	22.1	172	ReflexEZS	New Age	7/29/2016	5761	☐	
45	-54.00076	170.18066	1.4	171.58066	Gyro	Dillon Hume	7/31/2016		☑	
50	-53.94649	170.22898	1.4	171.62898	Gyro	Dillon Hume	7/31/2016		☑	
55	-53.88713	170.30698	1.4	171.70698	Gyro	Dillon Hume	7/31/2016		☑	
60	-53.94345	170.45566	1.4	171.85566	Gyro	Dillon Hume	7/31/2016		☑	
65	-53.94248	170.50359	1.4	171.90359	Gyro	Dillon Hume	7/31/2016		☑	
68	-53.9	150	22.1	172.1	ReflexEZS	New Age	7/30/2016	5758	☐	
70	-53.97506	170.59169	1.4	171.99169	Gyro	Dillon Hume	7/31/2016		☑	

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75	-53.82357	170.76285	1.4	172.16285	Gyro	Dillon Hume	7/31/2016		☑	
80	-53.75947	171.01757	1.4	172.41757	Gyro	Dillon Hume	7/31/2016		☑	
85	-53.7003	171.12134	1.4	172.52134	Gyro	Dillon Hume	7/31/2016		☑	
90	-53.76653	171.35141	1.4	172.75141	Gyro	Dillon Hume	7/31/2016		☑	
92	-53.5	150.7	22.1	172.8	ReflexEZS	New Age	7/30/2016	5758	☐	
95	-53.86878	171.48403	1.4	172.88403	Gyro	Dillon Hume	7/31/2016		☑	
100	-53.75392	171.52132	1.4	172.92132	Gyro	Dillon Hume	7/31/2016		☑	
105	-53.63139	171.68454	1.4	173.08454	Gyro	Dillon Hume	7/31/2016		☑	
110	-53.35672	171.85926	1.4	173.25926	Gyro	Dillon Hume	7/31/2016		☑	
115	-53.18147	172.06163	1.4	173.46163	Gyro	Dillon Hume	7/31/2016		☑	
119	-53.1	151.8	22.1	173.9	ReflexEZS	New Age	7/30/2016	5760	☐	
120	-53.16349	172.3375	1.4	173.7375	Gyro	Dillon Hume	7/31/2016		☑	
125	-53.12723	172.56456	1.4	173.96456	Gyro	Dillon Hume	7/31/2016		☑	
130	-52.89816	172.80609	1.4	174.20609	Gyro	Dillon Hume	7/31/2016		☑	
135	-52.57767	172.98763	1.4	174.38763	Gyro	Dillon Hume	7/31/2016		☑	
140	-52.45139	173.12068	1.4	174.52068	Gyro	Dillon Hume	7/31/2016		☑	
145	-52.37224	173.29425	1.4	174.69425	Gyro	Dillon Hume	7/31/2016		☑	
149	-52.8	152.5	22.1	174.6	ReflexEZS	New Age	7/31/2016	5772	☐	
150	-52.37077	173.37641	1.4	174.77641	Gyro	Dillon Hume	7/31/2016		☑	
155	-52.3262	173.73684	1.4	175.13684	Gyro	Dillon Hume	7/31/2016		☑	
160	-52.30188	174.12987	1.4	175.52987	Gyro	Dillon Hume	7/31/2016		☑	
165	-52.33243	174.30249	1.4	175.70249	Gyro	Dillon Hume	7/31/2016		☑	
170	-52.46567	174.51363	1.4	175.91363	Gyro	Dillon Hume	7/31/2016		☑	
176	-52.3	153.8	22.1	175.9	ReflexEZS	New Age	7/31/2016	5788	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**5.30**	**OVBN** **Overburden**									
5.30	**5.50**	**RHYv** **Rhyolite volcaniclastic**									

5.3 - 5.5: Siliceous mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?)

<<Min: 5.3 - 84.29 0.01% Min: Pyrrhotite>>

<<Alt: 5.3 - 5.5 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

5.50 6.40 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 5.5 - 6.4 Moderate Calcite>>

6.40 15.65 RHYv Rhyolite volcaniclastic

6.4 - 15.65: Siliceous, mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?). Weak foliation with local elongated blebs.

<<Alt: 6.4 - 30 Weak Calcite>>

<<Vein: 6.5 - 18.15 5% Quartz 65 deg. >> 2-4 2-10 cm wide QZ-veins per metre. Massive internal texture.

15.65 17.97 RHYi Aphanitic Rhyolite (intrusion)

15.65 - 17.97: Aphanitic massive rhyolite which appears to intrude the siliceous RHYv above and below.

17.97 30.00 RHYv Rhyolite volcaniclastic

17.97 - 30: Siliceous, mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?). Weak foliation with local elongated blebs.

<<Vein: 28.63 - 28.69 50% Quartz-Carbonate 65 deg. >> 2 ~1 cm wide QZ-veins

<<Struc: 25.5 - 25.6 Weak Fault>>

<<Struc: 29.7 - 29.8 Trace Fault>>

30.00 31.32 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 30 - 31.32 Moderate Calcite>>

31.32 39.62 RHYv Rhyolite volcaniclastic

31.32 - 39.62: Siliceous, mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?). Weak foliation with local elongated blebs.

<<Alt: 31.32 - 39.62 Weak Calcite>>

39.62 40.24 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 39.62 - 40.24 Moderate Calcite>>

40.24 52.54 RHYv Rhyolite volcaniclastic

40.24 - 52.54: Siliceous mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?). Siliceous ash tuff?

<<Alt: 40.24 - 52.54 Weak-Moderate Calcite>>

<<Struc: 40.24 - 40.37 Weak Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

52.54 55.40 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 52.54 - 58 Moderate Calcite>>

<<Struc: 53.75 - 53.8 Weak Fault>>

<<Struc: 54.1 - 54.3 Weak Fault>>

55.40 56.55 RHYva Coarse grained to ash tuff

55.4 - 56.55: Fine grained, light grey, weak-moderately laminated, ash tuff.

56.55 58.00 PEL Equigranular biotite + calcite +/- quartz rock

56.55 - 58: BI-CA laminated/banded meta-pelite

58.00 76.37 RHYi Aphanitic Rhyolite (intrusion)

58 - 76.37: Light grey, massive siliceous rhyolite, with local blebby to brecciated textures. Breccia shows earthy massive clay-silica clasts in vitreous massive silica groundmass. Lower contact displays alteration/gradational contact of the PEL.

<<Alt: 58 - 76.37 Weak Calcite>>

<<Vein: 70.55 - 72.2 30% Quartz-Carbonate 75 deg. >> Zone with massive QZ-veining

<<Struc: 58.77 - 58.78 Weak dominant foliation>>

<<Struc: 70.28 - 70.29 Trace dominant foliation>>

76.37 76.76 PEL Equigranular biotite + calcite +/- quartz rock

76.37 - 76.76: Clay-altered upper contact with RHYi

<<Alt: 76.37 - 76.76 Moderate Calcite>>

76.76 78.62 RHYc Rhyolite coherant volcanics

76.76 - 78.62: silicic banded rhyolite. Appears to grade into RHYv downward. Fining downward?

<<Alt: 76.76 - 81.66 Weak Calcite>>

78.62 81.66 RHYv Rhyolite volcaniclastic

78.62 - 81.66: Siliceous mottled silica blebs in light to medium grey groundmass. Almost appears to be a QZ-rich sandstone (?). Fines into pelite downward. Fining downward?

<<Struc: 79.59 - 79.6 Trace dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

81.66 84.29 PEL Equigranular biotite + calcite +/- quartz rock

81.66 - 84.29: BI-CA laminated meta-pelite

<<Alt: 81.66 - 84.29 Moderate Calcite>>

<<Struc: 82 - 82.4 Weak Fault>>

84.29 98.13 RHYvl Lapilli tuff

84.29 - 98.13: 'Dirty' with BI and siliceous lpl and BI-ash groundmass. Rare Qz-eyes. Gouge-rubble fault from ~89-96 m.

<<Min: 84.29 - 101.25 0.5% Min: Pyrite>>

<<Alt: 84.29 - 98.13 Weak Calcite>>

<<Struc: 85 - 85.05 Weak Fault>>

<<Struc: 89 - 96 Moderate Fault>>

98.13 99.60 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 98.13 - 99.6 Moderate Calcite>>

<<Struc: 98.5 - 98.6 Weak Fault>>

99.60 101.25 RHYvl Lapilli tuff

99.6 - 101.25: 'Dirty' lpl tuff with siliceous lpl and BI-ash groundmass.

<<Alt: 99.6 - 101.25 Weak Calcite>>

<<Vein: 100.5 - 100.7 80% Quartz-Carbonate>> Irregular to patchy QZ-carbonate vein

101.25 104.09 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

101.25 - 104.09: Green-black, BI-porphyroblastic, CL-BI-CA schist. CA occurs as patchy disseminated zones and cross-cutting CA-veinlets. BI occurs as black coarse grained porphyroblasts and brown fine grained groundmass. CL occurs as groundmass. Minor disseminated euhedral PY.

<<Min: 101.25 - 104.09 2% Min: Pyrite>>

<<Alt: 101.25 - 104.09 Moderate Chlorite>> OR or OP??

<<Alt: 101.25 - 104.09 Moderate-Strong Calcite>>

<<Alt: 101.25 - 104.09 Moderate-Strong Biotite>> OR or OP??

<<Vein: 101.25 - 104.09 2% Calcite 20 deg. >> Minor calcareous veins cross-cutting foliation

<<Struc: 102.3 - 102.31 Weak-Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

104.09 113.50 RHYvl Lapilli tuff

104.09 - 113.5: siliceous lpl in fine grained light grey ash matrix.

<<Min: 104.09 - 122.22 0.5% Min: Pyrite>>

<<Min: 104.09 - 122.22 0.5% Min: Pyrrhotite>>

<<Alt: 104.09 - 113.5 Weak Calcite>>

<<Struc: 106.59 - 106.6 Trace dominant foliation>>

113.50 113.70 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 113.5 - 117.33 Moderate Calcite>>

113.70 114.30 RHYc Rhyolite coherant volcanics

113.7 - 114.3: Siliceous banded/massive rhyolite

114.30 117.33 PEL Equigranular biotite + calcite +/- quartz rock

114.3 - 117.33: BI-CA laminated meta-pelite

<<Struc: 116.05 - 116.06 Moderate dominant foliation>>

117.33 120.41 RHYva Coarse grained to ash tuff

117.33 - 120.41: 'Dirty' ash tuff with mixed ash and BI groundmass.

<<Alt: 117.33 - 120.41 Weak-Moderate Calcite>>

<<Struc: 117.35 - 117.85 Weak Fault>>

<<Struc: 119.4 - 119.6 Weak Fault>>

120.41 122.22 PEL Equigranular biotite + calcite +/- quartz rock

120.41 - 122.22: BI-CA laminated meta-pelite

<<Alt: 120.41 - 122.22 Moderate Calcite>>

<<Struc: 121.83 - 121.84 Moderate dominant foliation>>

122.22 125.35 RHYvl Lapilli tuff

122.22 - 125.35: 'Dirty' lpl tuff, with mixed BI and siliceous lpl in fine grained ash and BI matrix.

<<Min: 122.22 - 125.35 2% Min: Pyrrhotite>>

<<Alt: 122.22 - 132.61 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

125.35 132.61 RHYvl Lapilli tuff

125.35 - 132.61: Weak-moderate MU-altered siliceous lpl tuff.

<<Min: 125.35 - 140.3 2% Min: Pyrite>>

<<Alt: 125.35 - 132.61 Weak-Moderate Muscovite>>

<<Struc: 126 - 126.6 Weak-Moderate Fault>>

132.61 133.00 SEDc calcareous Sediment

132.61 - 133: Fine grained, medium green, TML+/-GA phyric, pelite?? Matrix is CL-MU.

<<Alt: 132.61 - 133 Moderate Tourmaline>>

<<Alt: 132.61 - 133 Weak-Moderate Muscovite>>

<<Alt: 132.61 - 133 Weak Garnet>>

<<Alt: 132.61 - 133 Weak Chlorite>>

<<Alt: 132.61 - 133 Moderate Calcite>>

133.00 140.80 RHYv Rhyolite volcaniclastic

133 - 140.8: Weak-moderate MU-altered siliceous tuff.

<<Min: 140.3 - 141.3 0.1% Min: Pyrite>>

<<Alt: 133 - 140.8 Weak-Moderate Muscovite>>

<<Alt: 133 - 140.8 Weak Calcite>>

<<Struc: 135.6 - 137 Moderate-Strong Fault>>

<<Struc: 137 - 140 Weak Fault>>

140.80 141.30 PEL Equigranular biotite + calcite +/- quartz rock

140.8 - 141.3: Laminated/banded BI-CA schist

<<Alt: 140.8 - 141.3 Moderate Calcite>>

<<Alt: 140.8 - 158.12 Trace Muscovite>> Very weak alteration throughout zone between upper alteration and mineralized zone.

141.30 149.87 RHYvx Quartz and/or feldspar crystal tuff

141.3 - 149.87: 'Dirty' crystal tuff, with abundant mgr QZ-eyes and/or siliceous lpl with mixed felsic ash (MU) and pelitic (BI) groundmass. Heterogeneous with local zones being dominated by felsic volcanics or pelitic sediment.

<<Min: 141.3 - 158.12 0.5% Min: Sphalerite>>

<<Min: 141.3 - 158.12 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 141.3 - 158.12 0.01% Min: Chalcopyrite>>

<<Alt: 141.3 - 149.87 Weak-Moderate Calcite>>

<<Vein: 148.8 - 148.9 100% Quartz>> Massive QZ-vein with blebby CL+CA+/-PY

<<Struc: 141.3 - 141.5 Moderate-Strong Fault>>

<<Struc: 141.77 - 141.78 Moderate dominant foliation>>

<<Struc: 149.55 - 149.65 Weak Fault>>

149.87 150.93 PEL Equigranular biotite + calcite +/- quartz rock

149.87 - 150.93: Mixed ashy and pelitic . Banded MU-QZ and BI-CA schist.

<<Alt: 149.87 - 150.93 Moderate Calcite>>

150.93 154.50 RHYvx Quartz and/or feldspar crystal tuff

150.93 - 154.5: QZ-eye bearing 'dirty' crystal tuff with mixed BI+MU+QZ groundmass.

<<Alt: 150.93 - 154.5 Weak-Moderate Calcite>>

<<Vein: 153.4 - 153.5 100% Quartz-Carbonate>> Massive QZ-carbonate vein

<<Struc: 154.17 - 154.18 Moderate dominant foliation>>

154.50 155.00 PEL Equigranular biotite + calcite +/- quartz rock

154.5 - 155: Laminated/banded BI-CA schist.

<<Alt: 154.5 - 155 Moderate Calcite>>

155.00 158.00 RHYvx Quartz and/or feldspar crystal tuff

155 - 158: QZ-eye bearing 'dirty' crystal tuff with mixed BI+MU+QZ groundmass.

<<Alt: 155 - 158 Weak-Moderate Calcite>>

<<Struc: 156 - 156.16 Weak-Moderate Fault>>

158.00 158.94 PEL Equigranular biotite + calcite +/- quartz rock

158 - 158.94: Partially MU-altered with laminations replaced by SP+/-GL.

<<Min: 158.12 - 158.94 5% Min: Sphalerite>>

<<Min: 158.12 - 158.94 1% Min: Galena>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 158 - 160 Weak-Moderate Calcite>>

<<Alt: 158.12 - 158.94 Weak-Moderate Muscovite>>

158.94 161.68 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

158.94 - 161.68: Heavily disseminated SP+PO+PY+/-GL in strong CL-BI+/-disseminated GA alteration zone. Lower portion of the zone is moderately faulted with gouge and CA-cemented breccia.

<<Min: 158.94 - 161.68 5% Min: Sphalerite>>

<<Min: 158.94 - 161.68 2% Min: Pyrite>>

<<Min: 158.94 - 161.68 2% Min: Pyrrhotite>>

<<Min: 158.94 - 161.68 0.5% Min: Galena>>

<<Alt: 158.94 - 161.68 Weak Garnet>>

<<Alt: 158.94 - 161.68 Moderate-Strong Chlorite>>

<<Alt: 158.94 - 161.68 Moderate-Strong Biotite>>

<<Alt: 160 - 161.68 Moderate-Strong Calcite>>

<<Vein: 160.9 - 161.7 10% Calcite>> Calcite cemented breccia

<<Struc: 160 - 162.8 Moderate Fault>>

161.68 163.54 RHY **undifferentiated rhyolite**

161.68 - 163.54: Strongly MU-CL-BI+/-disseminated GA altered rhyolite (?) original texture is obscured by alteration. Minor disseminated PY+PO+SP+/-CP. Moderate gouge fault zone at upper contact.

<<Min: 161.68 - 163.54 2% Min: Sphalerite>>

<<Min: 161.68 - 163.54 1% Min: Pyrite>>

<<Min: 161.68 - 163.54 2% Min: Pyrrhotite>>

<<Min: 161.68 - 163.54 0.5% Min: Chalcopyrite>>

<<Alt: 161.68 - 163.54 Weak-Moderate Garnet>>

<<Alt: 161.68 - 163.54 Moderate Chlorite>>

<<Alt: 161.68 - 163.54 Moderate Biotite>>

<<Alt: 161.68 - 168.25 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

163.54 165.96 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

163.54 - 165.96: Heavily disseminated to semi-massive PO+SP with minor disseminated CP+/-GL. Locally blebby siliceous wallrock exists. Could potentially be logged as OC?

<<Min: 163.54 - 165.96 10% Min: Sphalerite>>

<<Min: 163.54 - 165.96 15% Min: Pyrrhotite>>

<<Min: 163.54 - 165.96 2% Min: Galena>>

<<Min: 163.54 - 165.96 2% Min: Chalcopyrite>>

<<Alt: 163.54 - 164 Moderate Chlorite>>

<<Alt: 164 - 164.85 Strong Silicification>>

<<Alt: 164.85 - 165.96 Moderate-Strong Chlorite>>

<<Struc: 164.85 - 165.8 Moderate Fault>>

165.96 166.52 OL **semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**

165.96 - 166.52: Buckshot PY in massive PO+SP matrix.

<<Min: 165.96 - 166.52 25% Min: Sphalerite>>

<<Min: 165.96 - 166.52 15% Min: Pyrite>>

<<Min: 165.96 - 166.52 30% Min: Pyrrhotite>>

<<Min: 165.96 - 166.52 2% Min: Galena>>

166.52 166.99 OJ **Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock**

166.52 - 166.99: Banded to semi-massive SP+PO with disseminated CP in pervasive CL-SI alteration.

<<Min: 166.52 - 166.99 10% Min: Sphalerite>>

<<Min: 166.52 - 166.99 10% Min: Pyrrhotite>>

<<Min: 166.52 - 166.99 3% Min: Chalcopyrite>>

<<Alt: 166.52 - 166.99 Moderate Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 166.52 - 166.99 Weak Garnet>>

<<Alt: 166.52 - 166.99 Moderate Chlorite>>

166.99 167.80 PEL Equigranular biotite + calcite +/- quartz rock

166.99 - 167.8: Moderate MU-BI altered laminated pelite.

<<Min: 166.99 - 167.8 2% Min: Sphalerite>>

<<Min: 166.99 - 167.8 3% Min: Pyrite>>

<<Alt: 166.99 - 167.8 Weak-Moderate Muscovite>>

<<Alt: 166.99 - 167.8 Moderate Biotite>>

<<Struc: 167.35 - 167.8 Weak Fault>>

167.80 168.45 OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock

167.8 - 168.45: Semi-massive SP+PO+PY+GL. Lower portion of the unit is brecciated with CA-cement.

<<Min: 167.8 - 168.45 10% Min: Sphalerite>>

<<Min: 167.8 - 168.45 3% Min: Pyrite>>

<<Min: 167.8 - 168.45 10% Min: Pyrrhotite>>

<<Min: 167.8 - 168.45 2% Min: Galena>>

<<Alt: 167.8 - 168.45 Strong Muscovite>>

<<Alt: 168.25 - 168.45 Moderate-Strong Calcite>>

<<Vein: 168.3 - 168.45 15% Calcite>> Calcite cemented breccia

<<Struc: 168 - 168.7 Moderate Fault>>

168.45 169.03 RHY undifferentiated rhyolite

168.45 - 169.03: Strong MU-altered rhyolite. Locally faulted. Lower ~10 cm of unit is a BI pelite with ptygmatic CA vein.

<<Min: 168.45 - 169.03 1% Min: Pyrite>>

<<Alt: 168.45 - 168.9 Trace Calcite>>

<<Alt: 168.45 - 169.03 Strong Muscovite>>

<<Alt: 168.9 - 169.7 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

169.03 169.70 OL **semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**

169.03 - 169.7: Disseminated fgr PY in massive PO+SP+CA matrix. Local sub-rounded silicified wallrock clasts hosted in sulfide matrix (matrix-supported).

<<Min: 169.03 - 169.7 10% Min: Sphalerite>>

<<Min: 169.03 - 169.7 25% Min: Pyrite>>

<<Min: 169.03 - 169.7 15% Min: Pyrrhotite>>

<<Alt: 169.03 - 169.7 Strong Muscovite>>

<<Struc: 169.05 - 169.35 Weak-Moderate Fault>>

169.70 171.05 RHYvx **Quartz and/or feldspar crystal tuff**

169.7 - 171.05: QZ-eye crystal tuff with minor pelitic material in groundmass.

<<Min: 169.7 - 171.05 2% Min: Sphalerite>>

<<Min: 169.7 - 171.05 3% Min: Pyrrhotite>>

<<Min: 169.7 - 171.05 0.5% Min: Galena>>

<<Alt: 169.7 - 171.05 Weak-Moderate Calcite>>

<<Alt: 169.7 - 174.05 Weak-Moderate Muscovite>>

<<Struc: 169.7 - 170 Weak-Moderate Fault>>

171.05 172.25 PEL **Equigranular biotite + calcite +/- quartz rock**

171.05 - 172.25: Laminated/banded BI-CA pelite.

<<Min: 171.05 - 174.34 0.5% Min: Pyrrhotite>>

<<Alt: 171.05 - 172.25 Moderate Calcite>>

172.25 173.71 RHYvx **Quartz and/or feldspar crystal tuff**

172.25 - 173.71: Mixed pelitic, ash tuff, and crystal tuff. Has a blebby/mottled texture with silicified blebs with BI rims in a BI-MU matrix.

<<Alt: 172.25 - 173.71 Moderate Silicification>>

<<Alt: 172.25 - 173.71 Trace Calcite>>

<<Struc: 172.93 - 172.94 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

173.71 174.34 PEL Equigranular biotite + calcite +/- quartz rock

173.71 - 174.34: Laminated/banded BI-CA pelite

<<Alt: 173.71 - 174.34 Moderate Calcite>>

<<Alt: 174.05 - 185 Weak Muscovite>>

174.34 176.24 RHYvx Quartz and/or feldspar crystal tuff

174.34 - 176.24: Mgr QZ and cgr FD phyric crystal tuff with sericitic/muscovite spaced foliation.

<<Min: 174.34 - 176.24 0.5% Min: Sphalerite>>

<<Min: 174.34 - 176.24 1% Min: Pyrite>>

<<Alt: 174.34 - 176.24 Weak Calcite>>

176.24 176.93 PEL Equigranular biotite + calcite +/- quartz rock

176.24 - 176.93: Mixed pelitic and felsic volcanic material. Dominated by pelite (laminated BI-CA). Local patches of QZ-eyes.

<<Min: 176.24 - 176.93 0.1% Min: Pyrite>>

<<Alt: 176.24 - 176.93 Moderate Calcite>>

176.93 185.00 RHYvx Quartz and/or feldspar crystal tuff

176.93 - 185: Mgr QZ and cgr FD phyric crystal tuff with sericitic/muscovite spaced foliation. Local zones with increased BI content (sedimentary input?). Locally siliceous. May also be logged as RHYcf?

<<Min: 176.93 - 185 2% Min: Sphalerite>>

<<Min: 176.93 - 185 2% Min: Pyrite>>

<<Min: 176.93 - 185 0.5% Min: Galena>>

<<Alt: 176.93 - 185 Trace Calcite>>

<<Vein: 176.93 - 178 2% Quartz>> Minor wavy to irregular QZ-veins

<<Struc: 182.22 - 182.23 Weak-Moderate dominant foliation>>

End of Hole @ 185

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-408

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Dillon Hume	Date Logging Start:	8/4/2016
UTM Easting	415424	Core Size:	HQ3	Azimuth:	228	Date Logging Complete:	8/17/2016
UTM Northing:	6815263	Casing Pulled?:	No	Dip:	-67	Drill Company:	New Age
UTM Elev. (m):	1548	Casing Depth (m):	7.5	Length (m):	491	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/2/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/17/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
						Parent Hole:	

Comments:

K16-408 was drilled as an exploration hole to test the Sebesi target on the East side (footwall) of the Fault Creek/Sunda Fault. The downhole EM survey was not completed due to rods becoming stuck in the Fault Creek Fault. The HQ3 rods became stuck at 365 m, at which point the hole was reduced to NQ3. The NQ3 string became stuck at 491 m.
K16-408 intersected intercalated mafic tuffs and carbonaceos mudstones of the Wind Lake Formation from 7.2-182.2 m. The Kudz Ze Kayah formation has a conformable interfingered contact with the overlying Wind Lake Formation. Intercalated felsic volcanic and pelitic sedimentary rocks of the Kudz Ze Kayah formation occur from 182.2-333.85 m. A strongly faulted zone (Fault Creek Fault?) occurs from 333.85-397.68 m which includes a predominantely gouge supported fault breccia and some large coherent blocks consisting of MAFi, and altered RHY. Below the fault zone, from 397.68-491 m (EOH), the hole intersected strongly muscovite altered rhyolite.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-67	226.6	1.4	228	TN14	Dillon Hume	8/2/2016		☑	
20	-68.4	207.3	22.1	229.4	ReflexEZS	New Age	8/3/2016	5774	☑	
44	-68.9	209.3	22.1	231.4	ReflexEZS	New Age	8/3/2016	5771	☑	
71	-69.1	206.1	22.1	228.2	ReflexEZS	New Age	8/4/2016	5763	☑	
95	-69.2	207.4	22.1	229.5	ReflexEZS	New Age	8/4/2016	5747	☑	
122	-69.7	206.2	22.1	228.3	ReflexEZS	New Age	8/4/2016	5747	☑	
149	-69.8	205.1	22.1	227.2	ReflexEZS	New Age	8/5/2016	5741	☑	
176	-69.9	204	22.1	226.1	ReflexEZS	New Age	8/5/2016	5747	☑	
203	-70.4	202.1	22.1	224.2	ReflexEZS	New Age	8/5/2016	5756	☑	
230	-70	200.8	22.1	222.9	ReflexEZS	New Age	8/6/2016	5744	☑	
257	-70	203	22.1	225.1	ReflexEZS	New Age	8/6/2016	5752	☑	
284	-70	196.9	22.1	219	ReflexEZS	New Age	8/6/2016	5827	☑	
311	-70.3	204.2	22.1	226.3	ReflexEZS	New Age	8/6/2016	5741	☑	
338	-70.4	205.4	22.1	227.5	ReflexEZS	New Age	8/7/2016	5766	☑	
437	-68.5	202.1	22.1	224.2	ReflexEZS	New Age	8/11/2016	6421	☑	No surveys between 338-437 m or below 437 m due to very faulted ground and possibility of rods becoming stuck.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 7.20 OVBN Overburden

7.20 9.24 RHY undifferentiated rhyolite

7.2 - 9.24: Light grey, massive siliceous unit, with large massive quartz vein.

<<Min: 7.2 - 55.45 0.01% Min: Pyrite>>

<<Alt: 7.2 - 9.24 Trace Calcite>>

<<Vein: 7.3 - 9.24 60% Quartz>> Zone with massive QZ-veins and silicification

9.24 11.53 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

9.24 - 11.53: Carbonaceous mudstone

<<Alt: 9.24 - 11.53 Weak-Moderate Calcite>>

11.53 18.35 MAFt Mafic Volcaniclastics

11.53 - 18.35: Medium green and white, calcareous banded mafic with chloritic groundmass and disseminated Bl porphyroblasts. Calcareous bands are patchy and not always through going.

<<Alt: 11.53 - 18.35 Moderate-Strong Calcite>>

18.35 21.98 MAFta Coarse grained to ash tuff

18.35 - 21.98: Fine grained, mixed chloritic and carbonaceous mudstone/mafic tuff.

<<Alt: 18.35 - 26.3 Trace Calcite>>

<<Struc: 21.32 - 21.4 Weak-Moderate Fault>>

21.98 26.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

21.98 - 26.3: Fine grained, mixed carbonaceous and chloritic mudstone/mafic tuff.

26.30 27.55 MAFta Coarse grained to ash tuff

26.3 - 27.55: Bl porphyroblasts in fine grained chloritic groundmass.

<<Alt: 26.3 - 27.55 Moderate Calcite>>

27.55 28.44 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

27.55 - 28.44: Fine grained, mixed carbonaceous and chloritic mudstone/mafic tuff.

<<Alt: 27.55 - 28.44 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

28.44 31.34 MAFt Mafic Volcaniclastics

28.44 - 31.34: Medium green and white, calcareous banded mafic with chloritic groundmass and disseminated BI porphyroblasts. Calcareous bands are patchy and not always through going.

<<Alt: 28.44 - 31.34 Moderate-Strong Calcite>>

<<Struc: 30.1 - 30.9 Weak Fault>>

31.34 34.86 MAFt Mafic Volcaniclastics

31.34 - 34.86: Medium green and white, mafic with chloritic groundmass and ~20% disseminated BI porphyroblasts.

<<Alt: 31.34 - 34.86 Moderate Calcite>>

34.86 40.93 MAFt Mafic Volcaniclastics

34.86 - 40.93: Medium green and white, calcareous banded mafic with chloritic groundmass and disseminated BI porphyroblasts. Calcareous bands are patchy and not always through going.

<<Alt: 34.86 - 40.93 Moderate-Strong Calcite>>

40.93 45.26 MAFta Coarse grained to ash tuff

40.93 - 45.26: Fine grained, mixed chloritic and carbonaceous mudstone/mafic tuff.

<<Alt: 40.93 - 54.57 Weak-Moderate Calcite>>

<<Struc: 44.7 - 45 Trace Fault>>

45.26 54.57 MAFt Mafic Volcaniclastics

45.26 - 54.57: Medium green and white, mafic with chloritic groundmass and ~20% disseminated BI porphyroblasts.

<<Vein: 45.38 - 48.25 3% Quartz-Carbonate>> Minor QZ-carbonate veins, locally ptigmatic

54.57 59.37 MAFt Mafic Volcaniclastics

54.57 - 59.37: Medium green and white, calcareous banded mafic with chloritic groundmass and disseminated BI porphyroblasts. Calcareous bands are patchy and not always through going. Local zones of strong albite (?) alteration associated with qz-veining and pyritic stingers.

<<Min: 55.45 - 56.65 3% Min: Pyrite>>

<<Min: 56.65 - 57.92 0.01% Min: Pyrite>>

<<Min: 57.92 - 58.85 3% Min: Pyrite>>

<<Min: 58.85 - 74.9 0.1% Min: Pyrrhotite>>

<<Alt: 54.57 - 55.45 Moderate Calcite>>

<<Alt: 55.45 - 56.65 Weak Calcite>>

<<Alt: 55.45 - 56.65 Strong Albite>> Pervasive albite (?) alteration with disseminated BI +/-PY, QZ-carbonate veins and pyritic stringers.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 56.65 - 57.92 Moderate Calcite>>

<<Alt: 57.92 - 58.85 Weak Calcite>>

<<Alt: 57.92 - 58.85 Strong Albite>> Pervasive albite (?) alteration with disseminated BI +/-PY, QZ-carbonate veins and pyritic stringers.

<<Alt: 58.85 - 59.37 Moderate Calcite>>

<<Vein: 55.45 - 55.65 10% Quartz-Carbonate 20 deg. >> Zone with QZ-carbonate veining, pyritic stringers, and pervasive albite alteration.

<<Vein: 55.45 - 56.65 3% Pyrite>> Zone with QZ-carbonate veining, pyritic stringers, and pervasive albite alteration.

<<Vein: 57.92 - 58.85 3% Quartz-Carbonate 40 deg. >> Zone with QZ-carbonate veining, pyritic stringers, and pervasive albite alteration.

<<Vein: 57.92 - 58.85 3% Pyrite>> Zone with QZ-carbonate veining, pyritic stringers, and pervasive albite alteration.

59.37 73.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

59.37 - 73.88: Mixed mafic tuff and mudstone. Local conglomerate (?) texture at 65 m, which appears as elongated calcereous blebs in a chloritic grondmass.

<<Alt: 59.37 - 73.88 Weak-Moderate Calcite>>

<<Struc: 70.5 - 72 Moderate Fault>>

73.88 74.90 FLZ Fault Zone

73.88 - 74.9: Gouge supported fault breccia with MDS and QZ-carbonate clasts.

<<Alt: 73.88 - 74.9 Weak-Moderate Calcite>>

<<Struc: 73.88 - 74.9 Strong Fault>>

74.90 82.10 MAFt Mafic Volcaniclastics

74.9 - 82.1: Medium grey-green, CL-BI-CA schist. Dominated by massive CL with disseminated BI porphyroblasts and local patchy to banded CA.

<<Min: 74.9 - 85.3 0.5% Min: Pyrite>>

<<Alt: 74.9 - 130.22 Moderate Calcite>>

<<Vein: 75.25 - 78.35 3% Quartz-Carbonate>> Minor blebby QZ-carbonate veins

82.10 85.30 RHYvl Lapilli tuff

82.1 - 85.3: Calcareous lpl in fine grained felsic groundmass. Local ~RHYc textures exist.

85.30 102.05 MAFt Mafic Volcaniclastics

85.3 - 102.05: Medium grey-green, CL-BI-CA schist. Dominated by massive CL with disseminated BI porphyroblasts and local patchy to banded CA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 85.3 - 102.05 0.5% Min: Pyrrhotite>>

<<Struc: 101.9 - 102 Weak Fault>>

102.05 130.22 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

102.05 - 130.22: Carbonaceos mudstone with well developed crenulation cleavage. Local breccia zones/faults.

<<Min: 102.05 - 130.22 0.1% Min: Pyrite>>

<<Min: 104.8 - 105 0.5% Min: Galena>>

<<Struc: 112.3 - 112.5 Weak Fault>>

<<Struc: 114.8 - 117.6 Moderate Fault>> Rubble zone with two ~50 cm wide intervals of partially healed clast-supported gouge breccia

<<Struc: 120.8 - 121.35 Weak-Moderate Fault>>

<<Struc: 125.09 - 125.1 Weak-Moderate dominant foliation>>

<<Struc: 125.9 - 126.3 Moderate Fault>> Partially healed clast-supported breccia

130.22 139.53 MAFt Mafic Volcaniclastics

130.22 - 139.53: Light green, massive CL-CA mafic with blebby CA+/-SI+/-AK.

<<Min: 130.22 - 171.68 0.5% Min: Pyrrhotite>>

<<Alt: 130.22 - 171.68 Moderate Calcite>>

<<Struc: 133.1 - 133.2 Weak Fault>>

<<Struc: 139.4 - 139.5 Weak Fault>>

139.53 154.80 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

139.53 - 154.8: Carbonaceos mudstone with minor intercalated mafic tuff. Sharp lower contact.

<<Vein: 146.46 - 146.7 80% Quartz-Carbonate>> Patchy mottled QZ-carbonate vein

<<Struc: 146.6 - 146.75 Moderate Fault>>

154.80 163.00 MAFt Mafic Volcaniclastics

154.8 - 163: Light green, massive CL-CA mafic with blebby to wavy CA.

<<Vein: 162.55 - 163.1 100% Quartz-Carbonate>> Massive QZ+/-carbonate vein

<<Struc: 157 - 157.01 Weak dominant foliation>>

<<Struc: 158 - 158.6 Weak Fault>>

<<Struc: 160.75 - 160.76 Weak dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

163.00 170.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

163 - 170: Carbonaceos mudstone with minor intercalated mafic tuff.

<<Vein: 167.4 - 167.55 100% Quartz-Carbonate>> Massive QZ-carbonate vein

<<Struc: 167.35 - 168.7 Moderate Fault>>

<<Struc: 168.7 - 169.5 Weak Fault>>

170.00 171.68 MAFt Mafic Volcaniclastics

170 - 171.68: Light green, massive CL-CA mafic with blebby to wavy CA.

171.68 175.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

171.68 - 175.4: Carbonaceos mudstone with minor intercalated chert.

<<Min: 171.68 - 217.05 0.5% Min: Pyrite>>

<<Alt: 171.68 - 175.4 Trace Calcite>>

<<Vein: 172.1 - 172.5 95% Quartz-Carbonate>> Massive QZ-carbonate vein with minor wallrock fragments.

175.40 179.57 MAFt Mafic Volcaniclastics

175.4 - 179.57: Light green-grey, massive CL-MU-CA intermediate tuff with blebby to wavy CA.

<<Alt: 175.4 - 182.2 Weak-Moderate Calcite>>

179.57 182.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

179.57 - 182.2: Intercalated MU-CL schist (MAFt) and carbonaceous mudstone. At contact with KZK Group.

<<Struc: 181.2 - 182.15 Weak-Moderate Fault>>

182.20 185.00 MDSt Rhyolite tuff dominant mudstone

182.2 - 185: QZ-eyes and felsic lpl with a carbonaceous and ashy matrix. Similar to unit seen at Wind Lake-KZK contact elsewhere.

<<Alt: 182.2 - 200.68 Weak Calcite>>

<<Vein: 182.5 - 182.75 100% Quartz-Carbonate>> Massive QZ-carbonate vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

185.00 187.17 MDSc Carbonaceous dominant mudstone

185 - 187.17: Carbonaceous mudstone with minor felsic volcaniclastic material and QZ-eyes.

<<Struc: 185.9 - 187 Moderate Fault>>

187.17 188.00 RHYvx Quartz and/or feldspar crystal tuff

187.17 - 188: QZ-eyes and felsic lpl with a carbonaceous and ashy matrix. Similar to unit seen at Wind Lake-KZK contact elsewhere.

188.00 197.00 RHYv Rhyolite volcaniclastic

188 - 197: Fine grained QZ-MU schist with local BCQlpl and weak MU-alteration

<<Alt: 193.2 - 197 Weak Muscovite>> Weak yellowish sericite/muscovite alteration.

<<Vein: 188 - 216.65 15% Quartz-Tourmaline>> Large zone with massive to veinlets of QZ-TML-carbonate. Mostly at a high angle to foliation (cross-cutting). As well there are 5-10 cm wide cremy veins of QZ-carbonate.

197.00 200.68 RHYvl Lapilli tuff

197 - 200.68: Cream-coloured felsic lpl in a light grey ashy matrix.

<<Struc: 197.31 - 197.32 Moderate dominant foliation>>

<<Struc: 198.75 - 198.85 Weak Fault>>

200.68 201.52 PEL Equigranular biotite + calcite +/- quartz rock

200.68 - 201.52: Light brown, mixed ash and pelitic sediment with calcareous veining.

<<Alt: 200.68 - 201.52 Moderate Calcite>>

201.52 213.47 RHYvl Lapilli tuff

201.52 - 213.47: Cream-coloured felsic lpl in a light grey ashy matrix. Large zone of massive QZ-cabonate-TML vein from ~205-208.5 m.

<<Alt: 201.52 - 216.65 Weak-Moderate Calcite>>

<<Struc: 204.25 - 209.65 Weak Fault>>

<<Struc: 212.1 - 212.65 Weak Fault>>

213.47 216.65 RHYvl Lapilli tuff

213.47 - 216.65: Dark cm sized CL-BI-CA lpl in fine grained grey ash tuff.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

216.65 217.05 PEL Equigranular biotite + calcite +/- quartz rock

216.65 - 217.05: Brown, laminated/banded BI-CA-QZ schist.

<<Alt: 216.65 - 217.05 Moderate-Strong Calcite>>

217.05 226.75 RHYva Coarse grained to ash tuff

217.05 - 226.75: Light grey, ash dominated felsic tuff with local darker coloured blebs/patches (lpl?) consisting of CL-BI-CA-QZ.

<<Min: 217.05 - 243.45 0.5% Min: Pyrrhotite>>

<<Alt: 217.05 - 225.75 Moderate Calcite>>

<<Alt: 225.75 - 243.45 Weak-Moderate Calcite>>

226.75 237.56 RHYvl Lapilli tuff

226.75 - 237.56: White cm-sized calcareous lpl (~20%) in light grey ash matrix, with ~10% disseminated fgr BI.

<<Struc: 229.74 - 229.75 Weak-Moderate dominant foliation>>

237.56 243.45 RHYvl Lapilli tuff

237.56 - 243.45: White cm-sized calcareous lpl (~20%) in light grey ash matrix, with ~5-10% disseminated fgr creamy crystals (sericite-after-feldspar?).

243.45 246.20 RHYc Rhyolite coherant volcanics

243.45 - 246.2: Siliceous banded to massive coherent rhyolite.

<<Min: 243.45 - 246.2 1% Min: Pyrrhotite>>

<<Alt: 243.45 - 246.2 Weak Calcite>>

<<Struc: 245.59 - 245.6 Moderate dominant foliation>>

246.20 246.63 PEL Equigranular biotite + calcite +/- quartz rock

246.2 - 246.63: Laminated BI-CA schist.

<<Min: 246.2 - 252.95 0.1% Min: Pyrite>>

<<Alt: 246.2 - 246.63 Moderate-Strong Calcite>>

246.63 248.40 RHYvl Lapilli tuff

246.63 - 248.4: Felic lpl tuff to silicic banded rhyolite.

<<Alt: 246.63 - 250.07 Weak-Moderate Calcite>>

<<Vein: 247.5 - 247.75 100% Quartz-Carbonate>> Massive QZ-carbonate vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

248.40 248.50 PEL Equigranular biotite + calcite +/- quartz rock

248.4 - 248.5: BI-CA schist.

248.50 249.00 RHYc Rhyolite coherant volcanics

248.5 - 249: Silicic banded rhyolite.

249.00 249.15 PEL Equigranular biotite + calcite +/- quartz rock

249.15 250.07 RHYvl Lapilli tuff

249.15 - 250.07: White calcareous lpl in fine grained gey ash matrix.

250.07 252.95 PEL Equigranular biotite + calcite +/- quartz rock

250.07 - 252.95: Black, massive BI with banded to disseminated CA.

<<Alt: 250.07 - 252.95 Moderate-Strong Calcite>>

<<Struc: 251.44 - 251.45 Moderate dominant foliation>>

252.95 253.40 RHYva Coarse grained to ash tuff

252.95 - 253.4: Grey, fine grained ash tuff.

<<Min: 252.95 - 259.8 1% Min: Pyrite>>

<<Min: 252.95 - 259.8 0.1% Min: Pyrrhotite>>

<<Alt: 252.95 - 259.8 Weak Calcite>>

253.40 255.30 RHYc Rhyolite coherant volcanics

253.4 - 255.3: Silicic banded rhyolite.

255.30 257.56 RHYi Aphanitic Rhyolite (intrusion)

255.3 - 257.56: Light grey, aphanitic, glassy rhyolite with randomy oriented brittle fractures.

257.56 259.80 RHYc Rhyolite coherant volcanics

257.56 - 259.8: Silicic banded rhyolite.

<<Vein: 258.4 - 258.95 40% Quartz-Carbonate>> Patchy to massive QZ-carbonate veining with minor sericitic vein selvage

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

259.80 263.42 RHYva Coarse grained to ash tuff

259.8 - 263.42: Grey, ash dominated tuff with minor calcareous lpl.

<<Min: 259.8 - 263.42 2% Min: Pyrrhotite>>

<<Alt: 259.8 - 278.4 Weak-Moderate Calcite>>

<<Struc: 259.95 - 260 Weak Fault>>

263.42 268.90 RHYvl Lapilli tuff

263.42 - 268.9: White cm-sized calcareous lpl (~20%) in light grey ash matrix, with ~10% disseminated fgr BI.

<<Min: 263.42 - 336.5 0.1% Min: Pyrrhotite>>

268.90 278.40 RHYvx Quartz and/or feldspar crystal tuff

268.9 - 278.4: Fine grained ash tuff with disseminated (10-25%) fine gained sbhedral to euhedral sericite-after-feldspar. Moderate faulting/brecciation from 269.7-271.8 m.

<<Struc: 269.55 - 270.6 Weak Fault>>

<<Struc: 270.6 - 271.75 Moderate Fault>>

<<Struc: 278.15 - 278.2 Weak-Moderate Fault>>

278.40 285.20 SED undifferentiated Sediment

278.4 - 285.2: Brown, mixed ash and pelitic sediment with local cgr sand clasts. Disseminated BI throughout with vfgr matrix. Blebs to bands of CA.

<<Alt: 278.4 - 285.2 Moderate Calcite>>

285.20 287.75 RHYv Rhyolite volcaniclastic

285.2 - 287.75: Light green-grey, fine grained tuff (?) with blebby CA and disseminated BI.

<<Alt: 285.2 - 287.75 Weak-Moderate Calcite>>

287.75 288.43 PEL Equigranular biotite + calcite +/- quartz rock

287.75 - 288.43: Medium green-brown, fine grained pelitic sediment (?) with disseminated BI and wavy bands of CA.

<<Alt: 287.75 - 295.05 Moderate-Strong Calcite>>

288.43 289.90 RHYv Rhyolite volcaniclastic

288.43 - 289.9: Light green-grey, fine grained ash (?) with wavy bands of CA+/-QZ. Local texturally resembles RHYc.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

289.90 295.05 SED undifferentiated Sediment

289.9 - 295.05: Medium green-brown, fine grained pelitic sediment (?) with disseminated BI and wavy bands and blebs of CA.

295.05 297.40 RHYva Coarse grained to ash tuff

295.05 - 297.4: Grey, fine grained ash tuff with disseminated BI and minor calcareous lpl.

<<Alt: 295.05 - 297.4 Weak Calcite>>

297.40 297.60 PEL Equigranular biotite + calcite +/- quartz rock

297.4 - 297.6: Brown, very fine grained pelitic sediment with disseminated fgr and minor CA blebs.

<<Alt: 297.4 - 302.4 Weak-Moderate Calcite>>

297.60 302.40 RHYvl Lapilli tuff

297.6 - 302.4: White cm-sized calcareous lpl (~20%) in light grey ash matrix, with ~10% disseminated fgr BI.

<<Vein: 298.5 - 298.9 30% Quartz-Carbonate 70 deg. >> QZ-carbonate veins

302.40 304.50 PEL Equigranular biotite + calcite +/- quartz rock

302.4 - 304.5: Brown-black, fine grained BI with disseminated to banded CA+/-AK.

<<Alt: 302.4 - 304.5 Moderate-Strong Calcite>>

304.50 313.75 RHYvl Lapilli tuff

304.5 - 313.75: White cm-sized calcareous lpl (~20%) in light grey ash matrix, with ~10% disseminated fgr BI.

<<Alt: 304.5 - 333.85 Weak-Moderate Calcite>>

<<Struc: 309.15 - 309.3 Weak Fault>>

313.75 323.15 RHYvl Lapilli tuff

313.75 - 323.15: Calcareous and felsic lpl within fine grained ash tuff. Lpl content appears to increase toward the lower contact (Fining upward?).

<<Struc: 318.84 - 318.85 Weak dominant foliation>>

323.15 328.20 RHYv Rhyolite volcaniclastic

323.15 - 328.2: Light green-grey, clast-supported breccia. Clasts range from ~0.5 to 2 cm and are felsic rhyolitic composition. Matrix is predominantley fine grained medium grey-green ash? Potentially a healed fault breccia?

<<Vein: 324.1 - 324.55 100% Quartz-Carbonate>> Massive QZ-carbonate vein

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

328.20 332.45 RHYv Rhyolite volcaniclastic

328.2 - 332.45: Light grey mixed lpl and ash tuff.

<<Vein: 328.45 - 336.5 5% Quartz-Carbonate 80 deg. >> Zone with 2-3 ~1 cm wide QZ-carbonate veins per metre and minor ~20 cm massive QZ-carbonate veins.

332.45 333.85 RHYc Rhyolite coherant volcanics

332.45 - 333.85: Silicic banded rhyolite with minor horizons of RHYv.

333.85 337.60 FLZ Fault Zone

333.85 - 337.6: Strongly faulted zone with core of fault gouge-supported polylithic breccia. Clasts include QZ, CA, SED, RHY, and PY.

<<Min: 336.5 - 337.6 2% Min: Pyrite>> Minor pyritic clasts

<<Alt: 333.85 - 337.6 Moderate Calcite>>

<<Struc: 333.85 - 336.5 Weak-Moderate Fault>>

<<Struc: 336.5 - 337.6 Intense Fault>>

337.60 342.70 SED undifferentiated Sediment

337.6 - 342.7: Light brown BI-MU-CA+/-SI schistwith AK-porphyroblasts. Large block within fault zone?

<<Min: 337.6 - 342.7 0.1% Min: Pyrite>>

<<Alt: 337.6 - 342.7 Moderate Calcite>>

<<Struc: 337.6 - 338 Weak-Moderate Fault>>

342.70 356.00 FLZ Fault Zone

342.7 - 356: Fault gouge-supported fault breccia. Intense faulting of rhyolite (?) from 342.7-348.5 m and 353.6-356 m. From 348.5-353.6 m, faulted and sheared MAFi occurs. The MAFi appears to have deformed more ductilely than the rhyolitic unit ?? Minor clasts of massive pyrite at ~354.7 m.

<<Min: 342.7 - 348.5 2% Min: Pyrite>> Minor pyritic clasts

<<Min: 348.5 - 353.6 0.1% Min: Pyrrhotite>>

<<Min: 353.6 - 356 2% Min: Pyrite>> Minor pyritic clasts

<<Alt: 342.7 - 348.5 Weak-Moderate Calcite>>

<<Alt: 348.5 - 353.6 Moderate-Strong Calcite>>

<<Alt: 353.6 - 356 Moderate Calcite>>

<<Struc: 342.7 - 348.5 Intense Fault>>

<<Struc: 348.5 - 353.6 Moderate Shear>> Sheared ductile deformation of MAFi. Also, brittle faulting.

<<Struc: 348.5 - 353.6 Strong Fault>> Sheared ductile deformation of MAFi. Also, brittle faulting.

<<Struc: 353.6 - 356 Intense Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

356.00 358.85 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

356 - 358.85: Cl-CA banded schist with disseminated BI. Maybe a coherent block within a larger fault zone?

<<Min: 356 - 358.85 0.1% Min: Pyrrhotite>>

<<Alt: 356 - 358.85 Moderate-Strong Calcite>>

<<Vein: 356.75 - 358.8 5% Calcite>> ~3 1 cm wide CA-QZ veins per metre. Veins are parallel to foliation

<<Struc: 356 - 358.85 Weak-Moderate Fault>>

358.85 379.00 FLZ Fault Zone

358.85 - 379: Gouge-supported fault breccia with clasts of RHY, MDS, MAFi, and minor semi-massive PY.

<<Min: 358.85 - 378.5 2% Min: Pyrite>> Minor pyritic clasts

<<Min: 378.5 - 385.1 3% Min: Pyrite>> Disseminated PY in MU-altered RHY block within fault zone.

<<Alt: 358.85 - 401.8 Weak-Moderate Calcite>>

<<Alt: 378.5 - 386 Moderate Muscovite>> Yellow coloured MU, noted in coherent block within the fault zone. Potentially an altered block that was then faulted into the zone.

<<Struc: 358.85 - 378.5 Intense Fault>>

<<Struc: 378.5 - 380.4 Moderate Fault>>

379.00 383.20 RHY undifferentiated rhyolite

379 - 383.2: Weak-moderate MU-altered, weak-moderately faulted, rhyolite with a spaced MU-cleavage and siliceous domains.

<<Vein: 383 - 384.1 20% Quartz-Carbonate>> Two massive QZ-carbonate veins within moderately faulted and MU-altered RHY. A block within the larger fault zone that displays MU-alteration with QZ-veining assemblage?

<<Struc: 380.4 - 383.2 Weak Fault>>

383.20 397.68 FLZ Fault Zone

383.2 - 397.68: Moderate-strongly faulted RHY. Locally gouge-supported breccia with clasts of RHY and MDS. From 390-397.68 m, the fault consists of strongly faulted rhyolite with strong MU-alteration.

<<Min: 385.1 - 390 2% Min: Pyrite>> Minor pyritic clasts

<<Min: 390 - 401.8 3% Min: Pyrite>> Disseminated PY in MU-altered RHY block within fault zone.

<<Alt: 390 - 401.8 Strong Muscovite>>

<<Struc: 383.2 - 385.1 Moderate-Strong Fault>>

<<Struc: 385.1 - 390 Intense Fault>>

<<Struc: 390 - 397.68 Strong Fault>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

397.68 401.80 RHY undifferentiated rhyolite

397.68 - 401.8: Yellow-grey, moderately faulted, strongly MU-altered rhyolite. RHYv?

<<Struc: 397.68 - 399.9 Weak Fault>>

<<Struc: 399.9 - 401.8 Moderate Fault>>

401.80 402.60 MDSc Carbonaceous dominant mudstone

401.8 - 402.6: Black, carbonaceous mudstone. Quite hard, potentially due to silicification. Blebby PY.

<<Min: 401.8 - 402.6 5% Min: Pyrite>>

<<Alt: 401.8 - 405.05 Weak Muscovite>> Silver coloured MU in MDS unit.

<<Alt: 401.8 - 405.05 Trace Calcite>>

402.60 405.05 MDSt Rhyolite tuff dominant mudstone

402.6 - 405.05: Black and grey, carbonaceous bands in rhyolite tuff.

<<Min: 402.6 - 405.05 3% Min: Pyrite>>

405.05 462.70 RHY undifferentiated rhyolite

405.05 - 462.7: Strongly Mu-altered forming pervasive sericitic cleavages. Yellowish-grey, QZ-sericite schist with disseminated PY and minor CA bands. Locally texture ~resembles silicic banding and elsewhere RHYv textures? Strong alteration and moderate faulting makes differentiating RHYv from RHYc very difficult.

<<Min: 405.05 - 462.7 2% Min: Pyrite>>

<<Min: 405.05 - 462.7 2% Min: Pyrrhotite>>

<<Alt: 405.05 - 464.12 Strong Muscovite>> Yellow coloured sericitic cleavages

<<Alt: 405.05 - 464.12 Weak Calcite>>

<<Struc: 411 - 448.6 Weak Fault>> Highly broke core (Rubble zone) with local gougey material. Coincides with strong sericite alteration.

<<Struc: 459.5 - 459.6 Weak Fault>>

<<Struc: 462.4 - 462.7 Weak-Moderate Fault>>

462.70 464.12 OI Heavilly disseminated sulphides in host schist

462.7 - 464.12: ~15% patchy to disseminated PY in strongly MU-altered RHY.

<<Min: 462.7 - 464.12 15% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

464.12 491.00 RHYv Rhyolite volcaniclastic

464.12 - 491: Strongly Mu-altered rhyolite, with some clastic textures includig minor fine grained ashy bands and local lpl.

<<Min: 464.12 - 491 3% Min: Pyrite>>

<<Alt: 464.12 - 491 Moderate-Strong Muscovite>> Yellow coloured sericitic cleavages

<<Alt: 464.12 - 491 Weak-Moderate Calcite>>

<<Vein: 471 - 480.8 5% Quartz-Carbonate>> Zone with minor ~5-15 cm wide massive QZ +/- patchy carbonate veins

<<Struc: 464.15 - 464.5 Weak-Moderate Fault>>

<<Struc: 479.15 - 479.6 Weak-Moderate Fault>>

End of Hole @ 491

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-409

Prospect:	ABM	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Oscar Nielsen	Date Logging Start:	8/5/2016
UTM Easting	414850	Core Size:	HQ3	Azimuth:	180	Date Logging Complete:	8/8/2016
UTM Northing:	6815880	Casing Pulled?:	Yes	Dip:	-80.2	Drill Company:	Hytech
UTM Elev. (m):	1394	Casing Depth (m):	4.5	Length (m):	300	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/4/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/6/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-409 was drilled to target the down-dip extension of the ABM sulphide lens. Neither the expected ABM lens nor the associated mafic sill are present in the hole. A 20 m thick zone of strong, green, muscovite alteration of the type associated with ABM mineralization, occurs at the top of the hole in a position with no known mineralization. This may indicate another pathway taken by mineralizing fluids at a stratigraphic position above known mineralization. The hole cuts a flow rich volcanic pile. Quartz eye bearing crystal tuffs are present in the top 50 and bottom 50 m. There is also a package of carbonaceous tuffs and flows from 185-200 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-80.23	178.6	1.4	180	TN14	Oscar Nielsen	8/6/2016		☑	
5	-80.14857	177.47121	1.4	178.87121	Gyro	Oscar Nielsen	8/6/2016		☑	99.0208388186158
9	-80.6	160.6	22.1	182.7	ReflexEZS	Hytech	8/4/2016	5741	☐	
10	-80.07751	177.87158	1.4	179.27158	Gyro	Oscar Nielsen	8/6/2016		☑	100
15	-79.89923	178.49991	1.4	179.89991	Gyro	Oscar Nielsen	8/6/2016		☑	99.93819992817
20	-79.64488	179.40972	1.4	180.80972	Gyro	Oscar Nielsen	8/6/2016		☑	100
25	-79.41346	179.8683	1.4	181.2683	Gyro	Oscar Nielsen	8/6/2016		☑	100
30	-79.23487	180.94692	1.4	182.34692	Gyro	Oscar Nielsen	8/6/2016		☑	100
33	-79.5	161.8	22.1	183.9	ReflexEZS	Hytech	8/4/2016	5787	☐	
35	-79.03927	181.77066	1.4	183.17066	Gyro	Oscar Nielsen	8/6/2016		☑	100
40	-78.95634	182.55418	1.4	183.95418	Gyro	Oscar Nielsen	8/6/2016		☑	100
45	-78.76841	182.82437	1.4	184.22437	Gyro	Oscar Nielsen	8/6/2016		☑	100
50	-78.50538	183.08114	1.4	184.48114	Gyro	Oscar Nielsen	8/6/2016		☑	100
55	-78.37487	183.38434	1.4	184.78434	Gyro	Oscar Nielsen	8/6/2016		☑	100
57	-78.8	162	22.1	184.1	ReflexEZS	Hytech	8/4/2016	5784	☐	
60	-78.11471	183.93176	1.4	185.33176	Gyro	Oscar Nielsen	8/6/2016		☑	100
65	-77.95693	184.37071	1.4	185.77071	Gyro	Oscar Nielsen	8/6/2016		☑	100
70	-77.80593	184.86457	1.4	186.26457	Gyro	Oscar Nielsen	8/6/2016		☑	100
75	-77.61153	184.91983	1.4	186.31983	Gyro	Oscar Nielsen	8/6/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-409

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
80	-77.50785	184.89051	1.4	186.29051	Gyro	Oscar Nielsen	8/6/2016		☑	100
81	-77.5	167.3	22.1	189.4	ReflexEZS	Hytech	8/4/2016	5863	☐	
85	-77.32756	184.85488	1.4	186.25488	Gyro	Oscar Nielsen	8/6/2016		☑	100
90	-77.28773	184.95418	1.4	186.35418	Gyro	Oscar Nielsen	8/6/2016		☑	100
95	-77.1776	184.87681	1.4	186.27681	Gyro	Oscar Nielsen	8/6/2016		☑	100
100	-77.1648	184.86427	1.4	186.26427	Gyro	Oscar Nielsen	8/6/2016		☑	100
105	-77.01549	185.10638	1.4	186.50638	Gyro	Oscar Nielsen	8/6/2016		☑	100
105.01	-77.4	167	22.1	189.1	ReflexEZS	Hytech	8/4/2016	5768	☐	
110	-76.92179	185.429	1.4	186.829	Gyro	Oscar Nielsen	8/6/2016		☑	100
115	-76.84893	185.766	1.4	187.166	Gyro	Oscar Nielsen	8/6/2016		☑	100
120	-76.70331	185.8635	1.4	187.2635	Gyro	Oscar Nielsen	8/6/2016		☑	99.958849621056
125	-76.6109	186.37306	1.4	187.77306	Gyro	Oscar Nielsen	8/6/2016		☑	100
129	-76.7	166.5	22.1	188.6	ReflexEZS	Hytech	8/5/2016	5779	☐	
130	-76.50162	186.28926	1.4	187.68926	Gyro	Oscar Nielsen	8/6/2016		☑	100
135	-76.40449	186.63162	1.4	188.03162	Gyro	Oscar Nielsen	8/6/2016		☑	100
140	-76.30555	186.41709	1.4	187.81709	Gyro	Oscar Nielsen	8/6/2016		☑	100
145	-76.27739	186.74985	1.4	188.14985	Gyro	Oscar Nielsen	8/6/2016		☑	99.9594959994396
150	-76.27538	186.93816	1.4	188.33816	Gyro	Oscar Nielsen	8/6/2016		☑	100
153	-76.5	170.7	22.1	192.8	ReflexEZS	Hytech	8/5/2016	5827	☐	
155	-76.21696	186.94341	1.4	188.34341	Gyro	Oscar Nielsen	8/6/2016		☑	100
160	-76.18474	187.1027	1.4	188.5027	Gyro	Oscar Nielsen	8/6/2016		☑	100
165	-76.15428	187.0522	1.4	188.4522	Gyro	Oscar Nielsen	8/6/2016		☑	100
170	-76.1632	187.13248	1.4	188.53248	Gyro	Oscar Nielsen	8/6/2016		☑	99.8246687574656
175	-76.07335	187.05198	1.4	188.45198	Gyro	Oscar Nielsen	8/6/2016		☑	100
177	-76.2	167.3	22.1	189.4	ReflexEZS	Hytech	8/5/2016	5774	☐	
180	-76.031	187.07936	1.4	188.47936	Gyro	Oscar Nielsen	8/6/2016		☑	100
185	-76.03848	187.54864	1.4	188.94864	Gyro	Oscar Nielsen	8/6/2016		☑	99.864988443744
190	-75.96056	187.84741	1.4	189.24741	Gyro	Oscar Nielsen	8/6/2016		☑	99.9110373590807
195	-75.93342	188.0731	1.4	189.4731	Gyro	Oscar Nielsen	8/6/2016		☑	100
200	-75.87804	188.33181	1.4	189.73181	Gyro	Oscar Nielsen	8/6/2016		☑	100
201	-76.2	170.3	22.1	192.4	ReflexEZS	Hytech	8/5/2016	5782	☐	
205	-75.84392	188.61222	1.4	190.01222	Gyro	Oscar Nielsen	8/6/2016		☑	100
210	-75.80809	188.90662	1.4	190.30662	Gyro	Oscar Nielsen	8/6/2016		☑	100
215	-75.78388	189.02162	1.4	190.42162	Gyro	Oscar Nielsen	8/6/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-409

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
220	-75.74466	189.19871	1.4	190.59871	Gyro	Oscar Nielsen	8/6/2016		☑	100
225	-75.73178	189.42742	1.4	190.82742	Gyro	Oscar Nielsen	8/6/2016		☑	100
225.01	-76.2	168	22.1	190.1	ReflexEZS	Hytech	8/5/2016	5794	☐	
230	-75.73784	189.32579	1.4	190.72579	Gyro	Oscar Nielsen	8/6/2016		☑	100
235	-75.71448	189.37882	1.4	190.77882	Gyro	Oscar Nielsen	8/6/2016		☑	99.7658424344681
240	-75.7043	189.45684	1.4	190.85684	Gyro	Oscar Nielsen	8/6/2016		☑	100
245	-75.6233	189.80925	1.4	191.20925	Gyro	Oscar Nielsen	8/6/2016		☑	100
249	-75.8	170.6	22.1	192.7	ReflexEZS	Hytech	8/5/2016	5738	☐	
250	-75.52309	189.9175	1.4	191.3175	Gyro	Oscar Nielsen	8/6/2016		☑	100
255	-75.45349	189.84269	1.4	191.24269	Gyro	Oscar Nielsen	8/6/2016		☑	100
260	-75.37792	190.08064	1.4	191.48064	Gyro	Oscar Nielsen	8/6/2016		☑	100
265	-75.35977	190.26934	1.4	191.66934	Gyro	Oscar Nielsen	8/6/2016		☑	100
270	-75.29684	190.29029	1.4	191.69029	Gyro	Oscar Nielsen	8/6/2016		☑	100
273	-75.2	170.5	22.1	192.6	ReflexEZS	Hytech	8/6/2016	5799	☐	
275	-75.22647	190.4375	1.4	191.8375	Gyro	Oscar Nielsen	8/6/2016		☑	100
280	-75.12945	190.73849	1.4	192.13849	Gyro	Oscar Nielsen	8/6/2016		☑	100
285	-75.06106	190.98515	1.4	192.38515	Gyro	Oscar Nielsen	8/6/2016		☑	100
290	-75.01511	190.81004	1.4	192.21004	Gyro	Oscar Nielsen	8/6/2016		☑	100
299.99	-74.8	168.7	22.1	190.8	ReflexEZS	Hytech	8/6/2016	5771	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.50**	**OVBN Overburden**									
4.50	**18.35**	**RHYva Coarse grained to ash tuff grey-green FG**									

4.5 - 18.35: Fine grained, finely banded, rhyolitic ash tuff. Green colour come from muscovite alteration.

<<Min: 4.5 - 15.3 1% Min: Pyrite>> Bands, blebs and aggregate of pyrite associated with strong MU alteration

<<Min: 13.3 - 20.96 1% Min: Pyrrhotite>> Foliation parallel bands and wisps

<<Alt: 4.5 - 17.55 Moderate Muscovite>> Altering the non-siliceous component

<<Alt: 4.5 - 20.96 Weak Calcite>>

<<Alt: 17.55 - 18.35 Weak Silicification>> Possibly related to the adjacent RHYcw?

<<Alt: 17.55 - 20.96 Weak-Moderate Muscovite>> Altering the non-siliceous component

<<Struc: 16.6 - 16.61 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

18.35 20.96 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green FG

18.35 - 20.96: Aphanitic, siliceous, muscovite altered unit of coherent rhyolite.

20.96 29.45 RHYvx Quartz and/or feldspar crystal tuff medium grey FCG

20.96 - 29.45: Thick, massive unit of poorly sorted volcano-epiclastic material, comprising 1-4mm fragments of quartz/siliceous material and dark and light lithic fragments.

<<Min: 20.96 - 24.85 0.5% Min: Pyrrhotite>> Foliation parallel wisps

<<Min: 24.6 - 25.4 0.5% Min: Sphalerite>> Foliation parallel aggregates

<<Min: 25.4 - 27.55 0.5% Min: Pyrite>>

<<Min: 27.55 - 29.45 0.5% Min: Pyrrhotite>>

<<Alt: 20.96 - 24.85 Weak Muscovite>> Altering the non-siliceous component

<<Alt: 20.96 - 27.55 Weak-Moderate Silicification>> Through the RHYvx

<<Alt: 20.96 - 38.35 Trace Calcite>> Rare blebs.

<<Vein: 21.5 - 21.87 20% Quartz-Carbonate>>

<<Vein: 27.55 - 32.75 35% Quartz-Carbonate 60 deg. >>

<<Struc: 27.4 - 32.75 Weak Fault>> Narrow fault gouge zones associated with MU alteration and massive QZ veins.

29.45 33.35 RHYva Coarse grained to ash tuff grey-green FMG

29.45 - 33.35: Strongly altered unit of rhyolitic ash tuff with thin, coarser beds of 0.5-1 mm bands of medium grained material, and crystals increasing towards the bottom. There are rare thin, siliceous wavy/flattened (pumice?) clasts.

<<Min: 29.45 - 37.85 0.5% Min: Pyrite>>

<<Alt: 29.45 - 30.58 Moderate-Strong Muscovite>> Strong, pervasive muscovite alteration, small zone of muscovite mush

<<Alt: 30.58 - 36.76 Weak-Moderate Muscovite>> Altering the non-siliceous component

<<Struc: 33.33 - 33.34 dominant foliation>>

33.35 39.00 RHYvx Quartz and/or feldspar crystal tuff grey-green FCG

33.35 - 39: Abundant round quartz eyes and white-green feldspar? crystals? in a fine grained ashy matrix.

<<Min: 37.85 - 40.58 0.01% Min: Pyrite>>

<<Alt: 36.76 - 37.85 Moderate Muscovite>> Altering the non-siliceous component

<<Alt: 37.85 - 49.66 Weak Muscovite>> Altering the non-siliceous component

<<Alt: 38.35 - 41.14 Weak Calcite>> Blebs and crystal replacement

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 37.6 - 37.7 Weak Shear>> Weak shearing associated with QZ/CA vein.

39.00 39.36 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

39 - 39.36: Thin unit of fine grained sedimentary rock with porphyroblasts of biotite and ankerite

<<Alt: 39 - 39.36 Moderate Biotite>> Black euhedral biotite porphyroblasts, associated with diamond shaped ankerite porphyroblasts

<<Alt: 39 - 39.36 Moderate Ankerite>> Cream coloured diamond shaped porphyroblasts, fizz after scratching

39.36 40.13 RHYvx Quartz and/or feldspar crystal tuff grey-green FCG

39.36 - 40.13: Abundant round quartz eyes and white-green feldspar? crystals? in a fine grained ashy matrix.

<<Alt: 40.11 - 40.58 Weak-Moderate Biotite>> Black euhedral biotite porphyroblasts, associated with diamond shaped ankerite porphyroblasts

<<Alt: 40.11 - 40.58 Weak-Moderate Ankerite>> Cream coloured diamond shaped subhedral porphyroblasts, fizz after scratching

40.13 41.11 PEL Equigranular biotite + calcite +/- quartz rock medium grey FMG

40.13 - 41.11: Thin unit of fine to medium grained sedimentary rock with porphyroblasts of biotite and ankerite

<<Min: 40.58 - 41.14 0.01% Min: Pyrrhotite>>

41.11 49.66 RHYvx Quartz and/or feldspar crystal tuff grey-brown FCG

41.11 - 49.66: Abundant round quartz eyes and white-green feldspar? crystals? in a fine grained ashy matrix.

<<Min: 41.14 - 49.66 0.5% Min: Pyrrhotite>>

<<Alt: 41.14 - 43.05 Moderate Calcite>>

<<Alt: 43.05 - 49.66 Weak Calcite>> Blebs and crystal replacement

<<Struc: 41.52 - 41.53 Foliation>>

<<Struc: 46.46 - 46.47 dominant foliation>>

49.66 51.40 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FCG

49.66 - 51.4: Curdy-textured siliceous unit comprising clots of silica material divided by thin domains of green-brown muscovite and/or biotite

<<Struc: 49.96 - 49.97 Foliation>> Flow band.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

51.40 53.96 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

51.4 - 53.96: Unit of fine grained sedimentary rock with porphyroblasts of biotite and ankerite

<<Min: 53.56 - 53.96 0.01% Min: Pyrrhotite>>

<<Alt: 51.4 - 53.96 Weak-Moderate Calcite>> Patches of pervasive calcite, where ankerite porphyroblasts have not grown

<<Alt: 51.4 - 53.96 Moderate Biotite>> Black euhedral biotite porphyroblasts, associated with diamond shaped ankerite porphyroblasts

<<Alt: 51.4 - 53.96 Moderate Ankerite>> Cream coloured diamond shaped porphyroblasts, fizz after scratching

53.96 56.19 RHYcw Curdy textured-flow banded (flows, subvolcanics) light grey FCG

53.96 - 56.19: Curdy-textured siliceous unit comprising clots of silica material divided by thin domains of green-brown muscovite and/or biotite

<<Alt: 53.96 - 79.13 Trace Calcite>>

56.19 58.19 RHYvx Quartz and/or feldspar crystal tuff grey-brown FCG

56.19 - 58.19: Abundant round quartz eyes and white-green feldspar? crystals? in a fine grained ashy matrix.

<<Min: 56.19 - 114 0.5% Min: Pyrrhotite>>

<<Vein: 57.31 - 58.52 20% Quartz-Carbonate 75 deg. >> SUL=Sphalerite

58.19 59.72 RHYva Coarse grained to ash tuff dark grey FG

58.19 - 59.72: A thin unit of generally well sorted, massive, fine grained ash tuff with rare quartz eye clasts

<<Struc: 59.39 - 59.4 dominant foliation>>

59.72 60.11 MDSt Rhyolite tuff dominant mudstone dark grey FG

59.72 - 60.11: a thin unit comprising alternating light and dark, well formed bands of fine sediment. some bands are chaotically folded

60.11 71.44 RHYva Coarse grained to ash tuff medium grey FCG

60.11 - 71.44: Abundant round quartz eyes and white-green feldspar? crystals? in a fine grained ashy matrix.

<<Min: 63 - 64.4 0.01% Min: Pyrite>>

<<Min: 64.4 - 114.4 1% Min: Pyrrhotite>> Bands of disseminated pyrrhotite

<<Alt: 60.11 - 64.4 Trace Biotite>> Patches of disseminated euhedral black biotite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 64.4 - 71.44 Weak Biotite>> Patches of disseminated euhedral black biotite

<<Vein: 63 - 66 10% Tourmaline 5 deg. >>

<<Vein: 66.5 - 67.38 85% Quartz-Carbonate 75 deg. >>

<<Struc: 62.25 - 62.26 Foliation>> Flow band.

<<Struc: 64.98 - 64.99 dominant foliation>>

71.44 79.13 RHYvl Lapilli tuff medium grey FCG

71.44 - 79.13: A thick unit comprising a matrix of fine grained grey ashy material (with biotite porphyroblasts) and 0.5-5 cm flattened white siliceous clasts (lapilli). The lower 50 cm of the unit contains a higher abundance of lapilli (50-60%) with larger sizes, possibly indicating a graded bed, tops up.

<<Alt: 71.44 - 79.13 Trace Biotite>> Patches of disseminated euhedral black biotite

<<Alt: 71.44 - 114.4 Weak Tourmaline>> Small clots and rare fans of tourmaline

<<Struc: 72.09 - 72.1 dominant foliation>>

<<Struc: 74.65 - 74.66 dominant foliation>>

79.13 81.04 PEL Equigranular biotite + calcite +/- quartz rock grey-green FG

79.13 - 81.04: A thin unit of well banded, well sorted, fine grained pelite. Rare black euhedral biotite porphyroblasts are present with euhedral ankerite porphyroblasts and bands of calcite.

<<Alt: 79.13 - 81.04 Moderate Chlorite>> Pervasive chlorite flakes, possibly indicating a mafic source for the pelitic sediment

<<Alt: 79.13 - 81.04 Weak-Moderate Calcite>> porphyroblasts with calcite and bands

<<Alt: 79.13 - 81.04 Weak Biotite>> Patches and ankerite associated aggregates of disseminated euhedral black biotite

<<Alt: 79.13 - 81.04 Weak-Moderate Ankerite>> Cream coloured diamond shaped porphyroblasts, fizz after scratching

81.04 83.45 RHYva Coarse grained to ash tuff dark grey FMG

81.04 - 83.45: Primarily comprises fine grained siliceous ashy material with rare siliceous flattened lapilli. biotite and chlorite in the groundmass make the rock appear dark

<<Alt: 81.04 - 83.45 Trace Calcite>>

<<Alt: 81.4 - 83.45 Weak-Moderate Biotite>> Fine dark brown biotite in bands throughout the unit.

83.45 84.72 PEL Equigranular biotite + calcite +/- quartz rock brown FG

83.45 - 84.72: Pelitic unit composed of biotite material, both fine brown shreddy biotite and large2-4 mm black euhedral biotite porphyroblasts. Also present, giving the rock its distinctive appearance are euhedral diamond shaped ankerite porphyroblasts in bands

<<Alt: 83.45 - 84.72 Moderate Biotite>> Fine dark brown biotite in bands throughout the unit.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 83.45 - 84.72 Weak-Moderate Ankerite>> Cream coloured diamond shaped porphyroblasts, fizz after scratching

<<Alt: 83.45 - 84.78 Moderate Calcite>> porphyroblasts with calcite and pervasive throughout the rest of the unit

84.72 85.87 RHYva Coarse grained to ash tuff dark grey FCG

84.72 - 85.87: Primarily comprises fine grained siliceous ashy material with rare biotite-chlorite altered flattened lapilli. biotite and chlorite in the groundmass make the rock appear dark.

<<Alt: 84.72 - 85.87 Weak Biotite>> Fine dark brown biotite in patches.

<<Alt: 84.78 - 85.87 Trace Calcite>>

<<Struc: 84.97 - 84.98 dominant foliation>>

85.87 87.04 PEL Equigranular biotite + calcite +/- quartz rock brown FG

85.87 - 87.04: Pelitic unit composed of biotite material, both fine brown shreddy biotite and large2-4 mm black euhedral biotite porphyroblasts. Also present, giving the rock its distinctive appearance are euhedral diamond shaped ankerite porphyroblasts in bands. from 86.21-86.40, there is an interval of INT, with sharp contacts, possibly a baked margin (locally bleached)

<<Alt: 85.87 - 87.04 Moderate Calcite>> Pervasive, except for two small zones of silica alteration

<<Alt: 85.87 - 87.04 Moderate Biotite>> Fine dark brown biotite in bands throughout the unit.

<<Alt: 86.24 - 86.4 Moderate-Strong Silicification>> Strong, texture destroying silica alteration. Looks like a felsic dyke perhaps?

87.04 87.54 RHYva Coarse grained to ash tuff dark grey FCG

87.04 - 87.54: Primarily comprises fine grained siliceous ashy material with rare biotite-chlorite altered flattened lapilli. biotite and chlorite in the groundmass make the rock appear dark.

<<Alt: 87.04 - 87.54 Trace Calcite>>

<<Alt: 87.04 - 87.54 Weak Biotite>> Fine dark brown biotite in pseudoclastic patches

87.54 88.01 PEL Equigranular biotite + calcite +/- quartz rock brown FG

87.54 - 88.01: Pelitic unit composed of biotite material, both fine brown shreddy biotite and large2-4 mm black euhedral biotite porphyroblasts. Also present, giving the rock its distinctive appearance are euhedral diamond shaped ankerite porphyroblasts in bands.

<<Alt: 87.54 - 88.01 Moderate Calcite>>

<<Alt: 87.54 - 88.01 Moderate Biotite>> Fine dark brown biotite in bands throughout the unit.

88.01 91.03 RHYvl Lapilli tuff medium grey FCG

88.01 - 91.03: A thick unit comprising a matrix of fine grained grey ashy material (with biotite porphyroblasts) and 0.5-5 cm flattened white siliceous clasts (lapilli).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 88.01 - 91.03 Trace Biotite>> Disseminated euhedral black porphyroblasts of biotite

<<Alt: 88.01 - 114.4 Trace Chlorite>> Weak chlorite alteration in patches throughout the units

<<Alt: 88.01 - 118.48 Weak Calcite>> Blebs and bands of calcite

91.03 114.40 RHYva Coarse grained to ash tuff dark grey FCG

91.03 - 114.4: Primarily comprises fine grained siliceous ashy material with rare biotite-chlorite altered or siliceous flattened lapilli. Biotite and chlorite in the groundmass make the rock appear dark.

<<Alt: 91.03 - 114.4 Trace Biotite>> Fine dark brown biotite in patches.

<<Vein: 94.5 - 98.5 10% Tourmaline 45 deg. >> SUL (CP 0.5%, GL 0.5%) Cockade form in one vein, tourmaline on the outside, quartz on the inside.

<<Vein: 102.5 - 113 5% Tourmaline>>

<<Struc: 96.76 - 96.77 dominant foliation>>

<<Struc: 101.39 - 101.4 dominant foliation>>

<<Struc: 104.89 - 104.9 dominant foliation>>

<<Struc: 109.29 - 109.3 dominant foliation>>

114.40 117.39 RHYvl Lapilli tuff light grey FCG

114.4 - 117.39: This unit comprises 1-3cm lensoid white-green clasts (monomictic) with a matrix of fine grained material. It appears that these clasts (lapilli) are more common than in the preceding unit however this may be the result of alteration surrounding the fault that runs through the unit.

<<Min: 114.4 - 117.39 3% Min: Pyrite>>

<<Min: 114.4 - 117.39 0.5% Min: Pyrrhotite>> Bands of disseminated pyrrhotite

<<Struc: 114.94 - 117.03 Moderate Fault>> Multi-zone fault, comprising 3 gougy zones 5-25 cm thick, separated by intervals of boken rock or rubble.

117.39 128.30 RHYva Coarse grained to ash tuff dark grey FCG

117.39 - 128.3: Primarily comprises fine grained siliceous ashy material with rare biotite-chlorite altered and/or siliceous flattened lapilli. The biotite altered lapilli may be pseudoclasts. Biotite and chlorite in the groundmass make the rock appear dark.

<<Min: 117.39 - 146.67 1% Min: Pyrite>>

<<Min: 117.39 - 146.67 0.5% Min: Pyrrhotite>>

<<Alt: 117.39 - 119.68 Weak Biotite>> Fine dark brown biotite in bands

<<Alt: 117.39 - 142.35 Trace Chlorite>> Weak chlorite alteration in patches throughout the units

<<Alt: 118.48 - 119.68 Moderate Calcite>>

<<Alt: 119.68 - 120.79 Moderate Biotite>> Fine dark brown biotite throughout the interval

<<Alt: 119.68 - 122.2 Moderate-Strong Calcite>>

<<Alt: 120.79 - 122.2 Weak Biotite>> Fine dark brown biotite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 122.2 - 126 Weak-Moderate Calcite>>

<<Alt: 122.2 - 142.35 Trace Biotite>> Patches of fine dark brown biotite

<<Alt: 126 - 143.53 Weak Calcite>>

<<Vein: 120.22 - 120.26 100% Quarzt-Biotite 45 deg. >>

<<Vein: 126.64 - 126.95 100% Quartz>> SUL= GL

<<Struc: 124.46 - 124.46 dominant foliation>> Chloritic parting

128.30 131.44 RHYvl Lapilli tuff medium grey FCG

128.3 - 131.44: This unit comprises 1-3cm lensoid white-green clasts (monomictic) with a matrix of fine grained material. It appears that these clasts (lapilli) are more common than in the preceding unit however this may be the result of alteration surrounding the fault t that runs through the unit.

<<Vein: 131.05 - 144 1% Tourmaline-Sulphide 45 deg. >> sulphide = pyrrhotite UND = talc

131.44 143.53 RHYva Coarse grained to ash tuff dark grey FCG

131.44 - 143.53: Primarily comprises fine grained siliceous ashy material with rare biotite-chlorite altered and/or siliceous flattened lapilli. The biotite altered lapilli may be pseudoclasts. Biotite and chlorite in the groundmass make the rock appear dark.

<<Alt: 142.35 - 143.53 Weak Muscovite>> Bands of cream-green muscovite cutting the BCQ alteration

<<Struc: 134.4 - 134.4 dominant foliation>> Chloritic parting

143.53 146.67 RHYva Coarse grained to ash tuff grey-green FCG

143.53 - 146.67: This moderately muscovite altered unit comprises mainly fine grained ash material, with subangular/deformed 1-5 mm light green patches, interpreted as clasts.

<<Alt: 143.53 - 149.85 Weak-Moderate Muscovite>> Patchy/pervasive cream green alteration.

<<Vein: 144.89 - 145.6 5% Ankerite 45 deg. >>

<<Struc: 144.2 - 144.2 Vein>> Tourmaline-quartz-biotite vein, cut by py-qtz vein

146.67 148.14 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green FG

146.67 - 148.14: This moderately to strongly altered unit comprises wavy bands of siliceous material in a mass of muscovite with pyrite. interpreted as a coherent flow

<<Min: 146.67 - 148.14 3% Min: Pyrite>>

148.14 151.44 RHYva Coarse grained to ash tuff grey-green FCG

148.14 - 151.44: This moderately muscovite altered unit comprises mainly fine grained ash material, with subangular/deformed 1-5 mm light green patches, interpreted as clasts.

<<Min: 148.14 - 155.82 0.5% Min: Pyrite>>

<<Min: 148.14 - 155.82 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 149.85 - 149.9 100% Quartz-Carbonate 10 deg. >>

151.44 151.60 RHYva Coarse grained to ash tuff dark grey FG

151.44 - 151.6: Well sorted fine grained, relatively unaltered, well bedded ash tuff

151.60 154.57 RHYva Coarse grained to ash tuff medium grey FG

151.6 - 154.57: Weakly altered unit of poorly banded , homogeneous fine grained material. No strong distinguishing features

<<Alt: 151.6 - 154.57 Weak Muscovite>>

<<Vein: 154.35 - 183.42 15% Quartz>>

<<Struc: 154.2 - 154.28 Weak Fault>> small gougy fault in weak rock

154.57 155.82 MDSt Rhyolite tuff dominant mudstone dark grey FG

154.57 - 155.82: Well banded, strongly deformed unit with bands of black carbonaceous material with light green muscovite altered alternating bands, interpreted as ashy layers.

<<Min: 154.57 - 155.82 0.01% Min: Pyrite>>

<<Struc: 155.23 - 155.23 dominant foliation>> Carbonaceous parting

155.82 166.70 RHY undifferentiated rhyolite green FG

155.82 - 166.7: Strongly muscovite altered rhyolitic material with ptygmatic bands (veins?) of quartz and pyrite as well as massive quartz pods/veins. primary textures not preserved

<<Min: 155.82 - 160.1 1% Min: Pyrite>>

<<Min: 160.1 - 160.9 1% Min: Pyrite>>

<<Min: 166.14 - 189.76 1% Min: Pyrite>>

<<Min: 166.14 - 189.76 0.01% Min: Pyrrhotite>>

<<Alt: 155.82 - 159.2 Moderate Muscovite>> Pervasive alteration, barring the siliceous zones

<<Alt: 159.2 - 166.14 Moderate-Strong Muscovite>> No textures left, but rock is still coherent

<<Alt: 166.14 - 170.56 Moderate Muscovite>>

<<Struc: 166.5 - 166.5 dominant foliation>> Micaceous parting

166.70 175.51 RHY undifferentiated rhyolite green FMG

166.7 - 175.51: Strongly muscovite altered rhyolitic material with ptygmatic bands (veins?) of quartz and pyrite as well as massive quartz pods/veins. The sole primary texture preserved is the siliceous quartz eyes present in the rock.

<<Alt: 170.56 - 172.57 Weak-Moderate Muscovite>> Does not alter the siliceous pods

<<Alt: 172.57 - 180.3 Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

175.51 176.11 RHYcw Curdy textured-flow banded (flows, subvolcanics) green FG

175.51 - 176.11: Strongly muscovite altered unit. Curdy silica texture has been preserved through the alteration, suggesting a unit of RHYcw.

176.11 181.70 RHY undifferentiated rhyolite green FMG

176.11 - 181.7: Strongly muscovite altered rhyolitic material with ptygmatic bands (veins?) of quartz and pyrite as well as massive quartz pods/veins. The sole primary feature preserved are the rare siliceous quartz eyes present in the rock.

<<Alt: 180.3 - 181.7 Moderate-Strong Muscovite>>

<<Struc: 179.41 - 179.41 dominant foliation>> Micaceous parting

181.70 187.56 RHYv Rhyolite volcaniclastic green FMG

181.7 - 187.56: strongly muscovite altered unit, well developed banding is preserved, as well as rare quartz eyes, suggesting a sedimentary process. The lack of additional features suggests an ash tuff

<<Alt: 181.7 - 187.56 Moderate Muscovite>> Banding is preserved, despite pervasive alteration

<<Struc: 186.97 - 186.97 dominant foliation>> micaceous fault

187.56 192.10 MDSw Coherent rhyolite flow with carbonaceous content light grey FG

187.56 - 192.1: This unit primarily consists of curdy-textured silica with deformed bands of carbonaceous material and muscovite.

<<Min: 189.76 - 235.63 1% Min: Pyrite>> In bands with quartz and disseminated

<<Alt: 187.56 - 188.47 Weak-Moderate Muscovite>> Moderately altered between curdy silica pods and carbonaceous material.

<<Alt: 188.47 - 189.21 Weak Muscovite>> Weakly altered between curdy silica pods and carbonaceous material.

<<Vein: 188.87 - 188.9 100% Quartz 75 deg. >>

192.10 195.34 MDSt Rhyolite tuff dominant mudstone grey-green FG

192.1 - 195.34: Comprises moderately muscovite altered rhyolitic material with deformed and dismembered bands of carbonaceous material as well bands/veins of quartz-pyrite. Due to the lower levels of poddy-curdy silica in this unit it is interpreted as a tuffaceous unit.

<<Alt: 192.72 - 195.08 Weak-Moderate Muscovite>> Moderately altered between the ptygmatic quartz-pyrite bands and carbonaceous material.

<<Alt: 195.08 - 270.02 Weak Muscovite>> Overprint white/silver muscovite

<<Struc: 192.94 - 193 Weak-Moderate Fault>> 95% gouge, 5% crushed rock

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

195.34 202.38 MDSw Coherent rhyolite flow with carbonaceous content medium grey FG

195.34 - 202.38: This unit primarily consists of curdy-textured silica with deformed bands of carbonaceous material and muscovite.

202.38 224.40 RHYcw Curdy textured-flow banded (flows, subvolcanics) medium grey FG

202.38 - 224.4: Comprises primarily curdy textured silica. The interstitial material to this silica is muscovite. Quartz eyes are very rare, possible xenocrysts

224.40 224.80 RHYva Coarse grained to ash tuff light grey FG

224.4 - 224.8: A thin zone of ash? within a sequence of coherent rhyolitic flow units. This could e a xenolith within a single flow, or possibly an intra-flow layer however, there does not appear to be a flow top breccia on either margin.

224.80 235.63 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green FG

224.8 - 235.63: Comprises primarily curdy textured silica. The interstitial material to this silica is muscovite.

235.63 238.84 RHYva Coarse grained to ash tuff light grey FCG

235.63 - 238.84: Comprises a matrix of fine grained, weakly muscovite altered siliceous ashy material, with rare 0.5-2.5 cm siliceous lapilli, <15%.

<<Min: 235.63 - 255.02 1% Min: Pyrrhotite>>

<<Alt: 235.63 - 270.02 Weak Calcite>>

238.84 242.95 RHYvl Lapilli tuff light grey FCG

238.84 - 242.95: Comprises a matrix of fine grained, weakly muscovite altered siliceous ashy material, with rare 0.5-2.5 cm siliceous lapilli, >15%.

<<Struc: 239.36 - 239.36 dominant foliation>> lapilli flattening plane

242.95 256.02 RHYvl Lapilli tuff medium grey FCG

242.95 - 256.02: Comprises a matrix of fine grained, weakly muscovite or chlorite altered siliceous ashy material, with lapilli of various varieties (siliceous, BCQlpl, carbonate bearing) lapilli, >15% and lithic fragments.

<<Min: 255.02 - 300 0.5% Min: Pyrrhotite>>

<<Alt: 242.95 - 251.82 Weak Chlorite>> Patchy chlorite in the matrix of the RHYvl and occasionally in the lapilli too.

<<Vein: 248.78 - 248.8 100% Quartz 25 deg. >>

<<Struc: 253.1 - 253.1 dominant foliation>> Micaceous parting plane

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

256.02 270.02 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

256.02 - 270.02: Comprises crystals of feldspar (15-20%) and common quartz eyes (1-5%) in a matrix of fine grained ashy material.

<<Vein: 256.58 - 256.71 100% Quartz-Carbonate 70 deg. >>

<<Vein: 267.25 - 267.57 100% Quartz-Carbonate>>

270.02 270.29 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

270.02 - 270.29: Comprises a unit of biotite altered (fine, brown) pelitic material, well banded, with pervasive calcite.

<<Alt: 270.02 - 270.29 Moderate Calcite>> Hosted in pelite

<<Alt: 270.02 - 270.29 Weak-Moderate Biotite>> Hosted in pelite

270.29 285.33 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

270.29 - 285.33: Comprises crystals of feldspar (15-20%) and common quartz eyes (1-5%) in a matrix of fine grained ashy material.

<<Alt: 270.29 - 285.33 Weak Muscovite>> Overprint white/silver muscovite

<<Alt: 270.29 - 285.33 Weak Calcite>>

<<Vein: 272 - 276 5% Tourmaline 5 deg. >> Vein has releasing bends, revealing a dextral offset, with Beta ~320

<<Vein: 277.55 - 278.3 75% Quartz>>

<<Vein: 278.14 - 278.3 5% Tourmaline>>

<<Vein: 280.79 - 280.89 95% Quartz-Carbonate>>

<<Struc: 275.4 - 275.4 Vein>> Tourmaline vein with releasing bends, indicating normal motion

285.33 285.83 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

285.33 - 285.83: Comprises a unit of biotite altered (fine, brown) pelitic material, well banded, with pervasive calcite.

<<Alt: 285.33 - 285.83 Moderate Calcite>> Hosted in pelite

<<Alt: 285.33 - 285.83 Weak-Moderate Biotite>> Hosted in pelite

285.83 291.97 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

285.83 - 291.97: Comprises crystals of feldspar (15-20%) and common quartz eyes (1-5%) in a matrix of fine grained ashy material.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 285.83 - 291.97 Weak Muscovite>> Overprint white/silver muscovite

<<Alt: 285.83 - 291.97 Weak Calcite>>

<<Vein: 287.85 - 287.92 100% Quartz>> SUL (0.9 SP, 0.1 GL)

<<Struc: 285.83 - 285.83 Contact>> Lower contact between PEL-RHYvx

291.97 292.15 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

291.97 - 292.15: Comprises a unit of biotite altered (fine, brown) pelitic material, well banded, with pervasive calcite.

<<Alt: 291.97 - 292.15 Weak-Moderate Calcite>> Hosted in pelite

<<Alt: 291.97 - 292.15 Weak-Moderate Biotite>> Hosted in pelite

292.15 295.68 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

292.15 - 295.68: Comprises crystals of feldspar (15-20%) and common quartz eyes (1-5%) in a matrix of fine grained ashy material.

<<Alt: 292.15 - 295.68 Weak Muscovite>> Overprint white/silver muscovite

<<Alt: 292.15 - 295.68 Weak Calcite>>

295.68 296.65 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

295.68 - 296.65: Comprises a unit of biotite altered (fine, brown) pelitic material, well banded, with pervasive calcite, a thick quartz carbonate vein cuts the middle of the unit

<<Alt: 295.68 - 296.65 Weak-Moderate Calcite>> Hosted in pelite

<<Alt: 295.68 - 296.65 Moderate Biotite>> Hosted in pelite

<<Vein: 295.85 - 296.35 90% Quartz 70 deg. >>

296.65 297.85 RHYvx Quartz and/or feldspar crystal tuff medium grey FMG

296.65 - 297.85: Comprises crystals of feldspar (15-20%) and common quartz eyes (1-5%) in a matrix of fine grained ashy material.

<<Alt: 296.65 - 300 Weak Muscovite>> Overprint white/silver muscovite

<<Alt: 296.65 - 300 Weak Calcite>>

297.85 300.00 RHYvl Lapilli tuff medium grey FCG

297.85 - 300: Comprises weakly flattened lapilli 0.5-3 cm in the long direction, with a sericite-altered (OP), fine matrix.

<<Struc: 299.8 - 299.8 dominant foliation>> Lapilli flattening plane

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 300											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-410

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	GPS	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Knight Piésold	Date Logging Start:	8/10/2016
UTM Easting	416138	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	8/10/2016
UTM Northing:	6816446	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1474	Casing Depth (m):	6	Length (m):	31	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/8/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	8/9/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

This hole was drilled as part of a geotechnical investigation of the Class C storage facility that included Standard Penetration Tests (SPT's), Packer Testing and Thermistor installation. It intersected black mudstone of the Wind Lake Formation interbedded with thin mafic tuff units, followed by a thicker, possibly crystal bearing mafic tuff unit. It is possible that this lower unit is the uppermost portion of the KZK Formation however without additional context, it is difficult to make a positive determination.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	8/8/2016		☑	Vertical hole

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.07 OVBN Overburden

6.07 18.74 MDS Carbonaceous Mudstone & Tuffaceous Mudstone **black** **VFG**

6.07 - 18.74: Black argillaceous mudstone with streaks of white carbonate rich material. Thin (0.2-0.5 m) interbeds of medium grained mafic volcaniclastic material are present within this unit

<<Alt: 6.07 - 18.74 Moderate Calcite>> Carbonate is present throughout the unit, but is especially strong in the lighter patches of the rock

<<Vein: 8.87 - 10.2 90% Quartz-Carbonate>>

<<Struc: 14.7 - 14.7 dominant foliation>> Foliation within the argillaceous mudstone

18.74 29.76 MAFt Mafic Volcaniclastics **grey-green** **FMG**

18.74 - 29.76: White granule sized clasts with angular, sometimes polygonal edges suggesting crystals? in a matrix of fine grey green ashy-tuffaceous material. The unit is predominantly massive with some zones of banding.

<<Min: 18.74 - 23.7 0.5% Min: Pyrrhotite>> Thin wisps of foliation parallel pyrrhotite

<<Alt: 18.74 - 29.26 Weak-Moderate Calcite>> Bands of carbonate rich material throughout

<<Alt: 29.26 - 31 Trace Calcite>> Weak, spotty carbonate material

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 21 - 21.25 99% Quartz-Carbonate>>

29.76 31.00 MAFt Mafic Volcaniclastics grey-green FCG

29.76 - 31: White, 2-10 mm rounded, but still vaguely polygonal clasts (possibly large, transported crystals or lapilli) in a matrix of fine tuffaceous, ashy material.

<<Min: 29.76 - 31 0.5% Min: Pyrite>> Thin wisps of foliation parallel pyrite

<<Struc: 29.85 - 29.85 dominant foliation>> Lapilli flattening plane

End of Hole @ 31

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-411

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	GPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Knight Piésold	Date Logging Start:	8/13/2016
UTM Easting	415944	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	8/14/2016
UTM Northing:	6816237	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1448	Casing Depth (m):	0	Length (m):	34.1	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/9/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	8/12/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

K16-411 was drilled as part of a geotechnical investigation of the Class C storage facility that included Standard Penetration Tests (SPT's), Packer Testing and Thermistor installation.. Bedrock was encountered at a depth of 18.2m consisting of carbonaceous mudstone, with mafic volcaniclastics of the Wind Lake Formation.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	8/9/2016		☑	Vertical hole

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 18.20 OVBN Overburden

18.20 21.35 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

18.2 - 21.35: Dark grey, fine-grained, carbonaceous mudstone.

<<Min: 18.2 - 21.35 0.1% Min: Pyrite>>

<<Alt: 18.2 - 21.35 Trace Calcite>>

<<Struc: 18.5 - 21.44 Trace Fault>> Rubble zone; poor recovery.

21.35 26.75 MAFt Mafic Volcaniclastics

21.35 - 26.75: Oxidized, light-grey, bleached mafic volcaniclastics with clay-like alteration, calcite stringers, and strained-blebs of pyrite.

<<Min: 21.35 - 26.75 2% Min: Pyrite>> Disseminated blebs of pyrite, increasing abundance downhole.

<<Alt: 21.35 - 26.75 Weak Calcite>> Calcite clots and stringers.

<<Vein: 21.35 - 26.75 Quartz-Carbonate>> Quartz-calcite stringers.

<<Struc: 22.25 - 22.55 Weak Fault>> Rubble zone, and oxidized gouge; poor recovery.

<<Struc: 22.88 - 22.89 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 26.63 - 27.55 Trace Fault>> Rubble zone; poor recovery.

26.75 34.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

26.75 - 34.1: Dark-grey to black, carbonaceous mudstone. Oxidation is localized within vuggy, carbonate-rich bands.

<<Min: 26.75 - 34.1 0.1% Min: Pyrite>> Pyrite replacement within quartz-carbonate banding.

<<Alt: 26.75 - 34.1 Trace Calcite>>

<<Struc: 31.69 - 31.7 dominant foliation>>

<<Struc: 33.36 - 33.85 Weak-Moderate Fault>> Fault gouge, weak-shearing.

End of Hole @ 34.1

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-412

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	GPS	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Knight Piésold	Date Logging Start:	8/15/2016
UTM Easting	416068	Core Size:	HQ3	Azimuth:	360	Date Logging Complete:	8/16/2016
UTM Northing:	6816060	Casing Pulled?:	Yes	Dip:	-90	Drill Company:	Hytech
UTM Elev. (m):	1462	Casing Depth (m):	0	Length (m):	38.7	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/12/2016
Local Northing:		Cemented?:	THM	Core Storage Loc.:	KZK Camp	Drill Completed:	8/14/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
						Parent Hole:	

Comments:

K16-412 was drilled as part of a geotechnical investigation of the Class C storage facility that included Standard Penetration Tests (SPT's), Packer Testing and Thermistor installation.. Bedrock was encountered at a depth of 19m and consisted of interbedded carbonaceous mudstone and mafic volcaniclastics of the Wind Lake Formation. Quartz veining was prominent between 21.5 - 24.5 m, followed by weak to moderate faulting to a depth of 28.2 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-90	360	0	360	PLND-LiDAR	Knight Piésold	8/12/2016		☑	Vertical hole

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 19.00 OVBN Overburden

19.00 33.97 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

19 - 33.97: Dark grey, carbonaceous mudstone with small beds of mafic volcaniclastics. Quartz veining is prominent between 21.5 - 24.5m.

<<Min: 19 - 31.1 0.1% Min: Pyrite>>

<<Min: 31.1 - 33.16 1% Min: Pyrite>> Cm-size pyrite aggregates, and pyrite banding.

<<Min: 33.16 - 33.97 0.1% Min: Pyrite>>

<<Alt: 19 - 25.2 Moderate Calcite>> Disseminated-banded calcite.

<<Alt: 25.2 - 38.05 Trace Calcite>>

<<Vein: 21.5 - 24.5 Quartz-Carbonate>> Quartz-carbonate veins; calcite is patchy and FRA.

<<Vein: 29.13 - 32.5 Quartz-Carbonate>> Weakly-oxidized, vuggy, quartz-carbonate veins.

<<Struc: 20.76 - 20.77 dominant foliation>>

<<Struc: 22.3 - 23.06 Weak Fault>> Rubble zone.

<<Struc: 23.7 - 25.62 Weak-Moderate Fault>> Rubble zone and mudstone gouge; poor recovery.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 26.94 - 28.2 Moderate Fault>> Weak mudstone, and gouge.

<<Struc: 28.95 - 28.96 dominant foliation>>

<<Struc: 29.44 - 31.3 Trace Fault>> Rubble zone.

33.97 34.50 MAFt Mafic Volcaniclastics

<<Min: 33.97 - 34.5 1% Min: Pyrite>> Strained blebs of disseminated pyrite.

<<Vein: 34.37 - 38.6 Quartz-Carbonate>> Quartz-carbonate veins; calcite is blebby.

<<Struc: 34.12 - 34.13 dominant foliation>>

34.50 36.06 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

34.5 - 36.06: Patchy silicification within carbonaceous mudstone.

<<Min: 34.5 - 36.06 0.5% Min: Pyrite>> Pyrite banding and FRA.

<<Alt: 34.5 - 36.06 Weak Silicification>>

<<Struc: 35.82 - 35.83 dominant foliation>>

36.06 38.70 MAFt Mafic Volcaniclastics

36.06 - 38.7: Light grey (bleached) to green mafic volcaniclastics interbedded with small mudstone lenses, near the end of the drillhole. Interval from 36.5 - 37m, contains blebby-bands of quartz, wispy-bands of tuff, and irregular, white bands with 1-2mm sized, clay altered feldspars; blebby-aggregates of pyrite are common within this zone.

<<Min: 36.06 - 37 3% Min: Pyrite>> Cm-size, subrounded blebs of pyrite, and FRA; associated with altered zone within MAFt.

<<Min: 37 - 38.7 0.1% Min: Pyrite>>

<<Alt: 38.05 - 38.7 Moderate Calcite>>

<<Struc: 38.08 - 38.09 dominant foliation>>

End of Hole @ 38.7

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-413

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Roger Hulstein	Date Logging Start:	8/14/2016
UTM Easting	415800	Core Size:	HQ3	Azimuth:	239.9	Date Logging Complete:	8/16/2016
UTM Northing:	6815170	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	New Age
UTM Elev. (m):	1595	Casing Depth (m):	6	Length (m):	147	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/12/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/15/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
						Parent Hole:	

Comments:

Drill hole intersected units of the Wind Lake Formation from 4.6m to 147.0m (EOH). Hole was abandoned at 147.0m due to excessive diviation from planned azimuth of 240 degrees and redrilled as K16-414.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	238.5	1.4	239.9	TN14	Roger Hulstein	8/12/2016		☑	Muddy drill pad, drill likely settled during drilling. At 8pm Aug 15 azimuth of drill rod in chuck was 237.8 (+1.4=239.2 degrees) and dip was -64.6 deg (as measred by TN14) prior to being aligned for K16-414.
15	-64.9	214.4	22.1	236.5	ReflexEZS	New Age	8/13/2016	5855	☐	mag field is a little high
42	-65.8	217.7	22.1	239.8	ReflexEZS	New Age	8/13/2016	5769	☑	
69	-65.7	216.4	22.1	238.5	ReflexEZS	New Age	8/13/2016	5782	☑	
93	-66.1	214.6	22.1	236.7	ReflexEZS	New Age	8/14/2016	5771	☑	
117	-66.4	212.9	22.1	235	ReflexEZS	New Age	8/14/2016	5802	☑	
135	-66.9	211.3	22.1	233.4	ReflexEZS	New Age	8/15/2016	5710	☑	esentially non-magnetic (no pyrrhotite) section.
147	-67.2	211.2	22.1	233.3	ReflexEZS	New Age	8/15/2016	5786	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.60**	**OVBN** **Overburden**									
4.60	**8.76**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone**									

4.6 - 8.76: includes minor MAFta

<<Min: 4.6 - 19.5 0.5% Min: Pyrite>>

<<Min: 4.6 - 19.5 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 4.6 - 8.76 Moderate Calcite>>

<<Vein: 6.1 - 8.76 20% Quartz-Carbonate>>

<<Struc: 5 - 7.3 Moderate dominant foliation>>

<<Struc: 6 - 15.5 Weak Fault>> broken core, minor gouge zones <5cm wide

<<Struc: 7.3 - 12.5 Moderate dominant foliation>>

8.76 13.68 MAFta Coarse grained to ash tuff

8.76 - 13.68: 12.27-12.48m: intercalated unit of calcite rich MDS.

<<Alt: 8.76 - 13.68 Moderate Calcite>>

<<Struc: 12.5 - 38 Moderate dominant foliation>> local zones of wavy banding approx perpendicular to DFOL

13.68 16.08 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 13.68 - 16.08 Moderate-Strong Calcite>>

<<Vein: 14.7 - 21 15% Quartz-Carbonate>>

16.08 19.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

16.08 - 19.5: minor bands of MAFta

<<Alt: 16.08 - 19.5 Moderate Calcite>>

19.50 21.45 MAFt Mafic Volcaniclastics

19.5 - 21.45: cm size siliceous (rhyolite?) blebs (large lapilli?) separated by green clay rich folia. 19.85-19.93m: weak limonite, gougy, crushed qtz zone. 19.93-20.05m: carbonaceous mudstone.

<<Min: 19.5 - 21.45 0.5% Min: Pyrite>>

<<Alt: 19.5 - 21.45 Weak Calcite>>

<<Vein: 21 - 40 5% Calcite>>

<<Struc: 19.85 - 19.93 Weak-Moderate Fault>> fault gouge

21.45 44.15 MAFt Mafic Volcaniclastics

21.45 - 44.15: upper section is coarser.

<<Min: 21.45 - 39 1% Min: Pyrite>> and as diss

<<Min: 21.45 - 39 1% Min: Pyrrhotite>>

<<Min: 39 - 40.8 1% Min: Pyrite>>

<<Min: 39 - 40.8 3% Min: Pyrrhotite>>

<<Min: 40.8 - 44.15 1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 21.45 - 44.15 Moderate-Strong Calcite>> and in bands and diss

<<Vein: 42.95 - 46.45 15% Quartz-Carbonate>>

<<Struc: 28.74 - 30 Moderate Fault>> broke core, minor gouge

<<Struc: 38 - 38.44 Moderate dominant foliation>>

<<Struc: 38.44 - 39 Moderate dominant foliation>>

44.15 46.66 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

44.15 - 46.66: intercalated carbonaceous MDS (60%) with MAFta (40%).

<<Min: 44.15 - 46.66 1% Min: Pyrite>>

<<Min: 44.15 - 46.66 1% Min: Pyrrhotite>>

<<Alt: 44.15 - 46.66 Moderate-Strong Calcite>>

<<Alt: 45.5 - 46.66 Weak Silicification>>

<<Struc: 44.5 - 45.5 Weak-Moderate Fault>> broke core, minor gouge

46.66 56.10 MAFt Mafic Volcaniclastics

46.66 - 56.1: 48.93-49.10m: siliceous 'lappilli' - similar to 19.50-21.45m.

<<Min: 46.66 - 56.1 0.5% Min: Pyrite>>

<<Min: 46.66 - 56.1 3% Min: Pyrrhotite>>

<<Alt: 46.66 - 56.1 Moderate Calcite>> and in bands and blebs

<<Alt: 52.88 - 55.53 Weak Biotite>>

<<Vein: 51.3 - 51.8 15% Quartz-Carbonate 10 deg. >>

<<Struc: 47.5 - 48 Moderate dominant foliation>>

<<Struc: 48 - 48.4 Moderate dominant foliation>>

<<Struc: 50.55 - 50.65 Moderate-Strong Contact>>

<<Struc: 55.5 - 57 Moderate dominant foliation>>

56.10 62.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

56.1 - 62.6: Includes section of MAFta or non carbonaceous MDS at: 56.72-57.13m, 60.00-60.31m,

<<Min: 56.1 - 62.6 5% Min: Pyrite>>

<<Alt: 56.1 - 62.6 Moderate Silicification>> original siliceous argillite

<<Alt: 56.1 - 62.6 Weak-Moderate Calcite>>

<<Vein: 56.1 - 57.5 10% Quartz-Carbonate>>

<<Struc: 57.7 - 62 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 59.7 - 66.95 Weak Fault>> broken core (brittle fracture of siliceous agillite), minor gouge zones.

62.60 63.59 MAFta Coarse grained to ash tuff

<<Min: 62.6 - 63.59 1% Min: Pyrite>>

<<Alt: 62.6 - 63.59 Moderate Calcite>>

<<Vein: 62.6 - 63.58 8% Quartz-Carbonate>>

63.59 67.14 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

63.59 - 67.14: locally siliceous (argillite?). Minor zones of non carbonaceous MDS or MAFta at: 65.25-65.40m and 64.47-64.71m.

<<Min: 63.59 - 67.14 3% Min: Pyrite>> and as diss

<<Alt: 63.59 - 67.14 Moderate Silicification>> original siliceous argillite

<<Alt: 63.59 - 67.14 Weak Calcite>>

<<Vein: 64.47 - 66.6 8% Quartz-Carbonate>>

<<Struc: 66.85 - 67.14 Moderate dominant foliation>>

67.14 72.82 MAFt Mafic Volcaniclastics

<<Min: 67.14 - 74 3% Min: Pyrite>>

<<Min: 67.14 - 74 0.5% Min: Pyrrhotite>>

<<Alt: 67.14 - 72.82 Moderate Calcite>> and in veins

<<Vein: 67.5 - 79 10% Quartz-Carbonate>> and foliaform bands

<<Struc: 69 - 70 Moderate dominant foliation>>

72.82 73.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 72.82 - 81.13 Weak-Moderate Calcite>> blebs, bands, veins

<<Struc: 73.05 - 73.3 Weak Fault>> broken core

73.50 74.00 MAFta Coarse grained to ash tuff

74.00 77.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 74 - 84.33 3% Min: Pyrite>> rare blebs and hairline stringers

<<Alt: 74 - 80.4 Weak-Moderate Silicification>>

<<Struc: 76 - 76.3 Weak-Moderate Fault>> broken core

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

77.20 80.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

77.2 - 80.4: 79.00-80.40m: siliceous sections

<<Struc: 79.5 - 80.2 Moderate Fault>> broken and missing core, gouge

80.40 81.13 MAFta Coarse grained to ash tuff

81.13 84.33 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 83 - 83.5 0.5% Min: Pyrrhotite>>

<<Alt: 81.13 - 88.31 Moderate Calcite>> and in bands

<<Vein: 84.31 - 84.33 100% Quartz-Carbonate>> and foliaform bands

<<Struc: 83.8 - 84 Moderate dominant foliation>>

84.33 88.31 MAFt Mafic Volcaniclastics

<<Min: 84.33 - 84.53 5% Min: Pyrite>>

<<Min: 84.33 - 84.53 0.1% Min: Chalcopyrite>>

<<Min: 84.53 - 88.1 1% Min: Pyrite>>

<<Min: 88.1 - 90.39 1% Min: Pyrite>>

<<Min: 88.1 - 90.39 3% Min: Pyrrhotite>>

<<Vein: 87.47 - 88.31 10% Quartz-Carbonate>>

<<Struc: 84.33 - 86.2 Weak-Moderate Fault>> broken core, clay on foliation

88.31 95.47 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

88.31 - 95.47: <50% siliceous sections

<<Min: 90.39 - 95.17 3% Min: Pyrite>> and as blebs and hairline veinlet

<<Min: 95.17 - 121.8 1% Min: Pyrite>>

<<Min: 95.17 - 121.8 3% Min: Pyrrhotite>> diss and rare blebs

<<Alt: 88.31 - 91.42 Moderate Calcite>> and in bands

<<Alt: 91.42 - 95.47 Weak Calcite>> blebs, bands, veins

<<Alt: 93.3 - 97.7 Weak Silicification>>

<<Vein: 91.74 - 95.19 10% Quartz-Carbonate>>

<<Struc: 91.3 - 95 Weak-Moderate Fault>> zones of broken core, clay on foliation

95.47 116.85 MAFt Mafic Volcaniclastics

<<Alt: 95.47 - 104.4 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 104.4 - 108.4 Weak Calcite>>

<<Alt: 108.4 - 126 Moderate Calcite>> blebs and bands

<<Vein: 111.9 - 111.98 70% Quartz-Carbonate>>

<<Vein: 114 - 124.4 5% Quartz-Carbonate>>

<<Struc: 96 - 97.3 Moderate dominant foliation>>

<<Struc: 98 - 99 Moderate dominant foliation>>

<<Struc: 103.9 - 104.2 Weak-Moderate Fault>> broken core, clay on foliation

<<Struc: 104.8 - 105.6 Moderate dominant foliation>>

<<Struc: 112 - 112.2 Weak-Moderate Fault>> broken and crushed core

116.85 123.44 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 121.8 - 126 1% Min: Pyrite>>

<<Min: 121.8 - 126 0.5% Min: Pyrrhotite>>

<<Struc: 117 - 117.4 Moderate dominant foliation>>

<<Struc: 119.8 - 120 Moderate dominant foliation>>

<<Struc: 122.8 - 123.3 Moderate dominant foliation>>

<<Struc: 123.27 - 123.47 Weak-Moderate Fault>> gouge zone

123.44 126.00 MAFt Mafic Volcaniclastics

<<Struc: 125.1 - 125.35 Weak-Moderate Fault>> crushed core & missing core

126.00 137.06 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 126 - 131 1% Min: Pyrite>> and rare blebs

<<Min: 131 - 147 2% Min: Pyrite>> and as wisps

<<Min: 131 - 147 2% Min: Pyrrhotite>> and as wisps and rare bands with pyrite and calcite

<<Alt: 126 - 131.65 Moderate-Strong Calcite>> dis and bands

<<Alt: 131.65 - 132.4 Weak Calcite>>

<<Alt: 132.4 - 137.06 Moderate-Strong Calcite>> dis and bands

<<Struc: 126.15 - 126.35 Weak-Moderate Fault>> crushed core

<<Struc: 126.8 - 128.6 Trace Fault>> broken and minor clay on foliation

<<Struc: 131.1 - 132 Weak-Moderate Fault>> broken and minor gouge

<<Struc: 133 - 134 Moderate dominant foliation>>

<<Struc: 134.3 - 134.7 Weak Fault>> broken and minor gouge

<<Struc: 136.2 - 137.1 Weak Fault>> broken and minor gouge

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-413

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
137.06	**138.56**	**MAFt** **Mafic Volcaniclastics** <<Alt: 137.06 - 138.56 Moderate Calcite>> dis and bands									
138.56	**146.08**	**MDS** **Carbonaceous Mudstone & Tuffaceous Mudstone** <<Alt: 138.56 - 147 Moderate Calcite>> dis and blebs <<Struc: 139.85 - 139.93 Moderate Fault>> gouge <<Struc: 140 - 141 Moderate dominant foliation>>									
146.08	**147.00**	**MAFt** **Mafic Volcaniclastics**									
End of Hole @ 147											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-414

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Roger Hulstein	Date Logging Start:	8/16/2016
UTM Easting	415800	Core Size:	HQ3	Azimuth:	245	Date Logging Complete:	8/25/2016
UTM Northing:	6815170	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	New Age
UTM Elev. (m):	1595	Casing Depth (m):	4.5	Length (m):	342.25	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/15/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/21/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
						Parent Hole:	

Comments:

Exploration and down hole geophysical (EM) drillhole K16-414 was abandoned at 342.25m due to excessive deviation. A new hole, K16-414W1 was then wedged off at 266.50m in an ultimately unsuccessful attempt to correct the azimuth. K16-414W1 was abandoned at 285.00m due to excessive deviation. No geophysical survey was carried out on either hole.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	243.6	1.4	245	TN14	Roger Hulstein	8/15/2016		☑	
15	-64.6	221.3	22.1	243.4	ReflexEZS	New Age	8/15/2016	5827	☑	
42	-65.8	222.7	22.1	244.8	ReflexEZS	New Age	8/16/2016	5750	☑	
69	-66.4	220.1	22.1	242.2	ReflexEZS	New Age	8/16/2016	5790	☑	
93	-66.5	218.6	22.1	240.7	ReflexEZS	New Age	8/16/2016	5783	☑	
114	-66.9	218	22.1	240.1	ReflexEZS	New Age	8/17/2016	5735	☑	
144	-67.5	217.8	22.1	239.9	ReflexEZS	New Age	8/17/2016	5808	☑	
171	-67.7	217.3	22.1	239.4	ReflexEZS	New Age	8/18/2016	5796	☑	
192	-68	216.1	22.1	238.2	ReflexEZS	New Age	8/18/2016	5791	☑	
216	-68.5	215.4	22.1	237.5	ReflexEZS	New Age	8/18/2016	5797	☑	
243	-68.7	214.5	22.1	236.6	ReflexEZS	New Age	8/19/2016	5790	☑	
267	-69.7	213.4	22.1	235.5	ReflexEZS	New Age	8/19/2016	5775	☑	
291	-70.2	212.2	22.1	234.3	ReflexEZS	New Age	8/20/2016	5782	☑	
327	-70.3	209.3	22.1	231.4	ReflexEZS	New Age	8/20/2016	5788	☑	
339	-70.2	209.2	22.1	231.3	ReflexEZS	New Age	8/20/2016	5787	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**4.50**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

4.50 8.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

4.5 - 8.4: core rubble, mostly qtz-calcite veining recovered

<<Min: 4.5 - 11.25 1% Min: Pyrite>>

<<Alt: 4.5 - 8 Moderate Calcite>> calcite mostly in qtz-calicite veining

<<Alt: 8 - 13 Moderate-Strong Calcite>> bands, blebs and diss

<<Vein: 4.5 - 8 70% Quartz-Carbonate>> poor core recovery in zone

<<Struc: 7.5 - 9.4 Moderate-Strong Fault>>

8.40 12.85 MAFt Mafic Volcaniclastics

8.4 - 12.85: weak carbonaceous & calcite rich section 11.72-12.16m.

<<Min: 11.25 - 39 1% Min: Pyrrhotite>>

<<Min: 11.25 - 41.6 0.5% Min: Pyrite>>

<<Struc: 10.4 - 10.7 Weak-Moderate Fault>>

<<Struc: 11.5 - 11.8 Moderate-Strong dominant foliation>>

<<Struc: 12 - 12.3 Weak-Moderate Fault>>

12.85 14.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 13 - 22.4 Weak-Moderate Calcite>> bands, blebs, diss

<<Struc: 12.85 - 14.1 Moderate-Strong Fault>> missing core

14.60 15.46 MAFt Mafic Volcaniclastics

<<Vein: 14.8 - 17.8 35% Quarzt-Chlorite-Carbonate>>

15.46 18.83 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 18 - 18.8 Weak-Moderate Silicification>>

<<Struc: 16 - 18 Strong Fault>> broken and missing core

18.83 40.90 MAFta Coarse grained to ash tuff

18.83 - 40.9: 40.20-40.90: weak increase in carbonaceous wisps.

<<Min: 33 - 332 1% Min: Pyrite>>

<<Min: 39 - 41.6 3% Min: Pyrrhotite>>

<<Alt: 22.4 - 51.7 Moderate-Strong Calcite>> bands, blebs, diss

<<Vein: 19.1 - 19.2 100% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 26.5 - 27.4 10% Quartz-Carbonate>>

<<Struc: 18.83 - 22.5 Strong Fault>> broken and missing core, gouge

<<Struc: 27 - 27.7 Moderate Fault>> broken core

<<Struc: 28.3 - 29 Moderate-Strong dominant foliation>>

<<Struc: 29.65 - 31.4 Moderate Fault>> zones of missing core and minor gouge

<<Struc: 31.4 - 35.8 Weak Fault>> zones of missing core and minor gouge

<<Struc: 35.92 - 36.1 Moderate-Strong dominant foliation>>

<<Struc: 38.5 - 39 Moderate-Strong dominant foliation>>

40.90 41.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 41.6 - 54 1% Min: Pyrrhotite>>

<<Min: 41.6 - 56.87 0.5% Min: Pyrite>> patchy

<<Struc: 41.6 - 43.8 Trace Fault>> zones of missing core and minor gouge

41.88 46.84 MAFta Coarse grained to ash tuff

41.88 - 46.84: minor carbonaceous bands

<<Vein: 46.7 - 47 50% Quarzt-Chlorite-Carbonate>>

<<Struc: 45 - 45.5 Moderate-Strong dominant foliation>>

46.84 48.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Struc: 47 - 48 Moderate Fault>> broken and missing core

48.00 56.30 MAFt Mafic Volcaniclastics

48 - 56.3: 49.60-49.76: banded-blebby siliceous zone, similar to zone noted in K16-413 at about same depth.

<<Alt: 51.7 - 56.3 Moderate Calcite>> bands, blebs, diss

56.30 56.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 56.3 - 58 Weak-Moderate Calcite>> bands, blebs, diss

<<Alt: 56.3 - 62.88 Moderate Silicification>>

56.60 56.87 MAFt Mafic Volcaniclastics

56.87 57.48 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 56.87 - 62.88 3% Min: Pyrite>> occasional blebs and bands Py

<<Struc: 56.87 - 57.15 Moderate-Strong dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

57.48 57.93 MAFt Mafic Volcaniclastics

57.93 62.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 58 - 62.88 Weak Calcite>> bands, blebs, diss

<<Vein: 60.77 - 60.86 100% Quartz-Carbonate>>

<<Struc: 61.3 - 62.88 Weak-Moderate Fault>> brittle fractures, minor gouge on folia.

62.88 64.00 MAFt Mafic Volcaniclastics

<<Min: 62.88 - 65.32 1% Min: Pyrite>>

<<Alt: 62.88 - 64 Moderate Calcite>>

64.00 64.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 64 - 66 Moderate Silicification>>

<<Alt: 64 - 69.1 Weak Calcite>>

64.65 65.32 MAFt Mafic Volcaniclastics

65.32 66.70 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 65.32 - 69.1 3% Min: Pyrite>>

<<Vein: 66 - 66.33 100% Quartz-Carbonate>>

<<Struc: 66.38 - 69.1 Moderate Fault>> brittle fractures, minor gouge on folia, missing core.

66.70 67.30 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

<<Struc: 67 - 67.3 Moderate-Strong dominant foliation>>

67.30 69.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 67.3 - 69.1 Moderate Silicification>>

69.10 73.51 MAFt Mafic Volcaniclastics

<<Min: 69.1 - 73.51 1% Min: Pyrite>>

<<Min: 69.1 - 73.51 0.5% Min: Pyrrhotite>>

<<Alt: 69.1 - 75.2 Weak-Moderate Calcite>>

73.51 85.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

73.51 - 85: 81.60-83.65m: more MAFta bands

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 73.51 - 81.6 1% Min: Pyrite>>

<<Min: 75.6 - 75.6 0.1% Min: Chalcopyrite>> in qtz bleb or clast in siliceous mudstone unit.

<<Min: 81.6 - 89.5 0.5% Min: Pyrite>>

<<Min: 81.6 - 89.5 3% Min: Pyrrhotite>>

<<Alt: 74.4 - 76.6 Weak-Moderate Silicification>>

<<Alt: 75.2 - 84.6 Weak Calcite>>

<<Alt: 76.6 - 81.4 Moderate-Strong Silicification>>

<<Alt: 84.6 - 94 Weak-Moderate Calcite>>

<<Vein: 73.56 - 79.8 25% Quartz-Carbonate>>

<<Struc: 73.51 - 83.1 Weak Fault>> brittle fractures, minor gouge on folia.

<<Struc: 75.1 - 75.3 Moderate-Strong dominant foliation>>

<<Struc: 83.25 - 83.8 Weak dominant foliation>>

85.00 86.58 MAFta Coarse grained to ash tuff

85 - 86.58: very minor carbonaceous bands

<<Struc: 85 - 92.62 Trace Fault>> brittle fractures, minor gouge on folia.

86.58 87.28 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

87.28 89.35 MAFta Coarse grained to ash tuff

89.35 91.15 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 89.5 - 92.62 0.5% Min: Pyrrhotite>>

<<Min: 89.5 - 97 3% Min: Pyrite>>

<<Struc: 91 - 92.6 Moderate-Strong dominant foliation>>

91.15 92.62 MAFta Coarse grained to ash tuff

<<Vein: 92.28 - 94.45 8% Quartz-Carbonate>>

92.62 97.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

92.62 - 97.1: very minor ash bands

<<Min: 97 - 127.4 2% Min: Pyrrhotite>>

<<Alt: 94 - 96.2 Weak Calcite>>

<<Alt: 94.8 - 96.2 Moderate-Strong Silicification>>

<<Alt: 96.2 - 159 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 92.62 - 95.8 Weak-Moderate Fault>> brittle fractures, minor gouge on folia.

97.10 104.85 MAFta Coarse grained to ash tuff

97.1 - 104.85: looks like an epiclastic…

<<Vein: 97.1 - 105.8 8% Quartz-Carbonate>>

<<Struc: 101.38 - 102 Moderate dominant foliation>>

<<Struc: 104.7 - 105 Moderate dominant foliation>>

104.85 105.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

104.85 - 105.5: ash rich

105.50 114.67 MAFta Coarse grained to ash tuff

<<Vein: 113 - 122.92 5% Quartz-Carbonate>>

<<Struc: 105.5 - 107 Weak Fault>> folia parallel gouge

114.67 118.45 MAFta Coarse grained to ash tuff

118.45 121.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

118.45 - 121: minor ash

<<Struc: 119.25 - 229.8 Weak-Moderate Fault>> broken core, minor gouge

<<Struc: 120 - 120.5 Weak-Moderate dominant foliation>>

121.00 122.92 MAFta Coarse grained to ash tuff

<<Struc: 121 - 121.3 Moderate dominant foliation>>

122.92 126.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Struc: 125 - 125.22 Moderate Fault>> broken core, minor gouge

126.00 127.40 MAFta Coarse grained to ash tuff

<<Min: 126 - 129 2% Min: Pyrite>>

127.40 139.38 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

127.4 - 139.38: numerous lenses and blebs of fine grained grey 'limestone'

<<Min: 129 - 132.5 3% Min: Pyrite>> and as mm bands and diss

<<Min: 132.5 - 137.5 3% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 132.5 - 150.04 1% Min: Pyrite>> and in fractures

<<Struc: 128.47 - 129 Moderate Fault>> broken core, minor gouge

<<Struc: 134.5 - 134.8 Moderate Fault>> broken core, minor gouge

<<Struc: 135 - 135.4 Moderate-Strong dominant foliation>>

139.38 140.80 MAFta Coarse grained to ash tuff

<<Struc: 139.38 - 139.8 Moderate Fault>> gouge zones

140.80 146.78 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 143.6 - 145.7 2% Min: Pyrrhotite>> and as diss

<<Struc: 143.5 - 144 Moderate-Strong dominant foliation>>

<<Struc: 145.75 - 146.2 Moderate Fault>> broken core, minor gouge

146.78 151.01 MAFta Coarse grained to ash tuff

<<Min: 150.04 - 150.1 25% Min: Pyrite>> pyritic band

<<Min: 150.1 - 151.01 1% Min: Pyrite>>

<<Min: 150.1 - 151.01 0.5% Min: Pyrrhotite>>

151.01 161.34 MAFt Mafic Volcaniclastics

151.01 - 161.34: ash rich below 159.60m.

<<Min: 159.9 - 166.87 1% Min: Pyrite>> and as mm bands, blebs and in qtz vein

<<Min: 160.6 - 164.4 1% Min: Pyrrhotite>> and in qtz vein

<<Alt: 159 - 166.87 Weak-Moderate Calcite>>

<<Vein: 151.01 - 158 15% Quartz-Carbonate>>

<<Vein: 158 - 160.35 10% Quartz-Carbonate>>

<<Vein: 160.35 - 161.34 60% Quarzt-Chlorite-Carbonate>>

<<Struc: 153 - 157.5 Moderate Fault>> broken core, minor gouge, missing core

161.34 166.87 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Alt: 162 - 166.87 Weak-Moderate Silicification>>

<<Struc: 161.35 - 162 Moderate dominant foliation>>

<<Struc: 162.24 - 165.3 Weak Fault>> (2) six cm gougy zones

166.87 173.90 MAFta Coarse grained to ash tuff

166.87 - 173.9: soupy folds

<<Min: 166.87 - 173.3 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 173.3 - 182.65 1% Min: Pyrite>> and as blebs and as folia

<<Min: 173.55 - 173.65 1% Min: Sulphosalts>> or fine grained galena?

<<Alt: 166.87 - 173.9 Moderate Calcite>> bands, blebs, diss

<<Vein: 170.35 - 175.53 30% Quartz-Carbonate>>

<<Struc: 169 - 169.4 Moderate dominant foliation>>

173.90 182.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

173.9 - 182.65: contorted folding, gougy zones

<<Alt: 173.9 - 182.65 Moderate-Strong Calcite>>

<<Vein: 176 - 178.4 5% Quartz-Carbonate>>

<<Struc: 175.7 - 179.4 Moderate-Strong Fault>> broken, gougy, sheared, contorted folding.

<<Struc: 179.4 - 190 Moderate dominant foliation>>

182.65 184.76 MAFta Coarse grained to ash tuff

182.65 - 184.76: sandy

<<Min: 182.65 - 184.76 1% Min: Pyrite>>

<<Min: 184.65 - 185.75 0.5% Min: Pyrrhotite>>

<<Alt: 182.65 - 184.76 Moderate-Strong Calcite>>

184.76 191.20 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

184.76 - 191.2: local contorted folding.

<<Min: 184.76 - 190.9 1% Min: Pyrite>>

<<Min: 185.65 - 185.75 1% Min: Chalcopyrite>>

<<Min: 190.9 - 192.7 1% Min: Pyrrhotite>>

<<Min: 190.9 - 193.35 3% Min: Pyrite>>

<<Alt: 184.76 - 193.35 Moderate-Strong Calcite>>

<<Struc: 185 - 186.7 Weak-Moderate Fault>> broken core, minor gouge, missing core

<<Struc: 186.1 - 186.25 Moderate >> Axial plane of minor fod

<<Struc: 187.75 - 193.35 Weak Fault>> clay gouge on folia, local crushed and gouge zones, broken core

191.20 192.67 MAFta Coarse grained to ash tuff

<<Vein: 191.2 - 192.3 10% Quartz-Carbonate>>

<<Struc: 192 - 194 Moderate dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

192.67 193.35 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

193.35 197.70 MAFta Coarse grained to ash tuff

<<Min: 193.35 - 197.7 0.5% Min: Pyrite>>

<<Alt: 193.35 - 201 Moderate-Strong Calcite>>

<<Vein: 194.58 - 197.35 5% Quartz-Carbonate>>

197.70 219.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

197.7 - 219.65: minor bands and lenses of grey 'limestone'. 199.60-199.90m: MAFta band.

<<Min: 197.7 - 219.65 1% Min: Pyrite>>

<<Min: 200.6 - 204.4 0.5% Min: Pyrrhotite>>

<<Alt: 201 - 219.65 Moderate-Strong Calcite>> bands, blebs, diss

<<Vein: 203 - 205.9 10% Quartz-Carbonate>>

<<Vein: 209.1 - 211.35 15% Quartz-Carbonate>>

<<Vein: 213.8 - 216.65 10% Quartz-Carbonate>>

<<Vein: 216.65 - 225.25 5% Quartz-Carbonate>>

<<Struc: 199.9 - 203 Moderate-Strong dominant foliation>>

<<Struc: 202.8 - 226.9 Weak Fault>>

<<Struc: 214 - 216 Moderate dominant foliation>>

219.65 225.25 MAFta Coarse grained to ash tuff

<<Min: 219.65 - 223 0.01% Min: Sulphosalts>> questionable - fine grained grey sulfide.

<<Min: 219.65 - 223 3% Min: Pyrite>> blebs and veinlets with calcite-qtz-fuchsite alt

<<Min: 223 - 230 1% Min: Pyrite>>

<<Alt: 219.65 - 224.35 Moderate Muscovite>> not muscovite but Cr-mica, fuchsite - mariposite

<<Alt: 219.65 - 228.28 Weak-Moderate Calcite>> bands, blebs, diss

<<Struc: 225 - 225.25 Moderate dominant foliation>>

225.25 227.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Vein: 225.25 - 229.3 10% Quartz-Carbonate>>

227.85 229.25 MAFta Coarse grained to ash tuff

227.85 - 229.25: 228.28-229.08m: CRB mudstone and ash tuff

<<Alt: 228.28 - 232.2 Moderate Calcite>> bands, blebs, diss

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 228.28 - 229 Moderate dominant foliation>> cutting minor folds = axial plane

229.25 236.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

229.25 - 236.6: narrow bands of ash tuff

<<Min: 230 - 232.2 1% Min: Pyrrhotite>>

<<Min: 230 - 234 3% Min: Pyrite>> blebs and veinlets

<<Min: 234 - 237.1 1% Min: Pyrite>>

<<Alt: 232.2 - 237.86 Weak Calcite>> bands, blebs, diss

<<Vein: 229.3 - 232.3 5% Quartz-Carbonate>>

<<Vein: 234 - 234.7 100% Quartz-Carbonate>>

<<Vein: 234.7 - 237.86 5% Quartz-Carbonate>>

<<Struc: 229.6 - 322.1 Weak-Moderate Fault>> narrow gouge zones and broken core

<<Struc: 232.2 - 234 Moderate Fault>> broken core, minor gouge

<<Struc: 234.72 - 236.37 Moderate-Strong Fault>> broken core, minor gouge

<<Struc: 236.37 - 237.72 Weak-Moderate Fault>> clay on folia, minor gouge zones

236.60 237.10 MAFta Coarse grained to ash tuff

236.6 - 237.1: sheared band of MDS

237.10 237.86 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

237.1 - 237.86: minor siliceous - qtz bands. Shearing intensity increases down unit to 10cm gougy fault contact at 236.76 - 236.86.

<<Min: 237.1 - 237.86 3% Min: Pyrite>>

<<Struc: 237.72 - 238.65 Moderate-Strong Fault>> gouge zones

237.86 242.14 RHYvl Lapilli tuff

237.86 - 242.14: Finer grained, more ash downhole. Upper contact 237.86-238.80m: sheared and gougy. Approx 5% blue QE

<<Min: 237.86 - 248 1% Min: Pyrite>>

<<Alt: 237.86 - 242.14 Trace Calcite>>

<<Struc: 242.1 - 242.2 Strong Contact>> undulating

242.14 256.95 RHYvl Lapilli tuff

242.14 - 256.95: ash rich sections, few feldspar crystals.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 248 - 253.5 1% Min: Pyrrhotite>>
<<Min: 253.5 - 260.66 1% Min: Pyrite>>
<<Alt: 242.14 - 247 Moderate Calcite>>
<<Alt: 247 - 256.95 Weak-Moderate Calcite>>
<<Alt: 252.3 - 256.95 Trace Biotite>>
<<Vein: 242.14 - 246.76 5% Calcite>>
<<Vein: 253.65 - 256.5 3% Quartz-Tourmaline>>
<<Struc: 243 - 243.5 Weak-Moderate dominant foliation>>
<<Struc: 243.5 - 244 Weak-Moderate dominant foliation>>
<<Struc: 247.4 - 248 Moderate-Strong dominant foliation>>
<<Struc: 250.5 - 250.6 Weak-Moderate Fault>> gouge
<<Struc: 250.7 - 251 Moderate dominant foliation>>
<<Struc: 251 - 251.05 Weak-Moderate Fault>> gouge
<<Struc: 252 - 252.1 Weak-Moderate Fault>> gouge

256.95 258.45 PEL Equigranular biotite + calcite +/- quartz rock

256.95 - 258.45: minor biotite

<<Alt: 256.95 - 261.1 Moderate-Strong Calcite>>
<<Vein: 258.1 - 258.2 20% Quartz-Tourmaline>>
<<Struc: 257 - 258.2 Moderate-Strong dominant foliation>>

258.45 260.66 RHYva Coarse grained to ash tuff

<<Min: 260 - 266 0.5% Min: Pyrrhotite>>
<<Alt: 258.45 - 260.66 Trace Biotite>>
<<Vein: 260.4 - 260.6 20% Quartz-Tourmaline>>

260.66 266.72 RHYvl Lapilli tuff

<<Min: 260.66 - 266 3% Min: Pyrite>>
<<Min: 266 - 274 1% Min: Pyrite>>
<<Alt: 260.66 - 269.15 Weak Chlorite>> weak BCQlpl alteration
<<Alt: 261.1 - 266.72 Weak Calcite>>
<<Vein: 261.3 - 264.6 5% Quartz-Carbonate>>
<<Vein: 263.9 - 264 10% Quartz-Tourmaline>>
<<Vein: 263.9 - 264 10% Carbonate-Chlorite>> chl-carb veinlet cuts qtz-tour veinlet
<<Vein: 264.9 - 265 5% Quartz-Tourmaline>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 262.65 - 262.7 Weak-Moderate Fault>> gouge

266.72 269.15 RHYvl Lapilli tuff

266.72 - 269.15: weak BCQlpl

<<Alt: 266.72 - 273 Weak Calcite>>

<<Vein: 267.4 - 268 15% Quartz-Tourmaline>>

269.15 274.00 RHYvl Lapilli tuff

269.15 - 274: weak BCQlpl overprinted by Mu

<<Alt: 269.15 - 273 Weak Muscovite>> Mu overprinting BCQlpl alteration

<<Alt: 269.15 - 273 Trace Chlorite>> weak BCQlpl alteration

<<Alt: 273 - 287 Trace Calcite>>

<<Vein: 271.8 - 272.3 60% Carbonate-Chlorite>>

<<Struc: 269.15 - 269.22 Moderate Fault>> gouge and up hole margin of bleached zone

<<Struc: 273 - 273.3 Moderate Fault>> gouge

274.00 276.00 FLZ Fault Zone

<<Min: 274 - 276 3% Min: Pyrite>>

<<Struc: 274 - 276 Strong Fault>> gouge, sheared

276.00 281.10 RHYvl Lapilli tuff

<<Min: 276 - 298.8 1% Min: Pyrite>>

<<Struc: 276 - 279.9 Weak Fault>> broken core, trace gouge

<<Struc: 279.9 - 294 Moderate Fault>> broken core, numerous 2-15cm gouge zones and zones of broken core

281.10 285.35 RHYvx Quartz and/or feldspar crystal tuff

281.1 - 285.35: scattered (3%) feldspar crystals

<<Alt: 282 - 287 Weak Muscovite>> related to fault zone

285.35 287.30 RHYvl Lapilli tuff

<<Alt: 287 - 294.6 Weak Calcite>>

<<Vein: 286.4 - 287.3 15% Quartz-Tourmaline>>

287.30 288.00 PEL Equigranular biotite + calcite +/- quartz rock

288.00 291.00 RHYvl Lapilli tuff

<<Vein: 288 - 288.4 90% Quartz-Tourmaline>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

291.00 294.00 RHYva Coarse grained to ash tuff

<<Vein: 292.4 - 294 5% Quartz-Carbonate-Sulphide 45 deg. >>

294.00 294.60 RHYvl Lapilli tuff

294 - 294.6: finning up

294.60 299.60 RHYva Coarse grained to ash tuff

294.6 - 299.6: almost a pelite

<<Min: 298.8 - 303 3% Min: Pyrite>>

<<Alt: 294.6 - 299.6 Weak-Moderate Calcite>>

<<Struc: 298.55 - 299.6 Moderate-Strong Fault>> gouge and broken core

299.60 313.30 RHYvl Lapilli tuff

299.6 - 313.3: repeated sequences on 0.5-1.0m scale of lpl and ash beds. Finning upwards and lpl beds commonly have abrupt lower contacts.

<<Min: 303 - 306.2 1% Min: Pyrite>>

<<Min: 303.8 - 303.9 0.01% Min: Sphalerite>>

<<Min: 306.2 - 313 3% Min: Pyrite>>

<<Min: 313 - 342.25 1% Min: Pyrite>>

<<Alt: 299.6 - 307.5 Weak Calcite>>

<<Alt: 307.5 - 322 Trace Calcite>> diss, veinlets, blebs

<<Vein: 300.3 - 300.8 100% Quartz-Carbonate-Sulphide>>

<<Vein: 304.4 - 304.48 80% Carbonate-Kaolinite/White clay 70 deg. >> rhodochrosite

<<Vein: 306.2 - 307.5 100% Quarzt-Tourmaline-Sulphide>> minor pyrite and tourmaline

<<Vein: 310 - 310.15 100% Quartz-Carbonate-Sulphide>> minor pyrite

<<Vein: 311.12 - 311.44 15% Quartz-Carbonate>>

313.30 327.60 RHYvl Lapilli tuff

<<Alt: 315 - 326.7 Trace Tourmaline>>

<<Alt: 322 - 328.5 Weak Calcite>>

<<Vein: 320.2 - 322.33 5% Quartz-Carbonate-Sulphide>> minor pyrite

<<Struc: 326.6 - 328.9 Weak-Moderate Fault>> narrow gouge zones and broken core

327.60 329.50 RHYva Coarse grained to ash tuff

327.6 - 329.5: dominated by ash beds with lesser

<<Alt: 328.5 - 337 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 328.56 - 331.6 20% Quartz-Carbonate>> trace pyrite and tourmaline

329.50 342.25 RHYvl Lapilli tuff

329.5 - 342.25: Good Rhyvl with minor bands of RHYva. Minor folds in foliation with foliation parallel to core axis.

<<Alt: 337 - 342.25 Weak Calcite>>

<<Vein: 332 - 333.45 10% Quartz-Carbonate 62 deg. >> qtz-carb

<<Struc: 329.85 - 330.55 Strong Fault>> gouge and broken core

<<Struc: 330.55 - 331.8 Weak Fault>> minor gouge and broken core.

<<Struc: 332.5 - 333 Moderate dominant foliation>>

<<Struc: 333.5 - 333.6 Moderate dominant foliation>>

<<Struc: 333.5 - 338.3 Weak Fault>> minor gouge zones on folaition and cross cutting it.

<<Struc: 337.5 - 337.9 Moderate dominant foliation>>

<<Struc: 338.3 - 340.75 Weak-Moderate Fault>> broken core and gouge zones

<<Struc: 341 - 342 Moderate dominant foliation>>

End of Hole @ 342.25

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-414W1

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Roger Hulstein	Date Logging Start:	8/26/2016
UTM Easting	415800	Core Size:	HQ3	Azimuth:	245	Date Logging Complete:	8/26/2016
UTM Northing:	6815170	Casing Pulled?:	Yes	Dip:	-65	Drill Company:	New Age
UTM Elev. (m):	1595	Casing Depth (m):	4.5	Length (m):	285	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/21/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	8/23/2016
Local Elev. (m):				Hole Completed?:	Abandoned	Purpose:	Exploration
						Parent Hole:	

Comments:

K16-414W1 is a wedge off K16-414 which was abandoned due to excessive deviation. K16-414W1 was abandoned at 285.00m as the deviation remained excessive. Wedge drill hole (and drill core) starts at 266.50m from parent hole K16-414.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-65	243.6	1.4	245	TN14	Roger Hulstein	8/15/2016		☑	From parent hole K16-414 drill log
15	-64.6	221.3	22.1	243.4	ReflexEZS	New Age	8/15/2016	5827	☑	From parent hole K16-414 drill log
42	-65.8	222.7	22.1	244.8	ReflexEZS	New Age	8/16/2016	5750	☑	From parent hole K16-414 drill log
69	-66.4	220.1	22.1	242.2	ReflexEZS	New Age	8/16/2016	5790	☑	From parent hole K16-414 drill log
93	-66.5	218.6	22.1	240.7	ReflexEZS	New Age	8/16/2016	5783	☑	From parent hole K16-414 drill log
114	-66.9	218	22.1	240.1	ReflexEZS	New Age	8/17/2016	5735	☑	From parent hole K16-414 drill log
144	-67.5	217.8	22.1	239.9	ReflexEZS	New Age	8/17/2016	5808	☑	From parent hole K16-414 drill log
171	-67.7	217.3	22.1	239.4	ReflexEZS	New Age	8/18/2016	5796	☑	From parent hole K16-414 drill log
192	-68	216.1	22.1	238.2	ReflexEZS	New Age	8/18/2016	5791	☑	From parent hole K16-414 drill log
216	-68.5	215.4	22.1	237.5	ReflexEZS	New Age	8/18/2016	5797	☑	From parent hole K16-414 drill log
243	-68.7	214.5	22.1	236.6	ReflexEZS	New Age	8/19/2016	5790	☑	From parent hole K16-414 drill log
266.5	-69.7	213.4	22.1	235.5	ReflexEZS	New Age	8/19/2016	5775	☑	From parent hole K16-414 drill log, extrapolated from measurement at 267.00.
279	-70.1	208.1	22.1	230.2	ReflexEZS	New Age	8/23/2016	5761	☑	
285	-70.1	207.8	22.1	229.9	ReflexEZS	New Age	8/23/2016	5780	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
266.50	**272.81**	**RHYvl Lapilli tuff**									
266.5 - 272.81: very weak remnant BCQlpl											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 266.5 - 272.81 1% Min: Pyrite>>
<<Alt: 266.5 - 270 Weak Calcite>>
<<Alt: 270 - 272.81 Weak-Moderate Calcite>>
<<Vein: 266.75 - 267.25 15% Quartz-Tourmaline 15 deg. >>
<<Vein: 271.93 - 272.15 100% Quarzt-Chlorite-Carbonate 65 deg. >>
<<Struc: 266.5 - 267.83 Moderate Fault>> broken core, rubble
<<Struc: 268.9 - 269.05 Moderate-Strong Fault>> gouge
<<Struc: 269.95 - 270.2 Moderate-Strong Fault>> broken crushed core,

272.81 275.87 FLZ Fault Zone

272.81 - 275.87: sheared , crushed, mino clay gouge

<<Min: 272.81 - 275.87 1% Min: Pyrite>>
<<Alt: 272.81 - 275.87 Weak Calcite>> calcite in clasts
<<Struc: 272.81 - 275.87 Strong Fault>> sheared, clay gouge, 30-65 degree shears

275.87 281.55 RHYvl Lapilli tuff

275.87 - 281.55: disrupted by shearing - faulting

<<Min: 275.87 - 280.62 1% Min: Pyrite>>
<<Min: 280.63 - 280.73 10% Min: Pyrite>>
<<Min: 280.73 - 285 1% Min: Pyrite>>
<<Alt: 275.87 - 278 Weak-Moderate Calcite>>
<<Alt: 278 - 285 Trace Cordierite>>
<<Vein: 278.7 - 278.8 80% Quartz-Carbonate 60 deg. >>
<<Struc: 275.87 - 279.2 Weak-Moderate Fault>> sections of broken core, minor gouge zones
<<Struc: 279.9 - 280.2 Weak Fault>> broken core
<<Struc: 280.05 - 280.1 Strong Fault>> gouge

281.55 283.00 FLZ Fault Zone

281.55 - 283: kaolinized in part

<<Struc: 281.55 - 283 Strong Fault>> gouge, kaolin, broken and crushed core

283.00 285.00 RHYvl Lapilli tuff

<<Struc: 283.7 - 283.8 Strong Fault>> gouge

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-414W1

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
End of Hole @ 285											

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-415

Prospect:	Tarawera	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Oscar Nielsen	Date Logging Start:	8/20/2016
UTM Easting	413575	Core Size:	HQ3	Azimuth:	194.8	Date Logging Complete:	9/5/2016
UTM Northing:	6815210	Casing Pulled?:	Yes	Dip:	-59.9	Drill Company:	New Age
UTM Elev. (m):	1712	Casing Depth (m):	4.5	Length (m):	854.5	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/19/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	9/4/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
Comments:						Parent Hole:	

K16-415 was designed to test a shallow geophysical anomaly in the Rhyolite Peak area and to continue into the underlying stratigraphy.
The likely source of the geophysical anomaly was a 0.52 m zone of massive sulphide interval containing pyrrhotite, pyrite, chalcopyrite, and sphalerite with tourmaline porphyroblasts, intersected from 46.45 m to 46.97 m. The mineralized zone lies between an intrusive rhyolite body/strongly silicified ash tuff above it and a siliceous coherent flow below.
The stratigraphy below the massive sulphide comprises amygdaloidal rhyolite bodies from 82-95 m interlayered with and underlain by a series of moderately to intensely silicified volcaniclastic rocks and fine grained epiclastic rocks.
From 525.21m to 641.84m, the lithology is marked by narrow quartzite units characterized by sharp contacts and intercalated intermediate volcanic (epiclastic) units. Those could be aplitic dykes (or sills) or meta sandstone (possibly channels within the volcanic sediments). Contacts, texture and occurrence tend to suggest sedimentary origin nevertheless porphyroblast ghosts seem occasional.
The bottom of the hole consists in volcaniclastic rhyolite and pelite interbedded. A unique lapilitic/garnet porphyroblasts unit is observed from 510.53m to 519.75m (potential marker unit).
No significant mineralization zones are intercepted excluding the massive sulphide crosscut at 46.45m. When observed, muscovite alteration is weak whereas silicification occurs pervasively.
The hole ends in at 854.50m in mudstone and mafic tuff interbedded.
DHEM survey was processed successfully from bottom to top by Aurora Geosciences.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-59.9	193.4	1.4	194.8	TN14	Oscar Nielsen	8/19/2016		☑	
11	-61.1	177.6	22.1	199.7	ReflexEZS	New Age	8/19/2016	6388	☑	
39	-59.7	5.8	22.1	27.9	ReflexEZS	New Age	8/19/2016	3977	☐	Likely inside drill rods
68.5	-62.2	173.9	22.1	196	ReflexEZS	New Age	8/20/2016	6288	☑	
95.5	-53.1	351.2	22.1	13.3	ReflexEZS	New Age	8/21/2016	3073	☐	Likely inside drill rods
122.5	-62.7	170.7	22.1	192.8	ReflexEZS	New Age	8/22/2016	6456	☑	
149.5	-63.1	170.7	22.1	192.8	ReflexEZS	New Age	8/22/2016	6439	☑	
176.5	-63.1	171.1	22.1	193.2	ReflexEZS	New Age	8/22/2016	6445	☑	
200.5	-63.4	173.3	22.1	195.4	ReflexEZS	New Age	8/23/2016	6415	☑	
227	-63.7	174.3	22.1	196.4	ReflexEZS	New Age	8/23/2016	6427	☑	
260	-64	175.9	22.1	198	ReflexEZS	New Age	8/23/2016	5733	☑	
290	-63.9	174.4	22.1	196.5	ReflexEZS	New Age	8/24/2016	5732	☑	
310	-63.8	177.4	22.1	199.5	ReflexEZS	New Age	8/24/2016	5738	☑	

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
341	-64	178.6	22.1	200.7	ReflexEZS	New Age	8/25/2016	5731	☑	
371	-64	178.7	22.1	200.8	ReflexEZS	New Age	8/25/2016	5751	☑	
395	-63.9	177.9	22.1	200	ReflexEZS	New Age	8/25/2016	5736	☑	
425	-63.8	181.1	22.1	203.2	ReflexEZS	New Age	8/26/2016	5747	☑	
450	-63.7	181.5	22.1	203.6	ReflexEZS	New Age	8/26/2016	5727	☑	
482	-63.7	178.4	22.1	200.5	ReflexEZS	New Age	8/27/2016	5714	☑	
505	-63.6	182.6	22.1	204.7	ReflexEZS	New Age	8/27/2016	5732	☑	
536	-63.6	183.5	22.1	205.6	ReflexEZS	New Age	8/28/2016	5743	☑	
560	-63.8	182.3	22.1	204.4	ReflexEZS	New Age	8/28/2016	5733	☑	
600	-63.6	184	22.1	206.1	ReflexEZS	New Age	8/29/2016	5738	☑	No survey at 585.00m due to rods slipping-foot clamp issue.
632	-63.5	184.9	22.1	207	ReflexEZS	New Age	8/30/2016	5741	☑	
662	-63.1	186.3	22.1	208.4	ReflexEZS	New Age	8/30/2016	5706	☑	
692	-63.2	184.7	22.1	206.8	ReflexEZS	New Age	8/31/2016	5788	☑	
722	-62.4	186.5	22.1	208.6	ReflexEZS	New Age	9/1/2016	5720	☑	
752	-62.4	185.7	22.1	207.8	ReflexEZS	New Age	9/2/2016	5726	☑	
782	-62.1	188.2	22.1	210.3	ReflexEZS	New Age	9/3/2016	5728	☑	
824	-61.9	188.4	22.1	210.5	ReflexEZS	New Age	9/3/2016	5748	☑	
854	-61.4	189.3	22.1	211.4	ReflexEZS	New Age	9/4/2016	5725	☑	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 4.50 OVBN Overburden

0 - 4.5: Casing Depth, solid rock

4.50 18.80 RHYvx Quartz and/or feldspar crystal medium grey FMG tuff

4.5 - 18.8: 1-2 mm blue round quartz eyes and 1-2mm cream -white angular clasts (feldspar crystal fragments?) in a blue-grey ashy matrix.

<<Min: 4.5 - 31.07 0.5% Min: Pyrrhotite>> Disseminated Pyrrhotite to near the beginning of MU/SI alteration

<<Alt: 4.5 - 18.8 Trace Calcite>>

18.80 19.67 RHYva Coarse grained to ash tuff grey-brown FG

18.8 - 19.67: grey-brown fine grained ashy bed with sharp planar contacts and sub mm black euhedral biotite porphyroblasts.

<<Alt: 18.8 - 19.67 Weak-Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 18.8 - 19.67 Weak-Moderate Biotite>>

<<Struc: 18.8 - 18.8 Contact>> Contact between RHYvx and RHYva with pelitic input

19.67 23.47 RHYvx Quartz and/or feldspar crystal tuff light grey FMG

19.67 - 23.47: 1-4 mm blue quartz crystals with deformed siliceous white deformed "curdy" lapilli in a fine mica-altered matrix, interbedded with thin biotite porphyroblastic pelite beds

<<Alt: 19.67 - 23.47 Trace Calcite>>

23.47 26.31 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

23.47 - 26.31: Weakly banded black-biotite porphyroblastic ashy pelite unit. more pelitic material at the top

<<Alt: 23.47 - 26.31 Weak-Moderate Calcite>>

<<Alt: 23.47 - 26.31 Moderate Biotite>>

<<Vein: 25.63 - 25.87 100% Quartz-Carbonate>>

<<Struc: 23.8 - 23.8 Bedding>> Bedding within a pelitic unit

26.31 27.39 RHYvl Lapilli tuff light grey FCG

26.31 - 27.39: Graded unit from an ashy lapilli bearing top to a lapilli supported conglomerate at the bottom.

<<Alt: 26.31 - 27.39 Trace Calcite>>

<<Struc: 26.9 - 26.9 Bedding>> Lapilli flattening direction in a RHYvl

27.39 29.35 RHYi Aphanitic Rhyolite (intrusion) grey pink VFG

27.39 - 29.35: Very siliceous unit, weakly quartz phyric and massive. Thin (<10 cm) ashy domains are present, possibly xenoliths (?) could indicate that this is actually a sedimentary unit that has been silicified. Sharp planar contacts.

29.35 46.45 RHYva Coarse grained to ash tuff light grey FG

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
45.00	46.45	1.45	B00291966	-0.005	-0.3	-0.01	-0.01	0.02

29.35 - 46.45: Fine grained ashy, very siliceous unit, altered in some section s to muscovite. strong silicification gives it the appearance of RHYi in some sections however the unit gradationally changes in and out of this alteration.

<<Min: 31.07 - 44.24 0.5% Min: Pyrite>> Associated with OP MU and SI alteration

<<Min: 44.24 - 46.45 0.5% Min: Pyrrhotite>> Associated with syngenetic MU

<<Min: 44.24 - 46.45 0.1% Min: Chalcopyrite>> With PO

<<Alt: 29.35 - 34.5 Weak Calcite>>

<<Alt: 34.5 - 40.07 Moderate Silicification>>

<<Alt: 34.5 - 40.07 Trace Calcite>>

<<Alt: 40.07 - 44.24 Weak Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 40.07 - 44.24 Weak Calcite>>									
		<<Alt: 44.24 - 46.45 Moderate-Strong Muscovite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 44.24 - 46.45 Weak Biotite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Vein: 31.07 - 32.35 80% Quartz-Carbonate>>									
		<<Vein: 44.24 - 45.91 75% Quartz-Carbonate>>									
		<<Struc: 43.9 - 43.9 dominant foliation>> orientation of micaceous parting									
46.45	**46.97**	**OF Pyrrhotite rich sulphides FMG**	46.45	46.97	0.52	B00291967	0.08	26.2	0.79	0.26	9.02
		46.45 - 46.97: Massive sulphide interval. Sulphide makes up 50-60% of the interval. PO dominates the sulphide assemblage (60%) with 20% pyrite, 10% sphalerite, and 10% chalcopyrite. The remaining portion f the interval comprises calcite blebs and bands and relict host rock altered to chlorite and biotite.									
		<<Min: 46.45 - 46.94 5% Min: Sphalerite>> Predominantly in the lower half of the unit									
		<<Min: 46.45 - 46.94 10% Min: Pyrite>> Disseminated round grains of pyrite predominantly in the lower half of the unit									
		<<Min: 46.45 - 46.94 30% Min: Pyrrhotite>> The bulk of the massive sulphide in this interval is pyrrhotite.									
		<<Min: 46.45 - 46.94 5% Min: Chalcopyrite>> Forms a net texture with pyrrhotite									
		<<Alt: 46.45 - 46.94 Moderate Tourmaline>> Perfect euhedral black tourmaline crystals									
		<<Alt: 46.45 - 46.94 Moderate Chlorite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 46.45 - 46.94 Moderate Calcite>>									
		<<Alt: 46.45 - 46.94 Moderate Biotite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 46.94 - 47.22 Moderate Muscovite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 46.94 - 50.95 Weak-Moderate Tourmaline>> Associated with zones of more intense mineralization									
		<<Alt: 46.94 - 50.95 Weak-Moderate Chlorite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 46.94 - 50.95 Weak-Moderate Biotite>> Appears to be associated with the mineralization and the immediately surrounding rock									
		<<Alt: 46.94 - 51.29 Moderate Calcite>>									
46.97	**51.29**	**RHYv Rhyolite volcaniclastic green-brown FG**	46.97	48.47	1.50	B00291968	-0.005	0.6	-0.01	0.02	0.04
		46.97 - 51.29: Strongly chlorite-biotite altered unit, fine grained with bands defined by biotite porphyroblasts and calcite. Wisps, blebs, and thin bands of sphalerite, pyrite, and pyrrhotite are present.									
		<<Min: 46.97 - 50.95 0.5% Min: Sphalerite>>	48.47	49.67	1.20	B00291969	-0.005	0.3	-0.01	-0.01	0.02
		<<Min: 46.97 - 50.95 1% Min: Pyrrhotite>> Associated with the proximal syngenetic alteration	49.67	50.95	1.28	B00291971	-0.005	1.6	0.02	0.02	0.16

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 46.97 - 50.95 0.5% Min: Chalcopyrite>> associated with PO

<<Min: 50.95 - 54.31 0.1% Min: Pyrite>>

<<Vein: 47.88 - 48.15 50% Quartz-Carbonate>> Galena

<<Struc: 46.97 - 46.97 Contact>> OB/footwall rock contact. Upper contact is sub-parallel

51.29 53.97 RHYcw Curdy textured-flow banded (flows, subvolcanics) green FG

51.29 - 53.97: Strongly banded (chaotic folding - flow banding) siliceous-micaceous unit. Bottom contact has fluidal (?) siliceous clasts (?) in a micaceous matrix.

<<Alt: 51.29 - 53.97 Weak-Moderate Muscovite>>

<<Alt: 51.29 - 53.97 Trace Calcite>>

53.97 70.01 RHYva Coarse grained to ash tuff light grey FG

53.97 - 70.01: Fine grained light grey siliceous-very siliceous unit. Appears to be granular. uncommon 1 mm round brown garnet porphyroblasts. lowest metre of the unit is strongly carbonate altered.

<<Min: 54.31 - 54.92 5% Min: Pyrite>>

<<Min: 54.92 - 58.02 0.5% Min: Pyrite>>

<<Min: 58.02 - 70 0.5% Min: Pyrrhotite>>

<<Min: 70 - 71.01 3% Min: Pyrite>> Associated with a zone of calcite alteration

<<Alt: 53.97 - 58.02 Weak Muscovite>>

<<Alt: 53.97 - 70 Trace Garnet>>

<<Alt: 53.97 - 70 Weak Calcite>>

<<Alt: 58.02 - 70 Weak Silicification>>

<<Alt: 70 - 71.01 Moderate-Strong Calcite>> associated with pyrite

<<Vein: 54.31 - 54.92 85% Quartz-Carbonate 75 deg. >>

<<Struc: 58.02 - 58.25 Weak Fault>> Rubbly fault, likely little movement

<<Struc: 68.1 - 68.1 dominant foliation>> Micaceous parting

70.01 75.72 RHYcw Curdy textured-flow banded (flows, subvolcanics) green FG

70.01 - 75.72: Fine grained chaotically banded (flow banded) unit with brecciated upper and lower contacts. Non-siliceous domains are flaky green muscovite.

<<Min: 71.01 - 76.95 0.1% Min: Pyrrhotite>>

<<Alt: 71.01 - 75.72 Weak-Moderate Muscovite>>

<<Alt: 71.01 - 75.72 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

75.72 76.95 RHYva Coarse grained to ash tuff green FMG

75.72 - 76.95: Fine grained ashy unit with rare granule sized grains and poorly developed bedding

<<Alt: 75.72 - 76.95 Trace Muscovite>>

<<Alt: 75.72 - 76.95 Weak Calcite>>

76.95 77.46 PEL Equigranular biotite + calcite +/- quartz rock green-brown FG

76.95 - 77.46: fine grained well banded sediment with black and brown biotite.

<<Min: 76.95 - 77.46 0.1% Min: Pyrite>>

<<Min: 76.95 - 77.46 0.1% Min: Pyrrhotite>>

<<Alt: 76.95 - 77.46 Moderate-Strong Calcite>>

<<Alt: 76.95 - 77.46 Weak Biotite>>

<<Vein: 77.4 - 77.97 25% Quartz-Carbonate>>

77.46 82.99 RHYva Coarse grained to ash tuff green FMG

77.46 - 82.99: Domains of flow banded RHYcw (or silicification?) with irregular margins in a matrix consisting of ashy RHYva.

<<Min: 77.46 - 80.3 0.1% Min: Pyrite>>

<<Min: 77.46 - 80.3 0.5% Min: Pyrrhotite>>

<<Min: 80.3 - 82.99 0.1% Min: Pyrite>>

<<Alt: 77.46 - 82.99 Weak-Moderate Muscovite>>

<<Alt: 77.46 - 82.99 Weak Calcite>>

<<Alt: 80.3 - 95.75 Moderate Silicification>> Related to RHYi?

<<Vein: 80.3 - 80.41 100% Quartz-Carbonate>>

<<Vein: 80.75 - 81.67 40% Quartz-Carbonate-Sulphide>> 0.1% Galena

<<Struc: 77.5 - 77.5 dominant foliation>> Micaceous Parting

<<Struc: 82.6 - 82.6 dominant foliation>> Micaceous parting

82.99 88.37 RHYi Aphanitic Rhyolite (intrusion) grey pink FG

82.99 - 88.37: Aphanitic, weakly amygdaloidal. The upper metre of the unit is brecciated and cemented by quartz-pyrite. It is unclear if the rock was brecciated by his fluid or if it was brecciated prior to the infiltration of the fluid.

<<Min: 82.99 - 84.09 3% Min: Pyrite>>

<<Min: 84.09 - 88.37 0.5% Min: Pyrite>>

<<Min: 84.09 - 88.37 0.1% Min: Pyrrhotite>>

<<Vein: 82.99 - 84.09 10% Quartz>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 82.99 - 82.99 Contact>> RHYva-RHYi contact

88.37 89.90 RHYva Coarse grained to ash tuff medium grey FMG

88.37 - 89.9: Possible xenolith? sits between two RHYi bodies moderate silicification, 2-10 mm lapilli.

<<Min: 88.37 - 89.9 0.1% Min: Pyrite>>

<<Alt: 88.37 - 89.9 Weak Calcite>>

89.90 95.46 RHYi Aphanitic Rhyolite (intrusion) grey pink FG

89.9 - 95.46: Grey pink aphanitic unit with oblate, lensoid and dumbbell shaped quartz filled amygdules.

<<Min: 89.9 - 95.46 1% Min: Pyrite>>

<<Min: 94.4 - 95.46 0.1% Min: Pyrrhotite>>

<<Vein: 92.6 - 93.95 85% Quartz>>

<<Vein: 94.47 - 94.99 100% Quartz-Carbonate 75 deg. >>

<<Vein: 94.49 - 94.95 80% Quartz-Carbonate>>

<<Struc: 89.9 - 89.9 Contact>> RHYva-RHYi contact

95.46 105.12 RHYva Coarse grained to ash tuff medium grey FMG

95.46 - 105.12: Subangular to subrounded granule sized lithic fragments, quartz eyes, and white lapilli in an ash sized matrix. likely resedimented.

<<Min: 95.46 - 119.5 0.5% Min: Pyrrhotite>>

<<Alt: 95.46 - 105.12 Weak Calcite>>

<<Struc: 99.8 - 100.3 Weak-Moderate Fault>> zone of thin gougy-crushed rock faults

<<Struc: 102.14 - 102.4 Weak Fault>> zone of crushed rock faults

105.12 105.62 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

105.12 - 105.62: Bands of black euhedral and brown shreddy biotite porphyroblast bearing, fine grained sedimentary rock

<<Alt: 105.12 - 105.62 Moderate Calcite>>

<<Alt: 105.12 - 105.62 Weak-Moderate Biotite>>

105.62 110.06 RHYva Coarse grained to ash tuff medium grey FMG

105.62 - 110.06: Subangular to subrounded granule sized lithic fragments, quartz eyes, and white lapilli in an ash sized matrix. Likely resedimented.

<<Alt: 105.62 - 113.11 Weak-Moderate Calcite>>

<<Vein: 109.85 - 110.27 35% Quartz-Carbonate 70 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

110.06 113.11 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green FG

110.06 - 113.11: White-green aphanitic rock with bands of siliceous material, interpreted to be flow bands. Could be lapilli?

<<Min: 110.06 - 113.11 0.1% Min: Pyrite>>

113.11 136.11 RHYva Coarse grained to ash tuff medium grey FCG

113.11 - 136.11: medium grey gritty volcaniclastic sedimentary rock with predominantly granule sized lithic clasts and rare quartz eyes. There is a population of large cobble sized clasts with flow banding, suggesting a coherent rhyolite.

<<Min: 119.5 - 122.5 1% Min: Pyrite>>

<<Min: 122.5 - 136.11 0.1% Min: Pyrrhotite>>

<<Alt: 113.11 - 119.5 Weak-Moderate Silicification>>

<<Alt: 113.11 - 136.11 Weak Calcite>>

<<Alt: 119.5 - 121.05 Moderate-Strong Silicification>>

<<Alt: 121.05 - 122.5 Moderate Silicification>>

<<Alt: 122.5 - 136.11 Weak-Moderate Silicification>>

<<Vein: 119.5 - 121.05 50% Quartz-Carbonate>>

<<Vein: 130.74 - 131.05 65% Quartz-Carbonate>>

<<Vein: 133.54 - 133.78 10% Quartz-Carbonate 70 deg. >>

<<Vein: 135.74 - 135.79 75% Quartz-Carbonate 40 deg. >>

136.11 137.26 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

136.11 - 137.26: Dark grey-brown ankerite-biotite porphyroblastic fine grained pelitic unit.

<<Alt: 136.11 - 137.26 Moderate Calcite>>

<<Alt: 136.11 - 137.26 Strong Biotite>>

<<Vein: 136.9 - 137.5 40% Calcite 70 deg. >>

<<Struc: 136.3 - 136.31 Weak Fault>> Gouge filled fracture

137.26 141.42 RHYva Coarse grained to ash tuff medium grey FMG

137.26 - 141.42: medium grey-green sandy, massive unit without quartz eyes.

<<Min: 137.26 - 141.42 0.1% Min: Pyrite>>

<<Min: 137.26 - 141.42 0.1% Min: Pyrrhotite>>

<<Alt: 137.26 - 144.6 Weak-Moderate Silicification>>

<<Alt: 137.26 - 154.1 Weak Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

141.42 142.30 MDSt Rhyolite tuff dominant mudstone dark grey FG

141.42 - 142.3: Dark grey carbonaceous mudstone unit interlayered with tuffaceous sediment. Gradational lower contact, sharp upper contact.

<<Min: 141.42 - 142.3 0.1% Min: Pyrite>>

142.30 145.60 RHYva Coarse grained to ash tuff grey pink FMG

142.3 - 145.6: Medium grey-green to pink gritty sedimentary rock (wacke-granule conglomerate). The lowest metre is stained pink with hematite and contains angular blebs of jasper, possibly derived from pyrite (relict? pyrite crystal in one jasper bleb)

<<Min: 142.3 - 144.6 0.1% Min: Pyrrhotite>>

<<Min: 144.6 - 146.26 0.01% Min: Pyrite>> Altered to jasper

<<Alt: 144.6 - 155.91 Moderate Silicification>>

145.60 146.26 MDSt Rhyolite tuff dominant mudstone dark grey FG

145.6 - 146.26: Dark grey carbonaceous mudstone unit interlayered with tuffaceous sediment, lower contact is gradational, upper contact is a fault

<<Struc: 145.9 - 145.9 dominant foliation>> Foliation in MDSt, representing bedding (transposed?)

146.26 154.10 RHYva Coarse grained to ash tuff medium grey FMG

146.26 - 154.1: medium grey package of rocks comprising a gritty tuffaceous wacke and beds of extremely fine grained well sorted siliceous ash.

<<Min: 146.26 - 164.92 0.01% Min: Pyrrhotite>> Altered to jasper

<<Struc: 151.4 - 151.4 dominant foliation>>

154.10 155.91 RHYi Aphanitic Rhyolite (intrusion) grey pink FG

154.1 - 155.91: Pink grey unit, strongly siliceous with blebs of jasper and a crackle texture. Could be hematite altered RHYva

155.91 164.92 RHYva Coarse grained to ash tuff medium grey FMG

155.91 - 164.92: Medium grey-green to pink gritty sedimentary rock (wacke-granule conglomerate).

<<Alt: 155.91 - 169.18 Weak-Moderate Silicification>>

<<Alt: 155.91 - 169.18 Weak-Moderate Calcite>>

<<Vein: 158.29 - 158.32 100% Quartz-Carbonate 90 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

164.92 165.36 MDSc Carbonaceous dominant mudstone dark grey FG

164.92 - 165.36: Dark grey carbonaceous mudstone that has been strongly silicified. well bedded. upper contact is sharp,lower contact is gradational.

<<Min: 164.92 - 172.88 0.01% Min: Pyrite>> Altered to jasper

165.36 169.18 RHYv Rhyolite volcaniclastic green FMG

165.36 - 169.18: light green strongly muscovite altered unit, relict gritty clasts and banding are present suggesting a RHYva.

<<Alt: 165.36 - 169.18 Moderate Muscovite>> Non-siliceous domains altered

169.18 170.04 MDSc Carbonaceous dominant mudstone black VFG

169.18 - 170.04: Black, carbonaceous, silicified, mudstone with folded bedding.

<<Alt: 169.18 - 170.04 Moderate Silicification>>

<<Struc: 169.18 - 169.18 Contact>> MDSc/RHYva contact

170.04 172.88 MDSt Rhyolite tuff dominant mudstone medium grey FG

170.04 - 172.88: Interbedded black carbonaceous mudstone and muscovite altered green rhyolitic volcaniclastic rock. All units are silicified.

<<Alt: 170.04 - 173.72 Weak Calcite>>

<<Alt: 170.4 - 173.72 Weak-Moderate Silicification>>

172.88 178.34 RHYva Coarse grained to ash tuff grey-green FMG

172.88 - 178.34: Poorly sorted weakly laminated to massive, volcaniclastic rock. ~1mm garnet porphyroblasts disseminated locally.

<<Min: 172.88 - 178.34 0.1% Min: Pyrrhotite>> Altered to jasper

<<Alt: 172.88 - 178.34 Weak-Moderate Muscovite>> Non-siliceous domains altered

<<Alt: 173.5 - 176.3 Moderate Garnet>>

<<Alt: 173.72 - 176.3 Trace Calcite>>

<<Alt: 173.72 - 176.48 Moderate Silicification>>

<<Alt: 176.48 - 176.91 Moderate-Strong Silicification>>

<<Alt: 176.8 - 180.24 Moderate Calcite>>

<<Alt: 176.91 - 178.34 Weak-Moderate Silicification>>

<<Vein: 176.48 - 176.91 50% Quartz>> very white, soft non-swelling (?) clay mineral in vein. could be relict host rock

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 177.26 - 180.71 10% Calcite 70 deg. >>

178.34 180.24 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

178.34 - 180.24: Four zones of biotite porphyroblast growth within a fine tuffaceous sequence.

<<Alt: 178.34 - 180.24 Weak-Moderate Biotite>>

180.24 191.01 RHYva Coarse grained to ash tuff grey-green FMG

180.24 - 191.01: Medium grey-green gritty sedimentary rock (wacke-granule conglomerate) with uncommon small 2-5mm white lapilli clasts and lithic clasts.

<<Min: 180.24 - 191.01 0.1% Min: Pyrrhotite>>

<<Min: 180.89 - 191.01 0.1% Min: Pyrite>>

<<Alt: 180.24 - 183 Weak-Moderate Talc-serpentine>> This represents kaolinite-white clay.

<<Alt: 180.24 - 191.01 Moderate Silicification>>

<<Alt: 180.24 - 191.01 Weak Calcite>>

<<Vein: 180.89 - 182.34 20% Quartz>>

<<Vein: 184.39 - 184.44 100% Quartz-Carbonate 90 deg. >>

<<Vein: 185.77 - 187.55 10% Quartz>>

<<Vein: 190.96 - 193.23 15% Calcite>>

191.01 193.23 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

191.01 - 193.23: Dark grey-brown fine grained, well sorted biotite and ankerite porphyroblast bearing pelitic bed. Upper contact is faulted, lower contact is gradational.

<<Alt: 191.01 - 193.23 Moderate-Strong Calcite>>

<<Alt: 191.01 - 193.23 Moderate Biotite>>

193.23 213.47 RHYva Coarse grained to ash tuff medium grey FMG

193.23 - 213.47: Medium grey-green gritty sedimentary rock (wacke-granule conglomerate) with uncommon small 2-5mm white lapilli clasts and lithic clasts.

<<Min: 193.23 - 213.47 0.1% Min: Pyrite>>

<<Min: 193.23 - 213.47 0.5% Min: Pyrrhotite>>

<<Alt: 193.23 - 206.5 Weak-Moderate Silicification>>

<<Alt: 193.23 - 216.53 Trace Calcite>>

<<Alt: 206.5 - 213.47 Moderate Silicification>>

<<Struc: 198.4 - 198.4 dominant foliation>> micaceous parting

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 203.5 - 203.5 dominant foliation>> micaceous parting

213.47 216.53 RHYva Coarse grained to ash tuff light grey VFG

213.47 - 216.53: Very fine grained cherty, siliceous rock, conformably overlies a pelite with a sharp planar contact, possibly a distal ash fall?

<<Min: 213.47 - 216.53 0.5% Min: Pyrrhotite>>

<<Alt: 213.47 - 216 Moderate-Strong Silicification>>

<<Alt: 216 - 216.53 Strong Silicification>>

<<Vein: 215.49 - 216 35% Quartz-Carbonate 90 deg. >>

216.53 217.03 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

216.53 - 217.03: Ashy pelitic unit, with biotite and ankerite porphyroblasts and

<<Struc: 216.53 - 216.53 Contact>> Sharp planar contact between pelite ash (chert?)

217.03 237.36 RHYva Coarse grained to ash tuff grey-green FMG

217.03 - 237.36: Medium grey-green gritty sedimentary rock (wacke-granule conglomerate) with rare all blue quartz eyes, uncommon small 2-5mm white lapilli clasts and lithic clasts. Graded beds rarely reach larger lapilli sizes and densities.

<<Min: 217.03 - 237.36 0.1% Min: Pyrite>>

<<Min: 217.03 - 237.36 0.5% Min: Pyrrhotite>>

<<Alt: 217.03 - 237.36 Weak-Moderate Silicification>>

<<Alt: 217.03 - 237.36 Trace Calcite>>

<<Vein: 218.37 - 218.68 40% Quartz-Carbonate 90 deg. >>

<<Vein: 219 - 219.26 100% Quartz-Carbonate 75 deg. >>

<<Vein: 235.9 - 253.97 100% Quartz-Carbonate 90 deg. >>

<<Struc: 229.9 - 229.9 dominant foliation>> micaceous parting

237.36 238.10 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

237.36 - 238.1: Banded, ashy, fine grained biotite and carbonate porphyroblast bearing sedimentary rock. Sharp planar upper contact, gradational lower contact.

<<Min: 237.36 - 238.1 0.5% Min: Pyrite>>

<<Alt: 237.36 - 238.1 Weak-Moderate Calcite>>

<<Alt: 237.36 - 238.1 Weak Biotite>>

<<Vein: 237.55 - 237.6 100% Calcite 85 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

238.10 244.39 RHYva Coarse grained to ash tuff grey-green FMG

238.1 - 244.39: Medium grey-green sedimentary rock with rare blue quartz eyes, and possible lithic clasts.

<<Min: 238.1 - 244.39 0.1% Min: Pyrite>>

<<Alt: 238.1 - 244.39 Weak Silicification>>

<<Alt: 238.1 - 244.39 Weak-Moderate Muscovite>>

<<Alt: 238.1 - 244.39 Trace Calcite>>

<<Vein: 240.44 - 240.49 50% Quartz-Carbonate 85 deg. >>

<<Struc: 241.05 - 241.06 Fault>> Thin gougy fault

244.39 245.07 FLZ Fault Zone light grey

244.39 - 245.07: Gouge rich fault zone with a minor component of crushed rock.

<<Vein: 244.39 - 244.71 95% Quartz-Carbonate>> wall rock pulled in altered to muscovite, hematite.

<<Struc: 244.39 - 245.07 Moderate-Strong Fault>> Thick gouge filled fault with a quartz vein at the top (healed earlier fault?)

245.07 252.24 RHYv Rhyolite volcaniclastic green

245.07 - 252.24: strongly brecciated, muscovite-hematite-chlorite altered rock. Relict banding and granular texture suggest a volcaniclastic primary lithology.

<<Alt: 245.07 - 248.3 Weak-Moderate Calcite>>

<<Alt: 245.07 - 252.24 Weak-Moderate Muscovite>>

<<Alt: 248.3 - 252.24 Trace Calcite>>

<<Alt: 249.26 - 250.63 Moderate Silicification>>

<<Alt: 250.63 - 252.24 Weak Silicification>>

<<Vein: 247.64 - 247.76 98% Quartz-Carbonate 90 deg. >> 2% wallrock in vein

<<Struc: 247 - 250.5 Weak-Moderate Fault>> Zoe of broken rock and minor gouge development

252.24 253.89 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

252.24 - 253.89: Banded, well sorted black euhedral biotite bearing sedimentary rock. Some sections appear to be chlorite altered.

<<Min: 252.78 - 275.77 0.1% Min: Pyrite>> local patches up to 0.5%, with jasper

<<Alt: 252.24 - 253.89 Moderate Calcite>>

<<Alt: 252.24 - 253.89 Weak Biotite>>

<<Vein: 253 - 253.24 90% Quartz-Carbonate 75 deg. >>

<<Struc: 253.25 - 253.25 dominant foliation>> banding orientation in pelite

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

253.89 261.67 RHYva Coarse grained to ash tuff medium grey FMG

253.89 - 261.67: Massive, moderately sorted tuffaceous sandstone to pebble bearing conglomerate with a sandy matrix.

<<Alt: 253.89 - 270.97 Moderate Silicification>>

<<Alt: 253.89 - 270.97 Weak Garnet>>

<<Alt: 253.89 - 270.97 Weak Calcite>>

<<Vein: 254.64 - 255.42 100% Quartz-Carbonate 70 deg. >>

<<Struc: 257 - 259.8 Weak Fault>> Zone of broken and crushed rock

<<Struc: 260.5 - 260.5 dominant foliation>> Micaceous parting

261.67 262.97 RHYvl Lapilli tuff grey pink FCG

261.67 - 262.97: Massive bed (grades in from RHYva) with large pebble to coble sized clasts of white-pink (hematite stained?) lapilli.

262.97 270.97 RHYva Coarse grained to ash tuff grey-green FMG

262.97 - 270.97: Medium grey-green sedimentary rock with rare blue quartz eyes, small lapilli, and possible lithic clasts. Bottom 1 metre is bleached and stained pink with hematite.

270.97 272.72 MDSc Carbonaceous dominant mudstone black VFG

270.97 - 272.72: Very fine grained black carbonaceous mudstone. Upper contact is marked by small scale flame structures indicating tops upwards.

<<Alt: 270.97 - 273.53 Weak-Moderate Silicification>>

<<Struc: 270.97 - 270.97 Contact>> Sharp mudstone-RHYva contact

<<Struc: 271.16 - 271.35 Moderate Fault>> Gouge-crushed rock filled fault zone

272.72 275.77 RHYv Rhyolite volcaniclastic light grey FMG

272.72 - 275.77: Massive, granular textured rock, strong silicification make identification difficult however textures suggest a clastic protolith.

<<Alt: 272.72 - 273.53 Weak-Moderate Muscovite>>

<<Alt: 272.72 - 282.95 Weak Calcite>>

<<Alt: 273.53 - 275.77 Moderate Silicification>>

<<Struc: 273.45 - 273.53 Weak-Moderate Fault>> Thin, gougy fault

275.77 277.66 RHYi Aphanitic Rhyolite (intrusion) light grey FG

275.77 - 277.66: Fine grained, very siliceous, light grey green rock with silica filled "micro-amygdules" with lensoid and oblate forms as well as silica filled crackle texture veins. upper an lower contacts are veined.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 275.77 - 278 Strong Silicification>>

<<Vein: 275.85 - 277.2 5% Calcite>>

<<Vein: 277.2 - 277.66 100% Quartz-Carbonate 90 deg. >>

277.66 279.38 RHYva Coarse grained to ash tuff medium grey FMG

277.66 - 279.38: Medium grey-green sedimentary rock with small lapilli and possible lithic clasts. Lapilli bleached and stained pink with hematite.

<<Alt: 278 - 282.95 Moderate-Strong Silicification>>

<<Alt: 279 - 284.52 Moderate Albite>> Pink staining, albite according to Cominco. Seems to be spatially related to flecks of jasper.\

279.38 281.12 RHYvl Lapilli tuff grey pink FCG

279.38 - 281.12: Massive bed (grades in from RHYva) with large pebble to coble sized clasts of white-pink (hematite stained?) lapilli.

<<Min: 281 - 282.95 0.01% Min: Pyrrhotite>>

<<Struc: 279.5 - 279.5 dominant foliation>> Micaceous parting

<<Struc: 280.1 - 280.11 Weak-Moderate Fault>> Thin, gougy fault

281.12 282.95 RHYva Coarse grained to ash tuff grey pink FMG

281.12 - 282.95: Medium grey-green sedimentary rock with small lapilli and possible lithic clasts. Lapilli bleached and stained pink with hematite.

282.95 284.52 RHYvl Lapilli tuff grey pink FCG

282.95 - 284.52: Massive bed comprising white-pink subrounded to amoeboid clasts in a fine grained matrix. Predominantly matrix supported. Clasts selectively altered with pink staining (hematite?)

<<Alt: 282.95 - 287.49 Moderate Silicification>>

<<Alt: 282.95 - 289.45 Weak-Moderate Calcite>>

<<Alt: 282.95 - 317.24 Weak Garnet>>

284.52 287.49 RHYva Coarse grained to ash tuff grey-green FCG

284.52 - 287.49: Massive unit of fine grained tuffaceous sediment with rare lapilli sized clasts and common quartz eyes.

287.49 289.45 RHYva Coarse grained to ash tuff grey-green FG

287.49 - 289.45: Sandy textured, bedded tuffaceous sediment.

<<Alt: 287.49 - 291 Weak-Moderate Silicification>>

<<Vein: 288.53 - 288.63 100% Quartz-Carbonate 15 deg. >>

<<Struc: 289.35 - 289.35 dominant foliation>> Micaceous parting

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

289.45 291.28 RHYvx Quartz and/or feldspar crystal tuff grey-green FCG

289.45 - 291.28: Clasts of crystals and crystal fragments (2-12 mm feldspar and blue quartz) in a sandy matrix. Matrix supported.

<<Alt: 289.45 - 308.84 Weak Calcite>>

<<Alt: 291 - 306 Moderate Silicification>>

<<Struc: 289.45 - 290.15 Weak Fault>> Zone of crushed rock

291.28 308.84 RHYva Coarse grained to ash tuff medium grey FCG

291.28 - 308.84: Gritty tuffaceous sandstone with scattered clasts and bands of lapilli, crystal fragments, and blue quartz eyes in a compositionally dominant matrix of ash sized volcaniclastic material.

<<Alt: 293 - 297 Weak Albite>> Pink staining.

<<Alt: 306 - 308.84 Weak Silicification>>

<<Struc: 294.2 - 294.3 Weak-Moderate Fault>> Thin zone of gouge and rubble

<<Struc: 299.3 - 299.5 Weak-Moderate Fault>> Thin zone of gouge and rubble

<<Struc: 307.3 - 307.3 dominant foliation>> Micaceous parting

308.84 313.30 RHYvl Lapilli tuff medium grey FCG

308.84 - 313.3: Lenticular lapilli that have been selectively stained a pink hue give the rock a streaked look. Lapilli are 10 to >64 mm in length but only up to 10 mm in width. The matrix is a fine ashy material.

<<Alt: 308.84 - 313.3 Trace Calcite>>

<<Alt: 308.84 - 313.3 Weak Albite>> Pink staining

<<Alt: 308.84 - 315.5 Moderate Silicification>>

<<Struc: 311.75 - 311.75 dominant foliation>> Micaceous parting

313.30 317.24 RHYva Coarse grained to ash tuff light grey MG

313.3 - 317.24: Granular, banded sandy, well sorted ashy tuff with possible grading from silt sized grains at the top to coarse sand sized grains at the bottom.

<<Min: 315.5 - 317.24 0.5% Min: Pyrite>>

<<Alt: 313.3 - 315.5 Moderate Albite>> Pink staining

<<Alt: 313.3 - 317.24 Weak Calcite>>

317.24 318.47 RHYi Aphanitic Rhyolite (intrusion) grey-green CG

317.24 - 318.47: Irregular, jigsaw fit clasts (8- >64 mm) of RHYi in a matrix of quartz, chlorite and sandy particles, possibly from the overlying unit. Possible pepperite?

<<Alt: 317.24 - 318.47 Moderate Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 317.24 - 318.47 Moderate Chlorite>> In breccia matrix

<<Alt: 317.24 - 323.5 Trace Calcite>>

<<Vein: 317.33 - 318.53 20% Quartz>>

<<Struc: 317.24 - 317.24 Contact>> Breccia zone contact

318.47 323.50 RHYi Aphanitic Rhyolite (intrusion) light grey VFG

318.47 - 323.5: Massive, porphyritic coherent rock with rare quartz filled, round amygdules. Rock is extremely siliceous.

<<Alt: 318.47 - 323.5 Strong Silicification>>

323.50 346.81 RHYva Coarse grained to ash tuff light grey FMG

323.5 - 346.81: Massive, moderately sorted, gritty RHYva with angular to subrounded clasts including lapilli, lithic fragments and quartz eyes.

<<Min: 332.46 - 336 0.1% Min: Pyrite>>

<<Min: 332.46 - 336 0.01% Min: Pyrrhotite>>

<<Min: 336 - 388.79 0.1% Min: Pyrrhotite>>

<<Min: 337 - 346.81 0.1% Min: Pyrite>>

<<Alt: 323.5 - 332 Weak-Moderate Silicification>>

<<Alt: 323.5 - 351.16 Weak Calcite>>

<<Alt: 332 - 336.69 Moderate Silicification>>

<<Alt: 333.27 - 335.75 Moderate Albite>> Cream green bleaching of the rock with associated patchy pink staining, likely due to hematite

<<Alt: 336.69 - 353.88 Weak-Moderate Silicification>>

<<Vein: 324.36 - 324.65 100% Quartz-Carbonate 80 deg. >>

<<Vein: 325.25 - 325.29 60% Quartz 44 deg. >>

<<Vein: 330.29 - 331.07 40% Quartz-Carbonate 80 deg. >>

<<Vein: 332.46 - 335.75 5% Quartz-Carbonate 80 deg. >> Spatially associated with a zone of albitic/hematitic alteration.

<<Vein: 339.08 - 339.49 80% Quartz-Carbonate 90 deg. >>

<<Vein: 340.52 - 340.65 85% Quartz-Carbonate 90 deg. >>

<<Vein: 341.15 - 341.21 100% Quartz-Carbonate 90 deg. >>

<<Struc: 330.29 - 330.9 Trace Fault>> Zone of broken rock

<<Struc: 338.24 - 338.25 Weak Fault>> Thin gougy fault

346.81 350.09 RHYvl Lapilli tuff medium grey FCG

346.81 - 350.09: Massive unit of lapilli bearing tuffaceous rock with 5-30 mm white lapilli (some maybe feldspar crystals) and abundant quartz eyes.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

350.09 351.16 RHYva Coarse grained to ash tuff medium grey FMG

350.09 - 351.16: Graded unit with quartz eye granule bearing tuff at the top, grading to a lapilli bearing ashy tuff at the bottom.

351.16 353.88 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

351.16 - 353.88: Dark brown-black unit with bands of biotite rich pelite and light brown-grey, less biotite rich material interpreted as more and less pelitic input into this fine grained, well sorted sediment.

<<Alt: 351.16 - 353.88 Weak-Moderate Calcite>>

<<Alt: 351.16 - 353.88 Moderate Biotite>>

<<Alt: 351.16 - 353.88 Weak-Moderate Ankerite>>

<<Vein: 351.26 - 353.94 10% Calcite 80 deg. >>

<<Struc: 353.86 - 353.86 Bedding>> Bedding within the Pelite unit

353.88 356.76 RHYvl Lapilli tuff grey-green FCG

353.88 - 356.76: Monomictic lapilli rick clasts supported lapilli bearing (8-30 mm) tuff unit with abundant quartz eye granules.

<<Alt: 353.88 - 362.7 Moderate Silicification>>

<<Alt: 353.88 - 363.58 Weak Biotite>>

<<Alt: 353.88 - 370.14 Weak Calcite>>

356.76 359.58 RHYva Coarse grained to ash tuff grey-green FMG

356.76 - 359.58: Massive, sandy textured tuffaceous sediment with common quartz eyes. Grades into the underlying RHYvl.

<<Vein: 359.2 - 359.27 65% Quartz-Carbonate 90 deg. >>

359.58 363.58 RHYvl Lapilli tuff grey-green FCG

359.58 - 363.58: Monomictic lapilli rick clasts supported lapilli bearing (8-30 mm) tuff unit with abundant quartz eye granules.

<<Alt: 362.7 - 363.58 Weak-Moderate Silicification>>

363.58 363.97 FLZ Fault Zone light grey

363.58 - 363.97: Intensely gougy fault zone.

<<Struc: 363.58 - 363.97 Moderate Fault>> Fault filled completely with gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

363.97 367.59 RHYvl Lapilli tuff grey-green FCG

363.97 - 367.59: Monomictic lapilli rick clasts supported lapilli bearing (8-30 mm) tuff unit with abundant quartz eye granules.

<<Alt: 363.97 - 364.54 Weak-Moderate Silicification>>

<<Alt: 363.97 - 365.38 Weak Biotite>>

<<Alt: 364.54 - 370.16 Moderate Silicification>>

367.59 368.26 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

367.59 - 368.26: Dark brown-black unit with bands of biotite rich pelite and light brown-grey, less biotite rich material interpreted as more and less pelitic input into this fine grained, well sorted sediment. Upper contact is a fault, lower contact is veined.

368.26 370.14 RHYva Coarse grained to ash tuff medium grey FG

368.26 - 370.14: Grey, black euhedral biotite bearing, massive tuff. Fine grained.

<<Alt: 368.26 - 370.14 Weak Biotite>>

370.14 370.55 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

370.14 - 370.55: Dark brown-black unit with bands of biotite rich pelite and light brown-grey, less biotite rich material interpreted as more and less pelitic input into this fine grained, well sorted sediment. Upper contact is sharp and planar, lower contact is veined.

<<Min: 370.14 - 388.79 0.1% Min: Pyrite>>

<<Alt: 370.14 - 370.55 Moderate Calcite>>

<<Alt: 370.16 - 370.55 Moderate-Strong Biotite>>

370.55 371.46 RHYvl Lapilli tuff grey-green FCG

370.55 - 371.46: Unit of lapilli (and feldspar?) and quartz eye bearing, poorly sorted volcaniclastic tuffaceous conglomerate (tephra?)

<<Alt: 370.55 - 381.2 Moderate Silicification>>

<<Alt: 370.55 - 401.02 Weak Calcite>> Locally veinlets set, mainly replacing lapilli.

<<Vein: 370.73 - 371.5 15% Quartz-Carbonate 80 deg. >>

<<Struc: 370.55 - 370.55 Contact>> Contact between pelite and RHYvl

371.46 385.27 RHYva Coarse grained to ash tuff grey-green FMG

371.46 - 385.27: Fine grained ashy tuff unit with rare bands of lapilli and black, euhedral biotite porphyroblasts. Rare quartz eyes. Few PO/PY stringers, QZ veins, Narrow fine grain BI rich layers, probably pelite, associated with CA veinlets.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 373.5 - 381.2 Weak Biotite>>

<<Alt: 381.2 - 413.22 Weak-Moderate Silicification>>

<<Vein: 382.1 - 388.79 Quartz-Carbonate>> Multiple QZ/CA veins representing 10% of the interval. Associated with very fine grain unit/few CL.

<<Struc: 374.5 - 374.5 dominant foliation>> Break surface of a foliation parallel vein

<<Struc: 377.42 - 377.43 dominant foliation>>

385.27 388.79 RHY undifferentiated rhyolite medium grey VFG

385.27 - 388.79: Very fine grained or obscured texture matrix, BI porphyroblasts. Possibly ash.

<<Struc: 386.82 - 386.83 dominant foliation>>

<<Struc: 388.32 - 388.79 Weak Fault>> Narrow fault gouge interval and Qz vein.

388.79 401.02 RHYvl Lapilli tuff grey-green FMG

388.79 - 401.02: Muscovite-Biotite, locally granular texture, PO/PY stringers and subhedral patch, possibly fine crystals.

<<Min: 388.79 - 392.5 1% Min: Pyrite>>

<<Min: 388.79 - 392.5 0.5% Min: Pyrrhotite>>

<<Min: 392.5 - 401.55 3% Min: Pyrite>> Stringers.

<<Min: 392.5 - 425.96 0.5% Min: Pyrrhotite>>

<<Alt: 391.3 - 439 Weak-Moderate Biotite>>

<<Struc: 392.12 - 392.21 Trace Fault>> Fault gouge.

<<Struc: 393.55 - 393.56 dominant foliation>>

<<Struc: 397.44 - 397.45 dominant foliation>>

<<Struc: 399.85 - 399.86 dominant foliation>>

401.02 412.40 RHYvx Quartz and/or feldspar crystal tuff grey-green MG

401.02 - 412.4: Medium, locally coarse grained, CL patch, PY/PO stringers and patch, fine grained feldspar, quartz eyes, few BI porphyroblasts patchy.

<<Min: 401.55 - 425.96 0.5% Min: Pyrite>> and in QZ vein.

<<Min: 401.55 - 425.96 0.1% Min: Chalcopyrite>> and in QZ vein.

<<Alt: 401.02 - 407 Trace Calcite>>

<<Alt: 407 - 472.28 Weak Calcite>> Disseminated and moderate/pervasive in BI rich intervals.

<<Vein: 401.55 - 401.73 Quartz-Carbonate>> QZ/CA/CL, PY stringers at upper contact.

<<Vein: 408 - 408.03 Quartz-Tourmaline>> QZ/TM, wavy vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

412.40 413.22 PEL Equigranular biotite + calcite +/- quartz rock beige FG

412.4 - 413.22: Possibly mafic dyke. Fine grain BI, CA veinlets and in matrix, homogeneous, sharp contacts.

413.22 420.42 RHY undifferentiated rhyolite dark grey VFG

413.22 - 420.42: Very fine grained or obscured texture, BI porphyroblasts (25 to 35%) locally altered CL.

<<Alt: 413.22 - 421.29 Trace Chlorite>> Partially replacing BI

<<Alt: 413.22 - 422.55 Moderate-Strong Silicification>>

<<Struc: 413.22 - 413.23 Contact>> Contact PEL/RHY

420.42 421.29 PEL Equigranular biotite + calcite +/- quartz rock black FG

420.42 - 421.29: CA/BI rich, sharp upper contact, gradual lower contact.

421.29 432.28 RHYva Coarse grained to ash tuff dark grey FMG

421.29 - 432.28: Fine to medium grain, BI porphyroblasts,. PO/few CP stringers, patchy CL halo, CL rich from 424.85 to 425.96, possibly pelite CL (granular texture/CA/BI). Locally coarser texture patch "wrapped" by foliation (pebble size clasts?).

<<Min: 422.5 - 423 0.1% Min: Sphalerite>> In QZ vein.

<<Min: 422.5 - 423 0.1% Min: Galena>> In QZ vein.

<<Min: 425.96 - 438.65 0.5% Min: Pyrite>> and associated with PO.

<<Min: 425.96 - 438.65 2% Min: Pyrrhotite>>

<<Alt: 424.85 - 425.96 Weak Chlorite>>

<<Alt: 425.96 - 432.28 Weak-Moderate Silicification>>

<<Alt: 425.96 - 432.28 Trace Chlorite>> Associated with stringers.

<<Vein: 422.55 - 422.85 Quartz-Sulphide>> Massive QZ vein containing PO/SP/CP/GL in fracture.

<<Vein: 431.55 - 438 Quartz-Carbonate>> Multiple QZ/probably late CA/CL veins representing 25% of the interval. Associated with chloritic unit/BI porphyroblasts (pelite chl?)

432.28 438.65 RHY undifferentiated rhyolite medium grey VFG

432.28 - 438.65: Chaotic interval marked by wavy QZ and QZ/CA veins and whitish/beige mineral (?), CL alteration, narrow interval containing PO stringers. Sharp contact with narrow RHY (very fine grain or obscured texture matrix/Bippo). Probably late CA (crosscut QZ veins).

<<Min: 436.06 - 436.6 2% Min: Pyrrhotite>> Stringers.

<<Alt: 432.28 - 438.65 Weak-Moderate Chlorite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

438.65 456.40 RHYvl Lapilli tuff medium grey MCG

438.65 - 456.4: Locally silicic bands, probably large lapilli. Could be porphyry gradual contacts suggest volcaniclastic unit.

<<Min: 438.65 - 445.5 1% Min: Pyrite>>

<<Min: 438.65 - 445.5 0.5% Min: Pyrrhotite>>

<<Min: 445.5 - 450.02 3% Min: Pyrite>> and patchy.

<<Min: 445.5 - 450.02 2% Min: Pyrrhotite>> and veinlets.

<<Min: 450.02 - 458.55 0.5% Min: Pyrrhotite>>

<<Min: 450.02 - 472.28 0.5% Min: Pyrite>>

<<Alt: 438.65 - 472.28 Weak Silicification>>

456.40 457.57 RHYv Rhyolite volcaniclastic medium grey MG

456.4 - 457.57: Gradual contact, coarse to fine grain.

457.57 472.28 RHYva Coarse grained to ash tuff medium grey FG

457.57 - 472.28: Few BI porphyroblasts, subrounded to Subangular QE. Containing PO/CP stringers marked by BI patch. Ash layers (no QE) containing 10cm wide clasts of RHYvx/QE (bomb ?). Some intervals altered CL (SP stringers observed), sometime undeveloped CL alteration. Narrow granular silicic bands (large lapilli or disaggregated bands).

<<Min: 458.55 - 475 0.5% Min: Chalcopyrite>> Stringers.

<<Min: 458.55 - 476.52 1% Min: Pyrrhotite>> Stringers.

<<Min: 461.5 - 462.22 1% Min: Sphalerite>> Two stringers in CL altered RHYva.

<<Alt: 461.5 - 472.28 Weak-Moderate Chlorite>> Considered as original due to fine P stringers at 461.50m and QE persisting through. Locally weak to trace, undeveloped.

<<Struc: 458.73 - 458.74 dominant foliation>>

472.28 476.52 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

472.28 - 476.52: Foliated-local crenulation, CA banded. PO disseminated to patchy. Clasts highly calcareous, light grey.

<<Min: 472.28 - 492.02 0.1% Min: Pyrite>> Rare fine stringers.

<<Alt: 472.28 - 476.52 Weak-Moderate Calcite>>

<<Alt: 472.28 - 482.46 Weak-Moderate Silicification>> Silicified mudstone.

476.52 482.46 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

476.52 - 482.46: Thinly foliated, homogeneous texture, rare CA bands, undeformed. QZ veins (containing PO) or pods from 478.09m to 482.46m, local deformation, cherty. Mafic tuff clasts or bands.

<<Min: 476.52 - 482.46 2% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 476.52 - 482.46 Weak Calcite>> Associated with QZ in veins.

<<Vein: 478.09 - 483.4 Quartz-Carbonate>> Multiple QZ/CA veins representing 20 percent of the interval.

482.46 485.79 CHT Chert black VFG

482.46 - 485.79: Well developed chert. PO disseminated. MDS/SI interbedded.

<<Alt: 482.46 - 485.79 Strong Silicification>> Chert, possibly silicification.

<<Struc: 485.32 - 485.33 dominant foliation>>

485.79 492.02 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

485.79 - 492.02: Weakly CA banded, veinlets.

<<Min: 485.79 - 506 0.5% Min: Pyrrhotite>>

<<Alt: 485.79 - 493.62 Weak-Moderate Silicification>> Silicified mudstone.

<<Alt: 485.79 - 503.8 Weak-Moderate Calcite>>

<<Struc: 487.13 - 487.14 dominant foliation>>

492.02 494.84 MAFta Coarse grained to ash tuff green FG

492.02 - 494.84: Heterogeneous. Chloritic fine grained matrix. Locally siliceous clasts. BI/CA patch/veins. Few QZ veins. Sharp lower contact.

<<Min: 492.02 - 517.14 0.1% Min: Pyrite>>

<<Vein: 493.12 - 493.4 Carbonate-Biotite>> BI/CA patch.

<<Struc: 493.17 - 497.18 dominant foliation>>

494.84 495.55 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

494.84 - 495.55: CA veining/blabs. Crenulated foliation (primary foliation or bedding relics). Gradual lower contact.

495.55 497.95 MAFt Mafic Volcaniclastics green FG

495.55 - 497.95: Fine grained cholritic matrix, medium grain clasts (lapilli CA altered). Ashy layers at upper contact. Could be mafic dike, possibly chill margin at lower contact.

<<Struc: 497.16 - 497.17 dominant foliation>>

497.95 502.02 SLT Siltstone - fine-grained sedimentary rock light grey MG

497.95 - 502.02: Could be RHYva/QE. Cholritic content at upper contact fading out downhole. Locally coarser grains. Some MAFt patch intervals (class or beds).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

502.02 503.80 MAFt Mafic Volcaniclastics green FG

502.02 - 503.8: Fine grained chloritic matrix, medium grained clasts (lapilli altered CA), BI and CA bands.

503.80 511.30 SLT Siltstone - fine-grained sedimentary rock light grey FMG

503.8 - 511.3: Or RHYva/QE. Granular texture, weakly chloritic at upper contact. BI porphyroblasts patches.

<<Min: 506 - 511.3 2% Min: Pyrrhotite>>

<<Alt: 503.8 - 569.79 Weak Calcite>>

511.30 515.60 SED undifferentiated Sediment dark grey FMG

511.3 - 515.6: QZ/BI/MU unit, intermediate composition, locally chloritic (or green sericite(?)). Mottled texture and clasts at upper contact, biotite rich. Could be volcaniclastic.

<<Min: 511.3 - 517.14 0.5% Min: Pyrrhotite>>

515.60 517.14 MDS Carbonaceous Mudstone & Tuffaceous Mudstone beige FG

515.6 - 517.14: Black, fine grained, foliated, few CA bands. QZ vein at upper contact/bleaching, sharp lower contact, Multiple QZ/A vein (2 to 5cm wide).

<<Vein: 516.65 - 517.14 Quartz-Carbonate>> Multiple QZ and QZ/CA veins representing 30 % of the interval.

517.14 517.75 RHYva Coarse grained to ash tuff light grey FG

517.14 - 517.75: Abundant QE eyes at upper contact. Gradual lower contact. Fine grain matrix,

<<Min: 517.14 - 525.94 1% Min: Pyrite>> In fracture.

<<Min: 517.14 - 525.94 2% Min: Pyrrhotite>> In fracture.

<<Struc: 517.68 - 517.69 dominant foliation>>

517.75 518.18 RHY undifferentiated rhyolite light grey

517.75 - 518.18: Texture obscured, coarser aspect/granular to massive, almost coherent rhyolite, silica rich, few QZ eyes. Sulphide in fracture (RHYc?).

518.18 520.58 RHYva Coarse grained to ash tuff light grey FG

518.18 - 520.58: Abundant small QE eyes at upper contact. Gradual lower contact. Fine grain matrix, Including fine grained, light blue, probably ash (40 c interval).

520.58 523.02 RHY undifferentiated rhyolite leucocratic

520.58 - 523.02: Texture obscured, coarser grained/granular to massive, almost coherent rhyolite, silica rich, few QZ eyes. Possibly fracture containing PO. Glassy from 522.66m to 523.02m. Sulphides in fracture (RHYc?).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

523.02 523.56 RHYva Coarse grained to ash tuff leucocratic FG

523.02 - 523.56: Fine grained matrix, few lapilli. Few QE.

523.56 525.21 RHYva Coarse grained to ash tuff medium grey FG

523.56 - 525.21: Fine grained, biotite patch and in foliation. Gradual contacts.

<<Struc: 524.75 - 524.76 dominant foliation>>

<<Struc: 525.15 - 525.16 dominant foliation>>

525.21 525.65 RHYvl Lapilli tuff light grey FMG

525.21 - 525.65: Mid strained lapilli in fine to fine to medium grained matrix.

525.65 525.94 INT undifferentiated (granitic) intrusive rocks beige VFG

525.65 - 525.94: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Less possibly homogeneous fine grained sandstone channel.

525.94 526.38 RHYva Coarse grained to ash tuff medium grey FG

525.94 - 526.38: With pelitic content marked by biotite.

<<Min: 525.94 - 556.07 0.5% Min: Pyrrhotite>>

<<Min: 525.95 - 542.92 0.5% Min: Pyrite>> and few disseminated.

526.38 526.58 INT undifferentiated (granitic) intrusive rocks beige VFG

526.38 - 526.58: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Less possibly homogeneous fine grained sandstone channel.

526.58 526.80 RHYva Coarse grained to ash tuff medium grey FG

526.58 - 526.8: With pelitic content marked by biotite.

526.80 527.13 INT undifferentiated (granitic) intrusive rocks beige VFG

526.8 - 527.13: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Feldspar phenocrysts.

527.13 530.02 SED undifferentiated Sediment medium grey FG

527.13 - 530.02: Some clasts could be lapilli. Heterogeneous composition. BI small porphyroblasts elongated.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

530.02 530.21 INT undifferentiated (granitic) intrusive rocks beige FG

530.02 - 530.21: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Less possibly homogeneous fine grained sandstone.

530.21 532.12 RHYva Coarse grained to ash tuff medium grey FG

530.21 - 532.12: Few BI porphyroblasts, bleached lower contact, possibly chill margin.

<<Vein: 532 - 532.15 Quarzt-Tourmaline-Sulphide 48 deg. >> Veins, different composition, from possibly TML to glassy silica with phenocrysts and sulfides, marking the contact on sheared/fault zone.

<<Struc: 532 - 534.15 Moderate Shear>> Measurement from the upper contact between rhyolite and sheared/faulted zone (marked by veins) and probably intrusive felsic unit.

532.12 534.15 INT undifferentiated (granitic) intrusive rocks light grey

532.12 - 534.15: Faulted/sheared possibly felsic dyke containing lapilitic rhyolite clasts. Upper contact showing wavy veining, maybe TML, glassy with crystals and inclusion (?) amygdaloidal. Large chill margin at upper contact.

534.15 539.31 PEL Equigranular biotite + calcite +/- quartz rock grey-green FMG

534.15 - 539.31: Biotite/chlorite/feldspar unit. Could be mafic dyke. Similar by some aspect with mafic sill but low carbonate content.

539.31 539.83 INT undifferentiated (granitic) intrusive rocks beige FG

539.31 - 539.83: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Biotite needles overprinted.

539.83 540.44 PEL Equigranular biotite + calcite +/- quartz rock grey-green FMG

539.83 - 540.44: Biotite/chlorite/feldspar unit. Could be mafic dyke. Similar by some aspect with mafic sill but low carbonate content.

<<Struc: 540.33 - 540.34 Contact>> Upper contact with aplitic dyke in pelite.

540.44 540.57 INT undifferentiated (granitic) intrusive rocks beige FG

540.44 - 540.57: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Feldspar phenocrysts. Biotite needles overprinted.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

540.57 542.92 PEL Equigranular biotite + calcite +/- quartz rock black FMG

540.57 - 542.92: Biotite/chlorite/feldspar unit. Could be mafic dyke. Similar by some aspect with mafic sill but low carbonate content.

542.92 544.55 RHYva Coarse grained to ash tuff medium grey FG

542.92 - 544.55: Bleached upper contact possibly due to QZ vein. Small BI porphyroblasts.

<<Min: 542.92 - 699.71 0.1% Min: Pyrite>> Rare, in fracture.

<<Alt: 542.92 - 556.07 Weak-Moderate Silicification>>

544.55 544.71 INT undifferentiated (granitic) intrusive rocks beige VFG

544.55 - 544.71: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Feldspar phenocrysts ghosts. Biotite needles overprinted.

544.71 545.65 RHYvl Lapilli tuff medium grey FMG

544.71 - 545.65: Well developed BI porphyroblasts, lapilli in fine grained matrix.

545.65 548.66 RHYva Coarse grained to ash tuff medium grey FG

545.65 - 548.66: Pelitic content marked by biotite in foliation.

548.66 548.79 INT undifferentiated (granitic) intrusive rocks beige VFG

548.66 - 548.79: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Biotite needles overprinted.

548.79 550.15 RHYva Coarse grained to ash tuff medium grey FG

548.79 - 550.15: Pelitic content marked by biotite in foliation.

550.15 550.26 INT undifferentiated (granitic) intrusive rocks beige VFG

550.15 - 550.26: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke.

550.26 556.07 RHYva Coarse grained to ash tuff medium grey FG

550.26 - 556.07: Few lapilli. Pelitic content marked by biotite in foliation. Silicic bands at lower contact from 555.13m.

<<Struc: 551.26 - 551.27 dominant foliation>>

<<Struc: 556.06 - 556.07 Contact>> Upper contact pelite/rhyolite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

556.07 560.55 PEL Equigranular biotite + calcite +/- quartz rock black FG

556.07 - 560.55: Homogeneous texture, crosscut by milky QZ veins and aplitic dyke (?).

<<Min: 556.07 - 558.43 1% Min: Pyrrhotite>> and in veinlets.

<<Min: 558.43 - 569.79 0.1% Min: Pyrrhotite>> Concentrated in rare pelite bands.

<<Alt: 558.43 - 569.79 Weak-Moderate Silicification>>

560.55 562.77 INT undifferentiated (granitic) intrusive rocks beige VFG

560.55 - 562.77: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Feldspar phenocrysts.

<<Struc: 561.41 - 561.42 dominant foliation>>

562.77 565.45 RHYvl Lapilli tuff medium grey FG

562.77 - 565.45: Rare crystals. Large lapilli poorly sorted in fine grained matrix. Marrow pelitic intervals (10cm and less wide).

<<Struc: 565.08 - 565.09 Contact>> Lower contact narrow pelite/lapilitic ash tuff.

565.45 565.86 INT undifferentiated (granitic) intrusive rocks beige VFG

565.45 - 565.86: Light color, very sharp contacts, siliceous, fine crystals. Probably intrusive aplitic unit/felsic dyke. Feldspar phenocrysts.

565.86 569.79 RHYv Rhyolite volcaniclastic medium grey FG

565.86 - 569.79: Fine grained matrix, rare QE, silicic bands at lower contact.

<<Struc: 566.62 - 566.62 dominant foliation>>

569.79 572.30 PEL Equigranular biotite + calcite +/- quartz rock black FG

569.79 - 572.3: Black, fine grain biotite, weakly to moderately calcareous, few QZ/CA veins. Gradual upper contact, sharp lower contact.

<<Min: 569.79 - 572.3 0.1% Min: Pyrrhotite>>

<<Alt: 569.79 - 572.3 Weak-Moderate Calcite>>

572.30 578.15 RHYvl Lapilli tuff grey-green MG

572.3 - 578.15: Some fine grained bands (mud or ash?), muscovite content increases at lower contact. Clasts (?) containing QE from 575.13m to 575.31m. Epiclastic sediment, could be logged as SED.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 572.3 - 578.15 0.1% Min: Pyrrhotite>>

<<Alt: 572.3 - 578.15 Weak-Moderate Silicification>>

<<Alt: 572.3 - 578.15 Trace Calcite>>

<<Struc: 572.32 - 572.33 dominant foliation>>

<<Struc: 575.93 - 575.94 dominant foliation>>

578.15 579.80 PEL Equigranular biotite + calcite +/- quartz rock beige FG

578.15 - 579.8: Black, fine grain. Some rounded CA replaced clasts could be amygdules (mafic dyke (?). Faulted at lower contact. CA veinlets.

<<Min: 578.15 - 594.42 1% Min: Pyrrhotite>>

<<Alt: 578.15 - 594.42 Weak-Moderate Calcite>>

579.80 580.18 RHYvl Lapilli tuff grey-green MCG

579.8 - 580.18: Gougy narrow interval, clastic, coarse, heterogeneous. Epiclastic sediment, could be logged as SED.

<<Struc: 579.8 - 580 Weak Fault>> And weak shearing at contact between pelite and sediments.

580.18 580.45 INT undifferentiated (granitic) intrusive rocks beige VFG

580.18 - 580.45: Very fine crystals, light color, siliceous (quartzite type unit).

580.45 584.62 PEL Equigranular biotite + calcite +/- quartz rock green-brown FMG

580.45 - 584.62: Biotite rich unit, locally coarse texture/clastic (sediments intercaled).

<<Struc: 581.83 - 581.84 dominant foliation>>

<<Struc: 583.03 - 583.04 dominant foliation>>

<<Struc: 584.54 - 584.55 dominant foliation>>

584.62 584.87 INT undifferentiated (granitic) intrusive rocks beige VFG

584.62 - 584.87: Siliceous, probably intrusive, sharp contact, quartzite (?).

584.87 587.52 PEL Equigranular biotite + calcite +/- quartz rock black FG

584.87 - 587.52: Fine grain biotite, weakly to moderately calcareous.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

587.52 589.33 RHYvl Lapilli tuff grey-green MCG

587.52 - 589.33: Siliceous, strained clasts (lapilli (?)), heterogeneous, conglomerate texture, biotite porphyroblasts. Maybe intermediate composition volcaniclastic unit. Epiclastic sediment, could be logged as SED.

589.33 594.42 PEL Equigranular biotite + calcite +/- quartz rock black FG

589.33 - 594.42: Fine grain biotite, weakly to moderately calcareous, phenocrysts feldspar, sharp at upper contact replaced calcite (late crystallization). Possibly mafic unit but narrow sediment interval from 592.90m to 593.00m suggests sedimentary origin.

594.42 595.25 RHYvl Lapilli tuff grey-green FMG

594.42 - 595.25: Muscovite/sericite rich matrix, locally conglomerate texture with possibly mid strained lapilli, heterogeneous. Intermediate volcaniclastic unit or sediment.

<<Min: 594.42 - 635.84 0.1% Min: Pyrrhotite>>

<<Alt: 594.42 - 608.45 Weak Silicification>>

<<Alt: 594.42 - 638.97 Trace Calcite>>

595.25 595.46 INT undifferentiated (granitic) intrusive rocks beige VFG

595.25 - 595.46: Siliceous, fine crystals, sharp contacts, quartzite aspect.

595.46 599.77 RHYvl Lapilli tuff grey-green MG

595.46 - 599.77: Muscovite/sericite rich matrix, locally conglomerate texture with possibly mid strained lapilli, heterogeneous. Intermediate volcaniclastic unit or sediment.

<<Struc: 595.5 - 599.5 Trace Fault>> Multiple narrow gouge (2 to 5 cm wide). Minor.

599.77 608.45 RHYva Coarse grained to ash tuff dark grey FMG

599.77 - 608.45: Muscovite/sericite rich matrix, few clasts (possibly lapilli). Epiclastic sediment, could be logged as SED.

<<Struc: 603.58 - 603.59 dominant foliation>>

<<Struc: 604.86 - 604.87 dominant foliation>>

<<Struc: 608.3 - 608.31 dominant foliation>>

608.45 612.26 RHYvx Quartz and/or feldspar crystal tuff dark grey VFG

608.45 - 612.26: Silicified unit showing feldspar and quartz porphyry (1 to 3mm, automorph) in a granular to granophyric texture. Could be intrusive (INT-large felsic dyke). Sharp upper contact.

<<Alt: 608.45 - 613.46 Intense Silicification>> Quartzite (?).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

612.26 613.46 INT undifferentiated (granitic) intrusive rocks light grey VFG

612.26 - 613.46: Probably same unit than above, strongly silicified, bleached, very fine crystals (granophyric), few feldspar ghosts preserved. Could be silicified crystal tuff.

613.46 616.28 RHYva Coarse grained to ash tuff medium grey FG

613.46 - 616.28: Intermediate ash tuff.

<<Alt: 613.46 - 649.31 Weak Silicification>>

<<Struc: 613.8 - 613.81 dominant foliation>>

616.28 623.25 RHYva Coarse grained to ash tuff medium grey FMG

616.28 - 623.25: Lapilli at upper contact. Probably epiclastic sediments, Biotite porphyroblasts, heterogeneous composition, some clasts, dominantly fine grain matrix.

<<Struc: 616.4 - 616.41 dominant foliation>>

<<Struc: 620.35 - 625.36 dominant foliation>>

623.25 624.02 SLT Siltstone - fine-grained sedimentary rock beige FG

623.25 - 624.02: Fine grain, homogeneous, felsic, biotite porphyroblasts overprinted.

624.02 628.14 RHYvl Lapilli tuff medium grey

624.02 - 628.14: Heterogeneous, pebble size clasts, poorly sorted, locally granular, containing elongated silica clasts possibly lapilli. Interpreted as reworked material-epiclastic sediment. Epiclastic sediment, could be logged as SED.

628.14 628.43 PEL Equigranular biotite + calcite +/- quartz rock black VFG

628.14 - 628.43: Very fine grain biotite, homogeneous.

628.43 629.30 RHYvl Lapilli tuff dark grey CG

628.43 - 629.3: Coarse grain, pebble size clasts, conglomerate texture, muscovite/sericite matrix. Epiclastic sediment, could be logged as SED.

629.30 630.06 RHYva Coarse grained to ash tuff dark grey FG

629.3 - 630.06: Fine grain, homogeneous, biotite porphyroblasts.

<<Struc: 629.75 - 629.76 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

630.06 635.84 RHYvl Lapilli tuff dark grey MG

630.06 - 635.84: Conglomerate texture, heterogeneous. Siliceous clasts, white, containing rare phenocrysts (porphyry clasts/lapilli (?)). Epiclastic sediment, could be logged as SED.

<<Struc: 633.2 - 633.21 dominant foliation>>

635.84 636.15 PEL Equigranular biotite + calcite +/- quartz rock black FG

635.84 - 636.15: Fine grain biotite containing angular, poorly sorted clasts or porphyroblasts (possibly rhyolite clasts, deformed bands observed inside/tube pumice (?)), heterogeneous. Wavy contacts contouring clasts suggesting sedimentary sequence.

<<Min: 635.84 - 636.15 2% Min: Pyrrhotite>>

636.15 638.97 RHYv Rhyolite volcaniclastic dark grey FMG

636.15 - 638.97: Heterogeneous, locally granular. Some clasts, matrix supported. Sharp lower contact.

<<Min: 636.84 - 657.53 0.1% Min: Pyrrhotite>>

638.97 639.52 PEL Equigranular biotite + calcite +/- quartz rock black FG

638.97 - 639.52: Fine grain biotite, sharp contacts, granular o the upper part. Thinly foliated.

<<Alt: 638.97 - 639.52 Weak Calcite>>

639.52 641.47 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

639.52 - 641.47: Biotite bands/ash tuff thinly interbedded, heterogeneous composition. Locally granular and felsic intervals.

<<Alt: 639.52 - 649.31 Trace Calcite>>

641.47 641.84 INT undifferentiated (granitic) intrusive rocks beige FG

641.47 - 641.84: Siliceous intervals, granular(or granophyric), possibly felsic dyke but sharp contact, no chill margin. Maybe sandstone channel crosscutting muddy pelitic sequence.

641.84 644.59 RHYv Rhyolite volcaniclastic medium grey FG

641.84 - 644.59: Fine grain matrix containing few rhyolite clasts and/or lapilli. Gradual upper upper contact, sharp lower contact.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

644.59 649.31 PEL Equigranular biotite + calcite +/- quartz rock dark grey FG

644.59 - 649.31: Biotite bands/ash tuff thinly interbedded, heterogeneous composition. Locally granular and felsic intervals. Felsic dyke/sandstone/quartzite from 648.42m to648.61m. Sharp contacts.

<<Struc: 644.8 - 644.81 dominant foliation>>

649.31 654.87 SLT Siltstone - fine-grained sedimentary rock beige FG

649.31 - 654.87: Siliceous unit, locally texture changes from fine grain to granular. Containing pelite interval crosscut by narrow felsic interval. Sediment bands at lower contact suggests that al the unit is sedimentary (interpreted as meta sandstone).

<<Alt: 649.31 - 654.87 Strong Silicification>> Quartzite (?).

<<Alt: 649.31 - 657.53 Weak Calcite>>

654.87 656.90 PEL Equigranular biotite + calcite +/- quartz rock black FG

654.87 - 656.9: Possibly mafic dyke but no chill margin. Angular clasts/late porphyroblasts. Sharp upper and lower contacts. Weakly calcareous.

<<Struc: 656.79 - 656.8 Contact>> Contact between felsic dyke/narrow sandstone unit and RHYv.

<<Struc: 656.85 - 656.86 dominant foliation>>

656.90 657.53 RHYv Rhyolite volcaniclastic grey-brown FG

656.9 - 657.53: Light grey, dominantly ash tuff, banded (strongly strained lapilli (?). Containing a 15cm wide siliceous interval (intrusive or sandy/quartzite).

657.53 659.96 PEL Equigranular biotite + calcite +/- quartz rock black FMG

657.53 - 659.96: Moderately calcareous. Porphyroblasts replaced calcite over 12cm at upper contact. Heterogeneous at upper contact, locally granular.

<<Min: 657.53 - 659.96 0.5% Min: Pyrrhotite>>

<<Alt: 657.53 - 659.96 Weak-Moderate Calcite>>

659.96 666.47 RHY undifferentiated rhyolite light grey VFG

659.96 - 666.47: Siliceous unit, very fine grain, few silica clasts (possibly lapilli). Could be log as RHYc/RHYi. Probably RHYva silicified or siltstone. Weakly calcareous. One light yellow band, very fine grain, possibly mud clasts suggesting sedimentary unit.

<<Min: 659.96 - 669.78 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 659.96 - 666.47 Strong Silicification>>

<<Alt: 659.96 - 669.78 Trace Calcite>>

666.47 667.71 PEL Equigranular biotite + calcite +/- quartz rock black FMG

666.47 - 667.71: Interbedded with RHYva.

667.71 668.64 SLT Siltstone - fine-grained sedimentary rock beige VFG

667.71 - 668.64: Fine grain, homogeneous, siliceous. Possibly meta siltstone.

668.64 669.78 RHY undifferentiated rhyolite light grey FG

668.64 - 669.78: Siliceous unit, very fine grain, few silica clasts (possibly lapilli). Could be log as RHYc/RHYi. Probably RHYv silicified or siltstone. Weakly calcareous.

669.78 671.76 PEL Equigranular biotite + calcite +/- quartz rock black

669.78 - 671.76: Different grain size bands, heterogeneous texture, calcareous.

<<Alt: 669.78 - 671.76 Weak-Moderate Calcite>>

671.76 674.34 RHY undifferentiated rhyolite light grey FG

671.76 - 674.34: Siliceous or silicified unit, fine grin. Could be ash tuff or siltstone. Could be log as RHYc/RHYi. Pinkish patches, possible albite alteration.

<<Alt: 671.76 - 674.34 Strong Silicification>>

<<Alt: 671.76 - 674.34 Weak Calcite>>

674.34 676.66 PEL Equigranular biotite + calcite +/- quartz rock black

674.34 - 676.66: Different grain size bands, heterogeneous texture, calcareous.

<<Min: 674.5 - 699.71 0.5% Min: Pyrrhotite>>

<<Alt: 674.34 - 680.64 Trace Calcite>>

676.66 680.64 RHYva Coarse grained to ash tuff medium grey FG

676.66 - 680.64: Some banded silica rich patch with obscured texture.

<<Alt: 676.66 - 680.64 Weak Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

680.64 683.15 PEL Equigranular biotite + calcite +/- quartz rock black FG

680.64 - 683.15: Weakly to moderately calcareous, CA veinlets, Fine grain and coarser grain bands.

<<Alt: 680.64 - 683.15 Moderate Calcite>>

683.15 686.35 RHYv Rhyolite volcaniclastic medium grey FG

683.15 - 686.35: Pelite interval from 685.65m to 685.96m. Could be SED/heterogeneous texture.

<<Alt: 683.15 - 698.27 Trace Calcite>>

<<Struc: 685.07 - 685.08 dominant foliation>>

<<Struc: 685.65 - 685.66 Contact>> Contact RHYv/PEL.

686.35 688.30 PEL Equigranular biotite + calcite +/- quartz rock black MG

686.35 - 688.3: Weakly calcareous, sorted bands.

688.30 692.27 RHYva Coarse grained to ash tuff medium grey FG

688.3 - 692.27: Fine grain, few biotite porphyroblasts, homogeneous.

692.27 694.35 PEL Equigranular biotite + calcite +/- quartz rock black FMG

692.27 - 694.35: Weakly calcareous, homogeneous, faulted at upper contact.

<<Alt: 694.27 - 698.27 Weak Silicification>>

694.35 698.27 RHYva Coarse grained to ash tuff medium grey FG

694.35 - 698.27: Pelite from 695.89m to 69630m and some siliceous interval showing obscured texture.

698.27 699.74 PEL Equigranular biotite + calcite +/- quartz rock black FG

698.27 - 699.74: Homogeneous, fine grain, weakly calcareous.

<<Min: 699.71 - 704.5 0.5% Min: Pyrrhotite>>

<<Min: 699.71 - 720.27 1% Min: Pyrite>> Local aggregated euhedral crystal.

<<Alt: 698.27 - 699.74 Weak-Moderate Calcite>>

699.74 703.27 RHYv Rhyolite volcaniclastic grey-brown FG

699.74 - 703.27: Chaotic volcaniclastic interval containing abundant QZ veins/pods-muscovite halo/silicic bands.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 699.74 - 704.55 Weak Muscovite>> Associated with QZ veins/pods.

<<Alt: 699.74 - 706 Moderate Silicification>>

<<Alt: 699.74 - 706.13 Trace Calcite>>

<<Vein: 699.74 - 704.55 Quartz>> Multiple QZ veins and pods representing 25% of the interval associated with MU alteration.

<<Struc: 702.7 - 703.6 Trace Shear>> Weak deformation along QZ veins.

703.27 703.62 PEL Equigranular biotite + calcite +/- quartz rock black FG

703.27 - 703.62: Weakly sheared.

703.62 706.13 RHYv Rhyolite volcaniclastic grey-green FG

703.62 - 706.13: Rare silica clasts, fine grain. Probably ash tuff.

<<Min: 704.5 - 720.27 0.1% Min: Pyrrhotite>>

<<Alt: 704.55 - 714.5 Trace Muscovite>>

<<Struc: 706 - 706.01 dominant foliation>>

706.13 706.69 PEL Equigranular biotite + calcite +/- quartz rock black

706.13 - 706.69: Grains or crystals aggregated in bands. CA veins, moderately calcareous.

<<Alt: 706.13 - 706.69 Weak-Moderate Calcite>> and bands.

706.69 710.50 RHYvl Lapilli tuff grey-green FG

706.69 - 710.5: Locally sericite/muscovite matrix bands showing clasts. Possibly reworked volcaniclastic (or sediment). Heterogeneous composition, texture mostly obscured..

<<Alt: 706.69 - 720.27 Trace Calcite>>

710.50 720.27 RHYv Rhyolite volcaniclastic medium grey MCG

710.5 - 720.27: Coarse grain dominantly, some QZ clasts (lapilli?), PY disseminated, possibly large clasts (pumice silicified?) showing obscured texture. BI needles, rare QE.

720.27 729.12 PEL Equigranular biotite + calcite +/- quartz rock

720.27 - 729.12: Homogeneous, poorly calcareous, rare rhyolite bands intercaled, PY disseminated from 728.50m to lower contact, large euhedral crystals observed, CA veinlets.

<<Min: 720.27 - 729.72 0.1% Min: Pyrite>>

<<Min: 720.27 - 729.72 2% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 720.27 - 729.72 Weak Calcite>> and bands (veinlets).

729.12 735.65 RHYvl Lapilli tuff light grey FMG

729.12 - 735.65: Rhyolite and pelite intercaled. QZ bands/silicic bands, chaotic texture, PY disseminated. Pelite from 730.16m to 730.76m and from 732.32m to 730.03m.

<<Min: 729.72 - 750 2% Min: Pyrite>> Euhedral, large crystals in pelite, aggregated/discontinuous bands in rhyolite.

<<Min: 729.72 - 752.54 0.5% Min: Pyrrhotite>>

<<Alt: 729.72 - 752.54 Trace Calcite>> In pelite units.

<<Vein: 729.72 - 732 Quartz>> Multiple QZ veins/silicic bands representing 20% of the interval.

<<Struc: 735.1 - 735.5 Weak Fault>> Minor fault gouge.

735.65 736.20 PEL Equigranular biotite + calcite +/- quartz rock black FG

735.65 - 736.2: Fine grain matrix, white mineral clasts or phenocrysts (replaced calcite), possibly amygdules.

736.20 737.00 RHYv Rhyolite volcaniclastic medium grey MG

736.2 - 737: Dirty rhyolite.

737.00 737.60 PEL Equigranular biotite + calcite +/- quartz rock black FG

737 - 737.6: Fine grain, homogeneous.

737.60 742.48 RHYv Rhyolite volcaniclastic medium grey

737.6 - 742.48: Probably epiclastic. Dirty rhyolite, Biotite bands, heterogeneous texture (various grain size bends). Some CL blebs and muscovite alteration trace.

<<Alt: 739.3 - 742.48 Trace Muscovite>>

<<Alt: 739.3 - 742.48 Trace Chlorite>> And/or green sericite.

<<Vein: 741.45 - 750.3 Quartz>> Multiple QZ blebs/veins representing 10% of the interval.

742.48 743.26 PEL Equigranular biotite + calcite +/- quartz rock black FG

742.48 - 743.26: Fine grain, homogeneous, sharp contacts.

743.26 752.54 RHYv Rhyolite volcaniclastic medium grey

743.26 - 752.54: Pelite intercaled. PY disseminated (euhedral dominantly), QZ patches and weak MU alteration. Locally silicic bands/large strained lapilli (?).

<<Min: 750 - 764 0.5% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 746.5 - 749.5 Weak Muscovite>> Associated with QZ blebs.

<<Struc: 745.1 - 745.11 dominant foliation>>

<<Struc: 745.76 - 745.77 dominant foliation>>

752.54 758.76 PEL Equigranular biotite + calcite +/- quartz rock black FG

752.54 - 758.76: Including rhyolitic intervals intercaled. Homogeneous, fine grain, sharp contacts.

<<Min: 752.54 - 765.15 1% Min: Pyrrhotite>>

<<Alt: 752.54 - 755.34 Weak Calcite>>

<<Alt: 755.34 - 756.04 Trace Calcite>>

<<Alt: 756.04 - 758.76 Weak Calcite>>

758.76 765.15 RHYva Coarse grained to ash tuff medium grey FMG

758.76 - 765.15: Dominantly fine grain, heterogeneous texture. Some clasts aggregated suggesting multiple sorted interval sequences (coarse grain/fine grain).

<<Min: 764 - 780.82 0.1% Min: Pyrite>>

<<Alt: 758.76 - 766.52 Trace Calcite>>

<<Struc: 762.15 - 762.16 dominant foliation>>

765.15 766.52 RHY undifferentiated rhyolite light grey FG

765.15 - 766.52: Possibly silicified pumice/sericite intercaled.

<<Min: 765.15 - 793.47 0.5% Min: Pyrrhotite>>

<<Alt: 765.15 - 766.52 Moderate-Strong Silicification>>

766.52 767.60 PEL Equigranular biotite + calcite +/- quartz rock black FG

766.52 - 767.6: Fine grain, weakly calcareous.

<<Alt: 766.52 - 767.6 Weak Calcite>>

<<Struc: 767.38 - 767.65 Trace Fault>> Minor fault gouge.

767.60 771.54 RHY undifferentiated rhyolite light grey FG

767.6 - 771.54: Silicic bands/chert (?). Pelite intercaled from 769.61m to 770.01m. Possibly silicified pumice. Ash interval at upper contact.

<<Alt: 767.6 - 771.54 Strong Silicification>>

<<Alt: 767.6 - 772.32 Trace Calcite>>

<<Struc: 770.85 - 770.86 dominant foliation>>

From (m)	To (m)	Rocktype & Description			From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

771.54 772.32 RHYva Coarse grained to ash tuff light grey FG

771.54 - 772.32: Gradual upper contact.

772.32 775.88 PEL Equigranular biotite + calcite +/- quartz rock black FG

772.32 - 775.88: Rhyolite interval intercaled from 773.80m to 774.08m. Sharp contacts.

<<Alt: 772.32 - 775.88 Weak Calcite>>

<<Alt: 775.08 - 777.7 Weak Muscovite>> Could be original with regard to the color.

<<Struc: 773.56 - 773.61 dominant foliation>>

775.88 779.15 RHYv Rhyolite volcaniclastic dark grey MG

775.88 - 779.15: Dirty rhyolite. Biotite bands, MU alteration trace. Epiclastic sediments (?). Pelite intercaled.

<<Alt: 775.88 - 783.51 Trace Calcite>>

779.15 783.51 SED undifferentiated Sediment dark grey MG

779.15 - 783.51: Or dirty rhyolite. Chaotic unit, wavy QZ veining, weak muscovite associated, PY disseminated (2%). Possibly clasts relics, biotite bands and patches.

<<Min: 780.82 - 785.58 2% Min: Pyrite>>

<<Vein: 780.8 - 782.4 Quartz>> QZ vein patches, 5% of the interval.

<<Struc: 779.35 - 779.36 dominant foliation>>

783.51 785.58 SED undifferentiated Sediment grey-brown FMG

783.51 - 785.58: Banded brown/black, micaceous, mottled texture.

<<Alt: 783.51 - 785.68 Weak Calcite>> and in fracture.

785.58 786.60 PEL Equigranular biotite + calcite +/- quartz rock black VFG

785.58 - 786.6: Very fine grain, calcite in fracture.

<<Min: 785.58 - 793.47 0.5% Min: Pyrite>>

<<Alt: 785.68 - 793.47 Trace Calcite>>

786.60 790.40 SED undifferentiated Sediment grey-brown FMG

786.6 - 790.4: Gradual lower contact. Micaceous, bands/blebs brown/black.

790.40 793.47 RHYva Coarse grained to ash tuff dark grey FMG

790.4 - 793.47: Dirty rhyolite, gradual upper contact.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

793.47 810.53 PEL Equigranular biotite + calcite +/- quartz rock green-brown FG

793.47 - 810.53: Fine grain, chlorite blebs at upper contact associated with white clasts/porphyroblasts replaced calcite. Chlorite banded intervals, Medium size biotite porphyroblasts, non foliated, homogeneous.

<<Min: 793.47 - 819.74 2% Min: Pyrrhotite>>

<<Min: 793.47 - 854.5 0.1% Min: Pyrite>>

<<Alt: 793.47 - 810.53 Weak Chlorite>>

<<Alt: 793.47 - 810.53 Weak-Moderate Calcite>>

<<Struc: 810.2 - 810.21 dominant foliation>>

810.53 819.75 RHYvl Lapilli tuff light grey FG

810.53 - 819.75: Fine grain matrix, mid strained clasts (lapilli), silicified, biotite porphyroblasts (overprint). Disseminated garnet (orange/pink-amandine (?)) subhedral, well developed. Sharp upper contact, gradual lower contact.

<<Min: 819.74 - 854.5 1% Min: Pyrrhotite>>

<<Alt: 810.53 - 819.75 Moderate-Strong Silicification>>

<<Alt: 811.8 - 818.4 Moderate Garnet>> Probably not original(not associated with muscovite or chlorite).

<<Struc: 811.56 - 811.57 dominant foliation>>

<<Struc: 817.63 - 817.64 dominant foliation>>

819.75 826.83 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey VFG

819.75 - 826.83: CA banded, narrow mafic tuff intervals, locally mixed. Biotite in foliation. Sharp lower contact.

<<Alt: 819.75 - 828.63 Moderate-Strong Calcite>>

<<Vein: 820.46 - 820.8 Quartz>> QZ vein/pod in mafic tuff interval.

<<Struc: 821.35 - 821.36 dominant foliation>>

<<Struc: 824.45 - 824.46 dominant foliation>>

826.83 827.25 MAFt Mafic Volcaniclastics green FG

826.83 - 827.25: Sharp contact, homogeneous, biotite porphyroblasts, non foliated.

827.25 828.63 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey VFG

827.25 - 828.63: CA banded, narrow mafic tuff intervals, locally mixed. Biotite in foliation

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

828.63 846.04 MAFt Mafic Volcaniclastics green FG

828.63 - 846.04: Homogeneous, weak biotite content, banded BI/CA at upper contact.

<<Min: 829.3 - 831 0.1% Min: Galena>> I QZ vein.

<<Alt: 828.63 - 846.04 Weak-Moderate Calcite>>

<<Vein: 829.3 - 831 Quartz>> Multiple narrow QZ vein, GL trace representing 20% of the interval.

<<Struc: 829.92 - 829.93 dominant foliation>>

<<Struc: 835.43 - 835.44 dominant foliation>>

<<Struc: 839.71 - 839.72 dominant foliation>>

<<Struc: 843.6 - 843.61 dominant foliation>>

846.04 848.38 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey VFG

846.04 - 848.38: CA banded and light grey bands/clasts strongly calcareous (limestone), gradual contacts. Biotite in foliation.

<<Alt: 846.04 - 848.38 Moderate Calcite>>

<<Struc: 846.6 - 846.61 dominant foliation>>

848.38 849.66 MDS Carbonaceous Mudstone & Tuffaceous Mudstone light grey FMG

848.38 - 849.66: Strongly calcareous, coarser grain, banded, dirty limestone.

<<Alt: 848.38 - 849.66 Strong Calcite>>

849.66 854.50 MAFt Mafic Volcaniclastics black VFG

849.66 - 854.5: Weakly faulted/fractured, fine grain, CA veins, possibly lithic fragments. EOH.

<<Alt: 849.66 - 854.5 Moderate Calcite>> EOH.

<<Struc: 849.66 - 849.67 dominant foliation>>

<<Struc: 850.3 - 854.5 Weak Fault>> Minor fault gouge, weak shearing, fractured mudstone.

End of Hole @ 854.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-416

Prospect:	Sebesi	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Roger Hulstein
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Roger Hulstein	Date Logging Start:	8/26/2016
UTM Easting	415440	Core Size:	HQ3	Azimuth:	183	Date Logging Complete:	9/18/2016
UTM Northing:	6815276	Casing Pulled?:	Yes	Dip:	-68	Drill Company:	New Age
UTM Elev. (m):	1550	Casing Depth (m):	6	Length (m):	834	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	8/24/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	9/17/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Exploration
Comments:						Parent Hole:	

The purpose of K16-416 was to test for possible offset Krakatoa Zone mineralisation at the Sebesi exploration target and follow up on the PO-rich sulphide horizon intersected in K16-394, which is expected at approximately 700m depth.
Bedrock was encountered at 6m; followed by the Wind Lake Formation to a depth of 190.58m. KZK Formation rocks occur from 190.58 m to EOH and consist of alternating felsic volcanic ash and lapilli tuffs, intercalated with minor pelitic-beds, mudstone, mafic tuffs, and feldspar + quartz phyric, glassy, RHYif intrusive's (531.2-601.3m). Strong muscovite-silica alteration was encountered between 614.5 - 618.0 m associated with minor disseminated PO+SP+PY+/-GL. Patchy-disseminated CP+PO+/-GL occurs within quartz veins from 696.8 - 696.95 m, and 726.91 - 727.09 m correlating with the expected depth of mineralisation from K16-394. A DHEM survey was completed by Aurora Geosciences on September 17th, 2016.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-68	181.6	1.4	183	TN14	Roger Hulstein	8/24/2016		☑	aligned at 830pm Aug 24, 2016
0.01	-68.1131	181.6	1.4	183	Gyro	Oscar Nielsen	9/17/2016		☑	100
10	-67.9228	181.3914	1.4	182.7914	Gyro	Oscar Nielsen	9/17/2016		☑	98.607
12	-67.7	159.7	22.1	181.8	EZ-MARK	New Age	8/25/2016	5828	☐	
20	-68.1833	181.6957	1.4	183.0957	Gyro	Oscar Nielsen	9/17/2016		☑	99.1366
30	-68.2488	182.0277	1.4	183.4277	Gyro	Oscar Nielsen	9/17/2016		☑	99.0631
39	-68.5	160.3	22.1	182.4	EZ-MARK	New Age	8/25/2016	58378	☐	
40	-68.43	182.5046	1.4	183.9046	Gyro	Oscar Nielsen	9/17/2016		☑	98.9532
50	-68.3941	182.5514	1.4	183.9514	Gyro	Oscar Nielsen	9/17/2016		☑	99.0725
60	-68.3399	182.7682	1.4	184.1682	Gyro	Oscar Nielsen	9/17/2016		☑	99.3729
63	-68.5	161.1	22.1	183.2	EZ-MARK	New Age	8/25/2016	58492	☐	
70	-68.3352	183.1303	1.4	184.5303	Gyro	Oscar Nielsen	9/17/2016		☑	99.1618
80	-68.3423	183.2458	1.4	184.6458	Gyro	Oscar Nielsen	9/17/2016		☑	98.7148
87	-68.4	161.5	22.1	183.6	EZ-MARK	New Age	8/26/2016	58098	☐	
90	-68.3806	183.1449	1.4	184.5449	Gyro	Oscar Nielsen	9/17/2016		☑	98.7556
100	-68.4006	182.7379	1.4	184.1379	Gyro	Oscar Nielsen	9/17/2016		☑	98.6712
110	-68.4215	182.6889	1.4	184.0889	Gyro	Oscar Nielsen	9/17/2016		☑	99.108

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-416

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
114	-68.3	161.4	22.1	183.5	EZ-MARK	New Age	8/26/2016	58266	☐	
120	-68.4655	182.7955	1.4	184.1955	Gyro	Oscar Nielsen	9/17/2016		☑	99.3379
130	-68.4056	183.3621	1.4	184.7621	Gyro	Oscar Nielsen	9/17/2016		☑	99.2539
138	-68.6	162.5	22.1	184.6	EZ-MARK	New Age	8/26/2016	58322	☐	
140	-68.7211	184.2738	1.4	185.6738	Gyro	Oscar Nielsen	9/17/2016		☑	99.3747
150	-68.9173	185.0643	1.4	186.4643	Gyro	Oscar Nielsen	9/17/2016		☑	99.5969
160	-69.0139	185.2755	1.4	186.6755	Gyro	Oscar Nielsen	9/17/2016		☑	100
162	-68.8	163.3	22.1	185.4	EZ-MARK	New Age	8/26/2016	57939	☐	
170	-69.0306	185.6429	1.4	187.0429	Gyro	Oscar Nielsen	9/17/2016		☑	99.8963
180	-69.1452	185.7354	1.4	187.1354	Gyro	Oscar Nielsen	9/17/2016		☑	100
186	-69.1	164.5	22.1	186.6	EZ-MARK	New Age	8/27/2016	58335	☐	
190	-69.2264	185.9898	1.4	187.3898	Gyro	Oscar Nielsen	9/17/2016		☑	100
200	-69.4487	186.1581	1.4	187.5581	Gyro	Oscar Nielsen	9/17/2016		☑	100
210	-69.464	186.5121	1.4	187.9121	Gyro	Oscar Nielsen	9/17/2016		☑	100
210.01	-69.6	166.5	22.1	188.6	EZ-MARK	New Age	8/27/2016	58032	☐	
220	-69.5047	186.3783	1.4	187.7783	Gyro	Oscar Nielsen	9/17/2016		☑	100
230	-69.572	186.4915	1.4	187.8915	Gyro	Oscar Nielsen	9/17/2016		☑	100
234	-69.6	163.8	22.1	185.9	EZ-MARK	New Age	8/28/2016	58019	☐	
240	-69.6133	187.0757	1.4	188.4757	Gyro	Oscar Nielsen	9/17/2016		☑	100
250	-69.6803	187.3545	1.4	188.7545	Gyro	Oscar Nielsen	9/17/2016		☑	100
260	-69.7299	187.8238	1.4	189.2238	Gyro	Oscar Nielsen	9/17/2016		☑	100
261	-69.7	165.6	22.1	187.7	EZ-MARK	New Age	8/28/2016	58084	☐	
270	-69.8543	188.4077	1.4	189.8077	Gyro	Oscar Nielsen	9/17/2016		☑	100
280	-69.7577	188.9729	1.4	190.3729	Gyro	Oscar Nielsen	9/17/2016		☑	100
285	-70.1	169	22.1	191.1	EZ-MARK	New Age	8/28/2016	58084	☐	
290	-69.7259	189.4804	1.4	190.8804	Gyro	Oscar Nielsen	9/17/2016		☑	100
300	-69.6029	189.4849	1.4	190.8849	Gyro	Oscar Nielsen	9/17/2016		☑	100
300.01	-69.8	168.2	22.1	190.3	EZ-MARK	New Age	8/29/2016	57906	☐	
310	-69.6239	189.5707	1.4	190.9707	Gyro	Oscar Nielsen	9/17/2016		☑	100
320	-69.3171	189.9841	1.4	191.3841	Gyro	Oscar Nielsen	9/17/2016		☑	99.8006
324	-69	168.9	22.1	191	EZ-MARK	New Age	8/31/2016	57932	☐	
330	-69.5194	189.9456	1.4	191.3456	Gyro	Oscar Nielsen	9/17/2016		☑	100
340	-69.3903	189.9024	1.4	191.3024	Gyro	Oscar Nielsen	9/17/2016		☑	100
348	-69.7	165.8	22.1	187.9	EZ-MARK	New Age	9/2/2016	58094	☐	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-416

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
350	-69.5988	188.8874	1.4	190.2874	Gyro	Oscar Nielsen	9/17/2016		☑	100
360	-69.9638	188.2822	1.4	189.6822	Gyro	Oscar Nielsen	9/17/2016		☑	99.8939
370	-70.1034	187.6167	1.4	189.0167	Gyro	Oscar Nielsen	9/17/2016		☑	100
372	-70	164.9	22.1	187	EZ-MARK	New Age	9/3/2016	58244	☐	
380	-70.1449	187.1052	1.4	188.5052	Gyro	Oscar Nielsen	9/17/2016		☑	100
390	-70.0749	186.8403	1.4	188.2403	Gyro	Oscar Nielsen	9/17/2016		☑	100
396	-70.2	166.3	22.1	188.4	EZ-MARK	New Age	9/3/2016	58062	☐	
400	-69.9817	187.0717	1.4	188.4717	Gyro	Oscar Nielsen	9/17/2016		☑	100
410	-69.7853	187.2253	1.4	188.6253	Gyro	Oscar Nielsen	9/17/2016		☑	100
420	-69.6826	187.303	1.4	188.703	Gyro	Oscar Nielsen	9/17/2016		☑	100
420.01	-86.6	85.9	22.1	108	EZ-MARK	New Age	9/5/2016	22169	☐	
430	-69.6057	186.8032	1.4	188.2032	Gyro	Oscar Nielsen	9/17/2016		☑	100
435	-69.5	164.3	22.1	186.4	EZ-MARK	New Age	9/5/2016	58042	☐	
440	-69.5186	186.5172	1.4	187.9172	Gyro	Oscar Nielsen	9/17/2016		☑	100
450	-69.4602	186.4944	1.4	187.8944	Gyro	Oscar Nielsen	9/17/2016		☑	100
459	-69.4	164.5	22.1	186.6	EZ-MARK	New Age	9/5/2016	58192	☐	
460	-69.4186	186.6192	1.4	188.0192	Gyro	Oscar Nielsen	9/17/2016		☑	100
470	-69.3132	186.5286	1.4	187.9286	Gyro	Oscar Nielsen	9/17/2016		☑	100
480	-69.1437	186.8308	1.4	188.2308	Gyro	Oscar Nielsen	9/17/2016		☑	100
483	-69	164.5	22.1	186.6	EZ-MARK	New Age	9/6/2016	57774	☐	
490	-68.9465	187.3068	1.4	188.7068	Gyro	Oscar Nielsen	9/17/2016		☑	100
500	-68.8437	187.4834	1.4	188.8834	Gyro	Oscar Nielsen	9/17/2016		☑	100
507	-69.1	164.3	22.1	186.4	EZ-MARK	New Age	9/7/2016	57473	☐	
510	-68.7307	187.4828	1.4	188.8828	Gyro	Oscar Nielsen	9/17/2016		☑	100
520	-68.7222	187.6685	1.4	189.0685	Gyro	Oscar Nielsen	9/17/2016		☑	100
530	-68.6562	187.971	1.4	189.371	Gyro	Oscar Nielsen	9/17/2016		☑	100
531	-68.3	164.8	22.1	186.9	EZ-MARK	New Age	9/7/2016	57887	☐	
540	-68.6182	188.1894	1.4	189.5894	Gyro	Oscar Nielsen	9/17/2016		☑	100
550	-68.4506	188.5692	1.4	189.9692	Gyro	Oscar Nielsen	9/17/2016		☑	100
555	-68.2	165.2	22.1	187.3	EZ-MARK	New Age	9/8/2016	58062	☐	
560	-68.1516	188.8094	1.4	190.2094	Gyro	Oscar Nielsen	9/17/2016		☑	100
570	-67.9237	189.1346	1.4	190.5346	Gyro	Oscar Nielsen	9/17/2016		☑	100
580	-67.9097	189.4467	1.4	190.8467	Gyro	Oscar Nielsen	9/17/2016		☑	100
582	-68.4	166.7	22.1	188.8	EZ-MARK	New Age	9/8/2016	57914	☐	

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-416

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
590	-67.8315	189.8271	1.4	191.2271	Gyro	Oscar Nielsen	9/17/2016		☑	100
600	-67.6064	190.3151	1.4	191.7151	Gyro	Oscar Nielsen	9/17/2016		☑	100
606	-67.7	168.2	22.1	190.3	EZ-MARK	New Age	9/8/2016	57412	☐	
610	-67.3997	190.7698	1.4	192.1698	Gyro	Oscar Nielsen	9/17/2016		☑	100
620	-67.2892	191.0952	1.4	192.4952	Gyro	Oscar Nielsen	9/17/2016		☑	100
630	-67.2437	191.2486	1.4	192.6486	Gyro	Oscar Nielsen	9/17/2016		☑	100
636	-66.6	168.5	22.1	190.6	EZ-MARK	New Age	9/11/2016	56832	☐	
640	-66.8279	190.7464	1.4	192.1464	Gyro	Oscar Nielsen	9/17/2016		☑	100
650	-66.5325	190.3564	1.4	191.7564	Gyro	Oscar Nielsen	9/17/2016		☑	100
660	-66.3749	190.1215	1.4	191.5215	Gyro	Oscar Nielsen	9/17/2016		☑	100
660.01	-66.2	168.7	22.1	190.8	EZ-MARK	New Age	9/11/2016	56877	☐	
670	-66.1888	190.0369	1.4	191.4369	Gyro	Oscar Nielsen	9/17/2016		☑	100
680	-65.7921	189.5188	1.4	190.9188	Gyro	Oscar Nielsen	9/17/2016		☑	100
684	-65.3	169.3	22.1	191.4	EZ-MARK	New Age	9/12/2016	57448	☐	
690	-65.2801	189.3517	1.4	190.7517	Gyro	Oscar Nielsen	9/17/2016		☑	100
700	-65.1717	189.2739	1.4	190.6739	Gyro	Oscar Nielsen	9/17/2016		☑	100
708	-64.9	165.9	22.1	188	EZ-MARK	New Age	9/12/2016	56755	☐	
710	-65.0041	189.1209	1.4	190.5209	Gyro	Oscar Nielsen	9/17/2016		☑	100
720	-64.8461	189.2138	1.4	190.6138	Gyro	Oscar Nielsen	9/17/2016		☑	100
730	-64.3674	188.9469	1.4	190.3469	Gyro	Oscar Nielsen	9/17/2016		☑	100
740	-64.0263	188.7327	1.4	190.1327	Gyro	Oscar Nielsen	9/17/2016		☑	100
750	-63.5888	188.1951	1.4	189.5951	Gyro	Oscar Nielsen	9/17/2016		☑	100
759	-62.5	165.8	22.1	187.9	EZ-MARK	New Age	9/14/2016	57012	☐	
760	-62.7762	188.2294	1.4	189.6294	Gyro	Oscar Nielsen	9/17/2016		☑	100
770	-62.5405	188.0979	1.4	189.4979	Gyro	Oscar Nielsen	9/17/2016		☑	100
780	-62.3129	188.172	1.4	189.572	Gyro	Oscar Nielsen	9/17/2016		☑	100
786	-61.8	165.3	22.1	187.4	EZ-MARK	New Age	9/15/2016	57183	☐	
790	-62.0865	188.2112	1.4	189.6112	Gyro	Oscar Nielsen	9/17/2016		☑	100
800	-61.8589	188.2033	1.4	189.6033	Gyro	Oscar Nielsen	9/17/2016		☑	100
810	-61.5657	188.4503	1.4	189.8503	Gyro	Oscar Nielsen	9/17/2016		☑	100
810.01	-61.2	167	22.1	189.1	EZ-MARK	New Age	9/16/2016	56894	☐	
820	-61.2264	188.6963	1.4	190.0963	Gyro	Oscar Nielsen	9/17/2016		☑	100
830	-60.851	188.9059	1.4	190.3059	Gyro	Oscar Nielsen	9/17/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 6.00 OVBN Overburden

6.00 10.60 SLT Siltstone - fine-grained sedimentary rock

6 - 10.6: massive homogeneous black fine grained silicified siltstone (looks like chert), locally crosscut by minor white qtz veins with associated bleaching

<<Alt: 6 - 10.6 Intense Silicification>> chert like unit

<<Alt: 6 - 12 Trace Calcite>> fracture filling

<<Vein: 6.3 - 7.6 50% Quartz>> poor core recovery. Locally bleached envelope

<<Vein: 10.5 - 10.6 80% Quartz>>

<<Struc: 10.5 - 12 Moderate Fault>> missing and broken core, minor gouge.

10.60 14.45 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

10.6 - 14.45: minor siliceous zones, broken with minor gouge 10.60-12.30

<<Min: 12 - 26 0.1% Min: Pyrite>>

<<Alt: 12 - 14.45 Moderate Calcite>>

<<Vein: 12.05 - 12.12 100% Quartz-Carbonate>>

<<Struc: 10.6 - 16 Moderate dominant foliation>>

14.45 17.64 MAFta Coarse grained to ash tuff

14.45 - 17.64: lower 25cm is qtz vein - silica flooding with minor chlorite - silica and alteration from underlyng unit?

<<Min: 16 - 17 1% Min: Pyrrhotite>>

<<Alt: 14.45 - 17.64 Moderate-Strong Calcite>>

<<Alt: 17.44 - 20.25 Intense Silicification>> chert like unit

<<Vein: 17.4 - 17.64 100% Quarzt-Chlorite-Carbonate>> veining at unit contact

17.64 20.25 SLT Siltstone - fine-grained sedimentary rock

17.64 - 20.25: black fine grained weakly & faintly banded silicified siltstone in upper section of unit while lower section resembles a more massive grey silicified siltstone with interstitial calcite (originally limestone unit?).

<<Alt: 17.64 - 19 Trace Calcite>> fracture filling

<<Alt: 19 - 22 Moderate Calcite>> and diss

<<Vein: 19.1 - 19.6 15% Quartz 10 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

20.25 21.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

20.25 - 21.1: dominated by MDS, 20cm band MAFta at upper contact.

21.10 27.19 MAFta Coarse grained to ash tuff

<<Min: 24 - 36 1% Min: Pyrrhotite>>

<<Alt: 22 - 25.7 Moderate-Strong Calcite>>

<<Alt: 25.7 - 27.19 Weak Calcite>>

<<Struc: 22.4 - 24 Moderate-Strong dominant foliation>>

27.19 27.67 MAFt Mafic Volcaniclastics

27.19 - 27.67: coarse lappilli.

<<Alt: 27.19 - 27.67 Strong Calcite>>

27.67 34.68 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

27.67 - 34.68: upper 3 m has high ash content, transitional contact with true MDS in lower section of unit.

<<Alt: 27.67 - 30.9 Weak Calcite>>

<<Alt: 30.9 - 31.6 Moderate Calcite>>

<<Alt: 31.6 - 34.68 Weak-Moderate Calcite>>

<<Struc: 30.3 - 31.2 Weak-Moderate Fault>> scattered thin (<3cm) zones of gouge, minor crushed gouge.

<<Struc: 32.2 - 33 Moderate dominant foliation>>

34.68 45.00 MAFt Mafic Volcaniclastics

34.68 - 45: 35.43-36.42m: minor mudstone component

<<Min: 36 - 50.4 0.5% Min: Pyrite>>

<<Alt: 34.68 - 38.5 Moderate-Strong Calcite>>

<<Alt: 38.5 - 41.2 Weak Calcite>>

<<Alt: 41.2 - 45 Moderate-Strong Calcite>>

<<Vein: 36.67 - 37.95 30% Quartz-Carbonate 80 deg. >>

<<Struc: 41.85 - 52 Moderate dominant foliation>>

<<Struc: 42.5 - 48 Moderate Fault>> broken and crushed core, scattered thin (<3cm) zones of gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

45.00 50.40 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

45 - 50.4: mix of MAFta and MDS

<<Alt: 45 - 47.15 Weak Calcite>>

<<Alt: 47.15 - 51 Weak Calcite>>

<<Alt: 49.4 - 50.4 Trace Chlorite>> associated with adjacent rhyolite

<<Vein: 47.15 - 47.25 100% Quartz-Carbonate>>

<<Vein: 49.4 - 50.4 50% Quartz-Carbonate>> rubble in fault zone

<<Struc: 49.4 - 50.4 Strong Fault>> broken and crushed core, scattered thin (<3cm) zones of gouge. Missing core.

50.40 55.27 RHY undifferentiated rhyolite light grey FG

50.4 - 55.27: light grey, fine grained rhyolite, possible dyke, flow, ? Upper contact sharp but marked by about a meter of missing core, broken core, gouge, qtz veining and possible remnant chlorite alteration - possible hornfels. Up to 3% rounded 0.2 - .-5 mm feldspar grains & up to 5% 1-2mm chlorite after mafic mineral, both in fine grained (<0.1mm) groundmass of qtz - feldspar +/- calcite groundmass. Lower contact sharp over 1cm and marked by increase in biotite, Bippo, in RHY over 30cm.

<<Min: 50.4 - 53.36 0.5% Min: Pyrite>>

<<Alt: 51 - 53.35 Weak-Moderate Calcite>>

<<Alt: 53.35 - 55.27 Moderate-Strong Calcite>>

<<Struc: 51 - 51.5 Weak Fault>>

<<Struc: 53.56 - 54.2 Weak-Moderate Fault>>

<<Struc: 55.25 - 55.3 Strong Contact>>

55.27 56.69 MAFta Coarse grained to ash tuff

55.27 - 56.69: Slight increase in calcite banding along foliation at contacts.

<<Min: 55.75 - 71.73 3% Min: Pyrite>>

<<Alt: 55.27 - 56.69 Strong Calcite>>

<<Struc: 55.35 - 56.6 Moderate dominant foliation>>

<<Struc: 56.65 - 56.69 Strong Contact>>

56.69 60.40 RHY undifferentiated rhyolite

56.69 - 60.4: as 50.40-55.27m

<<Alt: 56.69 - 60.4 Weak Calcite>>

60.40 61.00 MAFta Coarse grained to ash tuff

60.4 - 61: as 55.27-56.69m.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 60.4 - 66.1 Moderate Calcite>>

61.00 71.73 RHY undifferentiated rhyolite

61 - 71.73: as 50.40-55.27m but less siliceous, more chloritic groundmass from 61.00 - 66.00m. At 65.60-70.20m brittle fractures with hairline - 2mm py filling with py selvege. At 70.20-70.30m flow banding(?) with calcite on some bands. Lower contact marked by finer grained size and end of Bippo.

<<Alt: 61 - 66.19 Weak Chlorite>>

<<Alt: 66.1 - 71.1 Weak Calcite>> dis, blebs

<<Alt: 71.1 - 75.8 Weak-Moderate Calcite>> dis, blebs, bands

<<Vein: 64 - 64.2 70% Quartz-Carbonate>>

<<Vein: 67.8 - 67.84 100% Quartz-Carbonate 57 deg. >>

<<Vein: 70.5 - 71 20% Quartz-Carbonate 65 deg. >>

<<Struc: 70 - 70.15 Weak Fault>> broken core

<<Struc: 71.65 - 71.85 Weak Fault>>

71.73 79.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

71.73 - 79.1: mixed bands of fine ash and mudstone, some grey calcite rich bands with Bippo. Lithic clasts - lappilli in some bands/sections.

<<Min: 71.73 - 73.2 1% Min: Pyrite>>

<<Min: 73.2 - 76.4 1% Min: Pyrite>>

<<Min: 73.2 - 76.4 1% Min: Pyrrhotite>>

<<Min: 76.4 - 80 0.1% Min: Pyrite>>

<<Alt: 75.8 - 81 Moderate Calcite>> dis, blebs, bands

<<Struc: 72 - 72.7 Moderate dominant foliation>>

<<Struc: 76.4 - 78.4 Moderate Fault>> broken and crushed core, minor gouge

79.10 82.44 MAFta Coarse grained to ash tuff

<<Min: 80 - 82.44 3% Min: Pyrite>>

<<Alt: 81 - 93 Moderate-Strong Calcite>> dis, blebs

82.44 93.00 MAFt Mafic Volcaniclastics

<<Min: 82.44 - 84.9 1% Min: Pyrite>>

<<Min: 84.9 - 87.45 3% Min: Pyrite>>

<<Min: 87.45 - 94 0.1% Min: Pyrite>>

<<Struc: 84 - 84.5 Weak Fault>> broken core

<<Struc: 85.5 - 86.1 Weak-Moderate Fault>> broken and crushed core, minor gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 87 - 91.5 Moderate-Strong dominant foliation>>

<<Struc: 91 - 93.25 Moderate Fault>> broken and crushed core, minor gouge

93.00 95.21 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

93 - 95.21: crackle brx, qtz vein at upper contact, py blebs and filling, MAFi similar to chloritized section of RHY at 61.00-66.00m.

<<Min: 94 - 95.05 3% Min: Pyrite>>

<<Min: 95.05 - 102 3% Min: Pyrite>>

<<Alt: 93 - 95.4 Weak Calcite>> dis, blebs, bands

<<Alt: 93.8 - 95 Weak Chlorite>>

<<Vein: 93.2 - 93.95 100% Quartz>>

<<Vein: 94.65 - 95.21 30% Quartz>>

<<Struc: 93.9 - 95.25 Moderate Fault>> broken and crushed core, minor gouge

95.21 95.40 MAFt Mafic Volcaniclastics

95.40 99.00 FLZ Fault Zone

<<Alt: 95.4 - 99.1 Trace Calcite>>

<<Struc: 95.4 - 99.1 Moderate-Strong Fault>> broken and crushed core, gouge

99.00 101.73 MAFta Coarse grained to ash tuff

<<Alt: 99.1 - 101 Weak-Moderate Calcite>> dis, blebs

<<Alt: 101 - 108 Moderate-Strong Calcite>>

<<Struc: 99.1 - 102.35 Weak Fault>> broken and crushed core

101.73 113.22 MAFt Mafic Volcaniclastics

<<Min: 111 - 113.7 1% Min: Pyrrhotite>>

<<Min: 111 - 113.7 0.1% Min: Galena>>

<<Min: 111 - 113.7 0.1% Min: Chalcopyrite>>

<<Min: 111 - 115.6 1% Min: Pyrite>>

<<Alt: 108 - 126.3 Weak-Moderate Calcite>> dis, blebs

<<Struc: 107 - 112 Weak Fault>> scattered narrow gouge zones

<<Struc: 113 - 114 Moderate dominant foliation>>

113.22 118.13 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

113.22 - 118.13: gradational upper contact over about 1m, MAFta band at 117.15-117.32m

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 115.6 - 120.6 3% Min: Pyrite>> trace silver sulfides at 116.15

<<Struc: 115.5 - 116 Moderate Fault>> gouge and crushed core

<<Struc: 116.4 - 117.65 Weak Fault>> minor gouge zones on folia

118.13 119.30 MAFta Coarse grained to ash tuff

<<Struc: 118.8 - 119.7 Moderate-Strong Fault>> gouge and crushed core

119.30 120.65 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

<<Min: 120.6 - 126.5 1% Min: Pyrite>>

120.65 124.15 MAFta Coarse grained to ash tuff

<<Struc: 120.8 - 126.35 Moderate Fault>> gouge and crushed core

124.15 162.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

124.15 - 162: Good MDS for the most part. Local sections (136.20-138.70m) has tuff - ash component. Abundant calcite and med grey limy bands (limestone) and clasts (ie. 136.2-145.5m, 149.3-154.3m). Entire unit is incompetent,locally contorted and cut by shear - gouge zones.

<<Min: 126.5 - 158.7 0.1% Min: Pyrite>>

<<Min: 143 - 144 0.1% Min: Pyrrhotite>>

<<Min: 158.7 - 161.4 1% Min: Pyrrhotite>>

<<Min: 161.4 - 168 0.1% Min: Pyrite>>

<<Alt: 126.3 - 136.2 Moderate-Strong Calcite>> dis, blebs

<<Alt: 136.2 - 145.5 Strong Calcite>> dis, blebs, bands of limestone

<<Alt: 145.5 - 148.26 Weak-Moderate Calcite>>

<<Alt: 148.26 - 151.9 Strong Calcite>>

<<Alt: 151.9 - 167.45 Moderate Calcite>> dis, blebs, bands, in shear - fault zone.

<<Vein: 125.9 - 126 75% Quartz-Carbonate>>

<<Vein: 129.6 - 133.8 10% Quartz-Carbonate>>

<<Vein: 134.7 - 135.6 90% Quartz-Carbonate>>

<<Vein: 136.9 - 137.1 50% Quartz-Carbonate>>

<<Vein: 139.25 - 139.32 100% Quartz-Carbonate 32 deg. >>

<<Vein: 141.81 - 143.3 10% Quartz-Carbonate 60 deg. >>

<<Vein: 145.5 - 146.3 30% Quartz-Carbonate 30 deg. >>

<<Vein: 147.1 - 147.2 50% Quartz-Carbonate>>

<<Vein: 157.43 - 157.7 70% Quartz-Carbonate>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 157.7 - 167.5 15% Quartz-Carbonate>> vein clasts in fault brx

<<Vein: 160.75 - 261.2 25% Quartz-Carbonate 70 deg. >>

<<Struc: 126.35 - 131.1 Weak Fault>>

<<Struc: 127.5 - 128 Moderate dominant foliation>>

<<Struc: 128.5 - 130.5 Moderate-Strong dominant foliation>>

<<Struc: 131.1 - 133.9 Weak-Moderate Fault>> gouge and crushed core

<<Struc: 133.9 - 143.1 Weak Fault>>

<<Struc: 136.2 - 139 Moderate-Strong dominant foliation>>

<<Struc: 143.1 - 143.35 Moderate Fault>> gouge and crushed core

<<Struc: 143.35 - 149.3 Weak Fault>>

<<Struc: 144.7 - 145.75 Moderate-Strong dominant foliation>>

<<Struc: 147 - 148 Moderate-Strong dominant foliation>> and shearing

<<Struc: 151.8 - 159.3 Moderate Fault>> contorted schist, local gouge and brx zones.

<<Struc: 155 - 155.2 Moderate dominant foliation>>

<<Struc: 157.7 - 158.3 Moderate-Strong dominant foliation>>

<<Struc: 157.8 - 158.4 Moderate-Strong dominant foliation>>

<<Struc: 159.3 - 160 Strong Fault>> gouge and crushed core

<<Struc: 160 - 162 Moderate Fault>> contorted schist, local gouge and brx zones.

<<Struc: 161.7 - 161.85 Moderate-Strong Shear>>

162.00 183.90 FLZ Fault Zone

162 - 183.9: brecciated and sheared, blocks and clasts of MDS, MAFta and qtz-carb veining in gouge and crushed lithology of same. 170.60-173.60m; 50% qtz veining and remainder is muscovite altered and bleached MAFt.

<<Min: 168 - 175 3% Min: Pyrite>>

<<Min: 175 - 190.2 0.1% Min: Pyrite>>

<<Alt: 167.45 - 173.6 Trace Calcite>>

<<Alt: 170.7 - 173.6 Moderate-Strong Muscovite>> in shear - fault zone

<<Alt: 173.6 - 179.25 Weak Calcite>> and diss

<<Alt: 179.25 - 184.8 Weak-Moderate Calcite>> dis, blebs

<<Vein: 170.8 - 173.6 60% Quartz-Carbonate>> crushed qtz vein (minor carbonate) in fault zone with bleached MAFt clasts

<<Struc: 162 - 183.9 Strong Fault>> gouge and crushed core

183.90 184.83 MAFta Coarse grained to ash tuff

183.9 - 184.83: minor bands of MDS

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 184.8 - 190.58 Trace Calcite>>

<<Struc: 183.9 - 186.2 Weak-Moderate Fault>> zones of gouge and broken core

184.83 190.58 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

184.83 - 190.58: most of unit is medium green grey, cut by grey MDS bands. Medium - green - grey ash tuff is not calcareous, unusual for Wind Lake package, more likely an intermediate ash tuff belonging to KZK.

<<Struc: 189.9 - 190.2 Weak-Moderate Fault>> zones of gouge and broken core

190.58 194.50 RHY undifferentiated rhyolite

190.58 - 194.5: light tan green, fine - medium grained, banded (silic) homogonous - massive unit. Upper contact interbanded with MDS over approx 40cm. Silic bands, cut by foliation, unit could be a RHYc.

<<Min: 194 - 195 0.5% Min: Pyrrhotite>>

<<Alt: 190.58 - 197.3 Trace Calcite>>

<<Struc: 192 - 196.85 Weak Fault>>

194.50 198.22 RHYva Coarse grained to ash tuff

194.5 - 198.22: Similar to unit above but light green grey in color. Upper contact is sharp along fine grained bleached band of ash. Lower contact from 197.30 - 198.22m is bleached, light tan - brown (fine grained phlogopite - biotite), hornfeldsed looking ash unit, terminating at a thin (<1cm) qtz-pyrite-gouge band that cuts the foliation of the underlying brown RHY unit. Unconformable contact at core scale.

<<Min: 195 - 225 0.1% Min: Pyrite>>

<<Alt: 197.3 - 198.7 Moderate Calcite>>

<<Vein: 198.2 - 198.22 50% Quartz-Carbonate-Sulphide 20 deg. >> qtz-pyrite-gouge on contact, bleached envelope with calcite

<<Struc: 196.2 - 198.7 Weak-Moderate Fault>> gouge zones on folia

198.22 198.70 RHYvl Lapilli tuff

198.22 - 198.7: Brown (biotite) fine grained ash with light grey qtz clasts and disrupted bands. Upper contact is unconformable, appears to cut banding at low angle, against a thin (<1cm) qtz-pyrite-gouge band. Lower contact is light grey gouge.

198.70 205.00 RHYvx Quartz and/or feldspar crystal tuff

198.7 - 205: Granular ash unit with blue qtz eyes. Bleaching and weak muscovite alteration increasing towards lower contact over 1 m.

<<Alt: 198.7 - 201.9 Weak-Moderate Calcite>>

<<Alt: 201.9 - 204.9 Trace Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 204.9 - 207 Weak-Moderate Calcite>>

<<Struc: 202.2 - 202.6 Weak-Moderate dominant foliation>>

205.00 205.98 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

205 - 205.98: Calcite altered feldspar phyric MAFi dyke with fine grained banded contacts. About 30% feldspars, up to 0.5 cm. Could also just be calcite porphyroblasts in a volcaniclastic… Dyke is likely intermediate, has a fine gr groundmass of qtz-feld-musc.

205.98 214.80 RHYvl Lapilli tuff

205.98 - 214.8: Blue qtz eyes, about 5%, 1-4mm size and possibly up to 3% broken white 1-3 mm feldspar crystals.10% white - light grey lapilli. Unit is coarser than 198.70-205.00m. Lower contact in bleached, muscovite - sericite altered, fault-shear zone with qtz vein.

<<Alt: 207 - 213 Weak Calcite>>

<<Alt: 213 - 216 Moderate Muscovite>> musc-sericite-clay associated with shear - fault zones.

<<Alt: 213 - 222 Trace Calcite>>

<<Vein: 206.75 - 207 80% Quartz-Carbonate 52 deg. >> crudely banded with schist

<<Struc: 205.98 - 207 Weak-Moderate Fault>>

<<Struc: 206.5 - 206.7 Weak-Moderate dominant foliation>>

<<Struc: 211.95 - 212 Weak-Moderate dominant foliation>>

<<Struc: 212 - 213 Weak-Moderate Fault>> gouge zones on folia

<<Struc: 213.61 - 216.8 Moderate Fault>> gouge

214.80 219.20 RHYva Coarse grained to ash tuff

214.8 - 219.2: locally finely banded

<<Alt: 216 - 222.15 Weak Muscovite>> musc-sericite-clay associated with shear - fault zones.

<<Struc: 216.8 - 219.2 Weak Fault>> gouge on folia

219.20 220.29 RHYvl Lapilli tuff

<<Struc: 219.2 - 221.6 Weak-Moderate Fault>> gouge cutting foliation

220.29 223.36 RHYva Coarse grained to ash tuff

<<Alt: 222 - 223.36 Moderate Calcite>>

223.36 234.22 RHYvl Lapilli tuff

223.36 - 234.22: more ash rich to 226.5m but textures obscured by faulting. Good RHYvl from 226.50-234.00m. Lower contact in broken core but appears to be a healed breccia

<<Min: 225 - 254.1 0.5% Min: Pyrite>> blebs and diss

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 223.36 - 228 Trace Calcite>>

<<Alt: 223.36 - 233.5 Weak-Moderate Muscovite>> musc-sericite-clay associated with shear - fault zones.

<<Alt: 228 - 232.7 Weak Calcite>>

<<Alt: 232.7 - 234.22 Trace Calcite>>

<<Vein: 224.6 - 228 5% Quartz-Tourmaline>> several qtz-tourmaline veins, some crushed by more recent faulting - shearing

<<Vein: 232.5 - 233.55 5% Quartz-Carbonate 30 deg. >> several narrow < cm crushed veins

<<Struc: 223.4 - 228 Moderate-Strong Fault>> gouge zones

<<Struc: 229.4 - 237 Weak-Moderate Fault>> gouge and broken core

234.22 237.00 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

234.22 - 237: Very similar to 205.00-205.99m. Green weakly calcite altered feldspar phyric MAFi dyke with fine grained banded contacts. About 10% feldspars, up to 3-4mm. Dyke is likely intermediate, has a fine gr groundmass of qtz-feld-musc-biotite-chlorite..

<<Alt: 234.22 - 235.35 Weak Calcite>>

<<Alt: 235.35 - 244.2 Weak-Moderate Calcite>> and diss

237.00 258.43 RHYvl Lapilli tuff

237 - 258.43: numerous shear - fault zones, minor fine grained, ash rich, sections.

<<Min: 254.1 - 258.43 1% Min: Pyrite>> and diss

<<Alt: 237 - 242 Weak Muscovite>> musc-sericite-clay associated with shear - fault zones.

<<Alt: 244.2 - 258.43 Weak Calcite>> and diss

<<Alt: 244.6 - 258.43 Weak-Moderate Muscovite>> musc-sericite-clay associated with shear - fault zones.

<<Vein: 245.92 - 246 100% Quartz-Carbonate>>

<<Vein: 249.76 - 253.8 5% Quartz-Tourmaline>>

<<Vein: 254.1 - 254.89 80% Quartz-Tourmaline>> includes 20% wallrock clasts

<<Struc: 237 - 242 Moderate-Strong Fault>> gouge and broken core

<<Struc: 244 - 246.25 Moderate Fault>> gouge and broken core

<<Struc: 247.9 - 251 Moderate Fault>> gouge and broken core

<<Struc: 250 - 250.1 Moderate dominant foliation>>

<<Struc: 251 - 254.1 Moderate-Strong Fault>> gouge and broken core

<<Struc: 256 - 257 Moderate dominant foliation>>

<<Struc: 256.4 - 262.7 Moderate Fault>> broken core and minor gouge

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

258.43 261.40 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

258.43 - 261.4: Very similar to 205.00-205.98m & 234.22-237.00m:Fine grained (chilled?) poorly banded contacts with qtz-carb veining, Exact footwall contact lost in rubble.

<<Min: 258.43 - 265.8 0.5% Min: Pyrite>>

<<Alt: 258.43 - 261.4 Weak-Moderate Calcite>> and diss

<<Vein: 258.43 - 258.8 25% Quartz-Carbonate 80 deg. >>

261.40 263.25 RHYv Rhyolite volcaniclastic

261.4 - 263.25: textures obscured by broken core.

<<Alt: 261.4 - 263.25 Weak Calcite>>

<<Struc: 262.65 - 262.7 Moderate-Strong Shear>>

<<Struc: 262.7 - 265.8 Weak Fault>> broken core and minor gouge

<<Struc: 263 - 264 Moderate dominant foliation>>

263.25 266.19 PEL Equigranular biotite + calcite +/- quartz rock

263.25 - 266.19: fine grained biotite and calcite altered PEL with numerous mm to cm size rhyolite ash bands, few section with lpl. Lower 20cm leached, brecciated and qtz veined.

<<Min: 265.8 - 266.7 0.5% Min: Pyrrhotite>>

<<Alt: 263.25 - 265.9 Moderate-Strong Calcite>>

<<Alt: 265.9 - 269.55 Weak Calcite>>

<<Vein: 264 - 265.7 5% Calcite>> carb veining with vugs

<<Vein: 266 - 268 15% Quarzt-Chlorite-Carbonate>> brecciated qtz-carb veining in fault zone

266.19 278.15 RHYvl Lapilli tuff

266.19 - 278.15: Sheared and faulted RHYvl. 266.19-269.55m: sheared-faulted and qtz veining obscure textures, possible block of brecciated RHYc 267.2-267.40.

<<Min: 266.7 - 269.2 0.5% Min: Pyrite>>

<<Min: 266.7 - 269.2 0.1% Min: Pyrrhotite>>

<<Min: 269.2 - 280 0.1% Min: Pyrite>>

<<Alt: 269.5 - 277.2 Weak-Moderate Calcite>>

<<Alt: 277.2 - 283.4 Weak Calcite>>

<<Vein: 266.9 - 267.1 10% Quartz-Tourmaline 13 deg. >> crosscutting QT vein

<<Struc: 267 - 267.1 Moderate Vein>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 269.2 - 269.3 Moderate-Strong Fault>> fault margin contact

<<Struc: 269.3 - 270 Moderate-Strong Fault>>

<<Struc: 270 - 287.4 Weak-Moderate Fault>> numerous narrow gouge zone on folia and crosscutting DFOL. Broken core, missing core, very soft ground.

<<Struc: 276 - 276.9 Moderate-Strong dominant foliation>>

278.15 279.70 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

278.15 - 279.7: Very similar to 205.00-205.98m & 234.22-237.00m:Fine grained (chilled?) poorly banded contacts with minor qtz-carb veining, Unit has better banding, than units above, defined by calcite - ankerite altered feldspar phenocrysts, - now looking more like porphyroblasts. Unit could easily be a MAFTa.

<<Struc: 278.15 - 278.9 Moderate-Strong dominant foliation>>

279.70 290.05 RHYvl Lapilli tuff

279.7 - 290.05: A different looking RHYvl. Has silic bands, brecciated silic bands and brecciated blocks of RHYc. White lpl and lithic clasts of qtz and mixed qtz+/-feld+/-calcite from mm to 2cm size. Lpl - lithic clasts are poorly sorted and matrix (ash) supported. Unit is locally brecciated, fractured and cut/healed with qtz+/-py fracture filling.

<<Min: 280 - 290 3% Min: Pyrite>> py - qtz in healed fractures

<<Min: 290 - 297.5 0.1% Min: Pyrite>>

<<Alt: 283.3 - 286.9 Trace Calcite>>

<<Alt: 286.9 - 290 Weak Calcite>>

<<Alt: 290 - 292.6 Weak Calcite>>

<<Struc: 282.7 - 283.3 Moderate-Strong dominant foliation>>

<<Struc: 284 - 286.6 Moderate-Strong dominant foliation>>

<<Struc: 285.5 - 286.6 Moderate-Strong dominant foliation>>

<<Struc: 287.4 - 290 Moderate-Strong Fault>> numerous narrow gouge zone on folia and crosscutting DFOL. Broken core, missing core, very soft ground.

<<Struc: 290 - 294.2 Strong Fault>> gouge and broken core, missing core

290.05 294.20 FLZ Fault Zone

290.05 - 294.2: zone of crushed and comminuted RHYvl (and RHY?) and bands of gouge. Sections of missing core.

<<Alt: 292.6 - 298.8 Trace Calcite>>

294.20 303.70 RHYvl Lapilli tuff

294.2 - 303.7: Faulted and sheared RHYvl with narrow sections of gouge.

<<Min: 297.5 - 297.7 5% Min: Pyrite>>

<<Min: 297.7 - 302.5 1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 302.5 - 308.2 3% Min: Pyrite>>

<<Alt: 298.8 - 302 Weak Calcite>>

<<Alt: 302 - 308.2 Trace Calcite>>

<<Vein: 297.5 - 297.7 100% Quartz-Carbonate-Sulphide 80 deg. >> brecciated qtz-cal-pyrite (in fracture filling) vein

<<Struc: 294.2 - 302.1 Moderate-Strong Fault>> numerous narrow gouge zone on folia and crosscutting DFOL. Broken core, missing core, very soft ground.

<<Struc: 295.5 - 296.6 Moderate dominant foliation>>

<<Struc: 299 - 301.2 Moderate dominant foliation>>

<<Struc: 302.1 - 308.2 Strong Fault>> gouge and broken core, missing core, very soff ground!

303.70 308.80 FLZ Fault Zone

303.7 - 308.8: Faulted and sheared with gouge zones, missing core. Blocks - sections with RHYvl, similar to lithologies above and below.

<<Min: 308.2 - 399 0.1% Min: Pyrite>>

<<Alt: 308.2 - 349.65 Weak Calcite>>

<<Vein: 304.1 - 304.3 100% Quartz-Carbonate-Sulphide 35 deg. >>

<<Vein: 305.93 - 306 100% Quartz-Carbonate 60 deg. >>

<<Struc: 305.93 - 306 Strong Vein>>

<<Struc: 308.2 - 310.4 Moderate dominant foliation>>

<<Struc: 308.2 - 314.7 Moderate-Strong Fault>> numerous narrow gouge zone on folia and crosscutting DFOL. Broken core, missing core, very soft ground.

308.80 323.60 RHYvl Lapilli tuff

308.8 - 323.6: Narrow sections of gouge. Approx, 317.50-318.40; RHYva. Bippo from 318.20m to 320m. Abundant calcareous lpl.

<<Vein: 318 - 318.4 10% Quartz-Carbonate 46 deg. >> calcite bands in RHYva at contact

<<Struc: 314.65 - 314.7 Moderate dominant foliation>>

<<Struc: 314.7 - 323.6 Weak-Moderate Fault>> Broken core with abundant zones of gougey faulting.

<<Struc: 318.5 - 319.5 Moderate dominant foliation>>

323.60 338.65 FLZ Fault Zone

323.6 - 338.65: Strongly-intensely faulted gouge to clast supported breccia. Dominated by felsic RHY clasts with minor dark PEL(?) clasts.

<<Struc: 323.6 - 330 Strong Fault>> Strongly faulted clast-supported fault gouge breccia

<<Struc: 330 - 336.4 Intense Fault>> Intense faulting. Gouge-supported fault gouge breccia

<<Struc: 336.4 - 338.65 Strong Fault>> Strongly faulted clast-supported fault gouge breccia

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

338.65 346.90 RHYv Rhyolite volcaniclastic

338.65 - 346.9: Moderate-strong faulting of volcaniclastic rhyolite with disseminated BI porphyroblasts.

<<Struc: 338.65 - 350.1 Moderate-Strong Fault>> Moderate-strongly faulted rhyolite. Abundant gouge zones and brecciated rock.

346.90 349.65 RHYc Rhyolite coherent volcanics

346.9 - 349.65: Moderate-strong faulting of silicic banded rhyolite.

349.65 352.50 PEL Equigranular biotite + calcite +/- quartz rock

349.65 - 352.5: Black, sheared and faulted, BI-CA schist, meta-pelite (?).

<<Alt: 349.65 - 352.5 Moderate-Strong Calcite>>

<<Vein: 349.7 - 350.05 65% Quartz-Carbonate>> Two massive QZ-carbonate veins

<<Struc: 350.1 - 352.5 Weak-Moderate Fault>> Weak-moderately faulted PEL in the middle of a larger fault zone.

352.50 361.70 FLZ Fault Zone

352.5 - 361.7: Strongly faulted zone varying from a gouge-supported fault breccia to strongly faulted RHY or PEL.

<<Alt: 352.5 - 372.85 Weak Calcite>>

<<Vein: 353.7 - 354.7 15% Quartz-Carbonate>> Clasts of massive QZ-carbonate vein within the fault zone

<<Struc: 352.5 - 353.7 Intense Fault>> Gouge-supported fault breccia.

<<Struc: 353.7 - 357 Strong Fault>> Strong fault with large zones of gouge. Original lithology is somewhat recognizable. Large clasts of RHY and PEL exist.

<<Struc: 357 - 361.7 Intense Fault>> Gouge-supported fault breccia

361.70 369.40 RHYvl Lapilli tuff

361.7 - 369.4: Medium grey, felsic lpl tuff, with siliceous lpl (maybe deformed FD?) and fine grained grey ash matrix.

<<Struc: 361.7 - 369.4 Weak-Moderate Fault>>

369.40 372.85 FLZ Fault Zone

369.4 - 372.85: Gouge-supported fault breccia with angular clasts of dominantly RHY and PEL.

<<Vein: 370 - 371.5 5% Quartz-Carbonate>> Clasts of massive QZ-carbonate vein within the fault zone

<<Struc: 369.4 - 372.85 Intense Fault>> Gouge-supported fault breccia

372.85 376.50 RHYvl Lapilli tuff

372.85 - 376.5: Moderately faulted near top of unit. Grey, lpl tuff with ~10% calcerous lpl, minor disseminated BI, and disseminated fine grained Ankerite.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 372.85 - 376.5 Weak-Moderate Calcite>>

<<Struc: 372.85 - 375 Moderate Fault>>

376.50 377.95 PEL Equigranular biotite + calcite +/- quartz rock

376.5 - 377.95: Black to grey, BI-MU-CA schist, mixed pelite and ash tuff.

<<Alt: 376.5 - 377.95 Moderate Calcite>>

377.95 386.20 RHYvl Lapilli tuff

377.95 - 386.2: Grey, lpl tuff with ~10% calcareous lpl, minor disseminated BI, and disseminated fine grained Ankerite.

<<Alt: 377.95 - 403.47 Weak-Moderate Calcite>>

<<Vein: 383.8 - 384.1 80% Quartz-Carbonate>> Zone with massive QZ-carbonate veining

<<Vein: 385.6 - 385.8 100% Quartz-Carbonate>> Massive QZ-carbonate vein

<<Struc: 378.7 - 385.4 Weak Fault>>

386.20 403.47 RHYvl Lapilli tuff

386.2 - 403.47: Grey, calcareous-lpl tuff with 10-15% disseminated fine-medium grained BI in a fine grained grey ash matrix.

<<Min: 399 - 403.47 0.5% Min: Pyrrhotite>>

<<Vein: 390.85 - 391.15 100% Quartz-Carbonate>> Massive QZ-carbonate vein

<<Struc: 386.35 - 386.36 Weak-Moderate dominant foliation>> Foliation in RHYvl

<<Struc: 397.75 - 397.76 Weak-Moderate dominant foliation>> Foliation in RHYvl

403.47 404.15 RHYc Rhyolite coherant volcanics

403.47 - 404.15: Silicic banded rhyolite. Grades downward into aphanitic rhyolite.

<<Min: 403.47 - 411.45 0.5% Min: Pyrite>>

<<Alt: 403.47 - 414 Trace Calcite>>

404.15 411.45 RHYi Aphanitic Rhyolite (intrusion)

404.15 - 411.45: Light grey to pink, aphanitic rhyolite with local mottled textured. Abundant QZ-veining throughout. Minor disseminated PY.

<<Vein: 404.15 - 411.6 10% Quartz-Carbonate>> QZ-carbonate veining in RHYi. Veins are patchy without sharp contacts. Vary from 1 to 30 cm in core width. Minor disseminated PY.

411.45 414.00 RHYc Rhyolite coherant volcanics

411.45 - 414: Silicic banded rhyolite. Grades upward into aphanitic rhyolite.

<<Min: 411.45 - 463 0.1% Min: Pyrite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 413.29 - 413.3 Moderate dominant foliation>> Silicic banding in RHYc

414.00 423.70 RHYva Coarse grained to ash tuff

414 - 423.7: Medium grey, fine grained ash tuff.

<<Alt: 414 - 488.05 Weak Calcite>>

<<Vein: 423.1 - 423.6 100% Quartz-Carbonate>> Massive QZ-carbonate vein with wallrock clasts

<<Struc: 417.5 - 421.5 Weak Fault>>

423.70 461.70 RHYvl Lapilli tuff

423.7 - 461.7: Grey, siliceous-lpl tuff in fine grained grey ash matrix. Lpl varies in composition locally from siliceous to calcareous to dark BI-CL and in abundance from ~25% to 5%. Minor bands of ash tuff with gradational contacts.

<<Min: 423.7 - 488.05 0.5% Min: Pyrrhotite>>

<<Vein: 442.74 - 442.78 100% Quartz-Carbonate>> QZ-carbonate vein

<<Vein: 455.3 - 488.05 3% Quartz-Carbonate 70 deg. >> ~1-2 QZ-carbonate veins (1-5 cm wide) per metre.

<<Struc: 423.7 - 426 Weak Fault>>

<<Struc: 440.7 - 440.71 Weak dominant foliation>> Foliation in RHYvl

<<Struc: 443.69 - 443.7 Weak dominant foliation>> Foliation in RHYvl

<<Struc: 444.45 - 444.9 Weak Fault>>

<<Struc: 446.86 - 446.87 Weak-Moderate dominant foliation>> Foliation in RHYvl

461.70 463.00 RHYva Coarse grained to ash tuff

461.7 - 463: Light greenish-brown, BI-MU-QZ schist. Mixed ash tuff and pelitic material?

<<Struc: 461.8 - 461.81 Moderate dominant foliation>> Foliation in RHYva.

463.00 465.25 RHYvl Lapilli tuff

463 - 465.25: Siliceous lpl in a fine grained grey-green ash matrix.

<<Min: 463 - 488.05 1% Min: Pyrite>>

465.25 468.65 RHYc Rhyolite coherant volcanics

465.25 - 468.65: Silicic banded rhyolite.

<<Struc: 466 - 466.6 Weak-Moderate Fault>>

468.65 488.05 RHYvl Lapilli tuff

468.65 - 488.05: Variable anbundance (~5-35%) of siliceous and/or calcareous lpl within fine grained grey-green ash matrix.

<<Struc: 477.18 - 477.19 Weak dominant foliation>> Weakly developed foliation in RHYvl

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 480.18 - 480.19 Weak dominant foliation>> Weakly developed foliation in RHYvl

488.05 489.55 PEL Equigranular biotite + calcite +/- quartz rock

488.05 - 489.55: BI-CA schist with gradational contacts.

<<Alt: 488.05 - 489.55 Moderate Calcite>>

489.55 501.50 RHYvl Lapilli tuff

489.55 - 501.5: Light grey-green, siliceous-lpl rhyolite tuff. Upper portion of the unit (489.55-498 m) displays weak MU+SI alteration with patchy PY+PO+/-SP mineralization.

<<Min: 489.55 - 498 0.5% Min: Sphalerite>>

<<Min: 489.55 - 498 2% Min: Pyrrhotite>>

<<Min: 489.55 - 501.5 3% Min: Pyrite>>

<<Alt: 489.55 - 498 Weak Muscovite>> Pervasive MU-alteration with increased QZ-veining and patchy PY+PO+/-SP mineralization.

<<Alt: 489.55 - 501.5 Weak Calcite>>

<<Vein: 491.2 - 501.5 15% Quartz-Carbonate>> Series of QZ-carbonate veins. Highest density between 491.2-495.1 m.

<<Struc: 493.44 - 493.45 Weak-Moderate dominant foliation>> Foliation in RHYvl

<<Struc: 500.92 - 500.93 Weak dominant foliation>> Foliation in RHYvl

501.50 503.80 PEL Equigranular biotite + calcite +/- quartz rock

501.5 - 503.8: Laminated BI-CA schist with patchy/blebby CA.

<<Min: 501.5 - 503.8 1% Min: Pyrite>>

<<Alt: 501.5 - 503.8 Moderate-Strong Calcite>>

<<Vein: 502.9 - 503.05 80% Quartz-Carbonate>> Irregular/blebby QZ-carboanate vein

503.80 531.20 RHYvl Lapilli tuff

503.8 - 531.2: Grey, siliceous-lpl rhyolite tuff with a fine grained ash matrix. Locally RHYva or calcareous-lpl tuff.

<<Min: 503.8 - 531.2 0.5% Min: Pyrite>>

<<Min: 503.8 - 531.2 1% Min: Pyrrhotite>>

<<Alt: 503.8 - 601.3 Weak Calcite>>

<<Vein: 531.15 - 531.2 100% Quartz-Carbonate>> QZ-carbonate vein at contact of RHYvl and RHYif.

<<Struc: 509 - 509.2 Weak Fault>>

<<Struc: 513.32 - 513.33 Weak dominant foliation>> Weakly developed foliation in RHYvl

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 518.67 - 518.68 Weak dominant foliation>> Weakly developed foliation in RHYvl

<<Struc: 527.14 - 527.15 Weak dominant foliation>> Weakly developed foliation in RHYvl

<<Struc: 529.73 - 529.74 Weak dominant foliation>> Weakly developed foliation in RHYvl

531.20 560.50 RHYif feldspar and quartz porphyry intrusions

531.2 - 560.5: Light grey, glassy groundmass, coarse grained subhedral FD and fine grained anhedral QZ (QZ-eyes) phyric rhyolite. Porphyritic intrusion? Appears similar to the RHYcf below the GP4F mineralization horizon. Contacts with RHYv display minor veining and silver MU-alteration.

<<Min: 531.2 - 560.5 3% Min: Pyrite>>

<<Alt: 532.1 - 560.5 Strong Silicification>> Very siliceous FD-phyric RHYif

<<Vein: 531.2 - 560.5 2% Quartz-Carbonate>> ~1 QZ-carbonate veins per metre varying from 1 cm to 1.5 m.

<<Struc: 539.32 - 539.33 Trace dominant foliation>> Weakly developed foliation in RHYif

<<Struc: 542.42 - 542.43 Trace dominant foliation>> Weakly developed foliation in RHYif

<<Struc: 551.52 - 551.53 Trace dominant foliation>> Weakly developed foliation in RHYif

<<Struc: 556.82 - 556.83 Trace dominant foliation>> Weakly developed foliation in RHYif

560.50 563.65 RHYvl Lapilli tuff

560.5 - 563.65: Light green-grey, fine grained ash tuff with calcareous lpl.

<<Min: 560.5 - 563.65 1% Min: Pyrite>>

563.65 579.05 RHYif feldspar and quartz porphyry intrusions

563.65 - 579.05: Light grey, glassy groundmass, coarse grained subhedral FD and fine grained anhedral QZ (QZ-eyes) phyric rhyolite. Porphyritic intrusion? Appears similar to the RHYcf below the GP4F mineralization horizon. Contacts with RHYv display minor veining and silver MU-alteration.

<<Min: 563.65 - 579.05 2% Min: Pyrite>>

<<Alt: 563.65 - 579.05 Strong Silicification>>

<<Vein: 563.65 - 609.5 1% Quartz-Carbonate>> ~1 1 cm wide QZ-carbonate vein per metre

<<Struc: 568.8 - 575 Weak-Moderate Fault>>

579.05 583.77 RHYvl Lapilli tuff

579.05 - 583.77: Light green-grey, fine grained ash tuff with siliceous and calcareous lpl.

<<Min: 579.05 - 583.77 2% Min: Pyrite>>

<<Struc: 581.29 - 581.3 Weak-Moderate dominant foliation>> Foliation in RHYvl

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

583.77 601.30 RHYif feldspar and quartz porphyry intrusions

583.77 - 601.3: Light grey, aphanitic to glassy MU-silica groundmass, coarse grained subhedral FD and fine grained anhedral QZ (QZ-eyes) phyric rhyolite. Porphyritic intrusion? Appears similar to the RHYcf below the GP4F mineralization horizon.

<<Min: 583.77 - 601.3 3% Min: Pyrite>>

<<Min: 583.77 - 601.3 0.5% Min: Pyrrhotite>>

<<Alt: 583.77 - 601.3 Moderate Silicification>>

<<Struc: 589.67 - 589.68 Trace dominant foliation>> Weakly developed foliation in RHYif

<<Struc: 591.88 - 591.89 Trace dominant foliation>> Weakly developed foliation in RHYif

<<Struc: 599.34 - 599.35 Trace dominant foliation>> Weakly developed foliation in RHYif

601.30 609.50 RHYv Rhyolite volcaniclastic

601.3 - 609.5: Light greenish-grey, QZ-phyric, fine grained QZ-MU schist. Local zones with blebby siliceous lpl. Minor disseminated QZ-eyes (round blue QZ-phenocrysts). Lowe portion of the unit displays moderate MU-alteration.

<<Min: 601.3 - 609.5 2% Min: Pyrite>>

<<Min: 601.3 - 609.5 4% Min: Pyrrhotite>>

<<Alt: 601.3 - 609.5 Weak-Moderate Muscovite>>

<<Alt: 601.3 - 609.5 Weak-Moderate Calcite>>

<<Struc: 607.82 - 607.83 Weak-Moderate dominant foliation>> Foliation in RHYv

609.50 610.15 MDSt Rhyolite tuff dominant mudstone

609.5 - 610.15: Dark grey to black, carbonaceous tuff with disseminated QZ-eyes.

<<Min: 609.5 - 614.45 1% Min: Pyrrhotite>>

<<Alt: 609.5 - 610.15 Weak Calcite>>

<<Vein: 609.5 - 614.45 3% Quartz-Carbonate 70 deg. >> ~5-10 ~.5 cm QZ-carbonate veins per metre

610.15 612.83 RHYv Rhyolite volcaniclastic

610.15 - 612.83: Medium grey-green, volcaniclastic dacite/andesite (?) Minor disseminated BI and calcareous veining.

<<Alt: 610.15 - 612.83 Weak-Moderate Calcite>>

612.83 613.60 PEL Equigranular biotite + calcite +/- quartz rock

612.83 - 613.6: Dark green-black, laminated BI-CL-CA schist.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 612.83 - 613.6 Moderate Calcite>>

613.60 614.45 RHYv Rhyolite volcaniclastic

613.6 - 614.45: Medium grey-green, MU-CL-CA-BI schist, with disseminated medium grained BI and CA appearing as lpl (?).

<<Alt: 613.6 - 618 Weak Calcite>>

614.45 618.00 RHY undifferentiated rhyolite

614.45 - 618: Strongly MU-SI alteration. Light yellow-green, banded, QZ-MU schist with minor blebby to disseminated PO+SP+PY+/-GL.

<<Min: 614.45 - 618 2% Min: Sphalerite>>

<<Min: 614.45 - 618 1% Min: Pyrite>>

<<Min: 614.45 - 618 2% Min: Pyrrhotite>>

<<Min: 614.45 - 618 0.1% Min: Galena>>

<<Alt: 614.45 - 618 Moderate-Strong Silicification>>

<<Alt: 614.45 - 618 Strong Muscovite>>

<<Vein: 614.45 - 618 5% Quartz-Carbonate>> Zone with strong MU-SI alteration and 5-10 QZ-carbonate veins (may be part of alteration?) per metre. Veining contains blebby bright green chlorite and minro disseminated sulfides.

<<Struc: 617.48 - 617.49 Strong dominant foliation>> Strongly foliated MU-SI altered RHY

618.00 622.30 RHYv Rhyolite volcaniclastic

618 - 622.3: Grey-green, fine grained ash volcaniclastic rhyolite (?). Abundant QZ-carb veining makes texture difficult to determine.

<<Min: 618 - 622.3 1% Min: Pyrrhotite>>

<<Alt: 618 - 622.3 Moderate Calcite>>

<<Vein: 618 - 622.3 25% Quartz-Carbonate>> Abundant small (.2-1 cm wide) QZ-carbonate veins

622.30 624.30 MDSt Rhyolite tuff dominant mudstone

622.3 - 624.3: Dark grey-black, siliceous mudstone. Silica flooding of carbonaceous mudstone?

<<Min: 622.3 - 656.47 2% Min: Pyrrhotite>>

<<Alt: 622.3 - 624.3 Trace Calcite>>

<<Vein: 622.3 - 624.3 10% Quartz-Carbonate>> Silicified mudstone with some distinct QZ-carbonate veins

<<Struc: 623.6 - 623.95 Weak Fault>>

624.30 631.13 RHYva Coarse grained to ash tuff

624.3 - 631.13: Light grey, fine grained ash tuff (QZ-MU schist) with disseminated PO.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 624.3 - 650.3 Weak Calcite>>

<<Vein: 624.3 - 631.13 1% Quartz-Carbonate>> Minor ~1-2 cm wide QZ-carbonate veins

<<Struc: 630.62 - 630.63 Weak-Moderate dominant foliation>> Foliation in RHYva

631.13 633.77 MDSt Rhyolite tuff dominant mudstone

631.13 - 633.77: Upper portion of the unit can be characterized as a siliceous mudstone. The lower portion of the unit is an ash tuff with ~5-10% cabonaceous material or clasts of mudstone (fiamme?).

<<Vein: 631.13 - 638.65 3% Quartz-Carbonate>> Minor 1-3 cm wide QZ-carbonate veins with some smaller (.1-.5 cm wide) veins as well.

<<Struc: 633.25 - 633.26 Weak-Moderate dominant foliation>> Foliation in MDSt

633.77 638.65 RHYva Coarse grained to ash tuff

633.77 - 638.65: Grey with speckled black, BI-phyric (medium grained), fine grained ash tuff.

638.65 644.00 RHYvl Lapilli tuff

638.65 - 644: Light green-grey, siliceous-lpl in fine grained ash tuff matrix. Lpl varies from ~5-30%.

<<Vein: 638.65 - 650.3 0.5% Quartz-Carbonate>> Trace ~.1-.5 cm wide QZ-carbonate veins

<<Struc: 643.24 - 643.25 Weak-Moderate dominant foliation>> Foliation in RHYva

644.00 650.30 RHYva Coarse grained to ash tuff

644 - 650.3: Grey with speckled black, BI-phyric (medium grained), fine grained ash tuff.

<<Struc: 650.1 - 650.11 Weak dominant foliation>> Foliation in RHYva

650.30 652.70 MDSc Carbonaceous dominant mudstone

650.3 - 652.7: Black, carbonaceous mudstone with local silicified portion and disseminated PO.

<<Alt: 650.3 - 656.47 Moderate Calcite>>

<<Vein: 650.3 - 656.47 20% Quartz-Carbonate>> Abundant QZ-carbonate veining. Locally ptigmatic structure. As well minor TML+PO+/-CP veining

652.70 656.47 SED undifferentiated Sediment

652.7 - 656.47: Medium green-black, BI-CL-MU-CA-QZ schist. Appears to have local clastic txture. Texture is obscured by QZ-carb veining (locally ptigmatic). Disseminated PO throughout, with trace disseminated CP+TML in veins.

<<Min: 655.65 - 655.95 0.5% Min: Chalcopyrite>>

<<Struc: 656.13 - 656.14 Weak-Moderate dominant foliation>> Foliation in SED

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

656.47 663.21 RHYvl Lapilli tuff

656.47 - 663.21: Light green-grey, siliceous-lpl in fine-grained, ash tuff matrix. Medium-grained biotite ppo, and silicic alteration are localized.

<<Min: 656.47 - 663.21 0.1% Min: Pyrrhotite>>

<<Min: 656.47 - 680.45 0.5% Min: Pyrite>>

<<Alt: 656.47 - 663.21 Weak Silicification>>

<<Alt: 656.47 - 663.21 Weak-Moderate Calcite>>

<<Alt: 656.47 - 663.21 Weak Biotite>> BI ppo.

<<Vein: 662.63 - 662.8 Quartz-Carbonate>> DEF quartz veins with patchy-carbonate, and specks of chlorite.

<<Struc: 657.22 - 657.23 dominant foliation>>

<<Struc: 662.55 - 662.56 dominant foliation>>

663.21 680.45 MDSt Rhyolite tuff dominant mudstone

663.21 - 680.45: Dark grey-black, tuff-dominant mudstone with calcareous banding, and disseminated PY and PO. Disseminated CP is localized.

<<Min: 663.21 - 668.92 3% Min: Pyrrhotite>> Disseminated bands.

<<Min: 663.61 - 664.88 0.5% Min: Chalcopyrite>>

<<Min: 668.92 - 680.45 2% Min: Pyrrhotite>> Disseminated bands.

<<Alt: 663.21 - 678.74 Trace Biotite>>

<<Alt: 663.21 - 679.29 Moderate Calcite>>

<<Alt: 663.21 - 680.45 Trace Chlorite>>

<<Alt: 678.74 - 681.46 Weak Biotite>>

<<Alt: 679.29 - 687 Weak Calcite>>

<<Vein: 663.99 - 664.42 Quartz-Carbonate>> Quartz veins with patches of carbonate.

<<Struc: 663.21 - 663.22 Contact>> RHYvl-MDSt CNT

<<Struc: 665.32 - 665.33 dominant foliation>>

<<Struc: 671 - 671.26 Weak Fault>> Small zones of fractured mudstone with minor gouge (< 10%).

<<Struc: 671.3 - 671.31 dominant foliation>>

<<Struc: 675.31 - 675.32 dominant foliation>>

<<Struc: 677.35 - 677.4 Weak-Moderate Fault>> Sheared-gougey mudstone.

<<Struc: 677.58 - 677.59 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

680.45 691.07 RHYva Coarse grained to ash tuff

680.45 - 691.07: Light green-grey, ash-dominant tuff with siliceous-lpl, and quartz eyes. Fining-upward sequence. Silica-alteration is prominent between 687 - 690.09m; alteration is proximal to the massive quartz vein (690.09-691.07m).

<<Min: 680.45 - 683.39 0.5% Min: Pyrite>>

<<Min: 680.45 - 683.39 1% Min: Pyrrhotite>>

<<Min: 682.91 - 683.39 0.5% Min: Chalcopyrite>> Disseminated bands.

<<Min: 683.39 - 686.43 0.5% Min: Pyrrhotite>>

<<Min: 683.39 - 716 0.1% Min: Pyrite>>

<<Min: 686.43 - 693.24 0.1% Min: Pyrrhotite>>

<<Alt: 686.09 - 686.86 Weak Biotite>>

<<Alt: 687 - 690.09 Moderate Silicification>>

<<Alt: 687 - 691.36 Weak Muscovite>>

<<Alt: 687 - 691.36 Trace Calcite>> Calcite aggregates occur within quartz veins.

<<Vein: 689.03 - 689.09 Quartz-Carbonate>> Quartz vein with patches of carbonate.

<<Vein: 690.09 - 691.07 Quartz-Carbonate>> Fractured quartz vein with calcite FRA and patches.

<<Struc: 680.82 - 680.83 Foliation>>

<<Struc: 683.47 - 683.48 dominant foliation>>

<<Struc: 688.62 - 688.63 Crenulation cleavage>>

691.07 709.08 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

691.07 - 709.08: Medium green-black, biotite altered mudstone with localized bands of relict-limestone (?) Disseminated PO occurs throughout the unit; CP is patchy, and prominent between 696.85 - 696.90m.

<<Min: 693.24 - 696.85 1% Min: Pyrrhotite>> Disseminated bands.

<<Min: 696.85 - 697 5% Min: Chalcopyrite>>

<<Min: 696.85 - 697 10% Min: Pyrrhotite>>

<<Min: 697 - 705.35 2% Min: Pyrrhotite>> Disseminated bands; aggregates within quartz veins.

<<Min: 702 - 702.1 0.1% Min: Chalcopyrite>> Disseminated CP within quartz vein.

<<Min: 705.35 - 714.95 1% Min: Pyrrhotite>>

<<Alt: 691.15 - 694.59 Weak Biotite>>

<<Alt: 691.36 - 708.24 Moderate Calcite>>

<<Alt: 694.59 - 717.3 Trace Biotite>>

<<Alt: 708.24 - 723.13 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 692.41 - 693.24 Quartz-Carbonate-Sulphide>> Massive quartz veins with calcite FRA, and patches of calcite and pyrrhotite (< 2%).

<<Vein: 702 - 702.1 Quartz-Carbonate-Sulphide 70 deg. >> Quartz-carbonate vein with patches of pyrrhotite.

<<Vein: 704.05 - 704.2 Quartz-Carbonate>> Quartz veins with patchy-carbonate.

<<Struc: 692.02 - 692.03 dominant foliation>>

<<Struc: 698.35 - 698.36 dominant foliation>>

<<Struc: 701.7 - 701.71 dominant foliation>>

<<Struc: 707.72 - 708.49 Trace Fault>> Broken core; minor gouge within fractures.

709.08 723.34 MDSc Carbonaceous dominant mudstone

709.08 - 723.34: Dark grey, carbonaceous mudstone. Localized zones with crenulated-foliation. Biotite alteration (disseminated) increases toward the end of the unit. Upper and lower CNT are gradational.

<<Min: 714.95 - 726.9 0.1% Min: Pyrrhotite>>

<<Min: 716 - 716.42 0.5% Min: Pyrite>> Medium-grained PY within MDS gouge.

<<Min: 716.42 - 741.21 0.1% Min: Pyrite>>

<<Min: 719.06 - 721.26 0.01% Min: Galena>> Trace GL within quartz veins.

<<Alt: 717.3 - 724.56 Weak Biotite>> Disseminated-patchy BI.

<<Alt: 723.13 - 724.16 Weak-Moderate Calcite>> Calcite bands; aggregates occur within the quartz veins.

<<Vein: 714.44 - 714.52 Quartz-Carbonate 64 deg. >> Brecciated quartz-carbonate vein with sub-angular clasts, and traces of pyrrhotite.

<<Vein: 717.96 - 720.58 Quartz-Carbonate 73 deg. >> Quartz-carbonate veins (1-5cm wide) with traces of disseminated sulphides (GL).

<<Vein: 721.1 - 721.25 Quartz-Carbonate 50 deg. >> Quartz vein with patchy-carbonate.

<<Struc: 711.51 - 711.6 Weak Fault>> Sheared MDS; minor gouge.

<<Struc: 712.28 - 712.29 dominant foliation>>

<<Struc: 713.87 - 713.88 dominant foliation>>

<<Struc: 715.94 - 716.42 Moderate-Strong Fault>> MDS gouge with cm-size, brecciated mudstone clasts, and medium-grained pyrite.

<<Struc: 719.98 - 719.99 dominant foliation>>

<<Struc: 723.08 - 723.09 dominant foliation>>

723.34 728.13 RHYvl Lapilli tuff

723.34 - 728.13: Light green-grey, volcaniclastic lapilli tuff with quartz eyes (< 3%). Upper and lower CNT are gradational; biotite alteration occurs near the margins. Minor sulphides (CP+PO+GL) are visible within quartz veins.

<<Min: 726.9 - 727.08 0.5% Min: Sulphosalts>> SS (?) FRA within quartz vein.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 726.9 - 727.08 0.5% Min: Pyrrhotite>>

<<Min: 726.9 - 727.08 0.1% Min: Galena>>

<<Min: 726.9 - 727.08 0.5% Min: Chalcopyrite>>

<<Alt: 724.16 - 724.56 Moderate Calcite>>

<<Alt: 724.56 - 728.13 Weak Calcite>> Localized within quartz veins; calcite FRA.

<<Alt: 728.04 - 743 Weak Biotite>>

<<Vein: 723.54 - 727.8 Quartz-Carbonate>> Regular-massive quartz veins with patchy-carbonate, and traces of sulphides (PO, CP, + GL).

<<Struc: 725.53 - 725.54 dominant foliation>>

728.13 729.75 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

728.13 - 729.75: Biotite-altered (weak) mudstone intercalated with felsic volcaniclastics, containing quartz eyes.

<<Alt: 728.13 - 730.46 Moderate Calcite>>

729.75 733.40 RHYvx Quartz and/or feldspar crystal tuff

729.75 - 733.4: Quartz-rich, MU-altered RHYvx with quartz eyes (< 3%) and disseminated biotite (10%). Minor intercalated MDS.

<<Alt: 730.46 - 733.4 Trace Calcite>> Disseminated CA; rare banding.

<<Struc: 731.8 - 731.81 Crenulation cleavage>>

733.40 736.30 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

733.4 - 736.3: Mudstone intercalated with felsic volcaniclastics, containing quartz eyes. Moderate FLT from 735 - 736.3m; approx 50% recovered within FLT zone.

<<Alt: 733.4 - 738.76 Weak-Moderate Calcite>> Banded CA; patchy within quartz veins.

<<Vein: 733.65 - 734.9 Quartz-Carbonate 80 deg. >> Quartz veins with patchy-carbonate.

<<Struc: 735 - 736.3 Moderate Fault>> Sheared MDS and gouge, with cm-size, sub-angular quartz-carbonate clasts. ~ 50% recovered.

736.30 743.16 RHYv Rhyolite volcaniclastic

736.3 - 743.16: Volcaniclastic RHY with disseminated biotite (<10%), and biotite ppo. Two massive quartz veins are intercepted between 741.23-741.99m and 742.45-743m; MU alteration and shearing is common along the margins of the veins.

<<Min: 741.21 - 741.69 0.5% Min: Pyrite>>

<<Min: 741.21 - 741.69 2% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 741.69 - 747.1 0.1% Min: Pyrite>>

<<Alt: 738.76 - 741.21 Weak Calcite>>

<<Alt: 741.21 - 743.16 Weak-Moderate Calcite>> CA FRA and blebs within quartz veins; CA is pervasive within altered RHY.

<<Alt: 741.99 - 746.76 Weak Muscovite>> Weak MU alteration visible along foliated RHYv. MU alteration is stronger adjacent to the two massive quartz veins.

<<Vein: 741.23 - 741.99 Quartz-Carbonate-Sulphide>> Massive quartz vein with calcite (<5%) and pyrrhotite (2%) FRA.

<<Vein: 742.45 - 743 Quartz-Carbonate>> Massive quartz vein with calcite FRA.

<<Struc: 737.3 - 737.31 dominant foliation>>

<<Struc: 741.14 - 741.15 Foliation>> Carbonate banding.

743.16 746.76 RHYv Rhyolite volcaniclastic

743.16 - 746.76: Light grey, quartz-rich RHYv with quartz eyes, and weak muscovite alteration. Minor FLTing is evident between 745.6-746.3m.

<<Min: 743.16 - 747.1 0.5% Min: Pyrrhotite>> Disseminated blebs-bands; trace disseminated PO within quartz veins.

<<Alt: 743.16 - 746.76 Trace Calcite>>

<<Struc: 743.25 - 743.26 dominant foliation>>

<<Struc: 743.31 - 743.46 Moderate Fault>> Sericitic gouge and shear zone, with mm-size quartz clasts.

<<Struc: 745.34 - 745.35 Crenulation cleavage>>

<<Struc: 745.6 - 746.3 Weak-Moderate Fault>> Sharp boundaries; upper and lower CNT range between 15 - 20 deg. Fractured, MU-altered RHY, with sericitic gouge.

746.76 747.10 PEL Equigranular biotite + calcite +/- quartz rock

746.76 - 747.1: Biotite-rich pelite with quartz-carbonate veining; veins contain traces of disseminated pyrrhotite.

<<Alt: 746.76 - 747.1 Moderate-Strong Calcite>> Pervasive within PEL; patchy-CA within quartz veins.

<<Vein: 746.82 - 747.1 Quartz-Carbonate-Sulphide>> Quartz-carbonate veins with disseminated PO (<1%).

747.10 752.00 RHYvl Lapilli tuff

747.1 - 752: Light green-grey, MU-altered (weak) lapilli tuff. Lapilli range in size from 1-10mm wide; localized zones contain up to 30% lapilli. Quartz eyes are rare. Minor FLTing is prominent throughout the unit.

<<Min: 747.1 - 752.01 0.5% Min: Pyrite>> FRA within FLT zone (weak); trace FD throughout RHY.

<<Min: 747.1 - 752.01 0.5% Min: Pyrrhotite>> Localized FRA throughout weakly-faulted RHY; disseminated blebs within quartz-carbonate veins.

<<Alt: 747.1 - 752.01 Weak Calcite>> CA alteration within lapilli; FRA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 747.1 - 752.9 Weak Muscovite>> Weak MU alteration within lapilli tuff; alteration is most prominent within the sheared-FLT zones, and along the margins of quartz-carbonate veins.

<<Struc: 747.18 - 749.65 Weak Fault>> Several zones of incompetent, sheared-fractured RHY with occasional bands of sericitic gouge.

<<Struc: 749.95 - 749.96 Crenulation cleavage>>

752.00 755.55 MAFt Mafic Volcaniclastics

752 - 755.55: Medium green, biotite-rich, mafic volcaniclastics. Quartz-carbonate veins contain traces of disseminated pyrrhotite.

<<Min: 752.01 - 755.55 0.5% Min: Pyrrhotite>> Disseminated PO blebs within quartz veins.

<<Min: 752.01 - 758.15 0.1% Min: Pyrite>>

<<Alt: 752.01 - 755.55 Weak-Moderate Calcite>> CA is pervasive throughout the mafic volcaniclastics; CA is stronger within quartz-carbonate veins, and FRA.

<<Vein: 752.01 - 752.05 Quartz-Carbonate-Sulphide 50 deg. >> Quartz-carbonate vein with disseminated PY+PO (<2%).

<<Vein: 752.56 - 752.72 Quartz-Carbonate-Sulphide>> Massive quartz-carbonate vein with dissseminated PO (<1%).

<<Vein: 752.8 - 754.38 Quarzt-Chlorite-Carbonate>> DEF quartz veins with patchy-carbonate, chloritic blebs, and trace disseminated pyrrhotite.

<<Vein: 755.33 - 755.46 Quarzt-Chlorite-Carbonate>> Quartz-carbonate vein with chloritic blebs, and traces of disseminated pyrite.

<<Struc: 754.35 - 754.36 Foliation>>

755.55 756.43 RHYvl Lapilli tuff

755.55 - 756.43: Quartz-rich, volcaniclastic-lapilli tuff with disseminated biotite alteration (weak), and trace disseminated pyrrhotite.

<<Min: 755.55 - 758.15 0.5% Min: Pyrrhotite>>

<<Alt: 755.55 - 756.43 Weak Calcite>>

<<Alt: 755.55 - 756.43 Weak Biotite>> 5-10% disseminated biotite.

<<Vein: 756.42 - 758.15 Quartz-Carbonate 75 deg. >> Quartz-carbonate banding within PEL.

<<Struc: 755.7 - 755.75 Weak-Moderate Fault>> Gouge-crumbled RHY.

756.43 758.15 PEL Equigranular biotite + calcite +/- quartz rock

756.43 - 758.15: Biotite-rich pelite intercalated with minor felsic volcaniclastics. Quartz-carbonate banding is common throughout the unit.

<<Alt: 756.43 - 758.15 Weak-Moderate Calcite>>

<<Struc: 757.07 - 757.08 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

758.15 762.45 RHYvl Lapilli tuff

758.15 - 762.45: Light green-grey, volcaniclastic lapilli tuff intercalated with minor pelite. Disseminated biotite alteration (weak), and trace disseminated pyrrhotite occur throughout the unit; quartz eyes are rare (<2%). Pyrite FRA.

<<Min: 758.15 - 762.45 0.5% Min: Pyrite>>

<<Min: 758.15 - 762.45 1% Min: Pyrrhotite>> Disseminated-foliated PO.

<<Alt: 758.15 - 762.45 Weak Calcite>> Disseminated-blebs.

<<Alt: 758.15 - 762.45 Trace Biotite>> Trace-weak biotite alteration.

<<Vein: 761.31 - 761.46 Quartz-Carbonate>> Quartz-carbonate veins with trace disseminated PO.

<<Vein: 762.35 - 762.4 Quarzt-Chlorite-Carbonate>> Quartz-carbonate vein with chloritic blebs.

762.45 762.83 PEL Equigranular biotite + calcite +/- quartz rock

<<Min: 762.45 - 771 0.5% Min: Pyrrhotite>>

<<Min: 762.45 - 783 0.1% Min: Pyrite>>

<<Alt: 762.45 - 762.83 Weak-Moderate Calcite>>

762.83 763.49 RHYvl Lapilli tuff

<<Alt: 762.83 - 763.49 Weak Calcite>> Quartz-carbonate veining.

<<Alt: 762.83 - 763.49 Trace Biotite>>

763.49 764.00 PEL Equigranular biotite + calcite +/- quartz rock

763.49 - 764: Biotite-rich pelite intercalated with minor felsic volcaniclastics.

<<Alt: 763.49 - 764 Weak-Moderate Calcite>> Quartz-carbonate veining.

764.00 780.67 RHYvl Lapilli tuff

764 - 780.67: Volcaniclastic ash-rich, lapilli tuff intercalated with minor pelitic sediments. Disseminated biotite, biotite ppo, and quartz eyes (localized) are visible throughout the unit.

<<Alt: 764 - 768.75 Weak Calcite>> Disseminated-blebs of CA; quartz-carbonate veining.

<<Alt: 764 - 773.9 Weak-Moderate Biotite>> Trace-weak disseminated biotite, with disseminated-patchy, moderate zones.

<<Alt: 768.75 - 773.9 Weak-Moderate Calcite>> Disseminated blebs-banded.

<<Alt: 773.9 - 779.6 Trace Calcite>> Trace disseminated CA; banded within rare pelitic sediments.

<<Alt: 773.9 - 780.67 Weak Biotite>> Trace-weak disseminated biotite.

<<Alt: 779.6 - 780.67 Weak Calcite>>

<<Vein: 765.89 - 768.03 Quartz-Carbonate>> DEF-FOD quartz-carbonate veins with trace chlorite FRA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 770.55 - 774.47 Quartz-Carbonate>> DEF-FOD quartz-carbonate veins (0.1-5cm wide).

<<Vein: 775.85 - 776.4 Quartz-Carbonate>> Quartz veins (2-8cm wide) with patchy-carbonate.

<<Vein: 777.75 - 779.49 Quartz-Carbonate>>

<<Struc: 764.11 - 764.12 Foliation>> Biotite banding.

<<Struc: 769.06 - 769.07 dominant foliation>>

<<Struc: 770.39 - 770.4 dominant foliation>>

<<Struc: 772.86 - 772.87 dominant foliation>>

<<Struc: 777.42 - 777.43 dominant foliation>>

<<Struc: 778.13 - 778.44 Moderate Fault>> RHY clay-gouge containing mm-size quartz clasts, and disseminated biotite; ~ 70% recovered.

780.67 780.92 PEL Equigranular biotite + calcite +/- quartz rock

<<Alt: 780.67 - 780.92 Weak-Moderate Calcite>>

<<Struc: 780.82 - 780.83 dominant foliation>>

780.92 786.87 RHYvl Lapilli tuff

780.92 - 786.87: Volcaniclastic ash-rich, lapilli tuff intercalated with minor, ankerite-altered, pelitic sediments. Disseminated biotite (<10%) alteration is weak; quartz eyes are rare (<1%). Minor FLTing below 786m.

<<Min: 780.92 - 786.87 0.5% Min: Pyrrhotite>> Disseminated PO; mm-size blebs within quartz veins.

<<Min: 783 - 783.1 0.5% Min: Chalcopyrite>> Disseminated-FRA within quartz vein.

<<Min: 783 - 784.8 0.5% Min: Pyrite>> Fine to coarse-grained PY visible on fractured surfaces.

<<Min: 783.53 - 783.85 0.1% Min: Sulphosalts>> Black, fine-grained SS(?) FRA within massive quartz vein.

<<Min: 784.8 - 792.6 0.1% Min: Pyrite>> Rare FRA.

<<Alt: 780.92 - 786.87 Weak Calcite>> Disseminated blebs-bands.

<<Alt: 780.92 - 788.19 Weak Biotite>>

<<Alt: 784.8 - 785.1 Weak Ankerite>> Disseminated ankerite(?) blebs within intercalated pelite-felsic volcaniclastics.

<<Vein: 782.24 - 782.34 Quartz-Carbonate>> Quartz-carbonate veins with chlorite FRA.

<<Vein: 783 - 783.25 Quartz-Carbonate>> Quartz-carbonate vein with minor disseminated chlorite, chalcopyrite, and pyrrhotite.

<<Vein: 783.55 - 783.85 Quartz-Carbonate>> Massive quartz-carbonate vein with trace chlorite, PY, and SS (?) FRA.

<<Struc: 781.15 - 781.22 Weak Fault>> Fractured RHY.

<<Struc: 781.57 - 781.58 dominant foliation>>

<<Struc: 786.15 - 786.21 Moderate Fault>> Sericitic-gouge with disseminated biotite, and mm-size quartz and RHY clasts.

<<Struc: 786.7 - 786.87 Moderate-Strong Fault>> Clay-gouge and broken RHY; ~ 50% recovered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

786.87 788.19 RHYva Coarse grained to ash tuff

786.87 - 788.19: Ash-dominant, volcaniclastic RHY with weak biotite alteration, and minor intercalated PEL.

<<Alt: 786.87 - 788.19 Weak-Moderate Calcite>>

<<Vein: 787.01 - 787.12 Quarzt-Chlorite-Carbonate>> Quartz vein with patchy-carbonate, and chloritic blebs.

788.19 788.74 PEL Equigranular biotite + calcite +/- quartz rock

788.19 - 788.74: Minor intercalated felsic volcaniclastics.

<<Alt: 788.19 - 788.74 Moderate Calcite>>

<<Struc: 788.32 - 788.33 dominant foliation>>

788.74 805.77 RHYva Coarse grained to ash tuff

788.74 - 805.77: Light green volcaniclastic ash tuff with biotite ppo, trace disseminated bioite, and localized lapilli; hairline PY FRA and banding.

<<Min: 792.6 - 795.4 1% Min: Pyrite>> Med-grained PY visible on fractured surfaces; disseminated blebs occur within quartz veins.

<<Min: 792.65 - 793.74 0.5% Min: Pyrrhotite>> Disseminated blebs-FRA within quartz veins.

<<Min: 795.4 - 798.83 0.1% Min: Pyrite>> Trace disseminated PY; rare FRA.

<<Min: 798.83 - 800.38 2% Min: Pyrite>> PY veinlet, and disseminated PY along foliation.

<<Min: 800.38 - 807.35 0.1% Min: Pyrite>>

<<Min: 805.06 - 814.26 0.5% Min: Pyrrhotite>> Disseminated PO within RHY; blebs within quartz veins.

<<Alt: 788.74 - 793.77 Weak Calcite>>

<<Alt: 788.74 - 793.77 Trace Biotite>>

<<Alt: 793.77 - 794.22 Moderate Biotite>>

<<Alt: 793.77 - 797.5 Weak-Moderate Calcite>>

<<Alt: 794.22 - 795.64 Weak Biotite>> Trace-weak, disseminated-patchy biotite.

<<Alt: 795.64 - 797.18 Weak-Moderate Biotite>>

<<Alt: 797.18 - 804.91 Trace Biotite>> Trace-weak, disseminated-patchy biotite.

<<Alt: 797.5 - 811.4 Weak Calcite>> Disseminated-banded CA; more intense within quartz-carbonate veins and pelitic sediments.

<<Alt: 804.91 - 805.68 Weak Biotite>>

<<Alt: 805.68 - 807.4 Weak Biotite>> Patches of disseminated biotite.

<<Vein: 791.17 - 792.98 Quartz-Carbonate>> DEF quartz-carbonate veins; rare veins contain sub-angular, brecciated quartz clasts.

<<Vein: 793.01 - 793.5 Quartz>> Massive quartz veins with calcite FRA and disseminated PO (<0.5%).

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 798.87 - 799.37 Quartz-Carbonate>> Quartz-carbonate veins with trace chlorite and pyrite; pyrite veinlets.

<<Struc: 791.26 - 791.27 Foliation>>

<<Struc: 795.06 - 795.07 dominant foliation>>

<<Struc: 798.5 - 798.51 dominant foliation>>

<<Struc: 802.8 - 802.81 dominant foliation>>

<<Struc: 803.78 - 803.79 dominant foliation>>

<<Struc: 805.4 - 805.41 dominant foliation>>

805.77 809.40 RHYvl Lapilli tuff

805.77 - 809.4: Light green, volcaniclastic lapilli tuff with trace-weak disseminated biotite, and trace disseminated pyrite.

<<Min: 807.35 - 811.4 1% Min: Pyrite>>

<<Alt: 807.4 - 809.4 Trace Biotite>>

<<Vein: 807.04 - 807.11 Quartz-Carbonate>> DEF quartz vein with patchy-carbonate.

<<Struc: 806.4 - 806.41 dominant foliation>>

<<Struc: 808.7 - 808.71 dominant foliation>>

809.40 810.04 PEL Equigranular biotite + calcite +/- quartz rock

<<Struc: 809.4 - 809.41 Contact>> RHYvl-PEL CNT.

<<Struc: 809.65 - 809.66 dominant foliation>>

810.04 811.40 RHYvl Lapilli tuff

810.04 - 811.4: Trace disseminated pyrite.

<<Alt: 810.04 - 811.4 Trace Biotite>>

<<Struc: 811.24 - 811.25 dominant foliation>>

811.40 814.26 PEL Equigranular biotite + calcite +/- quartz rock

811.4 - 814.26: Pelite intercalated with biotite-altered, felsic volcaniclastics (~30%). Massive quartz vein from 811.64-811.91m.

<<Min: 811.4 - 818.15 0.5% Min: Pyrite>>

<<Alt: 811.4 - 814.26 Weak-Moderate Calcite>> Disseminated-banded.

<<Vein: 811.64 - 811.91 Quartz>> Massive quartz vein with patchy-carbonate; carbonate contains disseminated pyrrhotite, pyrite, and chlorite.

<<Vein: 813.93 - 814.9 Quartz-Carbonate 80 deg. >>

<<Struc: 812.22 - 812.23 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

814.26 820.30 RHYva Coarse grained to ash tuff

814.26 - 820.3: Light grey-green, biotite-altered (weak) ash tuff intercalated with minor pelitic sediments. Minor FLT from 818.64-819.1m.

<<Min: 815.45 - 834 0.5% Min: Pyrrhotite>> Disseminated PO throughout interval; blebs within quartz veins.

<<Min: 818.15 - 834 0.1% Min: Pyrite>> Disseminated PY; trace FRA within FLT (826.39-827.75m).

<<Alt: 814.26 - 816.1 Trace Calcite>> Trace disseminated CA within bands and quartz veins.

<<Alt: 814.26 - 820.3 Weak Biotite>> Trace-weak, disseminated-patchy biotite.

<<Alt: 816.1 - 816.6 Weak-Moderate Calcite>> Banded CA; blebs within quartz veins.

<<Alt: 816.6 - 819.82 Weak Calcite>>

<<Alt: 819.82 - 821.26 Weak Ankerite>>

<<Alt: 819.82 - 821.45 Weak-Moderate Calcite>> Banded-blebs.

<<Vein: 815.16 - 815.3 Quartz-Carbonate>> Massive DEF quartz vein with patchy-carbonate, and traces of chlorite, biotite, and pyrite.

<<Vein: 815.45 - 815.52 Quartz>> Quartz veins with disseminated calcite and chlorite.

<<Vein: 816.34 - 816.6 Quartz>> Massive quartz veins with blebby-calcite.

<<Struc: 814.26 - 814.27 Contact>> PEL-RHYva CNT.

<<Struc: 815.78 - 815.79 dominant foliation>>

<<Struc: 818.64 - 819.1 Weak-Moderate Fault>> Clay-gouge, and fractured RHY.

820.30 821.26 PEL Equigranular biotite + calcite +/- quartz rock

820.3 - 821.26: Biotite-rich pelite intercalated with felsic volcaniclastics (<20%). Minor ankerite alteration.

821.26 834.00 RHYva Coarse grained to ash tuff

821.26 - 834: Trace-weak biotite alteration (disseminated); intercalated with minor pelitic sediments. FLTing between 822.77-823.03m, and 826.39-827.75m. Localized quartz-rich lapilli.

<<Alt: 821.26 - 830 Trace Biotite>>

<<Alt: 821.45 - 823.73 Weak Calcite>> Disseminated blebs-bands.

<<Alt: 823.73 - 828.5 Weak-Moderate Calcite>> Banded-pervasive; quartz-carbonate veins.

<<Alt: 828.5 - 834 Weak Calcite>> Disseminated-pervasive; rare FRA.

<<Alt: 830 - 831.62 Weak Biotite>>

<<Alt: 831.62 - 834 Trace Biotite>>

<<Vein: 826.8 - 827.12 Quartz-Carbonate>> Quartz-carbonate veins, and subrounded, quartz-carbonate clasts within FLT BRX.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 827.76 - 828 Quartz-Carbonate>> Massive quartz-carbonate vein, intercepted by a DEF tourmaline veinlet sub-parallel TCA. Trace BI and MU FRA.

<<Vein: 829.09 - 831.16 Quartz-Carbonate>> Cm-size quartz-carbonate veins, parallel to foliation.

<<Struc: 822.29 - 822.3 dominant foliation>>

<<Struc: 822.76 - 823.03 Weak-Moderate Fault>> Sharp upper and lower CNT. Clay-gouge, with pulverized RHY. FLT is most intense between 822.76-822.86m.

<<Struc: 824.47 - 824.48 Crenulation cleavage>>

<<Struc: 825.93 - 825.94 dominant foliation>>

<<Struc: 826.39 - 827.75 Weak Fault>> FLT BRX: sheared-RHY to gouge matrix with 1-20 mm-size, subrounded quartz and RHY clasts. Trace disseminated PY within gouge. FLT is weaker-less competent along outer margins.

<<Struc: 830.23 - 830.24 dominant foliation>>

<<Struc: 833.74 - 833.75 dominant foliation>>

End of Hole @ 834

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-417

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Jerome de Pasquale	Date Logging Start:	9/9/2016
UTM Easting	415209	Core Size:	HQ3	Azimuth:	222.8	Date Logging Complete:	9/15/2016
UTM Northing:	6815286	Casing Pulled?:	Yes	Dip:	-79.1	Drill Company:	New Age
UTM Elev. (m):	1425	Casing Depth (m):	12	Length (m):	366	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	9/8/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	9/14/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-417 is a Krakatoa resource infill hole. The top of the hole consists of graphitic calcareous mudstone and interbedded mafic tuff of the Wind Lake formation. The contact with the KZK formation occurs at 46.88m which comprises volcaniclastic, aphanitic and coherant rhyolite.
Muscovite alteration increases progressively from 198.50 - 270.70 m with two narrow zones of OI type mineralization (dominantly PO/PY/minor SP and GL) intercepted at 241.33 m and 248.54 m. The Krakatoa upper lens occurs at 270.70m with the zone of mineralisation extending to 292.20 m. Here mineralization consists of OA, OB, and OI types with minor OK/OL intercalated with muscovite altered rhyolite for a total of 11.44meters of massive sulphide. The contact with the footwall mafic intrusion occurs at 288.41 m.
The footwall mafic is cut by a fault zone and also contains thin massive sulphide lenses from 304.72m to 305.60 m, 323.29 to 323.61 m, and 329.61 to 329.80 m. Below the narrow lenses is a weakly muscovite altered rhyolite volcaniclastic rock with disseminated pyrite and pyrrhotite, as well as sphalerite in proximity to the sulphide lenses.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-79.1	221.4	1.4	222.8	TN14	Jerome de Pasquale	9/8/2016		☑	
0.01	-78.8419	221.4	1.4	222.8	GYRO	Oscar Nielsen	9/14/2016		☑	99.5467
5	-78.7883	221.7396	1.4	223.1396	GYRO	Oscar Nielsen	9/14/2016		☑	100
10	-78.7103	222.4357	1.4	223.8357	GYRO	Oscar Nielsen	9/14/2016		☑	99.5997
15	-78.6014	222.6519	1.4	224.0519	GYRO	Oscar Nielsen	9/14/2016		☑	99.5044
20	-78.5257	222.6977	1.4	224.0977	GYRO	Oscar Nielsen	9/14/2016		☑	99.2375
25	-78.6966	222.4426	1.4	223.8426	GYRO	Oscar Nielsen	9/14/2016		☑	99.4013
27	-78.5	202.4	22.1	224.5	ReflexEZS	New Age	9/9/2016	5779	☐	
30	-78.786	222.0407	1.4	223.4407	GYRO	Oscar Nielsen	9/14/2016		☑	99.9439
35	-78.7869	221.2449	1.4	222.6449	GYRO	Oscar Nielsen	9/14/2016		☑	99.4305
40	-78.7147	220.4332	1.4	221.8332	GYRO	Oscar Nielsen	9/14/2016		☑	99.9347
45	-79.0018	220.2917	1.4	221.6917	GYRO	Oscar Nielsen	9/14/2016		☑	100
50	-78.9559	219.6511	1.4	221.0511	GYRO	Oscar Nielsen	9/14/2016		☑	100
55	-79.0552	218.2411	1.4	219.6411	GYRO	Oscar Nielsen	9/14/2016		☑	100
57	-78.5	202.4	22.1	224.5	ReflexEZS	New Age	9/10/2016	5779	☐	
60	-78.9747	216.8581	1.4	218.2581	GYRO	Oscar Nielsen	9/14/2016		☑	100
65	-78.8119	216.0445	1.4	217.4445	GYRO	Oscar Nielsen	9/14/2016		☑	100

EQUITY | EXPLORATION CONSULTANTS LTD.

GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-417

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
70	-78.6117	215.3776	1.4	216.7776	GYRO	Oscar Nielsen	9/14/2016		☑	100
75	-78.439	214.8747	1.4	216.2747	GYRO	Oscar Nielsen	9/14/2016		☑	100
80	-78.193	214.4496	1.4	215.8496	GYRO	Oscar Nielsen	9/14/2016		☑	100
85	-78.0314	214.3773	1.4	215.7773	GYRO	Oscar Nielsen	9/14/2016		☑	99.9752
87	-78.2	196.9	22.1	219	ReflexEZS	New Age	9/10/2016	5736	☐	
90	-77.8098	214.1115	1.4	215.5115	GYRO	Oscar Nielsen	9/14/2016		☑	100
95	-77.6611	213.7321	1.4	215.1321	GYRO	Oscar Nielsen	9/14/2016		☑	100
100	-77.6338	213.3066	1.4	214.7066	GYRO	Oscar Nielsen	9/14/2016		☑	100
105	-77.5632	212.9644	1.4	214.3644	GYRO	Oscar Nielsen	9/14/2016		☑	100
110	-77.5084	212.5747	1.4	213.9747	GYRO	Oscar Nielsen	9/14/2016		☑	99.7817
115	-77.37	212.1803	1.4	213.5803	GYRO	Oscar Nielsen	9/14/2016		☑	99.8778
117	-77.4	195.4	22.1	217.5	ReflexEZS	New Age	9/10/2016	5719	☐	
120	-77.2219	211.9018	1.4	213.3018	GYRO	Oscar Nielsen	9/14/2016		☑	100
125	-77.1858	211.905	1.4	213.305	GYRO	Oscar Nielsen	9/14/2016		☑	100
130	-77.0048	211.7424	1.4	213.1424	GYRO	Oscar Nielsen	9/14/2016		☑	100
135	-76.8154	211.1837	1.4	212.5837	GYRO	Oscar Nielsen	9/14/2016		☑	99.941
140	-76.6452	210.1909	1.4	211.5909	GYRO	Oscar Nielsen	9/14/2016		☑	100
145	-76.4193	209.5842	1.4	210.9842	GYRO	Oscar Nielsen	9/14/2016		☑	100
147	-76.5	191.5	22.1	213.6	ReflexEZS	New Age	9/11/2016	5737	☐	
150	-76.2401	209.0898	1.4	210.4898	GYRO	Oscar Nielsen	9/14/2016		☑	100
155	-76.1582	208.6215	1.4	210.0215	GYRO	Oscar Nielsen	9/14/2016		☑	100
160	-76.153	209.0112	1.4	210.4112	GYRO	Oscar Nielsen	9/14/2016		☑	100
165	-76.1689	208.9459	1.4	210.3459	GYRO	Oscar Nielsen	9/14/2016		☑	100
170	-76.1799	209.0393	1.4	210.4393	GYRO	Oscar Nielsen	9/14/2016		☑	100
175	-76.2453	208.4185	1.4	209.8185	GYRO	Oscar Nielsen	9/14/2016		☑	100
177	-76.2	190.9	22.1	213	ReflexEZS	New Age	9/11/2016	5758	☐	
180	-76.2611	208.4376	1.4	209.8376	GYRO	Oscar Nielsen	9/14/2016		☑	100
185	-76.138	207.9106	1.4	209.3106	GYRO	Oscar Nielsen	9/14/2016		☑	100
190	-75.9556	207.6804	1.4	209.0804	GYRO	Oscar Nielsen	9/14/2016		☑	100
195	-75.8482	207.732	1.4	209.132	GYRO	Oscar Nielsen	9/14/2016		☑	100
200	-75.673	207.1972	1.4	208.5972	GYRO	Oscar Nielsen	9/14/2016		☑	100
205	-75.5289	207.1144	1.4	208.5144	GYRO	Oscar Nielsen	9/14/2016		☑	99.9871
207	-75.6	186.7	22.1	208.8	ReflexEZS	New Age	9/12/2016	5739	☐	
210	-75.3636	206.5801	1.4	207.9801	GYRO	Oscar Nielsen	9/14/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-417

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
215	-75.1505	206.4262	1.4	207.8262	GYRO	Oscar Nielsen	9/14/2016		☑	100
220	-74.8188	205.7997	1.4	207.1997	GYRO	Oscar Nielsen	9/14/2016		☑	100
225	-74.6326	205.5437	1.4	206.9437	GYRO	Oscar Nielsen	9/14/2016		☑	99.8498
230	-74.216	205.3532	1.4	206.7532	GYRO	Oscar Nielsen	9/14/2016		☑	100
235	-74.1068	205.4978	1.4	206.8978	GYRO	Oscar Nielsen	9/14/2016		☑	100
237	-74.1	189.3	22.1	211.4	ReflexEZS	New Age	9/12/2016	5740	☐	
240	-73.9089	205.8103	1.4	207.2103	GYRO	Oscar Nielsen	9/14/2016		☑	99.9788
245	-73.7415	206.355	1.4	207.755	GYRO	Oscar Nielsen	9/14/2016		☑	99.8978
250	-73.5864	207.036	1.4	208.436	GYRO	Oscar Nielsen	9/14/2016		☑	99.6802
255	-73.3185	208.1665	1.4	209.5665	GYRO	Oscar Nielsen	9/14/2016		☑	99.9977
260	-73.0143	208.2241	1.4	209.6241	GYRO	Oscar Nielsen	9/14/2016		☑	99.6883
265	-72.8354	208.2659	1.4	209.6659	GYRO	Oscar Nielsen	9/14/2016		☑	100
267	-73	190.2	22.1	212.3	ReflexEZS	New Age	9/13/2016	5797	☐	
270	-72.8894	208.1178	1.4	209.5178	GYRO	Oscar Nielsen	9/14/2016		☑	100
275	-72.8235	207.7527	1.4	209.1527	GYRO	Oscar Nielsen	9/14/2016		☑	100
280	-72.7745	207.7275	1.4	209.1275	GYRO	Oscar Nielsen	9/14/2016		☑	100
285	-72.6852	207.6747	1.4	209.0747	GYRO	Oscar Nielsen	9/14/2016		☑	100
290	-72.8391	207.41	1.4	208.81	GYRO	Oscar Nielsen	9/14/2016		☑	100
295	-72.7926	207.4166	1.4	208.8166	GYRO	Oscar Nielsen	9/14/2016		☑	100
297	-72.8	189	22.1	211.1	ReflexEZS	New Age	9/13/2016	5713	☐	
300	-72.7356	207.5492	1.4	208.9492	GYRO	Oscar Nielsen	9/14/2016		☑	100
305	-72.5099	207.6626	1.4	209.0626	GYRO	Oscar Nielsen	9/14/2016		☑	100
310	-72.5049	207.5825	1.4	208.9825	GYRO	Oscar Nielsen	9/14/2016		☑	100
315	-72.3919	207.5162	1.4	208.9162	GYRO	Oscar Nielsen	9/14/2016		☑	100
320	-72.6464	207.3072	1.4	208.7072	GYRO	Oscar Nielsen	9/14/2016		☑	100
325	-72.6079	207.6769	1.4	209.0769	GYRO	Oscar Nielsen	9/14/2016		☑	100
327	-72.6	186.8	22.1	208.9	ReflexEZS	New Age	9/14/2016	5622	☐	
330	-72.7727	207.2841	1.4	208.6841	GYRO	Oscar Nielsen	9/14/2016		☑	100
335	-72.6618	208.0912	1.4	209.4912	GYRO	Oscar Nielsen	9/14/2016		☑	100
340	-72.5332	208.3761	1.4	209.7761	GYRO	Oscar Nielsen	9/14/2016		☑	100
345	-72.2093	208.9871	1.4	210.3871	GYRO	Oscar Nielsen	9/14/2016		☑	100
350	-71.9547	209.6496	1.4	211.0496	GYRO	Oscar Nielsen	9/14/2016		☑	100
357	-71.8	190.8	22.1	212.9	ReflexEZS	New Age	9/14/2016	5728	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 12.07 OVBN Overburden

<<Min: 12.04 - 46.88 0.5% Min: Pyrite>>

<<Min: 12.04 - 46.88 3% Min: Pyrrhotite>> Higher content in mafic tuff units.

<<Alt: 12.04 - 23.5 Moderate-Strong Calcite>> and veining.

12.07 16.50 MAFt Mafic Volcaniclastics grey-green FMG

12.07 - 16.5: Fine to medium grain, homogeneous, weakly foliated.

16.50 23.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

16.5 - 23.5: Thinly foliated, CA bands, fine grain.

<<Struc: 21 - 23.5 Weak Fault>> Fault gouge, minor.

23.50 28.12 MAFta Coarse grained to ash tuff grey-green FG

23.5 - 28.12: Fine grain, weakly foliated, sharp contact, QZ/CA wavy bands/veins. Narrow mudstone interval intercaled.

<<Min: 26.22 - 288.31 10% Min: Magnetite>>

<<Alt: 23.5 - 28.1 Moderate Calcite>>

<<Alt: 28.1 - 46.88 Weak Calcite>>

<<Struc: 23.9 - 23.91 dominant foliation>>

28.12 36.60 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

28.12 - 36.6: Fine grain, black, CA veinlets, rare light blue bands-CA rich (limestone relics). PO in foliation. Narrow mafic tuff intervals intercaled.

<<Vein: 30.6 - 31.4 Quartz-Carbonate>> QZ/Ca veins representing 35% of the interval.

<<Struc: 34.4 - 34.6 Trace Fault>> Multiple narrow fault gouge intervals-sandy clay.

<<Struc: 34.7 - 34.71 dominant foliation>>

36.60 37.36 CHT Chert grey-green

36.6 - 37.36: Silica banded, green grey, felsic interval, could be flow or silicified pumice, PO disseminated.

37.36 42.36 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

37.36 - 42.36: Graphitic mudstone, thin foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

42.36 43.76 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black

42.36 - 43.76: Silica banded, PO patch. Cherty mudstone.

43.76 46.88 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

43.76 - 46.88: Fine grain, black, foliated, interval including large QZ vein at lower contact.

<<Min: 45.88 - 116 1% Min: Pyrrhotite>> Concentrated in and at contact with narrow possibly sediment intervals.

<<Vein: 46.3 - 46.88 Quartz-Tourmaline>> Massive QZ/TML vein, gougy at upper contact, marking the contact between Wind Lake and KZK formations.

<<Struc: 45.4 - 47.4 Weak-Moderate Fault>> Chaotic interval showing weak folding, QZ/TML massive veins, fault gouge at contact between Wind Lake and KZK formation.

46.88 48.80 SEDc calcareous Sediment grey-brown FMG

46.88 - 48.8: Calcareous, fine to medium grain, banded, few biotite, heterogeneous.

<<Min: 46.88 - 78.17 0.1% Min: Pyrite>>

<<Alt: 46.88 - 65 Trace Calcite>>

48.80 49.50 RHYvx Quartz and/or feldspar crystal tuff light grey FMG

48.8 - 49.5: Light blue crystal tuff, weakly carbonaceous (1 to 2mm wide, euhedral), locally abundant QZ eyes, faulted at lower contact. Recognized as maker unit between Wind Lake and KZK formations.

49.50 78.17 RHYvl Lapilli tuff grey-green FMG

49.5 - 78.17: Fine to medium grain, light grey/green, possibly intermediated composition, containing strained lapilli. Locally gougy and Qz veins. Few calcareous sediment narrow intervals, grey-brown. QZ/TML at upper contact, friable.

<<Vein: 50.9 - 51.6 Quartz-Tourmaline>> Large QZ/TML vein.

<<Vein: 54.93 - 56.12 Quartz-Tourmaline>> Large QZ/TML vein (possibly late TML).

<<Vein: 75.04 - 75.18 Carbonate-Chlorite>> QZ and black greasy mineral (chlorite?)

<<Vein: 76.96 - 77.35 Quartz>> QZ vein, fracture.

<<Struc: 50.9 - 52.05 Weak-Moderate Fault>> Chaotic interval showing weak folding, QZ/TML massive veins, fault gouge, similar to contact between Wind Lake and KZK formation above.

<<Struc: 56.8 - 56.81 dominant foliation>>

<<Struc: 59.97 - 59.98 dominant foliation>>

<<Struc: 61.45 - 73.25 Trace Fault>> Multiple narrow minor fault gouge zone, up to 15 cm wide, sandy clay.

<<Struc: 68.81 - 68.82 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 77.88 - 77.89 dominant foliation>>

78.17 79.38 RHYva Coarse grained to ash tuff grey-green FG

78.17 - 79.38: Fine grain matrix, PY disseminated.

<<Min: 78.17 - 79.38 0.5% Min: Pyrite>>

<<Alt: 78.17 - 82.62 Weak-Moderate Calcite>>

79.38 82.62 RHYvl Lapilli tuff grey-green

79.38 - 82.62: Silicic bands, possibly flow, probably volcaniclastic. Few small feldspar disseminated. SP trace at upper contact.

<<Min: 79.38 - 80 0.1% Min: Sphalerite>> Along the foliation, low content.

<<Min: 79.38 - 95 0.1% Min: Pyrite>>

82.62 84.31 RHYi Aphanitic Rhyolite (intrusion) grey-green

82.62 - 84.31: Siliceous, locally clastic (fractured/banded), QZ veins, few CL.

<<Alt: 82.62 - 98.35 Moderate-Strong Silicification>>

<<Alt: 82.62 - 111.62 Weak Calcite>> Disseminated and in fracture.

84.31 85.35 RHYv Rhyolite volcaniclastic grey FMG

84.31 - 85.35: Locally silicic bands, possibly flow, probably volcaniclastic. Few small feldspar disseminated.

85.35 101.27 RHYi Aphanitic Rhyolite (intrusion) grey-brown

85.35 - 101.27: Silica rich, locally fragmental/banded to glassy. Main body between 98.35m to 101.27m. Upper margin is possibly silicified RHYv.

<<Min: 95 - 101.22 0.5% Min: Pyrite>>

<<Min: 101.22 - 111.46 0.1% Min: Pyrite>>

<<Alt: 98.35 - 101.27 Strong Silicification>> RHYi. Could be associated with albite alteration.

<<Vein: 92 - 92.2 Quartz>> QZ, fractured, few CA in fracture.

101.27 106.17 RHYvl Lapilli tuff grey-green

101.27 - 106.17: Silicic bands, lower margin of RHYi. Banded yellow muscovite alteration.

<<Alt: 101.27 - 106.17 Moderate Silicification>> Lower margin of RHYi.

<<Alt: 101.62 - 106.17 Moderate-Strong Muscovite>> Sharp contacts.

<<Vein: 104.69 - 105.09 Quartz>> QZ veining representing 70% of the interval.

106.17 111.46 RHYvl Lapilli tuff grey-green FG

106.17 - 111.46: Mid strained lapilli, fine grain matrix.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 108 - 111 Trace Fault>> Multiple narrow minor fault gouge zone, up to 10 cm wide, sandy clay.

111.46 114.47 MAFi Mafic Intrusions (primarily footwall mafic intrusion) light grey

111.46 - 114.47: Possibly mafic material. CA in matrix and veinlets, BI porphyroblasts (low density), white/orange specks. Heterogeneous texture.

<<Min: 111.46 - 123 0.5% Min: Pyrite>> and patchy.

<<Alt: 111.46 - 114.47 Moderate Calcite>> and veinlets.

114.47 117.05 RHY undifferentiated rhyolite grey-brown FG

114.47 - 117.05: CA veins, skarny aspect from 115.00m to 117.05m, banded, heterogeneous/chaotic.

<<Min: 116 - 134.17 0.5% Min: Pyrrhotite>>

<<Alt: 114.47 - 117.05 Weak-Moderate Calcite>> and QZ/CA veins.

<<Vein: 115 - 116.07 Quartz-Carbonate>> QZ/CA veining, deformed, large halo of alteration, skarny aspect.

117.05 120.26 RHYvl Lapilli tuff grey FG

117.05 - 120.26: Fine grain matrix, mid strained lapilli, curdy like at lower contact.

<<Alt: 117.05 - 120.26 Weak Calcite>>

120.26 122.65 PEL Equigranular biotite + calcite +/- quartz rock black FMG

120.26 - 122.65: Homogeneous, BI/C rich, sharp upper contact, QZ/TML vein at lower contact, weak possibly secondary foliation.

<<Alt: 120.26 - 121.8 Strong Calcite>>

<<Alt: 121.8 - 142.57 Weak Calcite>>

<<Vein: 121.8 - 122.65 Quartz-Tourmaline>> QZ/TML vein containing host rock. Contact between PEL (MAFi?) and RHYv. The presence of large QZ tends to mafic dyke assumption.

122.65 126.97 RHYvl Lapilli tuff grey-green FMG

122.65 - 126.97: Fine to medium grain matrix, poorly sorted, possibly crystal fragments (angular clasts), locally silicic bands and curdy like texture undeveloped.

<<Min: 123 - 135 2% Min: Pyrite>> Associated with QZ bands.

126.97 132.95 RHYva Coarse grained to ash tuff grey-green FG

126.97 - 132.95: Few lapilli, locally weakly sheared, wavy translucent QZ veinlet set.

<<Struc: 130.07 - 131.9 Moderate Fault>> And shearing. Gravelly/ sandy gouge. Weak damage zone.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

132.95 134.97 RHYvx Quartz and/or feldspar crystal tuff grey-green FG

132.95 - 134.97: Fine grain matrix, feldspar crystals (possibly fragments) and some euhedral showing locally jigsaw fit texture, poorly sorted, weakly foliated.

<<Min: 134.17 - 138.5 1% Min: Pyrrhotite>> Associated with PY.

<<Struc: 134.41 - 134.42 dominant foliation>>

134.97 136.10 RHYv Rhyolite volcaniclastic grey-green

134.97 - 136.1: Fine grain at lower contact, weak MU alteration, locally QZ/PY patch showing vuggy texture.

<<Min: 135 - 150.32 3% Min: Pyrite>> Discontinuous QZCA//sometime PO?PY veins.

136.10 137.34 RHYvx Quartz and/or feldspar crystal tuff grey-green

136.1 - 137.34: Crystal aggregated, PY/QZ patch/vuggy texture. PO patch, green clots (altered lapilli or crystal ?) and large angular clasts (crystal fragments?). No QE.

137.34 142.57 RHYva Coarse grained to ash tuff grey-green FG

137.34 - 142.57: Few lapilli, weakly sheared.

<<Min: 138.5 - 158.8 0.5% Min: Pyrrhotite>>

142.57 143.30 SEDc calcareous Sediment grey-brown VFG

142.57 - 143.3: Strongly calcareous, very fine grain, could be ash/mud layer.

<<Alt: 142.57 - 143.3 Strong Calcite>>

143.30 150.32 RHYva Coarse grained to ash tuff grey-green FG

143.3 - 150.32: Few lapilli or clasts at lower contact, heterogeneous texture. QZ/PY/PO patch associated with silvery muscovite.

<<Alt: 143.3 - 151.32 Weak Calcite>>

<<Struc: 143.3 - 143.31 Contact>> Contact calcareous ash/sediment and RHYva.

150.32 152.06 PEL Equigranular biotite + calcite +/- quartz rock black FMG

150.32 - 152.06: Calcareous, weakly foliated, BI/CA.

<<Min: 150.32 - 157.8 0.5% Min: Pyrite>>

<<Alt: 151.32 - 152.06 Moderate-Strong Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

152.06 153.07 RHYva Coarse grained to ash tuff grey-green FMG

152.06 - 153.07: Weakly foliated, fine to medium grain.

<<Alt: 152.06 - 153.87 Weak Calcite>>

153.07 157.80 SEDc calcareous Sediment grey-brown VFG

153.07 - 157.8: Strongly calcareous, banded, fine grain biotite, sharp contact, non chill margin.

<<Alt: 153.97 - 157.8 Strong Calcite>>

<<Struc: 156.46 - 156.47 dominant foliation>>

157.80 159.55 RHY undifferentiated rhyolite grey-green

157.8 - 159.55: Chaotic interval, probably volcaniclastic rhyolite at contact with RHYi/transition.

<<Min: 157.8 - 182.65 2% Min: Pyrite>> In fracture in RHYi.

<<Min: 158.8 - 177 2% Min: Pyrrhotite>> In fracture in RHYi.

<<Alt: 157.8 - 189.3 Weak Calcite>>

159.55 165.18 RHYi Aphanitic Rhyolite (intrusion) grey-green

159.55 - 165.18: Siliceous, aphanitic, fracture ion the margin, sulphide infill (PO/PY/GL/SP trace).

<<Min: 159.55 - 165.18 0.1% Min: Sphalerite>> Associated with PO/PY/GL in RHYi.

<<Min: 159.55 - 165.18 0.1% Min: Galena>> Associated with PO/PY/SP in RHYi.

<<Alt: 159.55 - 165.18 Intense Silicification>> RHYi.

165.18 166.84 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

165.18 - 166.84: Muscovite altered, silica bands, possibly flow.

<<Alt: 165.18 - 171.85 Strong Silicification>>

166.84 167.34 RHY undifferentiated rhyolite grey-green

166.84 - 167.34: Possibly ash layer at contact with RHYi, texture obscured.

167.34 169.25 RHYc Rhyolite coherant volcanics grey-green

167.34 - 169.25: Siliceous, heterogeneous, fracture at margin, could contain clasts of RHYi.

169.25 171.85 RHYcf Feldspar & feldspar quartz porphyry grey-green

169.25 - 171.85: Very few QE. Poorly sorted, angular clasts micro fractured.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

171.85 173.42 RHYi Aphanitic Rhyolite (intrusion) grey

171.85 - 173.42: Aphanitic, fractured, sulphide infill, grey.

<<Alt: 171.85 - 173.42 Intense Silicification>> RHYi.

173.42 175.25 RHYcf Feldspar & feldspar quartz porphyry grey-green

173.42 - 175.25: Containing feldspar poorly sorted showing jigsaw fit texture, possibly angular fragments.

<<Alt: 173.42 - 178.49 Strong Silicification>>

<<Vein: 174.18 - 174.44 Quartz>> QZ vein crosscutting siliceous unit.

175.25 178.49 RHYc Rhyolite coherant volcanics grey-green

175.25 - 178.49: Siliceous, texture obscured, fractured, weak foliated.

<<Min: 177 - 189.3 0.5% Min: Pyrrhotite>>

178.49 182.65 RHYi Aphanitic Rhyolite (intrusion) grey

178.49 - 182.65: Aphanitic, fractured, sulphide infill, grey to orange at lower contact, possibly albite alteration.

<<Alt: 178.49 - 182.65 Intense Silicification>> RHYi.

<<Alt: 180 - 181 Moderate-Strong Albite>> Orange color, possibly albite alteration.

182.65 186.43 RHYcw Curdy textured-flow banded (flows, subvolcanics) grey-green

182.65 - 186.43: Possibly flow banded. Lower margin of RHYi usually show this silicic banded texture. QZ/CA vein, whitish to purple (skarny aspect) destroying texture at lower contact.

<<Min: 182.65 - 189.3 0.5% Min: Pyrite>>

<<Alt: 182.65 - 186.43 Moderate Silicification>>

186.43 189.30 RHYvl Lapilli tuff grey

186.43 - 189.3: Rare crystals or crystal fragments, mid strained lapilli, heterogeneous texture.

189.30 197.73 SEDc calcareous Sediment grey-brown VFG

189.3 - 197.73: Calcareous fine grain layers, very fine grain, banded, pyrite discontinuous veinlets, rare clasts (1 to 3 mm wide).

<<Min: 189.3 - 194.73 5% Min: Pyrite>>

<<Min: 189.3 - 194.73 1% Min: Pyrrhotite>>

<<Min: 194.73 - 198.6 1% Min: Pyrite>>

<<Min: 194.73 - 227.24 0.5% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Alt: 189.3 - 194.73 Moderate Calcite>>									
		<<Alt: 194.73 - 283.7 Trace Calcite>>									
		<<Vein: 190.16 - 190.43 Quartz>> Massive QZ vein, fractured.									
197.73	**217.98**	**RHYv Rhyolite volcaniclastic grey-green**									
		197.73 - 217.98: Difficult to identified but no evidence of flow or curdy texture. Probably volcaniclastic, rare interval showing pseudo fragmental (almost boudinage) texture (disaggregated bands?). Heterogeneous, weakly altered MU.									
		<<Min: 198.6 - 241.33 3% Min: Pyrite>>									
		<<Alt: 198.5 - 227.24 Weak-Moderate Muscovite>>									
		<<Vein: 209.26 - 229.5 Quartz-Tourmaline>> QZ/TML vein. TML in fracture associated with CA gangue.									
		<<Struc: 198.1 - 198.6 Weak-Moderate Fault>> Fault gouge, healed at upper contact.									
		<<Struc: 210.3 - 210.42 Weak Fault>> Sand/gravelly fault gouge, minor.									
217.98	**239.91**	**RHYv Rhyolite volcaniclastic light grey**									
		217.98 - 239.91: Possibly silicified pumice intervals mixed with finer grain volcaniclastic material. Locally large "clasts" aggregated or fractured silica bands.									
		<<Min: 227.24 - 241.33 1% Min: Pyrrhotite>>									
		<<Alt: 227.24 - 241.33 Moderate Muscovite>>									
		<<Struc: 237.16 - 237.58 Moderate Fault>> Weak shearing at upper contact, fault gouge sandy/gravelly.									
239.91	**241.33**	**RHY undifferentiated rhyolite grey-green**	240.00	240.60	0.60	D00005617	0.006	-0.3	-0.01	-0.01	0.17
		239.91 - 241.33: Probably volcaniclastic rhyolite, MU alteration obscuring the texture.									
			240.60	241.33	0.73	D00005618	0.01	-0.3	-0.01	-0.01	-0.01
241.33	**242.50**	**OI Heavilly disseminated sulphides in host schist FMG**	241.33	241.92	0.59	D00005619	0.013	1	-0.01	-0.01	0.01
		241.33 - 242.5: Rhyolite hosted, foliated, mostly PO/PY, black mineral specks possible chlorite.									
		<<Min: 241.33 - 242.5 0.5% Min: Sphalerite>>	241.92	242.50	0.58	D00005621	0.012	0.8	-0.01	0.01	0.01
		<<Min: 241.33 - 242.5 5% Min: Pyrite>>									
		<<Min: 241.33 - 242.5 20% Min: Pyrrhotite>>									
		<<Min: 241.33 - 242.5 1% Min: Galena>>									
242.50	**248.54**	**RHY undifferentiated rhyolite grey-green**	242.50	243.00	0.50	D00005622	-0.005	0.7	-0.01	-0.01	0.05
		242.5 - 248.54: Silica bands, wispy sulphide at lower contact, moderate MU alteration, QZ/PY patch.									
		<<Min: 242.5 - 248 3% Min: Pyrite>> and semi massive vein.	243.00	244.00	1.00	D00005623	0.014	1.7	-0.01	0.02	-0.01
		<<Min: 242.5 - 248 0.5% Min: Pyrrhotite>>	247.00	248.00	1.00	D00005624	-0.005	-0.3	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 248 - 248.54 5% Min: Pyrite>>			248.00	248.54	0.54	D00005625	0.015	0.3	-0.01	-0.01	0.02
<<Min: 248 - 248.54 10% Min: Pyrrhotite>>											
<<Alt: 242.5 - 247 Moderate Muscovite>>											
<<Alt: 247 - 256.8 Moderate-Strong Muscovite>>											
248.54	**249.70**	**OI** **Heavilly disseminated sulphides in host schist** **FMG**	248.54	249.18	0.64	D00005626	0.04	1	0.02	-0.01	0.02
248.54 - 249.7: Heavily disseminated to semi massive sulfide, PY/PO dominant, QZ veins.											
<<Min: 248.54 - 249.1 25% Min: Pyrrhotite>> to semi massive.			249.18	249.70	0.52	D00005627	0.017	0.6	-0.01	-0.01	0.09
<<Min: 248.54 - 249.1 1% Min: Galena>>											
<<Min: 248.54 - 249.7 10% Min: Pyrite>>											
<<Min: 249.1 - 257.42 1% Min: Pyrite>>											
<<Min: 249.1 - 257.42 0.5% Min: Pyrrhotite>>											
249.70	**257.09**	**RHY** **undifferentiated rhyolite** **grey-green**	249.70	250.77	1.07	D00005628	-0.005	-0.3	-0.01	-0.01	-0.01
249.7 - 257.09: Strongly altered MU, texture obscured, QZ/PY patch.											
<<Min: 252.2 - 252.4 0.5% Min: Galena>> In QZ veins.			250.77	252.00	1.23	D00005629	0.006	0.3	-0.01	-0.01	-0.01
<<Alt: 256.8 - 269.7 Strong Muscovite>>											
<<Vein: 249.7 - 250.08 Quartz>> Massive QZ vein, CA in fracture.											
<<Vein: 252.2 - 252.4 Quartz-Sulphide>> QZ vein containing GL.											
<<Struc: 251.06 - 257.42 Weak Fault>> Minor fault gouge zone, muscovite alteration/smooth joints, minor damage zone.											
257.09	**270.70**	**RHYcw** **Curdy textured-flow banded (flows, subvolcanics)** **grey-green**	268.04	269.00	0.96	D00005631	0.014	1.4	-0.01	0.01	0.03
257.09 - 270.7: Strongly altered MU, locally flow texture, (or hyaloclastic), silica bands.											
<<Min: 257.42 - 269.7 0.1% Min: Pyrite>>			269.00	270.00	1.00	D00005632	0.012	1.3	-0.01	-0.01	0.02
<<Min: 269.7 - 270.7 5% Min: Sphalerite>>			270.00	270.70	0.70	D00005633	0.011	2	0.01	0.02	0.02
<<Min: 269.7 - 270.7 80% Min: Pyrite>>											
<<Min: 269.7 - 270.7 3% Min: Magnetite>>											
<<Min: 269.7 - 270.7 1% Min: Galena>>											
<<Struc: 257.42 - 260.5 Weak-Moderate Fault>> And sheared, kink style deformation within the foliation.											

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
270.70	**271.70**	**OA**	**Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FG**	270.70	271.70	1.00	D00005634	2.6	256	1.95	1.56	6.64
270.7 - 271.7: Or OB/disseminated magnetite.													
<<Min: 270.7 - 272.5 2% Min: Sphalerite>>													
<<Min: 270.7 - 272.5 5% Min: Pyrite>>													
<<Min: 270.7 - 272.5 0.5% Min: Galena>>													
<<Min: 270.7 - 272.5 1% Min: Chalcopyrite>> Remobilized.													
<<Alt: 270.7 - 274.46 Moderate-Strong Muscovite>>													
271.70	**272.60**	**OI**	**Heavilly disseminated sulphides in host schist**	**FMG**	271.70	272.60	0.90	D00005635	4.49	85.5	0.65	0.25	0.95
271.7 - 272.6: Rhyolite hosted, remobilized CP in QZ/CA vein.													
272.60	**273.96**	**RHY**	**undifferentiated rhyolite**	**grey-green**	272.60	273.96	1.36	D00005636	0.105	2.8	0.01	0.03	0.03
272.6 - 273.96: Silvery muscovite, foliated.													
<<Min: 272.96 - 274.46 0.1% Min: Galena>>													
<<Vein: 273.37 - 273.5 Quartz-Chlorite-Sulphide>> QZ/CL vein containing sulfide (CP/GL/PY/SP trace)													
273.96	**274.46**	**OI**	**Heavilly disseminated sulphides in host schist**	**FMG**	273.96	274.46	0.50	D00005637	0.541	59.5	0.44	0.32	0.89
273.96 - 274.46: I rhyolite schist, foliated, laminated sulfide.													
<<Min: 273.96 - 274.46 2% Min: Sphalerite>>													
<<Min: 273.96 - 274.46 20% Min: Pyrite>>													
274.46	**277.20**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FG**	274.46	275.00	0.54	D00005638	1.24	187	0.33	1.64	4.2
274.46 - 277.2: Wispy laminated, CA in matrix, QZ clasts.													
<<Min: 274.46 - 277.2 5% Min: Sphalerite>>					275.00	276.00	1.00	D00005639	1.84	215	0.27	1.74	5.92
<<Min: 274.46 - 277.2 70% Min: Pyrite>>					276.00	276.60	0.60	D00005641	1.92	200	0.34	1.67	5.65
<<Min: 274.46 - 277.2 3% Min: Galena>>					276.60	277.20	0.60	D00005642	2.68	255	0.97	2.13	7.36
<<Min: 274.46 - 277.2 0.5% Min: Chalcopyrite>>													
<<Struc: 277.19 - 285.17 Weak-Moderate Fault>> Narrow fault gouge zone, friable semi massive sulfide, weakly sheared contacts.													

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
277.20	**283.70**	**RHY**	**undifferentiated rhyolite**	**grey-green**	277.20	278.13	0.93	D00005643	0.027	1.6	-0.01	0.01	-0.01
277.2 - 283.7: PY disseminated, foliated, altered muscovite, probably volcaniclastic. Narrow OB interval from 278.13m to 278.40m, QZ clasts and CA in matrix.													
<<Min: 277.2 - 283.7 2% Min: Pyrite>>					278.13	279.00	0.87	D00005644	1.61	169	0.13	0.87	2.56
<<Alt: 277.2 - 283.7 Moderate-Strong Muscovite>>					279.00	280.00	1.00	D00005645	0.016	1.2	-0.01	-0.01	0.02
					280.00	281.00	1.00	D00005646	0.018	1.4	-0.01	-0.01	0.12
					281.00	282.00	1.00	D00005647	0.022	1.9	-0.01	0.02	0.03
					282.00	283.00	1.00	D00005648	1.8	119	0.16	0.97	2.59
					283.00	283.70	0.70	D00005649	0.029	1.9	-0.01	0.02	0.03
283.70	**284.20**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	283.70	284.20	0.50	D00005651	2.16	297	0.06	4.65	10.1
283.7 - 284.2: CA, possibly weak BA in gangue, undeveloped OK.													
<<Min: 283.7 - 284.2 20% Min: Sphalerite>>													
<<Min: 283.7 - 284.2 30% Min: Pyrite>>													
<<Min: 283.7 - 284.2 5% Min: Galena>>													
<<Alt: 283.7 - 303.76 Moderate-Strong Calcite>>													
284.20	**285.17**	**OI**	**Heavilly disseminated sulphides in host schist**	**MG**	284.20	285.17	0.97	D00005652	1.69	399	0.56	2.31	2.34
284.2 - 285.17: Friable, gougy texture, talc clots.													
<<Min: 284.2 - 285.17 5% Min: Sphalerite>>													
<<Min: 284.2 - 285.17 20% Min: Pyrite>>													
<<Min: 284.2 - 285.17 3% Min: Galena>>													
285.17	**285.67**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	**FMG**	285.17	285.67	0.50	D00005653	2.02	336	0.49	6.27	8.9
285.17 - 285.67: QZ clasts, in matrix,.													
<<Min: 285.17 - 285.67 15% Min: Sphalerite>>													
<<Min: 285.17 - 285.67 20% Min: Pyrite>>													
<<Min: 285.17 - 285.67 10% Min: Galena>>													

From (m)	To (m)	Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Min: 285.17 - 288.41 15% Min: Barite>> Probably BA in gangue.												
285.67	**286.22**	**OL semi to massive sulphide; 10 – 40% coarse buckshot PY in a SP +/- PO, MG, GL, CP matrix**	**MG**	285.67	286.22	0.55	D00005654	3.31	639	0.22	12.4	19.7
285.67 - 286.22: SP rich, PY coarse grain buckshot texture well developed at upper contact, OK like at lower contact (probably BA gangue/heavy.)												
<<Min: 285.67 - 286.22 30% Min: Sphalerite>>												
<<Min: 285.67 - 286.22 15% Min: Pyrite>> and buckshot texture.												
<<Min: 285.67 - 286.22 10% Min: Galena>>												
286.22	**288.41**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	286.22	287.00	0.78	D00005655	1.81	303	0.43	5.61	7.88
286.22 - 288.41: Wispy laminated, CA/probably BA rich gangue.												
<<Min: 286.22 - 288.31 15% Min: Sphalerite>>				287.00	287.55	0.55	D00005656	1.05	299	0.3	5.15	8.63
<<Min: 286.22 - 288.31 35% Min: Pyrite>>				287.55	288.41	0.86	D00005657	1.87	284	0.41	4.63	8.35
<<Min: 286.22 - 288.31 5% Min: Galena>>												
288.41	**290.04**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	288.41	289.08	0.67	D00005658	1.52	287	1.03	4.49	2.7
288.41 - 290.04: CA rich, few laminated sulfide at contacts.												
				289.08	290.04	0.96	D00005659	0.903	168	0.37	2.23	0.53
290.04	**291.70**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	**FMG**	290.04	291.00	0.96	D00005661	1.4	308	0.14	6	11.5
290.04 - 291.7: Weakly laminate, locally fractured. Including mafic, calcareous interval 25 cm wide containing possibly cordierite crystals aggregated, replaced calcite.												
<<Min: 290.04 - 291.7 5% Min: Sphalerite>>				291.00	291.70	0.70	D00005662	3.59	268	0.69	4.6	6.9
<<Min: 290.04 - 291.7 80% Min: Pyrite>>												
<<Min: 290.04 - 291.7 5% Min: Magnetite>>												
<<Min: 290.04 - 291.7 3% Min: Galena>>												

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
291.70	**292.20**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	**FMG**	291.70	292.20	0.50	D00005663	1.48	468	0.26	8.41	10.8
291.7 - 292.2: CA in matrix.													
292.20	**295.09**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	292.20	293.00	0.80	D00005664	0.464	81.4	0.14	1.09	0.5
292.2 - 295.09: Bleached mafic sill, CA rich/CL.													
<<Struc: 292.2 - 293 Moderate Fault>> Fault gouge at lower massive sulfide lower contact, mafic sill gouge, bleached, no calcite washed.					293.00	294.00	1.00	D00005665	0.114	21.2	0.04	0.25	0.08
					294.00	295.09	1.09	D00005666	0.117	24.5	0.08	0.31	0.1
295.09	**296.16**	**OI**	**Heavilly disseminated sulphides in host schist**		295.09	296.16	1.07	D00005667	8.97	476	0.88	1.57	3.48
295.09 - 296.16: Associated with vuggy CA vein.													
<<Min: 295.09 - 296.16 1% Min: Sphalerite>>													
<<Min: 295.09 - 296.16 10% Min: Pyrite>>													
<<Min: 295.09 - 296.16 0.5% Min: Galena>>													
<<Min: 295.09 - 296.16 0.5% Min: Chalcopyrite>>													
296.16	**303.76**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	296.16	297.00	0.84	D00005668	13.43	866	2.01	0.19	0.62
296.16 - 303.76: Calcareous, CL, bleached mafic sill.													
					297.00	298.02	1.02	D00005669	0.018	3.5	-0.01	0.05	0.06
					298.02	298.97	0.95	D00005671	0.023	3.2	-0.01	0.05	0.06
					298.97	300.00	1.03	D00005672	0.044	3.9	0.01	0.04	0.07
					300.00	301.00	1.00	D00005673	0.082	11.8	0.03	0.14	0.07
					301.00	302.00	1.00	D00005674	0.099	11.2	0.05	0.16	0.08
					302.00	303.00	1.00	D00005675	0.054	8.8	0.03	0.13	0.09
					303.00	303.76	0.76	D00005676	0.109	19.5	0.06	0.22	0.13
303.76	**304.72**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	303.76	304.72	0.96	D00005677	0.276	47	0.22	0.74	0.17
303.76 - 304.72: Gougy mafic sill, calcareous.													
<<Alt: 303.76 - 313.52 Trace Calcite>> Fault zone/shear zone.													

From (m)	To (m)		Rocktype & Description		From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 303.76 - 304.72 Moderate Fault>> Faulted mafic sill at upper contact with massive sulfide, damaged zone.													
304.72	**305.60**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**		304.72	305.60	0.88	D00005678	1.35	320	0.72	6.65	7.33
304.72 - 305.6: CA in matrix. Could be large clasts in fault zone, displaced (FLZ at lower contact, gouge at upper contact).													
<<Min: 304.72 - 305.6 10% Min: Sphalerite>>													
<<Min: 304.72 - 305.6 50% Min: Pyrite>>													
<<Min: 304.72 - 305.6 1% Min: Magnetite>>													
<<Min: 304.72 - 305.6 5% Min: Galena>>													
<<Min: 304.72 - 305.6 1% Min: Chalcopyrite>>													
305.60	**309.00**	**FLZ**	**Fault Zone**	**green**	305.60	306.60	1.00	D00005679	0.342	56	0.06	0.9	0.08
305.6 - 309: Locally fault breccia (angular clasts, calcareous) consisting in gougy mafic material, sheared at lower contacts along the core axis.													
<<Struc: 305.6 - 309 Strong Fault>> and sheared. Faulted along the core axis. Clay gouge and fault breccia, angular clasts/calcareous.					306.60	308.00	1.40	D00005681	0.129	14.5	0.04	0.24	0.06
					308.00	309.00	1.00	D00005682	0.179	23.6	0.04	0.29	0.07
309.00	**313.52**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**									
309 - 313.52: Faulted along the core axis.													
<<Vein: 311.7 - 312.5 Calcite>> CA vein along the core axis in sheared zone, healed fault (?).													
<<Struc: 311.65 - 313.52 Moderate-Strong Shear>> Sheared along the core axis, calcite veins, healed fault zone (?).													
313.52	**323.29**	**MAFi**	**Mafic Intrusions (primarily footwall mafic intrusion)**	**green**	321.00	322.00	1.00	D00005683	0.111	39.6	0.03	0.49	0.06
313.52 - 323.29: Ca rich/CL, beached mafic sill, banded, foliated.													
<<Alt: 313.52 - 329.61 Moderate-Strong Calcite>>					322.00	323.11	1.11	D00005684	0.214	53.2	0.07	0.68	0.06
<<Vein: 314.7 - 314.9 Quartz>> QZ in mafic sill, proximity of shear zone.					323.11	323.61	0.50	D00005685	0.279	135	0.67	1.43	8.35
<<Struc: 313.52 - 318.4 Weak Fault>> Damage zone, narrow fault gouge interval, minor.													
323.29	**323.61**	**OB**	**Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**										
323.29 - 323.61: Containing remobilized GL/CP associated with CA gangue.													

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 323.29 - 323.61 15% Min: Sphalerite>>									
		<<Min: 323.29 - 323.61 40% Min: Pyrite>>									
		<<Min: 323.29 - 323.61 2% Min: Pyrrhotite>>									
		<<Min: 323.29 - 323.61 3% Min: Galena>> Remobilized.									
		<<Min: 323.29 - 323.61 2% Min: Chalcopyrite>> Remobilized.									
323.61	**329.61**	**MAFi Mafic Intrusions (primarily footwall mafic intrusion) green**	323.61	324.50	0.89	D00005686	0.084	16.6	0.02	0.25	0.06
		323.61 - 329.61: Ca rich/CL, beached mafic sill, banded, foliated.									
		<<Min: 323.61 - 329.61 0.5% Min: Sphalerite>> Associated with calcite rich bands	324.50	326.00	1.50	D00005687	0.095	39.1	0.05	0.77	0.04
		<<Min: 323.61 - 329.61 1% Min: Pyrite>>	326.00	327.00	1.00	D00005688	0.091	61.2	0.04	1.4	0.05
		<<Min: 329.6 - 366 2% Min: Pyrite>>	327.00	328.11	1.11	D00005689	0.091	34	0.08	0.67	0.08
		<<Min: 329.6 - 366 0.5% Min: Pyrrhotite>>	328.11	329.61	1.50	D00005691	0.096	76.9	0.48	1.61	1.55
329.61	**329.80**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite grey-brown FMG**	329.61	330.29	0.68	D00005692	0.026	37.9	0.75	0.29	0.86
		329.61 - 329.8: Dark grey brown sulphide, pyrite dominates with lesser chalcopyrite. Calcite and silica gangue.									
		<<Min: 329.61 - 329.8 2% Min: Sphalerite>>									
		<<Min: 329.61 - 329.8 65% Min: Pyrite>>									
		<<Min: 329.61 - 329.8 10% Min: Pyrrhotite>>									
		<<Min: 329.61 - 329.8 8% Min: Chalcopyrite>>									
		<<Alt: 329.61 - 329.8 Moderate Calcite>>									
329.80	**366.00**	**RHYv Rhyolite volcaniclastic light grey FG**									
		329.8 - 366: Light-grey to white rhyolitic volcaniclastic rock contains up to 5% pyrite/pyrrhotite and patches of tourmaline. Cut by numerous small faults. Banding is defined by pyrite/pyrrhotite									
		<<Min: 329.8 - 334.5 0.5% Min: Sphalerite>>									
		<<Alt: 329.8 - 334.5 Moderate Tourmaline>>									
		<<Alt: 329.8 - 334.5 Weak-Moderate Muscovite>>									
		<<Alt: 329.8 - 366 Weak Calcite>>									
		<<Alt: 334.5 - 366 Weak-Moderate Tourmaline>> Sometimes associated with veins									
		<<Alt: 334.5 - 366 Weak Muscovite>>									
		<<Vein: 350.05 - 350.07 100% Quartz-Carbonate 5 deg. >>									
		<<Vein: 357.45 - 357.46 100% Quartz 15 deg. >>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 332.4 - 332.65 Weak-Moderate Fault>> Predominantly composed of gouge											
<<Struc: 335.63 - 335.73 Weak-Moderate Fault>> Predominantly composed of gouge											
<<Struc: 346.1 - 346.21 Weak-Moderate Fault>> Predominantly composed of gouge											
<<Struc: 356.23 - 356.32 Weak-Moderate Fault>> Predominantly composed of gouge											
<<Struc: 358.13 - 358.13 Moderate dominant foliation>> Dominant foliation deveoped along micaceous parting planes											
End of Hole @ 366											

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-418

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Oscar Nielsen
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Oscar Nielsen	Date Logging Start:	9/18/2016
UTM Easting	415360	Core Size:	HQ3	Azimuth:	213.8	Date Logging Complete:	9/30/2016
UTM Northing:	6815332	Casing Pulled?:	Yes	Dip:	-76.7	Drill Company:	New Age
UTM Elev. (m):	1502	Casing Depth (m):	10.5	Length (m):	475.5	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	9/16/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	9/28/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-418 was designed to expand the Krakatoa resource downdip. The hole intersected two 0.35 m blocks of massive sulphide within a fault structure, but no in situ massive sulphide was intersected. Wind Lake formation mudstones and mafic tuffaceous sediments are present within the first 159.50 m. The KZK formation below this is a mixed volcano sedimentary package with only one coherent unit from 212.00 - 222.00 m. Moderate-strong muscovite alteration begins at ~342 m and continues through the rest of the hole. The two blocks of massive sulphide present are within the fault from ~433.00 - 437.00 m.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-76.7	212.4	1.4	213.8	TN14	Oscar Nielsen	9/18/2016		☑	
0.01	-77.29064	212.6	1.4	214	Gyro	Oscar Nielsen	9/28/2016		☑	100
5	-77.29174	211.12966	1.4	212.52966	Gyro	Oscar Nielsen	9/28/2016		☑	99.14056312271
10	-77.30118	210.9565	1.4	212.3565	Gyro	Oscar Nielsen	9/28/2016		☑	99.781549208963
15	-77.33936	210.85959	1.4	212.25959	Gyro	Oscar Nielsen	9/28/2016		☑	100
15.01	-77.4	186.7	22.1	208.8	ReflexEZS	New Age	9/15/2016	5758	☐	
20	-76.98388	210.85116	1.4	212.25116	Gyro	Oscar Nielsen	9/28/2016		☑	99.5132033781532
25	-76.72369	210.81034	1.4	212.21034	Gyro	Oscar Nielsen	9/28/2016		☑	99.12616227242
30	-76.68356	210.85098	1.4	212.25098	Gyro	Oscar Nielsen	9/28/2016		☑	99.6188597375024
35	-76.72663	211.15738	1.4	212.55738	Gyro	Oscar Nielsen	9/28/2016		☑	99.5042836447466
40	-76.45593	211.22404	1.4	212.62404	Gyro	Oscar Nielsen	9/28/2016		☑	99.3390269834365
45	-76.09926	211.74362	1.4	213.14362	Gyro	Oscar Nielsen	9/28/2016		☑	99.0123056526868
45.01	-76.5	190.5	22.1	212.6	ReflexEZS	New Age	9/18/2016	5742	☐	
50	-75.82928	211.75351	1.4	213.15351	Gyro	Oscar Nielsen	9/28/2016		☑	99.2331139137794
55	-75.5983	211.82515	1.4	213.22515	Gyro	Oscar Nielsen	9/28/2016		☑	100
60	-75.54674	211.93703	1.4	213.33703	Gyro	Oscar Nielsen	9/28/2016		☑	100
65	-75.01813	212.39479	1.4	213.79479	Gyro	Oscar Nielsen	9/28/2016		☑	99.375233480075
70	-74.83307	212.4256	1.4	213.8256	Gyro	Oscar Nielsen	9/28/2016		☑	99.3567697478384
75	-74.54243	212.2764	1.4	213.6764	Gyro	Oscar Nielsen	9/28/2016		☑	99.6615714440145

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-418

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
75.01	-74.8	192.2	22.1	214.3	ReflexEZS	New Age	9/18/2016	5749	☐	
80	-74.49836	211.84691	1.4	213.24691	Gyro	Oscar Nielsen	9/28/2016		☑	100
85	-74.55168	211.45439	1.4	212.85439	Gyro	Oscar Nielsen	9/28/2016		☑	99.982269952736
90	-74.27977	211.51709	1.4	212.91709	Gyro	Oscar Nielsen	9/28/2016		☑	99.844083632768
95	-74.08046	211.20862	1.4	212.60862	Gyro	Oscar Nielsen	9/28/2016		☑	99.6318066
100	-73.8261	211.1065	1.4	212.5065	Gyro	Oscar Nielsen	9/28/2016		☑	99.809233393898
105	-73.65607	211.17886	1.4	212.57886	Gyro	Oscar Nielsen	9/28/2016		☑	99.9127152903585
105.01	-73.7	190.3	22.1	212.4	ReflexEZS	New Age	9/19/2016	5749	☐	
110	-73.525	210.66699	1.4	212.06699	Gyro	Oscar Nielsen	9/28/2016		☑	100
114	-73.4	190.5	22.1	212.6	ReflexEZS	New Age	9/19/2016	5726	☐	
115	-73.43336	210.61677	1.4	212.01677	Gyro	Oscar Nielsen	9/28/2016		☑	100
120	-72.91561	210.9986	1.4	212.3986	Gyro	Oscar Nielsen	9/28/2016		☑	99.0162441966038
120.01	-73.3	189.4	22.1	211.5	ReflexEZS	New Age	9/19/2016	5745	☐	
125	-72.70413	210.58172	1.4	211.98172	Gyro	Oscar Nielsen	9/28/2016		☑	98.895992724896
129	-72.9	190.2	22.1	212.3	ReflexEZS	New Age	9/19/2016	5754	☐	
130	-72.65388	210.38855	1.4	211.78855	Gyro	Oscar Nielsen	9/28/2016		☑	99.7752353648862
135	-72.67215	210.19729	1.4	211.59729	Gyro	Oscar Nielsen	9/28/2016		☑	100
138	-73.2	190	22.1	212.1	ReflexEZS	New Age	9/20/2016	5744	☐	
140	-72.62466	210.02302	1.4	211.42302	Gyro	Oscar Nielsen	9/28/2016		☑	100
145	-72.67589	209.78416	1.4	211.18416	Gyro	Oscar Nielsen	9/28/2016		☑	100
150	-72.71289	209.73381	1.4	211.13381	Gyro	Oscar Nielsen	9/28/2016		☑	100
155	-72.65687	209.66378	1.4	211.06378	Gyro	Oscar Nielsen	9/28/2016		☑	100
156	-72.6	189.5	22.1	211.6	ReflexEZS	New Age	9/20/2016	5766	☐	
160	-72.18414	210.40128	1.4	211.80128	Gyro	Oscar Nielsen	9/28/2016		☑	99.3051405211264
165	-72.06538	210.32577	1.4	211.72577	Gyro	Oscar Nielsen	9/28/2016		☑	99.1780012372096
165.01	-72.2	190.7	22.1	212.8	ReflexEZS	New Age	9/21/2016	5738	☐	
170	-71.86412	210.48238	1.4	211.88238	Gyro	Oscar Nielsen	9/28/2016		☑	99.6257265212468
174	-72	188.1	22.1	210.2	ReflexEZS	New Age	9/21/2016	5734	☐	
175	-71.78544	210.78338	1.4	212.18338	Gyro	Oscar Nielsen	9/28/2016		☑	100
180	-71.69478	210.78298	1.4	212.18298	Gyro	Oscar Nielsen	9/28/2016		☑	100
185	-71.7095	210.71446	1.4	212.11446	Gyro	Oscar Nielsen	9/28/2016		☑	100
186	-71.6	188.8	22.1	210.9	ReflexEZS	New Age	9/21/2016	5742	☐	
190	-71.72792	210.75458	1.4	212.15458	Gyro	Oscar Nielsen	9/28/2016		☑	100
195	-71.71753	210.80457	1.4	212.20457	Gyro	Oscar Nielsen	9/28/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-418

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
200	-71.55208	210.95108	1.4	212.35108	Gyro	Oscar Nielsen	9/28/2016		☑	99.8883840746179
204	-71.5	191.2	22.1	213.3	ReflexEZS	New Age	9/21/2016	5744	☐	
205	-71.23871	211.28488	1.4	212.68488	Gyro	Oscar Nielsen	9/28/2016		☑	98.8763758882127
210	-71.09392	211.28558	1.4	212.68558	Gyro	Oscar Nielsen	9/28/2016		☑	100
215	-70.96803	211.26155	1.4	212.66155	Gyro	Oscar Nielsen	9/28/2016		☑	100
216	-71.1	191.6	22.1	213.7	ReflexEZS	New Age	9/22/2016	5741	☐	
220	-70.82995	211.11658	1.4	212.51658	Gyro	Oscar Nielsen	9/28/2016		☑	100
225	-70.76488	211.35294	1.4	212.75294	Gyro	Oscar Nielsen	9/28/2016		☑	100
230	-70.72199	211.26396	1.4	212.66396	Gyro	Oscar Nielsen	9/28/2016		☑	100
235	-70.61226	211.41629	1.4	212.81629	Gyro	Oscar Nielsen	9/28/2016		☑	100
240	-70.60355	211.23621	1.4	212.63621	Gyro	Oscar Nielsen	9/28/2016		☑	100
240.01	-70.8	188.4	22.1	210.5	ReflexEZS	New Age	9/22/2016	5745	☐	
245	-70.54413	211.53963	1.4	212.93963	Gyro	Oscar Nielsen	9/28/2016		☑	100
250	-70.47021	211.70636	1.4	213.10636	Gyro	Oscar Nielsen	9/28/2016		☑	100
255	-70.45082	211.63948	1.4	213.03948	Gyro	Oscar Nielsen	9/28/2016		☑	100
260	-70.40727	211.80334	1.4	213.20334	Gyro	Oscar Nielsen	9/28/2016		☑	100
264	-70.5	192.2	22.1	214.3	ReflexEZS	New Age	9/22/2016	5739	☐	
265	-70.34332	211.8162	1.4	213.2162	Gyro	Oscar Nielsen	9/28/2016		☑	100
270	-70.26079	211.97956	1.4	213.37956	Gyro	Oscar Nielsen	9/28/2016		☑	100
275	-70.32893	211.76169	1.4	213.16169	Gyro	Oscar Nielsen	9/28/2016		☑	100
280	-70.26302	211.90385	1.4	213.30385	Gyro	Oscar Nielsen	9/28/2016		☑	100
285	-70.22222	212.13262	1.4	213.53262	Gyro	Oscar Nielsen	9/28/2016		☑	100
288	-70.4	190	22.1	212.1	ReflexEZS	New Age	9/23/2016	5751	☐	
290	-70.18076	212.13895	1.4	213.53895	Gyro	Oscar Nielsen	9/28/2016		☑	100
295	-70.17863	212.26776	1.4	213.66776	Gyro	Oscar Nielsen	9/28/2016		☑	100
300	-70.13173	212.31049	1.4	213.71049	Gyro	Oscar Nielsen	9/28/2016		☑	100
305	-70.12934	212.45729	1.4	213.85729	Gyro	Oscar Nielsen	9/28/2016		☑	100
310	-70.02104	212.49016	1.4	213.89016	Gyro	Oscar Nielsen	9/28/2016		☑	100
312	-70.1	191.6	22.1	213.7	ReflexEZS	New Age	9/24/2016	5763	☐	
315	-69.92546	212.47311	1.4	213.87311	Gyro	Oscar Nielsen	9/28/2016		☑	100
320	-69.92038	212.63015	1.4	214.03015	Gyro	Oscar Nielsen	9/28/2016		☑	100
325	-69.88613	212.50858	1.4	213.90858	Gyro	Oscar Nielsen	9/28/2016		☑	100
330	-69.82371	212.69565	1.4	214.09565	Gyro	Oscar Nielsen	9/28/2016		☑	100
335	-69.74412	212.96428	1.4	214.36428	Gyro	Oscar Nielsen	9/28/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-418

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
336	-70	192.8	22.1	214.9	ReflexEZS	New Age	9/25/2016	5718	☐	
340	-69.70975	213.1191	1.4	214.5191	Gyro	Oscar Nielsen	9/28/2016		☑	100
345	-69.64511	213.20957	1.4	214.60957	Gyro	Oscar Nielsen	9/28/2016		☑	100
350	-69.61694	213.10708	1.4	214.50708	Gyro	Oscar Nielsen	9/28/2016		☑	100
355	-69.51022	213.25694	1.4	214.65694	Gyro	Oscar Nielsen	9/28/2016		☑	100
360	-69.46889	213.17382	1.4	214.57382	Gyro	Oscar Nielsen	9/28/2016		☑	100
360.01	-69.7	190.7	22.1	212.8	ReflexEZS	New Age	9/25/2016	5728	☐	
365	-69.42693	213.38426	1.4	214.78426	Gyro	Oscar Nielsen	9/28/2016		☑	100
370	-69.31923	213.57564	1.4	214.97564	Gyro	Oscar Nielsen	9/28/2016		☑	100
375	-69.2671	213.51832	1.4	214.91832	Gyro	Oscar Nielsen	9/28/2016		☑	100
380	-69.29957	213.64519	1.4	215.04519	Gyro	Oscar Nielsen	9/28/2016		☑	100
384	-69.3	192.3	22.1	214.4	ReflexEZS	New Age	9/25/2016	5742	☐	
385	-69.18932	213.81808	1.4	215.21808	Gyro	Oscar Nielsen	9/28/2016		☑	100
390	-69.1698	213.90924	1.4	215.30924	Gyro	Oscar Nielsen	9/28/2016		☑	100
395	-69.0841	214.11107	1.4	215.51107	Gyro	Oscar Nielsen	9/28/2016		☑	100
400	-69.05321	213.94584	1.4	215.34584	Gyro	Oscar Nielsen	9/28/2016		☑	100
405	-69.03291	214.1496	1.4	215.5496	Gyro	Oscar Nielsen	9/28/2016		☑	100
408	-68.9	197.5	22.1	219.6	ReflexEZS	New Age	9/26/2016	5727	☐	
410	-68.93986	214.01794	1.4	215.41794	Gyro	Oscar Nielsen	9/28/2016		☑	100
415	-69.03499	213.68643	1.4	215.08643	Gyro	Oscar Nielsen	9/28/2016		☑	100
420	-68.8796	213.42404	1.4	214.82404	Gyro	Oscar Nielsen	9/28/2016		☑	100
425	-68.70652	213.3213	1.4	214.7213	Gyro	Oscar Nielsen	9/28/2016		☑	100
430	-68.60655	213.37995	1.4	214.77995	Gyro	Oscar Nielsen	9/28/2016		☑	100
435	-68.60544	213.13492	1.4	214.53492	Gyro	Oscar Nielsen	9/28/2016		☑	100
435.01	-68.6	191.2	22.1	213.3	ReflexEZS	New Age	9/27/2016	5297	☐	
440	-68.62126	213.46274	1.4	214.86274	Gyro	Oscar Nielsen	9/28/2016		☑	100
445	-68.51843	213.60155	1.4	215.00155	Gyro	Oscar Nielsen	9/28/2016		☑	100
450	-68.34734	213.8834	1.4	215.2834	Gyro	Oscar Nielsen	9/28/2016		☑	100
455	-68.3202	214.15476	1.4	215.55476	Gyro	Oscar Nielsen	9/28/2016		☑	100
459	-68.3	190.3	22.1	212.4	ReflexEZS	New Age	9/27/2016	5720	☐	
460	-68.27176	214.31996	1.4	215.71996	Gyro	Oscar Nielsen	9/28/2016		☑	100
465	-68.1388	214.55638	1.4	215.95638	Gyro	Oscar Nielsen	9/28/2016		☑	100

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 10.50 OVBN Overburden

0 - 10.5: Casing to 10.5 m

10.50 44.79 MAFt Mafic Volcaniclastics grey-green FMG

10.5 - 44.79: Grey green sandy/granular bands of tuffaceous mafic derived sediment, interbedded with thin units (<10 cm) of grey-blue to black mudstone (MDS). In the top 10 m there is significant oxidation and 1-2m intervals of a biotite porphyroblast bearing, subtly banded rock. This may represent thin intermediate dykes or bleached/altered zones of mafic tuff however, the oxidation present and faulting obscures the relationship between the two domains.

<<Min: 24 - 105.82 0.1% Min: Pyrite>> Isolated clots and blebs of pyrite, sometimes associated with quartz-carbonate veins

<<Min: 24 - 105.82 0.1% Min: Pyrrhotite>> Small, finely disseminate blebs along foliation planes

<<Alt: 10.5 - 12.25 Moderate Albite>> Bleached white area of rock, interpreted provisionally as albite alteration

<<Alt: 10.5 - 12.79 Weak-Moderate Biotite>>

<<Alt: 12.25 - 15.05 Weak-Moderate Calcite>>

<<Alt: 12.79 - 15.05 Weak Biotite>>

<<Alt: 15.05 - 17 Weak-Moderate Biotite>>

<<Alt: 15.05 - 17 Moderate Albite>> Bleached white area of rock, interpreted provisionally as albite alteration

<<Alt: 17 - 31.33 Weak Biotite>>

<<Alt: 17 - 62.05 Weak-Moderate Calcite>>

<<Vein: 14.41 - 15.05 90% Quartz-Carbonate>>

<<Struc: 17.67 - 19.3 Weak-Moderate Fault>> Zone of broken/crushed rock, with minor gouge. Strongly oxidized

<<Struc: 27 - 27 Weak-Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

<<Struc: 31.52 - 31.98 Weak-Moderate Fault>> Zone of faulting with thin (~10cm) zones of gougy materi\al

<<Struc: 43.95 - 43.95 Moderate dominant foliation>> Foliation defined by alignment of micaceous (chloritie) minerals.

44.79 50.57 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

44.79 - 50.57: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone with thin 1cm chloritic mafic tuff beds.

50.57 51.57 MAFt Mafic Volcaniclastics green MG

50.57 - 51.57: Green, chloritic, moderately to well sorted sandy, medium grained mafic tuff

51.57 59.74 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FMG

51.57 - 59.74: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone with thin 1cm chloritic mafic tuff beds.

<<Vein: 55.7 - 56.03 45% Quartz-Carbonate 80 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

59.74 62.05 MAFt Mafic Volcaniclastics grey-green FMG

59.74 - 62.05: Thicker beds of chloritic, sandy mafic tuff with finely interbedded dark grey carbonaceous mudstone.

<<Struc: 60.08 - 60.08 >> Axial plane of folding in the Wind Lake group

62.05 86.19 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

62.05 - 86.19: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone with thin 1cm chloritic mafic tuff beds.

<<Alt: 62.05 - 105.82 Moderate Calcite>>

<<Vein: 62.05 - 62.98 85% Quartz-Carbonate 70 deg. >>

<<Vein: 72.92 - 92.91 20% Quartz-Carbonate 75 deg. >>

<<Struc: 71.94 - 71.94 Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

<<Struc: 72.79 - 86 Weak-Moderate Fault>> Zone of weak to moderate faulting parallel to the dominant foloiation plane

86.19 88.10 MAFt Mafic Volcaniclastics grey-green FG

86.19 - 88.1: A thick bed of chloritic, silty mafic tuff

88.10 105.82 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

88.1 - 105.82: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone with thin 1cm chloritic mafic tuff beds.

<<Struc: 90 - 94.22 Weak-Moderate Fault>> Zone of weak to moderate faulting, parallel to the dominant foliation plane. Gougy zones common due to the friale host rock.

<<Struc: 95.98 - 95.98 Moderate-Strong dominant foliation>> Foliation defined by alignment of micaceous minerals.

<<Struc: 98.92 - 98.92 Moderate-Strong dominant foliation>> Foliation defined by alignment of micaceous minerals.

105.82 119.15 MAFt Mafic Volcaniclastics grey-green FMG

105.82 - 119.15: Thicker beds of chloritic, silty mafic tuff with finely interbedded dark grey carbonaceous mudstone.

<<Min: 105.82 - 119.15 0.1% Min: Pyrite>> Associated with carbonate veins

<<Min: 105.82 - 119.15 0.5% Min: Pyrrhotite>> Patches and bands of blebs of pyrrhotite, cocordant with the dominant foliation.

<<Alt: 105.82 - 133.9 Moderate-Strong Calcite>>

<<Struc: 111 - 111 Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

<<Struc: 113.1 - 113.1 Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

119.15 133.90 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

119.15 - 133.9: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone.

<<Min: 119.15 - 133.9 0.5% Min: Pyrite>> Disseminated in the mudstone and in thin stringers

<<Min: 119.15 - 133.9 0.1% Min: Pyrrhotite>> Typically associated with thin MAFt beds

<<Struc: 120.42 - 120.54 Weak-Moderate Fault>> Gouge filled fault within the mudstone unit.

<<Struc: 122.81 - 122.81 >> Axial plane of folding in the Wind Lake group

<<Struc: 122.86 - 122.86 Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

<<Struc: 132.32 - 132.54 Moderate Fault>> Fault zone comprising gouge

<<Struc: 133.2 - 133.2 Bedding>> Contact between a bed of MAFt and MDS

133.90 134.77 MAFt Mafic Volcaniclastics grey-green FMG

133.9 - 134.77: A thick bed of chloritic, silty mafic tuff

<<Min: 133.9 - 134.77 0.5% Min: Pyrrhotite>> Foliation parallel blebs within MAFt beds

<<Alt: 133.9 - 134.77 Moderate Calcite>>

134.77 149.10 MDS Carbonaceous Mudstone & Tuffaceous Mudstone dark grey FG

134.77 - 149.1: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone with chloritic mafic tuff interbeds, up to 30 cm thick.

<<Min: 134.77 - 149.1 0.5% Min: Pyrite>> Foiation parallel blaebs concentrated in carbonaceous beds.

<<Min: 134.77 - 149.1 0.1% Min: Pyrrhotite>> Typically associated with thin MAFt beds

<<Alt: 134.77 - 137.32 Moderate-Strong Calcite>>

<<Alt: 137.32 - 142.55 Weak-Moderate Calcite>>

<<Alt: 142.55 - 148.16 Moderate-Strong Calcite>>

<<Alt: 148.16 - 149.1 Trace Calcite>>

<<Struc: 142.89 - 143.32 Weak Fault>> Fault zone comprising gouge, crushed rock, and rubble.

<<Struc: 148.42 - 148.65 Weak-Moderate Fault>> Fault zone comprising gouge and crushed rock.

149.10 151.47 SED undifferentiated Sediment light grey MG

149.1 - 151.47: A light grey, bedded/banded granular unit comprising quartz and minor mica layers. Appears to be a quartzite or sandstone. the lowest 0.5m is finely interbedded with carbonaceous mudstone.

<<Min: 149.1 - 151.47 0.1% Min: Pyrite>> On fracture planes

<<Min: 149.1 - 151.47 1% Min: Pyrrhotite>> Foliation parallel blebs

<<Vein: 149.97 - 149.98 100% Quartz 68 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

151.47 155.98 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black FG

151.47 - 155.98: Dark grey to black fine grained, well sorted carbonaceous mudstone/siltstone

<<Min: 151.47 - 159.5 0.5% Min: Pyrite>> In thin stringers

<<Vein: 153.82 - 155.09 100% Quartz 26 deg. >>

155.98 157.98 RHYva Coarse grained to ash tuff light grey FMG

155.98 - 157.98: Light grey-green, well sorted fine grained felsic volcaniclastic sediment.

<<Vein: 157.94 - 157.98 100% Quartz-Carbonate>>

157.98 159.50 MDS Carbonaceous Mudstone & Tuffaceous Mudstone black VFG

157.98 - 159.5: Black, carbonaceous fine grained sediment with bands of calcite.

<<Alt: 157.98 - 159.5 Weak-Moderate Calcite>>

159.50 160.66 RHYva Coarse grained to ash tuff light grey FMG

159.5 - 160.66: light grey-green, gritty lapilli (or possibly deformed crystal?) bearing felsic volcanic derived sediment

<<Min: 159.5 - 170.8 0.5% Min: Pyrrhotite>> Foiation parallel blebs.

<<Alt: 159.5 - 170.8 Weak Calcite>>

<<Struc: 159.86 - 159.86 Weak-Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

160.66 164.66 RHYvl Lapilli tuff light grey FCG

160.66 - 164.66: Light grey green lapilli (15-20%) tuff. Lapilli are 5-10 mm, subrounded, white clasts.

<<Struc: 163.8 - 163.8 Weak-Moderate dominant foliation>> Foliation defined by alignment of micaceous minerals.

164.66 167.63 RHYva Coarse grained to ash tuff light grey FCG

164.66 - 167.63: Light grey green lapilli bearing (5-10%) tuff. Lapilli are 5-10 mm, subrounded, white clasts.

<<Vein: 165.81 - 166.16 100% Quartz 20 deg. >>

<<Struc: 166.1 - 166.7 Weak-Moderate Fault>> Fault zone made up of crushed quartz

167.63 170.80 RHYva Coarse grained to ash tuff light grey FMG

167.63 - 170.8: light grey green fine grained tuffaceous volcaniclastic rock with very rare lapilli (1-2%), and a mm sclae bandingbetween light grey and light grey green domains.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

170.80 171.38 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

170.8 - 171.38: Light grey brown, fine grained, well banded(bedded?), carbonate porphyroblast bearing pelitic sedimentary rock.

<<Alt: 170.8 - 171.38 Moderate Calcite>>

<<Alt: 170.8 - 171.38 Weak-Moderate Ankerite>>

<<Struc: 170.9 - 170.9 Bedding>> Internal bedding in pelitic unit

171.38 174.87 RHYva Coarse grained to ash tuff grey-green FMG

171.38 - 174.87: light grey-green lapilli bearing (5%) felsic tuffaceous rock.

<<Min: 171.38 - 174.84 0.5% Min: Pyrrhotite>> Foiation parallel blebs.

<<Alt: 171.38 - 177.05 Weak Calcite>>

<<Struc: 174.37 - 174.37 Weak dominant foliation>> Foliation defined by alignment of micaceous minerals.

174.87 176.32 RHYva Coarse grained to ash tuff grey-green FG

174.87 - 176.32: light grey green, well sorted fine grained ashy tuff with rare lapilli sized clasts.

176.32 180.01 RHYva Coarse grained to ash tuff grey-green FMG

176.32 - 180.01: light grey green lapilli bearing (10-15%, 5-20mm) ash tuff. Lapilli are monomict.

<<Min: 176.32 - 180.01 0.5% Min: Pyrrhotite>> Foiation parallel blebs.

<<Alt: 177.05 - 183 Weak-Moderate Calcite>>

<<Struc: 179.55 - 179.55 Weak dominant foliation>> Foliation defined by alignment of micaceous minerals.

180.01 180.54 PEL Equigranular biotite + calcite +/- quartz rock medium grey FG

180.01 - 180.54: medium green-grey, well banded, carbone porphyroblast bearing epiclastic sediment. Contains fine black lithic clasts(?) or possibly porphyrolasts

<<Alt: 180.01 - 180.54 Trace Ankerite>>

180.54 190.15 RHYva Coarse grained to ash tuff grey-green FG

180.54 - 190.15: Light grey-green lapilli bearing ash tuff with thin interbds of pelitic material. lapilli make up ~10% of the rock and are smaller than typical (2-6mm)

<<Min: 180.54 - 212.94 0.1% Min: Pyrrhotite>> Foiation parallel blebs.

<<Alt: 183 - 183.3 Moderate-Strong Calcite>>

<<Alt: 183.3 - 212.94 Weak-Moderate Calcite>>

<<Struc: 182.89 - 182.89 Weak dominant foliation>> Foliation defined by alignment of micaceous minerals.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

190.15 212.94 RHYva Coarse grained to ash tuff grey-green FCG

190.15 - 212.94: Light grey-green lapilli bearing tuff (35-40%, 5-15mm)

<<Struc: 190.81 - 190.81 Weak dominant foliation>> Foliation defined by alignment of micaceous minerals.

212.94 222.53 RHYc Rhyolite coherant volcanics light grey FG

212.94 - 222.53: Light grey, massive, aphanitic and aphyric, siliceous rock, interpreted as a coherent rhyolite. Upper contact has a zone of clasts of the same material 1 m wide, possibly a flow top breccia?

<<Min: 212.94 - 222.53 0.01% Min: Pyrite>> Also in hairline veins

<<Alt: 212.94 - 222.53 Weak-Moderate Silicification>>

<<Alt: 212.94 - 222.53 Trace Calcite>>

<<Vein: 218.52 - 218.92 50% Calcium carbonate/Carbonate 20 deg. >> Carbonate breccia cutting host RHYc

222.53 223.24 RHYva Coarse grained to ash tuff medium grey FCG

222.53 - 223.24: Medium grey, ash supported, lapilli bearing ((3-10mm, 5%) ash tuff.

<<Min: 222.53 - 223.24 0.1% Min: Pyrite>> Foiation parallel blebs.

<<Alt: 222.53 - 223.24 Weak Calcite>>

223.24 228.29 RHYc Rhyolite coherant volcanics light grey FG

223.24 - 228.29: Light grey, massive, aphanitic and aphyric, siliceous rock, interpreted as a coherent rhyolite. This unit is centered on a massive quartz vein, could be silicification of a volcaniclastic unit

<<Min: 223.24 - 228.29 0.1% Min: Pyrrhotite>> Small disseminations.

<<Alt: 223.24 - 228.29 Weak-Moderate Silicification>>

<<Alt: 223.24 - 228.29 Trace Calcite>>

<<Vein: 225.37 - 226 100% Quartz-Sericite/White mica 42 deg. >>

228.29 231.00 RHYvl Lapilli tuff grey-green FCG

228.29 - 231: Medium grey-green clastic unit incorporating lapilli and angular clasts of coherent rhyolite.

<<Min: 228.29 - 237.2 0.1% Min: Pyrite>> Hairline veins filled with pyrite.

<<Alt: 228.29 - 231 Weak Calcite>>

<<Struc: 229.57 - 229.57 Weak Crenulation cleavage>> plane defined by crenulations

<<Struc: 230.14 - 230.21 Weak-Moderate Fault>> Thin fault filled with gouge an crushed rock

<<Struc: 230.77 - 230.77 Weak dominant foliation>> Foliation defined by alignment of micaceous minerals.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

231.00 232.32 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

231 - 232.32: Banded brown and medium to light grey, gradational internal contacts between more pelitic and more ashy internal domains.

<<Alt: 231 - 232.32 Moderate-Strong Calcite>>

<<Alt: 231 - 232.32 Moderate Biotite>>

232.32 232.86 RHYvl Lapilli tuff grey-green FCG

232.32 - 232.86: Medium grey-green ash supported lapilli (3-25mm, 25%) tuff with brown, euhedral biotite porphyroblasts, suggesting pelitic input.

<<Alt: 232.32 - 232.86 Weak Calcite>>

232.86 233.82 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

232.86 - 233.82: Banded brown and medium to light grey, gradational internal contacts between more pelitic and more ashy internal domains.

<<Alt: 232.86 - 233.82 Moderate-Strong Calcite>>

<<Alt: 232.86 - 233.82 Moderate Biotite>>

<<Vein: 233.04 - 233.82 15% Quartz-Carbonate 65 deg. >>

233.82 237.20 RHYvl Lapilli tuff medium grey FCG

233.82 - 237.2: Medium grey, ash supported, lapilli (3-10mm, 15%) tuff with biotite porphyroblasts, suggesting pelitic input

<<Alt: 233.82 - 237.2 Weak-Moderate Calcite>>

<<Alt: 233.82 - 237.2 Weak Biotite>>

237.20 244.20 RHYvx Quartz and/or feldspar crystal tuff light grey FCG

237.2 - 244.2: Light grey, quartz eye and feldspar crystal bearing tuff, with possible lithic fragments, especially in the upper half of the unit. lower contact is gradational.

<<Min: 237.2 - 244.2 0.5% Min: Pyrite>> Foliation parallel disseminations

<<Min: 240.69 - 250.15 0.5% Min: Pyrrhotite>> Bands and patches of, typically foliation parallel) pyrrhotite

<<Alt: 237.2 - 270.09 Weak Calcite>>

<<Vein: 237.2 - 238.04 20% Quartz-Carbonate 68 deg. >>

<<Struc: 243.36 - 243.36 Weak dominant foliation>> Foliation plane defined by alignment of sulphide blebs

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

244.20 247.74 RHYva Coarse grained to ash tuff medium grey FMG

244.2 - 247.74: Medium grey quartz eye bearing (0.5-1.5mm, 1-3%) and flatened lapilliup to 15mm long, 2-3mm wide.

<<Min: 244.2 - 250.15 0.1% Min: Pyrite>> Fine disseminations of pyrite, often with pyrrhotite

247.74 250.85 RHYvl Lapilli tuff medium grey FCG

247.74 - 250.85: Medium grey, quartz crystal (1-2mm, 1-2%) lapilli tuff. Lapilli are 15%, 3-7mm, carbonate bearing.

250.85 253.29 RHYva Coarse grained to ash tuff medium grey FG

250.85 - 253.29: Medium grey, fine grained ash tuff with porhyroblasts of black euhedral biotite porphyroblasts representing pelitic input.

<<Alt: 251.74 - 253.29 Weak Biotite>>

<<Vein: 252.3 - 252.51 100% Quartz 80 deg. >>

<<Struc: 251.41 - 251.41 Weak dominant foliation>> Foliation plane defined by the alignment of lapilli.

253.29 253.97 RHYvl Lapilli tuff light grey CG

253.29 - 253.97: light grey, clast supported (lapilli stone) lapilli tuff. Clasts are tightly packed with minimal matrix. Lapilli are 10->64mm and make up 50-60% of the rock.

<<Min: 253.29 - 263.47 0.1% Min: Pyrite>> Disseminations and in bands with pyrrhotite

253.97 256.64 RHYva Coarse grained to ash tuff medium grey FG

253.97 - 256.64: Medium grey, fine grained ash tuff with porhyroblasts of black euhedral biotite porphyroblasts representing pelitic input.

<<Min: 255.75 - 258.66 1% Min: Pyrrhotite>> Patches of disseminated pyrrhotite

<<Alt: 253.97 - 256.01 Weak-Moderate Biotite>>

<<Vein: 256.01 - 256.64 95% Quartz 60 deg. >>

256.64 258.66 RHYvx Quartz and/or feldspar crystal tuff light grey FCG

256.64 - 258.66: Light grey quartz and feldspar bearing crystal tuff. Matrix supported with 5-10% crystals.

<<Alt: 256.64 - 259.6 Moderate Albite>> Min veins cut altered rock, suggesting OR

<<Alt: 256.64 - 259.76 Weak-Moderate Silicification>> Min veins cut altered rock, suggesting OR

258.66 263.47 RHYva Coarse grained to ash tuff light grey FG

258.66 - 263.47: Light-medium grey fine grained ash tuff. Some sections have been altered to appear igneous however, there is a gradation of alteration from less altered, identifiable ash tuff to what appears to be a coherent rhyolite. Some sections also display pseudoclastic texturesdue to partial alteration. Bands of euhedral brown biotite suggest pelitic input.

<<Min: 258.66 - 261.52 0.1% Min: Pyrrhotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 261.52 - 263.47 1% Min: Pyrrhotite>> Aggregates in band form.

<<Alt: 260.82 - 260.86 Moderate Biotite>>

<<Alt: 261.53 - 265.28 Weak-Moderate Muscovite>> Associated with patches/bands of pyrrhotite and pyrite

263.47 265.28 RHYvl Lapilli tuff medium grey FCG

263.47 - 265.28: Massive, moderately sorted lapilli (3-10mm, white, siliceous) tuff. Rock has been silicified along with the lapilli.

<<Min: 263.47 - 270.09 0.5% Min: Pyrrhotite>>

265.28 270.09 RHYva Coarse grained to ash tuff medium grey FG

265.28 - 270.09: Medium grey, generally fine grained, ash tuff with 3-5% thin (1-2mm), flattened lapilli, giving the rock a streaked look. Throughout the unit there are euhedral black biotite porphyroblasts, non-aligned with the dominant foliation.

<<Alt: 265.28 - 270.09 Trace Biotite>>

<<Alt: 267.5 - 270.09 Trace Tourmaline>> Associated with tourmaline earing veins

<<Vein: 267.5 - 270.09 1% Tourmaline 45 deg. >>

<<Struc: 270.03 - 270.09 Moderate Fault>> Thin fault, almost entirely filled with gouge

270.09 273.56 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

270.09 - 273.56: Grey-brown, banded pelite, with more grey ashy layers and ankerite porphyroblasts.

<<Min: 270.09 - 273.56 0.1% Min: Pyrrhotite>> one patch of disseminated pyrrhotite

<<Alt: 270.09 - 273.56 Moderate-Strong Calcite>>

<<Alt: 270.09 - 273.56 Moderate Biotite>>

<<Alt: 270.09 - 273.56 Weak-Moderate Ankerite>>

273.56 276.00 RHYva Coarse grained to ash tuff light grey FMG

273.56 - 276: Light grey lapilli bearing (3-8mm, white, calcite bearing) ash tuff with rare biotite porpyroblasts.

<<Min: 273.56 - 279.86 0.01% Min: Pyrite>>

<<Min: 273.56 - 279.86 0.1% Min: Pyrrhotite>>

<<Alt: 273.56 - 279.86 Weak-Moderate Calcite>>

<<Struc: 273.56 - 273.56 Trace Bedding>> Contact between PEL and RHYva

276.00 278.06 RHYva Coarse grained to ash tuff grey-brown FMG

276 - 278.06: Light grey brown lapilli bearing pelitic ash tuff. Lapilli are small (3-8 mm) and make up 2-5% of the rock. Bands or brown biotite suggest pelitic input.

<<Alt: 276 - 276.72 Weak Biotite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

278.06 279.86 RHYva Coarse grained to ash tuff light grey FG

278.06 - 279.86: This RHYva initially looks like a coherent rhyolite, however without any defined contact, it grades into a massive, granular RHYva, suggesting that the coherent looking portions have been altered .

<<Alt: 278.06 - 279.86 Weak-Moderate Silicification>>

279.86 280.04 PEL Equigranular biotite + calcite +/- quartz rock brown FG

279.86 - 280.04: Grey-brown mottled biotite bearing pelitic sedimentary rock.

<<Min: 280.03 - 287.04 0.1% Min: Pyrite>>

<<Min: 280.03 - 287.04 0.01% Min: Pyrrhotite>>

<<Alt: 279.86 - 280.04 Moderate-Strong Calcite>>

<<Alt: 279.86 - 280.04 Moderate Biotite>>

280.04 287.03 RHYv Rhyolite volcaniclastic medium grey FG

280.04 - 287.03: Light grey-pink patchy, massive unit. The unit grades within itself between more and less altered volcaniclastic rock.The more altered portions have been altered by albite and/or silica and have pseudoclastic textures, with the clasts appearing to be coherent rholite. No sharp contacts exist between these portions of the rock and the zones that look to be massive volcaniclastic, suggesting the alteration interpretation, however, these rocks could easily be logged a RHY as well.

<<Alt: 280.06 - 287.03 Weak Calcite>>

<<Alt: 281.52 - 283.76 Weak-Moderate Albite>>

<<Alt: 283.76 - 287.03 Moderate Albite>>

287.03 287.95 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

287.03 - 287.95: Grey brown mottled and banded ashy pelitic sediment.

<<Alt: 287.03 - 287.95 Moderate-Strong Calcite>>

<<Alt: 287.03 - 287.95 Weak-Moderate Biotite>>

287.95 295.85 RHYv Rhyolite volcaniclastic light grey FG

287.95 - 295.85: Light grey, siliceous, massive, unit. Alteration (silica, albite) has created a pseudoclastic texture resembling a coherent rhyolite breccia however, this texture fades out internally, suggesting the alteration explanation for these features.

<<Min: 287.95 - 295.85 0.1% Min: Pyrite>>

<<Min: 287.95 - 295.85 0.1% Min: Pyrrhotite>>

<<Alt: 287.95 - 288.91 Moderate Albite>>

<<Alt: 287.95 - 291.05 Weak-Moderate Silicification>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 287.95 - 295.85 Weak Calcite>>

<<Alt: 288.91 - 290.1 Weak Albite>>

<<Alt: 290.1 - 292.3 Moderate Albite>>

<<Alt: 291.05 - 294.7 Moderate Silicification>>

<<Alt: 292.3 - 294.09 Weak Albite>>

<<Alt: 294.7 - 295.85 Weak Silicification>>

295.85 296.60 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

295.85 - 296.6: Grey brown banded ashy pelitic sediment.

<<Alt: 295.85 - 296.6 Moderate-Strong Calcite>>

<<Alt: 295.85 - 296.6 Moderate-Strong Biotite>>

<<Alt: 295.85 - 296.6 Weak Ankerite>>

<<Alt: 296.3 - 305.74 Weak Biotite>>

<<Struc: 296.55 - 296.6 Weak-Moderate Fault>> Gouge filled fault

296.60 313.87 RHYva Coarse grained to ash tuff medium grey FCG

296.6 - 313.87: Streaked, medium grey, brown, and green, lapilli bearing (3-10mm, some are bcqlpl, others are light grey carbonate bearing lapilli) ash tuff. Weak muscovite alteration in patches.

<<Alt: 296.6 - 313.87 Weak-Moderate Calcite>>

<<Alt: 305.89 - 313.87 Weak Muscovite>> does not appear to be related to any mineralization

<<Vein: 297.5 - 297.51 10% Tourmaline 5 deg. >>

<<Vein: 305.74 - 305.89 95% Quartz>>

<<Struc: 307.83 - 313.37 Weak-Moderate Fault>> Zone of thin faults, mainly filled with micaceous gouge

313.87 316.81 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

313.87 - 316.81: Mottled, grey-brown, carbonate porphyroblast bearing, strongly veined ashy pelite

<<Min: 315.91 - 316.57 1% Min: Pyrite>> Associated with tourmaline-carbonate alteration

<<Alt: 313.87 - 316.81 Moderate-Strong Calcite>>

<<Alt: 313.87 - 316.81 Weak-Moderate Biotite>>

<<Alt: 314.84 - 320.52 Moderate Biotite>>

<<Alt: 315.91 - 316.57 Moderate-Strong Ankerite>>

<<Vein: 315.2 - 316.28 35% Quartz>> Associated with a zone of strong TML/CB alteration in the host rock

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

316.81 318.84 RHYv Rhyolite volcaniclastic grey-green

316.81 - 318.84: Grey-green muscovite altered unit, most likely an interval of RHYva that has been altered.

<<Alt: 316.81 - 318.84 Weak Calcite>>

318.84 320.50 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

318.84 - 320.5: Mottled, grey-brown, carbonate porphyroblast bearing, strongly veined ashy pelite

<<Min: 320.43 - 323.82 0.5% Min: Pyrrhotite>> disseminations aligned with the dominant foliation

<<Alt: 318.84 - 320.52 Moderate-Strong Calcite>>

<<Alt: 318.84 - 320.52 Weak Ankerite>>

<<Alt: 320.48 - 323.82 Weak Muscovite>>

320.50 323.82 RHYva Coarse grained to ash tuff grey-green FG

320.5 - 323.82: Weakly muscovite altered, fine grained, apparently well sorted ashy tuff

<<Alt: 320.52 - 323.82 Weak Calcite>>

323.82 324.98 FLZ Fault Zone grey-green

323.82 - 324.98: Gougy, muscovite bearing fault zone.

<<Alt: 323.82 - 324.98 Weak Calcite>>

<<Struc: 323.82 - 324.98 Moderate-Strong Fault>> Thick fault composed of gouge and crushed rock

324.98 341.08 RHYva Coarse grained to ash tuff grey-green

324.98 - 341.08: Moderately to strongly altered interval of rhyolitic volcaniclastic rock, relict banding in less altered areas.

<<Min: 324.98 - 325.41 0.1% Min: Pyrite>> also dis

<<Min: 325.41 - 326.14 0.1% Min: Pyrrhotite>>

<<Min: 326.14 - 327.47 1% Min: Pyrite>>

<<Min: 328.83 - 330 0.1% Min: Pyrite>>

<<Min: 328.83 - 337.2 1% Min: Pyrrhotite>> foliation parallel blebs

<<Min: 337.2 - 337.9 2% Min: Pyrite>> associated with carbonate patches

<<Min: 337.2 - 337.9 2% Min: Pyrrhotite>> associated with carbonate patches

<<Min: 337.9 - 340.44 0.5% Min: Pyrrhotite>>

<<Min: 340.44 - 341.08 1% Min: Pyrite>>

<<Min: 340.44 - 341.08 5% Min: Pyrrhotite>>

<<Alt: 324.98 - 325.41 Moderate Muscovite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 324.98 - 333.53 Weak Calcite>>

<<Alt: 325.41 - 326.14 Weak Muscovite>>

<<Alt: 326.41 - 327.47 Moderate Muscovite>>

<<Alt: 327.47 - 328.83 Weak Muscovite>>

<<Alt: 328.83 - 333.53 Weak-Moderate Muscovite>>

<<Alt: 333.53 - 334 Weak Chlorite>> Relict chlorite in muscovite altered rock

<<Alt: 333.53 - 334 Weak Biotite>> relict biotite with chlorite

<<Alt: 333.53 - 334 Moderate Calcite>>

<<Alt: 333.53 - 334.98 Weak Muscovite>>

<<Alt: 334 - 337.2 Weak Calcite>>

<<Alt: 334.98 - 337.2 Weak-Moderate Muscovite>>

<<Alt: 337.2 - 337.9 Weak-Moderate Biotite>> OP???

<<Alt: 337.2 - 337.9 Moderate Calcite>>

<<Alt: 337.2 - 337.9 Trace Chlorite>> on slip planes, replacing something disseminated in the rock

<<Alt: 337.9 - 341.08 Weak-Moderate Muscovite>>

<<Alt: 337.9 - 341.08 Weak Calcite>>

<<Struc: 335.68 - 335.71 Weak-Moderate Fault>> Gouge filled minor fault

341.08 342.48 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

341.08 - 342.48: Mottled mdium grey-brown, with blebs of white, carbonate material, possibly boudinaged veins?

<<Min: 341.08 - 342.48 0.5% Min: Pyrrhotite>>

<<Alt: 341.08 - 342.48 Moderate Calcite>>

<<Alt: 341.08 - 342.48 Moderate Biotite>>

<<Struc: 341.33 - 342.92 Moderate Fault>> Several 5-15 cm thick gougy faults

342.48 346.08 RHYva Coarse grained to ash tuff grey-green FG

342.48 - 346.08: Mottled light grey green, moderately to strongly muscovite altered rhyolitic volcaniclastic rock with small patches of relict banded rock.

<<Min: 342.48 - 358.1 1% Min: Pyrrhotite>> commonly foliation parallel diseminations, rare patches up to 5% PO

<<Min: 343 - 343.23 1% Min: Sphalerite>> Associated with a quartz vein

<<Alt: 342.48 - 345.54 Moderate-Strong Muscovite>>

<<Alt: 342.48 - 348.85 Weak Calcite>>

<<Alt: 345.54 - 348.85 Moderate Muscovite>>

<<Vein: 344.07 - 344.32 90% Quartz 80 deg. >>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

346.08 348.85 MDSt Rhyolite tuff dominant mudstone grey-green FG

346.08 - 348.85: Light green grey and black banded rock. Black bands are composed of carbonaceous material, less than 15% of the rock. Light grey-green domains are muscovite altered rhyolitic rock, unclear if it is coherent or clastic.

<<Struc: 347.54 - 347.54 Moderate dominant foliation>> Aligned muscovite

348.85 356.51 RHYva Coarse grained to ash tuff grey-green FG

348.85 - 356.51: Light grey-green, fine grained, well foliated, muscovite altered rhyolitic volcaniclastic rock.

<<Min: 356.5 - 358.1 0.1% Min: Pyrite>>

<<Alt: 348.85 - 354.85 Moderate-Strong Muscovite>>

<<Alt: 348.85 - 357.45 Weak Calcite>>

<<Alt: 354.85 - 356.74 Moderate Muscovite>>

356.51 359.45 MDSt Rhyolite tuff dominant mudstone dark grey FG

356.51 - 359.45: Dark grey and light green interbedded carbonaceous mudstone and rhyolitic tuff. Rhyolitic domains have been altered to light green muscovite chaotically folded.

<<Min: 358.1 - 359.45 1% Min: Pyrite>>

<<Alt: 356.74 - 357.48 Weak Muscovite>> pervasive within the rhyolitic domains of the MDSt

<<Alt: 357.48 - 358.1 Moderate Muscovite>> pervasive within the rhyolitic domains of the MDSt

<<Alt: 357.48 - 380.96 Trace Calcite>>

<<Alt: 358.29 - 359.45 Weak Muscovite>> pervasive within the rhyolitic domains of the MDSt

<<Vein: 358.1 - 358.29 100% Quartz 60 deg. >>

359.45 360.98 RHYva Coarse grained to ash tuff light grey FG

359.45 - 360.98: Light grey, foliated rock with abundant disseminated pyrite.

<<Min: 359.45 - 360.42 5% Min: Pyrite>>

<<Min: 360.42 - 402 0.5% Min: Pyrite>> MU

<<Alt: 359.45 - 365.25 Weak-Moderate Muscovite>>

360.98 365.13 MDSt Rhyolite tuff dominant mudstone grey-green FG

360.98 - 365.13: Light green-grey with thin black bands, predominantly muscovite altered rhyolitic tuff with a minor mudstone component.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

365.13 396.32 RHYva Coarse grained to ash tuff grey-green FG

365.13 - 396.32: Light grey greenfine grained, well foliated, muscovite altered rhyolitic tuff.

<<Alt: 365.25 - 372.61 Moderate Muscovite>>

<<Alt: 372.61 - 377.51 Weak-Moderate Muscovite>>

<<Alt: 377.51 - 380.96 Moderate Muscovite>>

<<Alt: 380.96 - 388.25 Moderate-Strong Muscovite>>

<<Alt: 388.25 - 402 Moderate Muscovite>>

<<Vein: 381.29 - 381.36 90% Quartz 75 deg. >>

<<Vein: 386.01 - 386.71 95% Quartz 75 deg. >>

<<Struc: 365.65 - 365.66 Weak-Moderate Fault>> Gouge filled thin, foliation parallel fault

<<Struc: 371.59 - 371.61 Weak-Moderate Fault>> Thin gouge rich fault.

<<Struc: 371.92 - 371.92 Moderate dominant foliation>> Aligned mscovite in an alteration band

<<Struc: 383.84 - 385.38 Moderate Fault>> Fault zone consisting of multiple gougy faults.

396.32 399.14 RHYvl Lapilli tuff grey-green FCG

396.32 - 399.14: Light grey green, siliceous, muscovite altered lapilli (5-20mm 15-20%) tuff. Lapilli are diffuse, white, and siliceous.

<<Alt: 396.32 - 399.14 Weak Calcite>> within lapilli

<<Alt: 397.16 - 402 Weak-Moderate Silicification>>

<<Struc: 398.62 - 398.62 Weak dominant foliation>> Foliation defined by alignment of lapilli

399.14 409.90 RHYv Rhyolite volcaniclastic grey-green FG

399.14 - 409.9: Light grey green, siliceous, muscovite altered, weakly banded, granular textured, tuff. Patchy silica altereation cut by muscovite alteratio ngives the diffuse and mottled look.

<<Min: 400 - 401 0.5% Min: Sphalerite>>

<<Min: 402 - 409.9 1% Min: Pyrite>> MU

<<Alt: 401 - 419 Moderate-Strong Muscovite>>

<<Alt: 402 - 409.1 Weak-Moderate Silicification>>

<<Vein: 400.74 - 400.75 60% Massive Sulphide/Sulphides undifferentiated 80 deg. >> SUL - 75% Spalerite, 25% pyrite

<<Struc: 401.32 - 402 Weak Fault>> Pooly developed fault

409.90 410.47 FLZ Fault Zone light grey

409.9 - 410.47: Gougy, well developed fault zone.

<<Struc: 409.9 - 410.47 Moderate Fault>> Gougerich fault

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
410.47	**416.77**	**PEL Equigranular biotite + calcite +/- quartz rock green-brown FG**									
410.47 - 416.77: Sheared, strongly chlorite-muscovite altered, brown biotite porphyroblast bearing pelitic sediment. <<Alt: 410.47 - 416.08 Weak Biotite>> <<Alt: 410.47 - 416.77 Weak-Moderate Chlorite>> <<Alt: 416.08 - 416.77 Moderate Biotite>> <<Struc: 410.47 - 416.08 Moderate Shear>>											
416.77	**428.74**	**RHYv Rhyolite volcaniclastic grey-green FG**	425.77	427.27	1.50	D00005693	-0.005	1.9	0.05	0.01	0.43
416.77 - 428.74: Strongly muscovite altered, difficult to discern primary texture beyond banding. lower contact with PEL is gradational. <<Min: 416.77 - 421.84 0.5% Min: Pyrite>> <<Min: 419 - 421.84 1% Min: Pyrrhotite>> <<Min: 420.01 - 421.84 0.5% Min: Sphalerite>> <<Min: 420.01 - 421.84 1% Min: Chalcopyrite>> <<Min: 421.84 - 425.77 0.1% Min: Sphalerite>> <<Min: 425.77 - 428.74 1% Min: Pyrite>> <<Min: 425.77 - 428.74 0.1% Min: Chalcopyrite>> With PO <<Min: 425.77 - 431 2% Min: Pyrrhotite>> <<Alt: 416.77 - 428.77 Weak Biotite>> <<Alt: 419 - 421.84 Moderate Muscovite>> <<Alt: 425.77 - 428.74 Moderate Muscovite>> <<Vein: 417.14 - 419.49 15% Quartz>> <<Vein: 420.14 - 421.22 30% Quartz-Carbonate>> Tourmaline may actually be actinolite. Sulphide is chalcopyrite <<Vein: 421.84 - 425.77 100% Quartz 45 deg. >> Tourmaline may be actinolite. Sulphide is sphalerite. <<Vein: 426.01 - 428.67 20% Carbonate-Biotite>>	427.27	428.74	1.47	D00005694	-0.005	0.6	0.02	-0.01	0.02
428.74	**433.41**	**PEL Equigranular biotite + calcite +/- quartz rock green-brown FG**	432.00	433.50	1.50	D00005695	-0.005	-0.3	0.01	-0.01	0.02
428.74 - 433.41: Chlorite-muscovite-bitotite altered, fine grained, well sorted, pelite. <<Alt: 428.74 - 435 Weak-Moderate Muscovite>> Muscovite in fault zones too <<Alt: 428.74 - 435 Moderate Calcite>> Carries into fault <<Alt: 428.77 - 433.41 Moderate Biotite>> <<Alt: 431.2 - 435 Moderate Chlorite>>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
433.41	**435.00**	**FLZ Fault Zone grey-green**	433.50	435.00	1.50	D00005696	-0.005	-0.3	-0.01	-0.01	0.03
433.41 - 435: Muscovite-chlorite rich fault zone with blocks of the overlying pelitic rock within it.											
<<Struc: 433.41 - 437.47 Moderate-Strong Fault>> Gouge/low friction mineral rich fault zone containing two blocks of massive sulphide.											
435.00	**435.36**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite brown FMG**	435.00	435.50	0.50	D00005697	0.05	36.9	0.34	0.59	7.18
435 - 435.36: Massive sulphide block, a large zone of pyrrhotite is present, accounting for 35% of the unit, Pyrite is the dominant sulphide outside of this blob, making up another 20% of the unit. Sphalerite is present with the pyrite, accounting for 15%, and chalcopyrite makes up another 5% of the rock. The primary gangue mineral is chlorite, which makes up 20% of the unit, with calcite and quartz making up 5% of the rock. The edges of the sulphide have slickenslides, suggesting that this is a fault block.											
<<Min: 435 - 435.36 15% Min: Sphalerite>>											
<<Min: 435 - 435.36 20% Min: Pyrite>>											
<<Min: 435 - 435.36 35% Min: Pyrrhotite>>											
<<Min: 435 - 435.36 5% Min: Chalcopyrite>>											
<<Alt: 435 - 435.36 Moderate-Strong Chlorite>> Gangue in OB											
435.36	**436.36**	**FLZ Fault Zone grey-green**	435.50	436.36	0.86	D00005698	-0.005	5.4	0.07	0.06	0.77
435.36 - 436.36: Gougy fault zone, very little solid rock.											
<<Alt: 435.36 - 436.36 Weak-Moderate Chlorite>> In fault											
<<Alt: 435.36 - 436.66 Moderate-Strong Muscovite>> Muscovite in fault zone											
436.36	**436.71**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite brown FMG**	436.36	436.86	0.50	D00005699	0.039	42.3	0.71	0.56	9.46
436.36 - 436.71: Block of massive sulphide. Dominant minerals are pyrite (30%) present as clasts and as part of the net-texture minerals in the body with pyrrhotite (35%) present as blebs or clasts(?). The primary gangue mineral is chlorite (30%)interstitial to the clasts of sulphide as well as lesser chalcopyrite (5%) present in with the pyrite. The edges of the sulphide have slickenslides, suggesting that it is a fault block.											
<<Min: 436.36 - 436.71 30% Min: Pyrite>> Also present as clasts in the sulphide body											
<<Min: 436.36 - 436.71 35% Min: Pyrrhotite>> Clasts???											
<<Min: 436.36 - 436.71 5% Min: Chalcopyrite>>											
<<Alt: 436.36 - 436.71 Moderate Chlorite>> Gangue in OC											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
436.71	**437.47**	**FLZ Fault Zone grey-green FMG**	436.86	437.47	0.61	D00005701	0.005	13.9	0.12	0.19	2.44

436.71 - 437.47: Muscovite-chlorite rich fault zone with blocks of quartz, likely from the quarz vein below entrained within it.

<<Alt: 436.71 - 437.47 Moderate-Strong Muscovite>> Muscovite in fault zone

<<Alt: 436.71 - 437.47 Moderate Chlorite>> In fault zone

<<Alt: 436.71 - 437.47 Weak Calcite>>

437.47	**465.74**	**RHYv Rhyolite volcaniclastic green-brown FG**	437.47	438.97	1.50	D00005702	-0.005	0.8	-0.01	-0.01	0.01

437.47 - 465.74: Banded, mottled, altered rock. Domains of muscovite surround isolated patches of chlorite, biotite and quartz (BCQLPL?) Alternately, could be a sheared Pelitic sediment, where the shear network has been altered to muscovite.

<<Min: 437.47 - 438.62 1% Min: Pyrite>>

<<Min: 438.62 - 460.38 0.5% Min: Pyrrhotite>> foliation parallel blebs

<<Min: 459.39 - 462.04 0.5% Min: Pyrite>>

<<Min: 460.38 - 466.85 1% Min: Pyrrhotite>> foliation parallel blebs

<<Min: 464.11 - 465.75 0.5% Min: Pyrite>>

<<Alt: 437.47 - 453.13 Trace Calcite>>

<<Alt: 437.47 - 465.71 Moderate Muscovite>>

<<Alt: 437.47 - 475.5 Weak-Moderate Chlorite>> BCQlpl?

<<Alt: 437.47 - 475.5 Weak-Moderate Biotite>> BCQlpl?

<<Alt: 453.13 - 457.73 Weak-Moderate Calcite>>

<<Alt: 457.73 - 465.74 Weak Calcite>>

<<Vein: 437.47 - 438.62 100% Quartz>> Tourmaline may be actinolite

<<Vein: 447.58 - 447.86 100% Quartz 45 deg. >>

<<Vein: 449.12 - 451.44 10% Quartz>>

<<Vein: 452.6 - 452.83 15% Carbonate-Chlorite>>

<<Vein: 457.73 - 460.02 35% Quartz>>

<<Vein: 460.38 - 460.53 90% Quartz 50 deg. >>

<<Vein: 460.46 - 460.49 80% Tourmaline 25 deg. >> Tourmaline fibres parallel to extension direction

<<Struc: 440.6 - 446 Weak-Moderate Fault>> A sseries of pooly developed blocky faults with gouge.

<<Struc: 454.94 - 454.94 Moderate dominant foliation>> Foliation defined by biotite and muscovite grain alignment

<<Struc: 463.07 - 463.43 Weak-Moderate Fault>> Blocky, rubbly fault.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

465.74 466.85 PEL Equigranular biotite + calcite +/- quartz rock grey-brown FG

465.74 - 466.85: Finely banded, biotite and chlorite bearing pelitic sediment. 1-2mm disseminated black clots are present, possibly tourmaline porphyroblasts?

<<Alt: 465.74 - 466.85 Weak Muscovite>>

<<Alt: 465.74 - 466.85 Moderate Calcite>>

<<Struc: 466.32 - 466.32 Bedding>> Bedding within pelitic unit

466.85 475.50 RHYv Rhyolite volcaniclastic green-brown FG

466.85 - 475.5: Banded, mottled, altered rock. Domains of muscovite surround isolated patches of chlorite, biotite and quartz (BCQLPL?) Alternately, could be a sheared Pelitic sediment, where the shear network has been altered to muscovite.

<<Min: 466.85 - 475.5 0.5% Min: Pyrite>>

<<Min: 466.85 - 475.5 0.5% Min: Pyrrhotite>> foliation parallel blebs

<<Alt: 466.85 - 475.5 Moderate Muscovite>>

<<Alt: 466.85 - 475.5 Weak Calcite>>

<<Struc: 472.27 - 472.37 Weak-Moderate Fault>> Fault filled with crushed rock and gouge.

End of Hole @ 475.5

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-419

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	PLND-LiDAR	Logged By:	Alicia Vainio
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Oscar Nielsen	Date Logging Start:	9/18/2016
UTM Easting	415242	Core Size:	HQ3	Azimuth:	7.8	Date Logging Complete:	9/29/2016
UTM Northing:	6815246	Casing Pulled?:	Yes	Dip:	-86.8	Drill Company:	New Age
UTM Elev. (m):	1440	Casing Depth (m):	8	Length (m):	416.22	Drill Rig:	Zinex A5
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	9/18/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	9/28/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
						Parent Hole:	

Comments:

K16-419 was designed as a step-out hole to test the down-dip extents of Krakatoa Zone mineralization. Two massive sulphide lenses were encountered; the upper lens occured between 296.73-299.40 m, and the main lens was intercepted within the expected zone, from 333.20-346.55 m. The Wind Lake Formation occurs to a depth of 44.85 m followed by the KZK Formation to EOH. Here the KZK Formation consists of alternating felsic volcanic ash-lapilli tuffs and coherent volcanics, intercalated with minor pelitic-beds and mudstone. Moderate-strong, muscovite-silica alteration began around 198.20 m, and increases in intensity when proximal to both the upper and main lens mineralisation. The upper lens (296.73 -299.40 m) consisted of OB-type mineralization with disseminated sulphides (OI) immediately before this from 296.35 m - 296.73 m. The main lens consisted of mixed OB and OA-type mineralization with a significant pyrrhotite-component within the final 50cm (OF). Moderate muscovite-silica-biotite alteration with disseminated pyrite was pervasive throughout the felsic footwall. Previous drillholes in the Krakatoa Zone show a similar alteration assemblage at this depth but no further mineralization has been intercepted. A DHEM survey was completed by Aurora Geosciences on September 28th, 2016.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-86.8	6.4	1.4	7.8	TN14	Oscar Nielsen	9/19/2016		☑	
0.01	-86.81661	4.6	1.4	6	Gyro	Oscar Nielsen	9/28/2016		☑	100
5	-86.41067	5.65021	1.4	7.05021	Gyro	Oscar Nielsen	9/28/2016		☑	100
10	-86.43163	6.30135	1.4	7.70135	Gyro	Oscar Nielsen	9/28/2016		☑	99.9179119227992
15	-86.58694	4.40836	1.4	5.80836	Gyro	Oscar Nielsen	9/28/2016		☑	100
20	-86.9463	358.96608	1.4	0.3661	Gyro	Oscar Nielsen	9/28/2016		☑	100
25	-87.43714	357.29961	1.4	358.69961	Gyro	Oscar Nielsen	9/28/2016		☑	100
30	-87.62423	357.87824	1.4	359.27824	Gyro	Oscar Nielsen	9/28/2016		☑	99.9421404405406
35	-87.51987	357.99125	1.4	359.39125	Gyro	Oscar Nielsen	9/28/2016		☑	100
39	-88	348.2	22.1	10.3	ReflexEZS	New Age	9/20/2016	5785	☐	
40	-87.39047	357.28352	1.4	358.68352	Gyro	Oscar Nielsen	9/28/2016		☑	100
45	-87.39977	356.81857	1.4	358.21857	Gyro	Oscar Nielsen	9/28/2016		☑	100
50	-87.37676	356.53843	1.4	357.93843	Gyro	Oscar Nielsen	9/28/2016		☑	100
55	-87.48269	355.37068	1.4	356.77068	Gyro	Oscar Nielsen	9/28/2016		☑	100
60	-87.61677	356.92725	1.4	358.32725	Gyro	Oscar Nielsen	9/28/2016		☑	100
65	-87.80604	353.22133	1.4	354.62133	Gyro	Oscar Nielsen	9/28/2016		☑	100
66	-87.9	337.2	22.1	359.3	ReflexEZS	New Age	9/21/2016	5724	☐	

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-419

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
70	-88.02075	354.56437	1.4	355.96437	Gyro	Oscar Nielsen	9/28/2016		☑	100
75	-87.99015	354.51007	1.4	355.91007	Gyro	Oscar Nielsen	9/28/2016		☑	100
80	-88.02095	355.13913	1.4	356.53913	Gyro	Oscar Nielsen	9/28/2016		☑	100
85	-88.00754	354.42394	1.4	355.82394	Gyro	Oscar Nielsen	9/28/2016		☑	100
90	-88.19486	355.19202	1.4	356.59202	Gyro	Oscar Nielsen	9/28/2016		☑	100
93	-87.7	326.3	22.1	348.4	ReflexEZS	New Age	9/21/2016	5762	☐	
95	-88.34811	348.92518	1.4	350.32518	Gyro	Oscar Nielsen	9/28/2016		☑	100
100	-88.64307	346.81165	1.4	348.21165	Gyro	Oscar Nielsen	9/28/2016		☑	100
105	-88.8372	348.29484	1.4	349.69484	Gyro	Oscar Nielsen	9/28/2016		☑	100
110	-89.13312	348.93589	1.4	350.33589	Gyro	Oscar Nielsen	9/28/2016		☑	100
115	-89.27736	344.86827	1.4	346.26827	Gyro	Oscar Nielsen	9/28/2016		☑	100
117	-89.6	322.1	22.1	344.2	ReflexEZS	New Age	9/22/2016	5736	☐	
120	-89.41901	345.87217	1.4	347.27217	Gyro	Oscar Nielsen	9/28/2016		☑	100
125	-89.48446	357.53113	1.4	358.93113	Gyro	Oscar Nielsen	9/28/2016		☑	100
130	-89.54456	10.15215	1.4	11.55215	Gyro	Oscar Nielsen	9/28/2016		☑	100
135	-89.59529	39.86002	1.4	41.26002	Gyro	Oscar Nielsen	9/28/2016		☑	100
140	-89.68312	70.68488	1.4	72.08488	Gyro	Oscar Nielsen	9/28/2016		☑	100
145	-89.82427	90.69657	1.4	92.09657	Gyro	Oscar Nielsen	9/28/2016		☑	100
147	-89.9	283.2	22.1	305.3	EZ-MARK	New Age	9/22/2016	57364	☐	
150	-89.71167	117.95321	1.4	119.35321	Gyro	Oscar Nielsen	9/28/2016		☑	100
155	-89.65728	124.47383	1.4	125.87383	Gyro	Oscar Nielsen	9/28/2016		☑	100
160	-89.47832	143.40555	1.4	144.80555	Gyro	Oscar Nielsen	9/28/2016		☑	100
165	-89.33182	159.82462	1.4	161.22462	Gyro	Oscar Nielsen	9/28/2016		☑	100
170	-89.2384	160.76384	1.4	162.16384	Gyro	Oscar Nielsen	9/28/2016		☑	100
174	-89.7	177.6	22.1	199.7	EZ-MARK	New Age	9/23/2016	57537	☐	
175	-89.26311	165.22421	1.4	166.62421	Gyro	Oscar Nielsen	9/28/2016		☑	100
180	-89.19555	167.51956	1.4	168.91956	Gyro	Oscar Nielsen	9/28/2016		☑	100
185	-89.12763	157.74326	1.4	159.14326	Gyro	Oscar Nielsen	9/28/2016		☑	100
190	-89.09152	155.70495	1.4	157.10495	Gyro	Oscar Nielsen	9/28/2016		☑	100
195	-89.04396	158.55415	1.4	159.95415	Gyro	Oscar Nielsen	9/28/2016		☑	100
200	-88.93465	161.49129	1.4	162.89129	Gyro	Oscar Nielsen	9/28/2016		☑	100
201	-89.1	137.5	22.1	159.6	EZ-MARK	New Age	9/23/2016	57385	☐	
205	-88.76108	159.53223	1.4	160.93223	Gyro	Oscar Nielsen	9/28/2016		☑	100
210	-88.61126	161.94307	1.4	163.34307	Gyro	Oscar Nielsen	9/28/2016		☑	100

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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-419

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
215	-88.3256	165.40792	1.4	166.80792	Gyro	Oscar Nielsen	9/28/2016		☑	100
220	-87.94352	165.77787	1.4	167.17787	Gyro	Oscar Nielsen	9/28/2016		☑	100
225	-87.6716	169.08744	1.4	170.49	Gyro	Oscar Nielsen	9/28/2016		☑	100
225.01	-88.4	162.5	22.1	184.6	EZ-MARK	New Age	9/23/2016	57386	☐	
230	-87.50256	168.79524	1.4	170.19524	Gyro	Oscar Nielsen	9/28/2016		☑	100
235	-87.41593	167.67397	1.4	169.07397	Gyro	Oscar Nielsen	9/28/2016		☑	100
240	-87.2798	169.75839	1.4	171.15839	Gyro	Oscar Nielsen	9/28/2016		☑	100
245	-87.18626	169.6385	1.4	171.0385	Gyro	Oscar Nielsen	9/28/2016		☑	100
250	-87.19758	167.56248	1.4	168.96248	Gyro	Oscar Nielsen	9/28/2016		☑	100
252	-87.4	145.1	22.1	167.2	EZ-MARK	New Age	9/24/2016	57389	☐	
255	-87.37741	167.63901	1.4	169.03901	Gyro	Oscar Nielsen	9/28/2016		☑	100
260	-87.24861	168.95718	1.4	170.35718	Gyro	Oscar Nielsen	9/28/2016		☑	100
265	-87.28407	169.53837	1.4	170.93837	Gyro	Oscar Nielsen	9/28/2016		☑	100
270	-87.02254	169.14669	1.4	170.54669	Gyro	Oscar Nielsen	9/28/2016		☑	100
275	-87.7102	171.75689	1.4	173.16	Gyro	Oscar Nielsen	9/28/2016		☑	100
275.01	-87	120.3	22.1	142.4	EZ-MARK	New Age	9/24/2016	57483	☐	
280	-86.50169	174.056	1.4	175.456	Gyro	Oscar Nielsen	9/28/2016		☑	100
285	-86.42215	172.7274	1.4	174.1274	Gyro	Oscar Nielsen	9/28/2016		☑	100
290	-86.19282	173.30068	1.4	174.70068	Gyro	Oscar Nielsen	9/28/2016		☑	100
295	-86.06794	172.646	1.4	174.046	Gyro	Oscar Nielsen	9/28/2016		☑	100
300	-85.96235	173.39405	1.4	174.79405	Gyro	Oscar Nielsen	9/28/2016		☑	100
305	-85.91342	172.77743	1.4	174.17743	Gyro	Oscar Nielsen	9/28/2016		☑	100
306	-86.3	145.8	22.1	167.9	EZ-MARK	New Age	9/25/2016	57958	☐	
310	-85.79859	172.55789	1.4	173.95789	Gyro	Oscar Nielsen	9/28/2016		☑	100
315	-85.73948	173.74966	1.4	175.14966	Gyro	Oscar Nielsen	9/28/2016		☑	100
320	-85.68761	174.06853	1.4	175.46853	Gyro	Oscar Nielsen	9/28/2016		☑	100
325	-85.73865	174.37013	1.4	175.77013	Gyro	Oscar Nielsen	9/28/2016		☑	100
330	-85.725	175.76126	1.4	177.16	Gyro	Oscar Nielsen	9/28/2016		☑	100
330.01	-85.9	146.3	22.1	168.4	EZ-MARK	New Age	9/25/2016	57989	☐	
335	-85.79398	174.17492	1.4	175.57492	Gyro	Oscar Nielsen	9/28/2016		☑	100
340	-85.86205	175.20373	1.4	176.60373	Gyro	Oscar Nielsen	9/28/2016		☑	100
345	-85.8536	174.81351	1.4	176.21351	Gyro	Oscar Nielsen	9/28/2016		☑	100
350	-85.85221	176.05942	1.4	177.45942	Gyro	Oscar Nielsen	9/28/2016		☑	100
354	-85.8	156.3	22.1	178.4	EZ-MARK	New Age	9/26/2016	56340	☐	

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
355	-85.77755	176.49918	1.4	177.89918	Gyro	Oscar Nielsen	9/28/2016		☑	100
360	-85.60529	178.31773	1.4	179.71773	Gyro	Oscar Nielsen	9/28/2016		☑	100
365	-85.40749	178.54836	1.4	179.94836	Gyro	Oscar Nielsen	9/28/2016		☑	100
370	-85.28138	178.84909	1.4	180.24909	Gyro	Oscar Nielsen	9/28/2016		☑	100
375	-85.08539	179.67764	1.4	181.07764	Gyro	Oscar Nielsen	9/28/2016		☑	100
380	-84.99654	180.087	1.4	181.487	Gyro	Oscar Nielsen	9/28/2016		☑	100
381	-85.4	161.4	22.1	183.5	EZ-MARK	New Age	9/27/2016	57202	☐	
385	-84.90353	180.94137	1.4	182.34137	Gyro	Oscar Nielsen	9/28/2016		☑	100
390	-84.9041	181.04453	1.4	182.44453	Gyro	Oscar Nielsen	9/28/2016		☑	100
395	-84.77137	182.81477	1.4	184.21477	Gyro	Oscar Nielsen	9/28/2016		☑	100
400	-84.66597	183.03878	1.4	184.43878	Gyro	Oscar Nielsen	9/28/2016		☑	100
405	-84.51217	184.06974	1.4	185.46974	Gyro	Oscar Nielsen	9/28/2016		☑	100
409	-85.3	167.2	22.1	189.3	EZ-MARK	New Age	9/27/2016	57381	☐	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

0.00 8.15 OVBN Overburden

8.15 9.69 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

8.15 - 9.69: Weakly-oxidized, dark grey to black, fine-grained, carbonaceous mudstone interbedded with cm-size zones of mafic tuff. FLT zone between 8.42- 8.55m; FLT consists of gouge and fractured MDS.

<<Min: 8.15 - 11.85 0.1% Min: Pyrite>>

<<Min: 8.15 - 11.85 0.1% Min: Pyrrhotite>>

<<Alt: 8.15 - 9.69 Weak-Moderate Calcite>> Banded CA; patchy-carbonate within quartz bands.

<<Vein: 8.55 - 8.91 Quartz-Carbonate 55 deg. >> Weakly-oxidized, carbonate-rich, quartz veins.

<<Struc: 8.42 - 8.62 Weak-Moderate Fault>> Gouge - Fractured MDS.

<<Struc: 9.33 - 9.38 Weak Fault>> Minor shear-gouge zone within oxidized MDS.

<<Struc: 9.48 - 9.49 dominant foliation>>

9.69 11.85 MAFt Mafic Volcaniclastics MG

9.69 - 11.85: Weakly-oxidized, greyish-green, medium-grained, well-sorted mafic tuff. Upper CNT is sharp; quartz vein-FLT lower CNT.

<<Alt: 9.69 - 19 Weak-Moderate Calcite>> Pervasive and FRA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 11.8 - 11.85 Quartz-Carbonate 65 deg. >> Competent, quartz-carbonate vein within a minor sheared-FLT zone. Vein contains small (<3mm), subangular MDS clasts.

<<Struc: 10.91 - 10.92 dominant foliation>>

<<Struc: 11.7 - 11.88 Trace Fault>> Sheared-gouge, vein-FLT CNT between mafic tuff and mudstone.

11.85 30.00 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

11.85 - 30: Dark grey to black, fine-grained, carbonaceous mudstone intercalated with minor siltstone. Oxidation is visible on fractured surfaces; the oxidation-intensity decreases downhole. Oxidized quartz-carbonate bands are vuggy (up to 14.80m). Carbonate-rich bands undulate in localized zones. Minor FLT gouge-zones occur throughout the unit.

<<Min: 11.85 - 26.4 0.5% Min: Pyrrhotite>> Disseminated, isolated blebs; rare FRA.

<<Min: 11.85 - 62.76 0.5% Min: Pyrite>> Disseminated; rare FRA.

<<Min: 26.4 - 27.3 3% Min: Pyrrhotite>>

<<Min: 27.3 - 34.15 1% Min: Pyrrhotite>>

<<Alt: 19 - 22.5 Weak Calcite>>

<<Alt: 22.5 - 27.3 Trace Calcite>>

<<Alt: 27.3 - 32.8 Weak Calcite>> Banded CA; quartz-carbonate veins.

<<Vein: 28.15 - 28.21 Quartz-Carbonate>> Weakly-oxidized, quartz-carbonate vein with trace disseminated pyrrhotite.

<<Struc: 13.16 - 13.17 dominant foliation>>

<<Struc: 13.37 - 15.5 Trace Fault>> Fractured mudstone.

<<Struc: 15.5 - 15.6 Moderate Fault>> MDS gouge with trace oxidation.

<<Struc: 17.6 - 17.61 dominant foliation>>

<<Struc: 17.64 - 18.18 Weak Fault>> Incompetent, fractured mudstone; ~75% recovered.

<<Struc: 21.16 - 21.17 dominant foliation>>

<<Struc: 21.9 - 21.91 dominant foliation>>

<<Struc: 22 - 27.15 Trace Fault>> Localized zones with fractured mudstone, and rubble.

<<Struc: 28.35 - 30 Moderate Fault>> Fractured-pulverized mudstone, with traces of gouge visible on fractured surfaces; <10% recovered.

30.00 31.42 MAFt Mafic Volcaniclastics

30 - 31.42: Green, well-sorted mafic tuff; carbonaceous bands become prominent around 31m, due to gradational MDS lower CNT. The upper CNT occurs within a FLT between 28.35-30m; ~90% loss occurred wthin the FLT zone. Localized bands (<5cm) have undergone bleaching.

<<Struc: 30.87 - 30.88 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

31.42 34.15 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

31.42 - 34.15: Light-medium grey, carbonaceous mudstone interbedded with mafic tuff (32.68-32.88m). Minor FLTing occurs between 31.67- 32.06m.

<<Alt: 32.8 - 42.5 Weak-Moderate Calcite>> Banded CA; CA is more intense within quartz-carbonate veins.

<<Vein: 32.85 - 33.14 Quartz-Carbonate 65 deg. >> Quartz-carbonate veins (1-4cm wide).

<<Struc: 31.85 - 31.91 Weak-Moderate Fault>> Mudstone with chloritic gouge, on fractured surfaces.

<<Struc: 33.68 - 33.69 dominant foliation>> 180 deg. off?

34.15 34.85 MAFt Mafic Volcaniclastics

34.15 - 34.85: Green, chloritic mafic tuff with minor disseminated pyrrhotite. Sharp upper and lower CNT.

<<Min: 34.15 - 34.85 1% Min: Pyrrhotite>>

<<Struc: 34.35 - 34.36 dominant foliation>> 180 deg. off?

34.85 44.85 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

34.85 - 44.85: Medium-dark grey, carbonaceous mudstone. Moderate - strong FLT zones are common throughout the unit; >50% loss has occurred within the MDS. There is a massive quartz-carbonate-sericite vein from approx 41.7-42.5m; the vein might be larger, depending on where the loss within the FLT is most prominent. Disseminated blebs of pyrrhotite and pyrite are most common within the fractured-FLT zones.

<<Min: 34.85 - 85.3 0.5% Min: Pyrrhotite>> Disseminated PO; blebs within rare quartz-carbonate veins; minor FRA.

<<Alt: 42.5 - 63.1 Trace Calcite>> Trace disseminated CA; more intense within rare quartz-carbonate veins.

<<Vein: 36.07 - 36.52 Quartz-Carbonate 45 deg. >> Undulating-brecciated, quartz-carbonate veins with mm-size, subrounded quartz clasts.

<<Vein: 41.7 - 42.5 Quartz-Carbonate-Sericite>> Incompetent, fractured quartz-carbonate vein with sericite FRA; disseminated pyrrhotite blebs, and traces of pyrite.

<<Struc: 35.43 - 36 Moderate Fault>> Fractured-pulverized MDS with fine-grained PY-rich zones; >50% loss.

<<Struc: 36.51 - 45 Moderate-Strong Fault>> MDS rubble-gouge. FLT-intensity decreases downhole, within the massive quartz-carbonate-sericite vein. ~40% recovered.

44.85 59.90 RHYvl Lapilli tuff

44.85 - 59.9: Light-medium green, felsic volcaniclastics with moderate-strong FLT zones. Subrounded, carbonate-poor, poorly-sorted lapilli are localized, and proximal to FLT zones. Quartz-carbonate vein - FLT upper CNT; gradational lower CNT.

<<Vein: 44.85 - 48.12 Quartz-Carbonate-Sericite>> Fractured quartz-carbonate veins with sericite FRA, and disseminated pyrite and pyrrhotite. Rare pyrite FRA (stringers).

<<Struc: 45 - 45.3 Weak-Moderate Fault>> Fractured RHY with sericitic gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 46.52 - 48 Moderate Fault>> Sheared RHY and quartz veins, with sericitic gouge; gouge contains mm-size, brecciated clasts of RHY. ~70% washed away.

<<Struc: 48.7 - 55.6 Moderate-Strong Fault>> Localized zones with moderate-strong FLT-intensity; zones consist of sericitic gouge-shear. The gouge contains small (1-10mm), subangular clasts of RHY and MDS. 25% of the interval consists of competent, non-faulted RHY; there is approx 60% core loss within the unit.

<<Struc: 55.72 - 55.73 dominant foliation>>

<<Struc: 57.2 - 60 Weak Fault>> Incompetent, fractured RHYv with small zones of gouge; interval has approx 60% core loss.

59.90 85.30 RHYva Coarse grained to ash tuff

59.9 - 85.3: Light-medium green, ash-dominant, felsic volcaniclastics intercalated with minor bands (cm-size) of localized, biotite-rich sediment. Localized porphyritic texture between 62.36-62.6m. Joint-set with QC+PY+/-PO FRA between 62.76-63.42m. Localized, cm-size tourmaline veinlets, and minor FLTing occur throughout the unit.

<<Min: 62.76 - 63.43 3% Min: Pyrite>> QC+PY+/-PO FRA within a well-developed joint set. FD along foliation.

<<Min: 63.43 - 67.7 0.1% Min: Pyrite>>

<<Min: 67.7 - 71.59 2% Min: Pyrite>> Quartz-carbonate-tourmaline stringers +/- PY. Vugs contain coarse-grained, euhedral PY.

<<Min: 71.56 - 71.59 2% Min: Galena>> GL-filled vugs within quartz vein.

<<Min: 71.59 - 79.8 0.5% Min: Pyrite>> Trace disseminated PY; occasional blebs within quartz-carbonate stringers.

<<Min: 79.8 - 80.95 2% Min: Pyrite>> PY FRA; blebs within tourmaline stringers. Disseminated PY is visible within gouge.

<<Min: 80.95 - 85.3 0.1% Min: Pyrite>>

<<Alt: 62.9 - 67.15 Trace Biotite>> Trace disseminated biotite.

<<Alt: 63.1 - 85.3 Weak Calcite>> Disseminated-banded CA; quartz-carbonate FRA.

<<Alt: 75 - 77.4 Weak Ankerite>> Patchy-zones of banded AK (?).

<<Alt: 79 - 85.3 Trace Muscovite>>

<<Alt: 84.5 - 85.3 Weak Silicification>> Weak silicification proximal to RHYi.

<<Vein: 62.76 - 63.42 Quartz-Carbonate-Sulphide 45 deg. >> Parallel, joint set of mm-size QC+PY+/-PO stringers.

<<Vein: 67.7 - 70.45 Tourmaline>> Tourmaline-dominant, quartz-carbonate stringers +/- pyrite. Stringers contain mm-size, subrounded clasts of RHY host. Vugs are rare, and contain med-grained, euhedral pyrite.

<<Vein: 71.56 - 71.59 Quartz-Sulphide 35 deg. >> Quartz vein with mm-scale vugs; vugs contain fine-grained PY (3%), and med-grained GL (< 2%).

<<Vein: 75.15 - 80 Quartz-Carbonate-Sulphide 25 deg. >> Quartz-carbonate and tourmaline stringers with disseminated PY +/- PO.

<<Struc: 60.77 - 60.78 dominant foliation>>

<<Struc: 62.93 - 62.94 dominant foliation>>

<<Struc: 65.95 - 65.96 dominant foliation>>

<<Struc: 67.93 - 68 Weak Fault>> Fractured RHY with minor gouge.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 69.38 - 69.39 dominant foliation>>

<<Struc: 70.11 - 70.12 dominant foliation>>

<<Struc: 73.08 - 73.09 dominant foliation>>

<<Struc: 73.3 - 75 Weak Fault>> Fractured-pulverized RHY; 1m wash.

<<Struc: 76.96 - 76.97 dominant foliation>>

<<Struc: 78.5 - 78.58 Weak Fault>> Sheared, strong-gouge RHY.

<<Struc: 80.12 - 80.95 Weak-Moderate Fault>> Minor FLT zones within competent RHY (mottled texture); 30% competent RHY. FLT zones consist of pulverized RHY and rubble. Interval has approx ~50% loss.

<<Struc: 81.57 - 81.58 dominant foliation>>

<<Struc: 82.26 - 83.7 Weak-Moderate Fault>> RHY shear, gouge, and rubble; ~50% recovered.

<<Struc: 84.33 - 84.34 dominant foliation>>

<<Struc: 84.92 - 85 Weak Fault>> Shear-gouge.

85.30 91.10 RHYi Aphanitic Rhyolite (intrusion)

85.3 - 91.1: Light greenish-grey to reddish-grey, siliceous, aphanitic RHYi. Minor sulphide mineralization FRA; dom. PY +/- PO. Massive quartz vein (35cm) at lower CNT.

<<Min: 85.3 - 91.1 0.5% Min: Pyrrhotite>> QC+PY +/- PO fracture infill.

<<Min: 85.3 - 91.2 4% Min: Pyrite>> QC+PY +/- PO fracture infill.

<<Alt: 85.3 - 93.48 Trace Calcite>> Quartz-carbonate (weak) FRA within hairline fractures.

<<Vein: 85.3 - 91.1 Quartz-Carbonate>> Hairline quartz-carbonate, and PY +/- PO FRA within RHYi.

<<Struc: 86.3 - 86.34 dominant foliation>>

<<Struc: 88 - 93.47 Trace Fault>> Several RHY rubble zones within competent core (25% competent); ~50% loss.

91.10 96.83 RHYva Coarse grained to ash tuff

91.1 - 96.83: Light green, ash-dominant, felsic volcaniclastic tuff with weak MU-alteration, and localized lapilli-rich zones. MU-alteration is stronger proximal to FLT zones disseminated PY is common within gouge.

<<Min: 93.46 - 96.83 1% Min: Pyrite>> Disseminated throughout unit; patchier within gouge zones.

<<Min: 93.46 - 120.45 0.5% Min: Pyrrhotite>> Disseminated PO; rare blebs within quartz veins.

<<Alt: 93.46 - 96.83 Weak Muscovite>> Weak MU alteration; alteration is stronger within FLT zones.

<<Alt: 93.48 - 96.83 Weak-Moderate Calcite>> Disseminated-blebs.

<<Vein: 91.1 - 91.45 Quartz>> Massive quartz vein with PY + CC FRA.

<<Vein: 91.45 - 93 Quartz>> Quartz and RHY rubble; < 20% recovered.

<<Vein: 93.46 - 94.52 Quartz-Carbonate>> Cm-size, quartz-carbonate veinlets within sheared zones. Veins contain blebs of disseminated PY.

<<Struc: 93.85 - 93.86 dominant foliation>>

<<Struc: 94.4 - 94.44 Weak Shear>> Weak shear zone.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 96.26 - 96.3 Weak-Moderate Fault>> Sericitic gouge with mm-size, subrounded clasts of quartz and RHY, and disseminated PY.

<<Struc: 96.49 - 96.5 dominant foliation>>

96.83 102.14 RHYi Aphanitic Rhyolite (intrusion)

96.83 - 102.14: Light grey, siliceous RHYi. Hairline fractures are prominent throughout the unit. Calcite FRA contains trace disseminated CL +/- PY +/- SP (?)

<<Min: 96.83 - 102.14 0.5% Min: Sphalerite>>

<<Min: 96.83 - 102.14 1% Min: Pyrite>> QC FRA +/- PY +/- SP

<<Alt: 96.83 - 102.14 Weak-Moderate Calcite>> Quartz-carbonate infill within hairline fractures; disseminated blebs.

<<Vein: 96.83 - 102.14 Quartz-Carbonate>> Hairline quartz-carbonate, chlorite, and sulphide FRA. Sulphides consist of PY +/- SP.

<<Struc: 100.1 - 101.34 Weak-Moderate Fault>> Fractured-rubble RHY; ~75% loss.

102.14 104.15 RHYvl Lapilli tuff

102.14 - 104.15: Light greyish-green, volcaniclastic lapilli tuff with clasts of silica-rich, RHYc (?)

<<Min: 102.14 - 121.57 0.1% Min: Pyrite>>

<<Alt: 102.14 - 114.35 Weak-Moderate Calcite>> Disseminated blebs-banded CA.

<<Vein: 102.9 - 103.4 Quartz-Carbonate 30 deg. >> Quartz stringers with disseminated calcite.

<<Struc: 103 - 103.2 Trace Fault>> Cm-size bands of gouge (< 20%) within competent RHY.

<<Struc: 103.9 - 103.91 dominant foliation>>

104.15 117.43 RHYva Coarse grained to ash tuff

104.15 - 117.43: Light green, ash-dominant, volcaniclastic tuff intercalated with minor pelitic beds. Weak-disseminated biotite alteration occurs from 111.37-117.43m.

<<Alt: 111.37 - 117.43 Weak Biotite>>

<<Alt: 114.35 - 117.43 Trace Calcite>> Trace disseminated blebs.

<<Vein: 110.62 - 110.63 Quartz 50 deg. >> Quartz stringer with subangular blebs of PO (< 5mm), and CL FRA.

<<Struc: 106.76 - 107.71 Weak Fault>> Heavily-jointed RHY with small-rare gouge zones.

<<Struc: 107.85 - 107.86 dominant foliation>>

<<Struc: 109.55 - 109.56 dominant foliation>>

<<Struc: 110.68 - 111 Weak Fault>> RHY rubble; ~ 65% recovered.

<<Struc: 114 - 114.2 Weak Fault>> Weak-shear zone with small (< 5mm), subangular quartz clasts.

<<Struc: 115.58 - 115.59 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

117.43 121.37 PEL Equigranular biotite + calcite +/- quartz rock

117.43 - 121.37: PEL interbedded with biotite-rich, ash-dominant, felsic volcaniclastics. FLT zone between 118.7-119.00m; FLT consists of RHY-gouge, and pulverized PEL. Sharp upper and lower CNT.

<<Min: 120.45 - 120.8 1% Min: Sphalerite>>

<<Min: 120.45 - 120.8 2% Min: Pyrrhotite>>

<<Min: 120.45 - 120.8 0.5% Min: Galena>> Disseminated GL within quartz-carbonate bands.

<<Min: 120.8 - 129.57 0.5% Min: Pyrrhotite>>

<<Alt: 117.43 - 121.57 Trace Calcite>> Trace-weak pervasive CA within PEL.

<<Vein: 120.45 - 120.8 Quartz-Carbonate-Sulphide>> Quartz-carbonate bands with trace PO+SP+/-GL.

<<Struc: 117.9 - 117.91 dominant foliation>>

<<Struc: 118.66 - 119 Moderate Fault>> RHY gouge and pulverized PEL. Sharp upper CNT (~30 deg.)

121.37 124.70 RHYva Coarse grained to ash tuff

121.37 - 124.7: Light-medium green, ash-dominant volcaniclastic tuff with weak MU-alteration. Weak-moderate FLT zones occur throughout the unit.

<<Min: 121.57 - 124.7 1% Min: Pyrite>> DEF, mm-size QC-PY stringers.

<<Alt: 121.57 - 124.7 Trace Calcite>> Trace disseminated-blebs of CA.

<<Struc: 121.57 - 121.58 Contact>> CNT between PEL-RHYv.

<<Struc: 121.65 - 122.7 Weak-Moderate Fault>> RHY gouge and rubble zone; ~30% recovered.

<<Struc: 123.5 - 124 Weak Fault>> Sheared-fractured, gouge zone; ~50% recovered.

124.70 129.57 PEL Equigranular biotite + calcite +/- quartz rock

124.7 - 129.57: Pelite intercalated with biotite-altered, felsic volcaniclastics. Hairline fractures with QC infill is common; minor FLTing between 126-127.6m.

<<Min: 124.7 - 129.57 0.1% Min: Pyrite>>

<<Alt: 124.7 - 125.6 Weak-Moderate Calcite>> Banded-pervasive CA within PEL.

<<Alt: 125.6 - 129.57 Trace Calcite>>

<<Vein: 125 - 129.57 Quartz-Carbonate>> Undulating quartz-carbonate veins (1-5cm wide) with trace disseminated BI, due to host PEL.

<<Struc: 126 - 127.6 Trace Fault>> Fractured, volcaniclastic RHY within PEL. Minor zones of sericitic gouge.

<<Struc: 128.25 - 128.26 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

129.57 144.39 RHYv Rhyolite volcaniclastic

129.57 - 144.39: MU-altered, volcaniclastic RHY with disseminated PY. Quartz-carbonate bands undulate, in localized-altered zones. MU-alteration increases downhole.

<<Min: 129.57 - 132.15 1% Min: Pyrrhotite>>

<<Min: 129.57 - 137.04 0.5% Min: Pyrite>>

<<Min: 132.15 - 139.2 0.5% Min: Pyrrhotite>>

<<Min: 137.04 - 142.6 2% Min: Pyrite>> Disseminated, subangular blebs (< 5mm), and FRA.

<<Min: 137.48 - 137.66 0.5% Min: Galena>> Med-grained, disseminated GL within zoned, QC-SP (?) veinlet.

<<Min: 137.48 - 140.65 2% Min: Sphalerite>> SP FRA, and zonation within a quartz-carbonate veinlet.

<<Min: 139.2 - 140.75 1% Min: Pyrrhotite>> Coarse-grained, disseminated PO; and FRA.

<<Min: 140.75 - 144.39 0.5% Min: Pyrrhotite>>

<<Min: 142.6 - 144.39 0.5% Min: Pyrite>>

<<Alt: 129.57 - 139.18 Weak Muscovite>>

<<Alt: 129.57 - 144.39 Weak-Moderate Calcite>> Banded-clots of CA; patchy-carbonate within quartz-carbonate veins.

<<Alt: 139.18 - 144.39 Weak-Moderate Muscovite>>

<<Vein: 131.02 - 134.25 Quartz-Carbonate>> Regular to massive, deformed quartz-carbonate veins.

<<Vein: 137.6 - 137.61 Quartz-Carbonate-Sulphide 50 deg. >> Quartz-carbonate-sulphide veinlet; sulphides consist of sphalerite (?) and galena. Zoneation: quartz-carbonate (outside) to inner sulphides.

<<Vein: 138.5 - 144 Quartz-Carbonate>> Quartz-carbonate veins (1-10cm); rare sulphide FRA (PY+/-SP).

<<Struc: 130.35 - 130.36 dominant foliation>>

<<Struc: 132.12 - 132.22 Weak Fault>> Small rubble zone.

<<Struc: 132.4 - 132.41 dominant foliation>>

<<Struc: 133.95 - 134.9 Weak Fault>> Small bands of sericitic gouge; gouge contains mm-size, subrounded clasts of RHY host, and disseminated PY. The remainder of the interval, consists of fractured RHYv.

<<Struc: 137.13 - 137.14 dominant foliation>>

<<Struc: 140.35 - 140.36 Crenulation cleavage>>

<<Struc: 143.64 - 143.65 dominant foliation>>

144.39 145.68 RHYcw Curdy textured-flow banded (flows, subvolcanics)

144.39 - 145.68: Light grey, quartz-rich, flow-banded RHY. Undulating, flow bands are brecciated apart with MU +/- PY +/- PO FRA. Upper and lower CNT are gradational.

<<Min: 144.39 - 150.76 1% Min: Pyrite>> MU, PY, and PO fracture infill, within fractured, flow-banded RHY. Coarse-grained, disseminated blebs and FRA throughout volcaniclastic RHY.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 144.39 - 155.54 1% Min: Pyrrhotite>> MU, PY, and PO fracture infill, within fractured, flow-banded RHY. Coarse-grained, disseminated blebs and FRA throughout volcaniclastic RHY.

<<Alt: 144.39 - 145.68 Weak-Moderate Muscovite>> MU blebs and FRA within brecciated RHYc.

<<Alt: 144.39 - 145.68 Trace Calcite>> Trace disseminated CA within flow-banded RHY; rare FRA.

<<Vein: 145.66 - 148.53 Quartz-Carbonate>>

145.68 149.77 RHYva Coarse grained to ash tuff

145.68 - 149.77: Light to med-green, ash-dominant, volcaniclastic tuff with weak MU-alteration; and undulating, carbonate-rich bands. PY + PO are disseminated throughout the unit. Sharp lower CNT.

<<Alt: 145.68 - 149.77 Moderate Muscovite>>

<<Alt: 145.68 - 150.76 Weak-Moderate Calcite>> Calcite blebs, and quartz-carbonate bands.

<<Struc: 145.92 - 145.93 dominant foliation>>

<<Struc: 148.11 - 148.12 dominant foliation>>

149.77 150.76 RHYcw Curdy textured-flow banded (flows, subvolcanics) FG

149.77 - 150.76: Light grey, quartz-rich, heavily-fractured, coherent RHY. FRA consists of silver-medium green MU, and PY +/- PO.

<<Alt: 149.77 - 155.54 Moderate Muscovite>> MU FRA within cleavage planes and undulating fractures, within the BRX.

<<Struc: 150.58 - 150.59 dominant foliation>>

150.76 154.44 RHYcw Curdy textured-flow banded (flows, subvolcanics)

150.76 - 154.44: Light grey, siliceous, flow-banded, BRX-stockwork RHY. FRA consists of silver to dark-green MU, tourmaline, chlorite (?) and PY +/- PO. Dark green, subangular clasts (< 1cm) are localized; mm-size vugs are most prominent within pyrite-rich zones.

<<Min: 150.76 - 154.44 6% Min: Pyrite>> Patchy-zones of PY FRA within BRX RHYc.

<<Alt: 150.76 - 154.44 Trace Calcite>> Trace disseminated and FRA.

<<Vein: 151.98 - 152.23 Quartz-Carbonate 55 deg. >> Quartz-dominant veins with disseminated-blebs of CA.

154.44 155.54 RHYcw Curdy textured-flow banded (flows, subvolcanics) FG

154.44 - 155.54: Light grey, quartz-rich, heavily-fractured, coherent RHY. FRA consists of silver-medium green MU, and PY +/- PO.

<<Min: 154.44 - 155.54 0.5% Min: Pyrite>> MU, PO, and PY FRA within fractured RHYc.

<<Alt: 154.44 - 159.54 Weak Calcite>> Disseminated-blebs of CA; rare FRA.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

155.54 159.18 RHYv Rhyolite volcaniclastic

155.54 - 159.18: Grey, volcaniclastic RHY with forest-green, MU-alteration visible within fractures-cleavage. Minor shearing is evident throughout the unit.

<<Min: 155.54 - 159.18 1% Min: Pyrrhotite>>

<<Min: 155.54 - 169 0.5% Min: Pyrite>> FD along foliation; rare hairline FRA, and blebs within quartz-carbonate bands.

<<Alt: 155.54 - 162.56 Weak-Moderate Muscovite>> MU-alteration along cleavage planes - foliation within RHY.

<<Vein: 156 - 159.18 Quartz-Carbonate>>

<<Struc: 158.41 - 158.42 Crenulation cleavage>>

<<Struc: 158.71 - 158.72 dominant foliation>>

159.18 173.74 RHYc Rhyolite coherant volcanics grey-green

159.18 - 173.74: Light grey-green, coherent RHY. Green muscovite within cleavage planes-fractures create a brecciated-look between the large (cm-scale), gritty, RHYc 'clasts'. Silica and ankerite (?) alteration pick up within the final 2m. Minor FLTing occurs between approx 160.6- 161.95m and 169-169.25m. Silicic bands undulate when proximal to FLT zones.

<<Min: 159.18 - 169 0.1% Min: Pyrrhotite>> Trace disseminated PO; rare, hairline FRA.

<<Min: 169 - 173.74 1% Min: Pyrite>> Hairline to mm-size stringers; PY +/- PO infill within fractures.

<<Min: 169 - 173.74 0.5% Min: Pyrrhotite>> Hairline to mm-size stringers; PY +/- PO infill within fractures.

<<Alt: 159.54 - 162.56 Weak-Moderate Calcite>> Disseminated-banded CA; occasional FRA.

<<Alt: 162.56 - 173.74 Weak Calcite>> Disseminated-blebs and FRA.

<<Alt: 162.56 - 191.73 Weak Muscovite>> Banded to pervasive MU-alteration; alteration is most prominent along foliation breaks.

<<Alt: 171.32 - 172.8 Weak-Moderate Silicification>>

<<Alt: 172.8 - 173.74 Trace Chlorite>>

<<Alt: 172.8 - 173.74 Weak-Moderate Ankerite>> Yellowish-white, gritty, carbonate alteration - ankerite?

<<Vein: 159.18 - 159.56 Quartz-Carbonate>> Massive quartz vein with patchy-carbonate, and CA FRA. Trace disseminated PY.

<<Vein: 171.3 - 173.79 Quartz-Carbonate>> Quartz-carbonate stringers and veinlets.

<<Struc: 160.6 - 161.94 Trace Fault>> Small sheared/pulverized-rehealed zones, and rubble zones within competent RHYc (~40%).

<<Struc: 162.5 - 162.51 dominant foliation>>

<<Struc: 167.6 - 167.61 dominant foliation>>

<<Struc: 169 - 169.1 Weak-Moderate Fault>> Pulverized RHYc, and rubble.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

173.74 180.21 RHYvl Lapilli tuff grey-green

173.74 - 180.21: Light greenish-grey, volcaniclastic lapilli tuff. Subrounded, quartz-carbonate (poor) lapilli (< 1cm) are poorly-sorted. Lapilli abundance is greatest within the centre of the unit. PY-rich (+/- PO) kink bands are sporadic, throughout the interval.

<<Min: 173.74 - 180.21 3% Min: Pyrite>> Disseminated kink-bands of PY +/- PO within lapilli tuff.

<<Min: 173.74 - 180.21 0.5% Min: Pyrrhotite>> Disseminated kink-bands of PY +/- PO within lapilli tuff.

<<Alt: 173.74 - 180.21 Weak-Moderate Calcite>> Disseminated-blebs; quartz-carbonate lapilli.

<<Vein: 175.5 - 176.42 Quartz-Carbonate>> Quartz carbonate veinlets (1-2cm wide) containing disseminated PY blebs.

<<Struc: 174.87 - 174.88 dominant foliation>>

<<Struc: 179.46 - 179.47 dominant foliation>>

180.21 184.32 RHYc Rhyolite coherant volcanics light grey

180.21 - 184.32: Light-grey, gritty, coherent RHY. QC +/- PY stringers are common, and create a brecciated-look. Upper and lower CNT are gradational.

<<Min: 180.21 - 184.32 3% Min: Pyrite>> QC stringer-network +/- PY +/- PO.

<<Min: 180.21 - 184.32 0.5% Min: Pyrrhotite>> QC stringer-network +/- PY +/- PO.

<<Alt: 180.21 - 184.32 Weak-Moderate Calcite>> Disseminated CA; mostly FRA.

<<Vein: 180.21 - 183.15 Quartz-Carbonate-Sulphide>> QC +/- PY stringers; stringers brecciate coherent RHY.

<<Vein: 183.1 - 183.66 Quartz-Carbonate>> Quartz-carbonate bands.

<<Struc: 183.44 - 183.45 dominant foliation>>

184.32 189.00 RHYvl Lapilli tuff

184.32 - 189: Light greenish-grey, volcaniclastic, lapilli tuff. Subrounded, quartz-carbonate lapilli are < 10mm, and are poorly-sorted; abundance is < 25%. There is a moderate FLT between 187.12-187.32m; the FLT consists of hard-sericitic gouge, and large, subangular quartz clasts (< 2cm). PY is disseminated within clasts. PY-rich disseminated-bands are common throughout the RHY.

<<Min: 184.32 - 198.21 3% Min: Pyrite>> Disseminated PY-rich (+/- PO) QC bands.

<<Min: 184.32 - 198.21 0.1% Min: Pyrrhotite>> Disseminated PY-rich (+/- PO) QC bands.

<<Alt: 184.32 - 191.73 Weak Calcite>> Disseminated-blebs of CA; rare FRA.

<<Struc: 184.55 - 184.56 dominant foliation>>

<<Struc: 186.8 - 186.81 dominant foliation>>

<<Struc: 187.12 - 187.32 Moderate Fault>> Semi-hard, sericitic gouge. The gouge contains cm-size clasts of quartz; disseminated PY is visible within the quartz.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

189.00 191.73 RHYva Coarse grained to ash tuff grey-green

189 - 191.73: Light green-grey, ash-dominant, volcaniclastic tuff with rare PY-rich bands.

191.73 198.21 RHYva Coarse grained to ash tuff

191.73 - 198.21: Siliceous, ash-dominant, volcaniclastic tuff. Possible QE? (rare)

<<Alt: 191.73 - 192.2 Moderate-Strong Silicification>>

<<Alt: 191.73 - 198.21 Trace Muscovite>>

<<Alt: 191.73 - 198.21 Trace Calcite>> Trace-weak, disseminated CA; rare FRA.

<<Alt: 192.2 - 245.88 Moderate Silicification>> Moderate SI-alteration (?) or just siliceous RHY unit (no alteration).

<<Vein: 195.04 - 195.18 Quartz-Carbonate>> Quartz-carbonate veinlets with trace, disseminated PY.

<<Vein: 197.25 - 199.25 Quartz-Carbonate 65 deg. >>

<<Struc: 192.87 - 192.88 dominant foliation>>

<<Struc: 196.75 - 196.76 dominant foliation>>

198.21 204.97 RHYvl Lapilli tuff

198.21 - 204.97: MU-SI-altered, volcaniclastic lapilli tuff. Minor FLT zone between 199.13-200m.

<<Min: 198.21 - 207.23 1% Min: Pyrite>> Disseminated-banded PY.

<<Min: 198.21 - 207.23 0.1% Min: Pyrrhotite>> Trace, disseminated PO.

<<Alt: 198.21 - 205.34 Moderate Muscovite>> Pervasive MU-alteration, most prominent within folia, creating a banded-appearance.

<<Alt: 198.21 - 205.34 Weak Calcite>> Disseminated blebs of CA; quartz-carbonate lapilli.

<<Struc: 198.21 - 198.22 Contact>>

<<Struc: 199.66 - 200 Weak-Moderate Fault>> Soft-sericitic gouge; gouge contains mm-size, subrounded RHY clasts. ~ 50% of the unit is competent RHY.

<<Struc: 202.34 - 202.35 dominant foliation>>

<<Struc: 204.54 - 204.55 dominant foliation>>

204.97 207.23 RHYva Coarse grained to ash tuff FG

204.97 - 207.23: Fine-grained, ash-dominant, volcaniclastic tuff with strong, pervasive muscovite alteration. Coarse-grained, disseminated, subhedral PY is common along foliation.

<<Alt: 205.34 - 206.27 Strong Muscovite>> Pervasive-patchy, MU-alteration proximal to a massive quartz vein-FLT zone.

<<Alt: 205.34 - 206.27 Moderate Calcite>> Patchy-carbonate within quartz veins.

<<Alt: 206.27 - 207.23 Moderate Muscovite>>

<<Alt: 206.27 - 207.53 Moderate Calcite>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 205.35 - 206.43 Quartz-Carbonate>> Regular - undulating quartz-carbonate veins, and a massive - faulted vein (205.6-206.15m).

<<Vein: 207 - 208.2 Quartz-Carbonate 60 deg. >> Quartz-carbonate bands; occasional PY-replacement within bands.

<<Struc: 205.73 - 206.15 Weak-Moderate Fault>> Rubble-quartz vein.

<<Struc: 206.95 - 206.96 dominant foliation>>

207.23 215.20 RHYv Rhyolite volcaniclastic

207.23 - 215.2: Light greenish-grey, MU-SI altered RHY. Disseminated PY is common within silica-rich bands. PY-rich bands occur in localized zones. Disseminated (singular) PY +/- PO is visible throughout the unit.

<<Min: 207.23 - 233.86 5% Min: Pyrite>> Disseminated PY; banding is common within silica-rich zones.

<<Min: 207.23 - 233.86 1% Min: Pyrrhotite>>

<<Alt: 207.23 - 245.88 Weak-Moderate Muscovite>> Weak-moderate MU-alteration; alteration is most intense within FLT zones.

<<Alt: 207.53 - 209.7 Weak-Moderate Calcite>> Quartz-carbonate aggregates-disseminated blebs.

<<Alt: 209.7 - 220.5 Weak Calcite>> Disseminated-blebs of CA; rare FRA.

<<Struc: 208.45 - 208.65 Trace Fault>> Heavily-fractured, incompetent RHY.

<<Struc: 209.85 - 209.86 dominant foliation>>

<<Struc: 211.61 - 211.62 dominant foliation>>

215.20 247.50 RHY undifferentiated rhyolite

215.2 - 247.5: Light greenish-grey, MU-SI altered, undifferentiated RHY with disseminated PY +/- PO. Disseminated PY-rich bands are common within silica-rich zones.

<<Min: 233.86 - 240.38 8% Min: Pyrite>> Disseminated PY; banding is common within silica-rich zones.

<<Min: 233.86 - 240.38 0.1% Min: Pyrrhotite>>

<<Min: 240.38 - 247.5 0.5% Min: Pyrite>> Trace disseminated PY.

<<Min: 240.38 - 247.5 4% Min: Pyrrhotite>> Disseminated PO +/- PY; PO is elongated-strained along foliation.

<<Alt: 220.5 - 228.55 Moderate Calcite>> Moderate CA within aggregates and quartz-carbonate bands; trace disseminated.

<<Alt: 228.55 - 273 Trace Calcite>> Trace disseminated; rare FRA. Weak, patchy-carbonate within quartz veins.

<<Alt: 245.88 - 248.87 Moderate Muscovite>> Stronger alteration within FLT zone.

<<Alt: 245.88 - 272.23 Weak-Moderate Silicification>>

<<Vein: 220.45 - 221.38 Quartz-Carbonate>>

<<Vein: 227.7 - 228.47 Quartz-Carbonate>> 1-3cm wide, quartz-carbonate veins.

<<Vein: 240.27 - 241.08 Quartz-Carbonate 65 deg. >> Quartz-carbonate veins (1-5cm wide) with trace disseminated-blebs of PO.

<<Struc: 215.2 - 215.35 Weak-Moderate Fault>> Fractured-pulverized RHY.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 215.78 - 215.79 dominant foliation>>

<<Struc: 217.11 - 217.19 Moderate Fault>> Sericitic-gouge; gouge contains mm-size, subrounded quartz clasts, and trace disseminated PY.

<<Struc: 218.53 - 218.63 Moderate Fault>> FLT gouge with mm-size, subangular quartz clasts.

<<Struc: 221.9 - 221.91 dominant foliation>>

<<Struc: 222.51 - 222.52 dominant foliation>>

<<Struc: 225.32 - 225.33 dominant foliation>>

<<Struc: 226.2 - 226.21 Crenulation cleavage>>

<<Struc: 227.05 - 227.06 dominant foliation>>

<<Struc: 230.83 - 230.84 dominant foliation>>

<<Struc: 233.42 - 233.43 dominant foliation>>

<<Struc: 234.5 - 234.51 dominant foliation>>

<<Struc: 235.19 - 235.35 Weak-Moderate Fault>> RHY shear-gouge with cm-size, subrounded quartz clasts, and disseminated PY.

<<Struc: 236.35 - 236.92 Weak-Moderate Fault>> Weak-sheared RHY to semi-hard gouge; 1-10mm size, subangular quartz clasts, and disseminated PY.

<<Struc: 238.5 - 238.54 Weak-Moderate Fault>> RHY-gouge with mm-size, subangular quartz clasts, and patchy-PY.

<<Struc: 241.71 - 241.72 dominant foliation>>

<<Struc: 244.36 - 244.37 dominant foliation>>

<<Struc: 245.9 - 247.5 Weak Fault>> Trace-weak, sheared, MU-altered RHY with minor bands of gouge.

247.50 248.87 FLZ Fault Zone

247.5 - 248.87: Brecciated, silica-rich, MU-altered RHY. Cm-scale, subrounded quartz clasts contain disseminated PY. Soft, sericitic-gouge FRA.

<<Min: 247.5 - 249.34 6% Min: Pyrite>> Subrounded quartz clasts within RHY-FLT contain disseminated PY.

<<Struc: 247.5 - 248.87 Moderate Fault>> Sheared-brecciated RHY; sericitic gouge-clay within fractures. Clasts range from mm-size to cm-scale, and are generally made up of quartz. PY-replacement within quartz clasts is localized.

248.87 263.20 RHY undifferentiated rhyolite

248.87 - 263.2: MU-SI altered, undifferentiated RHY. Weak-moderate FLTing has created minor brecciated zones. Disseminated PO +/- PY is visible throughout the unit; pyrite-rich bands occur in zones with strong SI-alteration.

<<Min: 249.34 - 263.2 1% Min: Pyrite>> Disseminated PO +/- PY; disseminated PY is patchy within silica-rich zones. Rare FRA.

<<Min: 249.34 - 263.2 4% Min: Pyrrhotite>> Disseminated PO +/- PY; PO is elongated-strained along foliation.

<<Alt: 248.87 - 273.05 Weak-Moderate Muscovite>> Pervasive weak-moderate MU-alteration; alteration is stronger within FLT zones.

<<Struc: 250.5 - 250.95 Weak Fault>> Fractured RHY; ~ 50% recovered.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 252.62 - 253.4 Weak-Moderate Fault>> Pulverized RHY, and rubble.

<<Struc: 255.36 - 257.3 Weak Fault>> Trace-weak FLT zones, within competent RHY; zones consist of fractured-sheared RHY, and pyrite-rich gouge within fractures.

<<Struc: 261.7 - 261.71 dominant foliation>>

<<Struc: 262 - 262.37 Weak Fault>> Fractured RHY; small pulverized zones.

263.20 264.89 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

263.2 - 264.89: Dark grey, mudstone intercalated with MU-SI altered RHY (30%). Trace disseminated PO + PY.

<<Min: 263.2 - 267.13 0.1% Min: Pyrite>> Disseminated PO +/- PY.

<<Min: 263.2 - 272.03 3% Min: Pyrrhotite>> Disseminated PO +/- PY; PO-banding occurs in silica-rich zones within RHY.

264.89 265.78 RHY undifferentiated rhyolite

264.89 - 265.78: MU-SI altered RHY with disseminated PY+PO. FLT upper CNT; gradational lower CNT.

<<Struc: 264.9 - 265 Moderate-Strong Fault>> Soft-gouge with mm-size, subangular RHY clasts. FLT represents CNT between MDS and RHY.

<<Struc: 265.63 - 265.64 dominant foliation>>

265.78 267.13 MDS Carbonaceous Mudstone & Tuffaceous Mudstone

265.78 - 267.13: Med-dark grey, siliceous (?) mudstone with disseminated PY+PO.

267.13 296.35 RHY undifferentiated rhyolite

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
292.00	293.50	1.50	D00005751	0.03	3.2	0.02	-0.01	0.01

267.13 - 296.35: MU-SI altered, undifferentiated RHY. MU alteration becomes strong around 273m; alteration is strongest within foliation and fractures. Localized zones contain brecciated quartz-aggregates; clasts are seperated with strongly-altered sericite. RHY ranges from well-sorted-banded to a poorly-sorted, mottled texture. Alteration and textural-distortion increases downhole.

<<Min: 267.13 - 272.03 5% Min: Pyrite>> Disseminated-banded PY.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
293.50	295.00	1.50	D00005752	0.007	1.2	-0.01	-0.01	0.05

<<Min: 272.03 - 296.35 3% Min: Pyrite>> Disseminated PY +/- PO; PY is elongated-strained along foliation.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
295.00	296.35	1.35	D00005753	0.062	7.5	0.09	0.03	0.16

<<Min: 272.03 - 296.35 1% Min: Pyrrhotite>> Disseminated PY +/- PO; PO is elongated-strained along foliation.

<<Min: 294 - 296.35 0.1% Min: Sphalerite>> Trace disseminated SP.

<<Min: 296.25 - 296.35 5% Min: Chalcopyrite>> Blebs of CP within quartz vein; trace subhedral PY +/- SP.

<<Alt: 272.23 - 296.35 Moderate Silicification>> SI-alteration within quartz-rich RHY; brecciated apart by strong MU-alteration.

<<Alt: 273 - 274.4 Weak-Moderate Calcite>> Patchy-carbonate within quartz-carbonate veins; FRA.

<<Alt: 273.05 - 274.4 Moderate-Strong Muscovite>> Moderate-strong MU-alteration; tight foliation gives a banded-appearance.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Alt: 274.4 - 291.28 Strong Muscovite>> Banded-FRA MU alteration. Olive-lime green, sericite is visible along folia, and within fractures; alteration is pervasive throughout the interval, and has destroyed the original texture of the undifferentiated RHY, creating a brecciated-mottled look in weaker zones.

<<Alt: 274.4 - 296.35 Weak Calcite>> Trace to weak, disseminated-blebs and FRA. CA is weak-moderate within quartz-carbonate veins.

<<Alt: 291.28 - 293.17 Strong Muscovite>> Strong, pervasive MU alteration with more intense, patchy, MU-altered zones.

<<Alt: 293.17 - 296.44 Moderate Muscovite>>

<<Vein: 268.04 - 269.68 Quartz-Carbonate>> Undulating quartz veins with CA patches and FRA.

<<Vein: 270.82 - 271.11 Quartz>> Massive quartz vein, broken apart by RHY host; vein contains carbonate blebs and FRA.

<<Vein: 272.72 - 274.4 Quartz-Carbonate 70 deg. >> Quartz-carbonate veins (0.5-4cm wide).

<<Vein: 279.46 - 285.23 Quartz-Carbonate 70 deg. >> Quartz veins with patchy-carbonate, and CA FRA.

<<Vein: 285.45 - 295.5 Quartz-Carbonate>> DEF-undulating quartz-carbonate veins within heavily-altered RHY.

<<Vein: 296.26 - 296.35 Quartz-Sulphide>> Fractured, quartz vein with angular-brecciated clasts of RHY host; CP blebs.

<<Struc: 271.42 - 271.52 Moderate Fault>> Semi-soft RHY gouge-shear zone, with disseminated PY.

<<Struc: 273.37 - 273.47 Weak-Moderate Fault>> Clast-supported, FLT BRX. Large, angular RHY clasts have undergone strong sericite alteration, and are surrounded with semi-soft, sericitic gouge.

<<Struc: 273.85 - 274.4 Foliation>> Tight-foliation - shear zone (?) proximal to FLT.

<<Struc: 275.72 - 277.34 Weak-Moderate Fault>> Brecciated RHY with strong sericite alteration. Minor bands of gouge.

<<Struc: 279.58 - 279.59 dominant foliation>>

<<Struc: 283.25 - 283.26 dominant foliation>>

<<Struc: 283.46 - 283.7 Weak Fault>> Fractured-brecciated, MU-altered RHY with minor gouge.

<<Struc: 293.9 - 293.91 dominant foliation>>

<<Struc: 295.68 - 295.69 dominant foliation>>

296.35	**296.73**	**OK**	**Heavilly disseminated sulphides and/or stringer style mineralization associated with barite ± quartz ± carbonate gangue**	296.35	296.85	0.50	D00005754	0.807	128	0.85	0.7	2.78

296.35 - 296.73: Heavily-disseminated PY + SP +/- CP within a silicate-rich gangue. There is strong MU-alteration at the beginning of the interval.

<<Min: 296.35 - 296.73 10% Min: Sphalerite>> Heavily-disseminated PY + SP +/- CP within a silicate-rich gangue.

<<Min: 296.35 - 296.73 15% Min: Pyrite>> Heavily-disseminated PY + SP +/- CP within a silicate-rich gangue.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 296.35 - 296.73 3% Min: Chalcopyrite>> Heavily-disseminated PY + SP +/- CP within a silicate-rich gangue.									
		<<Struc: 296.67 - 296.68 dominant foliation>>									
296.73	**299.40**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	296.85	298.00	1.15	D00005755	1.23	97.7	1.37	0.53	4.78
		296.73 - 299.4: Fine-coarse grained, PY-dominant, massive sulphide with disseminated SP +/- CP. CA is weakly-disseminated; subrounded, carbonate-rich blebs are rare. Sharp upper and lower CNT.									
		<<Min: 296.73 - 299.4 7% Min: Sphalerite>> Fine-coarse grained, PY-dominant, massive sulphide with disseminated SP +/- CP.	298.00	299.40	1.40	D00005756	1.31	143	0.79	0.78	6.83
		<<Min: 296.73 - 299.4 75% Min: Pyrite>> Fine-coarse grained, PY-dominant, massive sulphide with disseminated SP +/- CP.									
		<<Min: 296.73 - 299.4 2% Min: Chalcopyrite>> Fine-coarse grained, PY-dominant, massive sulphide with disseminated SP +/- CP.									
		<<Alt: 296.73 - 299.4 Weak Calcite>> Weakly-disseminated CA; and rare, carbonate-rich blebs.									
		<<Struc: 297.69 - 297.7 dominant foliation>>									
299.40	**329.89**	**RHY** **undifferentiated rhyolite**	299.40	300.90	1.50	D00005757	0.01	1.1	-0.01	0.01	0.02
		299.4 - 329.89: MU-SI altered, undifferentiated RHY; alteration is strongest proximal to the massive sulphide, and within FLT zones. Ankerite alteration begins around 320.85m, and continues to 329.89m. Massive quartz veins occur between 321-328.8m; veins contain blebs of GL+CP+/-SP.									
		<<Min: 299.4 - 306.6 0.1% Min: Sphalerite>> Trace, finely-disseminated SP along foliation.	300.90	302.40	1.50	D00005758	0.006	0.5	-0.01	-0.01	-0.01
		<<Min: 299.4 - 306.6 2% Min: Pyrite>> 1-2% PY, FD along foliation. PY blebs are visible within the FLT zone (302.9-303.3m).	302.40	304.00	1.60	D00005759	0.005	0.4	-0.01	-0.01	-0.01
		<<Min: 306.6 - 321.03 3% Min: Pyrite>> FD to disseminated PY along foliation.	327.50	329.00	1.50	D00005761	0.386	40.3	0.05	0.18	0.11
		<<Min: 306.87 - 321.03 2% Min: Arsenopyrite>> FD to blebs of disseminated AS.	329.00	330.13	1.13	D00005762	0.77	53.2	0.14	0.21	1.25
		<<Min: 321.03 - 326.28 1% Min: Sphalerite>> SP blebs and FRA within massive quartz veins.									
		<<Min: 321.03 - 326.28 0.5% Min: Pyrite>> Disseminated PY along foliation; trace PY within quartz veins.									
		<<Min: 321.03 - 326.28 2% Min: Galena>> Blebs of GL within massive quartz veins.									
		<<Min: 324.7 - 326.28 2% Min: Chalcopyrite>> CP blebs and FRA within a massive quartz vein.									
		<<Min: 326.28 - 328.04 0.5% Min: Pyrite>>									
		<<Min: 328.04 - 328.8 2% Min: Sphalerite>> SP blebs and FRA within a fractured, massive quartz vein.									
		<<Min: 328.04 - 328.8 3% Min: Galena>> GL blebs and FRA within a fractured, massive quartz vein.									
		<<Min: 328.04 - 329 0.5% Min: Pyrite>> Disseminated PY is visible on fractured, quartz surfaces. FD along foliation of RHY.									
		<<Min: 329 - 329.1 5% Min: Sphalerite>> Disseminated blebs and FRA within a quartz-carbonate vein.									
		<<Min: 329 - 329.1 2% Min: Chalcopyrite>> Disseminated-blebs of CP+SP within a quartz-carbonate vein.									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 329 - 329.89 2% Min: Pyrite>> Disseminated PY within quartz-carbonate vein; FD along foliation of RHY.

<<Alt: 299.4 - 326.28 Moderate Muscovite>> Mod-strong, pervasive MU-alteration, most visible along cleavage planes. MU-alteration is strongest within the FLT zone (~302.9-303.3m).

<<Alt: 299.4 - 326.28 Weak Calcite>> Trace-weak, disseminated CA; occasional FRA. CA blebs within massive quartz veins.

<<Alt: 299.4 - 333.2 Moderate Silicification>>

<<Alt: 320.85 - 331 Moderate Ankerite>> Disseminated-blebs of AK, pervasive throughout the RHY.

<<Alt: 326.28 - 329.02 Trace Calcite>> Trace disseminated CA; blebs and FRA within quartz veins.

<<Alt: 326.28 - 333.2 Moderate-Strong Muscovite>>

<<Alt: 329.02 - 330.13 Weak-Moderate Calcite>> CA-rich patches within quartz-carbonate veins.

<<Vein: 321.03 - 321.6 Quartz>> Blebs of GL +/- SP within a massive quartz vein; CA blebs and FRA.

<<Vein: 323.26 - 323.71 Quartz>> Massive quartz vein with blebs of SP+GL.

<<Vein: 324.7 - 326.28 Quartz>> Massive quartz vein with blebs of carbonate. CP+GL+SP+PY blebs and FRA within vein.

<<Vein: 327.72 - 327.81 Quartz-Carbonate>> DEF quartz veins with blebby-carbonate.

<<Vein: 328.04 - 328.8 Quartz>> Fractured, massive quartz vein with patchy-carbonate, and blebs of GL+SP; ~70% recovered.

<<Vein: 329.02 - 330.3 Quartz-Carbonate-Sulphide>> Quartz-carbonate veins with disseminated PY+SP.

<<Struc: 299.4 - 299.41 Contact>> Lower CNT of massive sulphide, between OB mineralization and RHY.

<<Struc: 301.3 - 301.31 dominant foliation>>

<<Struc: 302.85 - 303.55 Moderate Fault>> Weak, fractured-brecciated RHY with strong MU-alteration, minor gouge, and disseminated PY.

<<Struc: 305.72 - 305.73 dominant foliation>>

<<Struc: 306.4 - 306.87 Weak Fault>> Competent, fractured-brecciated RHY with strong MU alteration, and minor gouge.

<<Struc: 308 - 308.01 dominant foliation>>

<<Struc: 313.27 - 314.65 Moderate Fault>> MU-altered, RHY BRX and RHY. The matrix surrounding cm-size, subrounded quartz and RHY clasts consists of weak, sericitic gouge.

<<Struc: 316.83 - 316.84 dominant foliation>>

<<Struc: 319.84 - 319.85 dominant foliation>>

<<Struc: 321.6 - 322.9 Weak-Moderate Fault>> MU & AK-altered RHY rubble, with small pulverized zones.

<<Struc: 327.22 - 327.23 Foliation>>

<<Struc: 329.81 - 329.82 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
329.89	**330.13**	**OI** **Heavilly disseminated sulphides in host schist**									
329.89 - 330.13: Heavily-disseminated PY + SP +/- GL within host RHY, and a quartz-carbonate vein (330.01-330.07m).											
<<Min: 329.89 - 330.13 3% Min: Sphalerite>> Disseminated SP; blebs within quartz-carbonate veins.											
<<Min: 329.89 - 330.13 20% Min: Pyrite>> Banded to semi-massive PY; PY is disseminated within quartz-carbonate veins.											
<<Min: 329.89 - 330.13 0.5% Min: Galena>> Trace disseminated GL within quartz-carbonate veins.											
330.13	**333.20**	**RHY** **undifferentiated rhyolite**	330.13	331.70	1.57	D00005763	0.031	2.5	-0.01	-0.01	0.03
330.13 - 333.2: MU-AK-SI altered, undifferentiated RHY with disseminated PY +/- SP. Sharp lower CNT, with massive sulphide.											
<<Min: 330.13 - 333.2 0.5% Min: Sphalerite>> Trace disseminated SP, near the margins of the upper and lower CNT.			331.70	333.20	1.50	D00005764	0.027	7.1	0.02	0.05	0.21
<<Min: 330.13 - 333.2 2% Min: Pyrite>> Most abundant proximal to upper and lower CNT.											
<<Alt: 330.13 - 333.45 Trace Calcite>>											
<<Alt: 331 - 332.89 Weak-Moderate Ankerite>>											
333.20	**338.82**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	333.20	334.40	1.20	D00005765	2.42	345	0.39	3.13	9.9
333.2 - 338.82: Semi-massive to massive PY with disseminated-bands of SP, and trace disseminated GL+CP+/-MG. Quartz-carbonate bands and aggregates occur throughout the interval; possible BA aggregates? Localized zones contain tourmaline (?) FRA and blebs.											
<<Min: 333.2 - 333.53 2% Min: Sphalerite>>			334.40	335.90	1.50	D00005766	2.07	275	0.33	2.56	7.23
<<Min: 333.2 - 334.4 1% Min: Chalcopyrite>> Semi-massive to massive PY with disseminated-banded SP, and trace disseminated CP+GL.			335.90	337.00	1.10	D00005767	2.02	209	0.27	2.09	6.34
<<Min: 333.2 - 338.09 60% Min: Pyrite>> Semi-massive to massive PY with disseminated-banded SP, and trace CP+GL+/-MG.			337.00	338.09	1.09	D00005768	2.42	263	0.2	4.26	9.6
<<Min: 333.2 - 338.84 0.5% Min: Galena>> Semi-massive to massive PY with disseminated-banded SP, and trace disseminated CP+GL.			338.09	338.82	0.73	D00005769	1.5	120	0.29	1.85	7.41
<<Min: 333.53 - 334.4 10% Min: Sphalerite>> Disseminated-banded SP within massive PY.											
<<Min: 334.3 - 338.82 0.1% Min: Magnetite>>											
<<Min: 334.4 - 338.09 6% Min: Sphalerite>> Disseminated-banded SP within semi-massive to massive PY.											
<<Min: 334.4 - 338.8 0.5% Min: Chalcopyrite>>											
<<Min: 334.93 - 338.09 2% Min: Barite>> Possible BA aggregates?											
<<Min: 338.09 - 338.82 3% Min: Sphalerite>> Disseminated-banded SP within massive PY.											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
		<<Min: 338.09 - 338.82 85% Min: Pyrite>> Massive PY with disseminated-banded SP, and trace disseminated CP +/- MG.									
		<<Min: 338.8 - 340.94 3% Min: Chalcopyrite>> Disseminated-blebs of CP; most common within quartz-carbonate aggregates.									
		<<Alt: 333.45 - 334.4 Weak-Moderate Calcite>> Disseminated-pervasive CA; QC aggregates.									
		<<Alt: 334.4 - 342.25 Trace Calcite>> Trace-weak, disseminated OP; patchy within quartz-carbonate (poor) aggregates.									
		<<Struc: 333.2 - 333.21 Contact>> Upper CNT of massive sulphide.									
		<<Struc: 335.86 - 335.87 dominant foliation>>									
		<<Struc: 336.34 - 337.52 Weak-Moderate Fault>> Incompetent, fractured OB mineralization.									
		<<Struc: 337.86 - 337.87 dominant foliation>>									
338.82	**340.94**	**OA Laminar or heavilly disseminated magnetite bearing massive sulphide**	338.82	340.00	1.18	D00005772	1.71	183	0.42	3.22	7.56
		338.82 - 340.94: Massive PY with disseminated-banded MG+SP+/-GL. Quartz-carbonate aggregates contain blebs of CP+SP+GL.									
		<<Min: 338.82 - 340.94 10% Min: Magnetite>> Disseminated blebs-bands of MG within massive PY.	340.00	340.94	0.94	D00005773	0.712	160	0.13	3.39	9.88
		<<Min: 338.82 - 342.25 70% Min: Pyrite>> Semi-massive to massive PY.									
		<<Min: 338.82 - 343.4 5% Min: Sphalerite>> Disseminated-banded SP+MG within massive PY. SP+GL blebs are common within quartz-carbonate aggregates.									
		<<Min: 338.84 - 340.75 1% Min: Galena>> Disseminated GL within massive PY; GL-blebs are common within quartz-carbonate aggregates.									
		<<Min: 340.75 - 345.34 0.1% Min: Galena>> Trace disseminated GL within the massive PY.									
340.94	**344.35**	**OB Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	340.94	342.25	1.31	D00005774	1.78	152	0.32	2.58	7.51
		340.94 - 344.35: Semi-massive to massive PY with disseminated-bands of SP +/- CP. Quartz-carbonate bands-aggregates host disseminated sulphides. Tourmaline porphyrblasts are localized (343.9-344.35m).									
		<<Min: 340.94 - 342 1% Min: Chalcopyrite>> Disseminated-blebs of CP; gen found within visible host rock.	342.25	343.40	1.15	D00005775	2.86	180	0.27	1.42	5.07
		<<Min: 342.25 - 344.35 60% Min: Pyrite>> Semi-massive to massive PY.	343.40	344.35	0.95	D00005776	3.63	437	0.23	5.3	10.8
		<<Min: 342.25 - 344.35 1% Min: Barite>> Possible BA aggregates?									
		<<Min: 343.4 - 345.34 8% Min: Sphalerite>> Disseminated-banded SP within massive PY.									
		<<Alt: 342.25 - 343.4 Weak Calcite>> Disseminated-banded CA.									
		<<Alt: 343.4 - 345.34 Trace Calcite>>									
		<<Struc: 342.41 - 342.42 dominant foliation>>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
344.35	**345.34**	**OA** **Laminar or heavilly disseminated magnetite bearing massive sulphide**	344.35	345.34	0.99	D00005777	1.06	135	0.19	1.9	11.1

344.35 - 345.34: Massive PY with disseminated-banded MG+SP; trace disseminated GL, and rare quartz-carbonate aggregates.

<<Min: 344.35 - 345.34 15% Min: Magnetite>> Disseminated blebs-bands of MG within massive PY.

<<Min: 344.35 - 346.05 70% Min: Pyrite>>

<<Struc: 345.3 - 345.31 dominant foliation>>

345.34	**346.05**	**OB** **Wispy laminar, fine buckshot textured, massive sulphide with lesser magnetite**	345.34	346.05	0.71	D00005778	0.375	138	-0.01	3.24	9.16

345.34 - 346.05: Massive PY with disseminated-banded SP. Quartz-carbonate and barite (?) aggregates contain disseminated SP+GL.

<<Min: 345.34 - 346.05 6% Min: Sphalerite>> Disseminated-banded SP within massive PY; SP+GL blebs within quartz-carbonate aggregates.

<<Min: 345.34 - 346.05 1% Min: Galena>> Disseminated GL within massive PY; GL-blebs within quartz-carbonate aggregates.

<<Min: 345.34 - 346.05 2% Min: Barite>>

<<Alt: 345.34 - 346.05 Weak-Moderate Calcite>> Weak-moderate, pervasive CA; QC aggregates.

346.05	**346.55**	**OF** **Pyrrhotite rich sulphides**	346.05	346.55	0.50	D00005779	0.37	39.2	0.5	0.65	7.63

346.05 - 346.55: Semi-massive to massive PO+PY, with disseminated SP, MG, CP, and coarse-grained AS. Soft, dark-green, chloritic host (?) and subangular clasts - mafic origin? Sharp, quartz vein lower CNT with RHY.

<<Min: 346.05 - 346.55 8% Min: Sphalerite>> Fine-medium grained, disseminated-banded SP within semi-massive PO+PY.

<<Min: 346.05 - 346.55 15% Min: Pyrite>> Semi-massive to massive PY+PO, with disseminated SP, MG, CP, and coarse-grained AS.

<<Min: 346.05 - 346.55 35% Min: Pyrrhotite>> Semi-massive to massive PY+PO, with disseminated SP, MG, CP, and coarse-grained AS.

<<Min: 346.05 - 346.55 4% Min: Magnetite>> Disseminated-blebs of MG.

<<Min: 346.05 - 346.55 1% Min: Chalcopyrite>> Disseminated-blebs.

<<Min: 346.05 - 346.55 5% Min: Arsenopyrite>> Coarse-grained, disseminated AS within semi-massive PO+PY and altered-host.

<<Alt: 346.05 - 355 Trace Calcite>> Trace, blebs and FRA within quartz veins.

From (m)	To (m)	Rocktype & Description
346.55	**380.90**	**RHY undifferentiated rhyolite**

346.55 - 380.9: MU-SI altered, undifferentiated RHY with minor BRX FLT zones, and localized chevron-folding. Massive quartz veins are prominent up to approx 353.4m. CL-alteration is restricted to FLT zones. PY is disseminated throughout the unit; PY-rich banding is localized, and more prominent towards the end of the interval.

<<Min: 346.55 - 356.6 0.5% Min: Pyrite>>

<<Min: 346.55 - 361.38 0.1% Min: Pyrrhotite>>

<<Min: 356.6 - 357.18 4% Min: Pyrite>> Fine-medium grained, disseminated-banded PY.

<<Min: 357.18 - 361.38 1% Min: Pyrite>> Disseminated PY; rare, localized banding.

<<Min: 361.38 - 364.49 2% Min: Pyrrhotite>>

<<Min: 361.38 - 364.8 3% Min: Pyrite>> Disseminated-banded.

<<Min: 364.49 - 371.5 0.1% Min: Pyrrhotite>> Trace disseminated PO.

<<Min: 364.8 - 371.5 0.5% Min: Pyrite>> Rare bands of disseminated PY; blebs within massive quartz vein.

<<Min: 371.5 - 380.9 4% Min: Pyrite>> Disseminated-banded PY +/- PO.

<<Min: 371.5 - 380.9 1% Min: Pyrrhotite>> Disseminated-banded PY +/- PO.

<<Alt: 346.55 - 375.1 Weak-Moderate Silicification>>

<<Alt: 346.55 - 380.9 Moderate Muscovite>>

<<Alt: 355 - 370.85 Trace Calcite>> Trace disseminated CA.

<<Alt: 366.35 - 375.29 Trace Chlorite>>

<<Alt: 370.85 - 379.35 Weak-Moderate Calcite>> Patchy-blebs within quartz-carbonate veins.

<<Alt: 370.97 - 375 Weak Biotite>> BI-alteration +/- PO within silica-rich blebs.

<<Alt: 375.1 - 380.9 Moderate Silicification>>

<<Alt: 379.35 - 380.9 Trace Calcite>>

<<Vein: 346.55 - 347.66 Quartz>> DEF quartz veins; carbonate blebs and FRA within hairline fractures.

<<Vein: 348.19 - 348.61 Quartz>> Massive quartz vein; rare carbonate blebs.

<<Vein: 348.7 - 350.16 Quartz>> 1-5cm quartz veins with carbonate blebs and FRA.

<<Vein: 353.23 - 353.46 Quartz>>

<<Vein: 355.3 - 355.5 Quartz>>

<<Vein: 359.04 - 363.13 Quartz-Carbonate>>

<<Vein: 370.88 - 371.43 Quartz-Carbonate>> Massive-undulating quartz vein with patchy-carbonate, and blebs of chlorite, tourmaline, biotite, and pyrite.

<<Vein: 374.07 - 376.8 Quartz-Carbonate>> Series of fractured-pulverized quartz-carbonate veins with tourmaline FRA, and disseminated PY.

<<Vein: 378.07 - 378.48 Quartz-Carbonate>> DEF quartz veins with patchy-carbonate, blebs of chlorite, and disseminated biotite and pyrite.

<<Vein: 379.26 - 381.67 Quartz-Carbonate>> Quartz veins with blebby-carbonate.

From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
346.55	348.00	1.45	D00005781	0.007	1.4	-0.01	0.01	0.03
348.00	349.50	1.50	D00005782	0.006	0.4	-0.01	-0.01	-0.01
349.50	351.00	1.50	D00005783	0.006	0.8	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Struc: 346.55 - 346.56 Contact>> Lower CNT of massive sulphide.

<<Struc: 348.04 - 348.05 dominant foliation>>

<<Struc: 348.66 - 348.67 dominant foliation>>

<<Struc: 351.3 - 353.6 Trace Fault>> Trace-weak, fractures throughout RHY; minor shearing-gouge.

<<Struc: 356.27 - 356.28 dominant foliation>>

<<Struc: 359.7 - 359.71 dominant foliation>>

<<Struc: 363.19 - 363.2 dominant foliation>>

<<Struc: 367.48 - 367.49 dominant foliation>>

<<Struc: 370.44 - 370.45 dominant foliation>>

<<Struc: 372.7 - 373.25 Weak-Moderate Fault>> Incompetent-fractured RHY with 8cm of weak, chloritic gouge.

<<Struc: 374.1 - 376.4 Weak-Moderate Fault>> Fractured RHY with minor shearing. Quartz-RHY is pulverized proximal to the quartz vein (~375m). Subrounded, brecciated quartz clasts (< 4cm) occur within the sheared RHY.

<<Struc: 376.67 - 377.15 Moderate Fault>> Fractured RHY with pulverized zones, and minor gouge. Sericitic gouge contains subangular quartz clasts (1-10mm).

<<Struc: 377.69 - 377.7 dominant foliation>>

380.90 381.74 PEL Equigranular biotite + calcite +/- quartz rock

380.9 - 381.74: Dark green-brown, chlorite-rich, biotite-poor PEL (?) with quartz-carbonate banding, and disseminated PY + PO.

<<Min: 380.9 - 381.74 0.1% Min: Pyrite>>

<<Min: 380.9 - 381.74 0.5% Min: Pyrrhotite>> Disseminated PO; generally localized.

<<Alt: 380.9 - 381.74 Weak-Moderate Chlorite>> Chlorite-rich PEL.

<<Alt: 380.9 - 381.74 Weak Calcite>> Weak-pervasive CA within PEL; quartz-carbonate bands.

381.74 382.80 RHY undifferentiated rhyolite

381.74 - 382.8: Light grey, SI-altered RHY with disseminated PO.

<<Min: 381.74 - 382.8 2% Min: Pyrrhotite>>

<<Min: 381.74 - 387.98 0.5% Min: Pyrite>> Disseminated PY; PY blebs within quartz vein.

<<Alt: 381.74 - 382.8 Moderate Silicification>>

<<Alt: 381.74 - 382.8 Moderate Muscovite>>

<<Alt: 381.74 - 382.8 Trace Calcite>>

<<Struc: 381.76 - 381.77 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

382.80 384.93 PEL Equigranular biotite + calcite +/- quartz rock

382.8 - 384.93: Greenish-brown, biotite-rich PEL with localized MU-alteration, and disseminated PO +/- PY.

<<Min: 382.8 - 387.98 1% Min: Pyrrhotite>> Disseminated-banded PO; PO blebs within quartz vein.

<<Alt: 382.8 - 387.98 Weak Chlorite>> Chloritic PEL. CL blebs are stronger within massive quartz-carbonate-chlorite, altered vein.

<<Alt: 382.8 - 387.98 Weak-Moderate Calcite>> Patchy, CA is stronger within the massive quartz-carbonate-chlorite vein.

<<Struc: 383.52 - 383.53 dominant foliation>>

384.93 387.98 PEL Equigranular biotite + calcite +/- quartz rock

384.93 - 387.98: Alternating beds of PEL and altered-RHY, with gradational contacts. Minor FLT zones occur throughout the interval. There is a massive quartz-carbonate-chlorite vein with disseminated biotite +/- pyrite from approx 385.7-385.9m.

<<Alt: 384.93 - 387.98 Moderate Silicification>> Pervasive SI-alteration within RHY.

<<Alt: 384.93 - 416.22 Moderate Muscovite>> Pervasive, web-like texture surrounding BI-SI blebs; alteration is stronger within FLZ.

<<Vein: 385.59 - 386.05 Quarzt-Chlorite-Carbonate>> Regular to massive quartz veins with patchy carbonate and chlorite, disseminated biotite is most prominent within the carbonate. Trace disseminated pyrite.

<<Vein: 386.05 - 393.85 Quartz-Carbonate>>

<<Struc: 384.94 - 384.95 dominant foliation>>

<<Struc: 385.14 - 385.75 Weak-Moderate Fault>> Heavily-fractured RHY - rubble zone; <50% recovered.

<<Struc: 387.6 - 387.61 dominant foliation>>

<<Struc: 387.7 - 387.97 Weak-Moderate Fault>> Fractured RHY - rubble zone.

387.98 416.22 RHY undifferentiated rhyolite

387.98 - 416.22: MU-SI-BI altered RHY (?) with disseminated PO + PY. FLZ from approx 390.15-391.5m. Tourmaline FRA and localized, mm-size blebs are rare.

<<Min: 387.98 - 400.6 2% Min: Pyrite>> Disseminated PY; gen localized within SI-BI altered blebs.

<<Min: 387.98 - 400.6 5% Min: Pyrrhotite>> Disseminated PO localized within SI-BI blebs.

<<Min: 400.6 - 401.62 0.5% Min: Pyrite>>

<<Min: 400.6 - 401.62 0.1% Min: Pyrrhotite>>

<<Min: 401.62 - 406.03 3% Min: Pyrite>> Disseminated PY; rare bands.

<<Min: 401.62 - 406.03 2% Min: Pyrrhotite>>

<<Min: 406.03 - 406.85 1% Min: Pyrite>> Disseminated-banded.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Min: 406.03 - 406.85 1% Min: Pyrrhotite>> Disseminated PO; localized within SI-rich zone.

<<Min: 406.85 - 416.22 4% Min: Pyrite>> Fine-grained blebs to coarse-grained disseminated PY. Subhedral, med-coarse grained PY is visible on fractured surfaces. FRA is rare.

<<Min: 406.85 - 416.22 4% Min: Pyrrhotite>> Disseminated PO+PY; PO is gen localized within silica-rich blebs. Difficult to approximate percentage, based on amount of mixed biotite alteration.

<<Alt: 387.98 - 394.5 Weak Calcite>>

<<Alt: 387.98 - 405.3 Weak Biotite>> Blebs of disseminated BI +/- PO within silica-rich blebs.

<<Alt: 387.98 - 416.22 Weak-Moderate Silicification>> SI-rich blebs host disseminated BI+PO+/-PY. SI appears brecciated, due to surrounding MU-alteration, web-like texture.

<<Alt: 394.5 - 416.22 Trace Calcite>>

<<Alt: 406.85 - 416.22 Weak Biotite>> Blebs of disseminated BI +/- PO within silica-rich blebs.

<<Vein: 402.22 - 403.46 Quartz-Carbonate>> Quartz veins with blebby-carbonate.

<<Struc: 390.17 - 391.5 Moderate-Strong Fault>> MU-BI altered RHY FLT consists of sheared-RHY and gouge. The weak, sericitic gouge contains mm-size, subangular clasts of RHY, quartz, and disseminated PY. Gouge FRA is common within fractures. ~ 60% of the unit was recovered.

<<Struc: 393.1 - 393.11 dominant foliation>>

<<Struc: 399 - 400 Trace Fault>> Fractured, incompetent RHY.

<<Struc: 401.98 - 401.99 dominant foliation>>

<<Struc: 405.65 - 406.24 Weak Fault>> Sheared-fractured zones, within competent RHY.

<<Struc: 406.41 - 406.42 dominant foliation>>

<<Struc: 406.7 - 406.85 Moderate-Strong Fault>> Weak, sericitic gouge with mm-size quartz clasts, and disseminated pyrite.

<<Struc: 411.18 - 411.85 Trace Fault>> Fractured zone.

<<Struc: 413.1 - 413.11 dominant foliation>>

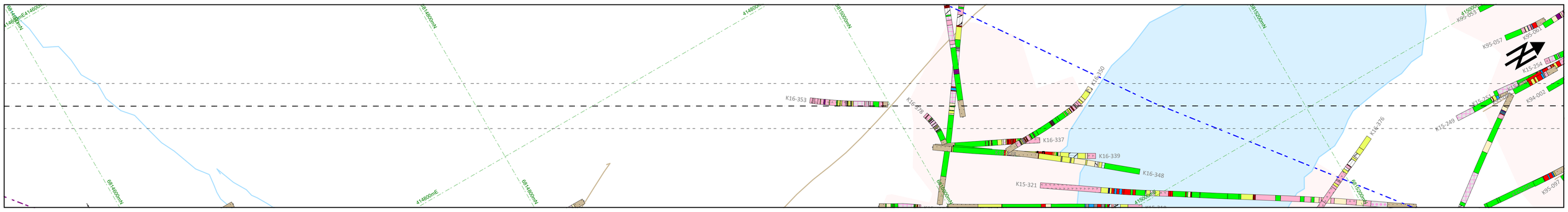
End of Hole @ 416.22

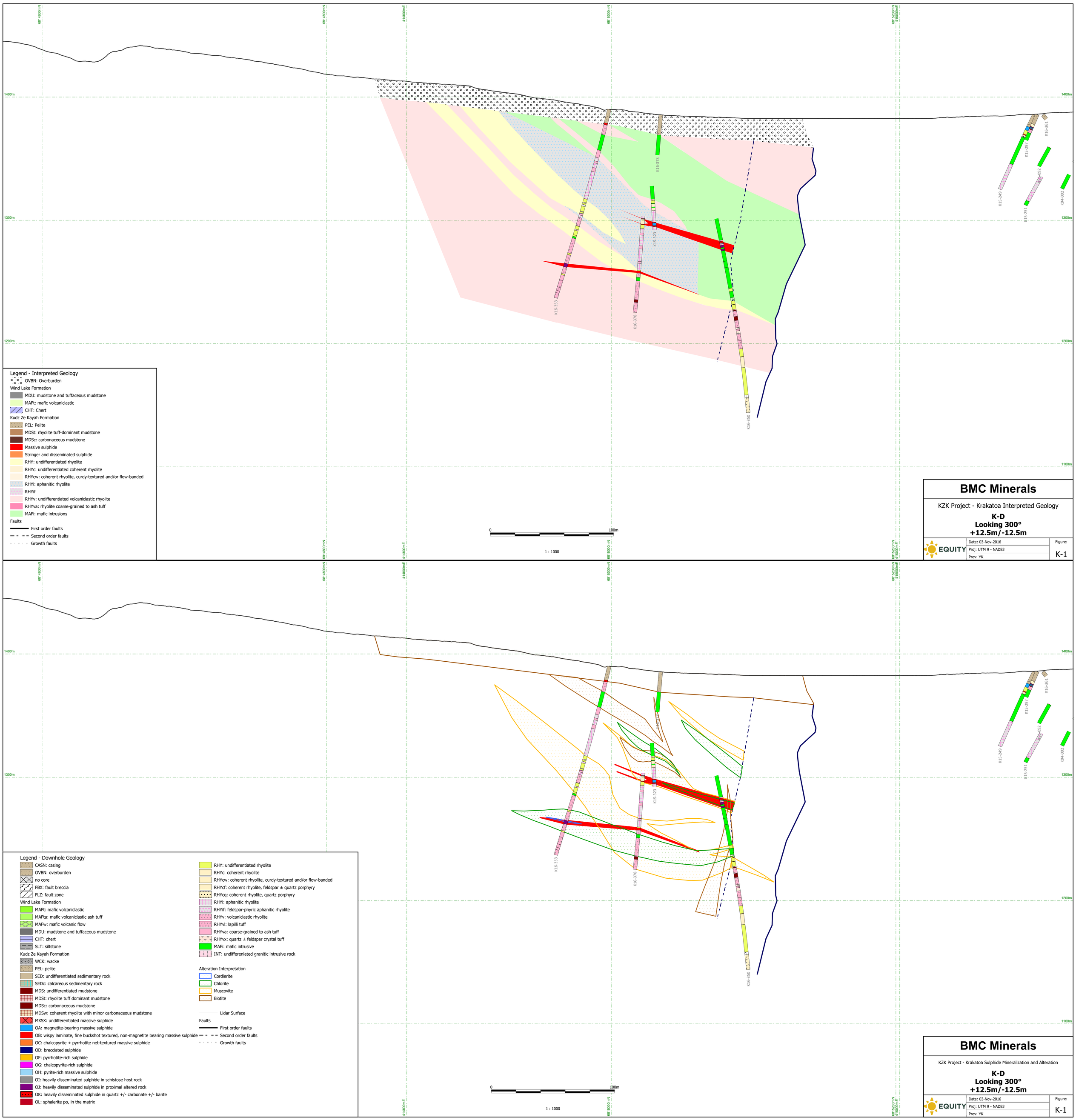
Appendix K: Geological Sections

This appendix contains 16 geological sections through the Krakatoa Zone and GP4F deposit, as summarized in Table K-1 below.

Table K-1: Table of contents for Krakatoa Zone and GP4F deposit sections in appendix K

Section	Deposit/Zone	Orientation	Looking	Width	Figure No
K-D	Krakatoa	030°	300°	±12.5 m	Figure K-1
K-E	Krakatoa	030°	300°	±12.5 m	Figure K-2
K-F	Krakatoa	030°	300°	±12.5 m	Figure K-3
K-G	Krakatoa	030°	300°	±12.5 m	Figure K-4
K-H	Krakatoa	030°	300°	±12.5 m	Figure K-5
K-I	Krakatoa	030°	300°	±12.5 m	Figure K-6
K-J	Krakatoa	030°	300°	±12.5 m	Figure K-7
K-K	Krakatoa	030°	300°	±12.5 m	Figure K-8
K-L	Krakatoa	030°	300°	±12.5 m	Figure K-9
K-M	Krakatoa	030°	300°	±12.5 m	Figure K-10
419350E	GP4F	000°	270°	±25 m	Figure K-11
419400E	GP4F	000°	270°	±25 m	Figure K-12
419450E	GP4F	000°	270°	±25 m	Figure K-13
419500E	GP4F	000°	270°	±25 m	Figure K-14
419550E	GP4F	000°	270°	±25 m	Figure K-15
419650E	GP4F	000°	270°	±25 m	Figure K-16





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation
- MDU: mudstone and tuffaceous mudstone
- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation
- PEL: Pelite
- MDSt: rhyolite tuff-dominant mudstone
- MDSc: carbonaceous mudstone
- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-D
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure:
Proj: UTM 9 - NAD83	K-1
Prov: YK	

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation
- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation
- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
- MDSw: coherent rhyolite with minor carbonaceous mudstone
- MXSX: undifferentiated massive sulphide
- OA: magnetite-bearing massive sulphide
- OB: wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide
- OC: chalcopyrite + pyrrhotite net-textured massive sulphide
- OD: brecciated sulphide
- OF: pyrrhotite-rich sulphide
- OG: chalcopyrite-rich sulphide
- OH: pyrite-rich massive sulphide
- OI: heavily disseminated sulphide in schistose host rock
- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
- RHYcq: coherent rhyolite, quartz porphyry
- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undiffereniated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

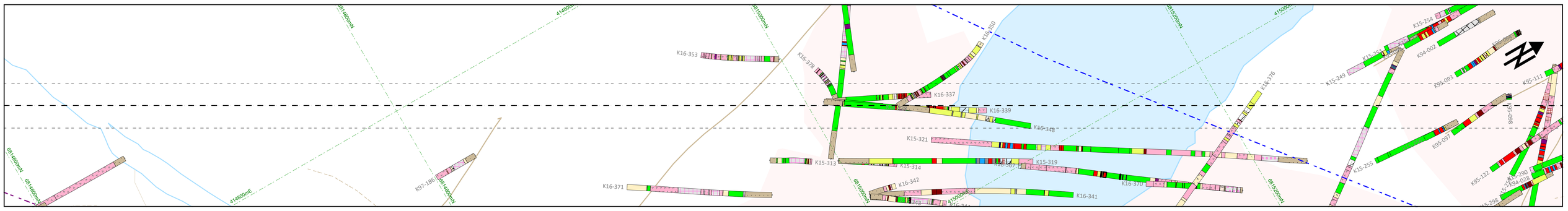
BMC Minerals

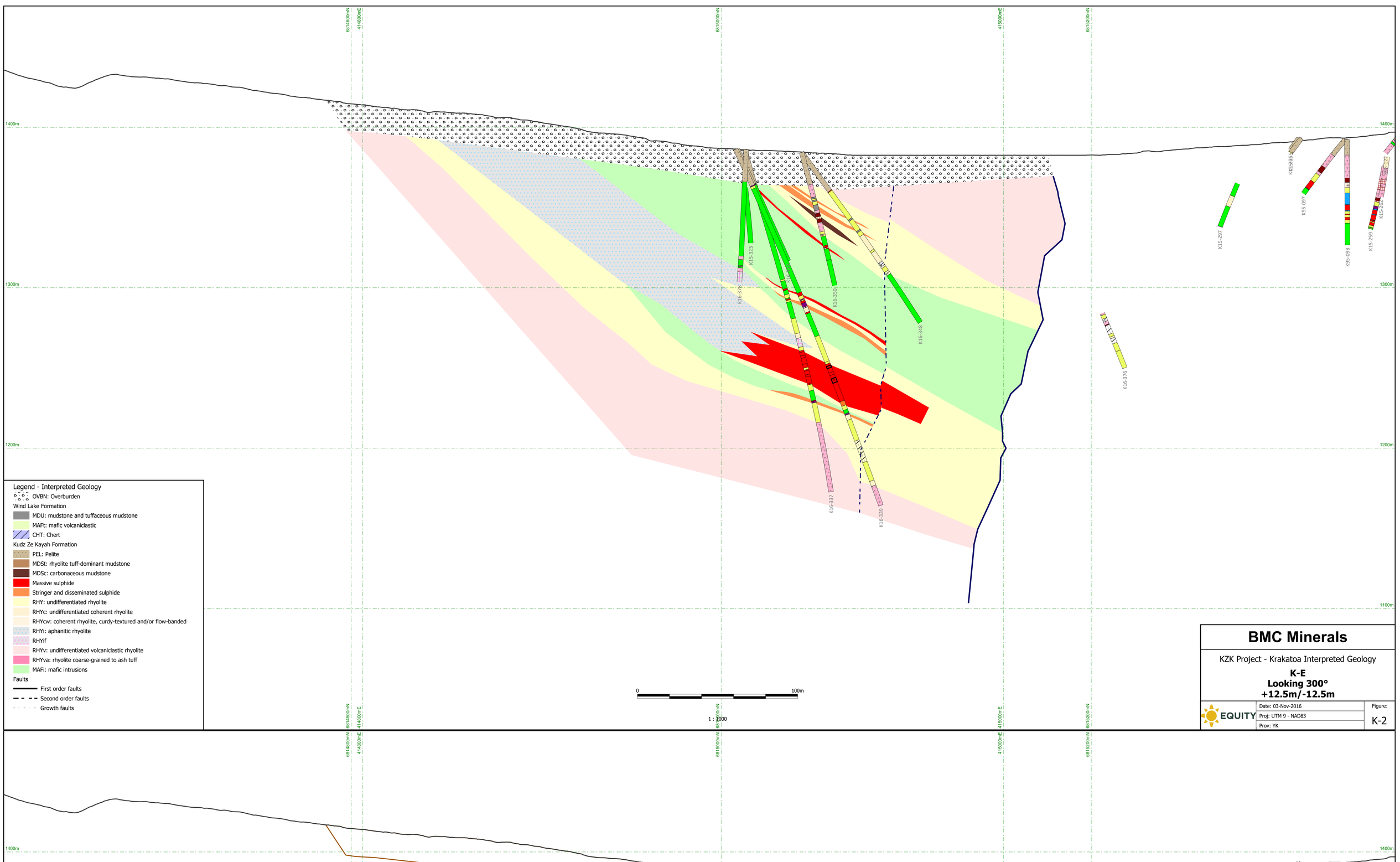
KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-D
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure:
Proj: UTM 9 - NAD83	K-1
Prov: YK	





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation

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Kudz Ze Kayah Formation

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- MDSt: rhyolite tuff-dominant mudstone
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- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

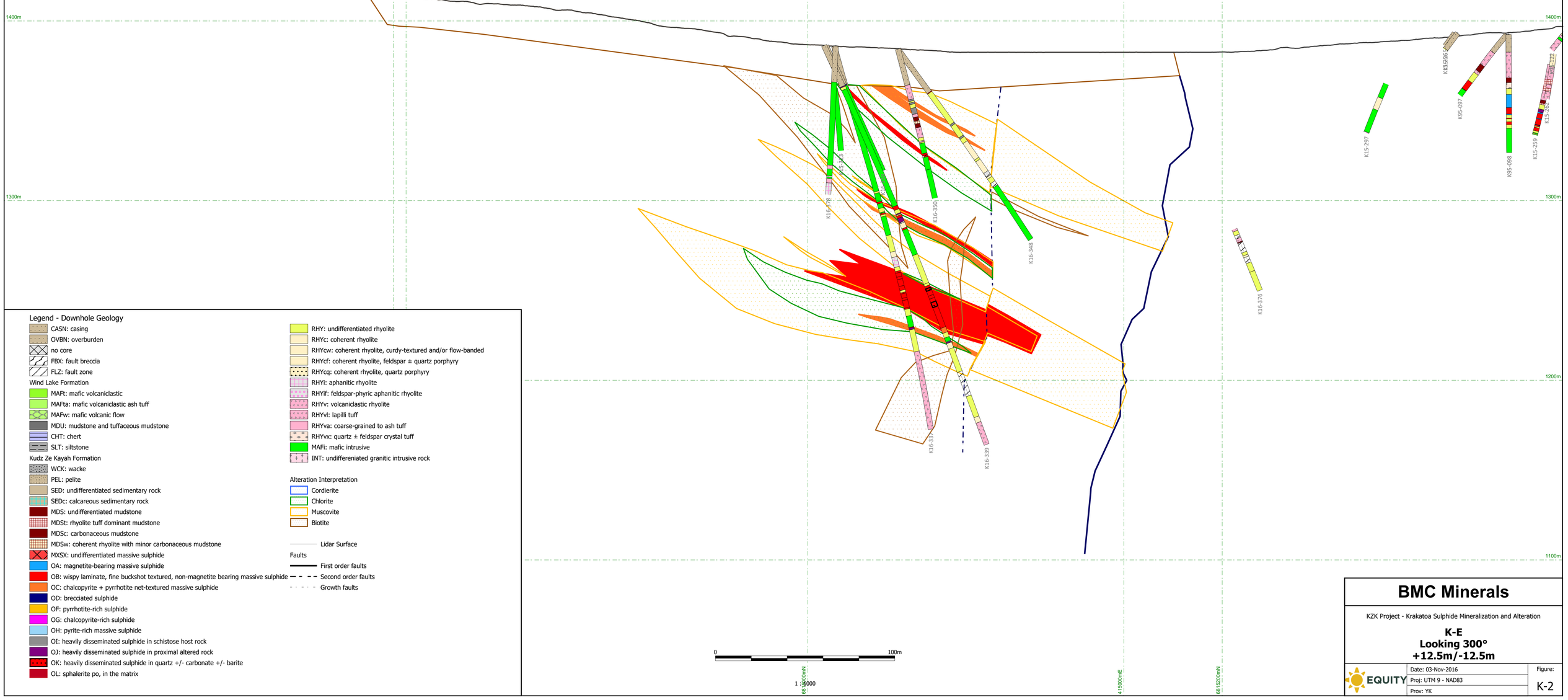
BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-E
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-2
Proj: UTM 9 - NAD83	
Prov: YK	



Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
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- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferentiated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

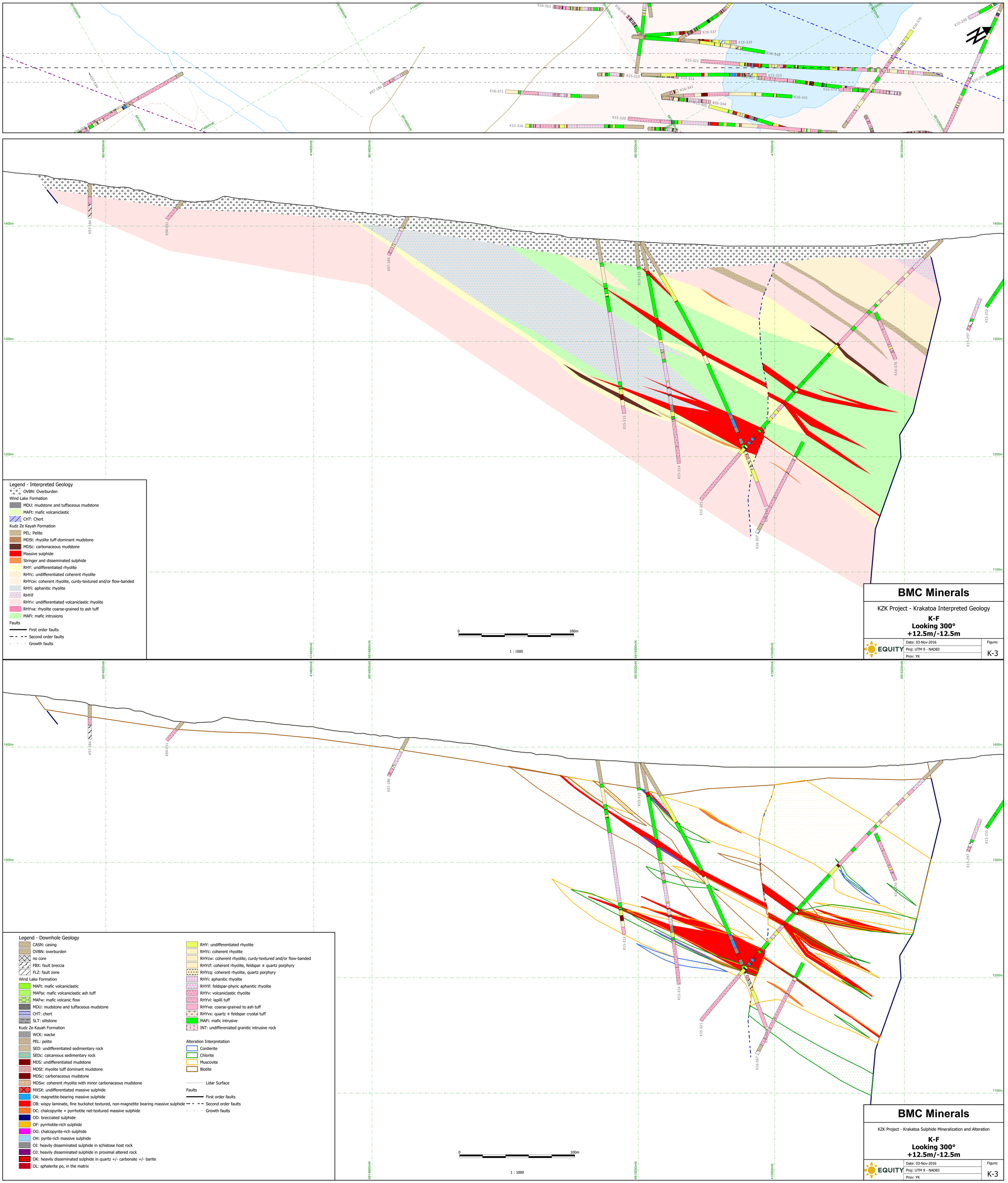
BMC Minerals

KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-E
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-2
Proj: UTM 9 - NAD83	
Prov: YK	



Legend - Interpreted Geology

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Wind Lake Formation

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Kudz Ze Kayah Formation

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- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-F
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-3
Proj: UTM 9 - NAD83	
Prov: YK	

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

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- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

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- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-F
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-3
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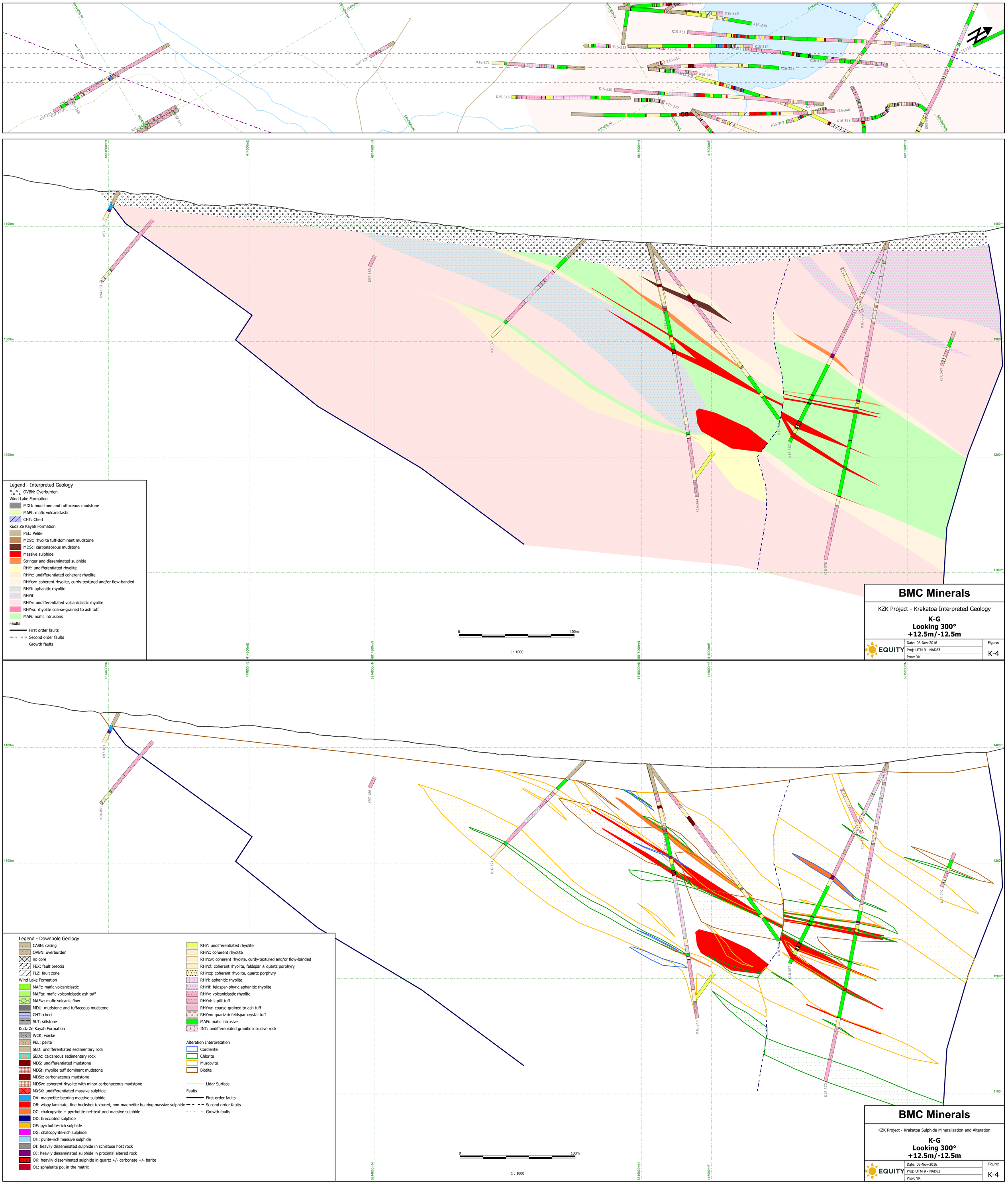
Prov: YK	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K97-181
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K97-185
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K16-339
K16-348
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K16-367
K15-255
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K16-342
K16-341
K15-305
K16-344
K15-320
K15-316
K15-322
K15-318
K16-340
K16-358
K15-307
K15-360
K16-370
1400m
1300m
1200m
1100m
0
100m
1 : 1000
Legend - Interpreted Geology
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Faults
First order faults
Second order faults
Growth faults
BMC Minerals
KZK Project - Krakatoa Interpreted Geology
K-G
Looking 300°
+12.5m/-12.5m
EQUITY
Date: 03-Nov-2016
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-4
Legend - Downhole Geology
CASN: casing
OVBN: overburden
no core
FBX: fault breccia
FLZ: fault zone
Wind Lake Formation
MAFt: mafic volcaniclastic
MAFta: mafic volcaniclastic ash tuff
MAFw: mafic volcanic flow
MDU: mudstone and tuffaceous mudstone
CHT: chert
SLT: siltstone
Kudz Ze Kayah Formation
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PEL: pelite
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SEDc: calcareous sedimentary rock
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MAFi: mafic intrusive
INT: undifferenciated granitic intrusive rock
Alteration Interpretation
Cordierite
Chlorite
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Lidar Surface
Faults
First order faults
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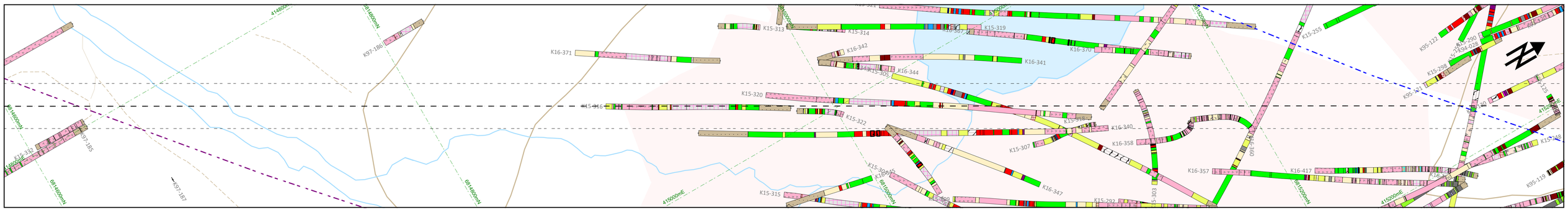
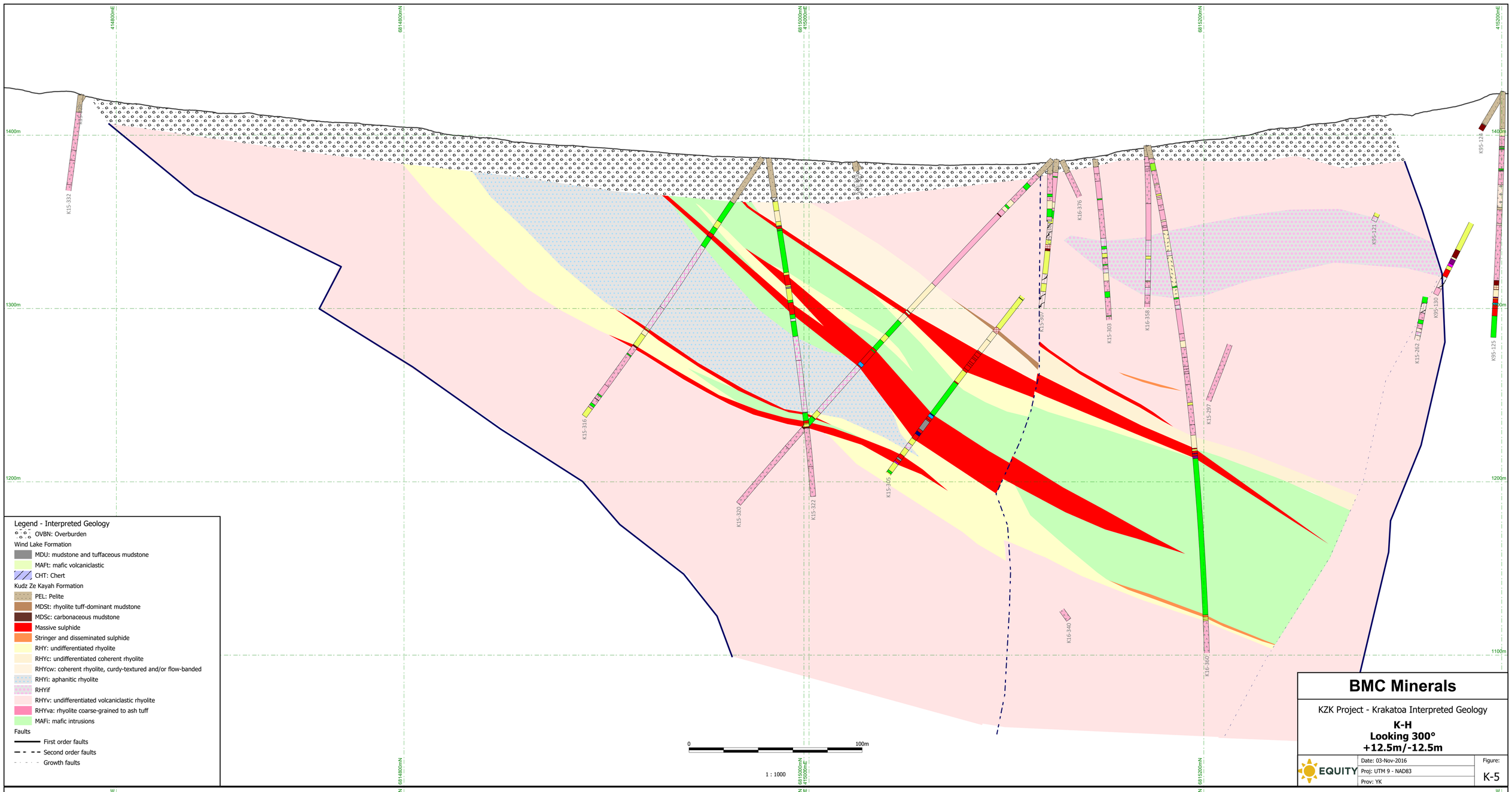
Growth faults
BMC Minerals
KZK Project - Krakatoa Sulphide Mineralization and Alteration
K-G
Looking 300°
+12.5m/-12.5m
EQUITY
Date: 03-Nov-2016
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-4





Legend - Interpreted Geology

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- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

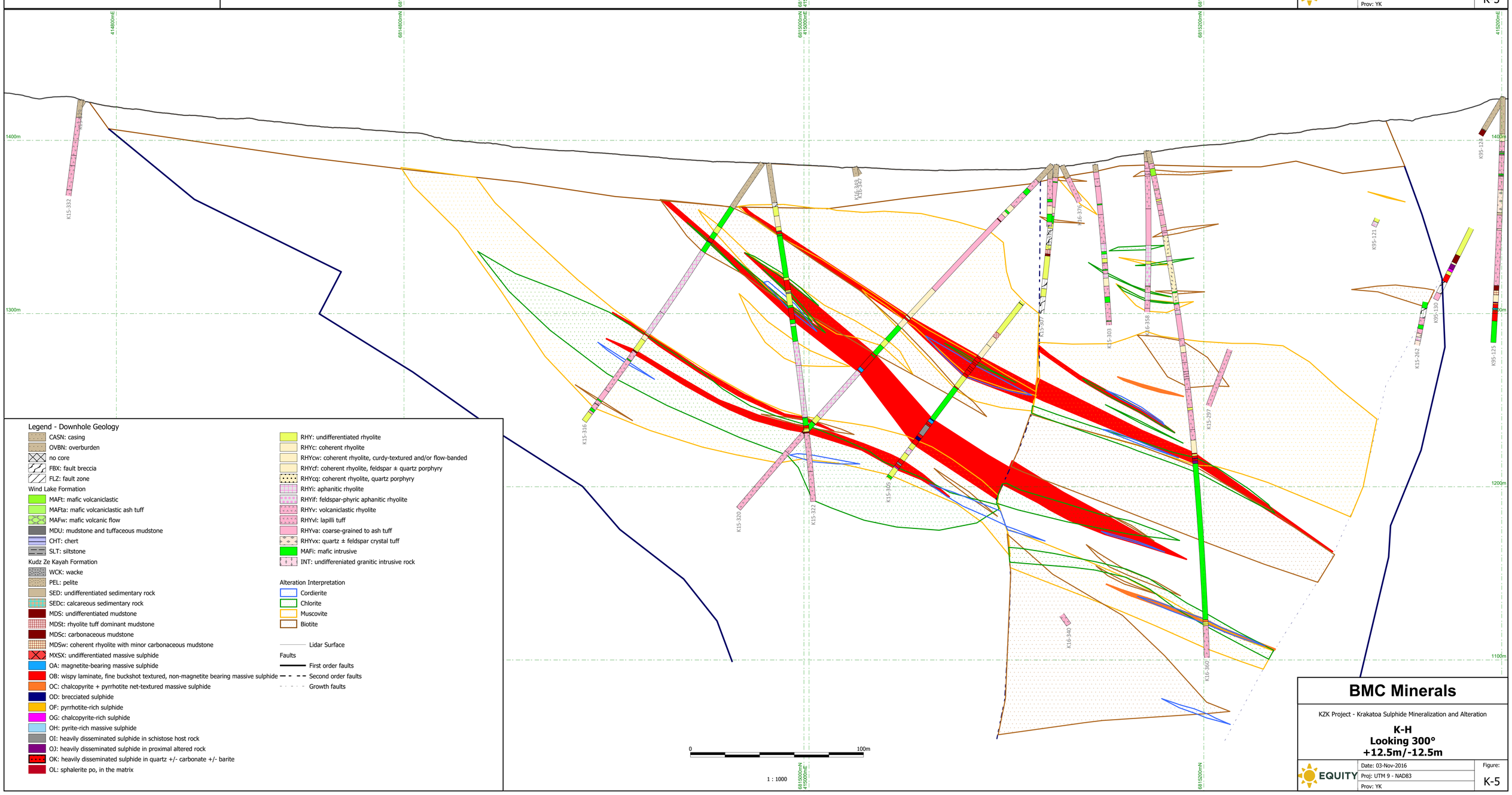
BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-H
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-5
Proj: UTM 9 - NAD83	
Prov: YK	



Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation

- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
- MDSw: coherent rhyolite with minor carbonaceous mudstone
- MXSX: undifferentiated massive sulphide
- OA: magnetite-bearing massive sulphide
- OB: wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide
- OC: chalcopyrite + pyrrhotite net-textured massive sulphide
- OD: brecciated sulphide
- OF: pyrrhotite-rich sulphide
- OG: chalcopyrite-rich sulphide
- OH: pyrite-rich massive sulphide
- OI: heavily disseminated sulphide in schistose host rock
- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
- RHYcq: coherent rhyolite, quartz porphyry
- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

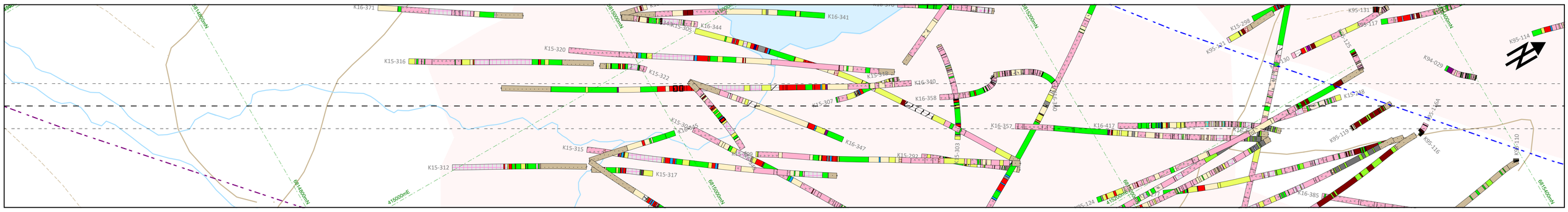
BMC Minerals

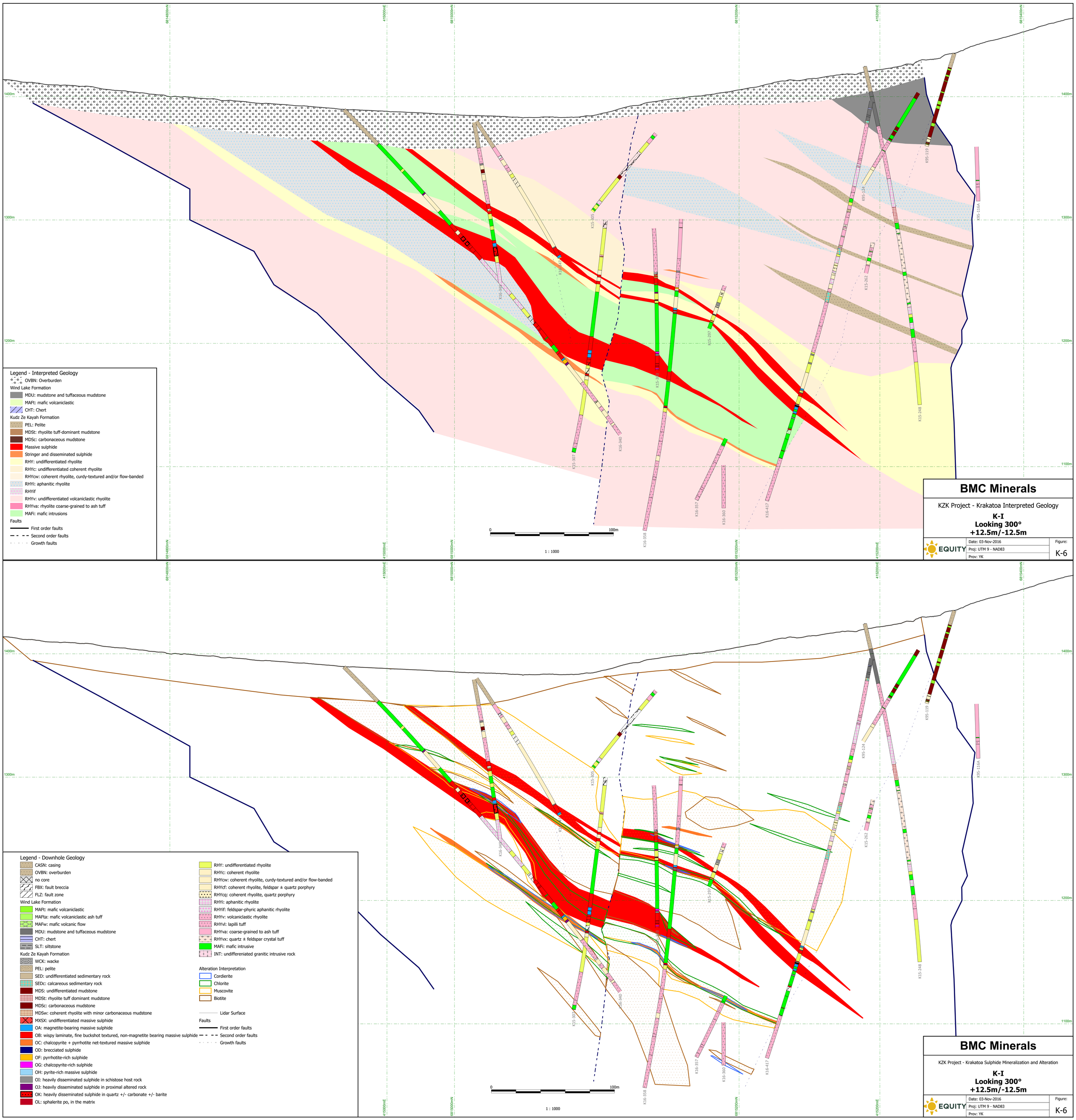
KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-H
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-5
Proj: UTM 9 - NAD83	
Prov: YK	





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation
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- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation
- PEL: Pelite
- MDSt: rhyolite tuff-dominant mudstone
- MDSc: carbonaceous mudstone
- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
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- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-I
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure:
Proj: UTM 9 - NAD83	K-6
Prov: YK	

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation
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- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

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- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

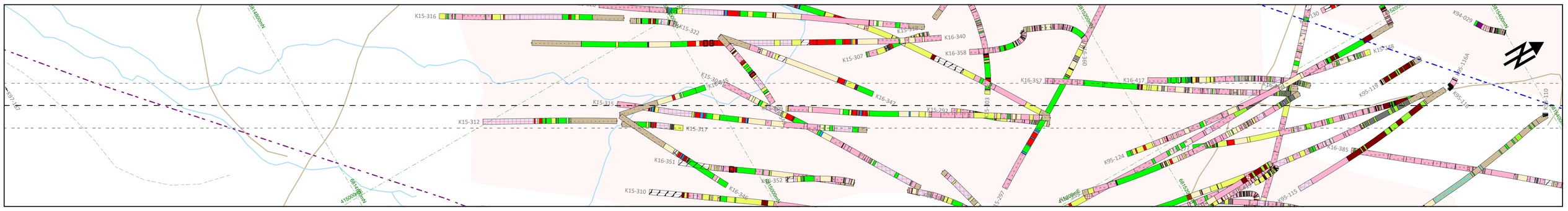
BMC Minerals

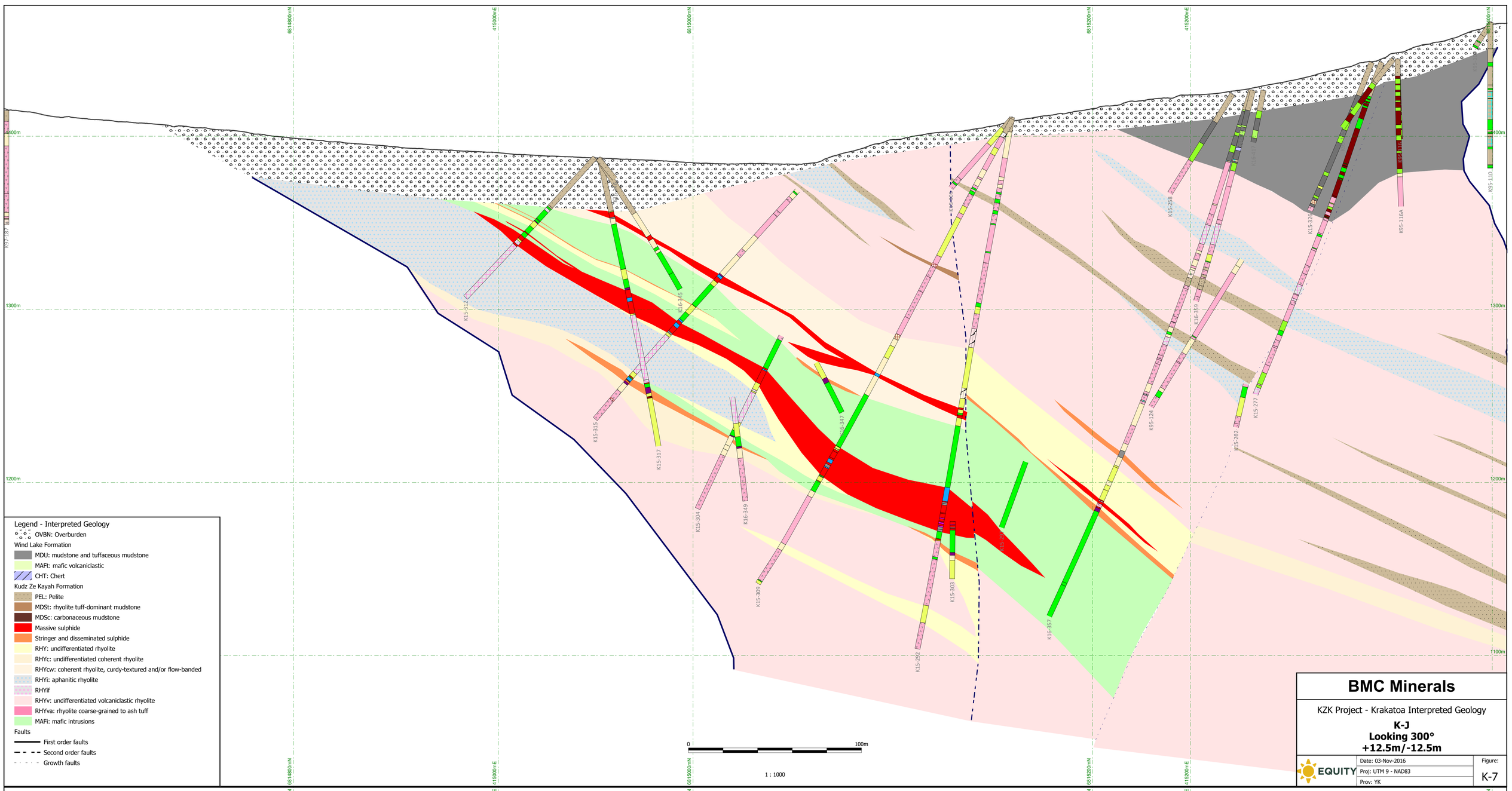
KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-I
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure:
Proj: UTM 9 - NAD83	K-6
Prov: YK	





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation
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- CHT: Chert

Kudz Ze Kayah Formation
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- MDSc: carbonaceous mudstone
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- Stringer and disseminated sulphide
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- RHYc: undifferentiated coherent rhyolite
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- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

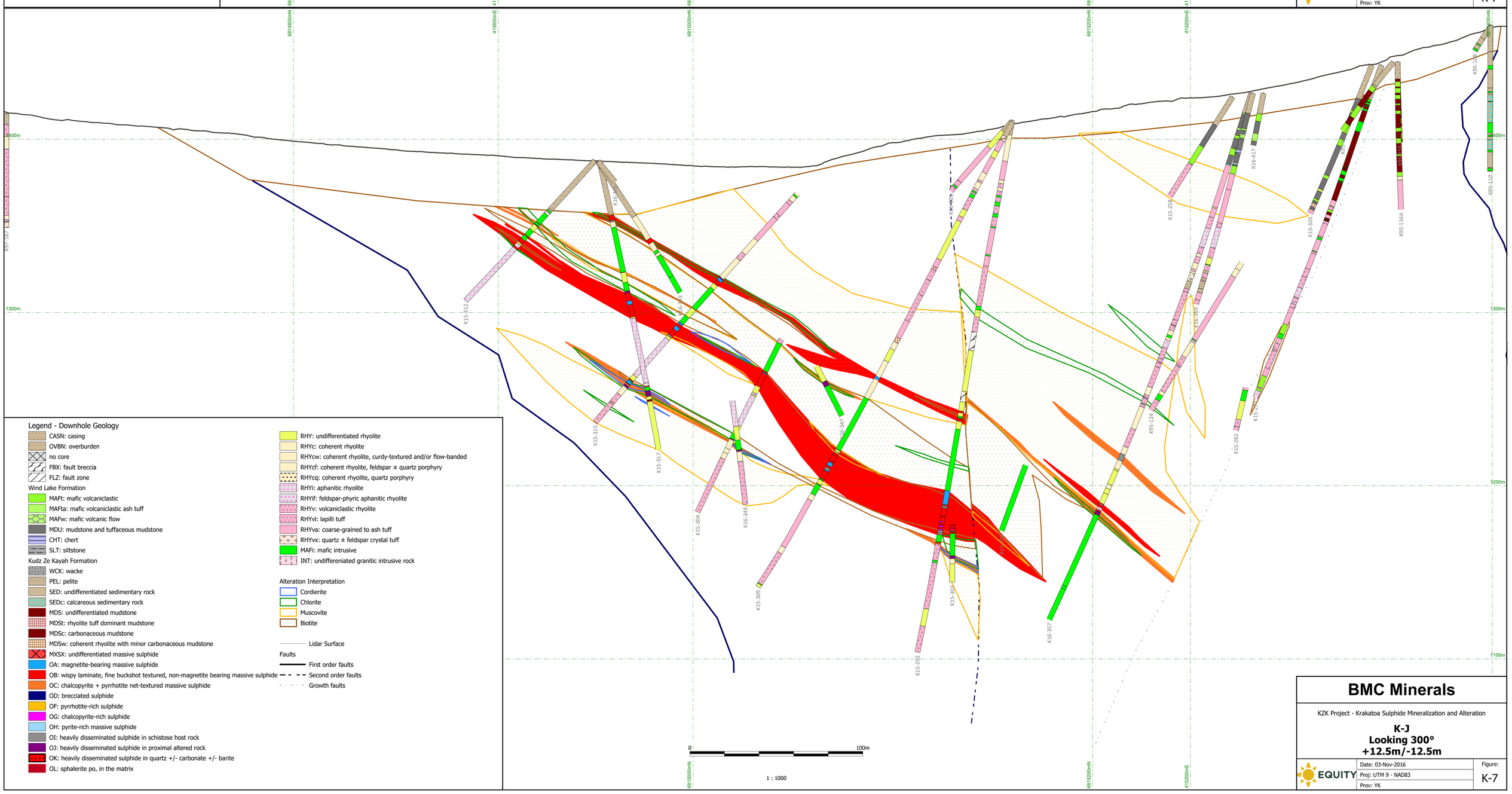
BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-J
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-7
Proj: UTM 9 - NAD83	
Prov: YK	



Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation
- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation
- WCK: wacke
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- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

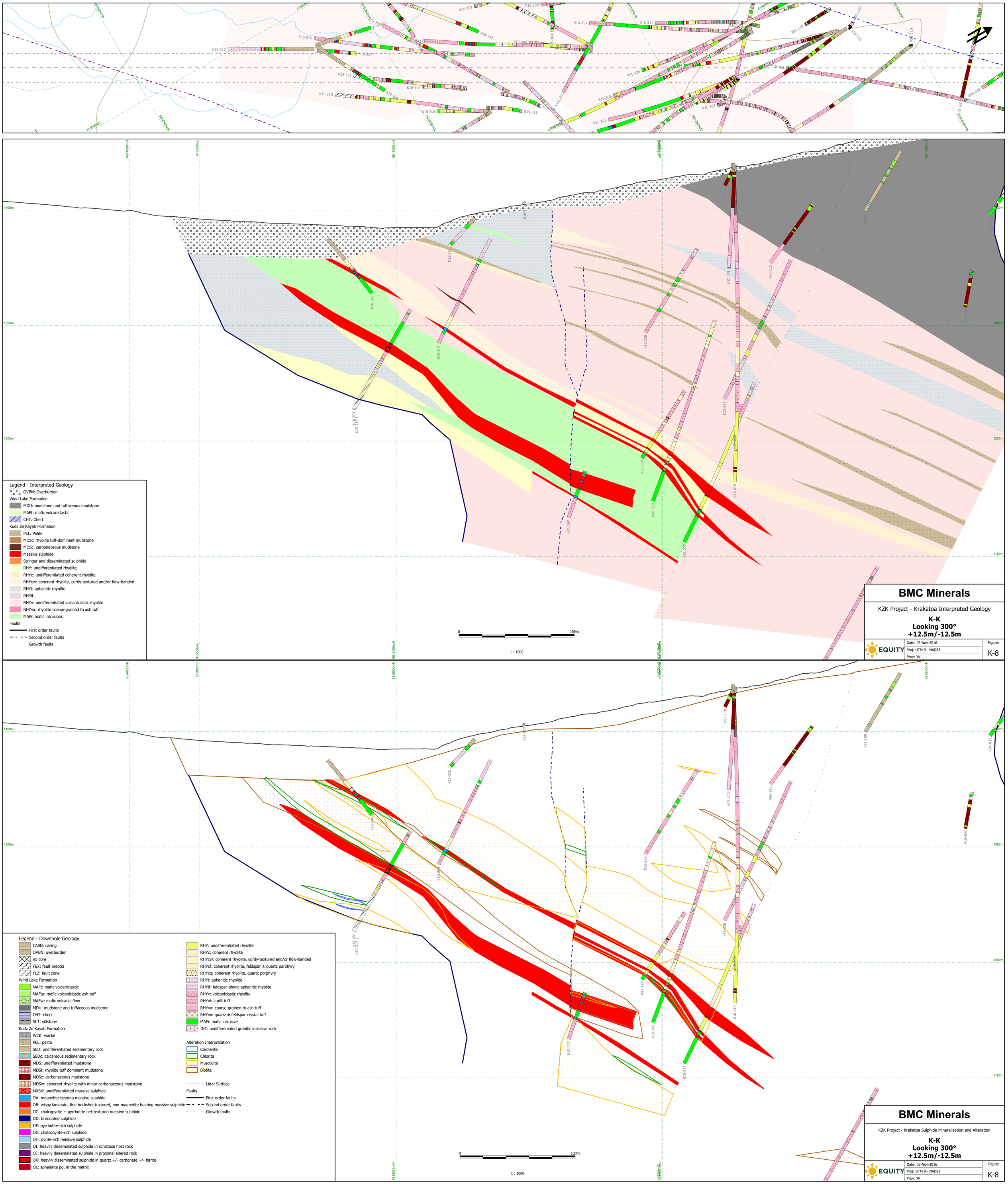
BMC Minerals

KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-J
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-7
Proj: UTM 9 - NAD83	
Prov: YK	


Legend - Interpreted Geology
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MAFi: mafic intrusions
Faults
First order faults
Second order faults
Growth faults
0
100m
1 : 1000
BMC Minerals
KZK Project - Krakatoa Interpreted Geology
K-K
Looking 300°
+12.5m/-12.5m
EQUITY
Date: 03-Nov-2016
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-8
Legend - Downhole Geology
CASN: casing
OVBN: overburden
no core
FBX: fault breccia
FLZ: fault zone
Wind Lake Formation
MAFt: mafic volcaniclastic
MAFta: mafic volcaniclastic ash tuff
MAFw: mafic volcanic flow
MDU: mudstone and tuffaceous mudstone
CHT: chert
SLT: siltstone
Kudz Ze Kayah Formation
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MAFi: mafic intrusive
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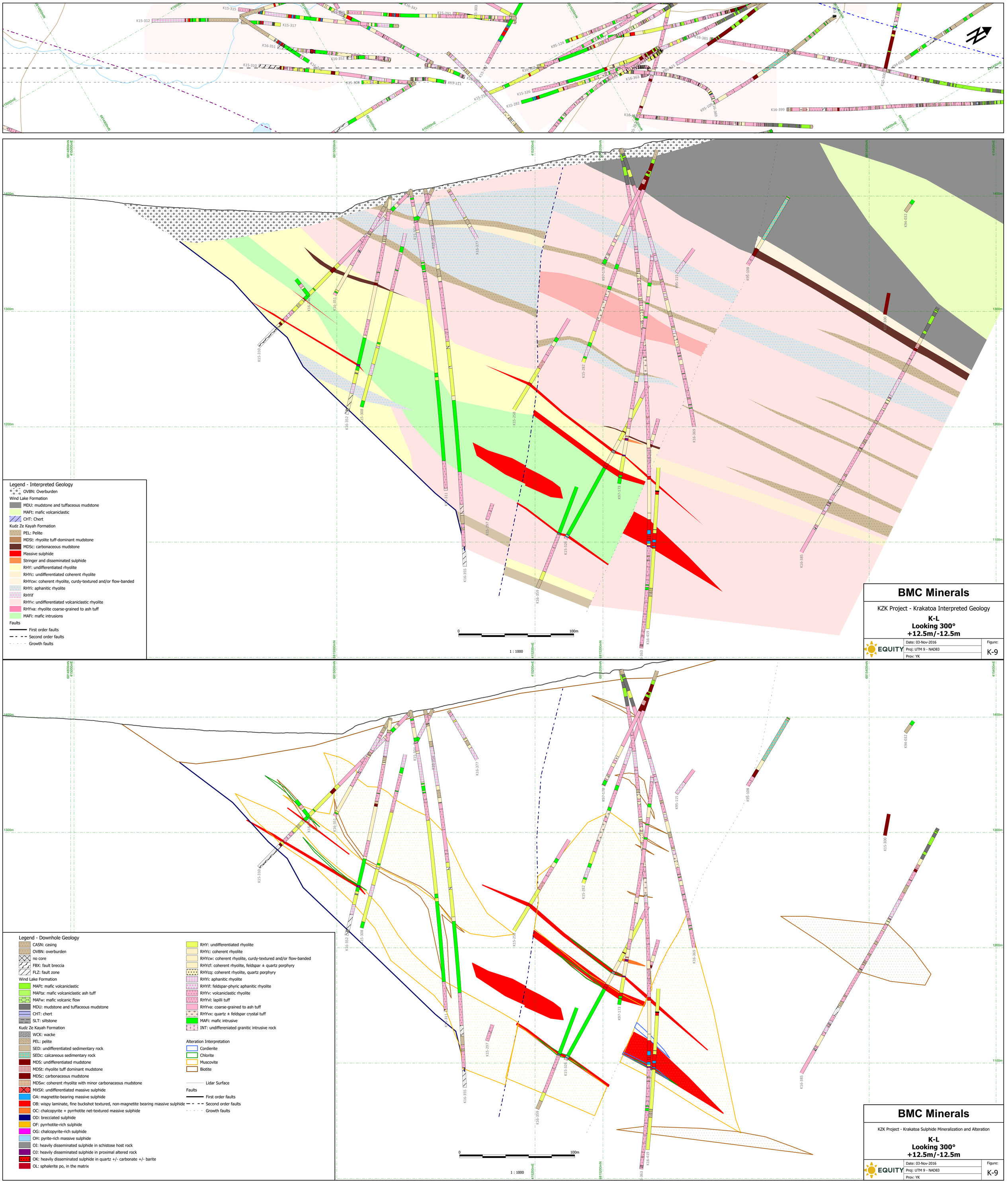
Alteration Interpretation
Cordierite
Chlorite
Muscovite
Biotite
Lidar Surface
Faults
First order faults
Second order faults
Growth faults
0
100m
1 : 1000
BMC Minerals
KZK Project - Krakatoa Sulphide Mineralization and Alteration
K-K
Looking 300°
+12.5m/-12.5m
EQUITY
Date: 03-Nov-2016
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-8



Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation

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- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation

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- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-L
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-9
Proj: UTM 9 - NAD83	
Prov: YK	

Legend - Downhole Geology

- CASN: casing
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- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

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- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation

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- RHYvl: lapilli tuff
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- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

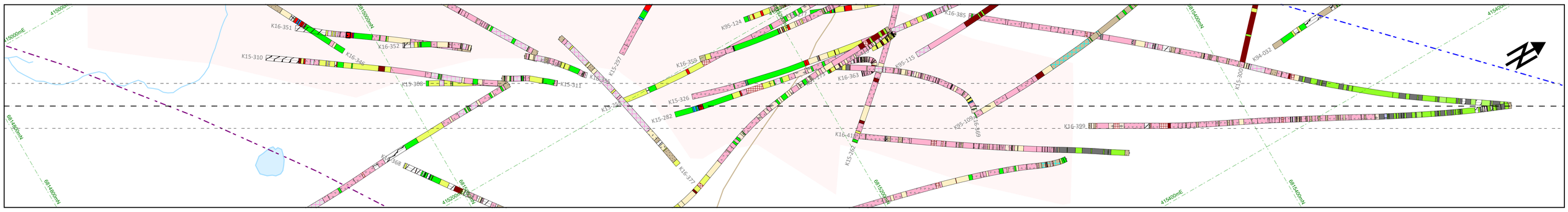
BMC Minerals

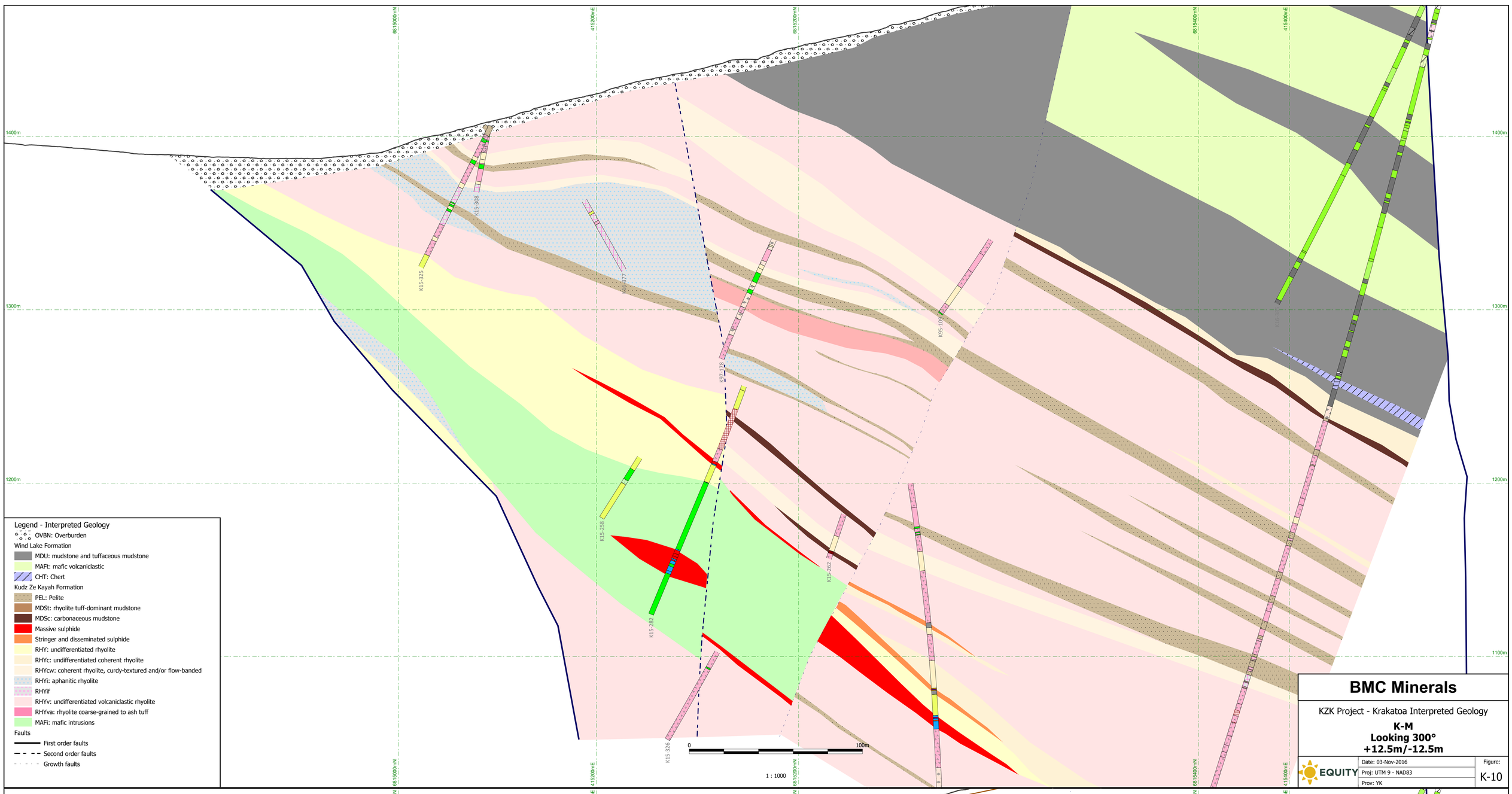
KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-L
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-9
Proj: UTM 9 - NAD83	
Prov: YK	





Legend - Interpreted Geology

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- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
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- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

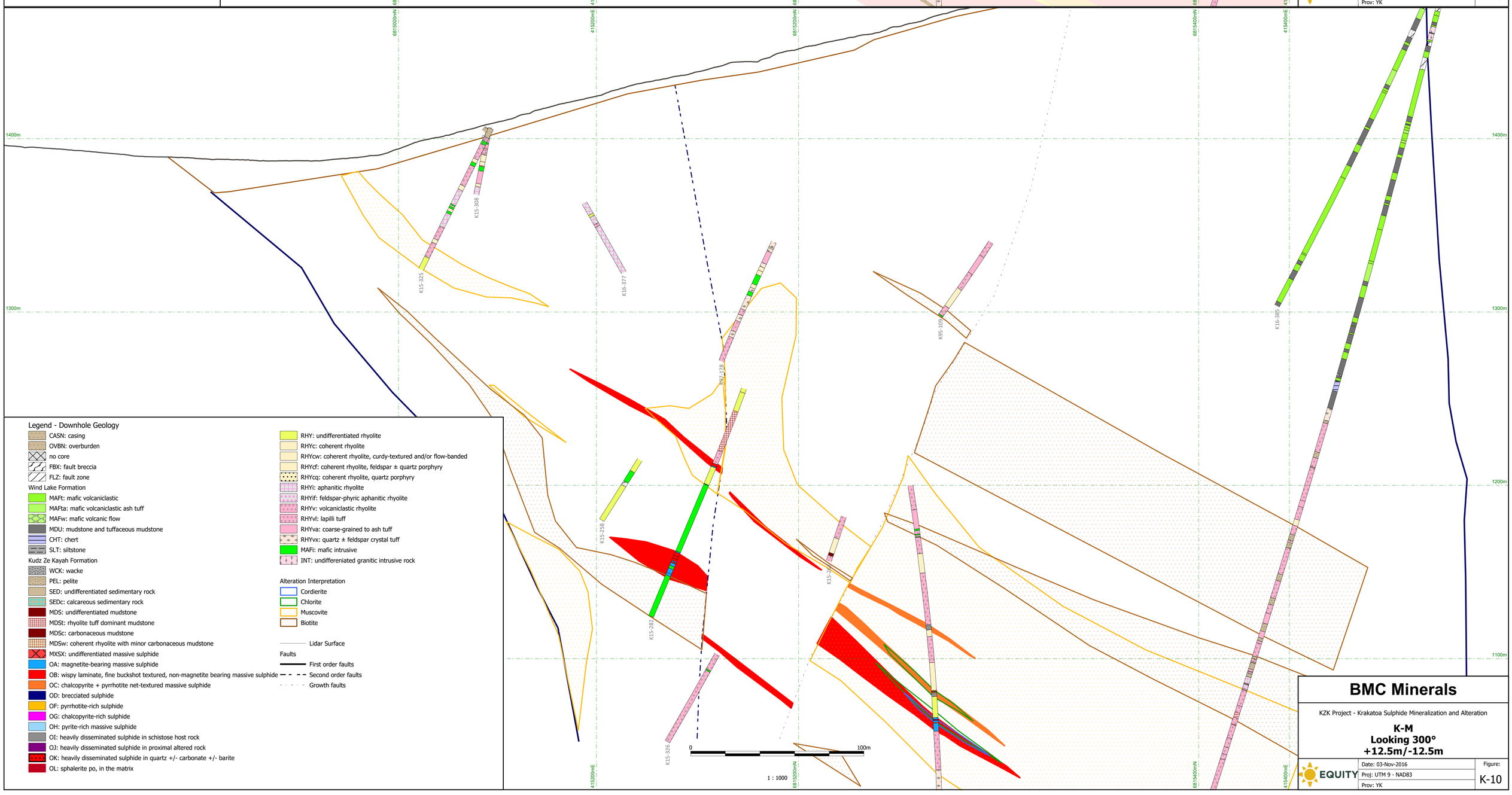
BMC Minerals

KZK Project - Krakatoa Interpreted Geology

K-M
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-10
Proj: UTM 9 - NAD83	
Prov: YK	



Legend - Downhole Geology

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- INT: undifferenieated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - Krakatoa Sulphide Mineralization and Alteration

K-M
Looking 300°
+12.5m/-12.5m

EQUITY

Date: 03-Nov-2016	Figure: K-10
Proj: UTM 9 - NAD83	
Prov: YK	

6813000mN
6813200mN
6813400mN
6813600mN
419400mE
K98-192
K98-197
K98-198
K15-224
K16-400
K16-380
K15-234
1400m
1300m
1200m
1100m
K98-197
K98-198
K98-196
0
100m
1 : 1000

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- Second order faults
- Growth faults

BMC Minerals

KZK Project - GP4F Interpreted Geology

GP4F 419350E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-11

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation

- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
- MDSw: coherent rhyolite with minor carbonaceous mudstone
- MXSX: undifferentiated massive sulphide
- OA: magnetite-bearing massive sulphide
- OB: wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide
- OC: chalcopyrite + pyrrhotite net-textured massive sulphide
- OD: brecciated sulphide
- OF: pyrrhotite-rich sulphide
- OG: chalcopyrite-rich sulphide
- OH: pyrite-rich massive sulphide
- OI: heavily disseminated sulphide in schistose host rock
- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
- RHYcq: coherent rhyolite, quartz porphyry
- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undiffereniated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

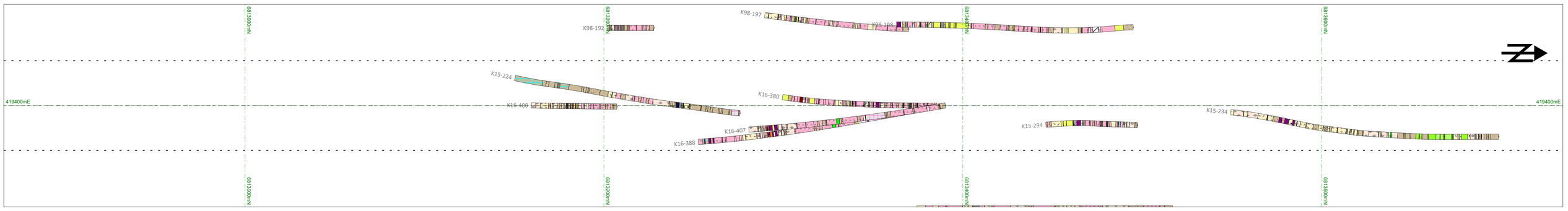
KZK Project - GP4F Sulphide Mineralization and Alteration

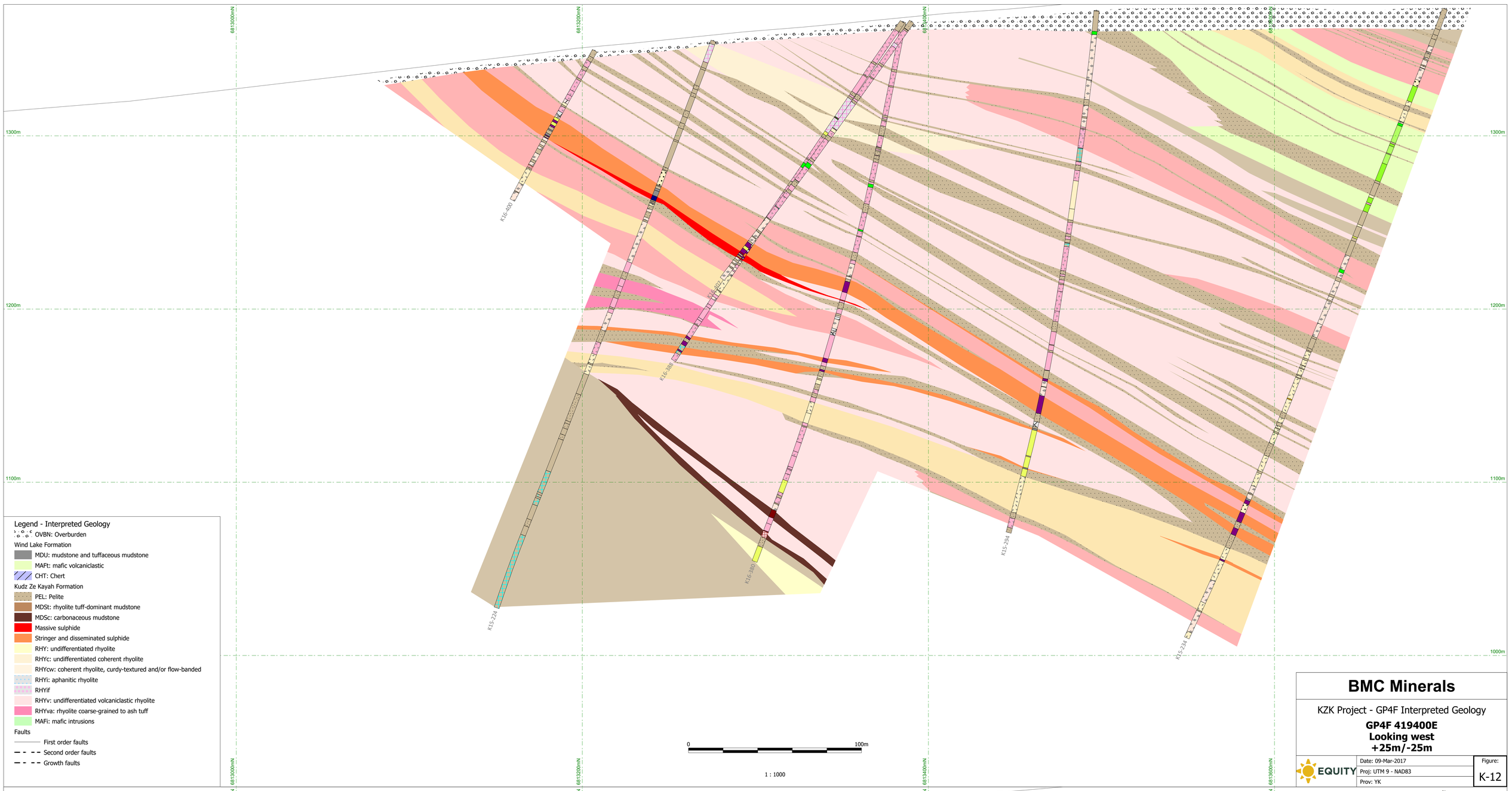
GP4F 419350E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-11





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation
- MDU: mudstone and tuffaceous mudstone
- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation
- PEL: Pelite
- MDSt: rhyolite tuff-dominant mudstone
- MDSc: carbonaceous mudstone
- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

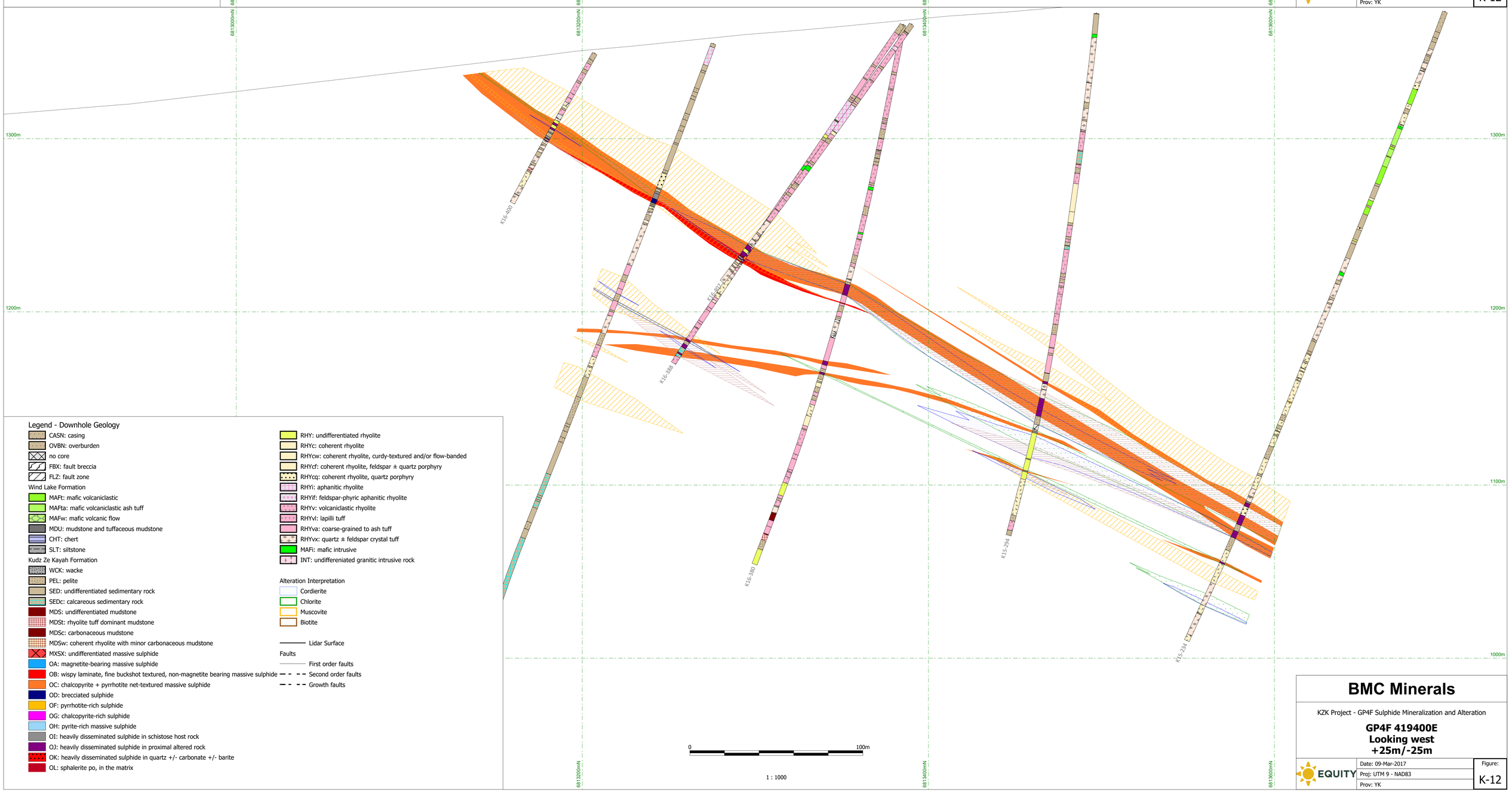
KZK Project - GP4F Interpreted Geology

GP4F 419400E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-12



Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation
- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation
- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
- MDSw: coherent rhyolite with minor carbonaceous mudstone
- MXSX: undifferentiated massive sulphide
- OA: magnetite-bearing massive sulphide
- OB: wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide
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- OD: brecciated sulphide
- OF: pyrrhotite-rich sulphide
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- OH: pyrite-rich massive sulphide
- OI: heavily disseminated sulphide in schistose host rock
- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
- RHYcq: coherent rhyolite, quartz porphyry
- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

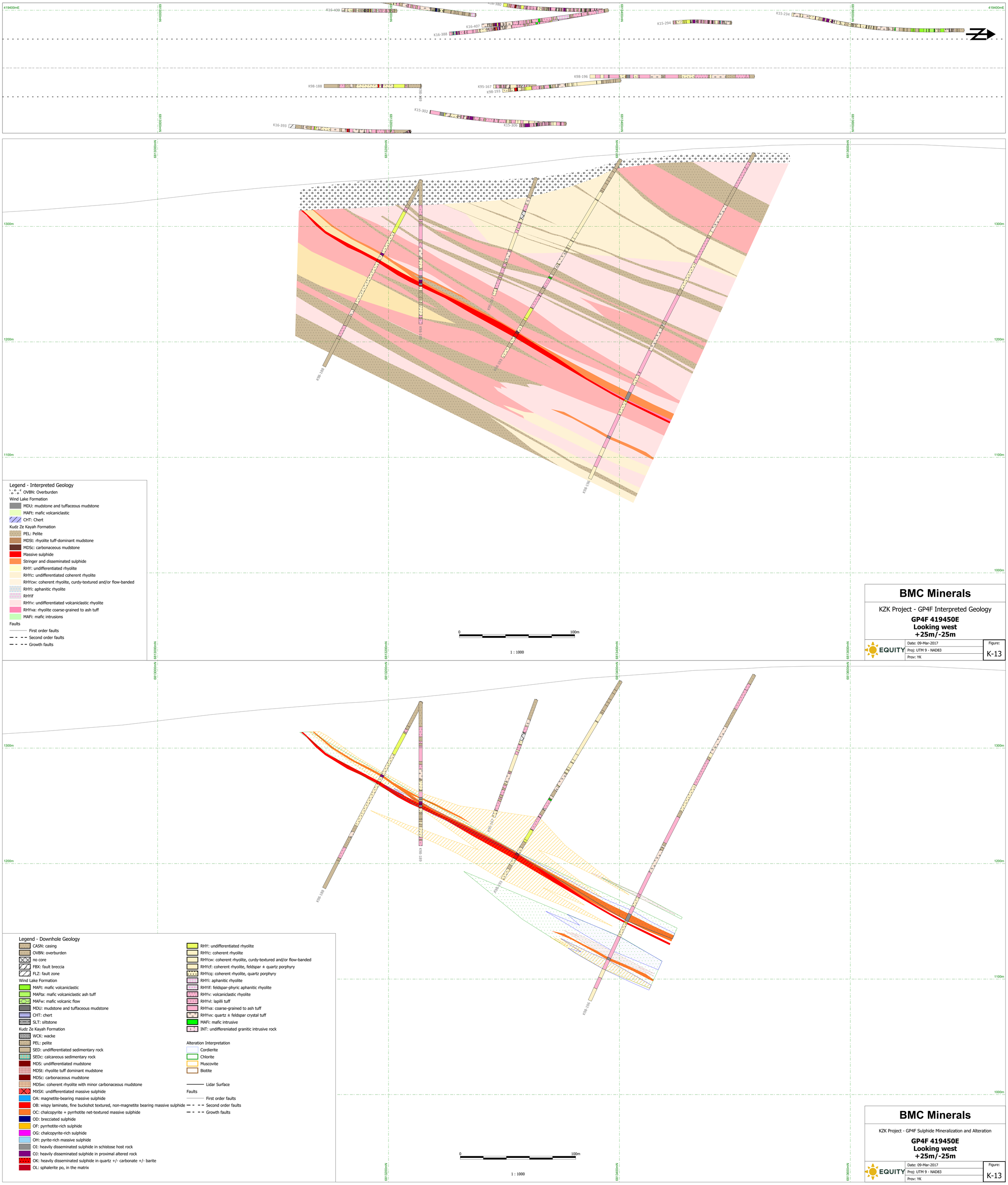
KZK Project - GP4F Sulphide Mineralization and Alteration

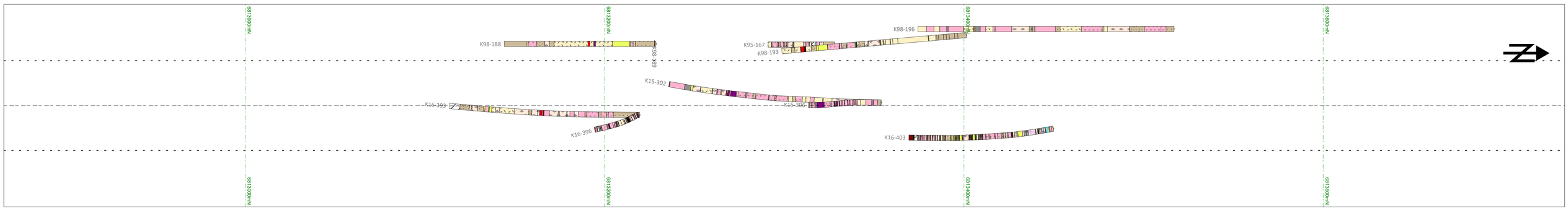
GP4F 419400E
Looking west
+25m/-25m

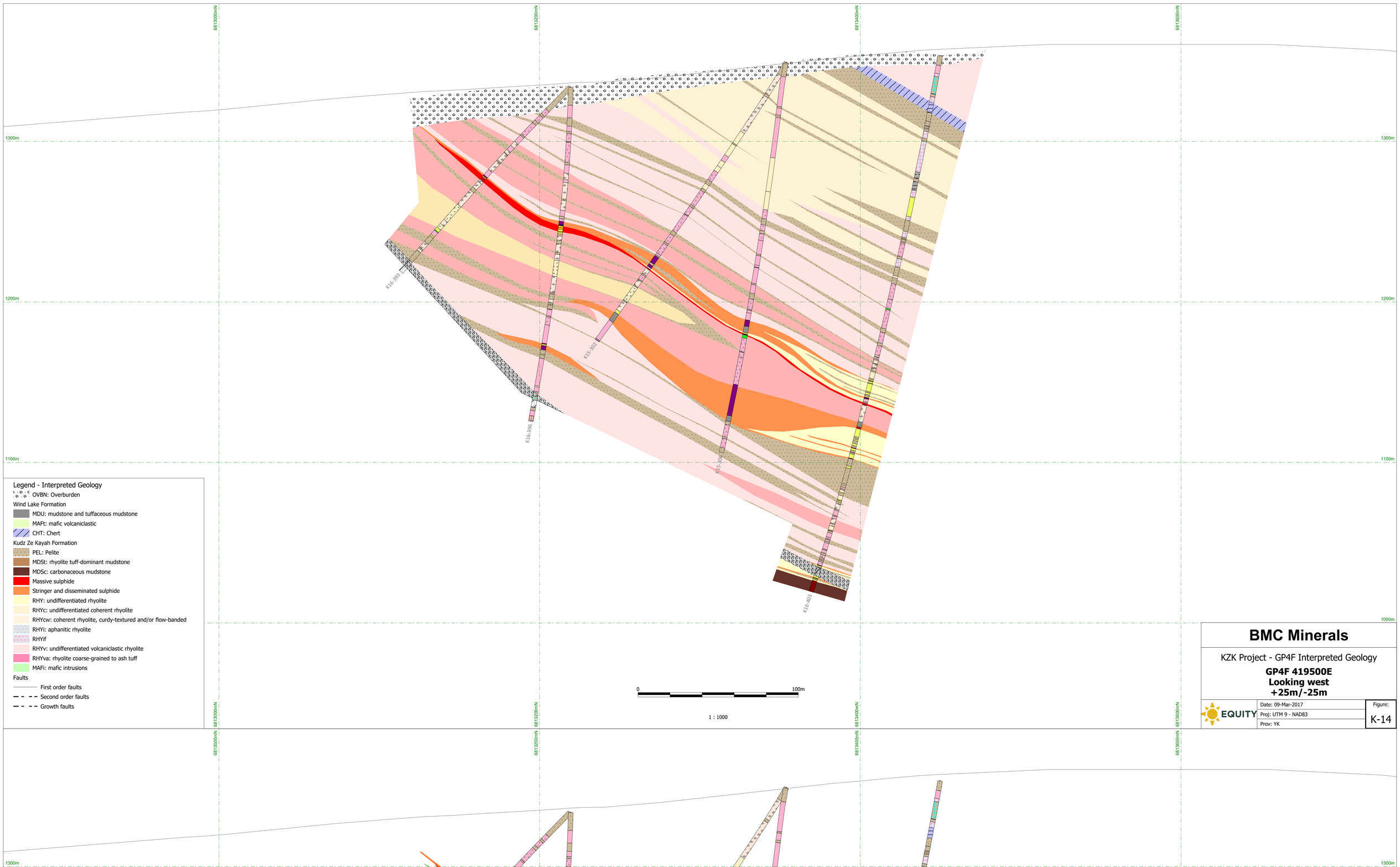
EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-12


419400mE
6813800mN
6813600mN
6813400mN
6813200mN
6813000mN
K16-400
K16-380
K16-407
K16-388
K15-294
K15-234
K98-196
K98-188
K95-167
K98-193
K98-189
K15-302
K15-306
K16-393
1300m
1200m
1100m
1000m
K98-188
K98-189
K95-167
K98-193
K98-196
0
100m
1 : 1000
Legend - Interpreted Geology
OVBN: Overburden
Wind Lake Formation
MDU: mudstone and tuffaceous mudstone
MAFt: mafic volcaniclastic
CHT: Chert
Kudz Ze Kayah Formation
PEL: Pelite
MDSt: rhyolite tuff-dominant mudstone
MDSc: carbonaceous mudstone
Massive sulphide
Stringer and disseminated sulphide
RHY: undifferentiated rhyolite
RHYc: undifferentiated coherent rhyolite
RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
RHYi: aphanitic rhyolite
RHYif
RHYv: undifferentiated volcaniclastic rhyolite
RHYva: rhyolite coarse-grained to ash tuff
MAFi: mafic intrusions
Faults
First order faults
Second order faults
Growth faults
BMC Minerals
KZK Project - GP4F Interpreted Geology
GP4F 419450E
Looking west
+25m/-25m
EQUITY
Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-13
K98-189
K95-167
K98-193
K98-196
Legend - Downhole Geology
CASN: casing
OVBN: overburden
no core
FBX: fault breccia
FLZ: fault zone
Wind Lake Formation
MAFt: mafic volcaniclastic
MAFta: mafic volcaniclastic ash tuff
MAFw: mafic volcanic flow
MDU: mudstone and tuffaceous mudstone
CHT: chert
SLT: siltstone
Kudz Ze Kayah Formation
WCK: wacke
PEL: pelite
SED: undifferentiated sedimentary rock
SEDc: calcareous sedimentary rock
MDS: undifferentiated mudstone
MDSt: rhyolite tuff dominant mudstone
MDSc: carbonaceous mudstone
MDSw: coherent rhyolite with minor carbonaceous mudstone
MXSX: undifferentiated massive sulphide
OA: magnetite-bearing massive sulphide
OB: wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide
OC: chalcopyrite + pyrrhotite net-textured massive sulphide
OD: brecciated sulphide
OF: pyrrhotite-rich sulphide
OG: chalcopyrite-rich sulphide
OH: pyrite-rich massive sulphide
OI: heavily disseminated sulphide in schistose host rock
OJ: heavily disseminated sulphide in proximal altered rock
OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
OL: sphalerite po, in the matrix
RHY: undifferentiated rhyolite
RHYc: coherent rhyolite
RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
RHYcf: coherent rhyolite, feldspar ± quartz porphyry
RHYcq: coherent rhyolite, quartz porphyry
RHYi: aphanitic rhyolite
RHYif: feldspar-phyric aphanitic rhyolite
RHYv: volcaniclastic rhyolite
RHYvl: lapilli tuff
RHYva: coarse-grained to ash tuff
RHYvx: quartz ± feldspar crystal tuff
MAFi: mafic intrusive
INT: undifferenciated granitic intrusive rock
Alteration Interpretation
Cordierite
Chlorite
Muscovite
Biotite
Lidar Surface
Faults
First order faults
Second order faults
Growth faults
BMC Minerals
KZK Project - GP4F Sulphide Mineralization and Alteration
GP4F 419450E
Looking west
+25m/-25m
EQUITY
Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK
Figure:
K-13





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation
- MDU: mudstone and tuffaceous mudstone
- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation
- PEL: Pelite
- MDSt: rhyolite tuff-dominant mudstone
- MDSc: carbonaceous mudstone
- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults
- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

KZK Project - GP4F Interpreted Geology

GP4F 419500E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-14

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation
- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation
- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
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- OI: heavily disseminated sulphide in schistose host rock
- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
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- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation
- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults
- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

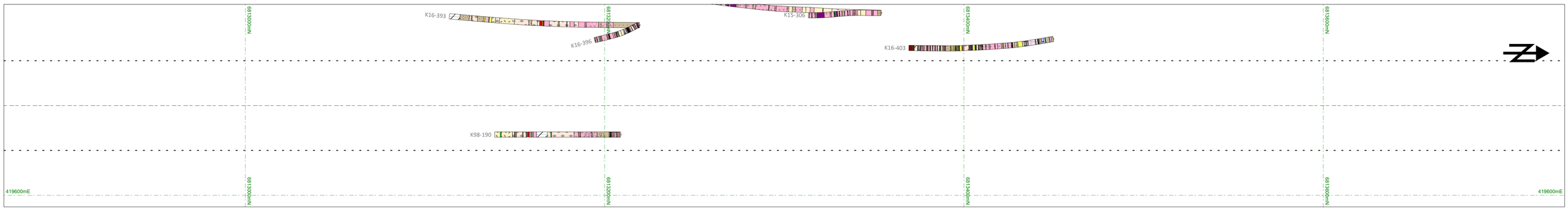
KZK Project - GP4F Sulphide Mineralization and Alteration

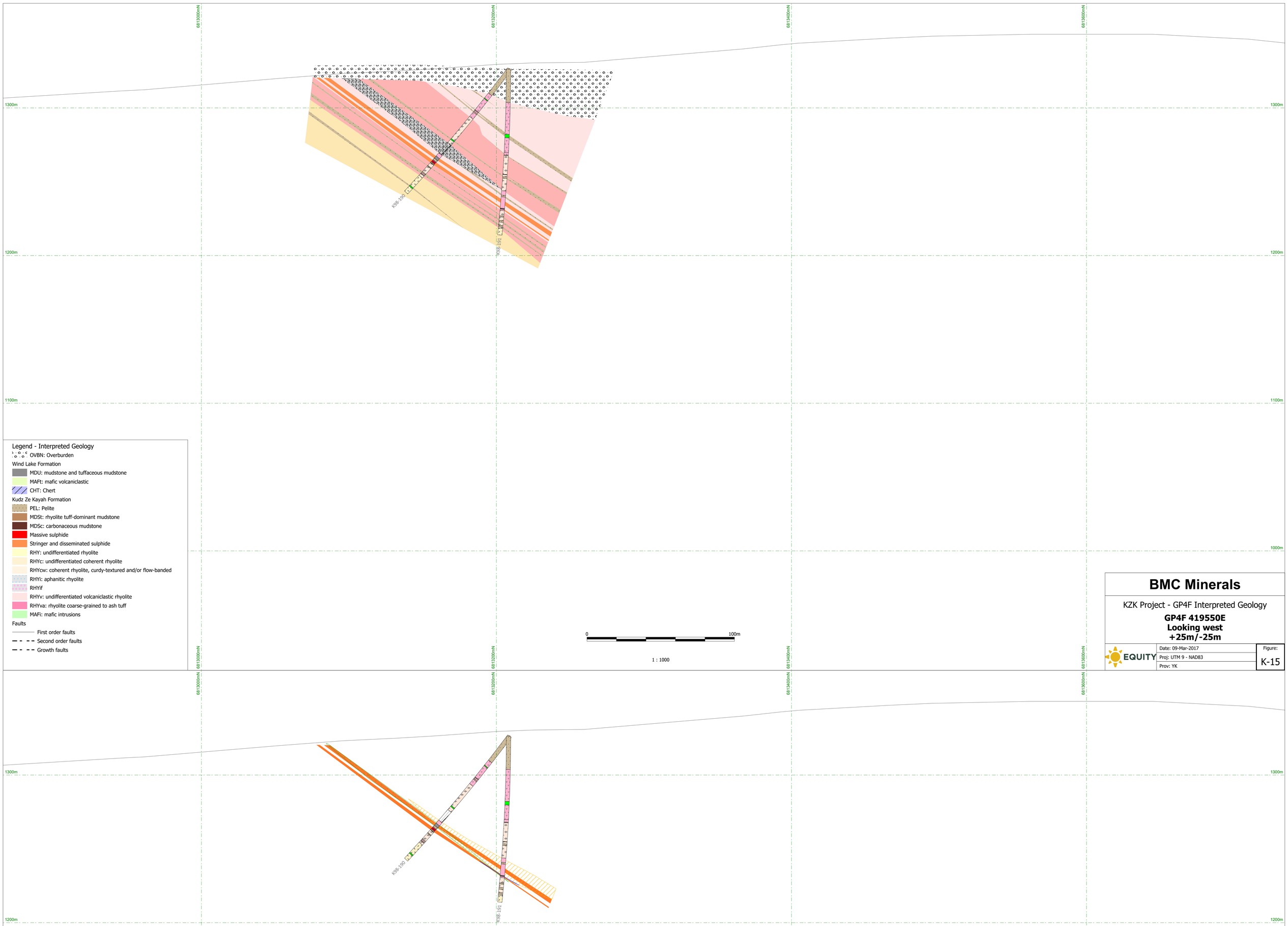
GP4F 419500E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-14





Legend - Interpreted Geology

- OVBN: Overburden

Wind Lake Formation

- MDU: mudstone and tuffaceous mudstone
- MAFt: mafic volcaniclastic
- CHT: Chert

Kudz Ze Kayah Formation

- PEL: Pelite
- MDSt: rhyolite tuff-dominant mudstone
- MDSc: carbonaceous mudstone
- Massive sulphide
- Stringer and disseminated sulphide
- RHY: undifferentiated rhyolite
- RHYc: undifferentiated coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYi: aphanitic rhyolite
- RHYif
- RHYv: undifferentiated volcaniclastic rhyolite
- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

KZK Project - GP4F Interpreted Geology

GP4F 419550E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-15

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

Kudz Ze Kayah Formation

- WCK: wacke
- PEL: pelite
- SED: undifferentiated sedimentary rock
- SEDc: calcareous sedimentary rock
- MDS: undifferentiated mudstone
- MDSt: rhyolite tuff dominant mudstone
- MDSc: carbonaceous mudstone
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- OI: heavily disseminated sulphide in schistose host rock
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- OL: sphalerite po, in the matrix
- RHY: undifferentiated rhyolite
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- RHYcq: coherent rhyolite, quartz porphyry
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- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

0 100m

1 : 1000

BMC Minerals

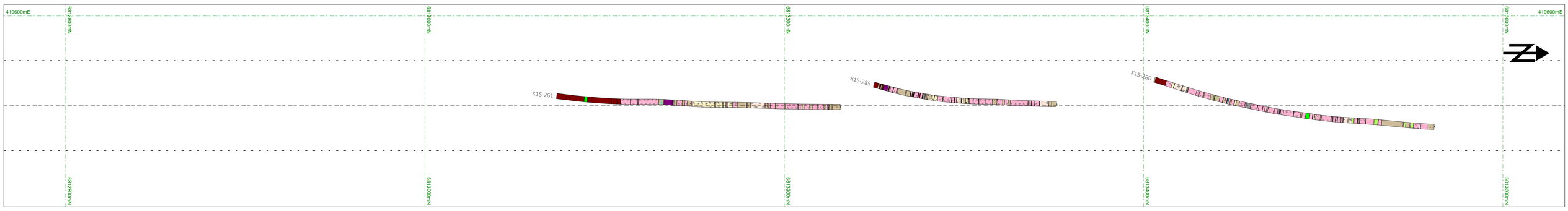
KZK Project - GP4F Sulphide Mineralization and Alteration

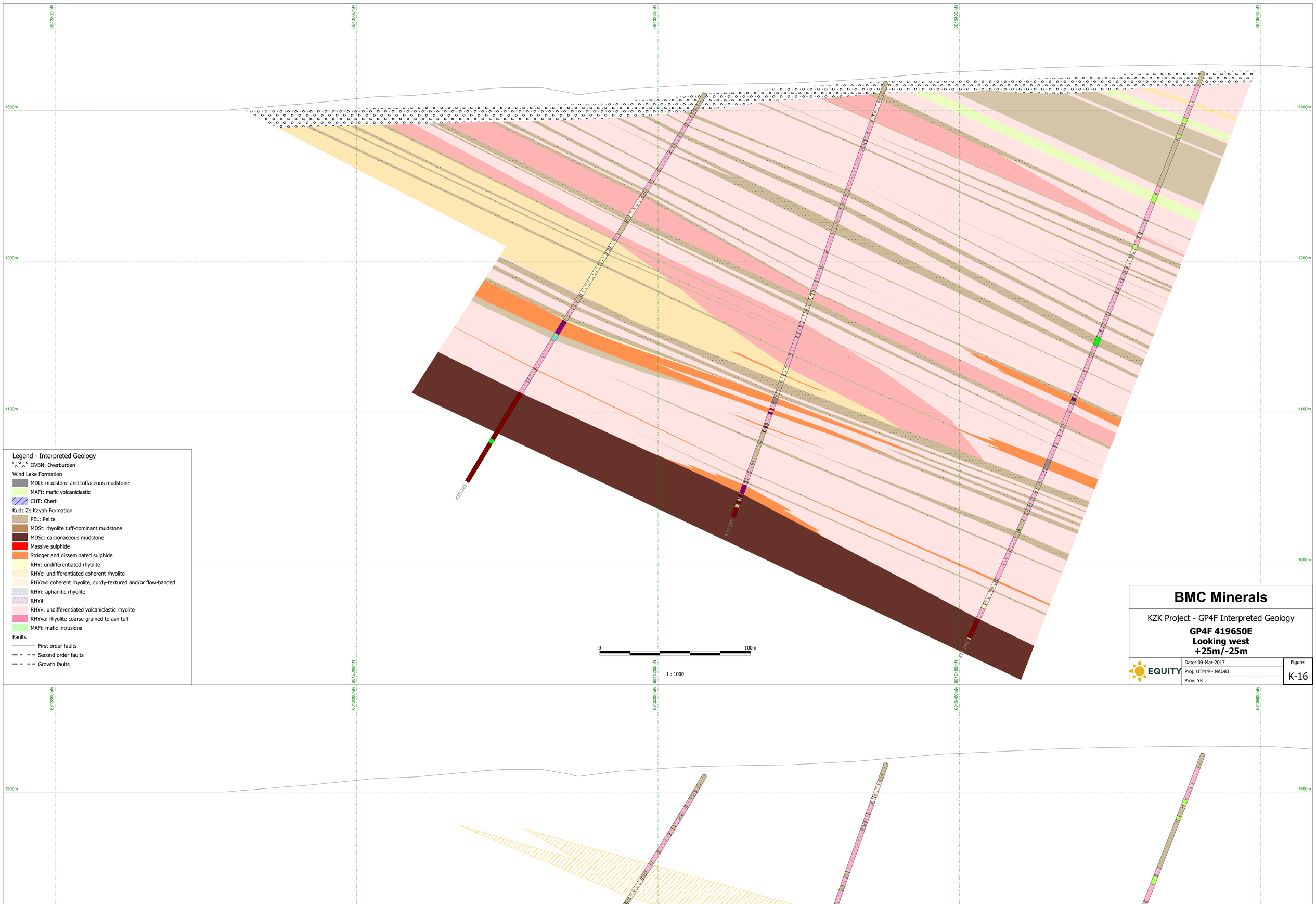
GP4F 419550E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-15





Legend - Interpreted Geology

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Wind Lake Formation

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- RHYif
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- RHYva: rhyolite coarse-grained to ash tuff
- MAFi: mafic intrusions

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - GP4F Interpreted Geology

GP4F 419650E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-16

Legend - Downhole Geology

- CASN: casing
- OVBN: overburden
- no core
- FBX: fault breccia
- FLZ: fault zone

Wind Lake Formation

- MAFt: mafic volcaniclastic
- MAFta: mafic volcaniclastic ash tuff
- MAFw: mafic volcanic flow
- MDU: mudstone and tuffaceous mudstone
- CHT: chert
- SLT: siltstone

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- OG: chalcopyrite-rich sulphide
- OH: pyrite-rich massive sulphide
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- OJ: heavily disseminated sulphide in proximal altered rock
- OK: heavily disseminated sulphide in quartz +/- carbonate +/- barite
- OL: sphalerite po, in the matrix

- RHY: undifferentiated rhyolite
- RHYc: coherent rhyolite
- RHYcw: coherent rhyolite, curdy-textured and/or flow-banded
- RHYcf: coherent rhyolite, feldspar ± quartz porphyry
- RHYcq: coherent rhyolite, quartz porphyry
- RHYi: aphanitic rhyolite
- RHYif: feldspar-phyric aphanitic rhyolite
- RHYv: volcaniclastic rhyolite
- RHYvl: lapilli tuff
- RHYva: coarse-grained to ash tuff
- RHYvx: quartz ± feldspar crystal tuff
- MAFi: mafic intrusive
- INT: undifferenciated granitic intrusive rock

Alteration Interpretation

- Cordierite
- Chlorite
- Muscovite
- Biotite

- Lidar Surface

Faults

- First order faults
- Second order faults
- Growth faults

BMC Minerals

KZK Project - GP4F Sulphide Mineralization and Alteration

GP4F 419650E
Looking west
+25m/-25m

EQUITY

Date: 09-Mar-2017
Proj: UTM 9 - NAD83
Prov: YK

Figure: K-16

Appendix L: Certificates of Analysis

This appendix contains all of the certificates of analysis (COA) pertaining to resource definition, exploration and metallurgical drilling at the KZK Project during 2016. Elements analyzed for all DDHs include Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb and Se. Additional elements were analyzed in the Krakatoa check assay program (VA16113176). COAs are listed in alphanumeric order, with the first page of each COA indicated in the Page Number column in Table L-1 below.

Table L-1: Table of contents for COAs in this appendix

Certificate	Elements Assayed	Drill holes	Target	Samples (#)	Page Number
VA16113176	Ag, Au, Cu, Fe, Pb, Zn, S, Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Ga, Ge, Hf, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Rb, Re, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zr	Various	Krakatoa Check Assay	46	1
VA16136024	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	Various	GP4F Check Assay	18	13
VC161371	Pycnometer	Various	-	200	17
VC161661	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-337, 338	Krakatoa	85	24
VC161668	Pycnometer	Various	-	23	34
VC161774	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-339, 341	Krakatoa	112	36
VC161844	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-340	Krakatoa	153	50
VC161846	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-343, 344	Krakatoa	95	68
VC161847	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-345	Krakatoa	21	80
VC161848	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-346	Krakatoa	35	84
VC161881	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-350	Krakatoa	75	91
VC161903	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-349	Krakatoa	67	98
VC161904	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-351	Krakatoa	37	108
VC161905	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-348	Krakatoa	27	113
VC161906	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-347	Krakatoa	41	118
VC161919	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-353	Krakatoa	39	125
VC162012	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-352	Krakatoa	34	130
VC162013	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-352	Krakatoa	6	135
VC162014	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-355	Krakatoa	38	138
VC162015	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-357	Krakatoa	81	143
VC162016	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	Various	Krakatoa	10	150
VC162046	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-358	Krakatoa	87	154
VC162068	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-359	Krakatoa	77	162
VC162069	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-360	Krakatoa	61	172
VC162070	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-361	ABM	44	181
VC162071	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-363	Krakatoa	67	186
VC162129	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-364	ABM	52	195

Certificate	Elements Assayed	Drill holes	Target	Samples (#)	Page Number
VC162132	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-362	ABM	95	202
VC162171	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-370	Krakatoa	42	214
VC162172	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-369	Krakatoa	28	219
VC162179	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-367	Krakatoa	49	224
VC162227	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-365	ABM	74	229
VC162228	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-365	ABM	72	239
VC162229	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-366	ABM	68	249
VC162230	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-371	Krakatoa - geotechnical	1	259
VC162243	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-378	Krakatoa	20	262
VC162244	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-374	Sebesi	3	266
VC162277	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-385	Krakatoa	19	269
VC162294	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-396	GP4F	32	272
VC162295	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-400	GP4F	28	277
VC162306	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-374, 379	Sebesi, infrastructure	2	282
VC162309	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-380	GP4F	40	285
VC162310	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-384, 386	Sebesi, infrastructure	9	290
VC162311	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-388	GP4F	38	293
VC162313	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-393	GP4F	17	300
VC162426	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-403	GP4F	41	303
VC162639	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	Various historic DDHs	GP4F Re-assay	24	310
VC162986	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-372	Sebesi	5	314
VC162987	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-394	Sebesi	18	317
VC162988	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-415	Rhyolite Peak	6	320
VC163022	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-417	Krakatoa	76	323
VC163099	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-419	Krakatoa	33	333
VC163100	Ag, Au, Cu, Fe, Pb, Zn, S, As, Ba, Bi, Hg, Sb, Se	K16-418	Krakatoa	10	340

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

CERTIFICATE VA16113176

Project: KZK Project

P.O. No.: BMC16-01_CA1

This report is for 46 Pulp samples submitted to our lab in Vancouver, BC, Canada on 13-JUL-2016.

The following have access to data associated with this certificate:

R. BLACK	NEIL MARTIN	RON VOORDOUW

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-24	Pulp Login - Rcd w/o Barcode
LOG-QC	QC Test on Received Samples

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-ICP81	ICP Fusion - Ore Grade	ICP-AES
ME-OG46	Ore Grade Elements - AquaRegia	ICP-AES
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
Ag-OG46	Ore Grade Ag - Aqua Regia	VARIABLE
Cu-OG46	Ore Grade Cu - Aqua Regia	VARIABLE
Pb-OG46	Ore Grade Pb - Aqua Regia	VARIABLE
Zn-OG46	Ore Grade Zn - Aqua Regia	VARIABLE
Au-AA25	Ore Grade Au 30g FA AA finish	AAS
ME-MS85	Lithium Borate Fusion - Select Elements	ICP-MS
Ag-AA45	Trace Ag - aqua regia/AAS	AAS
Ag-AA46	Ore grade Ag - aqua regia/AA	AAS

To: **EQUITY EXPLORATION CONSULTANTS LTD.**
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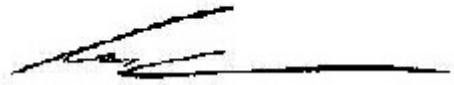
This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 30-JUL-2016
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Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA25 Au ppm 0.01	Ag-AA45 Ag ppm 0.2	Ag-AA46 Ag ppm 1	ME-ICP81 Cu % 0.002	ME-ICP81 Fe % 0.05	ME-ICP81 Pb % 0.01	ME-ICP81 S % 0.01	ME-ICP81 Zn % 0.002	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.2	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10
B00291046		0.30	0.59	>100	161	0.070	14.05	3.12	17.75	6.12	>100	0.09	438	0.7	<10	10
B00291053		0.26	2.50	>100	159	0.353	31.7	2.40	36.7	5.21	>100	0.05	>10000	0.8	<10	10
B00291060		0.10	0.80	41.0		0.454	19.55	0.31	17.90	1.130	46.1	0.71	1285	0.2	<10	10
B00291088		0.20	<0.01	0.7		0.006	6.03	0.01	0.05	0.024	0.93	2.82	48.2	<0.2	<10	220
B00291107		0.16	3.33	90.4		1.075	22.1	0.29	17.35	5.04	93.6	4.39	178.0	0.9	<10	20
B00291114		0.30	1.28	>100	384	0.052	26.8	3.54	36.3	12.20	>100	0.41	177.0	0.3	<10	20
B00291116		0.26	<0.01	0.6		0.004	6.85	<0.01	0.20	0.028	0.69	3.55	52.5	<0.2	<10	2430
B00291135		0.40	1.42	>100	190	0.215	26.7	4.09	33.4	10.05	>100	0.01	566	0.2	<10	10
B00291142		0.28	2.09	>100	205	0.828	26.8	2.28	27.4	3.78	>100	0.01	980	4.5	<10	20
B00291166		0.20	0.04	25.0		0.086	10.55	0.42	6.06	1.040	25.2	1.84	59.0	<0.2	<10	40
B00291200		0.10	1.27	64.8		0.366	3.82	1.37	4.58	5.42	69.4	1.45	74.5	1.2	<10	40
B00291201		0.08	0.85	18.6		1.745	13.55	0.26	9.14	1.050	20.7	1.75	78.4	0.8	<10	30
B00291202		0.26	2.43	>100	295	0.143	25.1	4.57	31.1	6.48	>100	0.01	>10000	1.1	<10	20
B00291213		0.30	2.04	>100	204	0.193	14.90	3.46	18.25	4.60	>100	0.01	4820	2.8	<10	10
B00291221		0.24	3.54	>100	279	0.234	19.00	3.32	22.6	4.47	>100	0.04	>10000	3.1	<10	10
B00291234		0.22	2.24	>100	332	0.312	30.7	4.83	37.6	6.49	>100	0.06	1105	0.6	<10	20
B00291250		0.20	<0.01	0.2		<0.002	0.12	<0.01	0.13	0.006	0.23	0.04	3.3	<0.2	<10	70
B00291312		0.24	0.09	27.0		0.395	39.3	0.39	33.1	9.68	32.9	0.17	636	<0.2	<10	10
B00291338		0.32	2.10	>100	389	0.171	30.6	4.39	40.4	11.20	>100	0.08	670	0.9	<10	10
B00291362		0.32	2.48	>100	244	0.587	27.2	5.84	27.5	8.43	>100	0.83	9480	0.8	<10	10
B00291415		0.22	<0.01	1.4		<0.002	6.52	0.02	4.29	0.150	1.46	0.28	418	<0.2	<10	50
B00291438		0.24	0.27	56.9		0.040	24.1	0.64	28.2	3.80	64.7	0.64	239	<0.2	<10	20
B00291440		0.10	0.82	40.9		0.465	19.85	0.30	18.15	1.155	46.1	0.72	1280	0.2	<10	10
B00291464		0.20	0.57	87.9		0.509	12.85	0.52	9.91	1.935	99.9	2.47	1990	1.4	<10	60
B00291468		0.30	0.50	99.3		0.156	20.00	1.12	20.1	3.76	>100	1.83	4590	0.7	<10	30
B00291489		0.34	3.68	>100	331	0.251	36.3	1.18	46.1	8.90	>100	0.05	1160	<0.2	<10	10
B00291555		0.24	<0.01	0.7		<0.002	7.52	<0.01	4.63	0.037	1.04	0.26	35.9	<0.2	<10	50
B00291584		0.24	1.63	>100	178	0.965	23.2	1.42	26.0	5.00	>100	0.92	4270	0.7	<10	20
B00292021		0.20	<0.01	0.8		0.006	8.04	<0.01	0.17	0.036	0.98	4.26	68.3	<0.2	<10	1510
B00292116		0.20	<0.01	0.4		<0.002	1.74	<0.01	1.27	<0.002	0.48	0.18	110.5	<0.2	<10	120
B00292120		0.26	<0.01	<0.2		<0.002	<0.05	<0.01	0.08	<0.002	0.02	0.02	0.2	<0.2	<10	10
B00292122		0.22	0.02	2.4		0.010	4.85	0.03	4.27	0.152	2.61	0.30	255	<0.2	<10	70
B00292129		0.18	<0.01	<0.2		0.007	3.37	<0.01	0.99	0.011	0.21	0.68	0.3	<0.2	<10	140
B00292144		0.26	5.38	>100	280	0.739	28.4	2.35	32.7	5.00	>100	0.01	>10000	1.2	<10	10
B00292162		0.20	0.28	26.0		0.652	10.25	0.03	3.15	0.787	28.5	3.95	8.6	0.3	<10	120
B00292219		0.18	0.88	23.5		0.949	13.00	0.02	3.39	0.424	13.70	3.80	76.4	0.3	<10	140
B00292226		0.34	3.01	>100	166	0.121	30.0	4.25	33.6	6.93	>100	0.01	>10000	1.6	<10	10
B00292308		0.22	<0.01	0.2		<0.002	4.09	<0.01	0.25	0.015	0.21	1.06	5.5	<0.2	<10	110
B00292318		0.18	0.04	0.9		<0.002	8.89	<0.01	7.86	0.020	1.12	0.47	118.0	<0.2	<10	60
B00292319		0.18	<0.01	<0.2		<0.002	2.78	<0.01	1.12	0.035	0.51	0.64	22.5	<0.2	<10	130

***** See Appendix Page for comments regarding this certificate *****

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VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	Hg	In
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOR	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02	0.01	0.005
B00291046		0.11	2.20	2.02	270	18.70	9.6	4	0.22	721	13.15	1.91	0.13	0.23	16.30	0.095
B00291053		0.08	6.62	5.81	174.0	21.2	10.6	1	0.43	3540	24.0	2.63	0.29	<0.02	13.20	0.211
B00291060		0.16	22.9	1.61	55.2	3.61	53.6	22	0.41	4520	18.75	3.87	0.31	0.06	9.08	4.44
B00291088		0.20	0.05	7.54	1.00	21.4	39.6	122	0.83	76.2	4.72	6.33	<0.05	<0.02	0.06	0.022
B00291107		0.22	53.1	0.06	283	95.6	76.6	3	3.29	>10000	20.8	16.45	0.70	0.86	10.70	1.305
B00291114		0.09	28.9	4.16	757	9.85	15.2	4	0.15	555	20.8	3.83	0.24	0.22	38.8	0.868
B00291116		0.43	0.05	5.14	0.59	5.61	42.2	193	4.36	50.7	5.47	9.53	0.06	0.04	0.13	0.017
B00291135		<0.05	77.2	4.74	463	2.65	26.2	2	<0.05	2280	21.2	2.23	0.55	<0.02	8.63	0.271
B00291142		0.05	14.95	8.59	131.5	11.70	5.1	2	0.07	8380	25.9	2.18	0.27	<0.02	8.32	0.093
B00291166		0.27	19.10	3.17	57.6	39.4	31.4	27	0.52	844	9.00	6.04	0.16	0.47	1.66	0.123
B00291200		0.50	3.52	1.57	260	39.6	31.8	29	0.91	3560	3.25	9.28	0.06	1.26	3.67	1.835
B00291201		0.42	17.50	1.03	58.1	36.0	218	19	0.73	>10000	12.60	13.55	0.14	1.25	0.82	2.17
B00291202		<0.05	3.15	2.43	245	0.52	1.3	4	<0.05	1465	23.1	2.63	0.18	<0.02	41.3	0.005
B00291213		<0.05	1.04	2.32	174.0	0.67	0.4	3	0.05	1975	14.45	3.06	0.09	<0.02	20.6	0.006
B00291221		<0.05	4.95	1.19	179.5	0.44	0.5	6	0.21	2380	18.40	5.17	0.21	<0.02	19.00	0.005
B00291234		0.07	3.82	3.43	246	3.80	1.1	6	0.05	3300	23.8	5.54	0.31	0.02	21.0	0.016
B00291250		<0.05	0.01	>25.0	0.17	0.37	0.5	1	<0.05	4.3	0.12	0.20	<0.05	0.02	0.12	<0.005
B00291312		<0.05	67.3	0.06	526	4.53	177.0	4	0.09	4090	39.5	7.75	0.58	0.07	4.74	0.995
B00291338		0.08	6.43	3.63	533	7.81	7.2	3	0.16	1780	21.1	0.90	0.55	0.16	64.7	0.058
B00291362		0.20	61.2	0.94	357	35.6	15.5	3	4.72	5820	25.0	4.97	1.04	0.44	8.46	0.148
B00291415		0.18	0.59	1.96	7.73	77.4	2.8	5	0.09	13.2	6.04	1.22	0.08	0.28	0.60	0.056
B00291438		0.21	33.1	5.52	229	47.3	17.0	3	0.31	423	22.8	2.53	0.94	0.75	16.55	0.551
B00291440		0.18	23.3	1.63	55.9	3.69	53.2	22	0.41	4580	18.85	3.78	0.29	0.06	8.62	4.37
B00291464		0.25	20.4	0.10	111.0	111.5	30.4	5	0.66	5000	11.70	9.28	0.36	1.53	5.68	0.262
B00291468		0.20	38.6	0.09	229	100.0	20.7	5	1.17	1605	19.05	7.09	0.93	0.79	10.00	0.420
B00291489		<0.05	36.4	1.50	562	3.99	25.0	2	<0.05	2530	23.7	2.35	0.77	0.11	44.1	1.280
B00291555		0.18	0.49	2.07	2.06	19.20	2.9	4	0.12	12.4	6.84	0.88	0.05	0.17	0.30	0.011
B00291584		0.29	46.4	3.25	293	48.9	30.4	4	2.38	>10000	23.1	6.28	0.84	0.55	19.60	0.764
B00292021		0.55	0.06	4.94	0.75	3.14	43.6	208	3.23	88.7	6.42	8.72	0.07	0.03	0.14	0.007
B00292116		0.17	0.18	1.89	0.06	63.0	3.0	9	0.22	6.8	1.60	0.96	0.06	0.24	0.12	0.007
B00292120		<0.05	0.01	>25.0	0.02	0.32	0.4	1	<0.05	2.3	0.04	0.06	<0.05	<0.02	0.13	<0.005
B00292122		0.22	2.92	0.55	9.93	20.6	2.7	6	0.45	115.0	4.33	1.03	0.06	0.29	0.16	0.043
B00292129		0.53	0.16	1.90	0.32	86.7	4.8	4	1.07	88.5	2.96	2.32	0.08	0.12	0.11	0.018
B00292144		<0.05	10.90	5.37	251	2.70	6.8	2	<0.05	7720	24.2	0.85	0.55	<0.02	20.1	0.171
B00292162		0.52	25.1	5.62	49.4	24.2	40.3	66	3.67	6440	8.98	12.25	0.16	0.25	2.01	0.451
B00292219		0.44	16.95	8.77	23.4	37.9	35.8	23	2.97	9350	11.95	14.35	0.13	0.44	0.67	0.353
B00292226		<0.05	3.40	5.29	232	6.96	0.8	1	<0.05	1245	24.2	4.60	0.34	<0.02	15.70	0.022
B00292308		0.55	0.28	1.18	0.24	146.0	4.5	5	1.05	8.4	3.35	3.85	0.13	0.14	0.12	0.017
B00292318		0.25	0.43	1.62	0.90	53.4	2.2	9	0.14	11.0	8.23	1.71	0.08	0.32	0.17	0.012
B00292319		0.52	0.24	1.74	1.69	151.5	5.1	5	0.90	7.3	2.43	2.53	0.14	0.16	0.17	0.025

***** See Appendix Page for comments regarding this certificate *****

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb
	Units	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOR	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001	0.01	0.05
B00291046		0.11	10.7	1.2	0.13	1020	17.05	<0.01	0.16	47.8	50	>10000	5.8	0.022	>10.0	163.0
B00291053		0.03	12.9	1.7	0.44	2110	10.00	<0.01	<0.05	28.3	20	>10000	2.3	0.007	>10.0	521
B00291060		0.09	1.9	6.7	0.93	782	7.80	<0.01	<0.05	25.6	250	2710	3.0	0.014	>10.0	129.0
B00291088		0.17	10.1	21.7	2.85	944	0.56	<0.01	<0.05	69.0	530	81.9	7.0	0.001	0.05	9.70
B00291107		0.79	44.3	31.1	3.39	953	6.07	0.01	0.72	5.1	70	2600	51.1	0.003	>10.0	53.4
B00291114		0.04	3.8	1.9	0.09	659	4.10	<0.01	0.06	48.4	20	>10000	1.6	0.004	>10.0	527
B00291116		1.28	2.7	34.8	3.52	935	0.44	0.01	0.08	81.4	550	34.8	57.0	0.001	0.20	4.56
B00291135		<0.01	1.8	0.5	1.99	2810	3.34	<0.01	<0.05	9.3	20	>10000	0.2	0.002	>10.0	338
B00291142		0.01	6.3	0.7	2.52	4410	24.0	<0.01	<0.05	5.0	70	>10000	0.5	0.012	>10.0	350
B00291166		0.21	19.1	14.4	2.64	1200	13.50	0.01	0.05	36.3	290	3710	8.1	0.008	5.80	15.80
B00291200		0.29	20.0	6.6	0.41	483	13.90	0.13	0.44	26.7	320	>10000	11.4	0.001	4.35	113.5
B00291201		0.16	18.2	9.0	1.05	514	9.52	0.06	0.73	16.7	390	2280	7.2	0.001	9.37	21.6
B00291202		<0.01	0.2	0.8	0.46	906	19.00	<0.01	<0.05	12.0	<10	>10000	0.2	0.012	>10.0	927
B00291213		<0.01	0.2	0.5	0.87	1140	19.95	<0.01	<0.05	17.2	<10	>10000	0.4	0.012	>10.0	761
B00291221		0.01	0.2	1.0	0.26	595	24.2	<0.01	0.05	20.4	<10	>10000	1.5	0.014	>10.0	1130
B00291234		0.01	1.6	0.6	0.10	894	5.21	<0.01	0.09	23.4	<10	>10000	0.6	0.004	>10.0	1260
B00291250		<0.01	0.2	0.5	1.22	30	0.14	<0.01	<0.05	<0.2	40	35.2	0.1	0.001	0.13	1.79
B00291312		0.01	2.3	1.4	0.32	783	0.80	<0.01	0.22	2.3	<10	3430	0.5	0.001	>10.0	13.60
B00291338		0.05	4.1	0.8	0.41	1080	4.71	<0.01	0.17	31.7	20	>10000	2.6	0.003	>10.0	857
B00291362		0.42	16.3	12.2	0.51	649	3.06	0.01	0.74	7.1	100	>10000	33.7	0.004	>10.0	195.5
B00291415		0.22	38.6	1.2	0.74	488	7.31	0.01	0.06	38.5	260	230	7.5	0.021	3.93	16.45
B00291438		0.16	23.0	5.1	0.48	850	20.3	<0.01	0.26	29.9	50	5990	5.9	0.014	>10.0	37.0
B00291440		0.09	1.9	7.8	0.95	786	7.40	<0.01	<0.05	25.9	260	2720	2.9	0.013	>10.0	125.5
B00291464		0.45	52.6	18.3	1.84	473	30.4	0.01	0.30	21.3	120	4930	19.4	0.033	>10.0	56.4
B00291468		0.45	46.8	14.8	1.22	321	27.3	0.01	0.86	6.5	70	>10000	22.8	0.007	>10.0	85.4
B00291489		0.03	2.0	0.6	0.10	612	1.64	<0.01	0.07	25.3	10	>10000	1.1	0.003	>10.0	1325
B00291555		0.23	9.5	1.6	0.85	773	5.72	<0.01	0.10	58.6	160	81.1	9.0	0.020	4.20	7.78
B00291584		0.36	23.4	11.5	0.76	719	7.43	<0.01	0.93	16.4	50	>10000	27.7	0.007	>10.0	236
B00292021		1.05	1.4	38.7	3.93	1000	0.64	0.01	0.13	87.0	560	88.8	57.4	0.002	0.16	3.30
B00292116		0.19	31.9	0.6	0.01	231	2.29	0.01	0.12	4.1	130	16.5	4.5	<0.001	1.30	2.21
B00292120		<0.01	0.2	0.4	1.06	19	0.09	<0.01	<0.05	<0.2	30	3.0	0.1	0.001	0.09	0.48
B00292122		0.21	9.7	2.1	0.24	224	9.54	0.01	<0.05	14.4	140	448	8.1	0.008	4.01	3.54
B00292129		0.24	41.4	5.2	0.65	926	1.71	0.02	<0.05	4.9	900	10.5	8.8	<0.001	0.97	0.45
B00292144		0.01	1.6	0.6	2.64	1420	4.51	<0.01	<0.05	2.7	10	>10000	0.5	0.005	>10.0	1270
B00292162		1.18	11.6	38.8	3.50	1200	2.75	0.01	0.30	50.3	400	406	70.5	0.001	2.60	13.00
B00292219		0.77	18.4	43.2	2.27	2150	6.37	0.01	0.37	18.4	210	312	39.3	0.004	3.02	25.9
B00292226		<0.01	4.5	0.5	1.07	2940	6.78	<0.01	<0.05	8.5	10	>10000	0.2	0.007	>10.0	648
B00292308		0.35	73.4	25.1	0.47	1420	2.42	<0.01	0.19	4.6	830	53.3	11.1	<0.001	0.21	1.17
B00292318		0.32	26.7	2.2	0.62	540	28.5	0.01	0.14	23.7	210	125.0	11.1	0.013	7.87	6.85
B00292319		0.33	75.5	5.5	0.54	491	4.59	0.01	<0.05	5.4	710	57.1	11.7	0.002	1.19	2.86

***** See Appendix Page for comments regarding this certificate *****

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1510-250 HOWE STREET
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Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	2	0.5
B00291046		0.2	38.2	7.2	45.3	<0.01	0.03	3.6	<0.005	8.27	3.65	17	0.21	5.92	>10000	6.9
B00291053		1.2	94.8	13.0	102.5	<0.01	0.04	<0.2	<0.005	17.95	2.59	10	0.18	12.10	>10000	<0.5
B00291060		2.2	117.0	12.8	37.8	<0.01	0.28	0.4	<0.005	9.54	1.02	22	2.83	3.41	>10000	2.0
B00291088		8.4	1.9	<0.2	135.0	<0.01	0.02	1.0	0.009	0.33	0.06	49	<0.05	20.7	215	<0.5
B00291107		1.7	216	3.2	3.4	0.01	0.01	22.3	0.059	10.05	13.85	12	0.20	16.50	>10000	32.0
B00291114		0.4	89.6	12.9	29.7	<0.01	0.05	1.7	<0.005	3.25	3.18	33	0.09	4.78	>10000	6.2
B00291116		13.0	0.5	0.4	88.3	<0.01	<0.01	0.4	0.256	7.34	0.15	111	0.14	6.96	277	0.9
B00291135		0.1	202	9.5	57.4	<0.01	0.03	<0.2	<0.005	8.24	0.83	5	0.07	2.61	>10000	<0.5
B00291142		0.1	80.7	24.3	64.6	<0.01	0.04	<0.2	<0.005	15.40	4.96	6	0.17	11.50	>10000	<0.5
B00291166		2.5	50.6	1.4	62.0	<0.01	0.03	16.2	0.005	1.69	6.26	16	0.13	6.52	9200	17.1
B00291200		2.0	4.5	2.7	16.8	0.01	0.07	5.1	0.020	0.70	1.36	10	0.89	6.47	>10000	53.1
B00291201		4.8	22.4	4.2	12.3	0.02	0.60	4.1	0.028	0.24	1.24	15	2.36	7.62	9750	50.9
B00291202		<0.1	24.6	16.0	18.7	<0.01	0.05	<0.2	<0.005	9.48	2.25	10	0.99	0.89	>10000	<0.5
B00291213		<0.1	9.2	4.5	33.1	<0.01	0.03	<0.2	<0.005	11.05	1.45	13	0.88	0.66	>10000	<0.5
B00291221		0.1	42.9	5.0	21.8	<0.01	0.04	<0.2	<0.005	17.05	1.01	15	1.25	0.71	>10000	<0.5
B00291234		0.1	85.5	10.9	49.2	<0.01	0.03	0.2	<0.005	17.20	2.80	31	0.37	4.24	>10000	1.7
B00291250		0.3	0.4	<0.2	4680	<0.01	0.01	<0.2	0.005	0.02	1.36	2	<0.05	0.60	61	<0.5
B00291312		0.2	187.5	6.0	1.8	<0.01	0.06	1.2	<0.005	1.76	0.45	5	0.07	0.52	>10000	2.7
B00291338		0.2	220	14.3	117.0	<0.01	0.03	2.1	<0.005	1.71	2.68	7	0.13	4.27	>10000	4.1
B00291362		0.6	400	11.6	28.3	<0.01	0.02	7.4	0.014	3.23	3.06	11	0.12	4.62	>10000	14.3
B00291415		0.5	3.9	0.3	27.1	<0.01	0.03	21.2	<0.005	0.24	3.62	4	0.16	5.22	1420	11.5
B00291438		0.7	360	2.7	89.3	<0.01	0.02	13.7	<0.005	1.40	5.94	11	0.16	13.80	>10000	24.8
B00291440		2.3	113.0	12.2	36.7	<0.01	0.27	0.5	<0.005	9.30	1.03	22	2.72	3.30	>10000	2.0
B00291464		1.0	120.0	3.4	4.0	0.01	0.01	37.6	0.016	3.13	12.35	36	0.27	22.1	>10000	57.2
B00291468		0.9	370	1.8	2.9	0.01	0.02	30.3	0.025	4.86	8.64	10	0.25	19.20	>10000	29.9
B00291489		0.1	300	7.9	26.3	<0.01	0.02	1.2	<0.005	2.68	2.22	9	0.61	1.49	>10000	3.8
B00291555		0.6	5.3	0.3	45.2	<0.01	0.01	15.4	<0.005	0.17	4.43	3	0.10	3.67	342	6.3
B00291584		0.5	330	23.2	57.3	<0.01	0.05	13.3	0.012	12.30	5.90	16	0.51	13.80	>10000	17.0
B00292021		5.0	0.7	0.3	61.9	<0.01	<0.01	0.2	0.288	8.29	0.05	98	0.14	4.11	314	0.7
B00292116		0.4	0.6	0.7	54.8	<0.01	<0.01	19.9	<0.005	0.79	2.11	1	0.05	9.11	11	8.5
B00292120		0.2	0.2	<0.2	5060	<0.01	0.01	<0.2	<0.005	<0.02	1.34	1	<0.05	0.24	6	<0.5
B00292122		0.4	13.3	0.5	18.1	<0.01	0.03	14.1	<0.005	0.59	3.70	2	0.13	2.70	1420	9.7
B00292129		2.0	2.5	0.3	87.2	<0.01	<0.01	19.6	<0.005	0.15	0.52	2	<0.05	13.55	87	4.8
B00292144		0.1	194.5	5.6	103.5	<0.01	0.02	<0.2	<0.005	3.85	4.25	6	0.37	0.79	>10000	<0.5
B00292162		3.5	39.9	2.0	78.3	0.01	0.02	15.3	0.147	6.90	4.09	39	0.12	14.80	7190	8.2
B00292219		3.8	33.0	3.3	137.0	0.01	0.05	26.9	0.083	13.20	6.92	21	0.16	24.9	3790	15.6
B00292226		0.1	97.9	8.4	54.6	<0.01	0.03	<0.2	<0.005	10.10	2.44	9	0.21	5.69	>10000	<0.5
B00292308		1.8	0.8	0.6	26.8	<0.01	0.01	22.6	0.010	0.11	0.60	4	0.10	14.75	117	5.1
B00292318		0.5	3.0	0.5	25.3	<0.01	0.01	20.2	<0.005	0.54	4.41	3	0.40	4.52	181	11.5
B00292319		1.5	0.7	0.5	33.7	<0.01	<0.01	29.0	<0.005	0.54	2.15	2	0.11	7.48	319	6.2

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
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VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method Analyte Units LOR	Ag-OG46 Ag ppm 1	Cu-OG46 Cu % 0.001	Pb-OG46 Pb % 0.001	Zn-OG46 Zn % 0.001	ME-MS85 Ba ppm 0.5
B00291046		156		2.93	5.68	336
B00291053		165		2.28	4.93	166.5
B00291060					1.075	464
B00291088						2250
B00291107			1.020		4.68	2010
B00291114		397		3.46	12.10	8090
B00291116						6670
B00291135		194		4.05	9.92	9.3
B00291142		203		2.17	3.64	33.8
B00291166						5720
B00291200				1.295	5.19	2690
B00291201			1.720			1395
B00291202		324		4.50	6.29	>10000
B00291213		207		3.43	4.52	>10000
B00291221		278		3.15	4.28	>10000
B00291234		341		4.64	6.36	>10000
B00291250						103.5
B00291312					9.41	110.5
B00291338		404		4.11	10.85	1295
B00291362		249		5.50	8.28	2500
B00291415						511
B00291438					3.78	1480
B00291440					1.135	485
B00291464					1.910	6210
B00291468		103		1.135	3.68	6310
B00291489		358		1.150	8.63	365
B00291555						677
B00291584		181	1.015	1.490	5.18	6040
B00292021						4350
B00292116						1725
B00292120						8.0
B00292122						2460
B00292129						1075
B00292144		286		2.33	4.90	26.8
B00292162						1485
B00292219						4790
B00292226		168		4.07	6.64	88.4
B00292308						871
B00292318						662
B00292319						962

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CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA25 Au ppm 0.01	Ag-AA45 Ag ppm 0.2	Ag-AA46 Ag ppm 1	ME-ICP81 Cu % 0.002	ME-ICP81 Fe % 0.05	ME-ICP81 Pb % 0.01	ME-ICP81 S % 0.01	ME-ICP81 Zn % 0.002	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.2	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10
B00292330		0.10	1.29	67.5		0.354	3.65	1.33	4.60	5.38	70.5	1.52	76.1	1.2	<10	50
B00292331		0.12	0.83	18.8		1.615	12.75	0.23	8.81	1.015	20.0	1.74	75.7	0.8	<10	30
B00292334		0.18	0.01	0.2		0.007	5.45	<0.01	0.38	0.017	0.42	2.69	475	<0.2	<10	530
B00292349		0.18	6.49	>100	366	0.342	8.25	0.88	8.98	1.730	>100	2.18	627	6.2	<10	80
B00292378		0.22	0.23	29.6		0.101	11.20	0.38	10.90	1.580	32.4	0.70	1305	0.2	<10	20
D00004042		0.26	1.84	>100	168	0.546	31.2	4.36	37.2	7.42	>100	0.03	3970	0.4	<10	30

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	Hg	In
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOR	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02	0.01	0.005
B00292330		0.54	3.54	1.60	264	39.5	31.3	31	0.93	3650	3.34	8.93	0.07	1.43	3.99	1.805
B00292331		0.41	17.75	1.00	46.9	35.3	215	18	0.71	>10000	12.40	12.60	0.13	1.35	0.83	2.09
B00292334		0.28	0.05	6.39	0.39	30.5	43.3	110	0.61	91.7	4.61	6.37	<0.05	0.09	0.09	0.019
B00292349		0.27	2.50	7.32	76.4	19.80	3.7	4	0.99	3580	8.07	6.73	0.14	0.45	4.67	0.079
B00292378		0.28	16.95	0.32	115.0	86.6	10.0	7	0.44	1015	9.48	3.44	0.15	0.72	3.21	0.218
D00004042		<0.05	33.6	5.19	287	5.51	0.5	4	0.06	5600	23.9	3.06	0.60	<0.02	15.90	0.010

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Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb
	Units	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOR	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001	0.01	0.05
B00292330		0.30	20.2	6.7	0.42	496	13.35	0.14	0.45	26.5	330	>10000	11.5	0.001	4.47	112.5
B00292331		0.16	18.1	8.8	1.03	498	9.02	0.06	0.73	16.4	390	2220	7.0	<0.001	9.20	20.3
B00292334		0.35	15.5	22.2	2.13	867	4.17	0.01	<0.05	82.6	580	30.2	13.9	0.006	0.37	25.3
B00292349		0.11	3.7	7.9	0.15	891	16.00	0.03	0.08	37.0	90	7950	4.4	0.015	8.87	1615
B00292378		0.42	39.7	4.6	0.15	131	37.5	0.01	0.36	40.7	130	3610	12.3	0.021	>10.0	54.2
D00004042		0.01	3.2	0.4	0.57	2100	4.62	<0.01	<0.05	6.0	30	>10000	0.6	0.005	>10.0	299

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Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	2	0.5
B00292330		2.2	4.8	2.6	19.0	0.01	0.03	5.3	0.023	0.70	1.44	10	0.90	6.65	>10000	54.8
B00292331		5.0	21.5	4.0	14.4	0.02	0.56	4.2	0.029	0.24	1.26	15	2.25	7.37	9450	51.0
B00292334		7.5	1.6	0.3	146.5	<0.01	<0.01	3.4	0.016	1.50	1.52	57	0.20	16.45	127	3.5
B00292349		2.1	42.0	4.9	38.1	<0.01	0.01	2.5	<0.005	1.15	4.00	5	0.07	14.00	>10000	14.9
B00292378		1.0	30.5	3.0	9.4	<0.01	0.02	34.8	0.011	18.15	14.05	8	0.41	21.9	>10000	27.5
D00004042		0.1	211	18.4	97.3	<0.01	0.03	<0.2	<0.005	17.10	2.57	13	0.17	2.99	>10000	<0.5

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Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

Sample Description	Method Analyte Units LOR	Ag-OG46 Ag ppm 1	Cu-OG46 Cu % 0.001	Pb-OG46 Pb % 0.001	Zn-OG46 Zn % 0.001	ME-MS85 Ba ppm 0.5
B00292330				1.350	5.30	2580
B00292331			1.795			1350
B00292334						4460
B00292349		364			1.720	>10000
B00292378					1.515	8990
D00004042		171		4.19	7.05	1425

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 30-JUL-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16113176

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Ag-AA45	Ag-AA46	Ag-OG46	Au-AA25
Cu-OG46	LOG-24	LOG-QC	ME-ICP81
ME-MS41	ME-MS85	ME-OG46	Pb-OG46
WEI-21	Zn-OG46		

ALS Canada Ltd.

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 24-AUG-2016
Account: EIA

CERTIFICATE VA16136024

Project: KZK Project

P.O. No.: BMC16-01_CA2

This report is for 18 Pulp samples submitted to our lab in Vancouver, BC, Canada on 17-AUG-2016.

The following have access to data associated with this certificate:

R. BLACK CHRIS HUGHES	JANE CAPP NEIL MARTIN	EQUITY EXPLORATION DANIELLE MOUNTJOY

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-24	Pulp Login - Rcd w/o Barcode

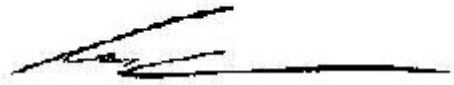
ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-MS85	Lithium Borate Fusion - Select Elements	ICP-MS
Au-AA25	Ore Grade Au 30g FA AA finish	AAS
Au-GRA21	Au 30g FA-GRAV finish	WST-SIM
Ag-AA46	Ore grade Ag - aqua regia/AA	AAS
Ag-GRA21	Ag 30g FA-GRAV finish	WST-SIM
ME-ICP81	ICP Fusion - Ore Grade	ICP-AES
ME-MS42	Up to 34 elements by ICP-MS	ICP-MS

To: **EQUITY EXPLORATION CONSULTANTS LTD.**
ATTN: CHRIS HUGHES
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 24-AUG-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16136024

Sample Description	Method	WEI-21	Au-AA25	Au-GRA21	Ag-AA46	Ag-GRA21	ME-ICP81	ME-ICP81	ME-ICP81	ME-ICP81	ME-ICP81	ME-MS42	ME-MS42	ME-MS42	ME-MS42	ME-MS42
	Analyte	Recvd Wt.	Au	Au	Ag	Ag	Cu	Fe	Pb	S	Zn	As	Bi	Hg	Sb	Se
	Units	kg	ppm	ppm	ppm	ppm	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm
	LOR	0.02	0.01	0.05	1	5	0.002	0.05	0.01	0.01	0.002	0.1	0.01	0.005	0.05	0.2
D00004413		0.18	0.01		2		0.028	5.58	0.08	1.85	0.597	2.0	1.77	0.180	1.83	6.0
D00004417		0.26	3.50		170		0.416	21.8	5.46	17.55	7.93	30.9	1.14	1.320	118.0	13.4
D00004422		0.28	3.13		146		0.232	24.5	4.53	21.3	10.45	84.8	0.55	2.11	88.6	20.0
D00004423		0.18	0.35		3		0.014	4.42	0.07	0.36	0.066	14.9	0.14	0.022	4.88	<0.2
D00004430		0.10	1.25		65		0.368	3.78	1.29	4.56	5.13	81.5	3.86	4.07	110.0	4.4
D00004431		0.12	0.82		20		1.725	13.25	0.23	9.20	1.000	84.7	17.40	0.793	24.1	24.8
D00004437		0.16	<0.01		1		0.008	5.43	0.01	2.80	0.040	0.9	0.34	<0.005	0.52	22.0
D00004458		0.18	0.10		57		0.111	9.53	2.33	8.06	3.47	4.1	5.45	3.98	66.9	13.0
D00004462		0.18	<0.01		1		0.023	4.35	0.01	1.08	0.038	2.1	0.19	0.021	0.76	0.8
D00004465		0.18	<0.01		1		0.018	6.05	<0.01	1.17	0.027	2.3	0.07	0.011	1.71	1.6
D00005530		0.16	0.85		43		0.474	19.85	0.29	17.85	1.115	>250	20.6	9.29	123.5	133.0
D00005533		0.16	0.09		11		0.153	15.00	1.57	7.20	3.16	1.6	13.30	0.615	15.65	13.5
D00005539		0.16	5.73	3.66	286	288	0.295	20.4	7.66	25.3	15.15	45.8	0.72	11.35	235	7.4
D00004358		0.24	0.06		21		0.061	13.95	2.49	7.34	3.11	7.1	2.71	0.446	16.65	2.3
D00004366		0.18	5.75	7.52	383	397	0.078	22.6	9.85	31.7	16.90	149.0	0.89	20.1	>250	16.7
D00004390		0.12	0.80		43		0.471	19.70	0.30	17.60	1.120	>250	20.8	9.29	122.0	132.5
D00004396		0.24	13.25	7.50	151		0.335	25.5	4.70	19.75	8.11	176.0	13.40	1.490	91.5	27.6
D00004398		0.34	3.00		185		0.152	26.7	6.34	29.7	11.30	>250	0.23	2.85	172.5	5.3

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
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www.alsglobal.com

To: **EQUITY EXPLORATION CONSULTANTS LTD.**
1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 24-AUG-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16136024

Sample Description	Method Analyte Units LOR	ME-MS85 Ba ppm 0.5
D00004413		2880
D00004417		579
D00004422		467
D00004423		1160
D00004430		2620
D00004431		1405
D00004437		4530
D00004458		1325
D00004462		943
D00004465		1030
D00005530		497
D00005533		382
D00005539		1205
D00004358		748
D00004366		192.5
D00004390		491
D00004396		332
D00004398		64.6

***** See Appendix Page for comments regarding this certificate *****

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1510-250 HOWE STREET
VANCOUVER BC V6C 3R8

Finalized Date: 24-AUG-2016
Account: EIA

Project: KZK Project

CERTIFICATE OF ANALYSIS VA16136024

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:			
Ag-AA46	Ag-GRA21	Au-AA25	Au-GRA21
LOG-24	ME-ICP81	ME-MS42	ME-MS85
WEI-21			

Certificate of Analysis

Work Order : VC161371

[Report File No.: 0000017104]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Apr 28, 2016

P.O. No.	:	PO# BMC15-01_3
Project No.	:	KZK
No. Of Samples	:	200
Date Submitted	:	Apr 18, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Comments:

G_PHY03V analysis was performed by SGS Sudbury.

Certified By : _____

Cam Chiang
Assistant Operations Manager

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00264053	2.86
B00264054	3.01
B00264055	2.82
B00264504	3.02
B00264505	2.80
B00264519	3.88
B00264522	4.34
B00264524	4.35
B00264529	3.37
B00264532	2.91
B00264533	2.99
B00264542	3.19
B00264544	3.16
B00264546	4.21
B00264567	4.04
B00264568	4.19
B00265006	3.26
B00265008	3.99
B00265012	4.07
B00265014	4.05
B00265016	4.07
B00264602	4.14
B00264604	4.58
B00264626	4.46
B00264628	4.34
B00264632	4.16
B00266506	2.73
B00266507	2.75
B00266527	4.24
B00266529	3.98
B00266532	3.63
B00268511	2.82
B00268512	2.81
B00268513	2.78
B00264715	4.18
B00264717	3.87
B00268548	4.39
B00268551	3.37
B00268553	3.92
B00268619	3.07

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00268621	2.96
B00268622	4.52
B00266567	3.46
B00266569	4.37
B00266572	4.51
B00266574	4.36
B00266588	2.75
B00266589	2.76
B00266591	2.79
B00266646	2.93
B00266649	2.94
B00266677	3.35
B00266678	2.98
B00266698	4.37
B00266701	4.20
B00266722	4.29
B00266724	4.29
B00266726	4.31
B00266728	4.39
B00268643	4.39
B00268645	4.23
B00264859	2.98
B00264861	3.16
B00266768	4.35
B00266769	4.44
B00268757	4.34
B00268759	4.72
B00268762	4.44
B00264813	3.20
B00264814	3.15
B00264816	4.00
B00264818	4.37
B00264821	3.06
B00264822	3.09
B00268724	3.30
B00268726	4.43
B00268736	4.47
B00268738	4.37
B00264953	3.57
B00264955	3.12

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00264957	3.75
B00264962	4.56
B00264964	4.24
B00266817	3.75
B00266819	4.53
B00268819	4.61
B00268822	4.13
B00268832	4.17
B00268979	4.54
B00268982	4.54
B00269505	2.91
B00269506	3.93
B00268157	4.43
B00268159	4.48
B00268162	4.37
B00268206	4.09
B00268223	4.40
B00268854	4.49
B00268856	3.98
B00268858	4.63
B00266862	3.74
B00266864	4.52
B00266879	3.60
B00266882	3.04
B00266884	4.55
B00268248	3.02
B00268249	3.13
B00268254	4.40
B00268256	4.15
B00268258	4.25
B00268279	3.88
B00268282	4.24
B00268902	4.32
B00268904	4.51
B00268945	4.18
B00266954	4.51
B00266956	4.40
B00266985	4.66
B00266987	4.19
B00265109	4.54

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00265115	3.66
B00265117	4.26
B00265134	4.38
B00265136	4.32
B00265171	4.17
B00265179	4.66
B00265182	4.57
B00265207	4.32
B00265209	4.14
B00265212	3.83
B00265272	2.80
B00265274	3.99
B00265276	4.10
B00265278	4.54
B00268464	4.31
B00268466	3.81
B00268481	4.43
B00268483	3.91
B00269584	4.42
B00269586	4.50
B00269624	4.37
B00269626	4.27
B00269672	4.39
B00269674	4.65
B00269676	4.47
B00269693	4.38
B00269694	4.06
B00269748	3.61
B00269749	3.29
B00233219	4.33
B00233222	4.38
B00233237	2.75
B00233239	2.78
B00233242	2.77
B00233248	4.41
B00233252	3.88
B00265471	3.52
B00265473	3.64
B00265481	3.32
B00265484	4.03

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00232654	4.24
B00232656	4.22
B00232658	3.65
B00269937	4.62
B00269939	4.33
B00269942	4.55
B00269964	3.06
B00269965	3.50
B00269966	3.06
B00233173	4.65
B00233175	4.41
B00233186	3.91
B00233188	4.30
B00233193	4.13
B00265388	3.26
B00265391	3.59
B00269904	4.45
B00232723	2.99
B00232725	2.89
B00233502	4.23
B00233504	4.19
B00265343	4.19
B00265345	4.26
B00265347	3.52
B00269788	4.35
B00269804	4.44
B00269806	4.41
B00269808	4.33
B00269843	4.35
B00269845	3.23
B00233557	4.03
B00233559	3.31
B00233562	2.80
B00233564	2.79
B00233569	4.28
B00233573	3.95
B00232772	2.80
B00232773	2.84
B00266897	4.51
B00266899	4.25

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Final : VC161371 Order: PO# BMC15-01_3

Report File No.: 0000017104

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
*Rep B00264532	2.92
*Rep B00264602	4.15
*Rep B00268511	2.81
*Rep B00266646	2.93
*Rep B00268643	4.38
*Rep B00264821	3.06
*Rep B00268982	4.53
*Rep B00269506	3.89
*Rep B00268902	4.34
*Rep B00265179	4.67
*Rep B00268483	3.94
*Rep B00269748	3.65
*Rep B00269965	3.51
*Rep B00233188	4.33
*Rep B00269843	4.38
*Rep B00266899	4.27
*Std SMALL_SPHERE	7.03
*Std OREAS905	2.74
*Std AMIS0282	2.78
*Std OREAS906	2.76
*Std N_SYENITE	2.63
*Std SMALL_SPHERE	7.00
*Std SMALL_SPHERE	7.08
*Std SMALL_SPHERE	6.97
*Std N_SYENITE	2.64
*Std OREAS906	2.75
*Std OREAS905	2.73
*Std AMIS0282	2.78

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Certificate of Analysis

Work Order : VC161661

[Report File No.: 0000017600]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 06, 2016

P.O. No.	:	PO# BMC16-01_2
Project No.	:	KZK
No. Of Samples	:	85
Date Submitted	:	May 17, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291001	2.985	N.A.	<5	0.9	0.10	<0.01	7.71	<0.01
B00291002	2.970	N.A.	6	1.0	0.20	<0.01	7.19	0.01
B00291003	3.020	N.A.	<5	<0.3	0.17	<0.01	7.03	<0.01
B00291004	2.005	N.A.	7	0.5	0.05	<0.01	6.68	<0.01
B00291005	2.735	N.A.	<5	0.4	0.11	<0.01	7.00	<0.01
B00291006	2.460	N.A.	191	5.2	0.58	0.01	2.52	0.05
B00291007	1.570	N.A.	82	15.4	0.49	<0.01	2.11	0.10
B00291008	1.295	N.A.	299	71.1	0.49	0.10	10.2	0.43
B00291009	0.940	N.A.	13	2.8	0.22	<0.01	7.71	0.02
B00291010	1.410	N.A.	9	1.1	0.33	<0.01	6.30	0.01
B00291011	1.110	N.A.	19	2.2	0.39	0.01	5.11	0.03
B00291012	1.970	N.A.	63	7.5	0.47	0.04	7.70	0.05
B00291013	2.275	N.A.	332	91.7	0.49	0.08	20.7	1.15
B00291014	2.010	N.A.	11	4.4	0.33	0.01	8.53	0.06
B00291015	2.705	N.A.	7	<0.3	0.26	<0.01	7.86	<0.01
B00291016	1.685	N.A.	6	1.0	0.32	<0.01	1.25	<0.01
B00291017	1.860	N.A.	6	0.7	0.50	<0.01	1.63	<0.01
B00291018	1.385	N.A.	1540	185	0.88	0.13	5.21	0.06
B00291019	2.095	N.A.	3440	>300	1.75	0.20	21.7	2.26
B00291020	1.660	N.A.	5	<0.3	<0.01	<0.01	0.13	<0.01
B00291021	1.480	N.A.	46	6.3	1.16	<0.01	4.76	0.04
B00291022	2.815	N.A.	7	0.5	0.64	<0.01	6.59	<0.01
B00291023	3.130	N.A.	8	0.9	0.41	<0.01	6.65	<0.01
B00291024	3.195	N.A.	8	1.0	0.22	<0.01	8.03	<0.01
B00291025	3.375	N.A.	5	0.6	0.15	0.01	7.61	<0.01
B00291026	3.140	N.A.	7	0.4	0.24	<0.01	7.18	<0.01
B00291027	3.045	N.A.	<5	0.7	0.40	<0.01	6.94	<0.01
B00291028	1.680	N.A.	<5	1.9	0.55	<0.01	1.54	0.03
B00291029	1.385	N.A.	15	1.6	0.80	<0.01	1.55	0.01
B00291030	2.270	N.A.	10	2.1	1.67	<0.01	1.35	0.02
B00291031	2.395	N.A.	11	2.1	1.25	<0.01	1.86	0.02
B00291032	2.700	N.A.	13	1.7	0.59	<0.01	1.68	0.02
B00291033	1.810	N.A.	15	2.7	0.50	<0.01	2.15	0.03
B00291034	2.215	N.A.	14	3.0	0.33	<0.01	2.11	0.04
B00291035	1.765	N.A.	41	3.5	0.33	<0.01	3.04	0.06
B00291036	2.865	N.A.	1280	168	<0.01	0.11	31.3	3.76
B00291037	2.500	N.A.	2020	138	<0.01	0.36	24.6	2.19
B00291038	3.325	N.A.	1330	136	0.01	0.24	27.7	2.64
B00291039	2.830	N.A.	3400	288	<0.01	0.62	30.0	6.35
B00291040	0.160	N.A.	1280	67.5	0.25	0.36	3.75	1.39

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291041	0.160	N.A.	823	19.9	0.14	1.71	13.4	0.25
B00291042	3.610	N.A.	2090	120	<0.01	0.48	28.6	1.94
B00291043	3.665	N.A.	1210	180	0.01	0.15	25.8	1.90
B00291044	2.630	N.A.	982	120	<0.01	0.35	19.5	1.81
B00291045	2.145	N.A.	1020	>300	<0.01	0.02	28.9	5.52
B00291046	1.345	N.A.	668	163	0.03	0.07	13.9	3.06
B00291047	2.200	N.A.	42	2.8	0.28	<0.01	4.34	0.04
B00291048	1.570	N.A.	697	101	0.02	0.04	22.0	1.69
B00291049	2.705	N.A.	1180	102	<0.01	0.21	29.1	1.98
B00291050	4.345	96.2	2010	168	<0.01	0.27	29.1	3.53
B00291051	3.485	N.A.	2510	201	0.01	3.09	30.8	3.93
B00291052	3.705	N.A.	4120	166	0.01	0.59	29.4	2.90
B00291053	3.255	N.A.	2890	159	0.02	0.35	29.9	2.33
B00291054	2.760	N.A.	1620	221	0.01	1.52	30.8	4.45
B00291055	3.270	N.A.	2090	>300	<0.01	1.28	31.4	5.72
B00291056	1.365	N.A.	1580	295	0.07	2.09	21.1	3.80
B00291057	1.870	N.A.	9	1.6	0.22	<0.01	1.99	0.02
B00291058	2.785	N.A.	10	1.0	0.26	<0.01	2.82	0.01
B00291059	2.425	N.A.	16	4.5	0.30	0.02	4.04	0.07
B00291060	0.150	N.A.	867	46.3	0.04	0.45	19.9	0.30
B00291061	2.335	N.A.	9	2.1	0.22	<0.01	6.64	0.05
B00291062	2.800	N.A.	8	0.8	0.04	<0.01	7.08	0.02
B00291063	2.905	N.A.	8	1.9	<0.01	<0.01	6.79	0.05
B00291064	3.015	N.A.	9	0.8	<0.01	<0.01	6.58	0.01
B00291065	1.185	N.A.	69	13.9	0.02	0.03	6.67	0.21
B00291066	0.780	N.A.	881	129	0.04	0.31	29.7	2.02
B00291067	0.645	N.A.	25	6.3	0.08	0.14	9.00	0.06
B00291068	1.440	N.A.	257	45.5	0.19	0.34	6.50	0.84
B00291069	3.080	N.A.	17	0.6	0.21	<0.01	2.67	<0.01
B00291070	2.960	N.A.	6	0.4	0.11	<0.01	2.15	0.01
*Dup B00291070	N.A.	N.A.	8	0.4	0.11	<0.01	2.11	0.02
B00291071	2.865	N.A.	7	0.4	0.09	<0.01	1.77	<0.01
B00291072	2.500	N.A.	5	<0.3	0.08	<0.01	1.65	<0.01
B00291073	3.325	N.A.	13	2.6	0.07	<0.01	3.04	0.11
B00291074	2.830	N.A.	<5	<0.3	0.07	<0.01	2.00	<0.01
B00291075	0.160	N.A.	<5	1.1	0.07	<0.01	2.12	0.09
B00291076	0.160	N.A.	<5	<0.3	0.07	<0.01	2.28	<0.01
B00291077	3.610	N.A.	367	51.8	0.10	0.53	31.8	1.13
B00291078	3.665	N.A.	<5	<0.3	0.26	<0.01	5.92	<0.01
B00291079	2.630	N.A.	<5	0.4	0.06	<0.01	6.80	<0.01

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291080	2.145	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00291081	1.345	N.A.	<5	0.4	0.08	<0.01	5.10	<0.01
B00291082	2.200	N.A.	7	0.5	0.05	<0.01	6.51	<0.01
B00291083	1.570	N.A.	7	0.4	0.05	<0.01	6.68	<0.01
B00291084	2.705	85.2	5	0.3	0.09	<0.01	6.44	<0.01
B00291085	4.345	N.A.	10	5.3	0.12	0.03	4.83	0.02
*Rep B00291018			1700					
*Rep B00291061			6					
*Rep B00291079			<5					
*Std OXN117			7340					
*Std OXB130			127					
*Std OREAS214			2950					
*Std OXH97			1310					
*Std OXN117			7630					
*Blk BLANK			<5					
*Blk BLANK			<5					
*Rep B00291022					0.64	<0.01	6.60	<0.01
*Rep B00291033					0.50	<0.01	2.16	0.03
*Rep B00291054					0.01	1.55	29.8	4.42
*Rep B00291072					0.08	<0.01	1.67	<0.01
*Std OREAS131B					0.08	0.02	5.71	1.88
*Std ME-19					0.17	0.46	3.97	0.98
*Std RM183-89					3.18	<0.01	35.0	0.03
*Std OREAS134A					0.14	0.13	12.0	12.8
*Std ME-19					0.17	0.47	3.95	0.99
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00291028				1.7				
*Rep B00291051				203				
*Rep B00291074				<0.3				
*Std SU_1B				6.3				
*Std OREAS621				70.7				
*Std AMIS0268				195				
*Std OREAS621				69.7				
*Std AMIS0268				191				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291001	0.1	0.02	829	<5	0.14	0.01	<1	N.A.
B00291002	<0.1	0.02	214	<5	0.12	<0.01	<1	N.A.
B00291003	<0.1	0.01	111	<5	0.03	<0.01	<1	N.A.
B00291004	0.1	0.02	114	<5	0.06	<0.01	<1	N.A.
B00291005	<0.1	0.01	170	<5	0.02	<0.01	<1	N.A.
B00291006	0.6	<0.01	1280	10	0.27	0.05	4	N.A.
B00291007	0.9	<0.01	62	<5	0.51	0.11	14	N.A.
B00291008	8.1	1.91	117	47	18.5	4.56	140	N.A.
B00291009	0.6	0.23	254	<5	0.87	0.50	8	N.A.
B00291010	0.2	0.05	337	<5	0.24	0.10	2	N.A.
B00291011	0.3	0.03	440	<5	0.76	0.13	10	N.A.
B00291012	3.7	0.49	28	5	4.70	1.17	42	N.A.
B00291013	21.9	3.54	159	63	11.9	8.40	525	N.A.
B00291014	0.5	0.16	58	<5	0.93	0.38	18	N.A.
B00291015	0.4	0.03	45	<5	0.09	0.06	3	N.A.
B00291016	0.2	0.04	9	<5	0.56	0.06	1	N.A.
B00291017	0.2	0.02	7	<5	0.29	0.05	<1	N.A.
B00291018	1.9	0.32	254	582	1.03	1.49	4	N.A.
B00291019	28.9	7.00	418	1250	23.6	25.5	75	534
B00291020	<0.1	<0.01	6	<5	<0.02	0.06	<1	N.A.
B00291021	3.5	0.02	146	12	0.72	0.49	14	N.A.
B00291022	0.1	0.02	60	<5	0.04	0.04	<1	N.A.
B00291023	<0.1	0.02	68	<5	0.03	0.03	<1	N.A.
B00291024	0.1	0.01	62	<5	0.17	0.02	<1	N.A.
B00291025	0.3	0.01	59	<5	0.05	0.01	<1	N.A.
B00291026	0.1	0.01	55	<5	0.04	0.02	<1	N.A.
B00291027	0.3	0.01	61	<5	0.04	0.02	<1	N.A.
B00291028	0.3	0.03	6	<5	1.95	0.05	<1	N.A.
B00291029	0.3	0.08	6	<5	0.37	0.13	2	N.A.
B00291030	0.6	0.05	17	<5	0.35	0.11	<1	N.A.
B00291031	1.1	0.05	20	<5	0.36	0.11	<1	N.A.
B00291032	1.2	0.03	20	<5	0.34	0.05	<1	N.A.
B00291033	1.6	0.05	33	<5	0.45	0.12	1	N.A.
B00291034	1.4	0.08	22	5	0.44	0.15	1	N.A.
B00291035	2.4	0.13	43	<5	0.41	0.28	2	N.A.
B00291036	37.5	7.18	575	194	6.02	10.7	87	N.A.
B00291037	23.6	3.74	807	300	1.06	5.81	15	N.A.
B00291038	29.3	6.05	1300	261	7.32	7.39	26	N.A.
B00291039	35.0	8.43	>10000	572	4.24	10.7	58	291
B00291040	4.7	5.34	74	118	3.82	4.22	5	N.A.

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291041	9.1	1.01	85	22	17.8	0.81	21	N.A.
B00291042	31.4	4.85	1380	183	0.27	13.5	21	N.A.
B00291043	27.9	4.23	2840	300	0.20	13.3	28	N.A.
B00291044	17.4	4.02	1790	187	0.19	12.1	23	N.A.
B00291045	35.0	8.59	2240	332	0.19	23.3	29	316
B00291046	16.1	5.96	455	171	2.47	18.6	37	N.A.
B00291047	2.8	0.10	137	8	0.37	0.37	3	N.A.
B00291048	23.7	3.03	3350	224	0.60	15.3	85	N.A.
B00291049	31.0	5.21	8530	419	5.11	27.2	53	N.A.
B00291050	34.1	7.87	>10000	655	29.5	20.6	191	N.A.
B00291051	31.8	8.07	7500	364	50.5	10.4	215	N.A.
B00291052	33.0	7.11	>10000	1040	47.3	14.9	203	N.A.
B00291053	34.9	5.04	>10000	654	7.46	14.5	87	N.A.
B00291054	32.1	7.31	7570	424	8.96	8.46	76	N.A.
B00291055	31.4	8.40	8360	562	5.60	8.45	97	297
B00291056	25.2	12.0	2340	332	71.2	19.5	274	274
B00291057	0.9	0.02	31	<5	0.94	0.24	1	N.A.
B00291058	1.7	0.01	37	<5	0.61	0.12	<1	N.A.
B00291059	1.2	0.25	21	<5	5.38	0.61	7	N.A.
B00291060	16.2	1.08	1410	116	22.8	9.23	100	N.A.
B00291061	0.2	0.07	20	<5	0.95	0.12	2	N.A.
B00291062	0.1	0.03	23	<5	0.18	0.05	<1	N.A.
B00291063	<0.1	0.03	15	<5	0.19	0.06	<1	N.A.
B00291064	<0.1	0.03	22	<5	0.11	0.06	<1	N.A.
B00291065	0.3	0.09	29	8	1.82	0.22	7	N.A.
B00291066	34.0	6.19	292	84	63.8	14.7	139	N.A.
B00291067	2.2	0.30	10	12	0.49	0.76	8	N.A.
B00291068	2.5	1.57	19	42	19.9	3.60	153	N.A.
B00291069	1.5	0.03	20	<5	0.95	0.07	3	N.A.
B00291070	0.8	0.03	12	<5	0.35	0.08	2	N.A.
*Dup B00291070	0.7	0.03	12	<5	0.38	0.07	2	N.A.
B00291071	0.7	<0.01	9	<5	0.30	0.02	1	N.A.
B00291072	0.6	<0.01	9	<5	0.22	<0.01	<1	N.A.
B00291073	1.2	0.30	5	<5	2.89	0.28	6	N.A.
B00291074	0.6	0.01	5	<5	0.24	0.01	2	N.A.
B00291075	0.4	0.14	3	<5	0.55	0.13	5	N.A.
B00291076	0.5	0.01	6	<5	0.16	<0.01	1	N.A.
B00291077	25.0	8.37	111	61	23.3	13.7	261	N.A.
B00291078	0.1	0.02	36	7	<0.02	0.05	1	N.A.
B00291079	<0.1	0.02	41	<5	0.04	0.03	<1	N.A.

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291080	<0.1	<0.01	7	<5	<0.02	<0.01	<1	N.A.
B00291081	<0.1	0.02	51	<5	0.08	0.06	<1	N.A.
B00291082	<0.1	0.01	31	<5	0.02	0.02	<1	N.A.
B00291083	<0.1	0.01	44	<5	<0.02	0.02	<1	N.A.
B00291084	<0.1	<0.01	37	<5	<0.02	0.02	<1	N.A.
B00291085	0.2	<0.01	26	<5	0.33	0.18	<1	N.A.
*Rep B00291022	0.2	0.02						
*Rep B00291033	1.6	0.05						
*Rep B00291054	31.9	7.23						
*Rep B00291072	0.6	<0.01						
*Std OREAS131B	4.9	3.05						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.7	<0.01						
*Std OREAS134A	19.2	17.4						
*Std ME-19	1.5	0.76						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291016			8	<5	0.55	0.06	1	
*Rep B00291026			52	<5	0.05	0.02	<1	

Element	As	Sb	@Bi	@Hg	@Se	Ag
Method	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	3	5	0.02	0.01	1	10
Units	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00291065	28	7	1.79	0.23	8	
*Rep B00291084	36	<5	<0.02	0.01	<1	
*Std DS-1	7300	N.A.	N.A.	80.8	N.A.	
*Std OREAS210	3800	N.A.	N.A.	N.A.	N.A.	
*Std OREAS131B	N.A.	41	N.A.	N.A.	N.A.	
*Std OREAS934	N.A.	N.A.	520	N.A.	82	
*Std DS-1	7160	N.A.	N.A.	82.2	N.A.	
*Blk BLANK	<3	<5	<0.02	<0.01	<1	
*Blk BLANK	<3	<5	<0.02	<0.01	<1	
*Blk BLANK						<10
*Std AMIS0267						955

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291001	N.A.
B00291002	N.A.
B00291003	N.A.
B00291004	N.A.
B00291005	N.A.
B00291006	N.A.
B00291007	N.A.
B00291008	N.A.
B00291009	N.A.
B00291010	N.A.
B00291011	N.A.
B00291012	N.A.
B00291013	N.A.
B00291014	N.A.
B00291015	N.A.
B00291016	N.A.
B00291017	N.A.
B00291018	N.A.
B00291019	N.A.
B00291020	N.A.
B00291021	N.A.
B00291022	N.A.
B00291023	N.A.
B00291024	N.A.
B00291025	N.A.
B00291026	N.A.
B00291027	N.A.
B00291028	N.A.
B00291029	N.A.
B00291030	N.A.
B00291031	N.A.
B00291032	N.A.
B00291033	N.A.
B00291034	N.A.
B00291035	N.A.
B00291036	N.A.
B00291037	N.A.
B00291038	N.A.
B00291039	1.21
B00291040	N.A.

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291041	N.A.
B00291042	N.A.
B00291043	N.A.
B00291044	N.A.
B00291045	N.A.
B00291046	N.A.
B00291047	N.A.
B00291048	N.A.
B00291049	N.A.
B00291050	1.41
B00291051	N.A.
B00291052	2.65
B00291053	1.19
B00291054	N.A.
B00291055	N.A.
B00291056	N.A.
B00291057	N.A.
B00291058	N.A.
B00291059	N.A.
B00291060	N.A.
B00291061	N.A.
B00291062	N.A.
B00291063	N.A.
B00291064	N.A.
B00291065	N.A.
B00291066	N.A.
B00291067	N.A.
B00291068	N.A.
B00291069	N.A.
B00291070	N.A.
*Dup B00291070	N.A.
B00291071	N.A.
B00291072	N.A.
B00291073	N.A.
B00291074	N.A.
B00291075	N.A.
B00291076	N.A.
B00291077	N.A.
B00291078	N.A.
B00291079	N.A.

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Final : VC161661 Order: PO# BMC16-01_2

Report File No.: 0000017600

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291080	N.A.
B00291081	N.A.
B00291082	N.A.
B00291083	N.A.
B00291084	N.A.
B00291085	N.A.

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
*Blk BLANK	<0.01
*Rep B00291050	1.40
*Std MP1B	2.24

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Certificate of Analysis
Work Order : VC161668
[Report File No.: 0000017573]

Date: June 02, 2016

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

P.O. No.: PO# BMC15-01_3
Project No.: KZK
Samples: 23
Received: May 18, 2016
Pages: Page 1 to 2
(Inclusive of Cover Sheet)

Methods Summary

No. Of Samples	Method Code	Description
23	G_LOG02	Pre-preparation processing, sorting, logging, boxing
23	G_PHY03V	Specific Gravity - Pycnometer

Storage: Pulp & Reject

PULP STORAGE	:	STORE FOR 90 DAYS
REJECT STORAGE	:	STORE FOR 30 DAYS

Comments:

G_PHY03V analysis was performed by SGS Sudbury.

Certified By : _____

Cam Chiang
Assistant Operations Manager

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161668 Order: PO# BMC15-01_3

Report File No.: 0000017573

Element	Sg
Method	G_PHY03V
Det.Lim.	0.01
Units	NOUNIT
B00268856	3.99
B00269694	4.08
B00264584	3.98
B00266698	4.40
B00266701	4.22
B00268256	4.15
B00265014	4.08
B00265016	4.10
B00266722	4.29
B00266724	4.34
B00266726	4.33
B00266728	4.37
B00264626	4.43
B00266574	4.36
B00264524	4.39
B00233188	4.29
B00264715	4.21
B00264816	3.99
B00268483	3.91
B00264519	3.88
B00232723	3.00
B00232725	2.89
B00268279	3.84
*Rep B00266722	4.26
*Rep B00268483	3.93
*Std SMALL_SPHERE	7.06
*Std AMIS0283	3.36

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Certificate of Analysis

Work Order : VC161774

[Report File No.: 0000017738]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 20, 2016

P.O. No.	:	PO# BMC16-01_3
Project No.	:	KZK
No. Of Samples	:	112
Date Submitted	:	May 25, 2016
Report Comprises	:	Pages 1 to 14 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data has been included and is informational only.
This Report cancels and supersedes the Report No. 017697
dated Jun 14, 2016 issued by SGS Canada (Production Way).

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161774 Order: PO# BMC16-01_3

Report File No.: 0000017738

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291086	1.810	N.A.	911	157	0.14	0.50	28.9	2.13
B00291087	0.375	N.A.	8	0.7	0.23	0.01	4.80	<0.01
B00291088	1.045	N.A.	12	0.8	0.20	<0.01	5.82	<0.01
B00291089	4.145	N.A.	9	0.4	0.07	<0.01	5.63	<0.01
B00291090	4.050	N.A.	8	0.6	0.09	<0.01	6.52	<0.01
B00291091	2.695	N.A.	7	<0.3	0.07	<0.01	6.76	<0.01
B00291092	3.140	N.A.	7	2.2	0.07	0.01	6.04	0.02
B00291093	2.840	N.A.	7	<0.3	0.05	<0.01	6.83	<0.01
B00291094	5.660	N.A.	9	<0.3	0.05	<0.01	7.52	<0.01
B00291095	5.470	N.A.	7	<0.3	0.03	<0.01	10.1	<0.01
B00291096	4.245	N.A.	6	0.3	0.03	<0.01	10.6	<0.01
B00291097	4.950	N.A.	5	<0.3	0.08	<0.01	7.21	<0.01
B00291098	4.985	N.A.	7	0.3	0.09	<0.01	6.84	<0.01
B00291099	5.425	N.A.	10	0.6	0.31	<0.01	8.28	<0.01
B00291100	0.135	N.A.	4350	>300	0.04	0.33	11.3	11.5
B00291101	0.160	N.A.	832	19.4	0.13	1.70	13.5	0.26
B00291102	2.940	N.A.	1650	>300	0.12	0.54	31.5	3.16
B00291103	3.370	N.A.	1160	256	<0.01	0.01	38.1	2.60
B00291104	4.355	N.A.	2030	>300	<0.01	0.76	34.5	3.14
B00291105	3.670	N.A.	26	1.7	0.74	<0.01	2.96	<0.01
B00291106	2.370	N.A.	27	4.4	0.68	<0.01	4.95	0.03
B00291107	2.305	N.A.	1320	99.2	0.19	1.04	22.7	0.30
B00291108	2.300	N.A.	315	47.7	1.11	0.11	9.29	0.47
B00291109	8.690	N.A.	1070	188	0.03	0.13	35.4	1.94
B00291110	4.125	N.A.	104	14.9	0.91	0.10	16.4	0.15
B00291111	5.185	N.A.	1020	144	0.64	0.91	22.0	1.61
B00291112	4.840	N.A.	32	3.6	0.49	<0.01	2.54	0.04
B00291113	3.950	N.A.	21	3.3	0.68	<0.01	2.22	0.04
B00291114	4.800	N.A.	1310	>300	0.75	0.05	27.9	3.82
B00291115	2.680	N.A.	157	0.7	1.60	<0.01	3.88	<0.01
B00291116	5.955	N.A.	11	0.4	0.63	<0.01	6.93	<0.01
B00291117	5.705	N.A.	9	0.4	0.43	<0.01	7.05	<0.01
B00291118	5.905	N.A.	10	0.4	0.35	<0.01	7.44	<0.01
B00291119	5.435	N.A.	9	0.7	0.28	<0.01	7.33	<0.01
B00291120	0.955	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
*Dup B00291120	N.A.	N.A.	7	<0.3	<0.01	<0.01	0.05	<0.01
B00291121	5.985	N.A.	10	0.7	0.31	<0.01	7.28	<0.01
B00291122	6.200	N.A.	7	<0.3	0.30	<0.01	7.80	<0.01
B00291123	5.325	N.A.	6	0.7	0.41	<0.01	1.29	<0.01
B00291124	5.825	N.A.	6	1.2	0.56	<0.01	1.58	0.03

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Final : VC161774 Order: PO# BMC16-01_3

Report File No.: 0000017738

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291125	2.125	N.A.	11	2.0	0.60	<0.01	1.85	0.02
B00291126	3.995	N.A.	24	14.2	0.79	<0.01	2.13	0.26
B00291127	3.425	N.A.	6	0.8	0.56	<0.01	1.67	<0.01
B00291128	3.895	N.A.	10	36.4	0.65	0.05	5.48	0.97
B00291129	4.725	N.A.	5	11.3	0.33	0.03	1.94	0.25
B00291130	5.260	N.A.	5	3.0	1.01	<0.01	4.26	0.06
B00291131	6.400	N.A.	898	>300	0.02	0.03	27.0	4.97
B00291132	7.215	N.A.	848	176	<0.01	0.18	25.3	3.93
B00291133	6.235	N.A.	996	218	<0.01	0.18	24.4	6.53
B00291134	1.650	N.A.	641	137	<0.01	0.07	26.7	3.01
B00291135	7.845	96.7	1040	201	<0.01	0.22	27.5	4.24
B00291136	2.875	N.A.	1680	196	<0.01	0.22	27.5	4.16
B00291137	6.735	N.A.	2600	254	<0.01	0.65	28.6	4.77
B00291138	8.275	N.A.	1490	239	0.02	0.32	30.3	4.91
B00291139	4.355	N.A.	798	220	0.02	0.09	33.6	4.67
B00291140	0.160	N.A.	1270	71.0	0.26	0.35	3.85	1.38
B00291141	0.160	N.A.	849	21.1	0.14	1.69	13.4	0.26
B00291142	4.775	N.A.	2230	206	<0.01	0.81	26.5	2.29
B00291143	4.660	N.A.	1550	167	<0.01	0.71	28.0	3.66
B00291144	2.940	N.A.	4770	>300	<0.01	3.66	25.0	6.66
B00291145	3.765	N.A.	2210	232	0.01	1.18	31.3	6.41
B00291146	1.200	N.A.	2500	161	<0.01	1.51	33.7	3.46
B00291147	2.115	N.A.	1890	206	<0.01	1.04	31.4	5.54
B00291148	4.980	N.A.	1990	222	<0.01	1.11	31.5	5.83
B00291149	9.575	N.A.	2220	217	0.01	1.05	31.1	5.17
B00291150	5.835	N.A.	3150	229	0.02	1.20	31.8	5.25
B00291151	4.655	N.A.	2230	199	<0.01	0.99	32.1	4.48
B00291152	7.300	N.A.	3420	250	<0.01	0.80	31.2	5.58
B00291153	6.680	N.A.	3280	283	<0.01	0.68	26.4	4.28
B00291154	7.485	N.A.	2020	289	<0.01	0.52	31.6	6.07
B00291155	6.985	N.A.	1880	270	<0.01	0.55	31.2	6.05
*Dup B00291155	N.A.	N.A.	1760	282	<0.01	0.52	31.5	6.18
B00291156	6.160	N.A.	1730	236	0.01	0.46	30.3	3.97
B00291157	4.090	N.A.	2940	>300	<0.01	3.41	28.3	4.53
B00291158	4.810	N.A.	4410	>300	<0.01	5.45	25.4	4.94
B00291159	7.450	N.A.	2700	>300	0.02	2.97	22.1	5.20
B00291160	1.170	N.A.	<5	<0.3	<0.01	0.02	0.06	<0.01
B00291161	4.725	N.A.	133	30.0	0.49	0.07	3.68	0.35
B00291162	5.700	N.A.	215	37.7	0.51	0.05	14.7	0.49
B00291163	3.895	N.A.	<5	1.5	0.16	0.03	8.76	0.02

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Report File No.: 0000017738

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291164	3.075	N.A.	<5	1.2	0.22	0.01	7.82	0.02
B00291165	1.800	N.A.	231	87.0	0.08	0.14	34.3	1.56
B00291166	3.075	N.A.	46	27.1	0.58	0.09	10.4	0.43
B00291167	1.740	N.A.	7	0.9	0.63	<0.01	2.80	0.02
B00291168	4.335	N.A.	<5	0.5	0.47	<0.01	2.15	0.01
B00291169	4.980	N.A.	8	1.7	0.19	<0.01	4.06	0.06
B00291170	5.140	N.A.	<5	<0.3	0.13	<0.01	3.96	<0.01
B00291171	2.590	N.A.	<5	<0.3	0.10	<0.01	4.93	<0.01
B00291172	5.150	N.A.	30	1.1	0.09	0.01	9.60	0.02
B00291173	5.190	N.A.	<5	<0.3	0.09	<0.01	2.73	<0.01
B00291174	5.020	N.A.	<5	0.4	0.09	<0.01	2.81	<0.01
B00292001	2.470	N.A.	20	4.9	0.30	<0.01	2.43	0.05
B00292002	1.485	N.A.	73	9.3	0.40	0.02	4.98	0.10
B00292003	2.640	N.A.	11	1.5	0.46	<0.01	2.88	0.02
B00292004	2.355	N.A.	9	1.4	0.49	<0.01	3.11	0.01
B00292005	1.645	N.A.	319	48.3	0.38	0.08	8.17	0.39
B00292006	1.790	N.A.	757	36.8	0.36	0.05	11.0	0.29
B00292007	2.390	N.A.	37	3.3	0.42	<0.01	2.33	0.03
B00292008	2.500	N.A.	10	2.3	0.34	<0.01	1.44	0.02
B00292009	2.555	N.A.	7	1.3	0.34	<0.01	1.31	0.01
B00292010	0.140	N.A.	864	44.2	0.05	0.45	19.7	0.31
B00292011	2.530	89.9	5	0.8	0.15	<0.01	8.01	0.01
B00292012	2.345	N.A.	6	0.7	0.30	<0.01	7.22	<0.01
B00292013	2.295	N.A.	<5	<0.3	0.44	<0.01	6.98	<0.01
B00292014	0.765	N.A.	1530	>300	0.05	0.53	28.0	3.03
B00292015	1.375	N.A.	20	<0.3	0.27	<0.01	1.89	0.01
B00292016	1.750	N.A.	9	0.8	0.27	<0.01	1.73	<0.01
*Dup B00292016	N.A.	N.A.	14	0.7	0.27	<0.01	1.84	<0.01
B00292017	2.355	N.A.	9	1.3	0.46	<0.01	1.71	0.01
B00292018	0.995	N.A.	1360	86.5	1.03	0.03	11.3	0.95
B00292019	2.785	N.A.	6	0.8	0.66	<0.01	7.05	0.01
B00292020	1.550	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292021	2.595	N.A.	<5	0.8	0.42	<0.01	7.83	0.01
B00292022	2.770	N.A.	<5	1.2	0.23	<0.01	7.29	<0.01
B00292023	2.995	N.A.	<5	0.7	0.15	<0.01	8.46	<0.01

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Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Rep B00291093		<0.3				
*Rep B00291151		195				
*Rep B00291172		1.0				
*Rep B00292020		<0.3				
*Std SU_1B		6.0				
*Std OREAS621		69.0				
*Std AMIS0268		192				
*Std SU_1B		6.4				
*Std OREAS621		70.1				
*Std AMIS0268		192				
*Std OREAS621		69.5				
*Blk BLANK		<0.3				
*Blk BLANK		<0.3				
*Rep B00291118	10					
*Rep B00291150	3590					
*Rep B00292002	54					
*Rep B00292023	<5					
*Std OXN117	7660					
*Std OXB130	131					
*Std OREAS214	2910					
*Std OXH97	1280					
*Std OXN117	7520					
*Std OXB130	125					
*Std OREAS214	3190					
*Blk BLANK	<5					
*Blk BLANK	<5					
*Rep B00291095			0.03	<0.01	10.1	<0.01
*Rep B00291126			0.78	<0.01	2.14	0.26
*Rep B00291131			0.02	0.03	26.9	4.96
*Rep B00291159			0.02	2.97	22.1	5.20
*Rep B00292011			0.16	<0.01	8.15	<0.01
*Rep B00292015			0.28	<0.01	1.97	0.01

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Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Std OREAS134A	0.14	0.13	12.0	13.0
*Std OREAS131B	0.07	0.02	5.65	1.88
*Std RM183-89	3.08	<0.01	36.1	0.03
*Std ME-19	0.16	0.45	3.88	0.99
*Std RM183-89	3.06	<0.01	35.3	0.03
*Blk BLANK	<0.01	<0.01	<0.05	<0.01
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291086	27.4	7.92	283	182	5.77	33.9	399	N.A.
B00291087	0.3	0.03	18	<5	0.05	0.12	5	N.A.
B00291088	<0.1	0.02	34	5	0.04	0.05	2	N.A.
B00291089	0.1	0.02	35	<5	0.05	0.05	<1	N.A.
B00291090	<0.1	0.01	32	<5	0.03	0.03	<1	N.A.
B00291091	<0.1	0.01	35	<5	<0.02	<0.01	<1	N.A.
B00291092	0.1	<0.01	36	<5	0.33	0.05	<1	N.A.
B00291093	0.2	<0.01	47	<5	<0.02	0.10	<1	N.A.
B00291094	<0.1	0.01	64	<5	<0.02	<0.01	<1	N.A.
B00291095	0.1	0.02	77	<5	<0.02	<0.01	<1	N.A.
B00291096	0.1	0.02	70	<5	<0.02	<0.01	<1	N.A.
B00291097	0.1	0.01	55	<5	0.03	<0.01	<1	N.A.
B00291098	<0.1	0.01	56	<5	0.05	<0.01	<1	N.A.
B00291099	0.3	0.03	48	<5	0.02	0.04	<1	N.A.
B00291100	20.7	17.0	1590	508	4.00	24.6	9	306
B00291101	9.0	1.08	76	16	16.6	0.86	19	N.A.
B00291102	42.0	13.4	1390	223	52.6	27.9	130	308
B00291103	47.7	8.49	1780	249	45.8	16.4	163	262
B00291104	42.7	8.17	4040	204	63.9	14.3	202	310
B00291105	1.6	0.02	102	<5	0.72	0.13	5	N.A.
B00291106	2.4	0.17	2530	<5	3.02	0.58	23	N.A.
B00291107	17.2	5.11	170	29	56.4	12.4	225	N.A.
B00291108	7.2	1.89	3050	33	12.7	4.79	103	N.A.
B00291109	43.5	10.0	1200	107	103	23.0	168	N.A.
B00291110	7.2	2.76	70	50	4.30	6.77	49	N.A.
B00291111	21.9	6.39	158	86	27.6	16.0	139	N.A.
B00291112	1.6	0.30	35	<5	0.63	0.78	2	N.A.
B00291113	1.0	0.17	151	<5	0.60	0.45	2	N.A.
B00291114	37.8	12.4	206	415	26.7	42.8	86	416
B00291115	1.7	0.03	74	21	0.05	0.30	2	N.A.
B00291116	0.2	0.02	50	<5	0.03	0.11	<1	N.A.
B00291117	0.1	0.01	49	<5	<0.02	0.02	<1	N.A.
B00291118	<0.1	<0.01	58	<5	<0.02	0.02	<1	N.A.
B00291119	<0.1	0.01	57	<5	0.05	0.02	<1	N.A.
B00291120	0.1	<0.01	<3	<5	<0.02	<0.01	<1	N.A.
*Dup B00291120	<0.1	<0.01	<3	<5	<0.02	<0.01	<1	N.A.
B00291121	<0.1	0.01	65	<5	0.04	<0.01	<1	N.A.
B00291122	0.2	0.01	54	<5	<0.02	<0.01	<1	N.A.
B00291123	0.2	0.05	<3	<5	0.04	<0.01	<1	N.A.
B00291124	0.2	0.07	<3	9	0.11	0.03	<1	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291125	0.2	0.07	4	6	0.09	0.05	<1	N.A.
B00291126	0.3	0.22	<3	11	0.82	0.16	4	N.A.
B00291127	0.2	0.03	<3	<5	<0.02	<0.01	<1	N.A.
B00291128	5.0	1.81	10	51	2.43	1.76	15	N.A.
B00291129	0.8	0.36	<3	12	0.68	0.22	4	N.A.
B00291130	0.4	0.06	<3	<5	0.31	0.06	<1	N.A.
B00291131	32.4	7.53	208	362	1.29	18.6	31	286
B00291132	28.6	7.74	253	184	1.46	13.5	25	N.A.
B00291133	31.1	12.2	290	188	27.1	13.5	166	N.A.
B00291134	30.8	9.16	400	143	72.1	8.55	202	N.A.
B00291135	32.7	10.0	647	393	72.6	8.84	203	N.A.
B00291136	31.1	5.85	1110	314	48.7	6.37	140	N.A.
B00291137	33.3	7.71	1820	423	36.8	7.71	123	245
B00291138	34.7	6.71	1290	352	2.87	7.77	61	N.A.
B00291139	39.8	6.94	1140	282	4.07	9.79	69	N.A.
B00291140	4.4	5.17	69	117	3.66	3.86	5	N.A.
B00291141	9.0	1.08	77	21	16.9	0.78	17	N.A.
B00291142	26.9	3.71	1030	418	14.2	8.25	69	N.A.
B00291143	31.1	6.73	4860	251	33.3	8.70	145	N.A.
B00291144	36.0	21.3	>10000	578	413	18.6	531	452
B00291145	40.5	12.7	6730	307	121	8.65	267	N.A.
B00291146	40.0	7.60	>10000	318	89.4	5.08	215	N.A.
B00291147	36.4	7.77	5630	399	46.6	6.77	173	N.A.
B00291148	38.6	10.6	>10000	531	32.7	8.53	245	N.A.
B00291149	38.3	10.2	9370	589	33.3	10.8	234	N.A.
B00291150	38.4	9.52	>10000	770	29.1	11.7	200	N.A.
B00291151	37.6	9.02	>10000	722	33.5	10.8	217	N.A.
B00291152	37.4	10.1	>10000	898	28.8	12.3	148	N.A.
B00291153	32.2	11.3	6440	1630	55.6	14.1	197	262
B00291154	39.9	11.5	7820	828	45.6	11.5	298	294
B00291155	39.9	13.2	>10000	735	43.6	11.6	322	262
*Dup B00291155	40.7	13.6	9590	716	43.5	12.0	315	273
B00291156	37.4	11.0	5990	715	107	11.2	482	N.A.
B00291157	30.9	13.3	1270	400	99.4	15.9	429	334
B00291158	29.2	17.8	1270	998	128	26.4	488	426
B00291159	30.1	18.5	1530	411	154	32.7	434	350
B00291160	0.1	0.01	8	<5	0.06	0.12	<1	N.A.
B00291161	2.7	1.35	47	102	8.24	2.37	17	N.A.
B00291162	15.0	2.18	141	51	15.2	3.00	37	N.A.
B00291163	1.1	0.05	13	23	0.82	0.06	3	N.A.

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Final : VC161774 Order: PO# BMC16-01_3

Report File No.: 0000017738

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291164	0.4	0.06	13	10	0.39	0.08	1	N.A.
B00291165	39.1	5.24	204	64	75.2	9.40	200	N.A.
B00291166	5.9	1.05	58	21	18.5	1.75	44	N.A.
B00291167	1.7	0.01	18	<5	0.65	0.06	2	N.A.
B00291168	1.1	<0.01	11	<5	0.46	0.04	2	N.A.
B00291169	1.6	0.10	14	<5	0.56	0.12	10	N.A.
B00291170	1.4	0.02	3	<5	0.05	<0.01	2	N.A.
B00291171	2.7	0.02	11	7	0.16	0.01	3	N.A.
B00291172	7.6	0.02	108	27	1.39	<0.01	6	N.A.
B00291173	1.2	0.01	6	<5	0.23	<0.01	1	N.A.
B00291174	1.2	0.01	4	<5	0.38	<0.01	2	N.A.
B00292001	1.2	0.15	17	<5	1.19	0.71	12	N.A.
B00292002	3.7	0.32	64	8	4.02	1.31	28	N.A.
B00292003	1.1	0.03	25	<5	0.53	0.16	5	N.A.
B00292004	1.1	0.07	28	<5	0.36	0.33	4	N.A.
B00292005	4.4	0.92	73	27	31.4	3.54	84	N.A.
B00292006	8.2	0.43	98	29	6.41	2.42	82	N.A.
B00292007	0.7	0.03	24	<5	0.38	0.12	6	N.A.
B00292008	0.2	0.01	15	<5	0.13	<0.01	2	N.A.
B00292009	0.2	<0.01	61	<5	0.08	<0.01	1	N.A.
B00292010	17.9	1.13	1390	111	23.0	8.19	100	N.A.
B00292011	0.3	0.01	57	<5	0.04	<0.01	<1	N.A.
B00292012	0.2	0.01	68	<5	0.03	<0.01	<1	N.A.
B00292013	0.6	0.02	76	<5	<0.02	0.02	<1	N.A.
B00292014	35.6	6.92	287	265	27.9	26.8	324	295
B00292015	0.9	0.02	108	<5	0.55	0.37	2	N.A.
B00292016	0.9	<0.01	71	<5	0.41	0.19	<1	N.A.
*Dup B00292016	0.9	<0.01	98	<5	0.46	0.15	<1	N.A.
B00292017	0.8	<0.01	19	<5	0.31	0.08	<1	N.A.
B00292018	10.6	1.81	108	112	3.91	5.27	26	N.A.
B00292019	0.1	0.05	37	<5	0.06	0.03	<1	N.A.
B00292020	<0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
B00292021	0.2	0.03	71	<5	0.03	<0.01	<1	N.A.
B00292022	0.2	0.02	95	<5	0.02	<0.01	<1	N.A.
B00292023	0.3	0.02	974	<5	<0.02	<0.01	<1	N.A.
*Rep B00291099			47	<5	<0.02	0.03	<1	
*Rep B00291122			53	<5	<0.02	<0.01	<1	
*Rep B00291172			104	26	1.39	<0.01	5	
*Rep B00292012			60	<5	0.03	<0.01	<1	
*Std OREAS934			N.A.	N.A.	546	N.A.	76	

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Final : VC161774 Order: PO# BMC16-01_3

Report File No.: 0000017738

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
*Std DS-1			6910	N.A.	N.A.	85.6	N.A.
*Std OREAS210			3710	N.A.	N.A.	N.A.	N.A.
*Std OREAS131B			N.A.	37	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	511	N.A.	80
*Std DS-1			7000	N.A.	N.A.	85.0	N.A.
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Rep B00291095	0.1	0.02					
*Rep B00291126	0.3	0.22					
*Rep B00291131	32.9	7.53					
*Rep B00291159	29.1	18.5					
*Rep B00292011	0.3	0.01					
*Rep B00292015	0.9	0.02					

Element	S	@Zn	Ag
Method	GO_ICP90Q	GO_ICP90Q	GO_FAG313
Det.Lim.	0.1	0.01	10
Units	%	%	g/t
*Std OREAS134A	18.8	17.3	
*Std OREAS131B	4.8	3.16	
*Std RM183-89	0.8	<0.01	
*Std ME-19	1.6	0.81	
*Std RM183-89	0.7	<0.01	
*Blk BLANK	<0.1	<0.01	
*Blk BLANK	<0.1	<0.01	
*Rep B00291114			411
*Std ME-1302			419
*Blk BLANK			<10

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Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291086	N.A.
B00291087	N.A.
B00291088	N.A.
B00291089	N.A.
B00291090	N.A.
B00291091	N.A.
B00291092	N.A.
B00291093	N.A.
B00291094	N.A.
B00291095	N.A.
B00291096	N.A.
B00291097	N.A.
B00291098	N.A.
B00291099	N.A.
B00291100	N.A.
B00291101	N.A.
B00291102	N.A.
B00291103	N.A.
B00291104	N.A.
B00291105	N.A.
B00291106	N.A.
B00291107	N.A.
B00291108	N.A.
B00291109	N.A.
B00291110	N.A.
B00291111	N.A.
B00291112	N.A.
B00291113	N.A.
B00291114	N.A.
B00291115	N.A.
B00291116	N.A.
B00291117	N.A.
B00291118	N.A.
B00291119	N.A.
B00291120	N.A.
*Dup B00291120	N.A.
B00291121	N.A.
B00291122	N.A.
B00291123	N.A.
B00291124	N.A.

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Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291125	N.A.
B00291126	N.A.
B00291127	N.A.
B00291128	N.A.
B00291129	N.A.
B00291130	N.A.
B00291131	N.A.
B00291132	N.A.
B00291133	N.A.
B00291134	N.A.
B00291135	N.A.
B00291136	N.A.
B00291137	N.A.
B00291138	N.A.
B00291139	N.A.
B00291140	N.A.
B00291141	N.A.
B00291142	N.A.
B00291143	N.A.
B00291144	1.81
B00291145	N.A.
B00291146	1.15
B00291147	N.A.
B00291148	1.32
B00291149	N.A.
B00291150	1.89
B00291151	1.45
B00291152	1.28
B00291153	N.A.
B00291154	N.A.
B00291155	1.13
*Dup B00291155	1.02
B00291156	N.A.
B00291157	N.A.
B00291158	N.A.
B00291159	N.A.
B00291160	N.A.
B00291161	N.A.
B00291162	N.A.
B00291163	N.A.

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Final : VC161774 Order: PO# BMC16-01_3

Report File No.: 0000017738

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291164	N.A.
B00291165	N.A.
B00291166	N.A.
B00291167	N.A.
B00291168	N.A.
B00291169	N.A.
B00291170	N.A.
B00291171	N.A.
B00291172	N.A.
B00291173	N.A.
B00291174	N.A.
B00292001	N.A.
B00292002	N.A.
B00292003	N.A.
B00292004	N.A.
B00292005	N.A.
B00292006	N.A.
B00292007	N.A.
B00292008	N.A.
B00292009	N.A.
B00292010	N.A.
B00292011	N.A.
B00292012	N.A.
B00292013	N.A.
B00292014	N.A.
B00292015	N.A.
B00292016	N.A.
*Dup B00292016	N.A.
B00292017	N.A.
B00292018	N.A.
B00292019	N.A.
B00292020	N.A.
B00292021	N.A.
B00292022	N.A.
B00292023	N.A.

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Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
*Blk BLANK	<0.01
*Rep B00291151	1.47
*Std MP1B	2.20

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Certificate of Analysis

Work Order : VC161844

[Report File No.: 0000017735]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 17, 2016

P.O. No.	:	PO# BMC16-01_4
Project No.	:	KZK
No. Of Samples	:	153
Date Submitted	:	Jun 01, 2016
Report Comprises	:	Pages 1 to 18 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291175	2.855	N.A.	<5	<0.3	0.09	<0.01	7.48	<0.01
B00291176	3.485	N.A.	<5	<0.3	0.22	<0.01	6.91	<0.01
B00291177	2.260	N.A.	<5	<0.3	0.21	0.02	8.25	<0.01
B00291178	1.845	N.A.	2100	45.4	0.17	0.78	7.64	0.20
B00291179	2.120	N.A.	<5	0.9	0.29	<0.01	2.25	<0.01
B00291180	0.155	N.A.	856	44.4	0.05	0.47	20.4	0.31
B00291181	0.865	N.A.	405	128	0.16	0.14	15.6	1.28
B00291182	2.015	N.A.	15	5.8	0.21	<0.01	2.24	0.07
B00291183	2.575	N.A.	<5	<0.3	0.16	<0.01	2.03	<0.01
B00291184	2.005	N.A.	<5	0.7	0.45	<0.01	6.95	<0.01
B00291185	1.705	N.A.	7	0.5	0.42	<0.01	7.58	<0.01
B00291186	1.605	N.A.	8	0.8	0.41	<0.01	7.35	<0.01
B00291187	1.465	N.A.	<5	0.4	0.35	<0.01	8.44	<0.01
B00291188	1.995	N.A.	<5	0.5	0.43	<0.01	7.32	<0.01
B00291189	1.760	N.A.	<5	0.5	0.60	<0.01	6.99	<0.01
B00291190	1.560	N.A.	<5	<0.3	<0.01	<0.01	0.08	<0.01
B00291191	1.940	N.A.	9	1.3	0.38	<0.01	7.93	0.02
B00291192	1.750	N.A.	8	0.5	0.30	<0.01	9.18	<0.01
B00291193	1.630	N.A.	9	1.2	0.80	<0.01	7.07	0.02
B00291194	2.090	N.A.	104	31.3	1.12	0.05	8.15	0.50
B00291195	2.185	N.A.	1270	250	0.07	0.48	28.4	3.55
B00291196	2.760	N.A.	1710	275	1.58	0.04	31.1	4.46
B00291197	2.865	N.A.	1860	>300	>4.00	0.13	29.6	4.46
B00291198	2.840	N.A.	2530	>300	>4.00	0.20	24.4	4.36
B00291199	1.775	N.A.	2500	234	>4.00	0.13	24.1	3.72
B00291200	0.175	N.A.	1260	67.2	0.26	0.36	3.66	1.32
B00291201	0.175	N.A.	822	19.9	0.15	1.96	13.9	0.25
B00291202	3.050	N.A.	2170	>300	>4.00	0.15	24.9	4.56
B00291203	3.440	N.A.	2330	>300	>4.00	0.29	29.6	5.02
B00291204	1.780	N.A.	351	18.2	0.59	0.02	4.59	0.45
B00291205	2.350	N.A.	199	34.8	2.14	0.06	4.03	0.20
B00291206	1.165	N.A.	2110	228	>4.00	0.35	8.58	1.19
B00291207	1.325	N.A.	105	27.2	2.74	<0.01	5.27	0.35
B00291208	1.080	N.A.	1790	>300	1.06	0.25	26.4	3.81
B00291209	2.340	N.A.	825	205	>4.00	0.11	19.3	3.02
*Dup B00291209	N.A.	N.A.	888	196	>4.00	0.10	19.1	2.88
B00291210	1.910	N.A.	<5	<0.3	0.04	<0.01	0.09	<0.01
B00291211	2.835	N.A.	3670	>300	>4.00	0.55	20.5	4.42
B00291212	2.855	N.A.	2630	>300	>4.00	0.54	20.1	4.12
B00291213	2.610	N.A.	1880	200	>4.00	0.20	14.9	3.50

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291214	2.585	N.A.	2530	188	>4.00	0.23	14.5	2.48
B00291215	2.685	N.A.	2240	221	>4.00	0.16	19.7	3.07
B00291216	2.555	N.A.	4170	>300	>4.00	0.48	32.2	4.90
B00291217	2.795	N.A.	2440	295	>4.00	0.28	24.0	3.78
B00291218	0.970	N.A.	2070	>300	>4.00	0.18	26.9	6.65
B00291219	2.305	N.A.	2600	>300	>4.00	0.17	21.6	6.10
B00291220	0.165	N.A.	1250	68.8	0.27	0.36	3.90	1.36
B00291221	2.190	N.A.	3610	283	>4.00	0.24	19.1	3.22
B00291222	2.505	N.A.	1530	191	>4.00	0.10	17.8	2.65
B00291223	1.595	N.A.	2700	291	2.79	0.29	20.4	3.38
B00291224	1.035	98.1	1870	220	0.82	0.18	25.5	2.65
B00291225	2.175	N.A.	1250	>300	>4.00	0.02	27.9	4.57
B00291226	2.315	N.A.	1970	275	>4.00	0.26	24.8	3.95
B00291227	1.165	N.A.	1960	>300	>4.00	0.21	21.3	3.34
B00291228	2.125	N.A.	3010	>300	>4.00	0.46	24.2	3.57
B00291229	2.715	N.A.	1920	289	>4.00	0.44	21.2	2.89
B00291230	1.300	N.A.	<5	<0.3	0.06	<0.01	<0.05	<0.01
B00291231	2.605	N.A.	1960	>300	>4.00	0.48	20.1	3.13
B00291232	1.910	N.A.	1240	277	>4.00	0.26	26.7	4.32
B00291233	1.380	N.A.	816	>300	>4.00	0.23	25.5	4.77
B00291234	2.120	N.A.	2230	>300	>4.00	0.33	31.7	5.02
B00291235	2.500	N.A.	7010	>300	0.07	0.85	29.6	5.27
B00291236	2.405	N.A.	3040	286	0.04	0.03	29.0	4.69
B00291237	2.295	N.A.	828	191	0.03	0.03	28.1	3.60
B00291238	2.140	N.A.	1050	108	0.02	0.03	27.5	2.04
B00291239	1.860	N.A.	2950	>300	0.01	0.39	28.9	2.56
B00291240	0.170	N.A.	1240	71.8	0.26	0.36	3.68	1.33
B00291241	0.170	N.A.	813	20.3	0.14	1.73	13.5	0.25
B00291242	2.665	N.A.	1020	257	0.01	0.11	33.2	3.36
B00291243	1.665	N.A.	400	178	0.01	0.03	33.3	4.11
B00291244	1.785	N.A.	1300	>300	0.02	0.28	29.6	3.79
*Dup B00291244	N.A.	N.A.	1350	>300	0.02	0.26	29.8	4.05
B00291245	1.005	N.A.	957	69.7	0.19	0.77	9.63	0.92
B00291246	2.035	N.A.	15	1.2	0.35	<0.01	2.51	0.02
B00291247	2.265	N.A.	12	0.9	0.21	<0.01	1.90	0.01
B00291248	1.590	N.A.	101	14.6	0.21	<0.01	3.70	0.26
B00291249	1.060	N.A.	36	0.6	0.15	<0.01	1.90	<0.01
B00291250	1.980	N.A.	<5	<0.3	<0.01	<0.01	0.10	<0.01
B00291251	1.070	N.A.	48	0.7	0.18	<0.01	1.85	0.01
B00291252	1.315	N.A.	29	8.2	0.08	<0.01	1.09	0.25

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291253	1.445	N.A.	48	1.2	0.17	<0.01	2.22	0.01
B00291254	1.620	N.A.	7	1.3	0.20	<0.01	1.73	0.01
B00291255	2.155	N.A.	<5	0.3	0.21	<0.01	1.90	<0.01
B00291256	0.830	N.A.	41	12.0	0.16	<0.01	1.99	0.09
B00291257	2.360	N.A.	21	13.0	0.20	<0.01	1.81	0.10
B00291258	3.180	N.A.	<5	1.0	0.22	<0.01	2.12	0.01
B00291259	1.420	N.A.	135	10.5	0.09	0.01	1.71	0.09
B00291260	0.155	N.A.	836	45.0	0.05	0.46	20.1	0.31
B00291261	1.920	N.A.	138	29.7	0.22	0.01	2.63	0.18
B00291262	3.010	N.A.	513	67.9	0.22	0.06	3.71	0.24
B00291263	1.450	N.A.	679	46.8	0.01	0.02	34.1	0.74
B00291264	2.245	N.A.	1400	199	<0.01	0.24	38.4	0.35
B00291265	2.215	N.A.	1540	240	0.01	0.24	30.2	1.88
B00291266	1.150	N.A.	689	120	<0.01	0.02	29.8	2.29
B00291267	0.885	N.A.	644	89.6	<0.01	0.01	33.7	1.45
B00291268	2.315	N.A.	492	118	<0.01	0.01	32.3	1.49
B00291269	1.340	N.A.	597	152	0.02	0.02	30.4	2.40
B00291270	1.520	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291271	1.805	N.A.	2680	139	0.01	0.07	27.5	2.58
B00291272	2.265	N.A.	824	186	0.02	0.01	30.4	2.46
B00291273	1.955	N.A.	1450	>300	0.02	0.18	27.1	4.98
B00291274	2.405	99.2	532	157	<0.01	0.02	32.6	1.79
B00291275	2.395	N.A.	556	128	0.04	0.01	32.5	1.75
B00291276	2.425	N.A.	905	>300	0.03	0.01	28.2	4.21
B00291277	2.470	N.A.	2270	>300	0.08	0.10	33.4	3.90
B00291278	2.435	N.A.	482	72.2	<0.01	<0.01	33.2	0.96
B00291279	2.445	N.A.	466	90.1	<0.01	<0.01	34.2	0.98
*Dup B00291279	N.A.	N.A.	479	90.9	<0.01	<0.01	34.3	0.99
B00291280	0.170	N.A.	1230	67.8	0.26	0.35	3.82	1.36
B00291281	0.170	N.A.	815	19.7	0.14	1.71	13.4	0.25
B00291282	1.280	N.A.	475	95.6	<0.01	<0.01	34.3	0.96
B00291283	1.725	N.A.	5680	>300	0.05	0.47	30.1	2.12
B00291284	1.135	N.A.	5600	>300	0.69	0.55	10.6	0.31
B00291285	2.295	N.A.	1950	277	0.13	0.22	26.5	1.81
B00291286	2.280	N.A.	3160	>300	0.01	0.26	29.2	3.03
B00291287	2.035	N.A.	2970	226	<0.01	0.36	36.0	0.27
B00291288	2.275	N.A.	1480	102	<0.01	0.15	36.1	0.17
B00291289	2.285	N.A.	369	9.4	<0.01	<0.01	35.8	0.11
B00291290	1.620	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291291	3.020	N.A.	1430	83.9	<0.01	0.12	36.1	0.15

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291292	1.330	N.A.	2270	164	0.01	0.26	34.2	0.11
B00291293	2.090	N.A.	4930	>300	<0.01	0.47	32.2	0.73
B00291294	1.160	N.A.	90	4.9	0.65	0.02	6.66	<0.01
B00291295	1.105	N.A.	29	2.1	0.31	<0.01	6.52	<0.01
B00291296	0.920	N.A.	36	4.6	0.20	<0.01	6.60	0.02
B00291297	2.090	N.A.	21	2.4	0.26	<0.01	6.54	0.02
B00291298	0.965	N.A.	29	2.7	0.17	<0.01	6.69	0.03
B00291299	1.635	N.A.	33	3.8	1.57	<0.01	6.77	0.03
B00291300	0.155	N.A.	811	44.8	0.05	0.47	20.1	0.31
B00291301	1.060	N.A.	95	5.3	1.94	0.03	7.57	0.05
B00291302	2.445	N.A.	716	158	0.02	0.07	30.0	3.53
B00291303	2.700	N.A.	294	82.0	0.02	0.01	34.4	2.55
B00291304	2.625	N.A.	204	48.0	<0.01	0.19	32.8	1.07
B00291305	2.590	N.A.	363	84.1	0.02	1.50	30.7	1.40
B00291306	2.160	N.A.	147	55.4	0.01	0.23	30.1	1.33
B00291307	2.825	N.A.	231	58.4	0.01	0.74	34.0	1.09
B00291308	2.325	N.A.	170	38.8	<0.01	1.15	32.2	0.43
B00291309	1.180	N.A.	143	57.9	<0.01	0.58	30.5	0.91
B00291310	1.875	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291311	1.780	N.A.	143	65.7	0.01	0.27	37.2	0.91
B00291312	2.090	N.A.	99	31.2	0.01	0.46	44.2	0.44
B00291313	2.250	N.A.	52	26.1	0.01	0.65	48.1	0.33
B00291314	2.260	N.A.	76	26.1	<0.01	0.78	48.6	0.34
*Dup B00291314	N.A.	N.A.	80	26.6	<0.01	0.78	48.8	0.35
B00291315	1.825	N.A.	74	39.8	0.03	0.84	36.6	0.43
B00291316	1.940	N.A.	63	49.0	0.02	0.54	32.4	0.55
B00291317	1.965	N.A.	69	43.4	0.07	0.70	25.5	0.43
B00291318	2.175	N.A.	42	49.3	0.03	0.72	25.5	0.60
B00291319	1.365	N.A.	<5	11.9	0.26	0.05	3.48	0.15
B00291320	0.175	N.A.	1260	68.4	0.26	0.36	3.70	1.39
B00291321	0.175	N.A.	845	20.9	0.14	1.70	13.7	0.26
B00291322	2.250	N.A.	<5	2.5	0.22	0.02	2.50	0.04
B00291323	1.580	N.A.	<5	0.5	0.19	<0.01	1.85	<0.01
B00291324	2.440	96.8	<5	0.7	0.14	<0.01	2.23	0.01
B00291325	2.270	N.A.	<5	0.7	0.11	<0.01	2.04	0.01
B00291326	2.325	N.A.	<5	0.4	0.10	<0.01	1.90	<0.01
B00291327	2.840	N.A.	<5	0.6	0.08	<0.01	2.96	<0.01
*Rep B00291180				44.0				
*Rep B00291221				288				
*Rep B00291270				<0.3				

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	@Au	@Ag
Method	GE_FAA313	GE_AAS12E
Det.Lim.	5	0.3
Units	ppb	g/t
*Rep B00291301		5.3
*Rep B00291321		20.9
*Std SU_1B		6.5
*Std OREAS621		67.7
*Std AMIS0268		189
*Std SU_1B		5.8
*Std OREAS621		66.9
*Std AMIS0268		197
*Std SU_1B		6.3
*Std OREAS621		69.4
*Std AMIS0268		198
*Blk BLANK		<0.3
*Blk BLANK		<0.3
*Blk BLANK		<0.3
*Blk BLANK		<0.3
*Rep B00291197	1960	
*Rep B00291223	2390	
*Rep B00291266	603	
*Rep B00291310	<5	
*Rep B00291327	<5	
*Std OXN117	7710	
*Std OXB130	127	
*Std OREAS214	2870	
*Std OXH97	1300	
*Std OXN117	7760	
*Std OXB130	124	
*Std OREAS214	3120	
*Std OXH97	1280	
*Std OXN117	7890	
*Blk BLANK	<5	
*Blk BLANK	<5	
*Blk BLANK	<5	
*Blk BLANK	<5	

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep B00291177	0.21	0.02	8.23	<0.01
*Rep B00291198	>4.00	0.20	24.3	4.28
*Rep B00291227	>4.00	0.21	21.4	3.38
*Rep B00291243	0.01	0.03	33.0	4.12
*Rep B00291266	<0.01	0.03	29.5	2.35
*Rep B00291290	<0.01	<0.01	0.07	<0.01
*Rep B00291308	<0.01	1.15	32.6	0.43
*Std OREAS134A	0.14	0.13	11.9	12.7
*Std OREAS131B	0.08	0.02	5.67	1.82
*Std ME-19	0.17	0.47	3.93	0.97
*Std RM183-89	3.10	<0.01	35.6	0.03
*Std ME-19	0.17	0.46	3.91	0.97
*Std RM183-89	3.14	<0.01	35.8	0.03
*Std OREAS134A	0.15	0.14	12.1	13.1
*Blk BLANK	<0.01	<0.01	<0.05	<0.01
*Blk BLANK	<0.01	<0.01	<0.05	<0.01
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

Element	@Au
Method	GE_FAA313
Det.Lim.	5
Units	ppb
*Rep B00291283	4480
*Rep B00291284	3650

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291175	0.1	0.01	68	<5	0.03	<0.01	<1	N.A.
B00291176	<0.1	0.01	52	<5	<0.02	<0.01	<1	N.A.
B00291177	0.5	0.05	30	<5	0.04	0.05	4	N.A.
B00291178	4.7	2.14	26	32	13.7	6.45	56	N.A.
B00291179	0.7	0.01	12	<5	0.81	0.06	1	N.A.
B00291180	19.0	1.16	1400	127	24.3	8.75	118	N.A.
B00291181	18.4	3.17	118	150	16.7	10.1	193	N.A.
B00291182	1.1	0.11	14	6	0.72	0.30	7	N.A.
B00291183	1.0	<0.01	160	<5	0.39	0.04	<1	N.A.
B00291184	0.1	0.03	71	<5	0.06	0.05	<1	N.A.
B00291185	0.1	0.03	77	<5	0.03	0.02	<1	N.A.
B00291186	<0.1	0.03	74	<5	0.10	0.03	<1	N.A.
B00291187	0.2	0.03	104	<5	0.03	0.22	<1	N.A.
B00291188	0.1	0.03	74	<5	0.04	0.13	<1	N.A.
B00291189	<0.1	0.02	72	<5	0.05	<0.01	<1	N.A.
B00291190	<0.1	<0.01	7	<5	<0.02	<0.01	<1	N.A.
B00291191	<0.1	0.03	69	<5	0.23	0.02	<1	N.A.
B00291192	<0.1	0.03	68	<5	0.03	0.01	<1	N.A.
B00291193	0.5	0.03	181	8	0.31	0.05	<1	N.A.
B00291194	6.4	1.22	269	110	5.49	4.07	27	N.A.
B00291195	34.3	6.87	8500	434	27.1	20.7	138	N.A.
B00291196	38.5	6.32	6100	716	11.7	23.1	79	N.A.
B00291197	38.3	6.94	7560	908	16.4	21.9	95	N.A.
B00291198	34.8	5.78	>10000	940	1.99	23.5	20	N.A.
B00291199	31.7	5.35	>10000	757	10.3	23.5	29	N.A.
B00291200	4.5	5.06	78	121	3.90	3.94	5	N.A.
B00291201	9.7	1.04	86	23	17.8	0.79	21	N.A.
B00291202	35.1	6.05	>10000	1210	3.70	41.8	26	N.A.
B00291203	39.9	7.74	3400	880	28.2	42.2	81	N.A.
B00291204	3.8	1.01	272	35	1.61	3.71	18	N.A.
B00291205	3.7	0.31	101	132	0.59	1.16	10	N.A.
B00291206	10.3	2.02	936	1420	1.79	7.14	28	N.A.
B00291207	3.1	0.71	63	42	0.94	3.03	6	N.A.
B00291208	33.0	5.03	772	1190	6.74	20.1	66	N.A.
B00291209	26.5	4.26	404	444	2.48	15.9	50	N.A.
*Dup B00291209	26.0	4.18	390	443	2.52	16.3	49	N.A.
B00291210	0.1	<0.01	8	<5	<0.02	0.04	<1	N.A.
B00291211	29.0	5.57	7840	2460	0.92	21.6	23	N.A.
B00291212	29.2	5.37	4860	2010	0.89	20.1	26	N.A.
B00291213	25.1	4.34	4930	965	1.21	20.2	11	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291214	25.3	3.19	7340	1090	0.36	24.2	7	N.A.
B00291215	29.2	4.05	>10000	963	0.05	23.5	5	N.A.
B00291216	42.7	6.86	1540	2000	0.60	24.3	36	N.A.
B00291217	34.5	4.84	7480	1520	1.54	21.8	36	N.A.
B00291218	37.8	6.25	8210	1250	8.12	29.4	100	N.A.
B00291219	30.8	6.22	>10000	1190	6.42	28.7	94	N.A.
B00291220	4.3	5.06	75	122	3.95	4.10	5	N.A.
B00291221	25.8	4.33	>10000	1380	5.54	19.5	40	N.A.
B00291222	26.2	4.09	4600	559	1.82	20.2	19	N.A.
B00291223	25.0	5.32	821	1240	5.57	22.7	56	N.A.
B00291224	31.7	7.64	536	794	5.27	27.2	49	N.A.
B00291225	33.7	6.12	2440	512	10.6	21.7	140	N.A.
B00291226	29.9	5.17	4170	885	4.53	18.0	87	N.A.
B00291227	27.6	4.35	5180	1240	3.49	16.9	67	N.A.
B00291228	29.5	4.98	>10000	1580	4.24	19.8	132	N.A.
B00291229	27.3	4.06	6940	979	3.76	16.6	63	N.A.
B00291230	<0.1	<0.01	7	<5	<0.02	0.13	<1	N.A.
B00291231	24.5	4.05	2300	1440	2.91	15.5	67	N.A.
B00291232	33.9	6.13	3710	384	11.8	20.6	133	N.A.
B00291233	32.8	5.67	703	343	6.50	18.2	116	N.A.
B00291234	39.4	6.36	1350	1420	4.18	21.2	113	N.A.
B00291235	36.8	7.57	1770	4550	5.51	26.6	112	7.12
B00291236	33.2	6.73	1720	381	8.83	20.8	118	N.A.
B00291237	30.6	5.41	3530	239	6.14	13.8	82	N.A.
B00291238	27.5	3.40	6860	150	0.48	8.33	28	N.A.
B00291239	30.1	3.73	2220	941	0.41	7.14	32	N.A.
B00291240	4.4	5.12	71	113	3.88	3.93	6	N.A.
B00291241	9.0	1.05	83	19	17.6	0.79	23	N.A.
B00291242	38.3	5.67	2780	409	9.09	18.0	144	N.A.
B00291243	40.9	6.47	2740	211	3.08	13.3	45	N.A.
B00291244	35.8	4.73	1990	416	0.83	10.6	41	N.A.
*Dup B00291244	36.3	5.13	1890	415	0.89	11.1	43	N.A.
B00291245	9.6	1.33	1100	146	0.71	1.33	27	N.A.
B00291246	0.3	0.02	237	<5	0.24	0.26	<1	N.A.
B00291247	0.5	0.01	22	<5	0.23	0.08	<1	N.A.
B00291248	2.9	0.36	65	15	0.35	1.13	5	N.A.
B00291249	1.0	0.01	23	<5	0.10	0.04	<1	N.A.
B00291250	0.1	<0.01	6	<5	<0.02	0.02	<1	N.A.
B00291251	1.2	<0.01	28	<5	0.11	0.04	<1	N.A.
B00291252	0.5	<0.01	19	8	2.35	0.04	1	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291253	1.8	0.01	43	<5	0.14	0.04	<1	N.A.
B00291254	0.3	0.02	150	<5	0.41	0.05	<1	N.A.
B00291255	0.3	<0.01	690	<5	0.22	0.06	<1	N.A.
B00291256	0.8	0.15	173	39	0.84	1.06	2	N.A.
B00291257	0.1	0.04	76	35	1.32	0.38	2	N.A.
B00291258	0.1	0.03	54	5	0.10	0.15	<1	N.A.
B00291259	0.5	0.12	15	42	0.52	0.64	2	N.A.
B00291260	18.2	1.09	1410	113	23.7	9.28	132	N.A.
B00291261	0.9	0.22	29	107	0.75	1.65	3	N.A.
B00291262	2.0	0.35	97	264	0.68	2.16	6	N.A.
B00291263	37.5	2.75	2390	70	53.9	10.3	120	N.A.
B00291264	40.1	1.20	1530	368	55.9	4.74	176	N.A.
B00291265	33.4	4.59	3330	446	49.2	25.5	101	N.A.
B00291266	35.3	7.55	2010	218	37.0	45.1	63	N.A.
B00291267	38.2	5.95	572	133	31.2	44.1	65	N.A.
B00291268	36.6	5.09	588	175	32.6	38.9	67	N.A.
B00291269	36.3	7.37	554	177	49.1	46.6	74	N.A.
B00291270	0.1	<0.01	5	<5	<0.02	0.04	<1	N.A.
B00291271	32.4	8.52	795	181	39.1	46.9	61	N.A.
B00291272	35.4	6.71	440	230	37.7	49.8	83	N.A.
B00291273	33.2	9.06	642	1300	50.4	71.6	77	N.A.
B00291274	36.2	4.69	398	228	23.1	35.3	73	N.A.
B00291275	35.6	5.71	396	175	34.6	44.6	107	N.A.
B00291276	34.1	8.08	1100	397	38.5	73.3	76	N.A.
B00291277	41.5	7.81	9420	838	15.5	72.7	55	N.A.
B00291278	38.8	4.74	1540	106	14.5	51.8	53	N.A.
B00291279	39.6	4.64	595	122	22.7	49.9	76	N.A.
*Dup B00291279	39.3	4.68	609	122	22.7	50.9	75	N.A.
B00291280	4.4	5.07	76	125	4.00	4.10	7	N.A.
B00291281	9.0	1.03	79	22	17.6	0.99	23	N.A.
B00291282	39.3	5.14	809	121	19.5	53.8	65	N.A.
B00291283	35.7	5.89	2160	2520	19.0	65.2	47	3.76
B00291284	10.8	1.39	1170	2350	5.66	18.5	9	4.92
B00291285	31.0	4.88	4630	1100	11.3	56.8	33	N.A.
B00291286	35.3	6.08	1230	2280	21.8	65.3	55	N.A.
B00291287	40.8	1.48	1780	1640	5.15	17.0	24	N.A.
B00291288	39.7	1.72	4700	569	6.34	11.7	21	N.A.
B00291289	40.9	2.24	4440	102	4.46	26.8	22	N.A.
B00291290	0.2	<0.01	5	<5	<0.02	0.22	<1	N.A.
B00291291	40.5	2.04	5330	630	5.37	24.4	25	N.A.

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291292	39.2	2.21	3870	1360	5.85	28.3	24	N.A.
B00291293	37.9	4.71	3320	2830	15.0	43.9	24	N.A.
B00291294	0.2	0.05	73	18	0.11	1.41	<1	N.A.
B00291295	0.1	0.03	61	<5	0.08	0.55	<1	N.A.
B00291296	0.2	0.04	51	7	0.26	0.35	<1	N.A.
B00291297	0.1	0.04	36	15	0.27	0.18	<1	N.A.
B00291298	<0.1	0.05	32	12	0.31	0.17	<1	N.A.
B00291299	<0.1	0.08	78	19	0.22	0.51	<1	N.A.
B00291300	17.8	1.16	1410	119	24.1	9.51	135	N.A.
B00291301	0.6	0.14	97	92	0.19	0.88	<1	N.A.
B00291302	36.1	5.93	389	674	5.86	12.4	125	N.A.
B00291303	41.5	5.33	546	127	14.6	5.14	143	N.A.
B00291304	31.7	4.59	1950	80	21.4	2.69	131	N.A.
B00291305	27.2	3.61	2010	106	37.8	2.08	154	N.A.
B00291306	29.3	3.73	694	94	30.9	2.38	134	N.A.
B00291307	35.7	4.12	633	69	38.8	2.42	166	N.A.
B00291308	31.1	4.61	989	44	42.6	3.07	96	N.A.
B00291309	29.4	5.60	1100	41	80.6	2.94	158	N.A.
B00291310	0.2	<0.01	8	<5	0.05	0.05	<1	N.A.
B00291311	33.2	8.60	3550	40	141	4.28	255	N.A.
B00291312	36.7	10.5	687	22	74.0	4.78	284	N.A.
B00291313	31.2	8.07	202	37	55.1	3.96	219	N.A.
B00291314	29.0	6.78	483	51	59.6	3.57	223	N.A.
*Dup B00291314	29.0	6.97	463	44	61.1	3.60	221	N.A.
B00291315	25.2	11.2	14	60	78.5	7.72	276	N.A.
B00291316	21.2	10.7	11	61	103	7.77	276	N.A.
B00291317	21.2	14.2	13	84	96.3	4.89	281	N.A.
B00291318	24.0	17.5	14	137	115	5.82	344	N.A.
B00291319	2.0	1.80	<3	18	24.7	0.62	21	N.A.
B00291320	4.5	5.33	70	126	3.98	4.12	6	N.A.
B00291321	9.2	1.09	75	22	16.6	0.74	22	N.A.
B00291322	1.1	0.12	4	10	2.14	0.06	8	N.A.
B00291323	0.6	0.01	<3	<5	0.49	<0.01	2	N.A.
B00291324	1.1	0.04	11	<5	0.76	0.02	2	N.A.
B00291325	0.8	0.08	6	<5	0.67	0.05	2	N.A.
B00291326	0.7	0.01	4	<5	0.46	0.03	<1	N.A.
B00291327	1.4	0.09	6	20	0.94	0.04	3	N.A.

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Element	As	Sb	@Bi	@Hg	@Se
Method	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	3	5	0.02	0.01	1
Units	ppm	ppm	ppm	ppm	ppm
*Rep B00291190	7	<5	<0.02	<0.01	<1
*Rep B00291213	4920	983	1.19	20.6	10
*Rep B00291240	72	118	3.96	4.24	6
*Rep B00291257	77	34	1.27	0.35	2
*Rep B00291275	388	174	35.1	45.2	104
*Rep B00291326	4	<5	0.48	0.02	<1
*Std OREAS210	3730	N.A.	N.A.	N.A.	N.A.

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Std OREAS131B			N.A.	36	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	489	N.A.	81	
*Std DS-1			7260	N.A.	N.A.	77.9	N.A.	
*Std OREAS926			N.A.	N.A.	38.4	N.A.	11	
*Std OREAS934			N.A.	N.A.	495	N.A.	82	
*Std DS-1			6970	N.A.	N.A.	80.9	N.A.	
*Std OREAS624			108	N.A.	21.5	1.82	28	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Blk BLANK								<0.50
*Rep B00291177	0.5	0.04						
*Rep B00291198	34.1	5.74						
*Rep B00291227	27.4	4.32						
*Rep B00291243	40.6	6.49						
*Rep B00291266	36.1	7.34						
*Rep B00291290	0.2	<0.01						
*Rep B00291308	32.2	4.58						
*Std OREAS134A	19.5	17.1						
*Std OREAS131B	4.9	3.04						
*Std ME-19	1.6	0.77						
*Std RM183-89	0.8	<0.01						
*Std ME-19	1.6	0.77						
*Std RM183-89	0.7	<0.01						
*Std OREAS134A	19.2	17.4						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Std GS-14A								14.83

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	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	As GE_ICM14B 3 ppm	Sb GE_ICM14B 5 ppm	@Bi GE_ICM14B 0.02 ppm	@Hg GE_ICM14B 0.01 ppm	@Se GE_ICM14B 1 ppm	@Au GO_FAG303 0.5 g/t
*Rep B00291284								3.59

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
B00291175	N.A.	N.A.	N.A.
B00291176	N.A.	N.A.	N.A.
B00291177	N.A.	N.A.	N.A.
B00291178	N.A.	N.A.	N.A.
B00291179	N.A.	N.A.	N.A.
B00291180	N.A.	N.A.	N.A.
B00291181	N.A.	N.A.	N.A.
B00291182	N.A.	N.A.	N.A.
B00291183	N.A.	N.A.	N.A.
B00291184	N.A.	N.A.	N.A.
B00291185	N.A.	N.A.	N.A.
B00291186	N.A.	N.A.	N.A.
B00291187	N.A.	N.A.	N.A.
B00291188	N.A.	N.A.	N.A.
B00291189	N.A.	N.A.	N.A.
B00291190	N.A.	N.A.	N.A.
B00291191	N.A.	N.A.	N.A.
B00291192	N.A.	N.A.	N.A.
B00291193	N.A.	N.A.	N.A.
B00291194	N.A.	N.A.	N.A.
B00291195	264	N.A.	N.A.
B00291196	287	N.A.	N.A.
B00291197	337	N.A.	6.1
B00291198	370	1.04	17.2
B00291199	N.A.	1.46	15.1
B00291200	N.A.	N.A.	N.A.
B00291201	N.A.	N.A.	N.A.
B00291202	328	1.16	14.4
B00291203	393	N.A.	6.2
B00291204	N.A.	N.A.	N.A.
B00291205	N.A.	N.A.	N.A.
B00291206	N.A.	N.A.	4.5
B00291207	N.A.	N.A.	N.A.
B00291208	323	N.A.	N.A.
B00291209	N.A.	N.A.	20.9
*Dup B00291209	N.A.	N.A.	20.6
B00291210	N.A.	N.A.	N.A.
B00291211	339	N.A.	17.3
B00291212	316	N.A.	19.4
B00291213	N.A.	N.A.	29.7

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
B00291214	N.A.	N.A.	35.0
B00291215	N.A.	1.09	23.9
B00291216	404	N.A.	5.8
B00291217	309	N.A.	21.6
B00291218	423	N.A.	15.0
B00291219	356	1.05	20.4
B00291220	N.A.	N.A.	N.A.
B00291221	272	1.55	26.0
B00291222	N.A.	N.A.	23.4
B00291223	295	N.A.	N.A.
B00291224	N.A.	N.A.	N.A.
B00291225	344	N.A.	13.9
B00291226	281	N.A.	20.1
B00291227	283	N.A.	23.4
B00291228	357	1.03	19.8
B00291229	265	N.A.	24.5
B00291230	N.A.	N.A.	N.A.
B00291231	285	N.A.	20.2
B00291232	256	N.A.	14.4
B00291233	305	N.A.	17.8
B00291234	356	N.A.	4.8
B00291235	797	N.A.	N.A.
B00291236	274	N.A.	N.A.
B00291237	N.A.	N.A.	N.A.
B00291238	N.A.	N.A.	N.A.
B00291239	421	N.A.	N.A.
B00291240	N.A.	N.A.	N.A.
B00291241	N.A.	N.A.	N.A.
B00291242	243	N.A.	N.A.
B00291243	N.A.	N.A.	N.A.
B00291244	306	N.A.	N.A.
*Dup B00291244	317	N.A.	N.A.
B00291245	N.A.	N.A.	N.A.
B00291246	N.A.	N.A.	N.A.
B00291247	N.A.	N.A.	N.A.
B00291248	N.A.	N.A.	N.A.
B00291249	N.A.	N.A.	N.A.
B00291250	N.A.	N.A.	N.A.
B00291251	N.A.	N.A.	N.A.
B00291252	N.A.	N.A.	N.A.

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
B00291253	N.A.	N.A.	N.A.
B00291254	N.A.	N.A.	N.A.
B00291255	N.A.	N.A.	N.A.
B00291256	N.A.	N.A.	N.A.
B00291257	N.A.	N.A.	N.A.
B00291258	N.A.	N.A.	N.A.
B00291259	N.A.	N.A.	N.A.
B00291260	N.A.	N.A.	N.A.
B00291261	N.A.	N.A.	N.A.
B00291262	N.A.	N.A.	N.A.
B00291263	N.A.	N.A.	N.A.
B00291264	N.A.	N.A.	N.A.
B00291265	N.A.	N.A.	N.A.
B00291266	N.A.	N.A.	N.A.
B00291267	N.A.	N.A.	N.A.
B00291268	N.A.	N.A.	N.A.
B00291269	N.A.	N.A.	N.A.
B00291270	N.A.	N.A.	N.A.
B00291271	N.A.	N.A.	N.A.
B00291272	N.A.	N.A.	N.A.
B00291273	424	N.A.	N.A.
B00291274	N.A.	N.A.	N.A.
B00291275	N.A.	N.A.	N.A.
B00291276	315	N.A.	N.A.
B00291277	329	N.A.	N.A.
B00291278	N.A.	N.A.	N.A.
B00291279	N.A.	N.A.	N.A.
*Dup B00291279	N.A.	N.A.	N.A.
B00291280	N.A.	N.A.	N.A.
B00291281	N.A.	N.A.	N.A.
B00291282	N.A.	N.A.	N.A.
B00291283	416	N.A.	N.A.
B00291284	324	N.A.	N.A.
B00291285	262	N.A.	N.A.
B00291286	349	N.A.	N.A.
B00291287	N.A.	N.A.	N.A.
B00291288	N.A.	N.A.	N.A.
B00291289	N.A.	N.A.	N.A.
B00291290	N.A.	N.A.	N.A.
B00291291	N.A.	N.A.	N.A.

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
B00291292	N.A.	N.A.	N.A.
B00291293	405	N.A.	N.A.
B00291294	N.A.	N.A.	N.A.
B00291295	N.A.	N.A.	N.A.
B00291296	N.A.	N.A.	N.A.
B00291297	N.A.	N.A.	N.A.
B00291298	N.A.	N.A.	N.A.
B00291299	N.A.	N.A.	N.A.
B00291300	N.A.	N.A.	N.A.
B00291301	N.A.	N.A.	N.A.
B00291302	N.A.	N.A.	N.A.
B00291303	N.A.	N.A.	N.A.
B00291304	N.A.	N.A.	N.A.
B00291305	N.A.	N.A.	N.A.
B00291306	N.A.	N.A.	N.A.
B00291307	N.A.	N.A.	N.A.
B00291308	N.A.	N.A.	N.A.
B00291309	N.A.	N.A.	N.A.
B00291310	N.A.	N.A.	N.A.
B00291311	N.A.	N.A.	N.A.
B00291312	N.A.	N.A.	N.A.
B00291313	N.A.	N.A.	N.A.
B00291314	N.A.	N.A.	N.A.
*Dup B00291314	N.A.	N.A.	N.A.
B00291315	N.A.	N.A.	N.A.
B00291316	N.A.	N.A.	N.A.
B00291317	N.A.	N.A.	N.A.
B00291318	N.A.	N.A.	N.A.
B00291319	N.A.	N.A.	N.A.
B00291320	N.A.	N.A.	N.A.
B00291321	N.A.	N.A.	N.A.
B00291322	N.A.	N.A.	N.A.
B00291323	N.A.	N.A.	N.A.
B00291324	N.A.	N.A.	N.A.
B00291325	N.A.	N.A.	N.A.
B00291326	N.A.	N.A.	N.A.
B00291327	N.A.	N.A.	N.A.

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Final : VC161844 Order: PO# BMC16-01_4

Report File No.: 0000017735

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
*Std ME-1302	436		
*Std AMIS0267	946		
*Blk BLANK	<10		
*Blk BLANK		<0.01	
*Rep B00291202		1.15	
*Std MP1B		2.24	
*Rep B00291197	327		
*Rep B00291235	796		
*Rep B00291214			36.0
*Rep B00291221			25.9

Element	Ba
Method	GO_XRF77B
Det.Lim.	0.2
Units	%
*Blk BLANK	<0.2
*Std CRM6587-93	35.0

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Certificate of Analysis

Work Order : VC161846

[Report File No.: 0000017747]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 20, 2016

P.O. No.	:	PO# BMC16-01_5
Project No.	:	KZK
No. Of Samples	:	95
Date Submitted	:	Jun 01, 2016
Report Comprises	:	Pages 1 to 12 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Se values greater than 1000ppm were done by dilution and are informational only.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292024	2.250	N.A.	11	1.4	0.24	<0.01	1.55	<0.01
B00292025	2.660	N.A.	6	0.7	0.30	<0.01	1.47	<0.01
B00292026	2.700	N.A.	8	0.9	0.25	<0.01	1.32	<0.01
B00292027	0.910	N.A.	22	0.8	0.24	<0.01	1.56	<0.01
B00292028	1.820	N.A.	13	1.0	0.26	<0.01	1.99	<0.01
B00292029	2.725	N.A.	22	0.9	0.29	<0.01	2.21	<0.01
B00292030	0.150	N.A.	873	44.9	0.05	0.47	20.1	0.31
B00292031	2.650	N.A.	38	6.3	0.28	0.01	2.39	<0.01
B00292032	1.425	N.A.	537	68.3	0.32	0.35	11.1	0.43
B00292033	1.650	N.A.	328	62.2	0.28	0.35	8.29	0.42
B00292034	1.795	N.A.	2530	259	<0.01	1.01	34.2	2.85
B00292035	1.875	N.A.	1630	262	0.08	1.02	27.6	2.50
B00292036	0.505	N.A.	9	1.3	0.38	0.01	4.05	<0.01
B00292037	1.480	N.A.	<5	0.8	0.19	<0.01	7.01	<0.01
B00292038	1.345	N.A.	<5	1.8	0.18	0.01	6.78	0.02
B00292051	1.385	N.A.	<5	0.3	0.30	<0.01	1.25	<0.01
B00292052	1.710	N.A.	10	0.5	0.26	<0.01	1.45	<0.01
B00292053	1.360	N.A.	89	4.6	0.23	0.02	2.59	0.04
B00292054	1.950	N.A.	40	1.4	0.27	<0.01	1.75	0.01
B00292055	1.880	N.A.	14	1.2	0.26	<0.01	1.77	<0.01
B00292056	2.050	N.A.	13	0.7	0.24	<0.01	1.92	<0.01
B00292057	1.300	N.A.	15	1.0	0.30	<0.01	2.10	<0.01
B00292058	1.550	N.A.	65	5.4	0.28	0.01	2.31	0.02
B00292059	1.590	N.A.	187	12.0	0.22	0.01	2.90	0.05
B00292060	1.565	N.A.	<5	<0.3	<0.01	<0.01	0.11	<0.01
B00292061	1.180	N.A.	847	58.5	0.21	0.61	9.87	0.26
B00292062	1.585	N.A.	531	56.0	0.21	0.90	7.33	0.25
B00292063	2.415	N.A.	2590	290	0.05	0.97	31.7	3.32
B00292064	1.685	N.A.	2520	280	<0.01	1.86	37.5	2.84
B00292065	1.385	N.A.	1500	142	0.27	0.72	21.3	1.08
B00292066	1.500	N.A.	54	32.5	0.11	0.10	10.6	0.62
B00292067	0.865	N.A.	18	3.8	0.24	0.03	7.11	0.05
B00292068	1.790	N.A.	<5	0.4	0.09	<0.01	6.72	<0.01
B00292069	2.320	N.A.	<5	0.4	0.05	<0.01	6.57	<0.01
*Dup B00292069	N.A.	N.A.	<5	<0.3	0.05	<0.01	6.60	<0.01
B00292070	0.155	N.A.	827	45.8	0.05	0.47	20.1	0.31
B00292071	1.690	N.A.	<5	<0.3	0.08	<0.01	6.77	<0.01
B00292072	1.535	N.A.	11	0.6	0.15	<0.01	6.12	<0.01
B00292073	2.890	N.A.	<5	0.3	0.11	<0.01	7.62	<0.01
B00292074	1.850	N.A.	<5	<0.3	0.06	<0.01	8.64	<0.01

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292075	1.700	N.A.	<5	0.7	0.04	<0.01	7.77	<0.01
B00292076	2.070	N.A.	5	0.7	0.17	<0.01	7.48	<0.01
B00292077	1.660	N.A.	<5	0.3	0.12	<0.01	7.21	<0.01
B00292078	2.440	N.A.	<5	<0.3	0.12	<0.01	7.17	<0.01
B00292079	2.340	N.A.	7	<0.3	0.17	<0.01	7.45	<0.01
B00292080	1.490	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
B00292081	2.390	N.A.	<5	<0.3	0.17	<0.01	7.31	<0.01
B00292082	1.315	N.A.	<5	<0.3	0.28	<0.01	6.67	<0.01
B00292083	1.940	N.A.	<5	0.4	0.23	<0.01	5.63	<0.01
B00292084	1.705	N.A.	5	1.0	0.21	0.02	8.11	<0.01
B00292085	2.175	92.0	<5	<0.3	0.17	<0.01	7.46	<0.01
B00292086	1.710	N.A.	<5	0.7	0.06	<0.01	8.24	<0.01
B00292087	2.155	N.A.	<5	<0.3	0.14	<0.01	8.14	<0.01
B00292088	0.920	N.A.	75	23.2	0.55	0.07	11.6	0.23
B00292089	1.640	N.A.	1020	112	0.18	0.36	32.8	1.19
B00292090	0.170	N.A.	1270	68.5	0.26	0.35	3.83	1.34
B00292091	0.170	N.A.	801	20.2	0.14	1.79	13.6	0.25
B00292092	1.935	N.A.	1050	157	0.12	0.67	31.5	1.32
B00292093	1.805	N.A.	856	78.0	0.36	0.09	3.75	0.10
B00292094	1.290	N.A.	12	2.6	0.17	<0.01	1.34	0.03
B00292095	1.690	N.A.	45	2.1	0.34	<0.01	2.03	0.01
B00292096	1.210	N.A.	<5	1.2	0.37	<0.01	2.14	<0.01
B00292097	1.255	N.A.	9	1.1	0.43	<0.01	6.68	<0.01
B00292098	2.205	N.A.	9	0.5	0.55	<0.01	6.93	<0.01
B00292099	2.390	N.A.	6	0.3	0.83	<0.01	7.60	<0.01
B00292100	1.470	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292101	2.420	N.A.	15	0.6	1.00	<0.01	6.72	<0.01
B00292102	1.700	N.A.	389	24.6	0.79	0.02	5.18	0.33
B00292103	3.900	N.A.	2790	275	>4.00	0.14	21.1	2.84
B00292104	2.340	N.A.	2990	>300	0.06	0.23	22.8	3.06
*Dup B00292104	N.A.	N.A.	3500	>300	0.06	0.25	22.8	3.04
B00292105	2.905	N.A.	5250	>300	2.32	0.25	22.2	3.14
B00292106	2.520	N.A.	89	10.2	0.87	<0.01	2.22	0.07
B00292107	2.990	N.A.	14	3.0	0.52	<0.01	1.80	0.03
B00292108	2.800	N.A.	17	2.6	0.40	<0.01	1.96	0.04
B00292109	2.610	N.A.	9	1.5	0.51	<0.01	1.51	0.02
B00292110	0.155	N.A.	833	44.6	0.05	0.47	20.2	0.31
B00292111	3.280	N.A.	8	1.4	0.50	<0.01	1.91	0.02
B00292112	2.590	N.A.	8	1.2	0.39	<0.01	1.83	0.02
B00292113	2.715	N.A.	8	<0.3	0.16	<0.01	2.07	<0.01

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292114	2.860	N.A.	7	<0.3	0.15	<0.01	1.96	<0.01
B00292115	2.180	N.A.	6	0.6	0.17	<0.01	2.12	<0.01
B00292116	2.505	N.A.	<5	0.4	0.17	<0.01	1.82	<0.01
B00292117	1.590	N.A.	<5	0.3	0.15	<0.01	1.77	<0.01
B00292118	1.165	N.A.	138	34.9	0.32	0.04	7.02	0.39
B00292119	1.145	N.A.	23	1.4	0.39	<0.01	6.43	0.01
B00292120	1.495	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292121	1.265	N.A.	333	53.8	0.18	2.63	21.2	0.04
B00292122	1.025	N.A.	28	2.6	0.23	0.01	4.60	0.04
B00292123	1.530	N.A.	11	<0.3	0.12	<0.01	4.46	<0.01
B00292124	0.475	N.A.	6	1.4	0.04	0.03	2.05	0.01
B00292125	2.110	N.A.	<5	<0.3	0.08	<0.01	2.71	<0.01
B00292126	2.610	N.A.	<5	0.3	0.09	<0.01	4.66	<0.01
B00292127	2.660	N.A.	<5	<0.3	0.11	<0.01	3.70	<0.01
B00292128	2.080	N.A.	<5	<0.3	0.10	0.02	4.38	<0.01
B00292129	2.890	97.2	<5	<0.3	0.11	<0.01	3.51	<0.01
B00292130	0.155	N.A.	869	44.1	0.05	0.47	20.5	0.31
*Rep B00292068				<0.3				
*Rep B00292072				0.5				
*Rep B00292128				<0.3				
*Std SU_1B				6.2				
*Std OREAS621				71.1				
*Std AMIS0268				190				
*Std SU_1B				6.1				
*Std OREAS621				65.6				
*Std AMIS0268				182				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Rep B00292066			106					
*Rep B00292098			7					
*Rep B00292117			<5					
*Std OXN117			7730					
*Std OXB130			125					
*Std OREAS214			3180					
*Std OXH97			1300					
*Std OXN117			7800					
*Std OXB130			126					
*Blk BLANK			<5					
*Blk BLANK			<5					

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep B00292038	0.18	0.01	6.78	0.02
*Rep B00292078	0.13	<0.01	7.24	<0.01
*Rep B00292090	0.26	0.35	3.84	1.36
*Rep B00292104	0.06	0.23	22.8	3.04
*Rep B00292126	0.09	<0.01	4.66	<0.01
*Std OREAS131B	0.08	0.02	5.66	1.90
*Std ME-19	0.16	0.46	3.91	0.95
*Std RM183-89	3.08	<0.01	35.8	0.03
*Std ME-19	0.17	0.46	3.96	0.98
*Blk BLANK	<0.01	<0.01	<0.05	<0.01
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292024	1.1	0.03	19	12	2.23	0.05	3	N.A.
B00292025	0.8	<0.01	11	<5	1.55	<0.01	1	N.A.
B00292026	0.7	0.01	51	11	1.10	0.04	1	N.A.
B00292027	0.9	0.02	64	22	2.06	0.06	2	N.A.
B00292028	1.1	0.03	492	8	0.59	0.12	4	N.A.
B00292029	1.3	0.02	185	14	0.59	0.10	4	N.A.
B00292030	18.5	1.10	1360	118	23.8	8.88	124	N.A.
B00292031	1.4	0.02	77	17	1.58	0.16	7	N.A.
B00292032	10.2	1.14	2200	63	19.6	4.72	366	N.A.
B00292033	6.6	0.78	1690	59	9.16	3.36	231	N.A.
B00292034	40.2	9.17	4370	314	20.5	36.0	689	N.A.
B00292035	32.3	5.53	1790	199	63.3	20.5	1250	N.A.
B00292036	0.8	0.05	92	59	0.15	0.19	7	N.A.
B00292037	0.3	0.03	96	11	0.15	0.09	4	N.A.
B00292038	0.7	0.04	27	24	0.37	0.15	5	N.A.
B00292051	0.5	<0.01	12	<5	0.95	<0.01	1	N.A.
B00292052	0.8	<0.01	16	7	0.77	0.02	1	N.A.
B00292053	2.1	0.16	1440	142	5.90	0.59	8	N.A.
B00292054	1.0	0.02	282	25	2.99	0.09	3	N.A.
B00292055	1.0	0.03	263	13	1.38	0.13	4	N.A.
B00292056	1.0	0.05	393	9	0.47	0.25	5	N.A.
B00292057	1.2	<0.01	42	10	0.41	0.05	3	N.A.
B00292058	1.4	0.13	279	67	1.27	0.63	9	N.A.
B00292059	2.1	0.11	51	164	1.46	0.56	25	N.A.
B00292060	0.2	<0.01	6	<5	<0.02	0.01	<1	N.A.
B00292061	7.7	2.36	2100	158	13.3	10.3	188	N.A.
B00292062	4.8	0.41	2370	113	9.51	2.10	171	N.A.
B00292063	38.6	11.1	4570	322	23.3	44.2	747	N.A.
B00292064	45.7	9.63	962	307	19.7	38.9	973	N.A.
B00292065	23.5	3.59	3500	104	69.8	13.0	1240	N.A.
B00292066	8.1	1.81	63	90	17.0	4.25	137	N.A.
B00292067	1.4	0.16	29	31	1.36	0.42	17	N.A.
B00292068	0.2	0.01	24	12	<0.02	0.06	<1	N.A.
B00292069	0.2	0.01	55	<5	0.03	0.11	<1	N.A.
*Dup B00292069	0.1	0.01	56	<5	<0.02	0.10	<1	N.A.
B00292070	18.0	1.14	1290	112	24.0	8.90	126	N.A.
B00292071	0.1	0.01	72	<5	<0.02	0.08	<1	N.A.
B00292072	0.1	0.01	134	<5	0.05	0.11	<1	N.A.
B00292073	0.1	<0.01	84	<5	<0.02	0.07	<1	N.A.
B00292074	0.1	0.02	64	<5	0.09	0.04	<1	N.A.

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292075	0.1	0.01	131	<5	0.04	0.05	<1	N.A.
B00292076	<0.1	0.01	107	<5	0.04	0.02	<1	N.A.
B00292077	0.1	0.01	443	<5	<0.02	0.02	<1	N.A.
B00292078	0.1	0.01	355	<5	<0.02	0.01	<1	N.A.
B00292079	<0.1	0.01	169	<5	<0.02	0.03	<1	N.A.
B00292080	<0.1	<0.01	7	<5	<0.02	<0.01	<1	N.A.
B00292081	<0.1	0.01	346	<5	<0.02	<0.01	<1	N.A.
B00292082	<0.1	0.01	174	<5	<0.02	<0.01	<1	N.A.
B00292083	0.5	<0.01	302	<5	<0.02	0.04	<1	N.A.
B00292084	0.7	0.01	276	<5	0.07	0.04	1	N.A.
B00292085	<0.1	<0.01	60	<5	<0.02	0.05	<1	N.A.
B00292086	<0.1	0.01	61	<5	0.07	0.09	<1	N.A.
B00292087	0.1	0.01	257	<5	<0.02	0.11	<1	N.A.
B00292088	8.0	1.38	108	56	13.2	6.10	125	N.A.
B00292089	39.6	6.30	4590	114	28.6	22.7	756	N.A.
B00292090	4.4	5.12	70	100	4.06	3.94	6	N.A.
B00292091	9.2	1.03	78	18	17.8	0.87	23	N.A.
B00292092	38.3	7.91	3430	151	32.3	28.4	759	N.A.
B00292093	2.6	0.35	505	200	3.62	1.39	59	N.A.
B00292094	0.6	0.02	71	11	0.75	0.13	4	N.A.
B00292095	1.2	0.03	85	5	0.44	0.15	1	N.A.
B00292096	0.9	<0.01	11	<5	0.80	0.08	2	N.A.
B00292097	0.1	0.03	29	<5	0.23	0.07	<1	N.A.
B00292098	0.1	0.02	21	<5	0.03	0.05	<1	N.A.
B00292099	0.1	0.02	39	<5	<0.02	0.05	<1	N.A.
B00292100	<0.1	<0.01	6	<5	<0.02	0.03	<1	N.A.
B00292101	0.1	0.02	35	<5	0.03	0.07	<1	N.A.
B00292102	4.0	1.13	63	25	1.58	4.00	11	N.A.
B00292103	28.2	4.54	2310	567	7.96	26.3	40	N.A.
B00292104	23.3	4.68	2680	887	3.25	30.0	29	N.A.
*Dup B00292104	23.4	4.69	2640	894	3.16	28.8	28	N.A.
B00292105	21.7	4.06	5770	777	0.21	24.1	13	5.65
B00292106	0.8	0.09	93	14	0.36	0.46	<1	N.A.
B00292107	0.5	0.05	13	<5	0.23	0.20	<1	N.A.
B00292108	0.7	0.06	9	<5	0.38	0.21	<1	N.A.
B00292109	0.7	0.03	9	<5	1.02	0.15	<1	N.A.
B00292110	18.1	1.16	1390	106	24.2	8.11	126	N.A.
B00292111	0.6	0.07	7	<5	0.18	0.21	<1	N.A.
B00292112	0.5	0.03	8	<5	0.19	0.17	<1	N.A.
B00292113	1.5	<0.01	28	<5	0.20	0.06	<1	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292114	1.5	<0.01	44	<5	0.20	0.05	<1	N.A.
B00292115	1.5	<0.01	39	<5	0.26	0.06	<1	N.A.
B00292116	1.3	<0.01	102	<5	0.21	0.04	<1	N.A.
B00292117	1.2	<0.01	29	<5	0.25	0.05	<1	N.A.
B00292118	3.1	0.96	59	41	4.14	1.35	14	N.A.
B00292119	0.1	0.04	33	76	0.28	0.09	<1	N.A.
B00292120	0.1	<0.01	<3	<5	<0.02	0.04	<1	N.A.
B00292121	16.3	6.18	16	25	70.7	2.87	214	N.A.
B00292122	4.0	0.14	194	<5	3.60	0.09	14	N.A.
B00292123	3.2	<0.01	30	<5	0.31	0.03	1	N.A.
B00292124	1.2	0.24	2060	8	2.40	0.10	6	N.A.
B00292125	0.8	<0.01	6	<5	0.21	0.03	1	N.A.
B00292126	1.6	0.02	<3	<5	0.61	0.02	2	N.A.
B00292127	1.0	0.01	<3	<5	0.10	0.02	1	N.A.
B00292128	1.6	<0.01	<3	<5	0.19	0.02	3	N.A.
B00292129	1.1	0.01	<3	<5	0.17	<0.01	1	N.A.
B00292130	18.5	1.16	1320	99	23.9	7.91	123	N.A.
*Rep B00292029			176	15	0.55	0.11	4	

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00292066			60	93	16.9	4.17	135	
*Rep B00292104			2660	897	3.26	30.7	30	
*Rep B00292122			213	<5	3.62	0.09	15	
*Std OREAS131B			N.A.	39	N.A.	N.A.	N.A.	
*Std OREAS624			109	N.A.	22.5	N.A.	29	
*Std DS-1			6760	N.A.	N.A.	78.6	N.A.	
*Std OREAS926			N.A.	N.A.	41.8	N.A.	11	
*Std OREAS934			N.A.	N.A.	512	N.A.	78	
*Std DS-1			6820	N.A.	N.A.	80.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std OXN117								7.50
*Blk BLANK								<0.50
*Rep B00292038	0.7	0.04						
*Rep B00292078	0.1	0.01						
*Rep B00292090	4.5	5.14						
*Rep B00292104	23.1	4.68						
*Rep B00292126	1.6	0.02						
*Std OREAS131B	4.8	3.06						

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	As GE_ICM14B 3 ppm	Sb GE_ICM14B 5 ppm	@Bi GE_ICM14B 0.02 ppm	@Hg GE_ICM14B 0.01 ppm	@Se GE_ICM14B 1 ppm	@Au GO_FAG303 0.5 g/t
*Std ME-19	1.5	0.77						
*Std RM183-89	0.7	<0.01						
*Std ME-19	1.6	0.78						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00292105								4.83

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	Ag	Ba
Method	GO_FAG313	GO_XRF77B
Det.Lim.	10	0.2
Units	g/t	%
B00292024	N.A.	N.A.
B00292025	N.A.	N.A.
B00292026	N.A.	N.A.
B00292027	N.A.	N.A.
B00292028	N.A.	N.A.
B00292029	N.A.	N.A.
B00292030	N.A.	N.A.
B00292031	N.A.	N.A.
B00292032	N.A.	N.A.
B00292033	N.A.	N.A.
B00292034	260	N.A.
B00292035	262	N.A.
B00292036	N.A.	N.A.
B00292037	N.A.	N.A.
B00292038	N.A.	N.A.
B00292051	N.A.	N.A.
B00292052	N.A.	N.A.
B00292053	N.A.	N.A.
B00292054	N.A.	N.A.
B00292055	N.A.	N.A.
B00292056	N.A.	N.A.
B00292057	N.A.	N.A.
B00292058	N.A.	N.A.
B00292059	N.A.	N.A.
B00292060	N.A.	N.A.
B00292061	N.A.	N.A.
B00292062	N.A.	N.A.
B00292063	296	N.A.
B00292064	283	N.A.
B00292065	N.A.	N.A.
B00292066	N.A.	N.A.
B00292067	N.A.	N.A.
B00292068	N.A.	N.A.
B00292069	N.A.	N.A.
*Dup B00292069	N.A.	N.A.
B00292070	N.A.	N.A.
B00292071	N.A.	N.A.
B00292072	N.A.	N.A.
B00292073	N.A.	N.A.
B00292074	N.A.	N.A.

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	Ag	Ba
Method	GO_FAG313	GO_XRF77B
Det.Lim.	10	0.2
Units	g/t	%
B00292075	N.A.	N.A.
B00292076	N.A.	N.A.
B00292077	N.A.	N.A.
B00292078	N.A.	N.A.
B00292079	N.A.	N.A.
B00292080	N.A.	N.A.
B00292081	N.A.	N.A.
B00292082	N.A.	N.A.
B00292083	N.A.	N.A.
B00292084	N.A.	N.A.
B00292085	N.A.	N.A.
B00292086	N.A.	N.A.
B00292087	N.A.	N.A.
B00292088	N.A.	N.A.
B00292089	N.A.	N.A.
B00292090	N.A.	N.A.
B00292091	N.A.	N.A.
B00292092	N.A.	N.A.
B00292093	N.A.	N.A.
B00292094	N.A.	N.A.
B00292095	N.A.	N.A.
B00292096	N.A.	N.A.
B00292097	N.A.	N.A.
B00292098	N.A.	N.A.
B00292099	N.A.	N.A.
B00292100	N.A.	N.A.
B00292101	N.A.	N.A.
B00292102	N.A.	N.A.
B00292103	297	19.4
B00292104	384	N.A.
*Dup B00292104	371	N.A.
B00292105	424	N.A.
B00292106	N.A.	N.A.
B00292107	N.A.	N.A.
B00292108	N.A.	N.A.
B00292109	N.A.	N.A.
B00292110	N.A.	N.A.
B00292111	N.A.	N.A.
B00292112	N.A.	N.A.
B00292113	N.A.	N.A.

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Final : VC161846 Order: PO# BMC16-01_5

Report File No.: 0000017747

Element	Ag	Ba
Method	GO_FAG313	GO_XRF77B
Det.Lim.	10	0.2
Units	g/t	%
B00292114	N.A.	N.A.
B00292115	N.A.	N.A.
B00292116	N.A.	N.A.
B00292117	N.A.	N.A.
B00292118	N.A.	N.A.
B00292119	N.A.	N.A.
B00292120	N.A.	N.A.
B00292121	N.A.	N.A.
B00292122	N.A.	N.A.
B00292123	N.A.	N.A.
B00292124	N.A.	N.A.
B00292125	N.A.	N.A.
B00292126	N.A.	N.A.
B00292127	N.A.	N.A.
B00292128	N.A.	N.A.
B00292129	N.A.	N.A.
B00292130	N.A.	N.A.

Element	Ag	Ba
Method	GO_FAG313	GO_XRF77B
Det.Lim.	10	0.2
Units	g/t	%
*Std ME-1302	450	
*Blk BLANK	<10	
*Blk BLANK		<0.2
*Rep B00292103		19.3
*Std CRM6587-93		35.2

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Certificate of Analysis

Work Order : VC161847

[Report File No.: 0000017744]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 20, 2016

P.O. No.	:	PO# BMC16-01_6
Project No.	:	KZK
No. Of Samples	:	21
Date Submitted	:	Jun 01, 2016
Report Comprises	:	Pages 1 to 4 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161847 Order: PO# BMC16-01_6

Report File No.: 0000017744

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291328	1.670	N.A.	13	0.5	0.24	<0.01	1.83	<0.01
B00291329	0.765	N.A.	19	1.9	0.30	<0.01	2.58	0.04
B00291330	1.510	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291331	0.875	N.A.	12	0.7	0.31	<0.01	2.00	0.02
B00291332	1.710	N.A.	10	1.1	0.29	<0.01	2.34	0.02
B00291333	1.195	N.A.	12	0.9	0.33	<0.01	1.91	0.02
B00291334	1.905	N.A.	16	1.6	0.42	<0.01	2.21	0.04
B00291335	0.870	N.A.	23	5.3	0.41	<0.01	2.15	0.07
B00291336	0.750	N.A.	37	6.3	0.52	<0.01	2.08	0.03
B00291337	1.790	N.A.	1510	285	0.03	0.14	34.2	3.11
B00291338	2.615	N.A.	2240	>300	0.14	0.18	30.6	4.57
B00291339	2.995	N.A.	1250	>300	0.03	0.02	34.2	5.07
B00291340	0.175	N.A.	1290	70.0	0.26	0.36	3.70	1.37
B00291341	0.175	N.A.	840	20.9	0.14	1.70	13.3	0.26
B00291342	2.240	N.A.	8	2.4	0.70	<0.01	1.83	0.03
B00291343	1.870	N.A.	12	4.4	0.39	<0.01	1.12	0.06
B00291344	2.860	N.A.	14	6.8	0.22	<0.01	0.85	0.03
B00291345	1.300	N.A.	61	37.2	0.15	<0.01	0.82	0.05
B00291346	2.470	N.A.	17	2.0	0.50	0.02	3.59	0.01
B00291347	0.975	N.A.	<5	<0.3	0.32	<0.01	5.84	<0.01
B00291348	2.045	99.2	8	3.2	0.13	<0.01	1.16	0.03
*Rep B00291335					0.41	<0.01	2.20	0.07
*Std ME-19					0.16	0.46	3.84	0.98
*Std RM183-89					3.08	<0.01	35.4	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00291334				1.5				
*Std OREAS621				70.3				
*Blk BLANK				<0.3				
*Rep B00291336			36					
*Std OXN117			7820					
*Blk BLANK			<5					

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Final : VC161847 Order: PO# BMC16-01_6

Report File No.: 0000017744

Element	S	@Zn	As	Hg	Sb	@Bi	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	1	5	0.02	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291328	0.8	0.01	17	<1	6	0.52	3	N.A.
B00291329	1.2	0.03	2350	<1	<5	1.14	3	N.A.
B00291330	0.1	<0.01	5	<1	<5	<0.02	<1	N.A.
B00291331	0.7	0.03	512	<1	<5	0.34	<1	N.A.
B00291332	1.1	0.03	701	<1	<5	0.55	2	N.A.
B00291333	0.7	0.06	1150	<1	<5	0.40	1	N.A.
B00291334	1.0	0.10	944	<1	<5	0.37	1	N.A.
B00291335	1.0	0.12	416	<1	<5	0.56	3	N.A.
B00291336	0.8	0.03	582	<1	5	1.00	4	N.A.
B00291337	44.4	10.1	1090	52	606	13.7	398	291
B00291338	40.8	11.2	811	72	919	7.46	296	426
B00291339	44.6	10.4	9480	66	479	7.44	231	375
B00291340	4.5	5.31	73	4	105	3.93	7	N.A.
B00291341	9.0	1.06	82	<1	13	18.4	23	N.A.
B00291342	0.2	0.02	9	<1	<5	0.12	<1	N.A.
B00291343	<0.1	<0.01	18	<1	<5	0.05	<1	N.A.
B00291344	0.2	<0.01	504	<1	<5	<0.02	<1	N.A.
B00291345	<0.1	<0.01	570	<1	26	0.02	<1	N.A.
B00291346	0.9	<0.01	>10000	<1	11	0.05	<1	N.A.
B00291347	0.2	0.02	2340	<1	<5	<0.02	<1	N.A.
B00291348	0.1	<0.01	318	<1	<5	0.03	<1	N.A.
*Std ME-1302								451
*Blk BLANK								<10
*Rep B00291335	1.0	0.12						
*Std ME-19	1.6	0.77						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291345			564	<1	27	0.02	<1	
*Std OREAS131B			N.A.	N.A.	34	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	N.A.	523	78	
*Std DS-1			6790	83	N.A.	N.A.	N.A.	
*Blk BLANK			<3	<1	<5	<0.02	<1	
*Rep B00291338								422

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Final : VC161847 Order: PO# BMC16-01_6

Report File No.: 0000017744

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00291328	N.A.
B00291329	N.A.
B00291330	N.A.
B00291331	N.A.
B00291332	N.A.
B00291333	N.A.
B00291334	N.A.
B00291335	N.A.
B00291336	N.A.
B00291337	N.A.
B00291338	N.A.
B00291339	N.A.
B00291340	N.A.
B00291341	N.A.
B00291342	N.A.
B00291343	N.A.
B00291344	N.A.
B00291345	N.A.
B00291346	1.15
B00291347	N.A.
B00291348	N.A.
*Blk BLANK	<0.01

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
*Rep B00291346	1.15
*Std MP1B	2.27

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Certificate of Analysis

Work Order : VC161848

[Report File No.: 0000017733]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 17, 2016

P.O. No.	:	PO# BMC16-01_7
Project No.	:	KZK
No. Of Samples	:	35
Date Submitted	:	Jun 01, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Se values greater than 1000ppm were done by dilution and are informational only.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291349	3.380	N.A.	6	0.3	0.22	<0.01	2.02	<0.01
B00291350	0.660	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291351	2.315	N.A.	9	0.6	0.25	<0.01	2.03	<0.01
B00291352	3.330	N.A.	12	0.6	0.23	<0.01	2.19	<0.01
B00291353	4.205	N.A.	11	0.6	0.31	<0.01	2.04	<0.01
B00291354	0.760	N.A.	12	1.2	0.34	<0.01	2.53	<0.01
B00291355	1.335	N.A.	46	11.6	0.52	0.01	3.05	0.13
B00291356	4.010	N.A.	1190	178	0.36	0.05	25.4	2.05
B00291357	3.820	N.A.	1320	144	0.25	0.58	25.9	1.90
B00291358	4.740	N.A.	859	145	0.05	0.38	32.0	2.84
B00291359	4.055	N.A.	1860	212	0.12	0.40	31.0	4.64
B00291360	0.170	N.A.	1270	69.7	0.25	0.36	3.86	1.33
B00291361	0.170	N.A.	828	21.3	0.14	1.81	13.7	0.25
B00291362	3.680	N.A.	2290	248	0.23	0.59	27.0	5.87
B00291363	1.780	N.A.	5960	289	0.51	3.01	23.7	3.96
B00291364	5.310	N.A.	2840	230	0.38	1.28	29.7	4.99
B00291365	4.295	N.A.	3290	282	0.05	0.16	33.6	8.32
B00291366	2.865	N.A.	965	272	0.20	0.01	30.8	8.24
B00291367	2.970	N.A.	1190	201	0.08	0.02	31.7	4.96
B00291368	2.400	N.A.	707	92.5	1.29	0.05	7.20	2.06
B00291369	2.960	N.A.	1010	141	0.43	0.33	22.9	2.99
B00291370	0.795	N.A.	<5	0.6	<0.01	<0.01	0.36	0.03
B00291371	2.845	N.A.	1320	223	0.08	0.01	32.8	5.08
B00291372	2.465	N.A.	1310	270	0.16	0.17	24.9	5.63
B00291373	4.070	N.A.	12	1.8	1.26	<0.01	4.61	0.03
B00291374	2.400	N.A.	<5	1.0	0.70	<0.01	6.74	0.01
B00291375	3.730	N.A.	7	0.6	0.60	<0.01	6.71	<0.01
B00291376	3.620	N.A.	10	0.9	0.58	<0.01	6.65	0.01
B00291377	4.170	N.A.	9	1.0	0.63	<0.01	6.69	<0.01
B00291378	3.820	N.A.	8	1.1	0.59	<0.01	6.80	<0.01
B00291379	3.905	N.A.	8	1.0	0.44	<0.01	6.70	<0.01
B00291380	0.145	N.A.	840	44.5	0.05	0.47	20.2	0.31
B00291381	3.995	N.A.	<5	1.2	0.39	<0.01	6.94	<0.01
B00291382	2.330	N.A.	7	0.8	0.26	<0.01	7.04	<0.01
B00291383	2.130	95.3	<5	0.9	0.21	<0.01	7.28	<0.01
*Dup B00291383	N.A.	N.A.	7	0.8	0.21	<0.01	7.17	<0.01
*Rep B00291381				1.3				
*Std OREAS621				68.6				
*Std AMIS0268				189				
*Blk BLANK				<0.3				

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Rep B00291379	9				
*Std OXN117	7720				
*Std OXB130	123				
*Blk BLANK	<5				
*Rep B00291378		0.59	<0.01	6.79	<0.01
*Std ME-19		0.16	0.47	4.06	0.95
*Std RM183-89		3.01	<0.01	36.1	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291349	1.2	<0.01	19	5	1.77	0.10	3	N.A.
B00291350	0.1	<0.01	5	<5	<0.02	<0.01	<1	N.A.
B00291351	1.0	<0.01	49	<5	0.61	0.10	3	N.A.
B00291352	1.0	<0.01	1060	6	0.60	0.02	3	N.A.
B00291353	0.7	0.01	1080	<5	0.71	0.03	3	N.A.
B00291354	0.9	0.02	598	<5	0.77	0.09	5	N.A.
B00291355	1.5	0.29	54	9	1.11	0.89	66	N.A.
B00291356	30.1	6.96	4860	171	8.49	12.5	1900	N.A.
B00291357	28.2	8.10	7530	143	16.9	12.2	1700	N.A.
B00291358	25.2	7.07	3570	142	22.9	8.60	923	N.A.
B00291359	32.9	9.96	2650	168	54.9	11.1	665	N.A.
B00291360	4.5	5.13	69	112	3.86	3.99	5	N.A.
B00291361	9.4	1.03	81	16	17.6	0.78	22	N.A.
B00291362	27.5	8.01	8770	176	62.0	8.56	381	N.A.
B00291363	23.1	6.20	3360	165	23.5	6.51	391	3.86
B00291364	34.5	6.87	6950	200	27.0	6.78	471	N.A.
B00291365	42.0	7.62	>10000	307	23.5	8.50	396	N.A.
B00291366	38.5	8.80	265	247	8.03	10.9	131	N.A.
B00291367	41.5	8.61	248	233	5.91	12.7	175	N.A.
B00291368	5.5	1.07	174	83	10.8	2.18	100	N.A.
B00291369	22.1	3.29	233	94	9.75	5.46	104	N.A.
B00291370	0.4	0.03	7	<5	0.03	0.09	<1	N.A.
B00291371	44.2	11.3	288	257	9.78	18.8	167	N.A.
B00291372	31.5	6.38	332	221	13.2	11.4	244	N.A.
B00291373	0.4	0.07	13	<5	0.11	0.16	1	N.A.
B00291374	<0.1	0.05	39	<5	0.11	0.07	<1	N.A.
B00291375	<0.1	0.02	62	<5	0.03	0.04	<1	N.A.
B00291376	0.1	0.03	171	<5	0.05	0.07	<1	N.A.
B00291377	0.2	0.01	2160	<5	0.03	0.04	<1	N.A.
B00291378	0.2	0.01	2280	<5	0.02	0.03	<1	N.A.
B00291379	0.1	0.01	1220	<5	0.05	0.03	<1	N.A.
B00291380	19.2	1.16	1320	111	23.8	8.86	120	N.A.
B00291381	0.2	0.01	678	<5	0.17	0.04	<1	N.A.
B00291382	<0.1	0.01	267	<5	0.05	0.03	<1	N.A.
B00291383	0.1	0.02	219	<5	0.14	0.03	<1	N.A.
*Dup B00291383	0.1	0.01	221	<5	0.12	0.02	<1	N.A.

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Std OXN117								7.64
*Blk BLANK								<0.50
*Rep B00291378	0.2	0.01						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291369			228	98	9.93	5.63	105	
*Rep B00291373			17	5	0.11	0.17	2	
*Std OREAS131B			N.A.	36	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	508	N.A.	82	
*Std DS-1			6780	N.A.	N.A.	77.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00291363								7.14

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	Ag	As
Method	GO_FAG313	GO_ICP13B
Det.Lim.	10	0.01
Units	g/t	%
B00291349	N.A.	N.A.
B00291350	N.A.	N.A.
B00291351	N.A.	N.A.
B00291352	N.A.	N.A.
B00291353	N.A.	N.A.
B00291354	N.A.	N.A.
B00291355	N.A.	N.A.
B00291356	N.A.	N.A.
B00291357	N.A.	N.A.
B00291358	N.A.	N.A.
B00291359	N.A.	N.A.
B00291360	N.A.	N.A.
B00291361	N.A.	N.A.
B00291362	N.A.	N.A.
B00291363	273	N.A.
B00291364	N.A.	N.A.
B00291365	275	1.20
B00291366	258	N.A.
B00291367	N.A.	N.A.
B00291368	N.A.	N.A.
B00291369	N.A.	N.A.
B00291370	N.A.	N.A.
B00291371	N.A.	N.A.
B00291372	249	N.A.
B00291373	N.A.	N.A.
B00291374	N.A.	N.A.
B00291375	N.A.	N.A.
B00291376	N.A.	N.A.
B00291377	N.A.	N.A.
B00291378	N.A.	N.A.
B00291379	N.A.	N.A.
B00291380	N.A.	N.A.
B00291381	N.A.	N.A.
B00291382	N.A.	N.A.
B00291383	N.A.	N.A.
*Dup B00291383	N.A.	N.A.

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Final : VC161848 Order: PO# BMC16-01_7

Report File No.: 0000017733

Element	Ag	As
Method	GO_FAG313	GO_ICP13B
Det.Lim.	10	0.01
Units	g/t	%
*Std ME-1302	436	
*Blk BLANK	<10	
*Rep B00291363	272	
*Blk BLANK		<0.01
*Rep B00291365		1.21
*Std MP1B		2.23

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Certificate of Analysis

Work Order : VC161881

[Report File No.: 0000017791]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 24, 2016

P.O. No.	:	PO# BMC16-01_11
Project No.	:	KZK
No. Of Samples	:	75
Date Submitted	:	Jun 08, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161881 Order: PO# BMC16-01_11

Report File No.: 0000017791

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291411	2.790	N.A.	<5	<0.3	0.09	<0.01	2.35	<0.01
B00291412	3.460	N.A.	11	<0.3	0.08	<0.01	5.45	<0.01
B00291413	1.745	N.A.	56	1.3	0.04	<0.01	15.4	0.02
B00291414	3.740	N.A.	<5	<0.3	0.07	<0.01	4.62	<0.01
B00291415	3.660	N.A.	5	1.1	0.05	<0.01	6.43	0.01
B00291416	2.590	N.A.	<5	<0.3	0.07	<0.01	2.73	<0.01
B00291417	4.965	N.A.	<5	<0.3	0.07	<0.01	2.93	<0.01
B00291418	2.690	N.A.	50	1.1	0.05	<0.01	14.7	<0.01
B00291419	2.155	N.A.	80	1.0	0.05	<0.01	14.9	0.01
B00291420	0.180	N.A.	863	45.8	0.05	0.46	20.3	0.31
B00291421	3.505	N.A.	45	0.9	0.07	<0.01	8.92	<0.01
B00291422	2.580	N.A.	14	0.7	0.07	<0.01	6.25	0.01
B00291423	3.145	N.A.	<5	0.7	0.07	<0.01	2.44	<0.01
B00291424	2.810	N.A.	30	0.3	0.07	<0.01	4.99	<0.01
B00291425	2.010	N.A.	33	0.6	0.04	<0.01	3.67	<0.01
B00291426	2.740	N.A.	7	0.6	0.26	<0.01	1.57	<0.01
B00291427	1.600	N.A.	7	0.7	0.28	<0.01	1.75	<0.01
B00291428	2.740	N.A.	10	1.2	0.21	<0.01	1.79	<0.01
B00291429	3.570	N.A.	11	2.0	0.34	<0.01	2.41	<0.01
B00291430	0.740	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
B00291431	1.175	N.A.	10	1.9	0.36	<0.01	2.49	<0.01
B00291432	2.730	N.A.	14	2.9	0.39	<0.01	2.86	0.03
B00291433	2.805	N.A.	51	21.9	0.14	0.03	6.28	0.25
B00291434	2.205	N.A.	<5	0.4	0.24	<0.01	6.31	<0.01
B00291435	2.620	N.A.	91	16.9	0.11	0.05	8.19	0.19
B00291436	2.830	N.A.	64	17.4	0.30	0.09	7.08	0.18
B00291437	2.575	N.A.	10	1.7	0.22	0.02	6.87	0.02
B00291438	4.205	N.A.	324	58.7	0.15	0.04	25.0	0.65
B00291439	5.260	N.A.	178	23.8	0.46	0.08	12.6	0.30
B00291440	0.155	N.A.	828	44.4	0.05	0.47	20.1	0.31
B00291441	4.220	N.A.	30	1.9	0.26	0.01	7.14	0.02
B00291442	4.175	N.A.	7	0.5	0.35	0.02	6.63	<0.01
B00291443	2.945	N.A.	76	8.7	0.50	0.03	4.31	0.12
B00291444	3.880	N.A.	5	<0.3	0.29	<0.01	5.42	<0.01
B00291445	3.790	N.A.	6	<0.3	0.23	<0.01	7.50	<0.01
*Dup B00291445	N.A.	N.A.	8	0.3	0.23	<0.01	7.36	<0.01
B00291446	2.825	N.A.	<5	<0.3	0.24	<0.01	8.28	<0.01
B00291447	3.485	N.A.	7	<0.3	0.14	<0.01	7.22	<0.01
B00291448	4.775	N.A.	<5	<0.3	0.15	<0.01	7.29	<0.01
B00291449	3.785	N.A.	7	<0.3	0.02	<0.01	7.11	<0.01

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Final : VC161881 Order: PO# BMC16-01_11

Report File No.: 0000017791

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291450	0.675	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291451	4.075	N.A.	<5	<0.3	0.03	0.01	8.74	<0.01
B00291452	4.090	N.A.	<5	<0.3	0.03	<0.01	9.67	<0.01
B00291453	4.235	N.A.	<5	<0.3	0.06	0.01	10.1	<0.01
B00291454	4.115	N.A.	<5	<0.3	0.08	<0.01	9.82	<0.01
B00291455	3.570	N.A.	<5	<0.3	0.17	<0.01	8.04	<0.01
B00291456	3.370	N.A.	10	0.7	0.10	<0.01	8.36	<0.01
B00291457	3.550	N.A.	6	0.9	0.11	<0.01	8.35	<0.01
B00291458	3.125	N.A.	51	6.2	0.44	<0.01	4.35	0.08
B00291459	2.165	N.A.	110	10.4	0.36	0.01	2.87	0.05
B00291460	0.180	N.A.	890	45.4	0.05	0.47	20.2	0.31
B00291461	3.065	95.2	667	82.6	0.59	0.04	10.2	0.61
B00291462	4.720	N.A.	2550	>300	<0.01	0.13	37.9	2.14
B00291463	3.685	N.A.	2480	235	0.13	0.25	32.5	1.84
B00291464	3.565	N.A.	787	99.9	0.61	0.52	13.2	0.53
B00291465	2.630	N.A.	39	5.4	0.59	0.02	2.82	0.02
B00291466	2.680	N.A.	34	2.4	0.79	<0.01	5.51	0.02
B00291467	2.675	N.A.	956	96.6	0.11	0.47	28.0	0.79
B00291468	3.760	N.A.	747	104	0.63	0.17	20.7	1.18
B00291469	2.540	N.A.	747	160	0.45	0.24	20.5	2.13
B00291470	0.825	N.A.	<5	<0.3	<0.01	<0.01	0.13	<0.01
B00291471	2.350	N.A.	18	3.3	0.58	<0.01	8.97	0.03
B00291472	2.745	N.A.	10	1.6	0.38	<0.01	5.89	0.01
B00291473	3.680	N.A.	647	104	0.67	0.12	22.5	1.20
B00291474	2.430	N.A.	1640	196	0.60	0.11	21.5	1.45
B00291475	4.220	N.A.	13	3.1	0.39	<0.01	7.00	0.04
B00291476	3.755	N.A.	9	0.7	0.13	<0.01	7.56	<0.01
B00291477	4.535	N.A.	<5	0.8	0.15	<0.01	8.73	<0.01
B00291478	2.790	N.A.	<5	0.5	0.07	<0.01	9.14	<0.01
B00291479	4.155	N.A.	6	0.6	0.22	<0.01	7.55	<0.01
B00291480	0.155	N.A.	881	44.7	0.05	0.47	20.3	0.31
B00291481	3.955	N.A.	11	0.6	0.29	<0.01	7.17	<0.01
*Dup B00291481	N.A.	N.A.	8	0.6	0.28	<0.01	7.21	<0.01
B00291482	3.170	N.A.	7	0.5	0.23	<0.01	7.05	<0.01
B00291483	4.995	N.A.	6	0.8	0.08	<0.01	7.96	<0.01
B00291484	3.980	N.A.	9	1.1	0.13	<0.01	7.43	<0.01
B00291485	3.860	93.4	<5	0.6	0.32	<0.01	7.38	<0.01
*Rep B00291435				17.1				
*Rep B00291472				1.7				
*Rep B00291484				1.0				

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Final : VC161881 Order: PO# BMC16-01_11

Report File No.: 0000017791

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std OREAS621		68.6				
*Std SU_1B		6.3				
*Std OREAS621		69.1				
*Std AMIS0268		194				
*Blk BLANK		<0.3				
*Blk BLANK		<0.3				
*Rep B00291455	9					
*Std OXN117	7770					
*Std OXB130	109					
*Std OREAS214	3000					
*Std OXH97	1330					
*Blk BLANK	<5					
*Rep B00291420			0.05	0.47	20.2	0.31
*Rep B00291452			0.03	<0.01	9.91	<0.01
*Rep B00291455			0.17	<0.01	8.05	<0.01
*Rep B00291479			0.22	<0.01	7.59	<0.01
*Std OREAS134A			0.14	0.13	12.1	13.0
*Std ME-19			0.16	0.46	3.88	0.95
*Std RM183-89			3.07	<0.01	35.7	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291411	0.7	0.02	3	<5	0.17	0.05	<1	N.A.
B00291412	3.3	<0.01	38	24	0.17	0.04	<1	N.A.
B00291413	15.5	<0.01	296	38	0.75	0.05	3	N.A.
B00291414	2.5	0.01	440	27	0.03	0.05	1	N.A.
B00291415	4.1	0.14	353	22	0.58	0.52	3	N.A.
B00291416	1.3	0.01	10	6	<0.02	0.05	<1	N.A.
B00291417	1.4	<0.01	11	<5	<0.02	0.04	<1	N.A.
B00291418	13.9	<0.01	299	54	0.46	0.04	3	N.A.
B00291419	15.3	<0.01	403	46	0.44	0.05	3	N.A.
B00291420	18.4	1.11	1360	103	22.1	9.18	105	N.A.
B00291421	8.5	0.02	254	36	0.35	0.11	3	N.A.
B00291422	4.8	0.05	95	11	0.34	0.23	2	N.A.
B00291423	1.6	0.01	19	<5	0.82	0.04	1	N.A.
B00291424	4.6	0.02	61	10	0.75	0.07	5	N.A.
B00291425	3.1	0.14	79	42	1.71	0.42	15	N.A.
B00291426	0.8	0.03	9	<5	1.38	0.09	2	N.A.
B00291427	0.9	<0.01	11	<5	0.61	0.03	2	N.A.
B00291428	0.8	0.01	16	<5	0.91	0.05	2	N.A.
B00291429	1.6	0.01	16	<5	0.70	0.04	3	N.A.
B00291430	0.1	<0.01	3	<5	<0.02	0.02	<1	N.A.
B00291431	1.4	0.01	19	<5	0.55	0.08	3	N.A.
B00291432	1.2	0.05	16	<5	1.61	0.20	4	N.A.
B00291433	0.5	0.62	25	16	9.29	2.08	23	N.A.
B00291434	0.4	0.03	42	20	0.14	0.15	1	N.A.
B00291435	0.6	0.35	28	14	9.10	1.63	19	N.A.
B00291436	1.5	0.28	22	31	8.37	1.31	24	N.A.
B00291437	0.5	0.06	12	15	0.11	0.17	7	N.A.
B00291438	28.5	3.72	250	35	30.5	16.9	363	N.A.
B00291439	10.8	1.53	135	39	3.47	6.62	64	N.A.
B00291440	18.3	1.11	1380	109	22.3	8.96	108	N.A.
B00291441	1.1	0.13	35	9	0.16	0.59	5	N.A.
B00291442	1.3	0.03	25	<5	0.05	0.16	5	N.A.
B00291443	1.5	0.02	95	16	0.81	0.28	12	N.A.
B00291444	0.5	0.02	41	<5	<0.02	0.06	<1	N.A.
B00291445	<0.1	0.03	30	<5	<0.02	0.05	<1	N.A.
*Dup B00291445	0.1	0.03	26	<5	<0.02	0.05	<1	N.A.
B00291446	0.1	0.04	20	<5	<0.02	0.07	<1	N.A.
B00291447	<0.1	0.02	36	<5	<0.02	0.05	<1	N.A.
B00291448	0.3	0.01	39	<5	<0.02	0.08	<1	N.A.
B00291449	<0.1	0.01	57	<5	<0.02	0.02	<1	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291450	0.1	<0.01	4	<5	<0.02	0.02	<1	N.A.
B00291451	0.4	0.01	35	<5	<0.02	0.01	<1	N.A.
B00291452	0.2	0.01	33	<5	<0.02	<0.01	<1	N.A.
B00291453	0.5	0.01	21	<5	<0.02	<0.01	<1	N.A.
B00291454	0.4	0.01	24	<5	<0.02	0.01	<1	N.A.
B00291455	0.2	0.01	34	<5	<0.02	0.01	<1	N.A.
B00291456	<0.1	0.01	50	<5	0.06	0.01	<1	N.A.
B00291457	<0.1	0.02	58	<5	0.12	0.02	<1	N.A.
B00291458	1.2	<0.01	146	6	0.28	0.03	5	N.A.
B00291459	2.1	<0.01	61	10	0.80	0.23	8	N.A.
B00291460	18.4	1.16	1410	116	21.6	9.24	111	N.A.
B00291461	10.6	1.83	216	81	9.57	5.60	85	N.A.
B00291462	48.2	9.23	2410	592	60.7	34.1	325	377
B00291463	38.6	5.85	5040	209	47.8	21.6	258	N.A.
B00291464	9.8	1.85	2030	55	18.9	6.21	112	N.A.
B00291465	1.8	0.04	35	<5	1.21	0.29	8	N.A.
B00291466	3.8	0.02	218	<5	1.57	0.22	16	N.A.
B00291467	24.1	2.41	725	43	45.4	6.69	334	N.A.
B00291468	19.7	3.58	4300	71	36.6	11.1	375	N.A.
B00291469	20.7	5.93	2410	118	31.2	16.4	364	N.A.
B00291470	0.2	<0.01	9	<5	0.09	0.12	<1	N.A.
B00291471	0.5	0.14	59	13	0.95	0.37	6	N.A.
B00291472	0.2	0.08	48	<5	0.51	0.17	2	N.A.
B00291473	21.7	4.81	223	67	20.7	12.6	196	N.A.
B00291474	25.7	3.98	385	405	19.8	12.0	105	N.A.
B00291475	0.7	0.10	29	<5	0.17	0.20	<1	N.A.
B00291476	0.1	0.02	40	<5	0.08	0.07	<1	N.A.
B00291477	0.2	0.02	48	<5	0.05	0.04	<1	N.A.
B00291478	0.2	0.01	47	<5	<0.02	0.02	<1	N.A.
B00291479	0.1	0.01	61	<5	0.03	<0.01	<1	N.A.
B00291480	18.0	1.12	1390	107	22.0	9.30	109	N.A.
B00291481	<0.1	0.01	72	<5	0.02	0.04	<1	N.A.
*Dup B00291481	<0.1	0.01	69	<5	<0.02	0.01	<1	N.A.
B00291482	<0.1	0.01	80	<5	<0.02	<0.01	<1	N.A.
B00291483	0.2	0.02	533	<5	0.04	<0.01	<1	N.A.
B00291484	0.1	0.02	113	<5	0.11	<0.01	<1	N.A.
B00291485	1.2	0.01	52	10	<0.02	<0.01	<1	N.A.

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Final : VC161881 Order: PO# BMC16-01_11

Report File No.: 0000017791

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00291421			243	35	0.33	0.08	2	
*Rep B00291447			40	<5	<0.02	0.04	<1	
*Rep B00291476			39	<5	0.08	0.07	<1	
*Rep B00291481			71	<5	<0.02	<0.01	<1	
*Std DS-1			7090	N.A.	N.A.	81.9	N.A.	
*Std OREAS210			3710	N.A.	N.A.	N.A.	N.A.	
*Std OREAS131B			N.A.	37	N.A.	N.A.	N.A.	
*Std OREAS624			112	N.A.	20.4	1.99	30	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								441
*Blk BLANK								<10
*Rep B00291420	18.4	1.16						
*Rep B00291452	0.3	0.02						
*Rep B00291455	0.1	<0.01						
*Rep B00291479	0.1	0.01						
*Std OREAS134A	19.3	17.2						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291462								370

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Certificate of Analysis

Work Order : VC161903

[Report File No.: 0000017759]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 21, 2016

P.O. No.	:	PO# BMC16-01_10
Project No.	:	KZK
No. Of Samples	:	67
Date Submitted	:	Jun 08, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Se values greater than 1000ppm were done by dilution and are informational only.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004001	3.215	N.A.	7	0.4	0.18	<0.01	1.47	<0.01
D00004002	2.700	N.A.	7	<0.3	0.18	<0.01	1.88	<0.01
D00004003	1.525	N.A.	13	1.2	0.18	<0.01	2.05	<0.01
D00004004	1.775	N.A.	8	0.5	0.22	<0.01	2.30	<0.01
D00004005	1.980	N.A.	72	2.2	0.26	<0.01	2.27	0.03
D00004006	1.960	N.A.	119	3.8	0.32	0.02	2.47	0.07
D00004007	3.145	N.A.	2560	272	0.03	0.77	32.8	3.30
D00004008	1.485	N.A.	5240	>300	0.08	0.28	32.1	5.71
D00004009	1.395	N.A.	3310	289	0.10	0.20	29.6	4.12
D00004010	0.170	N.A.	1300	68.1	0.25	0.36	3.87	1.35
D00004011	0.170	N.A.	822	19.6	0.14	1.71	13.6	0.25
D00004012	3.395	N.A.	708	128	0.02	0.13	32.6	1.78
D00004013	1.460	N.A.	94	16.7	0.24	0.09	3.69	0.20
D00004014	3.575	N.A.	1920	265	0.02	0.18	32.4	4.00
D00004015	2.530	N.A.	1340	205	0.03	0.19	34.5	4.18
D00004016	1.980	N.A.	18	1.8	0.33	<0.01	1.48	0.02
D00004017	2.595	N.A.	20	2.8	0.34	<0.01	1.28	0.03
D00004018	1.820	N.A.	<5	0.5	0.31	<0.01	3.07	<0.01
D00004019	2.790	N.A.	<5	0.4	0.13	<0.01	7.65	<0.01
D00004020	1.715	N.A.	<5	<0.3	<0.01	<0.01	0.13	<0.01
D00004021	2.950	N.A.	<5	<0.3	0.07	<0.01	7.96	<0.01
D00004022	3.200	N.A.	<5	<0.3	0.14	<0.01	8.15	<0.01
D00004023	1.595	N.A.	<5	<0.3	0.19	<0.01	9.32	<0.01
D00004024	3.020	N.A.	7	0.7	0.20	<0.01	2.36	<0.01
D00004025	2.580	N.A.	<5	0.5	0.21	<0.01	7.55	<0.01
D00004026	3.165	N.A.	15	<0.3	0.15	<0.01	7.43	<0.01
D00004027	3.175	N.A.	<5	<0.3	0.07	<0.01	8.18	<0.01
D00004028	2.895	N.A.	<5	<0.3	0.03	<0.01	7.81	<0.01
D00004029	2.885	N.A.	11	2.3	0.31	<0.01	7.77	0.03
D00004030	0.155	N.A.	861	44.0	0.05	0.47	20.3	0.31
D00004031	2.645	N.A.	103	8.6	0.85	0.08	7.02	0.14
D00004032	3.075	N.A.	1860	131	0.05	1.57	33.4	3.60
D00004033	3.395	N.A.	1820	146	1.18	0.38	33.6	4.85
D00004034	1.605	N.A.	1140	115	0.04	0.42	36.9	5.01
D00004035	2.900	N.A.	851	136	0.03	0.44	38.7	5.10
*Dup D00004035	N.A.	N.A.	833	141	0.02	0.43	38.9	5.19
D00004036	2.575	N.A.	1310	120	0.12	0.30	36.4	5.54
D00004037	2.045	N.A.	1360	52.0	2.98	0.28	3.96	0.15
D00004038	2.885	N.A.	1730	158	>4.00	0.36	24.0	3.82
D00004039	2.890	N.A.	2790	196	>4.00	0.26	23.6	4.37

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Final : VC161903 Order: PO# BMC16-01_10

Report File No.: 0000017759

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004040	1.625	N.A.	<5	<0.3	0.04	<0.01	0.07	<0.01
D00004041	2.770	N.A.	2070	173	2.24	0.48	31.0	3.77
D00004042	2.500	N.A.	1860	163	0.14	0.55	31.6	4.46
D00004043	2.530	N.A.	1480	181	0.01	0.30	31.0	4.56
D00004044	2.810	N.A.	2180	208	0.04	0.17	30.1	3.61
D00004045	1.705	N.A.	7340	>300	0.04	0.98	22.6	4.40
D00004046	1.815	N.A.	33	2.9	0.32	<0.01	2.57	0.04
D00004047	2.275	N.A.	16	1.8	0.20	<0.01	2.23	0.02
D00004048	2.150	N.A.	7	0.8	0.19	<0.01	2.10	<0.01
D00004049	0.895	N.A.	<5	0.5	0.16	<0.01	1.61	<0.01
D00004050	0.155	N.A.	847	43.8	0.05	0.47	20.1	0.30
D00004051	1.740	98.6	19	6.5	0.16	<0.01	2.41	0.03
D00004052	2.540	N.A.	64	10.9	0.13	<0.01	2.53	0.13
D00004053	1.850	N.A.	44	3.0	0.12	<0.01	2.59	0.02
D00004054	2.405	N.A.	<5	0.8	0.22	<0.01	6.93	<0.01
D00004055	3.085	N.A.	5	0.4	0.18	<0.01	6.70	<0.01
D00004056	2.420	N.A.	<5	1.4	0.06	<0.01	6.87	0.03
D00004057	2.935	N.A.	122	65.4	0.03	0.75	23.6	0.68
D00004058	1.920	N.A.	<5	0.4	0.20	<0.01	3.11	<0.01
D00004059	1.360	N.A.	<5	0.5	0.12	<0.01	2.70	<0.01
D00004060	1.625	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004061	2.755	N.A.	<5	2.1	0.07	<0.01	5.35	0.02
B00292039	5.460	N.A.	<5	<0.3	0.10	<0.01	3.00	<0.01
B00292040	1.790	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292041	4.895	N.A.	7	<0.3	0.11	<0.01	4.01	<0.01
B00292042	4.080	N.A.	7	0.4	0.09	<0.01	3.27	<0.01
B00292043	4.650	N.A.	29	2.1	0.08	<0.01	8.45	0.04
B00292044	3.025	N.A.	10	0.5	0.09	<0.01	5.23	<0.01
*Rep D00004013				16.6				
*Rep D00004056				1.4				
*Std SU_1B				6.2				
*Std OREAS621				67.0				
*Std AMIS0268				191				
*Std AMIS0268				188				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Rep D00004057			124					
*Std OXN117			7330					
*Std OXB130			121					
*Std OREAS214			2890					

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Report File No.: 0000017759

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Std OXH97	1270				
*Blk BLANK	<5				
*Rep D00004007		0.03	0.79	32.9	3.38
*Rep D00004032		0.05	1.57	33.3	3.63
*Rep D00004052		0.13	<0.01	2.55	0.14
*Std OREAS134A		0.14	0.13	12.1	12.9
*Std ME-19		0.16	0.47	4.06	0.97
*Std RM183-89		3.06	<0.01	35.6	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Blk BLANK		<0.01	<0.01	<0.05	<0.01

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Final : VC161903 Order: PO# BMC16-01_10

Report File No.: 0000017759

Element	S	@Zn	As	Hg	Sb	@Bi	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	1	5	0.02	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004001	0.6	<0.01	59	<1	7	2.08	<1	N.A.
D00004002	0.8	<0.01	41	<1	<5	0.53	1	N.A.
D00004003	0.9	0.04	26	<1	12	0.54	3	N.A.
D00004004	0.8	0.01	103	<1	<5	0.63	3	N.A.
D00004005	0.8	0.05	243	<1	<5	0.66	3	N.A.
D00004006	1.0	0.14	625	<1	<5	0.52	2	N.A.
D00004007	37.7	7.79	>10000	32	459	24.3	1780	N.A.
D00004008	38.7	8.03	>10000	34	1240	7.31	248	5.13
D00004009	36.2	7.59	>10000	35	824	7.75	206	N.A.
D00004010	4.5	5.13	73	4	112	3.95	7	N.A.
D00004011	9.4	1.05	82	<1	18	17.5	17	N.A.
D00004012	39.8	8.43	778	40	175	38.6	313	N.A.
D00004013	1.9	0.39	1080	2	22	3.24	19	N.A.
D00004014	39.8	9.84	4270	46	349	11.2	498	N.A.
D00004015	43.3	10.3	2560	46	263	14.7	218	N.A.
D00004016	0.3	0.02	35	<1	<5	0.26	2	N.A.
D00004017	0.2	0.05	646	<1	<5	0.17	3	N.A.
D00004018	0.2	0.01	725	<1	5	0.05	<1	N.A.
D00004019	0.1	0.02	295	<1	<5	<0.02	<1	N.A.
D00004020	0.1	<0.01	7	<1	<5	<0.02	<1	N.A.
D00004021	0.1	0.01	148	<1	<5	<0.02	<1	N.A.
D00004022	0.1	0.02	90	<1	<5	0.03	<1	N.A.
D00004023	0.2	0.05	50	<1	5	0.04	<1	N.A.
D00004024	1.0	0.01	230	<1	<5	0.63	2	N.A.
D00004025	0.1	0.04	69	<1	<5	0.40	2	N.A.
D00004026	0.1	0.01	81	<1	<5	0.03	<1	N.A.
D00004027	0.4	0.01	69	<1	<5	0.02	<1	N.A.
D00004028	0.1	0.02	66	<1	<5	0.04	<1	N.A.
D00004029	0.2	0.01	354	<1	<5	0.14	<1	N.A.
D00004030	18.3	1.15	1380	7	110	23.8	103	N.A.
D00004031	0.8	0.16	891	<1	8	3.79	7	N.A.
D00004032	36.6	9.79	3370	4	104	126	316	N.A.
D00004033	41.2	9.66	>10000	1	581	72.2	249	N.A.
D00004034	37.7	10.1	9310	3	270	94.6	299	N.A.
D00004035	36.2	10.7	2440	<1	209	148	339	N.A.
*Dup D00004035	36.0	10.8	2350	2	203	150	349	N.A.
D00004036	31.5	10.1	>10000	3	251	53.1	180	N.A.
D00004037	1.6	0.27	445	<1	1210	1.39	5	N.A.
D00004038	32.0	5.66	5950	5	728	6.34	63	N.A.
D00004039	32.9	5.44	>10000	15	1010	0.84	48	N.A.

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Element	S	@Zn	As	Hg	Sb	@Bi	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	1	5	0.02	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004040	0.1	0.01	29	<1	<5	<0.02	<1	N.A.
D00004041	37.6	6.56	3190	14	450	50.8	211	N.A.
D00004042	37.7	7.04	4060	15	315	32.8	227	N.A.
D00004043	36.6	6.30	3990	12	499	0.39	120	N.A.
D00004044	34.9	5.08	>10000	16	606	1.39	76	N.A.
D00004045	28.3	6.28	8260	37	4870	2.72	39	7.66
D00004046	0.4	0.06	362	<1	12	0.52	1	N.A.
D00004047	0.5	0.03	249	<1	8	0.35	<1	N.A.
D00004048	0.9	<0.01	221	<1	6	0.53	<1	N.A.
D00004049	0.1	<0.01	20	<1	<5	0.14	<1	N.A.
D00004050	18.2	1.14	1440	7	119	24.8	106	N.A.
D00004051	1.5	0.08	25	<1	9	0.59	<1	N.A.
D00004052	2.1	0.17	29	<1	13	0.31	<1	N.A.
D00004053	1.9	0.10	26	<1	5	0.15	<1	N.A.
D00004054	0.2	0.03	49	<1	<5	0.12	<1	N.A.
D00004055	0.1	0.02	42	<1	<5	0.07	<1	N.A.
D00004056	0.1	0.04	34	<1	<5	0.44	<1	N.A.
D00004057	19.1	11.5	53	9	17	115	213	N.A.
D00004058	1.3	0.01	6	<1	<5	0.59	2	N.A.
D00004059	1.2	0.04	115	<1	6	0.62	2	N.A.
D00004060	0.1	<0.01	6	<1	<5	<0.02	<1	N.A.
D00004061	2.5	0.04	3	<1	6	4.27	3	N.A.
B00292039	0.7	0.01	<3	<1	<5	0.13	<1	N.A.
B00292040	0.1	<0.01	5	<1	<5	<0.02	<1	N.A.
B00292041	2.1	<0.01	37	<1	7	0.41	1	N.A.
B00292042	2.2	0.02	30	<1	7	0.72	2	N.A.
B00292043	7.9	0.07	204	<1	27	0.56	6	N.A.
B00292044	4.1	0.03	68	<1	16	0.44	3	N.A.

Element	S	@Zn	As	Hg	Sb	@Bi	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	1	5	0.02	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00004011			79	<1	19	17.0	17	
*Rep D00004031			902	<1	9	3.85	7	
*Rep B00292044			64	<1	15	0.44	3	
*Std OREAS131B			N.A.	N.A.	39	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	N.A.	508	84	
*Std DS-1			6810	85	N.A.	N.A.	N.A.	
*Std OREAS210			3760	N.A.	N.A.	N.A.	N.A.	
*Blk BLANK			<3	<1	<5	<0.02	<1	

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	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	As GE_ICM14B 3 ppm	Hg GE_ICM14B 1 ppm	Sb GE_ICM14B 5 ppm	@Bi GE_ICM14B 0.02 ppm	@Se GE_ICM14B 1 ppm	@Au GO_FAG303 0.5 g/t
*Std OXN117								7.83
*Blk BLANK								<0.50
*Rep D00004007	38.6	7.89						
*Rep D00004032	36.0	9.62						
*Rep D00004052	2.2	0.17						
*Std OREAS134A	19.3	17.5						
*Std ME-19	1.6	0.76						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004008								4.98

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Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
D00004001	N.A.	N.A.	N.A.
D00004002	N.A.	N.A.	N.A.
D00004003	N.A.	N.A.	N.A.
D00004004	N.A.	N.A.	N.A.
D00004005	N.A.	N.A.	N.A.
D00004006	N.A.	N.A.	N.A.
D00004007	271	2.19	N.A.
D00004008	475	2.02	N.A.
D00004009	305	1.70	N.A.
D00004010	N.A.	N.A.	N.A.
D00004011	N.A.	N.A.	N.A.
D00004012	N.A.	N.A.	N.A.
D00004013	N.A.	N.A.	N.A.
D00004014	279	N.A.	N.A.
D00004015	N.A.	N.A.	N.A.
D00004016	N.A.	N.A.	N.A.
D00004017	N.A.	N.A.	N.A.
D00004018	N.A.	N.A.	N.A.
D00004019	N.A.	N.A.	N.A.
D00004020	N.A.	N.A.	N.A.
D00004021	N.A.	N.A.	N.A.
D00004022	N.A.	N.A.	N.A.
D00004023	N.A.	N.A.	N.A.
D00004024	N.A.	N.A.	N.A.
D00004025	N.A.	N.A.	N.A.
D00004026	N.A.	N.A.	N.A.
D00004027	N.A.	N.A.	N.A.
D00004028	N.A.	N.A.	N.A.
D00004029	N.A.	N.A.	N.A.
D00004030	N.A.	N.A.	N.A.
D00004031	N.A.	N.A.	N.A.
D00004032	N.A.	N.A.	N.A.
D00004033	N.A.	1.27	N.A.
D00004034	N.A.	N.A.	N.A.
D00004035	N.A.	N.A.	N.A.
*Dup D00004035	N.A.	N.A.	N.A.
D00004036	N.A.	1.15	N.A.
D00004037	N.A.	N.A.	N.A.
D00004038	N.A.	N.A.	16.8
D00004039	N.A.	1.61	17.7

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Final : VC161903 Order: PO# BMC16-01_10

Report File No.: 0000017759

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
D00004040	N.A.	N.A.	N.A.
D00004041	N.A.	N.A.	N.A.
D00004042	N.A.	N.A.	N.A.
D00004043	N.A.	N.A.	N.A.
D00004044	N.A.	1.13	N.A.
D00004045	512	N.A.	N.A.
D00004046	N.A.	N.A.	N.A.
D00004047	N.A.	N.A.	N.A.
D00004048	N.A.	N.A.	N.A.
D00004049	N.A.	N.A.	N.A.
D00004050	N.A.	N.A.	N.A.
D00004051	N.A.	N.A.	N.A.
D00004052	N.A.	N.A.	N.A.
D00004053	N.A.	N.A.	N.A.
D00004054	N.A.	N.A.	N.A.
D00004055	N.A.	N.A.	N.A.
D00004056	N.A.	N.A.	N.A.
D00004057	N.A.	N.A.	N.A.
D00004058	N.A.	N.A.	N.A.
D00004059	N.A.	N.A.	N.A.
D00004060	N.A.	N.A.	N.A.
D00004061	N.A.	N.A.	N.A.
B00292039	N.A.	N.A.	N.A.
B00292040	N.A.	N.A.	N.A.
B00292041	N.A.	N.A.	N.A.
B00292042	N.A.	N.A.	N.A.
B00292043	N.A.	N.A.	N.A.
B00292044	N.A.	N.A.	N.A.

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
*Std AMIS0267	948		
*Blk BLANK	<10		
*Blk BLANK			<0.2
*Rep D00004039			17.7
*Std CRM3594-86			10.3
*Blk BLANK		<0.01	
*Rep D00004009		1.79	
*Std MP1B		2.18	

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Final : VC161903 Order: PO# BMC16-01_10

Report File No.: 0000017759

	Ag GO_FAG313 10 g/t	As GO_ICP13B 0.01 %	Ba GO_XRF77B 0.2 %
*Rep D00004045	528		

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Certificate of Analysis

Work Order : VC161904

[Report File No.: 0000017788]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 23, 2016

P.O. No.	:	PO# BMC16-01_12
Project No.	:	KZK
No. Of Samples	:	37
Date Submitted	:	Jun 08, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161904 Order: PO# BMC16-01_12

Report File No.: 0000017788

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292201	2.785	N.A.	6	0.6	0.25	<0.01	2.40	<0.01
B00292202	3.005	N.A.	<5	0.9	0.33	<0.01	2.08	<0.01
B00292203	3.025	N.A.	6	0.5	0.50	<0.01	1.94	<0.01
B00292204	2.500	N.A.	<5	0.4	0.80	<0.01	2.15	<0.01
B00292205	1.575	N.A.	<5	<0.3	1.64	<0.01	4.16	<0.01
B00292206	1.590	N.A.	28	2.6	1.24	0.04	5.11	<0.01
B00292207	1.610	N.A.	12	0.8	0.36	0.01	6.94	<0.01
B00292208	1.995	N.A.	15	1.1	0.32	<0.01	2.15	<0.01
B00292209	2.385	N.A.	12	1.0	0.19	<0.01	2.13	<0.01
B00292210	0.155	N.A.	848	44.0	0.05	0.47	20.1	0.31
B00292211	3.325	N.A.	8	0.6	0.11	<0.01	2.38	<0.01
B00292212	3.105	N.A.	<5	0.6	0.04	<0.01	7.60	<0.01
B00292213	3.015	N.A.	<5	<0.3	0.03	<0.01	7.06	<0.01
B00292214	3.000	N.A.	<5	0.7	0.03	<0.01	6.80	<0.01
B00292215	2.890	N.A.	7	<0.3	0.15	<0.01	6.60	<0.01
B00292216	1.695	N.A.	6	<0.3	0.34	<0.01	6.43	<0.01
B00292217	2.935	N.A.	7	<0.3	0.31	<0.01	6.49	<0.01
B00292218	3.105	N.A.	<5	<0.3	0.21	<0.01	7.93	<0.01
B00292219	1.535	N.A.	1060	13.9	0.46	0.94	13.0	0.02
B00292220	3.530	N.A.	5	<0.3	<0.01	<0.01	0.09	<0.01
B00292221	3.310	N.A.	1970	197	<0.01	0.90	31.2	7.26
B00292222	3.435	N.A.	1640	154	0.08	0.06	31.5	6.00
B00292223	1.485	N.A.	2500	110	0.03	0.28	28.6	3.73
B00292224	2.990	N.A.	1910	138	0.03	0.20	30.5	4.61
B00292225	2.925	N.A.	2700	164	0.02	0.22	29.8	5.01
B00292226	2.845	N.A.	2930	164	<0.01	0.13	29.6	4.20
B00292227	2.730	N.A.	4890	208	0.04	0.32	24.7	3.79
B00292228	3.185	N.A.	31	4.6	0.73	<0.01	2.90	0.09
B00292229	2.535	N.A.	14	1.6	0.52	<0.01	2.28	0.03
B00292230	0.155	N.A.	863	44.7	0.05	0.47	20.0	0.31
B00292231	1.940	N.A.	6	0.3	0.48	<0.01	2.37	<0.01
B00292232	2.415	N.A.	6	0.6	0.68	<0.01	2.73	<0.01
B00292233	3.070	N.A.	<5	0.9	0.32	<0.01	1.63	<0.01
B00292234	1.055	N.A.	5	1.2	0.22	<0.01	2.56	<0.01
B00292235	2.205	N.A.	<5	0.5	0.16	<0.01	1.49	<0.01
*Dup B00292235	N.A.	N.A.	<5	0.5	0.16	<0.01	1.38	<0.01
B00292236	2.180	N.A.	<5	0.6	0.11	<0.01	1.68	<0.01
B00292237	1.835	99.0	9	1.2	0.12	<0.01	1.55	<0.01
*Rep B00292237				1.0				
*Std OREAS621				67.9				

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Final : VC161904 Order: PO# BMC16-01_12

Report File No.: 0000017788

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std AMIS0268		191				
*Blk BLANK		<0.3				
*Rep B00292229	12					
*Std OXN117	7850					
*Std OXB130	119					
*Blk BLANK	<5					
*Rep B00292225			0.02	0.22	30.2	5.05
*Std ME-19			0.16	0.47	4.03	0.94
*Std RM183-89			3.12	<0.01	35.6	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Final : VC161904 Order: PO# BMC16-01_12

Report File No.: 0000017788

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
B00292201	1.6	<0.01	16	5	0.56	0.06	<1	N.A.
B00292202	1.1	<0.01	12	<5	0.56	<0.01	<1	N.A.
B00292203	1.0	<0.01	13	<5	0.40	<0.01	<1	N.A.
B00292204	0.3	<0.01	8	<5	0.29	<0.01	<1	N.A.
B00292205	0.6	0.02	8	<5	0.02	<0.01	<1	N.A.
B00292206	2.1	0.07	23	<5	1.31	0.09	4	N.A.
B00292207	0.3	0.08	66	<5	0.47	0.12	<1	N.A.
B00292208	0.7	0.02	45	<5	0.32	0.02	<1	N.A.
B00292209	0.9	0.03	255	<5	0.36	0.03	<1	N.A.
B00292210	18.7	1.15	1380	107	22.3	9.66	106	N.A.
B00292211	1.3	0.01	269	<5	0.56	0.04	<1	N.A.
B00292212	0.1	0.02	202	<5	<0.02	<0.01	<1	N.A.
B00292213	<0.1	0.02	75	<5	0.06	<0.01	<1	N.A.
B00292214	<0.1	0.02	60	<5	0.08	<0.01	<1	N.A.
B00292215	<0.1	0.01	49	<5	0.34	<0.01	<1	N.A.
B00292216	<0.1	0.01	42	<5	0.09	<0.01	<1	N.A.
B00292217	<0.1	0.01	41	<5	0.10	<0.01	<1	N.A.
B00292218	<0.1	0.01	41	<5	0.28	<0.01	<1	N.A.
B00292219	3.4	0.40	79	26	16.3	0.56	28	N.A.
B00292220	<0.1	<0.01	4	<5	0.04	<0.01	<1	N.A.
B00292221	39.0	8.82	2150	298	4.09	7.97	50	N.A.
B00292222	38.5	7.52	>10000	439	0.20	6.36	46	1.35
B00292223	29.9	5.60	>10000	514	1.17	10.6	29	2.02
B00292224	34.8	6.54	>10000	565	3.96	11.9	58	1.35
B00292225	35.7	8.22	>10000	718	12.0	13.3	132	1.49
B00292226	33.1	6.48	>10000	715	3.73	16.8	91	1.81
B00292227	26.6	4.79	>10000	1620	5.40	16.9	113	1.83
B00292228	0.8	0.11	169	32	0.21	0.34	2	N.A.
B00292229	0.4	0.04	70	8	0.20	0.12	<1	N.A.
B00292230	18.9	1.15	1340	107	22.2	9.33	106	N.A.
B00292231	0.4	0.02	40	6	0.09	0.08	<1	N.A.
B00292232	0.3	0.02	421	<5	0.16	0.03	<1	N.A.
B00292233	0.2	<0.01	39	<5	0.34	<0.01	<1	N.A.
B00292234	1.4	<0.01	17	6	0.35	0.02	<1	N.A.
B00292235	0.4	<0.01	11	<5	0.45	<0.01	<1	N.A.
*Dup B00292235	0.4	<0.01	13	<5	0.39	<0.01	<1	N.A.
B00292236	0.3	<0.01	70	<5	0.37	<0.01	<1	N.A.
B00292237	0.7	0.01	632	6	0.54	0.08	<1	N.A.

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Final : VC161904 Order: PO# BMC16-01_12

Report File No.: 0000017788

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
*Rep B00292222			>10000	466	0.19	6.88	48	
*Std OREAS131B			N.A.	35	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	506	N.A.	81	
*Std DS-1			6800	N.A.	N.A.	84.4	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00292225	36.4	8.32						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK								<0.01
*Std MP1B								2.27
*Rep B00292227								1.93

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Certificate of Analysis

Work Order : VC161905

[Report File No.: 0000017761]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 22, 2016

P.O. No.	:	PO# BMC16-01_9
Project No.	:	KZK
No. Of Samples	:	27
Date Submitted	:	Jun 08, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161905 Order: PO# BMC16-01_9

Report File No.: 0000017761

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291384	0.975	N.A.	1790	273	<0.01	0.19	29.6	3.20
B00291385	2.625	N.A.	6	0.4	0.20	<0.01	1.60	<0.01
B00291386	2.460	N.A.	6	0.6	0.21	<0.01	1.67	<0.01
B00291387	2.830	N.A.	8	<0.3	0.26	<0.01	2.42	<0.01
B00291388	2.595	N.A.	6	0.4	0.54	<0.01	2.25	<0.01
B00291389	2.460	N.A.	<5	<0.3	0.74	<0.01	1.83	<0.01
B00291390	0.585	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291391	2.380	N.A.	<5	0.7	0.47	<0.01	2.56	<0.01
B00291392	1.050	N.A.	7	4.1	0.57	0.03	10.1	0.02
B00291393	1.085	N.A.	<5	1.9	0.35	0.03	14.4	<0.01
B00291394	1.505	N.A.	8	0.5	0.73	<0.01	4.32	<0.01
B00291395	1.865	N.A.	12	0.4	0.57	0.01	4.42	<0.01
B00291396	2.215	N.A.	6	0.5	0.41	<0.01	1.88	<0.01
B00291397	1.600	N.A.	5	<0.3	0.33	<0.01	1.46	<0.01
B00291398	2.595	N.A.	8	0.6	0.27	<0.01	1.29	<0.01
B00291399	2.015	N.A.	6	0.8	0.22	<0.01	1.35	<0.01
B00291400	0.155	N.A.	842	44.8	0.05	0.47	20.3	0.31
B00291401	1.845	N.A.	<5	0.5	0.22	<0.01	1.07	<0.01
B00291402	1.795	N.A.	9	<0.3	0.37	<0.01	2.26	<0.01
B00291403	2.925	N.A.	33	0.5	0.13	0.01	25.4	<0.01
B00291404	1.760	N.A.	<5	0.8	0.37	0.01	7.51	<0.01
B00291405	1.570	N.A.	8	2.8	2.61	0.02	7.28	0.01
B00291406	2.010	N.A.	6	4.1	0.89	0.02	6.70	0.01
B00291407	1.710	N.A.	<5	1.3	0.36	0.01	3.70	<0.01
B00291408	1.840	N.A.	7	0.6	0.29	<0.01	3.39	<0.01
B00291409	2.910	98.3	8	0.4	0.24	<0.01	3.18	<0.01
B00291410	0.525	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
*Rep B00291386				0.4				
*Std SU_1B				6.2				
*Blk BLANK				<0.3				
*Rep B00291406			8					
*Std OXN117			7840					
*Std OXB130			125					
*Blk BLANK			<5					

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Final : VC161905 Order: PO# BMC16-01_9

Report File No.: 0000017761

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep B00291391	0.47	<0.01	2.57	<0.01
*Rep B00291405	2.62	0.02	7.27	<0.01
*Std ME-19	0.16	0.47	3.93	0.97
*Std RM183-89	3.06	<0.01	35.7	0.03
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Final : VC161905 Order: PO# BMC16-01_9

Report File No.: 0000017761

Element	S	@Zn	Sb	@As	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	5	1	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291384	35.5	9.73	793	7280	12.7	45.1	147	285
B00291385	0.5	<0.01	<5	20	4.30	0.23	<1	N.A.
B00291386	0.6	<0.01	<5	3	7.85	0.09	<1	N.A.
B00291387	0.9	<0.01	6	8	9.03	0.05	<1	N.A.
B00291388	0.6	<0.01	<5	6	0.54	0.03	<1	N.A.
B00291389	0.5	0.01	<5	3	0.32	<0.01	<1	N.A.
B00291390	0.1	<0.01	<5	2	<0.02	<0.01	<1	N.A.
B00291391	1.5	<0.01	8	6	2.00	<0.01	<1	N.A.
B00291392	6.3	0.01	13	1	9.47	0.01	6	N.A.
B00291393	8.6	<0.01	13	2	3.86	0.01	4	N.A.
B00291394	3.2	<0.01	<5	8	2.94	<0.01	<1	N.A.
B00291395	3.9	<0.01	<5	12	4.36	<0.01	<1	N.A.
B00291396	1.0	<0.01	<5	5	2.38	<0.01	<1	N.A.
B00291397	0.4	<0.01	<5	2	0.75	<0.01	<1	N.A.
B00291398	0.4	<0.01	<5	4	2.20	<0.01	<1	N.A.
B00291399	0.5	<0.01	<5	4	2.56	<0.01	<1	N.A.
B00291400	18.2	1.15	109	1400	22.3	9.90	112	N.A.
B00291401	0.2	<0.01	<5	3	2.09	0.03	<1	N.A.
B00291402	1.4	<0.01	<5	7	1.12	<0.01	<1	N.A.
B00291403	28.2	<0.01	12	115	8.11	0.01	5	N.A.
B00291404	4.8	0.13	12	16	1.07	0.25	1	N.A.
B00291405	4.6	0.08	16	2	4.76	0.06	1	N.A.
B00291406	3.8	0.03	28	2	7.24	0.04	1	N.A.
B00291407	1.8	<0.01	6	<1	2.71	<0.01	<1	N.A.
B00291408	2.2	<0.01	<5	5	1.55	<0.01	<1	N.A.
B00291409	2.6	<0.01	<5	9	1.41	<0.01	<1	N.A.
B00291410	0.1	<0.01	<5	<1	<0.02	<0.01	<1	N.A.
*Rep B00291394			6	8	2.94	<0.01	<1	
*Std OREAS926			N.A.	N.A.	42.3	N.A.	10	
*Std OREAS131B			35	N.A.	N.A.	N.A.	N.A.	
*Std DS-1			N.A.	6920	N.A.	81.9	N.A.	
*Blk BLANK			<5	<1	<0.02	<0.01	<1	
*Std ME-1302								427

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Final : VC161905 Order: PO# BMC16-01_9

Report File No.: 0000017761

Element	S	@Zn	Ag
Method	GO_ICP90Q	GO_ICP90Q	GO_FAG313
Det.Lim.	0.1	0.01	10
Units	%	%	g/t
*Blk BLANK			<10
*Rep B00291391	1.6	<0.01	
*Rep B00291405	4.6	0.08	
*Std ME-19	1.6	0.75	
*Std RM183-89	0.7	<0.01	
*Blk BLANK	<0.1	<0.01	
*Rep B00291384			272

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Certificate of Analysis

Work Order : VC161906

[Report File No.: 0000017760]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 21, 2016

P.O. No.	:	PO# BMC16-01_8
Project No.	:	KZK
No. Of Samples	:	41
Date Submitted	:	Jun 08, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292131	2.435	N.A.	11	0.4	0.43	<0.01	1.89	<0.01
B00292132	3.105	N.A.	10	0.5	0.50	<0.01	2.05	<0.01
B00292133	2.865	N.A.	7	0.7	0.53	<0.01	1.99	<0.01
B00292134	2.810	N.A.	12	1.2	0.53	<0.01	2.33	<0.01
B00292135	2.545	N.A.	10	1.2	0.54	<0.01	2.05	0.01
B00292136	2.510	N.A.	6	1.0	0.56	<0.01	2.14	<0.01
B00292137	2.850	N.A.	8	2.5	0.53	<0.01	2.42	0.05
B00292138	0.970	N.A.	212	51.9	0.29	1.16	4.05	0.27
B00292139	2.045	N.A.	1050	244	0.07	0.05	28.8	6.29
B00292140	1.455	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00292141	2.365	N.A.	556	194	<0.01	<0.01	33.1	6.37
B00292142	2.655	N.A.	1450	231	<0.01	0.24	31.2	4.64
B00292143	2.560	N.A.	1710	174	<0.01	0.17	32.1	4.05
B00292144	2.360	N.A.	4960	261	<0.01	0.78	29.6	2.45
B00292145	2.765	N.A.	1880	>300	<0.01	0.60	29.0	3.76
B00292146	3.055	N.A.	1020	215	<0.01	0.53	34.0	2.34
B00292147	3.460	N.A.	1120	159	0.02	0.08	33.0	4.80
B00292148	2.875	N.A.	1250	215	0.13	0.33	30.9	6.31
B00292149	2.270	N.A.	5130	254	0.02	1.68	32.0	6.15
B00292150	0.170	N.A.	1220	68.4	0.26	0.36	3.73	1.32
B00292151	0.170	N.A.	817	20.5	0.14	1.76	13.6	0.25
B00292152	1.500	N.A.	6	2.3	0.27	0.02	2.39	0.03
B00292153	2.705	N.A.	6	0.5	0.17	<0.01	2.19	<0.01
B00292154	2.690	N.A.	6	0.4	0.16	<0.01	1.94	<0.01
B00292155	2.910	N.A.	<5	0.8	0.16	<0.01	1.87	<0.01
B00292156	3.000	N.A.	<5	0.5	0.13	<0.01	1.95	<0.01
B00292157	2.345	N.A.	<5	0.5	0.13	<0.01	1.95	<0.01
B00292158	1.375	N.A.	<5	0.5	0.17	<0.01	1.85	<0.01
B00292159	2.895	N.A.	385	27.3	0.11	0.80	2.83	0.01
B00292160	1.385	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292161	1.480	N.A.	301	23.9	0.16	0.83	9.70	<0.01
B00292162	2.520	N.A.	229	26.6	0.15	0.65	10.2	0.04
B00292163	2.595	N.A.	908	76.7	0.11	1.81	15.3	0.09
B00292164	2.865	N.A.	6	2.0	0.15	0.02	7.57	0.02
B00292165	2.810	N.A.	<5	1.2	0.17	<0.01	6.81	0.02
*Dup B00292165	N.A.	N.A.	<5	1.3	0.17	<0.01	6.66	0.02
B00292166	2.465	N.A.	<5	1.3	0.10	<0.01	7.21	0.02
B00292167	3.050	N.A.	<5	0.7	0.12	<0.01	7.84	0.02
B00292168	2.750	N.A.	<5	1.2	0.08	<0.01	7.42	0.02
B00292169	3.135	N.A.	<5	1.0	0.05	<0.01	7.81	0.02

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292170	0.155	N.A.	820	44.7	0.05	0.46	20.1	0.30
B00292171	2.380	95.2	<5	1.0	0.07	<0.01	7.46	<0.01
*Rep B00292158				0.5				
*Rep B00292171				0.9				
*Std SU_1B				6.5				
*Std AMIS0268				188				
*Blk BLANK				<0.3				
*Rep B00292156			<5					
*Std OXN117			7480					
*Std OXB130			125					
*Std OREAS214			2850					
*Blk BLANK			<5					
*Rep B00292131					0.42	<0.01	1.91	<0.01
*Rep B00292162					0.15	0.64	10.2	0.04
*Std OREAS134A					0.15	0.13	12.0	12.7
*Std RM183-89					3.18	<0.01	35.7	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292131	0.7	0.01	968	7	0.47	<0.01	2	N.A.
B00292132	0.9	0.01	163	<5	0.27	<0.01	<1	N.A.
B00292133	0.6	0.02	321	<5	0.35	<0.01	<1	N.A.
B00292134	1.0	0.06	645	<5	0.40	0.17	1	N.A.
B00292135	0.6	0.03	335	<5	0.35	0.06	1	N.A.
B00292136	0.6	0.02	438	<5	0.30	<0.01	<1	N.A.
B00292137	0.6	0.10	247	<5	0.69	0.18	4	N.A.
B00292138	2.4	0.51	1950	30	15.1	1.11	37	N.A.
B00292139	35.6	8.93	4540	290	23.6	21.0	167	N.A.
B00292140	0.1	0.01	12	<5	<0.02	0.09	<1	N.A.
B00292141	41.7	9.29	2010	228	13.4	23.2	181	N.A.
B00292142	37.2	7.63	>10000	582	12.6	23.3	200	N.A.
B00292143	36.7	7.07	>10000	474	17.4	23.4	148	N.A.
B00292144	32.7	5.14	>10000	1500	9.39	18.9	177	N.A.
B00292145	33.1	5.14	4630	1250	10.6	19.4	195	N.A.
B00292146	40.8	7.20	2560	367	14.1	20.9	163	N.A.
B00292147	39.9	8.29	6030	266	7.44	14.7	98	N.A.
B00292148	35.0	11.9	>10000	314	22.0	10.5	128	N.A.
B00292149	33.3	10.8	>10000	849	13.1	10.9	83	5.02
B00292150	4.4	5.24	75	114	3.60	4.07	5	N.A.
B00292151	9.1	1.08	81	22	16.0	0.86	19	N.A.
B00292152	1.0	0.09	34	<5	0.58	0.20	4	N.A.
B00292153	1.5	<0.01	41	<5	0.43	0.10	<1	N.A.
B00292154	1.3	<0.01	166	<5	0.42	0.08	<1	N.A.
B00292155	1.3	<0.01	57	<5	0.34	0.05	<1	N.A.
B00292156	1.0	<0.01	36	<5	0.38	0.05	<1	N.A.
B00292157	1.0	<0.01	14	<5	0.52	0.09	<1	N.A.
B00292158	0.9	<0.01	12	<5	0.83	0.04	1	N.A.
B00292159	1.3	0.19	5	10	6.72	0.54	10	N.A.
B00292160	<0.1	<0.01	5	<5	<0.02	<0.01	<1	N.A.
B00292161	2.2	0.37	8	11	4.24	0.95	16	N.A.
B00292162	3.0	0.78	8	15	22.8	1.88	34	N.A.
B00292163	5.6	0.89	15	22	62.1	2.32	67	N.A.
B00292164	0.5	0.04	49	<5	2.59	0.03	6	N.A.
B00292165	<0.1	0.04	69	<5	0.18	<0.01	<1	N.A.
*Dup B00292165	<0.1	0.04	68	<5	0.18	<0.01	<1	N.A.
B00292166	0.2	0.03	204	<5	0.22	<0.01	<1	N.A.
B00292167	<0.1	0.03	200	<5	0.06	<0.01	<1	N.A.
B00292168	<0.1	0.03	138	<5	0.11	<0.01	<1	N.A.
B00292169	<0.1	0.03	402	<5	0.10	<0.01	<1	N.A.

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292170	17.9	1.15	1370	112	21.6	9.74	104	N.A.
B00292171	<0.1	0.02	444	<5	0.09	0.01	<1	N.A.
*Rep B00292166			207	<5	0.22	<0.01	<1	
*Std OREAS926			N.A.	N.A.	41.0	N.A.	10	
*Std OREAS131B			N.A.	43	N.A.	N.A.	N.A.	
*Std DS-1			6770	N.A.	N.A.	78.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std OXN117								7.79
*Blk BLANK								<0.50
*Rep B00292131	0.7	0.01						
*Rep B00292162	3.0	0.78						
*Std OREAS134A	18.8	17.2						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00292149								4.94

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	Ag	As
Method	GO_FAG313	GO_ICP13B
Det.Lim.	10	0.01
Units	g/t	%
B00292131	N.A.	N.A.
B00292132	N.A.	N.A.
B00292133	N.A.	N.A.
B00292134	N.A.	N.A.
B00292135	N.A.	N.A.
B00292136	N.A.	N.A.
B00292137	N.A.	N.A.
B00292138	N.A.	N.A.
B00292139	N.A.	N.A.
B00292140	N.A.	N.A.
B00292141	N.A.	N.A.
B00292142	N.A.	1.38
B00292143	N.A.	1.36
B00292144	282	1.96
B00292145	318	N.A.
B00292146	N.A.	N.A.
B00292147	N.A.	N.A.
B00292148	N.A.	1.87
B00292149	273	4.60
B00292150	N.A.	N.A.
B00292151	N.A.	N.A.
B00292152	N.A.	N.A.
B00292153	N.A.	N.A.
B00292154	N.A.	N.A.
B00292155	N.A.	N.A.
B00292156	N.A.	N.A.
B00292157	N.A.	N.A.
B00292158	N.A.	N.A.
B00292159	N.A.	N.A.
B00292160	N.A.	N.A.
B00292161	N.A.	N.A.
B00292162	N.A.	N.A.
B00292163	N.A.	N.A.
B00292164	N.A.	N.A.
B00292165	N.A.	N.A.
*Dup B00292165	N.A.	N.A.
B00292166	N.A.	N.A.
B00292167	N.A.	N.A.
B00292168	N.A.	N.A.
B00292169	N.A.	N.A.

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Final : VC161906 Order: PO# BMC16-01_8

Report File No.: 0000017760

Element	Ag	As
Method	GO_FAG313	GO_ICP13B
Det.Lim.	10	0.01
Units	g/t	%
B00292170	N.A.	N.A.
B00292171	N.A.	N.A.
*Std ME-1302	431	
*Blk BLANK	<10	
*Blk BLANK		<0.01
*Rep B00292144		1.96
*Std MP1B		2.21
*Rep B00292145	322	

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Certificate of Analysis

Work Order : VC161919

[Report File No.: 0000017762]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 22, 2016

P.O. No.	:	PO# BMC16-01_13
Project No.	:	KZK
No. Of Samples	:	39
Date Submitted	:	Jun 13, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC161919 Order: PO# BMC16-01_13

Report File No.: 0000017762

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291486	2.685	N.A.	304	83.8	0.10	0.07	19.2	2.10
B00291487	2.815	N.A.	69	10.3	0.08	0.02	7.76	0.19
B00291488	3.205	N.A.	2240	>300	0.14	0.20	27.2	1.52
B00291489	1.670	N.A.	2500	>300	0.04	0.26	36.7	1.22
B00291490	0.785	N.A.	<5	<0.3	<0.01	<0.01	0.09	<0.01
B00291491	2.815	N.A.	269	23.5	0.43	0.02	2.87	0.07
B00291492	2.840	N.A.	11	1.8	0.22	<0.01	2.35	0.01
B00291493	2.915	N.A.	<5	0.7	0.17	<0.01	2.16	<0.01
B00291494	2.460	N.A.	39	10.3	0.36	0.05	2.78	0.14
B00291495	3.810	N.A.	66	5.7	0.36	0.02	2.24	0.04
B00291496	3.765	N.A.	14	1.9	0.35	<0.01	1.60	0.06
B00291497	4.885	N.A.	6	0.9	0.30	<0.01	1.61	0.01
B00291498	2.705	N.A.	11	1.2	0.22	<0.01	1.38	0.02
B00291499	1.930	N.A.	27	3.1	0.25	<0.01	3.15	0.06
B00291500	0.145	N.A.	840	44.8	0.05	0.47	20.0	0.31
B00291501	3.165	N.A.	25	4.3	0.19	<0.01	1.56	0.05
B00291502	2.420	N.A.	21	2.0	0.19	<0.01	1.95	0.02
B00291503	3.250	N.A.	11	0.8	0.17	<0.01	1.96	<0.01
B00291504	5.285	N.A.	27	2.5	0.24	<0.01	2.19	0.03
B00291505	4.030	N.A.	86	9.6	0.24	0.02	3.34	0.18
B00291506	3.360	N.A.	16	0.7	0.26	<0.01	1.73	<0.01
B00291507	4.025	N.A.	10	0.5	0.27	<0.01	1.69	<0.01
B00291508	2.115	N.A.	<5	<0.3	0.07	<0.01	2.04	<0.01
B00291509	3.650	N.A.	<5	<0.3	0.07	<0.01	4.30	<0.01
B00291510	0.620	N.A.	<5	<0.3	<0.01	<0.01	0.09	<0.01
B00291511	2.090	N.A.	<5	<0.3	0.07	<0.01	2.16	<0.01
B00291513	4.840	N.A.	7	0.6	0.03	0.03	15.6	<0.01
B00291514	2.950	N.A.	6	1.1	0.07	0.01	8.59	<0.01
B00291515	4.420	N.A.	<5	<0.3	0.10	<0.01	4.98	<0.01
B00291516	3.495	N.A.	<5	0.3	0.10	<0.01	3.25	<0.01
B00291517	2.355	N.A.	5	<0.3	0.11	<0.01	2.81	<0.01
B00291518	5.060	N.A.	<5	<0.3	0.12	<0.01	2.41	<0.01
B00291519	2.810	N.A.	<5	0.4	0.13	<0.01	3.37	<0.01
B00291520	0.145	N.A.	840	45.2	0.05	0.47	19.8	0.31
B00291521	1.935	N.A.	<5	<0.3	0.11	<0.01	6.69	<0.01
*Dup B00291521	N.A.	N.A.	<5	<0.3	0.11	<0.01	6.88	<0.01
B00291522	2.755	N.A.	5	1.1	0.13	<0.01	6.41	0.01
B00291523	5.390	N.A.	<5	<0.3	0.12	<0.01	3.74	<0.01
B00291524	3.685	N.A.	<5	<0.3	0.12	<0.01	4.10	<0.01
B00291525	2.725	93.4	<5	<0.3	0.14	<0.01	3.65	<0.01

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Final : VC161919 Order: PO# BMC16-01_13

Report File No.: 0000017762

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Rep B00291508		<0.3				
*Rep B00291524		<0.3				
*Std SU_1B		6.5				
*Std OREAS621		68.9				
*Blk BLANK		<0.3				
*Rep B00291516	5					
*Rep B00291524	<5					
*Std OXN117	7540					
*Std OXB130	113					
*Std OREAS214	2920					
*Blk BLANK	<5					
*Rep B00291503			0.17	<0.01	2.00	<0.01
*Rep B00291523			0.12	<0.01	3.72	<0.01
*Std ME-19			0.17	0.47	3.99	0.95
*Std RM183-89			3.20	<0.01	35.8	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Final : VC161919 Order: PO# BMC16-01_13

Report File No.: 0000017762

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291486	14.0	4.23	5040	113	21.6	3.50	133	N.A.
B00291487	2.3	0.48	272	16	2.38	1.33	11	N.A.
B00291488	33.0	5.14	3780	1080	16.5	30.6	198	296
B00291489	46.2	8.60	1470	1430	33.2	49.2	382	369
B00291490	0.2	0.03	9	<5	0.11	<0.01	2	N.A.
B00291491	1.2	0.21	59	74	0.76	1.66	9	N.A.
B00291492	0.7	0.03	82	<5	0.80	0.19	3	N.A.
B00291493	0.1	0.02	55	<5	0.24	0.14	<1	N.A.
B00291494	1.9	0.36	20	10	1.95	1.98	3	N.A.
B00291495	1.4	0.06	22	6	0.43	0.33	<1	N.A.
B00291496	0.7	0.08	14	<5	0.40	0.43	<1	N.A.
B00291497	0.6	0.05	13	<5	0.47	0.26	<1	N.A.
B00291498	0.8	0.03	22	<5	0.41	0.22	<1	N.A.
B00291499	2.7	0.21	44	14	0.33	1.21	1	N.A.
B00291500	18.3	1.14	1370	108	21.7	9.44	108	N.A.
B00291501	1.2	0.42	22	16	0.37	2.88	<1	N.A.
B00291502	1.4	0.02	26	5	0.54	0.15	<1	N.A.
B00291503	0.7	0.01	16	<5	0.35	0.06	<1	N.A.
B00291504	1.8	0.06	28	5	0.16	0.16	<1	N.A.
B00291505	3.2	0.46	39	14	0.22	2.40	1	N.A.
B00291506	0.9	0.02	13	<5	0.28	0.08	<1	N.A.
B00291507	1.2	<0.01	10	<5	0.09	0.04	<1	N.A.
B00291508	<0.1	<0.01	<3	<5	<0.02	0.01	<1	N.A.
B00291509	0.2	0.04	3	<5	0.04	<0.01	<1	N.A.
B00291510	<0.1	<0.01	6	<5	<0.02	<0.01	<1	N.A.
B00291511	<0.1	0.01	<3	<5	<0.02	<0.01	<1	N.A.
B00291513	8.1	0.41	<3	<5	1.73	0.13	17	N.A.
B00291514	3.5	0.07	<3	<5	2.53	0.01	9	N.A.
B00291515	0.7	0.02	4	<5	0.07	<0.01	2	N.A.
B00291516	0.6	0.01	<3	<5	0.70	<0.01	1	N.A.
B00291517	<0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
B00291518	<0.1	0.01	<3	<5	0.20	<0.01	<1	N.A.
B00291519	0.5	0.02	8	<5	0.68	<0.01	2	N.A.
B00291520	18.0	1.14	1390	115	21.5	9.37	107	N.A.
B00291521	0.9	0.09	4	<5	0.15	0.06	4	N.A.
*Dup B00291521	1.2	0.09	3	<5	0.12	0.03	5	N.A.
B00291522	2.3	2.19	5	5	2.31	0.49	16	N.A.
B00291523	1.2	<0.01	4	<5	0.28	<0.01	2	N.A.
B00291524	1.2	<0.01	<3	<5	0.15	<0.01	2	N.A.
B00291525	0.8	0.01	3	<5	0.11	<0.01	1	N.A.

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Final : VC161919 Order: PO# BMC16-01_13

Report File No.: 0000017762

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00291496			15	<5	0.40	0.45	1	
*Std OREAS131B			N.A.	36	N.A.	N.A.	N.A.	
*Std OREAS624			110	N.A.	19.5	2.01	30	
*Std DS-1			6930	N.A.	N.A.	86.3	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								431
*Blk BLANK								<10
*Rep B00291503	0.7	0.01						
*Rep B00291523	1.3	<0.01						
*Std ME-19	1.5	0.76						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291489								348

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Certificate of Analysis

Work Order : VC162012

[Report File No.: 0000017864]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 06, 2016

P.O. No.	:	PO# BMC16-01_14
Project No.	:	KZK
No. Of Samples	:	34
Date Submitted	:	Jun 16, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
Samples this job were analyzed with VC162013.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162012 Order: PO# BMC16-01_14

Report File No.: 0000017864

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292238	6.300	N.A.	6	0.7	0.10	<0.01	1.65	<0.01
B00292239	2.455	N.A.	<5	0.4	0.07	<0.01	1.18	<0.01
B00292240	1.655	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00292241	6.505	N.A.	<5	0.4	0.10	<0.01	1.50	<0.01
B00292242	2.865	N.A.	<5	0.6	0.12	<0.01	6.63	<0.01
B00292243	5.190	N.A.	<5	0.5	0.19	<0.01	4.72	<0.01
B00292244	6.965	N.A.	5	0.5	0.15	<0.01	8.02	<0.01
B00292245	5.720	N.A.	<5	0.5	0.13	<0.01	6.38	<0.01
B00292246	6.405	N.A.	<5	<0.3	0.14	<0.01	6.58	<0.01
B00292247	5.485	N.A.	<5	0.5	0.01	<0.01	7.28	<0.01
B00292248	6.035	N.A.	<5	0.3	0.02	<0.01	7.40	<0.01
B00292249	5.725	N.A.	52	0.8	0.03	<0.01	6.61	<0.01
B00292250	0.140	N.A.	854	44.0	0.05	0.46	20.1	0.31
B00292251	6.050	N.A.	6	<0.3	0.33	<0.01	6.38	<0.01
B00292252	6.230	N.A.	9	0.6	0.36	<0.01	6.36	<0.01
B00292253	5.770	N.A.	<5	<0.3	0.40	<0.01	7.02	<0.01
B00292254	3.955	N.A.	9	1.2	0.61	0.03	3.19	<0.01
B00292255	4.305	N.A.	75	32.3	0.41	0.48	9.08	0.33
B00292256	2.735	N.A.	378	43.3	0.45	1.70	8.26	0.68
B00292257	3.285	N.A.	23	1.8	0.51	0.05	2.97	0.04
B00292258	3.910	N.A.	96	4.4	0.56	0.11	3.11	0.06
B00292259	1.960	N.A.	145	4.2	0.50	0.10	3.43	0.06
B00292260	1.210	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00292261	2.085	N.A.	172	14.1	0.62	0.10	2.91	0.11
B00292262	2.555	N.A.	23	4.3	0.95	<0.01	2.72	0.06
B00292263	3.405	N.A.	54	114	0.44	0.33	11.5	2.05
B00292264	5.005	N.A.	<5	2.3	0.34	0.01	2.39	0.03
B00292265	5.570	N.A.	<5	0.5	0.18	<0.01	1.82	<0.01
B00292266	4.535	N.A.	<5	0.6	0.15	<0.01	1.79	<0.01
B00292267	5.705	N.A.	<5	0.6	0.20	<0.01	1.71	<0.01
B00292268	5.360	N.A.	<5	0.5	0.16	<0.01	1.64	<0.01
B00292269	4.185	N.A.	<5	0.4	0.17	<0.01	1.99	<0.01
B00292270	0.140	N.A.	890	44.4	0.05	0.46	20.2	0.31
B00292271	5.225	99.6	6	0.8	0.20	<0.01	2.08	<0.01
*Rep B00292268				0.5				
*Std OREAS621				68.1				
*Std AMIS0268				189				
*Blk BLANK				<0.3				
*Rep B00292242			7					
*Std OXN117			7540					

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Final : VC162012 Order: PO# BMC16-01_14

Report File No.: 0000017864

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Std OXB130	123				
*Blk BLANK	<5				
*Rep B00292239		0.06	<0.01	1.18	<0.01
*Rep B00292255		0.40	0.50	9.14	0.33
*Std OREAS131B		0.08	0.02	5.64	1.83
*Std RM183-89		3.11	<0.01	35.6	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01

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Final : VC162012 Order: PO# BMC16-01_14

Report File No.: 0000017864

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
B00292238	0.7	0.01	73	<5	0.31	0.04	<1	N.A.
B00292239	0.2	<0.01	8	<5	0.05	0.02	<1	N.A.
B00292240	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
B00292241	<0.1	<0.01	430	<5	0.04	<0.01	<1	N.A.
B00292242	0.2	0.02	422	<5	0.07	0.02	<1	N.A.
B00292243	0.6	0.01	2180	<5	0.05	<0.01	<1	N.A.
B00292244	0.2	0.02	449	<5	0.10	<0.01	<1	N.A.
B00292245	0.2	0.01	408	<5	0.05	<0.01	<1	N.A.
B00292246	<0.1	0.01	87	<5	<0.02	<0.01	<1	N.A.
B00292247	<0.1	0.02	59	<5	0.11	<0.01	<1	N.A.
B00292248	0.1	0.01	63	<5	0.04	<0.01	<1	N.A.
B00292249	<0.1	0.01	110	<5	0.04	<0.01	<1	N.A.
B00292250	18.5	1.12	1390	110	23.6	8.75	110	N.A.
B00292251	<0.1	0.01	170	<5	0.08	0.02	<1	N.A.
B00292252	<0.1	0.01	120	<5	0.16	<0.01	<1	N.A.
B00292253	0.3	0.01	933	<5	<0.02	<0.01	3	N.A.
B00292254	0.4	0.07	24	<5	1.24	0.23	6	N.A.
B00292255	4.4	1.52	7	12	56.1	5.42	90	N.A.
B00292256	6.4	3.32	3160	232	50.9	15.0	175	N.A.
B00292257	0.5	0.11	662	102	2.45	0.54	11	N.A.
B00292258	0.7	0.20	6030	352	4.27	0.93	25	N.A.
B00292259	0.8	0.22	>10000	626	5.54	0.99	26	1.00
B00292260	0.2	<0.01	14	<5	0.04	<0.01	<1	N.A.
B00292261	1.2	0.33	>10000	771	6.03	1.59	24	1.50
B00292262	1.2	0.15	432	34	0.40	0.52	2	N.A.
B00292263	9.3	2.76	3220	167	0.80	7.43	26	N.A.
B00292264	1.1	0.05	8	13	0.30	0.08	<1	N.A.
B00292265	1.0	<0.01	64	<5	0.25	<0.01	<1	N.A.
B00292266	1.0	<0.01	26	<5	0.23	<0.01	<1	N.A.
B00292267	0.8	<0.01	11	<5	0.43	<0.01	<1	N.A.
B00292268	0.7	<0.01	26	<5	0.36	<0.01	<1	N.A.
B00292269	1.1	<0.01	63	<5	0.41	<0.01	<1	N.A.
B00292270	18.6	1.15	1410	113	24.2	9.49	112	N.A.
B00292271	1.5	<0.01	17	<5	0.67	<0.01	<1	N.A.

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Final : VC162012 Order: PO# BMC16-01_14

Report File No.: 0000017864

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
*Rep B00292259			9850	658	5.53	1.05	27	
*Std OREAS131B			N.A.	38	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	515	N.A.	79	
*Std DS-1			6660	N.A.	N.A.	81.3	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00292239	0.2	<0.01						
*Rep B00292255	4.4	1.56						
*Std OREAS131B	4.8	3.08						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Std MP1B								2.27
*Blk BLANK								<0.01
*Rep B00292259								1.00

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Certificate of Analysis

Work Order : VC162013

[Report File No.: 0000017830]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 30, 2016

P.O. No.	:	PO# BMC16-01_17
Project No.	:	KZK
No. Of Samples	:	6
Date Submitted	:	Jun 16, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
Samples this job were analyzed with VC162012.
SCR34 data has been included.
This Report cancels and supersedes the Report No. 017824 dated Jun 30, 2016 issued by SGS Canada (Production Way).

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162013 Order: PO# BMC16-01_17

Report File No.: 0000017830

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292272	2.440	N.A.	5	0.6	0.08	<0.01	4.81	<0.01
B00292273	1.695	N.A.	13	1.3	0.06	<0.01	3.07	0.02
B00292274	2.855	N.A.	11	1.7	0.07	<0.01	8.02	0.02
B00292275	2.200	N.A.	8	0.9	0.05	<0.01	16.5	<0.01
B00292276	3.990	N.A.	<5	0.6	0.09	<0.01	5.41	<0.01
B00292277	5.180	96.1	<5	0.5	0.09	<0.01	3.11	<0.01
*Rep B00292274				1.8				
*Std SU_1B				6.4				
*Blk BLANK				<0.3				
*Rep B00292274			10					
*Std OREAS214			3000					
*Blk BLANK			<5					
*Rep B00292273					0.06	<0.01	3.08	0.02
*Std OREAS134A					0.15	0.13	11.9	12.6
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162013 Order: PO# BMC16-01_17

Report File No.: 0000017830

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00292272	3.7	0.01	30	<5	0.31	0.04	1
B00292273	1.7	0.25	856	7	1.22	0.66	3
B00292274	6.0	0.12	449	15	1.20	0.35	4
B00292275	14.0	0.01	89	<5	0.38	0.03	4
B00292276	3.0	0.01	10	<5	0.50	0.01	2
B00292277	2.0	0.02	10	<5	0.23	<0.01	<1
*Rep B00292276			13	<5	0.48	0.02	1
*Std OREAS131B			N.A.	38	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	512	N.A.	76
*Std DS-1			6730	N.A.	N.A.	83.2	N.A.
*Rep B00292273	1.7	0.24					
*Std OREAS134A	19.3	17.4					
*Blk BLANK	<0.1	<0.01					

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Certificate of Analysis

Work Order : VC162014

[Report File No.: 0000017839]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 30, 2016

P.O. No.	:	PO# BMC16-01_15
Project No.	:	KZK
No. Of Samples	:	38
Date Submitted	:	Jun 16, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162014 Order: PO# BMC16-01_15

Report File No.: 0000017839

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292278	4.515	N.A.	<5	<0.3	0.08	<0.01	3.21	<0.01
B00292279	6.210	N.A.	<5	<0.3	0.08	<0.01	5.32	<0.01
B00292280	1.415	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
B00292281	5.195	N.A.	<5	<0.3	0.10	<0.01	4.16	<0.01
B00292282	5.170	N.A.	<5	<0.3	0.09	<0.01	2.59	<0.01
B00292283	4.680	N.A.	<5	<0.3	0.10	<0.01	3.01	<0.01
B00292284	5.430	N.A.	<5	<0.3	0.10	<0.01	2.32	<0.01
B00292285	5.615	N.A.	<5	0.3	0.09	<0.01	3.92	<0.01
B00292286	3.290	N.A.	<5	<0.3	0.09	<0.01	2.71	<0.01
B00292287	2.780	N.A.	<5	<0.3	0.09	<0.01	2.10	<0.01
B00292288	5.315	N.A.	<5	<0.3	0.08	<0.01	1.79	<0.01
B00292289	4.875	N.A.	<5	0.3	0.09	<0.01	1.95	<0.01
B00292290	0.140	N.A.	868	44.0	0.05	0.46	19.9	0.31
B00292291	5.060	N.A.	<5	0.5	0.19	0.01	4.48	<0.01
B00292292	5.900	N.A.	<5	<0.3	0.17	<0.01	5.23	<0.01
B00292293	3.465	N.A.	7	0.4	0.22	<0.01	1.91	0.02
B00292294	3.155	N.A.	10	0.7	0.19	<0.01	1.81	0.02
B00292295	5.305	N.A.	8	0.7	0.18	<0.01	1.91	0.01
B00292296	4.815	N.A.	18	3.5	0.14	<0.01	1.82	0.07
B00292297	4.495	N.A.	7	0.4	0.13	<0.01	1.57	<0.01
B00292298	4.650	N.A.	8	<0.3	0.15	<0.01	3.55	<0.01
B00292299	5.775	N.A.	6	<0.3	0.15	<0.01	1.92	<0.01
B00292300	1.785	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00292301	6.020	N.A.	<5	<0.3	0.12	<0.01	1.94	<0.01
B00292302	5.470	N.A.	5	<0.3	0.11	<0.01	3.01	<0.01
B00292303	3.880	N.A.	<5	<0.3	0.09	<0.01	2.75	<0.01
B00292304	2.440	N.A.	14	<0.3	0.09	<0.01	3.67	<0.01
B00292305	2.185	N.A.	5	<0.3	0.09	<0.01	2.49	<0.01
B00292306	5.205	N.A.	<5	<0.3	0.09	<0.01	3.38	<0.01
B00292307	3.460	N.A.	<5	<0.3	0.10	<0.01	3.96	<0.01
B00292308	4.470	N.A.	<5	<0.3	0.09	<0.01	4.35	<0.01
B00292309	3.810	N.A.	<5	<0.3	<0.01	<0.01	0.98	<0.01
B00292310	0.140	N.A.	854	43.7	0.05	0.46	20.0	0.31
B00292311	3.220	N.A.	<5	<0.3	0.09	<0.01	4.14	<0.01
B00292312	4.560	N.A.	<5	<0.3	0.09	<0.01	4.59	<0.01
B00292313	5.055	N.A.	16	<0.3	0.10	<0.01	4.91	<0.01
B00292314	5.510	N.A.	6	<0.3	0.10	<0.01	3.72	<0.01
B00292315	4.880	93.2	17	0.4	0.09	<0.01	4.56	<0.01
*Rep B00292294			10					
*Rep B00292315			15					

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Final : VC162014 Order: PO# BMC16-01_15

Report File No.: 0000017839

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std OREAS214	3150					
*Blk BLANK	<5					
*Rep B00292278			0.08	<0.01	3.18	<0.01
*Rep B00292302			0.11	<0.01	2.92	<0.01
*Std ME-19			0.17	0.46	3.99	0.96
*Std RM183-89			3.18	<0.01	35.8	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01
*Rep B00292291		0.6				
*Std SU_1B		6.4				
*Std OREAS621		68.1				
*Blk BLANK		<0.3				

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Final : VC162014 Order: PO# BMC16-01_15

Report File No.: 0000017839

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00292278	0.4	<0.01	4	<5	0.28	0.02	<1
B00292279	0.6	<0.01	6	<5	0.15	0.02	<1
B00292280	<0.1	<0.01	6	<5	<0.02	0.02	<1
B00292281	0.7	<0.01	7	<5	0.24	<0.01	<1
B00292282	1.1	<0.01	9	<5	0.70	0.05	<1
B00292283	0.9	<0.01	9	<5	0.41	<0.01	<1
B00292284	0.5	<0.01	4	<5	0.21	0.01	<1
B00292285	2.4	0.01	28	<5	1.03	0.12	<1
B00292286	1.3	<0.01	12	<5	0.51	0.04	<1
B00292287	0.8	<0.01	5	<5	0.58	0.01	<1
B00292288	0.4	<0.01	41	<5	0.33	<0.01	<1
B00292289	0.5	<0.01	6	<5	0.49	<0.01	<1
B00292290	17.7	1.13	1350	107	22.5	8.58	123
B00292291	0.7	0.02	150	<5	0.11	0.02	1
B00292292	0.6	0.02	156	5	<0.02	0.02	<1
B00292293	0.5	0.01	8	<5	0.11	0.05	<1
B00292294	0.8	0.02	10	<5	0.30	0.07	<1
B00292295	1.0	0.02	14	<5	0.62	0.03	1
B00292296	1.1	0.10	14	<5	3.13	0.28	3
B00292297	0.7	0.01	12	<5	0.42	0.02	<1
B00292298	2.7	0.02	38	7	0.51	0.02	1
B00292299	0.6	<0.01	9	<5	0.17	0.01	<1
B00292300	<0.1	<0.01	<3	<5	<0.02	<0.01	<1
B00292301	0.6	<0.01	5	<5	0.18	0.02	<1
B00292302	0.6	0.01	33	<5	0.19	<0.01	<1
B00292303	0.3	0.01	<3	<5	0.19	<0.01	<1
B00292304	1.9	0.01	3	10	0.22	0.02	<1
B00292305	0.4	<0.01	<3	<5	0.21	<0.01	<1
B00292306	0.6	0.01	14	<5	0.07	0.01	<1
B00292307	0.8	0.01	25	<5	0.48	<0.01	<1
B00292308	0.2	0.01	<3	<5	0.30	<0.01	<1
B00292309	0.2	<0.01	<3	<5	0.34	<0.01	<1
B00292310	17.8	1.13	1350	107	22.1	8.42	127
B00292311	0.2	0.01	<3	<5	0.25	0.02	<1
B00292312	0.9	<0.01	<3	10	0.34	<0.01	<1
B00292313	2.0	<0.01	<3	11	0.09	<0.01	<1
B00292314	0.4	<0.01	<3	7	0.13	<0.01	<1
B00292315	1.8	<0.01	5	12	0.28	<0.01	<1

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Final : VC162014 Order: PO# BMC16-01_15

Report File No.: 0000017839

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
*Rep B00292295			12	<5	0.65	0.03	1
*Std OREAS131B			N.A.	41	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	491	N.A.	78
*Std DS-1			7020	N.A.	N.A.	81.1	N.A.
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Rep B00292278	0.4	<0.01					
*Rep B00292302	0.6	0.01					
*Std ME-19	1.5	0.74					
*Std RM183-89	0.7	<0.01					
*Blk BLANK	<0.1	<0.01					

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Certificate of Analysis

Work Order : VC162015

[Report File No.: 0000017847]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 05, 2016

P.O. No.	:	PO# BMC16-01_16
Project No.	:	KZK
No. Of Samples	:	81
Date Submitted	:	Jun 16, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162015 Order: PO# BMC16-01_16

Report File No.: 0000017847

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291526	3.115	N.A.	<5	0.4	0.30	<0.01	1.60	<0.01
B00291527	4.865	N.A.	<5	<0.3	0.36	<0.01	2.74	<0.01
B00291528	3.100	N.A.	<5	<0.3	0.38	<0.01	2.99	<0.01
B00291529	2.430	N.A.	<5	<0.3	0.19	<0.01	1.29	<0.01
B00291530	0.560	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291531	3.080	N.A.	<5	0.8	0.21	<0.01	4.80	<0.01
B00291532	3.245	N.A.	5	0.3	0.20	<0.01	5.05	<0.01
B00291533	3.405	N.A.	<5	<0.3	0.18	<0.01	2.42	<0.01
B00291534	3.290	N.A.	<5	<0.3	0.25	<0.01	2.19	<0.01
B00291535	4.000	N.A.	<5	<0.3	0.29	<0.01	1.84	<0.01
B00291536	4.395	N.A.	<5	<0.3	0.31	<0.01	2.49	<0.01
B00291537	4.140	N.A.	<5	<0.3	0.28	<0.01	1.87	<0.01
B00291538	5.920	N.A.	<5	<0.3	0.26	<0.01	1.92	<0.01
B00291539	2.290	N.A.	<5	0.4	0.19	<0.01	1.79	<0.01
B00291540	0.170	N.A.	853	44.7	0.05	0.46	20.3	0.30
B00291541	3.655	N.A.	<5	<0.3	0.27	<0.01	1.97	<0.01
B00291542	4.050	N.A.	<5	<0.3	0.27	<0.01	1.65	<0.01
B00291543	3.075	N.A.	<5	0.5	0.28	<0.01	2.06	<0.01
B00291544	3.190	N.A.	<5	0.5	0.16	<0.01	2.57	<0.01
B00291545	2.840	N.A.	<5	<0.3	0.21	<0.01	1.91	<0.01
B00291546	1.875	N.A.	<5	<0.3	0.29	<0.01	2.55	<0.01
B00291547	3.760	N.A.	<5	<0.3	0.30	<0.01	4.80	<0.01
B00291548	3.280	N.A.	<5	<0.3	0.27	<0.01	7.37	<0.01
B00291549	4.175	N.A.	<5	0.4	0.10	<0.01	2.40	<0.01
B00291550	0.740	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291551	3.470	N.A.	<5	<0.3	0.10	<0.01	2.48	<0.01
B00291552	3.830	N.A.	10	<0.3	0.09	<0.01	2.48	<0.01
B00291553	3.770	N.A.	<5	0.5	0.09	<0.01	4.93	<0.01
B00291554	3.390	N.A.	<5	0.7	0.07	<0.01	6.50	<0.01
B00291555	4.250	N.A.	<5	0.7	0.07	<0.01	7.73	<0.01
B00291556	5.350	N.A.	<5	0.9	0.06	<0.01	13.6	<0.01
B00291558	3.025	N.A.	<5	0.9	0.09	<0.01	12.6	0.01
B00291559	2.250	N.A.	<5	0.9	0.07	<0.01	5.96	<0.01
B00291560	0.145	N.A.	904	46.9	0.05	0.45	20.1	0.31
B00291561	3.115	N.A.	<5	0.4	0.08	<0.01	2.31	<0.01
*Dup B00291561	N.A.	N.A.	<5	0.5	0.08	<0.01	2.20	<0.01
B00291562	3.445	N.A.	<5	<0.3	0.09	<0.01	2.39	<0.01
B00291563	3.090	N.A.	<5	0.5	0.08	<0.01	2.32	<0.01
B00291564	3.670	N.A.	<5	0.3	0.08	<0.01	2.68	<0.01
B00291565	3.510	N.A.	<5	0.5	0.07	<0.01	2.99	<0.01

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Final : VC162015 Order: PO# BMC16-01_16

Report File No.: 0000017847

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291566	1.635	N.A.	7	0.8	0.07	<0.01	4.61	0.02
B00291567	3.610	N.A.	15	0.9	0.07	<0.01	12.2	0.02
B00291568	2.740	N.A.	<5	0.4	0.12	<0.01	2.60	<0.01
B00291569	4.010	N.A.	<5	<0.3	0.14	<0.01	1.74	<0.01
B00291570	0.745	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291571	4.280	N.A.	<5	0.4	0.16	<0.01	1.44	<0.01
B00291572	3.270	N.A.	<5	0.5	0.17	<0.01	2.06	<0.01
B00291573	2.500	N.A.	<5	0.8	0.18	<0.01	1.56	<0.01
B00291574	2.210	N.A.	<5	0.5	0.20	<0.01	1.66	<0.01
B00291575	3.850	N.A.	8	0.5	0.20	<0.01	1.81	<0.01
B00291576	3.075	93.7	11	0.7	0.24	<0.01	1.83	<0.01
B00291577	2.980	N.A.	21	2.0	0.32	<0.01	2.37	0.05
B00291578	3.335	N.A.	15	2.8	0.35	<0.01	2.12	0.05
B00291579	3.370	N.A.	86	7.7	0.35	0.03	2.77	0.07
B00291580	0.155	N.A.	1290	68.0	0.26	0.37	3.73	1.37
B00291581	0.155	N.A.	827	22.1	0.14	1.81	13.8	0.26
B00291582	2.870	N.A.	931	211	0.24	0.23	29.8	2.02
B00291583	2.210	N.A.	182	13.0	1.03	0.01	4.24	0.12
B00291584	3.160	N.A.	1470	170	0.59	1.02	24.8	1.54
B00291586	2.655	N.A.	9	1.6	0.44	<0.01	1.88	<0.01
B00291587	2.210	N.A.	7	1.6	0.66	<0.01	1.78	<0.01
B00291588	2.610	N.A.	19	2.8	0.98	<0.01	2.86	0.02
B00291589	3.675	N.A.	2630	>300	0.97	0.32	24.2	4.02
B00291590	0.565	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291591	3.635	N.A.	595	82.1	0.83	0.24	4.29	1.53
B00291592	4.545	N.A.	804	79.6	1.10	0.09	8.11	0.57
B00291593	2.740	N.A.	37	7.1	0.63	<0.01	6.62	0.10
B00291594	4.080	N.A.	52	9.7	0.86	<0.01	6.80	0.15
B00291595	4.370	N.A.	47	9.2	0.67	<0.01	7.06	0.14
B00291596	4.160	N.A.	29	6.1	0.79	<0.01	7.30	0.08
B00291597	4.395	N.A.	18	4.5	0.70	<0.01	7.27	0.05
*Dup B00291597	N.A.	N.A.	19	4.5	0.70	<0.01	7.41	0.06
B00291598	4.260	N.A.	<5	1.9	0.62	<0.01	7.35	0.02
B00291599	4.675	N.A.	18	4.0	0.35	<0.01	7.27	0.06
B00291600	0.145	N.A.	890	47.0	0.04	0.45	19.1	0.30
B00291601	3.600	N.A.	16	3.7	0.28	<0.01	7.04	0.07
B00291602	4.295	N.A.	8	2.0	0.02	<0.01	6.81	0.04
B00291603	3.790	N.A.	21	5.8	0.03	<0.01	6.86	0.11
B00291604	2.805	N.A.	31	11.6	0.23	0.01	7.04	0.22
B00291605	2.150	N.A.	124	38.3	0.25	0.52	9.02	0.47

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Final : VC162015 Order: PO# BMC16-01_16

Report File No.: 0000017847

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291606	2.910	N.A.	28	3.2	0.57	0.07	2.19	<0.01
B00291607	3.595	N.A.	5	0.8	0.42	<0.01	2.10	<0.01
B00291608	2.850	96.8	6	0.4	0.21	<0.01	2.76	<0.01
*Rep B00291528			<5					
*Rep B00291587			5					
*Rep B00291604			30					
*Std OXN117			7690					
*Std OXB130			135					
*Std OREAS214			2990					
*Std OXH97			1300					
*Std OXN117			7540					
*Blk BLANK			<5					
*Blk BLANK			<5					
*Rep B00291536					0.32	<0.01	2.54	<0.01
*Rep B00291562					0.09	<0.01	2.37	<0.01
*Rep B00291571					0.16	<0.01	1.47	<0.01
*Rep B00291608					0.21	<0.01	2.73	<0.01
*Std OREAS134A					0.15	0.13	12.1	12.6
*Std RM183-89					3.15	<0.01	36.2	0.03
*Std OREAS131B					0.08	0.02	5.73	1.88
*Std ME-19					0.16	0.46	3.89	0.97
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00291538				<0.3				
*Rep B00291559				1.0				
*Rep B00291573				0.7				
*Rep B00291601				4.1				
*Std SU_1B				6.0				

Element	@Ag
Method	GE_AAS12E
Det.Lim.	0.3
Units	g/t
*Std OREAS621	67.7
*Std AMIS0268	191
*Blk BLANK	<0.3
*Blk BLANK	<0.3

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Final : VC162015 Order: PO# BMC16-01_16

Report File No.: 0000017847

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291526	0.8	<0.01	7	<5	0.97	<0.01	<1	N.A.
B00291527	2.0	<0.01	8	<5	1.13	<0.01	<1	N.A.
B00291528	2.3	<0.01	15	<5	0.91	<0.01	<1	N.A.
B00291529	0.7	<0.01	5	<5	0.35	<0.01	<1	N.A.
B00291530	<0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
B00291531	4.5	<0.01	13	<5	1.14	<0.01	<1	N.A.
B00291532	4.6	<0.01	13	<5	1.28	<0.01	<1	N.A.
B00291533	1.6	0.01	6	<5	1.03	<0.01	<1	N.A.
B00291534	1.3	0.01	8	<5	1.40	<0.01	<1	N.A.
B00291535	0.7	<0.01	5	<5	0.54	<0.01	<1	N.A.
B00291536	1.0	0.01	10	<5	0.36	<0.01	<1	N.A.
B00291537	0.3	<0.01	<3	<5	1.31	<0.01	<1	N.A.
B00291538	0.2	<0.01	5	<5	0.55	<0.01	<1	N.A.
B00291539	1.0	<0.01	8	<5	2.14	<0.01	<1	N.A.
B00291540	18.0	1.12	1310	109	22.6	9.00	107	N.A.
B00291541	1.1	<0.01	5	<5	1.01	0.04	<1	N.A.
B00291542	0.8	<0.01	4	<5	1.04	0.02	<1	N.A.
B00291543	1.0	<0.01	5	<5	1.52	<0.01	<1	N.A.
B00291544	1.7	<0.01	12	<5	1.77	<0.01	<1	N.A.
B00291545	0.7	<0.01	5	<5	0.52	<0.01	<1	N.A.
B00291546	1.3	<0.01	8	<5	1.20	<0.01	<1	N.A.
B00291547	1.4	<0.01	9	<5	1.35	<0.01	<1	N.A.
B00291548	1.1	<0.01	<3	<5	0.23	0.01	<1	N.A.
B00291549	1.0	<0.01	11	<5	0.23	<0.01	<1	N.A.
B00291550	<0.1	<0.01	5	<5	<0.02	<0.01	<1	N.A.
B00291551	1.0	0.01	7	<5	0.24	<0.01	<1	N.A.
B00291552	0.9	<0.01	6	<5	0.21	<0.01	<1	N.A.
B00291553	3.5	0.01	65	6	0.26	<0.01	1	N.A.
B00291554	4.3	0.05	215	18	0.36	0.05	4	N.A.
B00291555	4.7	0.03	28	<5	0.50	0.06	4	N.A.
B00291556	8.4	0.02	27	<5	0.24	0.02	4	N.A.
B00291558	9.1	0.01	48	5	0.52	<0.01	3	N.A.
B00291559	3.0	0.11	12	<5	1.20	0.30	3	N.A.
B00291560	18.0	1.15	1310	105	23.7	9.24	109	N.A.
B00291561	1.2	<0.01	15	<5	0.58	0.04	<1	N.A.
*Dup B00291561	1.1	<0.01	14	<5	0.59	0.01	<1	N.A.
B00291562	1.4	<0.01	19	<5	0.55	<0.01	<1	N.A.
B00291563	1.3	<0.01	14	<5	0.62	<0.01	<1	N.A.
B00291564	1.3	<0.01	15	<5	0.55	<0.01	1	N.A.
B00291565	1.1	0.02	7	12	0.45	0.04	2	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291566	3.1	0.07	32	<5	0.73	0.24	2	N.A.
B00291567	9.1	0.02	44	14	0.47	0.07	4	N.A.
B00291568	1.6	<0.01	14	<5	0.59	0.04	<1	N.A.
B00291569	0.9	<0.01	9	<5	0.73	0.03	<1	N.A.
B00291570	<0.1	<0.01	6	<5	<0.02	<0.01	<1	N.A.
B00291571	0.6	<0.01	7	<5	2.56	0.02	<1	N.A.
B00291572	1.4	<0.01	14	<5	0.99	0.03	1	N.A.
B00291573	0.7	<0.01	9	<5	1.52	0.02	<1	N.A.
B00291574	0.8	<0.01	22	<5	1.36	0.09	<1	N.A.
B00291575	0.8	0.01	60	<5	1.22	0.06	2	N.A.
B00291576	0.8	0.04	108	<5	0.59	0.10	3	N.A.
B00291577	1.1	0.11	71	<5	0.88	0.32	6	N.A.
B00291578	1.0	0.10	51	<5	0.82	0.24	6	N.A.
B00291579	1.5	0.18	382	<5	2.10	0.56	12	N.A.
B00291580	4.5	5.28	66	109	3.88	4.05	5	N.A.
B00291581	9.3	1.07	77	20	17.3	0.81	19	N.A.
B00291582	34.9	5.75	2640	234	30.4	21.4	201	N.A.
B00291583	2.6	0.24	1050	20	1.73	1.34	22	N.A.
B00291584	27.4	5.22	4000	203	45.7	20.9	319	N.A.
B00291586	1.1	0.02	114	<5	0.52	0.21	2	N.A.
B00291587	1.1	0.01	15	<5	0.45	0.08	<1	N.A.
B00291588	2.2	0.02	21	6	0.69	0.21	2	N.A.
B00291589	31.7	8.74	708	1580	17.6	25.4	182	417
B00291590	<0.1	<0.01	9	<5	<0.02	0.12	<1	N.A.
B00291591	2.6	0.20	43	78	21.3	0.83	43	N.A.
B00291592	3.5	0.61	55	130	0.61	1.04	8	N.A.
B00291593	0.2	0.08	21	<5	0.27	0.11	1	N.A.
B00291594	0.5	0.06	27	17	0.34	0.05	2	N.A.
B00291595	0.2	0.07	36	<5	0.57	0.05	<1	N.A.
B00291596	0.3	0.07	47	<5	0.24	0.06	<1	N.A.
B00291597	0.1	0.06	55	<5	0.41	0.03	<1	N.A.
*Dup B00291597	0.1	0.06	62	<5	0.44	0.04	<1	N.A.
B00291598	<0.1	0.06	69	<5	0.25	0.02	<1	N.A.
B00291599	0.1	0.05	74	<5	0.54	0.02	<1	N.A.
B00291600	17.6	1.12	1360	111	23.3	8.94	107	N.A.
B00291601	0.2	0.05	80	<5	0.48	0.05	<1	N.A.
B00291602	0.1	0.06	40	<5	0.44	0.03	<1	N.A.
B00291603	0.1	0.05	44	5	1.64	0.02	1	N.A.
B00291604	0.1	0.06	53	13	2.82	0.04	4	N.A.
B00291605	2.9	1.14	14	33	22.8	1.02	38	N.A.

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Final : VC162015 Order: PO# BMC16-01_16

Report File No.: 0000017847

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291606	1.2	<0.01	8	<5	1.11	0.02	2	N.A.
B00291607	1.1	0.01	200	<5	0.61	0.01	2	N.A.
B00291608	1.6	<0.01	17	6	0.41	<0.01	2	N.A.
*Rep B00291534			10	<5	1.39	<0.01	<1	
*Rep B00291550			4	<5	<0.02	<0.01	<1	
*Rep B00291578			54	<5	0.80	0.22	7	
*Rep B00291604			51	13	2.89	0.03	4	
*Std OREAS934			N.A.	N.A.	514	N.A.	72	
*Std DS-1			7030	N.A.	N.A.	82.4	N.A.	
*Std OREAS131B			N.A.	38	N.A.	N.A.	N.A.	
*Std DS-1			6860	N.A.	N.A.	83.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Blk BLANK			<3	<5	<0.02	0.01	<1	
*Std ME-1302								429
*Blk BLANK								<10
*Rep B00291536	1.0	<0.01						
*Rep B00291562	1.4	<0.01						
*Rep B00291571	0.6	<0.01						
*Rep B00291608	1.6	<0.01						
*Std OREAS134A	19.0	17.1						
*Std RM183-89	0.8	<0.01						
*Std OREAS131B	4.8	3.07						
*Std ME-19	1.5	0.78						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
*Rep B00291589	420

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Certificate of Analysis

Work Order : VC162016

[Report File No.: 0000017834]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jun 30, 2016

P.O. No.	:	PO# BMC16-01_18
Project No.	:	KZK
No. Of Samples	:	10
Date Submitted	:	Jun 15, 2016
Report Comprises	:	Pages 1 to 4 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162016 Order: PO# BMC16-01_18

Report File No.: 0000017834

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
Q190432	0.135	N.A.	900	45.1	0.05	0.46	20.0	0.31
B00291512	6.585	N.A.	<5	0.4	0.09	<0.01	7.88	<0.01
B00291557	5.275	N.A.	15	0.7	0.07	<0.01	15.8	0.01
B00291585	6.595	N.A.	9380	>300	0.41	0.86	27.7	3.28
B00292344	8.960	N.A.	3200	>300	0.02	0.48	39.9	5.49
Q190433	1.490	N.A.	<5	0.8	<0.01	<0.01	0.08	<0.01
B00292349	3.785	N.A.	6650	>300	>4.00	0.35	8.18	0.90
B00292368	12.085	N.A.	1020	102	<0.01	0.32	32.1	1.44
B00229372	12.465	N.A.	2130	172	<0.01	1.03	33.4	2.20
B00292397	12.800	96.9	563	133	>4.00	0.55	31.6	2.03
*Rep B00292368				105				
*Std AMIS0268				195				
*Blk BLANK				<0.3				
*Rep B00291585			>10000					
*Std OXN117			7680					
*Blk BLANK			<5					
*Rep B00291512					0.09	0.01	7.84	<0.01
*Std OREAS134A					0.15	0.13	12.0	12.6
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162016 Order: PO# BMC16-01_18

Report File No.: 0000017834

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
Q190432	18.1	1.14	1410	119	22.4	9.05	112	N.A.
B00291512	2.6	0.03	<3	<5	0.85	0.01	5	N.A.
B00291557	14.2	0.01	105	<5	0.31	0.01	2	N.A.
B00291585	35.3	7.42	9160	3900	12.6	38.2	126	11.22
B00292344	43.5	7.19	3190	400	3.80	16.6	182	N.A.
Q190433	0.2	0.01	16	5	<0.02	0.11	<1	N.A.
B00292349	9.4	1.67	664	1530	2.75	5.01	41	5.32
B00292368	37.6	5.62	4580	464	38.1	23.0	235	N.A.
B00229372	38.2	6.70	8340	545	65.7	22.0	189	N.A.
B00292397	40.3	8.64	209	181	43.8	29.9	164	N.A.
*Std GS-20B								20.00
*Blk BLANK								<0.50
*Rep B00291512	2.6	0.03						
*Std OREAS134A	19.2	17.1						
*Blk BLANK	<0.1	<0.01						
*Rep B00291512			5	<5	0.79	<0.01	5	
*Std OREAS131B			N.A.	37	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	514	N.A.	79	
*Std DS-1			6720	N.A.	N.A.	79.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00291585								10.50

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Final : VC162016 Order: PO# BMC16-01_18

Report File No.: 0000017834

Element	Ag	Ba
Method	GO_FAG313	GO_XRF77B
Det.Lim.	10	0.2
Units	g/t	%
Q190432	N.A.	N.A.
B00291512	N.A.	N.A.
B00291557	N.A.	N.A.
B00291585	828	N.A.
B00292344	395	N.A.
Q190433	N.A.	N.A.
B00292349	359	4.6
B00292368	N.A.	N.A.
B00229372	N.A.	N.A.
B00292397	N.A.	4.7
*Std AMIS0267	866	
*Blk BLANK	<10	
*Std CRM3594-86		9.9
*Blk BLANK		<0.2
*Rep B00291585	824	
*Rep B00292397		4.6

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Certificate of Analysis

Work Order : VC162046

[Report File No.: 0000017936]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 12, 2016

P.O. No.	:	PO# BMC16-01_19
Project No.	:	KZK
No. Of Samples	:	87
Date Submitted	:	Jun 23, 2016
Report Comprises	:	Pages 1 to 8 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292316	6.110	N.A.	7	0.3	0.10	<0.01	2.77	<0.01
B00292317	5.285	N.A.	9	0.6	0.07	<0.01	4.14	<0.01
B00292318	5.525	N.A.	36	1.2	0.07	<0.01	8.57	<0.01
B00292319	4.980	N.A.	6	0.5	0.10	<0.01	2.97	<0.01
B00292320	1.500	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292321	2.135	N.A.	<5	<0.3	0.10	<0.01	3.02	<0.01
B00292322	4.680	N.A.	<5	<0.3	0.10	<0.01	2.88	<0.01
B00292323	5.445	N.A.	9	0.3	0.10	<0.01	3.72	<0.01
B00292324	5.735	N.A.	9	0.3	0.15	<0.01	3.33	<0.01
B00292325	5.195	N.A.	10	0.3	0.18	<0.01	3.56	<0.01
B00292326	4.190	N.A.	11	0.4	0.17	<0.01	4.28	<0.01
B00292327	2.810	N.A.	<5	0.8	0.28	<0.01	2.74	<0.01
B00292328	5.485	N.A.	360	166	0.27	1.10	37.8	1.11
B00292329	4.705	N.A.	131	13.9	0.74	<0.01	3.80	0.09
B00292330	0.155	N.A.	1280	67.1	0.25	0.35	3.64	1.34
B00292331	0.160	N.A.	811	21.1	0.14	1.74	13.4	0.25
B00292332	2.845	N.A.	1520	128	0.44	0.64	25.7	0.66
B00292333	5.080	N.A.	104	6.5	0.59	0.02	2.63	0.05
B00292334	6.425	N.A.	7	0.4	0.45	<0.01	5.45	<0.01
B00292335	6.065	N.A.	6	0.5	0.17	<0.01	7.48	<0.01
B00292336	4.985	N.A.	12	0.8	0.41	<0.01	3.74	<0.01
B00292337	4.255	N.A.	16	1.4	0.36	<0.01	2.39	<0.01
B00292338	5.875	N.A.	7	1.3	0.32	<0.01	2.17	<0.01
B00292339	5.170	N.A.	<5	0.7	0.34	<0.01	2.35	<0.01
B00292340	1.085	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292341	5.000	N.A.	13	0.6	0.40	<0.01	2.21	<0.01
B00292342	5.675	N.A.	27	1.5	0.55	<0.01	2.32	<0.01
B00292343	3.145	N.A.	1230	41.1	1.02	<0.01	4.93	0.47
B00292345	5.690	N.A.	3120	>300	0.01	2.71	40.0	4.65
B00292346	5.820	N.A.	2020	175	0.03	0.39	34.8	2.40
B00292347	4.960	N.A.	2210	179	2.01	0.39	15.4	1.05
B00292348	3.975	N.A.	1740	247	0.78	0.04	30.9	3.44
B00292350	0.155	N.A.	1310	68.8	0.26	0.35	3.64	1.38
B00292351	0.160	N.A.	848	20.4	0.14	1.79	13.5	0.25
B00292352	4.510	N.A.	<5	<0.3	0.30	<0.01	7.64	<0.01
*Dup B00292352	N.A.	N.A.	<5	<0.3	0.31	<0.01	7.66	<0.01
B00292353	5.375	N.A.	<5	<0.3	0.41	<0.01	6.59	<0.01
B00292354	4.830	N.A.	<5	<0.3	0.19	<0.01	7.14	<0.01
B00292355	5.160	N.A.	<5	0.5	0.20	<0.01	7.25	<0.01
B00292356	6.525	N.A.	<5	0.8	0.20	<0.01	6.88	<0.01

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292357	6.995	N.A.	<5	<0.3	0.13	<0.01	7.14	<0.01
B00292358	6.610	N.A.	<5	<0.3	0.15	<0.01	7.15	<0.01
B00292359	5.505	N.A.	5	0.5	0.04	<0.01	7.10	<0.01
B00292360	1.230	N.A.	<5	<0.3	<0.01	<0.01	0.10	<0.01
B00292361	5.765	N.A.	5	0.6	0.05	<0.01	7.32	<0.01
B00292362	5.560	N.A.	<5	0.5	0.07	<0.01	6.84	0.01
B00292363	4.950	N.A.	7	1.2	0.06	<0.01	6.54	0.01
B00292364	5.260	N.A.	10	1.1	0.06	<0.01	6.68	<0.01
B00292365	4.815	N.A.	10	0.8	0.28	<0.01	6.68	<0.01
B00292366	5.150	N.A.	11	2.4	0.41	<0.01	7.11	<0.01
B00292367	4.675	96.5	13	3.1	0.52	<0.01	8.10	<0.01
B00292369	4.755	N.A.	2080	219	<0.01	1.54	33.8	2.96
B00292370	0.160	N.A.	1310	67.0	0.26	0.35	3.68	1.33
B00292371	0.160	N.A.	825	20.3	0.14	1.71	13.5	0.26
B00292373	5.745	N.A.	2240	229	0.02	0.53	29.4	2.58
B00292374	5.735	N.A.	1030	132	1.51	0.18	29.9	2.57
B00292375	6.220	N.A.	1720	125	0.01	0.62	30.8	1.33
B00292376	4.555	N.A.	1030	222	<0.01	0.08	29.6	5.07
B00292377	3.190	N.A.	3110	>300	<0.01	4.43	19.3	7.22
B00292378	2.640	N.A.	248	28.3	0.87	0.10	11.1	0.39
B00292379	4.820	N.A.	15	2.1	0.45	<0.01	7.07	0.03
B00292380	2.020	N.A.	<5	<0.3	<0.01	<0.01	0.09	<0.01
B00292381	5.700	N.A.	24	2.8	0.15	<0.01	6.92	0.04
B00292382	4.935	N.A.	12	2.7	0.14	<0.01	7.33	0.04
B00292383	5.790	N.A.	11	2.3	0.03	<0.01	7.33	0.03
B00292384	4.865	N.A.	<5	0.6	0.07	<0.01	7.64	0.01
B00292385	4.815	N.A.	<5	0.3	0.08	<0.01	7.18	<0.01
B00292386	4.575	N.A.	<5	0.4	0.08	<0.01	7.29	<0.01
B00292387	5.510	N.A.	<5	0.4	0.13	<0.01	7.24	<0.01
B00292388	5.670	N.A.	<5	0.3	0.08	<0.01	7.54	<0.01
B00292389	5.505	N.A.	<5	0.5	0.12	<0.01	6.70	<0.01
*Dup B00292389	N.A.	N.A.	6	0.5	0.12	<0.01	6.54	<0.01
B00292390	0.145	N.A.	835	46.8	0.05	0.46	20.1	0.31
B00292391	5.030	N.A.	<5	<0.3	0.17	<0.01	7.15	<0.01
B00292392	5.635	N.A.	11	0.8	0.15	<0.01	7.22	<0.01
B00292393	5.595	N.A.	9	1.3	0.02	<0.01	7.01	0.01
B00292394	5.355	N.A.	11	1.5	0.03	<0.01	6.81	0.02
B00292395	5.355	N.A.	16	1.2	0.11	<0.01	6.96	0.02
B00292396	3.500	N.A.	28	6.9	0.49	<0.01	7.21	0.10
B00292398	3.420	N.A.	78	81.4	0.13	0.25	22.4	1.78

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292399	2.630	N.A.	<5	0.5	0.75	0.02	2.61	<0.01
B00292400	1.575	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00292401	4.510	N.A.	<5	1.1	0.14	0.01	2.55	<0.01
B00292402	7.920	N.A.	5	<0.3	0.14	<0.01	3.18	<0.01
B00292403	5.385	N.A.	7	<0.3	0.10	<0.01	3.76	<0.01
B00292404	4.505	N.A.	<5	<0.3	0.09	<0.01	2.84	<0.01
B00292405	5.180	N.A.	<5	<0.3	0.10	<0.01	2.99	<0.01
B00292406	5.670	N.A.	<5	<0.3	0.09	<0.01	4.05	<0.01
B00292407	5.275	98.0	<5	<0.3	0.10	<0.01	6.09	<0.01
*Rep B00292352				<0.3				
*Rep B00292389				0.5				
*Rep B00292403				<0.3				
*Std SU_1B				6.2				
*Std OREAS621				66.7				
*Std AMIS0268				191				
*Std SU_1B				6.2				
*Std OREAS621				68.4				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Rep B00292329			134					
*Rep B00292373			2000					
*Rep B00292396			21					
*Std OXN117			7710					
*Std OXB130			124					
*Std OREAS214			2870					
*Std OXH97			1340					
*Std OXN117			7730					
*Blk BLANK			<5					
*Blk BLANK			<5					

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep B00292321	0.09	<0.01	3.00	<0.01
*Rep B00292361	0.05	<0.01	7.41	<0.01
*Rep B00292363	0.06	<0.01	6.85	<0.01
*Rep B00292396	0.49	<0.01	7.13	0.10
*Std OREAS134A	0.15	0.13	11.9	13.0
*Std ME-19	0.16	0.46	3.86	0.98
*Std OREAS131B	0.08	0.02	5.71	1.92

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

	Ba GO_ICP90Q 0.01 %	@Cu GO_ICP90Q 0.01 %	Fe GO_ICP90Q 0.05 %	@Pb GO_ICP90Q 0.01 %
*Std RM183-89	3.12	<0.01	35.4	0.02
*Blk BLANK	<0.01	<0.01	<0.05	<0.01
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292316	1.1	0.01	11	<5	0.23	0.03	<1	N.A.
B00292317	2.1	0.01	17	17	0.23	0.06	<1	N.A.
B00292318	7.6	0.02	78	11	0.47	0.06	3	N.A.
B00292319	1.1	0.03	17	<5	0.26	0.08	<1	N.A.
B00292320	<0.1	<0.01	5	<5	<0.02	0.01	<1	N.A.
B00292321	1.0	<0.01	13	<5	0.18	0.01	<1	N.A.
B00292322	1.2	<0.01	14	6	0.17	0.02	<1	N.A.
B00292323	1.4	<0.01	14	6	0.24	0.02	<1	N.A.
B00292324	1.5	<0.01	14	<5	0.22	0.02	<1	N.A.
B00292325	1.5	<0.01	14	<5	0.28	0.02	<1	N.A.
B00292326	2.1	0.02	9	26	0.26	0.07	2	N.A.
B00292327	0.5	0.01	5	9	0.66	0.07	2	N.A.
B00292328	30.4	4.14	367	166	28.8	10.8	375	N.A.
B00292329	2.4	0.05	56	15	1.31	0.31	21	N.A.
B00292330	4.4	5.32	71	110	3.95	4.24	6	N.A.
B00292331	9.3	1.06	80	20	17.1	0.82	21	N.A.
B00292332	27.2	2.39	273	90	24.6	6.72	421	N.A.
B00292333	1.2	0.01	296	15	0.36	0.15	10	N.A.
B00292334	0.4	0.01	446	32	0.08	0.06	2	N.A.
B00292335	0.3	0.02	174	<5	0.11	0.05	2	N.A.
B00292336	2.2	0.01	1380	<5	0.53	0.06	5	N.A.
B00292337	1.4	0.02	361	8	0.62	0.08	1	N.A.
B00292338	1.2	0.02	138	11	0.67	0.06	1	N.A.
B00292339	1.4	0.02	69	<5	0.42	0.04	1	N.A.
B00292340	<0.1	<0.01	5	<5	<0.02	0.01	<1	N.A.
B00292341	1.2	0.02	49	<5	0.59	0.08	1	N.A.
B00292342	1.3	0.03	27	8	0.44	0.10	2	N.A.
B00292343	3.6	0.59	8030	91	1.35	2.50	35	N.A.
B00292345	35.7	6.39	250	276	7.35	16.1	101	413
B00292346	43.7	11.5	532	105	59.1	13.6	125	N.A.
B00292347	15.8	3.47	247	296	7.81	5.12	73	N.A.
B00292348	39.2	11.4	295	142	25.5	26.2	163	N.A.
B00292350	4.5	5.23	74	111	4.09	4.48	6	N.A.
B00292351	9.0	1.04	77	19	17.6	0.88	20	N.A.
B00292352	0.3	0.02	29	25	0.03	0.13	<1	N.A.
*Dup B00292352	0.4	0.02	28	25	0.03	0.11	<1	N.A.
B00292353	<0.1	0.02	53	<5	<0.02	0.12	<1	N.A.
B00292354	<0.1	0.02	74	<5	<0.02	0.07	<1	N.A.
B00292355	<0.1	0.02	79	<5	0.12	0.04	<1	N.A.
B00292356	<0.1	0.01	175	<5	0.19	0.04	<1	N.A.

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292357	0.1	0.01	323	<5	0.03	0.03	<1	N.A.
B00292358	0.1	0.01	177	<5	0.09	0.04	<1	N.A.
B00292359	0.1	0.01	65	<5	0.05	0.02	<1	N.A.
B00292360	<0.1	<0.01	5	<5	<0.02	0.02	<1	N.A.
B00292361	0.1	<0.01	62	<5	0.12	0.01	<1	N.A.
B00292362	<0.1	0.01	55	<5	0.07	0.03	<1	N.A.
B00292363	<0.1	<0.01	59	<5	0.06	0.02	<1	N.A.
B00292364	<0.1	<0.01	59	<5	0.04	0.02	<1	N.A.
B00292365	<0.1	<0.01	54	<5	0.05	0.04	<1	N.A.
B00292366	<0.1	0.02	54	<5	0.11	0.05	<1	N.A.
B00292367	0.1	0.02	55	<5	0.20	0.08	<1	N.A.
B00292369	39.2	10.7	8800	337	92.6	22.4	362	N.A.
B00292370	4.4	5.15	73	106	4.09	4.15	6	N.A.
B00292371	9.4	1.06	80	21	17.8	0.83	20	N.A.
B00292373	35.1	7.39	3170	1660	57.3	30.2	106	N.A.
B00292374	35.0	7.03	2460	702	35.6	15.4	85	N.A.
B00292375	35.4	4.48	3620	1090	50.9	7.90	153	N.A.
B00292376	36.6	8.19	5840	443	96.9	7.88	139	N.A.
B00292377	29.3	22.6	4640	432	353	18.7	320	477
B00292378	10.2	1.47	1190	60	17.0	3.37	29	N.A.
B00292379	0.2	0.05	517	<5	1.05	0.12	2	N.A.
B00292380	<0.1	<0.01	6	<5	0.08	0.07	<1	N.A.
B00292381	<0.1	0.04	139	8	0.88	0.09	<1	N.A.
B00292382	0.2	0.05	161	<5	0.66	0.14	<1	N.A.
B00292383	<0.1	0.05	77	<5	0.52	0.05	<1	N.A.
B00292384	<0.1	0.02	312	7	0.12	0.03	<1	N.A.
B00292385	<0.1	0.01	251	<5	0.09	0.02	<1	N.A.
B00292386	<0.1	0.02	259	<5	0.10	0.03	<1	N.A.
B00292387	<0.1	0.02	149	<5	0.08	0.02	<1	N.A.
B00292388	0.1	0.02	428	<5	0.07	0.02	<1	N.A.
B00292389	<0.1	0.02	181	<5	0.05	0.01	<1	N.A.
*Dup B00292389	<0.1	0.02	194	<5	0.05	<0.01	<1	N.A.
B00292390	18.6	1.15	1350	101	23.4	8.53	109	N.A.
B00292391	0.1	0.02	227	<5	0.05	0.04	<1	N.A.
B00292392	<0.1	0.02	155	5	0.12	0.04	<1	N.A.
B00292393	<0.1	0.03	99	6	0.23	<0.01	<1	N.A.
B00292394	<0.1	0.03	73	5	0.36	<0.01	<1	N.A.
B00292395	<0.1	0.03	52	21	0.31	0.14	<1	N.A.
B00292396	<0.1	0.05	45	30	1.59	0.07	3	N.A.
B00292398	14.1	3.88	484	150	125	4.89	233	N.A.

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Final : VC162046 Order: PO# BMC16-01_19

Report File No.: 0000017936

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292399	0.7	0.01	<3	<5	1.16	0.03	4	N.A.
B00292400	0.1	<0.01	4	<5	0.03	<0.01	<1	N.A.
B00292401	0.3	<0.01	3	<5	3.30	<0.01	2	N.A.
B00292402	0.6	0.01	6	9	0.49	0.01	1	N.A.
B00292403	1.7	<0.01	8	13	0.60	<0.01	2	N.A.
B00292404	0.9	0.01	6	7	0.38	<0.01	1	N.A.
B00292405	1.1	<0.01	5	5	0.46	<0.01	2	N.A.
B00292406	1.6	<0.01	<3	5	0.21	<0.01	4	N.A.
B00292407	1.5	<0.01	<3	7	0.15	<0.01	1	N.A.
*Rep B00292324			13	<5	0.21	0.01	<1	
*Rep B00292363			55	<5	0.06	0.02	<1	
*Rep B00292375			3420	1030	50.2	7.79	151	
*Rep B00292390			1380	102	23.4	8.59	111	
*Std OREAS621			N.A.	112	N.A.	N.A.	N.A.	
*Std OREAS624			115	N.A.	21.8	1.99	31	
*Std DS-1			6780	N.A.	N.A.	80.2	N.A.	
*Std OREAS210			3660	N.A.	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	485	N.A.	78	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								423

Element	S	@Zn	Ag
Method	GO_ICP90Q	GO_ICP90Q	GO_FAG313
Det.Lim.	0.1	0.01	10
Units	%	%	g/t
*Blk BLANK			<10
*Rep B00292321	1.0	<0.01	
*Rep B00292361	0.2	<0.01	
*Rep B00292363	<0.1	0.01	
*Rep B00292396	<0.1	0.06	
*Std OREAS134A	19.4	17.8	
*Std ME-19	1.5	0.77	
*Std OREAS131B	4.9	3.09	
*Std RM183-89	0.7	<0.01	
*Blk BLANK	<0.1	<0.01	
*Blk BLANK	<0.1	<0.01	
*Rep B00292377			478

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Certificate of Analysis

Work Order : VC162068

[Report File No.: 0000018031]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 19, 2016

P.O. No.	:	PO# BMC16-01_20
Project No.	:	KZK
No. Of Samples	:	77
Date Submitted	:	Jun 27, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162068 Order: PO# BMC16-01_20

Report File No.: 0000018031

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291609	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291610	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291611	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291612	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291613	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291614	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291615	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291616	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291617	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291618	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291619	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291620	0.145	N.A.	840	45.4	0.05	0.46	20.1	0.31
B00291621	3.815	N.A.	12	0.3	0.21	<0.01	1.50	<0.01
B00291622	3.745	N.A.	19	0.7	0.21	<0.01	1.54	<0.01
B00291623	3.640	N.A.	28	0.9	0.21	<0.01	1.38	<0.01
B00291624	3.785	N.A.	21	1.1	0.22	<0.01	1.90	<0.01
B00291625	4.385	N.A.	70	10.3	0.28	0.03	3.98	0.16
B00291626	6.015	N.A.	2040	189	0.05	0.38	32.9	1.75
B00291627	5.945	N.A.	2590	255	0.02	0.40	32.3	2.29
B00291628	5.715	N.A.	1800	191	0.02	0.59	26.6	1.90
B00291629	3.685	N.A.	1210	203	0.10	0.08	25.5	2.36
B00291630	0.640	N.A.	7	<0.3	<0.01	<0.01	0.06	<0.01
B00291631	4.785	N.A.	72	11.0	0.14	0.02	2.41	<0.01
B00291632	4.400	N.A.	13	0.5	0.11	<0.01	2.28	<0.01
B00291633	1.845	N.A.	18	0.8	0.13	<0.01	2.13	<0.01
B00291634	2.170	N.A.	24	0.9	0.37	<0.01	2.10	<0.01
B00291635	3.000	N.A.	157	27.2	0.24	0.01	5.05	0.33
B00291636	2.180	N.A.	3460	125	0.13	1.04	29.0	1.20
B00291637	5.355	N.A.	467	78.6	0.45	0.20	11.8	0.72
B00291638	2.170	N.A.	868	181	0.26	0.19	15.8	2.21
B00291639	6.570	N.A.	1960	>300	0.02	0.46	33.8	3.87
B00291640	0.160	N.A.	1290	70.1	0.25	0.36	3.79	1.28
B00291641	0.160	N.A.	816	20.2	0.14	1.71	13.4	0.24
B00291642	3.690	N.A.	18	1.8	0.20	<0.01	2.32	0.01
B00291643	4.145	N.A.	29	0.7	0.35	<0.01	2.08	<0.01
*Dup B00291643	N.A.	N.A.	26	0.6	0.37	<0.01	2.16	<0.01
B00291644	3.440	N.A.	71	5.1	0.86	0.01	2.23	<0.01
B00291645	2.660	N.A.	1370	157	0.61	0.08	22.0	2.20
B00291646	5.455	N.A.	499	52.5	0.94	0.09	12.4	1.04
B00291647	3.485	N.A.	2250	17.0	1.19	0.05	8.67	0.27

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Final : VC162068 Order: PO# BMC16-01_20

Report File No.: 0000018031

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291648	0.604	N.A.	3700	244	>4.00	0.35	27.7	5.12
B00291649	4.385	N.A.	66	9.1	>4.00	0.01	6.81	0.17
B00291650	0.665	N.A.	5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291651	3.720	N.A.	73	8.9	0.33	<0.01	6.86	0.15
B00291652	3.475	N.A.	41	5.1	0.49	<0.01	6.88	0.08
B00291653	3.900	N.A.	26	2.7	0.67	<0.01	6.65	0.04
B00291654	3.340	95.6	20	2.3	0.66	<0.01	7.06	0.03
B00291655	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291656	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291657	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291658	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291659	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291660	0.145	N.A.	828	46.1	0.05	0.46	19.7	0.31
B00291661	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291662	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291663	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291664	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291665	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291666	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291667	3.885	N.A.	<5	2.1	0.05	<0.01	6.85	0.03
B00291668	3.525	N.A.	12	1.5	0.11	<0.01	6.83	0.03
B00291669	3.500	N.A.	<5	1.1	0.15	<0.01	7.31	0.02
B00291670	0.815	N.A.	<5	<0.3	<0.01	<0.01	0.10	<0.01
B00291671	3.720	N.A.	20	4.6	0.33	<0.01	7.28	0.08
B00291672	2.845	N.A.	1020	>300	0.55	0.24	28.1	4.07
B00291673	4.460	N.A.	367	41.8	0.01	1.05	43.3	0.06
B00291674	2.545	N.A.	283	36.0	0.01	1.35	43.5	0.03
B00291675	4.205	N.A.	6	1.8	0.24	0.04	2.48	<0.01
B00291676	3.365	N.A.	<5	0.5	0.15	<0.01	2.37	<0.01
B00291677	2.630	N.A.	<5	0.7	0.11	<0.01	2.47	<0.01
B00291678	3.735	97.6	<5	0.7	0.07	<0.01	2.93	<0.01
*Dup B00291678	N.A.	N.A.	<5	0.8	0.07	<0.01	2.85	0.01
B00291679	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291680	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291681	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291682	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291683	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291684	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291685	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Rep B00291649				9.3				

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Final : VC162068 Order: PO# BMC16-01_20

Report File No.: 0000018031

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std SU_1B		5.8				
*Std AMIS0268		185				
*Std OREAS621		69.5				
*Blk BLANK		<0.3				
*Rep B00291646			0.93	0.09	11.8	1.05
*Std OREAS131B			0.08	0.02	5.66	1.84
*Std ME-19			0.16	0.47	3.87	0.94
*Std RM183-89			3.12	<0.01	35.5	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01
*Std OREAS214	2910					
*Std OXH97	1260					
*Blk BLANK	<5					
*Rep B00291624	35					
*Rep B00291675	5					

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291609	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291610	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291611	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291612	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291613	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291614	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291615	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291616	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291617	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291618	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291619	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291620	18.6	1.15	1330	96	23.4	10.1	100	N.A.
B00291621	0.7	<0.01	89	<5	0.74	0.04	1	N.A.
B00291622	0.6	<0.01	155	13	0.79	0.12	2	N.A.
B00291623	0.5	0.01	105	14	1.47	0.23	2	N.A.
B00291624	0.8	0.05	319	<5	0.64	0.31	3	N.A.
B00291625	2.2	0.29	503	8	3.01	1.25	35	N.A.
B00291626	39.4	7.58	6930	637	32.9	25.6	434	N.A.
B00291627	39.7	7.26	>10000	1050	39.5	25.3	265	261
B00291628	31.9	6.68	5960	542	12.2	33.2	114	N.A.
B00291629	31.0	5.94	7730	277	10.2	28.3	339	N.A.
B00291630	0.2	<0.01	8	<5	<0.02	0.01	<1	N.A.
B00291631	1.4	0.01	100	51	0.45	0.17	3	N.A.
B00291632	1.6	<0.01	191	<5	0.51	0.09	1	N.A.
B00291633	1.4	0.01	244	9	0.45	0.08	2	N.A.
B00291634	1.4	<0.01	84	7	0.45	0.07	2	N.A.
B00291635	4.7	1.17	631	41	1.85	5.90	41	N.A.
B00291636	34.7	8.97	>10000	290	30.8	38.5	890	N.A.
B00291637	12.6	2.56	1820	65	16.8	15.2	151	N.A.
B00291638	17.7	5.83	3410	152	16.8	33.9	122	N.A.
B00291639	44.2	10.2	8740	554	19.4	68.4	333	356
B00291640	4.4	4.97	75	104	3.82	3.67	6	N.A.
B00291641	9.2	1.03	83	20	17.9	0.76	19	N.A.
B00291642	1.5	0.04	282	6	0.60	0.29	3	N.A.
B00291643	1.5	0.01	195	9	0.48	0.17	2	N.A.
*Dup B00291643	1.5	<0.01	168	8	0.48	0.13	1	N.A.
B00291644	1.4	0.02	66	44	0.44	0.24	2	N.A.
B00291645	26.6	5.39	399	334	22.6	17.2	184	N.A.
B00291646	11.2	2.31	94	37	1.86	6.46	32	N.A.
B00291647	3.2	0.62	61	7	2.40	1.70	9	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291648	34.9	8.03	95	123	22.3	20.7	121	N.A.
B00291649	0.2	0.10	25	<5	0.34	0.18	2	N.A.
B00291650	<0.1	<0.01	5	<5	<0.02	0.06	<1	N.A.
B00291651	0.2	0.07	33	<5	0.33	0.08	<1	N.A.
B00291652	0.1	0.06	34	<5	0.45	0.05	<1	N.A.
B00291653	0.2	0.05	47	<5	0.48	<0.01	<1	N.A.
B00291654	0.1	0.05	54	<5	0.42	0.01	<1	N.A.
B00291655	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291656	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291657	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291658	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291659	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291660	18.5	1.14	1360	95	23.0	9.11	100	N.A.
B00291661	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291662	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291663	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291664	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291665	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291666	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291667	<0.1	0.05	48	<5	0.36	0.10	<1	N.A.
B00291668	<0.1	0.05	39	<5	0.25	0.07	<1	N.A.
B00291669	0.2	0.05	38	<5	0.19	0.05	<1	N.A.
B00291670	<0.1	<0.01	6	<5	<0.02	0.03	<1	N.A.
B00291671	0.1	0.06	37	10	0.48	0.09	1	N.A.
B00291672	33.9	8.24	3900	411	108	18.2	120	337
B00291673	33.3	7.27	258	39	83.9	5.64	293	N.A.
B00291674	34.6	6.34	147	64	96.6	3.74	254	N.A.
B00291675	1.1	0.06	10	<5	1.72	0.11	2	N.A.
B00291676	0.7	0.04	20	5	0.87	0.07	2	N.A.
B00291677	1.1	0.01	6	8	0.95	0.04	3	N.A.
B00291678	1.2	0.07	122	16	1.61	0.08	3	N.A.
*Dup B00291678	1.2	0.07	152	17	1.55	0.06	3	N.A.
B00291679	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291680	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291681	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291682	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291683	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291684	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291685	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

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Final : VC162068 Order: PO# BMC16-01_20

Report File No.: 0000018031

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Std ME-1302								424
*Blk BLANK								<10
*Rep B00291646	11.3	2.29						
*Std OREAS131B	4.9	2.98						
*Std ME-19	1.6	0.74						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291647			59	11	2.34	1.72	8	
*Std OREAS621			N.A.	110	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	527	N.A.	83	
*Std DS-1			7210	N.A.	N.A.	80.1	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00291639								349

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Final : VC162068 Order: PO# BMC16-01_20

Report File No.: 0000018031

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
B00291609	N.A.	N.A.
B00291610	N.A.	N.A.
B00291611	N.A.	N.A.
B00291612	N.A.	N.A.
B00291613	N.A.	N.A.
B00291614	N.A.	N.A.
B00291615	N.A.	N.A.
B00291616	N.A.	N.A.
B00291617	N.A.	N.A.
B00291618	N.A.	N.A.
B00291619	N.A.	N.A.
B00291620	N.A.	N.A.
B00291621	N.A.	N.A.
B00291622	N.A.	N.A.
B00291623	N.A.	N.A.
B00291624	N.A.	N.A.
B00291625	N.A.	N.A.
B00291626	N.A.	N.A.
B00291627	1.14	N.A.
B00291628	N.A.	N.A.
B00291629	N.A.	N.A.
B00291630	N.A.	N.A.
B00291631	N.A.	N.A.
B00291632	N.A.	N.A.
B00291633	N.A.	N.A.
B00291634	N.A.	N.A.
B00291635	N.A.	N.A.
B00291636	6.87	N.A.
B00291637	N.A.	N.A.
B00291638	N.A.	N.A.
B00291639	N.A.	N.A.
B00291640	N.A.	N.A.
B00291641	N.A.	N.A.
B00291642	N.A.	N.A.
B00291643	N.A.	N.A.
*Dup B00291643	N.A.	N.A.
B00291644	N.A.	N.A.
B00291645	N.A.	N.A.
B00291646	N.A.	N.A.
B00291647	N.A.	N.A.

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Report File No.: 0000018031

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
B00291648	N.A.	8.0
B00291649	N.A.	7.3
B00291650	N.A.	N.A.
B00291651	N.A.	N.A.
B00291652	N.A.	N.A.
B00291653	N.A.	N.A.
B00291654	N.A.	N.A.
B00291655	N.A.	N.A.
B00291656	N.A.	N.A.
B00291657	N.A.	N.A.
B00291658	N.A.	N.A.
B00291659	N.A.	N.A.
B00291660	N.A.	N.A.
B00291661	N.A.	N.A.
B00291662	N.A.	N.A.
B00291663	N.A.	N.A.
B00291664	N.A.	N.A.
B00291665	N.A.	N.A.
B00291666	N.A.	N.A.
B00291667	N.A.	N.A.
B00291668	N.A.	N.A.
B00291669	N.A.	N.A.
B00291670	N.A.	N.A.
B00291671	N.A.	N.A.
B00291672	N.A.	N.A.
B00291673	N.A.	N.A.
B00291674	N.A.	N.A.
B00291675	N.A.	N.A.
B00291676	N.A.	N.A.
B00291677	N.A.	N.A.
B00291678	N.A.	N.A.
*Dup B00291678	N.A.	N.A.
B00291679	N.A.	N.A.
B00291680	N.A.	N.A.
B00291681	N.A.	N.A.
B00291682	N.A.	N.A.
B00291683	N.A.	N.A.
B00291684	N.A.	N.A.
B00291685	N.A.	N.A.

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Report File No.: 0000018031

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
*Std MP1B	2.28	
*Blk BLANK	<0.01	
*Std CRM3594-86		10.7
*Blk BLANK		<0.2
*Rep B00291649		6.6

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Certificate of Analysis

Work Order : VC162069

[Report File No.: 0000017943]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 12, 2016

P.O. No.	:	PO# BMC16-01_21
Project No.	:	KZK
No. Of Samples	:	61
Date Submitted	:	Jun 27, 2016
Report Comprises	:	Pages 1 to 9 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292408	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292409	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292410	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292411	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292412	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292413	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292414	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292415	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292416	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292417	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292418	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292419	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292420	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292421	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292422	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292423	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292424	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292425	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292426	4.480	N.A.	5	0.7	0.21	<0.01	1.63	<0.01
B00292427	4.475	N.A.	18	1.6	0.20	0.01	1.07	<0.01
B00292428	6.430	N.A.	13	0.9	0.19	<0.01	1.66	<0.01
B00292429	3.050	N.A.	14	0.9	0.18	<0.01	2.31	<0.01
B00292430	0.140	N.A.	861	44.1	0.05	0.47	20.0	0.30
B00292431	1.995	N.A.	15	0.6	0.23	<0.01	1.97	<0.01
B00292432	3.170	N.A.	33	1.8	0.33	0.02	1.81	<0.01
B00292433	3.260	N.A.	1100	23.8	0.07	0.86	32.7	2.53
B00292434	4.000	N.A.	187	21.9	0.53	0.03	3.33	0.13
B00292435	7.140	N.A.	1340	118	0.13	0.56	34.5	1.38
B00292436	2.635	N.A.	1280	171	0.82	0.20	20.8	3.31
B00292437	6.525	N.A.	1720	161	0.31	0.07	33.5	2.84
B00292438	4.870	N.A.	2410	134	0.92	0.39	18.9	2.49
B00292439	2.580	N.A.	4040	>300	0.67	0.47	22.9	3.02
B00292440	1.355	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
B00292441	1.995	N.A.	978	84.2	1.54	0.14	6.54	0.33
B00292442	5.520	N.A.	12	<0.3	0.03	<0.01	0.94	<0.01
*Dup B00292442	N.A.	N.A.	<5	0.4	0.04	<0.01	0.93	<0.01
B00292443	5.550	N.A.	16	0.4	0.42	<0.01	6.34	<0.01
B00292444	5.665	N.A.	10	0.3	0.28	<0.01	6.66	<0.01
B00292445	5.090	N.A.	13	1.6	0.28	<0.01	6.62	0.02
B00292446	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00292447	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292448	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292449	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292450	0.145	N.A.	837	44.5	0.05	0.47	20.2	0.30
B00292451	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292452	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292453	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292454	5.100	N.A.	11	1.3	0.23	<0.01	7.51	0.03
B00292455	4.545	N.A.	26	4.4	0.05	<0.01	7.30	0.08
B00292456	4.775	N.A.	46	6.7	0.05	0.01	7.63	0.14
B00292457	4.885	96.3	25	6.2	0.07	0.02	6.99	0.11
B00292458	3.795	N.A.	40	13.1	0.25	0.02	6.87	0.20
B00292459	6.325	N.A.	2200	243	0.28	4.97	23.1	1.62
B00292460	1.450	N.A.	<5	<0.3	<0.01	<0.01	0.08	<0.01
B00292461	3.950	N.A.	20	4.7	0.32	0.12	3.91	<0.01
B00292462	3.845	N.A.	80	20.2	0.13	0.57	6.51	0.16
B00292463	5.600	N.A.	<5	<0.3	0.18	<0.01	2.01	<0.01
B00292464	4.185	N.A.	6	<0.3	0.12	<0.01	2.52	<0.01
B00292465	4.990	N.A.	<5	0.3	0.11	<0.01	2.47	<0.01
B00292466	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292467	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292468	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Rep B00292462			67					
*Std OXB130			127					
*Std OREAS214			2920					
*Blk BLANK			<5					
*Std ME-19					0.16	0.47	4.04	0.96
*Std RM183-89					3.07	<0.01	35.7	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Std SU_1B				5.7				
*Std AMIS0268				184				
*Blk BLANK				<0.3				

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.3	0.01	0.01	0.05	0.01
Units	g/t	%	%	%	%
*Rep B00292434	22.5				
*Rep B00292428		0.19	<0.01	1.64	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292408	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292409	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292410	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292411	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292412	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292413	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292414	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292415	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292416	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292417	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292418	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292419	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292420	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292421	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292422	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292423	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292424	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292425	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292426	0.6	0.01	11	<5	0.41	0.04	1	N.A.
B00292427	0.2	<0.01	104	6	0.41	<0.01	1	N.A.
B00292428	0.7	<0.01	170	7	1.19	<0.01	1	N.A.
B00292429	1.1	<0.01	307	<5	0.87	0.06	3	N.A.
B00292430	18.0	1.12	1370	103	22.8	8.91	121	N.A.
B00292431	0.8	<0.01	52	<5	0.37	0.04	3	N.A.
B00292432	0.6	<0.01	9	<5	0.21	0.06	3	N.A.
B00292433	39.9	8.52	2380	212	22.2	27.5	699	N.A.
B00292434	2.3	0.24	562	26	8.08	1.07	18	N.A.
B00292435	39.1	5.00	4020	101	26.7	18.7	319	N.A.
B00292436	18.8	5.65	>10000	189	9.21	16.6	303	N.A.
B00292437	39.6	8.47	>10000	142	43.9	23.8	289	N.A.
B00292438	18.6	6.71	>10000	218	40.3	15.0	281	N.A.
B00292439	26.0	7.75	2330	1000	33.7	18.5	198	338
B00292440	<0.1	<0.01	11	<5	<0.02	0.14	<1	N.A.
B00292441	3.1	0.23	262	287	6.35	0.85	19	N.A.
B00292442	<0.1	<0.01	17	<5	<0.02	0.10	<1	N.A.
*Dup B00292442	<0.1	<0.01	16	<5	<0.02	0.04	<1	N.A.
B00292443	0.3	0.02	34	<5	<0.02	0.02	<1	N.A.
B00292444	0.1	0.01	39	<5	<0.02	0.01	<1	N.A.
B00292445	0.1	0.03	42	<5	0.19	<0.01	<1	N.A.
B00292446	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00292447	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292448	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292449	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292450	18.5	1.15	1400	110	22.9	8.85	121	N.A.
B00292451	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292452	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292453	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292454	0.1	0.05	87	<5	0.21	0.02	<1	N.A.
B00292455	0.2	0.05	74	13	1.11	<0.01	2	N.A.
B00292456	0.2	0.05	57	36	2.47	0.02	3	N.A.
B00292457	0.1	0.06	52	30	1.54	0.02	3	N.A.
B00292458	0.2	0.07	55	28	3.94	0.10	4	N.A.
B00292459	21.7	3.77	2470	112	175	10.3	314	N.A.
B00292460	0.1	<0.01	7	<5	0.15	<0.01	1	N.A.
B00292461	0.3	0.06	6	66	5.10	0.09	8	N.A.
B00292462	2.3	0.95	12	258	23.2	0.93	62	N.A.
B00292463	0.7	0.02	5	<5	0.28	<0.01	1	N.A.
B00292464	1.0	<0.01	8	<5	0.13	<0.01	1	N.A.
B00292465	1.0	<0.01	7	<5	0.34	<0.01	1	N.A.
B00292466	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292467	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00292468	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Std ME-1302								423
*Blk BLANK								<10
*Std ME-19	1.5	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Std OREAS621			N.A.	113	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	479	N.A.	78	
*Std DS-1			6970	N.A.	N.A.	79.9	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00292428	0.6	<0.01						
*Rep B00292458			58	28				
*Rep B00292458					4.20	0.09	4	
*Rep B00292439								368

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00292408	N.A.
B00292409	N.A.
B00292410	N.A.
B00292411	N.A.
B00292412	N.A.
B00292413	N.A.
B00292414	N.A.
B00292415	N.A.
B00292416	N.A.
B00292417	N.A.
B00292418	N.A.
B00292419	N.A.
B00292420	N.A.
B00292421	N.A.
B00292422	N.A.
B00292423	N.A.
B00292424	N.A.
B00292425	N.A.
B00292426	N.A.
B00292427	N.A.
B00292428	N.A.
B00292429	N.A.
B00292430	N.A.
B00292431	N.A.
B00292432	N.A.
B00292433	N.A.
B00292434	N.A.
B00292435	N.A.
B00292436	2.57
B00292437	1.26
B00292438	3.71
B00292439	N.A.
B00292440	N.A.
B00292441	N.A.
B00292442	N.A.
*Dup B00292442	N.A.
B00292443	N.A.
B00292444	N.A.
B00292445	N.A.
B00292446	N.A.

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Final : VC162069 Order: PO# BMC16-01_21

Report File No.: 0000017943

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00292447	N.A.
B00292448	N.A.
B00292449	N.A.
B00292450	N.A.
B00292451	N.A.
B00292452	N.A.
B00292453	N.A.
B00292454	N.A.
B00292455	N.A.
B00292456	N.A.
B00292457	N.A.
B00292458	N.A.
B00292459	N.A.
B00292460	N.A.
B00292461	N.A.
B00292462	N.A.
B00292463	N.A.
B00292464	N.A.
B00292465	N.A.
B00292466	N.A.
B00292467	N.A.
B00292468	N.A.
*Std MP1B	2.23
*Blk BLANK	<0.01
Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
*Rep B00292436	2.56

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Certificate of Analysis

Work Order : VC162070

[Report File No.: 0000017946]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 12, 2016

P.O. No.	:	PO# BMC16-01_22
Project No.	:	KZK
No. Of Samples	:	44
Date Submitted	:	Jun 27, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162070 Order: PO# BMC16-01_22

Report File No.: 0000017946

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00267401	2.330	N.A.	608	111	<0.01	0.06	37.4	2.02
B00267402	2.490	N.A.	1160	97.7	0.01	0.09	34.6	1.62
B00267403	2.880	N.A.	1470	102	<0.01	0.35	36.5	0.45
B00267404	3.030	N.A.	1840	223	<0.01	0.63	33.3	0.86
B00267405	2.590	N.A.	3190	>300	0.01	1.05	36.4	0.91
B00267406	2.270	N.A.	1600	156	<0.01	0.43	38.6	0.93
B00267407	2.940	N.A.	2110	227	<0.01	0.59	41.1	1.22
B00267408	2.610	N.A.	1590	226	<0.01	0.52	37.8	1.60
B00267409	2.900	N.A.	2450	206	<0.01	0.65	39.5	0.80
B00267410	1.445	N.A.	<5	0.4	<0.01	<0.01	0.08	<0.01
B00267411	3.025	N.A.	1890	163	<0.01	0.51	40.1	0.69
B00267412	2.880	N.A.	1400	121	<0.01	0.46	38.9	0.48
B00267413	2.710	N.A.	2790	266	<0.01	0.78	34.0	0.84
B00267414	2.540	N.A.	1830	271	<0.01	0.74	35.5	0.77
B00267415	2.490	N.A.	690	60.6	0.01	0.28	38.0	0.32
B00267416	4.115	N.A.	677	49.8	<0.01	0.55	43.3	0.38
B00267417	2.045	N.A.	1170	138	0.02	1.20	30.4	1.10
B00267418	2.795	N.A.	1910	159	0.09	0.15	31.7	1.93
B00267419	2.655	N.A.	907	204	3.22	0.37	32.4	2.38
B00267420	0.160	N.A.	1270	66.7	0.26	0.36	3.68	1.33
B00267421	0.155	N.A.	824	19.9	0.14	1.75	13.6	0.24
B00267422	2.730	N.A.	1210	161	0.14	0.33	33.5	2.03
B00267423	2.500	N.A.	1080	208	0.14	0.33	30.2	1.64
B00267424	2.260	N.A.	1340	158	0.74	0.33	2.84	0.06
B00267425	1.485	N.A.	83	3.8	0.57	0.10	2.97	0.02
B00267426	1.705	N.A.	803	150	0.02	0.60	29.3	3.51
B00267427	3.880	N.A.	3900	192	0.02	6.00	32.9	1.84
B00267428	3.245	N.A.	1910	246	0.02	2.73	31.3	5.06
B00267429	2.375	N.A.	60	7.2	0.19	0.05	5.52	0.10
B00267430	1.495	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00267431	1.505	N.A.	311	51.6	0.23	0.54	8.77	0.99
B00267432	1.205	N.A.	848	137	0.06	1.61	27.9	2.92
B00267433	2.295	N.A.	656	118	0.01	0.26	28.1	2.73
B00267434	1.760	N.A.	557	161	<0.01	0.10	33.0	4.29
B00267435	1.175	N.A.	386	179	0.03	0.23	27.3	4.09
*Dup B00267435	N.A.	N.A.	427	175	0.03	0.21	27.5	4.05
B00267436	2.160	N.A.	30	5.2	0.22	0.07	4.56	0.07
B00267437	1.685	N.A.	<5	1.5	0.19	0.01	2.42	0.02
B00267438	1.845	N.A.	<5	0.3	0.14	<0.01	2.43	<0.01
B00267439	1.900	N.A.	12	0.7	0.21	<0.01	3.25	<0.01

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Final : VC162070 Order: PO# BMC16-01_22

Report File No.: 0000017946

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00267440	0.130	N.A.	848	46.9	0.05	0.46	20.1	0.31
B00267441	1.785	N.A.	44	6.5	0.18	<0.01	3.78	0.11
B00267442	2.475	N.A.	35	8.5	0.19	0.23	3.49	0.02
B00267443	1.950	N.A.	412	52.1	0.24	0.27	11.4	0.81
B00267444	1.820	92.8	<5	<0.3	0.13	<0.01	6.13	<0.01
*Rep B00267402				98.8				
*Rep B00267423				206				
*Std SU_1B				6.2				
*Std OREAS621				69.8				
*Blk BLANK				<0.3				
*Rep B00267427			4200					
*Rep B00267443			417					
*Std OXN117			7450					
*Std OREAS214			3000					
*Blk BLANK			<5					
*Rep B00267416					<0.01	0.55	43.4	0.37
*Rep B00267425					0.57	0.09	2.97	0.01
*Std OREAS134A					0.15	0.13	12.0	12.8
*Std RM183-89					3.16	<0.01	35.9	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162070 Order: PO# BMC16-01_22

Report File No.: 0000017946

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00267401	45.1	9.88	3410	168	48.5	21.5	71	N.A.
B00267402	41.3	9.21	4720	415	24.7	25.5	84	N.A.
B00267403	43.8	6.71	3480	869	10.6	21.8	44	N.A.
B00267404	38.0	6.87	3350	1670	22.5	23.8	53	N.A.
B00267405	43.1	5.35	4500	2720	28.2	17.4	112	353
B00267406	44.7	6.30	6100	1020	34.4	21.7	143	N.A.
B00267407	46.8	3.53	8410	1440	49.4	12.3	113	N.A.
B00267408	45.5	6.76	9270	1110	67.0	23.3	240	N.A.
B00267409	47.3	4.85	9160	1770	41.9	17.3	213	N.A.
B00267410	<0.1	<0.01	14	<5	0.04	0.20	1	N.A.
B00267411	46.4	3.77	3220	1280	35.0	14.9	204	N.A.
B00267412	46.0	6.05	1850	1150	24.3	22.2	156	N.A.
B00267413	37.9	4.73	2670	2450	31.9	17.3	133	275
B00267414	39.2	4.39	6160	2430	42.0	16.9	163	282
B00267415	41.2	2.38	3260	245	37.4	9.06	205	N.A.
B00267416	44.1	1.93	2900	92	39.8	8.30	212	N.A.
B00267417	28.6	5.78	4310	254	40.1	29.2	74	N.A.
B00267418	35.9	6.34	5070	1540	19.2	35.6	27	N.A.
B00267419	39.7	6.57	2310	668	21.2	41.5	40	N.A.
B00267420	4.4	4.98	76	117	3.85	4.12	6	N.A.
B00267421	9.1	1.02	86	19	17.1	0.96	21	N.A.
B00267422	38.4	5.76	2570	1050	25.9	37.5	73	N.A.
B00267423	35.4	3.83	2860	951	10.6	20.7	46	N.A.
B00267424	1.6	0.09	683	977	0.92	0.84	3	N.A.
B00267425	1.7	0.05	167	16	0.28	0.29	1	N.A.
B00267426	37.4	10.3	531	181	91.6	5.83	445	N.A.
B00267427	37.4	14.6	371	101	80.9	9.27	556	N.A.
B00267428	35.4	14.1	276	175	110	8.05	346	N.A.
B00267429	4.1	0.37	53	10	2.72	0.57	58	N.A.
B00267430	0.1	<0.01	5	<5	<0.02	0.09	1	N.A.
B00267431	7.9	2.31	4470	62	6.31	3.59	254	N.A.
B00267432	30.1	5.95	5250	221	9.50	10.1	632	N.A.
B00267433	31.4	6.63	3620	319	9.95	14.8	438	N.A.
B00267434	40.3	7.53	2130	223	13.8	18.9	348	N.A.
B00267435	31.1	9.68	670	316	21.9	24.4	297	N.A.
*Dup B00267435	32.0	9.65	716	324	20.8	24.6	292	N.A.
B00267436	1.6	0.65	119	17	4.12	1.77	16	N.A.
B00267437	0.5	0.06	18	9	0.72	0.32	4	N.A.
B00267438	0.7	0.02	72	<5	0.23	0.17	2	N.A.
B00267439	1.7	0.01	55	<5	0.72	0.33	3	N.A.

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Final : VC162070 Order: PO# BMC16-01_22

Report File No.: 0000017946

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00267440	18.2	1.13	1400	103	21.5	8.78	112	N.A.
B00267441	2.2	0.21	145	26	1.26	0.87	10	N.A.
B00267442	1.3	0.12	458	<5	4.71	0.44	9	N.A.
B00267443	9.0	2.47	3740	44	16.7	7.92	162	N.A.
B00267444	0.2	0.02	329	10	<0.02	0.06	1	N.A.
*Rep B00267423			3060	905	10.8	21.9	49	
*Std OREAS926			N.A.	N.A.	41.0	N.A.	10	
*Std OREAS621			N.A.	106	N.A.	N.A.	N.A.	
*Std DS-1			7050	N.A.	N.A.	78.9	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								423
*Blk BLANK								<10
*Rep B00267416	42.5	1.93						
*Rep B00267425	1.6	0.05						
*Std OREAS134A	18.9	16.7						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00267405								356

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Certificate of Analysis

Work Order : VC162071

[Report File No.: 0000017945]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 12, 2016

P.O. No.	:	PO# BMC16-01_23
Project No.	:	KZK
No. Of Samples	:	67
Date Submitted	:	Jun 27, 2016
Report Comprises	:	Pages 1 to 9 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162071 Order: PO# BMC16-01_23

Report File No.: 0000017945

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291686	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291687	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291688	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291689	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291690	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291691	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291692	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291693	6.365	N.A.	<5	0.4	0.18	<0.01	1.71	<0.01
B00291694	4.900	N.A.	11	1.3	0.17	<0.01	1.99	0.02
B00291695	4.580	N.A.	8	0.7	0.19	<0.01	2.38	0.01
B00291696	4.255	N.A.	60	3.2	0.21	0.02	3.31	0.12
B00291697	2.450	N.A.	56	11.8	0.27	0.02	4.43	0.21
B00291698	5.275	N.A.	1320	195	0.03	0.59	33.6	2.76
B00291699	8.095	N.A.	1640	121	0.02	1.46	36.5	0.73
B00291700	0.160	N.A.	1290	67.2	0.26	0.35	3.69	1.34
B00291701	0.160	N.A.	820	20.4	0.14	1.72	13.6	0.25
B00291702	2.425	N.A.	700	62.5	0.08	0.51	24.9	0.45
B00291703	2.165	N.A.	298	62.7	0.09	0.22	7.63	0.87
B00291704	6.570	N.A.	15	1.7	0.12	<0.01	2.30	0.01
B00291705	5.975	N.A.	7	0.7	0.11	<0.01	2.08	<0.01
B00291706	6.150	N.A.	7	0.9	0.11	<0.01	2.14	<0.01
B00291707	4.445	N.A.	<5	0.4	0.11	<0.01	2.14	<0.01
B00291708	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291709	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291710	1.515	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291711	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291712	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291713	4.790	N.A.	7	1.0	0.71	<0.01	2.04	<0.01
B00291714	5.370	N.A.	33	2.0	0.81	<0.01	3.36	<0.01
B00291715	4.455	N.A.	14	0.5	0.90	<0.01	2.42	<0.01
B00291716	4.610	N.A.	29	0.5	1.34	<0.01	3.10	<0.01
B00291717	2.310	N.A.	57	14.7	0.26	0.09	1.81	0.04
B00291718	5.065	N.A.	2070	>300	0.07	0.16	28.1	4.40
B00291719	7.065	N.A.	1900	227	<0.01	0.48	30.1	3.93
*Dup B00291719	N.A.	N.A.	2150	222	<0.01	0.50	30.0	3.95
B00291720	0.170	N.A.	1280	68.7	0.26	0.35	3.67	1.34
B00291721	0.165	N.A.	814	20.2	0.14	1.73	13.5	0.25
B00291722	6.740	N.A.	1330	191	1.40	0.20	27.8	3.18
B00291723	7.970	N.A.	3420	>300	>4.00	0.47	29.6	2.99
B00291724	7.910	N.A.	1380	185	>4.00	0.18	29.0	2.71

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Final : VC162071 Order: PO# BMC16-01_23

Report File No.: 0000017945

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291725	5.605	N.A.	2320	179	>4.00	0.18	29.3	2.90
B00291726	5.910	N.A.	2910	206	>4.00	0.36	29.0	3.55
B00291727	5.905	N.A.	2530	184	>4.00	0.23	29.7	4.19
B00291728	2.300	N.A.	1870	129	>4.00	0.37	26.2	3.00
B00291729	6.960	N.A.	656	165	0.47	0.35	37.8	4.27
B00291730	1.515	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00291731	7.230	N.A.	818	176	0.09	0.14	35.4	5.95
B00291732	7.010	N.A.	853	168	1.77	0.29	35.1	4.73
B00291733	6.335	N.A.	1830	125	>4.00	0.26	30.3	1.84
B00291734	4.835	N.A.	2330	140	>4.00	0.14	25.8	2.60
B00291735	7.190	99.0	2920	226	>4.00	0.17	26.3	3.78
B00291736	3.630	N.A.	2750	>300	>4.00	0.23	21.9	6.10
B00291737	5.940	N.A.	2670	>300	>4.00	0.16	18.5	6.29
B00291738	6.765	N.A.	4040	>300	>4.00	0.46	25.4	4.48
B00291739	7.285	N.A.	632	116	0.12	0.40	39.5	2.32
B00291740	0.160	N.A.	1250	69.0	0.26	0.36	3.72	1.37
B00291741	0.160	N.A.	822	20.0	0.14	1.71	13.5	0.25
B00291742	5.085	N.A.	650	76.2	0.02	0.86	37.5	1.16
B00291743	4.260	N.A.	13	1.9	0.57	<0.01	3.82	0.02
B00291744	2.165	N.A.	12	3.6	0.56	0.03	6.36	0.04
B00291745	3.390	N.A.	47	23.7	0.09	0.42	20.6	0.10
B00291746	5.070	N.A.	<5	1.7	0.38	0.02	2.28	<0.01
B00291747	5.305	N.A.	<5	1.7	0.36	<0.01	2.07	0.01
B00291748	4.270	N.A.	<5	0.8	0.30	<0.01	2.15	<0.01
B00291749	5.780	N.A.	<5	0.5	0.20	<0.01	1.99	<0.01
B00291750	1.375	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291751	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291752	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Rep B00291696				3.4				
*Rep B00291728				126				
*Std SU_1B				6.1				
*Std OREAS621				67.8				
*Std AMIS0268				200				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Rep B00291722			1210					
*Rep B00291749			7					
*Std OXN117			7410					
*Std OXB130			122					
*Std OXH97			1290					

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Final : VC162071 Order: PO# BMC16-01_23

Report File No.: 0000017945

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Blk BLANK	<5				
*Rep B00291736		>4.00	0.23	22.3	6.05
*Std OREAS131B		0.08	0.02	5.71	1.87
*Std OREAS134A		0.15	0.13	12.0	13.1
*Std RM183-89		3.09	<0.01	35.6	0.02
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Rep B00291699		0.02	1.42	35.6	0.69

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291686	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291687	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291688	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291689	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291690	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291691	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291692	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291693	0.7	0.01	49	<5	0.77	0.08	1	N.A.
B00291694	0.9	0.12	579	<5	0.57	0.22	6	N.A.
B00291695	0.9	0.03	345	<5	0.29	0.09	3	N.A.
B00291696	1.7	0.22	307	10	0.71	0.41	26	N.A.
B00291697	2.8	0.38	147	15	1.45	0.85	65	N.A.
B00291698	41.1	7.21	>10000	325	44.3	14.5	636	N.A.
B00291699	42.8	4.68	>10000	192	77.1	10.6	692	N.A.
B00291700	4.5	5.04	80	117	4.08	4.04	7	N.A.
B00291701	9.5	1.06	84	21	17.5	0.76	22	N.A.
B00291702	30.1	7.44	1860	270	28.5	15.7	521	N.A.
B00291703	6.7	1.09	883	137	10.4	2.26	175	N.A.
B00291704	1.2	0.04	156	6	0.95	0.18	6	N.A.
B00291705	1.2	0.03	51	10	0.47	0.13	3	N.A.
B00291706	1.3	0.01	96	8	0.62	0.07	2	N.A.
B00291707	1.4	<0.01	35	5	0.55	0.03	1	N.A.
B00291708	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291709	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291710	<0.1	<0.01	5	<5	<0.02	0.01	<1	N.A.
B00291711	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291712	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291713	1.2	<0.01	43	8	0.44	0.04	<1	N.A.
B00291714	2.7	<0.01	45	14	0.94	0.08	3	N.A.
B00291715	1.2	<0.01	24	<5	0.30	0.02	<1	N.A.
B00291716	1.7	0.01	32	5	0.33	0.07	1	N.A.
B00291717	1.1	0.34	56	62	0.87	0.62	3	N.A.
B00291718	38.4	10.8	407	853	41.6	23.2	161	409
B00291719	38.5	8.77	>10000	427	24.2	15.6	92	N.A.
*Dup B00291719	39.0	8.82	>10000	429	24.3	15.8	91	N.A.
B00291720	4.7	5.13	79	112	3.95	4.14	6	N.A.
B00291721	9.7	1.07	84	20	17.4	0.78	20	N.A.
B00291722	35.3	8.62	5000	312	43.6	16.4	139	N.A.
B00291723	39.9	7.06	1570	1340	32.1	21.9	96	312
B00291724	41.1	6.47	2740	544	9.32	31.5	19	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291725	40.9	6.63	8950	683	3.86	24.7	17	N.A.
B00291726	39.0	6.89	>10000	1090	10.6	14.8	26	N.A.
B00291727	40.7	10.2	>10000	892	14.0	17.6	51	N.A.
B00291728	36.1	6.91	2150	1570	6.69	14.5	41	N.A.
B00291729	38.0	9.66	452	222	38.2	11.9	229	N.A.
B00291730	<0.1	<0.01	7	<5	<0.02	0.21	<1	N.A.
B00291731	36.6	10.1	344	284	28.5	11.8	191	N.A.
B00291732	32.0	7.29	459	301	8.86	9.66	45	N.A.
B00291733	36.5	4.95	2570	1300	41.9	14.5	69	N.A.
B00291734	33.7	7.29	>10000	875	6.60	31.4	34	N.A.
B00291735	34.3	8.07	6670	824	7.50	55.1	30	N.A.
B00291736	33.3	13.9	4110	1240	8.84	73.9	52	399
B00291737	26.2	10.8	1310	874	4.83	28.1	24	396
B00291738	34.3	9.87	1280	2110	8.79	22.9	78	372
B00291739	38.1	11.3	339	86	92.3	3.70	341	N.A.
B00291740	4.4	5.48	75	107	3.68	4.05	6	N.A.
B00291741	8.8	1.06	80	19	16.9	0.96	21	N.A.
B00291742	34.5	8.83	203	41	104	3.11	299	N.A.
B00291743	1.2	0.05	13	<5	3.09	0.16	4	N.A.
B00291744	2.0	0.30	5	7	7.36	0.27	10	N.A.
B00291745	9.1	5.38	6	24	51.7	4.34	104	N.A.
B00291746	0.7	0.03	4	<5	2.62	0.03	2	N.A.
B00291747	0.6	0.02	<3	<5	3.02	0.02	2	N.A.
B00291748	0.7	0.03	4	<5	0.90	0.04	2	N.A.
B00291749	1.1	<0.01	13	<5	0.38	<0.01	<1	N.A.
B00291750	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
B00291751	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291752	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep B00291729			456	212	38.8	11.9	231	
*Std OREAS926			N.A.	N.A.	41.6	N.A.	11	
*Std OREAS621			N.A.	106	N.A.	N.A.	N.A.	
*Std OREAS624			112	N.A.	20.1	1.87	32	
*Std DS-1			6980	N.A.	N.A.	80.8	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								429
*Blk BLANK								<10

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	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	As GE_ICM14B 3 ppm	Sb GE_ICM14B 5 ppm	@Bi GE_ICM14B 0.02 ppm	@Hg GE_ICM14B 0.01 ppm	@Se GE_ICM14B 1 ppm	Ag GO_FAG313 10 g/t
*Rep B00291736	33.2	14.2						
*Std OREAS131B	5.0	3.07						
*Std OREAS134A	19.0	17.1						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291744			4	8				
*Rep B00291744					6.97	0.24	11	
*Rep B00291699	41.9	4.66						
*Rep B00291718								414

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Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
B00291686	N.A.	N.A.
B00291687	N.A.	N.A.
B00291688	N.A.	N.A.
B00291689	N.A.	N.A.
B00291690	N.A.	N.A.
B00291691	N.A.	N.A.
B00291692	N.A.	N.A.
B00291693	N.A.	N.A.
B00291694	N.A.	N.A.
B00291695	N.A.	N.A.
B00291696	N.A.	N.A.
B00291697	N.A.	N.A.
B00291698	1.60	N.A.
B00291699	1.79	N.A.
B00291700	N.A.	N.A.
B00291701	N.A.	N.A.
B00291702	N.A.	N.A.
B00291703	N.A.	N.A.
B00291704	N.A.	N.A.
B00291705	N.A.	N.A.
B00291706	N.A.	N.A.
B00291707	N.A.	N.A.
B00291708	N.A.	N.A.
B00291709	N.A.	N.A.
B00291710	N.A.	N.A.
B00291711	N.A.	N.A.
B00291712	N.A.	N.A.
B00291713	N.A.	N.A.
B00291714	N.A.	N.A.
B00291715	N.A.	N.A.
B00291716	N.A.	N.A.
B00291717	N.A.	N.A.
B00291718	N.A.	N.A.
B00291719	1.53	N.A.
*Dup B00291719	1.53	N.A.
B00291720	N.A.	N.A.
B00291721	N.A.	N.A.
B00291722	N.A.	N.A.
B00291723	N.A.	7.3
B00291724	N.A.	13.3

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Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
B00291725	N.A.	11.4
B00291726	1.70	9.6
B00291727	1.48	8.5
B00291728	N.A.	14.8
B00291729	N.A.	N.A.
B00291730	N.A.	N.A.
B00291731	N.A.	N.A.
B00291732	N.A.	N.A.
B00291733	N.A.	13.1
B00291734	1.21	17.0
B00291735	N.A.	14.6
B00291736	N.A.	13.0
B00291737	N.A.	13.8
B00291738	N.A.	9.2
B00291739	N.A.	N.A.
B00291740	N.A.	N.A.
B00291741	N.A.	N.A.
B00291742	N.A.	N.A.
B00291743	N.A.	N.A.
B00291744	N.A.	N.A.
B00291745	N.A.	N.A.
B00291746	N.A.	N.A.
B00291747	N.A.	N.A.
B00291748	N.A.	N.A.
B00291749	N.A.	N.A.
B00291750	N.A.	N.A.
B00291751	N.A.	N.A.
B00291752	N.A.	N.A.

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
*Std MP1B	2.24	
*Blk BLANK	<0.01	
*Std CRM6587-93		33.7
*Std CRM3594-86		10.6
*Blk BLANK		<0.2
*Rep B00291726	1.73	
*Rep B00291728		15.0

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Certificate of Analysis

Work Order : VC162129

[Report File No.: 0000017999]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 15, 2016

P.O. No.	:	PO# BMC16-01_24
Project No.	:	KZK
No. Of Samples	:	52
Date Submitted	:	Jul 04, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162129 Order: PO# BMC16-01_24

Report File No.: 0000017999

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00267445	1.495	N.A.	2640	152	2.78	0.23	23.3	3.30
B00267446	2.745	N.A.	1280	200	<0.01	2.36	38.2	3.37
B00267447	2.405	N.A.	1740	233	0.03	3.78	36.8	2.74
B00267448	2.875	N.A.	2040	136	0.04	0.70	37.4	2.23
B00267449	2.935	N.A.	3020	159	0.05	1.42	37.9	0.60
B00267450	1.660	N.A.	<5	<0.3	<0.01	<0.01	0.08	<0.01
B00267451	2.690	N.A.	684	48.4	0.02	0.49	40.7	0.46
B00267452	3.055	N.A.	1470	61.9	0.02	0.65	42.1	0.83
B00267453	2.770	N.A.	1240	114	0.03	0.35	34.1	2.21
B00267454	2.440	N.A.	1260	88.0	0.02	0.32	37.2	0.89
B00267455	2.795	N.A.	1090	133	0.03	1.03	41.8	2.49
B00267456	2.165	N.A.	830	93.2	<0.01	1.01	42.1	1.14
B00267457	2.150	N.A.	1620	169	<0.01	1.29	38.0	3.05
B00267458	2.145	N.A.	1300	91.0	<0.01	0.21	26.6	1.14
B00267459	2.395	N.A.	985	91.4	0.02	0.10	34.5	1.46
B00267460	0.200	N.A.	1270	67.4	0.26	0.36	3.88	1.35
B00267461	0.200	N.A.	814	20.0	0.14	1.74	13.4	0.24
B00267462	1.300	N.A.	795	180	0.07	0.60	33.9	3.51
B00267463	3.590	N.A.	3240	>300	1.43	0.57	30.0	4.31
B00267464	1.515	N.A.	24	2.1	0.44	<0.01	4.33	0.02
B00267465	2.575	N.A.	30	2.4	0.34	<0.01	2.80	<0.01
B00267466	2.315	N.A.	77	6.0	0.64	<0.01	2.62	0.04
B00267467	2.435	N.A.	482	37.0	0.61	0.01	3.90	0.27
B00267468	1.350	N.A.	3590	>300	0.55	0.76	19.8	2.52
B00267469	1.875	N.A.	396	54.6	1.35	0.08	5.62	0.11
B00267470	1.140	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
B00267471	2.075	N.A.	668	155	0.13	0.04	30.3	5.22
B00267472	2.475	N.A.	389	144	0.24	0.15	27.4	5.07
B00267473	2.725	N.A.	400	80.2	0.02	0.13	40.8	1.79
B00267474	1.865	N.A.	27	5.8	0.93	<0.01	4.85	0.11
B00267475	2.825	N.A.	655	91.0	0.02	0.05	36.9	2.25
B00267476	2.555	N.A.	518	103	0.02	0.13	39.8	1.65
B00267477	2.660	N.A.	739	88.4	0.19	0.25	32.1	1.15
B00267478	2.645	N.A.	386	33.7	0.66	0.14	18.7	0.44
B00267479	2.400	N.A.	1290	179	0.38	0.31	24.6	2.00
*Dup B00267479	N.A.	N.A.	1560	190	0.39	0.33	24.4	1.97
B00267480	0.185	N.A.	834	43.5	0.05	0.47	20.0	0.31
B00267481	2.900	N.A.	1030	200	0.33	0.31	6.96	0.57
B00267482	2.960	N.A.	<5	0.5	0.24	<0.01	2.63	<0.01
B00267483	2.525	N.A.	<5	0.8	0.20	<0.01	2.09	<0.01

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Final : VC162129 Order: PO# BMC16-01_24

Report File No.: 0000017999

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00267484	2.855	N.A.	<5	0.9	0.21	<0.01	1.52	<0.01
B00267485	2.315	N.A.	<5	0.7	0.17	<0.01	1.57	<0.01
B00267486	2.515	N.A.	7	1.5	0.21	<0.01	1.97	<0.01
B00267487	2.780	N.A.	<5	0.6	0.22	<0.01	2.23	<0.01
B00267488	5.910	N.A.	64	5.1	0.97	<0.01	3.02	0.26
B00267489	5.690	N.A.	60	3.2	0.92	<0.01	3.44	0.12
B00267490	1.635	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00267491	3.760	N.A.	34	1.9	0.96	<0.01	2.89	0.10
B00267492	3.235	N.A.	<5	3.6	0.19	<0.01	2.07	0.05
B00267493	5.395	96.7	<5	0.8	0.29	<0.01	1.74	<0.01
B00267494	6.335	N.A.	<5	0.4	0.27	<0.01	1.40	<0.01
B00267495	5.395	N.A.	<5	0.4	0.37	<0.01	2.29	<0.01
B00267496	4.325	N.A.	<5	0.5	0.28	<0.01	2.06	<0.01
*Rep B00267463			3280					
*Rep B00267491			36					
*Std OXN117			7780					
*Std OXB130			119					
*Std OREAS214			3030					
*Blk BLANK			<5					
*Rep B00267464					0.45	<0.01	4.39	0.02
*Rep B00267490					<0.01	<0.01	0.05	<0.01
*Std OREAS131B					0.08	0.02	5.70	1.89
*Std ME-19					0.16	0.47	3.91	0.94
*Std RM183-89					3.11	<0.01	36.0	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00267463				>300				
*Rep B00267483				1.0				
*Std SU_1B				6.0				
*Std OREAS621				68.7				
*Std AMIS0268				198				
*Blk BLANK				<0.3				

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Final : VC162129 Order: PO# BMC16-01_24

Report File No.: 0000017999

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00267445	30.6	14.5	>10000	550	50.8	46.4	699	N.A.
B00267446	40.7	8.68	3260	402	105	23.0	469	N.A.
B00267447	37.3	10.1	2600	226	171	26.0	609	N.A.
B00267448	42.6	7.41	5850	474	94.8	27.8	267	N.A.
B00267449	41.9	3.49	3580	1760	51.6	20.0	124	N.A.
B00267450	0.1	<0.01	8	<5	0.17	0.30	<1	N.A.
B00267451	45.7	4.68	2030	253	41.6	26.5	160	N.A.
B00267452	44.8	3.28	>10000	416	52.8	17.9	305	N.A.
B00267453	39.2	7.60	4090	600	51.7	18.6	296	N.A.
B00267454	41.8	4.70	3520	783	49.7	6.62	217	N.A.
B00267455	37.0	7.47	8290	189	104	4.89	374	N.A.
B00267456	40.5	9.28	3970	95	124	4.88	335	N.A.
B00267457	36.8	10.9	>10000	303	92.5	5.60	307	N.A.
B00267458	31.8	12.6	5750	669	91.0	7.34	200	N.A.
B00267459	37.8	8.07	5050	369	98.5	6.97	202	N.A.
B00267460	4.4	5.16	72	111	4.27	4.17	5	N.A.
B00267461	9.0	1.04	77	20	18.1	0.82	19	N.A.
B00267462	34.8	10.7	2150	217	81.8	8.36	240	N.A.
B00267463	35.7	9.61	8000	1700	28.5	34.0	194	351
B00267464	1.2	0.15	57	20	0.90	0.52	2	N.A.
B00267465	1.7	0.04	21	12	0.50	0.31	<1	N.A.
B00267466	2.0	0.05	44	15	0.44	0.73	<1	N.A.
B00267467	3.4	0.51	94	55	0.49	3.42	3	N.A.
B00267468	23.8	5.42	2210	1610	13.9	27.3	87	381
B00267469	3.4	0.36	287	173	0.91	1.02	5	N.A.
B00267470	0.1	<0.01	5	<5	<0.02	0.09	<1	N.A.
B00267471	38.6	14.1	215	150	29.4	28.3	92	N.A.
B00267472	30.3	9.26	151	121	23.5	17.2	132	N.A.
B00267473	39.8	5.51	291	86	41.5	8.79	94	N.A.
B00267474	1.0	0.19	41	14	0.78	0.31	3	N.A.
B00267475	41.2	7.35	1520	176	14.2	6.94	60	N.A.
B00267476	42.1	6.77	735	118	33.6	5.45	44	N.A.
B00267477	33.1	4.40	2170	95	32.9	4.36	36	N.A.
B00267478	16.7	1.91	211	37	32.6	2.11	30	N.A.
B00267479	29.1	6.25	559	197	15.3	12.4	71	N.A.
*Dup B00267479	29.2	6.18	605	197	15.5	12.8	74	N.A.
B00267480	18.2	1.16	1430	105	23.9	9.11	111	N.A.
B00267481	5.7	1.48	603	362	9.57	3.24	28	N.A.
B00267482	0.8	0.01	10	<5	0.54	0.12	<1	N.A.
B00267483	0.5	<0.01	9	<5	0.49	0.12	<1	N.A.

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Final : VC162129 Order: PO# BMC16-01_24

Report File No.: 0000017999

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00267484	0.7	0.01	9	<5	0.72	0.09	<1	N.A.
B00267485	0.8	<0.01	9	<5	0.48	0.06	<1	N.A.
B00267486	1.3	0.01	14	5	0.50	0.10	<1	N.A.
B00267487	1.4	0.08	17	6	0.26	0.10	<1	N.A.
B00267488	2.3	0.36	22	17	0.42	1.64	4	N.A.
B00267489	2.9	0.13	54	7	0.38	0.70	3	N.A.
B00267490	<0.1	<0.01	4	<5	<0.02	0.02	<1	N.A.
B00267491	2.2	0.04	35	<5	0.24	0.13	4	N.A.
B00267492	0.7	0.23	46	<5	0.32	1.02	<1	N.A.
B00267493	0.6	0.34	181	<5	0.21	0.60	<1	N.A.
B00267494	0.4	0.65	89	<5	0.09	0.55	<1	N.A.
B00267495	0.6	0.67	59	<5	0.13	0.88	<1	N.A.
B00267496	1.6	1.59	12	<5	0.39	4.13	1	N.A.
*Std ME-1302								439
*Blk BLANK								<10
*Rep B00267464	1.2	0.15						
*Rep B00267490	<0.1	<0.01						
*Std OREAS131B	5.0	2.98						
*Std ME-19	1.5	0.78						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00267456			3910	90	124	4.71	322	
*Rep B00267494			97	<5	0.09	0.58	<1	
*Std OREAS621			N.A.	111	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	492	N.A.	86	
*Std DS-1			6970	N.A.	N.A.	83.4	N.A.	

Element	As	Sb	@Bi	@Hg	@Se	Ag
Method	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	3	5	0.02	0.01	1	10
Units	ppm	ppm	ppm	ppm	ppm	g/t
*Blk BLANK	<3	<5	<0.02	<0.01	<1	
*Rep B00267468						380

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Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00267445	2.03
B00267446	N.A.
B00267447	N.A.
B00267448	N.A.
B00267449	N.A.
B00267450	N.A.
B00267451	N.A.
B00267452	1.04
B00267453	N.A.
B00267454	N.A.
B00267455	N.A.
B00267456	N.A.
B00267457	1.07
B00267458	N.A.
B00267459	N.A.
B00267460	N.A.
B00267461	N.A.
B00267462	N.A.
B00267463	N.A.
B00267464	N.A.
B00267465	N.A.
B00267466	N.A.
B00267467	N.A.
B00267468	N.A.
B00267469	N.A.
B00267470	N.A.
B00267471	N.A.
B00267472	N.A.
B00267473	N.A.
B00267474	N.A.
B00267475	N.A.
B00267476	N.A.
B00267477	N.A.
B00267478	N.A.
B00267479	N.A.
*Dup B00267479	N.A.
B00267480	N.A.
B00267481	N.A.
B00267482	N.A.
B00267483	N.A.

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Final : VC162129 Order: PO# BMC16-01_24

Report File No.: 0000017999

Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
B00267484	N.A.
B00267485	N.A.
B00267486	N.A.
B00267487	N.A.
B00267488	N.A.
B00267489	N.A.
B00267490	N.A.
B00267491	N.A.
B00267492	N.A.
B00267493	N.A.
B00267494	N.A.
B00267495	N.A.
B00267496	N.A.
*Std MP1B	2.28
*Blk BLANK	<0.01
Element	As
Method	GO_ICP13B
Det.Lim.	0.01
Units	%
*Rep B00267445	1.98

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Certificate of Analysis

Work Order : VC162132

[Report File No.: 0000018111]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 26, 2016

P.O. No.	:	PO# BMC16-01_25
Project No.	:	KZK
No. Of Samples	:	95
Date Submitted	:	Jul 04, 2016
Report Comprises	:	Pages 1 to 12 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162132 Order: PO# BMC16-01_25

Report File No.: 0000018111

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004062	1.875	N.A.	6	0.7	0.11	<0.01	1.80	0.01
D00004063	1.710	N.A.	8	1.0	0.13	<0.01	2.01	0.02
D00004064	2.820	N.A.	7	0.3	0.19	<0.01	1.56	<0.01
D00004065	1.965	N.A.	8	2.4	0.17	<0.01	2.97	0.08
D00004066	2.805	N.A.	63	23.4	0.23	0.01	3.37	1.18
D00004067	2.455	N.A.	21	2.3	0.21	0.06	3.25	0.01
D00004068	1.990	N.A.	70	6.2	0.34	0.17	8.20	<0.01
D00004069	1.475	N.A.	983	121	0.28	2.98	17.2	0.18
D00004070	0.190	N.A.	1270	68.9	0.25	0.35	3.72	1.34
D00004071	0.190	N.A.	820	19.6	0.14	1.74	13.4	0.26
D00004072	1.315	N.A.	609	74.1	0.30	0.76	24.6	0.65
D00004073	2.380	N.A.	759	111	0.21	1.34	36.7	1.97
D00004074	2.370	N.A.	762	131	0.03	0.17	32.5	1.24
D00004075	1.850	N.A.	296	108	0.01	0.16	31.7	1.09
D00004076	2.050	N.A.	265	123	<0.01	0.11	34.6	1.11
D00004077	2.070	N.A.	207	72.0	<0.01	0.11	33.8	0.68
D00004078	2.065	N.A.	220	46.9	0.05	0.22	33.0	0.35
D00004079	1.990	N.A.	305	66.3	0.01	0.62	33.7	0.37
D00004080	1.815	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
D00004081	2.020	N.A.	855	131	0.19	2.10	35.6	0.39
D00004082	0.945	N.A.	839	212	1.07	2.86	22.9	0.92
D00004083	2.450	N.A.	700	181	0.22	0.92	28.6	1.21
D00004084	2.150	N.A.	291	62.9	0.05	0.34	29.0	0.38
D00004085	2.880	N.A.	626	97.5	<0.01	1.29	41.2	0.40
D00004086	2.320	N.A.	410	170	0.03	0.51	31.6	1.60
D00004087	2.440	N.A.	206	62.7	0.08	0.48	39.9	0.58
D00004088	1.700	N.A.	66	118	0.02	0.21	45.6	1.59
D00004089	2.700	N.A.	190	40.9	<0.01	0.61	45.1	0.36
D00004090	0.190	N.A.	1240	68.6	0.26	0.36	3.67	1.35
D00004091	0.190	N.A.	809	19.7	0.14	1.81	13.5	0.26
D00004092	2.960	N.A.	226	94.4	<0.01	0.44	43.8	1.53
D00004093	2.890	N.A.	150	38.8	<0.01	0.46	45.7	0.31
D00004094	2.820	N.A.	120	30.8	<0.01	0.58	43.0	0.16
D00004095	2.950	N.A.	162	34.8	0.06	0.47	41.6	0.20
D00004096	2.010	N.A.	299	76.3	<0.01	0.80	41.1	0.88
*Dup D00004096	N.A.	N.A.	228	75.6	<0.01	0.76	40.9	0.88
D00004097	2.270	N.A.	358	109	0.04	0.15	34.2	1.62
D00004098	2.480	N.A.	2610	236	0.02	0.20	33.4	1.81
D00004099	3.025	N.A.	2710	>300	0.02	0.37	23.4	2.95
D00004100	1.480	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01

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Final : VC162132 Order: PO# BMC16-01_25

Report File No.: 0000018111

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004101	3.130	N.A.	2410	>300	0.03	0.15	22.4	4.84
D00004102	2.470	N.A.	2840	>300	0.03	0.30	23.9	4.68
D00004103	2.510	N.A.	3430	>300	0.02	0.37	28.9	4.47
D00004104	2.700	N.A.	3460	>300	0.01	0.47	31.9	1.97
D00004105	2.135	N.A.	4210	>300	0.06	0.52	29.7	2.20
D00004106	2.075	N.A.	1440	>300	>4.00	0.09	22.9	5.20
D00004107	1.755	N.A.	3000	>300	2.01	0.61	35.6	2.19
D00004108	2.520	N.A.	1470	>300	>4.00	0.30	32.0	2.29
D00004109	2.275	N.A.	16	13.9	1.53	<0.01	2.83	0.22
D00004110	0.145	93.3	826	44.2	0.05	0.47	20.2	0.31
D00004111	2.645	N.A.	7	0.6	0.66	<0.01	2.29	<0.01
D00004112	2.475	N.A.	6	1.3	0.55	<0.01	2.46	0.01
D00004113	2.380	N.A.	8	<0.3	0.33	<0.01	2.29	<0.01
D00004114	2.690	N.A.	9	<0.3	0.24	<0.01	1.76	<0.01
D00004115	2.830	N.A.	<5	0.4	0.37	<0.01	2.11	<0.01
D00004116	1.605	N.A.	7	<0.3	0.19	<0.01	1.95	<0.01
D00004117	2.500	N.A.	11	0.4	0.34	<0.01	1.83	<0.01
D00004118	2.765	N.A.	63	2.2	0.48	<0.01	8.27	0.02
D00004119	2.395	N.A.	337	47.7	0.54	0.10	5.79	0.50
D00004120	1.470	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
D00004121	2.895	N.A.	1150	83.9	0.17	0.61	28.8	0.96
D00004122	1.505	N.A.	413	29.9	0.33	0.46	5.54	0.26
D00004123	2.150	N.A.	<5	0.8	0.48	<0.01	3.48	<0.01
D00004124	1.960	N.A.	<5	0.4	0.57	0.01	2.88	<0.01
D00004125	2.630	N.A.	<5	<0.3	0.51	<0.01	2.57	<0.01
D00004126	2.675	N.A.	<5	<0.3	0.38	<0.01	2.30	<0.01
D00004127	2.620	N.A.	<5	<0.3	0.42	<0.01	2.15	<0.01
D00004128	2.180	N.A.	<5	<0.3	0.45	<0.01	1.99	<0.01
D00004129	2.305	N.A.	9	3.0	0.59	0.11	2.99	<0.01
D00004130	0.145	N.A.	828	44.8	0.05	0.47	20.1	0.31
D00004131	1.220	N.A.	100	52.7	0.22	0.51	14.9	0.68
*Dup D00004131	N.A.	N.A.	81	51.2	0.22	0.49	14.9	0.67
D00004132	2.065	N.A.	2690	295	0.14	7.82	28.9	1.14
D00004133	2.280	N.A.	4110	295	0.18	8.87	24.0	0.82
D00004134	2.200	N.A.	4490	>300	0.14	11.9	26.3	0.32
D00004135	3.385	N.A.	190	75.8	0.36	0.27	22.0	1.24
D00004136	1.185	N.A.	71	18.3	0.48	0.71	3.74	0.03
D00004137	1.700	N.A.	8	1.1	0.09	0.03	1.83	0.01
D00004138	2.905	N.A.	9	4.8	0.11	0.04	4.55	0.05
D00004139	2.305	N.A.	<5	1.7	0.17	0.02	7.41	0.01

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Report File No.: 0000018111

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004140	1.370	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
D00004141	1.630	N.A.	32	11.1	0.26	0.22	13.5	0.09
D00004142	1.250	N.A.	<5	1.6	0.36	0.06	7.00	<0.01
D00004143	1.405	N.A.	<5	<0.3	0.02	<0.01	1.68	<0.01
D00004144	1.775	N.A.	<5	<0.3	<0.01	<0.01	0.93	<0.01
D00004145	2.205	N.A.	6	<0.3	0.25	<0.01	6.60	<0.01
D00004146	2.665	N.A.	6	0.3	0.18	0.01	4.59	<0.01
D00004147	2.005	N.A.	5	<0.3	0.29	<0.01	2.36	<0.01
D00004148	2.995	N.A.	<5	2.1	0.31	<0.01	2.97	0.03
D00004149	2.110	N.A.	9	0.3	0.21	<0.01	3.27	<0.01
D00004150	0.145	N.A.	831	45.0	0.05	0.47	20.1	0.31
D00004151	3.750	N.A.	12	0.5	0.16	<0.01	2.25	<0.01
D00004152	5.085	N.A.	37	2.3	0.22	<0.01	2.43	0.04
D00004153	4.690	N.A.	37	3.2	0.30	<0.01	2.27	0.07
D00004154	4.845	N.A.	81	4.0	0.32	<0.01	2.46	0.05
D00004155	5.280	N.A.	62	11.3	0.23	<0.01	1.93	0.12
D00004156	3.465	87.4	45	0.7	0.07	<0.01	6.82	<0.01
*Rep D00004094			145					
*Rep D00004121			1250					
*Rep D00004149			21					
*Std OXN117			7500					
*Std OXB130			118					
*Std OREAS214			2950					
*Std OXH97			1270					
*Std OXN117			7590					
*Std OXB130			115					
*Blk BLANK			<5					
*Blk BLANK			<5					

Element	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.3	0.01	0.01	0.05	0.01
Units	g/t	%	%	%	%
*Rep D00004072		0.30	0.75	24.7	0.65
*Rep D00004103		0.02	0.36	28.4	4.48
*Rep D00004114		0.25	<0.01	1.77	<0.01
*Rep D00004151		0.16	<0.01	2.28	<0.01
*Std OREAS134A		0.15	0.13	11.8	12.9
*Std OREAS131B		0.08	0.02	5.57	1.89
*Std RM183-89		3.11	<0.01	35.4	0.03
*Std ME-19		0.16	0.47	3.91	0.94

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	@Ag GE_AAS12E 0.3 g/t	Ba GO_ICP90Q 0.01 %	@Cu GO_ICP90Q 0.01 %	Fe GO_ICP90Q 0.05 %	@Pb GO_ICP90Q 0.01 %
*Std RM183-89		3.10	<0.01	35.8	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Rep D00004067	2.3				
*Rep D00004095	34.3				
*Rep D00004108	>300				
*Rep D00004127	<0.3				
*Rep D00004155	11.2				
*Std SU_1B	6.1				
*Std OREAS621	69.0				
*Std OREAS621	69.4				
*Std AMIS0268	197				
*Blk BLANK	<0.3				
*Blk BLANK	<0.3				

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004062	0.7	0.02	7	6	0.43	<0.01	1	N.A.
D00004063	0.8	<0.01	11	12	0.46	<0.01	1	N.A.
D00004064	0.3	<0.01	15	<5	0.16	<0.01	1	N.A.
D00004065	1.0	0.11	26	7	0.77	0.04	12	N.A.
D00004066	1.5	0.14	106	59	1.67	0.33	260	N.A.
D00004067	0.8	0.29	802	<5	2.64	0.28	10	N.A.
D00004068	1.7	1.86	5	<5	7.96	0.94	34	N.A.
D00004069	12.8	3.26	7	26	54.9	1.77	235	N.A.
D00004070	4.4	5.15	70	107	4.04	4.19	6	N.A.
D00004071	9.2	1.07	77	19	17.9	0.83	20	N.A.
D00004072	17.8	10.2	30	9	97.4	7.87	374	N.A.
D00004073	27.9	10.8	147	27	98.7	8.01	310	N.A.
D00004074	37.9	8.07	665	488	50.6	6.32	161	N.A.
D00004075	36.0	11.6	323	85	94.0	5.75	445	N.A.
D00004076	32.9	12.4	224	65	122	5.93	621	N.A.
D00004077	30.9	7.69	228	34	101	3.67	413	N.A.
D00004078	34.7	8.87	271	33	65.0	4.14	302	N.A.
D00004079	33.6	8.68	214	40	69.5	4.26	317	N.A.
D00004080	0.1	0.01	4	<5	0.10	<0.01	<1	N.A.
D00004081	37.7	10.4	262	41	56.6	5.44	276	N.A.
D00004082	22.5	8.50	355	74	107	4.90	224	N.A.
D00004083	33.5	12.9	315	70	172	6.64	353	N.A.
D00004084	32.4	17.8	231	35	76.8	8.89	360	N.A.
D00004085	35.8	12.8	288	38	68.0	6.19	306	N.A.
D00004086	37.5	16.2	393	89	213	8.92	395	N.A.
D00004087	38.2	12.3	279	27	73.9	5.80	345	N.A.
D00004088	34.8	8.69	76	48	171	4.14	378	N.A.
D00004089	42.0	6.42	257	46	42.4	2.95	320	N.A.
D00004090	4.5	5.22	68	106	3.94	4.11	5	N.A.
D00004091	9.4	1.07	76	18	17.2	0.75	19	N.A.
D00004092	41.1	7.61	254	39	120	3.05	455	N.A.
D00004093	38.4	5.19	215	41	49.9	2.20	274	N.A.
D00004094	37.3	6.79	171	19	46.3	2.75	234	N.A.
D00004095	36.9	8.58	242	16	53.7	3.42	238	N.A.
D00004096	39.9	5.98	423	49	60.1	3.09	149	N.A.
*Dup D00004096	39.8	5.95	419	52	58.9	3.13	151	N.A.
D00004097	37.1	5.51	407	131	19.5	6.01	88	N.A.
D00004098	39.5	9.25	>10000	1150	23.5	16.6	79	N.A.
D00004099	25.4	9.67	2910	1840	11.9	31.8	15	306
D00004100	0.1	0.01	5	<5	<0.02	0.15	<1	N.A.

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Final : VC162132 Order: PO# BMC16-01_25

Report File No.: 0000018111

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004101	27.5	13.1	4070	1070	13.2	52.2	18	346
D00004102	30.2	14.0	4290	1580	5.47	65.2	12	406
D00004103	32.8	6.81	>10000	1740	4.24	40.5	22	415
D00004104	37.0	6.40	>10000	1690	9.51	44.5	19	289
D00004105	35.7	9.33	>10000	1820	21.4	65.2	29	348
D00004106	34.5	14.6	4330	687	10.9	133	19	383
D00004107	44.1	4.94	5110	1470	8.14	57.2	13	299
D00004108	41.8	7.63	7700	1060	25.1	76.0	111	306
D00004109	1.6	0.65	69	28	2.71	4.84	3	N.A.
D00004110	18.6	1.13	1340	101	23.1	9.87	106	N.A.
D00004111	0.3	0.02	2360	<5	0.48	0.26	<1	N.A.
D00004112	0.3	0.04	2200	<5	0.61	0.33	<1	N.A.
D00004113	0.8	<0.01	1140	<5	0.34	0.14	<1	N.A.
D00004114	1.0	<0.01	156	<5	0.38	0.12	<1	N.A.
D00004115	0.4	0.02	50	<5	0.39	0.24	<1	N.A.
D00004116	1.0	<0.01	15	<5	0.19	0.09	<1	N.A.
D00004117	0.9	<0.01	34	6	0.21	0.31	<1	N.A.
D00004118	8.4	0.02	334	45	0.97	6.52	5	N.A.
D00004119	5.2	1.09	326	87	6.54	5.95	21	N.A.
D00004120	<0.1	<0.01	4	<5	<0.02	0.07	<1	N.A.
D00004121	31.7	6.62	9780	145	37.8	30.2	429	N.A.
D00004122	4.2	0.88	945	28	6.54	3.77	47	N.A.
D00004123	0.2	0.05	55	<5	0.32	0.34	3	N.A.
D00004124	1.0	0.01	670	<5	0.74	0.24	2	N.A.
D00004125	0.2	0.01	1020	<5	0.77	0.10	1	N.A.
D00004126	0.1	0.01	816	<5	0.21	0.07	<1	N.A.
D00004127	0.1	0.01	269	<5	0.19	0.07	<1	N.A.
D00004128	<0.1	<0.01	349	<5	0.33	0.05	<1	N.A.
D00004129	0.5	0.04	567	<5	0.25	0.14	3	N.A.
D00004130	18.9	1.15	1320	98	23.4	9.83	114	N.A.
D00004131	10.2	4.00	6	28	48.7	9.79	145	N.A.
*Dup D00004131	10.4	3.94	5	28	49.5	10.4	154	N.A.
D00004132	26.5	6.35	1090	55	175	11.2	285	277
D00004133	24.8	7.64	1580	49	118	17.7	240	268
D00004134	24.0	4.52	58	48	41.5	11.1	228	304
D00004135	21.0	3.90	164	39	92.7	7.78	244	N.A.
D00004136	1.2	0.12	5	6	1.64	0.34	6	N.A.
D00004137	0.5	0.08	4	<5	0.94	0.21	4	N.A.
D00004138	0.5	0.27	4	<5	6.43	0.53	12	N.A.
D00004139	0.2	0.24	3	<5	2.23	0.51	3	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004140	<0.1	<0.01	<3	<5	<0.02	0.02	<1	N.A.
D00004141	7.5	1.10	43	12	11.8	2.07	38	N.A.
D00004142	2.1	0.19	7	9	0.27	0.13	5	N.A.
D00004143	0.2	0.01	4	<5	0.12	0.02	<1	N.A.
D00004144	0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00004145	1.4	0.05	34	<5	0.05	<0.01	2	N.A.
D00004146	1.1	0.02	20	<5	0.35	<0.01	4	N.A.
D00004147	0.5	0.01	13	<5	0.33	0.02	<1	N.A.
D00004148	0.9	0.02	25	<5	2.23	0.05	2	N.A.
D00004149	1.9	0.01	37	<5	0.49	0.46	<1	N.A.
D00004150	18.0	1.15	1410	107	23.5	8.78	112	N.A.
D00004151	1.1	<0.01	17	<5	0.68	<0.01	<1	N.A.
D00004152	1.8	0.14	40	6	0.38	0.88	2	N.A.
D00004153	1.8	0.05	39	6	0.38	0.45	<1	N.A.
D00004154	2.0	0.43	40	17	0.28	3.22	1	N.A.
D00004155	1.3	0.43	41	20	0.44	3.57	1	N.A.
D00004156	0.3	0.01	402	<5	0.08	<0.01	<1	N.A.
*Rep D00004079			210	39	68.1	4.20	302	
*Rep D00004101			3880	1020	13.1	50.8	18	
*Rep D00004135			179	39	90.4	7.33	242	
*Std OREAS210			3660	N.A.	N.A.	N.A.	N.A.	
*Std OREAS621			N.A.	105	N.A.	N.A.	N.A.	
*Std OREAS621			N.A.	101	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	487	N.A.	79	
*Std OREAS624			115	N.A.	21.7	1.88	29	
*Std DS-1			6700	N.A.	N.A.	81.6	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								441

Element	S	@Zn	Ag
Method	GO_ICP90Q	GO_ICP90Q	GO_FAG313
Det.Lim.	0.1	0.01	10
Units	%	%	g/t
*Blk BLANK			<10
*Rep D00004072	17.8	10.1	
*Rep D00004103	33.9	6.54	
*Rep D00004114	1.0	<0.01	
*Rep D00004151	1.1	<0.01	
*Std OREAS134A	19.3	17.3	
*Std OREAS131B	4.9	3.09	

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Final : VC162132 Order: PO# BMC16-01_25

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	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	Ag GO_FAG313 10 g/t
*Std RM183-89	0.8	<0.01	
*Std ME-19	1.6	0.75	
*Std RM183-89	0.8	<0.01	
*Blk BLANK	<0.1	<0.01	
*Blk BLANK	<0.1	<0.01	
*Rep D00004106			383

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Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
D00004062	N.A.	N.A.
D00004063	N.A.	N.A.
D00004064	N.A.	N.A.
D00004065	N.A.	N.A.
D00004066	N.A.	N.A.
D00004067	N.A.	N.A.
D00004068	N.A.	N.A.
D00004069	N.A.	N.A.
D00004070	N.A.	N.A.
D00004071	N.A.	N.A.
D00004072	N.A.	N.A.
D00004073	N.A.	N.A.
D00004074	N.A.	N.A.
D00004075	N.A.	N.A.
D00004076	N.A.	N.A.
D00004077	N.A.	N.A.
D00004078	N.A.	N.A.
D00004079	N.A.	N.A.
D00004080	N.A.	N.A.
D00004081	N.A.	N.A.
D00004082	N.A.	N.A.
D00004083	N.A.	N.A.
D00004084	N.A.	N.A.
D00004085	N.A.	N.A.
D00004086	N.A.	N.A.
D00004087	N.A.	N.A.
D00004088	N.A.	N.A.
D00004089	N.A.	N.A.
D00004090	N.A.	N.A.
D00004091	N.A.	N.A.
D00004092	N.A.	N.A.
D00004093	N.A.	N.A.
D00004094	N.A.	N.A.
D00004095	N.A.	N.A.
D00004096	N.A.	N.A.
*Dup D00004096	N.A.	N.A.
D00004097	N.A.	N.A.
D00004098	1.05	N.A.
D00004099	N.A.	N.A.
D00004100	N.A.	N.A.

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Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
D00004101	N.A.	N.A.
D00004102	N.A.	N.A.
D00004103	1.35	N.A.
D00004104	1.36	N.A.
D00004105	1.13	N.A.
D00004106	N.A.	11.6
D00004107	N.A.	N.A.
D00004108	N.A.	8.8
D00004109	N.A.	N.A.
D00004110	N.A.	N.A.
D00004111	N.A.	N.A.
D00004112	N.A.	N.A.
D00004113	N.A.	N.A.
D00004114	N.A.	N.A.
D00004115	N.A.	N.A.
D00004116	N.A.	N.A.
D00004117	N.A.	N.A.
D00004118	N.A.	N.A.
D00004119	N.A.	N.A.
D00004120	N.A.	N.A.
D00004121	N.A.	N.A.
D00004122	N.A.	N.A.
D00004123	N.A.	N.A.
D00004124	N.A.	N.A.
D00004125	N.A.	N.A.
D00004126	N.A.	N.A.
D00004127	N.A.	N.A.
D00004128	N.A.	N.A.
D00004129	N.A.	N.A.
D00004130	N.A.	N.A.
D00004131	N.A.	N.A.
*Dup D00004131	N.A.	N.A.
D00004132	N.A.	N.A.
D00004133	N.A.	N.A.
D00004134	N.A.	N.A.
D00004135	N.A.	N.A.
D00004136	N.A.	N.A.
D00004137	N.A.	N.A.
D00004138	N.A.	N.A.
D00004139	N.A.	N.A.

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Report File No.: 0000018111

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
D00004140	N.A.	N.A.
D00004141	N.A.	N.A.
D00004142	N.A.	N.A.
D00004143	N.A.	N.A.
D00004144	N.A.	N.A.
D00004145	N.A.	N.A.
D00004146	N.A.	N.A.
D00004147	N.A.	N.A.
D00004148	N.A.	N.A.
D00004149	N.A.	N.A.
D00004150	N.A.	N.A.
D00004151	N.A.	N.A.
D00004152	N.A.	N.A.
D00004153	N.A.	N.A.
D00004154	N.A.	N.A.
D00004155	N.A.	N.A.
D00004156	N.A.	N.A.

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
*Std CD_1	0.66	
*Blk BLANK	<0.01	
*Std CRM3594-86		10.1
*Blk BLANK		<0.2
*Rep D00004106		11.4
*Rep D00004104	1.39	

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Certificate of Analysis

Work Order : VC162171

[Report File No.: 0000018082]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 22, 2016

P.O. No.	:	PO# BMC16-01_29
Project No.	:	KZK
No. Of Samples	:	42
Date Submitted	:	Jul 11, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162171 Order: PO# BMC16-01_29

Report File No.: 0000018082

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291837	5.440	N.A.	<5	0.9	0.03	<0.01	6.79	0.02
B00291838	5.025	N.A.	<5	0.7	0.07	<0.01	7.93	0.02
B00291839	3.590	N.A.	12	4.6	0.23	0.04	6.99	0.05
B00291840	1.445	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291841	4.135	N.A.	260	32.4	0.12	0.25	7.07	0.02
B00291842	6.305	N.A.	288	53.4	0.03	0.27	10.8	0.71
B00291843	4.025	N.A.	72	7.1	0.34	0.02	2.93	0.06
B00291844	2.205	N.A.	428	101	0.33	0.15	14.6	0.45
B00291845	3.415	N.A.	<5	<0.3	0.22	<0.01	1.89	<0.01
B00291846	3.955	N.A.	<5	0.3	0.26	<0.01	1.43	<0.01
B00291847	2.945	N.A.	334	17.9	0.25	0.64	3.31	0.01
B00291848	5.960	N.A.	980	58.0	0.02	0.41	36.8	0.69
B00291849	4.165	N.A.	80	3.2	0.57	0.01	4.45	<0.01
B00291850	0.170	N.A.	1270	69.9	0.26	0.36	3.80	1.34
B00291851	0.170	N.A.	810	20.5	0.14	1.74	13.3	0.26
B00291852	5.665	N.A.	927	124	0.02	0.30	36.6	1.53
B00291853	6.715	N.A.	1180	193	0.10	0.27	34.0	1.79
B00291854	4.340	N.A.	26	3.4	0.46	0.06	6.10	0.05
B00291855	2.585	N.A.	17	42.4	<0.01	0.04	1.17	1.07
B00291856	3.295	N.A.	<5	<0.3	0.02	<0.01	1.45	<0.01
B00291857	6.325	N.A.	<5	<0.3	0.33	<0.01	6.66	<0.01
B00291858	6.350	N.A.	5	0.3	0.20	<0.01	6.99	<0.01
B00291860	1.415	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
B00291865	4.730	N.A.	<5	<0.3	0.21	<0.01	5.82	<0.01
B00291866	5.985	N.A.	9	<0.3	0.16	<0.01	6.82	0.01
B00291867	4.460	N.A.	1510	272	0.01	1.10	27.3	5.01
B00291868	4.930	N.A.	8	0.5	0.18	0.02	5.25	<0.01
B00291869	6.745	N.A.	<5	<0.3	0.11	<0.01	6.89	<0.01
B00291870	0.155	N.A.	838	43.6	0.05	0.47	20.1	0.31
B00291875	5.675	N.A.	<5	<0.3	0.14	<0.01	6.85	<0.01
B00291876	5.505	N.A.	9	2.6	0.11	0.02	8.00	0.07
B00291877	6.245	N.A.	1260	115	0.10	1.31	29.3	1.61
B00291878	2.345	N.A.	170	6.9	0.32	0.19	8.92	0.07
B00291879	0.725	N.A.	3090	81.4	0.17	2.00	19.7	0.69
B00291880	1.695	N.A.	6	<0.3	<0.01	<0.01	<0.05	<0.01
B00291881	4.850	N.A.	90	1.7	0.28	0.05	7.57	<0.01
*Dup B00291881	N.A.	N.A.	41	1.5	0.28	0.06	7.59	<0.01
B00291882	7.030	N.A.	9	0.7	0.17	<0.01	7.05	0.01
B00291888	4.740	N.A.	30	11.8	0.11	0.06	7.47	0.20
B00291889	1.850	N.A.	1560	207	<0.01	2.27	30.0	2.97

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Final : VC162171 Order: PO# BMC16-01_29

Report File No.: 0000018082

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291890	0.170	N.A.	1270	70.5	0.25	0.36	3.76	1.33
B00291891	0.170	N.A.	816	20.9	0.14	1.75	13.4	0.25
B00291892	3.780	97.7	126	15.3	0.13	0.27	4.34	0.21
*Rep B00291876			20					
*Rep B00291889			1600					
*Std OXN117			7750					
*Std OXB130			124					
*Std OREAS214			3010					
*Blk BLANK			<5					
*Rep B00291837					0.03	<0.01	7.01	0.02
*Rep B00291878					0.31	0.19	8.68	0.08
*Std ME-19					0.16	0.47	4.00	0.96
*Std RM183-89					3.10	<0.01	34.9	0.04
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00291838				0.7				
*Std SU_1B				6.0				
*Std OREAS621				68.8				
*Std AMIS0268				204				
*Blk BLANK				<0.3				

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Final : VC162171 Order: PO# BMC16-01_29

Report File No.: 0000018082

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291837	<0.1	0.03	64	<5	0.14	0.02	<1	N.A.
B00291838	0.3	0.03	67	<5	0.34	<0.01	2	N.A.
B00291839	0.3	0.09	27	<5	6.70	0.13	10	N.A.
B00291840	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
B00291841	0.3	0.16	328	809	13.0	0.65	13	N.A.
B00291842	9.4	1.78	706	794	22.9	4.09	323	N.A.
B00291843	1.8	0.05	233	79	3.75	0.30	24	N.A.
B00291844	16.6	3.37	1730	531	27.5	6.96	231	N.A.
B00291845	0.2	<0.01	6	7	0.35	0.05	2	N.A.
B00291846	0.6	<0.01	31	<5	0.37	0.03	3	N.A.
B00291847	1.4	0.05	4150	19	0.81	0.15	11	N.A.
B00291848	33.4	10.1	321	56	31.3	12.2	173	N.A.
B00291849	0.2	0.03	27	23	0.10	0.12	1	N.A.
B00291850	4.3	5.12	72	96	4.00	4.20	6	N.A.
B00291851	9.1	1.06	84	18	18.1	0.83	19	N.A.
B00291852	43.9	8.68	2090	139	31.1	18.1	128	N.A.
B00291853	40.2	5.54	584	213	29.9	12.6	155	N.A.
B00291854	0.2	0.05	24	87	0.64	0.10	2	N.A.
B00291855	0.4	0.06	9	23	7.93	0.08	14	N.A.
B00291856	0.1	<0.01	4	6	0.05	0.01	<1	N.A.
B00291857	<0.1	0.02	35	5	0.02	0.05	<1	N.A.
B00291858	0.1	0.02	47	<5	0.04	0.04	<1	N.A.
B00291860	0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
B00291865	0.1	<0.01	34	<5	<0.02	0.01	<1	N.A.
B00291866	<0.1	0.02	29	<5	0.05	<0.01	<1	N.A.
B00291867	26.9	11.6	69	199	73.8	22.4	249	257
B00291868	0.5	0.01	62	12	0.05	0.03	2	N.A.
B00291869	<0.1	<0.01	64	<5	<0.02	<0.01	<1	N.A.
B00291870	18.4	1.16	1360	105	23.7	8.60	104	N.A.
B00291875	<0.1	0.02	60	<5	0.05	0.03	<1	N.A.
B00291876	0.4	0.17	42	6	1.27	0.34	4	N.A.
B00291877	33.5	7.15	1760	294	86.0	13.5	246	N.A.
B00291878	1.8	0.59	72	64	26.1	1.03	40	N.A.
B00291879	20.1	6.26	353	727	277	10.2	455	N.A.
B00291880	0.1	<0.01	5	<5	0.06	<0.01	<1	N.A.
B00291881	0.2	0.05	54	7	1.24	0.14	2	N.A.
*Dup B00291881	0.2	0.05	51	11	1.24	0.17	2	N.A.
B00291882	<0.1	0.01	62	<5	0.13	0.05	<1	N.A.
B00291888	0.7	0.18	40	14	4.20	0.29	11	N.A.
B00291889	37.6	12.3	2300	170	138	15.1	312	N.A.

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Final : VC162171 Order: PO# BMC16-01_29

Report File No.: 0000018082

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291890	4.4	5.14	73	106	3.85	4.13	6	N.A.
B00291891	8.9	1.04	85	19	17.8	0.71	18	N.A.
B00291892	2.5	0.88	216	25	6.80	1.30	47	N.A.
*Rep B00291857			31	5	0.02	0.05	<1	
*Std OREAS621			N.A.	108	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	511	N.A.	84	
*Std DS-1			7260	N.A.	N.A.	74.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								446
*Blk BLANK								<10
*Rep B00291837	0.1	0.03						
*Rep B00291878	1.8	0.58						
*Std ME-19	1.5	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291867								244

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Certificate of Analysis

Work Order : VC162172

[Report File No.: 0000018079]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 22, 2016

P.O. No.	:	PO# BMC16-01_31
Project No.	:	KZK
No. Of Samples	:	28
Date Submitted	:	Jul 11, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162172 Order: PO# BMC16-01_31

Report File No.: 0000018079

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291899	4.965	N.A.	<5	1.0	0.45	0.01	2.13	0.01
B00291900	1.390	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00291901	5.045	N.A.	12	2.1	0.42	0.08	3.33	0.01
B00291902	3.005	N.A.	13	57.7	0.09	0.76	40.0	0.85
B00291903	2.120	N.A.	<5	10.3	0.53	0.14	8.94	0.18
B00291904	2.465	N.A.	11	44.4	0.18	0.22	26.0	0.87
B00291905	2.515	N.A.	<5	21.4	0.41	0.08	13.5	0.35
B00291906	2.000	N.A.	<5	3.5	0.10	0.04	9.90	0.06
B00291907	4.635	N.A.	<5	0.5	0.62	<0.01	2.41	<0.01
B00291908	5.070	N.A.	<5	<0.3	0.24	<0.01	1.52	<0.01
B00291909	4.575	N.A.	<5	<0.3	0.30	<0.01	2.92	<0.01
B00291910	0.155	N.A.	845	43.4	0.05	0.46	19.6	0.30
B00291911	4.685	N.A.	63	6.2	0.36	0.18	7.06	0.05
B00291912	5.580	N.A.	20	12.4	0.91	0.05	6.79	0.28
B00291913	5.095	N.A.	<5	3.0	0.56	0.01	6.05	0.06
B00291914	4.915	N.A.	159	79.9	0.04	0.57	35.6	0.44
B00291915	2.320	N.A.	373	30.2	0.06	0.65	15.1	0.13
B00291916	5.455	N.A.	2030	115	0.01	2.74	30.9	0.47
B00291917	2.950	N.A.	3350	221	0.03	7.78	27.3	0.48
B00291918	5.775	N.A.	1270	264	<0.01	2.27	38.5	1.63
B00291919	6.240	N.A.	341	34.9	<0.01	0.57	40.5	0.17
B00291920	1.650	N.A.	<5	<0.3	<0.01	<0.01	0.09	<0.01
B00291921	7.130	N.A.	223	54.3	<0.01	0.46	45.0	0.22
B00291922	6.810	N.A.	139	59.7	0.02	0.41	39.3	0.30
B00291923	5.965	N.A.	<5	1.5	0.35	<0.01	2.93	0.01
B00291924	4.925	N.A.	<5	<0.3	0.18	0.06	2.56	0.01
B00291925	4.900	N.A.	<5	0.8	0.11	<0.01	2.30	0.02
B00291926	3.670	90.3	<5	0.6	0.10	<0.01	2.66	0.02
*Rep B00291919				35.2				
*Rep B00291921				53.2				
*Std OREAS621				68.0				
*Blk BLANK				<0.3				
*Rep B00291900			<5					
*Std OXN117			7210					
*Std OXB130			122					
*Blk BLANK			<5					

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Final : VC162172 Order: PO# BMC16-01_31

Report File No.: 0000018079

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep B00291923	0.36	<0.01	2.95	0.02
*Std OREAS134A	0.15	0.13	12.1	12.8
*Std RM183-89	3.14	<0.01	34.8	0.04
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Final : VC162172 Order: PO# BMC16-01_31

Report File No.: 0000018079

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
B00291899	1.0	0.06	12	<5	1.15	0.19	1	N.A.
B00291900	<0.1	<0.01	6	8	0.03	0.06	2	N.A.
B00291901	1.0	0.12	10	<5	1.07	0.23	3	N.A.
B00291902	29.7	8.86	9	20	129	15.4	261	N.A.
B00291903	4.5	0.88	6	12	19.2	1.42	29	N.A.
B00291904	21.5	8.23	6	27	99.4	6.16	183	N.A.
B00291905	10.0	4.38	4	18	47.2	0.84	72	N.A.
B00291906	7.1	0.80	4	42	6.99	0.10	16	N.A.
B00291907	0.9	0.02	7	<5	0.95	0.02	2	N.A.
B00291908	0.4	0.01	4	<5	0.44	<0.01	<1	N.A.
B00291909	0.6	<0.01	3	9	0.51	0.01	<1	N.A.
B00291910	18.2	1.16	1360	101	22.1	8.60	112	N.A.
B00291911	3.3	2.10	25	9	15.3	1.55	35	N.A.
B00291912	1.8	0.88	9	12	25.8	0.48	71	N.A.
B00291913	0.5	0.21	5	<5	5.83	0.11	12	N.A.
B00291914	31.7	7.75	130	72	215	3.15	266	N.A.
B00291915	8.3	5.96	59	16	52.8	2.31	94	N.A.
B00291916	33.0	18.5	200	37	185	6.37	410	N.A.
B00291917	28.3	19.0	120	18	177	7.15	344	N.A.
B00291918	37.3	11.9	258	22	577	4.06	485	245
B00291919	38.0	14.2	210	18	115	3.35	221	N.A.
B00291920	0.1	0.03	5	<5	0.29	0.01	<1	N.A.
B00291921	36.8	7.69	148	33	178	1.33	268	N.A.
B00291922	38.1	14.5	119	24	168	2.70	300	N.A.
B00291923	0.9	0.07	7	<5	3.90	0.04	3	N.A.
B00291924	1.1	0.03	14	<5	0.36	0.03	<1	N.A.
B00291925	0.5	0.01	6	10	1.41	0.03	<1	N.A.
B00291926	0.7	0.01	<3	7	1.39	0.01	<1	N.A.
*Rep B00291901			11	<5	1.09	0.23	3	
*Std OREAS621			N.A.	107	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	521	N.A.	82	
*Std DS-1			6930	N.A.	N.A.	80.5	N.A.	

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Final : VC162172 Order: PO# BMC16-01_31

Report File No.: 0000018079

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								444
*Blk BLANK								<10
*Rep B00291923	0.9	0.07						
*Std OREAS134A	19.2	16.9						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291918								249

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Certificate of Analysis

Work Order : VC162179

[Report File No.: 0000018118]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 26, 2016

P.O. No.	:	PO# BMC16-01_28
Project No.	:	KZK
No. Of Samples	:	49
Date Submitted	:	Jul 11, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162179 Order: PO# BMC16-01_28

Report File No.: 0000018118

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291760	0.150	N.A.	796	44.1	0.05	0.47	19.9	0.31
B00291770	1.360	N.A.	<5	<0.3	<0.01	<0.01	0.10	<0.01
B00291773	4.685	N.A.	<5	0.4	0.11	<0.01	7.46	<0.01
B00291774	5.575	N.A.	1800	22.9	0.31	0.05	6.43	0.22
B00291775	3.265	N.A.	597	114	0.22	0.20	14.3	1.68
B00291776	4.260	N.A.	8	0.8	0.24	<0.01	5.58	0.01
B00291777	3.875	N.A.	<5	<0.3	0.23	<0.01	7.46	<0.01
B00291778	4.140	N.A.	464	1.9	0.26	0.05	6.68	<0.01
B00291779	2.285	N.A.	470	56.1	0.36	0.19	8.48	0.69
B00291780	0.155	N.A.	1270	65.1	0.26	0.36	3.79	1.30
B00291781	0.160	N.A.	807	18.7	0.14	1.71	13.3	0.24
B00291782	1.855	N.A.	1010	123	0.05	0.47	36.6	1.28
B00291783	4.265	N.A.	5	1.0	1.13	<0.01	4.31	0.01
B00291784	3.880	N.A.	76	10.4	1.13	0.02	6.09	0.08
B00291785	6.625	N.A.	197	48.8	>4.00	0.04	28.2	0.73
B00291786	3.565	N.A.	25	3.5	0.96	0.01	8.02	0.06
B00291787	5.895	N.A.	<5	<0.3	0.13	<0.01	9.06	<0.01
B00291790	1.455	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291796	5.070	N.A.	<5	<0.3	0.33	<0.01	6.88	<0.01
B00291797	5.650	N.A.	<5	<0.3	0.38	<0.01	7.82	<0.01
B00291798	3.405	N.A.	39	2.6	0.38	0.02	7.01	0.04
B00291799	4.745	N.A.	2480	177	0.02	0.51	31.5	4.28
B00291800	0.160	N.A.	1270	68.8	0.27	0.37	3.90	1.34
B00291801	0.160	N.A.	811	19.8	0.14	1.74	13.7	0.25
B00291802	5.270	N.A.	2010	96.3	0.01	0.22	23.3	2.29
B00291803	3.410	N.A.	2550	75.3	<0.01	0.13	24.9	1.66
B00291804	4.035	N.A.	1330	138	<0.01	0.32	27.9	2.54
B00291805	3.400	N.A.	15	2.1	0.31	<0.01	3.41	0.03
B00291806	2.800	N.A.	8	2.2	0.20	<0.01	2.70	0.04
B00291807	4.510	N.A.	611	115	0.01	0.07	17.8	2.06
B00291808	4.375	N.A.	14	1.8	0.22	<0.01	2.83	0.02
B00291809	4.095	N.A.	108	3.9	0.14	<0.01	3.23	0.04
B00291810	1.805	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291811	4.315	N.A.	28	3.4	0.13	<0.01	2.42	0.06
B00291812	7.205	N.A.	866	165	0.02	0.66	26.8	3.79
*Dup B00291812	N.A.	N.A.	1010	170	0.02	0.63	26.7	3.68
B00291813	7.890	N.A.	1100	217	<0.01	0.70	27.4	3.79
B00291814	7.870	N.A.	1210	222	0.04	0.86	25.1	3.70
B00291815	5.720	N.A.	51	10.1	0.15	0.08	8.13	0.14
B00291816	4.710	N.A.	23	4.9	0.14	0.01	7.38	0.08

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Final : VC162179 Order: PO# BMC16-01_28

Report File No.: 0000018118

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291817	6.765	N.A.	8	2.9	0.09	0.01	7.49	0.06
B00291820	0.145	N.A.	836	46.3	0.05	0.47	20.1	0.31
B00291824	5.795	N.A.	<5	1.5	<0.01	0.01	7.86	0.03
B00291825	5.065	N.A.	5	2.2	0.08	0.01	6.69	0.04
B00291826	1.275	N.A.	552	56.4	0.02	4.70	17.3	0.09
B00291827	4.010	95.6	<5	0.4	0.13	<0.01	2.04	<0.01
B00291828	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291829	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291830	1.595	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
B00291831	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Rep B00291807			604					
*Rep B00291825			<5					
*Std OXN117			7400					
*Std OXB130			122					
*Std OREAS214			2950					
*Blk BLANK			<5					
*Rep B00291779				56.5				
*Rep B00291825				2.2				
*Std AMIS0268				198				
*Std SU_1B				6.2				
*Blk BLANK				<0.3				
*Rep B00291800					0.26	0.36	3.81	1.31
*Std OREAS134A					0.15	0.13	12.0	12.4
*Std ME-19					0.17	0.47	3.95	0.95
*Std RM183-89					3.19	<0.01	36.6	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162179 Order: PO# BMC16-01_28

Report File No.: 0000018118

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ba
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_XRF77B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.2
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
B00291760	17.9	1.12	1390	108	23.3	8.10	107	N.A.
B00291770	<0.1	<0.01	4	<5	0.02	<0.01	<1	N.A.
B00291773	0.2	0.02	51	<5	0.08	0.02	<1	N.A.
B00291774	0.7	0.03	46	13	9.07	0.05	22	N.A.
B00291775	14.2	2.59	125	53	45.9	5.96	228	N.A.
B00291776	0.2	0.02	44	<5	0.44	0.04	4	N.A.
B00291777	0.3	0.03	38	13	0.13	0.01	3	N.A.
B00291778	0.7	0.04	23	6	0.19	0.05	3	N.A.
B00291779	6.9	2.36	73	60	8.78	6.08	38	N.A.
B00291780	4.6	5.13	75	109	3.90	3.66	6	N.A.
B00291781	8.8	1.02	80	17	17.3	0.76	20	N.A.
B00291782	42.5	4.44	257	53	96.3	8.79	209	N.A.
B00291783	0.3	0.04	22	<5	0.58	0.13	2	N.A.
B00291784	1.0	0.05	34	10	1.08	0.25	7	N.A.
B00291785	35.6	6.77	101	50	4.74	13.8	26	16.8
B00291786	0.4	0.27	15	<5	0.17	0.81	1	N.A.
B00291787	0.4	0.02	15	<5	<0.02	0.04	<1	N.A.
B00291790	0.2	<0.01	4	<5	<0.02	<0.01	<1	N.A.
B00291796	0.4	0.01	46	10	<0.02	0.05	<1	N.A.
B00291797	0.3	0.01	58	<5	<0.02	0.05	<1	N.A.
B00291798	0.1	0.02	57	6	0.44	0.09	<1	N.A.
B00291799	30.5	7.19	1310	175	8.00	10.8	57	N.A.
B00291800	4.6	5.14	71	104	3.99	3.65	6	N.A.
B00291801	9.3	1.04	80	20	17.2	0.81	19	N.A.
B00291802	20.5	3.99	202	121	2.65	7.17	41	N.A.
B00291803	24.5	3.22	217	95	1.72	6.89	21	N.A.
B00291804	29.5	4.22	265	162	2.98	13.4	29	N.A.
B00291805	1.9	0.04	13	<5	0.19	0.21	<1	N.A.
B00291806	1.1	0.07	10	7	0.15	0.18	<1	N.A.
B00291807	18.6	4.62	228	111	1.35	11.2	16	N.A.
B00291808	1.0	0.04	15	<5	0.21	0.11	<1	N.A.
B00291809	1.4	0.05	19	6	0.44	0.16	<1	N.A.
B00291810	0.1	0.02	4	<5	<0.02	<0.01	<1	N.A.
B00291811	1.4	0.06	19	<5	0.40	0.16	<1	N.A.
B00291812	29.8	9.05	3030	242	34.3	25.6	147	N.A.
*Dup B00291812	28.8	8.50	2890	243	31.4	23.8	135	N.A.
B00291813	33.7	9.36	2770	998	66.6	22.6	309	N.A.
B00291814	32.6	10.1	2600	461	67.5	25.2	193	N.A.
B00291815	1.8	0.37	383	12	7.17	1.67	18	N.A.
B00291816	0.5	0.14	360	8	0.92	0.40	3	N.A.

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Final : VC162179 Order: PO# BMC16-01_28

Report File No.: 0000018118

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ba
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_XRF77B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.2
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
B00291817	0.2	0.06	135	<5	0.79	0.09	<1	N.A.
B00291820	18.5	1.16	1500	115	25.7	9.42	115	N.A.
B00291824	0.2	0.04	92	<5	0.38	0.04	<1	N.A.
B00291825	0.4	0.10	39	8	6.84	0.20	7	N.A.
B00291826	7.6	1.46	36	152	220	3.43	129	N.A.
B00291827	0.5	0.04	8	<5	0.68	0.06	3	N.A.
B00291828	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291829	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
B00291830	0.1	<0.01	8	<5	<0.02	<0.01	<1	N.A.
B00291831	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Std CRM6587-93								32.9
*Blk BLANK								<0.2
*Rep B00291775			123	53	46.8	6.14	236	
*Rep B00291825			37	7	6.85	0.21	7	
*Std OREAS621			N.A.	106	N.A.	N.A.	N.A.	
*Std OREAS624			114	N.A.	21.7	1.89	31	
*Std DS-1			6970	N.A.	N.A.	80.5	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep B00291800	4.5	5.13						
*Std OREAS134A	19.2	16.7						
*Std ME-19	1.6	0.77						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep B00291785								16.7

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Certificate of Analysis

Work Order : VC162227

[Report File No.: 0000018202]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 29, 2016

P.O. No.	:	PO# BMC16-01_26 / 4157-4230
Project No.	:	KZK
No. Of Samples	:	74
Date Submitted	:	Jul 15, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004157	2.605	N.A.	14	4.3	0.10	<0.01	1.81	0.07
D00004158	1.780	N.A.	38	1.2	0.11	<0.01	1.95	0.01
D00004159	1.700	N.A.	35	1.2	0.12	<0.01	1.72	0.01
D00004160	1.510	N.A.	<5	<0.3	<0.01	<0.01	0.09	<0.01
D00004161	2.195	N.A.	116	7.7	0.10	<0.01	1.83	0.06
D00004162	2.820	N.A.	8	1.1	0.17	<0.01	1.80	<0.01
D00004163	2.555	N.A.	<5	0.9	0.26	0.01	3.82	0.02
D00004164	1.950	N.A.	52	12.0	0.27	0.20	18.5	0.42
D00004165	1.875	N.A.	111	10.9	0.36	0.25	5.54	0.08
D00004166	1.885	N.A.	4360	>300	0.36	2.87	11.7	0.05
D00004167	0.820	N.A.	1360	>300	0.04	0.02	20.3	8.49
D00004168	1.795	N.A.	255	51.8	0.54	0.04	5.76	0.50
D00004169	1.415	N.A.	93	12.3	1.95	0.01	3.76	0.11
D00004170	0.155	N.A.	815	43.1	0.05	0.46	20.3	0.31
D00004171	3.420	N.A.	3540	>300	>4.00	0.60	17.9	2.21
D00004172	2.890	N.A.	175	29.7	1.06	0.03	3.09	0.22
D00004173	1.885	N.A.	19	0.5	0.80	<0.01	1.91	<0.01
D00004174	1.710	N.A.	125	19.7	1.25	0.01	2.93	0.09
D00004175	1.795	N.A.	47	7.1	0.97	<0.01	2.28	0.04
D00004176	2.500	N.A.	1870	295	>4.00	0.41	26.6	3.12
D00004177	2.215	N.A.	9	1.8	1.06	<0.01	2.21	0.05
D00004178	2.500	N.A.	26	3.7	2.67	<0.01	2.88	0.05
D00004179	2.585	N.A.	<5	6.7	1.58	0.02	2.16	<0.01
D00004180	1.620	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004181	1.390	N.A.	85	48.0	1.34	0.13	1.83	0.12
D00004182	1.445	N.A.	<5	7.7	>4.00	0.03	1.78	0.09
D00004183	3.780	N.A.	1010	>300	1.10	0.29	26.9	5.41
D00004184	1.855	N.A.	1080	227	>4.00	0.19	25.6	4.02
D00004185	2.525	N.A.	1260	238	>4.00	0.33	19.7	2.06
D00004186	3.065	N.A.	1890	230	>4.00	0.43	22.4	2.54
D00004187	3.430	N.A.	1430	162	>4.00	0.29	22.3	2.53
D00004188	1.625	N.A.	917	68.3	0.82	0.19	4.59	0.31
D00004189	3.190	N.A.	12	1.6	0.85	<0.01	2.25	<0.01
D00004190	0.155	N.A.	865	43.3	0.05	0.46	20.3	0.31
D00004191	2.240	N.A.	13	1.5	0.72	<0.01	1.85	<0.01
*Dup D00004191	N.A.	N.A.	13	1.6	0.74	<0.01	1.92	<0.01
D00004192	2.700	N.A.	103	6.2	0.87	0.01	2.05	0.04
D00004193	3.520	N.A.	1990	287	>4.00	0.67	27.1	3.93
D00004194	2.420	N.A.	3130	249	0.86	0.86	36.5	0.97
D00004195	3.945	N.A.	911	75.3	0.63	0.22	40.7	0.68

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004196	3.165	N.A.	2080	207	>4.00	0.54	33.8	1.88
D00004197	2.035	N.A.	1400	202	2.24	0.31	38.2	2.93
D00004198	4.155	N.A.	1050	122	0.13	1.14	43.9	1.13
D00004199	2.605	N.A.	926	50.0	0.06	0.96	43.8	0.29
D00004200	1.610	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
D00004201	3.125	N.A.	1830	98.6	0.02	1.85	40.7	0.38
D00004202	2.845	N.A.	1570	114	<0.01	2.34	44.6	0.45
D00004203	3.495	N.A.	711	37.3	<0.01	1.12	45.8	0.08
D00004204	2.855	N.A.	624	40.6	0.07	0.96	45.5	0.16
D00004205	3.060	N.A.	425	93.9	0.04	0.47	43.6	1.00
D00004206	2.910	98.1	581	138	0.02	0.52	43.4	1.87
D00004207	4.495	N.A.	959	66.8	0.06	0.67	45.5	0.84
D00004208	4.620	N.A.	804	55.0	0.04	0.56	42.4	0.68
D00004209	3.135	N.A.	1060	134	0.01	0.69	41.2	1.86
D00004210	0.170	N.A.	1290	66.3	0.25	0.35	3.65	1.34
D00004211	0.170	N.A.	821	20.6	0.14	1.73	13.5	0.25
D00004212	3.375	N.A.	1150	158	0.01	0.81	41.4	2.38
D00004213	3.200	N.A.	1050	68.8	0.02	0.47	38.6	1.15
D00004214	2.975	N.A.	826	75.6	0.02	0.74	41.3	1.15
D00004215	2.165	N.A.	1060	116	0.11	0.39	37.7	2.49
D00004216	3.255	N.A.	2070	224	>4.00	0.26	29.5	4.10
D00004217	3.305	N.A.	1050	168	>4.00	0.21	26.5	3.44
D00004218	2.970	N.A.	2170	164	>4.00	0.51	28.0	2.24
D00004219	2.235	N.A.	1270	103	>4.00	0.20	25.6	1.75
D00004220	1.285	N.A.	<5	<0.3	0.01	<0.01	0.06	<0.01
D00004221	2.445	N.A.	1360	97.5	0.73	0.18	30.7	1.69
D00004222	2.725	N.A.	1410	172	>4.00	0.22	20.0	1.74
D00004223	2.335	N.A.	1050	97.8	>4.00	0.06	29.7	1.30
D00004224	2.890	N.A.	2430	276	>4.00	0.24	26.2	2.82
D00004225	2.990	N.A.	2780	167	2.37	0.24	32.0	1.03
D00004226	3.060	N.A.	3410	280	1.19	0.44	34.3	1.07
*Dup D00004226	N.A.	N.A.	3990	269	1.20	0.44	34.1	1.08
D00004227	2.915	N.A.	4150	>300	>4.00	0.40	28.2	1.97
D00004228	2.390	N.A.	2830	204	>4.00	0.20	27.4	2.46
D00004229	2.685	N.A.	3130	>300	>4.00	0.38	30.8	2.88
D00004230	0.170	N.A.	1250	66.8	0.26	0.35	3.71	1.35
*Rep D00004158				1.2				
*Rep D00004189				1.6				
*Rep D00004215				117				
*Rep D00004226				275				

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std SU_1B		5.8				
*Std OREAS621		66.6				
*Std AMIS0268		190				
*Blk BLANK		<0.3				
*Rep D00004177	6					
*Rep D00004200	<5					
*Std OXN117	7610					
*Std OXB130	123					
*Std OREAS214	2990					
*Std OXH97	1230					
*Blk BLANK	<5					
*Rep D00004172			1.04	0.03	3.06	0.22
*Rep D00004196			>4.00	0.56	34.2	1.93
*Rep D00004210			0.26	0.35	3.71	1.35
*Rep D00004224			>4.00	0.24	26.4	2.89
*Std ME-19			0.17	0.46	3.92	0.94
*Std OREAS134A			0.14	0.13	11.9	12.9
*Std RM183-89			3.11	<0.01	35.7	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004157	1.4	0.12	32	10	0.68	0.24	3	N.A.
D00004158	1.4	0.01	404	<5	0.63	0.12	<1	N.A.
D00004159	1.1	0.02	541	<5	0.35	0.11	<1	N.A.
D00004160	0.2	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00004161	1.0	0.11	6180	76	0.33	1.00	5	N.A.
D00004162	0.9	<0.01	319	11	0.24	0.05	<1	N.A.
D00004163	1.1	0.10	752	10	0.90	0.80	4	N.A.
D00004164	10.2	1.20	1410	189	4.23	11.5	76	N.A.
D00004165	2.0	0.06	572	304	8.70	1.06	27	N.A.
D00004166	10.0	0.38	2800	>10000	85.4	18.6	124	417
D00004167	28.1	13.1	5750	846	10.9	157	186	502
D00004168	4.8	0.87	239	162	1.65	13.6	15	N.A.
D00004169	3.3	0.22	94	35	0.90	2.84	6	N.A.
D00004170	18.6	1.14	1380	108	22.8	8.67	104	N.A.
D00004171	24.7	3.40	1300	2660	12.1	168	78	626
D00004172	2.8	0.75	81	126	2.66	19.1	14	N.A.
D00004173	1.3	<0.01	19	<5	0.11	0.22	<1	N.A.
D00004174	2.3	0.21	57	52	0.87	3.16	4	N.A.
D00004175	1.7	0.09	31	23	0.46	1.87	2	N.A.
D00004176	33.6	4.85	1160	1580	5.15	108	71	293
D00004177	1.2	0.13	9	6	0.17	0.81	1	N.A.
D00004178	1.9	0.22	28	15	1.14	1.61	3	N.A.
D00004179	0.9	0.01	10	67	0.26	0.16	<1	N.A.
D00004180	<0.1	<0.01	3	<5	<0.02	0.05	<1	N.A.
D00004181	1.1	0.11	22	302	0.39	0.56	2	N.A.
D00004182	0.8	0.15	45	37	0.35	0.93	2	N.A.
D00004183	33.9	6.93	768	1030	6.09	95.8	95	369
D00004184	34.9	6.83	457	1070	18.1	103	163	N.A.
D00004185	29.4	5.16	655	1950	20.6	106	181	N.A.
D00004186	30.7	7.46	2950	1370	39.3	67.4	168	N.A.
D00004187	30.1	8.28	856	751	38.6	59.6	217	N.A.
D00004188	3.4	1.10	6320	775	4.87	8.16	31	N.A.
D00004189	1.2	0.01	421	7	0.74	0.23	2	N.A.
D00004190	18.0	1.12	1370	107	22.4	8.40	104	N.A.
D00004191	1.3	<0.01	237	<5	0.42	0.20	<1	N.A.
*Dup D00004191	1.3	0.01	254	<5	0.42	0.18	<1	N.A.
D00004192	1.1	0.12	1260	29	0.58	0.48	2	N.A.
D00004193	33.3	11.8	2800	998	27.2	28.9	267	260
D00004194	44.1	7.77	3630	1860	60.2	19.3	196	N.A.
D00004195	49.3	8.03	1120	433	40.0	19.2	276	N.A.

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004196	41.2	5.56	3960	1460	56.5	14.6	179	N.A.
D00004197	45.3	5.79	5470	904	43.4	9.79	179	N.A.
D00004198	35.5	7.01	858	296	118	8.47	412	N.A.
D00004199	34.4	7.59	790	398	121	7.18	437	N.A.
D00004200	<0.1	<0.01	5	<5	<0.02	0.07	<1	N.A.
D00004201	38.8	10.7	1230	388	197	6.76	530	N.A.
D00004202	36.9	5.32	929	295	205	4.02	471	N.A.
D00004203	33.4	6.24	289	84	52.1	4.01	424	N.A.
D00004204	34.3	6.16	296	137	77.7	4.44	450	N.A.
D00004205	32.9	8.29	232	114	121	5.25	371	N.A.
D00004206	37.0	7.89	803	287	135	5.57	654	N.A.
D00004207	41.5	2.48	1840	486	81.0	2.40	484	N.A.
D00004208	41.9	2.98	2350	613	69.9	3.16	402	N.A.
D00004209	41.3	6.31	5130	594	100	7.42	408	N.A.
D00004210	4.5	5.21	73	108	3.72	3.87	6	N.A.
D00004211	9.7	1.10	84	19	17.4	0.78	19	N.A.
D00004212	39.4	8.02	9090	280	84.0	10.0	357	N.A.
D00004213	41.8	9.66	3210	1080	45.9	13.8	222	N.A.
D00004214	40.7	6.40	2980	409	37.6	14.0	285	N.A.
D00004215	42.2	8.88	5970	460	35.3	26.5	379	N.A.
D00004216	37.0	8.78	>10000	1300	8.98	60.4	127	N.A.
D00004217	35.4	8.42	7910	927	4.82	150	134	N.A.
D00004218	36.1	7.31	6100	1360	8.91	257	224	N.A.
D00004219	31.6	5.16	>10000	873	7.05	223	134	N.A.
D00004220	0.1	<0.01	15	<5	<0.02	0.15	<1	N.A.
D00004221	35.3	7.49	9880	678	20.3	339	152	N.A.
D00004222	24.1	4.51	4880	930	10.6	223	216	N.A.
D00004223	35.7	6.02	7890	493	23.5	167	230	N.A.
D00004224	33.0	10.6	9300	1310	25.5	167	113	238
D00004225	38.6	7.76	7440	1010	32.7	87.9	262	N.A.
D00004226	39.6	6.11	>10000	1850	20.0	86.3	195	288
*Dup D00004226	38.3	6.04	>10000	2070	22.0	97.9	217	276
D00004227	34.5	8.00	>10000	2060	11.4	118	133	301
D00004228	34.6	6.89	>10000	1150	11.8	87.2	104	N.A.
D00004229	39.0	7.47	4300	1790	23.9	73.2	179	294
D00004230	4.3	5.21	81	106	3.89	4.06	5	N.A.

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00004165			589	299	8.92	1.08	27	
*Rep D00004194			3720	1850	60.6	19.9	193	
*Rep D00004228			>10000	1190	11.8	84.8	105	
*Std OREAS621			N.A.	108	N.A.	N.A.	N.A.	
*Std OREAS624			114	N.A.	21.0	1.90	30	
*Std OREAS934			N.A.	N.A.	492	N.A.	82	
*Std DS-1			6840	N.A.	N.A.	81.0	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								437
*Blk BLANK								<10
*Rep D00004172	2.8	0.75						
*Rep D00004196	42.5	5.86						
*Rep D00004210	4.5	5.30						
*Rep D00004224	33.3	10.6						
*Std ME-19	1.6	0.75						
*Std OREAS134A	19.0	17.1						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004171								618

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Report File No.: 0000018202

Element	As	Sb	Ba
Method	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.01	0.2
Units	%	%	%
D00004157	N.A.	N.A.	N.A.
D00004158	N.A.	N.A.	N.A.
D00004159	N.A.	N.A.	N.A.
D00004160	N.A.	N.A.	N.A.
D00004161	N.A.	N.A.	N.A.
D00004162	N.A.	N.A.	N.A.
D00004163	N.A.	N.A.	N.A.
D00004164	N.A.	N.A.	N.A.
D00004165	N.A.	N.A.	N.A.
D00004166	N.A.	1.12	N.A.
D00004167	N.A.	N.A.	N.A.
D00004168	N.A.	N.A.	N.A.
D00004169	N.A.	N.A.	N.A.
D00004170	N.A.	N.A.	N.A.
D00004171	N.A.	N.A.	16.6
D00004172	N.A.	N.A.	N.A.
D00004173	N.A.	N.A.	N.A.
D00004174	N.A.	N.A.	N.A.
D00004175	N.A.	N.A.	N.A.
D00004176	N.A.	N.A.	4.9
D00004177	N.A.	N.A.	N.A.
D00004178	N.A.	N.A.	N.A.
D00004179	N.A.	N.A.	N.A.
D00004180	N.A.	N.A.	N.A.
D00004181	N.A.	N.A.	N.A.
D00004182	N.A.	N.A.	5.0
D00004183	N.A.	N.A.	N.A.
D00004184	N.A.	N.A.	10.3
D00004185	N.A.	N.A.	21.2
D00004186	N.A.	N.A.	16.3
D00004187	N.A.	N.A.	10.6
D00004188	N.A.	N.A.	N.A.
D00004189	N.A.	N.A.	N.A.
D00004190	N.A.	N.A.	N.A.
D00004191	N.A.	N.A.	N.A.
*Dup D00004191	N.A.	N.A.	N.A.
D00004192	N.A.	N.A.	N.A.
D00004193	N.A.	N.A.	5.8
D00004194	N.A.	N.A.	N.A.
D00004195	N.A.	N.A.	N.A.

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	As	Sb	Ba
Method	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.01	0.2
Units	%	%	%
D00004196	N.A.	N.A.	9.4
D00004197	N.A.	N.A.	N.A.
D00004198	N.A.	N.A.	N.A.
D00004199	N.A.	N.A.	N.A.
D00004200	N.A.	N.A.	N.A.
D00004201	N.A.	N.A.	N.A.
D00004202	N.A.	N.A.	N.A.
D00004203	N.A.	N.A.	N.A.
D00004204	N.A.	N.A.	N.A.
D00004205	N.A.	N.A.	N.A.
D00004206	N.A.	N.A.	N.A.
D00004207	N.A.	N.A.	N.A.
D00004208	N.A.	N.A.	N.A.
D00004209	N.A.	N.A.	N.A.
D00004210	N.A.	N.A.	N.A.
D00004211	N.A.	N.A.	N.A.
D00004212	N.A.	N.A.	N.A.
D00004213	N.A.	N.A.	N.A.
D00004214	N.A.	N.A.	N.A.
D00004215	N.A.	N.A.	N.A.
D00004216	1.03	N.A.	7.0
D00004217	N.A.	N.A.	12.4
D00004218	N.A.	N.A.	9.6
D00004219	1.03	N.A.	12.3
D00004220	N.A.	N.A.	N.A.
D00004221	N.A.	N.A.	N.A.
D00004222	N.A.	N.A.	14.2
D00004223	N.A.	N.A.	5.2
D00004224	N.A.	N.A.	5.0
D00004225	N.A.	N.A.	N.A.
D00004226	1.21	N.A.	N.A.
*Dup D00004226	1.16	N.A.	N.A.
D00004227	1.40	N.A.	8.1
D00004228	1.90	N.A.	11.7
D00004229	N.A.	N.A.	6.0
D00004230	N.A.	N.A.	N.A.

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Final : VC162227 Order: PO# BMC16-01_26 / 4157-4230

Report File No.: 0000018202

Element	As	Sb	Ba
Method	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.01	0.2
Units	%	%	%
*Std CD_1	0.70	3.46	
*Blk BLANK	<0.01	<0.01	
*Std CRM6587-93			31.4
*Blk BLANK			<0.2
*Rep D00004185			20.8
*Rep D00004166	N.A.	1.09	

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Certificate of Analysis

Work Order : VC162228

[Report File No.: 0000018201]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 29, 2016

P.O. No.	:	PO# BMC16-01_26 / 4231-4302
Project No.	:	KZK
No. Of Samples	:	72
Date Submitted	:	Jul 15, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004231	0.170	N.A.	817	19.7	0.14	1.69	13.7	0.26
D00004232	2.545	N.A.	420	45.1	1.09	0.18	6.46	0.21
D00004233	3.365	N.A.	68	13.8	0.95	0.02	4.97	0.20
D00004234	2.780	N.A.	23	4.3	0.57	<0.01	2.86	0.01
D00004235	2.790	N.A.	38	3.9	0.58	<0.01	3.43	0.01
D00004236	3.170	N.A.	37	5.3	0.85	<0.01	2.84	0.03
D00004237	2.370	N.A.	35	6.7	1.27	<0.01	2.27	0.02
D00004238	1.825	N.A.	11	2.6	1.72	<0.01	2.00	0.02
D00004239	0.700	N.A.	55	4.9	0.92	0.02	9.47	0.02
D00004240	1.705	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00004241	2.260	N.A.	18	2.4	1.39	0.01	2.13	0.04
D00004242	1.810	N.A.	97	18.0	1.92	0.09	5.99	0.24
D00004243	3.050	N.A.	<5	14.3	1.56	0.10	11.1	0.17
D00004244	1.000	N.A.	89	26.0	1.15	0.03	9.09	0.34
D00004245	2.020	N.A.	605	39.4	1.93	0.06	6.02	0.12
D00004246	1.840	N.A.	108	5.6	2.18	<0.01	5.54	0.07
D00004247	2.515	N.A.	196	4.8	3.14	0.02	4.05	0.02
D00004248	2.035	N.A.	241	16.1	2.80	0.07	3.98	0.02
D00004249	2.225	N.A.	1960	60.3	1.29	1.20	18.9	0.16
D00004250	0.170	N.A.	1300	66.7	0.26	0.35	3.69	1.38
D00004251	0.170	N.A.	834	20.5	0.13	1.69	13.2	0.25
D00004252	2.795	N.A.	1090	38.4	1.48	0.70	18.9	0.16
D00004253	1.630	N.A.	2330	73.8	0.89	2.07	27.8	0.25
D00004254	2.880	N.A.	1070	146	0.03	0.27	34.7	3.51
D00004255	3.055	N.A.	1970	135	3.08	0.59	35.6	1.92
D00004256	3.030	N.A.	4010	232	0.72	1.31	37.1	2.24
D00004257	2.900	N.A.	3270	171	3.59	1.03	33.9	1.74
D00004258	2.625	N.A.	1480	116	0.05	0.49	36.5	2.19
D00004259	2.240	N.A.	610	26.0	<0.01	0.12	38.6	0.54
D00004260	1.350	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00004261	2.935	N.A.	606	53.5	0.01	0.13	36.7	1.02
D00004262	3.115	N.A.	266	24.1	0.02	0.04	37.1	0.58
D00004263	2.225	N.A.	839	63.2	<0.01	0.23	44.2	1.59
D00004264	2.880	N.A.	857	62.9	0.02	0.14	41.2	1.18
D00004265	3.275	N.A.	729	33.2	<0.01	0.09	42.5	0.76
*Dup D00004265	N.A.	N.A.	635	35.9	<0.01	0.09	43.0	0.78
D00004266	2.700	N.A.	856	59.4	<0.01	<0.01	37.8	1.96
D00004267	2.630	N.A.	418	98.8	0.02	0.43	39.5	4.62
D00004268	3.145	N.A.	559	93.8	2.88	0.12	32.3	2.75
D00004269	3.575	N.A.	1120	136	>4.00	0.35	31.6	2.83

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004270	0.170	N.A.	1250	67.6	0.26	0.35	3.75	1.38
D00004271	0.170	N.A.	807	19.9	0.14	1.76	13.8	0.26
D00004272	2.550	N.A.	1310	32.2	1.77	0.63	3.49	0.13
D00004273	2.865	N.A.	21	4.4	2.95	0.09	2.40	0.03
D00004274	2.765	N.A.	132	28.1	>4.00	0.39	4.38	0.29
D00004275	1.905	N.A.	2070	177	>4.00	0.67	28.6	2.96
D00004276	2.985	N.A.	3070	191	>4.00	0.56	29.1	3.45
D00004277	2.990	N.A.	1990	171	>4.00	0.34	26.2	5.01
D00004278	2.440	N.A.	1860	161	>4.00	0.49	31.1	2.62
D00004279	3.130	N.A.	1440	142	1.22	0.43	37.4	1.50
D00004280	1.430	95.6	<5	<0.3	<0.01	<0.01	0.14	<0.01
D00004281	2.590	N.A.	1530	142	3.16	0.48	32.9	1.78
D00004282	2.865	N.A.	2250	153	>4.00	0.63	32.3	1.57
D00004283	2.910	N.A.	1120	120	1.19	0.36	31.9	2.24
D00004284	2.830	N.A.	1460	155	>4.00	0.36	29.2	2.97
D00004285	1.640	N.A.	36	19.8	0.27	<0.01	7.86	0.49
D00004286	2.265	N.A.	<5	<0.3	0.20	<0.01	6.47	<0.01
D00004287	2.140	N.A.	<5	<0.3	0.26	<0.01	6.00	<0.01
D00004288	1.485	N.A.	10	0.6	0.32	<0.01	2.52	0.01
D00004289	2.540	N.A.	<5	<0.3	0.39	<0.01	2.44	<0.01
D00004290	0.155	N.A.	837	44.1	0.05	0.46	20.3	0.30
D00004291	2.150	N.A.	9	1.1	0.80	<0.01	3.11	<0.01
D00004292	1.935	N.A.	13	1.4	0.22	<0.01	1.42	0.02
D00004293	2.495	N.A.	10	2.0	0.30	0.01	2.26	0.04
D00004294	1.760	N.A.	11	1.6	1.08	0.01	4.50	0.03
D00004295	1.860	N.A.	<5	2.5	0.53	0.02	5.21	0.05
D00004296	1.950	N.A.	<5	1.5	0.39	0.01	5.61	0.05
D00004297	2.560	N.A.	<5	0.9	0.45	<0.01	2.73	0.02
D00004298	2.620	N.A.	<5	1.3	0.38	<0.01	1.65	0.05
D00004299	2.420	N.A.	5	2.0	0.86	<0.01	2.05	0.03
D00004300	1.355	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004301	2.550	N.A.	16	1.9	0.36	<0.01	2.19	0.06
*Dup D00004301	N.A.	N.A.	13	2.2	0.34	<0.01	2.01	0.06
D00004302	2.425	N.A.	15	0.4	0.73	<0.01	1.54	<0.01
*Rep D00004238				2.6				
*Rep D00004253				70.3				
*Rep D00004279				133				
*Rep D00004300				<0.3				
*Std OREAS621				69.0				
*Std AMIS0268				189				

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Std SU_1B		6.2				
*Blk BLANK		<0.3				
*Rep D00004242	104					
*Rep D00004281	1350					
*Std OXN117	7550					
*Std OXB130	137					
*Std OREAS214	2890					
*Std OXH97	1270					
*Blk BLANK	<5					
*Rep D00004241			1.35	0.01	2.12	0.04
*Rep D00004262			0.02	0.04	37.1	0.55
*Rep D00004283			1.19	0.36	31.7	2.27
*Rep D00004302			0.73	<0.01	1.54	<0.01
*Std OREAS134A			0.15	0.13	12.0	12.9
*Std RM183-89			3.14	<0.01	35.7	0.04
*Std OREAS131B			0.08	0.02	5.72	1.85
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
D00004231	9.0	1.06	83	19	17.0	0.76	20	N.A.
D00004232	4.0	2.08	2740	179	6.88	10.4	66	N.A.
D00004233	3.1	0.46	1560	35	2.75	1.41	19	N.A.
D00004234	2.6	1.33	54	7	0.26	7.53	2	N.A.
D00004235	2.8	0.14	37	5	0.39	0.92	<1	N.A.
D00004236	2.1	0.04	54	9	0.73	0.28	2	N.A.
D00004237	1.2	0.07	19	11	0.41	0.40	4	N.A.
D00004238	0.8	0.06	13	<5	0.39	0.17	2	N.A.
D00004239	9.3	0.01	294	17	0.69	1.11	11	N.A.
D00004240	0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00004241	0.4	0.04	284	11	1.14	0.05	4	N.A.
D00004242	4.0	1.47	336	36	5.00	2.21	26	N.A.
D00004243	6.9	2.20	14	8	6.62	2.37	40	N.A.
D00004244	8.5	1.16	70	28	4.57	2.53	33	N.A.
D00004245	3.2	0.47	37	153	5.64	1.59	25	N.A.
D00004246	3.7	0.19	25	40	2.45	0.64	19	N.A.
D00004247	1.5	0.10	43	13	2.74	0.29	10	N.A.
D00004248	1.2	0.03	26	104	3.60	0.13	16	N.A.
D00004249	14.9	0.50	122	245	33.6	4.63	192	N.A.
D00004250	4.4	5.21	73	111	3.76	4.08	6	N.A.
D00004251	9.0	1.03	84	18	16.1	0.73	20	N.A.
D00004252	15.4	1.01	135	11	37.6	5.07	247	N.A.
D00004253	22.8	0.77	187	23	32.1	4.54	334	N.A.
D00004254	43.3	10.3	2650	404	27.5	41.9	114	N.A.
D00004255	43.4	8.43	2700	503	18.6	39.4	95	N.A.
D00004256	44.1	7.31	5900	1400	17.0	49.4	98	N.A.
D00004257	40.3	5.21	5790	683	10.3	37.0	47	N.A.
D00004258	43.3	6.74	3200	401	19.5	29.9	86	N.A.
D00004259	43.5	8.41	1850	78	17.6	22.5	65	N.A.
D00004260	0.1	<0.01	7	<5	<0.02	0.04	<1	N.A.
D00004261	44.8	9.41	764	132	38.6	17.5	94	N.A.
D00004262	41.3	10.2	1030	42	32.4	11.8	194	N.A.
D00004263	42.4	4.90	5310	114	54.3	4.23	227	N.A.
D00004264	45.6	4.77	5590	192	46.4	4.28	220	N.A.
D00004265	47.0	2.35	4220	110	22.3	2.08	160	N.A.
*Dup D00004265	48.6	2.45	4360	107	22.9	2.02	160	N.A.
D00004266	42.7	9.27	>10000	126	33.3	6.64	79	1.49
D00004267	38.3	11.8	413	106	23.5	5.75	172	N.A.
D00004268	38.9	11.2	646	177	37.9	6.89	149	N.A.
D00004269	40.2	8.96	1670	321	32.6	13.4	120	N.A.

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
D00004270	4.3	5.23	81	103	3.72	3.81	7	N.A.
D00004271	9.1	1.06	85	20	16.9	0.77	19	N.A.
D00004272	2.0	0.18	131	18	0.97	0.41	5	N.A.
D00004273	1.0	0.04	41	<5	0.52	0.07	2	N.A.
D00004274	2.2	0.62	380	17	4.14	1.24	22	N.A.
D00004275	36.0	8.45	1840	243	30.2	23.6	240	N.A.
D00004276	40.5	10.6	2550	406	34.3	43.9	192	N.A.
D00004277	39.1	14.5	1630	284	30.6	66.5	177	N.A.
D00004278	42.1	9.79	2310	352	41.7	50.6	278	N.A.
D00004279	46.4	6.11	2150	378	51.1	35.9	465	N.A.
D00004280	0.2	0.01	8	<5	0.08	0.09	<1	N.A.
D00004281	40.1	5.43	2300	401	27.5	35.2	268	N.A.
D00004282	39.5	5.91	2800	385	33.2	34.6	254	N.A.
D00004283	38.3	5.15	1700	257	8.47	19.8	84	N.A.
D00004284	37.3	8.46	1670	412	14.5	23.5	118	N.A.
D00004285	3.1	1.69	45	15	3.78	3.26	28	N.A.
D00004286	0.1	0.02	11	<5	0.02	0.07	<1	N.A.
D00004287	<0.1	0.01	8	<5	<0.02	0.05	<1	N.A.
D00004288	0.8	0.02	34	<5	0.36	0.10	<1	N.A.
D00004289	0.6	0.01	6	<5	0.19	0.06	<1	N.A.
D00004290	18.0	1.16	1420	108	23.9	8.79	112	N.A.
D00004291	1.1	0.02	23	<5	1.32	0.07	<1	N.A.
D00004292	2.5	3.44	20	<5	0.80	8.92	3	N.A.
D00004293	4.0	4.75	40	7	1.15	2.05	3	N.A.
D00004294	4.5	1.91	139	16	0.26	0.84	2	N.A.
D00004295	5.3	2.50	20	10	0.60	1.08	4	N.A.
D00004296	4.7	1.48	25	5	0.40	1.01	2	N.A.
D00004297	1.9	0.19	12	<5	0.25	0.08	<1	N.A.
D00004298	0.9	0.08	8	<5	1.12	0.06	1	N.A.
D00004299	1.3	0.16	9	<5	2.04	0.12	2	N.A.
D00004300	<0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
D00004301	1.8	0.62	17	<5	0.86	1.75	1	N.A.
*Dup D00004301	1.7	0.63	17	<5	1.01	1.79	2	N.A.
D00004302	1.3	0.19	17	<5	0.11	0.27	<1	N.A.

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	As
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_ICP13B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.01
Units	%	%	ppm	ppm	ppm	ppm	ppm	%
*Rep D00004253			183	24	31.8	4.31	332	
*Rep D00004255			2750	511	18.9	40.4	97	
*Rep D00004294			137	17	0.25	0.84	2	
*Std OREAS624			115	N.A.	20.2	1.88	31	
*Std DS-1			7060	N.A.	N.A.	81.5	N.A.	
*Std OREAS621			N.A.	107	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	490	N.A.	76	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std MP1B								2.20
*Blk BLANK								<0.01
*Rep D00004241	0.5	0.04						
*Rep D00004262	40.3	10.3						
*Rep D00004283	37.7	5.16						
*Rep D00004302	1.3	0.19						
*Std OREAS134A	19.4	17.2						
*Std RM183-89	0.7	<0.01						
*Std OREAS131B	4.9	3.03						
*Blk BLANK	<0.1	<0.01						
*Rep D00004266								1.49

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	Ba
Method	GO_XRF77B
Det.Lim.	0.2
Units	%
D00004231	N.A.
D00004232	N.A.
D00004233	N.A.
D00004234	N.A.
D00004235	N.A.
D00004236	N.A.
D00004237	N.A.
D00004238	N.A.
D00004239	N.A.
D00004240	N.A.
D00004241	N.A.
D00004242	N.A.
D00004243	N.A.
D00004244	N.A.
D00004245	N.A.
D00004246	N.A.
D00004247	N.A.
D00004248	N.A.
D00004249	N.A.
D00004250	N.A.
D00004251	N.A.
D00004252	N.A.
D00004253	N.A.
D00004254	N.A.
D00004255	N.A.
D00004256	N.A.
D00004257	N.A.
D00004258	N.A.
D00004259	N.A.
D00004260	N.A.
D00004261	N.A.
D00004262	N.A.
D00004263	N.A.
D00004264	N.A.
D00004265	N.A.
*Dup D00004265	N.A.
D00004266	N.A.
D00004267	N.A.
D00004268	N.A.
D00004269	6.7

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	Ba
Method	GO_XRF77B
Det.Lim.	0.2
Units	%
D00004270	N.A.
D00004271	N.A.
D00004272	N.A.
D00004273	N.A.
D00004274	6.2
D00004275	7.7
D00004276	7.0
D00004277	7.9
D00004278	5.1
D00004279	N.A.
D00004280	N.A.
D00004281	N.A.
D00004282	6.8
D00004283	N.A.
D00004284	5.0
D00004285	N.A.
D00004286	N.A.
D00004287	N.A.
D00004288	N.A.
D00004289	N.A.
D00004290	N.A.
D00004291	N.A.
D00004292	N.A.
D00004293	N.A.
D00004294	N.A.
D00004295	N.A.
D00004296	N.A.
D00004297	N.A.
D00004298	N.A.
D00004299	N.A.
D00004300	N.A.
D00004301	N.A.
*Dup D00004301	N.A.
D00004302	N.A.

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Final : VC162228 Order: PO# BMC16-01_26 / 4231-4302

Report File No.: 0000018201

Element	Ba
Method	GO_XRF77B
Det.Lim.	0.2
Units	%
*Std CRM3594-86	10.0
*Blk BLANK	<0.2
*Rep D00004276	7.3

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Certificate of Analysis

Work Order : VC162229

[Report File No.: 0000018226]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 02, 2016

P.O. No.	:	PO# BMC16-01_27
Project No.	:	KZK
No. Of Samples	:	68
Date Submitted	:	Jul 15, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00006001	3.725	N.A.	2120	>300	>4.00	0.48	31.5	4.38
D00006002	2.060	N.A.	1480	170	>4.00	0.14	27.8	1.95
D00006003	2.770	N.A.	1340	143	3.33	0.29	39.6	1.63
D00006004	2.310	N.A.	2690	157	3.80	0.09	35.0	2.12
D00006005	2.955	N.A.	2590	212	>4.00	0.31	33.3	1.86
D00006006	2.285	N.A.	1990	156	>4.00	0.30	34.3	0.78
D00006007	2.795	N.A.	1100	140	>4.00	0.14	26.9	2.09
D00006008	1.680	N.A.	2520	265	>4.00	0.24	25.5	4.33
D00006009	1.550	N.A.	172	25.1	0.26	0.07	2.87	0.13
D00006010	0.145	N.A.	822	44.7	0.05	0.46	20.3	0.31
D00006011	1.540	N.A.	<5	0.4	0.02	<0.01	0.94	<0.01
D00006012	1.905	N.A.	105	17.4	1.64	0.03	6.18	0.17
D00006013	1.170	N.A.	122	19.4	1.55	0.02	4.68	0.18
D00006014	2.570	N.A.	96	18.2	1.33	0.02	4.68	0.14
D00006015	2.075	N.A.	38	3.0	0.94	0.03	5.18	0.01
D00006016	2.010	N.A.	<5	<0.3	1.20	<0.01	4.24	<0.01
D00006017	1.680	N.A.	22	9.0	0.21	0.03	1.07	0.02
D00006018	0.655	N.A.	<5	<0.3	2.35	<0.01	1.97	<0.01
D00006019	2.090	N.A.	<5	<0.3	1.69	<0.01	1.89	<0.01
D00006020	1.620	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00006021	2.705	N.A.	34	2.1	1.58	<0.01	3.69	0.02
D00006022	1.835	N.A.	83	5.9	1.04	0.01	8.05	0.07
D00006023	2.955	N.A.	1940	183	0.23	0.29	30.2	3.42
D00006024	2.680	N.A.	3340	156	0.03	0.47	35.6	2.04
D00006025	2.400	N.A.	2940	172	2.84	0.27	36.2	3.13
D00006026	2.180	N.A.	1700	146	>4.00	0.14	34.1	3.57
D00006027	2.315	N.A.	1610	105	<0.01	0.22	37.5	2.44
D00006028	3.030	N.A.	790	99.4	2.38	0.17	34.9	2.13
D00006029	1.430	N.A.	787	108	1.33	0.28	4.10	0.04
D00006030	0.145	N.A.	839	42.8	0.05	0.46	20.1	0.31
D00006031	2.340	N.A.	99	10.8	2.41	0.02	4.89	0.12
D00006032	2.565	N.A.	1680	148	0.48	0.22	24.8	1.96
D00006033	1.315	N.A.	7320	>300	0.41	2.87	23.6	2.43
D00006034	2.690	N.A.	1970	234	0.03	0.54	33.8	4.22
D00006035	2.985	N.A.	984	131	<0.01	0.18	35.0	3.76
*Dup D00006035	N.A.	N.A.	951	133	<0.01	0.18	35.0	3.73
D00006036	2.865	N.A.	1540	175	0.01	0.41	36.6	3.19
D00006037	2.775	N.A.	1500	144	2.41	0.46	31.9	3.72
D00006038	2.675	N.A.	1480	108	1.82	0.43	32.4	2.39
D00006039	2.755	N.A.	2490	210	1.54	0.76	29.3	4.61

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Final : VC162229 Order: PO# BMC16-01_27

Report File No.: 0000018226

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00006040	1.450	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
D00006041	2.985	N.A.	1300	145	<0.01	0.44	29.4	5.61
D00006042	2.800	N.A.	1240	211	2.28	0.29	26.8	8.13
D00006043	2.165	N.A.	1820	216	2.60	0.59	21.6	3.25
D00006044	1.440	N.A.	430	85.7	0.20	0.09	20.5	2.65
D00006045	2.310	N.A.	101	15.0	2.49	0.05	5.78	0.16
D00006046	2.570	N.A.	14	0.6	3.15	<0.01	3.50	0.03
D00006047	2.825	N.A.	40	0.7	2.98	<0.01	4.31	0.02
D00006048	2.760	N.A.	47	2.8	3.23	<0.01	3.55	0.12
D00006049	3.050	N.A.	14	1.6	2.93	<0.01	2.24	0.06
D00006050	0.145	N.A.	838	43.4	0.05	0.46	19.9	0.31
D00006051	2.510	98.8	10	<0.3	2.36	<0.01	2.57	0.01
D00006052	2.295	N.A.	9	0.3	3.04	<0.01	3.03	0.02
D00006053	2.025	N.A.	5	<0.3	3.14	<0.01	4.01	<0.01
D00006054	1.850	N.A.	29	1.0	1.85	<0.01	9.29	0.03
D00006055	3.490	N.A.	2100	>300	1.85	1.26	22.0	3.13
D00006056	1.010	N.A.	146	9.8	0.90	0.11	4.33	0.19
D00006057	0.900	N.A.	1600	>300	0.07	1.71	30.9	2.59
D00006058	1.545	N.A.	47	14.5	0.71	0.07	7.81	0.31
D00006059	1.700	N.A.	<5	0.7	2.19	<0.01	3.17	0.02
D00006060	1.755	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00006061	1.310	N.A.	<5	1.9	1.66	<0.01	3.44	0.07
D00006062	2.010	N.A.	37	5.2	1.19	0.03	3.92	0.10
D00006063	1.755	N.A.	<5	1.4	1.37	<0.01	2.23	0.07
D00006064	2.510	N.A.	6	1.6	1.06	<0.01	1.96	0.13
D00006065	2.700	N.A.	<5	0.5	0.48	<0.01	1.91	<0.01
D00006066	1.985	N.A.	10	0.5	0.34	<0.01	2.74	<0.01
D00006067	1.945	N.A.	<5	<0.3	0.43	<0.01	2.15	<0.01
D00006068	2.360	N.A.	<5	<0.3	0.38	<0.01	1.63	<0.01
*Rep D00006007				142				
*Rep D00006032				149				
*Rep D00006063				1.2				
*Std SU_1B				6.1				
*Std OREAS621				67.0				
*Std AMIS0268				189				
*Blk BLANK				<0.3				
*Blk BLANK				<0.3				
*Rep D00006055			2330					
*Std OXN117			7790					
*Std OXB130			122					

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Final : VC162229 Order: PO# BMC16-01_27

Report File No.: 0000018226

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Std OREAS214	2940				
*Std OXH97	1270				
*Blk BLANK	<5				
*Rep D00006022		1.02	0.01	7.96	0.07
*Rep D00006042		2.25	0.29	26.6	8.08
*Rep D00006056		0.90	0.11	4.38	0.18
*Std OREAS134A		0.15	0.13	12.0	12.6
*Std ME-19		0.17	0.46	4.09	0.94
*Std RM183-89		3.14	<0.01	36.2	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Blk BLANK		<0.01	<0.01	<0.05	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00006001	42.4	12.5	6610	1250	45.5	47.3	157	N.A.
D00006002	36.2	5.32	9730	1140	11.3	37.4	26	N.A.
D00006003	43.2	6.13	2300	1020	66.7	35.8	363	N.A.
D00006004	43.0	11.5	>10000	1090	93.9	58.1	263	N.A.
D00006005	41.3	7.89	>10000	1520	44.5	53.4	107	N.A.
D00006006	41.1	1.59	3490	1480	1.21	29.6	6	N.A.
D00006007	35.3	6.12	5900	743	12.6	78.9	38	N.A.
D00006008	33.8	11.0	4320	1120	26.0	63.8	125	N.A.
D00006009	1.7	0.57	90	153	0.83	2.97	7	N.A.
D00006010	18.8	1.15	1380	107	22.1	9.01	107	N.A.
D00006011	<0.1	0.08	8	<5	<0.02	0.02	<1	N.A.
D00006012	5.0	0.89	194	66	2.88	5.48	18	N.A.
D00006013	4.2	0.75	100	77	2.07	4.20	15	N.A.
D00006014	3.9	0.33	99	77	1.33	2.79	12	N.A.
D00006015	2.3	0.09	85	10	1.14	0.66	4	N.A.
D00006016	0.7	0.02	38	5	0.39	0.11	2	N.A.
D00006017	0.1	<0.01	13	57	0.74	0.08	2	N.A.
D00006018	0.3	0.02	9	<5	0.22	0.01	1	N.A.
D00006019	0.4	0.02	30	<5	0.29	<0.01	2	N.A.
D00006020	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00006021	0.5	0.02	51	6	0.76	0.02	11	N.A.
D00006022	1.8	0.16	244	8	4.80	0.53	29	N.A.
D00006023	36.5	8.82	3080	225	15.5	39.1	413	N.A.
D00006024	44.0	9.72	3240	245	29.9	38.5	136	N.A.
D00006025	46.7	8.00	1890	209	18.8	23.2	65	N.A.
D00006026	44.6	10.5	1080	187	23.2	9.98	64	N.A.
D00006027	43.9	10.3	1880	110	38.8	7.89	167	N.A.
D00006028	31.8	8.19	402	194	32.9	5.21	107	N.A.
D00006029	2.4	0.36	934	366	0.59	0.32	3	N.A.
D00006030	18.7	1.15	1400	108	22.4	8.46	109	N.A.
D00006031	3.9	0.32	176	18	1.32	0.62	15	N.A.
D00006032	31.1	8.65	984	213	93.0	34.3	436	N.A.
D00006033	30.4	4.91	5880	2470	13.0	30.3	134	7.91
D00006034	44.5	11.3	1460	244	19.2	29.4	198	N.A.
D00006035	44.8	11.4	>10000	241	62.5	25.3	530	N.A.
*Dup D00006035	44.0	11.5	>10000	241	64.7	22.4	521	N.A.
D00006036	44.9	7.64	882	215	26.0	12.9	168	N.A.
D00006037	40.7	7.65	2100	364	16.2	31.3	148	N.A.
D00006038	41.5	9.06	1770	289	21.0	37.2	107	N.A.
D00006039	39.9	12.3	3270	487	33.4	19.2	305	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00006040	<0.1	0.01	7	<5	0.03	0.04	<1	N.A.
D00006041	42.1	16.3	2000	391	40.2	18.3	339	N.A.
D00006042	39.1	14.6	1290	429	23.7	16.9	251	N.A.
D00006043	28.0	6.06	2410	843	13.0	11.9	361	N.A.
D00006044	24.2	4.78	451	157	<0.02	<0.01	<1	N.A.
D00006045	5.5	0.83	173	45	0.85	1.70	32	N.A.
D00006046	2.8	0.01	35	<5	0.32	0.01	6	N.A.
D00006047	3.4	0.02	64	<5	0.22	<0.01	4	N.A.
D00006048	2.8	0.20	67	<5	0.38	0.12	6	N.A.
D00006049	1.4	0.10	46	<5	0.45	0.09	4	N.A.
D00006050	17.9	1.15	1360	78	23.2	9.03	109	N.A.
D00006051	1.5	0.08	35	<5	0.30	0.06	3	N.A.
D00006052	2.5	<0.01	39	<5	0.34	0.05	7	N.A.
D00006053	3.0	0.01	30	<5	0.16	0.05	4	N.A.
D00006054	7.9	0.04	102	<5	0.27	0.18	28	N.A.
D00006055	28.1	7.39	1610	1930	4.06	46.7	383	N.A.
D00006056	3.1	0.34	629	22	2.34	2.76	21	N.A.
D00006057	36.5	6.42	846	1620	10.5	33.5	228	N.A.
D00006058	7.4	0.57	461	15	0.94	2.07	29	N.A.
D00006059	1.6	0.07	25	<5	0.36	0.28	3	N.A.
D00006060	<0.1	<0.01	<3	<5	<0.02	0.07	<1	N.A.
D00006061	1.8	0.41	12	<5	0.31	0.89	3	N.A.
D00006062	2.8	0.81	25	<5	0.44	0.93	3	N.A.
D00006063	0.7	0.16	6	<5	0.72	0.13	2	N.A.
D00006064	0.5	0.11	9	<5	0.37	0.08	2	N.A.
D00006065	<0.1	0.01	<3	<5	0.59	0.02	<1	N.A.
D00006066	0.6	0.01	11	<5	0.40	0.03	<1	N.A.
D00006067	0.2	<0.01	<3	<5	0.29	<0.01	<1	N.A.
D00006068	0.1	<0.01	<3	<5	0.28	<0.01	<1	N.A.

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00006007			5860	741	12.3	76.9	38	
*Rep D00006041			1980	388	39.1	18.4	326	
*Rep D00006061			12	<5	0.31	0.90	3	
*Std OREAS621			N.A.	110	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	464	N.A.	82	
*Std OREAS624			114	N.A.	20.7	1.89	28	
*Std DS-1			7180	N.A.	N.A.	78.6	N.A.	

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	S GO_ICP90Q 0.1 %	@Zn GO_ICP90Q 0.01 %	As GE_ICM14B 3 ppm	Sb GE_ICM14B 5 ppm	@Bi GE_ICM14B 0.02 ppm	@Hg GE_ICM14B 0.01 ppm	@Se GE_ICM14B 1 ppm	@Au GO_FAG303 0.5 g/t
*Std DS-1			6760	N.A.	N.A.	81.8	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std OXN117								7.94
*Blk BLANK								<0.50
*Rep D00006022	1.7	0.16						
*Rep D00006042	39.6	14.6						
*Rep D00006056	3.1	0.34						
*Std OREAS134A	19.3	17.1						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00006033								8.41

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Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
D00006001	314	N.A.	4.8
D00006002	N.A.	N.A.	17.6
D00006003	N.A.	N.A.	N.A.
D00006004	N.A.	1.33	N.A.
D00006005	N.A.	1.06	6.7
D00006006	N.A.	N.A.	12.2
D00006007	N.A.	N.A.	16.0
D00006008	279	N.A.	5.4
D00006009	N.A.	N.A.	N.A.
D00006010	N.A.	N.A.	N.A.
D00006011	N.A.	N.A.	N.A.
D00006012	N.A.	N.A.	N.A.
D00006013	N.A.	N.A.	N.A.
D00006014	N.A.	N.A.	N.A.
D00006015	N.A.	N.A.	N.A.
D00006016	N.A.	N.A.	N.A.
D00006017	N.A.	N.A.	N.A.
D00006018	N.A.	N.A.	N.A.
D00006019	N.A.	N.A.	N.A.
D00006020	N.A.	N.A.	N.A.
D00006021	N.A.	N.A.	N.A.
D00006022	N.A.	N.A.	N.A.
D00006023	N.A.	N.A.	N.A.
D00006024	N.A.	N.A.	N.A.
D00006025	N.A.	N.A.	N.A.
D00006026	N.A.	N.A.	4.5
D00006027	N.A.	N.A.	N.A.
D00006028	N.A.	N.A.	N.A.
D00006029	N.A.	N.A.	N.A.
D00006030	N.A.	N.A.	N.A.
D00006031	N.A.	N.A.	N.A.
D00006032	N.A.	N.A.	N.A.
D00006033	1031	N.A.	N.A.
D00006034	N.A.	N.A.	N.A.
D00006035	N.A.	1.08	N.A.
*Dup D00006035	N.A.	N.A.	N.A.
D00006036	N.A.	N.A.	N.A.
D00006037	N.A.	N.A.	N.A.
D00006038	N.A.	N.A.	N.A.
D00006039	N.A.	N.A.	N.A.

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Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
D00006040	N.A.	N.A.	N.A.
D00006041	N.A.	N.A.	N.A.
D00006042	N.A.	N.A.	N.A.
D00006043	N.A.	N.A.	N.A.
D00006044	N.A.	N.A.	N.A.
D00006045	N.A.	N.A.	N.A.
D00006046	N.A.	N.A.	N.A.
D00006047	N.A.	N.A.	N.A.
D00006048	N.A.	N.A.	N.A.
D00006049	N.A.	N.A.	N.A.
D00006050	N.A.	N.A.	N.A.
D00006051	N.A.	N.A.	N.A.
D00006052	N.A.	N.A.	N.A.
D00006053	N.A.	N.A.	N.A.
D00006054	N.A.	N.A.	N.A.
D00006055	638	N.A.	N.A.
D00006056	N.A.	N.A.	N.A.
D00006057	564	N.A.	N.A.
D00006058	N.A.	N.A.	N.A.
D00006059	N.A.	N.A.	N.A.
D00006060	N.A.	N.A.	N.A.
D00006061	N.A.	N.A.	N.A.
D00006062	N.A.	N.A.	N.A.
D00006063	N.A.	N.A.	N.A.
D00006064	N.A.	N.A.	N.A.
D00006065	N.A.	N.A.	N.A.
D00006066	N.A.	N.A.	N.A.
D00006067	N.A.	N.A.	N.A.
D00006068	N.A.	N.A.	N.A.

Element	Ag	As	Ba
Method	GO_FAG313	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.2
Units	g/t	%	%
*Std AMIS0267	922		
*Blk BLANK	<10		
*Std MP1B		2.20	
*Blk BLANK		<0.01	
*Std CRM6587-93			31.5
*Blk BLANK			<0.2
*Rep D00006055	632		

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	Ag GO_FAG313 10 g/t	As GO_ICP13B 0.01 %	Ba GO_XRF77B 0.2 %
*Rep D00006002			17.6

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Certificate of Analysis

Work Order : VC162230

[Report File No.: 0000018227]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 02, 2016

P.O. No.	:	PO# BMC16-01_30
Project No.	:	KZK
No. Of Samples	:	1
Date Submitted	:	Jul 15, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
QC was shared with VC162229.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Report File No.: 0000018227

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005522	1.615	96.6	398	42.9	0.14	0.14	20.4	0.28
*Rep D00005522				44.7				
*Rep D00005522					0.14	0.14	20.2	0.29
*Rep D00005522			384					

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Final : VC162230 Order: PO# BMC16-01_30

Report File No.: 0000018227

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
D00005522	17.4	0.48	144	<5	21.2	1.30	64
*Rep D00005522			145	<5	21.8	1.37	66
*Rep D00005522	17.7	0.48					

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Certificate of Analysis

Work Order : VC162243

[Report File No.: 0000018210]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 29, 2016

P.O. No.	:	PO# BMC16-01_32
Project No.	:	KZK
No. Of Samples	:	20
Date Submitted	:	Jul 18, 2016
Report Comprises	:	Pages 1 to 4 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.
Samples may have coarse gold.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162243 Order: PO# BMC16-01_32

Report File No.: 0000018210

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004303	2.450	N.A.	6	2.2	0.51	<0.01	1.98	0.02
D00004304	1.070	N.A.	371	176	0.04	0.04	23.9	3.42
D00004305	2.390	N.A.	8	1.0	0.57	<0.01	2.20	0.01
D00004306	1.820	N.A.	<5	1.4	0.47	<0.01	1.62	<0.01
D00004307	1.850	N.A.	14	9.2	0.42	<0.01	2.21	0.16
D00004308	1.110	N.A.	714	208	0.09	0.14	17.8	2.21
D00004309	1.730	N.A.	8	1.9	0.90	<0.01	1.93	0.02
D00004310	0.155	N.A.	893	45.1	0.05	0.45	20.1	0.31
D00004311	1.295	N.A.	5290	>300	0.14	2.11	3.98	0.11
D00004312	1.835	N.A.	12	1.4	0.13	<0.01	1.52	<0.01
D00004313	2.055	N.A.	25	3.9	0.11	<0.01	2.81	<0.01
D00004314	1.220	N.A.	35	7.3	0.12	<0.01	2.60	0.03
D00004315	2.420	N.A.	1120	224	<0.01	0.61	25.3	3.82
D00004316	2.005	N.A.	1240	267	<0.01	1.10	25.1	4.11
D00004317	1.640	N.A.	32	3.2	0.18	<0.01	3.25	0.04
D00004318	2.730	N.A.	14	1.4	0.10	<0.01	2.20	<0.01
D00004319	3.185	N.A.	<5	<0.3	0.07	<0.01	5.60	<0.01
D00004320	1.565	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
D00004321	1.060	N.A.	7	0.6	0.55	<0.01	1.69	<0.01
D00004322	2.630	98.3	9	2.5	0.99	<0.01	1.57	0.04
*Rep D00004314				7.3				
*Std OREAS621				68.4				
*Blk BLANK				<0.3				
*Rep D00004312					0.13	<0.01	1.55	<0.01
*Std ME-19					0.17	0.47	4.04	0.98
*Std RM183-89					3.15	<0.01	35.9	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep D00004314			43					
*Std OXN117			7580					
*Blk BLANK			<5					

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Final : VC162243 Order: PO# BMC16-01_32

Report File No.: 0000018210

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004303	1.1	0.02	21	5	0.78	0.06	1	N.A.
D00004304	30.7	7.08	178	273	15.1	19.5	83	N.A.
D00004305	0.3	0.03	10	<5	0.34	0.10	<1	N.A.
D00004306	0.4	0.17	29	<5	0.49	0.47	<1	N.A.
D00004307	1.1	0.41	27	13	0.90	0.76	3	N.A.
D00004308	21.2	5.99	195	663	26.1	8.88	109	N.A.
D00004309	0.9	0.04	14	<5	0.36	0.06	<1	N.A.
D00004310	18.0	1.12	1360	99	22.1	8.83	110	N.A.
D00004311	3.2	0.34	2030	7060	2.40	4.92	10	7.89
D00004312	0.8	<0.01	93	7	0.43	0.07	<1	N.A.
D00004313	1.8	0.03	157	26	0.39	0.09	<1	N.A.
D00004314	1.2	0.08	475	94	0.65	0.50	2	N.A.
D00004315	27.6	7.28	5110	909	16.5	28.9	135	N.A.
D00004316	32.0	13.1	1780	694	81.7	24.9	322	N.A.
D00004317	0.9	0.10	45	35	0.95	0.51	3	N.A.
D00004318	1.1	0.04	202	7	0.40	0.18	<1	N.A.
D00004319	1.8	0.06	<3	<5	0.15	0.04	4	N.A.
D00004320	<0.1	<0.01	3	<5	<0.02	0.01	<1	N.A.
D00004321	0.9	0.02	15	<5	0.31	0.09	<1	N.A.
D00004322	0.3	0.07	7	<5	0.56	0.14	<1	N.A.
*Std OXN117								7.90
*Blk BLANK								<0.50
*Rep D00004312	0.8	<0.01						
*Std ME-19	1.6	0.78						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004310			1370	98	22.0	9.34	110	
*Std OREAS621			N.A.	110	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	480	N.A.	78	
*Std DS-1			6970	N.A.	N.A.	82.2	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep D00004311								7.38

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Final : VC162243 Order: PO# BMC16-01_32

Report File No.: 0000018210

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
D00004303	N.A.
D00004304	N.A.
D00004305	N.A.
D00004306	N.A.
D00004307	N.A.
D00004308	N.A.
D00004309	N.A.
D00004310	N.A.
D00004311	604
D00004312	N.A.
D00004313	N.A.
D00004314	N.A.
D00004315	N.A.
D00004316	229
D00004317	N.A.
D00004318	N.A.
D00004319	N.A.
D00004320	N.A.
D00004321	N.A.
D00004322	N.A.
*Std AMIS0267	965
*Blk BLANK	<10

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
*Rep D00004311	654

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Certificate of Analysis

Work Order : VC162244

[Report File No.: 0000018211]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Jul 29, 2016

P.O. No.	:	PO# BMC16-01_33
Project No.	:	KZK
No. Of Samples	:	3
Date Submitted	:	Jul 18, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
QC was shared with VC162243.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162244 Order: PO# BMC16-01_33

Report File No.: 0000018211

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00266301	1.905	97.7	<5	1.9	<0.01	<0.01	18.6	0.13
B00266302	5.150	N.A.	<5	0.3	0.07	<0.01	3.06	0.02
B00266303	4.210	N.A.	<5	0.7	<0.01	<0.01	7.21	0.05
*Rep B00266302				0.3				
*Rep B00266303			<5					
*Rep B00266301					<0.01	<0.01	18.9	0.13

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Final : VC162244 Order: PO# BMC16-01_33

Report File No.: 0000018211

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00266301	11.8	0.10	5	<5	1.98	0.01	1
B00266302	1.2	0.03	<3	<5	0.57	0.02	<1
B00266303	3.8	0.03	6	<5	0.53	0.03	<1
*Rep B00266301			5	<5	1.93	<0.01	2
*Rep B00266301	11.9	0.09					

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Certificate of Analysis

Work Order : VC162277

[Report File No.: 0000018310]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 04, 2016

P.O. No.	:	PO# BMC16-01_39
Project No.	:	KZK
No. Of Samples	:	19
Date Submitted	:	Jul 25, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162277 Order: PO# BMC16-01_39

Report File No.: 0000018310

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00266306	5.510	N.A.	13	1.8	0.06	<0.01	5.72	0.04
B00266307	4.805	N.A.	18	0.3	0.05	<0.01	13.6	<0.01
B00266308	5.415	N.A.	18	0.7	0.07	<0.01	8.04	<0.01
B00266309	2.120	N.A.	13	0.6	0.06	<0.01	10.4	0.01
B00266310	0.195	N.A.	855	43.1	0.05	0.47	19.9	0.31
B00266311	6.990	N.A.	7	0.4	0.10	<0.01	3.72	<0.01
B00266312	4.080	N.A.	26	0.6	0.08	<0.01	9.98	0.01
B00266313	5.240	N.A.	40	0.9	0.06	<0.01	14.9	0.01
B00266314	4.235	N.A.	79	4.5	0.09	0.25	4.76	<0.01
B00266315	5.495	N.A.	34	0.5	0.11	<0.01	10.1	0.01
B00266316	6.605	N.A.	10	0.5	0.10	0.02	7.73	<0.01
B00266317	3.710	N.A.	<5	0.5	0.13	<0.01	2.53	<0.01
B00266318	2.120	N.A.	232	17.5	0.14	0.94	4.49	<0.01
B00266319	2.760	N.A.	307	6.0	0.02	0.06	5.04	0.15
B00266320	0.860	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
B00266321	4.175	N.A.	18	1.1	0.17	0.01	7.03	<0.01
B00266322	3.970	N.A.	<5	1.3	0.21	<0.01	2.71	<0.01
B00266323	4.240	N.A.	20	0.6	0.12	<0.01	6.51	<0.01
B00266324	4.590	95.1	<5	<0.3	0.09	<0.01	5.85	<0.01
*Rep B00266309				0.7				
*Std SU_1B				6.0				
*Blk BLANK				<0.3				
*Rep B00266320			<5					
*Std OXN117			7750					
*Blk BLANK			<5					
*Rep B00266314					0.09	0.25	4.69	<0.01
*Std OREAS134A					0.15	0.13	11.8	12.9
*Std RM183-89					3.11	<0.01	35.4	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162277 Order: PO# BMC16-01_39

Report File No.: 0000018310

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00266306	4.5	0.03	57	<5	0.48	0.05	4
B00266307	13.9	<0.01	98	<5	0.27	0.01	2
B00266308	7.1	<0.01	88	<5	0.52	<0.01	3
B00266309	9.7	0.02	108	<5	0.46	0.08	4
B00266310	17.9	1.15	1360	82	22.3	8.85	113
B00266311	1.9	0.01	57	16	0.21	0.11	3
B00266312	9.2	0.01	139	<5	0.30	0.06	4
B00266313	15.3	0.01	219	<5	0.42	0.09	5
B00266314	3.3	2.14	7	17	1.51	5.40	21
B00266315	9.6	0.04	130	<5	0.78	0.15	6
B00266316	6.1	0.28	35	9	1.14	0.71	7
B00266317	0.4	0.03	<3	<5	1.12	0.06	2
B00266318	2.6	0.35	<3	18	0.84	0.88	7
B00266319	5.0	0.47	2370	324	4.25	1.38	32
B00266320	<0.1	<0.01	<3	<5	<0.02	<0.01	<1
B00266321	6.1	0.34	35	<5	1.37	0.63	6
B00266322	1.2	0.22	9	<5	1.77	0.44	2
B00266323	5.7	0.04	680	6	0.79	0.05	4
B00266324	2.8	0.02	<3	<5	0.63	<0.01	2
*Rep B00266314	3.3	2.12					
*Std OREAS134A	19.1	17.5					
*Std RM183-89	0.7	<0.01					
*Blk BLANK	<0.1	<0.01					
*Rep B00266319			2400	327	4.30	1.39	32
*Std OREAS926			N.A.	N.A.	40.6	N.A.	11
*Std OREAS621			N.A.	116	N.A.	N.A.	N.A.
*Std DS-1			7200	N.A.	N.A.	81.9	N.A.
*Blk BLANK			<3	<5	<0.02	<0.01	<1

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Certificate of Analysis

Work Order : VC162294

[Report File No.: 0000018358]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 09, 2016

P.O. No.	:	PO# BMC16-01_40
Project No.	:	KZK
No. Of Samples	:	32
Date Submitted	:	Jul 27, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162294 Order: PO# BMC16-01_40

Report File No.: 0000018358

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004406	4.750	N.A.	29	6.2	0.17	0.26	4.65	0.09
D00004407	5.470	N.A.	9	1.9	0.20	0.04	4.23	0.17
D00004408	2.230	N.A.	10	2.4	0.34	0.02	5.31	0.05
D00004409	1.245	N.A.	36	3.4	0.37	<0.01	4.76	0.05
D00004410	0.130	N.A.	776	43.5	0.05	0.47	19.9	0.31
D00004411	2.640	N.A.	31	4.2	0.39	<0.01	5.15	0.07
D00004412	3.015	N.A.	9	0.3	0.18	<0.01	9.48	<0.01
D00004413	1.575	N.A.	305	1.9	0.28	0.03	5.51	0.09
D00004414	2.770	N.A.	478	23.8	0.10	0.10	11.6	2.15
D00004415	1.585	N.A.	305	8.0	0.14	0.08	10.5	0.26
D00004416	1.360	N.A.	1600	164	0.08	0.62	22.5	5.30
D00004417	2.710	N.A.	2830	179	0.06	0.42	22.7	5.84
D00004418	2.170	N.A.	1340	64.2	0.09	0.22	15.3	2.47
D00004419	0.710	N.A.	121	7.8	0.08	0.01	4.50	0.22
D00004420	1.145	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004421	1.365	N.A.	796	57.8	0.09	0.11	10.3	2.04
D00004422	1.435	N.A.	2960	150	0.05	0.24	25.8	4.86
D00004423	1.810	N.A.	69	3.0	0.11	0.01	4.32	0.07
D00004424	2.030	N.A.	192	35.2	0.08	0.03	10.8	1.39
D00004425	2.415	N.A.	18	8.6	0.12	<0.01	3.38	0.39
D00004426	2.710	N.A.	14	12.3	0.12	0.01	4.51	0.42
D00004427	2.600	N.A.	11	<0.3	0.11	<0.01	5.38	<0.01
D00004428	2.135	N.A.	24	1.9	0.10	0.02	5.14	0.03
D00004429	1.180	N.A.	170	9.4	0.06	0.10	9.17	0.10
D00004430	0.140	N.A.	1220	66.6	0.26	0.36	3.85	1.32
D00004431	0.145	N.A.	729	19.7	0.14	1.86	13.6	0.24
D00004432	1.675	N.A.	<5	1.2	0.12	0.04	5.38	0.01
D00004433	0.985	N.A.	15	7.8	0.06	0.15	14.3	0.09
D00004434	2.150	N.A.	13	6.8	0.08	0.05	7.95	0.17
D00004435	1.850	N.A.	10	7.2	0.10	0.10	11.0	0.38
D00004436	2.835	N.A.	<5	<0.3	0.08	<0.01	7.97	<0.01
D00004437	2.715	97.0	<5	1.1	0.43	<0.01	5.60	0.01
*Rep D00004432			<5					
*Std OXN117			7060					
*Std OXB130			118					
*Blk BLANK			<5					

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Final : VC162294 Order: PO# BMC16-01_40

Report File No.: 0000018358

Element	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.3	0.01	0.01	0.05	0.01
Units	g/t	%	%	%	%
*Rep D00004407		0.21	0.04	4.28	0.17
*Rep D00004427		0.11	<0.01	5.48	<0.01
*Std ME-19		0.17	0.46	3.90	0.94
*Std RM183-89		3.16	<0.01	35.8	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01
*Rep D00004421	55.7				
*Rep D00004429	9.4				
*Std SU_1B	6.2				
*Std AMIS0268	189				
*Blk BLANK	<0.3				

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Final : VC162294 Order: PO# BMC16-01_40

Report File No.: 0000018358

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
D00004406	1.1	0.30	<3	<5	14.4	0.02	14
D00004407	0.7	0.40	<3	<5	7.31	0.01	9
D00004408	2.8	0.16	15	<5	0.82	0.23	1
D00004409	3.8	0.05	43	<5	0.28	0.44	<1
D00004410	17.8	1.14	1340	104	22.7	8.84	105
D00004411	3.8	0.06	38	<5	0.42	0.17	<1
D00004412	0.4	0.07	5	<5	<0.02	0.02	<1
D00004413	1.9	0.62	4	<5	1.71	0.19	6
D00004414	6.4	3.19	10	14	13.6	0.69	26
D00004415	4.7	0.42	16	7	1.09	0.05	4
D00004416	16.7	5.94	86	92	1.00	0.80	12
D00004417	17.8	8.20	28	115	1.06	1.18	14
D00004418	11.5	5.90	25	45	0.21	1.00	10
D00004419	1.2	0.17	7	10	<0.02	0.03	<1
D00004420	<0.1	<0.01	5	<5	<0.02	<0.01	<1
D00004421	6.0	2.18	29	41	0.16	0.34	4
D00004422	21.8	11.3	76	94	0.53	2.16	21
D00004423	0.4	0.06	12	<5	0.12	<0.01	<1
D00004424	5.4	2.20	50	31	0.34	0.36	4
D00004425	0.9	0.79	5	<5	4.33	0.16	3
D00004426	1.4	0.70	<3	<5	14.3	0.12	4
D00004427	0.3	0.08	<3	<5	<0.02	0.01	<1
D00004428	2.7	0.02	13	<5	1.12	0.03	2
D00004429	5.9	3.61	3	<5	14.7	1.07	29
D00004430	4.5	5.18	72	110	4.06	3.84	7
D00004431	9.3	1.03	77	21	16.3	0.77	18
D00004432	1.6	0.04	3	<5	0.73	<0.01	2
D00004433	11.6	11.9	4	<5	9.84	9.51	56
D00004434	3.8	2.14	4	<5	10.9	0.47	27
D00004435	5.7	2.80	4	<5	6.83	1.41	28
D00004436	0.5	0.08	5	<5	0.04	0.03	<1
D00004437	2.8	0.05	<3	<5	0.32	0.01	19
*Rep D00004431			81	21	17.8	0.78	19
*Std OREAS621			N.A.	108	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	502	N.A.	79
*Std DS-1			6980	N.A.	N.A.	78.8	N.A.

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Final : VC162294 Order: PO# BMC16-01_40

Report File No.: 0000018358

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Rep D00004407	0.8	0.40					
*Rep D00004427	0.3	0.08					
*Std ME-19	1.6	0.77					
*Std RM183-89	0.8	<0.01					
*Blk BLANK	<0.1	<0.01					

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Certificate of Analysis

Work Order : VC162295

[Report File No.: 0000018359]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 09, 2016

P.O. No.	:	PO# BMC16-01_41
Project No.	:	KZK
No. Of Samples	:	28
Date Submitted	:	Jul 27, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162295 Order: PO# BMC16-01_41

Report File No.: 0000018359

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004438	1.000	N.A.	101	24.8	0.18	<0.01	3.07	0.02
D00004439	1.475	N.A.	74	18.5	0.19	0.03	6.23	0.80
D00004440	1.590	N.A.	<5	<0.3	<0.01	<0.01	0.14	<0.01
D00004441	1.240	N.A.	34	4.4	0.18	0.02	3.82	0.20
D00004442	0.390	N.A.	<5	3.8	0.13	0.02	4.17	0.09
D00004443	0.945	N.A.	<5	1.5	0.16	0.05	5.02	0.02
D00004444	1.210	N.A.	<5	0.5	0.02	0.03	2.06	<0.01
D00004445	1.475	N.A.	30	10.7	0.23	0.19	13.5	0.11
D00004446	0.965	N.A.	47	19.5	0.25	0.24	12.9	0.24
D00004447	1.485	N.A.	16	10.3	0.33	0.14	7.34	0.39
D00004448	2.075	N.A.	54	18.3	0.19	0.23	10.5	0.96
D00004449	1.030	N.A.	34	4.1	0.30	0.07	4.46	0.20
D00004450	0.130	N.A.	858	45.7	0.05	0.46	19.9	0.31
D00004451	1.960	N.A.	15	5.2	0.23	0.02	5.76	0.28
D00004452	1.430	N.A.	161	31.4	0.24	0.12	10.7	2.58
D00004453	0.955	N.A.	48	7.6	0.33	0.05	5.88	0.54
D00004454	2.035	N.A.	121	8.3	0.43	0.03	5.31	0.37
D00004455	1.885	N.A.	829	29.7	0.39	0.03	7.79	1.11
D00004456	1.160	N.A.	168	49.4	0.23	0.10	8.36	3.05
D00004457	1.485	N.A.	<5	<0.3	0.19	0.02	7.19	0.02
D00004458	0.765	N.A.	77	61.6	0.13	0.11	9.71	2.58
D00004459	1.415	N.A.	57	6.1	0.15	0.02	3.17	0.38
D00004460	1.900	N.A.	<5	<0.3	<0.01	<0.01	0.11	<0.01
D00004461	1.470	N.A.	<5	<0.3	0.13	<0.01	2.14	<0.01
D00004462	2.000	N.A.	13	0.7	0.09	0.02	4.44	0.02
D00004463	2.190	N.A.	8	3.7	0.07	0.01	3.14	0.21
D00004464	0.725	N.A.	<5	<0.3	0.08	<0.01	2.38	0.02
D00004465	1.620	91.9	<5	0.4	0.10	0.02	5.71	<0.01
*Rep D00004449				4.0				
*Rep D00004464				0.4				
*Std OREAS621				67.9				
*Blk BLANK				<0.3				
*Rep D00004448			58					
*Std OREAS214			2710					
*Std OXH97			1220					
*Blk BLANK			<5					

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Final : VC162295 Order: PO# BMC16-01_41

Report File No.: 0000018359

Element	Ba	@Cu	Fe	@Pb
Method	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	0.05	0.01
Units	%	%	%	%
*Rep D00004445	0.23	0.20	13.6	0.12
*Std ME-19	0.17	0.46	4.02	0.97
*Std RM183-89	3.19	<0.01	36.0	0.03
*Blk BLANK	<0.01	<0.01	<0.05	<0.01

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Final : VC162295 Order: PO# BMC16-01_41

Report File No.: 0000018359

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
D00004438	2.0	0.02	1370	22	0.16	0.04	<1
D00004439	3.8	1.34	22	19	0.86	1.78	4
D00004440	<0.1	<0.01	3	<5	<0.02	<0.01	<1
D00004441	1.6	0.46	11	6	0.58	0.60	2
D00004442	0.9	1.17	<3	<5	9.96	0.15	6
D00004443	1.2	0.37	<3	<5	2.93	0.05	4
D00004444	1.2	0.94	<3	<5	0.35	0.14	3
D00004445	11.0	5.97	4	<5	20.5	2.18	27
D00004446	12.6	10.2	3	<5	40.1	2.23	39
D00004447	4.8	3.14	6	<5	9.86	0.55	11
D00004448	9.8	6.25	9	11	21.1	2.09	26
D00004449	2.0	0.48	<3	<5	1.09	0.40	3
D00004450	18.1	1.12	1420	111	23.9	8.82	111
D00004451	1.4	1.12	4	<5	2.81	1.12	4
D00004452	10.1	7.11	6	39	35.2	14.3	34
D00004453	3.6	0.39	9	11	1.41	1.13	5
D00004454	3.0	0.51	14	10	0.19	1.77	2
D00004455	7.3	1.83	58	257	0.33	7.03	4
D00004456	8.6	6.91	7	42	14.5	7.01	31
D00004457	1.2	0.06	5	<5	<0.02	0.09	<1
D00004458	8.0	3.62	5	69	5.26	3.70	12
D00004459	2.1	0.85	7	10	1.71	0.88	1
D00004460	0.1	<0.01	<3	<5	<0.02	<0.01	<1
D00004461	0.8	0.65	<3	<5	0.07	0.62	<1
D00004462	1.0	0.04	<3	<5	0.17	0.02	<1
D00004463	0.8	0.42	<3	<5	1.43	0.18	3
D00004464	<0.1	0.09	<3	<5	0.93	0.02	1
D00004465	1.1	0.03	5	<5	0.05	0.03	1
*Rep D00004465			4	<5	0.05	0.04	1
*Std OREAS621			N.A.	108	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	489	N.A.	78
*Std DS-1			7110	N.A.	N.A.	81.2	N.A.

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Final : VC162295 Order: PO# BMC16-01_41

Report File No.: 0000018359

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
*Blk BLANK			<3	<5	<0.02	<0.01	<1
*Rep D00004445	11.2	6.03					
*Std ME-19	1.5	0.77					
*Std RM183-89	0.7	<0.01					
*Blk BLANK	<0.1	<0.01					

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Certificate of Analysis

Work Order : VC162306

[Report File No.: 0000018360]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 09, 2016

P.O. No.	:	PO# BMC16-01_34
Project No.	:	KZK
No. Of Samples	:	2
Date Submitted	:	Jul 28, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Comments:

Ba and S data is informational only.
QC was shared with VC162310.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162306 Order: PO# BMC16-01_34

Report File No.: 0000018360

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00266304	5.675	N.A.	6	<0.3	0.12	<0.01	6.94	<0.01
D00004323	1.945	92.3	<5	0.9	0.10	<0.01	5.39	<0.01
*Rep B00266304				<0.3				
*Rep D00004323			<5					
*Rep B00266304					0.12	<0.01	6.90	<0.01

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Final : VC162306 Order: PO# BMC16-01_34

Report File No.: 0000018360

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00266304	6.0	<0.01	24	<5	0.37	0.02	<1
D00004323	2.5	0.03	8	<5	2.65	0.02	<1
*Rep B00266304	6.1	<0.01					
*Rep D00004323			8	<5	2.67	0.02	<1

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Certificate of Analysis

Work Order : VC162309

[Report File No.: 0000018382]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 09, 2016

P.O. No.	:	PO# BMC16-01_35
Project No.	:	KZK
No. Of Samples	:	40
Date Submitted	:	Jul 28, 2016
Report Comprises	:	Pages 1 to 5 (Inclusive of Cover Sheet)

Comments:

Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162309 Order: PO# BMC16-01_35

Report File No.: 0000018382

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005529	2.945	N.A.	<5	1.2	0.15	0.05	6.66	0.06
D00005530	0.155	N.A.	872	44.0	0.05	0.46	20.1	0.31
D00005531	3.200	N.A.	30	9.2	0.06	0.06	11.8	1.04
D00005532	3.385	N.A.	<5	0.5	0.04	<0.01	10.7	0.06
D00005533	3.455	N.A.	88	12.1	0.04	0.15	15.2	1.63
D00005534	1.110	N.A.	137	23.7	0.04	0.30	18.3	1.01
D00005535	2.005	N.A.	206	4.8	0.18	0.38	13.3	0.02
D00005536	3.170	N.A.	25	4.0	0.21	0.03	6.46	0.14
D00005537	2.120	N.A.	92	11.5	0.23	0.03	6.53	0.30
D00005538	2.110	N.A.	295	37.1	0.38	0.05	7.12	0.67
D00005539	1.490	N.A.	3000	296	0.12	0.28	20.3	8.03
D00005540	1.235	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00005541	2.105	N.A.	12	1.3	0.19	0.02	3.37	<0.01
D00005542	3.200	N.A.	86	3.9	0.17	0.02	6.89	0.04
D00005543	2.810	N.A.	90	1.4	0.14	0.01	4.80	<0.01
D00005544	3.300	N.A.	15	14.4	0.09	0.01	5.50	0.39
D00005545	1.555	N.A.	<5	<0.3	0.06	<0.01	3.48	<0.01
D00005546	2.565	N.A.	12	7.2	0.04	0.03	9.35	0.28
D00005547	2.655	N.A.	12	7.7	0.06	0.06	6.92	0.65
D00005548	3.530	N.A.	10	8.5	0.12	0.01	5.67	0.19
D00005549	3.470	N.A.	7	2.7	0.14	<0.01	5.67	0.09
D00005550	0.155	N.A.	822	43.1	0.05	0.46	20.3	0.31
D00005551	2.415	N.A.	7	5.8	0.03	0.02	8.48	0.62
D00005552	2.865	N.A.	<5	4.9	0.08	0.02	8.32	0.40
D00005553	3.310	N.A.	<5	3.4	0.11	0.02	9.91	0.26
D00005554	3.200	N.A.	7	3.6	0.32	0.03	3.44	0.13
D00005555	3.005	N.A.	<5	0.8	0.33	0.02	3.47	0.04
D00005556	3.180	N.A.	<5	1.5	0.30	0.04	4.90	0.09
D00005557	5.095	N.A.	19	2.5	0.28	0.18	6.94	0.03
D00005558	2.940	N.A.	8	1.9	0.35	0.08	4.53	0.04
D00005559	2.835	N.A.	7	1.9	0.38	0.09	4.76	0.06
D00005560	1.540	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00005561	3.265	N.A.	7	2.1	0.38	0.07	3.70	0.06
D00005562	2.465	N.A.	11	2.6	0.37	0.10	4.21	0.09
D00005563	3.020	N.A.	13	2.3	0.38	0.22	6.63	0.08
*Dup D00005563	N.A.	N.A.	14	2.4	0.38	0.21	6.61	0.09
D00005564	2.865	N.A.	8	3.2	0.22	0.02	4.48	0.56
D00005565	3.115	N.A.	<5	<0.3	0.02	<0.01	10.6	<0.01
D00005566	3.605	N.A.	<5	0.8	0.03	0.04	12.5	0.01
D00005567	2.010	N.A.	10	2.1	0.11	0.18	11.3	0.01

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Final : VC162309 Order: PO# BMC16-01_35

Report File No.: 0000018382

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005568	3.140	91.9	<5	<0.3	0.19	<0.01	10.8	<0.01
*Rep D00005544				13.9				
*Rep D00005563				2.2				
*Std SU_1B				5.9				
*Std OREAS621				70.6				
*Blk BLANK				<0.3				
*Rep D00005544			11					
*Rep D00005566			<5					
*Std OXN117			7590					
*Std OXB130			118					
*Std OREAS214			3020					
*Blk BLANK			<5					
*Rep D00005531					0.06	0.06	11.9	1.05
*Std OREAS131B					0.08	0.02	5.73	1.86
*Std ME-19					0.16	0.46	3.89	0.94
*Std RM183-89					3.11	<0.01	36.1	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162309 Order: PO# BMC16-01_35

Report File No.: 0000018382

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005529	1.8	0.21	3	<5	2.18	0.06	2	N.A.
D00005530	19.0	1.13	1400	108	24.2	8.26	113	N.A.
D00005531	4.4	1.91	4	9	6.22	0.24	5	N.A.
D00005532	0.7	0.06	3	<5	0.28	0.02	<1	N.A.
D00005533	7.1	3.13	4	13	13.2	0.57	12	N.A.
D00005534	13.9	13.8	5	9	44.5	3.27	53	N.A.
D00005535	6.1	1.56	6	<5	0.88	0.44	8	N.A.
D00005536	1.3	0.40	6	<5	1.88	0.17	3	N.A.
D00005537	2.2	0.88	10	<5	1.16	0.40	3	N.A.
D00005538	5.2	1.04	58	30	0.45	0.78	5	N.A.
D00005539	25.5	15.0	41	222	0.74	9.90	14	298
D00005540	<0.1	<0.01	4	<5	<0.02	0.01	<1	N.A.
D00005541	0.7	0.02	5	<5	<0.02	0.04	<1	N.A.
D00005542	1.9	0.12	6	<5	0.07	0.18	2	N.A.
D00005543	1.7	0.02	6	<5	0.11	0.04	<1	N.A.
D00005544	2.9	2.20	6	6	5.05	0.56	7	N.A.
D00005545	<0.1	0.02	6	<5	0.04	0.01	<1	N.A.
D00005546	2.0	1.41	4	<5	13.6	0.12	11	N.A.
D00005547	3.5	2.83	4	<5	4.35	0.27	7	N.A.
D00005548	3.0	0.79	14	<5	0.94	0.93	3	N.A.
D00005549	2.1	0.19	68	<5	0.16	0.11	<1	N.A.
D00005550	18.4	1.12	1390	106	24.3	8.94	111	N.A.
D00005551	2.1	1.26	4	<5	0.27	0.32	3	N.A.
D00005552	2.2	0.94	9	<5	3.57	0.17	4	N.A.
D00005553	1.9	1.02	5	<5	4.41	0.14	4	N.A.
D00005554	2.0	1.03	5	36	2.73	0.19	2	N.A.
D00005555	1.5	0.33	5	30	0.60	0.06	<1	N.A.
D00005556	3.0	0.30	8	<5	0.68	0.07	2	N.A.
D00005557	2.6	1.62	6	<5	2.08	0.34	6	N.A.
D00005558	2.2	0.79	11	<5	3.99	0.13	4	N.A.
D00005559	2.3	0.68	8	<5	4.93	0.09	5	N.A.
D00005560	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00005561	1.9	0.97	7	<5	3.23	0.13	4	N.A.
D00005562	1.9	0.75	7	<5	8.32	0.15	6	N.A.
D00005563	5.0	2.95	9	<5	27.5	0.78	14	N.A.
*Dup D00005563	5.0	3.05	10	<5	24.4	0.77	14	N.A.
D00005564	2.9	0.52	21	<5	0.21	0.39	1	N.A.
D00005565	0.5	0.04	4	<5	0.07	0.01	<1	N.A.
D00005566	1.1	0.15	<3	<5	2.61	0.01	4	N.A.
D00005567	1.0	0.59	3	<5	1.79	0.01	6	N.A.

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Final : VC162309 Order: PO# BMC16-01_35

Report File No.: 0000018382

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005568	0.2	0.05	3	<5	0.57	<0.01	<1	N.A.
*Rep D00005538			56	28	0.46	0.79	5	
*Std OREAS621			N.A.	112	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	488	N.A.	80	
*Std DS-1			6850	N.A.	N.A.	78.4	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								422
*Blk BLANK								<10
*Rep D00005531	4.4	1.94						
*Std OREAS131B	4.9	3.04						
*Std ME-19	1.6	0.74						
*Std RM183-89	0.7	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00005539								297

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Certificate of Analysis

Work Order : VC162310

[Report File No.: 0000018361]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 09, 2016

P.O. No.	:	PO# BMC16-01_36
Project No.	:	KZK
No. Of Samples	:	9
Date Submitted	:	Jul 28, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Comments:

Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162310 Order: PO# BMC16-01_36

Report File No.: 0000018361

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291951	3.065	N.A.	5	0.7	0.20	0.02	4.64	0.02
B00291952	3.485	N.A.	<5	2.8	0.16	<0.01	4.33	0.26
B00291953	4.565	N.A.	<5	0.4	0.12	0.01	4.95	<0.01
B00291954	4.550	N.A.	<5	0.5	0.15	<0.01	4.77	<0.01
B00266305	3.750	N.A.	<5	0.8	0.10	0.02	8.35	<0.01
B00291955	4.185	N.A.	10	1.2	0.21	0.04	9.86	<0.01
B00291956	5.655	N.A.	<5	1.1	0.34	0.03	5.42	<0.01
B00291957	5.785	N.A.	<5	1.5	0.23	0.03	4.72	0.02
B00291958	5.540	97.1	<5	0.5	0.21	<0.01	4.43	<0.01
*Rep B00266305				0.7				
*Std SU_1B				6.0				
*Blk BLANK				<0.3				
*Rep B00291958			<5					
*Std OXN117			7670					
*Blk BLANK			<5					
*Rep B00291953					0.12	<0.01	4.90	0.01
*Std ME-19					0.16	0.46	3.99	0.95
*Std RM183-89					3.05	<0.01	35.9	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162310 Order: PO# BMC16-01_36

Report File No.: 0000018361

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00291951	0.9	0.01	<3	<5	1.35	0.03	<1
B00291952	1.1	0.14	4	<5	2.11	0.06	13
B00291953	0.6	0.01	4	<5	0.36	<0.01	<1
B00291954	0.8	0.02	6	<5	0.23	0.02	<1
B00266305	3.2	0.02	3	<5	0.28	0.01	<1
B00291955	1.9	0.45	<3	<5	1.80	0.15	5
B00291956	1.1	0.15	5	<5	1.07	0.05	<1
B00291957	0.7	0.26	5	<5	1.53	0.08	1
B00291958	0.3	0.02	9	<5	0.50	<0.01	<1
*Rep B00291953	0.6	0.01					
*Std ME-19	1.4	0.76					
*Std RM183-89	0.7	<0.01					
*Blk BLANK	<0.1	<0.01					
*Rep B00291952			3	<5	2.05	0.04	12
*Std OREAS621			N.A.	113	N.A.	N.A.	N.A.
*Std OREAS624			113	N.A.	21.6	1.86	33
*Blk BLANK			<3	<5	<0.02	<0.01	<1

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Certificate of Analysis

Work Order : VC162311

[Report File No.: 0000018415]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 11, 2016

P.O. No.	:	PO# BMC16-01_37
Project No.	:	KZK
No. Of Samples	:	38
Date Submitted	:	Jul 28, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Comments:

Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004351	5.410	N.A.	75	3.6	0.12	0.06	3.24	0.13
D00004352	2.520	N.A.	21	6.4	0.14	0.12	3.91	0.14
D00004353	5.605	N.A.	<5	0.7	0.19	0.02	5.09	<0.01
D00004354	2.435	N.A.	5	0.5	0.20	0.03	4.12	<0.01
D00004355	2.270	N.A.	<5	0.6	0.18	0.04	3.55	<0.01
D00004356	2.275	N.A.	<5	4.8	0.21	0.04	5.72	0.16
D00004357	1.620	N.A.	38	19.8	0.08	0.09	16.8	2.50
D00004358	1.935	N.A.	49	20.2	0.07	0.06	13.9	2.48
D00004359	0.610	N.A.	13	4.8	0.05	0.03	8.26	0.31
D00004360	1.695	N.A.	<5	<0.3	<0.01	<0.01	0.14	<0.01
D00004361	2.255	N.A.	264	34.4	0.11	0.18	12.8	0.89
D00004362	2.135	N.A.	1260	187	0.08	0.57	20.6	4.85
D00004363	2.815	N.A.	1110	171	0.09	0.33	24.1	4.30
D00004364	1.875	N.A.	923	79.1	0.10	0.16	10.7	1.69
D00004365	1.280	N.A.	3330	101	0.08	0.16	12.5	2.69
D00004366	1.450	N.A.	6140	>300	0.02	0.08	23.0	9.99
D00004367	1.295	N.A.	785	109	0.10	0.05	11.6	2.48
D00004368	2.490	N.A.	12	4.7	0.10	<0.01	3.00	0.17
D00004369	2.600	N.A.	<5	0.3	0.08	<0.01	4.47	<0.01
D00004370	0.145	N.A.	809	44.5	0.05	0.47	20.0	0.31
D00004371	2.325	N.A.	<5	2.4	0.09	<0.01	5.01	0.12
D00004372	2.865	N.A.	10	15.2	0.08	0.01	5.17	0.54
D00004373	3.280	N.A.	173	58.5	0.09	<0.01	3.96	0.09
D00004374	1.470	N.A.	6	3.1	0.05	0.02	5.45	0.03
D00004375	1.295	N.A.	39	30.0	0.03	0.03	15.7	0.52
D00004376	2.770	N.A.	<5	3.3	0.03	0.02	6.19	0.10
D00004377	3.015	N.A.	12	10.4	0.05	0.05	10.2	0.88
D00004378	2.615	N.A.	35	23.2	0.05	0.08	9.50	2.91
D00004379	1.990	N.A.	<5	1.6	0.08	0.02	5.38	0.08
D00004380	1.390	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00004381	2.090	N.A.	10	4.8	0.07	0.03	5.87	0.27
D00004382	2.375	N.A.	<5	1.8	0.11	0.03	7.06	0.13
D00004383	1.710	N.A.	20	10.2	0.07	0.04	12.6	1.08
D00004384	1.695	N.A.	5	2.8	0.10	0.03	6.87	0.11
D00004385	2.745	N.A.	<5	1.1	0.07	<0.01	3.94	0.01
*Dup D00004385	N.A.	N.A.	6	1.1	0.07	<0.01	4.10	0.02
D00004386	1.150	N.A.	131	140	0.02	0.12	17.6	3.54
D00004387	2.265	N.A.	11	2.5	0.07	0.01	5.67	0.03
D00004388	1.095	79.9	5	9.4	0.09	0.01	5.37	0.38
*Rep D00004355				0.6				

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Rep D00004383		10.3				
*Std SU_1B		5.8				
*Std AMIS0268		191				
*Blk BLANK		<0.3				
*Rep D00004353	<5					
*Rep D00004388	5					
*Std OXN117	7900					
*Std OXB130	119					
*Std OREAS214	3020					
*Blk BLANK	<5					
*Rep D00004358			0.07	0.06	13.8	2.51
*Rep D00004384			0.10	0.03	6.87	0.11
*Std ME-19			0.17	0.47	4.08	0.93
*Std RM183-89			3.08	<0.01	35.4	0.03
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004351	1.1	0.45	3	<5	2.35	0.17	6	N.A.
D00004352	1.0	0.77	<3	<5	23.4	0.07	18	N.A.
D00004353	0.3	0.03	3	<5	12.9	0.02	2	N.A.
D00004354	0.5	0.37	<3	<5	3.49	0.04	4	N.A.
D00004355	0.6	0.11	<3	<5	1.55	0.10	2	N.A.
D00004356	2.3	1.45	<3	<5	8.38	0.19	6	N.A.
D00004357	10.4	4.49	8	18	3.56	0.46	6	N.A.
D00004358	7.0	3.13	9	17	2.77	0.41	3	N.A.
D00004359	2.2	0.45	13	<5	3.20	0.05	2	N.A.
D00004360	0.2	<0.01	3	<5	<0.02	0.01	<1	N.A.
D00004361	7.2	2.52	24	20	8.25	0.72	19	N.A.
D00004362	14.5	5.67	30	127	14.0	1.39	31	N.A.
D00004363	17.6	7.42	32	124	0.36	1.64	9	N.A.
D00004364	7.2	3.76	32	66	2.21	0.86	7	N.A.
D00004365	11.9	5.53	37	104	1.42	3.89	9	N.A.
D00004366	32.1	17.6	136	338	0.96	17.5	23	6.15
D00004367	12.8	5.23	51	87	1.04	7.44	10	N.A.
D00004368	1.0	0.32	3	<5	0.34	0.21	<1	N.A.
D00004369	0.2	0.02	4	<5	<0.02	0.08	<1	N.A.
D00004370	18.1	1.14	1330	106	24.2	8.72	124	N.A.
D00004371	0.6	0.10	25	<5	2.60	0.06	<1	N.A.
D00004372	2.7	0.78	3	12	0.52	0.19	<1	N.A.
D00004373	1.8	0.20	2230	63	0.21	0.50	<1	N.A.
D00004374	1.5	0.42	5	<5	2.60	0.13	2	N.A.
D00004375	2.3	1.48	5	11	17.2	0.64	20	N.A.
D00004376	1.6	0.25	7	<5	1.41	0.08	<1	N.A.
D00004377	4.0	2.78	4	<5	1.11	0.35	4	N.A.
D00004378	6.8	6.10	3	17	18.8	1.13	19	N.A.
D00004379	1.2	1.02	4	<5	2.98	0.14	3	N.A.
D00004380	<0.1	<0.01	3	<5	<0.02	0.02	<1	N.A.
D00004381	2.3	2.53	<3	<5	6.72	0.41	6	N.A.
D00004382	1.9	0.52	<3	<5	2.73	0.14	2	N.A.
D00004383	4.0	1.93	5	7	7.92	0.43	9	N.A.
D00004384	2.1	1.95	<3	<5	2.33	0.40	3	N.A.
D00004385	1.1	0.11	5	<5	0.38	0.02	<1	N.A.
*Dup D00004385	1.1	0.13	5	<5	0.37	0.04	<1	N.A.
D00004386	11.9	9.24	5	71	48.1	10.5	41	N.A.
D00004387	3.0	0.13	6	<5	0.36	0.04	<1	N.A.
D00004388	1.6	0.44	3	<5	7.87	0.09	2	N.A.

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00004370			1370	109	24.1	9.04	123	
*Std OREAS621			N.A.	107	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	484	N.A.	80	
*Std DS-1			6530	N.A.	N.A.	80.5	N.A.	
*Blk BLANK			<3	<5	<0.02	0.01	<1	
*Std GS-20B								20.76
*Blk BLANK								<0.50
*Rep D00004358	7.1	3.03						
*Rep D00004384	2.1	1.97						
*Std ME-19	1.6	0.76						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004366								5.94

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
D00004351	N.A.
D00004352	N.A.
D00004353	N.A.
D00004354	N.A.
D00004355	N.A.
D00004356	N.A.
D00004357	N.A.
D00004358	N.A.
D00004359	N.A.
D00004360	N.A.
D00004361	N.A.
D00004362	N.A.
D00004363	N.A.
D00004364	N.A.
D00004365	N.A.
D00004366	379
D00004367	N.A.
D00004368	N.A.
D00004369	N.A.
D00004370	N.A.
D00004371	N.A.
D00004372	N.A.
D00004373	N.A.
D00004374	N.A.
D00004375	N.A.
D00004376	N.A.
D00004377	N.A.
D00004378	N.A.
D00004379	N.A.
D00004380	N.A.
D00004381	N.A.
D00004382	N.A.
D00004383	N.A.
D00004384	N.A.
D00004385	N.A.
*Dup D00004385	N.A.
D00004386	N.A.
D00004387	N.A.
D00004388	N.A.

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Final : VC162311 Order: PO# BMC16-01_37

Report File No.: 0000018415

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
*Std ME-1302	422
*Blk BLANK	<10
*Rep D00004366	404

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Certificate of Analysis

Work Order : VC162313

[Report File No.: 0000018416]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 11, 2016

P.O. No.	:	PO# BMC16-01_38
Project No.	:	KZK
No. Of Samples	:	17
Date Submitted	:	Jul 28, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Comments:

Lower limit for GO_FAG303 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.
Samples may have coarse gold.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162313 Order: PO# BMC16-01_38

Report File No.: 0000018416

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004389	2.685	N.A.	19	8.8	0.22	0.02	4.78	0.17
D00004390	0.155	N.A.	819	44.0	0.05	0.46	20.0	0.30
D00004391	2.640	N.A.	35	2.2	0.26	0.02	5.19	0.05
D00004392	2.795	N.A.	9	0.7	0.21	<0.01	7.00	0.02
D00004393	1.645	N.A.	<5	<0.3	0.11	<0.01	4.70	<0.01
D00004394	0.915	N.A.	67	6.5	0.21	0.08	10.5	0.41
D00004395	1.395	N.A.	203	21.7	0.08	0.12	12.3	1.03
D00004396	1.795	N.A.	5180	161	0.03	0.33	26.1	5.01
D00004397	3.245	N.A.	2370	231	<0.01	0.26	32.7	8.22
D00004398	2.760	N.A.	2420	194	<0.01	0.16	27.2	6.76
D00004399	1.560	N.A.	36	3.6	0.18	0.01	6.44	0.15
D00004400	1.190	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004401	1.635	N.A.	38	173	0.18	<0.01	5.11	0.03
D00004402	1.890	N.A.	17	7.5	0.14	0.02	2.98	0.11
D00004403	2.640	N.A.	<5	3.7	0.15	0.01	3.31	0.19
D00004404	2.640	N.A.	15	2.4	0.15	0.01	3.38	0.28
D00004405	1.825	98.9	6	13.9	0.03	0.01	2.21	0.57
*Rep D00004402				7.4				
*Std AMIS0268				181				
*Blk BLANK				<0.3				
*Rep D00004401			36					
*Std OXN117			7510					
*Blk BLANK			<5					
*Rep D00004390					0.05	0.46	20.0	0.31
*Std ME-19					0.17	0.46	3.90	0.95
*Std RM183-89					3.19	<0.01	35.9	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162313 Order: PO# BMC16-01_38

Report File No.: 0000018416

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004389	1.4	1.08	4	<5	15.8	0.27	9	N.A.
D00004390	17.6	1.15	1370	99	24.0	8.52	113	N.A.
D00004391	2.9	0.14	32	<5	0.34	0.19	<1	N.A.
D00004392	1.3	0.05	15	<5	0.13	0.07	<1	N.A.
D00004393	0.4	0.01	7	<5	0.05	0.02	<1	N.A.
D00004394	4.6	1.33	7	<5	0.45	0.59	6	N.A.
D00004395	6.9	3.21	19	10	14.5	1.34	15	N.A.
D00004396	19.6	8.42	176	90	13.3	1.89	27	10.58
D00004397	32.2	13.3	1330	190	0.17	2.18	13	N.A.
D00004398	29.6	11.6	4300	173	0.24	2.63	11	N.A.
D00004399	0.6	0.22	19	<5	0.47	0.06	1	N.A.
D00004400	<0.1	<0.01	5	<5	<0.02	<0.01	<1	N.A.
D00004401	0.1	0.07	10	<5	0.83	0.04	<1	N.A.
D00004402	0.4	0.22	4	<5	0.84	0.05	1	N.A.
D00004403	0.9	0.61	<3	<5	1.07	0.11	2	N.A.
D00004404	0.8	0.47	4	<5	0.58	0.04	1	N.A.
D00004405	1.1	0.40	5	8	7.29	0.04	5	N.A.
*Std OXN117								7.49
*Blk BLANK								<0.50
*Rep D00004390	17.9	1.16						
*Std ME-19	1.5	0.77						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004399			19	<5	0.46	0.08	1	
*Std OREAS621			N.A.	111	N.A.	N.A.	N.A.	
*Std OREAS624			112	N.A.	21.5	1.90	31	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Rep D00004396								13.44

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Certificate of Analysis

Work Order : VC162426

[Report File No.: 0000018742]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 26, 2016

P.O. No.	:	PO# BMC16-01_42
Project No.	:	KZK
No. Of Samples	:	41
Date Submitted	:	Aug 05, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

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*INF = Composition of this sample makes detection impossible by this method

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Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004324	0.730	N.A.	38	25.9	0.09	0.07	7.44	2.24
D00004325	1.870	N.A.	11	3.0	0.10	0.07	7.75	0.22
D00004326	1.495	N.A.	<5	3.4	0.34	0.05	5.07	0.01
D00004327	0.825	N.A.	27	80.5	0.47	0.22	10.2	1.68
D00004328	2.975	N.A.	233	34.8	0.42	0.05	3.37	0.31
D00004329	2.035	N.A.	353	107	0.27	0.04	5.55	0.73
D00004466	0.745	N.A.	21	8.0	0.16	0.12	12.4	0.03
D00004467	2.675	N.A.	73	9.3	0.10	0.09	8.68	0.54
D00004468	1.525	N.A.	10	2.3	0.13	0.05	8.48	0.04
D00004469	1.995	N.A.	53	19.1	0.18	0.14	7.06	0.27
D00004470	0.155	N.A.	828	44.2	0.05	0.47	19.8	0.31
D00004471	1.395	N.A.	<5	0.4	0.17	<0.01	6.33	<0.01
D00004472	1.385	N.A.	131	23.3	0.21	0.04	7.29	0.43
D00004473	2.195	N.A.	710	94.2	0.15	0.13	20.2	3.61
D00004474	1.865	N.A.	43	<0.3	0.12	<0.01	3.60	0.01
D00004475	1.745	N.A.	83	<0.3	0.12	<0.01	2.71	<0.01
D00004476	1.330	N.A.	>10000	1.3	0.17	0.03	7.58	<0.01
D00004477	2.845	N.A.	937	>300	0.12	0.10	19.1	4.26
D00004478	1.485	N.A.	65	12.3	0.16	<0.01	4.83	0.15
D00004479	1.875	90.5	44	11.8	0.16	<0.01	3.05	0.16
D00004480	1.480	N.A.	<5	<0.3	<0.01	<0.01	<0.05	<0.01
D00004481	2.950	N.A.	102	30.1	0.18	<0.01	3.16	0.37
D00004482	0.765	N.A.	168	53.7	0.22	0.05	4.10	0.54
D00004483	2.795	N.A.	82	27.6	0.19	0.01	2.32	0.29
D00004484	1.460	N.A.	484	172	0.33	0.05	6.66	0.93
D00004485	0.865	N.A.	1980	242	0.24	<0.01	4.60	0.23
D00004486	1.640	N.A.	241	25.0	0.27	<0.01	4.72	0.07
D00004487	0.870	N.A.	1380	>300	0.13	0.22	18.6	2.65
D00004488	2.575	N.A.	63	14.0	0.07	0.08	9.37	0.10
D00004489	2.640	N.A.	58	9.9	0.10	0.06	8.44	0.17
D00004490	0.155	N.A.	861	45.0	0.05	0.47	19.8	0.30
D00004491	2.530	N.A.	30	10.5	0.09	0.10	9.57	0.28
D00004492	2.230	N.A.	8	3.2	0.05	0.07	9.59	0.14
D00004493	0.690	N.A.	11	6.5	0.08	0.25	14.7	0.15
D00004494	2.435	N.A.	6	3.8	0.16	0.02	4.33	0.28
*Dup D00004494	N.A.	N.A.	6	3.5	0.16	0.02	4.35	0.26
D00004495	1.970	N.A.	<5	1.0	0.17	0.02	6.48	0.06
D00004496	0.655	N.A.	11	20.0	0.12	0.07	9.76	0.31
D00004497	1.515	N.A.	<5	1.6	0.15	0.04	7.46	0.07
D00004498	2.105	N.A.	6	1.8	0.05	0.02	6.72	0.13

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00004499	1.920	88.2	15	7.4	0.02	0.07	8.23	0.67
D00004500	1.425	N.A.	<5	<0.3	<0.01	<0.01	0.11	<0.01
*Rep D00004467				9.6				
*Rep D00004483				28.5				
*Std SU_1B				5.8				
*Std AMIS0268				195				
*Blk BLANK				<0.3				
*Rep D00004468			10					
*Rep D00004500			<5					
*Std OXN117			7560					
*Std OXB130			125					
*Blk BLANK			<5					
*Rep D00004328					0.42	0.05	3.32	0.31
*Rep D00004482					0.22	0.04	4.06	0.54
*Std OREAS134A					0.15	0.14	11.9	12.7
*Std RM183-89					3.07	<0.01	35.6	0.04
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004324	3.2	2.07	4	14	19.0	0.31	8	N.A.
D00004325	1.8	0.47	3	<5	1.56	0.04	<1	N.A.
D00004326	1.6	0.04	<3	<5	0.15	<0.01	<1	N.A.
D00004327	7.4	3.62	19	49	1.76	0.13	33	N.A.
D00004328	1.6	0.59	4010	96	0.23	0.15	6	N.A.
D00004329	2.4	1.48	3740	169	2.62	0.14	21	N.A.
D00004466	8.1	7.93	9	<5	6.65	3.72	33	N.A.
D00004467	3.4	1.68	6	<5	9.18	0.76	18	N.A.
D00004468	1.4	0.57	6	<5	2.69	0.54	4	N.A.
D00004469	4.0	1.81	12	8	13.5	5.44	15	N.A.
D00004470	18.1	1.12	1320	108	23.9	9.23	111	N.A.
D00004471	0.9	0.02	13	<5	0.03	0.04	<1	N.A.
D00004472	5.0	0.81	24	13	0.34	2.36	<1	N.A.
D00004473	16.7	6.12	66	57	0.27	12.2	4	N.A.
D00004474	0.1	0.02	11	<5	<0.02	0.04	<1	N.A.
D00004475	0.2	0.01	14	<5	<0.02	0.02	<1	N.A.
D00004476	0.7	0.03	83	<5	<0.02	0.06	<1	10.72
D00004477	17.9	7.65	413	280	0.68	9.88	15	N.A.
D00004478	0.7	0.25	23	9	0.32	0.32	<1	N.A.
D00004479	0.9	0.28	11	8	0.15	0.38	<1	N.A.
D00004480	<0.1	<0.01	6	<5	<0.02	<0.01	<1	N.A.
D00004481	1.5	0.47	15	24	0.22	0.44	<1	N.A.
D00004482	2.2	1.05	6	38	1.02	1.06	<1	N.A.
D00004483	1.2	1.07	3	18	0.42	1.09	<1	N.A.
D00004484	5.1	1.54	67	122	5.10	2.94	11	N.A.
D00004485	3.9	0.71	151	73	0.39	2.95	4	N.A.
D00004486	3.7	0.10	1190	22	0.21	0.48	2	N.A.
D00004487	14.9	6.68	59	202	5.08	8.75	23	N.A.
D00004488	2.7	1.27	12	7	<0.02	<0.01	<1	N.A.
D00004489	2.0	0.70	10	9	4.52	0.55	11	N.A.
D00004490	17.6	1.14	1330	107	23.6	9.04	100	N.A.
D00004491	3.9	2.63	5	<5	8.98	0.32	8	N.A.
D00004492	1.9	0.71	3	<5	3.55	0.04	5	N.A.
D00004493	7.8	3.39	<3	<5	4.26	0.24	19	N.A.
D00004494	0.9	0.90	3	<5	3.47	0.08	3	N.A.
*Dup D00004494	0.9	0.79	<3	<5	3.13	0.07	3	N.A.
D00004495	0.6	0.21	3	<5	1.39	0.03	<1	N.A.
D00004496	4.6	5.91	4	<5	43.9	0.59	36	N.A.
D00004497	0.9	0.66	<3	<5	2.32	0.05	4	N.A.
D00004498	0.6	0.36	<3	<5	2.56	0.02	2	N.A.

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00004499	1.9	1.71	<3	<5	4.35	0.14	5	N.A.
D00004500	<0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
*Rep D00004477			410	279	0.69	9.89	15	
*Std OREAS621			N.A.	107	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	503	N.A.	77	
*Std DS-1			7170	N.A.	N.A.	83.2	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std OXN117								7.73
*Blk BLANK								<0.50
*Rep D00004328	1.6	0.57						
*Rep D00004482	2.2	1.05						
*Std OREAS134A	19.1	17.0						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00004476								11.02

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
D00004324	N.A.
D00004325	N.A.
D00004326	N.A.
D00004327	N.A.
D00004328	N.A.
D00004329	N.A.
D00004466	N.A.
D00004467	N.A.
D00004468	N.A.
D00004469	N.A.
D00004470	N.A.
D00004471	N.A.
D00004472	N.A.
D00004473	N.A.
D00004474	N.A.
D00004475	N.A.
D00004476	N.A.
D00004477	329
D00004478	N.A.
D00004479	N.A.
D00004480	N.A.
D00004481	N.A.
D00004482	N.A.
D00004483	N.A.
D00004484	N.A.
D00004485	N.A.
D00004486	N.A.
D00004487	360
D00004488	N.A.
D00004489	N.A.
D00004490	N.A.
D00004491	N.A.
D00004492	N.A.
D00004493	N.A.
D00004494	N.A.
*Dup D00004494	N.A.
D00004495	N.A.
D00004496	N.A.
D00004497	N.A.
D00004498	N.A.

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Final : VC162426 Order: PO# BMC16-01_42

Report File No.: 0000018742

Element	Ag
Method	GO_FAG313
Det.Lim.	10
Units	g/t
D00004499	N.A.
D00004500	N.A.
*Std ME-1302	430
*Blk BLANK	<10
*Rep D00004487	363

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Certificate of Analysis

Work Order : VC162639

[Report File No.: 0000018789]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Aug 31, 2016

P.O. No.	:	PO# BMC16-01_43
Project No.	:	KZK
No. Of Samples	:	24
Date Submitted	:	Aug 24, 2016
Report Comprises	:	Pages 1 to 4 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162639 Order: PO# BMC16-01_43

Report File No.: 0000018789

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005569	2.675	N.A.	10	7.4	0.21	0.06	5.16	0.34
D00005570	0.895	N.A.	2050	33.2	0.12	0.20	11.7	0.49
D00005571	1.305	N.A.	2270	268	<0.01	0.17	32.6	5.74
D00005572	0.585	N.A.	8	8.4	0.19	0.08	6.34	0.22
D00005573	1.090	N.A.	<5	<0.3	0.18	0.02	6.93	<0.01
D00005574	3.380	N.A.	284	16.4	0.14	0.05	9.74	0.48
D00005575	1.170	N.A.	75	16.6	0.18	0.02	6.20	0.28
D00005576	1.695	N.A.	32	22.3	0.02	0.15	14.1	3.00
D00005577	2.205	N.A.	53	9.7	0.37	0.15	12.2	0.69
D00005578	1.945	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00005579	1.610	N.A.	43	19.7	0.09	0.05	6.94	1.40
D00005580	3.410	N.A.	20	3.6	0.10	0.01	7.38	0.50
D00005581	0.560	N.A.	588	124	0.03	0.33	31.4	5.12
D00005582	3.640	N.A.	7	0.3	0.17	<0.01	10.00	0.04
D00005583	2.335	N.A.	24	3.8	0.16	0.09	4.65	0.04
D00005584	0.375	N.A.	1910	>300	0.03	0.09	13.9	20.3
D00005585	1.835	N.A.	1100	260	0.09	0.45	27.4	7.36
D00005586	1.415	N.A.	538	78.6	0.04	0.11	21.2	2.73
D00005587	2.710	N.A.	8	1.6	0.21	<0.01	2.19	0.08
D00005588	3.445	91.3	12	0.9	0.19	0.03	6.84	0.17
D00005589	2.395	N.A.	<5	1.2	0.18	<0.01	7.10	0.01
D00005590	0.925	N.A.	872	73.7	0.05	0.06	9.78	3.35
B00266326	0.115	N.A.	904	43.5	0.05	0.47	19.8	0.31
B00266327	0.100	N.A.	4090	>300	0.04	0.34	11.2	11.6
*Rep B00266326				44.3				
*Std OREAS621				66.4				
*Blk BLANK				<0.3				
*Rep D00005573					0.18	0.02	7.00	<0.01
*Std ME-19					0.17	0.47	4.03	0.96
*Std RM183-89					3.15	<0.01	35.4	0.04
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep B00266327			4220					
*Std OXB130			124					
*Blk BLANK			<5					

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Final : VC162639 Order: PO# BMC16-01_43

Report File No.: 0000018789

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005569	2.5	1.31	5	<5	12.2	0.33	13	N.A.
D00005570	2.7	0.99	815	16	0.11	1.43	2	N.A.
D00005571	39.0	11.2	1870	274	0.15	4.59	8	269
D00005572	3.6	1.04	4	<5	12.5	0.25	11	N.A.
D00005573	1.2	0.04	8	<5	0.02	<0.01	2	N.A.
D00005574	2.7	2.05	7	<5	3.21	0.56	6	N.A.
D00005575	1.6	0.21	3	8	0.21	0.12	1	N.A.
D00005576	8.6	4.64	4	13	7.04	0.58	44	N.A.
D00005577	8.2	1.57	9	10	1.66	2.02	10	N.A.
D00005578	0.1	<0.01	4	<5	<0.02	<0.01	<1	N.A.
D00005579	3.9	3.73	3	<5	40.9	1.09	20	N.A.
D00005580	1.2	1.06	5	<5	0.42	0.17	3	N.A.
D00005581	27.0	10.6	3960	113	0.45	1.53	12	N.A.
D00005582	0.5	0.08	7	<5	0.03	<0.01	<1	N.A.
D00005583	1.1	0.43	<3	<5	12.0	0.04	7	N.A.
D00005584	24.6	27.9	11	447	19.3	7.71	91	573
D00005585	23.7	8.91	158	192	5.72	2.41	19	261
D00005586	26.0	14.3	1070	102	8.12	7.81	23	N.A.
D00005587	0.8	1.09	<3	<5	0.47	0.26	1	N.A.
D00005588	0.7	0.40	4	<5	3.36	0.02	6	N.A.
D00005589	2.6	0.04	4	<5	0.04	0.04	1	N.A.
D00005590	10.9	6.01	40	83	0.94	15.2	9	N.A.
B00266326	18.3	1.15	1370	107	22.5	9.30	121	N.A.
B00266327	21.1	17.3	1770	614	4.76	28.8	11	313
*Std AMIS0267								918
*Blk BLANK								<10
*Rep D00005573	1.2	0.04						
*Std ME-19	1.6	0.76						
*Std RM183-89	0.8	0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00005579			4	<5	42.0	1.10	19	
*Std OREAS621			N.A.	107	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	543	N.A.	72	
*Std DS-1			6550	N.A.	N.A.	83.1	N.A.	

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Final : VC162639 Order: PO# BMC16-01_43

Report File No.: 0000018789

Element	As	Sb	@Bi	@Hg	@Se	Ag
Method	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	3	5	0.02	0.01	1	10
Units	ppm	ppm	ppm	ppm	ppm	g/t
*Blk BLANK	<3	<5	<0.02	<0.01	<1	
*Rep D00005584						574

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Certificate of Analysis

Work Order : VC162986

[Report File No.: 0000019299]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 06, 2016

P.O. No.	:	PO# BMC16-01_48
Project No.	:	KZK
No. Of Samples	:	5
Date Submitted	:	Sep 22, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162986 Order: PO# BMC16-01_48

Report File No.: 0000019299

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291974	1.870	N.A.	<5	4.8	0.08	<0.01	13.0	0.11
B00291975	1.840	N.A.	<5	1.8	0.12	<0.01	3.18	0.02
B00291976	5.500	N.A.	<5	1.4	0.39	0.01	4.37	0.02
B00291977	2.640	N.A.	146	18.3	0.19	0.70	4.87	0.04
B00291978	3.630	99.0	<5	1.1	0.20	0.03	3.66	<0.01
*Rep B00291977				18.1				
*Std OREAS621				69.2				
*Blk BLANK				<0.3				
*Rep B00291976			<5					
*Std OXB130			129					
*Blk BLANK			<5					
*Rep B00291974					0.08	<0.01	12.9	0.11
*Std ME-19					0.17	0.46	3.89	0.95
*Std RM183-89					3.17	<0.01	36.2	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was (were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativity of the goods and strictly relate to the sample (s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted. The findings report on the samples provided by the client and are not intended for commercial or contractual settlement purposes. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

Final : VC162986 Order: PO# BMC16-01_48

Report File No.: 0000019299

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00291974	7.8	0.07	4	<5	7.42	0.07	<1
B00291975	1.7	0.01	4	<5	3.75	0.03	<1
B00291976	1.7	0.59	15	<5	0.67	0.23	<1
B00291977	1.9	0.23	<3	<5	44.9	0.12	22
B00291978	0.7	0.16	<3	<5	3.48	0.06	4
*Rep B00291974			<3	<5	7.44	0.06	<1
*Std OREAS621			N.A.	108	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	539	N.A.	83
*Std DS-1			6850	N.A.	N.A.	78.3	N.A.
*Rep B00291974	7.7	0.07					
*Std ME-19	1.6	0.76					
*Std RM183-89	0.8	<0.01					
*Blk BLANK	<0.1	<0.01					
*Blk BLANK					<0.02	<0.01	<1
*Blk BLANK			<3	<5			

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Certificate of Analysis

Work Order : VC162987

[Report File No.: 0000019301]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 06, 2016

P.O. No.	:	PO# BMC16-01_49
Project No.	:	KZK
No. Of Samples	:	18
Date Submitted	:	Sep 22, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
QC was shared with VC162986.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162987 Order: PO# BMC16-01_49

Report File No.: 0000019301

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005601	3.740	N.A.	<5	1.3	0.29	0.03	10.1	0.01
D00005602	2.980	N.A.	<5	2.3	0.23	0.05	9.96	0.02
D00005603	2.405	N.A.	<5	1.5	0.23	0.03	7.16	<0.01
D00005604	3.085	N.A.	<5	3.3	0.24	0.06	5.99	0.06
D00005605	3.170	N.A.	15	2.7	0.17	0.08	10.0	0.02
D00005606	3.215	N.A.	<5	1.3	0.35	0.12	9.71	<0.01
D00005607	3.210	N.A.	<5	5.7	0.29	0.21	11.4	0.10
D00005608	3.035	N.A.	<5	3.6	0.46	0.09	6.70	0.04
D00005609	2.640	N.A.	<5	6.2	0.30	0.11	7.70	0.05
D00005610	0.155	N.A.	883	43.9	0.05	0.47	20.0	0.31
D00005611	4.545	N.A.	13	7.9	0.46	0.20	12.4	0.15
D00005612	2.790	N.A.	24	8.1	0.06	0.49	33.2	0.15
D00005613	3.710	N.A.	<5	2.2	0.22	0.03	4.27	0.01
D00005614	5.680	N.A.	<5	<0.3	0.52	<0.01	2.90	<0.01
D00005615	5.680	N.A.	<5	0.4	0.29	0.01	2.10	<0.01
D00005616	5.175	N.A.	<5	2.3	0.19	0.03	4.04	0.02
B00291972	3.860	N.A.	24	4.4	0.29	0.06	7.02	0.03
B00291973	3.290	89.6	58	4.7	0.21	0.04	6.44	0.15
*Rep D00005604				3.2				
*Rep D00005604			<5					
*Rep D00005608					0.45	0.09	6.67	0.05

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Final : VC162987 Order: PO# BMC16-01_49

Report File No.: 0000019301

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
D00005601	1.0	0.10	28	<5	1.78	<0.01	3
D00005602	2.7	0.22	3	<5	3.99	0.01	9
D00005603	1.0	0.07	3	<5	2.44	<0.01	4
D00005604	1.8	0.39	<3	<5	3.12	0.04	7
D00005605	4.9	0.42	6	<5	3.80	0.09	30
D00005606	3.9	0.04	3	<5	2.57	<0.01	24
D00005607	5.7	0.36	<3	<5	11.3	0.08	37
D00005608	1.9	0.24	<3	<5	7.20	0.06	11
D00005609	3.9	0.61	<3	<5	15.5	0.23	26
D00005610	18.2	1.14	1390	99	23.4	8.67	135
D00005611	6.6	1.81	3	<5	28.9	0.82	54
D00005612	25.0	9.27	4	<5	35.5	4.44	138
D00005613	1.3	0.60	<3	<5	20.7	0.28	8
D00005614	0.9	0.02	<3	<5	0.38	<0.01	2
D00005615	0.7	0.04	<3	<5	0.66	0.02	1
D00005616	1.7	0.52	<3	<5	5.89	0.19	8
B00291972	2.7	0.38	326	<5	6.27	<0.01	20
B00291973	1.7	0.29	899	<5	3.99	0.02	18
*Rep D00005615			<3	<5	0.69	<0.01	2
*Rep D00005608	1.9	0.24					

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Certificate of Analysis

Work Order : VC162988

[Report File No.: 0000019302]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 06, 2016

P.O. No.	:	PO# BMC16-01_50
Project No.	:	KZK
No. Of Samples	:	6
Date Submitted	:	Sep 22, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.
QC was shared with VC162986.
Se values over 1000ppm were done by dilution and are informational only.

Certified By :
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC162988 Order: PO# BMC16-01_50

Report File No.: 0000019302

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
B00291966	5.330	N.A.	<5	<0.3	0.18	<0.01	2.79	<0.01
B00291967	2.085	N.A.	80	26.2	0.04	0.79	23.7	0.26
B00291968	5.700	N.A.	<5	0.6	0.32	<0.01	5.59	0.02
B00291969	4.490	N.A.	<5	0.3	0.61	<0.01	4.61	<0.01
B00291970	0.155	N.A.	877	43.9	0.05	0.47	20.1	0.30
B00291971	9.145	89.4	<5	1.6	0.22	0.02	5.38	0.02
*Rep B00291969				0.4				
*Rep B00291967			82					
*Rep B00291966					0.18	<0.01	2.77	<0.01

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Final : VC162988 Order: PO# BMC16-01_50

Report File No.: 0000019302

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
B00291966	0.3	0.02	<3	<5	0.03	0.04	2
B00291967	19.7	9.02	28	<5	61.9	37.3	1160
B00291968	0.6	0.04	<3	<5	0.19	0.18	4
B00291969	1.2	0.02	5	<5	0.17	0.11	5
B00291970	18.1	1.14	1430	97	23.9	9.08	138
B00291971	0.9	0.16	27	<5	1.98	0.41	9
*Rep B00291967			26	<5	62.7	37.1	1160
*Rep B00291966	0.3	0.02					

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Certificate of Analysis

Work Order : VC163022

[Report File No.: 0000019312]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 07, 2016

P.O. No.	:	PO# BMC16-01_51
Project No.	:	KZK
No. Of Samples	:	76
Date Submitted	:	Sep 26, 2016
Report Comprises	:	Pages 1 to 10 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG303 and GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005617	2.325	N.A.	6	<0.3	0.09	<0.01	2.75	<0.01
D00005618	2.385	N.A.	10	<0.3	0.10	<0.01	3.75	<0.01
D00005619	2.795	N.A.	13	1.0	0.07	<0.01	17.2	<0.01
D00005620	0.820	N.A.	<5	<0.3	<0.01	<0.01	0.12	<0.01
D00005621	2.225	N.A.	12	0.8	0.09	<0.01	17.8	0.01
D00005622	1.725	N.A.	<5	0.7	0.09	<0.01	5.43	<0.01
D00005623	3.775	N.A.	14	1.7	0.08	<0.01	3.95	0.02
D00005624	4.160	N.A.	<5	<0.3	0.10	<0.01	1.66	<0.01
D00005625	2.305	N.A.	15	0.3	0.08	<0.01	11.1	<0.01
D00005626	2.365	N.A.	40	1.0	0.07	0.02	14.5	<0.01
D00005627	2.225	N.A.	17	0.6	0.15	<0.01	6.81	<0.01
D00005628	3.315	N.A.	<5	<0.3	0.09	<0.01	2.04	<0.01
D00005629	4.425	N.A.	6	0.3	0.13	<0.01	1.87	<0.01
D00005630	0.155	N.A.	817	43.9	0.05	0.46	20.3	0.31
D00005631	3.255	N.A.	14	1.4	0.36	<0.01	1.69	0.01
D00005632	3.995	N.A.	12	1.3	0.42	<0.01	2.37	<0.01
D00005633	2.425	N.A.	11	2.0	0.35	0.01	2.76	0.02
D00005634	5.705	N.A.	2600	254	0.02	1.95	36.0	1.56
D00005635	3.455	N.A.	4490	85.5	0.23	0.65	11.7	0.25
D00005636	5.260	N.A.	105	2.8	0.56	0.01	2.56	0.03
D00005637	2.060	N.A.	541	59.5	0.22	0.44	10.8	0.32
D00005638	3.810	N.A.	1240	187	0.14	0.33	32.4	1.64
D00005639	6.075	N.A.	1840	215	0.02	0.27	35.3	1.74
D00005640	0.900	N.A.	5	<0.3	<0.01	<0.01	0.08	<0.01
D00005641	3.220	N.A.	1920	200	<0.01	0.34	37.6	1.67
D00005642	3.980	N.A.	2680	258	0.02	0.97	32.6	2.13
D00005643	3.365	N.A.	27	1.6	0.24	<0.01	2.01	0.01
D00005644	3.635	N.A.	1610	169	0.17	0.13	12.1	0.87
D00005645	3.105	N.A.	16	1.2	0.30	<0.01	1.74	<0.01
D00005646	2.865	N.A.	18	1.4	0.37	<0.01	1.81	<0.01
D00005647	2.930	N.A.	22	1.9	0.54	<0.01	2.08	0.02
D00005648	4.185	N.A.	1800	119	0.51	0.16	14.3	0.97
D00005649	2.930	N.A.	29	1.9	1.16	<0.01	2.06	0.02
D00005650	0.155	N.A.	889	43.5	0.05	0.46	20.0	0.31
D00005651	2.825	N.A.	2160	286	0.11	0.06	21.3	4.65
*Dup D00005651	N.A.	N.A.	2700	291	0.11	0.06	21.3	4.60
D00005652	2.920	N.A.	1690	>300	0.49	0.56	12.7	2.31
D00005653	2.815	N.A.	2020	>300	>4.00	0.49	22.2	6.27
D00005654	2.775	N.A.	3310	>300	>4.00	0.22	14.3	12.4
D00005655	5.480	N.A.	1810	300	>4.00	0.43	23.5	5.61

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Final : VC163022 Order: PO# BMC16-01_51

Report File No.: 0000019312

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005656	3.130	N.A.	1050	297	>4.00	0.30	20.6	5.15
D00005657	4.975	N.A.	1870	277	>4.00	0.41	25.2	4.63
D00005658	2.525	N.A.	1520	>300	0.32	1.03	15.0	4.49
D00005659	2.915	N.A.	903	168	0.69	0.37	12.7	2.23
D00005660	0.740	N.A.	<5	<0.3	<0.01	<0.01	0.07	<0.01
D00005661	4.800	N.A.	1400	>300	0.04	0.14	33.7	6.00
D00005662	3.150	N.A.	3590	263	0.04	0.69	25.3	4.60
D00005663	2.380	N.A.	1480	>300	0.08	0.26	24.3	8.41
D00005664	2.355	N.A.	464	81.4	3.09	0.14	9.69	1.09
D00005665	3.005	N.A.	114	21.2	3.41	0.04	6.63	0.25
D00005666	4.125	97.0	117	24.5	3.94	0.08	6.68	0.31
D00005667	3.385	N.A.	10000	>300	1.47	0.88	18.6	1.57
D00005668	2.005	N.A.	>10000	>300	1.09	2.01	8.77	0.19
D00005669	3.020	N.A.	18	3.5	0.99	<0.01	7.09	0.05
D00005670	0.155	N.A.	825	44.9	0.05	0.47	20.1	0.31
D00005671	2.590	N.A.	23	3.2	1.46	<0.01	6.90	0.05
D00005672	3.950	N.A.	44	3.9	1.26	0.01	6.79	0.04
D00005673	3.130	N.A.	82	11.8	1.44	0.03	7.57	0.14
D00005674	4.585	N.A.	99	11.2	1.25	0.05	7.63	0.16
D00005675	3.170	N.A.	54	8.8	1.19	0.03	7.37	0.13
D00005676	2.405	N.A.	109	19.5	1.12	0.06	7.55	0.22
D00005677	4.300	N.A.	276	47.0	0.36	0.22	7.47	0.74
D00005678	5.400	N.A.	1350	>300	0.04	0.72	22.6	6.65
D00005679	3.960	N.A.	342	56.0	0.51	0.06	5.49	0.90
D00005680	0.690	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00005681	5.630	N.A.	129	14.5	0.64	0.04	5.63	0.24
D00005682	4.870	N.A.	179	23.6	0.62	0.04	5.80	0.29
D00005683	3.930	N.A.	111	39.6	0.52	0.03	6.98	0.49
D00005684	4.330	N.A.	214	53.2	0.58	0.07	6.97	0.68
D00005685	2.475	N.A.	279	135	0.39	0.67	20.0	1.43
D00005686	3.345	N.A.	84	16.6	0.39	0.02	7.38	0.25
*Dup D00005686	N.A.	N.A.	177	17.7	0.39	0.02	7.36	0.25
D00005687	4.855	N.A.	95	39.1	0.18	0.05	6.90	0.77
D00005688	3.370	N.A.	91	61.2	0.16	0.04	6.75	1.40
D00005689	3.930	N.A.	91	34.0	0.26	0.08	6.99	0.67
D00005690	0.155	N.A.	814	44.4	0.05	0.46	20.2	0.31
D00005691	1.900	N.A.	96	76.9	0.59	0.48	11.3	1.61
D00005692	2.765	98.5	26	37.9	0.32	0.75	7.48	0.29
*Rep D00005621				1.0				
*Rep D00005642				260				

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Final : VC163022 Order: PO# BMC16-01_51

Report File No.: 0000019312

Element	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.3	0.01	0.01	0.05	0.01
Units	ppb	g/t	%	%	%	%
*Rep D00005674		11.1				
*Rep D00005682		23.2				
*Std SU_1B		6.4				
*Std OREAS621		66.0				
*Std AMIS0268		192				
*Blk BLANK		<0.3				
*Blk BLANK		<0.3				
*Rep D00005651	2060					
*Rep D00005675	56					
*Rep D00005692	29					
*Std OXN117	7610					
*Std OXB130	128					
*Std OREAS214	3120					
*Std OXH97	1310					
*Std OREAS214	2990					
*Blk BLANK	<5					
*Rep D00005626			0.07	0.01	14.4	<0.01
*Rep D00005659			0.70	0.38	12.9	2.28
*Rep D00005664			3.10	0.14	9.72	1.07
*Rep D00005678			0.04	0.72	22.2	6.76
*Std OREAS134A			0.15	0.13	11.9	12.5
*Std ME-19			0.16	0.46	3.89	0.94
*Std RM183-89			3.07	<0.01	36.0	0.04
*Std ME-19			0.16	0.47	3.86	0.95
*Blk BLANK			<0.01	<0.01	<0.05	<0.01

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005617	1.5	0.17	11	<5	0.21	0.02	<1	N.A.
D00005618	2.2	<0.01	24	5	0.21	<0.01	<1	N.A.
D00005619	11.6	0.01	27	6	0.24	0.03	3	N.A.
D00005620	0.2	<0.01	5	<5	<0.02	0.01	<1	N.A.
D00005621	11.4	0.01	26	<5	0.22	0.02	3	N.A.
D00005622	3.2	0.05	19	5	0.37	0.11	1	N.A.
D00005623	3.0	<0.01	32	<5	2.76	0.03	2	N.A.
D00005624	0.8	<0.01	4	<5	0.39	0.01	<1	N.A.
D00005625	7.7	0.02	42	<5	0.44	0.02	7	N.A.
D00005626	10.7	0.02	58	<5	0.56	0.04	9	N.A.
D00005627	6.0	0.09	52	6	1.18	0.10	3	N.A.
D00005628	1.3	<0.01	12	<5	0.30	0.06	<1	N.A.
D00005629	1.0	<0.01	9	<5	0.64	<0.01	<1	N.A.
D00005630	18.3	1.13	1410	105	22.1	9.13	141	N.A.
D00005631	0.9	0.03	19	<5	0.62	0.09	3	N.A.
D00005632	1.2	0.02	14	<5	0.72	0.17	5	N.A.
D00005633	1.2	0.02	26	<5	0.78	0.38	5	N.A.
D00005634	41.7	6.64	6360	214	31.6	25.3	596	N.A.
D00005635	7.8	0.95	1710	47	68.3	6.90	117	N.A.
D00005636	1.7	0.03	19	22	3.13	0.51	12	N.A.
D00005637	8.9	0.89	1250	55	22.7	4.20	169	N.A.
D00005638	38.5	4.20	1880	217	19.2	24.3	493	N.A.
D00005639	42.7	5.92	3020	428	13.2	43.9	332	N.A.
D00005640	0.2	<0.01	7	<5	0.03	0.09	<1	N.A.
D00005641	46.8	5.65	3890	407	17.1	43.0	272	N.A.
D00005642	40.8	7.36	>10000	403	16.8	43.0	388	N.A.
D00005643	1.5	<0.01	63	<5	0.40	0.21	1	N.A.
D00005644	14.2	2.56	3270	685	8.84	9.90	112	N.A.
D00005645	1.3	0.02	32	5	0.36	0.07	<1	N.A.
D00005646	1.5	0.12	474	5	0.42	0.37	2	N.A.
D00005647	1.6	0.03	211	8	0.58	0.08	<1	N.A.
D00005648	16.5	2.59	533	632	9.10	7.69	97	N.A.
D00005649	1.1	0.03	23	11	0.52	0.23	2	N.A.
D00005650	19.2	1.16	1430	103	21.9	8.93	144	N.A.
D00005651	29.9	10.1	210	339	38.8	22.5	181	N.A.
*Dup D00005651	29.9	10.1	205	320	38.2	21.7	170	N.A.
D00005652	13.5	2.34	270	865	30.3	5.59	144	N.A.
D00005653	31.4	8.90	79	255	10.1	12.2	74	N.A.
D00005654	29.1	19.7	55	540	1.91	18.7	45	N.A.
D00005655	29.7	7.88	85	234	9.22	8.09	77	N.A.

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Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005656	26.5	8.63	67	310	6.74	9.03	103	N.A.
D00005657	29.1	8.35	111	167	26.7	9.67	212	N.A.
D00005658	9.2	2.70	65	157	41.7	2.58	139	N.A.
D00005659	2.0	0.53	34	225	34.7	0.69	73	N.A.
D00005660	0.2	<0.01	5	<5	0.07	<0.01	<1	N.A.
D00005661	32.6	11.5	277	231	28.6	12.1	341	N.A.
D00005662	25.1	6.90	612	182	12.3	8.01	167	N.A.
D00005663	32.7	10.8	300	480	26.4	13.4	273	N.A.
D00005664	1.5	0.50	31	109	14.8	0.76	43	N.A.
D00005665	0.2	0.08	46	13	2.90	0.08	9	N.A.
D00005666	0.4	0.10	39	21	2.39	0.06	8	N.A.
D00005667	22.4	3.48	1320	7050	9.34	5.28	106	8.97
D00005668	3.9	0.62	1710	>10000	3.39	2.06	18	13.43
D00005669	<0.1	0.06	40	9	0.37	0.02	1	N.A.
D00005670	18.5	1.15	1450	102	22.2	8.79	135	N.A.
D00005671	0.2	0.06	45	7	0.38	0.05	1	N.A.
D00005672	0.5	0.07	47	13	0.48	0.16	1	N.A.
D00005673	0.6	0.07	41	5	1.30	0.29	7	N.A.
D00005674	0.5	0.08	38	<5	1.51	0.21	8	N.A.
D00005675	0.4	0.09	40	24	1.27	0.25	9	N.A.
D00005676	0.3	0.13	36	37	8.85	0.25	21	N.A.
D00005677	0.8	0.17	32	56	21.7	0.28	45	N.A.
D00005678	26.7	7.33	199	320	34.9	10.9	230	N.A.
D00005679	0.6	0.08	74	125	20.2	0.19	34	N.A.
D00005680	<0.1	<0.01	5	<5	<0.02	<0.01	<1	N.A.
D00005681	0.7	0.06	49	76	5.68	0.14	14	N.A.
D00005682	0.9	0.07	71	82	14.6	0.08	20	N.A.
D00005683	0.4	0.06	14	25	9.25	0.03	10	N.A.
D00005684	0.4	0.06	17	41	10.5	0.10	16	N.A.
D00005685	23.0	8.35	97	67	23.9	9.80	94	N.A.
D00005686	0.3	0.06	19	13	4.16	0.12	4	N.A.
*Dup D00005686	0.3	0.06	17	11	4.22	0.07	4	N.A.
D00005687	0.3	0.04	8	26	5.80	0.02	10	N.A.
D00005688	0.6	0.05	6	37	13.9	0.04	25	N.A.
D00005689	0.4	0.08	7	18	6.60	0.06	11	N.A.
D00005690	17.6	1.14	1460	100	22.8	9.17	136	N.A.
D00005691	6.0	1.55	19	64	39.3	0.77	69	N.A.
D00005692	4.6	0.86	3	25	12.0	0.17	23	N.A.

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Final : VC163022 Order: PO# BMC16-01_51

Report File No.: 0000019312

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	@Au
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG303
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	0.5
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00005624			4	<5	0.39	0.01	<1	
*Rep D00005662			616	213	12.2	7.81	155	
*Rep D00005675			43	27	1.33	0.20	10	
*Rep D00005690			1440	102	22.8	9.19	137	
*Std DS-1			7180	N.A.	N.A.	82.5	N.A.	
*Std OREAS926			N.A.	N.A.	39.7	N.A.	10	
*Std OREAS621			N.A.	111	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	520	N.A.	80	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std GS-20B								20.45
*Blk BLANK								<0.50
*Rep D00005626	10.2	0.01						
*Rep D00005659	2.1	0.55						
*Rep D00005664	1.5	0.51						
*Rep D00005678	26.0	7.40						
*Std OREAS134A	18.9	17.3						
*Std ME-19	1.6	0.75						
*Std RM183-89	0.8	<0.01						
*Std ME-19	1.6	0.76						
*Blk BLANK	<0.1	<0.01						

Element	@Au
Method	GO_FAG303
Det.Lim.	0.5
Units	g/t
*Rep D00005667	9.93

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Report File No.: 0000019312

Element	Ag	As	Sb	Ba
Method	GO_FAG313	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.01	0.2
Units	g/t	%	%	%
D00005617	N.A.	N.A.	N.A.	N.A.
D00005618	N.A.	N.A.	N.A.	N.A.
D00005619	N.A.	N.A.	N.A.	N.A.
D00005620	N.A.	N.A.	N.A.	N.A.
D00005621	N.A.	N.A.	N.A.	N.A.
D00005622	N.A.	N.A.	N.A.	N.A.
D00005623	N.A.	N.A.	N.A.	N.A.
D00005624	N.A.	N.A.	N.A.	N.A.
D00005625	N.A.	N.A.	N.A.	N.A.
D00005626	N.A.	N.A.	N.A.	N.A.
D00005627	N.A.	N.A.	N.A.	N.A.
D00005628	N.A.	N.A.	N.A.	N.A.
D00005629	N.A.	N.A.	N.A.	N.A.
D00005630	N.A.	N.A.	N.A.	N.A.
D00005631	N.A.	N.A.	N.A.	N.A.
D00005632	N.A.	N.A.	N.A.	N.A.
D00005633	N.A.	N.A.	N.A.	N.A.
D00005634	256	N.A.	N.A.	N.A.
D00005635	N.A.	N.A.	N.A.	N.A.
D00005636	N.A.	N.A.	N.A.	N.A.
D00005637	N.A.	N.A.	N.A.	N.A.
D00005638	N.A.	N.A.	N.A.	N.A.
D00005639	N.A.	N.A.	N.A.	N.A.
D00005640	N.A.	N.A.	N.A.	N.A.
D00005641	N.A.	N.A.	N.A.	N.A.
D00005642	255	1.26	N.A.	N.A.
D00005643	N.A.	N.A.	N.A.	N.A.
D00005644	N.A.	N.A.	N.A.	N.A.
D00005645	N.A.	N.A.	N.A.	N.A.
D00005646	N.A.	N.A.	N.A.	N.A.
D00005647	N.A.	N.A.	N.A.	N.A.
D00005648	N.A.	N.A.	N.A.	N.A.
D00005649	N.A.	N.A.	N.A.	N.A.
D00005650	N.A.	N.A.	N.A.	N.A.
D00005651	297	N.A.	N.A.	N.A.
*Dup D00005651	291	N.A.	N.A.	N.A.
D00005652	399	N.A.	N.A.	N.A.
D00005653	336	N.A.	N.A.	9.7
D00005654	639	N.A.	N.A.	11.6
D00005655	303	N.A.	N.A.	15.1

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Final : VC163022 Order: PO# BMC16-01_51

Report File No.: 0000019312

Element	Ag	As	Sb	Ba
Method	GO_FAG313	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.01	0.2
Units	g/t	%	%	%
D00005656	299	N.A.	N.A.	21.7
D00005657	284	N.A.	N.A.	6.7
D00005658	287	N.A.	N.A.	N.A.
D00005659	N.A.	N.A.	N.A.	N.A.
D00005660	N.A.	N.A.	N.A.	N.A.
D00005661	308	N.A.	N.A.	N.A.
D00005662	268	N.A.	N.A.	N.A.
D00005663	468	N.A.	N.A.	N.A.
D00005664	N.A.	N.A.	N.A.	N.A.
D00005665	N.A.	N.A.	N.A.	N.A.
D00005666	N.A.	N.A.	N.A.	N.A.
D00005667	476	N.A.	N.A.	N.A.
D00005668	866	N.A.	1.23	N.A.
D00005669	N.A.	N.A.	N.A.	N.A.
D00005670	N.A.	N.A.	N.A.	N.A.
D00005671	N.A.	N.A.	N.A.	N.A.
D00005672	N.A.	N.A.	N.A.	N.A.
D00005673	N.A.	N.A.	N.A.	N.A.
D00005674	N.A.	N.A.	N.A.	N.A.
D00005675	N.A.	N.A.	N.A.	N.A.
D00005676	N.A.	N.A.	N.A.	N.A.
D00005677	N.A.	N.A.	N.A.	N.A.
D00005678	320	N.A.	N.A.	N.A.
D00005679	N.A.	N.A.	N.A.	N.A.
D00005680	N.A.	N.A.	N.A.	N.A.
D00005681	N.A.	N.A.	N.A.	N.A.
D00005682	N.A.	N.A.	N.A.	N.A.
D00005683	N.A.	N.A.	N.A.	N.A.
D00005684	N.A.	N.A.	N.A.	N.A.
D00005685	N.A.	N.A.	N.A.	N.A.
D00005686	N.A.	N.A.	N.A.	N.A.
*Dup D00005686	N.A.	N.A.	N.A.	N.A.
D00005687	N.A.	N.A.	N.A.	N.A.
D00005688	N.A.	N.A.	N.A.	N.A.
D00005689	N.A.	N.A.	N.A.	N.A.
D00005690	N.A.	N.A.	N.A.	N.A.
D00005691	N.A.	N.A.	N.A.	N.A.
D00005692	N.A.	N.A.	N.A.	N.A.

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Final : VC163022 Order: PO# BMC16-01_51

Report File No.: 0000019312

Element	Ag	As	Sb	Ba
Method	GO_FAG313	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.01	0.2
Units	g/t	%	%	%
*Std ME-1302	423			
*Blk BLANK	<10			
*Blk BLANK		<0.01	<0.01	
*Std CRM3594-86				10.3

Element	Ag	As	Sb	Ba
Method	GO_FAG313	GO_ICP13B	GO_ICP13B	GO_XRF77B
Det.Lim.	10	0.01	0.01	0.2
Units	g/t	%	%	%
*Blk BLANK				<0.2
*Rep D00005653				10.0
*Rep D00005642		1.23	N.A.	
*Rep D00005634	251			
*Std CD_1		0.65	3.51	
*Std 5938-91		8.43	N.A.	

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Certificate of Analysis

Work Order : VC163099

[Report File No.: 0000019425]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 17, 2016

P.O. No.	:	PO# BMC16-01_52
Project No.	:	KZK
No. Of Samples	:	33
Date Submitted	:	Oct 04, 2016
Report Comprises	:	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Samples may have coarse gold.
Lower limit for GO_FAG313 may be elevated due to reduced assay fraction size.
Ba and S data is informational only.

Certified By :

John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005751	5.270	N.A.	30	3.2	0.19	0.02	0.91	<0.01
D00005752	5.275	N.A.	7	1.2	0.17	<0.01	1.41	<0.01
D00005753	3.485	N.A.	62	7.5	0.17	0.09	2.59	0.03
D00005754	2.080	N.A.	807	128	0.11	0.85	18.1	0.70
D00005755	6.715	N.A.	1230	97.7	0.01	1.37	37.6	0.53
D00005756	8.835	N.A.	1310	143	0.02	0.79	35.9	0.78
D00005757	5.115	N.A.	10	1.1	0.12	<0.01	1.49	0.01
D00005758	6.625	N.A.	6	0.5	0.12	<0.01	1.65	<0.01
D00005759	5.365	N.A.	5	0.4	0.12	<0.01	1.40	<0.01
D00005760	1.685	N.A.	<5	<0.3	<0.01	<0.01	0.05	<0.01
D00005761	3.875	N.A.	386	40.3	0.76	0.05	1.40	0.18
D00005762	3.885	N.A.	770	53.2	1.20	0.14	6.88	0.21
D00005763	5.935	N.A.	31	2.5	1.15	<0.01	2.53	<0.01
D00005764	5.930	N.A.	27	7.1	1.79	0.02	3.50	0.05
D00005765	6.775	N.A.	2420	>300	1.40	0.39	25.8	3.13
D00005766	8.560	N.A.	2070	273	>4.00	0.33	29.8	2.56
D00005767	6.805	N.A.	2020	209	>4.00	0.27	30.3	2.09
D00005768	7.275	N.A.	2420	262	>4.00	0.20	30.9	4.26
D00005769	4.840	N.A.	1500	120	>4.00	0.29	36.2	1.85
D00005770	0.170	N.A.	1240	65.2	0.26	0.37	3.73	1.34
D00005771	0.170	N.A.	802	20.7	0.14	1.72	13.4	0.24
D00005772	7.785	N.A.	1710	183	0.27	0.42	35.5	3.22
D00005773	4.480	N.A.	712	160	0.49	0.13	34.6	3.39
D00005774	7.690	N.A.	1780	152	>4.00	0.32	31.8	2.58
D00005775	7.310	N.A.	2860	180	>4.00	0.27	31.1	1.42
D00005776	6.370	N.A.	3630	>300	>4.00	0.23	24.0	5.30
D00005777	7.085	N.A.	1060	135	0.38	0.19	36.4	1.90
D00005778	4.235	N.A.	375	138	0.01	<0.01	35.1	3.24
D00005779	2.650	N.A.	370	39.2	0.11	0.50	37.0	0.65
D00005780	2.420	N.A.	<5	<0.3	<0.01	<0.01	0.17	<0.01
D00005781	6.180	N.A.	7	1.4	0.99	<0.01	2.21	0.01
D00005782	5.495	N.A.	6	0.4	0.50	<0.01	1.70	<0.01
D00005783	4.720	93.3	6	0.8	0.45	<0.01	1.95	<0.01
*Rep D00005762				53.5				
*Rep D00005776				>300				
*Std SU_1B				6.2				
*Std AMIS0268				193				
*Blk BLANK				<0.3				
*Rep D00005772			1430					
*Std OXN117			7770					

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	@Au	Ba	@Cu	Fe	@Pb
Method	GE_FAA313	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	5	0.01	0.01	0.05	0.01
Units	ppb	%	%	%	%
*Std OXB130	120				
*Blk BLANK	<5				
*Rep D00005756		0.02	0.79	35.8	0.79
*Rep D00005771		0.14	1.84	13.8	0.25
*Std OREAS134A		0.15	0.13	12.0	12.7
*Std RM183-89		3.12	<0.01	35.5	0.03
*Blk BLANK		<0.01	<0.01	<0.05	<0.01

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
D00005751	0.3	0.01	77	26	1.84	0.12	2	N.A.
D00005752	0.7	0.05	120	<5	0.38	0.17	4	N.A.
D00005753	1.6	0.16	73	10	1.12	0.46	24	N.A.
D00005754	21.0	2.78	293	157	46.0	6.16	643	N.A.
D00005755	44.2	4.78	5010	113	56.3	10.3	719	N.A.
D00005756	43.6	6.83	4930	549	76.5	13.9	809	N.A.
D00005757	1.1	0.02	136	<5	0.67	0.06	3	N.A.
D00005758	1.3	<0.01	183	<5	0.53	0.04	2	N.A.
D00005759	1.1	<0.01	175	<5	0.66	0.05	2	N.A.
D00005760	0.1	<0.01	3	<5	<0.02	<0.01	<1	N.A.
D00005761	0.9	0.11	102	173	3.07	0.29	9	N.A.
D00005762	7.1	1.25	125	390	4.07	2.38	18	N.A.
D00005763	1.9	0.03	136	6	0.43	0.17	2	N.A.
D00005764	2.5	0.21	36	8	3.60	0.49	14	N.A.
D00005765	33.0	9.90	771	1220	40.4	24.6	183	345
D00005766	37.8	7.23	1060	1240	30.8	21.4	83	275
D00005767	38.7	6.34	6910	900	49.2	27.2	123	N.A.
D00005768	40.6	9.60	>10000	1020	17.7	21.2	53	263
D00005769	46.3	7.41	1360	1120	46.8	14.6	136	N.A.
D00005770	4.5	5.43	75	100	3.88	3.95	7	N.A.
D00005771	9.0	1.05	81	17	17.3	0.79	23	N.A.
D00005772	39.1	7.56	2630	881	34.8	9.55	118	N.A.
D00005773	34.5	9.88	1050	300	34.4	12.6	121	N.A.
D00005774	40.8	7.51	7050	944	25.2	16.3	61	N.A.
D00005775	38.3	5.07	9120	1510	15.1	43.7	44	N.A.
D00005776	34.5	10.8	4740	1250	10.7	53.6	42	437
D00005777	37.1	11.1	454	614	44.6	12.5	192	N.A.
D00005778	43.9	9.16	370	180	24.9	9.48	171	N.A.
D00005779	32.0	7.63	124	38	55.3	9.24	222	N.A.
D00005780	0.1	<0.01	<3	<5	0.04	0.05	<1	N.A.
D00005781	1.0	0.03	8	<5	2.07	0.08	2	N.A.
D00005782	1.0	<0.01	7	<5	0.40	0.03	<1	N.A.
D00005783	1.4	<0.01	12	<5	0.73	0.05	2	N.A.

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	S	@Zn	As	Sb	@Bi	@Hg	@Se	Ag
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GO_FAG313
Det.Lim.	0.1	0.01	3	5	0.02	0.01	1	10
Units	%	%	ppm	ppm	ppm	ppm	ppm	g/t
*Rep D00005775			8990	1490	15.0	43.1	44	
*Std OREAS621			N.A.	90	N.A.	N.A.	N.A.	
*Std OREAS934			N.A.	N.A.	504	N.A.	76	
*Std DS-1			6870	N.A.	N.A.	77.1	N.A.	
*Blk BLANK			<3	<5	<0.02	<0.01	<1	
*Std ME-1302								430
*Blk BLANK								<10
*Rep D00005756	43.3	6.73						
*Rep D00005771	9.5	1.08						
*Std OREAS134A	18.8	17.2						
*Std RM183-89	0.8	<0.01						
*Blk BLANK	<0.1	<0.01						
*Rep D00005765								345

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
D00005751	N.A.	N.A.
D00005752	N.A.	N.A.
D00005753	N.A.	N.A.
D00005754	N.A.	N.A.
D00005755	N.A.	N.A.
D00005756	N.A.	N.A.
D00005757	N.A.	N.A.
D00005758	N.A.	N.A.
D00005759	N.A.	N.A.
D00005760	N.A.	N.A.
D00005761	N.A.	N.A.
D00005762	N.A.	N.A.
D00005763	N.A.	N.A.
D00005764	N.A.	N.A.
D00005765	N.A.	N.A.
D00005766	N.A.	9.3
D00005767	N.A.	12.5
D00005768	1.16	8.1
D00005769	N.A.	5.1
D00005770	N.A.	N.A.
D00005771	N.A.	N.A.
D00005772	N.A.	N.A.
D00005773	N.A.	N.A.
D00005774	N.A.	9.1
D00005775	N.A.	9.8
D00005776	N.A.	11.4
D00005777	N.A.	N.A.
D00005778	N.A.	N.A.
D00005779	N.A.	N.A.
D00005780	N.A.	N.A.
D00005781	N.A.	N.A.
D00005782	N.A.	N.A.
D00005783	N.A.	N.A.

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Final : VC163099 Order: PO# BMC16-01_52

Report File No.: 0000019425

Element	As	Ba
Method	GO_ICP13B	GO_XRF77B
Det.Lim.	0.01	0.2
Units	%	%
*Std CRM3594-86		10.1
*Blk BLANK		<0.2
*Rep D00005768		8.3
*Blk BLANK	<0.01	
*Rep D00005768	1.16	
*Std 5938-91	8.43	

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Certificate of Analysis

Work Order : VC163100

[Report File No.: 0000019373]

To: **ROBIN BLACK**
BMC MINERALS (NO 1) LTD
530-1130 WEST PENDER ST
VANCOUVER BC V6E 4A4

Date: Oct 12, 2016

P.O. No.	:	PO# BMC16-01_53
Project No.	:	KZK
No. Of Samples	:	10
Date Submitted	:	Oct 04, 2016
Report Comprises	:	Pages 1 to 3 (Inclusive of Cover Sheet)

Distribution of unused material:
Active files:

Comments:

Ba and S data is informational only.

Certified By : _____
John Chiang
QC Chemist

SGS Minerals Services Geochemistry Vancouver conforms to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation which can be found at http://www.scc.ca/en/search/palcan/sgs

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Elements marked with the **@** symbol (e.g. @Cu) denote assays performed using accredited test methods

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Final : VC163100 Order: PO# BMC16-01_53

Report File No.: 0000019373

Element	WtKg	M75um	@Au	@Ag	Ba	@Cu	Fe	@Pb
Method	G_WGH79	G_SCR34	GE_FAA313	GE_AAS12E	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q	GO_ICP90Q
Det.Lim.	0.01	0.01	5	0.3	0.01	0.01	0.05	0.01
Units	kg	%	ppb	g/t	%	%	%	%
D00005693	5.910	N.A.	<5	1.9	1.16	0.05	8.15	0.01
D00005694	5.710	N.A.	<5	0.6	1.27	0.02	5.37	<0.01
D00005695	5.370	N.A.	<5	<0.3	0.58	0.01	6.49	<0.01
D00005696	2.840	N.A.	<5	<0.3	0.56	<0.01	8.11	<0.01
D00005697	2.475	N.A.	50	36.9	0.20	0.34	24.9	0.59
D00005698	4.235	N.A.	<5	5.4	0.52	0.07	6.74	0.06
D00005699	1.550	N.A.	39	42.3	0.05	0.71	35.4	0.56
D00005700	1.670	N.A.	<5	<0.3	<0.01	<0.01	0.06	<0.01
D00005701	2.980	N.A.	5	13.9	0.30	0.12	10.3	0.19
D00005702	5.375	96.0	<5	0.8	0.23	<0.01	2.29	<0.01
*Rep D00005696				<0.3				
*Std SU_1B				6.6				
*Blk BLANK				<0.3				
*Rep D00005696					0.57	<0.01	8.02	<0.01
*Std OREAS134A					0.15	0.13	12.0	12.7
*Std RM183-89					3.09	<0.01	35.2	0.03
*Blk BLANK					<0.01	<0.01	<0.05	<0.01
*Rep D00005695			<5					
*Std OREAS214			2900					
*Blk BLANK			<5					

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Final : VC163100 Order: PO# BMC16-01_53

Report File No.: 0000019373

Element	S	@Zn	Sb	@As	@Bi	@Hg	@Se
Method	GO_ICP90Q	GO_ICP90Q	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B	GE_ICM14B
Det.Lim.	0.1	0.01	5	1	0.02	0.01	1
Units	%	%	ppm	ppm	ppm	ppm	ppm
D00005693	3.8	0.43	<5	13	2.51	0.08	15
D00005694	1.9	0.02	<5	9	0.73	0.04	4
D00005695	0.4	0.02	29	4	0.14	0.02	2
D00005696	<0.1	0.03	<5	4	0.39	0.01	<1
D00005697	21.1	7.18	163	26	64.7	5.54	203
D00005698	4.6	0.77	43	2	8.78	0.45	25
D00005699	26.9	9.46	353	26	68.9	9.36	228
D00005700	0.1	<0.01	<5	<1	0.04	0.02	<1
D00005701	6.5	2.44	84	6	24.7	1.50	43
D00005702	1.1	0.01	6	<1	1.12	0.02	2
*Rep D00005696			<5	4	0.33	<0.01	<1
*Std OREAS621			109	N.A.	N.A.	N.A.	N.A.
*Std OREAS934			N.A.	N.A.	527	N.A.	76
*Std DS-1			N.A.	7270	N.A.	79.2	N.A.
*Blk BLANK			<5	<1	<0.02	<0.01	<1
*Rep D00005696	<0.1	0.03					
*Std OREAS134A	19.0	17.3					
*Std RM183-89	0.7	<0.01					
*Blk BLANK	<0.1	<0.01					

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Appendix M: Geochemical Assay QA/QC Report

Review of QA/QC results for 2016 KZK Project

Release 1.0, January 5th, 2017

Ron Voordouw

Equity Exploration Consultants Ltd.

SUMMARY

This technical document describes the quality assurance (QA) protocols used in collecting, sampling and analyzing drill core for the 2016 KZK Project, and summarizes quality control (QC) data returned for certified reference materials (CRMs) and blanks. The aim of the 2016 QA/QC program was to ensure that geochemical sampling and assays met industry standards, and that the analytical results were sufficiently accurate and free of contamination to be included in a new resource estimate. Assay results for the 134 CRM samples indicate an average analytical bias of -3.4% for Ag, +0.9% for Au and +0.2% for Pb, whereas Cu, Fe and Zn all returned biases of <0.05%. None of blank sample assays exceeded the 10**dl* threshold established to indicate contamination. A check assay program shows high correlation (≥0.99) of Ag, Cu, Pb and Zn between the original SGS analyses and the ALS duplicates, and somewhat weak correlation for gold (ρ = 0.94). Overall, review of QA/QC data for the 2016 KZK project indicates that SGS core assays are most likely accurate and free of contamination, and thereby suitable for inclusion in resource calculation.

KEYWORDS: KZK Project, QA/QC

INTRODUCTION

The 2016 KZK exploration program followed up on the 2015 program (Hughes et al., 2016), with focus on infill, expansion and/or metallurgical drilling at the Krakatoa Zone, GP4F deposit and ABM Zone, as well as exploration drilling on the Sebesi and Tarawera (or Rhyolite Peak) targets. The ABM Zone, Krakatoa Zone and GP4F deposits are all polymetallic (Pb-Zn-Ag ± Cu-Au) volcanogenic massive sulphide (VMS) deposits consisting mostly of pyrite, sphalerite, pyrrhotite, galena and chalcopyrite.

The following sections describe the procedures used to sample and analyze drill core on the 2016 KZK Project, as well as the quality assurance and control (QA/QC) program that was used to monitor the accuracy and contamination of geochemical assays.

Sampling

The 2016 KZK resource drilling, exploration drilling and core re-logging programs collected 2094 samples for geochemical assay, comprising 1858 core samples, 102 blanks and 134 certified reference material (CRM) samples. All core samples were identified with a unique sample ID number and marked with sample tags in the core box. Core samples were taken from every mineralized intersection as well as 5–10 m into the immediate hanging wall and footwall host rock in order to characterize potential waste rock dilution. Primary core samples conformed to lithological boundaries where possible, with core loggers attempting to constrain alteration and mineralization features within the lithological boundaries as well. Sample lengths range from 0.25–3.50 m, with a median of 1.04 m and an average length of 1.11 m. Sample weights range from 0.2–12.8 kg with a median weight of 2.8 kg and average of 3.1 kg. Sample weights show a poor correlation (R^2 = 0.11) with sample length (Figure 1), most likely due to the range in rock density (2.5–4.7 g/cm^3) and the artificially long lengths, coupled with low weights, for samples taken from intervals with significant core loss (e.g. fault zone).

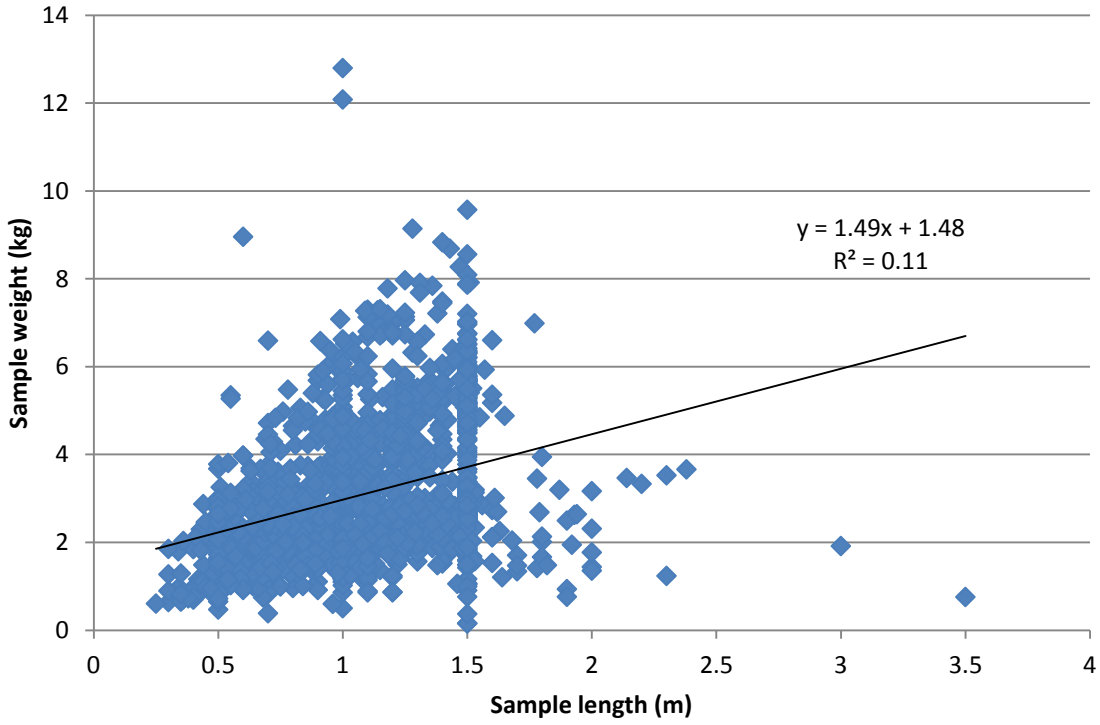

Figure 1: Length (m) against weight (kg) for all core samples collected as part of the 2016 sampling program.

Drill core samples were cut using an open circulation rock saw. Split core was consistently sampled from the same side, then placed into a labelled plastic sample bags sealed with a plastic zip tie. Groups of 4–7 sample bags were packed into rice bags that were then sealed with individually numbered security tags and shipped to the assay lab via two or more of the following contractors; Tu-Lidlini Petroleum (Ross River, YT), Small's Expediting (Whitehorse, YT), Air North (Whitehorse, YT) and/or Canadian Freightways (Whitehorse, YT). A list of required quartz washes was submitted to the analytical lab that would follow suspected high-grade samples in order to avoid contaminating adjacent lower grade samples. These quartz washes were completed at the crush and pulveriser stage of sample preparation.

Analytical methods

Drill core samples were sent to SGS Mineral Services Geochemistry Vancouver ("SGS Vancouver" or "SGS") for geochemical analysis of base (Cu, Pb, Zn) and precious (Ag, Au) metals for use in the resource calculation, as well as Fe and several other major and trace elements (As, Ba, Bi, Hg, S, Sb, Se). SGS Vancouver is an ISO 9001:2008 certified laboratory (accredited laboratory No. 744) that also conforms with the requirements of CAN-P-1579, CAN-P-1578 and CAN-P-4E (ISO/IEC 17025-2005) for the analytical methods used on the 2016 KZK Project. Accreditation details were provided in the 2015 QA/QC review (Voordouw, 2016b).

Prior to analysis, samples were weighed, dried and crushed to 75% passing 2 mm, with a 250 g split pulverized to 85% passing 75 microns. Gold was analysed by 30 g fire assay with an AAS finish and silver analysed by ICP with an AAS finish on a two-gram 2-acid digest aliquot (Table 1). Gold and silver over limits were triggered at Au >5 g/t and Ag >250 g/t respectively, resulting in re-analysis using a 30 g fire assay with gravimetric finish. Copper, lead, zinc and iron assays were done with Na_2O_2 fusion and ICP-AES analysis. This fusion results in complete digestion of the sample and so provides a near total chemical analysis. Arsenic, Bi, Hg, S, Sb and Se were analyzed by ICP-MS on a two-acid aqua regia digest of 3:1 HCl:HNO_3. A smaller aliquot was used for samples with relatively high Ba and S, in order to prevent the precipitation of Pb along with $BaSO_4$. Samples with >4% Ba and low base metals were fused with pyrosulphate and analyzed by XRF.

Table 1: Overview of analytical methods used by SGS and ALS for analysis of the 2016 samples

Element	SGS			ALS		
	Code	*Range*	*Method*	*Code*	*Range*	*Method*
Ag <250 ppm	GE_AAS12E	0.3–300 ppm	2-acid digest, AAS	Ag-AA45	0.2–100 ppm	AR digest, AAS
				Ag-AA46	1–1500 ppm	AR digest, AAS
Ag >250 ppm	GO_FAG313	10–3000 ppm	FA, GRAV	Ag-GRA21	5–10000 ppm	FA, GRAV
				Ag-OG46	1–1500ppm	AR digest, ICP-AES
Au <5 ppm	GE_FAA313	0.005–10 ppm	FA, AAS	Au-AA25	0.01–100 ppm	30 g, FA, AAS
Au >5 ppm	GO_FAG303	1.0–3000 ppm	FA, GRAV	Au-GRA21	0.05–1000 ppm	30 g, FA, GRAV
Cu	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.002–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.2–10000 ppm	AR digest, ICP-MS
				Cu-OG46	0.001–40%	AR digest, ICP-AES
Fe	GO_ICP90Q	0.05–50%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–70%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.01–50%	AR digest, ICP-MS
Pb	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.2–10000 ppm	AR digest, ICP-MS
				Pb-OG46	0.001–30 %	AR digest, ICP-AES
Zn	GO_ICP90Q	0.01–30%	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.002–30%	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.1–10000 ppm	AR digest, ICP-MS
				Zn-OG46	0.001–60 %	AR digest, ICP-AES
As	GE_ICM14B	1–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
Ba <4%	GO_ICP90Q	0.01–4%	Na_2O_2 fusion, ICP-AES	ME-MS85	?	LiBO2 fusion, ICP-MS
Ba >4%	GO_XRF77B	0.2–100%?	S_2O_7 fusion, XRF	ME-MS41	0.5–10000 ppm	AR digest, ICP-MS
Bi	GE_ICM14B	0.02–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
Hg	GE_ICM14B	0.01–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.01–10000 ppm	AR digest, ICP-MS
S	GO_ICP90Q	0.01–30%?	Na_2O_2 fusion, ICP-AES	ME-ICP81	0.01–60 %	Na_2O_2 fusion, ICP-AES
				ME-MS41	0.01–10 %	AR digest, ICP-MS
Sb	GE_ICM14B	0.05–10000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.05–10000 ppm	AR digest, ICP-MS
Se	GE_ICM14B	1–1000 ppm	AR digest, ICP-AES, -MS	ME-MS41	0.2–10000 ppm	AR digest, ICP-MS

QA/QC program

Quality assurance and control for Au, Ag, Cu, Fe, Pb and Zn assays was monitored through the insertion of Certified Reference Material (CRM) and blanks at alternating 20th sample intervals within the drill core sample sequence. The selection and insertion of low-, medium- or high-grade CRMs was matched to the visually estimated grade of surrounding mineralization. The selected CRM were manufactured from sulphide ore with a similar mineralogy to the ABM deposit and are generally certified for Cu, Pb, Zn and Fe at the percent level, as well as Au and Ag at the ppm level. Quartz washes were requested after particularly high-grade samples.

Six different CRMs were utilised in the 2016 KZK Project (Table 2), with CND-ME-1311 used to match low-grade intervals, OREAS 621 and OREAS 623 used for medium grade and OREAS 113, GBM310-16 and G312-4 used to match the highest grades. Certification details for each of these CRM were provided in last year's QA/QC report (Voordouw, 2016b). Back-to-back insertion of standards was done where intervals were inferred to be both moderate- to high-grade and poly-metallic. A minimum weight of 100 g was used for CRM samples so that reanalyses could be completed if required. Each CRM sample has its own unique sample number.

Blank material consisted of landscaping stone acquired from Premier Horticulture Ltd. in 18 kg bags. Ten of these blank samples were calibrated in 2015(Voordouw, 2016b) and are considered acceptable for use as a blank material.

Table 2: Certified means and standard deviations (SD) for CRMs used in 2015 KZK Project

CRM Name	Threshold	Ag (ppm)		Au (ppm)		Cu (%)		Fe (%)		Pb (%)		Zn (%)	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
CDN-ME-1311	Low-grade	44.9	1.1	0.839	0.033	0.468	0.011			0.303	0.006	1.12	0.02
OREAS 621	Medium-grade	69.0	6.7	1.250	0.042	0.368	0.017	3.71	0.11	1.33	0.06	5.22	0.22
OREAS 623	Medium-grade	22.7	3.5	0.827	0.039	1.73	0.09	13.45	0.38	0.247	0.010	1.03	0.04
OREAS 113	High-grade					13.3	0.5	28.0	2.1	0.025*	0.001*	0.4158	0.0196
GBM310-16	High-grade	314.3	14.9							11.26	0.50	17.02	0.68
G312-4	High-grade			5.30	0.22								

Notes: * = not used to monitor QA/QC for 2016 KZK Project; blank cells = not certified;

Criteria for failure and re-assay

The three criteria used to flag CRM and blank samples as "QA/QC failures" include:

(i) Any CRM sample with a Z-score >3 standard deviations (SD) from the mean ("3-SD failures");
(ii) Two consecutive, or two out of three consecutive, CRM samples with Z-scores between 2 and 3 SDs from the mean ("2-SD failures"); Z-scores must be of the same sign (i.e. positive or negative) and for the same element;
(iii) Any blank sample returning >10 times the analytical detection limit (*dl*).

When a CRM or blank exceeds one of the three failure thresholds defined above, a request for re-analysis also depends on whether it is associated with "mineralized" core samples or not. Minimum values used to define the boundary between "mineralized" and unmineralized" are in Table 3.

For failed CRMs and blanks, the "associated core samples" are the 10 sample numbers preceding the CRM/blank and the 10 sample numbers that follow it, meaning each CRM/blank is typically associated with 20 samples. A CRM/blank occurring near the beginning or end of a certificate may have a lower number of associated core samples whereas those occurring near a sequence-numbering switch may have a lower or higher number.

Table 3: Detection and mineralized limits for selected precious and base metals

Element	Detection limit (dl)	10x *dl*	"Mineralized"
Ag	0.3 g/t	3 g/t	20 g/t
Au	0.005 g/t	0.05 g/t	0.1 g/t
Cu	0.01%	0.10%	0.10%
Fe	0.05%	0.50%	n/a
Pb	0.01%	0.10%	0.50%
Zn	0.01%	0.10%	0.50%

REVIEW OF CERTIFIED REFERENCE MATERIALS

This section reviews the performance for each of the four certified reference materials (CRMs) used on the 2016 KZK Project. Two of the high-grade standards (OREAS 113, G312-4) were not used in 2016.

A summary of CRM analyses is shown in Table 4 whereas Shewart charts for Au, Ag, Cu, Fe, Pb and Zn are attached as Appendix M-A at the end of this report. The total number of failures for each CRM are summarized in Table 5 and Appendix M-B.

Table 4: Mean values and % difference (relative to certified mean) for CRMs used in 2016 KZK Project

Standard	Description	N.o. Analyses	Ag (ppm)	Au (ppm)	Cu (%)	Fe (%)	Pb (%)	Zn (%)
CDN-ME-1311	Certified mean	65	44.9	0.839	0.468		0.303	1.12
	Measured mean		44.6	0.846	0.464		0.308	1.14
	% difference		-0.76%	0.87%	-0.76%		1.70%	1.68%
OREAS 621	Certified mean	34	69	1.25	0.368	3.71	1.33	5.22
	Measured mean		68	1.27	0.357	3.75	1.35	5.18
	% difference		-1.18%	1.46%	-2.97%	1.07%	1.24%	-0.73%
OREAS 623	Certified mean	34	22.7	0.827	1.73	13.45	0.247	1.03
	Measured mean		20.3	0.818	1.74	13.52	0.251	1.05
	% difference		-10.78%	-1.09%	0.85%	0.50%	1.81%	2.14%
GBM310-16	Certified mean	1	314.3				11.26	17.02
	Measured mean		306				11.30	17.00
	% difference		-2.64%				0.36%	-0.12%
Weighted average		**134**	**-3.42%**	**0.52%**	**-0.91%**	**0.79%**	**1.60%**	**1.17%**

Table 5: Summary of 3-SD and 2-SD failures for all CRM used in 2016 KZK Project

CRM	N	Ag		Au		Cu		Pb		Zn		Total (N.o.)		Total (%)	
		3-SD	*2-SD*	*3-SD*	*2-SD*	*3-SD*	*2-SD*	*3-SD*	*2-SD*	*3-SD*	*2-SD*	*3-SD*	*2-SD*	*3-SD*	*2-SD*
CDN-ME-1311	65	0	0	0	0	0	0	0	0	0	1	0	1	0.0%	1.5%
OREAS 621	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%
OREAS 623	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%
GBM310-16	1	0	0	n/a	n/a	n/a	n/a	0	0	0	0	0	0	0.0%	0.0%
Total	**134**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0.0%**	**0.8%**

Notes: "0" = no failures

CDN-ME-1311

This CRM is manufactured by CDN Resource Laboratories in Langley, BC, Canada, and consists of material from the Campo Morado VMS deposit in Mexico. It is certified for Ag, Au, Cu, Pb and Zn with mineralogy comprising pyrite, quartz, ankerite, sphalerite, chalcopyrite and galena, as well as trace tennanite-freibergite, arsenopyrite and pyrrhotite. Pulp material is packaged in either 60 or 100 g paper envelopes that are individually vacuum-sealed and labelled with a sticker.

A total of 67 of these CRM are noted in the drill hole database and 65 analyses were returned from SGS Vancouver. The two missing standards are related to samples that were sent to SGS but not analyzed.

Mean concentrations of Ag, Au, Cu, Pb and Zn for the 65 assays of CDN-ME-1311 lie within ±1.7% of the certified mean. The average bias for silver and copper is negative and averages -0.7 to -0.8% whereas Au, Pb and Zn show positive bias between +0.9 to +1.7%.

One quality control failure was recorded for CDN-ME-1311, comprising two consecutive Zn assays with Z-scores between +2 and +3 (i.e. 2-SD failure). The failure rate of 1.5% is notably lower than last year's 3.4% for CDN-ME-1311 (Voordouw, 2016b). No re-assay work was done to address this QA/QC failure, which is consistent with how 2-SD failures were handled in 2015.

OREAS 621

OREAS 621 is manufactured by Ore Research & Exploration Pty Ltd of Bayswater North, Australia, ("Ore Research") and consist of zinc VMS ore from Gossan Hill, Western Australia, blended with barren rhyodacite that hosts and underlies the deposit. Certified elements relevant to the KZK project include Ag, Au, Cu, Fe, Pb and Zn (Table 2). Ore mineralogy consists mostly of sphalerite and chalcopyrite with lesser amounts of galena, in addition to pyrite, pyrrhotite and magnetite. Pulp material is packaged in 60 g laminated foil packets with nitrogen flush to prevent oxidation, and so two packets were submitted for each OREAS 621 sample number in order to exceed the minimum 100 g threshold. The packets come pre-printed with the CRM label that can be removed with a solvent.

Thirty-four OREAS 621 standards were noted in the drill hole database and were assayed by SGS, meaning every one of these standards that was submitted was also analyzed. Mean concentrations of Ag, Au, Cu, Fe, Pb and Zn all lie within ±3.0% of the certified mean (Table 6). Silver, Cu and Zn show a negative bias (-0.7 to -3.0%), whereas gold, Fe and Pb show positive bias of +1.1 to +1.5% (Table 6).

No QC failures were recorded for OREAS 621 in 2016 (Table 7), as compared to a failure rate of 0.5% in 2015.

OREAS 623

OREAS 623 is also manufactured by Ore Research and, likewise, consists of zinc VMS ore from Gossan Hill that is blended with barren rhyodacite. Certified elements include Ag, Au, Cu, Fe, Pb and Zn (Table 2). Ore mineralogy consists mostly of sphalerite and chalcopyrite with lesser amounts of galena, in addition to pyrite, pyrrhotite and magnetite. Pulp material is provided in 60 g laminated foil packets with a nitrogen flush to prevent oxidation, and so, once again, two packets were needed to exceed the minimum 100 g threshold. The packets come pre-printed with the CRM label that is removed with a solvent.

Thirty-four OREAS 623 standards were noted in the drill hole database and 34 analyses were returned from SGS. Mean abundances for most base and precious metals lies within ±2.1% of the certified mean, with the exception of silver (-10.8%). Gold also shows a negative bias (-1.08%) whereas Cu, Fe, Pb and Zn show a mean positive bias between 0.5% to 2.1%. For silver, the high ratio of the certified standard deviation (6.7 ppm) to the mean (68.7 ppm) prevented QA/QC failures even though the average CRM assay was 10.8% below the certified mean. A similar low bias of -10.6% was recorded for this CRM in 2015 (Voordouw, 2016b).

There were no quality control failures for OREAS 623 in comparison to a failure rate of 1.4% in 2015.

GMB310-16

GBM310-16 was sourced from GeoStats Pty Ltd ("GeoStats") of O'Connor, Western Australia, and is prepared from zinc sulphide ore. Certified elements include Ag, Pb and Zn (Table 6). This CRM is generally available in 20 g heat-sealed plastic packets but were likewise provided in custom 100 g packets for the 2015 KZK Project.

Just a single GBM310-16 standard was noted in the drill hole database and analysed by SGS. Mean abundances of Ag, Pb and Zn all lie within ±2.6% of the certified mean (Table 6). Silver shows a negative average bias of -2.6%, which is similar to the 2015 value of -2.4%, whereas Pb and Zn show mean bias 0.4% and -0.1% respectively.

No quality control failures were recorded for this standard in 2016.

REVIEW OF BLANKS

Blank material used on the 2016 KZK Project comprised landscaping stone acquired from Premier Horticulture Ltd. ("Premier") in 18 kg bags. One hundred and five blanks are recorded in the drill hole database and 102 of these were assayed by SGS. The three "missing" blanks were sent to SGS but were not analyzed as per request.

On average, >89% of blank assays returned values for base and precious metals that were less than the detection limit (*dl*) (Table 6). Copper, Pb and Zn showed the lowest levels of contamination, with >98% of blanks assays below detection. Contamination levels for gold and Zn were slightly higher whereas only 33% of Fe assays returned values below detection. Low-level but pervasive Fe contamination may be related to the Fe-rich nature of most analyzed rocks and/or the processing equipment. Whatever the case, the maximum levels of Fe contamination are insignificant compared to its abundance within the assayed material and, in addition, irrelevant to the resource calculation.

There were no blank analyses that exceeded the failure threshold of 10 x *dl*, indicating that assays are generally free of contamination.

Table 6: Summary statistics for blanks analyzed as part of 2016 KZK program

Statistic	Ag	Au	Cu	Fe	Pb	Zn
Detection limit	0.3 ppm	0.005 ppm	0.01%	0.05%	0.01%	0.01%
Mean (N = 102)	<dl	<dl	<dl	0.06%	<dl	<dl
N.o. samples <*dl*	100	96	101	34	101	91
% of samples <*dl*	98.0%	94.1%	99.0%	33.3%	99.0%	89.2%
N.o. samples >10 x *dl*	0	0	0	0	0	0
% of samples >10 x *dl*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum assay	0.6 ppm	0.007 ppm	0.02%	0.36%	0.03%	0.03%
Maximum assay/*dl*	2.0	1.4	2.0	7.2	3.0	3.0

CHECK ASSAYS

Two check assay programs were done in 2016, the first to confirm assays from the Krakatoa drilling program (Hughes, 2016) and the second for the GP4F work (Voordouw, 2016a). For both of these check assay programs, pulps were sent from SGS to ALS Minerals ("ALS") in North Vancouver, BC, Canada, for geochemical analysis of base (Cu, Pb, Zn) and precious (Ag, Au) metals, as well as Fe. The ALS lab in North Vancouver is an ISO 9001:2008 certified laboratory (accredited laboratory No. 579) that also conforms with the requirements of CAN-P-1579 and CAN-P-4E (ISO/IEC 17025-2005) for the analytical methods used, which are analogous to those used by SGS Vancouver (Table 1).

All check assay pulp samples submitted to ALS were analyzed for Ag, Au, Cu, Fe, Pb and Zn. Gold was analysed by 30 g fire assay with an AAS finish and silver analysed by ICP with an AAS finish. The silver over limit analysis was triggered at Ag >250 g/t, resulting in re-analysis using a 30 g fire assay with gravimetric finish. Over limit analysis for Au was not requested. Copper, lead, zinc and iron assays were done with sodium peroxide fusion and ICP-AES analysis. This fusion results in complete digestion of the sample and so provides a near total chemical analysis.

Nine CRMs and two blanks were submitted with the check assays, with CRMs comprising four CDN-ME-1311, three OREAS 621 and two OREAS 623. Two of the CDN-ME-1311 assays returned Z-scores of -3.6 for silver, thereby comprising a 3-SD failure. These samples were not re-assayed. All of the other CRM and blank assays appear to be accurate and free of contamination.

Gold assays reported by ALS are an average of 6.5% higher than the SGS analyses (Table 7), which themselves assayed an average of 0.5% above the certified CRM means (Table 6). This suggests that SGS assays are more accurate than ALS. The Pearson correlation coefficient (ρ) for the two datasets is 0.94, which is somewhat low in comparison to the other precious and base metals (see below). Removal of sample D00004396, which assayed 7.5 g/t Au by ALS and 10.58 g/t Au with SGS, has a marked effect on all comparative statistics, increasing the positive bias of the ALS data (to +11.0%) but also improving the correlation with SGS data (R^2 = 0.95, ρ = 0.97)

Table 7: Selected statistics for SGS original assays and ALS check assays

Analysis	Unit	Au (ppm)		Ag (ppm)		Cu (%)		Fe (%)		Pb (%)		Zn (%)	
		ALS	*SGS*	*ALS*	*SGS*	*ALS*	*SGS*	*ALS*	*SGS*	*ALS*	*SGS*	*ALS*	*SGS*
Samples	N.o.	52	52	52	52	52	52	52	52	52	52	52	52
Samples >*dl*	N.o.	42	45	50	50	46	50	52	52	42	42	51	51
Mean	ppm or %	1.54	1.44	120	124	0.23	0.24	16.7	16.9	2.0	2.1	4.29	4.29
Mean bias	%	6.5%		-3.2%		-1.8%		-1.6%		-3.1%		-0.2%	
Median	ppm or %	0.54	0.71	72.5	80.4	0.13	0.14	14.5	14.4	1.0	1.0	3.615	3.6
Median bias	%	-24.4%		-9.9%		-5.7%		0.5%		-3.8%		0.4%	
Min	ppm or %	<0.01	<0.005	<0.2	<0.3	<0.002	<0.01	1.7	1.8	<0.01	<0.01	<0.002	<0.01
Max	ppm or %	7.52	10.58	397	426	1.08	1.04	39.3	44.2	9.85	9.99	16.9	17.6
Range	ppm or %	7.52	10.58	397	426	1.08	1.04	37.6	42.4	9.85	9.99	16.9	17.6
Standard dev	ppm or %	1.98	2.00	129	134	0.28	0.28	10.4	10.7	2.38	2.46	4.43	4.50
R2 value (samples >*dl*)		0.89		0.99		1.00		0.99		1.00		1.00	
Pearson correl (samples >*dl*)		0.94		1.00		1.00		1.00		1.00		1.00	

Silver values determined by ALS are, on average, 3.2% lower than the SGS values, with a Pearson correlation coefficient (ρ) of 1.00 between the two data sets. The negative average bias for ALS check assays would be on top of the negative bias for SGS assays relative to CRM means, suggesting ALS silver assays are less accurate than SGS.

ALS copper assays are an average of 1.8% lower than the SGS assays and correlation between the two data sets is high (ρ = 1.00). The negative ALS bias is on top of the negative bias recorded by the SGS assays relative to certified CRM means, suggesting that the SGS assays are more accurate than ALS.

Iron values are an average of 1.6% lower in the ALS dataset relative to SGS, whereas SGS returned values an average of 0.8% higher than the certified means for the CRM. These results suggest that ALS and SGS assays for Fe have comparable accuracy. Measurements of correlation (R^2, ρ) are range from 0.99–1.00.

Pb assays are on average of 3.1% lower in the ALS data relative to SGS assays, essentially counterbalancing the 1.6% positive bias shown by SGS assays against certified CRM means. Measurements of correlation (R^2, ρ) are both 1.00. The Pb analyses reported by both ALS and SGS are therefore considered accurate and comparable.

Check assays for Zn are, on average, nearly identical to the original SGS assays, showing an average difference of just 0.2%. Relative to the certified CRM means, the SGS assays are an average of 1.2% higher. Measurements of correlation between ALS and SGS datasets (R^2, ρ) are both 1.00. Zn assays by ALS and SGS are therefore comparable and are both biased at approximately +1%

Results of the Krakatoa and GP4F check assay programs therefore both indicate that base metal (Cu, Fe, Pb, Zn) and precious metal (Ag, Au) assays are accurate, although with a bit more variability within the precious metal results.

DISCUSSION AND CONCLUSIONS

The quality assurance (QA) protocols used as part of the 2016 KZK geochemical assay program followed industry standard by inserting a minimum of 10% QA/QC samples (CRMs, blanks, check assays) within the core sample stream. This 10% considers only those QA samples inserted and requested by BMC, and does not include the internal QA/QC monitoring done by SGS and ALS. Both the SGS and ALS lab facilities are ISO 9001:2008 certified for the analytical methods used on the 2016 KZK Project.

Quality control of CRM and blank analyses was monitored in as close to real-time as possible. Only one failure was recorded for the core assays, comprising a 2-SD failure for which no re-assay was requested. Two additional 3-SD failures were returned by ALS as part of the check assay program, but no re-assay was requested. None of the blank analyses exceeded the failure threshold of ten times the detection limit. As a result, QC monitoring of the 2016 KZK assays suggests that the results are generally accurate and free of contamination.

Gold assays of CRM averaged 0.5% higher than the certified mean, which corresponds to an error of 5–10 ppb Au (or 0.005–0.01 g/t) at typical ABM resource grades of 1.0–1.5 g/t Au. No QA/QC failures (CRMs or blanks) were recorded for gold assays. The ALS check results show a reasonable correlation with SGS data (ρ = 0.94) and are an average of 6.5% higher than SGS analyses. When compared with the weakly positive bias of SGS relative to CRM, the check assay results suggest that the SGS analyses are more accurate than those done by ALS.

Silver assays of CRM returned an average analytical bias of -3.4%, equal to an error of around 5 g/t at typical ABM resource grades of 140 g/t Ag. An exceptionally high bias of -10.8% was recorded for OREAS 623 and is likely a function of its low certified grade (22.7 ppm) and the relatively high detection limit for the analytical method employed (0.3 ppm). No CRM or blank failures were recorded for the core assays although two 3-SD failures occurred as part of the check assay program, neither of which was followed up with re-assay. Check assay results indicate strong correlation between ALS and SGS datasets (ρ = 1.00), with ALS assays averaging 3.2% lower than SGS. Since the SGS assays were already negatively biased relative to the CRMs, it appears that SGS assays are, again, more accurate than ALS.

Copper assays of CRM were, on average, 0.9% lower than the certified mean, which equates to an error of 0.009% (90 ppm) on typical resource grades of 0.9%. The ALS copper assays show very strong correlation with SGS analyses but are an average of 1.8% lower. The negative bias in the ALS data is on top of the negative bias of SGS assays relative to CRMs, suggesting that the SGS assays are more accurate than ALS. No QA/QC failures were recorded.

CRM analyses for iron averaged 0.8% higher than the certified mean with no QA/QC failures. The ALS analyses were an average of 1.6% lower than SGS, thereby counterbalancing the positive bias shown in the SGS data. The iron analyses done by ALS and SGS are therefore of comparable accuracy.

Pb assays of standards were an average of 1.6% higher than the certified mean, which equates to an error of 0.024% (or 240 ppm) for typical ABM resource grades of 1.5% Pb. No QA/QC failures were recorded for either CRM or blanks. Check assay results are, on average, 3.1% lower than the SGS analyses and therefore counterbalance the positive bias of SGS assays relative to CRM.

Zn assays for CRM averaged 1.2% higher than the certified mean, corresponding to an error of 0.07% (700 ppm) at typical resource grades of 5.5–6.0% Zn. A single 2-SD failure was recorded for the zinc assays and was not followed up, in accordance with 2015 procedures (Voordouw, 2016b). There were no blank failures. Check assay results show that ALS assays are an average of 0.2% lower than SGS, indicating that both data sets likely show a ~1% positive bias relative to CRMs.

In summary, the analytical biases quantified through the analyses of certified reference materials and check assays indicate that SGS core assays of Au, Ag, Cu, Pb and Zn assays are sufficiently accurate. Analytical results for blank samples indicate that these analyses are free of contamination. For these reasons, the 2016 core assay data is likely of sufficiently high quality for use in resource estimation.

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Hughes, C., 2016, 2016 Krakatoa Zone resource drilling overview and deposit geology: Unpublished Technical Document for BMC Minerals Ltd., p. 42.

Hughes, C., Voordouw, R., Jones, M. I., and Awmack, H., 2016, 2015 Geological, Geophysical, Diamond Drilling and Environmental Program Report on the Kudz Ze Kayah Property: Yukon Mining Assessment Report, p. 3,755.

Voordouw, R., 2016a, 2016 GP4F work report: Unpublished Technical Document for BMC Minerals (No. 1) Ltd., p. 25.

Voordouw, R., 2016b, Review of QA/QC results for the 2015 KZK Project: Unpublished Technical Document for BMC Minerals (No. 1) Ltd, p. 58.

Appendix M-A:

Shewart and blank charts

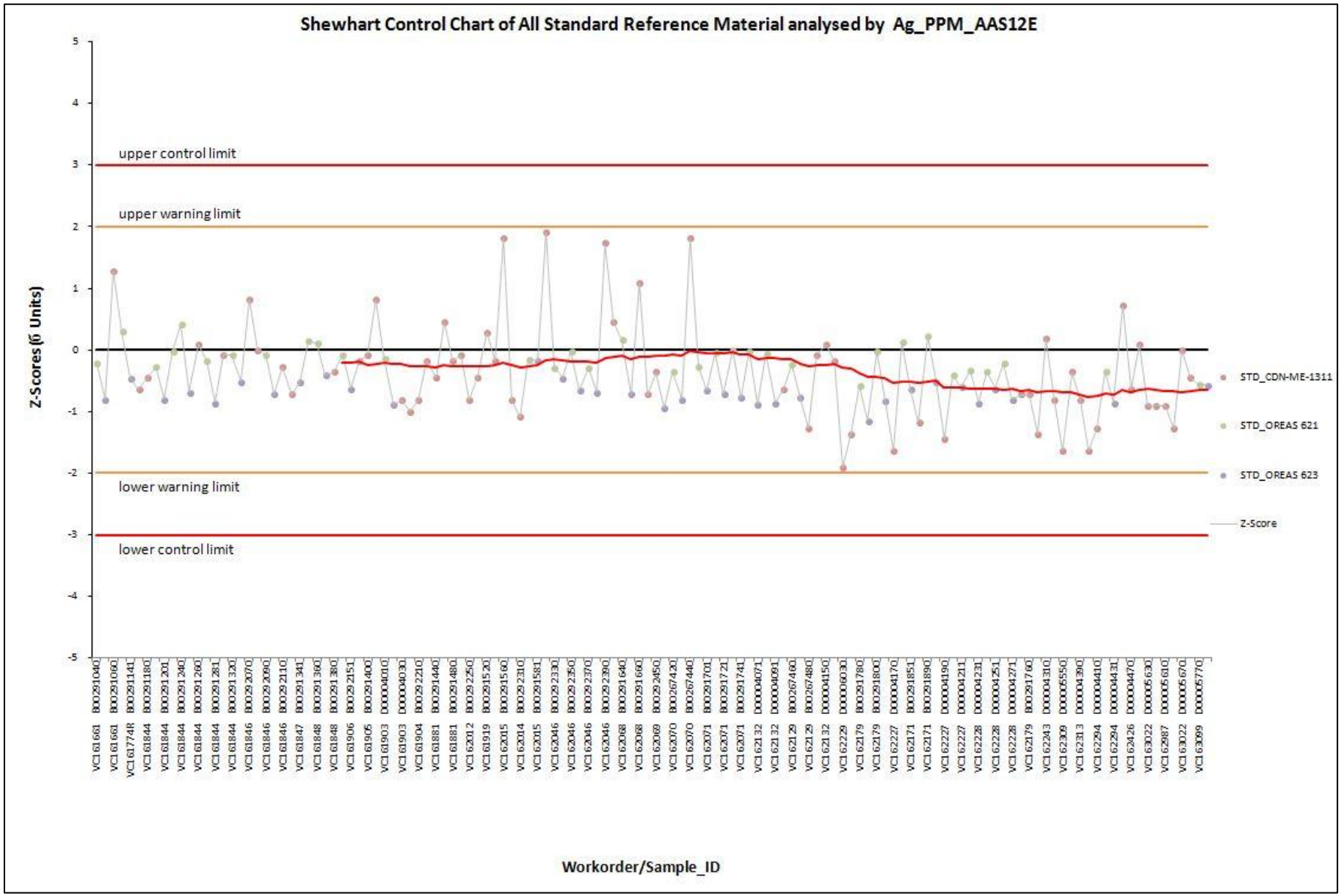


Figure M-A1: Shewart control chart for silver in CRMs. Red curved line is a moving average of 30 samples. The chart shows that all analyses are within the 2-SD warning limits. The moving average shows a weakly negative bias of SGS assays relative to the certified mean.

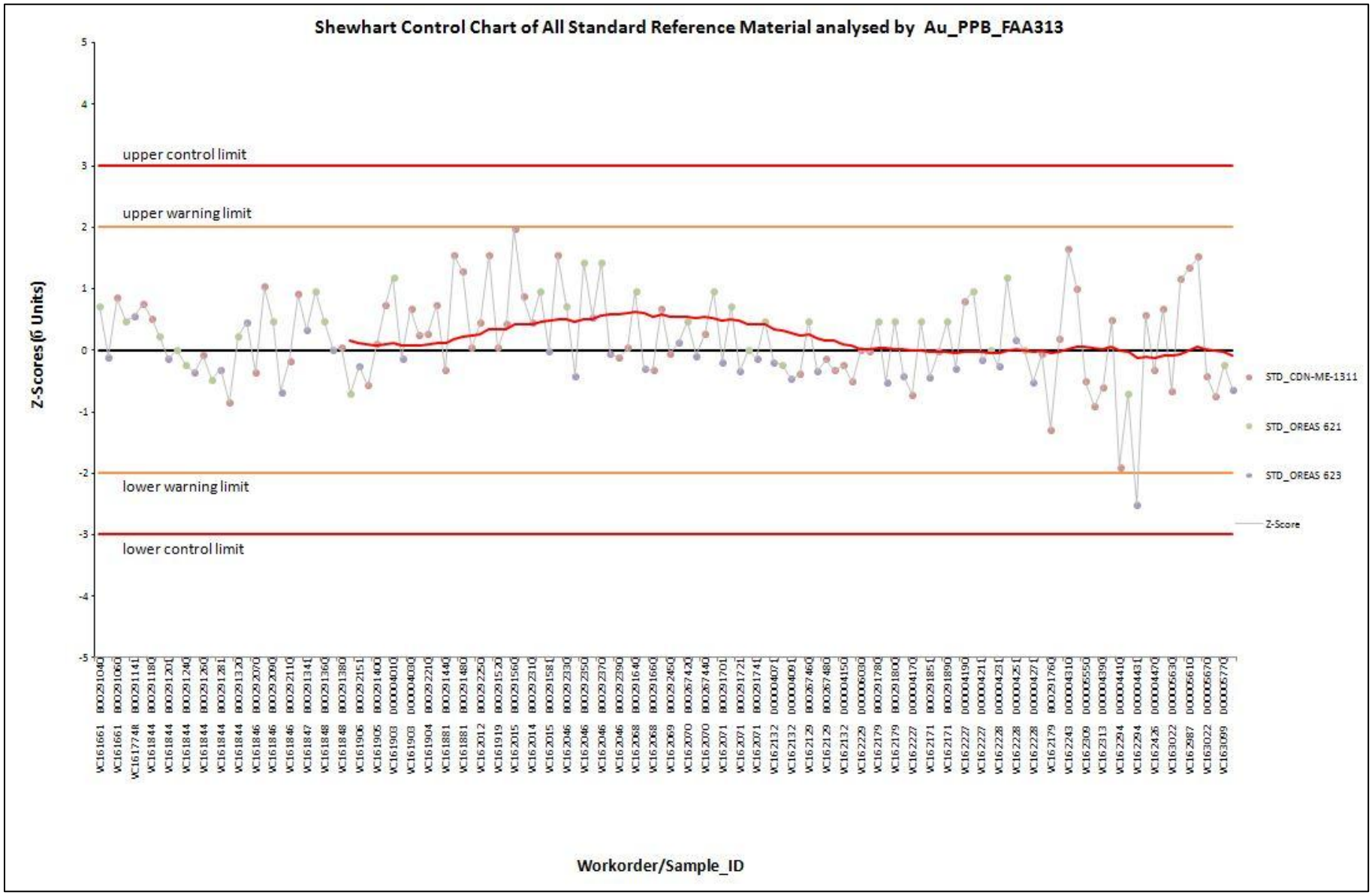


Figure M-A2: Shewart control chart for gold in CRMs. Red curved line is a moving average of 30 samples. The chart shows that most analyses, except for one, are within the 2-SD warning limits. The moving average shows a weakly positive bias of SGS assays relative to the certified mean.

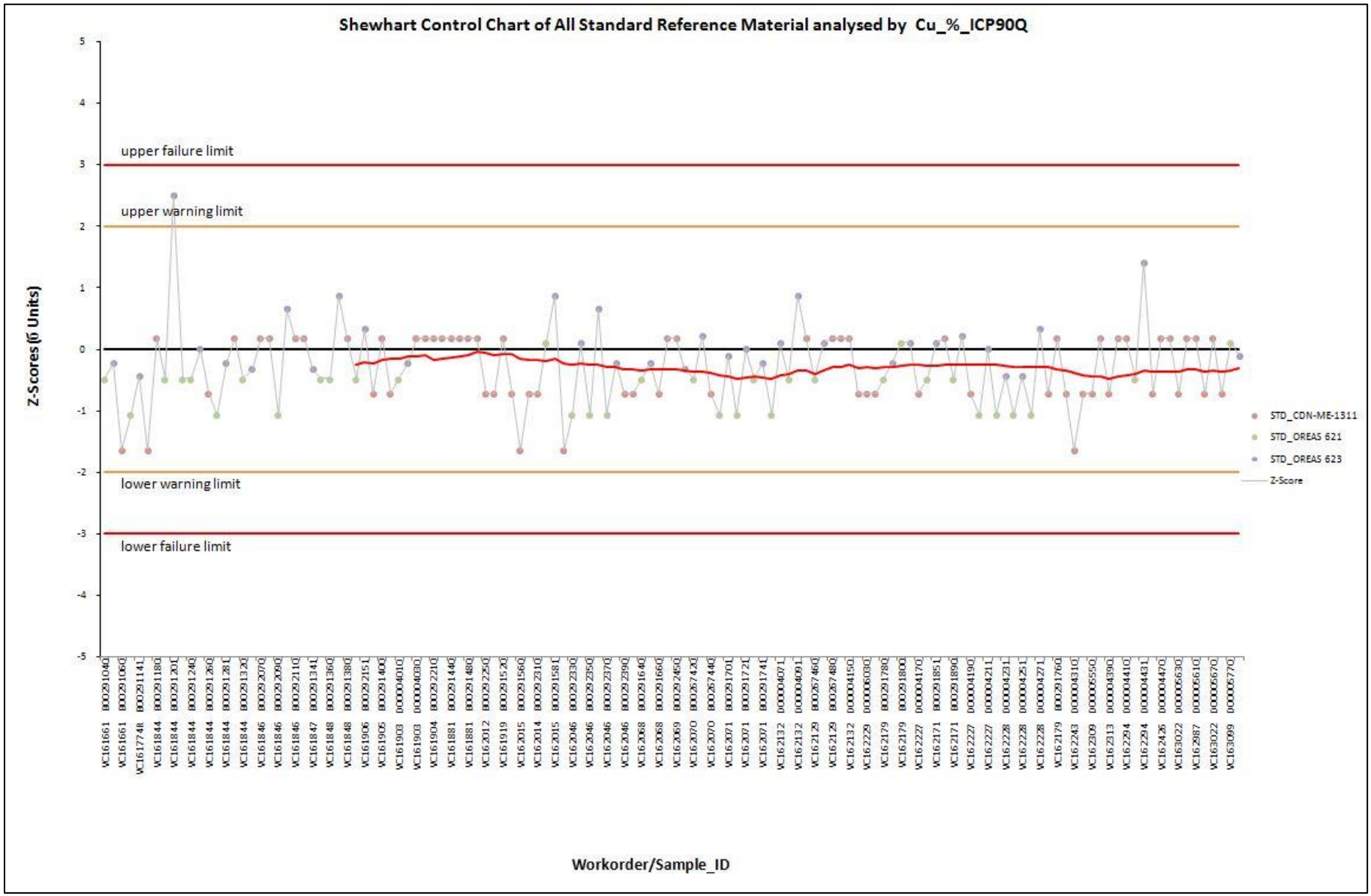


Figure M-A3: Shewart control chart for copper in CRMs. Red line is a moving average of 30 samples. The chart shows that most analyses, except for one, are within the 2-SD warning limits. The moving average shows a weakly negative bias of SGS assays relative to the certified mean.

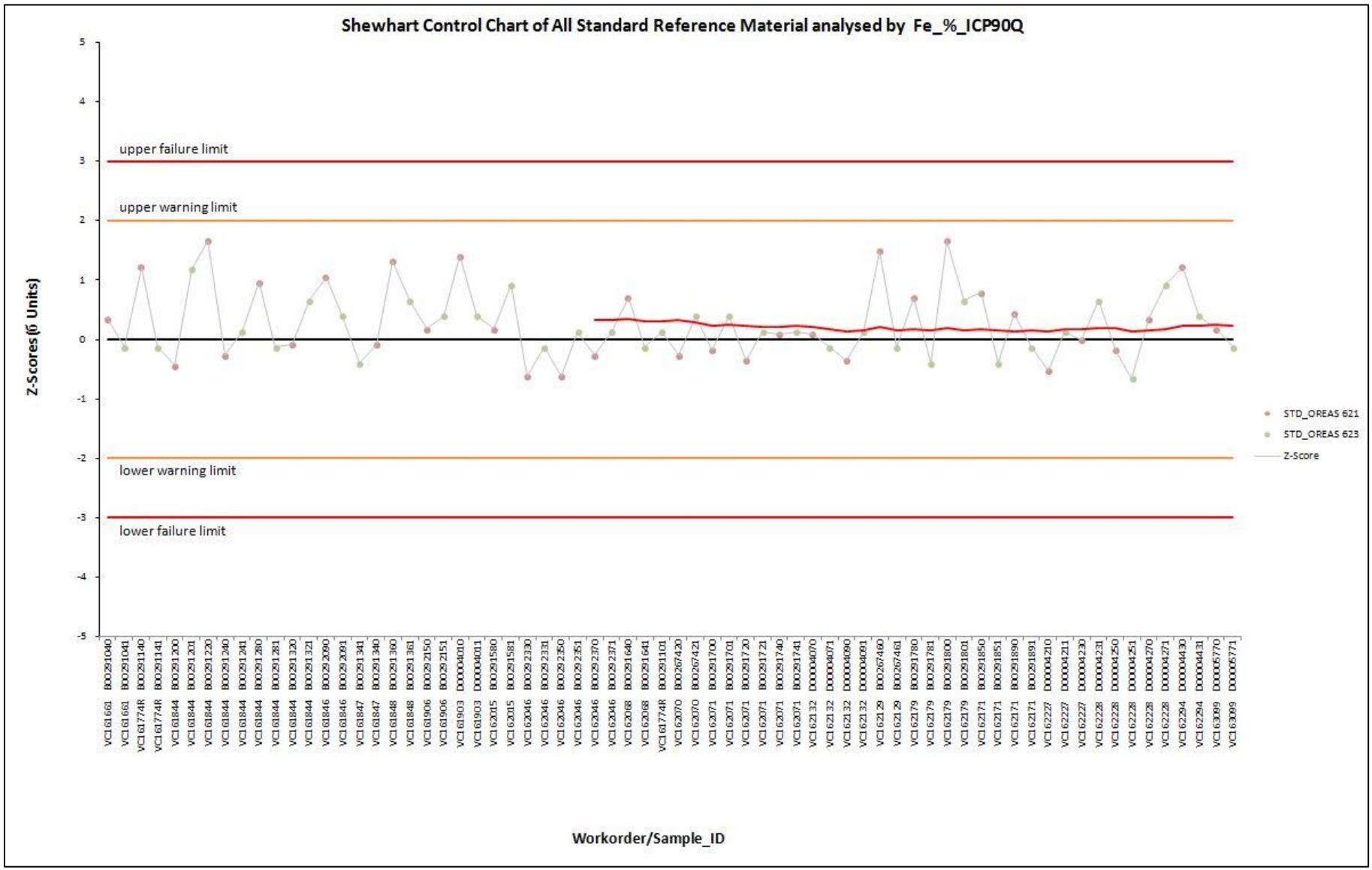


Figure M-A4: Shewart control chart for iron in CRMs. Red curved line is a moving average of 30 samples. The chart shows that all analyses are within the 2-SD warning limits. The moving average shows a weakly positive bias of SGS assays relative to the certified mean.

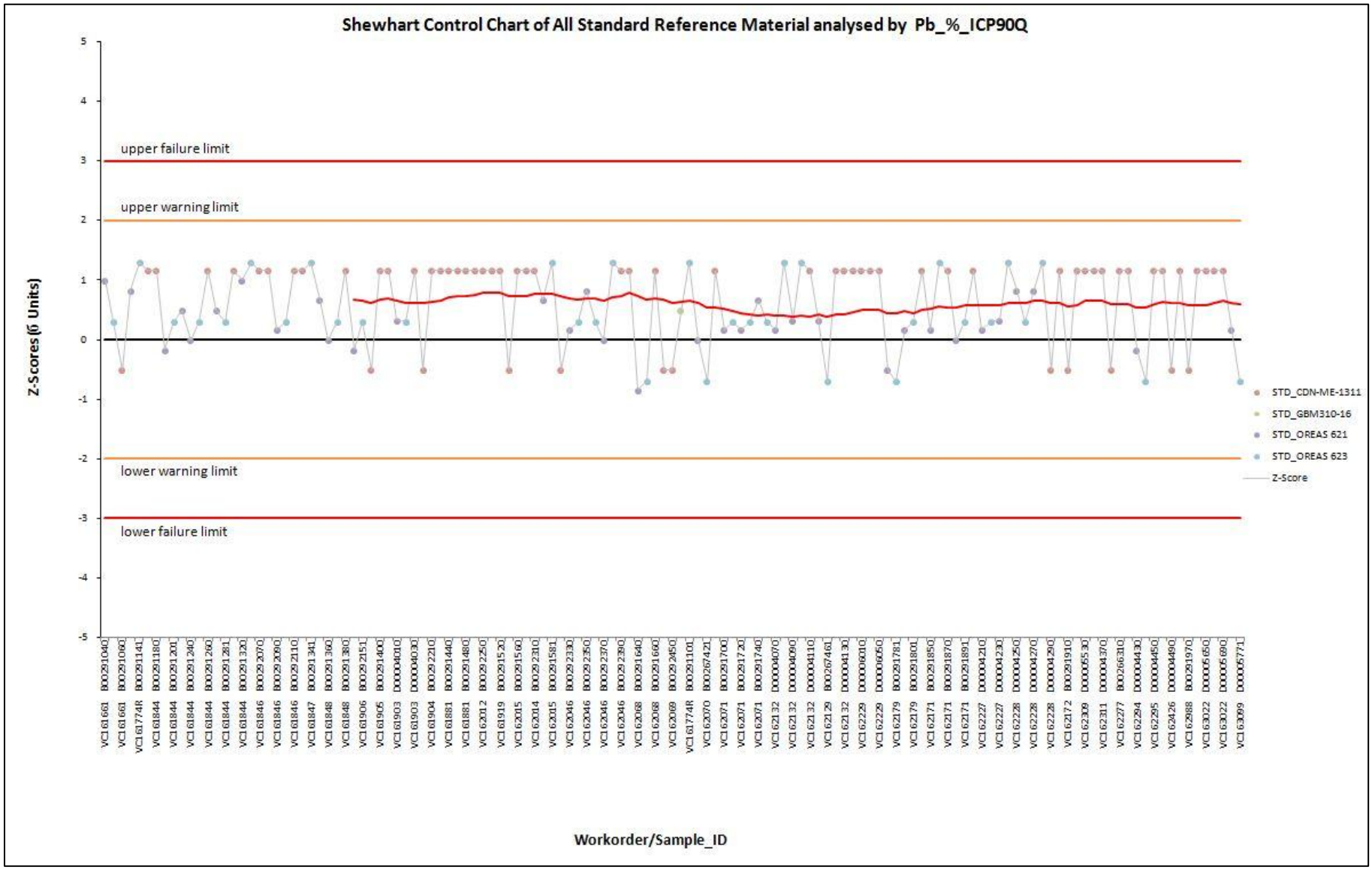


Figure M-A5: Shewart control chart for Pb in CRMs. Red curved line is a moving average of 30 samples. The chart shows that all analyses are within the 2-SD warning limits. The moving average shows a weakly positive bias of SGS assays relative to the certified mean.

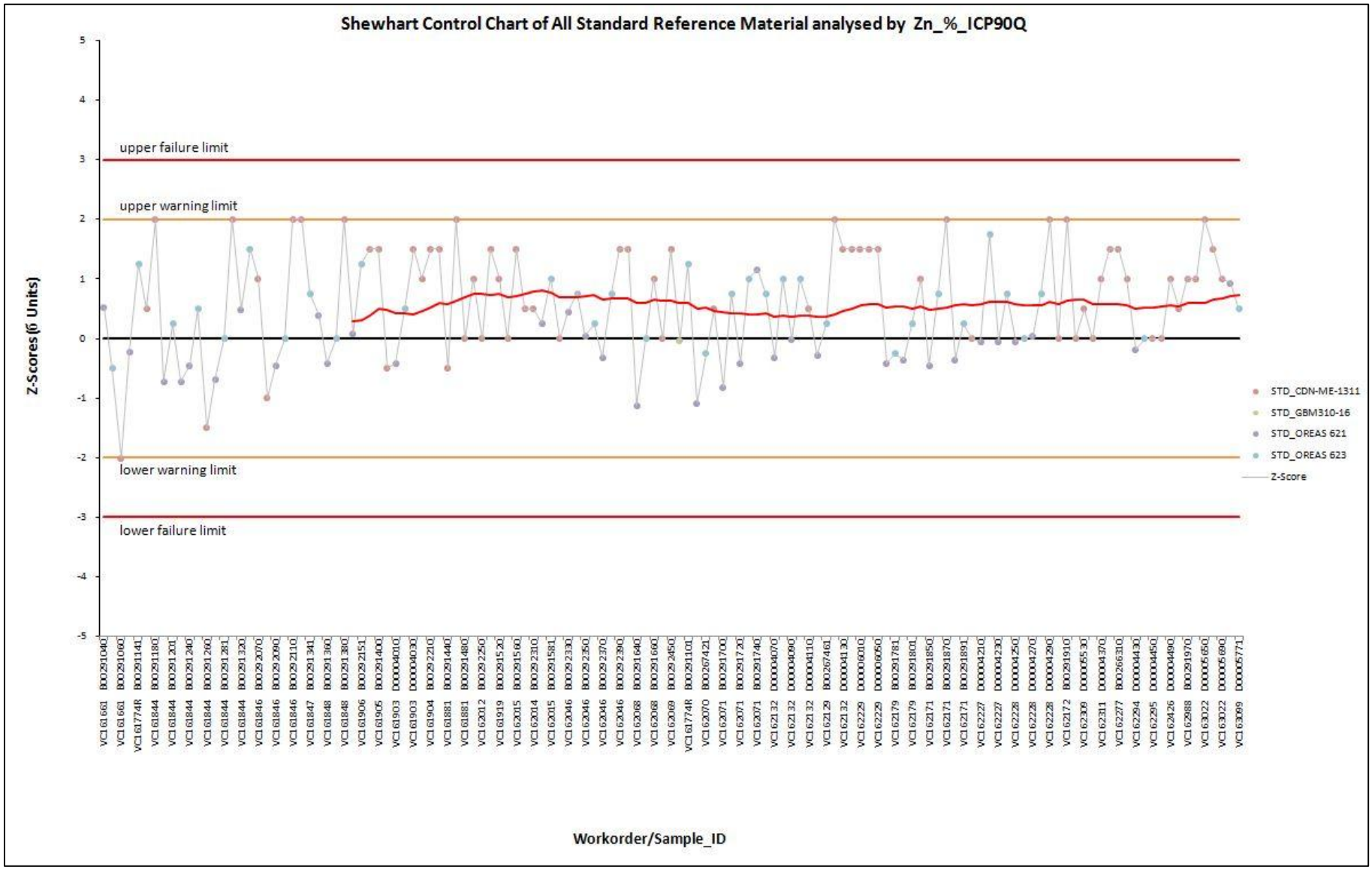


Figure M-A6: Shewart control chart for zinc in CRMs. Red line is a moving average of 30 samples. Several assays lie right on the 2-SD warning limits, with two adjacent data points comprising the 2-SD failure. The moving average shows a weakly positive bias of SGS assays relative to the certified mean.

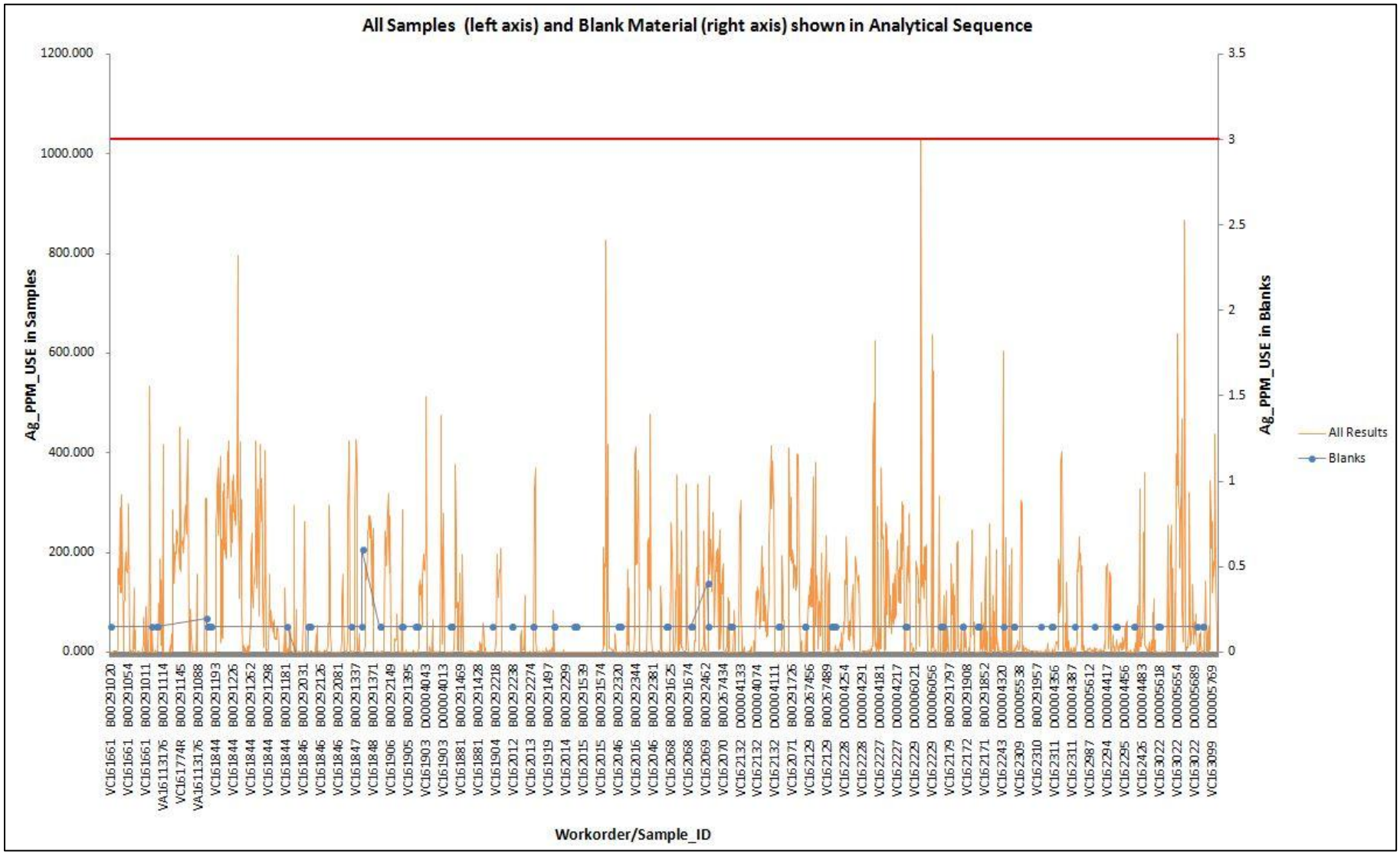


Figure M-A7: Silver in blanks (blue line and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.03 ppm so that samples analysing <*dl* are given a default value of 0.015 ppm. There are no blank analyses that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination

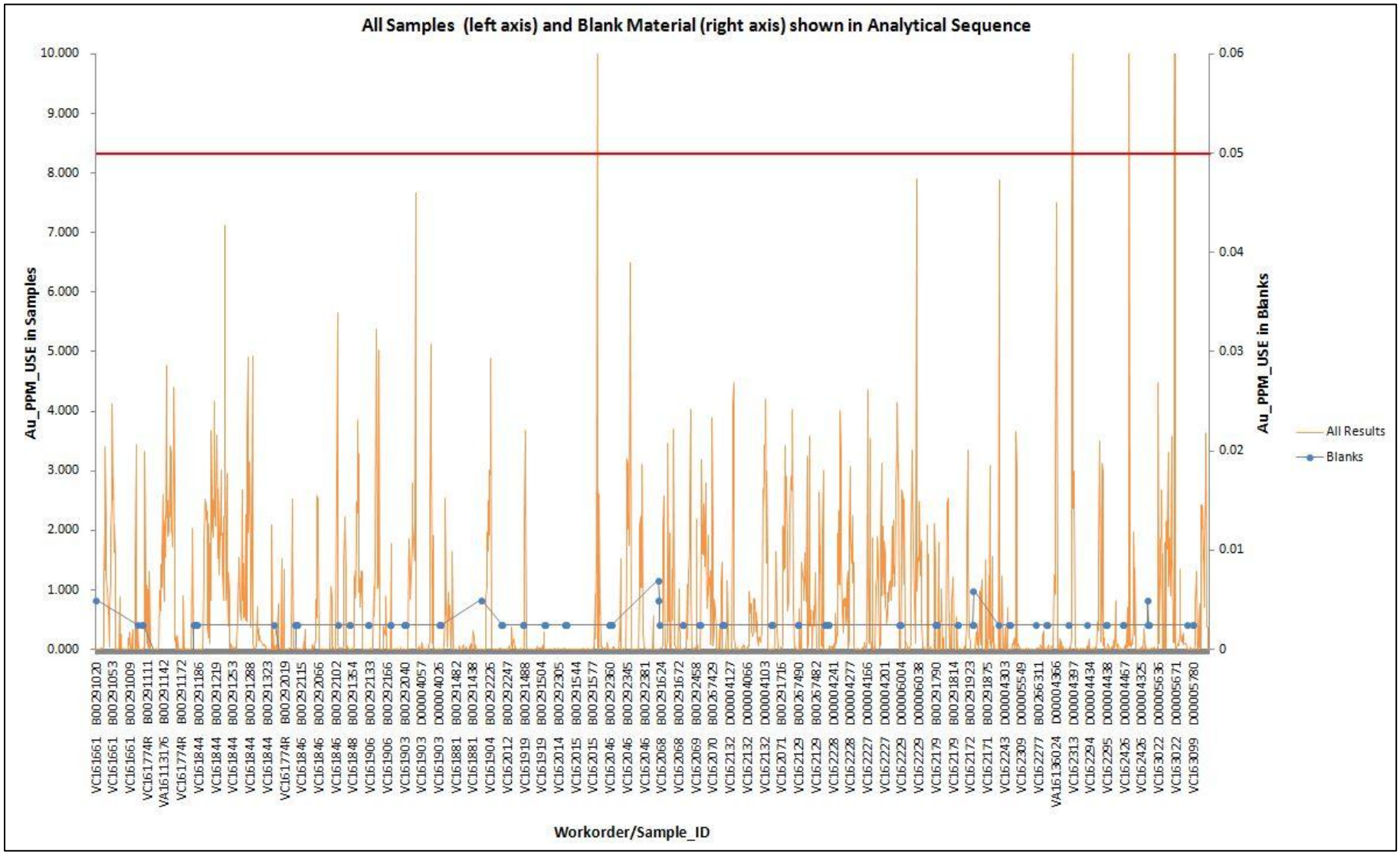


Figure M-A8: Gold in blanks (blue lines and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.005 ppm (5 ppb) so that samples analysing <*dl* are given a default value of 0.0025 ppm. There are no blank assays that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination.

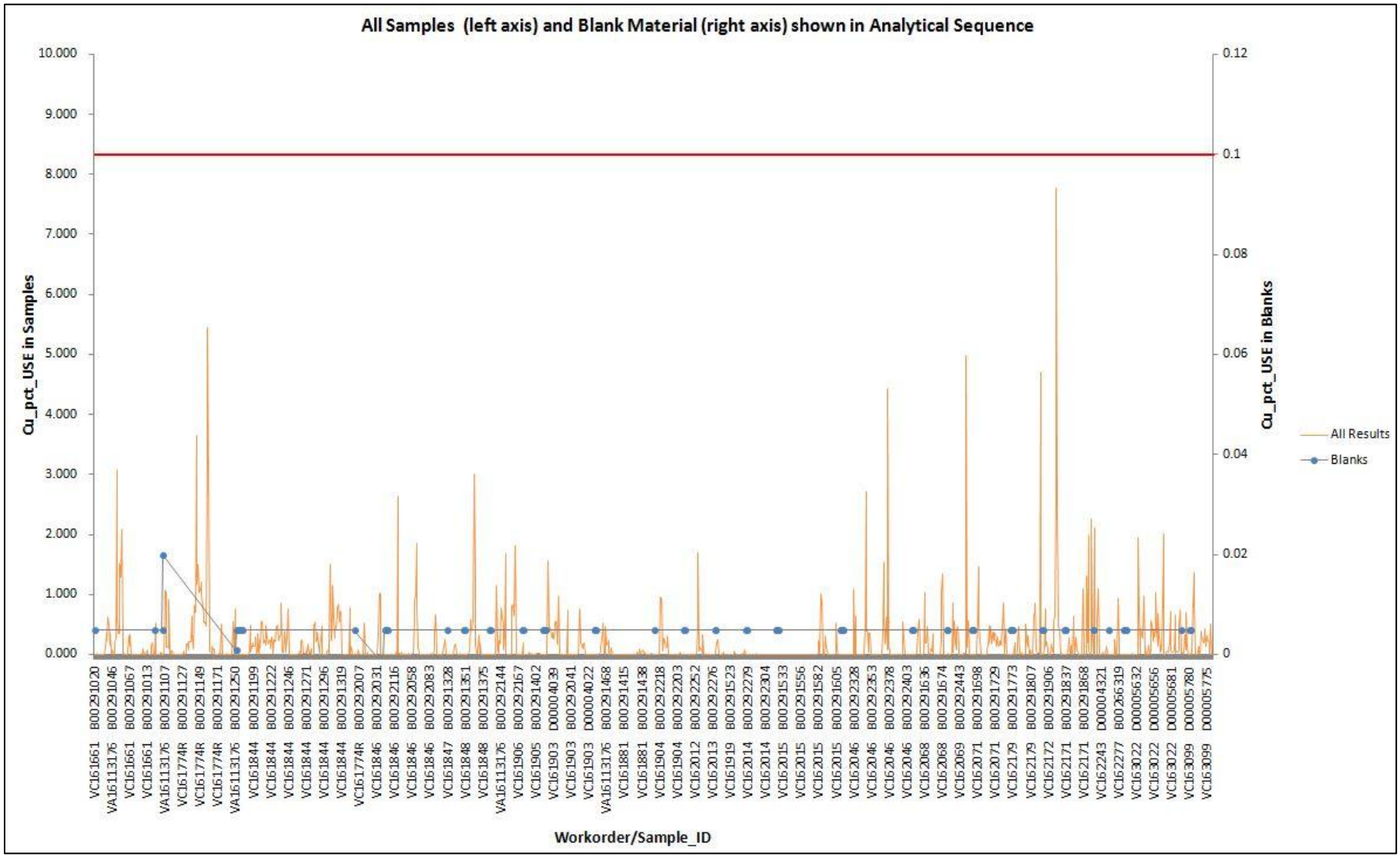


Figure M-A9: Copper in blanks (blue lines and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.01% ppm so that samples analysing <*dl* are given a default value of 0.005%. There are no blank assays that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination.

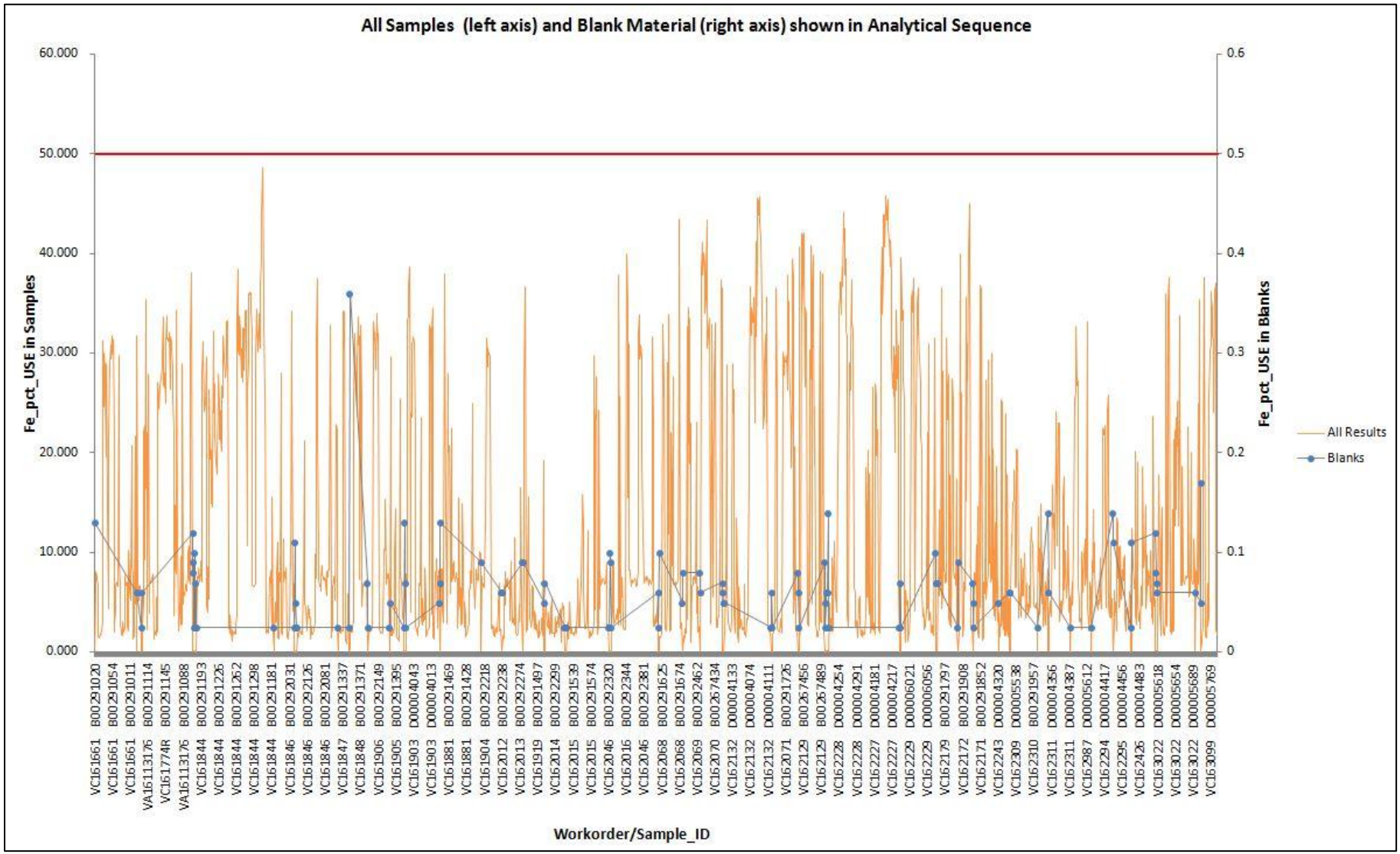


Figure M-A10: Iron (Fe) in blanks (blue lines and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.05% ppm so that samples analysing <*dl* are given a default value of 0.025%. There are no blank assays that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination.

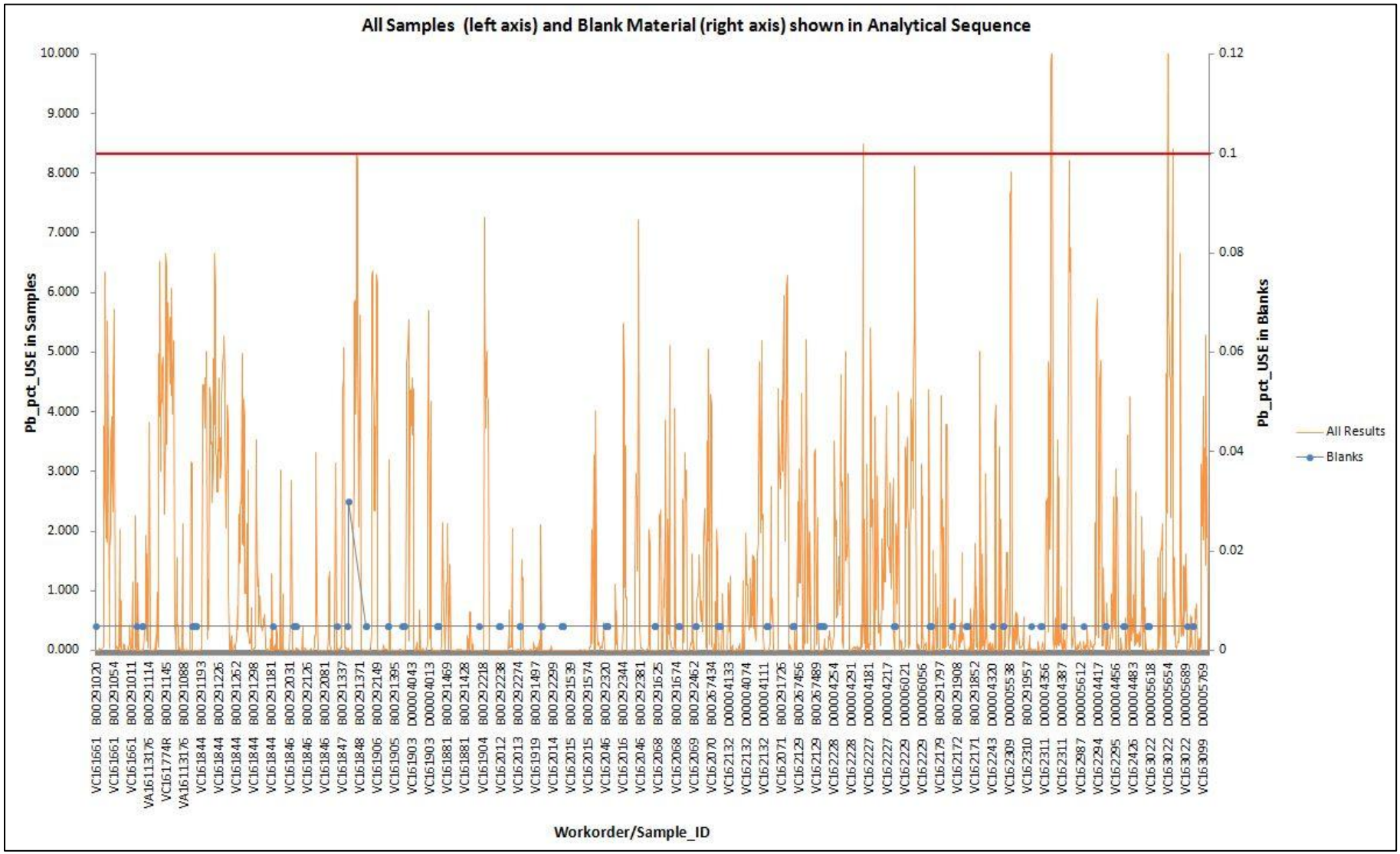


Figure M-A11: Lead in blanks (blue lines and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.01% so that samples analysing <*dl* are given a default value of 0.005%. There are no blank assays that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination.

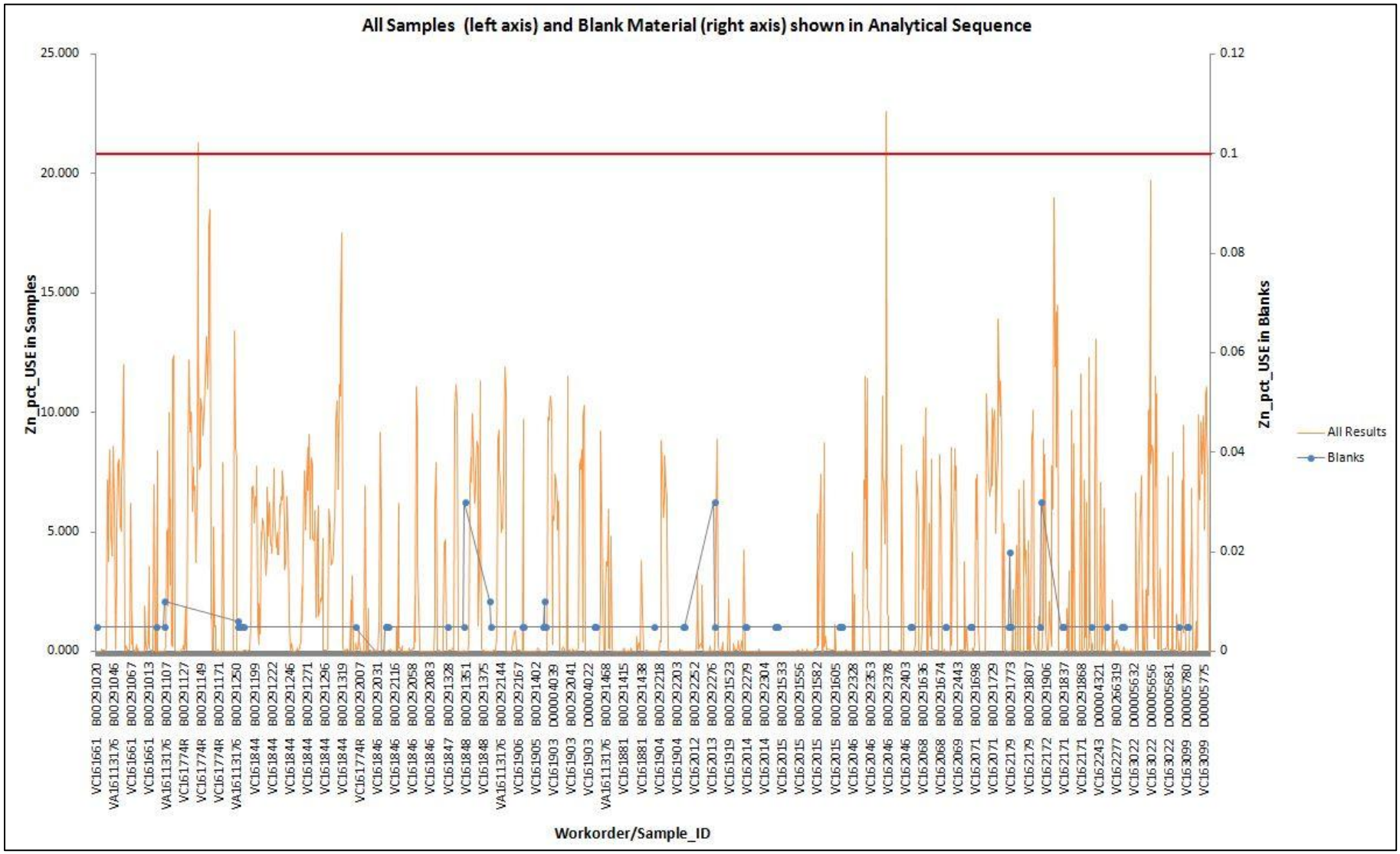


Figure M-A12: Zinc in blanks (blue lines and dots) as well as samples (yellow line). Detection limit (*dl*) is 0.01% so that samples analysing <*dl* are given a default value of 0.005%. There are no blank assays that exceed the >10**dl* threshold (red horizontal line) used to indicate contamination.

Appendix M-B:

Failure tracker

Table M-B1: Failure tracker for work orders related to the 2016 KZK project.

Work Order	Finalized	Sample(s)	Element	Failure Type	Reason for Failure	Recommended Action	Lab code	Total Re-assays	Action Taken	Action Result
VC161846	20-Jun-16	B00292110, B00292130	Zn	2-SD	Two consecutive CDN-ME-1311 zinc assays with Z-scores of +2	None	n/a	0	None	n/a
VA16113176	09-Aug-16	B00291060	Ag	3-SD	Check assay with Z-score of -3.6	None	n/a	0	None	n/a
VA16113176	09-Aug-16	B00291440	Ag	3-SD	Check assay with Z-score of -3.6	None	n/a	0	None	n/a

Appendix N: Petrographic Report

PETROGRAPHIC REPORT ON 4 ROCK SAMPLES

Report for: Danielle Mountjoy, Geologist
BMC Minerals (No.1) Ltd.
530-1130 West Pender Street,
Vancouver, B.C. V6E 4A4

Invoice 160664

Oct. 27, 2016.

SUMMARY:

In general, these 4 samples are well foliated, locally crenulated or cleaved, schistose metamorphic rocks composed of variable proportions of quartz, sericite, carbonate (calcite), chlorite, local plagioclase, minor biotite, accessory opaques (mostly iron sulfides, sphene/rutile, microscopic carbon?), local tourmaline and apatite, with foliation-parallel veinlets of carbonate and quartz. Capsule descriptions are as follows:

PET 2016-01: strongly foliated/crenulated sericite-quartz-carbonate-local plagioclase, minor accessory opaque (carbon, sulfide, rutile?), biotite, tourmaline and chlorite schist. Carbonate (mainly calcite) and quartz are locally coarsened/concentrated in "knots" or veins (?). Tourmaline abundance may be more than expected in normal meta-sediment, possibly suggesting a hydrothermal origin?

PET 2016-02: well foliated, quartz-sericite-chlorite-carbonate (calcite)-accessory plagioclase-opaques (sulfides, sphene/rutile?)-trace (relict) biotite-allanite/monazite? schist, with foliation-parallel veins of carbonate ±quartz. Protolith for this rock could be transitional between PET-01 (metasediment?) and 03 (meta-volcanic or volcaniclastic?), as suggested by the decrease in sericite/increase in chlorite and possible sphene/rutile.

PET 2016-03: foliated chlorite-quartz-plagioclase-carbonate (calcite)-accessory opaques (sulfides, sphene/rutile?)-apatite-trace (relict) biotite-allanite/monazite? schist, with foliation-parallel veins of carbonate ±quartz. Protolith for this rock could be meta-volcanic or volcaniclastic?), as suggested by the absence of sericite, increase in chlorite, plagioclase, apatite, sphene/rutile (?).

PET 2016-04: strongly foliated/locally crenulation cleaved carbonate-sericite-quartz-minor biotite-chlorite-accessory opaque (carbon, sulfide?), tourmaline schist. Carbonate (mainly calcite) and quartz are locally coarsened/concentrated in bands or veins (?). Tourmaline abundance may be more than expected in normal meta-sediment, suggesting hydrothermal origin?

Detailed petrographic descriptions and photomicrographs are appended (by email attachment). If you have any questions regarding the petrography, please do not hesitate to contact me.

Craig H.B. Leitch, Ph.D., P. Eng. (250) 538-1900 dromore61@gmail.com
124 Vesuvius Bay Road, Salt Spring Island, B.C. Canada V8K 1K3

PET 2016-01: STRONGLY FOLIATED/CRENULATED SERICITE-QUARTZ-CARBONATE-LOCAL PLAGIOCLASE, MINOR ACCESSORY OPAQUE (CARBON, SULFIDE, RUTILE?), BIOTITE, TOURMALINE AND CHLORITE SCHIST. CARBONATE (MAINLY CALCITE) AND QUARTZ ARE LOCALLY COARSENED/CONCENTRATED IN "KNOTS" OR VEINS (?)

From K16-418 123.38-123.5m; hand specimen shows dark blackish grey (carbon-rich?), fine-grained, strongly foliated/schistose rock of uncertain derivation with thin crenulations of white material that react strongly to cold dilute HCl (calcite). The rock is not magnetic, is fairly readily scratched by steel, shows no stain for K-feldspar in the etched offcut (but minor white etch indicates the presence of minor plagioclase). Modal mineralogy (regular thin section only) is approximately as follows:

Sericite/muscovite	50%
Quartz	25%
Carbonate (mainly calcite?)	17%
Plagioclase (mainly concentrated in certain bands only)	5%
Opaque (minute, possibly carbon?)	1-2%
(coarse, sulfide and rutile?)	<1%
Biotite	<1%
Tourmaline (schorlitic)	<1%
Chlorite (magnesian)	<1%

This sample consists mainly of highly foliated, strongly crenulated, fine-grained sericite, quartz, and carbonate with accessory opaques, widely scattered very minor biotite, chlorite and tourmaline, with local crenulated concentrations of plagioclase-rich rock (white in etched offcut). In places there are "knots" or incipient veins of coarser-grained carbonate-quartz that are not obvious in hand sample.

In the bulk of the slide, sericite forming sub- to euhedral flakes mostly <0.2 mm in diameter are strongly aligned in and define the crenulated foliation, commonly intimately mixed with the carbonate. Both of these commonly contain the majority of the extremely fine-grained opaque (minute particles mostly <5 μm, possibly carbonaceous matter?). Quartz typically forms subhedral crystals in the 0.1-0.2 mm range, but locally up to about 0.35 mm (and coarser in the "knots" or veins). The quartz crystals typically show only mild undulose extinction, minor sub-grain development, and rare suturing of grain boundaries, but locally show triple junctions, so may have been annealed. Carbonate crystals are either somewhat flattened/elongated (length:width up to 2:1) in the plane of foliation, mostly <0.1 mm long, or are coarsened in crenulation fold hinges to subhedra up to 0.3 mm. Strong reaction to HCL in hand sample indicates it is likely mainly calcite.

In the coarser-grained "knots" or veins (?), carbonate forms subhedra up to almost 1 mm long (somewhat elongated in the foliation) and quartz forms subhedra up to 0.5 mm (not elongated). Traces of biotite, tourmaline and opaque (see below) are found around the margins of the "knots".

In the crenulated feldspar-rich portion, plagioclase forms small subhedral crystals mostly <0.15 mm (rarely to 0.3 mm); rare twinning (extinction Y^010 about 15º suggests composition either near albite or oligoclase-andesine (?); no adjacent grains of quartz allow comparison of indices. Scattered flakes of biotite with ragged or rounded subhedral outlines to 0.25 mm show pale/medium brown pleochroism and are associated with accessory tourmaline as slender euhedral prisms up to 0.4 mm long with medium khaki/green pleochroism suggestive of schorlitic composition (Fe:Fe+Mg, or F:M, ratio, around 0.6-0.7?). Rare chlorite forms euhedral flakes to 0.2 mm with almost no colour/pleochroism and length-fast, anomalous greyish green birefringence suggestive of F:M around 0.4 (?). Although local elongated aggregates of sulfide (non-magnetic, pyrite?) up to 2 mm long are seen in the offcut (and in the coarser carbonate-quartz, most aggregates of opaque in thin section appear to be dark brown in strongly concentrated transmitted light, suggestive of rutile (?).

In summary, this is strongly foliated/crenulated sericite-quartz-carbonate-local plagioclase, minor accessory opaque (carbon, sulfide, rutile?), biotite, tourmaline and chlorite schist. Carbonate (mainly calcite) and quartz are locally coarsened/concentrated in "knots" or veins (?). Tourmaline abundance may be more than expected in normal meta-sediment, suggesting hydrothermal origin?

PET 2016-02: WELL FOLIATED, QUARTZ-SERICITE-CHLORITE-CARBONATE (CALCITE)-ACCESSORY PLAGIOCLASE-OPAQUES (SULFIDES, SPHENE/RUTILE?)-TRACE (RELICT) BIOTITE -ALLANITE/MONAZITE? SCHIST, WITH FOLIATION-PARALLEL VEINS OF CARBONATE ±QUARTZ

From K16-418 106.32-106.44m; hand specimen shows pale greenish grey (chlorite-rich?), fine-grained, strongly foliated/schistose rock of uncertain derivation with thin veinlets of white material that react strongly to cold dilute HCl (calcite). The rock is weakly magnetic, readily scratched by steel, shows strong reaction to cold dilute HCl throughout, and no stain for K-feldspar in the etched offcut (but minor white etch may indicate the presence of minor plagioclase). Modal mineralogy (regular thin section only) is approximately as follows:

Quartz	25%
Sericite/muscovite	25%
Chlorite (partly after biotite, traces of which remain)	25%
Carbonate (mainly calcite?)	17%
Plagioclase (scattered, oligoclase-albite?)	3%
Opaque (mainly sulfide?)	2%
Sphene/minor rutile?	2%
Biotite (relict in chlorite)	<1%
Allanite/monazite (?)	<1%

This sample consists of well foliated quartz, sericite, chlorite, carbonate and somewhat coarser-grained segregations of quartz-carbonate, with accessory plagioclase, opaque (sulfides?), sphene/rutile, and traces of relict biotite, minute allanite or monazite (?).

In the body of the rock, quartz typically occurs as somewhat elongated subhedral crystals up to about 0.5 mm long (length:width up to 3:1 in the plane of foliation), with relatively weak undulose extinction or sub-grain development, only rare suturing of grain boundaries, but common triple junctions, suggestive of annealing post-deformation. Sericite forms slender euhedral flakes rarely over 0.4 mm in diameter, strongly aligned in and defining the foliation, intimately mixed with chlorite of similar or slightly larger size. The chlorite shows very pale green colour with weak pleochroism and near-zero birefringence, suggestive of F:M around 0.4-0.5 (?), except dark grey-green in radiation-damaged haloes around minute crystals mostly <20 μm of possible allanite or monazite (?), or where there are minor included flakes of pale brown biotite (subhedral, mostly <0.2 mm; likely mainly replaced by the chlorite). Carbonate forms somewhat elongated subhedral crystals up to about 0.5 mm long (length:width up to 3:1 in the plane of foliation), likely mainly calcite to judge by the strong reaction to HCl in hand specimen. Plagioclase is only locally recognized, forming ragged subhedra to about 0.25 mm without any twinning, but slight negative relief compared to quartz suggestive of composition near albite-oligoclase (?).

Opaques are not identifiable in the absence of a polished surface, but appear likely to be mainly sulfides (likely pyrrhotite, to judge by the magnetism of the sample?) forming strongly elongated blebs up to 0.5 cm long, aligned in the foliation, composed of subhedra mainly <0.5 mm, and finer-grained, disseminated sphene ±rutile (?) occurring in small subhedral or rounded aggregates to about 0.4 mm in size composed of subhedra mainly <0.1 mm. In places the sulfides (?) are associated with lens-like aggregates up to 0.5 cm long (parallel to foliation) composed of quartz (interlocking subhedra to ~1.5 mm) and/or carbonate (grading to veins, see below).

Veins are sub-planar, mostly parallel to foliation, and up to 1.5 mm thick, composed mainly of carbonate as interlocking subhedra to 0.8 mm diameter, somewhat elongated in the foliation (length:width up to 3:1) and local quartz (subhedra mostly <0.5 mm, lacking elongation).

In summary, this is well foliated, quartz-sericite-chlorite-carbonate (calcite)-accessory plagioclase-opaques (sulfides, sphene/rutile?)-trace (relict) biotite-allanite/monazite? schist, with foliation-parallel veins of carbonate ±quartz. Protolith for this rock could be transitional between PET-01 (metasediment?) and 03 (meta-volcanic or volcaniclastic?), as suggested by the decrease in sericite/increase in chlorite and possible sphene/rutile.

PET 2016-03: FOLIATED CHLORITE-QUARTZ-PLAGIOCLASE-CARBONATE (CALCITE)-ACCESSORY OPAQUES (SULFIDES, SPHENE/RUTILE?)-APATITE-TRACE (RELICT) BIOTITE-ALLANITE/MONAZITE? SCHIST, WITH FOLIATION-PARALLEL VEINS OF CARBONATE ±QUARTZ

From K16-394 267.81-267.92m; hand specimen shows medium greenish grey (chlorite-rich?), fine-grained, foliated rock of uncertain derivation with thin veinlets of white material that react strongly to cold dilute HCl (calcite). The rock is weakly magnetic, fairly readily scratched by steel, shows strong reaction to cold dilute HCl throughout, and no stain for K-feldspar in the etched offcut (but fine-grained white etch likely indicates presence of modest plagioclase abundance). Modal mineralogy (regular thin section only) is approximately as follows:

Chlorite (partly after biotite, traces of which remain)	35%
Quartz	25%
Plagioclase (throughout, oligoclase-andesine?)	20%
Carbonate (mainly calcite?)	12%
Opaque (mainly sulfide, possibly pyrrhotite?)	3%
Sphene/minor rutile?	3%
Apatite (accessory)	<1%
Biotite (relict in chlorite)	<1%
Allanite/monazite (?)	<1%

This sample consists of well foliated chlorite, quartz, plagioclase, and somewhat coarser-grained segregations of carbonate, with accessory opaque (sulfides?), sphene/rutile, apatite, and traces of relict biotite, minute allanite or monazite (?).

In the body of the rock, quartz typically occurs as somewhat elongated subhedral crystals mostly <0.3 mm long (length:width mostly <2:1 in the plane of foliation), with relatively weak undulose extinction or sub-grain development, only rare suturing of grain boundaries, but common triple junctions, suggestive of annealing post-deformation. Plagioclase is generally difficult to distinguish from quartz except where it shows slight incipient alteration, forming ragged subhedra to almost 1 mm, or twinning (extinction Y^010 to 17º) and slight negative relief compared to quartz (?) suggestive of composition near oligoclase-andesine (?). Plagioclase commonly contains traces of accessory apatite (stubby to slender euhedral prisms <0.2 mm long).

Chlorite forming euhedral flakes to 0.5 mm, mainly aligned in and defining the foliation, shows pale green pleochroism and near-zero/weakly length-slow birefringence, suggestive of F:M around 0.5 (?), with dark grey-green in radiation-damaged haloes around minute crystals mostly <20 µm of possible allanite or monazite (?), and including minor flakes of pale brown biotite (subhedral, mostly <0.2 mm; likely mainly replaced by the chlorite). Carbonate is typically segregated in coarser-grained lenses/incipient veinlets, forming somewhat elongated subhedral crystals up to about 2 mm long (length:width up to 4:1 in the plane of foliation, somewhat blastic due to inclusions of quartz <0.15 mm), likely mainly calcite to judge by the strong reaction to HCl in hand specimen.

Opaques, not precisely identifiable in the absence of a polished surface, appear likely to be mainly sulfides (mostly pyrrhotite, to judge by the magnetism of the sample?) forming strongly elongated blebs up to 3 mm long, aligned in the foliation, composed of subhedra mainly <0.5 mm, and finer-grained, disseminated sphene ±rutile (?) occurring in small subhedral or rounded aggregates to about 0.4 mm in size composed of subhedra mainly <0.15 mm. In places the sulfides (?) appear to be associated with lens-like aggregates up to 0.5 cm long (parallel to foliation) composed of quartz (interlocking subhedra to ~0.5 mm) and/or carbonate (grading to poorly defined sub-planar veins sub-parallel to foliation, <1 mm thick, composed of carbonate and/or quartz as described above).

In summary, this is foliated chlorite-quartz-plagioclase-carbonate (calcite)-accessory opaques (sulfides, sphene/rutile?)-apatite-trace (relict) biotite-allanite/monazite? schist, with foliation-parallel veins of carbonate ±quartz. Protolith for this rock could be meta-volcanic or volcaniclastic?), as suggested by the absence of sericite, increase in chlorite, plagioclase, apatite, sphene/rutile (?).

PET 2016-04: STRONGLY FOLIATED/LOCALLY CRENULATION CLEAVED CARBONATE-SERICITE-QUARTZ-MINOR BIOTITE-CHLORITE-ACCESSORY OPAQUE (CARBON, SULFIDE?), TOURMALINE SCHIST. CARBONATE (MAINLY CALCITE) AND QUARTZ COMMONLY COARSENED/CONCENTRATED IN BANDS OR VEINS (?)

From K16-394 263.76-263.85m; hand specimen shows laminated grey, fine-grained, strongly foliated/schistose rock of uncertain derivation with local thin white veinlets that react strongly to cold dilute HCl (calcite). The rock is distinctly magnetic in places, fairly readily scratched by steel, shows rapid reaction to cold dilute HCl throughout, and no stain for K-feldspar in the etched offcut (but very minor fine-grained white etch could indicate presence of minor plagioclase?). Modal mineralogy (regular thin section only) is approximately as follows:

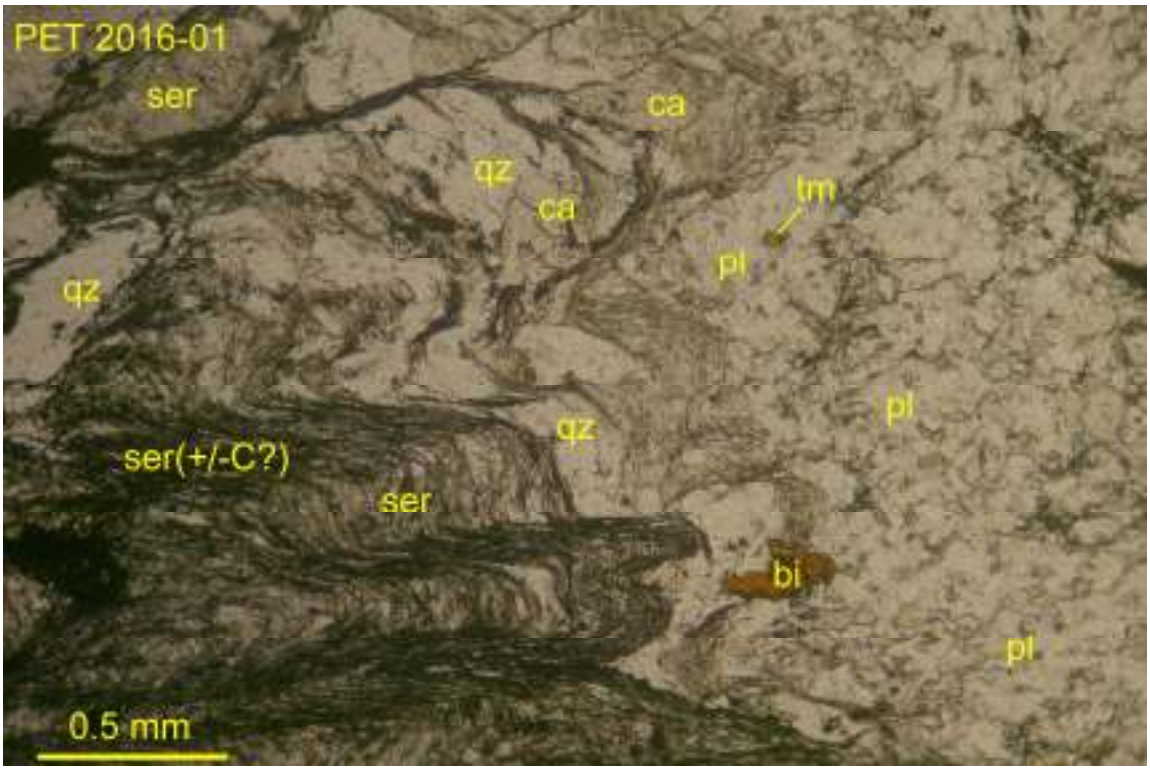
Carbonate (mainly calcite?)	40%
Sericite/muscovite	25%
Quartz	25%
Biotite	3-5%
Chlorite (magnesian)	3-5%
Opaque (coarse, mostly sulfide?)	~1%
(minute, possibly carbon?)	<1%
Tourmaline (schorlitic)	<1%

This sample consists mainly of strongly foliated, locally crenulation cleaved, fine-grained quartz, carbonate, sericite, minor biotite or in places chlorite, accessory opaques and tourmaline, alternating with lensy/vein-like aggregates s of coarser-grained carbonate-quartz, locally with opaques (sulfide?).

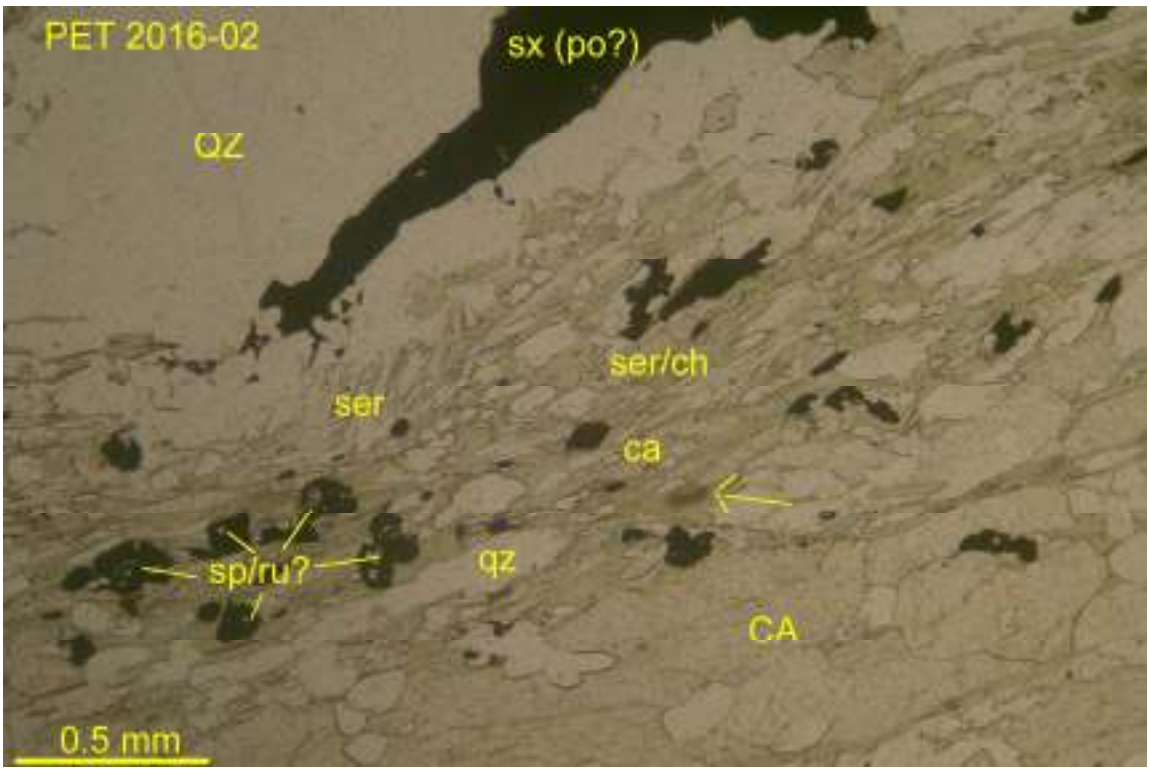
In the finer-grained parts, sericite forming sub- to euhedral flakes mostly <0.4 mm in diameter are strongly aligned in and define the foliation (locally semi-continuous optically to ~1 mm), commonly intimately mixed with (replacing?) much lesser biotite as subhedral flakes to 0.35 mm with pale brown pleochroism, also strongly aligned in the foliation. Both of these commonly contain most of the extremely fine-grained opaque (minute particles mostly <5 μm, possibly carbonaceous matter?). Quartz typically forms subhedral crystals in the 0.1-0.2 mm range, but locally up to about 0.35 mm (much coarser in the carbonate-quartz bands/veins). The quartz crystals typically show only mild undulose extinction, minor sub-grain development, and rare suturing of grain boundaries, but locally show triple junctions, so may have been annealed. Carbonate crystals are either somewhat flattened/elongated (length:width up to 2:1) in the plane of foliation, mostly <0.15 mm long, or are coarser in to subhedra up to 0.35 mm long (also flattened) where more abundant to semi-massive. Strong reaction to HCL in hand sample indicates it is likely mainly calcite. Chlorite appears to take the place of biotite in the latter areas, forming mainly euhedral flakes to 0.4 mm with almost no colour/pleochroism and length-fast, anomalous greyish green birefringence suggestive of F:M around 0.4 (?). Accessory tourmaline forms slender euhedral prisms up to 0.4 mm long with medium khaki/green pleochroism suggestive of schorlitic composition (F:M around 0.6-0.7?).

In the coarser-grained bands (grading to foliation-parallel veins up to 3.5 mm thick?), carbonate forms subhedra up to almost 2 mm long (commonly somewhat elongated in the foliation, length:width up to4:1) and quartz forms subhedra up to 0.5 mm (typically not so elongated, rarely to 2:1, with common triple junctions indicative of annealing post-deformation). Biotite is not seen in these areas, and tourmaline is rare, but chlorite (as described above) and opaque are common. The opaque occurs in somewhat elongated aggregates up to ~1 mm long in the foliation, composed of subhedra <0.35 mm that are likely sulfide (pyrrhotite?).

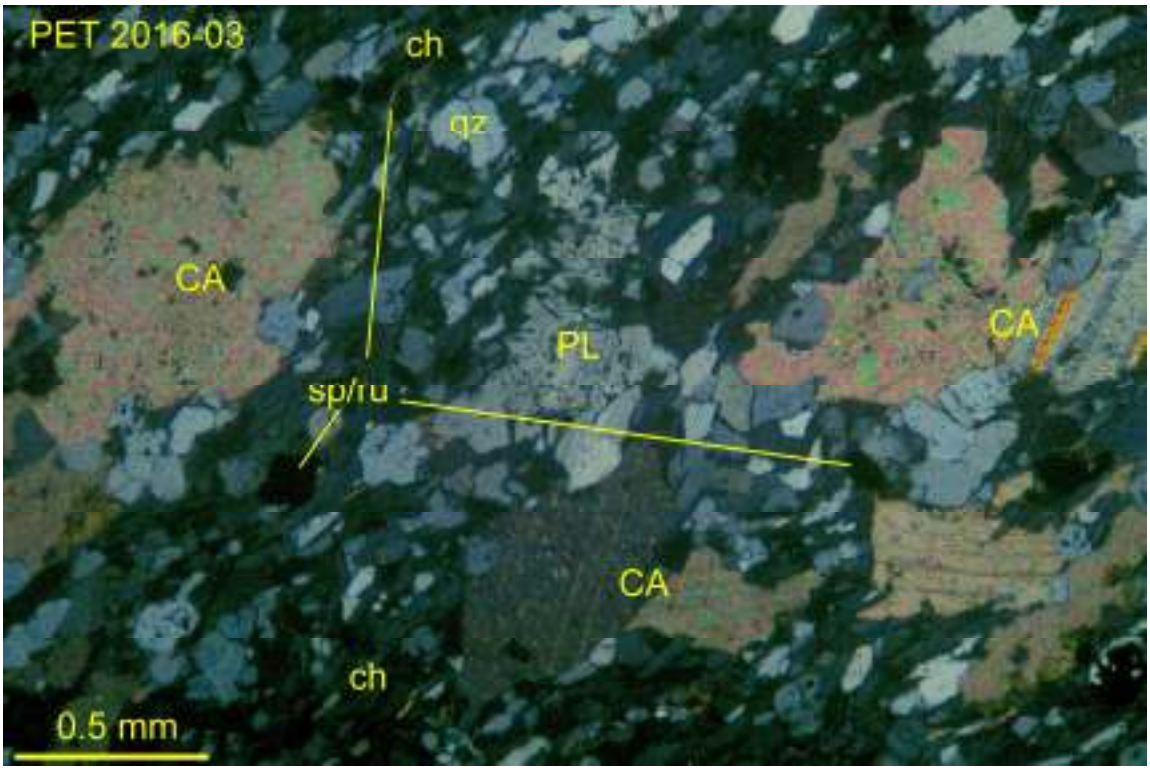
In summary, this is strongly foliated/locally crenulation cleaved carbonate-sericite-quartz-minor biotite-chlorite-accessory opaque (carbon, sulfide?), tourmaline schist. Carbonate (mainly calcite) and quartz are locally coarsened/concentrated in bands or veins (?). Tourmaline abundance may be more than expected in normal meta-sediment, suggesting hydrothermal origin?



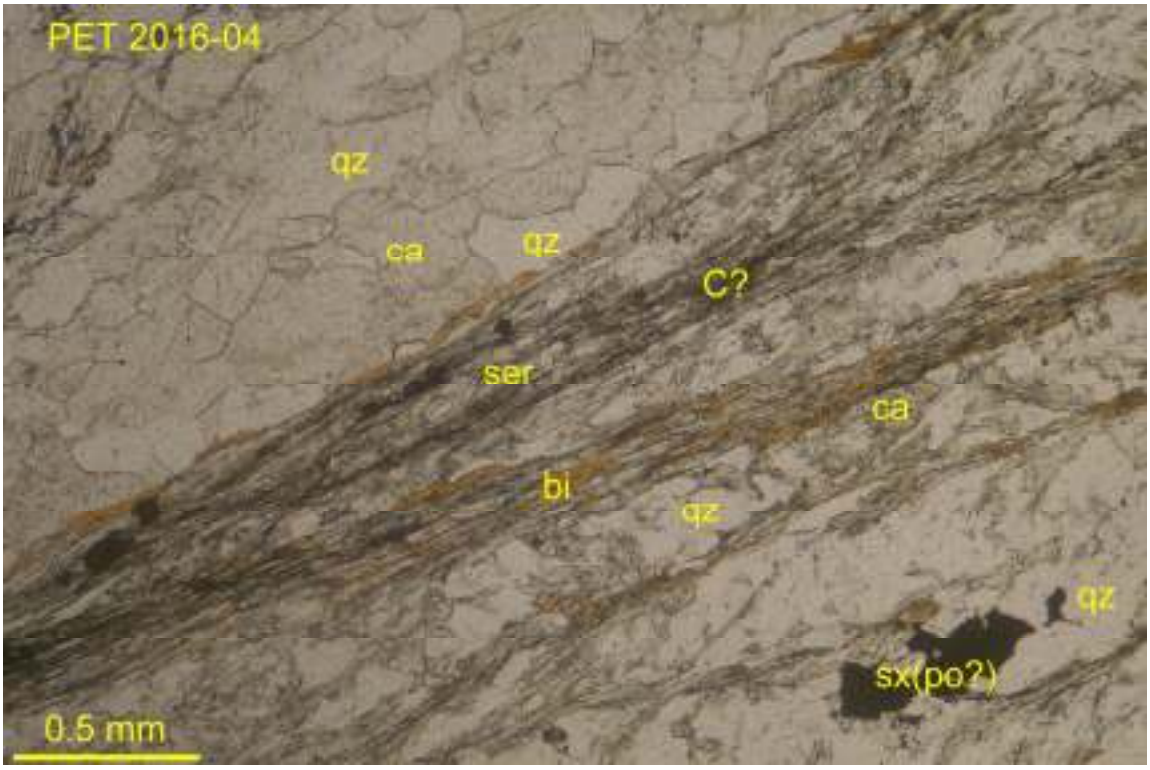
PET 2016-01: contact between fine-grained, strongly foliated/crenulated sericite-quartz-carbonate (coarse opaques may be rutile, minute opaques carbon, C?) and coarser-grained plagioclase (pl)–rich portion, partly separated by coarse quartz (qz)-carbonate (calcite, ca)-minor brown biotite, trace tourmaline (tm). Transmitted plane light, field of view ~3 mm wide.



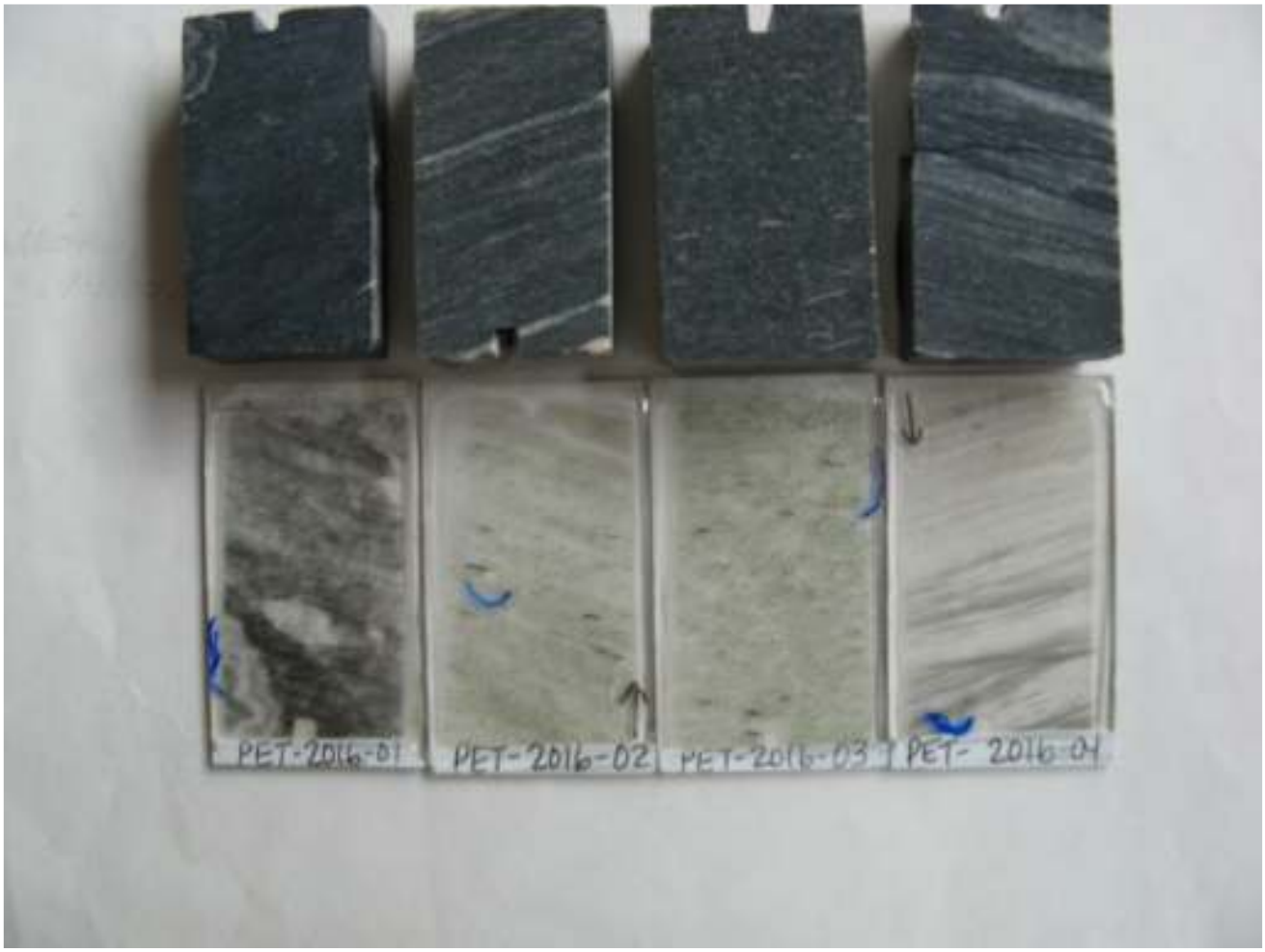
PET 2016-02: well-foliated quartz-sericite-chlorite-carbonate-accessory opaques (sulfides, sphene/rutile?) schist with lensy aggregates of coarser quartz (QZ), elongated blebs of sulfide (pyrrhotite?), or foliation-parallel veins of coarser carbonate (CA). Note dark pleochroic (radiation-damaged) halo (arrowed) in chlorite around possible allanite/monazite (?). Transmitted plane light, field of view ~3 mm wide.



PET 2016-03: ragged, somewhat blastic, vaguely twinned plagioclase (PL) and blastic, lensy aggregates of calcite (CA) crystals in foliated matrix of chlorite (dark) and quartz (qz); opaques (mainly sphene/rutile) are difficult to distinguish. Transmitted light, crossed polars, field of view 3 mm wide.



PET 2016-04: contrast between fine-grained, strongly foliated sericite (ser, ±carbon, C?)-quartz-lesser carbonate-pale brown biotite and coarser-grained, carbonate (mainly calcite, ca)-quartz-local opaque (sulfide, sx, possibly pyrrhotite, po?) bands of schist. Transmitted plane light, field of view ~3 mm wide.



Overview of thin sections and offcuts (blue semi-circles mark photomicrograph locations).

Appendix O: List of Metallurgical Samples

Table O-1: List of metallurgical samples collected in 2016.

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-340	B00233675	B00291175	Half core metallurgical	HQ3	89.00	90.50	1.50
K16-340	B00233676	B00291176	Half core metallurgical	HQ3	90.50	92.00	1.50
K16-340	B00233677	B00291177	Half core metallurgical	HQ3	92.00	93.49	1.49
K16-340	B00233678	B00291178	Half core metallurgical	HQ3	93.49	94.63	1.14
K16-340	B00233679	B00291179	Half core metallurgical	HQ3	94.63	95.53	0.90
K16-340	B00233681	B00291181	Half core metallurgical	HQ3	95.53	96.00	0.47
K16-340	B00233682	B00291182	Half core metallurgical	HQ3	96.00	97.80	1.80
K16-340	B00233683	B00291183	Half core metallurgical	HQ3	97.80	99.20	1.40
K16-340	B00233684	B00291184	Half core metallurgical	HQ3	117.00	118.00	1.00
K16-340	B00233685	B00291185	Half core metallurgical	HQ3	118.00	119.00	1.00
K16-340	B00233686	B00291186	Half core metallurgical	HQ3	119.00	120.00	1.00
K16-340	B00233687	B00291187	Half core metallurgical	HQ3	120.00	121.00	1.00
K16-340	B00233688	B00291188	Half core metallurgical	HQ3	121.00	122.00	1.00
K16-340	B00233689	B00291189	Half core metallurgical	HQ3	122.00	123.00	1.00
K16-340	B00233691	B00291191	Half core metallurgical	HQ3	123.00	124.00	1.00
K16-340	B00233692	B00291192	Half core metallurgical	HQ3	124.00	125.00	1.00
K16-340	B00233693	B00291193	Half core metallurgical	HQ3	125.00	126.00	1.00
K16-340	B00233694	B00291194	Half core metallurgical	HQ3	126.00	127.14	1.14
K16-340	B00233695	B00291195	Half core metallurgical	HQ3	127.14	128.00	0.86
K16-340	B00233696	B00291196	Half core metallurgical	HQ3	128.00	129.00	1.00
K16-340	B00233697	B00291197	Half core metallurgical	HQ3	129.00	130.00	1.00
K16-340	B00233698	B00291198	Half core metallurgical	HQ3	130.00	131.00	1.00
K16-340	B00233699	B00291199	Half core metallurgical	HQ3	131.00	132.00	1.00
K16-340	B00233702	B00291202	Half core metallurgical	HQ3	132.00	133.00	1.00
K16-340	B00233703	B00291203	Half core metallurgical	HQ3	133.00	134.16	1.16
K16-340	B00233704	B00291204	Half core metallurgical	HQ3	134.16	135.00	0.84
K16-340	B00233705	B00291205	Half core metallurgical	HQ3	135.00	136.00	1.00
K16-340	B00233706	B00291206	Half core metallurgical	HQ3	136.00	136.70	0.70
K16-340	B00233707	B00291207	Half core metallurgical	HQ3	136.70	137.48	0.78
K16-340	B00233708	B00291208	Half core metallurgical	HQ3	137.48	138.00	0.52
K16-340	B00233709	B00291209	Half core metallurgical	HQ3	138.00	139.00	1.00
K16-340	B00233711	B00291211	Half core metallurgical	HQ3	139.00	140.00	1.00
K16-340	B00233712	B00291212	Half core metallurgical	HQ3	140.00	141.00	1.00
K16-340	B00233713	B00291213	Half core metallurgical	HQ3	141.00	142.00	1.00
K16-340	B00233714	B00291214	Half core metallurgical	HQ3	142.00	143.00	1.00
K16-340	B00233715	B00291215	Half core metallurgical	HQ3	143.00	144.08	1.08
K16-340	B00233716	B00291216	Half core metallurgical	HQ3	144.08	145.00	0.92
K16-340	B00233717	B00291217	Half core metallurgical	HQ3	145.00	146.00	1.00
K16-340	B00233718	B00291218	Half core metallurgical	HQ3	146.00	146.34	0.34
K16-340	B00233719	B00291219	Half core metallurgical	HQ3	146.34	147.00	0.66
K16-340	B00233721	B00291221	Half core metallurgical	HQ3	147.00	148.00	1.00
K16-340	B00233722	B00291222	Half core metallurgical	HQ3	148.00	148.94	0.94
K16-340	B00233723	B00291223	Half core metallurgical	HQ3	148.94	149.70	0.76
K16-340	B00233724	B00291224	Half core metallurgical	HQ3	149.70	150.20	0.50
K16-340	B00233725	B00291225	Half core metallurgical	HQ3	150.20	151.00	0.80
K16-340	B00233726	B00291226	Half core metallurgical	HQ3	151.00	151.90	0.90
K16-340	B00233727	B00291227	Half core metallurgical	HQ3	151.90	152.32	0.42
K16-340	B00233728	B00291228	Half core metallurgical	HQ3	152.32	153.00	0.68
K16-340	B00233729	B00291229	Half core metallurgical	HQ3	153.00	154.00	1.00
K16-340	B00233731	B00291231	Half core metallurgical	HQ3	154.00	155.00	1.00
K16-340	B00233732	B00291232	Half core metallurgical	HQ3	155.00	155.80	0.80
K16-340	B00233733	B00291233	Half core metallurgical	HQ3	155.80	156.28	0.48
K16-340	B00233734	B00291234	Half core metallurgical	HQ3	156.28	157.00	0.72
K16-340	B00233735	B00291235	Half core metallurgical	HQ3	157.00	158.00	1.00
K16-340	B00233736	B00291236	Half core metallurgical	HQ3	158.00	159.00	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-340	B00233737	B00291237	Half core metallurgical	HQ3	159.00	160.00	1.00
K16-340	B00233738	B00291238	Half core metallurgical	HQ3	160.00	161.00	1.00
K16-340	B00233739	B00291239	Half core metallurgical	HQ3	161.00	162.00	1.00
K16-340	B00233742	B00291242	Half core metallurgical	HQ3	162.00	163.00	1.00
K16-340	B00233743	B00291243	Half core metallurgical	HQ3	163.00	163.60	0.60
K16-340	B00233744	B00291244	Half core metallurgical	HQ3	163.60	164.36	0.76
K16-340	B00233745	B00291245	Half core metallurgical	HQ3	164.36	165.00	0.64
K16-340	B00233746	B00291246	Half core metallurgical	HQ3	165.00	166.00	1.00
K16-340	B00233747	B00291247	Half core metallurgical	HQ3	166.00	167.00	1.00
K16-340	B00233748	B00291248	Half core metallurgical	HQ3	167.00	168.00	1.00
K16-340	B00233749	B00291249	Half core metallurgical	HQ3	168.00	169.50	1.50
K16-340	B00233751	B00291251	Half core metallurgical	HQ3	169.50	171.00	1.50
K16-340	B00233752	B00291252	Half core metallurgical	HQ3	171.00	172.00	1.00
K16-340	B00233753	B00291253	Half core metallurgical	HQ3	172.00	174.00	2.00
K16-340	B00233754	B00291254	Half core metallurgical	HQ3	221.00	222.00	1.00
K16-340	B00233755	B00291255	Half core metallurgical	HQ3	222.00	223.00	1.00
K16-340	B00233756	B00291256	Half core metallurgical	HQ3	223.00	223.70	0.70
K16-340	B00233757	B00291257	Half core metallurgical	HQ3	223.70	225.00	1.30
K16-340	B00233758	B00291258	Half core metallurgical	HQ3	225.00	226.22	1.22
K16-340	B00233759	B00291259	Half core metallurgical	HQ3	226.22	228.00	1.78
K16-340	B00233761	B00291261	Half core metallurgical	HQ3	228.00	231.00	3.00
K16-340	B00233762	B00291262	Half core metallurgical	HQ3	231.00	232.33	1.33
K16-340	B00233763	B00291263	Half core metallurgical	HQ3	232.33	233.00	0.67
K16-340	B00233764	B00291264	Half core metallurgical	HQ3	233.00	234.00	1.00
K16-340	B00233765	B00291265	Half core metallurgical	HQ3	234.00	235.00	1.00
K16-340	B00233766	B00291266	Half core metallurgical	HQ3	235.00	235.64	0.64
K16-340	B00233767	B00291267	Half core metallurgical	HQ3	235.64	236.00	0.36
K16-340	B00233768	B00291268	Half core metallurgical	HQ3	236.00	237.00	1.00
K16-340	B00233769	B00291269	Half core metallurgical	HQ3	237.00	237.55	0.55
K16-340	B00233771	B00291271	Half core metallurgical	HQ3	237.55	238.30	0.75
K16-340	B00233772	B00291272	Half core metallurgical	HQ3	238.30	239.30	1.00
K16-340	B00233773	B00291273	Half core metallurgical	HQ3	239.30	240.00	0.70
K16-340	B00233774	B00291274	Half core metallurgical	HQ3	240.00	241.00	1.00
K16-340	B00233775	B00291275	Half core metallurgical	HQ3	241.00	242.00	1.00
K16-340	B00233776	B00291276	Half core metallurgical	HQ3	242.00	243.00	1.00
K16-340	B00233777	B00291277	Half core metallurgical	HQ3	243.00	244.00	1.00
K16-340	B00233778	B00291278	Half core metallurgical	HQ3	244.00	245.00	1.00
K16-340	B00233779	B00291279	Half core metallurgical	HQ3	245.00	246.00	1.00
K16-340	B00233782	B00291282	Half core metallurgical	HQ3	246.00	246.50	0.50
K16-340	B00233783	B00291283	Half core metallurgical	HQ3	246.50	247.28	0.78
K16-340	B00233784	B00291284	Half core metallurgical	HQ3	247.28	248.00	0.72
K16-340	B00233785	B00291285	Half core metallurgical	HQ3	248.00	249.00	1.00
K16-340	B00233786	B00291286	Half core metallurgical	HQ3	249.00	250.00	1.00
K16-340	B00233787	B00291287	Half core metallurgical	HQ3	250.00	251.00	1.00
K16-340	B00233788	B00291288	Half core metallurgical	HQ3	251.00	252.00	1.00
K16-340	B00233789	B00291289	Half core metallurgical	HQ3	252.00	253.00	1.00
K16-340	B00233791	B00291291	Half core metallurgical	HQ3	253.00	254.00	1.00
K16-340	B00233792	B00291292	Half core metallurgical	HQ3	254.00	254.50	0.50
K16-340	B00233793	B00291293	Half core metallurgical	HQ3	254.50	255.32	0.82
K16-340	B00233794	B00291294	Half core metallurgical	HQ3	255.32	256.40	1.08
K16-340	B00233795	B00291295	Half core metallurgical	HQ3	256.40	257.40	1.00
K16-340	B00233796	B00291296	Half core metallurgical	HQ3	257.40	258.00	0.60
K16-340	B00233797	B00291297	Half core metallurgical	HQ3	258.00	259.20	1.20
K16-340	B00233798	B00291298	Half core metallurgical	HQ3	259.20	260.00	0.80
K16-340	B00233799	B00291299	Half core metallurgical	HQ3	260.00	261.00	1.00
K16-340	B00233801	B00291301	Half core metallurgical	HQ3	261.00	261.61	0.61
K16-340	B00233802	B00291302	Half core metallurgical	HQ3	261.61	262.60	0.99
K16-340	B00233803	B00291303	Half core metallurgical	HQ3	262.60	263.63	1.03

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-340	B00233804	B00291304	Half core metallurgical	HQ3	263.63	264.60	0.97
K16-340	B00233805	B00291305	Half core metallurgical	HQ3	264.60	265.60	1.00
K16-340	B00233806	B00291306	Half core metallurgical	HQ3	265.60	266.50	0.90
K16-340	B00233807	B00291307	Half core metallurgical	HQ3	266.50	267.50	1.00
K16-340	B00233808	B00291308	Half core metallurgical	HQ3	267.50	268.40	0.90
K16-340	B00233809	B00291309	Half core metallurgical	HQ3	268.40	268.87	0.47
K16-340	B00233811	B00291311	Half core metallurgical	HQ3	268.87	269.49	0.62
K16-340	B00233812	B00291312	Half core metallurgical	HQ3	269.49	270.19	0.70
K16-340	B00233813	B00291313	Half core metallurgical	HQ3	270.19	271.00	0.81
K16-340	B00233814	B00291314	Half core metallurgical	HQ3	271.00	271.87	0.87
K16-340	B00233815	B00291315	Half core metallurgical	HQ3	271.87	272.60	0.73
K16-340	B00233816	B00291316	Half core metallurgical	HQ3	272.60	273.40	0.80
K16-340	B00233817	B00291317	Half core metallurgical	HQ3	273.40	274.20	0.80
K16-340	B00233818	B00291318	Half core metallurgical	HQ3	274.20	275.11	0.91
K16-340	B00233819	B00291319	Half core metallurgical	HQ3	275.11	276.00	0.89
K16-340	B00233822	B00291322	Half core metallurgical	HQ3	276.00	277.50	1.50
K16-340	B00233823	B00291323	Half core metallurgical	HQ3	277.50	279.00	1.50
K16-340	B00233824	B00291324	Half core metallurgical	HQ3	279.00	280.50	1.50
K16-340	B00233825	B00291325	Half core metallurgical	HQ3	280.50	282.00	1.50
K16-340	B00233826	B00291326	Half core metallurgical	HQ3	282.00	283.50	1.50
K16-340	B00233827	B00291327	Half core metallurgical	HQ3	283.50	285.00	1.50
K16-340	B00291813	B00291313	Half core metallurgical	HQ3	270.19	271.00	0.81
K16-344	B00293051	B00292051	Half core metallurgical	HQ3	47.70	48.70	1.00
K16-344	B00293052	B00292052	Half core metallurgical	HQ3	48.70	49.70	1.00
K16-344	B00293053	B00292053	Half core metallurgical	HQ3	49.70	50.70	1.00
K16-344	B00293054	B00292054	Half core metallurgical	HQ3	50.70	51.70	1.00
K16-344	B00293055	B00292055	Half core metallurgical	HQ3	51.70	52.70	1.00
K16-344	B00293056	B00292056	Half core metallurgical	HQ3	52.70	53.70	1.00
K16-344	B00293057	B00292057	Half core metallurgical	HQ3	53.70	54.70	1.00
K16-344	B00293058	B00292058	Half core metallurgical	HQ3	54.70	55.70	1.00
K16-344	B00293059	B00292059	Half core metallurgical	HQ3	55.70	56.70	1.00
K16-344	B00293061	B00292061	Half core metallurgical	HQ3	56.70	57.70	1.00
K16-344	B00293062	B00292062	Half core metallurgical	HQ3	57.70	58.60	0.90
K16-344	B00293063	B00292063	Half core metallurgical	HQ3	58.60	59.60	1.00
K16-344	B00293064	B00292064	Half core metallurgical	HQ3	59.60	60.50	0.90
K16-344	B00293065	B00292065	Half core metallurgical	HQ3	60.50	61.10	0.60
K16-344	B00293066	B00292066	Half core metallurgical	HQ3	61.10	61.90	0.80
K16-344	B00293067	B00292067	Half core metallurgical	HQ3	61.90	62.90	1.00
K16-344	B00293068	B00292068	Half core metallurgical	HQ3	62.90	63.90	1.00
K16-344	B00293069	B00292069	Half core metallurgical	HQ3	63.90	64.90	1.00
K16-344	B00293071	B00292071	Half core metallurgical	HQ3	64.90	65.90	1.00
K16-344	B00293072	B00292072	Half core metallurgical	HQ3	65.90	66.90	1.00
K16-344	B00293073	B00292073	Half core metallurgical	HQ3	66.90	67.90	1.00
K16-344	B00293074	B00292074	Half core metallurgical	HQ3	67.90	68.90	1.00
K16-344	B00293075	B00292075	Half core metallurgical	HQ3	68.90	69.90	1.00
K16-344	B00293076	B00292076	Half core metallurgical	HQ3	69.90	70.90	1.00
K16-344	B00293077	B00292077	Half core metallurgical	HQ3	70.90	71.90	1.00
K16-344	B00293078	B00292078	Half core metallurgical	HQ3	71.90	73.00	1.10
K16-344	B00293079	B00292079	Half core metallurgical	HQ3	73.00	74.10	1.10
K16-344	B00293081	B00292081	Half core metallurgical	HQ3	74.10	75.20	1.10
K16-344	B00293082	B00292082	Half core metallurgical	HQ3	75.20	76.20	1.00
K16-344	B00293083	B00292083	Half core metallurgical	HQ3	76.20	77.20	1.00
K16-344	B00293084	B00292084	Half core metallurgical	HQ3	77.20	78.20	1.00
K16-344	B00293085	B00292085	Half core metallurgical	HQ3	78.20	79.20	1.00
K16-344	B00293086	B00292086	Half core metallurgical	HQ3	79.20	80.20	1.00
K16-344	B00293087	B00292087	Half core metallurgical	HQ3	80.20	81.20	1.00
K16-344	B00293088	B00292088	Half core metallurgical	HQ3	81.20	82.10	0.90
K16-344	B00293089	B00292089	Half core metallurgical	HQ3	82.10	83.10	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-344	B00293092	B00292092	Half core metallurgical	HQ3	83.10	84.10	1.00
K16-344	B00293093	B00292093	Half core metallurgical	HQ3	84.10	85.60	1.50
K16-344	B00293094	B00292094	Half core metallurgical	HQ3	85.60	86.70	1.10
K16-344	B00293095	B00292095	Half core metallurgical	HQ3	86.70	88.20	1.50
K16-344	B00293096	B00292096	Half core metallurgical	HQ3	88.20	89.40	1.20
K16-344	B00293097	B00292097	Half core metallurgical	HQ3	89.40	90.40	1.00
K16-344	B00293098	B00292098	Half core metallurgical	HQ3	90.40	91.90	1.50
K16-344	B00293099	B00292099	Half core metallurgical	HQ3	91.90	93.40	1.50
K16-344	B00293101	B00292101	Half core metallurgical	HQ3	93.40	94.60	1.20
K16-344	B00293102	B00292102	Half core metallurgical	HQ3	94.60	95.60	1.00
K16-344	B00293103	B00292103	Half core metallurgical	HQ3	95.60	96.70	1.10
K16-344	B00293104	B00292104	Half core metallurgical	HQ3	96.70	97.70	1.00
K16-344	B00293105	B00292105	Half core metallurgical	HQ3	97.70	98.70	1.00
K16-344	B00293106	B00292106	Half core metallurgical	HQ3	98.70	100.20	1.50
K16-344	B00293107	B00292107	Half core metallurgical	HQ3	100.20	101.70	1.50
K16-344	B00293108	B00292108	Half core metallurgical	HQ3	101.70	103.20	1.50
K16-344	B00293109	B00292109	Half core metallurgical	HQ3	103.20	104.70	1.50
K16-344	B00293111	B00292111	Half core metallurgical	HQ3	104.70	106.20	1.50
K16-344	B00293112	B00292112	Half core metallurgical	HQ3	106.20	107.70	1.50
K16-344	B00293113	B00292113	Half core metallurgical	HQ3	160.70	162.00	1.30
K16-344	B00293114	B00292114	Half core metallurgical	HQ3	162.00	163.50	1.50
K16-344	B00293115	B00292115	Half core metallurgical	HQ3	163.50	165.00	1.50
K16-344	B00293116	B00292116	Half core metallurgical	HQ3	165.00	166.50	1.50
K16-344	B00293117	B00292117	Half core metallurgical	HQ3	166.50	167.60	1.10
K16-344	B00293118	B00292118	Half core metallurgical	HQ3	167.60	168.60	1.00
K16-344	B00293119	B00292119	Half core metallurgical	HQ3	168.60	169.70	1.10
K16-344	B00293121	B00292121	Half core metallurgical	HQ3	169.70	170.30	0.60
K16-344	B00293122	B00292122	Half core metallurgical	HQ3	170.30	171.30	1.00
K16-344	B00293123	B00292123	Half core metallurgical	HQ3	171.30	172.70	1.40
K16-344	B00293124	B00292124	Half core metallurgical	HQ3	172.70	173.20	0.50
K16-344	B00293125	B00292125	Half core metallurgical	HQ3	173.20	174.70	1.50
K16-344	B00293126	B00292126	Half core metallurgical	HQ3	174.70	176.20	1.50
K16-344	B00293127	B00292127	Half core metallurgical	HQ3	176.20	177.70	1.50
K16-344	B00293128	B00292128	Half core metallurgical	HQ3	177.70	179.20	1.50
K16-344	B00293129	B00292129	Half core metallurgical	HQ3	179.20	180.70	1.50
K16-345	B00233828	B00291328	Half core metallurgical	HQ3	44.30	46.10	1.80
K16-345	B00233829	B00291329	Half core metallurgical	HQ3	46.10	48.00	1.90
K16-345	B00233831	B00291331	Half core metallurgical	HQ3	48.00	48.70	0.70
K16-345	B00233832	B00291332	Half core metallurgical	HQ3	48.70	49.90	1.20
K16-345	B00233833	B00291333	Half core metallurgical	HQ3	49.90	51.00	1.10
K16-345	B00233834	B00291334	Half core metallurgical	HQ3	51.00	52.50	1.50
K16-345	B00233835	B00291335	Half core metallurgical	HQ3	52.50	53.70	1.20
K16-345	B00233836	B00291336	Half core metallurgical	HQ3	53.70	54.38	0.68
K16-345	B00233837	B00291337	Half core metallurgical	HQ3	54.38	54.99	0.61
K16-345	B00233838	B00291338	Half core metallurgical	HQ3	54.99	56.00	1.01
K16-345	B00233839	B00291339	Half core metallurgical	HQ3	56.00	57.00	1.00
K16-345	B00233842	B00291342	Half core metallurgical	HQ3	57.00	58.50	1.50
K16-345	B00233843	B00291343	Half core metallurgical	HQ3	58.50	60.00	1.50
K16-345	B00233844	B00291344	Half core metallurgical	HQ3	60.00	61.50	1.50
K16-345	B00233845	B00291345	Half core metallurgical	HQ3	61.50	62.32	0.82
K16-345	B00233846	B00291346	Half core metallurgical	HQ3	62.32	63.55	1.23
K16-345	B00233847	B00291347	Half core metallurgical	HQ3	63.55	64.08	0.53
K16-345	B00233848	B00291348	Half core metallurgical	HQ3	64.08	65.76	1.68
K16-347	B00293131	B00292131	Half core metallurgical	HQ3	117.00	118.50	1.50
K16-347	B00293132	B00292132	Half core metallurgical	HQ3	118.50	120.00	1.50
K16-347	B00293133	B00292133	Half core metallurgical	HQ3	120.00	121.50	1.50
K16-347	B00293134	B00292134	Half core metallurgical	HQ3	121.50	123.00	1.50
K16-347	B00293135	B00292135	Half core metallurgical	HQ3	123.00	124.50	1.50

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-347	B00293136	B00292136	Half core metallurgical	HQ3	124.50	126.00	1.50
K16-347	B00293137	B00292137	Half core metallurgical	HQ3	126.00	127.56	1.56
K16-347	B00293138	B00292138	Half core metallurgical	HQ3	127.56	128.22	0.66
K16-347	B00293139	B00292139	Half core metallurgical	HQ3	128.22	129.00	0.78
K16-347	B00293141	B00292141	Half core metallurgical	HQ3	129.00	130.00	1.00
K16-347	B00293142	B00292142	Half core metallurgical	HQ3	130.00	131.00	1.00
K16-347	B00293143	B00292143	Half core metallurgical	HQ3	131.00	131.75	0.75
K16-347	B00293144	B00292144	Half core metallurgical	HQ3	131.75	132.50	0.75
K16-347	B00293145	B00292145	Half core metallurgical	HQ3	132.50	133.50	1.00
K16-347	B00293146	B00292146	Half core metallurgical	HQ3	133.50	134.50	1.00
K16-347	B00293147	B00292147	Half core metallurgical	HQ3	134.50	135.58	1.08
K16-347	B00293148	B00292148	Half core metallurgical	HQ3	135.58	136.50	0.92
K16-347	B00293149	B00292149	Half core metallurgical	HQ3	136.50	137.28	0.78
K16-347	B00293152	B00292152	Half core metallurgical	HQ3	137.28	138.50	1.22
K16-347	B00293153	B00292153	Half core metallurgical	HQ3	138.50	140.00	1.50
K16-347	B00293154	B00292154	Half core metallurgical	HQ3	140.00	141.50	1.50
K16-347	B00293155	B00292155	Half core metallurgical	HQ3	141.50	143.00	1.50
K16-347	B00293156	B00292156	Half core metallurgical	HQ3	143.00	144.50	1.50
K16-347	B00293157	B00292157	Half core metallurgical	HQ3	144.50	146.00	1.50
K16-347	B00293158	B00292158	Half core metallurgical	HQ3	146.00	146.75	0.75
K16-347	B00293159	B00292159	Half core metallurgical	HQ3	146.75	148.23	1.48
K16-347	B00293161	B00292161	Half core metallurgical	HQ3	148.23	149.00	0.77
K16-347	B00293162	B00292162	Half core metallurgical	HQ3	149.00	150.00	1.00
K16-347	B00293163	B00292163	Half core metallurgical	HQ3	150.00	151.27	1.27
K16-347	B00293164	B00292164	Half core metallurgical	HQ3	151.27	152.50	1.23
K16-347	B00293165	B00292165	Half core metallurgical	HQ3	152.50	154.00	1.50
K16-347	B00293166	B00292166	Half core metallurgical	HQ3	154.00	155.50	1.50
K16-347	B00293167	B00292167	Half core metallurgical	HQ3	155.50	157.00	1.50
K16-347	B00293168	B00292168	Half core metallurgical	HQ3	157.00	158.50	1.50
K16-347	B00293169	B00292169	Half core metallurgical	HQ3	158.50	160.00	1.50
K16-347	B00293171	B00292171	Half core metallurgical	HQ3	160.00	161.50	1.50
K16-349	D00005001	D00004001	Half core metallurgical	HQ3	64.60	66.10	1.50
K16-349	D00005002	D00004002	Half core metallurgical	HQ3	66.10	67.60	1.50
K16-349	D00005003	D00004003	Half core metallurgical	HQ3	67.60	69.00	1.40
K16-349	D00005004	D00004004	Half core metallurgical	HQ3	69.00	71.00	2.00
K16-349	D00005005	D00004005	Half core metallurgical	HQ3	71.00	72.50	1.50
K16-349	D00005006	D00004006	Half core metallurgical	HQ3	72.50	74.00	1.50
K16-349	D00005007	D00004007	Half core metallurgical	HQ3	74.00	75.00	1.00
K16-349	D00005008	D00004008	Half core metallurgical	HQ3	75.00	76.00	1.00
K16-349	D00005009	D00004009	Half core metallurgical	HQ3	76.00	77.00	1.00
K16-349	D00005012	D00004012	Half core metallurgical	HQ3	77.00	78.00	1.00
K16-349	D00005013	D00004013	Half core metallurgical	HQ3	79.30	80.00	0.70
K16-349	D00005014	D00004014	Half core metallurgical	HQ3	80.00	81.10	1.10
K16-349	D00005015	D00004015	Half core metallurgical	HQ3	81.10	82.20	1.10
K16-349	D00005016	D00004016	Half core metallurgical	HQ3	82.20	83.70	1.50
K16-349	D00005017	D00004017	Half core metallurgical	HQ3	83.70	85.20	1.50
K16-349	D00005018	D00004018	Half core metallurgical	HQ3	85.20	86.60	1.40
K16-349	D00005019	D00004019	Half core metallurgical	HQ3	86.60	88.00	1.40
K16-349	D00005021	D00004021	Half core metallurgical	HQ3	88.00	89.50	1.50
K16-349	D00005022	D00004022	Half core metallurgical	HQ3	89.50	91.00	1.50
K16-349	D00005023	D00004023	Half core metallurgical	HQ3	91.00	92.40	1.40
K16-349	D00005024	D00004024	Half core metallurgical	HQ3	94.10	95.60	1.50
K16-349	D00005025	D00004025	Half core metallurgical	HQ3	95.60	97.00	1.40
K16-349	D00005026	D00004026	Half core metallurgical	HQ3	97.00	98.50	1.50
K16-349	D00005027	D00004027	Half core metallurgical	HQ3	98.50	100.00	1.50
K16-349	D00005028	D00004028	Half core metallurgical	HQ3	100.00	101.50	1.50
K16-349	D00005029	D00004029	Half core metallurgical	HQ3	101.50	103.00	1.50
K16-349	D00005031	D00004031	Half core metallurgical	HQ3	103.00	104.40	1.40

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-349	D00005032	D00004032	Half core metallurgical	HQ3	104.40	105.50	1.10
K16-349	D00005033	D00004033	Half core metallurgical	HQ3	105.50	106.70	1.20
K16-349	D00005034	D00004034	Half core metallurgical	HQ3	106.70	107.20	0.50
K16-349	D00005035	D00004035	Half core metallurgical	HQ3	107.20	108.20	1.00
K16-349	D00005036	D00004036	Half core metallurgical	HQ3	108.20	109.20	1.00
K16-349	D00005037	D00004037	Half core metallurgical	HQ3	109.20	110.10	0.90
K16-349	D00005038	D00004038	Half core metallurgical	HQ3	110.10	111.10	1.00
K16-349	D00005039	D00004039	Half core metallurgical	HQ3	111.10	112.10	1.00
K16-349	D00005041	D00004041	Half core metallurgical	HQ3	112.10	113.10	1.00
K16-349	D00005042	D00004042	Half core metallurgical	HQ3	113.10	114.10	1.00
K16-349	D00005043	D00004043	Half core metallurgical	HQ3	114.10	115.10	1.00
K16-349	D00005044	D00004044	Half core metallurgical	HQ3	115.10	116.20	1.10
K16-349	D00005045	D00004045	Half core metallurgical	HQ3	116.20	117.30	1.10
K16-349	D00005046	D00004046	Half core metallurgical	HQ3	117.30	118.80	1.50
K16-349	D00005047	D00004047	Half core metallurgical	HQ3	118.80	120.30	1.50
K16-349	D00005048	D00004048	Half core metallurgical	HQ3	120.30	121.80	1.50
K16-349	D00005049	D00004049	Half core metallurgical	HQ3	121.80	122.90	1.10
K16-349	D00005051	D00004051	Half core metallurgical	HQ3	122.90	124.00	1.10
K16-349	D00005052	D00004052	Half core metallurgical	HQ3	124.00	125.50	1.50
K16-349	D00005053	D00004053	Half core metallurgical	HQ3	125.50	127.00	1.50
K16-349	D00005054	D00004054	Half core metallurgical	HQ3	164.50	166.00	1.50
K16-349	D00005055	D00004055	Half core metallurgical	HQ3	166.00	167.50	1.50
K16-349	D00005056	D00004056	Half core metallurgical	HQ3	167.50	168.80	1.30
K16-349	D00005057	D00004057	Half core metallurgical	HQ3	168.80	169.80	1.00
K16-349	D00005058	D00004058	Half core metallurgical	HQ3	169.80	171.00	1.20
K16-349	D00005059	D00004059	Half core metallurgical	HQ3	171.00	173.00	2.00
K16-349	D00005061	D00004061	Half core metallurgical	HQ3	173.00	174.50	1.50
K16-361	B00266401	B00267401	Half core metallurgical	HQ3	7.57	8.57	1.00
K16-361	B00266402	B00267402	Half core metallurgical	HQ3	8.57	9.57	1.00
K16-361	B00266403	B00267403	Half core metallurgical	HQ3	9.57	10.57	1.00
K16-361	B00266404	B00267404	Half core metallurgical	HQ3	10.57	11.57	1.00
K16-361	B00266405	B00267405	Half core metallurgical	HQ3	11.57	12.57	1.00
K16-361	B00266406	B00267406	Half core metallurgical	HQ3	12.57	13.57	1.00
K16-361	B00266407	B00267407	Half core metallurgical	HQ3	13.57	14.57	1.00
K16-361	B00266408	B00267408	Half core metallurgical	HQ3	14.57	15.57	1.00
K16-361	B00266409	B00267409	Half core metallurgical	HQ3	15.57	16.57	1.00
K16-361	B00266411	B00267411	Half core metallurgical	HQ3	16.57	17.57	1.00
K16-361	B00266412	B00267412	Half core metallurgical	HQ3	17.57	18.57	1.00
K16-361	B00266413	B00267413	Half core metallurgical	HQ3	18.57	19.57	1.00
K16-361	B00266414	B00267414	Half core metallurgical	HQ3	19.57	20.57	1.00
K16-361	B00266415	B00267415	Half core metallurgical	HQ3	20.57	21.45	0.88
K16-361	B00266416	B00267416	Half core metallurgical	HQ3	21.45	22.79	1.34
K16-361	B00266417	B00267417	Half core metallurgical	HQ3	22.79	23.79	1.00
K16-361	B00266418	B00267418	Half core metallurgical	HQ3	23.79	24.79	1.00
K16-361	B00266419	B00267419	Half core metallurgical	HQ3	24.79	25.79	1.00
K16-361	B00266422	B00267422	Half core metallurgical	HQ3	25.79	26.79	1.00
K16-361	B00266423	B00267423	Half core metallurgical	HQ3	26.79	27.77	0.98
K16-361	B00266424	B00267424	Half core metallurgical	HQ3	27.77	29.40	1.63
K16-361	B00266425	B00267425	Half core metallurgical	HQ3	29.40	30.78	1.38
K16-361	B00266426	B00267426	Half core metallurgical	HQ3	30.78	31.50	0.72
K16-361	B00266427	B00267427	Half core metallurgical	HQ3	31.50	32.76	1.26
K16-361	B00266428	B00267428	Half core metallurgical	HQ3	32.76	34.00	1.24
K16-361	B00266429	B00267429	Half core metallurgical	HQ3	34.00	35.48	1.48
K16-361	B00266431	B00267431	Half core metallurgical	HQ3	35.48	36.28	0.80
K16-361	B00266432	B00267432	Half core metallurgical	HQ3	36.28	37.28	1.00
K16-361	B00266433	B00267433	Half core metallurgical	HQ3	37.28	38.28	1.00
K16-361	B00266434	B00267434	Half core metallurgical	HQ3	38.28	39.00	0.72
K16-361	B00266435	B00267435	Half core metallurgical	HQ3	39.00	39.48	0.48

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-361	B00266436	B00267436	Half core metallurgical	HQ3	39.48	40.48	1.00
K16-361	B00266437	B00267437	Half core metallurgical	HQ3	40.48	42.00	1.52
K16-361	B00266438	B00267438	Half core metallurgical	HQ3	42.00	43.20	1.20
K16-361	B00266439	B00267439	Half core metallurgical	HQ3	43.20	44.20	1.00
K16-361	B00266441	B00267441	Half core metallurgical	HQ3	44.20	45.20	1.00
K16-361	B00266442	B00267442	Half core metallurgical	HQ3	45.20	46.50	1.30
K16-361	B00266443	B00267443	Half core metallurgical	HQ3	46.50	48.42	1.92
K16-361	B00266444	B00267444	Half core metallurgical	HQ3	48.42	49.42	1.00
K16-362	D00005062	D00004062	Half core metallurgical	HQ3	50.80	52.00	1.20
K16-362	D00005063	D00004063	Half core metallurgical	HQ3	52.00	53.70	1.70
K16-362	D00005064	D00004064	Half core metallurgical	HQ3	53.70	55.00	1.30
K16-362	D00005065	D00004065	Half core metallurgical	HQ3	55.00	56.00	1.00
K16-362	D00005066	D00004066	Half core metallurgical	HQ3	56.00	57.50	1.50
K16-362	D00005067	D00004067	Half core metallurgical	HQ3	57.50	58.93	1.43
K16-362	D00005068	D00004068	Half core metallurgical	HQ3	58.93	60.28	1.35
K16-362	D00005069	D00004069	Half core metallurgical	HQ3	60.28	61.00	0.72
K16-362	D00005072	D00004072	Half core metallurgical	HQ3	61.00	61.54	0.54
K16-362	D00005073	D00004073	Half core metallurgical	HQ3	61.54	62.50	0.96
K16-362	D00005074	D00004074	Half core metallurgical	HQ3	62.50	63.32	0.82
K16-362	D00005075	D00004075	Half core metallurgical	HQ3	63.32	63.97	0.65
K16-362	D00005076	D00004076	Half core metallurgical	HQ3	63.97	64.71	0.74
K16-362	D00005077	D00004077	Half core metallurgical	HQ3	64.71	65.45	0.74
K16-362	D00005078	D00004078	Half core metallurgical	HQ3	65.45	66.25	0.80
K16-362	D00005079	D00004079	Half core metallurgical	HQ3	66.25	67.00	0.75
K16-362	D00005081	D00004081	Half core metallurgical	HQ3	67.00	67.69	0.69
K16-362	D00005082	D00004082	Half core metallurgical	HQ3	67.69	68.09	0.40
K16-362	D00005083	D00004083	Half core metallurgical	HQ3	68.09	69.00	0.91
K16-362	D00005084	D00004084	Half core metallurgical	HQ3	69.00	69.83	0.83
K16-362	D00005085	D00004085	Half core metallurgical	HQ3	69.83	70.83	1.00
K16-362	D00005086	D00004086	Half core metallurgical	HQ3	70.83	71.60	0.77
K16-362	D00005087	D00004087	Half core metallurgical	HQ3	71.60	72.52	0.92
K16-362	D00005088	D00004088	Half core metallurgical	HQ3	72.52	73.10	0.58
K16-362	D00005089	D00004089	Half core metallurgical	HQ3	73.10	74.00	0.90
K16-362	D00005092	D00004092	Half core metallurgical	HQ3	74.00	75.00	1.00
K16-362	D00005093	D00004093	Half core metallurgical	HQ3	75.00	76.00	1.00
K16-362	D00005094	D00004094	Half core metallurgical	HQ3	76.00	77.00	1.00
K16-362	D00005095	D00004095	Half core metallurgical	HQ3	77.00	78.00	1.00
K16-362	D00005096	D00004096	Half core metallurgical	HQ3	78.00	78.73	0.73
K16-362	D00005097	D00004097	Half core metallurgical	HQ3	78.73	79.50	0.77
K16-362	D00005098	D00004098	Half core metallurgical	HQ3	79.50	80.38	0.88
K16-362	D00005099	D00004099	Half core metallurgical	HQ3	80.38	81.50	1.12
K16-362	D00005101	D00004101	Half core metallurgical	HQ3	81.50	82.50	1.00
K16-362	D00005102	D00004102	Half core metallurgical	HQ3	82.50	83.50	1.00
K16-362	D00005103	D00004103	Half core metallurgical	HQ3	83.50	84.50	1.00
K16-362	D00005104	D00004104	Half core metallurgical	HQ3	84.50	85.50	1.00
K16-362	D00005105	D00004105	Half core metallurgical	HQ3	85.50	86.50	1.00
K16-362	D00005106	D00004106	Half core metallurgical	HQ3	86.50	87.42	0.92
K16-362	D00005107	D00004107	Half core metallurgical	HQ3	87.42	88.08	0.66
K16-362	D00005108	D00004108	Half core metallurgical	HQ3	88.08	89.08	1.00
K16-362	D00005109	D00004109	Half core metallurgical	HQ3	89.08	90.50	1.42
K16-362	D00005111	D00004111	Half core metallurgical	HQ3	90.50	92.00	1.50
K16-362	D00005112	D00004112	Half core metallurgical	HQ3	92.00	93.50	1.50
K16-362	D00005113	D00004113	Half core metallurgical	HQ3	93.50	95.00	1.50
K16-362	D00005114	D00004114	Half core metallurgical	HQ3	95.00	96.50	1.50
K16-362	D00005115	D00004115	Half core metallurgical	HQ3	96.50	98.00	1.50
K16-362	D00005116	D00004116	Half core metallurgical	HQ3	101.00	102.50	1.50
K16-362	D00005117	D00004117	Half core metallurgical	HQ3	102.50	104.00	1.50
K16-362	D00005118	D00004118	Half core metallurgical	HQ3	104.00	105.00	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-362	D00005119	D00004119	Half core metallurgical	HQ3	105.00	105.95	0.95
K16-362	D00005121	D00004121	Half core metallurgical	HQ3	105.95	107.22	1.27
K16-362	D00005122	D00004122	Half core metallurgical	HQ3	107.22	108.17	0.95
K16-362	D00005123	D00004123	Half core metallurgical	HQ3	108.17	109.50	1.33
K16-362	D00005124	D00004124	Half core metallurgical	HQ3	109.50	111.00	1.50
K16-362	D00005125	D00004125	Half core metallurgical	HQ3	111.00	112.50	1.50
K16-362	D00005126	D00004126	Half core metallurgical	HQ3	112.50	114.00	1.50
K16-362	D00005127	D00004127	Half core metallurgical	HQ3	114.00	115.50	1.50
K16-362	D00005128	D00004128	Half core metallurgical	HQ3	115.50	117.00	1.50
K16-362	D00005129	D00004129	Half core metallurgical	HQ3	117.00	118.16	1.16
K16-362	D00005131	D00004131	Half core metallurgical	HQ3	118.16	118.80	0.64
K16-362	D00005132	D00004132	Half core metallurgical	HQ3	118.80	119.70	0.90
K16-362	D00005133	D00004133	Half core metallurgical	HQ3	119.70	120.60	0.90
K16-362	D00005134	D00004134	Half core metallurgical	HQ3	120.60	121.48	0.88
K16-362	D00005135	D00004135	Half core metallurgical	HQ3	121.48	122.92	1.44
K16-362	D00005136	D00004136	Half core metallurgical	HQ3	122.92	123.46	0.54
K16-362	D00005137	D00004137	Half core metallurgical	HQ3	123.46	124.47	1.01
K16-362	D00005138	D00004138	Half core metallurgical	HQ3	124.47	125.90	1.43
K16-362	D00005139	D00004139	Half core metallurgical	HQ3	125.90	127.30	1.40
K16-362	D00005141	D00004141	Half core metallurgical	HQ3	127.30	128.10	0.80
K16-362	D00005142	D00004142	Half core metallurgical	HQ3	128.10	129.13	1.03
K16-362	D00005143	D00004143	Half core metallurgical	HQ3	129.13	130.00	0.87
K16-362	D00005144	D00004144	Half core metallurgical	HQ3	130.00	131.00	1.00
K16-362	D00005145	D00004145	Half core metallurgical	HQ3	131.00	132.29	1.29
K16-362	D00005146	D00004146	Half core metallurgical	HQ3	132.29	133.79	1.50
K16-362	D00005147	D00004147	Half core metallurgical	HQ3	133.79	135.00	1.21
K16-362	D00005148	D00004148	Half core metallurgical	HQ3	135.00	136.50	1.50
K16-362	D00005149	D00004149	Half core metallurgical	HQ3	136.50	138.00	1.50
K16-364	B00266445	B00267445	Half core metallurgical	HQ3	5.65	6.26	0.61
K16-364	B00266446	B00267446	Half core metallurgical	HQ3	6.26	7.10	0.84
K16-364	B00266447	B00267447	Half core metallurgical	HQ3	7.10	8.05	0.95
K16-364	B00266448	B00267448	Half core metallurgical	HQ3	8.05	9.05	1.00
K16-364	B00266449	B00267449	Half core metallurgical	HQ3	9.05	10.05	1.00
K16-364	B00266451	B00267451	Half core metallurgical	HQ3	10.05	11.05	1.00
K16-364	B00266452	B00267452	Half core metallurgical	HQ3	11.05	12.05	1.00
K16-364	B00266453	B00267453	Half core metallurgical	HQ3	12.05	13.15	1.10
K16-364	B00266454	B00267454	Half core metallurgical	HQ3	13.15	13.86	0.71
K16-364	B00266455	B00267455	Half core metallurgical	HQ3	13.86	14.86	1.00
K16-364	B00266456	B00267456	Half core metallurgical	HQ3	14.86	15.60	0.74
K16-364	B00266457	B00267457	Half core metallurgical	HQ3	15.60	16.42	0.82
K16-364	B00266458	B00267458	Half core metallurgical	HQ3	16.42	17.20	0.78
K16-364	B00266459	B00267459	Half core metallurgical	HQ3	17.20	18.10	0.90
K16-364	B00266462	B00267462	Half core metallurgical	HQ3	18.10	18.58	0.48
K16-364	B00266463	B00267463	Half core metallurgical	HQ3	18.58	19.87	1.29
K16-364	B00266464	B00267464	Half core metallurgical	HQ3	19.87	21.00	1.13
K16-364	B00266465	B00267465	Half core metallurgical	HQ3	21.00	22.50	1.50
K16-364	B00266466	B00267466	Half core metallurgical	HQ3	22.50	24.00	1.50
K16-364	B00266467	B00267467	Half core metallurgical	HQ3	24.00	25.40	1.40
K16-364	B00266468	B00267468	Half core metallurgical	HQ3	25.40	26.05	0.65
K16-364	B00266469	B00267469	Half core metallurgical	HQ3	26.05	26.70	0.65
K16-364	B00266471	B00267471	Half core metallurgical	HQ3	26.70	27.53	0.83
K16-364	B00266472	B00267472	Half core metallurgical	HQ3	27.53	28.37	0.84
K16-364	B00266473	B00267473	Half core metallurgical	HQ3	28.37	29.26	0.89
K16-364	B00266474	B00267474	Half core metallurgical	HQ3	29.26	30.42	1.16
K16-364	B00266475	B00267475	Half core metallurgical	HQ3	30.42	31.32	0.90
K16-364	B00266476	B00267476	Half core metallurgical	HQ3	31.32	32.22	0.90
K16-364	B00266477	B00267477	Half core metallurgical	HQ3	32.22	33.37	1.15
K16-364	B00266478	B00267478	Half core metallurgical	HQ3	33.37	35.31	1.94

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-364	B00266479	B00267479	Half core metallurgical	HQ3	35.31	36.28	0.97
K16-364	B00266481	B00267481	Half core metallurgical	HQ3	36.28	37.53	1.25
K16-364	B00266482	B00267482	Half core metallurgical	HQ3	37.53	38.80	1.27
K16-364	B00266483	B00267483	Half core metallurgical	HQ3	38.80	40.20	1.40
K16-364	B00266484	B00267484	Half core metallurgical	HQ3	40.20	41.70	1.50
K16-364	B00266485	B00267485	Half core metallurgical	HQ3	41.70	43.20	1.50
K16-364	B00266486	B00267486	Half core metallurgical	HQ3	43.20	44.70	1.50
K16-364	B00266487	B00267487	Half core metallurgical	HQ3	44.70	46.20	1.50
K16-365	D00005157	D00004157	Half core metallurgical	HQ3	26.00	27.50	1.50
K16-365	D00005158	D00004158	Half core metallurgical	HQ3	27.50	29.00	1.50
K16-365	D00005159	D00004159	Half core metallurgical	HQ3	29.00	30.50	1.50
K16-365	D00005161	D00004161	Half core metallurgical	HQ3	30.50	31.77	1.27
K16-365	D00005162	D00004162	Half core metallurgical	HQ3	31.77	33.15	1.38
K16-365	D00005163	D00004163	Half core metallurgical	HQ3	33.15	34.64	1.49
K16-365	D00005164	D00004164	Half core metallurgical	HQ3	34.64	35.70	1.06
K16-365	D00005165	D00004165	Half core metallurgical	HQ3	35.70	37.06	1.36
K16-365	D00005166	D00004166	Half core metallurgical	HQ3	37.06	37.94	0.88
K16-365	D00005167	D00004167	Half core metallurgical	HQ3	37.94	38.36	0.42
K16-365	D00005168	D00004168	Half core metallurgical	HQ3	38.36	39.25	0.89
K16-365	D00005169	D00004169	Half core metallurgical	HQ3	39.25	40.12	0.87
K16-365	D00005171	D00004171	Half core metallurgical	HQ3	40.12	41.52	1.40
K16-365	D00005172	D00004172	Half core metallurgical	HQ3	41.52	43.00	1.48
K16-365	D00005173	D00004173	Half core metallurgical	HQ3	43.00	44.00	1.00
K16-365	D00005174	D00004174	Half core metallurgical	HQ3	44.00	45.00	1.00
K16-365	D00005175	D00004175	Half core metallurgical	HQ3	45.00	46.04	1.04
K16-365	D00005176	D00004176	Half core metallurgical	HQ3	46.04	47.16	1.12
K16-365	D00005177	D00004177	Half core metallurgical	HQ3	47.16	48.50	1.34
K16-365	D00005178	D00004178	Half core metallurgical	HQ3	48.50	50.00	1.50
K16-365	D00005179	D00004179	Half core metallurgical	HQ3	50.00	51.44	1.44
K16-365	D00005181	D00004181	Half core metallurgical	HQ3	51.44	52.43	0.99
K16-365	D00005182	D00004182	Half core metallurgical	HQ3	52.43	53.50	1.07
K16-365	D00005183	D00004183	Half core metallurgical	HQ3	53.50	55.00	1.50
K16-365	D00005184	D00004184	Half core metallurgical	HQ3	55.00	56.00	1.00
K16-365	D00005185	D00004185	Half core metallurgical	HQ3	56.00	57.00	1.00
K16-365	D00005186	D00004186	Half core metallurgical	HQ3	57.00	58.00	1.00
K16-365	D00005187	D00004187	Half core metallurgical	HQ3	58.00	59.18	1.18
K16-365	D00005188	D00004188	Half core metallurgical	HQ3	59.18	60.00	0.82
K16-365	D00005189	D00004189	Half core metallurgical	HQ3	60.00	61.50	1.50
K16-365	D00005191	D00004191	Half core metallurgical	HQ3	61.50	63.00	1.50
K16-365	D00005192	D00004192	Half core metallurgical	HQ3	63.00	64.62	1.62
K16-365	D00005193	D00004193	Half core metallurgical	HQ3	64.62	65.70	1.08
K16-365	D00005194	D00004194	Half core metallurgical	HQ3	65.70	66.50	0.80
K16-365	D00005195	D00004195	Half core metallurgical	HQ3	66.50	68.00	1.50
K16-365	D00005196	D00004196	Half core metallurgical	HQ3	68.00	69.00	1.00
K16-365	D00005197	D00004197	Half core metallurgical	HQ3	69.00	69.68	0.68
K16-365	D00005198	D00004198	Half core metallurgical	HQ3	69.68	71.00	1.32
K16-365	D00005199	D00004199	Half core metallurgical	HQ3	71.00	72.00	1.00
K16-365	D00005201	D00004201	Half core metallurgical	HQ3	72.00	73.00	1.00
K16-365	D00005202	D00004202	Half core metallurgical	HQ3	73.00	74.00	1.00
K16-365	D00005203	D00004203	Half core metallurgical	HQ3	74.00	75.00	1.00
K16-365	D00005204	D00004204	Half core metallurgical	HQ3	75.00	76.00	1.00
K16-365	D00005205	D00004205	Half core metallurgical	HQ3	76.00	77.00	1.00
K16-365	D00005206	D00004206	Half core metallurgical	HQ3	77.00	78.00	1.00
K16-365	D00005207	D00004207	Half core metallurgical	HQ3	78.00	79.50	1.50
K16-365	D00005208	D00004208	Half core metallurgical	HQ3	79.50	81.00	1.50
K16-365	D00005209	D00004209	Half core metallurgical	HQ3	81.00	82.00	1.00
K16-365	D00005212	D00004212	Half core metallurgical	HQ3	82.00	83.00	1.00
K16-365	D00005213	D00004213	Half core metallurgical	HQ3	83.00	84.00	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-365	D00005214	D00004214	Half core metallurgical	HQ3	84.00	85.00	1.00
K16-365	D00005215	D00004215	Half core metallurgical	HQ3	85.00	85.94	0.94
K16-365	D00005216	D00004216	Half core metallurgical	HQ3	85.94	87.08	1.14
K16-365	D00005217	D00004217	Half core metallurgical	HQ3	87.08	88.22	1.14
K16-365	D00005218	D00004218	Half core metallurgical	HQ3	88.22	89.20	0.98
K16-365	D00005219	D00004219	Half core metallurgical	HQ3	89.20	90.20	1.00
K16-365	D00005221	D00004221	Half core metallurgical	HQ3	90.20	91.20	1.00
K16-365	D00005222	D00004222	Half core metallurgical	HQ3	91.20	92.20	1.00
K16-365	D00005223	D00004223	Half core metallurgical	HQ3	92.20	93.00	0.80
K16-365	D00005224	D00004224	Half core metallurgical	HQ3	93.00	94.00	1.00
K16-365	D00005225	D00004225	Half core metallurgical	HQ3	94.00	95.00	1.00
K16-365	D00005226	D00004226	Half core metallurgical	HQ3	95.00	96.00	1.00
K16-365	D00005227	D00004227	Half core metallurgical	HQ3	96.00	97.00	1.00
K16-365	D00005228	D00004228	Half core metallurgical	HQ3	97.00	98.00	1.00
K16-365	D00005229	D00004229	Half core metallurgical	HQ3	98.00	98.84	0.84
K16-365	D00005232	D00004232	Half core metallurgical	HQ3	98.84	100.00	1.16
K16-365	D00005233	D00004233	Half core metallurgical	HQ3	100.00	101.50	1.50
K16-365	D00005234	D00004234	Half core metallurgical	HQ3	101.50	103.00	1.50
K16-365	D00005235	D00004235	Half core metallurgical	HQ3	103.00	104.50	1.50
K16-365	D00005236	D00004236	Half core metallurgical	HQ3	104.50	106.00	1.50
K16-365	D00005237	D00004237	Half core metallurgical	HQ3	106.00	107.00	1.00
K16-365	D00005238	D00004238	Half core metallurgical	HQ3	107.00	107.96	0.96
K16-365	D00005239	D00004239	Half core metallurgical	HQ3	107.96	108.36	0.40
K16-365	D00005241	D00004241	Half core metallurgical	HQ3	108.36	109.75	1.39
K16-365	D00005242	D00004242	Half core metallurgical	HQ3	109.75	111.00	1.25
K16-365	D00005243	D00004243	Half core metallurgical	HQ3	111.00	112.50	1.50
K16-365	D00005244	D00004244	Half core metallurgical	HQ3	112.50	113.25	0.75
K16-365	D00005245	D00004245	Half core metallurgical	HQ3	113.25	114.05	0.80
K16-365	D00005246	D00004246	Half core metallurgical	HQ3	114.05	115.00	0.95
K16-365	D00005247	D00004247	Half core metallurgical	HQ3	115.00	116.50	1.50
K16-365	D00005248	D00004248	Half core metallurgical	HQ3	116.50	117.60	1.10
K16-365	D00005249	D00004249	Half core metallurgical	HQ3	117.60	118.65	1.05
K16-365	D00005252	D00004252	Half core metallurgical	HQ3	118.65	119.72	1.07
K16-365	D00005253	D00004253	Half core metallurgical	HQ3	119.72	120.45	0.73
K16-365	D00005254	D00004254	Half core metallurgical	HQ3	120.45	121.50	1.05
K16-365	D00005255	D00004255	Half core metallurgical	HQ3	121.50	122.50	1.00
K16-365	D00005256	D00004256	Half core metallurgical	HQ3	122.50	123.50	1.00
K16-365	D00005257	D00004257	Half core metallurgical	HQ3	123.50	124.50	1.00
K16-365	D00005258	D00004258	Half core metallurgical	HQ3	124.50	125.50	1.00
K16-365	D00005259	D00004259	Half core metallurgical	HQ3	125.50	126.50	1.00
K16-365	D00005261	D00004261	Half core metallurgical	HQ3	126.50	127.50	1.00
K16-365	D00005262	D00004262	Half core metallurgical	HQ3	127.50	128.50	1.00
K16-365	D00005263	D00004263	Half core metallurgical	HQ3	128.50	129.19	0.69
K16-365	D00005264	D00004264	Half core metallurgical	HQ3	129.19	130.00	0.81
K16-365	D00005265	D00004265	Half core metallurgical	HQ3	130.00	131.00	1.00
K16-365	D00005266	D00004266	Half core metallurgical	HQ3	131.00	131.91	0.91
K16-365	D00005267	D00004267	Half core metallurgical	HQ3	131.91	132.80	0.89
K16-365	D00005268	D00004268	Half core metallurgical	HQ3	132.80	134.00	1.20
K16-365	D00005269	D00004269	Half core metallurgical	HQ3	134.00	135.20	1.20
K16-365	D00005272	D00004272	Half core metallurgical	HQ3	135.20	136.70	1.50
K16-365	D00005273	D00004273	Half core metallurgical	HQ3	136.70	138.20	1.50
K16-365	D00005274	D00004274	Half core metallurgical	HQ3	138.20	139.70	1.50
K16-365	D00005275	D00004275	Half core metallurgical	HQ3	139.70	140.70	1.00
K16-365	D00005276	D00004276	Half core metallurgical	HQ3	140.70	141.70	1.00
K16-365	D00005277	D00004277	Half core metallurgical	HQ3	141.70	142.70	1.00
K16-365	D00005278	D00004278	Half core metallurgical	HQ3	142.70	143.70	1.00
K16-365	D00005279	D00004279	Half core metallurgical	HQ3	143.70	144.70	1.00
K16-365	D00005281	D00004281	Half core metallurgical	HQ3	144.70	145.70	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-365	D00005282	D00004282	Half core metallurgical	HQ3	145.70	146.70	1.00
K16-365	D00005283	D00004283	Half core metallurgical	HQ3	146.70	147.70	1.00
K16-365	D00005284	D00004284	Half core metallurgical	HQ3	147.70	148.76	1.06
K16-365	D00005285	D00004285	Half core metallurgical	HQ3	148.76	149.70	0.94
K16-365	D00005286	D00004286	Half core metallurgical	HQ3	149.70	151.00	1.30
K16-365	D00005287	D00004287	Half core metallurgical	HQ3	151.00	152.05	1.05
K16-365	D00005288	D00004288	Half core metallurgical	HQ3	152.05	153.00	0.95
K16-365	D00005289	D00004289	Half core metallurgical	HQ3	153.00	154.50	1.50
K16-365	D00005291	D00004291	Half core metallurgical	HQ3	154.50	155.70	1.20
K16-365	D00005292	D00004292	Half core metallurgical	HQ3	155.70	157.00	1.30
K16-365	D00005293	D00004293	Half core metallurgical	HQ3	157.00	158.00	1.00
K16-365	D00005294	D00004294	Half core metallurgical	HQ3	158.00	159.00	1.00
K16-365	D00005295	D00004295	Half core metallurgical	HQ3	159.00	160.00	1.00
K16-365	D00005296	D00004296	Half core metallurgical	HQ3	160.00	161.04	1.04
K16-365	D00005297	D00004297	Half core metallurgical	HQ3	161.04	162.50	1.46
K16-365	D00005298	D00004298	Half core metallurgical	HQ3	162.50	164.00	1.50
K16-365	D00005299	D00004299	Half core metallurgical	HQ3	164.00	165.50	1.50
K16-365	D00005301	D00004301	Half core metallurgical	HQ3	165.50	167.00	1.50
K16-365	D00005302	D00004302	Half core metallurgical	HQ3	167.00	168.50	1.50
K16-366	D00007001	D00006001	Half core metallurgical	HQ3	8.57	9.57	1.00
K16-366	D00007002	D00006002	Half core metallurgical	HQ3	9.57	10.46	0.89
K16-366	D00007003	D00006003	Half core metallurgical	HQ3	10.46	11.46	1.00
K16-366	D00007004	D00006004	Half core metallurgical	HQ3	11.46	12.81	1.35
K16-366	D00007005	D00006005	Half core metallurgical	HQ3	12.81	13.81	1.00
K16-366	D00007006	D00006006	Half core metallurgical	HQ3	13.81	14.81	1.00
K16-366	D00007007	D00006007	Half core metallurgical	HQ3	14.81	16.00	1.19
K16-366	D00007008	D00006008	Half core metallurgical	HQ3	16.00	16.57	0.57
K16-366	D00007009	D00006009	Half core metallurgical	HQ3	16.57	17.62	1.05
K16-366	D00007011	D00006011	Half core metallurgical	HQ3	17.62	18.61	0.99
K16-366	D00007012	D00006012	Half core metallurgical	HQ3	18.61	20.00	1.39
K16-366	D00007013	D00006013	Half core metallurgical	HQ3	20.00	21.50	1.50
K16-366	D00007014	D00006014	Half core metallurgical	HQ3	21.50	22.75	1.25
K16-366	D00007015	D00006015	Half core metallurgical	HQ3	22.75	24.00	1.25
K16-366	D00007016	D00006016	Half core metallurgical	HQ3	24.00	25.00	1.00
K16-366	D00007017	D00006017	Half core metallurgical	HQ3	25.00	26.10	1.10
K16-366	D00007018	D00006018	Half core metallurgical	HQ3	26.10	26.60	0.50
K16-366	D00007019	D00006019	Half core metallurgical	HQ3	26.60	28.00	1.40
K16-366	D00007021	D00006021	Half core metallurgical	HQ3	28.00	29.50	1.50
K16-366	D00007022	D00006022	Half core metallurgical	HQ3	29.50	30.94	1.44
K16-366	D00007023	D00006023	Half core metallurgical	HQ3	30.94	31.94	1.00
K16-366	D00007024	D00006024	Half core metallurgical	HQ3	31.94	32.94	1.00
K16-366	D00007025	D00006025	Half core metallurgical	HQ3	32.94	33.94	1.00
K16-366	D00007026	D00006026	Half core metallurgical	HQ3	33.94	34.66	0.72
K16-366	D00007027	D00006027	Half core metallurgical	HQ3	34.66	35.51	0.85
K16-366	D00007028	D00006028	Half core metallurgical	HQ3	35.51	36.49	0.98
K16-366	D00007029	D00006029	Half core metallurgical	HQ3	36.49	37.56	1.07
K16-366	D00007031	D00006031	Half core metallurgical	HQ3	37.56	39.09	1.53
K16-366	D00007032	D00006032	Half core metallurgical	HQ3	39.09	40.00	0.91
K16-366	D00007033	D00006033	Half core metallurgical	HQ3	40.00	40.71	0.71
K16-366	D00007034	D00006034	Half core metallurgical	HQ3	40.71	42.50	1.79
K16-366	D00007035	D00006035	Half core metallurgical	HQ3	42.50	43.50	1.00
K16-366	D00007036	D00006036	Half core metallurgical	HQ3	43.50	44.50	1.00
K16-366	D00007037	D00006037	Half core metallurgical	HQ3	44.50	45.50	1.00
K16-366	D00007038	D00006038	Half core metallurgical	HQ3	45.50	46.50	1.00
K16-366	D00007039	D00006039	Half core metallurgical	HQ3	46.50	47.50	1.00
K16-366	D00007041	D00006041	Half core metallurgical	HQ3	47.50	48.50	1.00
K16-366	D00007042	D00006042	Half core metallurgical	HQ3	48.50	49.50	1.00
K16-366	D00007043	D00006043	Half core metallurgical	HQ3	49.50	50.50	1.00

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-366	D00007044	D00006044	Half core metallurgical	HQ3	50.50	51.35	0.85
K16-366	D00007045	D00006045	Half core metallurgical	HQ3	51.35	52.50	1.15
K16-366	D00007046	D00006046	Half core metallurgical	HQ3	52.50	54.00	1.50
K16-366	D00007047	D00006047	Half core metallurgical	HQ3	54.00	55.50	1.50
K16-366	D00007048	D00006048	Half core metallurgical	HQ3	55.50	57.00	1.50
K16-366	D00007049	D00006049	Half core metallurgical	HQ3	57.00	58.50	1.50
K16-366	D00007051	D00006051	Half core metallurgical	HQ3	58.50	60.00	1.50
K16-366	D00007052	D00006052	Half core metallurgical	HQ3	60.00	61.33	1.33
K16-366	D00007053	D00006053	Half core metallurgical	HQ3	61.33	62.33	1.00
K16-366	D00007054	D00006054	Half core metallurgical	HQ3	62.33	63.77	1.44
K16-366	D00007055	D00006055	Half core metallurgical	HQ3	63.77	64.86	1.09
K16-366	D00007056	D00006056	Half core metallurgical	HQ3	64.86	65.70	0.84
K16-366	D00007057	D00006057	Half core metallurgical	HQ3	65.70	66.00	0.30
K16-366	D00007058	D00006058	Half core metallurgical	HQ3	66.00	66.69	0.69
K16-366	D00007059	D00006059	Half core metallurgical	HQ3	66.69	67.50	0.81
K16-366	D00007061	D00006061	Half core metallurgical	HQ3	67.50	68.48	0.98
K16-366	D00007062	D00006062	Half core metallurgical	HQ3	68.48	69.48	1.00
K16-366	D00007063	D00006063	Half core metallurgical	HQ3	69.48	70.38	0.90
K16-366	D00007064	D00006064	Half core metallurgical	HQ3	70.38	71.80	1.42
K16-366	D00007065	D00006065	Half core metallurgical	HQ3	71.80	73.30	1.50
K16-366	D00007066	D00006066	Half core metallurgical	HQ3	73.30	74.50	1.20
K16-366	D00007067	D00006067	Half core metallurgical	HQ3	74.50	75.75	1.25
K16-366	D00007068	D00006068	Half core metallurgical	HQ3	75.75	77.00	1.25
K16-378	D00005303	D00004303	Half core metallurgical	HQ3	84.00	85.31	1.31
K16-378	D00005304	D00004304	Half core metallurgical	HQ3	85.31	85.73	0.42
K16-378	D00005305	D00004305	Half core metallurgical	HQ3	85.73	87.22	1.49
K16-378	D00005306	D00004306	Half core metallurgical	HQ3	87.22	88.20	0.98
K16-378	D00005307	D00004307	Half core metallurgical	HQ3	88.20	89.70	1.50
K16-378	D00005308	D00004308	Half core metallurgical	HQ3	89.70	90.13	0.43
K16-378	D00005309	D00004309	Half core metallurgical	HQ3	90.13	91.63	1.50
K16-378	D00005312	D00004312	Half core metallurgical	HQ3	124.30	125.80	1.50
K16-378	D00005313	D00004313	Half core metallurgical	HQ3	125.80	127.30	1.50
K16-378	D00005314	D00004314	Half core metallurgical	HQ3	127.30	127.98	0.68
K16-378	D00005315	D00004315	Half core metallurgical	HQ3	127.98	129.00	1.02
K16-378	D00005316	D00004316	Half core metallurgical	HQ3	129.00	129.77	0.77
K16-378	D00005317	D00004317	Half core metallurgical	HQ3	129.77	131.00	1.23
K16-378	D00005318	D00004318	Half core metallurgical	HQ3	131.00	132.50	1.50
K16-378	D00005321	D00004321	Half core metallurgical	HQ3	82.54	84.00	1.46
K16-378	D00005322	D00004322	Half core metallurgical	HQ3	91.00	92.50	1.50
K16-388	D00005353	D00004353	Half core metallurgical	HQ3	151.50	153.00	1.50
K16-388	D00005354	D00004354	Half core metallurgical	HQ3	153.00	154.50	1.50
K16-388	D00005355	D00004355	Half core metallurgical	HQ3	154.50	155.97	1.47
K16-388	D00005356	D00004356	Half core metallurgical	HQ3	155.97	157.20	1.23
K16-388	D00005357	D00004357	Half core metallurgical	HQ3	157.20	158.00	0.80
K16-388	D00005358	D00004358	Half core metallurgical	HQ3	158.00	159.00	1.00
K16-388	D00005359	D00004359	Half core metallurgical	HQ3	159.00	159.25	0.25
K16-388	D00005361	D00004361	Half core metallurgical	HQ3	160.85	162.00	1.15
K16-388	D00005362	D00004362	Half core metallurgical	HQ3	162.00	163.00	1.00
K16-388	D00005363	D00004363	Half core metallurgical	HQ3	163.00	164.23	1.23
K16-388	D00005364	D00004364	Half core metallurgical	HQ3	164.23	165.15	0.92
K16-388	D00005365	D00004365	Half core metallurgical	HQ3	165.83	166.40	0.57
K16-388	D00005366	D00004366	Half core metallurgical	HQ3	166.40	166.90	0.50
K16-388	D00005367	D00004367	Half core metallurgical	HQ3	166.90	167.54	0.64
K16-388	D00005368	D00004368	Half core metallurgical	HQ3	167.54	168.94	1.40
K16-388	D00005369	D00004369	Half core metallurgical	HQ3	168.94	170.40	1.46
K16-388	D00005371	D00004371	Half core metallurgical	HQ3	170.40	171.90	1.50
K16-388	D00005372	D00004372	Half core metallurgical	HQ3	171.90	173.40	1.50
K16-388	D00005373	D00004373	Half core metallurgical	HQ3	218.35	219.85	1.50

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-388	D00005374	D00004374	Half core metallurgical	HQ3	219.85	220.66	0.81
K16-388	D00005375	D00004375	Half core metallurgical	HQ3	220.66	221.45	0.79
K16-388	D00005376	D00004376	Half core metallurgical	HQ3	222.00	223.50	1.50
K16-388	D00005377	D00004377	Half core metallurgical	HQ3	223.50	225.00	1.50
K16-388	D00005378	D00004378	Half core metallurgical	HQ3	225.00	226.30	1.30
K16-388	D00005379	D00004379	Half core metallurgical	HQ3	226.30	227.50	1.20
K16-388	D00005381	D00004381	Half core metallurgical	HQ3	227.50	228.50	1.00
K16-388	D00005382	D00004382	Half core metallurgical	HQ3	228.50	229.73	1.23
K16-388	D00005383	D00004383	Half core metallurgical	HQ3	229.73	230.65	0.92
K16-388	D00005384	D00004384	Half core metallurgical	HQ3	230.65	231.45	0.80
K16-388	D00005385	D00004385	Half core metallurgical	HQ3	231.45	232.95	1.50
K16-388	D00005386	D00004386	Half core metallurgical	HQ3	221.45	222.00	0.55
K16-388	D00005387	D00004387	Half core metallurgical	HQ3	232.95	234.24	1.29
K16-388	D00005388	D00004388	Half core metallurgical	HQ3	234.24	234.80	0.56
K16-393	D00005389	D00004389	Half core metallurgical	HQ3	70.50	72.00	1.50
K16-393	D00005391	D00004391	Half core metallurgical	HQ3	72.00	73.50	1.50
K16-393	D00005392	D00004392	Half core metallurgical	HQ3	73.50	75.00	1.50
K16-393	D00005393	D00004393	Half core metallurgical	HQ3	75.00	75.83	0.83
K16-393	D00005394	D00004394	Half core metallurgical	HQ3	75.83	76.34	0.51
K16-393	D00005395	D00004395	Half core metallurgical	HQ3	76.34	77.10	0.76
K16-393	D00005396	D00004396	Half core metallurgical	HQ3	77.10	77.83	0.73
K16-393	D00005397	D00004397	Half core metallurgical	HQ3	77.83	79.00	1.17
K16-393	D00005398	D00004398	Half core metallurgical	HQ3	79.00	80.12	1.12
K16-393	D00005399	D00004399	Half core metallurgical	HQ3	80.12	81.00	0.88
K16-393	D00005401	D00004401	Half core metallurgical	HQ3	81.00	81.85	0.85
K16-393	D00005402	D00004402	Half core metallurgical	HQ3	81.85	83.00	1.15
K16-393	D00005403	D00004403	Half core metallurgical	HQ3	83.00	84.50	1.50
K16-393	D00005404	D00004404	Half core metallurgical	HQ3	84.50	86.00	1.50
K16-396	D00005408	D00004408	Half core metallurgical	HQ3	76.74	78.00	1.26
K16-396	D00005409	D00004409	Half core metallurgical	HQ3	78.00	79.20	1.20
K16-396	D00005411	D00004411	Half core metallurgical	HQ3	79.20	80.60	1.40
K16-396	D00005412	D00004412	Half core metallurgical	HQ3	80.60	82.21	1.61
K16-396	D00005413	D00004413	Half core metallurgical	HQ3	82.21	83.74	1.53
K16-396	D00005414	D00004414	Half core metallurgical	HQ3	83.74	85.09	1.35
K16-396	D00005415	D00004415	Half core metallurgical	HQ3	85.09	85.91	0.82
K16-396	D00005416	D00004416	Half core metallurgical	HQ3	85.91	86.50	0.59
K16-396	D00005417	D00004417	Half core metallurgical	HQ3	86.50	87.75	1.25
K16-396	D00005418	D00004418	Half core metallurgical	HQ3	87.75	88.80	1.05
K16-396	D00005419	D00004419	Half core metallurgical	HQ3	88.80	89.16	0.36
K16-396	D00005421	D00004421	Half core metallurgical	HQ3	89.16	90.00	0.84
K16-396	D00005422	D00004422	Half core metallurgical	HQ3	90.00	90.53	0.53
K16-396	D00005423	D00004423	Half core metallurgical	HQ3	90.53	91.42	0.89
K16-396	D00005424	D00004424	Half core metallurgical	HQ3	91.42	92.68	1.26
K16-396	D00005425	D00004425	Half core metallurgical	HQ3	92.68	94.10	1.42
K16-396	D00005426	D00004426	Half core metallurgical	HQ3	94.10	95.60	1.50
K16-396	D00005427	D00004427	Half core metallurgical	HQ3	95.60	97.00	1.40
K16-396	D00005428	D00004428	Half core metallurgical	HQ3	159.10	160.57	1.47
K16-396	D00005429	D00004429	Half core metallurgical	HQ3	160.57	161.16	0.59
K16-396	D00005432	D00004432	Half core metallurgical	HQ3	161.16	162.01	0.85
K16-396	D00005433	D00004433	Half core metallurgical	HQ3	162.01	162.46	0.45
K16-396	D00005434	D00004434	Half core metallurgical	HQ3	162.46	163.70	1.24
K16-396	D00005435	D00004435	Half core metallurgical	HQ3	163.70	164.72	1.02
K16-396	D00005436	D00004436	Half core metallurgical	HQ3	164.72	166.20	1.48
K16-400	D00005438	D00004438	Half core metallurgical	HQ3	34.70	36.20	1.50
K16-400	D00005439	D00004439	Half core metallurgical	HQ3	36.20	37.90	1.70
K16-400	D00005441	D00004441	Half core metallurgical	HQ3	37.90	40.20	2.30
K16-400	D00005442	D00004442	Half core metallurgical	HQ3	43.20	43.90	0.70
K16-400	D00005443	D00004443	Half core metallurgical	HQ3	43.90	44.50	0.60

Hole	Sample ID	Parent Sample ID	Sample type	Core Size	From (m)	To (m)	Length (m)
K16-400	D00005444	D00004444	Half core metallurgical	HQ3	44.50	46.14	1.64
K16-400	D00005445	D00004445	Half core metallurgical	HQ3	46.14	47.00	0.86
K16-400	D00005446	D00004446	Half core metallurgical	HQ3	47.00	47.52	0.52
K16-400	D00005447	D00004447	Half core metallurgical	HQ3	47.52	49.34	1.82
K16-400	D00005448	D00004448	Half core metallurgical	HQ3	49.34	50.45	1.11
K16-400	D00005449	D00004449	Half core metallurgical	HQ3	50.45	51.00	0.55
K16-400	D00005451	D00004451	Half core metallurgical	HQ3	51.00	52.16	1.16
K16-400	D00005452	D00004452	Half core metallurgical	HQ3	52.16	52.83	0.67
K16-400	D00005453	D00004453	Half core metallurgical	HQ3	52.83	53.30	0.47
K16-400	D00005454	D00004454	Half core metallurgical	HQ3	53.30	54.82	1.52
K16-400	D00005455	D00004455	Half core metallurgical	HQ3	54.82	56.07	1.25
K16-400	D00005456	D00004456	Half core metallurgical	HQ3	56.07	56.61	0.54
K16-400	D00005457	D00004457	Half core metallurgical	HQ3	56.61	57.42	0.81
K16-400	D00005458	D00004458	Half core metallurgical	HQ3	57.42	57.82	0.40
K16-400	D00005459	D00004459	Half core metallurgical	HQ3	57.82	58.55	0.73
K16-400	D00005461	D00004461	Half core metallurgical	HQ3	58.55	59.45	0.90
K16-400	D00005462	D00004462	Half core metallurgical	HQ3	59.45	60.62	1.17
K16-400	D00005463	D00004463	Half core metallurgical	HQ3	60.62	62.00	1.38
K16-400	D00005464	D00004464	Half core metallurgical	HQ3	62.00	62.50	0.50
K16-400	D00005465	D00004465	Half core metallurgical	HQ3	62.50	63.60	1.10
K16-407	D00005323	None	Whole core metallurgical	HQ3	154.50	155.00	0.50
K16-407	D00005324	None	Whole core metallurgical	HQ3	155.00	156.00	1.00
K16-407	D00005325	None	Whole core metallurgical	HQ3	156.00	157.00	1.00
K16-407	D00005326	None	Whole core metallurgical	HQ3	157.00	158.00	1.00
K16-407	D00005327	None	Whole core metallurgical	HQ3	158.00	158.94	0.94
K16-407	D00005328	None	Whole core metallurgical	HQ3	158.94	159.90	0.96
K16-407	D00005329	None	Whole core metallurgical	HQ3	159.90	160.90	1.00
K16-407	D00005330	None	Whole core metallurgical	HQ3	160.90	161.68	0.78
K16-407	D00005331	None	Whole core metallurgical	HQ3	161.68	163.54	1.86
K16-407	D00005332	None	Whole core metallurgical	HQ3	163.54	164.34	0.80
K16-407	D00005333	None	Whole core metallurgical	HQ3	164.34	165.14	0.80
K16-407	D00005334	None	Whole core metallurgical	HQ3	165.14	165.96	0.82
K16-407	D00005335	None	Whole core metallurgical	HQ3	165.96	166.52	0.56
K16-407	D00005336	None	Whole core metallurgical	HQ3	166.52	166.99	0.47
K16-407	D00005337	None	Whole core metallurgical	HQ3	166.99	167.80	0.81
K16-407	D00005338	None	Whole core metallurgical	HQ3	167.80	168.45	0.65
K16-407	D00005339	None	Whole core metallurgical	HQ3	168.45	169.03	0.58
K16-407	D00005340	None	Whole core metallurgical	HQ3	169.03	169.70	0.67
K16-407	D00005341	None	Whole core metallurgical	HQ3	169.70	171.05	1.35
K16-407	D00005342	None	Whole core metallurgical	HQ3	171.05	172.25	1.20
K16-407	D00005343	None	Whole core metallurgical	HQ3	172.25	173.71	1.46
K16-407	D00005344	None	Whole core metallurgical	HQ3	173.71	174.34	0.63

Appendix P: Mine Site Investigation

Geotechnical Logs and Data

This appendix contains all geotechnical data from the 2016 mine site investigation program. Data is taken directly from the Knight Piésold 2016 Geotechnical Site Investigation Data Report. Data is presented in separate appendices, with the first page of each appendix starting on the page number indicated in Table P-1 below.

Table P-1: Table of contents for the mine site geotechnical data in this appendix

Appendix	Appendix Name	Page Number	Number of Pages
A	Test Pit Summary Logs	1	54
B1	Geotechnical Drillhole Logs	56	37
B2	RMR_{89} Field Sheets	93	29
C	Field PLT Results	122	6
D1	Laboratory Soil Testing Results	129	89
D2	Laboratory Rock Testing Results	218	16
E1	Hydrogeology Data-Constant Head Tests	235	53
E2	Hydrogeology Data-Monitoring Well Completion Logs	288	10
E3	Hydrogeology Data-Vibrating Wire Piezometer Plots	298	3
E4	Hydrogeology Data-Vibrating Wire Piezometer Calibration Records	301	4
F1	Thermistor Plots	306	19
F2	Thermistor Calibration Records	325	6
G1	Test Pit Photographs	332	146
G2	Drill Site Photos	478	35
G3	SPT Photos	513	36
G4	Core Box Photos	549	48
G5	Installation Photos	597	10

APPENDIX A

TEST PIT SUMMARY LOGS

(Pages A-1 to A-53)

Contractor: Tim Moon Construction
Location: Fault Creek
Coordinates: 415,073 E , 6,814,580 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-01
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1398 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT, dark brown, saturated, root inclusions, no ice	
						SAND & GRAVEL (0.2 to 0.5 m) SAND and GRAVEL, some silt, trace cobbles, fine to coarse grained, rounded to subangular, well graded, dark brownish grey, compact, massive, no ice inclusions, dry to slightly moist [ALLUVIAL FAN]	
1	1397					**GRAVELLY SILT & SAND** (0.5 to 4.5 m) Gravelly SILT and SAND, trace cobbles, trace boulders, fine to coarse grained, subrounded to subangular, well graded, low to non plastic, dark grey, dense, massive, ice inclusions (Nf, Vx, Vc), moist [ALLUVIAL FAN]	
		G B	1				1.5 m - Grab sample from 1.5 - 1.6
2	1396						
3	1395						
4	1394						
						End of Test Pit: 4.5 m Limit of excavator	
5	1393						

GENERAL REMARKS:

Difficult excavation due to boulders, walls stable but began sloughing at depth, [illegible] water

SAMPLING SYMBOLS:

G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-1

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Fault Creek
Coordinates: 415,027 E , 6,814,603 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-02
Equipment Used: Linkbelt 290
Total Depth: 4.3 m
Elevation: 1397 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SAND and GRAVEL, medium brown, spongey, fibrous, moist, root inclusions	
						SANDY GRAVEL & COBBLES (0.2 to 0.4 m) Sandy GRAVEL and COBBLES, fine to coarse grained, angular, well graded, medium grey, loose, dry to moist, ice coatings on particles, massive	
1	1396					**GRAVELLY SILT & SAND** (0.4 to 1.5 m) Gravelly SILT and SAND, trace cobbles, trace boulders, fine to coarse grained, subrounded to subangular, low to non plastic, dark grey, dense, massive, moist [ALLUVIAL FAN]	
2	1395					**SILTY SAND & GRAVEL** (1.5 to 4.3 m) Silty SAND and GRAVEL, trace cobbles, trace boulders, fine to coarse grained, subangular to subrounded, orangey brown, loose, dry, massive [WEATHERED BEDROCK]	
3	1394						
4	1393	G B	1				4.2 m - Grab sample from 4.2 - 4.3
						End of Test Pit: 4.3 m Limit of excavator	
5	1392						

GENERAL REMARKS:

Moderate difficulty to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:

G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-2

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Fault Creek
Coordinates: 414,918 E , 6,814,649 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-03
Equipment Used: Linkbelt 290
Total Depth: 3.2 m
Elevation: 1409 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil and silty SAND, some gravel, trace cobbles and boulders, fine to coarse grained, rounded to subangular, well graded, medium brown, root inclusions, moist, massive	
						SAND (0.3 to 2.1 m) SAND, some gravel, some silt, some boulders/cobbles, fine to coarse grained, subrounded to subangular, well graded, dark grey, dense, moist to dry, massive [ALLUVIAL FAN]	
1	1408						
2	1407					**SILTY SAND & GRAVEL** (2.1 to 3.2 m) Silty SAND and GRAVEL, some cobbles and boulders, fine to coarse grained, subangular to subrounded, orangey grey, dense, moist to dry, massive [WEATHERED BEDROCK]	
3	1406					End of Test Pit: 3.2 m Bedrock	
4	1405						
5	1404						

GENERAL REMARKS:
Easy to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-3

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Fault Creek
Coordinates: 414,833 E , 6,814,660 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-04
Equipment Used: Linkbelt 290
Total Depth: 2.2 m
Elevation: 1413 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Silty SAND, trace gravel, trace cobbles, poorly graded, medium to dark brown, dense, moist, massive, root inclusions	
		GB	1			**SAND & GRAVEL** (0.3 to 2.2 m) SAND and GRAVEL, some silt, some cobbles, trace boulders, fine to coarse grained, rounded to subangular, dark to medium grey, non plastic, moist, ice inclusions (Vx), massive [ALLUVIAL FAN]	0.5 m - Grab sample from 0.5 - 0.7
1	1412						
2	1411					**WEATHERED BEDROCK** (2.2 to 2.2 m) Dark grey, slightly weathered, strong, no staining [ARGILITE] End of Test Pit: 2.2 m Bedrock	
3	1410						
4	1409						
5	1408						

GENERAL REMARKS:

Difficult excavation due to boulders, walls stable, no permafrost, small seep at 2.2 m

SAMPLING SYMBOLS:

GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-4

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Krakatoa
Coordinates: 414,907 E , 6,814,974 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-05
Equipment Used: Linkbelt 290
Total Depth: 3.3 m
Elevation: 1380 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.5 m) Topsoil and SILT, dark black brown, saturated, no ice, roots and moss, organic odour, massive	
1	1379					**SILTY, SANDY GRAVEL** (0.5 to 3.3 m) Silty, sandy GRAVEL, some cobbles, trace boulders, trace clay, fine to coarse grained, subangular to subrounded, well graded, light greenish grey, low to medium plasticity, massive, compact, saturated	
2	1378						
3	1377	GB	1				3 m - Grab sample from 3.0 - 3.3
						End of Test Pit: 3.3 m Wall instability	
4	1376						
5	1375						

GENERAL REMARKS:

Very easy to excavate, walls sloughing, groundwater seeping from all sides at [illegible]

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-5

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Krakatoa
Coordinates: 414,979 E , 6,814,935 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-06
Equipment Used: Linkbelt 290
Total Depth: 1.6 m
Elevation: 1382 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
1	1381	G B	1			**ORGANICS** (0 to 0.2 m) Silty SAND, some gravel, trace cobbles, fine to coarse grained, subrounded to angular, well graded, loose, saturated, massive, no ice, root inclusions **SAND & GRAVEL** (0.2 to 1.6 m) SAND and GRAVEL, some cobbles, trace silt, fine to coarse grained, rounded to subangular, well graded, dark grey, dense, saturated, massive, ice inclusions (Vf) [ALLUVIAL FAN]	0.5 m - Grab sample from 0.5 - 1.6
2	1380					End of Test Pit: 1.6 m Water filling excavation	
3	1379						
4	1378						
5	1377						

GENERAL REMARKS:
Very difficult to excavate, water seeping in at 1.3 m, walls stable
SAMPLING SYMBOLS:
G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-6

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,809 E , 6,815,624 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-07
Equipment Used: Linkbelt 290
Total Depth: 2.4 m
Elevation: 1398 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil and SILT, dark brown to black, fine grained, root inclusions, moist to frozen (Vx)	
						SILTY SAND (0.3 to 0.5 m) Silty SAND, some gravel, trace cobbles, fine to coarse grained, subrounded to subangular, light yellowish brown, dense, moist, no ice, massive	
1	1397					**SAND & GRAVEL** (0.5 to 2.4 m) SAND and GRAVEL, some silt, trace cobbles, trace boulders, fine to coarse grained, subrounded to angular, light brown to dark orange, very dense, massive, no ice [ALLUVIAL FAN]	
2	1396	G B	1				2.3 m - Grab sample from 2.3 - 2.4
						End of Test Pit: 2.4 m Bedrock	
3	1395						
4	1394						
5	1393						

GENERAL REMARKS:
Moderate difficulty to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-7

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,646 E , 6,815,332 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-08
Equipment Used: Linkbelt 290
Total Depth: 4.2 m
Elevation: 1432 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil and SILT, fine grained, dark black to brown, moist, roots and moss inclusions, no ice	
						GRAVELLY SILT & SAND (0.1 to 1.3 m) Gravelly SILT and SAND, trace clay, trace cobbles, trace boulders, fine to coarse grained, subangular to subrounded, well graded, dark grey, low to no plasticity, massive, moist, dense, not frozen [GLACIAL TILL]	0.5 m - Grab sample from 0.5 - 1.0
		G B	1				
1	1431						
						WEATHERED BEDROCK (1.3 to 4.2 m) Gravelly SAND, some silt, trace cobbles, fine to coarse grained, angular, light orange, dense, massive [FELSIC VOLCANIC]	
2	1430						
3	1429						
4	1428						
						End of Test Pit: 4.2 m Bedrock	
5	1427						

GENERAL REMARKS:
Moderate difficulty to excavate, walls stable, groundwater seep at 2 m

SAMPLING SYMBOLS:
G B GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-8

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,645 E , 6,815,671 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-09 **Page:** 1 of 1
Equipment Used: Linkbelt 290 Date Started: 18 May 16
Total Depth: 3.9 m Date Completed: 18 May 16
Elevation: 1426 m Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil, moss and peat, root inclusions, moist	
						ORGANICS (0.3 to 0.7 m) SILT, black, poorly graded, saturated, loose, massive	
1	1425					**SILTY, GRAVELLY SAND** (0.7 to 3.9 m) Silty, gravelly SAND, some cobbles, some boulders, fine to coarse grained, subangular to subrounded, well graded, light grey, low plasticity, saturated, massive [GLACIAL TILL]	
2	1424						
3	1423	G B	1				3.8 m - Grab sample from 3.8 - 3.9
4	1422					End of Test Pit: 3.9 m Limit of excavator	
5	1421						

GENERAL REMARKS:

Easy to excavate, walls sloughing slightly, groundwater at 3.9 m

SAMPLING SYMBOLS:

G B GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-9

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,544 E , 6,815,463 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-10
Equipment Used: Linkbelt 290
Total Depth: 3 m
Elevation: 1453 m

Page: 1 of 1
Date Started: 18 May 16
Date Completed: 18 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.3 m) Topsoil (spongey peat) and SILT, black, fine grained, loose, moist, root inclusions	
						SILTY SAND & GRAVEL (0.3 to 0.6 m) Silty SAND and GRAVEL, fine to coarse grained, poorly graded, medium brown, frozen (Vf), massive, trace root inclusions	
1	1452					**WEATHERED BEDROCK** (0.6 to 3 m) SAND and GRAVEL, poorly graded, light orange, frozen (Vf)	
2	1451						
3	1450					End of Test Pit: 3 m Bedrock	
4	1449						
5	1448						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-10

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction	**Test Pit No.:** TP16-11	**Page:** 1 of 1	
Location: Class B Facility	Equipment Used: Linkbelt 290	Date Started: 19 May 16	
Coordinates: 414,690 E , 6,816,429 N	Total Depth: 3.5 m	Date Completed: 19 May 16	
Coordinate System: UTM ZONE 9N	Elevation: 1447 m	Logged by: MAP	
		Reviewed by: LJG	

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.4 m) Topsoil and SILT, some sand, trace gravel, fine grained, poorly graded, black, dense and blocky, frozen (Vf), massive, root inclusions	
		GB	1			**SILTY SAND** (0.4 to 0.8 m) Silty SAND, trace gravel, trace cobbles, fine grained, poorly graded, non plastic, light grey brown, dense, massive, no ice	0.4 m - Grab sample from 0.4 - 0.8
1	1446					**WEATHERED BEDROCK** (0.8 to 3.5 m) Highly to completely weathered, Light grey, flakey, micaceous, soft/weak [FELSIC VOLCANIC]	
2	1445						
3	1444						
						End of Test Pit: 3.5 m Groundwater / Limit of excavator	
4	1443						
5	1442						

GENERAL REMARKS:

Easy to excavate, walls stable until 2 m depth then collapsing, groundwater at 2 m flowing into test pit quickly

SAMPLING SYMBOLS:

GB GRAB

BLOCK

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VA101-640/03	1	0

FIGURE A1-11

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,480 E , 6,816,591 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-12
Equipment Used: Linkbelt 290
Total Depth: 1.6 m
Elevation: 1485 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Peat and moss and SILT, dark brown to black, saturated, loose, massive, root inclusions **WEATHERED BEDROCK** (0.1 to 1.6 m) Highly weathered, dark grey with iron oxide staining, foliated with thin layers, weak, visible ice inclusions (Vx, Vf, Nf, ICE+SOIL) [ARGILITE]	
1	1484						
1.6	1483.4					End of Test Pit: 1.6 m Bedrock	
2	1483						
3	1482						
4	1481						
5	1480						

GENERAL REMARKS:
Moderate difficulty to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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FIGURE A1-12

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,546 E , 6,816,764 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-13
Equipment Used: Linkbelt 290
Total Depth: 2 m
Elevation: 1452 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat and moss) and SILT, dark brown, loose, moist, massive, root inclusions	
						WEATHERED BEDROCK (0.2 to 2 m) Fresh, medium grey, strong, no ice [ARGILITE]	
1	1451						
2	1450					End of Test Pit: 2 m Bedrock	
3	1449						
4	1448						
5	1447						

GENERAL REMARKS:

No access to proposed test pit location (near to road) therefore cut slope of [illegible]

SAMPLING SYMBOLS:

GB GRAB BLOCK

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VA101-640/03	1	0

FIGURE A1-13

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,472 E , 6,816,917 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-14
Equipment Used: Linkbelt 290
Total Depth: 2 m
Elevation: 1457 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil (moss) and SILT, dark brown, root inclusions, saturated	
						ORGANICS (0.3 to 0.5 m) SILT and SAND, trace gravel and cobbles, dark black, non plastic, soft, moist, massive	
						WEATHERED BEDROCK (0.5 to 2 m) Highly to completely weathered, orangey grey, iron oxide staining, weak [FELSIC VOLCANIC]	
1	1456						
2	1455					End of Test Pit: 2 m Bedrock	
3	1454						
4	1453						
5	1452						

GENERAL REMARKS:

No access to proposed test pit location (near to road) therefore cut slope of [illegible]

SAMPLING SYMBOLS:

GB GRAB BLOCK

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VA101-640/03	1	0

FIGURE A1-14

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,310 E , 6,817,229 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-15
Equipment Used: Linkbelt 290
Total Depth: 4.8 m
Elevation: 1466 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil, SILT and SAND, trace gravel, dark brown to black, fine to coarse grained, moist, massive, no ice	
						SAND & GRAVEL (0.3 to 0.4 m) SAND and GRAVEL, fine to coarse grained, orangey brown, weak, visible ice (Vx), massive	
1	1465					**SILT & SAND** (0.4 to 4.8 m) SILT and SAND, some gravel, trace clay, trace cobbles, trace boulders, fine to coarse grained, well graded, dense, low plasticity, light brown grey, massive [GLACIAL TILL]	
		GB	1				1.5 m - Grab sample from 1.5 - 1.6
2	1464						
3	1463						
4	1462						
5	1461					End of Test Pit: 4.8 m Limit of excavator	

GENERAL REMARKS:
Easy to moderate difficulty to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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VA101-640/03	1	0

FIGURE A1-15

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,243 E , 6,817,424 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-16
Equipment Used: Linkbelt 290
Total Depth: 1.5 m
Elevation: 1472 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (moss) and SILT, dark brown, non plastic, dense to loose, visible ice (Vx), massive, root inclusions	
						WEATHERED BEDROCK (0.2 to 1.5 m) Completely to highly weathered bedrock, light grey to medium orange, flakey, weak, hard at base, no evidence of ice [FELSIC VOLCANIC]	
1	1471						
						End of Test Pit: 1.5 m Bedrock	
2	1470						
3	1469						
4	1468						
5	1467						

GENERAL REMARKS:
Moderate difficulty to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB BLOCK

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FIGURE A1-16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,139 E , 6,817,760 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-17
Equipment Used: Linkbelt 290
Total Depth: 1.3 m
Elevation: 1478 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and silty SAND, trace gravel, trace cobbles, fine grained, dark brown, moist to dry, no ice	
						SAND (0.2 to 0.3 m) SAND, some silt, some gravel, fine to coarse grained, subangular to subrounded, medium to dark brown, poorly graded, non plastic, loose, dry, no ice, massive	
1	1477					**WEATHERED BEDROCK** (0.3 to 1.3 m) Slightly weathered to fresh, dark grey, large slabs (2 - 3 m long), layered, strong, minor iron oxide staining, no ice [ARGILITE]	
						End of Test Pit: 1.3 m Bedrock	
2	1476						
3	1475						
4	1474						
5	1473						

GENERAL REMARKS:
Very difficult to excavate (large slabs of bedrock), walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-17

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,045 E , 6,817,985 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-18
Equipment Used: Linkbelt 290
Total Depth: 2.3 m
Elevation: 1479 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT and SAND, trace gravel, trace cobbles, medium brown, loose, dry, massive, no ice	
						SAND & GRAVEL (0.2 to 2.3 m) SAND & GRAVEL, some clay, trace cobbles, trace boulders, fine to coarse grained, subangular to subrounded, well graded, loose, wet, no ice, massive, fragments of bedrock (dark grey, foliated, iron oxide staining) [COLLUVIUM]	
1	1478						
2	1477	GB	1				2 m - Grab sample from 2.0 -2.3
						End of Test Pit: 2.3 m Bedrock	
3	1476						
4	1475						
5	1474						

GENERAL REMARKS:
Difficult to excavate, walls seeping water but stable, groundwater seep at 0.5

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
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VA101-640/03	1	0

FIGURE A1-18

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,021 E , 6,818,170 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-19
Equipment Used: Linkbelt 290
Total Depth: 2.8 m
Elevation: 1470 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (hummocky spongey moss and peat) and SILT, dark brown, moist, root inclusions	
						SILT (0.1 to 0.2 m) SILT, white, soft, moist [VOLCANIC ASH]	
						SILTY SAND (0.2 to 2.8 m) Silty SAND, some gravel, trace clay, trace cobbles, trace boulders, fine to coarse grained, angular to subrounded, well graded, light to medium grey, low plasticity, massive [GLACIAL TILL]	
1	1469	GB	1				1 m - Grab sample from 1.0 - 1.5
2	1468						
3	1467					**WEATHERED BEDROCK** (2.8 to 2.8 m) Slightly weathered, medium grey, foliated, fractured, no staining, no ice [ARGILITE] End of Test Pit: 2.8 m Bedrock	
4	1466						
5	1465						

GENERAL REMARKS:
Moderate difficulty to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-19

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,181 E , 6,818,271 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-20
Equipment Used: Linkbelt 290
Total Depth: 2 m
Elevation: 1441 m

Page: 1 of 1
Date Started: 19 May 16
Date Completed: 19 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil (grass and moss) and silty SAND, dark brown to black, saturated, no ice, root inclusions	
						SANDY SILT (0.3 to 0.6 m) Sandy SILT, some gravel, trace cobbles, fine to coarse grained, subangular to subrounded, well graded, light grey, low to no plasticity, massive [GLACIAL TILL VENEER]	
1	1440					**WEATHERED BEDROCK** (0.6 to 2 m) Completely to highly weathered bedrock, dark grey, weak, foliated, no staining, no ice [ARGILITE]	
2	1439					End of Test Pit: 2 m Bedrock	
3	1438						
4	1437						
5	1436						

GENERAL REMARKS:

Moderate difficulty to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-20

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,331 E , 6,818,971 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-21
Equipment Used: Linkbelt 290
Total Depth: 2.3 m
Elevation: 1395 m

Page: 1 of 1
Date Started: 20 May 16
Date Completed: 20 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.4 m) Topsoil and SILT, dark brown, loose, saturated, many root inclusions, organic odour, massive	
						SILTY SAND (0.4 to 2.3 m) Silty SAND, some cobbles, trace gravel, fine grained, well graded, non plastic, light greyish brown, massive, cold but not frozen, dense to very dense, dry, not cohesive [GLACIAL TILL]	
1	1394						
2	1393						
						End of Test Pit: 2.3 m Boulders or Possible Bedrock	
3	1392						
4	1391						
5	1390						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-21

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,423 E , 6,818,989 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-22
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1386 m

Page: 1 of 1
Date Started: 20 May 16
Date Completed: 20 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil and SILT, dark brown, loose, saturated, many root inclusions, organic odour, massive	
						GRAVELLY SILT & SAND (0.3 to 4.5 m) GRAVELLY SILT & SAND, some cobbles, trace clay, trace gravel, fine grained, well graded, non plastic, light greyish brown, massive, cold but not frozen, dense to very dense, dry, not cohesive [GLACIAL TILL]	
1	1385	G B	1				1.5 m - Grab sample from 1.5 - 1.6
2	1384						
3	1383						
4	1382	G B	2				4.4 m - Grab sample from 4.4 - 4.5
						End of Test Pit: 4.5 m Limit of excavator	
5	1381						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-22

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,428 E , 6,818,370 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-23
Equipment Used: Linkbelt 290
Total Depth: 2.4 m
Elevation: 1412 m

Page: 1 of 1
Date Started: 20 May 16
Date Completed: 20 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (grass, lichen) and SILT, orangey brown to black, moist, root inclusions	
						SILTY SAND (0.1 to 2.4 m) Silty SAND, trace gravel, trace cobbles, fine to medium grained, poorly graded, light brown, dense, no ice, massive, dry	
1	1411						
2	1410						
						WEATHERED BEDROCK (2.4 to 2.4 m) Slightly to moderately weathered, dark grey, strong, minimal iron oxide staining, fractured [ARGILITE] End of Test Pit: 2.4 m Bedrock	
3	1409						
4	1408						
5	1407						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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KZK PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-23

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,409 E , 6,818,145 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-24
Equipment Used: Linkbelt 290
Total Depth: 1.5 m
Elevation: 1423 m

Page: 1 of 1
Date Started: 20 May 16
Date Completed: 20 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil and SILT, dark brown, saturated, loose, massive, ice and root inclusions (Vx)	
						WEATHERED BEDROCK (0.3 to 1.5 m) Slightly weathered to fresh, dark grey, flakey/shale-like, minor iron oxide staining, cold but not frozen [ARGILITE]	
1	1422						
						End of Test Pit: 1.5 m Bedrock	
2	1421						
3	1420						
4	1419						
5	1418						

GENERAL REMARKS:

Difficult to excavate, walls collapsing (rock fragments), no groundwater

SAMPLING SYMBOLS:

GB GRAB BLOCK

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VA101-640/03	1	0

FIGURE A1-24

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,805 E , 6,816,453 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-25
Equipment Used: Linkbelt 290
Total Depth: 1.9 m
Elevation: 1425 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (moss), dark brown, dry, no ice, root inclusions	
						SILTY, GRAVELLY SAND (0.2 to 1.6 m) Silty, gravelly SAND, trace clay, trace cobbles, fine to medium grained, subangular to rounded, poorly graded, dense, non plastic, massive, no ice, blocky but no cohesive, dry [GLACIAL TILL]	
1	1424	GB	1				1.3 m - Grab sample from 1.3 - 1.5
						WEATHERED BEDROCK (1.6 to 1.9 m) Moderately to highly weathered, dark grey, highly fractured, flakey, weak, no staining [ARGILITE]	
2	1423					End of Test Pit: 1.9 m Bedrock	
3	1422						
4	1421						
5	1420						

GENERAL REMARKS:
Moderate difficulty to excavate (boulders), walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-25

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,944 E , 6,816,975 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-26
Equipment Used: Linkbelt 290
Total Depth: 4 m
Elevation: 1394 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
1	1393					**ORGANICS** (0 to 0.2 m) Topsoil and silty SAND, dark brown, moist, non plastic, massive, root inclusions **SILTY, GRAVELLY SAND** (0.2 to 1.5 m) Silty gravelly SAND, trace cobbles, trace boulders, fine to coarse grained, subangular to subrounded, medium greyish brown, non plastic, loose to compact, stratified, ice lenses (Vs)	
2	1392					**SILTY, GRAVELLY SAND** (1.5 to 4 m) Silty, gravelly SAND, trace clay, trace cobbles, trace boulders, fine to coarse grained, well graded, medium grey, dense, low plasticity, moist, massive [GLACIAL TILL]	
3	1391	G B	1				2.5 m - Grab sample from 2.5 - 4.0
4	1390					End of Test Pit: 4 m Limit of excavator	
5	1389						

GENERAL REMARKS:

Difficult to excavate, walls collapsing from 0.2 - 1.5 m (sandy layer), no groundwater.

SAMPLING SYMBOLS:

G B GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-26

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,896 E , 6,816,889 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-27
Equipment Used: Linkbelt 290
Total Depth: 2.9 m
Elevation: 1413 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil (spongey moss) and SILT, moist, loose, non plastic, massive, no ice, root inclusions	
						SILTY SAND & GRAVEL (0.3 to 2.9 m) Silty SAND and GRAVEL, trace cobbles, trace boulders, fine to coarse grained, subangular to rounded, well graded, medium grey, non plastic, massive, loose to dense (increasing with depth)	
1	1412						
2	1411	GB	1				2.5 m - Grab sample from 2.5 - 2.8
3	1410					End of Test Pit: 2.9 m Refusal on boulders	
4	1409						
5	1408						

GENERAL REMARKS:
Easy to excavate until 2.9 m then bouldery, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-27

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,783 E , 6,817,432 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-28 **Page:** 1 of 1
Equipment Used: Linkbelt 290 Date Started: 21 May 16
Total Depth: 2.7 m Date Completed: 21 May 16
Elevation: 1401 m Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (moss and lichen) and SILT, dark brown, loose, dry	
						SILT (0.1 to 0.2 m) SILT, white, soft, moist [VOLCANIC ASH]	
						SAND & GRAVEL (0.2 to 0.4 m) SAND and GRAVEL, some silt, trace cobbles, orangey brown to black, fine to coarse grained, poorly graded, non plastic, loose, moist, massive	
1	1400					**SILTY SAND** (0.4 to 2.2 m) Silty SAND, some gravel, trace cobbles, trace boulders, fine to coarse grained, well graded, low to medium plasticity, moist, dense, massive [THIN GLACIAL TILL VENEER]	
2	1399					**WEATHERED BEDROCK** (2.2 to 2.7 m) Slightly weathered, dark grey [ARGILITE]	
3	1398					End of Test Pit: 2.7 m Bedrock and groundwater inflow	
4	1397						
5	1396						

GENERAL REMARKS:

Easy to excavate until bedrock encountered, walls collapsing below 2.2 m, groundwater inflow at 2.7 m.

SAMPLING SYMBOLS:

GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-28

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Till Borrow identified in 1997
Coordinates: 414,894 E , 6,817,465 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-29
Equipment Used: Linkbelt 290
Total Depth: 2.3 m
Elevation: 1386 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT, some cobbles, dark brown to black, fine grained, frozen (Vf, Vx, Vs, Nf)	
						GRAVEL (0.2 to 0.5 m) GRAVEL, some sand, some cobbles, fine to coarse grained, angular to subangular, dark grey/black, poorly graded, loose, saturated, massive, no ice	
1	1385					**SILTY, GRAVELLY SAND** (0.5 to 2.3 m) Silty, gravelly SAND, some silt, trace clay, trace cobbles, fine to coarse grained, well graded, non plastic, not cohesive, dense, no ice	
2	1384	GB	1				2 m - Grab sample from 2.0 - 2.3
						WEATHERED BEDROCK (2.3 to 2.3 m) Slightly weathered, dark grey, strong [ARGILITE] End of Test Pit: 2.3 m Bedrock	
3	1383						
4	1382						
5	1381						

GENERAL REMARKS:

Easy to excavate, walls collapsing below 0.5 m, water seep (thawing permafrost) at 0.5 m.

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-29

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility Seepage Collection Pond
Coordinates: 414,876 E , 6,817,827 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-30
Equipment Used: Linkbelt 290
Total Depth: 3.8 m
Elevation: 1368 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT, some cobbles, dark brown to black, saturated to frozen (Nf), root inclusions	
						SILTY SAND (0.2 to 0.4 m) Silty SAND, trace gravel, fine to coarse grained, poorly graded, medium grey, non plastic, dry, dense, massive	
1	1367					**SILTY, GRAVELLY SAND** (0.4 to 3.8 m) Silty, gravelly SAND, some gravel, trace clay, trace cobbles, fine to medium grained, well graded, dark grey brown, dense, low to no plasticity, massive, moist to dry, no ice [GLACIAL TILL]	
2	1366						
3	1365	GB	1				3.5 m - Grab sample from 3.5 - 3.8
4	1364					**POSSIBLE BEDROCK** (3.8 to 3.8 m) BOULDERS or weathered bedrock (no boulders excavated in test pit) End of Test Pit: 3.8 m Boulders or Possible Bedrock	
5	1363						

GENERAL REMARKS:

Difficult to excavate, walls stable, no groundwater, water seep (thawing permafrost)

SAMPLING SYMBOLS:

GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-30

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class A Facility
Coordinates: 414,605 E , 6,817,555 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-31
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1412 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.5 m) Topsoil and SILT, some sand, trace gravel, fine grained, dark brown to black, dense to loose, massive, saturated to frozen (Nf)	
						SILTY SAND & GRAVEL (0.5 to 0.8 m) Silty SAND and GRAVEL, trace cobbles, fine to coarse grained, light grey, well graded, non plastic, dense, massive	
1	1411					**SILTY, GRAVELLY SAND** (0.8 to 4.5 m) Silty, gravelly SAND, trace clay, trace cobbles, medium grey brown, moist, dense [GLACIAL TILL]	
2	1410						
3	1409						
4	1408	GB	1				4 m - Grab sample from 4.0 - 4.5
						End of Test Pit: 4.5 m Boulders or Possible Bedrock	
5	1407						

GENERAL REMARKS:
Easy to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-31

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Area below Class B Facility
Coordinates: 415,051 E , 6,816,895 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-32
Equipment Used: Linkbelt 290
Total Depth: 5 m
Elevation: 1389 m

Page: 1 of 1
Date Started: 21 May 16
Date Completed: 21 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (moss and lichen), reddish brown, loose, moist, root inclusions	
						SILTY, GRAVELLY SAND (0.2 to 5 m) Silty, gravelly SAND, trace cobbles, fine to medium grained, poorly graded, light brown grey, dense to loose, massive, dry to moist, non plastic [GLACIAL TILL]	
1	1388						
2	1387						
3	1386						
4	1385	GB	1				4 m - Grab sample from 4.0 - 4.5
5	1384					End of Test Pit: 5 m Limit of excavator	

GENERAL REMARKS:
Easy to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-32

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 415,010 E , 6,816,478 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-33
Equipment Used: Linkbelt 290
Total Depth: 3.4 m
Elevation: 1395 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.4 m) Topsoil and SILT, dark brown black, poorly graded, non plastic, moist to frozen (Nf, Vx), massive	
						SILT & SAND (0.4 to 3.4 m) SILT & SAND, some gravel, trace clay, trace cobbles, fine to coarse grained, well graded, light greyish brown, low plasticity, moist (no ice), dense, massive [GLACIAL TILL]	
1	1394						
2	1393						
3	1392	GB	1				3 m - Grab sample from 3.0 - 3.4
						End of Test Pit: 3.4 m Refusal on boulders	
4	1391						
5	1390						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-33

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,999 E , 6,816,353 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-34
Equipment Used: Linkbelt 290
Total Depth: 4.9 m
Elevation: 1391 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.1 m) Topsoil, spongey peat, moss, roots and lichen	
						SILT & COBBLES (0.1 to 0.3 m) SILT and COBBLES, black, gap graded, moist where melting to frozen (Vs, Vx, Nf), dense, non plastic, root inclusions	
1	1390					**SILTY, GRAVELLY SAND** (0.3 to 4.9 m) Silty, gravelly SAND, trace clay, trace cobbles, fine to coarse grained, well graded, light greyish brown, low to non plastic, dense, ice near top (Nf), moist, micaceous throughout, massive, slightly cohesive [GLACIAL TILL]	
2	1389						
3	1388						
4	1387	GB	1				4.5 m - Grab sample from 4.5 - 4.9
5	1386					End of Test Pit: 4.9 m Limit of excavator	

GENERAL REMARKS:

Moderate difficulty to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:

GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-34

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Class B Facility
Coordinates: 414,963 E , 6,816,132 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-35
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1381 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.1 m) Topsoil (peat and moss), and SILT, dark brown, moist, root inclusions	
						SILT (0.1 to 0.2 m) SILT, black, poorly graded, frozen (Nf), massive	
						SILT (0.2 to 0.3 m) SILT, white, loose, dry, not frozen [VOLCANIC ASH]	
1	1380					**SAND** (0.3 to 4.5 m) SAND, trace silt, trace gravel, fine to coarse grained, poorly graded, loose, black, micaceous, non plastic, dry, massive	
2	1379						
3	1378						
4	1377						
						WEATHERED BEDROCK (4.5 to 4.5 m) Completely to highly weathered, light grey, weak, saturated, iron oxide staining [FELSIC VOLCANIC]	
5	1376					End of Test Pit: 4.5 m Bedrock	

GENERAL REMARKS:

Easy to excavate, walls collapsing, groundwater at 4 m filling base of test pit

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-35

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,886 E , 6,815,763 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-36
Equipment Used: Linkbelt 290
Total Depth: 5.1 m
Elevation: 1388 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.1 m) Topsoil (spongey peat), loose, dry, massive, no ice	
						SILT (0.1 to 0.5 m) SILT, trace sand, trace gravel, trace cobbles, poorly graded, black, dense to loose, frozen (Nf), root inclusions, massive	
1	1387					**SILT & SAND** (0.5 to 5 m) SILT and SAND, some gravel, trace clay, trace cobbles, trace boulders, fine to coarse grained, well graded, medium yellowish brown, moist, not frozen, dense, massive [GLACIAL TILL]	
2	1386						
3	1385						
4	1384	GB	1				4 m - Grab sample from 4.0 - 5.0
5	1383	GB	2			**SANDY SILT** (5 to 5.1 m) Sandy SILT, some gravel, trace clay, fine grained, black, non plastic, blocky, dense [GLACIAL TILL]	5 m - Grab sample from 5.0 - 5.1
						End of Test Pit: 5.1 m Limit of excavator	

GENERAL REMARKS:

Easy to excavate, walls collapsing from 1 - 2 m, no groundwater

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-36

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 414,878 E , 6,815,556 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-37
Equipment Used: Linkbelt 290
Total Depth: 2.3 m
Elevation: 1391 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (moss and grass), dry, thin, minimal vegetation	
						SILTY SAND (0.1 to 0.3 m) Silty SAND, some gravel, fine to coarse grained, subangular to subrounded, well graded, loose, dark grey to black, dry, micaceous, massive	
1	1390					**SILTY SAND** (0.3 to 1.2 m) Silty SAND, some gravel, fine to coarse grained, subangular to subrounded, well graded, dense, orange to orangey brown, dry, micaceous, massive	
2	1389					**SILTY SAND** (1.2 to 2.3 m) Silty SAND, some gravel, fine to coarse grained, subangular to subrounded, well graded, dense, dark grey, dry, micaceous, massive	
						End of Test Pit: 2.3 m Bedrock	
3	1388						
4	1387						
5	1386						

GENERAL REMARKS:

Easy to excavate until weathered bedrock, walls stable, no groundwater

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-37

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,088 E , 6,815,621 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-38
Equipment Used: Linkbelt 290
Total Depth: 5 m
Elevation: 1381 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT, black to dark brown, dense to loose, frozen (Nf, Vx, Vs), massive, root inclusions	
						SILTY SAND (0.2 to 1.5 m) Silty SAND, trace gravel, trace cobbles, medium grey, dense, non plastic, stratified, 3 cm layer of volcanic ash at 0.3 m, moist to frozen (Nf)	
1	1380						
2	1379					**SILTY SAND** (1.5 to 5 m) Silty SAND, some gravel, trace clay, trace cobbles, fine to coarse grained, well graded, medium brown grey, moist to dry, non plastic, dense, massive [GLACIAL TILL]	
3	1378						
4	1377	GB	1				4.5 m - Grab sample from 4.5 - 5.0
5	1376					End of Test Pit: 5 m Limit of excavator	

GENERAL REMARKS:
Difficult to excavate, walls collapsing from 0.2 - 1.5 m, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

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VA101-640/03	1	0

FIGURE A1-38

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Topsoil Stockpile
Coordinates: 415,099 E , 6,815,883 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-39
Equipment Used: Linkbelt 290
Total Depth: 4 m
Elevation: 1381 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil and SILT, black, poorly graded, non plastic, loose, massive moist to saturated	
						SILT & COBBLES (0.2 to 0.5 m) SILT and COBBLES, some boulders, gap graded, black, non plastic, frozen (Nf, Vs), ice coatings on cobbles, dense, massive, root inclusions	
1	1380					**SILTY, GRAVELLY SAND** (0.5 to 4 m) Silty, gravelly SAND, trace clay, trace cobbles, trace boulders, fine to coarse grained, non plastic, medium grey brown, dense, saturated, massive [GLACIAL TILL]	
2	1379	GB	1				2 m - Grab sample from 2.0 - 2.5
3	1378						
4	1377					End of Test Pit: 4 m Wall instability	
5	1376						

GENERAL REMARKS:

Moderate difficulty to excavate, walls sloughing, groundwater at 2 m

SAMPLING SYMBOLS:

GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-39

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Topsoil Stockpile
Coordinates: 415,196 E , 6,816,100 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-40
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1384 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat and moss) and SILT, dark brown to black, poorly graded, non plastic, loose, moist to saturated, massive, root inclusions	
						SILT (0.2 to 0.4 m) SILT, some sand, some cobbles, trace gravel, fine grained, dark grey to black, frozen (Vx, Nf, ICE, ICE+SOIL), stratified/layered, non plastic	
1	1383					**SILTY, GRAVELLY SAND** (0.4 to 4.5 m) Silty, gravelly SAND, trace clay, trace cobbles, trace boulders, fine to coarse grained, well graded, low plasticity, dense, moist, no ice [GLACIAL TILL]	
2	1382						
3	1381	GB	1				3 m - Grab sample from 3.0 - 3.5
4	1380					End of Test Pit: 4.5 m Wall instability / Limit of Excavator	
5	1379						

GENERAL REMARKS:
Difficult to excavate, walls collapsing, groundwater at 4 m
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-40

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,168 E , 6,815,684 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-41
Equipment Used: Linkbelt 290
Total Depth: 3 m
Elevation: 1402 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat, moss and roots), loose, moist	
						SILT (0.2 to 0.5 m) SILT, some sand, trace cobbles, trace gravel, fine grained, black, non plastic, poorly graded, laminated/stratified, frozen (Nf, Vs, Vc), dense to loose, saturated	
1	1401					**SILTY, GRAVELLY SAND** (0.5 to 3 m) Silty, gravelly SAND, some cobbles, trace clay, fine to coarse grained, medium grey to brown, well graded, low plasticity, very dense, moist to frozen (Nf, Vx, Vs, ICE), massive	
2	1400	G B	1				2 m - Grab sample from 2.0 - 3.0
3	1399					End of Test Pit: 3 m Permafrost	
4	1398						
5	1397						

GENERAL REMARKS:
Very difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
G B GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-41

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,084 E , 6,815,361 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-42
Equipment Used: Linkbelt 290
Total Depth: 4.9 m
Elevation: 1388 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0	1388					**ORGANICS** (0 to 0.4 m) Topsoil and SILT, fine grained, dark brown to black, poorly graded, non plastic, frozen (Nf), massive, root inclusions	
						SAND (0.4 to 4.9 m) SAND, some silt, trace gravel, trace cobbles, trace boulders, trace clay, light yellowish brown, fine to coarse grained, angular to subrounded, poorly graded, non plastic, loose when excavated, no ice, dry to slightly moist, massive	
1	1387						
2	1386						
3	1385						
4	1384						
5	1383					End of Test Pit: 4.9 m Limit of excavator	

GENERAL REMARKS:
Easy to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-42

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,154 E , 6,815,112 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-43
Equipment Used: Linkbelt 290
Total Depth: 1.8 m
Elevation: 1403 m

Page: 1 of 1
Date Started: 22 May 16
Date Completed: 22 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.3 m) Topsoil and SILT, dark brown to black, fine grained, poorly graded, non plastic, dry to moist to frozen (Nf), massive, root inclusions	
						SILTY GRAVEL (0.3 to 1 m) Silty GRAVEL, some sand, trace cobbles, fine to coarse grained, angular to subrounded, well graded, non plastic, dry to slightly moist, dense to very dense, frozen in sections (Nf), massive	
1	1402					**WEATHERED BEDROCK** (1 to 1.8 m) Highly weathered, orangey grey, fractured, weak, foliated [FELSIC VOLCANIC]	
2	1401					End of Test Pit: 1.8 m Bedrock	
3	1400						
4	1399						
5	1398						

GENERAL REMARKS:
Difficult to excavate, sandy layer sloughing, no groundwater
SAMPLING SYMBOLS:
GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-43

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,110 E , 6,815,262 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-44
Equipment Used: Linkbelt 290
Total Depth: 4 m
Elevation: 1386 m

Page: 1 of 1
Date Started: 23 May 16
Date Completed: 23 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (hummocky moss, lichen and roots)	
						ORGANICS (0.1 to 0.3 m) SILT and COBBLES, fine grained, dark brown to black, gap graded, frozen (Nf), 5 cm volcanic ash layer, dense, non plastic, massive, root inclusions	
						SILTY, GRAVELLY SAND (0.3 to 4 m) Silty, gravelly SAND, trace clay, trace cobbles, fine to coarse grained, well graded, light yellowish brown, non plastic, dense, massive	
1	1385						
2	1384						
3	1383						
		GB	1				3.5 m - Grab sample from 3.5 - 4.0
4	1382					End of Test Pit: 4 m Limit of excavator	
5	1381						

GENERAL REMARKS:
Easy to moderate difficulty to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-44

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,149 E , 6,815,387 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-45
Equipment Used: Linkbelt 290
Total Depth: 3.5 m
Elevation: 1408 m

Page: 1 of 1
Date Started: 23 May 16
Date Completed: 23 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (roots, moss, grass)	
						ORGANICS (0.2 to 1.1 m) SILT and COBBLES, trace gravel, trace sand, gap graded, black, frozen (Nf), dense, massive	
1	1407						
						SILTY, GRAVELLY SAND (1.1 to 3.3 m) Silty, gravelly SAND, trace clay, trace cobbles, fine to coarse grained, well graded, non plastic, dense, frozen up to 3 m below ground surface, massive, no organics	
2	1406						
3	1405	GB	1				3 m - Grab sample from 3.0 - 3.3
						WEATHERED BEDROCK (3.3 to 3.5 m) Highly weathered, orangey brown, weak, highly fractured [FELSIC VOLCANIC]	
						End of Test Pit: 3.5 m Bedrock	
4	1404						
5	1403						

GENERAL REMARKS:
Very difficult to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-45

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,079 E , 6,815,484 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-46
Equipment Used: Linkbelt 290
Total Depth: 4.1 m
Elevation: 1383 m

Page: 1 of 1
Date Started: 23 May 16
Date Completed: 23 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (spongey peat and moss), lack, root inclusions	
						ORGANICS (0.2 to 0.4 m) SILT, some gravel, trace cobbles, fine grained, poorly graded, frozen (Nf, Vx and coatings on cobbles), black, dense, massive, 5 cm volcanic ash layer at 0.25 m	
1	1382					**SILTY, GRAVELLY SAND** (0.4 to 4.1 m) Silty, gravelly SAND, some clay, trace cobbles, fine to coarse grained, well graded, light yellowish grey, dense, massive, non plastic, moist to dry [GLACIAL TILL]	
2	1381	G B	1				2 m - Grab sample from 2.0 - 2.1
3	1380						
4	1379					End of Test Pit: 4.1 m Limit of excavator	
5	1378						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
G B GRAB ■ BLOCK

BMC MINERALS (NO. 1) LTD.
KZK PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-46

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: ABM
Coordinates: 415,091 E , 6,815,758 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-47
Equipment Used: Linkbelt 290
Total Depth: 4.5 m
Elevation: 1382 m

Page: 1 of 1
Date Started: 23 May 16
Date Completed: 23 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.5 m) SILT, trace sand, trace gravel, trace cobbles, black to dark brown, poorly graded, non plastic, dense, frozen (Nf, Vx) but melting, root inclusions	
						SILTY SAND (0.5 to 4.5 m) Silty SAND, some clay, some gravel, trace cobbles, trace boulders, fine to coarse grained, well graded, non to low plasticity, dense, light yellowish grey brown, frozen to 0.8 m below ground surface (Nf), cohesive but crumbles, dry to slightly moist [GLACIAL TILL]	
1	1381	GB	1				1.3 m - Grab sample from 1.3 - 1.6
2	1380						
3	1379						
4	1378						
5	1377					End of Test Pit: 4.5 m Limit of excavator	

GENERAL REMARKS:
Very difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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KZK PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE A1-47

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction	**Test Pit No.:** TP16-48	**Page:** 1 of 1	
Location: Class B Facility Seepage Collection Pond	Equipment Used: Linkbelt 290	Date Started: 23 May 16	
Coordinates: 415,140 E , 6,816,478 N	Total Depth: 4 m	Date Completed: 23 May 16	
Coordinate System: UTM ZONE 9N	Elevation: 1375 m	Logged by: MAP	
		Reviewed by: LJG	

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.1 m) Topsoil (peat, moss and roots), loose, moist	
						SILT (0.1 to 0.4 m) SILT, trace sand, trace gravel, trace cobbles, fine grained, poorly graded, black, frozen (Nf, ICE+SOIL, Vx), loose where not frozen, layered, non plastic, root inclusions	
1	1374					**SILT & SAND** (0.4 to 4 m) SILT and SAND, some gravel, trace clay, trace cobbles, fine to coarse grained, well graded, angular to subrounded, dense, low plasticity, medium grey, massive, rock clasts of highly to completely weathered rock [GLACIAL TILL]	
2	1373						
3	1372	G B	1				3 m - Grab sample from 3.0 - 3.1
4	1371					End of Test Pit: 4 m Wall instability	
5	1370						

GENERAL REMARKS:

Moderate difficulty to excavate, walls stable until 2 m then sloughing, water seep at 1.5 m (Moving permafrost?)

SAMPLING SYMBOLS:

G B GRAB

BLOCK

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FIGURE A1-48

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,317 E , 6,818,821 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-49
Equipment Used: Linkbelt 290
Total Depth: 4.2 m
Elevation: 1407 m

Page: 1 of 1
Date Started: 24 May 16
Date Completed: 24 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
						ORGANICS (0 to 0.1 m) Topsoil (peat, moss and roots), loose, moist	
		GB	1			**SILTY SAND & GRAVEL** (0.1 to 0.7 m) Silty SAND and GRAVEL, trace cobbles, fine to coarse grained, well graded, non plastic, dense, no ice, massive [COMPLETELY WEATHERED FELSIC VOLCANIC]	0.5 m - Grab sample from 0.5 - 0.7
1	1406					**WEATHERED BEDROCK** (0.7 to 4.2 m) Completely to highly weathered, light grey, weak, highly fractured [FELSIC VOLCANIC]	
2	1405						
3	1404						
4	1403					**WEATHERED BEDROCK** (4.2 to 4.2 m) Slightly weathered, light grey, strong [FELSIC VOLCANIC] End of Test Pit: 4.2 m Bedrock	
5	1402						

GENERAL REMARKS:
Very easy to excavate, walls caving in sandy layer, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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FIGURE A1-49

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,482 E , 6,818,848 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-50
Equipment Used: Linkbelt 290
Total Depth: 5 m
Elevation: 1379 m

Page: 1 of 1
Date Started: 24 May 16
Date Completed: 24 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat, moss and roots), loose, moist	
						ORGANICS (0.2 to 0.4 m) SILT, trace sand, fine grained, black, dense to frozen (Nf), root inclusions	
						SAND & GRAVEL (0.4 to 3 m) SAND and GRAVEL, some silt, some cobbles, fine to coarse grained, rounded to subangular, light brown, loose, dry, massive, non plastic	
1	1378						
2	1377	GB	1				2 m - Grab sample from 2.0 - 3.0
3	1376					**SANDY SILT** (3 to 5 m) Sandy SILT, some gravel, trace clay, trace cobbles, fine grained, low plastic, dry to moist, massive, dense [GLACIAL TILL]	
4	1375						
5	1374					End of Test Pit: 5 m Limit of excavator	

GENERAL REMARKS:
Very easy to excavate until ~ 3m, walls stable, no groundwater
SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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FIGURE A1-50

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,346 E , 6,818,617 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-51
Equipment Used: Linkbelt 290
Total Depth: 1.7 m
Elevation: 1409 m

Page: 1 of 1
Date Started: 24 May 16
Date Completed: 24 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat, moss and roots), loose, moist	
						SILT (0.2 to 0.3 m) SILT, fine grained, black, frozen (Nf)	
						SILT & SAND (0.3 to 0.4 m) SAND and SILT, trace gravel, fine to coarse grained, poorly graded, orangey brown, non plastic, dense, layered, dry, not frozen	
1	1408					**WEATHERED BEDROCK** (0.4 to 1.7 m) Slightly to highly weathered, dark grey to black, strong to weak, iron oxide staining, flakey, micaceous [MAFIC VOLCANIC]	
						End of Test Pit: 1.7 m Bedrock	
2	1407						
3	1406						
4	1405						
5	1404						

GENERAL REMARKS:

Easy to excavate until weathered bedrock, walls stable, no groundwater

SAMPLING SYMBOLS:

GB GRAB BLOCK

BMC MINERALS (NO. 1) LTD.
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VA101-640/03	1	0

FIGURE A1-51

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,474 E , 6,818,631 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-52
Equipment Used: Linkbelt 290
Total Depth: 2.5 m
Elevation: 1390 m

Page: 1 of 1
Date Started: 24 May 16
Date Completed: 24 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.2 m) Topsoil (peat, moss and roots), loose, moist	
						SILTY, GRAVELLY SAND (0.2 to 2.5 m) Silty, gravelly SAND, trace clay, trace cobbles, fine to coarse grained, well graded, non plastic, frozen (Nf) up to 2.1 m, massive, dense [GLACIAL TILL]	
1	1389						
2	1388	G B	1				2 m - Grab sample from 2.0 - 2.1
						WEATHERED BEDROCK (2.5 to 2.5 m) Slightly to highly weathered, medium grey, iron oxide staining [ARGILITE] End of Test Pit: 2.5 m Bedrock	
3	1387						
4	1386						
5	1385						

GENERAL REMARKS:
Very difficult to excavate, walls stable, no groundwater
SAMPLING SYMBOLS:
G B GRAB ■ BLOCK

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FIGURE A1-52

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Tim Moon Construction
Location: Mill Site
Coordinates: 414,236 E , 6,819,075 N
Coordinate System: UTM ZONE 9N

Test Pit No.: TP16-53
Equipment Used: Linkbelt 290
Total Depth: 3.5 m
Elevation: 1398 m

Page: 1 of 1
Date Started: 24 May 16
Date Completed: 24 May 16
Logged by: MAP
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	WATER LEVEL	MATERIAL DESCRIPTION	COMMENTS
0						**ORGANICS** (0 to 0.1 m) Topsoil (spongey moss and roots), saturated, ice particles	
						SILT (0.1 to 0.3 m) SILT, fine grained, black, dense to frozen (Nf), root inclusions	
						SILTY, GRAVELLY SAND (0.3 to 3.5 m) Silty, gravelly SAND, some boulders, trace clay, trace cobbles, fine to coarse grained, subangular to subrounded, medium grey, well graded, low to no plasticity, very dense, massive [GLACIAL TILL]	
1	1397						
2	1396						
3	1395	GB	1				3 m - Grab sample from 3.0 - 3.5
						End of Test Pit: 3.5 m Refusal on boulders	
4	1394						
5	1393						

GENERAL REMARKS:
Difficult to excavate, walls stable, no groundwater

SAMPLING SYMBOLS:
GB GRAB ■ BLOCK

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VA101-640/03	1	0

FIGURE A1-53

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\TEST PITS\PROJECTS\KZK 2016 TEST PITS_DJR.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, TEST PIT LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

APPENDIX B

GEOTECHNICAL DRILLHOLE DATA

Appendix B1 Geotechnical Drillhole Logs
Appendix B2 RMR_{89} Field Sheets

APPENDIX B1

GEOTECHNICAL DRILLHOLE LOGS

(Pages B1-1 to B1-36)

Contractor: Hy-Tech Drilling
Location: Fault Creek
Coordinates: 414,964 E , 6,814,627 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-379
Drill Type: Tech 5000 Diamond Drill
Total Length: 39.7m
Elevation: 1405 m
Inclination: -90

Page: 1 of 2
Date Started: 03 Jul 16
Date Completed: 04 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
		TOPSOIL (OVBN) (0 to 0.1 m) Sandy SILT, poorly graded, non-plastic, dark brown, moist, containing sticks and other organics (Topsoil).		SPT-01	65		7/12/14	26		
		GRAVELLY SILT AND SAND (OVBN) (0.1 to 1.3 m) Gravelly SILT and SAND, some cobbles, fine to medium grained, angular, well graded, non-plastic, light orangish brown, loose, stratified, dry.		SPT-02	27		27/26/11	37		
				SPT-03	42		5/20/13	33		
		GRAVELLY SILT AND SAND (OVBN) (1.3 to 5.9 m) Gravelly SILT and SAND, some cobbles, fine to coarse grained, subrounded to angular, well graded, non-plastic, medium greyish brown with lithic gravel and cobbles, compact, massive, moist to wet.		SPT-04	0		6/8/7	15		
5	1400			SPT-05	100		50+	R		
		COHERENT RHYOLITE (RHYCW) (5.9 to 7.7 m) Light to medium grey, fine grained, foliated, strong, moderately fractured, fresh to slightly weathered, fractures along fabric. With silicic banding and well-developed crenulation cleavage. Quartz and muscovite rich.	100				75			
			100				75			7.1 - 15.7 m: Constant Head Test - K = 7E-06 m/s
			92				60			
10	1395	**VOLCANICLASTIC RHYOLITE (RHYV)** (7.7 to 8.3 m) Light to medium grey, fine grained, foliated, strong, moderately fractured, fractures along fabric. Strong sericite alteration, banding has been contorted and original texture is obscure. Quartz and muscovite rich.	100	UCS-379-01			80			
		VOLCANICLASTIC RHYOLITE (RHYVL) (8.3 to 23.1 m) Light to medium grey, fine to medium grained, foliated, strong to very strong, moderately fractured, fresh to slightly weathered. Localized silicic bands around 12.8m. Moderate to strong chlorite and biotite alteration begins at approximately 11.6m, and continues to the end of the unit.	100				80			
			100				45			13.7 - 24.7 m: Constant Head Test - K = 2E-06 m/s
15	1390		100				85			
			100				85			
			100				110			
			100				110			
20	1385		100				110			
			97				40			
			99				75			
			99				75			
			97				110			24.2 - 35.2 m: Constant Head Test - K = 2E-06 m/s

KEY ROCK MASS PARAMETERS
RQD
RMR
SPT TEST 'N' VALUES - ×
20 40 60 80

GENERAL REMARKS:
Installed 3 vibrating wire piezometers at 16.6, 24.4, and 36.1 m depth.

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FIGURE B1-1

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Fault Creek
Coordinates: 414,964 E , 6,814,627 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-379
Drill Type: Tech 5000 Diamond Drill
Total Length: 39.7m
Elevation: 1405 m
Inclination: -90

Page: 2 of 2
Date Started: 03 Jul 16
Date Completed: 04 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			COHERENT RHYOLITE (RHYCF) (23.1 to 27.9 m) Light to dark greenish grey, fine to medium grained, foliated, very strong, moderately fractured, fresh, with chlorite alteration and disseminated pyrite.	97				150				
				100				110				
			VOLCANICLASTIC RHYOLITE (RHYVX) (27.9 to 32.2 m) Light to medium greenish grey with black veinlets, fine to medium grained, foliated, strong, minor fracturing. With quartz veinlets and clay infill.	100				150				
30	1375			100				75				
				100				75				
			MAFIC INTRUSION (MAFI) (32.2 to 32.4 m) Fine-grained, carbonate-rich mafic dyke with well-developed foliation and crenulation cleavage. Sharp upper and lower contact.	100				75				
				100				150				
			VOLCANICLASTIC RHYOLITE (RHYVL) (32.4 to 39.7 m) Light to dark greenish grey, fine to medium grained, foliated, strong, moderately fractured, fresh. With clay infill and chlorite alteration.	100				110				
35	1370			100				75				
				100				75				
				99				110				
40	1365		End of Drillhole: 39.7 m Reached TD									
45	1360											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - × (20, 40, 60, 80)

INSTRUMENTATION / WELL DETAILS: 31.7 - 39.7 m: Constant Head Test - K = 1E-06 m/s

GENERAL REMARKS:
Installed 3 vibrating wire piezometers at 16.6, 24.4, and 36.1 m depth.

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FIGURE B1-1

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB GEOTECHNICAL DRILLHOLE LOG 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,571 E , 6,817,991 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-387
Drill Type: Tech 5000 Diamond Drill
Total Length: 34.0m
Elevation: 1411 m
Inclination: -90

Date Started: 08 Jul 16
Date Completed: 09 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1410	**SANDY SILT (OVBN)** (0 to 0.2 m) Sandy SILT, some gravel, fine to medium grained, moderately well graded, non-plastic, medium greyish brown, stiff, massive, dry.		SPT-01	60		3/5/9	14			
		SILTY SAND (OVBN) (0.2 to 3.3 m) Silty SAND, some gravel, fine to coarse grained, well graded, non-plastic, black and medium brownish grey, dense, massive, moist to wet.		SPT-02	32		11/5/3	8			
				SPT-03	100		11/50+	R			
			100				75				
5	1405	**MUDSTONE (MDU)** (3.3 to 16 m) Medium to dark grey, fine grained, foliated, strong to very strong, moderately to highly fractured, slightly weathered. With iron oxide and clay infill on fractures. Quartz and calcite veinlets with disseminated pyrite.	100				75				
			98				75				
			100				75				6.5 - 16.0 m: Constant Head Test - K = 4E-07 m/s
			89				75				
10	1400		96				150				
			100	UCS-387-01			75				
			95				110				
15	1395		63				120				14.0 - 25.0 m: Constant Head Test - K = 4E-07 m/s
		MAFIC VOLCANICLASTIC (MAFT) (16 to 20.1 m) Light to medium grey and white, fine to coarse grained, foliated to massive, very strong. Moderately fractured, zones of massive quartz, with minor iron oxidation. Minor chlorite alteration.	84				120				
			88				120				
20	1390		97				150				
		MUDSTONE (MDU) (20.1 to 26.4 m) Medium to dark grey, fine to medium grained, foliated, very strong. Moderately to highly fractured, slightly weathered, with minor oxidation and clay infill on fractures. Weakly magnetic.	99				120				
			100				120				23.0 - 34.0 m: Constant Head Test - K = 3E-07 m/s
			95				120				

GENERAL REMARKS:
Installed 10 node thermister cable

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Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-2

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,571 E , 6,817,991 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-387
Drill Type: Tech 5000 Diamond Drill
Total Length: 34.0m
Elevation: 1411 m
Inclination: -90

Page: 2 of 2
Date Started: 08 Jul 16
Date Completed: 09 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
	1385			100	UCS-387-02			120				
			MAFIC VOLCANICLASTIC (MAFT) (26.4 to 27.4 m) Medium bluish grey, fine grained, foliated, very strong. Minor fracturing, slightly weathered with iron oxidation.	100				115				
			MUDSTONE (MDU) (27.4 to 28.9 m) Medium to dark grey, fine to medium grained, foliated, medium strong, highly fractured broken zone, slightly weathered with iron oxide staining.	100				30				
				100				90				
30				96				150				
	1380		**MAFIC INTRUSION (MAFI)** (28.9 to 34 m) Medium to dark grey, fine to medium grained, foliated, strong to very strong, moderately fractured with one rubble zone, slightly weathered. Iron oxide, calcite, and clay infill on some fractures. Weakly magnetic with disseminated sulphides.	100				150				
				100				20				
				100				120				
			End of Drillhole: 34 m Reached TD									
35	1375											
40	1370											
45	1365											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - ×: 20 40 60 80

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-2

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,361 E , 6,818,334 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-389
Drill Type: Tech 5000 Diamond Drill
Total Length: 42.0m
Elevation: 1421 m
Inclination: -90

Page: 1 of 2
Date Started: 09 Jul 16
Date Completed: 11 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1420		**SANDY, GRAVELLY SILT (OVBN)** (0 to 3 m) Sandy, gravelly SILT, fine to coarse grained, moderately well graded, non-plastic, medium brown, organic scent, firm, massive, moist.		SPT-01	28		3/5/5	10			
					SPT-02	52		8/14/19	33			
			SILTY CLAY (OVBN) (3 to 10.4 m) Silty CLAY, some sand and gravel, fine to coarse grained, moderately well graded, low plasticity, medium brown, very stiff, massive, wet to saturated.		SPT-03	100		26/50+	R			
5					SPT-04	72		27/50+	R			
	1415				SPT-05	100		25/R	R			
					SPT-06	100		R	R			
10			**MUDSTONE (MDU)** (10.4 to 12.8 m) Dark grey and white, fine grained, foliated, medium strong to strong. Highly fractured broken zones, slightly weathered with iron oxide and clay infill. Dissolution features along fractures.	100				30				
	1410			100				30				
			MAFIC VOLCANICLASTIC (MAFT) (12.8 to 18.1 m) Medium grey with white, fine to medium grained, foliated, strong, moderately to highly fractured, slightly weathered with iron oxide staining and minor chlorite alteration. Few quartz and calcite veinlets, minor dissolution along fractures. Weakly magnetic.	96				80				13.0 - 21.0 m: Constant Head Test - K = 6E-07 m/s
				102				80				
15				100				40				
	1405			100				80				
				100	UCS-389-01			90				
			MUDSTONE (MDU) (18.1 to 21 m) Medium to dark bluish grey, fine grained, foliated, strong to very strong, moderately fractured, slightly weathered. Trace iron oxide staining and minor dissolution along fractures.	100				80				19.0 - 31.5 m: Constant Head Test - K = 1E-06 m/s
20				100	UCS-389-02			120				
	1400		**MAFIC VOLCANICLASTIC (MAFT)** (21 to 28.9 m) Light to dark grey, fine grained, foliated, strong to very strong. Fresh to slightly weathered, with iron oxide staining and minor dissolution features. Quartz veinlets throughout, weakly magnetic.	98				120				
				100				120				
				99				120				

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - × (20 40 60 80)

GENERAL REMARKS:
Installed 10 node thermister cable

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VA101-640/03	1	0

FIGURE B1-3

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,361 E , 6,818,334 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-389
Drill Type: Tech 5000 Diamond Drill
Total Length: 42.0m
Elevation: 1421 m
Inclination: -90

Date Started: 09 Jul 16
Date Completed: 11 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
	1395		**MAFIC VOLCANICLASTIC (MAFT)** (21 to 28.9 m) Light to dark grey, fine grained, foliated, strong to very strong. Fresh to slightly weathered, with iron oxide staining and minor dissolution features. Quartz veinlets throughout, weakly magnetic.	100				90		RQD, RMR, SPT 'N' (20 40 60 80)		
				100				90				
			MUDSTONE (MDU) (28.9 to 30.3 m) Medium to dark grey, fine to medium grained, foliated, very strong. Moderately fractured, fresh, no infill. With quartz veinlets throughout.	100				120				
30	1390		**MAFIC VOLCANICLASTIC (MAFT)** (30.3 to 30.9 m) Medium to dark grey, fine to medium grained, foliated, very strong. Moderately fractured, fresh, minor clay infill. With quartz veinlets throughout.	100				120				
				98				120				31.0 - 42.0 m: Constant Head Test - K = 8E-07 m/s
			MUDSTONE (MDU) (30.9 to 33.1 m) Medium to dark grey, fine to medium grained, foliated, very strong, moderately fractured, no infill. Quartz veinlets throughout.	94				150				
35	1385		**MAFIC VOLCANICLASTIC (MAFT)** (33.1 to 34.2 m) Medium to dark grey, fine to medium grained, foliated, very strong, moderately to highly fractured. Fractures slightly rough with clay infill.	99				120				
				95				120				
			MUDSTONE (MDU) (34.2 to 41.8 m) Light to medium grey, fine to medium grained, foliated, very strong. Slightly to moderately fractured, fresh to slightly weathered with clay and iron oxide infill on some fractures. Fractures smooth to slightly rough. Quartz veinlets throughout.	98				120				
40				100				120				
	1380			97				120				
			MAFIC VOLCANICLASTIC (MAFT) (41.8 to 42 m) Medium to dark greenish grey, fine to medium grained, foliated, very strong. Moderately fractured, slightly weathered with iron oxide staining. Quartz veinlets throughout.									
			End of Drillhole: 42 m Reached TD									
45	1375											

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-3

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,323 E , 6,818,779 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-390
Drill Type: Tech 5000 Diamond Drill
Total Length: 38.6m
Elevation: 1409 m
Inclination: -90

Page: 1 of 2
Date Started: 11 Jul 16
Date Completed: 12 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			SILT AND SAND (OVBN) (0 to 2.1 m) SILT and SAND, some clay, some gravel, trace cobbles, fine to coarse grained, moderately well graded, slightly plastic, medium to dark brown, firm to stiff, massive, moist to wet.		SPT-01	72		3/4/5	9			
					SPT-02	67		2/4/12	16			
			MUDSTONE (MDU) (2.1 to 2.8 m) Dark grey, fine grained, foliated, medium strong. Highly fractured broken zone, slightly weathered with trace iron oxide staining.	91				35				
	1405		**MAFIC VOLCANICLASTIC (MAFT)** (2.8 to 3 m) Medium greyish brown, fine grained, foliated, medium strong. Moderately fractured, slightly weathered with trace iron oxide staining.	25				30				
5			**MUDSTONE (MDU)** (3 to 25.1 m) Dark grey to black with zones of orangish brown, fine grained, foliated, medium strong with weak zones. Highly fractured with broken and rubble zones throughout, slightly to moderately weathered. With iron oxide staining and clay infill.	75				30				
				100				40				
	1400			44				40				
10				13				20				9.6 - 16.1 m: Constant Head Test - K = 1E-06 m/s Lost circulation: Fractured/ faulted zone
				77				20				
	1395			38				20				13.6 - 23.6 m: Constant Head Test - K = 4E-07 m/s
15				13				20				
				43				30				
				70				35				
	1390			88				0.1				
20				93				35				
				99				30				
				97				60				23.1 - 38.6 m: Constant Head Test - K = 2E-07 m/s
	1385			96				60				

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-4

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,323 E , 6,818,779 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-390
Drill Type: Tech 5000 Diamond Drill
Total Length: 38.6m
Elevation: 1409 m
Inclination: -90

Date Started: 11 Jul 16
Date Completed: 12 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
30	1380		**MAFIC VOLCANICLASTIC (MAFT)** (25.1 to 26.2 m) Light to medium greyish brown, fine to medium grained, foliated, weak to medium strong. Moderately to highly fractured, slightly weathered with iron oxide staining and clay infill.	100				10		RQD, RMR, SPT TEST 'N' VALUES - 20 40 60 80		
				100				60				
				87				40				
			MUDSTONE (MDU) (26.2 to 27.2 m) Dark grey to black with white, fine grained, foliated, medium strong, moderately to highly fractured with few 5 cm clay-filled shear zones. Dissolution vugs and quartz veinlets throughout.	80				10				
				87				30				
			MAFIC VOLCANICLASTIC (MAFT) (27.2 to 28.2 m) Medium greyish brown and white, fine to medium grained, foliated to massive, medium strong, moderately fractured, with massive quartz.	100				30				
				97				60				
35	1375		**MUDSTONE (MDU)** (28.2 to 32.9 m) Dark grey to black with white, fine grained, foliated, medium strong, highly fractured, breaks along foliation. Slightly weathered with iron oxide staining and dissolution vugs. Few small clay-filled shear zones.	97	UCS-390-01			60				
				74				0.1				
			MAFIC VOLCANICLASTIC (MAFT) (32.9 to 34 m) Medium grey to brownish grey, fine to medium grained, foliated, strong with weak zones. Clay infill on some fractures.	100				60				
				100				45				
40	1370		**MUDSTONE (MDU)** (34 to 38.6 m) Dark grey to black with medium brownish grey and white, fine grained, medium strong to strong, foliated. Moderately fractured, slightly weathered, with iron oxide and clay infill. Dissolution vugs throughout.	92				45				
			End of Drillhole: 38.6 m Reached TD									
45	1365											
	1360											

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-4

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,852 E , 6,817,471 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-392
Drill Type: Tech 5000 Diamond Drill
Total Length: 46.2m
Elevation: 1390 m
Inclination: -90

Page: 1 of 2
Date Started: 13 Jul 16
Date Completed: 14 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			SANDY CLAY AND SILT (OVBN) (0 to 1.6 m) Sandy CLAY and SILT, some gravel, trace cobbles and boulders, fine to coarse grained, well graded, medium plasticity, light to medium greyish brown, soft, massive, wet.		SPT-01	48		13/12/7	19			
					SPT-02	58		5/4/5	9			
			SILTY SAND (OVBN) (1.6 to 5 m) Silty SAND, some gravel, fine to coarse gained, well graded, medium plasticity, light to medium brown, compact, massive, wet.		SPT-03	48		6/8/13	21			
					SPT-04	100		50+	R			
5	1385		**MAFIC VOLCANICLASTIC (MAFT)** (5 to 16.2 m) Light to medium grey, fine grained, foliated, strong. Highly fractured broken and rubble zone, slightly to moderately weathered with iron oxide staining and clay infill. Dissolution along fractures.	100				60				
				100				75				
				30				75				7.7 - 19.2 m: Constant Head Test - K = 1E-06 m/s
				27				75				
10	1380			43				75				
				33				75				
				73				75				
15	1375			93				75				
			MAFIC VOLCANICLASTIC (MAFT) (16.2 to 36.3 m) Light to medium greenish grey, fine grained, foliated, strong to very strong. Minor fracturing, fresh to slightly weathered, trace iron oxide staining and clay infill. Zones of massive quartz.	87	UCS-392-01			110				17.2 - 28.2 m: Constant Head Test - K = 1E-06 m/s
				97				110				
20	1370			97	UCS-392-02			110				
				100				110				
				100	UCS-392-03			150				
				100				110				

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-5

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,852 E , 6,817,471 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-392
Drill Type: Tech 5000 Diamond Drill
Total Length: 46.2m
Elevation: 1390 m
Inclination: -90

Page: 2 of 2
Date Started: 13 Jul 16
Date Completed: 14 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MAFIC VOLCANICLASTIC (MAFT) (16.2 to 36.3 m) Light to medium greenish grey, fine grained, foliated, strong to very strong. Minor fracturing, fresh to slightly weathered, trace iron oxide staining and clay infill. Zones of massive quartz.	100				75				25.2 - 37.2 m: Constant Head Test - K = 2E-05 m/s
				95				75				
				98				75				Artesian conditions achieved for the rest of drilling after Constant Head Test 2 (17.2 - 28.2 m)
30	1360			92				110				
				100				110				
				98				150				
35	1355			101				110				
			MUDSTONE (MDU) (36.3 to 37.4 m) Dark greenish grey, fine grained, foliated, very strong. Slightly to moderately fractured with massive quartz.	93				110				35.2 - 46.2 m: Constant Head Test - K = 1E-05 m/s
				101				125				
			MAFIC VOLCANICLASTIC (MAFT) (37.4 to 39.7 m) Light to dark grey with white, fine to medium grained, foliated, very strong. Minor fracturing, fresh, no infill. Massive quartz intrusions and sulphide veinlets.	101				125				
40	1350			100				125				
			MUDSTONE (MDU) (39.7 to 46.2 m) Medium to dark grey, fine to medium grained, foliated, very strong. Fresh, with disseminated and veined sulphides. Vuggy calcite veins, some with clay infill.	100				125				
				100				125				
45	1345			100				110				
			End of Drillhole: 46.2 m Reached TD									

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-5

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,822 E , 6,817,251 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-395
Drill Type: Tech 5000 Diamond Drill
Total Length: 46.2m
Elevation: 1406 m
Inclination: -90

Page: 1 of 2
Date Started: 15 Jul 16
Date Completed: 16 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	DRILLING NOTES
0	1405	**TOPSOIL (OVBN)** (0 to 0.1 m) Sandy SILT, dark brown, loose, massive, saturated, with roots and other organic material. (Topsoil)		SPT-01	50		10/6/3	9	
		SANDY SILT (OVBN) (0.1 to 2.3 m) Silty SAND, some gravel, trace cobbles and boulders, fine to coarse grained, angular, well graded, medium plasticity, medium greyish brown, compact to dense, massive, wet.	100	SPT-02	100		50+	R	
			96				35		
5	1400	**MAFIC VOLCANICLASTIC (MAFT)** (2.3 to 3.8 m) Light to medium greenish grey with orangish brown, fine grained, foliated, medium strong, moderately to highly fractured, slightly to moderately weathered with dissolution vugs and iron oxide staining. Quartz veins and clay infill.	100				60		4.2 - 13.2 m: Constant Head Test - K = 1E-06 m/s
			100				80		
		MUDSTONE (MDU) (3.8 to 7.6 m) Dark grey with white, fine grained, foliated, strong. Carbonaceous mudstone with blebby calcite. Moderately fractured, fresh to slightly weathered. With dissolution vugs along calcite and sulphide veinlets. Trace iron oxide, clay infill on some fractures.	100				90		
			100	UCS-395-01			90		
10	1395	**MAFIC VOLCANICLASTIC (MAFT)** (7.6 to 9.6 m) Medium to dark greenish grey, fine grained, foliated, strong. Minor fracturing, fresh, no infill. With massive quartz and sulphide veinlets. Weakly magnetic.	100	UCS-395-02			90		11.2 - 22.2 m: Constant Head Test - K = 8E-07 m/s
			97				90		
		MUDSTONE (MDU) (9.6 to 13 m) Dark grey with white, fine grained, foliated, strong. Carbonaceous mudstone, moderately fractured, fresh, with quartz and sulphide veinlets. Weakly magnetic. Some algae on sub-vertical fractures.	53				110		
15	1390		83				30		
		MUDSTONE (MDU) (13 to 25 m) Dark greenish grey with white, medium strong to strong, highly fractured broken and rubble zones with soft clay infill and extensive dissolution. With quartz and sulphide veinlets. Chlorite alteration.	37				80		
			39				70		
20	1385		99				90		20.2 - 32.7 m: Constant Head Test - K = 7E-07 m/s
			63				125		
			65				40		
			94				35		

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80
INSTRUMENTATION / WELL DETAILS

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-6

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,822 E , 6,817,251 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-395
Drill Type: Tech 5000 Diamond Drill
Total Length: 46.2m
Elevation: 1406 m
Inclination: -90

Page: 2 of 2
Date Started: 15 Jul 16
Date Completed: 16 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
	1380		**MUDSTONE (MDU)** (25 to 29.3 m) Medium to dark grey with greyish green and white, fine grained, foliated, strong. Moderately fractured, fresh, minor clay and rubble infill. With sulphide veinlets and dissolution vugs. Weakly magnetic, chlorite altered.	100				80		RQD / RMR / SPT 'N' (20 40 60 80)		
				95				80				
				100				60				
30	1375		**MAFIC VOLCANICLASTIC (MAFT)** (29.3 to 32 m) Medium grey with white, fine grained, foliated, strong. Minor fracturing, fresh, no infill. With massive quartz and sulphide veinlets. Weakly magnetic.	98				80				
			MUDSTONE (MDU) (32 to 40.2 m) Medium to dark grey with green and white, fine to medium grained, foliated, strong. Carbonaceous mudstone. Moderately fractured, with minor clay infill and dissolution features. Weakly magnetic.	100				75				32.2 - 46.2 m: Constant Head Test - K = 4E-07 m/s
				47				0.5				
				100				60				
35	1370			100				70				
				98				70				
				100				80				
40				98				60				
	1365		**MUDSTONE (MDU)** (40.2 to 44.8 m) Medium to dark grey with white, fine grained, foliated, highly fractured broken and rubble zones with clay infill. Carbonaceous mudstone. Many dissolution features throughout.	39				2				
				100				35				
				78				60				
				79				40				
45				87				60				
	1360		**MUDSTONE (MDU)** (44.8 to 46.2 m) Light to medium grey with white, fine grained, foliated, strong, moderately fractured. Carbonaceous mudstone, slightly weathered, with dissolution along fractures.									
			End of Drillhole: 46.2 m Reached TD									

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-6

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 415,844 E , 6,816,485 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-402
Drill Type: Tech 5000 Diamond Drill
Total Length: 70.6m
Elevation: 1443 m
Inclination: -90

Date Started: 22 Jul 16
Date Completed: 24 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			TOPSOIL (OVBN) (0 to 0.2 m) SILT, some sand, fine grained, medium plasticity, dark brown, soft to firm, massive, moist to wet. (Topsoil)		SPT-01	78		4/8/11	19			
					SPT-02	53		12/12/12	24			
			SILT AND SAND (OVBN) (0.2 to 4.1 m) SILT and SAND, some gravel, fine to medium grained, non-plastic, light to medium brown, compact, massive, dry to wet increasing moisture with depth.		SPT-03	100		15/R	R			
					SPT-04	42		8/19/15	34			
5			**SILT AND GRAVEL (OVBN)** (4.1 to 6.3 m) SILT and GRAVEL, fine to medium grained, brown, dense, massive, moist to wet.		SPT-05	100		12/R	R			
	1440		**MUDSTONE (MDU)** (6.3 to 22.3 m) Dark grey to black, fine grained, foliated, medium strong. Highly fractured, breaks along fabric, slightly to moderately weathered with iron oxide and clay infill. Dissolution along fractures.	100				40				
				67				40				
	1435			91				40				8.1 - 18.1 m: Constant Head Test - K = 4E-07 m/s
10				47				40				
				43				30				
				47				0.6				
	1430			47				40				
				85				40				
15				56				40				16.1 - 27.1 m: Constant Head Test - K = 1E-07 m/s
				90				40				
	1425			100				40				
20				87				30				
				100				30				
	1420		**SANDSTONE/SILTSTONE (SED)** (22.3 to 23.2 m) Beige, fine grained, foliated, medium strong, moderately fractured, slightly weathered with iron oxide staining and dissolution vugs. Calcite veinlets throughout.	97	UCS-402-01			40				
				100	UCS-402-02			35				

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-7

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 415,844 E , 6,816,485 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-402
Drill Type: Tech 5000 Diamond Drill
Total Length: 70.6m
Elevation: 1443 m
Inclination: -90

Date Started: 22 Jul 16
Date Completed: 24 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MUDSTONE (MDU) (23.2 to 24.8 m) Dark grey to black, fine grained, foliated, medium strong, moderately fractured, breaks along fabric. Slightly weathered, iron oxide staining, with calcite veinlets throughout.	97				90				25.1 - 37.6 m: Constant Head Test - K = 2E-05 m/s
	1415		**MAFIC VOLCANICLASTIC (MAFT)** (24.8 to 30.4 m) Light brownish to greenish grey, fine to medium grey, foliated, strong, moderately fractured, slightly weathered with iron oxide staining. Dissolution along fabric, calcite and sulphide veinlets throughout.	99	UCS-402-03			80				
30				98				25				
			MUDSTONE (MDU) (30.4 to 35.1 m) Dark grey to black, fine grained, foliated, medium strong. Moderately to highly fractured with broken zones, slightly weathered with iron oxide staining and dissolution vugs. Calcite veinlets throughout.	100				35				
	1410			95				35				
				100				35				
35				83				35				Lost circulation: Broken Zone
			SANDSTONE/SILTSTONE (SED) (35.1 to 36.1 m) Beige, fine grained to medium grained, foliated, strong. Minor fracturing, slightly weathered with iron oxide staining and dissolution vugs. Quartz and calcite veinlets with clay infill on some fractures.	100				60				
				100				40				37.1 - 48.1 m: Constant Head Test - K = 3E-06 m/s
	1405		**MUDSTONE (MDU)** (36.1 to 42.7 m) Dark grey to black with white, fine grained, foliated, medium strong to strong, moderately to highly fractured, slightly weathered with iron oxide staining. Calcite and sulphide veinlets and dissolution along fractures.	100				60				
40				100				60				
				90				80				
	1400		**SANDSTONE/SILTSTONE (SED)** (42.7 to 43.6 m) Beige, fine grained, moderately fractured, strong, fresh.	100				90				
				23				60				
45			**MUDSTONE (MDU)** (43.6 to 49.1 m) Dark grey to black, fine grained, foliated, strong. Moderately to highly fractured with broken zones, fresh to slightly weathered. Calcite veinlets and dissolution along fabric. With chlorite alteration.	96				80				
				85				60				46.1 - 60.1 m: Constant Head Test - K = 3E-06 m/s
	1395			90				60				

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - × (20, 40, 60, 80)

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-7

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 415,844 E , 6,816,485 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-402
Drill Type: Tech 5000 Diamond Drill
Total Length: 70.6m
Elevation: 1443 m
Inclination: -90

Page: 3 of 3
Date Started: 22 Jul 16
Date Completed: 24 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MAFIC VOLCANICLASTIC (MAFT) (49.1 to 52.7 m) Light to medium grey, fine grained, foliated, medium strong to strong, highly fractured broken zone. With clay infill.	67				60		RQD / RMR / SPT 'N' (20 40 60 80)		
				97				40				
	1390		**MUDSTONE (MDU)** (52.7 to 58.6 m) Dark grey to black, fine grained, foliated, strong to very strong, moderately fractured with clay filled broken sections, fresh. Sulphide and quartz veinlets.	90				80				
55				97				80				
				94				110				
	1385			88				80				58.1 - 70.6 m: Constant Head Test - K = 4E-06 m/s
			MAFIC VOLCANICLASTIC (MAFT) (58.6 to 61 m) White and light greenish grey, fine grained, massive, medium strong. Highly fractured broken zone, fresh to slightly weathered. Massive quartz and chlorite alteration.	40				40				
60				63				40				
			MUDSTONE (MDU) (61 to 64.4 m) Dark grey to black with white, fine grained, foliated, medium strong to strong, moderately to highly fractured with broken zones. Clay infill and chlorite alteration. Quartz and sulphide veinlets throughout.	74				40				
	1380			94				80				
65			**MAFIC VOLCANICLASTIC (MAFT)** (64.4 to 65.8 m) Light to medium grey, fine grained, foliated, very strong. Slightly to moderately fractured, fresh. With sulphide veinlets.	100				110				
			MUDSTONE (MDU) (65.8 to 66.8 m) Dark grey to black, fine grained, foliated, strong, moderately fractured, fresh.	93				80				
	1375		**MAFIC VOLCANICLASTIC (MAFT)** (66.8 to 70.6 m) Light to medium greenish grey, fine grained, foliated, very strong. Minor fracturing, fresh, minor clay infill. With quartz veinlets.	98				110				
70				99				110				
			End of Drillhole: 70.6 m Reached TD									
	1370											

GENERAL REMARKS:
Installed 10 node thermister cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-7

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 416,136 E , 6,816,446 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-410
Drill Type: Tech 5000 Diamond Drill
Total Length: 31.0m
Elevation: 1473 m
Inclination: -90

Date Started: 08 Aug 16
Date Completed: 09 Aug 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	BLOW COUNTS (PER 6")	UCS	SPT 'N' VALUE	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1470	**SANDY SILT (OVBN)** (0 to 1.5 m) Sandy SILT, some gravel, fine to coarse grained, subangular, non-plastic, medium greyish brown, soft, massive, moist.		SPT-01	42		1/2/1		3		
		GRAVELLY CLAY AND SILT (OVBN) (1.5 to 5 m) Gravelly CLAY and SILT, some sand, fine to coarse grained, subangular, low plasticity, black, stiff, massive, wet, with ice at ~2 m.		SPT-02	87		10/31/42		73		
				SPT-03	83		2/5/5		10		
5		**SANDY CLAY AND SILT (OVBN)** (5 to 5.6 m) Sandy CLAY and SILT, some gravel, fine to coarse grained, subangular, medium plasticity, light brown and grey, very stiff, massive, wet, with ice at ~5.2 m.		SPT-04	78		27/29/22		51		
			58				60				
			73				60				
	1465	**MUDSTONE (MDU)** (5.6 to 18.7 m) Medium grey to black argillaceous mudstone with streaks of white carbonate rich material. Thin (0.2-0.5 m) interbeds of medium grained mafic volcaniclastic material throughout. Fine grained, foliated and massive, medium strong with large zones of extremely weak clay-rich material.	67				30			▼	8.2 - 14.7 m: Constant Head Test - K = 1E-05 m/s
10			80				30				
			100				0.05				
			100				0.05				
			97				30				
			67				0.05				
			44				0.05				
			63				35				
	1460		91				0.05				
			100				30				
15			61				30				15.0 - 22.2 m: Constant Head Test - K = 5E-05 m/s
			75				0.05				
			29				0.05				
	1455		35				0.05				
			50				0.05				
		MAFIC VOLCANICLASTIC (MAFT) (18.7 to 24.4 m) Light to medium grey, fine to medium grained, foliated to massive, strong. Moderately fractured, slightly weathered, iron oxide staining and dissolution along fractures. With calcite veinlets.	100				45				
			100				0.05				
20			101				60				
			96				80				21.7 - 31.2 m: Constant Head Test - K = 3E-07 m/s
	1450		100				80				
			102				80				
			100				0.05				

KEY ROCK MASS PARAMETERS
RQD
RMR
SPT TEST 'N' VALUES - 20 40 60 80

GENERAL REMARKS:
Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-8

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 416,136 E , 6,816,446 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-410
Drill Type: Tech 5000 Diamond Drill
Total Length: 31.0m
Elevation: 1473 m
Inclination: -90

Page: 2 of 2
Date Started: 08 Aug 16
Date Completed: 09 Aug 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MAFIC VOLCANICLASTIC (MAFT) (24.4 to 29.8 m) Medium brownish grey, fine grained, foliated to massive, strong with zones of extremely weak clay-altered material.	100				60		RQD, RMR, SPT TEST 'N' VALUES - 20 40 60 80		
				30				0.05				
				100				35				
				100				0.05				
	1445			69				35				
				73				35				
30			**MAFIC VOLCANICLASTIC (MAFT)** (29.8 to 31 m) Light to medium brownish grey, fine grained, foliated, medium strong with extremely weak clay-altered zones.	89				35				
				100				0.4				
			End of Drillhole: 31 m Reached TD									
	1440											
35												
	1435											
40												
	1430											
45												
	1425											

GENERAL REMARKS:
Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-8

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 415,947 E , 6,816,237 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-411
Drill Type: Tech 5000 Diamond Drill
Total Length: 34.1m
Elevation: 1446 m
Inclination: -90

Date Started: 10 Aug 16
Date Completed: 12 Aug 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1445		**SANDY SILT (OVBN)** (0 to 5 m) Sandy SILT, trace gravel, fine to coarse grained, moderately well graded, medium brown with black gravel, firm to stiff, massive to laminated, moist at surface then dry followed by wet at 2 m depth.		SPT-01	97		4/7/6	13			
					SPT-02	72		5/13/7	20			
					SPT-03	67		3/9/11	20			
5	1440		**SILT AND SAND (OVBN)** (5 to 8 m) SILT and SAND, some gravel, trace cobbles and boulders, fine to coarse grained, angular to subrounded, moderately well graded, medium brown with lithic clasts, stiff, massive, wet to saturated.		SPT-04	62		4/6/8	14			
			GRAVELLY SILT (OVBN) (8 to 11 m) Gravelly SILT, some sand, fine to coarse grained, angular, well graded, medium plasticity, medium orangish brown, stiff, massive, saturated.		SPT-05	50		4/13/16	29			
10	1435		**SILT AND SILTY SAND (OVBN)** (11 to 15.5 m) Interbedded fine SAND and sandy SILT, trace gravel, fine grained, poorly graded, medium plasticity, dark greyish brown to black, stiff to very stiff, varved, saturated.		SPT-06	63		3/8/9	17			
					SPT-07	100		1/3/13	16			
15	1430		**CLAY AND SILT (OVBN)** (15.5 to 18.2 m) CLAY and SILT, some gravel, fine to coarse grained, poorly graded, medium plasticity, medium brown, stiff, massive, wet.		SPT-08	54		3/4/37	41			
			MUDSTONE (MDU) (18.2 to 21.4 m) Dark grey to black, fine grained, foliated, medium strong, carbonaceous mudstone. Highly fractured broken zone with iron oxide staining and trace clay infill.	83				35				
				25				35				
20				33				30				
	1425			56				30				
			MAFIC VOLCANICLASTIC (MAFT) (21.4 to 26.8 m) Light grey to orangish brown, fine grained, foliated, medium strong. Slightly to moderately weathered with iron oxidation, bleached mafic volcaniclastics with clay-like alteration, calcite stringers, and pyrite veins and blebs. Clay infill on some fractures.	100				0.05				
				87				30				
				97				30				23.5 - 28.1 m: Constant Head Test - K = 3E-06 m/s

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80

GENERAL REMARKS:
Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-9

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 415,947 E , 6,816,237 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-411
Drill Type: Tech 5000 Diamond Drill
Total Length: 34.1m
Elevation: 1446 m
Inclination: -90

Page: 2 of 2
Date Started: 10 Aug 16
Date Completed: 12 Aug 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
	1420			93				35				26.1 - 34.1 m: Constant Head Test - K = 8E-07 m/s
			MUDSTONE (MDU) (26.8 to 34.1 m) Dark-grey to black, fine grained, foliated, weak to medium strong, carbonaceous mudstone. Oxidation is localized within vuggy, carbonate-rich bands. Moderately to highly fractured, intact rock broken by clay rich altered zones. Disseminated and veined sulphides throughout.	43				15				
30				45				0.2				
				11				0.2				
				71				0.2				
	1415			91				35				
				100				60				
				100				0.3				
				100				60				
			End of Drillhole: 34.1 m Reached TD									
35	1410											
40	1405											
45	1400											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - ×: 20 40 60 80

GENERAL REMARKS:
Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-9

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class C Storage Facility
Coordinates: 416,070 E , 6,816,061 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: K16-412
Drill Type: Tech 5000 Diamond Drill
Total Length: 38.7m
Elevation: 1464 m
Inclination: -90

Page: 1 of 2
Date Started: 12 Aug 16
Date Completed: 14 Aug 16
Logged by: JAG
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			SILT AND SAND (OVBN) (0 to 3.3 m) SILT and SAND, some gravel, trace cobbles and boulders, fine to coarse grained, angular to subangular, moderately well graded, non-plastic, medium brown, compact, laminated, dry to wet at ~1.8 m.		SPT-01	50		2/3/2	5			
					SPT-02	60		16/15/6	21			
	1460		**SILTY, GRAVELLY SAND (OVBN)** (3.3 to 6.3 m) Silty, gravelly SAND, fine to coarse grained, angular to subangular, well graded, non-plastic, medium brown with lithic clasts, compact, massive, saturated.		SPT-03	30		2/3/3	6			
5					SPT-04	52		9/7/7	14			
			SILTY SAND (OVBN) (6.3 to 10.8 m) Silty SAND, trace gravel and cobbles, fine to medium grained, subangular, medium brown with lithic clasts, compact, massive, wet.		SPT-05	27		1/2/3	5		▼	
					SPT-06	65		6/6/6	12			
	1455											
10			**SANDY CLAY AND SILT (OVBN)** (10.8 to 16.8 m) Sandy CLAY and SILT, trace gravel, fine to medium grained, poorly graded, low plasticity, medium greyish brown, stiff, varved, wet.		SPT-07	97		15/21/22	43			
	1450				SPT-08	100		14/19/28	47			
15												
			SILTY SAND (OVBN) (16.8 to 19.2 m) Silty SAND, some gravel, trace cobbles, fine to coarse grained, well graded, medium greyish brown and black, compact, massive, wet.		SPT-09	78		13/32/44	76			
	1445		**MUDSTONE (MDU)** (19.2 to 34 m) Dark grey to black with white, fine grained, foliated, weak to medium strong. Carbonaceous mudstone with small beds of mafic volcaniclastics. Many small rubble and broken zones, slightly to moderately weathered. Clay infill on some fractures. Quartz veinlets throughout.	93				20			
20				100				10				20.5 - 26.7 m: Constant Head Test - K = 4E-07 m/s
				83				40				
				48				4				
				95				60				
	1440			62				15				

GENERAL REMARKS:
Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

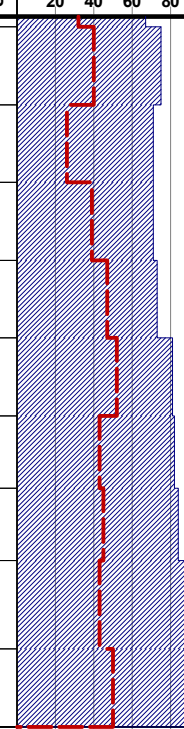
FIGURE B1-10

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling	**Drillhole No.:** K16-412	**Page:** 2 of 2
Location: Class C Storage Facility	Drill Type: Tech 5000 Diamond Drill	Date Started: 12 Aug 16
Coordinates: 416,070 E , 6,816,061 N	Total Length: 38.7m	Date Completed: 14 Aug 16
Coordinate System: UTM09 NAD83	Elevation: 1464 m	Logged by: JAG
Hole Size HQ3	Inclination: -90	Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS (RQD, RMR) / SPT TEST 'N' VALUES - × (20 40 60 80)	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MUDSTONE (MDU) (19.2 to 34 m) Dark grey to black with white, fine grained, foliated, weak to medium strong. Carbonaceous mudstone with small beds of mafic volcaniclastics. Many small rubble and broken zones, slightly to moderately weathered. Clay infill on some fractures. Quartz veinlets throughout.	81				40				
				49				0.5				
	1435			89				40				
30				72				60				
				62				60				Temporary loss of circulation
				91				45				32.5 - 38.7 m: Constant Head Test - K = 3E-06 m/s
	1430		**MAFIC VOLCANICLASTIC (MAFT)** (34 to 34.5 m) Light brownish grey, fine grained, foliated, medium strong. Slightly weathered, with iron oxide staining.	93				45				
35			**MUDSTONE (MDU)** (34.5 to 36.1 m) Dark grey, fine grained, foliated, medium strong. Patchy silicification, moderately fractured, slightly weathered, with clay infill and calcite veinlets.	92				45				
			MAFIC VOLCANICLASTIC (MAFT) (36.1 to 38.7 m) Light grey to green mafic volcaniclastics interbedded with small mudstone lenses. Fine grained, foliated, medium strong to strong. Moderately to highly fractured, slightly weathered with dissolution along fractured and small rubble zones. Minor chlorite alteration.	83				60				
	1425											
40			End of Drillhole: 38.7 m Reached TD									
	1420											
45												
	1415											



GENERAL REMARKS:

Installed open 1" PVC pipe to house thermistor cable

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-10

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 415,278 E , 6,816,530 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-12D
Drill Type: Tech 5000 Diamond Drill
Total Length: 28.2m
Elevation: 1369 m
Inclination: -90

Date Started: 20 Jul 16
Date Completed: 21 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1369		**TOPSOIL (OVBN)** (0 to 0.1 m) Dark brown, moist, containing sticks and roots. (Topsoil)		SPT-01	83		2/1/2	3			
			CLAY (OVBN) (0.1 to 3.7 m) CLAY, some gravel, gap graded, low plasticity, brownish grey, organic scent, very soft to soft, massive, moist to wet.		SPT-02	18		1/2/2	4			
	1365		**CLAY AND GRAVEL (OVBN)** (3.7 to 7.2 m) CLAY and GRAVEL, some silt, well graded, grey, compact, massive, wet.		SPT-03	90		7/12/7	19			
5					SPT-04	20		7/9/11	20			
					SPT-05	35		2/6/15	21			
			MAFIC VOLCANICLASTIC (MAFT) (7.2 to 13.1 m) Light to medium grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh, trace clay infill. Biotite along foliation.	100				80				
	1360			87				80				8.2 - 19.2 m: Constant Head Test - K = 8E-06 m/s
10				96	UCS-398-01			80				
				100				110				
				100				80				
			MUDSTONE (MDU) (13.1 to 14.6 m) Light to medium grey, fine grained, foliated, strong, moderately fractured. Fresh, with trace clay infill.	100				80				
	1355		**MAFIC INTRUSION (MAFI)** (14.6 to 21.2 m) Light to medium grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh, with clay infill. Interbedded with carbonaceous mudstone. With sulphide and quartz veinlets.	100				110				
15				100				150				
				100				80				
	1350			100				90				17.2 - 28.2 m: Constant Head Test - K = 3E-06 m/s
20				100				80				
			MUDSTONE (MDU) (21.2 to 26.2 m) Medium to dark grey, fine grained, foliated, strong. Moderately fractured, fresh, minor clay infill and dissolution vugs along fractures. Weakly magnetic, with disseminated sulphides.	100				90				
	1345			100				80				

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 21.0-27.0 m

BMC MINERALS (NO.1) LTD.
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FIGURE B1-11

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 415,278 E , 6,816,530 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-12D
Drill Type: Tech 5000 Diamond Drill
Total Length: 28.2m
Elevation: 1369 m
Inclination: -90

Date Started: 20 Jul 16
Date Completed: 21 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MAFIC VOLCANICLASTIC (MAFT) (26.2 to 28.2 m) Light to medium grey, fine to medium grained, foliated, strong. Moderately fractured, fresh, no infill. Mafic tuff with minor interbedded carbonaceous mudstone. With calcite veinlets and small (< 1cm) dissolution vugs. Disseminated sulphides throughout.	100				80		RQD / RMR / SPT TEST 'N' VALUES - 20 40 60 80		
				95				80				
30	1340		End of Drillhole: 28.2 m Reached TD									
35	1335											
40	1330											
45	1325											
	1320											

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 21.0-27.0 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-11

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 415,274 E , 6,816,530 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-12S
Drill Type: Tech 5000 Diamond Drill
Total Length: 8.0m
Elevation: 1369 m
Inclination: -90

Page: 1 of 1
Date Started: 21 Jul 16
Date Completed: 22 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1369		**TOPSOIL (OVBN)** (0 to 0.1 m) Dark brown, moist, containing sticks and roots. (Topsoil)									
			CLAY (OVBN) (0.1 to 3.7 m) CLAY, some gravel, gap graded, low plasticity, brownish grey, organic scent, very soft to soft, massive, moist to wet.									
5	1365		**CLAY AND GRAVEL (OVBN)** (3.7 to 7.2 m) CLAY and GRAVEL, some silt, well graded, grey, compact, massive, wet.									
			MAFIC VOLCANICLASTIC (MAFT) (7.2 to 8 m) Light to medium grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh, trace clay infill. Biotite along foliation.									
10	1360		End of Drillhole: 8 m Reached TD									
	1355											
15												
	1350											
20												
	1345											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - × (20 40 60 80)

GENERAL REMARKS:
Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 2.7 - 4.2 m.

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VA101-640/03	1	0

FIGURE B1-12

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,011 E , 6,817,774 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-13
Drill Type: Tech 5000 Diamond Drill
Total Length: 27.9m
Elevation: 1503 m
Inclination: -90

Date Started: 06 Jul 16
Date Completed: 07 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1503		**SILTY SAND (OVBN)** (0 to 1.1 m) Silty SAND, some gravel, fine to medium grained, moderately well graded, non-plastic, light to medium brownish grey, loose, massive, dry.		SPT-01	78		3/4/6	10			
				100				20				
				65				10				
	1500		**MUDSTONE (MDU)** (1.1 to 5.1 m) Medium greyish green, fine to medium grained, foliated, weak, highly fissile, breaks along fabric, slightly weathered with iron oxide staining and dissolution vugs. Mica and chlorite-rich. Clay infill on some fractures.	102				15				
				103				15				
5				100				30				3.5 - 9.9 m: Constant Head Test - K = 5E-05 m/s
			MAFIC VOLCANICLASTIC (MAFTA) (5.1 to 5.7 m) Medium grey with white, fine grained, foliated, medium strong, highly fractured. Iron oxide along foliation and some clay infill. Slightly to moderately weathered.	97				30				Lost circulation: Fracture zone with dissolution
			MUDSTONE (MDU) (5.7 to 11 m) Light to dark grey, fine grained, foliated, medium strong to strong, moderately to highly fractured, breaks along foliated. With iron oxide staining and dissolution vugs. Quartz veinlets throughout. Weakly magnetic.	99				40				
	1495			100				35				7.9 - 18.9 m: Constant Head Test - K = 9E-08 m/s
10				100				60				
			MAFIC VOLCANICLASTIC (MAFTA) (11 to 11.6 m) Medium to dark grey, fine grained, foliated, strong, moderately fractured, with iron oxide staining and dissolution vugs along foliation. With quartz veinlets.	92				45				
	1490			97				40				
				100				60				
			MUDSTONE (MDU) (11.6 to 26.8 m) Medium to dark grey with white, fine grained, foliated, strong to very strong. Moderately to highly fractured, breaks along foliation. With quartz and pyrite veinlets and clay infill on some fractures.	99				110				
15				92				110				
				100				150				
				92				60				16.9 - 27.9 m: Constant Head Test - K = 1E-07 m/s
	1485			100				10				
				100				60				
20				85				60				
				90				40				
				95				110				
	1480			97				60				
				100				20				

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 27.0 - 19.1 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-13

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,011 E , 6,817,774 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-13
Drill Type: Tech 5000 Diamond Drill
Total Length: 27.9m
Elevation: 1503 m
Inclination: -90

Page: 2 of 2
Date Started: 06 Jul 16
Date Completed: 07 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
				95				60				
			MAFIC INTRUSION (MAFI) (26.8 to 27.9 m) Medium grey, fine grained, foliated, very strong. Iron oxidation on fractured, think quartz veinlets throughout.	99				110				
	1475		End of Drillhole: 27.9 m Reached TD									
30												
	1470											
35												
	1465											
40												
	1460											
45												
	1455											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 27.0 - 19.1 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-13

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,779 E , 6,818,386 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-14D
Drill Type: Tech 5000 Diamond Drill
Total Length: 40.2m
Elevation: 1342 m
Inclination: -90

Date Started: 24 Jul 16
Date Completed: 25 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	DRILLING NOTES
0	1342	**TOPSOIL (OVBN)** (0 to 0.2 m) SILT, some sand, fine grained, poorly graded, medium plasticity, dark brown, soft, massive, wet. (Topsoil)		SPT-01	63		2/3/7	10	
	1340	**SANDY SILT (OVBN)** (0.2 to 3.5 m) Sandy SILT, some gravel, fine to coarse grained, angular, moderately well graded, low plasticity, medium greyish brown, stiff, massive, moist to wet.		SPT-02	62		5/12/16	28	
				SPT-03	52		5/11/16	27	
5		**CLAY AND SILT (OVBN)** (3.5 to 4.8 m) CLAY and SILT, some gravel, trace fine sand, fine grained, poorly graded, medium plasticity, light to medium brown, stiff, laminated, wet.		SPT-04	100		50+	R	
	1335	**MAFIC VOLCANICLASTIC (MAFT)** (4.8 to 13.2 m) Greenish grey, fine grained, foliated, medium strong to strong. Highly fractured broken and rubble zones, moderately weathered with iron oxide infill.	17	SPT-05	100		20 50+	R	
10			92				48 40		
			85				40		
	1330		44				60		
15		**MUDSTONE (MDU)** (13.2 to 16 m) Medium to dark grey, fine grained, foliated, medium strong to strong, highly fractured broken zones, thick clay infill on some fractures. Slightly to moderately weathered with iron oxide staining and dissolution along fractures.	90				40		13.2 - 22.2 m: Constant Head Test - K = 9E-06 m/s
			35				60		
	1325	**MAFIC VOLCANICLASTIC (MAFT)** (16 to 16.3 m) Greenish grey, fine grained, foliated, medium strong, highly fractured broken zone, with dissolution vugs.	87				80		
		MUDSTONE (MDU) (16.3 to 21.7 m) Medium to dark grey, fine grained, foliated, strong, highly fractured, breaks along foliation. With quartz veinlets.	40				80		
20			96				80		20.2 - 31.2 m: Constant Head Test - K = 1E-05 m/s
			84				80		
	1320	**MAFIC VOLCANICLASTIC (MAFT)** (21.7 to 28.4 m) Medium greenish grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh to slightly weathered with iron oxide staining and clay infill on some fractures.	73				80		
			100				110		

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - 20 40 60 80
INSTRUMENTATION / WELL DETAILS

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 31.85-37.85 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

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FIGURE B1-14

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,779 E , 6,818,386 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-14D
Drill Type: Tech 5000 Diamond Drill
Total Length: 40.2m
Elevation: 1342 m
Inclination: -90

Page: 2 of 2
Date Started: 24 Jul 16
Date Completed: 25 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MAFIC VOLCANICLASTIC (MAFT) (21.7 to 28.4 m) Medium greenish grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh to slightly weathered with iron oxide staining and clay infill on some fractures.	100				110		RQD, RMR; SPT TEST 'N' VALUES - × (20 40 60 80)		
	1315			95				80				
			MUDSTONE (MDU) (28.4 to 35.7 m) Medium to dark grey, fine grained, foliated, weak to medium strong, moderately to highly fractured with broken and rubble zones, some clay-filled zones. With calcite veinlets and dissolution along the foliation. Fresh to slightly weathered.	93				30				
30				83				30				28.2 - 40.2 m: Constant Head Test - K = 2E-06 m/s
	1310			75				20				
				85				30				
35				92				40				
			MAFIC VOLCANICLASTIC (MAFTA) (35.7 to 36.1 m) Medium greenish grey, fine to medium grained, strong, foliated. Minor fracturing, fresh. With chlorite alteration and fine calcite veinlets.	100				70				
				84				2				
	1305			100				35				
			MUDSTONE (MDU) (36.1 to 38.4 m) Dark grey with white, fine grained, weak to medium strong, foliated. Highly fractured, fresh to slightly weathered, with dissolution along foliation. Quartz and calcite veinlets throughout. Chlorite altered.	98				45				
40				97				90				
			MAFIC VOLCANICLASTIC (MAFT) (38.4 to 40.2 m) Medium grey and white, fine to medium grained, massive to foliated, strong. Minor fracturing, fresh to slightly weathered, clay and chlorite infill on some fractures. With calcite veinlets and massive quartz.									
	1300		End of Drillhole: 40.2 m Reached TD									
45												
	1295											

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 31.85-37.85 m.

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FIGURE B1-14

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,780 E , 6,818,383 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-14S
Drill Type: Tech 5000 Diamond Drill
Total Length: 4.5m
Elevation: 1341 m
Inclination: -90

Page: 1 of 1
Date Started: 25 Jul 16
Date Completed: 25 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1340		**TOPSOIL (OVBN)** (0 to 0.2 m) SILT, some sand, fine grained, poorly graded, medium plasticity, dark brown, soft, massive, wet. (Topsoil)							RQD, RMR; SPT TEST 'N' VALUES - 20 40 60 80		
			SANDY SILT (OVBN) (0.2 to 3.5 m) Sandy SILT, some gravel, fine to coarse grained, angular, moderately well graded, low plasticity, medium greyish brown, stiff, massive, moist to wet.									
5	1335		**CLAY AND SILT (OVBN)** (3.5 to 4.5 m) CLAY and SILT, some gravel, trace fine sand, fine grained, poorly graded, medium plasticity, light to medium brown, stiff, laminated, wet.									
			End of Drillhole: 4.5 m Reached TD									
10	1330											
15	1325											
20	1320											

GENERAL REMARKS:

Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 2.72-4.22 m

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FIGURE B1-15

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Krakatoa Pit
Coordinates: 414,976 E , 6,814,702 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-15D
Drill Type: Tech 5000 Diamond Drill
Total Length: 42.2m
Elevation: 1402 m
Inclination: -90

Page: 1 of 2
Date Started: 04 Jul 16
Date Completed: 05 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			TOPSOIL (OVBN) (0 to 0.1 m) Sandy SILT, some gravel, well graded, dark brown, loose, massive, moist, containing sticks and roots. (Topsoil)		SPT-01	73		9/50+	R			
					SPT-02	29		20/21/34	55			
	1400		**SILT AND SAND (OVBN)** (0.1 to 3.7 m) SILT and SAND, some gravel, trace cobbles and boulders, fine to coarse grained, well graded, medium brown, compact, laminated, wet.		SPT-03	83		8/13/10	23			
					SPT-04	10		8/3/2	5			
5			**SILTY, GRAVELLY SAND (OVBN)** (3.7 to 5.7 m) Silty, gravelly SAND, fine to coarse grained, angular, well graded, low plasticity, medium greyish brown, loose, massive, wet to saturated.		SPT-05	95		4/2/1	3			
			STRINGER & DISSEMINATED SULPHIDE (OI) (5.7 to 6.2 m) Light to medium brownish grey, fine to medium grained, foliated. Medium strong, moderately fractured, slightly to moderately weathered. Heavily disseminated sulphides. With clay and iron oxide on fractures.	100				40				
	1395			79				110				
				99				150				
			VOLCANICLASTIC RHYOLITE (RHYV) (6.2 to 17 m) Light to dark greenish grey, fine to medium grained, foliated, strong to very strong, moderately to highly fractured, fresh to slightly weathered. With calcite and pyrite veinlets, clay infill on fractures.	100	UCS-381-01			75				
10				77				75				10.2 - 18.2 m: Constant Head Test - K = 4E-07 m/s
	1390			96				75				
				83	UCS-381-02			110				
15				89				110				16.2 - 27.2 m: Constant Head Test - K = 5E-07 m/s
	1385		**COHERENT RHYOLITE (RHYC)** (17 to 24.2 m) Light to medium greenish grey, fine to medium grained, foliated, strong, moderately to highly fractured with one 25 cm clay-filled shear zone. With quartz and calcite veinlets, chlorite alteration, and disseminated pyrite. Zones of massive quartz.	88				110				
				70				150				
				94				75				
				60				75				
20				40				0.5				
				89				75				
	1380			98				110				
				91				110				
				91				150				

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 28.8 - 36.6 m.

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FIGURE B1-16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Krakatoa Pit
Coordinates: 414,976 E , 6,814,702 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-15D
Drill Type: Tech 5000 Diamond Drill
Total Length: 42.2m
Elevation: 1402 m
Inclination: -90

Page: 2 of 2
Date Started: 04 Jul 16
Date Completed: 05 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			VOLCANICLASTIC RHYOLITE (RHYV) (24.2 to 28.2 m) Light greenish grey, fine to medium grained, foliated, strong to very strong, moderately fractured, fresh. Quartz-rich, weakly magnetic, with veined and disseminated sulphides. Minor dissolution features throughout.	100				75		RQD, RMR; SPT TEST 'N' VALUES - 20 40 60 80		
	1375			100				110				
				100				90				27.2 - 42.2 m: Constant Head Test - K = 2E-06 m/s
			RHYOLITE TUFF MUDSTONE (MDST) (28.2 to 35.8 m) Medium to dark grey, fine to coarse grained, foliated, strong, moderately fractured, fresh. Rhyolite tuff-dominant mudstone with veined and disseminated sulphides. Quartz rich, weakly magnetic.	67				65				
30				100				90				
				102				90				
	1370			100				90				
				100				90				
				59				0.5				
35				100				90				
				99				70				
			VOLCANICLASTIC RHYOLITE (RHYV) (35.8 to 42.2 m) Light grey, fine to medium grained, foliated, strong, minor fracturing, fresh, no infill. With quartz and calcite veinlets and disseminated sulphides.	100				80				
	1365			100				120				
40				100				90				
	1360			100				90				
			End of Drillhole: 42.2 m Reached TD									
45												
	1355											

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 28.8 - 36.6 m.

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FIGURE B1-16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 414,977 E , 6,814,699 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-15S
Drill Type: Tech 5000 Diamond Drill
Total Length: 6.1m
Elevation: 1401 m
Inclination: -90

Page: 1 of 1
Date Started: 05 Jul 16
Date Completed: 05 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1400		**TOPSOIL (OVBN)** (0 to 0.1 m) Sandy SILT, some gravel, well graded, dark brown, loose, massive, moist, containing sticks and roots. (Topsoil)									
			SILT AND SAND (OVBN) (0.1 to 3.7 m) SILT and SAND, some gravel, trace cobbles and boulders, fine to coarse grained, well graded, medium brown, compact, laminated, wet.									
5	1395		**SILTY, GRAVELLY SAND (OVBN)** (3.7 to 5.7 m) Silty, gravelly SAND, fine to coarse grained, angular, well graded, low plasticity, medium greyish brown, loose, massive, wet to saturated.									
			STRINGER & DISSEMINATED SULPHIDE (OI) (5.7 to 6.1 m) Light to medium brownish grey, fine to medium grained, foliated. Medium strong, moderately fractured, slightly to moderately weathered. Heavily disseminated sulphides. With clay and iron oxide on fractures.									
10	1390		End of Drillhole: 6.08 m Reached TD									
15	1385											
20	1380											

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES - × : 20 40 60 80

GENERAL REMARKS:

Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 3.1 - 5.3 m.

BMC MINERALS (NO.1) LTD.
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Knight Piésold CONSULTING

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VA101-640/03	1	0

FIGURE B1-17

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Overburden Stockpile
Coordinates: 415,395 E , 6,817,229 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-16
Drill Type: Tech 5000 Diamond Drill
Total Length: 40.3m
Elevation: 1393 m
Inclination: -90

Date Started: 18 Jul 16
Date Completed: 19 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	DRILLING NOTES
	1390	**SILTY SAND (OVBN)** (0 to 1.8 m) Silty SAND, some gravel, fine to medium grained, moderately well graded, medium brown, compact, massive, moist.		SPT-01	45		2/4/3	7	
		SANDY GRAVEL (OVBN) (1.8 to 3.3 m) Sandy GRAVEL, some silt, medium to coarse grained, angular, light brown, loose, massive, dry.		SPT-02	60		11/50+	R	
				SPT-03	62		2/4/5	9	
		GRAVELLY SILT (OVBN) (3.3 to 3.9 m) Gravelly SILT, some sand, angular, well graded, medium plasticity, medium brownish grey, stiff, massive, wet.	100				70		
5			99	UCS-397-01			80		
		MAFIC VOLCANICLASTIC (MAFT) (3.9 to 12.7 m) Light to medium greenish grey with orangish brown, fine grained, foliated. Strong, moderately fractured, moderately weathered with iron oxide staining and clay infill. Dissolution features along fractures.	72				60		6.0 - 13.3 m: Constant Head Test - K = 1E-06 m/s
	1385		100				110		
10			92				110		
			100				80		11.3 - 22.3 m: Constant Head Test - K = 4E-06 m/s
			84				60		
	1380	**MUDSTONE (MDU)** (12.7 to 16.6 m) Dark grey with white, fine grained, foliated. Carbonaceous mudstone with banded calcite. Medium strong to strong, moderately to highly fractured, moderately weathered with iron oxidation and dissolution along fractures.	43				40		
			100				60		
15			98				65		
		MAFIC VOLCANICLASTIC (MAFT) (16.6 to 22.2 m) Light to medium grey, fine grained, foliated, strong to very strong, minor fracturing, fresh to slightly weathered with iron oxide staining and a few quartz veins. Minor dissolution along fractures.	100				65		
	1375		100				80		
20			100				110		20.3 - 31.3 m: Constant Head Test - K = 1E-06 m/s
			100				80		
	1370		100				80		
			92				75		

KEY ROCK MASS PARAMETERS
RQD
RMR
SPT TEST 'N' VALUES - 20 40 60 80

INSTRUMENTATION / WELL DETAILS

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 32.17-38.17 m

BMC MINERALS (NO.1) LTD.
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FIGURE B1-18

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Overburden Stockpile
Coordinates: 415,395 E , 6,817,229 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-16
Drill Type: Tech 5000 Diamond Drill
Total Length: 40.3m
Elevation: 1393 m
Inclination: -90

Page: 2 of 2
Date Started: 18 Jul 16
Date Completed: 19 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
			MUDSTONE (MDU) (22.2 to 32.3 m) Dark grey with white, fine grained, foliated, medium strong to strong. Carbonaceous mudstone with banded calcite. Moderately to highly fractured, fresh to slightly weathered with iron oxide staining and minor dissolution. With quartz and calcite veinlets.	69				30		RQD / RMR; SPT TEST 'N' VALUES - × (20 40 60 80)		
	1365			86				80				
				100				125				
30				93				80				29.3 - 40.3 m: Constant Head Test - K = 3E-06 m/s
				96				80				
	1360		**MAFIC VOLCANICLASTIC (MAFT)** (32.3 to 35.4 m) Light greenish grey mafic tuff, fine grained, foliated, strong. Moderately fractured, fresh to slightly weathered with iron oxide staining and sulphide veinlets.	90				80				
35				93				90				
			MUDSTONE (MDU) (35.4 to 40.3 m) Dark grey with white, fine grained, foliated, very strong. Carbonaceous mudstone with banded calcite. Moderately fractured, fresh, clay infill on some fractures. With quartz and sulphide veinlets.	97				110				
	1355			99				110				
40				83				110				
			End of Drillhole: 40.3 m Reached TD									
	1350											
45												
	1345											

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 32.17-38.17 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

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FIGURE B1-18

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,634 E , 6,817,489 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-17
Drill Type: Tech 5000 Diamond Drill
Total Length: 31.1m
Elevation: 1418 m
Inclination: -90

Date Started: 07 Jul 16
Date Completed: 08 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
0	1418	**TOPSOIL (OVBN)** (0 to 0.1 m) SILT, trace sand, trace gravel, fine grained, dark brown, loose, massive, moist, with roots and small sticks. (Topsoil)		SPT-01	92		3/5/6	11			
				SPT-02	100		50+	R			
	1415	**CLAY AND SILT (OVBN)** (0.1 to 1.6 m) CLAY and SILT, some sand, some gravel, trace cobbles and boulders, fine to coarse grained, moderately well graded, low plasticity, dark to medium greyish brown, firm, massive, moist.	94				60				
			52				60				
5		**MAFIC VOLCANICLASTIC (MAFT)** (1.6 to 4.1 m) Medium to dark brownish grey, fine grained, foliated, medium strong, highly fractured, moderately weathered with iron oxide and clay infill. Dissolution along foliation.	97				75				5.1 - 13.1 m: Constant Head Test - K = 4E-07 m/s
			87				40				
	1410	**MAFIC VOLCANICLASTIC (MAFT)** (4.1 to 15.2 m) Light to medium grey, fine grained, foliated, strong to very strong, moderately to highly fractured, slightly weathered. With iron oxide and minor clay infill along fabric.	97				75				
			100	UCS-386-01			110				
10			99				110				
			95				110				11.1 - 22.1 m: Constant Head Test - K = 7E-07 m/s
	1405		83	UCS-386-02			80				
			100				75				
15		**MUDSTONE (MDU)** (15.2 to 31.1 m) Medium to dark grey, fine grained, foliated, strong to very strong, moderately to highly fractured, fresh to slightly weathered. Massive and veined quartz, veined calcite and pyrite.	77				110				
			96				110				
	1400		100				75				
20			100				150				
			100				110				20.1 - 31.1 m: Constant Head Test - K = 7E-07 m/s
	1395		99				75				
			100				75				

KEY ROCK MASS PARAMETERS: RQD, RMR
SPT TEST 'N' VALUES: 20 40 60 80

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 20.3 - 27.7 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-19

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,634 E , 6,817,489 N
Coordinate System: UTM09 NAD83
Hole Size HQ3

Drillhole No.: MW16-17
Drill Type: Tech 5000 Diamond Drill
Total Length: 31.1m
Elevation: 1418 m
Inclination: -90

Date Started: 07 Jul 16
Date Completed: 08 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	RUN RECOVERY (%)	SAMPLE NO.	SAMPLE REC. (%)	SAMPLE TYPE	UCS / BLOW COUNTS (PER 6")	SPT 'N' VALUE	KEY ROCK MASS PARAMETERS / SPT TEST 'N' VALUES	INSTRUMENTATION / WELL DETAILS	DRILLING NOTES
30	1390		**MUDSTONE (MDU)** (15.2 to 31.1 m) Medium to dark grey, fine grained, foliated, strong to very strong, moderately to highly fractured, fresh to slightly weathered. Massive and veined quartz, veined calcite and pyrite.	98 100 100 99 100				40 75 75 150 150		RQD, RMR; SPT TEST 'N' VALUES - 20 40 60 80		
35	1385		End of Drillhole: 31.1 m Reached TD									
40	1380											
45	1375											
	1370											

GENERAL REMARKS:
Installed 1.25" monitoring well with 6 m screen. Completion zone from 20.3 - 27.7 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE B1-19

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, GEOTECHNICAL DRILLHOLE LOG, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 19 Oct 16

APPENDIX B2

RMR_{89} FIELD SHEETS

(Pages B2-1 to B2-28)

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-379

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 2-Jul-16
Date Completed: 4-Jul-16

Location: Fault Creek
Drill Hole ID: K16-379
Coordinates: 414,964 m easting
6,814,627 m northing

Surface Elevation: 1,412 m
Total Depth: 39.7 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	5.90	5.90						OVBN				Overburden											
5.90	7.30	1.40	100	76	11	75.00	R4	RHYc	Light grey with orangish brown	Fine grained	Foliated	Strong, moderately fractured, slightly weathered. Fractures are along fabric and have iron oxide weathering. Quartz and muscovite rich schist.	0	4	5	6	3	7.7	15.0	6.6	18.0	15	**62**
7.30	8.80	1.50	100	61	17	75.00	R4	RHYv	Light to medium grey	Fine grained	Foliated	Strong, moderately fractured, fresh. Fractures along fabric, muscovite and quartz rich schist.	0	4	3	2	6	7.7	11.9	6.1	15.0	15	**56**
8.80	10.30	1.50	92	46	15	60.00	R4	RHYv	Light to medium grey	Fine grained	Foliated	As above	0	4	1	2	6	6.5	9.3	6.2	13.0	15	**50**
10.30	11.80	1.50	100	94	7	80.00	R4	RHYv	Light to medium grey	Fine to medium grained	Foliated	Strong, moderately fractured, fresh. Fractures along fabric. Quartz and muscovite rich schist.	0	4	3	6	6	8.0	18.8	7.4	19.0	15	**68**
11.80	13.30	1.50	100	91	9	80.00	R4	RHYv	Light to medium grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh to slightly weathered. Fractures along fabric with clay, muscovite, and iron oxide infill. Quartz and muscovite rich schist.	0	4	5	2	6	8.0	18.2	7.0	17.0	15	**65**
13.30	14.80	1.50	100	70	12	45.00	R3	RHYv	Light to medium grey	Fine to medium grained	Foliated	Medium strong, moderately fractured, fresh to slightly weathered. Breaks along fabric, with chlorite and muscovite infill.	0	4	5	2	5	5.2	13.7	6.5	16.0	15	**56**
14.80	15.70	0.90	100	100	3	85.00	R4	RHYv	Light to medium grey	Fine to medium grained	Foliated	As above, strong	0	4	5	2	6	8.4	20.0	7.9	17.0	15	**68**
15.70	17.20	1.50	100	80	8	85.00	R4	RHYv	Light to medium grey with black	Fine to medium grained	Foliated	Strong, slightly weathered. Fractures with muscovite and iron oxide infill. One zone with veinlets of tourmaline and chlorite paired with dissolution features.	0	4	5	2	5	8.4	15.7	7.2	16.0	15	**62**
17.20	18.70	1.50	100	100	2	110.00	R5	RHYv	Light to medium grey	Fine to medium grained	Foliated	Strong to very strong, slightly weathered. Muscovite rich, with iron oxide clay on some fractures.	0	5	5	2	5	10.0	20.0	10.8	17.0	15	**73**
18.70	20.20	1.50	100	82	11	110.00	R5	RHYv	Light to medium grey	Fine to medium grained	Foliated	As above	0	4	1	2	5	10.0	16.1	6.7	12.0	15	**60**
20.20	21.40	1.20	100	98	2	110.00	R5	RHYv	Light to medium grey	Fine to medium grained	Foliated	As above	0	5	3	2	6	10.0	19.6	9.8	16.0	15	**70**
21.40	21.70	0.30	97	0	12	40.00	R3	RHYv	Light to medium greenish grey	Fine to medium grained	Sheared, foliated	Medium strong, with weak clay-filled shear zones. Highly fractured, slightly weathered. With chlorite and muscovite alteration.	0	0	3	0	5	4.8	3.0	5.3	8.0	15	**36**
21.70	22.50	0.80	99	71	9	75.00	R4	RHYv	Light to medium greenish grey	Fine to medium grained	Foliated	Strong, moderately to highly fractured, fresh, with chlorite alteration, clay and muscovite infill. With disseminated sulphides.	0	4	3	2	6	7.7	13.9	6.1	15.0	15	**58**
22.50	23.20	0.70	99	91	2	75.00	R4	RHYv	Light to medium greenish grey	Fine to medium grained	Foliated	Strong, few fractures, fresh, with chlorite alteration.	0	4	3	2	6	7.7	18.2	7.9	15.0	15	**64**
23.20	24.70	1.50	97	74	11	110.00	R5	RHYc	Light to dark greenish grey	Fine to medium grained	Foliated	Very strong, moderately fractured, fresh, with chlorite infill.	0	4	3	2	6	10.0	14.5	6.6	15.0	15	**61**
24.70	26.20	1.50	97	85	6	150.00	R5	RHYc	Light to medium greenish grey	Fine to medium grained	Foliated	As above	0	1	3	2	6	12.2	16.9	7.7	12.0	15	**64**
26.20	27.70	1.50	100	85	3	110.00	R5	RHYc	Medium greenish grey	Fine to medium grained	Foliated	Very strong, few fractures, fresh, with pyrite inclusions.	0	4	3	2	6	10.0	16.7	9.5	15.0	15	**66**
27.70	29.20	1.50	100	93	6	150.00	R5	RHYv	Light to medium greenish grey, black banding	Fine to medium grained	Foliated	As above	0	4	3	2	6	12.2	18.5	7.8	15.0	15	**68**
29.20	30.70	1.50	100	99	5	75.00	R4	RHYv	Light to medium greenish grey, black banding	Fine to medium grained	Foliated	Strong, few fractures, quartz banding.	0	4	3	2	6	7.7	20.0	8.2	15.0	15	**66**

DRILL RUN DATA								GEOLOGY - COMMENTS											RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
30.70	32.20	1.50	100	93	6	75.00	R4	RHYv	Light to medium greenish grey, black banding	Fine to medium grained	Foliated	As above, clay infill, colour darkening with depth.	0	4	3	2	6	7.7	18.6	7.8	15.0	15	**64**
32.20	33.40	1.20	100	80	8	75.00	R4	RHYv	Dark to light greenish grey, black banding	Fine to medium grained	Foliated	As above, magnetism present at top of run, hard clay infill.	0	4	3	4	6	7.7	15.7	6.8	17.0	15	**62**
33.40	33.80	0.40	100	0	10	150.00	R5	RHYv	Dark greenish grey	Fine to medium grained	Sheared, foliated	Very strong, highly fractured, iron oxide and clay infill, potential shear zone.	0	4	3	2	6	12.2	3.0	5.5	15.0	15	**51**
33.80	35.20	1.40	100	59	13	110.00	R5	RHYv	Light to dark greenish grey with depth,	Fine to medium grained	Sheared, foliated	Very strong, clay infill, chlorite alteration, evidence of shear at bottom.	0	4	3	2	6	10.0	11.5	6.3	15.0	15	**58**
35.20	36.70	1.50	100	67	11	75.00	R4	RHYv	Light to medium greenish grey	Fine to medium grained	Foliated	Strong, thick clay infill on one fracture, moderately to highly fractured, with chlorite alteration.	0	4	3	0	6	7.7	13.2	6.7	13.0	15	**55**
36.70	38.20	1.50	100	93	7	75.00	R4	RHYv	Light greenish grey	Fine to medium grained	Foliated	Strong, thick clay infill on one fracture, moderately fractured, with chlorite alteration.	0	4	1	0	6	7.7	18.5	7.4	11.0	15	**60**
38.20	39.70	1.50	99	91	9	110.00	R5	RHYv	Light greenish grey	Fine to medium grained	Foliated	Very strong, minor clay infill, moderately fractured.	0	4	3	2	6	10.0	18.2	7.0	15.0	15	**65**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-387

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 8-Jul-16
Date Completed: 9-Jul-16

Location: Class A Storage Facility
Drill Hole ID: K16-387
Coordinates: 414,571 m easting
6,817,991 m northing

Surface Elevation: 1,411 m
Total Depth: 34.0 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	3.30	3.30	0	0				OVBN				Overburden											
3.30	4.00	0.70	100	0	11	75.00	R4	MDU	Black to dark grey	Fine grained	Foliated	Strong, iron oxide weathering and infill, clay infill, moderately fractured, quartz veins, small pyrite crystals	0	4	3	2	3	7.7	3.0	5.8	12.0	15	**43**
4.00	5.50	1.50	100	42	18	75.00	R4	MDU	Black to dark grey	Fine grained	Foliated	As above, first 15cm is brown clay, plastic, moist, strong cohesion	0	4	3	2	3	7.7	8.7	6.1	12.0	15	**49**
5.50	7.00	1.50	98	11	20	75.00	R4	MDU	Medium grey	Fine grained	Foliated	Strong, moderately fractured, significant iron oxide weathering mid-run affecting strength, quartz veins, small pyrite crystals	0	4	1	2	3	7.7	4.3	6.0	10.0	15	**43**
7.00	8.50	1.50	100	44	15	75.00	R4	MDU	Medium grey	Fine grained	Foliated	As above, also significant iron oxide weathering mid-run with clay infill, massive quartz seam	0	4	1	2	3	7.7	9.0	6.3	10.0	15	**48**
8.50	10.00	1.50	89	0	32	75.00	R4	MDU	Medium grey	Fine grained	Foliated	As above, high iron oxide oxidation, highly fractured	0	4	1	2	3	7.7	3.0	5.6	10.0	15	**41**
10.00	11.50	1.50	96	25	20	150.00	R5	MDU	Light to medium grey	Fine grained	Foliated	Very strong, moderate to highly fractured, thick clay infill with high pyrite content, no to little weathering, quartz veinlets, pyrite crystals	0	4	1	0	5	12.2	6.1	5.9	10.0	15	**49**
11.50	13.00	1.50	100	27	18	75.00	R4	MDU	Light to medium grey	Fine grained	Foliated	As above, rock is not as strong	0	4	1	2	5	7.7	6.4	6.1	12.0	15	**47**
13.00	14.50	1.50	95	0	29	110.00	R5	MDU	Light to medium grey	Fine grained	Foliated	As above, very strong, highly fractured, as with most fractures in all runs the fractures are along the foliation/fabric	0	4	1	2	5	10.0	3.0	5.7	12.0	15	**46**
14.50	16.00	1.50	63	7	19	120.00	R5	MDU	Black to dark grey	Fine grained	Foliated	Very strong, highly fractured, grey clay infill, less oxidation than above, quartz veins and eyes, broken at top of run	0	4	1	2	5	10.6	3.7	5.7	12.0	15	**47**
16.00	17.50	1.50	84	29	15	120.00	R5	MAFt	Medium grey	Fine grained	Foliated	Very strong, highly fractured (less with depth), broken at top of run, iron oxide oxidation, clay infill, green alteration (slight), massive quartz	0	4	3	2	5	10.6	6.7	6.1	14.0	15	**52**
17.50	19.00	1.50	88	31	19	120.00	R5	MAFt	White to translucent	Coarse grained	Massive	Nearly 75% quartz, very strong, joint characteristics differ largely from the fine grained mudstone schist which returns at the end of the run	0	1	5	6	5	10.6	7.0	5.9	17.0	15	**56**
19.00	20.50	1.50	97	47	17	150.00	R5	MAFt	Light to medium grey	Fine to medium grained	Foliated	Very strong, approximately 20% massive quartz, minor iron oxide oxidation	0	4	1	2	5	12.2	9.5	6.1	12.0	15	**55**
20.50	22.00	1.50	99	9	25	120.00	R5	MDU	Light to medium grey	Fine to medium grained	Foliated	Very strong, highly fractured, minor iron oxide oxidation, minor clay infill, pyrite and quartz banding	0	4	1	2	5	10.6	4.0	5.8	12.0	15	**47**
22.00	23.50	1.50	100	30	22	120.00	R5	MDU	Medium to dark grey	Fine grained	Foliated	As above, high to moderately fractured	0	4	1	2	5	10.6	6.8	5.9	12.0	15	**50**
23.50	25.00	1.50	95	23	20	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, high to moderately fractured, quartz eyes, clay infill, minor iron oxide oxidation	0	4	1	2	5	10.6	5.8	5.9	12.0	15	**49**
25.00	26.50	1.50	100	44	19	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately to highly fractured, slightly weathered with iron oxide staining. Some clay infill, weakly magnetic.	0	4	3	2	5	10.6	9.0	6.0	14.0	15	**55**
26.50	28.39	1.89	100	88	15	115.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately fractured, slightly weathered with iron oxide staining and trace chlorite alteration. Weakly magnetic.	0	4	3	6	5	10.3	17.5	6.6	18.0	15	**67**
28.39	28.93	0.54	100	0	MAX	30.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Medium strong, highly fractured broken zone, slightly weathered with iron oxide staining.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	3.0	5.0	11.0	15	**38**

DRILL RUN DATA								GEOLOGY - COMMENTS											RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition						RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W							
28.93	29.50	0.57	100	65	4	90.00	R4	MAFi	Medium to dark grey	Fine to medium grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide staining. Weakly magnetic.	0	4	3	6	5	8.7	12.7	6.5	18.0	15	**61**
29.50	31.00	1.50	96	77	7	150.00	R5	MAFi	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately fractured, slightly weathered with trace iron oxide staining and minor calcite infill. Weakly magnetic, with disseminated sulphides.	0	4	3	6	5	12.2	15.0	7.3	18.0	15	**68**
31.00	32.74	1.74	100	85	9	150.00	R5	MAFi	Medium to dark grey	Fine to medium grained	Foliated	As above	0	4	3	6	5	12.2	16.8	7.3	18.0	15	**69**
32.74	32.88	0.14	100	0	MAX	20.00	R2	MAFi	Medium to dark grey	Fine to medium grained	Foliated	Weak, highly fractured rubble zone with clay infill. Trace iron oxide staining.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.0	3.0	5.0	6.0	15	**32**
32.88	34.00	1.12	100	100	4	120.00	R5	MAFi	Medium to dark grey	Fine to medium grained	Foliated	Very strong, minor fracturing, fresh to slightly weathered. With trace iron oxide.	0	4	3	6	6	10.6	20.0	8.1	19.0	15	**73**
EOH																								

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-389

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 9-Jul-16
Date Completed: 10-Jul-16

Location: Class A Storage Facility
Drill Hole ID: K16-389
Coordinates: 414,360 m easting
6,818,334 m northing

Surface Elevation: 1,421 m
Total Depth: 42.0 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	10.40	10.40						OVBN				Overburden											
10.40	11.00	0.60	100	0	25	30.00	R3	MDU	Dark grey and white	Fine grained	Foliated	Medium strong, highly fractured, breaks along fabric, slightly weathered. With minor dissolution features.	0	4	1	2	5	3.9	3.0	5.3	12.0	15	**39**
11.00	12.11	1.11	100	0	MAX	30.00	R3	MDU	Dark grey and white	Fine grained	Foliated	As above, broken zones and a few short clay-filled zones.	0	1	1	0	5	3.9	3.0	5.0	7.0	15	**34**
12.11	13.50	1.39	96	67	10	80.00	R4	MAFt	Light to medium grey	Fine to medium grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide and clay infill on some fractures.	0	4	3	2	5	8.0	13.1	6.6	14.0	15	**57**
13.50	15.30	1.80	102	64	16	80.00	R4	MAFt	Medium grey with white	Fine to medium grained	Foliated	Strong ,moderately fractured, slightly weathered with iron oxide staining. Few quartz veinlets throughout, weakly magnetic.	0	4	3	6	5	8.0	12.6	6.4	18.0	15	**60**
15.30	16.05	0.75	100	37	MAX	40.00	R3	MAFt	Medium grey, orangish brown, and white	Fine to medium grained	Foliated	Medium strong, large vuggy quartz vein with iron oxide infill and minor chlorite alteration. Moderately to highly fractured.	0	1	5	3	5	4.8	7.9	5.0	14.0	15	**47**
16.05	16.50	0.45	100	84	3	80.00	R4	MAFt	Medium grey with white	Fine to medium grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide staining. Few quartz veinlets throughout, weakly magnetic.	0	4	3	6	5	8.0	16.7	6.5	18.0	15	**64**
16.50	18.00	1.50	100	44	25	90.00	R4	MAFt	Medium to dark grey	Fine to medium grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide and mica on fractures. Minor dissolution along fabric.	0	4	3	4	5	8.7	9.0	5.8	16.0	15	**55**
18.00	19.50	1.50	100	45	18	80.00	R4	MDU	Dark bluish grey	Fine grained	Foliated	Strong, moderately fractured, slightly weathered. With trace iron oxide staining. Minor dissolution along foliation.	0	4	3	6	5	8.0	9.2	6.1	18.0	15	**56**
19.50	21.00	1.50	100	47	18	120.00	R5	MDU	Medium to dark grey	Fine grained	Foliated	As above, very strong, fresh to slightly weathered.	0	5	3	6	5	10.6	9.4	6.1	19.0	15	**60**
21.00	22.50	1.50	98	77	10	120.00	R5	MAFt	Medium to dark grey	Fine grained	Foliated	As above	0	5	1	6	5	10.6	15.2	6.8	17.0	15	**65**
22.50	24.00	1.50	100	100	2	120	R5	MAFt	Medium to dark grey	Fine grained	Foliated	Very strong, with large quartz veins, slightly weathered. Iron oxide staining, weakly magnetic.	0	4	3	6	5	10.6	20.0	10.8	18.0	15	**74**
24.00	25.50	1.50	99	99	3	120	R5	MAFt	Light to medium grey	Fine to medium grained	Foliated	Very strong, fresh, no infill. Minor fracturing, weakly magnetic, with quartz veins.	0	5	3	6	6	10.6	20.0	9.5	20.0	15	**75**
25.50	27.00	1.50	100	99	5	90.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, minor fracturing, fresh to slightly weathered with trace iron oxide staining. Quartz veinlets throughout. Weakly magnetic.	0	5	3	6	6	8.7	20.0	8.2	20.0	15	**72**
27.00	28.50	1.50	100	92	8	90.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	As above, with clay infill on some fractures and minor dissolution features.	0	5	3	2	6	8.7	18.3	7.2	16.0	15	**65**
28.50	30.00	1.50	100	81	9	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Strong, moderately fractured, fresh, no infill. Many quartz veinlets throughout.	0	5	3	6	6	10.6	15.9	7.0	20.0	15	**68**
30.00	31.50	1.50	100	91	8	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	As above, clay infill present.	0	5	3	2	6	10.6	18.0	7.2	16.0	15	**67**
31.50	33.00	1.50	98	49	15	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately fractured, no infill, quartz veinlets throughout.	0	5	3	6	6	10.6	9.8	6.2	20.0	15	**62**
33.00	34.50	1.50	94	38	24	150.00	R5	MAFt	Medium to dark grey	Fine to medium grained	Foliated	As above, clay infill, moderately to highly fractured.	0	5	3	2	6	12.2	8.0	5.8	16.0	15	**57**
34.50	36.00	1.50	99	73	11	120.00	R5	MDU	Light to medium grey	Fine to medium grained	Foliated	Very strong, moderately fractured, no infill, quartz banding.	0	4	1	6	6	10.6	14.2	6.7	17.0	15	**64**
36.00	37.50	1.50	95	83	9	120.00	R5	MDU	Light to medium grey	Fine to medium grained	Foliated	As above	0	4	1	6	6	10.6	16.3	6.9	17.0	15	**66**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
37.50	39.00	1.50	98	37	20	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, highly fractured for approximately 30cm, moderately fractured for the rest, minor iron oxide weathering and clay infill, quartz banding.	0	4	1	2	5	10.6	7.9	6.0	12.0	15	**52**
39.00	40.50	1.50	100	81	8	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately fractured, minor iron oxide and clay infill.	0	4	3	2	5	10.6	15.9	7.2	14.0	15	**63**
40.50	42.00	1.50	97	70	9	120.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	As above	0	4	3	2	5	10.6	13.7	6.9	14.0	15	**60**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-390

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 11-Jul-16
Date Completed: 12-Jul-16

Location: Class A Storage Facility
Drill Hole ID: K16-390
Coordinates: 414,323 m easting
6,818,779 m northing

Surface Elevation: 1,409 m
Total Depth: 38.6 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	2.10	2.10						OVBN				Overburden											
2.10	4.30	2.20	91	9	25	35	R3	MDU	Medium brown and dark grey	Fine grained	Foliated	Medium strong, slightly weathered, trace iron oxide staining, with quartz veinlets.	0	4	3	6	5	4.4	4.0	6.0	18.0	15	**47**
4.30	5.50	1.20	25	0	MAX	30	R3	MDU	Dark grey	Fine grained	Foliated	Medium strong, highly fractured rubble zone, with iron oxidation and dissolution vugs.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.9	3.0	5.0	6.0	15	**33**
5.50	7.10	1.60	75	0	MAX	30	R3	MDU	Dark grey and orangish brown	Fine grained	Foliated	As above	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.9	3.0	5.0	6.0	15	**33**
7.10	8.30	1.20	100	10	25	40.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Medium strong, fresh to slightly weathered, trace iron oxide staining, quartz veinlets throughout.	0	4	3	6	5	4.8	4.1	5.6	18.0	15	**48**
8.30	10.10	1.80	44	0	28	40.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Medium strong, iron oxide staining, clay infill.	0	4	1	2	5	4.8	3.0	5.4	12.0	15	**40**
10.10	11.60	1.50	13	0	3	20.00	R2	MDU	Dark grey to black	Fine grained	Foliated	Very low recovery, rock is as above, 50% of recovery is black clay, wet, soft, massive.	0	4	1	2	5	3.0	3.0	5.7	12.0	15	**39**
11.60	13.10	1.50	77	0	MAX	20.00	R2	MDU	Dark grey to black	Fine grained	Foliated	Black clay as above for approximately 20cm, then very faulted/ fractured rock as described above, fractures along foliation.	FAULT	FAULT	FAULT	FAULT	FAULT	3.0	3.0	5.0	0.0	15	**26**
13.10	14.60	1.50	38	0	MAX	20.00	R2	MDU	Dark grey to black	Fine grained	Foliated	Black clay present but less abundant, rock is as above, highly fractured, iron oxide oxidation more pervasive.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.0	3.0	5.0	6.0	15	**32**
14.60	16.10	1.50	13	0	MAX	20.00	R2	MDU	Dark grey to black	Fine grained	Foliated	Trace black clay, rock as above, iron oxide less than above.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.0	3.0	5.0	6.0	15	**32**
16.10	17.60	1.50	43	0	17	30.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Black clay at top, firm; rock as above, quartz banding, highly fractured.	0	4	1	2	3	3.9	3.0	5.5	10.0	15	**37**
17.60	19.10	1.50	70	11	22	35.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Strong, highly fractured, iron oxide, trace black clay as above.	0	4	1	2	5	4.4	4.3	5.6	12.0	15	**41**
19.10	19.50	0.40	88	0	MAX	0.10	R0	MDU	Dark grey to black with orangish brown	Fine grained	Massive to foliated	Extremely weak, black sand and orange clay, completely weathered.	0	0	0	0	1	1.0	3.0	5.0	1.0	15	**25**
19.50	20.60	1.10	93	9	22	35.00	R3	MDU	Dark grey to black with orangish brown	Fine grained	Foliated	Medium strong, moderately to highly fractured, slightly weathered with iron oxide coating fractures. Quartz veinlets throughout.	0	4	3	6	5	4.4	4.0	5.6	18.0	15	**47**
20.60	22.10	1.50	99	8	45	30.00	R3	MDU	Dark grey to black with orangish brown	Fine grained	Foliated	As above, highly fractured. One 7 cm clay-filled rubble zone, possible shear.	0	1	1	2	5	3.9	3.9	5.4	9.0	15	**37**
22.10	23.60	1.50	97	28	25	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, moderately fractured, slightly weathered, with iron oxide staining and clay infill on some discontinuities. Breaks along foliation.	0	5	1	2	5	6.5	6.5	5.8	13.0	15	**47**
23.60	25.10	1.50	96	13	32	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	As above	0	5	1	2	5	6.5	4.6	5.6	13.0	15	**45**
25.10	25.28	0.18	100	0	MAX	10.00	R2	MAFt	Dark grey and light orangish brown	Fine to medium grained	Foliated	Intensely fractured and broken with clay infill.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	2.0	3.0	5.0	11.0	15	**36**
25.28	26.60	1.32	100	70	11	60.00	R4	MAFt	Medium to dark grey with light orangish brown	Fine to medium grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide staining.	0	5	3	6	5	6.5	13.6	6.5	19.0	15	**61**
26.60	28.10	1.50	87	32	MAX	40.00	R3	MAFt	White, black, and orangish grey	Fine grained	Foliated	Medium strong, moderately fractured with two 5 cm clay-filled shear zones. With dissolution vugs and large quartz veins.	0	0	1	0	1	4.8	7.1	5.0	2.0	15	**34**
28.10	28.50	0.40	80	0	MAX	10.00	R2	MDU	Black and white	Fine grained	Massive to foliated	Very weak to weak, clay-filled shear zone.	0	0	0	0	0	2.0	3.0	5.0	0.0	15	**25**
28.50	30.30	1.80	87	9	40	30.00	R3	MDU	Black and white	Fine grained	Massive to foliated	Medium strong with clay-filled shear zone, slightly weathered with iron oxide staining.	0	1	1	0	3	3.9	4.1	5.5	5.0	15	**34**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
30.30	31.10	0.80	100	0	20	30.00	R3	MDU	Dark grey to black	Fine grained	Foliated	As above	0	5	1	6	5	3.9	3.0	5.5	17.0	15	**44**
31.10	32.60	1.50	97	83	15	60.00	R4	MDU	Black, light orangish grey, and medium grey	Fine grained	Foliated	Strong, moderately fractured, slightly weathered with iron oxide staining and dissolution vugs. Micaceous.	0	4	3	6	5	6.5	16.4	6.2	18.0	15	**62**
32.60	34.27	1.67	97	63	15	60.00	R4	MAFt	Medium grey to brownish grey	Fine to medium grained	Foliated	As above, with clay infill on some discontinuities.	0	4	3	2	6	6.5	12.3	6.4	15.0	15	**55**
34.27	34.46	0.19	74	0	MAX	0.10	R0	MDU	Black	Fine grained	Massive	Extremely weak, clay and rubble filled shear zone.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
34.46	35.60	1.14	100	39	15	60.00	R4	MDU	Black, medium grey, and white	Fine to medium grained	Massive to foliated	Strong, with massive quartz. Few small clay-filled zones. Dissolution vugs throughout.	0	1	1	0	3	6.5	8.3	6.0	5.0	15	**41**
35.60	37.00	1.40	100	35	20	45.00	R3	MDU	Dark grey and light brownish grey	Fine grained	Foliated	Medium strong, moderately fractured, slightly weathered with iron oxide and clay infill. Dissolution vugs throughout.	0	5	3	2	5	5.2	7.6	5.9	15.0	15	**49**
37.00	38.60	1.60	92	68	15	45.00	R3	MDU	Dark grey and light brownish grey	Fine grained	Foliated	As above	0	4	3	6	5	5.2	13.3	6.2	18.0	15	**58**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-392

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 13-Jul-16
Date Completed: 14-Jul-16

Location: Mill Site
Drill Hole ID: K16-392
Coordinates: 414,852 m easting
6,817,471 m northing

Surface Elevation: 1,390 m
Total Depth: 46.2 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	5.00	5.00						OVBN				Overburden											
5.00	6.00	1.00	100	0	MAX	60.00	R4	MAFt	Medium to dark grey with orangish brown	Fine grained	Foliated	Strong, highly fractured, slightly to moderately weathered, with iron oxide staining, dissolution along some fractures.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.5	3.0	5.0	11.0	15	**40**
6.00	7.20	1.20	100	28	28	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	Strong, highly fractured, iron oxide staining.	0	4	1	3	3	7.7	6.6	5.6	11.0	15	**46**
7.20	8.70	1.50	30	0	MAX	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	7.7	3.0	5.0	11.0	15	**42**
8.70	10.20	1.50	27	0	MAX	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	As above, last 5cm brown clay & gravel, firm, wet.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	7.7	3.0	5.0	11.0	15	**42**
10.20	11.70	1.50	43	0	MAX	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	As above, brown clay and gravel for last 10cm of run.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	7.7	3.0	5.0	11.0	15	**42**
11.70	13.20	1.50	33	0	MAX	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	Strong, highly fractured, massive quartz, fine broken gravel at end of run, trace iron oxide staining.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	7.7	3.0	5.0	11.0	15	**42**
13.20	14.70	1.50	73	0	MAX	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	As above, last 20cm more broken, contains darker grey clay.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	7.7	3.0	5.0	11.0	15	**42**
14.70	16.20	1.50	93	15	31	75.00	R4	MAFt	Medium to dark grey	Fine grained	Foliated	Strong, highly fractured, mostly fresh fractures, some thick clay infill, trace iron oxide staining.	0	4	1	0	5	7.7	4.7	5.6	10.0	15	**43**
16.20	17.70	1.50	87	35	16	110.00	R5	MAFt	Medium grey	Fine grained	Foliated	Very strong, moderately fractured, minor iron oxide staining.	0	4	1	2	5	10.0	7.5	6.0	12.0	15	**51**
17.70	19.20	1.50	97	55	17	110.00	R5	MAFt	Medium to light grey	Fine grained	Foliated	Very strong, moderately fractured, most fractures fresh, some clay infill.	0	4	1	2	5	10.0	10.8	6.1	12.0	15	**54**
19.20	20.70	1.50	97	80	10	110.00	R5	MAFt	Medium to light grey	Fine grained	Foliated	Very strong, slightly to moderately fractured, most fractures fresh, trace iron oxide staining.	0	4	1	6	5	10.0	15.7	6.7	16.0	15	**64**
20.70	22.20	1.50	100	77	10	110.00	R5	MAFt	Medium to light grey	Fine grained	Foliated	As above	0	4	1	6	5	10.0	15.0	6.8	16.0	15	**63**
22.20	23.70	1.50	100	39	18	150.00	R5	MAFt	Medium to light grey	Fine grained	Foliated	As above, moderately fractured	0	4	1	6	5	12.2	8.2	6.1	16.0	15	**58**
23.70	25.20	1.50	100	85	7	110.00	R5	MAFt	Medium to light greenish grey	Fine grained	Foliated	As above, minor fracturing, foliation weaker, less quartz banding, more quartz eyes.	0	4	1	6	5	10.0	16.9	7.4	16.0	15	**65**
25.20	26.70	1.50	100	93	6	75.00	R4	MAFt	Medium to light greenish grey	Fine grained	Foliated	Strong, few fractures, quartz eyes and banding, minor iron oxide staining.	0	4	1	6	5	7.7	18.6	7.8	16.0	15	**65**
26.70	28.20	1.50	95	67	10	75.00	R4	MAFt	Medium to light greenish grey	Fine grained	Foliated	As above	0	4	1	6	6	7.7	13.2	6.7	17.0	15	**60**
28.20	29.70	1.50	98	55	14	75.00	R4	MAFt	Medium to light greenish grey	Fine grained	Foliated	As above	0	4	1	6	6	7.7	10.8	6.3	17.0	15	**57**
29.70	31.20	1.50	92	77	6	110.00	R5	MAFt	Medium to light greenish grey	Fine grained	Foliated	As above, thicker quartz veins, very strong.	0	4	1	6	6	10.0	15.0	7.5	17.0	15	**65**
31.20	32.70	1.50	100	83	7	110.00	R5	MAFt	Medium to light greenish grey	Fine grained	Foliated	As above	0	4	1	6	6	10.0	16.3	7.4	17.0	15	**66**
32.70	34.20	1.50	98	56	13	150.00	R5	MAFt	Medium to light greenish grey	Fine grained	Foliated	Very strong, with quartz veinlets and iron oxide staining.	0	4	1	6	6	12.2	11.0	6.4	17.0	15	**62**
34.20	35.70	1.50	101	61	13	110.00	R5	MAFt	Dark greenish grey	Fine grained	Foliated	Very strong, slightly to moderately fractured, with massive quartz.	0	4	1	4	6	10.0	12.0	6.5	15.0	15	**59**
35.70	37.20	1.50	93	52	14	110.00	R5	MAFt	Dark greenish grey	Fine grained	Foliated	As above	0	4	1	4	6	10.0	10.3	6.2	15.0	15	**57**
37.20	38.70	1.50	101	95	5	125.00	R5	MAFt	Light to medium grey	Fine to medium grained	Foliated	Very strong, minor fracturing, fresh. No infill. One 3 cm rubble zone. With quartz and sulphide veinlets.	0	5	1	6	6	10.9	19.1	8.2	18.0	15	**71**
38.70	40.20	1.50	101	100	2	125.00	R5	MAFt	White and dark grey	Fine to medium grained	Foliated	Very strong, minor fracturing, fresh, no infill. Massive quartz and sulphide veinlets.	0	5	2	6	6	10.9	20.0	10.8	19.0	15	**76**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
40.20	41.70	1.50	100	93	4	125.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, minor fracturing, fresh, no infill. Quartz veinlets throughout. With disseminated and veined sulphides and dissolution vugs.	0	5	3	6	6	10.9	18.6	8.7	20.0	15	**73**
41.70	43.20	1.50	100	100	2	125.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	As above	0	5	5	6	6	10.9	20.0	10.8	22.0	15	**79**
43.20	44.70	1.50	100	100	3	125.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, minor fracturing, fresh, no infill. With vuggy calcite veins and disseminated and veined sulphides.	0	4	3	6	6	10.9	20.0	9.5	19.0	15	**74**
44.70	46.20	1.50	100	77	11	110.00	R5	MDU	Medium to dark grey	Fine to medium grained	Foliated	Very strong, moderately fractured, fresh to slightly weathered. Broken zone at end of run with dissolution and clay infill created strong (10 PSI) artesian conditions in hole.	0	4	3	2	6	10.0	15.0	6.7	15.0	15	**62**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-395

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 15-Jul-16
Date Completed: 16-Jul-16

Location: Mill Site
Drill Hole ID: K16-395
Coordinates: 414,822 m easting
6,817,251 m northing

Surface Elevation: 1,406 m
Total Depth: 46.2 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	2.30	2.30						OVBN				Overburden											
2.30	3.70	1.40	100	7	30	35.00	R3	MAFt	Light to medium greenish grey with orangish brown	Fine grained	Foliated	Medium strong, moderately to highly fractured, slightly to moderately weathered. With dissolution vugs and iron oxide staining. Quartz veins and clay infill.	0	1	3	0	3	4.4	3.8	5.6	7.0	15	**36**
3.70	4.20	0.50	96	28	6	60.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, slightly weathered. With trace iron oxide staining.	0	4	3	6	6	6.5	6.5	5.9	19.0	15	**53**
4.20	5.70	1.50	100	36	27	60.00	R4	MDU	Dark grey with white	Fine grained	Foliated	Strong, moderately fractured, fresh to slightly weathered. With dissolution vugs along calcite and sulphide veinlets. Some clay infill.	0	5	1	6	5	6.5	7.7	5.7	17.0	15	**52**
5.70	7.20	1.50	100	45	20	80.00	R4	MDU	Dark grey with white	Fine grained	Foliated	As above	0	5	1	2	6	8.0	9.2	6.0	14.0	15	**52**
7.20	8.70	1.50	100	92	5	90.00	R4	MAFt	Medium to dark greenish grey	Fine grained	Foliated	Strong, minor fracturing, fresh, no infill. With massive quartz and sulphide veinlets. Weakly magnetic.	0	5	1	6	6	8.7	18.3	8.2	18.0	15	**68**
8.70	10.20	1.50	100	65	15	90.00	R4	MAFt / MDU	Medium to dark greenish grey	Fine grained	Foliated	As above	0	5	1	6	6	8.7	12.6	6.3	18.0	15	**61**
10.20	11.70	1.50	100	70	10	90.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh, with quartz and sulphide veinlets. Weakly magnetic. Some algae on sub-vertical fractures.	0	5	1	6	6	8.7	13.7	6.8	18.0	15	**62**
11.70	13.20	1.50	97	37	23	90.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	As above	0	4	1	6	6	8.7	7.9	5.8	17.0	15	**54**
13.20	14.70	1.50	53	0	MAX	110.00	R5	MDU	White/ translucent	Coarse grained	Massive	Massive quartz, highly fractured/ broken, light blue clay infill.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	10.0	3.0	5.0	11.0	15	**44**
14.70	16.20	1.50	83	7	30	30.00	R3	MDU	Dark grey with white	Fine grained	Foliated	Very strong, quartz and sulphide units, thick clay infill.	0	4	1	0	6	3.9	3.7	5.6	11.0	15	**39**
16.20	17.70	1.50	37	0	MAX	80.00	R4	MDU	Dark grey with white	Fine grained	Foliated	Very strong, highly fractured/ broken, quartz and sulphide veinlets.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	8.0	3.0	5.0	11.0	15	**42**
17.70	19.20	1.50	39	7	MAX	70.00	R4	MDU	Dark grey with white	Fine grained	Foliated	As above, high quartz content, blue clay infill.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	7.3	3.7	5.0	6.0	15	**37**
19.20	20.70	1.50	99	56	20	90.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Very strong, highly fractured, massive quartz and pyrite, blue soft clay material, dissolution features, fresh.	0	4	3	6	6	8.7	11.0	6.0	19.0	15	**60**
20.70	22.20	1.50	63	15	15	125.00	R5	MDU	Medium to dark grey	Fine grained	Foliated	As above	0	1	3	6	5	10.9	4.7	5.8	15.0	15	**51**
22.20	23.70	1.50	65	14	MAX	40.00	R3	MDU	Greenish grey to black with white	Fine grained	Massive to foliated	Strong, highly fractured with clay filled zones (possible shears). Sub-vertical fractures with chlorite infill. Dissolution vugs, sulphide veinlets, and massive quartz.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	4.8	4.6	5.0	6.0	15	**35**
23.70	25.42	1.72	94	21	MAX	35.00	R3	MDU	Greenish grey to black with white	Fine grained	Massive to foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	5.5	5.0	11.0	15	**41**
25.42	26.70	1.28	100	96	9	80.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh, no infill. With sulphide veinlets and dissolution vugs. Weakly magnetic.	0	5	1	6	6	8.0	19.3	6.7	18.0	15	**67**
26.70	28.20	1.50	95	65	15	80.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	As above	0	4	3	6	6	8.0	12.8	6.2	19.0	15	**61**
28.20	29.70	1.50	100	39	30	60.00	R4	MDU	Medium to dark grey with greyish green and white	Fine grained	Foliated	Strong, moderately to highly fractured, fresh. Several few centimeter shear zones with clay and rubble infill. Massive quartz, chlorite infill, and a few dissolution features.	0	1	3	2	6	6.5	8.2	5.7	12.0	15	**47**
29.70	31.20	1.50	98	75	7	80.00	R4	MAFt	Medium grey with white	Fine grained	Foliated	Strong, minor fracturing, fresh, no infill. With massive quartz and sulphide veinlets. Weakly magnetic.	0	4	3	6	6	8.0	14.7	7.4	19.0	15	**64**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
31.20	33.25	2.05	100	62	23	75.00	R4	MDU	Medium grey with white	Fine grained	Foliated	As above	0	4	3	6	6	7.7	12.1	6.2	19.0	15	**60**
33.25	33.70	0.45	47	0	MAX	0.50	R0	MDU	Medium to dark grey with green and white	Fine to medium grained	Massive, faulted	Extremely weak, clay and rubble filled fault zone. With chlorite alteration.	FAULT	FAULT	FAULT	FAULT	FAULT	1.1	3.0	5.0	0.0	15	**24**
33.70	34.20	0.50	100	80	4	60.00	R4	MDU	Medium grey	Fine grained	Foliated	Strong, moderately fractured, fresh. With clay infill and dissolution features.	0	5	1	2	6	6.5	15.7	6.3	14.0	15	**58**
34.20	35.70	1.50	100	81	14	70.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	As above	0	4	3	2	6	7.3	16.0	6.3	15.0	15	**60**
35.70	37.20	1.50	98	71	8	70.00	R4	MDU	Medium to dark grey	Fine to medium grained	Foliated	Strong, moderately fractured, fresh, no infill. Minor dissolution and clay on some fractures. With sulphide veinlets.	0	4	3	2	6	7.3	13.9	7.1	15.0	15	**58**
37.20	38.70	1.50	100	68	8	80.00	R4	MDU	Medium to dark grey with white	Fine grained	Foliated	Strong, moderately fractured, fresh. With massive quartz and sulphide veins. Weakly magnetic.	0	4	3	4	6	8.0	13.3	7.2	17.0	15	**60**
38.70	40.20	1.50	98	85	13	60.00	R4	MDU	Medium to dark grey with white	Fine grained	Foliated	As above, with clay infill on some fractures.	0	4	3	2	6	6.5	16.7	6.4	15.0	15	**60**
40.20	40.94	0.74	39	0	MAX	2.00	R1	MDU	Medium to dark grey	Fine to medium grained	Massive, faulted	Clay and rubble filled fault zone. Intensely fractured and very weak. Some clay washed away.	FAULT	FAULT	FAULT	FAULT	FAULT	1.2	3.0	5.0	0.0	15	**24**
40.94	41.90	0.96	100	72	20	35.00	R3	MDU	Medium to dark grey	Fine grained	Foliated	Medium strong, moderately to highly fractured with small broken zones. Dissolution features throughout.	0	4	3	4	6	4.4	14.1	5.6	17.0	15	**56**
41.90	43.20	1.30	78	35	15	60.00	R4	MDU	Dark grey with white	Fine grained	Foliated	Strong, moderately fractured, few small clay-filled zones. With dissolution along fractures.	0	4	3	2	5	6.5	7.6	5.9	14.0	15	**49**
43.20	44.70	1.50	79	7	MAX	40.00	R3	MDU	Medium to dark grey with white	Fine grained	Foliated	Medium strong, highly fractured with many small rubble zones throughout. Clay infill in some zones, washed away in some places.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.8	5.0	11.0	15	**40**
44.70	46.20	1.50	87	41	20	60.00	R4	MDU	Light to medium grey with white	Fine grained	Foliated	Strong, moderately fractured, with dissolution along fractures.	0	4	3	6	5	6.5	8.4	5.9	18.0	15	**54**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-402

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 22-Jul-16
Date Completed: 24-Jul-16

Location: Class C Storage Facility
Drill Hole ID: K16-402
Coordinates: 415,844 m easting
6,816,485 m northing

Surface Elevation: 1,443 m
Total Depth: 70.6 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	6.30	6.30						OVBN				Overburden											
6.30	7.10	0.80	100	33	13	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	Medium strong, moderately fractured, grey clay infill, iron oxide weathering in fractures, dissolution features.	0	4	3	2	3	4.8	7.2	5.8	12.0	15	**45**
7.10	8.00	0.90	67	0	14	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above, highly fractured.	0	4	3	2	3	4.8	3.0	5.5	12.0	15	**40**
8.00	9.10	1.10	91	0	27	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above, highly fractured, frequent quartz banding, 3cm band of light brown soft rock at 9.0m.	0	4	3	2	3	4.8	3.0	5.5	12.0	15	**40**
9.10	10.60	1.50	47	0	MAX	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above, same light brown material at start of run, less weathering.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
10.60	12.10	1.50	43	0	MAX	30.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	3.0	5.0	11.0	15	**38**
12.10	12.85	0.75	47	0	MAX	0.60	R0	MDU	Light orangish brown	Fine grained	Laminated and foliated	Extremely weak rock, highly broken, although still shows foliation and schistosity.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	1.1	3.0	5.0	11.0	15	**35**
12.85	13.60	0.75	47	0	7	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	Medium strong, highly fractured, trace clay infill, trace iron oxidation in fractures.	0	4	1	6	5	4.8	3.0	5.6	16.0	15	**44**
13.60	14.90	1.30	85	17	22	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above, higher presence of clay infill, strong.	0	4	1	2	5	4.8	5.0	5.7	12.0	15	**42**
14.90	16.60	1.70	56	6	21	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above, trace clay infill.	0	4	1	6	5	4.8	3.7	5.6	16.0	15	**45**
16.60	18.10	1.50	90	37	24	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above	0	4	1	6	5	4.8	7.9	5.7	16.0	15	**49**
18.10	19.60	1.50	100	40	30	40.00	R3	MDU	Dark grey to black with light orangish brown	Fine grained	Laminated and foliated	Medium strong, highly fractured with few 5-10 cm broken zones. Iron oxide staining and dissolution along fabric. With calcite veinlets and mica along foliation.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	8.3	5.7	11.0	15	**45**
19.60	21.10	1.50	87	9	MAX	30.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	4.0	5.0	11.0	15	**39**
21.10	22.60	1.50	100	0	40	30.00	R3	MDU	Dark grey to black with light orangish brown	Fine grained	Laminated and foliated	As above, clay infill in some broken zones.	0	1	3	0	5	3.9	3.0	5.5	9.0	15	**36**
22.60	24.10	1.50	97	33	21	40.00	R3	MDU	Dark grey to black with light orangish brown	Fine grained	Laminated and foliated	Medium strong, moderately to highly fractured. Slightly weathered with iron oxide staining and dissolution along fractures. Calcite veinlets throughout.	0	4	3	6	5	4.8	7.2	5.9	18.0	15	**51**
24.10	25.60	1.50	100	83	11	35.00	R3	MAFt	Dark grey to black with light orangish brown	Fine grained	Laminated and foliated	As above, moderately fractured with a few small (< 10 cm) broken zones.	0	1	3	3	5	4.4	16.3	6.7	12.0	15	**54**
25.60	27.10	1.50	97	65	9	90.00	R4	MAFt	Light brownish grey	Fine to medium grained	Laminated	Strong, moderately fractured, slightly weathered with iron oxide staining. Dissolution along fabric. With calcite veinlets.	0	4	5	6	5	8.7	12.6	6.9	20.0	15	**63**
27.10	28.70	1.60	99	94	3	80.00	R4	MAFt	Light brownish grey	Fine to medium grained	Laminated	As above, minor fracturing, with a few sulphide veinlets.	0	5	5	6	5	8.0	18.7	9.7	21.0	15	**72**
28.70	30.10	1.40	98	66	10	25.00	R3	MAFt	Light greenish grey	Fine to medium grained	Foliated	Weak to medium strong, with weak chlorite altered zones. Moderately fractured, slightly weathered with iron oxide staining and dissolution vugs. Quartz and calcite veinlets.	0	1	3	2	3	3.4	13.0	6.7	9.0	15	**47**
30.10	31.60	1.50	100	75	11	35.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	Medium strong, moderately fractured, slightly weathered with iron oxide and dissolution vugs. Calcite veinlets throughout.	0	4	3	6	5	4.4	14.7	6.7	18.0	15	**59**
31.60	33.10	1.50	95	18	MAX	35.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	5.2	5.0	11.0	15	**41**

DRILL RUN DATA								GEOLOGY - COMMENTS											RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition						RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W							
33.10	34.60	1.50	100	41	MAX	35.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	Medium strong, moderately to highly fractured, slightly weathered with iron oxide and dissolution vugs. Calcite veinlets throughout.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	8.6	5.0	11.0	15	**44**
34.60	35.14	0.54	83	0	MAX	35.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	As above. Driller lost circulation in this zone.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	3.0	5.0	11.0	15	**38**
35.14	36.10	0.96	100	85	3	60.00	R4	MDU	Light brownish grey	Fine to medium grained	Foliated	Strong, minor fracturing, slightly weathered with iron oxide staining and dissolution vugs. Quartz and calcite veinlets. Clay infill on some fractures.	0	4	3	2	5	6.5	16.9	8.1	14.0	15	**60**
36.10	37.60	1.50	100	44	30	40.00	R3	MDU	Dark grey to black	Fine grained	Laminated and foliated	Medium strong, highly fractured, slightly weathered, with iron oxide staining. Calcite infill and dissolution along fractures.	0	4	3	2	5	4.8	9.0	5.7	14.0	15	**48**
37.60	39.10	1.50	100	71	15	60.00	R4	MDU	Dark grey to black with white	Fine grained	Laminated and foliated	Strong, moderately fractured, fresh to slightly weathered. With calcite veinlets and massive quartz.	0	4	3	6	5	6.5	13.8	6.3	18.0	15	**60**
39.10	40.60	1.50	100	83	11	60.00	R4	MDU	Dark grey to black with white	Fine grained	Laminated and foliated	Strong, moderately fractured, fresh to slightly weathered. With calcite veinlets and massive quartz.	0	4	3	6	5	6.5	16.3	6.7	18.0	15	**62**
40.60	42.10	1.50	90	81	2	80.00	R4	MDU	Dark grey to black	Fine grained	Laminated and foliated	Strong, minor fracturing, fresh. With calcite and sulphide veinlets.	0	5	3	6	6	8.0	15.9	10.3	20.0	15	**69**
42.10	43.60	1.50	100	95	5	90.00	R4	MDU	Light and dark grey	Fine grained	Foliated	Strong to very strong, minor fracturing, fresh. With sulphide and calcite veinlets.	0	5	3	6	6	8.7	18.9	8.2	20.0	15	**71**
43.60	45.10	1.50	23	16	MAX	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	As above. VERY LOW RECOVERY. Strong, with possible very weak zone of clay washed away during drilling.	0	1	1	2	5	6.5	4.9	5.0	9.0	15	**40**
45.10	46.60	1.50	96	65	9	80.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, moderately fractured, fresh. With calcite veinlets and small (<1 cm) dissolution vugs along the foliation.	0	4	3	6	6	8.0	12.8	6.9	19.0	15	**62**
46.60	48.10	1.50	85	26	MAX	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Moderately to highly fractured, broken in many zones. Small chlorite altered section. With calcite veinlets.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.5	6.2	5.0	11.0	15	**44**
48.10	49.60	1.50	90	11	MAX	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	As above, 30cm chlorite altered section at end of run	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.5	4.2	5.0	11.0	15	**42**
49.60	51.10	1.50	67	20	MAX	60.00	R4	MAFt	Dark grey to black	Fine grained	Foliated	As above, 25cm zone of chlorite alteration at start of run, followed by a 15cm quartz vein.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.5	5.4	5.0	11.0	15	**43**
51.10	52.60	1.50	97	20	MAX	40.00	R3	MAFt	Light grey	Fine grained	Foliated	Massive quartz throughout, grey clay in light grey rock, white clay in quartz	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	5.4	5.0	11.0	15	**41**
52.60	54.10	1.50	90	39	15	80.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Very strong competent rock, also weak clay filled broken sections, thick clay infill, massive quartz vein.	0	4	1	0	6	8.0	8.1	6.1	11.0	15	**48**
54.10	55.60	1.50	97	59	12	80.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, moderately fractured, sulphide and quartz veinlets, clay infill.	0	4	3	2	6	8.0	11.7	6.5	15.0	15	**56**
55.60	57.10	1.50	94	42	19	110.00	R5	MDU	Dark grey to black	Fine grained	Foliated	As above, highly fractured, 6cm thick clay-filled shear at 56.5m.	0	4	3	0	6	10.0	8.7	6.0	13.0	15	**53**
57.10	58.60	1.50	88	40	20	80.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, highly fractured, clay infill, quartz and sulphide veinlets	0	4	3	2	6	8.0	8.3	5.9	15.0	15	**52**
58.60	60.10	1.50	40	0	MAX	40.00	R3	MAFt	Light greenish grey	Fine grained	Foliated	Medium strong, broken, chlorite alteration.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
60.10	61.60	1.50	63	8	MAX	40.00	R3	MDU	White/Dark grey to black/green/grey	Fine grained	Foliated	Mixed run of massive quartz, dark grey to black foliated bedrock, green chlorite altered bedrock, and grey clay filled broken bedrock.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.9	5.0	11.0	15	**40**
61.60	62.90	1.30	74	0	MAX	40.00	R3	MDU	White and black	Fine grained	Foliated	First 40cm is broken quartz, last 50cm highly broken black foliated bedrock, high clay content.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
62.90	64.60	1.70	94	52	17	80.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, moderately fractured, quartz and sulphide veinlets, minor chlorite alteration at the end of the run.	0	4	3	2	6	8.0	10.4	6.2	15.0	15	**55**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
64.60	66.10	1.50	100	75	10	110.00	R5	MAFt	Greenish grey and black	Fine grained	Foliated	Very strong, slightly to moderately fractured, green alteration banding is strong unlike previous massive chlorite alteration, sulphide veinlets, fresh.	0	4	3	6	6	10.0	14.7	6.8	19.0	15	**66**
66.10	67.60	1.50	93	33	MAX	80.00	R4	MAFt	Black/dark to light grey	Fine grained	Foliated	Dark to light grey with depth, massive quartz and sulphides, white clay infill in quartz.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	8.0	7.2	5.0	11.0	15	**46**
67.60	69.10	1.50	98	79	13	110.00	R5	MAFt	Light to medium greenish grey	Fine grained	Foliated	Very strong, few fractures, quartz veinlets, fresh, no clay.	0	4	3	6	6	10.0	15.6	6.4	19.0	15	**66**
69.10	70.60	1.50	99	73	10	110.00	R5	MAFt	Light to medium greenish grey	Fine grained	Foliated	As above, 4cm broken zone near end, hard clay infill.	0	4	3	4	6	10.0	14.3	6.8	17.0	15	**63**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-410

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: Aug-8-2016
Date Completed: Aug-9-2016

Location: Class C Storage Facility
Drill Hole ID: K16-410
Coordinates: 416,136 m easting
6,816,446 m northing

Surface Elevation: 1,473 m
Total Depth: 31.0 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	5.60	5.60						OVBN				Overburden											
5.60	6.50	0.90	58	11	10	60.00	R4	MDU	Medium orangish brown	Fine to medium grained	Foliated	Strong, moderately fractured, iron oxide weathering, thick clay infill.	0	1	3	0	5	6.5	4.3	5.6	9.0	15	**40**
6.50	8.00	1.50	73	0	20	60.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, highly fractured, broken for first 30 cm, iron oxide weathering, clay infill.	0	4	3	2	5	6.5	3.0	5.7	14.0	15	**44**
8.00	9.50	1.50	67	37	8	30.00	R3	MDU	Medium orangish and brownish grey	Fine grained	Foliated	Medium strong, moderately fractured, 60 cm massive quartz zone, with iron oxide staining and zones of soft clay infill.	0	1	3	0	5	3.9	7.8	6.5	9.0	15	**42**
9.50	10.20	0.70	80	33	10	30.00	R3	MDU	Medium greenish grey and white	Fine grained	Massive and foliated	Very strong massive quartz with weak clay altered sections showing dissolution features. Trace iron oxide staining. Some chlorite alteration.	0	1	3	0	5	3.9	7.2	5.7	9.0	15	**41**
10.20	10.60	0.40	100	0	MAX	0.05	R0	MDU	Light to medium orangish grey	Fine grained	Massive	Soft clay with some gravel, fine grained, poorly graded, medium plasticity, massive, wet. Small sections of intact rock showing foliation.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
10.60	10.74	0.14	100	0	MAX	0.05	R0	MDU	Medium orangish brown	Fine grained	Massive	As above	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
10.74	11.10	0.36	97	72	3	30.00	R3	MDU	Medium brownish grey	Fine grained	Foliated	Medium strong, minor fracturing, slightly weathered, with clay infill.	0	4	3	2	5	3.9	14.1	6.2	14.0	15	**53**
11.10	11.50	0.40	67	0	MAX	0.05	R0	MDU	Medium grey	Fine grained	Massive	Soft clay with some gravel, fine grained, poorly graded, medium plasticity, massive, wet.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
11.50	12.05	0.55	44	0	MAX	0.05	R0	MDU	Medium grey and white	Fine grained	Massive	As above, 9 cm section of massive quartz. Minor schistose fabric preserved.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
12.05	13.20	1.15	63	19	MAX	35.00	R3	MDU	Dark grey and white	Fine grained	Foliated	Medium strong, moderately to highly fractured with few broken zones. Dissolution and iron oxidation along fractures.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	5.3	5.0	11.0	15	**41**
13.20	13.66	0.46	91	0	MAX	0.05	R0	MDU	Medium grey	Fine grained	Massive	Soft clay with some gravel, fine grained, poorly graded, medium plasticity, massive, wet.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
13.66	14.70	1.04	100	10	20	30.00	R3	MDU	Dark grey	Fine grained	Foliated	Medium strong, moderately fractured with few small broken zones, slightly weathered with iron oxide staining. Clay infill on some fractures.	0	4	1	2	5	3.9	4.1	5.7	12.0	15	**41**
14.70	16.20	1.50	61	0	30	30.00	R3	MDU	Dark grey	Fine grained	Massive and foliated	As above, 8 cm seam of soft clay.	0	0	3	0	5	3.9	3.0	5.4	8.0	15	**35**
16.20	16.60	0.40	75	0	MAX	0.05	R0	MDU	Medium grey	Fine grained	Massive	Soft clay, some gravel, fine grained, poorly graded, medium plasticity, massive, wet.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
16.60	17.70	1.10	29	0	MAX	0.05	R0	MDU	Medium greenish grey	Fine grained	Massive	As above	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
17.70	18.30	0.60	35	0	MAX	0.05	R0	MDU	Medium to dark grey	Fine grained	Massive	As above	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
18.30	18.78	0.48	50	0	MAX	0.05	R0	MDU	Medium orangish brown	Fine grained	Massive	Soft clay, some gravel, fine grained, poorly graded, medium plasticity, massive, wet. Some small intact rock fragments.	0	0	1	0	1	1.0	3.0	5.0	2.0	15	**26**
18.78	19.20	0.42	100	52	7	45.00	R3	MAFt	Medium orangish brown	Fine grained	Foliated	Moderately fractured, slightly weathered. With iron oxide staining and dissolution along fractures.	0	4	3	6	5	5.2	10.4	5.7	18.0	15	**54**
19.20	19.36	0.16	100	0	MAX	0.05	R0	MAFt	Light grey	Fine grained	Massive	Soft clay, fine grained, poorly graded, medium plasticity, massive, saturated.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
19.36	20.70	1.34	101	98	4	60.00	R4	MAFt	Light grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh to slightly weathered. Iron oxide staining and minor alteration along fractured. With calcite veinlets.	0	4	3	6	5	6.5	19.6	8.4	18.0	15	**68**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
20.70	22.20	1.50	96	68	8	80.00	R4	MAFt	Light grey	Fine to medium grained	Foliated	As above, clay infill on some fractures.	0	4	3	2	6	8.0	13.3	7.1	15.0	15	**58**
22.20	22.85	0.65	100	100	1	80.00	R4	MAFt	Light to medium grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh to slightly weathered. With calcite veinlets and clay infill on some fractures.	0	4	3	2	6	8.0	20.2	9.0	15.0	15	**67**
22.85	24.40	1.55	102	62	13	80.00	R4	MAFt	Light to medium grey	Fine to medium grained	Foliated	As above, 8 cm clay-filled shear zone in middle of run.	0	1	3	0	6	8.0	12.1	6.5	10.0	15	**52**
24.40	24.82	0.42	100	0	MAX	0.05	R0	MAFt	Medium brownish grey	Fine grained	Massive	Soft clay, fine grained, poorly graded, medium plasticity, massive, saturated. Small fragments of intact rock.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
24.82	25.20	0.38	100	82	3	60.00	R4	MAFt	Medium brownish grey	Fine to medium grained	Foliated	Strong, minor fracturing, slightly weathered. With calcite veinlets.	0	4	3	6	5	6.5	16.0	6.3	18.0	15	**62**
25.20	26.22	1.02	30	0	MAX	0.05	R0	MAFt	Medium brownish grey	Fine grained	Massive	Soft clay, fine grained, poorly graded, medium plasticity, massive, saturated. Small fragments of intact rock.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
26.22	26.70	0.48	100	35	MAX	35.00	R3	MAFt	Medium brownish grey	Fine to medium grained	Foliated	Medium strong, moderately to highly fractured with few rubble zones, iron oxide staining and dissolution features.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	4.4	7.6	5.0	6.0	15	**38**
26.70	26.82	0.12	100	0	MAX	0.05	R0	MAFt	Medium brownish grey	Fine grained	Massive	Soft clay, fine grained, poorly graded, medium plasticity, massive, saturated. Small fragments of intact rock.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
26.82	28.20	1.38	69	12	MAX	35.00	R3	MAFt	Medium brownish grey	Fine to medium grained	Foliated	Medium strong, highly fractured with few rubble zones, with iron oxide staining and dissolution features.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	4.4	4.3	5.0	6.0	15	**35**
28.20	29.70	1.50	73	17	MAX	35.00	R3	MAFt	Medium brownish grey	Fine to medium grained	Foliated	As above, few broken zones.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	5.1	5.0	11.0	15	**40**
29.70	30.80	1.10	89	0	MAX	35.00	R3	MAFt	Medium brownish grey	Fine to medium grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	3.0	5.0	11.0	15	**38**
30.80	31.00	0.20	100	0	MAX	0.40	R0	MAFt	Light brown	Fine grained	Foliated	Altered rock and soft clay, fine grained, low plasticity, still has foliated structure with rock fragments, iron oxide staining .	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-411

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 10-Aug-16
Date Completed: 12-Aug-16

Location: Class C Storage Facility
Drill Hole ID: K16-411
Coordinates: 415,947 m easting
6,816,237 m northing

Surface Elevation: 1,446 m
Total Depth: 34.1 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	18.20	18.20						OVBN				Overburden											
18.20	18.50	0.30	83	0	MAX	35.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Medium strong, highly fractured, iron oxide staining, trace clay infill.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	3.0	5.0	11.0	15	**38**
18.50	20.00	1.50	25	0	MAX	35.00	R3	MDU	Dark grey to black	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.4	3.0	5.0	11.0	15	**38**
20.00	20.75	0.75	33	0	MAX	30.00	R3	MDU	Dark grey to black	Fine grained	Foliated	As above	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.9	3.0	5.0	6.0	15	**33**
20.75	21.20	0.45	56	0	MAX	30.00	R3	MDU	Light brown	Fine grained	Foliated	Medium strong, highly fractured, high iron oxide staining, clay infill.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.9	3.0	5.0	6.0	15	**33**
21.20	22.00	0.80	100	0	MAX	0.05	R0	MAFt	Black	Fine to medium grained	Massive	Silty sand, poorly graded, loose, massive, wet.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
22.00	23.60	1.60	87	38	11	30.00	R3	MAFt	Light grey to orangish brown	Fine grained	Foliated	Medium strong, moderately fractured, slightly to moderately weathered. With clay and iron oxide on fractures.	0	4	3	2	5	3.9	7.9	6.6	14.0	15	**47**
23.60	25.10	1.50	97	36	25	30.00	R3	MAFt	Light grey to orangish brown	Fine grained	Foliated	As above	0	4	3	2	3	3.9	7.7	5.8	12.0	15	**44**
25.10	26.60	1.50	93	53	20	35.00	R3	MAFt	Medium orangish grey	Fine to medium grained	Foliated	Medium strong, moderately fractured, moderately weathered. With disseminated and veined sulphides.	0	4	3	6	3	4.4	10.5	5.9	16.0	15	**52**
26.60	28.10	1.50	43	0	MAX	15.00	R2	MDU	Medium brownish grey and dark grey	Fine grained	Foliated	Weak, highly fractured rubble zone, low recovery. Moderately weathered with dissolution and iron oxide staining.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	2.5	3.0	5.0	6.0	15	**31**
28.10	29.10	1.00	45	0	MAX	0.20	R0	MDU	Black	Fine grained	Massive	Sandy silt and clay, some gravel, fine grained, poorly graded, medium plasticity, stiff, massive, saturated.	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
29.10	30.20	1.10	11	0	MAX	0.20	R0	MDU	Black	Fine grained	Massive	As above	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
30.20	30.90	0.70	71	0	MAX	0.20	R0	MDU	Black	Fine grained	Massive	As above	0	0	0	0	0	1.0	3.0	5.0	0.0	15	**24**
30.90	32.38	1.48	91	37	25	35.00	R3	MDU	Dark grey to black	Fine grained	Foliated	Medium strong, moderately to highly fractured. With iron oxide staining and dissolution along fractures. With disseminated and veined sulphides and calcite veinlets.	0	1	3	6	5	4.4	7.9	5.7	15.0	15	**48**
32.38	33.36	0.98	100	57	12	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	As above, strong.	0	1	3	6	5	6.5	11.3	6.0	15.0	15	**54**
33.36	33.83	0.47	100	0	MAX	0.30	R0	MDU	Light to medium greenish grey	Fine grained	Massive to foliated	Very stiff clay, some gravel. Massive, some foliation preserved. With chlorite alteration.	0	0	1	0	1	1.0	3.0	5.0	2.0	15	**26**
33.83	34.10	0.27	100	59	2	60.00	R4	MDU	Dark grey to black	Fine grained	Foliated	Strong, moderately to highly fractured. With iron oxide staining and dissolution along fractures. With disseminated and veined sulphides and calcite veinlets.	0	4	3	6	6	6.5	11.6	6.2	19.0	15	**58**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. K16-412

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 12-Aug-16
Date Completed: 14-Aug-16

Location: Class C Storage Facility
Drill Hole ID: K16-412
Coordinates: 416,070 m easting
6,816,061 m northing

Surface Elevation: 1,464 m
Total Depth: 38.7 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	19.20	19.20						OVBN				Overburden											
19.20	19.80	0.60	93	0	25	20.00	R2	MDU	Light to dark grey	Fine grained	Foliated	Weak, highly fractured, altered, with clay infill.	0	4	1	2	3	3.0	3.0	5.3	10.0	15	**36**
19.80	21.30	1.50	100	32	MAX	10.00	R2	MDU	Medium to dark grey	Fine grained	Foliated	Weak, moderately fractured intact rock with two 20 cm clay altered zones. With clay and calcite infill on fractures.	0	0	1	0	1	2.0	7.1	5.0	2.0	15	**31**
21.30	22.33	1.03	83	40	14	40.00	R3	MDU	Dark grey and white	Fine grained	Foliated	Moderately fractured, fresh to slightly weathered, with clay infill, and zones of massive quartz.	0	4	3	2	6	4.8	8.3	5.8	15.0	15	**49**
22.33	23.04	0.71	48	0	MAX	4.00	R1	MDU	Black and white	Fine grained	Massive	Highly fractured clay-filled rubble zone. Very weak.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	1.4	3.0	5.0	6.0	15	**30**
23.04	23.70	0.66	95	74	3	60.00	R4	MDU	Black and white	Fine grained	Massive to foliated	Strong, minor fracturing, fresh, with clay infill.	0	4	3	2	6	6.5	14.5	7.1	15.0	15	**58**
23.70	25.20	1.50	62	8	MAX	15.00	R2	MDU	Black and white	Fine grained	Foliated	Highly fractured clay-filled rubble zone. Very weak.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	2.5	3.9	5.0	6.0	15	**32**
25.20	26.70	1.50	81	9	MAX	40.00	R3	MDU	Medium to dark grey	Fine grained	Foliated	Medium strong with weak altered sections, slightly weathered, with clay and calcite infill.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	4.1	5.0	11.0	15	**40**
26.70	28.20	1.50	49	0	MAX	0.50	R0	MDU	Medium grey	Fine grained	Massive to foliated	Altered to clay and rubble, extremely weak, intensely fractured.	0	0	1	0	1	1.1	3.0	5.0	2.0	15	**26**
28.20	29.70	1.50	89	0	MAX	40.00	R3	MDU	Medium to dark grey	Fine grained	Foliated	Medium strong, highly fractured broken zone with a few small clay-filled rubble zones. With calcite veinlets and mafic intrusions.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
29.70	31.20	1.50	72	7	30	60.00	R4	MDU	Dark grey	Fine grained	Foliated	Strong, moderately to highly fractured, slightly weathered. With iron oxide staining, massive quartz, and dissolution features.	0	4	1	6	5	6.5	3.7	5.5	16.0	15	**47**
31.20	32.70	1.50	62	41	10	60.00	R4	MDU	Dark grey	Fine grained	Foliated	As above, moderately fractured.	0	4	1	6	5	6.5	8.6	6.1	16.0	15	**52**
32.70	34.10	1.40	91	36	12	45.00	R3	MDU	Dark grey	Fine grained	Foliated	Medium strong, moderately fractured with a few 1 cm clay-filled fractures. Slightly weathered with minor dissolution features.	0	1	3	0	5	5.2	7.8	6.3	9.0	15	**43**
34.10	35.50	1.40	93	18	22	45.00	R3	MDU	Dark grey and light brown	Fine grained	Foliated	Medium strong, moderately to highly fractured, slightly weathered, with clay infill on fractures and calcite veinlets.	0	4	3	2	5	5.2	5.1	5.8	14.0	15	**45**
35.50	37.20	1.70	92	14	30	45.00	R3	MAFt	Light and dark grey	Fine grained	Foliated	Medium strong, moderately to highly fractured, slightly weathered. With dissolution along fractures and small rubble zones.	0	1	3	3	5	5.2	4.7	5.7	12.0	15	**43**
37.20	38.70	1.50	83	17	33	60.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, moderately to highly fractured, slightly weathered. Minor chlorite alteration.	0	4	3	6	5	6.5	5.1	5.5	18.0	15	**50**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-12D

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 20-Jul-16
Date Completed: 21-Jul-16

Location: Class B Storage Facility
Drill Hole ID: MW16-12D
Coordinates: 415,278 m easting
6,816,530 m northing

Surface Elevation: 1,369 m
Total Depth: 28.2 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	7.20	7.20	0	0				OVBN				Overburden											
7.20	7.90	0.70	100	34	9	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, moderately fractured, fresh, trace clay infill, biotite in fractures.	0	4	3	2	6	8.0	7.5	6.0	15.0	15	**51**
7.90	9.40	1.50	87	43	18	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	As above	0	4	3	2	6	8.0	8.9	5.9	15.0	15	**53**
9.40	10.20	0.80	96	84	5	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	As above, biotite speckles, no clay.	0	4	3	6	6	8.0	16.5	6.7	19.0	15	**65**
10.20	11.70	1.50	100	59	20	110.00	R5	MAFt	Light to medium grey	Fine grained	Foliated	Very strong, highly fractured at end of run, biotite speckles.	0	4	3	2	6	10.0	11.7	6.0	15.0	15	**58**
11.70	13.20	1.50	100	70	13	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	As above, moderately fractured	0	4	3	2	6	8.0	13.7	6.4	15.0	15	**58**
13.20	14.70	1.50	100	49	19	80.00	R4	MDU	Light to medium grey	Fine grained	Foliated	Strong, moderately fractured, soft minor clay infill.	0	4	1	2	6	8.0	9.8	6.0	13.0	15	**52**
14.70	16.20	1.50	100	27	17	110.00	R5	MAFt	Light to medium grey	Fine grained	Foliated	As above, 3cm shear zone at 15.8m	0	4	1	2	6	10.0	6.3	6.1	13.0	15	**51**
16.20	17.70	1.50	100	47	23	150.00	R5	MAFt	Light to medium grey	Fine grained	Foliated	As above, fracture with thick clay infill, highly fractured	0	4	1	0	6	12.2	9.4	5.9	11.0	15	**54**
17.70	19.20	1.50	100	57	11	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	As above, moderately fractured, clay infill, sulphide mineralization on fractures, quartz veins.	0	4	1	2	6	8.0	11.3	6.7	13.0	15	**54**
19.20	20.70	1.50	100	86	9	90.00	R4	MAFt	Medium grey	Fine grained	Foliated	Very strong, slightly to moderately fractured, trace clay infill, biotite speckles.	0	4	1	2	6	8.7	17.0	7.0	13.0	15	**61**
20.70	22.20	1.50	100	74	11	80.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, few small clay and rubble filled shear zones in middle of run (few cm long). Fresh, weakly magnetic.	0	1	3	2	6	8.0	14.5	6.7	12.0	15	**56**
22.20	23.70	1.50	100	97	7	90.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh, small 5 cm broken zone at top of run. Weakly magnetic.	0	4	3	6	6	8.7	19.4	7.5	19.0	15	**70**
23.70	25.20	1.50	100	89	8	80.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh, minor clay infill and small <1 cm dissolution vugs. Weakly magnetic, with disseminated sulphides.	0	4	3	2	6	8.0	17.7	7.2	15.0	15	**63**
25.20	26.70	1.50	100	76	16	80.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, small (13 cm) clay and rubble filled shear zone in middle of run. With calcite veinlets and small < 1 cm dissolution vugs. Fresh, weakly magnetic with disseminated sulphides.	0	1	3	2	6	8.0	14.9	6.2	12.0	15	**56**
26.70	28.20	1.50	95	75	13	80.00	R4	MAFt	Light to medium grey	Fine to medium grained	Foliated	Strong, moderately fractured, fresh, no infill. Veinlets of quartz and calcite. Minor dissolution. Weakly magnetic, with disseminated sulphides.	0	4	3	6	6	8.0	14.6	6.4	19.0	15	**63**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-13

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 6-Jul-16
Date Completed: 7-Jul-16

Location: Class A Storage Facility
Drill Hole ID: MW16-13
Coordinates: 414,011 m easting
6,817,774 m northing

Surface Elevation: 1,503 m
Total Depth: 27.9 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
														Joint Condition									
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	1.10	1.10						OVBN				Overburden											
1.10	1.50	0.40	100	0	8	20.00	R2	MDU	Medium greyish green	Fine to medium grained	Foliated	Weak, highly fissile, breaks along fabric, slightly weathered with iron oxide staining. Biotite along foliations.	0	4	3	6	5	3.0	3.0	5.6	18.0	15	**45**
1.50	2.10	0.60	65	0	MAX	10.00	R2	MDU	Medium greyish green	Fine to medium grained	Foliated	As above, highly fractured. Falls apart along foliation when handled. Mica and chlorite rich. With dissolution vugs. Clay on some fractures.	0	1	1	2	5	2.0	3.0	5.0	9.0	15	**34**
2.10	3.50	1.40	102	7	MAX	15.00	R2	MDU	Medium greyish green	Fine to medium grained	Foliated	As above	0	4	1	6	5	2.5	3.8	5.0	16.0	15	**42**
3.50	3.90	0.40	103	25	14	15.00	R2	MDU	Medium greyish green	Fine to medium grained	Foliated	As above	0	4	1	6	5	2.5	6.1	5.4	16.0	15	**45**
3.90	5.40	1.50	100	55	27	30.00	R3	MDU	Medium to dark grey with white	Fine grained	Foliated	Medium strong, highly fractured along fabric. Iron oxide along foliation and some clay infill. With quartz inclusions. Slightly to moderately weathered, weakly magnetic.	0	5	1	2	5	3.9	10.9	5.7	13.0	15	**49**
5.40	6.90	1.50	97	19	27	30.00	R3	MDU	Medium to dark grey with white	Fine grained	Foliated	As above, with dissolution vugs.	0	5	1	6	3	3.9	5.2	5.7	15.0	15	**45**
6.90	8.40	1.50	99	15	31	40.00	R3	MDU	Light to dark grey	Fine grained	Foliated	Medium strong, highly fractured, breaks along fabric, slightly to moderately weathered. With iron oxidation along foliation and dissolution vugs. Weakly magnetic.	0	5	1	6	3	4.8	4.7	5.6	15.0	15	**45**
8.40	9.90	1.50	100	35	24	35.00	R3	MDU	Light to dark grey	Fine grained	Foliated	As above	0	4	1	2	5	4.4	7.5	5.8	12.0	15	**45**
9.90	11.40	1.50	100	81	11	60.00	R4	MDU	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, breaks along foliation. With iron oxide staining and dissolution vugs. Few quartz veinlets throughout.	0	4	1	2	5	6.5	15.9	6.7	12.0	15	**56**
11.40	12.60	1.20	92	29	15	45.00	R3	MDU	Medium to dark grey	Fine grained	Foliated	Medium strong, moderately fractured, with clay and iron oxide infill. One 12 cm wide quartz zone.	0	4	1	2	6	5.2	6.7	5.9	13.0	15	**46**
12.60	12.90	0.30	97	0	10	40.00	R3	MDU	Medium to dark grey with white	Fine grained	Foliated	Medium strong, highly fractured, few quartz units	0	4	1	2	6	4.8	3.0	5.4	13.0	15	**41**
12.90	13.50	0.60	100	88	4	60.00	R4	MDU	Medium to dark grey with white	Fine grained	Foliated	Strong, few fractures, iron oxide along foliation, quartz units	0	4	1	4	6	6.5	17.5	6.6	15.0	15	**61**
13.50	15.10	1.60	99	46	22	110.00	R5	MDU	Medium to dark grey with white	Fine grained	Foliated	As above, very strong, thick soft clay infill at roughly 14.3m	0	4	1	0	6	10.0	9.4	5.9	11.0	15	**51**
15.10	15.90	0.80	92	59	7	110.00	R5	MDU	Medium to dark grey with white	Fine grained	Foliated	As above, thin iron oxide-clay infill	0	4	1	2	5	10.0	11.5	6.2	12.0	15	**55**
15.90	17.40	1.50	100	22	32	150.00	R5	MDU	Medium to dark grey with white	Fine grained	Foliated	As above, iridescence in brown iron oxide-clay infill	0	4	1	2	5	12.2	5.7	5.6	12.0	15	**51**
17.40	17.90	0.50	92	58	6	60.00	R4	MDU	Medium to dark grey with white	Fine grained	Foliated	Few fractures, strong,	0	4	1	2	5	6.5	11.4	5.9	12.0	15	**51**
17.90	18.00	0.10	100	0	MAX	10.00	R2	MDU	Dark grey/black	Fine grained	Foliated	Very highly fractured, breaks along plates/foliation.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	2.0	3.0	5.0	11.0	15	**36**
18.00	18.90	0.90	100	100	6	60.00	R4	MDU	Medium to dark grey with white	Fine grained	Foliated	Few fractures, strong, quartz veinlets	0	4	1	2	5	6.5	20.0	6.7	12.0	15	**60**
18.90	20.40	1.50	85	46	21	60.00	R4	MDU	Dark grey with white bands	Fine grained with massive quartz	Foliated	Highly fractured, strong, quartz banding, mineralization with quartz and pyrite, clay infill	0	4	1	2	5	6.5	9.3	5.8	12.0	15	**49**
20.40	20.60	0.20	90	0	MAX	40.00	R3	MDU	Dark grey with white bands	Fine grained	Foliated	As above, iron oxide-clay infill	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
20.60	21.90	1.30	95	18	19	110.00	R5	MDU	Dark to light grey	Fine grained	Foliated	Dark getting lighter with depth, shear zone approximately 7cm in thickness, mushy in shear zone, moderate to highly fractured, iron oxide oxidation, iron oxide-clay infill (soft)	0	4	4	2	2	10.0	5.2	5.8	10.0	15	**46**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
21.90	23.40	1.50	97	43	18	60.00	R4	MDU	Light to medium grey	Fine grained	Foliated	Lighter in color with depth, massive quartz, significant weathering in some joints with >5mm soft iron oxide-clay infill, muscovite alteration (schist) gives weakness to fractures, strength varies from roughly 30-60 Map	0	4	1	0	3	6.5	8.9	6.0	8.0	15	**44**
23.40	24.90	1.50	100	42	21	20.00	R2	MDU	Light grey	Fine grained with massive quartz	Foliated	Weak, highly weathered with iron oxide staining, thick (4 cm) clay infill.	0	4	3	0	1	3.0	8.7	5.9	8.0	15	**41**
24.90	26.40	1.50	95	36	20	60.00	R4	MDU	Light grey	Fine grained with massive quartz	Foliated	As above, intact rock is slightly more competent. Thick (4 cm) layer of grey clay.	0	4	3	0	3	6.5	7.7	5.9	10.0	15	**45**
26.40	27.90	1.50	99	51	13	110.00	R5	MAFi	Light grey	Fine grained	Foliated	Very strong, foliated, weathered with iron oxidation. Thick quartz veins and black crystals throughout.	0	4	3	2	3	10.0	10.1	6.4	12.0	15	**54**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-14D

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 24-Jul-16
Date Completed: 25-Jul-16

Location: Class A Storage Facility
Drill Hole ID: MW16-14D
Coordinates: 414,779 m easting
6,818,386 m northing

Surface Elevation: 1,342 m
Total Depth: 40.2 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	4.80	4.80						OVBN				Overburden											
4.80	9.80	5.00	17	0	MAX	20.00	R2	MAFt	Greenish grey	Fine grained	Foliated	No intact rock recovery, broken greenish grey schist.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.0	3.0	5.0	6.0	15	**32**
9.80	10.40	0.60	92	0	MAX	40.00	R3	MAFt	Greenish grey	Fine grained	Foliated	Intact rock, medium strong, highly fractured, iron oxide in fractures, quartz banding.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	4.8	3.0	5.0	6.0	15	**34**
10.40	11.40	1.00	85	15	MAX	40.00	R3	MAFt	Greenish grey	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	4.8	5.0	11.0	15	**41**
11.40	13.20	1.80	44	7	16	60.00	R4	MAFt	Greenish grey	Fine grained	Foliated	As above, strong.	0	4	1	2	5	6.5	3.8	5.6	12.0	15	**43**
13.20	14.70	1.50	90	0	MAX	40.00	R3	MDU	Dark to medium grey	Fine grained	Foliated	Medium strong, highly fractured, thick clay infill, many broken sections, trace iron oxide.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
14.70	16.20	1.50	35	11	MAX	60.00	R4	MDU	Greenish grey and white	Fine grained	Foliated	Strong, broken, massive quartz, dissolution along fractures.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.5	4.2	5.0	11.0	15	**42**
16.20	17.70	1.50	87	17	MAX	80.00	R4	MDU	Dark to medium grey	Fine grained	Foliated	Strong, highly fractured, quartz veinlets.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	8.0	5.1	5.0	11.0	15	**44**
17.70	19.20	1.50	40	0	MAX	80.00	R4	MDU	Dark to medium grey	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	8.0	3.0	5.0	11.0	15	**42**
19.20	20.70	1.50	96	14	MAX	80.00	R4	MDU	Dark to medium grey	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	8.0	4.6	5.0	11.0	15	**44**
20.70	22.20	1.50	84	17	23	80.00	R4	MAFt	Dark to medium grey	Fine grained	Foliated	As above, minor clay infill.	0	4	1	2	6	8.0	5.0	5.7	13.0	15	**47**
22.20	23.70	1.50	73	0	18	80.00	R4	MAFt	Dark to medium greenish grey	Fine grained	Foliated	Strong, highly fractured, broken zones, quartz banding, iron oxide in fractures, clay infill.	0	4	1	2	5	8.0	3.0	5.8	12.0	15	**44**
23.70	25.20	1.50	100	65	16	110.00	R5	MAFt	Medium greenish grey	Fine grained	Foliated	Very strong, moderately fractured, trace infill, fresh.	0	4	3	4	6	10.0	12.6	6.2	17.0	15	**61**
25.20	26.70	1.50	100	51	24	110.00	R5	MAFt	Medium greenish grey	Fine grained	Foliated	As above, iron oxidation in fractures, clay infill.	0	4	1	2	5	10.0	10.1	5.8	12.0	15	**53**
26.70	28.20	1.50	95	48	13	80.00	R4	MAFt	Medium greenish grey	Fine grained	Foliated	As above, thick clay infill.	0	4	1	0	5	8.0	9.7	6.4	10.0	15	**49**
28.20	29.70	1.50	93	0	MAX	30.00	R3	MDU	Medium greenish grey and black	Fine grained	Foliated	Strong, highly fractured, iron oxide and clay infill.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	3.0	5.0	11.0	15	**38**
29.70	31.20	1.50	83	0	MAX	30.00	R3	MDU	Medium greenish grey and black	Fine grained	Foliated	As above	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	3.0	5.0	11.0	15	**38**
31.20	32.70	1.50	75	0	MAX	20.00	R2	MDU	Medium to dark grey	Fine grained	Foliated	Weak, highly fractured broken zone with some rubble and clay filled sections. With calcite veinlets and dissolution along foliation.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	3.0	3.0	5.0	6.0	15	**32**
32.70	34.20	1.50	85	0	MAX	30.00	R3	MDU	Medium to dark grey	Fine grained	Foliated	As above, medium strong. With sulphide veinlets.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	3.9	3.0	5.0	11.0	15	**38**
34.20	35.70	1.50	92	15	30	40.00	R3	MDU	Dark grey and white	Fine grained	Foliated	Medium strong, highly fractured, fresh to slightly weathered. With dissolution along foliation. Quartz and calcite veinlets throughout.	0	4	3	6	5	4.8	4.8	5.6	18.0	15	**48**
35.70	36.20	0.50	100	78	3	70.00	R4	MAFt	Medium greenish grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh. Chlorite alteration and fine calcite veinlets.	0	5	3	6	6	7.3	15.3	6.7	20.0	15	**64**
36.20	36.75	0.55	84	0	MAX	2.00	R1	MDU	Dark grey	Fine grained	Massive to foliated	Very weak, intensely fractured and sheared to clay and rubble.	0	0	1	0	1	1.2	3.0	5.0	2.0	15	**26**
36.75	37.20	0.45	100	0	6	35.00	R3	MDU	Dark grey and white	Fine grained	Foliated	Medium strong, highly fractured, fresh to slightly weathered. With dissolution along foliation. Quartz and calcite veinlets throughout.	0	5	3	6	5	4.4	3.0	5.9	19.0	15	**47**
37.20	38.70	1.50	98	71	12	45.00	R3	MDU	Light to dark greenish grey	Fine grained	Foliated	Medium strong to strong, moderately fractured with a few small (<10 cm) broken zones. Chlorite alteration and calcite veinlets.	0	4	3	2	3	5.2	13.9	6.5	12.0	15	**53**
38.70	40.20	1.50	97	84	6	90.00	R4	MAFt	Medium grey and white	Fine to medium grained	Massive to foliated	Strong, minor fracturing, fresh to slightly weathered. Clay and chlorite infill on some fractures. With calcite veinlets and massive quartz.	0	4	3	2	6	8.7	16.6	7.7	15.0	15	**63**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-15D

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 4-Jul-16
Date Completed: 5-Jul-16

Location: Krakatoa Pit
Drill Hole ID: MW16-15D
Coordinates: 414,976 m easting
6,814,702 m northing

Surface Elevation: 1,402 m
Total Depth: 42 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	5.70	5.70	0	0				OVBN				Overburden											
5.70	6.70	1.00	100	41	15	40.00	R3	OI	Light to medium brownish grey	Fine to medium grained	Foliated	Medium strong, moderately fractured, slightly to moderately weathered, breaks along fabric. With clay, iron oxide, and muscovite on fractures.	0	1	5	2	5	4.8	8.5	5.9	13.0	15	**47**
6.70	7.70	1.00	79	45	11	110.00	R5	RHYv	Light grey	Fine to medium grained	Foliated	Very strong, moderately fractured, clay and iron oxide infill, with calcite lenses.	0	1	5	0	5	10.0	9.2	5.9	11.0	15	**51**
7.70	9.20	1.50	99	8	29	150.00	R5	RHYv	Light grey	Fine to medium grained	Foliated	As above but highly fractured.	0	1	3	2	5	12.2	3.9	5.7	11.0	15	**48**
9.20	10.70	1.50	100	71	14	75.00	R4	RHYv	Light greenish grey	Fine to medium grained	Foliated	Strong, massive quartz, calcite laminations, moderately fractured, clay in one fracture.	0	4	3	4	6	7.7	13.9	6.3	17.0	15	**60**
10.70	12.20	1.50	77	44	12	75.00	R4	RHYv	Light greenish grey	Fine to medium grained	Foliated	Strong, moderately fractured, dark mineralization, pyrite, calcite, clay infill.	0	1	3	2	6	7.7	9.0	6.2	12.0	15	**50**
12.20	13.70	1.50	96	72	11	75.00	R4	RHYv	Light greenish grey	Fine to medium grained	Foliated	Strong, moderately fractured, highly fractured for 7cm at 13.5m.	0	4	3	2	6	7.7	14.1	6.6	15.0	15	**58**
13.70	15.20	1.50	83	19	29	110.00	R5	RHYv	Light greenish grey	Fine to medium grained	Foliated	Very strong, highly fractured, light banding, dark mineralization in some fractures, quartz veins.	0	1	3	4	6	10.0	5.3	5.6	14.0	15	**50**
15.20	16.70	1.50	89	17	20	110.00	R5	RHYv	Light greenish grey	Fine to medium grained	Foliated	Very strong, highly fractured, calcite banding.	0	4	3	4	6	10.0	5.1	5.9	17.0	15	**53**
16.70	17.70	1.00	88	12	16	110.00	R5	RHYv	Light to dark greenish grey	Fine to medium grained	Foliated	Very strong, highly fractured, chlorite alteration, potential shear zone, with clay infill.	0	4	3	2	6	10.0	4.4	5.7	15.0	15	**50**
17.70	18.20	0.50	70	22	5	150.00	R5	RHYc	Light to medium greenish grey	Fine to medium grained	Foliated	Very strong, moderately fractured, quartz veins, muscovite, clay infill.	0	1	3	4	6	12.2	5.7	5.8	14.0	15	**53**
18.20	19.70	1.50	94	22	22	75.00	R4	RHYc	Light to medium greenish grey	Fine to medium grained	Foliated	Strong, highly fractured.	0	4	3	2	6	7.7	5.7	5.8	15.0	15	**49**
19.70	19.95	0.25	60	0	3	75.00	R4	RHYc	Light to medium greenish grey	Fine to medium grained	Foliated	As above	0	4	3	2	6	7.7	3.0	5.5	15.0	15	**46**
19.95	20.20	0.25	40	0	MAX	0.50	R0	RHYc	Medium grey	Fine grained	Massive	Possible shear zone, clay and rubble infill. Clay is highly plastic.	0	0	0	0	0	1.1	3.0	5.0	0.0	15	**24**
20.20	21.20	1.00	89	14	16	75.00	R4	RHYc	Light greenish grey	Fine to medium grained	Foliated	Strong, highly fractured, with massive quartz and pyrite mineralization.	0	4	3	2	6	7.7	4.6	5.7	15.0	15	**48**
21.20	22.40	1.20	98	42	20	110.00	R5	RHYc	Light greenish grey and white	Fine to medium grained	Foliated	Very strong, moderately to highly fractured with depth. Persistent vertical fracture at bottom of run. Chlorite alteration and disseminated pyrite.	0	4	3	2	6	10.0	8.6	5.8	15.0	15	**54**
22.40	24.00	1.60	91	68	19	110.00	R5	RHYc	Light greenish grey	Fine to medium grained	Foliated	Very strong, moderately fractured with two zones of more intense fracturing, with pyrite and dark mineral present. Less massive quartz than previous runs.	0	4	3	2	6	10.0	13.3	6.0	15.0	15	**59**
24.00	25.10	1.10	91	35	20	150.00	R5	RHYv	Light to dark greenish grey	Fine to coarse grained	Foliated	Strong, highly fractured, magnetic in some zones.	0	1	3	2	6	12.2	7.5	5.7	12.0	15	**52**
25.10	26.60	1.50	100	91	13	75.00	R4	RHYv	Light greenish grey	Fine to medium grained	Foliated	Strong, moderately fractured.	0	4	3	6	6	7.7	18.0	6.4	19.0	15	**66**
26.60	27.20	0.60	100	100	2	110.00	R5	RHYv	Light greenish grey	Fine to medium grained	Foliated	Very strong, minor fracturing.	0	5	3	6	6	10.0	20.0	7.7	20.0	15	**73**
27.20	29.00	1.80	100	100	4	90.00	R4	RHYv / MDSt	Light to medium grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh. No infill. High quartz content, slightly magnetic. With minor dissolution.	0	5	5	6	6	8.7	20.0	9.4	22.0	15	**75**
29.00	29.18	0.18	67	0	MAX	65.00	R4	MDSt	Light to dark grey	Fine to medium grained	Foliated	Strong, highly fractured broken zone, fresh. With pyrite veinlets, slightly magnetic.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	6.9	3.0	5.0	11.0	15	**41**
29.18	30.20	1.02	100	96	5	90.00	R4	MDSt	Light to dark grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh. No infill. High quartz content, slightly magnetic.	0	5	3	6	6	8.7	19.3	7.2	20.0	15	**70**

DRILL RUN DATA								GEOLOGY - COMMENTS											RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition						RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W							
30.20	31.70	1.50	102	93	8	90.00	R4	MDSt	Medium to dark grey	Fine to coarse grained	Foliated	Strong, minor fracturing, fresh. Clay infill on one fracture. Quartz rich, slightly magnetic. With disseminated and veined sulphides.	0	5	5	6	6	8.7	18.6	7.2	22.0	15	**72**
31.70	33.20	1.50	100	86	7	90.00	R4	MDSt	Medium to dark grey	Fine to coarse grained	Foliated	As above	0	5	5	6	6	8.7	17.0	7.4	22.0	15	**70**
33.20	34.01	0.81	100	100	4	90.00	R4	MDSt	Medium to dark grey	Fine to coarse grained	Foliated	As above	0	5	5	6	6	8.7	20.0	7.1	22.0	15	**73**
34.01	34.23	0.22	59	0	MAX	0.50	R0	MDSt	Medium grey	Fine grained	Massive	Clay-rich shear zone, highly plastic, some rubble. Extremely weak.	0	0	0	0	0	1.1	3.0	5.0	0.0	15	**24**
34.23	34.70	0.47	100	87	2	90.00	R4	MDSt	Medium to dark grey	Fine to coarse grained	Foliated	Strong, minor fracturing, fresh. No infill. Quartz rich, slightly magnetic, with veined and disseminated sulphides.	0	5	5	6	6	8.7	17.3	7.1	22.0	15	**70**
34.70	36.20	1.50	99	60	13	70.00	R4	MDSt	Light to dark grey	Fine to coarse grained	Foliated	Strong, moderately fractured, fresh. No infill. Quartz rich, slightly magnetic, with veined and disseminated sulphides. Breaks along fabric.	0	5	5	6	6	7.3	11.8	6.4	22.0	15	**62**
36.20	37.70	1.50	100	100	5	80.00	R4	RHYv	Light grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh, no infill. Slightly magnetic, with disseminated sulphides. Quartz-rich.	0	5	5	6	6	8.0	20.0	8.2	22.0	15	**73**
37.70	39.20	1.50	100	100	3	120.00	R5	RHYv	Light grey	Fine to medium grained	Foliated	As above, very strong.	0	5	3	6	6	10.6	20.0	9.5	20.0	15	**75**
39.20	40.70	1.50	100	98	5	90.00	R4	RHYv	Light grey	Fine to medium grained	Foliated	Strong, minor fracturing, fresh. One fracture along fabric with 1 mm white clay infill. Quartz and muscovite rich.	0	5	5	2	6	8.7	19.7	8.2	18.0	15	**70**
40.70	42.20	1.50	100	100	5	90.00	R4	RHYv	Light grey	Fine to medium grained	Foliated	As above	0	4	3	6	6	8.7	20.0	8.2	19.0	15	**71**
EOH																								

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-16

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 18-Jul-16
Date Completed: 20-Jul-16

Location: Overburden Stockpile
Drill Hole ID: MW16-16
Coordinates: 415,395 m easting
6,817,229 m northing

Surface Elevation: 1,393 m
Total Depth: 40.3 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	3.90	3.90	0	0				OVBN				Overburden											
3.90	4.80	0.90	100	30	18	70.00	R4	MAFt	Light to medium grey with orangish brown	Fine grained	Foliated	Strong, moderately to highly fractured, moderately weathered, no infill. Dissolution along some fractures. With iron oxide staining.	0	4	3	6	3	7.3	6.8	5.6	16.0	15	**51**
4.80	6.07	1.27	99	88	6	80.00	R4	MAFt	Medium grey with orangish brown	Fine grained	Foliated	As above, slightly weathered, moderately fractured.	0	4	3	6	5	8.0	17.5	7.3	18.0	15	**66**
6.07	7.30	1.23	72	13	MAX	60.00	R4	MAFt	Light grey and orangish brown	Fine grained	Foliated	Strong, moderately weathered, highly fractured with strong iron oxidation and dissolution along fractures.	0	4	3	2	3	6.5	4.5	5.0	12.0	15	**43**
7.30	8.80	1.50	100	77	15	110.00	R5	MAFt	Light to medium grey	Fine grained	Foliated	Very strong, moderately fractured, 5cm broken clayey zone, iron oxide in fractures.	0	4	3	2	3	10.0	15.0	6.3	12.0	15	**58**
8.80	10.30	1.50	92	49	12	110.00	R5	MAFt	Light to medium grey	Fine grained	Foliated	Very strong, slightly to highly fractured with depth, iron oxide in fractures, clay infill.	0	4	1	2	3	10.0	9.8	6.4	10.0	15	**51**
10.30	11.80	1.50	100	16	28	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, highly fractured, iron oxide weathering, dissolution along fractures.	0	4	1	2	3	8.0	4.9	5.7	10.0	15	**44**
11.80	13.30	1.50	84	23	26	60.00	R4	MAFt	Light to medium grey with orangish brown	Fine grained	Foliated	Strong, moderately fractured, moderately weathered with iron oxidation and dissolution along foliation.	0	4	1	4	3	6.5	5.8	5.6	12.0	15	**45**
13.30	14.14	0.84	43	0	MAX	40.00	R3	MDU	Light to medium grey with orangish brown	Fine grained	Foliated	Medium strong, highly fractured rubble zone, moderately weathered with iron oxidation and dissolution.	RUBBLE	RUBBLE	RUBBLE	RUBBLE	RUBBLE	4.8	3.0	5.0	6.0	15	**34**
14.14	14.80	0.66	100	67	8	60.00	R4	MDU	Light to medium grey with orangish brown	Fine grained	Foliated	Strong, moderately fractured, moderately weathered with iron oxidation and dissolution along foliation.	0	5	1	6	5	6.5	13.0	6.0	17.0	15	**58**
14.80	16.30	1.50	98	47	21	65.00	R4	MDU	Light and dark grey	Fine grained	Foliated	Strong, moderately fractured, slightly to moderately weathered with dissolution along fractures.	0	4	3	6	3	6.9	9.4	5.9	16.0	15	**53**
16.30	17.80	1.50	100	69	16	65.00	R4	MAFt	Light to medium grey with orangish brown	Fine grained	Foliated	As above	0	4	1	6	3	6.9	13.4	6.2	14.0	15	**55**
17.80	19.30	1.50	100	97	6	80.00	R4	MAFt	Medium grey	Fine grained	Foliated	Strong, minor fracturing, fresh to slightly weathered. With iron oxide staining and a few quartz veins.	0	4	3	6	6	8.0	19.5	7.8	19.0	15	**69**
19.30	20.80	1.50	100	100	6	110.00	R5	MAFt	Medium grey	Fine grained	Foliated	As above, very strong.	0	4	3	6	6	10.0	20.0	7.8	19.0	15	**72**
20.80	22.30	1.50	100	73	10	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, moderately fractured, slightly weathered. With iron oxide on fractures. Quartz veinlets and calcite veinlets with dissolution.	0	4	3	6	5	8.0	14.2	6.8	18.0	15	**62**
22.30	23.80	1.50	100	74	15	80.00	R4	MDU	Light to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh to slightly weathered with iron oxide staining and minor dissolution. Quartz and calcite veinlets.	0	5	1	6	5	8.0	14.5	6.3	17.0	15	**61**
23.80	25.30	1.50	92	66	10	75.00	R4	MDU	Dark grey with white	Fine grained	Foliated	As above	0	5	3	6	6	7.7	12.9	6.7	20.0	15	**62**
25.30	26.80	1.50	69	24	30	30.00	R3	MDU	Dark grey with white	Fine grained	Foliated	Medium strong with weak clay and rubble sections, slightly weathered with iron oxide staining and minor dissolution.	0	0	1	0	5	3.9	6.0	5.5	6.0	15	**36**
26.80	28.30	1.50	86	29	20	80.00	R4	MDU	Dark grey with white	Fine grained	Foliated	As above, no clay-filled sections.	0	4	1	6	6	8.0	6.7	5.8	17.0	15	**53**
28.30	29.80	1.50	100	50	30	125.00	R5	MDU	Dark grey	Fine grained	Foliated	Very strong, moderately to highly fractured, slightly weathered. With clay and iron oxide filled sub-vertical fractures.	0	1	3	2	5	10.9	10.0	5.7	11.0	15	**53**

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Joint Condition					RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
													Persis- P	Apert- A	Rough R	Infill I	Weath W						
29.80	31.30	1.50	93	43	15	80.00	R4	MDU	Light to dark grey	Fine grained	Foliated	Strong, moderately fractured, fresh to slightly weathered with iron oxide staining and minor dissolution.	0	4	3	6	6	8.0	8.8	6.2	19.0	15	**57**
31.30	32.50	1.20	96	51	12	80.00	R4	MDU	Light to dark grey	Fine grained	Foliated	As above	0	4	3	6	5	8.0	10.1	6.2	18.0	15	**57**
32.50	34.20	1.70	90	35	20	80.00	R4	MAFt	Light to medium grey	Fine grained	Foliated	Strong, moderately fractured, fresh to slightly weathered. With iron oxide staining and sulphide veinlets.	0	4	3	6	6	8.0	7.5	6.0	19.0	15	**56**
34.20	35.80	1.60	93	51	16	90.00	R4	MAFt	Light to dark grey	Fine grained	Foliated	As above	0	4	3	6	6	8.7	10.2	6.2	19.0	15	**59**
35.80	37.30	1.50	97	49	18	110.00	R5	MDU	Light to dark grey	Fine grained	Foliated	Very strong, moderately fractured, fresh, sulphide and quartz veinlets.	0	4	3	6	6	10.0	9.9	6.0	19.0	15	**60**
37.30	38.80	1.50	99	33	17	110.00	R5	MDU	Light to dark grey	Fine grained	Foliated	As above	0	4	3	6	6	10.0	7.2	6.1	19.0	15	**57**
38.80	40.30	1.50	83	24	19	110.00	R5	MDU	Light to dark grey	Fine grained	Foliated	Very strong, moderately to highly fractured, fresh, sulphide and quartz veinlets, thick clay infill (2-4cm) at 39.5m.	0	4	3	6	6	10.0	6.0	5.8	19.0	15	**56**
EOH																							

GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET
ROCK MASS CLASSIFICATION - RMR 1989
DRILLHOLE I.D. MW16-17

Project: KUDZ ZE KAYAH PROJECT
Client: BMC MINERALS (NO.1) LTD.
Drilling Company: HY-TECH
Drill Type: Tech 5000
Date Started: 7-Jul-16
Date Completed: 8-Jul-16

Location: Mill Site
Drill Hole ID: MW16-17
Coordinates: 414,634 m easting
6,817,489 m northing

Surface Elevation: 1,418 m
Total Depth: 31.1 m
Azimuth: - °
Inclination: -90 °

DRILL RUN DATA								GEOLOGY - COMMENTS										RMR CALCULATIONS					
													Joint Condition										
Depth From m	Depth To m	Run Length m	Recov. (%)	RQD (%)	# of Fractures	UCS (Est.) (MPa)	ROCK CLASS.	Lithology (Client)	Rock Colour	Rock Grain Size / Texture	Structure	Other Notes	Persis- P	Apert- A	Rough R	Infill I	Weath W	RMR-89 UCS Rating	RMR-89 RQD Rating	RMR-89 Joint Spac. Rating	RMR-89 Joint Condition Rating	RMR-89 Water Rating	RMR-89 Total By Joint
0.00	1.60	1.60						OVBN				Overburden											
1.60	3.00	1.40	94	0	31	60.00	R4	MAFt	Medium to dark grey	Fine grained	Foliated	Medium strong, highly fractured, slightly to moderately weathered. Breaks along fabric. Clay and iron oxide infill. Dissolution along fractures.	0	1	1	2	5	6.5	3.0	5.6	9.0	15	**39**
3.00	4.10	1.10	52	0	23	60.00	R4	MAFt	Medium to dark grey	Fine grained	Foliated	As above	0	4	1	2	5	6.5	3.0	5.3	12.0	15	**42**
4.10	5.60	1.50	97	67	10	75.00	R4	MAFt	Medium to dark grey	Fine grained	Foliated	Strong, moderately fractured, breaks along fabric, shear zone with clay infill, iron oxide infill and staining.	0	4	1	2	3	7.7	13.2	6.8	10.0	15	**53**
5.60	7.10	1.50	87	21	19	40.00	R3	MAFt	Medium to light grey	Fine grained	Foliated	Medium strong, highly fractured, slightly to moderately weathered. Breaks along fabric. Clay and iron oxide infill.	0	4	1	2	3	4.8	5.5	5.9	10.0	15	**41**
7.10	8.60	1.50	97	25	22	75.00	R4	MAFt	Medium to light grey	Fine grained	Foliated	Strong, highly fractured, slightly to moderately weathered. Breaks along fabric. Clay and iron oxide infill.	0	4	1	2	3	7.7	6.1	5.9	10.0	15	**45**
8.60	10.10	1.50	100	32	29	110.00	R5	MAFt	Medium to light grey	Fine grained	Foliated	As above, very strong.	0	4	1	2	3	10.0	7.1	5.7	10.0	15	**48**
10.10	11.60	1.50	99	0	30	110.00	R5	MAFt	Medium grey	Fine grained	Foliated	Intact rock is very strong, but highly fractured and weak in other sections, iron oxide weathering in fractures, thin clay infill.	0	4	1	2	3	10.0	3.0	5.7	10.0	15	**44**
11.60	13.10	1.50	95	53	14	110.00	R5	MAFt	Medium grey	Fine grained	Foliated	As above, slightly to moderately fractured.	0	4	1	2	3	10.0	10.5	6.3	10.0	15	**52**
13.10	13.40	0.30	83	50	MAX	80.00	R4	MAFt	Medium grey	Fine grained	Foliated	Highly fractured for most of run, fresh.	0	1	3	6	6	8.0	10.0	5.0	16.0	15	**54**
13.40	14.90	1.50	100	68	13	75.00	R4	MAFt	Medium grey	Fine grained	Foliated	Strong, slightly to moderatly fractured, breaks along fabric.	0	4	1	2	5	7.7	13.3	6.4	12.0	15	**54**
14.90	16.10	1.20	77	12	23	110.00	R5	MDU	Medium grey	Fine grained	Foliated	As above, less infill, highly fractured, two broken zones	0	4	1	2	5	10.0	4.3	5.5	12.0	15	**47**
16.10	17.60	1.50	96	30	27	110.00	R5	MDU	Medium grey	Fine grained	Foliated	As above, very strong intact rock but many weathered/highly fractured sections, some iron oxide infill, and grey clay.	0	4	1	2	3	10.0	6.8	5.7	10.0	15	**48**
17.60	19.10	1.50	100	24	16	75.00	R4	MDU	Medium grey	Fine grained	Foliated	Strong, many weathered/highly fractured sections, iron oxide-clay infill.	0	4	1	2	3	7.7	6.0	6.2	10.0	15	**45**
19.10	20.60	1.50	100	40	15	150.00	R5	MDU	Medium grey	Fine grained	Foliated	As above, massive quartz with veinlets of pyrite, very strong, hard and soft clay infill.	0	4	3	2	3	12.2	8.3	6.3	12.0	15	**54**
20.60	22.10	1.50	100	49	15	110.00	R5	MDU	Medium grey	Fine grained	Foliated	Massive quartz, very strong, iron oxide infill in fractures, blue clay infill in quartz pockets, many pyrite veins, dark metallic bands.	0	4	1	2	3	10.0	9.8	6.3	10.0	15	**51**
22.10	23.60	1.50	99	56	15	75.00	R4	MDU	Dark grey	Fine grained	Foliated	White and black banding, massive quartz veins, strong, clay infill, pyrite veins.	0	4	1	2	0	7.7	11.0	6.3	7.0	15	**47**
23.60	25.10	1.50	100	15	25	75.00	R4	MDU	Dark grey	Fine grained	Foliated	As above, blue clay infill.	0	4	1	2	6	7.7	4.7	5.8	13.0	15	**46**
25.10	25.50	0.40	98	0	MAX	40.00	R3	MDU	Dark grey	Fine grained	Foliated	As above, broken.	BROKEN	BROKEN	BROKEN	BROKEN	BROKEN	4.8	3.0	5.0	11.0	15	**39**
25.50	26.60	1.10	100	51	8	75.00	R4	MDU	Medium to light grey	Fine grained	Foliated	Massive quartz veins, blue clay infill.	0	4	1	2	6	7.7	10.1	6.6	13.0	15	**52**
26.60	28.10	1.50	100	9	15	75.00	R4	MDU	Medium grey	Fine grained	Foliated	White and blue banding, massive quartz, strong, pyrite veins, blue clay infill, persistent vertical fracture.	0	4	1	0	6	7.7	4.0	6.3	11.0	15	**44**
28.10	29.60	1.50	99	25	19	150.00	R5	MDU	Medium grey	Fine grained	Foliated	Black metallic mineral, 20cm zone of quartz, light bluish grey, very strong due to high quartz content.	0	4	1	2	6	12.2	6.1	6.0	13.0	15	**52**
29.60	31.10	1.50	100	66	16	150.00	R5	MDU	Medium grey	Fine grained	Foliated	As above	0	4	1	2	6	12.2	12.9	6.2	13.0	15	**59**
EOH																							

APPENDIX C

FIELD PLT RESULTS

(Pages C-1 to C-5)

Knight Piésold
CONSULTING

TABLE C

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
SUMMARY OF POINT LOAD INDEX TESTING

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Drillhole ID	PLT #	Downhole Depth (m)	Elevation (masl)	Primary Lithology	Test Type	Core Size	Width (mm)	Length (mm)	Load (MPa)	Failure Type	DE^2	IS (MPa)	F	$IS_{(50)}$ (MPa)
K16-379	1	6.0	1399.0	RHY	D	HQ3	61.1	12.0	6.7	foliation	3733.2	1.8	1.1	2.0
K16-379	2	9.0	1396.0	RHY	D	HQ3	61.1	11.0	6.0	foliation	3733.2	1.6	1.1	1.8
K16-379	3	12.2	1392.8	RHY	D	HQ3	61.1	11.0	5.2	foliation	3733.2	1.4	1.1	1.5
K16-379	4	15.1	1389.9	RHY	D	HQ3	61.1	12.0	5.3	foliation	3733.2	1.4	1.1	1.6
K16-379	5	19.2	1385.8	RHY	D	HQ3	61.1	10.0	6.0	normal	3733.2	1.6	1.1	1.8
K16-379	6	23.0	1382.0	RHY	D	HQ3	61.1	14.0	5.6	foliation	3733.2	1.5	1.1	1.7
K16-379	7	24.7	1380.3	RHY	D	HQ3	61.1	14.0	6.7	foliation	3733.2	1.8	1.1	2.0
K16-379	8	26.6	1378.4	RHY	D	HQ3	61.1	19.0	11.3	normal	3733.2	3.0	1.1	3.3
K16-379	9	29.3	1375.7	RHY	D	HQ3	61.1	11.0	5.0	foliation	3733.2	1.3	1.1	1.5
K16-379	10	30.0	1375.0	RHY	D	HQ3	61.1	13.0	8.1	foliation	3733.2	2.2	1.1	2.4
K16-379	11	33.8	1371.2	RHY	D	HQ3	61.1	14.0	5.2	foliation	3733.2	1.4	1.1	1.5
K16-379	12	36.0	1369.0	RHY	D	HQ3	61.1	14.0	4.6	foliation	3733.2	1.2	1.1	1.4
K16-379	13	37.7	1367.3	RHY	D	HQ3	61.1	15.0	4.5	foliation	3733.2	1.2	1.1	1.3
MW16-15D	1	2.1	1399.9	RHY	D	HQ3	61.1	13.0	7.1	invalid	3733.2	1.9	1.1	2.1
MW16-15D	2	6.4	1395.6	RHY	D	HQ3	61.1	8.0	2.4	foliation	3733.2	0.6	1.1	0.7
MW16-15D	3	8.0	1394.0	RHY	D	HQ3	61.1	8.0	4.3	foliation	3733.2	1.1	1.1	1.3
MW16-15D	4	9.3	1392.7	RHY	D	HQ3	61.1	16.0	5.8	foliation	3733.2	1.6	1.1	1.7
MW16-15D	5	10.9	1391.1	RHY	D	HQ3	61.1	18.0	2.6	normal	3733.2	0.7	1.1	0.8
MW16-15D	6	12.2	1389.8	RHY	D	HQ3	61.1	8.0	4.4	foliation	3733.2	1.2	1.1	1.3
MW16-15D	7	13.0	1389.0	RHY	D	HQ3	61.1	8.0	3.5	foliation	3733.2	0.9	1.1	1.0
MW16-15D	8	13.9	1388.1	RHY	D	HQ3	61.1	20.0	5.4	foliation	3733.2	1.5	1.1	1.6
MW16-15D	9	15.4	1386.6	RHY	D	HQ3	61.1	12.0	6.3	foliation	3733.2	1.7	1.1	1.8
MW16-15D	10	17.0	1385.0	RHY	D	HQ3	61.1	8.0	2.2	foliation	3733.2	0.6	1.1	0.6
MW16-15D	11	19.2	1382.8	RHY	D	HQ3	61.1	9.0	2.2	foliation	3733.2	0.6	1.1	0.6
MW16-15D	12	21.0	1381.0	RHY	D	HQ3	61.1	13.0	1.5	foliation	3733.2	0.4	1.1	0.4
MW16-15D	13	21.8	1380.2	RHY	D	HQ3	61.1	11.0	4.3	foliation	3733.2	1.2	1.1	1.3
MW16-15D	14	22.9	1379.1	RHY	D	HQ3	61.1	10.0	6.9	normal	3733.2	1.8	1.1	2.0
MW16-15D	15	25.2	1376.8	RHY	D	HQ3	61.1	10.0	2.4	foliation	3733.2	0.6	1.1	0.7
MW16-15D	16	28.1	1373.9	RHY	D	HQ3	61.1	30.0	2.7	foliation	3733.2	0.7	1.1	0.8
MW16-15D	17	31.6	1370.4	MDSt	D	HQ3	61.1	12.0	3.8	foliation	3733.2	1.0	1.1	1.1
MW16-15D	18	33.9	1368.1	MDSt	D	HQ3	61.1	11.0	5.5	foliation	3733.2	1.5	1.1	1.6
MW16-15D	19	37.8	1364.2	RHY	D	HQ3	61.1	18.0	2.1	foliation	3733.2	0.6	1.1	0.6
MW16-15D	20	42.0	1360.0	RHY	D	HQ3	61.1	13.0	4.7	foliation	3733.2	1.3	1.1	1.4
MW16-13	1	2.8	1500.2	MDU	D	HQ3	61.1	10.0	0.8	foliation	3733.2	0.2	1.1	0.2
MW16-13	2	4.0	1499.0	MDU	D	HQ3	61.1	10.0	1.0	foliation	3733.2	0.3	1.1	0.3
MW16-13	3	5.3	1497.7	MAFt	D	HQ3	61.1	11.0	6.8	foliation	3733.2	1.8	1.1	2.0
MW16-13	4	6.6	1496.4	MDU	D	HQ3	61.1	10.0	2.6	foliation	3733.2	0.7	1.1	0.8
MW16-13	5	9.5	1493.5	MDU	D	HQ3	61.1	12.0	2.0	foliation	3733.2	0.5	1.1	0.6
MW16-13	6	10.3	1492.7	MDU	D	HQ3	61.1	8.0	1.3	foliation	3733.2	0.4	1.1	0.4
MW16-13	7	11.0	1492.0	MAFt	D	HQ3	61.1	14.0	12.7	foliation	3733.2	3.4	1.1	3.7
MW16-13	8	13.1	1489.9	MDU	D	HQ3	61.1	13.0	1.8	foliation	3733.2	0.5	1.1	0.5
MW16-13	9	14.5	1488.5	MDU	D	HQ3	61.1	11.0	3.0	foliation	3733.2	0.8	1.1	0.9
MW16-13	10	15.2	1487.8	MDU	D	HQ3	61.1	16.0	3.4	foliation	3733.2	0.9	1.1	1.0
MW16-13	11	16.7	1486.3	MDU	D	HQ3	61.1	17.0	7.0	foliation	3733.2	1.9	1.1	2.0
MW16-13	12	18.4	1484.6	MDU	D	HQ3	61.1	16.0	9.1	normal	3733.2	2.4	1.1	2.7
MW16-13	13	20.9	1482.1	MDU	D	HQ3	61.1	11.0	0.8	foliation	3733.2	0.2	1.1	0.2
MW16-13	14	22.0	1481.0	MDU	D	HQ3	61.1	20.0	2.6	foliation	3733.2	0.7	1.1	0.8
MW16-13	15	25.8	1477.2	MDU	D	HQ3	61.1	11.0	2.1	foliation	3733.2	0.6	1.1	0.6
MW16-13	16	27.6	1475.4	MAFi	D	HQ3	61.1	20.0	7.0	normal	3733.2	1.9	1.1	2.0
MW16-17	1	4.3	1413.7	MAFt	D	HQ3	61.1	8.0	0.8	foliation	3733.2	0.2	1.1	0.2
MW16-17	2	5.0	1413.0	MAFt	D	HQ3	61.1	13.0	3.6	foliation	3733.2	1.0	1.1	1.1
MW16-17	3	9.0	1409.0	MAFt	D	HQ3	61.1	12.0	17.5	foliation	3733.2	4.7	1.1	5.1
MW16-17	4	11.6	1406.4	MAFt	D	HQ3	61.1	15.0	2.4	foliation	3733.2	0.6	1.1	0.7
MW16-17	5	14.2	1403.8	MAFt	D	HQ3	61.1	11.0	4.6	foliation	3733.2	1.2	1.1	1.4
MW16-17	6	20.0	1398.0	MDU	D	HQ3	61.1	9.0	0.9	foliation	3733.2	0.2	1.1	0.3
MW16-17	7	23.5	1394.5	MDU	D	HQ3	61.1	10.0	2.9	foliation	3733.2	0.8	1.1	0.8
MW16-17	8	28.2	1389.8	MDU	D	HQ3	61.1	12.0	10.2	foliation	3733.2	2.7	1.1	3.0

TABLE C

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
SUMMARY OF POINT LOAD INDEX TESTING

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Drillhole ID	PLT #	Downhole Depth (m)	Elevation (masl)	Primary Lithology	Test Type	Core Size	Width (mm)	Length (mm)	Load (MPa)	Failure Type	DE^2	IS (MPa)	F	$IS_{(50)}$ (MPa)
MW16-17	9	30.7	1387.3	MDU	D	HQ3	61.1	13.0	6.9	foliation	3733.2	1.8	1.1	2.0
MW16-17	10	41.7	1376.3	MDU	D	HQ3	61.1	20.0	6.5	foliation	3733.2	1.8	1.1	1.9
K16-387	1	4.7	1406.3	MDU	D	HQ3	61.1	13.0	1.2	foliation	3733.2	0.3	1.1	0.4
K16-387	2	8.1	1402.9	MDU	D	HQ3	61.1	16.0	4.2	foliation	3733.2	1.1	1.1	1.2
K16-387	3	10.6	1400.4	MDU	D	HQ3	61.1	15.0	5.5	foliation	3733.2	1.5	1.1	1.6
K16-387	4	12.4	1398.6	MDU	D	HQ3	61.1	12.0	2.7	foliation	3733.2	0.7	1.1	0.8
K16-387	5	19.1	1391.9	MAFt	D	HQ3	61.1	19.0	5.7	foliation	3733.2	1.5	1.1	1.7
K16-387	6	20.4	1390.6	MDU	D	HQ3	61.1	15.0	1.0	foliation	3733.2	0.3	1.1	0.3
K16-387	7	25.1	1385.9	MDU	D	HQ3	61.1	12.0	4.9	foliation	3733.2	1.3	1.1	1.4
K16-387	8	27.1	1383.9	MAFt	D	HQ3	61.1	14.0	0.7	foliation	3733.2	0.2	1.1	0.2
K16-387	9	29.4	1381.6	MAFi	D	HQ3	61.1	15.0	1.9	foliation	3733.2	0.5	1.1	0.5
K16-387	10	30.5	1380.5	MAFi	D	HQ3	61.1	13.0	10.5	normal	3733.2	2.8	1.1	3.1
K16-387	11	33.5	1377.5	MAFi	D	HQ3	61.1	13.0	6.4	foliation	3733.2	1.7	1.1	1.9
K16-389	1	13.4	1407.6	MAFt	D	HQ3	61.1	10.0	2.0	foliation	3733.2	0.5	1.1	0.6
K16-389	2	17.3	1403.7	MAFt	D	HQ3	61.1	10.0	2.5	foliation	3733.2	0.7	1.1	0.7
K16-389	3	17.5	1403.5	MAFt	D	HQ3	61.1	14.0	5.9	foliation	3733.2	1.6	1.1	1.7
K16-389	4	20.5	1400.5	MDU	D	HQ3	61.1	10.0	5.2	foliation	3733.2	1.4	1.1	1.5
K16-389	5	22.1	1398.9	MAFt	D	HQ3	61.1	17.0	5.8	foliation	3733.2	1.6	1.1	1.7
K16-389	6	26.5	1394.5	MAFt	D	HQ3	61.1	11.0	8.1	foliation	3733.2	2.2	1.1	2.4
K16-389	7	28.1	1392.9	MAFt	D	HQ3	61.1	15.0	5.0	foliation	3733.2	1.3	1.1	1.5
K16-389	8	33.4	1387.6	MAFt	D	HQ3	61.1	11.0	3.9	foliation	3733.2	1.1	1.1	1.2
K16-389	9	36.9	1384.1	MDU	D	HQ3	61.1	12.0	4.5	foliation	3733.2	1.2	1.1	1.3
K16-389	10	40.4	1380.6	MDU	D	HQ3	61.1	20.0	8.3	foliation	3733.2	2.2	1.1	2.4
K16-390	1	7.1	1401.9	MDU	D	HQ3	61.1	11.0	1.0	foliation	3733.2	0.3	1.1	0.3
K16-390	2	8.4	1400.6	MDU	D	HQ3	61.1	8.0	1.6	normal	3733.2	0.4	1.1	0.5
K16-390	3	12.2	1396.8	MDU	D	HQ3	61.1	8.0	2.0	foliation	3733.2	0.5	1.1	0.6
K16-390	4	18.0	1391.0	MDU	D	HQ3	61.1	8.0	2.4	normal	3733.2	0.6	1.1	0.7
K16-390	5	19.9	1389.1	MDU	D	HQ3	61.1	9.0	1.6	foliation	3733.2	0.4	1.1	0.5
K16-390	6	21.3	1387.7	MDU	D	HQ3	61.1	12.0	1.1	foliation	3733.2	0.3	1.1	0.3
K16-390	7	23.3	1385.7	MDU	D	HQ3	61.1	11.0	2.9	foliation	3733.2	0.8	1.1	0.9
K16-390	8	24.8	1384.2	MDU	D	HQ3	61.1	8.0	3.8	foliation	3733.2	1.0	1.1	1.1
K16-390	9	25.9	1383.1	MAFt	D	HQ3	61.1	13.0	1.0	foliation	3733.2	0.3	1.1	0.3
K16-390	10	26.9	1382.1	MDU	D	HQ3	61.1	13.0	1.1	normal	3733.2	0.3	1.1	0.3
K16-390	11	28.7	1380.3	MDU	D	HQ3	61.1	17.0	1.6	foliation	3733.2	0.4	1.1	0.5
K16-390	12	32.4	1376.6	MDU	D	HQ3	61.1	11.0	2.2	foliation	3733.2	0.6	1.1	0.7
K16-390	13	33.2	1375.8	MAFt	D	HQ3	61.1	11.0	5.2	foliation	3733.2	1.4	1.1	1.5
K16-390	14	34.9	1374.1	MDU	D	HQ3	61.1	13.0	3.5	foliation	3733.2	0.9	1.1	1.0
K16-390	15	36.6	1372.4	MDU	D	HQ3	61.1	18.0	2.8	normal	3733.2	0.7	1.1	0.8
K16-392	1	6.7	1383.3	MAFt	D	HQ3	61.1	9.0	2.8	foliation	3733.2	0.7	1.1	0.8
K16-392	2	13.5	1376.5	MAFt	D	HQ3	61.1	8.0	2.8	normal	3733.2	0.7	1.1	0.8
K16-392	3	15.4	1374.6	MAFt	D	HQ3	61.1	9.0	0.2	foliation	3733.2	0.1	1.1	0.1
K16-392	4	16.5	1373.5	MAFt	D	HQ3	61.1	10.0	4.8	normal	3733.2	1.3	1.1	1.4
K16-392	5	19.0	1371.0	MAFt	D	HQ3	61.1	14.0	4.1	normal	3733.2	1.1	1.1	1.2
K16-392	6	19.5	1370.5	MAFt	D	HQ3	61.1	12.0	3.0	normal	3733.2	0.8	1.1	0.9
K16-392	7	21.0	1369.0	MAFt	D	HQ3	61.1	14.0	5.6	normal	3733.2	1.5	1.1	1.7
K16-392	8	23.1	1366.9	MAFt	D	HQ3	61.1	15.0	2.9	normal	3733.2	0.8	1.1	0.9
K16-392	9	24.1	1365.9	MAFt	D	HQ3	61.1	18.0	6.1	normal	3733.2	1.6	1.1	1.8
K16-392	10	25.3	1364.7	MAFt	D	HQ3	61.1	13.0	4.6	normal	3733.2	1.2	1.1	1.3
K16-392	11	28.1	1361.9	MAFt	D	HQ3	61.1	10.0	6.7	normal	3733.2	1.8	1.1	2.0
K16-392	12	28.8	1361.2	MAFt	D	HQ3	61.1	7.0	5.1	normal	3733.2	1.4	1.1	1.5
K16-392	13	31.1	1358.9	MAFt	D	HQ3	61.1	7.0	3.7	normal	3733.2	1.0	1.1	1.1
K16-392	14	31.3	1358.7	MAFt	D	HQ3	61.1	6.0	3.9	normal	3733.2	1.0	1.1	1.1
K16-392	15	32.7	1357.3	MAFt	D	HQ3	61.1	6.5	4.0	normal	3733.2	1.1	1.1	1.2
K16-392	16	37.1	1352.9	MDU	D	HQ3	61.1	6.5	3.6	normal	3733.2	1.0	1.1	1.0
K16-392	17	37.4	1352.6	MAFt	D	HQ3	61.1	13.0	3.8	normal	3733.2	1.0	1.1	1.1
K16-392	18	40.1	1349.9	MDU	D	HQ3	61.1	15.0	1.3	normal	3733.2	0.4	1.1	0.4
K16-392	19	40.5	1349.5	MDU	D	HQ3	61.1	12.0	3.4	normal	3733.2	0.9	1.1	1.0

TABLE C

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
SUMMARY OF POINT LOAD INDEX TESTING

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Drillhole ID	PLT #	Downhole Depth (m)	Elevation (masl)	Primary Lithology	Test Type	Core Size	Width (mm)	Length (mm)	Load (MPa)	Failure Type	DE^2	IS (MPa)	F	$IS_{(50)}$ (MPa)
K16-392	20	42.8	1347.2	MDU	D	HQ3	61.1	16.0	4.5	normal	3733.2	1.2	1.1	1.3
K16-392	21	44.4	1345.6	MDU	D	HQ3	61.1	11.0	5.7	normal	3733.2	1.5	1.1	1.7
K16-392	22	45.1	1344.9	MDU	D	HQ3	61.1	15.0	4.0	normal	3733.2	1.1	1.1	1.2
K16-395	1	2.7	1403.3	MAFt	D	HQ3	61.1	5.0	3.2	normal	3733.2	0.9	1.1	0.9
K16-395	2	3.9	1402.1	MDU	D	HQ3	61.1	15.0	4.0	foliation	3733.2	1.1	1.1	1.2
K16-395	3	4.6	1401.4	MDU	D	HQ3	61.1	11.0	6.3	normal	3733.2	1.7	1.1	1.8
K16-395	4	6.6	1399.4	MDU	D	HQ3	61.1	13.0	3.1	foliation	3733.2	0.8	1.1	0.9
K16-395	5	7.5	1398.5	MDU	D	HQ3	61.1	15.0	6.3	normal	3733.2	1.7	1.1	1.8
K16-395	6	9.3	1396.7	MAFt	D	HQ3	61.1	11.0	2.8	foliation	3733.2	0.8	1.1	0.8
K16-395	7	10.8	1395.2	MDU	D	HQ3	61.1	16.0	6.8	normal	3733.2	1.8	1.1	2.0
K16-395	8	11.9	1394.1	MDU	D	HQ3	61.1	12.0	6.8	normal	3733.2	1.8	1.1	2.0
K16-395	9	13.3	1392.7	MDU	D	HQ3	61.1	7.0	5.5	normal	3733.2	1.5	1.1	1.6
K16-395	10	15.4	1390.6	MDU	D	HQ3	61.1	7.0	3.1	normal	3733.2	0.8	1.1	0.9
K16-395	11	20.5	1385.5	MDU	D	HQ3	61.1	10.0	14.2	normal	3733.2	3.8	1.1	4.2
K16-395	12	20.8	1385.2	MDU	D	HQ3	61.1	10.0	16.6	normal	3733.2	4.4	1.1	4.9
K16-395	13	22.6	1383.4	MDU	D	HQ3	61.1	9.0	3.6	foliation	3733.2	1.0	1.1	1.0
K16-395	14	24.1	1381.9	MDU	D	HQ3	61.1	22.0	20.8	normal	3733.2	5.6	1.1	6.1
K16-395	15	25.7	1380.3	MDU	D	HQ3	61.1	10.0	1.1	foliation	3733.2	0.3	1.1	0.3
K16-395	16	26.8	1379.2	MDU	D	HQ3	61.1	11.0	7.9	normal	3733.2	2.1	1.1	2.3
K16-395	17	28.8	1377.2	MDU	D	HQ3	61.1	12.0	3.7	normal	3733.2	1.0	1.1	1.1
K16-395	18	30.0	1376.0	MAFt	D	HQ3	61.1	18.0	16.7	normal	3733.2	4.5	1.1	4.9
K16-395	19	31.7	1374.3	MAFt	D	HQ3	61.1	10.0	1.1	foliation	3733.2	0.3	1.1	0.3
K16-395	20	34.1	1371.9	MAFt	D	HQ3	61.1	10.0	3.2	foliation	3733.2	0.9	1.1	0.9
K16-395	21	34.6	1371.4	MAFt	D	HQ3	61.1	12.0	2.1	foliation	3733.2	0.6	1.1	0.6
K16-395	22	36.8	1369.2	MDU	D	HQ3	61.1	14.0	2.9	normal	3733.2	0.8	1.1	0.9
K16-395	23	37.7	1368.3	MDU	D	HQ3	61.1	10.0	9.9	normal	3733.2	2.7	1.1	2.9
K16-395	24	39.1	1366.9	MDU	D	HQ3	61.1	18.0	1.3	foliation	3733.2	0.4	1.1	0.4
K16-395	25	41.4	1364.6	MDU	D	HQ3	61.1	14.0	2.4	foliation	3733.2	0.6	1.1	0.7
K16-395	26	42.9	1363.1	MDU	D	HQ3	61.1	15.0	2.8	foliation	3733.2	0.7	1.1	0.8
K16-395	27	43.6	1362.4	MDU	D	HQ3	61.1	14.0	1.2	foliation	3733.2	0.3	1.1	0.3
K16-395	28	44.8	1361.2	MDU	D	HQ3	61.1	14.0	3.7	foliation	3733.2	1.0	1.1	1.1
MW16-16D	1	4.7	1388.3	MAFt	D	HQ3	61.1	9.0	3.7	normal	3733.2	1.0	1.1	1.1
MW16-16D	2	5.2	1387.8	MAFt	D	HQ3	61.1	16.0	5.4	normal	3733.2	1.5	1.1	1.6
MW16-16D	3	5.9	1387.1	MAFt	D	HQ3	61.1	12.0	6.6	normal	3733.2	1.8	1.1	1.9
MW16-16D	4	7.4	1385.6	MAFt	D	HQ3	61.1	6.0	2.2	foliation	3733.2	0.6	1.1	0.6
MW16-16D	5	8.9	1384.1	MAFt	D	HQ3	61.1	12.0	6.4	foliation	3733.2	1.7	1.1	1.9
MW16-16D	6	10.4	1382.6	MAFt	D	HQ3	61.1	8.0	1.2	foliation	3733.2	0.3	1.1	0.3
MW16-16D	7	11.5	1381.5	MAFt	D	HQ3	61.1	11.0	16.3	invalid	3733.2	4.4	1.1	4.8
MW16-16D	8	11.9	1381.1	MAFt	D	HQ3	61.1	11.0	5.2	foliation	3733.2	1.4	1.1	1.5
MW16-16D	9	14.5	1378.5	MDU	D	HQ3	61.1	16.0	3.5	foliation	3733.2	0.9	1.1	1.0
MW16-16D	10	15.3	1377.7	MDU	D	HQ3	61.1	13.0	3.9	normal	3733.2	1.0	1.1	1.1
MW16-16D	11	16.9	1376.1	MAFt	D	HQ3	61.1	12.0	4.3	normal	3733.2	1.2	1.1	1.3
MW16-16D	12	19.0	1374.0	MAFt	D	HQ3	61.1	11.0	9.2	normal	3733.2	2.5	1.1	2.7
MW16-16D	13	20.6	1372.4	MAFt	D	HQ3	61.1	18.0	9.8	normal	3733.2	2.6	1.1	2.9
MW16-16D	14	21.1	1371.9	MAFt	D	HQ3	61.1	19.0	10.9	normal	3733.2	2.9	1.1	3.2
MW16-16D	15	23.1	1369.9	MDU	D	HQ3	61.1	12.0	1.2	foliation	3733.2	0.3	1.1	0.4
MW16-16D	16	24.4	1368.6	MDU	D	HQ3	61.1	12.0	1.0	foliation	3733.2	0.3	1.1	0.3
MW16-16D	17	25.5	1367.5	MDU	D	HQ3	61.1	16.0	2.3	foliation	3733.2	0.6	1.1	0.7
MW16-16D	18	27.2	1365.8	MDU	D	HQ3	61.1	13.0	0.7	foliation	3733.2	0.2	1.1	0.2
MW16-16D	19	29.7	1363.3	MDU	D	HQ3	61.1	15.0	19.1	normal	3733.2	5.1	1.1	5.6
MW16-16D	20	31.0	1362.0	MDU	D	HQ3	61.1	20.0	1.8	foliation	3733.2	0.5	1.1	0.5
MW16-16D	21	31.7	1361.3	MDU	D	HQ3	61.1	14.0	4.4	normal	3733.2	1.2	1.1	1.3
MW16-16D	22	32.7	1360.3	MAFt	D	HQ3	61.1	13.0	1.9	foliation	3733.2	0.5	1.1	0.6
MW16-16D	23	35.0	1358.0	MAFt	D	HQ3	61.1	11.0	2.1	foliation	3733.2	0.6	1.1	0.6
MW16-16D	24	36.1	1356.9	MDU	D	HQ3	61.1	16.0	9.2	foliation	3733.2	2.5	1.1	2.7
MW16-16D	25	38.7	1354.3	MDU	D	HQ3	61.1	8.0	4.0	foliation	3733.2	1.1	1.1	1.2
MW16-16D	26	40.2	1352.8	MDU	D	HQ3	61.1	10.0	4.2	foliation	3733.2	1.1	1.1	1.2

TABLE C

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
SUMMARY OF POINT LOAD INDEX TESTING

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Drillhole ID	PLT #	Downhole Depth (m)	Elevation (masl)	Primary Lithology	Test Type	Core Size	Width (mm)	Length (mm)	Load (MPa)	Failure Type	DE^2	IS (MPa)	F	$IS_{(50)}$ (MPa)
MW16-12D	1	7.8	1361.2	MAFt	D	HQ3	61.1	14.0	2.9	foliation	3733.2	0.8	1.1	0.9
MW16-12D	2	8.8	1360.2	MAFt	D	HQ3	61.1	10.0	2.2	foliation	3733.2	0.6	1.1	0.6
MW16-12D	3	9.5	1359.5	MAFt	D	HQ3	61.1	12.0	3.2	foliation	3733.2	0.9	1.1	0.9
MW16-12D	4	10.3	1358.7	MAFt	D	HQ3	61.1	10.0	4.2	foliation	3733.2	1.1	1.1	1.2
MW16-12D	5	12.5	1356.5	MAFt	D	HQ3	61.1	13.0	3.0	foliation	3733.2	0.8	1.1	0.9
MW16-12D	6	13.4	1355.6	MDU	D	HQ3	61.1	13.0	5.1	foliation	3733.2	1.4	1.1	1.5
MW16-12D	7	16.1	1352.9	MAFi	D	HQ3	61.1	10.0	2.8	foliation	3733.2	0.8	1.1	0.8
MW16-12D	8	17.6	1351.4	MAFi	D	HQ3	61.1	10.0	3.4	foliation	3733.2	0.9	1.1	1.0
MW16-12D	9	18.0	1351.0	MAFi	D	HQ3	61.1	11.0	4.4	veinlet	3733.2	1.2	1.1	1.3
MW16-12D	10	19.5	1349.5	MAFi	D	HQ3	61.1	15.0	2.1	foliation	3733.2	0.6	1.1	0.6
MW16-12D	11	20.8	1348.2	MAFi	D	HQ3	61.1	12.0	4.6	foliation	3733.2	1.2	1.1	1.3
MW16-12D	12	23.0	1346.0	MDU	D	HQ3	61.1	14.0	2.9	foliation	3733.2	0.8	1.1	0.9
MW16-12D	13	25.0	1344.0	MDU	D	HQ3	61.1	14.0	3.8	foliation	3733.2	1.0	1.1	1.1
MW16-12D	14	26.4	1342.6	MAFt	D	HQ3	61.1	13.0	3.7	foliation	3733.2	1.0	1.1	1.1
MW16-12D	15	27.3	1341.7	MAFt	D	HQ3	61.1	16.0	2.1	foliation	3733.2	0.6	1.1	0.6
K16-402	1	7.0	1436.0	MDU	D	HQ3	61.1	12.0	1.5	foliation	3733.2	0.4	1.1	0.4
K16-402	2	9.2	1433.8	MDU	D	HQ3	61.1	6.0	0.8	foliation	3733.2	0.2	1.1	0.2
K16-402	3	13.8	1429.2	MDU	D	HQ3	61.1	6.5	1.2	foliation	3733.2	0.3	1.1	0.3
K16-402	4	14.9	1428.1	MDU	D	HQ3	61.1	7.0	1.9	foliation	3733.2	0.5	1.1	0.6
K16-402	5	17.1	1425.9	MDU	D	HQ3	61.1	10.0	2.4	foliation	3733.2	0.6	1.1	0.7
K16-402	6	19.1	1423.9	MDU	D	HQ3	61.1	12.0	1.4	foliation	3733.2	0.4	1.1	0.4
K16-402	7	20.1	1422.9	MDU	D	HQ3	61.1	13.0	2.0	foliation	3733.2	0.5	1.1	0.6
K16-402	8	23.4	1419.6	MDU	D	HQ3	61.1	11.0	1.0	foliation	3733.2	0.3	1.1	0.3
K16-402	9	24.6	1418.4	MDU	D	HQ3	61.1	15.0	1.4	foliation	3733.2	0.4	1.1	0.4
K16-402	10	24.9	1418.1	MAFt	D	HQ3	61.1	14.0	1.9	foliation	3733.2	0.5	1.1	0.5
K16-402	11	26.2	1416.8	MAFt	D	HQ3	61.1	12.0	1.4	foliation	3733.2	0.4	1.1	0.4
K16-402	12	28.0	1415.0	MAFt	D	HQ3	61.1	12.0	6.0	normal	3733.2	1.6	1.1	1.8
K16-402	13	29.3	1413.7	MAFt	D	HQ3	61.1	14.0	4.3	normal	3733.2	1.2	1.1	1.3
K16-402	14	31.1	1411.9	MDU	D	HQ3	61.1	16.0	2.9	foliation	3733.2	0.8	1.1	0.8
K16-402	15	32.8	1410.2	MDU	D	HQ3	61.1	14.0	0.8	foliation	3733.2	0.2	1.1	0.2
K16-402	16	34.0	1409.0	MDU	D	HQ3	61.1	13.0	1.0	foliation	3733.2	0.3	1.1	0.3
K16-402	17	35.5	1407.5	WCK	D	HQ3	61.1	16.0	5.0	normal	3733.2	1.3	1.1	1.5
K16-402	18	37.5	1405.5	MDU	D	HQ3	61.1	13.0	6.7	normal	3733.2	1.8	1.1	2.0
K16-402	19	37.8	1405.2	MDU	D	HQ3	61.1	14.0	5.8	foliation	3733.2	1.6	1.1	1.7
K16-402	20	39.3	1403.7	MDU	D	HQ3	61.1	12.0	2.9	foliation	3733.2	0.8	1.1	0.8
K16-402	21	42.0	1401.0	MDU	D	HQ3	61.1	13.0	8.0	normal	3733.2	2.2	1.1	2.4
K16-402	22	42.8	1400.2	WCK	D	HQ3	61.1	15.0	13.2	normal	3733.2	3.5	1.1	3.9
K16-402	23	43.7	1399.3	MDU	D	HQ3	61.1	13.0	5.8	foliation	3733.2	1.6	1.1	1.7
K16-402	24	45.5	1397.5	MDU	D	HQ3	61.1	18.0	5.9	normal	3733.2	1.6	1.1	1.7
K16-402	25	47.9	1395.1	MDU	D	HQ3	61.1	19.0	3.7	foliation	3733.2	1.0	1.1	1.1
K16-402	26	48.2	1394.8	MDU	D	HQ3	61.1	8.0	8.9	foliation	3733.2	2.4	1.1	2.6
K16-402	27	50.9	1392.1	MAFt	D	HQ3	61.1	8.0	3.8	foliation	3733.2	1.0	1.1	1.1
K16-402	28	53.6	1389.4	MDU	D	HQ3	61.1	20.0	5.5	foliation	3733.2	1.5	1.1	1.6
K16-402	29	55.5	1387.5	MDU	D	HQ3	61.1	8.0	3.4	foliation	3733.2	0.9	1.1	1.0
K16-402	30	56.9	1386.1	MDU	D	HQ3	61.1	10.0	2.8	foliation	3733.2	0.8	1.1	0.8
K16-402	31	58.3	1384.7	MDU	D	HQ3	61.1	10.0	4.8	foliation	3733.2	1.3	1.1	1.4
K16-402	32	63.1	1379.9	MDU	D	HQ3	61.1	8.0	4.8	foliation	3733.2	1.3	1.1	1.4
K16-402	33	64.8	1378.2	MAFt	D	HQ3	61.1	24.0	1.2	foliation	3733.2	0.3	1.1	0.3
K16-402	34	64.9	1378.1	MAFt	D	HQ3	61.1	14.0	3.1	normal	3733.2	0.8	1.1	0.9
K16-402	35	70.3	1372.7	MAFt	D	HQ3	61.1	11.0	1.7	foliation	3733.2	0.5	1.1	0.5
MW16-14D	1	12.1	1329.9	MAFt	D	HQ3	61.1	8.0	2.7	foliation	3733.2	0.7	1.1	0.8
MW16-14D	2	17.5	1324.5	MDU	D	HQ3	61.1	14.0	3.2	foliation	3733.2	0.9	1.1	0.9
MW16-14D	3	19.4	1322.6	MDU	D	HQ3	61.1	6.5	1.6	foliation	3733.2	0.4	1.1	0.5
MW16-14D	4	20.9	1321.1	MDU	D	HQ3	61.1	12.0	2.9	foliation	3733.2	0.8	1.1	0.8
MW16-14D	5	22.5	1319.5	MAFt	D	HQ3	61.1	7.0	2.8	foliation	3733.2	0.8	1.1	0.8
MW16-14D	6	25.1	1316.9	MAFt	D	HQ3	61.1	14.0	2.2	invalid	3733.2	0.6	1.1	0.6
MW16-14D	7	25.2	1316.8	MAFt	D	HQ3	61.1	9.0	5.1	foliation	3733.2	1.4	1.1	1.5

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TABLE C

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
SUMMARY OF POINT LOAD INDEX TESTING

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Drillhole ID	PLT #	Downhole Depth (m)	Elevation (masl)	Primary Lithology	Test Type	Core Size	Width (mm)	Length (mm)	Load (MPa)	Failure Type	DE^2	IS (MPa)	F	$IS_{(50)}$ (MPa)
MW16-14D	8	26.6	1315.4	MAFt	D	HQ3	61.1	9.0	7.2	foliation	3733.2	1.9	1.1	2.1
MW16-14D	9	28.0	1314.0	MAFt	D	HQ3	61.1	25.0	1.2	invalid	3733.2	0.3	1.1	0.3
MW16-14D	10	28.7	1313.3	MDU	D	HQ3	61.1	8.0	2.0	normal	3733.2	0.5	1.1	0.6
MW16-14D	11	35.3	1306.7	MDU	D	HQ3	61.1	12.0	6.8	normal	3733.2	1.8	1.1	2.0
MW16-14D	12	35.8	1306.2	MAFt	D	HQ3	61.1	12.0	3.6	foliation	3733.2	1.0	1.1	1.0
MW16-14D	13	37.6	1304.4	MDU	D	HQ3	61.1	14.0	3.9	foliation	3733.2	1.0	1.1	1.1
MW16-14D	14	40.1	1301.9	MAFt	D	HQ3	61.1	12.0	4.8	foliation	3733.2	1.3	1.1	1.4
K16-410	1	9.0	1464.0	MDU	D	HQ3	61.1	16.0	3.7	foliation	3733.2	1.0	1.1	1.1
K16-410	2	10.7	1462.3	MDU	D	HQ3	61.1	8.0	2.0	foliation	3733.2	0.5	1.1	0.6
K16-410	3	19.4	1453.6	MAFt	D	HQ3	61.1	14.0	1.5	foliation	3733.2	0.4	1.1	0.4
K16-410	4	19.8	1453.2	MAFt	D	HQ3	61.1	14.0	2.4	foliation	3733.2	0.6	1.1	0.7
K16-410	5	20.5	1452.5	MAFt	D	HQ3	61.1	10.0	4.5	foliation	3733.2	1.2	1.1	1.3
K16-410	6	20.6	1452.4	MAFt	D	HQ3	61.1	12.0	8.0	normal	3733.2	2.1	1.1	2.3
K16-410	7	21.7	1451.3	MAFt	D	HQ3	61.1	18.0	7.3	foliation	3733.2	2.0	1.1	2.1
K16-410	8	22.9	1450.1	MAFt	D	HQ3	61.1	17.0	7.3	normal	3733.2	2.0	1.1	2.1
K16-410	9	24.0	1449.0	MAFt	D	HQ3	61.1	30.0	2.5	foliation	3733.2	0.7	1.1	0.7
K16-410	10	25.0	1448.0	MAFt	D	HQ3	61.1	15.0	1.5	foliation	3733.2	0.4	1.1	0.4
K16-410	11	26.1	1446.9	MAFt	D	HQ3	61.1	16.0	0.8	invalid	3733.2	0.2	1.1	0.2
K16-410	12	28.3	1444.7	MAFt	D	HQ3	61.1	8.0	0.6	foliation	3733.2	0.2	1.1	0.2
K16-411	1	20.2	1425.8	MDU	D	HQ3	61.1	12.0	0.4	foliation	3733.2	0.1	1.1	0.1
K16-411	2	23.4	1422.6	MAFt	D	HQ3	61.1	14.0	6.2	normal	3733.2	1.7	1.1	1.8
K16-411	3	23.6	1422.4	MAFt	D	HQ3	61.1	11.0	4.9	normal	3733.2	1.3	1.1	1.4
K16-411	4	31.3	1414.7	MDU	D	HQ3	61.1	13.0	4.9	normal	3733.2	1.3	1.1	1.4
K16-411	5	32.8	1413.2	MDU	D	HQ3	61.1	12.0	2.4	normal	3733.2	0.6	1.1	0.7
K16-411	6	33.9	1412.1	MDU	D	HQ3	61.1	8.0	0.4	foliation	3733.2	0.1	1.1	0.1
K16-411	7	34.6	1411.4	MDU	D	HQ3	61.1	13.0	8.3	foliation	3733.2	2.2	1.1	2.4
K16-411	8	37.1	1408.9	MDU	D	HQ3	61.1	11.0	17.3	foliation	3733.2	4.6	1.1	5.1
K16-411	9	37.5	1408.5	MDU	D	HQ3	61.1	26.0	5.3	foliation	3733.2	1.4	1.1	1.5
K16-412	1	22.8	1441.2	MDU	D	HQ3	61.1	24.0	1.7	foliation	3733.2	0.5	1.1	0.5
K16-412	2	24.4	1439.6	MDU	D	HQ3	61.1	16.0	1.8	foliation	3733.2	0.5	1.1	0.5
K16-412	3	26.4	1437.6	MDU	D	HQ3	61.1	11.0	0.9	foliation	3733.2	0.2	1.1	0.3
K16-412	4	32.3	1431.7	MDU	D	HQ3	61.1	10.0	4.0	foliation	3733.2	1.1	1.1	1.2
K16-412	5	33.3	1430.7	MDU	D	HQ3	61.1	18.0	2.2	foliation	3733.2	0.6	1.1	0.7
K16-412	6	33.4	1430.6	MAFt	D	HQ3	61.1	12.0	1.4	normal	3733.2	0.4	1.1	0.4
K16-412	7	34.0	1430.0	MDU	D	HQ3	61.1	15.0	4.5	foliation	3733.2	1.2	1.1	1.3

M:\1\01\00640\03\A\Data\3 - Reporting\Rock Strength\[2016 SI PLT Summary.xlsx]Appendix - PLT

NOTES:

1. RESULTS PRESENTED AS Is(50) BECAUSE INSUFFICIENT UCS TESTING DATA EXISTS TO DETERMINE PLT SCALE FACTOR 'k' FOR THE PROJECT SITE.
2. ONLY VALID PLT RESULTS ARE SHOWN. PLT TESTS WITH BLANK UCS VALUES ARE INVALID.
3. TEST TYPE 'D' REFERS TO DIAMETRAL LOADING.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT VA101-640/03-1	JAG	LJG

APPENDIX D

LABORATORY TEST RESULTS

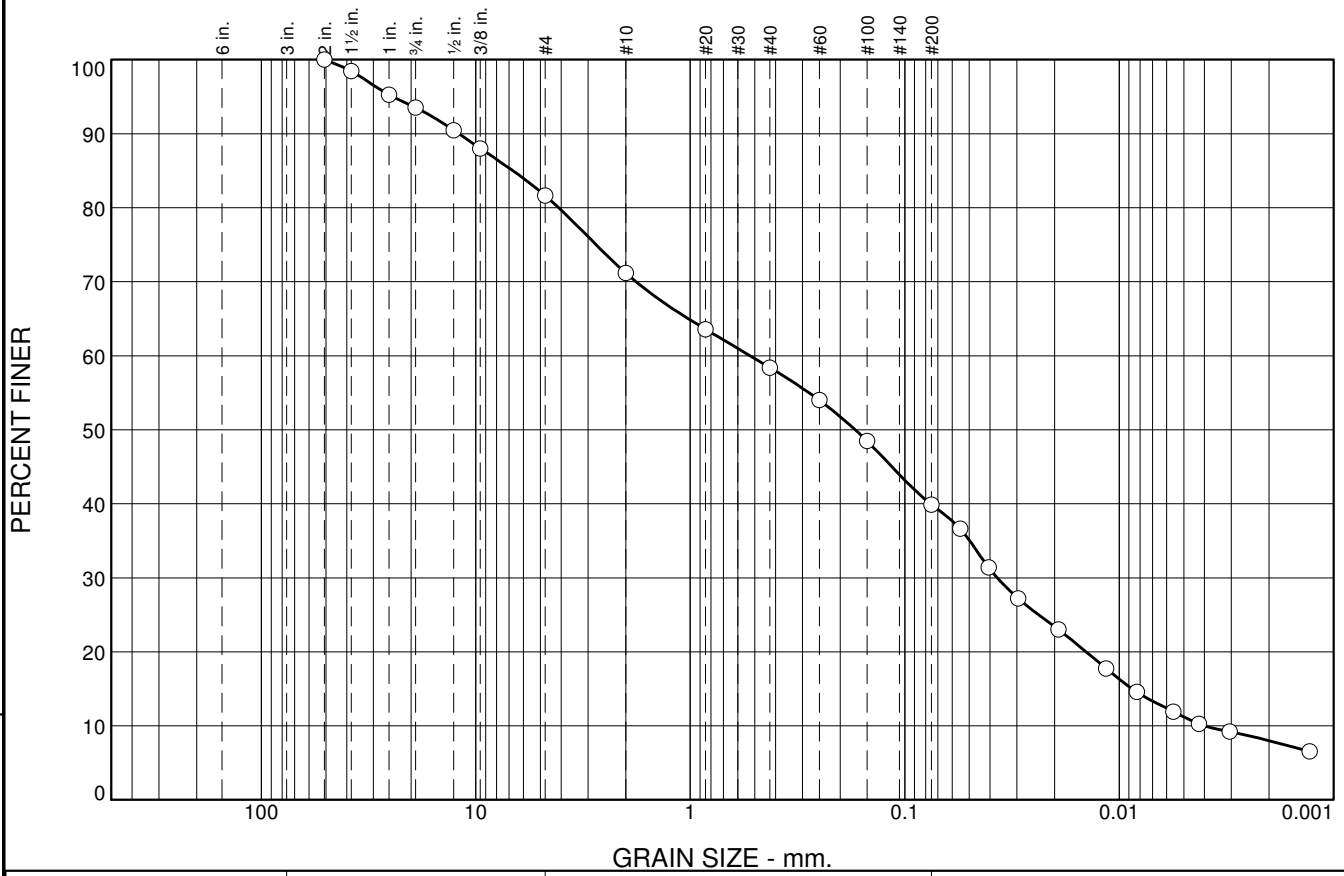
Appendix D1 Soil Testing Results
Appendix D2 Rock Testing Results

APPENDIX D1

SOIL TESTING RESULTS

(Pages D1-1 to D1-88)

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.5	11.8	10.5	12.8	18.5	31.9	8.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.5		
1	95.3		
.75	93.5		
.5	90.5		
.375	88.0		
#4	81.7		
#10	71.2		
#20	63.6		
#40	58.4		
#60	54.0		
#100	48.5		
#200	39.9		
0.0551 mm.	36.6		
0.0406 mm.	31.4		
0.0296 mm.	27.2		
0.0192 mm.	23.0		
0.0115 mm.	17.7		
0.0083 mm.	14.6		
0.0056 mm.	11.9		
0.0043 mm.	10.3		
0.0031 mm.	9.2		
0.0013 mm.	6.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.0114 D_{85}= 6.7046 D_{60}= 0.5254
D_{50}= 0.1702 D_{30}= 0.0371 D_{15}= 0.0087
D_{10}= 0.0040 C_u= 131.37 C_c= 0.65

Classification

USCS= AASHTO=

Remarks

Sample No.: TP-15 (2 of2) **Source of Sample:** **Date:** 6/17/16
Location: TP16-05 **Elev./Depth:** 1.5-1.6m

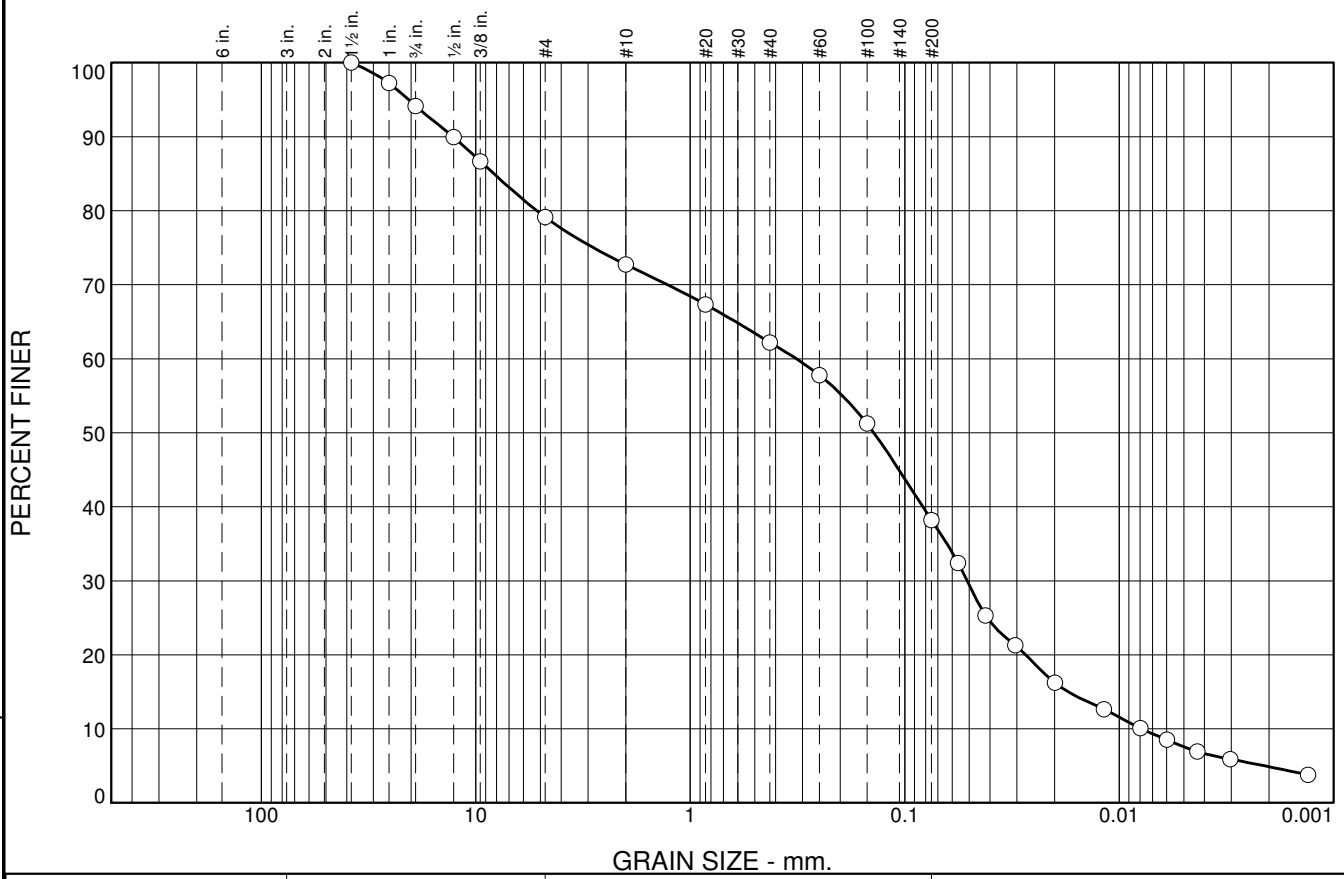
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.9	14.9	6.5	10.5	24.0	33.3	4.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	97.2		
.75	94.1		
.5	89.9		
.375	86.7		
#4	79.2		
#10	72.7		
#20	67.4		
#40	62.2		
#60	57.8		
#100	51.2		
#200	38.2		
0.0564 mm.	32.4		
0.0420 mm.	25.3		
0.0305 mm.	21.3		
0.0200 mm.	16.2		
0.0118 mm.	12.7		
0.0080 mm.	10.1		
0.0060 mm.	8.5		
0.0043 mm.	6.9		
0.0030 mm.	5.9		
0.0013 mm.	3.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.7653 D_{85}= 8.2353 D_{60}= 0.3201
D_{50}= 0.1393 D_{30}= 0.0512 D_{15}= 0.0173
D_{10}= 0.0078 C_u= 40.81 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-22 (1 of 2) **Source of Sample:** **Date:** 6/15/16
Location: TP16-22 **Elev./Depth:** 1.5-1.6m

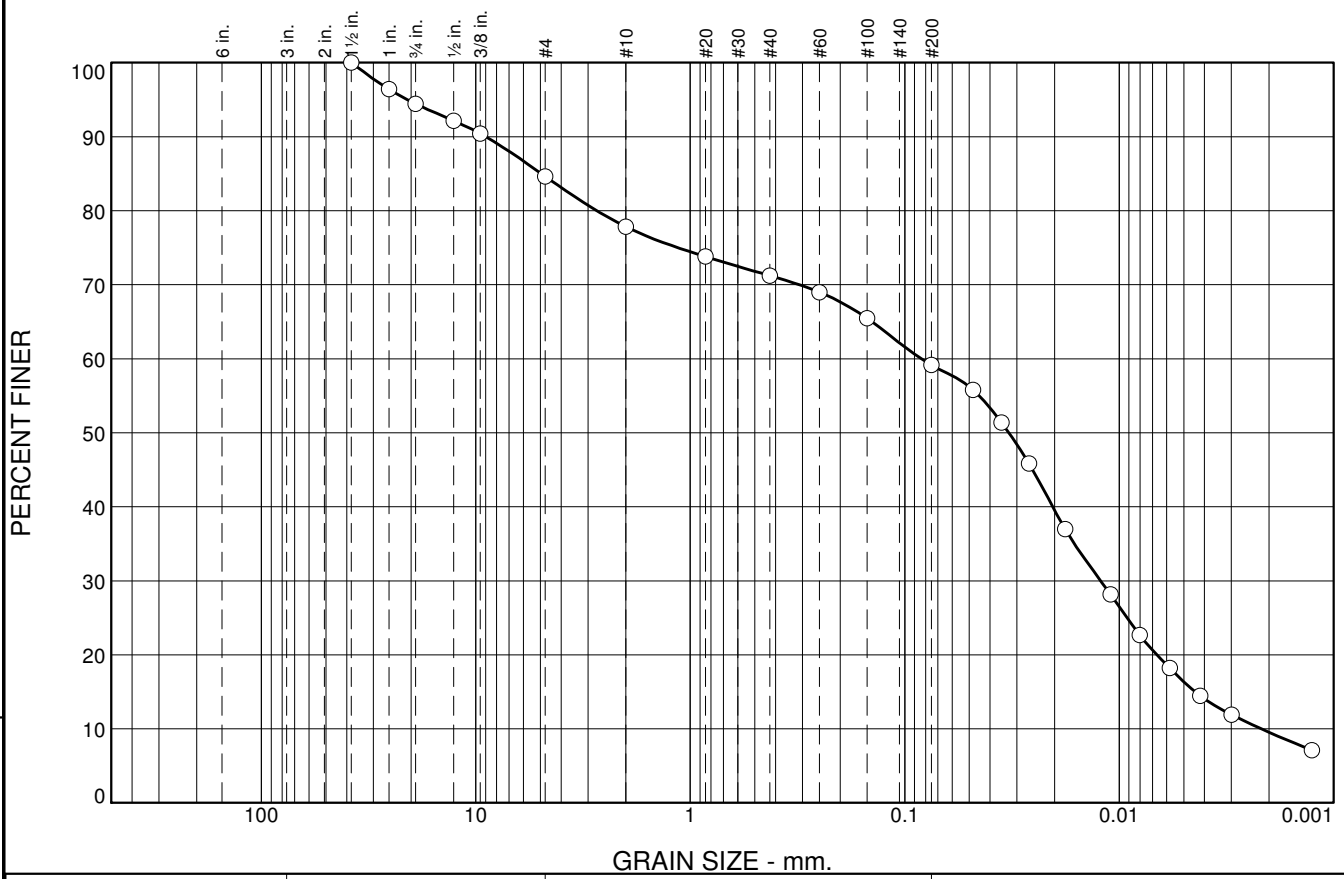
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.6	9.8	6.7	6.7	12.0	49.7	9.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	96.4		
.75	94.4		
.5	92.2		
.375	90.4		
#4	84.6		
#10	77.9		
#20	73.8		
#40	71.2		
#60	69.0		
#100	65.5		
#200	59.2		
0.0480 mm.	55.8		
0.0354 mm.	51.4		
0.0263 mm.	45.8		
0.0178 mm.	37.0		
0.0110 mm.	28.1		
0.0080 mm.	22.7		
0.0058 mm.	18.2		
0.0042 mm.	14.5		
0.0030 mm.	11.9		
0.0013 mm.	7.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 8.9840 D_{85}= 4.9438 D_{60}= 0.0836
D_{50}= 0.0327 D_{30}= 0.0122 D_{15}= 0.0044
D_{10}= 0.0022 C_u= 38.48 C_c= 0.82

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-36 (2 of 2) **Source of Sample:** **Date:** 6/21/16
Location: TP16-36 **Elev./Depth:** 5.0-5.1m

Knight Piésold CONSULTING

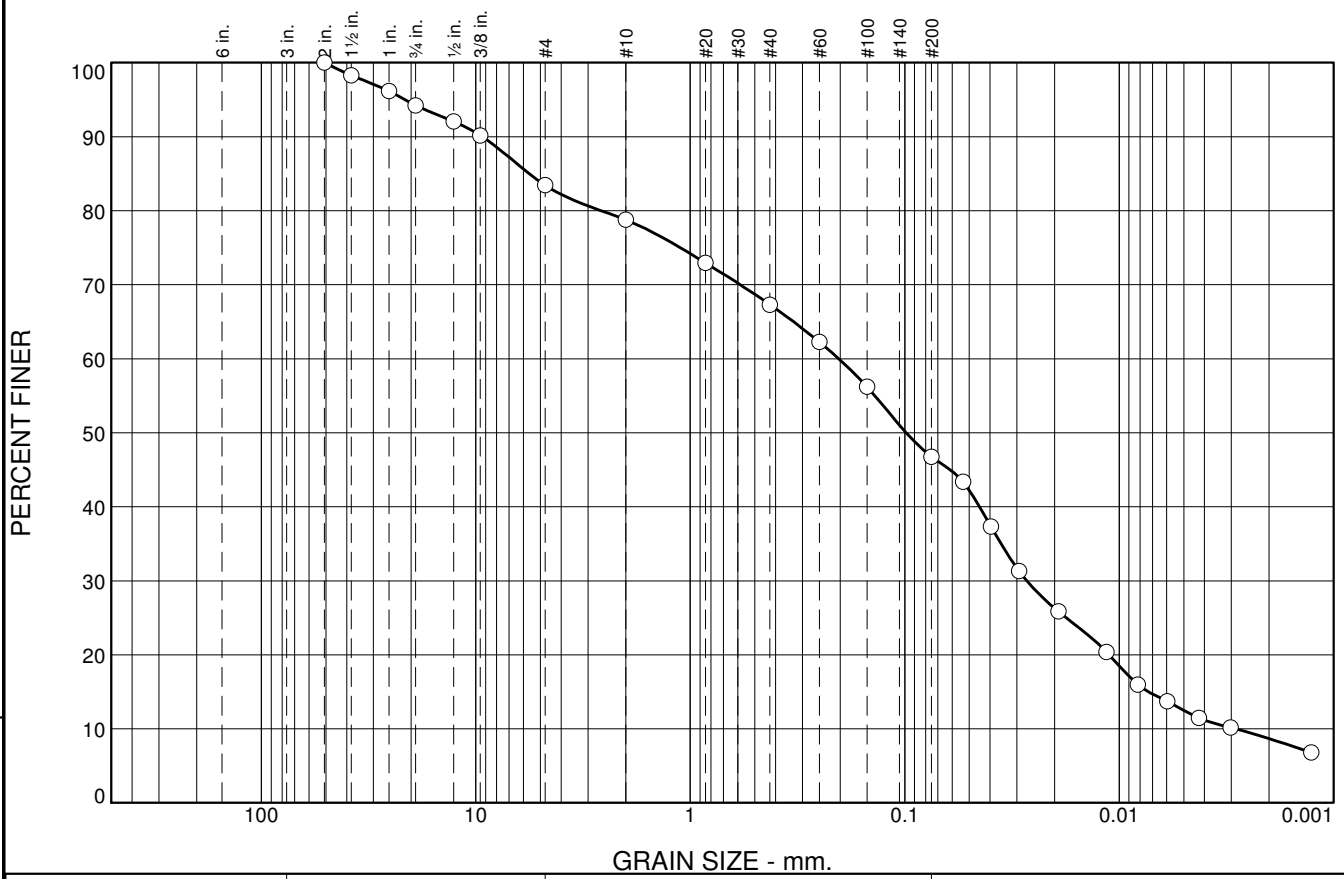
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.8	10.7	4.7	11.5	20.6	38.0	8.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.3		
1	96.2		
.75	94.2		
.5	92.1		
.375	90.2		
#4	83.5		
#10	78.8		
#20	73.0		
#40	67.3		
#60	62.3		
#100	56.2		
#200	46.7		
0.0535 mm.	43.4		
0.0397 mm.	37.3		
0.0293 mm.	31.3		
0.0192 mm.	25.9		
0.0115 mm.	20.4		
0.0082 mm.	16.0		
0.0060 mm.	13.7		
0.0043 mm.	11.5		
0.0030 mm.	10.2		
0.0013 mm.	6.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 9.3179 D_{85}= 5.6242 D_{60}= 0.2028
D_{50}= 0.0984 D_{30}= 0.0270 D_{15}= 0.0073
D_{10}= 0.0029 C_u= 70.69 C_c= 1.25

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-48 (2 of 2) **Source of Sample:** **Date:** 6/25/16
Location: TP16-48 **Elev./Depth:** 3.0-3.1m

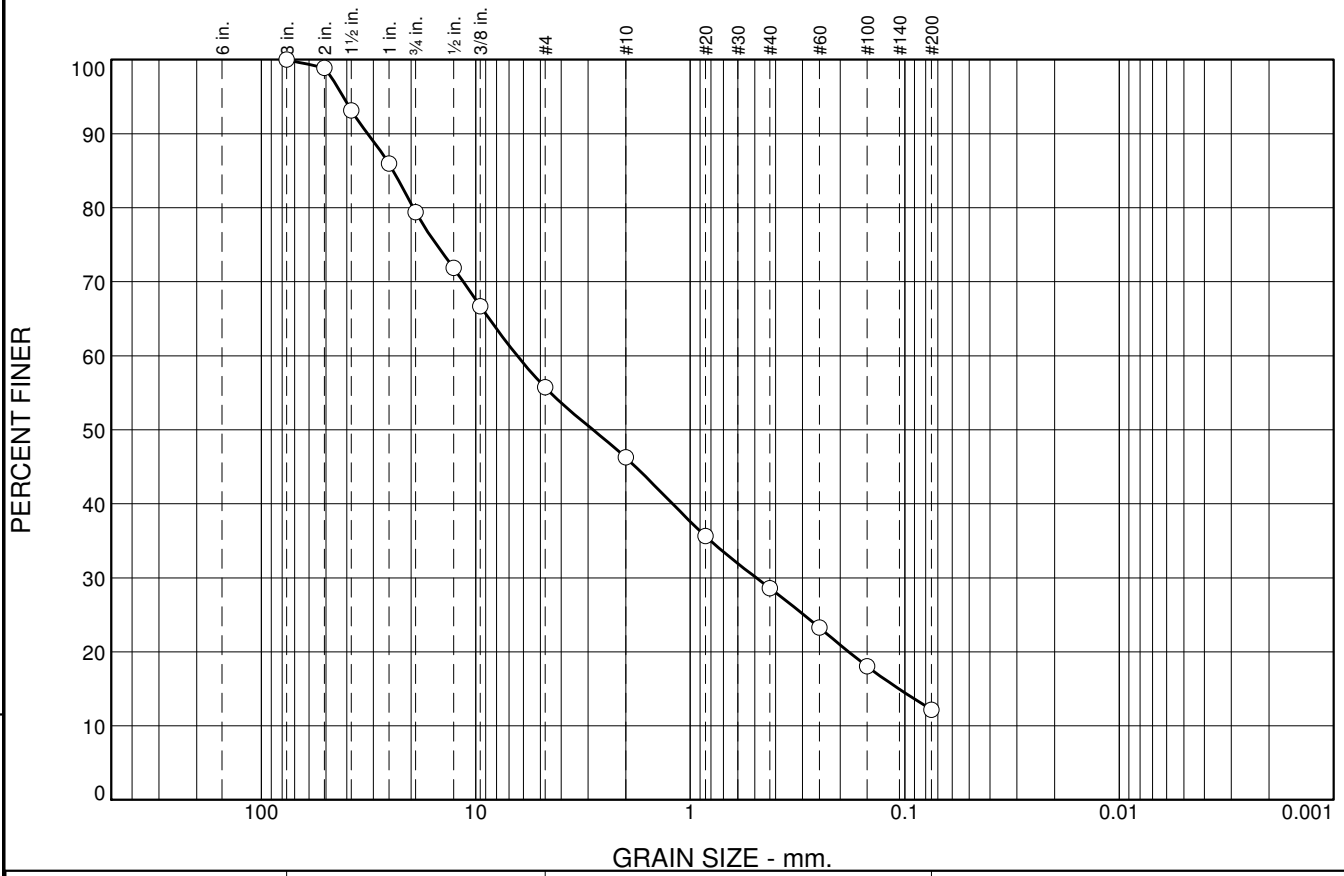
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	20.6	23.7	9.4	17.7	16.4	12.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	98.9		
1.5	93.1		
1	86.0		
.75	79.4		
.5	71.9		
.375	66.7		
#4	55.7		
#10	46.3		
#20	35.6		
#40	28.6		
#60	23.3		
#100	18.0		
#200	12.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 31.9440 D_{85}= 24.2693 D_{60}= 6.4035
D_{50}= 2.8425 D_{30}= 0.4915 D_{15}= 0.1066
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-01 **Source of Sample:** **Date:** 6/15/16
Location: TP16-01 **Elev./Depth:** 1.5-1.6m

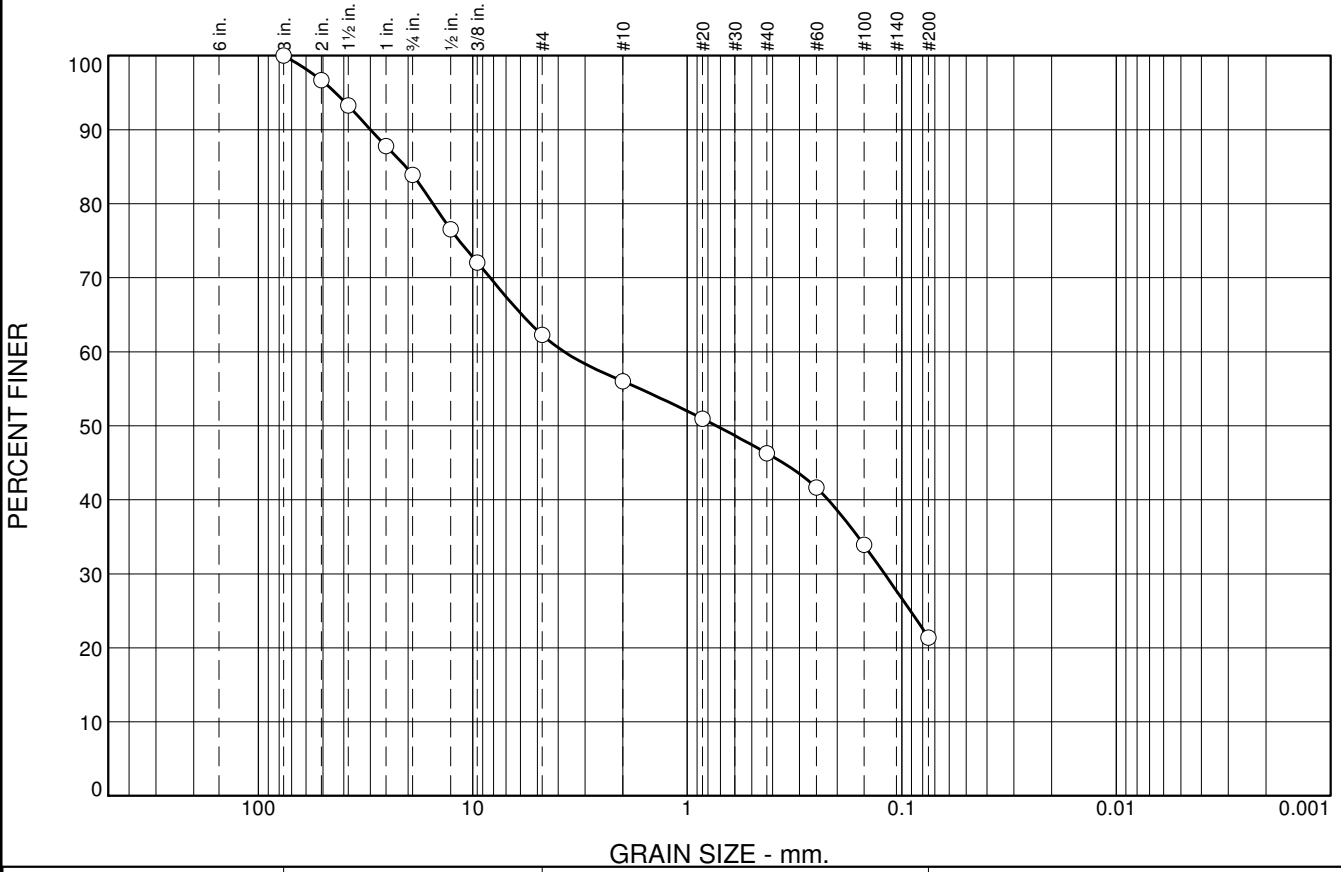
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	16.1	21.6	6.3	9.7	24.9	21.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	96.7		
1.5	93.3		
1	87.8		
.75	83.9		
.5	76.5		
.375	72.1		
#4	62.3		
#10	56.0		
#20	51.0		
#40	46.3		
#60	41.6		
#100	33.9		
#200	21.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 29.9547 D_{85}= 20.5153 D_{60}= 3.7451
D_{50}= 0.7324 D_{30}= 0.1201 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-02 **Source of Sample:** **Date:** 6/15/16
Location: TP16-02 **Elev./Depth:** 4.2-4.3m

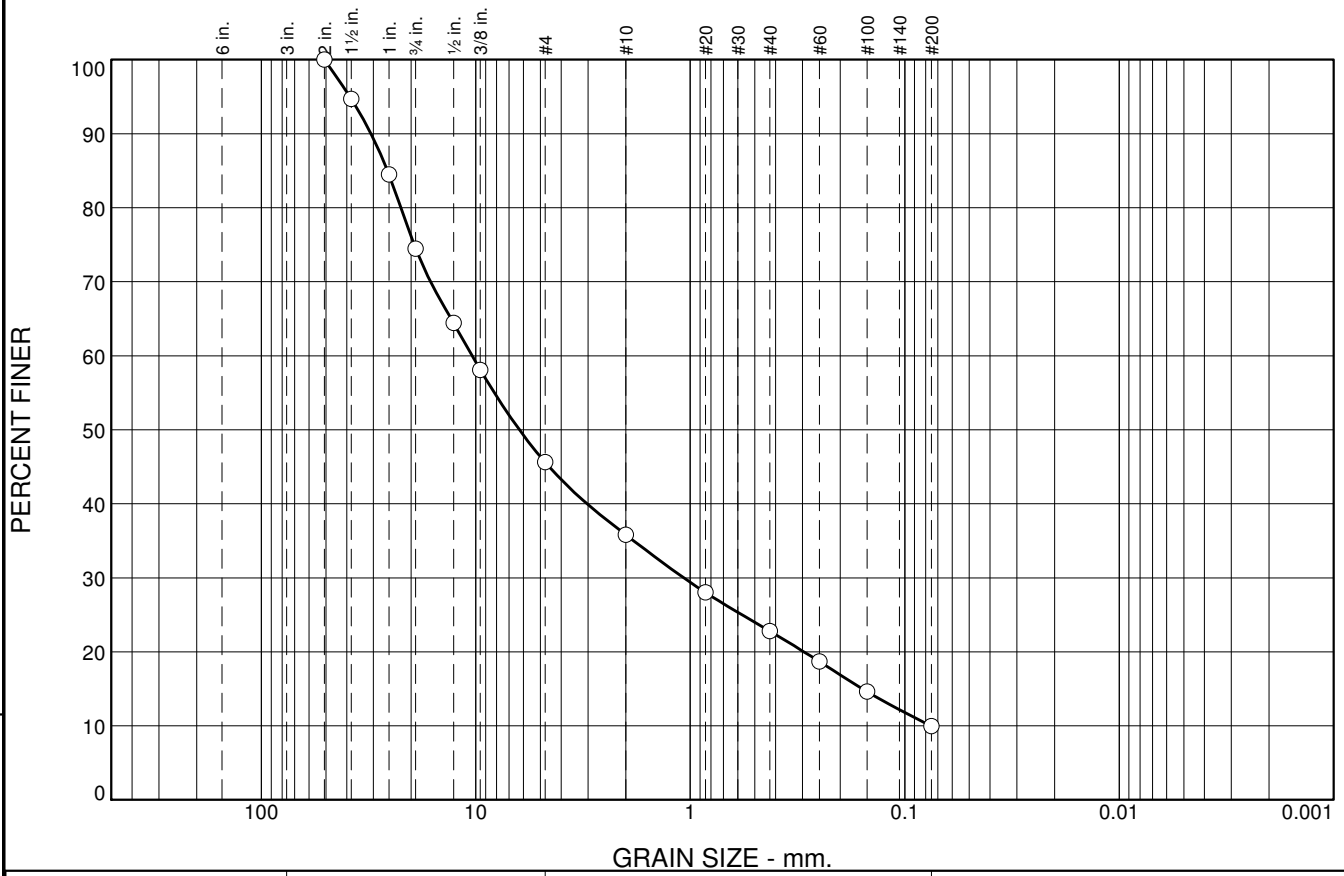
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	25.5	28.9	9.8	13.0	12.8	10.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	94.7		
1	84.5		
.75	74.5		
.5	64.4		
.375	58.1		
#4	45.6		
#10	35.8		
#20	28.0		
#40	22.8		
#60	18.7		
#100	14.6		
#200	10.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 30.8032 D_{85}= 25.8101 D_{60}= 10.3962
D_{50}= 6.2607 D_{30}= 1.0719 D_{15}= 0.1575
D_{10}= 0.0755 C_u= 137.75 C_c= 1.46

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-04 **Source of Sample:** **Date:** 6/15/16
Location: TP16-04 **Elev./Depth:** 0.5-0.7m

Knight Piésold CONSULTING

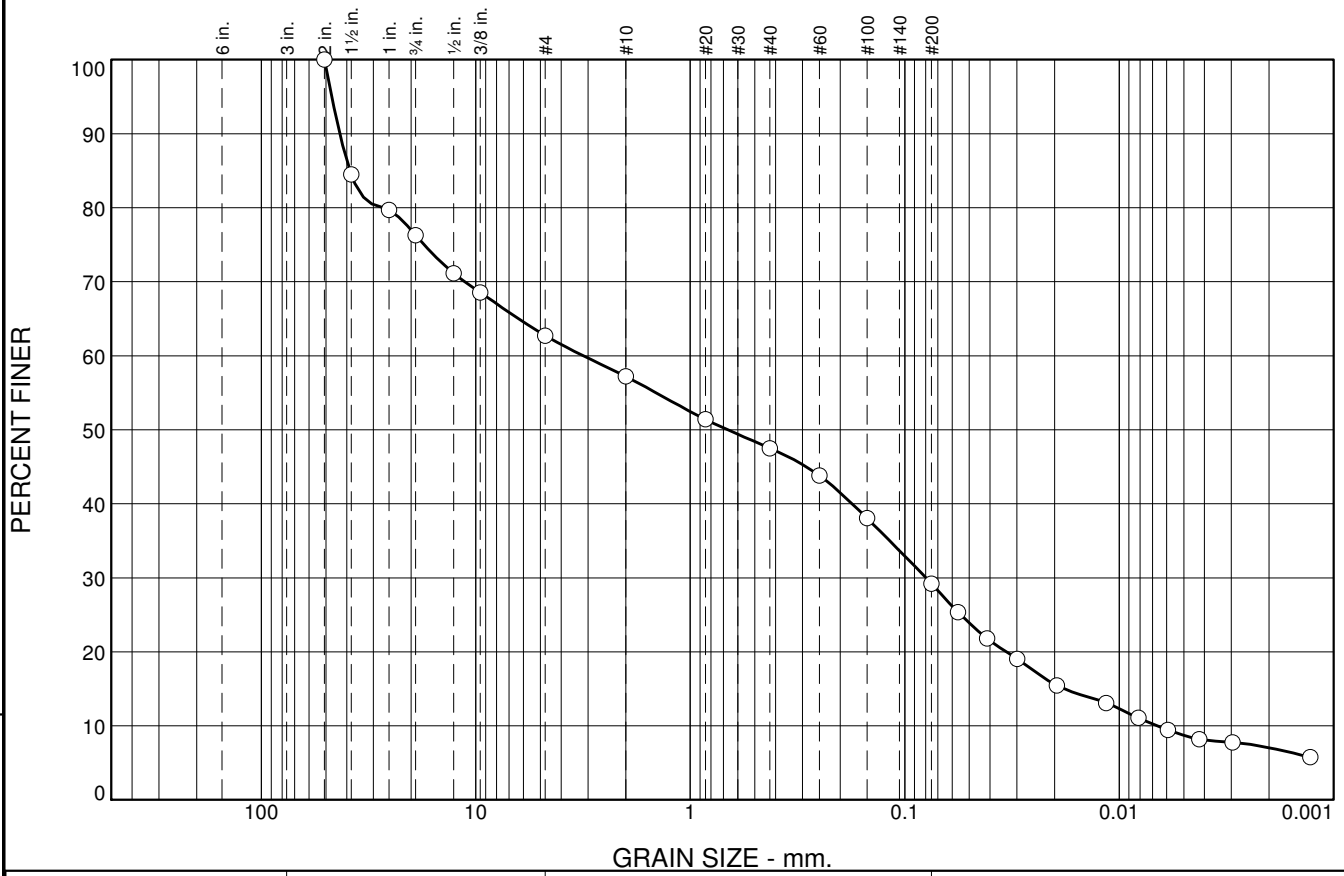
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	23.7	13.6	5.5	9.7	18.3	22.2	7.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	84.5		
1	79.7		
.75	76.3		
.5	71.2		
.375	68.5		
#4	62.7		
#10	57.2		
#20	51.4		
#40	47.5		
#60	43.8		
#100	38.1		
#200	29.2		
0.0564 mm.	25.4		
0.0413 mm.	21.8		
0.0299 mm.	19.0		
0.0195 mm.	15.5		
0.0115 mm.	13.1		
0.0081 mm.	11.1		
0.0059 mm.	9.5		
0.0042 mm.	8.2		
0.0030 mm.	7.8		
0.0013 mm.	5.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 43.0280 D_{85}= 38.6245 D_{60}= 3.1505
D_{50}= 0.6695 D_{30}= 0.0797 D_{15}= 0.0180
D_{10}= 0.0066 C_u= 474.52 C_c= 0.30

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-05 **Source of Sample:** **Date:** 6/15/16
Location: TP16-05 **Elev./Depth:** 3.0-3.3m

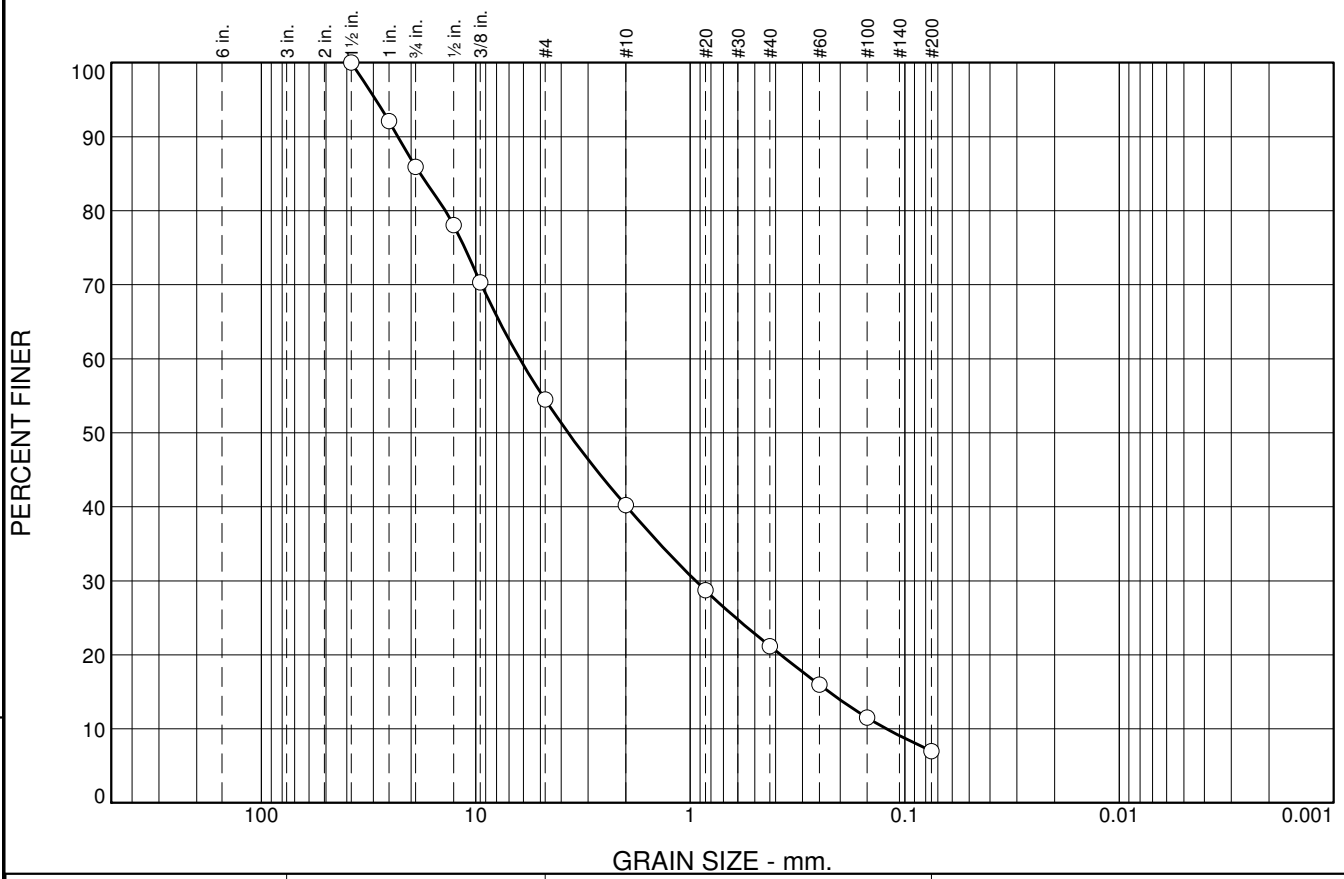
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.1	31.4	14.3	19.0	14.2	7.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	92.1		
.75	85.9		
.5	78.1		
.375	70.3		
#4	54.5		
#10	40.2		
#20	28.7		
#40	21.2		
#60	16.0		
#100	11.5		
#200	7.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 23.0573 D_{85}= 18.1626 D_{60}= 6.2287
D_{50}= 3.7088 D_{30}= 0.9443 D_{15}= 0.2249
D_{10}= 0.1214 C_u= 51.31 C_c= 1.18

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-06 **Source of Sample:** **Date:** 6/15/16
Location: TP16-06 **Elev./Depth:** 0.5-1.6m

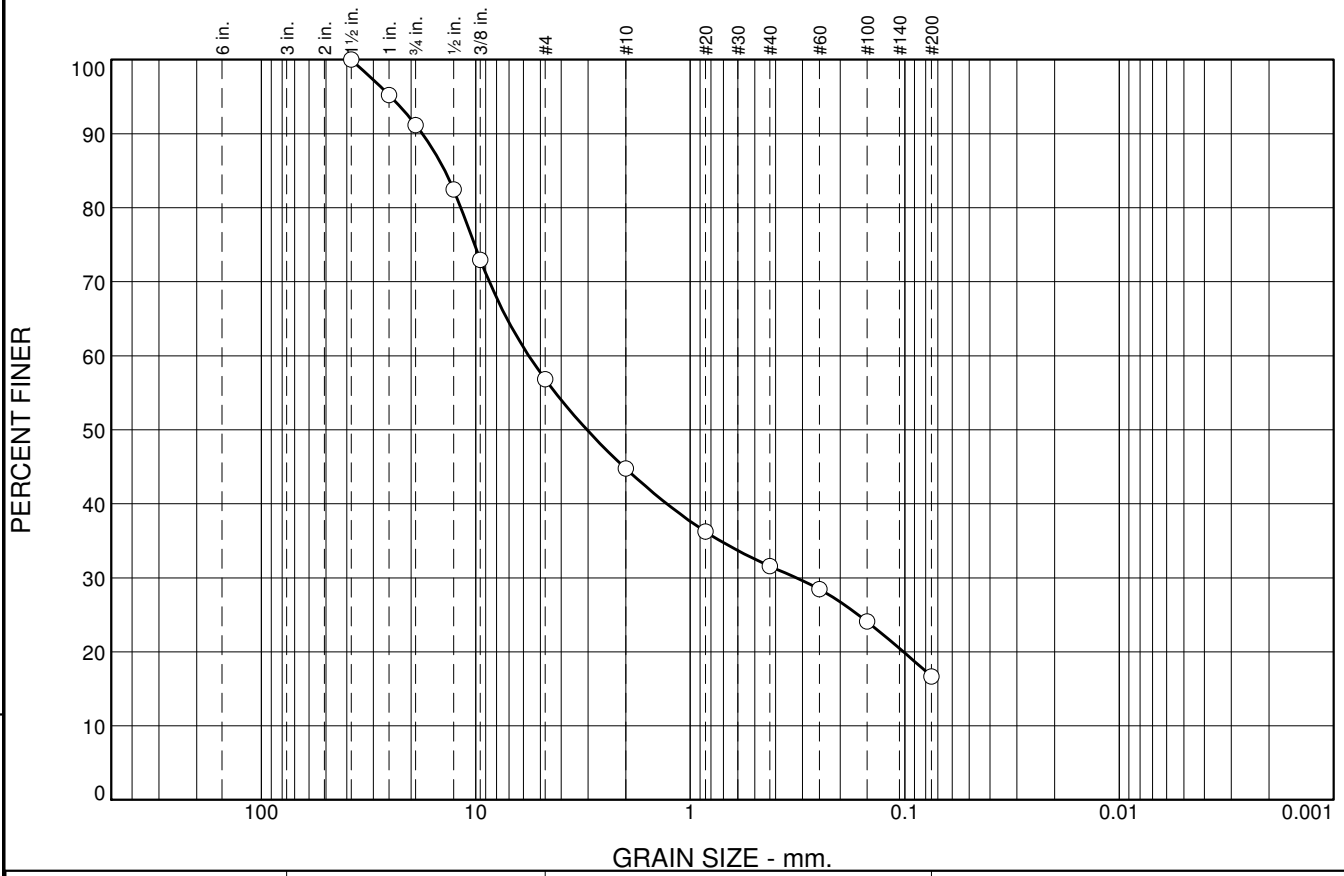
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.8	34.4	12.0	13.2	14.9	16.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	95.2		
.75	91.2		
.5	82.5		
.375	73.0		
#4	56.8		
#10	44.8		
#20	36.2		
#40	31.6		
#60	28.5		
#100	24.1		
#200	16.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 17.7522 D_{85}= 13.9398 D_{60}= 5.6576
D_{50}= 3.0309 D_{30}= 0.3198 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-07 **Source of Sample:** **Date:** 6/15/16
Location: TP16-07 **Elev./Depth:** 2.3-2.4m

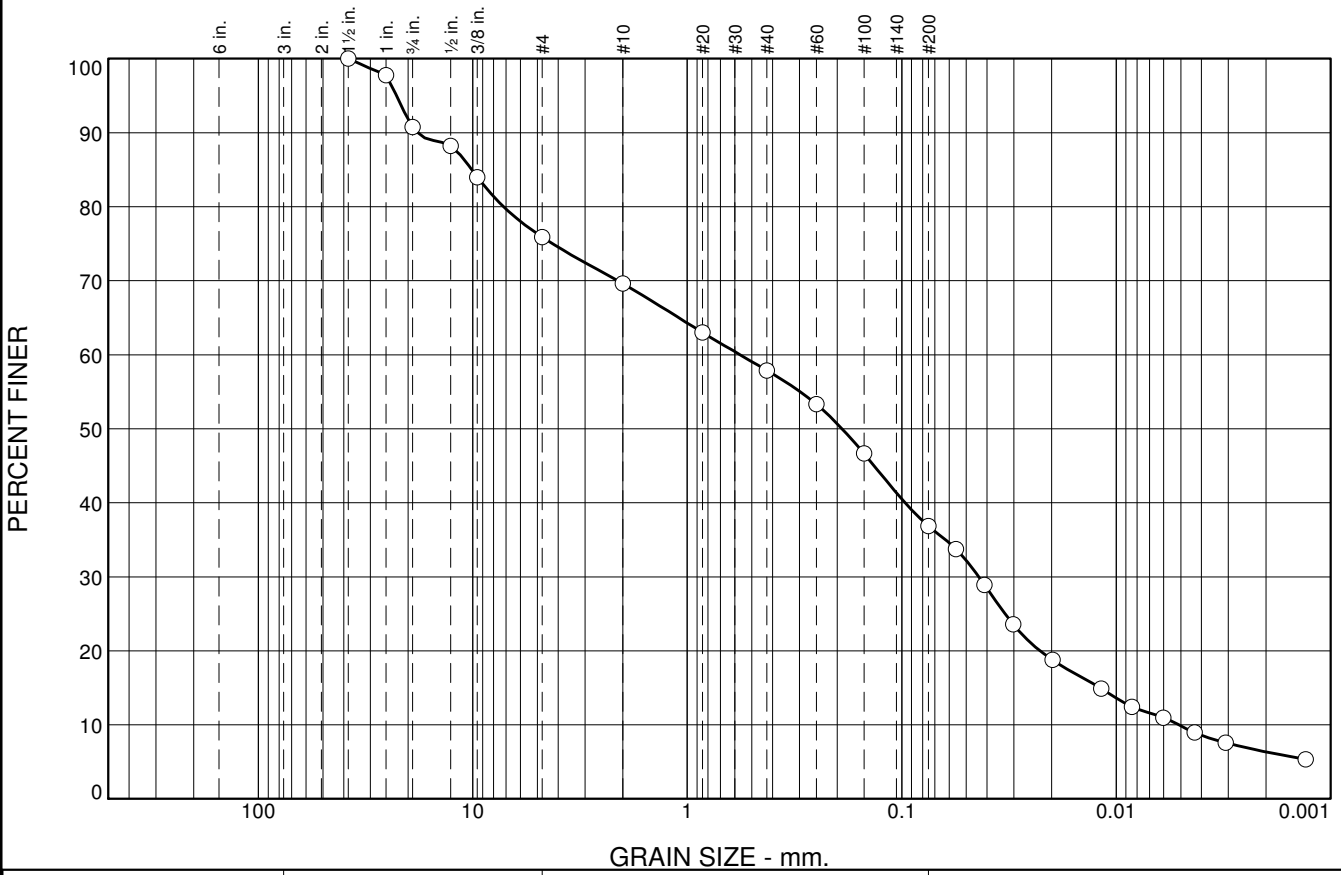
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.2	14.9	6.3	11.7	21.1	30.5	6.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	97.8		
.75	90.8		
.5	88.2		
.375	84.0		
#4	75.9		
#10	69.6		
#20	63.0		
#40	57.9		
#60	53.3		
#100	46.7		
#200	36.8		
0.0558 mm.	33.7		
0.0411 mm.	28.9		
0.0303 mm.	23.6		
0.0198 mm.	18.8		
0.0117 mm.	14.9		
0.0084 mm.	12.4		
0.0060 mm.	11.0		
0.0043 mm.	9.0		
0.0031 mm.	7.6		
0.0013 mm.	5.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 18.1053 D_{85}= 10.1065 D_{60}= 0.5673
D_{50}= 0.1898 D_{30}= 0.0437 D_{15}= 0.0119
D_{10}= 0.0051 C_u= 111.17 C_c= 0.66

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-08 **Source of Sample:** **Date:** 6/15/16
Location: TP16-08 **Elev./Depth:** 0.5-1.0m

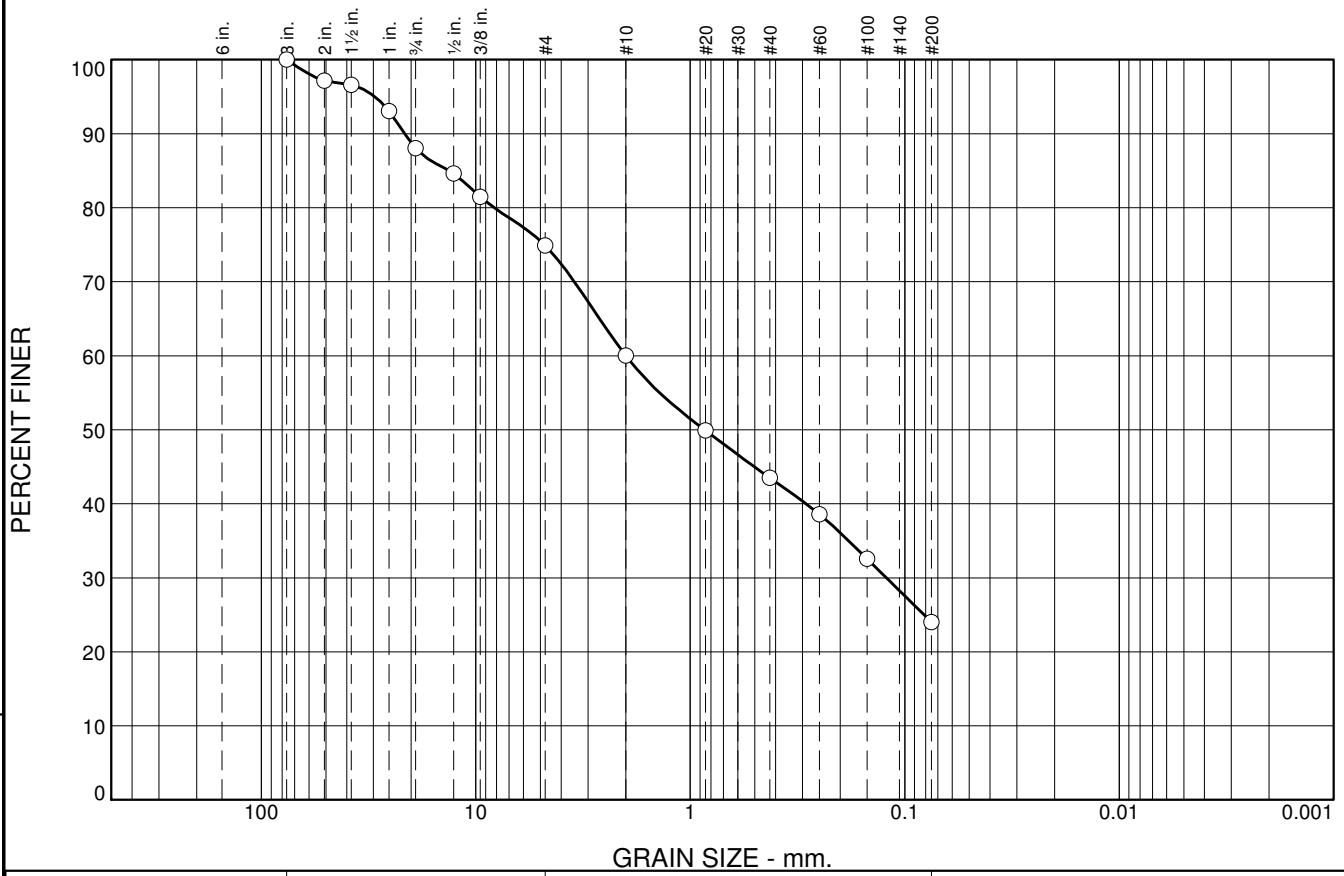
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	12.0	13.1	14.9	16.5	19.5	24.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	97.2		
1.5	96.6		
1	93.1		
.75	88.0		
.5	84.6		
.375	81.5		
#4	74.9		
#10	60.0		
#20	49.9		
#40	43.5		
#60	38.6		
#100	32.6		
#200	24.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 21.4326 D_{85}= 13.2824 D_{60}= 1.9951
D_{50}= 0.8574 D_{30}= 0.1217 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-09 **Source of Sample:** **Date:** 6/15/16
Location: TP16-09 **Elev./Depth:** 3.8-3.9m

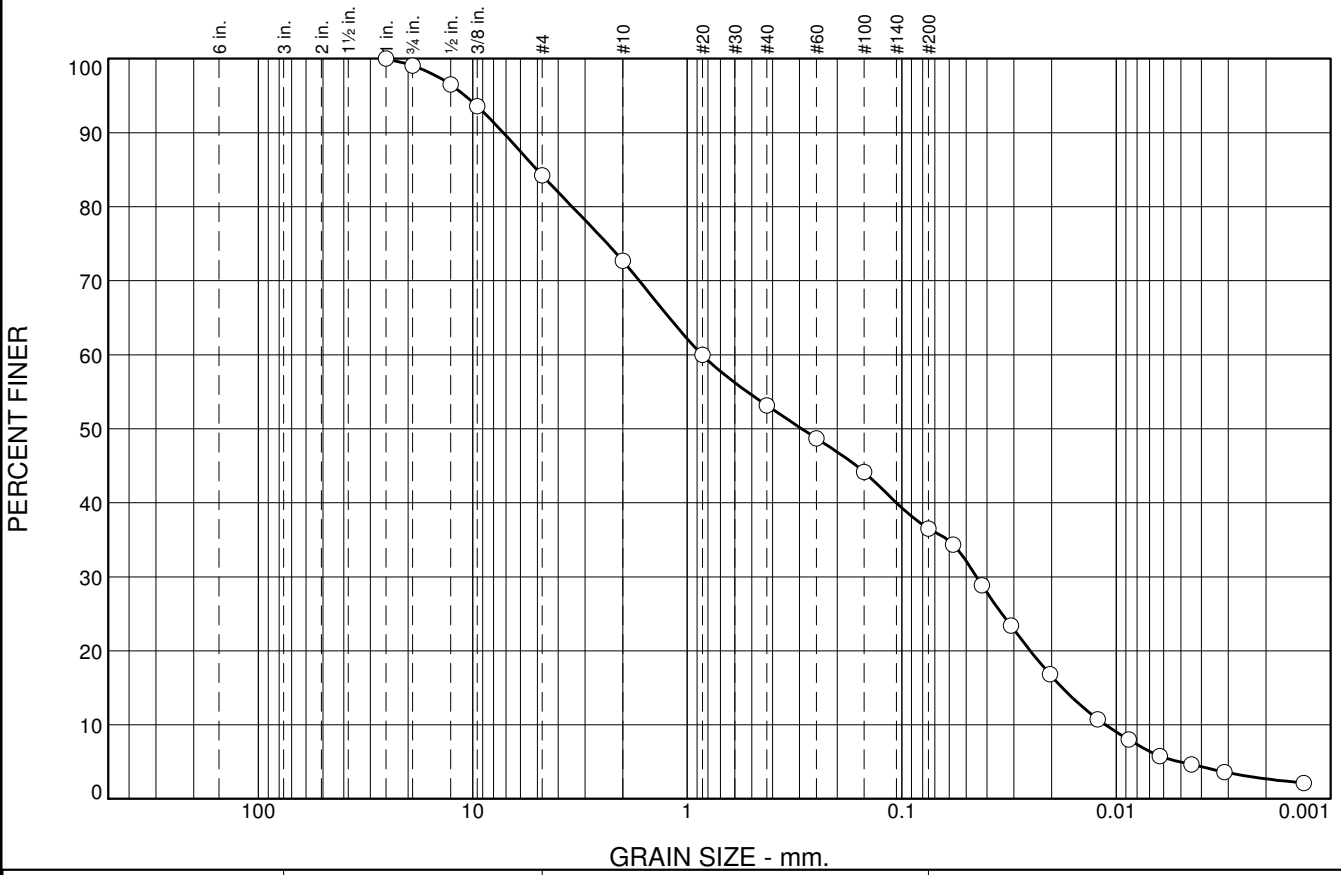
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.9	14.9	11.5	19.5	16.7	33.8	2.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.1		
.5	96.5		
.375	93.6		
#4	84.2		
#10	72.7		
#20	60.0		
#40	53.2		
#60	48.7		
#100	44.2		
#200	36.5		
0.0576 mm.	34.4		
0.0423 mm.	28.9		
0.0310 mm.	23.4		
0.0204 mm.	16.8		
0.0122 mm.	10.8		
0.0087 mm.	8.0		
0.0063 mm.	5.8		
0.0045 mm.	4.6		
0.0031 mm.	3.6		
0.0013 mm.	2.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 7.2021 D_{85}= 5.0203 D_{60}= 0.8512
D_{50}= 0.2923 D_{30}= 0.0448 D_{15}= 0.0178
D_{10}= 0.0112 C_u= 76.01 C_c= 0.21

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-11 **Source of Sample:** **Date:** 6/15/16
Location: TP16-11 **Elev./Depth:** 0.4-0.8m

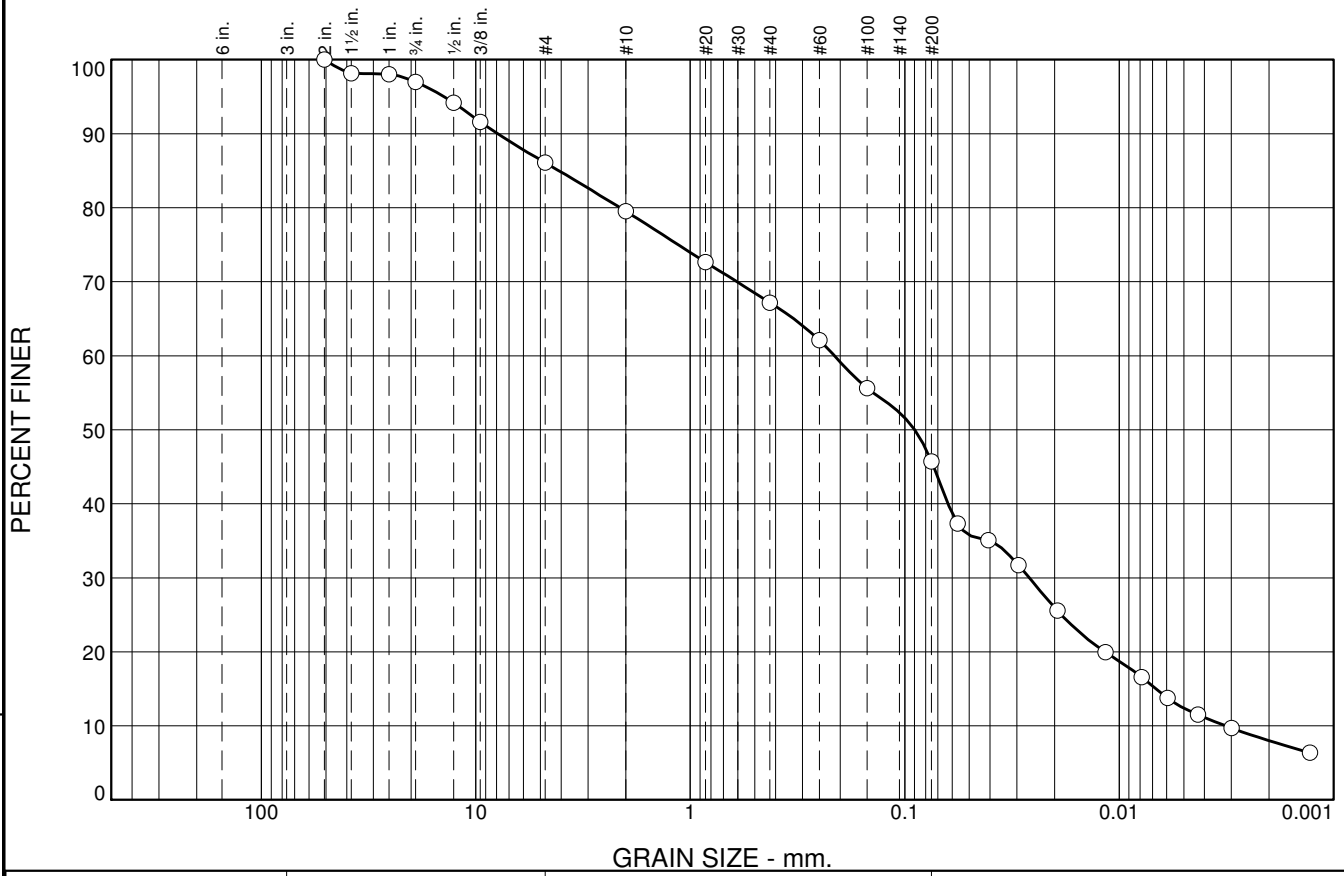
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.0	10.9	6.6	12.3	21.5	37.7	8.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.2		
1	98.1		
.75	97.0		
.5	94.2		
.375	91.6		
#4	86.1		
#10	79.5		
#20	72.7		
#40	67.2		
#60	62.1		
#100	55.6		
#200	45.7		
0.0567 mm.	37.3		
0.0407 mm.	35.1		
0.0295 mm.	31.7		
0.0194 mm.	25.6		
0.0116 mm.	20.0		
0.0078 mm.	16.6		
0.0060 mm.	13.8		
0.0043 mm.	11.5		
0.0030 mm.	9.7		
0.0013 mm.	6.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 7.9124 D_{85}= 4.0973 D_{60}= 0.2127
D_{50}= 0.0900 D_{30}= 0.0262 D_{15}= 0.0067
D_{10}= 0.0032 C_u= 66.51 C_c= 1.01

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-15 (1 of2) **Source of Sample:** **Date:** 6/17/16
Location: TP16-15 **Elev./Depth:** 1.5-1.6m

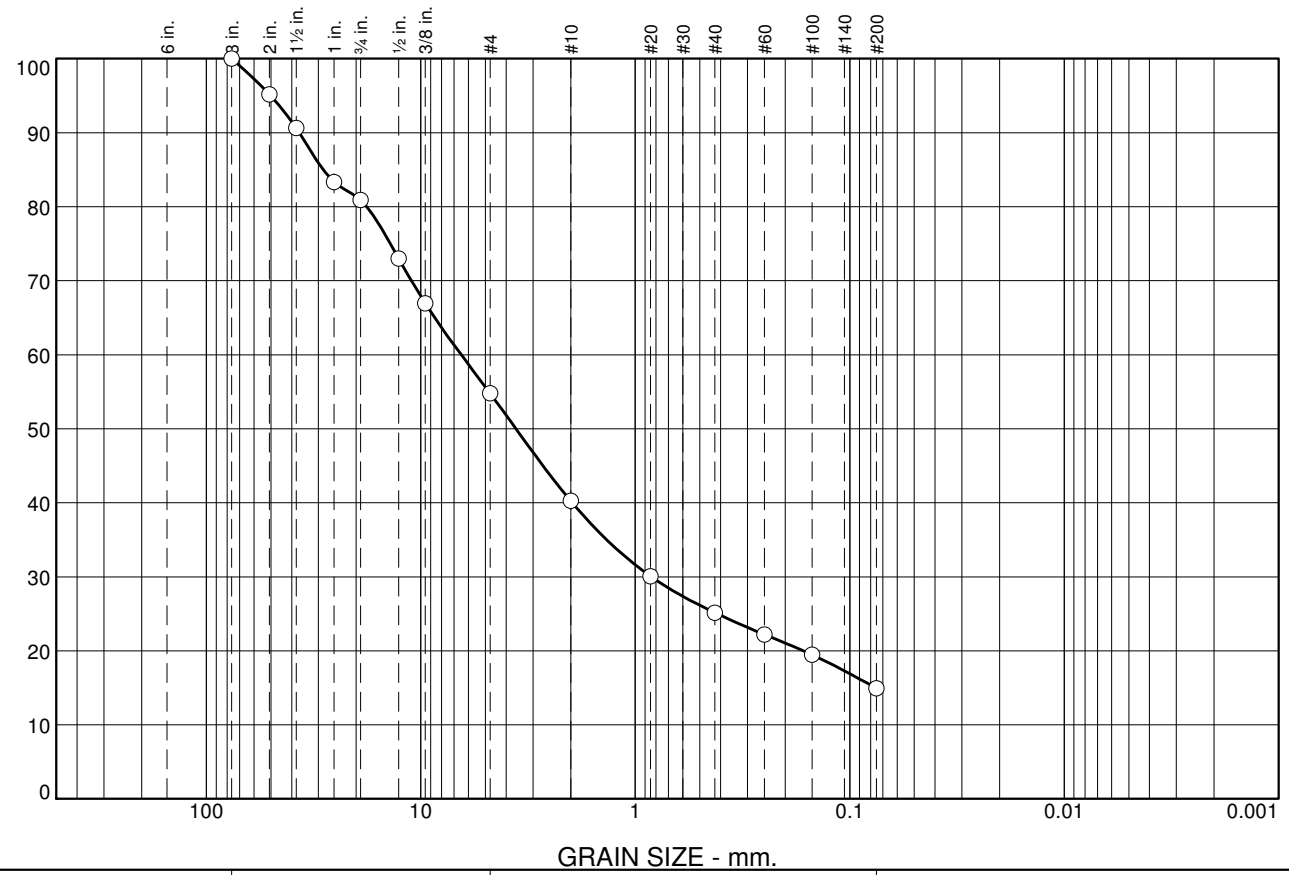
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	19.1	26.1	14.5	15.1	10.3	14.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	95.2		
1.5	90.6		
1	83.3		
.75	80.9		
.5	73.0		
.375	66.9		
#4	54.8		
#10	40.3		
#20	30.1		
#40	25.2		
#60	22.2		
#100	19.5		
#200	14.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 36.8488 D_{85}= 28.4822 D_{60}= 6.4794
D_{50}= 3.5992 D_{30}= 0.8416 D_{15}= 0.0757
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-18 **Source of Sample:** **Date:** 6/15/16
Location: TP16-18 **Elev./Depth:** 2.0-2.3m

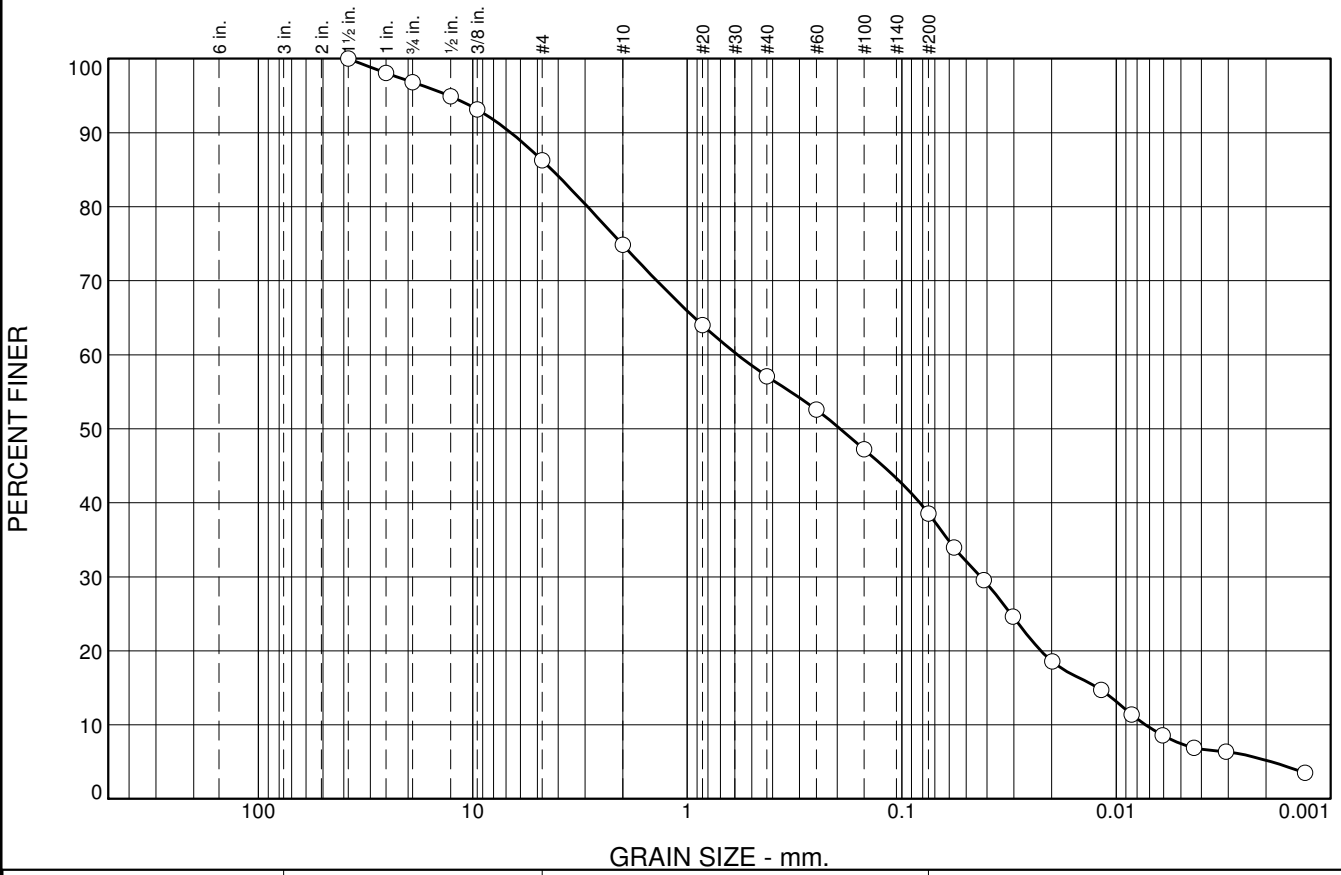
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.2	10.5	11.4	17.8	18.5	33.4	5.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	98.1		
.75	96.8		
.5	94.9		
.375	93.1		
#4	86.3		
#10	74.9		
#20	64.0		
#40	57.1		
#60	52.6		
#100	47.2		
#200	38.6		
0.0569 mm.	33.9		
0.0415 mm.	29.6		
0.0303 mm.	24.6		
0.0199 mm.	18.6		
0.0117 mm.	14.7		
0.0085 mm.	11.4		
0.0061 mm.	8.6		
0.0043 mm.	6.9		
0.0031 mm.	6.4		
0.0013 mm.	3.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 6.6424 D_{85}= 4.2753 D_{60}= 0.5820
D_{50}= 0.1936 D_{30}= 0.0428 D_{15}= 0.0121
D_{10}= 0.0073 C_u= 79.79 C_c= 0.43

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-19 **Source of Sample:** **Date:** 6/15/16
Location: TP16-19 **Elev./Depth:** 1.0-1.5m

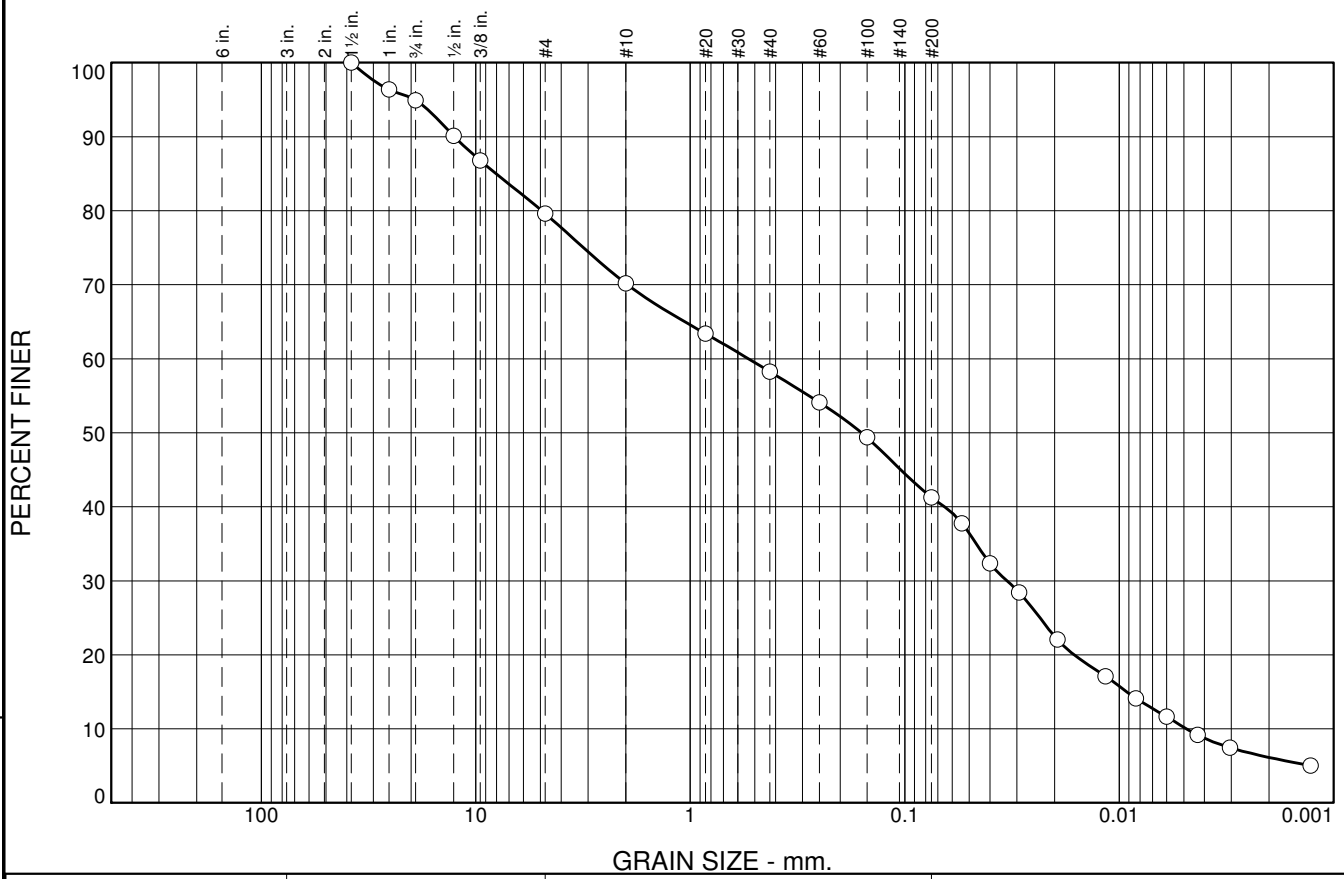
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.1	15.3	9.4	11.9	17.0	35.2	6.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	96.4		
.75	94.9		
.5	90.1		
.375	86.8		
#4	79.6		
#10	70.2		
#20	63.4		
#40	58.3		
#60	54.1		
#100	49.4		
#200	41.3		
0.0541 mm.	37.8		
0.0401 mm.	32.4		
0.0292 mm.	28.4		
0.0194 mm.	22.1		
0.0116 mm.	17.1		
0.0084 mm.	14.1		
0.0060 mm.	11.6		
0.0043 mm.	9.2		
0.0030 mm.	7.5		
0.0013 mm.	5.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.5828 D_{85}= 8.0380 D_{60}= 0.5351
D_{50}= 0.1588 D_{30}= 0.0333 D_{15}= 0.0092
D_{10}= 0.0049 C_u= 110.30 C_c= 0.43

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-22 (2 of 2) **Source of Sample:** **Date:** 6/17/16
Location: TP16-22 **Elev./Depth:** 4.4-4.5m

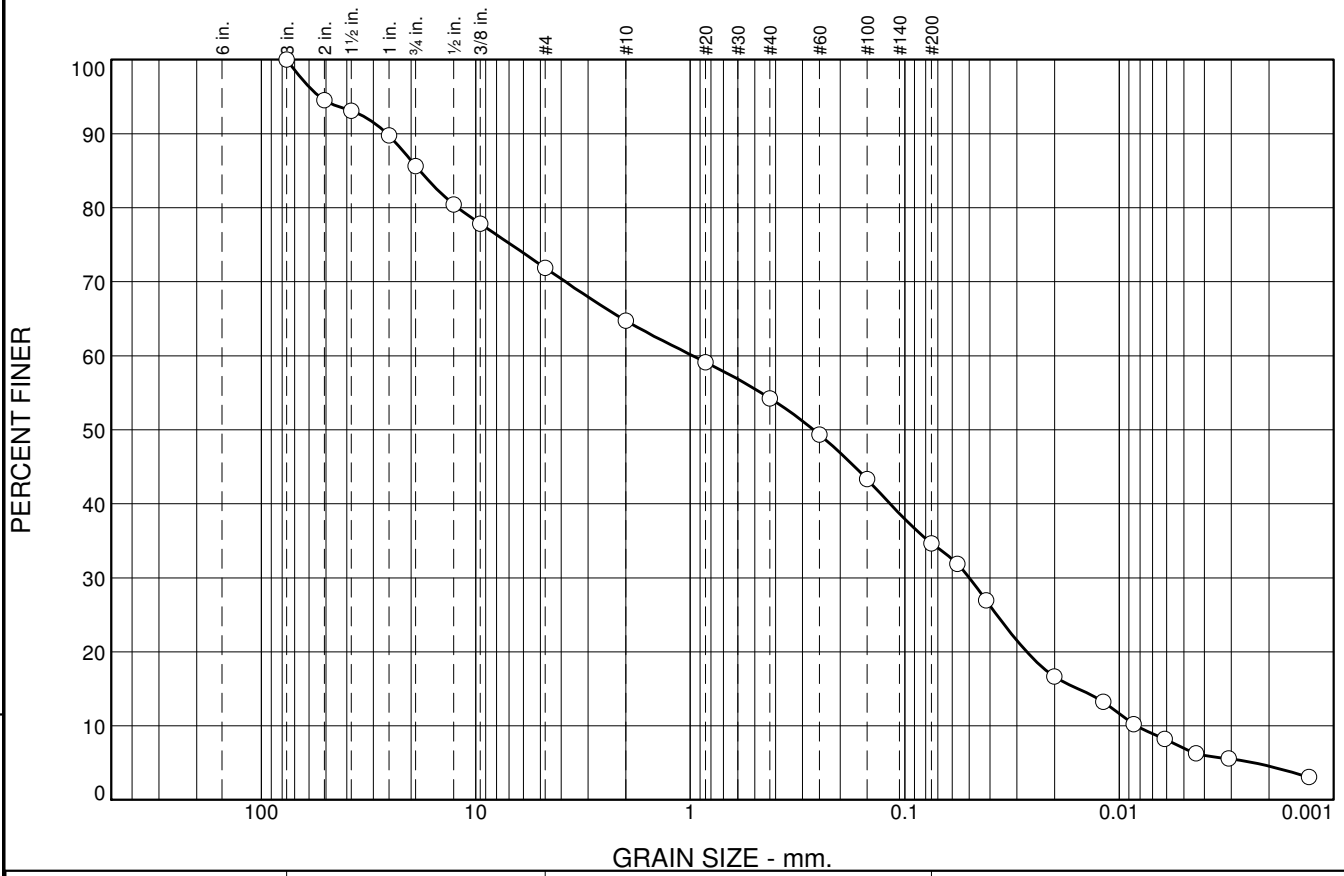
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.4	13.7	7.1	10.5	19.6	30.2	4.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	94.5		
1.5	93.1		
1	89.8		
.75	85.6		
.5	80.4		
.375	77.8		
#4	71.9		
#10	64.8		
#20	59.1		
#40	54.3		
#60	49.4		
#100	43.3		
#200	34.7		
0.0568 mm.	31.9		
0.0418 mm.	27.0		
0.0201 mm.	16.7		
0.0119 mm.	13.2		
0.0086 mm.	10.2		
0.0061 mm.	8.2		
0.0044 mm.	6.3		
0.0031 mm.	5.6		
0.0013 mm.	3.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.8977 D_{85}= 18.2303 D_{60}= 0.9742
D_{50}= 0.2662 D_{30}= 0.0499 D_{15}= 0.0156
D_{10}= 0.0083 C_u= 117.23 C_c= 0.31

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-25 **Source of Sample:** **Date:** 6/17/16
Location: TP16-25 **Elev./Depth:** 1.3-1.5m

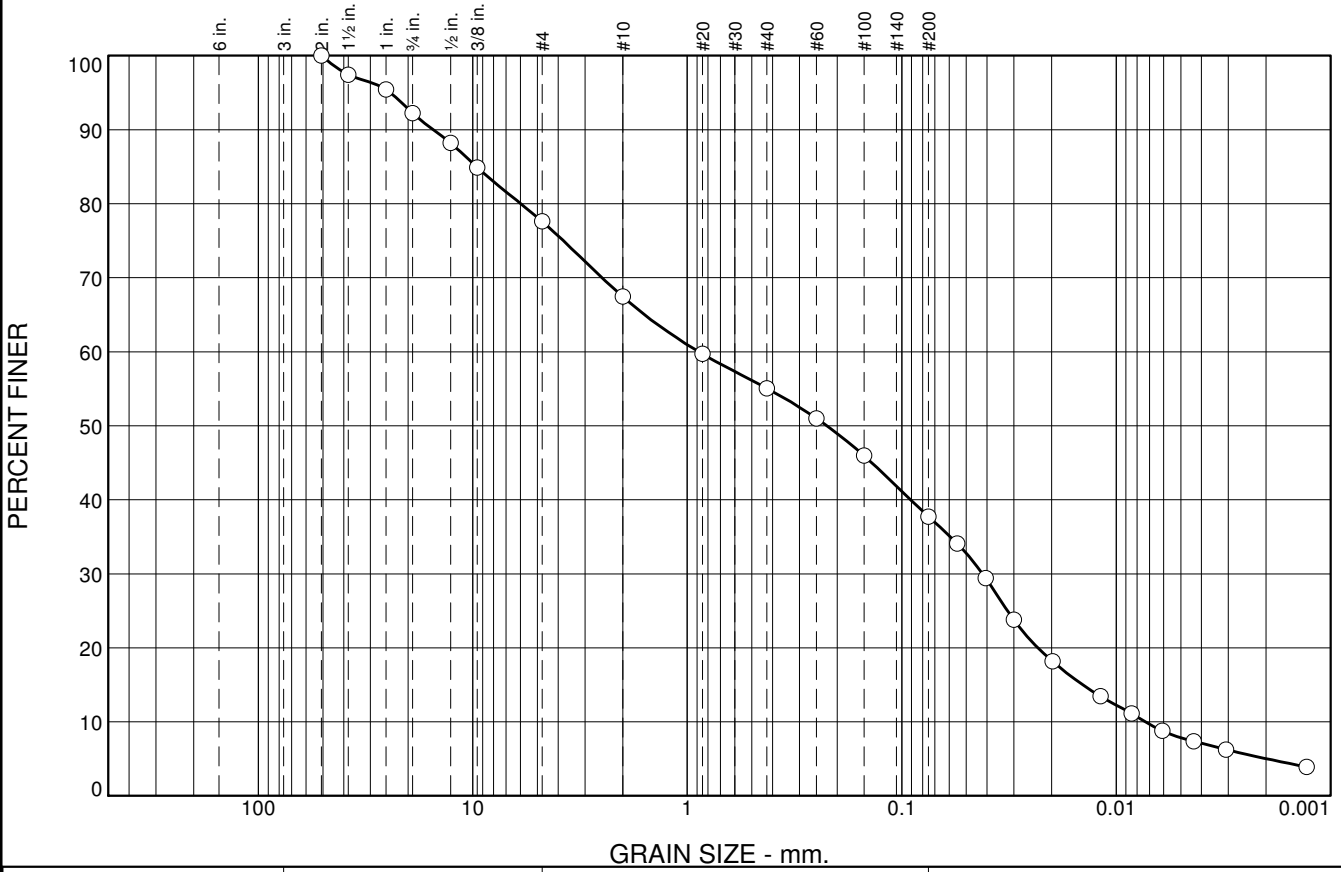
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.8	14.6	10.1	12.5	17.3	32.7	5.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	97.4		
1	95.4		
.75	92.2		
.5	88.2		
.375	84.9		
#4	77.6		
#10	67.5		
#20	59.7		
#40	55.0		
#60	51.0		
#100	46.0		
#200	37.7		
0.0551 mm.	34.1		
0.0406 mm.	29.4		
0.0300 mm.	23.8		
0.0198 mm.	18.2		
0.0118 mm.	13.5		
0.0085 mm.	11.1		
0.0061 mm.	8.8		
0.0043 mm.	7.4		
0.0031 mm.	6.3		
0.0013 mm.	3.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 15.2821 D_{85}= 9.6151 D_{60}= 0.8826
D_{50}= 0.2232 D_{30}= 0.0420 D_{15}= 0.0143
D_{10}= 0.0073 C_u= 120.86 C_c= 0.27

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-26 **Source of Sample:** **Date:** 6/17/16
Location: TP16-26 **Elev./Depth:** 2.5-4.0m

Knight Piésold CONSULTING

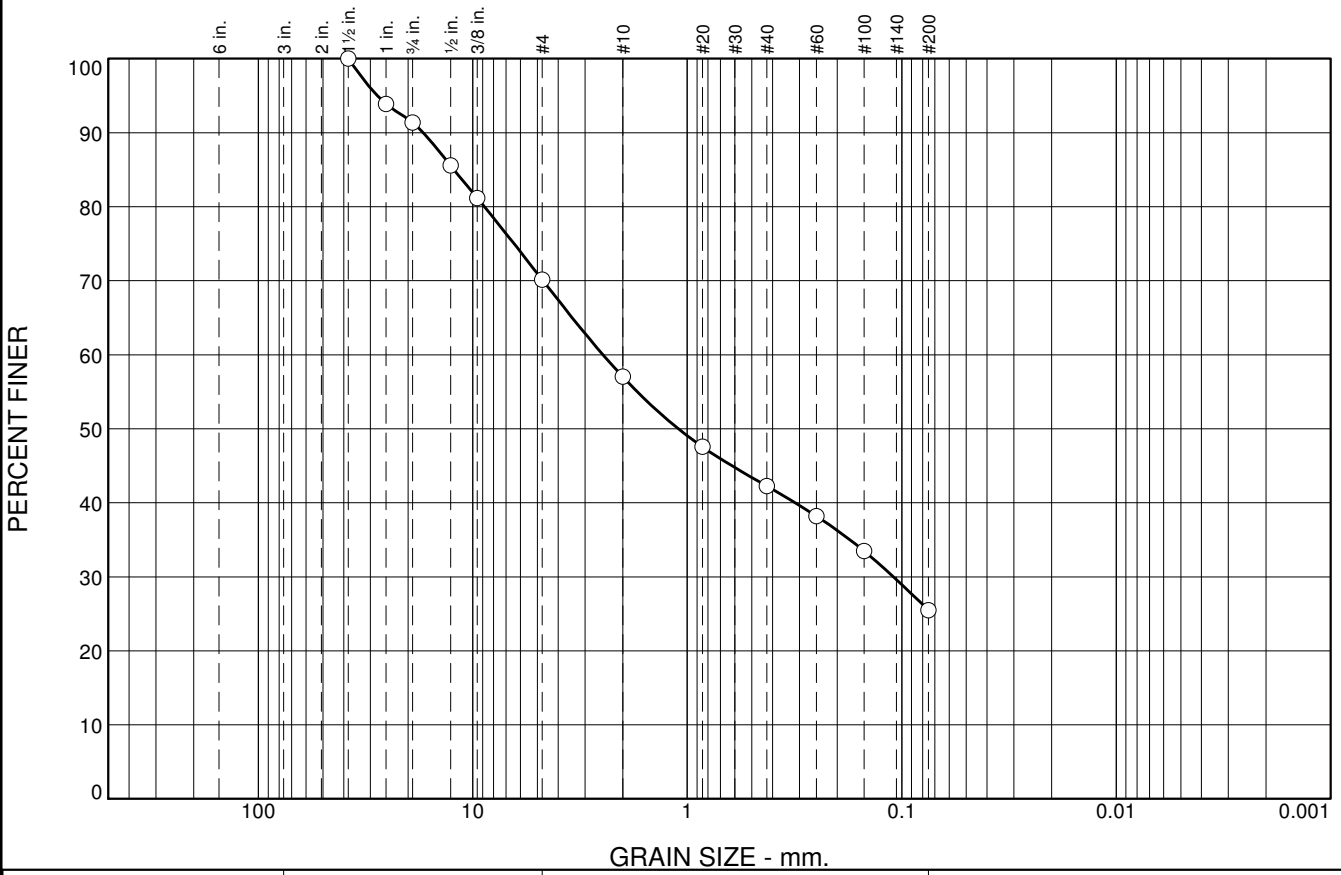
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.6	21.2	13.2	14.8	16.7	25.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	93.9		
.75	91.4		
.5	85.6		
.375	81.2		
#4	70.2		
#10	57.0		
#20	47.6		
#40	42.2		
#60	38.2		
#100	33.5		
#200	25.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.9993 D_{85}= 12.2493 D_{60}= 2.4700
D_{50}= 1.1000 D_{30}= 0.1093 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-27 **Source of Sample:** **Date:** 6/17/16
Location: TP16-27 **Elev./Depth:** 2.5-2.8m

Knight Piésold CONSULTING

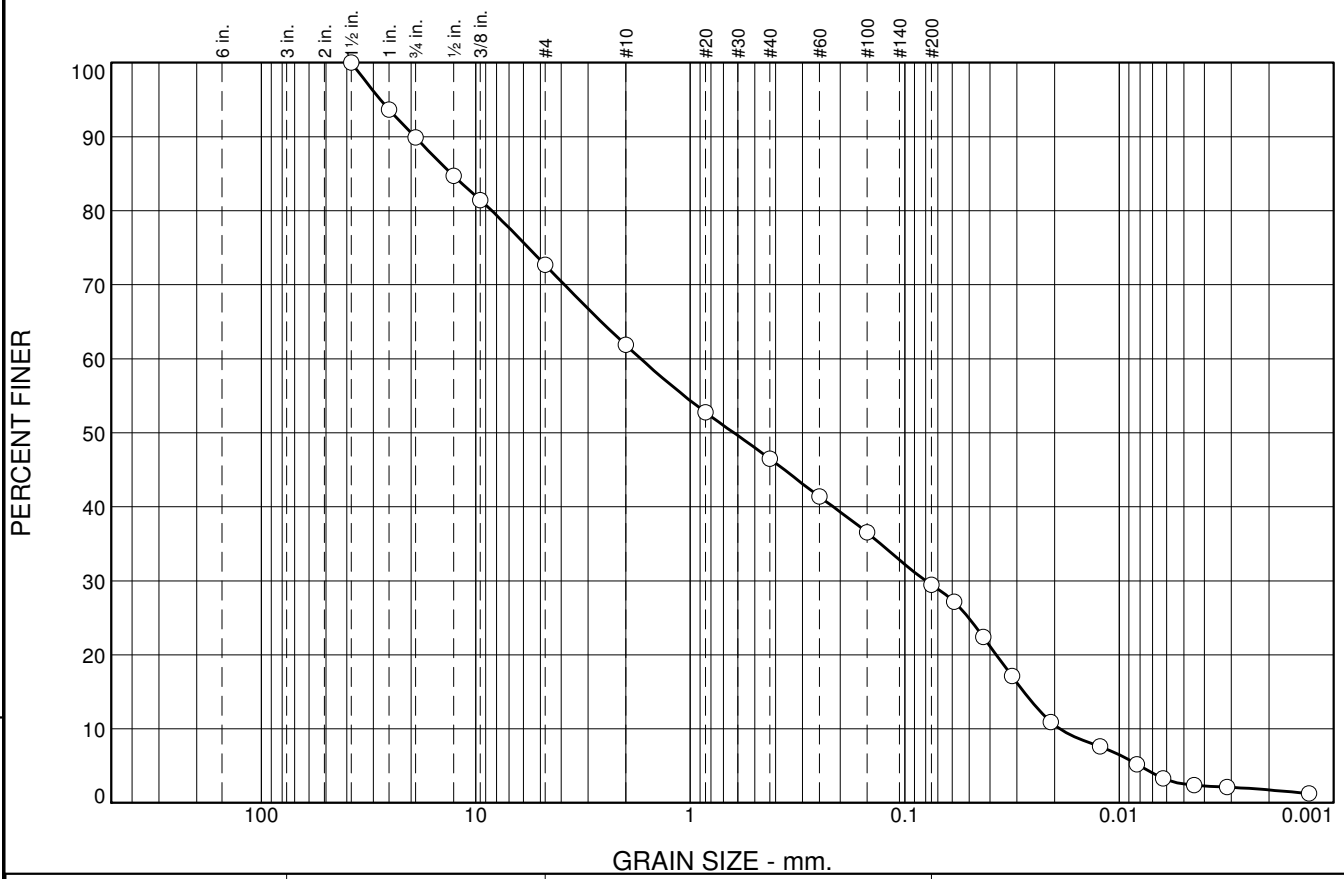
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.1	17.2	10.8	15.4	17.0	27.8	1.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	93.7		
.75	89.9		
.5	84.7		
.375	81.4		
#4	72.7		
#10	61.9		
#20	52.8		
#40	46.5		
#60	41.4		
#100	36.5		
#200	29.5		
0.0588 mm.	27.2		
0.0431 mm.	22.4		
0.0316 mm.	17.1		
0.0208 mm.	10.9		
0.0123 mm.	7.6		
0.0083 mm.	5.2		
0.0062 mm.	3.3		
0.0045 mm.	2.4		
0.0031 mm.	2.1		
0.0013 mm.	1.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 19.2108 D_{85}= 12.9991 D_{60}= 1.7003
D_{50}= 0.6269 D_{30}= 0.0798 D_{15}= 0.0278
D_{10}= 0.0189 C_u= 89.95 C_c= 0.20

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-29 **Source of Sample:** **Date:** 6/21/16
Location: TP16-29 **Elev./Depth:** 2.0-2.3m

Knight Piésold CONSULTING

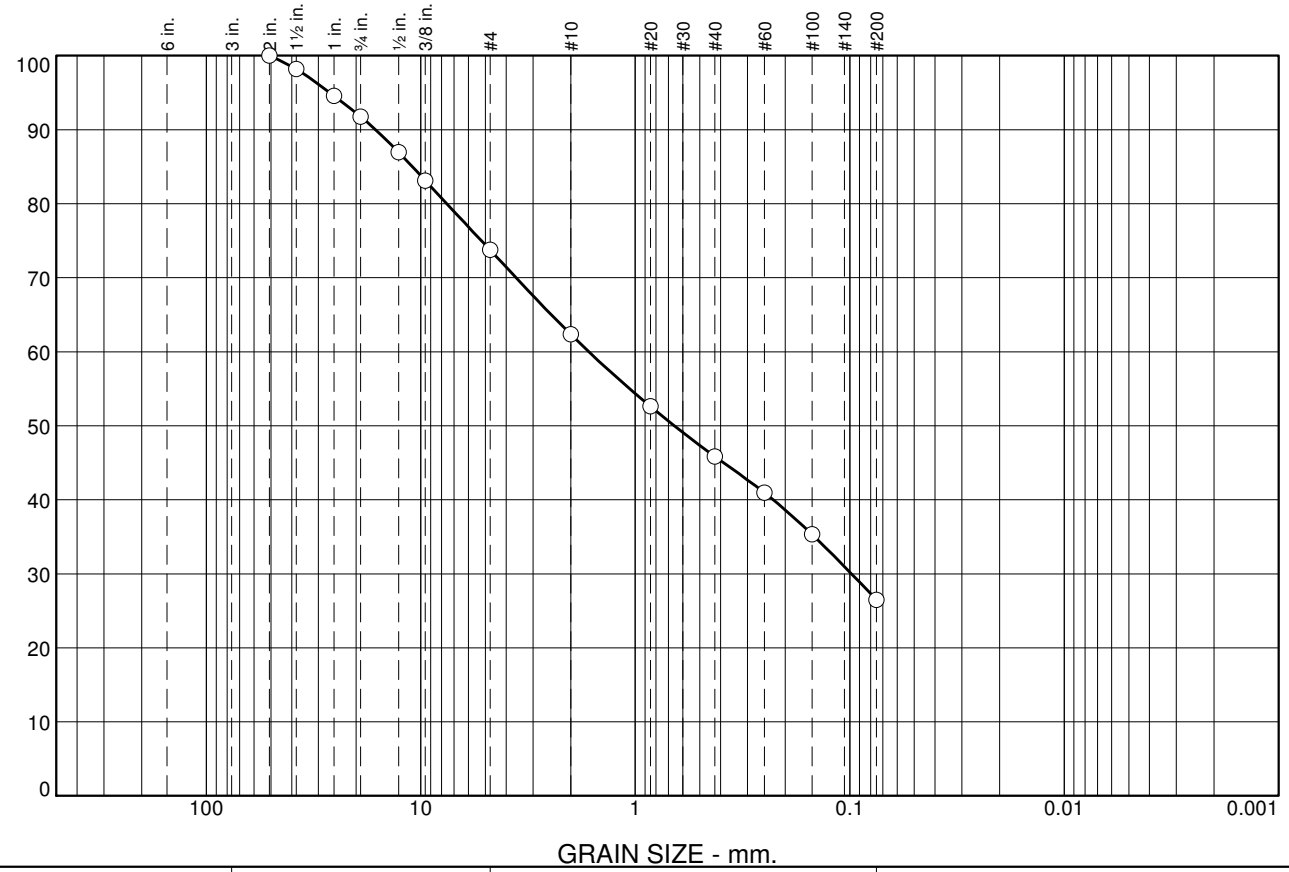
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.2	18.0	11.4	16.6	19.3	26.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.2		
1	94.6		
.75	91.8		
.5	87.0		
.375	83.1		
#4	73.8		
#10	62.4		
#20	52.6		
#40	45.8		
#60	41.0		
#100	35.3		
#200	26.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.2293 D_{85}= 10.9434 D_{60}= 1.6450
D_{50}= 0.6566 D_{30}= 0.0982 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-30 **Source of Sample:** **Date:** 6/21/16
Location: TP16-30 **Elev./Depth:** 3.5-3.8m

Knight Piésold CONSULTING

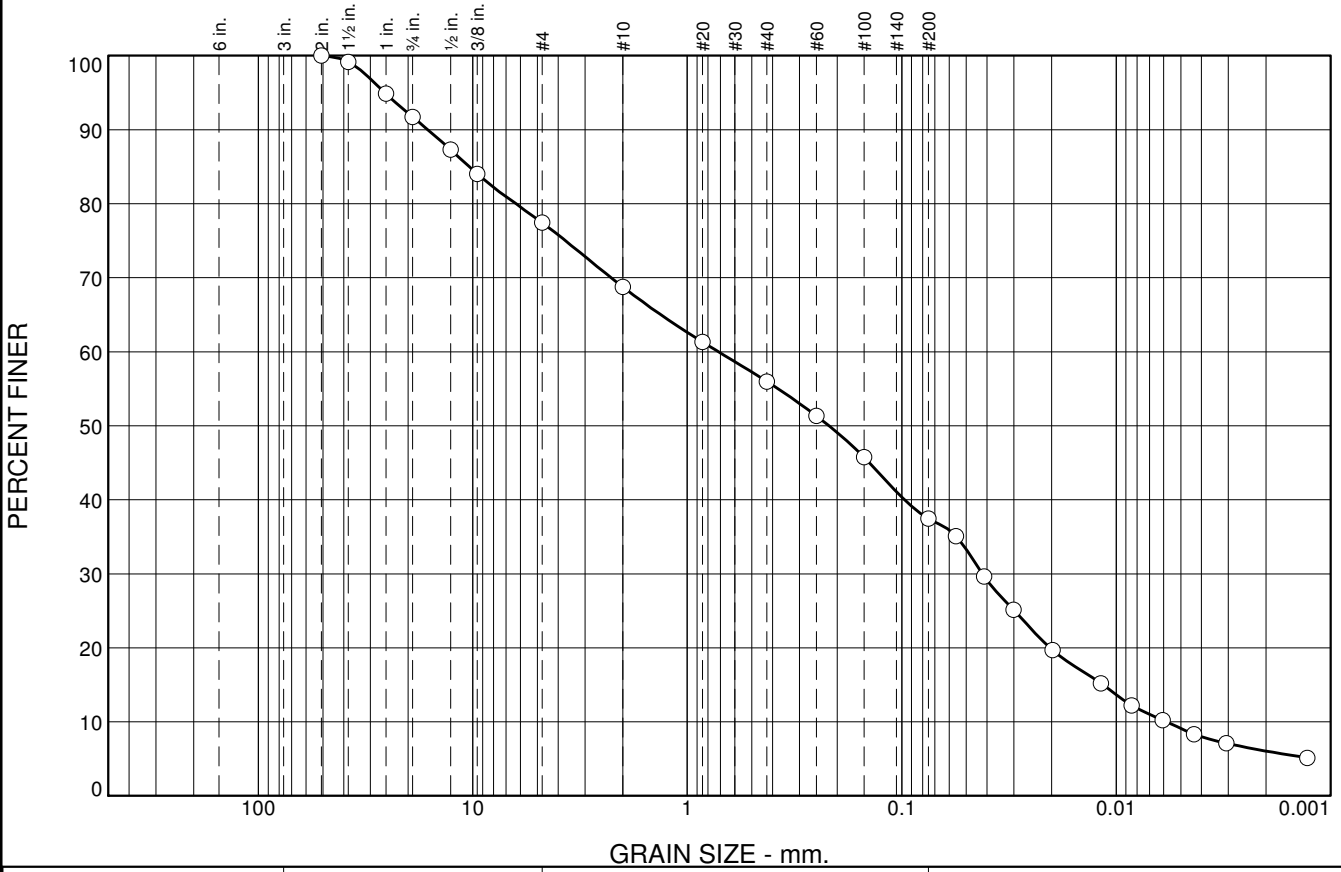
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.3	14.3	8.6	12.8	18.6	31.3	6.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.2		
1	94.9		
.75	91.7		
.5	87.3		
.375	84.0		
#4	77.4		
#10	68.8		
#20	61.3		
#40	56.0		
#60	51.3		
#100	45.8		
#200	37.4		
0.0558 mm.	35.1		
0.0412 mm.	29.6		
0.0301 mm.	25.2		
0.0198 mm.	19.7		
0.0118 mm.	15.2		
0.0085 mm.	12.2		
0.0061 mm.	10.2		
0.0043 mm.	8.3		
0.0031 mm.	7.1		
0.0013 mm.	5.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.1975 D_{85}= 10.3992 D_{60}= 0.7152
D_{50}= 0.2182 D_{30}= 0.0421 D_{15}= 0.0115
D_{10}= 0.0058 C_u= 123.02 C_c= 0.43

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-31 **Source of Sample:** **Date:** 6/17/16
Location: TP16-31 **Elev./Depth:** 4.0-4.5m

Knight Piésold CONSULTING

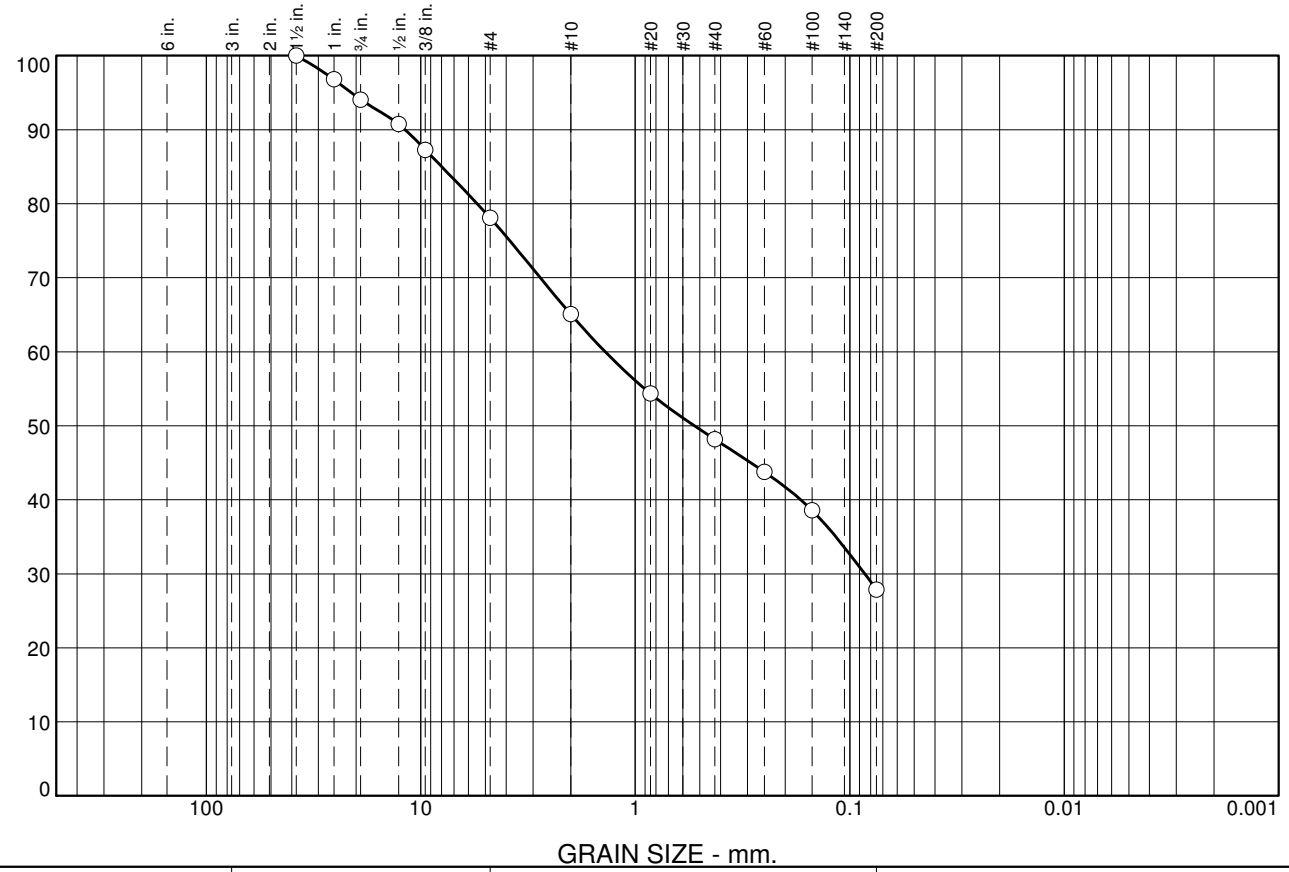
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.9	16.0	13.0	16.9	20.3	27.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	96.8		
.75	94.1		
.5	90.8		
.375	87.3		
#4	78.1		
#10	65.1		
#20	54.4		
#40	48.2		
#60	43.8		
#100	38.6		
#200	27.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.8411 D_{85}= 7.9903 D_{60}= 1.3805
D_{50}= 0.5304 D_{30}= 0.0852 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-32 **Source of Sample:** **Date:** 6/17/16
Location: TP16-32 **Elev./Depth:** 4.0-4.5m

Knight Piésold CONSULTING

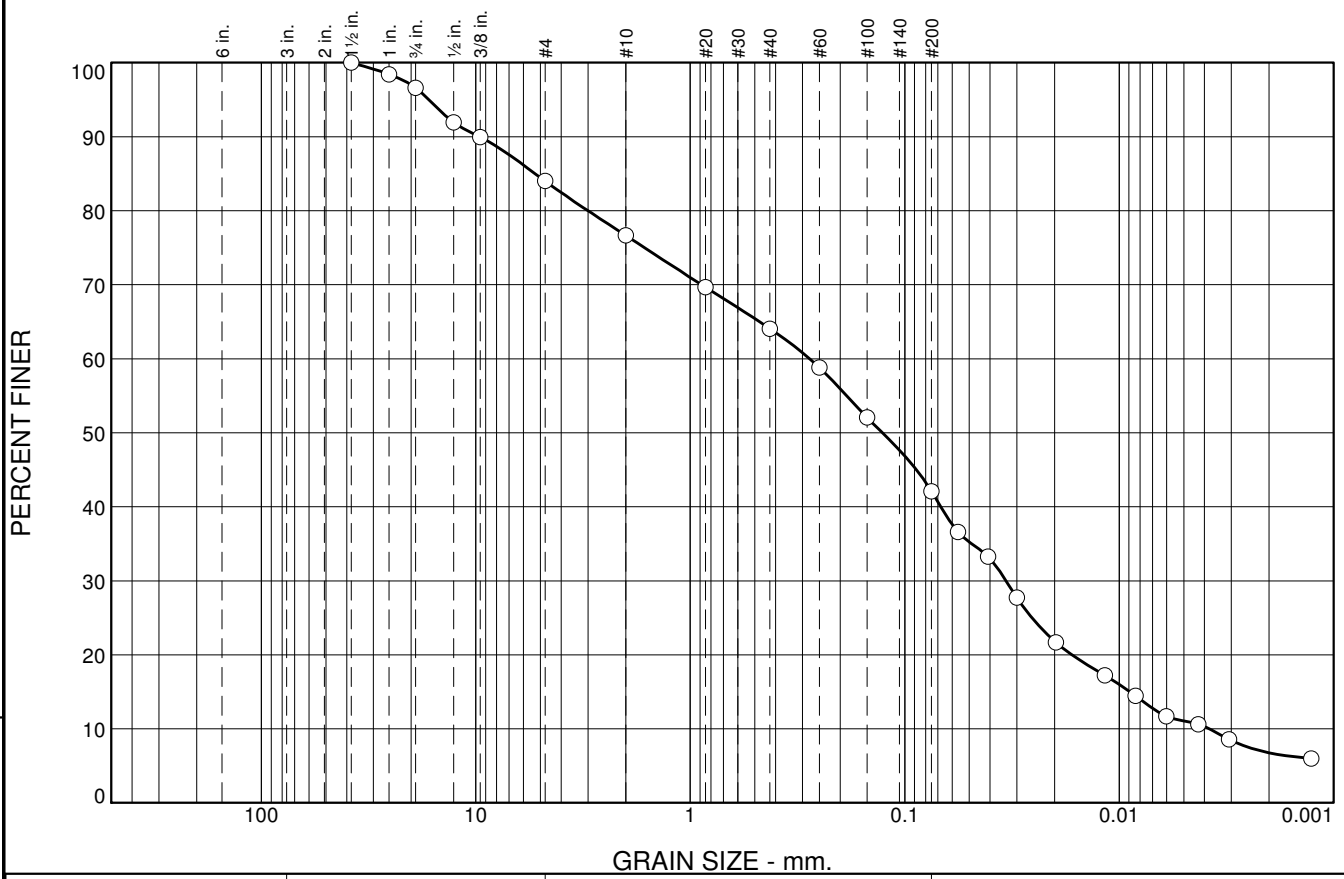
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.4	12.6	7.3	12.6	22.0	35.3	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	98.4		
.75	96.6		
.5	91.9		
.375	89.9		
#4	84.0		
#10	76.7		
#20	69.7		
#40	64.1		
#60	58.8		
#100	52.1		
#200	42.1		
0.0565 mm.	36.6		
0.0409 mm.	33.3		
0.0300 mm.	27.8		
0.0197 mm.	21.7		
0.0117 mm.	17.2		
0.0084 mm.	14.5		
0.0060 mm.	11.7		
0.0043 mm.	10.6		
0.0031 mm.	8.6		
0.0013 mm.	6.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 9.6031 D_{85}= 5.2853 D_{60}= 0.2774
D_{50}= 0.1270 D_{30}= 0.0337 D_{15}= 0.0089
D_{10}= 0.0038 C_u= 73.06 C_c= 1.08

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-33 **Source of Sample:** **Date:** 6/21/16
Location: TP16-33 **Elev./Depth:** 3.0-3.4m

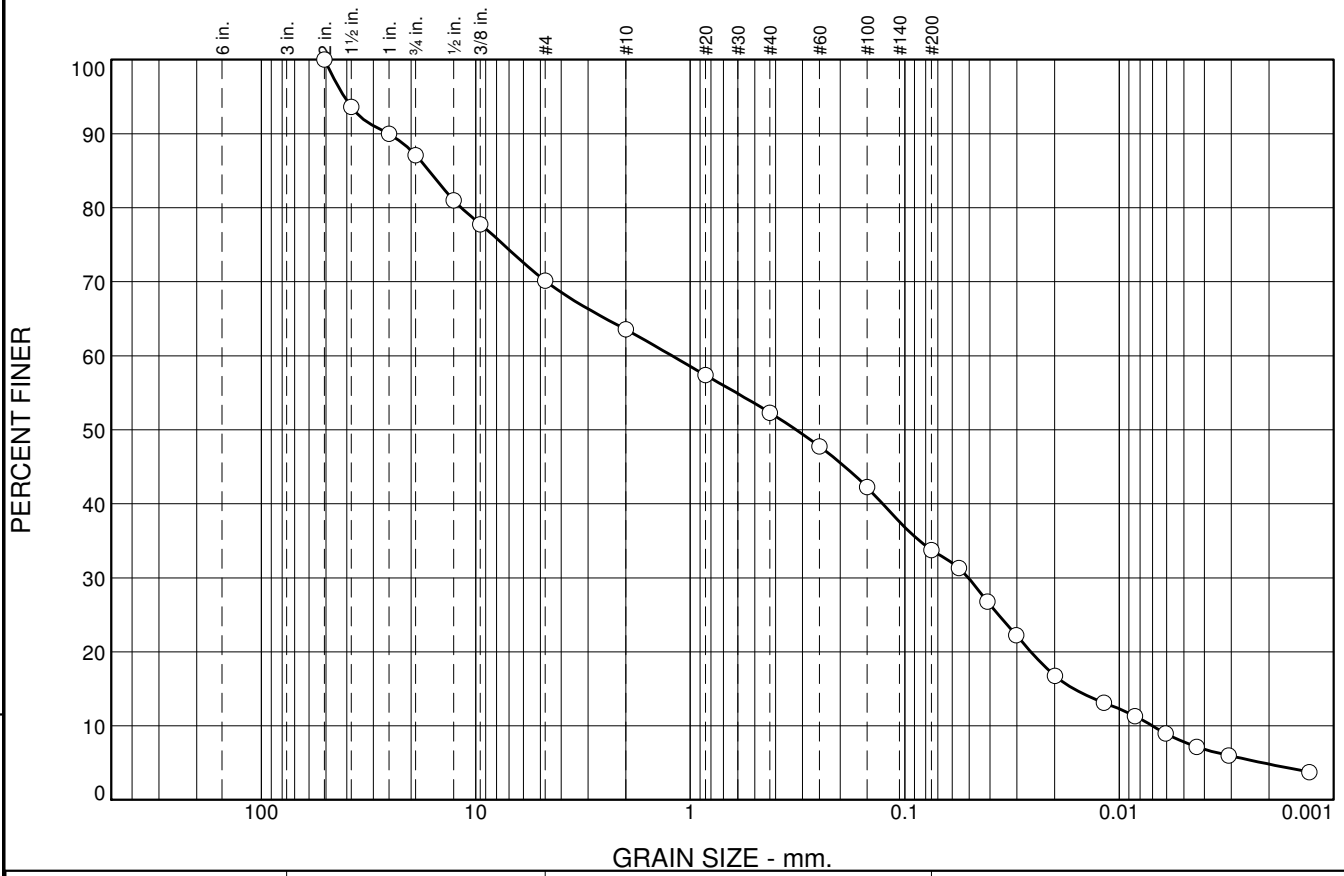
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	12.9	17.0	6.5	11.3	18.6	28.9	4.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	93.6		
1	90.0		
.75	87.1		
.5	81.0		
.375	77.8		
#4	70.1		
#10	63.6		
#20	57.4		
#40	52.3		
#60	47.8		
#100	42.2		
#200	33.7		
0.0559 mm.	31.3		
0.0411 mm.	26.8		
0.0302 mm.	22.2		
0.0199 mm.	16.8		
0.0118 mm.	13.1		
0.0084 mm.	11.3		
0.0061 mm.	9.0		
0.0043 mm.	7.2		
0.0031 mm.	6.0		
0.0013 mm.	3.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.4980 D_{85}= 16.5094 D_{60}= 1.2153
D_{50}= 0.3205 D_{30}= 0.0505 D_{15}= 0.0163
D_{10}= 0.0070 C_u= 173.25 C_c= 0.30

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-34 **Source of Sample:** **Date:** 6/17/16
Location: TP16-34 **Elev./Depth:** 4.5-4.9m

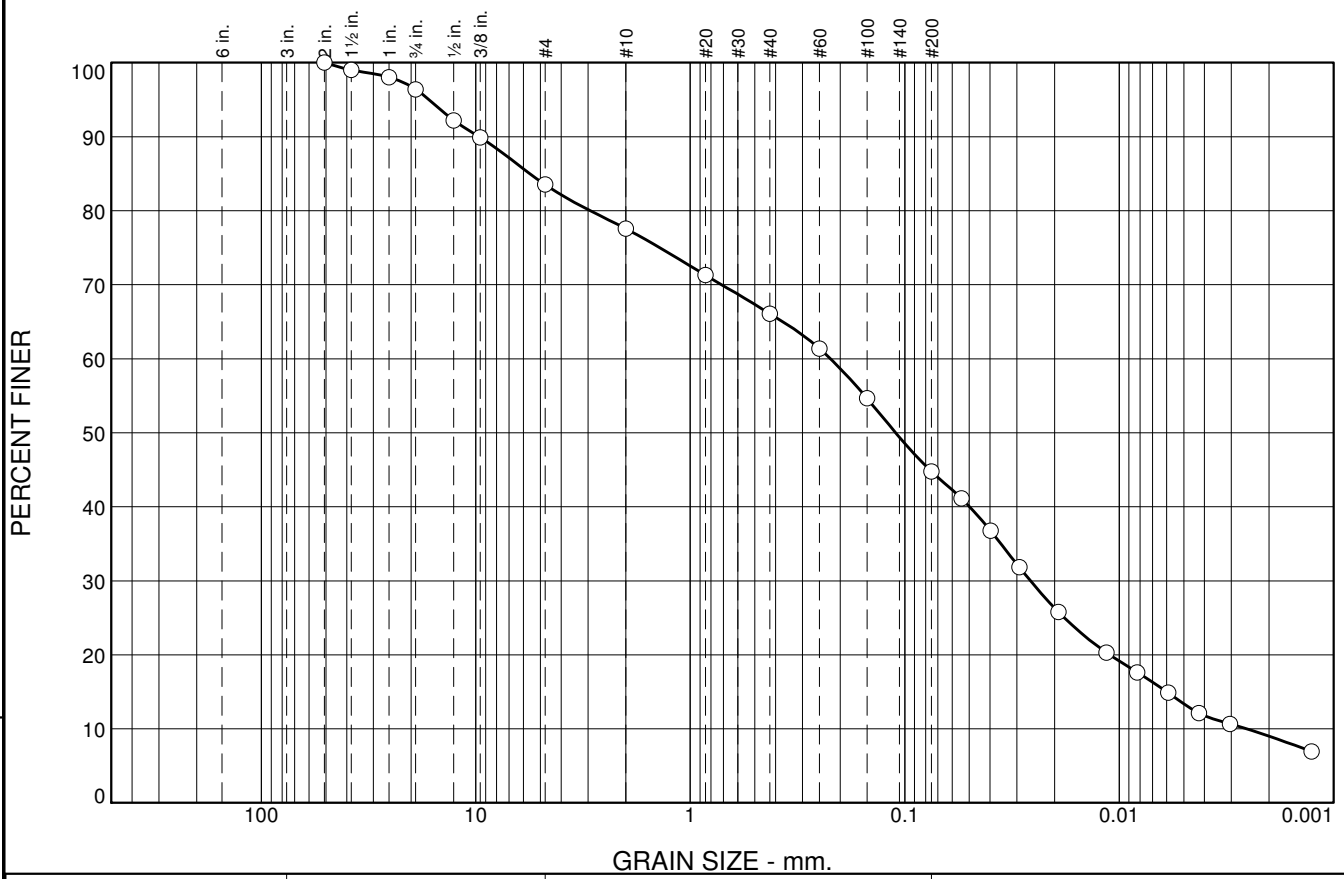
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.6	12.9	5.9	11.5	21.3	35.8	9.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.0		
1	98.0		
.75	96.4		
.5	92.2		
.375	89.9		
#4	83.5		
#10	77.6		
#20	71.3		
#40	66.1		
#60	61.4		
#100	54.6		
#200	44.8		
0.0544 mm.	41.2		
0.0398 mm.	36.8		
0.0292 mm.	31.8		
0.0192 mm.	25.8		
0.0115 mm.	20.3		
0.0082 mm.	17.6		
0.0059 mm.	14.9		
0.0042 mm.	12.1		
0.0030 mm.	10.7		
0.0013 mm.	7.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 9.6374 D_{85}= 5.5881 D_{60}= 0.2217
D_{50}= 0.1101 D_{30}= 0.0259 D_{15}= 0.0060
D_{10}= 0.0025 C_u= 86.99 C_c= 1.19

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-36(1 of 2) **Source of Sample:** **Date:** 6/21/16
Location: TP16-36 **Elev./Depth:** 4.0-5.0m

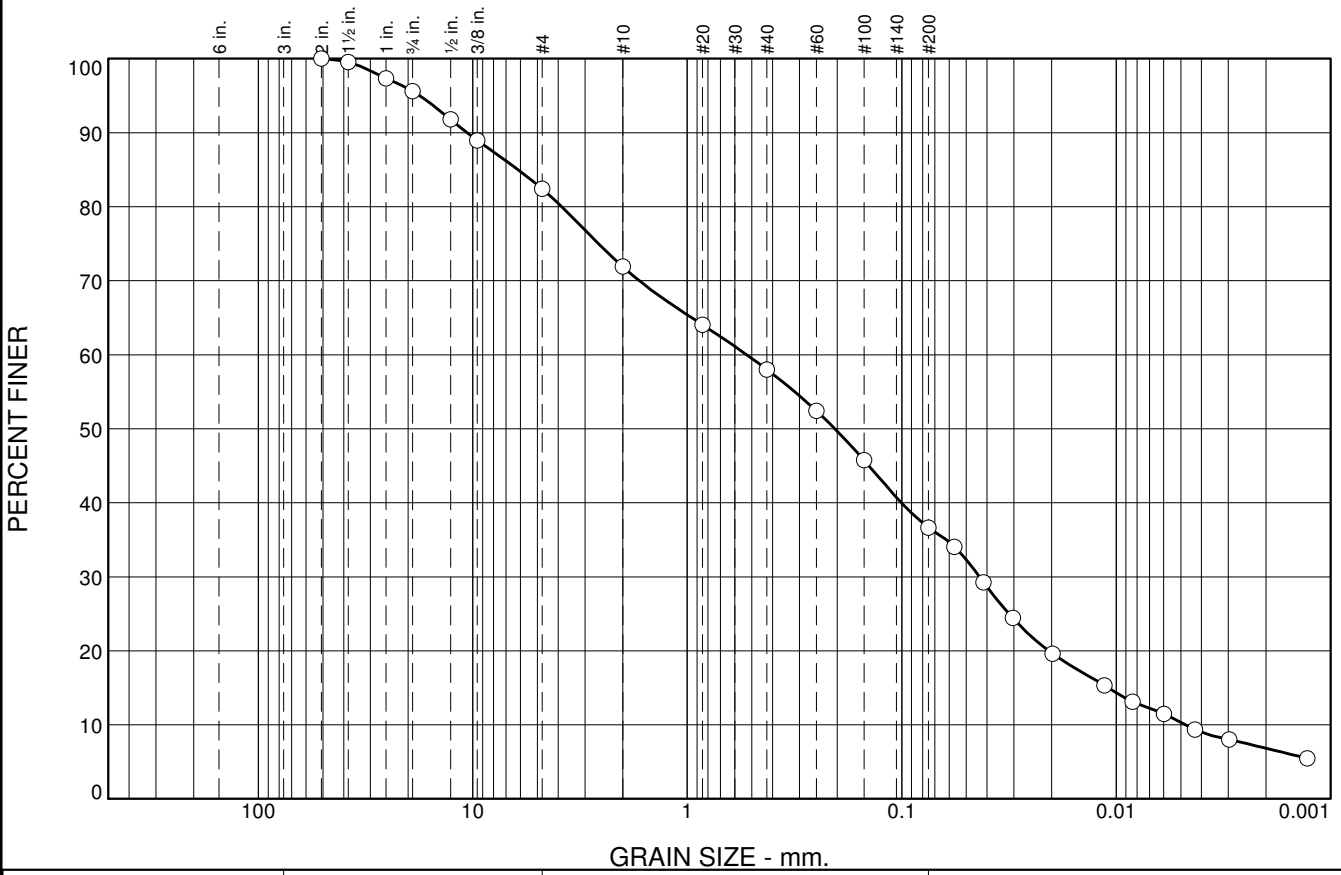
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.4	13.2	10.5	13.9	21.3	29.9	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.5		
1	97.4		
.75	95.6		
.5	91.8		
.375	89.0		
#4	82.4		
#10	71.9		
#20	64.1		
#40	58.0		
#60	52.4		
#100	45.8		
#200	36.7		
0.0568 mm.	34.1		
0.0415 mm.	29.2		
0.0303 mm.	24.4		
0.0198 mm.	19.6		
0.0113 mm.	15.3		
0.0084 mm.	13.1		
0.0060 mm.	11.5		
0.0043 mm.	9.3		
0.0030 mm.	8.0		
0.0013 mm.	5.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 10.6165 D_{85}= 6.1487 D_{60}= 0.5277
D_{50}= 0.2051 D_{30}= 0.0434 D_{15}= 0.0109
D_{10}= 0.0048 C_u= 110.62 C_c= 0.75

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-38 **Source of Sample:** **Date:** 6/22/16
Location: TP16-38 **Elev./Depth:** 4.5-5.0m

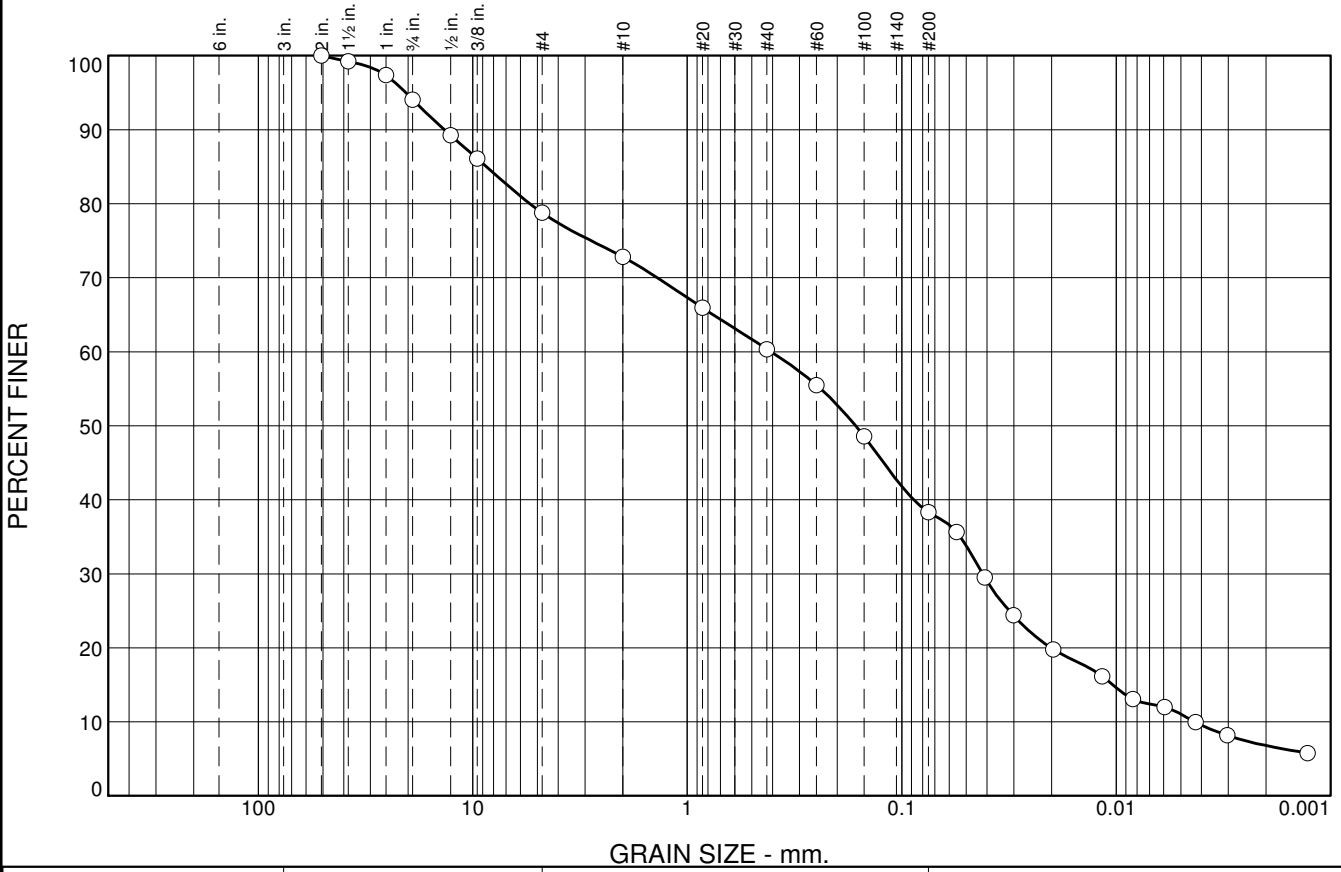
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.9	15.3	6.0	12.4	22.1	31.5	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.2		
1	97.4		
.75	94.1		
.5	89.3		
.375	86.1		
#4	78.8		
#10	72.8		
#20	66.0		
#40	60.4		
#60	55.5		
#100	48.6		
#200	38.3		
0.0554 mm.	35.7		
0.0411 mm.	29.5		
0.0301 mm.	24.4		
0.0196 mm.	19.8		
0.0116 mm.	16.2		
0.0084 mm.	13.1		
0.0060 mm.	12.0		
0.0043 mm.	10.0		
0.0030 mm.	8.2		
0.0013 mm.	5.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 13.5570 D_{85}= 8.6297 D_{60}= 0.4069
D_{50}= 0.1641 D_{30}= 0.0420 D_{15}= 0.0104
D_{10}= 0.0043 C_u= 94.92 C_c= 1.01

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-39 **Source of Sample:** **Date:** 6/22/16
Location: TP16-39 **Elev./Depth:** 2.0-2.5m

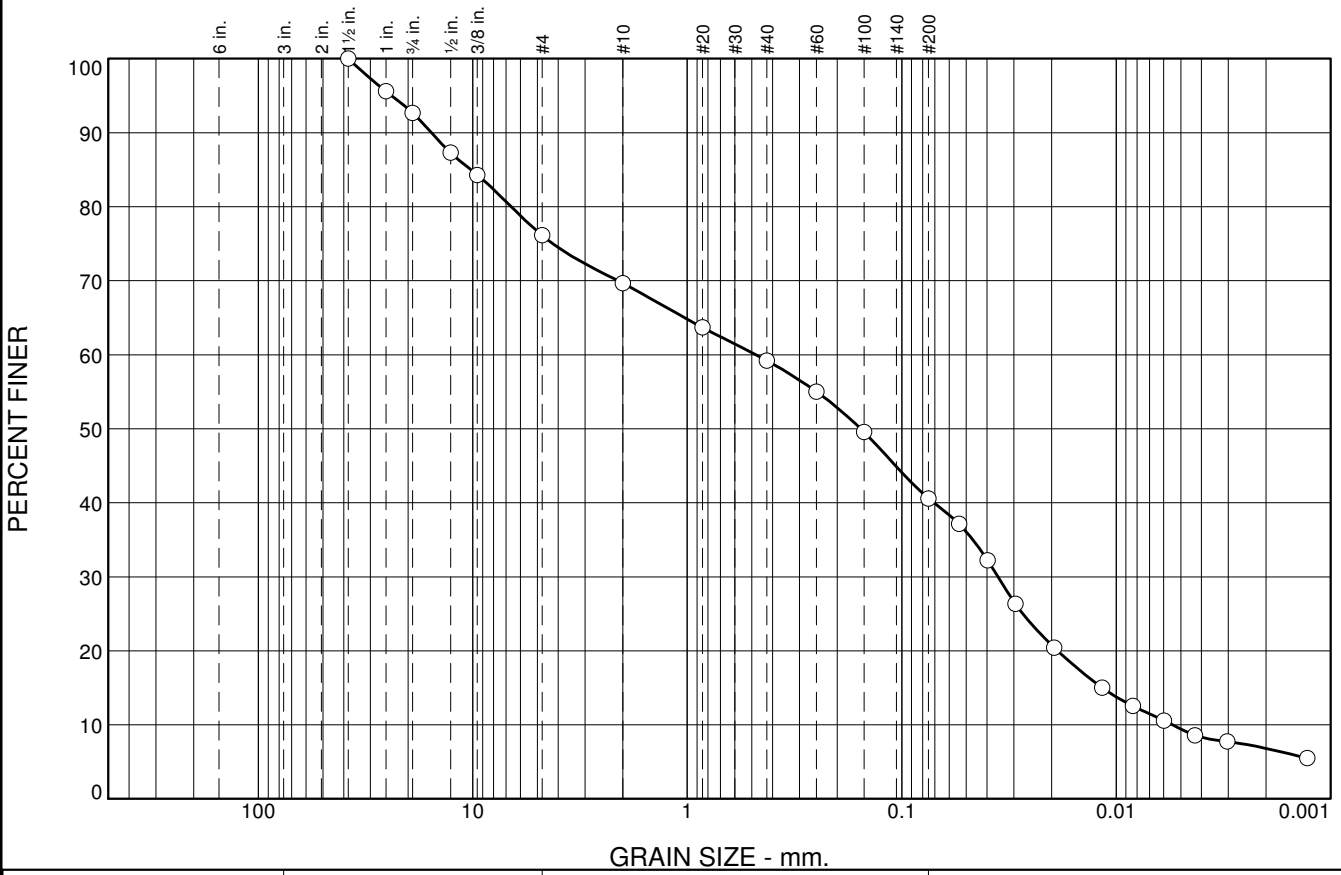
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.3	16.6	6.4	10.5	18.6	33.8	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	95.6		
.75	92.7		
.5	87.3		
.375	84.3		
#4	76.1		
#10	69.7		
#20	63.7		
#40	59.2		
#60	55.0		
#100	49.6		
#200	40.6		
0.0540 mm.	37.2		
0.0398 mm.	32.2		
0.0295 mm.	26.3		
0.0194 mm.	20.4		
0.0116 mm.	15.0		
0.0084 mm.	12.5		
0.0060 mm.	10.6		
0.0043 mm.	8.6		
0.0030 mm.	7.8		
0.0013 mm.	5.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 15.5718 D_{85}= 10.2121 D_{60}= 0.4782
D_{50}= 0.1552 D_{30}= 0.0356 D_{15}= 0.0116
D_{10}= 0.0055 C_u= 87.35 C_c= 0.48

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-40 **Source of Sample:** **Date:** 6/22/16
Location: TP16-40 **Elev./Depth:** 3.0-3.5m

Knight Piésold CONSULTING

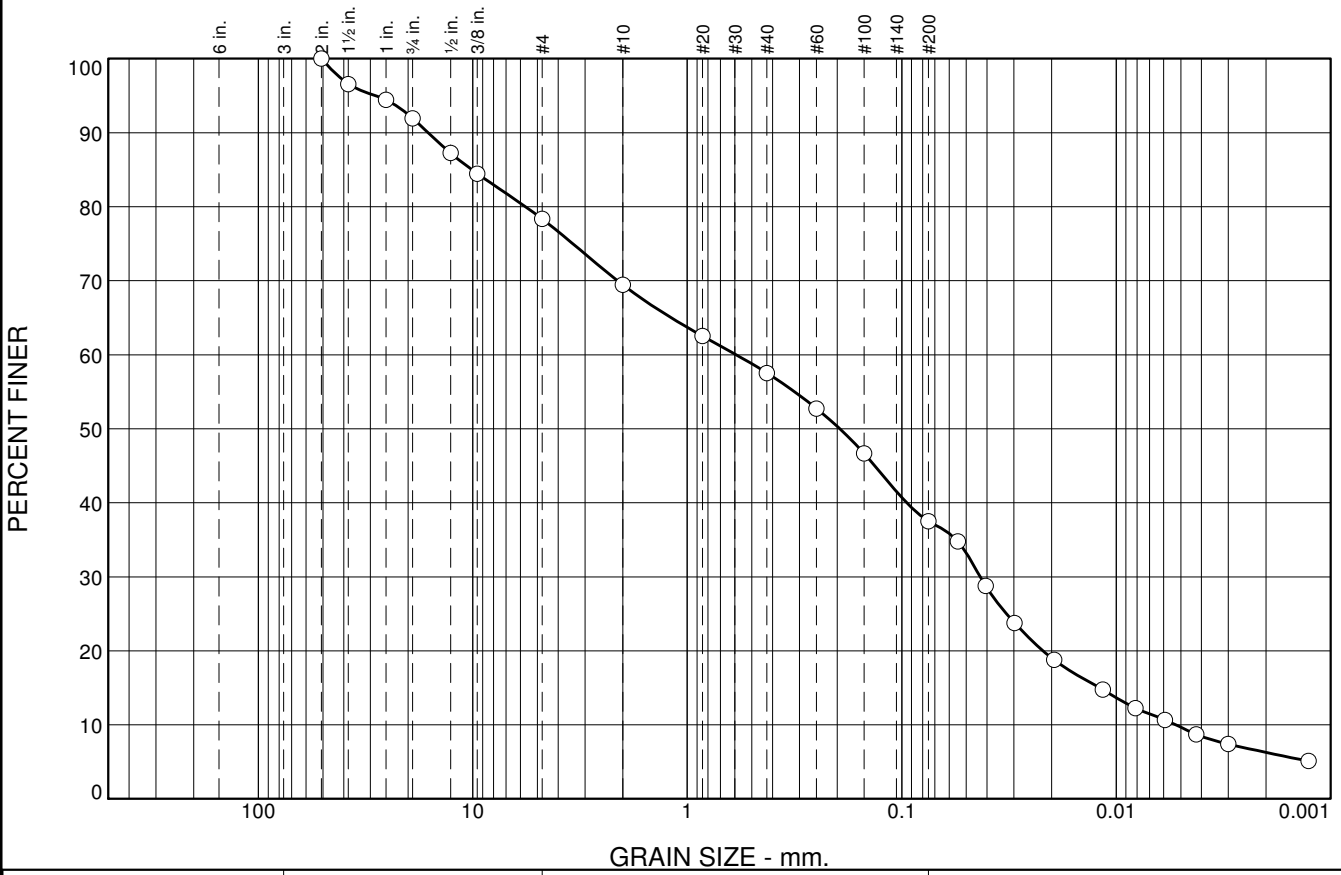
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.1	13.5	8.9	12.0	20.0	31.2	6.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	96.6		
1	94.5		
.75	91.9		
.5	87.2		
.375	84.5		
#4	78.4		
#10	69.5		
#20	62.5		
#40	57.5		
#60	52.7		
#100	46.7		
#200	37.5		
0.0547 mm.	34.8		
0.0406 mm.	28.8		
0.0298 mm.	23.8		
0.0195 mm.	18.8		
0.0115 mm.	14.8		
0.0081 mm.	12.2		
0.0059 mm.	10.7		
0.0042 mm.	8.7		
0.0030 mm.	7.4		
0.0013 mm.	5.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.1163 D_{85}= 10.1037 D_{60}= 0.5916
D_{50}= 0.1942 D_{30}= 0.0430 D_{15}= 0.0119
D_{10}= 0.0053 C_u= 112.13 C_c= 0.59

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-41 **Source of Sample:** **Date:** 6/22/16
Location: TP16-41 **Elev./Depth:** 2.0-3.0m

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

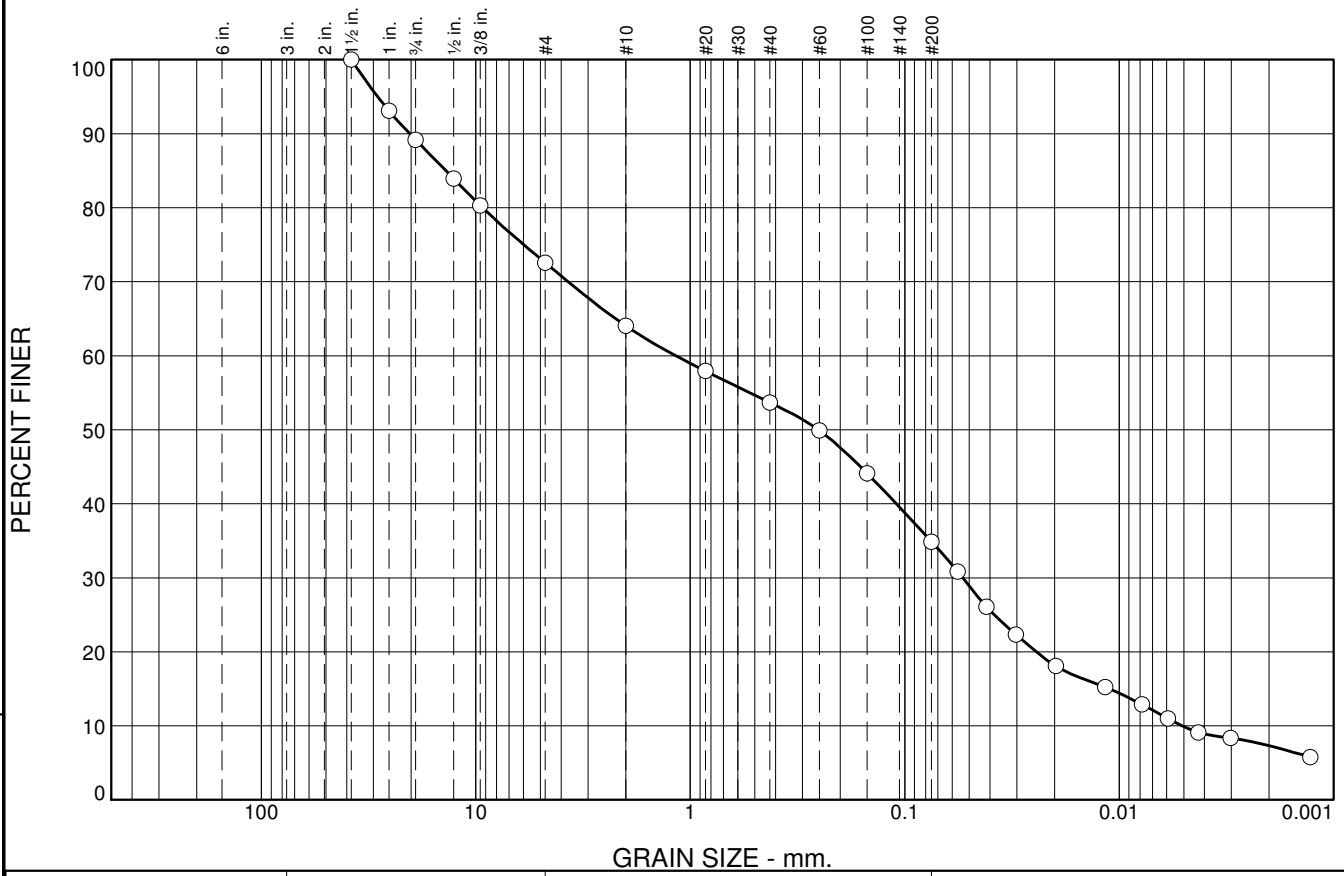
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.8	16.6	8.5	10.4	18.8	27.6	7.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	93.1		
.75	89.2		
.5	83.9		
.375	80.3		
#4	72.6		
#10	64.1		
#20	57.9		
#40	53.7		
#60	49.9		
#100	44.1		
#200	34.9		
0.0566 mm.	30.8		
0.0416 mm.	26.1		
0.0303 mm.	22.3		
0.0197 mm.	18.1		
0.0116 mm.	15.2		
0.0078 mm.	12.9		
0.0059 mm.	11.0		
0.0043 mm.	9.1		
0.0030 mm.	8.4		
0.0013 mm.	5.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 20.3062 D_{85}= 13.7781 D_{60}= 1.1664
D_{50}= 0.2526 D_{30}= 0.0536 D_{15}= 0.0111
D_{10}= 0.0051 C_u= 229.40 C_c= 0.49

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-44 **Source of Sample:** **Date:** 6/22/16
Location: TP16-44 **Elev./Depth:** 3.5-4.0m

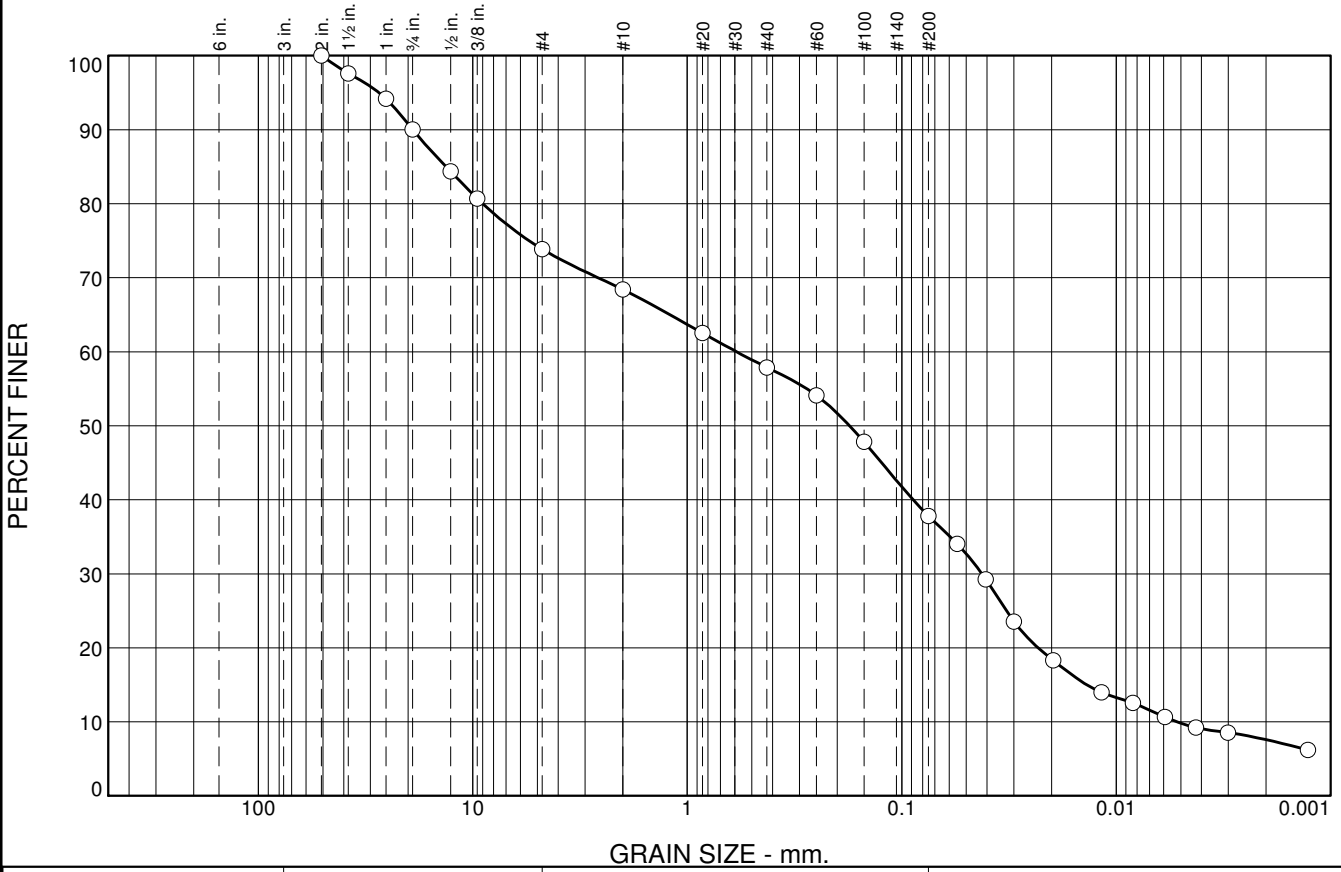
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.0	16.1	5.5	10.5	20.1	30.2	7.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	97.6		
1	94.2		
.75	90.0		
.5	84.4		
.375	80.7		
#4	73.9		
#10	68.4		
#20	62.5		
#40	57.9		
#60	54.1		
#100	47.8		
#200	37.8		
0.0551 mm.	34.0		
0.0405 mm.	29.3		
0.0300 mm.	23.5		
0.0197 mm.	18.3		
0.0117 mm.	14.0		
0.0084 mm.	12.6		
0.0059 mm.	10.7		
0.0042 mm.	9.2		
0.0030 mm.	8.6		
0.0013 mm.	6.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 19.0289 D_{85}= 13.3113 D_{60}= 0.5892
D_{50}= 0.1751 D_{30}= 0.0422 D_{15}= 0.0137
D_{10}= 0.0052 C_u= 112.93 C_c= 0.58

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-45 **Source of Sample:** **Date:** 6/22/16
Location: TP16-45 **Elev./Depth:** 3.0-3.3m

Knight Piésold CONSULTING

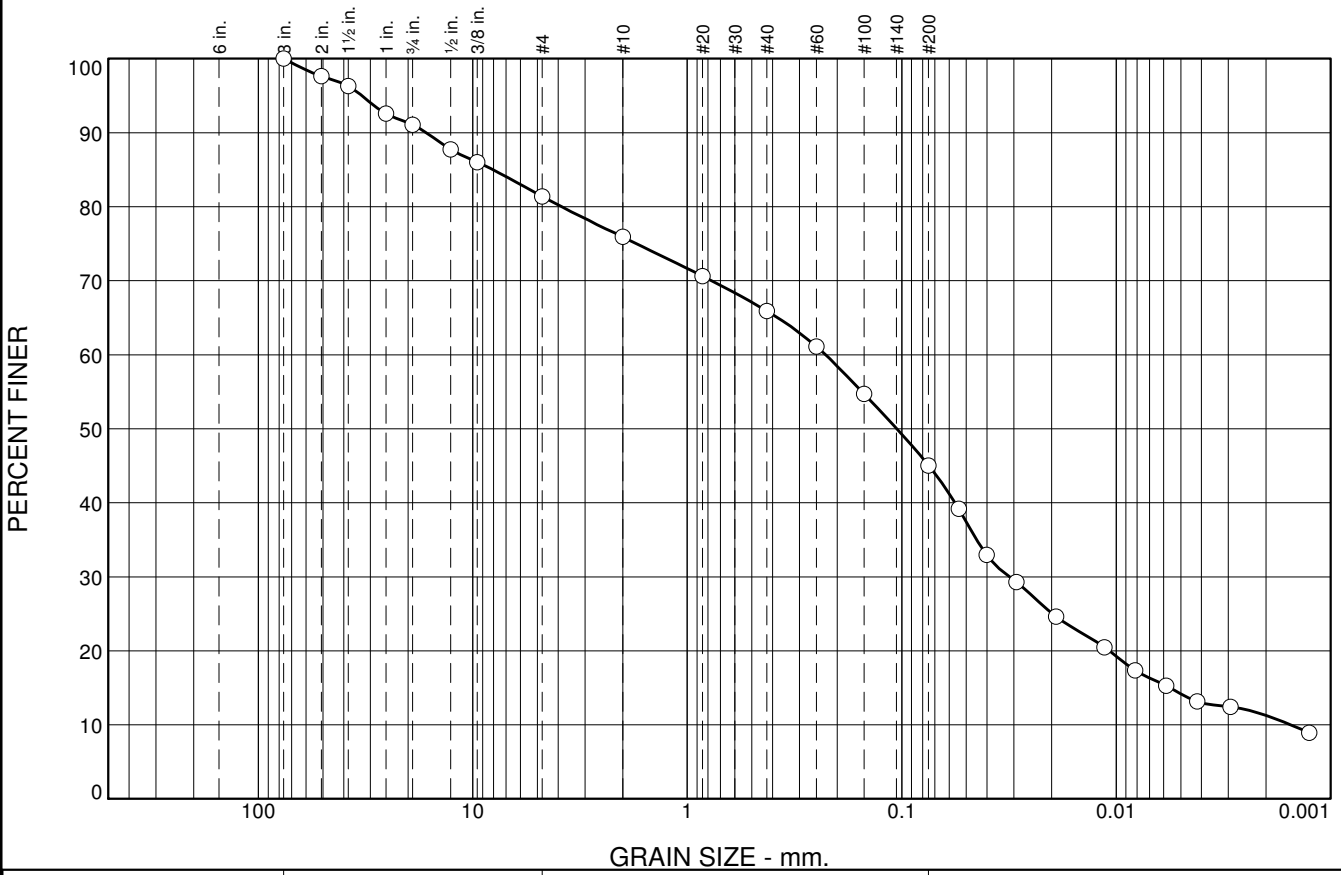
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.9	9.7	5.5	10.0	20.9	33.7	11.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	97.6		
1.5	96.3		
1	92.6		
.75	91.1		
.5	87.8		
.375	86.0		
#4	81.4		
#10	75.9		
#20	70.6		
#40	65.9		
#60	61.1		
#100	54.7		
#200	45.0		
0.0541 mm.	39.2		
0.0402 mm.	32.9		
0.0292 mm.	29.3		
0.0191 mm.	24.6		
0.0113 mm.	20.5		
0.0082 mm.	17.4		
0.0058 mm.	15.3		
0.0042 mm.	13.2		
0.0029 mm.	12.4		
0.0013 mm.	8.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.4749 D_{85}= 8.0553 D_{60}= 0.2267
D_{50}= 0.1053 D_{30}= 0.0314 D_{15}= 0.0056
D_{10}= 0.0015 C_u= 147.31 C_c= 2.83

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-46 **Source of Sample:** **Date:** 6/22/16
Location: TP16-46 **Elev./Depth:** 2.0-2.1m

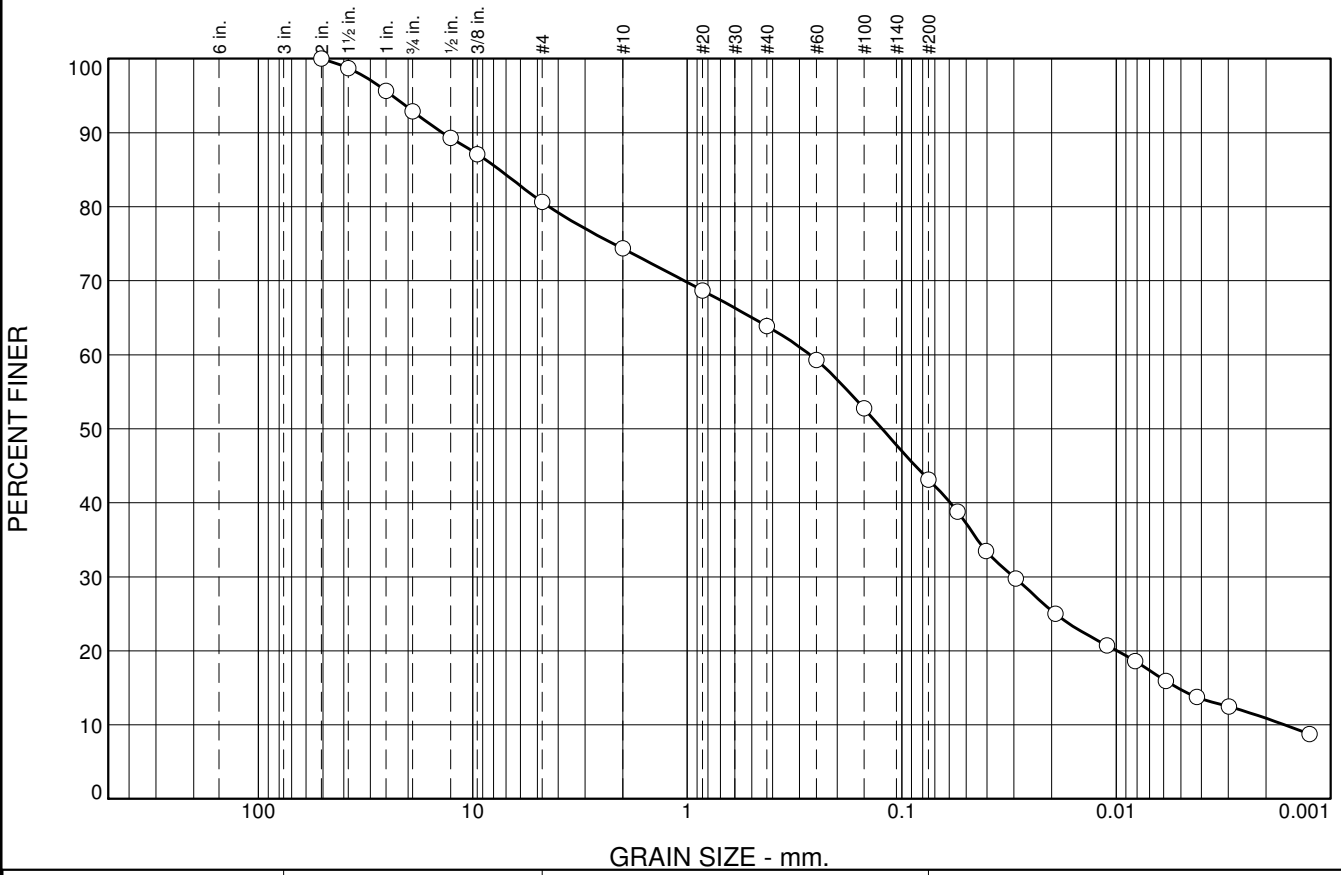
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.1	12.2	6.3	10.5	20.8	32.2	10.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.7		
1	95.7		
.75	92.9		
.5	89.3		
.375	87.1		
#4	80.7		
#10	74.4		
#20	68.7		
#40	63.9		
#60	59.3		
#100	52.8		
#200	43.1		
0.0549 mm.	38.8		
0.0405 mm.	33.5		
0.0294 mm.	29.8		
0.0192 mm.	25.0		
0.0110 mm.	20.8		
0.0082 mm.	18.6		
0.0059 mm.	15.9		
0.0042 mm.	13.8		
0.0030 mm.	12.5		
0.0013 mm.	8.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 13.8302 D_{85}= 7.5079 D_{60}= 0.2677
D_{50}= 0.1235 D_{30}= 0.0300 D_{15}= 0.0052
D_{10}= 0.0016 C_u= 163.16 C_c= 2.05

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-47 **Source of Sample:** **Date:** 6/25/16
Location: TP16-47 **Elev./Depth:** 1.3-1.6m

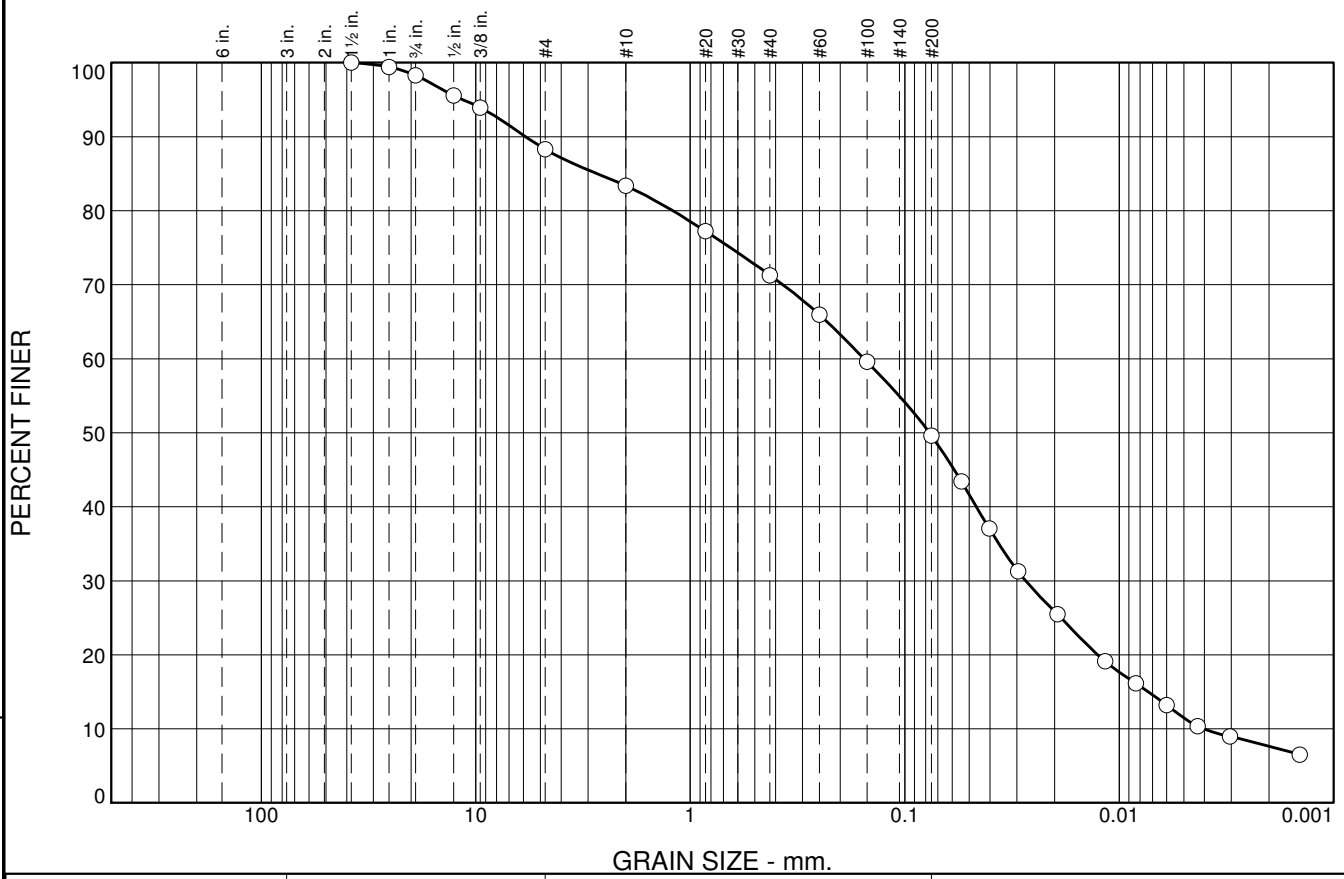
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.7	10.0	4.9	12.1	21.7	41.9	7.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	99.4		
.75	98.3		
.5	95.6		
.375	93.9		
#4	88.3		
#10	83.4		
#20	77.2		
#40	71.3		
#60	66.0		
#100	59.6		
#200	49.6		
0.0544 mm.	43.4		
0.0403 mm.	37.1		
0.0296 mm.	31.3		
0.0194 mm.	25.5		
0.0116 mm.	19.1		
0.0084 mm.	16.1		
0.0060 mm.	13.2		
0.0043 mm.	10.4		
0.0030 mm.	9.0		
0.0014 mm.	6.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.8530 D_{85}= 2.7078 D_{60}= 0.1548
D_{50}= 0.0767 D_{30}= 0.0273 D_{15}= 0.0073
D_{10}= 0.0040 C_u= 38.23 C_c= 1.19

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-48 (1 of 2) **Source of Sample:** **Date:** 6/25/16
Location: TP16-48 **Elev./Depth:** 3.0-3.1m

Knight Piésold CONSULTING

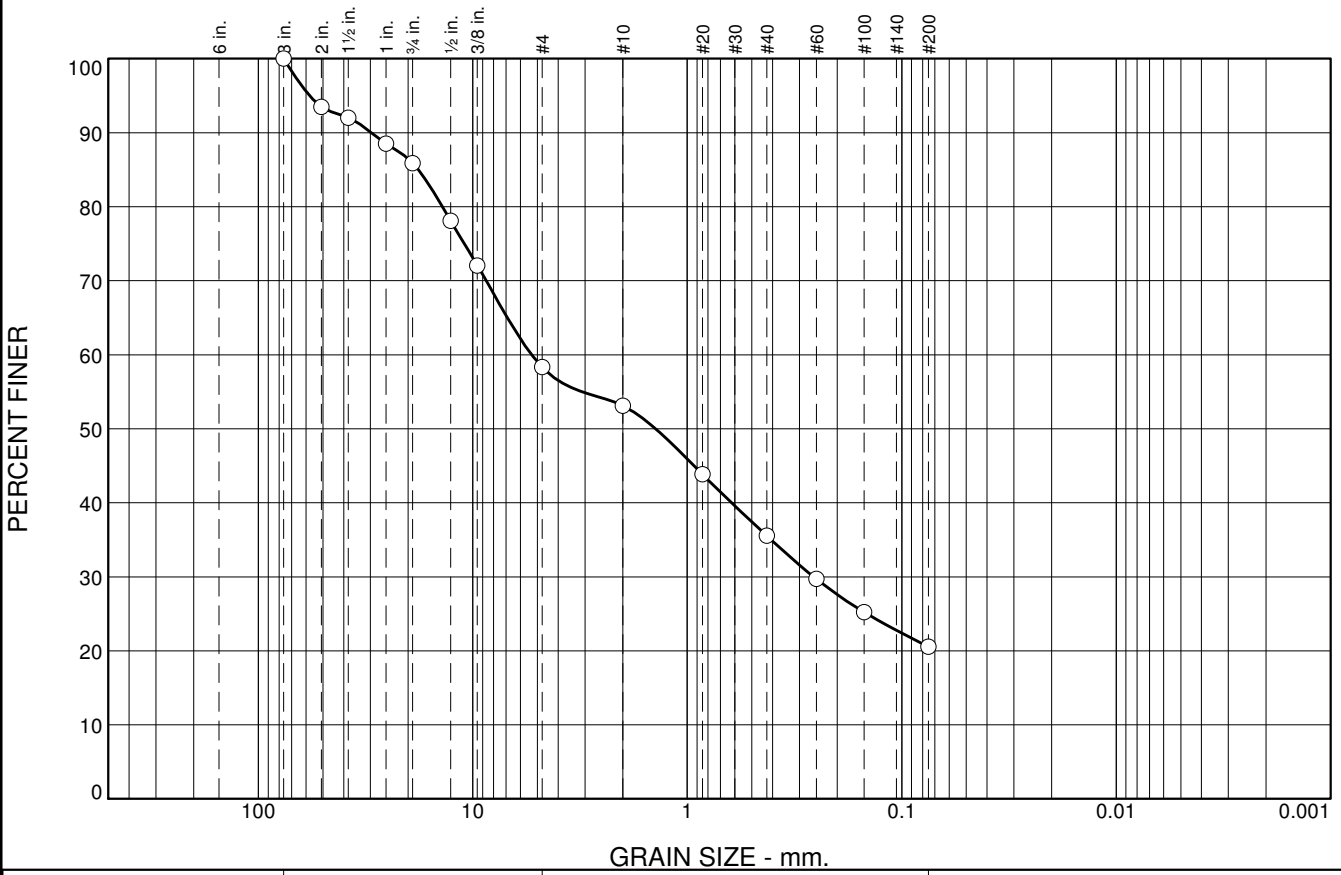
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.1	27.6	5.2	17.6	15.0	20.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	93.5		
1.5	92.0		
1	88.5		
.75	85.9		
.5	78.1		
.375	72.1		
#4	58.3		
#10	53.1		
#20	43.9		
#40	35.5		
#60	29.7		
#100	25.2		
#200	20.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 29.7081 D_{85}= 17.9216 D_{60}= 5.3098
D_{50}= 1.4050 D_{30}= 0.2575 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-49 **Source of Sample:** **Date:** 6/25/16
Location: TP16-49 **Elev./Depth:** 0.5-0.7m

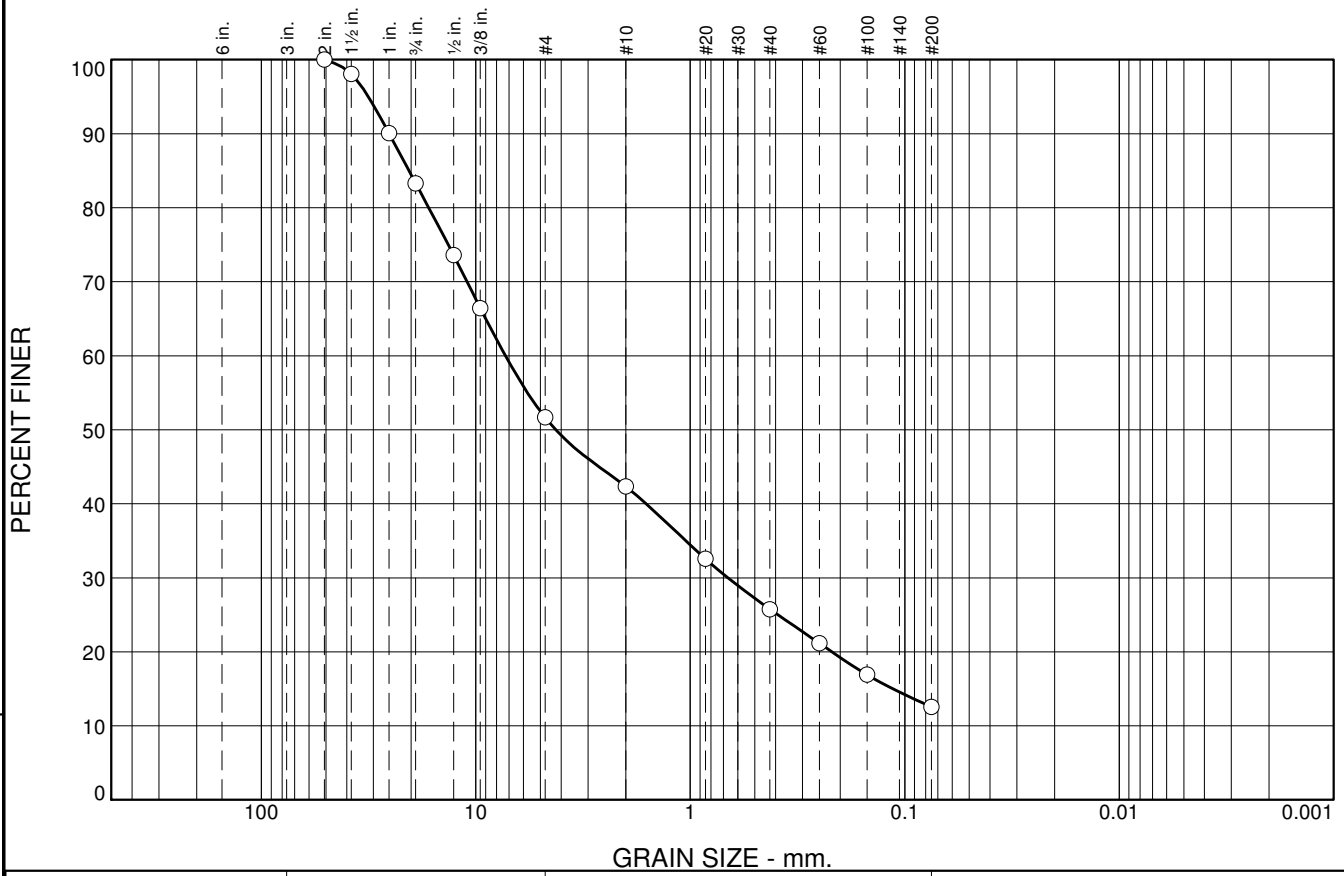
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	16.7	31.6	9.4	16.5	13.2	12.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.1		
1	90.1		
.75	83.3		
.5	73.6		
.375	66.4		
#4	51.7		
#10	42.3		
#20	32.6		
#40	25.8		
#60	21.2		
#100	16.9		
#200	12.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.3245 D_{85}= 20.4737 D_{60}= 7.2708
D_{50}= 4.2373 D_{30}= 0.6672 D_{15}= 0.1134
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-50 **Source of Sample:** **Date:** 6/25/16
Location: TP16-50 **Elev./Depth:** 2.0-3.0m

Knight Piésold CONSULTING

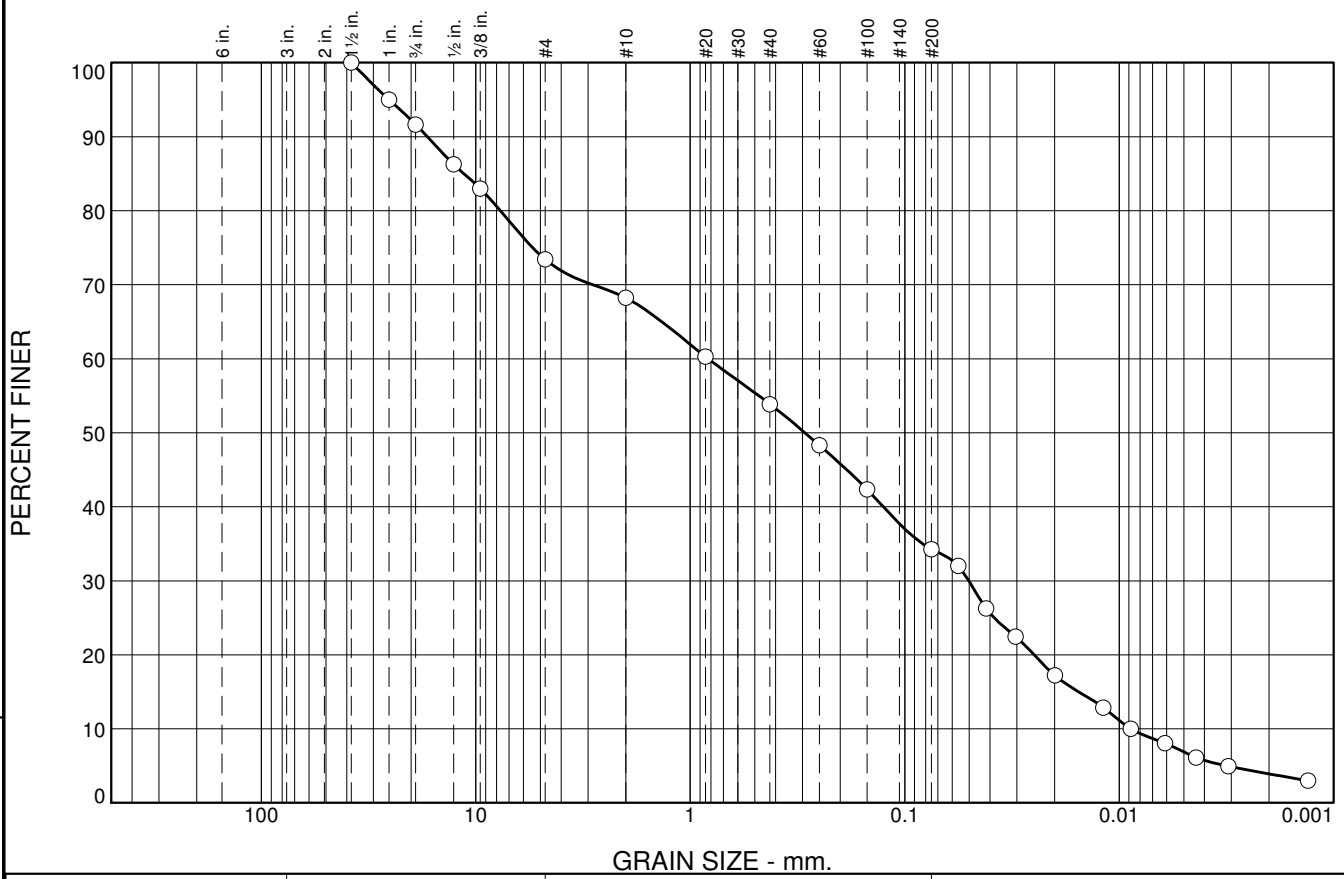
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.4	18.2	5.2	14.3	19.6	30.4	3.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	95.0		
.75	91.6		
.5	86.3		
.375	83.0		
#4	73.4		
#10	68.2		
#20	60.3		
#40	53.9		
#60	48.3		
#100	42.4		
#200	34.3		
0.0563 mm.	32.0		
0.0417 mm.	26.3		
0.0304 mm.	22.5		
0.0199 mm.	17.2		
0.0119 mm.	12.9		
0.0088 mm.	10.0		
0.0061 mm.	8.1		
0.0044 mm.	6.1		
0.0031 mm.	4.9		
0.0013 mm.	3.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.8107 D_{85}= 11.3584 D_{60}= 0.8244
D_{50}= 0.2920 D_{30}= 0.0502 D_{15}= 0.0155
D_{10}= 0.0088 C_u= 93.52 C_c= 0.35

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-52 **Source of Sample:** **Date:** 6/25/16
Location: TP16-52 **Elev./Depth:** 2.0-2.1m

Knight Piésold CONSULTING

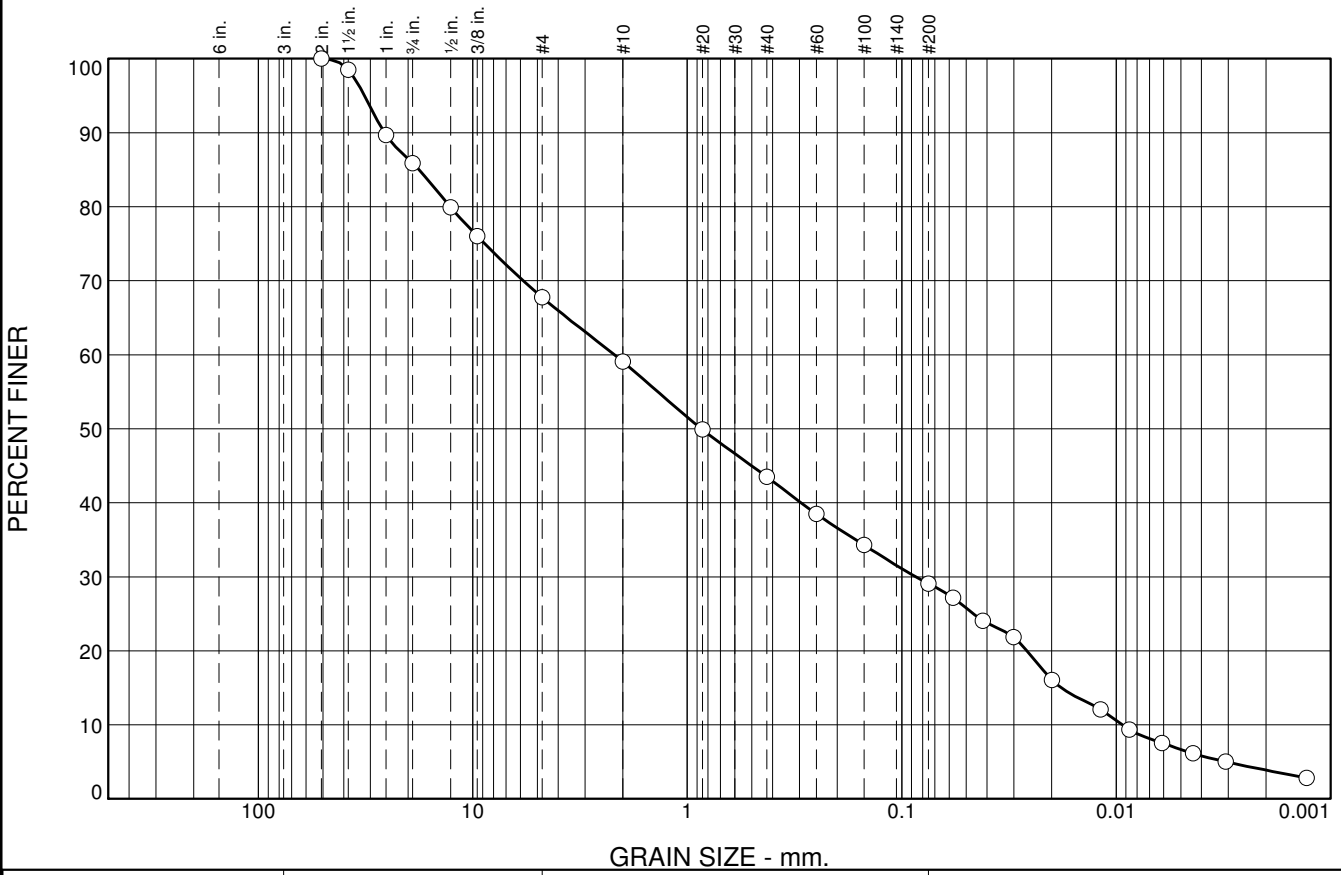
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.1	18.1	8.7	15.6	14.4	25.2	3.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	98.5		
1	89.7		
.75	85.9		
.5	79.9		
.375	76.0		
#4	67.8		
#10	59.1		
#20	49.9		
#40	43.5		
#60	38.5		
#100	34.3		
#200	29.1		
0.0576 mm.	27.2		
0.0418 mm.	24.1		
0.0301 mm.	21.8		
0.0199 mm.	16.1		
0.0118 mm.	12.1		
0.0087 mm.	9.4		
0.0061 mm.	7.5		
0.0044 mm.	6.1		
0.0031 mm.	5.0		
0.0013 mm.	2.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.7923 D_{85}= 17.7821 D_{60}= 2.1864
D_{50}= 0.8581 D_{30}= 0.0858 D_{15}= 0.0180
D_{10}= 0.0094 C_u= 233.22 C_c= 0.36

Classification

USCS= AASHTO=

Remarks

Sample No.: TP16-53 **Source of Sample:** **Date:** 6/25/16
Location: TP16-53 **Elev./Depth:** 3.0-3.5m

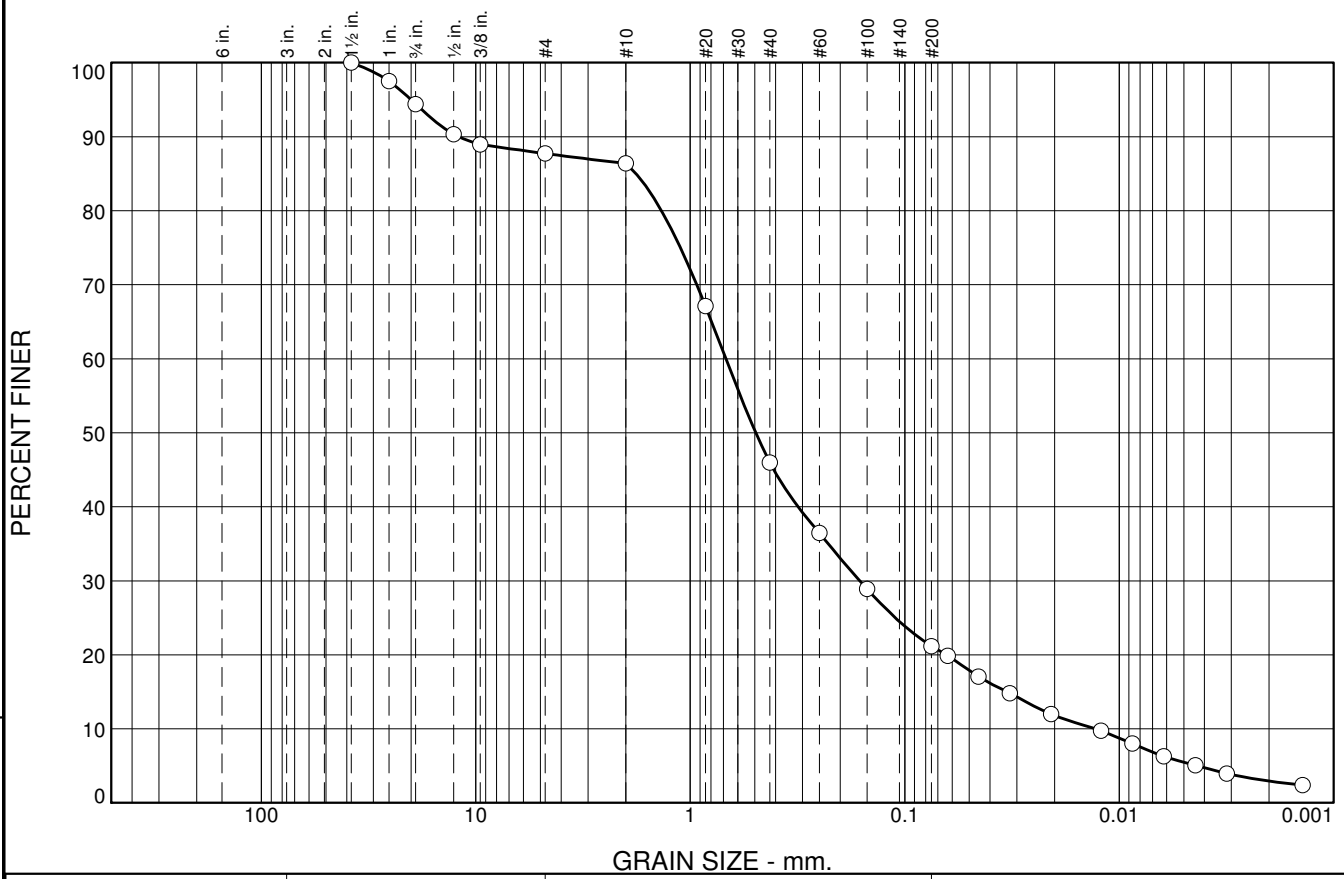
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: JDH **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.6	6.7	1.3	40.4	24.8	18.3	2.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	97.5		
.75	94.4		
.5	90.4		
.375	89.0		
#4	87.7		
#10	86.4		
#20	67.1		
#40	46.0		
#60	36.4		
#100	28.9		
#200	21.2		
0.0630 mm.	19.9		
0.0452 mm.	17.1		
0.0324 mm.	14.8		
0.0208 mm.	12.0		
0.0122 mm.	9.7		
0.0087 mm.	8.0		
0.0062 mm.	6.3		
0.0044 mm.	5.1		
0.0031 mm.	4.0		
0.0014 mm.	2.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.0227 D_{85}= 1.7868 D_{60}= 0.6818
D_{50}= 0.4948 D_{30}= 0.1620 D_{15}= 0.0334
D_{10}= 0.0130 C_u= 52.59 C_c= 2.97

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-05 **Source of Sample:** **Date:** 9/13/16
Location: K16-381 **Elev./Depth:** 5.2-5.8m

Knight Piésold CONSULTING

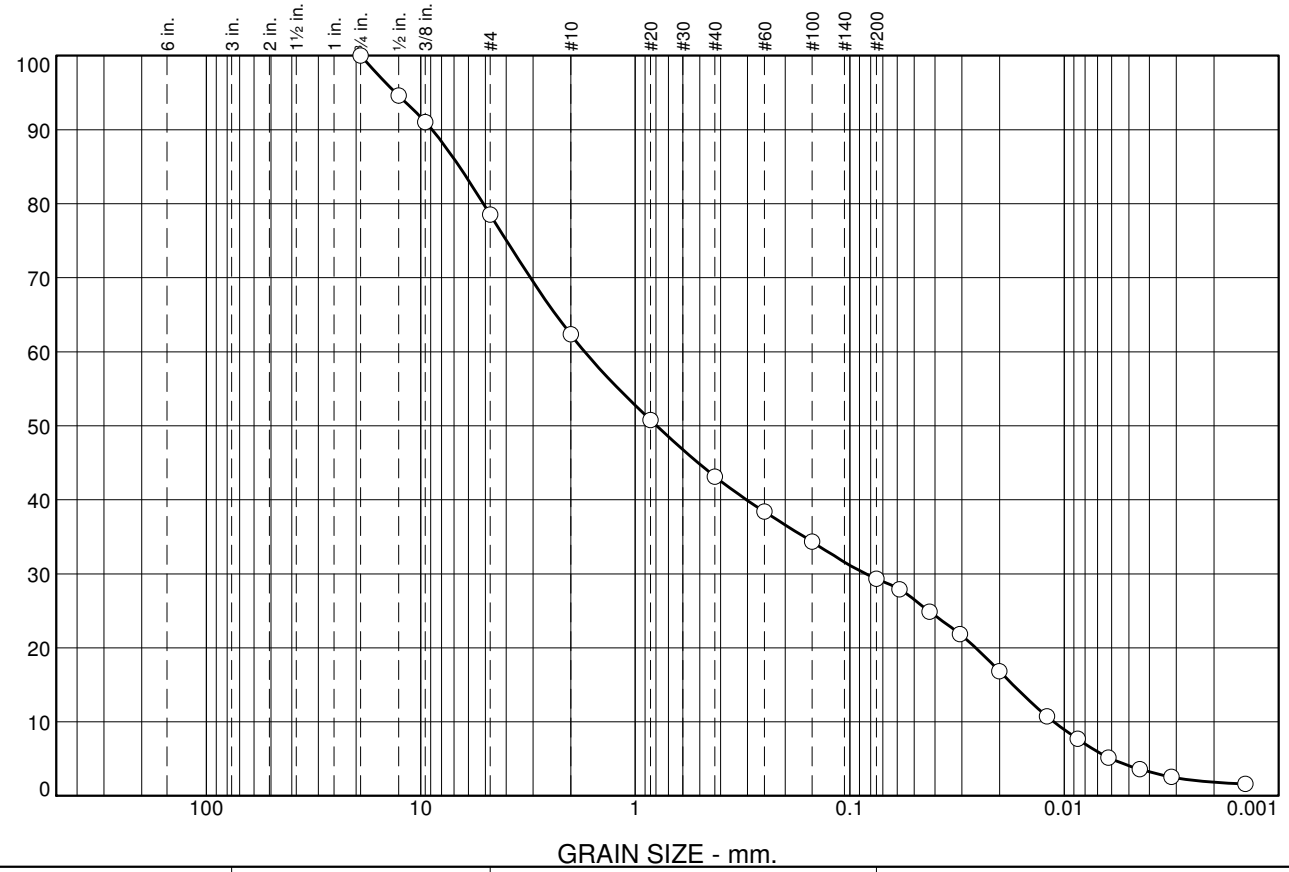
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	21.5	16.2	19.2	13.8	27.5	1.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	94.6		
.375	91.0		
#4	78.5		
#10	62.3		
#20	50.8		
#40	43.1		
#60	38.4		
#100	34.3		
#200	29.3		
0.0587 mm.	27.9		
0.0424 mm.	24.9		
0.0306 mm.	21.9		
0.0200 mm.	16.8		
0.0120 mm.	10.8		
0.0087 mm.	7.7		
0.0062 mm.	5.2		
0.0044 mm.	3.6		
0.0032 mm.	2.6		
0.0014 mm.	1.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 8.8553 D_{85}= 6.6043 D_{60}= 1.7198
D_{50}= 0.7945 D_{30}= 0.0842 D_{15}= 0.0173
D_{10}= 0.0112 C_u= 154.13 C_c= 0.37

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-03 **Source of Sample:** **Date:** 9/13/16
Location: K16-387 **Elev./Depth:** 3.0-3.3m

Knight Piésold CONSULTING

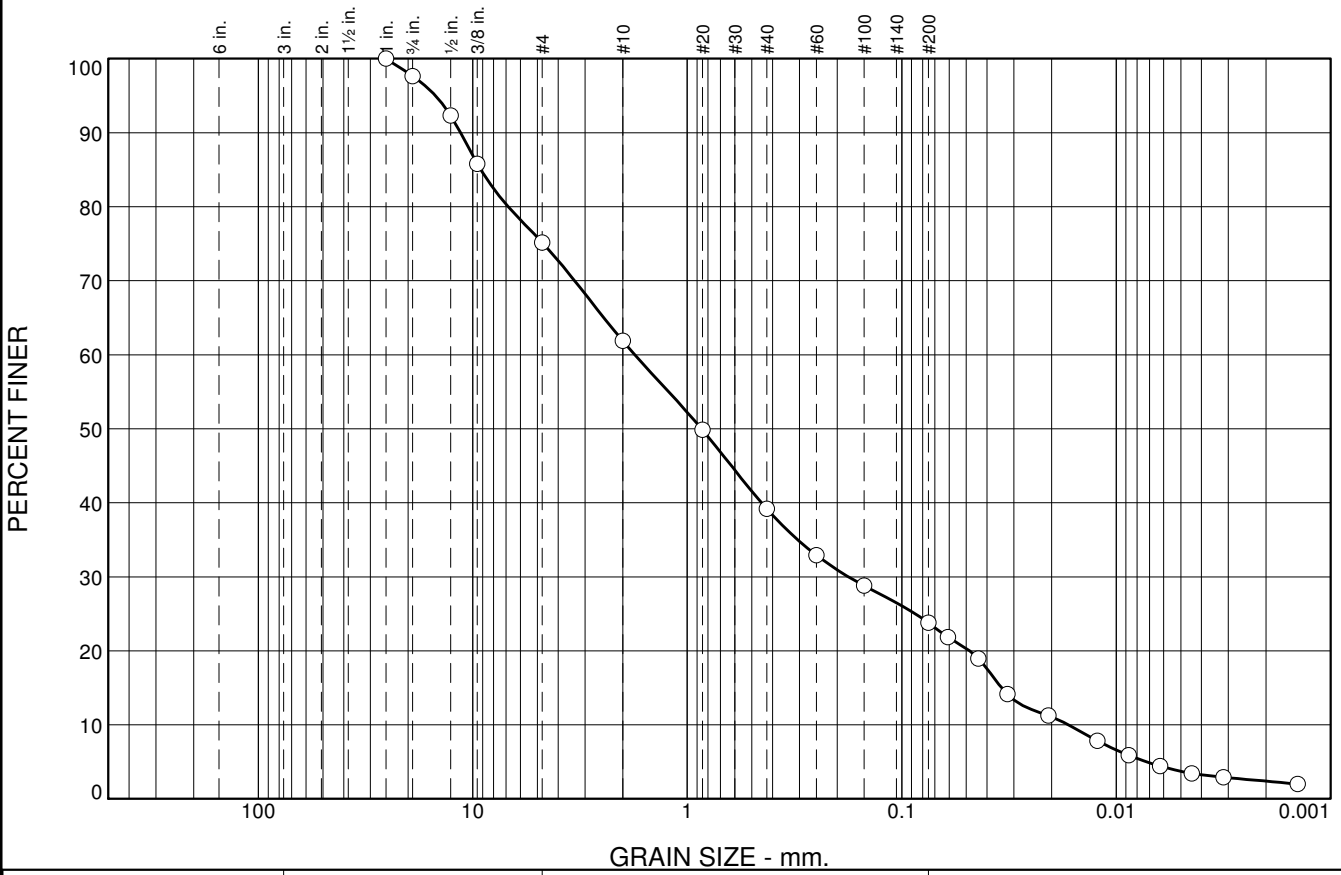
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.4	22.4	13.3	22.7	15.4	21.4	2.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	97.6		
.5	92.3		
.375	85.8		
#4	75.2		
#10	61.9		
#20	49.9		
#40	39.2		
#60	32.9		
#100	28.8		
#200	23.8		
0.0609 mm.	21.9		
0.0440 mm.	19.0		
0.0321 mm.	14.1		
0.0207 mm.	11.2		
0.0122 mm.	7.8		
0.0087 mm.	5.9		
0.0062 mm.	4.4		
0.0044 mm.	3.5		
0.0032 mm.	2.9		
0.0014 mm.	2.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.4138 D_{85}= 9.1716 D_{60}= 1.7561
D_{50}= 0.8581 D_{30}= 0.1772 D_{15}= 0.0342
D_{10}= 0.0167 C_u= 105.11 C_c= 1.07

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-03 **Source of Sample:** **Date:** 9/13/16
Location: K16-389 **Elev./Depth:** 3.0-3.3m

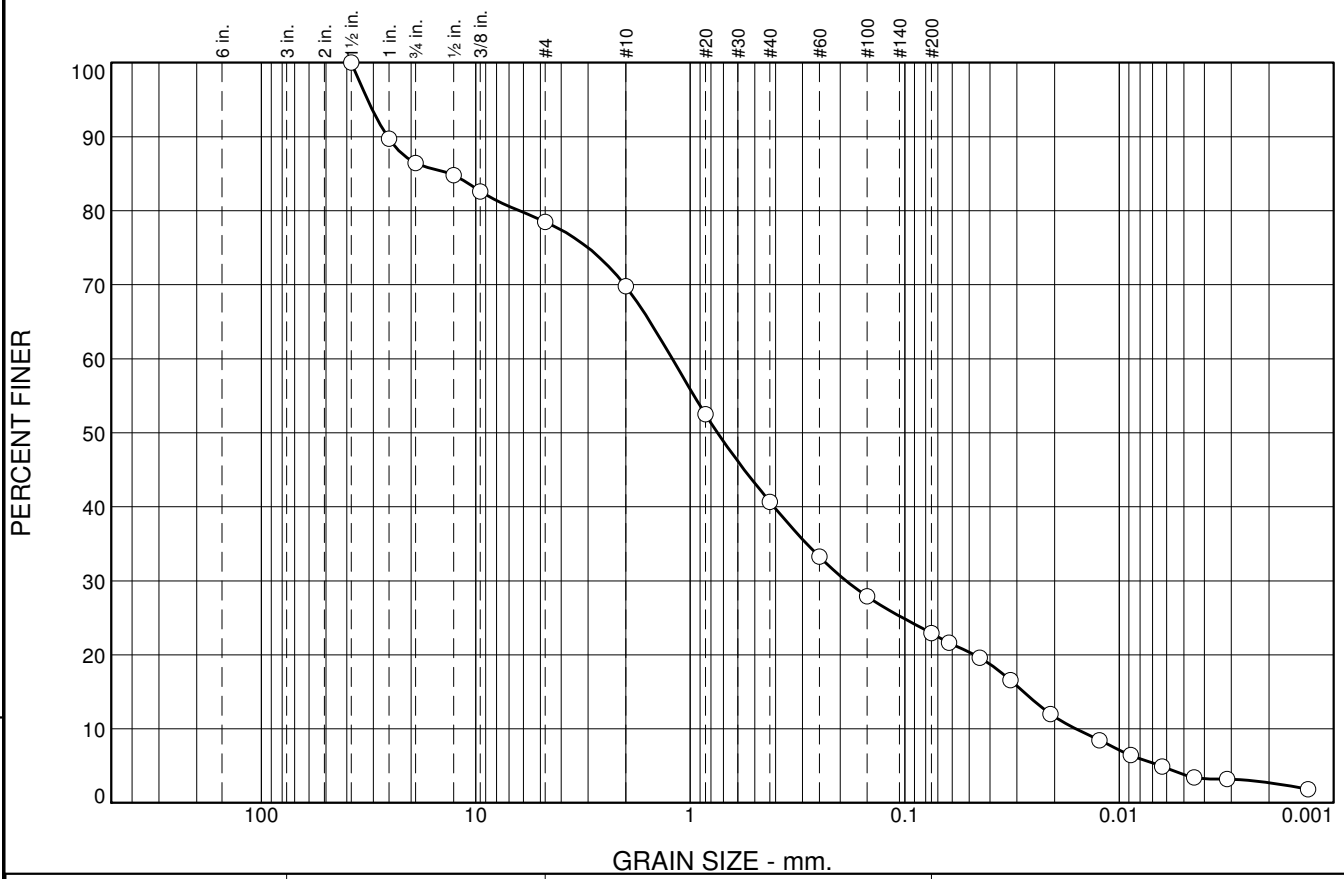
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.6	7.9	8.7	29.1	17.8	20.2	2.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	89.7		
.75	86.4		
.5	84.8		
.375	82.6		
#4	78.5		
#10	69.8		
#20	52.5		
#40	40.7		
#60	33.3		
#100	27.9		
#200	22.9		
0.0623 mm.	21.6		
0.0446 mm.	19.6		
0.0322 mm.	16.6		
0.0209 mm.	12.0		
0.0123 mm.	8.5		
0.0088 mm.	6.4		
0.0063 mm.	4.9		
0.0045 mm.	3.5		
0.0031 mm.	3.2		
0.0013 mm.	1.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.7673 D_{85}= 13.2003 D_{60}= 1.2135
D_{50}= 0.7460 D_{30}= 0.1876 D_{15}= 0.0279
D_{10}= 0.0159 C_u= 76.15 C_c= 1.82

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-05 **Source of Sample:** **Date:** 9/14/16
Location: K16-389 **Elev./Depth:** 6.0-6.13m

Knight Piésold CONSULTING

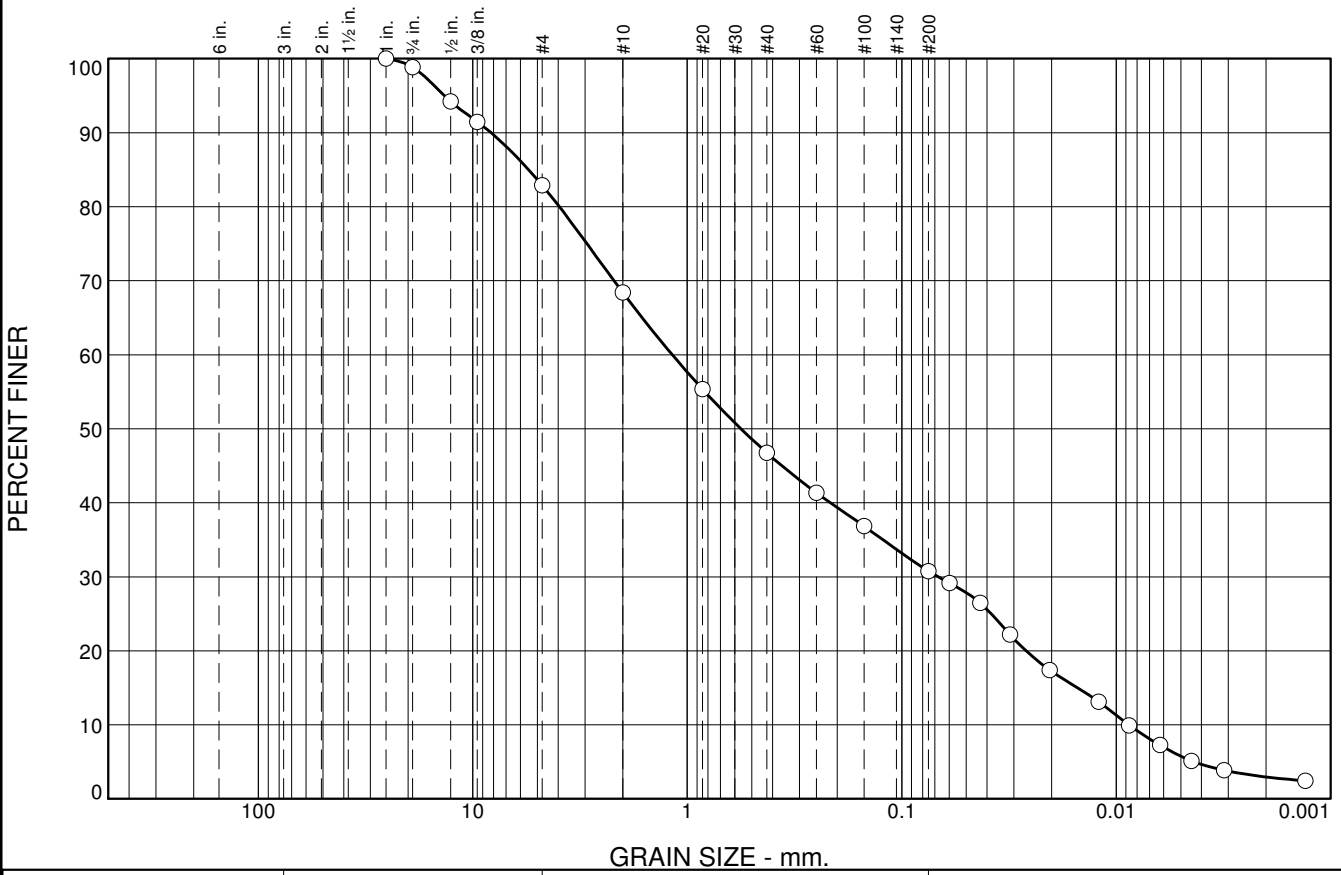
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.2	15.9	14.5	21.7	15.9	27.8	3.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	98.8		
.5	94.2		
.375	91.5		
#4	82.9		
#10	68.4		
#20	55.4		
#40	46.7		
#60	41.4		
#100	36.9		
#200	30.8		
0.0598 mm.	29.1		
0.0430 mm.	26.5		
0.0313 mm.	22.2		
0.0204 mm.	17.4		
0.0121 mm.	13.1		
0.0087 mm.	9.9		
0.0062 mm.	7.3		
0.0045 mm.	5.1		
0.0031 mm.	3.9		
0.0013 mm.	2.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 8.2238 D_{85}= 5.4871 D_{60}= 1.1750
D_{50}= 0.5621 D_{30}= 0.0676 D_{15}= 0.0151
D_{10}= 0.0088 C_u= 134.15 C_c= 0.44

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-02 **Source of Sample:** **Date:** 9/14/16
Location: K16-390 **Elev./Depth:** 1.5-2.1m

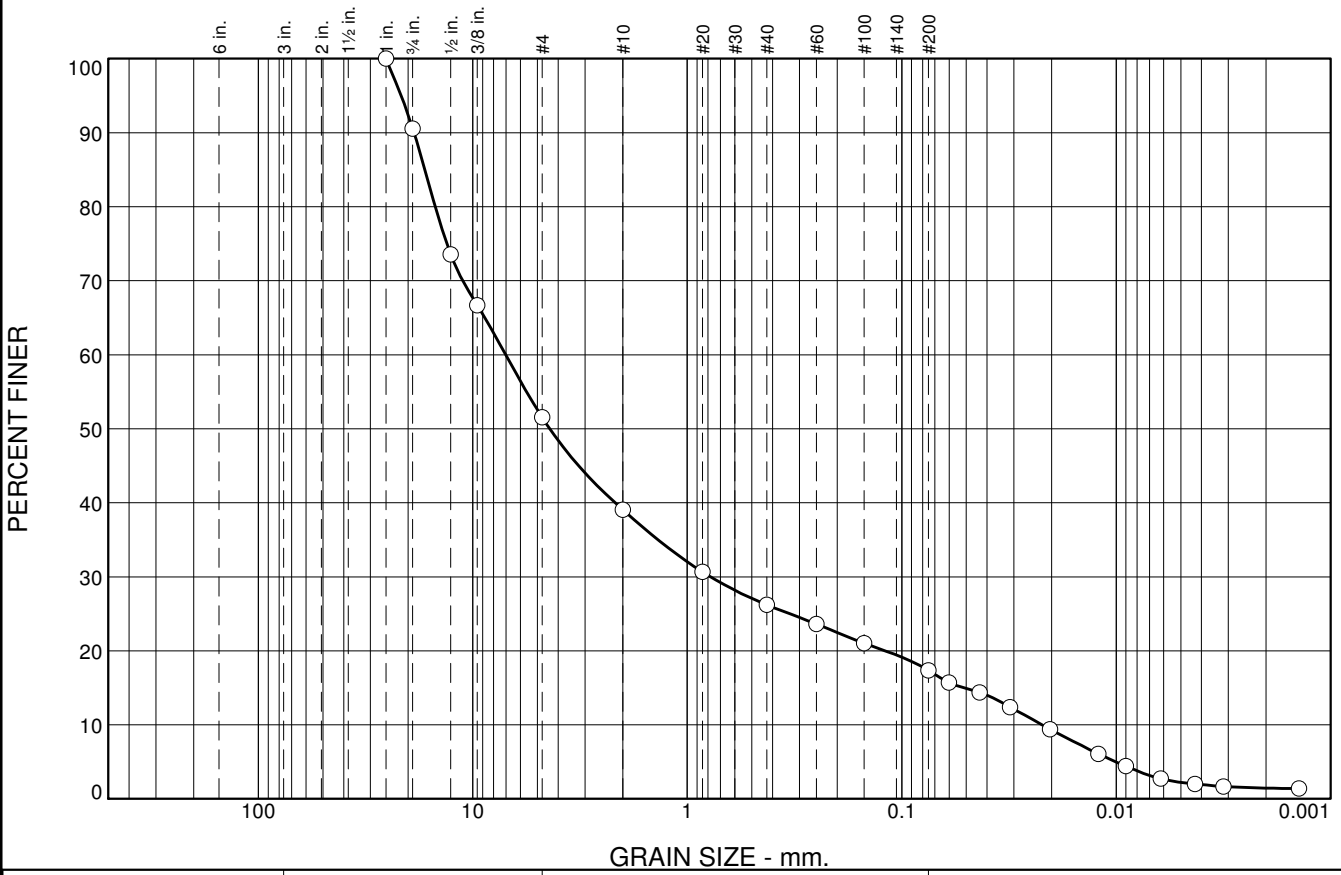
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.4	39.0	12.5	12.9	8.8	16.0	1.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	90.6		
.5	73.6		
.375	66.7		
#4	51.6		
#10	39.1		
#20	30.7		
#40	26.2		
#60	23.6		
#100	21.0		
#200	17.4		
0.0604 mm.	15.7		
0.0433 mm.	14.4		
0.0312 mm.	12.4		
0.0203 mm.	9.4		
0.0121 mm.	6.1		
0.0090 mm.	4.4		
0.0062 mm.	2.7		
0.0043 mm.	2.0		
0.0032 mm.	1.7		
0.0014 mm.	1.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 18.7826 D_{85}= 16.7234 D_{60}= 7.0222
D_{50}= 4.3749 D_{30}= 0.7799 D_{15}= 0.0513
D_{10}= 0.0221 C_u= 317.46 C_c= 3.92

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-03 **Source of Sample:** **Date:** 9/13/16
Location: K16-397 **Elev./Depth:** 3.3-3.82m

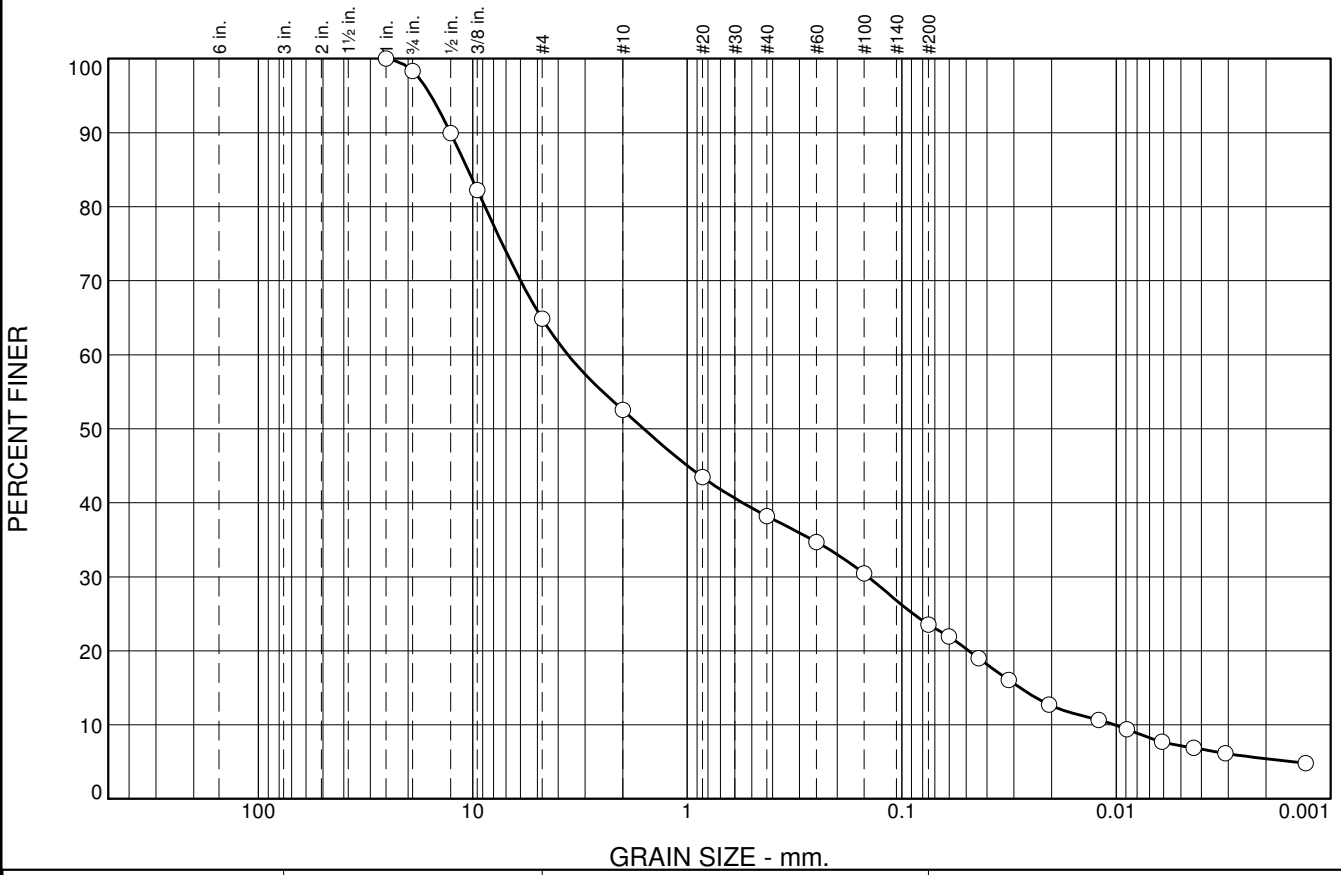
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.7	33.4	12.4	14.3	14.7	18.1	5.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	98.3		
.5	90.0		
.375	82.2		
#4	64.9		
#10	52.5		
#20	43.5		
#40	38.2		
#60	34.7		
#100	30.4		
#200	23.5		
0.0604 mm.	21.9		
0.0438 mm.	19.0		
0.0317 mm.	16.1		
0.0206 mm.	12.7		
0.0121 mm.	10.7		
0.0089 mm.	9.4		
0.0061 mm.	7.7		
0.0044 mm.	6.9		
0.0031 mm.	6.2		
0.0013 mm.	4.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.7211 D_{85}= 10.5444 D_{60}= 3.6034
D_{50}= 1.5956 D_{30}= 0.1434 D_{15}= 0.0280
D_{10}= 0.0102 C_u= 353.27 C_c= 0.56

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-03 **Source of Sample:** **Date:** 9/14/16
Location: K16-398 **Elev./Depth:** 3.4-4.0m

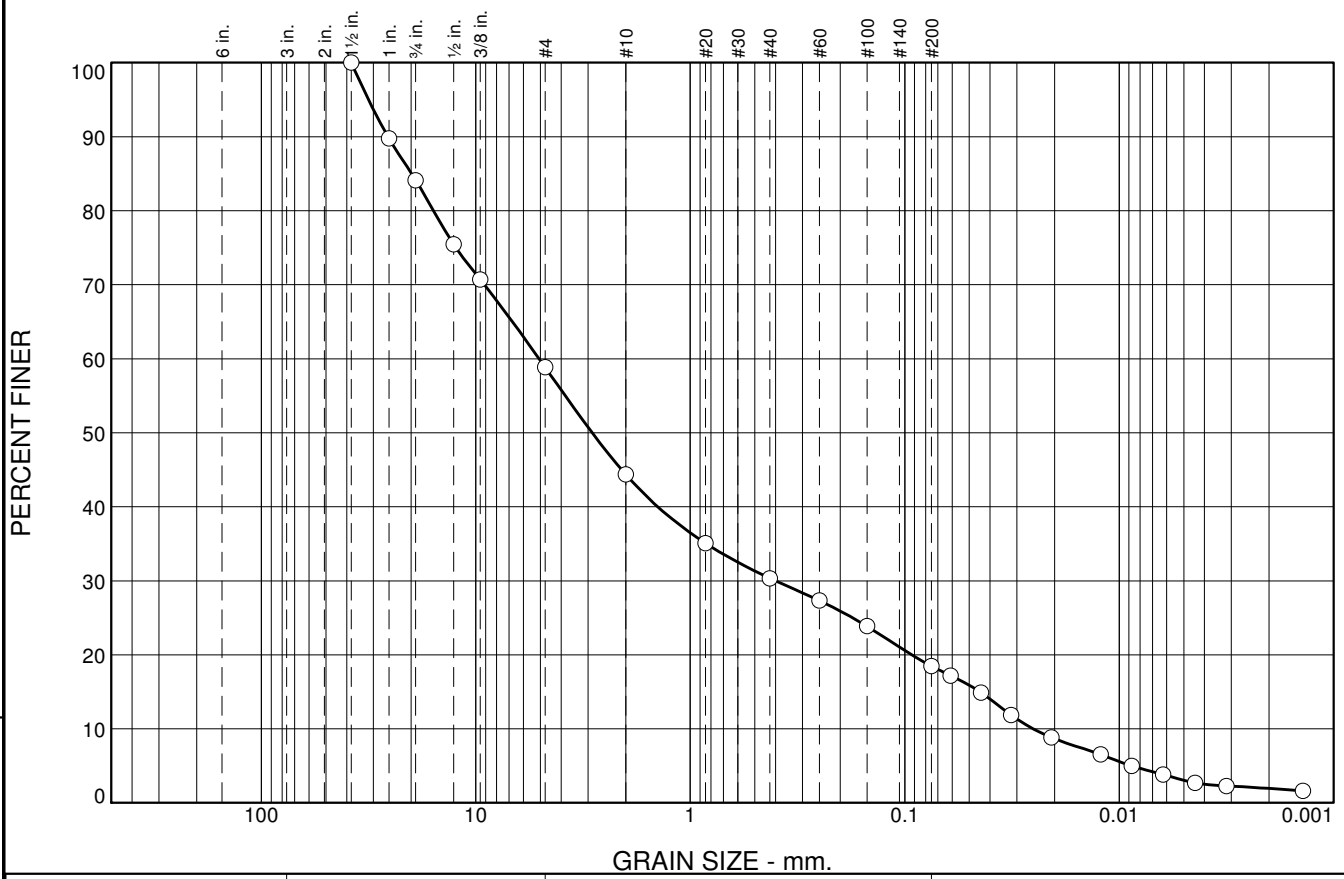
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	15.9	25.2	14.5	14.1	11.8	16.6	1.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	89.8		
.75	84.1		
.5	75.5		
.375	70.7		
#4	58.9		
#10	44.4		
#20	35.1		
#40	30.3		
#60	27.3		
#100	23.9		
#200	18.5		
0.0610 mm.	17.2		
0.0440 mm.	14.9		
0.0320 mm.	11.9		
0.0207 mm.	8.8		
0.0122 mm.	6.5		
0.0087 mm.	5.0		
0.0062 mm.	3.8		
0.0044 mm.	2.7		
0.0032 mm.	2.3		
0.0014 mm.	1.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.6531 D_{85}= 19.9127 D_{60}= 5.0674
D_{50}= 2.8669 D_{30}= 0.4002 D_{15}= 0.0445
D_{10}= 0.0252 C_u= 201.01 C_c= 1.25

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-04 **Source of Sample:** **Date:** 9/13/16
Location: K16-402 **Elev./Depth:** 4.1-4.7m

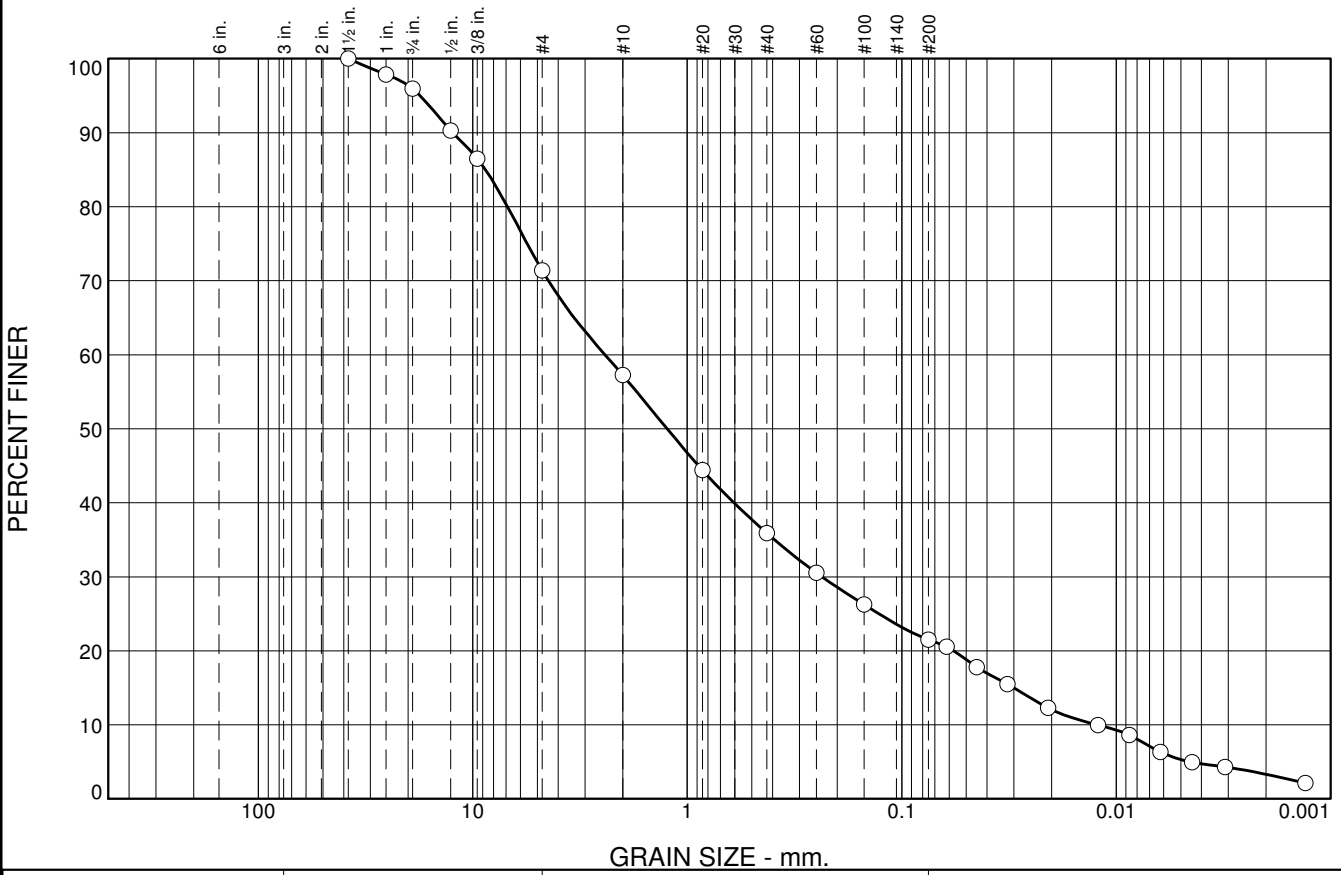
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.1	24.5	14.2	21.3	14.4	18.2	3.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	97.9		
.75	95.9		
.5	90.3		
.375	86.5		
#4	71.4		
#10	57.2		
#20	44.4		
#40	35.9		
#60	30.5		
#100	26.3		
#200	21.5		
0.0618 mm.	20.6		
0.0446 mm.	17.8		
0.0321 mm.	15.5		
0.0207 mm.	12.3		
0.0122 mm.	10.0		
0.0087 mm.	8.6		
0.0062 mm.	6.3		
0.0044 mm.	5.0		
0.0031 mm.	4.3		
0.0013 mm.	2.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.4192 D_{85}= 8.7298 D_{60}= 2.4182
D_{50}= 1.2415 D_{30}= 0.2355 D_{15}= 0.0300
D_{10}= 0.0122 C_u= 197.68 C_c= 1.88

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-02 **Source of Sample:** **Date:** 9/14/16
Location: K16-410 **Elev./Depth:** 1.5-2.1m

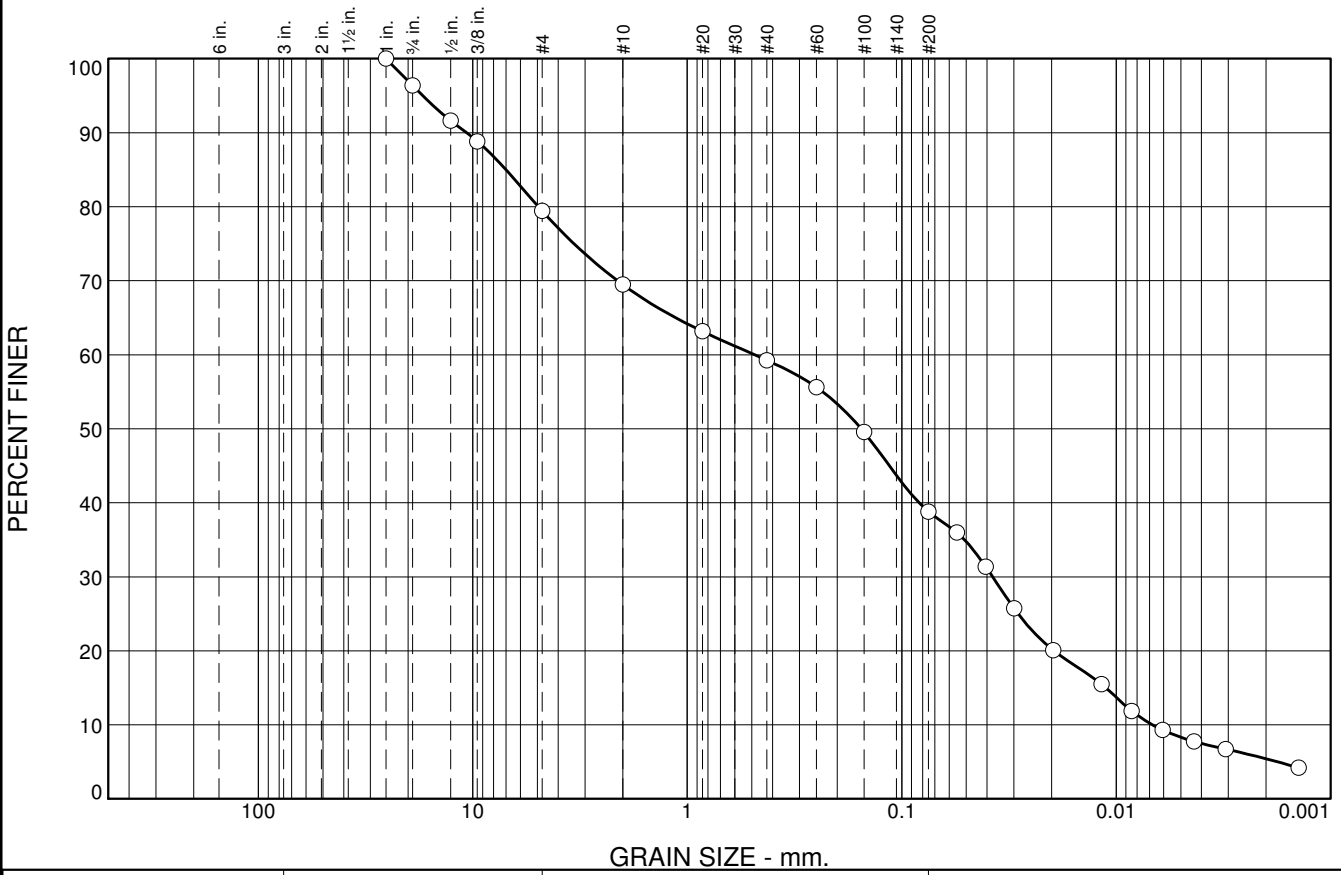
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.6	17.0	9.9	10.3	20.4	33.4	5.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	96.4		
.5	91.6		
.375	88.8		
#4	79.4		
#10	69.5		
#20	63.2		
#40	59.2		
#60	55.6		
#100	49.6		
#200	38.8		
0.0553 mm.	36.0		
0.0406 mm.	31.4		
0.0299 mm.	25.8		
0.0197 mm.	20.1		
0.0117 mm.	15.5		
0.0085 mm.	11.9		
0.0061 mm.	9.3		
0.0043 mm.	7.8		
0.0031 mm.	6.7		
0.0014 mm.	4.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 10.7081 D_{85}= 7.0030 D_{60}= 0.4858
D_{50}= 0.1544 D_{30}= 0.0377 D_{15}= 0.0112
D_{10}= 0.0068 C_u= 71.80 C_c= 0.43

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-02 **Source of Sample:** **Date:** 9/13/16
Location: K16-411 **Elev./Depth:** 2.0-2.6m

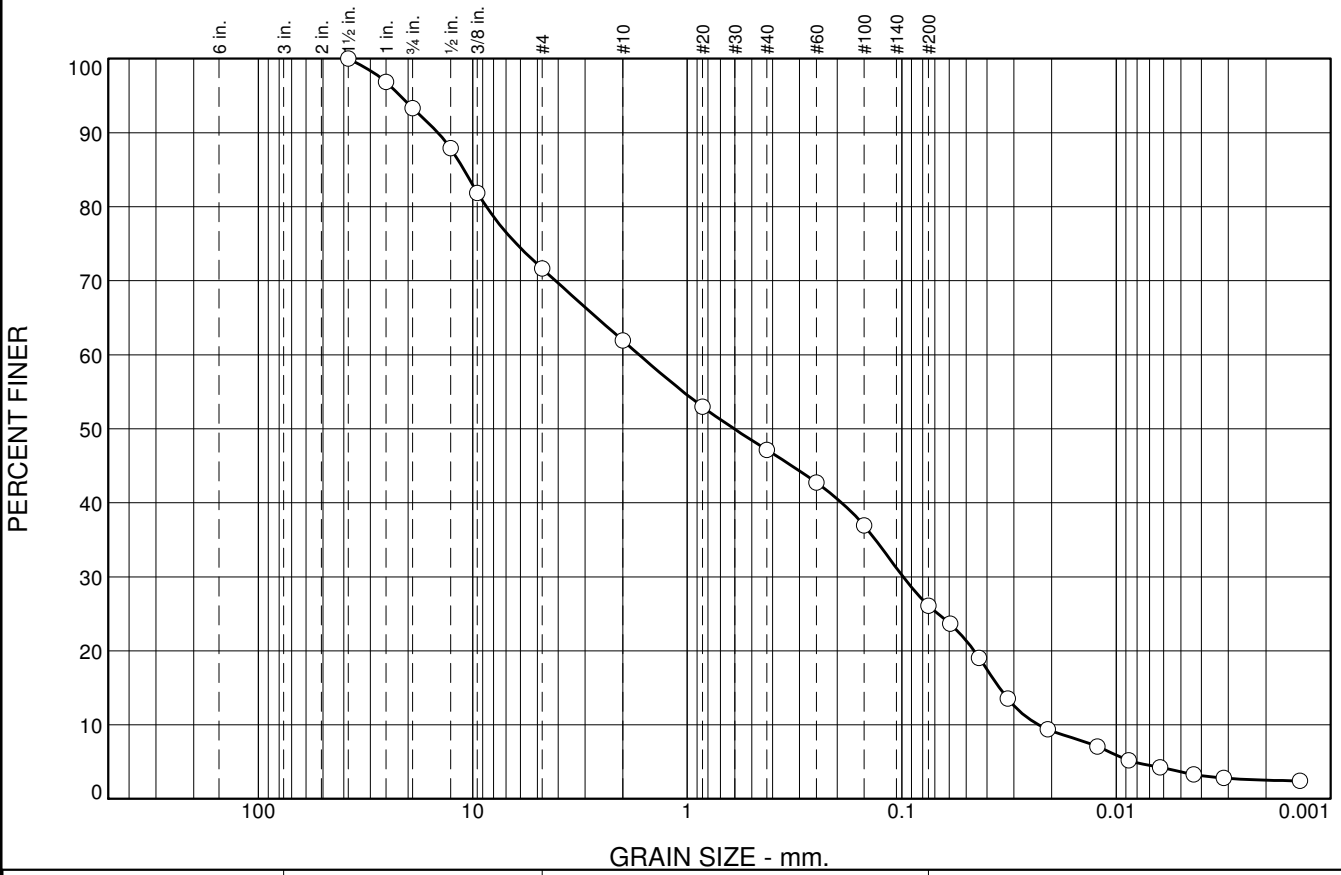
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.7	21.6	9.7	14.9	21.0	23.6	2.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	96.9		
.75	93.3		
.5	87.9		
.375	81.9		
#4	71.7		
#10	62.0		
#20	53.0		
#40	47.1		
#60	42.7		
#100	36.9		
#200	26.1		
0.0595 mm.	23.7		
0.0436 mm.	19.1		
0.0321 mm.	13.5		
0.0208 mm.	9.4		
0.0122 mm.	7.1		
0.0088 mm.	5.2		
0.0062 mm.	4.3		
0.0044 mm.	3.3		
0.0031 mm.	2.8		
0.0014 mm.	2.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 14.5208 D_{85}= 11.0110 D_{60}= 1.6746
D_{50}= 0.6053 D_{30}= 0.0985 D_{15}= 0.0350
D_{10}= 0.0230 C_u= 72.89 C_c= 0.25

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-03 **Source of Sample:** **Date:** 9/13/16
Location: K16-411 **Elev./Depth:** 3.5-4.1m

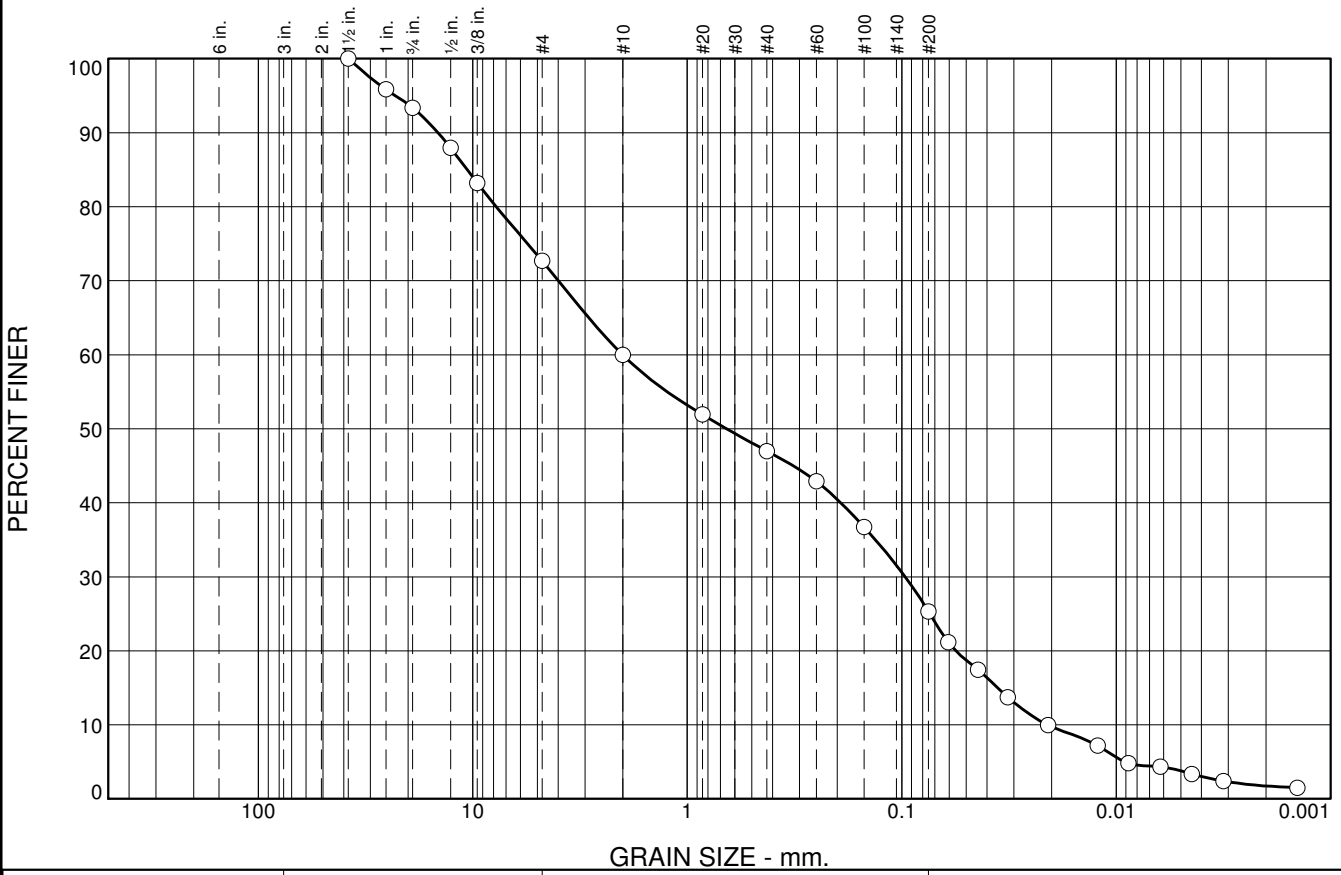
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.6	20.7	12.7	13.0	21.7	23.6	1.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	95.9		
.75	93.4		
.5	88.0		
.375	83.2		
#4	72.7		
#10	60.0		
#20	51.9		
#40	47.0		
#60	42.9		
#100	36.7		
#200	25.3		
0.0607 mm.	21.2		
0.0441 mm.	17.5		
0.0320 mm.	13.7		
0.0208 mm.	10.0		
0.0122 mm.	7.2		
0.0088 mm.	4.8		
0.0062 mm.	4.3		
0.0044 mm.	3.4		
0.0032 mm.	2.4		
0.0014 mm.	1.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 14.5207 D_{85}= 10.6223 D_{60}= 2.0020
D_{50}= 0.6546 D_{30}= 0.0963 D_{15}= 0.0357
D_{10}= 0.0208 C_u= 96.08 C_c= 0.22

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-04 **Source of Sample:** **Date:** 9/13/16
Location: K16-411 **Elev./Depth:** 5.0-5.6m

Knight Piésold CONSULTING

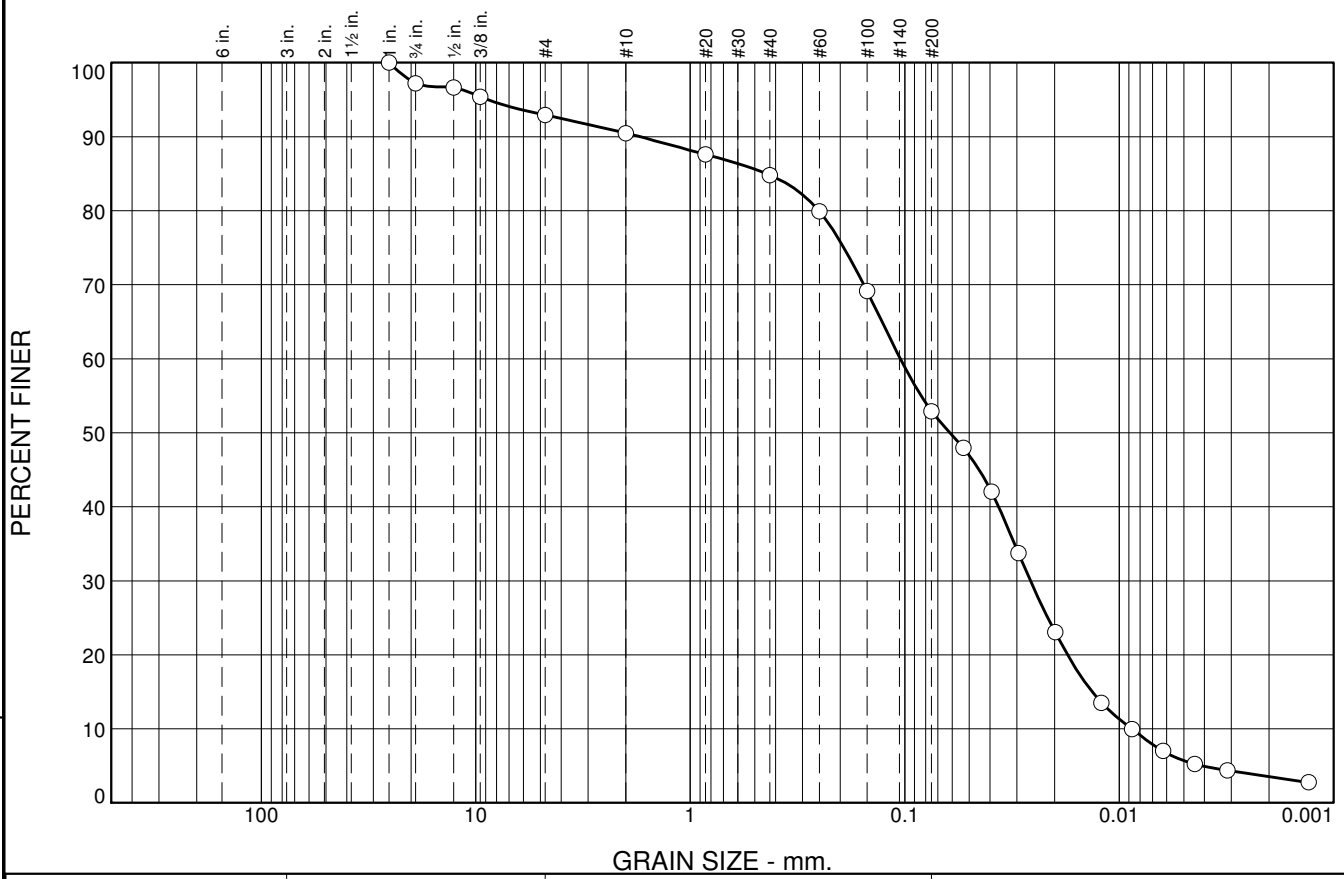
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.8	4.3	2.4	5.7	31.9	49.4	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	97.2		
.5	96.6		
.375	95.4		
#4	92.9		
#10	90.5		
#20	87.6		
#40	84.8		
#60	79.9		
#100	69.2		
#200	52.9		
0.0533 mm.	48.0		
0.0394 mm.	42.0		
0.0295 mm.	33.7		
0.0199 mm.	23.0		
0.0121 mm.	13.5		
0.0087 mm.	10.0		
0.0062 mm.	7.0		
0.0044 mm.	5.3		
0.0031 mm.	4.4		
0.0013 mm.	2.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.7173 D_{85}= 0.4412 D_{60}= 0.1047
D_{50}= 0.0616 D_{30}= 0.0259 D_{15}= 0.0134
D_{10}= 0.0087 C_u= 11.99 C_c= 0.73

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-06 **Source of Sample:** **Date:** 9/13/16
Location: K16-411 **Elev./Depth:** 11.0-11.6m

Knight Piésold CONSULTING

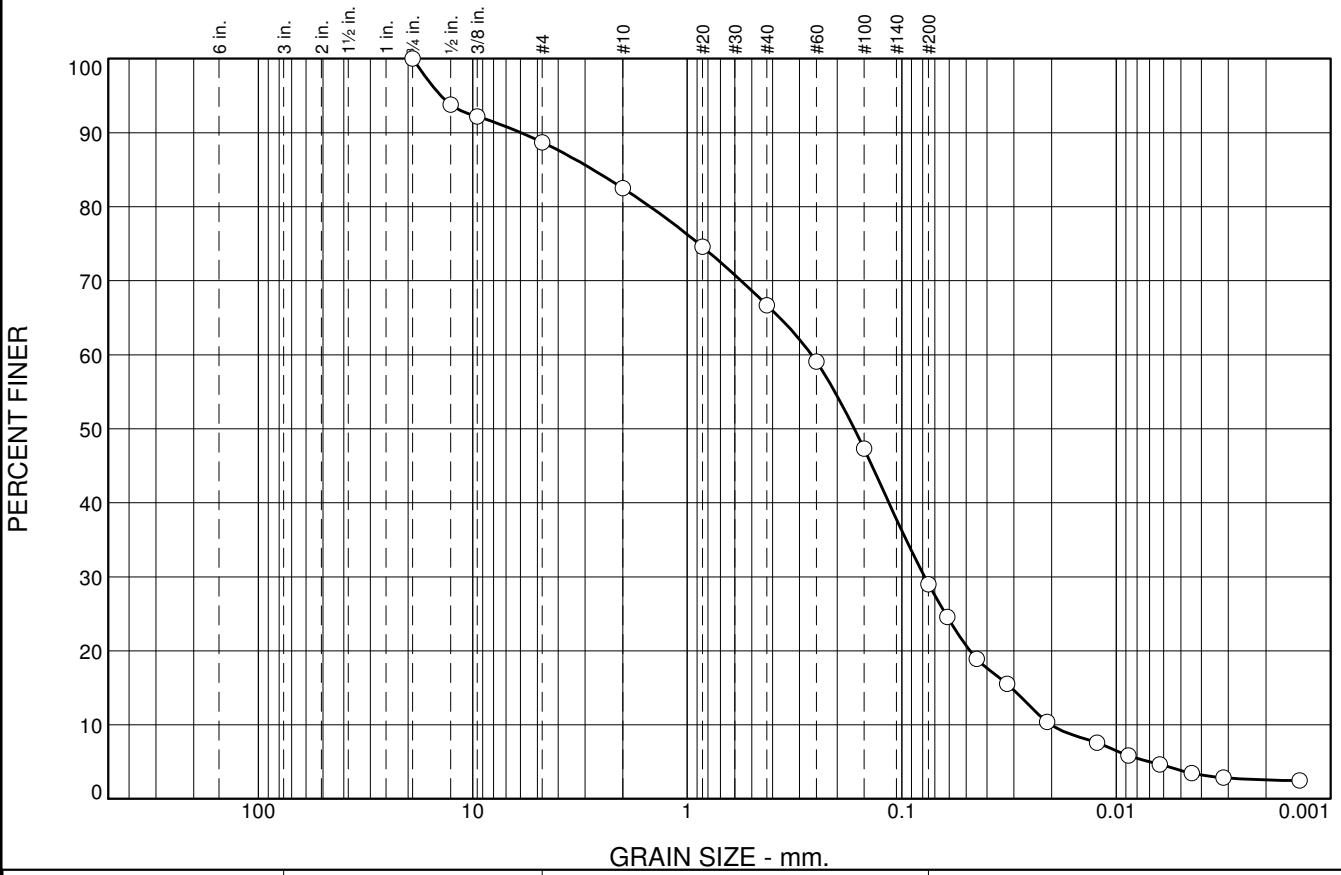
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	11.3	6.2	15.8	37.7	26.4	2.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	93.8		
.375	92.2		
#4	88.7		
#10	82.5		
#20	74.6		
#40	66.7		
#60	59.1		
#100	47.3		
#200	29.0		
0.0612 mm.	24.6		
0.0448 mm.	18.9		
0.0323 mm.	15.5		
0.0210 mm.	10.4		
0.0123 mm.	7.6		
0.0088 mm.	5.8		
0.0063 mm.	4.7		
0.0044 mm.	3.5		
0.0032 mm.	2.9		
0.0014 mm.	2.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.9488 D_{85}= 2.7447 D_{60}= 0.2635
D_{50}= 0.1663 D_{30}= 0.0783 D_{15}= 0.0308
D_{10}= 0.0200 C_u= 13.15 C_c= 1.16

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-07 **Source of Sample:** **Date:** 9/13/16
Location: K16-411 **Elev./Depth:** 14.0-14.6m

Knight Piésold CONSULTING

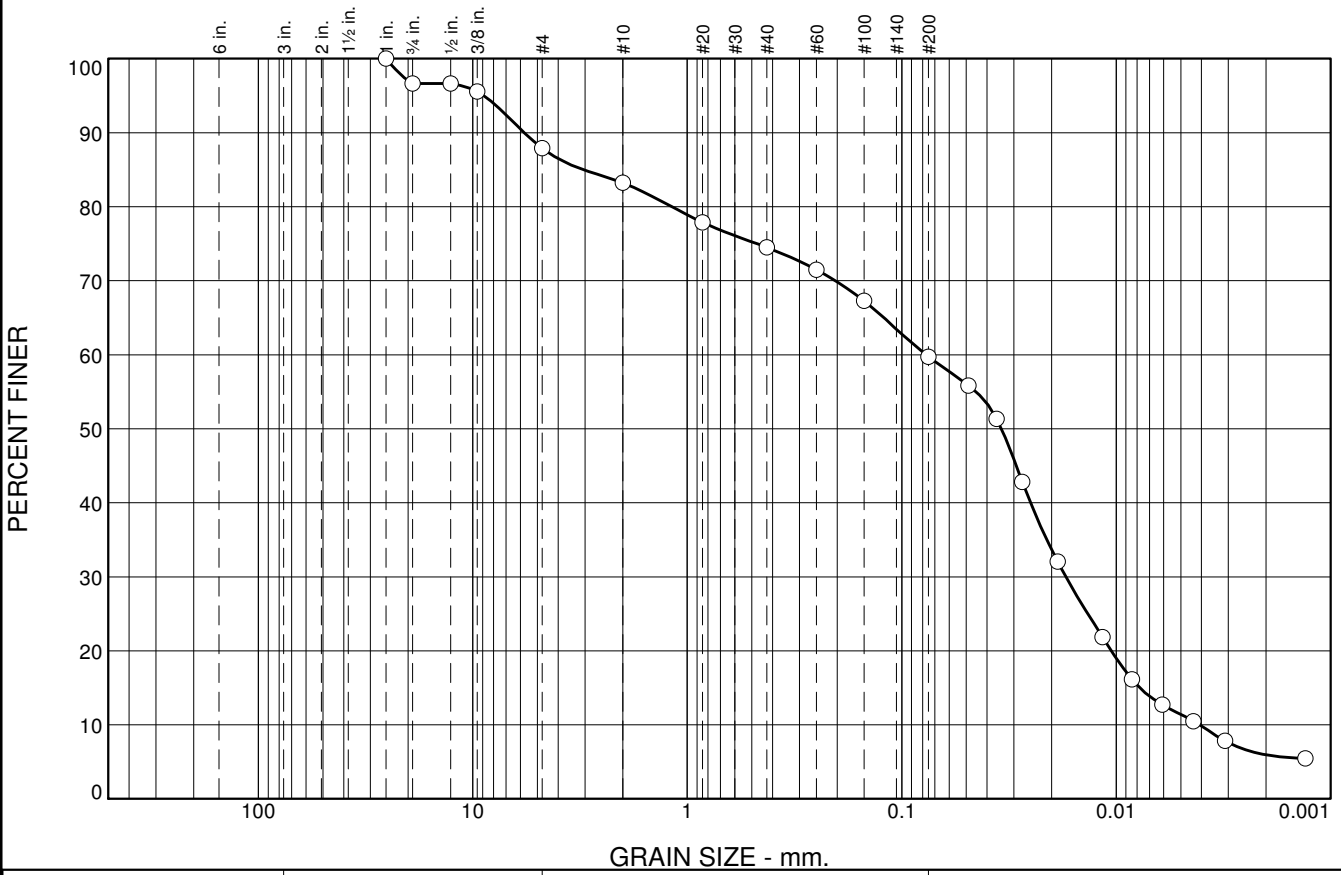
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.4	8.7	4.7	8.7	14.8	53.8	5.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	96.6		
.5	96.6		
.375	95.6		
#4	87.9		
#10	83.2		
#20	77.9		
#40	74.5		
#60	71.5		
#100	67.3		
#200	59.7		
0.0489 mm.	55.9		
0.0361 mm.	51.3		
0.0274 mm.	42.8		
0.0188 mm.	32.1		
0.0116 mm.	21.8		
0.0085 mm.	16.2		
0.0061 mm.	12.7		
0.0044 mm.	10.5		
0.0031 mm.	7.8		
0.0013 mm.	5.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.7419 D_{85}= 3.0395 D_{60}= 0.0770
D_{50}= 0.0343 D_{30}= 0.0172 D_{15}= 0.0078
D_{10}= 0.0041 C_u= 18.83 C_c= 0.94

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-08 **Source of Sample:** **Date:** 9/14/16
Location: K16-411 **Elev./Depth:** 17.0-17.5m

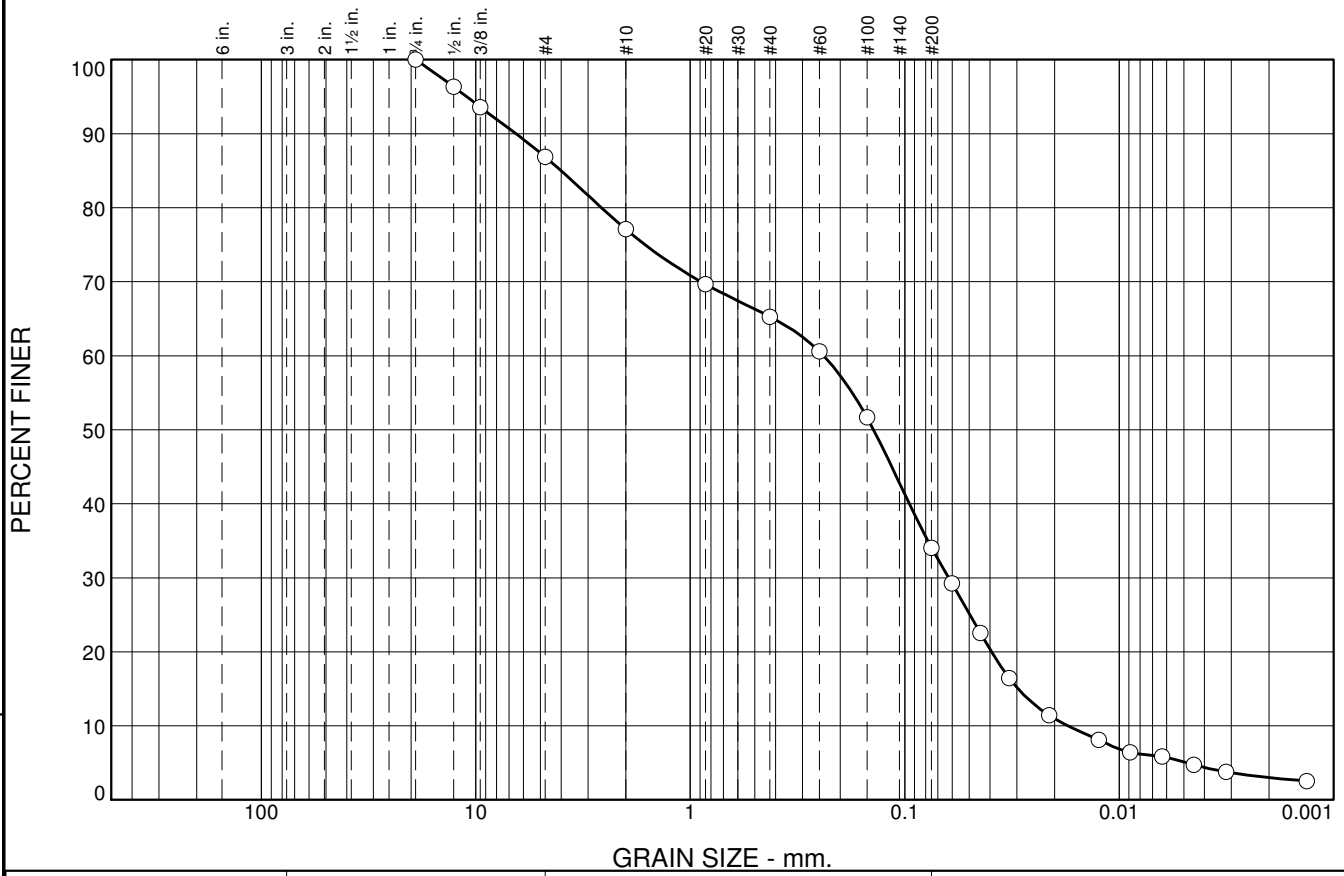
Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	13.1	9.8	11.8	31.3	31.0	3.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	96.3		
.375	93.6		
#4	86.9		
#10	77.1		
#20	69.7		
#40	65.3		
#60	60.6		
#100	51.7		
#200	34.0		
0.0602 mm.	29.2		
0.0444 mm.	22.6		
0.0326 mm.	16.5		
0.0212 mm.	11.4		
0.0125 mm.	8.1		
0.0089 mm.	6.4		
0.0063 mm.	5.9		
0.0045 mm.	4.7		
0.0032 mm.	3.8		
0.0013 mm.	2.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 6.5013 D_{85}= 3.9986 D_{60}= 0.2389
D_{50}= 0.1397 D_{30}= 0.0624 D_{15}= 0.0296
D_{10}= 0.0173 C_u= 13.79 C_c= 0.94

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-02 **Source of Sample:** **Date:** 9/14/16
Location: K16-412 **Elev./Depth:** 1.8-2.4m

Knight Piésold CONSULTING

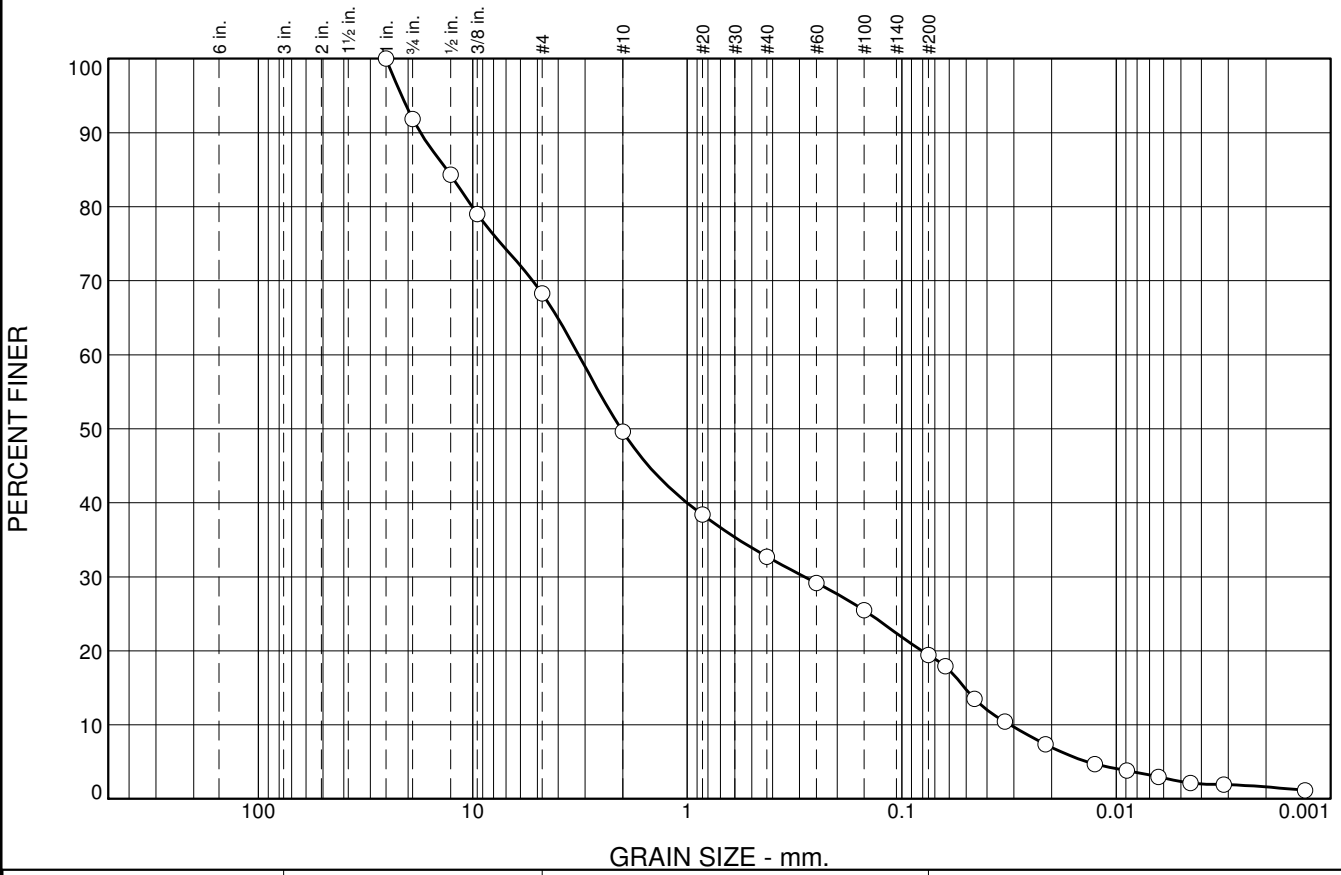
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.1	23.6	18.7	16.9	13.3	17.8	1.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	91.9		
.5	84.3		
.375	79.0		
#4	68.3		
#10	49.6		
#20	38.4		
#40	32.7		
#60	29.2		
#100	25.5		
#200	19.4		
0.0626 mm.	17.9		
0.0458 mm.	13.5		
0.0331 mm.	10.4		
0.0214 mm.	7.4		
0.0126 mm.	4.7		
0.0089 mm.	3.8		
0.0063 mm.	3.0		
0.0045 mm.	2.1		
0.0032 mm.	1.9		
0.0013 mm.	1.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 17.5011 D_{85}= 13.2094 D_{60}= 3.2109
D_{50}= 2.0390 D_{30}= 0.2835 D_{15}= 0.0508
D_{10}= 0.0312 C_u= 102.93 C_c= 0.80

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-04 **Source of Sample:** **Date:** 9/14/16
Location: K16-412 **Elev./Depth:** 4.8-5.4m

Knight Piésold CONSULTING

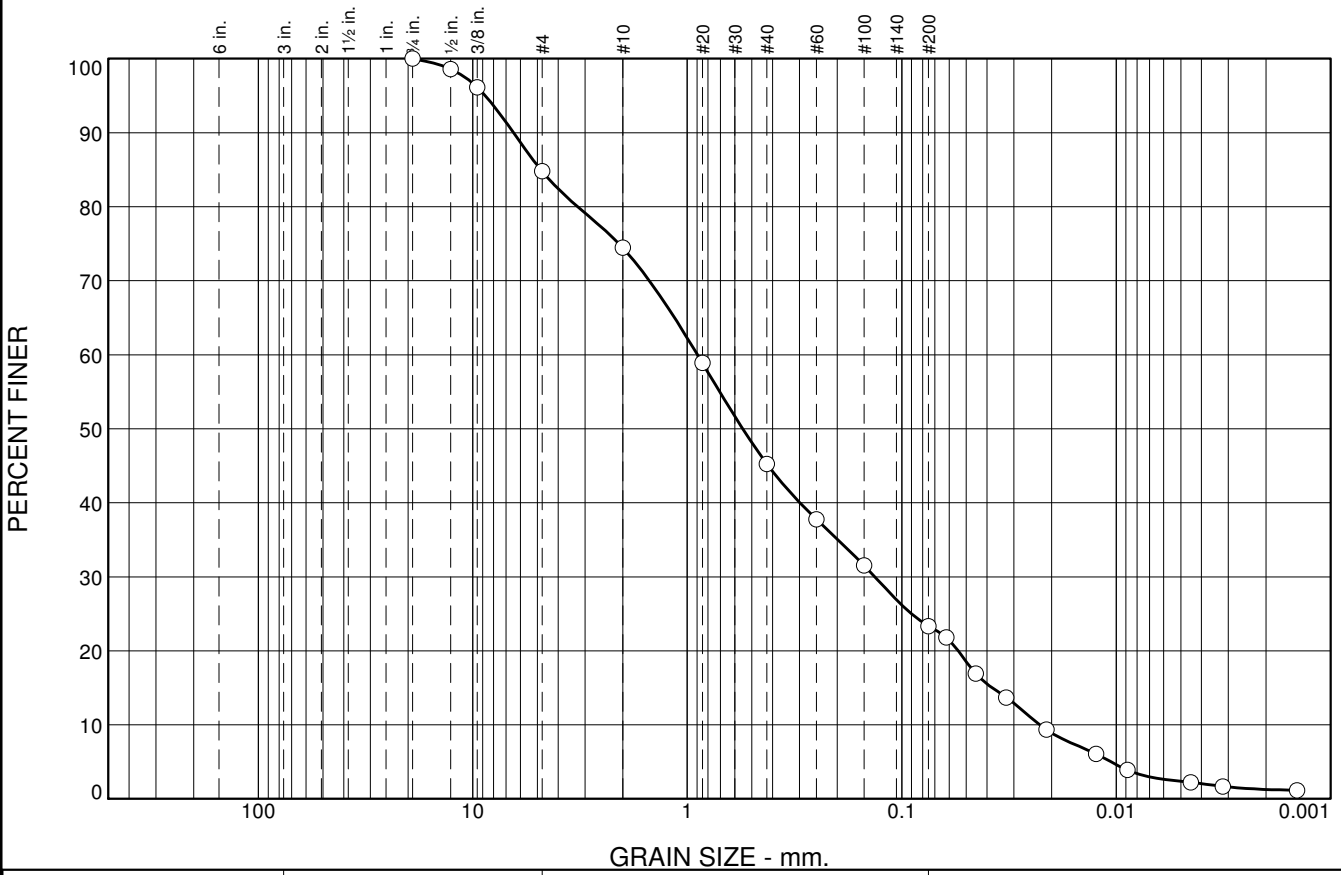
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.2	10.3	29.3	21.9	22.0	1.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	98.6		
.375	96.1		
#4	84.8		
#10	74.5		
#20	58.9		
#40	45.2		
#60	37.8		
#100	31.5		
#200	23.3		
0.0620 mm.	21.8		
0.0451 mm.	16.9		
0.0325 mm.	13.7		
0.0211 mm.	9.3		
0.0124 mm.	6.1		
0.0089 mm.	3.9		
0.0045 mm.	2.2		
0.0032 mm.	1.7		
0.0014 mm.	1.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 6.4588 D_{85}= 4.8158 D_{60}= 0.8964
D_{50}= 0.5516 D_{30}= 0.1335 D_{15}= 0.0378
D_{10}= 0.0227 C_u= 39.52 C_c= 0.88

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-06 **Source of Sample:** **Date:** 9/13/16
Location: K16-412 **Elev./Depth:** 7.8-8.4

Knight Piésold CONSULTING

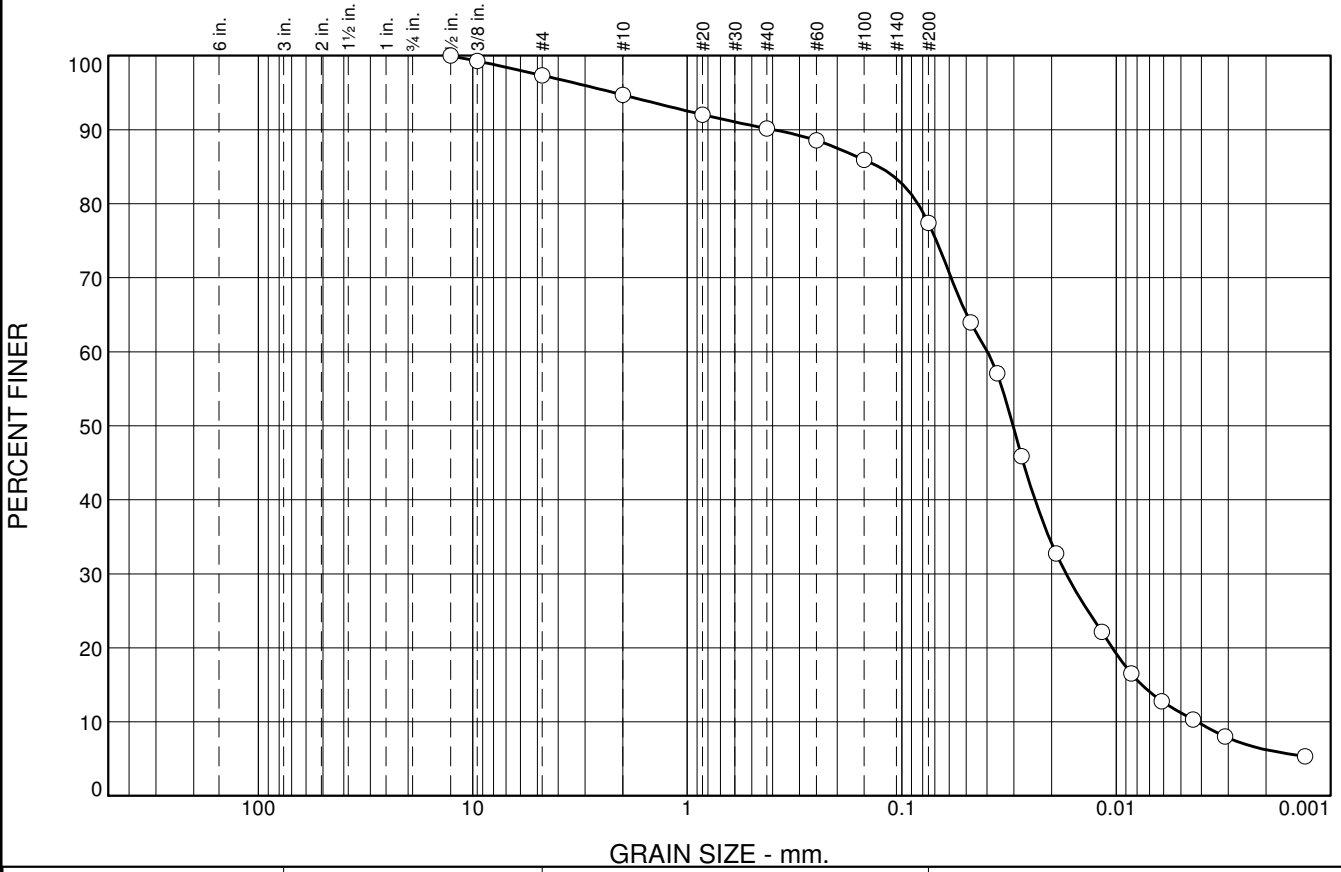
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.7	2.6	4.5	12.8	71.2	6.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5	100.0		
.375	99.3		
#4	97.3		
#10	94.7		
#20	92.0		
#40	90.2		
#60	88.6		
#100	85.9		
#200	77.4		
0.0477 mm.	64.0		
0.0359 mm.	57.1		
0.0277 mm.	45.9		
0.0191 mm.	32.8		
0.0117 mm.	22.2		
0.0085 mm.	16.5		
0.0061 mm.	12.8		
0.0044 mm.	10.3		
0.0031 mm.	8.0		
0.0013 mm.	5.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3974 D_{85}= 0.1281 D_{60}= 0.0398
D_{50}= 0.0303 D_{30}= 0.0171 D_{15}= 0.0076
D_{10}= 0.0042 C_u= 9.48 C_c= 1.75

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-07 **Source of Sample:** **Date:** 9/14/16
Location: K16-412 **Elev./Depth:** 10.8-11.4m

Knight Piésold CONSULTING

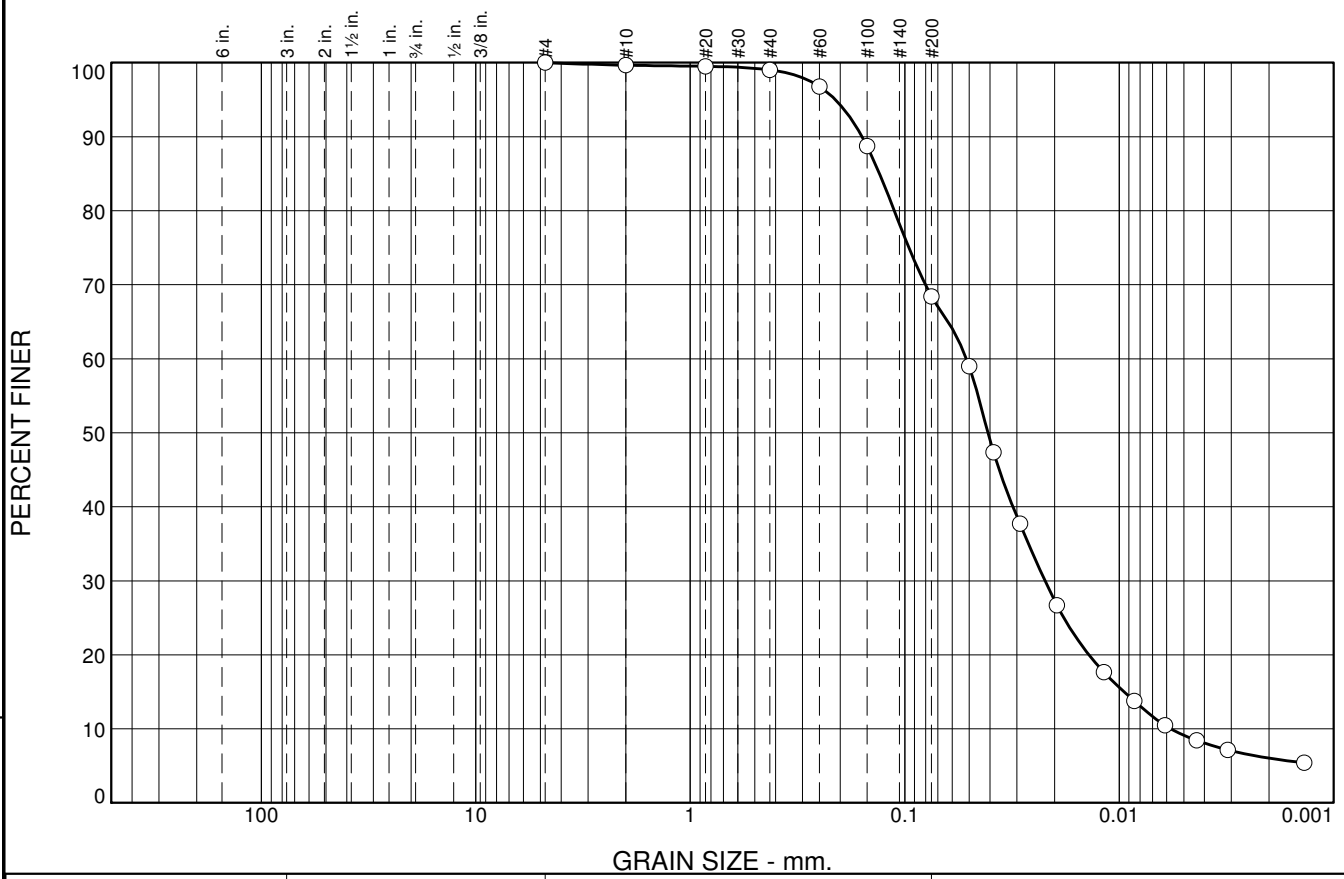
Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

Tested By: EAG **Checked By:** JDB

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Particle Size Distribution Report ASTM D422



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	0.7	30.6	62.4	6.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.7		
#20	99.5		
#40	99.0		
#60	96.8		
#100	88.7		
#200	68.4		
0.0500 mm.	59.0		
0.0385 mm.	47.4		
0.0290 mm.	37.7		
0.0195 mm.	26.7		
0.0118 mm.	17.7		
0.0085 mm.	13.8		
0.0061 mm.	10.5		
0.0044 mm.	8.5		
0.0031 mm.	7.1		
0.0014 mm.	5.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1581 D_{85}= 0.1311 D_{60}= 0.0515
D_{50}= 0.0409 D_{30}= 0.0222 D_{15}= 0.0095
D_{10}= 0.0057 C_u= 8.96 C_c= 1.66

Classification

USCS= AASHTO=

Remarks

Sample No.: SPT-08 **Source of Sample:** **Date:** 9/13/16
Location: K16-412 **Elev./Depth:** 13.8-14.4m

Knight Piésold CONSULTING

Client: KP Vancouver
Project: Kudz Ze Kayah

Project No: VA101-00640/03 **Figure**

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: EAG **Checked By:** JDB

Knight Piésold CONSULTING

Moisture Content
ASTM D 2216

Project	Kudz Ze kayah	Project No.	VA101-00640
Lab No.	L2016-057	Date of Test	6/15/2016
Tested By	EAG	Checked By	JDB

Drying Conditions: 105 deg C Method: Oven

Sample No.		TP16-01	TP16-02	TP16-04	TP16-05	TP16-06
Sample ID						
Depth (m)		1.5-1.6	4.2-4.3	0.5-0.7	3.0-3.3	0.5-1.6
Tare No.		XPAN	Broncos	Nugs	Rocks	KP4
Tare + Wet Soil	A	19604.5	14706.0	11902.0	8642.0	3423.2
Tare + Dry Soil	B	18367.0	13665.5	11238.0	8034.0	3151.5
Tare	C	2770.0	2118.5	2116.5	2126.0	413.7
Wt. of Water	D , A-B	1237.5	1040.5	664.0	608.0	271.7
Dry Soil, Ws	E , B-C	15597.0	11547.0	9121.5	5908.0	2737.8
Moisture Content, (%)	(D / E) x100	7.9	9.0	7.3	10.3	9.9

Sample No.		TP16-07	TP16-08	TP16-09	TP16-11	TP16-15
Sample ID						(1 of 2)
Depth		2.3-2.4	0.5-1.0	3.8-3.9	0.4-0.8	1.5-1.6
Tare No.		Big Bet	Big Blue	TI Pan	C2	3111
Tare + Wet Soil	A	4471.0	3794.0	8177.0	1772.5	17242.0
Tare + Dry Soil	B	4191.3	3439.5	7691.0	1646.0	15681.0
Tare	C	382.5	374.5	2649.0	392.5	2408.5
Wt. of Water	A-B, D	279.7	354.5	486.0	126.5	1561.0
Dry Soil, Ws	B-C, E	3808.8	3065.0	5042.0	1253.5	13272.5
Moisture Content, (%)	(D / E) x100	7.3	11.6	9.6	10.1	11.8

Sample No.		TP16-15	TP16-18	TP16-19	TP16-22	TP16-22
Sample ID		(2 of 2)			(1 of 2)	(2 of 2)
Depth		1.5-1.6	2.0-2.3	1.0-1.5	1.5-1.6	4.4-4.5
Tare No.		Nascar	911	AVS	WE	Big Bet
Tare + Wet Soil	A	17867.5	3713.0	9027.0	12204.0	6706.5
Tare + Dry Soil	B	16331.5	3407.1	8339.5	11349.0	6004.0
Tare	C	2090.0	407.5	2060.0	2765.5	382.5
Wt. of Water	A-B, D	1536.0	305.9	687.5	855.0	702.5
Dry Soil, Ws	B-C, E	14241.5	2999.6	6279.5	8583.5	5621.5
Moisture Content, (%)	(D / E) x100	10.8	10.2	10.9	10.0	12.5

Knight Piésold CONSULTING

Moisture Content
ASTM D 2216

Project	Kudz Ze kayah	Project No.	VA101-00640
Lab No.	L2016-057	Date of Test	6/15/2016
Tested By	EAG	Checked By	JDB

Drying Conditions: 105 deg C Method: Oven

Sample No.		TP16-25	TP16-26	TP16-27	TP16-29	TP16-30
Sample ID						
Depth (m)		1.3-1.5	2.5-4.0	2.5-2.8	2.0-2.3	3.5-3.8
Tare No.		Crush	Broncos	AVS	WE	Rocks
Tare + Wet Soil	A	16131.0	13603.0	9722.0	11832.5	20564.0
Tare + Dry Soil	B	14861.0	12496.5	9027.0	10740.0	18665.0
Tare	C	2127.0	2121.5	2061.5	2765.5	2127.0
Wt. of Water	D , A-B	1270.0	1106.5	695.0	1092.5	1899.0
Dry Soil, Ws	E , B-C	12734.0	10375.0	6965.5	7974.5	16538.0
Moisture Content, (%)	(D / E) x100	10.0	10.7	10.0	13.7	11.5

Sample No.		TP16-31	TP16-32	TP16-33	TP16-34	TP16-36
Sample ID						(1 of 2)
Depth		4.0-4.5	4.0-4.5	3.0-3.4	4.5-4.9	4.0-5.0
Tare No.		APAN	Big Blue	Nugs	XPAN	A Pan
Tare + Wet Soil	A	15181.0	8070.0	12434.5	14574.5	13300.5
Tare + Dry Soil	B	13918.0	7682.0	11484.0	13597.0	12085.5
Tare	C	2838.0	375.0	2117.0	2770.0	2837.5
Wt. of Water	A-B, D	1263.0	388.0	950.5	977.5	1215.0
Dry Soil, Ws	B-C, E	11080.0	7307.0	9367.0	10827.0	9248.0
Moisture Content, (%)	(D / E) x100	11.4	5.3	10.1	9.0	13.1

Sample No.		TP16-36	TP16-38	TP16-39	TP16-40	TP16-41
Sample ID		(2 of 2)				
Depth		5.0-5.1	4.5-5.0	2.0-2.5	3.0-3.5	2.0-3.0
Tare No.		Big Bet	Broncos	I Pan	Crush	3111
Tare + Wet Soil	A	6479.0	21622.5	14096.0	12580.5	13046.0
Tare + Dry Soil	B	5571.0	19580.5	12692.0	11515.0	11971.5
Tare	C	382.3	2117.0	2842.0	2120.0	2407.5
Wt. of Water	A-B, D	908.0	2042.0	1404.0	1065.5	1074.5
Dry Soil, Ws	B-C, E	5188.7	17463.5	9850.0	9395.0	9564.0
Moisture Content, (%)	(D / E) x100	17.5	11.7	14.3	11.3	11.2

Knight Piésold CONSULTING

Moisture Content
ASTM D 2216

Project	Kudz Ze kayah	Project No.	VA101-00640
Lab No.	L2016-057	Date of Test	6/15/2016
Tested By	EAG	Checked By	JDB

Drying Conditions: 105 deg C Method: Oven

Sample No.		TP16-44	TP16-45	TP16-46	TP16-47	TP16-48
Sample ID						(1 of 2)
Depth (m)		3.5-4.0	3.0-3.3	2.0-2.1	1.3-1.6	3.0-3.1
Tare No.		Ti Pan	Nascar	U Pan	Crush	Broncos
Tare + Wet Soil	A	14625.5	12905.0	25595.0	26513.0	17860.5
Tare + Dry Soil	B	13590.0	11680.0	23774.0	24189.0	15782.5
Tare	C	2647.5	2089.0	2819.0	2122.5	2120.5
Wt. of Water	D , A-B	1035.5	1225.0	1821.0	2324.0	2078.0
Dry Soil, Ws	E , B-C	10942.5	9591.0	20955.0	22066.5	13662.0
Moisture Content, (%)	(D / E) x100	9.5	12.8	8.7	10.5	15.2

Sample No.		TP16-48	TP16-49	TP16-50	TP16-52	TP16-53
Sample ID		(2 of 2)				
Depth		3.0-3.1	0.5-0.7	2.0-3.0	2.0-2.1	3.0-3.5
Tare No.		Nascar	U Pan	TI Pan	A Pan	X Pan
Tare + Wet Soil	A	22564.0	7610.0	12641.0	13776.0	16748.0
Tare + Dry Soil	B	20041.0	7348.5	12008.5	12097.5	15758.0
Tare	C	2088.5	2823.0	2649.5	2837.0	2769.0
Wt. of Water	A-B, D	2523.0	261.5	632.5	1678.5	990.0
Dry Soil, Ws	B-C, E	17952.5	4525.5	9359.0	9260.5	12989.0
Moisture Content, (%)	(D / E) x100	14.1	5.8	6.8	18.1	7.6

Sample No.						
Sample ID						
Depth						
Tare No.						
Tare + Wet Soil	A					
Tare + Dry Soil	B					
Tare	C					
Wt. of Water	A-B, D					
Dry Soil, Ws	B-C, E					
Moisture Content, (%)	(D / E) x100					

Knight Piésold CONSULTING

Moisture Content
ASTM D 2216

Project	Kudz Ze Kayah	Project No.	VA101-00640/02
Lab No.	L2016-095	Date of Test	9/9/2016
Tested By	JDH	Checked By	JDB

Drying Conditions: 105 deg C Method: Oven

Sample No.		K16-381	K16-387	K16-389	K16-389	K16-390
Sample ID		SPT-05	SPT-03	SPT-03	SPT-05	SPT-02
Depth		5.2-5.8m	3.0-3.3m	3.0-3.3m	6.0-6.13m	1.5-2.1m
Tare No.		RG16	RG4	RG9	RG12	RG17
Tare + Wet Soil	A	1308.9	968.1	1025.8	570.6	1141.5
Tare + Dry Soil	B	1133.2	885.7	931.9	534.6	1028.2
Tare	C	186.2	185.5	188.6	185.6	186.3
Wt. of Water	D , A-B	175.7	82.4	93.9	36.0	113.3
Dry Soil, Ws	E , B-C	947.0	700.2	743.3	349.0	841.9
Moisture Content, (%)	(D / E) x100	18.6	11.8	12.6	10.3	13.5

Sample No.		K16-397	K16-398	K16-402	K16-410	K16-411
Sample ID		SPT-03	SPT-03	SPT-04	SPT-02	SPT-02
Depth		3.0-3.3m	3.4-4m	4.1-4.7m	1.5-2.1m	2.0-2.6m
Tare No.		RG8	RG5	RG7	RG6	J23
Tare + Wet Soil	A	805.1	1616.4	802.9	1261.9	1270.7
Tare + Dry Soil	B	762.7	1479.9	737.5	1138.3	1136.6
Tare	C	184.5	186.3	185.0	183.6	199.2
Wt. of Water	A-B, D	42.4	136.5	65.4	123.6	134.1
Dry Soil, Ws	B-C, E	578.2	1293.6	552.5	954.7	937.4
Moisture Content, (%)	(D / E) x100	7.3	10.6	11.8	12.9	14.3

Sample No.		K16-411	K16-411	K16-411	K16-411	K16-411
Sample ID		SPT-03	SPT-04	SPT-06	SPT-07	SPT-08
Depth		3.5-4.1m	5.0-5.6m	11.0-11.6m	14.0-14.6m	17.0-17.5m
Tare No.		RG10	RG13	RG2	Rodgers	RG16
Tare + Wet Soil	A	1199.8	1076.4	1036.5	784.3	817.9
Tare + Dry Soil	B	1094.3	961.5	895.4	704.6	719.6
Tare	C	185.4	184.0	183.4	185.1	184.4
Wt. of Water	A-B, D	105.5	114.9	141.1	79.7	98.3
Dry Soil, Ws	B-C, E	908.9	777.5	712.0	519.5	535.2
Moisture Content, (%)	(D / E) x100	11.6	14.8	19.8	15.3	18.4

Knight Piésold CONSULTING

Moisture Content
ASTM D 2216

Project	Kudz Ze Kayah	Project No.	VA101-00640/02
Lab No.	L2016-095	Date of Test	9/9/2016
Tested By	JDH	Checked By	JDB

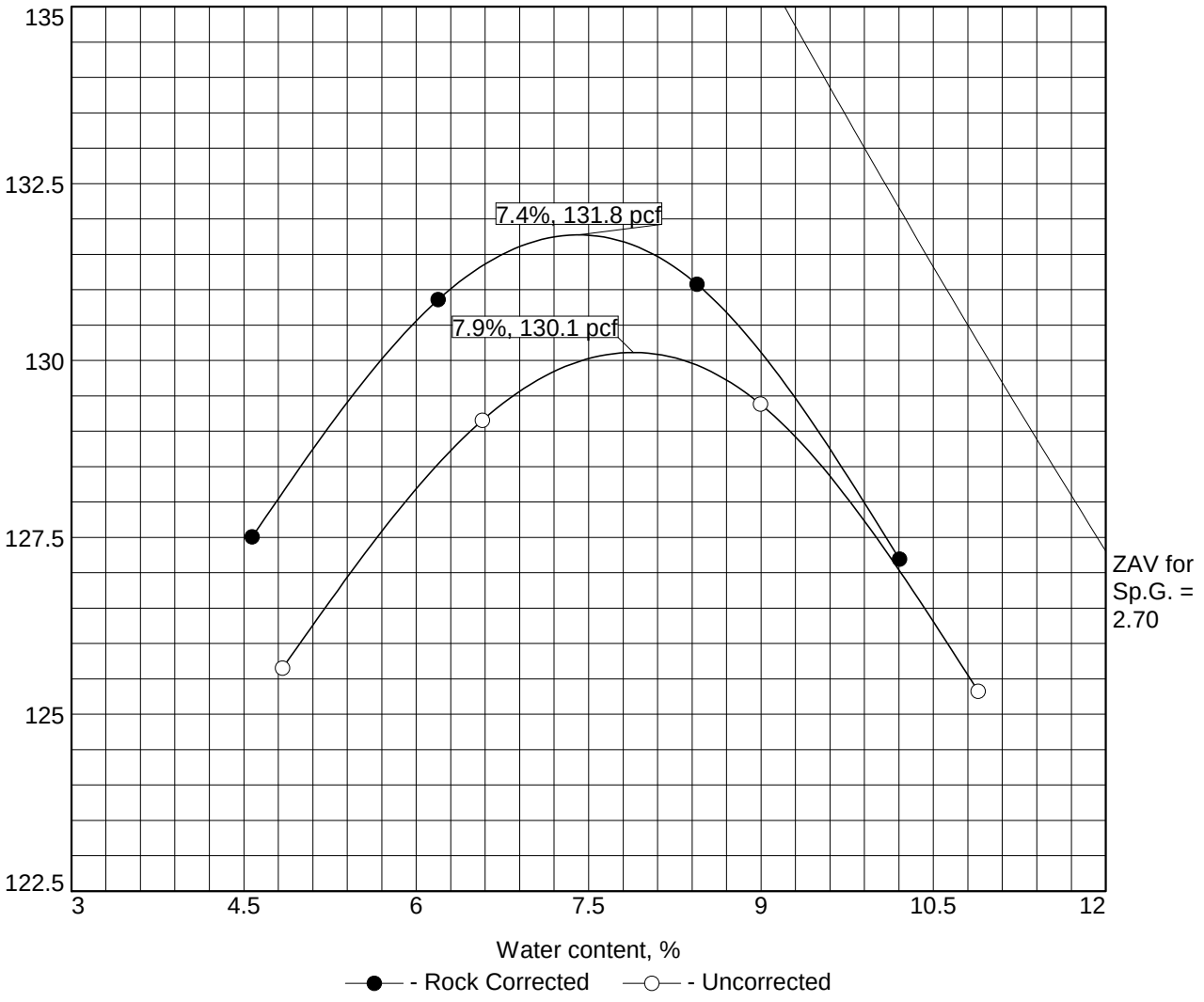
Drying Conditions: 105 deg C Method: Oven

Sample No.		K16-412	K16-412	K16-412	K16-412	K16-412
Sample ID		SPT-02	SPT-04	SPT-06	SPT-07	SPT-08
Depth		1.8-2.4m	4.8-5.4m	7.8-8.4m	10.8-11.4m	13.8-14.4m
Tare No.		J04	RG19	Newton	Cutler	RG20
Tare + Wet Soil	A	954.7	923.6	1091.3	1428.3	1541.3
Tare + Dry Soil	B	850.5	851.2	991.5	1179.2	1276.9
Tare	C	200.1	185.5	184.4	184.0	186.2
Wt. of Water	D , A-B	104.2	72.4	99.8	249.1	264.4
Dry Soil, Ws	E , B-C	650.4	665.7	807.1	995.2	1090.7
Moisture Content, (%)	(D / E) x100	16.0	10.9	12.4	25.0	24.2

Sample No.						
Sample ID						
Depth						
Tare No.						
Tare + Wet Soil	A					
Tare + Dry Soil	B					
Tare	C					
Wt. of Water	A-B, D					
Dry Soil, Ws	B-C, E					
Moisture Content, (%)	(D / E) x100					

Sample No.						
Sample ID						
Depth						
Tare No.						
Tare + Wet Soil	A					
Tare + Dry Soil	B					
Tare	C					
Wt. of Water	A-B, D					
Dry Soil, Ws	B-C, E					
Moisture Content, (%)	(D / E) x100					

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
1.0-1.5m				2.7			6.9	38.6

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 131.8 pcf	130.1 pcf	
Optimum moisture = 7.4 %	7.9 %	

Project No. VA101-00640/ **Client:** KP Vancouver
Project: Kudz Ze Kayah
Date: 7/19/16
○ **Location:** TP16-19 **Sample Number:** TP16-19

Remarks:

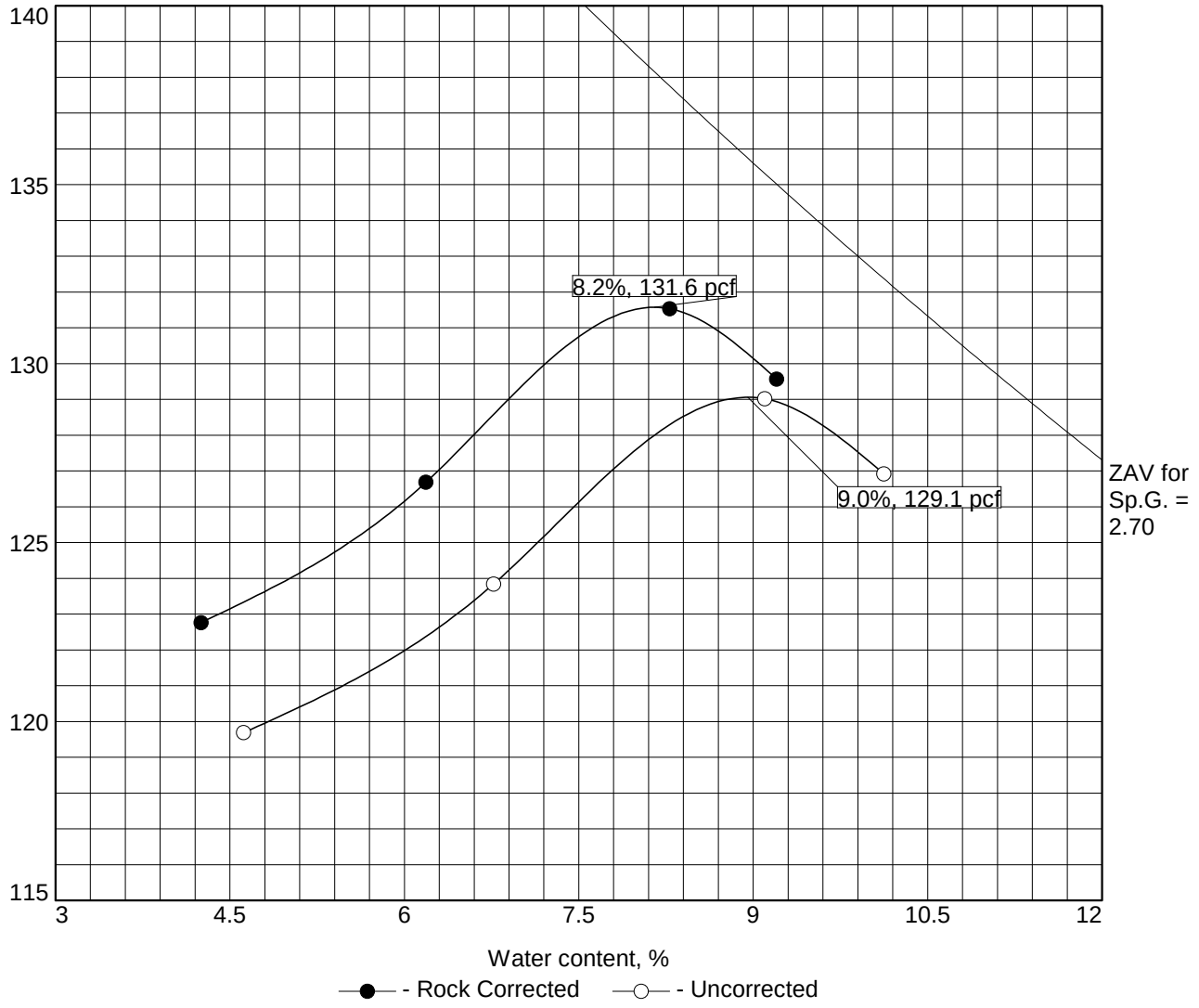
Knight Piésold CONSULTING

Figure

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
3.0-3.4m				2.7			10.1	42.1

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 131.6 pcf	129.1 pcf	
Optimum moisture = 8.2 %	9.0 %	

Project No. VA101-00640/ **Client:** KP Vancouver
Project: Kudz Ze Kayah
Date: 7/19/16
○ **Location:** TP16-33 **Sample Number:** TP16-33

Knight Piésold CONSULTING

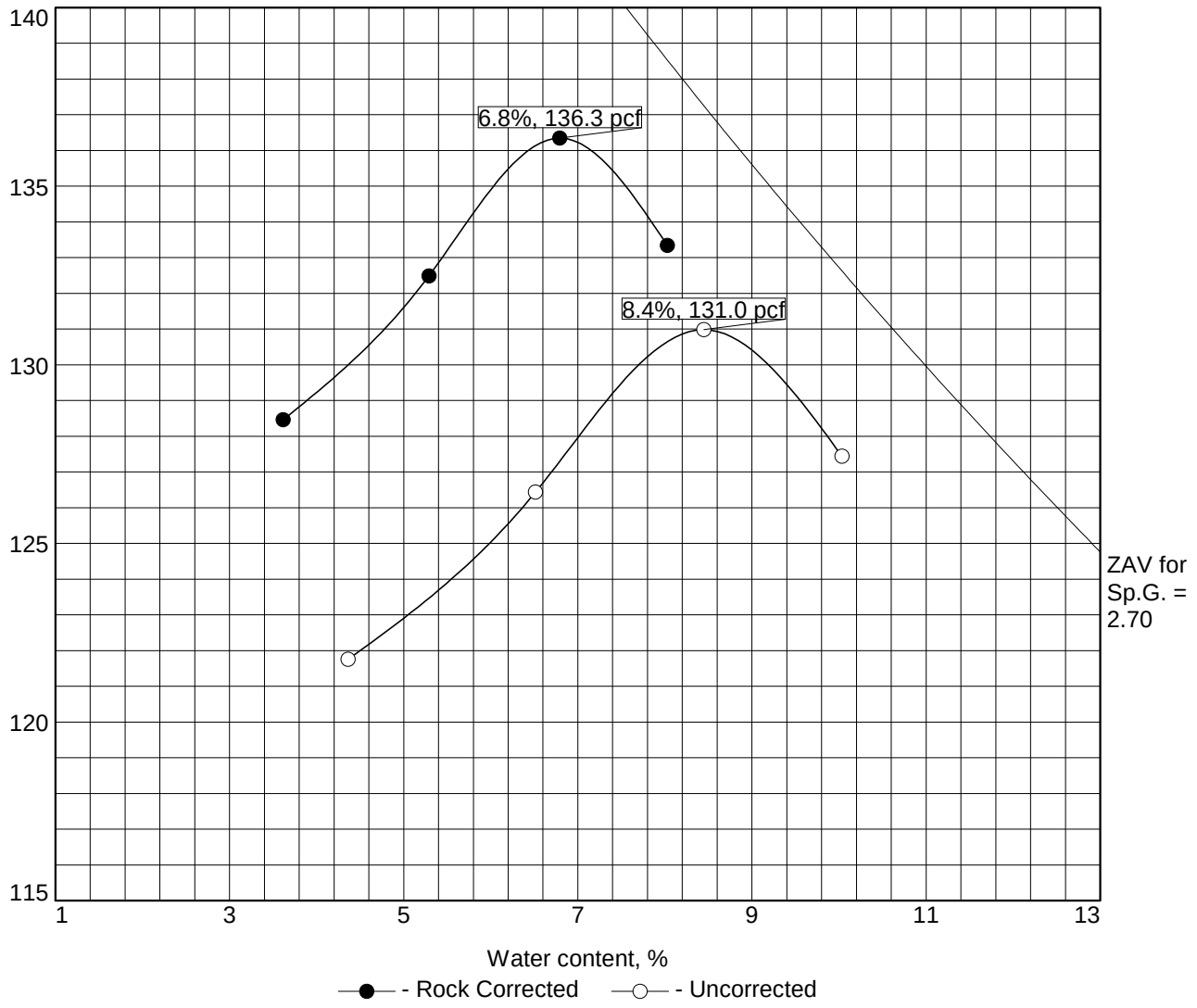
Remarks:

Figure

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

COMPACTION TEST REPORT



The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Test specification: ASTM D 698-12 Method B Standard
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
4.5-4.9m				2.7			22.2	33.7

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 136.3 pcf	131.0 pcf	
Optimum moisture = 6.8 %	8.4 %	

Project No. VA101-00640/ **Client:** KP Vancouver
Project: Kudz Ze Kayah
Date: 7/19/16
○ **Location:** TP16-34 **Sample Number:** TP16-34

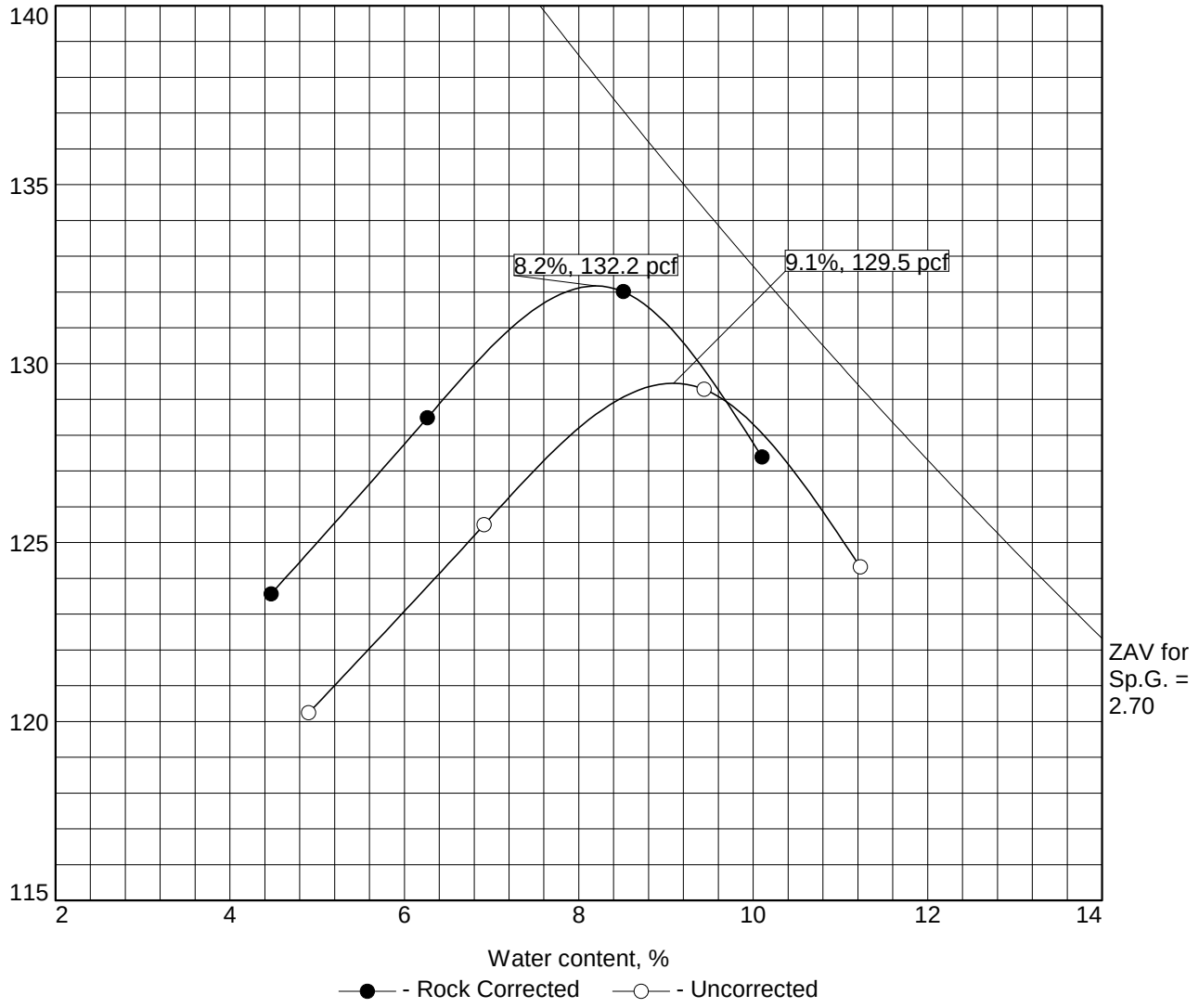
Knight Piésold CONSULTING

Remarks:

Figure

Tested By: JDH **Checked By:** JDB

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
4.5-5.0m				2.7			11.0	36.7

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 132.2 pcf	129.5 pcf	
Optimum moisture = 8.2 %	9.1 %	

Project No. VA101-00640/ **Client:** KP Vancouver
Project: Kudz Ze Kayah
Date: 7/19/16
○ **Location:** TP16-38 **Sample Number:** TP16-38

Remarks:

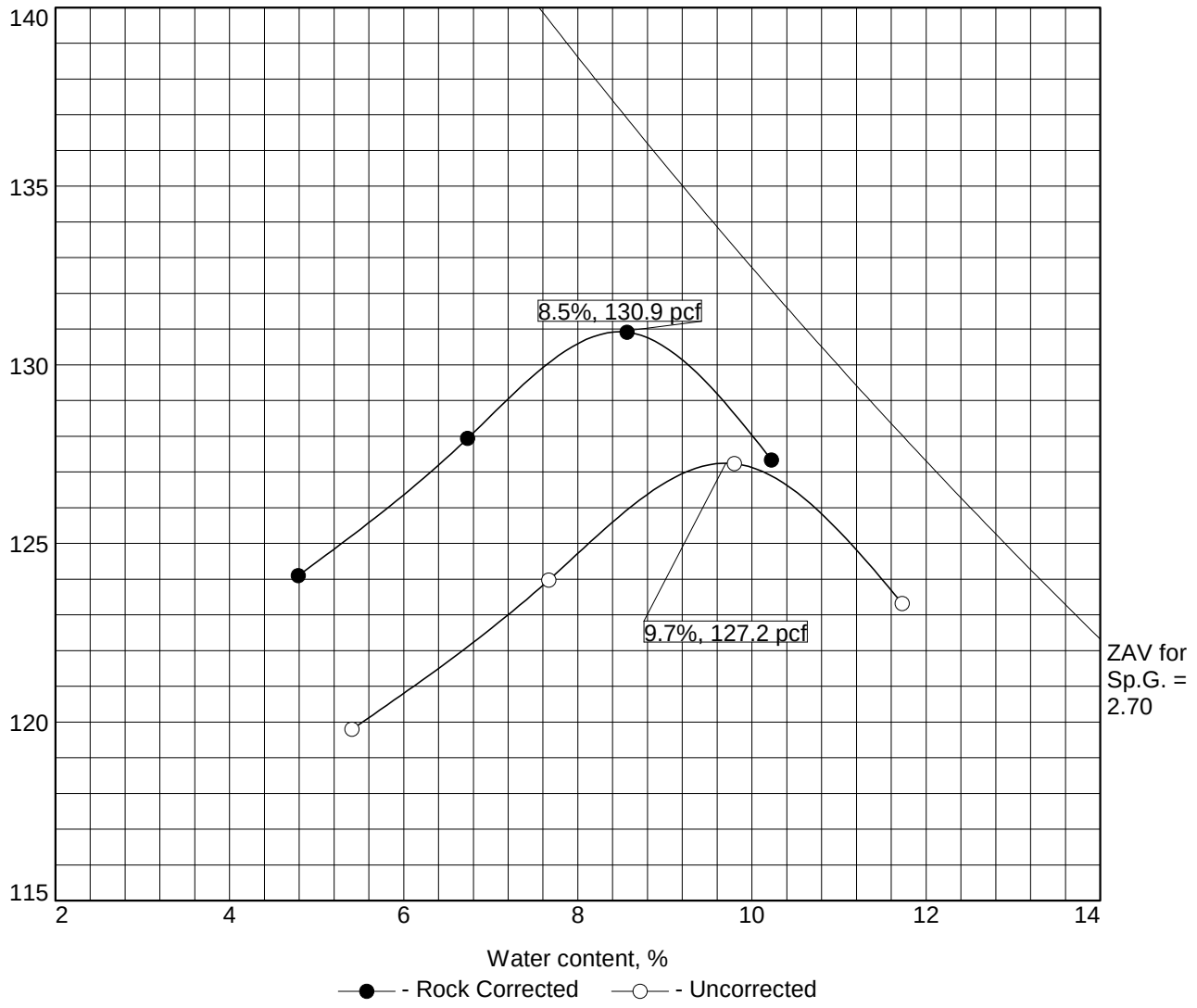
Knight Piésold CONSULTING

Figure

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
2.0-2.1m				2.7			14.0	45.0

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 130.9 pcf	127.2 pcf	
Optimum moisture = 8.5 %	9.7 %	

Project No. VA101-00640/ **Client:** KP Vancouver
Project: Kudz Ze Kayah
Date: 7/19/16
○ **Location:** TP16-46 **Sample Number:** TP16-46

Knight Piésold CONSULTING

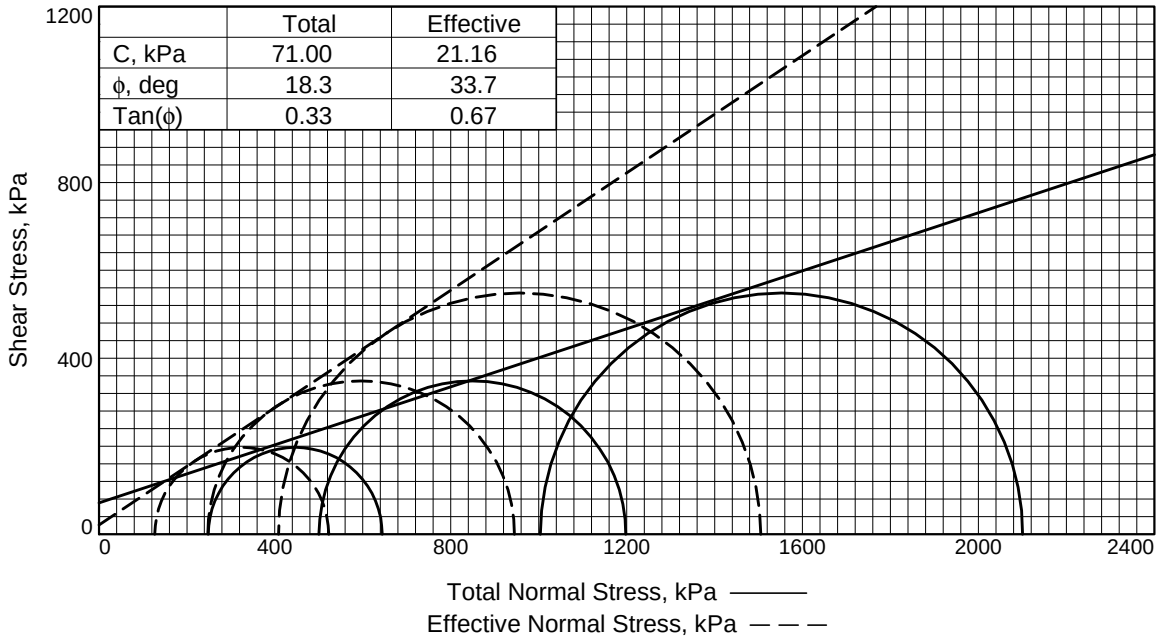
Remarks:

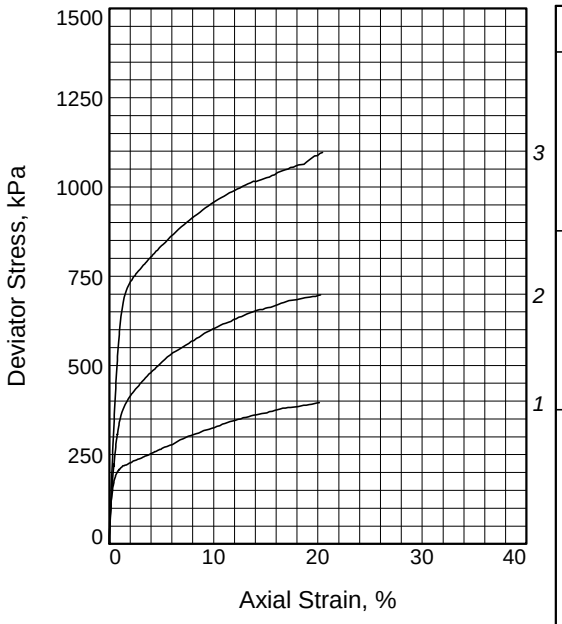
Figure

The USCS classification pertains only to the portion of sample that passes the 3" sieve as per ASTM D2487.

Tested By: JDH **Checked By:** JDB

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	10.3	10.3	10.3
	Dry Density, pcf	125.0	125.0	124.8
	Saturation, %	80.2	80.2	79.6
	Void Ratio	0.3483	0.3481	0.3506
	Diameter, in.	2.88	2.88	2.88
	Height, in.	5.74	5.74	5.75
At Test	Water Content, %	11.5	10.7	10.3
	Dry Density, pcf	127.3	130.6	131.9
	Saturation, %	96.2	100.0	100.0
	Void Ratio	0.3236	0.2902	0.2780
	Diameter, in.	2.86	2.84	2.83
	Height, in.	5.70	5.67	5.63
Strain rate, %/min.		0.03	0.03	0.03
Eff. Cell Pressure, kPa		248.7	500.5	1003.9
Fail. Stress, kPa		395.3	697.6	1096.7
Excess Pore Pr., kPa		121.6	253.2	595.6
Strain, %		20.1	20.3	20.4
Ult. Stress, kPa				
Excess Pore Pr., kPa				
Strain, %				
$\bar{\sigma}_1$ Failure, kPa		522.5	945.0	1505.0
$\bar{\sigma}_3$ Failure, kPa		127.2	247.3	408.3

Type of Test:
CU with Pore Pressures

Sample Type: Remolded

Description:

Assumed Specific Gravity= 2.7

Remarks: Failure chosen at 20% strain. Particles larger tan 1/2" were removed and replaced with finer gravel prior to test.

Figure _____

Client: KP Vancouver

Project: Kudz Ze Kayah

Location: TP16-38

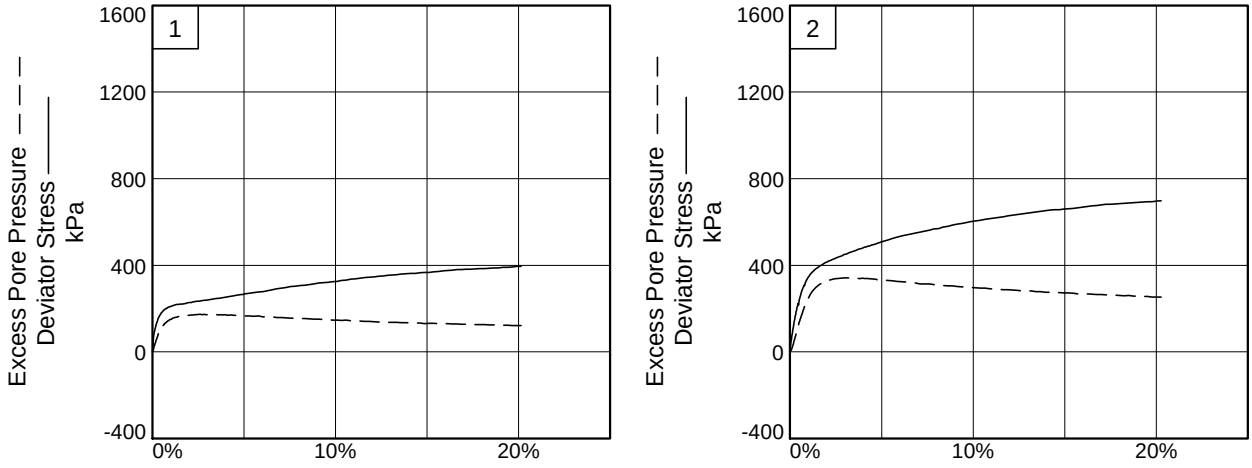
Sample Number: TP16-38 **Depth:** 4.5-5.0m

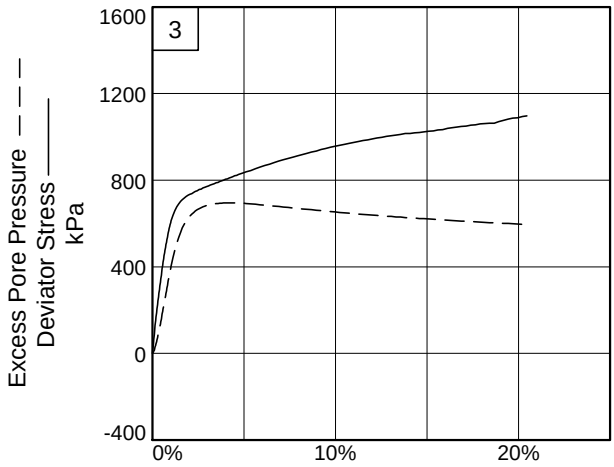
Proj. No.: VA101-00640/03 **Date Sampled:** 6/22/16

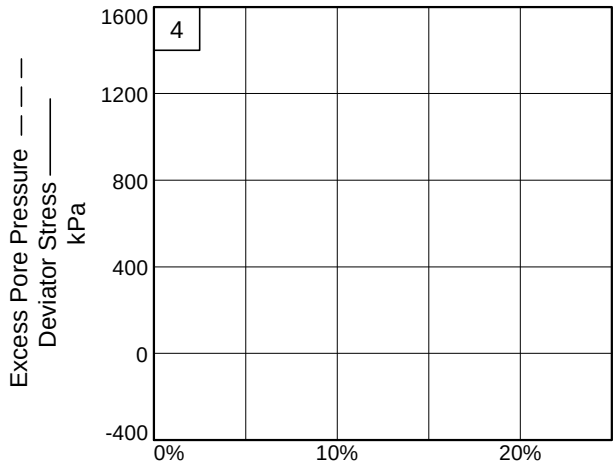
Knight Piésold CONSULTING

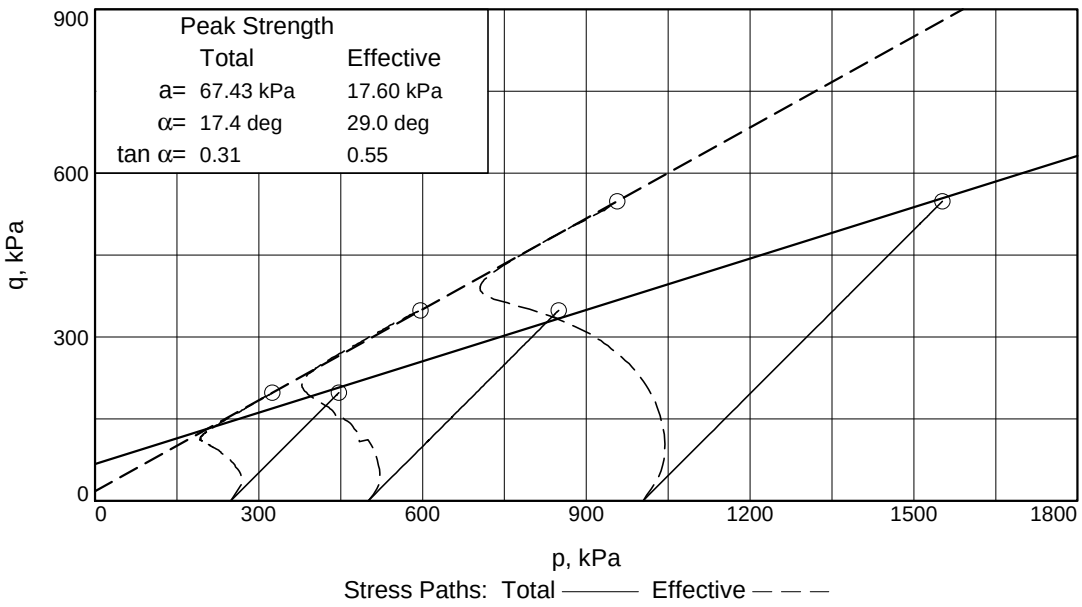
Tested By: JHK **Checked By:** JDB

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.









Client: KP Vancouver
Project: Kudz Ze Kayah
Location: TP16-38 **Depth:** 4.5-5.0m **Sample Number:** TP16-38
Project No.: VA101-00640/03 **Figure** _____

Knight Piesold Geotechnical Lab.

Tested By: JHK **Checked By:** JDB

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

8/11/2016
4:23 PM

Date: 6/22/16
Client: KP Vancouver
Project: Kudz Ze Kayah
Project No.: VA101-00640/03
Location: TP16-38
Depth: 4.5-5.0m **Sample Number:** TP16-38
Description:
Remarks: Failure chosen at 20% strain. Particles larger tan 1/2" were removed and replaced with finer gravel prior to test.
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=** **PL=** **PI=**
Test Method: ASTM D 4767 Method A

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	636.600			1787.600
Moisture content: Dry soil+tare, gms.	587.300			1645.600
Moisture content: Tare, gms.	110.670			413.500
Moisture, %	10.3	12.4	11.5	11.5
Moist specimen weight, gms.	1354.0			
Diameter, in.	2.88	2.88	2.86	
Area, in.²	6.51	6.51	6.44	
Height, in.	5.74	5.74	5.70	
Net decrease in height, in.		0.00	0.04	
Net decrease in water volume, cc.			11.20	
Wet density, pcf	137.9	140.6	142.0	
Dry density, pcf	125.0	125.0	127.3	
Void ratio	0.3483	0.3483	0.3236	
Saturation, %	80.2	96.4	96.2	

Test Readings for Specimen No. 1

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.0635 cm
Consolidation cell pressure = 86.040 psi (593.22 kPa)
Consolidation back pressure = 49.964 psi (344.49 kPa)
Consolidation effective confining stress = 248.74 kPa
Strain rate, %/min. = 0.03
Fail. Stress = 395.32 kPa **at reading no.** 140

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
0	-0.3131	2.067	0.0	0.0	0.00	248.74	248.74	1.00	49.964	248.74	0.00
1	-0.3116	14.701	12.6	0.0	13.52	246.68	260.20	1.05	50.262	253.44	6.76
2	-0.3102	61.127	59.1	0.1	63.21	237.48	300.68	1.27	51.597	269.08	31.60
3	-0.3087	73.625	71.6	0.1	76.56	230.67	307.23	1.33	52.584	268.95	38.28
4	-0.3073	84.753	82.7	0.1	88.45	223.77	312.21	1.40	53.586	267.99	44.22
5	-0.3059	94.198	92.1	0.1	98.53	217.11	315.63	1.45	54.551	266.37	49.26
6	-0.3044	102.490	100.4	0.2	107.37	210.67	318.03	1.51	55.486	264.35	53.68
7	-0.3030	110.379	108.3	0.2	115.77	203.38	319.15	1.57	56.542	261.27	57.89
8	-0.3015	117.978	115.9	0.2	123.86	195.53	319.39	1.63	57.681	257.46	61.93
9	-0.3001	125.039	123.0	0.2	131.37	190.40	321.77	1.69	58.425	256.08	65.69
10	-0.2987	131.192	129.1	0.3	137.91	184.05	321.96	1.75	59.346	253.00	68.96
11	-0.2972	136.895	134.8	0.3	143.97	177.56	321.52	1.81	60.287	249.54	71.98
12	-0.2958	143.002	140.9	0.3	150.45	171.93	322.38	1.88	61.104	247.16	75.23
13	-0.2944	147.828	145.8	0.3	155.56	166.18	321.74	1.94	61.938	243.96	77.78
14	-0.2929	152.556	150.5	0.4	160.57	161.68	322.25	1.99	62.591	241.96	80.28
15	-0.2915	155.574	153.5	0.4	163.75	157.13	320.87	2.04	63.251	239.00	81.87
16	-0.2900	159.473	157.4	0.4	167.86	152.19	320.05	2.10	63.967	236.12	83.93
17	-0.2886	163.050	161.0	0.4	171.63	147.46	319.09	2.16	64.653	233.27	85.82
18	-0.2871	166.058	164.0	0.5	174.80	143.24	318.04	2.22	65.265	230.64	87.40
19	-0.2857	169.869	167.8	0.5	178.81	140.82	319.63	2.27	65.616	230.23	89.41
20	-0.2843	172.561	170.5	0.5	181.64	136.97	318.61	2.33	66.174	227.79	90.82
21	-0.2828	175.107	173.0	0.5	184.30	134.57	318.87	2.37	66.523	226.72	92.15
22	-0.2814	177.278	175.2	0.6	186.57	131.17	317.74	2.42	67.015	224.46	93.28
23	-0.2799	179.576	177.5	0.6	188.97	127.50	316.46	2.48	67.548	221.98	94.48
24	-0.2785	181.636	179.6	0.6	191.11	125.34	316.45	2.52	67.861	220.89	95.55
25	-0.2770	183.672	181.6	0.6	193.23	122.35	315.58	2.58	68.294	218.97	96.61
26	-0.2756	185.408	183.3	0.7	195.02	118.99	314.01	2.64	68.782	216.50	97.51
27	-0.2741	187.113	185.0	0.7	196.79	117.95	314.74	2.67	68.933	216.34	98.39
28	-0.2727	188.496	186.4	0.7	198.21	114.62	312.82	2.73	69.416	213.72	99.10
29	-0.2712	189.803	187.7	0.7	199.55	113.76	313.31	2.75	69.540	213.53	99.77
30	-0.2698	190.725	188.7	0.8	200.47	111.96	312.43	2.79	69.802	212.19	100.24
31	-0.2683	192.155	190.1	0.8	201.94	109.05	310.99	2.85	70.224	210.02	100.97
32	-0.2669	194.180	192.1	0.8	204.04	109.07	313.11	2.87	70.221	211.09	102.02
33	-0.2655	194.409	192.3	0.8	204.23	107.03	311.26	2.91	70.517	209.15	102.12
34	-0.2640	195.941	193.9	0.9	205.81	104.68	310.49	2.97	70.857	207.59	102.90
35	-0.2626	196.866	194.8	0.9	206.74	104.68	311.41	2.97	70.858	208.05	103.37
36	-0.2611	198.090	196.0	0.9	207.98	102.26	310.24	3.03	71.209	206.25	103.99
37	-0.2597	197.981	195.9	0.9	207.81	100.14	307.96	3.08	71.515	204.05	103.91
38	-0.2583	198.699	196.6	1.0	208.52	98.51	307.03	3.12	71.753	202.77	104.26
39	-0.2568	200.480	198.4	1.0	210.36	98.96	309.32	3.13	71.686	204.14	105.18
40	-0.2554	200.208	198.1	1.0	210.02	98.37	308.38	3.14	71.773	203.37	105.01
41	-0.2496	203.642	201.6	1.1	213.44	93.65	307.09	3.28	72.457	200.37	106.72
42	-0.2439	206.095	204.0	1.2	215.81	90.04	305.85	3.40	72.981	197.94	107.91
43	-0.2381	208.972	206.9	1.3	218.63	88.51	307.14	3.47	73.203	197.82	109.32
44	-0.2324	209.563	207.5	1.4	219.04	85.39	304.42	3.57	73.656	194.91	109.52
45	-0.2267	211.606	209.5	1.5	220.97	84.74	305.70	3.61	73.750	195.22	110.48
46	-0.2209	211.842	209.8	1.6	220.99	82.03	303.02	3.69	74.143	192.52	110.49

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
47	-0.2152	213.668	211.6	1.7	222.68	82.07	304.75	3.71	74.137	193.41	111.34
48	-0.2094	215.133	213.1	1.8	224.00	79.79	303.78	3.81	74.468	191.79	112.00
49	-0.2037	217.253	215.2	1.9	225.99	79.98	305.97	3.83	74.440	192.97	113.00
50	-0.1979	218.711	216.6	2.0	227.29	80.29	307.58	3.83	74.394	193.94	113.65
51	-0.1922	219.965	217.9	2.1	228.37	78.59	306.96	3.91	74.641	192.78	114.19
52	-0.1865	222.421	220.4	2.2	230.71	78.23	308.94	3.95	74.693	193.59	115.35
53	-0.1807	224.089	222.0	2.3	232.21	76.42	308.64	4.04	74.956	192.53	116.11
54	-0.1750	225.543	223.5	2.4	233.49	77.45	310.94	4.01	74.807	194.19	116.75
55	-0.1692	226.641	224.6	2.5	234.40	75.93	310.33	4.09	75.028	193.13	117.20
56	-0.1635	227.926	225.9	2.6	235.50	76.06	311.55	4.10	75.009	193.81	117.75
57	-0.1577	229.261	227.2	2.7	236.64	77.49	314.14	4.05	74.800	195.82	118.32
58	-0.1520	230.898	228.8	2.8	238.10	75.96	314.06	4.13	75.023	195.01	119.05
59	-0.1462	231.573	229.5	2.9	238.56	76.99	315.55	4.10	74.873	196.27	119.28
60	-0.1405	233.262	231.2	3.0	240.06	77.40	317.46	4.10	74.814	197.43	120.03
61	-0.1347	234.849	232.8	3.1	241.46	76.28	317.74	4.17	74.976	197.01	120.73
62	-0.1290	236.945	234.9	3.2	243.38	76.75	320.13	4.17	74.909	198.44	121.69
63	-0.1233	238.128	236.1	3.3	244.35	75.60	319.95	4.23	75.075	197.78	122.18
64	-0.1175	239.737	237.7	3.4	245.76	76.93	322.69	4.19	74.882	199.81	122.88
65	-0.1118	241.315	239.2	3.5	247.13	77.47	324.61	4.19	74.804	201.04	123.57
66	-0.1060	241.843	239.8	3.6	247.42	77.92	325.34	4.18	74.739	201.63	123.71
67	-0.1003	243.591	241.5	3.7	248.96	77.38	326.34	4.22	74.817	201.86	124.48
68	-0.0945	245.222	243.2	3.8	250.38	78.70	329.08	4.18	74.626	203.89	125.19
69	-0.0888	247.265	245.2	3.9	252.22	77.50	329.72	4.25	74.800	203.61	126.11
70	-0.0830	248.324	246.3	4.0	253.04	78.28	331.33	4.23	74.686	204.80	126.52
71	-0.0773	250.298	248.2	4.1	254.80	79.98	334.79	4.19	74.439	207.39	127.40
72	-0.0715	251.806	249.7	4.2	256.08	77.66	333.74	4.30	74.776	205.70	128.04
73	-0.0658	254.120	252.1	4.3	258.18	79.09	337.27	4.26	74.569	208.18	129.09
74	-0.0601	254.679	252.6	4.4	258.48	79.15	337.63	4.27	74.561	208.39	129.24
75	-0.0543	256.484	254.4	4.5	260.06	79.83	339.89	4.26	74.461	209.86	130.03
76	-0.0486	258.457	256.4	4.6	261.80	81.13	342.93	4.23	74.273	212.03	130.90
77	-0.0428	260.238	258.2	4.7	263.34	80.23	343.56	4.28	74.404	211.89	131.67
78	-0.0371	261.999	259.9	4.8	264.85	81.28	346.14	4.26	74.251	213.71	132.43
79	-0.0313	262.541	260.5	4.9	265.12	82.35	347.48	4.22	74.096	214.91	132.56
80	-0.0256	265.207	263.1	5.0	267.55	82.18	349.73	4.26	74.121	215.96	133.78
81	-0.0112	269.251	267.2	5.3	270.94	83.15	354.09	4.26	73.980	218.62	135.47
82	0.0031	272.176	270.1	5.5	273.18	83.63	356.81	4.27	73.910	220.22	136.59
83	0.0175	275.827	273.8	5.8	276.14	83.53	359.67	4.31	73.925	221.60	138.07
84	0.0318	279.029	277.0	6.1	278.62	86.60	365.22	4.22	73.479	225.91	139.31
85	0.0462	283.824	281.8	6.3	282.68	86.39	369.07	4.27	73.510	227.73	141.34
86	0.0605	288.927	286.9	6.6	287.03	87.04	374.07	4.30	73.415	230.56	143.51
87	0.0749	293.942	291.9	6.8	291.26	89.79	381.06	4.24	73.016	235.43	145.63
88	0.0893	297.672	295.6	7.1	294.19	89.97	384.15	4.27	72.991	237.06	147.09
89	0.1036	302.254	300.2	7.3	297.94	91.23	389.17	4.27	72.808	240.20	148.97
90	0.1180	306.359	304.3	7.6	301.19	92.73	393.92	4.25	72.591	243.32	150.60
91	0.1323	309.343	307.3	7.8	303.32	93.39	396.71	4.25	72.495	245.05	151.66
92	0.1467	312.870	310.8	8.1	305.96	94.81	400.77	4.23	72.289	247.79	152.98
93	0.1610	316.286	314.2	8.3	308.47	94.95	403.42	4.25	72.269	249.19	154.24

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
94	0.1754	319.650	317.6	8.6	310.92	96.87	407.79	4.21	71.991	252.33	155.46
95	0.1898	323.777	321.7	8.8	314.09	97.38	411.47	4.23	71.917	254.42	157.05
96	0.2041	328.653	326.6	9.1	317.97	97.63	415.60	4.26	71.880	256.62	158.99
97	0.2185	331.279	329.2	9.3	319.64	98.79	418.43	4.24	71.712	258.61	159.82
98	0.2328	334.088	332.0	9.6	321.47	98.99	420.46	4.25	71.683	259.73	160.74
99	0.2472	337.178	335.1	9.8	323.56	101.88	425.45	4.18	71.263	263.66	161.78
100	0.2616	340.595	338.5	10.1	325.95	101.92	427.87	4.20	71.258	264.89	162.97
101	0.2759	345.025	343.0	10.3	329.29	103.01	432.30	4.20	71.100	267.65	164.64
102	0.2903	348.355	346.3	10.6	331.55	102.77	434.32	4.23	71.134	268.55	165.78
103	0.3046	353.287	351.2	10.8	335.33	105.65	440.98	4.17	70.716	273.32	167.66
104	0.3190	356.490	354.4	11.1	337.43	105.53	442.96	4.20	70.734	274.24	168.71
105	0.3334	360.330	358.3	11.3	340.12	106.96	447.08	4.18	70.527	277.02	170.06
106	0.3477	364.350	362.3	11.6	342.96	107.30	450.26	4.20	70.478	278.78	171.48
107	0.3621	366.976	364.9	11.8	344.46	107.47	451.92	4.21	70.453	279.69	172.23
108	0.3764	369.773	367.7	12.1	346.11	109.41	455.52	4.16	70.172	282.46	173.05
109	0.3908	373.473	371.4	12.3	348.59	110.23	458.82	4.16	70.053	284.52	174.29
110	0.4051	376.250	374.2	12.6	350.19	109.88	460.06	4.19	70.104	284.97	175.09
111	0.4195	380.669	378.6	12.8	353.30	112.21	465.51	4.15	69.765	288.86	176.65
112	0.4338	383.121	381.1	13.1	354.56	111.68	466.24	4.17	69.842	288.96	177.28
113	0.4482	386.365	384.3	13.4	356.55	111.67	468.21	4.19	69.844	289.94	178.27
114	0.4626	390.470	388.4	13.6	359.31	113.91	473.22	4.15	69.518	293.57	179.65
115	0.4769	393.348	391.3	13.9	360.91	113.58	474.50	4.18	69.566	294.04	180.46
116	0.4913	395.449	393.4	14.1	361.79	114.88	476.68	4.15	69.377	295.78	180.90
117	0.5056	398.036	396.0	14.4	363.10	115.09	478.19	4.15	69.347	296.64	181.55
118	0.5200	401.311	399.2	14.6	365.03	115.37	480.40	4.16	69.306	297.89	182.51
119	0.5343	403.853	401.8	14.9	366.27	117.90	484.17	4.11	68.940	301.04	183.14
120	0.5487	406.275	404.2	15.1	367.39	117.30	484.69	4.13	69.027	300.99	183.69
121	0.5630	410.781	408.7	15.4	370.38	117.14	487.53	4.16	69.050	302.34	185.19
122	0.5774	413.369	411.3	15.6	371.62	118.11	489.73	4.15	68.910	303.92	185.81
123	0.5918	417.471	415.4	15.9	374.20	118.73	492.93	4.15	68.820	305.83	187.10
124	0.6061	421.108	419.0	16.1	376.35	118.57	494.92	4.17	68.843	306.74	188.18
125	0.6205	423.536	421.5	16.4	377.39	119.48	496.87	4.16	68.711	308.17	188.70
126	0.6348	427.874	425.8	16.6	380.13	120.09	500.22	4.17	68.622	310.16	190.07
127	0.6492	429.892	427.8	16.9	380.78	120.99	501.77	4.15	68.492	311.38	190.39
128	0.6635	432.395	430.3	17.1	381.85	121.02	502.87	4.16	68.487	311.94	190.92
129	0.6779	433.847	431.8	17.4	381.97	121.55	503.52	4.14	68.411	312.54	190.99
130	0.6922	436.022	434.0	17.6	382.73	122.66	505.39	4.12	68.250	314.02	191.36
131	0.7066	438.947	436.9	17.9	384.13	123.07	507.20	4.12	68.190	315.14	192.06
132	0.7209	441.346	439.3	18.1	385.05	123.09	508.14	4.13	68.187	315.62	192.53
133	0.7353	444.384	442.3	18.4	386.52	123.98	510.50	4.12	68.058	317.24	193.26
134	0.7497	447.709	445.6	18.6	388.23	124.72	512.94	4.11	67.952	318.83	194.11
135	0.7640	449.015	446.9	18.9	388.16	125.60	513.76	4.09	67.823	319.68	194.08
136	0.7784	453.075	451.0	19.1	390.47	125.15	515.62	4.12	67.888	320.39	195.23
137	0.7927	454.998	452.9	19.4	390.91	126.00	516.92	4.10	67.765	321.46	195.46
138	0.8071	458.406	456.3	19.6	392.62	126.72	519.34	4.10	67.661	323.03	196.31
139	0.8214	461.836	459.8	19.9	394.34	127.30	521.64	4.10	67.576	324.47	197.17
140	0.8351	464.374	462.3	20.1	395.32	127.15	522.47	4.11	67.598	324.81	197.66

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	636.600			1779.600
Moisture content: Dry soil+tare, gms.	587.300			1647.000
Moisture content: Tare, gms.	110.670			413.500
Moisture, %	10.3	12.9	10.7	10.7
Moist specimen weight, gms.	1354.2			
Diameter, in.	2.88	2.88	2.84	
Area, in.²	6.51	6.51	6.32	
Height, in.	5.74	5.74	5.67	
Net decrease in height, in.		0.00	0.07	
Net decrease in water volume, cc.			26.30	
Wet density, pcf	138.0	141.2	144.7	
Dry density, pcf	125.0	125.0	130.6	
Void ratio	0.3481	0.3481	0.2902	
Saturation, %	80.2	100.0	100.0	

Test Readings for Specimen No. 2

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.0635 cm
Consolidation cell pressure = 122.800 psi (846.68 kPa)
Consolidation back pressure = 50.204 psi (346.14 kPa)
Consolidation effective confining stress = 500.53 kPa
Strain rate, %/min. = 0.03
Fail. Stress = 697.64 kPa **at reading no.** 140

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
0	-0.2956	1.684	0.0	0.0	0.00	500.53	500.53	1.00	50.204	500.53	0.00
1	-0.2941	23.053	21.4	0.0	23.32	498.40	521.72	1.05	50.513	510.06	11.66
2	-0.2927	41.518	39.8	0.1	43.47	494.81	538.28	1.09	51.033	516.55	21.73
3	-0.2913	55.809	54.1	0.1	59.05	490.26	549.31	1.12	51.694	519.78	29.52
4	-0.2898	69.734	68.1	0.1	74.22	484.16	558.38	1.15	52.579	521.27	37.11
5	-0.2884	82.519	80.8	0.1	88.14	477.53	565.67	1.18	53.541	521.60	44.07
6	-0.2869	95.248	93.6	0.2	102.00	470.77	572.77	1.22	54.520	521.77	51.00
7	-0.2855	107.661	106.0	0.2	115.50	463.35	578.85	1.25	55.596	521.10	57.75
8	-0.2841	118.203	116.5	0.2	126.96	456.01	582.97	1.28	56.661	519.49	63.48
9	-0.2826	128.547	126.9	0.2	138.19	448.84	587.03	1.31	57.701	517.94	69.10
10	-0.2812	139.528	137.8	0.3	150.11	441.67	591.78	1.34	58.741	516.73	75.06
11	-0.2797	150.086	148.4	0.3	161.57	434.17	595.74	1.37	59.829	514.96	80.79
12	-0.2783	159.735	158.1	0.3	172.03	426.66	598.69	1.40	60.919	512.67	86.02
13	-0.2768	170.141	168.5	0.3	183.31	419.01	602.32	1.44	62.028	510.67	91.66
14	-0.2754	180.476	178.8	0.4	194.51	411.46	605.97	1.47	63.123	508.71	97.25
15	-0.2740	190.230	188.5	0.4	205.07	403.47	608.54	1.51	64.282	506.00	102.53
16	-0.2725	198.389	196.7	0.4	213.89	395.91	609.80	1.54	65.377	502.86	106.94
17	-0.2711	207.121	205.4	0.4	223.32	388.47	611.80	1.57	66.457	500.14	111.66
18	-0.2696	201.249	199.6	0.5	216.89	375.54	592.42	1.58	68.333	483.98	108.44
19	-0.2682	212.026	210.3	0.5	228.54	369.32	597.86	1.62	69.235	483.59	114.27
20	-0.2668	222.234	220.6	0.5	239.57	363.01	602.58	1.66	70.151	482.79	119.78
21	-0.2653	231.090	229.4	0.5	249.12	356.68	605.81	1.70	71.068	481.24	124.56
22	-0.2639	237.804	236.1	0.6	256.35	350.07	606.42	1.73	72.027	478.24	128.18
23	-0.2624	244.370	242.7	0.6	263.41	342.89	606.30	1.77	73.068	474.59	131.71

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
24	-0.2610	252.146	250.5	0.6	271.78	336.27	608.05	1.81	74.029	472.16	135.89
25	-0.2595	259.253	257.6	0.6	279.42	329.98	609.40	1.85	74.941	469.69	139.71
26	-0.2581	264.945	263.3	0.7	285.52	323.83	609.36	1.88	75.832	466.59	142.76
27	-0.2567	270.659	269.0	0.7	291.65	316.55	608.20	1.92	76.888	462.38	145.82
28	-0.2552	274.991	273.3	0.7	296.27	309.73	606.00	1.96	77.877	457.87	148.13
29	-0.2538	280.426	278.7	0.7	302.08	303.58	605.66	2.00	78.770	454.62	151.04
30	-0.2523	285.875	284.2	0.8	307.91	297.71	605.62	2.03	79.621	451.66	153.95
31	-0.2509	283.965	282.3	0.8	305.76	289.84	595.60	2.05	80.762	442.72	152.88
32	-0.2494	290.257	288.6	0.8	312.49	284.46	596.95	2.10	81.543	440.71	156.25
33	-0.2480	296.385	294.7	0.8	319.05	279.65	598.70	2.14	82.240	439.18	159.52
34	-0.2465	301.077	299.4	0.9	324.05	275.18	599.23	2.18	82.888	437.21	162.02
35	-0.2451	306.016	304.3	0.9	329.31	270.73	600.04	2.22	83.533	435.39	164.65
36	-0.2436	309.777	308.1	0.9	333.29	266.28	599.57	2.25	84.180	432.92	166.64
37	-0.2422	312.940	311.3	0.9	336.63	261.99	598.62	2.28	84.802	430.30	168.31
38	-0.2408	317.466	315.8	1.0	341.43	257.77	599.20	2.32	85.413	428.49	170.72
39	-0.2393	320.722	319.0	1.0	344.86	253.31	598.18	2.36	86.060	425.74	172.43
40	-0.2379	323.653	322.0	1.0	347.94	248.58	596.52	2.40	86.747	422.55	173.97
41	-0.2321	334.666	333.0	1.1	359.48	233.73	593.21	2.54	88.900	413.47	179.74
42	-0.2264	343.320	341.6	1.2	368.44	221.23	589.67	2.67	90.713	405.45	184.22
43	-0.2206	351.949	350.3	1.3	377.36	210.73	588.09	2.79	92.236	399.41	188.68
44	-0.2149	358.599	356.9	1.4	384.13	201.87	585.99	2.90	93.522	393.93	192.06
45	-0.2091	364.631	362.9	1.5	390.22	194.67	584.88	3.00	94.566	389.77	195.11
46	-0.2034	371.009	369.3	1.6	396.67	188.89	585.55	3.10	95.405	387.22	198.33
47	-0.1977	375.365	373.7	1.7	400.93	184.25	585.18	3.18	96.077	384.71	200.47
48	-0.1919	381.156	379.5	1.8	406.72	178.51	585.23	3.28	96.910	381.87	203.36
49	-0.1862	386.552	384.9	1.9	412.08	174.89	586.97	3.36	97.435	380.93	206.04
50	-0.1804	390.080	388.4	2.0	415.43	171.76	587.19	3.42	97.888	379.48	207.71
51	-0.1747	394.299	392.6	2.1	419.51	169.31	588.82	3.48	98.243	379.07	209.75
52	-0.1689	397.950	396.3	2.2	422.97	167.14	590.11	3.53	98.558	378.63	211.48
53	-0.1632	402.502	400.8	2.3	427.38	165.32	592.70	3.59	98.823	379.01	213.69
54	-0.1574	405.779	404.1	2.4	430.43	163.86	594.29	3.63	99.034	379.08	215.22
55	-0.1517	409.748	408.1	2.5	434.21	162.01	596.22	3.68	99.303	379.11	217.10
56	-0.1460	413.252	411.6	2.6	437.48	161.07	598.55	3.72	99.439	379.81	218.74
57	-0.1402	416.461	414.8	2.7	440.43	160.91	601.34	3.74	99.463	381.12	220.22
58	-0.1345	419.799	418.1	2.8	443.52	159.55	603.06	3.78	99.660	381.30	221.76
59	-0.1287	425.454	423.8	2.9	449.04	158.70	607.74	3.83	99.783	383.22	224.52
60	-0.1230	428.217	426.5	3.0	451.50	158.70	610.20	3.84	99.782	384.45	225.75
61	-0.1172	431.544	429.9	3.1	454.55	159.24	613.79	3.85	99.704	386.51	227.27
62	-0.1115	435.518	433.8	3.2	458.27	159.08	617.34	3.88	99.728	388.21	229.13
63	-0.1057	438.373	436.7	3.3	460.80	158.11	618.91	3.91	99.868	388.51	230.40
64	-0.1000	442.866	441.2	3.5	465.05	158.03	623.09	3.94	99.879	390.56	232.53
65	-0.0942	445.731	444.0	3.6	467.58	159.70	627.28	3.93	99.638	393.49	233.79
66	-0.0885	449.026	447.3	3.7	470.55	160.41	630.97	3.93	99.534	395.69	235.28
67	-0.0828	452.965	451.3	3.8	474.20	161.25	635.45	3.94	99.413	398.35	237.10
68	-0.0770	456.001	454.3	3.9	476.89	161.74	638.62	3.95	99.342	400.18	238.44
69	-0.0713	458.711	457.0	4.0	479.22	160.96	640.18	3.98	99.455	400.57	239.61
70	-0.0655	462.733	461.0	4.1	482.93	162.26	645.19	3.98	99.266	403.73	241.47

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
71	-0.0598	465.924	464.2	4.2	485.76	161.13	646.89	4.01	99.431	404.01	242.88
72	-0.0540	468.318	466.6	4.3	487.75	162.10	649.85	4.01	99.289	405.98	243.87
73	-0.0483	471.076	469.4	4.4	490.11	162.84	652.95	4.01	99.182	407.90	245.06
74	-0.0425	474.980	473.3	4.5	493.66	163.62	657.29	4.02	99.068	410.46	246.83
75	-0.0368	477.879	476.2	4.6	496.16	164.83	660.99	4.01	98.894	412.91	248.08
76	-0.0310	480.685	479.0	4.7	498.55	165.24	663.79	4.02	98.834	414.52	249.28
77	-0.0253	483.994	482.3	4.8	501.47	166.92	668.39	4.00	98.590	417.65	250.73
78	-0.0196	487.075	485.4	4.9	504.13	168.87	673.01	3.99	98.307	420.94	252.07
79	-0.0138	491.029	489.3	5.0	507.70	170.52	678.21	3.98	98.069	424.36	253.85
80	-0.0081	494.117	492.4	5.1	510.36	168.20	678.56	4.03	98.405	423.38	255.18
81	0.0063	501.716	500.0	5.3	516.85	170.59	687.44	4.03	98.058	429.01	258.42
82	0.0206	509.517	507.8	5.6	523.51	172.20	695.71	4.04	97.824	433.95	261.75
83	0.0350	516.736	515.1	5.8	529.53	175.24	704.77	4.02	97.383	440.01	264.76
84	0.0494	524.002	522.3	6.1	535.55	177.04	712.59	4.03	97.123	444.81	267.78
85	0.0637	528.919	527.2	6.3	539.13	177.80	716.94	4.03	97.012	447.37	269.57
86	0.0781	535.143	533.5	6.6	544.02	181.23	725.25	4.00	96.515	453.24	272.01
87	0.0924	540.454	538.8	6.8	547.95	181.89	729.84	4.01	96.418	455.87	273.97
88	0.1068	546.630	544.9	7.1	552.72	186.38	739.10	3.97	95.768	462.74	276.36
89	0.1211	552.693	551.0	7.4	557.35	186.85	744.19	3.98	95.700	465.52	278.67
90	0.1355	558.641	557.0	7.6	561.82	187.33	749.15	4.00	95.630	468.24	280.91
91	0.1498	566.106	564.4	7.9	567.79	189.86	757.65	3.99	95.263	473.76	283.90
92	0.1642	569.739	568.1	8.1	569.88	191.85	761.73	3.97	94.974	476.79	284.94
93	0.1785	577.729	576.0	8.4	576.30	193.91	770.21	3.97	94.676	482.06	288.15
94	0.1929	582.779	581.1	8.6	579.74	195.76	775.51	3.96	94.407	485.63	289.87
95	0.2073	589.810	588.1	8.9	585.13	196.08	781.22	3.98	94.361	488.65	292.57
96	0.2216	596.131	594.4	9.1	589.78	198.62	788.39	3.97	93.993	493.51	294.89
97	0.2360	601.703	600.0	9.4	593.65	200.67	794.32	3.96	93.695	497.49	296.82
98	0.2504	607.559	605.9	9.6	597.76	201.14	798.90	3.97	93.627	500.02	298.88
99	0.2647	613.763	612.1	9.9	602.19	202.56	804.75	3.97	93.421	503.66	301.10
100	0.2791	617.668	616.0	10.1	604.33	204.68	809.01	3.95	93.114	506.84	302.16
101	0.2934	623.526	621.8	10.4	608.35	206.23	814.58	3.95	92.889	510.40	304.18
102	0.3078	629.541	627.9	10.6	612.50	206.72	819.22	3.96	92.818	512.97	306.25
103	0.3221	634.731	633.0	10.9	615.82	209.40	825.22	3.94	92.428	517.31	307.91
104	0.3365	638.801	637.1	11.2	618.01	209.76	827.77	3.95	92.377	518.76	309.01
105	0.3508	643.124	641.4	11.4	620.43	212.68	833.11	3.92	91.954	522.89	310.22
106	0.3652	648.170	646.5	11.7	623.52	213.74	837.27	3.92	91.799	525.51	311.76
107	0.3796	655.192	653.5	11.9	628.49	213.50	841.99	3.94	91.834	527.75	314.24
108	0.3939	659.524	657.8	12.2	630.84	215.01	845.84	3.93	91.616	530.42	315.42
109	0.4083	665.706	664.0	12.4	634.93	216.88	851.81	3.93	91.344	534.35	317.46
110	0.4226	669.686	668.0	12.7	636.89	218.65	855.54	3.91	91.087	537.09	318.44
111	0.4370	675.315	673.6	12.9	640.39	218.32	858.71	3.93	91.135	538.52	320.20
112	0.4513	681.041	679.4	13.2	643.95	219.54	863.49	3.93	90.959	541.52	321.98
113	0.4657	685.478	683.8	13.4	646.27	222.72	868.99	3.90	90.497	545.85	323.13
114	0.4800	691.247	689.6	13.7	649.81	222.20	872.01	3.92	90.573	547.11	324.91
115	0.4944	695.271	693.6	13.9	651.69	224.53	876.22	3.90	90.235	550.37	325.84
116	0.5088	700.665	699.0	14.2	654.82	224.60	879.42	3.92	90.225	552.01	327.41
117	0.5231	704.442	702.8	14.4	656.42	226.33	882.75	3.90	89.973	554.54	328.21

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
118	0.5375	707.109	705.4	14.7	656.96	226.41	883.37	3.90	89.962	554.89	328.48
119	0.5518	712.675	711.0	15.0	660.18	227.68	887.86	3.90	89.778	557.77	330.09
120	0.5662	716.405	714.7	15.2	661.66	228.85	890.52	3.89	89.607	559.68	330.83
121	0.5805	720.160	718.5	15.5	663.15	229.65	892.80	3.89	89.492	561.22	331.58
122	0.5949	724.729	723.0	15.7	665.37	232.55	897.92	3.86	89.072	565.23	332.68
123	0.6093	730.422	728.7	16.0	668.59	231.85	900.44	3.88	89.174	566.14	334.30
124	0.6236	735.582	733.9	16.2	671.29	233.16	904.45	3.88	88.983	568.80	335.65
125	0.6380	740.834	739.2	16.5	674.06	233.48	907.54	3.89	88.936	570.51	337.03
126	0.6523	745.320	743.6	16.7	676.09	235.63	911.72	3.87	88.624	573.68	338.04
127	0.6667	750.558	748.9	17.0	678.78	235.86	914.64	3.88	88.592	575.25	339.39
128	0.6810	755.764	754.1	17.2	681.41	236.66	918.07	3.88	88.476	577.37	340.71
129	0.6954	758.928	757.2	17.5	682.18	239.30	921.48	3.85	88.093	580.39	341.09
130	0.7097	762.916	761.2	17.7	683.67	239.13	922.79	3.86	88.117	580.96	341.83
131	0.7241	766.486	764.8	18.0	684.75	239.91	924.66	3.85	88.004	582.29	342.38
132	0.7385	770.773	769.1	18.2	686.47	241.19	927.66	3.85	87.818	584.42	343.23
133	0.7528	774.557	772.9	18.5	687.71	240.71	928.42	3.86	87.888	584.56	343.85
134	0.7672	779.121	777.4	18.8	689.62	242.89	932.51	3.84	87.572	587.70	344.81
135	0.7815	782.997	781.3	19.0	690.90	242.56	933.46	3.85	87.619	588.01	345.45
136	0.7959	786.136	784.5	19.3	691.50	244.72	936.22	3.83	87.307	590.47	345.75
137	0.8102	790.467	788.8	19.5	693.14	244.41	937.55	3.84	87.351	590.98	346.57
138	0.8246	793.666	792.0	19.8	693.76	246.81	940.57	3.81	87.003	593.69	346.88
139	0.8389	798.925	797.2	20.0	696.16	247.67	943.83	3.81	86.879	595.75	348.08
140	0.8531	803.119	801.4	20.3	697.64	247.31	944.95	3.82	86.930	596.13	348.82

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	636.600			1770.800
Moisture content: Dry soil+tare, gms.	587.300			1643.900
Moisture content: Tare, gms.	110.670			411.700
Moisture, %	10.3	13.0	10.3	10.3
Moist specimen weight, gms.	1354.0			
Diameter, in.	2.88	2.88	2.83	
Area, in.²	6.51	6.51	6.30	
Height, in.	5.75	5.75	5.63	
Net decrease in height, in.		0.00	0.12	
Net decrease in water volume, cc.			33.00	
Wet density, pcf	137.7	141.0	145.5	
Dry density, pcf	124.8	124.8	131.9	
Void ratio	0.3506	0.3506	0.2780	
Saturation, %	79.6	100.0	100.0	

Test Readings for Specimen No. 3

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.0635 cm
Consolidation cell pressure = 195.680 psi (1349.17 kPa)
Consolidation back pressure = 50.075 psi (345.25 kPa)
Consolidation effective confining stress = 1003.91 kPa
Strain rate, %/min. = 0.03
Fail. Stress = 1096.74 kPa **at reading no.** 140

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
0	-0.0530	14.583	0.0	0.0	0.00	1003.91	1003.91	1.00	50.075	1003.91	0.00
1	-0.0515	33.034	18.5	0.0	20.19	1000.58	1020.77	1.02	50.558	1010.67	10.09
2	-0.0501	53.447	38.9	0.1	42.51	997.59	1040.10	1.04	50.993	1018.84	21.26
3	-0.0486	74.104	59.5	0.1	65.09	993.40	1058.49	1.07	51.600	1025.94	32.54
4	-0.0472	96.444	81.9	0.1	89.50	988.06	1077.56	1.09	52.374	1032.81	44.75
5	-0.0458	115.280	100.7	0.1	110.06	981.79	1091.85	1.11	53.283	1036.82	55.03
6	-0.0443	134.529	119.9	0.2	131.07	974.53	1105.60	1.13	54.336	1040.06	65.53
7	-0.0429	152.564	138.0	0.2	150.74	966.83	1117.56	1.16	55.453	1042.20	75.37
8	-0.0414	169.867	155.3	0.2	169.59	958.43	1128.03	1.18	56.671	1043.23	84.80
9	-0.0400	186.593	172.0	0.2	187.81	949.75	1137.56	1.20	57.930	1043.66	93.91
10	-0.0386	203.739	189.2	0.3	206.48	940.81	1147.30	1.22	59.226	1044.05	103.24
11	-0.0371	220.258	205.7	0.3	224.46	931.20	1155.66	1.24	60.620	1043.43	112.23
12	-0.0357	237.856	223.3	0.3	243.60	921.10	1164.69	1.26	62.086	1042.89	121.80
13	-0.0342	253.240	238.7	0.3	260.32	910.83	1171.15	1.29	63.575	1040.99	130.16
14	-0.0328	269.802	255.2	0.4	278.31	900.54	1178.85	1.31	65.067	1039.70	139.15
15	-0.0314	284.840	270.3	0.4	294.63	889.80	1184.43	1.33	66.625	1037.12	147.32
16	-0.0299	300.639	286.1	0.4	311.78	879.31	1191.08	1.35	68.147	1035.19	155.89
17	-0.0285	315.658	301.1	0.4	328.06	868.33	1196.39	1.38	69.739	1032.36	164.03
18	-0.0270	331.067	316.5	0.5	344.76	857.06	1201.82	1.40	71.374	1029.44	172.38
19	-0.0256	346.587	332.0	0.5	361.58	845.44	1207.02	1.43	73.060	1026.23	180.79
20	-0.0242	361.177	346.6	0.5	377.37	833.65	1211.02	1.45	74.769	1022.33	188.68
21	-0.0227	375.097	360.5	0.5	392.42	821.96	1214.39	1.48	76.464	1018.18	196.21
22	-0.0213	388.551	374.0	0.6	406.96	810.41	1217.38	1.50	78.140	1013.90	203.48
23	-0.0198	402.820	388.2	0.6	422.38	798.53	1220.91	1.53	79.864	1009.72	211.19

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
24	-0.0184	415.716	401.1	0.6	436.30	786.39	1222.69	1.55	81.624	1004.54	218.15
25	-0.0170	429.243	414.7	0.6	450.90	774.32	1225.22	1.58	83.374	999.77	225.45
26	-0.0155	441.284	426.7	0.7	463.87	762.33	1226.20	1.61	85.114	994.26	231.94
27	-0.0141	453.306	438.7	0.7	476.82	750.86	1227.68	1.64	86.777	989.27	238.41
28	-0.0126	465.081	450.5	0.7	489.49	739.14	1228.63	1.66	88.477	983.88	244.74
29	-0.0112	477.055	462.5	0.7	502.37	727.32	1229.70	1.69	90.190	978.51	251.19
30	-0.0098	487.288	472.7	0.8	513.35	714.89	1228.25	1.72	91.993	971.57	256.68
31	-0.0083	498.535	484.0	0.8	525.43	702.28	1227.71	1.75	93.823	964.99	262.72
32	-0.0069	508.753	494.2	0.8	536.39	690.25	1226.64	1.78	95.567	958.45	268.19
33	-0.0054	518.968	504.4	0.8	547.33	678.58	1225.91	1.81	97.260	952.25	273.67
34	-0.0040	527.806	513.2	0.9	556.78	667.36	1224.15	1.83	98.887	945.76	278.39
35	-0.0026	538.012	523.4	0.9	567.71	656.10	1223.81	1.87	100.520	939.96	283.85
36	-0.0011	546.457	531.9	0.9	576.72	644.37	1221.09	1.90	102.221	932.73	288.36
37	0.0003	555.834	541.3	0.9	586.73	633.41	1220.15	1.93	103.811	926.78	293.37
38	0.0018	563.055	548.5	1.0	594.41	622.18	1216.59	1.96	105.440	919.39	297.20
39	0.0032	571.089	556.5	1.0	602.96	611.70	1214.66	1.99	106.960	913.18	301.48
40	0.0046	579.382	564.8	1.0	611.78	600.99	1212.78	2.02	108.513	906.88	305.89
41	0.0104	603.622	589.0	1.1	637.38	561.35	1198.73	2.14	114.263	880.04	318.69
42	0.0161	624.202	609.6	1.2	658.97	526.27	1185.24	2.25	119.351	855.75	329.48
43	0.0219	641.257	626.7	1.3	676.70	494.82	1171.53	2.37	123.912	833.18	338.35
44	0.0276	654.759	640.2	1.4	690.57	467.83	1158.40	2.48	127.827	813.11	345.28
45	0.0334	666.343	651.8	1.5	702.33	444.61	1146.94	2.58	131.195	795.77	351.17
46	0.0391	674.446	659.9	1.6	710.33	424.69	1135.02	2.67	134.084	779.85	355.16
47	0.0449	681.501	666.9	1.7	717.18	407.78	1124.96	2.76	136.536	766.37	358.59
48	0.0506	689.597	675.0	1.8	725.13	393.17	1118.29	2.84	138.656	755.73	362.56
49	0.0564	694.845	680.3	1.9	730.00	380.93	1110.93	2.92	140.431	745.93	365.00
50	0.0622	700.346	685.8	2.0	735.14	369.95	1105.09	2.99	142.023	737.52	367.57
51	0.0679	704.318	689.7	2.1	738.62	360.92	1099.54	3.05	143.333	730.23	369.31
52	0.0737	710.113	695.5	2.3	744.05	353.05	1097.10	3.11	144.475	725.07	372.03
53	0.0794	715.045	700.5	2.4	748.54	345.94	1094.49	3.16	145.505	720.22	374.27
54	0.0852	718.628	704.0	2.5	751.59	339.99	1091.57	3.21	146.369	715.78	375.79
55	0.0909	724.384	709.8	2.6	756.94	334.95	1091.88	3.26	147.100	713.41	378.47
56	0.0967	727.396	712.8	2.7	759.35	331.05	1090.40	3.29	147.665	710.72	379.68
57	0.1024	732.381	717.8	2.8	763.86	326.98	1090.84	3.34	148.255	708.91	381.93
58	0.1082	736.082	721.5	2.9	766.99	323.67	1090.66	3.37	148.736	707.16	383.49
59	0.1139	739.627	725.0	3.0	769.95	320.93	1090.87	3.40	149.133	705.90	384.97
60	0.1197	744.346	729.8	3.1	774.14	318.52	1092.66	3.43	149.482	705.59	387.07
61	0.1254	748.437	733.9	3.2	777.66	316.57	1094.23	3.46	149.765	705.40	388.83
62	0.1312	752.462	737.9	3.3	781.10	315.27	1096.37	3.48	149.954	705.82	390.55
63	0.1369	756.088	741.5	3.4	784.11	313.32	1097.43	3.50	150.236	705.38	392.05
64	0.1427	760.442	745.9	3.5	787.88	312.26	1100.14	3.52	150.390	706.20	393.94
65	0.1484	763.485	748.9	3.6	790.25	311.40	1101.65	3.54	150.516	706.52	395.13
66	0.1542	768.272	753.7	3.7	794.46	310.44	1104.90	3.56	150.654	707.67	397.23
67	0.1600	772.229	757.6	3.8	797.78	309.97	1107.76	3.57	150.722	708.87	398.89
68	0.1657	775.546	761.0	3.9	800.43	309.15	1109.57	3.59	150.842	709.36	400.21
69	0.1715	779.938	765.4	4.0	804.19	308.69	1112.88	3.61	150.908	710.79	402.09
70	0.1772	782.420	767.8	4.1	805.94	308.41	1114.35	3.61	150.949	711.38	402.97

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
71	0.1830	787.696	773.1	4.2	810.61	308.30	1118.91	3.63	150.965	713.60	405.31
72	0.1887	791.230	776.6	4.3	813.45	308.60	1122.04	3.64	150.922	715.32	406.72
73	0.1945	795.165	780.6	4.4	816.70	308.96	1125.65	3.64	150.869	717.31	408.35
74	0.2002	799.414	784.8	4.5	820.26	308.84	1129.10	3.66	150.887	718.97	410.13
75	0.2060	802.740	788.2	4.6	822.86	309.27	1132.12	3.66	150.825	720.70	411.43
76	0.2117	806.992	792.4	4.7	826.41	309.49	1135.90	3.67	150.792	722.69	413.20
77	0.2175	811.316	796.7	4.8	830.03	309.96	1139.98	3.68	150.725	724.97	415.01
78	0.2232	815.062	800.5	4.9	833.03	310.58	1143.61	3.68	150.634	727.10	416.52
79	0.2290	818.406	803.8	5.0	835.61	310.69	1146.31	3.69	150.618	728.50	417.81
80	0.2347	821.451	806.9	5.1	837.88	311.33	1149.21	3.69	150.525	730.27	418.94
81	0.2491	830.619	816.0	5.4	845.11	313.07	1158.19	3.70	150.273	735.63	422.56
82	0.2635	840.248	825.7	5.6	852.77	315.40	1168.18	3.70	149.935	741.79	426.39
83	0.2779	850.299	835.7	5.9	860.82	317.10	1177.91	3.71	149.689	747.50	430.41
84	0.2923	858.872	844.3	6.1	867.29	318.89	1186.17	3.72	149.430	752.53	433.64
85	0.3066	868.230	853.6	6.4	874.51	321.37	1195.88	3.72	149.070	758.62	437.26
86	0.3210	877.183	862.6	6.6	881.27	323.18	1204.45	3.73	148.807	763.82	440.63
87	0.3354	886.731	872.1	6.9	888.58	325.44	1214.02	3.73	148.479	769.73	444.29
88	0.3498	894.768	880.2	7.2	894.31	327.78	1222.09	3.73	148.139	774.94	447.15
89	0.3642	903.160	888.6	7.4	900.35	329.86	1230.21	3.73	147.838	780.04	450.17
90	0.3786	912.213	897.6	7.7	907.01	332.21	1239.22	3.73	147.497	785.72	453.50
91	0.3930	920.682	906.1	7.9	913.03	334.51	1247.54	3.73	147.163	791.03	456.52
92	0.4074	928.568	914.0	8.2	918.42	336.86	1255.28	3.73	146.822	796.07	459.21
93	0.4217	936.385	921.8	8.4	923.69	338.48	1262.17	3.73	146.588	800.32	461.85
94	0.4361	944.734	930.2	8.7	929.46	340.51	1269.97	3.73	146.293	805.24	464.73
95	0.4505	952.969	938.4	8.9	935.06	342.15	1277.21	3.73	146.055	809.68	467.53
96	0.4649	962.527	947.9	9.2	941.93	344.45	1286.38	3.73	145.722	815.41	470.97
97	0.4793	969.492	954.9	9.5	946.18	346.87	1293.04	3.73	145.371	819.96	473.09
98	0.4937	977.879	963.3	9.7	951.79	348.61	1300.40	3.73	145.119	824.50	475.90
99	0.5081	985.644	971.1	10.0	956.75	350.57	1307.32	3.73	144.835	828.94	478.37
100	0.5225	993.499	978.9	10.2	961.75	352.79	1314.54	3.73	144.512	833.67	480.87
101	0.5368	1000.696	986.1	10.5	966.06	354.33	1320.39	3.73	144.288	837.36	483.03
102	0.5512	1008.052	993.5	10.7	970.49	356.44	1326.93	3.72	143.982	841.69	485.24
103	0.5656	1014.483	999.9	11.0	973.97	358.65	1332.63	3.72	143.662	845.64	486.99
104	0.5800	1022.082	1007.5	11.3	978.55	360.11	1338.66	3.72	143.451	849.39	489.28
105	0.5944	1030.136	1015.6	11.5	983.54	361.92	1345.46	3.72	143.188	853.69	491.77
106	0.6087	1036.459	1021.9	11.8	986.80	363.78	1350.58	3.71	142.919	857.18	493.40
107	0.6231	1042.743	1028.2	12.0	989.99	365.32	1355.32	3.71	142.694	860.32	495.00
108	0.6375	1050.598	1036.0	12.3	994.66	366.84	1361.49	3.71	142.475	864.16	497.33
109	0.6519	1056.705	1042.1	12.5	997.60	368.69	1366.29	3.71	142.206	867.49	498.80
110	0.6663	1064.204	1049.6	12.8	1001.84	370.26	1372.10	3.71	141.978	871.18	500.92
111	0.6807	1070.926	1056.3	13.0	1005.31	371.17	1376.47	3.71	141.847	873.82	502.65
112	0.6951	1077.743	1063.2	13.3	1008.82	373.33	1382.15	3.70	141.532	877.74	504.41
113	0.7094	1083.851	1069.3	13.6	1011.62	374.42	1386.05	3.70	141.374	880.24	505.81
114	0.7238	1092.130	1077.5	13.8	1016.44	376.19	1392.63	3.70	141.118	884.41	508.22
115	0.7382	1093.943	1079.4	14.1	1015.13	378.18	1393.31	3.68	140.830	885.74	507.56
116	0.7526	1100.298	1085.7	14.3	1018.07	378.94	1397.01	3.69	140.720	887.97	509.03
117	0.7670	1106.297	1091.7	14.6	1020.64	380.67	1401.31	3.68	140.468	890.99	510.32

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress kPa	Minor Eff. Stress kPa	Major Eff. Stress kPa	1:3 Ratio	Pore Press. psi	P kPa	Q kPa
118	0.78141	112.383	1097.8	14.8	1023.26	381.64	1404.90	3.68	140.327	893.27	511.63
119	0.79571	118.539	1104.0	15.1	1025.91	382.87	1408.78	3.68	140.149	895.82	512.95
120	0.81011	124.113	1109.5	15.3	1027.99	384.31	1412.30	3.67	139.940	898.31	513.99
121	0.82451	131.944	1117.4	15.6	1032.12	385.70	1417.82	3.68	139.739	901.76	516.06
122	0.83891	137.507	1122.9	15.9	1034.11	387.26	1421.37	3.67	139.513	904.31	517.06
123	0.85331	147.463	1132.9	16.1	1040.11	388.50	1428.62	3.68	139.332	908.56	520.06
124	0.86761	153.587	1139.0	16.4	1042.55	390.52	1433.07	3.67	139.039	911.80	521.27
125	0.88201	160.817	1146.2	16.6	1045.96	391.16	1437.12	3.67	138.947	914.14	522.98
126	0.89641	167.360	1152.8	16.9	1048.70	392.73	1441.44	3.67	138.719	917.09	524.35
127	0.91081	172.844	1158.3	17.1	1050.45	393.53	1443.98	3.67	138.604	918.75	525.23
128	0.92521	181.255	1166.7	17.4	1054.82	395.21	1450.02	3.67	138.360	922.61	527.41
129	0.93951	185.784	1171.2	17.6	1055.64	396.10	1451.74	3.67	138.230	923.92	527.82
130	0.95391	193.648	1179.1	17.9	1059.43	397.18	1456.60	3.67	138.074	926.89	529.71
131	0.96831	199.991	1185.4	18.2	1061.81	398.55	1460.36	3.66	137.876	929.45	530.91
132	0.98271	204.415	1189.8	18.4	1062.45	399.74	1462.18	3.66	137.703	930.96	531.22
133	0.99711	209.191	1194.6	18.7	1063.37	400.85	1464.22	3.65	137.541	932.54	531.68
134	1.01141	220.262	1205.7	18.9	1069.85	401.69	1471.54	3.66	137.419	936.62	534.92
135	1.02581	231.352	1216.8	19.2	1076.29	402.98	1479.26	3.67	137.233	941.12	538.14
136	1.04021	241.218	1226.6	19.4	1081.58	404.03	1485.62	3.68	137.080	944.83	540.79
137	1.05461	250.843	1236.3	19.7	1086.61	405.15	1491.76	3.68	136.919	948.45	543.31
138	1.06901	256.323	1241.7	19.9	1087.95	406.11	1494.06	3.68	136.779	950.08	543.98
139	1.08331	267.675	1253.1	20.2	1094.40	407.26	1501.65	3.69	136.612	954.45	547.20
140	1.09731	274.287	1259.7	20.4	1096.74	408.27	1505.01	3.69	136.466	956.64	548.37

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Constant Volume-Falling Head (by mercury)

PROJECT:	Kudz Ze Kayah	PROJECT NO. :	VA101-00640/03
LOCATION:	TP-38	LAB NO.:	L2016-057
DEPTH:	4.5-5.0m	SAMPLE ID:	2016-057-23
SAMPLE NO.:		TEST STARTED :	08/04/16
SAMPLE TYPE:	Remolded	TEST FINISHED :	08/07/16
CONF. PRESSURE. (kPa):	35	SATURATED TEST:	Yes

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1354.10	1385.30
Wt. Wet Soil & Pan (g)	636.60	1798.80
Wt. Dry Soil & Pan (g)	587.30	1645.60
Wt. Moisture Lost (g)	49.30	153.20
Wt. of Pan Only (g)	110.67	413.50
Wt. of Dry Soil (g)	476.63	1232.10
Moisture Content %	10.3	12.4
Wet Density (pcf)	138.0	143.8
Dry Density (pcf)	125.0	127.9

Init. Diameter (in)	2.880	(cm)	7.315
Init. Area (sq in)	6.514	(sq cm)	42.028
Init. Height (in)	5.740	(cm)	14.580
Height Change (in)	0.021	(cm)	0.053
Consol. Height (in)	5.719	(cm)	14.526
Area After Consol. (sq in)	6.418	(sq cm)	41.412
Vol. Before Consol. (cu ft)	0.02164	Specific Gravity	2.70
Vol. Before Consol. (cc)	612.8	Assumed?	Yes
Change in Vol. (cc)	11.2		
Cell Exp. (cc)	0.0	Init. Saturation	80.2
Vol. After Consol. (cc)	601.6	Init. Void Ratio	0.348
Vol. After Consol. (cu ft)	0.02124	Final Saturation	100.0
Effective Porosity %	25.83	Final Void Ratio	0.324
Pressure Difference (psi):	0.00	Pipette area (a_{out}), cm2	0.0314
		Annulus area (a_{in}), cm2	0.767

Permeability Flow Trials

Time	Pipette Elevation	Annulus Elevation	Z1	D zp	Coefficient of Permeability, k
Min.	cm	cm	cm	cm	cm/sec
0.00	21.60	0.40	21.2		
0.75	20.30	0.45	19.9	1.3	1.3E-06
0.75	19.20	0.50	18.7	1.1	1.2E-06
1.00	17.90	0.65	17.3	1.3	1.1E-06
1.00	16.75	0.80	16.0	1.2	1.1E-06
1.00	15.70	0.85	14.9	1.1	1.1E-06
1.00	14.70	0.90	13.8	1.0	1.1E-06
			Avg.of Last 4 Rdgs.		**1.1E-06**
			Max.Hyd.Gradient:	18.3	

General Test Notes:
1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: 125.0 pcf @ 10.0% moisture content.

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Constant Volume-Falling Head (by mercury)

PROJECT:	Kudz Ze Kayah	PROJECT NO. :	VA101-00640/03
LOCATION:	TP-38	LAB NO.:	L2016-057
DEPTH:	4.5-5.0m	SAMPLE ID:	2016-057-23
SAMPLE NO.:		TEST STARTED :	08/07/16
SAMPLE TYPE:	Remolded	TEST FINISHED :	08/10/16
CONF. PRESSURE. (kPa):	250	SATURATED TEST:	Yes

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1354.10	1374.10
Wt. Wet Soil & Pan (g)	636.60	1787.60
Wt. Dry Soil & Pan (g)	587.30	1645.60
Wt. Moisture Lost (g)	49.30	142.00
Wt. of Pan Only (g)	110.67	413.50
Wt. of Dry Soil (g)	476.63	1232.10
Moisture Content %	10.3	11.5
Wet Density (pcf)	138.0	144.0
Dry Density (pcf)	125.0	129.1

Init. Diameter (in)	2.880	(cm)	7.315
Init. Area (sq in)	6.514	(sq cm)	42.028
Init. Height (in)	5.740	(cm)	14.580
Height Change (in)	0.039	(cm)	0.099
Consol. Height (in)	5.701	(cm)	14.481
Area After Consol. (sq in)	6.378	(sq cm)	41.149
Vol. Before Consol. (cu ft)	0.02164	Specific Gravity	2.70
Vol. Before Consol. (cc)	612.8	Assumed?	Yes
Change in Vol. (cc)	16.9		
Cell Exp. (cc)	0.0	Init. Saturation	80.2
Vol. After Consol. (cc)	595.9	Init. Void Ratio	0.348
Vol. After Consol. (cu ft)	0.02104	Final Saturation	100.0
Effective Porosity %	25.83	Final Void Ratio	0.311
Pressure Difference (psi):	0.00	Pipette area (a_{out}), cm2	0.0314
		Annulus area (a_{in}), cm2	0.767

Permeability Flow Trials

Time	Pipette Elevation	Annulus Elevation	Z1	D zp	Coefficient of Permeability, k
Min.	cm	cm	cm	cm	cm/sec
0.00	20.50	0.50	20.0		
2.00	18.95	0.60	18.4	1.6	6.5E-07
3.00	17.50	0.75	16.8	1.5	4.4E-07
2.00	16.70	0.80	15.9	0.8	3.8E-07
2.00	15.90	0.85	15.1	0.8	4.0E-07
2.00	15.15	0.85	14.3	0.8	3.9E-07
2.00	14.50	0.90	13.6	0.7	3.6E-07
			Avg.of Last 4 Rdgs.		**3.8E-07**
			Max.Hyd.Gradient:	17.4	

General Test Notes:
1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: 125.0 pcf @ 10.0% moisture content.

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Constant Volume-Falling Head (by mercury)

PROJECT:	Kudz Ze Kayah	PROJECT NO. :	VA101-00640/03
LOCATION:	TP-38	LAB NO.:	L2016-057
DEPTH:	4.5-5.0m	SAMPLE ID:	2016-057-23
SAMPLE NO.:		TEST STARTED :	08/04/16
SAMPLE TYPE:	Remolded	TEST FINISHED :	08/07/16
CONF. PRESSURE. (kPa):	500	SATURATED TEST:	Yes

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1354.20	1366.10
Wt. Wet Soil & Pan (g)	636.60	1779.60
Wt. Dry Soil & Pan (g)	587.30	1647.00
Wt. Moisture Lost (g)	49.30	132.60
Wt. of Pan Only (g)	110.67	413.50
Wt. of Dry Soil (g)	476.63	1233.50
Moisture Content %	10.3	10.7
Wet Density (pcf)	138.0	145.4
Dry Density (pcf)	125.0	131.3

Init. Diameter (in)	2.880	(cm)	7.315
Init. Area (sq in)	6.514	(sq cm)	42.028
Init. Height (in)	5.740	(cm)	14.580
Height Change (in)	0.073	(cm)	0.185
Consol. Height (in)	5.667	(cm)	14.394
Area After Consol. (sq in)	6.315	(sq cm)	40.743
Vol. Before Consol. (cu ft)	0.02164	Specific Gravity	2.70
Vol. Before Consol. (cc)	612.8	Assumed?	Yes
Change in Vol. (cc)	26.3		
Cell Exp. (cc)	0.0	Init. Saturation	80.2
Vol. After Consol. (cc)	586.5	Init. Void Ratio	0.348
Vol. After Consol. (cu ft)	0.02071	Final Saturation	100.0
Effective Porosity %	25.82	Final Void Ratio	0.290
Pressure Difference (psi):	0.00	Pipette area (a_{out}), cm2	0.0314
		Annulus area (a_{in}), cm2	0.767

Permeability Flow Trials

Time	Pipette Elevation	Annulus Elevation	Z1	D zp	Coefficient of Permeability, k
Min.	cm	cm	cm	cm	cm/sec
0.00	21.20	0.40	20.8		
1.00	20.80	0.40	20.4	0.4	2.9E-07
4.00	19.40	0.45	19.0	1.4	2.8E-07
5.00	17.80	0.50	17.3	1.6	2.9E-07
4.00	16.60	0.55	16.1	1.2	2.9E-07
3.00	15.80	0.60	15.2	0.8	2.6E-07
			Avg.of Last 4 Rdgs.		**2.8E-07**
			Max.Hyd.Gradient:	18.2	

General Test Notes:
1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: 125.0 pcf @ 10.0% moisture content.

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Constant Volume-Falling Head (by mercury)

PROJECT:	Kudz Ze Kayah	PROJECT NO. :	VA101-00640/03
LOCATION:	TP-38	LAB NO.:	L2016-057
DEPTH:	4.5-5.0m	SAMPLE ID:	2016-057-23
SAMPLE NO.:		TEST STARTED :	08/04/16
SAMPLE TYPE:	Remolded	TEST FINISHED :	08/11/16
CONF. PRESSURE. (kPa):	1000	SATURATED TEST:	Yes

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1354.00	1359.10
Wt. Wet Soil & Pan (g)	636.60	1770.80
Wt. Dry Soil & Pan (g)	587.30	1643.90
Wt. Moisture Lost (g)	49.30	126.90
Wt. of Pan Only (g)	110.67	411.70
Wt. of Dry Soil (g)	476.63	1232.20
Moisture Content %	10.3	10.3
Wet Density (pcf)	137.7	146.1
Dry Density (pcf)	124.8	132.4

Init. Diameter (in)	2.880	(cm)	7.315
Init. Area (sq in)	6.514	(sq cm)	42.028
Init. Height (in)	5.750	(cm)	14.605
Height Change (in)	0.124	(cm)	0.315
Consol. Height (in)	5.626	(cm)	14.290
Area After Consol. (sq in)	6.300	(sq cm)	40.645
Vol. Before Consol. (cu ft)	0.02168	Specific Gravity	2.70
Vol. Before Consol. (cc)	613.8	Assumed?	Yes
Change in Vol. (cc)	33.0		
Cell Exp. (cc)	0.0	Init. Saturation	79.6
Vol. After Consol. (cc)	580.8	Init. Void Ratio	0.351
Vol. After Consol. (cu ft)	0.02051	Final Saturation	100.0
Effective Porosity %	25.96	Final Void Ratio	0.278
Pressure Difference (psi):	0.00	Pipette area (a_{out}), cm2	0.0314
		Annulus area (a_{in}), cm2	0.767

Permeability Flow Trials

Time	Pipette Elevation	Annulus Elevation	Z1	D zp	Coefficient of Permeability, k
Min.	cm	cm	cm	cm	cm/sec
0.00	20.20	0.40	19.8		
10.00	18.00	0.40	17.6	2.2	2.0E-07
9.00	16.30	0.50	15.8	1.7	1.9E-07
9.00	14.70	0.50	14.2	1.6	1.9E-07
5.00	13.90	0.60	13.3	0.8	1.8E-07
			Avg.of Last 4 Rdgs.		**1.9E-07**
			Max.Hyd.Gradient:	17.4	

General Test Notes:
1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: 125.0 pcf @ 10.0% moisture content.

APPENDIX D2

ROCK TESTING RESULTS

(Pages D2-1 to D2-15)

DEPARTMENT OF
MINING ENGINEERING

Goodwin Hall
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Tel 613 533-2230
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September 12, 2016

Ms. Jessica Galavan
Knight Piesold Ltd.
Suite 1400 - 750 West Pender St.
Vancouver, British Columbia V6C 2T8

Re: Rock core testing – Kudz Ze Kayah Project (VA101-640/03)

Dear Ms. Galavan:

One shipment of twenty core specimens was received for which unconfined compression strength tests were to be performed on eight designated specimens. All other core sections were retained as spares. All designated samples were successfully tested within the Rock Mechanics Laboratory of the Robert M. Buchan Department of Mining, Queen's University at Kingston.

Each specimen that was subjected to unconfined compression failure testing was subjected to a process of preparation that included:

-diamond sawing to prepare cylindrical samples having nearly parallel end faces
-diamond lathing, to prepare sample faces parallel to within $\pm$ 0.025 mm
-testing to failure within a servo-controlled compression frame; all tests were performed under axial strain control at rates approximating 10^{-5} s^{-1}, and simultaneous recording of axial force, axial deformation and circumferential deformation, from which determination of standard failure parameters was made.

Photo images of specimens both prior to and following failure testing are also appended to the written report for your information. Stress/strain plots for each unconfined compression test will also be forwarded to you electronically following submission of this report. Summary billing for work completed will also be included with a mailed copy of this report.

Please note that this Department assumes no liability for any test information that has been generated due to the selection of sample materials at source or for testing procedures requested. Additionally, we assume no responsibility for design application of any information that is transmitted. Should you also require any additional information concerning work that has been performed, please do not hesitate to contact me by telephone at (613)-533-2198 or by FAX at (613)-533-6597.

Yours sincerely,

J. F. Archibald, Ph.D., P. Eng., FCIM

Results of Failure Tests (Kudz Ze Kayah Project VA101-640/03)

Sample (depth, m)	Density (g/cm^3)	Young's Modulus E (GPa)	Poisson's ratio (μ)	UCS S_C (MPa)
UCS-379-01 (11.27-11.55	2.77	6.263	0.26	17.6 (pf)
UCS-381-01 (9.58-9.79)	2.74	12.539	0.16	28.3 (pf)
UCS-386-01 (9.55-9.75)	2.75	7.743	0.21	23.1 (pf)
UCS-387-01 (12.45-12.65)	2.77	6.613	0.14	18.9 (f)
UCS-395-01 (8.52-8.70)	2.77	14.752	0.16	58.9 (pf)
UCS-395-02 (10.35-10.68)	2.76	14.878	0.15	46.6 (pf)
UCS-402-01 (23.86-24.06)	2.71	8.349	0.20	32.9 (pf)
UCS-402-03 (27.18-27.44)	2.73	5.641	0.26	27.1

(pf) – indicates failure to occur partially along pre-existing foliation
(f) – indicates failure to occur entirely along pre-existing foliation

SPECIMEN PHOTOGRAPHS

Pre-Test Unconfined Compression Specimens

VA101-64013
- K2K PROJECT
K16-395
UCS-395-01
8.52 - 8.70m
JULY 23, 2016
UCS KNIGHT PIESOLD SEPT 2016
Length:
Diameter:
UCS-395-01 (8.52-8.70)

UCS KNIGHT PIESOLD SEPT 2016
Length:
Diameter:
UCS-395-02 (10.35-10.68)

UCS KNIGHT PIESOLD SEPT 2016
Length:
Diameter:
UCS-402-01 (23.86-24.06)

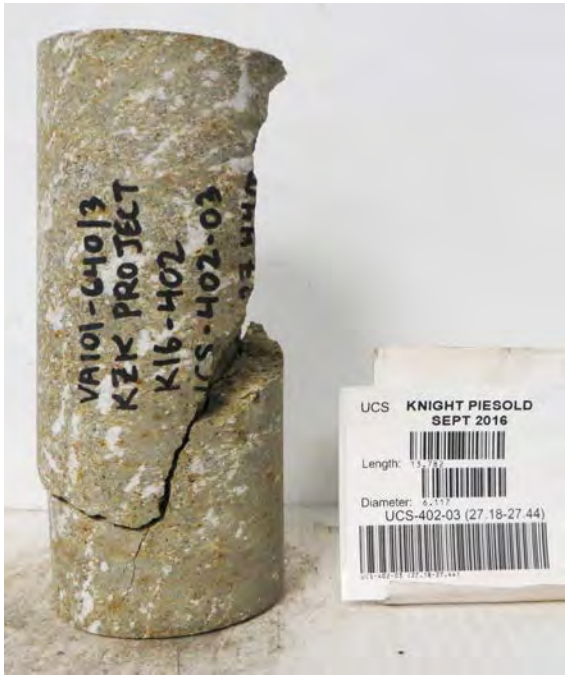
27.18-27.44m
July 23, 2016
UCS KNIGHT PIESOLD SEPT 2016
Length:
Diameter:
UCS-402-03 (27.18-27.44)

Post-Test Unconfined Compression Specimens

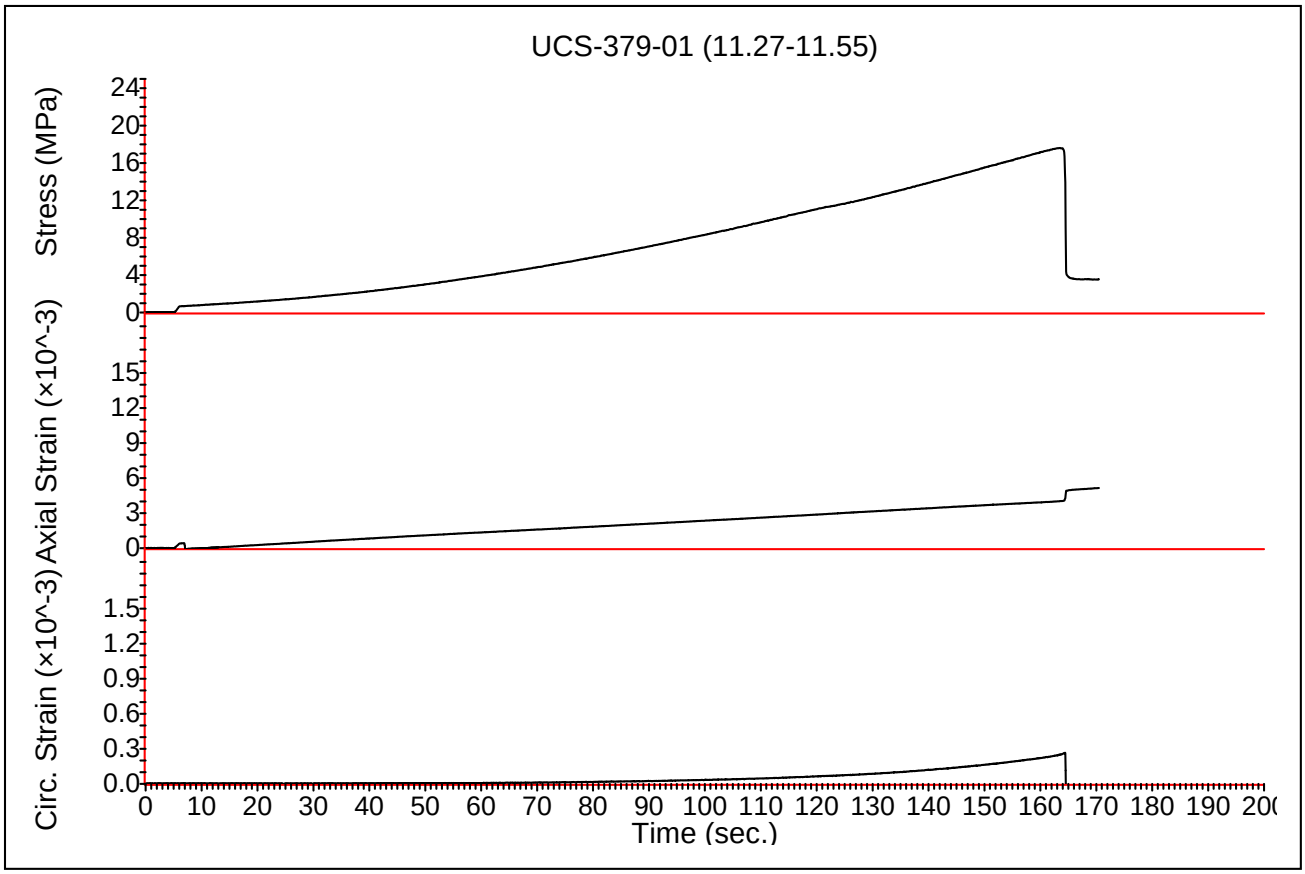
UCS KNIGHT PIESOLD
SEPT 2016
Length:
Diameter:
UCS-395-01 (8.52-8.70)

UCS KNIGHT PIESOLD
SEPT 2016
Length:
Diameter:
UCS-395-02 (10.35-10.68)

UCS KNIGHT PIESOLD
SEPT 2016
Length:
Diameter:
UCS-402-01 (23.86-24.06)


VA101-640/3
KZK PROJECT
KB-402
UCS-402-03
UCS KNIGHT PIESOLD
SEPT 2016
Length:
Diameter:
UCS-402-03 (27.18-27.44)

Data Set Properties



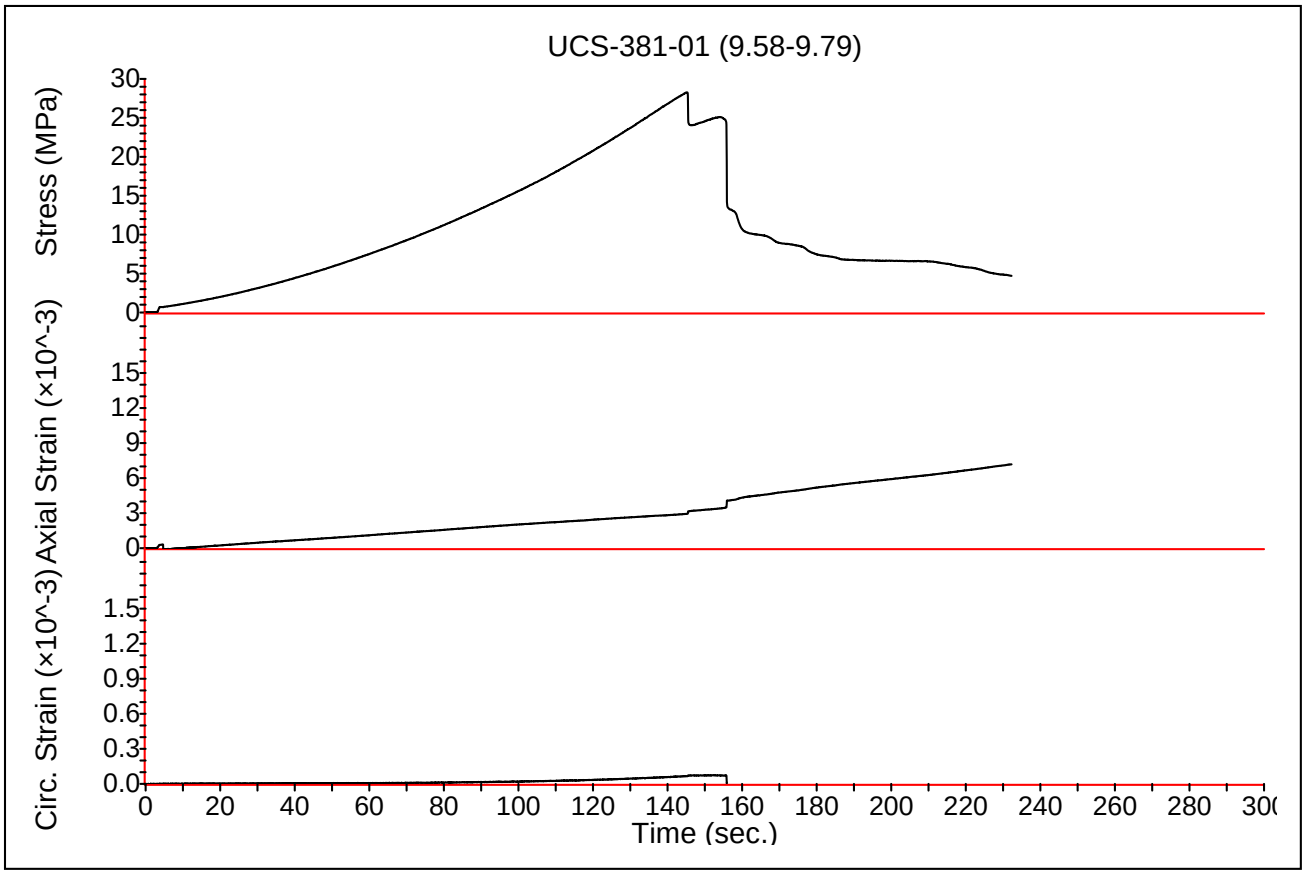
Description: UCS-379-01 (11.27-11.55)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.986
- Diameter (cm): 6.094

Analysis Results
- Peak Stress: 17.6176 MPa

Data Set Properties



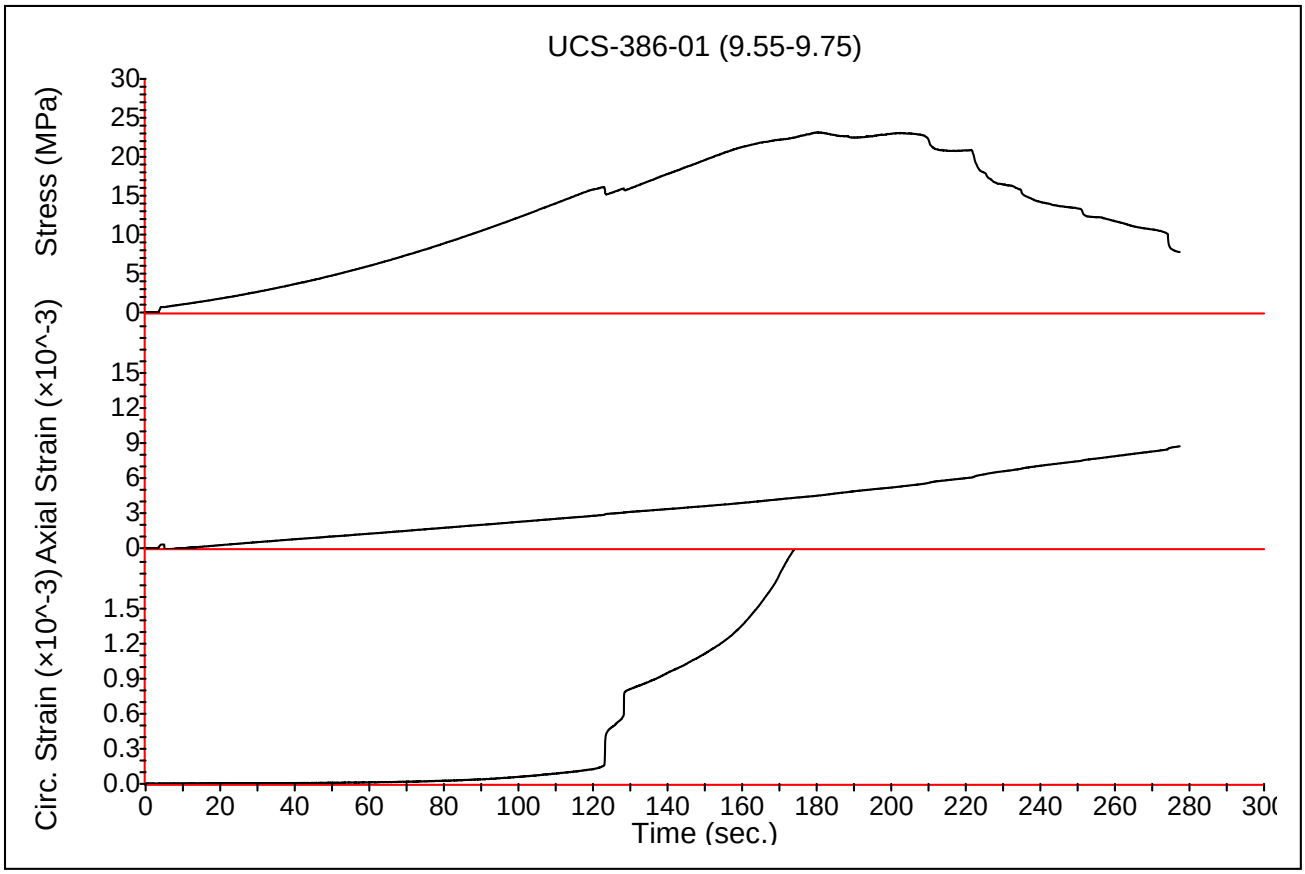
Description: UCS-381-01 (9.58-9.79)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.999
- Diameter (cm): 6.115

Analysis Results
- Peak Stress: 28.2647 MPa

Data Set Properties



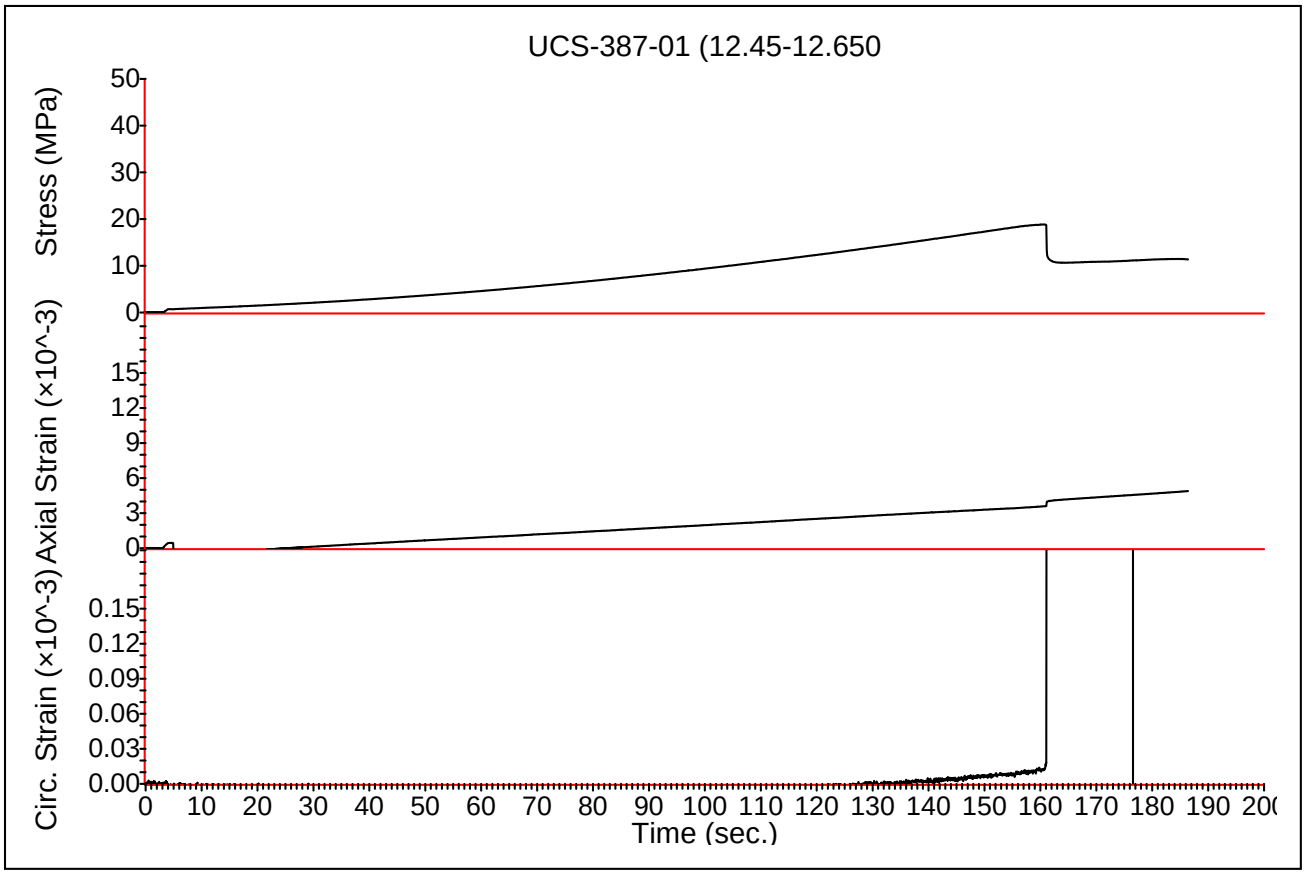
Description: UCS-386-01 (9.55-9.75)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.592
- Diameter (cm): 6.119

Analysis Results
- Peak Stress: 23.1494 MPa

Data Set Properties



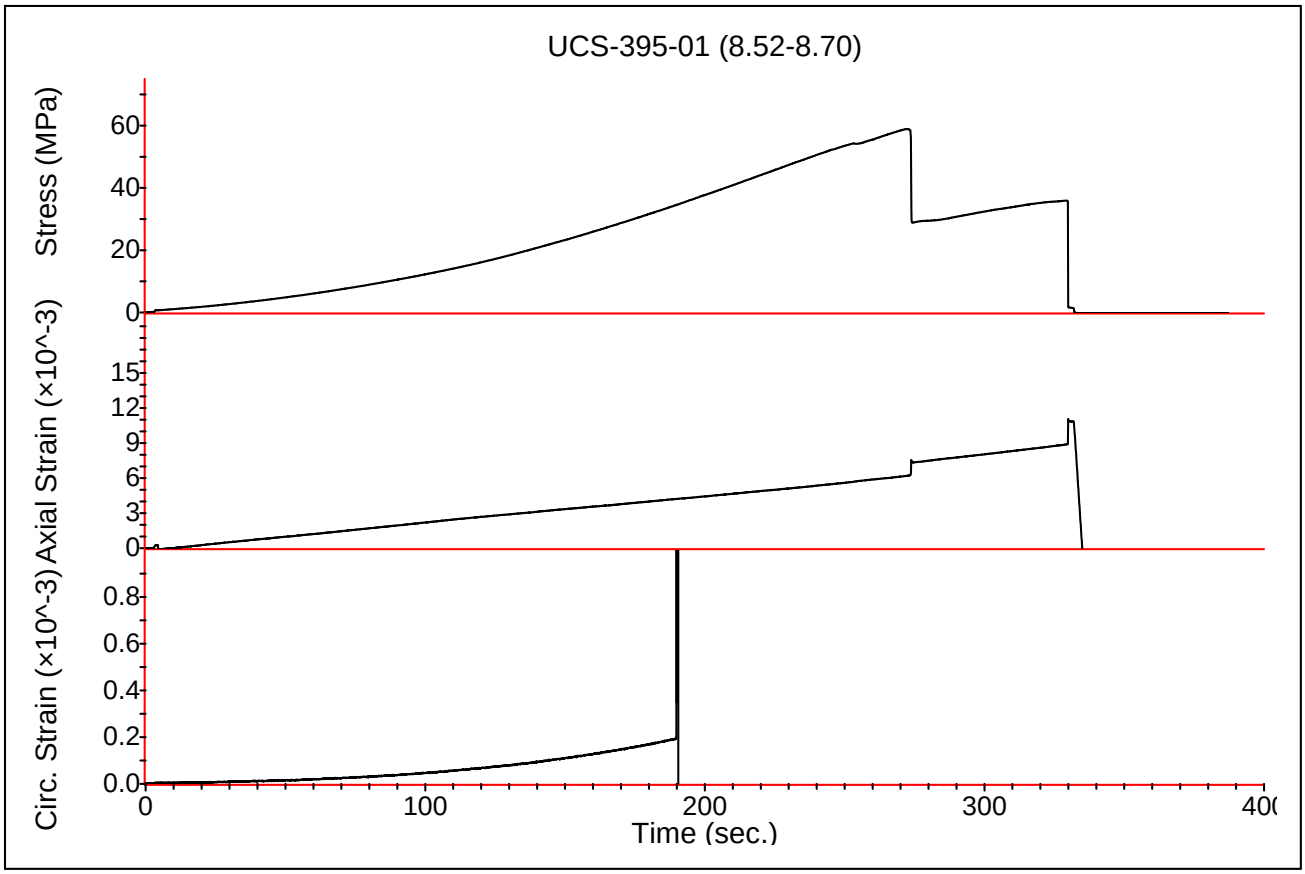
Description: UCS-387-01 (12.45-12.650

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.535
- Diameter (cm): 6.12

Analysis Results
- Peak Stress: 18.8609 MPa

Data Set Properties



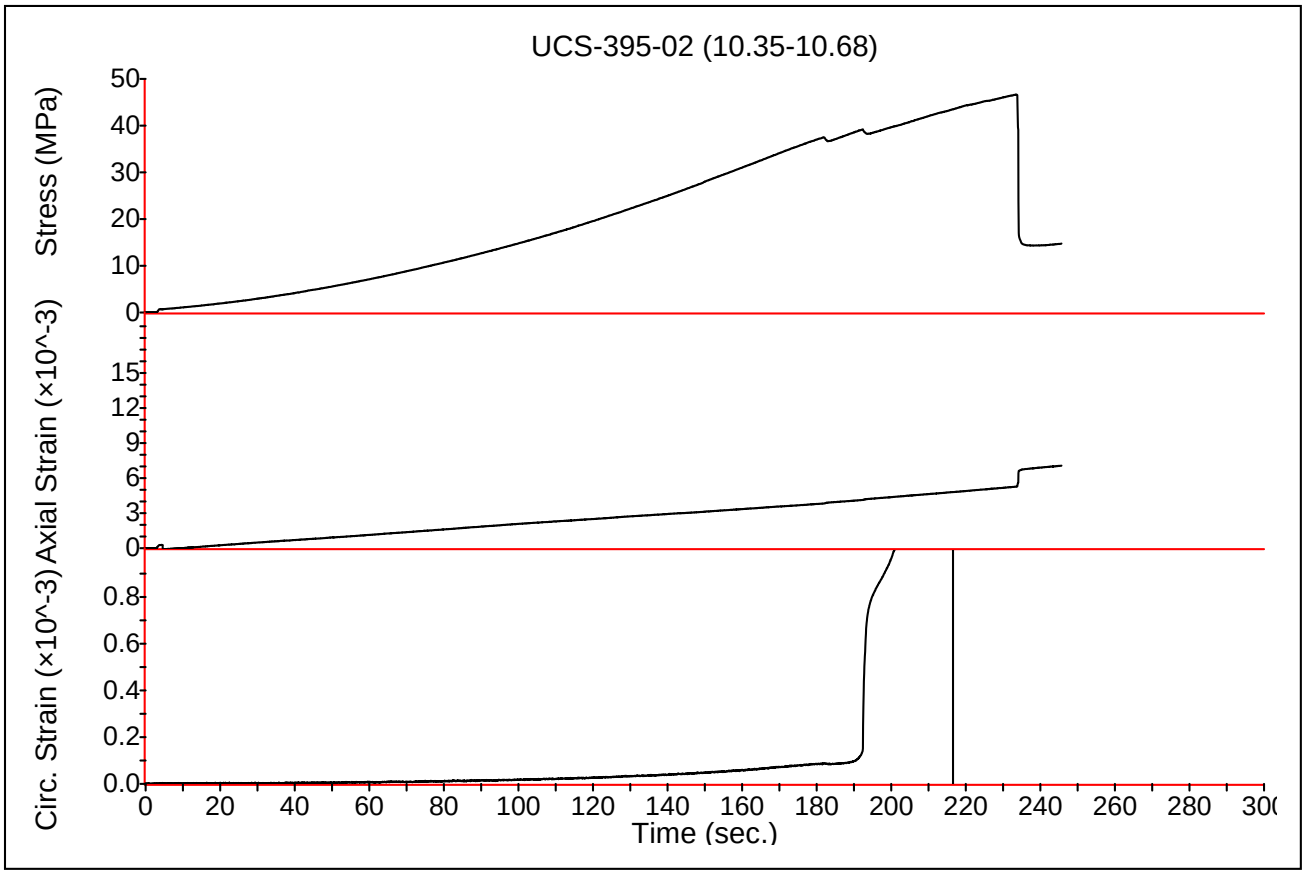
Description: UCS-395-01 (8.52-8.70)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 14.017
- Diameter (cm): 6.107

Analysis Results
- Peak Stress: 58.9222 MPa

Data Set Properties



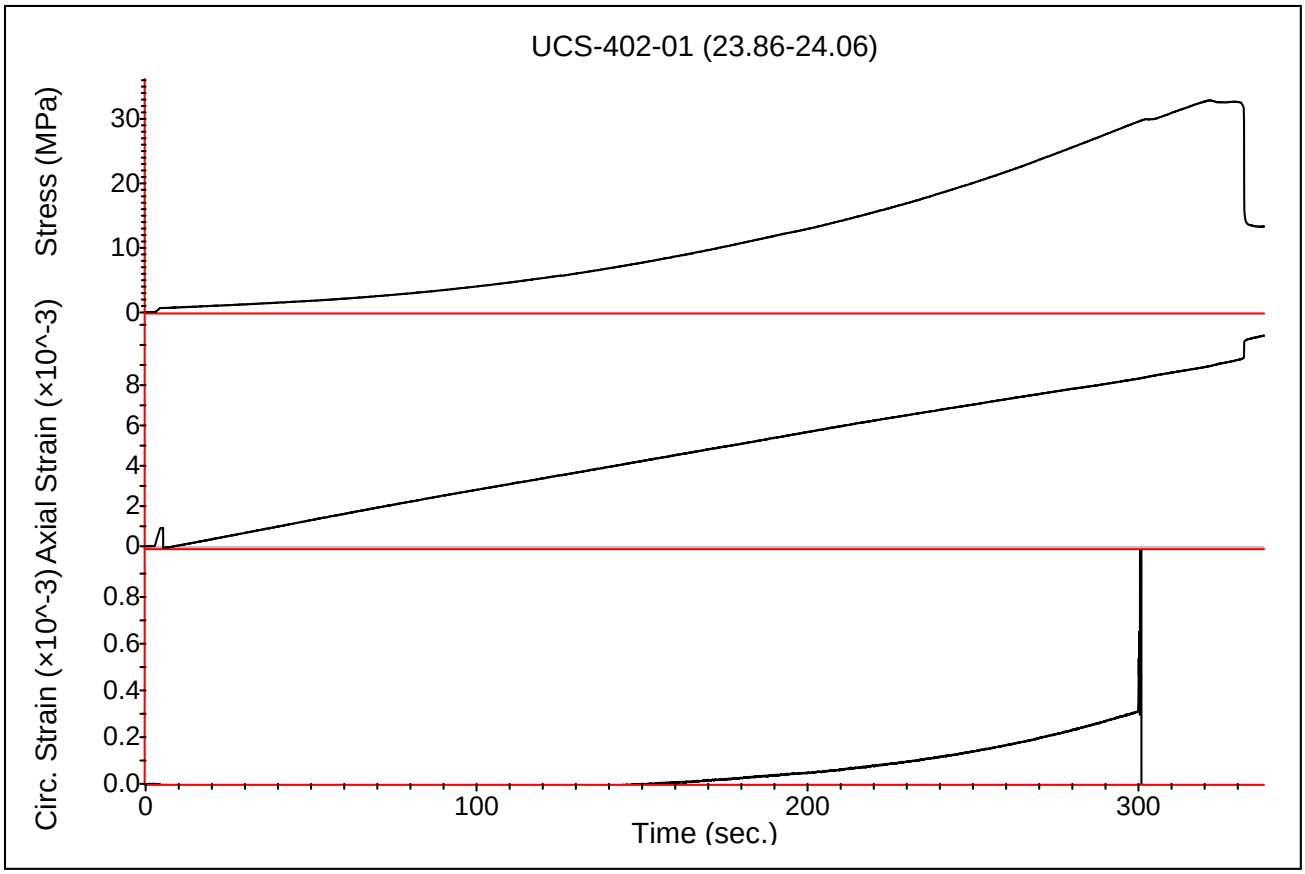
Description: UCS-395-02 (10.35-10.68)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.949
- Diameter (cm): 6.136

Analysis Results
- Peak Stress: 46.6361 MPa

Data Set Properties



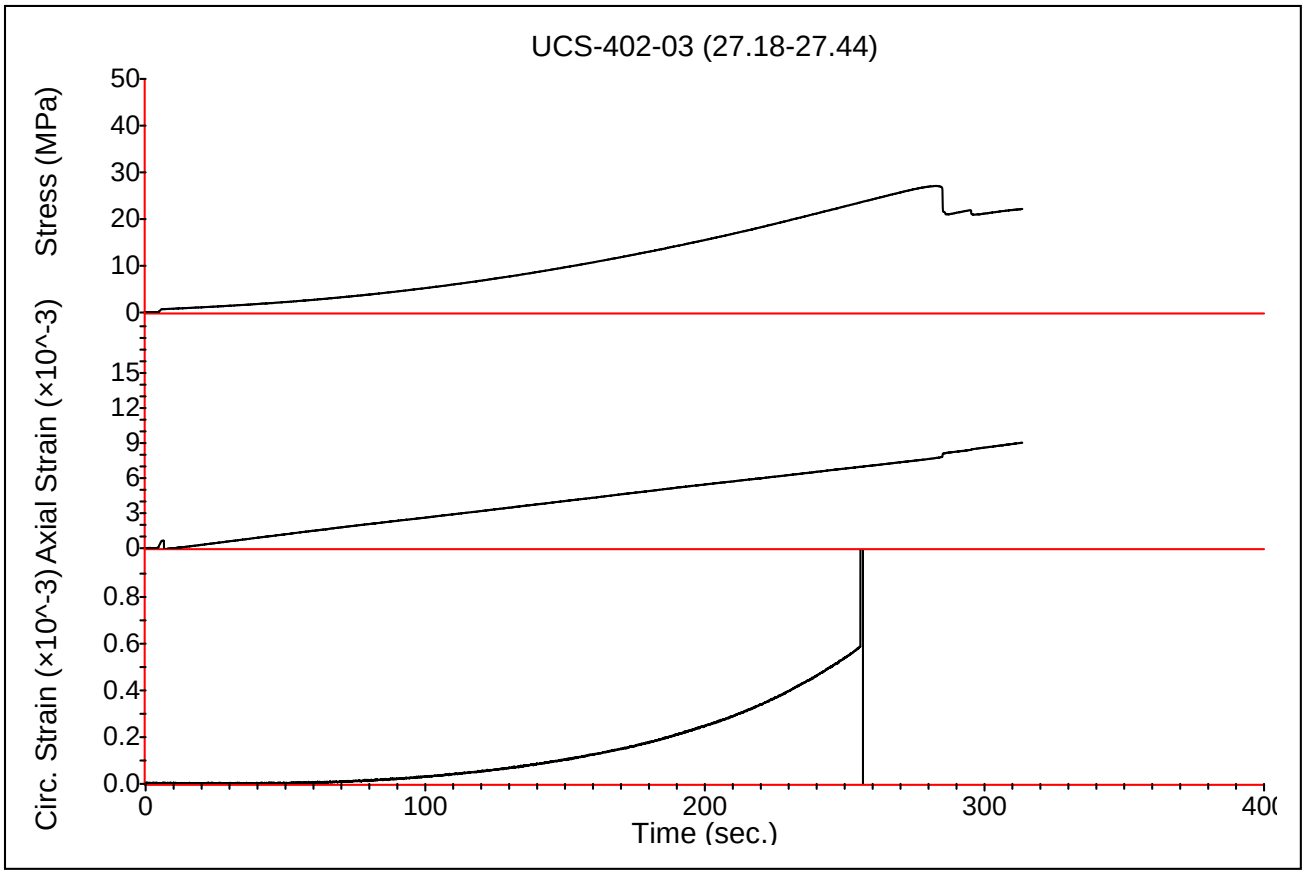
Description: UCS-402-01 (23.86-24.06)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.67
- Diameter (cm): 6.127

Analysis Results
- Peak Stress: 32.8977 MPa

Data Set Properties



Description: UCS-402-03 (27.18-27.44)

Test Properties
- Serial Number:
- Date Created: Friday, September 09, 2016
- Temperature: 25 °C
- Pressure: 100 Pa
- Atmosphere:
- Sample Position: 0

Sample Properties
- Shape: Cylinder
- Length (cm): 13.782
- Diameter (cm): 6.117

Analysis Results
- Peak Stress: 27.1086 MPa

APPENDIX E

HYDROGEOLOGY DATA

Appendix E1 Constant Head Tests
Appendix E2 Monitoring Well Completion Logs
Appendix E3 Vibrating Wire Piezometer Plots
Appendix E4 Vibrating Wire Piezometer Calibration Records

APPENDIX E1

CONSTANT HEAD TESTS

(Pages E1-1 to E1-52)

Knight Piésold CONSULTING

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

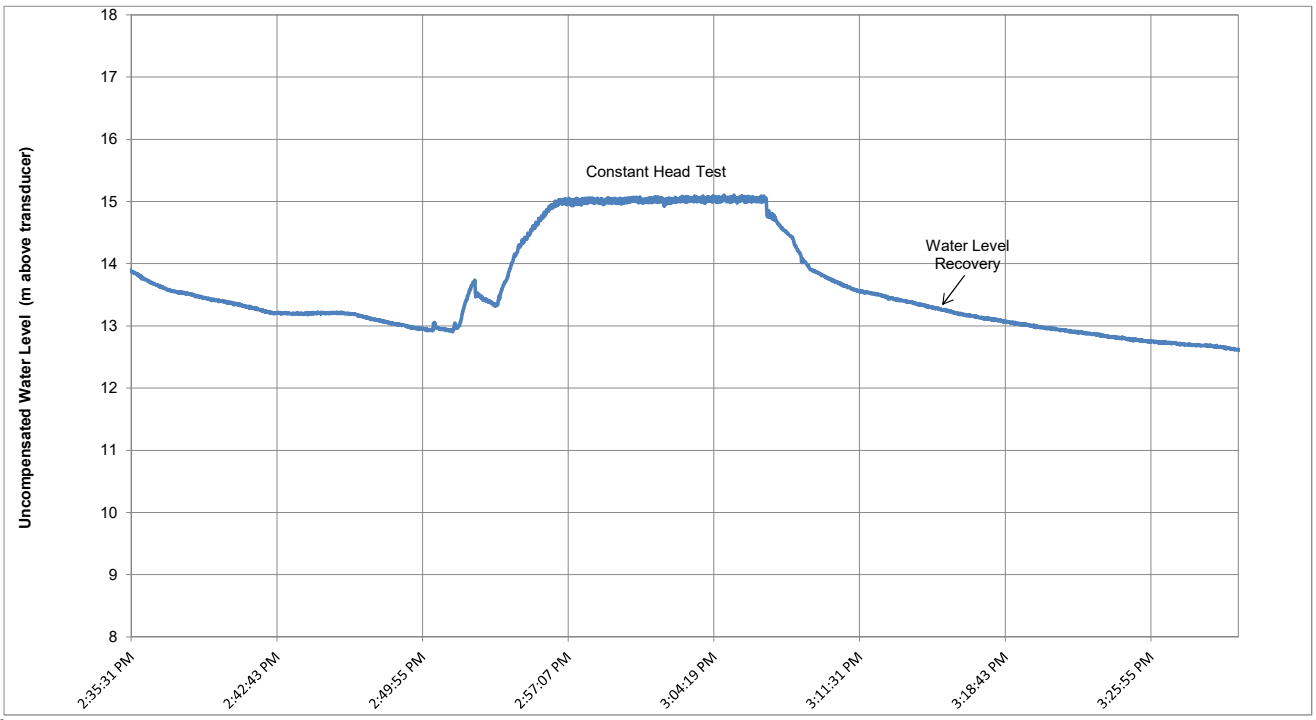
Print 10/20/16 10:30

Project No.	VA101-640/3		**Drillhole**	**K16-379**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	7.1	m (Downhole from ground surface)
				7.1	m (Vertical from ground surface)
Test Date	3-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	2:58 PM	
Top of test interval	7.1	m along hole	**Initial Water Level**	12.7	m above transducer
Bottom of test interval	15.7	m along hole	**Water Level During Testing**	15	m above transducer
Test length, L	8.6	m along hole	**Head Maintained above Initial , Hc**	2.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	7E-06	m/s	**Shape Factor, F**	10.4	
Transmissivity, T	6E-05	m^2/s	**Q**	1.6E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 15 minutes prior to test. Test conducted using a flow meter in m3. Transducer started at 2:20 PM and lowered packer at 2:32 PM. Deflate packer for 10 minutes, remove from hole at 3:30 PM. Initial water level estimated from water level recovery after the constant head test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-379_CH01 7.1-15.7m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

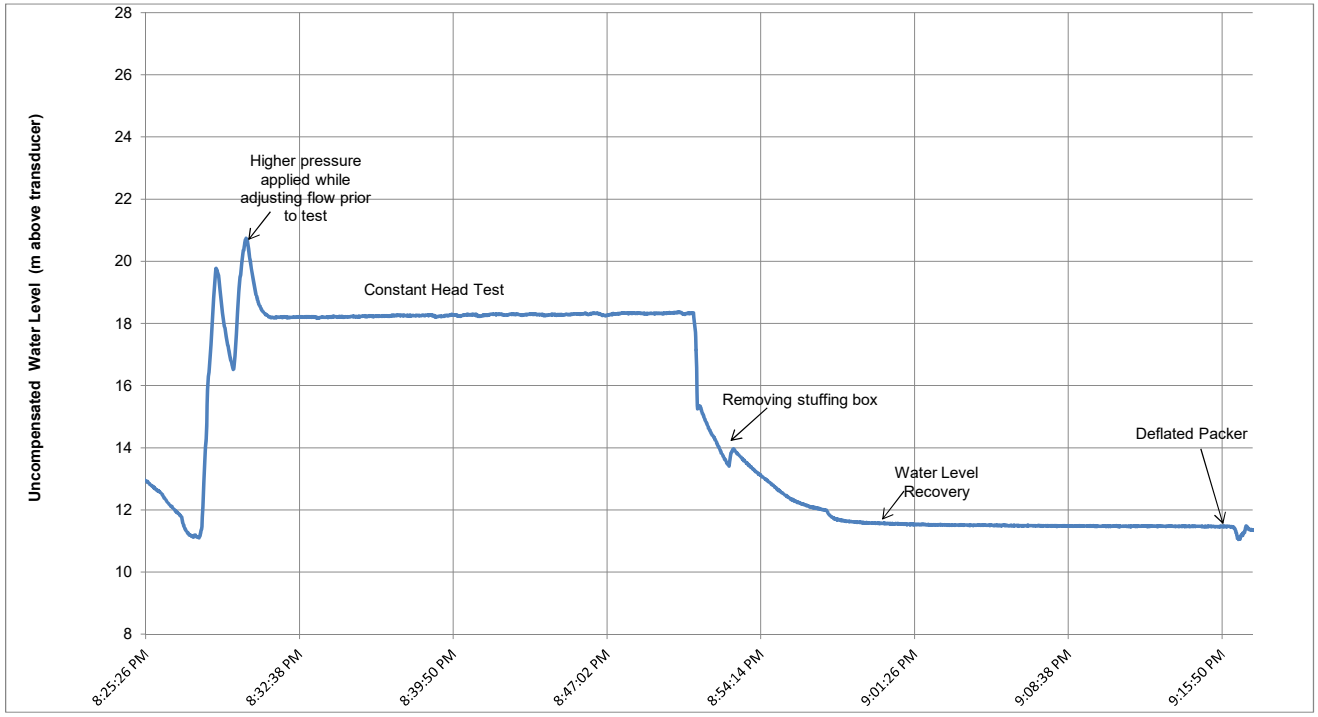
Print 10/20/16 10:31

Project No.	VA101-640/3		**Drillhole**	**K16-379**	
Field Technician	DJR		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	13.7	m (Downhole from ground surface)
				13.7	m (Vertical from ground surface)
Test Date	3-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	8:35 PM	
Top of test interval	13.7	m along hole	**Initial Water Level**	11.5	m above transducer
Bottom of test interval	24.7	m along hole	**Water Level During Testing**	18.3	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	6.8	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	2E-06	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	2E-05	m^2/s	**Q**	1.8E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered packer at 7:57 PM. Finished test at 8:51 PM. Packer out of drillhole at 9:23 PM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	29OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

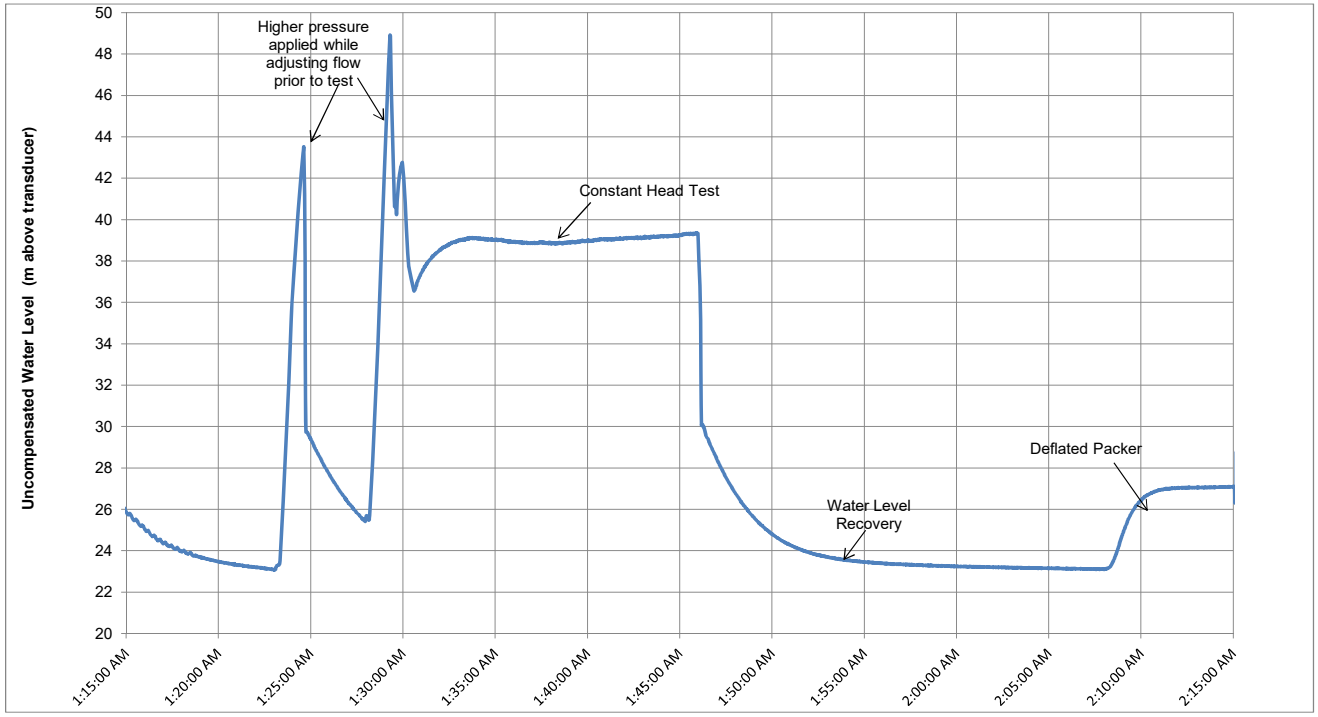
Print 10/20/16 10:32

Project No.	VA101-640/3		**Drillhole**	**K16-379**	
Field Technician	DJR		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	24.2	m (Downhole from ground surface)
				24.2	m (Vertical from ground surface)
Test Date	3-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	1:36 AM	
Top of test interval	24.2	m along hole	**Initial Water Level**	23.0	m above transducer
Bottom of test interval	35.2	m along hole	**Water Level During Testing**	39.0	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	16.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	2E-06	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	2E-05	m^2/s	**Q**	4.1E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Packer out of hole at 2:24 AM. Constant Head analysis interval 1:35 - 1:46 AM. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-379_CH03 24.2-35.2m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

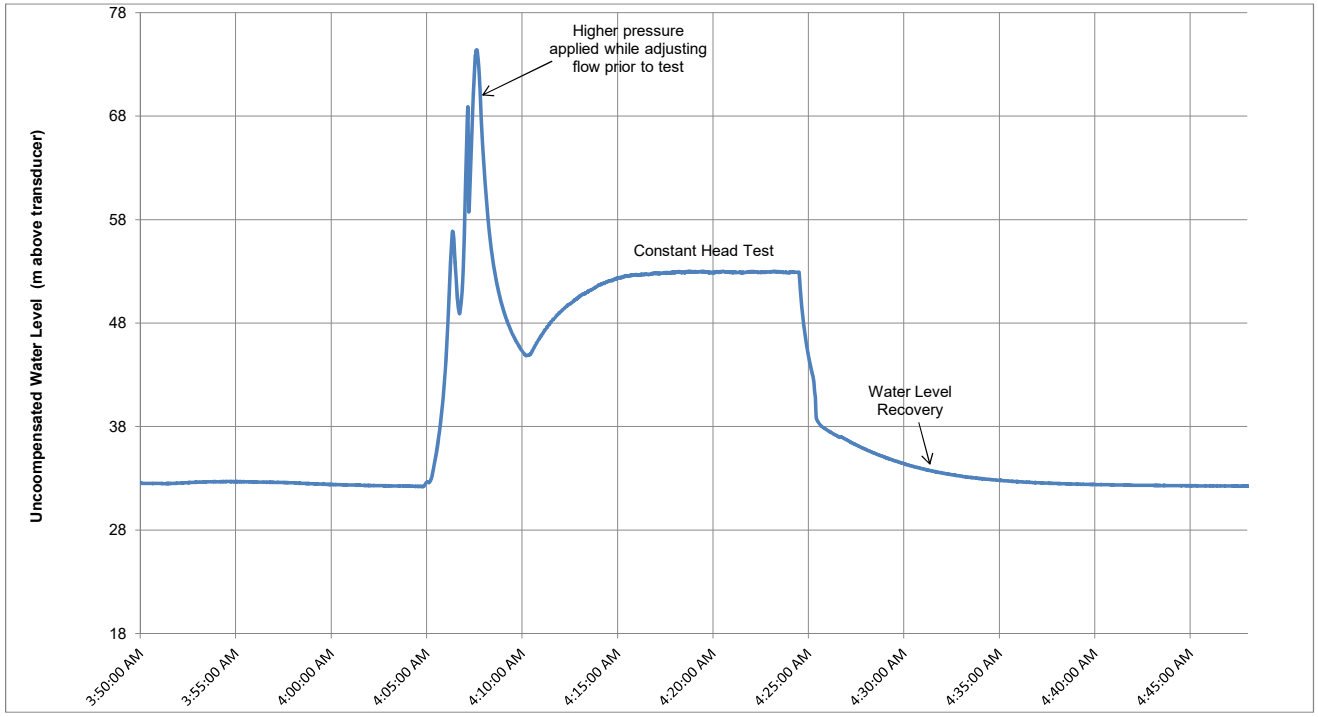
Print 10/20/16 10:32

Project No.	VA101-640/3		Drillhole	K16-379	
Field Technician	DJR		Test No.	4	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	31.7	m (Downhole from ground surface)
				31.7	m (Vertical from ground surface)
Test Date	4-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	4:14 AM	
Top of test interval	31.7	m along hole	Initial Water Level	32.0	m above transducer
Bottom of test interval	39.7	m along hole	Water Level During Testing	52.8	m above transducer
Test length, L	8.0	m along hole	Head Maintained above Initial , Hc	20.8	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	Shape Factor, F	9.8	
Transmissivity, T	1E-05	m^2/s	Q	2.5E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Inflating packer from 3:48 AM to 4:02 AM. Constant head test run for 15 minutes (last 10 minutes used for analysis). Packer out of hole at 5:00 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

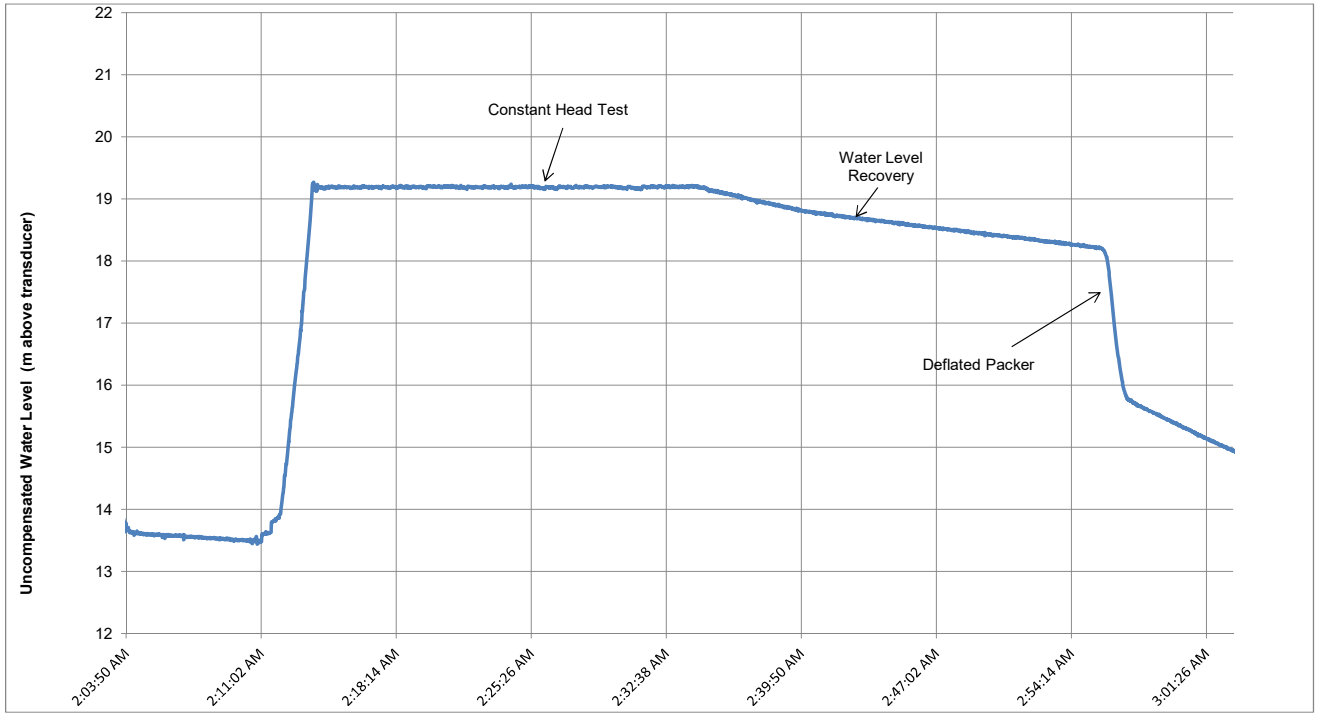
Print 10/20/16 10:33

Project No.	VA101-640/3		Drillhole	K16-387	
Field Technician	DJR		Test No.	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	6.5	m (Downhole from ground surface)
				6.5	m (Vertical from ground surface)
Test Date	8-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	2:15 AM	
Top of test interval	6.5	m along hole	Initial Water Level	18.2	m above transducer
Bottom of test interval	16.0	m along hole	Water Level During Testing	19.2	m above transducer
Test length, L	9.5	m along hole	Head Maintained above Initial , Hc	1.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	Shape Factor, F	11.3	
Transmissivity, T	4E-06	m^2/s	Q	4.1E-06	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Start transducer and lower packer at 1:28 AM. Packer inflated from 1:34 to 1:50 AM. Test started at 2:14 AM. Injected flows too low to measure using flow system and instead water level maintained at tops of rods using a 1 L container. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

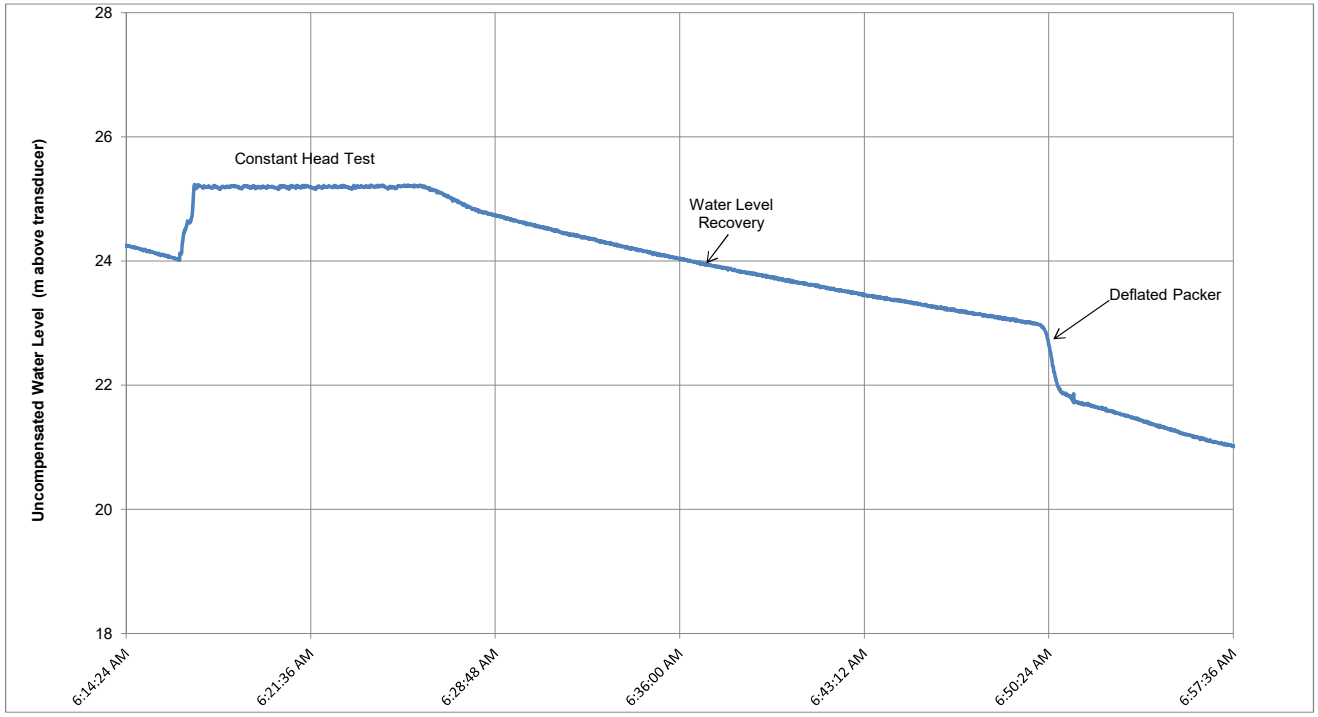
Print 10/20/16 10:35

Project No.	VA101-640/3		**Drillhole**	**K16-387**	
Field Technician	DJR		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	14.0	m (Downhole from ground surface)
				14.0	m (Vertical from ground surface)
Test Date	9-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	6:17 AM	
Top of test interval	14.0	m along hole	**Initial Water Level**	23.0	m above transducer
Bottom of test interval	25.0	m along hole	**Water Level During Testing**	25.2	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	2.2	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	4E-06	m^2/s	**Q**	1.2E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Start transducer and lower packer at 5:40 AM. Inflate packer from 5:44 to 6:00 AM. Pressure between 8 to 12 PSI applied prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow sustem and instead water level maintained at top of rods using a 1 L container for test. Packer removed at 7:48 AM. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-387_CH02 14.0-25.0m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

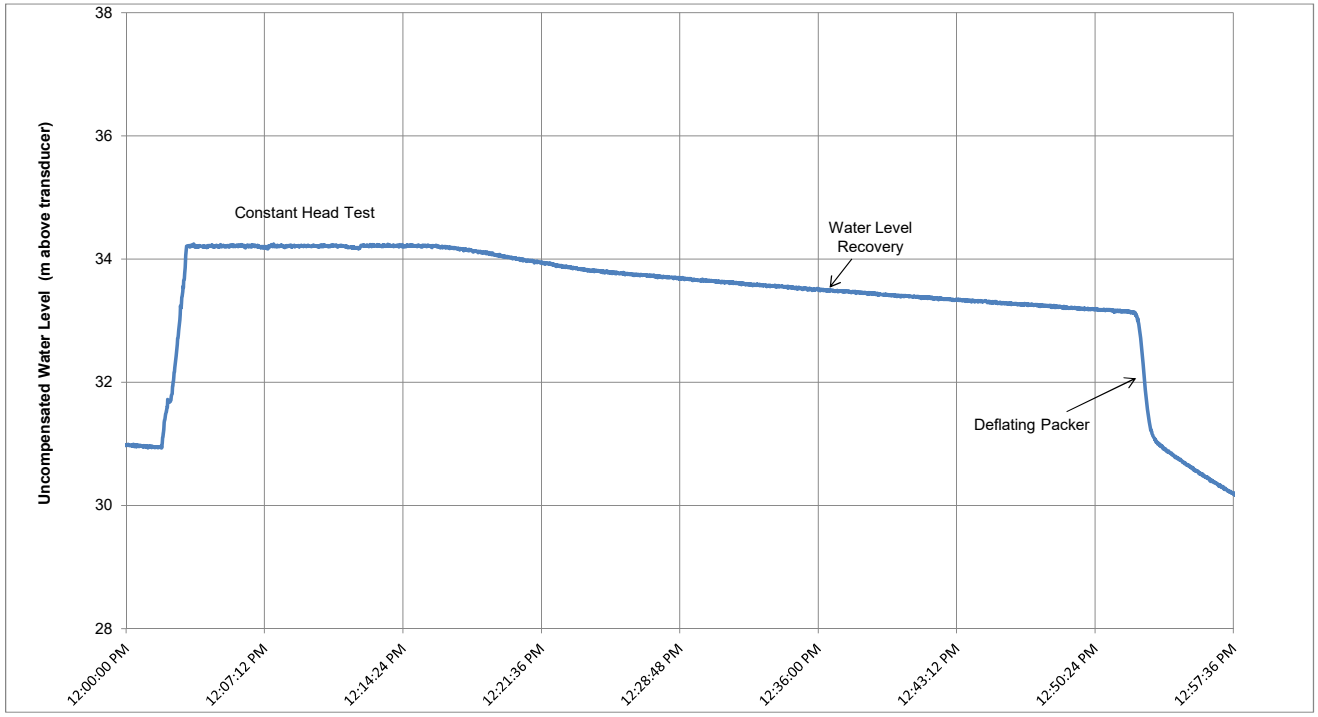
Print 10/20/16 10:34

Project No.	VA101-640/3		**Drillhole**	**K16-387**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	23.0	m (Downhole from ground surface)
				23.0	m (Vertical from ground surface)
Test Date	9-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	12:13 PM	
Top of test interval	23.0	m along hole	**Initial Water Level**	33.1	m above transducer
Bottom of test interval	34.0	m along hole	**Water Level During Testing**	34.2	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	1.1	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	3E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	3E-06	m^2/s	**Q**	4.0E-06	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Start inflation at 11:36 AM. Pressures up to ~20 PSI applied prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

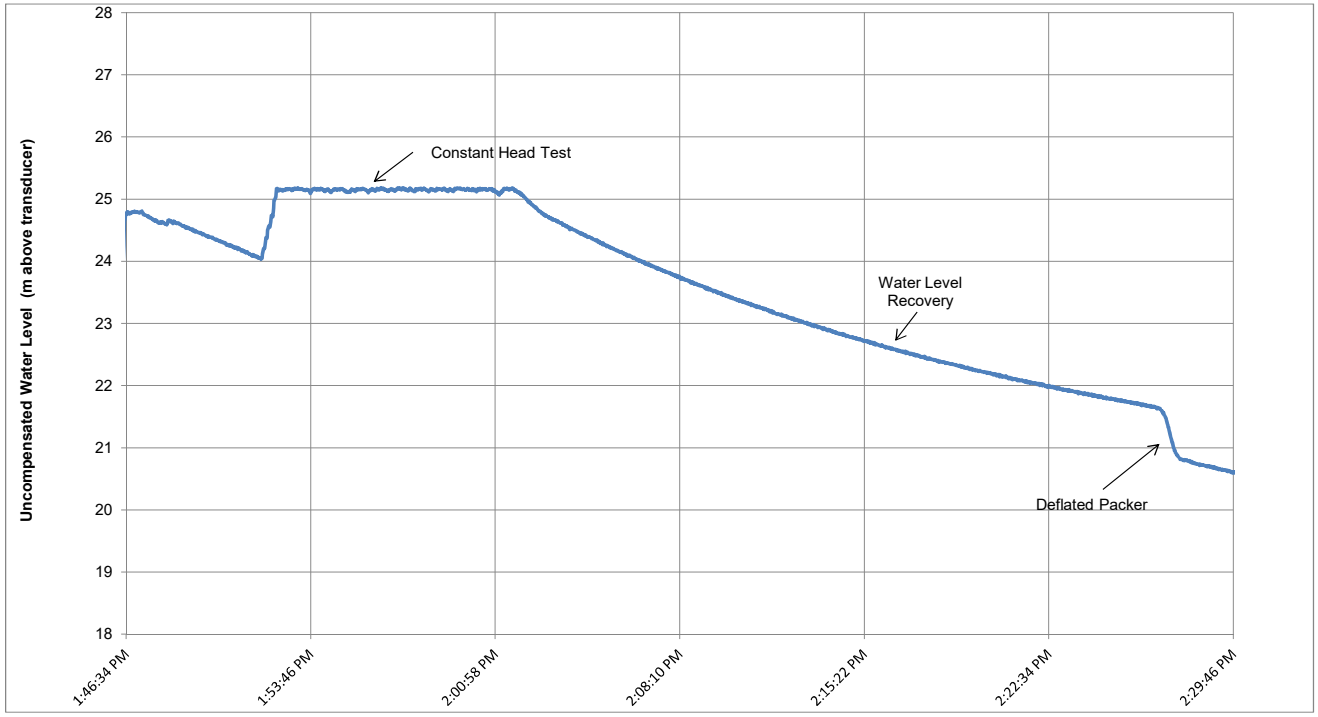
Print 10/20/16 10:35

Project No.	VA101-640/3		Drillhole	K16-389	
Field Technician	JAG		Test No.	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	13.0	m (Downhole from ground surface)
				13.0	m (Vertical from ground surface)
Test Date	10-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	1:53 PM	
Top of test interval	13.0	m along hole	Initial Water Level	21.9	m above transducer
Bottom of test interval	21.0	m along hole	Water Level During Testing	25.1	m above transducer
Test length, L	8.0	m along hole	Head Maintained above Initial , Hc	3.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	6E-07	m/s	Shape Factor, F	9.8	
Transmissivity, T	5E-06	m^2/s	Q	2.0E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Packer lowered and inflated with nitrogen at 1:25 PM. Pressure of 80 PSI was applied over ~5 minutes prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container for testing. Packer was deflated and removed from hole at 2:45 PM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

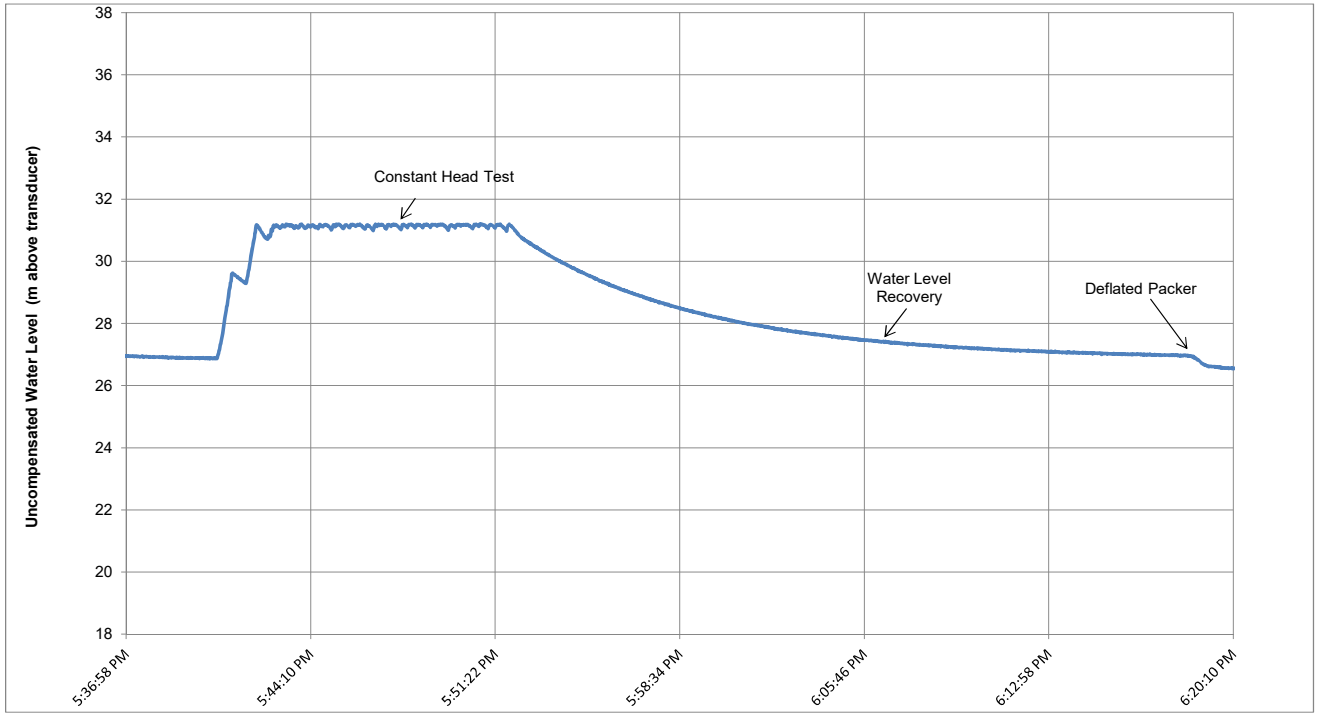
Print 10/20/16 10:36

Project No.	VA101-640/3		**Drillhole**	**K16-389**	
Field Technician	JAG		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	19.0	m (Downhole from ground surface)
				19.0	m (Vertical from ground surface)
Test Date	10-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	5:43 PM	
Top of test interval	19.0	m along hole	**Initial Water Level**	27.0	m above transducer
Bottom of test interval	31.5	m along hole	**Water Level During Testing**	31.1	m above transducer
Test length, L	12.5	m along hole	**Head Maintained above Initial , Hc**	4.2	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	**Shape Factor, F**	14.1	
Transmissivity, T	1E-05	m^2/s	**Q**	5.9E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 15 minutes prior to test. Start inflating packer at 5:30 PM. Water level maintained at the top of rods during constant head test. Packer was deflated and removed from hole at 6:30 PM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

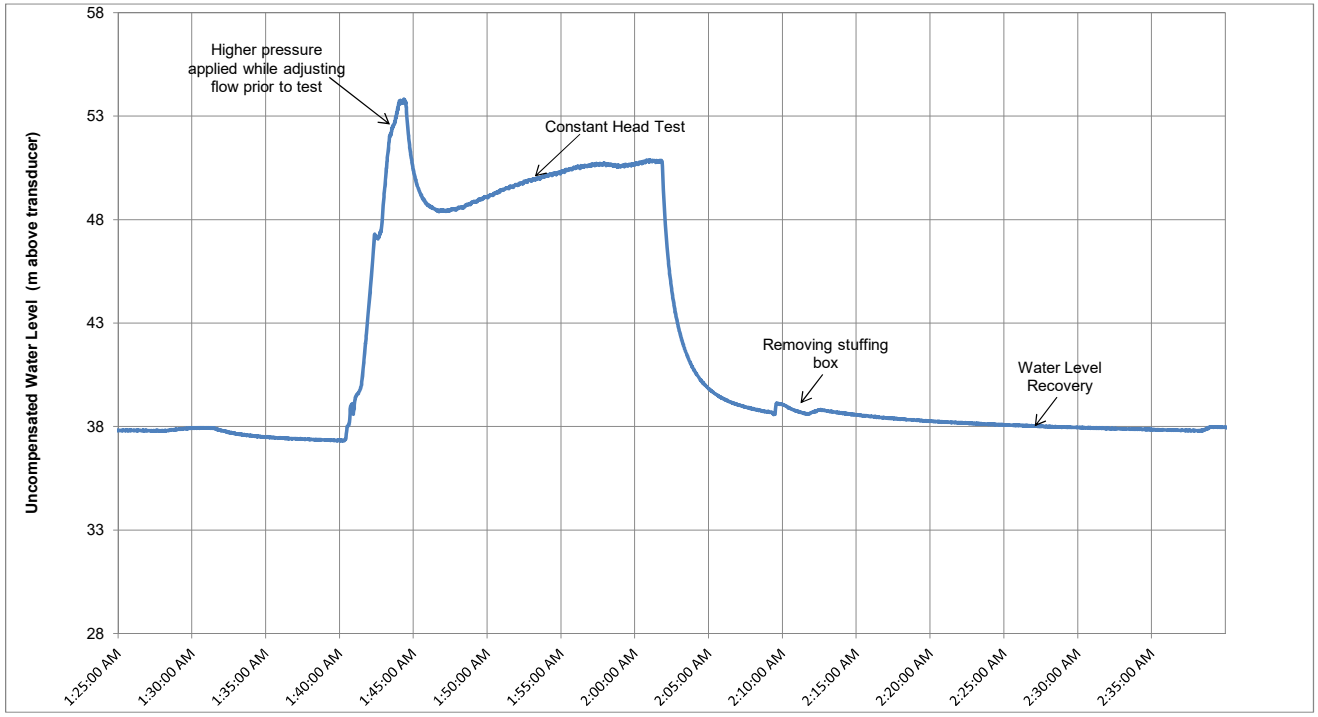
Print 10/20/16 10:36

Project No.	VA101-640/3		**Drillhole**	**K16-389**	
Field Technician	DJR		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	31.0	m (Downhole from ground surface)
				31.0	m (Vertical from ground surface)
Test Date	11-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	1:46 AM	
Top of test interval	31.0	m along hole	**Initial Water Level**	37.9	m above transducer
Bottom of test interval	42.0	m along hole	**Water Level During Testing**	51	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	13.1	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	7E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	8E-06	m^2/s	**Q**	1.2E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 1:15 AM and lower packer tool at 1:20. Inflate packer from 1:23 until 1:40 AM. Start constant head test at 1:46 AM and end at 2:02 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

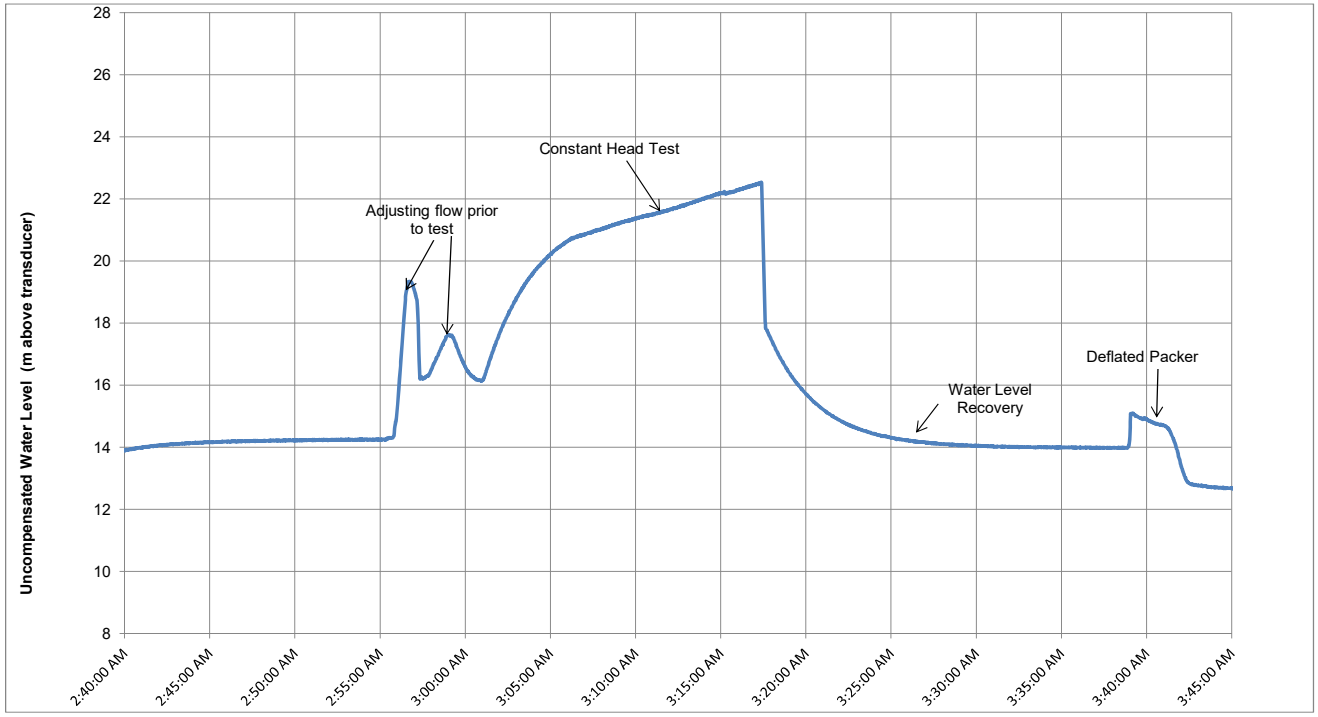
Print 10/20/16 10:37

Project No.	VA101-640/3		Drillhole	K16-390	
Field Technician	DJR		Test No.	1	
Analyst	DJR / JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	9.6	m (Downhole from ground surface)
				9.6	m (Vertical from ground surface)
Test Date	12-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	3:02 AM	
Top of test interval	9.6	m along hole	Initial Water Level	14	m above transducer
Bottom of test interval	16.1	m along hole	Water Level During Testing	21	m above transducer
Test length, L	6.5	m along hole	Head Maintained above Initial , Hc	7.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	Shape Factor, F	8.3	
Transmissivity, T	9E-06	m^2/s	Q	7.9E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 2:06 AM and lower packer tool at 2:13. Inflate packer from 2:22 until 2:42 AM. Start constant head test at 3:02 AM and end at 3:17 AM. Remove at 3:58 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

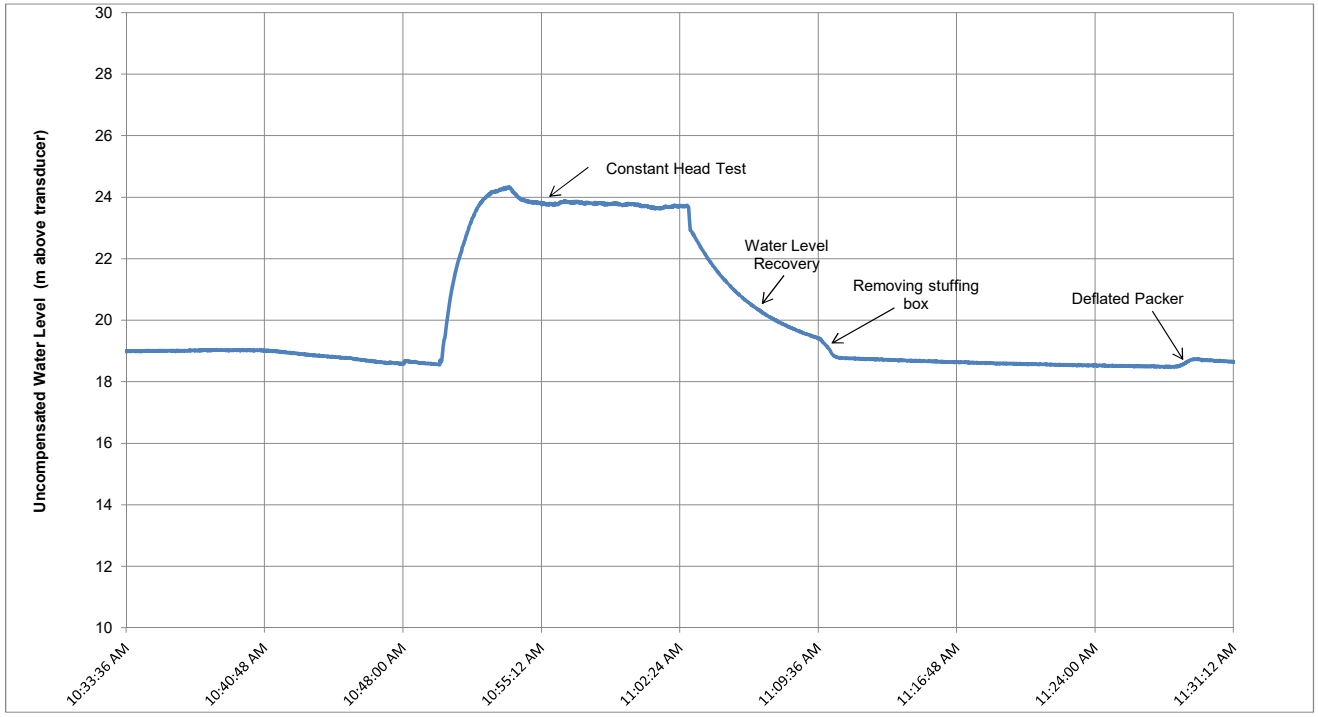
Print 10/20/16 10:38

Project No.	VA101-640/3		Drillhole	K16-390	
Field Technician	JAG		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	13.6	m (Downhole from ground surface)
				13.6	m (Vertical from ground surface)
Test Date	12-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	10:52 AM	
Top of test interval	13.6	m along hole	Initial Water Level	18.5	m above transducer
Bottom of test interval	23.6	m along hole	Water Level During Testing	23.8	m above transducer
Test length, L	10.0	m along hole	Head Maintained above Initial , Hc	5.4	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	Shape Factor, F	11.8	
Transmissivity, T	4E-06	m^2/s	Q	2.5E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drilling using polymer. Drillhole flushed for 10 minutes prior to test until water clear. Test conducted using a flowmeter in m^3.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

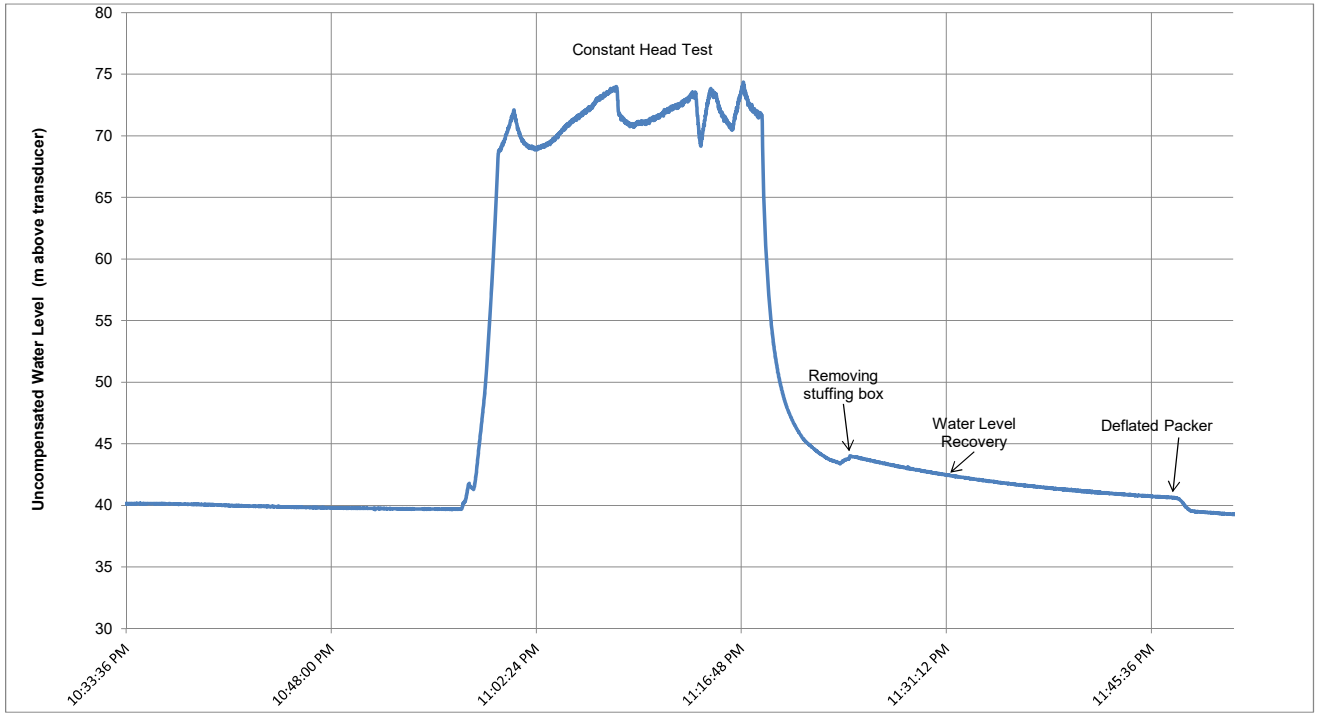
Print 10/20/16 10:38

Project No.	VA101-640/3		Drillhole	K16-390	
Field Technician	DJR		Test No.	3	
Analyst	DJR / JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	23.1	m (Downhole from ground surface)
				23.1	m (Vertical from ground surface)
Test Date	12-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	11:02 PM	
Top of test interval	23.1	m along hole	Initial Water Level	40	m above transducer
Bottom of test interval	38.6	m along hole	Water Level During Testing	72	m above transducer
Test length, L	15.5	m along hole	Head Maintained above Initial , Hc	32.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	2E-07	m/s	Shape Factor, F	16.9	
Transmissivity, T	3E-06	m^2/s	Q	1.2E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Transducer started at 10:21 PM and lowered at 10:24 PM. Inflated packer from 10:28 to 10:55 PM. Pressure applied during testing exceeded the maximum allowable injection pressure (Pmax), to minimize the potential for inducing hydraulic fracturing. Pmax is calculated in the literature as distance from ground to top of test interval multiplied by a factor of safety of 0.98 psi/m - 1.64 psi/m (Read and Stacey 2009). Test results do not appear to be affected by the higher applied pressure.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

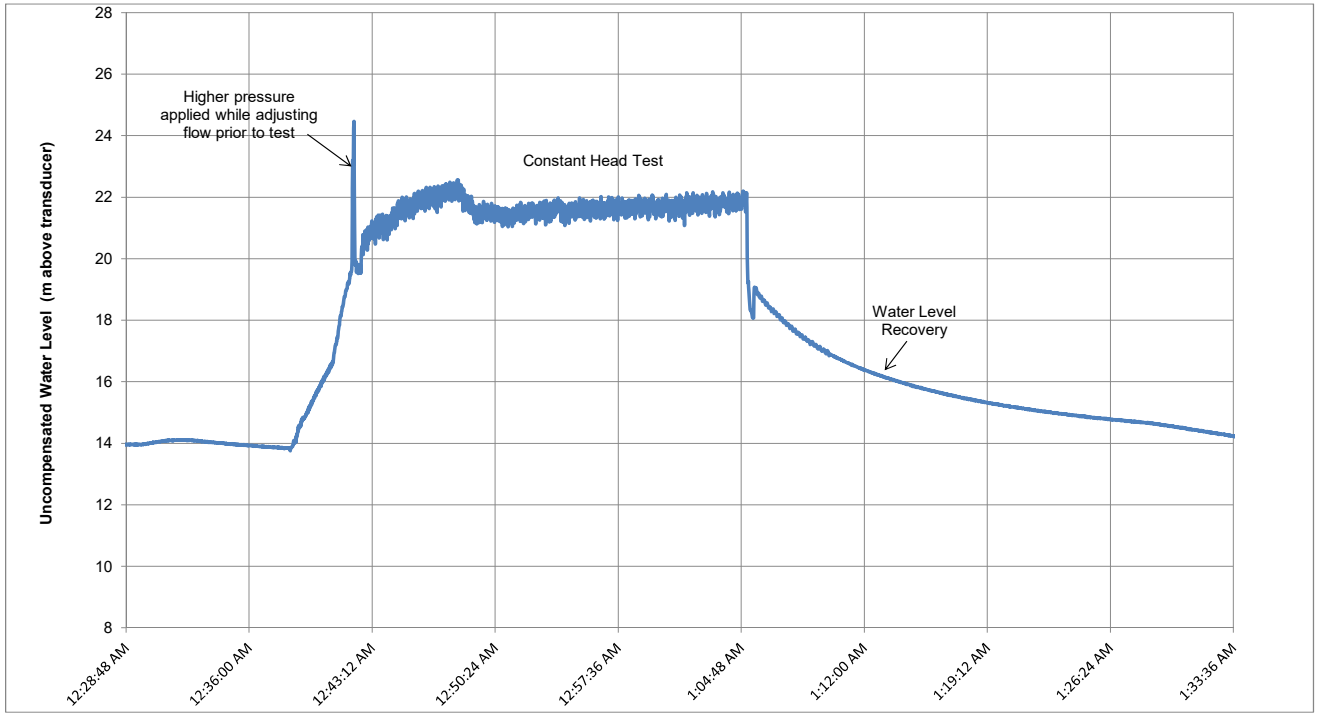
Print 10/20/16 10:39

Project No.	VA101-640/3		**Drillhole**	**K16-392**	
Field Technician	DJR		**Test No.**	1	
Analyst	DJR				
Monitoring Instrument Type	Transducer		**Transducer Position:**	7.7	m (Downhole from ground surface)
				7.7	m (Vertical from ground surface)
Test Date	14-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	12:50 AM	
Top of test interval	7.7	m along hole	**Initial Water Level**	14	m above transducer
Bottom of test interval	19.2	m along hole	**Water Level During Testing**	21.5	m above transducer
Test length, L	11.5	m along hole	**Head Maintained above Initial , Hc**	7.5	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	**Shape Factor, F**	13.2	
Transmissivity, T	1E-05	m^2/s	**Q**	1.1E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m3. Transducer started at 12:17 AM, lowered packer tool at 12:20 AM,packer inflation from 12:25-12:36 AM. Start test at 12:50 AM. Deflate packer at about 1:25 AM, removed 1:40 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

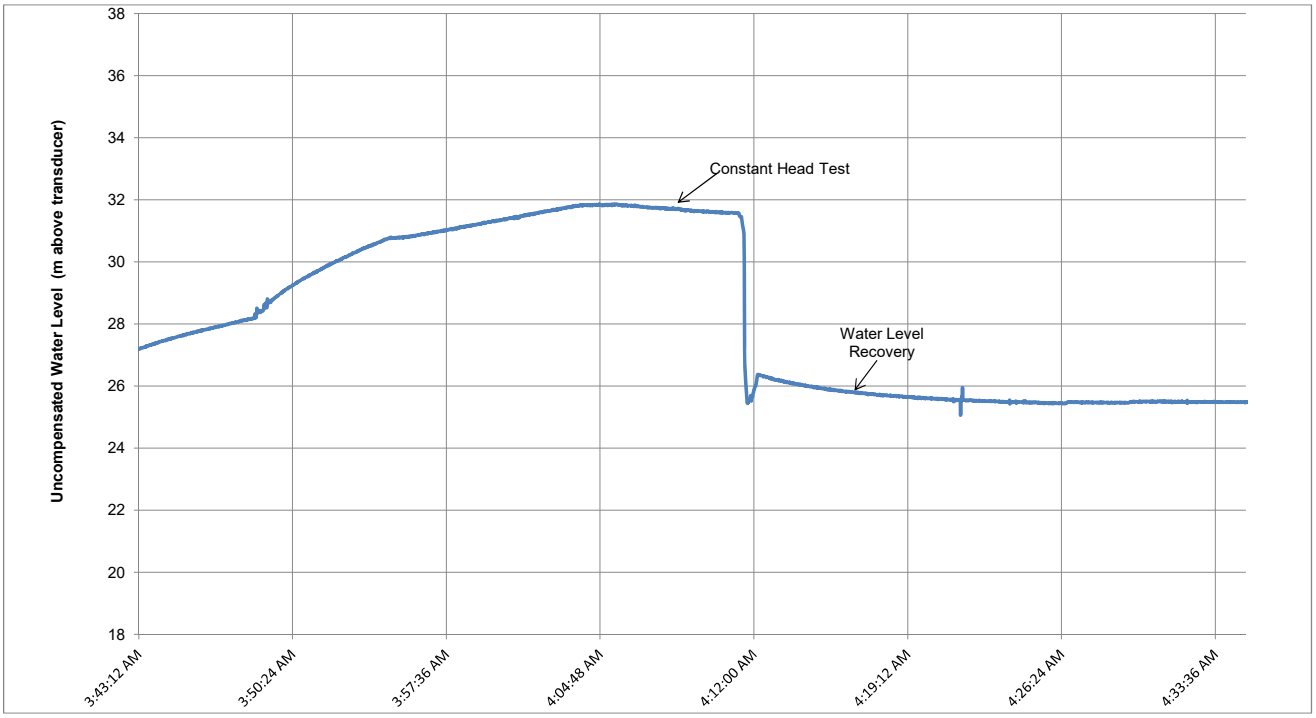
Print 10/20/16 10:39

Project No.	VA101-640/3		Drillhole	K16-392	
Field Technician	DJR		Test No.	2	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	17.2	m (Downhole from ground surface)
				17.2	m (Vertical from ground surface)
Test Date	14-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	3:56 AM	
Top of test interval	17.2	m along hole	Initial Water Level	25.4	m above transducer
Bottom of test interval	28.2	m along hole	Water Level During Testing	31.7	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	6.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	Shape Factor, F	12.7	
Transmissivity, T	1E-05	m^2/s	Q	8.1E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lower packer at 3:30 AM, inflate packer bladder with nitrogen at 3:32 AM, start constant head test at 3:56 AM. Flow rate during constant head slowly decreased over test duration from ~8L/min initially to ~0L/min. Hose was removed from stuffing box at end of constant head, and water poured out at an initial rate of ~4gal/min and decreased 5 minutes later to `2gal/min. Artesian conditions were not observed from hole prior to test but continued until end of drill hole. Estimate of K less certain because injected flow not well constrained during testing.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-392_CH02 17.20-28.20m_artesian.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

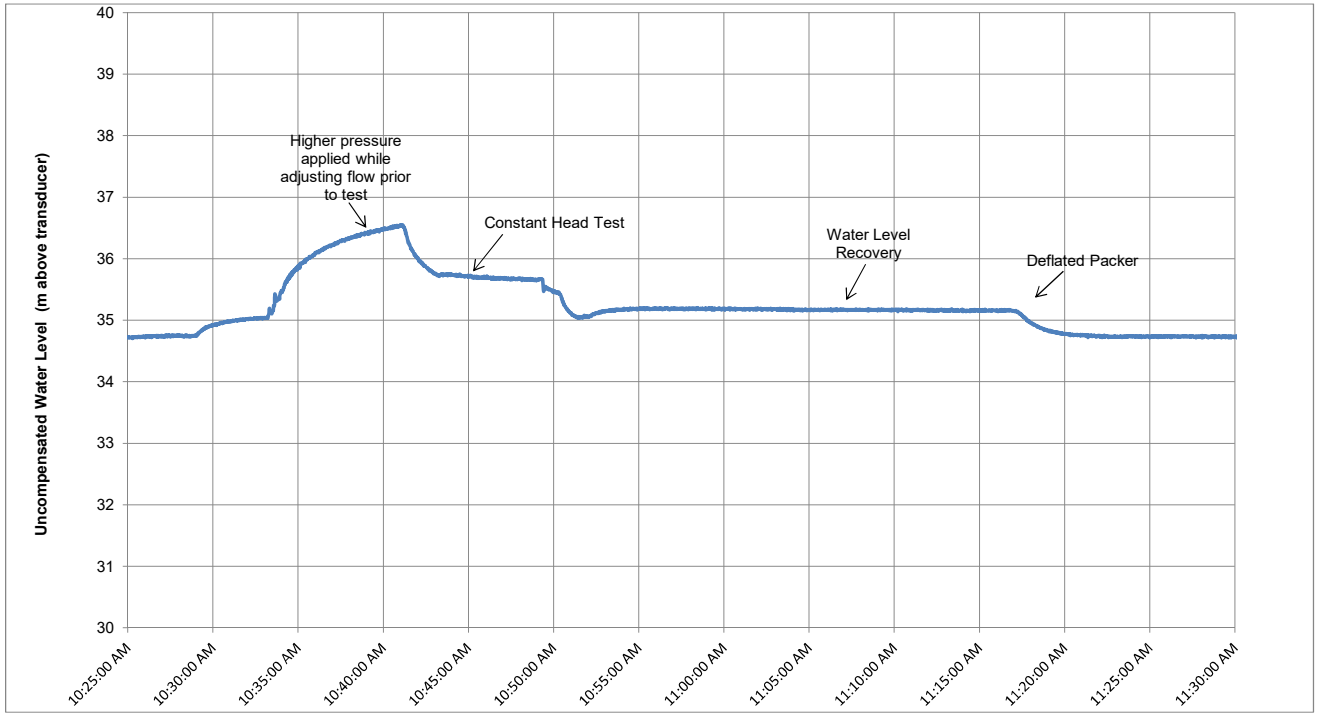
Print 10/20/16 10:40

Project No.	VA101-640/3		**Drillhole**	**K16-392**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	25.2	m (Downhole from ground surface)
				25.2	m (Vertical from ground surface)
Test Date	14-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	10:42 AM	
Top of test interval	25.2	m along hole	**Initial Water Level**	35	m above transducer
Bottom of test interval	37.2	m along hole	**Water Level During Testing**	36	m above transducer
Test length, L	12.0	m along hole	**Head Maintained above Initial , Hc**	0.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	**Shape Factor, F**	13.7	
Transmissivity, T	2E-04	m^2/s	**Q**	1.6E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 7:30 AM, start constant head test at 10:37 AM, analyzed test from 10:42-10:49.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-392_CH03 25.20-37.20m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

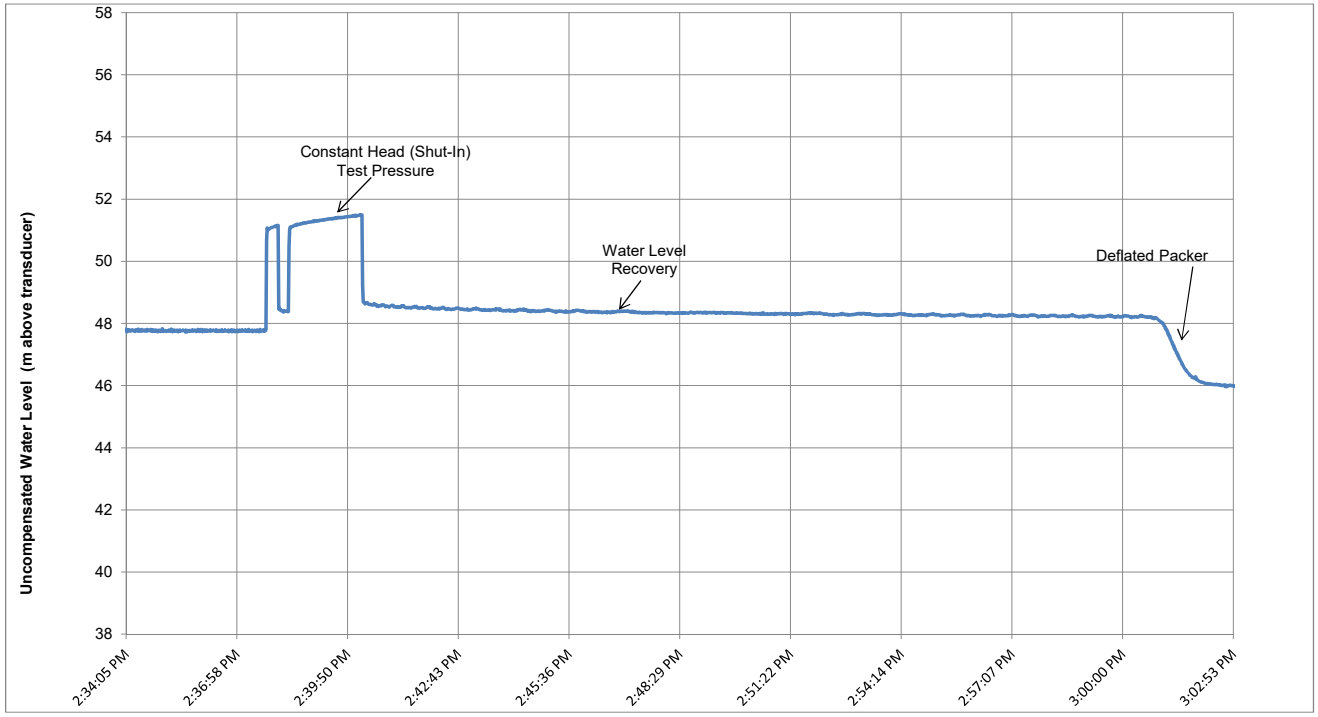
Print 10/20/16 10:46

Project No.	VA101-640/3		**Drillhole**	**K16-392**	
Field Technician	JAG		**Test No.**	4	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	35.2	m (Downhole from ground surface)
				35.2	m (Vertical from ground surface)
Test Date	7-Jun-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	2:42 PM	
Top of test interval	35.2	m along hole	**Initial Water Level**	48.3	m above transducer
Bottom of test interval	46.2	m along hole	**Water Level During Testing**	51.3	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	3.1	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	1E-04	m^2/s	**Q**	4.8E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m3. Shut in test at 2:38 PM. Shut-in pressure released and water allowed to flow out of hole through flow meter for 11 minutes resulting in about 30 L/min. Packer deflated at 3:02 PM and removed from hole at 3:33 PM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

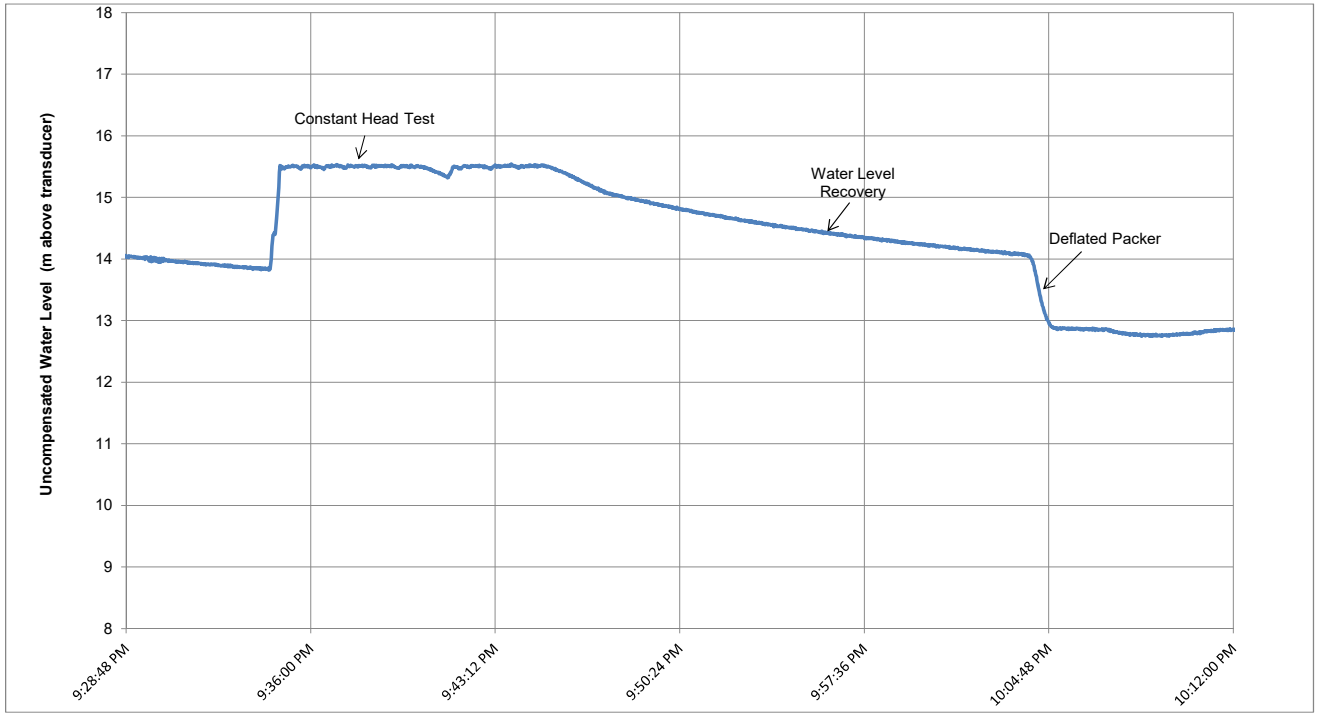
Print 10/20/16 10:47

Project No.	VA101-640/3		Drillhole	K16-395	
Field Technician	DJR		Test No.	1	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	4.2	m (Downhole from ground surface)
				4.2	m (Vertical from ground surface)
Test Date	15-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	9:35 PM	
Top of test interval	4.2	m along hole	Initial Water Level	14	m above transducer
Bottom of test interval	13.2	m along hole	Water Level During Testing	15	m above transducer
Test length, L	9.0	m along hole	Head Maintained above Initial , Hc	1.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	2E-06	m/s	Shape Factor, F	10.8	
Transmissivity, T	1E-05	m^2/s	Q	1.6E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m3. The packer was lowered at 8:29 PM, and the packer was inflated from 8:38-8:50 PM. The test began at 9:35 PM. Pressures up to ~20 psi applied prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container. Initial water level estimated from water level recovery after the test.

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

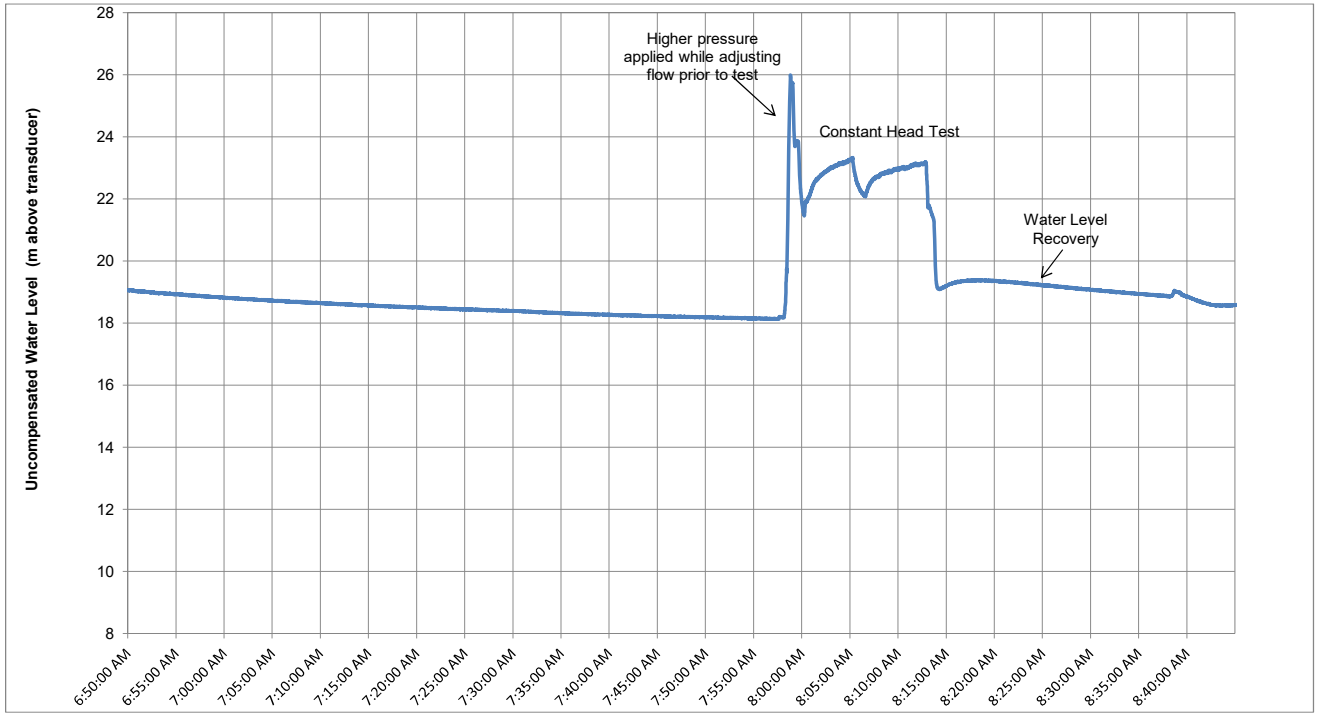
Print 10/20/16 10:47

Project No.	VA101-640/3		**Drillhole**	**K16-395**	
Field Technician	JAG		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	11.2	m (Downhole from ground surface)
				11.2	m (Vertical from ground surface)
Test Date	16-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	8:01 AM	
Top of test interval	11.2	m along hole	**Initial Water Level**	18	m above transducer
Bottom of test interval	22.2	m along hole	**Water Level During Testing**	23	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	5	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	6E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	7E-06	m^2/s	**Q**	3.8E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Started transducer at 6:18 AM, lowered at 6:28 AM, inflated from 6:31 to 6:50 AM, started constant head test at 8:01 which ran for 12 minutes. Removed from hole at 8:55 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

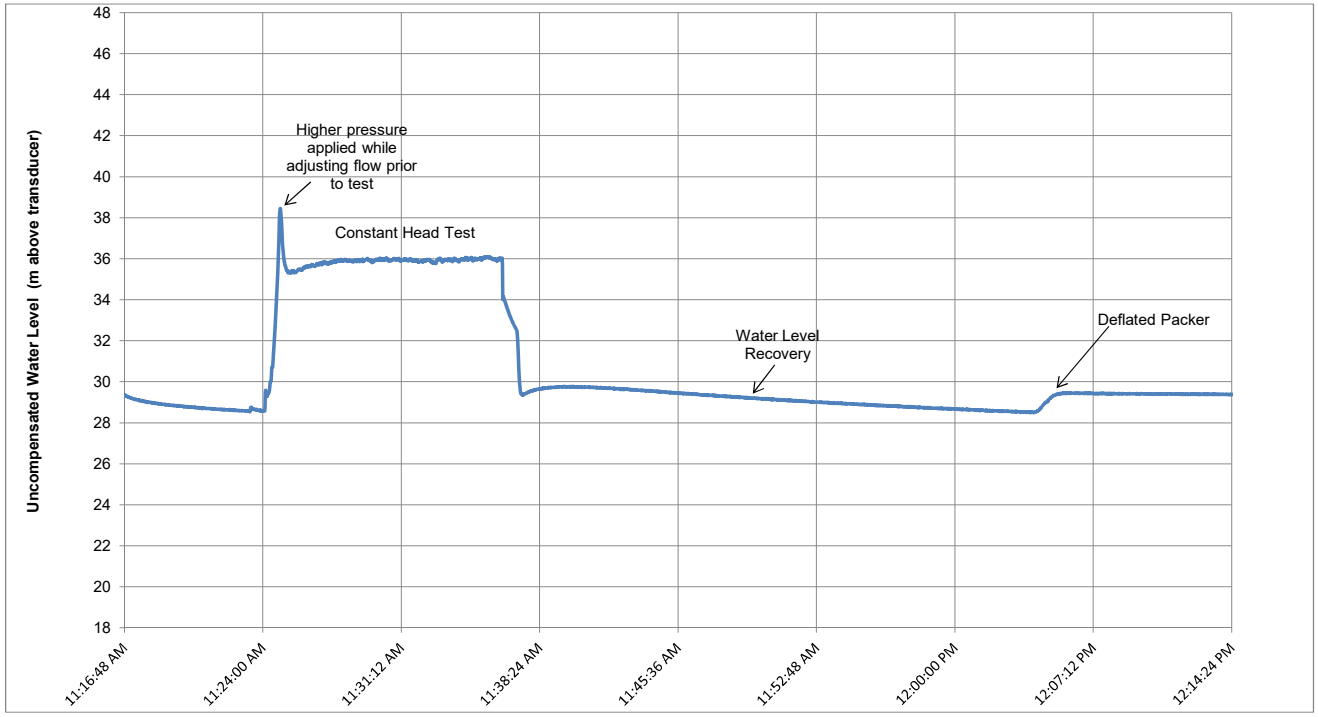
Print 10/20/16 10:48

Project No.	VA101-640/3		**Drillhole**	**K16-395**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	20.2	**m (Downhole from ground surface)**
				20.2	**m (Vertical from ground surface)**
Test Date	16-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	11:26 AM	
Top of test interval	20.2	**m along hole**	**Initial Water Level**	28.5	**m above transducer**
Bottom of test interval	32.7	**m along hole**	**Water Level During Testing**	35.9	**m above transducer**
Test length, L	12.5	**m along hole**	**Head Maintained above Initial , Hc**	7.4	**m**
Drill-hole angle	90	**degrees**			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	7E-07	**m/s**	**Shape Factor, F**	14.1	
Transmissivity, T	9E-06	**m^2/s**	**Q**	7.1E-05	**m^3/s**



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Started transducer at 10:57 AM. Packer tool lowered at 11:02 AM and inflated 11:07 to 11:24 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

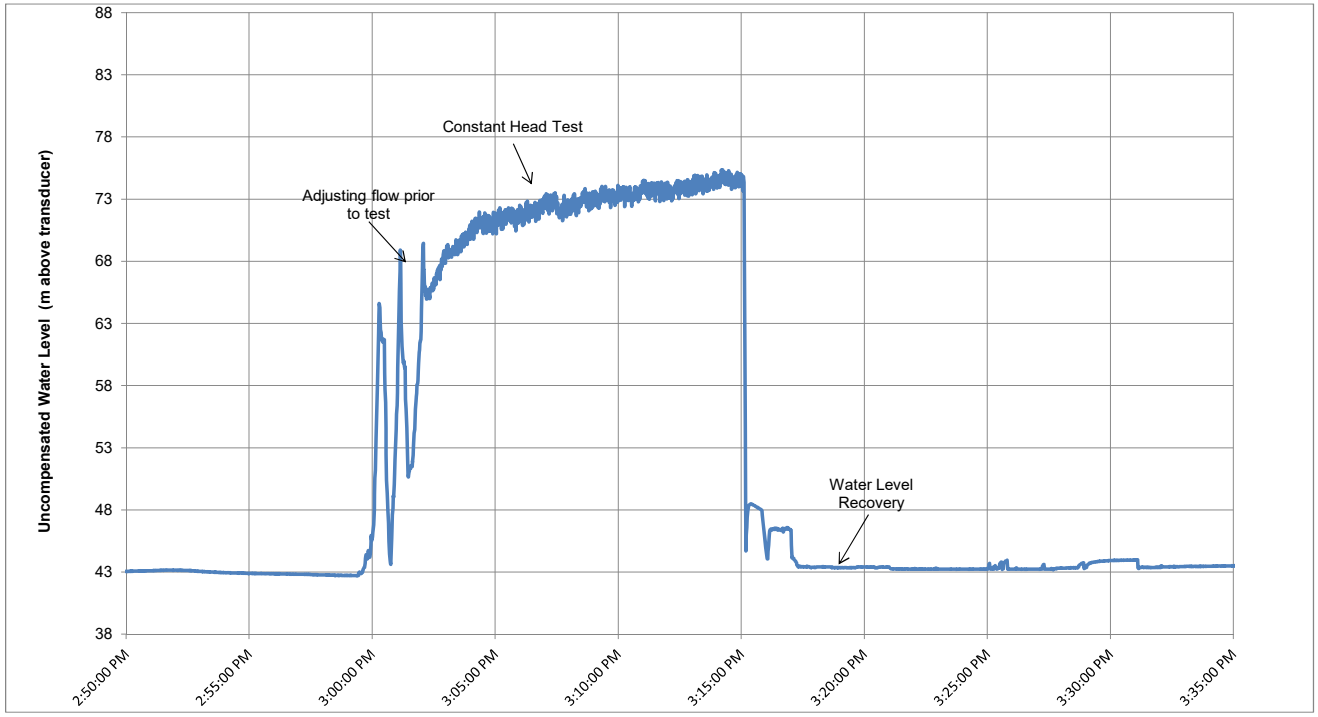
Print 10/20/16 10:48

Project No.	VA101-640/3		Drillhole	K16-395	
Field Technician	JAG		Test No.	4	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	32.2	m (Downhole from ground surface)
				32.2	m (Vertical from ground surface)
Test Date	16-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	3:04 PM	
Top of test interval	32.2	m along hole	Initial Water Level	43	m above transducer
Bottom of test interval	46.2	m along hole	Water Level During Testing	73	m above transducer
Test length, L	14.0	m along hole	Head Maintained above Initial , Hc	30.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	Shape Factor, F	15.5	
Transmissivity, T	5E-06	m^2/s	Q	1.7E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Started transducer at 2:38 PM, lowered at 2:42 PM, inflated from 2:45 to 3:00 PM, started constant head test at 3:04 PM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

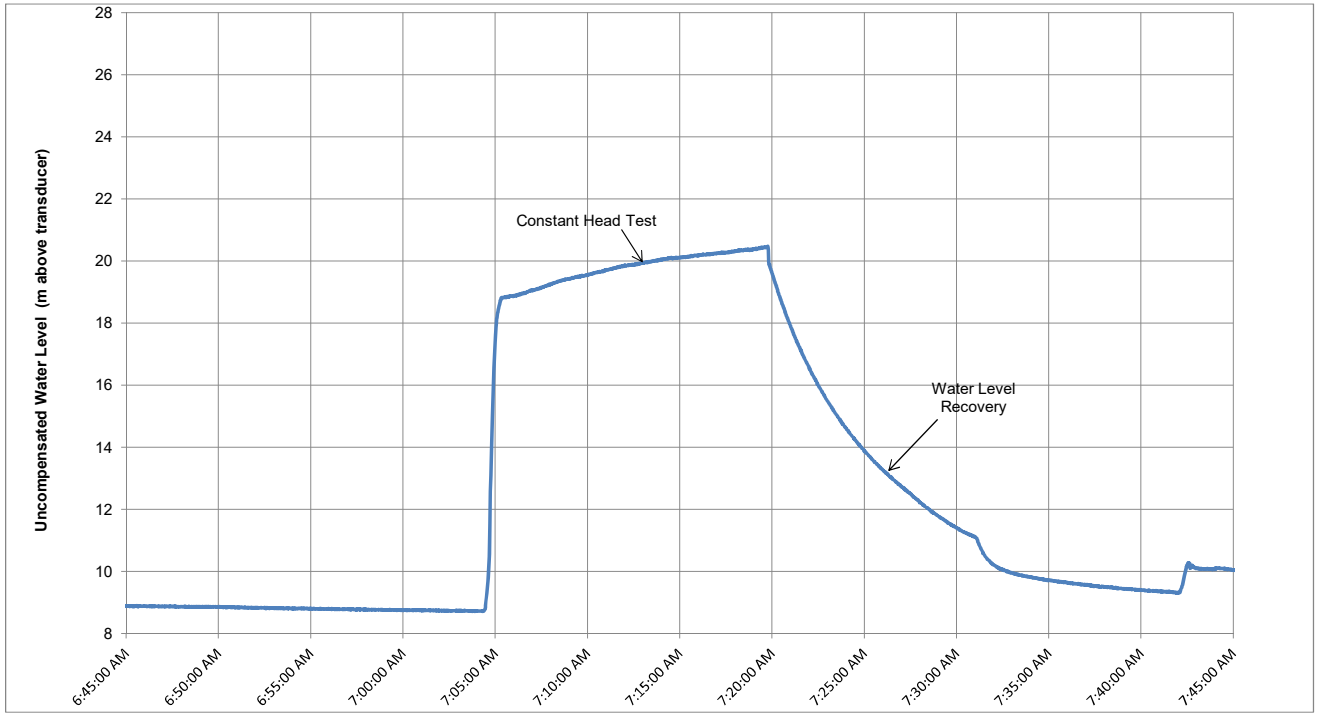
Print 10/20/16 10:49

Project No.	VA101-640/3		**Drillhole**	**K16-402**	
Field Technician	DJR / JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	8.1	m (Downhole from ground surface)
				8.1	m (Vertical from ground surface)
Test Date	23-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	7:07 AM	
Top of test interval	8.1	m along hole	**Initial Water Level**	-5.0	m above transducer
Bottom of test interval	18.1	m along hole	**Compensated Water Level During Test**	11	m above transducer
Test length, L	10.0	m along hole	**Head Maintained above Initial , Hc**	16.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	2E-07	m/s	**Shape Factor, F**	11.8	
Transmissivity, T	2E-06	m^2/s	**Q**	4.6E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Transducer started at 5:44 AM, packer tool lowered at 5:49 AM, inflated from 6:12 to 6:25 AM. Packer deflated at 7:41 AM and removed at 7:58 AM. Water level at or below transducer (top of test interval) based on plotted transducer data. Initial water level assumed to be at the mid-point of the test interval for the analysis. K estimate for qualitative purposes only as initial water level was assumed and methodology/analysis valid only for saturated conditions.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

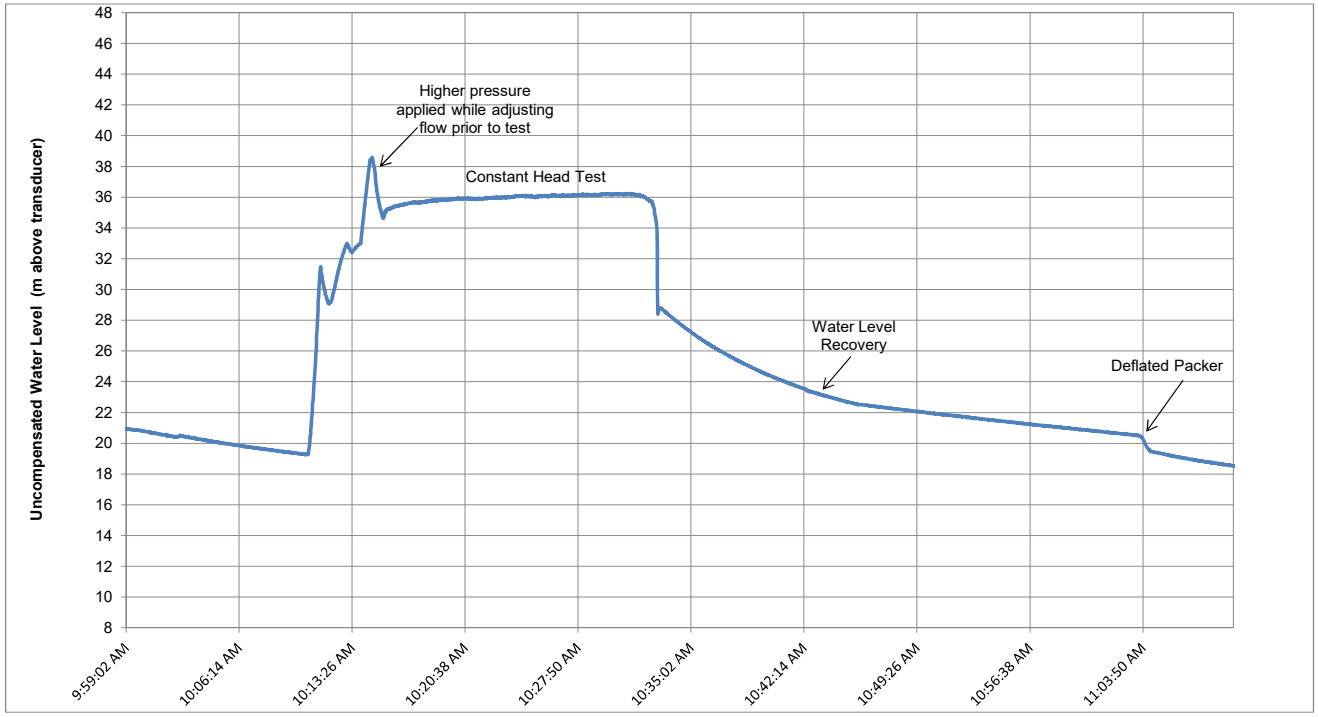
Print 10/20/16 10:50

Project No.	VA101-640/3			**Drillhole**	**K16-402**	
Field Technician	JAG			**Test No.**	2	
Analyst	JAG					
Monitoring Instrument Type	Transducer			**Transducer Position:**	16.1	**m (Downhole from ground surface)**
					16.1	**m (Vertical from ground surface)**
Test Date	23-Jul-16					
Drill-hole diameter, D	HQ3	0.096	m			
Diameter of drill pipe, d	HQ3	0.078	m	**Test Start Time**	10:20 AM	
Top of test interval	16.1	**m along hole**		**Initial Water Level**	20.6	**m above transducer**
Bottom of test interval	27.1	**m along hole**		**Water Level During Testing**	36	**m above transducer**
Test length, L	11.0	**m along hole**		**Head Maintained above Initial , Hc**	15.4	**m**
Drill-hole angle	90	**degrees**				

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-07	**m/s**	**Shape Factor, F**	12.7	
Transmissivity, T	1E-06	**m^2/s**	**Q**	1.9E-05	**m^3/s**



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Started transducer at 9:46 AM, lowered at 9:48 AM, inflated from 9:55 to 10:10 AM, started constant head test at 10:20 AM which ran for 12 minutes. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

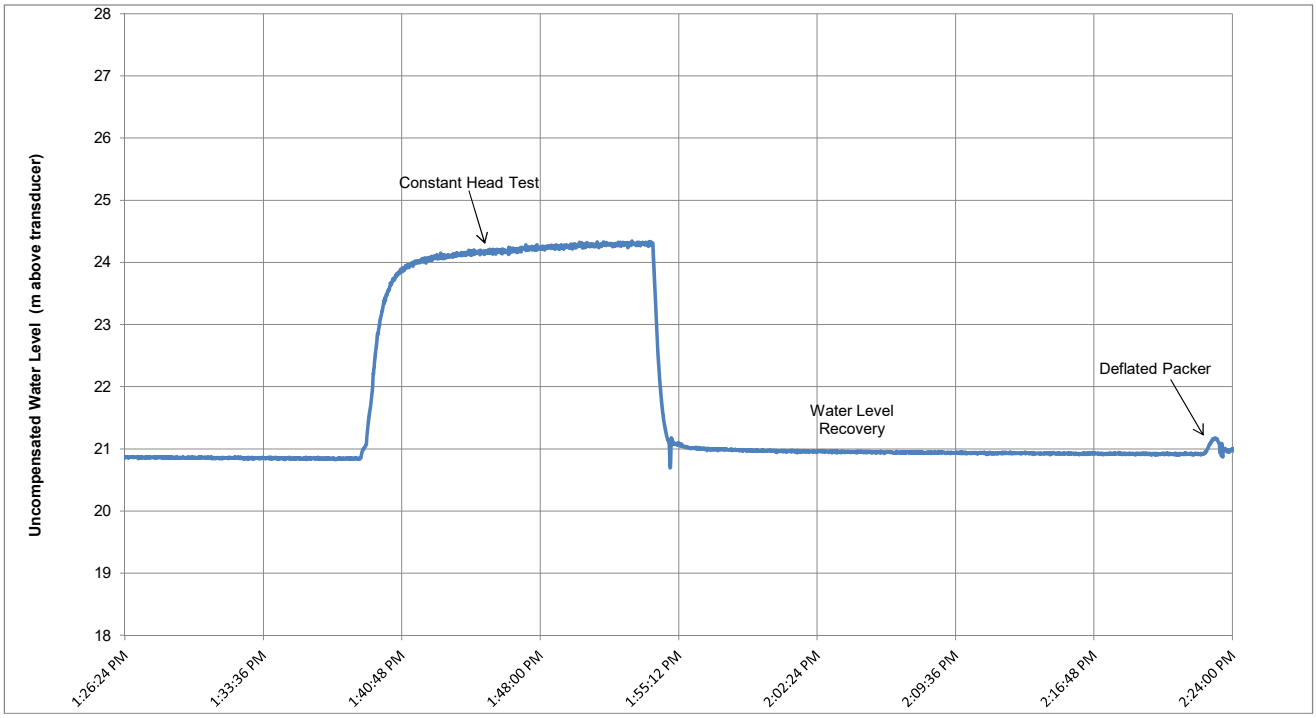
Print 10/20/16 10:50

Project No.	VA101-640/3		Drillhole	K16-402	
Field Technician	JAG		Test No.	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	25.1	m (Downhole from ground surface)
				25.1	m (Vertical from ground surface)
Test Date	23-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	1:42 AM	
Top of test interval	25.1	m along hole	Initial Water Level	20.9	m above transducer
Bottom of test interval	37.6	m along hole	Water Level During Testing	24.2	m above transducer
Test length, L	12.5	m along hole	Head Maintained above Initial , Hc	3.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	2E-05	m/s	Shape Factor, F	14.1	
Transmissivity, T	2E-04	m^2/s	Q	7.3E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered packer at 1:18 PM, inflated from 1:20 to 1:38 PM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

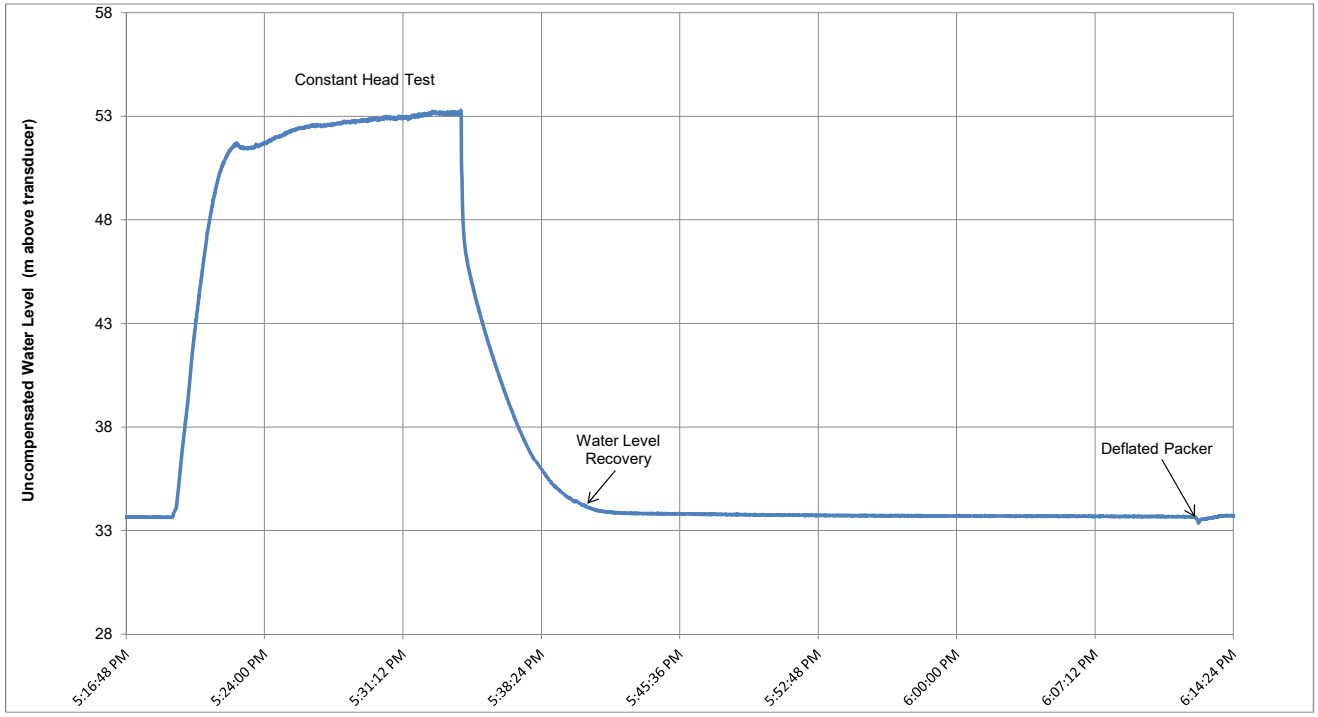
Print 10/20/16 10:51

Project No.	VA101-640/3		**Drillhole**	**K16-402**	
Field Technician	JAG		**Test No.**	4	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	37.1	m (Downhole from ground surface)
				37.1	m (Vertical from ground surface)
Test Date	23-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	5:22 PM	
Top of test interval	37.1	m along hole	**Initial Water Level**	33.7	m above transducer
Bottom of test interval	48.1	m along hole	**Water Level During Testing**	53	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	19.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	4E-05	m^2/s	**Q**	8.4E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lower packer downhole at 4:55 and inflate packer from 5:00 PM to 5:20 PM. Start constant head test at 5:22 PM and run for 12 minutes. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

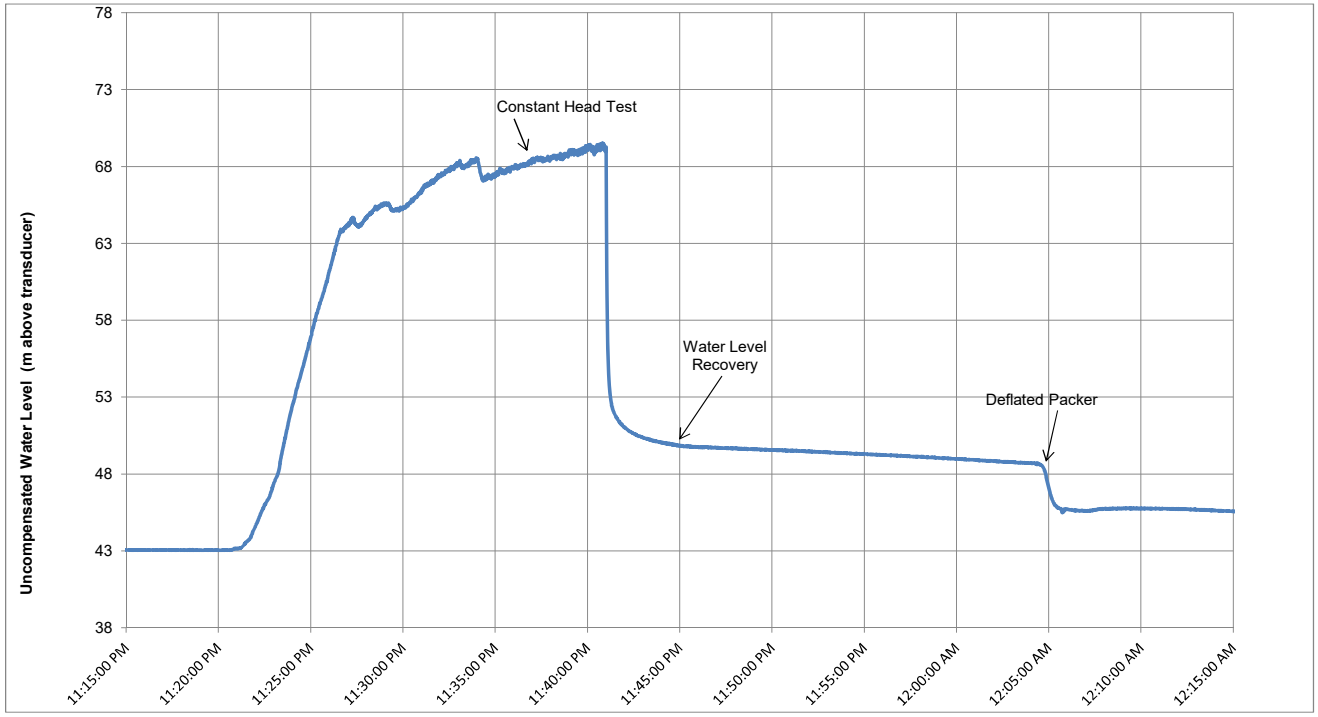
Print 10/20/16 10:52

Project No.	VA101-640/3		Drillhole	K16-402	
Field Technician	DJR		Test No.	5	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	46.1	m (Downhole from ground surface)
				46.1	m (Vertical from ground surface)
Test Date	23-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	11:33 PM	
Top of test interval	46.1	m along hole	Initial Water Level	48.5	m above transducer
Bottom of test interval	60.1	m along hole	Water Level During Testing	68.3	m above transducer
Test length, L	14.0	m along hole	Head Maintained above Initial , Hc	19.8	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	Shape Factor, F	15.5	
Transmissivity, T	4E-05	m^2/s	Q	8.7E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered packer at 10:54 PM, inflated from 10:59 - 11:19 PM, started constant head test at 11:25 PM, analyzed results from 11:33 PM - 11:41 PM (end of test). Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[K16-402_CH05 46.1-60.1m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

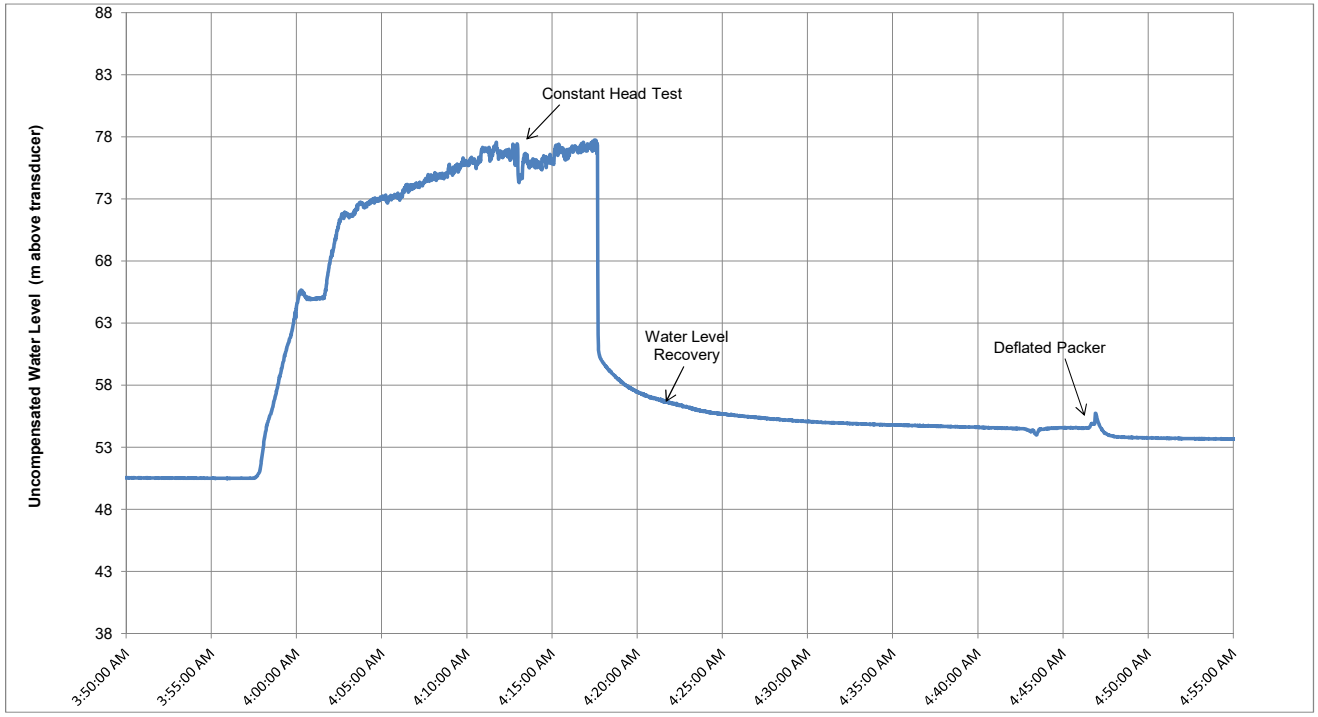
Print 10/20/16 10:52

Project No.	VA101-640/3		Drillhole	K16-402	
Field Technician	DJR		Test No.	6	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	58.1	m (Downhole from ground surface)
				58.1	m (Vertical from ground surface)
Test Date	24-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	4:11 AM	
Top of test interval	58.1	m along hole	Initial Water Level	54.6	m above transducer
Bottom of test interval	70.6	m along hole	Water Level During Testing	76.5	m above transducer
Test length, L	12.5	m along hole	Head Maintained above Initial , Hc	21.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-06	m/s	Shape Factor, F	14.1	
Transmissivity, T	5E-05	m^2/s	Q	1.3E-03	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered the packer at 3:32 AM, inflated from 3:37 - 3:55 AM, started constant head test at 4:04 AM, analyzed results from 4:11 - 4:17 AM (end test). Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

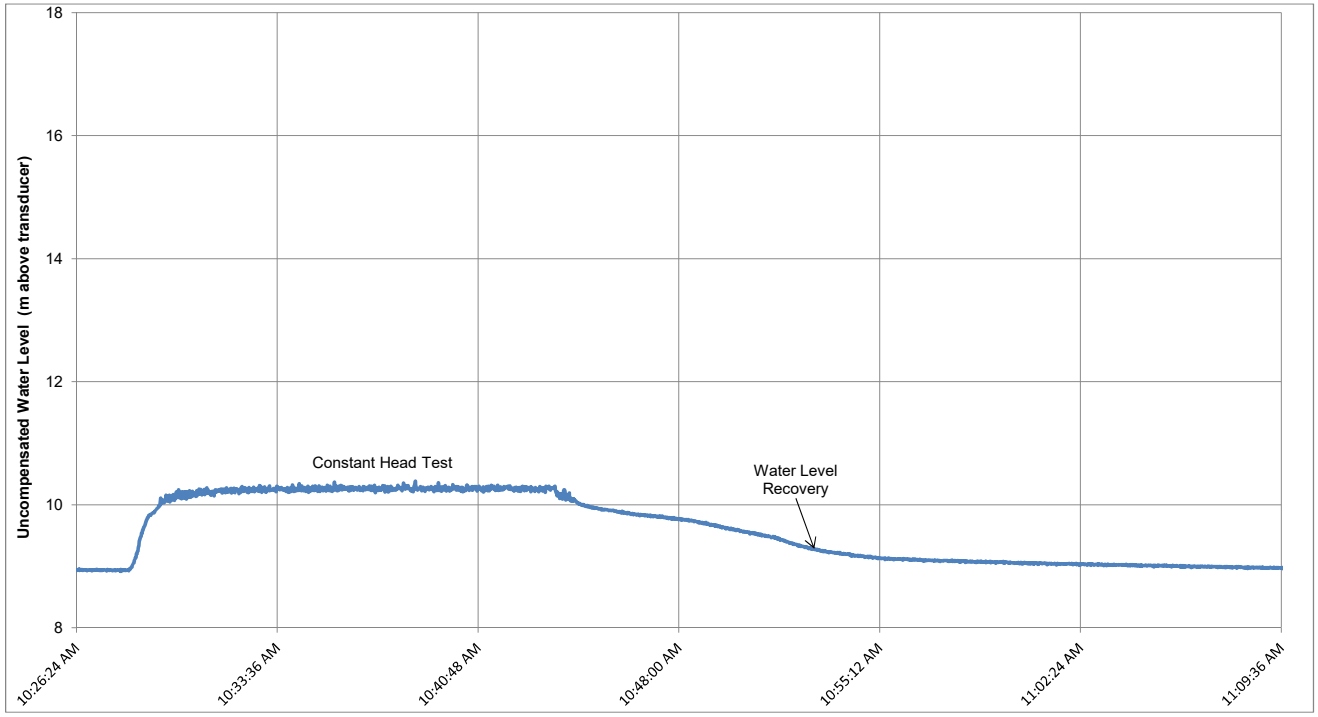
Print 10/20/16 10:53

Project No.	VA101-640/4		**Drillhole**	**K16-410**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	8.2	m (Downhole from ground surface)
				8.2	m (Vertical from ground surface)
Test Date	8-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	10:31 AM	
Top of test interval	8.2	m along hole	**Initial Water Level**	-3.3	m above transducer
Bottom of test interval	14.7	m along hole	**Compensated Water Level During Test**	1.6	m above transducer
Test length, L	6.5	m along hole	**Head Maintained above Initial , Hc**	4.8	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	**Shape Factor, F**	8.3	
Transmissivity, T	9E-05	m^2/s	**Q**	5.4E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 10:03 AM, lower packer at 10:11 AM, inflate from 10:15 to 10:25 AM. Deflate packer at 11:02 AM, and remove at 11:14 AM. Water level at or below transducer (top of test interval) based on plotted transducer data. Initial water level assumed to be at the mid-point of the test interval for the analysis. K estimate for qualitative purposes only as initial water level was assumed and methodology/analysis valid only for saturated conditions.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

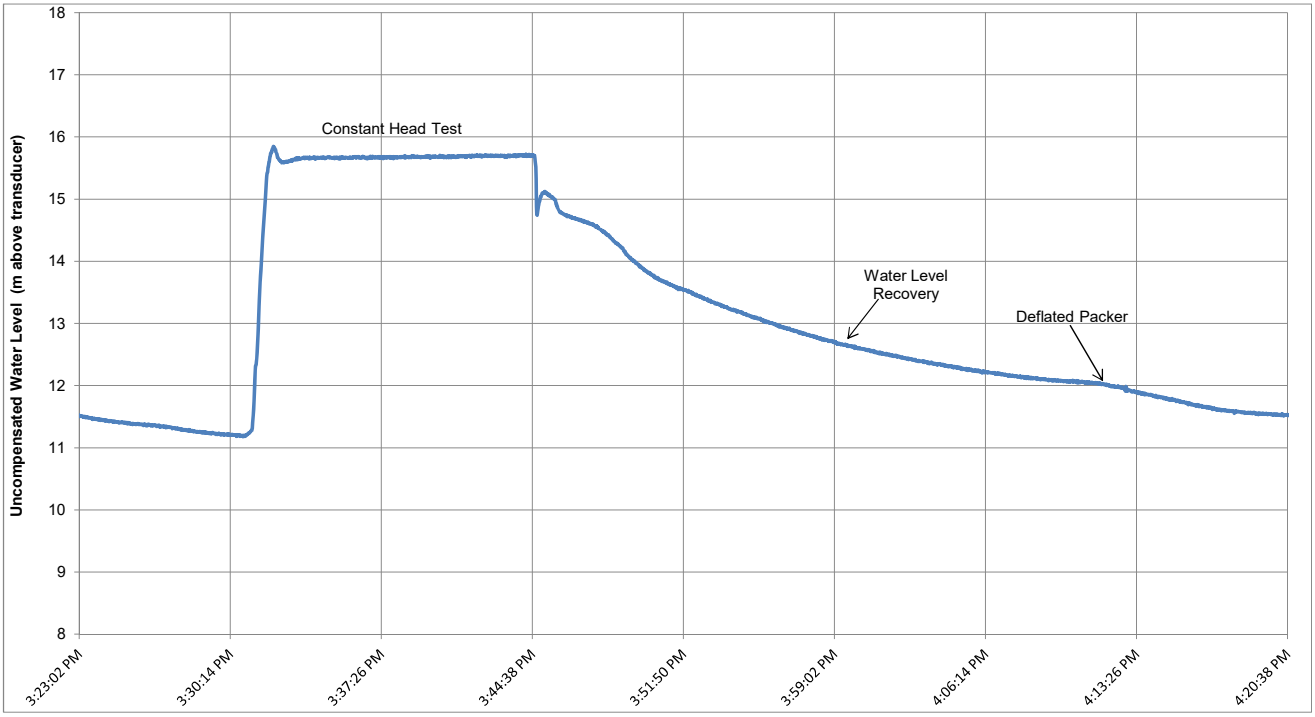
Print 10/20/16 10:54

Project No.	VA101-640/4		**Drillhole**	**K16-410**	
Field Technician	JAG		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	15.0	m (Downhole from ground surface)
				15.0	m (Vertical from ground surface)
Test Date	9-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	3:33 PM	
Top of test interval	15.0	m along hole	**Initial Water Level**	12.0	m above transducer
Bottom of test interval	22.2	m along hole	**Water Level During Testing**	15.7	m above transducer
Test length, L	7.2	m along hole	**Head Maintained above Initial , Hc**	3.7	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	**Shape Factor, F**	9.0	
Transmissivity, T	7E-05	m^2/s	**Q**	3.4E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 1:14 PM, lower packer at 3.14 PM, inflate from 3:19 PM to 3:30 PM, start test at 3:33 PM, end at 3:44 PM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

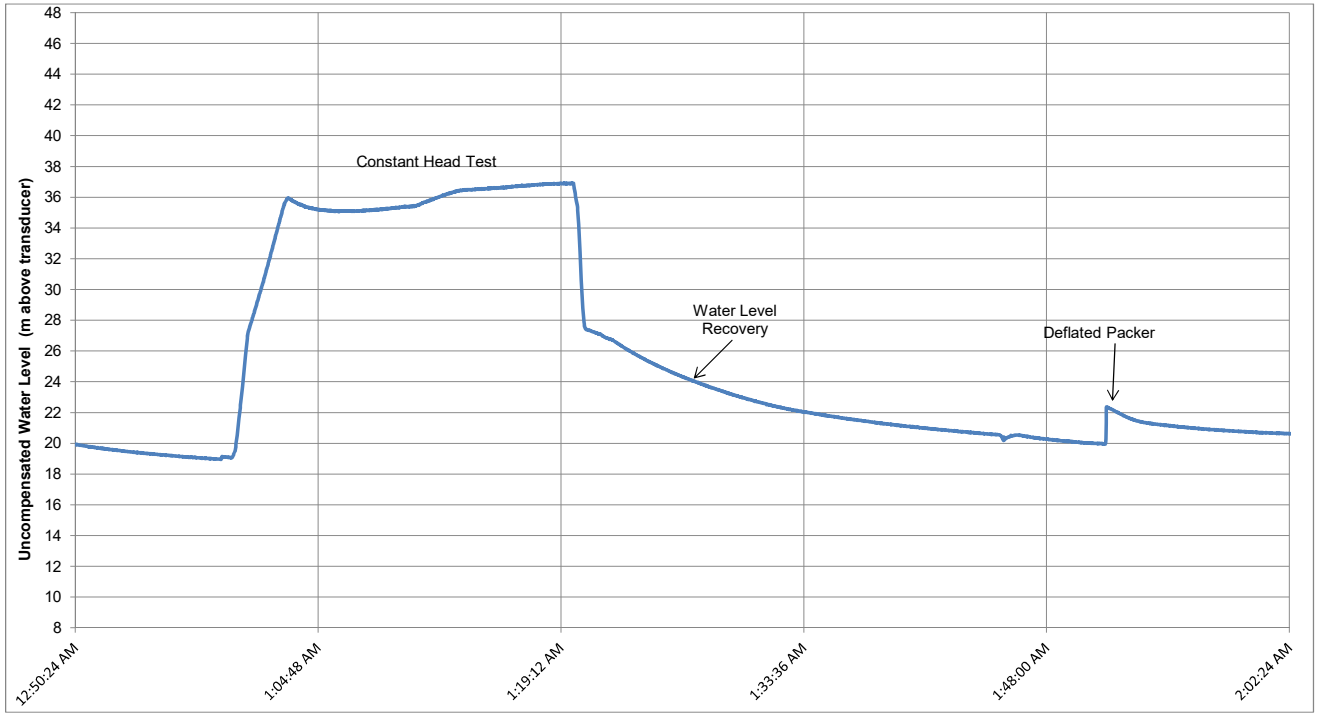
Print 10/20/16 11:57

Project No.	VA101-640/4		**Drillhole**	**K16-410**	
Field Technician	DJR		**Test No.**	3	
Analyst	DJR				
Monitoring Instrument Type	Transducer		**Transducer Position:**	21.7	m (Downhole from ground surface)
				21.7	m (Vertical from ground surface)
Test Date	9-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	1:04 AM	
Top of test interval	21.7	m along hole	**Initial Water Level**	20	m above transducer
Bottom of test interval	31.2	m along hole	**Water Level During Testing**	36	m above transducer
Test length, L	9.5	m along hole	**Head Maintained above Initial , Hc**	16.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	3E-07	m/s	**Shape Factor, F**	11.3	
Transmissivity, T	2E-06	m^2/s	**Q**	4.7E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 12:20 AM, lower packer at 12:30 AM, inflate from 12:41 to 12:55 AM, start test at 1:04 AM, end at 1:19 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

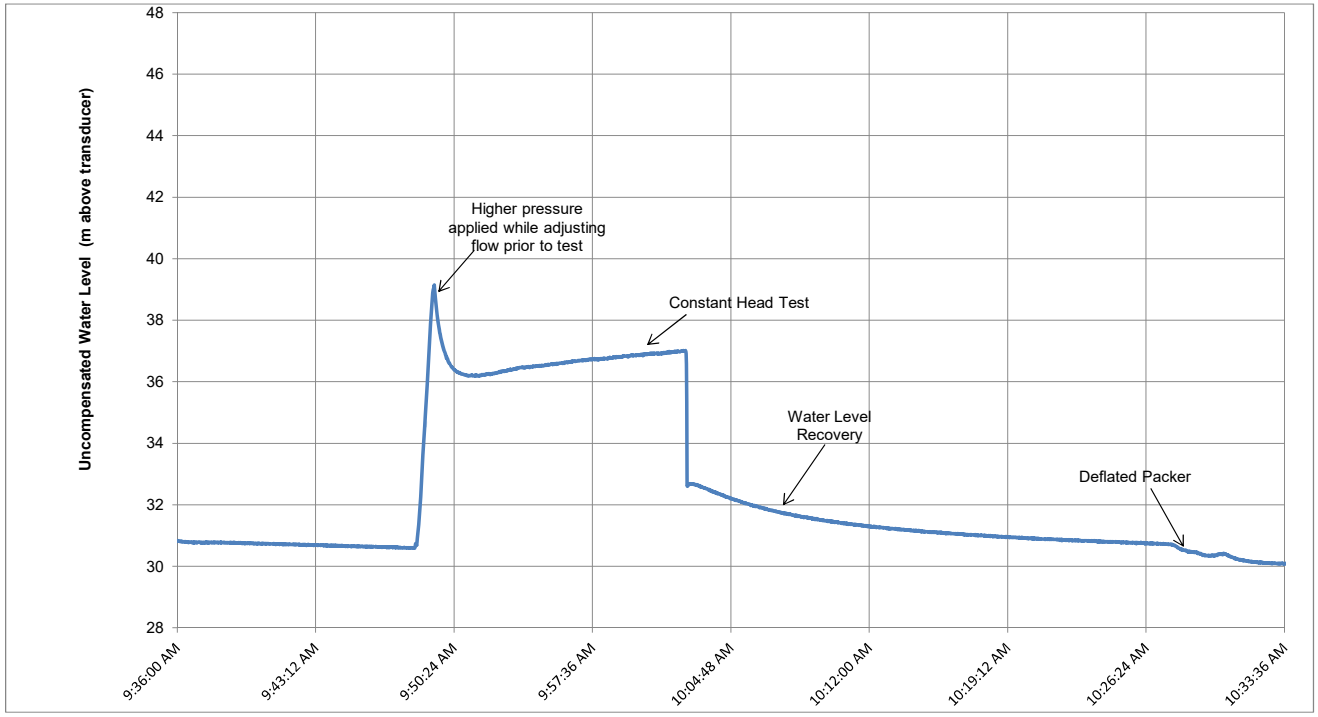
Print 10/20/16 10:55

Project No.	VA101-640/4		**Drillhole**	**K16-411**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	23.5	m (Downhole from ground surface)
				23.5	m (Vertical from ground surface)
Test Date	11-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	9:52 AM	
Top of test interval	23.5	m along hole	**Initial Water Level**	30.8	m above transducer
Bottom of test interval	28.1	m along hole	**Water Level During Testing**	36.7	m above transducer
Test length, L	4.6	m along hole	**Head Maintained above Initial , Hc**	5.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	**Shape Factor, F**	6.3	
Transmissivity, T	1E-05	m^2/s	**Q**	1.1E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 8:11 AM, lower packer at 9:21 AM, inflate from 9:33 AM to 9:44 AM, start test at 9:52 AM, end at 10:02 AM, deflate packer at 10:23 AM, and remove at 11:20 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

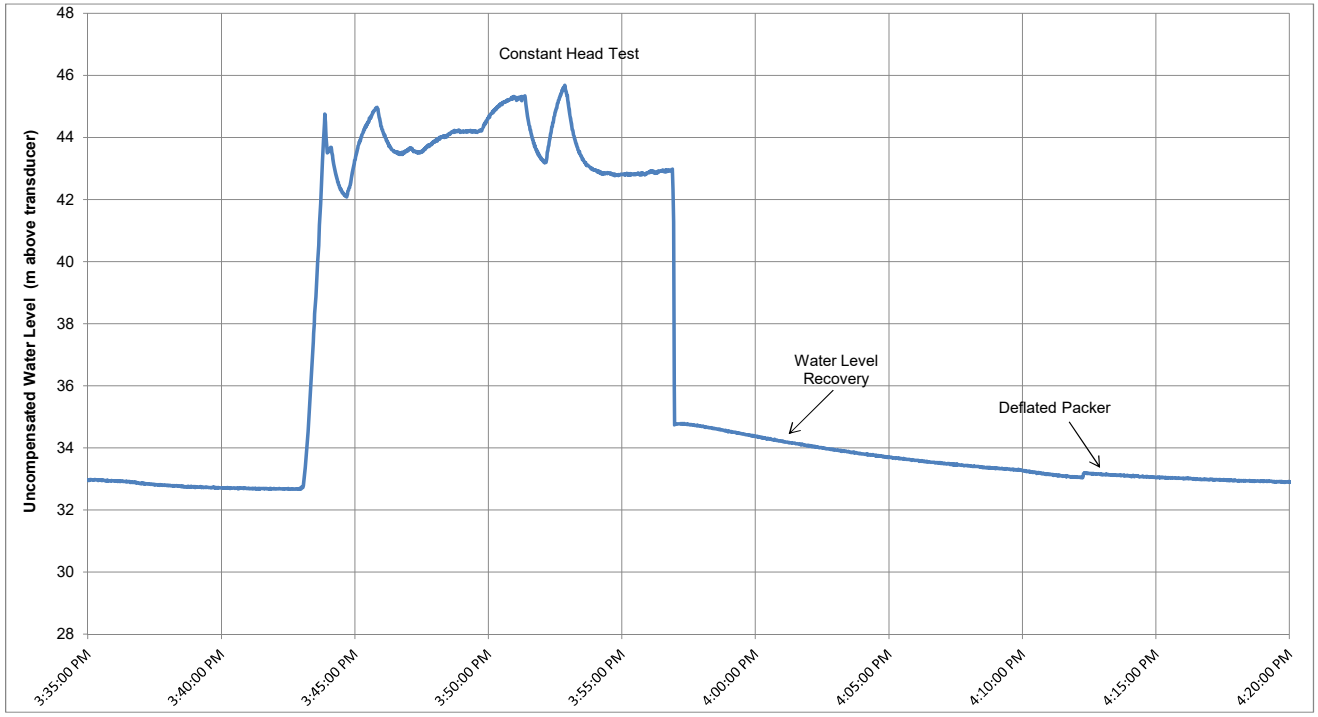
Print 10/20/16 10:55

Project No.	VA101-640/4		**Drillhole**	**K16-411**	
Field Technician	JAG		**Test No.**	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	26.1	m (Downhole from ground surface)
				26.1	m (Vertical from ground surface)
Test Date	11-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	3:46 PM	
Top of test interval	26.1	m along hole	**Initial Water Level**	32.9	m above transducer
Bottom of test interval	34.1	m along hole	**Water Level During Testing**	43.8	m above transducer
Test length, L	8.0	m along hole	**Head Maintained above Initial , Hc**	10.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	8E-07	m/s	**Shape Factor, F**	9.8	
Transmissivity, T	6E-06	m^2/s	**Q**	8.5E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 3:18 PM, lower packer at 3:26 PM, inflate from 3:29 PM to 3:42 PM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

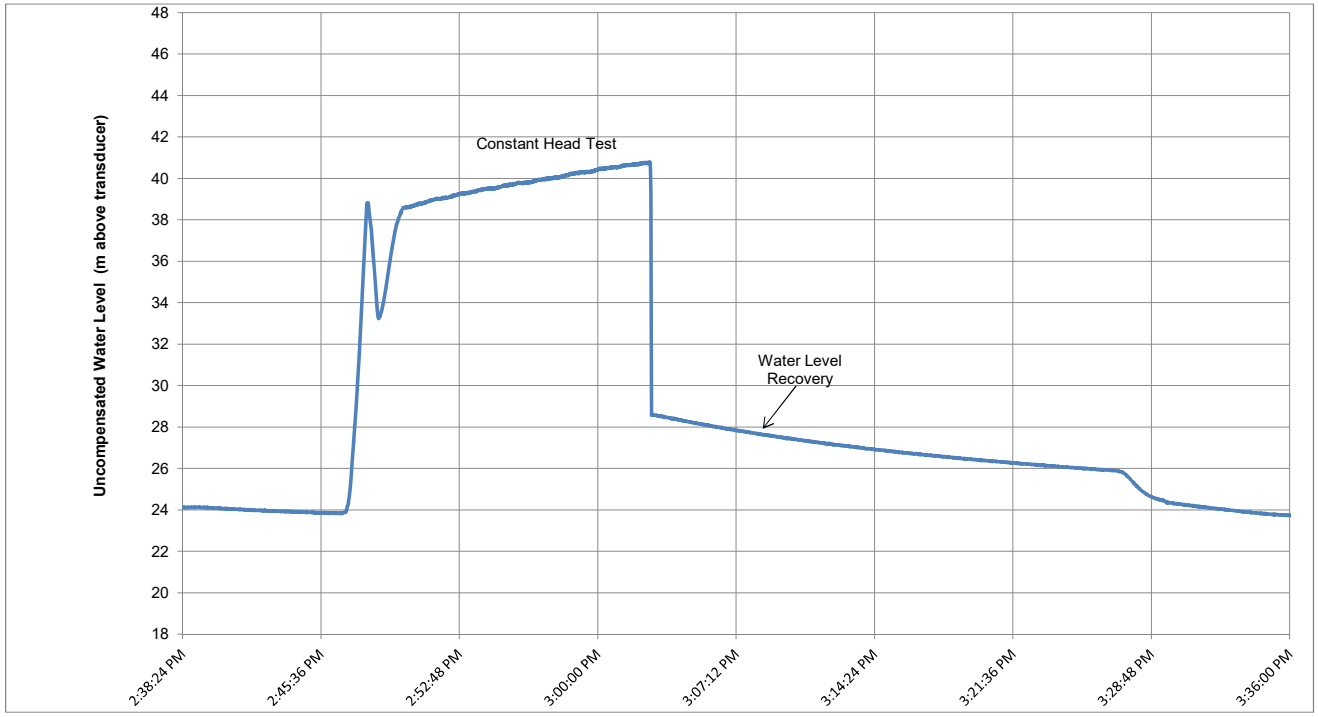
Print 10/20/16 10:55

Project No.	VA101-640/4		**Drillhole**	**K16-412**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	20.5	m (Downhole from ground surface)
				20.5	m (Vertical from ground surface)
Test Date	13-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	2:52 PM	
Top of test interval	20.5	m along hole	**Initial Water Level**	26	m above transducer
Bottom of test interval	26.7	m along hole	**Water Level During Testing**	40	m above transducer
Test length, L	6.2	m along hole	**Head Maintained above Initial , Hc**	14.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	**Shape Factor, F**	8.0	
Transmissivity, T	2E-06	m^2/s	**Q**	4.4E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 10:57 AM, lower packer at 2:20 PM, inflate from 2:30 to 2:44 PM, start test at 2:52 PM, end at 3:03 PM, deflate packer at 3:27 PM, and remove at 3:41 PM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

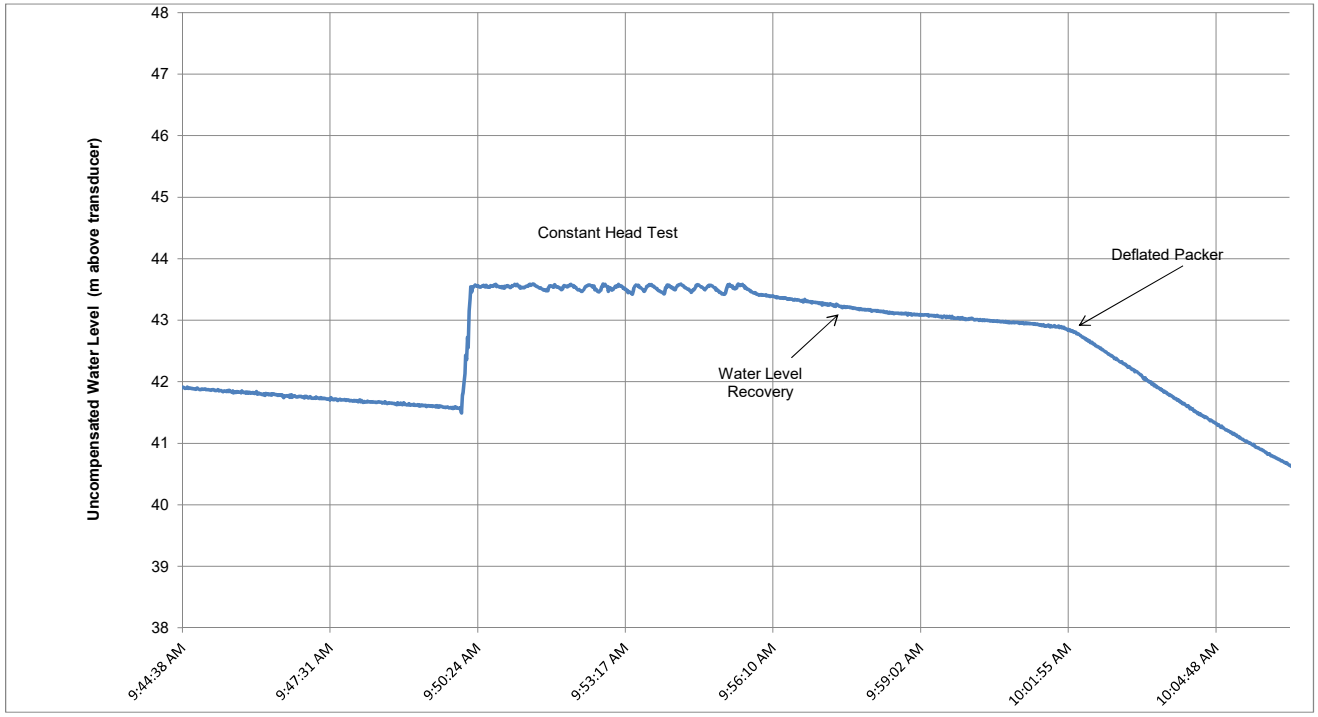
Print 10/20/16 10:56

Project No.	VA101-640/4		**Drillhole**	**K16-412**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	32.5	m (Downhole from ground surface)
				32.5	m (Vertical from ground surface)
Test Date	14-Aug-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	9:50 AM	
Top of test interval	32.5	m along hole	**Initial Water Level**	41.6	m above transducer
Bottom of test interval	38.7	m along hole	**Water Level During Testing**	43.5	m above transducer
Test length, L	6.2	m along hole	**Head Maintained above Initial , Hc**	1.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	**Shape Factor, F**	8.0	
Transmissivity, T	2E-05	m^2/s	**Q**	5.2E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Start transducer at 8:50 AM, lower packer at 9:22 AM, inflate from 9:26 AM to 9:35 AM, start test at 9:50 AM, end at 9:55 AM. Pressures up to ~40 PSI applied prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container. Deflate packer at 10:00 AM, and remove at 10:15 AM. Initial water level estimated from water level recovery after the test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

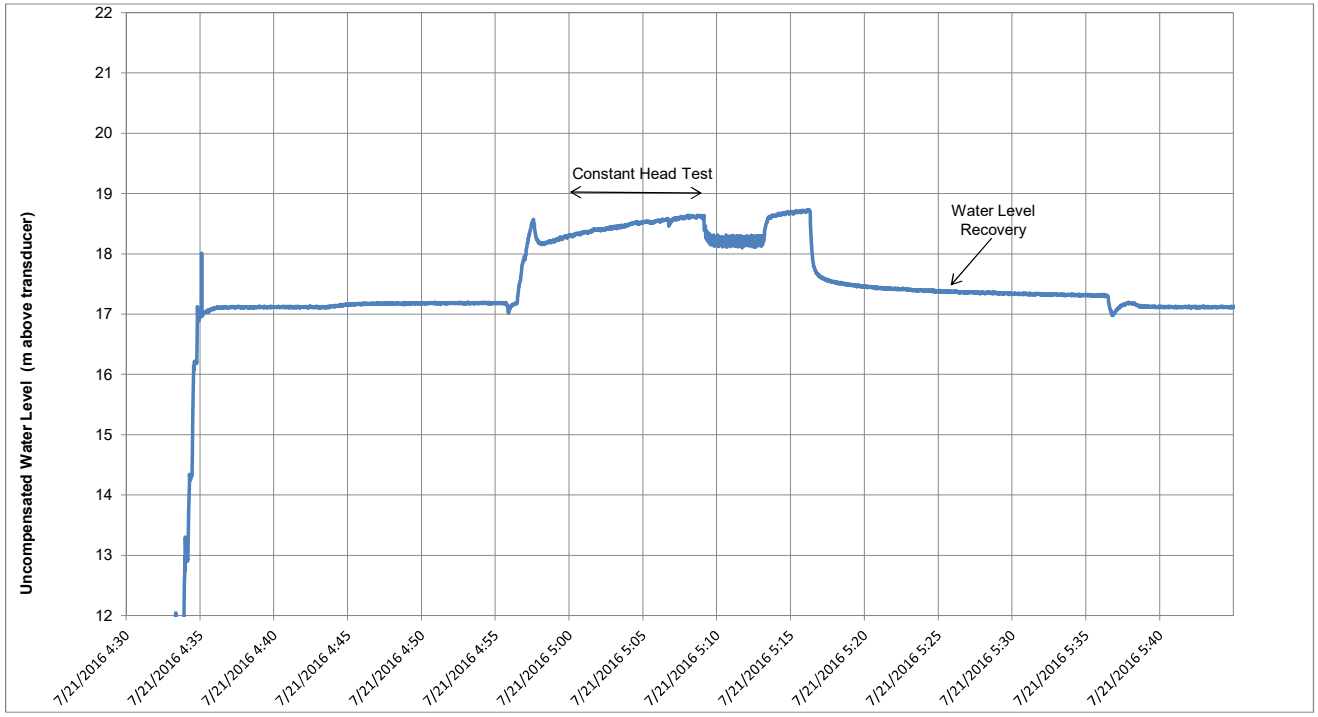
Print 10/20/16 11:02

Project No.	VA101-640/3		Drillhole	MW16-12D	
Field Technician	DJR		Test No.	1	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	8.2	m (Downhole from ground surface)
				8.2	m (Vertical from ground surface)
Test Date	21-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	5:00 AM	
Top of test interval	8.2	m along hole	Initial Water Level	17.3	m above transducer
Bottom of test interval	19.2	m along hole	Water Level During Testing	18.4	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	1.1	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	8E-06	m/s	Shape Factor, F	12.7	
Transmissivity, T	8E-05	m^2/s	Q	1.1E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m3. Started transducer at 4:14 AM, lowered packer tool at 4:33 AM,packer inflated at 4:36 AM, test starts at 5:00 AM and ran for 15 minutes (only first 10 minutes used in analysis because adjustments to flow meter led to unstable measurements at the end of test).

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-12D_CH01 8.2-19.2m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

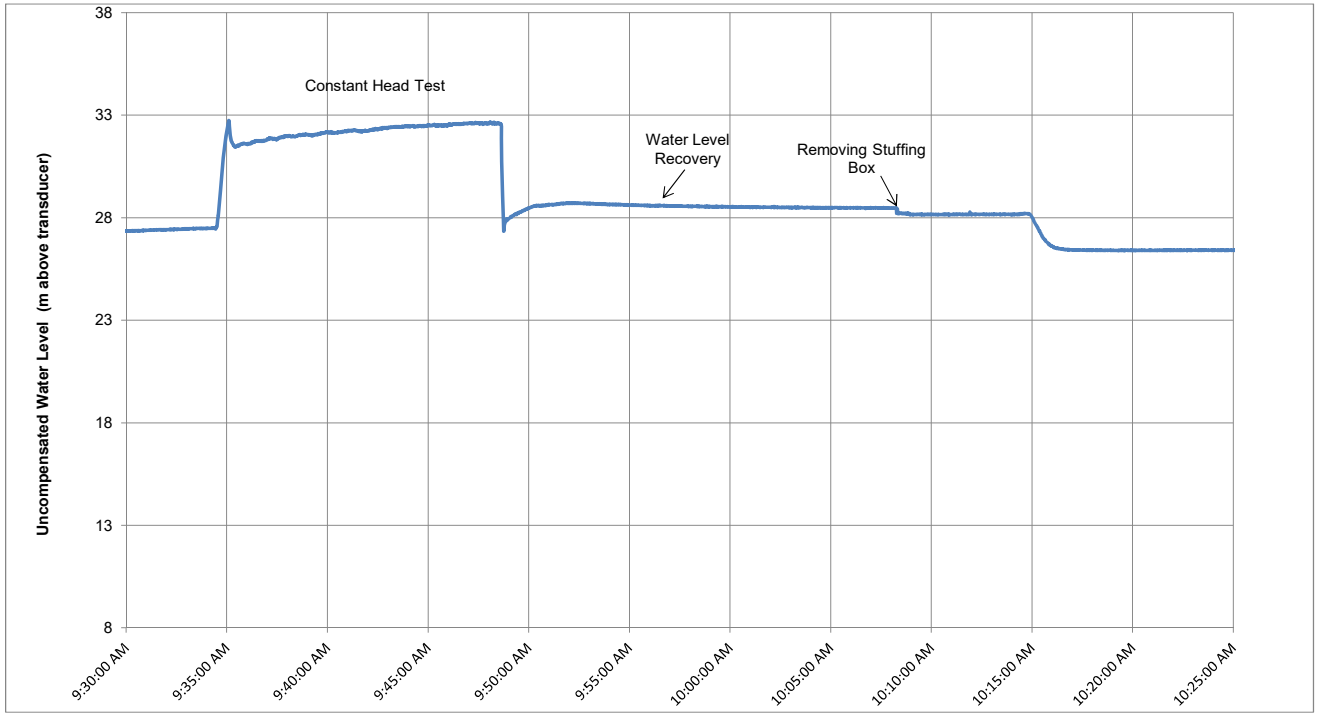
Print 10/20/16 11:03

Project No.	VA101-640/3		Drillhole	MW16-12D	
Field Technician	JAG		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	17.2	m (Downhole from ground surface)
				17.2	m (Vertical from ground surface)
Test Date	21-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	9:37 AM	
Top of test interval	17.2	m along hole	Initial Water Level	28.5	m above transducer
Bottom of test interval	28.2	m along hole	Water Level During Testing	32.3	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	3.8	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	Shape Factor, F	12.7	
Transmissivity, T	3E-05	m^2/s	Q	1.3E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Started transducer at 9:14 AM, lowered packer tool at 9:15 AM, inflated packer from 9:18 to 9:34 AM. Deflated at 10:15 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION USING CONSTANT HEAD METHOD

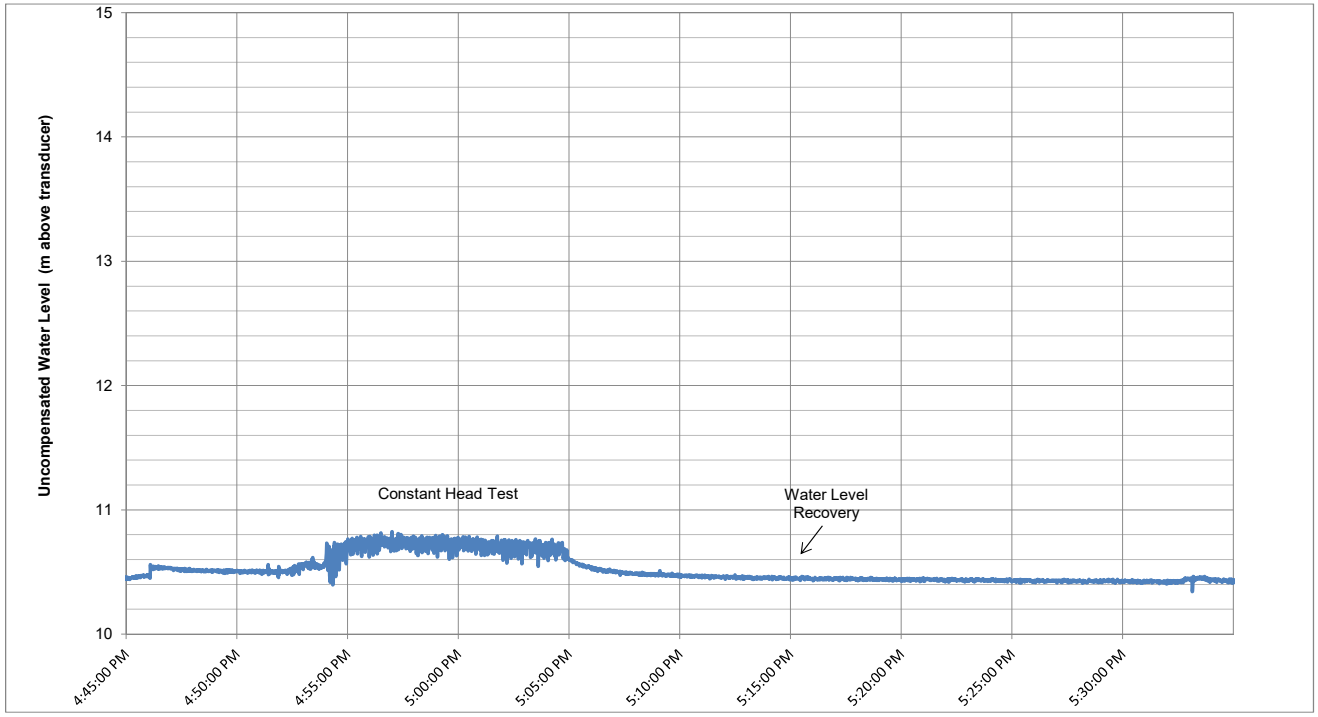
Print 10/20/16 11:04

Project No.	VA101-640/3		**Drillhole**	**MW16-13**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	3.5	m (Downhole from ground surface)
				3.5	m (Vertical from ground surface)
Test Date	6-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	4:55 PM	
Top of test interval	3.5	m along hole	**Initial Water Level**	10.4	m above transducer
Bottom of test interval	9.9	m along hole	**Water Level During Testing**	10.7	m above transducer
Test length, L	6.4	m along hole	**Head Maintained above Initial , Hc**	0.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	5E-05	m/s	**Shape Factor, F**	8.2	
Transmissivity, T	3E-04	m^2/s	**Q**	1.4E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Limited water available at site for test and therefore only a small head applied. Estimate of K value less certain because of the small head applied during test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

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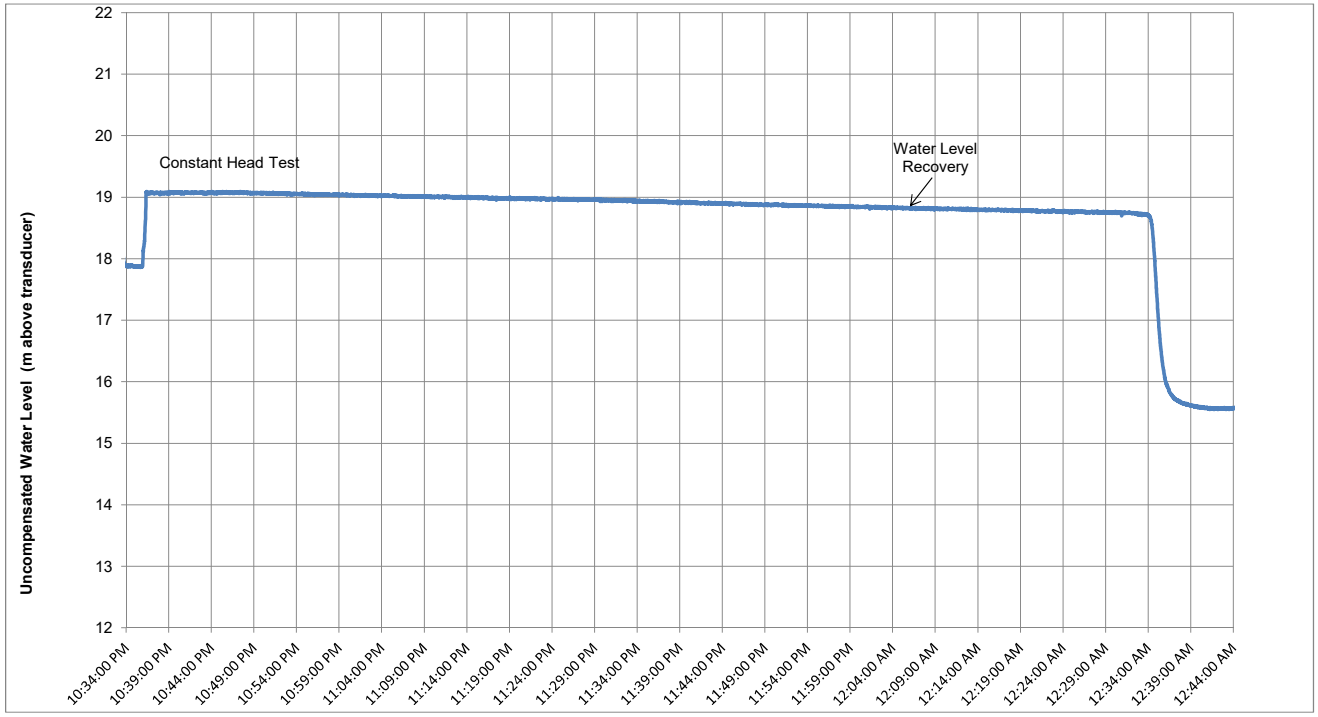
Project No.	VA101-640/3		Drillhole	MW16-13	
Field Technician	DJR		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	7.9	m (Downhole from ground surface)
				7.9	m (Vertical from ground surface)
Test Date	6-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	10:37 PM	
Top of test interval	7.9	m along hole	Initial Water Level	18.8	m above transducer
Bottom of test interval	18.9	m along hole	Water Level During Testing	19.1	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	0.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	9E-08	m/s	Shape Factor, F	12.7	
Transmissivity, T	1E-06	m^2/s	Q	3.2E-07	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Started transducer at 9:30 PM, lower packer at 9:34 PM, start inflation at 9:35 PM, and finish inflation at 9:55 PM. Attempted test using flow meter system from 10:12 to 10:33 PM (not shown on plot), but flows were too low to meausure with flow meter system. Constant head test from 10:37 PM to 10:47:30 PM by maintaining water level at top of rods using a 1 L container. Estimate of K value less certain because of small head applied during test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

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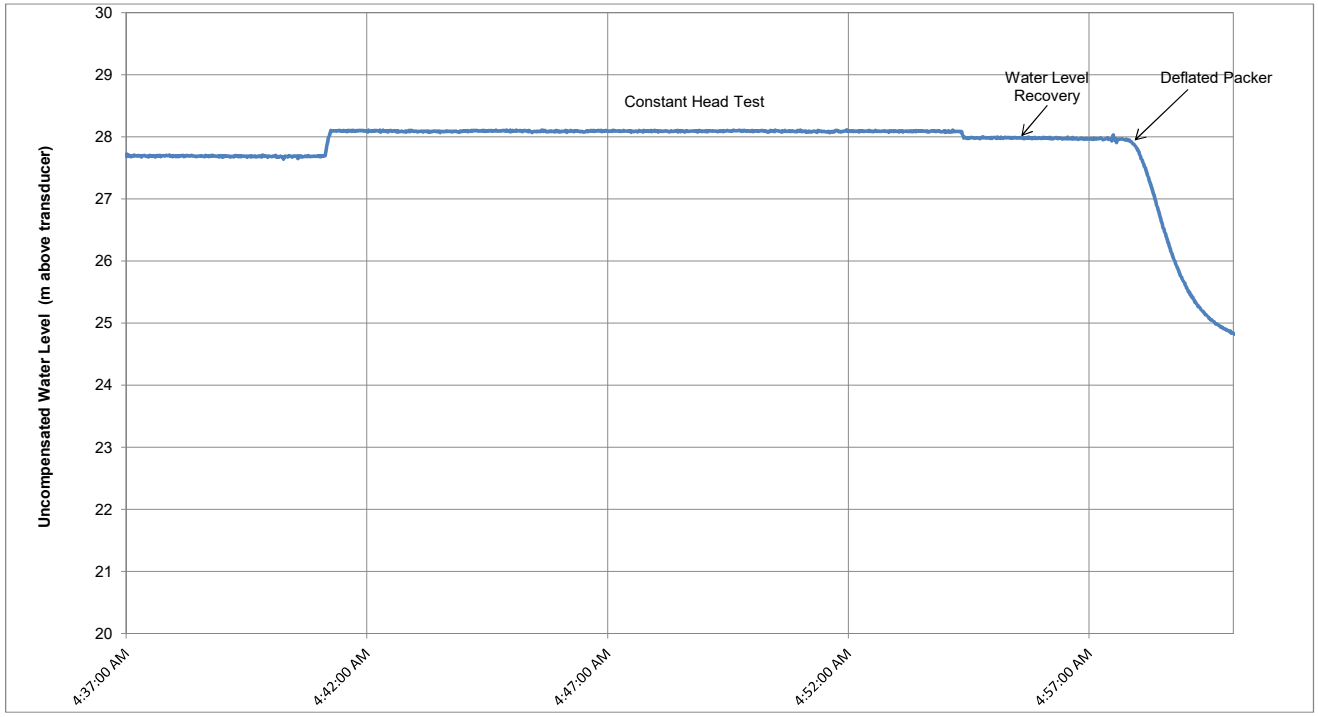
Project No.	VA101-640/3		**Drillhole**	**MW16-13**	
Field Technician	DJR		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	15.9	m (Downhole from ground surface)
				15.9	m (Vertical from ground surface)
Test Date	7-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	4:43 AM	
Top of test interval	15.9	m along hole	**Initial Water Level**	27.9	m above transducer
Bottom of test interval	27.9	m along hole	**Water Level During Testing**	28.1	m above transducer
Test length, L	12.0	m along hole	**Head Maintained above Initial , Hc**	0.2	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-07	m/s	**Shape Factor, F**	13.7	
Transmissivity, T	1E-06	m^2/s	**Q**	2.4E-07	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Packer lowered at 3:45 AM, inflation started at 3:50 AM and finished at 4:10 AM. Pressures between about 10 to 25 PSI applied prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container. Estimate of K value less certain because of small head applied during test.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

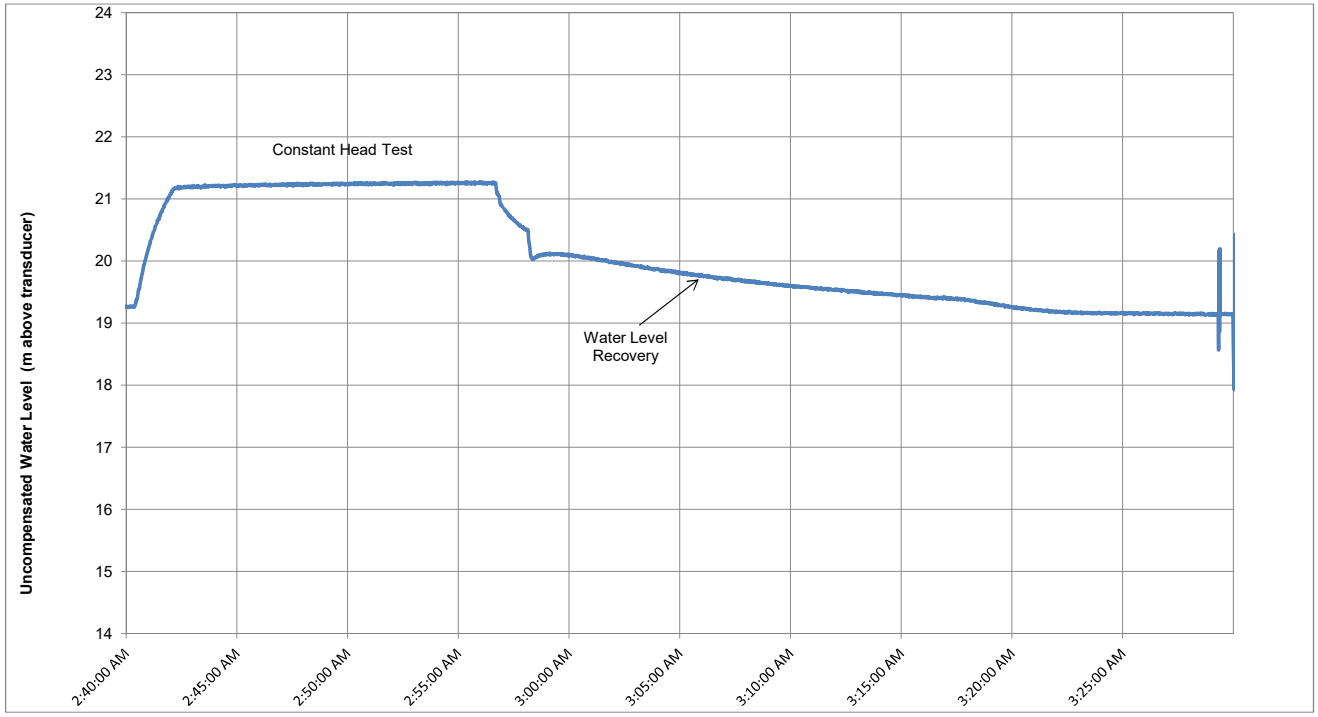
Print 10/20/16 11:44

Project No.	VA101-640/3		**Drillhole**	**MW16-14D**	
Field Technician	DJR		**Test No.**	1	
Analyst	DJR				
Monitoring Instrument Type	Transducer		**Transducer Position:**	13.2	m (Downhole from ground surface)
				13.2	m (Vertical from ground surface)
Test Date	25-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	2:45 AM	
Top of test interval	13.2	m along hole	**Initial Water Level**	19.3	m above transducer
Bottom of test interval	22.2	m along hole	**Water Level During Testing**	21.2	m above transducer
Test length, L	9.0	m along hole	**Head Maintained above Initial , Hc**	1.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	9E-06	m/s	**Shape Factor, F**	10.8	
Transmissivity, T	9E-05	m^2/s	**Q**	2.0E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered the packer tool at 2:20 AM, inflated packer from 2:26 - 2:40 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

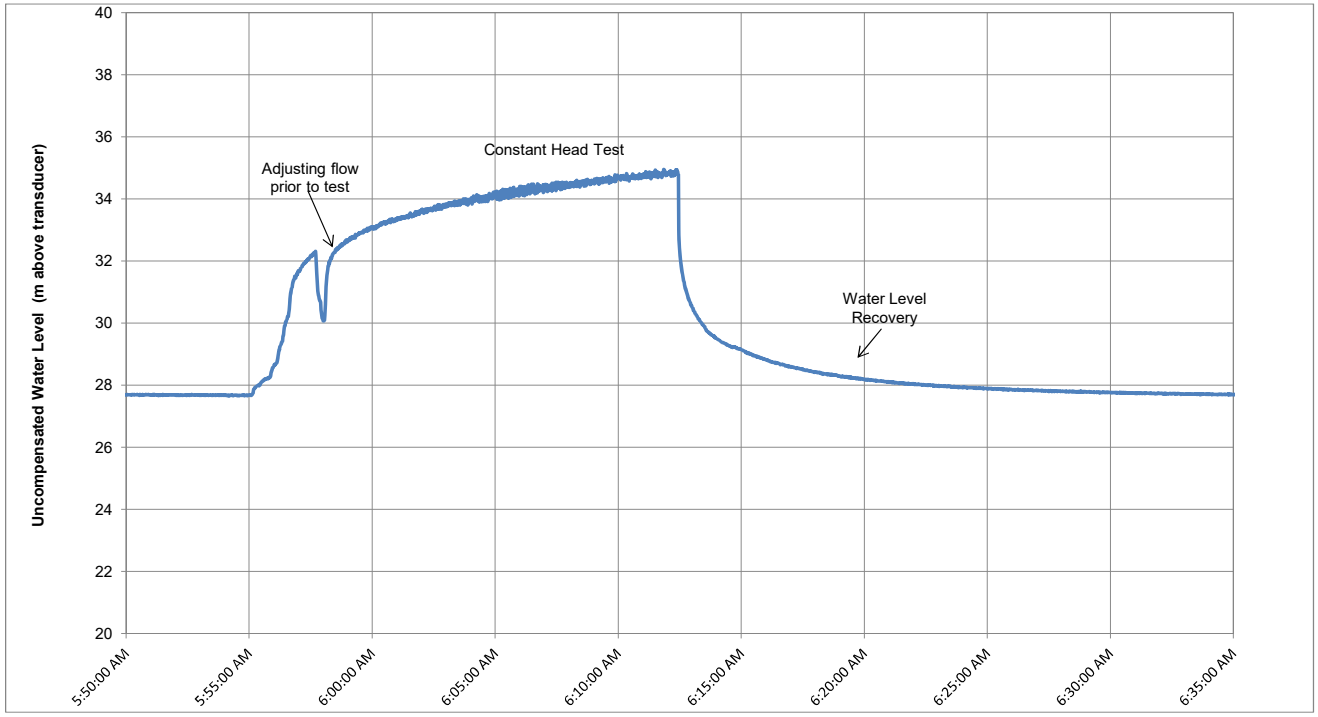
Print 10/20/16 11:45

Project No.	VA101-640/3		Drillhole	MW16-14D	
Field Technician	DJR		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	20.2	m (Downhole from ground surface)
				20.2	m (Vertical from ground surface)
Test Date	25-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	5:59 AM	
Top of test interval	20.2	m along hole	Initial Water Level	27.7	m above transducer
Bottom of test interval	31.2	m along hole	Water Level During Testing	34	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	6.3	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	Shape Factor, F	12.7	
Transmissivity, T	2E-04	m^2/s	Q	1.2E-03	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Transducer started at 5:33 AM, lowered packer tool at 5:40 AM, inflated packer from 5:42 to 5:53 AM, started constant head test at 5:59 AM which ran for 13 minutes. Deflated at 6:33 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

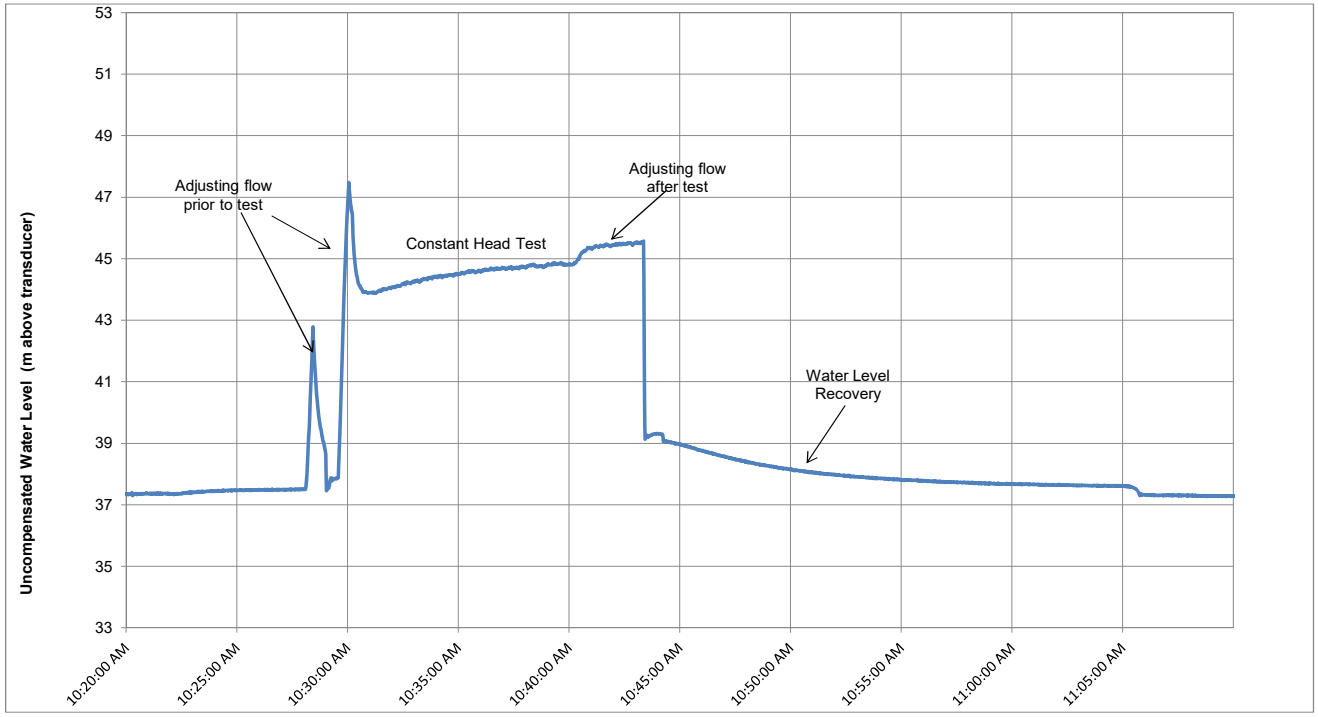
Print 10/20/16 11:45

Project No.	VA101-640/3		**Drillhole**	**MW16-14D**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	28.2	m (Downhole from ground surface)
				28.2	m (Vertical from ground surface)
Test Date	25-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	10:31 PM	
Top of test interval	28.2	m along hole	**Initial Water Level**	37.6	m above transducer
Bottom of test interval	40.2	m along hole	**Water Level During Testing**	44.6	m above transducer
Test length, L	12.0	m along hole	**Head Maintained above Initial , Hc**	7.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	2E-06	m/s	**Shape Factor, F**	13.7	
Transmissivity, T	2E-05	m^2/s	**Q**	1.5E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Packer lowered at 9:44 AM, packer inflated from 10:18 - 10:29 AM, started constant head test at 10:31 AM to 10:40 AM.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

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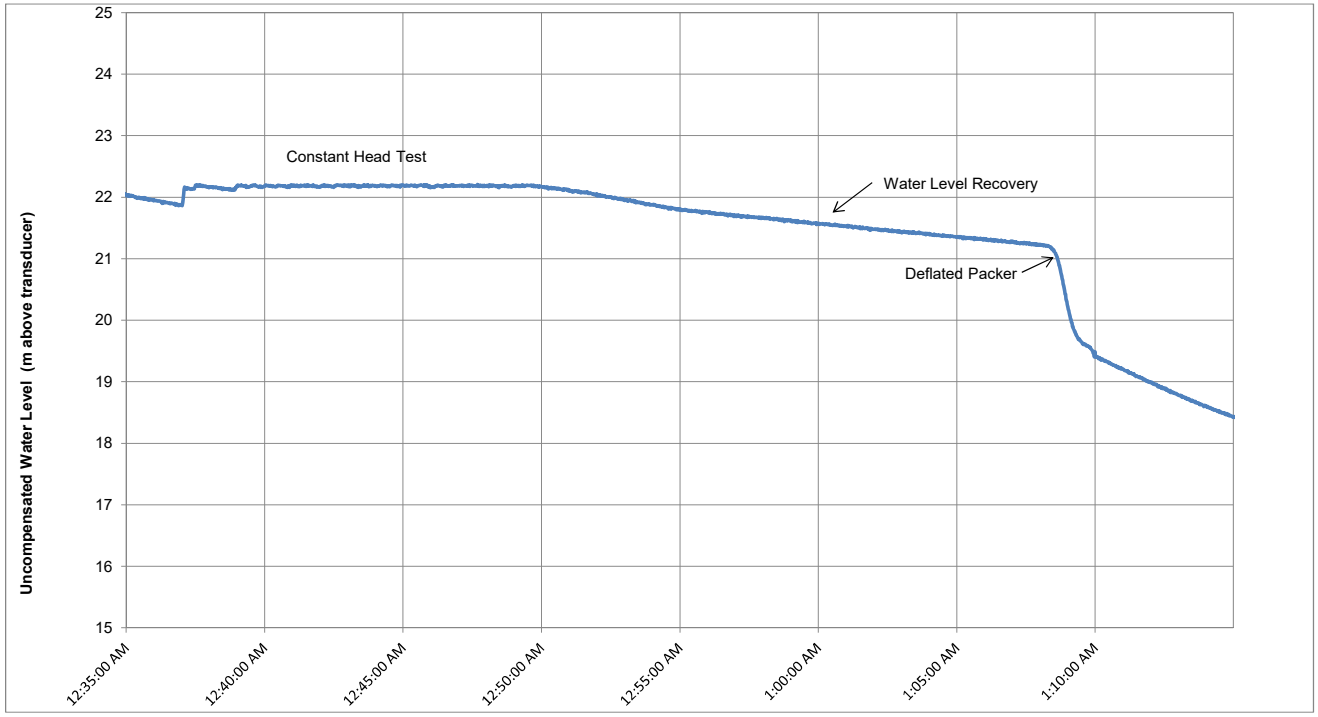
Project No.	VA101-640/3		**Drillhole**	**MW16-15D**	
Field Technician	DJR		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	10.2	m (Downhole from ground surface)
				10.2	m (Vertical from ground surface)
Test Date	4-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	4:42 PM	
Top of test interval	10.2	m along hole	**Initial Water Level**	21.2	m above transducer
Bottom of test interval	18.2	m along hole	**Water Level During Testing**	22.2	m above transducer
Test length, L	8.0	m along hole	**Head Maintained above Initial , Hc**	1.0	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	**Shape Factor, F**	9.8	
Transmissivity, T	3E-06	m^2/s	**Q**	4.2E-06	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Pressure of about 8 psi for 10 minutes, 50 and 80 PSI for less than 30 seconds (not shown on plot) were applied prior to constant head test during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at rop of rods using a 1 L container.

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REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

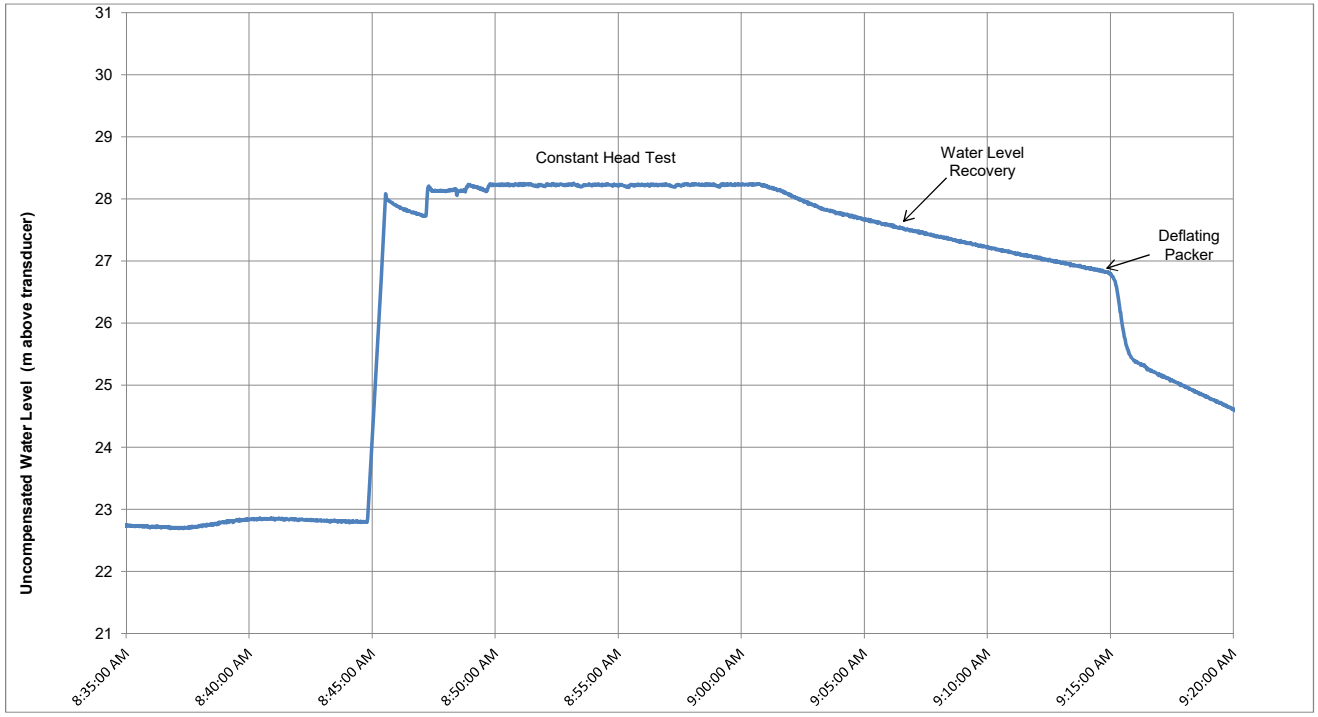
Print 10/20/16 11:46

Project No.	VA101-640/3		**Drillhole**	**MW16-15D**	
Field Technician	JAG		**Test No.**	2	
Analyst	DJR				
Monitoring Instrument Type	Transducer		**Transducer Position:**	16.2	m (Downhole from ground surface)
				16.2	m (Vertical from ground surface)
Test Date	5-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	8:50 AM	
Top of test interval	16.2	m along hole	**Initial Water Level**	26.8	m above transducer
Bottom of test interval	27.2	m along hole	**Water Level During Testing**	28.2	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	1.4	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	5E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	6E-06	m^2/s	**Q**	9.1E-06	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Water level maintained at top of rods using a 1 L measuring container during constant head test. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-15D_CH02 16.2-27.2m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

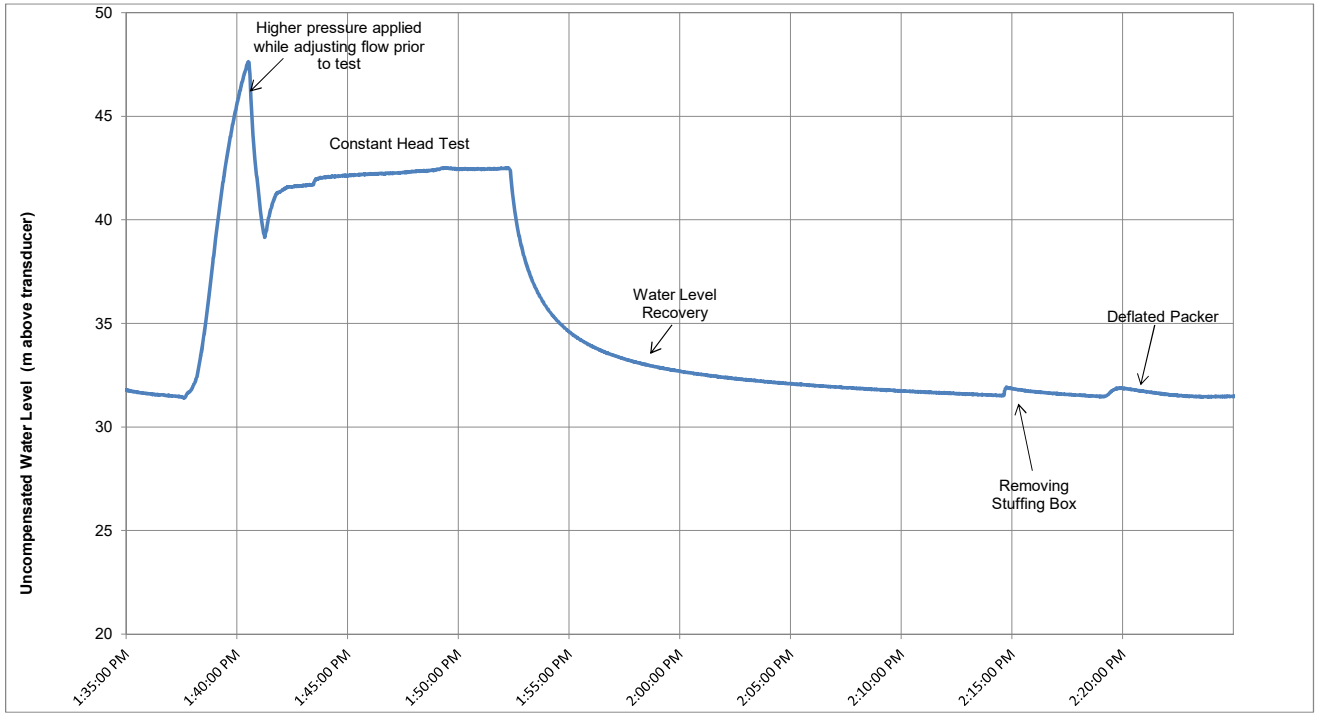
Print 10/20/16 11:47

Project No.	VA101-640/3		**Drillhole**	**MW16-15D**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	27.2	m (Downhole from ground surface)
				27.2	m (Vertical from ground surface)
Test Date	5-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	1:41 PM	
Top of test interval	27.2	m along hole	**Initial Water Level**	31.6	m above transducer
Bottom of test interval	42.2	m along hole	**Water Level During Testing**	42.0	m above transducer
Test length, L	15.0	m along hole	**Head Maintained above Initial , Hc**	10.5	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	2E-06	m/s	**Shape Factor, F**	16.4	
Transmissivity, T	2E-05	m^2/s	**Q**	2.7E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m3. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-15D_CH03 27.2-42.2m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

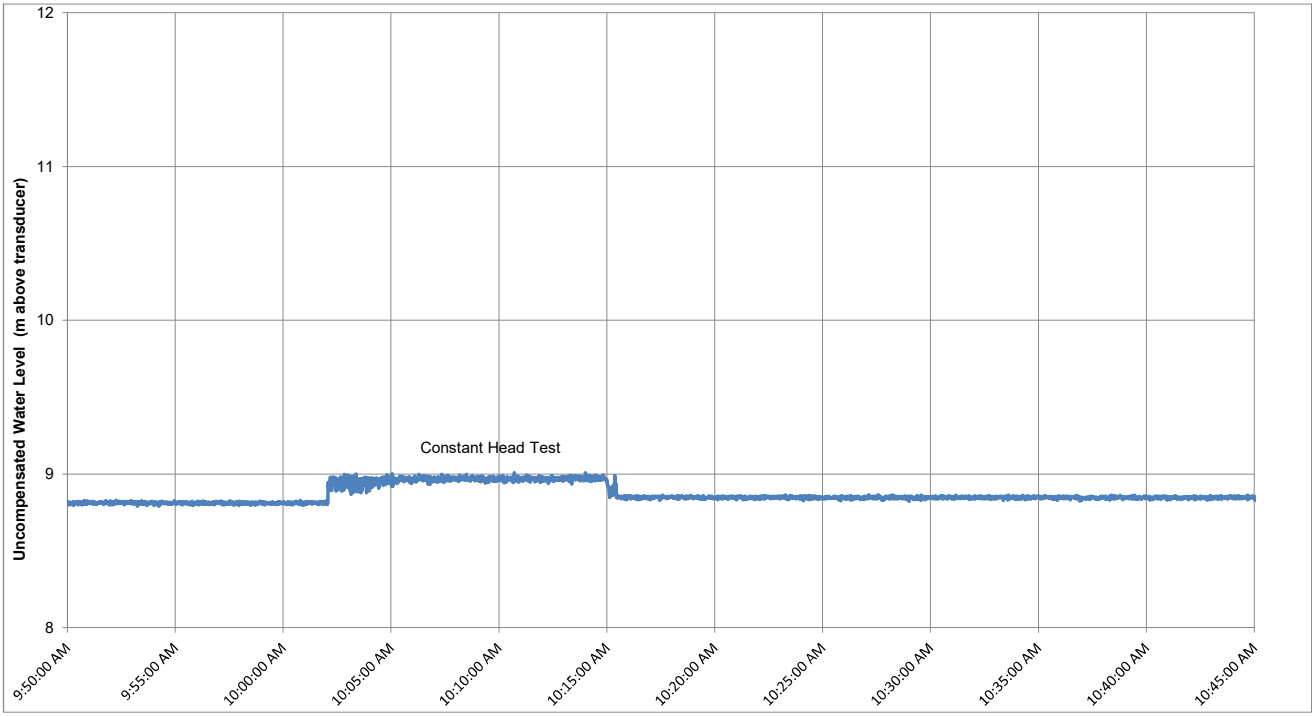
Print 10/20/16 11:47

Project No.	VA101-640/3		**Drillhole**	**MW16-16**	
Field Technician	JAG		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	6.0	m (Downhole from ground surface)
				6.0	m (Vertical from ground surface)
Test Date	19-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	10:03 AM	
Top of test interval	6.0	m along hole	**Initial Water Level**	-3.7	m above transducer
Bottom of test interval	13.3	m along hole	**Compensated Water Level During Test**	0.3	m above transducer
Test length, L	7.3	m along hole	**Head Maintained above Initial , Hc**	3.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	5E-06	m/s	**Shape Factor, F**	9.1	
Transmissivity, T	4E-05	m^2/s	**Q**	1.9E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Transducer started at 8:38 AM, lowered at 9:45 AM, inflated from 9:50 - 10:01 AM, started constant head test at 10:03 AM which ran for 12 minutes, deflated at 10:36 AM, and removed at 11:00 AM. Water level at or below transducer (top of test interval) based on plotted transducer data. Initial water level assumed to be at the mid-point of the test interval for the analysis. K estimate for qualitative purposes only as initial water level was assumed and methodology/analysis valid only for saturated conditions.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-16_CH01 6.0-13.3m_not_submerged.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

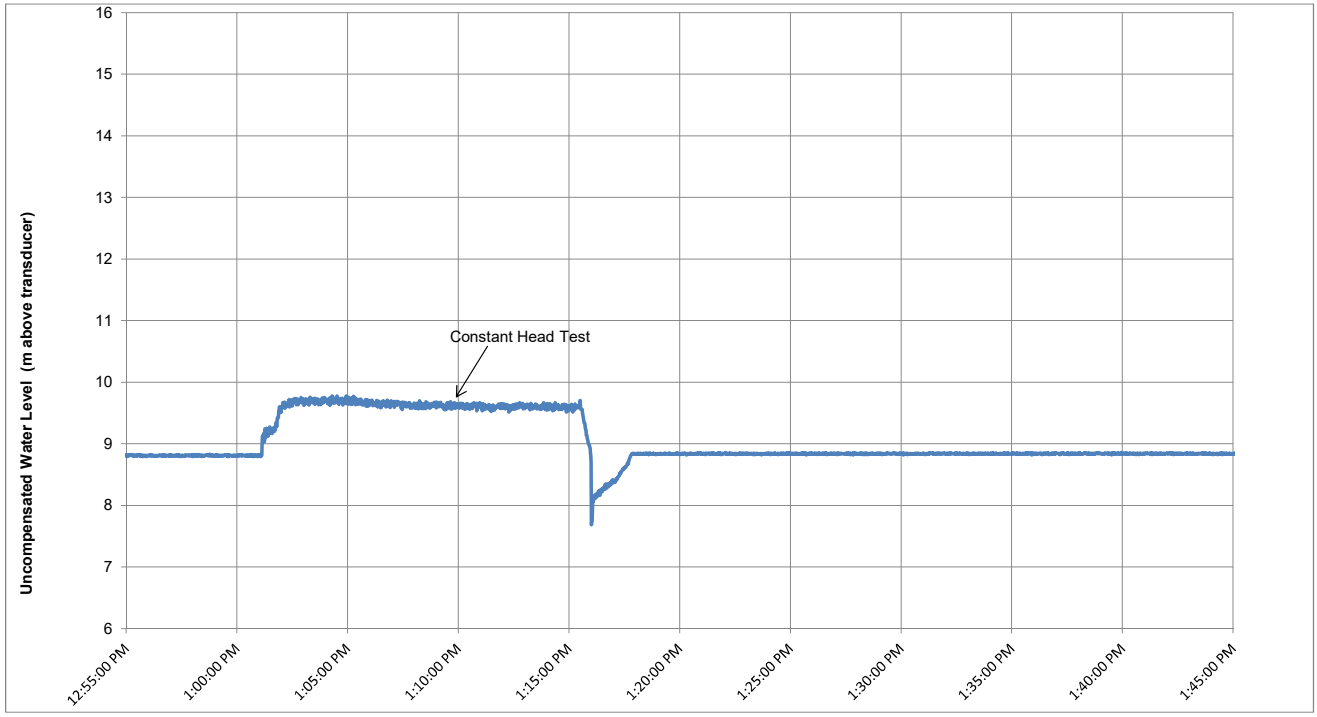
Print 10/20/16 11:48

Project No.	VA101-640/3		Drillhole	MW16-16	
Field Technician	JAG		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	11.3	m (Downhole from ground surface)
				11.3	m (Vertical from ground surface)
Test Date	19-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	1:04 PM	
Top of test interval	11.3	m along hole	Initial Water Level	-5.5	m above transducer
Bottom of test interval	22.3	m along hole	Compensated Water Level During Test	0.9	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	6.4	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-05	m/s	Shape Factor, F	12.7	
Transmissivity, T	1E-04	m^2/s	Q	8.1E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Lowered packer at 12:45 PM, inflated from 12:48 to 1:02 PM, started constant head test at 1:04 PM which ran for 12 minutes. Water level at or below transducer (top of test interval) based on plotted transducer data. Initial water level assumed to be at the mid-point of the test interval for the analysis. K estimate for qualitative purposes only as initial water level was assumed and methodology/analysis valid only for saturated conditions.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-16_CH02 11.3-22.3m_not_submerged.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

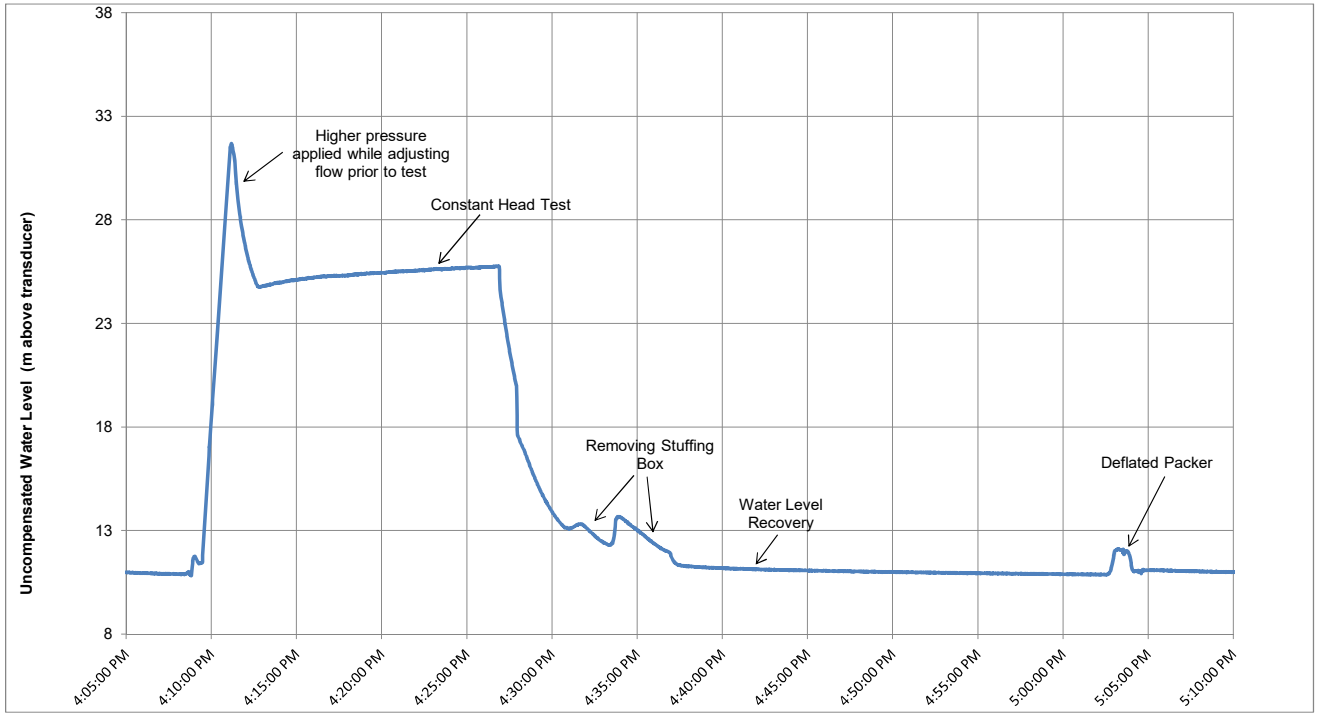
Print 10/20/16 11:49

Project No.	VA101-640/3		**Drillhole**	**MW16-16**	
Field Technician	JAG		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	20.3	m (Downhole from ground surface)
				20.3	m (Vertical from ground surface)
Test Date	19-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	4:11 PM	
Top of test interval	20.3	m along hole	**Initial Water Level**	10.9	m above transducer
Bottom of test interval	31.3	m along hole	**Water Level During Testing**	25.4	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	14.5	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	1E-06	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	1E-05	m^2/s	**Q**	2.4E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Inflated packer from 3:50 - 4:08 PM. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-16_CH03 20.3-31.3m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

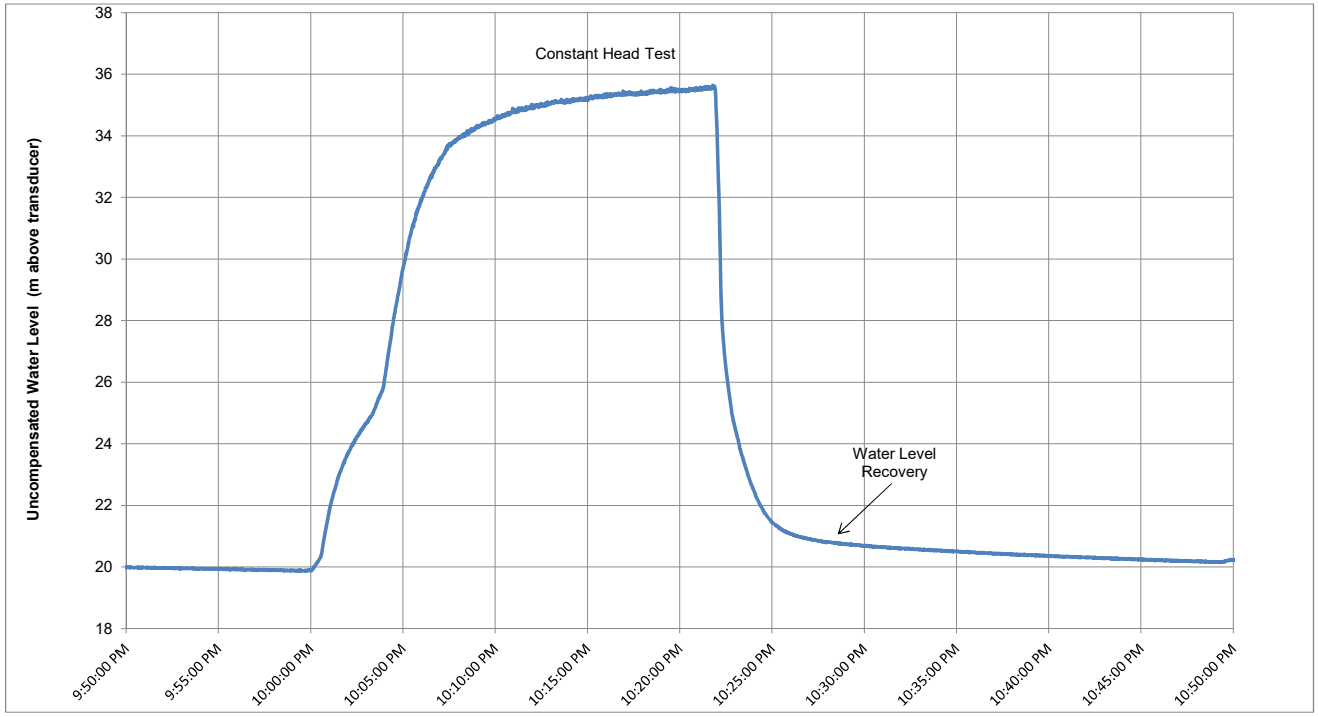
Print 10/20/16 11:49

Project No.	VA101-640/3		Drillhole	MW16-16	
Field Technician	DJR		Test No.	4	
Analyst	DJR				
Monitoring Instrument Type	Transducer		Transducer Position:	29.3	m (Downhole from ground surface)
				29.3	m (Vertical from ground surface)
Test Date	19-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	10:06 PM	
Top of test interval	29.3	m along hole	Initial Water Level	20.1	m above transducer
Bottom of test interval	40.3	m along hole	Water Level During Testing	35.3	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	15.2	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	3E-06	m/s	Shape Factor, F	12.7	
Transmissivity, T	3E-05	m^2/s	Q	5.2E-04	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Transducer started at 9:22 PM, lowered at 9:25 PM, inflated from 9:30-9:55 PM.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-16_CH04 29.3-40.3m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

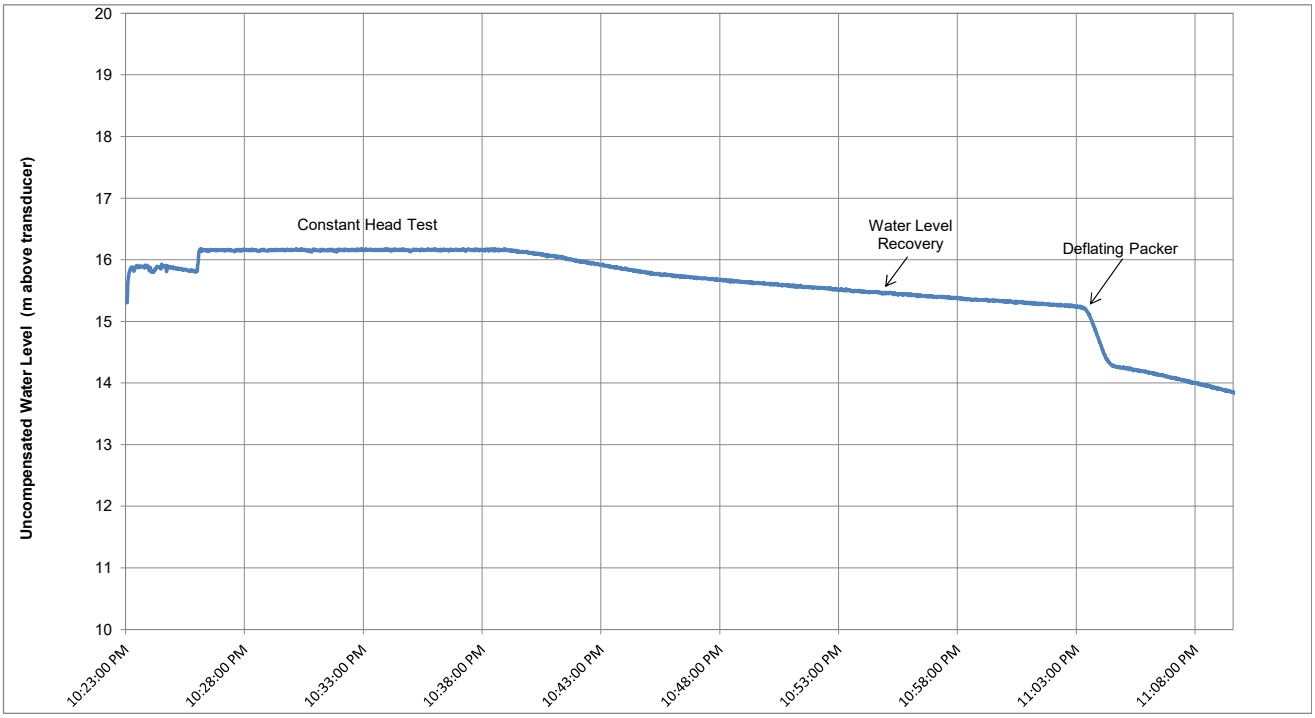
Print 10/20/16 11:49

Project No.	VA101-640/3		**Drillhole**	**MW16-17**	
Field Technician	DJR		**Test No.**	1	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	5.1	m (Downhole from ground surface)
				5.1	m (Vertical from ground surface)
Test Date	7-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	10:26 PM	
Top of test interval	5.1	m along hole	**Initial Water Level**	15.3	m above transducer
Bottom of test interval	13.1	m along hole	**Water Level During Testing**	16.2	m above transducer
Test length, L	8.0	m along hole	**Head Maintained above Initial , Hc**	0.9	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	4E-07	m/s	**Shape Factor, F**	9.8	
Transmissivity, T	4E-06	m^2/s	**Q**	3.8E-06	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Packer lowered at 21:50, begin and end inflation at 21:52 and 22:05 respectively. Pressure of ~65 PSI applied for less than 30 seconds prior to constant head test (not shown on plot) during attempt to use flow system to inject water for testing. Injected flows too low to measure using flow system and instead water level maintained at top of rods using a 1 L container. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-17_CH01 5.1-13.1m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

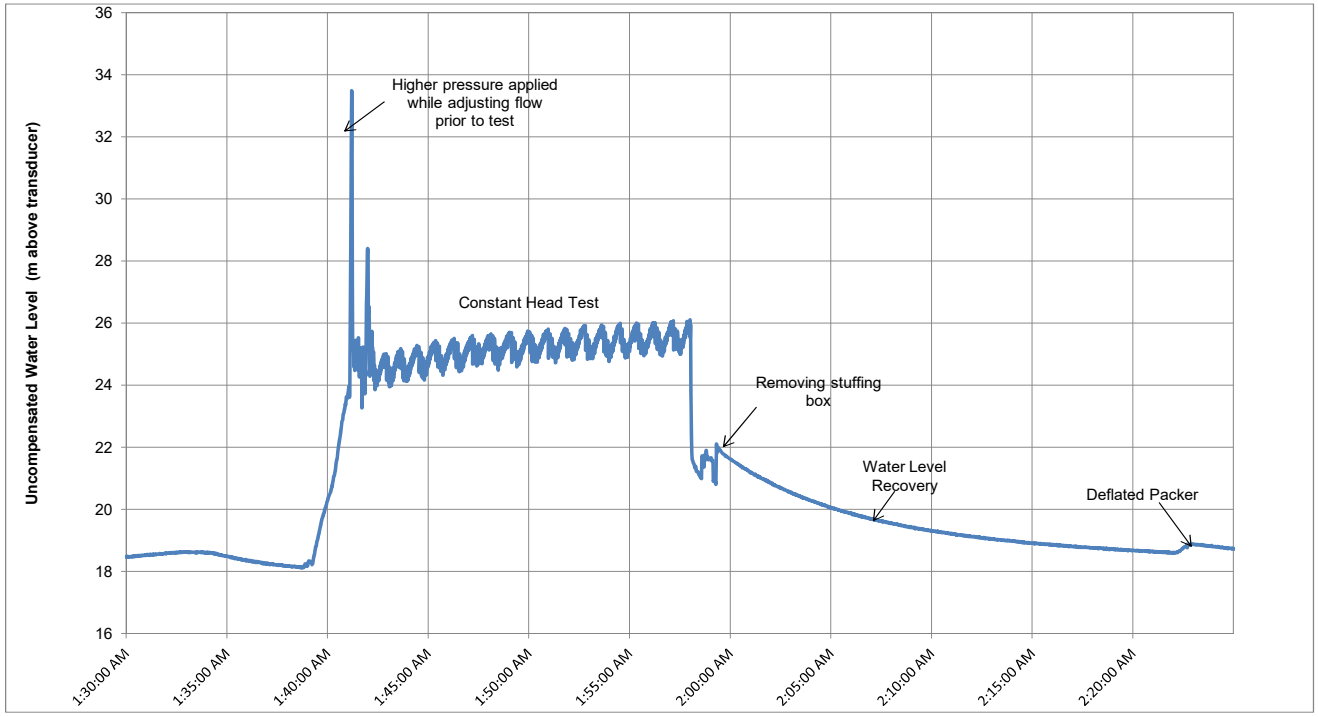
Print 10/20/16 11:50

Project No.	VA101-640/3		Drillhole	MW16-17	
Field Technician	DJR		Test No.	2	
Analyst	JAG				
Monitoring Instrument Type	Transducer		Transducer Position:	11.1	m (Downhole from ground surface)
				11.1	m (Vertical from ground surface)
Test Date	8-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	Test Start Time	1:43 AM	
Top of test interval	11.1	m along hole	Initial Water Level	18.7	m above transducer
Bottom of test interval	22.1	m along hole	Water Level During Testing	25.2	m above transducer
Test length, L	11.0	m along hole	Head Maintained above Initial , Hc	6.6	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_c}$$

$$F = \frac{2\pi L}{\ln(2L/D)}, \quad \text{for } L > 4D$$

Hydraulic Conductivity, K	7E-07	m/s	Shape Factor, F	12.7	
Transmissivity, T	8E-06	m^2/s	Q	6.1E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 1:22 AM and lower packer tool down hole at 1:25 AM. Initial water level estimated from water level recovery after the test.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-17_CH02 11.1-22.1m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

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BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

HYDRAULIC CONDUCTIVITY CALCULATION
USING CONSTANT HEAD METHOD

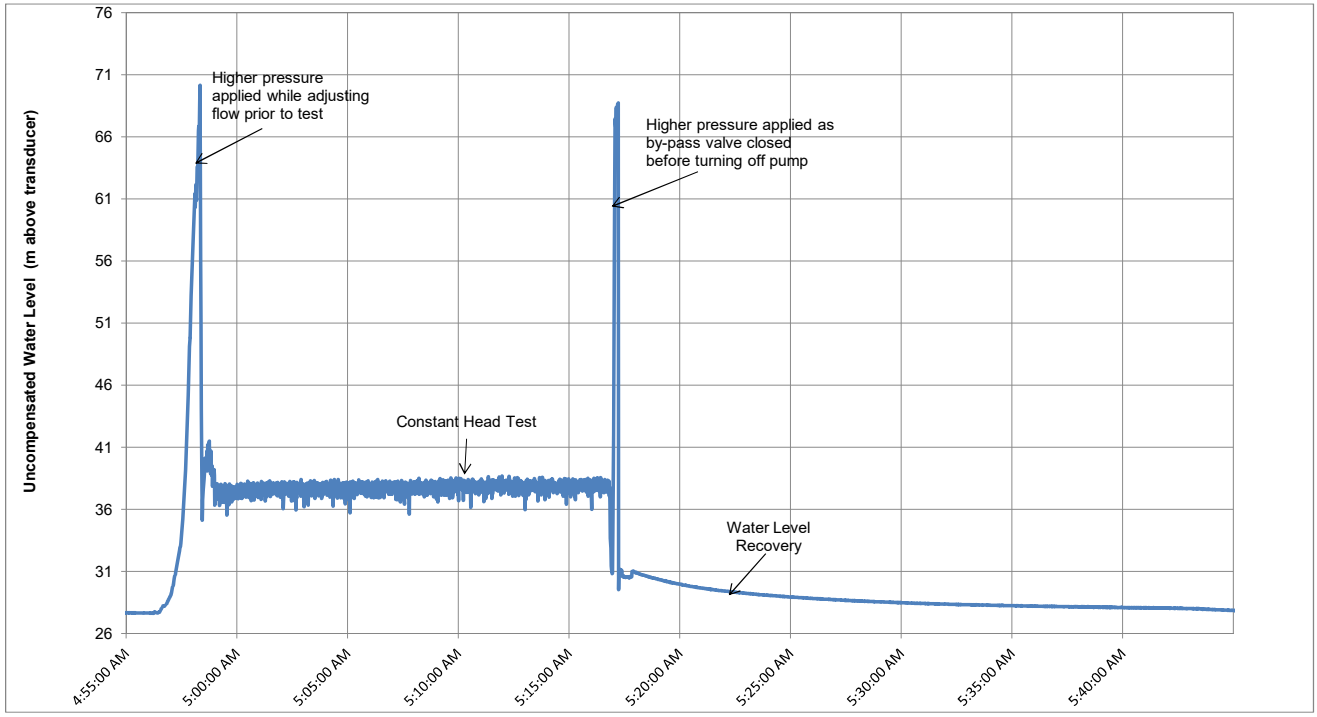
Print 10/20/16 11:50

Project No.	VA101-640/3		**Drillhole**	**MW16-17**	
Field Technician	DJR		**Test No.**	3	
Analyst	JAG				
Monitoring Instrument Type	Transducer		**Transducer Position:**	20.1	m (Downhole from ground surface)
				20.1	m (Vertical from ground surface)
Test Date	8-Jul-16				
Drill-hole diameter, D	HQ3	0.096 m			
Diameter of drill pipe, d	HQ3	0.078 m	**Test Start Time**	5:00 AM	
Top of test interval	20.1	m along hole	**Initial Water Level**	28	m above transducer
Bottom of test interval	31.1	m along hole	**Water Level During Testing**	38	m above transducer
Test length, L	11.0	m along hole	**Head Maintained above Initial , Hc**	10	m
Drill-hole angle	90	degrees			

$$K = \frac{Q}{FH_C}$$

$$F = \frac{2\pi L}{ln(2L/D)}, \quad for\ L > 4D$$

Hydraulic Conductivity, K	7E-07	m/s	**Shape Factor, F**	12.7	
Transmissivity, T	8E-06	m^2/s	**Q**	9.2E-05	m^3/s



References:

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50

Hoek, E., Bray, J., 1981. Rock Slope Engineering, CRC Press, pp 368

TEST COMMENTS:

Drillhole flushed for 10 minutes prior to test. Test conducted using a flowmeter in m^3. Start transducer at 4:35 AM, lower packer at 4:37 AM, start nitrogen at 4:40 AM, start constant head test at 5:00 AM for 16 minutes. Removed packer at 5:55 AM.

M:\1\01\00640\03\A\Data\3 - Reporting\Hydraulic Conductivity Testing\Rev 0\[MW16-17_CH03 20.1-31.1m_complete.xlsx]CH Test 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	CHS

APPENDIX E2

MONITORING WELL COMPLETION LOGS

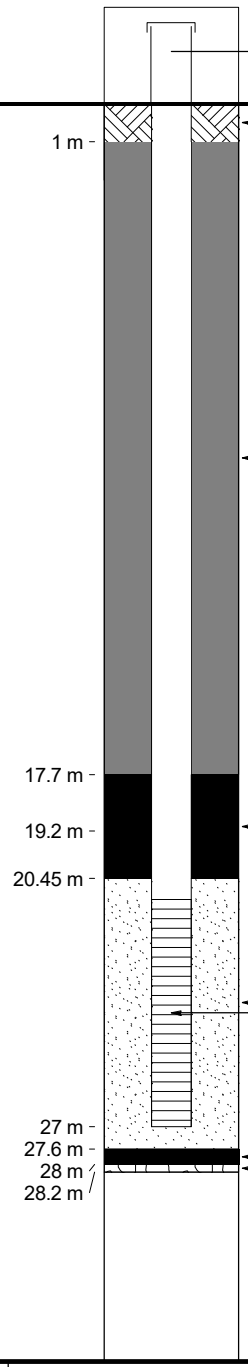
(Pages E2-1 to E2-9)

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 415,278 E , 6,816,530 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-12D
Drill Type: Tech 5000 Diamond Drill
Total Depth: 28.2m
Elevation: 1369 m
Inclination: -90

Page: 1 of 1
Date Started: 20 Jul 16
Date Completed: 21 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	
0			Topsoil (OVBN) Dark brown, moist, containing sticks and roots. (Topsoil)
			CLAY (OVBN) CLAY, some gravel, gap graded, low plasticity, brownish grey, organic scent, very soft to soft, massive, moist to wet.
5	1365		CLAY and GRAVEL (OVBN) CLAY and GRAVEL, some silt, well graded, grey, compact, massive, wet.
10	1360		Mafic Volcaniclastic (MAFt) Light to medium grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh, trace clay infill. Biotite along foliation.
	1355		Mudstone (MDU) Light to medium grey, fine grained, foliated, strong, moderately fractured. Fresh, with trace clay infill.
15			Mafic Intrusion (MAFi) Light to medium grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh, with clay infill. Interbedded with carbonaceous mudstone. With sulphide and quartz veinlets.
20	1350		
			Mudstone (MDU) Medium to dark grey, fine grained, foliated, strong. Moderately fractured, fresh, minor clay infill and dissolution vugs along fractures. Weakly magnetic, with disseminated sulphides.
25	1345		
			Mafic Volcaniclastic (MAFt) Light to medium grey, fine to medium grained, foliated, strong. Moderately fractured, fresh, no infill. Mafic tuff with minor interbedded carbonaceous mudstone. With calcite veinlets and small (< 1cm) dissolution vugs. Disseminated sulphides throughout.
30	1340		



NOTES

8.2 - 19.2 m: Constant Head Test - K = 8E-06 m/s

17.2 - 28.2 m: Constant Head Test - K = 3E-06 m/s

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 21.0-27.0 m

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Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-1

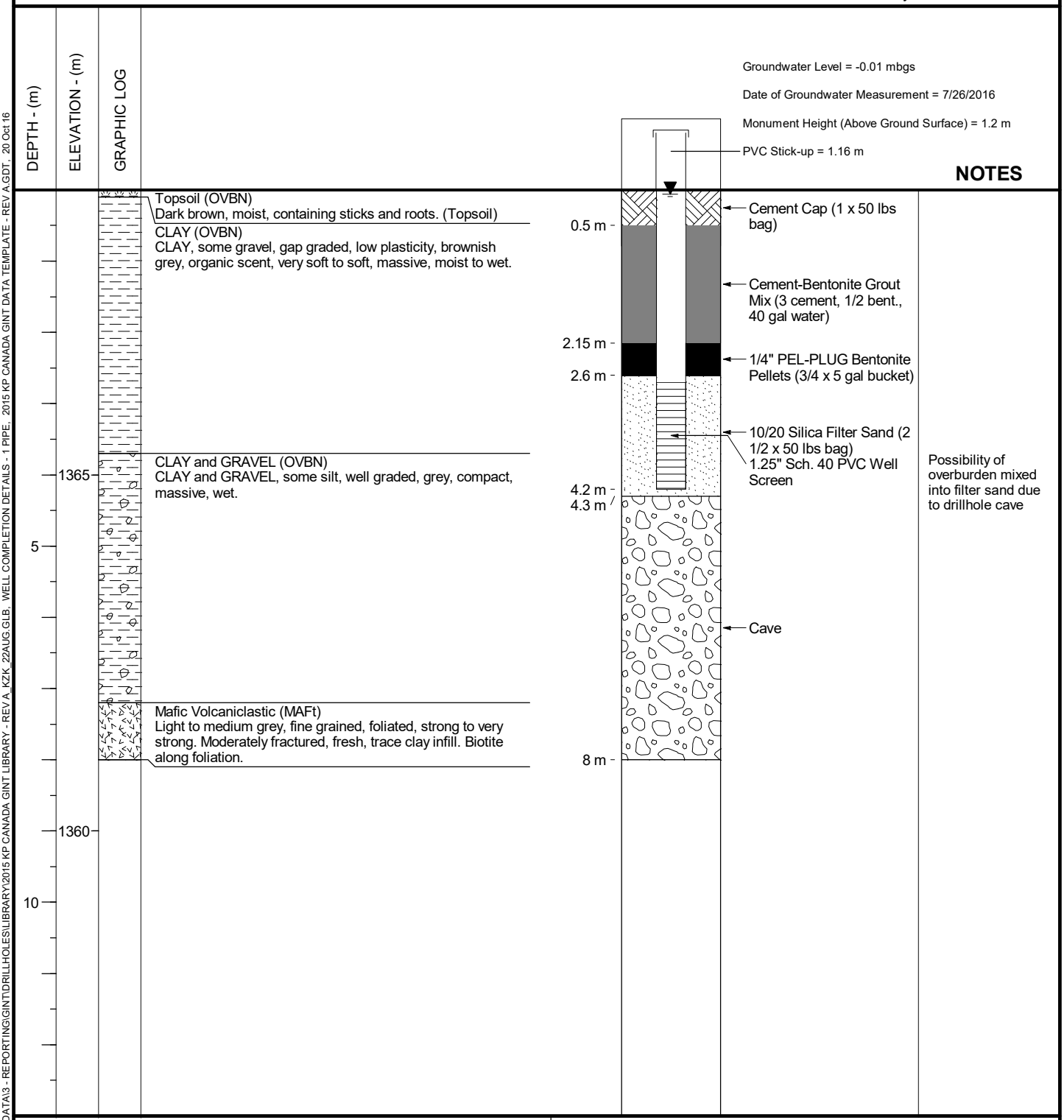
File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 415,274 E , 6,816,530 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-12S
Drill Type: Tech 5000 Diamond Drill
Total Depth: 8.0m
Elevation: 1369 m
Inclination: -90

Page: 1 of 1
Date Started: 21 Jul 16
Date Completed: 22 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG



GENERAL REMARKS:

Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 2.7 - 4.2 m.

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Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-2

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

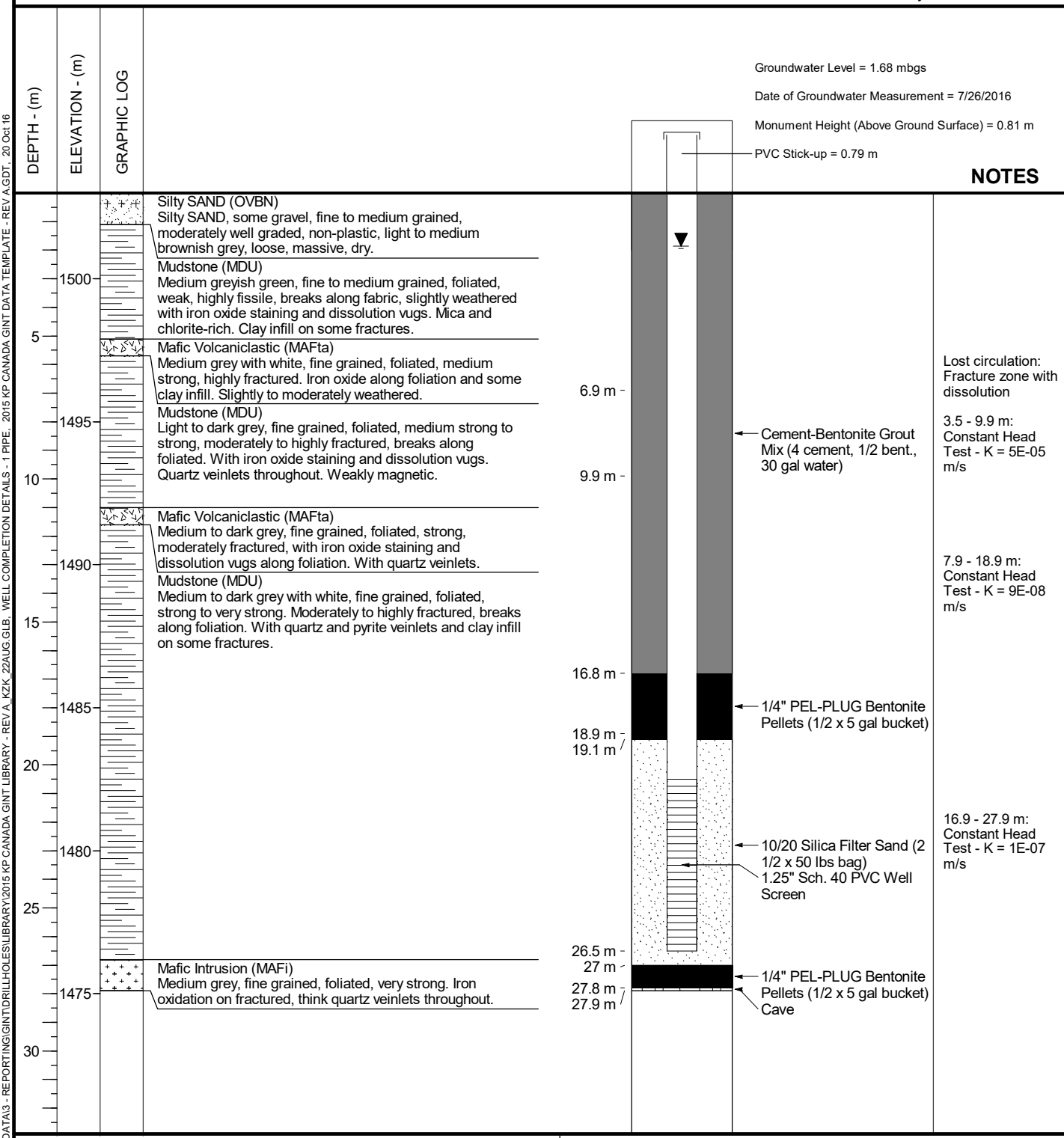
Appendix: E2

File:M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,011 E , 6,817,774 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-13
Drill Type: Tech 5000 Diamond Drill
Total Depth: 27.9m
Elevation: 1503 m
Inclination: -90

Page: 1 of 1
Date Started: 06 Jul 16
Date Completed: 07 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG



GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 27.0 - 19.1 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-3

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

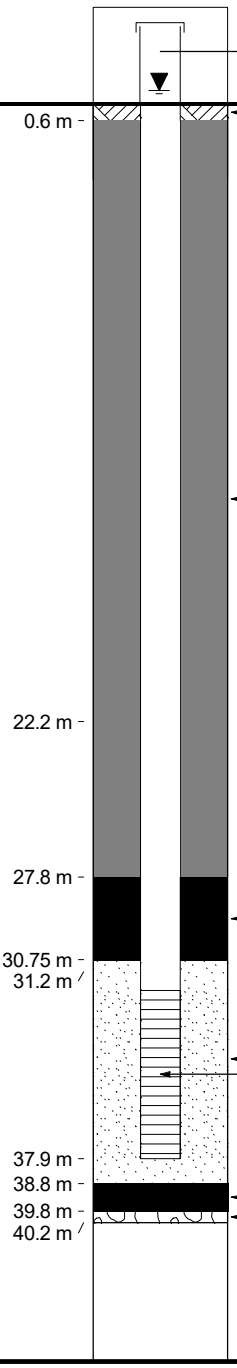
File:M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\ADATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,779 E , 6,818,386 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-14D
Drill Type: Tech 5000 Diamond Drill
Total Depth: 40.2m
Elevation: 1342 m
Inclination: -90

Page: 1 of 1
Date Started: 24 Jul 16
Date Completed: 25 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	
0	1340		Topsoil (OVBN) SILT, some sand, fine grained, poorly graded, medium plasticity, dark brown, soft, massive, wet. (Topsoil)
			Sandy SILT (OVBN) Sandy SILT, some gravel, fine to coarse grained, angular, moderately well graded, low plasticity, medium greyish brown, stiff, massive, moist to wet.
5	1335		CLAY and SILT (OVBN) CLAY and SILT, some gravel, trace fine sand, fine grained, poorly graded, medium plasticity, light to medium brown, stiff, laminated, wet.
			Mafic Volcaniclastic (MAFt) Greenish grey, fine grained, foliated, medium strong to strong. Highly fractured broken and rubble zones, moderately weathered with iron oxide infill.
10	1330		
			Mudstone (MDU) Medium to dark grey, fine grained, foliated, medium strong to strong, highly fractured broken zones, thick clay infill on some fractures. Slightly to moderately weathered with iron oxide staining and dissolution along fractures.
15	1325		Mafic Volcaniclastic (MAFt) Greenish grey, fine grained, foliated, medium strong, highly fractured broken zone, with dissolution vugs.
			Mudstone (MDU) Medium to dark grey, fine grained, foliated, strong, highly fractured, breaks along foliation. With quartz veinlets.
20	1320		Mafic Volcaniclastic (MAFt) Medium greenish grey, fine grained, foliated, strong to very strong. Moderately fractured, fresh to slightly weathered with iron oxide staining and clay infill on some fractures.
25	1315		
			Mudstone (MDU) Medium to dark grey, fine grained, foliated, weak to medium strong, moderately to highly fractured with broken and rubble zones, some clay-filled zones. With calcite veinlets and dissolution along the foliation. Fresh to slightly weathered.
30	1310		
35	1305		Mafic Volcaniclastic (MAFta) Medium greenish grey, fine to medium grained, strong, foliated. Minor fracturing, fresh. With chlorite alteration and fine calcite veinlets.
			Mudstone (MDU) Dark grey with white, fine grained, weak to medium strong, foliated. Highly fractured, fresh to slightly weathered, with dissolution along foliation. Quartz and calcite veinlets throughout. Chlorite altered.
40	1300		



NOTES

13.2 - 22.2 m: Constant Head Test - K = 9E-06 m/s

20.2 - 31.2 m: Constant Head Test - K = 1E-05 m/s

28.2 - 40.2 m: Constant Head Test - K = 2E-06 m/s

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 31.85-37.85 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-4

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

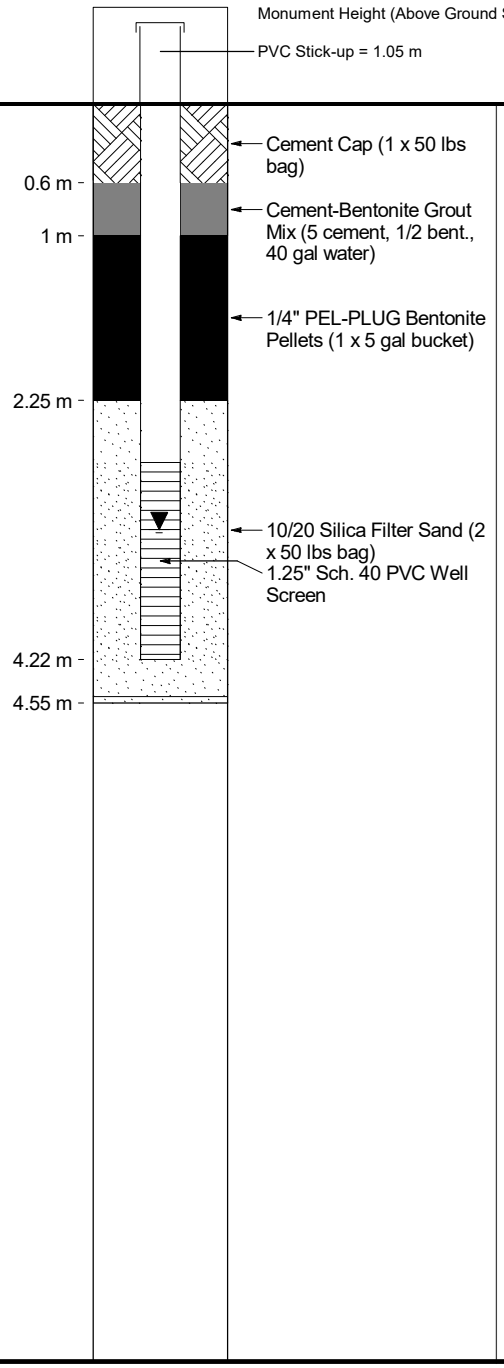
Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Hy-Tech Drilling
Location: Class A Storage Facility
Coordinates: 414,780 E , 6,818,383 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-14S
Drill Type: Tech 5000 Diamond Drill
Total Depth: 4.5m
Elevation: 1341 m
Inclination: -90

Page: 1 of 1
Date Started: 25 Jul 16
Date Completed: 25 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG	
			Topsoil (OVBN) SILT, some sand, fine grained, poorly graded, medium plasticity, dark brown, soft, massive, wet. (Topsoil)
	1340		Sandy SILT (OVBN) Sandy SILT, some gravel, fine to coarse grained, angular, moderately well graded, low plasticity, medium greyish brown, stiff, massive, moist to wet.
			CLAY and SILT (OVBN) CLAY and SILT, some gravel, trace fine sand, fine grained, poorly graded, medium plasticity, light to medium brown, stiff, laminated, wet.
5	1335		



NOTES

GENERAL REMARKS:

Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 2.72-4.22 m

BMC MINERALS (NO.1) LTD.
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Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-5

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

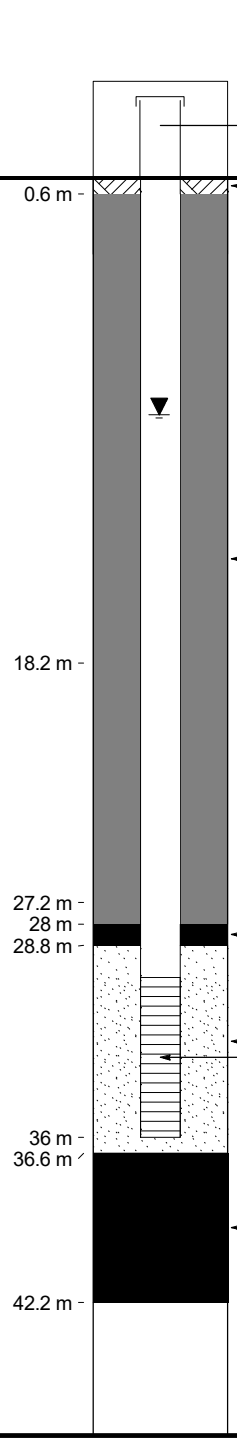
File:M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\100640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Hy-Tech Drilling
Location: Krakatoa Pit
Coordinates: 414,976 E , 6,814,702 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-15D
Drill Type: Tech 5000 Diamond Drill
Total Depth: 42.2m
Elevation: 1402 m
Inclination: -90

Page: 1 of 1
Date Started: 04 Jul 16
Date Completed: 05 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG

DEPTH - (m)	ELEVATION - (m)	GRAPHIC LOG		
0	1400		Topsoil (OVBN) Sandy SILT, some gravel, well graded, dark brown, loose, massive, moist, containing sticks and roots. (Topsoil)	
5			SILT and SAND (OVBN) SILT and SAND, some gravel, trace cobbles and boulders, fine to coarse grained, well graded, medium brown, compact, laminated, wet.	
	1395		Silty, gravelly SAND (OVBN) Silty, gravelly SAND, fine to coarse grained, angular, well graded, low plasticity, medium greyish brown, loose, massive, wet to saturated.	
10	1390		Stringer & Disseminated Sulphide (OI) Light to medium brownish grey, fine to medium grained, foliated. Medium strong, moderately fractured, slightly to moderately weathered. Heavily disseminated sulphides. With clay and iron oxide on fractures.	
15			Volcaniclastic Rhyolite (RHYv) Light to dark greenish grey, fine to medium grained, foliated, strong to very strong, moderately to highly fractured, fresh to slightly weathered. With calcite and pyrite veinlets, clay infill on fractures.	
	1385		Coherent Rhyolite (RHYc) Light to medium greenish grey, fine to medium grained, foliated, strong, moderately to highly fractured with one 25 cm clay-filled shear zone. With quartz and calcite veinlets, chlorite alteration, and disseminated pyrite. Zones of massive quartz.	
20	1380			
25			Volcaniclastic Rhyolite (RHYv) Light greenish grey, fine to medium grained, foliated, strong to very strong, moderately fractured, fresh. Quartz-rich, weakly magnetic, with veined and disseminated sulphides. Minor dissolution features throughout.	
	1375		Rhyolite Tuff Mudstone (MDSt) Medium to dark grey, fine to coarse grained, foliated, strong, moderately fractured, fresh. Rhyolite tuff-dominant mudstone with veined and disseminated sulphides. Quartz rich, weakly magnetic.	
30	1370			
35			Volcaniclastic Rhyolite (RHYv) Light grey, fine to medium grained, foliated, strong, minor fracturing, fresh, no infill. With quartz and calcite veinlets and disseminated sulphides.	
40	1365			
45	1360			



NOTES

10.2 - 18.2 m: Constant Head Test - K = 4E-07 m/s

16.2 - 27.2 m: Constant Head Test - K = 5E-07 m/s

27.2 - 42.2 m: Constant Head Test - K = 2E-06 m/s

GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 28.8 - 36.6 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-6

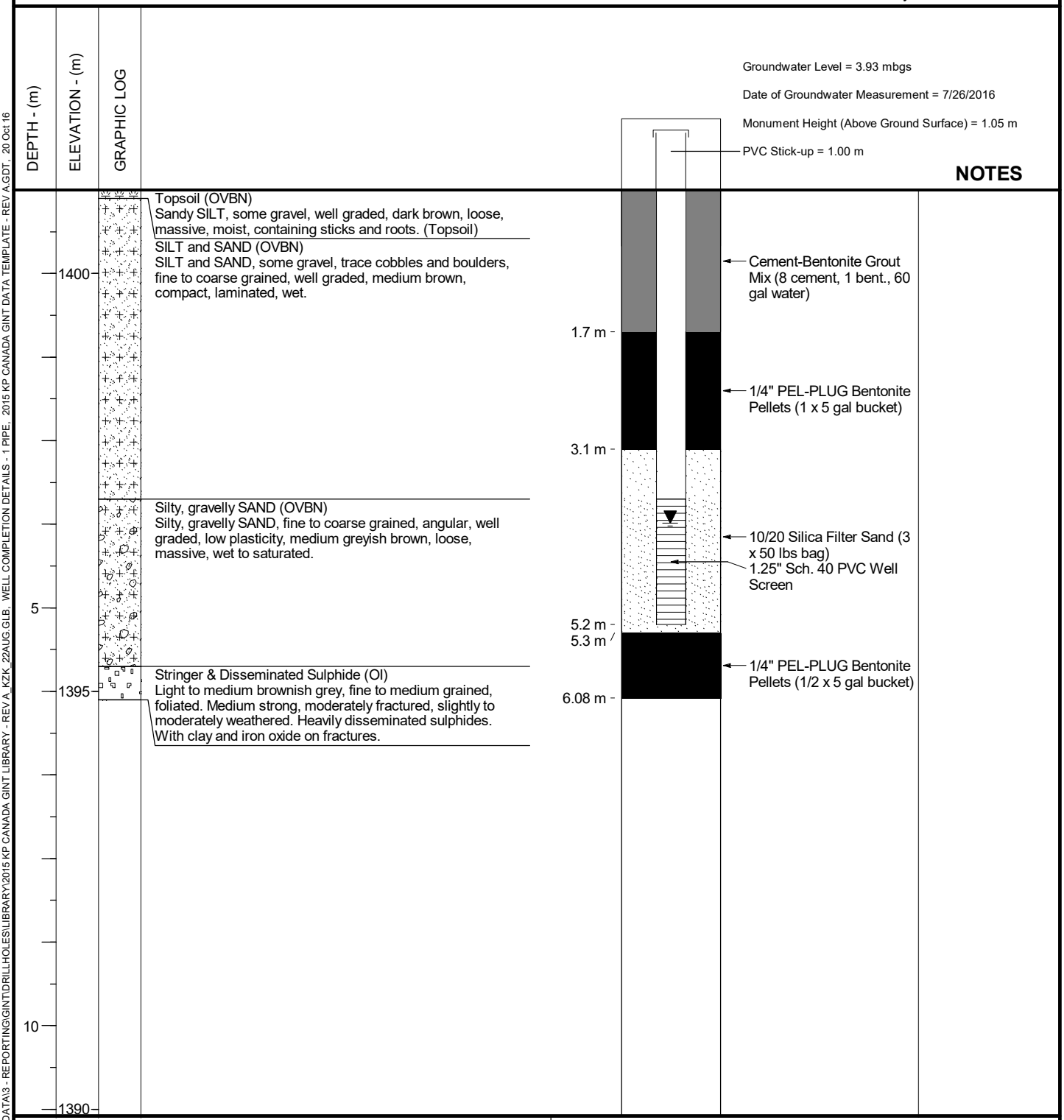
Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Hy-Tech Drilling
Location: Class B Storage Facility
Coordinates: 414,977 E , 6,814,699 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-15S
Drill Type: Tech 5000 Diamond Drill
Total Depth: 6.1m
Elevation: 1401 m
Inclination: -90

Page: 1 of 1
Date Started: 05 Jul 16
Date Completed: 05 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG



GENERAL REMARKS:

Installed 1.25" monitoring well with 1.5 m screen. Completion zone from 3.1 - 5.3 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-7

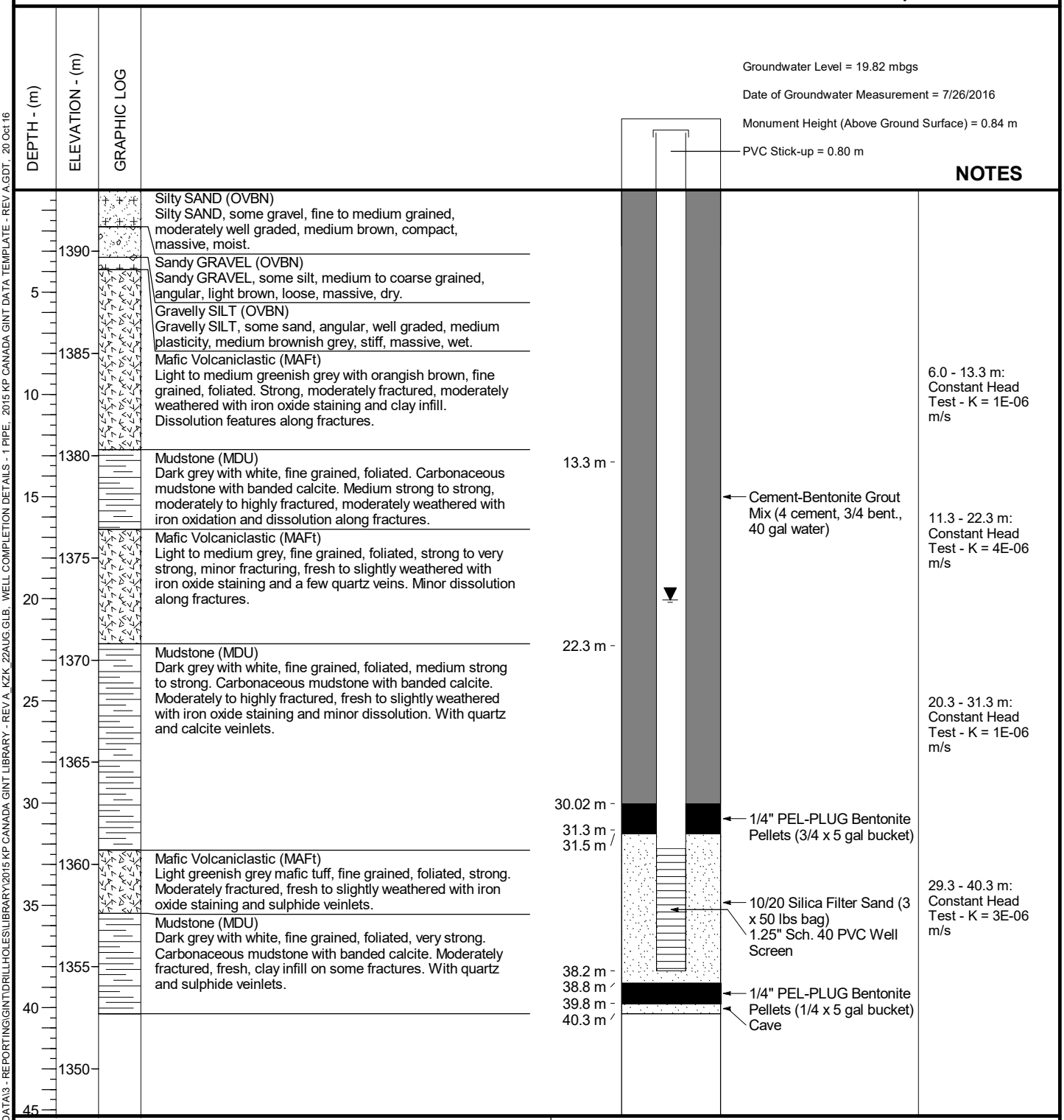
Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

File:M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Contractor: Hy-Tech Drilling
Location: Overburden Stockpile
Coordinates: 415,395 E , 6,817,229 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-16
Drill Type: Tech 5000 Diamond Drill
Total Depth: 40.3m
Elevation: 1393 m
Inclination: -90

Page: 1 of 1
Date Started: 18 Jul 16
Date Completed: 19 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG



GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 32.17-38.17 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-8

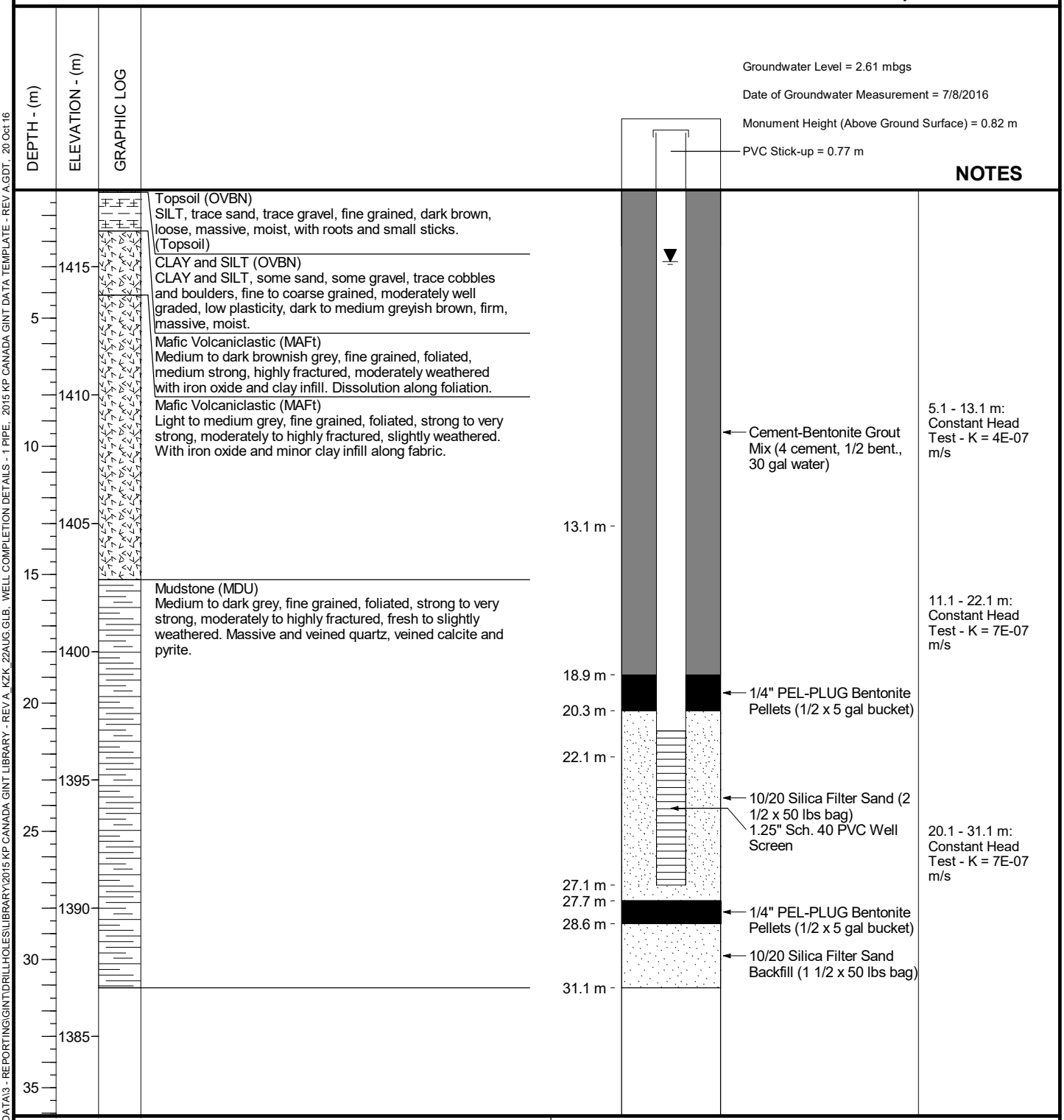
File:M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\1\01\00640\03\A\DATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A_KZK_22AUG.GLB, WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

Contractor: Hy-Tech Drilling
Location: Mill Site
Coordinates: 414,634 E , 6,817,489 N
Coordinate System: UTM09 NAD83

Drillhole No.: MW16-17
Drill Type: Tech 5000 Diamond Drill
Total Depth: 31.1m
Elevation: 1418 m
Inclination: -90

Page: 1 of 1
Date Started: 07 Jul 16
Date Completed: 08 Jul 16
Logged by: JAG / DJR
Reviewed by: LJG



GENERAL REMARKS:

Installed 1.25" monitoring well with 6 m screen. Completion zone from 20.3 - 27.7 m.

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
VA101-640/03	1	0

FIGURE E2-9

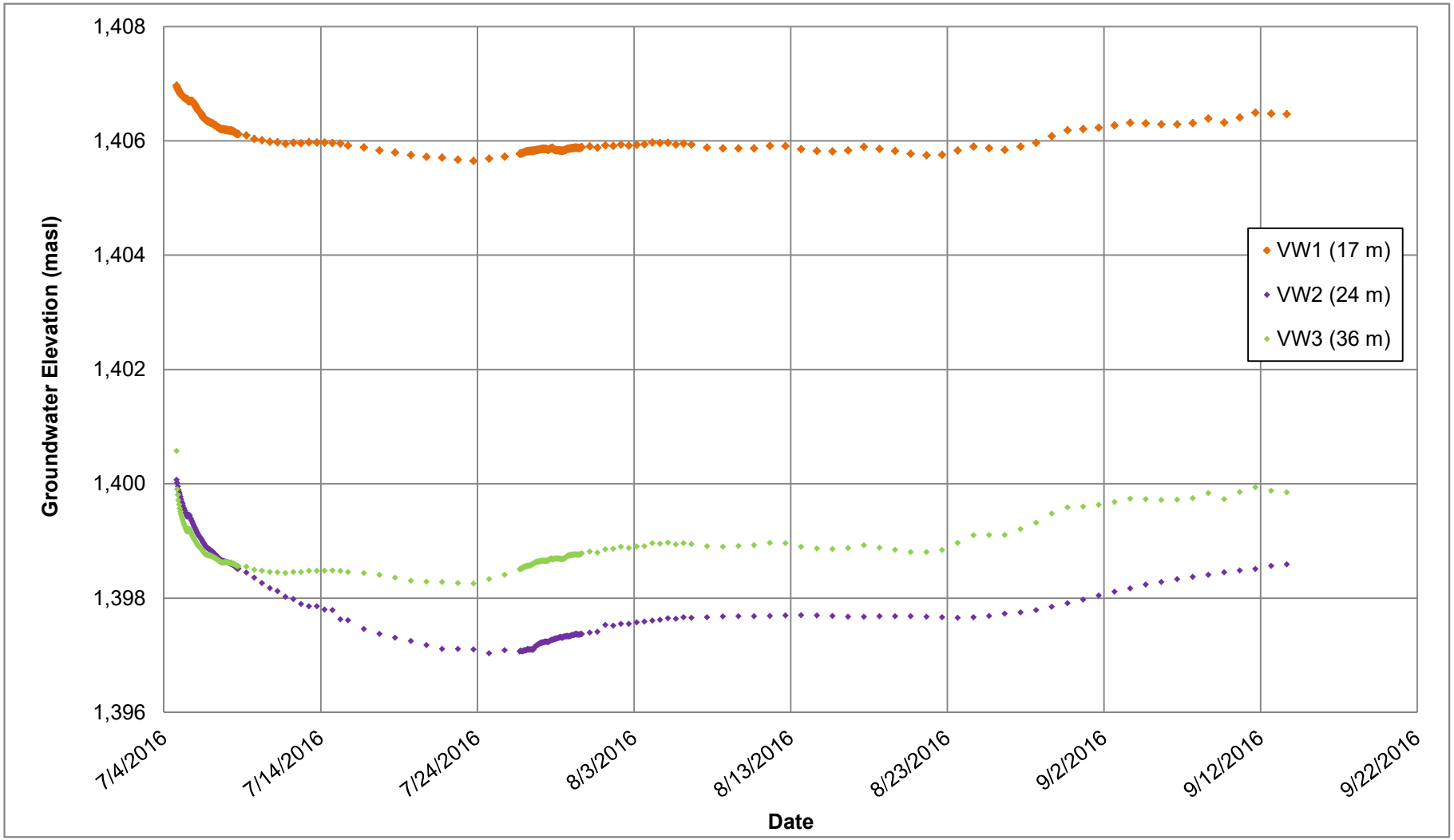
File:M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\PROJECTS\2016 KZK GEOTECH SI.GPJ
Library: M:\101\00640\03\AIDATA\3 - REPORTING\GINT\DRILLHOLES\LIBRARY\2015 KP CANADA GINT LIBRARY - REV A KZK 22AUG.GLB WELL COMPLETION DETAILS - 1 PIPE, 2015 KP CANADA GINT DATA TEMPLATE - REV A.GDT, 20 Oct 16

Logging conducted according to the ASTM 2488 standard and the Canadian Foundation Engineering Manual, 4th Edition, 2006.

APPENDIX E3

VIBRATING WIRE PIEZOMETER PLOTS

(Pages E3-1 to E3-2)



NOTES:

1. GROUND ELEVATION IS 1412 MASL.
2. SENSOR DEPTHS IN LEGEND ARE VERTICAL DEPTHS BELOW GROUND SURFACE.

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

BMC MINERALS (NO.1) LTD.

KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
K16-379 PIEZOMETER DATA
GROUNDWATER ELEVATION

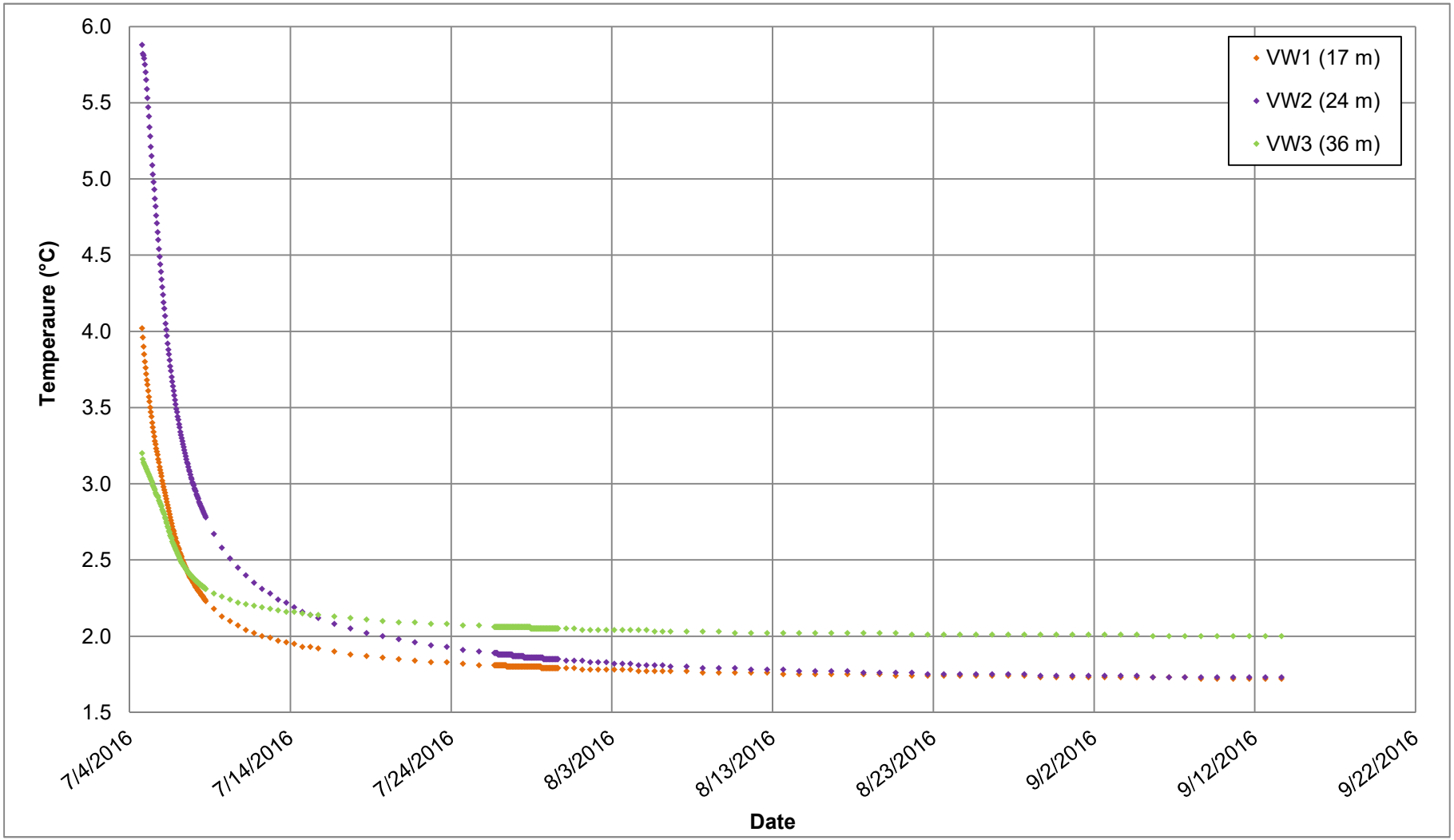
Knight Piésold CONSULTING

P/A NO. VA101-640/03

REF. NO. 1

FIGURE E3.1

REV 0



NOTES:

1. SENSOR DEPTHS SHOWN IN LEGEND ARE VERTICAL DEPTHS BELOW GROUND SURFACE.

REV	DATE	DESCRIPTION	PREP'D	CHK'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

BMC MINERALS (NO.1) LTD.

KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
K16-379 PIEZOMETER DATA
TEMPERATURE

Knight Piésold CONSULTING

P/A NO. VA101-640/03

REF. NO. 1

FIGURE E3.2

REV 0

APPENDIX E4

VIBRATING WIRE PIEZOMETER CALIBRATION RECORDS

(Pages E4-1 to E4-3)

innovation in geotechnical instrumentation

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Calibration Record

Vibrating Wire Piezometer

Customer:		Knight Piesold Consulting	
Model:		VW2100-2.0	
Serial Number:		**VW37334**	
Mfg Number:		1611606	
Range:		2.0	MPa
Temperature:		23.1	°C
Barometric Pressure:		979.5	millibars
Work Order Number:		210263	
Cable Length:		25	meters
Cable Markings:		1376876 m - 1376900 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8950	8948	8949	0.004	0.18	-0.01
0.4	8268	8268	8268	0.400	-0.01	0.02
0.8	7585	7585	7585	0.797	-0.15	0.01
1.2	6898	6898	6898	1.197	-0.17	-0.01
1.6	6207	6206	6207	1.599	-0.05	-0.01
2.0	5510	5510	5510	2.004	0.20	0.01
			Max. Error (%):		0.20	0.02

Linear Calibration Factor:	**C.F.=**	**0.00058171**	**MPa/B unit**
Regression Zero:	**At Calibration =**	**8955.1**	**B unit**
Temperature Correction Factor:	**Tk =**	**0.0004919**	**MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -2.4495E-09 **B:** -0.00054629 **C:** 5.0847

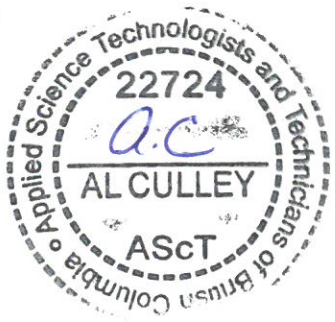
Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	7-Jun-16	8954	22.0	1010.6

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: S. Kim SK Date: 7-Jun-16

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1



Document Number: ELL0143H

Recycled
MIG0106B

innovation in geotechnical instrumentation

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Calibration Record

Vibrating Wire Piezometer

Customer:		Knight Piesold Consulting	
Model:		VW2100-2.0	
Serial Number:		**VW37335**	
Mfg Number:		1611607	
Range:		2.0	MPa
Temperature:		23.1	°C
Barometric Pressure:		979.5	millibars
Work Order Number:		210263	
Cable Length:		35	meters
Cable Markings:		1376902 m - 1376936 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8794	8795	8795	0.004	0.19	-0.02
0.4	8097	8098	8098	0.400	0.00	0.04
0.8	7399	7400	7400	0.797	-0.17	0.01
1.2	6697	6697	6697	1.196	-0.20	-0.03
1.6	5988	5988	5988	1.599	-0.06	-0.01
2.0	5274	5274	5274	2.005	0.23	0.01
			Max. Error (%):		0.23	0.04

Linear Calibration Factor:	**C.F.=**	**0.00056832 MPa/B unit**
Regression Zero:	**At Calibration =**	**8801.3 B unit**
Temperature Correction Factor:	**Tk =**	**0.0004694 MPa/°C rise**

Polynomial Gage Factors (MPa) A: -2.6425E-09 B: -0.00053114 C: 4.8750

Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	7-Jun-16	8802	21.9	1010.6

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: S. Kim S K Date: 7-Jun-16

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

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Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Calibration Record

Vibrating Wire Piezometer

Customer:		Knight Piesold Consulting
Model:		VW2100-2.0
Serial Number:		**VW37336**
Mfg Number:		1611608
Range:		2.0 MPa
Temperature:		23.1 °C
Barometric Pressure:		979.5 millibars
Work Order Number:		210263
Cable Length:		45 meters
Cable Markings:		1376830 m - 1376875 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8847	8848	8848	0.003	0.15	-0.01
0.4	8151	8151	8151	0.400	-0.01	0.02
0.8	7453	7453	7453	0.797	-0.13	0.00
1.2	6751	6752	6752	1.197	-0.14	-0.01
1.6	6046	6046	6046	1.599	-0.04	-0.01
2.0	5336	5337	5337	2.003	0.17	0.01
				Max. Error (%):	0.17	0.02

Linear Calibration Factor:	**C.F.=**	**0.00056976 MPa/B unit**
Regression Zero:	**At Calibration =**	**8852.7 B unit**
Temperature Correction Factor:	**Tk =**	**0.0005433 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -1.9610E-09 **B:** -0.00054194 **C:** 4.9481

Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	7-Jun-16	8853	22.1	1010.6

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: S. Kim SK Date: 7-Jun-16

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

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APPENDIX F

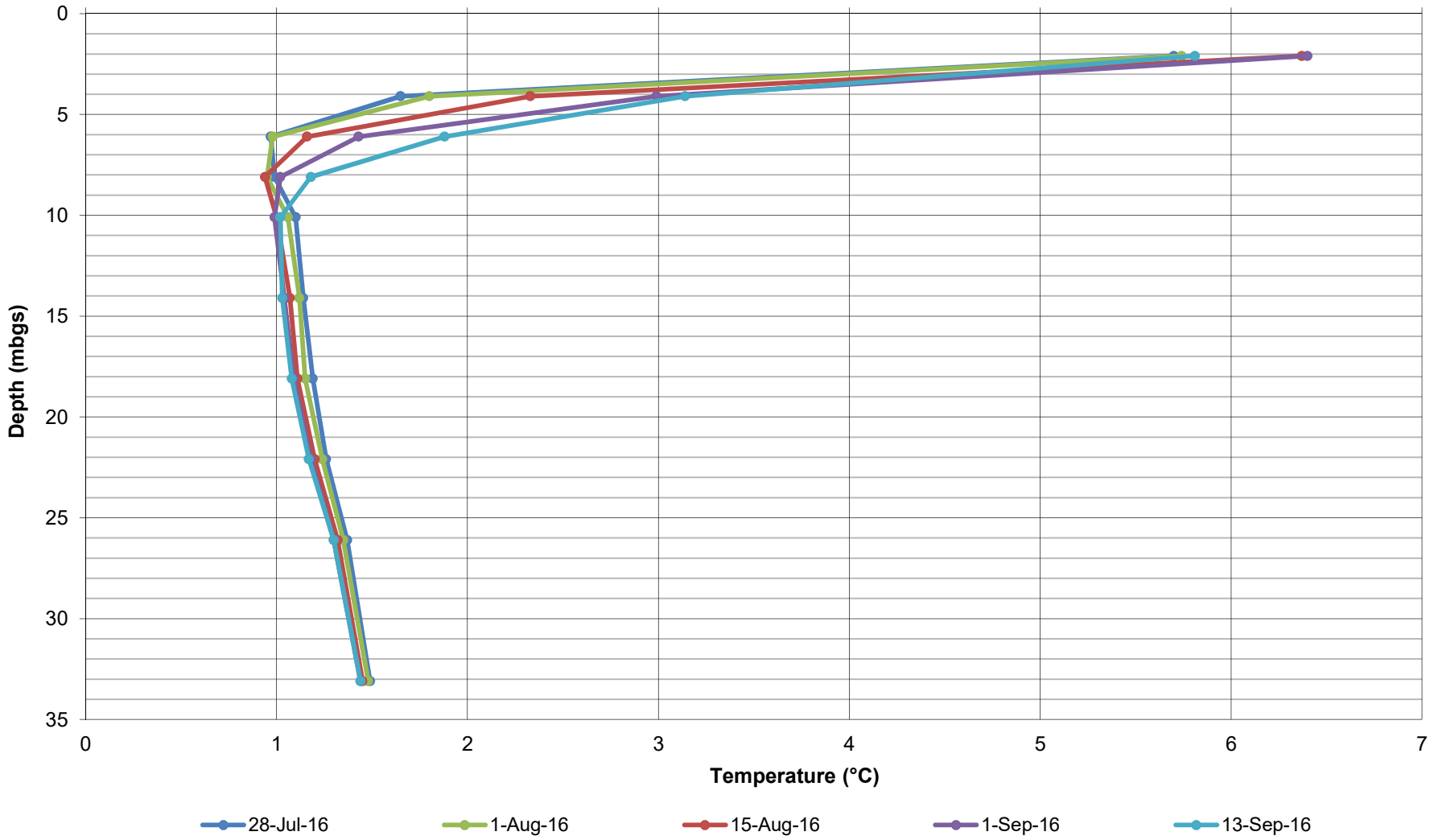
THERMISTOR DATA

Appendix F1 Thermistor Plots
Appendix F2 Thermistor Calibration Records

APPENDIX F1

THERMISTOR PLOTS

(Pages F1-1 to F1-18)



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

BMC MINERALS (NO.1) LTD.

KUDZ ZE KAYAH PROJECT

2016 GEOTECHNICAL SITE INVESTIGATION
K16-387 TRUMPET CURVE

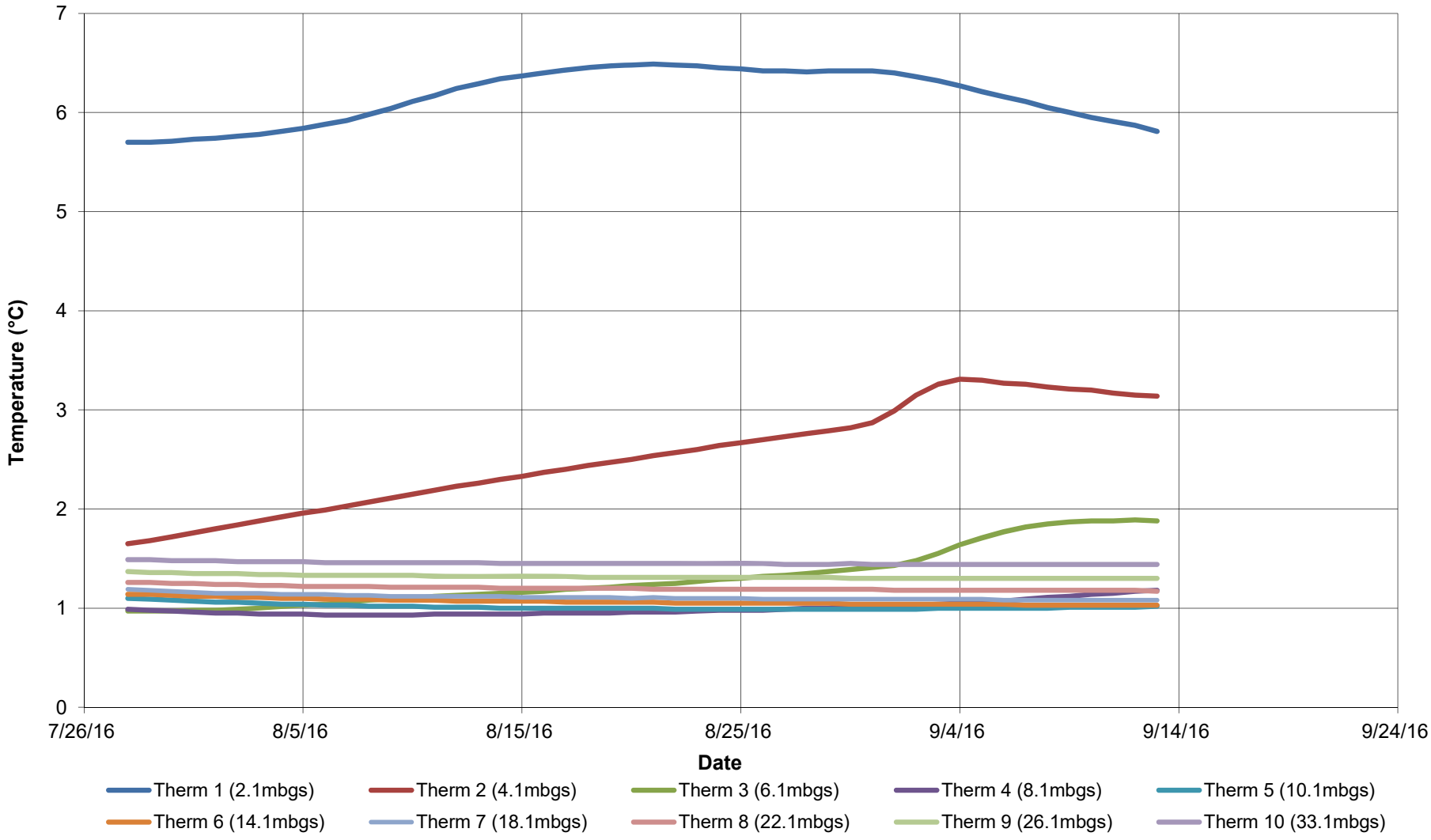
Knight Piésold CONSULTING

P/A NO. VA101-640/03

REF. NO. 1

FIGURE F1.1

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

BMC MINERALS (NO.1) LTD.

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2016 GEOTECHNICAL SITE INVESTIGATION
K16-387 THERMISTOR DATA

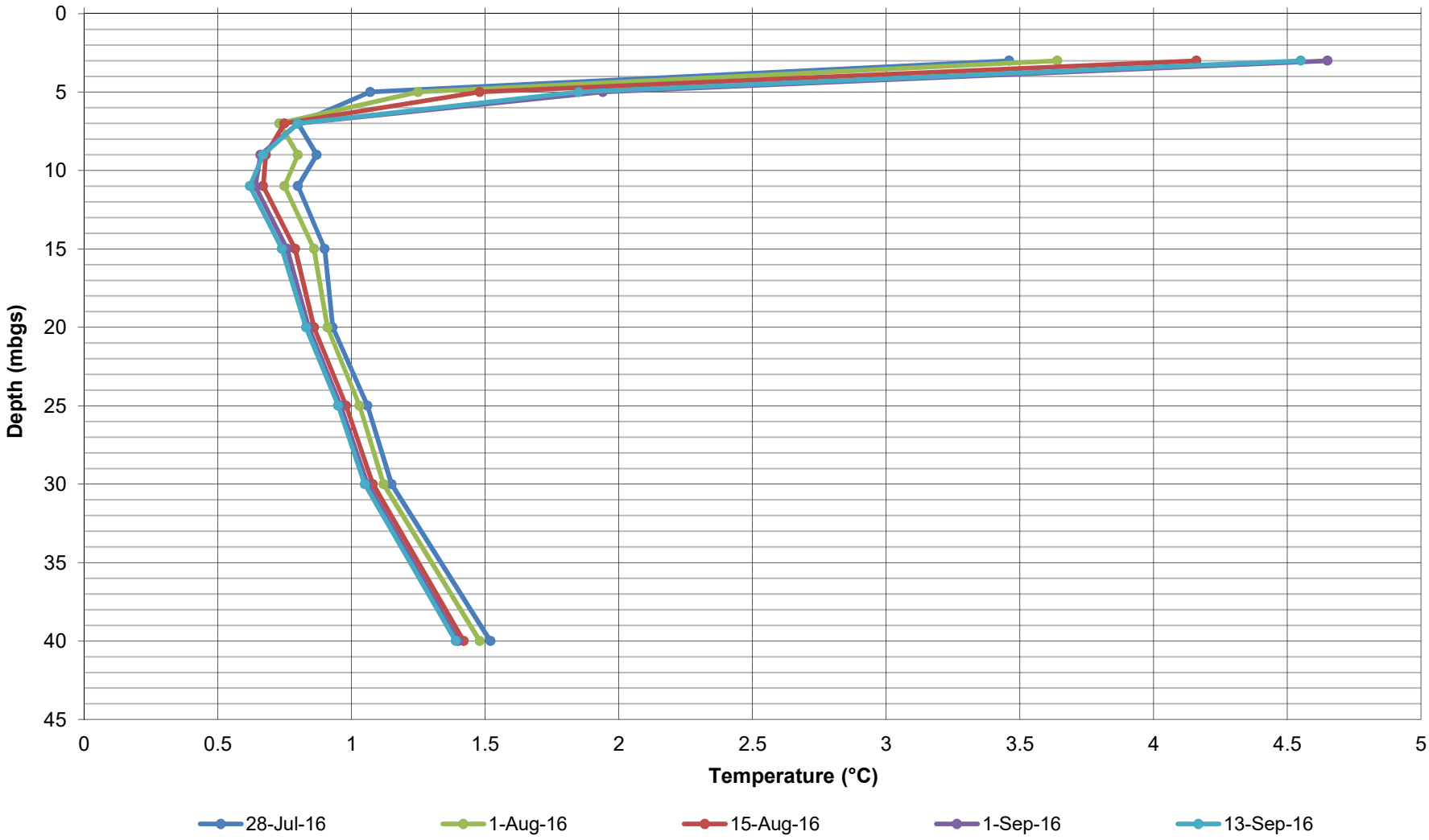
Knight Piésold CONSULTING

P/A NO. VA101-640/03

REF. NO. 1

FIGURE F1.2

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-389 TRUMPET CURVE

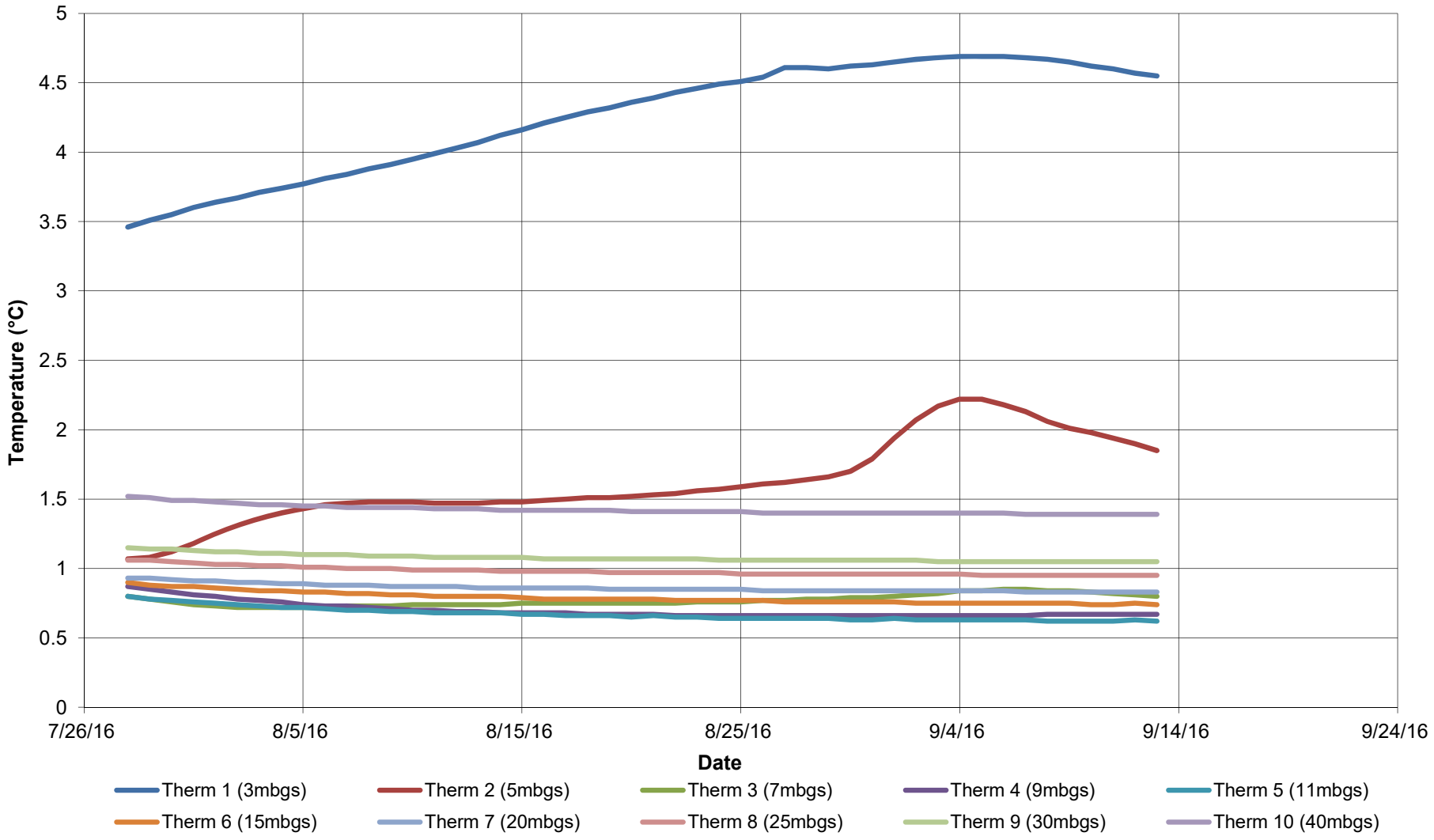
Knight Piésold CONSULTING

P/A NO. VA101-640/03

REF. NO. 1

FIGURE F1.3

REV 0



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K16-389 THERMISTOR DATA

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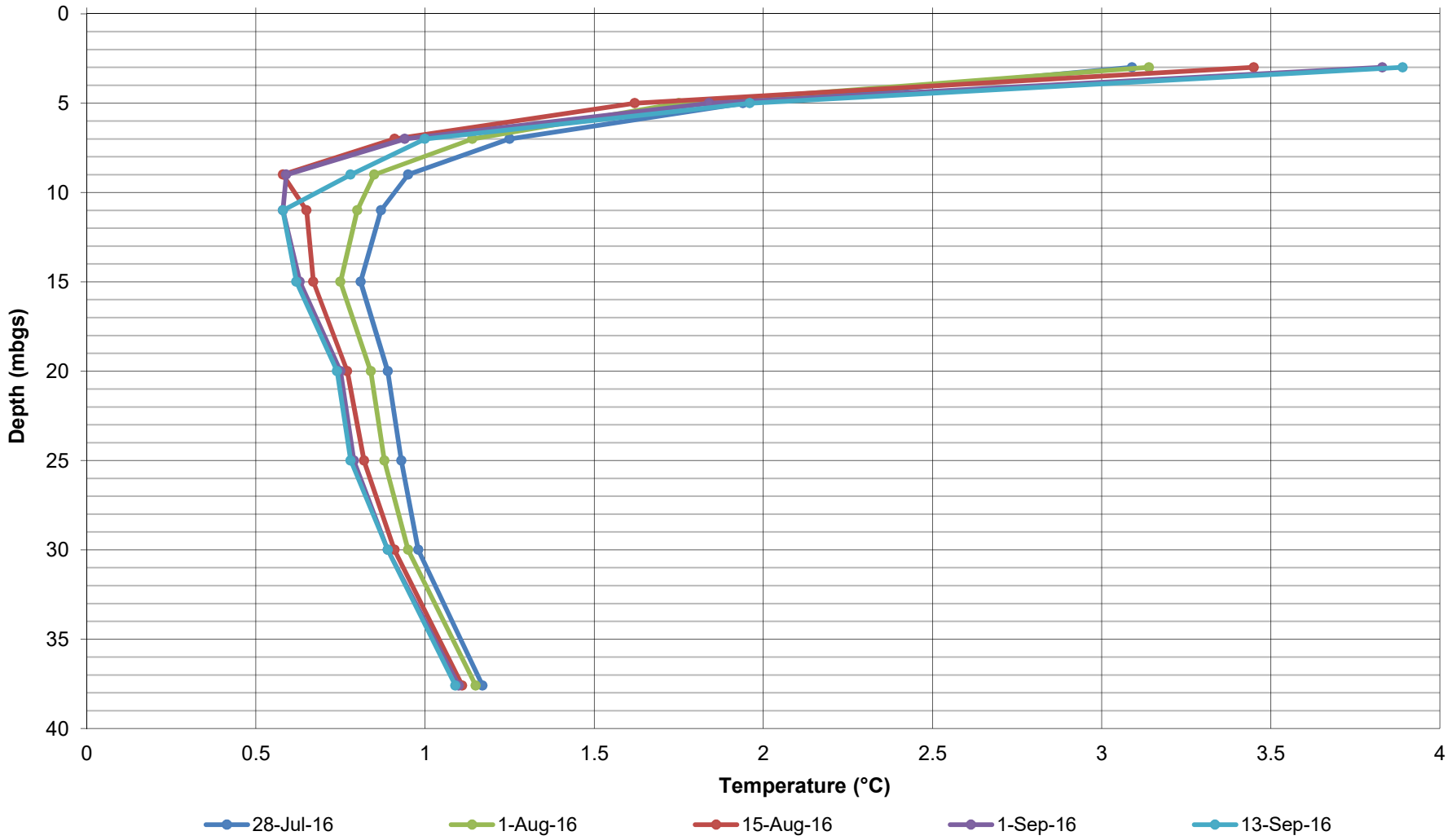
REF. NO. 1

FIGURE F1.4

REV 0

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-390 TRUMPET CURVE

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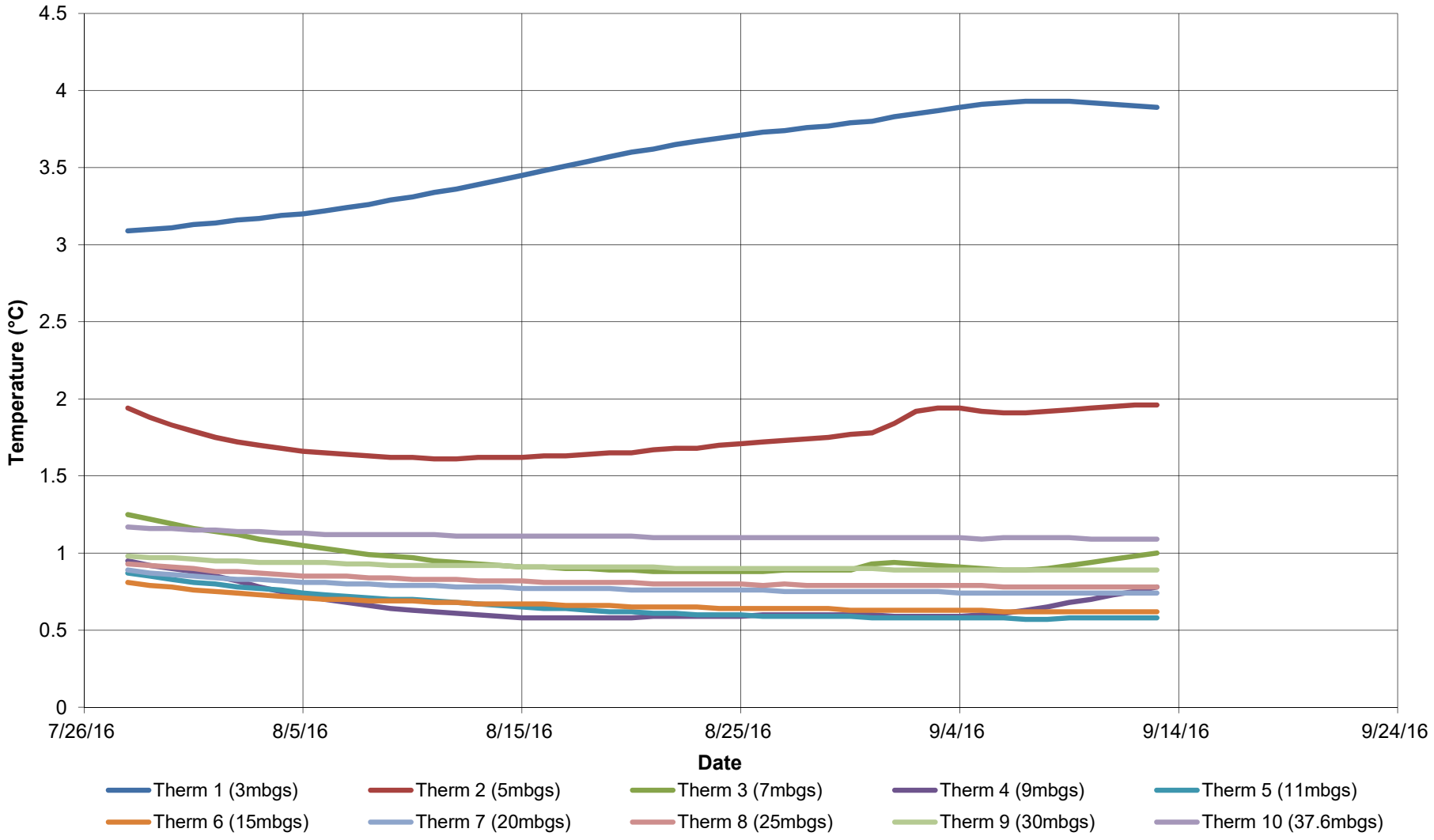
REF. NO. 1

FIGURE F1.5

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-390 THERMISTOR DATA

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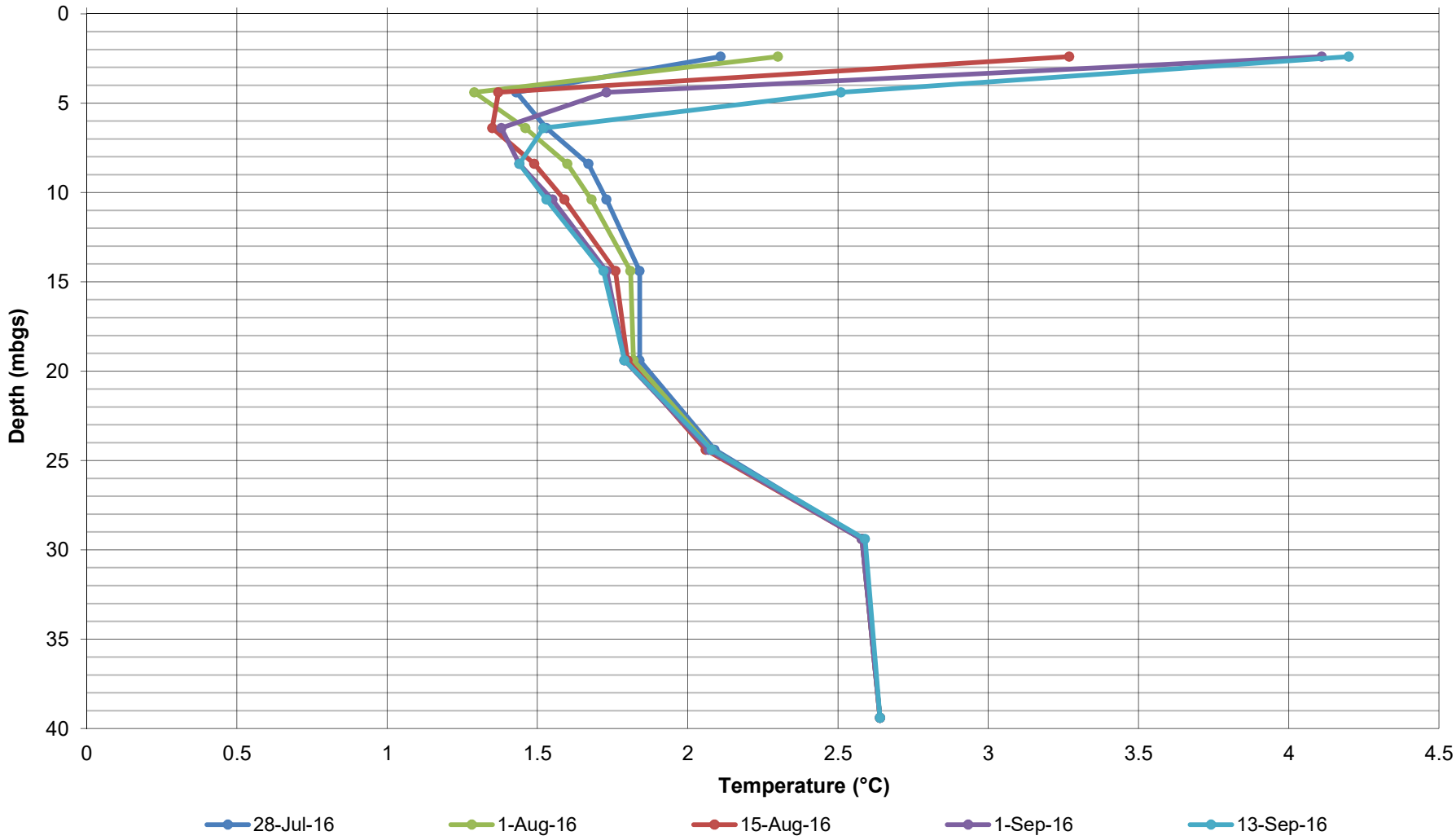
REF. NO. 1

FIGURE F1.6

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-392 TRUMPET CURVE

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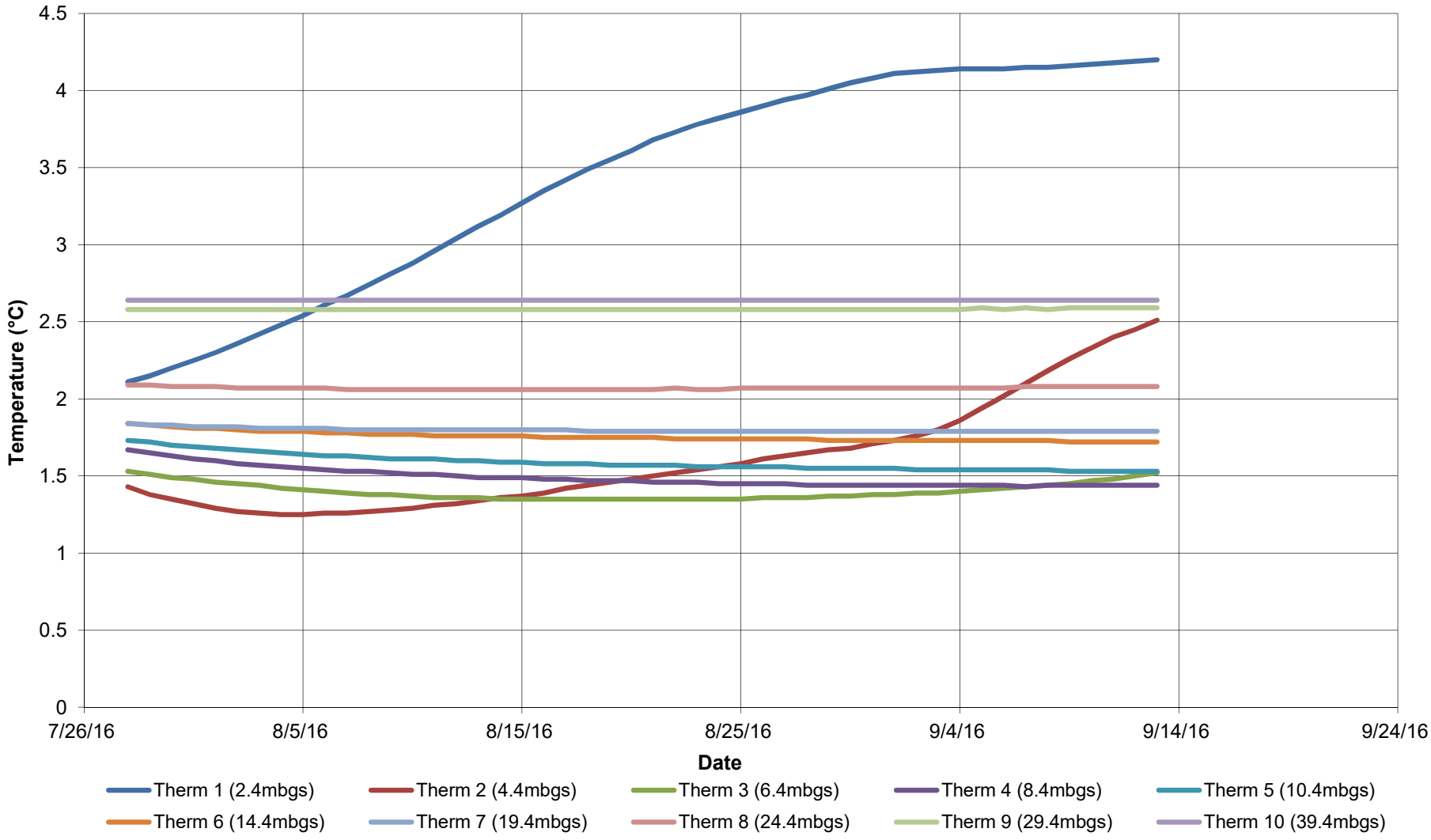
REF. NO. 1

FIGURE F1.7

REV 0



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K16-392 THERMISTOR DATA

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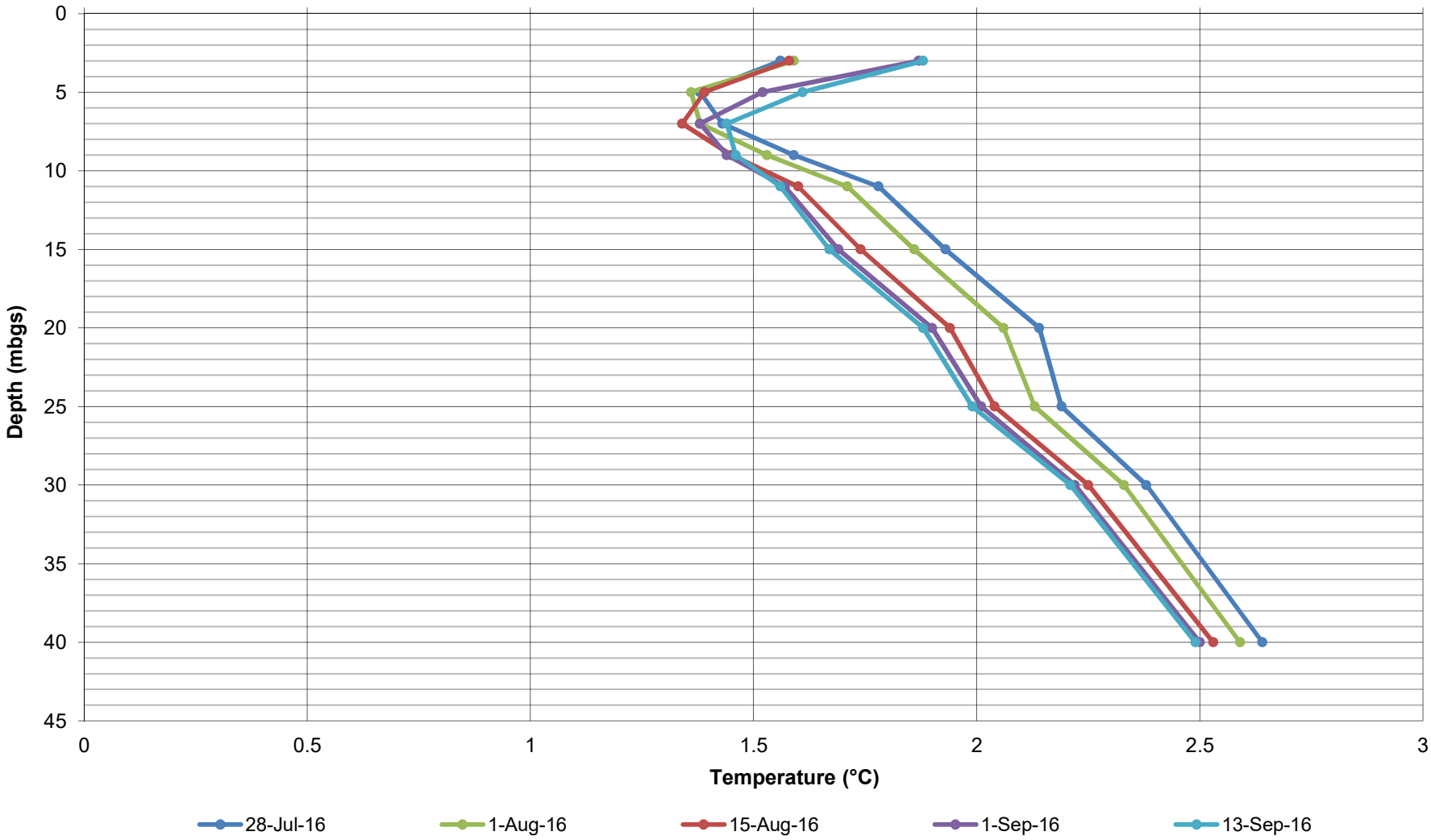
REF. NO. 1

FIGURE F1.8

REV 0

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-395 TRUMPET CURVE

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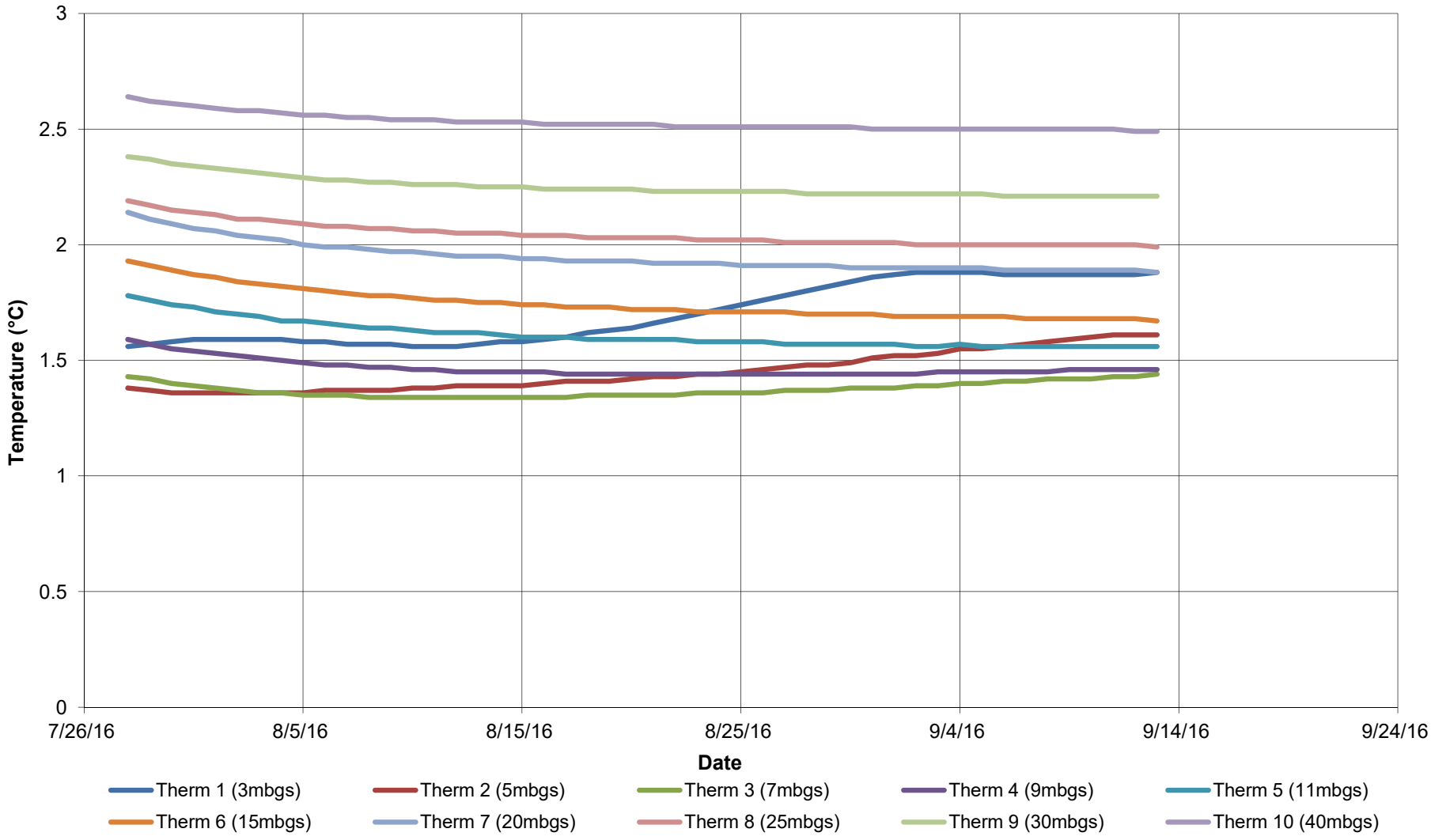
REF. NO. 1

FIGURE F1.9

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-395 THERMISTOR DATA

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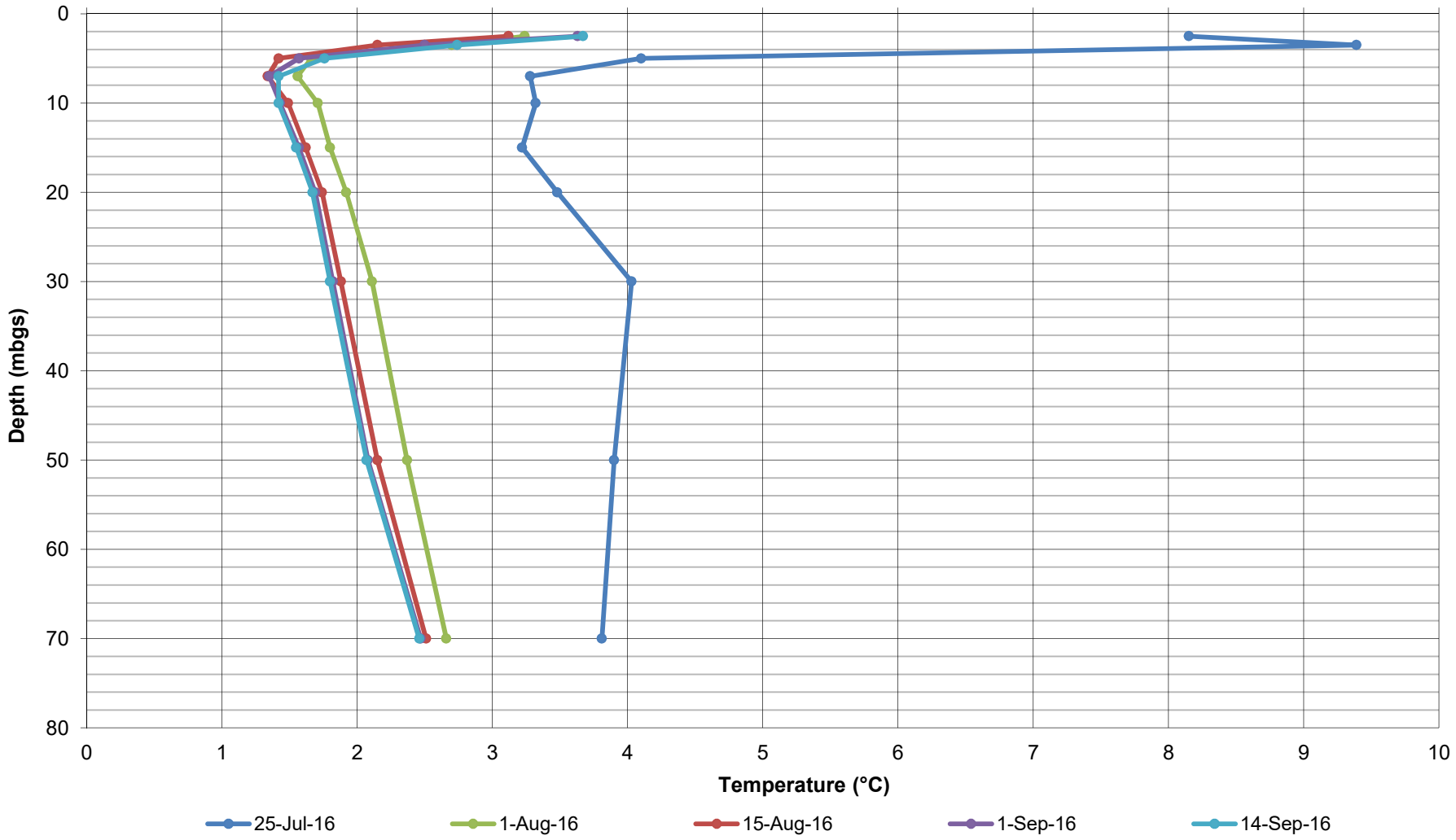
REF. NO. 1

FIGURE F1.10

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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2016 GEOTECHNICAL SITE INVESTIGATION
K16-402 TRUMPET CURVE

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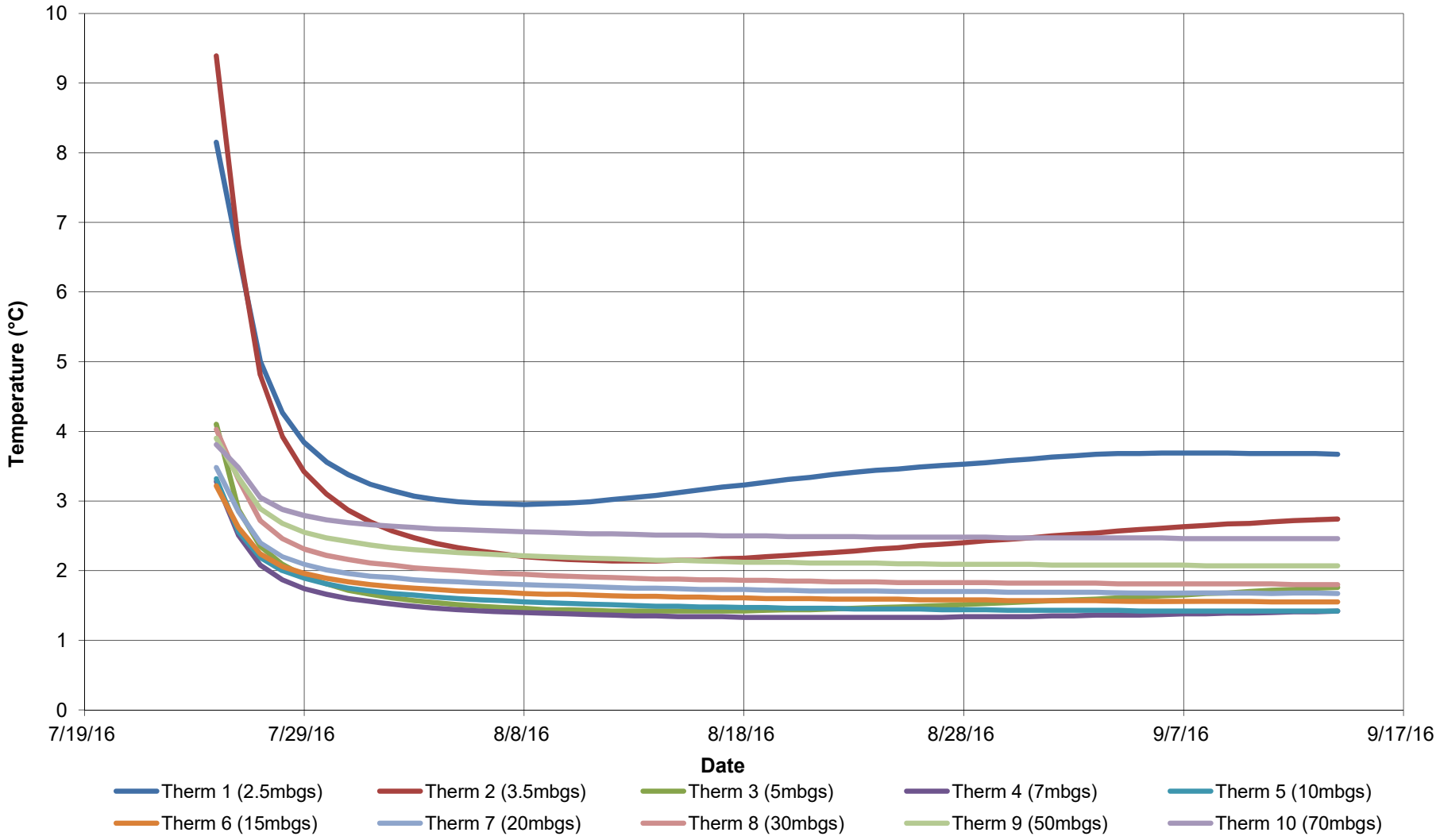
REF. NO. 1

FIGURE F1.11

REV 0



REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-402 THERMISTOR DATA

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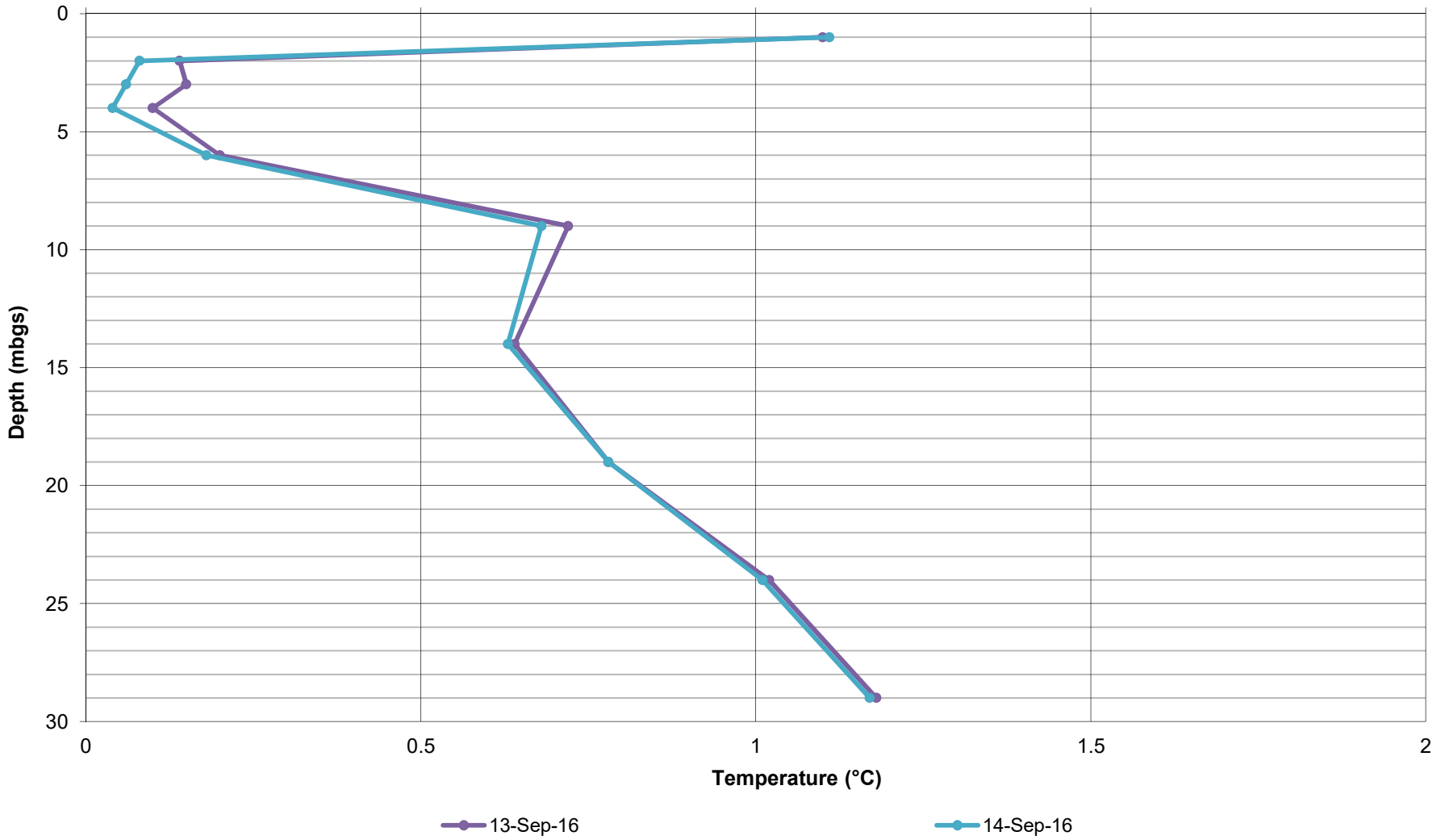
REF. NO. 1

FIGURE F1.12

REV 0



NOTES:
1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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16-410 TRUMPET CURVE

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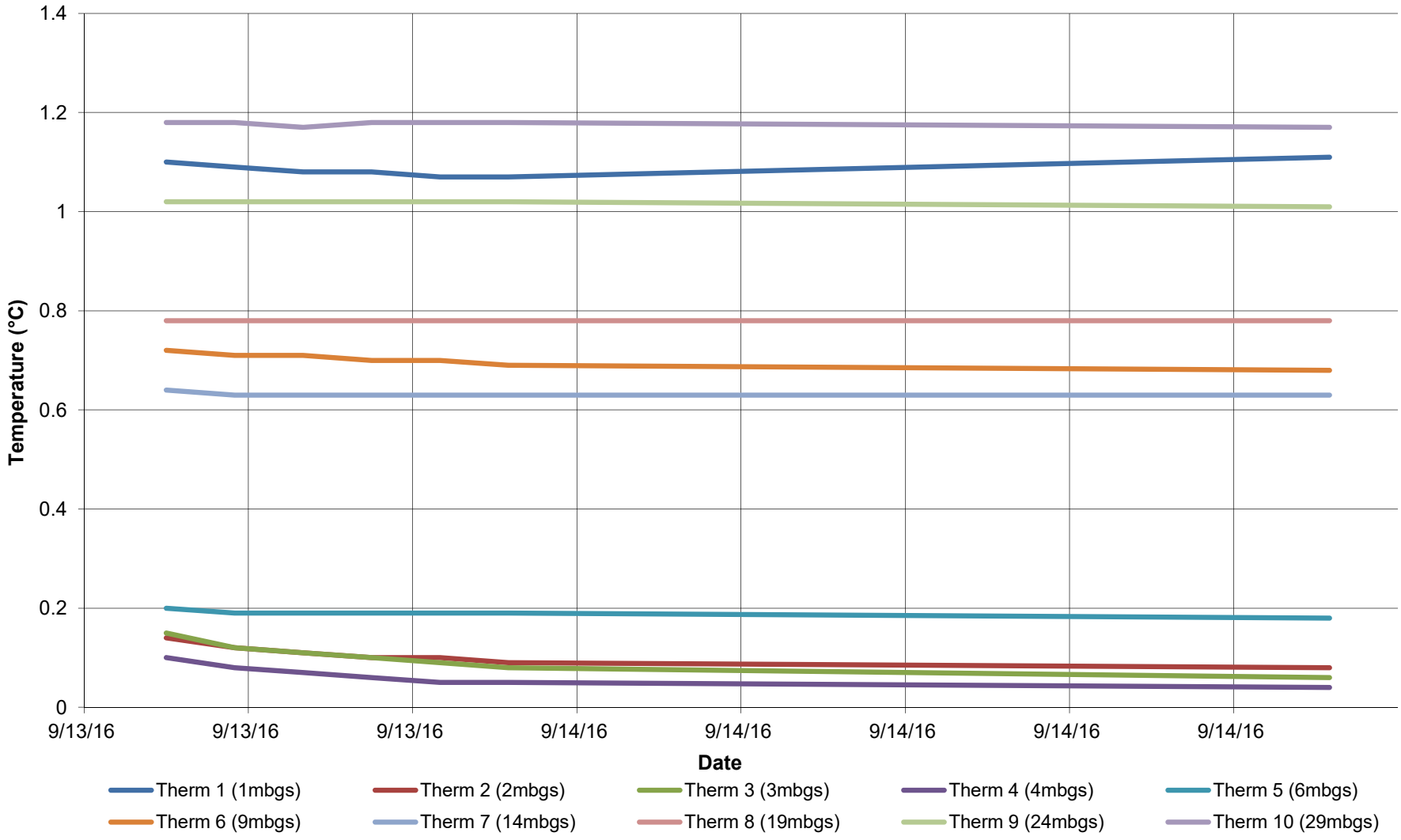
REF. NO. 1

FIGURE F1.13

REV 0



NOTES:

1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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2016 GEOTECHNICAL SITE INVESTIGATION
K16-410 THERMISTOR DATA

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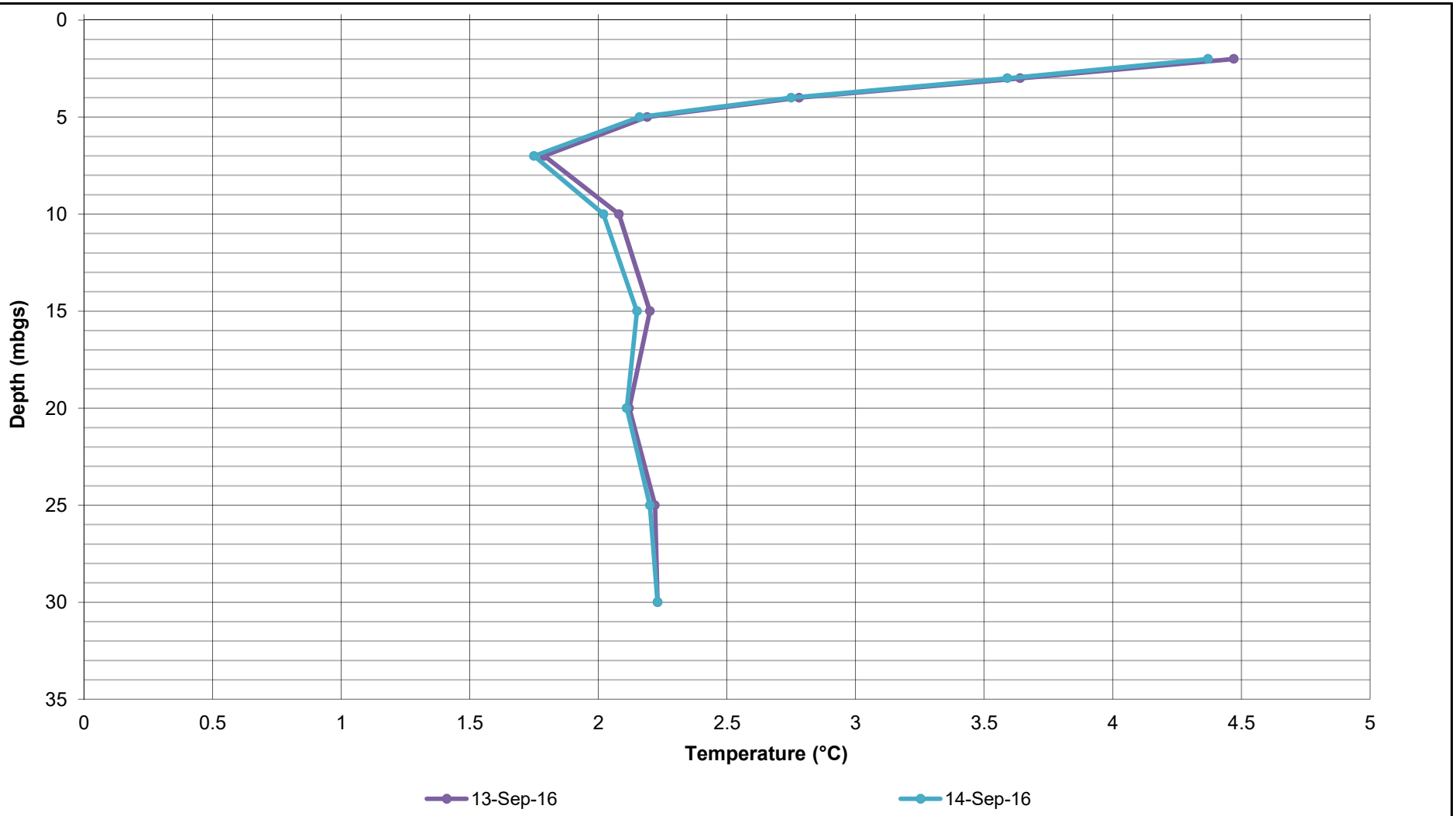
REF. NO. 1

FIGURE F1.14

REV 0



NOTES:

1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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2016 GEOTECHNICAL SITE INVESTIGATION
K16-411 TRUMPET CURVE

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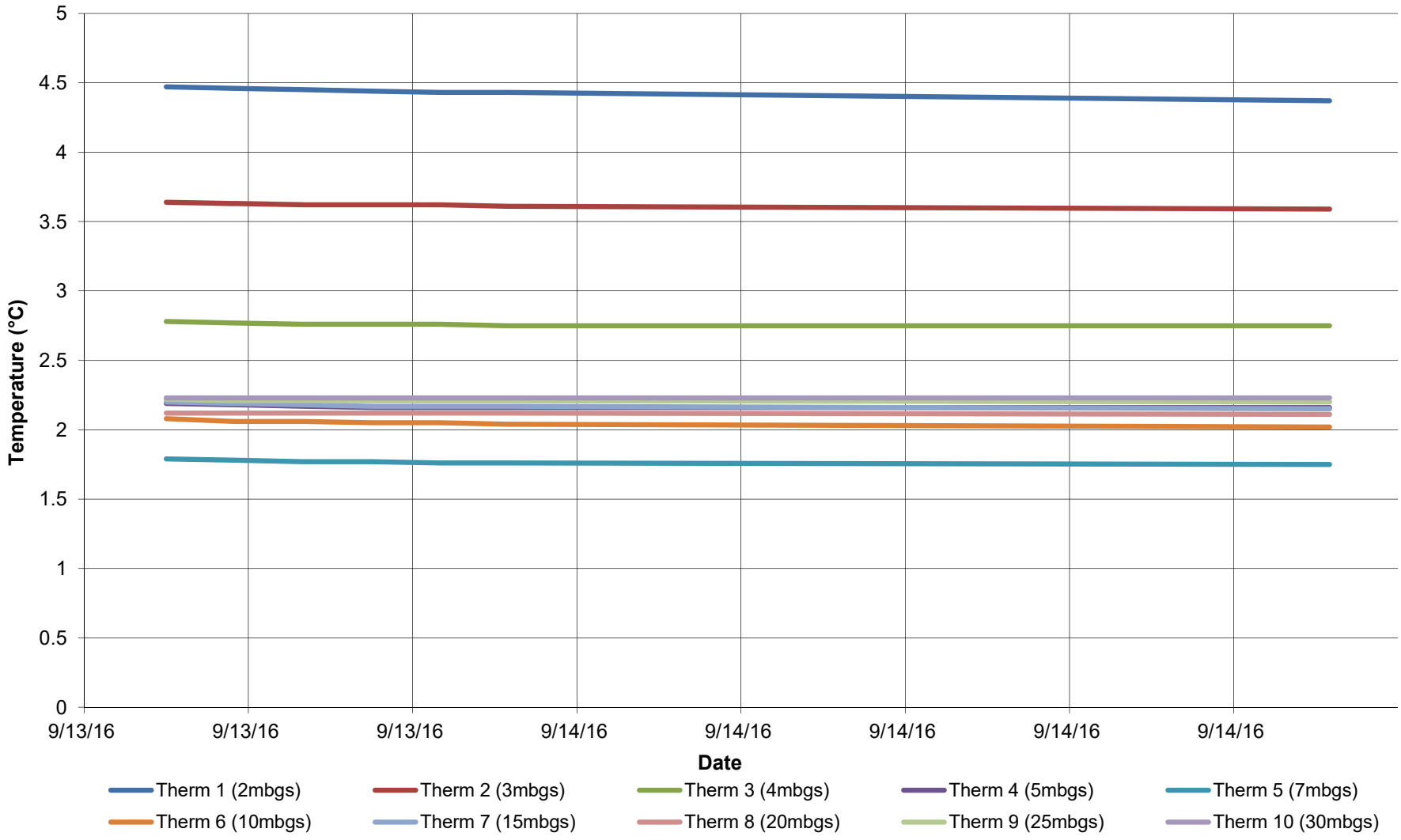
REF. NO. 1

FIGURE F1.15

REV 0



NOTES:
1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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K16-411 THERMISTOR DATA

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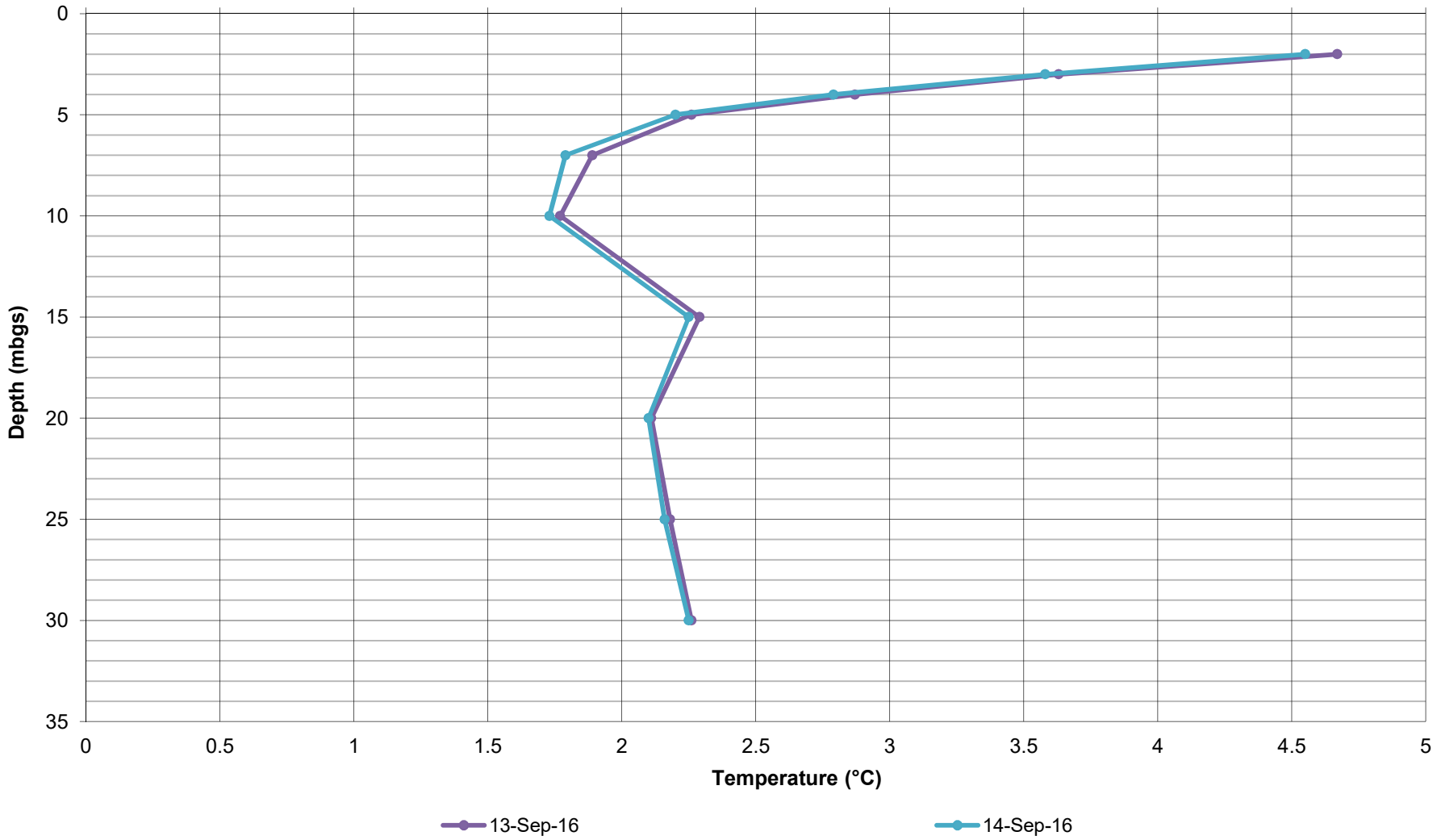
REF. NO. 1

FIGURE F1.16

REV 0



NOTES:

1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

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2016 GEOTECHNICAL SITE INVESTIGATION
K16-412 TRUMPET CURVE

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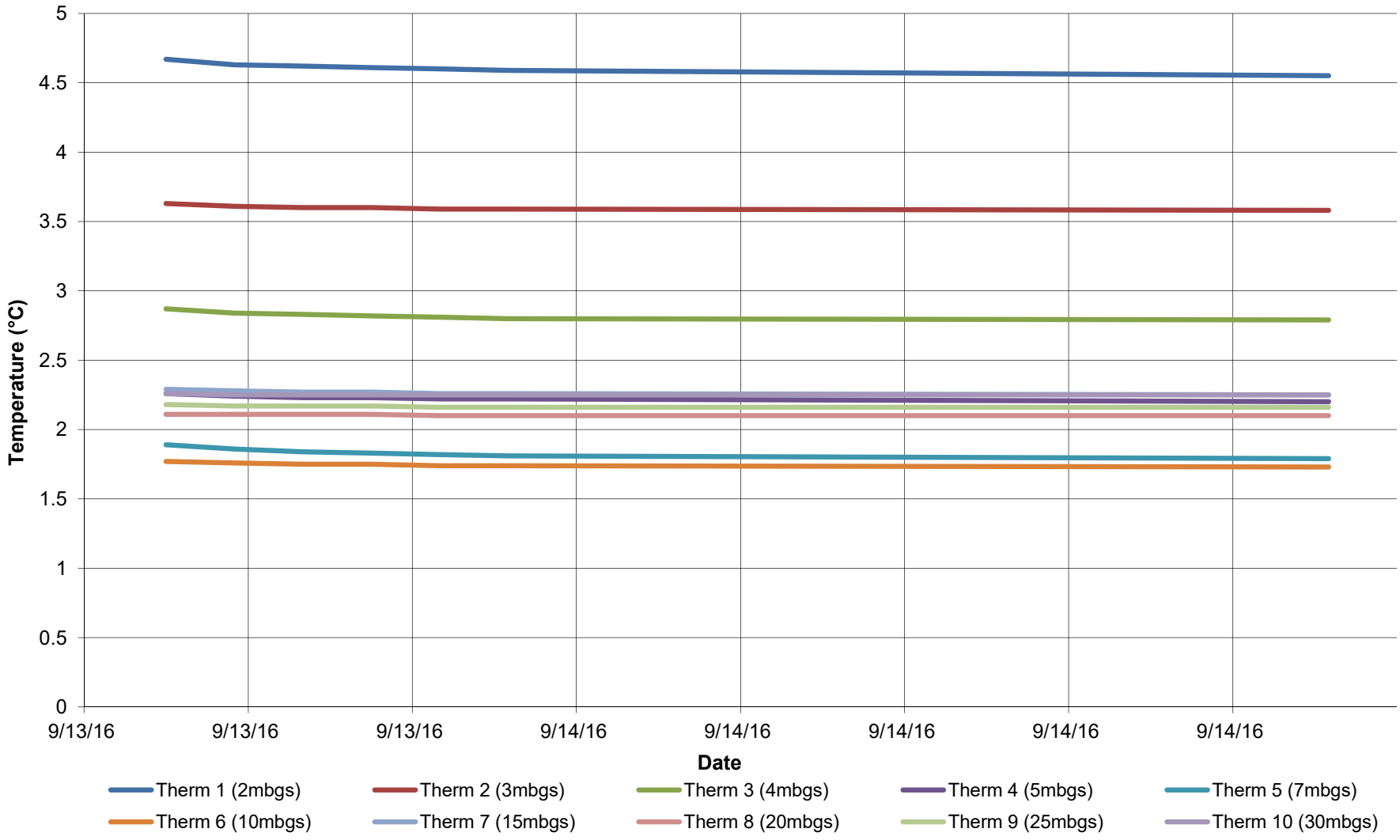
REF. NO. 1

FIGURE F1.17

REV 0



NOTES:

1. ONLY ONE DAY OF DATA AVAILABLE AT TIME OF COLLECTION.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	20OCT'16	ISSUED WITH REPORT	JAG	LJG

BMC MINERALS (NO.1) LTD.

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K16-412 THERMISTOR DATA

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FIGURE F1.18

REV 0

APPENDIX F2

THERMISTOR CALIBRATION RECORDS

(Pages F2-1 to F2-5)

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RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Certificate of Compliance

Thermistor Strings

Customer:	Knight Piesold Consulting	Number of Points:	10
Work Order:	210263	Length:	40 m
Thermistor Type:	3 kΩ		

This is to certify that Thermistor Strings S/N: TS4127-TS4131 meet the RST Instruments specifications for the product.

Technician: I. Kurchavov I K Date: 5 July, 2016

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22724
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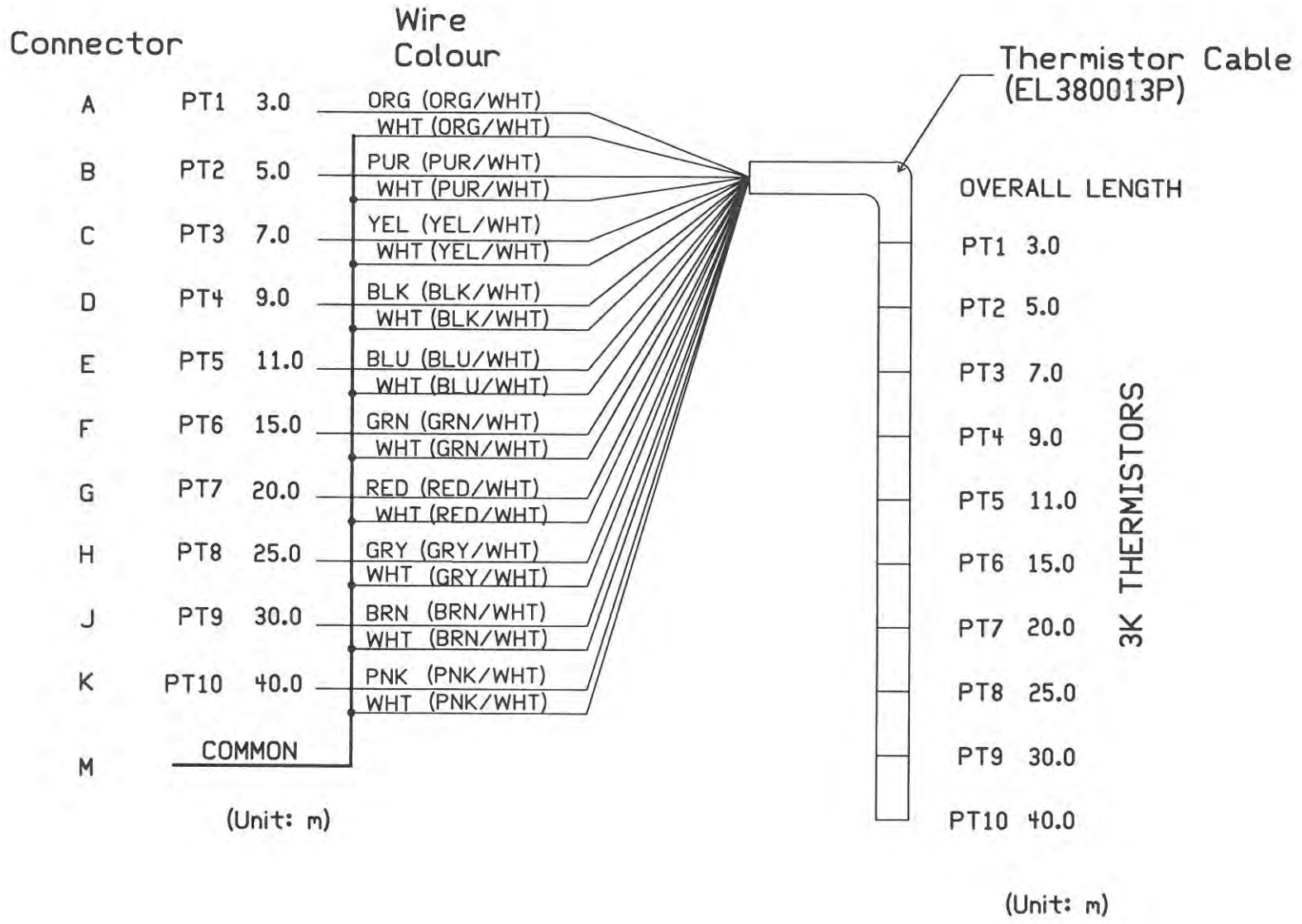
AScT

THM0008B



S/N: TS4127-TS4131

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE
J/N:	THW0245/WO210263 Revision: A
Author:	CB Size: A
Date:	2016/06/06 Sheet 1 of 1

innovation in geotechnical instrumentation

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Certificate of Compliance

Thermistor Strings

Customer:	KNIGHT PIESOLD CONSULTING	Number of Points:	10
Work Order:	210954	Length:	30 m
Thermistor Type:	3 kΩ		

This is to certify that Thermistor String S/N: TS4136-TS4138 meets the RST Instruments specifications for the product.

Technician: C. Luong C.L Date: 23 August 2016

THM0008B

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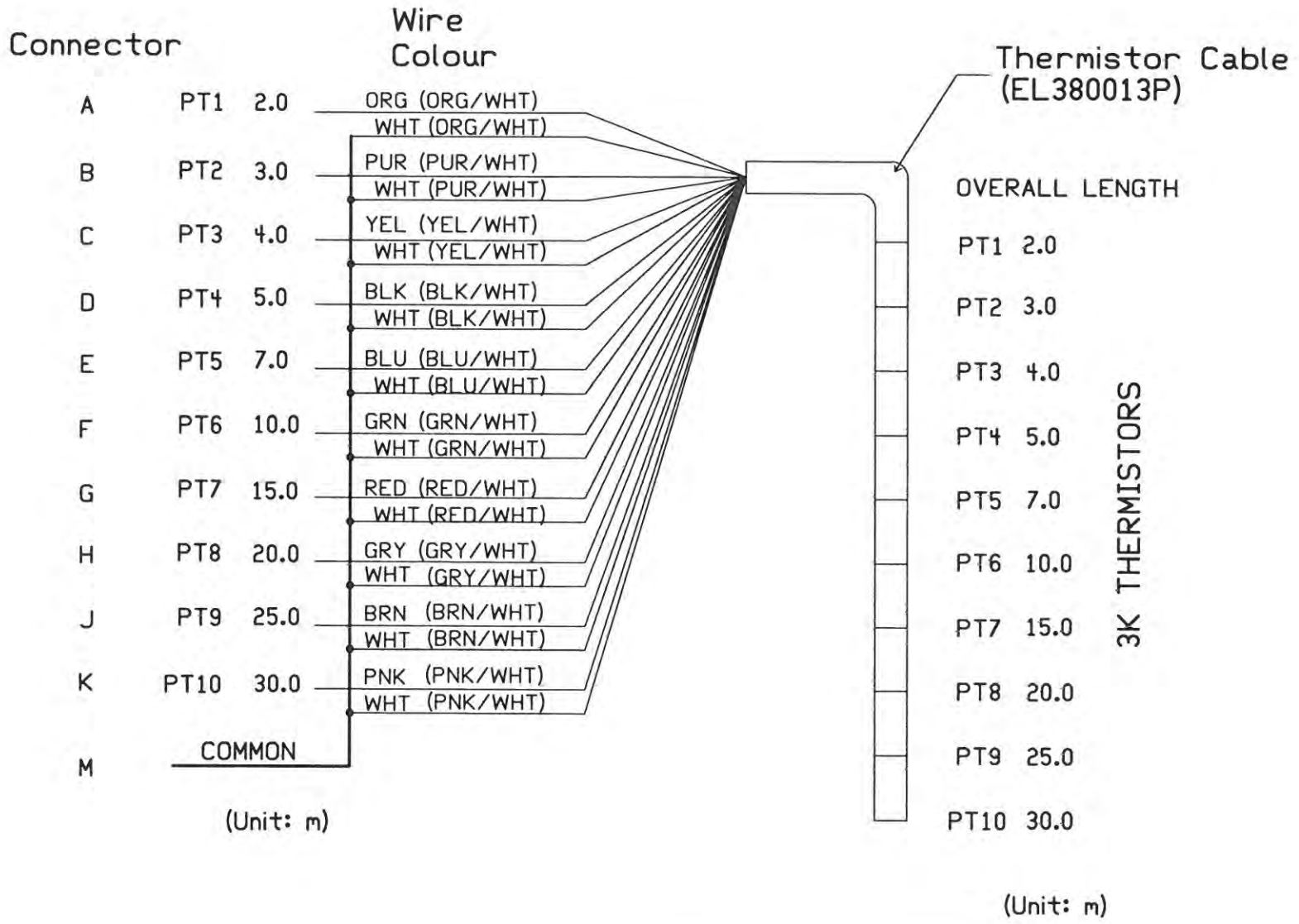
AScT



S/N: TS4136-TS4138

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE
J/N:	THW0250/WO210954 Revision: A
Author:	CB Size: A
Date:	2016/08/11 Sheet 1 of 1

Resistance versus Temperature Relationship 3000 Ohm NTC Thermistors

Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp
201.1K	-50	16.60K	-10	2417	30	525.4	70	153.2	110
187.3K	-49	15.72K	-9	2317	31	507.8	71	149.0	111
174.5K	-48	14.90K	-8	2221	32	490.9	72	145.0	112
162.7K	-47	14.12K	-7	2130	33	474.7	73	141.1	113
151.7K	-46	13.39K	-6	2042	34	459.0	74	137.2	114
141.6K	-45	12.70K	-5	1959	35	444.0	75	133.6	115
132.2K	-44	12.05K	-4	1880	36	429.5	76	130.0	116
123.5K	-43	11.44K	-3	1805	37	415.6	77	126.5	117
115.4K	-42	10.86K	-2	1733	38	402.2	78	123.2	118
107.9K	-41	10.31K	-1	1664	39	389.3	79	119.9	119
101.0K	-40	9796	0	1598	40	376.9	80	116.8	120
94.48K	-39	9310	1	1535	41	364.9	81	113.8	121
88.46K	-38	8851	2	1475	42	353.4	82	110.8	122
82.87K	-37	8417	3	1418	43	342..2	83	107.9	123
77.99K	-36	8006	4	1363	44	331.5	84	105.2	124
72.81K	-35	7618	5	1310	45	321.2	85	102.5	125
68.30K	-35	7252	6	1260	46	311.3	86	99.9	126
64.09K	-33	6905	7	1212	47	301.7	87	97.3	127
60.17K	-32	6576	8	1167	48	282.4	88	94.9	128
56.51K	-31	6265	9	1123	49	283.5	89	92.5	129
53.10K	-30	5971	10	1081	50	274.9	90	90.2	130
49.91K	-29	56.92	11	1040	51	266.6	91	87.9	131
46.94K	-28	5427	12	1002	52	258.6	92	85.7	132
44.16K	-27	5177	13	965	53	250.9	93	83.6	134
39.13K	-25	4714	15	895.8	55	236.2	95	79.6	135
36.86K	-24	4500	16	863.3	56	229.3	96	77.6	136
34.73K	-23	4297	17	832.2	57	222.6	97	75.8	137
32.74K	-22	4105	18	802.3	58	216.1	98	73.9	138
30.87K	-21	3922	19	773.7	59	209.8	99	72.2	139
29.13K	-20	3748	20	746.3	60	203.8	100	70.4	140
27.49K	-19	3583	21	719.9	61	197.9	101	68.8	141
25.95K	-18	3426	22	694.7	62	192.2	102	67.1	142
24.51K	-17	3277	23	670.4	63	186.8	103	65.5	143
23.16K	-16	3135	24	647.1	64	181.5	104	64.0	144
21.89K	-15	3000	25	624.7	65	176.4	105	62.5	145
20.70K	-14	2872	26	603.3	66	171.4	106	61.1	146
19.58K	-13	2750	27	582.6	67	166.7	107	59.6	147
18.52K	-12	2633	28	562.8	68	162.0	108	58.3	148
17.53K	-11	2523	29	543.7	69	157.6	109	56.8	149
								55.6	150

Temperature calculated using:

Steinhart-Hart Linearization

$$T_C = \frac{1}{C_0 + C_1(\ln R) + C_3(\ln R)^3} - 273.15$$

3000 Ohm @ 25C NTC Thermistor

C_0= 0.0014051
C_1= 0.0002369
C_3= 0.0000001019
lnR= Natural Log of Resistance
T_C= Temperature in °C

APPENDIX G

PHOTOGRAPHS

Appendix G1 Test Pit Photographs
Appendix G2 Drill Site Photos
Appendix G3 SPT Photos
Appendix G4 Core Box Photos
Appendix G5 Installation Photos

APPENDIX G1

TEST PIT PHOTOS

(Pages G1-1 to G1-145)

PHOTO 1 TP16-01 - Before Looking East

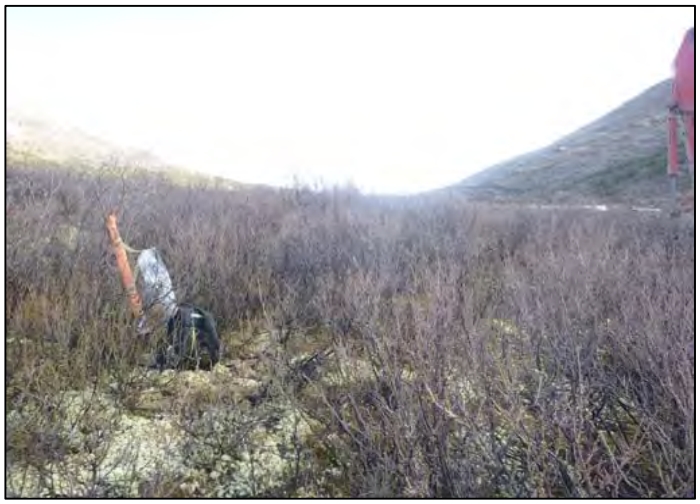


PHOTO 2 TP16-01 - Before Looking North

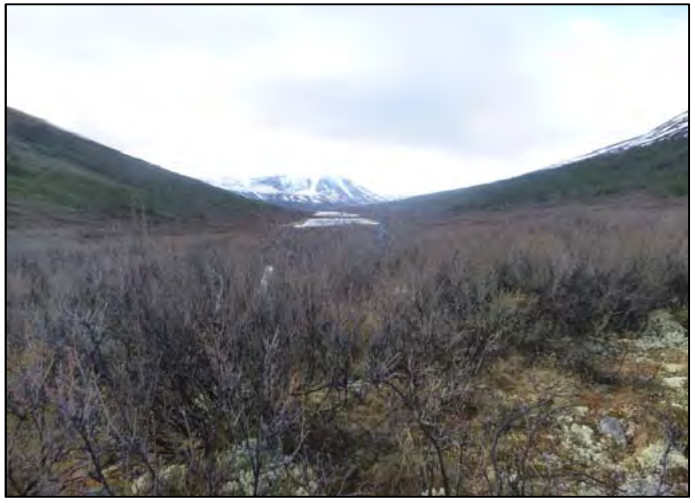


PHOTO 3 TP16-01 - Before Looking South

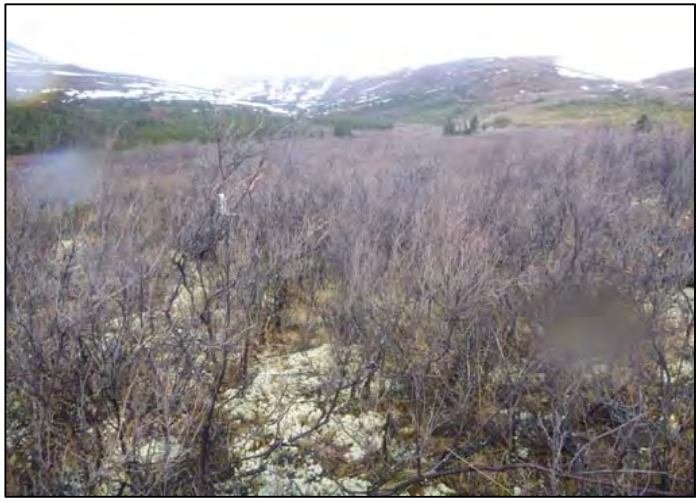


PHOTO 4 TP16-01 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 5 TP16-01 - Topsoil removed

PHOTO 6 TP16-01 - 0 to 1.6 m

PHOTO 7 TP16-01 - 0 to 4.5 m (EOH)

PHOTO 8 TP16-01 - Material at 2 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 9 TP16-01 - Spoil

PHOTO 10 TP16-01 - Spoil (EOH)

PHOTO 11 TP16-01 - Complete Looking East

PHOTO 12 TP16-01 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

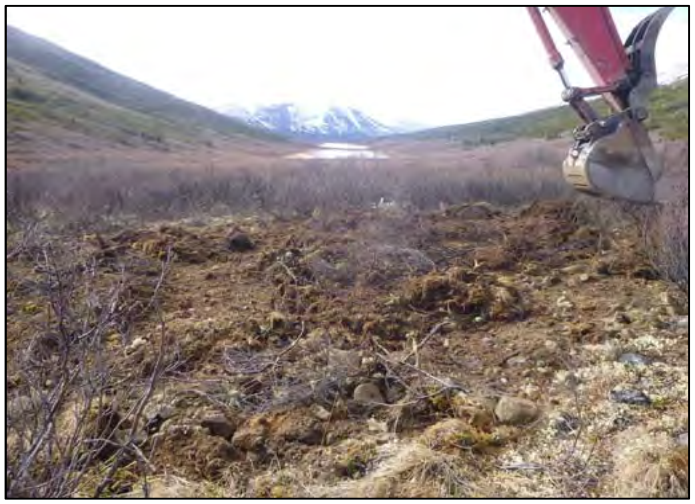


PHOTO 13 TP16-01 - Complete Looking South

PHOTO 14 TP16-01 - Complete Looking West

PHOTO 15 TP16-02 - Before Looking East

PHOTO 16 TP16-02 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 17 TP16-02 - Before Looking South

PHOTO 18 TP16-02 - Before Looking West

PHOTO 19 TP16-02 - Topsoil

PHOTO 20 TP16-02 - 0 m to 1.8 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 21 TP16-02 - Material at 1.8 m

PHOTO 22 TP16-02 - 0 m to 4.3 m

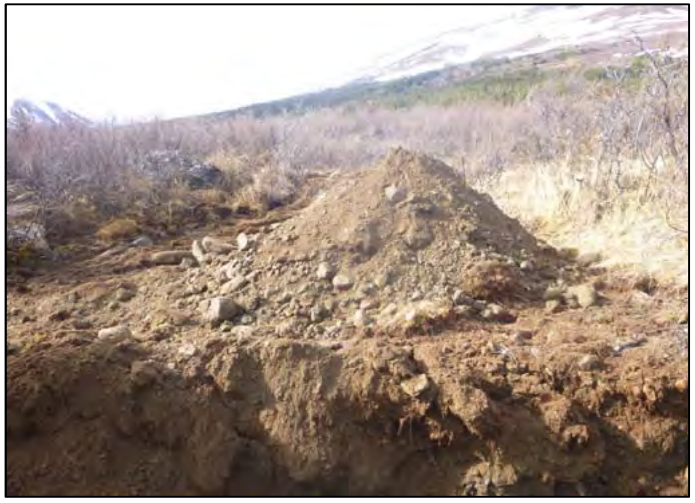


PHOTO 23 TP16-02 - Spoil Pile

PHOTO 24 TP16-02 - Weathered bedrock

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 25 TP16-02 - Complete Looking East

PHOTO 26 TP16-02 - Complete Looking North

PHOTO 27 TP16-02 - Complete Looking South

PHOTO 28 TP16-02 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 29 TP16-03 - Before Looking East

PHOTO 30 TP16-03 - Before Looking North

PHOTO 31 TP16-03 - Before Looking South

PHOTO 32 TP16-03 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 33 TP16-03 - 0 m to 1.8 m

PHOTO 34 TP16-03 - 0 m to 3.2 m

PHOTO 35 TP16-03 - Spoil Pile

PHOTO 36 TP16-03 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 37 TP16-03 - Complete Looking North

PHOTO 38 TP16-03 - Complete Looking South

PHOTO 39 TP16-03 - Complete Looking West

PHOTO 40 TP16-04 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 41 TP16-04 - Before Looking North

PHOTO 42 TP16-04 - Before Looking South

PHOTO 43 TP16-04 - Before Looking West

PHOTO 44 TP16-04 - 0 m to 1.7 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 45 TP16-04 - Material at 1.7 m

PHOTO 46 TP16-04 - 0 m to 2.2 m

PHOTO 47 TP16-04 - Spoil Pile

PHOTO 48 TP16-04 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 49 TP16-04 - Complete Looking North

PHOTO 50 TP16-04 - Complete Looking South

PHOTO 51 TP16-04 - Complete Looking West

PHOTO 52 TP16-05 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 53 TP16-05 - Before Looking North

PHOTO 54 TP16-05 - Before Looking South

PHOTO 55 TP16-05 - Before Looking West

PHOTO 56 TP16-05 - 0 m to 1.6 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 57 TP16-05 - 0 m to 3.3 m (2)

PHOTO 58 TP16-05 - Complete Looking East

PHOTO 59 TP16-05 - Complete Looking North

PHOTO 60 TP16-05 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 61 TP16-05 - Complete Looking West

PHOTO 62 TP16-06 - Before Looking East

PHOTO 63 TP16-06 - Before Looking North

PHOTO 64 TP16-06 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 65 TP16-06 - Before Looking West

PHOTO 66 TP16-06 - 0 m to 0.8 m

PHOTO 67 TP16-06 - 0 m to 1.6 m

PHOTO 68 TP16-06 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 69 TP16-06 - Complete Looking North

PHOTO 70 TP16-06 - Complete Looking South

PHOTO 71 TP16-06 - Complete Looking West

PHOTO 72 TP16-07 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 73 TP16-07 - Before Looking North

PHOTO 74 TP16-07 - Before Looking South

PHOTO 75 TP16-07 - Before Looking West

PHOTO 76 TP16-07 - 0 m to 1.7 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 77 TP16-07 - 0 m to 2.4 m

PHOTO 78 TP16-07 - Material at 2.4 m

PHOTO 79 TP16-07 - Spoil Pile

PHOTO 80 TP16-07 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 81 TP16-07 - Complete Looking North

PHOTO 82 TP16-07 - Complete Looking South

PHOTO 83 TP16-07 - Complete Looking West

PHOTO 84 TP16-08 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 85 TP16-08 - Before Looking North

PHOTO 86 TP16-08 - Before Looking South

PHOTO 87 TP16-08 - Before Looking West

PHOTO 88 TP16-08 - 0 m to 2.1 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 89 TP16-08 - Material at 2.1 m

PHOTO 90 TP16-08 - 0 m to 4.2 m

PHOTO 91 TP16-09 - Before Looking East

PHOTO 92 TP16-09 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 93 TP16-09 - Before Looking South

PHOTO 94 TP16-09 - Before Looking West

PHOTO 95 TP16-09 - 0 m to 3.9 m

PHOTO 96 TP16-09 - Material at 3.9 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 97 TP16-09 - Complete Looking East

PHOTO 98 TP16-09 - Complete Looking North

PHOTO 99 TP16-09 - Complete Looking South

PHOTO 100 TP16-09 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 101 TP16-10 - Before Looking East

PHOTO 102 TP16-10 - Before Looking North

PHOTO 103 TP16-10 - Before Looking South

PHOTO 104 TP16-10 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 105 TP16-10 - 0 m to 1.9 m

PHOTO 106 TP16-10 - 0 m to 3.3 m

PHOTO 107 TP16-11 - Before Looking East

PHOTO 108 TP16-11 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 109 TP16-11 - Before Looking South

PHOTO 110 TP16-11 - Before Looking West

PHOTO 111 TP16-11 - 0 m to 1.5 m

PHOTO 112 TP16-11 - Material at 1.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 113 TP16-11 - 0 m to 3.5 m

PHOTO 114 TP16-11 - Spoil Pile

PHOTO 115 TP16-11 - Complete Looking East

PHOTO 116 TP16-11 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 117 TP16-11 - Complete Looking South

PHOTO 118 TP16-11 - Complete Looking West

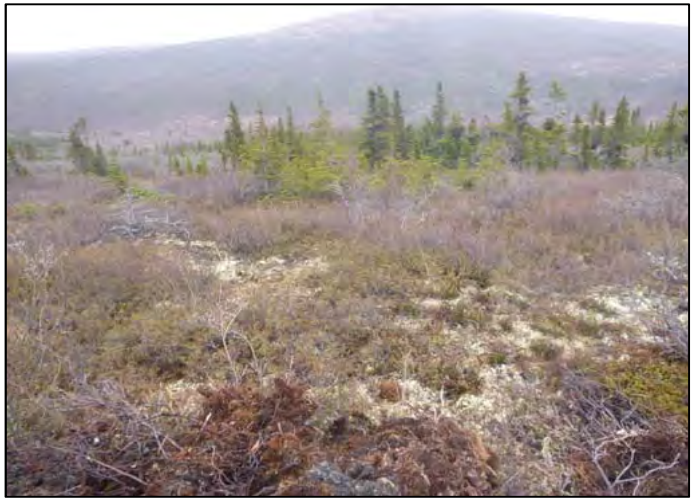


PHOTO 119 TP16-12 - Before Looking East

PHOTO 120 TP16-12 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

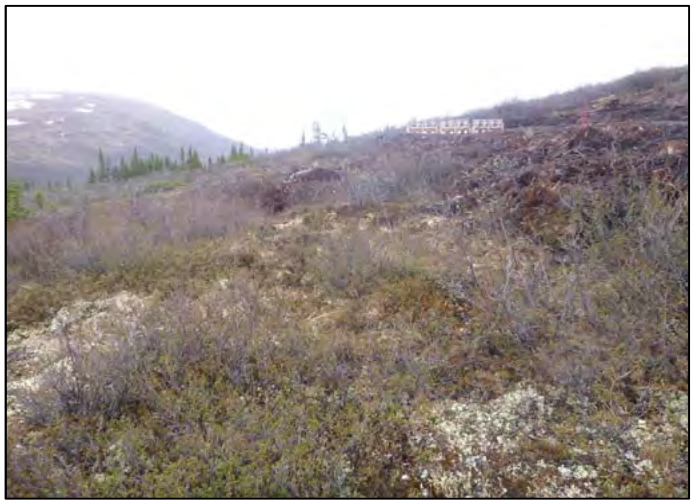


PHOTO 121 TP16-12 - Before Looking South

PHOTO 122 TP16-12 - Before Looking West

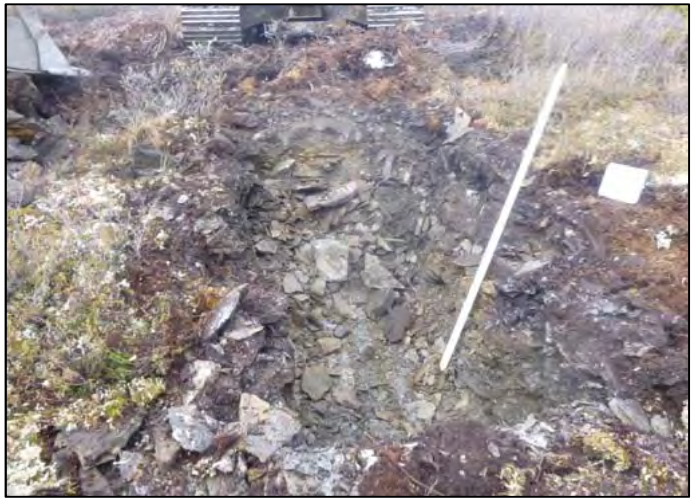


PHOTO 123 TP16-12 - 0 m to 1.6 m

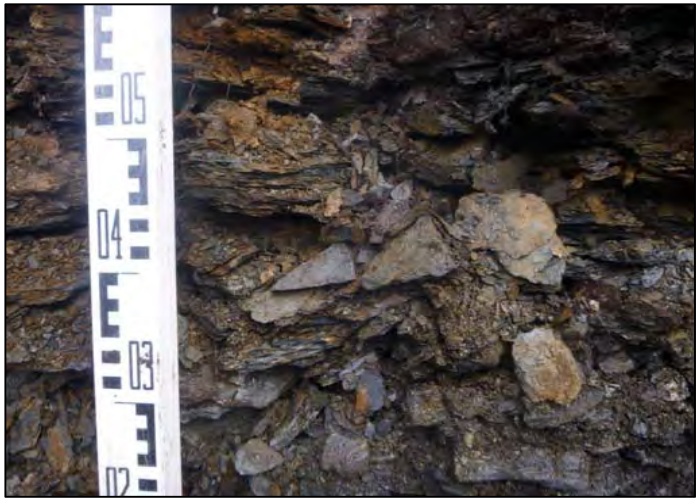


PHOTO 124 TP16-12 - Material at 0.4 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 125 TP16-12 - Spoil Pile

PHOTO 126 TP16-12 - Complete Looking East

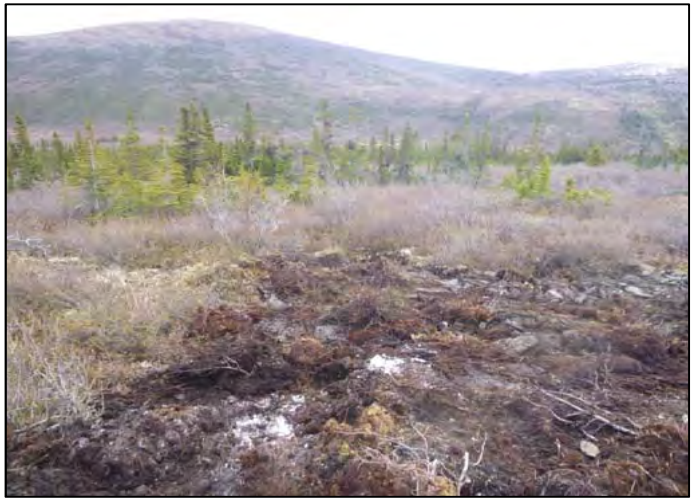


PHOTO 127 TP16-12 - Complete Looking North

PHOTO 128 TP16-12 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 129 TP16-12 - Complete Looking West

PHOTO 130 TP16-13 - Before Looking East

PHOTO 131 TP16-13 - Before Looking North

PHOTO 132 TP16-13 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 133 TP16-13 - Before Looking West

PHOTO 134 TP16-14 - Before Looking East

PHOTO 135 TP16-14 - Before Looking North

PHOTO 136 TP16-14 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 137 TP16-14 - Before Looking West

PHOTO 138 TP16-14 - Topsoil

PHOTO 139 TP16-15 - Before Looking East

PHOTO 140 TP16-15 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 141 TP16-15 - Before Looking South

PHOTO 142 TP16-15 - Before Looking West

PHOTO 143 TP16-15 - 0 m to 1.1 m

PHOTO 144 TP16-15 - Material at 1.1 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 145 TP16-15 - 0 m to 4.8 m

PHOTO 146 TP16-15 - Material at 4.8 m

PHOTO 147 TP16-15 - Samples

PHOTO 148 TP16-15 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 149 TP16-15 - Complete Looking East

PHOTO 150 TP16-15 - Complete Looking North

PHOTO 151 TP16-15 - Complete Looking South

PHOTO 152 TP16-15 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 153 TP16-16 - Before Looking East

PHOTO 154 TP16-16 - Before Looking North

PHOTO 155 TP16-16 - Before Looking South

PHOTO 156 TP16-16 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 157 TP16-16 - 0 m to 1.5 m

PHOTO 158 TP16-16 - Spoil Pile

PHOTO 159 TP16-16 - Complete Looking East

PHOTO 160 TP16-16 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 161 TP16-16 - Complete Looking South

PHOTO 162 TP16-16 - Complete Looking West

PHOTO 163 TP16-17 - Before Looking East

PHOTO 164 TP16-17 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 165 TP16-17 - Before Looking South

PHOTO 166 TP16-17 - Before Looking West

PHOTO 167 TP16-17 - 0 m to 1.3 m

PHOTO 168 TP16-17 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 169 TP16-17 - Complete Looking East

PHOTO 170 TP16-17 - Complete Looking North

PHOTO 171 TP16-17 - Complete Looking South

PHOTO 172 TP16-17 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 173 TP16-18 - Before Looking East

PHOTO 174 TP16-18 - Before Looking North

PHOTO 175 TP16-18 - Before Looking South

PHOTO 176 TP16-18 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 177 TP16-18 - 0 m to 1.5 m

PHOTO 178 TP16-18 - 0 m to 2.3 m

PHOTO 179 TP16-18 - Spoil Pile

PHOTO 180 TP16-18 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 181 TP16-18 - Complete Looking North

PHOTO 182 TP16-18 - Complete Looking South

PHOTO 183 TP16-18 - Complete Looking West

PHOTO 184 TP16-19 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 185 TP16-19 - Before Looking North

PHOTO 186 TP16-19 - Before Looking South

PHOTO 187 TP16-19 - Before Looking West

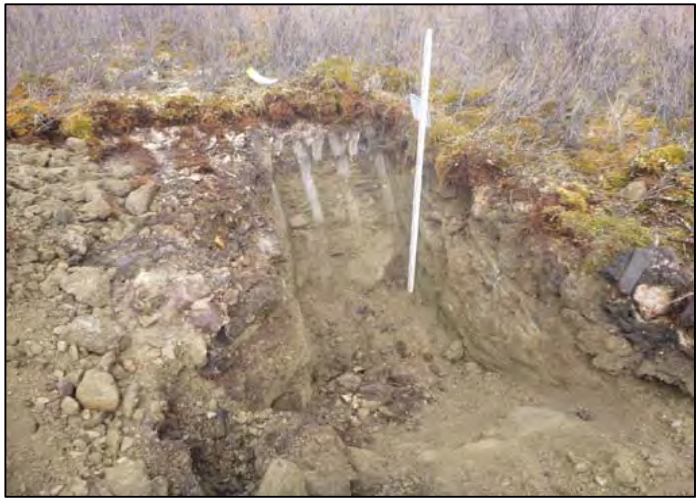


PHOTO 188 TP16-19 - 0 m to 1.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 189 TP16-19 - Material at 1.5 m

PHOTO 190 TP16-19 - 0 m to 2.8 m

PHOTO 191 TP16-19 - Spoil Pile

PHOTO 192 TP16-19 - Volcanic ash

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

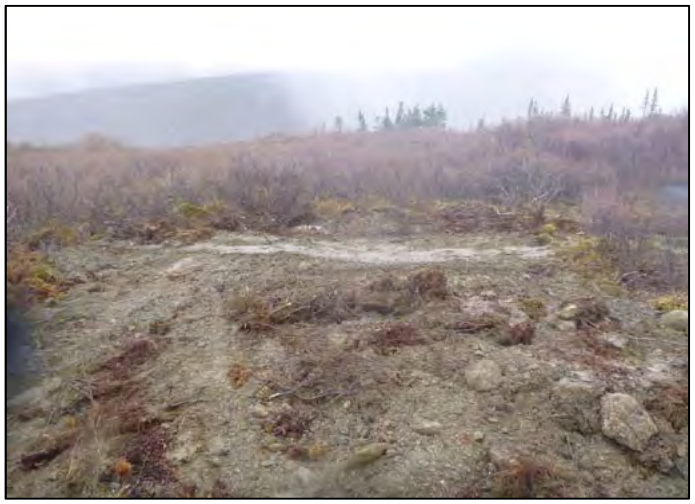


PHOTO 193 TP16-19 - Complete Looking East

PHOTO 194 TP16-19 - Complete Looking North

PHOTO 195 TP16-19 - Complete Looking South

PHOTO 196 TP16-19 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 197 TP16-20 - Before Looking East

PHOTO 198 TP16-20 - Before Looking North

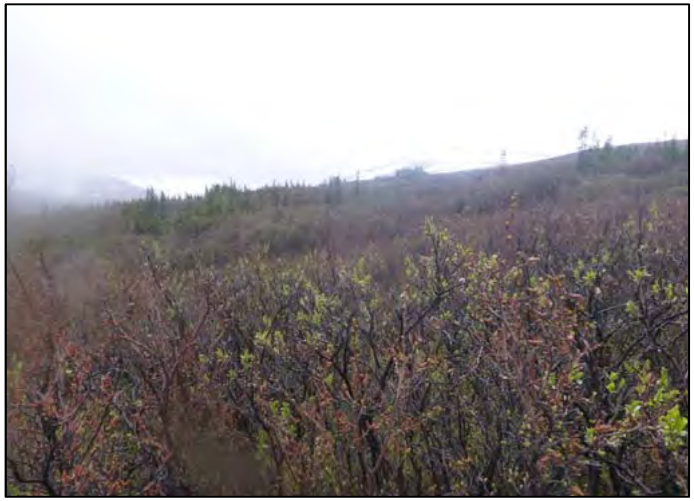


PHOTO 199 TP16-20 - Before Looking South

PHOTO 200 TP16-20 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

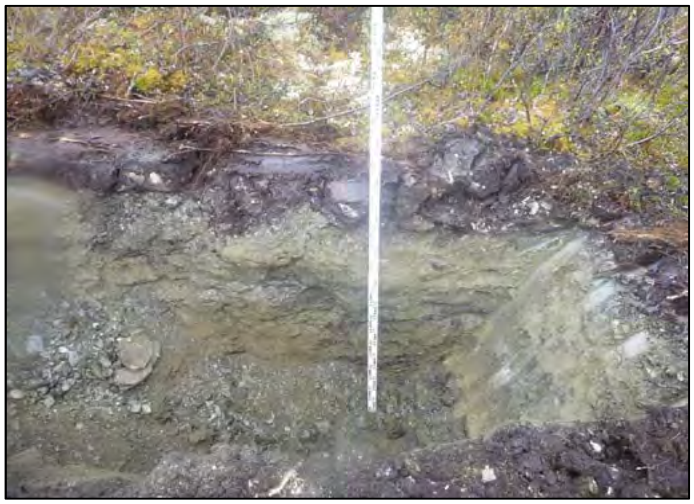


PHOTO 201 TP16-20 - 0 m to 1.9 m

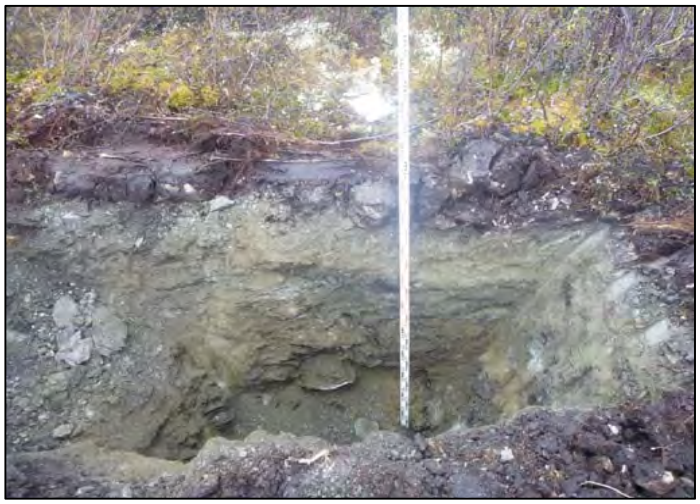


PHOTO 202 TP16-20 - 0 m to 2.0 m

PHOTO 203 TP16-20 - Bedrock

PHOTO 204 TP16-20 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 205 TP16-20 - Complete Looking East

PHOTO 206 TP16-20 - Complete Looking North

PHOTO 207 TP16-20 - Complete Looking South

PHOTO 208 TP16-20 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 209 TP16-21 - Before Looking East

PHOTO 210 TP16-21 - Before Looking North

PHOTO 211 TP16-21 - Before Looking South

PHOTO 212 TP16-21 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 213 TP16-21 - 0 m to 1.7 m

PHOTO 214 TP16-21 - 0 m to 2.3 m

PHOTO 215 TP16-21 - Complete Looking East

PHOTO 216 TP16-21 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 217 TP16-21 - Complete Looking South

PHOTO 218 TP16-21 - Complete Looking West

PHOTO 219 TP16-22 - Before Looking East

PHOTO 220 TP16-22 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

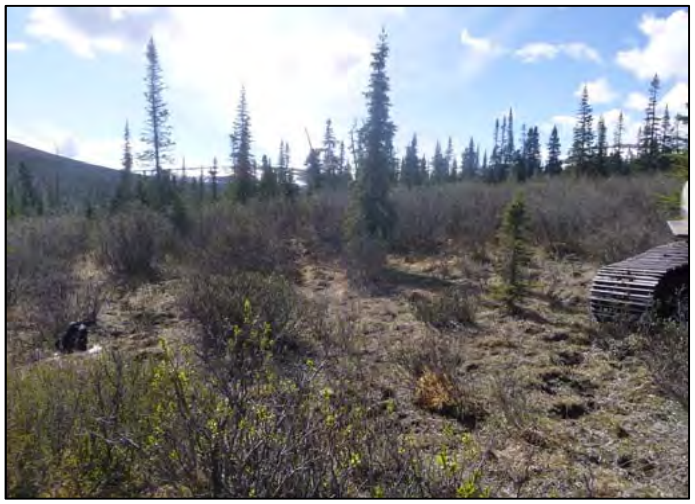


PHOTO 221 TP16-22 - Before Looking South

PHOTO 222 TP16-22 - Before Looking West

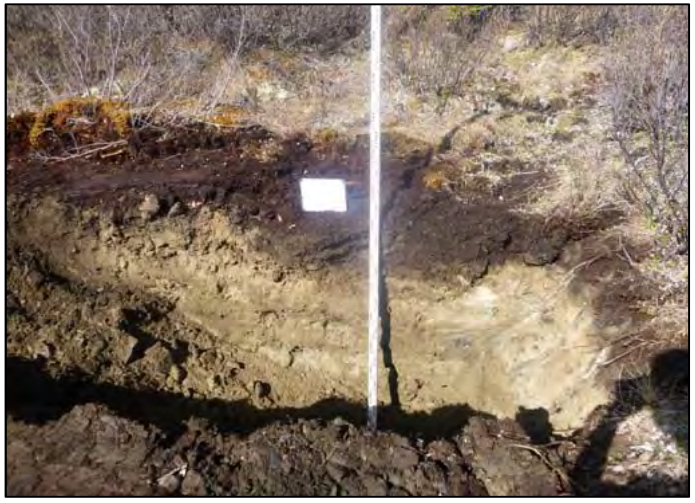


PHOTO 223 TP16-22 - 0 m to 2.1 m

PHOTO 224 TP16-22 - 0 m to 4.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 225 TP16-22 - Material at 4.5 m

PHOTO 226 TP16-22 - Spoil Pile

PHOTO 227 TP16-23 - Before Looking East

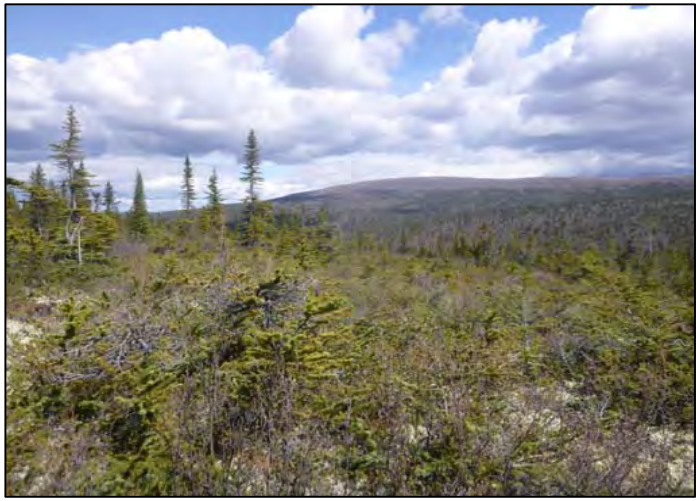


PHOTO 228 TP16-23 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 229 TP16-23 - Before Looking South

PHOTO 230 TP16-23 - Before Looking West

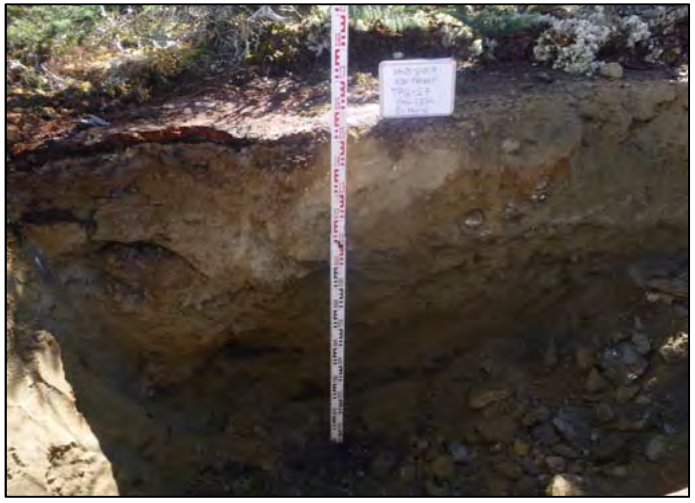


PHOTO 231 TP16-23 - 0 m to 1.5 m

PHOTO 232 TP16-23 - 0 m to 2.4 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 233 TP16-23 - Spoil Pile

PHOTO 234 TP16-23 - Complete Looking East

PHOTO 235 TP16-23 - Complete Looking North

PHOTO 236 TP16-23 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 237 TP16-23 - Complete Looking West

PHOTO 238 TP16-24 - Before Looking East

PHOTO 239 TP16-24 - Before Looking North

PHOTO 240 TP16-24 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 241 TP16-24 - Before Looking West

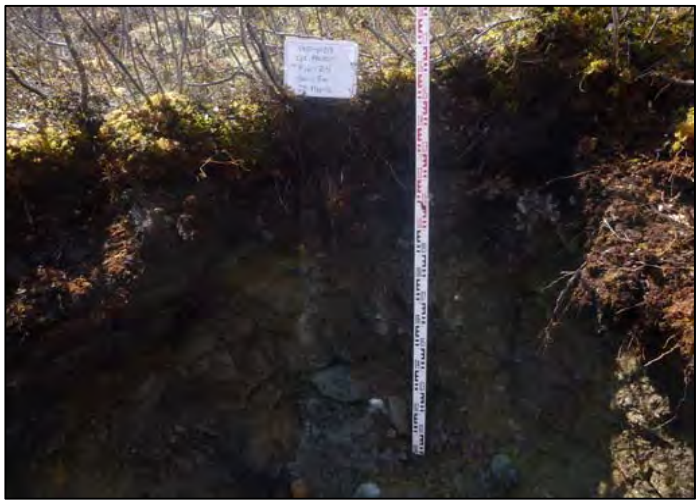


PHOTO 242 TP16-24 - 0 m to 1.5 m

PHOTO 243 TP16-24 - Spoil Pile

PHOTO 244 TP16-24 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 245 TP16-24 - Complete Looking North

PHOTO 246 TP16-24 - Complete Looking South

PHOTO 247 TP16-24 - Complete Looking West

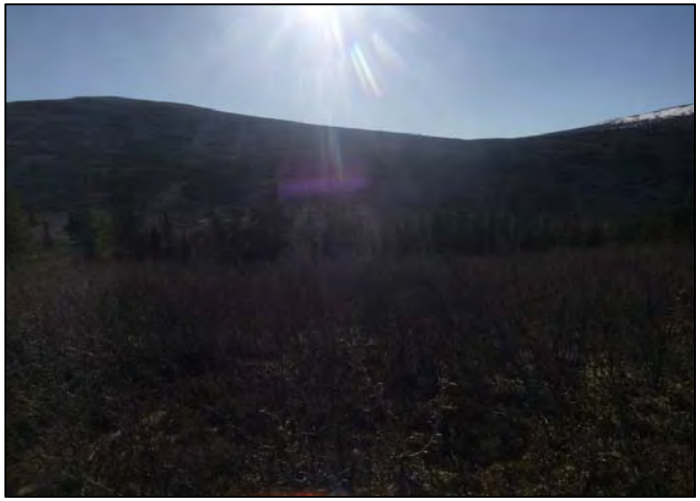


PHOTO 248 TP16-25 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 249 TP16-25 - Before Looking North

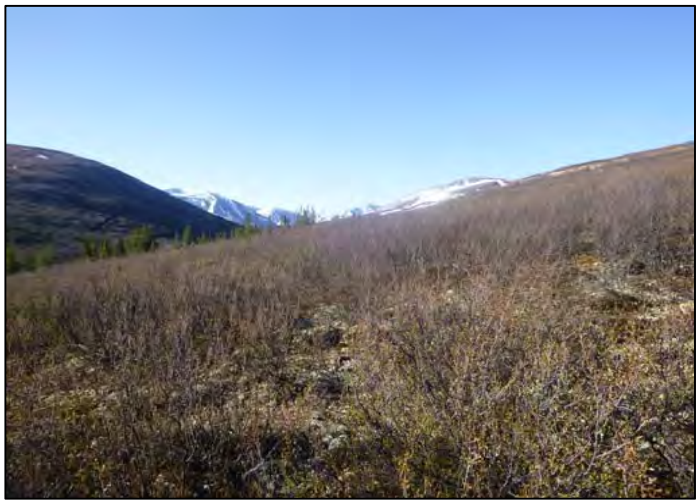


PHOTO 250 TP16-25 - Before Looking South

PHOTO 251 TP16-25 - Before Looking West

PHOTO 252 TP16-25 - 0 m to 1.4 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 253 TP16-25 - Material at 1.0 m

PHOTO 254 TP16-25 - Material at 1.3 m

PHOTO 255 TP16-25 - Material at 1.4 m

PHOTO 256 TP16-25 - 0 m to 1.9 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 257 TP16-25 - Material at 1.9 m

PHOTO 258 TP16-25 - Bedrock

PHOTO 259 TP16-25 - Spoil Pile

PHOTO 260 TP16-25 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 261 TP16-25 - Complete Looking North

PHOTO 262 TP16-25 - Complete Looking South

PHOTO 263 TP16-25 - Complete Looking West

PHOTO 264 TP16-26 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 265 TP16-26 - Before Looking North

PHOTO 266 TP16-26 - Before Looking South

PHOTO 267 TP16-26 - Before Looking West

PHOTO 268 TP16-26 - 0 m to 1.6 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 269 TP16-26 - 0 m to 4.0 m

PHOTO 270 TP16-26 - Material at 4.0 m

PHOTO 271 TP16-26 - Spoil Pile

PHOTO 272 TP16-26 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 273 TP16-26 - Complete Looking North

PHOTO 274 TP16-26 - Complete Looking South

PHOTO 275 TP16-26 - Complete Looking West

PHOTO 276 TP16-27 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 277 TP16-27 - Before Looking North

PHOTO 278 TP16-27 - Before Looking South

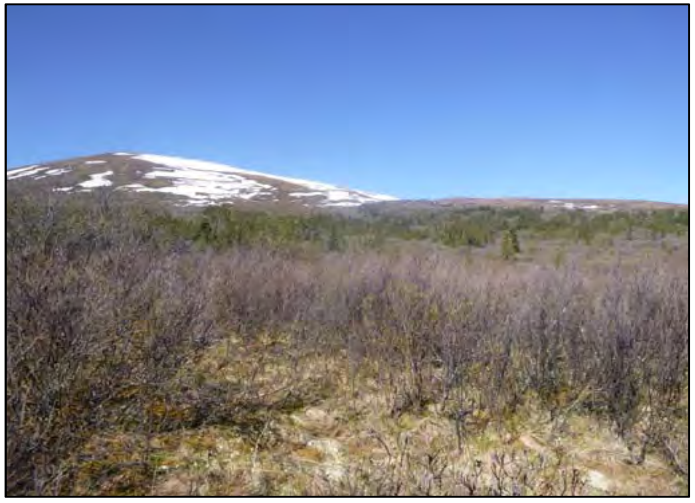


PHOTO 279 TP16-27 - Before Looking West

PHOTO 280 TP16-27 - 0 m to 1.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 281 TP16-27 - 0 m to 2.9 m

PHOTO 282 TP16-27 - Spoil Pile

PHOTO 283 TP16-27 - Complete Looking East

PHOTO 284 TP16-27 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 285 TP16-27 - Complete Looking South

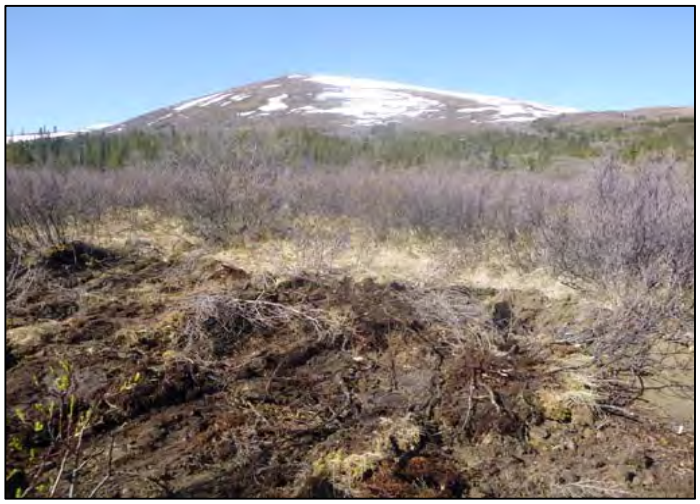


PHOTO 286 TP16-27 - Complete Looking West

PHOTO 287 TP16-28 - Before Looking East

PHOTO 288 TP16-28 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

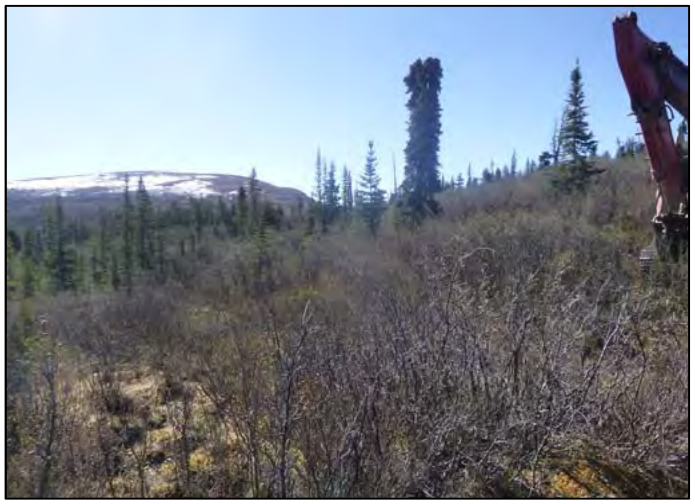


PHOTO 289 TP16-28 - Before Looking South

PHOTO 290 TP16-28 - Before Looking West

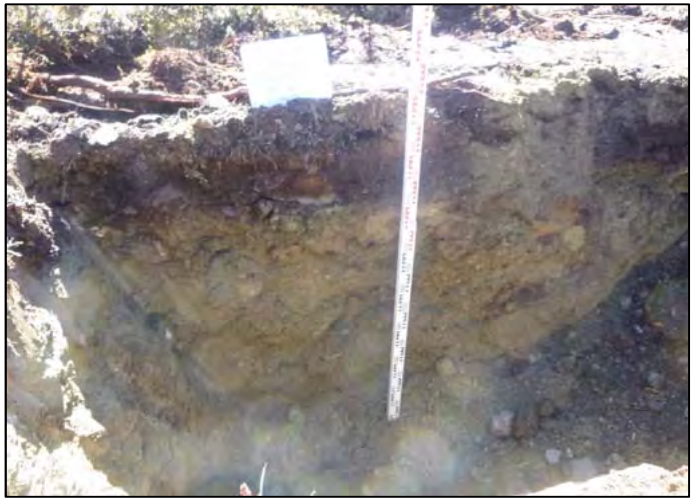


PHOTO 291 TP16-28 - 0 m to 1.6 m

PHOTO 292 TP16-28 - 0 m to 2.7 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 293 TP16-28 - Spoil Pile

PHOTO 294 TP16-28 - Volcanic ash

PHOTO 295 TP16-28 - Complete Looking East

PHOTO 296 TP16-28 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 297 TP16-28 - Complete Looking South

PHOTO 298 TP16-28 - Complete Looking West

PHOTO 299 TP16-29 - Before Looking East

PHOTO 300 TP16-29 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 301 TP16-29 - Before Looking South

PHOTO 302 TP16-29 - Before Looking West

PHOTO 303 TP16-29 - 0 m to 1.7 m

PHOTO 304 TP16-29 - 0 m to 2.3 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

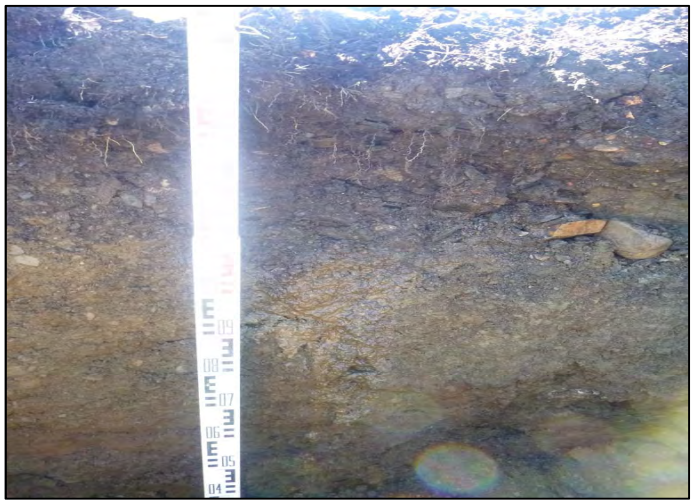


PHOTO 305 TP16-29 - Seep

PHOTO 306 TP16-29 - Spoil Pile

PHOTO 307 TP16-29 - Complete Looking East

PHOTO 308 TP16-29 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 309 TP16-29 - Complete Looking South

PHOTO 310 TP16-29 - Complete Looking West

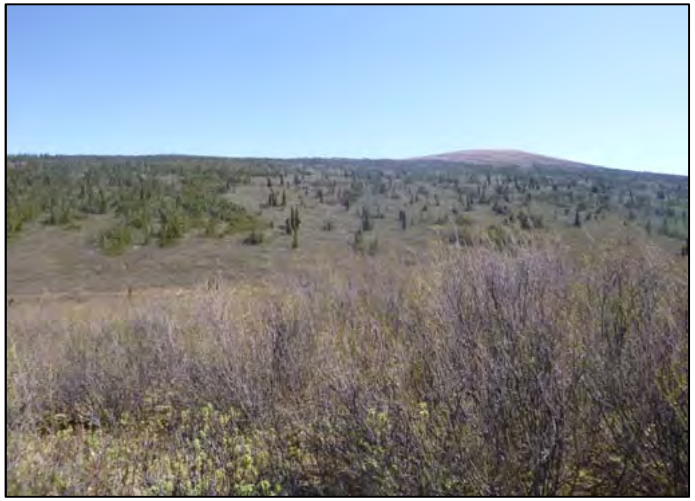


PHOTO 311 TP16-30 - Before Looking East

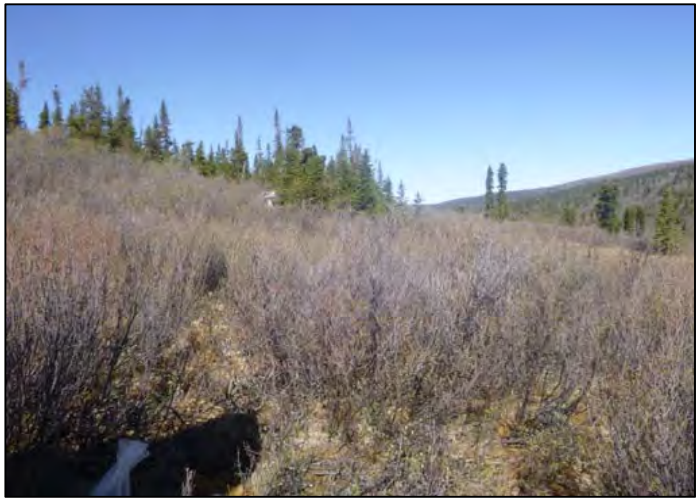


PHOTO 312 TP16-30 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 313 TP16-30 - Before Looking South

PHOTO 314 TP16-30 - Before Looking West

PHOTO 315 TP16-30 - 0 m to 2 m

PHOTO 316 TP16-30 - 0 m to 3.8 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 317 TP16-30 - Material at 3.8 m

PHOTO 318 TP16-30 - Spoil Pile

PHOTO 319 TP16-31 - Before Looking East

PHOTO 320 TP16-31 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 321 TP16-31 - Before Looking South

PHOTO 322 TP16-31 - Before Looking West

PHOTO 323 TP16-31 - 0 m to 1.4 m

PHOTO 324 TP16-31 - 0 m to 4.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 325 TP16-31 - Spoil Pile

PHOTO 326 TP16-31 - Complete Looking East

PHOTO 327 TP16-31 - Complete Looking North

PHOTO 328 TP16-31 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 329 TP16-31 - Complete Looking West

PHOTO 330 TP16-32 - Before Looking East

PHOTO 331 TP16-32 - Before Looking North

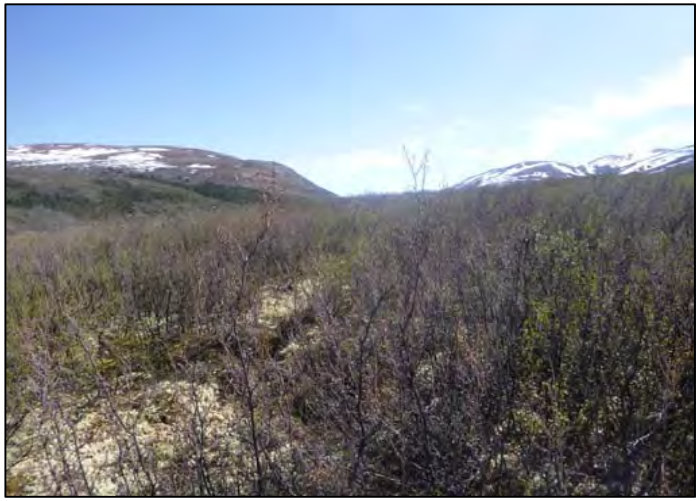


PHOTO 332 TP16-32 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 333 TP16-32 - Before Looking West

PHOTO 334 TP16-32 - 0 m to 1.4 m

PHOTO 335 TP16-32 - Material at 1.4 m

PHOTO 336 TP16-32 - 0 m to 5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 337 TP16-32 - Spoil Pile

PHOTO 338 TP16-32 - Complete Looking East

PHOTO 339 TP16-32 - Complete Looking North

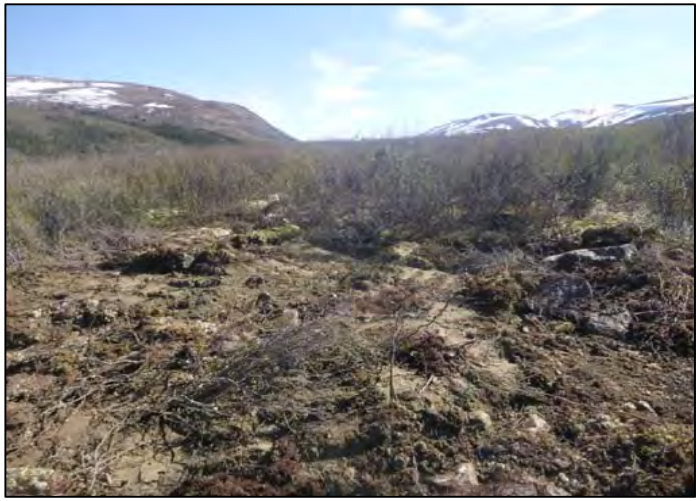


PHOTO 340 TP16-32 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 341 TP16-32 - Complete Looking West

PHOTO 342 TP16-33 - Before Looking East

PHOTO 343 TP16-33 - Before Looking North

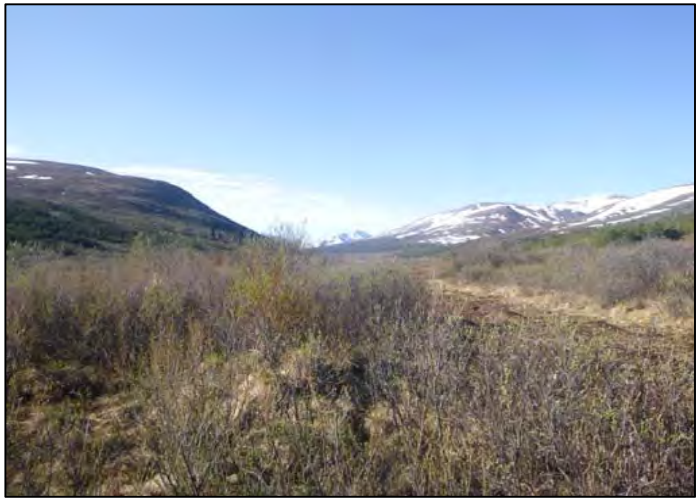


PHOTO 344 TP16-33 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 345 TP16-33 - Before Looking West

PHOTO 346 TP16-33 - 0 m to 1.5 m

PHOTO 347 TP16-33 - 0 m to 3.4 m

PHOTO 348 TP16-33 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 349 TP16-33 - Complete Looking East

PHOTO 350 TP16-33 - Complete Looking North

PHOTO 351 TP16-33 - Complete Looking South

PHOTO 352 TP16-33 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 353 TP16-34 - Before Looking East

PHOTO 354 TP16-34 - Before Looking North

PHOTO 355 TP16-34 - Before Looking South

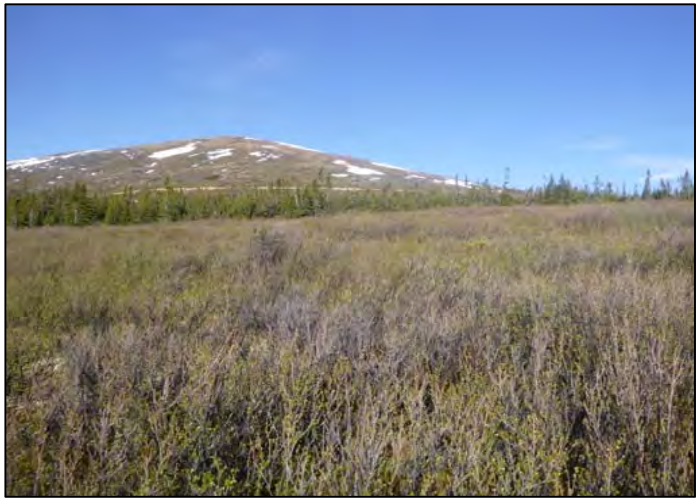


PHOTO 356 TP16-34 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 357 TP16-34 - 0 m to 1.1 m

PHOTO 358 TP16-34 - Spoil Pile

PHOTO 359 TP16-34 - Complete Looking East

PHOTO 360 TP16-34 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 361 TP16-34 - Complete Looking South

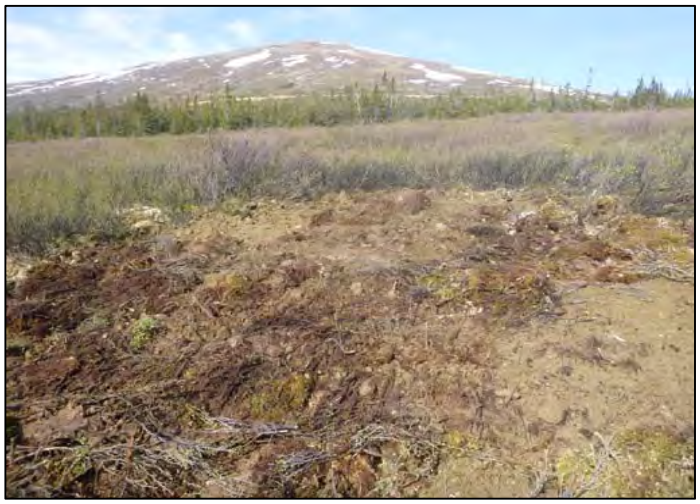


PHOTO 362 TP16-34 - Complete Looking West

PHOTO 363 TP16-35 - Before Looking East

PHOTO 364 TP16-35 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 365 TP16-35 - Before Looking South

PHOTO 366 TP16-35 - Before Looking West

PHOTO 367 TP16-35 - 0 m to 1.4 m

PHOTO 368 TP16-35 - 0 m to 4.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 369 TP16-35 - Weathered Bedrock at 4.5 m

PHOTO 370 TP16-35 - Spoil Pile

PHOTO 371 TP16-35 - Complete Looking East

PHOTO 372 TP16-35 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 373 TP16-35 - Complete Looking South

PHOTO 374 TP16-35 - Complete Looking West

PHOTO 375 TP16-36 - Before Looking East

PHOTO 376 TP16-36 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 377 TP16-36 - Before Looking South

PHOTO 378 TP16-36 - Before Looking West

PHOTO 379 TP16-36 - 0 m to 1 m

PHOTO 380 TP16-36 - 0 m to 5.1 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 381 TP16-36 - Spoil Pile

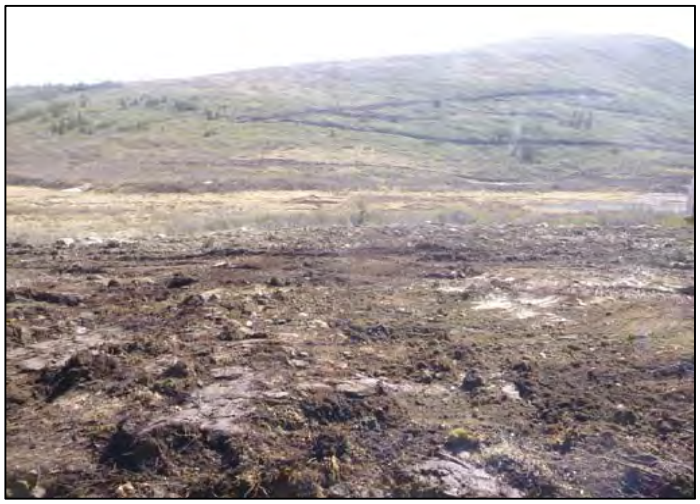


PHOTO 382 TP16-36 - Complete Looking East

PHOTO 383 TP16-36 - Complete Looking North

PHOTO 384 TP16-36 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 385 TP16-36 - Complete Looking West

PHOTO 386 TP16-37 - Before Looking East

PHOTO 387 TP16-37 - Before Looking North

PHOTO 388 TP16-37 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 389 TP16-37 - Before Looking West

PHOTO 390 TP16-37 - 0 m to 1.5 m

PHOTO 391 TP16-37 - 0 m to 2.3 m

PHOTO 392 TP16-37 - Spoil Pile at 2.3 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 393 TP16-37 - Spoil Pile

PHOTO 394 TP16-37 - Complete Looking East

PHOTO 395 TP16-37 - Complete Looking North

PHOTO 396 TP16-37 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 397 TP16-37 - Complete Looking West

PHOTO 398 TP16-38 - Before Looking East

PHOTO 399 TP16-38 - Before Looking North

PHOTO 400 TP16-38 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 401 TP16-38 - Before Looking West

PHOTO 402 TP16-38 - 0 m to 2.1 m

PHOTO 403 TP16-38 - 0 m to 5 m

PHOTO 404 TP16-38 - Spoil Pile at 5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 405 TP16-38 - Spoil Pile

PHOTO 406 TP16-38 - Volcanic Ash Layer

PHOTO 407 TP16-38 - Complete Looking East

PHOTO 408 TP16-38 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 409 TP16-38 - Complete Looking South

PHOTO 410 TP16-38 - Complete Looking West

PHOTO 411 TP16-39 - Before Looking East

PHOTO 412 TP16-39 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 413 TP16-39 - Before Looking South

PHOTO 414 TP16-39 - Before Looking West

PHOTO 415 TP16-39 - 0 m to 2 m

PHOTO 416 TP16-39 - 0 m to 4 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 417 TP16-39 - Spoil Pile at 4 m

PHOTO 418 TP16-39 - Spoil Pile

PHOTO 419 TP16-39 - Complete Looking East

PHOTO 420 TP16-39 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 421 TP16-39 - Complete Looking South

PHOTO 422 TP16-39 - Complete Looking West

PHOTO 423 TP16-40 - Before Looking East

PHOTO 424 TP16-40 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 425 TP16-40 - Before Looking South

PHOTO 426 TP16-40 - Before Looking West

PHOTO 427 TP16-40 - 0 m to 1.7 m

PHOTO 428 TP16-40 - Frozen Material at 1.7 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 429 TP16-40 - 0 m to 4.5 m

PHOTO 430 TP16-40 - Spoil Pile

PHOTO 431 TP16-40 - Complete Looking East

PHOTO 432 TP16-40 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 433 TP16-40 - Complete Looking South

PHOTO 434 TP16-40 - Complete Looking West

PHOTO 435 TP16-41 - Before Looking East

PHOTO 436 TP16-41 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 437 TP16-41 - Before Looking South

PHOTO 438 TP16-41 - Before Looking West

PHOTO 439 TP16-41 - 0 m to 3 m

PHOTO 440 TP16-41 - Material at 3 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 441 TP16-41 - Complete Looking East

PHOTO 442 TP16-41 - Complete Looking North

PHOTO 443 TP16-41 - Complete Looking South

PHOTO 444 TP16-41 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 445 TP16-42 - Before Looking East

PHOTO 446 TP16-42 - Before Looking North

PHOTO 447 TP16-42 - Before Looking South

PHOTO 448 TP16-42 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 449 TP16-42 - Frozen Topsoil

PHOTO 450 TP16-42 - 0 m to 1.7 m

PHOTO 451 TP16-42 - 0 m to 4.9 m

PHOTO 452 TP16-42 - Material at 4.9 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 453 TP16-42 - Spoil Pile

PHOTO 454 TP16-42 - Complete Looking East

PHOTO 455 TP16-42 - Complete Looking North

PHOTO 456 TP16-42 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 457 TP16-42 - Complete Looking West

PHOTO 458 TP16-43 - Before Looking East

PHOTO 459 TP16-43 - Before Looking North

PHOTO 460 TP16-43 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 461 TP16-43 - Before Looking West

PHOTO 462 TP16-43 - 0 m to 1.8 m

PHOTO 463 TP16-43 - Frozen Material

PHOTO 464 TP16-43 - Complete Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 465 TP16-43 - Complete Looking North

PHOTO 466 TP16-43 - Complete Looking South

PHOTO 467 TP16-43 - Complete Looking West

PHOTO 468 TP16-44 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 469 TP16-44 - Before Looking North

PHOTO 470 TP16-44 - Before Looking South

PHOTO 471 TP16-44 - Before Looking West

PHOTO 472 TP16-44 - 0 m to 1.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 473 TP16-44 - 0 m to 4 m

PHOTO 474 TP16-44 - Material at 4 m

PHOTO 475 TP16-44 - Complete Looking East

PHOTO 476 TP16-44 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 477 TP16-44 - Complete Looking South

PHOTO 478 TP16-44 - Complete Looking West

PHOTO 479 TP16-45 - Before Looking East

PHOTO 480 TP16-45 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 481 TP16-45 - Before Looking South

PHOTO 482 TP16-45 - Before Looking West

PHOTO 483 TP16-45 - 0 m to 1.5 m

PHOTO 484 TP16-45 - 0 m to 3.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 485 TP16-45 - Material at 3.5 m

PHOTO 486 TP16-45 - Complete Looking East

PHOTO 487 TP16-45 - Complete Looking North

PHOTO 488 TP16-45 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

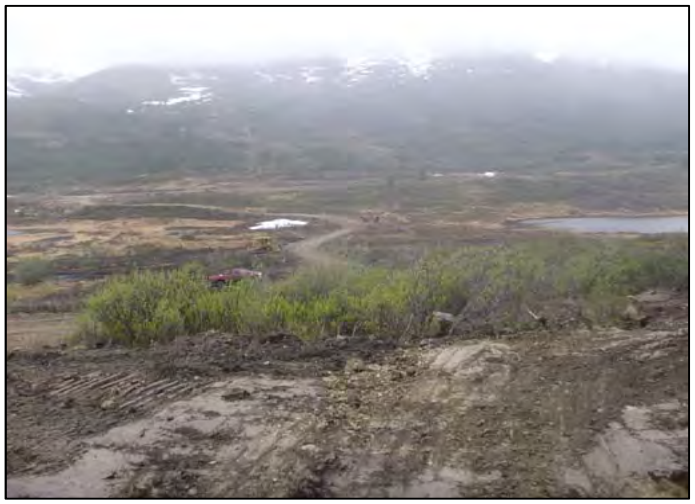


PHOTO 489 TP16-45 - Complete Looking West

PHOTO 490 TP16-46 - Before Looking East

PHOTO 491 TP16-46 - Before Looking North

PHOTO 492 TP16-46 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 493 TP16-46 - Before Looking West

PHOTO 494 TP16-46 - 0 m to 2.1 m

PHOTO 495 TP16-46 - Material at 2.1 m

PHOTO 496 TP16-46 - Sample from 2.0 - 2.1 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 497 TP16-46 - 0 m to 4.1 m

PHOTO 498 TP16-46 - Complete Looking East

PHOTO 499 TP16-46 - Complete Looking North

PHOTO 500 TP16-46 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 501 TP16-46 - Complete Looking West

PHOTO 502 TP16-47 - Before Looking East

PHOTO 503 TP16-47 - Before Looking North

PHOTO 504 TP16-47 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 505 TP16-47 - Before Looking West

PHOTO 506 TP16-47 - 0 m to 1.6 m

PHOTO 507 TP16-47 - Sample from 1.3 to 1.6 m

PHOTO 508 TP16-47 - 0 m to 4.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 509 TP16-47 - Spoil pile

PHOTO 510 TP16-47 - Complete Looking East

PHOTO 511 TP16-47 - Complete Looking North

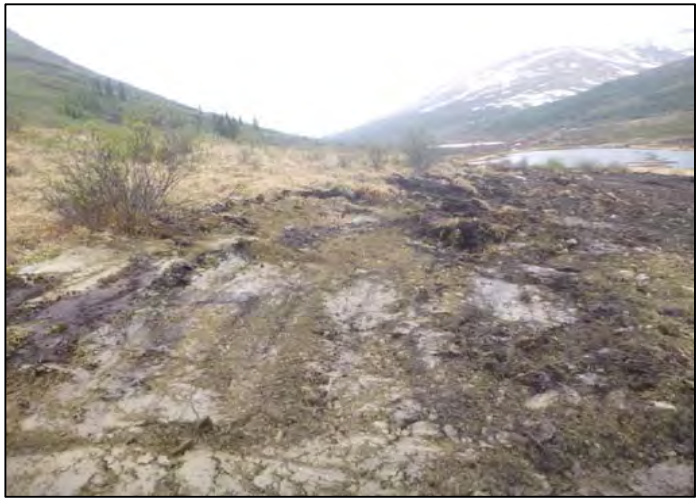


PHOTO 512 TP16-47 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 513 TP16-47 - Complete Looking West

PHOTO 514 TP16-48 - Before Looking East

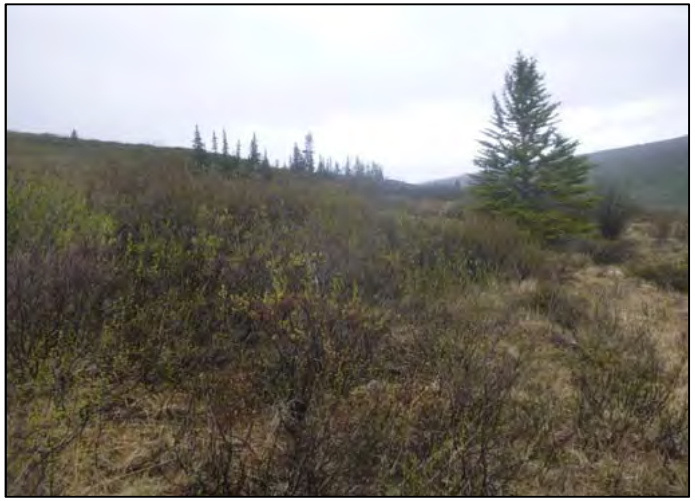


PHOTO 515 TP16-48 - Before Looking North

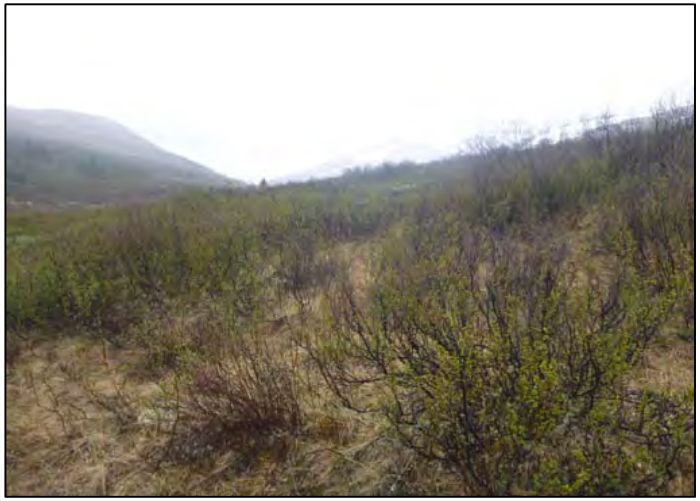


PHOTO 516 TP16-48 - Before Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 517 TP16-48 - Before Looking West

PHOTO 518 TP16-48 - 0 m to 1.8 m

PHOTO 519 TP16-48 - 0 m to 4 m (caved)

PHOTO 520 TP16-48 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 521 TP16-48 - Complete Looking East

PHOTO 522 TP16-48 - Complete Looking North

PHOTO 523 TP16-48 - Complete Looking South

PHOTO 524 TP16-48 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 525 TP16-49 - Before Looking East

PHOTO 526 TP16-49 - Before Looking North

PHOTO 527 TP16-49 - Before Looking South

PHOTO 528 TP16-49 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 529 TP16-49 - 0 m to 1.4 m

PHOTO 530 TP16-49 - 0 m to 4.2 m

PHOTO 531 TP16-49 - Spoil Pile at 4.2 m

PHOTO 532 TP16-49 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 533 TP16-49 - Complete Looking East

PHOTO 534 TP16-49 - Complete Looking North

PHOTO 535 TP16-49 - Complete Looking South

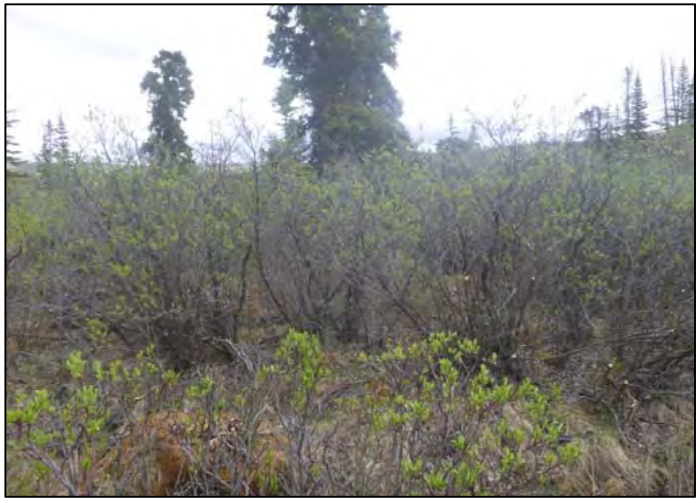


PHOTO 536 TP16-50 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 537 TP16-50 - Before Looking North

PHOTO 538 TP16-50 - Before Looking South

PHOTO 539 TP16-50 - Before Looking West

PHOTO 540 TP16-50 - 0 m to 1.2 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 541 TP16-50 - 0 m to 5 m

PHOTO 542 TP16-50 - Spoil Pile

PHOTO 543 TP16-50 - Complete Looking East

PHOTO 544 TP16-50 - Complete Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 545 TP16-50 - Complete Looking South

PHOTO 546 TP16-50 - Complete Looking West

PHOTO 547 TP16-51 - Before Looking East

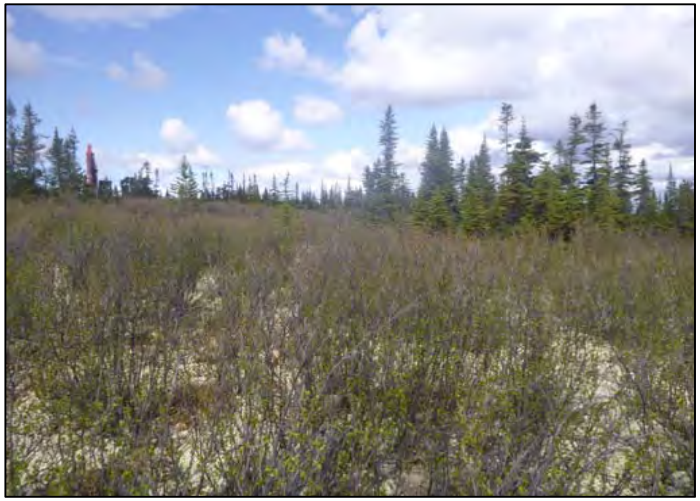


PHOTO 548 TP16-51 - Before Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 549 TP16-51 - Before Looking South

PHOTO 550 TP16-51 - Before Looking West

PHOTO 551 TP16-51 - 0 m to 1.7 m

PHOTO 552 TP16-51 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 553 TP16-51 - Complete Looking East

PHOTO 554 TP16-51 - Complete Looking North

PHOTO 555 TP16-51 - Complete Looking South

PHOTO 556 TP16-51 - Complete Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 557 TP16-52 - Before Looking East

PHOTO 558 TP16-52 - Before Looking North

PHOTO 559 TP16-52 - Before Looking South

PHOTO 560 TP16-52 - Before Looking West

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 561 TP16-52 - Frozen Topsoil

PHOTO 562 TP16-52 - 0 m to 1.7 m

PHOTO 563 TP16-52 - 0 m to 2.5 m

PHOTO 564 TP16-52 - Material at 2.5 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 565 TP16-52 - Spoil Pile

PHOTO 566 TP16-52 - Complete Looking East

PHOTO 567 TP16-52 - Complete Looking North

PHOTO 568 TP16-52 - Complete Looking South

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 569 TP16-52 - Complete Looking West

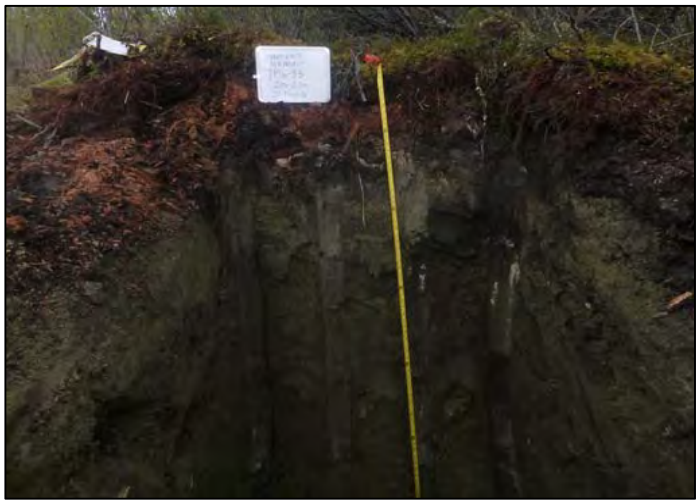


PHOTO 570 TP16-53 - 0 m to 2 m

PHOTO 571 TP16-53 - 0 m to 3.5 m

PHOTO 572 TP16-53 - Before Looking East

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 573 TP16-53 - Before Looking North

PHOTO 574 TP16-53 - Before Looking South

PHOTO 575 TP16-53 - Before Looking West

PHOTO 576 TP16-53 - Boulder

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 577 TP16-53 - Spoil Pile at 3.5 m

PHOTO 578 TP16-53 - Spoil Pile

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

APPENDIX G2

DRILL SITE PHOTOS

(Pages G2-1 to G2-34)

PHOTO 1 - K16-379 Looking East

PHOTO 2 - K16-379 Looking North

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - K16-379 Looking South

PHOTO 4 - K16-379 Looking West

PHOTO 5 - K16-387 Looking East

PHOTO 6 - K16-387 Looking North

PHOTO 7 - K16-387 Looking South

PHOTO 8 - K16-387 Looking West

PHOTO 9 - K16-389 Looking East

PHOTO 10 K16-389 Looking North

PHOTO 11 K16-389 Looking South

PHOTO 12 K16-389 Looking West

PHOTO 13 K16-390 Looking East

PHOTO 14 K16-390 Looking North

PHOTO 15 K16-390 Looking South

PHOTO 16 K16-390 Looking West

PHOTO 17 K16-392 Looking East

PHOTO 18 K16-392 Looking North

PHOTO 19 K16-392 Looking South

PHOTO 20 K16-392 Looking West

PHOTO 21 K16-395 Looking East

PHOTO 22 K16-395 Looking North

PHOTO 23 K16-395 Looking South

PHOTO 24 K16-395 Looking West

PHOTO 25 K16-402 Looking East

PHOTO 26 K16-402 Looking North

PHOTO 27 K16-402 Looking South

PHOTO 28 K16-402 Looking West

PHOTO 29 K16-410 Looking East

PHOTO 30 K16-410 Looking North

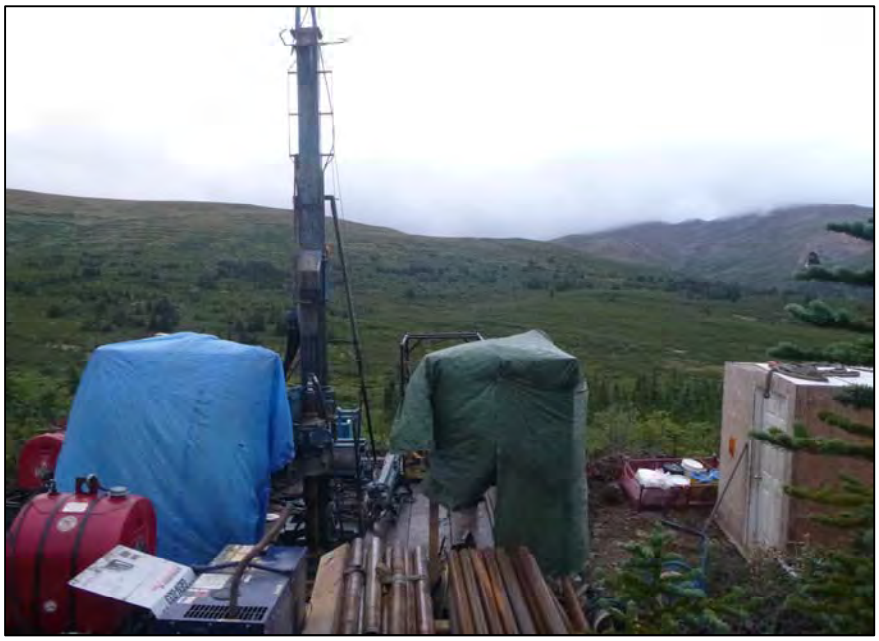


PHOTO 31 K16-410 Looking South

PHOTO 32 K16-410 Looking West

PHOTO 33 K16-411 Looking East

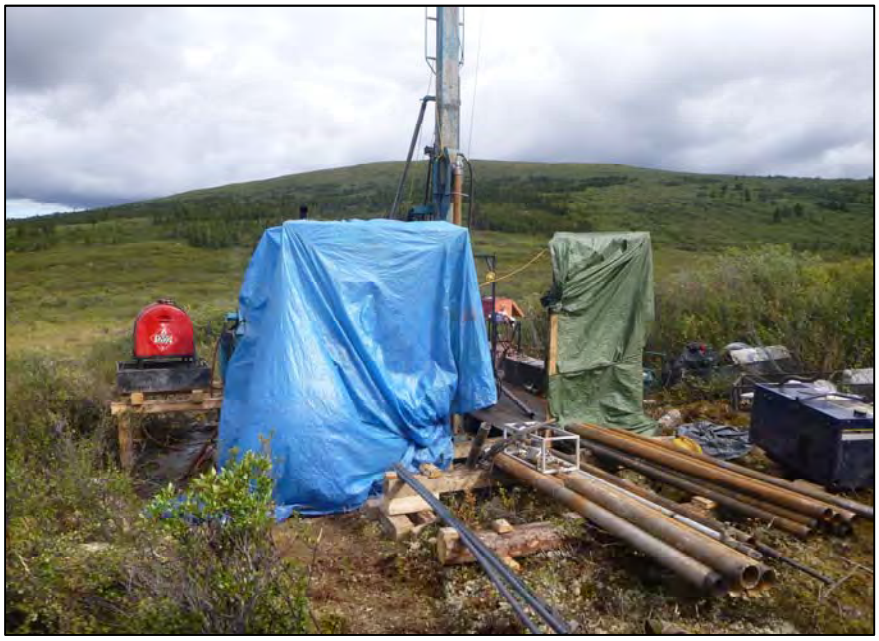


PHOTO 34 K16-411 Looking North

PHOTO 35 K16-411 Looking South

PHOTO 36 K16-411 Looking West

PHOTO 37 K16-412 Looking East

PHOTO 38 K16-412 Looking North

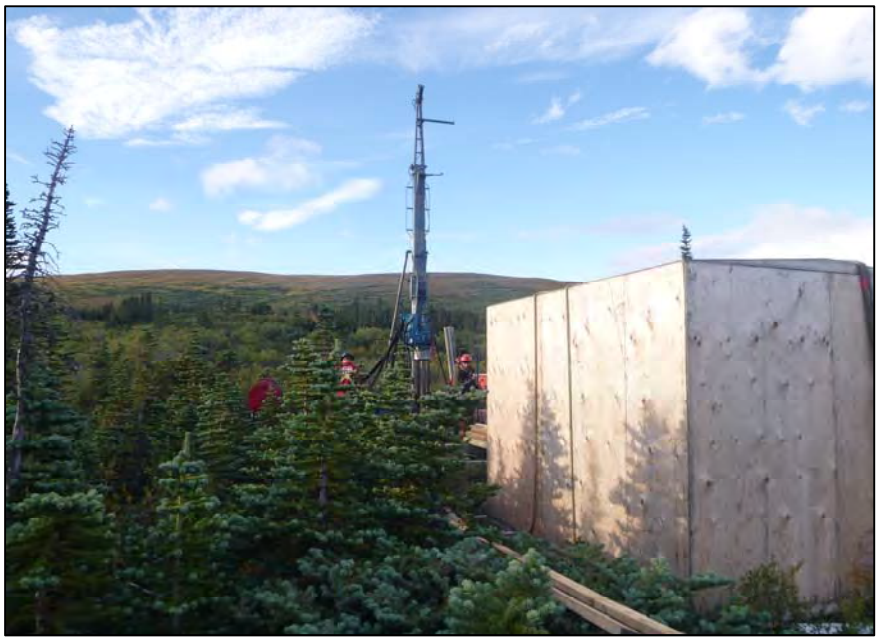


PHOTO 39 K16-412 Looking South

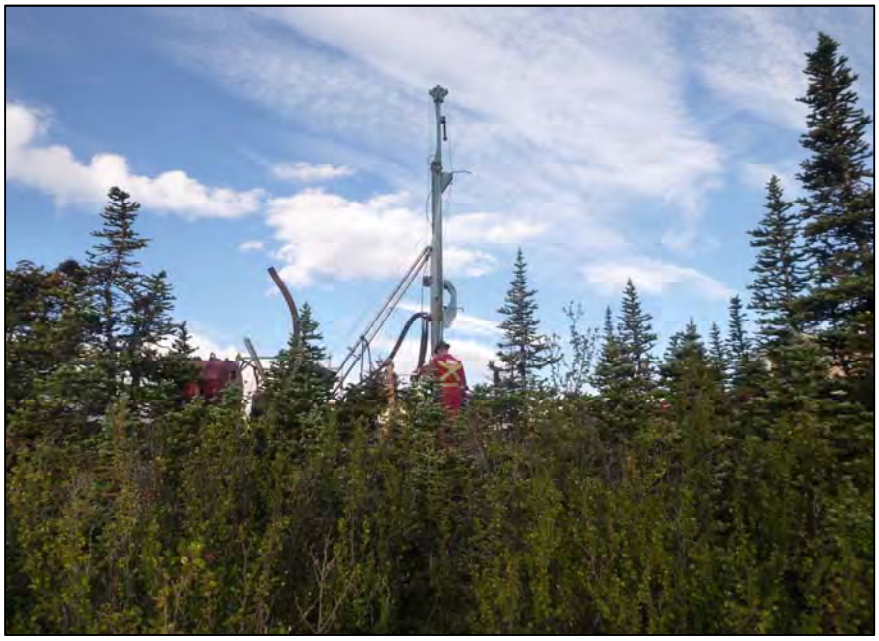


PHOTO 40 K16-412 Looking West

PHOTO 41 MW16-12D Looking East

PHOTO 42 MW16-12D Looking North

PHOTO 43 MW16-12D Looking South

PHOTO 44 MW16-12D Looking West

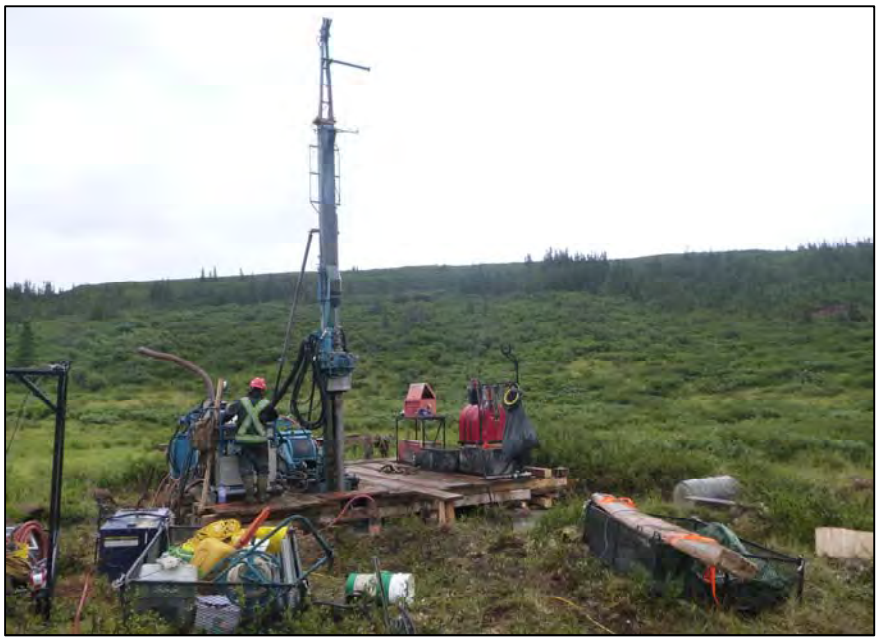


PHOTO 45 MW16-12S Looking East

PHOTO 46 MW16-12S Looking North

PHOTO 47 MW16-12S Looking South

PHOTO 48 MW16-12S Looking West

PHOTO 49 MW16-13 Looking East

PHOTO 50 MW16-13 Looking North

PHOTO 51 MW16-13 Looking South

PHOTO 52 MW16-13 Looking West

PHOTO 53 MW16-14D Looking East

PHOTO 54 MW16-14D Looking North

PHOTO 55 MW16-14D Looking South

PHOTO 56 MW16-14D Looking West

PHOTO 57 MW16-15D Looking East

PHOTO 58 MW16-15D Looking North

PHOTO 59 MW16-15D Looking South

PHOTO 60 MW16-15D Looking West

PHOTO 61 MW16-16 Looking East

PHOTO 62 MW16-16 Looking North

PHOTO 63 MW16-16 Looking South

PHOTO 64 MW16-16 Looking West

PHOTO 65 MW16-17 Looking East

PHOTO 66 MW16-17 Looking North

PHOTO 67 MW16-17 Looking South

PHOTO 68 MW16-17 Looking West

APPENDIX G3

SPT PHOTOS

(Pages G3-1 to G3-35)

PHOTO 1 - K16-379 SPT-01 0.00 - 0.60 m

PHOTO 2 - K16-379 SPT-02 1.50 - 2.10 m

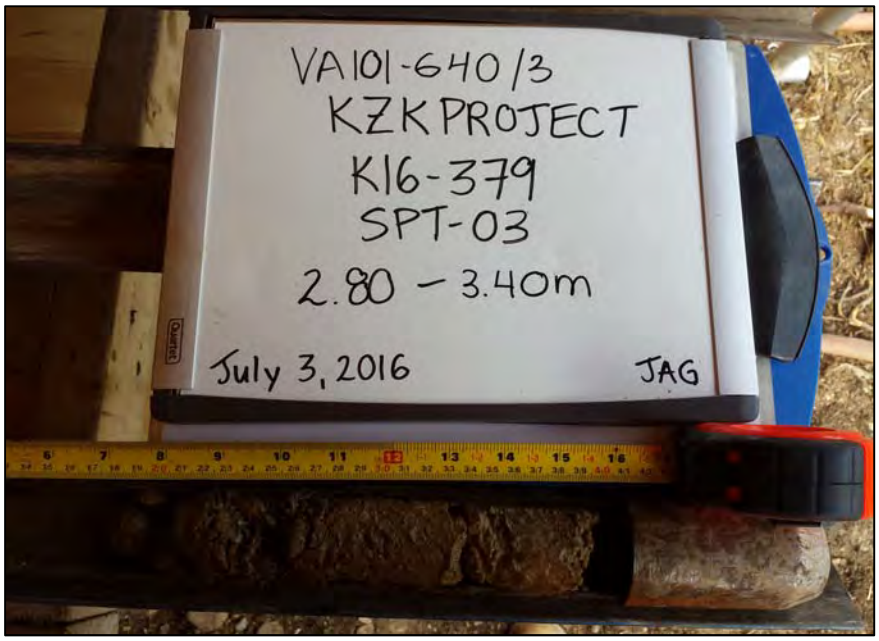


PHOTO 3 - K16-379 SPT-03 2.80 - 3.40 m

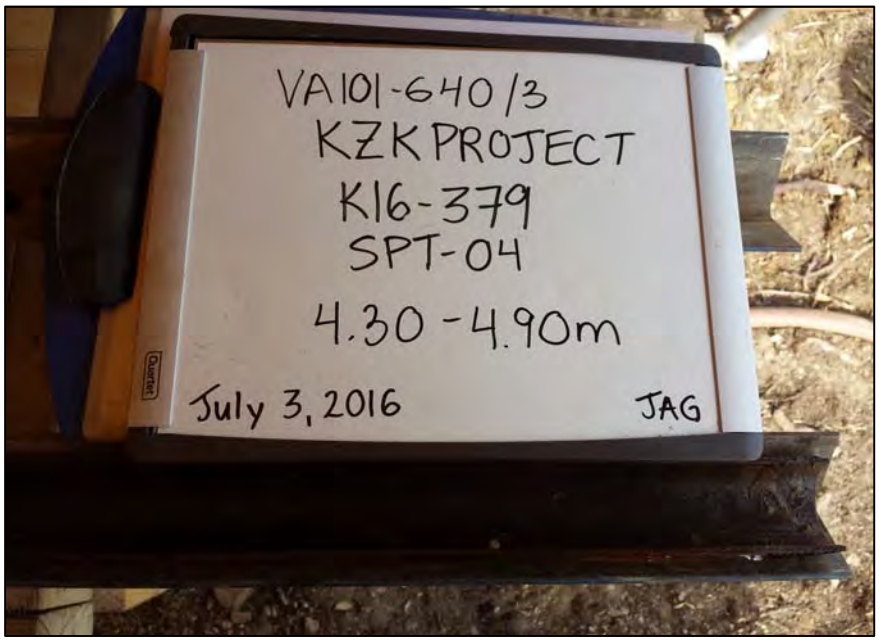


PHOTO 4 - K16-379 SPT-04 4.30 - 4.90 m

PHOTO 5 - K16-379 SPT-05 5.80 - 5.90 m

PHOTO 6 - K16-387 SPT-01 0.00 - 0.60 m

PHOTO 7 - K16-387 SPT-02 1.50 - 2.10 m

PHOTO 8 - K16-387 SPT-03 3.00 - 3.30 m

PHOTO 9 - K16-389 SPT-01 0.00 - 0.60 m

PHOTO 10 K16-389 SPT-02 1.50 - 2.10 m

PHOTO 11 K16-389 SPT-03 3.00 - 3.30 m

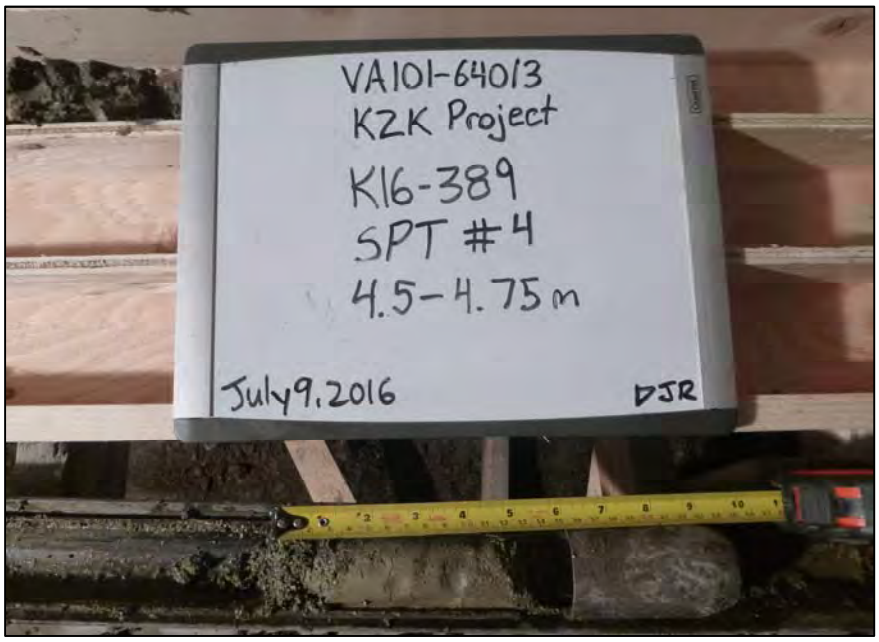


PHOTO 12 K16-389 SPT-04 4.50 - 4.75 m

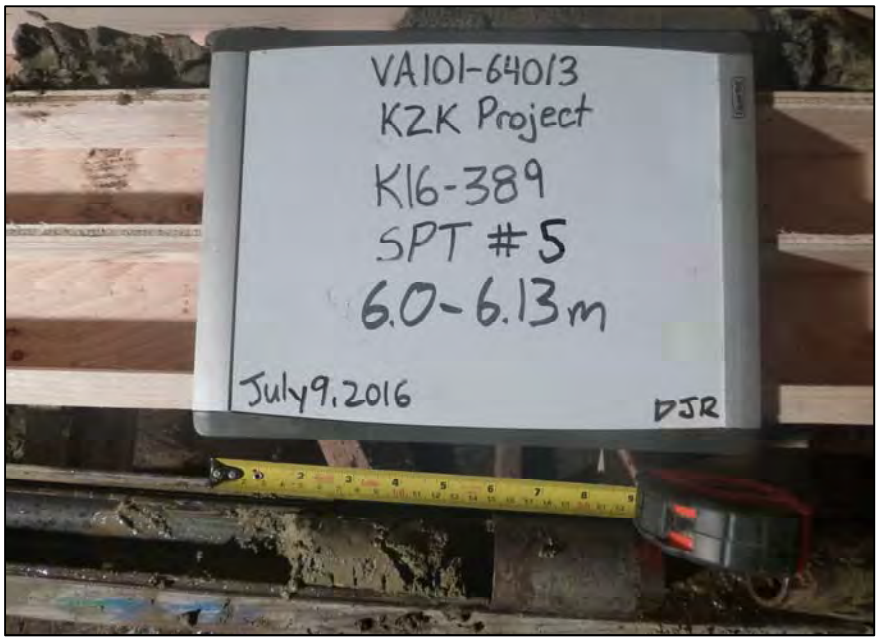


PHOTO 13 K16-389 SPT-05 6.00 - 6.13 m

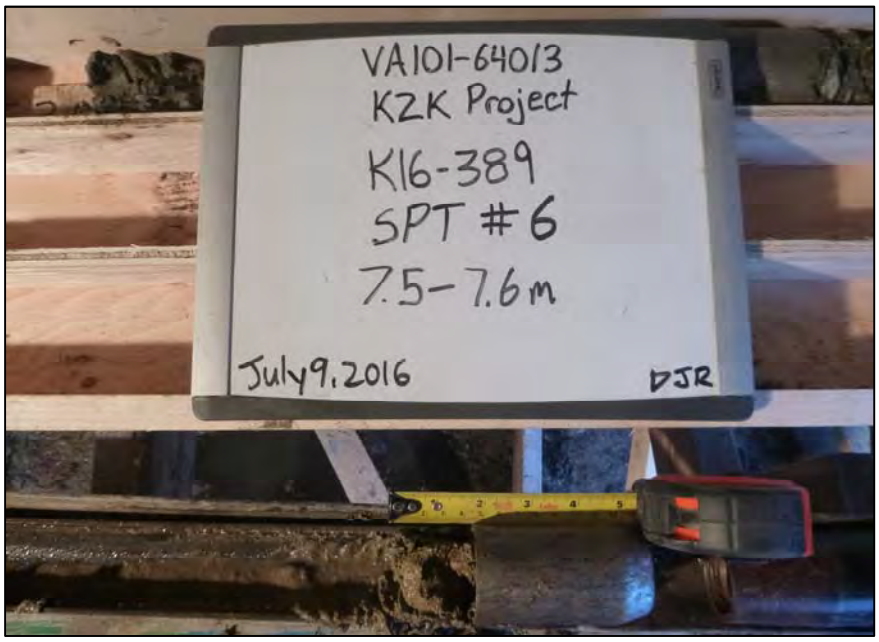


PHOTO 14 K16-389 SPT-06 7.50 - 7.60 m

PHOTO 15 K16-390 SPT-01 0.00 - 0.60 m

PHOTO 16 K16-390 SPT-02 1.50 - 2.10 m

PHOTO 17 K16-390 SPT-03 6.80 - 7.15 m

PHOTO 18 K16-392 SPT-01 0.00 - 0.60 m

PHOTO 19 K16-392 SPT-02 1.50 - 2.10 m

PHOTO 20 K16-392 SPT-03 3.10 - 3.70 m

PHOTO 21 K16-392 SPT-04 4.50 - 4.58 m

PHOTO 22 K16-395 SPT-01 0.00 - 0.60 m

PHOTO 23 K16-395 SPT-02 2.20 - 2.27 m

PHOTO 24 K16-402 SPT-01 0.00 - 0.60 m

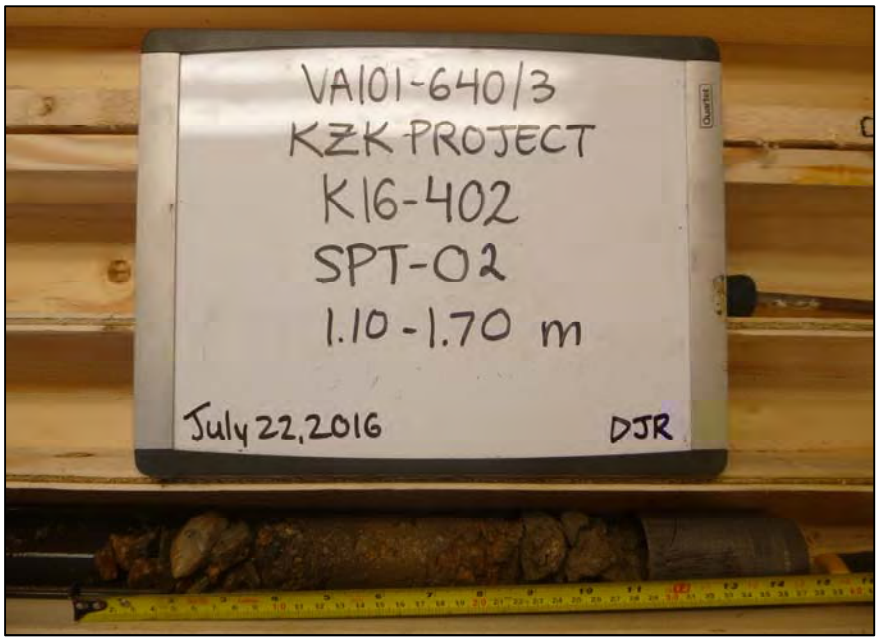


PHOTO 25 K16-402 SPT-02 1.10 - 1.70 m

PHOTO 26 K16-402 SPT-03 2.60 - 2.68 m

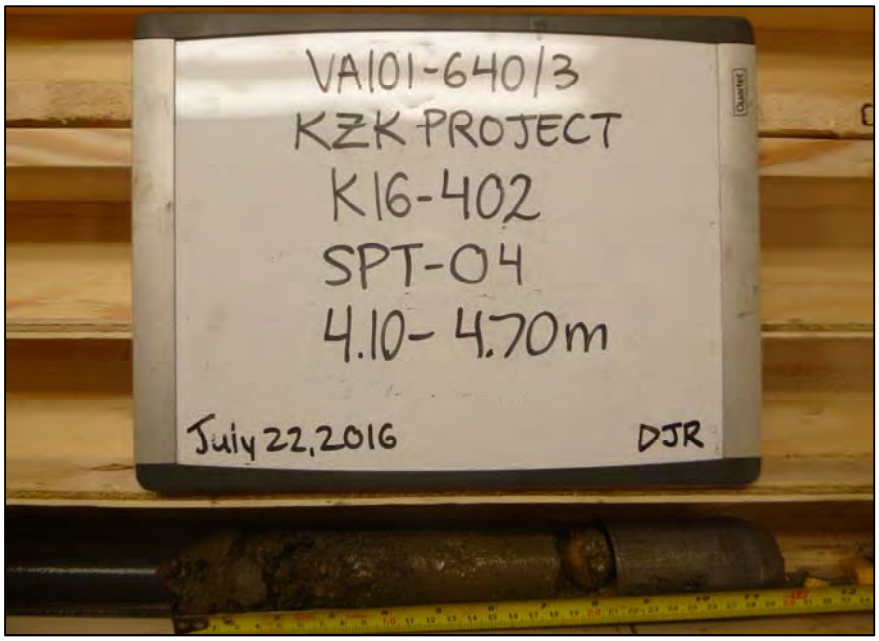


PHOTO 27 K16-402 SPT-04 4.10 - 4.70 m

PHOTO 28 K16-402 SPT-05 5.60 - 5.83 m

PHOTO 29 K16-410 SPT-01 0.00 - 0.60 m

PHOTO 30 K16-410 SPT-02 1.50 - 2.10 m

PHOTO 31 K16-410 SPT-03 3.00 - 3.60 m

PHOTO 32 K16-410 SPT-04 5.00 - 5.58 m

PHOTO 33 K16-411 SPT-01 0.00 - 0.60 m

PHOTO 34 K16-411 SPT-02 2.00 - 2.60 m

PHOTO 35 K16-411 SPT-03 3.50 - 4.10 m

PHOTO 36 K16-411 SPT-04 5.00 - 5.60 m

PHOTO 37 K16-411 SPT-05 8.00 - 8.60 m

PHOTO 38 K16-411 SPT-06 11.00 - 11.60 m

PHOTO 39 K16-411 SPT-07 14.00 - 14.60 m

PHOTO 40 K16-411 SPT-08 17.00 - 17.50 m

PHOTO 41 K16-412 SPT-01 0.00 - 0.60 m

PHOTO 42 K16-412 SPT-02 1.80 - 2.40 m

PHOTO 43 K16-412 SPT-03 3.30 - 3.90 m

PHOTO 44 K16-412 SPT-04 4.80 - 5.40 m

PHOTO 45 K16-412 SPT-05 6.30 - 6.90 m

PHOTO 46 K16-412 SPT-06 7.80 - 8.40 m

PHOTO 47 K16-412 SPT-07 10.80 - 11.40 m

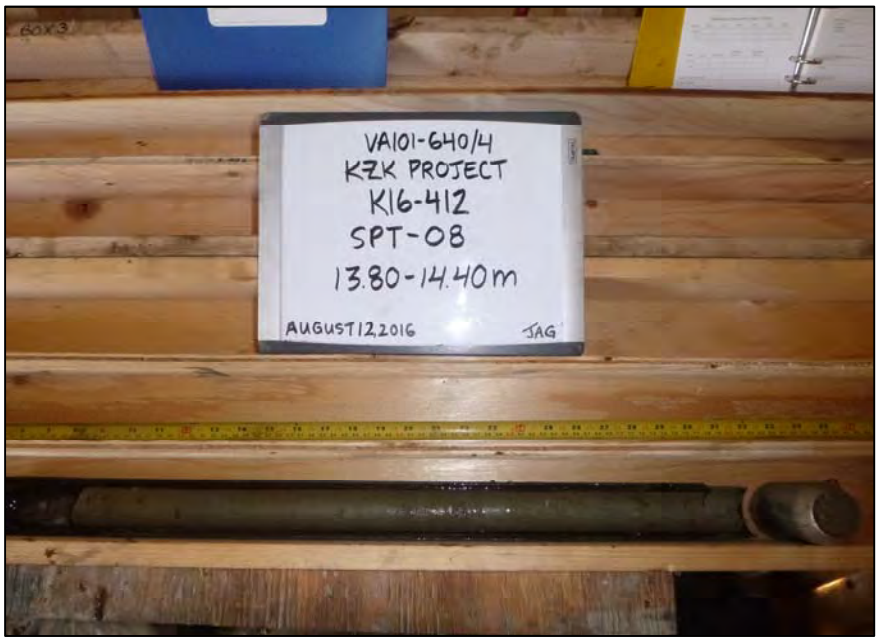


PHOTO 48 K16-412 SPT-08 13.80 - 14.40 m

PHOTO 49 K16-412 SPT-09 16.80 - 17.25 m

PHOTO 50 MW16-12D SPT-01 0.00 - 0.60 m

PHOTO 51 MW16-12D SPT-02 1.90 - 2.50 m

PHOTO 52 MW16-12D SPT-03 3.40 - 4.00 m

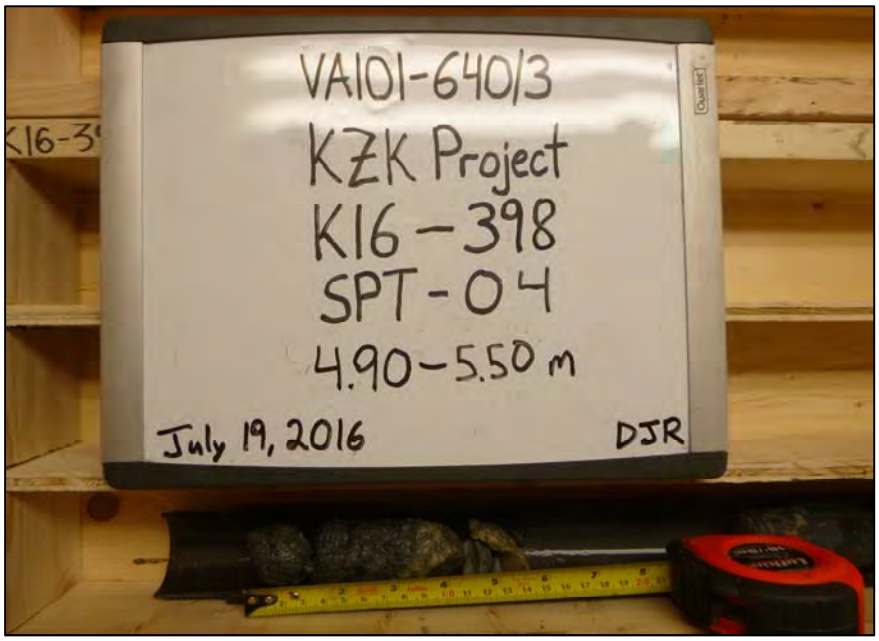


PHOTO 53 MW16-12D SPT-04 4.90 - 5.50 m

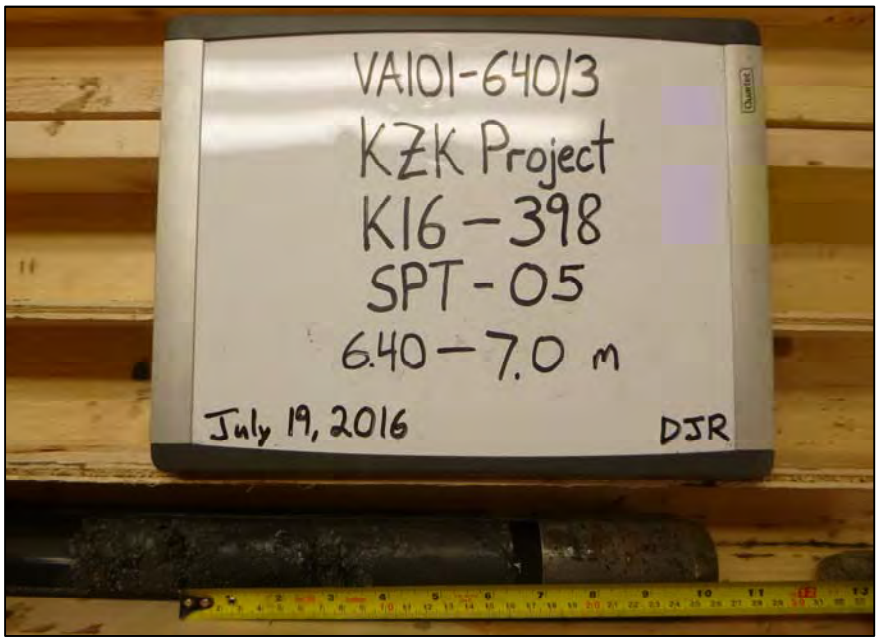


PHOTO 54 MW16-12D SPT-05 6.40 - 7.00 m

PHOTO 55 MW16-13 SPT-01 0.00 - 0.60 m

PHOTO 56 MW16-14D SPT-01 0.00 - 0.60 m

PHOTO 57 MW16-14D SPT-02 1.80 - 2.40 m

PHOTO 58 MW16-14D SPT-03 3.30 - 3.90 m

PHOTO 59 MW16-14D SPT-04 4.80 - 4.92 m

PHOTO 60 MW16-14D SPT-05 7.80 - 7.90 m

PHOTO 61 MW16-15D SPT-01 0.00 - 0.22 m

PHOTO 62 MW16-15D SPT-02 0.70 - 1.15 m

PHOTO 63 MW16-15D SPT-03 2.20 - 2.80 m

PHOTO 64 MW16-15D SPT-04 3.70 - 4.30 m

PHOTO 65 MW16-15D SPT-05 5.20 - 5.80 m

PHOTO 66 MW16-16 SPT-01 0.00 - 0.60 m

PHOTO 67 MW16-16 SPT-02 1.80 - 2.00 m

PHOTO 68 MW16-16 SPT-03 3.30 - 3.82 m

PHOTO 69 MW16-17 SPT-01 0.00 - 0.60 m

PHOTO 70 MW16-17 SPT-02 1.50 - 1.57 m

APPENDIX G4

CORE BOX PHOTOS

(Pages G4-1 to G4-47)

PHOTO 1 - K16-379 Box 01-02 0.00 - 10.86 m

PHOTO 2 - K16-379 Box 03-04 10.86 - 17.20 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - K16-379 Box 05-06 17.20 - 23.42 m

PHOTO 4 - K16-379 Box 07-08 23.42 - 29.78 m

PHOTO 5 - K16-379 Box 09-10 29.78 - 35.85 m

PHOTO 6 - K16-379 Box 11-12 35.85 - 39.70 m (EOH)

PHOTO 1 - K16-387 Box 01-02 0.00 - 9.15 m

PHOTO 2 - K16-387 Box 03-04 9.15 - 16.30 m

PHOTO 3 - K16-387 Box 05-06 16.30 - 23.11 m

PHOTO 4 - K16-387 Box 07-08 23.11 - 29.38 m

PHOTO 5 - K16-387 Box 09-10 29.38 - 34.00 m (EOH)

PHOTO 1 - K16-389 Box 01-02 0.00 - 14.86 m

PHOTO 2 - K16-389 Box 03-04 14.86 - 21.14 m

PHOTO 3 - K16-389 Box 05-06 21.14 - 27.55 m

PHOTO 4 - K16-389 Box 07-08 27.55 - 34.15 m

PHOTO 5 - K16-389 Box 09-10 34.15 - 40.55 m

PHOTO 6 - K16-389 Box 11 40.55 - 42.00 m (EOH)

PHOTO 1 - K16-390 Box 01-02 0.0 - 13.1 m

PHOTO 2 - K16-390 Box 03-04 13.1 - 24.48 m

PHOTO 3 - K16-390 Box 05-06 24.48 - 28.7 m

PHOTO 4 - K16-390 Box 07-08 28.7 - 35.0 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 5 - K16-390 Box 09-10 35.0 - 38.6 m (EOH)

PHOTO 1 - K16-392 Box 01-02 0.00 - 13.55 m

PHOTO 2 - K16-392 Box 03-04 13.55 - 21.02 m

PHOTO 3 - K16-392 Box 05-06 21.02 - 27.50 m

PHOTO 4 - K16-392 Box 07-08 27.50 - 34.20 m

PHOTO 5 - K16-392 Box 09-10 34.20 - 40.59 m

PHOTO 6 - K16-392 Box 11-12 40.59 - 46.20 m (EOH)

PHOTO 1 - K16-395 Box 01-02 0.00 - 8.20 m

PHOTO 2 - K16-395 Box 03-04 8.20 - 15.05 m

PHOTO 3 - K16-395 Box 05-06 15.05 - 24.69 m

PHOTO 4 - K16-395 Box 07-08 24.69 - 30.99 m

PHOTO 5 - K16-395 Box 09-10 30.99 - 37.53 m

PHOTO 6 - K16-395 Box 11-12 37.53 - 44.70 m

PHOTO 7 - K16-395 Box 13 44.70 - 46.20 m (EOH)

PHOTO 1 - K16-402 Box 01-02 0.00 - 14.40 m

PHOTO 2 - K16-402 Box 03-04 14.40 - 21.96 m

PHOTO 3 - K16-402 Box 05-06 21.96 - 28.11 m

PHOTO 4 - K16-402 Box 07-08 28.11 - 34.42 m

PHOTO 5 - K16-402 Box 09-10 34.42 - 40.70 m

PHOTO 6 - K16-402 Box 11-12 40.70 - 42.47 m

PHOTO 7 - K16-402 Box 13-14 48.47 - 55.60 m

PHOTO 8 - K16-402 Box 15-16 55.60 - 63.32 m

PHOTO 9 - K16-402 Box 17-18 63.32 - 70.00 m

PHOTO 10 K16-402 Box 19 70.00 - 70.60 m (EOH)

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 1 - K16-410 Box 01-02 0.00 - 12.83 m

PHOTO 2 - K16-410 Box 03-04 12.83 - 20.57 m

PHOTO 3 - K16-410 Box 05-06 20.57 - 27.80 m

PHOTO 4 - K16-410 Box 07 27.80 - 31.0 m (EOH)

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 1 - K16-411 Box 01-02 0.00 - 21.60 m

PHOTO 2 - K16-411 Box 03-04 21.60 - 28.70 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - K16-411 Box 05-06 28.70 - 34.10 m (EOH)

PHOTO 1 - K16-412 Box 01-02 0.00 - 16.80 m

PHOTO 2 - K16-412 Box 03-04 16.80 - 25.31 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - K16-412 Box 05-06 23.31 - 33.26 m

PHOTO 4 - K16-412 Box 07-08 33.26 - 38.70 m (EOH)

PHOTO 1 - MW16-12D Box 01-02 0.00 - 12.88 m

PHOTO 2 - MW16-12D Box 03-04 12.88 - 19.20 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - MW16-12D Box 05-06 19.20 - 25.57 m

PHOTO 4 - MW16-12D Box 07 25.57 - 28.20 m (EOH)

PHOTO 1 - MW16-13 Box 01-02 0.00 - 7.33 m

PHOTO 2 - MW16-13 Box 03-04 7.33 - 13.74 m

PHOTO 3 - MW16-13 Box 05-06 13.74 - 20.60 m

PHOTO 4 - MW16-13 Box 07-08 20.60 - 27.02 m

PHOTO 5 - MW16-13 Box 09 27.02 - 27.90 m (EOH)

PHOTO 1 - MW16-14D Box 01-02 0.00 - 16.50 m

PHOTO 2 - MW16-14D Box 03-04 16.50 - 24.25 m

PHOTO 3 - MW16-14D Box 05-06 24.25 - 31.10 m

PHOTO 4 - MW16-14D Box 07-08 31.10 - 37.76 m

PHOTO 5 - MW16-14D Box 09 37.76 - 40.20 m (EOH)

PHOTO 1 - MW16-15D Box 01-02 0.00 - 9.35 m

PHOTO 2 - MW16-15D Box 03-04 9.35 - 16.13 m

PHOTO 3 - MW16-15D Box 05-06 16.13 - 23.32 m

PHOTO 4 - MW16-15D Box 07-08 23.32 - 29.84 m

PHOTO 5 - MW16-15D Box 09-10 29.84 - 36.20 m

PHOTO 6 - MW16-15D Box 11-12 36.20 - 42.20 m (EOH)

PHOTO 1 - MW16-16 Box 01-02 0.00 - 10.20 m

PHOTO 2 - MW16-16 Box 03-04 10.20 - 17.25 m

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - MW16-16 Box 05-06 17.25 - 23.50 m

PHOTO 4 - MW16-16 Box 07-08 23.50 - 30.62 m

PHOTO 5 - MW16-16 Box 09-10 30.62 - 37.30 m

PHOTO 6 - MW16-16 Box 11 37.30 - 40.30 m (EOH)

PHOTO 1 - MW16-17 Box 01-02 0.00 - 8.24 m

PHOTO 2 - MW16-17 Box 03-04 8.24 - 14.60 m

PHOTO 3 - MW16-17 Box 05-06 14.60 - 21.20 m

PHOTO 4 - MW16-17 Box 07-08 21.20 - 27.68 m

PHOTO 5 - MW16-17 Box 09-10 27.68 - 31.10 m (EOH)

APPENDIX G5

INSTALLATION PHOTOS

(Pages G5-1 to G5-9)

PHOTO 1 - K16-379 - Vibrating Wire Piezometers

PHOTO 2 - K16-387 - Thermistor

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 3 - K16-389 - Thermistor

PHOTO 4 - K16-390 - Thermistor

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 5 - K16-392 - Thermistor

PHOTO 6 - K16-395 - Thermistor

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 7 - K16-402 - Thermistor

PHOTO 8 - K16-410 - Thermistor

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 9 - K16-411 - Thermistor

PHOTO 10 K16-412 - Thermistor

BMC MINERALS (NO.1) LTD.
KUDZ ZE KAYAH PROJECT

PHOTO 11 MW16-12D&S - Bedrock and Overburden Monitoring Wells

PHOTO 12 MW16-13 - Bedrock Monitoring Well

PHOTO 13 MW16-14D - Bedrock Monitoring Well

PHOTO 14 MW16-14S - Overburden Monitoring Well

PHOTO 15 MW16-15D&S - Bedrock and Overburden Monitoring Wells

PHOTO 16 MW16-16 - Bedrock Monitoring Well

PHOTO 17 MW16-17 - Bedrock Monitoring Well

Appendix Q: Krakatoa Rock Quality

Geotechnical Logs and Data

This appendix contains all geotechnical data from the 2016 Krakatoa Zone rock quality investigation program. Data is taken directly from the Rockland Ltd. 2016 Geotechnical Pre-feasibility Study of the Underground Mine Design Report. Data is presented in separate appendices, with the first page of each appendix starting on the page number indicated in Table Q-1 below.

Table Q-1: Table of contents for the Krakatoa Zone rock quality data in this appendix

Appendix	Appendix Name	Page Number	Number of Pages
II	Laboratory Test Results – Unconfined Compressive Test	1	64
IV	Geotechnical Logs and Point Load Test Results	65	62
IV	Packer Test Summary: Table 1-22 to Table 1-28	128	2
IV	Outcrop Survey	130	4

APPENDIX II

LABORATORY TEST RESULTS

UNCONFINED COMPRESSIVE TEST

Laboratory Determination of Uniaxial Compressive Strength of Intact Rock Core Specimens.

Summary of Test Results

ASTM D7012 Method C

Project No.:	1658755
Project:	KZK
Location:	Not provided
Client:	BMC Minerals Ltd.
Lab ID No:	219

Failure Modes

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Note: (deg) measured from core axis
Wet density based on as received moisture

No.	Borehole #	Sample #	Depth (m)	Dia (mm)	Ht (mm)	Area (cm²)	Volume (cm³)	Mass (g)	Wet Density (kg/m³)	Moisture (%)	Dry Density (kg/m³)	Maximum Load (kN)	Stress σ_u (MPa)	Rock Type	Failure Mode	
															Type	(deg)
1	K16-353	0190409-A	129.77-130.68	62.00	122.19	30.19	368.90	1003.20	2719	1.26	2686	115.70	38.3	Stringer (OJ)	5	19
2	K16-353	0190409-B	129.77-130.68	62.06	123.02	30.25	372.13	1005.10	2701	1.09	2672	45.70	15.1	Stringer (OJ)	5	34
3	K16-353	0190409-C	129.77-130.68	62.07	120.50	30.26	364.62	951.90	2611	0.70	2593	137.20	45.3	Stringer (OJ)	5	25
4	K16-357	0190419-A	223.55-224.10	61.09	126.92	29.31	372.01	1174.00	3156	0.09	3153	122.20	41.7	OI (Stringer)	5*	59
5	K16-357	0190419-B	223.55-224.10	61.07	121.85	29.29	356.92	1166.10	3267	0.15	3262	188.00	64.2	OI (Stringer)	5*	35
6	K16-357	0190420-A	253.90-254.60	60.59	124.06	28.83	357.70	1555.20	4348	0.07	4345	293.70	101.9	OB (Ore)	2*	
7	K16-357	0190420-B	253.90-254.60	60.81	121.84	29.04	353.86	1133.90	3204	0.23	3197	101.60	35.0	OB (Ore)	5	23
8	K16-358	0190427-A	165.80-166.40	61.53	125.56	29.73	373.35	1742.10	4666	0.14	4660	284.10	95.5	OA	5/2	12
9	K16-358	0190427-B	165.80-166.40	61.48	126.62	29.69	375.89	1769.50	4708	0.14	4701	276.80	93.2	OA	5	20
10	K16-358	0190427-C	165.80-166.40	61.57	124.07	29.77	369.40	1725.40	4671	0.17	4663	394.50	132.5	OA	2	
11	K16-358	0190428-A	169.90-170.40	61.54	123.93	29.74	368.62	1200.40	3256	0.29	3247	272.60	91.6	OI	5/6	15
12	K16-358	0190429-A	217.60-218.60	61.86	122.74	30.05	368.89	1548.60	4198	0.05	4196	410.90	136.7	OB	5	26
13	K16-358	0190429-B	217.60-218.60	61.95	125.67	30.14	378.79	1516.90	4005	0.04	4003	417.10	138.4	OB	2	
14	K16-358	0190430-A	219.45-220.44	61.90	124.28	30.09	374.00	1649.70	4411	0.06	4408	388.70	129.2	OB	5/6	29
15	K16-358	0190430-B	219.45-220.44	61.82	125.95	30.02	378.05	1584.80	4192	0.06	4190	287.70	95.8	OB	6	
16	K16-358	0190431-A	245.46-246.46	62.01	123.35	30.20	372.52	1704.20	4575	0.06	4572	214.40	71.0	OB	1	
17	K16-358	0190431-B	245.46-246.46	62.00	125.61	30.19	379.23	1755.30	4629	0.10	4624	241.10	79.9	OB	5	13
18	K16-358	0190431-C	245.46-246.46	62.01	122.81	30.20	370.89	1596.10	4303	0.07	4300	244.50	81.0	OB	2	

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Laboratory Determination of Uniaxial Compressive Strength of Intact Rock Core Specimens.

Summary of Test Results

ASTM D7012 Method C

Project No.:	1658755
Project:	KZK
Location:	Not provided
Client:	BMC Minerals Ltd.
Lab ID No:	219

Failure Modes

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Note: (deg) measured from core axis
Wet density based on as received moisture

No.	Borehole #	Sample #	Depth (m)	Dia (mm)	Ht (mm)	Area (cm^2)	Volume (cm^3)	Mass (g)	Wet Density (kg/m^3)	Moisture (%)	Dry Density (kg/m^3)	Maximum Load (kN)	Stress σ_u (MPa)	Rock Type	Failure Mode	
															Type	(deg)
19	K16-358	0190431-D	245.46-246.46	62.04	120.65	30.23	364.72	1603.00	4395	0.17	4388	330.20	109.2	OB	2	

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	0190409-A
Location:	Not provided	**Depth (m):**	129.77-130.68
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**115.70**
Stress σ_u (MPa)	**38.3**
Pace Rate (kN/s)	0.50
Lithology	Stringer (OJ)

Sample Measurements

Diameter	(mm)	62.00
Height	(mm)	122.19
Area	(cm^2)	30.19
Volume	(cm^3)	368.90
Mass	(g)	1003.20
Moisture Content	(%)	1.26
Wet Density	(kg/m^3)	2719
Dry Density	(kg/m^3)	2686

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **19**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Sample size does not meet standard requirements

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	0190409-B
Location:	Not provided	**Depth (m):**	129.77-130.68
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**45.70**
Stress σ_u (MPa)	**15.1**
Pace Rate (kN/s)	0.50
Lithology	Stringer (OJ)

Sample Measurements

Diameter	(mm)	62.06
Height	(mm)	123.02
Area	(cm^2)	30.25
Volume	(cm^3)	372.13
Mass	(g)	1005.10
Moisture Content	(%)	1.09
Wet Density	(kg/m^3)	2701
Dry Density	(kg/m^3)	2672

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **34**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Sample size does not meet standard requirements

AFTER TEST

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	0190409-C
Location:	Not provided	**Depth (m):**	129.77-130.68
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**137.20**
Stress σ_u (MPa)	**45.3**
Pace Rate (kN/s)	0.50
Lithology	Stringer (OJ)

Sample Measurements

Diameter	(mm)	62.07
Height	(mm)	120.50
Area	(cm^2)	30.26
Volume	(cm^3)	364.62
Mass	(g)	951.90
Moisture Content	(%)	0.70
Wet Density	(kg/m^3)	2611
Dry Density	(kg/m^3)	2593

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **25**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Sample size does not meet standard requirements

AFTER TEST

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
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Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	0190419-A
Location:	Not provided	**Depth (m):**	223.55-224.10
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**122.20**
Stress σ_u (MPa)	**41.7**
Pace Rate (kN/s)	0.50
Lithology	OI (Stringer)

Sample Measurements

Diameter	(mm)	61.09
Height	(mm)	126.92
Area	(cm^2)	29.31
Volume	(cm^3)	372.01
Mass	(g)	1174.00
Moisture Content	(%)	0.09
Wet Density	(kg/m^3)	3156
Dry Density	(kg/m^3)	3153

BEFORE TEST

Failure Mode

Type: **5***

Degrees:* **59**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

* - shear along foliation

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	0190419-B
Location:	Not provided	**Depth (m):**	223.55-224.10
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**188.00**
Stress σ_u (MPa)	**64.2**
Pace Rate (kN/s)	0.50
Lithology	OI (Stringer)

Sample Measurements

Diameter	(mm)	61.07
Height	(mm)	121.85
Area	(cm^2)	29.29
Volume	(cm^3)	356.92
Mass	(g)	1166.10
Moisture Content	(%)	0.15
Wet Density	(kg/m^3)	3267
Dry Density	(kg/m^3)	3262

BEFORE TEST

Failure Mode

Type: **5***

Degrees:* **35**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

* - shear along foliation

Sample size does not meet standard requirements

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	0190420-A
Location:	Not provided	**Depth (m):**	253.90-254.60
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**293.70**
Stress σ_u (MPa)	**101.9**
Pace Rate (kN/s)	0.50
Lithology	OB (Ore)

Sample Measurements

Diameter	(mm)	60.59
Height	(mm)	124.06
Area	(cm^2)	28.83
Volume	(cm^3)	357.70
Mass	(g)	1555.20
Moisture Content	(%)	0.07
Wet Density	(kg/m^3)	4348
Dry Density	(kg/m^3)	4345

BEFORE TEST

Failure Mode

Type: **2***

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

* - vertical conical extension

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	0190420-B
Location:	Not provided	**Depth (m):**	253.90-254.60
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**101.60**
Stress σ_u (MPa)	**35.0**
Pace Rate (kN/s)	0.50
Lithology	OB (Ore)

Sample Measurements

Diameter	(mm)	60.81
Height	(mm)	121.84
Area	(cm^2)	29.04
Volume	(cm^3)	353.86
Mass	(g)	1133.90
Moisture Content	(%)	0.23
Wet Density	(kg/m^3)	3204
Dry Density	(kg/m^3)	3197

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **23**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

AFTER TEST

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190427-A
Location:	Not provided	**Depth (m):**	165.80-166.40
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**284.10**
Stress σ_u (MPa)	**95.5**
Pace Rate (kN/s)	0.50
Lithology	OA

Sample Measurements

Diameter	(mm)	61.53
Height	(mm)	125.56
Area	(cm^2)	29.73
Volume	(cm^3)	373.35
Mass	(g)	1742.10
Moisture Content	(%)	0.14
Wet Density	(kg/m^3)	4666
Dry Density	(kg/m^3)	4660

BEFORE TEST

Failure Mode

Type: **5/2**

Degrees:* **12**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190427-B
Location:	Not provided	**Depth (m):**	165.80-166.40
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**276.80**
Stress σ_u (MPa)	**93.2**
Pace Rate (kN/s)	0.50
Lithology	OA

Sample Measurements

Diameter	(mm)	61.48
Height	(mm)	126.62
Area	(cm^2)	29.69
Volume	(cm^3)	375.89
Mass	(g)	1769.50
Moisture Content	(%)	0.14
Wet Density	(kg/m^3)	4708
Dry Density	(kg/m^3)	4701

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **20**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190427-C
Location:	Not provided	**Depth (m):**	165.80-166.40
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**394.50**
Stress σ_u (MPa)	**132.5**
Pace Rate (kN/s)	0.50
Lithology	OA

Sample Measurements

Diameter	(mm)	61.57
Height	(mm)	124.07
Area	(cm^2)	29.77
Volume	(cm^3)	369.40
Mass	(g)	1725.40
Moisture Content	(%)	0.17
Wet Density	(kg/m^3)	4671
Dry Density	(kg/m^3)	4663

BEFORE TEST

Failure Mode

Type: **2**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190428-A
Location:	Not provided	**Depth (m):**	169.90-170.40
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**272.60**
Stress σ_u (MPa)	**91.6**
Pace Rate (kN/s)	0.50
Lithology	OI

Sample Measurements

Diameter	(mm)	61.54
Height	(mm)	123.93
Area	(cm^2)	29.74
Volume	(cm^3)	368.62
Mass	(g)	1200.40
Moisture Content	(%)	0.29
Wet Density	(kg/m^3)	3256
Dry Density	(kg/m^3)	3247

BEFORE TEST

Failure Mode

Type: **5/6**

Degrees:* **15**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190429-A
Location:	Not provided	**Depth (m):**	217.60-218.60
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**410.90**
Stress σ_u (MPa)	**136.7**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	61.86
Height	(mm)	122.74
Area	(cm^2)	30.05
Volume	(cm^3)	368.89
Mass	(g)	1548.60
Moisture Content	(%)	0.05
Wet Density	(kg/m^3)	4198
Dry Density	(kg/m^3)	4196

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **26**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Sample size does not meet standard requirements

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190429-B
Location:	Not provided	**Depth (m):**	217.60-218.60
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**417.10**
Stress σ_u (MPa)	**138.4**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	61.95
Height	(mm)	125.67
Area	(cm^2)	30.14
Volume	(cm^3)	378.79
Mass	(g)	1516.90
Moisture Content	(%)	0.04
Wet Density	(kg/m^3)	4005
Dry Density	(kg/m^3)	4003

BEFORE TEST

Failure Mode

Type: **2**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190430-A
Location:	Not provided	**Depth (m):**	219.45-220.44
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**388.70**
Stress σ_u (MPa)	**129.2**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	61.90
Height	(mm)	124.28
Area	(cm^2)	30.09
Volume	(cm^3)	374.00
Mass	(g)	1649.70
Moisture Content	(%)	0.06
Wet Density	(kg/m^3)	4411
Dry Density	(kg/m^3)	4408

BEFORE TEST

Failure Mode

Type: **5/6**

Degrees:* **29**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190430-B
Location:	Not provided	**Depth (m):**	219.45-220.44
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**287.70**
Stress σ_u (MPa)	**95.8**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	61.82
Height	(mm)	125.95
Area	(cm²)	30.02
Volume	(cm³)	378.05
Mass	(g)	1584.80
Moisture Content	(%)	0.06
Wet Density	(kg/m³)	4192
Dry Density	(kg/m³)	4190

BEFORE TEST

Failure Mode

Type: **6**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190431-A
Location:	Not provided	**Depth (m):**	245.46-246.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**214.40**
Stress σ_u (MPa)	**71.0**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	62.01
Height	(mm)	123.35
Area	(cm^2)	30.20
Volume	(cm^3)	372.52
Mass	(g)	1704.20
Moisture Content	(%)	0.06
Wet Density	(kg/m^3)	4575
Dry Density	(kg/m^3)	4572

BEFORE TEST

Failure Mode

Type: **1**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Sample size does not meet standard requirements

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190431-B
Location:	Not provided	**Depth (m):**	245.46-246.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**241.10**
Stress σ_u (MPa)	**79.9**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	62.00
Height	(mm)	125.61
Area	(cm^2)	30.19
Volume	(cm^3)	379.23
Mass	(g)	1755.30
Moisture Content	(%)	0.10
Wet Density	(kg/m^3)	4629
Dry Density	(kg/m^3)	4624

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **13**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190431-C
Location:	Not provided	**Depth (m):**	245.46-246.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**244.50**
Stress σ_u (MPa)	**81.0**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	62.01
Height	(mm)	122.81
Area	(cm^2)	30.20
Volume	(cm^3)	370.89
Mass	(g)	1596.10
Moisture Content	(%)	0.07
Wet Density	(kg/m^3)	4303
Dry Density	(kg/m^3)	4300

BEFORE TEST

Failure Mode

Type: **2**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Sample size does not meet standard requirements

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	0190431-D
Location:	Not provided	**Depth (m):**	245.46-246.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	219

Testing Results

Max Load (kN)	**330.20**
Stress σ_u (MPa)	**109.2**
Pace Rate (kN/s)	0.50
Lithology	OB

Sample Measurements

Diameter	(mm)	62.04
Height	(mm)	120.65
Area	(cm^2)	30.23
Volume	(cm^3)	364.72
Mass	(g)	1603.00
Moisture Content	(%)	0.17
Wet Density	(kg/m^3)	4395
Dry Density	(kg/m^3)	4388

BEFORE TEST

Failure Mode

Type: **2**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Sample size does not meet standard requirements

AFTER TEST

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	June 14, 2016	L.Perrey	June 15,2016
TESTED BY	DATE	CHECKED BY	DATE

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Laboratory Determination of Uniaxial Compressive Strength of Intact Rock Core Specimens.

Summary of Test Results

ASTM D7012 Method C

Project No.: 1658755
Project: KZK
Location: Not provided
Client: BMC Minerals Ltd.
Lab ID No: 270

Failure Modes
(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Note: (deg) measured from core axis
Wet density based on as received moisture

No.	Borehole #	Sample #	Depth (m)	Dia (mm)	Ht (mm)	Area (cm²)	Volume (cm³)	Mass (g)	Wet Density (kg/m³)	Moisture (%)	Dry Density (kg/m³)	Maximum Load (kN)	Stress σ_u (MPa)	Rock Type	Failure Mode	
															Type	(deg)
1	K16-350	190401	204.0-204.135	61.07	140.12	29.29	410.44	1194.40	2910	0.09	2907	14.80	5.1	RHYc	5	45
2	K16-353	190404	27.13-27.33	61.01	124.92	29.23	365.19	1101.50	3016	0.10	3013	157.80	54.0	MAFi	5	27
3	K16-353	190405	33.0-33.27	61.11	125.16	29.33	367.10	1105.40	3011	0.14	3007	151.00	51.5	MAFi	5	25
4	K16-353	190406-A	50.12-50.46	61.30	128.43	29.51	379.03	1036.40	2734	0.14	2731	200.90	68.1	RHYv	5	34
5	K16-353	190406-B	50.12-50.46	61.29	126.16	29.50	372.21	1018.50	2736	0.12	2733	119.40	40.5	RHYv	5	38
6	K16-353	190407	82.08-82.31	61.68	129.43	29.88	386.74	1024.90	2650	0.20	2645	280.90	94.0	RHY	5	18
7	K16-354	190410	33.0-33.27	60.99	122.45	29.22	357.74	937.80	2621	0.33	2613	276.00	94.5	RHYi	4	
8	K16-356	190411	12.5-12.8	60.78	128.56	29.01	373.01	1040.50	2789	0.14	2786	221.90	76.5	MAFi	5	15
9	K16-357	190412	48.0-48.25	61.11	131.13	29.33	384.61	1070.50	2783	0.26	2776	183.80	62.7	RHYv	5/6	40
10	K16-357	190413	74.3-74.6	61.37	128.82	29.58	381.05	1057.80	2776	0.17	2771	149.20	50.4	RHYv	5	33
11	K16-357	190414	90.6-90.85	61.32	130.06	29.53	384.09	1000.80	2606	0.23	2600	152.50	51.6	RHYi	1*	
12	K16-357	190415	104.4-104.65	61.36	128.70	29.57	380.57	1008.40	2650	0.29	2642	153.10	51.8	RHYc	5	19
13	K16-357	190416-A	192.5-192.85	61.10	131.16	29.32	384.57	1061.00	2759	0.29	2751	57.70	19.7	RHYc	5	55
14	K16-357	190416-B	192.5-192.85	61.07	125.78	29.29	368.43	1027.10	2788	0.22	2782	24.60	8.4	RHYc	5	54
15	K16-357	190417-A	195.35-195.70	61.13	129.70	29.35	380.66	1057.10	2777	0.11	2774	88.50	30.2	RHYc	5	57
16	K16-357	190417-B	195.35-195.70	61.04	113.04	29.26	330.79	925.00	2796	0.13	2793	105.90	36.2	RHYc	5	67
17	K16-358	190421-A	64.15-64.46	61.12	125.59	29.34	368.48	1037.70	2816	0.29	2808	94.30	32.1	RHY	5	37
18	K16-358	190421-B	64.15-64.46	61.15	128.11	29.37	376.24	1034.80	2750	0.32	2742	123.50	42.1	RHY	5	39

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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Laboratory Determination of Uniaxial Compressive Strength of Intact Rock Core Specimens.

Summary of Test Results

ASTM D7012 Method C

Project No.: 1658755
Project: KZK
Location: Not provided
Client: BMC Minerals Ltd.
Lab ID No: 270

Failure Modes
(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Note: (deg) measured from core axis
Wet density based on as received moisture

No.	Borehole #	Sample #	Depth (m)	Dia (mm)	Ht (mm)	Area (cm^2)	Volume (cm^3)	Mass (g)	Wet Density (kg/m^3)	Moisture (%)	Dry Density (kg/m^3)	Maximum Load (kN)	Stress σ_u (MPa)	Rock Type	Failure Mode Type	Failure Mode (deg)
19	K16-357	190422	309.0-309.28	60.85	131.81	29.08	383.32	1140.40	2975	0.18	2970	188.30	64.7	MAFi	5	29
20	K16-357	190423	315.38-315.76	60.73	127.05	28.97	368.02	1076.40	2925	0.32	2916	137.70	47.5	MAFi	6/5	77
21	K16-378	190434	151.76-151.90	60.85	120.98	29.08	351.82	934.40	2656	Sample is too weak to test						
22	K16-377	190435	24.92-25.12	61.09	126.18	29.31	369.85	975.70	2638	0.23	2632	359.30	122.6	RHYi	1	
23	K16-371	190436	59.91-60.13	61.11	125.21	29.33	367.24	961.90	2619	0.19	2614	361.80	123.4	RHYi	1	
24	K16-371	190437	58.95-59.22	61.09	126.33	29.31	370.29	974.30	2631	0.23	2625	198.00	67.6	RHYi	5	14
25	K16-376	190438	14.84-15.20	61.27	127.12	29.48	374.80	1034.80	2761	0.08	2759	101.30	34.4	RHYv	5	21
26	K16-373	190439-A	61.48-61.81	60.62	127.17	28.86	367.03	1098.10	2992	0.28	2983	38.60	13.4	MAFi	5	25
27	K16-373	190439-B	61.48-61.81	60.70	128.28	28.94	371.22	1108.90	2987	0.22	2981	103.70	35.8	MAFi	5	28
28	K16-373	190441	68.94-69.29	60.75	129.27	28.99	374.70	1063.30	2838	0.22	2832	60.40	20.8	MAFi	5	33
29	K16-371	190442-A	66.0-66.35	60.13	129.16	28.40	366.78	1004.30	2738	0.15	2734	355.20	125.1	RHYi	6	
30	K16-371	190442-B	66.0-66.35	61.08	125.29	29.30	367.12	988.70	2693	0.15	2689	432.00	147.4	RHYi	6	
31	K16-371	190445-A	88.50-88.79	61.12	126.22	29.34	370.33	1001.90	2705	0.16	2701	303.70	103.5	RHYv	5	15
32	K16-371	190445-B	88.50-88.79	61.15	129.29	29.37	379.71	1039.50	2738	0.13	2734	295.90	100.8	RHYv	5	14

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E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-350
Project:	KZK	**Sample Number:**	190401
Location:	Not provided	**Depth (m):**	204.0-204.135
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**14.80**
Stress σ_u (MPa)	**5.1**
Pace Rate (kN/s)	1.25
Lithology	RHYc

Sample Measurements

Diameter	(mm)	61.07
Height	(mm)	140.12
Area	(cm^2)	29.29
Volume	(cm^3)	410.44
Mass	(g)	1194.40
Moisture Content	(%)	0.09
Wet Density	(kg/m^3)	2910
Dry Density	(kg/m^3)	2907

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **45**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Height and mass measurements include sulfur cap.

Shear along foliation.

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	190404
Location:	Not provided	**Depth (m):**	27.13-27.33
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**157.80**
Stress σ_u (MPa)	**54.0**
Pace Rate (kN/s)	1.25
Lithology	MAFi

Sample Measurements

Diameter	(mm)	61.01
Height	(mm)	124.92
Area	(cm^2)	29.23
Volume	(cm^3)	365.19
Mass	(g)	1101.50
Moisture Content	(%)	0.10
Wet Density	(kg/m^3)	3016
Dry Density	(kg/m^3)	3013

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **27**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	190405
Location:	Not provided	**Depth (m):**	33.0-33.27
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**151.00**	Diameter (mm)	61.11
Stress σ_u (MPa)	**51.5**	Height (mm)	125.16
Pace Rate (kN/s)	1.25	Area (cm^2)	29.33
Lithology	MAFi	Volume (cm^3)	367.10
		Mass (g)	1105.40
		Moisture Content (%)	0.14
		Wet Density (kg/m^3)	3011
		Dry Density (kg/m^3)	3007

BEFORE TEST

Failure Mode	Notes
Type: **5**	- Water content as received - Wet density based on as received moisture **Mode:**
Degrees:* **25**	(1) Simple Extension (2) Multiple Extension (3) Multiple Fracturing (4) Multiple Shear (5) Single Shear (6) Spalling (7) Other
* Degrees measured with respect to core axis.	
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	190406-A
Location:	Not provided	**Depth (m):**	50.12-50.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**200.90**	Diameter (mm)	61.30
Stress σ_u (MPa)	**68.1**	Height (mm)	128.43
Pace Rate (kN/s)	1.25	Area (cm^2)	29.51
Lithology	RHYv	Volume (cm^3)	379.03
		Mass (g)	1036.40
		Moisture Content (%)	0.14
		Wet Density (kg/m^3)	2734
		Dry Density (kg/m^3)	2731

BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **5**	**Mode:**
Degrees:* **34**	(1) Simple Extension
	(2) Multiple Extension
	(3) Multiple Fracturing
* Degrees measured with respect to core axis.	(4) Multiple Shear
	(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling
	(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	190406-B
Location:	Not provided	**Depth (m):**	50.12-50.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**119.40**	Diameter (mm)	61.29
Stress σ_u (MPa)	**40.5**	Height (mm)	126.16
Pace Rate (kN/s)	1.25	Area (cm^2)	29.50
Lithology	RHYv	Volume (cm^3)	372.21
		Mass (g)	1018.50
		Moisture Content (%)	0.12
		Wet Density (kg/m^3)	2736
		Dry Density (kg/m^3)	2733

BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **5**	**Mode:**
Degrees:* **38**	(1) Simple Extension
	(2) Multiple Extension
* Degrees measured with respect to core axis.	(3) Multiple Fracturing
	(4) Multiple Shear
	(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling
	(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

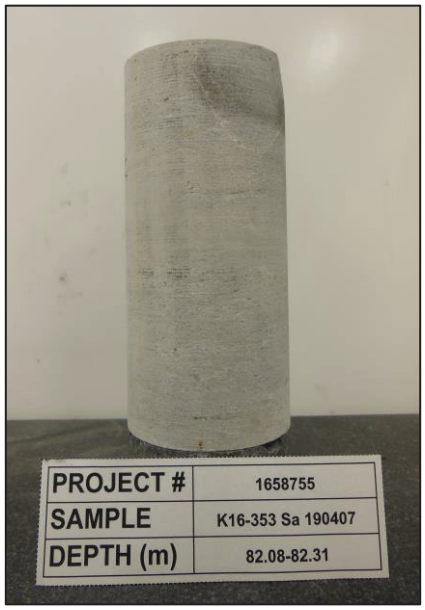
Project No.:	1658755	**Borehole:**	K16-353
Project:	KZK	**Sample Number:**	190407
Location:	Not provided	**Depth (m):**	82.08-82.31
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**280.90**
Stress σ_u (MPa)	**94.0**
Pace Rate (kN/s)	1.25
Lithology	RHY

Sample Measurements

Diameter	(mm)	61.68
Height	(mm)	129.43
Area	(cm^2)	29.88
Volume	(cm^3)	386.74
Mass	(g)	1024.90
Moisture Content	(%)	0.20
Wet Density	(kg/m^3)	2650
Dry Density	(kg/m^3)	2645



BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **18**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-354
Project:	KZK	**Sample Number:**	190410
Location:	Not provided	**Depth (m):**	33.0-33.27
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**276.00**
Stress σ_u (MPa)	**94.5**
Pace Rate (kN/s)	1.25
Lithology	RHYi

Sample Measurements

Diameter	(mm)	60.99
Height	(mm)	122.45
Area	(cm^2)	29.22
Volume	(cm^3)	357.74
Mass	(g)	937.80
Moisture Content	(%)	0.33
Wet Density	(kg/m^3)	2621
Dry Density	(kg/m^3)	2613

BEFORE TEST

Failure Mode

Type: **4**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-356
Project:	KZK	**Sample Number:**	190411
Location:	Not provided	**Depth (m):**	12.5-12.8
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**221.90**
Stress σ_u (MPa)	**76.5**
Pace Rate (kN/s)	1.25
Lithology	MAFi

Sample Measurements

Diameter	(mm)	60.78
Height	(mm)	128.56
Area	(cm^2)	29.01
Volume	(cm^3)	373.01
Mass	(g)	1040.50
Moisture Content	(%)	0.14
Wet Density	(kg/m^3)	2789
Dry Density	(kg/m^3)	2786

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **15**

* Degrees measured with respect to core axis.

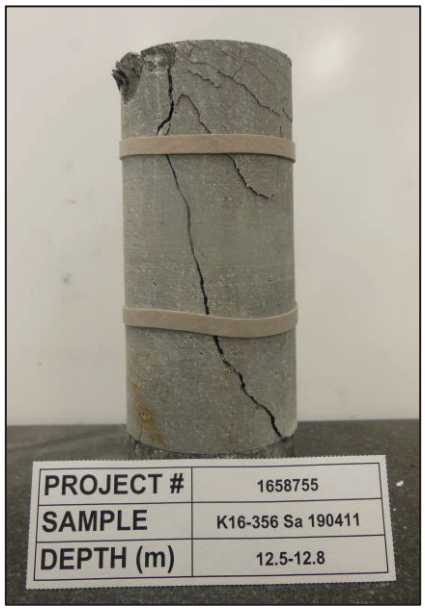
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other



AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190412
Location:	Not provided	**Depth (m):**	48.0-48.25
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**183.80**
Stress σ_u (MPa)	**62.7**
Pace Rate (kN/s)	1.25
Lithology	RHYv

Sample Measurements

Diameter	(mm)	61.11
Height	(mm)	131.13
Area	(cm^2)	29.33
Volume	(cm^3)	384.61
Mass	(g)	1070.50
Moisture Content	(%)	0.26
Wet Density	(kg/m^3)	2783
Dry Density	(kg/m^3)	2776

BEFORE TEST

Failure Mode

Type: **5/6**

Degrees:* **40**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190413
Location:	Not provided	**Depth (m):**	74.3-74.6
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**149.20**
Stress σ_u (MPa)	**50.4**
Pace Rate (kN/s)	1.25
Lithology	RHYv

Sample Measurements

Diameter	(mm)	61.37
Height	(mm)	128.82
Area	(cm²)	29.58
Volume	(cm³)	381.05
Mass	(g)	1057.80
Moisture Content	(%)	0.17
Wet Density	(kg/m³)	2776
Dry Density	(kg/m³)	2771

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **33**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190414
Location:	Not provided	**Depth (m):**	90.6-90.85
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**152.50**
Stress σ_u (MPa)	**51.6**
Pace Rate (kN/s)	1.25
Lithology	RHYi

Sample Measurements

Diameter	(mm)	61.32
Height	(mm)	130.06
Area	(cm^2)	29.53
Volume	(cm^3)	384.09
Mass	(g)	1000.80
Moisture Content	(%)	0.23
Wet Density	(kg/m^3)	2606
Dry Density	(kg/m^3)	2600

BEFORE TEST

Failure Mode

Type: **1***

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Sample broke along healed discontinuity.

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190415
Location:	Not provided	**Depth (m):**	104.4-104.65
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**153.10**
Stress σ_u (MPa)	**51.8**
Pace Rate (kN/s)	1.25
Lithology	RHYc

Sample Measurements

Diameter	(mm)	61.36
Height	(mm)	128.70
Area	(cm^2)	29.57
Volume	(cm^3)	380.57
Mass	(g)	1008.40
Moisture Content	(%)	0.29
Wet Density	(kg/m^3)	2650
Dry Density	(kg/m^3)	2642

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **19**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190416-A
Location:	Not provided	**Depth (m):**	192.5-192.85
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**57.70**
Stress σ_u (MPa)	**19.7**
Pace Rate (kN/s)	1.25
Lithology	RHYc

Sample Measurements

Diameter	(mm)	61.10
Height	(mm)	131.16
Area	(cm^2)	29.32
Volume	(cm^3)	384.57
Mass	(g)	1061.00
Moisture Content	(%)	0.29
Wet Density	(kg/m^3)	2759
Dry Density	(kg/m^3)	2751

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **55**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Shear along foliation.

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190416-B
Location:	Not provided	**Depth (m):**	192.5-192.85
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**24.60**	Diameter (mm)	61.07
Stress σ_u (MPa)	**8.4**	Height (mm)	125.78
Pace Rate (kN/s)	1.25	Area (cm^2)	29.29
Lithology	RHYc	Volume (cm^3)	368.43
		Mass (g)	1027.10
		Moisture Content (%)	0.22
		Wet Density (kg/m^3)	2788
		Dry Density (kg/m^3)	2782

BEFORE TEST

Failure Mode		Notes
		- Water content as received
		- Wet density based on as received moisture
Type:	**5**	**Mode:**
Degrees:*	**54**	(1) Simple Extension
		(2) Multiple Extension
		(3) Multiple Fracturing
* Degrees measured with respect to core axis.		(4) Multiple Shear
		(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.		(6) Spalling
		(7) Other

AFTER TEST

Comments

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E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

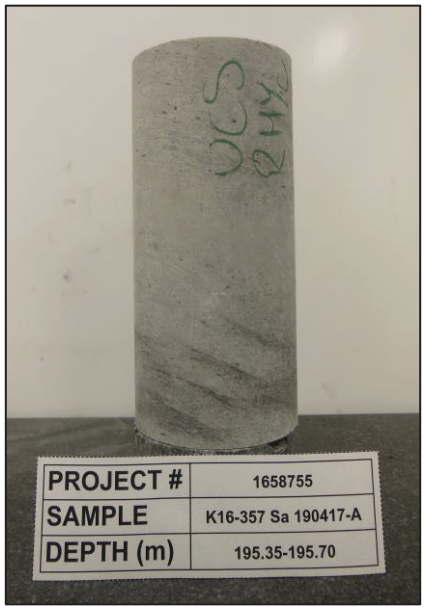
Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190417-A
Location:	Not provided	**Depth (m):**	195.35-195.70
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**88.50**
Stress σ_u (MPa)	**30.2**
Pace Rate (kN/s)	1.25
Lithology	RHYc

Sample Measurements

Diameter	(mm)	61.13
Height	(mm)	129.70
Area	(cm²)	29.35
Volume	(cm³)	380.66
Mass	(g)	1057.10
Moisture Content	(%)	0.11
Wet Density	(kg/m³)	2777
Dry Density	(kg/m³)	2774



BEFORE TEST

Failure Mode

Type:	**5**
Degrees:*	**57**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190417-B
Location:	Not provided	**Depth (m):**	195.35-195.70
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**105.90**
Stress σ_u (MPa)	**36.2**
Pace Rate (kN/s)	1.25
Lithology	RHYc

Sample Measurements

Diameter	(mm)	61.04
Height	(mm)	113.04
Area	(cm^2)	29.26
Volume	(cm^3)	330.79
Mass	(g)	925.00
Moisture Content	(%)	0.13
Wet Density	(kg/m^3)	2796
Dry Density	(kg/m^3)	2793

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **67**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Sample size does not meet standard requirements.

Shear along folation with rock bridges.

AFTER TEST

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TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	190421-A
Location:	Not provided	**Depth (m):**	64.15-64.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**94.30**
Stress σ_u (MPa)	**32.1**
Pace Rate (kN/s)	1.25
Lithology	RHY

Sample Measurements

Diameter	(mm)	61.12
Height	(mm)	125.59
Area	(cm^2)	29.34
Volume	(cm^3)	368.48
Mass	(g)	1037.70
Moisture Content	(%)	0.29
Wet Density	(kg/m^3)	2816
Dry Density	(kg/m^3)	2808

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **37**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Shear along foliation with rock bridges.

AFTER TEST

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TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-358
Project:	KZK	**Sample Number:**	190421-B
Location:	Not provided	**Depth (m):**	64.15-64.46
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**123.50**
Stress σ_u (MPa)	**42.1**
Pace Rate (kN/s)	1.25
Lithology	RHY

Sample Measurements

Diameter	(mm)	61.15
Height	(mm)	128.11
Area	(cm^2)	29.37
Volume	(cm^3)	376.24
Mass	(g)	1034.80
Moisture Content	(%)	0.32
Wet Density	(kg/m^3)	2750
Dry Density	(kg/m^3)	2742

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **39**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

Comments

Single shear along foliation with rock bridges

AFTER TEST

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190422
Location:	Not provided	**Depth (m):**	309.0-309.28
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**188.30**
Stress σ_u (MPa)	**64.7**
Pace Rate (kN/s)	1.25
Lithology	MAFi

Sample Measurements

Diameter	(mm)	60.85
Height	(mm)	131.81
Area	(cm^2)	29.08
Volume	(cm^3)	383.32
Mass	(g)	1140.40
Moisture Content	(%)	0.18
Wet Density	(kg/m^3)	2975
Dry Density	(kg/m^3)	2970

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **29**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-357
Project:	KZK	**Sample Number:**	190423
Location:	Not provided	**Depth (m):**	315.38-315.76
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**137.70**
Stress σ_u (MPa)	**47.5**
Pace Rate (kN/s)	1.25
Lithology	MAFi

Sample Measurements

Diameter	(mm)	60.73
Height	(mm)	127.05
Area	(cm^2)	28.97
Volume	(cm^3)	368.02
Mass	(g)	1076.40
Moisture Content	(%)	0.32
Wet Density	(kg/m^3)	2925
Dry Density	(kg/m^3)	2916

BEFORE TEST

Failure Mode

Type: **6/5**

Degrees:* **77**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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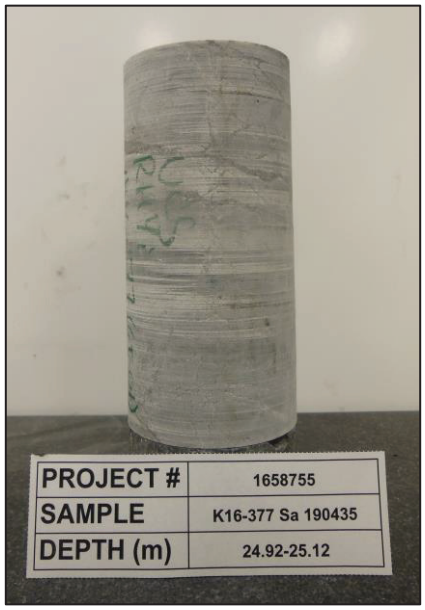
Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-377
Project:	KZK	**Sample Number:**	190435
Location:	Not provided	**Depth (m):**	24.92-25.12
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**359.30**	Diameter (mm)	61.09
Stress σ_u (MPa)	**122.6**	Height (mm)	126.18
Pace Rate (kN/s)	1.25	Area (cm^2)	29.31
Lithology	RHYi	Volume (cm^3)	369.85
		Mass (g)	975.70
		Moisture Content (%)	0.23
		Wet Density (kg/m^3)	2638
		Dry Density (kg/m^3)	2632



BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **1**	**Mode:**
Degrees:*	(1) Simple Extension
	(2) Multiple Extension
	(3) Multiple Fracturing
* Degrees measured with respect to core axis.	(4) Multiple Shear
	(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling
	(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190436
Location:	Not provided	**Depth (m):**	59.91-60.13
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**361.80**	Diameter (mm)	61.11
Stress σ_u (MPa)	**123.4**	Height (mm)	125.21
Pace Rate (kN/s)	1.25	Area (cm^2)	29.33
Lithology	RHYi	Volume (cm^3)	367.24
		Mass (g)	961.90
		Moisture Content (%)	0.19
		Wet Density (kg/m^3)	2619
		Dry Density (kg/m^3)	2614

BEFORE TEST

Failure Mode	Notes
Type: **1**	- Water content as received - Wet density based on as received moisture **Mode:**
Degrees:*	(1) Simple Extension (2) Multiple Extension (3) Multiple Fracturing
* Degrees measured with respect to core axis.	(4) Multiple Shear (5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling (7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190437
Location:	Not provided	**Depth (m):**	58.95-59.22
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**198.00**
Stress σ_u (MPa)	**67.6**
Pace Rate (kN/s)	1.25
Lithology	RHYi

Sample Measurements

Diameter	(mm)	61.09
Height	(mm)	126.33
Area	(cm^2)	29.31
Volume	(cm^3)	370.29
Mass	(g)	974.30
Moisture Content	(%)	0.23
Wet Density	(kg/m^3)	2631
Dry Density	(kg/m^3)	2625

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **14**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-376
Project:	KZK	**Sample Number:**	190438
Location:	Not provided	**Depth (m):**	14.84-15.20
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**101.30**
Stress σ_u (MPa)	**34.4**
Pace Rate (kN/s)	1.25
Lithology	RHYv

Sample Measurements

Diameter	(mm)	61.27
Height	(mm)	127.12
Area	(cm^2)	29.48
Volume	(cm^3)	374.80
Mass	(g)	1034.80
Moisture Content	(%)	0.08
Wet Density	(kg/m^3)	2761
Dry Density	(kg/m^3)	2759

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **21**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

Shear along foliation.

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-373
Project:	KZK	**Sample Number:**	190439-A
Location:	Not provided	**Depth (m):**	61.48-61.81
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**38.60**	Diameter (mm)	60.62
Stress σ_u (MPa)	**13.4**	Height (mm)	127.17
Pace Rate (kN/s)	1.25	Area (cm^2)	28.86
Lithology	MAFi	Volume (cm^3)	367.03
		Mass (g)	1098.10
		Moisture Content (%)	0.28
		Wet Density (kg/m^3)	2992
		Dry Density (kg/m^3)	2983

BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **5**	**Mode:**
Degrees:* **25**	(1) Simple Extension
	(2) Multiple Extension
	(3) Multiple Fracturing
* Degrees measured with respect to core axis.	(4) Multiple Shear
	(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling
	(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-373
Project:	KZK	**Sample Number:**	190439-B
Location:	Not provided	**Depth (m):**	61.48-61.81
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**103.70**	Diameter (mm)	60.70
Stress σ_u (MPa)	**35.8**	Height (mm)	128.28
Pace Rate (kN/s)	1.25	Area (cm^2)	28.94
Lithology	MAFi	Volume (cm^3)	371.22
		Mass (g)	1108.90
		Moisture Content (%)	0.22
		Wet Density (kg/m^3)	2987
		Dry Density (kg/m^3)	2981

BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **5**	**Mode:**
Degrees:* **28**	(1) Simple Extension
	(2) Multiple Extension
* Degrees measured with respect to core axis.	(3) Multiple Fracturing
	(4) Multiple Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(5) Single Shear
	(6) Spalling
	(7) Other

AFTER TEST

Comments

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-373
Project:	KZK	**Sample Number:**	190441
Location:	Not provided	**Depth (m):**	68.94-69.29
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**60.40**
Stress σ_u (MPa)	**20.8**
Pace Rate (kN/s)	1.25
Lithology	MAFi

Sample Measurements

Diameter	(mm)	60.75
Height	(mm)	129.27
Area	(cm²)	28.99
Volume	(cm³)	374.70
Mass	(g)	1063.30
Moisture Content	(%)	0.22
Wet Density	(kg/m³)	2838
Dry Density	(kg/m³)	2832

BEFORE TEST

Failure Mode

Type:	**5**
Degrees:*	**33**

* Degrees measured with respect to core axis.

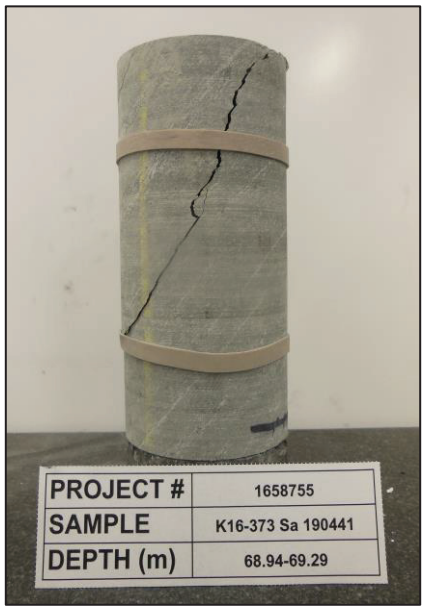
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other



AFTER TEST

Comments

Shear along foliation with rock bridges.

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
300, 3811 North Fraser Way, Burnaby, British Columbia, Canada V5J 5J2
Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

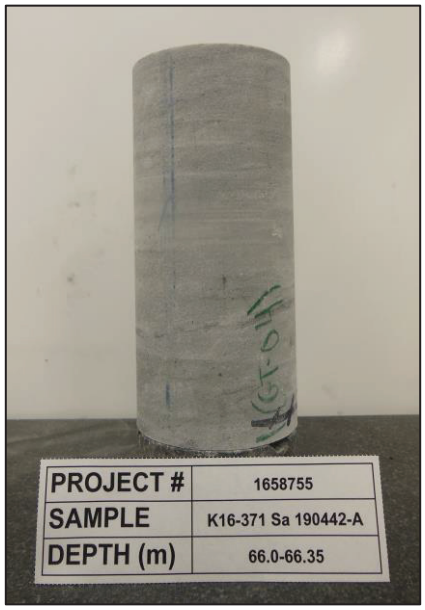
Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190442-A
Location:	Not provided	**Depth (m):**	66.0-66.35
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**355.20**
Stress σ_u (MPa)	**125.1**
Pace Rate (kN/s)	1.25
Lithology	RHYi

Sample Measurements

Diameter	(mm)	60.13
Height	(mm)	129.16
Area	(cm²)	28.40
Volume	(cm³)	366.78
Mass	(g)	1004.30
Moisture Content	(%)	0.15
Wet Density	(kg/m³)	2738
Dry Density	(kg/m³)	2734



BEFORE TEST

Failure Mode

Type: **6**

Degrees:*

* Degrees measured with respect to core axis.

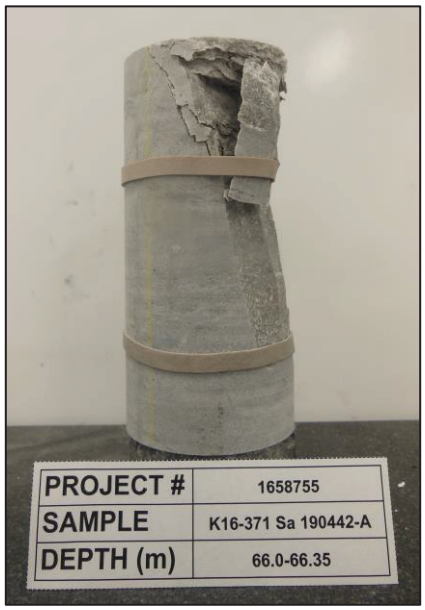
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other



AFTER TEST

Comments

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E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190442-B
Location:	Not provided	**Depth (m):**	66.0-66.35
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**432.00**
Stress σ_u (MPa)	**147.4**
Pace Rate (kN/s)	1.25
Lithology	RHYi

Sample Measurements

Diameter	(mm)	61.08
Height	(mm)	125.29
Area	(cm²)	29.30
Volume	(cm³)	367.12
Mass	(g)	988.70
Moisture Content	(%)	0.15
Wet Density	(kg/m³)	2693
Dry Density	(kg/m³)	2689

BEFORE TEST

Failure Mode

Type: **6**

Degrees:*

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

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E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190445-A
Location:	Not provided	**Depth (m):**	88.50-88.79
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results

Max Load (kN)	**303.70**
Stress σ_u (MPa)	**103.5**
Pace Rate (kN/s)	1.25
Lithology	RHYv

Sample Measurements

Diameter	(mm)	61.12
Height	(mm)	126.22
Area	(cm^2)	29.34
Volume	(cm^3)	370.33
Mass	(g)	1001.90
Moisture Content	(%)	0.16
Wet Density	(kg/m^3)	2705
Dry Density	(kg/m^3)	2701

BEFORE TEST

Failure Mode

Type: **5**

Degrees:* **15**

* Degrees measured with respect to core axis.

The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.

Notes

- Water content as received
- Wet density based on as received moisture

Mode:

(1) Simple Extension
(2) Multiple Extension
(3) Multiple Fracturing
(4) Multiple Shear
(5) Single Shear
(6) Spalling
(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

Golder Associates Ltd.
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Tel: 604-412-6899 Fax: 604-412-6816 www.golder.com

Uniaxial Compressive Strength of Intact Rock Core Specimens (Method C)

ASTM D7012

Project No.:	1658755	**Borehole:**	K16-371
Project:	KZK	**Sample Number:**	190445-B
Location:	Not provided	**Depth (m):**	88.50-88.79
Client:	BMC Minerals Ltd.	**Lab ID No:**	270

Testing Results		Sample Measurements	
Max Load (kN)	**295.90**	Diameter (mm)	61.15
Stress σ_u (MPa)	**100.8**	Height (mm)	129.29
Pace Rate (kN/s)	1.25	Area (cm^2)	29.37
Lithology	RHYv	Volume (cm^3)	379.71
		Mass (g)	1039.50
		Moisture Content (%)	0.13
		Wet Density (kg/m^3)	2738
		Dry Density (kg/m^3)	2734

BEFORE TEST

Failure Mode	Notes
	- Water content as received
	- Wet density based on as received moisture
Type: **5**	**Mode:**
Degrees:* **14**	(1) Simple Extension
	(2) Multiple Extension
	(3) Multiple Fracturing
* Degrees measured with respect to core axis.	(4) Multiple Shear
	(5) Single Shear
The impact of any pre-existing feature on the test results will be noted in the comments, if applicable.	(6) Spalling
	(7) Other

AFTER TEST

Comments

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

E. Kostyukov	July 22, 2016	L.Perrey	July 27,2016
TESTED BY	DATE	CHECKED BY	DATE

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BMC MINERALS

UCS TEST RESULTS - MDU

August 23, 2016

Imran Haque, EIT

SUMMARY

A total of six samples were gathered for testing where a total of seven tests were possible given the length and diameter ratios as per ASTM standards. One sample was broken upon arrival whereas two samples broke when attempting to sulfur cap. Therefore, a total of four UCS tests were completed successfully.

Due to the weak nature of the sedimentary rock, a wet weight was excluded for measurement due to excessive handling required which may cause further damage to the sample. Preparation of the sample included an average measurement of the length and diameter, dry weight, and sulfur capping or saw cutting, if possible.

Before testing, a pace rate of 2.4 kN/s was applied. Core length and diameter were input on to the machine before testing. All tests required plates on the base due to the sample length and any debris or material was wiped off before each test.

Out of the four samples, Q190446 was the most carbonaceous weakly foliated sample which was the best representation of KZK's mudstone unit. The UCS strength of said sample was 9 MPa with a Type 4 failure breaking along foliation at 62°.

The remaining three samples, Q190450-A, Q190450-B, and Q930551, were noted as an MDU unit but did consist of biotite and calcite veining and was not as carbonaceous as Q190446. The three samples collected were a gradational contact between the MDU and MAFt units. The UCS results were 24.9 MPa, 29.3 MPa, 35.3 MPa. This results in an average strength of 29.8 MPa and a standard deviation of +/- 5.2 MPa.

Given the results above and due to the lacking number of MDU unit samples that meet the standard length and diameter ratio, as well as weak engineering and strength properties, it is fair to assume a carbonaceous MDU unit is <25 MPa.

Sample ID:	Q930551	**σ (MPa):**	35.3
Length (mm):	130	**α (°):**	55
Diameter (mm):	61.1	**Type:**	2
Dry Weight (kg):	1.0661	**Preparation:**	Sulfur Cap

Comments: Broke along weak plane of foliation as well as vertical cracks observed from both ends of cap.

Sample ID:	Q190448	**σ (MPa):**	-
Length (mm):	-	**α (°):**	-
Diameter (mm):	-	**Type:**	-
Dry Weight (kg):	-	**Preparation:**	Broken

Comments: Sample broken upon arrival.

Sample ID:	Q190448	**σ (MPa):**	9.0
Length (mm):	99	**α (°):**	62
Diameter (mm):	61.1	**Type:**	4
Dry Weight (kg):	1.0254	**Preparation:**	Sulfur Cap

Comments: Best representation of MDU unit due to amount of carbonaceous material and weak planes of foliation. Sample does not meet L/D ratio. Fresh diagonal cut failure which may be the cause of unbonded sulfur cap.

Sample ID:	Q190447	**σ (MPa):**	-
Length (mm):	-	**α (°):**	-
Diameter (mm):	-	**Type:**	-
Dry Weight (kg):	-	**Preparation:**	Broke

Comments: Broke when attempting to sulfur cap.

Sample ID:	Q190449	**σ (MPa):**	-
Length (mm):	-	**α (°):**	-
Diameter (mm):	-	**Type:**	-
Dry Weight (kg):	-	**Preparation:**	Broke

Comments: Broke when attempting to sulfur cap.

Sample ID:	Q190450-A	**σ (MPa):**	24.9
Length (mm):	142	**α (°):**	38
Diameter (mm):	61.1	**Type:**	2
Dry Weight (kg):	1.1723	**Preparation:**	Saw

Comments: Well defined cone at bottom with vertical cracks on top end of cone.

Sample ID:	Q190450-B	**σ (MPa):**	29.3
Length (mm):	145	**α (°):**	85
Diameter (mm):	61.1	**Type:**	3
Dry Weight (kg):	1.2061	**Preparation:**	Saw

Comments: Vertical cracking on both ends of cone.

APPENDIX IV

GEOTECHNICAL LOGS

AND

POINT LOAD TEST RESULTS

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-351	Krakatoa (in-pit)	All	KRAK025	415130	6815045	1399.4	198	-59	NQ3	214	24-May-16	25-May-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	DH		
Geotech Log	HM	IH	01-Jun-16
PLT	IH	IH	01-Jun-16
UCS	N/A	N/A	N/A

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-351	0.00	9.30	Overburden (OVBN)
K16-351	9.30	9.90	Coherent rhyolite (RHYc)
K16-351	9.90	14.50	Pelite (PEL)
K16-351	14.50	17.30	Volcaniclastic rhyolite (RHYv)
K16-351	17.30	19.80	Volcaniclastic rhyolite (RHYv)
K16-351	19.80	32.10	Aphanitic rhyolite (RHYi)
K16-351	32.10	34.40	Volcaniclastic rhyolite (RHYv)
K16-351	34.40	36.30	Pelite (PEL)
K16-351	36.30	37.00	Volcaniclastic rhyolite (RHYv)
K16-351	37.00	37.50	Pelite (PEL)
K16-351	37.50	38.90	Coherent rhyolite (RHYc)
K16-351	38.90	53.60	Volcaniclastic rhyolite (RHYv)
K16-351	53.60	54.80	No Core
K16-351	54.80	68.00	Volcaniclastic rhyolite (RHYv)
K16-351	68.00	93.00	Coherent rhyolite (RHYc)
K16-351	93.00	94.60	Rhyolite (RHY)
K16-351	94.60	95.60	Mafic intrusion (MAFi)
K16-351	95.60	101.90	Volcaniclastic rhyolite (RHYv)
K16-351	101.90	103.00	Mafic intrusion (MAFi)
K16-351	103.00	110.90	Volcaniclastic rhyolite (RHYv)
K16-351	110.90	131.80	Mafic intrusion (MAFi)
K16-351	131.80	133.40	Semi-massive sulphide (OI, OJ)
K16-351	133.40	135.60	Massive sulphide (OA, OB, OC, OF, OK)
K16-351	135.60	140.20	Massive sulphide (OA, OB, OC, OF, OK)
K16-351	140.20	146.90	Volcaniclastic rhyolite (RHYv)
K16-351	146.90	147.50	Aphanitic rhyolite (RHYi)
K16-351	147.50	149.60	Volcaniclastic rhyolite (RHYv)
K16-351	149.60	152.00	Aphanitic rhyolite (RHYi)
K16-351	152.00	153.40	Rhyolite (RHY)
K16-351	153.40	155.10	Aphanitic rhyolite (RHYi)
K16-351	155.10	156.90	Rhyolite (RHY)
K16-351	156.90	161.10	Aphanitic rhyolite (RHYi)
K16-351	161.10	163.20	Rhyolite (RHY)
K16-351	163.20	198.00	Fault Zone (FLZ)
		EOH	

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data								Strength Data		Discontinuity parameters for Q System												RMR76							Comment
													ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Oriented Core Log				Fault and Broken Zones					
			From (m)	To (m)	Run (m)	TCR (%)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microlofest	
K16-351	HW	RHYc	9.3	9.9	0.6	0.6	100%	9	0.0	0%	W2	R3	2									6	J	2	4	70.0		J	1	12	0%	0%	0%	0%	0%	
K16-351	HW	PEL	9.9	14.5	4.6	3.2	70%	57	2.0	43%	W2	R2	2	1	J	4	1	4	J	2	2	52	J,Fol	2	4				1	12	0%	0%	0%	5%	0%	
K16-351	HW	RHYv	14.5	19.8	5.3	4.6	86%	75	2.0	37%	W3	R3	3					5	J	2	4	57	J,Fol	2	4	60.0	240.0	J	2	12	0%	0%	0%	5%	0%	
K16-351	HW	RHYi	19.8	22.8	3.0	2.8	93%	17	1.9	63%	W2	R3/R4	3	3	J	2	4	0				14	J	2	4	65.0	270.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYi	22.8	25.8	3.0	2.6	87%	13	2.4	80%	W2	R3/R4	3	1	J	2	4	0				12	J	2	4	65.0	250.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYi	25.8	28.8	3.0	1.9	63%	6	1.9	63%	W2	R3/R4	3	1	J	2	4	0				5	J	2	4	60.0	80.0	J	1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYi	28.8	32.1	3.3	2.8	85%	21	1.9	58%	W3	R3/R4	3	4	J	2	4	0				17	J	2	4	25.0	170.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	32.1	34.4	2.3	2.3	100%	12	1.8	78%	W2	R3	3	1	J	2	4	1	J	2	4	10	J	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	PEL	34.4	36.3	1.9	1.8	95%	3	1.7	89%	W1	R3	2					1	J	3	3	2	J	2	4	80.0	280.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	36.3	37.0	0.7	0.7	100%	5	0.4	57%	W2	R3	3	2	J	2	4					3	J	2	4	80.0	90.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYc	37.0	38.9	1.9	1.5	79%	5	1.3	68%	W2	R3	3	1	J	2	4					4	J	2	4	20.0	75.0	J	2	12	0%	0%	0%	0%	0%	0.5m of PEL lumped into it
K16-351	HW	RHYv	38.9	41.9	3.0	2.7	90%	31	1.8	60%	W2	R3	3	1	J	2	4					30	J	2	4	85.0	290.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	41.9	44.9	3.0	2.6	87%	37	0.8	27%	W3	R2/R3	4	3	J	2	4					34	J	2	4	70.0	320.0	J	2	12	0%	0%	10%	0%	0%	
K16-351	HW	RHYv	44.9	47.9	3.0	2.7	90%	19	1.5	50%	W2	R3	3	1	J	2	4	1	J	2	4	17	J	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	47.9	50.9	3.0	2.6	87%	31	1.1	37%	W2	R3	3	2	J	3	3					29	J	2	4				1	12	0%	0%	10%	0%	10%	
K16-351	HW	RHYv	50.9	53.9	3.0	2.2	73%	30	1.2	40%	W2	R3	3									30	J	2	4				1	12	0%	0%	5%	0%	15%	
K16-351	HW	RHYv	53.9	56.9	3.0	2.9	97%	27	0.6	20%	W3	R3	3	1	J	3	3					26	J	2	4				1	12	40%	0%	0%	0%	Fault Gouge	
K16-351	HW	RHYv	56.9	59.9	3.0	2.8	93%	44	1.1	37%	W2	R3	3	1	J	3	4					43	J	2	3	70.0	90.0	J	2	12	0%	0%	5%	0%		
K16-351	HW	RHYv	59.9	62.9	3.0	1.8	60%	30	0.5	17%	W2	R3	2									30	J,Fol	2	4				1	12	0%	0%	0%	0%	1m wash away	
K16-351	HW	RHYv	62.9	65.9	3.0	2.7	90%	41	1.2	40%	W2	R3	3									41	J,Fol	3	4	75.0	250.0	J	2	12	0%	0%	0%	5%	0%	
K16-351	HW	RHYv	65.9	68.9	3.0	2.1	70%	52	0.8	27%	W3	R2	3	1	J	2	4					51	J,Fol	2	4	70.0	270.0	J	2	12	0%	0%	0%	0%	30%	0.9m of RHYc
K16-351	HW	RHYc	68.9	71.9	3.0	1.9	63%	36	0.2	7%	W3	R2	3	1	J	3	4					35	J,Fol	2	4				1	12	0%	0%	0%	5%	5%	1m wash away
K16-351	HW	RHYc	71.9	74.9	3.0	2.0	67%	36	0.3	10%	W3	R2	2									36	J,Fol	2	4				1	12	0%	0%	0%	2%	0%	0.5 m wash away
K16-351	HW	RHYc	74.9	77.9	3.0	1.8	60%	38	0.4	13%	W3	R2	2									38	J,Fol	2	4				1	12	0%	0%	0%	10%	0%	1.5m wash away
K16-351	HW	RHYc	77.9	80.9	3.0	2.7	90%	35	1.1	37%	W3	R3	2									35	J,Fol	2	4	75.0	280.0	Fol	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYc	80.9	83.9	3.0	2.7	90%	25	1.8	60%	W3	R3	2									25	J,Fol	2	4				1	12	0%	0%	0%	0%	0%	0.2m wash away
K16-351	HW	RHYc	83.9	86.9	3.0	2.6	87%	29	1.7	57%	W2	R3	2									29	J,Fol	2	4	70.0	330.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYc	86.9	89.9	3.0	2.6	87%	30	1.9	63%	W2	R3	3					1	J	3	3	29	J,Fol	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYc	89.9	93.0	3.1	2.5	81%	33	1.3	42%	W3	R2	2									33	J,Fol	2	4				1	12	0%	0%	0%	0%	0%	0.3m wash out
K16-351	HW	RHY	93.0	95.6	2.6	2.1	81%	53	0.2	8%	W4	R2	3					2	J	3	4	51	J,Fol	2	4				1	12	0%	0%	0%	5%	20%	1m MAFi
K16-351	HW	RHYv	95.6	98.6	3.0	1.9	63%	38	0.5	17%	W3	R3	3					1	J	3	4	37	J,Fol	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	98.6	102.0	3.4	3.2	94%	58	1.3	38%	W3	R2	2									58	J,Fol	2	4				1	12	0%	0%	0%	0%	0%	0.1m MAFi
K16-351	HW	MAFi	102.0	103.0	1.0	0.9	90%	17	0.5	50%	W4	R2	3					1	J	3	3	16	Fol	3	3				1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	103.0	106.0	3.0	2.7	90%	58	0.5	17%	W2	R2	3	1		2	4					57	Fol	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	RHYv	106.0	110.4	4.4	1.1	25%	64	0.1	2%	W3	R3	2									64	Fol	2	4				1	12	0%	0%	10%	0%	10%	1.3m wash away
K16-351	HW	MAFi	110.4	113.4	3.0	1.6	53%	42	0.6	20%	W3	R2	3					1	J	3	3	41	Fol	3	3				1	12	0%	0%	0%	20%	0%	1.2m wash away
K16-351	HW	MAFi	113.4	116.4	3.0	2.9	97%	25	2.0	67%	W3	R2	2									25	Fol	3	3				1	12	0%	0%	0%	0%	0%	
K16-351	HW	MAFi	116.4	119.0	2.6	2.5	96%	28	1.0	38%	W3	R2	3					5	J	3	3	23	J,Fol	3	3				1	12	0%	0%	0%	0%	0%	
K16-351	HW	MAFi	119.0	122.0	3.0	2.8	93%	18	2.5	83%	W3	R2	3					16	Foli	3	4	2	J	3	4				1	12	0%	0%	0%	0%	0%	
K16-351	HW	MAFi	122.0	125.0	3.0	2.7	90%	27	1.3	43%	W3	R2	3					23	J,Fol	3	4	4	J	3	4	40.0	230.0	J	2	12	0%	0%	0%	0%	0%	
K16-351	HW	MAFi	125.0	128.0	3.0	2.6	87%	47	0.9	30%	W3	R2	3					25	J,Fol	3	4	22	J	2	4				1	12	0%	0%	10%	0%	10%	
K16-351	HW	MAFi	128.0	131.8	3.8	3.3	87%	27	1.4	37%	W3	R2	3					11	SHR	2	4	16	Foli	2	4				1	12	0%	0%	10%	0%	5%	
K16-351	Ore	Stringer/diss. sulphid	131.8	133.4	1.6	1.3	81%	25	0.1	6%	W3	R3/R4	2									25	Foli	2	4	70.0	250.0	Foli	2	12	0%	0%	10%	5%	0%	
K16-351	Ore	Mass. Sulphides	133.4	135.6	2.2	2.0	91%	11	1.4	64%	W1	R4	2					11	J	1.5	2					55.0	110.0	J	2	20	0%	0%	0%	0%	0%	
K16-351	Ore	Stringer/diss. sulphid	135.6	138.6	3.0	2.8	93%	9	2.4	80%	W1	R3/R4	2					9	J	1.5	2					55.0	140.0	J	2	20	0%	0%	0%	0%	0%	
K16-351	Ore	Stringer/diss. sulphid	138.6	140.2	1.6	1.5	94%	7	1.3	81%	W1	R4	2					7	J	2	2					30.0	140.0	J	2	20	0%	0%	0%	0%	0%	
K16-351	FW	RHY	140.2	143.2	3.0	2.9	97%	43	0.9	30%	W3	R3	2									43	Fol, J	2	4				1	12	0%	0%	0%	0%	0%	
K16-351	FW	RHY	143.2	146.9	3.7	3.1	84%	74	0.3	8%	W4	R3	2									74	Fol,J	2	4				1	12	0%	0%	60%	5%	5%	
K16-351	FW	RHYi	146.9	150.0	3.1	2.8	90%	39	1.2	39%	W3	R3	3					1	J	2	6	38	Foli	2	4	80.0	90.0		2	12	0%	0%	5%	0%	0%	
K16-351	FW	RHYi	150.0	153.0	3.0	2.7	90%	34	1.3	43%	W2	R3	3	1	J	4	6					33	Fol,J	2	4	30.0	340.0	J	1	12	0%	0%	10%	0%	0%	
K16-351	FW	RHYi	153.0	156.0	3.0	2.4	80%	40	0.9	30%	W3	R3	2									40	Fol,J	2	4				1	12	0%	0%	0%	10%	0%	0.9m of RHY
K16-351	FW	RHYi	156.0	159.0	3.0	2.5	83%	38	1.1	37%	W4	R3	3	1	J	4	4												1	12	0%	0%	0%	5%	0%	0.9m of RHY
K16-351	FW	RHYi	159.0	162.0	3.0	2.1	70%	39	1.1	37%	W4	R2	2					3	J	4	4	36	Fol,J	2	4	50.0	90.0	J	2	12	0%	0%	0%	5%	30%	0.9m of RHY
K16-351	FW	RHYi																							60.0	80.0	J	2							
K16-351	FW	RHY	162.0	163.2	1.2	1.0	83%	23	0.3	25%	W4	R2	3					2	J	4	4	21	Fol,J	4	6				1	12	0%	0%	10%	0%	10%	
K16-351	FW	Fault zone	163.2	166.0	2.8	2.3	82%	32	0.8	29%	W5	R0	6																1	12	0%	0%	0%	0%	90%	
K16-351	FW	Fault zone	166.0	169.0	3.0	3.0	100%	18	1.8	60%	W5	R0	6																1	6	30%	40%	0%	0%	30%	Fault clast in gouge, folded highly altered RHY
K16-351	FW	Fault zone	169.0	172.0	3.0	2.9	97%	120	0.7	23%	W5	R0	20																1	0	70%	30%	0%	0%	0%	argillitic clast in fault gouge
K16-351	FW	Fault zone	172.0	175.0	3.0	2.5	83%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	only evidence of rock structure preserved
K16-351	FW	Fault zone	175.0	178.0	3.0	2.5	83%	120	0.0	0%	W5	R0	20																1	0	90%	0%	0%	10%	0%	few heavily altered rock fragments, rubble
K16-351	FW	Fault zone	178.0	181.0	3.0	2.7	90%	54	1.2	40%	W5	R0	20																1	0	30%	0%	0%	5%	65%	gouge and heavily altered rock
K16-351	FW	Fault zone	181.0	184.0	3.0	1.8	60%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	gouge
K16-351	FW	Fault zone	184.0	187.0	3.0	2.7	90%	120	0.0	0%	W5	R0	20																1	0	90%	0%	10%	0%	0%	heavily altered rock (broken zone) within gouge
K16-351	FW	Fault zone	187.0	190.0	3.0	2.6	87%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	completely gouge
K16-351	FW	Fault zone	190.0	193.0	3.0	2.8	93%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	completely gouge
K16-351	FW	Fault zone	193.0	196.0	3.0	2.7	90%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	completely gouge
K16-351	FW	Fault zone	196.0	198.0	2.0	1.9	95%	120	0.0	0%	W5	R0	20																1	0	100%	0%	0%	0%	0%	completely gouge, End of hole

UCS Sample Summay

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
								0	#DIV/0!		
								0	#DIV/0!		
									#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	I_S (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.45}$	$I_{S(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-351	PLT-001	58.80	HW	RHYv	7.9	L	a	fresh break II to fol. Valid	55.00	45	55.00	79	7.49	3151.27	0.002376567	0.9537	2.27	
K16-351	PLT-002	65.96	HW	RHYv	7.3	L	a	fresh break II to fol. Valid	45.00	45	45.00	73	6.92	2578.31	0.002684084	0.9537	2.56	
K16-351	PLT-003	68.00	HW	RHYv	10.1	L	a	fresh break II to fol. Valid	47.00	45	47.00	101	9.57	2692.90	0.00355557	0.9537	3.39	
K16-351	PLT-004	79.85	HW	RHYc	2.44	II	d	fresh break II valid	45.00	45	45.00	24.4	2.31	2025.00	0.001142281	0.9537	1.09	
K16-351	PLT-005	93.00	HW	RHY	1.18	II	d	natural break along fol. Valid	45.00	45	45.00	11.8	1.12	2025.00	0.000552415	0.9537	0.53	
K16-351	PLT-006	93.00	HW	RHY	3.96	L	a	fresh break L to fol. Valid	40.00	45	40.00	39.6	3.75	2291.83	0.001638026	0.9537	1.56	
K16-351	PLT-007	95.20	HW	MAFi	3.14	L	a	natural break along fol. Valid	35.00	45	35.00	31.4	2.98	2005.35	0.001484388	0.9537	1.42	
K16-351	PLT-008	114	HW	MAFi	6.06	L	a	natural break along fol. valid	45	45	45.00	60.6	5.74	2578.31	0.002228157	0.9537	2.12	
K16-351	PLT-009	133.2	Ore	string	5.88	II	d	fresh break valid	45	45	45.00	58.8	5.57	2025.00	0.002752711	0.9537	2.63	
K16-351	PLT-010	135.6	Ore	MXSX	10.1	II	d	fresh break valid	45	45	45.00	101	9.57	2025.00	0.004728296	0.9537	4.51	
K16-351	PLT-011	140.2	Ore	string	0.96	II	d	fresh break valid	45	45	45.00	9.6	0.91	2025.00	0.000449422	0.9537	0.43	
K16-351	PLT-012	157.1	FW	RHYi	3.28	II	d	fresh break valid	45	45	45.00	32.8	3.11	2025.00	0.001535526	0.9537	1.46	
K16-351	PLT-013	161.8	FW	RHYi	4.96	L	a	fresh break L to fol valid	29	45	29.00	49.6	4.70	1661.58	0.002829889	0.9537	2.70	
K16-351	PLT-014	171.8	FW	MDS	1.54	II	d	natural break along fol valid	45	45	45.00	15.4	1.46	2025.00	0.000720948	0.9537	0.69	
											0.00	0	0.00	0.00		0.0000		

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-353	Krakatoa	All	KRAK006	415130	6815045	1399.4	192	-83	HQ3	224	25-May-16	28-May-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	DH		
Geotechnical	ON	IH	3/Jun/16
PLT	IH	IH	3/Jun/16
UCS	N/A	N/A	

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-352	0	1.5	Overburden (OVBN)
K16-352	1.5	10.4	Coherent rhyolite (RHYc)
K16-352	10.4	12.7	Pelite (PEL)
K16-352	12.7	20.1	Volcaniclastic rhyolite (RHYv)
K16-352	20.1	33.3	Aphanitic rhyolite (RHYi)
K16-352	33.3	34	Volcaniclastic rhyolite (RHYv)
K16-352	34	37.4	Pelite (PEL)
K16-352	37.4	38.5	Coherent rhyolite (RHYc)
K16-352	38.5	38.8	Pelite (PEL)
K16-352	38.8	40.3	Coherent rhyolite (RHYc)
K16-352	40.3	65.8	Volcaniclastic rhyolite (RHYv)
K16-352	65.8	66.2	Mafic intrusion (MAFi)
K16-352	66.2	73	Volcaniclastic rhyolite (RHYv)
K16-352	73	75.3	Mudstone (MDS)
K16-352	75.3	77.5	Mudstone (MDS)
K16-352	77.5	107.9	Coherent rhyolite (RHYc)
K16-352	107.9	121.8	Volcaniclastic rhyolite (RHYv)
K16-352	121.8	124	Coherent rhyolite (RHYc)
K16-352	124	147.5	Mafic intrusion (MAFi)
K16-352	147.5	149.3	Semi-massive sulphide (OI, OJ)
K16-352	149.3	152.9	Mafic intrusion (MAFi)
K16-352	152.9	155.1	Rhyolite (RHY)
K16-352	155.1	156	Semi-massive sulphide (OI, OJ)
K16-352	156	164.7	Rhyolite (RHY)
K16-352	164.7	173.5	Aphanitic rhyolite (RHYi)
K16-352	173.5	187.2	Fault Zone (FLZ)
K16-352	187.2	188.9	Semi-massive sulphide (OI, OJ)
K16-352	188.9	192	Fault Zone (FLZ)

Geotechnical Log

Hole ID	Zone	Lith-ology	Core Recovery Data							Strength Data			Discontinuity parameters for Q System																								RMR76												Comment
													ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Oriented Core Log						Fault and Broken Zones																		
			From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/un	RQD (m)	RQD (%)	Weathering/Alte	Strength	Joint Set Numbe	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (0,2,)	Joint Conditions	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Micro-defects	
616-352	HW	RHYo	1.50	3.00	1.5		0%			0%																																					Null
616-352	HW	RHYo	3.00	6.00	3.0	1.91	64%	60	0.51	17%	W2/A2	R3	6					3	J	4.0	2.0	12	J	3.0	2					20			15%	65%		No ontentation line, broken zone due to poor ground conditions.
616-352	HW	RHYo	6.00	9.00	3.0	2.47	82%	88	1.70	57%	W2/A2	R4	6					2	J	3.0	2.0	12	J	3.0	2					20				20%		No ontentation line, some lost core in blocky/broken zone, Jointing both follows and cuts discontinuous muscovite layers
616-352	HW	RHYo	9.00	10.40	1.4	1.37	98%	7	1.11	79%	W2/A2	R3	5					2	J	3.0	1.0	5	J	3.0	1					20						Short interval due to lithology change, no ontentation line, Jointing both follows and cuts discontinuous muscovite
616-352	HW	PEL	10.40	12.20	2.3	2.14	93%	28	0.70	30%	W1/A1	R4	3					2	J	3.0	1.0	26	JF	2.0	1					12-20	5%					No ontentation line, interval length due to small unit, Rare high angle TCA clay filled joints (fault?)
616-352	HW	RHYo	12.70	15.00	2.3	2.10	91%	13	1.61	70%	W1/A1	R3	2									13	JF	2.0	2					12-20	5%					No ontentation line, interval length due to short unit, Rare high angle gouge filled fractures/joints
616-352	HW	RHYo	15.00	18.00	3.0	2.23	74%	14	1.12	37%	W2/A2	R3	3									10	JF	1.0	2	89.0	315.0	JF	3.0	12-20	5%					Interval length due to short unit, Rare high angle gouge filled fractures/joints
616-352	HW	RHYo	18.00	20.10	2.1	2.04	97%	12	1.46	67%	W2/A2	R3	3					2	J	4.0	1.0	10	JF	1.5	2	89.0	318.0	JF	3.0	6-12	1%					Rare high angle TCA gouge zones parallel to the primary joint set, short interval due to lithology change
616-352	HW	RHYI	20.10	25.00	4.9	4.37	89%	28	2.92	60%	W1/A1	R4	6					4	J	1.5	1.0	15	J	1.5	2					20				8%	10%	Long interval due to driller blocking, no orientation line, microdefects following muscovite rich flow bands in the rhyolite
616-352	HW	RHYI	25.00	27.00	2.0	1.64	82%	12	1.09	55%	W1/A1	R4	5	1	J	3.0	1.0	1	J	1.5	1.0	4	J	1.5	1	70.0	242.0	J	2.0	20				8%		Short interval due to blocking, lost core in broken/blocky zone
616-352	HW	RHYI	27.00	30.10	3.1	2.82	91%	20	1.64	53%	W1/A1	R3	4					12	J	3.0	1.0					85.0	190.0	J	3.0	20				4%		Interval length due to driller blocking
616-352	HW	RHYI	30.10	33.30	3.2	2.57	80%	26	1.57	49%	W1/A1	R4	6					14	J	1.5	1.0					55.0	53.0	UN	3.0	20				10%		Joints exploit pyrite veinlets and muscovite rich flow banding discontinuities. Length due to lithology change
616-352	HW	RHYo	33.30	34.61	1.3	1.30	99%	17	0.61	48%	W2/A2	R3	4	3	J	1.0	3.0	14	F	1.0	3.0					85.0	325.0	FOL	3.0	12-20						Short run due to lith change, joints developed along and cutting foliation
616-352	HW	PEL	34.60	37.40	2.8	2.65	95%	13	2.21	79%	W1/A1	R3	3	1	V	3.0	1.0					10	J	1.0	1					6-12	1%					Run length for lith, no ori line, high angle to joints follow dominant foliation
616-352	HW	RHYo	37.40	40.40	3.0	2.79	93%	21	1.58	53%	W2/A2	R4	5					4	V	1.5	0.8	15	JF	1.0	3					6	5%			5%		no ori line, small lenses of PEL within RHYo, Run length due lithology change
616-352	HW	RHYo	40.40	45.00	4.6	3.61	78%	36	1.82	40%	W2/A2	R3	3									13	JF	1.0	3	85.0	320.0	FOL	3.0	0-6	7%		10%			lost core in broken/gouge zone,
616-352	HW	RHYo	45.00	48.00	3.0	2.93	98%	11	2.26	75%	W2/A2	R3	2									11	JF	1.0	4	50.0	318.0	JF	2.0	0-6	5%					Small gouge faults following the foliation
616-352	HW	RHYo	48.00	51.00	3.0	2.75	92%	4	2.70	90%	W1/A1	R3	2					1	J	1.0	4.0	3	JF	1.0	4	80.0	326.0	JF	2.0	0-6	1%					Small gouge faults following the foliation
616-352	HW	RHYo	51.00	54.00	3.0	2.93	97%	8	2.53	84%	W1/A1	R3	4					2	J	3.0	2.0	9	JF	1.0	4	85.0	328.0	JF	3.0	6	1%	1%				Small gouge faults following the foliation
616-352	HW	RHYo	54.00	57.00	3.0	2.97	99%	30	1.74	58%	W3/A3	R3	3									15	JF	1.0	8					0	15%	15%	10%			No Ori line, Fault zones exploiting foliation febric are 1-25cm wide
616-352	HW	RHYo	60.00	63.00	3.0	2.31	77%	18	0.30	10%	W2/A2	R3	5									14	JF	1.0	8					0-6	5%	10%				No Ori line, Fault zones exploiting foliation febric are 1-5cm wide
616-352	HW	RHYo	63.00	66.00	3.0	2.87	96%	23	1.32	44%	W2/A2	R3	3									20	JF	1.0	6	88.0	354.0	JF	3.0	6		1%			5%	Some spun core, early alternating light and dark foliation bands (bedding?) transposed into the dominant foliation at alpha 60-70 beta 355
616-352	HW	RHYo	66.00	69.00	3.0	1.61	54%	62	1.30	43%	W4/A4	R2/1	15									8	JF	1.0	6					0-6		50%			5%	No ori line, poor recovery in fault zone (wash away)
616-352	HW	RHYo	69.00	75.00	6.0	1.91	32%	120	0.36	6%	W4/A4	R2/1	15-20									13	JF	1.0	8-12					0-6		68%		26%		No ori line, lost core due to rubble/gouge faults, long interval due to very poor recovery
616-352	HW	RHYo	75.00	77.50	2.5	0.22	9%	120	0.00	0%	W4/A4	R2/1	20																0		91%		9%		Run lost due to poor ground/fault, no ori line, short due to lithology change
616-352	HW	RHYo	77.50	81.00	3.5	2.81	80%	45	1.36	39%	W3/A3	R2/1	4									14	JF	1.0	8-12					0		12%		3%		Some core loss due to poor ground, no ori line, long interval due to lith change
616-352	HW	RHYo	81.00	84.00	3.0	2.40	80%	11	2.04	68%	W1/A1	R4	2									11	JF	1.0	4					6-12				5%		Minor core loss due to rubbly ground? No ori line where joints are
616-352	HW	RHYo	84.00	87.00	3.0	2.66	88%	0	2.35	78%	W1/A1	R3	3					1	JF	0.5-1	4.0	8	JF	1.0	4	70.0	348.0	JF	3.0	6-12	3%					Core lost to grinding/spun core, fault breccia well grooved
616-352	HW	RHYo	87.00	90.00	3.0	1.81	60%	25	1.31	44%	W1/A1	R4	6																12				20%		Core lost to grinding, spun core PR
616-352	HW	RHYo	90.00	93.00	3.0	2.70	90%	4	2.69	89%	W1/A1	R3	3									4	JF	1.0	4	80.0	60.0	JF	3.0	6						Core lost to spun core,
616-352	HW	RHYo	93.00	96.00	3.0	2.98	99%	8	2.61	87%	W1/A1	R4	3					1	JF	1.0	4.0	7	JF	1.0	2-4	35.0	45.0	JF	2.0	6						Joints are exploiting variable foliation developed along micaceous partings
616-352	HW	RHYo	96.00	99.00	3.0	2.58	86%	26	0.88	29%	W2/A2	R3	3					1	JF	1.0	4.0	23	JF	1.0	4-8	59.0	20.0	JF	3.0	6						Joints are exploiting variable foliation developed along micaceous partings
616-352	HW	RHYo	99.00	102.00	3.0	2.99	100%	7	2.99	100%	W2/A2	R3	4					2	JF	1.0	4.0	9	JF	1.0	4	49.0	340.0	JF	2.0	6						Joints are exploiting variable foliation developed along micaceous partings
616-352	HW	RHYo	102.00	105.00	3.0	2.66	89%	28	2.09	70%	W2/A2	R2/3	4									4	JF	1.5-2	6	90.0	0.0	JF	2.0	6		20%				Joints are exploiting variable foliation developed along micaceous partings
616-352	HW	RHYo	105.00	107.90	2.9	2.80	93%	6	2.37	82%	W2/A2	R3	3									6	JF	1.5-2	4-8					6-12						Short interval due to lithology change, no ori line, some core blocks were spun and ground PR
616-352	HW	RHYo	107.90	111.00	3.1	2.65	85%	10	2.36	76%	W1/A1	R3	4									10	JF	1-2	4					12						Long interval due to lith change, Joints are exploiting variable foliation developed along micaceous partings, no ori line
616-352	HW	RHYo	111.00	114.00	3.0	2.95	98%	6	2.88	96%	W1/A1	R3	3									8	JF	1-2	4					6-12						Joints are exploiting variable foliation developed along micaceous partings, no ori line
616-352	HW	RHYo	114.00	117.00	3.0	2.96	99%	8	2.94	98%	W1/A1	R3	3					1	J	3.0	1.0	7	JF	1-2	4					6-12						Joints are exploiting variable foliation developed along micaceous partings, no ori line
616-352	HW	RHYo	117.00	120.00	3.0	2.83	88%	25	1.35	45%	W2/A2	R2/3	3					1	J	1.0	4.0	11	JF	1-2	8-12					6		20%				Joints are exploiting variable foliation developed along micaceous partings, no ori line
616-352	HW	RHY	120.00	121.80	1.8	1.78	99%	9	1.42	79%	W2/A2	R3	3									9	JF	1-	8-12					6						Joints are exploiting variable foliation developed along micaceous partings, no ori line, short interval for lith change
616-352	HW	RHY	121.80	124.35	2.6	2.51	98%	54	0.49	19%	W3/A3	R2/1	3									13	JF	0.5-1	8					6				30%	30%	Joints are exploiting variable foliation developed along micaceous partings, no ori line, short interval for lith change
616-352	HW	MAF	124.35	129.00	4.7	4.29	92%	20	3.62	78%	W3/A3	R2/3	5					1	J	1.0	4.0	12	JF	0.5-1	8-12	55.0	190.0	JF	3.0	6		8%			10%	Joints are exploiting variable foliation developed along micaceous partings, long interval for lith change
616-352	HW	MAF	129.00	132.00	3.0	2.87	95%	0	2.85	95%	W3/A3	R4	4					1	J	1.5	4.0	8	J	1.5	4	40.0	308.0	JF	3.0	20						Slickensided joint surfaces chloritic
616-352	HW	MAF	132.00	135.00	3.0	2.52	84%	9	2.25	75%	W2/A2	R5	4					2	J	1.5	4	8	J	1.5	4	85.0	300.0	J	3.0	6					9%	Slickensided joint surface with chlorite and hematite, no ori line
616-352	HW	MAF	135.00	138.00	3.0	2.41	80%	14	1.77	59%	W2/A2	R4	4					4	J	1.5	4.0	8	J	1.5	4	45.0	310.0	J	2.0	6				3%		Slickensided joint surface with chlorite, no ori line
616-352	HW	MAF	138.00	141.00	3.0	2.86	95%	19	1.74	58%	W2/A2	R4	4					1	J	1.0	4.0	13	JF	1-	4					6					5%	Slickensided joint surface with chlorite, no ori line
616-352	HW	MAF	141.00	144.00	3.0	2.78	93%	16	2.09	70%	W2/A2	R3	3									16	JF	1-	4-8					6-12						chloritic joint surface with clay, no ori line
616-352	HW	MAF	144.00	147.43	3.4	2.91	85%	24	1.57	46%	W2/A2	R3	6					10	JF	1.0	4.0	10	JF	1-	4					6		3%				chloritic joint surface with minor clay, no ori line, poor recovery due to bad ground, long interval due to lith change
616-352	Ore	OJ	147.43	149.30	1.9	1.32	83%	14	1.08	58%	W3/A3	R3	3					10	JF	1.0	4.0					45.0	125.0	JF	2.0	6-12		15%				Chloritic partings commonly make joints, poor recovery due to fault rubble, short interval due to lith change, poor recovery due to faults
616-352	FW	MAF	149.30	152.90	3.6	2.28	63%	33	0.64	18%	W4/A4	R3	3					21	JF	1.0	4.0									0-6		10%				Foliation partings commonly make joints, poor recovery due to fault rubble, short interval due to lith change, no ori line
616-352	FW	RHY	152.90	155.05	2.2	1.10	54%	54	0.59	27%	W4/A4	R1/2	15-20					2	JF	1.0	8.0									0						Foliation partings commonly make joints, poor recovery due to fault rubble, short interval due to lith change no ori line
616-352	Ore	OJ	155.01	156.00	0.9	0.81	85%	5	0.35	16%	W4/A4	R3	2					1	JF	1.0	4.0									12						Foliation partings commonly make joints, short interval due to lith change no ori line
616-352	Waste	RHY	156.00	159.00	3.0	2.80	93%	33	1.62	54%	W4/A4	R2/1	3					2	JF	0.5	4.0									0-6				30%	20%	Foliation partings make joint surfaces and fault planes, poor recovery due to fault breccia no ori line
616-352	Waste	RHY	159.00	162.00	3.0	2.92	97%	15	1.92	64%	W4/A4	R2/1	4					4	JF	1.0	4.0	3	JF	1-	8-12	40.0	16.0	JF	3.0	0-6		6%			75%	Foliation partings make joint surfaces and fault planes,
616-352	Waste	RHY	162.00	164.70	2.7	2.55	94%	20	1.27	47%	W3/A3	R2/3	4					14	JF	1.0	4.0	6	J	1-	4-6					6-12					10%	Foliation partings make joint surfaces and fault planes, short interval due to lith change
616-352	Waste	RHYI	164.70	168.00	3.3	3.03	92%	6	3.03	92%	W4/A4	R2/3	3					6	JF	1.0	8.0					45.0	0.0	FOL	3.0	6-12		10%			90%	Well consolidated fault breccia and with zones of more competent rock. microdefects are widespread
616-352	Waste	RHYI	168.00	171.00	3.0	1.70	57%	57	1.20	40%	W4/A4	R2/3	3					1	J	1.0	4.0									0-6			45%		25%	Poor recovery due to blocky ground, no ori line
616-352	Waste	RHYI	171.00	173.50	2.5	2.27	91%	27	1.12	45%	W4/A4	R2/3	4					13	JF	1.0	4.0									0-6			15%		85%	No ori line, poor ground.
616-352	Waste	FLZ	173.50	177.00	3.5	3.37	91%	120	0.00	0%	W4/5	R2	15-20																			100%				No ori line, fault zone
616-352	Waste	FLZ	177.00	180.00	3.0	2.62	89%	120	0.00	0%	W4/5	R2	15-20																			100%				No ori line, fault zone
616-352	Waste	FLZ	180.00	183.00	3.0	1.64	55%	120	0.00	0%	W4/5	R2	15-20																			100%				No ori line, fault zone
616-352	Waste	FLZ	183.00	186.00	3.0	1.30	43%	120	0.00	0%	W4/5	R1	15-20																			100%				No ori line, fault zone
616-352	Waste	FLZ	186.00	189.00	3.0	1.79	59%	120	0.00	0%	W4/5	R2	15-20																			100%				No ori line, fault zone
616-352	Waste	FLZ	189.00	192.00	3.0	2.90	97%	120	0.00	0%	W4/5	R1	15-20																			100%				No ori line, fault zone
					0.0		#DIV/0!			#DIV/0!																																		

No UCS

POINT LOAD TEST RESULTS

Load Correction Factor = 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load I_L (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is $(kN/mm^2) = P/D_e^2$	$F=(D_e/50)^{0.45}$	$Is_{(50)} = F \times I_L$ (MPa)	UCS Sample Match
K16-352	PLT-01	8.21	HW	RHYc	17.12	II	d	Valid test	61.10	61.1	61.10	171.2	16.23	3733.21	0.004347401	1.0944	4.76	
K16-352	PLT-02	8.21	HW	RHYc	13.62	II	d	Valid test	61.10	61.1	61.10	136.2	12.91	3733.21	0.003458621	1.0944	3.79	
K16-352	PLT-03	8.21	HW	RHYc	17.82	L	a	Valid test	46.00	61.1	46.00	178.2	16.89	3578.57	0.004720705	1.0944	5.17	
K16-352	PLT-04	12.05	HW	PEL	2.76	II	d	Valid test	61.10	61.1	61.10	27.6	2.62	3733.21	0.000700866	1.0944	0.77	
K16-352	PLT-05	15.04	HW	RHYv	3.8	II	d	Valid test	61.10	61.1	61.10	38	3.60	3733.21	0.00096496	1.0944	1.06	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-353	Krakatoa (in-pit)	All	KRAK014	414882	6814999	1390	159	-77	HQ3	210	27-May-16	30-May-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	JDP		
Geotechnical	IH	IH	1/Jun/16
PLT	IH	IH	1/Jun/16
UCS	IH	IH	1/Jun/16

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-353	0.00	11.40	Overburden (OVBN)
K16-353	11.40	12.80	Massive sulphide (OA, OB, OC, OF, OK)
K16-353	12.80	21.10	Volcaniclastic rhyolite (RHYv)
K16-353	21.10	34.10	Mafic intrusion (MAFi)
K16-353	34.10	40.30	Volcaniclastic rhyolite (RHYv)
K16-353	40.30	43.35	Aphanitic rhyolite (RHYi)
K16-353	43.35	45.00	Volcaniclastic rhyolite (RHYv)
K16-353	45.00	48.95	Aphanitic rhyolite (RHYi)
K16-353	48.95	52.14	Volcaniclastic rhyolite (RHYv)
K16-353	52.14	75.10	Aphanitic rhyolite (RHYi)
K16-353	75.10	78.00	Rhyolite (RHY)
K16-353	78.00	78.70	Aphanitic rhyolite (RHYi)
K16-353	78.70	79.95	Rhyolite (RHY)
K16-353	79.95	81.36	Aphanitic rhyolite (RHYi)
K16-353	81.36	85.60	Rhyolite (RHY)
K16-353	85.60	86.07	Aphanitic rhyolite (RHYi)
K16-353	86.07	87.21	Rhyolite (RHY)
K16-353	87.21	87.60	Aphanitic rhyolite (RHYi)
K16-353	87.60	88.95	Volcaniclastic rhyolite (RHYv)
K16-353	88.95	91.00	Aphanitic rhyolite (RHYi)
K16-353	91.00	97.90	Volcaniclastic rhyolite (RHYv)
K16-353	97.90	98.08	Aphanitic rhyolite (RHYi)
K16-353	98.08	100.90	Rhyolite (RHY)
K16-353	100.90	101.80	Aphanitic rhyolite (RHYi)
K16-353	101.80	105.70	Rhyolite (RHY)
K16-353	105.70	106.95	Rhyolite (RHY)
K16-353	106.95	108.43	Mafic intrusion (MAFi)
K16-353	108.43	121.10	Volcaniclastic rhyolite (RHYv)
K16-353	121.10	122.40	Rhyolite (RHY)
K16-353	122.40	129.77	Volcaniclastic rhyolite (RHYv)
K16-353	129.77	132.77	Semi-massive sulphide (OI, OJ)
K16-353	132.77	138.51	Volcaniclastic rhyolite (RHYv)
K16-353	138.51	139.60	Rhyolite (RHY)
K16-353	139.60	143.94	Volcaniclastic rhyolite (RHYv)
K16-353	143.94	149.95	Volcaniclastic rhyolite (RHYv)
K16-353	149.95	152.82	Volcaniclastic rhyolite (RHYv)
K16-353	152.82	154.70	Volcaniclastic rhyolite (RHYv)
K16-353	154.70	159.00	Volcaniclastic rhyolite (RHYv)
		EOH	

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data						Strength Data		Discontinuity parameters for Q System									Oriented Core Log				RMR76	Fault and Broken Zones			Comment
											ALPHA=0-29			ALPHA=30-59			ALPHA=60-90											
			From (m)	To (m)	Run (m)	TCR (%)	SCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Ja)	Count	TYPE	Ja	Count	TYPE	Ja	Count	TYPE	Ja	Alpha	Beta	Type	Confidence (1,2,3)	Joint Condition Rating	% Fault/Gouge	% Fault Breccia	% Broken zone	% Hydrothermal	% Not Logged	
010-013	GBE	Oxide	8.0	11.3	3.3	2.4	73%	85	0	0%	W4	R1	20														15%		20%	60%	20%	Considered as OVBN by GEO w/ 1.7m of MSOX broken with remaining run vary in crushed to microdefected/gouged run and no ORIENT line
014-013	GBE	MSOX	11.3	13.2	1.9	0.9	49%	29	0	0%	W3	R1	15				14	R	3.0	3.0							20	5%		80%			Ore broken up heavily no orient line due to broken zone difficult to measure or identify joints
016-013	Waste	Ironstone	13.2	15.0	1.8	1.2	80%	21	0	11%	W3	R1	4				21	R	3.0	3.0	1	J	3.0	4.0			12	5%		95%	5%		Change in rock with small scale clay coatings with one dominate fol.; no orient line
017-013	Waste	Ironstone	15.0	18.0	3.0	1.9	63%	24	1	25%	W2	R3	6				13	R	2.0	3.0	J	J	2.0	3.0			12	20%	10%	70%	20%		No orient line available highly silicified at end of run gouge hv clay like material crushed up.
018-013	Waste	Ironstone	18.0	21.2	3.2	2.3	73%	71	0	13%	W2	R2	6				18	R	2.0	3.0	J	J	2.0	3.0			12		30%	30%	5%		Difference in FF as counted more for R2 and R2 areas but two distinctive joints can be seen. No orient line available mostly poker chip to rubble/broken areas through run with soft coatings
019-013	Waste	MAFI	21.2	24.0	2.8	2.3	103%	20	3	39%	W2	R4	6				7	J	2.0	3.0	12	JF	3.0	3.0	2 to 4	60-0	20	JF	3.0	20			Good run with distinctive joint sets no micro gouge or SG zones. Surface of J is little more rougher now plus run in some areas no signs of weathering. Took two blows to break rock
020-013	Waste	MAFI	24.0	27.0	3.0	3.2	105%	18	2	35%	W2	R4	6				8	J	3.0	3.0	14	JF	3.0	4.0	45-0	330-0	2	3.0	20				Minor broken zone but similar condition as last run. Joint surface seems to be more sandy like as before and hard seems like change in dominate foliation joint with it now nibbling
021-013	Waste	MAFI	27.0	30.0	3.0	2.5	84%	14	2	74%	W2	R4	7				7	J	3.0	3.0	13	JF	3.0	3.0	67-0	296-0	JF	3.0	20		5%			Similar as last run
022-013	Waste	MAFI	30.0	33.0	3.0	2.9	96%	20	2	67%	W2	R4	6				8	J	3.0	4.0	12	JF	3.0	3.0	30-0	324-0	J	2.0	20					Similar as last run but other joint set able to detect and more mech anical breaks this run
023-013	Waste	MAFI	33.0	35.7	2.7	2.3	82%	13	2	56%	W2	R3	6				3	J	3.0	3.0	9	JF	3.0	3.0	57-0	324-0	J	2.0	20		50%			Broken zone within run but mino or similar joint conditions. but end of run clayey due to change in lith
024-013	Waste	SHV	35.7	39.0	3.3	3.0	91%	130	0	0%	W1	R1	15 to 20														6		30%	60%	70%		After ch angeo n lith very broken up almost crushed rock in most portions of run and in most areas microdefects where picking up sample breaks no orient line due to poor ground
025-013	Waste	SHV	39.0	40.3	1.3	0.8	62%	27	0	0%	W1	R1	15														6		10%	60%	50%		Small run due to lith change on start run.
026-013	Waste	SHV	40.3	42.0	1.7	1.6	95%	44	0	0%	W3	R1	15								15	JF	2.0	4.0			6		30%	60%			Small run due to lith change. Majority of run very silicified with veining and microdefects visible throughout. to areas where there is jointing it is very closely spaced. Clay coatings inaccurate to sericitic on joint surfaces.
027-013	Waste	SHV	42.0	45.0	3.0	1.7	56%	41	0	56%	W2/W4	R1	15								13	JF	3.0	4.0			6	10%		90%	70%		Poor recovery due to washing out of material (gouge?). All joints have clay to gouge filling approx. 2-5mm thick where joints are very closely spaced.
028-013	Waste	SHV	45.0	48.3	3.3	2.0	60%	45	0	56%	W4	R1/R2	15-20														6		80%	90%	90%		Unable to excl point mes urements as very crushed up fractured rock. Large QTZ veining through run with clay cohtings. Altchr present within vein as well. Poor recovery again due to washing of material possible gouge?lith change.
029-013	Waste	SHV	48.3	52.1	3.9	3.2	81%	35	2	65%	W2	R1	6				2	J	2.0	4.0	18	JF	2.0	3.0	70-0	345-0	JF	3.0	6				100%	A lot better run with minimal thick gouge or QTZ veining in comparison to to the runs. Consistent dominate fol. Throughout with multiple mechanical breaks. Lith change.
030-013	Waste	SHV	52.1	54.0	1.9	1.8	91%	72	0	0%	W2/W4	R2	15-20														12		80%	100%	80%		Back to QTZ veining with in silicha and meccoonchoricritic coatings on surfaces of most fractures. Very rubble zone like no orientation line available. Longer run due to change or lith.
031-013	Waste	SHV	54.0	57.0	3.0	2.9	97%	90	0	5%	W3/W4	R2/R3	15-20														12		90%	75%	60%		Similar as last run where all run is rubble with multiple fractures due to high content in silica and altchr where in some cases infilling of 5-9mm coatings on surface of fracture/joint zones. Unable to dark orientation due to no line
032-013	Waste	SHV	57.0	60.0	3.0	2.1	69%	85	0	5%	W3	R1	15-20																80%	50%	50%		Similar as previous run very rubble like to broken rock throughout with microdefects. Again no orientation line due to poor rock. Poor recovery as noted in block got washed out.
033-013	Waste	SHV	60.0	63.0	3.0	2.6	86%	60	0	10%	W3	R2-R3	15-20																60%	60%	60%		Similar as previous run.
034-013	Waste	SHV	63.0	66.0	3.0	2.9	97%	110	0	0%	W3	R2	15-20																90%	50%	50%		Similar as previous run. No orient poor ground cannot measure any joints as too broken just like last runs.
035-013	Waste	SHV	66.0	69.0	3.0	2.7	89%	105	0	0%	W3	R2	15-20																90%	75%	50%		Similar as previous run. No orient poor ground cannot measure any joints as too broken just like last runs.
036-013	Waste	SHV	69.0	72.0	3.0	3.1	103%	100	0	0%	W3	R2	15-20																90%	90%	90%		No distinct block for the 72m mark to had use our own meter stick therefore no or R20 not too accurate. Similar to last run very broken up and rubble throughout run very mecoonchi rich and in areas silicified.
037-013	Waste	SHV	72.0	75.0	3.0	2.6	86%	62	2	16%	W3	R1	6								8	JF	3.0	2 to 3			12		90%	45%			Change to FF and I as I counted rubble zones as 4.25cm. Very silicified with QTZ veining with altchr with multiple microdefects and fractures but earlier in the run dominate fol present with random jointing and another secondary jointing difficult to measure. No orient line.
038-013	Waste	SHV	75.0	78.0	3.0	3.1	103%	21	2	16%	W2/W4	R2	6								9	JF	3.0	3.0			6/12		50%	60%			No orient line. One dominate joint visible with some random jointing but jointing very fel spaced. Initial run with QTZ veining then into Conventional RetWork with multiple mechanical clay breaks throughout. GEO has this zone has Ret/Web but I have continued with the Lone Lith as Ret/ for simplicity due to small run.
039-013	Waste	SHV	78.0	81.3	3.3	3.8	97%	73	2	16%	W3	R1	6	7	J	3.5	3.0				9	JF	3.0	3.0			6		20%	50%	20%		Longer run due to lith change next run. At the RWT in this run but combined it with RWT as useless to continue the two with such small length of lith. Clay coated infills with some joint surfaces. Noticed a joint set almost parallel to core axis with a rougher surface than the dominate fol.). Also some random jointing. No orient line available.
040-013	Waste	RWT	81.3	84.0	2.7	2.2	105%	27	1	15%	W2/W4	R3	12	3	J	3.0	3.0	6	9	JF	2.0	4.0				6/12		20%				Short run due end of block and lith change. Three joints spotted with random jointing this run but dominate fol has to flow weaker joint surface condition.
041-013	Waste	RWT	84.0	85.6	1.6	1.6	100%	27	1	59%	W2/W4	R3	6								6	JF	2.0	4.0			12		20%				Short run due to lith change again. FF do not match due to broken zone consist. One J set seen with some random. No orient line available.
042-013	Waste	RWT	85.6	87.6	2.0	1.7	87%	35	1	15%	W3	R1	6								10	JF	2.0	4.0			12		20%				Again short run due to lith change One dominate joint visible with lots of random jointing throughout run. Some areas there is fracturing right parallel to core axis. No orient line.
043-013	Waste	RWT	87.6	89.0	1.4	1.3	74%	15	0	17%	W4	R1	15-20														6	35%		50%	25%		Short run due to lith change Mostly gouged up material and rubble zones. No orient line available.
044-013	Waste	RWT	89.0	91.0	2.0	0.8	41%	85	0	0%	W1	R2	20														6	15%		60%	25%		Short run again due to lith change. Majority of run gouged to rubble like zone. Unable to make any measurements a no orient line due to poor rock
045-013	Waste	RWT	91.0	93.0	2.0	0.8	43%	65	0	10%	W1	R1	6								11	JF	3.0	3.0			12		15%	10%			Change in lith due to run change again. More competent rock this portion of lith with its dominate fol with some random jointing apparent. Minor rubble zone. at initial of run due to the different in FF and I reading count.
046-013	Waste	RWT	93.0	96.0	3.0	2.6	87%	45	1	69%	W3	R1	6								8	JF	3.0	4.0	68-0	330-0	JF	4.0	12	15%		25%			Most noted were mechanical breaks. High number between FF and joint. due to R2 and gouged areas. Random jointing present as well.
047-013	Waste	RWT	96.0	99.0	3.0	2.9	96%	42	0	13%	W2/W4	R2	15								11	JF	3.0	4.0			6/12		30%	20%	70%		Close spacing of random jointing with dominate fol present throughout. No orient line. Crushed rock in some areas as #2 or #3.
048-013	Waste	RWT	99.0	102.0	3.0	2.9	96%	120	0	0%	W3	R2	15														6		80%	20%	70%		Microdefected throughout with NO very poor run.
049-013	Waste	RWT	102.0	105.0	3.0	1.8	60%	120	0	0%	W4	R2	15-20														6	20%		80%	90%		Similar as previous run. Poor recovery due to poor ground. Gouged in one portion of run ~20cm long
050-013	Waste	RWT	105.0	108.0	3.0	2.9	96%	45	1	17%	W4	R1/R2	15														6	15%		90%	90%		No orientation line, fault breccia zone run at a low angle to the core axis.
051-013	Waste	RWT	108.0	111.0	3.0	3.0	100%	38	2	41%	W3	R1	6								12	JF	2.0	4.0			6	15%		10%			No orientation line, gouge zones are at a high angle to the core axis.
052-013	Waste	RWT	111.0	114.0	3.0	3.1	103%	19	2	40%	W3	R1	6								10	JF	2.0	4.0	68-0	330-0	J	4.0	12			100%			Decent run with fairly competent rock with visible jointing some random in areas but dominate fol visible.
053-013	Waste	RWT	114.0	117.0	3.0	2.7	89%	18	2	62%	W2/W4	R2	6								12	JF	3.0	4.0	68-0	330-0	JF	3.0	12	15%				Similar as previous run with minor gouge sericite
054-013	Waste	RWT	117.0	120.0	3.0	3.1	103%	27	1	28%	W3	R2/R3	6								24	JF	2.0	4.0			12	15%		10%			No meter block for 118 used meter stick for accumption. Joints filled with clay fill sericitic coating mainly undulated.
055-013	Waste	RWT	120.0	123.0	3.0	2.5	82%	46	1	35%	W3	R2/R3	6								23	JF	2.0	4.0			12	40%	10%	25%			Several broken zones throughout run. No orientation line available. Similar to last run where surface of joint very clay like coating.
056-013	Waste	RWT	123.0	126.0	3.0	2.7	90%	12	1	69%	W2/W4	R2/R3	6								23	JF	2.0	4.0			12	20%		20%			Minor gouge zone within run as well as a rubble zone colurial no orientation line available. Similar joint surface conditions as previous run.
057-013	Waste	RWT	126.0	129.0	3.0	2.7	91%	120	0	7%	W4	R2/R3	15								12	JF	2.0	4.0			12	15%		20%			Gouged material throughout run with microdefects high intensity no orientation line available. Longer run due to lith change next run.
058-013	Dike	Syenogr	129.0	132.0	3.0	2.6	86%	12	2	69%	W4	R1	6								12	JF	3.0	4.0			12	10%				25%	Highly chlorotic altered syenogr zone with pyrite-majority. No orientation line visible gouged areas with sharp contact
059-013	Waste	RHYv	132.0	135.0	3.0	2.7	91%	15	1	31%	W3	R1	6								12	JF	3.0	3.0			12		20%	80%			Minor broken zones run small due change in lith
060-013	Waste	RHYv	135.0	138.0	3.0	2.7	90%	58	1	37%	W3/W4	R2	6								11	JF	2.0	4.0			12	30%	50%	50%			Difference in FF due to broken and rubble areas which is microdefected. No orientation line
061-013	Waste	RHYv	138.0	141.0	3.0	2.8	93%	29	2	66%	W3	R1	6								10	JF	2.0	4.0			12	5%		25%			Proximal alteration for half of run but mostly RHYv unit. No orient line.
062-013	Waste	RHYv	141.0	144.0	3.0	2.9	96%	17	2	82%	W2/W4	R1	6								11	JF	3.0	3.0			12		10%	10%			Competent run with larger spacing of discont. No orient line.
063-013	Waste	RHYv	144.0	147.0	3.0	2.9	93%	36	2	58%	W3	R1	6								19	JF	2.0	4.0			12		50%	50%			Competent run broken through parallel to core axis but dominate j set visible no orient mark.
064-013	Waste	RHYv	147.0	150.0	3.0	2.8	92%	45	1	38%	W3	R1	6								16	JF	3.0	2.0			12	25%	10%	10%			~40cm gouge within run but mostly competent rock but close spacing of discont.
065-013	Waste	RHYv	150.0	153.0	3.0	2.9	94%	17	2	82%	W2/W4	R1	6								11	JF	3.0	2.0	70-0	330-0	JF	3.0	12	10%		10%			~15cm gouge within run but competent rock with dominate fol present.
066-013	Waste	RHYv	153.0	156.0	3.0	2.8	93%	36	2	58%	W3	R1	6								19	JF	3.0	2.0			12		50%	50%			Higher ch aracter of due to RZ and RZ areas. No orient run
067-013	Waste	RHYv	156.0	159.0	3.0	2.3	77%	43	1	33%	W3/W4	R1	7								15	JF	2.0	3.0			12		25%	25%	50%		Higher attention within this run in comparison to before with broken and rubble zones. No orient line. EOH
					0.0		#DIV/0!																								

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-353	MAFi	Waste	22.34	22.62	0190403		61.1	280	4.58265139116205 Valid	29-May-16	
K16-353	MAFi	Waste	27.13	27.33	0190404		61.1	200	3.27332242225858 Valid	29-May-16	
K16-353	MAFi	Waste	33	33.27	0190405		61.1	270	4.41898527004915 Valid	29-May-16	
K16-353	RHYv	Waste	50.12	50.46	0190406		61.1	340	5.56464811783966 Valid	29-May-16	
K16-353	RHY	Waste	82.08	82.31	0190407		61.1	230	3.76432078559745 Valid	31-May-16	
K16-353	RHYv	Waste	150.52	150.68	0190408		61.1	160	2.61865793780682 Valid	31-May-16	
K16-353	Stringer (OJ)	Ore	129.77	130.68	0190409	B00291512	61.1	910	14.8936170212765 Valid	31-May-16	Stringer - Chloritic altered
								0	#DIV/0!	29-May-16	

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test D_e^2 =4(WD)/pi For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.4}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-353	PLT-01	16.17	Waste	RHYv	4.94	II	d	fresh cut valid test silicified	61.10	61.10	61.10	49.4	4.68	3733.21	0.001254449	1.0944	1.37	
K16-353	PLT-02	24.00	Waste	MAFi	15.12	II	d	fresh cut valid test	61.10	61.10	61.10	151.2	14.33	3733.21	0.003839527	1.0944	4.20	
K16-353	PLT-03	27.00	Waste	MAFi	10.18	II	d	fresh cut valid test	61.10	61.10	61.10	101.8	9.65	3733.21	0.002585078	1.0944	2.83	
K16-353	PLT-04	27.00	Waste	MAFi	3.26	L	a	fresh cut valid break L to fol but very low number	56.30	61.10	56.30	32.6	3.09	4379.85	0.000705612	1.0944	0.77	
K16-353	PLT-05	31.30	Waste	MAFi	12.66	II	d	fresh cut break along fol valid	61.10	61.10	61.10	126.6	12.00	3733.21	0.003214842	1.0944	3.52	
K16-353	PLT-06	40.40	Waste	RHYi	4.86	II	d	break along fol	61.10	61.10	61.10	48.6	4.61	3733.21	0.001234134	1.0944	1.35	
K16-353	PLT-07	47.50	Waste	RHYi	1.64	II	d	break L to fol fresh cut	61.10	61.10	61.10	16.4	1.55	3733.21	0.000416457	1.0944	0.46	
K16-353	PLT-08	63	Waste	RHYi	10.1	II	d	fresh cut along fol valid	61.10	61.10	61.10	101	9.57	3733.21	0.002564763	1.0944	2.81	
K16-353	PLT-09	82.75	Waste	RHY	9.8	II	d	fresh cut along fol valid	61.1	61.1	61.10	98	9.29	3733.21	0.002488582	1.0944	2.72	
K16-353	PLT-10	91.2	Waste	RHYv	0.34	II	d	natural break along fol valid	61.1	61.1	61.10	3.4	0.32	3733.21	8.63386E-05	1.0944	0.09	
K16-353	PLT-11	91.2	Waste	RHYv	0.96	L	a	natural break (2) along fol valid	39	61.1	39.00	9.6	0.91	3034.00	0.00029996	1.0944	0.33	
K16-353	PLT-12	111	Waste	RHY	1.62	II	d	discontinuous cut parallel to fol valid	61.1	61.1	61.10	16.2	1.54	3733.21	0.000411378	1.0944	0.45	
K16-353	PLT-13	130.95	Ore	Stringer	9.4	II	d	fresh cut perpendicular to core axis, valid	61.1	61.1	61.10	94	8.91	3733.21	0.002387007	1.0944	2.61	
K16-353	PLT-14	137.16	Waste	RHYv	0.32	II	d	natural break along fol valid	61.1	61.1	61.10	3.2	0.30	3733.21	8.12598E-05	1.0944	0.09	
K16-353	PLT-15	151.86	Waste	RHYv	0.5	II	d	natural break along fol valid	61.1	61.1	61.10	5	0.47	3733.21	0.000126968	1.0944	0.14	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-354	Krakatoa	HW	KRAK010	415150	6815074	1407.2	39	-80	HQ3	38	28-May-16	29-May-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	DH		
Geotechnical	IH	IH	01-Jun-16
PLT	KF	IH	

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-354	0.00	3.50	Overburden (OVBN)
K16-354	3.50	11.70	Volcaniclastic rhyolite (RHYv)
K16-354	11.70	12.30	Coherent rhyolite (RHYc)
K16-354	12.30	12.60	Volcaniclastic rhyolite (RHYv)
K16-354	12.60	14.00	Pelite (PEL)
K16-354	14.00	28.10	Coherent rhyolite (RHYc)
K16-354	28.10	32.50	Pelite (PEL)
K16-354	32.50	39.00	Aphanitic rhyolite (RHYi)
		EOH	

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data							Strength Data			Discontinuity parameters for Q System												RMR76						Comment
													ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Oriented Core Log					Fault and Broken Zones				
			From (m)	To (m)	Run (m)	TCR (%)	TCR1 (%)	FF/run	RQD (m)	RQD (%)	Weathering/ Alteration	Strength	Joint Set Number (Js)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (1,2,3)	Joint Condition Rating	% Fault Gouge	% fault breccia	% broken zone	% Rubble zone	% Mn nodules	
K16-354	HW	RHYv	3.5	6.0	2.5	2.1	82%	82	0	12%	W4/W5	R1/R2	20																6			15%	70%		Note that there are no driller blocks per 3 m so using approx. meter marks for every 3 meter run. This specific run is a combination of RHYv according to GEO but some OVBN within this run due to the low rating system.
K16-354	HW	RHYv	6.0	9.0	3.0	1.3	44%	72	0	10%	W4/W5	R1/R2	20																6			10%	60%		Similar as previous run in conditions.
K16-354	HW	RHYv	9.0	12.6	3.6	3.3	91%	48	1	29%	W4	R2	6					9	JF	1.0	4.0	25	J	3.0	4.0					6	5%		15%			Heavily altered as previous run in the surface of core as well as the surface of joints. I would say the JFol is <30 seeing the overall foliation although the open and clay filled joints within that alpha range is lower then >60. Change in lith
K16-354	HW	PEL	12.6	14.0	1.4	1.4	98%	10	1	70%	W3/W4	R3	4					2	J	2.0	3.0	6	JF	3.0	3.0					12			5%			Change in lith change due to run length. Competent domain but highly weather joint surfaces but surface of core is good. Two joint sets visible. No orient line.
K16-354	HW	RHYc	14.0	18.0	4.0	3.8	95%	14	3	71%	W3	R3	4					6	JF	3.0	2.0	5	J	3.0	3.0	55.0	110.0	JF	3.0	6			15%	15%		Longer run as trying to stay in a 3m sequence. Two distinctive joints visible through run fairly competent but joint surfaces still weathered. Core surface not weathered.
K16-354	HW	RHYc	18.0	21.0	3.0	2.8	92%	34	2	72%	W3	R3	4					8	JF	3.0	2.0	5	J	3.0	3.0	75.0	178.0	J	2.0	12			25%		30%	Highly silicified through run with QTZ veining minor broken zone areas. Veining microdefected with low intensity.
K16-354	HW	RHYc	21.0	24.0	3.0	2.7	90%	18	2	78%	W3	R3	4					7	JF	3.0	2.0	2	J	3.0	3.0	47.0	115.0	JF	3.0	12					10%	Highly silicified with QTZ veining as las run with distinctive two joint sets
K16-354	HW	RHYc	24.0	28.1	4.1	4.1	100%	15	3	80%	W3	R3	4					8	JF	3.0	3.0	7	J	3.0	3.0	49.0	149.0	JF	3.0	12						Competent run far spacing of discount. visible joint sets highly silicified veining.
K16-354	HW	PEL	28.1	32.5	4.4	4.2	95%	42	3	63%	W3	R3	4					9	JF	3.0	2.0	6	J	3.0	3.0	48.0	185.0	JF	3.0	12			15%	10%		Surge in lith due to run length. Minor BZ and RZ within run but fairly competent rock with far spaced discount..
K16-354	HW	RHYi	32.5	36.0	3.5	3.4	96%	17	3	72%	W2/W3	R3	4					2	JF	3.0	2.0	3	J	3.0	3.0	50.0	135.0	JF	3.0	12					25%	Similar as previous run.
K16-354	HW	RHYi	36.0	39.0	3.0	3.0	98%	13	2	83%	W2/W3	R3	4					1	JF	3.0	2.0	4	J	3.0	3.0	52.0	155.0	JF	3.0	12					10%	Competent run as last run with far spacing of discont.... mostly mechanical breaks.
					6.0																														

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-354	RHYi	Waste	33	33.27	0190410		61.1	270	4.41898527004915 Valid	31-May-16	From abandoned hole
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test D_e^2=4(WD)/pi For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.45}$	$IS_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-354	PLT-001	3.50	HW	RHYV	2.68	II	d	Valid test	61.10	61.1	61.10	26.8	2.54	3733.21	0.000680551	1.0944	0.74	
K16-354	PLT-002	3.50	HW	RHYV	5.42	II	d	Valid test	61.10	61.1	61.10	54.2	5.14	3733.21	0.001376338	1.0944	1.51	
K16-354	PLT-003	3.50	HW	RHYV	14.34	L	a	Invalid test jumped off	47.50	61.1	47.50	143.4	13.59	3695.26	0.003678854	1.0944	4.03	
K16-354	PLT-004	10.81	HW	RHYV	5.86	II	d	Valid test	61.10	61.1	61.10	58.6	5.56	3733.21	0.001488071	1.0944	1.63	
K16-354	PLT-005	10.81	HW	RHYV	13.4	L	a	Invalid test jumped off	55.00	61.1	55.00	134	12.70	4278.72	0.002968924	1.0944	3.25	
K16-354	PLT-006	17.70	HW	RHYC	1.38	II	d	Valid test	61.10	61.1	61.10	13.8	1.31	3733.21	0.000350433	1.0944	0.38	
K16-354	PLT-007	17.70	HW	RHYC	10.62	II	d	Valid test	61.10	61.1	61.10	106.2	10.07	3733.21	0.002696811	1.0944	2.95	
K16-354	PLT-008	17.7	HW	RHYC	9.44	II	d	Valid test	61.1	61.1	61.10	94.4	8.95	3733.21	0.002397165	1.0944	2.62	
K16-354	PLT-009	17.7	HW	RHYC	12.36	L	a	Valid test	29	61.1	29.00	123.6	11.72	2256.05	0.005193707	1.0944	5.68	
K16-354	PLT-010	24	HW	RHYC	8.68	II	d	Valid test	61.1	61.1	61.10	86.8	8.23	3733.21	0.002204173	1.0944	2.41	
K16-354	PLT-011	24	HW	RHYC	6.2	L	a	Valid test	46	61.1	46.00	62	5.88	3578.57	0.001642445	1.0944	1.80	
											0.00	0	0.00	0.00		0.0000	0.00	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-355	KRAKATOA	All	KRAK010A	415150	6815074	1425	329.7	-80	HQ3	36	29-May-16	2-Jun-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	DH		
Geotech Log	O Nielsen	IH	6/Jun/16
PLT	KF	IH	6/Jun/16
UCS	N/A	N/A	N/A

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-355	0.00	4.50	Overburden (OVBN)
K16-355	4.50	12.00	Volcaniclastic rhyolite (RHYv)
K16-355	12.00	12.40	Coherent rhyolite (RHYc)
K16-355	12.40	12.60	Volcaniclastic rhyolite (RHYv)
K16-355	12.60	14.30	Pelite (PEL)
K16-355	14.30	27.80	Coherent rhyolite (RHYc)
K16-355	27.80	32.50	Pelite (PEL)
K16-355	32.50	66.60	Aphanitic rhyolite (RHYi)
K16-355	66.60	70.50	Coherent rhyolite (RHYc)
K16-355	70.50	77.20	Pelite (PEL)
K16-355	77.20	81.30	Coherent rhyolite (RHYc)
K16-355	81.30	81.90	Greywacke (WCK)
K16-355	81.90	87.20	Volcaniclastic rhyolite (RHYv)
K16-355	87.20	105.20	Volcaniclastic rhyolite (RHYv)
K16-355	105.20	123.20	Volcaniclastic rhyolite (RHYv)
K16-355	123.20	126.40	Volcaniclastic rhyolite (RHYv)
K16-355	126.40	133.80	Volcaniclastic rhyolite (RHYv)
K16-355	133.80	138.10	Rhyolite (RHY)
K16-355	138.10	140.10	Fault Zone (FLZ)
K16-355	140.10	155.60	Rhyolite (RHY)
K16-355	155.60	157.30	Fault Zone (FLZ)
K16-355	157.30	181.40	Rhyolite (RHY)
K16-355	181.40	185.30	Coherent rhyolite (RHYc)
K16-355	185.30	247.50	Mafic intrusion (MAFi)
K16-355	247.50	275.90	Volcaniclastic rhyolite (RHYv)
K16-355	275.90	283.50	Fault Zone (FLZ)
K16-355	283.50	285.20	Volcaniclastic rhyolite (RHYv)
K16-355	285.20	292.70	Undifferentiated sedimentary rock (SED)
K16-355	292.70	296.30	Volcaniclastic rhyolite (RHYv)
K16-355	296.30	298.00	Undifferentiated sedimentary rock (SED)
K16-355	298.00	312.40	Volcaniclastic rhyolite (RHYv)
K16-355	312.40	329.70	Fault Zone (FLZ)

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data								Strength Data			Discontinuity parameters for Q System: ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Oriented Core Log				RMR76	Fault and Broken Zones					Comment
			From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-355	HW	OVBN	4.30	8.50	4.2		0%			0%																										Overburden
K16-355	HW	RHYv	8.50	12.60	4.1	2.74	67%	42	1.09	27%	W4/A4	R3/4	6					11	J	1	4-8	4	JF	1.5	4-8					0-6			15%			No ori line, interval length due to lith change, poor recovery due to broken ground
K16-355	HW	PEL	12.60	14.30	1.7	1.36	80%	13	1.00	59%	W3/A3	R3/4	6					3	J	3	2	5	JF	1	4					6-12		15%	10%			Poor recovery in fault zone? No ori line, Length due to lith change
K16-355	HW	RHYc	14.30	18.00	3.7	3.50	95%	9	3.30	89%	W1/A1	R4	1									1	JF	3	2					12-20			5%			No ori line, interval length due to lith change,
K16-355	HW	RHYc	18.00	21.00	3.0	2.70	90%	8	2.50	83%	W1/A1	R4	2									5	JF	3	1								5%			No ori line, poor recovery due to spun core, ground
K16-355	HW	RHYc	21.00	24.00	3.0	2.93	98%	4	2.93	98%	W1/A1	R4	2					3	J	3	1	1	J	1	8	20.0	0.0	FOL	3.0	12						Good recovery,
K16-355	HW	RHYc	24.00	27.80	3.8	3.65	96%	10	3.50	92%	W1/A1	R4	4					5	J	1-3	1	4	J	1-3	4	25.0	170.0	FOL	2.0	20						Good recovery, length due to light change
K16-355	HW	PEL	27.80	32.50	4.7	4.19	89%	18	3.94	84%	W1/A1	R4	6	1	J	3	1	5	JF	1	4	4	JF	1	4	45.0	175.0	FOL	3.0	6		3%	5%			Foliation changes (folded) within the run, poor recovery due to spun core, joints parting along micaceous foliation planes,
K16-355	HW	RHYi	32.50	36.00	3.5	3.04	87%	7	3.01	86%	W1/A1	R3	3	4	J	4	1					3	J	3	2	18.0	26.0	J	3.0	20						Spun core,
K16-355	HW	RHYi	36.00	39.00	3.0	2.74	91%	7	2.74	91%	W1/A1	R4	3					1	J	1	3	6	J	1	4-6					6-20						Good recovery, no ori line
K16-355	HW	RHYi	39.00	42.00	3.0	2.63	88%	11	2.08	69%	W1/A1	R3	3	2	J	3.0	1.0					9	J	1-3	1-4					12-20						No ori line, spun core
K16-355	HW	RHYi	42.00	45.00	3.0	2.75	92%	6	2.68	89%	W1/A1	R4	3					4	J	1.5	1	2	J	1.5	1					20-25						Spun core, no ori line,
K16-355	HW	RHYi	45.00	48.00	3.0	1.80	60%	8	1.69	56%	W1/A1	R4	4					2	J	1.5	1	6	J	1.5	1	50.0	205.0	J	3.0	20						Poor recovery PR no reason,
K16-355	HW	RHYi	48.00	51.00	3.0	2.82	94%	9	2.78	93%	W1/A1	R5	4	3	J	3.0	1.0	2	J	1.5	1	4	J	1-1.5	1-4					12-20						No ori line, good recovery
K16-355	HW	RHYi	51.00	54.00	3.0	2.97	99%	8	2.97	99%	W1/A1	R3	3					5	J	1.5	1-4	3	J	1	4	60.0	124.0	J	3.0	6-12						Good recovery
K16-355	HW	RHYi	54.00	57.00	3.0	3.05	102%	12	2.87	96%	W1/A1	R4	3					2	J	1	4	6	J	1	1-4	75.0	136.0	J	3.0	12-20				3%		Good recovery
K16-355	HW	RHYi	57.00	60.00	3.0	2.54	85%	15	2.18	73%	W1/A1	R4	3	1	J	3.0	1.0	10	J	1	4	4	J	1	1-4	50.0	340.0	J	2.0	12-20						Good recovery
K16-355	HW	RHYi	60.00	63.00	3.0	2.99	100%	8	2.31	77%	W1/A1	R4	3					7	J	1	4	1	J	1	4					12						Good recovery, no ori line
K16-355	HW	RHYi	63.0	66.6	3.6	3.4	94%	3	3	81%	W3	R3/R4	4					3	J	3.0	3.0	6	JF	3.0	4.0					12				5%		Minor BZ fairly competent rock
K16-355	HW	RHYc	66.6	69.0	2.4	2.3	96%	31	0	19%	W3	R3	6									14	JF	2.0	4.0					12			30%			Minor BZ
K16-355	HW	RHYc	69.0	70.5	1.5	1.3	88%	26	1	37%	W3	R3	6									13	JF	2.0	4.0					12			30%			Minor BZ weaker rock then PEL fairly altered
K16-355	HW	PEL	70.5	72.0	1.5	2.3	156%	35	1	80%	W3	R4	3									6	JF	3.0	2.0					12				10%		Possible block error due to recovery %
K16-355	HW	PEL	72.0	75.0	3.0	2.2	72%	13	2	61%	W3	R4	2									7	JF	3.0	2.0					20				5%		Minor broken zone but fairly competent rock
K16-355	HW	PEL	75.0	77.2	2.2	2.3	102%	1	2	100%	W2	R4	1																	20-25						Solid run with only one natural fracture whereas meaning mechanical breaks very competent rock
K16-355	HW	RHYc	77.2	81.3	4.1	3.8	91%	35	3	65%	W3	R4	6																	12				10%	30%	Highly silicified vein ~1m long with med to high micro defect intensity fractured with joint spacing fairly apart
K16-355	HW	PEL	81.3	81.9	0.6	0.6	102%	11	0	70%	W3	R3	6																	12						Minor zone due to lith change
K16-355	HW	RHYv	81.9	84.0	2.1	2.0	94%	46	1	36%	W3	R3	6									13	JF	3.0	2.0					12				20%	40%	Higher intensity of micro defects this run with minor broken zones
K16-355	HW	RHYv	84.0	87.0	3.0	3.1	102%	17	2	80%	W3	R4	6					1	J	2.0	3.0	12	JF	3.0	2.0	55.0	185.0	JF	3.0	12						Competent run
K16-355	HW	RHYv	87.0	90.0	3.0	2.7	90%	25	2	58%	W3	R3	6					2	J	3.0	3.0	18	JF	3.0	2.0					12	5%				10%	Low intensity of micro defects with minor gouge this run
K16-355	HW	RHYv	90.0	93.0	3.0	2.6	87%	74	1	18%	W3/W4	R3	6					10	J	2.0	3.0	11	JF	3.0	3.0					12					30%	Med to high intensity of micro defects within run where there is competent rock close spacing of discount with clay coating to silt sand like.
K16-355	HW	RHYv	93.0	96.0	3.0	2.5	83%	27	1	44%	W3	R4	3									14	JF	3.0	3.0					12	5%					Minor gouge within run but very competent and strong rock
K16-355	HW	RHYv	96.0	99.0	3.0	2.8	92%	28	1	30%	W3/W4	R3	6									19	JF	3.0	3.0	65.0	170.0	JF	3.0	12			20%		40%	Minor micro defects with minimal BZ area but dominate fol prominent within run
K16-355	HW	RHYv	99.0	102.0	3.0	2.8	93%	71	1	19%	W3/W4	R2/R3	6									11	JF	2.0	3.0					12		20%	10%	20%	60%	Higher intensity of micro defects with brecciated to gouge run with minor RZ and BZ.
K16-355	HW	RHYv	102.0	105.0	3.0	2.6	86%	39	1	37%	W3	R3	3									15	JF	3.0	3.0					12			30%		30%	Similar as rev run but low-med intensity of micro defects
K16-355	HW	RHYv	105.0	108.0	3.0	2.8	94%	23	2	70%	W3	R4	3									9	JF	3.0	2.0	60.0	160.0	JF	3.0	12			30%			Higher FF due to BZ
K16-355	HW	RHYv	108.0	111.0	3.0	2.7	91%	8	2	79%	W2	R4	2									8	JF	3.0	2.0	61.0	170.0	JF	3.0	12-20						Competent run with far spacing of discount. Dom fol consistent throughout
K16-355	HW	RHYv	111.00	114.00	3.0	3.07	102%	15	2.57	86%	W2/A2	R4	4					13	JF	1	4-8	2	J	1.5	2	162.0	50.0	JF	3.0	6-12					5%	Competent run, one small zone of fault breccia cutting the dominant foliation
K16-355	HW	RHYv	114.00	117.00	3.0	3.00	100%	14	2.80	93%	W2	R4q	3					8	JF	1	4-8					48.0	166.0	JF	3.0	6-12	3%		8%			Foliation parallel jointing and fault zones, small zones of gouge fault breccia
K16-355	HW	RHYv	117.00	120.00	3.0	2.73	91%	11	2.66	89%	W3/4	R4	3					6	JF	1	4-8	1	J	1	4					6-12			3%		30%	Zones of fault breccia forming along the foliation planes, no ori line
K16-355	HW	RHYv	120.00	123.00	3.0	2.28	76%	12	1.42	47%	W3/4	R2	6					8	JF	1	4-8	5	J	1	4-8					0-6	2%	7%	7%		60%	Strong micaceous alteration has made a soft and friable rock, cut by foliation parallel and cutting joints, poor recovery due to poor ground
K16-355	HW	RHYv	123.00	126.00	3.0	2.62	87%	5	2.39	80%	W3/4	R2	3					5	JF	1	4					47.0	190.0	JF	3.0	6-12					20%	Strong micaceous alteration has made a soft and friable rock, cut by foliation parallel and cutting joints, poor recovery due to poor ground
K16-355	HW	RHYv	126.00	129.00	3.0	2.26	75%	39	0.81	27%	W4/A4	R2/3	6	1	J	3.0	1.0	10	JF	1	4									6		%	15%		25%	No ori line, intense foliation and alteration makes a low quality rock
K16-355	HW	FLT	129.00	133.80	4.8	3.56	74%	120	0.00	0%	W4/A4	R1	3																	0						Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	FLT	133.80	138.00	4.2	2.60	62%	120	0.00	0%	W4/A4	R1	3																	0						Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	FLT	138.00	141.00	3.0	1.87	62%	120	0.00	0%	W4/A5	R0	20																	0		100%				Fault zone, crushed rock and gouge, no orientation
K16-355	HW	FLT	141.00	144.00	3.0	2.70	90%	120	0.00	0%	W4/A5	R1	3																	0						Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	FLT	144.00	147.00	3.0	2.64	88%	120	0.00	0%	W4/A5	R1	3																	0						Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	FLT	147.00	150.00	3.0	2.30	77%	120	0.00	0%	W4/A5	R1	3																	0						Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	FLT	150.00	153.00	3.0	1.52	51%	120	0.00	0%	W4/A5	R0	20																	0		100%				Fault zone, crushed rock and gouge, no orientation
K16-355	HW	FLT	153.00	156.00	3.0	1.60	53%	120	0.00	0%	W4/A5	R0	20																	0		100%				Fault zone, crushed rock and gouge, no orientation
K16-355	HW	RHY	156.00	157.30	1.3	0.94	72%	120	0.00	0%	W4/A5	R0	20																	0		100%				Fault zone, crushed rock and gouge, no orientation
K16-355	HW	RHY	157.30	159.00	1.7	1.29	76%	22	0.38	22%	W3	R3	3					10	JF	1	4-12									0-6	1%	%	20%		20%	0.1-2.0 cm thick gouge zones parallel to the dominant foliation, , no ori line, short interval due to lith change
K16-355	HW	RHY	159.00	162.00	3.0	2.90	97%	120	0.00	0%	W4	R1	3																	0-6	30%				70%	1m spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	162.00	165.00	3.0	2.99	100%	99	0.70	23%	W3/4	R2-3	3																	0-6			30%		70%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	165.00	168.00	3.0	2.50	83%	36	1.02	34%	W1/3	R1-3	3					6	JF	1	8									0-6			30%		70%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	168.00	171.00	3.0	2.24	75%	105	0.46	15%	W4	R1-3	3					1	JF	1	4									0-6			85%		15%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	171.00	174.00	3.0	2.00	67%	120	0.20	7%	W4	R2	3																	0			90%		10%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	174.00	177.00	3.0	2.76	92%	120	0.00	0%	W4	R2	3																	0			20%	15%	65%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line
K16-355	HW	RHY	177.00	181.40	4.4	4.09	93%	120	0.00	0%	W4	R2	3																	0	10%	75%			15%	Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, no ori line, long interval due to litl
K16-355	HW	RHYc	181.40	185.30	3.9	3.55	91%	120	0.00	0%	W4	R1-2	3													44.0	170.0	JF	3.0	0	5%		95%			Strongly altered and sheared rock forms 1mm spaced partings along the foliation planes, very weak rock, easily split with a knife, long interval due to lith change, long interval due to lith change
K16-355	WASTE	MAFi	185.30	189.00	3.7	3.44	93%	4	3.44	93%	W1	R3	1	3	JF	1.5	2.0	1	JF	1	2					30.0	155.0	JF	3.0	6-12						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	189.00	192.00	3.0	2.82	94%	5	2.72	91%	W1	R3	1	2	JF	1.5	2.0	3	JF	0.5-1	2					30.0	120.0	JF	3.0	6-12						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	192.00	195.00	3.0	2.53	84%	7	2.23	74%	W1	R4	4	4	JF	1.0	3.0	3	JF	1	2									6						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	195.00	198.00	3.0	2.99	100%	6	2.74	91%	W1	R4	2	5	JF	1.5	2.0	1	JF	0.5	4					55.0	150.0	JF	3.0	6						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	198.00	201.00	3.0	2.83	94%	10	2.60	87%	W1	R3	6	2	JF	1.5	2.0	2	JF	1.5	2					26.0	148.0	JF	3.0	6			5%			Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	201.00	204.00	3.0	2.92	97%	3	2.86	95%	W1	R4	2					3	JF	1.5	2					35.0	210.0	JF	3.0	6						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	204.00	207.00	3.0	2.95	98%	2	2.95	98%	W1	R3	1	1	JF	1.5	4.0	1	JF	1.5	2					15.0	122.0	JF	3.0	6						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	207.00	210.00	3.0	2.94	98%	3	2.87	96%	W1	R3	3					2	JF	1	2-8	1	JF	1	4					0-6	1%					Chloritic parting planes form joints, some have slickensides, competent rock mass, no ori line
K16-355	WASTE	MAFi	210.00	213.00	3.0	2.99	100%	3	2.96	99%	W1	R5	2					3	JF	1.5	2					35.0	150.0	JF	3.0	6-12						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	213.00	216.00	3.0	2.55	85%	5	2.28	76%	W1	R3	1	1	J	3.0	1.0	2	JF	1.5	2	2	J	1	2	60.0	228.0	J	3.0	6-12						Chloritic parting planes form joints, some have slickensides, competent rock
K16-355	WASTE	MAFi	216.00	219.00	3.0	2.73	91%	25	2.07	69%	W2	R3	6					3	JF	1.5	2	2	J	1.5	2					6		5%	15%			Chloritic parting planes form joints, some have slickensides, two short fault/shear zones, no ori line
K16-355	WASTE	MAFi	219.00	222.00	3.0	2.93	98%	8	2.92	97%	W2	R3	4					5	JF	1.5	2	2	J	1.5	2					6						Chloritic parting planes form joints, some have slickensides, no ori line
K16-355	WASTE	MAFi	222.00	225.00	3.0	2.91	97%	10	2.74	91%	W2	R3	1	1	JF	1.5	2.0	3	JF	1.5	2	1	J	1	4								4%			Chloritic parting planes form joints, some have slickensides, no ori line
K16-355	WASTE	MAFi	225.00	228.00	3.0	2.75	92%	11	2.20	73%	W3	R3	3					7	JF	1.5	2									6		1%	15%		25%	Chloritic parting planes form joints, some have slickensides, no ori line
K16-355	WASTE	MAFi	228.00	231.00	3.0	2.97	99%	24	2.51	84%	W3	R4	3					7	JF	1.5	2									6-12			15%			Chloritic parting planes form joints, some have slickensides, 45 cm broken/faulted zone, no ori line
K16-355	WASTE	MAFi	231.00	234.00	3.0	2.97	99%	8	2.94	98%	W2	R3	4					3	JF	1.5	2	6	J	1.5	2-4					6			5%			Chloritic parting planes form joints, some have slickensides, no ori line
K16-355	WASTE	MAFi	234.00	237.00	3.0	2.89	96%	41	0.97	32%	W2	R2/3	12	4	J	2.0	2.0	5	JF	1.5	2	3	J	2	2-4					6				30%	20%	Chlorite increasing , causing additional rock weakness, heavily veined and jointed rock, two 40 cm broken zones
K16-355	WASTE	MAFi	237.00	240.00	3.0	2.88	96%	9	2.46	82%	W2	R3	6					5	JF	1	2	5	JF	0.5-1	2	68.0	237.0	JF	3.0	6						Oriented measurement on slickensided surface, gamma to slickenside from beta 318 degrees. Chloritic partings make slip surfaces and joint planes.
K16-355	WASTE	MAFi	240.00	243.00	3.0	2.84	95%	14	2.46	82%	W2	R3	3	1	J	1.5	4.0					13	JF	0.5-1	2	60.0	230.0	JF	3.0	6						Chloritic parting planes form joints, some have slickensides, competent rock mass
K16-355	WASTE	MAFi	243.00	247.50	4.5	4.15	92%	25	2.86	64%	W2	R3	3					3	JF	1.0	2.0	22	JF	0.5-1	2	70.0	140.0	JF	1.0	6		1%				Less chlorite, , flecks of brown biotite, fractures forming along less well defined foliations,
K16-355	FW	RHYv	247.50	252.00	4.5	4.30	96%	120	0.00	0%	W4	R2	6																	6		25%			75%	Micaceous partings throughout the rock leave it very susceptible to fracture along them. last metre is fault breccia
K16-355	FW	RHYv	252.00	255.00	3.0	2.71	90%	114	0.00	0%	W4	R1	3									12	JF	1	1-2					6						Micaceous partings throughout the rock leave it very susceptible to fracture along them. No orientation
K16-355	FW	RHYv	255.00	258.00	3.0	2.87	96%	120	0.00	0%	W4	R2	3																	0					100%	Micaceous partings throughout the rock leave it very susceptible to fracture along them. No orientation, small rubble zones
K16-355	FW	RHYv	258.00	261.00	3.0	2.54	85%	55	0.70	23%	W4	R2-3	6					3	JF	1	2									0-6	1%	10%			40%	Micaceous partings throughout the rock leave it very susceptible to fracture along them. rock too friable to measure foliation
K16-355	FW	RHYv	261.00	264.00	3.0	2.75	92%	78	0.00	0%	W3	R3	6					6	JF	1	2-4	7	JF	1	2	60.0	10.0	JF	3.0	0					55%	Micaceous partings throughout the rock leave it very susceptible to fracture along them.
K16-355	FW	RHYv	264.00	267.00	3.0	2.08	69%	120	0.00	0%	W4	R0-1	20																	0		40%			60%	Intensely sheared zone, with a clast supported fault breccia zone 1.3m long. Micaceous partings easily flake by hand
K16-355	FW	RHYv	267.00	270.00	3.0	2.31	77%	120	0.00	0%	W4	R0-2	20																	0		90%			10%	Intensely sheared zone, with a clast supported fault breccia zone 2.7m long. Micaceous partings easily flake by hand
K16-355	FW	RHYv	270.00	273.00	3.0	3.04	101%	120	0.00	0%	W4	R2	3																	0					100%	Intensely sheared zone. Micaceous partings easily flake by hand, no ori line
K16-355	FW	RHYv	273.00	275.90	2.9	2.75	95%	120	0.00	0%	W4	R1	3																	0					100%	Intensely sheared zone. Micaceous partings easily flake by hand, no ori line
K16-355	FW	FLZ	275.90	279.00	3.1	2.97	96%	120	0.00	0%	W4	R1	3																	0		100%				Semi-consolidated fault breccia, clast hosted. interval length due to lith change
K16-355	FW	FLZ	279.00	282.00	3.0	2.80	93%	120	0.00	0%	W4	R1	3																	0		30%			70%	Intensely sheared zone. Micaceous partings easily flake by hand, no ori line
K16-355	FW	FLZ	282.00	285.40	3.4	3.05	90%	120	0.00	0%	W4	R1	3																	0						Intensely sheared zone. Micaceous partings easily flake by hand, 12-30 cm clast supported fault breccia zones, no ori line
K16-355	FW	SED	285.40	291.00	5.6	4.90	87%	120	0.00	0%	W4	R1	3																	0						Intensely sheared zone. Micaceous partings easily flake by hand, 12-30 cm clast supported fault breccia zones, no ori line
K16-355	FW	SED	291.00	292.70	1.7	1.73	102%	6	1.68	99%	W2	R3	6					2	JF	1.5	2-4	4	JF	1	2-4					12						Variable orientation of foliation plane, joints follow the foliation, competent rock
K16-355	FW	RHYv	292.70	296.30	3.6	3.74	104%	120	0.00	0%	W4	R1-3	12																	0		10%	20%		70%	Intensely sheared zone. Micaceous partings easily flake by hand, 12-30 cm clast supported fault breccia zones, no ori line
K16-355	FW	SED	296.30	298.00	1.7	1.50	88%	25	0.66	39%	W3	R3	3					7	JF	1	4-8									0	1%		30%			Variable orientation of foliation plane, joints follow the foliation, competent rock
K16-355	FW	RHYv	298.00	304.00	6.0	5.07	85%	85	1.34	22%	W3	R3	3					21	JF	1	2									6					25%	Micaceous partings throughout the rock leave it very susceptible to fracture along them.
K16-355	FW	RHYv	304.00	307.00	3.0	2.82	94%	93	0.75	25%	W3	R1-3	6					8	JF	1	4	4	JF	1	2					6-12		35%	5%		60%	Micaceous partings throughout the rock leave it very susceptible to fracture along them.
K16-355	FW	RHYv	307.00	310.00	3.0	2.73	91%	103	0.56	19%	W3	R1-3	3									3	JF	1	4					0-6					85%	RHYv shear zone. Short interval due to lith change
K16-355	FW	RHYv	310.00	312.40	2.4	2.11	88%	96	0.98	41%	W1/4	R4	3																	6-12					80%	Interval consisting of a large quartz vein cutting a section of micaceous
K16-355	FW	FLZ	312.40	315.00	2.6	2.48	95%	120	0.00	0%	W4-5	R1/2	15-20																	0		100%				fault breccia
K16-355	FW	FLZ	315.00	318.00	3.0	2.89	96%	120	0.00	0%	W4-6	R1/3	15-21																	0		100%				fault breccia
K16-355	FW	FLZ	318.00	321.00	3.0	2.88	96%	120	0.00	0%	W4-7	R1/4	15-22																	0		100%				fault breccia
K16-355	FW	FLZ	321.00	324.00	3.0	2.90	97%	120	0.00	0%	W4-8	R1/5	15-23																	0		100%				fault breccia
K16-355	FW	FLZ	324.00	327.00	3.0	2.54	85%	120	0.00	0%	W4-9	R1/6	15-24																	0		100%				fault breccia
K16-355	FW	FLZ	327.00	329.70	2.7	2.51	93%	120	0.00	0%	W4-10	R1/7	15-25																	0		100%				fault breccia
					0.0		#DIV/0!			#DIV/0!																										
					0.0		#DIV/0!			#DIV/0!																										

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
								0	#DIV/0!		
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.4}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-355	PLT-01	44.10	HW	RHYi	18.1	II	d	valid	61.10	61.10	61.10	181	17.16	3733.21	0.004596259	1.0944	5.03	
K16-355	PLT-02	44.10	HW	RHYi	17.74	L	a	valid	23.00	61.10	23.00	177.4	16.82	1789.28	0.009399025	1.0944	10.29	
K16-355	PLT-03	69.90	HW	PEL	11.72	II	d	valid	61.10	61.10	61.10	117.2	11.11	3733.21	0.002976141	1.0944	3.26	
K16-355	PLT-04	77.80	HW	RHYc	9.36	II	d	valid	61.10	61.10	61.10	93.6	8.87	3733.21	0.00237685	1.0944	2.60	
K16-355	PLT-05	115.80	HW	RHYv	4.66	II	d	valid	61.10	61.10	61.10	46.6	4.42	3733.21	0.001183346	1.0944	1.30	
K16-355	PLT-06	115.80	HW	RHYv	11.4	L	a	valid	42.50	61.10	42.50	114	10.81	3306.28	0.003268684	1.0944	3.58	
K16-355	PLT-07	190.10	WASTE	MAFi	8.08	II	d	valid	61.10	61.10	61.10	80.8	7.66	3733.21	0.002051811	1.0944	2.25	
K16-355	PLT-08	210.9	WASTE	MAFi	10.8	II	d	valid	61.10	61.10	61.10	108	10.24	3733.21	0.002742519	1.0944	3.00	
K16-355	PLT-09	229.1	WASTE	MAFi	6.04	II	d	valid	61.1	61.10	61.10	60.4	5.73	3733.21	0.001533779	1.0944	1.68	
K16-355	PLT-10	229.1	WASTE	MAFi	5.54	L	a	valid	34	61.10	34.00	55.4	5.25	2645.03	0.001985582	1.0944	2.17	
K16-355	PLT-11	242.3	WASTE	MAFi	1.1	II	d	valid	61.1	61.10	61.10	11	1.04	3733.21	0.000279331	1.0944	0.31	
K16-355	PLT-12	242.3	WASTE	MAFi	9.44	L	a	valid	28	61.10	28.00	94.4	8.95	2178.26	0.004108383	1.0944	4.50	
K16-355	PLT-13	297.5	FW	SED	1.9	II	d	valid	61.1	61.10	61.10	19	1.80	3733.21	0.00048248	1.0944	0.53	
K16-355	PLT-14	298.5	FW	SED	4.44	L	a	valid	25.5	61.10	25.50	44.4	4.21	1983.77	0.002121777	1.0944	2.32	
											0.00	0	0.00	0.00	#DIV/0!	0.0000	#DIV/0!	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-356	Krakatoa	HW	KRAK019	415207	6815283	1425	19	-72	HQ3	211	30-May-16	31-May-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	JDP		
Geotechnical	IH		
PLT	IH		
UCS			

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-356	0	12	Overburden (OVBN)
K16-356	12	14.5	Mafic tuff (MAFt)
K16-356	14.5	15.5	Graphitic mudstone (MDU)
K16-356	15.5	15.9	Mafic tuff (MAFt)
K16-356	15.9	19	Graphitic mudstone (MDU)

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data								Strength Data			Discontinuity parameters for Q System											Oriented Core Log				RMR76	Fault and Broken Zones					Comment
														ALPHA=0-29				ALPHA=30-59				ALPHA=60-90													
			From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3.2.1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-356	HW	OVBN	11.0	12.0	1.0	0.6	59%	40	0	0%	W4	R2/R3	20																0				100%		Weathered OVBN material low run due to lith change next.
K16-356	HW	MAFi	12.0	14.5	2.5	1.5	58%	28	1	36%	W4	R3	3									9	J	2.0	2.0					6				30%		Weathered on surface of core and joints. Still some rubble zone in this run bu
K16-356	HW	MDS	14.5	18.0	3.5	2.0	56%	61	0	3%	W4	R2	15-20																			20%	50%		Mudstone closely spacing of discont. weathered with RZ and BZ throughout r
K16-356	HW	MDS	18.0	19.0	1.0	0.6	57%	40	0	0%	W4	R2	15-20																				90%		Similar as last run rubble zone throughout. EOH abandoned due to deviation.
					0.0		#DIV/0!			#DIV/0!																									

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-356	MAFi	Waste	12.5	12.8	0190411		61.1	300	4.9099836333879 Valid	01-Jun-16	From abandoned hole
								0	#DIV/0!		
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test D_e^2 =4(WD)/pi For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.4}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-356	PLT-01	13.70	HW	MAFi	10.98	II	d	valid fresh break perp to core axis	61.10	61.10	61.10	109.8	10.41	3733.21	0.002788228	1.0944	3.05	
K16-356	PLT-02	13.70	HW	MAFi	16.46	L	a	valid	42.20	61.10	42.20	164.6	15.60	3282.95	0.004753072	1.0944	5.20	
K16-356	PLT-03	17.93	HW	MDS	4.52	II	d	natural break along fol	61.10	61.10	61.10	45.2	4.28	3733.21	0.001147795	1.0944	1.26	
K16-356	PLT-04	17.93	HW	MDS	5.8	L	a	natural break along fol w/chloritic alteration	26.90	61.10	26.90	58	5.50	2092.68	0.002627439	1.0944	2.88	
K16-356	PLT-05	18.30	HW	MDS	1.78	L	a	II to core axis valid break	41.60	61.10	41.60	17.8	1.69	3236.27	0.000521415	1.0944	0.57	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-357	Krakatoa	All	KRAK019A	415207	6815283	1425	381	-72	HQ3	211	1-Jun-16	6-Jun-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	JDP		
Geotechnical	IH	IH	06-Jun-16
PLT	JF/RN/IH	IH	06-Jun-16
UCS	IH	IH	06-Jun-16

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-357	0	12	Overburden (OVBN)
K16-357	12	12.84	Mafic tuff (MAFt)
K16-357	12.84	21.2	Graphitic mudstone (MDU)
K16-357	21.2	22.44	Mafic tuff (MAFt)
K16-357	22.44	25.65	Graphitic mudstone (MDU)
K16-357	25.65	27.52	Mafic tuff (MAFt)
K16-357	27.52	33.47	Graphitic mudstone (MDU)
K16-357	33.47	37.6	Mafic tuff (MAFt)
K16-357	37.6	42.82	Graphitic mudstone (MDU)
K16-357	42.82	43.48	Undifferentiated sedimentary rock (SED)
K16-357	43.48	69	Volcaniclastic rhyolite (RHYv)
K16-357	69	69.69	Coherent rhyolite (RHYc)
K16-357	69.69	75.22	Volcaniclastic rhyolite (RHYv)
K16-357	75.22	81.81	Volcaniclastic rhyolite (RHYv)
K16-357	81.81	93.29	Aphanitic rhyolite (RHYi)
K16-357	93.29	97.46	Volcaniclastic rhyolite (RHYv)
K16-357	97.46	99.2	Coherent rhyolite (RHYc)
K16-357	99.2	103	Volcaniclastic rhyolite (RHYv)
K16-357	103	106.78	Coherent rhyolite (RHYc)
K16-357	106.78	108.08	Volcaniclastic rhyolite (RHYv)
K16-357	108.08	109.27	Coherent rhyolite (RHYc)
K16-357	109.27	114.12	Volcaniclastic rhyolite (RHYv)
K16-357	114.12	118.89	Pelite (PEL)
K16-357	118.89	120.72	Volcaniclastic rhyolite (RHYv)
K16-357	120.72	138	Volcaniclastic rhyolite (RHYv)
K16-357	138	141.24	Volcaniclastic rhyolite (RHYv)
K16-357	141.24	141.48	Volcaniclastic rhyolite (RHYv)
K16-357	141.48	144.48	Volcaniclastic rhyolite (RHYv)
K16-357	144.48	147.44	Coherent rhyolite (RHYc)
K16-357	147.44	148.93	Mafic intrusion (MAFi)
K16-357	148.93	150.56	Coherent rhyolite (RHYc)
K16-357	150.56	155.3	Aphanitic rhyolite (RHYi)
K16-357	155.3	161.81	Volcaniclastic rhyolite (RHYv)
K16-357	161.81	163.78	Volcaniclastic rhyolite (RHYv)
K16-357	163.78	164.65	Volcaniclastic rhyolite (RHYv)
K16-357	164.65	167.14	Volcaniclastic rhyolite (RHYv)
K16-357	167.14	179.41	Volcaniclastic rhyolite (RHYv)
K16-357	179.41	184.42	Coherent rhyolite (RHYc)
K16-357	184.42	185.9	Volcaniclastic rhyolite (RHYv)
K16-357	185.9	186.65	Greywacke (WCK)
K16-357	186.65	189.73	Volcaniclastic rhyolite (RHYv)
K16-357	189.73	190.4	Undifferentiated sedimentary rock (SED)
K16-357	190.4	191.82	Volcaniclastic rhyolite (RHYv)
K16-357	191.82	205.43	Coherent rhyolite (RHYc)
K16-357	205.43	216.8	Volcaniclastic rhyolite (RHYv)
K16-357	216.8	221.26	Coherent rhyolite (RHYc)
K16-357	221.26	225.26	Semi-massive sulphide (OI, OJ)
K16-357	225.26	230.61	Coherent rhyolite (RHYc)
K16-357	230.61	231.6	Rhyolite (RHY)
K16-357	231.6	240.35	Rhyolite (RHY)
K16-357	240.35	243	Coherent rhyolite (RHYc)
K16-357	243	246	Rhyolite (RHY)
K16-357	246	252.24	Rhyolite (RHY)
K16-357	252.24	252.74	Massive sulphide (OA, OB, OC, OF, OK)
K16-357	252.74	253.26	Volcaniclastic rhyolite (RHYv)
K16-357	253.26	254.6	Massive sulphide (OA, OB, OC, OF, OK)
K16-357	254.6	256.6	Volcaniclastic rhyolite (RHYv)
K16-357	256.6	257.27	Massive sulphide (OA, OB, OC, OF, OK)
K16-357	257.27	259.37	Semi-massive sulphide (OI, OJ)
K16-357	259.37	304.44	Mafic intrusion (MAFi)
K16-357	304.44	306.24	Mafic intrusion (MAFi)
K16-357	306.24	331	Mafic intrusion (MAFi)
K16-357	331	332.23	Mafic intrusion (MAFi)
K16-357	332.23	340.27	Volcaniclastic rhyolite (RHYv)
K16-357	340.27	347.12	Volcaniclastic rhyolite (RHYv)
K16-357	347.12	369.94	Volcaniclastic rhyolite (RHYv)
K16-357	369.94	371.58	Volcaniclastic rhyolite (RHYv)
K16-357	371.58	377.69	Volcaniclastic rhyolite (RHYv)
K16-357	377.69	381	Volcaniclastic rhyolite (RHYv)

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data						Strength Data	Discontinuity parameters for Q System									Oriented Core Log				RMR76	Fault and Broken Zones			Comment
			From (m)	To (m)	Run (m)	TCR (%)	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	ALPHA-JA-20 Count	ALPHA-JA-20 Type	ALPHA-JA-20 Jr	ALPHA-JA-20 Ja	ALPHA-JA-50 Count	ALPHA-JA-50 Type	ALPHA-JA-50 Jr	ALPHA-JA-50 Ja	Alpha	Beta	Type	Fracture Index (FI)	Joint Condition Rating	% Fault Recovery	% Fault Broken	% Broken Core	

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-357	RHYv	Waste	48	48.25	0190412		61.1	250	4.09165302782324 Valid	02-Jun-16	
K16-357	RHYv	Waste	74.3	74.6	0190413		61.1	300	4.90998363338784 Valid	02-Jun-16	
K16-357	RHYi	Waste	90.6	90.85	0190414		61.1	250	4.09165302782324 Valid	02-Jun-16	
K16-357	RHYc	Waste	104.4	104.65	0190415		61.1	250	4.09165302782324 Valid	02-Jun-16	
K16-357	RHYc	Waste	192.5	192.85	0190416		61.1	350	5.72831423895244 Valid	04-Jun-16	
K16-357	RHYc	Waste	195.35	195.7	0190417		61.1	350	5.72831423895244 Valid	04-Jun-16	
K16-357	RHYi	Waste	216	216.3	0190418		61.1	300	4.90998363338807 Valid	04-Jun-16	
K16-357	OI (Stringer)	Ore	223.55	224.1	0190419	B00291557	61.1	550	9.00163666121085 Valid	04-Jun-16	Should be able to test 2
K16-357	OB (Ore)	Ore	253.9	254.6	190420	B00291585	61.1	700	11.4566284779049 Valid	05-Jun-16	Should be able to test 2
K16-357	MAFi	Waste	309	309.28	190422		61.1	280	4.58265139116158 Valid	06-Jun-16	
K16-357	MAFi	Waste	315.38	315.76	190423		61.1	380	6.21931260229125 Valid	06-Jun-16	
K16-357	RHYv	Waste	366.73	367.03	190424		61.1	300	4.90998363338714 Valid	06-Jun-16	
								0	#DIV/0!		
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test D_e^2=4(WD)/pi For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.45}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-377	PLT-01	12.84	HW	MDS	2.52	II	d	valid test	61.10	61.1	61.10	25.2	2.39	3733.21	0.000639921	1.0944	0.70	
K16-357	PLT-02	17.25	HW	MDS	2.48	II	d	valid test	61.10	61.1	61.10	24.8	2.35	3733.21	0.000629764	1.0944	0.69	
K16-357	PLT-03	17.25	HW	MDS	9.68	L	a	invalid test jump off	49.90	61.1	49.90	96.8	9.18	3881.97	0.002363915	1.0944	2.59	
K16-357	PLT-04	22.59	HW	MDS	0.98	II	d	valid test	61.10	61.1	61.10	9.8	0.93	3733.21	0.000248858	1.0944	0.27	
K16-357	PLT-05	24.90	HW	MDS	0.96	II	d	valid test	61.10	61.1	61.10	9.6	0.91	3733.21	0.000243779	1.0944	0.27	
K16-357	PLT-06	24.90	HW	MDS	0.96	L	a	invalid test jump off	54.00	61.1	54.00	9.6	0.91	4200.93	0.000216638	1.0944	0.24	
K16-357	PLT-07	27.42	HW	MDS	2.14	II	d	valid test	61.10	61.1	61.10	21.4	2.03	3733.21	0.000543425	1.0944	0.59	
K16-357	PLT-08	45	HW	RHYV	0	II	d	invalid test fell apart	61.1	61.1	61.10	0	0.00	3733.21	0	1.0944	0.00	
K16-357	PLT-09	45	HW	RHYV	1.64	L	a	valid test	56	61.1	56.00	16.4	1.55	4356.52	0.000356872	1.0944	0.39	
K16-357	PLT-10	54	HW	RHYV	0	II	d	invalid test jump off	61.1	61.1	61.10	0	0.00	3733.21	0	1.0944	0.00	
K16-357	PLT-11	54	HW	RHYV	9.48	L	a	valid test	38	61.1	38.00	94.8	8.99	2956.21	0.003040057	1.0944	3.33	
K16-357	PLT-12	63.9	HW	RHYV	2.28	II	d	valid test	61.1	61.1	61.10	22.8	2.16	3733.21	0.000578976	1.0944	0.63	
K16-357	PLT-13	73.66	HW	RHYV	2.5	II	d	valid test	61.1	61.1	61.10	25	2.37	3733.21	0.000634842	1.0944	0.69	
K16-357	PLT-14	84.6	HW	RHYI	8.48	II	d	valid test	61.1	61.1	61.10	84.8	8.04	3733.21	0.002153385	1.0944	2.36	
K16-357	PLT-15	84.6	HW	RHYI	3.94	L	a	valid test	38	61.1	38.00	39.4	3.74	2956.21	0.001263484	1.0944	1.38	
K16-357	PLT-16	130.05	HW	RHYV	3.12	II	d	valid test	61.10	61.1	61.10	31.2	2.96	3733.21	0.000792283	1.0944	0.87	
K16-357	PLT-17	130.05	HW	RHYV	8.94	L	a	valid test	44.00	61.1	44.00	89.4	8.48	3422.98	0.00247595	1.0944	2.71	
K16-357	PLT-18	141.85	HW	RHYV	3.3	II	d	valid test	61.10	61.1	61.10	33	3.13	3733.21	0.000837992	1.0944	0.92	
K16-357	PLT-19	146.52	HW	RHYC	4.2	II	d	valid test	61.10	61.1	61.10	42	3.98	3733.21	0.001066535	1.0944	1.17	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-358	Krakatoa	All	KRAK012	415101	6815171	1396	325	-86.3	HQ3	73.4	2-Jun-06	6-Jun-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	Dillon		
Geotechnical	Oscar	IH	15/Jun/16
PLT	Kellin		
UCS	Oscar/Imran	IH	15/Jun/16

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-358	0	6.3	Overburden (OVBN)
K16-358	6.3	10	Volcaniclastic rhyolite (RHYv)
K16-358	10	11.9	Volcaniclastic rhyolite (RHYv)
K16-358	11.9	13.5	Volcaniclastic rhyolite (RHYv)
K16-358	13.5	14.6	Volcaniclastic rhyolite (RHYv)
K16-358	14.6	33.5	Volcaniclastic rhyolite (RHYv)
K16-358	33.5	54.6	Volcaniclastic rhyolite (RHYv)
K16-358	54.6	63.8	Aphanitic rhyolite (RHYi)
K16-358	63.8	65.5	Rhyolite (RHY)
K16-358	65.5	78	Aphanitic rhyolite (RHYi)
K16-358	78	78.6	Pelite (PEL)
K16-358	78.6	81.9	Volcaniclastic rhyolite (RHYv)
K16-358	81.9	86.3	Aphanitic rhyolite (RHYi)
K16-358	86.3	91	Volcaniclastic rhyolite (RHYv)
K16-358	91	96.5	Volcaniclastic rhyolite (RHYv)
K16-358	96.5	100.1	Volcaniclastic rhyolite (RHYv)
K16-358	100.1	100.5	Pelite (PEL)
K16-358	100.5	125.6	Volcaniclastic rhyolite (RHYv)
K16-358	125.6	135.4	Volcaniclastic rhyolite (RHYv)
K16-358	135.4	136.7	Semi-massive sulphide (OI, OJ)
K16-358	136.7	148.9	Volcaniclastic rhyolite (RHYv)
K16-358	148.9	150.1	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	150.1	151.4	Coherent rhyolite (RHYc)
K16-358	151.4	152	Semi-massive sulphide (OI, OJ)
K16-358	152	156.4	Mafic intrusion (MAFi)
K16-358	156.4	165.8	Coherent rhyolite (RHYc)
K16-358	165.8	167.3	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	167.3	168.2	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	168.2	169.3	Semi-massive sulphide (OI, OJ)
K16-358	169.3	169.9	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	169.9	170.4	Semi-massive sulphide (OI, OJ)
K16-358	170.4	217.6	Mafic intrusion (MAFi)
K16-358	217.6	224.3	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	224.3	224.98	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	224.98	225.72	Semi-massive sulphide (OI, OJ)
K16-358	225.72	245.46	Mafic intrusion (MAFi)
K16-358	245.46	246.46	Massive sulphide (OA, OB, OC, OF, OK)
K16-358	246.46	247.16	Semi-massive sulphide (OI, OJ)
K16-358	247.16	250.51	Rhyolite (RHY)
K16-358	250.51	266.71	Volcaniclastic rhyolite (RHYv)
K16-358	266.71	274.49	Volcaniclastic rhyolite (RHYv)
K16-358	274.49	286.39	Volcaniclastic rhyolite (RHYv)
K16-358	286.39	290.66	Coherent rhyolite (RHYc)
K16-358	290.66	303.72	Volcaniclastic rhyolite (RHYv)
K16-358	303.72	305.92	Volcaniclastic rhyolite (RHYv)
K16-358	305.92	320.88	Volcaniclastic rhyolite (RHYv)
K16-358	320.88	348	Volcaniclastic rhyolite (RHYv)

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data								Strength Data			Discontinuity parameters for Q System: ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Oriented Core Log				RMR76	Fault and Broken Zones					Comment
			From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-35	HW	OVBN	0.00	6.30	6.30	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Null	Overburden
K16-35	HW	RHYv	6.30	9.00	2.70	1.63	60%	85	0.00	0%	W4	R4	15					1	J	1	8	3	J	1	8					0	10%	10%		20%	30%	Strong weathering at surface
K16-35	HW	RHYv	9.00	12.00	3.00	2.60	87%	13	1.05	35%	W2	R4	3					2	J	3	2	11	J	2-3	2-4	85.0	340.0	J	1.0	12-15	2%					Joint surface s are weathered, but not the rock mass. Rare gouge joints perpendicular to the core axis.
K16-35	HW	RHYv	12.00	15.00	3.00	2.82	94%	6	2.74	91%	W2	R4	6					1	J	3	1	5	J	1.5	2-4					12-15						Competent core, no orientation line
K16-35	HW	RHYv	15.00	18.00	3.00	1.71	57%	21	0.89	30%	W3/A3	R3	3									7	J	1.5	2-8					6-12			30%		20%	Multiple broken zone, softer rock, no orientation line
K16-35	HW	RHYv	18.00	21.00	3.00	2.28	76%	5	2.01	67%	W2/A2	R3	3					1	J	1	3	4	J	1.5	2-4					12-20			8%			Competent rock, no orientation line
K16-35	HW	RHYv	21.00	24.00	3.00	2.32	77%	13	1.97	66%	W2/A2	R4	1	1	J	1	4	2	J	1	4	1	J	1	4					12			10%			Competent rock, joints are cutting across the dominant foliation, two minor broken zones
K16-35	HW	RHYv	24.00	27.00	3.00	2.83	94%	5	2.78	93%	W2/A2	R4	1					3	J	1	4	2	J	1.5	2	35.0	120.0	J	3.0	6						Competent rock
K16-35	HW	RHYv	27.00	30.00	3.00	2.90	97%	7	2.79	93%	W2/A2	R3	3	1	J	1.5	1	1	J	3	1	5	J	1.5	2-4					12-20						Competent rock, joints are cutting across the dominant foliation, two minor broken zones
K16-35	HW	RHYv	30.00	33.00	3.00	1.92	64%	56	1.37	46%	W3/A3	R1-4	20					1	J	3	1	2	J	1.5	4					0		35%	12%			Competent rock progresses rapidly into a fault zone with two broken zones preceding it
K16-35	HW	RHYv	33.00	36.00	3.00	1.05	35%	120	0.00	0%	W4/A4	R1-2	20					2	J	3	4	4	J	1	4-8					0		90%	10%			Fault breccia dominated run, include a broken zone with gouge covered joint surfaces
K16-35	HW	RHYv	36.00	39.00	3.00	2.30	77%	52	0.87	29%	W3/A3	R0-3	20	1	J	4.0	0	1	J	1	4-8	10	J	1.5	4					0		40%	10%			Fault breccia dominated run, include a broken zone with gouge covered joint surfaces
K16-35	HW	RHYv	39.00	42.00	3.00	1.53	51%	20	0.88	29%	W3/A3	R4	6					2	J	3	2	11	JF	1.5	4					6-12		5%	15%			Well fractured rock, jointing typically along foliation planes
K16-35	HW	RHYv	42.00	45.00	3.00	2.95	98%	94	0.81	27%	W3/A3	R0-3	6	1	J	3.0	4	5	JF	1.5	2	7	JF	1	4					6-12		50%	15%			cutting through fault zone, two clast supported fault breccia.
K16-35	HW	RHYv	45.00	48.00	3.00	2.79	93%	34	2.20	73%	W2/A2	R4	4	2	J	1.0	8					3	JF	3	8					6-12			30%			competent rock cut by a zone of broken rock
K16-35	HW	RHYv	48.00	51.00	3.00	2.95	98%	15	2.69	90%	W2/A2	R4	1	1	J	1.0	8	2	J	1.5	2	5	JF	1	2-4					6-12				3%		competent rock cut by a zone of broken rock
K16-35	HW	RHYv	51.00	54.60	3.60	3.13	87%	14	3.01	84%	W3/A3	R3	4					5	JF	1	1	2	JF	1	4					12				3%		strong but brittle rock, high silica content
K16-35	HW	RHYi	54.60	57.00	2.40	2.37	99%	3	2.11	88%	W2/A2	R4	1	1	J	4.0	1	2	J	1	2									12						strong, competent rock mass, high silica content
K16-35	HW	RHYi	57.00	60.00	3.00	2.86	95%	4	2.69	90%	W2/A2	R4	3					1	J	1	1	3	JF	1	8-12					6-12						strong, competent rock mass, high silica content, cut by a zone of gouge, foliation parallel joints/faults
K16-35	HW	RHYi	60.00	63.80	3.80	3.79	100%	0	2.99	79%	W1/A1	R5	0.5																	25						Massive, strong siliceous rock mass
K16-35	HW	RHY	63.80	65.50	1.70	1.58	93%	3	1.53	90%	W2/A2	R4	1					1	J	1.5	2	2	JF	1.5	2	65.0	325.0	JF	3.0	20						foliated ash tuff layer sitting between two coherent siliceous rhyolite flows
K16-35	HW	RHY	65.50	69.00	3.50	2.94	84%	8	2.59	74%	W2/A2	R4	4					5	JF	1.5	2	4	JF	1.5	2					12					20%	orientation line does not extend to jointed areas,
K16-35	HW	RHY	69.00	72.00	3.00	2.97	99%	5	2.97	99%	W1/A1	R4	4					3	J	1.5	2	3	J	1.5	2-4	35.0	200.0	J	3.0	12-20						Competent rock
K16-35	HW	RHY	72.00	75.00	3.00	2.77	92%	7	2.56	85%	W1/A1	R4	6	1	J	1,5	2	2	J	1.5	2	4	J	3	2	40.0	256.0	J	3.0	12-20						Competent rock
K16-35	HW	RHY	75.00	78.00	3.00	2.54	85%	10	2.31	77%	W2/A2	R4	4					2	J	1	4-8	4	JF	1	1-2					6-12		1%	3%			foliation increases towards the lower end of this run, with increasing fracture fault development
K16-35	HW	RHYv	78.00	81.90	3.90	3.15	81%	7	2.92	75%	W3/A3	R3	2									7	JF	1	2-8					0-6					5%	no orientation line
K16-35	HW	RHYi	81.90	86.30	4.40	4.15	94%	6	4.10	93%	W1/A1	R4	3	2	J	3.0	1	4	J	3	1									20						Competent, strong rock
K16-35	HW	RHYv	86.30	90.00	3.70	3.56	96%	17	3.09	84%	W2/A2	R4	3					2	J	1.5	1-2	9	JF	1	2-12					0-12	3%	5%				Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	90.00	93.00	3.00	2.91	97%	31	1.56	52%	W3/A3	R3	3									8	JF	1	2-12					0-12		15%	5%			Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	93.00	96.00	3.00	2.06	69%	6	1.75	58%	W3/A3	R4	3					6	JF	1	2-4	2	JF	1	2-4					0-12			3%			Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	96.00	99.00	3.00	2.85	95%	4	2.85	95%	W2/A2	R4	2					4	JF	1	2					45.0	260.0	J	3.0	12						Predominantly foliation parallel joint planes, no significant gouge formation, micaceous joint surfaces (low friction)
K16-35	HW	RHYv	99.00	102.00	3.00	2.82	94%	4	2.82	94%	W1/A1	R4	2					4	JF	1	2					50.0	90.0	JF	3.0	6-12						Foliation parallel jointing and faulting
K16-35	HW	RHYv	102.00	105.00	3.00	2.89	96%	15	2.63	88%	W2/A2	R4	3	1	J	1.0	12	6	JF	1	2-4	1	JF	1	2	50.0	72.0	JF	3.0	6		7%				Foliation parallel jointing, micaceous partings are low friction
K16-35	HW	RHYv	105.00	108.00	3.00	2.75	92%	10	2.58	86%	W3/A3	R4	4					4	JF	1	2.4	6	JF	1	2-4					6						Foliation parallel jointing, micaceous partings are low friction
K16-35	HW	RHYv	108.00	111.00	3.00	2.88	96%	25	2.28	76%	W3/A3	R3	6					4	JF	1	8	5	JF	1	4-8					0-6						Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	111.00	114.00	3.00	2.73	91%	12	2.41	80%	W3/A3	R3	3					1	J	1	12	9	JF	1	4-12					0-6		5%	3%			Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	114.00	117.00	3.00	2.82	94%	25	2.13	71%	W3/A3	R1/3	6					2	JF	1	4-8	8	JF	1	2-12					0-6		15%				Foliation parallel jointing and faulting, no orientation line
K16-35	HW	RHYv	117.00	120.00	3.00	2.88	96%	59	1.47	49%	W4/A4	R3	12					2	JF	1	4-12	7	J	1	8-12					0						Thin joints with low friction coatings are foliation parallel, thicker fault breccia filled zones tend to cut foliation
K16-358	HW	RHYv	120.00	123.00	3.00	2.88	96%	8	2.79	93%	W2/A2	R3	6	1	J	3.0	4	1	JF	1	4	6	J	1	2-8					6		3%				Thin joints with low friction coatings are foliation parallel, thicker fault breccia filled zones tend to cut foliation
K16-358	HW	RHYv	123.00	126.00	3.00	2.87	96%	20	2.42	81%	W3/A3	R3	3					2	J	1	3	14	JF	1	2-8					0-6		3%	6%			Thin joints with low friction coatings are foliation parallel, thicker fault breccia filled zones tend to cut foliation
K16-358	HW	RHYv	126.00	129.00	3.00	2.70	90%	15	2.12	71%	W3/A3	R3	3					2	JF	1.5	2-4	13	JF	1	2-8					6-12		1%	10%			Foliation parallel jointing, micaceous partings are low friction, no orientation line
K16-358	HW	RHYv	129.00	132.00	3.00	2.80	93%	20	2.68	89%	W3/A3	R3	3	1	J	3.0	2	2	JF	1	2-8	8	JF	1	4-8					6			7%			Thin joints with low friction coatings are foliation parallel, thicker fault breccia filled zones tend to cut foliation, no orientation line
K16-358	HW	RHYv	132.00	135.40	3.40	3.27	96%	18	3.00	88%	W3/A3	R3	3					5	J	1	1-4	13	JF	1	4					6-12			3%			Joints are predominantly foliation parallel, with micaceous/clay covered partings . Rare joints that cut foliation have chlorite or no coating
K16-358	HW	RHYv	135.40	136.70	1.30	1.30	100%	11	1.12	86%	W3/A3	R3	2									11	JF	1.5	2					12						Foliation parallel jointing, rough sulphide crystals create a rough parting surface
K16-358	HW	RHYv	136.70	141.00	4.30	2.80	65%	97	0.00	0%	W4/A4	R0/2	20									6	JF	1	4-8					0		75%	25%			Intensely deformed/broken rock, clast supported fault breccia comprises the majority of the run
K16-358	HW	RHYv	141.00	144.00	3.00	2.87	96%	44	0.63	21%	W4/A4	R0/2	15					9	JF	1	4-8	13	JF	1	4-8					0	5%	12%	50%			Intensely deformed/broken rock, clast and matrix supported fault breccia comprises a high percentage of the run
K16-358	ORE	MXSX	144.00	148.90	4.90	3.72	76%	68	1.13	23%	W4/A4	R0/3	15									13	JF	1	4-12					0	2%	28%	15%			Intensely deformed/broken rock, clast and matrix supported fault breccia comprises a high percentage of the run
K16-358	WASTE	RHYc	148.90	150.10	1.20	1.08	90%	6	0.91	76%	W1/A1	R3	4					2	J	1.5	2	4	J	3	2					20						Competent interval of sulphide material, intense deformation is concentrated on the margins of the lens.
K16-358	WASTE	RHYc	150.10	153.00	2.90	2.70	93%	19	2.20	76%	W3/A3	R3	6					9	JF	1	4	2	J	1.5	2					6-12		5%				Matrix supported fault breccia sits at the contact with the sulphide lens. The majority of the joint are low friction micaceous partings.
K16-358	WASTE	RHYc	153.00	156.00	3.00	2.94	98%	25	2.49	83%	W3/A3	R3	6					6	JF	0.5-1	4	14	JF	0.5-1	4					0-6		3%				Tightly spaced chloritic and micaceous partings form low friction surfaces along which joints form and move. Gouge fault zones cut the dominant foliation No orientation line :(
K16-358	WASTE	RHYc	156.00	159.00	3.00	2.78	93%	16	2.43	81%	W2/A2	R3	4					7	JF	1	4	9	JF	1	4-8					6		5%			10%	Foliation parallel joints along micaceous partings.
K16-358	WASTE	RHYc	159.00	162.00	3.00	2.82	94%	63	0.87	29%	W4/A4	R0/2	15	2	J	3.0	2	2	J	1	8	1	J	1.5	2					0		40%			30%	Rock is highly altered and weak, joints have formed with no relationship to the dominant foliation.
K16-358	WASTE	RHYc	162.00	165.80	3.80	3.25	86%	53	1.76	46%	W4/A4	R1/3	12-15	1	J	1.0	4	4	J	1	8	7	J	1	4-8					0-6	3%		35%			Rock is highly altered and weak, joints have formed with no relationship to the dominant foliation, creating gouge zones.
K16-358	ORE	MXSX	165.80	169.90	4.10	4.10	100%	21	3.85	94%	W1/A1	R4	1	2	J	1.5	1	6	J	1.5	1	9	J	1.5	1-4	12.0	170.0	J	3.0	20						Massive sulphide ore, weak foliation, joints form with no preferred orientation relative to the foliation, joint surfaces are coated in black sooty coating. The sulphide makes a high friction joint surface
K16-358	ORE	Stringer and Disse	169.90	174.00	4.10	4.03	98%	10	3.81	93%	W2/A2	R4	3					1	J	1	4	9	JF	1	2-4	76.0	60.0	JF	3.0	12						Thin joints with low friction coatings are foliation parallel
K16-358	WASTE	MAFi	174.00	177.00	3.00	3.00	100%	6	3.00	100%	W2/A2	R4	2									6	JF	1	2-4	75.0	95.0	JF	3.0	12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	177.00	180.00	3.00	2.90	97%	6	2.76	92%	W2/A2	R3	3	1	J	3.0	2					5	JF	0.5-1	4	75.0	60.0	JF	3.0	6						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	180.00	183.00	3.00	3.02	101%	5	3.00	100%	W2/A2	R3	6	1	J	1	2	2	JF	1	2-4	2	JF	1	4					6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel, no orientation line
K16-358	WASTE	MAFi	183.00	186.00	3.00	2.99	100%	1	2.99	100%	W2/A2	R4	1									1	J	3	4	75.0	270.0	J	2.0	20						Competent rock
K16-358	WASTE	MAFi	186.00	189.00	3.00	2.98	99%	6	2.98	99%	W2/A2	R5	2									6	JF	1-1.5	4	80.0	74.0	JF	2.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	189.00	192.00	3.00	2.98	99%	8	2.87	96%	W2/A2	R3	2									8	JF	0.5-2	4	80.0	310.0	J	2.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	192.00	195.00	3.00	3.03	101%	3	2.90	97%	W2/A2	R4	2									3	JF	0.5-2	4	50.0	62.0	J	2.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	195.00	198.00	3.00	2.95	98%	6	2.95	98%	W2/A2	R3	3					1	VN	2	1	5	JF	0.5-2	4	80.0	90.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	198.00	201.00	3.00	2.99	100%	5	2.96	99%	W2/A2	R3	3	1	J	2	2					4	JF	1-1.5	4	80.0	50.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	201.00	204.00	3.00	3.06	102%	15	2.78	93%	W2/A2	R4	3	1	J	3.0	1	1	JF	1.5	4	13	JF	0.5-2	4	75.0	350.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	204.00	207.00	3.00	2.97	99%	7	2.97	99%	W2/A2	R4	3					1	J	2	4	6	JF	0.5-1	4	82.0	10.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	207.00	210.00	3.00	3.07	102%	12	2.69	90%	W2/A2	R3	4					4	J	1-2	4	8	JF	0.5-2	4	65.0	298.0	J	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel or rarely crosscut foliation
K16-358	WASTE	MAFi	210.00	213.00	3.00	2.97	99%	17	2.61	87%	W2/A2	R3	3					2	J	1	2	15	JF	0.5-2	4	65.0	86.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel or rarely crosscut foliation
K16-358	WASTE	MAFi	213.00	217.60	4.60	4.50	98%	29	4.06	88%	W3/A3	R3	4					5	JF	0.5-2	4	20	JF	0.5-2	4	65.0	242.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel or rarely crosscut foliation
K16-358	ORE	MXSX	217.60	219.00	1.40	1.37	98%	4	1.37	98%	W1/A1	UCS	3	3	J	3.0	1	2	J	1-3	1-4	2	J	2-3	1	18.0	295.0	J	2.0	12-20						Massive sulphide ore, weak foliation, joints form with no preferred orientation relative to the foliation, joint surfaces are coated in black sooty coating. The sulphide makes a high friction joint surface. One joint surfa
K16-358	ORE	MXSX	219.00	222.00	3.00	2.90	97%	7	2.90	97%	W1/A1	R5	3	5	J	3.0	1	1	J	2	1	1	J	3	1	40.0	295.0	J	3.0	12-20						Massive sulphide ore, weak foliation, joints form with no preferred orientation relative to the foliation, joint surfaces are coated in black sooty coating. The sulphide and quartz makes a high friction joint surface.
K16-358	ORE	MXSX	222.00	224.98	2.98	2.82	95%	9	2.77	93%	W1/A1	R3	4	1	J	3.0	1	8	J	1-3	1					40.0	170.0	J	3.0	12-20						Massive sulphide ore, weak foliation, joints form with no preferred orientation relative to the foliation, joint surfaces are coated in black sooty coating. The sulphide and quartz makes a high friction joint surface.
K16-358	ORE	Stringer and Disse	224.98	225.72	0.74	0.64	86%	6	0.59	80%	W3/A3	R0/3	2					2	J	0.5-1	4									6						Stringer sulphide cut by a fault zone, moderately foliated with joints following foliation
K16-358	WASTE	MAFi	225.72	228.00	2.28	2.24	98%	5	1.92	84%	W2/A2	R4	4					1	JF	0.5-1	4	4	J	0.5-1	4	47.0	354.0	JF	3.0	6						Thin joints with low friction chloritic partings or slickensides are foliation parallel
K16-358	WASTE	MAFi	228.00	231.00	3.00	2.96	99%	7	2.81	94%	W2/A2	R3	3	1	J	3.0	2	5	JF	0.5-2	4	1	JF	0.5	4	45.0	350.0	JF	3.0	6						Thin joints with low friction chloritic partings or slickensides are foliation parallel, rare rough joints cut the foliation
K16-358	WASTE	MAFi	231.00	234.00	3.00	2.95	98%	1	2.45	82%	W2/A2	R3	1					1	JF	0.5	4					50.0	24.0	JF	3.0	6						Thin joints with low friction chloritic slickensides are foliation parallel
K16-358	WASTE	MAFi	234.00	237.00	3.00	2.99	100%	8	2.99	100%	W2/A2	R4	4	2	JF	1.5	4	1	JF	1.5	4					20.0	350.0	JF	3.0	6						Thin joints with low friction chloritic slickensides are foliation parallel
K16-358	WASTE	MAFi	237.00	240.00	3.00	2.98	99%	8	2.88	96%	W2/A2	R3	4	2	J	3.0	4	5	JF	1-2	2-4	1	J	2	2	30.0	318.0	JF	3.0	6-12						Thin joints with low friction chloritic coatings are foliation parallel, rare foliation cutting joints are rough and poorly developed
K16-358	WASTE	MAFi	240.00	243.00	3.00	3.00	100%	9	2.89	96%	W2/A2	R4	6	1	J	3.0	4	5	JF	0.5-1	4	3	JF	1	2-4	50.0	335.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel, rare rough joints cut the foliation
K16-358	WASTE	MAFi	243.00	245.46	2.46	2.30	93%	5	2.23	91%	W2/A2	R4	4					2	JF	0.5-1	4	3	JF	1-2	2	43.0	334.0	JF	3.0	6-12						Thin joints with low friction chloritic partings or slickensides are foliation parallel, rare rough joints cut the foliation
K16-358	ORE	MXSX	245.46	247.16	1.70	1.68	99%	4	1.54	91%	W1/A1	R4	4					3	J	0.5-1.5	2	1	J	1	2					12						Massive sulphide ore, weak foliation, joints form with no preferred orientation relative to the foliation, joint surfaces are coated in black sooty coating. The sulphide and quartz makes a high friction joint surface. One
K16-358	FW	RHYc	247.16	250.51	3.35	3.08	92%	86	0.69	21%	W4/A4	R2	15-20					6	JF	0.5-1	4	1	J	1	2					0-6	9%	30%	20%			Micaceous partings in the highly muscovite altered and deformed RHYc form slip surfaces, and a low overall rock strength.
K16-358	FW	RHYv	250.51	255.00	4.49	4.07	91%	103	0.38	8%	W4/A4	R0/2	15-20	1	J	1.0	6	6	JF	0.5-1	4	2	JF	0.5-1	4					0-6			10%		50%	Micaceous partings in the highly muscovite altered and deformed RHYv form slip surfaces, and a low overall rock strength.
K16-358	FW	RHYv	255.00	258.00	3.00	2.81	94%	44	1.33	44%	W3/A3	R1/3	3					31	JF	1	4-6									6			3%		9%	Micaceous partings in the muscovite-sericite altered and deformed RHYv form slip surfaces, and create a low overall rock strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	258.00	261.00	3.00	2.88	96%	31	0.49	16%	W3/A3	R3	4					30	JF	1	4-6	1	JF	1	4					6						Micaceous partings in the muscovite-sericite altered and deformed RHYv form slip surfaces, and create a low overall rock strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	261.00	264.00	3.00	1.81	60%	87	0.00	0%	W3/A3	R1/3	12					10	JF	1	4-8	4	JF	1-2	4					0-6		9%	59%			Micaceous partings in the muscovite-sericite altered and deformed RHYv form slip surfaces, and create a low overall rock strength. Joints are almost all foliation parallel. Near the end of the run, a fault breccia is pres
K16-358	FW	RHYv	264.00	267.00	3.00	2.56	85%	104	0.00	0%	W4/A4	R0/2	15																	0		15%	66%			Micaceous partings in the muscovite-sericite altered and deformed RHYv form slip surfaces, and create a low overall rock strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	267.00	270.00	3.00	2.75	92%	20	2.43	81%	W2/A2	R4	3		J	3.0	2	2	JF	1	4	6	JF	1	4-6					6-12			7%			Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	270.00	273.00	3.00	2.85	95%	14	2.45	82%	W2/A2	R3	4					7	JF	1	4-6	7	JF	1	4-6					6						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	273.00	276.00	3.00	2.73	91%	29	2.10	70%	W3/A3	R0/3	3					13	JF	1	4-6	3	JF	1	4-12					0-6	1%	2%	10%			Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non foliation parallel joints have dev
K16-358	FW	RHYv	276.00	279.00	3.00	2.94	98%	9	2.84	95%	W2/A2	R3	3					8	JF	1	4	1	JF	1	4	64.0	30.0	JF	3.0	6						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are all foliation parallel.
K16-358	FW	RHYv	279.00	282.00	3.00	2.87	96%	18	2.65	88%	W2/A2	R3	3	1	J	2.0	1	13	JF	1	4									6					3%	Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are nearly all foliation parallel.
K16-358	FW	RHYv	282.00	286.35	4.35	4.22	97%	40	2.95	68%	W3/A3	R2/3	6					12	JF	1-2	4-12	22	JF	1	4-6	75.0	19.0	JF	3.0	6	1%	6%				Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non foliation parallel joints have dev
K16-358	FW	RHYc	286.35	288.00	1.65	1.50	91%	8	1.17	71%	W3/A3	R2/3	6	1	J	1.0	4	5	JF	1	4-6	3	JF	1	4					6						Chloritic and micaceous partings in the RHYc form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are nearly all foliation parallel.
K16-358	FW	RHYc	288.00	290.66	2.66	1.85	70%	83	0.14	5%	W4/A4	R0/3	15					1	J	3	2	3	JF	1	4					0-6	1%	15%			50%	Two extensive (40cm, 62cm) fault breccia zones, one is silicified and healed.
K16-358	FW	RHYv	290.66	294.00	3.34	3.35	100%	15	3.05	91%	W2/A2	R4	3					6	J	1-2	4	9	JF	1	4					6-12						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength.
K16-358	FW	RHYv	294.00	297.00	3.00	3.00	100%	10	2.88	96%	W2/A2	R4	3	1	J	1.0	1	7	JF	1	4-6	2	J	1	4-8	60.0	90.0	JF	3.0	6-12						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength.
K16-358	FW	RHYv	297.00	300.00	3.00	2.89	96%	6	2.78	93%	W2/A2	R3	3	1	J	3.0	2	1	J	1	6	4	JF	1	4-6	70.0	90.0	JF	3.0	6-12						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength.
K16-358	FW	RHYv	300.00	303.00	3.00	2.97	99%	9	2.79	93%	W2/A2	R4	4					2	J	1	4-8	7	JF	1	4	65.0	140.0	JF	3.0	6						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non foliation parallel joints have dev
K16-358	FW	RHYv	303.00	306.00	3.00	2.66	89%	19	2.36	79%	W2/A2	R4	3					2	J	1-3	1-4	8	JF	1-1.5	4					6	2%		6%		2%	Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non foliation parallel joints have dev
K16-358	FW	RHYv	306.00	309.00	3.00	2.76	92%	26	2.15	72%	W3/A3	R0-4	12	1	J	2.0	4	2	JF	1	4-8	3	J	2	8-12	38.0	318.0	JF	2.0	0-6	2%	13%	6%			Micaceous partings in the RHYv form planes of weakness however, the alteration is not completely pervasive so the rock retains strength in some areas. Joints are almost all foliation parallel. Non foliation parallel jo
K16-358	FW	RHYv	309.00	312.00	3.00	2.72	91%	17	2.38	79%	W2/A2	R4	3					1	J	1	2	8	JF	1	4-12					0-6	1%		6%			Micaceous partings in the RHYv form planes of weakness. Joints that cross-cut foliation typically are rougher and/or more gouge
K16-358	FW	RHYv	312.00	315.00	3.00	2.92	97%	6	2.86	95%	W2/A2	R4	4	2	J	1.0	1-2					4	JF	1	4-6					6-12						Micaceous partings in the RHYv form planes of weakness. Joints that cross-cut foliation typically are rougher
K16-358	FW	RHYv	315.00	318.00	3.00	2.94	98%	118	2.64	88%	W2/A2	R3	3					6	JF	1-2	4-6	3	JF	1-2	4-6	75.0	92.0	J	3.0	12-20			7%			Micaceous partings in the RHYv form planes of weakness. Joints that cross-cut foliation typically are rougher
K16-358	FW	RHYv	318.00	321.00	3.00	2.93	98%	11	2.96	99%	W2/A2	R4	4					4	JF	1-2	4	5	JF	1	4					6-12						Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel.
K16-358	FW	RHYv	321.00	324.00	3.00	2.95	98%	14	2.30	77%	W2/A2	R3	6					5	JF	1-2	2-4	2	JF	1	4-12					0-6	1%	6%				Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non-foliation parallel are rougher ar
K16-358	FW	RHYv	324.00	327.00	3.00	2.71	90%	42	1.91	64%	W3/A3	R3	6					3	JF	1	4	2	JF	1	4					6			26%			Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non-foliation parallel are rougher ar
K16-358	FW	RHYv	327.00	330.00	3.00	2.92	97%	20	2.52	84%	W2/A2	R3	2					16	JF	1-2	2-8					75.0	80.0	JF	2.0	6-12						Micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are almost all foliation parallel. Non-foliation parallel are rougher and/or gouge fi
K16-358	FW	RHYv	330.00	333.00	3.00	2.93	98%	12	2.82	94%	W2/A2	R3	4					4	JF	2	2-8	4	JF	1	4					6-12			6%			Chloritic and micaceous partings in the RHYv form slip surfaces however, the alteration is not pervasive so the rock retains overall strength. Joints are all foliation parallel.
K16-358	FW	RHYv	333.00	336.00	3.00	2.81	94%	15	2.52	84%	W3/A3	R2/3	6					2	J	2	2	8	JF	1-2	4-8					6			3%		3%	Chloritic and micaceous partings in the RHYv form slip surfaces, the alteration is semi-pervasive so the rock has lost strength. Joints are all foliation parallel however, some are gouge as opposed to being smooth mica
K16-358	FW	RHYv	336.00	339.00	3.00	2.83	94%	57	1.44	48%	W4/A4	R0-03	15									4	JF	1-2	4-8					0-6			45%			Chloritic and micaceous partings in the RHYv form slip surfaces, the alteration is semi-pervasive so the rock has lost strength. Joints are all foliation parallel however, some are gouge as opposed to being smooth mica
K16-358	FW	RHYv	339.00	342.00	3.00	2.82	94%	15	2.52	84%	W3/A3	R3	3	1	J	3.0	2	4	JF	1-2	4-6	6	JF	1-2	4-6					6-12						Chloritic and micaceous partings in the RHYv form slip surfaces, the alteration is semi-pervasive so the rock has lost strength. Joints are all foliation parallel however, some are gouge as opposed to being smooth mica
K16-358	FW	RHYv	342.00	345.00	3.00	2.92	97%	18	2.41	80%	W3/A3	R0/3	6	1	J	1	4	6	JF	1-2	4-8	6	JF	1-2	2-6					6-12		9%				Chloritic and micaceous partings in the RHYv form slip surfaces, the alteration is semi-pervasive so the rock has lost strength. Joints are predominantly foliation parallel however, some are gouge as opposed to being
K16-358	FW	RHYv	345.00	348.00	3.00	2.88	96%	14	2.59	86%	W3/A3	R3	12	1	J	1	6	4	JF	1	4-6	6	JF	1	4-6					6	1%		1%			Chloritic and micaceous partings in the RHYv form slip surfaces, the alteration is semi-pervasive so the rock has lost strength. Joints are predominantly foliation parallel however, some are gouge as opposed to being

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-358	RHY	Waste	64.15	64.46	0190421		61.1	310	5.07364975450062 Valid	June 6 2016	Two tests may be possible
K16-358	OA	ORE	165.8	166.4	0190427	B00292344	61.1	600	9.81996726677568 Valid	June 8 2016	
K16-358	OI	ORE	169.9	170.4	0190428	B00292349	61.1	500	8.18330605564648 Valid	June 8 2016	
K16-358	OB	ORE	217.6	218.6	0190429	B00292368	61.1	1000	16.366612111293 Valid	June 8 2016	
K16-358	OB	ORE	219.45	220.44	0190430	B00292372	61.1	990	16.2029459901802 Valid	June 8 2016	
K16-358	OB	ORE	245.46	246.46	0190431	B00292397	61.1	1000	16.366612111293 Valid	June 9 2016	
								0	#DIV/0!		
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.4}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-358	PLT-01	13.90	HW	RHYV	8.28	II	d	Valid test	61.10	61.1	61.10	82.8	7.85	3733.21	0.002102598	1.0944	2.30	
K16-358	PLT-02	26.30	HW	RHYV	5.08	II	d	Valid test	61.10	61.1	61.10	50.8	4.82	3733.21	0.00129	1.0944	1.41	
K16-358	PLT-03	26.30	HW	RHYV	14.22	L	a	Valid test	46.50	61.1	46.50	142.2	13.48	3617.46	0.003726522	1.0944	4.08	
K16-358	PLT-04	37.00	HW	RHYV	2.84	II	d	Valid test	61.10	61.1	61.10	28.4	2.69	3733.21	0.000721181	1.0944	0.79	
K16-358	PLT-05	48.00	HW	RHYV	4.82	II	d	Valid test	61.10	61.1	61.10	48.2	4.57	3733.21	0.001223976	1.0944	1.34	
K16-358	PLT-06	55.90	HW	RHYI	4.8	II	d	Valid test	61.10	61.1	61.10	48	4.55	3733.21	0.001218897	1.0944	1.33	
K16-358	PLT-07	60.10	HW	RHYI	11.9	II	d	Valid test	61.10	61.1	61.10	119	11.28	3733.21	0.00302185	1.0944	3.31	
K16-358	PLT-08	64.7	HW	RHY	8.7	II	d	Valid test	61.1	61.1	61.10	87	8.25	3733.21	0.002209252	1.0944	2.42	
K16-358	PLT-09	74.5	HW	RHYI	10.86	II	d	Valid test	61.1	61.1	61.10	108.6	10.30	3733.21	0.002757755	1.0944	3.02	
K16-358	PLT-10	74.5	HW	RHYI	31.32	L	a	invalid test jump off	60	61.1	60.00	313.2	29.69	4667.70	0.006361031	1.0944	6.96	
K16-358	PLT-11	79.1	HW	RHYV	3.62	II	d	Valid test	61.1	61.1	61.10	36.2	3.43	3733.21	0.000919252	1.0944	1.01	
K16-358	PLT-12	94.2	HW	RHYV	2.44	II	d	Valid test	61.1	61.1	61.10	24.4	2.31	3733.21	0.000619606	1.0944	0.68	
K16-358	PLT-13	94.2	HW	RHYV	12.78	L	a	Valid test	30	61.1	30.00	127.8	12.12	2333.85	0.005191186	1.0944	5.68	
K16-358	PLT-14	100.1	HW	PEL	12.6	II	d	Valid test	61.1	61.1	61.10	126	11.94	3733.21	0.003199606	1.0944	3.50	
K16-358	PLT-15	111.9	HW	RHYV	3.58	II	d	Valid test	61.1	61.1	61.10	35.8	3.39	3733.21	0.000909094	1.0944	0.99	
K16-358	PLT-16	111.9	HW	RHYV	11.14	L	a	Valid test	52	61.1	52.00	111.4	10.56	4045.34	0.002610591	1.0944	2.86	
K16-358	PLT-17	123.3	HW	RHYV	0.62	II	d	Valid test	61.1	61.1	61.10	6.2	0.59	3733.21	0.000157441	1.0944	0.17	
K16-358	PLT-18	123.3	HW	RHYV	10.42	L	a	Valid test	29	61.1	29.00	104.2	9.88	2256.05	0.004378514	1.0944	4.79	
K16-358	PLT-19	127.6	HW	RHYV	2.58	II	d	Valid test	61.1	61.1	61.10	25.8	2.45	3733.21	0.000655157	1.0944	0.72	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-359	Krakatoa	All	KRAK030	415207.0	6815283.0	1425.0	380.0	-73.0	HQ3	180.0	7-Jun-20	12-Jun-20

Drill Hole Collection Program

Discipline	Personnel	Checked by	Date
Geologist	JDP		
Geotech Log	HM/IH		
PLT	HM/IH		
UCS	IH/HM	IH	

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-359	0	12	Overburden (OVBN)
K16-359	12	21.1	Graphitic mudstone (MDU)
K16-359	21.1	22.12	Mafic tuff (MAFt)
K16-359	22.12	24.34	Graphitic mudstone (MDU)
K16-359	24.34	27.03	Mafic tuff (MAFt)
K16-359	27.03	34	Graphitic mudstone (MDU)
K16-359	34	36.23	Chert (CHT)
K16-359	36.23	41.64	Graphitic mudstone (MDU)
K16-359	41.64	42.87	Undifferentiated sedimentary rock (SED)
K16-359	42.87	43.67	Graphitic mudstone (MDU)
K16-359	43.67	48.4	Mafic tuff (MAFt)
K16-359	48.4	57.9	Volcaniclastic rhyolite (RHYv)
K16-359	57.9	78.11	Volcaniclastic rhyolite (RHYv)
K16-359	78.11	80.7	Volcaniclastic rhyolite (RHYv)
K16-359	80.7	93.07	Aphanitic rhyolite (RHYi)
K16-359	93.07	99.17	Volcaniclastic rhyolite (RHYv)
K16-359	99.17	103.28	Rhyolite (RHY)
K16-359	103.28	103.75	Mafic intrusion (MAFi)
K16-359	103.75	107.02	Volcaniclastic rhyolite (RHYv)
K16-359	107.02	108.68	Pelite (PEL)
K16-359	108.68	111.45	Volcaniclastic rhyolite (RHYv)
K16-359	111.45	113	Pelite (PEL)
K16-359	113	113.68	Volcaniclastic rhyolite (RHYv)
K16-359	113.68	118.03	Pelite (PEL)
K16-359	118.03	120.49	Pelite (PEL)
K16-359	120.49	124.85	Volcaniclastic rhyolite (RHYv)
K16-359	124.85	128.49	Volcaniclastic rhyolite (RHYv)
K16-359	128.49	134.11	Coherent rhyolite (RHYc)
K16-359	134.11	141.43	Coherent rhyolite (RHYc)
K16-359	141.43	142.98	Mafic intrusion (MAFi)
K16-359	142.98	146.9	Coherent rhyolite (RHYc)
K16-359	146.9	149.69	Coherent rhyolite (RHYc)
K16-359	149.69	153.92	Coherent rhyolite (RHYc)
K16-359	153.92	160.54	Volcaniclastic rhyolite (RHYv)
K16-359	160.54	164.24	Volcaniclastic rhyolite (RHYv)
K16-359	164.24	173.1	Volcaniclastic rhyolite (RHYv)
K16-359	173.1	174.53	Volcaniclastic rhyolite (RHYv)
K16-359	174.53	178.76	Volcaniclastic rhyolite (RHYv)
K16-359	178.76	181.15	Volcaniclastic rhyolite (RHYv)
K16-359	181.15	184.77	Volcaniclastic rhyolite (RHYv)
K16-359	184.77	185.88	Volcaniclastic rhyolite (RHYv)
K16-359	185.88	188.7	Coherent rhyolite (RHYc)
K16-359	188.7	190.1	Fault Zone (FLZ)
K16-359	190.1	191.92	Volcaniclastic rhyolite (RHYv)
K16-359	191.92	193.3	Rhyolite (RHY)
K16-359	193.3	213.75	Volcaniclastic rhyolite (RHYv)
K16-359	213.75	221.14	Volcaniclastic rhyolite (RHYv)
K16-359	221.14	227.25	Volcaniclastic rhyolite (RHYv)
K16-359	227.25	229.34	Rhyolite (RHY)
K16-359	229.34	231.83	Coherent rhyolite (RHYc)
K16-359	231.83	236.65	Volcaniclastic rhyolite (RHYv)
K16-359	236.65	239.69	Coherent rhyolite (RHYc)
K16-359	239.69	249.1	Coherent rhyolite (RHYc)
K16-359	249.1	252.75	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	252.75	255	Coherent rhyolite (RHYc)
K16-359	255	258	Rhyolite (RHY)
K16-359	258	258.5	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	258.5	260.37	Semi-massive sulphide (OI, OJ)
K16-359	260.37	261.41	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	261.41	264.25	Coherent rhyolite (RHYc)
K16-359	264.25	264.75	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	264.75	266.9	Semi-massive sulphide (OI, OJ)
K16-359	266.9	267.86	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	267.86	338.13	Mafic intrusion (MAFi)
K16-359	338.13	338.7	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	338.7	339.4	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	339.4	339.9	Massive sulphide (OA, OB, OC, OF, OK)
K16-359	339.9	352	Volcaniclastic rhyolite (RHYv)
K16-359	352	374.51	Volcaniclastic rhyolite (RHYv)
K16-359	374.51	382.38	Rhyolite (RHY)
K16-359	382.38	390	Undifferentiated sedimentary rock (SED)

Geotechnical Log

Hole ID	Zone	Lithology	Core Recovery Data								Strength Data			Discontinuity parameters for Q System												Oriented Core Log				RMR76	Fault and Broken Zones					Comment
														ALPHA=0-29				ALPHA=30-59				ALPHA=60-90														
			From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-359	HW	OVBN	12.00	15.00	3.0	0.75	25%	120	0.00	0%	W5	R1	15																					100%		Overburden - lost core
K16-359	HW	MDU	15.00	18.00	3.0	1.54	51%	37	0.32	11%	W4	R3	12									16	J	1.50	4					6			30%	20%		Mudstone unit weathered on surface of core and joints hard to determine fairly competent may have chlori
K16-359		MDU	18.00	21.10	3.1	1.31	42%	39	0.14	5%	W3/W4	R3	12									5	J	1.5	4					6	10%		40%	20%		Similar as prev run with minor gouge zone - change in lith
K16-359		MAFi	21.10	22.12	1.0	1.06	104%	9	0.78	76%	W3	R3	6									4	J	3	3					12			20%			Change in lith short competent run with fracture thru core axis at end of run
K16-359		MDU	22.12	24.34	2.2	2.07	93%	36	0.86	39%	W3	R3	6									15	J	1	4					12	15%		30%			Close spacing of discont - planar smooth joint surfaces one blow of hammer to break
K16-359		MAFi	24.34	27.03	2.7	2.26	84%	34	0.99	37%	W3	R3	6									11	J	1.5	4	72.0	20.0	JF	1.0	12			25%	10%		Change in lith
K16-359		MDU	27.03	30.00	3.0	1.47	49%	120	0.00	0%	W2	R2/R3	15																	6	10%		50%	40%		Major BZ and RZ with minor gouge within MDU unit
K16-359		MDU	30.00	33.00	3.0	1.38	46%	120	0.59	20%	W2	R2	15									no data, core already cut								6	25%		40%	10%		Similar as prev. run
K16-359		MDU	33.00	34.00	1.0	0.90	90%	120	0.25	25%	w2	R3	15																	12	0%	0%	20%			folded
K16-359		MAFi	34.00	36.23	2.2	1.17	52%	120	0.33	15%	W3	R3	3									17	J	3	4.00											cherty mafic
K16-359		MDU	36.23	39.00	2.8	2.44	88%	23	1.80	65%	W2	R4	2									15	Fol, J	2.00	4.00	65.0	350.0		2.0	12	0%	0%	0%	0%	0%	competent rock, but folded
K16-359		MDU	39.00	41.64	2.6	2.46	93%	25	1.10	42%	W2/W3	R4	3					2	J	2	4	23	Fo0il,J	2.00	4.00					12	0%	0%	10%	10%	0%	competent rock with quartz veining and altered portions
K16-359		MDU	41.64	43.67	2.0	1.95	96%	20	1.17	58%	W2/W3	R3	4									20	Fol, J	2.00	4.00					12	0%	0%	0%	10%	0%	folded,1.2m SED and 0.8m m MDU
K16-359		MAFi	43.67	47.00	3.3	2.04	61%	48	0.45	14%	W3	R2	3									23	F,j	2.00	4.00					12	0%	0%	0%	40%	0%	joints follow foliation mainly
K16-359		MAFi	47.00	48.40	1.4	1.30	93%	23	0.77	55%	W2	R3	3									8	F,J	2.00	4.00					6	0%	0%	20%	0%	0%	
K16-359		QTZ-vein	48.40	51.90	3.5	3.40	97%	51	1.64	47%	W2/W1	R3	6					2	J	3	0.75	19	j	3.00	0.75					20	0%	0%	0%	50%	0%	mostly QTZ vein
K16-359		RHYv	51.90	55.00	3.1	2.70	87%	52	0.80	26%	W3	R2	6					2	J	2	4	25	J	2.00	4.00					12	30%	0%	0%	20%	0%	0.7m Fault gouge
K16-359		RHYv	55.00	58.00	3.0	1.90	63%	120	1.30	43%	W3	R2	15																	6	90%	0%	0%	10%	80%	Fault gouge hard
K16-359		RHYv	58.00	61.0	3.0	2.2	73%	64	0.34	11%	W3	R2	3									31	,Shear	2.00	4.00					6	0%	0%	10%	5%	0%	QTZ vein crossing, 0.20 m thick
K16-359		RHYv	61.00	64.0	3.0	2.5	83%	44	0.47	16%	W2/W3	R2	3									33	J	2.00	4.00	75.0	125.0	J	2.0	12	0%	0%	70%	0%	20%	shear zone?
K16-359		RHYv	64.00	67.0	3.0	2.1	68%	120	0.14	5%	W3	R2	3									38		2.00	4.00	70.0	230.0	j	2.0	12	0%	0%	80%	0%	0%	competent rock with high joint density
K16-359		RHYv	67.00	70.0	3.0	2.5	83%	40	0.40	13%	W2	R2	4									36	Fol, J	2.00	4.00					6	0%	0%	0%	0%	5%	joints follow foliation, folded foliation
K16-359		RHYv	70.00	73.0	3.0	2.2	73%	41	0.80	27%	W2	R2	3									23	Fol, J	2.00	4.00					12	0%	0%	10%	10%	0%	evenly joint spacing approx.. 8 cm
K16-359		RHYv	73.00	76.0	3.0	2.0	67%	42	1.30	43%	W3	R2	3									35	Fol, J	2.00	4.00	85.0	95.0	J	2.0	20	0%	0%	20%	0%	10%	joints follow foliation
K16-359		RHYv	76.00	79.0	3.0	2.8	93%	24	1.50	50%	W2	R2	3									20		2.00	4.00	60.0	110.0	j	2.0	12	0%	0%	0%	0%	0%	fold kink
K16-359		RHYv	79.00	80.7	1.7	1.5	88%	24	0.40	24%	W2/W3	R2	2									22		2.00	4.00					12	0%	0%	0%	0%	5%	
K16-359		QTZ-vein	80.70	83.4	2.7	1.6	61%	6	1.50	56%	W1	R3	12					3	J	3.0	0.75	3	J	3.00	0.75					20	0%	0%	0%	5%	0%	
K16-359		RHYi	83.40	87.0	3.6	2.8	78%	47	0.97	27%	W3	R2/R3	3									38		2.00	4.00					12	0%	0%	0%	30%	5%	
K16-359		RHYi	87.00	90.2	3.2	2.8	88%	55	0.72	23%	W3	R2/R3	12					10	J	3.0	3.00	15	J	3.00	3.00					20	0%	40%	30%	20%	10%	Fault zone 1m thick
K16-359	HW	RHYi	90.17	93.1	2.9	1.8	63%	47	0.26	9%	W3	R3	12									31	J, foil	2.00	4.00					12	0%	0%	10%	40%	5%	smaller QTZ-veins crossing
K16-359		RHYv	93.07	96.0	2.9	2.5	85%	40	0.64	22%	W3	R2	6					3	J	3.0	3.00	25	J, fol	2.00	4.00					12	20%	0%	5%	5%	10%	fault stringer
K16-359		RHYv	96.00	99.2	3.2	2.8	90%	37	1.26	40%	W3	R2	6					3	J	2.0	4.00	24	J, fol	2.00	4.00					12	10%	0%	5%	20%	10%	heavily weathered at few distinct joints
K16-359		RHY	99.17	103.3	4.1	2.7	66%	58	1.24	30%	W3	R2	6					5	J	3.0	3.00	43	J, foil	2.00	4.00	80.0	110.0		2.0	12	0%	0%	5%	0%	5%	heavily weathered at few distinct joints
K16-359		RHY																								75.0	260.0		2.0							
K16-359		RHY	103.28	106.0	2.7	2.5	93%	34	1.60	59%	W2	R2/R3	6					4	J	3.0	3.00	26		2.00	4.00	85	80	Foil	2.0	12						weathered at distinct joint, 0.5m MAF
K16-359		RHY	106.00	109.0	3.0	2.6	85%	43	0.30	10%	W2	R2	3					2	J	3.0	3.00	28		2.00	4.00					12	0%	0%	0%	10%	0%	1.6m PEL
K16-359		RHYv	109.00	112.0	3.0	2.6	87%	48	1.50	50%	W3	R2	6									39		2.00	4.00					12	0%	0%	0%	0%	30%	0.6m PEL
K16-359		PEL	112.00	115.00	3.0	2.62	87%	36	2.00	67%	W3	R2	6					5	J	3	3.00	14		2.00	4.00	65.0	305.0	J	2.0	12	0%	0%	0%	0%	0%	0.68m RHYv
K16-359		PEL	115.00	118.03	3.0	2.42	80%	61	1.32	44%	W3	R2	6					3	J	3	3.00	42		2.00	4.00					12	0%	0%	0%	0%	20%	
K16-359		PEL	118.03	120.49	2.5	2.40	98%	33	1.26	51%	W3	R2	12					5	J	3	3.00	24	J. fol	2.00	4.00					12	20%	0%	0%	0%	0%	0.25 m thick gouge shear zone
K16-359		RHY	120.49	124.85	4.4	3.97	91%	120	1.24	28%	W3	R2	15					8	J	2	4.00	32		2.00	4.00					12	0%	0%	30%	10%	5%	0.4m incompetent shattered rock
K16-359		RHYv	124.85	128.49	3.6	3.10	85%	64	1.23	34%	W3	R2	3									48		2.00	4.00					12	0%	0%	0%	10%	5%	0.1m disintegrated joints with gouge
K16-359		RHYc	128.49	132.00	3.5	3.30	94%	25	2.63	75%	W3	R4	3									25		2.00	4.00					12	0%	0%	0%	0%	5%	up to 20mm thick gouge filling in some joints
K16-359		RHYc	132.00	135.00	3.0	2.70	90%	59	0.92	31%	W3	R2/R3	12									31	Foil	2.00	4.00					12	10%	0%	0%	30%	10%	
K16-359		RHYc	135.00	138.00	3.0	2.90	97%	41	1.54	51%	W3	R2/R3	12					2	Foil	1.5	8.00	28	Foil	2.00	4.00					12	0%	0%	0%	5%	5%	upper part of QTZ vein crossing, 0.20 m thick, RHYc dominantly silicified
K16-359		RHYc	138.00	141.00	3.0	2.42	81%	22	1.94	65%	W3	R4	15									12	Fol, j	2.00	4.00					25	0%	0%	0%	10%	5%	QTZ vein crossing,1.0 m thick
K16-359		RHYc	141.00	144.00	3.0	2.80	93%	26	1.89	63%	W3	R4	4					3	j	3	3.00	16		2.00	4.00					12	5%	0%	0%	5%	0%	1.5m RHYv/MAFi
K16-359		RHYc	144.00	147.00	3.0	2.62	87%	39	1.64	55%	W3	R3/R4	6									27		2.00	8.00					6	0%	0%	0%	5%	10%	some thick clay filled joints, very smooth slickenside like
K16-359		RHYc	147.00	150.00	3.0	2.78	93%	29	1.50	50%	W3/W4	R2/R3	3									21	Foil	2.00	4.00					12	0%	0%	0%	0%	10%	QTZ-vein crossing, 0.3m thick
K16-359		RHYc	150.00	153.00	3.0	2.87	96%	26	2.15	72%	W3	R3	3									23		2.00	4.00					12	0%	0%	0%	0%	0%	
K16-359		RHYv	153.00	156.00	3.0	2.88	96%	33	1.24	41%	W3	R3/R2	6					6	j	2	4.00	22		2.00	4.00					12	20%	0%	0%	0%	10%	shear folding, 0.9m RHYc at start of run
K16-359		RHYv	156.00	159.00	3.0	2.28	76%	37	0.84	28%	W3	R2	6									21		2.00	4.00	80.0	60.0	J	2.0	12	10%	0%	0%	10%	10%	shearing
K16-359		RHYv	159.00	162.00	3.0	2.68	89%	26	1.70	57%	W3/W4	R2/R3	3									26		2.00	4.00					12	5%	0%	0%	0%	30%	shear zone1m
K16-359		RHYv	162.00	165.00	3.0	2.64	88%	37	1.30	43%	W3	R2/R3	4	3	J	3.0	3.0					27	Foil	2.00	4.00					12	0%	0%	0%	0%	30%	some prominent joints filled with clay>5 mm thick
K16-359		RHYv	165.00	168.00	3.0	2.90	97%	40	1.50	50%	W3	R2	3									29		2.00	4.00	80.0	120.0	j	2.0	12	5%	0%	0%	0%	5%	4 joints with breccia fillings >10mm
K16-359		RHYv	168.00	171.00	3.0	2.55	85%	39	1.27	42%	W3	R2	3									32		2.00	4.00					12	5%	0%	0%	0%	0%	
K16-359		RHYv	171.00	174.00	3.0	2.80	93%	26	2.03	68%	W3	R2	3									24		2.00	4.00	85.0	40.0	J	2.0	12	0%	0%	0%	0%	0%	few joints with clay filling<5mm
K16-359		RHYv	174.00	177.00	3.0	2.90	97%	24	2.35	78%	W3	R2	4									21	Fol, J	2.00	4.00					12	0%	0%	0%	0%	0%	
K16-359		RHYv	177.00	180.00	3.0	2.86	95%	19	2.02	67%	W3	R2/R3	4					4	J	2	8.00	15		2.00	8.00					6	5%	0%	0%	0%	0%	few joints with clay filling<5mm
K16-359		RHYv	180.00	183.00	3.0	2.41	80%	35	1.46	49%	W3	R2	6					4	J	3	3.00	24		2.00	4.00	60.0	0.0	J	2.0	12	5%	0%	0%	0%	0%	few breccia filled joints
K16-359		RHYv	183.00	186.00	3.0	2.36	79%	31	1.32	44%	W3	R2/R3	9					4	J	2	4.00	21		2.00	8.00					6	0%	0%	0%	0%	0%	
K16-359		RHYv	186.00	188.70	2.7	2.59	96%	28	1.95	72%	W3/W4	R2/R3	12					3	J	2	8.00	18	Fol, J	2.00	8.00					6	0%	0%	0%	20%	0%	adjacent to fault zone
K16-359		Fault zone	188.70	190.10	1.4	1.33	95%	120	0.00	0%	W5	S5/S6	20																	0	40%	60%	0%	10%	0%	
K16-359		RHYv	190.10	191.92	1.8	1.55	85%	31	0.21	12%	W3/W4	R2	3									26	Fol	2.00	4.00					12	0%	0%	0%	0%	20%	strongly altered 0.3m adjacent to fault
K16-359		Fault zone	191.92	195.30	3.4	1.85	55%	120o	0.00	0%	W5	S6-S4	20																	0	100%	0%	0%	0%	0%	fault gouge of different consistence
K16-359		RHYv	195.30	198.00	2.7	2.38	88%	32	1.51	56%	W4	R2	12									21		2.00	8.00					6	5%	0%	0%	0%	10%	prominent joints filled with <5mm gouge
K16-359		RHYv	198.00	201.00	3.0	2.47	82%	49	1.04	35%	W3/W4	R2	12									34		2.00	4.00					12	0%	0%	0%	0%	20%	
K16-359		RHYv	201.00	204.00	3.0	2.50	83%	47	1.10	37%	W3	R2	6									37		2.00	8.00	65.0	110.0	j	2.0	6	0%	10%	0%	10%	10%	Fault stringer, 0.10m thick
K16-359		RHYv	204.00	207.00	3.0	2.40	80%	40	0.75	25%	W3/W4	R2	3									31	fol, J	2.00	8.00	55.00	150.0	J	2.0	6	0%	0%	0%	0%	0%	few healed joints
K16-359		RHYv	207.00	210.00	3.0	2.60	87%	27	1.90	63%	W3	R2	6									20	fol, J	3.00	4.00	55.0	220.0	J	2.0	12	0%	0%	0%	10%	0%	3 disintegrated joints, breccia
K16-359		RHYv	210.00	213.00	3.0	2.54	85%	42	1.10	37%	W3	R3	6									23		2.00	4.00	55.0	280.0	J	2.0	12	20%	0%	0%	20%	10%	
K16-359		RHYv	213.00	216.00	3.0	2.56	85%	49	1.27	42%	W3	R3	6	1	J	3.0	3.0	1	J	3	3.00	31	, shear	2.00	8.00					6-12	10%	0%	20%	10%	10%	gouge joints, shears
K16-359		RHYv	216.00	219.00	3.0	2.30	77%	36	0.94	31%	W3	R2	6									21	fol, j	2.00	8.00					6-12	0%	0%	10%	30%	10%	QTZ-vein crossing, 0.2m thick
K16-359		RHYv	219.00	222.00	3.0	2.63	88%	40	1.70	57%	W3	R2/R3	6									27	fol,j	2.00	8.00					6	0%	0%	0%	30%	5%	most joints have clay fillings<5mm thick,
K16-359		RHYv	222.00	225.00	3.0	2.32	77%	61	0.98	33%	W3	R3	6									37		2.00	8.00	80.0	40.0	J	2.0	6	0%	0%	0%	20%	0%	
K16-359		RHYv	225.00	227.55	2.6	2.08	82%	39	0.69	27%	W3	R3	3									30		2.00	8.00	60.0	338.0	Foil	2.0	6	0%	0%	0%	5%	10%	mainly even spaced jointing
K16-359		MDS	227.55	229.54	2.0	1.20	60%	16	0.48	24%	W3	R3	6									12		2.00	4.00					12	0%	0%	0%	0%	0%	
K16-359		RHYc	229.54	231.83	2.3	2.12	93%	19	1.67	73%	W3	R3	6									11		2.00	4.00					12	5%	0%	5%	5%	10%	increasing competence
K16-359		RHYv	231.83	235.00	3.2	2.58	81%	33	0.97	31%	W2/W3	R3	3									19		2.00	8.00	70.0	340.0	J	2.0	6	5%	0%	0%	0%	0%	
K16-359		RHYv	235.00	236.65	1.7	1.58	96%	10	1.24	75%	W3	R2	2									10		1.00	4.00					6	0%	0%	0%	0%	0%	QTZ-vein 0.6m thick
K16-359		RHYc	236.65	239.69	3.0	2.67	88%	36	1.17	38%	W3	R2	6									26		2.00	8.00	60.0	40.0	j	2.0	6	0%	0%	0%	0%	0%	
K16-359		RHY	239.69	243.00	3.3	2.92	88%	35	1.69	51%	W3	R2	3									28		2.00	8.00	65.0	330.0	J	2.0	6	0%	0%	0%	0%	0%	2 joints with clay fillings 10mm, shear banding, calcite fissures
K16-359		RHY	243.00	246.00	3.0	2.62	87%	53	0.72	24%	W3	R2	3									29	, shear	2.00	8.00					6	0%	0%	0%	0%	10%	folding and shearing
K16-359	HW	RHY	246.00	249.10	3.1	2.48	80%	60	0.00	0%	W4	R2	4									42	foil, shear	1.00	8.00					6	5%	0%	40%	0%	10%	shear zone
K16-359	Ore	Massive Sulphides	249.10	252.75	3.7	3.24	89%	16	2.37	65%	W1	R3/R4	6	4	J	3.0	1.0					8	J	2.00	8.00	45.0	310.0	J	2.0	20						
K16-359	ore	Massive Sulphides																								25.0	160.0	J	2.0	20						
K16-359	waste	RHY	252.75	255.00	2.3	2.07	92%	30	0.87	39%	W3	R2	3									21		2.00	8.00					6	10%	0%	0%	0%	5%	shear zone
K16-359	waste	Fault zone	255.00	258.00	3.0	1.87	62%	120	0.00	0%	W5	S6	20																	0	80%	20%	0%	0%	20%	gouge and sheared material, some rock structure preserved
K16-359	ore	Massive Sulphides	258.00	261.41	3.4	2.82	83%	38	1.15	34%	W1	R2-R3	12	4	J	3.0	1.0					26	J	2.00	8.00					6-20	5%	0%	0%	20%	10%	1.9 m RHY transgressing into massive sulphides
K16-359	waste	RHY	261.41	264.25	2.8	2.80	99%	37	1.50	53%	W3	R3	3	3								30		2.00	8.00					6	0%	0%	0%	0%	20%	shear
K16-359	ore	Massive Sulphides	264.25	267.86	3.6	3.41	94%	19	2.29	63%	W1-W3	R2-R3	12									11	J,	1.00	4.00	75.0	30.0	Fol	3.0	6-20	0%	0%	0%	0%	0%	two folded MAFi cut in, both 1.0m thick, oriented probe measurement
K16-359	ore	Massive Sulphides																								65.0	320.0	J	3.0							oriented probe in Massive sulphides
K16-359	waste	MAFi	267.86	271.00	3.1	3.01	96%	16	2.44	78%	W3	R2	4									15		1.50	4.00	80.00	310.00	J	3.00	6-12	0%	0%	0%	0%	0%	large fracture spacing
K16-359	waste	MAFi	271.00	274.00	3.0	2.90	97%	10	2.55	85%	W2	R3	4					1	J	2	8.00	6	J, fol	2.00	8.00	40.0	280.0	J	3.0	12	0%	0%	0%	0%	0%	probe measurement at contact QTZ/MAFi, QTZ-vein 0.2m
K16-359	waste	MAFi																								85.0	110.0	J	3.0							Probe measurement MAFi
K16-359	waste	MAFi	274.00	277.00	3.0	2.87	96%	8	2.61	87%	W2	R2/R3	3									7		3.00	2.00	75.0	35.0	J	3.0	20	0%	0%	0%	0%	0%	up to 1m joint spacing
K16-359	waste	MAFi	277.00	280.00	3.0	2.90	97%	13	2.56	85%	W2	R2	6					1	J	3	3.00	5		3.00	3.00	50.0	130.0	J	3.0	12	0%	0%	0%	0%	0%	few fresh fractures, not counted due to handling induced,qtz-vein0.1m
K16-359	waste	MAFi	280.00	283.00	3.0	2.93	98%	7	2.80	93%	W2	R2	3									6	J	2.00	4.00	70.0	140.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359	waste	MAFi	283.00	286.00	3.0	2.91	97%	16	2.60	87%	W2	R2	3									16	J	2.00	4.00	75.0	90.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359		MAFi																								75.0	75.0									
K16-359	waste	MAFi	286.00	289.00	3.0	2.81	94%	12	2.37	79%	w2	R2	4					2	j	2	3.00	10	J	2.00	3.00	45.0	280.0	j	3.0	12	0%	0%	0%	0%	0%	evenly joint spacing
K16-359																										75.0	230.0	j	3.0							
K16-359	waste	MAFi	289.00	292.00	3.0	2.91	97%	11	2.46	82%	W2	R2	6					3	j	3	4.00	8	j	2.00	3.00	40.0	270.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359																										75.0	220.0	j	3.0							
K16-359	waste	MAFi	292.00	295.00	3.0	2.88	96%	19	1.94	65%	w2	R2	3					1	J	3	3.00	18		3.00	4.00	80.0	30.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359	waste	MAFi	295.00	298.00	3.0	2.91	97%	6	2.87	96%	W2	R2	4					2	j	3	3.00	6		3.00	3.00	50.0	90.0	j	3.0	20	0%	0%	0%	0%	0%	vast joint spacing
K16-359	waste	MAFi	298.00	301.00	3.0	2.94	98%	12	2.57		W2	R2	6									12	J, Fol	3.00	2.00	75.0	20.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359	waste	MAFi	301.00	304.00	3.0	2.85	95%	7	2.74	91%	W2	R2	3									7	J, Fol	3.00	3.00	75.0	30.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359																										70.0	0.0	Fol	3.0							
K16-359	waste	MAFi	304.00	307.00	3.0	2.76	92%	15	2.78	93%	W2	R2/R3	4									15	J, Fol	3.00	3.00	80.0	30.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359	waste	MAFi	307.00	310.00	3.0	2.90	97%	15	2.41	80%	W2	R2/R3	6									12	Joel	3.00	2.00	60.0	85.0	J	3.0	20	0%	0%	0%	0%	0%	large fracture spacing
K16-359	waste	MAFi	310.00	313.00	3.0	2.88	96%	9	2.75	92%	W2	R2/R3	4					1	j	3	3.00	8	J	3.00	2.00	30.0	30.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359																										70.0	30.0	J	3.0							
K16-359	waste	MAFi	313.00	316.00	3.0	3.00	100%	9	2.56	85%	W2	R2	4									9	Joel	3.00	2.00	80.0	60.0	J	3.0	20	0%	0%	0%	0%	0%	
K16-359	waste	MAFi	316.00	319.00	3.0	2.90	97%	6	2.81	94%	W2	R2/R3	2									6	J,fol	3.00	3.00	70.0	55.0	Fol	3.0	20	0%	0%	0%	0%	0%	
K16-359																										80.0	45.0	J	3.0							
K16-359	waste	MAFt	319.00	322.00	3.0	2.96	99%	8	2.69	90%	W2	R2	4					1	J	3.0	3	7	J,fol	3.00	4.00	60.0	270.0	j	3.0	12	0%	0%	0%	0%	0%	
K16-359	waste	MAFt	322.00	325.00	3.0	2.95	98%	8	2.70	90%	W2	R2	3									8	J,fol	3.00	4.00	60.0	350.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359	waste	MAFt	325.00	328.00	3.0	2.93	98%	6	2.81	94%	W2	R2	2									6	J	3.00	4.00	70.0	280.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359	waste	MAFt	328.00	331.00	3.0	2.90	97%	6	2.81	94%	W2	R3/R2	4									6	J	3.00	3.00	50.0	130.0	J	3.0	20	0%	0%	0%	0%	0%	large fracture spacing
K16-359																										50.0	310.0	J	3.0							
K16-359	waste	MAFt	331.00	334.00	3.0	2.96	99%	6	2.90	97%	W2	R2	4									6	J	2.00	4.00	50.0	290.0	J	3.0	12	0%	0%	0%	0%	0%	
K16-359																										70.0	10.0	J	3.0							
K16-359	waste	MAFt	334.00	337.00	3.0	2.85	95%	14	2.54	85%	W2	R3/R2	4									14	j	2.00	4.00	80.0	70.0	j	2.0	12	0%	0%	0%	0%	0%	
K16-359																										55.0	295.0	J	3.0							
K16-359	waste	MAFi	337.00	338.13	1.1	1.10	97%	9	0.95	84%	W2	R2	2									9	J, Shear, fo	3.00	3.00	80.0	70.0	J	2.0	20	0%	0%	0%	0%	0%	
K16-359		Mass. Sulphides	338.13	339.90	1.8	1.70	96%	12	1.13	64%	W2	R4	4					2	J	3.0	1.0	10	J	3.00	1.00	30.0	290.0	j	3.0	20	0%	0%	0%	0%	0%	
K16-359																										80.0	260.0	J	3.0							
K16-359	FW	RHYv	339.90	343.00	3.1	2.46	79%	34	1.04	34%	W3	R2	3									26	J, Fol	2.00	4.00					6	20%	20%	0%	20%	40%	
K16-359	FW	RHYv	343.00	346.00	3.0	2.31	77%	56	0.55	18%	W3/W4	R2	3									41	J, Fol	2.00	4.00					6	30%	0%	0%	0%	10%	0.6m fault, RHYv strongly foliated
K16-359	FW	RHYv	346.00	349.00	3.0	2.63	88%	54	0.66	22%	W3/W4	R2	3									47	J, Fol	2.00	4.00	70.0	120.0	J	2.0	6	0%	0%	0%	0%	30%	joints follow foliation, shear discs, microdefects along foliation
K16-359	FW	RHYv	349.00	352.00	3.0	2.55	85%	77	0.61	20%	W4	R2	12					2	J, Fo	2	8.00	53	J, Fol	2.00	8.00	65.0	40.0	Fol	2.0	6	0%	0%	20%	20%	10%	folded shear zone
K16-359	FW	RHYv	352.00	355.00	3.0	2.27	76%	73	0.23	8%	W3	R2	6									51	J, Fol	2.00	8.00	72.0	42.0	Fol	3.0	6	0%	0%	0%	10%	0%	
K16-359	FW	RHYv	355.00	358.00	3.0	2.42	81%	57	0.29	10%	W3/W4	R2	6									43	J, Fol	2.00	8.00	75.0	60.0	J	2.0	6	20%	0%	20%	20%	20%	shear and fault
K16-359																										72.0	42.0	Fol	2.0							
K16-359	FW	RHYv	358.00	361.00	3.0	1.97	66%	47	0.22	7%	W3/.W4	R2	3									42	J, Fol	2.00	8.00					6	0%	0%	40%	10%	20%	shear discs30% of run
K16-359	FW	RHYv	361.00	364.00	3.0	2.72	91%	69	0.48	16%	W3	R2/R1	6					2	J	2	8.00	60	J, Fol	2.00	8.00	85.0	300.0	j	2.0	6	0%	0%	20%	10%	30%	few joints with clay filling>5mm
K16-359	FW	RHYv	364.00	367.00	3.0	2.34	78%	65	0.73	24%	W2/W3	R2	12									41	J, Fol	2.00	8.00	77.0	21.0	Fol	2.0	6	0%	0%	0%	20%	10%	QTZ vein0.10m, few micro shears
K16-359																										80.0	25.0	J	2.0							
K16-359	FW	RHYv	367.00	370.00	3.0	2.39	80%	67	0.40	13%	W3	R2	6									45	J, Fol	2.00	4.00					6	0%	0%	0%	20%	10%	shear discs, QTZ vein 0.1m
K16-359	FW	RHYv	370.00	373.00	3.0	2.70	90%	62	0.34	11%	W2/W3	R2	3									58	J, Fol	2.00	4.00	80.0	30.0	J	2.0	6	0%	0%	10%	0%	10%	common joint spacing 8 cm
K16-359	FW	RHYv	373.00	376.00	3.0	2.66	89%	48	0.34	11%	W2/W3	R2	3									42	J, Fol	2.00	4.00	61.0	20.0	Fol	2.0	6	0%	0%	0%	0%	0%	
K16-359																										80.0	35.0	J	2.0							
K16-359	FW	RHYv	376.00	379.00	3.0	2.63	88%	43	0.65	22%	W3	R2	3	1	J	2.0	8.0	2	J	2	8.00	40	J, Fol	2.00	8.00					6	0%	0%	0%	0%	10%	shear marks
K16-359	FW	RHYv	379.00	382.38	3.4	2.68	79%	51	0.56	17%	W3	R3/R2	9					3	j	2.0	8.0	35	J, Fol	2.00	8.00					6	0%	0%	10%	10%	30%	shear rubble 0.15m
K16-359	FW	SED	382.38	385.00	2.6	2.59	99%	56	0.48	18%	W3	R2	6					4	J	2	4.00	40	J, Fol	2.00	4.00					6	0%	0%	0%	10%	10%	
K16-359	FW	SED	385.00	388.00	3.0	2.49	83%	48	1.00	33%	W3	R2	12									39	J, Fol	2.00	8.00					6	0%	20%	0%	0%	10%	sheared QTZ 0.2m
K16-359	FW	SED	388.00	390.00	2.0	1.69	85%	43	0.28	14%	W3	R2/R3	3									40	J, Fol	2.00	8.00	85.0	21.0	Fol	2.0							
			390.00		-390.0		0%			0%																80.0	25.0	J								End of hole

UCS Sample Summary

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
K16-359	MDS	Waste	23.4	23.58	01904026		61.1	180	2.94599018003273 Valid	07-Jun-16	
								0	#DIV/0!		

POINT LOAD TEST

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.45}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-359	PLT-01	22.39	HW	MDS	5.40	II	d	valid	61.10	61.10	61.10	54	5.12	3733.21	0.00137126	1.0944	1.50	
K16-359	PLT-02	22.39	HW	MDS	2.84	II	d	valid	61.10	61.10	61.10	28.4	2.69	3733.21	0.000721181	1.0944	0.79	
K16-359	PLT-03	22.39	HW	MDS	1.06	L	a	valid	26.00	61.10	26.00	10.6	1.00	2022.67	0.000496809	1.0944	0.54	
K16-359	PLT-04	22.39	HW	MDS	0.64	L	a	valid	29.00	61.10	29.00	6.4	0.61	2256.05	0.00026893	1.0944	0.29	
K16-359	PLT-05	28.26	HW	MDS	1.40	L	a	valid	39.00	61.10	39.00	14	1.33	3034.00	0.000437442	1.0944	0.48	
K16-359	PLT-06	31.61	HW	Mafi	9.86	II	d	valid	61.10	61.10	61.10	98.6	9.35	3733.21	0.002503818	1.0944	2.74	
K16-359	PLT-07	32.61	HW	Mafi	8.08	L	a	valid	37.50	61.10	37.50	80.8	7.66	2917.31	0.002625652	1.0944	2.87	
K16-359	PLT-08	44.29	HW	MDU	1.38	ii	d	valid	61.10	61.10	61.10	13.8	1.31	3733.21	0.000350433	1.0944	0.38	
K16-359	PLT-09	44.29	HW	MDU	2.22	L	a	valid	26.50	61.10	26.50	22.2	2.10	2061.57	0.001020855	1.0944	1.12	
K16-359	PLT-10	52.97	HW	RHYv	3.98	ii	d	valid	61.10	61.10	61.10	39.8	3.77	3733.21	0.001010669	1.0944	1.11	
K16-359	PLT-11	52.97	HW	RHYv	15.16	L	a	invalid	40.00	61.10	40.00	151.6	14.37	3111.80	0.00461845	1.0944	5.05	
K16-359	PLT-12	74.91	HW	RHYv	8.78	ii	d	valid	61.10	61.10	61.10	87.8	8.32	3733.21	0.002229567	1.0944	2.44	
K16-359	PLT-13	75.91	HW	RHYv	18.58	L	a	valid	31.60	61.10	31.60	185.8	17.61	2458.32	0.007164991	1.0944	7.84	
K16-359	PLT-14	87.32	HW	RHYi	7.08	ii	d	valid	61.10	61.10	61.10	70.8	6.71	3733.21	0.001797874	1.0944	1.97	
K16-359	PLT-15	88.32	HW	RHYi	13.80	L	a	valid	45.50	61.10	45.50	138	13.08	3539.67	0.003695938	1.0944	4.04	
K16-359	PLT-16	94.07	HW	RHYv	5.38	ii	d	valid	61.10	61.10	61.10	53.8	5.10	3733.21	0.001366181	1.0944	1.50	
K16-359	PLT-17	95.07	HW	RHYv	8.10	L	a	valid	47.50	61.10	47.50	81	7.68	3695.26	0.002078014	1.0944	2.27	
K16-359	PLT-18	103.92	HW	RHY	8.96	ii	d	valid	61.10	61.10	61.10	89.6	8.49	3733.21	0.002275275	1.0944	2.49	
K16-359	PLT-19	104.92	HW	RHY	19.40	L	a	valid	40.00	61.10	40.00	194	18.39	3111.80	0.005910153	1.0944	6.47	
K16-359	PLT-20	107.23	HW	PEL	2.02	ii	d	valid	61.10	61.10	61.10	20.2	1.91	3733.21	0.000512953	1.0944	0.56	
K16-359	PLT-21	108.23	HW	PEL	14.00	L	a	invalid	40.00	61.10	40.00	140	13.27	3111.80	0.004265059	1.0944	4.67	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-360	Krakatoa		KRAK013	415101.0	6815171.0	1396.0	325.0	-77	HQ3	20	6-Jun-16	9-Jun-16

Drill Hole Collection Program

Discipline	Personnel	Checked by	Date
Geologist	RH		
Geotech Log	IH/ON	IH	19/Jul/16
PLT	IH/ON	IH	19/Jul/16

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-360	0	7.5	Overburden (OVBN)
K16-360	7.5	10.4	Volcaniclastic rhyolite (RHYv)
K16-360	10.4	14.65	Mafic tuff (MAFt)
K16-360	14.65	22.36	Volcaniclastic rhyolite (RHYv)
K16-360	22.36	23.02	Coherent rhyolite (RHYc)
K16-360	23.02	28.38	Volcaniclastic rhyolite (RHYv)
K16-360	28.38	29.5	Rhyolite (RHY)
K16-360	29.5	30.55	Volcaniclastic rhyolite (RHYv)
K16-360	30.55	31.38	Coherent rhyolite (RHYc)
K16-360	31.38	35	Volcaniclastic rhyolite (RHYv)
K16-360	35	37.87	Volcaniclastic rhyolite (RHYv)
K16-360	37.87	43.68	Volcaniclastic rhyolite (RHYv)
K16-360	43.68	44.67	Coherent rhyolite (RHYc)
K16-360	44.67	47.06	Volcaniclastic rhyolite (RHYv)
K16-360	47.06	48.09	Volcaniclastic rhyolite (RHYv)
K16-360	48.09	49.8	Volcaniclastic rhyolite (RHYv)
K16-360	49.8	62	Coherent rhyolite (RHYc)
K16-360	62	64.65	Aphanitic rhyolite (RHYi)
K16-360	64.65	82.6	Coherent rhyolite (RHYc)
K16-360	82.6	83.33	Mafic intrusion (MAFi)
K16-360	83.33	89.12	Coherent rhyolite (RHYc)
K16-360	89.12	89.97	Mafic intrusion (MAFi)
K16-360	89.97	93.55	Volcaniclastic rhyolite (RHYv)
K16-360	93.55	96	Aphanitic rhyolite (RHYi)
K16-360	96	110.16	Volcaniclastic rhyolite (RHYv)
K16-360	110.16	114.34	Volcaniclastic rhyolite (RHYv)
K16-360	114.34	118.16	Coherent rhyolite (RHYc)
K16-360	118.16	123.95	Volcaniclastic rhyolite (RHYv)
K16-360	123.95	129.2	Volcaniclastic rhyolite (RHYv)
K16-360	129.2	130.7	Volcaniclastic rhyolite (RHYv)
K16-360	130.7	132.2	Volcaniclastic rhyolite (RHYv)
K16-360	132.2	133.47	Volcaniclastic rhyolite (RHYv)
K16-360	133.47	139.69	Volcaniclastic rhyolite (RHYv)
K16-360	139.69	150.2	Volcaniclastic rhyolite (RHYv)
K16-360	150.2	151.65	Rhyolite (RHY)
K16-360	151.65	163	Volcaniclastic rhyolite (RHYv)
K16-360	163	169.07	Volcaniclastic rhyolite (RHYv)
K16-360	169.07	176.64	Coherent rhyolite (RHYc)
K16-360	176.64	177.15	Massive sulphide (OA, OB, OC, OF, OK)
K16-360	177.15	178.26	Rhyolite (RHY)
K16-360	178.26	179.51	Massive sulphide (OA, OB, OC, OF, OK)
K16-360	179.51	180.03	Semi-massive sulphide (OI, OJ)
K16-360	180.03	181.04	Massive sulphide (OA, OB, OC, OF, OK)
K16-360	181.04	182.66	Semi-massive sulphide (OI, OJ)
K16-360	182.66	273.12	Mafic intrusion (MAFi)
K16-360	273.12	274.4	Massive sulphide (OA, OB, OC, OF, OK)
K16-360	274.4	275.6	Rhyolite (RHY)
K16-360	275.6	276.59	Rhyolite (RHY)
K16-360	276.59	330	Volcaniclastic rhyolite (RHYv)

Geotechnical Log

			Core Recovery Data								Strength Data			Discontinuity parameters for Q System												Oriented Core Log				RMR76	Fault and Broken Zones					Comment
														ALPHA=0-29				ALPHA=30-59				ALPHA=60-90														
Hole ID	Zone	Lithology	From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-360	OVBN	OVBN	6.00	9.00	3.00	1.83	61%	120	0.00	0%	W5	R1	20																	0				100%		OVBN
K16-360	HW	RHYv	9.00	10.40	1.40	1.39	99%	4	1.37	98%	W4	R3/R4	3									4	J	1.5	4					12						Highly silicified fairly competent but highly weathered to shallower depth
K16-360	HW	MAFi	10.40	12.00	1.60	1.76	110%	5	1.59	99%	W4	R4	6					2	J	3	3	4	J	3	3					12						Change in lith joint surfaces weathered with slight coating but rough
K16-360	HW	MAFi	12.00	14.65	2.65	2.56	97%	15	1.58	60%	W3/W4	R4	12	2	J	3	3	2	J	3	3	6	J	3	4	70.0	140.0	J	3.0	12	5%			5%		Change in lith.
K16-360	HW	RHYv	14.65	18.00	3.35	3.13	93%	13	2.09	62%	W3	R3	6					2	J	2	3	11	J	1	4					12						Most joint surfaces planar with slight coating
K16-360	HW	RHYv	18.00	21.00	3.00	2.94	98%	12	2.51	84%	W3	R3	6	1	V	1.5	2	3	J	2	3	8	J	2	3					12						No orient line QTZ vein at shallow dip
K16-360	HW	RHYv	21.00	22.36	1.36	1.34	99%	3	0.99	73%	W3	R3	6					1	J	2	3	2	J	2	3					12						Change in lith
K16-360	HW	RHYc	22.36	23.02	0.66	0.65	98%	13	0.25	38%	W4	R2	6									5	J	2	4					12	20%					Change in lith. Minor gouged zones
K16-360	HW	RHYv	23.02	27.00	3.98	3.71	93%	50	1.31	33%	W4	R2	12					5	J	2	3	7	J	2	3	50.0	180.0	JF	3.0	6	20%		20%			Faulted gouge at end of run unable to measure due to no orient line but alpha similar to JF
K16-360	HW	RHYv	27.00	28.38	1.38	1.37	99%	3	1.29	93%	W3	R3/R4	3									3	J	3	3					12						Change in lith encountering a fault still RHYv
K16-360	HW	FLT	28.38	29.50	1.12	0.94	84%	120	0.00	0%	W4	R0/R1	20																	0		75%		25%		Fault breccia sharp contact from competent RHYv end of run RZ
K16-360	HW	RHYv	29.50	33.00	3.50	3.18	91%	59	0.92	26%	W4	R2	12					4	J	1.5	4	12	J	2	4					6			5%	15%	50%	High intensity of microdefects at end of run rich in muscovite and sericite in most open joints
K16-360	HW	RHYv	33.00	36.00	3.00	2.62	87%	120	0.00	0%	W4	R1	15-20																	0				60%	70%	Highly microdefects with crushed up soil like material within majority of run FF 120
K16-360	HW	RHYv	36.00	39.00	3.00	2.91	97%	57	0.74	25%	W4	R2/R3	12					2	J	2	4	12	J	2	4					6				50%	40%	Half of run in continuation with prev run with crushed rock then competent RHYv
K16-360	HW	RHYv	39.00	42.00	3.00	2.99	100%	36	1.34	45%	W3	R3	12	1	J	3.0	3	1	J	2	4	11	J	1	4	50.0	180.0	J	3.0	12			20%		25%	bit of run in microdefects but dom fol visible
K16-360	HW	RHYv	42.00	45.00	3.00	2.22	74%	120	0.00	0%	W4	R2/R3	15-20													65.0	175.0	J	3.0	0-6				75%	40%	Large RZ zone within run but last quarter of run competent. Small portion of run in RHYc but lump into RHYv run as <.5m
K16-360	HW	RHYv	45.00	49.80	4.80	4.71	98%	12	3.60	75%	W2	R3/R4	3					2	J	3	3	9	J	2	3	32.0	10.0	J	3.0	12						Due to lith change and getting to driller's lock long run
K16-360	HW	RHYc	49.80	51.00	1.20	1.20	100%	3	1.09	91%	W2	R3/R4	3									3	J	1.5	3					20						Change in lith due to run length very competent run high strength but joint surfaces smooth with minor coating
K16-360	HW	RHYc	51.00	54.0	3.00	3.0	100%	6	3	98%	W2	R3/R4	3									6	J	3.0	3.0	72.0	18.0	J	3.0	20						Similar as prev run
K16-360	HW	RHYc	54.00	57.0	3.00	3.0	101%	9	3	97%	W2	R3/R4	3					9	J	3.0	3.0					50.0	290.0	J	2.0	20						Similar as prev run difficult to determine fol within run but joints prominent
K16-360	HW	RHYc	57.00	60.0	3.00	2.7	90%	6	2	75%	W2	R4	3									6	J	3.0	3.0	60.0	280.0	V	3.0	20						Similar as prev run very silicified
K16-360	HW	RHYc	60.00	62.0	2.00	2.0	100%	17	1	74%	W2	R4	3									7	J	3.0	3.0	55.0	0.0	SHR	3.0	12	5%					Shear contact measured between two lith contacts
K16-360	HW	RHYi	62.00	64.7	2.65	2.7	103%	1	3	100%	W2	R4	2																	20						Highly silicified run major block veining
K16-360	HW	RHYc	64.65	69.0	4.35	4.1	95%	37	2	52%	W2	R3	12	2	J	3.0	3	4	J	3.0	3.0	10	J	3.0	3.0	70.0	175.0	J	3.0	12			30%			Random jointing with RZ very silicified rough to smooth joint surfaces
K16-360	HW	RHYc	69.00	72.0	3.00	2.9	97%	7	3	85%	W2	R3/R4	3									5	J	3.0	3.0	62.0	150.0	J	3.0	12			5%			Minor BZ
K16-360	HW	RHYc	72.00	75.0	3.00	3.0	99%	9	2	75%	W2	R4	6					3	J	3.0	3.0	6	J	3.0	3.0	74.0	180.0	J	3.0	12						Similar as prev run
K16-360	HW	RHYc	75.00	78.0	3.00	2.6	88%	28	1	48%	W2	R4	6					4	J	3.0	3.0	14	J	3.0	3.0					12			20%			Minor BZ
K16-360	HW	RHYc	78.00	81.0	3.00	3.0	100%	39	2	55%	W2	R3/R4	6					2	J	3.0	3.0	7	J	3.0	3.0					12			40%			Most of run in BZ
K16-360	HW	RHYc	81.00	82.6	1.60	1.6	98%	14	1	59%	W2	R4	3									8	J	3.0	3.0					12			20%			Change in lith.
K16-360	HW	MAFi	82.60	83.4	0.75	0.7	93%	6	0	57%	W3	R4	6					1	J	3.0	3.0	3	J	3.0	3.0					12			5%			Shark contact
K16-360	HW	RHYc	83.35	85.4	2.00	2.3	114%	18	2	90%	W3/W4	R3	6									4	J	2.0	3.0	67.0	180.0	J	3.0	12		30%			10%	Fault breccia contact with clasts of RHYc with sericitic no orient line at fault contact
K16-360	HW	RHYi	85.35	87.0	1.65	1.5	92%	36	1	33%	W3/W4	R3	6									9	J	3.0	3.0					12		40%			30%	Highly silicified with BZ breaks mostly parallel to core axis change in lith.
K16-360	HW	RHYi	87.00	89.1	2.12	2.1	97%	24	1	43%	W3/W4	R3	6					3	J	3.0	3.0	4	J	3.0	3.0					12		20%			30%	
K16-360	HW	MAFi	89.12	90.0	0.85	0.8	99%	4	0	56%	W4	R3	6					2	J	3.0	4.0	2	J	3.0	4.0	46.0	290.0	SHR	3.0	12						Change in lith Mafic dyke
K16-360	HW	RHYv	89.97	93.0	3.03	2.8	94%	16	2	55%	W4	R3	6					2	J	3.0	4.0	10	J	3.0	4.0					12	5%					Minor gouge no orient line
K16-360	HW	RHYv	93.00	96.0	3.00	3.2	105%	16	3	86%	W2	R4	6					3	J	3.0	3.0	7	J	3.0	3.0	68.0	140.0	J	3.0	12			10%			Minor BZ
K16-360	HW	RHYv	96.00	99.00	3.00	2.84	95%	9	2.62	87%	W2	R4	6					2	J	3	3	3	J	3	3					12			5%			Minor BZ
K16-360	HW	RHYv	99.00	102.00	3.00	2.68	89%	68	0.85	28%	W4	R2	15-20																	6		25%		30%	40%	Brecciated broken up rock at 100m mark microdefected then RZ at 1.1.3 till end of run
K16-360	HW	RHYv	102.00	105.00	3.00	2.79	93%	25	1.49	50%	W3/W4	R4	6					5	J	3	4	9	J	3	4	46.0	330.0	J	3.0	12	5%		20%		10%	Minor gouge and BZ areas
K16-360	HW	RHYv	105.00	108.00	3.00	2.79	93%	10	2.01	67%	W2	R4	6					8	J	3	4	2	J	3	4	49.0	230.0	JF	3.0	12						Competent run
K16-360	HW	RHYv	108.00	111.00	3.00	2.86	95%	22	1.94	65%	W2	R4	6					3	J	3	4	9	J	3	4					12			10%			Similar as last run
K16-360	HW	RHYv	111.00	114.34	3.34	2.71	81%	41	1.14	34%	W3	R3	6					5	J	3	4	8	J	3	4					6-12				30%	40%	High intensity of microdefects for part of run with areas that seem to be brecciated close spacing of discont.
K16-360	HW	RHYc	114.34	118.10	3.76	3.55	94%	13	3.40	90%	W2	R4	6	1	J	2.0	2	8	J	3	4-8	3	J	1-3	2-8					0-6	6%		2%			One thick, gouge fault zone . Foliation in this rock is weakly devolved and only about half of the medium alpha angle joints follow it.
K16-360	HW	RHYv	118.10	120.00	1.90	1.67	88%	13	1.30	68%	W2	R3	3	1	J	1.5	1	7	JF	1-1.5	4-8									6	1%		5%			Some foliation parallel joints have developed gouge up to 1cm thick
K16-360	HW	RHYv	120.00	123.00	3.00	2.80	93%	14	2.58	86%	W2	R4	3					9	JF	1-2	4-12					45.0	260.0	SHR	3.0	0-6		4%	3%			The majority of joints are foliation parallel and thin with low friction mineral surfaces however; non-foliation parallel joints have developed 0.5-10 cm thick breccia/gouge fillings.
K16-360	HW	RHYv	123.00	126.00	3.00	2.86	95%	13	2.48	83%	W3	R3	4					3	JF	1	2-4	4	JF	1-2	2-8	45.0	153.0	JF	3.0	6-12			7%			The majority of joints are foliation parallel and thin with low friction mineral surfaces however; non-foliation parallel joints have developed 0.5-10 cm thick breccia/broken zone areas
K16-360	HW	RHYv	126.00	129.00	3.00	2.79	93%	19	2.21	74%	W3	R3-4	3					13	JF	1-2	2-12	6	J	1-2	4	55.0	165.0	JF	3.0	6-12		5%				The majority of joints are foliation parallel and thin with low friction mineral surfaces. Two small foliation parallel gouge zones have formed
K16-360	HW	RHYv	129.00	132.00	3.00	2.77	92%	16	2.33	78%	W3	R3	3					8	JF	1-2	4	1	JF	1	4					12	9%					The majority of joints are foliation parallel and thin with low friction mineral surfaces. Two small foliation parallel gouge zones have formed
K16-360	HW	RHYv	132.00	135.00	3.00	2.93	98%	12	2.64	88%	W2	R4	3					10	JF	1	4-6	2	J	1.5	2					12						The majority of joints are foliation parallel and thin with low friction mineral surfaces.
K16-360	HW	RHYv	135.00	138.00	3.00	2.99	100%	13	2.91	97%	W2	R3	3					12	JF	1-3	1-4	1	J	2	2	55.0	160.0	JF	3.0	12						The majority of joints are foliation parallel and thin with low friction mineral surfaces. Rare healed joints cut foliation
K16-360	HW	RHYv	138.00	141.00	3.00	2.91	97%	8	2.91	97%	W2	R4	3					7	JF	1-2	2	1	JF	2	2	50.0	165.0	JF	3.0	12	1%					The majority of joints are foliation parallel and thin with low friction mineral surfaces. One gouge filled foliation parallel joint
K16-360	HW	RHYv	141.00	144.00	3.00	2.96	99%	9	2.92	97%	W2	R3	2					9	JF	1-2	2					60.0	148.0	JF	3.0	12						all joints are foliation parallel and thin with low friction mineral surfaces.
K16-360	HW	RHYv	144.00	147.00	3.00	2.90	97%	13	2.57	86%	W2	R3	3	1	J	1.5	1	7	JF	1-2	2-4	1	J	3	2					6-12					3%	The prominent joint set is foliation parallel, with rare joints cutting across foliation. perpendicular to core axis, the joint is beginning to develop gouge. More parallel to core axis, the joint is a fractured vein/healed joint
K16-360	HW	RHYv	147.00	150.00	3.00	3.05	102%	15	2.90	97%	W2	R3	3					15	JF	1-2	2-4	1	J	1	8	70.0	186.0	J	3.0	6-12	1%					The prominent joint set is foliation parallel, with rare joints cutting across foliation. Perpendicular to core axis, the joint is gouge.
K16-360	HW	RHYv	150.00	153.00	3.00	2.95	98%	120	0.00	0%	W4	R0-2	12													42.0	300.0	FAU	3.0	0		47%			53%	One thick fault zone and one thin fault zone separated by a zone of weak rock caused by foliation parallel microdefects
K16-360	HW	RHYv	153.00	156.00	3.00	2.98	99%	120	0.00	0%	W4	R0-3	12																	0		25%			75%	One fault zone surrounded by zones of weak rock caused by foliation parallel microdefects
K16-360	HW	RHYv	156.00	159.00	3.00	2.54	85%	120	0.00	0%	W4	R0/2	12																	0		8%			92%	One fault zone surrounded by zones of weak rock caused by foliation parallel microdefects
K16-360	HW	RHYv	159.00	162.00	3.00	2.94	98%	35	2.24	75%	W3	R0/3	3					19	JF	1-2	2					45.0	210.0	J	3.0	6-12						One fault zone surrounded by zones of weak rock caused by foliation parallel microdefects. Foliation parallel jointing continues away from the fault. Non-foliation parallel joints have weakly developed breccia/gouge fill
K16-360	HW	RHYv	162.00	165.00	3.00	2.93	98%	11	2.73	91%	W2	R3	3					9	JF	2-3	1-2	2	J	2	2	50.0	150.0	JF	3.0	12						The majority of joints are foliation parallel and thin with low friction mineral surfaces.
K16-360	HW	RHYv	165.00	168.00	3.00	2.84	95%	51	1.34	45%	W3	R0/3	3					5	JF	1-2	2-12									0-6		5%			33%	The majority of joints are foliation parallel and thin with low friction mineral surfaces. One fault cuts through parallel to foliation, with an extensive damage zone of microdefected roc surrounding it.
K16-360	HW	RHYv	168.00	169.07	1.07	1.05	98%	1	1.05	98%	W2	R3	2					1	JF	2	2									12						The joint is foliation parallel and thin with a low friction mineral surfaces.
K16-360	HW	RHYc	169.07	174.00	4.93	4.93	100%	13	4.73	96%	W2	R3	2					5	JF	1-2	2-4									12			10%			The joint is foliation parallel and thin with a low friction mineral surfaces.
K16-360	HW	RHYc	174.00	176.64	2.64	1.93	73%	61	1.25	47%	W3	R0/3	15					1	JF	1	4									0		67%	10%			This interval is dominated by a fault/fracture zone cutting a moderately to strongly altered (micaceous) Rhyolitic rock. Joint surfaces parallel to the foliation are extremely low friction.
K16-360	ORE	MXSX	176.64	177.15	0.51	0.52	102%	2	0.48	94%	W1	R5	2					2	J	3	1					50.0	65.0	J	3.0	20						Massive sulphide with rough, but consistent orientation fractures.
K16-360	WASTE	RHY	177.15	178.26	1.11	1.05	95%	4	1.05	95%	W4	R3	2					4	JF	1	4					52.0	170.0	JF	3.0	6						Joints are foliation parallel and thin with very low friction mineral surfaces.
K16-360	ORE	MXSX	178.26	179.51	1.25	1.18	94%	2	1.18	94%	W1	R4	1	1	J	3.0	1	1	JF	3	1									20						Massive sulphide is weakly foliated.
K16-360	ORE	Vein and Dissemina	179.51	180.03	0.52	0.51	98%	2	0.51	98%	W1	R3	1	1	J	3.0	1	1	JF	2	1									12-20						Disseminated sulphide forming along a dominant chloritic foliation. Mechanical breaks tend to follow the foliation, but only one natural break is present.
K16-360	ORE	MXSX	180.03	181.04	1.01	0.92	91%	2	0.92	91%	W1	R4	1	1	J	1.0	1	1	JF	1	1									20						Massive sulphide is weakly foliated.
K16-360	ORE	Vein and Dissemina	181.04	182.66	1.62	1.45	90%	0	1.45	90%	W1	R5	0.5																	12						Foliated sulphide with sulphides defining the foliation plane. No natural breaks
K16-360	WASTE	MAFi	182.66	186.00	3.34	2.98	89%	13	2.74	82%	W2	R3/4	6	1	J	3.0	2	8	JF	1-2	1-4	1	JF	1.5	4					6-20			3%			Mixed interval, MAFi and a thick quartz vein. Quartz vein has a well developed fracture network. MAFi parts along chloritic foliation planes.
K16-360	WASTE	MAFi	186.00	189.00	3.00	2.87	96%	2	2.87	96%	W2	R3	2					2	JF	0.5	4					70.0	94.0	JF	2.0	6						Slickensided chloritic partings in the chlorite defined foliation.
K16-360	WASTE	MAFi	189.00	192.00	3.00	3.00	100%	3	3.00	100%	W2	R3	3	1	J	3.0	1	2	JF	0.5	4									6/20						Slickensided chloritic partings in the chlorite defined foliation. One discontinuity defined by a calcite healed joint
K16-360	WASTE	MAFi	192.00	195.00	3.00	2.96	99%	2	2.96	99%	W2	R4	2					2	JF	0.5	4					70.0	150.0	JF	3.0	6						Slickensided chloritic partings in the chlorite defined foliation.
K16-360	WASTE	MAFi	195.00	198.00	3.00	2.98	99%	4	2.93	98%	W2	R4	2					4	JF	0.5-1	4					60.0	195.0	JF	3.0	6						slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	198.00	201.00	3.00	2.93	98%	4	2.91	97%	W2	R4	4	2	J	3.0	6					2	JF	1.5	4	25.0	60.0	J	3.0	6-12						Joints comprise high angle to gouge faults and soft chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	201.00	204.00	3.00	2.97	99%	3	2.97	99%	W2	R3	3	1	J	2.0	1	8	JF	0.5	4	1	JF	0.5	4	75.0	144.0	JF	3.0	6-12						Joints comprise high angle to gouge faults and soft chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	204.00	207.00	3.00	2.97	99%	8	2.93	98%	W2	R3	2					8	JF	0.5-1.5	2-4					35.0	125.0	JF	3.0	6-12						Joints comprise soft chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	207.00	210.00	3.00	2.86	95%	3	2.83	94%	W2	R3	3	1	J	2.0	2	2	JF	0.5-1.5	4					40.0	140.0	JF	3.0	6-12						Joints comprise soft chloritic partings along the chlorite defined foliation and a high angle to chloritic parting.
K16-360	WASTE	MAFi	210.00	213.00	3.00	2.92	97%	12	2.76	92%	W2	R3	3	1	J	2.0	2	9	JF	0.5-2	2-4	2	J	0.5-1	2-4	70.0	180.0	J	3.0	6-12						Joints comprise soft chloritic partings both along and cutting the chlorite defined foliation and a high angle to chloritic parting.
K16-360	WASTE	MAFi	213.00	216.00	3.00	2.88	96%	3	2.88	96%	W2	R3	3					2	JF	0.5-1.5	4.0	1	J	0.5	4					6-12						Joints comprise soft chloritic partings both along and cutting the chlorite defined foliation
K16-360	WASTE	MAFi	216.00	219.00	3.00	2.80	93%	18	2.35	78%	W3	R3	6	1	J	3.0	3	5	JF	0.5-1.5	4	2	J	1.5	6					6-12					13%	Joints comprise soft chloritic partings both along and cutting the chlorite defined foliation. Two zones of microdefects where low angle to joints have cut
K16-360	WASTE	MAFi	219.00	222.00	3.00	2.95	98%	6	2.95	98%	W2	R4	3					6	J	0.5-3	1-4					55.0	152.0	JF	3.0	6-12						Joints comprise soft and slickensided chloritic partings both along and cutting the chlorite defined foliation.
K16-360	WASTE	MAFi	222.00	225.00	3.00	2.94	98%	4	2.94	98%	W2	R4	2					4	JF	0.5-3	2-4					55.0	154.0	JF	3.0	6-12						Joints comprise soft and slickensided chloritic partings both along and cutting the chlorite defined foliation.
K16-360	WASTE	MAFi	225.00	228.00	3.00	2.82	94%	5	2.82	94%	W2	R4	3					3	JF	1	4-6	2	JF	0.5	4					6						Joints comprise soft and slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	228.00	231.00	3.00	2.86	95%	3	2.78	93%	W2	R4	1					3	JF	2	2-4					55.0	90.0	J	3.0	12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	231.00	234.00	3.00	3.00	100%	8	2.79	93%	W2	R3	2									2	JF	1.5	4	75.0	150.0	JF	3.0	6-12			5%			Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	234.00	237.00	3.00	2.84	95%	8	2.68	89%	W3	R3	3					8	JF	0.5-2	2-4					62.0	240.0	J	3.0	12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	237.00	240.00	3.00	2.91	97%	5	2.78	93%	W2	R4	3					4	JF	0.51	2-4	1	JF	1	6	75.0	186.0	JF	3.0	6						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	240.00	243.00	3.00	2.90	97%	5	2.90	97%	W2	R4	2					5	JF	0.5-1	4					65.0	118.0	JF	3.0	6						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	243.00	246.00	3.00	3.07	102%	1	3.00	100%	W2	R4	0.5					1	JF	0.5	4					55.0	108.0	JF	3.0	6						Joint comprises soft a slickensided chloritic parting along the chlorite defined foliation.
K16-360	WASTE	MAFi	246.00	249.00	3.00	2.99	100%	2	2.99	100%	W2	R4	1					2	JF	1.5	4					65.0	90.0	JF	3.0	6						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	249.00	252.00	3.00	2.91	97%	7	2.81	94%	W2	R3	6	1	J	3.0	2	5	JF	1.5-2	2-4	1	JF	0.5	4	50.0	140.0	JF	3.0	6-12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	252.00	255.00	3.00	2.98	99%	5	2.90	97%	W2	R4	3	1	J	3.0	2	4	JF	0.5-2	2-4					55.0	82.0	JF	3.0	6-12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	255.00	258.00	3.00	2.96	99%	2	2.96	99%	W2	R5	1	2	J	3.0	1-2									250.0	5.0	J	1.0	12						
K16-360	WASTE	MAFi	258.00	261.00	3.00	3.00	100%	1	3.00	100%	W2	R4	0.5					1	J	1.5	1					0.0	50.0	J	3.0	20						
K16-360	WASTE	MAFi	261.00	264.00	3.00	2.97	99%	3	2.97	99%	W2	R4	3	2	J	3.0	1	1	J	1.5	4					55.0	106.0	J	3.0	12						Spray quartz crystals on the joint surface of the high to angle joints
K16-360	WASTE	MAFi	264.00	267.00	3.00	2.86	95%	12	2.78	93%	W3	R3	4	2	J	1.5	4	2	JF	1.5-2	4									6		3%				Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	267.00	270.00	3.00	2.89	96%	4	2.89	96%	W3	R4	2					4	JF	0.5-1.5	4					45.0	82.0	JF	3.0	6-12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	WASTE	MAFi	270.00	273.12	3.12	2.94	94%	15	2.79	89%	W3	R3	4					3	JF	0.5	4	5	JF	0.5-1	2-4					6-12						Joints comprise soft and/or slickensided chloritic partings along the chlorite defined foliation.
K16-360	ORE	MXSX	273.12	274.40	1.28	1.28	100%	4	1.12	88%	W3	R5	2					4	J	1.5	4									6						Chloritic material on the OJ ore has formed undulating slickenside surfaces.
K16-360	FW	RHY	274.40	276.59	2.19	1.79	82%	120	0.00	0%	W5	R0/2	12																	0						Veins or extremely well developed alteration mica/sericite (paste) have formed in the RHY, rendering it extremely incompetent
K16-360	FW	RHYv	276.59	279.00	2.41	2.23	93%	64	0.60	25%	W3	R0/2	12					2	JF	1	4									0		7%	45%			Micaceous partings in the RHYv, cut by a fault zone and two broken zones flanking it.
K16-360		RHYv	279.00	282.00	3.00	3.00	100%	17	2.70	90%	W3	R0/3	15					5	J	1.5	4-6									12		10%				Joints predominantly cut the micaceous foliation, and have developed discontinuous gouge. Two 15cm fault zones cut the interval
K16-360		RHYv	282.00	285.00	3.00	2.85	95%	8	2.79	93%	W2	R3	6	1	J	2.0	4	5	J	1-2	2	2	JF	1	4					12						High angle to joints are foliation parallel (micaceous partings), Other joints cut the foliation. Low angle TCA joint has a discontinuous chloritic slickenside surface.
K16-360		RHYv	285.00	288.00	3.00	2.80	93%	30	2.00	67%	W3	R1/3	3					8	JF	1	2-6									12		7%			5%	Joints predominantly cut the micaceous foliation, and have developed discontinuous gouge. one 20cm fault zones cuts the interval
K16-360		RHYv	288.00	291.00	3.00	2.79	93%	62	1.28	43%	W4	R0-3	3					8	JF	1	4-8									6	1%				48%	Joints predominantly follow the micaceous partings that define the dominant foliation, as do the defects in the microdefect zone
K16-360		RHYv	291.00	294.00	3.00	2.75	92%	41	1.94	65%	W3	R0-3	3					10	JF	1-2	4-12									0-6		2%			27%	Joints predominantly follow the micaceous partings that define the dominant foliation, as do the defects in the microdefect zone
K16-360		RHYv	294.00	297.00	3.00	3.00	100%	18	2.60	87%	W3	R2/3	3	1	J	0.5	4	2	JF	1-2	4-12					23.0	318.0	J	3.0	0-6	1%				14%	Joints predominantly follow the micaceous partings that define the dominant foliation, as do the defects in the microdefect zone
K16-360		RHYv	297.00	300.00	3.00	2.97	99%	9	2.71	90%	W2	R2	3					9	JF	1	4-8									6						Joints predominantly follow the micaceous partings that define the dominant foliation
K16-360		RHYv	300.00	303.00	3.00	2.70	90%	120	0.00	0%	W4	R1	3													55.0	72.0	JF	3.0	6						Rock is weak along the micaceous partings that define the dominant foliation, highly altered
K16-360		RHYv	303.00	306.00	3.00	3.00	100%	11	2.87	96%	W2	R3	4					5	JF	1-2	2-4	2	J	2	2					12			3%			Joints predominantly follow the micaceous partings that define the dominant foliation, as do the breaks in the broken zone
K16-360		RHYv	306.00	309.00	3.00	2.87	96%	5	2.83	94%	W2	R3	6	1	J	1.0	2	2	JF	0.5-2	4-6	2	JF	1	8	68.0	70.0	JF	3.0	6						Joints predominantly follow the micaceous partings that define the dominant foliation, zone of gouge developed along the foliation plane.
K16-360		RHYv	309.00	312.00	3.00	2.93	98%	7	2.82	94%	W3	R3	4					2	JF	1-2	4	5	J	1-2	4-8	70.0	92.0	JF	3.0	6-12						Joints predominantly follow the micaceous partings that define the dominant foliation, small zone of gouge developed along the foliation plane.
K16-360		RHYv	312.00	315.00	3.00	2.98	99%	5	2.98	99%	W2	R4	2					5	J	1-2	4-6					55.0	80.0	JF	3.0	6-12						Joints predominantly follow the micaceous partings that define the dominant foliation however some cut it, and have developed gouge
K16-360		RHYv	315.00	318.00	3.00	2.85	95%	6	2.85	95%	W2	R3	2									6	JF	1-2	4-6					6-12						Joints predominantly follow the micaceous partings that define the dominant foliation. Some have developed slickensides comprising calcite
K16-360		RHYv	318.00	321.00	3.00	2.96	99%	18	2.70	90%	W3	R2/3	3					3	JF	1	6	1	JF	1	6					6		2%			10%	Joints predominantly follow the micaceous partings that define the dominant foliation. Some have developed weak gouge/breccia along their surfaces
K16-360		RHYv	321.00	324.00	3.00	2.94	98%	6	2.84	95%	W2	R3	3	1	J	2.0	2	1	J	3	2	4	JF	1	4-6	70.0	86.0	JF	3.0	6-12						Foliation is less well developed in this run
K16-360		RHYv	324.00	327.00	3.00	2.89	96%	6	2.81	94%	W2	R4	3	1	J	1.5	1	5	JF	1-2	2-4									12						Foliation is less well developed in this run
K16-360		RHYv	327.00	330.00	3.00	2.90	97%	6	2.79	93%	W2	R3	3					5	JF	1-2	2-4	1	JF	1	4					12						Foliation is less well developed in this run
			#REF!		#REF!		#REF!			#REF!																										

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.094971 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2 = 4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.4}$	$Is_{(50)} = F \times I_s$ (MPa)
K16-360	PLT-01	20.91	HW	RHYv	3.36	II	d	fresh break along silicified core axis broke into three pieces	61.10	61.10	61.10	33.6	3.19	3733.21	0.000854767	1.0944	0.94
K16-360	PLT-02	20.91	HW	RHYv	14.48	L	a	Broke into four pieces fresh break	37.00	61.10	37.00	144.8	13.75	2878.41	0.004777564	1.0944	5.23
K16-360	PLT-03	38.91	HW	RHYv	14.86	L	a	fresh break silicified	41.50	61.10	41.50	148.6	14.11	3228.49	0.004371298	1.0944	4.78
K16-360	PLT-04	54.00	HW	RHYi	19.86	II	d	fresh break perp to core axis	61.10	61.10	61.10	198.6	18.86	3733.21	0.005052285	1.0944	5.53
K16-360	PLT-05	87.75	HW	RHYc	6.56	II	d	fresh break perp to core axis	61.10	61.10	61.10	65.6	6.23	3733.21	0.001668831	1.0944	1.83
K16-360	PLT-06	108.00	HW	RHYv	5.94	II	d	fresh break	61.10	61.10	61.10	59.4	5.64	3733.21	0.001511106	1.0944	1.65
K16-360	PLT-07	117.00	HW	RHYc	3.9	II	d	fresh break along foliation	61.10	61.10	61.10	39	3.70	3733.21	0.000992141	1.0944	1.09
K16-360	PLT-08	196.4	WASTE	MAFi	7.96	II	d	clean break	61.10	61.10	61.10	79.6	7.56	3733.21	0.002024984	1.0944	2.22
K16-360	PLT-09	196.4	WASTE	MAFi	9.58	II	d	clean break	61.10	61.10	61.10	95.8	9.10	3733.21	0.002437104	1.0944	2.67
K16-360	PLT-10	196.4	WASTE	MAFi	18.6	L	a	clean break	27.50	61.10	27.50	186	17.66	2139.36	0.008256955	1.0944	9.04
K16-360	PLT-11	204.9	WASTE	MAFi	1.94	II	d	clean break	61.1	61.10	61.10	19.4	1.84	3733.21	0.000493526	1.0944	0.54
K16-360	PLT-12	217.8	WASTE	MAFi	5.2	II	d	clean break	61.1	61.10	61.10	52	4.94	3733.21	0.001322854	1.0944	1.45
K16-360	PLT-13	186.2	WASTE	MAFi	1.24	II	d	clean break	61.1	61.10	61.10	12.4	1.18	3733.21	0.00031545	1.0944	0.35
K16-360	PLT-14	186.2	WASTE	MAFi	1.68	II	d	clean break	61.1	61.10	61.10	16.8	1.60	3733.21	0.000427384	1.0944	0.47
K16-360	PLT-15	186.2	WASTE	MAFi	3.5	L	a	clean break	26	61.10	26.00	35	3.32	2022.67	0.001643366	1.0944	1.80
K16-360	PLT-16	186.2	WASTE	MAFi	4.58	L	a	clean break	30	61.10	30.00	45.8	4.35	2333.85	0.001863734	1.0944	2.04
K16-360	PLT-17	164.7	HW	RHYv	1.8	II	d	clean break	61.1	61.1	61.10	18	1.71	3733.21	0.000457911	1.0944	0.50
K16-360	PLT-18	142.6	HW	RHYv	1.66	II	d	fresh break along foliation	61.1	61.1	61.10	16.6	1.58	3733.21	0.000422296	1.0944	0.46
K16-360	PLT-19	142.6	HW	RHYv	10.84	L	a	clean break	29.5	61.1	29.50	108.4	10.29	2294.95	0.004485873	1.0944	4.91
K16-360	PLT-20	227.1	WASTE	MAFi	3.96	II	d	clean break	61.1	61.1	61.10	39.6	3.76	3733.21	0.001007404	1.0944	1.10
K16-360	PLT-21	133.4	HW	RHYv	4.24	II	d	fresh break along foliation pane	61.1	61.1	61.10	42.4	4.03	3733.21	0.001078635	1.0944	1.18

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-363	Krakatoa	All	KRAK033	415239	6815212	1440	415.0	-78.5	HQ3	16.5	12-Jul-16	17-Jul-16

Drill Hole Collection Program

Discipline	Personnel	Checked by	Date
Geologist	RH		
Geotech Log	HM/IH	IH	19/Jul/16
PLT	HM/IH	IH	19/Jul/16
UCS	N/A	N/A	N/A

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology & Lithology Code
K16-363	0	4.5	Overburden (OVBN)
K16-363	4.5	10.7	Mafic tuff (MAFt)
K16-363	10.7	16.07	Graphitic mudstone (MDU)
K16-363	16.07	23.9	Mafic tuff (MAFt)
K16-363	23.9	31.9	Graphitic mudstone (MDU)
K16-363	31.9	57.8	Volcaniclastic rhyolite (RHYv)
K16-363	57.8	71.82	Volcaniclastic rhyolite (RHYv)
K16-363	71.82	85.81	Aphanitic rhyolite (RHYi)
K16-363	85.81	88.6	Volcaniclastic rhyolite (RHYv)
K16-363	88.6	91	Aphanitic rhyolite (RHYi)
K16-363	91	105.05	Volcaniclastic rhyolite (RHYv)
K16-363	105.05	107.9	Pelite (PEL)
K16-363	107.9	109.41	Volcaniclastic rhyolite (RHYv)
K16-363	109.41	113.6	Coherent rhyolite (RHYc)
K16-363	113.6	115.74	Volcaniclastic rhyolite (RHYv)
K16-363	115.74	118.45	Coherent rhyolite (RHYc)
K16-363	118.45	129.3	Volcaniclastic rhyolite (RHYv)
K16-363	129.3	131.2	Coherent rhyolite (RHYc)
K16-363	131.2	133.41	Pelite (PEL)
K16-363	133.41	134.96	Volcaniclastic rhyolite (RHYv)
K16-363	134.96	137.47	Volcaniclastic rhyolite (RHYv)
K16-363	137.47	140.9	Coherent rhyolite (RHYc)
K16-363	140.9	141.8	Volcaniclastic rhyolite (RHYv)
K16-363	141.8	143.33	Coherent rhyolite (RHYc)
K16-363	143.33	150.96	Coherent rhyolite (RHYc)
K16-363	150.96	152.09	Volcaniclastic rhyolite (RHYv)
K16-363	152.09	153.18	Coherent rhyolite (RHYc)
K16-363	153.18	157	Coherent rhyolite (RHYc)
K16-363	157	158	Volcaniclastic rhyolite (RHYv)
K16-363	158	161.63	Coherent rhyolite (RHYc)
K16-363	161.63	167.52	Volcaniclastic rhyolite (RHYv)
K16-363	167.52	172.27	Coherent rhyolite (RHYc)
K16-363	172.27	176.25	Volcaniclastic rhyolite (RHYv)
K16-363	176.25	181.98	Volcaniclastic rhyolite (RHYv)
K16-363	181.98	182.56	Pelite (PEL)
K16-363	182.56	196.71	Volcaniclastic rhyolite (RHYv)
K16-363	196.71	197.78	Pelite (PEL)
K16-363	197.78	203.65	Aphanitic rhyolite (RHYi)
K16-363	203.65	234.09	Volcaniclastic rhyolite (RHYv)
K16-363	234.09	234.83	Mudstone (MDS)
K16-363	234.83	239.6	Volcaniclastic rhyolite (RHYv)
K16-363	239.6	253.8	Volcaniclastic rhyolite (RHYv)
K16-363	253.8	260.82	Coherent rhyolite (RHYc)
K16-363	260.82	261.65	Mudstone (MDS)
K16-363	261.65	269.55	Volcaniclastic rhyolite (RHYv)
K16-363	269.55	285.58	Volcaniclastic rhyolite (RHYv)
K16-363	285.58	288.45	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	288.45	317.58	Coherent rhyolite (RHYc)
K16-363	317.58	323.17	Coherent rhyolite (RHYc)
K16-363	323.17	332.35	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	332.35	335.95	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	335.95	337.82	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	337.82	339.63	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	339.63	341.86	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	341.86	344	Massive sulphide (OA, OB, OC, OF, OK)
K16-363	344	345.74	Rhyolite (RHY)
K16-363	345.74	346.65	Semi-massive sulphide (OI, OJ)
K16-363	346.65	354.6	Volcaniclastic rhyolite (RHYv)
K16-363	354.6	355.5	Pelite (PEL)
K16-363	355.5	358.3	Volcaniclastic rhyolite (RHYv)
K16-363	358.3	359	Pelite (PEL)
K16-363	359	364.46	Volcaniclastic rhyolite (RHYv)
K16-363	364.46	372.07	Volcaniclastic rhyolite (RHYv)
K16-363	372.07	375.64	Volcaniclastic rhyolite (RHYv)
K16-363	375.64	379.75	Volcaniclastic rhyolite (RHYv)
K16-363	379.75	380.5	Mafic intrusion (MAFi)
K16-363	380.5	382.12	Volcaniclastic rhyolite (RHYv)
K16-363	382.12	384.26	Mafic intrusion (MAFi)
K16-363	384.26	395.1	Volcaniclastic rhyolite (RHYv)
K16-363	395.1	405.31	Volcaniclastic rhyolite (RHYv)
K16-363	405.31	412.28	Volcaniclastic rhyolite (RHYv)
K16-363	412.28	420.32	Volcaniclastic rhyolite (RHYv)
K16-363	420.32	423.94	Volcaniclastic rhyolite (RHYv)
K16-363	423.94	425	Volcaniclastic rhyolite (RHYv)
K16-363	425	432	Volcaniclastic rhyolite (RHYv)
K16-363	432	432.2	Pelite (PEL)
K16-363	432.2	433.12	Volcaniclastic rhyolite (RHYv)
K16-363	433.12	433.27	Pelite (PEL)
K16-363	433.27	435	Volcaniclastic rhyolite (RHYv)

Geotechnical Log

Hole ID	Lithology	Core Recovery Data								Strength Data			Discontinuity parameters for Q System												Oriented Core Log				RMR76	Fault and Broken Zones					Comment
													ALPHA=0-29				ALPHA=30-59				ALPHA=60-90														
		From(m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Alpha	Beta	Type	Confidence (3,2,1)	Joint Condition Rating	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-363	MAFi	4.4	7.4	3.0	2.0	67%	120	0.14	5%	W5	R3-R:	3									60	J	1.0	8.0					6	0%	0%	###	###	###	overburden, cut boulders
K16-363	MAFi	7.4	10.8	3.4	2.5	72%	120	0.76	22%	W4	R3-R:	3									55	J	1.0	8.0					6	0%	0%	###	###	###	rubble alternating with competent rock
K16-363	MDU	10.8	13.8	3.0	2.1	70%	120	0.13	4%	W5	R2-RI	3									49	J	1.0	8.0					6	0%	0%	###	###	###	disc jointing (drilling related?)
K16-363	MDU	13.8	16.1	2.3	1.3	58%	53	0.22	10%	W4	R1	6									32	J	1.0	8.0					6	0%	0%	0%	###	###	
K16-363	Qtz-vein	16.1	18.9	2.8	2.0	71%	27	1.10	39%	W3	R4	9									12	J	3.0	3.0					20	0%	0%	0%	###	###	qtz-vein 2.0m thick,R4:
K16-363	MDU	18.9	22.0	3.1	2.3	73%	46	1.27	41%	W3	R2	12									22	J	1.0	4.0					6	0%	0%	0%	###	###	qtz-vein 0.3m thick
K16-363	MDU	22.0	23.9	1.9	1.1	60%	120	0.10	5%	W4	R3-R:	12	no dominant discontinuity orientation																6	0%	0%	0%	###	###	mostly rubble
K16-363	MDU	23.9	26.0	2.1	1.4	66%	120	0.26	13%	W4	R2-RI	12	no dominant discontinuity orientation																6	###	###	0%	###	###	
K16-363	Fault zone	26.0	29.0	3.1	1.9	62%	120	0.00	0%	W5	S4-R:	20	no dominant discontinuity orientation																0	###	###	0%	###	###	MDU recognizable
K16-363	Fault zone	29.0	31.9	2.9	0.7	24%	120	0.00	0%	W5	S4-R:	20	no dominant discontinuity orientation																0	0%	0%	0%	###	###	MDU recognizable
K16-363	RHYv	31.9	35.0	3.1	2.0	65%	72	0.40	13%	W3	R2-S	12									25	J,Foi	2.0	4.0					12	0%	0%	0%	###	###	few disintegrated joints
K16-363	RHYv	35.0	38.0	3.0	2.1	71%	50	1.08	36%	W4	R2	12									26	J,Foi	1.0	8.0					12	###	###	0%	###	###	0.2m qtz-vein, shear folding
K16-363	RHYv	38.0	41.0	3.0	1.9	62%	58	0.36	12%	W3	R3-R:	12									24	J,Foi	1.0	4.0					6	0%	0%	0%	###	###	smooth planar joints
K16-363	RHYv	41.0	44.0	3.0	2.0	66%	59	0.60	20%	W3	R2	12									19	J,Foi	1.0	4.0					12	0%	0%	0%	###	0%	besides foliation jointing many random fractures
K16-363	RHYv	44.0	47.0	3.0	2.5	82%	43	1.08	36%	W2	R2	6					5	J	3.0	4.0	32	J,Foi	1.0	4.0	70.0	#####	J	2.0	12	0%	0%	0%	###	0%	very few joints with mineral fillings, mostly softening clay coating
K16-363	RHYv	47.0	50.0	3.0	2.1	70%	63	0.45	15%	W2	R2	6					5	J	3.0	4.0	41	J,Foi	1.0	8.0					12	0%	0%	###	###	###	shear, clay filling, 0.5m
K16-363	RHYv	50.0	53.0	3.0	2.4	79%	46	0.70	23%	V2/A	R2	6	3	J	3.0	2.0					31	J,Foi	1.0	4.0	60.0	#####	J	2.0	12	0%	0%	0%	###	###	axial shear joints up to 0.5m length
K16-363	RHYv	53.0	56.0	3.0	1.9	63%	37	1.01	34%	W2	R2	6					9	J	1.5	3.0	17	J,Foi	2.0	4.0	60.0	#####	J	2.0	12	0%	0%	0%	###	0%	
K16-363	RHYv	56.0	59.0	3.0	2.4	80%	36	1.03	34%	W2	R2	6	3	J	1.0	4.0	6	J	3.0	4.0	16	J	1.0	4.0				2.0	12	0%	0%	0%	###	0%	2 prominent joint set
K16-363	RHYv	59.0	62.0	3.0	2.0	68%	49	1.08	36%	W3	R2	3									20	J,Foi	1.0	4.0	60.0	#####	J	3.0	12	0%	0%	0%	0%	###	
K16-363																									53.0	#####	Foli	3.0							
K16-363	RHYv	62.0	65.0	3.0	2.0	67%	39	1.00	33%	V3/A	R2	6	3	J	3.0	8.0					24	J,Foi	1.0	4.0					12	5%	0%	0%	###	###	axial shear joints with thin clay filling
K16-363	RHYv	65.0	68.0	3.0	2.5	84%	30	1.65	55%	W3	R2/R:	6					7	J	1-1.5	4.0	23	J,Foi	1.5	4.0	60.0	#####	Foli	3.0	12	5%	0%	0%	0%	5%	2 prominent joint set, one localized joint set perpendicular to foliation (67.0m)
K16-363																									70.0	#####	J	3.0							
K16-363																									40.0	60.0	J	3.0							
K16-363	RHYv	68.0	71.0	3.0	2.7	90%	21	2.34	78%	V2/A	R2	4					4	J	1.5	3.0	14	J,Foi	1.5	4.0	60.0	#####	Foli	2.0	12	0%	0%	0%	0%	0%	2 fracture sets: parallel and perpendicular to foliation
K16-363																									60.0	#####	J	2.0							
K16-363	RHYi	71.0	74.0	3.0	2.4	78%	27	0.92	31%	W2	R3/R:	6	4	J	1.5	3.0					18	J	1.0	4.0	60.0	#####	J	3.0	12	0%	0%	0%	###	0%	axial fractures, increased rock strength R3 at 72,0 m (RHYi)due to silicification, rock shattered, 71.0m-71.82m RHYv,
K16-363	RHYi	74.0	77.0	3.0	2.3	78%	40	0.76	25%	W2	R3	6	4	J	1.0	4.0	3	shea	1.0	4.0	28	J	1.0	4.0					6	0%	0%	0%	0%	0%	shattered rock
K16-363	RHYi	77.0	80.0	3.0	2.8	93%	26	1.94	65%	W2	R3	3									14	J	1.0	4.0					12	0%	0%	0%	0%	0%	shattered rock
K16-363	RHYi	80.0	83.0	3.0	2.8	92%	32	1.68	56%	W2	R3/R	6	6	J	1.0	4.0					18	J													
K16-363	RHYi	83.0	85.8	2.8	2.4	84%	32	1.27	45%	W3	R3	6	5	J	1.5	4.0	4	shea	1.0	4.0	16	J	1.0	4.0					12	0%	0%	0%	###	0%	axial shear
K16-363	RHY	85.8	88.7	2.8	2.5	86%	33	1.40	49%	W3	R2/R:	4					1	shea	1.5	4.0	22	J,Foi	1.0	4.0					12	0%	0%	0%	###	0%	few joint fillings
K16-363	RHYi	88.7	91.0	2.3	2.1	88%	26	1.42	60%	W2	R3	3									21	J	1.0	4.0					12	0%	0%	0%	0%	0%	
K16-363	RHYv	91.0	94.0	3.0	2.6	85%	35	1.45	48%	V2/A	R2	3									26	J,Foi	1.0	4.0	57.0	#####	Foli	3.0	12	5%	0%	0%	0%	###	shear
K16-363																									80.0	#####	J	3.0							
K16-363	RHYv	94.0	97.0	3.0	2.7	90%	45	1.45	48%	W2	R2	6					4	shea	1.0	4.0	29	J,Foi	1.0	4.0					12	0%	0%	0%	0%	0%	few clay fillings
K16-363	RHYv	97.0	#####	3.0	2.6	86%	16	2.15	72%	W2	R2	4	4	J	1.5	3.0					12	J,Foi	1.0	4.0					12	0%	0%	0%	0%	0%	
K16-363	RHYv	#####	#####	3.0	2.6	86%	46	1.17	39%	V3/A	R2/R:	12					20	J	1.0	8.0									6	###	0%	0%	###	###	shear zone
K16-363	RHYv	#####	#####	2.1	1.6	80%	22	1.35	66%	W3	R2/R:	3									10	J	1.0	4.0					12	###	0%	0%	0%	###	shear at contact to PEL
K16-363	PEL	#####	#####	2.9	2.3	82%	37	1.63	57%	W2	R2	6					12	J	1.5	4.0	11	J	1.0	4.0					12	5%	0%	0%	0%	0%	core of PEL competent, weak at margins to next litho
K16-363	RHYv	#####	#####	1.5	1.4	95%	14	0.60	40%	W2	R2	9	2	J	1.5	4.0	2	J	1.5	3.0	7	J	1.0	4.0					6	0%	0%	0%	0%	0%	
K16-363	RHYc	#####	#####	4.2	3.5	82%	27	2.59	62%	V2/A	R2	12	2	J	1.5	8.0	5	J	1.0	8.0	15	J	1.5	3.0					12	0%	###	###	###	###	shear breccia filled, long axial fractures with clay coatings
K16-363	RHYv	#####	#####	2.1	1.9	90%	29	1.10	51%	W3	R2	3									18	J	8.0	4.0	70.0	#####	Foli	2.0	12	5%	0%	0%	0%	###	shear at 115,0m, non active
K16-363																									70.0	#####	J	2.0							
K16-363	RHYc	#####	#####	2.7	2.5	93%	15	2.30	85%	W2		6									12	J	1.0	3.0					12	0%	0%	0%	0%	0%	long joint spacing, competent
K16-363	RHYv	#####	#####	2.6	2.2	86%	28	1.30	51%	V2/A	R2	6					4	J	1.5	3.0	18	J	1.0	8.0	70.0	#####	J	2.0	12	0%	###	###	###	###	active shear
K16-363	RHYv	#####	#####	3.0	2.8	92%	31	1.25	42%	W2	R2	6									16	J	2.0	4.0	70.0	#####	J	3.0	12	0%	0%	###	0%	5%	shatter joints
K16-363	RHYv	#####	#####	3.0	2.4	79%	39	1.12	37%	V2/A	R2-R:	9	4	J	1.5	3.0					20	J,Foi	2.0	4.0											perpendicular joint sets
K16-363	RHYv	#####	#####	2.3	2.0	85%	37	0.83	36%	W3	R2	3									21	J,Foi	1.0	8.0					12	0%	###	0%	###	###	fractures follow folded foliation, shear
K16-363	RHYc	#####	#####	1.9	1.3	66%	53	0.11	6%	W4	R3/R:	12									23	J,Foi	1.0	8.0					6	0%	###	0%	###	###	silicified and qtz veining=> shattered rock micro fissures, shear at contact to PEL
K16-363	RHYv	#####	#####	2.2	1.7	76%	35	0.88	40%	W2	R2	3	2	J	1.0	8.0					16	J,Foi	1.0	4.0					6	0%	0%	0%	###	0%	2 shear fractures non active at low angle
K16-363	RHYv	#####	#####	2.6	2.4	91%	31	1.17	45%	W3	R2	4	3	shea	2.0	8.0					22	J,Foi	1.0	4.0	60.0	#####	J	3.0	6	0%	0%	###	###	0%	clay filled shear 20;60, non active
K16-363																									20.0	60.0	J	3.0							
K16-363	RHYv	#####	#####	1.5	1.2	84%	30	0.67	46%	W3	R2	9	2	shea	2.0	8.0	12	J,Foi	1.0	8.0	6	J	1.5	4.0					6	0%	###	0%	###	###	low angle healed shear cutting low cohesive rubble shear
K16-363	RHYc	#####	#####	4.3	3.5	82%	72	1.14	26%	W4	R2	12	2	shea	1.5	8.0	31	J,Foi	1.0	8.0	22	J,Foi	1.5	4.0					6	0%	0%	0%	###	###	non active shear zone, folded and rotated foliation, joints follow foliation
K16-363	Fault zone	#####	#####	3.2	2.6	82%	32	1.13	35%	V4/A	R1	9					21	J,Foi	1.0	8.0	8	J	1.5	4.0	60.0	#####	J	3.0	6	0%	0%	0%	0%	###	sheared along folded foliation heavily altered RHYc
K16-363	Fault zone	#####	#####	5.1	3.8	75%	49	1.86	36%	W5	R1/RI	12					25	J,Foi	1.0	4.0	16	J,Foi	1.0	4.0					6	###	###	0%	###	###	sheared and reconsolidated
K16-363	RHYc	#####	#####	3.1	2.9	94%	22	2.02	66%	W2	R2	3									21	J,Foi	1.5	4.0	65.0	#####	J	3.0	12	0%	0%	0%	0%	0%	few joints clay filled <5mm
K16-363	RHYc	#####	#####	2.8	2.5	90%	32	1.22	43%	W3	R2/R:	3									25	J,Foi	1.0	4.0	60.0	#####	J	3.0	12	0%	0%	0%	5%	###	
K16-363	RHYc	#####	#####	3.0	2.7	90%	25	1.46	49%	V2/A	R2/R:	3									25	J,Foi	1.0	4.0					12	0%	0%	0%	0%	0%	few joints clay filled <5mm, 1.0m RHYv
K16-363	Fault zone	#####	#####	2.6	2.5	96%	120	1.04	40%	V3/A	R2/RI	20																	0	###	###	0%	###	###	
K16-363	RHYv	#####	#####	3.4	2.7	79%	47	0.94	28%	V3/A	R2/R:	12	2	J	3.0	4.0					15	J,Foi	1.0	4.0	70.0	#####	J	3.0	12	5%	0%	0%	0%	###	
K16-363	RHYv	#####	#####	2.5	2.3	93%	26	1.50	60%	W3	R2/R:	4									26	J,Foi	1.0	4.0	60.0	#####	J	2.0	12	0%	0%	0%	0%	###	few clay filled non active shears
K16-363	RHYc	#####	#####	3.5	3.0	87%	34	1.94	56%	W3	R2/R:	4	2	shea	1.5	8.0					26	J,Foi	1.0	4.0	65.0	#####	i	3.0	6	0%	0%	0%	5%	###	shear fold at 169.10m, swelling clay bands along low angle shears
K16-363	RHYc	#####	#####	1.3	1.2	92%	15	0.50	39%	W3	R2	3	1	J	1.5	4.0					11	J,Foi	1.5	4.0	75.0	#####	J	3.0	6	0%	0%	0%	###	5%	at contact to RHYv joint with 10mm clay filling
K16-363																									70.0	#####	J	3.0							
K16-363	RHYv	#####	#####	3.7	3.6	96%	14	3.20	86%	W2	R4/R:	6	2	j	3.0	3.0					12	J,Foi	1.0	4.0	70.0	#####	J	3.0	12	0%	0%	0%	0%	0%	
K16-363																									70.0	#####	Foli	3.0							
K16-363	RHYv	#####	#####	3.0	2.7	91%	29	1.59	53%	W2	R2	6	2	j	2.0	4.0					27	J,Foi	1.0	4.0	60.0	#####	J	3.0	12	0%	0%	0%	0%	0%	single lateral slickenside shear perpendicular to foliation at 177.80m
K16-363	RHYv	#####	#####	3.0	2.6	89%	45	1.10	37%	V3/A	R2	6									38	J,Foi	1.0	4.0					12	0%	###	0%	0%	0%	brecciated shear, at 180.10, overconsolidated clay (10mm thick)filled shear at 180.70,
K16-363	PEL	#####	#####	0.6	0.6	100%	1	0.58	100%	W2	R4	3									1	JF	1.0	4.0					12						Change in lith.
K16-363	RHYv	#####	#####	3.4	2.9	84%	32	1.72	50%	W2	R3	6									27	JF	1.0	4.0					12						Longer run due to change in lith. And meeting driller block. Dom J throughout with few random jointing
K16-363	RHYv	#####	#####	3.0	3.0	101%	27	1.99	66%	W2	R3	6									18	JF	1.0	4.0	65.0	#####	JF	3.0	12	###				###	Minor breccia zone highly microdefected
K16-363	RHYv	#####	#####	3.0	2.9	98%	20	2.34	78%	W2	R3	6									19	JF	1.0	4.0	70.0	#####	JF	3.0	12						Far spaced jointing as prev run with multiple random jointing
K16-363	RHYv	#####	#####	3.0	3.0	100%	13	2.83	94%	W2	R3	6									12	JF	1.0	4.0	74.0	#####	JF	3.0	12						Similar as prev run
K16-363	RHYv	#####	#####	1.7	1.7	101%	8	1.46	85%	W2	R3	6									8	JF	1.0	4.0					12						No orient line
K16-363	PEL	#####	#####	1.1	0.9	88%	4	0.42	39%	W3	R4	3									4	JF	1.5	4.0					12					###	Change in lith. High intensity of microdefects towards end of lith.
K16-363	RHYi	#####	#####	3.2	2.8	88%	30	1.86	58%	W4	R2	6					2	J	3.0	3.0	14	JF	2.0	3.0	69.0	#####	JF	3.0	12			###		###	Minor BZ highly altered run
K16-363	RHYi	#####	#####	2.7	2.5	96%	15	2.15	81%	W4	R2	6					2	J	3.0	3.0	11	JF	3.0	3.0					12					###	Change in lith.
K16-363	RHYv	#####	#####	3.3	3.2	94%	26	2.31	69%	W3	R3	6					5	J	2.0	4.0	6	JF	2.0	4.0					12				###	###	Minor RZ with QTZ veining and <10cm breccia
K16-363	RHYv	#####	#####	3.0	2.9	97%	29	1.95	65%	W3	R2/R:	6					3	J	2.0	4.0	16	JF	2.0	4.0	42.0	#####	FLT	2.0	12	###				###	Fault breccia contact 208.4
K16-363	RHYv	#####	#####	3.0	2.9	95%	29	1.93	64%	W2	R3	6					3	J	3.0	3.0	20	JF	3.0	4.0					12			###			Minor BZ
K16-363	RHYv	#####	#####	3.0	3.0	99%	25	2.23	74%	W3	R3	6									13	JF	3.0	3.0	64.0	#####	JF	3.0	12				###	###	Broken to brecciated high density within run
K16-363	RHYv	#####	#####	3.0	3.0	98%	9	2.18	73%	W2	R3	6					3	J	3.0	3.0	7	JF	3.0	3.0	65.0	#####	JF	3.0	12			###		###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	3.0	99%	7	2.69	90%	W2	R3	6					2	J	2.0	4.0	5	JF	2.0	4.0					12						Similar as prev run
K16-363	RHYv	#####	#####	3.0	3.0	99%	12	2.66	89%	W2	R3	6					2	J	1.0	3.0	7	JF	2.0	4.0					12						Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.2	72%	15	2.05	68%	W2	R3	6					3	J	2.0	4.0	10	JF	2.0	4.0	37.0	#####	SHR	2.0	12						Sharp shear/fault contact at 227.2
K16-363	RHYv	#####	#####	3.0	2.9	97%	30	1.79	60%	W2	R3	6					2	J	2.0	4.0	23	JF	2.0	4.0	68.0	#####	JF	3.0	12			###			Minor BZ
K16-363	RHYv	#####	#####	3.1	3.0	96%	36	1.85	60%	W3	R3	6					2	J	2.0	4.0	22	JF	2.0	4.0	70.0	#####	JF	3.0	12			###		###	Change in lith.
K16-363	MDS	#####	#####	0.7	0.7	91%	11	0.35	47%	W3	R3	6									10	JF	1.0	3.0					12						No orient line
K16-363	RHYv	#####	#####	2.2	1.9	88%	47	0.46	21%	W4	R2/R:	12									22	J	1.0	4.0					12					###	No orient line
K16-363	RHYv	#####	#####	3.0	2.7	91%	120	0.66	22%	W4	R2/R:	15																	6					###	High intensity of microdefects brecciated in most of run random
K16-363	RHYv	#####	#####	3.0	2.9	98%	25	1.97	66%	W4	R2/R:	12					6	J	1.0	4.0	9	J	2.0	4.0					6				###	###	Lower intensity of microdefects versus prev run minor RZ
K16-363	RHYv	#####	#####	3.0	2.9	97%	19	2.48	83%	V3/A	R3	12					4	J	1.0	4.0	7	J	1.0	4.0	45.0	#####	J	3.0	12			###		###	Minor BZ
K16-363	RHYv	#####	#####	3.0	3.1	102%	19	2.33	78%	W3	R3	12	1	J	3.0	3.0	2	J	2.0	3.0	15	JF	2.0	3.0	70.0	#####	JF	3.0	12					###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.8	93%	40	1.72	57%	W4	R2/R:	12					4	J	2.0	4.0	23	JF	2.0	4.0					12			###		###	Similar as prev run
K16-363	RHYv	#####	#####	1.8	1.7	94%	120	0.19	11%	W4	R2	15																	6			###		###	Majority of run in microdefects with RZ
K16-363	RHYc	#####	#####	4.2	3.8	90%	120	0.00	0%	W4	R2	15																	6					###	High intensity of microdefects
K16-363	RHYc	#####	#####	2.8	2.8	100%	120	0.00	0%	W4	R2	15																	6					###	Similar as prev run change in lith.
K16-363	MDS	#####	#####	0.8	0.8	95%	18	0.26	31%	W3	R3	6									8	JF	1.0	3.0					12				###	###	Change in lith.
K16-363	RHYv	#####	#####	2.4	2.2	92%	33	0.62	26%	W3	R2/R:	6					4	J	2.0	4.0	15	JF	2.0	4.0					12				###	###	Minor RZ easily breakable along dom fol
K16-363	RHYv	#####	#####	3.0	2.7	91%	42	1.13	38%	W3	R2/R:	6					5	J	2.0	4.0	22	JF	2.0	4.0					12				###	###	Higher number of microdefects within run random jointing soft joint surface coating
K16-363	RHYv	#####	#####	3.0	2.9	96%	32	1.09	36%	W3	R2/R:	6					4	J	2.0	4.0	19	JF	2.0	4.0					12			###		###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.9	97%	120	0.00	0%	W4	R2	15																	6				###	###	Highly microdefected FF 120
K16-363	RHYv	#####	#####	3.0	2.6	86%	51	0.42	14%	W4	R2	15					19	JF	1.0	4.0	3	J	1.0	4.0					6				###	###	Similar to prev run
K16-363	RHYv	#####	#####	3.0	3.0	100%	32	1.09	36%	W4	R2	15	2	J	1.0	4.0	19	JF	1.0	4.0	4	J	1.0	4.0	50.0	90.0	JF	2.0	6					###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.9	96%	57	1.03	34%	W4	R2	15					34	JF	1.0	4.0									6					###	Similar as prev run
K16-363	RHYv	#####	#####	3.6	3.3	93%	120	0.47	13%	W4	R2	15																	6	###	###			###	Fault breccia highly microdefected with sericitic goued within run
K16-363	MXSX	#####	#####	2.9	2.7	94%	15	1.97	69%	W2	R4	1																	25						Into very strong rock fractured
K16-363	RHYc/FLT	#####	#####	2.6	2.4	92%	78	0.34	13%	W4	R2	15																	6				###	###	Brecciated in some parts of run easily breakable with RZ lots of slip planes
K16-363	RHYc/FLT	#####	#####	3.0	2.7	91%	44	0.57	19%	V3/A	R2	12					25	JF	1.0	4.0	3	J	1.0	4.0					6				###	###	Weak rock breaks along fol easily very slippery surface with soft coating
K16-363	RHYc/FLT	#####	#####	3.0	2.9	97%	56	0.81	27%	V3/A	R2	12					29	JF	1.0	4.0									6				###	###	Similar as prev run
K16-363	RHYc/FLT	#####	#####	3.0	2.7	89%	120	0.00	0%	V3/A	R1/R:	15																	6		###		###	###	Highly microdefected with large BZ very muscovite rich locally brecciated slip planes with slicks shearing movement
K16-363	RHYc/FLT	#####	#####	3.0	2.8	92%	120	0.00	0%	V3/A	R1/R:	15																	6			###		###	Similar as prev run
K16-363	RHYc/FLT	#####	#####	3.0	2.9	98%	120	0.00	0%	V3/A	R1/R:	15																	6					###	Similar as prev run signs of cren. Folding (?)
K16-363	RHYc/FLT	#####	#####	3.0	2.8	92%	120	0.00	0%	V3/A	R1	15																	6		###			###	Similar as prev run fault breccia heavy shearing/movement
K16-363	RHYc/FLT	#####	#####	3.0	3.1	104%	120	0.00	0%	V3/A	R1	15													65.0	60.0	SHR	3.0	6					###	Similar as prev run
K16-363	RHYc/FLT	#####	#####	3.0	2.8	93%	120	0.00	0%	V3/A	R1	15													30.0	45.0	SHR	3.0	6					###	Similar as prev run very slippery almost slick surfaces in most surfaces with soft muscovite sericitic coating
K16-363	RHYc/FLT	#####	#####	3.0	2.9	97%	120	0.00	0%	V3/A	R1	15																	6					###	Similar as prev run crenulations with the crenulation cleavage visible changing almost perp to cren cleavage possibly hinge of some fold
K16-363	RHYc/FLT	#####	#####	3.0	2.9	98%	120	0.00	0%	V3/A	R1	15													35.0	#####	SHR	3.0	6					###	Similar as prev run
K16-363	RHYc/FLT	#####	#####	2.2	2.3	104%	120	0.00	0%	W4	R1	15													55.0	#####	V	2.0	6					###	Sharp QTZ vein contact at 322.52
K16-363	MXSX	#####	#####	3.8	3.7	97%	32	2.50	65%	W3	R4	6					2	J	3.0	1.0	12	J	3.0	1.0					25						Change in lith.
K16-363	MXSX	#####	#####	3.0	2.9	96%	10	2.59	86%	W2	R4	6					2	J	3.0	1.0	3	J	3.0	1.0					25			###			Similar as rev run
K16-363	MXSX	#####	#####	3.0	3.0	99%	14	2.01	67%	W2	R4	6	5	J	3.0	1.0					6	J	3.0	1.0	40.0	#####	J	3.0	25						Similar as last run
K16-363	MXSX	#####	#####	3.0	3.0	99%	8	2.89	96%	W2	R4	6	3	J	3.0	1.0					5	J	3.0	1.0	25.0	70.0	BD	3.0	25						Similar as last run
K16-363	MXSX	#####	#####	3.0	2.9	98%	6	2.84	95%	W2	R4	3									6	J	3.0	1.0	40.0	75.0	BD	3.0	25						Similar as last run
K16-363	MXSX	#####	#####	3.0	3.0	99%	9	2.74	91%	W2	R4	3									9	J	3.0	1.0	40.0	70.0	BD	3.0	25						Similar as last run
K16-363	MXSX	#####	#####	2.0	2.0	101%	7	1.76	88%	W2	R4	3					7	J	3.0	1.0					70.0	#####	BD	3.0	25						Change in lith.
K16-363	Stringer	#####	#####	2.6	2.5	95%	15	2.21	83%	W3	R3	3					2	J	2.0	3.0	9	J	2.0	3.0	75.0	80.0	J	3.0	12						Change in lith.
K16-363	RHYv	#####	#####	1.4	1.4	104%	7	0.96	71%	W2	R3	6					7	JF	2.0	3.0					58.0	60.0	JF	3.0	12						Dom fol within run change in lith.
K16-363	RHYv	#####	#####	3.0	3.0	101%	12	2.69	90%	W2	R3	6					3	J	2.0	3.0	7	J	2.0	3.0	66.0	68.0	JF	3.0	12						Similar as rev run
K16-363	RHYv	#####	#####	3.0	3.0	100%	15	2.01	67%	W2	R3	6					2	J	2.0	3.0	12	JF	2.0	3.0	62.0	0.0	JF	3.0	12						Similar as last run
K16-363	RHYv	#####	#####	3.0	2.8	93%	29	1.52	51%	W2	R3	6									13	JF	1.0	3.0					12						Similar as last run - <0.5m of PEL within run
K16-363	RHYv/FLT	#####	#####	3.0	2.6	86%	120	0.53	18%	W4	R2/R:	15																	6		###		###	###	3/4 of run of locally brecciated faulted with major RZ highly silicified with sericite
K16-363	RHYv/FLT	#####	#####	3.0	2.8	95%	120	0.00	0%	W4	R2	15																	6		###			###	Similar as last run
K16-363	RHYv	#####	#####	3.0	2.9	96%	23	1.44	48%	W3	R2/R:	6									17	J	1.0	3.0	55.0	50.0	J	3.0	12					###	Intact rock but medium intensity of microdefects
K16-363	RHYv	#####	#####	3.0	3.0	101%	35	1.17	39%	W3	R2	12					4	J	2.0	3.0	20	J	2.0	3.0					12				###	###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.7	91%	37	1.28	43%	W3	R2/R:	12					2	J	2.0	3.0	26	J	2.0	3.0	60.0	#####	J	2.0	12					###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.7	90%	10	2.39	80%	W3	R3	6					1	J	3.0	3.0	9	J	3.0	3.0	70.0	#####	J	3.0	20						QTZ vein 0.6m
K16-363	RHYv	#####	#####	3.0	3.0	100%	24	1.39	46%	W3	R3	12	1	J	2.0	3.0	2	J	2.0	3.0	12	J	2.0	3.0	63.0	#####	J	3.0	12				###		Random jointing QTZ veining at the end of run
K16-363	RHYv	#####	#####	1.8	1.8	100%	12	1.16	66%	W3	R3	12					2	J	2.0	3.0	4	J	2.0	3.0					12				5%		Change in lith.
K16-363	MAFi	#####	#####	0.8	0.7	93%	4	0.51	68%	W3	R4	6									2	J	1.0	3.0	80.0	#####	J	3.0	12			###			Minor BZ
K16-363	RHYv	#####	#####	0.5	0.5	106%	0	0.50	100%	W3	R4	3																	20						Change in lith.
K16-363	RHYv	#####	#####	1.1	1.1	101%	2	1.04	93%	W3	R4	3									2	J	3.0	3.0	78.0	50.0	J	3.0	20						Change in lith.
K16-363	MAFi	#####	#####	2.1	2.0	93%	6	1.09	51%	V3/A	R4	6					3	J	3.0	3.0	2	J	3.0	3.0	50.0	#####	J	3.0	12						Change in lith.
K16-363	RHYv	#####	#####	2.7	2.6	96%	59	0.24	9%	V3/A	R3	12					4	J	3.0	3.0	18	J	3.0	3.0					12			###	###	###	Minor RZ and BZ within run
K16-363	RHYv	#####	#####	3.0	3.0	98%	34	1.60	53%	W3	R3	12					5	J	3.0	3.0	11	J	3.0	3.0					12			###			Similar as prev run
K16-363	RHYv	#####	#####	3.0	3.0	99%	24	2.17	72%	W3	R3	6					3	J	3.0	3.0	9	J	3.0	3.0	46.0	10.0	J	3.0	12						Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.9	97%	29	2.06	69%	W3	R3	6					2	J	3.0	3.0	10	J	3.0	3.0	50.0	#####	J	3.0	12				###		Minor RZ
K16-363	RHYv	#####	#####	3.0	2.8	94%	38	1.38	46%	V3/A	R2/R:	12	2	J	3.0	3.0	3	J	3.0	3.0	10	J	3.0	3.0					6-12	###			###	###	High intensity of microdefects with minor gouge within run no orient line
K16-363	RHYv	#####	#####	3.0	2.8	92%	46	1.13	38%	V3/A	R2/R:	12					2	J	2.0	4.0	23	J	2.0	4.0					6-12	###			###	###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.7	91%	54	0.74	25%	V3/A	R2/R:	12					3	J	2.0	4.0	18	J	2.0	4.0					6-12	###			###	###	Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.9	98%	23	1.77	59%	W3	R3	12					2	J	2.0	4.0	15	J	2.0	4.0	75.0	#####	J	3.0	12			###		###	Minor BZ
K16-363	RHYv	#####	#####	3.0	2.9	96%	28	1.72	57%	W2	R3	12					2	J	2.0	4.0	14	J	2.0	4.0					12			###			Similar as prev run
K16-363	RHYv	#####	#####	3.0	2.9	96%	36	1.38	46%	W3	R3	12					3	J	2.0	4.0	9	J	2.0	4.0					12			###			Similar as last run
K16-363	RHYv	#####	#####	3.0	2.1	70%	48	0.26	9%	W3	R3	12									23	J	2.0	4.0	76.0	30.0	J	3.0	12			###			Similar as last run - loss of rec
K16-363	RHYv	#####	#####	3.0	2.2	73%	51	0.39	13%	W3	R2/R:	12					1	J	2.0	4.0	14	J	2.0	4.0					12				###	###	Minor BZ
K16-363	RHYv	#####	#####	3.0	2.9	95%	25	1.91	64%	W3	R3	12	2	J	2.0	4.0	3	J	2.0	4.0	15	J	2.0	4.0	55.0	25.0	J	3.0	12			###		###	Minor BZ
K16-363	RHYv	#####	#####	3.0	2.8	93%	35	1.27	42%	W3	R3	12					2	J	2.0	4.0	25	J	2.0	4.0					12						Close spacing of discont.
K16-363	RHYv	#####	#####	3.0	3.0	99%	42	1.24	41%	W3	R3	12					4	J	2.0	4.0	24	J	2.0	4.0					12						similar as last run musc rich
K16-363	RHYv	#####	#####	3.0	2.5	82%	37	1.30	43%	W3	R3	12					5	J	2.0	4.0	20	J	2.0	4.0					12				###		Minor BZ
K16-363	RHYv	#####	#####	3.0	2.9	95%	29	1.67	56%	W3	R3	12					3	J	2.0	4.0	18	J	2.0	4.0					12						EOH small <0.5mlength PEL unit (x2) within RHYv run included
		#####		#####		0%			0%																										
		#REF!		#REF!		#REF!			#REF!																										

UCS Sample Summay

Hole ID	Lithology	Ore/Waste	From	To	ALS Sample Tag #	SGS Sample Tag #	Diameter (mm)	Length (mm)	L/D Ratio	Date Prepped	Comments
								0	#DIV/0!		
								0	#DIV/0!		

POINT LOAD TEST RESULTS

Equipment: PIL-7 **Load Correction Factor =** 0.0948 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Zone (e.g. HW/Ore/FW)	Lithology	Reading on gauge (MPa)	II or L to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load L_c (kN)	For axial test $D_e^2=4(WD)/pi$ For diam. test $D_e^2 = D^2$ (mm)	Is (kN/mm^2)= P/D_e^2	$F=(D_e/50)^{0.45}$	$Is_{(50)} = F \times I_s$ (MPa)	UCS Sample Match
K16-363	PLT-01	21.00	HW	MDU	1.70	II	d	valid	61.10	61.10	61.10	17	1.61	3733.21	0.000431693	1.0944	0.47	
K16-363	PLT-02	21.00	HW	MDU	7.10	L	a	nonvalue, shearing	46.50	61.10	46.50	71	6.73	3617.46	0.00186064	1.0944	2.04	
K16-363	PLT-03	28.40	HW	MDU	2.16	II	d	valid	61.10	61.10	61.10	21.6	2.05	3733.21	0.000548504	1.0944	0.60	
K16-363	PLT-04	28.40	HW	MDU	0.36	L	a	valid	26.20	61.10	26.20	3.6	0.34	2038.23	0.00016744	1.0944	0.18	
K16-363	PLT-05	35.10	HW	RHYv	7.48	II	d	valid	61.10	61.10	61.10	74.8	7.09	3733.21	0.001899448	1.0944	2.08	
K16-363	PLT-06	35.10	HW	RHYv	6.38	L	a	valid	46.70	61.10	46.70	63.8	6.05	3633.02	0.001664795	1.0944	1.82	
K16-363	PLT-07	45.90	HW	RHYv	3.90	II	d	valid	61.10	61.10	61.10	39	3.70	3733.21	0.000990354	1.0944	1.08	
K16-363	PLT-08	45.90	HW	RHYv	9.12	L	a	valid	40.80	61.10	40.80	91.2	8.65	3174.03	0.002723903	1.0944	2.98	
K16-363	PLT-09	51.91	HW	RHYv	8.58	II	d	valid	61.10	61.10	61.10	85.8	8.13	3733.21	0.002178779	1.0944	2.38	
K16-363	PLT-10	51.91	HW	RHYv	7.06	L	a	valid	54.60	61.10	54.60	70.6	6.69	4247.60	0.001575684	1.0944	1.72	
K16-363	PLT-11	65.88	HW	RHYv	9.00	II	d	valid	61.10	61.10	61.10	90	8.53	3733.21	0.002285433	1.0944	2.50	
K16-363	PLT-12	65.88	HW	RHYv	17.32	L	a	valid	23.00	61.10	23.00	173.2	16.42	1789.28	0.0091765	1.0944	10.04	
K16-363	PLT-13	73.10	HW	RHYi	12.88	II	d	valid	61.10	61.10	61.10	128.8	12.21	3733.21	0.003270708	1.0944	3.58	
K16-363	PLT-14	73.10	HW	RHYi	6.22	L	a	valid	55.20	61.10	55.20	62.2	5.90	4294.28	0.001373119	1.0944	1.50	
K16-363	PLT-15	84.48	HW	RHYi	8.62	II	d	valid	61.10	61.10	61.10	86.2	8.17	3733.21	0.002188937	1.0944	2.40	
K16-363	PLT-16	84.48	HW	RHYv		L	a	not available due fracturing		61.10	0.00	0	0.00	0.00	#DIV/0!	1.0944	#DIV/0!	
K16-363	PLT-17	89.72	HW	RHYi	7.44	II	d	valid	61.10	61.10	61.10	74.4	7.05	3733.21	0.001889291	1.0944	2.07	
K16-363	PLT-18	89.72	HW	RHYi	22.48	L	a	not valid, shearing	47.80	61.10	47.80	224.8	21.31	3718.60	0.005730934	1.0944	6.27	
K16-363	PLT-19	90.00	HW	RHYi	0.30	II	d	valid	61.10	61.10	61.10	3	0.28	3733.21	7.61811E-05	1.0944	0.08	
K16-363	PLT-20	90.00	HW	RHYi	8.64	L	a	valid	35.00	61.10	35.00	86.4	8.19	2722.82	0.003008172	1.0944	3.29	
K16-363	PLT-21	95.12	HW	RHYv	8.54	II	d	valid	61.10	61.10	61.10	85.4	8.10	3733.21	0.002168622	1.0944	2.37	
K16-363	PLT-22	95.12	HW	RHYv	23.00	L	a	not valid, shearing	54.50	61.10	54.50	230	21.80	4239.82	0.005142666	1.0944	5.63	
K16-363	PLT-23	104.04	HW	RHYv	7.46	II	d	valid	61.10	61.10	61.10	74.6	7.07	3733.21	0.00189437	1.0944	2.07	
K16-363	PLT-24	104.04	HW	RHYv	16.00	L	a	valid	41.20	61.10	41.20	160	15.17	3205.15	0.004732382	1.0944	5.18	
K16-363	PLT-25	121.24	HW	RHYv	10.76	II	d	valid	61.10	61.10	61.10	107.6	10.20	3733.21	0.002732362	1.0944	2.99	
K16-363	PLT-26	121.24	HW	RHYv	27.92	L	a	valid	58.20	61.10	58.20	279.2	26.47	4527.67	0.005845874	1.0944	6.40	
K16-363	PLT-27	132.70	HW	PEL	10.24	II	d	valid	61.10	61.10	61.10	102.4	9.71	3733.21	0.002600314	1.0944	2.85	
K16-363	PLT-28	132.70	HW	PEL	22.84	L	a	valid	45.00	61.10	45.00	228.4	21.65	3500.77	0.006185013	1.0944	6.77	
K16-363	PLT-29	139.86	HW	RHYc	0.26	II	d	valid	61.10	61.10	61.10	2.6	0.25	3733.21	6.60236E-05	1.0944	0.07	
K16-363	PLT-30	139.86	HW	RHYc	1.42	L	a	valid	46.50	61.10	46.50	14.2	1.35	#REF!	#REF!	1.0944	#REF!	
K16-363	PLT-31	149.83	HW	RHYc	2.58	II	d	valid	61.10	61.10	61.10	25.8	2.45	4753.27	0.000514559	1.0944	0.56	
K16-363	PLT-32	149.83	HW	RHYc	4.72	L	a	valid	21.00	61.10	21.00	47.2	4.47	1633.69	0.002738922	1.0944	3.00	
K16-363	PLT-33	159.07	HW	RHYc	1.24	II	d	valid	61.10	61.10	61.10	12.4	1.18	3733.21	0.000314892	1.0944	0.34	
K16-363	PLT-34	159.07	HW	RHYc	10.66	L	a	not valid, shearing	47.00	61.10	47.00	106.6	10.11	3656.36	0.002763862	1.0944	3.02	
K16-363	PLT-35	158.48	HW	RHYc	5.20	II	d	valid	61.10	61.10	61.10	52	4.93	3733.21	0.001320472	1.0944	1.45	
K16-363	PLT-36	158.48	HW	RHYc	14.16	L	a	valid	36.20	61.10	36.20	141.6	13.42	2816.18	0.004766633	1.0944	5.22	
K16-363	PLT-37	162.25	HW	RHYv	2.16	II	d	valid	61.10	61.10	61.10	21.6	2.05	3733.21	0.000548504	1.0944	0.60	
K16-363	PLT-38	162.25	HW	RHYv	14.14	L	a	valid	50.00	61.10	50.00	141.4	13.40	3889.75	0.003446168	1.0944	3.77	
K16-363	PLT-39	247.82	HW	RHYv	11.54	II	d	valid fresh cut silicified	61.10	61.10	61.10	115.4	10.94	3733.21	0.002930433	1.0944	3.21	
K16-363	PLT-40	247.82	HW	RHYv	7.10	L	a	valid fresh cut silicified	24.00	61.10	24.00	71	6.73	1867.08	0.00360499	1.0944	3.95	
K16-363	PLT-41	255.20	HW	RHYc	0.30	II	d	multiple breaks valid	61.10	61.10	61.10	3	0.28	3733.21	7.61811E-05	1.0944	0.08	
K16-363	PLT-42	255.20	HW	RHYc	1.34	L	a	multiple breaks valid	32.50	61.1	32.50	13.4	1.27	2528.34	0.000502433	1.0944	0.55	
K16-363	PLT-43	261.00	HW	MDS	0.24	II	d	asily broken along foliation va	61.10	61.1	61.10	2.4	0.23	3733.21	6.09449E-05	1.0944	0.07	
K16-363	PLT-44	261.00	HW	MDS	0.36	L	a	asily broken along foliation va	43.00	61.1	43.00	3.6	0.34	3345.18	0.000102021	1.0944	0.11	
K16-363	PLT-45	281.82	HW	RHYv	2.26	II	d	break along fol valid	61.10	61.1	61.10	22.6	2.14	3733.21	0.000573898	1.0944	0.63	
K16-363	PLT-46	281.82	HW	RHYv	8.84	L	a	multiple breaks along fol valid	38.50	61.1	38.50	88.4	8.38	2995.11	0.002798005	1.0944	3.06	
K16-363	PLT-47	287.91	Ore	MXSX	8.64	II	d	fresh cut valid	61.10	61.1	61.10	86.4	8.19	3733.21	0.002194015	1.0944	2.40	
K16-363	PLT-48	303.00	Waste	RHYc	0.46	II	d	easily break along fol valid	61.10	61.1	61.10	4.6	0.44	3733.21	0.000116811	1.0944	0.13	
K16-363	PLT-49	303.00	Waste	RHYc	4.92	L	a	multiple breaks valid	34.00	61.1	34.00	49.2	4.66	2645.03	0.001763369	1.0944	1.93	
K16-363	PLT-50	319.31	Waste	RHYc	0.60	L	a	multiple breaks valid	27.50	61.1	27.50	6	0.57	2139.36	0.000265874	1.0944	0.29	
K16-363	PLT-51	323.92	Ore	MXSX	15.44	II	d	fresh break valid	61.10	61.1	61.10	154.4	14.64	3733.21	0.003920787	1.0944	4.29	
K16-363	PLT-52	373.80	Waste	RHYv	6.74	II	d	fresh break valid	61.10	61.1	61.10	67.4	6.39	3733.21	0.001711535	1.0944	1.87	
K16-363	PLT-53	392.30	Waste	RHYv	4.80	II	d	fresh break valid	61.10	61.1	61.10	48	4.55	3733.21	0.001218897	1.0944	1.33	
K16-363	PLT-54	409.37	Waste	RHYv	4.82	II	d	fresh break valid	61.10	61.1	61.10	48.2	4.57	3733.21	0.001223976	1.0944	1.34	
K16-363	PLT-55	409.37	Waste	RHYv	12.40	L	a	multiple breaks	45.00	61.1	45.00	124	11.76	3500.77	0.003357888	1.0944	3.67	
K16-363	PLT-56	425.97	Waste	RHYv	9.44	L	a	multiple breaks	36.00	61.1	36.00	94.4	8.95	2800.62	0.003195409	1.0944	3.50	
											0.00	0	0.00	0.00	#DIV/0!	0.0000	#DIV/0!	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-367	Krakatoa (in-pit)	All	KRAK007 (UG Hole 1)	415075.7	6815186.4	1388.5	282	-65	HQ3	215	15-Jun-16	18-Jun-18

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	ON		
Geotechnical	JM/IH	JRM	
PLT	IH/JRM/ON	JRM	Jun 26 - July 6

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology and Lithology Code
K16-367 (UG Hole 1)	0	8.7	OVBN
K16-367 (UG Hole 1)	8.7	16.3	Aphanitic Rhyolite (RHYi)
K16-367 (UG Hole 1)	16.3	19.4	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	19.4	29	Aphanitic Rhyolite (RHYi)
K16-367 (UG Hole 1)	29	29.8	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	29.8	48.3	Aphanitic Rhyolite (RHYi)
K16-367 (UG Hole 1)	48.3	49.55	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	49.55	52.7	Coherent Rhyolite (RHYc)
K16-367 (UG Hole 1)	52.7	56.6	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	56.6	57.35	Coherent Rhyolite (RHYc)
K16-367 (UG Hole 1)	57.35	83.85	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	83.85	86.9	Sediment (SED)
K16-367 (UG Hole 1)	86.9	107.8	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	107.8	111.5	Stringer Sulfide (OJ)
K16-367 (UG Hole 1)	111.5	118.2	Coherent Rhyolite (RHYc)
K16-367 (UG Hole 1)	118.2	147.5	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	147.5	148.2	Stringer Sulfide (OJ)
K16-367 (UG Hole 1)	148.2	151.9	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	151.9	152.5	Stringer Sulfide (OJ)
K16-367 (UG Hole 1)	152.5	152.8	Massive Sulfide (OB)
K16-367 (UG Hole 1)	152.8	155.1	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	155.1	156.1	Massive Sulfide (OK)
K16-367 (UG Hole 1)	156.1	173.1	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	173.1	177.1	Massive Sulfide (OK)
K16-367 (UG Hole 1)	177.1	178.8	Undifferentiated Rhyolite (RHY)
K16-367 (UG Hole 1)	178.8	180	Massive Sulfide (OK)
K16-367 (UG Hole 1)	180	184.3	Undifferentiated Rhyolite (RHY)
K16-367 (UG Hole 1)	184.3	188.8	Massive Sulfide (OB)
K16-367 (UG Hole 1)	188.8	207.6	Mafic Sill (MAFi)
K16-367 (UG Hole 1)	207.6	207.9	Stringer Sulfide (OJ)
K16-367 (UG Hole 1)	207.9	210.3	Coherent Rhyolite (RHYc)
K16-367 (UG Hole 1)	210.3	211.1	Mudstone (MDSt)
K16-367 (UG Hole 1)	211.1	223.1	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	223.1	223.5	Disseminated Sulfide (OI)
K16-367 (UG Hole 1)	223.5	273.1	Volcaniclastic Rhyolite (RHYv)
K16-367 (UG Hole 1)	273.1	278.7	Sediment (SED)
K16-367 (UG Hole 1)	278.7	282	Fault Zone (FLZ)

Geotechnical Log

Hole ID	Lithology	Core Recovery Data									Strength Data			Discontinuity parameters for Q System ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Fault and Broken Zones					Comment
		From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Be ta diff. between runs	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	
K16-367 (UG Hole 1)	Overburden (OVBN)	0.00	9.00																												
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	9.00	10.50	1.50	1.50	100%	18	0.96	64%	NEW	W2	R4	4	1	JN	2.0	1.0					17	JN	1.0	1.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	10.50	12.00	1.50	1.50	100%	3	1.50	100%	0	W1	R4	4					1	JN	2.0	1.0	2	JN	1.5	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	12.00	13.50	1.50	1.50	100%	3	1.50	100%	0	W1	R4	4					1	JN	1.0	4.0	3	JN	1.5-3	1-2						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	13.50	15.00	1.50	1.50	100%	3	1.50	100%	0	W1	R4	3	1	JN	1.5	2.0	1	JN	1.5	2.0	1	JN	1.5	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	15.00	16.30	1.30	1.30	100%	2	1.30	100%	0	W1	R4	3	1	JN	3.0	2.0					1	JN	1.5	1.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	16.30	18.00	1.70	1.70	100%	9	1.50	88%	0	W1	R4	6	1	JN	3.0	2.0	3	JN	1.5	2-4	4	JF	1.0	2.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	18.00	19.40	1.40	1.40	100%	5	1.20	86%	NEW	W2	R3	2									5	JF	1.0	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	19.40	21.00	1.60	1.60	100%	1	1.60	100%	0	W1	R4	2									1	JF	1.0	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	21.00	22.50	1.50	1.50	100%	2	1.50	100%	0	W1	R3	3					1	JF	2.0	2.0	1	JN	1.0	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	22.50	24.00	1.50	1.50	100%	2	1.50	100%	0	W1	R3	2									2	JF	1.0	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	24.00	25.50	1.50	1.50	100%	1	1.50	100%	0	W1	R4	2									1	JF	1.0	1.0					10%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	25.50	27.00	1.50	1.50	100%	7	1.44	96%	0	W1	R4	3					1	JN	1.0	2.0	6	JF	1.0	2.0					10%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	27.00	28.50	1.50	1.50	100%	4	1.43	95%	0	W1	R3	3									4	JF	1.5	1-2					15%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	28.50	29.70	1.20	1.20	100%	4	0.83	69%	-	W2	R2	3	1	JN	3.0	2.0					3	JF	1.0	2-6	5%		15%			Lost ori in broken/rubble zone.
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	29.70	31.25	1.55	1.16	75%	36	0.36	23%	-	W3/W4	R2	15									1	FLT	1.0	8.0	5%	10%	65%		60%	No orientation through rubble
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	31.25	33.00	1.75	1.75	100%	4	1.75	100%	NEW	W2	R3	4					1	HJN	2.0	0.8	3	JN	2-3	2.0						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	33.00	34.50	1.50	1.50	100%	6	1.50	100%	NEW	W1	R3	6	1	JN	2.0	2.0	3	JN	2.0	2.0	2	JN	1-2	1-2						
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	34.50	36.00	1.50	1.50	100%	7	1.31	87%	-	W2	R4	6					5	JN/HJ	1.5	1-2	2	JN/HF	1-1.5	0.8						No orientation due to poor fit of fragments
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	36.00	37.50	1.50	1.50	100%	8	1.05	70%	NEW	W2	R3	4					8	JN	1.5-3	1-2									15%	Lost ori due to poor fit of fragments at 37.1m
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	37.50	39.00	1.50	1.37	91%	28	0.45	30%	-	W3	R3	4					1	JN	4.0	4.0	4	JN	1.0	2-4						Ori lost in rubble
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	39.00	40.50	1.50	1.50	100%	5	1.31	87%	NEW	W2	R3	3									5	JF	1.5	2.0					10%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	40.50	42.00	1.50	1.50	100%	5	1.29	86%	0	W2	R3	3					2	JN	1.5	1.0	3	JN/JF	1.5	2.0					15%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	42.00	43.50	1.50	1.50	100%	2	1.50	100%	0	W2	R3	3																		
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	43.50	45.00	1.50	1.50	100%	5	1.44	96%	0	W2	R3	4	2	JN	1.5	2.0					3	JF	1.5	4.0					20%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	45.00	46.50	1.50	1.50	100%	4	1.50	100%	0	W2	R3	6	2	JN	1.5	2.0					2	JF/JN	1.5	2.0					10%	
K16-367 (UG Hole 1)	Aphanitic Rhyolite (RHYi)	46.50	48.00	1.50	1.50	100%	2	1.50	100%	0	W2	R3	4	1	JN	3.0	2.0					1	JF	1.5	2.0					50%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	48.00	49.50	1.50	1.50	100%	2	1.41	94%	NEW	W2	R2	3					1	JN	2.0	4.0	1	JF	2.0	4.0						Orientation lost at 48.58m.
K16-367 (UG Hole 1)	Coherent Rhyolite (RHYc)	49.50	51.00	1.50	1.50	100%	4	1.50	100%	0	W2	R2/R3	3	1	JN	1.5	2.0					2	JF	1.0	4.0						
K16-367 (UG Hole 1)	Coherent Rhyolite (RHYc)	51.00	52.50	1.50	1.50	100%	5	1.37	91%	0	W2	R3	4	2	JN	1.5	2.0					2	JF	1.0	4.0					5%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	52.50	54.00	1.50	1.50	100%	7	1.28	85%	NEW	W2	R2	3									5	JF	1.0	4.0						Orientation lost at 53.51m. Broken core with clay and mica alteration from 53.3 - 53.41m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	54.00	55.50	1.50	1.50	100%	5	1.35	90%	NEW	W2	R3	6					5	JN/JF	1.5	4.0							2%			Old orientation up to 54.61m. New orientation below that. Broken core between.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	55.50	56.50	1.00	1.00	100%	4	0.89	89%	-	W2	R3	3					1	JN	3.0	2.0	3	JN	1.0	4.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	56.50	58.50	2.00	2.00	100%	5	1.85	93%	NEW	W2	R4	3									4	JF	1.5	2.0			5%		2%	No orientation above 56.94m due to broken core.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	58.50	60.00	1.50	1.50	100%	4	1.43	95%	-	W2	R4	3					1	JN	1.5	2.0	3	JF	1.5	4.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	60.00	61.50	1.50	1.50	100%	2	1.50	100%	0	W2	R4	3	1	JN	1.5	2.0					1	JF	1.0	2.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	61.50	63.00	1.50	1.50	100%	2	1.50	100%	0	W2	R4	2					2	JF	1.5	2.0									5%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	63.00	64.50	1.50	1.50	100%	3	1.50	100%	0	W2	R3	3									2	JF/JN	1.5	2.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	64.50	66.00	1.50	1.50	100%	1	1.50	100%	0	W2	R4	2									1	JF	1.5	2.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	66.00	67.50	1.50	1.50	100%	0	1.50	100%	-	W2	R4	1																	2%	Orientation carried from above
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	67.50	69.00	1.50	1.50	100%	2	1.50	100%	0	W2	R4	2					2	JN	1.5	1.0										
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	69.00	69.75	0.75	0.75	100%	0	0.75	100%	NEW	W2	R4	2																		Spun core at top of run so cannot orient from above.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	69.75	72.00	2.25	2.15	96%	15	1.58	70%	NEW	W2/W3	R2	3					1	JN	3.0	2.0	12	JF	2.0	4.0			5%			Orientation lost in weak, fractured rhyolite. Particularly weak and altered from 69.75 - 70.30m. Lost core likely from 70.2 - 70.3 at bottom of weak rhyolite. Orientation lost again at 71.7m. Orientation in the middle of the run is from a mark made at 70.5m. Rhyolite is weaker than surrounding unit although classified the same.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	72.00	73.50	1.50	1.50	100%	12	1.06	71%	NEW	W2/W3	R2	3	1	JN	3.0	2.0					8	JN	2.0	4.0			1%	1%		Can break rock along foliation with hands. Rhyolite is weaker than surrounding unit although classified the same.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	73.50	75.00	1.50	1.50	100%	9	1.25	83%	NEW	W2	R2/R3	3					3	JN	2.0	4.0	1	JF	2.0	4.0			18%			Broken core with minor clay alteration from 73.72 - 74.00m. Orientation lost here.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	75.00	76.50	1.50	1.50	100%	7	1.39	93%	NEW	W2	R3	3	2	JN	3.0	2.0					1	JN	2.0	4.0			2%	2%		Ground core from 75.00-75.05 so lost orientation. Heavily altered core from 76.18 - 76.22m which could be part of a minor fault.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	76.50	78.00	1.50	1.50	100%	4	1.50	100%	335	W2	R3	3					1	JN	3.0	2.0	3	JF/JN	2.0	4.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	78.00	79.50	1.50	1.50	100%	16	1.24	83%	NEW	W2	R3	3					1	JN	3.0	2.0	4	JF/JN	2.0	4.0			20%		5%	Broken core from 78.39 - 78.7m. Pieces are rounded from redrill and little alteration. Likely mechanical and due to a step fractures through core.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	79.50	81.00	1.50	1.29	86%	23	0.81	54%	NEW	W2/W3	R3	3					1	JN	3.0	2.0	3	JF	2.0	4.0	30%			5%	15%	Blocked at 79.8m, no orientation. Fault gouge and lost core from 80.44 - 80.85m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	81.00	82.50	1.50	1.50	100%	6	1.49	99%	NEW	W2	R3	6					3	JN	3.0		2	JF	1.0	4.0						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	82.50	84.00	1.50	1.50	100%	5	1.37	91%	270	W2	R3	6					3	JN	3.0	2.0	2	JF	1.0	4.0						
K16-367 (UG Hole 1)	Sediment (SED)	84.00	85.50	1.50	1.50	100%	7	1.33	89%	180	W2	R3	3					3	JN	3.0	2.0	3	JF	2.0	4.0	1%				5%	Foliation is essentially perpendicular to the core axis and therefore spun core is frequent (destroying orientation). Zone of increased clay alteration and weaker than surrounding rock from 84.84 - 84.92m, possibly associated with a minor fault in area.
K16-367 (UG Hole 1)	Sediment (SED)	85.50	87.00	1.50	1.50	100%	2	1.50	100%	-	W2	R3	3	1	HJN	3.0	2.0					2	JF	1.0	4.0			1%			Broken core at bottom of run - no orientation.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	87.00	88.50	1.50	1.50	100%	4	1.50	100%	NEW	W2/23	R2/R3	3									4	JF/JN	1.0	4.0					10%	Weak along foliation - can break with hands.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	88.50	90.48	1.98	1.98	100%	10	1.56	79%	NEW	W2	R2	3									6	JF/FLT	2.0	4.0	1%		1%		2%	Orientation lost at 89.41m where core was spun and broken. Weak along foliation. Weak and altered 90.06 - 90.11m
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	90.48	91.50	1.02	1.02	100%	1	1.02	100%	NEW	W2	R3	1	1	JN	3.0	2.0														
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	91.50	93.00	1.50	1.50	100%	3	1.50	100%	-	W2	R4	1					3	JN	1.5	2.0									2%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	93.00	94.50	1.50	1.50	100%	15	1.03	69%	-	W2/W3	R2	3													2%			3%		Weak, clay altered rhyolite from 93.36 - 93.44m. No orientation could be extrapolated from adjacent runs due to poor rock quality zones.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	94.50	96.00	1.50	1.40	93%	26	0.10	7%	-	W2/W3	R2	3													10%			5%	15%	Weak, clay altered rhyolite with more microdefects causing rock to break easily under little pressure. Many 5cm or less zones of W4 which would failure with the additional of water. Orientation destroyed at base of run.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	96.00	97.50	1.50	1.50	100%	6	1.28	85%	NEW	W2/W3	R2	3					2	JN	3.0	4.0	4	JN/JF	1.0	4.0	1%				8%	Foliated with increased alteration and clay filled lenses or faults (often <3cm thick).
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	97.50	99.00	1.50	1.50	100%	9	1.08	72%	NEW	W2	R3	6	3	JN	3.0	2.0					3	JN/JF	1.0	4.0					5%	Core spun at the top so cannot compare to above run.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	99.00	100.50	1.50	1.50	100%	5	1.38	92%	NEW	W2	R3	6	1	JN	3.0	2.0	3	JN	3.0	2.0	1	JF	1.0	4.0					2%	Broken core from 99.26 -99.57m with variable sized pieces. Orientation lost at this zone.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	100.50	102.11	1.61	1.61	100%	4	1.55	96%	-	W2	R3	3									4	JF	1.0	4.0					15%	Foliation in core is more altered and contorted below 101.7m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	102.11	104.38	2.27	2.27	100%	9	1.74	77%	NEW	W2	R1-R3	3					3	JN	2.0	2.0	6	JN/JF	2.0	2.0			5%		10%	Bands of weaker foliated rhyolite which is easily broken by hand.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	104.38	105.00	0.62	0.62	100%	5	0.41	66%	0	W2/W3	R1	3					6	JN	2.0	4.0	7	JN/JF	1.0	4.0			5%		20%	Series of quartz veins surrounded by folded foliation which is weak and more altered. Quartz veins have many microdefects but more competent (R3).
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	105.00	106.40	1.40	1.40	100%	44	0.10	7%	NEW	W3/W4	R1	20					1	JN	3.0	4.0	2	JN/JF	2.0	4-8		50%			80%	Orientation lost from 105.00 - 105.80m. Increased weathering around quartz veins resulting in increased porosity.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	106.40	108.00	1.60	1.60	100%	8	1.28	80%	0	W2/W3	R1/R2	3					2	FLT	3.0	4.0	4	JN/JF	2.0	2.0					30%	Foliation is changing orientation often in alignment with local faults.
K16-367 (UG Hole 1)	Stringer Sulfide (OI)	108.00	109.50	1.50	1.50	100%	3	1.45	97%	0	W2	R3	3									3	JN/JF	1.0	2.0					30%	
K16-367 (UG Hole 1)	Stringer Sulfide (OI)	109.50	111.26	1.76	1.76	100%	1	1.76	100%	0	W2	R4	1									1	JF	2.0	4.0					40%	Some bands of rhyolite between ore.
K16-367 (UG Hole 1)	Coherent Rhyolite (RHYc)	111.26	112.85	1.59	1.59	100%	31	0.20	13%	NEW	W3	R1	3					2	JN	3.0	2.0	21	JF	2.0	4.0			25%		90%	Orientation lost from 111.50 - 111.78m.
K16-367 (UG Hole 1)	Fault Breccia - Coherent Rhyolite (RHY	112.85	114.60	1.75	1.75	100%	26	0.11	6%	-	W3/W4	R1	20														90%			100%	Rock is heavily altered around quartz veins. Liquefies when saturated. Breaks under own weight. Quartz veins are strong (R4) and have lots of microdefects.
K16-367 (UG Hole 1)	Fault Breccia - Coherent Rhyolite (RHY	114.60	115.50	0.90	0.90	100%	7	0.40	44%	NEW	W3	R2	15					2	JN/FL	2.0	2.0	3	JF/JN	2.0	4.0		100%			100%	Considered sugar cubed due to the number of open microdefects. More competent than previous run.
K16-367 (UG Hole 1)	Fault Breccia - Coherent Rhyolite (RHY	115.50	117.00	1.50	1.50	100%	9	1.01	67%	-	W3	R2	15	1	JN	2.0	4.0	7	JN/FL	2.0	4.0	1	JN.	3.0	4.0		100%			100%	Significant portion of this run is quartz vein which has increased the RQD, however the rock between veins remains weak, altered rhyolite. No orientation but was able to carry the orientation from previous run. Quartz veins have strength of R4
K16-367 (UG Hole 1)	Fault Breccia - Coherent Rhyolite (RHY	117.00	117.71	0.71	0.71	100%	28	0.00	0%	-	W3/W4	R1	20														100%			100%	Rock is heavily altered around quartz veins. Liquefies when saturated. Breaks under own weight. Quartz veins are strong (R4) and have lots of microdefects.
K16-367 (UG Hole 1)	Fault Breccia - Coherent Rhyolite (RHY	117.71	118.50	0.79	0.79	100%	13	0.11	14%	-	W2	R3	6					9	JN/JF	2.0	4.0	1	JN	2.0	4.0	5%				30%	
K16-367 (UG Hole 1)	Fault Breccia - Mafic Sill (MAFi)	118.50	120.00	1.50	1.17	78%	27	0.00	0%	NEW	W3	R2	15	2	JN	1.0	4.0	7	JN/JF	2.0	4.0	4	JN	2.0	4.0		100%			100%	Because of the lost core and nature of the run, the orientation should be considered suspect. Lost core anticipated from 118.87 - 119.20
K16-367 (UG Hole 1)	Fault Breccia - Mafic Sill (MAFi)	120.00	121.50	1.50	1.50	100%	49	0.00	0%	275	W3/W4	R1	20	2	JN	1.0	4.0	3	JN	3.0	4.0						100%			100%	Rock is heavily altered. Liquefies when saturated. Breaks under own weight or with subtle impact. Clay cemented together.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	121.50	121.88	0.38	0.38	100%	6	0.00	0%	-	W2/W3	R2	4	4	JF	1.5	4.0	2	JF	2.0	4.0									100%	Weaker parallel to foliation. Foliation shallowing with depth.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	121.88	123.00	1.12	1.12	100%	8.00	0.53	47%	-	W2	R2	4.00					2.00	FLT	1.00	2-6	6.00	JF	1.00	2-4		1%		15%		
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	123.00	124.50	1.50	1.43	95%	5.00	0.79	53%	-	W3	R2	6.00					3.00	FLT	1-2	2-6	2.00	JF	1.00	2.00		3%				
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	124.50	126.00	1.50	1.50	100%	12.00	1.24	83%	335	W2	R2	9.00					6.00	JN	1-2	2-4	6.00	JF	1-2	2.00						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	126.00	127.50	1.50	1.50	100%	9.00	0.92	61%	-	W2	R2	9.00					4.00	JN	1.50	2-4	5.00	JF	1-2	2.00						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	127.50	129.00	1.50	1.45	97%	7.00	1.15	77%	New	W2	R2	9.00					2.00	JN	1.5-3	2-4	5.00	JF	0.5-1	2-4						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	129.00	130.50	1.50	1.50	100%	5.00	1.41	94%	New	W2	R2	9.00					2.00	JN	1.50	4.00	3.00	JF	0.5-1.	2-4						lost ori at 129.67 due to poor fit of fragments
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	130.50	132.00	1.50	1.44	96%	4.00	1.15	77%	-	W2	R2	6.00	1.00	JN	2.00	4.00	1.00	JN	1.00	2.00	2.00	JF	0.5-1	2-4						No ori due to poor fit of fragments (crumbly rock)
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	132.00	133.50	1.50	1.50	100%	5.00	1.42	95%	New	W2	R2	4.00					1.00	JN	1.50	2.00	4.00	JF	0.50	4.00						Ori lost due to spun core at 132.14
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	133.50	135.00	1.50	1.20	80%	8.00	0.80	53%	-	W2	R2	6.00					1.00	JN	1.50	4.00	7.00	JF	1-1.5	2-4						Core was cut prior to teching, no orientation, lost core
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	135.00	136.50	1.50	1.35	90%	13.00	1.19	79%	-	W2	R2	4.00									10.00	JF/FLT	0.5-1.	2-6						Core was cut prior to teching, no orientation, lost core
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	136.50	137.82	1.32	1.32	100%	9	1.07	81%	NEW	W2	R3	3									9	JF/JN	1.0	4.0			2%		15%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	137.82	139.50	1.68	1.68	100%	3	1.68	100%	80	W2	R4	3									2	JF/JN	1.0	4.0					50%	Bottom broken so no orientation. Used orientation from previous run.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	139.50	140.83	1.33	1.33	100%	5	1.26	95%		W2	R3/R4	3					2	JN	1.0	4.0	3	JF/JN	2.0	4.0					5%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	140.83	142.50	1.67	1.67	100%	13	1.17	70%		W2/W3	R2	6					4	JN	1.0	4-8	5	JF/JN	1.0	4-8			2%		5%	More chlorite and hematite alteration throughout host rock making it weaker. Broken zone from weak core from 141.26 - 141.49m.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	142.50	144.00	1.50	1.50	100%	16	1.01	67%		W3	R2	3					1	JN	2.0	4.0	8	JF	0.5	4-8	3%	3%				Orientation lost at 143.70m in clay filled joint. Fault with clay and chlorite infill and very weak from 193.37 - 193.46m.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	144.00	145.50	1.50	1.50	100%	10	1.10	73%		W2	R2	6					2	JN	2.0	4.0	7	JF	1.0	4.0			2%			Orientation change of 220 deg at 144.45m.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	145.50	147.00	1.50	1.50	100%	13	0.88	59%		W2	R3	6					3	JN	2.0	4.0	9	JF	1.0	4.0	2%		2%			Clay seam from 146.22 - 146.26m.
K16-367 (UG Hole 1)	Stringer Sulfide (OI)	147.00	148.50	1.50	1.50	100%	8	1.16	77%		W2	R3	6					4	JN	1.5	2.0	4	JF	1.0	2.0						Ore stringer: 147.48 - 147.54m, 147.94 - 148.11m. Ore is more massive and stronger.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	148.50	150.00	1.50	1.50	100%	6	1.37	91%		W2	R3	6					2	JN	1.5	4.0	4	JF	1.0	4.0					5%	Weaker zone between 149.39 and 149.53m from increased alteration.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	150.00	151.50	1.50	1.50	100%	6	1.30	87%	New	W2/W3	R1/R2	6					3	JN	1.5	4.0	3	JF	1.0	2.0			2%		15%	Heavy chlorite alteration and breaks along foliation under own weight. Large qtz intrusion between 150.89 and 151.40 - rock is massive with some microdefects.
K16-367 (UG Hole 1)	Stringer Sulfide (OI)	151.50	153.00	1.50	1.50	100%	9	1.25	83%	0	W2/W3	R1/R2	3					1	JN	3.0	2.0	8	JF	0.5	4.0					10%	Some disseminated ore and band of ore from 152.50 - 152.81m which is stronger than host rock. Rock between ore (152.00 - 152.50m) is more chlorite altered, covered in precipitated muscovite, and is weak.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	153.00	154.08	1.08	1.08	100%	5	0.96	89%	-	W2	R3	3					3	JN	1.0	4.0	2	JF	1.0	4.0						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	154.08	154.65	0.57	0.57	100%	22	0.16	28%	-	W2	R1/R2	3					1	JN	1.0	2.0	14	JF	0.5	4.0			10%			Very weak along foliation (mica rich). Breaks under own weight.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	154.65	155.10	0.45	0.45	100%	1	0.45	100%	0	W2	R3	3					1	JN	1.0	4.0										Change to steep foliation
K16-367 (UG Hole 1)	Massive Sulfide (OX)	155.10	156.10	1.00	1.00	100%	0	1.00	100%	-	W2	R5	1																		Massive and strong
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	156.10	157.50	1.40	1.40	100%	4	1.37	98%	0	W2	R3	3					2	JN	1.5	2.0	2	JF	1.0	2.0					5%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	157.50	159.00	1.50	1.50	100%	2	1.50	100%	0	W2	R4	3									1	JF	1.0	2.0					5%	Although few breaks on foliation, it is still present and main weakness plane.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	159.00	160.50	1.50	1.50	100%	1	1.50	100%	0	W2	R4	3									1	JF	1.0	2.0						Intrinsic foliation but only random natural fractures. Think that foliation still should be considered one set.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	160.50	162.00	1.50	1.50	100%	3	1.50	100%	0	W2	R4	3					1	JN	3.0	2.0	1	JF	1.0	2.0					30%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	162.00	163.50	1.50	1.50	100%	1	1.50	100%	0	W2	R4	1																	15%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	163.50	165.00	1.50	1.50	100%	1	1.50	100%	0	W2	R4	1																	2%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	165.00	166.50	1.50	1.50	100%	0	1.50	100%	0	W2	R4	2																		Healed fractures along foliation. Should consider foliation 1 set.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	166.50	168.00	1.50	1.50	100%	3	1.43	95%	0	W2	R4	3									1	JF	1.5	2.0					20%	Same orientation as 2 runs ago
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	168.00	169.50	1.50	1.50	100%	0	1.50	100%	0	W2	R4	1																	3%	Same orientation as above and 3 runs before. Think it's correct.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	169.50	171.00	1.50	1.50	100%	2	1.42	95%	0	W2	R4	3									1	JF	1.5	2.0					10%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	171.00	173.15	2.15	2.15	100%	13	1.74	81%	0	W2/W3	R1/R2	6					3	JN	1.5	2.0	6	JF/JN	2.0	2.0		15%			10%	Very weak and heavily altered (increased porosity and chlorite weathering of biotite) from 171.19 - 171.37. Resembles gouge but no fault plane could be identified. Calcite blebs with sulphides from 171.37 - 171.48m.
K16-367 (UG Hole 1)	Massive Sulfide (OX)	173.15	174.00	0.85	0.85	100%	0	0.85	100%		W1	R6	1																		Massive run of sulphide ore, no fractures
K16-367 (UG Hole 1)	Massive Sulfide (OX)	174.00	175.50	1.50	1.47	98%	3	1.47	98%	NEW	W1	R3	1	1	JN	4.0	0.8	1	JN	4.0	2.0	1	JN	1.5	1.0						
K16-367 (UG Hole 1)	Massive Sulfide (OX)	175.50	177.10	1.60	1.60	100%	5	1.60	100%	0	W1	R4	1	2.0	JN	3.0	0.75-	1	JN	1.5	2.0	2	JF	1.5	1.0						
K16-367 (UG Hole 1)	Undifferentiated Rhyolite (RHY)	177.10	178.80	1.70	1.66	98%	7	1.21	71%	0	W2	R2	3	1.0	JN	2.0	3.0					8	JF	1.0	4-6		3%			50%	
K16-367 (UG Hole 1)	Massive Sulfide (OX)	178.80	180.06	1.26	1.26	100%	9	0.94	75%	-	W2	R3	3	1.0	JN	4.0	0.8	1	JN	3.0	2.0	7	JF	1-3	2.0						
K16-367 (UG Hole 1)	Undifferentiated Rhyolite (RHY)	180.06	181.36	1.30	1.30	100%	13	0.66	51%	NEW	W2	R2	3	1.0	JN	1.5	1.0	1	JN	1.0	2.0	11	JF	1.0	4.0					75%	Orientation lost at 181.5m.
K16-367 (UG Hole 1)	ult Breccia - Undifferentiated Rhyolite (	181.36	182.09	0.73	0.73	100%	25	0.00	0%	-	W3	R1/R2	15													10%	90%			100%	No orientation. Intact fault with quartz veins and heavily altered matrix.
K16-367 (UG Hole 1)	Undifferentiated Rhyolite (RHY)	182.09	183.00	0.91	0.74	81%	24	0.13	14%	-	W2/W3	R1	3					2	JN	2.0	4.0	10	JF	1.0	4.0			35%		40%	No orientation. Very weak across foliation. Can break with hands.
K16-367 (UG Hole 1)	Undifferentiated Rhyolite (RHY)	183.00	184.33	1.33	1.33	100%	11	0.65	49%	-	W2	R1	3					2	JN	2.0	4.0	9	JF	1.0	4.0					5%	No orientation. Very weak across foliation. Can break with hands.
K16-367 (UG Hole 1)	Massive Sulfide (OB)	184.33	186.00	1.67	1.67	100%	13	1.15	69%	New	W2	R4	6	3	JN	1.5	4.0	2	JN	1.5	2.0	6	JN	1.5	2.0			15%		10%	Lost orientation at broken core zone at 185.85m. A subtle foliation exists but rock much stronger than above rhyolite.
K16-367 (UG Hole 1)	Massive Sulfide (OB)	186.00	187.50	1.50	1.50	100%	10	1.05	70%	325	W2	R4	6	4	JN	3.0	1.0	2	JN	1.5	2.0									10%	
K16-367 (UG Hole 1)	Massive Sulfide (OB)	187.50	188.90	1.40	1.40	100%	4	1.18	84%	-	W2	R4	6	1	JN	1.0	2.0	1	JN	3.0	2.0	2	JN/JF	1.0	2.0	8%				20%	Carried orientation from previous run
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	188.90	190.50	1.60	1.60	100%	4	1.42	89%	NEW	W2	R3/R4	3					2	JN	1.5	2.0	1	JF	1.0	4.0					5%	Orientation lost at 189.2m due to spun core.
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	190.50	192.00	1.50	1.50	100%	4	1.41	94%	0	W2	R3	3									4	JF	1.0	4.0					25%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	192.00	193.50	1.50	1.50	100%	3	1.50	100%	0	W2	R3/R4	3									3	JF	1.0	2.0						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	193.50	195.00	1.50	1.50	100%	2	1.50	100%	0	W2	R4	3					1	JN	1.5	2.0	1	JF	1.0	2.0						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	195.00	196.50	1.50	1.50	100%	1	1.50	100%	0	W2	R4	1									1	JN	1.0	2.0					5%	
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	196.50	198.00	1.50	1.40	93%	3	1.27	85%	0	W2	R3	3					1	FLT	1.0	8.0	3	JN	2.0	2.0	1%					
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	198.00	199.50	1.50	1.38	92%	6	1.07	71%	0	W2	R3	6					2	JN	2-3	2.0	4	JN	1-1.5	2.0						Orientation lost due to fractures and poor fit, lines extended from each side
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	199.50	201.00	1.50	1.48	99%	4	1.48	99%	-	W2	R4	3					3	JN	2.0	2.0	1	JF	1.0	2.0						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	201.00	202.50	1.50	1.45	97%	1	1.45	97%	0	W2	R4	1									1	JN	1.5	2.0						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	202.50	204.00	1.50	1.50	100%	7	1.25	83%	0	W2	R4	3					1	JF	1.5	4.0	6	JF	1-2	2-4						Ori lost at 203.5
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	204.00	205.50	1.50	1.50	100%	5	1.35	90%	0	W2	R4	3					1	JN	2.0	2.0	4	JF	1.0	2-4						
K16-367 (UG Hole 1)	Mafic Sill (MAFi)	205.50	207.60	2.10	2.10	100%	21	0.75	36%	-	W3	R2	3									17	JF	1-2	2-6		5%			50%	No ori due to extremely weak rock, crumbles when moved, leading poor fit of fragments
K16-367 (UG Hole 1)	Coherent Rhyolite (RHYc)	207.60	208.50	0.90	0.90	100%	10	0.43	48%	New	W3	R2	3					1	JN	1.5	2.0	9	JF	1.0	2-6		10%			60%	
K16-367 (UG Hole 1)	Coherent Rhyolite (RHYc)	208.50	210.30	1.80	1.45	81%	24	0.74	41%	0	W3	R0-2	6									12	JF	1.0	2-4	2%		22%		70%	
K16-367 (UG Hole 1)	Mudstone (MDSt)	210.30	211.10	0.80	0.70	88%	19	0.13	16%	-	W2	R0-2	6									10	JF	1.0	2.0			55%			Foliation controlled broken zone, rock breaks very readily along the foliation plane
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	211.10	212.60	1.50	1.54	103%	13	0.38	25%	New	W3	R0-2	6					4	JN	1-2	2-6	4	JN	1.0	2.0		13%	13%		74%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	212.60	214.50	1.90	1.78	94%	4.00	1.78	94%	New	W2	R1	4.00					1.00	JN	1.50	4.00	3.00	JF	1.00	4.00						Minimal orientation due to extremely crumbly core
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	214.50	216.00	1.50	1.50	100%	22.00	0.75	50%	New	W3	R1	6.00	1.00	JN	2.00	6.00					10.00	JN	1.5-2	2-4			20%			Orientation lost at 215.79, Orientation for the majority of the run is from the previous run
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	216.00	217.50	1.50	1.50	100%	7.00	1.06	71%	New	W3	R1	6.00					2.00	JN	1.00	2-4	5.00	FLT	1-2	2-15	3%					Lost orientation at 216.6 due to poor fit of fragments
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	217.50	219.00	1.50	1.50	100%	7.00	1.50	100%	30	W3	R1	4.00					2.00	JN	1-2	4.00	5.00	JF	1-2	4.00						
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	219.00	220.50	1.50	1.50	100%	16.00	1.08	72%	-	W3	R1/3	4.00														3%	17%		80%	Lost orientation in fault at 220
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	220.50	222.00	1.50	1.40	93%	14.00	0.83	55%	-	W3	R1/2	4.00					1.00	JN	1.00	2.00	8.00	LT/JF/	1.00	4.00		1%	7%			No surviving orientation mark
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	222.00	223.50	1.50	1.50	100%	44.20	0.19	13%	-	W4	R1	15.00					4.00	JF/JN	1.00	4.00							58%			No surviving orientation mark
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	223.50	225.00	1.50	1.46	97%	13.00	0.81	54%	New	W4	R1	4.00									8.00	F/FLT/	1-2	4-8	1%		13%		100%	Orientation lost in fault at 224.95
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	225.00	226.50	1.50	1.50	100%	23.00	0.61	41%	-	W4	R0/1	15.00					3.00	FLT/JF	1.00	4.00	4.00	JF	1-2	2-4		30%			100%	No surviving orientation mark
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	226.50	228.00	1.50	1.50	100%	9.00	1.19	79%	-	W3	R0/1	15.00					2.00	FLT	1.00	4-6	2.00	FLT	1.00	4-8		13%			100%	No surviving orientation mark
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	228.00	230.18	2.18	2.13	98%	5.00	1.68	77%	-	W2	R2	4.00					3.00	FLT/JF	1.00	4-8	4.00	JF	3.00	2-4					50%	No surviving orientation mark
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	230.18	231.47	1.29	1.25	97%	5	1.00	78%	NEW	W2	R2	4					2	JN	1.5	2.0	3	JF	1.0	2-4	5%					Fault with thick gouge of soft clay from 230.59 - 230.62m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	231.47	232.50	1.03	1.03	100%	7	0.00	0%	-	W3	R1	3	1	FLT	1.5	4.0					6	JF	1.0	4.0					100%	Water weakens rock such that it can be indented by thumb. Alteration along foliation is clay and water makes these planes slides readily. Rock cannot support own weight. Orientation cannot be carried through rock. Strength perpendicular to foliation however the anisotropy is so great that compression perpendicular usually results in progressive failure along foliation.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	232.50	234.00	1.50	1.50	100%	15	0.00	0%	-	W3	R0/R1	3									15	JF	1.0	4.0					100%	Same as above. Rock is very weak along foliation when moist. Cements when dried out. Major Z folds in foliation from 232.67 - 233.08m. Run was oriented but it cannot be carried through run.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	234.00	236.04	2.04	2.04	100%	13	0.12	6%	-	W3/W4	R0/R1	3	2	FLT	1.0	8.0					11	JF	1.0	4.0		40%			100%	Same as above. Particularly weak from 234.06 - 234.16m, 234.94 - 235.43m, and 235.77 - 235.96m. Foliation texture begins to be destroyed.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	236.04	237.44	1.40	1.40	100%	6	0.73	52%	New	W2/W3	R1/R2	3					2	FLT	2.0	8.0	5	JF	1.0	4.0			1%		30%	Orientation lost at broken core at 236.79m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	237.44	238.35	0.91	0.91	100%	10	0.24	26%	-	W3/W4	R0/R1	6					3	FLT	2.0	8.0	4	JF	1.0	4-8	3%	25%			75%	Variable amounts of clay alteration throughout run correlating with R0 and R1 strength. Fringes of minor faults seem to be most altered.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	238.35	239.05	0.70	0.70	100%	5	0.55	79%	-	W2/W3	R1/R2	3					2	JN	2.0	4.0	4	JF	1.0	4.0					15%	Competent and less alteration alone foliation.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	239.05	240.00	0.95	0.95	100%	9	0.18	19%	NEW	W2/W3	R1/R2	3									6	JF	1.0	4.0		2%	10%		65%	Orientation lost at broken core at 239.93m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	240.00	241.50	1.50	1.50	100%	15	0.62	41%	-	W2/W3	R1/R2	3									8	JF	1.0	4-8		5%	4%		85%	Interbedded weak altered on foliation rhyolite with more competent less weathered along foliation rhyolite. Particularly weak zone from 240.53 - 240.82m
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	241.50	243.00	1.50	1.50	100%	11	0.72	48%	-	W2/W3	R1/R2	3					1	FLT	1.0	4-8	7	JF	1.0	4-8		5%			80%	Interbedded weak altered on foliation rhyolite with more competent less weathered along foliation rhyolite. Particularly zone with increased clay content from 241.86 - 242.43m
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	243.00	244.50	1.50	1.50	100%	9	1.24	83%	-	W2/W3	R1/R2	3					2	JN	2.0	4.0	7	JF	1.0	4-8		3%	2%		40%	Interbedded weak altered on foliation rhyolite with more competent less weathered along foliation rhyolite. Particularly zone with increased clay content from 244.21 - 244.29m
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	244.50	246.00	1.50	1.50	100%	9	1.32	88%	NEW	W2	R2	3					4	JN	3.0	2.0	5	JF	2.0	4.0			5%		10%	Orientation lost at 245.85m where core is spun.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	246.00	247.50	1.50	1.50	100%	5	1.38	92%	-	W2	R2/R3	3					1	JN	3.0	2.0	4	JF	1.0	4.0	5%		1%		15%	No orientation on this run. Top of run spun so cannot carry orientation from previous run. Top of next run spun so couldn't extrapolate from below either.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	247.50	249.28	1.78	1.78	100%	3	1.78	100%	NEW	W2	R3	3					2	JN	1.5	2.0	1	JF	1.0	2.0					20%	Broken core at 249 so orientation was lost below there.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	249.28	250.50	1.22	1.22	100%	17	0.44	36%	-	W2	R1/R2	6					2	JN	1.5	2.0	1	JF	1.0	4-8	1%		8%		30%	Fault zone from 249.98 - 250.06m which is heavily clay altered and weak.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	250.50	252.00	1.50	1.50	100%	11	0.93	62%	-	W2	R1/R2	6					4	JN	1.5	2.0	4	JF	1.0	2.0			8%		70%	Orientation marked but core destroyed immediately above - likely when unscrewing core lifter. Rock remains very anisotropic.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	252.00	253.50	1.50	1.50	100%	7	1.26	84%	-	W2	R1/R2	3					1	JN	3.0	2.0	6	JF	2.0	2.0					15%	Weak zone surrounding quartz veins from 252.41 - 252.62m. More chlorite and iron alteration on foliation making it weak, particularly below 253m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	253.50	255.00	1.50	1.50	100%	10	1.11	74%	-	W2	R1/R2	3	1	JN	2.0	4.0					8	JF	2.0	2.0					5%	Foliation has become undulating. About 5cm of clay at the bottom of the run - could be mechanical.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	255.00	256.50	1.50	1.50	100%	6	1.37	91%	-	W2	R1/R2	3	2	JN	2.0	4.0					4	JF	2.0	4.0					15%	Some bands (5-10cm thick) of increased chlorite alteration making them weaker.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	256.50	258.00	1.50	1.50	100%	6	1.34	89%	NEW	W2	R2	3					2	JN	3.0	2.0	4	JF/JN	2.0	2.0					20%	Some bands (3-10cm thick) of increased chlorite alteration making them weaker.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	258.00	259.50	1.50	1.50	100%	7	1.22	81%	-	W2	R3	3					2	JN	3.0	2.0	5	JF/JN	1.5	2.0					65%	No orientation and couldn't match with above run.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	259.50	261.00	1.50	1.50	100%	6	1.29	86%	-	W2	R2	3					2	JN	1.5	2.0	4	JN/JF	2.0	4.0			5%		30%	Orientation attempted by bottom of run friable and destroyed during transportation
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	261.00	262.50	1.50	1.50	100%	13	0.97	65%	-	W2/W3	R2	3					1	JN	1.5	4.0	4	JN/JF	2.0	4.0		35%			45%	Healed fault zone from 261.10 - 261.22 and from 262.12 - 262.5m composed of clay, quartz and chlorite. Foliation is anastomosing in these areas.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	262.50	264.00	1.50	1.50	100%	19	0.99	66%	-	W2/W3	R2	6					4	JN/JF	1.5	4.0	3	JF	2.0	4.0		10%	5%		65%	Broken core immediately above orientation line so couldn't orient run.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	264.00	265.50	1.50	1.50	100%	28	0.64	43%	-	W2/W3	R2	6					9	JN/JF	3.0	4.0	11	JF/JN	2.0	4.0			5%		40%	
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	265.50	267.00	1.50	1.50	100%	20	0.41	27%	-	W3	R1/R2	6					10	JN/JF	2.0	4.0	4	JN/JF	2.0	4.0		20%			85%	5cm of clay at the top of the run - likely mechanical. Blocked at 265.91m in high chlorite alteration band (5cm thick). Healed fault composed of cemented clay from 266.66 - 266.74m.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	267.00	268.50	1.50	1.50	100%	17	0.43	29%	-	W3	R1	6					3	JN	3.0	4.0	9	JN/JF	1.0	4.0		8%			80%	Blocked at 268.1. No orientation for run. Easily broken with hands along foliation.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	268.50	269.83	1.33	1.33	100%	19	0.23	17%	-	W3	R0/R1	15														70%			90%	Broken discs of core at the end with no visible orientation. Weak chloritized rock surrounding quartz veins - multiple throughout run. Foliation is contorted and appears to be a healed fault zone. Cemented clay from 268.85 - 269.14m. Textures are not preserved enough to pick joint sets.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	269.83	271.50	1.67	1.67	100%	16	0.89	53%	NEW	W2/W3	R1/R2	4					5	JN	3.0	4.0	11	JF	1.0	4.0					90%	Texture is better preserved. Likely fringe of fault zone above.
K16-367 (UG Hole 1)	Volcaniclastic Rhyolite (RHYv)	271.50	273.00	1.50	1.50	100%	10	1.18	79%	0	W3	R1	6					1	JN	3.0	4.0	8	JF/JN	1.0	4.0		5%			85%	
K16-367 (UG Hole 1)	Fault Breccia - Sediment (SED)	273.00	274.50	1.50	1.50	100%	30	0.12	8%	-	W3	R1	3					15	JF	1.0	4.0						95%	20%		60%	No orientation and redrilled core at top of run. Fault zone starts at approx. 273.10m. Obviously because rock has hematite alteration and more chlorite. An 80 deg fold in the foliation occurs at the top of the fault zone.
K16-367 (UG Hole 1)	Fault Breccia - Sediment (SED)	274.50	276.00	1.50	1.50	100%	18	0.70	47%	-	W3	R1	3	6	JF	1.0	4.0	3	JF	1.0	4.0						100%	5%		80%	Orientation attempted but core ground at bottom of run so can't carry it through. Foliation is contorted from 275.28 - 275.58m. Below 275.58m foliation is opposite orientation from start of run. Cemented fault breccia can be broken with hands.
K16-367 (UG Hole 1)	Fault Breccia - Sediment (SED)	276.00	276.58	0.58	0.58	100%	7	0.48	83%	-	W3	R2	3					3	JF	2.0	4.0						100%			100%	Foliation is contorted from 276.12 - 276.58m
K16-367 (UG Hole 1)	Fault Breccia - Sediment (SED)	276.58	279.00	2.42	2.42	100%	52	0.36	15%	-	W3/W4	R0/R1	20														100%			100%	Cemented clay fault zone. Very little strength (crumbles in hand) but liquefies when wet.
K16-367 (UG Hole 1)	Fault Zone (FLZ)	279.00	280.50	1.50	1.50	100%	60	0.00	0%	-	W4	R0	20														100%			100%	Cemented clay fault zone. Very little strength (crumbles in hand) but liquefies when wet
K16-367 (UG Hole 1)	Fault Zone (FLZ)	280.50	282.00	1.50	1.50	100%	60	0.00	0%	NEW	W4	R0	20														97%			97%	Cemented clay fault zone. Very little strength (crumbles in hand) but liquefies when wet. Into core again at 281.95m with orientation.

POINT LOAD TEST RESULTS

Equipment: PiL-7 Load Correction Factor = 0.0948

Hole ID	Test No.	Depth of Top of Sample (m)	Lithology	Reading on gauge (MPa)	II or I to weak planes, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load I_L (kN)	For axial test: $D_e^2 = 4W/\pi D$; For diam. test $D_e^2 = D^2$ (mm)	$I_S\,(kN/mm^2) = P/D_e^2$	$F=(D_e/50)^{0.45}$	$I_{S(50)} = F \times I_S$ (MPa)	UCS - Sample Match
K16-367 (UG Hole 1)		10.5	Aphanitic Rhyolite (RHYt)	8.92	II	D	Valid Test	168	63.1	168.00	89.2	8.46	3733.25	0.002265118	1.0944	2.48	
K16-367 (UG Hole 1)		10.5	Aphanitic Rhyolite (RHYt)	13.72	-	a	Valid Test	42	63.1	42.00	107.2	18.69	-	-	-	-	
K16-367 (UG Hole 1)		12.33	Aphanitic Rhyolite (RHYt)	11.54	II	D	Valid Test	186	63.1	186.00	115.4	10.94	3733.25	0.002930433	1.0944	3.21	
K16-367 (UG Hole 1)		12.33	Aphanitic Rhyolite (RHYt)	15.18	L	A	Valid Test	46	63.1	46.00	151.8	23.35	3578.57	0.006525531	-	-	
K16-367 (UG Hole 1)		16	Aphanitic Rhyolite (RHYt)	5.86	II	D	Valid Test	186	63.1	186.00	58.6	5.56	3733.25	0.001488573	1.0944	1.63	
K16-367 (UG Hole 1)		16	Aphanitic Rhyolite (RHYt)	16.96	L	A	Valid Test	41	63.1	41.00	169.6	16.08	3189.59	0.005040795	-	-	
K16-367 (UG Hole 1)		34.32	Volcaniclastic Rhyolite (RHYa)	7.76	II	D	Valid Test	179	63.1	179.00	77.6	7.36	3733.25	0.001970326	1.0944	2.16	
K16-367 (UG Hole 1)		16.32	Volcaniclastic Rhyolite (RHYa)	21.76	L	A	Valid Test	44	63.1	44.00	217.6	20.63	3422.98	0.006024473	-	-	
K16-367 (UG Hole 1)		20.64	Aphanitic Rhyolite (RHYt)	11.14	II	D	Valid Test	177	63.1	177.00	111.4	10.56	3733.25	0.002828458	1.0944	3.10	
K16-367 (UG Hole 1)		20.64	Aphanitic Rhyolite (RHYt)	43.26	L	A	Valid Test	45	63.1	45.00	432.6	41.01	3500.77	0.011714696	-	-	
K16-367 (UG Hole 1)		23.10	Aphanitic Rhyolite (RHYt)	16.02	II	D	Valid Test	170	63.1	170.00	160.2	13.20	3733.25	0.003540106	1.0944	3.90	
K16-367 (UG Hole 1)		23.55	Aphanitic Rhyolite (RHYt)	32.8	L	A	Valid Test	38	63.1	38.00	328	31.09	2956.25	0.010518345	-	-	
K16-367 (UG Hole 1)		27.3	Aphanitic Rhyolite (RHYt)	4.46	II	D	Valid Test	149	63.1	149.00	46.6	4.42	3733.25	0.001183246	1.0944	1.30	
K16-367 (UG Hole 1)		27.3	Aphanitic Rhyolite (RHYt)	21.48	-	A	Failed Test	51	63.1	51.00	214.8	20.35	3967.54	0.005381595	-	-	
K16-367 (UG Hole 1)		29.3	Mafic Sill (MAFi)	11.4	II	D	Valid Test - Failure along fabric	170	63.1	170.00	114	10.81	3733.25	0.002896881	1.0944	3.17	
K16-367 (UG Hole 1)		29.3	Mafic Sill (MAFi)	33.5	L	a	Valid Test	41	63.1	41.00	335	31.76	3189.59	0.009956718	-	-	
K16-367 (UG Hole 1)		30.85	Aphanitic Rhyolite (RHYt)	12.28	L	A	Valid Test	30	63.1	30.00	122.8	11.64	2333.85	0.004988088	1.0944	5.46	
K16-367 (UG Hole 1)		31.34	Aphanitic Rhyolite (RHYt)	6.64	II	D	Valid Test - Failure along fabric	146	63.1	146.00	66.4	6.40	3733.25	0.001719267	1.0944	1.88	
K16-367 (UG Hole 1)		32.1	Aphanitic Rhyolite (RHYt)	24.28	L	A	Valid Test	40	63.1	40.00	242.8	23.03	3111.80	0.007396831	1.0944	8.10	
K16-367 (UG Hole 1)		37.22	Aphanitic Rhyolite (RHYt)	24.92	II	D	Valid Test	193	63.1	193.00	249.2	23.62	3733.25	0.006328109	1.0944	6.93	
K16-367 (UG Hole 1)		37.65	Aphanitic Rhyolite (RHYt)	25.48	L	A	Valid Test	41	63.1	41.00	254.8	24.16	3189.59	0.007573981	1.0944	8.29	
K16-367 (UG Hole 1)		39.48	Aphanitic Rhyolite (RHYt)	10.98	II	D	Valid Test - Failure along fabric	131	63.1	131.00	109.8	10.41	3733.25	0.002788218	1.0944	3.05	
K16-367 (UG Hole 1)		39.48	Aphanitic Rhyolite (RHYt)	13.28	L	A	Valid Test - Failure along joint or vein	57	63.1	57.00	132.8	11.64	4634.33	0.00542541	1.0944	2.87	
K16-367 (UG Hole 1)		41.15	Aphanitic Rhyolite (RHYt)	34.72	L	A	Valid Test	42	63.1	42.00	347	32.90	3267.39	0.010067861	1.0944	11.02	
K16-367 (UG Hole 1)		42	Aphanitic Rhyolite (RHYt)	13.86	-	D	Valid Test	166	63.1	166.00	138.6	13.14	3733.25	0.003519566	1.0944	3.85	
K16-367 (UG Hole 1)		44.52	Aphanitic Rhyolite (RHYt)	12.68	-	D	Valid Test - Failure along joint or vein	134	63.1	134.00	126.8	12.21	3733.25	0.003270708	1.0944	3.58	
K16-367 (UG Hole 1)		45.62	Aphanitic Rhyolite (RHYt)	17.18	II	D	Valid Test	215	63.1	215.00	171.8	16.29	3733.25	0.004362437	1.0944	4.77	
K16-367 (UG Hole 1)		45.52	Aphanitic Rhyolite (RHYt)	21.96	L	A	Valid Test	40	63.1	40.00	219.6	20.30	3111.80	0.005736121	1.0944	10.66	
K16-367 (UG Hole 1)		48	Aphanitic Rhyolite (RHYt)	2.58	II	D	Valid Test - Failure along fabric	129	63.1	129.00	25.8	2.26	3733.25	0.000606427	1.0944	0.66	
K16-367 (UG Hole 1)		48	Aphanitic Rhyolite (RHYt)	10.78	L	A	Valid Test	36	63.1	36.00	107.8	10.22	2800.62	0.010648995	1.0944	3.09	
K16-367 (UG Hole 1)		49.4	Coherent Rhyolite (RHYc)	5.46	-	A	Valid Test	46	63.1	46.00	54.6	5.28	3578.57	0.001446433	1.0944	1.58	
K16-367 (UG Hole 1)		50.22	Coherent Rhyolite (RHYc)	8.74	II	D	Valid Test - Failure along fabric	167	63.1	167.00	87.4	8.29	3733.25	0.002219408	1.0944	2.43	
K16-367 (UG Hole 1)		50.22	Coherent Rhyolite (RHYc)	21.86	L	A	Valid Test	32	63.1	32.00	218.6	20.72	2489.44	0.008324481	1.0944	9.11	
K16-367 (UG Hole 1)		53.73	Volcaniclastic Rhyolite (RHYa)	15.84	L	A	Valid Test	29	63.1	29.00	158.4	15.02	2256.05	0.006656513	1.0944	7.28	
K16-367 (UG Hole 1)		54.97	Volcaniclastic Rhyolite (RHYa)	9.44	II	D	Valid Test - Failure along fabric	189	63.1	189.00	96.4	9.14	3733.25	0.002447952	1.0944	2.68	
K16-367 (UG Hole 1)		54.97	Volcaniclastic Rhyolite (RHYa)	25.82	L	A	Valid Test	46	63.1	46.00	258.2	24.48	3500.77	0.006991489	1.0944	7.65	
K16-367 (UG Hole 1)		59.35	Volcaniclastic Rhyolite (RHYa)	13.26	-	D	Valid Test	130	63.1	130.00	132.6	12.57	3733.25	0.003367206	1.0944	3.69	
K16-367 (UG Hole 1)		59.35	Volcaniclastic Rhyolite (RHYa)	21.92	-	A	Failed Test	50	63.1	50.00	219	22.18	3889.71	0.005702401	1.0944	6.24	
K16-367 (UG Hole 1)		63.2	Volcaniclastic Rhyolite (RHYa)	7.02	II	D	Valid Test - Failure along fabric	151	63.1	151.00	70.2	6.65	3733.25	0.001782437	1.0944	1.95	
K16-367 (UG Hole 1)		63.2	Volcaniclastic Rhyolite (RHYa)	16.06	L	A	Valid Test	35	63.1	35.00	160.6	15.21	2722.82	0.00559158	1.0944	6.12	
K16-367 (UG Hole 1)		65.4	Volcaniclastic Rhyolite (RHYa)	8.50	II	D	Valid Test - Failure along fabric	164	63.1	164.00	85	8.06	3733.25	0.002158464	1.0944	2.36	
K16-367 (UG Hole 1)		65.4	Volcaniclastic Rhyolite (RHYa)	21.48	L	A	Valid Test	36	63.1	36.00	214.8	20.74	2800.62	0.007406269	1.0944	8.11	
K16-367 (UG Hole 1)		68.9	Volcaniclastic Rhyolite (RHYa)	15.02	II	D	Valid Test	134	63.1	134.00	150.2	14.24	3733.25	0.003814133	1.0944	4.17	
K16-367 (UG Hole 1)		68.9	Volcaniclastic Rhyolite (RHYa)	25.44	-	A	Failed Test	36	63.1	36.00	254.4	24.12	2800.62	0.008611357	1.0944	9.42	
K16-367 (UG Hole 1)		72.65	Volcaniclastic Rhyolite (RHYa)	4.68	II	D	Valid Test - Failure along fabric	95	63.1	95.00	46.8	4.44	3733.25	0.001188425	1.0944	1.30	
K16-367 (UG Hole 1)		72.65	Volcaniclastic Rhyolite (RHYa)	15.94	L	A	Valid Test	45	63.1	45.00	159.4	15.11	3500.77	0.004316511	1.0944	4.72	
K16-367 (UG Hole 1)		75.85	Volcaniclastic Rhyolite (RHYa)	3.56	II	D	Valid Test - Failure along fabric	126	63.1	126.00	35.6	3.37	3733.25	0.000904316	1.0944	0.99	
K16-367 (UG Hole 1)		75.85	Volcaniclastic Rhyolite (RHYa)	11.92	L	A	Valid Test	51	63.1	51.00	119	11.28	3967.54	0.002843373	1.0944	3.13	
K16-367 (UG Hole 1)		77.65	Volcaniclastic Rhyolite (RHYa)	4.80	II	D	Valid Test - Failure along fabric	190	63.1	190.00	48	4.55	3733.25	0.001218987	1.0944	1.33	
K16-367 (UG Hole 1)		77.65	Volcaniclastic Rhyolite (RHYa)	18.58	L	A	Valid Test	46	63.1	46.00	185.8	17.61	3578.57	0.004922037	1.0944	5.39	
K16-367 (UG Hole 1)		80.15	Volcaniclastic Rhyolite (RHYa)	4.54	II	D	Valid Test - Failure along fabric	127	63.1	127.00	45.4	4.30	3733.25	0.001152674	1.0944	1.26	
K16-367 (UG Hole 1)		80.15	Volcaniclastic Rhyolite (RHYa)	13.96	-	A	Valid Test - Failure along joint or vein	51	63.1	51.00	139.6	13.72	3967.54	0.003459186	1.0944	3.23	
K16-367 (UG Hole 1)		83.15	Volcaniclastic Rhyolite (RHYa)	6.26	-	D	Valid Test	118	63.1	118.00	62.6	5.93	3733.25	0.001589645	1.0944	1.74	
K16-367 (UG Hole 1)		83.15	Volcaniclastic Rhyolite (RHYa)	18.24	-	A	Valid Test	35	63.1	35.00	182.4	17.29	2722.82	0.006350186	1.0944	6.95	
K16-367 (UG Hole 1)		85.2	Sediment (SED)	4.50	-	A	Valid Test - Failure along fabric	166	63.1	166.00	45	4.27	3733.25	0.001142736	1.0944	1.25	
K16-367 (UG Hole 1)		85.2	Sediment (SED)	17.64	L	A	Valid Test	20	63.1	20.00	176.4	16.72	2333.85	0.007162298	1.0944	7.84	
K16-367 (UG Hole 1)		87.95	Volcaniclastic Rhyolite (RHYa)	1.02	II	D	Valid Test - Failure along fabric	86	63.1	86.00	10.2	0.97	3733.25	0.000259166	1.0944	0.28	
K16-367 (UG Hole 1)		87.95	Volcaniclastic Rhyolite (RHYa)	11.88	L	A	Valid Test	45	63.1	45.00	118.8	11.26	3500.77	0.003217073	1.0944	3.52	
K16-367 (UG Hole 1)		91.15	Volcaniclastic Rhyolite (RHYa)	4.12	II	D	Valid Test - Failure along fabric	156	63.1	156.00	41.2	3.91	3733.25	0.001046622	1.0944	1.14	
K16-367 (UG Hole 1)		91.15	Volcaniclastic Rhyolite (RHYa)	8.98	L	A	Valid Test	20	63.1	20.00	89.8	8.51	3501.98	0.005473462	1.0944	1.99	
K16-367 (UG Hole 1)		94.25	Volcaniclastic Rhyolite (RHYa)	1.48	II	D	Valid Test - Failure along fabric	123	63.1	123.00	14.8	1.40	3733.25	0.000375827	1.0944	0.41	
K16-367 (UG Hole 1)		94.25	Volcaniclastic Rhyolite (RHYa)	9.60	L	A	Valid Test	47	63.1	47.00	96	9.26	3656.36	0.002711309	1.0944	1.87	
K16-367 (UG Hole 1)		96.9	Volcaniclastic Rhyolite (RHYa)	1.72	II	D	Valid Test - Failure along fabric	112	63.1	112.00	17.2	1.63	3733.25	0.000436772	1.0944	0.48	
K16-367 (UG Hole 1)		96.9	Volcaniclastic Rhyolite (RHYa)	11.78	L	A	Valid Test	46	63.1	46.00	107.8	10.22	3500.77	0.002919196	1.0944	3.19	
K16-367 (UG Hole 1)		99.3	Volcaniclastic Rhyolite (RHYa)	1.52	II	D	Valid Test - Failure along fabric	98	63.1	98.00	15.2	1.44	3733.25	0.000385984	1.0944	0.42	
K16-367 (UG Hole 1)		99.3	Volcaniclastic Rhyolite (RHYa)	9.04	L	A	Valid Test	48	63.1	48.00	90.4	8.57	3734.16	0.002295268	1.0944	2.51	
K16-367 (UG Hole 1)		101	Volcaniclastic Rhyolite (RHYa)	1.50	II	D	Valid Test - Failure along fabric	132	63.1	132.00	15	1.42	3733.25	0.000380905	1.0944	0.42	
K16-367 (UG Hole 1)		101	Volcaniclastic Rhyolite (RHYa)	21.90	L	A	Valid Test	47	63.1	47.00	219	21.26	3656.36	0.005985362	1.0944	5.38	
K16-367 (UG Hole 1)		104.05	Volcaniclastic Rhyolite (RHYa)	2.40	II	D	Valid Test - Failure along fabric	93	63.1	93.00	24	2.22	3733.25	0.000863386	1.0944	0.94	
K16-367 (UG Hole 1)		104.07	Volcaniclastic Rhyolite (RHYa)	13.44	L	A	Valid Test	43	63.1	43.00	134.4	12.74	3189.59	0.003994102	1.0944	4.37	
K16-367 (UG Hole 1)		107.05	Volcaniclastic Rhyolite (RHYa)	8.62	II	D	Valid Test - Failure along fabric	105	63.1	105.00	86.2	8.16	3733.25	0.002122401	1.0944	2.23	
K16-367 (UG Hole 1)		107.08	Volcaniclastic Rhyolite (RHYa)	10.36	L	A	Valid Test	46	63.1	46.00	103.6	9.82	3578.57	0.002744471	1.0944	3.00	
K16-367 (UG Hole 1)		110.1	Stringer Sulfide (QL)	8.36	-	D	Valid Test	146	63.1	146.00	83.6	7.91	3733.25	0.002122953	1.0944	2.32	
K16-367 (UG Hole 1)		110.07	Stringer Sulfide (QL)	17.74	-	A	Valid Test	57	63.1	57.00	177.4	16.82	4434.31	0.003792189	1.0944	4.15	
K16-367 (UG Hole 1)		112.63	Coherent Rhyolite (RHYc)	1.52	II	D	Valid Test - Failure along fabric	71	63.1	71.00	15.2	1.25	3733.25	0.000335107	1.0944	0.37	
K16-367 (UG Hole 1)		112.63	Coherent Rhyolite (RHYc)	5.22	L	A	Valid Test	36	63.1	36.00	52.2	4.95	2800.62	0.001766953	1.0944	1.93	
K16-367 (UG Hole 1)		114.2	Coherent Rhyolite (RHYc)	1.62	L	A	Valid Test	42	63.1	42.00	16.2	1.35	3267.39	0.000411999	1.0944	0.41	
K16-367 (UG Hole 1)		117.86	Coherent Rhyolite (RHYc)	5.03	L	A	Valid Test	43	63.1	43.00	50.3	4.76	3345.18	0.001422631	1.0944	1.56	
K16-367 (UG Hole 1)		120.43	Mafic Sill (MAFi)	0.94	-	D	Valid Test	110	63.1	110.00	9.4	0.89	3733.25	0.000238701	1.0944	0.26	
K16-367 (UG Hole 1)		120.48	Mafic Sill (MAFi)	9.69	-	A	Valid Test - Failure along joint or vein	55	63.1	55.00	96.9	9.57	4078.72	0.002523597	1.0944	3.15	
K16-367 (UG Hole 1)		121.86	Mafic Sill (MAFi)	1.20	L	A	Valid Test	39	63.1	39.00	12	1.14	3334.00	0.00037495	1.0944	0.41	
K16-367 (UG Hole 1)		123.3	Mafic Sill (MAFi)	4.92	II	D	Valid Test - Failure along fabric	130	63.1	130.00	49.2	4.66	3733.25	0.001249837	1.0944	1.37	
K16-367 (UG Hole 1)		123.3	Mafic Sill (MAFi)	8.72	L	A	Valid Test	32	63.1	32.00	87.2	8.27	2489.44	0.003320423	1.0944	1.63	
K16-367 (UG Hole 1)		127.06	Mafic Sill (MAFi)	7.46	II	D	Valid Test	125	63.1	125.00	71.6	6.79	3733.25	0.001818189	1.0944	1.99	
K16-367 (UG Hole 1)		127.06	Mafic Sill (MAFi)	11.60	L	A	Valid Test	31.5	63.1	31.50	116	10.93	2761.72	0.003951213	1.0944	4.28	
K16-367 (UG Hole 1)		129.9	Mafic Sill (MAFi)	7.34	II	D	Valid Test	180	63.1	180.00	73.4	6.96	3733.25	0.001863897	1.0944	2.04	
K16-367 (UG Hole 1)		129.9	Mafic Sill (MAFi)	15.70	L	A	Valid Test	44.5	63.1	44.50	157	14.88	3461.87	0.004299288	1.0944	4.71	
K16-367 (UG Hole 1)		131.73	Mafic Sill (MAFi)	9.48	II	D	Valid Test	210	63.1	210.00	94.8	8.99	3733.25	0.002407222	1.0944	2.63	
K16-367 (UG Hole 1)		131.73	Mafic Sill (MAFi)	19.46	L	A	Valid Test	44	63.1	44.00	194.6	18.45	3422.98	0.005389484	1.0944	5.90	
K16-367 (UG Hole 1)		137.46	Mafic Sill (MAFi)	4.90	-	D	Valid Test	118.00	63.10	118.00	49	4.65	3733.25	0.001243295	1.0944	1.36	
K16-367 (UG Hole 1)		137.93	Mafic Sill (MAFi)	4.93	-	A	Valid Test	51.00	63.10	51.00	41	3.89	3967.54	0.000979649	1.0944	1.07	
K16-367 (UG Hole 1)		138.56	Mafic Sill (MAFi)	21.12	-	A	Valid Test	148.00	63.10	148.00	211.2	20.03	3733.25	0.005363149	1.0944	5.87	
K16-367 (UG Hole 1)		148.43	Mafic Sill (MAFi)	20.46	L	A	Valid Test	34.00	63.10	33.00	252.8	23.95	2411.64	0.009929528	1.0944	10.87	
K16-367 (UG Hole 1)		161.72	Mafic Sill (MAFi)	4.08	-	D	Valid Test	91.00	63.10	91.00	40.8	3.87	3733.25	0.001036063	1.0944	1.13	
K16-367 (UG Hole 1)		161.72	Mafic Sill (MAFi)	19.58	L	A	Valid Test	30.00	63.10	30.00	195.8	18.56	2333.85	0.00795332	1.0944	8.70	
K16-367 (UG Hole 1)		163.59	Mafic Sill (MAFi)	3.78	-	D	Valid Test	65.00	63.10	65.00	37	3.51	3189.59	0.000953268	1.0944	0.93	
K16-367 (UG Hole 1)		165.1	Mafic Sill (MAFi)	2.46	II	D	Valid Test	129.00	63.10	129.00	24.6	2.33	3733.25	0.000624686	1.0944	0.68	
K16-367 (UG Hole 1)		165.33	Mafic Sill (MAFi)	2.92	L	A	Valid Test	33	63.1	33.00	29.2	2.77	2567.23	0.001078266	1.0944	1.18	
K16-367 (UG Hole 1)		166.95	Mafic Sill (MAFi)	2.00	II	D	Valid Test	196	63.1	196.00	25	2.37	3733.25	0.000634492	1.0944	0.69	
K16-367 (UG Hole 1)		166.98	Mafic Sill (MAFi)	10.72	L	A	Valid Test	21	63.1	21.00	107.2	10.16	1633.69	0.006220503	1.0944	6.81	
K16-367 (UG Hole 1)		169	Stringer Sulfide (QL)	10.64	-	D	Valid Test	99	63.1	99.00	106.4	11.98	3733.25	0.003209781	1.0944	3.51	
K16-367 (UG Hole 1)		167.91	Stringer Sulfide (QL)	18.42	-	A	Valid Test	55	63.1	55.00	184.2	17.46	4278.72	0.004081103	1.0944	4.47	
K16-367 (UG Hole 1)		169.38	Mafic Sill (MAFi)	1.20	II	D	Valid Test	96	63.1	96.00	12	1.14	3733.25	0.000304724	1.0944	0.33	
K16-367 (UG Hole 1)		169.28	Mafic Sill (MAFi)	7.68	L	A	Valid Test	45	63.1	45.00	76.8	7.19	3500.77	0.002052648	1.0944	2.25	
K16-367 (UG Hole 1)		151.82	Mafic Sill (MAFi)	5.78	II	D	Valid Test	170	63.1	170.00	57.8	5.48	3733.25	0.001468756	1.0944	1.61	
K16-367 (UG Hole 1)		151.82	Mafic Sill (MAFi)	9.30	L	A	Valid Test	47	63.1	47.00	93	8.82	3656.36	0.002411249	1.0944	2.64	
K16-367 (UG Hole 1)		154.2	Mafic Sill (MAFi)	0.98	II	D	Valid Test	87	63.1	87.00	9.8	0.93	3733.25	0.000248918	1.0944	0.27	
K16-367 (UG Hole 1)		154.22	Mafic Sill (MAFi)	9.36	L	A	Valid Test	32	63.1	32.00	93.6	8.87	2489.44	0.003564379	1.0944	3.90	

Drill Hole Information

Hole ID	Location	Zone HW/Ore/FW	Planned ID	Planned							Date	
				X	Y	Z	Length (m)	Dip (°)	Diameter	AZ (°)	Start	End
K16-370	Krakatoa Underground	Ore/Waste	KRAK009 (UG Hole 2)	415074.6	6815182.8	1388.0	280.5	-80	HQ3	215	18-Jun-16	20-Jun-16

Data Collection Program

Discipline	Personnel	Checked by	Date
Geology	DH		
Geotechnical	IH	JRM	
PLT	IH/JRM	JRM	Jun 28 - July 7

Geology Quick Log

Hole ID	From (m)	To (m)	Lithology and Lithology Code
K16-370 (UG Hole 2)	0	6.8	OVBN
K16-370 (UG Hole 2)	6.8	16.6	Aphanitic Rhyolite (RHYi)
K16-370 (UG Hole 2)	16.6	18.9	Pelite (PEL)
K16-370 (UG Hole 2)	18.9	30.2	Aphanitic Rhyolite (RHYi)
K16-370 (UG Hole 2)	30.2	30.75	Pelite (PEL)
K16-370 (UG Hole 2)	30.75	53.1	Aphanitic Rhyolite (RHYi)
K16-370 (UG Hole 2)	53.1	55.5	Coherent Rhyolite (RHYc)
K16-370 (UG Hole 2)	55.5	57.6	Pelite (PEL)
K16-370 (UG Hole 2)	57.6	70.3	Volcaniclastic Rhyolite (RHYv)
K16-370 (UG Hole 2)	70.3	71.5	Pelite (PEL)
K16-370 (UG Hole 2)	71.5	124.3	Volcaniclastic Rhyolite (RHYv)
K16-370 (UG Hole 2)	124.3	130	Coherent Rhyolite (RHYc)
K16-370 (UG Hole 2)	130	139.1	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	139.1	140.6	Stringer Sulfide (OJ)
K16-370 (UG Hole 2)	140.6	141.7	Undifferentiated Rhyolite (RHY)
K16-370 (UG Hole 2)	141.7	142.3	Disseminated Sulfide (OI)
K16-370 (UG Hole 2)	142.3	145.7	Undifferentiated Rhyolite (RHY)
K16-370 (UG Hole 2)	145.7	146.9	Massive Sulfide (OA)
K16-370 (UG Hole 2)	146.9	148.4	Undifferentiated Rhyolite (RHY)
K16-370 (UG Hole 2)	148.4	150.7	Massive Sulfide (OB)
K16-370 (UG Hole 2)	150.7	174.6	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	174.6	175.1	Stringer Sulfide (OJ)
K16-370 (UG Hole 2)	175.1	180.8	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	180.8	181.7	Massive Sulfide (OF)
K16-370 (UG Hole 2)	181.7	198.1	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	198.1	199.4	Massive Sulfide (OB)
K16-370 (UG Hole 2)	199.4	200.1	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	200.1	200.45	Massive Sulfide (OB)
K16-370 (UG Hole 2)	200.45	224.2	Mafic Sill (MAFi)
K16-370 (UG Hole 2)	224.2	224.6	Massive Sulfide (OB)
K16-370 (UG Hole 2)	224.6	232.4	Coherent Rhyolite (RHYc)
K16-370 (UG Hole 2)	232.4	280.5	Volcaniclastic Rhyolite (RHYv)

Geotechnical Log

		Core Recovery Data									Strength Data			Discontinuity parameters for Q System: ALPHA=0-29				ALPHA=30-59				ALPHA=60-90				Fault and Broken Zones					
Hole ID	Lithology	From (m)	To (m)	Run (m)	TCR (m)	TCR (%)	FF/run	RQD (m)	RQD (%)	Difference in Beta Between Runs	Weathering/Alteration	Strength	Joint Set Number (Jn)	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	Count	TYPE	Jr	Ja	% Fault Gouge	% Fault Breccia	% Broken zone	% Rubble zone	% Microdefects	Comment
K16-370 (UG Hole 2)	Overburden (OVBN)	0.0	6.8																												
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	6.8	9.7	2.85				0.00	0%	-	W3	R3	15																		Core stones
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	9.7	10.5	0.85	0.85	100%	10	0.64	75%	-	W3	R3	3					3	JN	3	1	3	JN	3	1				13%		Weather joint surfaces top of OVBN=9.65
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	10.5	12.0	1.50	1.50	100%	10	1.34	89%	-	W3	R3	3	2	JN	3	1					5	JN	3	1				6%		Weather joint surfaces unable to ori beginning of run since no ori line marked had to use ori from the 12-13.5 run to carry over ori
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	12.0	13.5	1.50	1.50	100%	9	1.24	83%	New	W2	R4	3	1	JN	3	1					8	JN	3	1						Similar ori condition as prev run
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	13.5	15.0	1.50	1.40	93%	15	0.81	54%	-	W2	R3	6	1	JN	3	1					6	JN	3	1				14%		Had to use prev run ori line since RZ at end of run unable to use ori
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	15.0	16.6	1.60	1.60	100%	5	1.60	100%	New	W2	R3	3	1	JN	3	1					4	JN	3	1						Far spacing of discont. New ori but lost at initial of run and could not match with prev since last run broken
K16-370 (UG Hole 2)	Pelite (PEL)	16.6	18.9	2.30	2.10	91%	16	1.48	64%	-	W2/W	R3	6									13	JN/FLT	1-3	1-6						lost ori at 16.6-17.72 and had to carry ori form the next run - new lith change/minor FLT at 17.7-17.75
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	18.9	21.0	2.10	2.10	100%	8	1.87	89%	New	W2	R3	3									8	JN	3	1						Many of the breaks a re right thru the core axis which isn't considered as FF or joints since completely parallel to CA
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	21.0	22.5	1.50	1.50	100%	18	1.20	80%	-	W2	R3	3									10	JN	3	1				10%	20%	Ori from 21 to 21.42 had to carry from prev run due to RZ area and gain as mentioned before a lot of breaks thru CA not considered as fractures
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	22.5	24.0	1.50	1.50	100%	9	0.80	53%	-	W2	R3	3	1	JN	3	1					5	JN	3	1				3%		No ori line broken on both ends and do not match
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	24.0	25.5	1.50	1.50	100%	18	0.96	64%	New	W2	R3	6									14	JN/FLT	1-3	1-6	3%				10%	close spacing of fractures this run
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	25.5	27.0	1.50	1.42	95%	21	0.97	65%	-	W2	R3	6					3	JN	3	1	6	JN	3	1				25%	10%	No ori line due to RZ
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	27.0	29.2	2.21	2.21	100%	19	1.75	79%	New	W2	R3	6									13	JN	3	1-2				10%		RZ at 28.3-28.35 ori line broke off after RZ also no ori marked for this run from driller so had to use prev run ori to carry over... New eng domain coming
K16-370 (UG Hole 2)	Pelite (PEL)	29.2	30.8	1.54	1.07	69%	63	0.00	0%	-	W3	R2	12									12	JN	1-2	3-4				17%	90%	Weak ENG domain PEL lith with initial of RHYi domain but highly microdefected hence FF max with multiple RZ within run with weaker strength able to ori 30.45 to 30.75 only
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	30.8	33.0	2.25	2.25	100%	18	1.47	65%	New	W2	R3	6									16	JN/HJN/FLT	1-3	1-4					15%	Minor FLT at 31.1 back into RHYi ori line used from the next run carried over since no ori marked by driller for this run
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	33.0	34.5	1.50	1.50	100%	6	1.31	87%	New	W2	R3	3					1	JN	3	1	5	JN	3	1					10%	Had to use prev run ori to carry over
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	34.5	36.0	1.50	1.50	100%	0	1.50	100%	New	W2	R3	1																		Multiple mechanical breaks no JN found but ori line had to be carried from the prev run since unable to match ori from current run
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	36.0	37.5	1.50	1.50	100%	1	1.50	100%	-	W2	R3	1									1	JN	3	1						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	37.5	39.0	1.50	1.50	100%	6	1.16	77%	New	W2	R3	1									4	JN	3	1-2				3%	15%	Lost ori at 38.39 minor RZ at 38.29
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	39.0	40.5	1.50	1.50	100%	4	1.37	91%	-	W2	R3	1									2	JN	3	1						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	40.5	42.0	1.50	1.50	100%	1	1.50	100%	175	W2	R3	1									1	JN	3	1						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	42.0	43.5	1.50	1.50	100%	0	1.50	100%	-	W2	R3	1																		
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	43.5	45.0	1.50	1.50	100%	3	1.40	93%	-	W2	R3	1	1	JN	3	1	1	JN	3	1								5%		
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	45.0	46.5	1.50	1.50	100%	1	1.50	100%	New	W2	R3	1	1	JN	3	1														
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	46.5	48.0	1.50	1.50	100%	3	1.48	99%	New	W2	R3	3									3	JN/JF	2-3	1-2						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	48.0	49.5	1.50	1.50	100%	1	1.50	100%	-	W2	R3	1									1	JN	2	1						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	49.5	51.0	1.50	1.50	100%	0	1.50	100%	0	W2	R3	1																		
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	51.0	52.5	1.50	1.50	100%	1	1.50	100%	-	W2	R3	1									1	JN	3	1						
K16-370 (UG Hole 2)	Aphanitic Rhyolite (RHYi)	52.5	53.1	0.58	0.58	100%	0	0.58	100%	0	W2	R3	1																		
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	53.1	54.4	1.27	1.27	100%	2	1.22	96%	-	W2	R4	1									1	JN	4	1						
K16-370 (UG Hole 2)	Pelite (PEL)	54.4	57.0	2.65	2.46	93%	17	1.93	73%	-	W2/W	R2/R	6									5	JN/JF	1-3	2-3			25%			Lost ori at 54.85 - Altered zone at 56.86-57 where strength decreases almost chalk-like material causing BZ plus BZ at 55 shearing and folding apparent
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	57.0	58.5	1.50	1.50	100%	2	1.47	98%	New	W2/W	R2/R	3									2	JN	3	1						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	58.5	60.0	1.50	1.50	100%	2	1.50	100%	New	W2	R3	1									2	JN	3	1						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	60.0	61.5	1.50	1.50	100%	4	1.50	100%	-	W2	R3	1									4	JN	3	1						Ori lost at 60.7
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	61.5	63.0	1.50	1.50	100%	2	1.40	93%	New	W2	R3/R	1									2	JN	3	1			7%			New ori used 30cm QTZ vein at 62.25 BZ at start of run 61.5-61.6
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	63.0	64.5	1.50	1.50	100%	2	1.45	97%	-	W2	R4	1									2	JN	3	1						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	64.5	66.0	1.50	1.50	100%	2	1.50	100%	New	W2	R4	1									2	JN	3	1						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	66.0	67.5	1.50	1.50	100%	1	1.50	100%	-	W2	R3	1									1	JN	3	1						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	67.5	70.3	2.80	2.80	100%	14	2.13	76%	New	W2	R3	6	1	JN	3	1	2	JN	2-3	2	10	JN/FLT	1-3	1-4					30%	
K16-370 (UG Hole 2)	Pelite (PEL)	70.3	71.5	1.20	1.10	92%	2	0.89	74%	-	W2	R3	3									2	JN	2	1					10%	Lost ori at 70.3 multiple breaks along core axis
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	71.5	73.5	2.00	2.00	100%	16	1.41	71%	-	W2	R3	6					2	JN	3	1	9	JN/FLT	1-3	1-4			3%	7%	20%	No ori this run back into RHYv lith. minor felt at 73.35
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	73.5	75.0	1.50	1.50	100%	5	1.39	93%	New	W2	R3	3									5	JN/FLT	1-3	1-4					10%	New ori line minor FLT <5mm thick at 73.88 73.6 and 74.04
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	75.0	76.5	1.50	1.50	100%	5	1.15	77%	-	W2	R3	3					1	FLT	2	4	5	JN	2-3	1-2					10%	Ori line not available in this run but carried from the next run from 76.1-76.5
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	76.5	78.0	1.50	1.29	86%	4	1.26	84%	New	W2	R3	2									4	JF/HJF	2-3	1-2						Poor recovery not due to poor ground
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	78.0	79.5	1.50	1.37	91%	14	0.92	61%	-	W2/W	R3	3									2	JN	2	2					25%	Alt zone between 78.5-78.8 FF considered 4/10cm for this run still intact but high intensity of microdefects chalk-like rock no ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	79.5	81.0	1.50	1.35	90%	10	0.86	57%	-	W2	R3	2					2	JN	2	2	8	JN/JF	2	2					10%	No ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	81.0	82.5	1.50	1.50	100%	5	1.41	94%	-	W2	R3	2									2	JF/FLT	1-2	2-6					10%	No ori line FLT 82.3 6cm thick stiff clay
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	82.5	84.0	1.50	1.50	100%	13	1.16	77%	-	W2	R3	2									2	JF/FLT	1-2	2-6				3%	10%	No ori line FLT stuff clay from 83.58-83.69
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	84.0	86.3	2.33	2.33	100%	6	2.02	87%	-	W2	R3	2									6	JN	2	1-3					15%	No ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	86.3	87.9	1.59	1.59	100%	64	0.26	16%	-	W3	R2	15															50%		80%	Weak zone from 86.33-87 BZ then from 87.3-87.92 highly microdefected with microfractures within run porous weak rock ori line from 87-87.8
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	87.9	90.0	2.08	2.08	100%	17	1.53	74%	-	W2	R3	6					1	JN	2	2	7	JN	1-2	2-3			10%		30%	BZ at 80.7-90 no ori line again
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	90.0	91.5	1.50	1.41	94%	4	0.89	59%	-	W2	R3	3									4	JN/FLT	1-2	2-4					25%	FLT at 90.63 minor ori line used from the next un as no ori line for this run - rubble zone area but mechanical breaks
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	91.5	93.0	1.50	1.45	97%	24	0.81	54%	New	W3	R2/R	15									4	JN	2	3					80%	Highly microdefected porous material given a JN of 15 new ori line finally
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	93.0	94.5	1.50	1.50	100%	8	1.18	79%	-	W2	R3	6									8	JN/HJN	1-2	3					60%	Used ori from the prev run but lost ori at 93.43
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	94.5	96.0	1.50	1.50	100%	10	0.91	61%	-	W2	R3	6					2	JN	2	2	8	JN	2	2-4					40%	No ori line from this run available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	96.0	97.5	1.50	1.50	100%	9	0.94	63%	-	W2	R3	6									9	JN. FLT	1-2	1-6					40%	No ori line
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	97.5	99.0	1.50	1.35	90%	6	1.21	81%	-	W2	R3	3									6	JN/JF	1-2	2-3					20%	No ori line
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	99.0	100.5	1.50	1.50	100%	9	1.15	77%	New	W2	R3	3									8	JN/JF	1-2	2-3					20%	
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	100.5	102.0	1.50	1.43	95%	10	1.06	71%	-	W2/W	R3	6									6	JN/JF/FLT	1-2	2-6	3%				40%	FLT at 101.47 7cm gouge no ori line only marked from 101.53-102
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	102.0	103.5	1.50	1.50	100%	11	0.97	65%	-	W2/W	R2/R	6									11	JN	1-2	2-4					60%	Muscovite and sericitic rich at end of run highly defected easily breakable along fol
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	103.5	105.0	1.50	1.42	95%	54	0.15	10%	-	W3	R2	15													6%				80%	No ori line due to poor ground this run. From 103.5 to 104.2 highly defected easily broken along fol with muscovite and sericitic alteration then QTZ vein highly silicified from 104.2-104.3 then from 104.3 to 104.55 shearing with folded apparent shear contact then FLT gouge at 104.85
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	105.0	106.5	1.50	1.50	100%	60	0.00	0%	-	W3	R2	15													6%		10%		100%	No ori line possible due to poor rock very microdefected with microfractures FLT between 105-15-105-23 and also another FLT gouge at 105.85 2cm thick
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	106.5	108.7	2.20	2.03	92%	36	0.00	0%	-	W3	R2/R	12					4	JN	1	3-4	22	JN/HJN/FLT	1	2-6			15%		80%	Used pre run ori but lost ori at 108. Again similar to prev run with similar high intensity of microdefects and microfractures within run close spacing of discont.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	108.7	110.2	1.45	1.45	100%	50	0.00	0%	-	W4	R0/R	20														100%			100%	FLT breccia all throughout this section highly altered easy to intent with thumbnail no ori line due to poor ground
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	110.2	112.5	2.35	2.15	91%	12	1.63	69%	New	W2	R3	6					2	JN	3	1-2	10	JN	2-3	2-3					20%	
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	112.5	114.0	1.50	1.50	100%	7	1.29	86%	New	W2	R3	3					1	JN	3	1	5	JN	2	2				3%	10%	Ori lost in minor RZ mid run
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	114.0	115.5	1.50	1.45	97%	14	0.80	53%	-	W2/W	R3	6					5	JN/JF	1-2	2	6	JN/HJN	1-3	2					70%	PEL 114-114.1 no ori available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	115.5	117.0	1.50	1.40	93%	11	0.88	59%	-	W2	R3	6					3	FLT/JN	1	2-4	7	JN	1-2	2-3					70%	Minor FLT at 116.15 no ori line available again.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	117.0	118.5	1.50	1.50	100%	8	1.02	68%	New	W2	R3	3					3	JN	2	1	5	JN/JF	2	2					10%	
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	118.5	120.0	1.50	1.50	100%	9	0.93	62%	-	W2	R3	3					3	JN/FLT	1-2	2-4	4	JN	2	2					20%	No ori line available FLT at 119.58
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	120.0	121.5	1.50	1.44	96%	19	0.74	49%	-	W2/W	R3	6					6	SHR/JF	1-2	2-4	5	JN/FLT	1-2	2-6	2%		3%	3%	80%	QTZ vein at 120.15-120.30 minor FLT gouge at 120.67 folded/shearing at 121.21 no ori line possible highly microdefected this run JF visible at end of run
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	121.5	124.3	2.80	2.65	95%	34	1.30	46%	-	W3	R3	12					2	JN	2	3	17	JN/JF	1-2	2-3				14%	90%	More altered than previous run with multiple RZ
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	124.3	126.0	1.70	1.70	100%	6	1.63	96%	New	W2	R3	3					2	JN	2	2	3	JN/JF	2	2						Used the ori from the next run
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	126.0	127.5	1.50	1.50	100%	4	1.46	97%	-	W2	R3	2									4	JN	1.5	2						
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	127.5	129.0	1.50	1.50	100%	9	1.08	72%	325	W2	R3	3									9	JN	2	2					10%	Solid run with minor microdefects
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	129.0	130.2	1.20	1.20	100%	9	1.04	87%	-	W2	R3	3									6	JF/FLT/JN	1-2	2-6					10%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	130.2	132.0	1.80	1.56	87%	13	1.03	57%	-	W2	R3	6					4	JN	2	4	9	JF/JN	1-2	3-4				5%		Start of logging for ore zone. Ori line unable to match both ends due to broken zone in between run so had to run ori line from prev run and from next run to match. Close spacing of discont due to lower RQD value JF almost perp to core axis
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	132.0	133.5	1.50	1.50	100%	16	0.90	60%	-	W2	R3	6					6	JN	3	4	6	JF	1-2	4				5%		Cannot match ori line into prev run since hard to match - No ori line available for next run so cannot match to that - therefore conf of 1 again
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	133.5	135.0	1.50	1.42	95%	10	1.13	75%	-	W2	R4	6					4	JN	2-3	2-4	4	JN	2-3	2-4				2%		Cannot match ori line to next run as driller did not mark ori mark. Unable to determine the true foliation throughout run joint surfaces mostly rough and undulating .Takes several blows to break rock
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	135.0	137.0	2.00	1.93	97%	8	1.87	94%	-	W2	R4	4					3	JN	2-3	3-4	3	JF	2	3						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	137.0	139.3	2.30	2.30	100%	44	0.46	20%	-	W3	R2	4									33	JN/JF/HJF/HJ	1-2	3-6				7%		Close spacing of discont. Disked core which is easy to break). Had ori line but unable to match with next run since broken ground so low confidence
K16-370 (UG Hole 2)	Stringer Sulfide (OI)	139.3	140.6	1.30	1.30	100%	5	1.10	85%	-	W2	R3	4									5	JF/JN	1-3	3-4						Poor ground so only took measurements to the 140.5 mark due to more confidence.
K16-370 (UG Hole 2)	Undifferentiated Rhyolite (RHY)	140.6	141.7	1.10	1.10	100%	6	0.93	85%	New	W2	R3	4									6	JN/JF	1-2	4						No ori below 141 due to poor ground. Rock fairly competent takes hammer a blow of two to break next run.
K16-370 (UG Hole 2)	Disseminated Sulfide (OI)	141.7	142.3	0.60	0.60	100%	6	0.43	72%	-	W3	R2/R	12					1	HJN	1	4	3	JN/JF/FLT	1	4-6		6%				Minor FLT breccia at 142.22 highly altered with silicification and clasts of mineralization with sericite coating again no ori line available
K16-370 (UG Hole 2)	Undifferentiated Rhyolite (RHY)	142.3	144.0	1.70	1.70	100%	20	0.98	58%	New	W3/W	R1/R	6					1	JN	1	4	6	JN/JF	2	4	13%					Ori line possible but conf of 1 since no match within surrounding runs - unable to orient at beginning of run as FLT gouge 142.3-142.55
K16-370 (UG Hole 2)	Undifferentiated Rhyolite (RHY)	144.0	145.7	1.70	1.57	92%	19	0.81	48%	-	W3	R1/R	6					4	JN/FLT	1-2	4	7	JF/JN	2	4						No ori line - Minor FLT at 144.3 and also end of run at 145.5-145.7 lith change coming
K16-370 (UG Hole 2)	Massive Sulfide (OA)	145.7	146.9	1.20	1.20	100%	3	0.93	77%	-	W2	R4/R	2					3	JN	3-4	0.8										No ori line
K16-370 (UG Hole 2)	Undifferentiated Rhyolite (RHY)	146.9	148.4	1.50	1.36	91%	19	0.66	44%	-	W3	R2	6					15	JF	2-3	4								5%	40%	Weak eng domain as well as end of MAFi contact altered with chloritic and sericite clay in some areas at 147-17.1 is calcite/QTZ with chloritic alteration with JF visible throughout but broken up and micro fractures throughout
K16-370 (UG Hole 2)	Massive Sulfide (OB)	148.4	150.7	2.30	2.20	96%	17	1.78	77%	New	W2	R3/R	4					4	JN	4	0.8	5	JN	4	0.8				15%		Ori line conf of 1 as only able to ori half of run and unable to confirm ori line since poor broken ground on either ends. OB not as competent as OA seems to be more broken up crumbly with greater number of fractures
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	150.7	152.2	1.50	1.25	83%	27	0.22	15%	-	W3	R1/R	6					12	JF/HJF/FL	1-2	4-6	4	JN/SHR/	1.5	4	15%		10%			Weak Eng domain due to altered weak MAFi unit with weak strength (can peel off) also minor gouge at 150.7-150.78 and shear contact at 152.1 - No ori line due to broken ground
K16-370 (UG Hole 2)	QTZ Vein - Mafic Sill (MAFi)	152.2	153.9	1.70	1.47	86%	24	0.75	44%	-	W3	R3/R	6					5	JN	3	2	3	JN	3	2			30%			No ori line again - QTZ vein new eng domain and end of QTZ vein this run takes several blows of hammer to break two natural joints visible throughout with some random breaks gradationally changes vein contact into MAFi next run
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	153.9	156.0	2.10	2.10	100%	16	1.88	90%	New	W2	R4	6					6	JN/JF	3	2	6	JN	3	2			9%			Ori line was traced back to the next four runs to confirm the accuracy and was off by 180 for beta - the change in beta angle of 180 has been made in the detailed logging sheet but conf as 1 still set due to the driller error in marking. MAFi unit this run very competent requires several blow to break not very altered at all with rough joint surfaces with minimal alteration within surface. Initial minor portion of run in broken ground with dom
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	156.0	157.5	1.50	1.44	96%	3	1.44	96%	-	W2	R4	4					1	JN	3	2	2	JN	3	2						No ori line marked by driller (must have forgot) so had to carry ori line from the next run into this one hence conf of 1. Aside from that, similar rock conditions as prev run
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	157.5	159.0	1.50	1.50	100%	6	1.40	93%	-	W2	R4	4					1	JN	3	2	5	JN	3	2						No ori line marked by driller this run as well had to carry ori line from the next run to bring it here hence conf of 1.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	159.0	160.5	1.50	1.50	100%	7	1.30	87%	-	W2	R4	4					1	JN	3	2	6	JN	.5-3	2						Ori line with conf of 1 as ad to match in the next 3 runs.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	160.5	162.0	1.50	1.50	100%	7	1.42	95%	-	W2	R4	4					4	JN	3	2	1	JN	3	2						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	162.0	163.5	1.50	1.50	100%	0	1.50	100%	-	W2	R4	1																		
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	163.5	165.0	1.50	1.50	100%	5	1.50	100%	0	W2	R4	3					4	JN	3	2									5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	165.0	166.5	1.50	1.50	100%	4	1.33	89%	0	W2	R4	3	3	JN	1.5	2													5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	166.5	168.0	1.50	1.50	100%	1	1.50	100%	0	W2	R3	1					1	JN	3	1									20%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	168.0	169.5	1.50	1.50	100%	5	1.33	89%	0	W2	R4	3					4	JN	1.5	2									10%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	169.5	171.0	1.50	1.50	100%	5	1.35	90%	-	W2	R4	3					2	JN	3	2	3	JN/JF	0.5	2					5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	171.0	172.5	1.50	1.50	100%	5	1.50	100%	-	W2	R3	3									4	JN/JF	1	2					40%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	172.5	174.0	1.50	1.50	100%	1	1.50	100%	-	W2	R3	2									1	JF	1	2					10%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	174.0	175.5	1.50	1.50	100%	10	1.38	92%	-	W2	R3/R	6					6	JN	3	2	3	JF	1	4					10%	Band of ore from 174.86 - 175.01m. Increasing sulphide content with depth.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	175.5	177.0	1.50	1.50	100%	11	1.32	88%	0	W2	R3	6					4	JN	3	2	7	JF	1	4					3%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	177.0	178.5	1.50	1.50	100%	7	1.25	83%	-	W2	R3	6					4	JN	2	2	3	JF	0.5	2					10%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	178.5	180.7	2.20	2.20	100%	17	1.80	82%	245	W2	R3	6					4	JN	1.5	2	12	JF	1	2			3%			
K16-370 (UG Hole 2)	Massive Sulfide (OF)	180.7	181.7	1.00	1.00	100%	1	1.00	100%	-	W2	R4	1									1	JF	1.5	2					5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	181.7	183.0	1.30	1.30	100%	6	1.11	85%	330	W2	R3/R	3									6	JF/JN	2	4						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	183.0	184.5	1.50	1.50	100%	7	1.34	89%	-	W2	R3	3					7	JN/JF	1.5	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	184.5	186.0	1.50	1.50	100%	6	1.50	100%	0	W2	R3/R	6	1	JN	3	4					5	JF/JN	1	4						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	186.0	187.5	1.50	1.50	100%	4	1.50	100%	-	W2	R4	3					4	JN/JF	1.5	2										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	187.5	189.0	1.50	1.50	100%	2	1.50	100%	0	W2	R4	3									1	JF	1.5	2						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	189.0	190.5	1.50	1.50	100%	8	1.33	89%	-	W2	R4	6					1	JN	3	2	7	JF/JN	1.5	2					20%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	190.5	192.0	1.50	1.50	100%	6	1.44	96%	0	W2	R4	6	1	JN	3	2					5	JF/JN	1.5	2					5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	192.0	193.5	1.50	1.50	100%	7	1.37	91%	-	W2	R4	6					3	JN	1.5	2	4	JF/JN	1.5	2					10%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	193.5	195.0	1.50	1.50	100%	9	1.27	85%	0	W2	R3	6					3	JN	1.5	2	6	JF/JN	1.5	2						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	195.0	196.5	1.50	1.50	100%	5	1.50	100%	New	W2	R3	3					1	JN	1.5	2	4	JF/JN	1.5	2						
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	196.5	198.0	1.54	1.54	100%	5	1.43	93%	-	W2	R3	3					1	JN	1.5	2	4	JF/JN	1.5	2						
K16-370 (UG Hole 2)	Massive Sulfide (OB)	198.0	199.4	1.36	1.36	100%	18	0.66	49%	-	W2	R3/R	15													30%		25%		80%	Orientation lost at 198.51m. Ore is very fractured and has abundance of microdefects which break on impact. Steep fractures/faults sub-parallel to core axis with some major chlorite alteration from 199.1 - 199.4m. Bands of chlorite are R0/R1 in strength.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	199.4	201.0	1.60	1.60	100%	13	1.21	76%	New	W2	R2	6	4	JF/J	1	4	9	JF/JN	1	4										Band of competent ore (R4) from 200.16 - 200.35m. Fringes of ore band are more altered and weaker (W3). Foliation rotates on either side of ore band.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	201.0	202.5	1.50	1.50	100%	7	1.22	81%	0	W2	R3	3					7	JF	1	4										This orientation appear correct and above should be changed.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	202.5	204.0	1.50	1.50	100%	5	1.45	97%	-	W2	R3	3					4	JF	1	4							3%			
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	204.0	205.5	1.50	1.50	100%	3	1.43	95%	-	W2	R3	2	2	JF	1	4	1	JF	1	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	205.5	207.0	1.50	1.50	100%	5	1.39	93%	0	W2	R4	6	1	JN	3	2	3	JF	1.5	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	207.0	208.5	1.50	1.50	100%	3	1.43	95%	-	W2	R4	3					3	JF	1.5	4									5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	208.5	210.0	1.50	1.50	100%	2	1.50	100%	0	W2	R4	3					2	JF	1.5	4									5%	
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	210.0	211.5	1.50	1.50	100%	0	1.50	100%	-	W2	R4	2																		A prevalent foliation remains so I would consider a Jn minimum of 2
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	211.5	213.0	1.50	1.50	100%	2	1.50	100%	0	W2	R4	2					2	JF	1	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	213.0	214.5	1.50	1.50	100%	1	1.50	100%	-	W2	R4/R	2					1	JF	1	2										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	214.5	216.0	1.50	1.50	100%	3	1.50	100%	0	W2	R4/R	3					3	JN/JF	1	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	216.0	217.5	1.50	1.50	100%	3	1.50	100%	-	W2	R4	2					3	JF	1.5	2										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	217.5	219.0	1.50	1.50	100%	4	1.42	95%	0	W2	R4	2					4	JF	1.5	2										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	219.0	220.5	1.50	1.50	100%	2	1.50	100%	-	W2	R4	2					2	JF	1.5	2										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	220.5	222.0	1.50	1.50	100%	1	1.50	100%	0	W2	R2	1	1	JN	3	2														Rock is very chlorite and hematite altered making it weak.
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	222.0	223.5	1.50	1.50	100%	7	1.31	87%	-	W2	R3	3	1	JN	3	4	5	JF	1.5	4										
K16-370 (UG Hole 2)	Mafic Sill (MAFi)	223.5	224.6	1.10	1.10	100%	4	1.10	100%	0	W2	R3	3					4	JF/JN	1.5	4										Band of massive sulphide ore from 224.2 - 224.6 which is more competent than surrounding MAFi. Some healed porous features in the ore band.
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	224.6	225.3	0.65	0.65	100%	3	0.59	91%	0	W2	R2	2									3	JF	1	4						
K16-370 (UG Hole 2)	Fault Breccia - Coherent Rhyolit	225.3	226.5	1.25	1.25	100%	27	0.47	38%	0	W3/W	R1	15					1	JN	1.5	4	1	JN	1	4	15%	70%			95%	Weak and abundance of microdefects so acts like sugar cubes (Jn = 15). Much of the rock breaks under its own weight.
K16-370 (UG Hole 2)	Fault Breccia - Coherent Rhyolit	226.5	228.0	1.50	1.50	100%	23	0.22	15%	-	W3/W	R1	15									10	JF	1.5	4		100%	5%		100%	Weak and abundance of microdefects so acts like sugar cubes (Jn = 15). Much of the rock breaks under its own weight.
K16-370 (UG Hole 2)	Fault Breccia - Coherent Rhyolit	228.0	229.9	1.90	1.50	79%	48	0.51	27%	-	W3/W	R0/R	15					1	JN	3	4	6	JF	1	4		65%		10%	85%	Some competent rhyolite clocks within the fault. Rock mass around rhyolite is heavily altered and very weak - almost cohesive soil. Very poor fault breccia to blocked run at 229.9.
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	229.9	231.0	1.10	1.10	100%	19	0.28	25%	-	W3	R1	4					3	JN	3	2	16	JF	0.5	2		30%	25%		75%	Weak along foliation. Rock mass fractures into thin (5-10mm thick discs). Some minor faults contorting foliation and localized weak bands as rock around fault tens to be more altered and chlorite rich.
K16-370 (UG Hole 2)	Coherent Rhyolite (RHYc)	231.0	232.5	1.50	1.50	100%	31	0.49	33%	New	W2/W	R1	4					2	JN	2	4	15	JF	0.5	2		10%	15%	5%	80%	Orientation lost at 232.34m in broken core.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	232.5	234.0	1.50	1.50	100%	9	1.28	85%	New	W2	R2	3									5	JF	1	4	2%		5%		20%	Orientation lost at 233.00m in broken core.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	234.0	235.9	1.89	1.89	100%	14	1.59	84%	-	W2/W	R1/R	6					2	JN	3	4	9	JF	1	4	5%		2%		15%	Orientation lost at 235.80m in broken core. Fault composed of cemented clay essentially from 234.38 - 234.43m.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	235.9	237.0	1.11	1.11	100%	2	1.11	100%	New	W2	R2	2									2	JF	1	2						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	237.0	238.5	1.50	1.50	100%	5	1.48	99%	55	W1	R2/R	2									5	JF	1	2						Easily dents with hammer point, but takes two blows to fracture
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	238.5	240.0	1.50	1.50	100%	8	1.29	86%	-	W1	R3	3					1	JN	1.5	3	7	JF	3	2-4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	240.0	241.5	1.50	1.50	100%	9	1.35	90%	New	W2	R2	6	1	JN	1	4	1	JN	2	3	7	JF/JN	1	2-4						Weak between 240.3-240.1
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	241.5	243.0	1.50	1.50	100%	6	1.41	94%	-	W2	R2	6	1	JN	1	2	3	JN	1-1.	2	2	FLT/JF	1	2-6						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	243.0	244.5	1.50	1.45	97%	6	1.28	85%	New	W2	R2	6					2	JN	1-1.	2-4	4	JN/JF	1-1.	2-4					10%	Weak 243.2-243.4
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	244.5	246.0	1.50	1.50	100%	8	1.42	95%	-	W2	R2	6					2	JN	1	2-4	4	JF/JN	3	2						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	246.0	247.5	1.50	1.50	100%	9	1.26	84%	New	W2	R2	6					1	JN	1	4	8	JF	1	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	247.5	249.0	1.50	1.50	100%	6	1.46	97%	0	W2	R2	2									6	JF	1	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	249.0	250.5	1.50	1.50	100%	5	1.29	86%	0	W2	R2	3					1	JN	3	4	4	JF	1	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	250.5	252.0	1.50	1.50	100%	5	1.47	95%	0	W2	R1/R	3					1	JN	2	4	4	JF	1	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	252.0	253.5	1.50	1.50	100%	1	1.50	100%	50	W2	R2	1					1	JN	1.5	4										
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	253.5	255.0	1.50	1.50	100%	3	1.50	100%	0	W2	R2	3					1	JN	1.5	4	2	JF	1	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	255.0	256.5	1.50	1.50	100%	3	1.42	95%	0	W2	R2	3					2	JN	3	2	1	JF	2	4						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	256.5	258.0	1.50	1.50	100%	4	1.42	95%	0	W2	R2	3									4	JF/JN	2	4					5%	Contorted foliation between 257.37 - 257.55m. Some mechanical fractures are curved.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	258.0	259.5	1.50	1.50	100%	3	1.41	94%	0	W2	R3	3					1	JN	1.5	2	2	JF	0.5	2						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	259.5	261.4	1.90	1.90	100%	5	1.87	98%	0	W2	R3	3									5	JF/JN	0.5	2						
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	261.4	262.5	1.10	1.10	100%	19	0.48	44%	-	W2	R1/R	9									7	JN/FLT	1	2-8	17%				20%	Had to use ori from the prev run since gouge ground hard to ori for this run. FLT gouge from 262.15-262.35 also minor FLT gouge at 262.08.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	262.5	264.0	1.50	1.30	87%	25	0.56	37%	New	W3	R2	12					3	JN	1	3	12	JN	1-1.	3-4					10%	ori line lost at 263.18 but current run did have ori mark just poor ground break easily with hand when picking up very micaceous rock closely spaced discont.
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	264.0	265.5	1.50	1.50	100%	33	0.48	32%	-	W3	R2	12					3	JN	1	3	22	JF/JN/FLT	1-1.	3-6	3%			6%	10%	Used ori from prev run since current run did not have any ori marked. Ori cut off at 264.33. Minor FLT gouge at 265
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	265.5	267.0	1.50	1.50	100%	28	0.49	33%	-	W2/W	R3	6									16	JF/JN	1-2	2-3				30%	10%	No ori line RZ 255.53-267
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	267.0	268.5	1.50	1.50	100%	12	0.96	64%	-	W2	R3	4									12	JF/JN	1-2	2					5%	No ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	268.5	270.0	1.50	1.35	90%	23	0.61	41%	-	W2/W	R3	6					3	JN	1	3	19	JF/JN/HJN/FL	1-2	2-6	2%			3%	30%	Minor FLT gouge at 268.62 no ori line
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	270.0	271.5	1.50	1.50	100%	29	0.60	40%	New	W3	R2/R	12					3	JN	1	3	14	JN/JF	1-2	3					80%	New ori line but got cut off at ALT zone between 270.8-271 so had to use ori from prev run to carry over highly microdefected and altered this run with microfractures hence JN of 12
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	271.5	273.0	1.50	1.50	100%	10	0.93	62%	New	W2	R2/R	6									10	JN/JF/HJN	1-2	3					60%	Could not match with prev run since broken ground does not fit
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	273.0	274.5	1.50	1.50	100%	14	0.96	64%	New	W2	R3	6					3	JN	1-2	3	11	JN	1-2	3					40%	
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	274.5	276.0	1.50	1.50	100%	14	0.90	60%	-	W2	R3	6									14	JN	1-2	3-4					40%	No ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	276.0	277.5	1.50	1.37	91%	9	0.95	63%	-	W2	R3	6					1	JN	3	1	8	JN	1-3	1-2					10%	No ori line available
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	277.5	279.0	1.50	1.50	100%	60	0.00	0%	-	W3	R2	15													10%				100%	Minor FLT gouge at 277.9 and 15cm gouge at 278.15-278.30 followed by a 5cm QTZ vein. Highly microdefected close spacing of fractures hence FF-60 and JN of 15 no ori line available due to poor ground unable to carry from the next or prev run
K16-370 (UG Hole 2)	Volcaniclastic Rhyolite (RHYv)	279.0	280.5	1.50	1.50	100%	25	0.25	17%	New	W2/W	R2	12					3	JN/JF	1-3	2	16	JF	1-2	2-3			8%		80%	New ori line but lost at 279.27 EOH

POINT LOAD TEST RESULTS

Equipment: PLT

Load Correction Factor = 0.0968 kN/bar

Hole ID	Test No.	Depth of Top of Sample (m)	Lithology	Reading on gauge (MPa)	P or S to mark pieces, if applicable	Test Type (d or a)	Comment and test quality	Distance Between Platens Before Test (mm)	Core diameter, D (mm)	W (mm) only for axial tests	Pressure (bar)	Corrected Load I_L (kN)	Calculated D_e^2 = equivalent core diameter squared (for above test) $D_e^2 = 4WD/\pi$ (mm)	$I_S(50)=Load^2/D_e^2$	$\sigma_{UCS} = P \times I_S$ (MPa)	UCS Sample Match
416-370-645-Hole 2	PLT101	8.10	Ephemitic Rhyolite (Ash)	12.82	D	d	Valid Test	61.10	61.10	61.10	128.4	12.07	9703.21	0.0017582615	1.10563	4.17	
416-370-645-Hole 2	PLT102	10.80	Ephemitic Rhyolite (Ash)	9.98	D	d	Valid Test - Fracture along foliation	61.10	61.10	61.10	96.6	9.07	9703.21	0.0009346609	1.10563	3.39	
416-370-645-Hole 2	PLT103	12.55	Ephemitic Rhyolite (Ash)	14.06	D	d	Valid Test	61.10	61.10	61.10	140.6	13.23	9703.21	0.0020370356	1.10563	3.61	
416-370-645-Hole 2	PLT104	13.08	Ephemitic Rhyolite (Ash)	10.82	L	a	Valid Test	65.00	61.10	42.00	108.4	12.08	3397.39	0.0098718361	1.10563	10.70	
416-370-645-Hole 2	PLT105	14.30	Ephemitic Rhyolite (Ash)	4.5	D	d	Valid Test	61.10	61.10	61.10	45	4.08	9703.21	0.0001891429	1.10563	1.01	
416-370-645-Hole 2	PLT106	16.18	Ephemitic Rhyolite (Ash)	7.16	D	d	Valid Test	61.10	61.10	61.10	71.6	6.79	9703.21	0.0005418589	1.10563	1.99	
416-370-645-Hole 2	PLT107	16.55	Perlite (PEL)	13.76	L	a	Failed Test	65.00	61.10	20.00	137.6	13.02	4846.72	0.0037263152	1.10563	4.09	
416-370-645-Hole 2	PLT108	20.8	Ephemitic Rhyolite (Ash)	4.88	D	d	Valid Test	61.10	61.10	61.10	48.8	4.43	9703.21	0.0002189524	1.10563	1.06	
416-370-645-Hole 2	PLT109	24.6	Ephemitic Rhyolite (Ash)	12.02	L	a	Valid Test	65	61.1	93.00	120.2	11.38	4722.65	0.0056158298	1.10563	4.58	
416-370-645-Hole 2	PLT110	25.78	Ephemitic Rhyolite (Ash)	11.24	D	d	Valid Test	61.1	61.1	61.10	112.4	10.66	9703.21	0.0019345251	1.10563	3.12	
416-370-645-Hole 2	PLT111	27.10	Ephemitic Rhyolite (Ash)	5.14	D	d	Failed Test	61.1	61.1	61.10	51.4	4.98	9703.21	0.0002707362	1.10563	0.87	
416-370-645-Hole 2	PLT112	28.89	Ephemitic Rhyolite (Ash)	5.09	D	d	Valid Test	61.1	61.1	61.10	50.9	4.83	9703.21	0.0012193539	1.10563	1.22	
416-370-645-Hole 2	PLT113	30.68	Perlite (PEL)	5.06	D	d	Valid Test	61.1	61.1	61.10	50.6	4.80	9703.21	0.0011842421	1.10563	1.21	
416-370-645-Hole 2	PLT114	32.17	Ephemitic Rhyolite (Ash)	18.7	L	a	Valid Test	67	61.1	47.00	187	17.73	5036.36	0.0104368329	1.10563	5.53	
416-370-645-Hole 2	PLT115	32.32	Ephemitic Rhyolite (Ash)	12.72	D	d	Valid Test	61.1	61.1	61.10	127.2	12.06	9703.21	0.0019230778	1.10563	3.51	
416-370-645-Hole 2	PLT116	35.85	Ephemitic Rhyolite (Ash)	14.12	D	d	Valid Test	61.1	61.1	61.10	141.2	13.38	9703.21	0.0024163377	1.10563	3.98	
416-370-645-Hole 2	PLT117	37.61	Ephemitic Rhyolite (Ash)	11.04	D	d	Failed Test	61.1	61.1	61.10	110.4	10.47	9703.21	0.0018058366	1.10563	3.07	
416-370-645-Hole 2	PLT118	39.50	Ephemitic Rhyolite (Ash)	10.8	D	d	Valid Test	61.1	61.1	61.10	108	29.20	9703.21	0.0078232258	1.10563	8.56	
416-370-645-Hole 2	PLT119	41.54	Ephemitic Rhyolite (Ash)	22.4	D	d	Valid Test	61.1	61.1	61.10	224	23.13	9703.21	0.0061760682	1.10563	6.78	
416-370-645-Hole 2	PLT120	42.47	Ephemitic Rhyolite (Ash)	10.96	L	a	Valid Test	60	61.1	60.00	109.6	29.55	9115.66	0.0094218751	1.10563	10.32	
416-370-645-Hole 2	PLT121	44.15	Ephemitic Rhyolite (Ash)	27.66	D	d	Valid Test	61.1	61.1	61.10	276.6	26.61	9703.21	0.0075735063	1.10563	7.78	
416-370-645-Hole 2	PLT122	46.77	Ephemitic Rhyolite (Ash)	2.42	D	d	Valid Test	61.1	61.1	61.10	24.2	2.24	9703.21	0.0000868464	1.10563	0.65	
416-370-645-Hole 2	PLT123	47.88	Ephemitic Rhyolite (Ash)	12.56	D	d	Failed Test	23	61.1	43.00	125.6	11.91	9703.21	0.0031289648	1.10563	3.69	
416-370-645-Hole 2	PLT124	50.13	Ephemitic Rhyolite (Ash)	18.54	D	d	Valid Test	61.1	61.1	61.10	185.4	17.22	9703.21	0.0056511095	1.10563	5.39	
416-370-645-Hole 2	PLT125	51.99	Ephemitic Rhyolite (Ash)	51.86	L	a	Failed Test	50	61.1	55.00	518.6	50.20	4279.72	0.0070058495	1.10563	7.73	
416-370-645-Hole 2	PLT126	52.32	Ephemitic Rhyolite (Ash)	12.3	D	d	Valid Test	61.1	61.1	61.10	123	11.66	9703.21	0.0015123425	1.10563	5.42	
416-370-645-Hole 2	PLT127	54.47	Cobonnet Rhyolite (Rhfs)	13.16	D	d	Valid Test	61.1	61.1	61.10	131.6	12.54	9703.21	0.0018491393	1.10563	4.28	
416-370-645-Hole 2	PLT128	55.5	Perlite (PEL)	8.14	D	d	Valid Test - Fracture along foliation	61	61.1	61.00	81.4	8.02	9703.21	0.0007407298	1.10563	2.57	
416-370-645-Hole 2	PLT129	58.35	Volcaniclastic Rhyolite (Rhfv)	7.38	D	d	Valid Test	600	61.1	163.00	73.8	7.00	9703.21	0.0014758955	1.10563	2.03	
416-370-645-Hole 2	PLT130	60.45	Volcaniclastic Rhyolite (Rhfv)	13.62	D	d	Valid Test	600	61.1	190.00	136.2	12.91	9703.21	0.0031058621	1.10563	5.79	
416-370-645-Hole 2	PLT131	60.65	Volcaniclastic Rhyolite (Rhfv)	16.9	L	a	Valid Test	52	61.1	52.00	169	15.09	9105.32	0.0061768602	1.10563	8.36	
416-370-645-Hole 2	PLT132	62.34	Volcaniclastic Rhyolite (Rhfv)	11.26	D	d	Valid Test	122	61.1	169.50	112.6	10.67	9703.21	0.0010809353	1.10563	3.10	
416-370-645-Hole 2	PLT133	63.8	Volcaniclastic Rhyolite (Rhfv)	9	D	d	Valid Test	91	61.1	91.00	90	2.84	9703.21	0.0007918351	1.10563	0.85	
416-370-645-Hole 2	PLT134	67.5	Volcaniclastic Rhyolite (Rhfv)	6.8	D	d	Valid Test	600	61.1	165.00	68	6.45	9703.21	0.0017150771	1.10563	1.83	
416-370-645-Hole 2	PLT135	68.4	Volcaniclastic Rhyolite (Rhfv)	6.66	D	d	Valid Test	110	61.1	127.00	66.6	5.73	9703.21	0.0015193779	1.10563	1.68	
416-370-645-Hole 2	PLT136	68.8	Volcaniclastic Rhyolite (Rhfv)	15.82	L	a	Valid Test	99	61.1	99.00	158.2	15.00	9094.00	0.0040430943	1.10563	5.32	
416-370-645-Hole 2	PLT137	69.86	Volcaniclastic Rhyolite (Rhfv)	5.85	L	a	Valid Test	92	61.1	92.00	58.5	5.65	8278.72	0.0008053032	1.10563	0.93	
416-370-645-Hole 2	PLT138	72	Volcaniclastic Rhyolite (Rhfv)	5.7	D	d	Valid Test	600	61.1	165.00	57	5.40	9703.21	0.0014437683	1.10563	1.59	
416-370-645-Hole 2	PLT139	73.5	Volcaniclastic Rhyolite (Rhfv)	9.3	L	a	Valid Test	53	61.1	53.00	93	8.91	9105.38	0.0014455302	1.10563	1.59	
416-370-645-Hole 2	PLT140	75.36	Volcaniclastic Rhyolite (Rhfv)	2.6	D	d	Valid Test	600	61.1	165.00	26	2.52	9703.21	0.0002682299	1.10563	0.30	
416-370-645-Hole 2	PLT141	80.43	Volcaniclastic Rhyolite (Rhfv)	3.42	L	a	Valid Test	60	61.1	60.00	34.2	3.28	6832.38	0.0006470324	1.10563	0.72	
416-370-645-Hole 2	PLT142	82.02	Volcaniclastic Rhyolite (Rhfv)	4.08	D	d	Valid Test	600	61.1	165.00	40.8	3.87	9703.21	0.0010238303	1.10563	1.13	
416-370-645-Hole 2	PLT143	83.4	Volcaniclastic Rhyolite (Rhfv)	7.53	D	d	Valid Test	600	61.1	165.00	75.3	6.77	9703.21	0.0018181311	1.10563	1.98	
416-370-645-Hole 2	PLT144	88.5	Volcaniclastic Rhyolite (Rhfv)	21.66	L	a	Valid Test	60	61.1	60.00	210.6	19.96	6667.70	0.0042277245	1.10563	4.68	
416-370-645-Hole 2	PLT145	91.47	Volcaniclastic Rhyolite (Rhfv)	20.3	L	a	Valid Test	53	61.1	53.00	203	19.24	9167.23	0.0071096166	1.10563	8.20	
416-370-645-Hole 2	PLT146	94	Volcaniclastic Rhyolite (Rhfv)	5.88	D	d	Valid Test	112	61.1	112.00	58.8	5.68	9703.21	0.0009483275	1.10563	1.05	
416-370-645-Hole 2	PLT147	96.35	Volcaniclastic Rhyolite (Rhfv)	1.22	D	d	Valid Test - Fracture along foliation	173	61.1	173.00	12.2	1.18	9703.21	0.0001908825	1.10563	0.34	
416-370-645-Hole 2	PLT148	98.99	Volcaniclastic Rhyolite (Rhfv)	2.56	D	d	Valid Test	135	61.1	135.00	25.6	2.32	9703.21	0.0005492212	1.10563	0.61	
416-370-645-Hole 2	PLT149	102	Volcaniclastic Rhyolite (Rhfv)	6.155	D	d	Valid Test	169	61.1	169.00	61.6	5.73	9703.21	0.0015153779	1.10563	1.68	
416-370-645-Hole 2	PLT150	106.88	Volcaniclastic Rhyolite (Rhfv)	2.16	L	a	Valid Test - Fracture along foliation	50	61.1	50.00	21.6	2.05	5889.75	0.0005539435	1.10563	0.59	
416-370-645-Hole 2	PLT151	107.6	Volcaniclastic Rhyolite (Rhfv)	5.96	L	a	Valid Test - Fracture along foliation	59	61.1	59.00	59.6	5.66	9094.00	0.0006521659	1.10563	0.67	
416-370-645-Hole 2	PLT152	111	Volcaniclastic Rhyolite (Rhfv)	7.8	L	a	Valid Test - Fracture along foliation	52	61.1	52.00	78	7.39	8695.38	0.0014237882	1.10563	2.00	
416-370-645-Hole 2	PLT153	112.87	Volcaniclastic Rhyolite (Rhfv)	6.58	D	d	Valid Test	173	61.1	173.00	65.8	6.18	9703.21	0.0011868225	1.10563	1.02	
416-370-645-Hole 2	PLT154	114.51	Volcaniclastic Rhyolite (Rhfv)	4.2	D	d	Valid Test	165	61.1	165.00	42	3.98	9703.21	0.0010368535	1.10563	1.17	
416-370-645-Hole 2	PLT155	117.07	Volcaniclastic Rhyolite (Rhfv)	11.5	L	a	Valid Test	65	61.1	65.00	115	10.71	6278.72	0.0035765545	1.10563	2.72	
416-370-645-Hole 2	PLT156	122.27	Volcaniclastic Rhyolite (Rhfv)	2.309	D	d	Valid Test	190	61.1	190.00	28.9	2.73	9703.21	0.0007713328	1.10563	0.83	
416-370-645-Hole 2	PLT157	122.99	Cobonnet Rhyolite (Rhfv)	8	D	d	Valid Test	510	61.1	122.00	80	7.58	9703.21	0.0020331496	1.10563	2.19	
416-370-645-Hole 2	PLT158	124.95	Cobonnet Rhyolite (Rhfv)	10.56	L	a	Valid Test	50	61.1	50.00	105.6	9.82	4934.52	0.0022254388	1.10563	2.47	
416-370-645-Hole 2	PLT159	127.79	Cobonnet Rhyolite (Rhfv)	10.68	L	a	Failed Test	51	61.1	51.00	106.8	9.93	4967.14	0.0025566008	1.10563	2.76	
416-370-645-Hole 2	PLT160	128.86	Cobonnet Rhyolite (Rhfv)	4.56	D	d	Valid Test	143.5	61.1	143.00	45.6	4.32	9703.21	0.0009141855	1.10563	1.01	
416-370-645-Hole 2	PLT161	129.45	Cobonnet Rhyolite (Rhfv)	4.14	D	d	Valid Test - Fracture along foliation	143.5	61.1	143.00	41.4	3.92	9703.21	0.0008301378	1.10563	0.92	
416-370-645-Hole 2	PLT162	131.05	Cobonnet Rhyolite (Rhfv)	5.94	L	a	Valid Test	55.00	61.10	55.00	59.4	5.65	3732.42	0.0023775927	1.10563	2.27	
416-370-645-Hole 2	PLT163	133.20	Mafic Sill (MAFI)	6.18	D	d	Valid Test - Fracture along foliation	108.00	61.10	108.00	61.8	6.15	9703.21	0.0009599109	1.10563	0.61	
416-370-645-Hole 2	PLT164	132.25	Mafic Sill (MAFI)	8.08	L	a	Valid Test	65.00	61.10	65.00	84.8	8.23	4322.64	0.0036162297	1.10563	3.73	
416-370-645-Hole 2	PLT165	116.75	Mafic Sill (MAFI)	8.86	-	d	Valid Test	97.00	61.10	97.00	68.8	6.70	9703.21	0.0007763698	1.10563	0.91	
416-370-645-Hole 2	PLT166	134.75	Mafic Sill (MAFI)	19.16	-	a	Valid Test	65.00	61.10	65.00	191.6	18.68	9009.77	0.0035565901	1.10563	3.93	
416-370-645-Hole 2	PLT167	136.45	Mafic Sill (MAFI)	5.03	D	d	Valid Test - Fracture along foliation	105.00	61.10	105.00	50.3	2.88	9703.21	0.0007719468	1.10563	0.85	
416-370-645-Hole 2	PLT168	138.4	Mafic Sill (MAFI)	10.12	L	a	Valid Test	55.00	61.10	55.00	101.2	9.78	4323.14	0.0053163796	1.10563	5.87	
416-370-645-Hole 2	PLT169	139.25	Skarngan Sulfide (SS)	6.78	L	a	Valid Test	127	61.1	67.00	67.8	6.55	6036.38	0.0017573878	1.10563	1.92	
416-370-645-Hole 2	PLT170	140.35	Skarngan Sulfide (SS)	6.68	L	a	Valid Test - Fracture along foliation	111	61.1	111.00	66.8	6.45	9967.54	0.0010368714	1.10563	1.14	
416-370-645-Hole 2	PLT171	141.35	Skarngan Sulfide (SS)	6.68	L	a	Valid Test	111	61.1	111.00	66.8	6.57	9967.54	0.0010368714	1.10563	1.14	
416-370-645-Hole 2	PLT172	143.25	Cloud Reverse Lateral Rhyolite (RHR)	6.414	L	a	Valid Test	105	61.1	150.00	64.2	6.19	9703.21	0.0015232601	1.10563	1.23	
416-370-645-Hole 2	PLT173	143.25	Cloud Reverse Lateral Rhyolite (RHR)	11.82	L	a	Valid Test	65	61.1	65.00	118.2	11.21	9115.66	0.0032609526	1.10563	3.70	
416-370-645-Hole 2	PLT174	145.1	Cloud Reverse Lateral Rhyolite (RHR)	9.59	D	d	Valid Test - Fracture along foliation	95	61.1	95.00	5	0.27	9703.21	0.0000136968	1.10563	0.53	
416-370-645-Hole 2	PLT175	145.4	Cloud Reverse Lateral Rhyolite (RHR)	4.06	L	a	Valid Test	29	61.1	29.00	17.6	1.28	2350.35	0.0005070316	1.10563	0.72	
416-370-645-Hole 2	PLT176	146.4	Skarngan Sulfide (SS)	14.18	D	d	Valid Test - Fracture along foliation	110	61.1	110.00	141.8	13.59	9703.21	0.0036641456	1.10563	4.98	
416-370-645-Hole 2	PLT177	146.4	Skarngan Sulfide (SS)	15.22	L	a	Valid Test	51	61.1	51.00	152.2	14.43	4431.44	0.0074938876	1.10563	6.70	
416-370-645-Hole 2	PLT178	147.95	Cloud Reverse Lateral Rhyolite (RHR)	5.56	D	d	Valid Test - Fracture along foliation	175	61.1	175.00	55.6	5.27	9703.21	0.0008468149	1.10563	0.93	
416-370-645-Hole 2	PLT179	147.95	Cloud Reverse Lateral Rhyolite (RHR)	2.98	L	a	Valid Test	50	61.1	28.00	29.8	2.83	2278.28	0.0012969834	1.10563	1.43	

A total of seven packer tests were completed for four geotechnical holes (GT-01 – GT-04). Three tests were in the fault areas whereas the remaining four tests were in HW areas. Table 1-22 to Table 1-28 summarises the packer tests completed:

Table 1-22: Hydraulic Conductivity – GT-04 HW Domain (1)

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Q (m3)/s**	**Lsin(A)/r**	**K (m/s)**
1	72	7.33944954	0.00064	225.672377	3.33261E-07
2	138	14.0672783	0.000765	225.672377	2.07835E-07
3	138.4	14.108053	0.0009375	225.672377	2.53964E-07
4	72	7.33944954	0.00061	225.672377	3.17639E-07

Table 1-23: Hydraulic Conductivity – GT-04 HW Domain (2)

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	82.73712	8.43653717	173.594136	0.00108571	6.08429E-07
2	152.460381	15.5460773	173.594136	0.0014375	4.37165E-07
3	103.4214	10.5456715	173.594136	0.00105833	4.74468E-07
4	199.94804	20.3882982	173.594136	0.00163333	3.7875E-07

Table 1-24: Hydraulic Conductivity – GT-02 East Fault

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	172.4365	17.5830019	106.304264	0.000925	3.68E-07
2	344.873	35.1660039	106.304264	0.00097639	1.94E-07
3	689.746	70.3320077	106.304264	0.00165	1.64E-07

Table 1-25: Hydraulic Conductivity – GT-03 HW Domain

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	206.9238	21.7996023	56.4189852	4.7619E-05	2.48505E-08
2	413.8476	42.1992046	56.4189852	7.3611E-05	1.98446E-08
3	620.7714	63.998807	56.4189852	9.8611E-05	1.7529E-08
4	413.8476	42.7354358	56.4189852	6.1111E-05	1.6268E-08

Table 1-26: Hydraulic Conductivity – GT-03 East Fault

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	68.9746	7.73320077	65.1952718	0.00021667	2.85721E-07
2	147.145813	15.0041617	65.1952718	0.00033833	2.29954E-07
3	206.9238	21.7996023	65.1952718	0.00033	1.54374E-07
4	137.9492	14.6026327	65.1952718	0.00021667	1.51311E-07
5	79.32079	8.08818089	65.1952718	0.00012778	1.61107E-07

Table 1-27: Hydraulic Conductivity – GT-01 Fault Creek Fault

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	48.28222	13.2532405	150.450627	0.00115	4.60208E-07
2	82.76952	8.43984093	150.450627	0.0012	7.54095E-07
3	137.9492	22.3964015	150.450627	0.00138472	3.27916E-07
4	82.76952	14.8209911	150.450627	0.00075238	2.6924E-07
5	48.28222	4.92324054	150.450627	0.00051	5.49412E-07

Table 1-28: Hydraulic Conductivity – GT-01 HW Domain

Hydraulic Conductivity					
Step	**kPa**	**dH**	**Lsin(A)/r**	**Q (m3/s)**	**K (m/s)**
1	120.6583	20.6332834	129.136788	0.00111667	3.2422E-07
2	275.7904	36.4517906	129.136788	0.00166389	2.73457E-07
3	80.4388667	16.5321889	129.136788	0.00058	2.10175E-07
4	25.2807867	10.9078308	129.136788	0.00013333	7.32293E-08

OUTCROP SURVEY

An outcrop survey was completed between August 17-18, 2016 for the purpose of determining orientation, lithology, type of structure, slope height, weathering, rock mass characteristics, where applicable, for pit and pit wall areas.

A compass was used to determine strike and dip for orientation where the right hand rule was applied. A magnetic declination of 22.1° was added to achieve grid north (NAD83 Z9). Majority of the west pit wall areas for both Krakatoa and ABM were reclaimed and therefore, insignificant data was collected. Similarly, portions of the east pit walls were also reclaimed or consisted of vegetation which resulted in no data. Majority of measurements were recorded within road cuts and excavation due to greater exposure of bedrock.

The primary structures noted were dominant joint/foliation and normal joint sets. Both Wind Lake and KZK formations were recorded which resulted in similar orientation for foliation. Several massive normal joint sets were also observed particularly for the KZK formation.

Figure 1-18 outlines a point summary drawing of the outcrop survey and Table 1-29 summarises in detail of each outcrop surveyed.

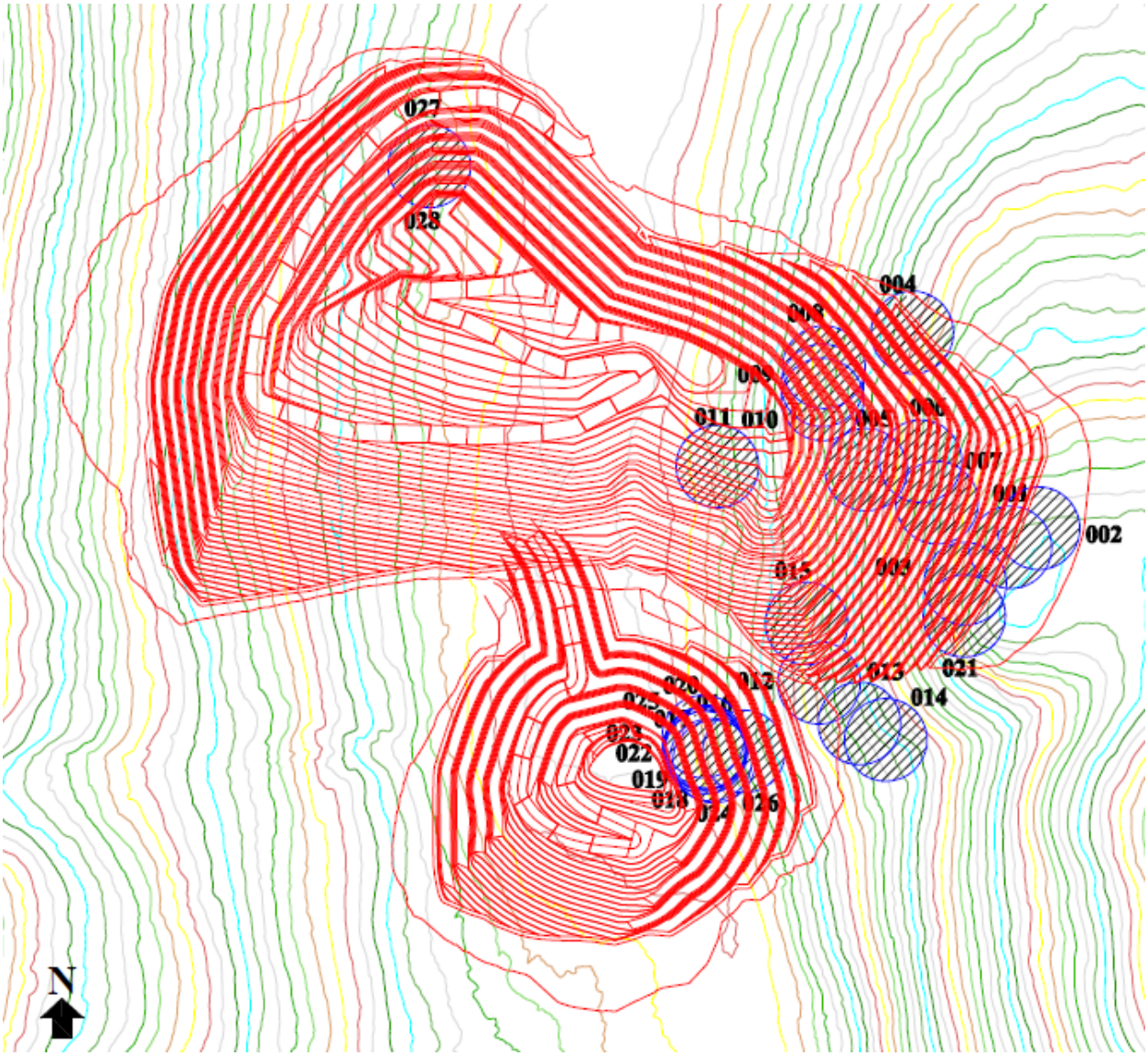

Figure 1-18: Summary of Outcrop Points with Respect to Proposed Open Pit Areas

Table 1-29: Outcrop Survey Summary

ID	Easting (m)	Northing (m)	Elevation (m)	Type	Orientation (Strike/Dip)	Lithology	Weathering	Slope Height (m)	Slope Angle	Formation
1	415493	6815312	1569	JF	332/18NE	Sedimentary	W3	2	60	Wind Lake
2	415527	6815335	1569	JN	240/22NW	Sedimentary	W3	1	30	Wind Lake
3	415438	6815268	1554	JN	096/20S	MDU	W4	4	50	Wind Lake
4	415374	6815572	1489	JN	252/20N	Sedimentary	W2/W3	3	70	Wind Lake (?)
5	415318	6815406	1479	VN	086/60S	QTZ Vein	W2	<0.5	30	Wind Lake
6	415384	6815416	1509	JN	090/30S	MAFt	W2	3	70	Wind Lake
7	415404	6815366	1524	JF	272/32N	MAFt	W2	2	40	Wind Lake
8	415267	6815530	1454	JF	294/12N	RHY (?)	W3	0.5	60	KZK (?)
9	415265	6815508	1454	JN	306/28NE	RHY (?)	W3	2	40	KZK (?)
10	415265	6815491	1454	JF	280/28N	RHYv (?)	W4	5	30	KZK (?)
11	415138	6815410	1399	JN	170/32W	RHYv (?)	W4	2	25	KZK (?)
12	415261	6815148	1449	JN	308/30N	RHY (?)	W4	2	40	KZK (?)
13	415310	6815099	1464	JN	136/12SW	RHY (?)	W2	1.5	30	KZK (?)
14	415342	6815079	1469	JN	220/30NW	RHY (?)	W2	0.5	30	KZK (?)
15	415246	6815220	1444	JF	280/32N	RHY	W3	4	50	KZK
16	415170	6815065	1414	JN	146/20SW	RHY	W4	0.5	50	KZK
17	415134	6815053	1399	JF	316/20NE	RHY	W4	1	40	KZK
18	415122	6815069	1399	JN	248/33N	RHYv	W3	5	25	KZK
19	415124	6815064	1399	JF	272/22N	RHYv	W4	3	25	KZK
20	415121	6815083	1399	JF (?)	280/12N	RHYv	W3	6	25	KZK
21	415437	6815229	1554	JF	246/16N	MAFt	W2	8	40	Wind Lake
22	415122	6815064	1399	JN	161/62W	RHYc	W3	8	40	KZK
23	415122	6815068	1399	JN	154/72W	RHYc	W3	8	25	KZK
24	415124	6815069	1399	JN	118/62S	RHYc	W2/W3		25	KZK

ID	Easting (m)	Northing (m)	Elevation (m)	Type	Orientation (Strike/Dip)	Lithology	Weathering	Slope Height (m)	Slope Angle	Formation
25	415125	6815071	1399	JF	282/38N-NE	RHYv	W2	6	25	KZK
26	415130	6815055	1399	JF	270/44N	RHYv	W4	2	25	KZK
27	414789	6815773	1404	JF	272/30N	RHYv	W3	3.5	30	KZK
28	414789	6815773	1404	JN	020/84E	RHYv	W3	3.5	30	KZK

Appendix R: List of ARD Samples

Table R-1: List of Krakatoa Zone waste rock geodomain samples collected in 2016.

Sample ID	Hole ID	From (m)	To (m)	Length (m)	Core Size
Q930101	K15-248	27.00	27.44	0.44	HQ3
Q930102	K15-248	33.10	33.55	0.45	HQ3
Q930103	K15-258	23.00	23.95	0.95	NQ3
Q930104	K15-258	30.95	32.00	1.05	NQ3
Q930105	K15-258	44.00	44.66	0.66	NQ3
Q930106	K15-277	30.96	32.00	1.04	NQ3
Q930107	K15-277	47.00	47.90	0.90	NQ3
Q930108	K15-277	68.00	68.95	0.95	NQ3
Q930109	K15-277	90.50	91.70	1.20	NQ3
Q930110	K15-282	15.50	17.00	1.50	NQ3
Q930111	K15-282	35.00	36.30	1.30	NQ3
Q930112	K15-303	20.00	20.55	0.55	HQ3
Q930113	K15-304	149.68	150.10	0.42	HQ3
Q930114	K15-304	119.67	120.09	0.42	HQ3
Q930115	K15-304	134.50	135.03	0.53	HQ3
Q930116	K15-305	68.53	69.00	0.47	HQ3
Q930117	K15-305	42.57	43.03	0.46	HQ3
Q930118	K15-305	15.50	16.00	0.50	HQ3
Q930119	K15-307	94.00	94.42	0.42	HQ3
Q930120	K15-307	50.94	51.40	0.46	HQ3
Q930121	K15-307	35.96	36.50	0.54	HQ3
Q930122	K15-310	119.00	119.44	0.44	HQ3
Q930123	K15-310	98.70	99.15	0.45	HQ3
Q930124	K15-310	71.00	71.44	0.44	HQ3
Q930125	K15-310	42.03	42.48	0.45	HQ3
Q930126	K15-311	38.00	38.47	0.47	HQ3
Q930127	K15-313	60.00	60.47	0.47	HQ3
Q930128	K15-314	76.50	77.50	1.00	HQ3
Q930129	K15-314	65.20	66.12	0.92	HQ3
Q930130	K15-315	116.74	117.18	0.44	HQ3
Q930131	K15-315	45.00	45.47	0.47	HQ3
Q930132	K15-316	42.55	43.00	0.45	HQ3
Q930133	K15-317	55.16	55.58	0.42	HQ3
Q930134	K15-319	114.00	115.00	1.00	HQ3
Q930135	K15-319	104.50	105.44	0.94	HQ3
Q930136	K15-319	50.00	50.47	0.47	HQ3
Q930137	K15-320	137.00	137.44	0.44	HQ3
Q930138	K15-320	110.00	110.45	0.45	HQ3
Q930139	K15-320	77.29	77.77	0.48	HQ3
Q930140	K15-320	59.00	59.49	0.49	HQ3
Q930141	K15-320	24.60	25.09	0.49	HQ3
Q930142	K15-321	99.96	100.38	0.42	HQ3
Q930143	K15-322	93.00	94.00	1.00	HQ3
Q930144	K15-322	77.50	78.50	1.00	HQ3
Q930145	K15-322	65.50	66.50	1.00	HQ3

Sample ID	Hole ID	From (m)	To (m)	Length (m)	Core Size
Q930146	K15-322	35.00	36.00	1.00	HQ3
Q930147	K15-323	68.00	68.49	0.49	HQ3
Q930148	K94-032	17.10	18.10	1.00	NQ3
Q930149	K94-032	45.60	46.50	0.90	NQ3
Q930150	K94-032	80.20	81.10	0.90	NQ3
Q930151	K94-032	124.40	125.40	1.00	NQ3
Q930152	K95-109	58.90	59.70	0.80	NQ3
Q930153	K95-109	119.98	120.70	0.72	NQ3
Q930154	K95-110	21.60	22.35	0.75	NQ3
Q930155	K95-110	50.10	50.90	0.80	NQ3
Q930156	K95-110	68.30	69.05	0.75	NQ3
Q930157	K95-115	32.60	33.44	0.84	NQ3
Q930158	K95-115	79.60	80.44	0.84	NQ3
Q930159	K95-116	24.20	25.10	0.90	NQ3
Q930160	K95-116A	58.20	59.00	0.80	NQ3
Q930161	K95-119	24.20	25.00	0.80	NQ3
Q930162	K95-119	32.90	33.85	0.95	NQ3
Q930163	K95-119	59.70	60.50	0.80	NQ3
Q930164	K95-119	68.90	69.80	0.90	NQ3
Q930165	K95-124	41.40	42.20	0.80	NQ3
Q930166	K95-124	51.20	52.10	0.90	NQ3
Q930167	K95-124	60.60	61.40	0.80	NQ3
Q930168	K97-173	14.60	15.07	0.47	HQ
Q930169	K97-173	31.10	31.57	0.47	HQ
Q930170	K97-175	20.20	20.70	0.50	HQ
Q930171	K97-175	49.70	50.20	0.50	HQ
Q930172	K97-175	79.87	80.28	0.41	HQ
Q930173	K97-175	107.17	107.60	0.43	HQ
Q930174	K97-175	135.00	135.50	0.50	HQ
Q930175	K97-178	9.38	9.80	0.42	HQ
Q930176	K97-178	30.80	31.60	0.80	HQ
Q930177	K15-319	157.98	158.43	0.45	HQ3
Q930178	K15-320	63.70	64.10	0.40	HQ3
Q930179	K15-322	149.00	149.84	0.84	HQ3

Appendix S: Geologist Certificates

GEOLOGIST'S CERTIFICATE

Christopher Hughes
704-900 Jervis Street
Vancouver, B.C., Canada

I, **CHRISTOPHER HUGHES**, M.Sc., do hereby certify that:

1. I am a Senior Project Geologist at Equity Exploration Consultants Ltd., a geological consulting and contracting firm with offices at Suite 1510–250 Howe Street, Vancouver, British Columbia.
2. I am a graduate of the University of Auckland, New Zealand, with Bachelor of Science (2003) and Masters of Science (2005) degrees in Geology, and I have practiced my profession continuously since 2005.
3. Since 2005 I have been involved in mineral exploration for gold, silver, copper, lead, zinc, iron ore and coal in New Zealand, Australia, Republic of Guinea, Cameroon, Republic of Congo and Canada.
4. I am co-author of the Assessment Report entitled "*2016 Geological, Geophysical, Diamond Drilling and Geotechnical Program Report on the Kudz Ze Kayah (KZK) Property"* prepared for BMC Minerals LTD.
5. I was directly involved with the planning, managing and execution of the 2016 exploration program at Kudz Ze Kayah and have examined the property which is subject of the Assessment Report.

Dated 17th March, 2017, at Vancouver, British Columbia.

Christopher Hughes, M.Sc.

GEOLOGIST'S CERTIFICATE

Ronald J. Voordouw
2327 Mary Hill Road
Port Coquitlam, BC, Canada
V3C 3A6

I, **RONALD VOORDOUW**, Ph.D., P.Geo., do hereby certify that:

1. I am presently a Project Geologist with Equity Exploration Consultants Ltd, with offices at Suite 1510, 250 Howe Street, Vancouver, British Columbia, Canada.
2. I graduated from the University of Calgary, Alberta, Canada, with a Bachelor of Science degree in geology in 1999, and with a Doctorate in geology in 2006 from the Memorial University of Newfoundland, Canada.
3. I am a professional geoscientist in good standing (#06962) in the province of Newfoundland and Labrador.
4. Since 2006 I have been involved in natural resource exploration for base metals and gold (2006, 2011 to present); research on PGE deposits (2007, 2008); and regional geological mapping (2009, 2010) in Canada and South Africa.
5. I am a co-author of the assessment report titled "*2016 Geological, Geophysical, Diamond Drilling and Geotechnical Program Report on the Kudz Ze Kayah (KZK) Property"* prepared for BMC Minerals LTD.
6. I co-managed the 2016 exploration work on the KZK Property from 15 April to 16 September 2016.

Dated 17th March 2017, at Vancouver, British Columbia.

#06962

Signed and sealed: "*Ronald J. Voordouw*"

Ronald J. Voordouw, Ph.D., P.Geo

Appendix T: Data Disk