ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
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Vancouver, B.C. V6B 1L8
Telephone: 604-688-2568 Fax: 604-688-2578

ASSESSMENT REPORT

describing

GEOPHYSICAL SURVEYING

at the

MORAINE PROPERTY

Moraine 1-72 YF30621-YF30692

located at

NTS 115A/15 and 115H/02
Latitude 60°59′N; Longitude 136°33′W

in the

Whitehorse Mining District
Yukon Territory

prepared by

Archer, Cathro & Associates (1981) Limited

for

BONAPARTE RESOURCES INC.
and
STRATEGIC METALS LTD.

by

A. Mitchell, B.Sc. Geology, GIT

April 2012

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INTRODUCTION

The Moraine property lies immediately south of the Dawson Range Gold Belt in southwestern Yukon (Figure 1). It was staked to cover two anomalous copper ± gold results reported from historical stream sediment sampling within a favourable geological belt. Bonaparte can earn a 100% interest in the property, subject to an option agreement with Strategic Metals Ltd.

This report describes an exploration program that was conducted by Archer, Cathro & Associates (1981) Limited in 2011 on behalf of Bonaparte. The work comprised helicopter-borne versatile time-domain electromagnetic (VTEM) and magnetic surveys that were flown between December 14 and 20, 2011.

PROPERTY LOCATION, CLAIM DATA AND ACCESS

The Moraine property consists of 72 contiguous mineral claims, which are located on NTS map sheets 115A/15 and 115H/02 at latitude 60°59′ north and longitude 136°33′ west (Figure 1). The property covers an area of approximately 1472 ha (15 km^2). The claims are registered with the Whitehorse Mining Recorder in the name of Archer Cathro, which holds them in trust for Strategic Metals. Specifics concerning claim registration are tabulated below, while the locations of individual claims are shown on Figure 2.

Claim Name	Grant Number	Expiry Date*
Moraine 1-72	YF30621-YF30692	March 23, 2017

* Expiry date includes 2011 work that has been filed for assessment credit but not yet accepted.

The Moraine property lies 8.5 km east of the Aishihik Lake road, at a point 20 km north of its junction with the Alaska Highway. The Alaska Highway is usable in all seasons by two wheel drive vehicles. Haines Junction is the closest supply center and is situated 60 km southwest of the property.

HISTORY AND PREVIOUS WORK

In 1985, the Geological Survey of Canada (GSC) conducted a low-density stream sediment and water sampling survey on NTS map sheet 115H (GSC, 1986). Two samples were collected from creeks draining the property to the northeast. One sample returned a weakly anomalous gold value of 12 ppb.

In 1993, the GSC performed a low-density stream sediment and water sampling survey on NTS map sheet 115A (Friske, 1994). Sample locations are plotted on Figure 3, while results for gold, copper, and arsenic are illustrated thematically on Figures 4 to 6. Two samples were taken from the west- and east-central parts of the property. The western sample yielded a strongly anomalous value for copper (106 ppm), while the eastern sample returned strongly anomalous values for copper (105 ppm) and arsenic (36 ppm) with a weakly anomalous value for gold (15 ppb).

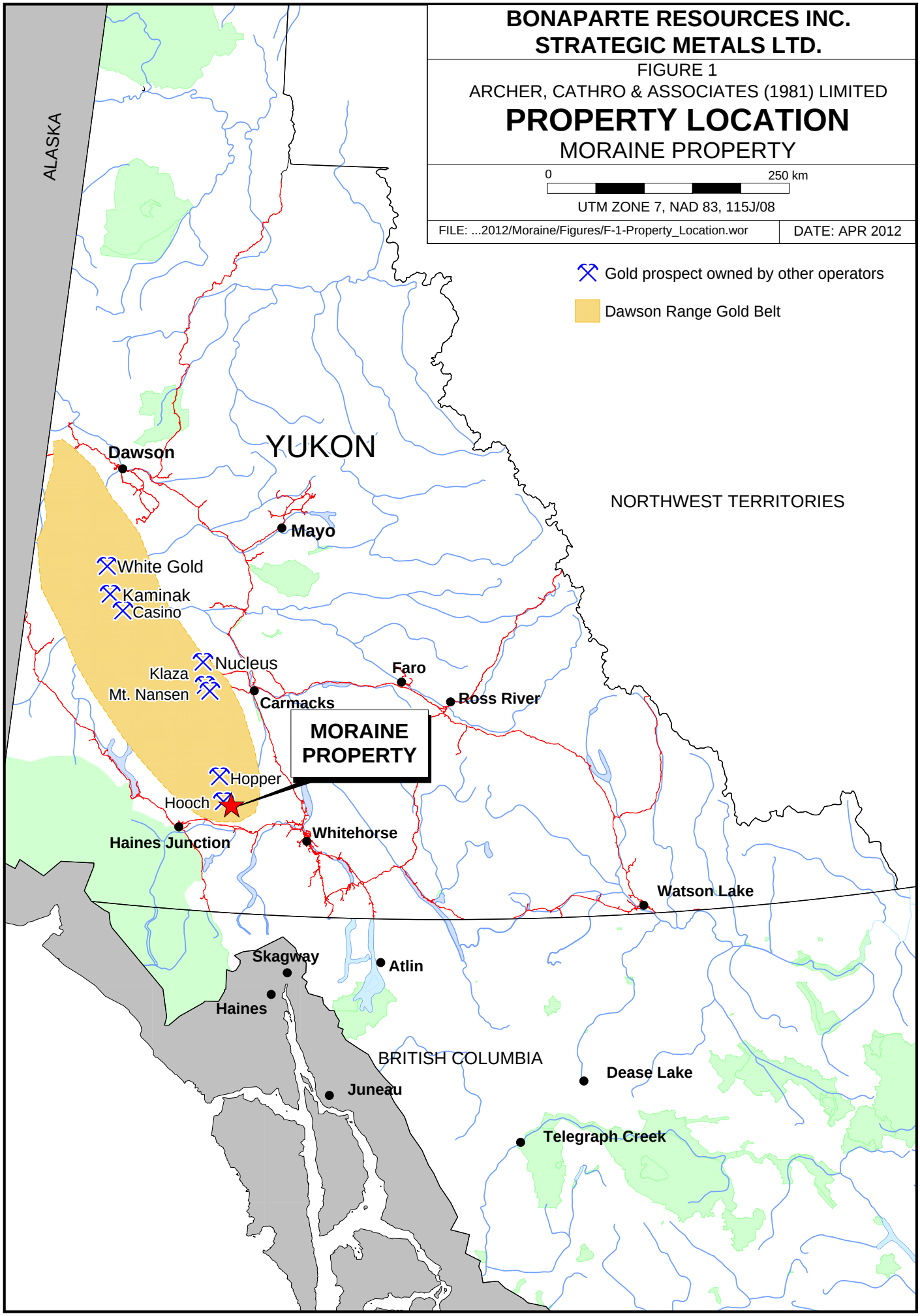
BONAPARTE RESOURCES INC.
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FIGURE 1
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
PROPERTY LOCATION
MORAINE PROPERTY
0
250 km
UTM ZONE 7, NAD 83, 115J/08
FILE: ...2012/Moraine/Figures/F-1-Property_Location.wor
DATE: APR 2012
Gold prospect owned by other operators
Dawson Range Gold Belt
ALASKA
YUKON
NORTHWEST TERRITORIES
BRITISH COLUMBIA
Dawson
Mayo
White Gold
Kaminak
Casino
Klaza
Nucleus
Mt. Nansen
Carmacks
Faro
Ross River
MORAINE PROPERTY
Hopper
Hooch
Haines Junction
Whitehorse
Watson Lake
Skagway
Atlin
Haines
Juneau
Dease Lake
Telegraph Creek

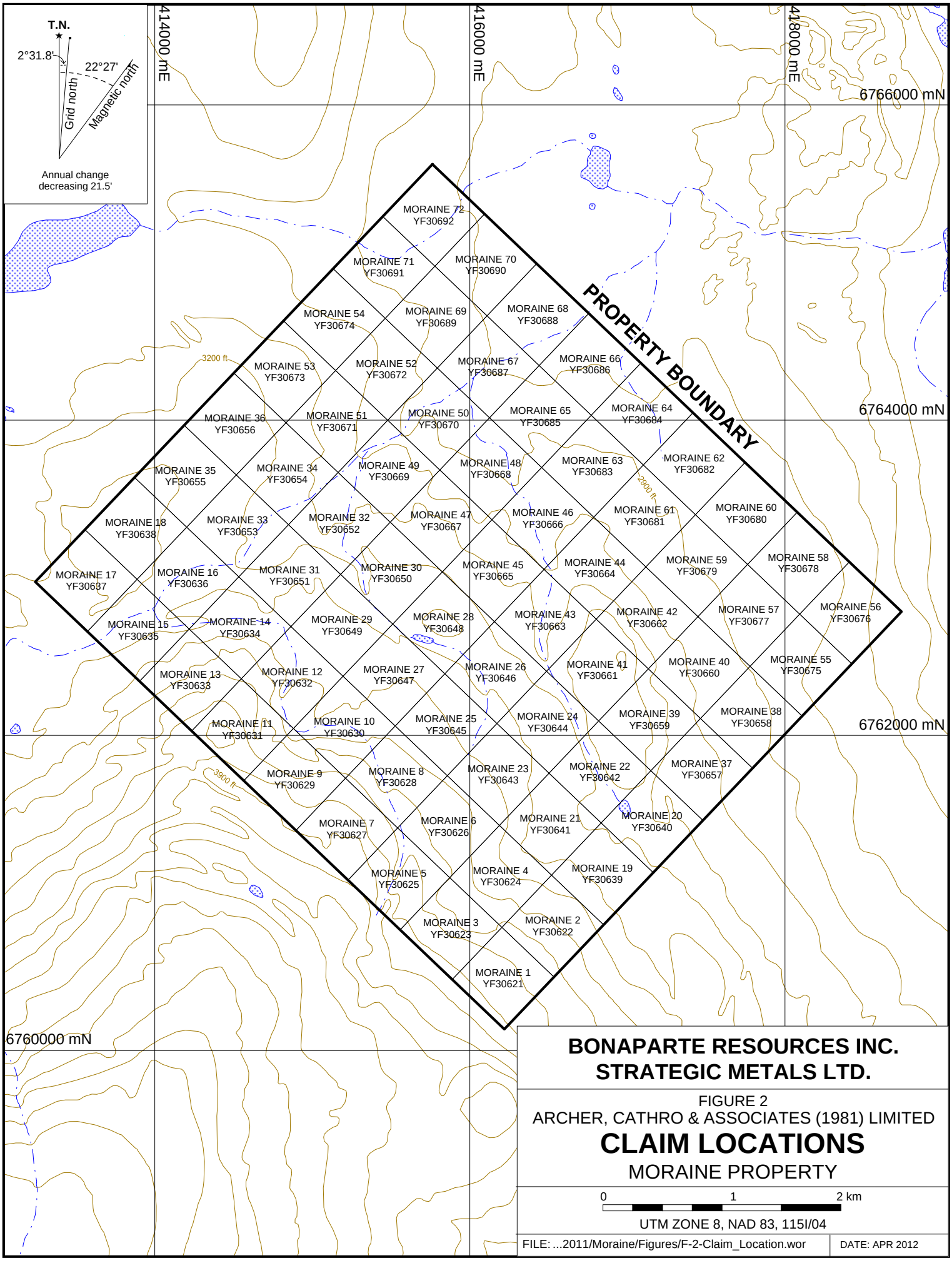

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FIGURE 2
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

CLAIM LOCATIONS

MORAINE PROPERTY

0 1 2 km

UTM ZONE 8, NAD 83, 115I/04

FILE: ...2011/Moraine/Figures/F-2-Claim_Location.wor | DATE: APR 2012

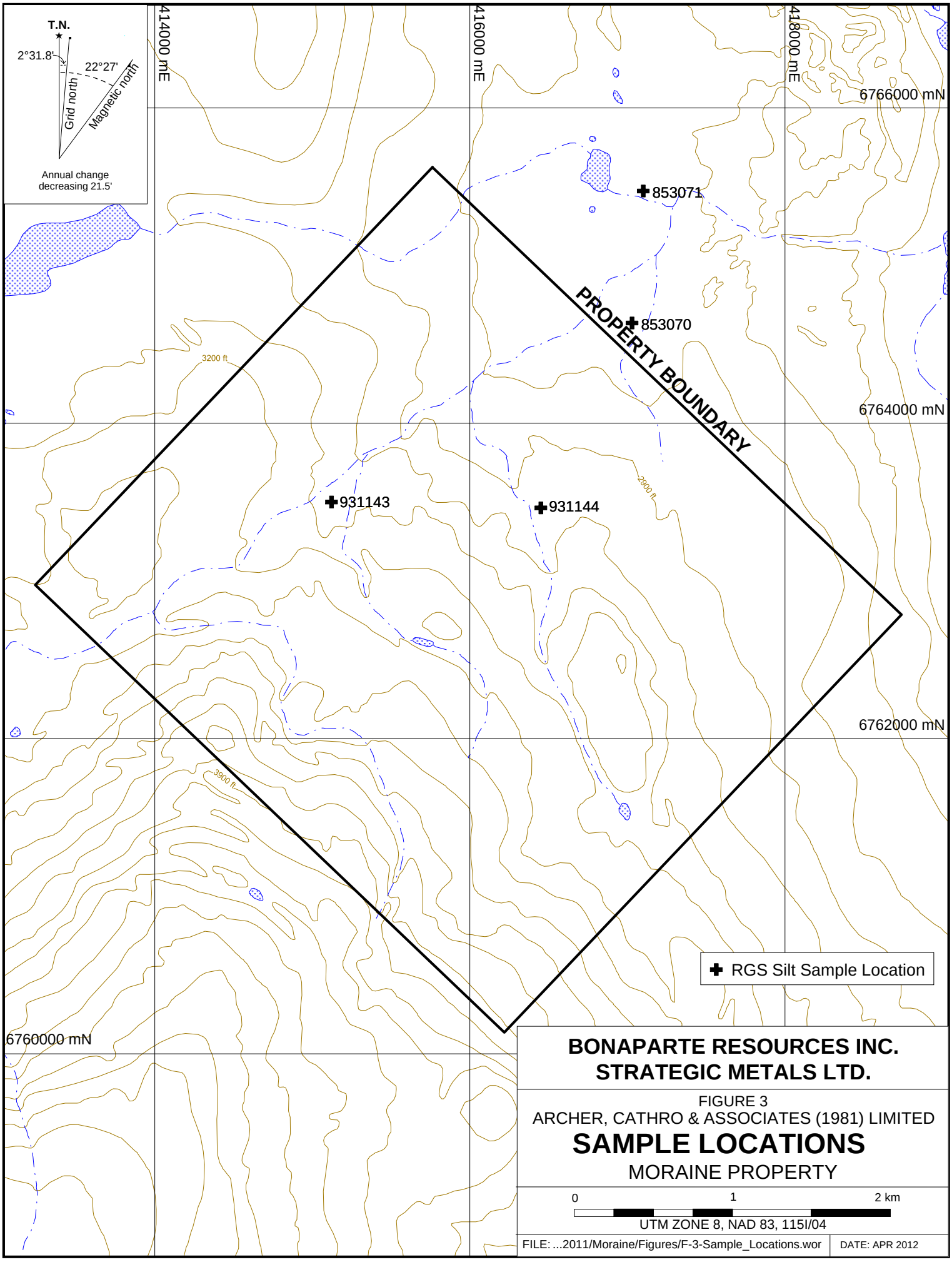

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FIGURE 3
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

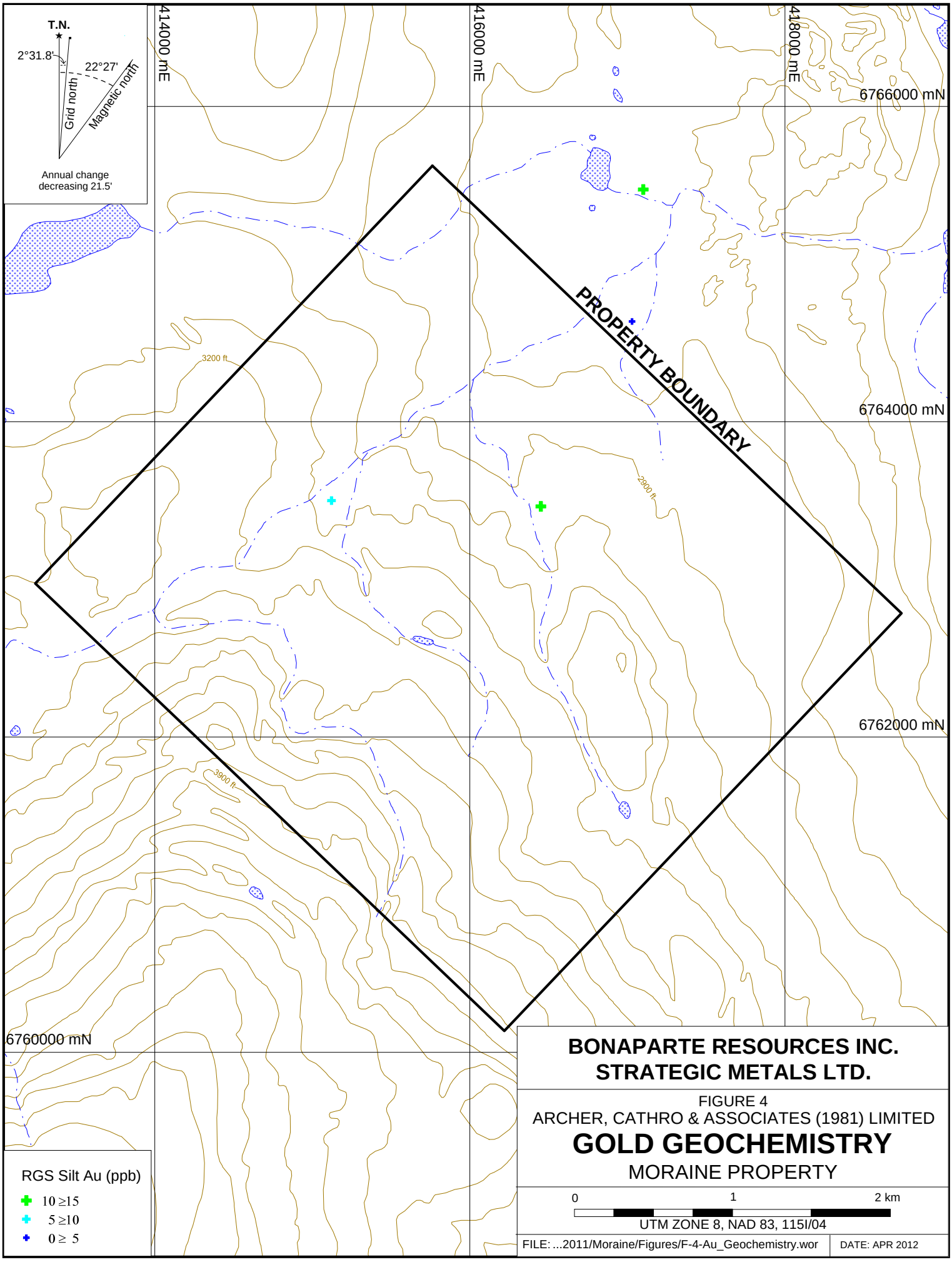
SAMPLE LOCATIONS

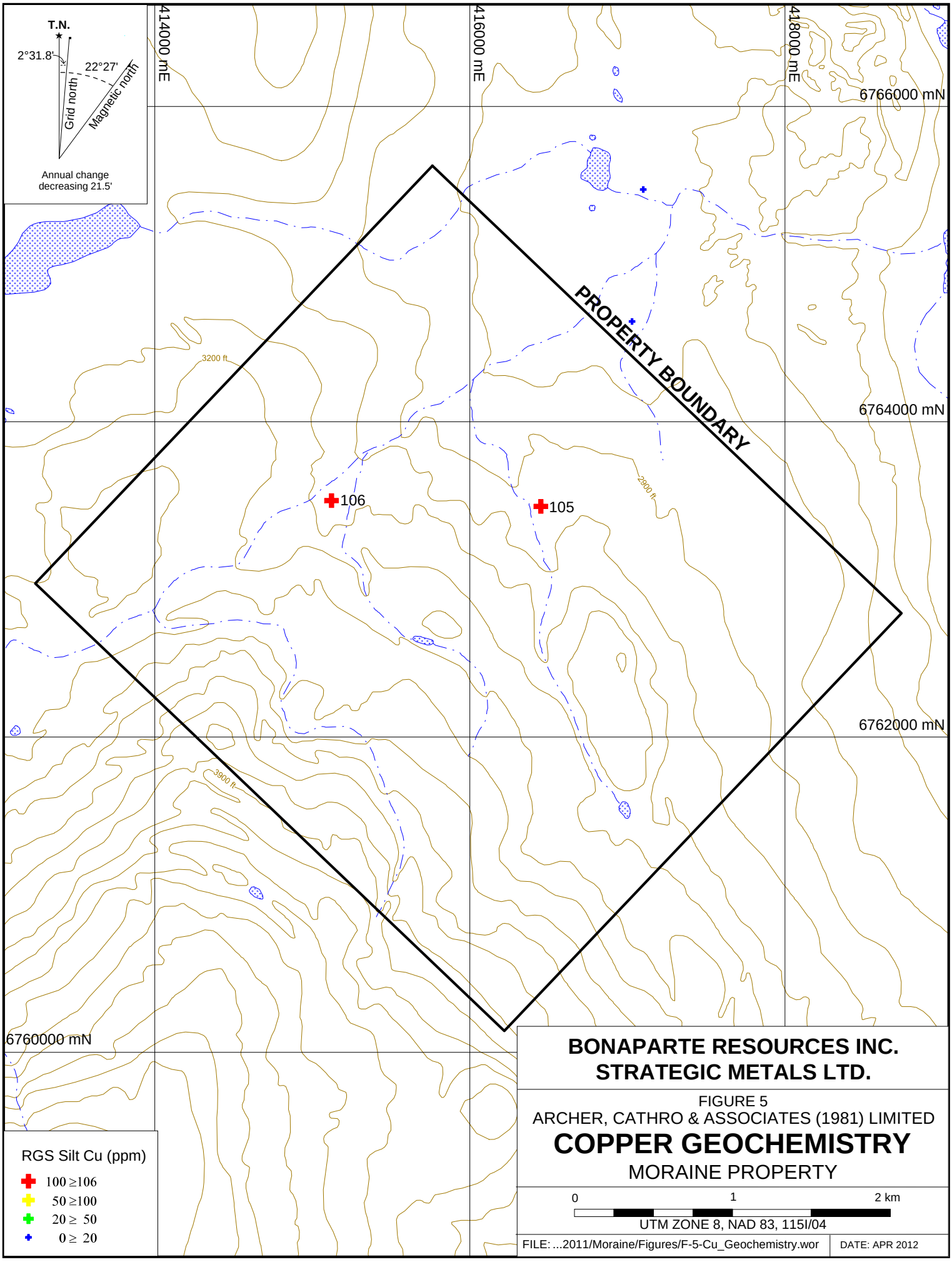
MORAINE PROPERTY

0 1 2 km

UTM ZONE 8, NAD 83, 115I/04

FILE: ...2011/Moraine/Figures/F-3-Sample_Locations.wor | DATE: APR 2012


T.N.
2°31.8'
22°27'
Grid north
Magnetic north
Annual change
decreasing 21.5'
414000 mE
416000 mE
418000 mE
6766000 mN
6764000 mN
6762000 mN
6760000 mN
PROPERTY BOUNDARY
3200 ft
2900 ft
3900 ft
RGS Silt Au (ppb)
10 ≥15
5 ≥10
0 ≥ 5
BONAPARTE RESOURCES INC.
STRATEGIC METALS LTD.
FIGURE 4
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
GOLD GEOCHEMISTRY
MORAINE PROPERTY
0
1
2 km
UTM ZONE 8, NAD 83, 115I/04
FILE: ...2011/Moraine/Figures/F-4-Au_Geochemistry.wor
DATE: APR 2012


T.N.
2°31.8'
22°27'
Grid north
Magnetic north
Annual change
decreasing 21.5'
414000 mE
416000 mE
418000 mE
6766000 mN
6764000 mN
6762000 mN
6760000 mN
PROPERTY BOUNDARY
3200 ft
2900 ft
3900 ft
106
105
RGS Silt Cu (ppm)
100 ≥106
50 ≥100
20 ≥ 50
0 ≥ 20
BONAPARTE RESOURCES INC.
STRATEGIC METALS LTD.
FIGURE 5
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
COPPER GEOCHEMISTRY
MORAINE PROPERTY
0
1
2 km
UTM ZONE 8, NAD 83, 115I/04
FILE: ...2011/Moraine/Figures/F-5-Cu_Geochemistry.wor
DATE: APR 2012

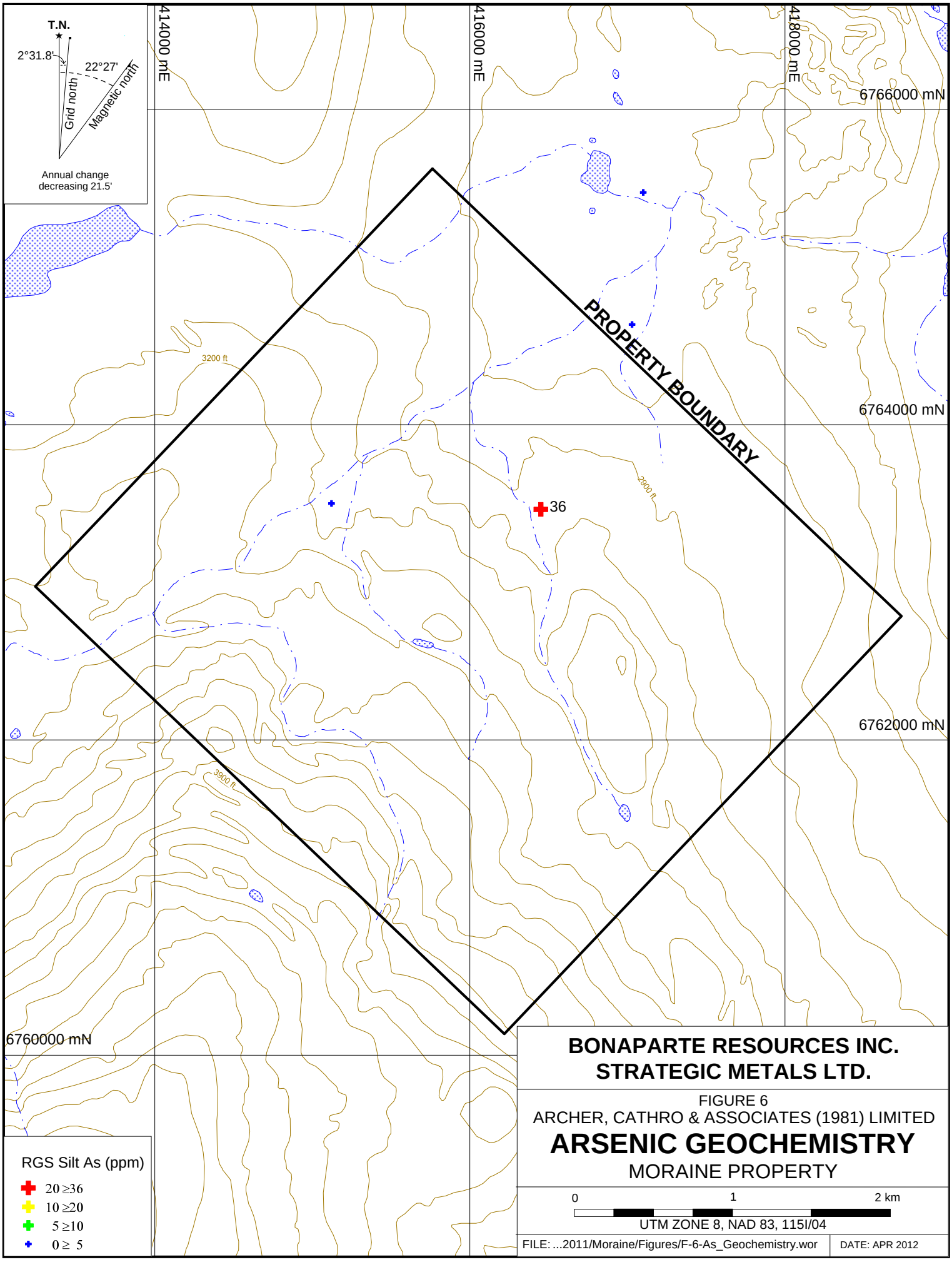


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FIGURE 6
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

ARSENIC GEOCHEMISTRY

MORAINE PROPERTY

0 1 2 km

UTM ZONE 8, NAD 83, 115I/04

FILE: ...2011/Moraine/Figures/F-6-As_Geochemistry.wor | DATE: APR 2012

GEOMORPHOLOGY

The Moraine property lies in the southern end of the Ruby Range within the Kluane Plateau and is drained by creeks that flow into the Hutshi Lakes, part of the Yukon River watershed.

Elevations on the property range from 1220 to 1750 m above sea level (asl), and treeline is at approximately 1400 m asl. About half of the property lies below treeline, which is forested by spruce, willow and birch with an understory of buckbrush, moss and lichen. Alpine areas are characterized by low lying grasses and moss. Outcrop is locally abundant and at higher elevations and within deep creek cuts.

Much of the overburden in the region is associated with the most recent Cordilleran ice sheet, the McConnell glaciation, which is believed to have covered south and central Yukon between 26,500 and 10,000 years ago (Yukon Geological Survey, 2010). In this area, the ice sheet generally moved in a northwesterly direction.

The climate in the Moraine area is typical of northern continental regions with long, cold winters, truncated fall and spring seasons and short, mild summers. The property is mostly snow free from late May to late September.

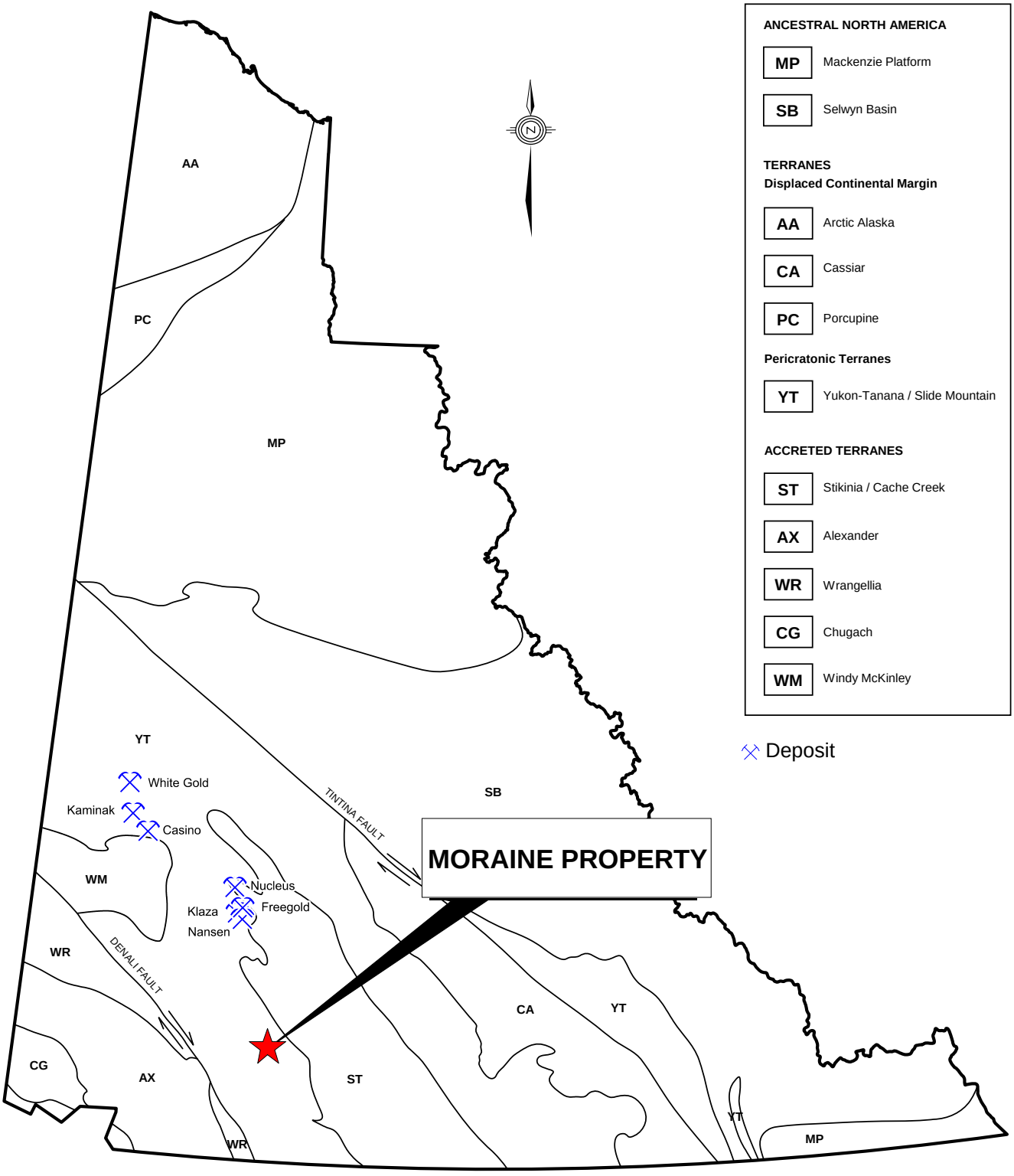
GEOLOGY

In 1973, the GSC published a geological map of the Aishihik Lake area (NTS map sheet 115H) at 1:250,000 scale (Templeman-Kluit, 1974). In 1992, a geological map of the Dezadeash area (NTS map sheet 115A) was produced at 1:250,000 scale by the GSC (Dodds, 1992). Gordey and Makepeace (2003) later completed a Yukon-wide geological compilation, which updated the main lithological unit names.

The Moraine property is located within the Yukon-Tanana Terrane (YTT) as shown on Figure 7. The YTT represents a continental arc that developed along the ancient Pacific margin of North America from Late Devonian to Permian. Figure 8 illustrates geology as compiled by Gordey and Makepeace (2003). The main lithological units are described in the Table I.

Table I – Regional Stratigraphic Units (*after Gordey and Makepeace, 2003*)

Unit Name	Age	Map Name	Description
Quaternary	Quaternary	Q	Unconsolidated glacial, glaciofluvial and glaciolacustrine deposits; fluviatile silt, sand, and gravel, and local volcanic ash, in part with cover of soil and organic deposits.
Ruby Range Suite	Early Tertiary	ETgN	Biotite-hornblende granodiorite (locally K-feldspar megacrysts), quartz monzonite, quartz diorite; minor granodiorite-gneiss; hornblende and biotite hornblende diorite; biotite quartz feldspar porphyry and porphyritic biotite quartz monzonite.
Skukum	Lower	lES1	Flow banded rhyolite flows and breccia, andesite



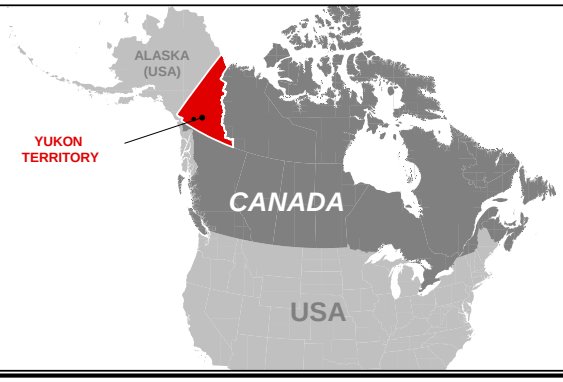


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FIGURE 7

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

TECTONIC SETTING

MORAINE PROPERTY

0 200 km

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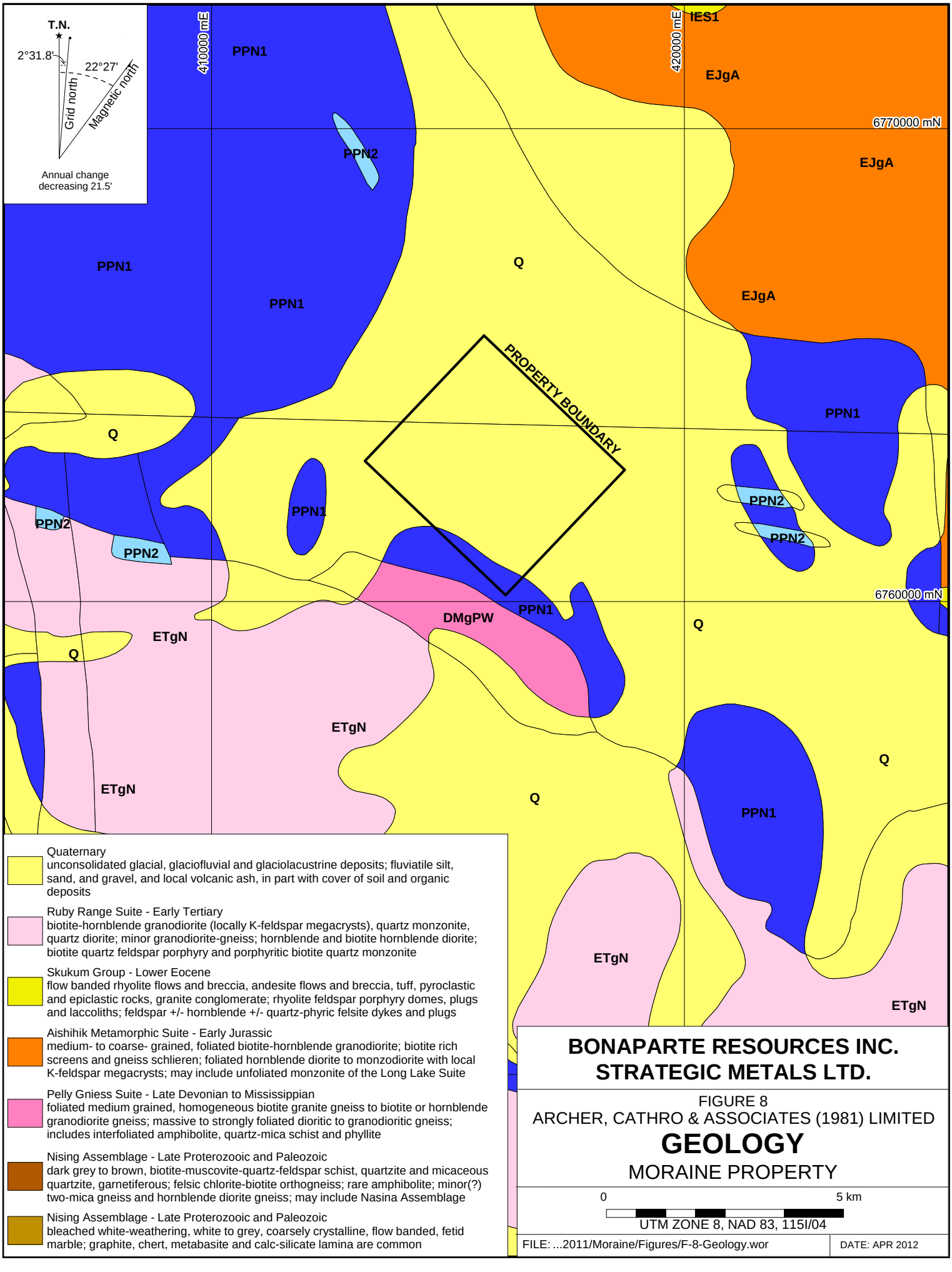

Quaternary
unconsolidated glacial, glaciofluvial and glaciolacustrine deposits; fluviatile silt, sand, and gravel, and local volcanic ash, in part with cover of soil and organic deposits

Ruby Range Suite - Early Tertiary
biotite-hornblende granodiorite (locally K-feldspar megacrysts), quartz monzonite, quartz diorite; minor granodiorite-gneiss; hornblende and biotite hornblende diorite; biotite quartz feldspar porphyry and porphyritic biotite quartz monzonite

Skukum Group - Lower Eocene
flow banded rhyolite flows and breccia, andesite flows and breccia, tuff, pyroclastic and epiclastic rocks, granite conglomerate; rhyolite feldspar porphyry domes, plugs and laccoliths; feldspar +/- hornblende +/- quartz-phyric felsite dykes and plugs

Aishihik Metamorphic Suite - Early Jurassic
medium- to coarse- grained, foliated biotite-hornblende granodiorite; biotite rich screens and gneiss schlieren; foliated hornblende diorite to monzodiorite with local K-feldspar megacrysts; may include unfoliated monzonite of the Long Lake Suite

Pelly Gniess Suite - Late Devonian to Mississippian
foliated medium grained, homogeneous biotite granite gneiss to biotite or hornblende granodiorite gneiss; massive to strongly foliated dioritic to granodioritic gneiss; includes interfoliated amphibolite, quartz-mica schist and phyllite

Nising Assemblage - Late Proterozooic and Paleozoic
dark grey to brown, biotite-muscovite-quartz-feldspar schist, quartzite and micaceous quartzite, garnetiferous; felsic chlorite-biotite orthogneiss; rare amphibolite; minor(?) two-mica gneiss and hornblende diorite gneiss; may include Nasina Assemblage

Nising Assemblage - Late Proterozooic and Paleozoic
bleached white-weathering, white to grey, coarsely crystalline, flow banded, fetid marble; graphite, chert, metabasite and calc-silicate lamina are common

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FIGURE 8
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

GEOLOGY

MORAINE PROPERTY

0 5 km

UTM ZONE 8, NAD 83, 115I/04

FILE: ...2011/Moraine/Figures/F-8-Geology.wor

DATE: APR 2012

	Eocene		flows and breccia, tuff, pyroclastic and epiclastic rocks, granite conglomerate; rhyolite feldspar porphyry domes, plugs and laccoliths; feldspar +/- hornblende +/- quartz-phyric felsite dykes and plugs.
Aishihik Metamorphic Suite	Early Jurassic	EJgA	Medium- to coarse- grained, foliated biotite-hornblende granodiorite; biotite rich screens and gneiss schlieren; foliated hornblende diorite to monzodiorite with local K-feldspar megacrysts; may include unfoliated monzonite of the Long Lake Suite.
Pelly Gneiss Suite	Late Devonian to Mississippian	DMgPW	Foliated medium grained, homogeneous biotite granite gneiss to biotite or hornblende granodiorite gneiss; massive to strongly foliated dioritic to granodioritic gneiss; includes interfoliated amphibolite, quartz-mica schist and phyllite.
Nisling Assemblage	Late Proterozoic and Paleozoic	PPN1	Dark grey to brown, biotite-muscovite-quartz-feldspar schist, quartzite and micaceous quartzite, garnetiferous; felsic chlorite-biotite orthogneiss; rare amphibolite; minor(?) two-mica gneiss and hornblende diorite gneiss.
		PPN2	Bleached white-weathering, white to grey, coarsely crystalline, flow banded, fetid marble; graphite, chert, metabasite and calc-silicate lamina are common.

No detailed geological mapping has been done on the Moraine property. The following description of property geology is based on published data discussed in the previous paragraphs.

The property is dominantly underlain by quaternary sediments, except for the southwestern corner, which hosts Late Proterozoic and Paleozoic Nisling metasedimentary rocks. A Pelly Gneiss Suite sill and Ruby Range Suite pluton is located immediately southwest of the property.

There is no known mineralization on the property.

GEOPHYSICAL SURVEY

Between December 14 and 20, 2011 Bonaparte contracted Geotech Ltd. to fly a helicopter-borne VTEM and magnetic survey over the Hopper, Hooch and Moraine properties. The Hopper property lies 30 km northeast of the Moraine property and hosts significant copper-gold-silver, skarn- and porphyry-style mineralization (Eaton, 2011). The Hooch property, located 10 km northwest of the Moraine property features skarn horizons that are variably mineralized with copper, gold and tungsten (Smith, 2012). Appendix II contains Geotech's report describing the 2011 survey, along with a CD containing the digital data.

Bonaparte has commissioned Condor Consulting, Inc. to carry out processing and analysis of the combined survey data. This work is currently underway.

Preliminary interpretation of the magnetic data identified two broad magnetic highs: one immediately west-southwest of the claim block and the other in the eastern edge of the property (Figure 9). Based on response in other areas, these anomalies are thought to mark large plutons. Smaller more linear magnetic highs in the north-central part of the property may correspond to dykes or areas of magnetite- or pyrrhotite-rich skarn. The electromagnetic data shows resistivity highs along the northern and eastern edges of the property (Figure 10). These highs trend northwesterly and may correspond to plutons and/or dykes.

DISCUSSION AND CONCLUSIONS

Bonaparte's work program was primarily designed to establish the geophysical signature of the Moraine property and to test for geophysical anomalies similar to those associated with mineralization and key geological features at the nearby Hooch and Hopper properties.

Geophysical surveys completed in 2011 successfully identified magnetic and resistivity highs that may correspond to plutons and dykes - the heat sources related to mineralization - at the Hooch and Hopper properties.

Future work is definitely warranted on the Moraine property. The first phase of work should include soil sampling and closely spaced silt sampling across the entire property. Once these results are interpreted, a second phase of work should include prospecting, additional soil sampling and/or hand-trenching in the vicinity of any geochemical anomalies.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

A. Mitchell, B.Sc. Geology, GIT

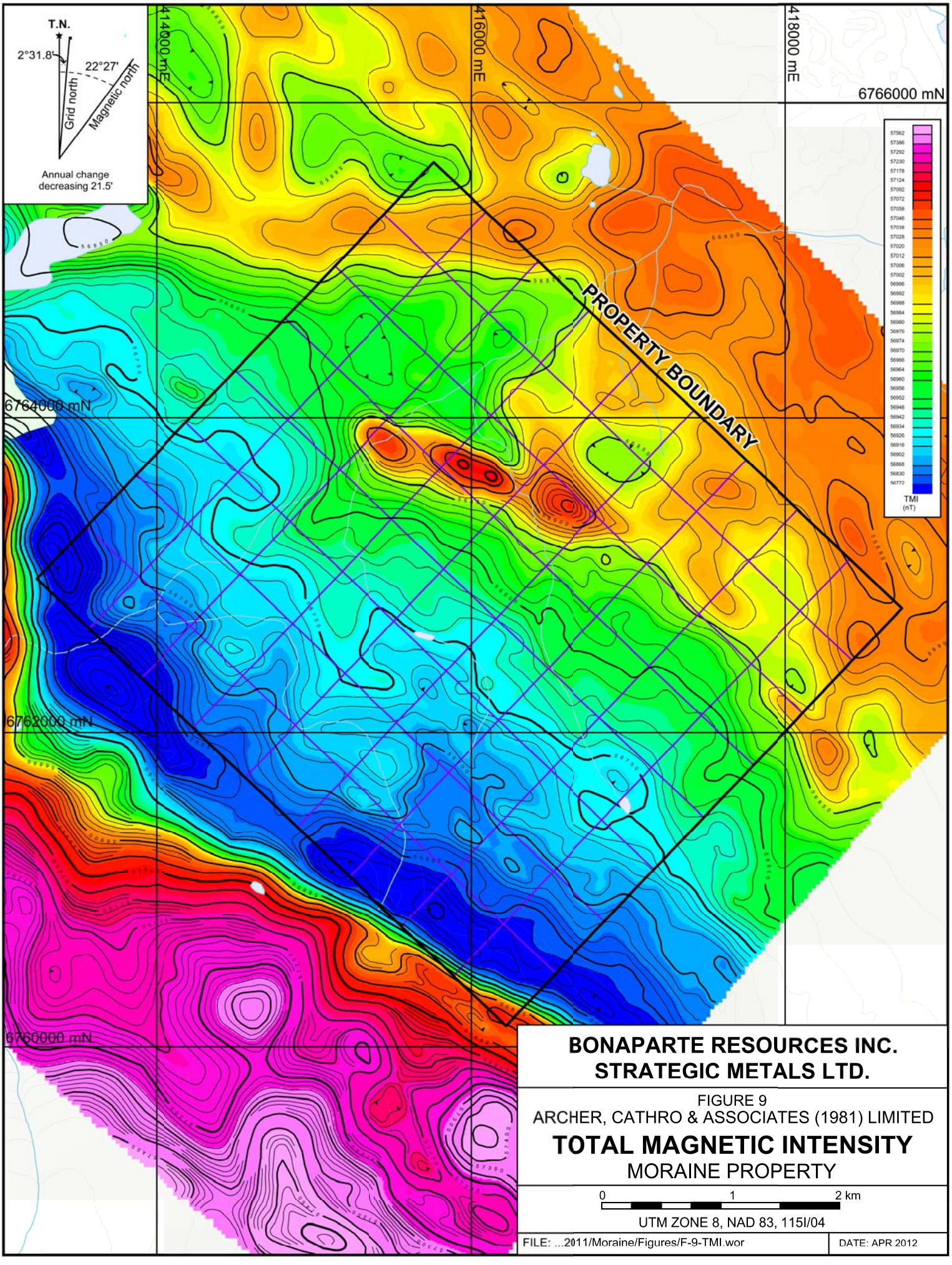

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FIGURE 9
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

TOTAL MAGNETIC INTENSITY

MORAINE PROPERTY

0 1 2 km

UTM ZONE 8, NAD 83, 115I/04

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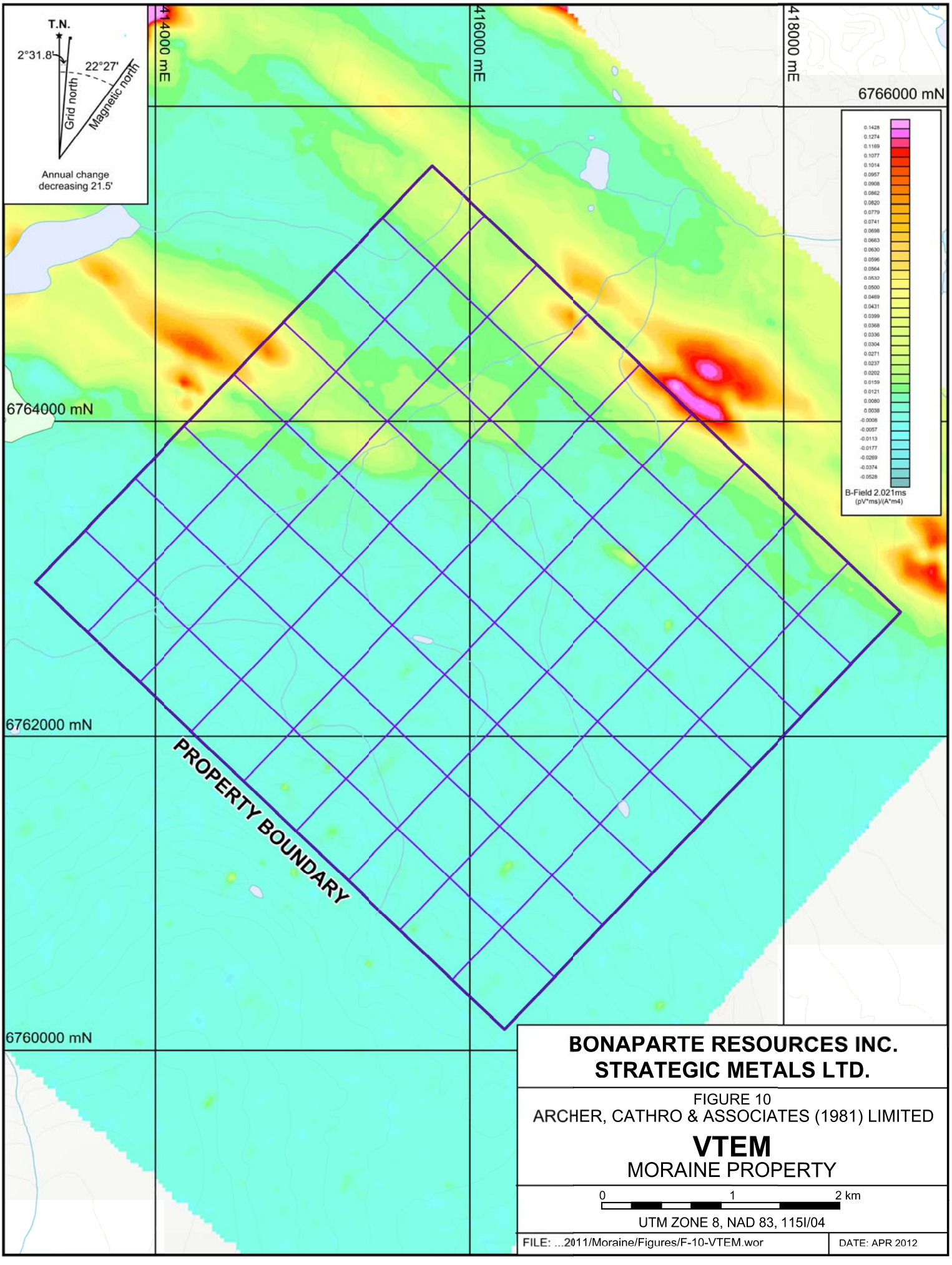

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FIGURE 10
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

VTEM
MORAINE PROPERTY

0 1 2 km

UTM ZONE 8, NAD 83, 115I/04

FILE: ...2011/Moraine/Figures/F-10-VTEM.wor | DATE: APR 2012

REFERENCES

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1992 Geology of Southwest Dezadeash map area (NTS map sheet 115A), Yukon Territory; Geological Survey of Canada, Open-File 2190, 1:250,000 scale map.

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Geological Survey of Canada
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2010 Geoprocess File Summary Report for Dezadeash Map Area NTS 115A; available at: http://ygsftp.gov.yk.ca/publications/openfile/2002/of2002_8d_geoprocess_file/documents/map_specific/115a.pdf

APPENDIX I

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Andrew Mitchell, geologist, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia and residential address in Vancouver, British Columbia, hereby certify that:

1. I graduated from the University of British Columbia in 2010 with a B.Sc. in Earth and Environmental Sciences.

2. From 2010 to present, I have been actively engaged in mineral exploration in Yukon Territory.

3. I am a Geoscientist in Training (GIT) with the Association of Professional Engineers and Geoscientists of British Columbia (Member Number 169067)

4. I have interpreted all data resulting from this work.

A. Mitchell, B.Sc. Geology, GIT

APPENDIX II

REPORT ON HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) AND AEROMAGNETIC GEOPHYSICAL SURVEY

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) AND AEROMAGNETIC GEOPHYSICAL SURVEY

Hopper and Hooch Properties

Haines Junction, Yukon Territory

For:

Bonaparte Resources Inc.

By:

Geotech Ltd.

245 Industrial Parkway North

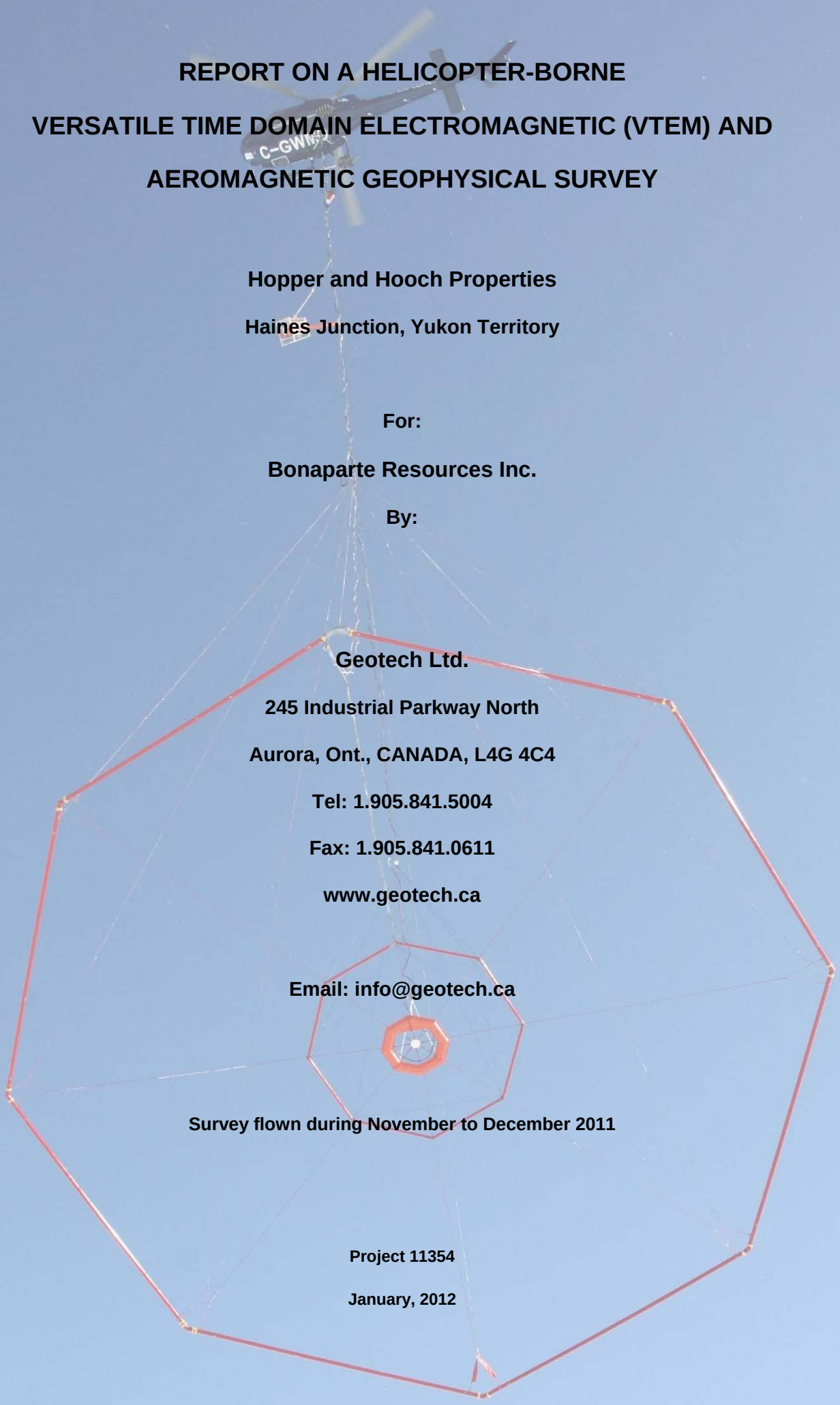
Aurora, Ont., CANADA, L4G 4C4

Tel: 1.905.841.5004

Fax: 1.905.841.0611

www.geotech.ca

Email: info@geotech.ca



Survey flown during November to December 2011

Project 11354

January, 2012

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REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) and AEROMAGNETIC SURVEY

Hooch and Hopper Properties
Haines Junction, Yukon Territory

Executive Summary

During November 22nd, 2011 to January 12th, 2012 Geotech Ltd. carried out a helicopter-borne geophysical survey over the Hooch and Hopper Properties located near Haines Junction, Yukon Territory, Canada.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM) system, and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 2083 line-kilometres of geophysical data were acquired.

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:

- Total Magnetic Intensity
- B-Field Z Component Channel grid
- Calculated Time Constant (TAU)
- Electromagnetic stacked profiles of the B-field Z component
- Electromagnetic stacked profiles of the dB/dt Z component

Digital data includes all electromagnetic and magnetic products, ancillary data and the VTEM 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 the Hooch and Hopper Properties located near Haines Junction, Yukon Territory, Canada (Figure 1 & 2).

Matt Turner represented Bonaparte Resources Inc 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 (VTEM) system with Z component measurements and aeromagnetics using a cesium magnetometer. A total of 2083 line-km of geophysical data were acquired during the survey.

The crew was based out of Haines Junction, Yukon Territory for the acquisition phase of the survey. Survey flying started on November 22nd, 2011 and was completed on January 12th, 2012.

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 January, 2012.

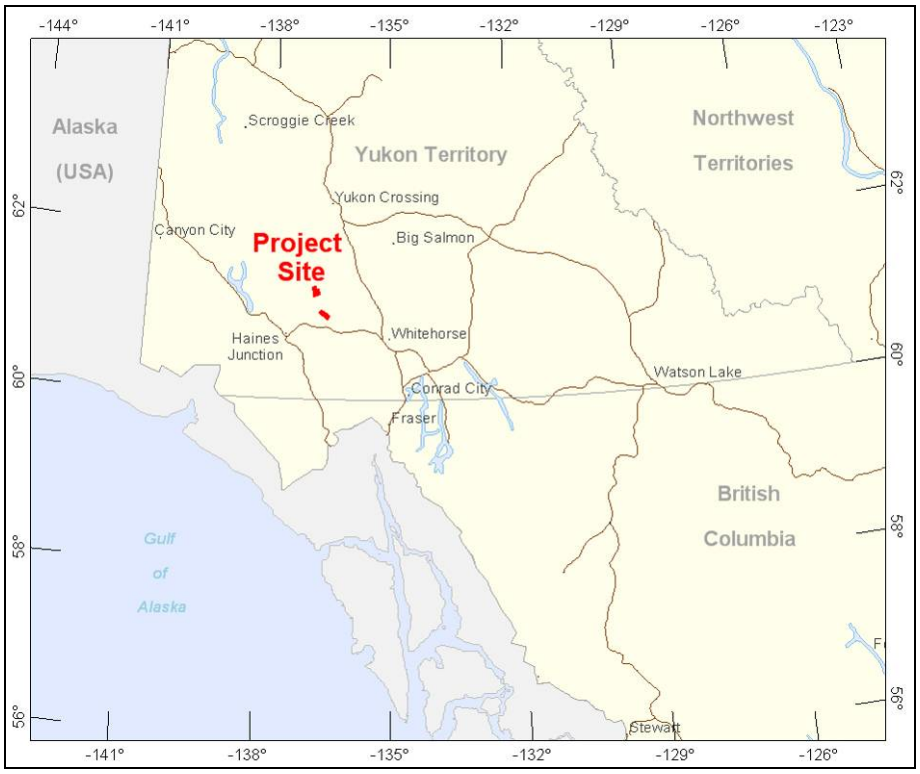


Figure 1: Property Location

1.2 Survey and System Specifications

The Blocks are located northeast of Haines Junction, Yukon Territory (Figure 2).

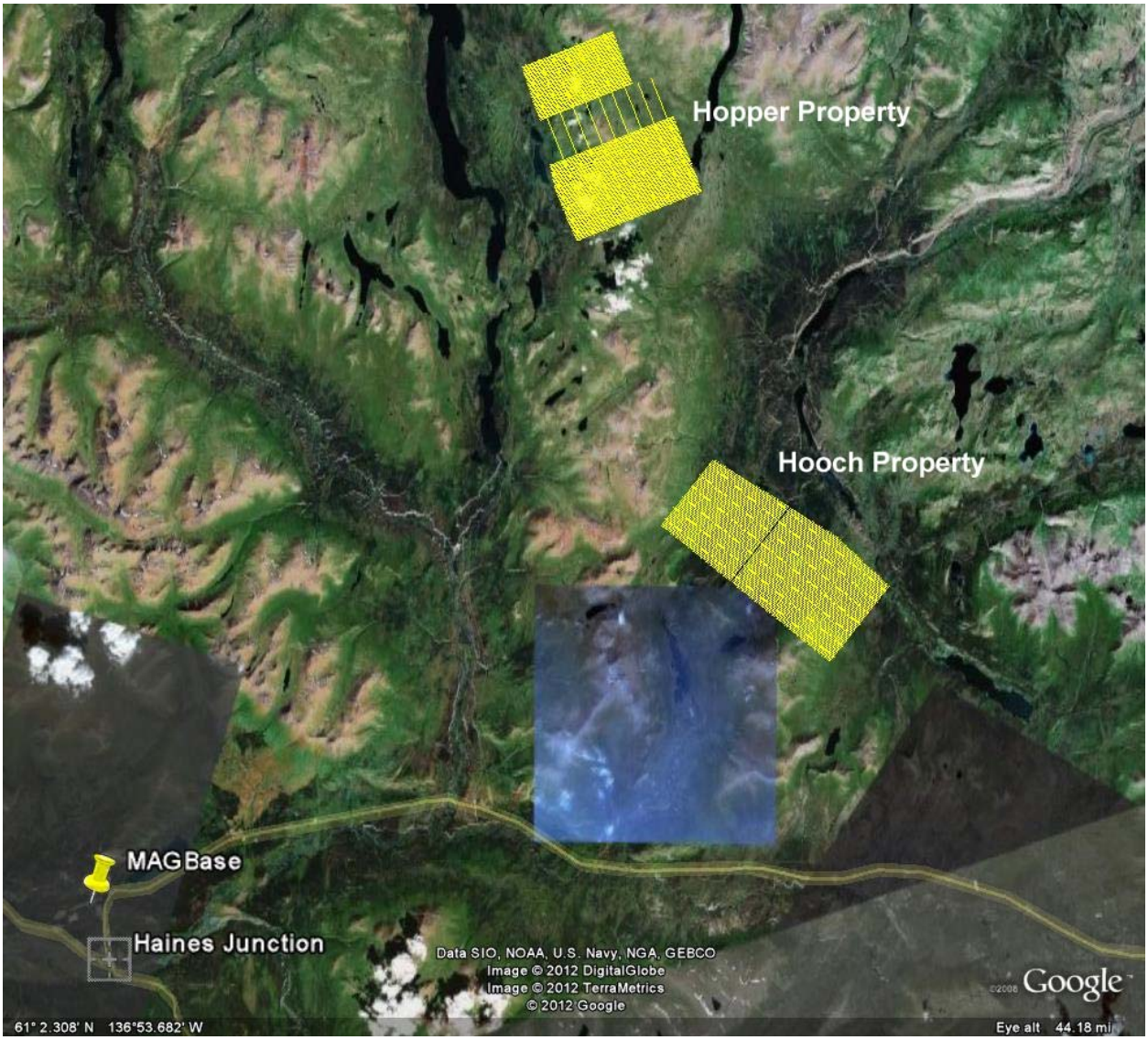


Figure 2: Survey area location on Google Earth

The Hooch block was flown in a southwest to northeast (N 40° E azimuth) direction with traverse line spacing of 100 metres as depicted in Figure 4. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres (N 130° E azimuth).

The Hopper block was flown in a southwest to northeast (N 70° E azimuth) direction with traverse line spacing of 100 metres as depicted in Figure 4. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres (N 160° E azimuth).

For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

Topographically, the blocks exhibit a high relief with elevations ranging from 972 to 1622 metres above mean sea level over an area of 216 square kilometres (Figure 3 & 4).

There are various rivers and streams running through the survey area which connect various lakes and wetlands. There are visible signs of culture such as roads and a power line which run along the west side of the Hopper Property.

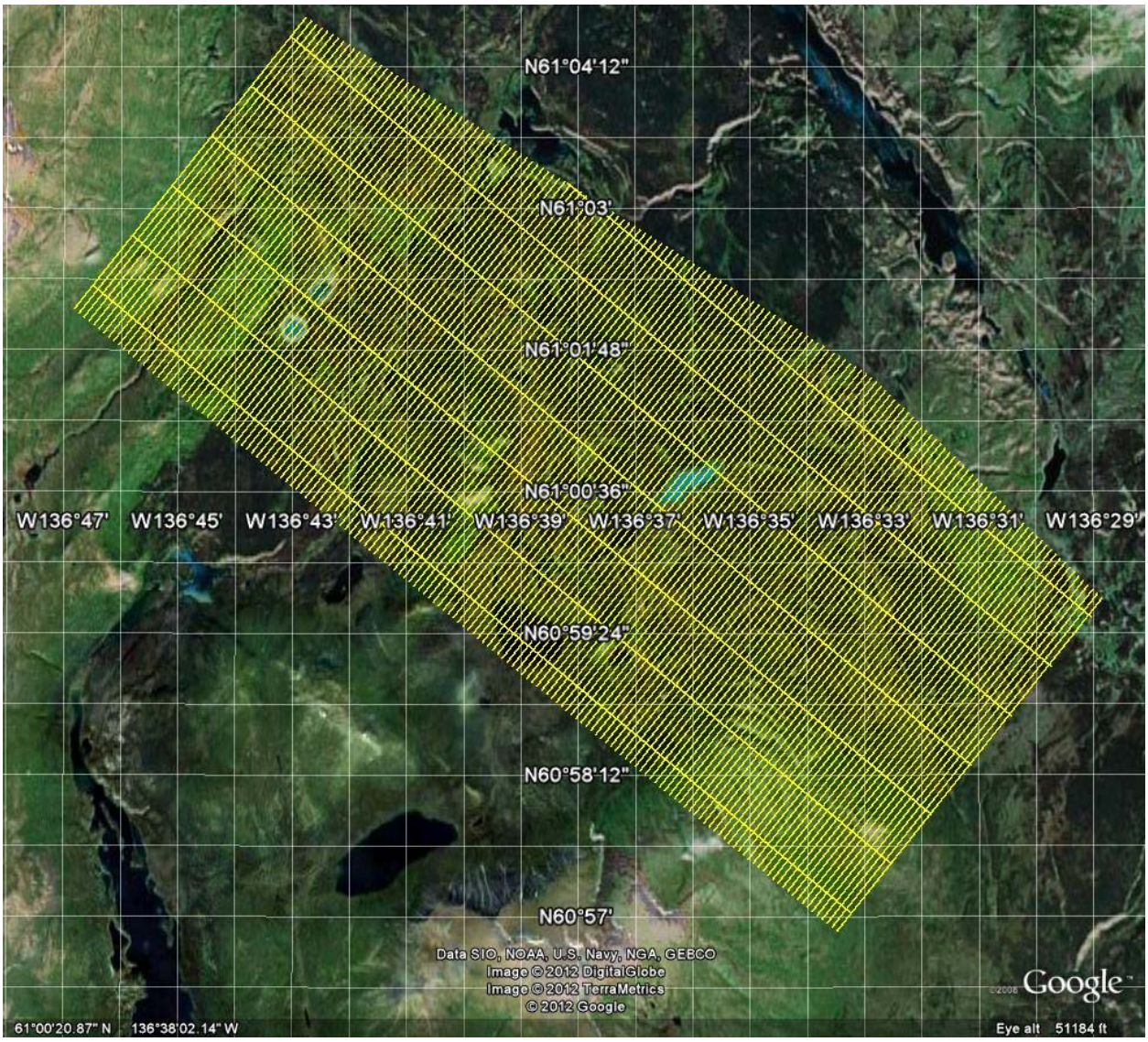


Figure 3 - Hooch Property Flight path over a Google Earth Image

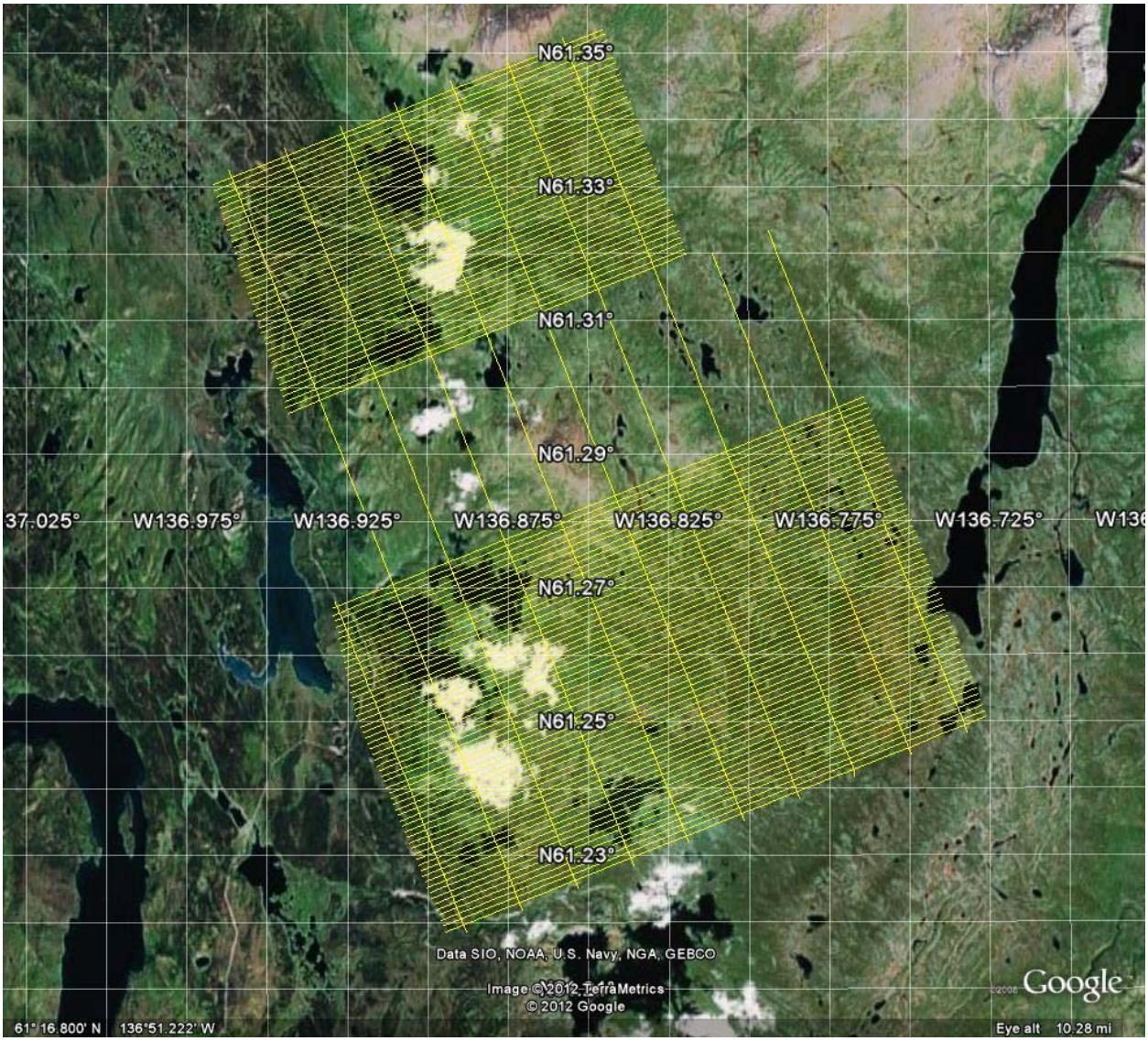


Figure 4: - Hopper Property Flight path over a Google Earth Image

2. DATA ACQUISITION

2.1 Survey Area

The survey blocks (see Figure 4 and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Traverse Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Hooch	Traverse: 100	103	1138	1132	N 40° E / N 220° E	L3000-L4550
	Tie: 1000				N 130° E / N 310° E	T4800-T4860
Hopper	Traverse: 100	113	1239	951	N 70° E / N 250° E	L1000-T2300
	Tie: 1000				N 160° E / N 340° E	T2800-T2890
TOTAL		216	2378	2083		

Survey block boundaries co-ordinates are provided in Appendix B.

2.2 Survey Operations

Survey operations were based out of Haines Junction from November 22nd, 2011 to January 12th, 2012. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Flight #	Flow km	Block	Crew location	Comments
22-Nov-2011				Haines Junction,YT	Crew mobilized
23-Nov-2011				Haines Junction,YT	Crew delayed due to weather
24-Nov-2011				Haines Junction,YT	Crew arrived
25-Nov-2011				Haines Junction,YT	System assembly commenced
26-Nov-2011				Haines Junction,YT	System assembly
27-Nov-2011				Haines Junction,YT	System assembly completed
28-Nov-2011				Haines Junction,YT	Testing not done due to weather
29-Nov-2011				Haines Junction,YT	Testing started
30-Nov-2011				Haines Junction,YT	Testing
1-Dec-2011				Haines Junction,YT	Testing
2-Dec-2011				Haines Junction,YT	Testing
3-Dec-2011				Haines Junction,YT	Testing
4-Dec-2011	1	6	hooch	Haines Junction,YT	6km flown limited production due to weather
5-Dec-2011				Haines Junction,YT	No production due to weather
6-Dec-2011	2,3	232	hooch	Haines Junction,YT	232km flown
7-Dec-2011	4	205	hooch	Haines Junction,YT	205km flown
8-Dec-2011	5	215	hooch	Haines Junction,YT	215km flown
9-Dec-2011				Haines Junction,YT	No production due to technical issues
10-Dec-2011	6	107	hooch	Haines Junction,YT	107km flown

[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, the survey was stopped early as per the client.

Date	Flight #	Flow km	Block	Crew location	Comments
11-Dec-2011	7,8	169	hooch	Haines Junction,YT	169km flown
12-Dec-2011				Haines Junction,YT	No production due to weather
13-Dec-2011	9	67	hooch	Haines Junction,YT	67km flown limited production due to weather
14-Dec-2011	10,11	207	hopper	Haines Junction,YT	207km flown
15-Dec-2011				Haines Junction,YT	No production due to weather
16-Dec-2011	12,13	241	hopper	Haines Junction,YT	241km flown
17-Dec-2011	14,15	246	hopper	Haines Junction,YT	246km flown
18-Dec-2011				Haines Junction,YT	No production due to weather
19-Dec-2011	16	175	hopper	Haines Junction,YT	175km flown
20-Dec-2011	17,18	212	hopper	Haines Junction,YT	212km flown
21-Dec-2011				Haines Junction,YT	No production due to weather
22-Dec-2011				Haines Junction,YT	Holiday break until Jan 3 2012
3-Jan-2012				Haines Junction,YT	Crew mobilized
4-Jan-2012				Haines Junction,YT	Crew arrived
5-Jan-2012				Haines Junction,YT	Reassembly of system
6-Jan-2012				Haines Junction,YT	System testing
7-Jan-2012				Haines Junction,YT	System testing limited due to weather
8-Jan-2012				Haines Junction,YT	System testing limited due to weather
9-Jan-2012				Haines Junction,YT	No production due to weather
10-Jan-2012				Haines Junction,YT	No production due to weather
11-Jan-2012				Haines Junction,YT	No production due to weather
12-Jan-2012				Haines Junction,YT	No production due to weather – job terminated as per client

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 76 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 41 metres and a magnetic sensor clearance of 63 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-GTEQ. The helicopter is owned and operated by Geotech Aviation. 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) system. VTEM, with the serial number 17 had been used for the survey. The configuration is as indicated in Figure 6.

The VTEM Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The EM bird was towed at a mean distance of 35 metres below the aircraft as shown in Figure 6 and Figure 7. The receiver decay recording scheme is shown diagrammatically in Figure 5.

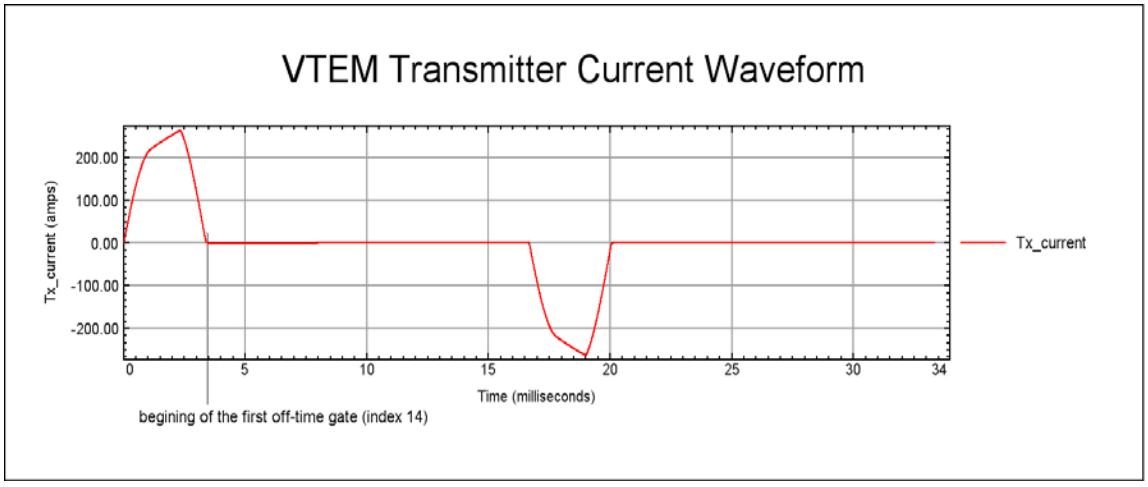


Figure 5 - VTEM Waveform

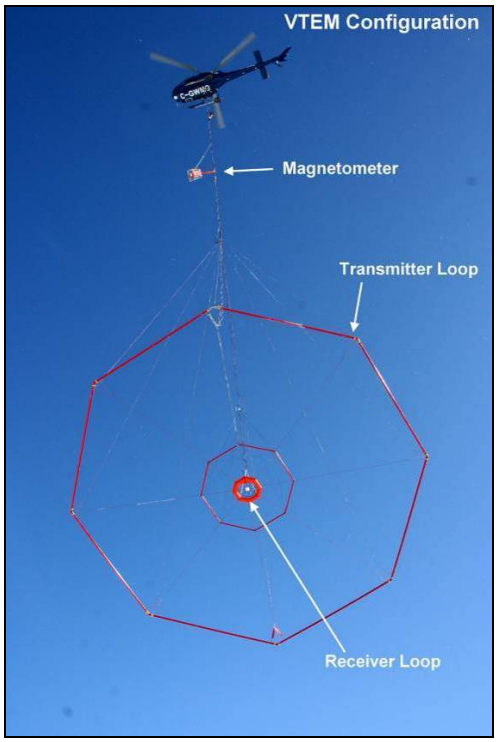


Figure 6: VTEM Configuration, with magnetometer.

The VTEM decay sampling scheme is shown in Table 3 below. Thirty-two time measurement gates were used for the final data processing in the range from 0.096 to 7.036 msec.

Table 3: Off-Time Decay Sampling Scheme

VTEM Decay Sampling Scheme			
Index	**Middle**	**Start**	**End**
Milliseconds			
14	0.096	0.090	0.103
15	0.110	0.103	0.118
16	0.126	0.118	0.136
17	0.145	0.136	0.156
18	0.167	0.156	0.179
19	0.192	0.179	0.206
20	0.220	0.206	0.236
21	0.253	0.236	0.271
22	0.290	0.271	0.312
23	0.333	0.312	0.358
24	0.383	0.358	0.411
25	0.440	0.411	0.472
26	0.505	0.472	0.543
27	0.580	0.543	0.623
28	0.667	0.623	0.716
29	0.766	0.716	0.823
30	0.880	0.823	0.945
31	1.010	0.945	1.086
32	1.161	1.086	1.247
33	1.333	1.247	1.432
34	1.531	1.432	1.646
35	1.760	1.646	1.891
36	2.021	1.891	2.172
37	2.323	2.172	2.495
38	2.667	2.495	2.865
39	3.063	2.865	3.292
40	3.521	3.292	3.781
41	4.042	3.781	4.341
42	4.641	4.341	4.987
43	5.333	4.987	5.729
44	6.125	5.729	6.581
45	7.036	6.581	7.560

Z Component: 14-45 time gates
X Component: 20-45 time gates.

VTEM system specification:

Transmitter

- Transmitter coil diameter: 17.6 m
- Number of turns: 4
- Effective coil area: 973 m^2
- Transmitter base frequency: 30 Hz
- Peak current: 260 A
- Pulse width: 3.40 ms
- Wave form shape: trapezoid
- Peak dipole moment: 253,016 nIA
- Nominal EM Bird terrain clearance: 41 metres above the ground

Receiver

- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m^2

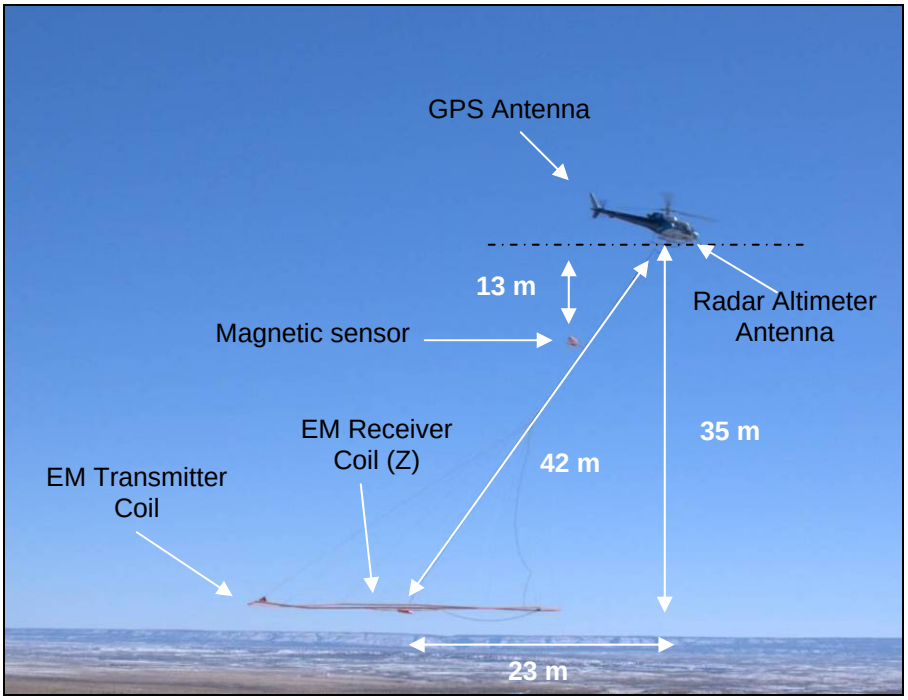


Figure 7: VTEM System Configuration

2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped cesium vapour magnetic field sensor mounted 13 metres below the helicopter, as shown in Figure 7. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds.

2.4.4 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).

2.4.5 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS(Wide Area Augmentation System) enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an 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 block were set-up prior to the survey and the information was fed into the airborne navigation system.

2.4.6 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

2.5 Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Cesium 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 Haines Junction airport in wooded area (60º 47.3879'N, 137º 32.2584'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 QA/QC:	Emilio Schein (office)
Crew Chief:	Benjamin Bruder
System Operators:	Claudiu Chirigel

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Geotech Aviation.

Pilot:	Guy Poirier
Mechanical Engineer:	Greg Hynes

Office:

Preliminary Data Processing:	Emilio Schein
Final Data Processing:	ZiHao Han
Final Data QA/QC:	Alexander Prikhodko
Reporting/Mapping:	Wendy Acorn

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operations Officer. The processing and interpretation phase was under the supervision of Alexander Prikhodko, P. Geo, Ph.D. The overall contract management and customer relations were by Mandy Long.

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 8 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

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. 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. B-field Z component time channel recorded at 2.021 milliseconds after the termination of the impulse is also presented as a color image. Calculated Time Constant (TAU) with anomaly contours of Calculated Vertical Derivative of TMI is presented in Appendix C and E. Tau was calculated for B-Field and dB/dt. Resistivity Depth Image (RDI) is also presented in Appendix C and F.

VTEM receiver coil orientation Z-axis coil is oriented parallel to the transmitter coil axis and is horizontal to the ground. Generalized modeling results of VTEM data, are shown in Appendix D.

Z component data produce double peak type anomalies for "thin" subvertical targets and single peak for "thick" targets.

The limits and change-over of "thin-thick" depends on dimensions of a TEM system the system's height and depth of a target. For example see Appendix D, Fig.D-16.

4.3 Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along traverse lines. A micro-levelling procedure was applied to remove persistent low-amplitude components of flight-line noise remaining in the data.

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 25 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

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 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 8 North. All maps show the mining claims, 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 color magnetic TMI contour map. The following maps are presented on paper;

- VTEM dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field late time Z Component colour image.
- Total Magnetic Intensity (TMI) colour image and contours.
- VTEM dB/dt & B-Field Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

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 8 North
Y:	metres	UTM Northing NAD83 Zone 8 North
Z:	metres	GPS antenna elevation (above Geoid)
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
SFz[14]:	pV/(A*m^4)	Z dB/dt 96 microsecond time channel
SFz[15]:	pV/(A*m^4)	Z dB/dt 110 microsecond time channel
SFz[16]:	pV/(A*m^4)	Z dB/dt 126 microsecond time channel
SFz[17]:	pV/(A*m^4)	Z dB/dt 145 microsecond time channel
SFz[18]:	pV/(A*m^4)	Z dB/dt 167 microsecond time channel
SFz[19]:	pV/(A*m^4)	Z dB/dt 192 microsecond time channel
SFz[20]:	pV/(A*m^4)	Z dB/dt 220 microsecond time channel
SFz[21]:	pV/(A*m^4)	Z dB/dt 253 microsecond time channel
SFz[22]:	pV/(A*m^4)	Z dB/dt 290 microsecond time channel
SFz[23]:	pV/(A*m^4)	Z dB/dt 333 microsecond time channel
SFz[24]:	pV/(A*m^4)	Z dB/dt 383 microsecond time channel
SFz[25]:	pV/(A*m^4)	Z dB/dt 440 microsecond time channel
SFz[26]:	pV/(A*m^4)	Z dB/dt 505 microsecond time channel
SFz[27]:	pV/(A*m^4)	Z dB/dt 580 microsecond time channel
SFz[28]:	pV/(A*m^4)	Z dB/dt 667 microsecond time channel
SFz[29]:	pV/(A*m^4)	Z dB/dt 766 microsecond time channel
SFz[30]:	pV/(A*m^4)	Z dB/dt 880 microsecond time channel
SFz[31]:	pV/(A*m^4)	Z dB/dt 1010 microsecond time channel
SFz[32]:	pV/(A*m^4)	Z dB/dt 1161 microsecond time channel
SFz[33]:	pV/(A*m^4)	Z dB/dt 1333 microsecond time channel
SFz[34]:	pV/(A*m^4)	Z dB/dt 1531 microsecond time channel
SFz[35]:	pV/(A*m^4)	Z dB/dt 1760 microsecond time channel
SFz[36]:	pV/(A*m^4)	Z dB/dt 2021 microsecond time channel
SFz[37]:	pV/(A*m^4)	Z dB/dt 2323 microsecond time channel
SFz[38]:	pV/(A*m^4)	Z dB/dt 2667 microsecond time channel
SFz[39]:	pV/(A*m^4)	Z dB/dt 3063 microsecond time channel
SFz[40]:	pV/(A*m^4)	Z dB/dt 3521 microsecond time channel
SFz[41]:	pV/(A*m^4)	Z dB/dt 4042 microsecond time channel
SFz[42]:	pV/(A*m^4)	Z dB/dt 4641 microsecond time channel
SFz[43]:	pV/(A*m^4)	Z dB/dt 5333 microsecond time channel
SFz[44]:	pV/(A*m^4)	Z dB/dt 6125 microsecond time channel
SFz[45]:	pV/(A*m^4)	Z dB/dt 7036 microsecond time channel
BFz	(pV*ms)/(A*m^4)	Z B-Field data for time channels 14 to 45
PLM:		60 Hz power line monitor
CVG	nT/m	Calculated Magnetic Vertical Gradient
TauSF	milliseconds	Time Constant (Tau) calculated from dB/dt data
TauBF	milliseconds	Time Constant (Tau) calculated from B-Field data
Nchan_BF		Last channel where the Tau algorithm stops calculation, B-Field data
Nchan_SF		Last channel where the Tau algorithm stops calculation, dB/dt data

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45.

- Database of the VTEM Waveform “11354_waveform_final.gdb” in Geosoft GDB format, containing the following channels:

Time:	Sampling rate interval, 5.2083 milliseconds
Rx_Volt:	Output voltage of the receiver coil (Volt)
Tx_Current:	Output current of the transmitter (Amp)

- Grids in Geosoft GRD format, as follows:

TMI:	Total Magnetic Intensity (nT)
BFz36:	B-Field Z Component Channel 36 (Time Gate 2.021 ms)
TAUSFz:	dB/dt Calculated Time Constant (TAU)
TAUBFz:	B-Field Calculated Time Constant (TAU)
CVG:	Calculated Vertical Derivative of TMI (CVG)
DEM:	Digital Elevation Model

  A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 25 metres was used.

- Maps at 1:20,000 in Geosoft MAP format, as follows:

11354_20K_dBdt_bb:	dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11354_20K_Bfield_bb:	B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11354_20K_BFz36_bb:	B-Field late time Z Component Channel 36, Time Gate 2.021 ms colour image.
11354_20K_TMI_bb:	Total Magnetic Intensity (TMI) colour image and contours.
11354_20K_TauSF_bb:	dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

  Where bb represents the block name ie 11354_20k_TMI_Hooch

  Maps are also presented in PDF format.

- 1:50,000 topographic vectors were taken from the NRCAN Geogratis database at; http://geogratis.gc.ca/geogratis/en/index.html.

- A Google Earth file *11354_Bonaparte.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne versatile time domain electromagnetic (VTEM) geophysical survey has been completed over the Hooch and Hopper Properties near Haines Junction, Yukon Territory.

The total area coverage is 216 km^2. Total survey line coverage is 2083 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles, and contour color images at a scale of 1:20,000. A formal Interpretation has not been included or requested.

Based on the geophysical results obtained, a number of TEM anomalies were identified across the properties. These anomalies are considered as low to moderate conductive targets.

The Hopper Property

Four of EM anomaly zones in the block with high time constants (TAU dB/dt) are outlined by blue rectangles in Figure 8.

Two of them are situated in the north part of the block and conform to the (N20°W) direction (along 2820T line – NW zone and along 2840T line – NE zone). The targets are considered as dipping plate similar conductors with estimated depths to the tops less than 50 meters below the surface (See Appendix C RDI L1110). The conductive zones lengths are about 2 km along the magnetic sources. Sometimes association with local magnetic anomalies is visible (See Appendix C TAU-CVG map). The NW zone is going beyond of the block border to the north but cut by the last line.

A long anomalous zone with strong EM response oriented NNW along magnetic anomaly is located at the south-west edge of the block T2800 line). The boundary is open to both directions of its strike. The target is considered as structural conductors with top of the conductive unit near surface (See Appendix C RDI's L1920 & L2130).

The fourth anomalous zone lies about 1 km east and oriented in NW direction crossing magnetic sources, with about 3 km in length. The target is considered as a gently dipping to the east lithological conductor.

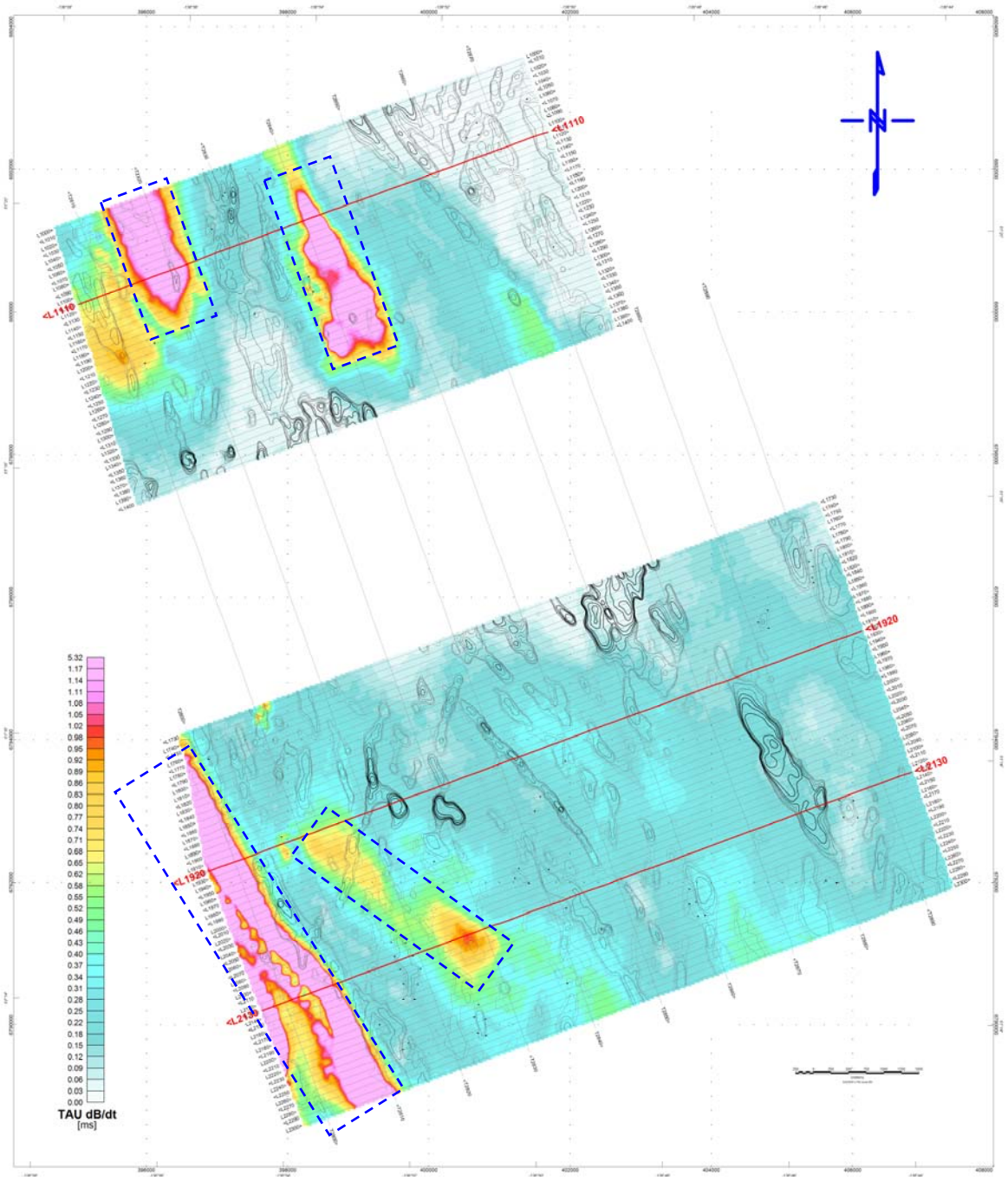


Figure 8 - TAU (dB/dt) grid overlain by CVG contours with lines chosen for RDI sections (Hopper Block)

The Hooch Property

There are several long EM anomalous zones (Zone A, B and C) and two of them traverse the whole block in NW direction (Zone B and C) along the magnetic anomaly sources (Figure 9).

Zone A is situated in the central area of the block with 6.5 km length. 4-5 EM local anomalies are in or close to this zone. The estimated depths of the targets are about 100m (See Appendix C RDI L3840).

In Zone B, there are 5 anomalies have relative larger size and higher time constant (TAU dB/dt) values. According to the RDIs, the depths of these targets are from near surface to about 100m (See Appendix C RDI L3260, L3840 and L4290).

Zone C is located along the east border of the survey area. The boundaries of the two anomalies along this zone are open.

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, magnetic 3D inversion and plate Maxwell modelling prior to ground follow up and drill testing.

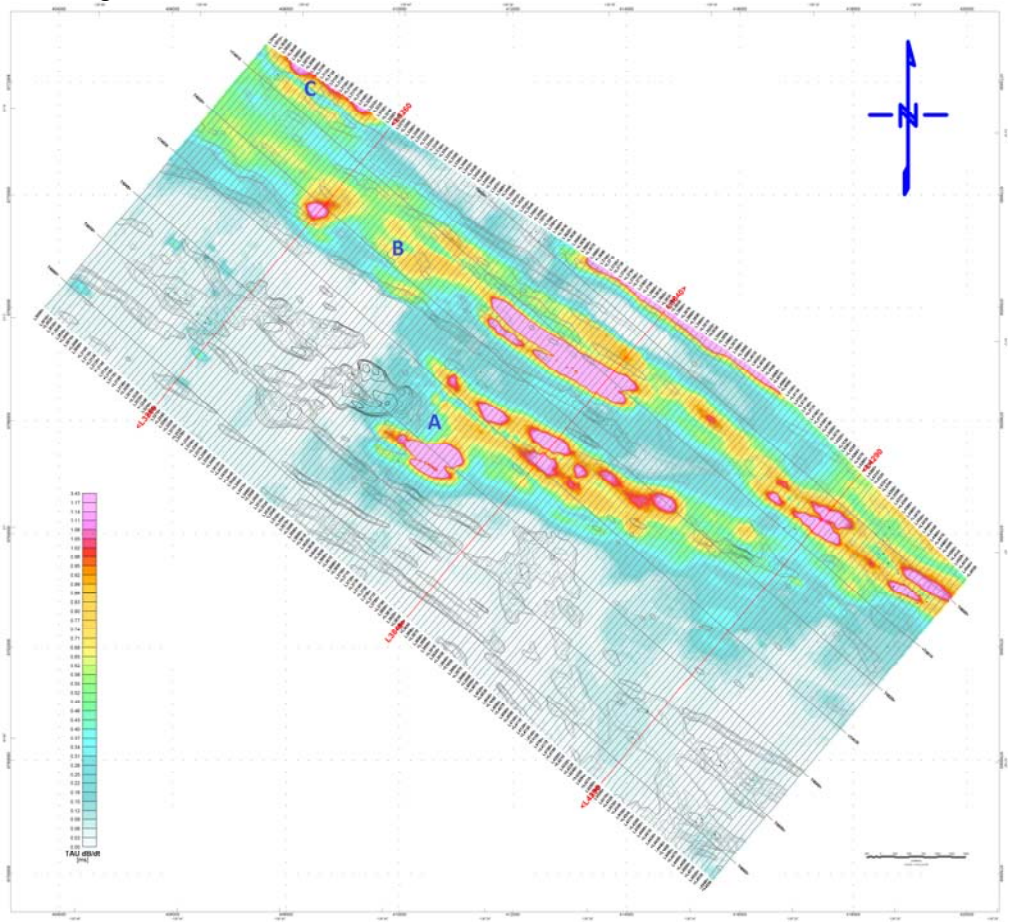


Figure 9 - TAU (dB/dt) grid overlain by CVG contours with lines chosen for RDI sections (Hooch Block)

Respectfully submitted[6],

Emilio Schein
Geotech Ltd.

ZiHao Han
Geotech Ltd.

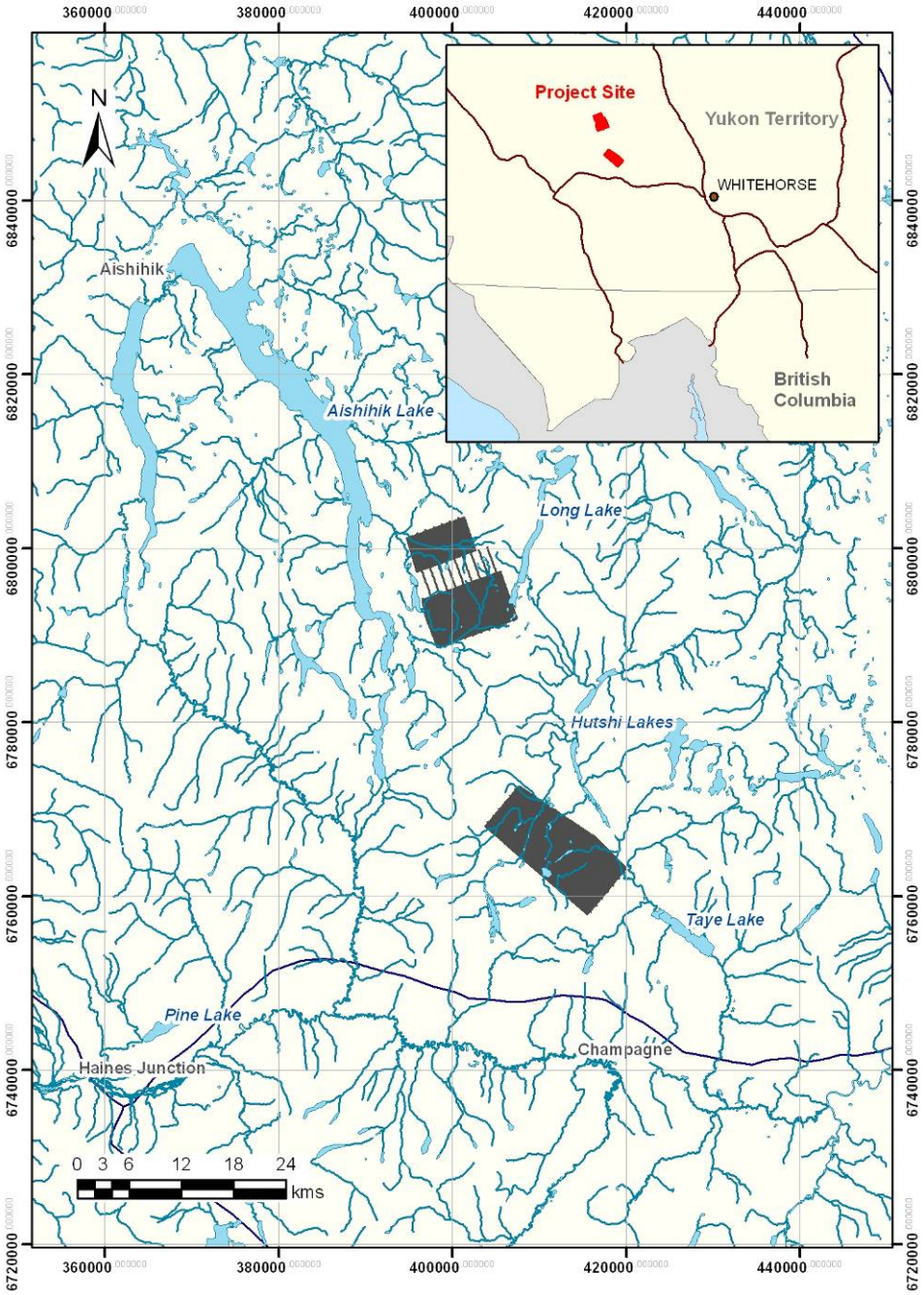
Alexander Prikhodko, P. Geo
Geotech Ltd.

January 2012

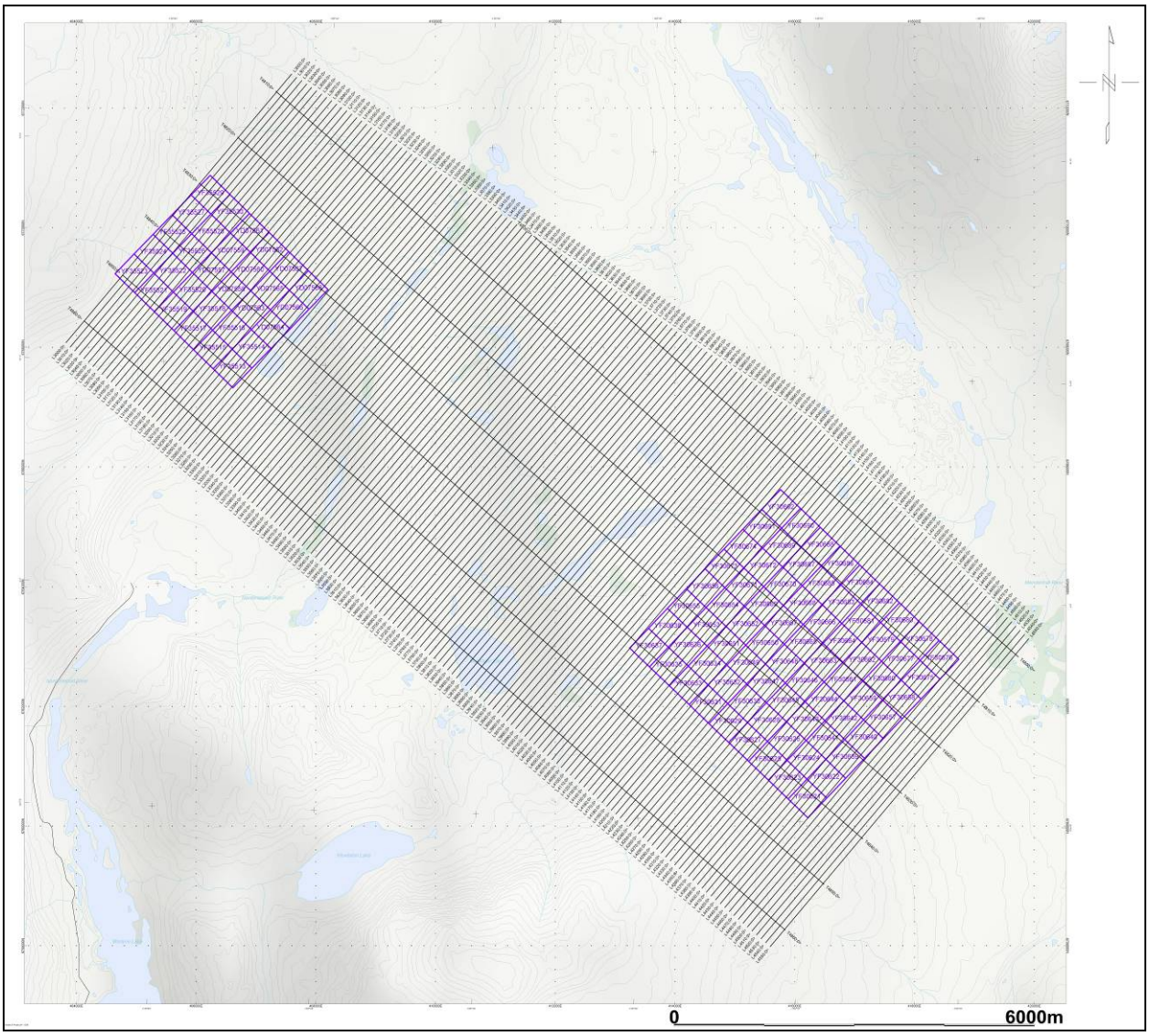
[6]Final data processing of the EM and magnetic data were carried out by Emilio Schein and ZiHao Han, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo., PhD, Senior Geophysicist, VTEM Interpretation Supervisor.

APPENDIX A

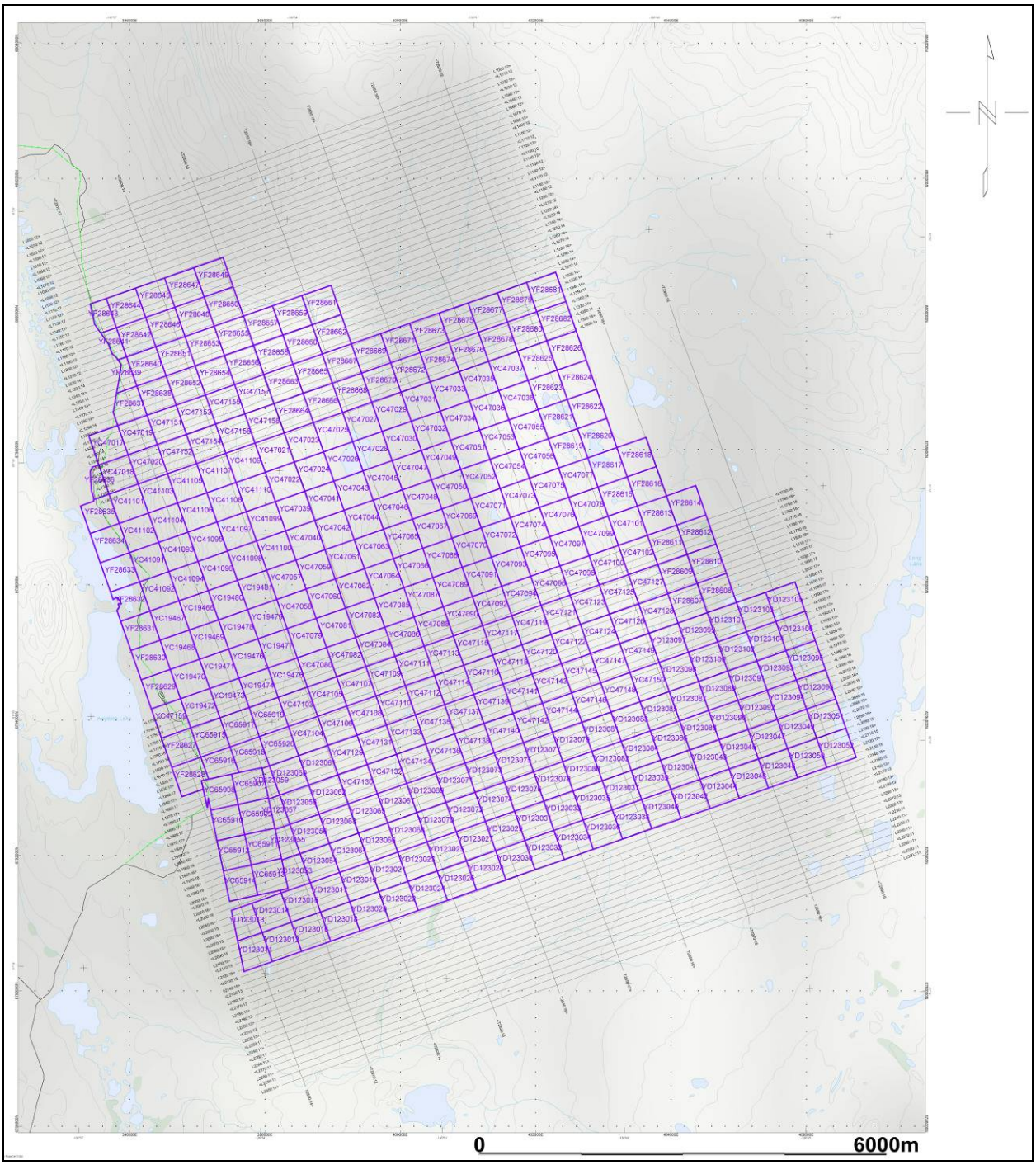
SURVEY BLOCK LOCATION MAP



Survey Overview of the Block



Mining Claims - Hooch Property



Mining Claims - Hopper Property

APPENDIX B

SURVEY BLOCK COORDINATES
(WGS 84, UTM Zone 8 North)

Hopper Property

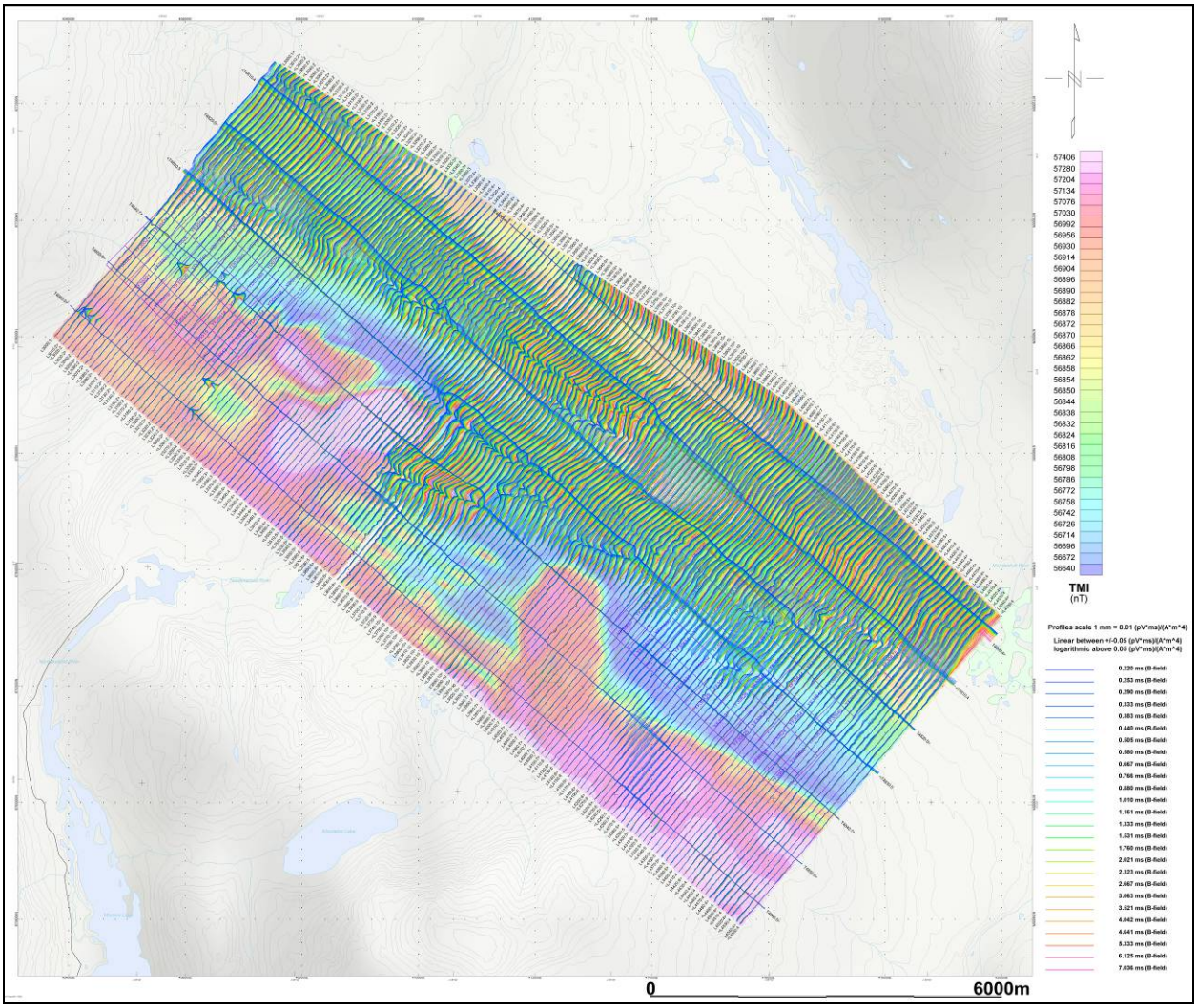
X	Y
394818.7	6801196.9
401236.7	6803532.9
402593.5	6799533
404384.4	6800170.3
407301.5	6791906
398342.6	6788644.2
396952.1	6792283.4
395976	6797314.4

Hooch Property

X	Y
403819.2	6768071.4
407580	6772580
416328.8	6766722.6
419952.9	6763082.4
415595	6757977.9

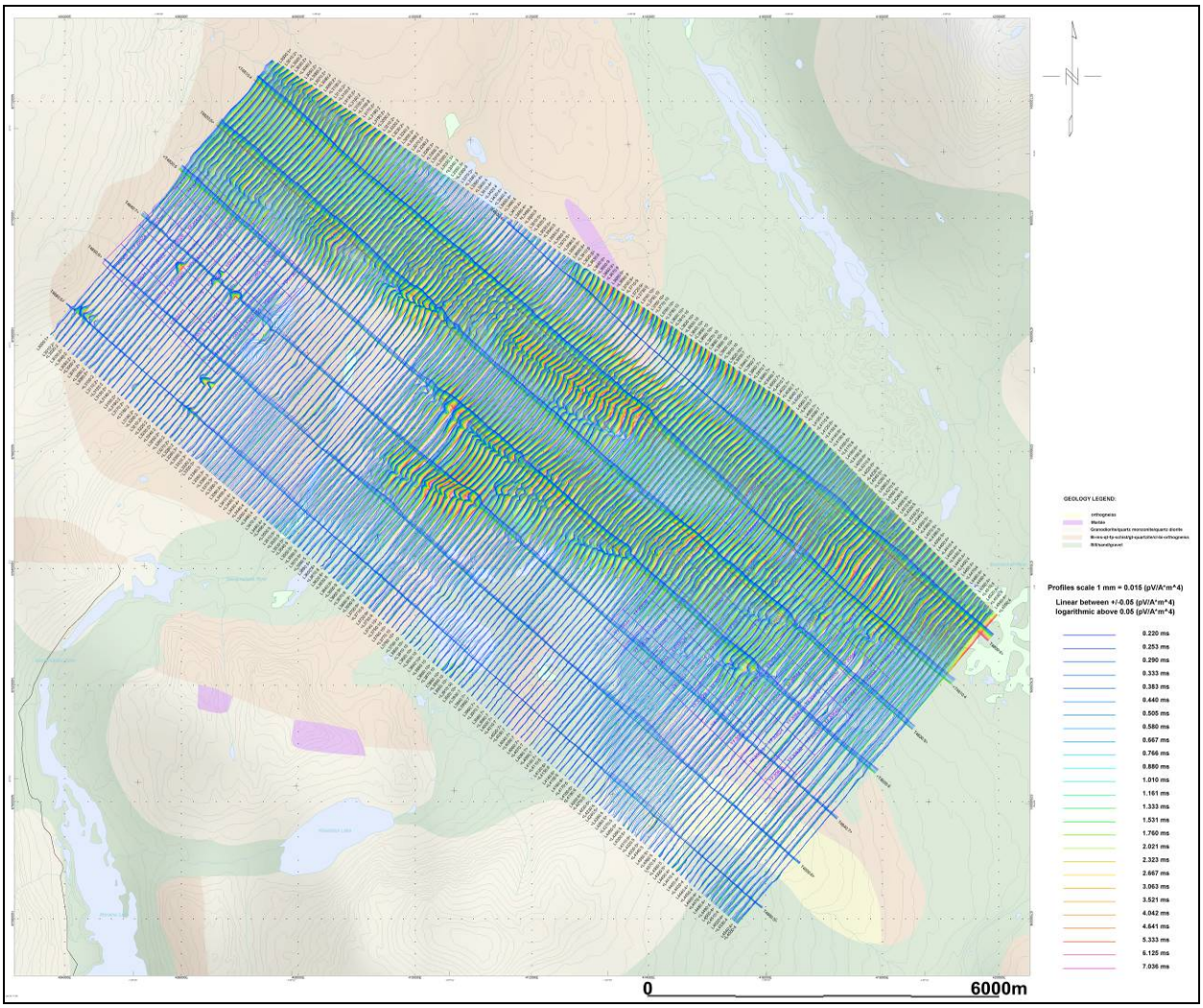
APPENDIX C

GEOPHYSICAL MAPS[1]

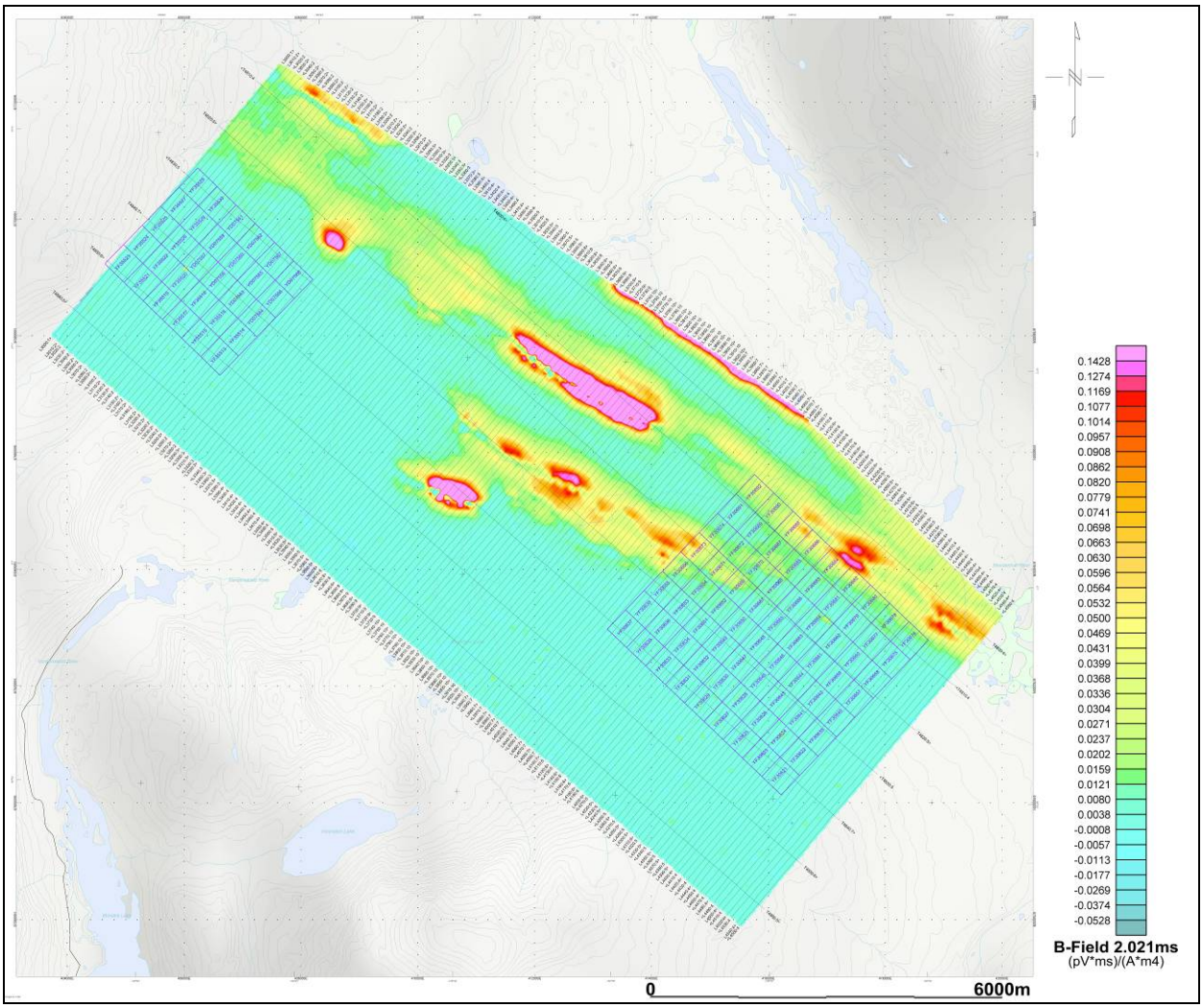


Hooch Property - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms

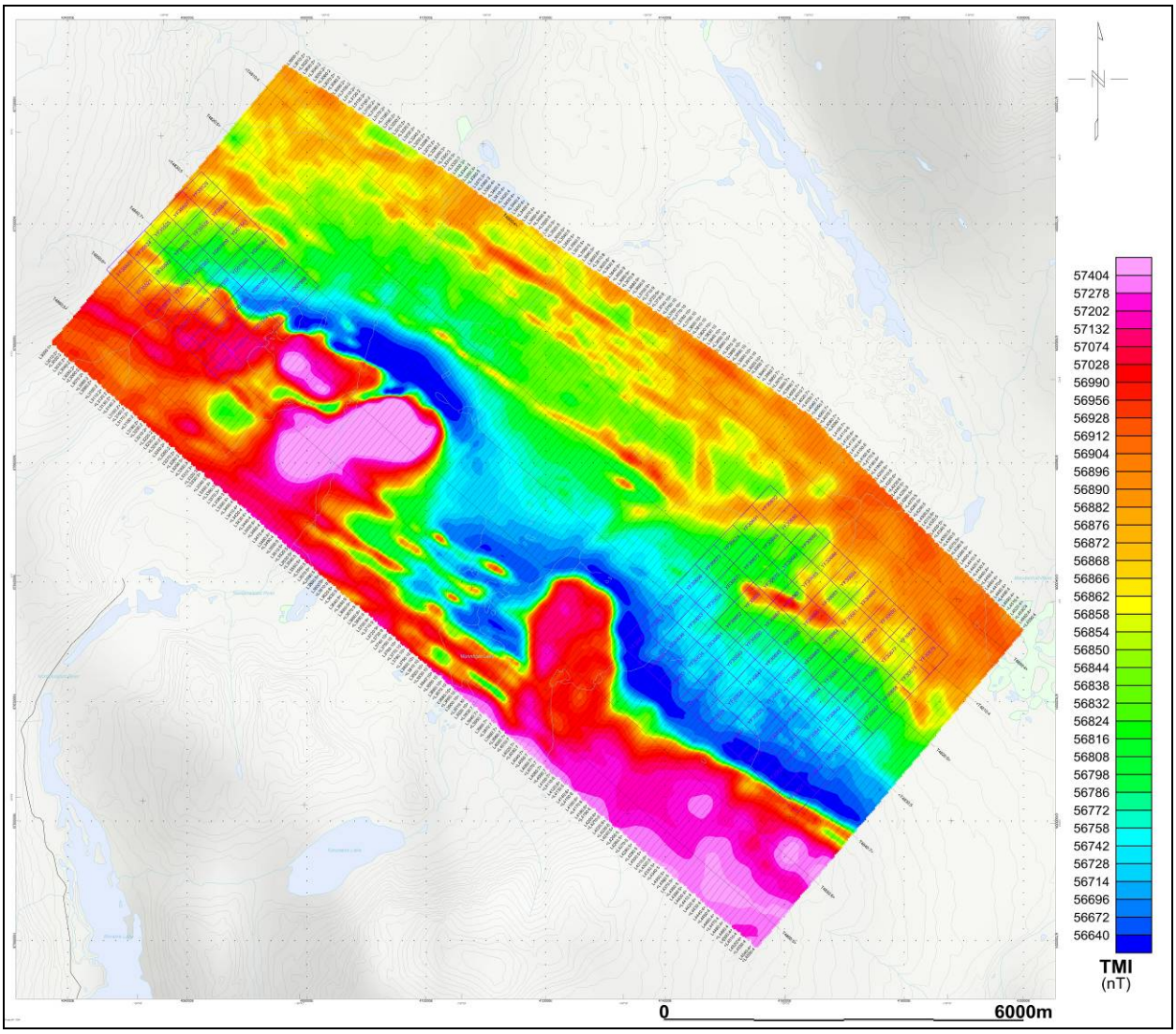
[1] Full size geophysical maps are also available in PDF format on the final DVD



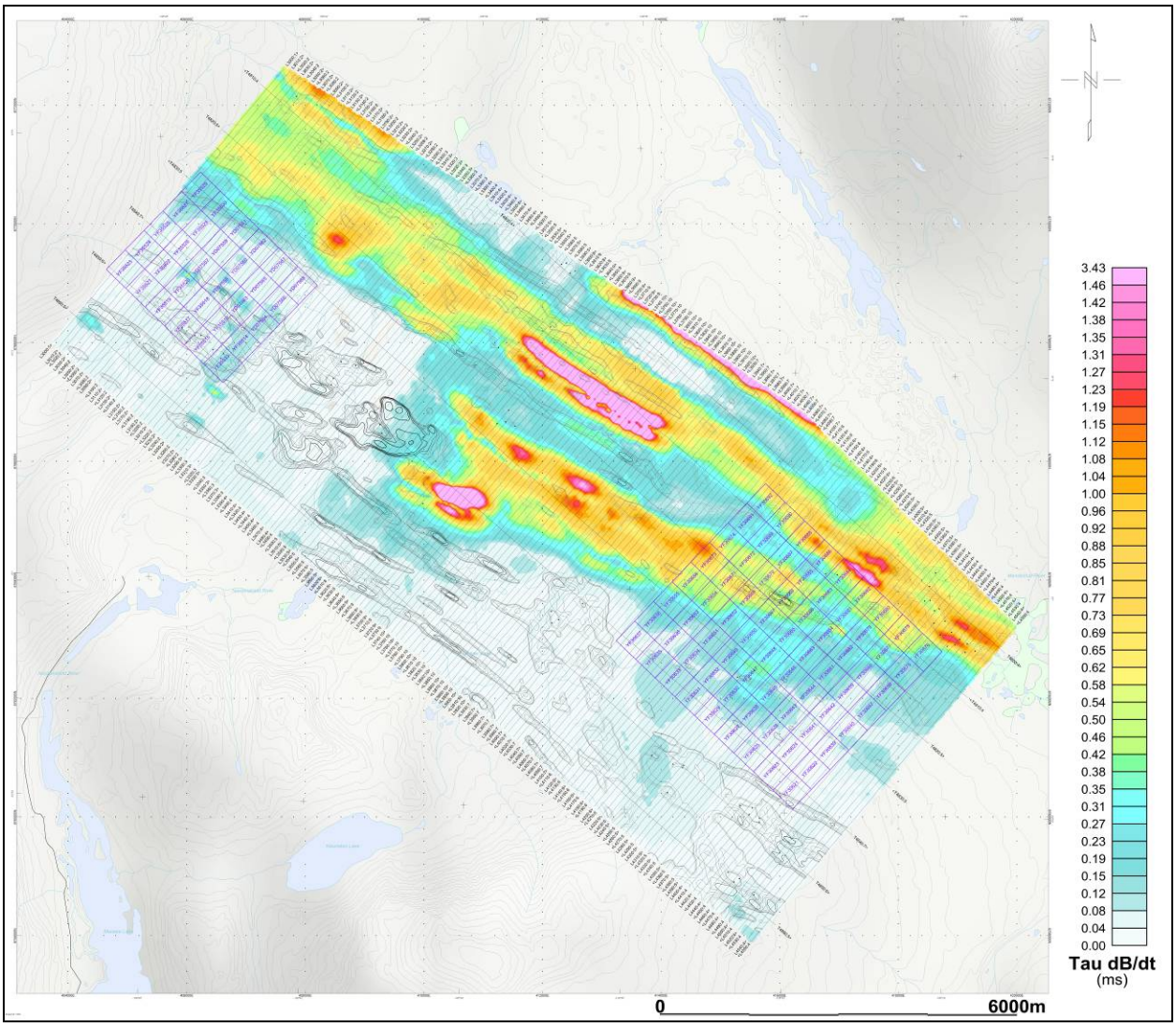
Hooch Property - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



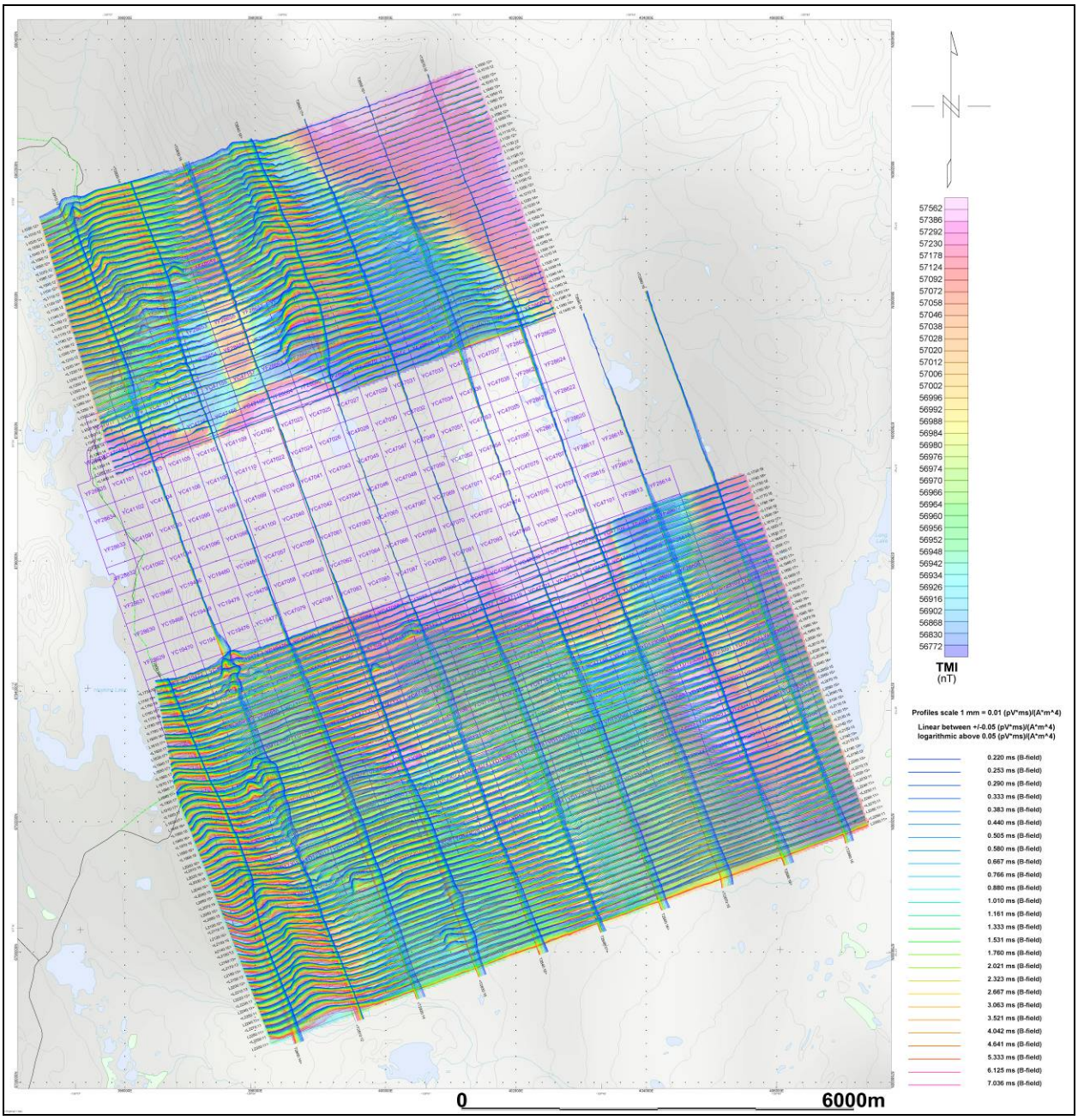
Hooch Property - VTEM B-Field Channel 36, Time Gate 2.021 ms



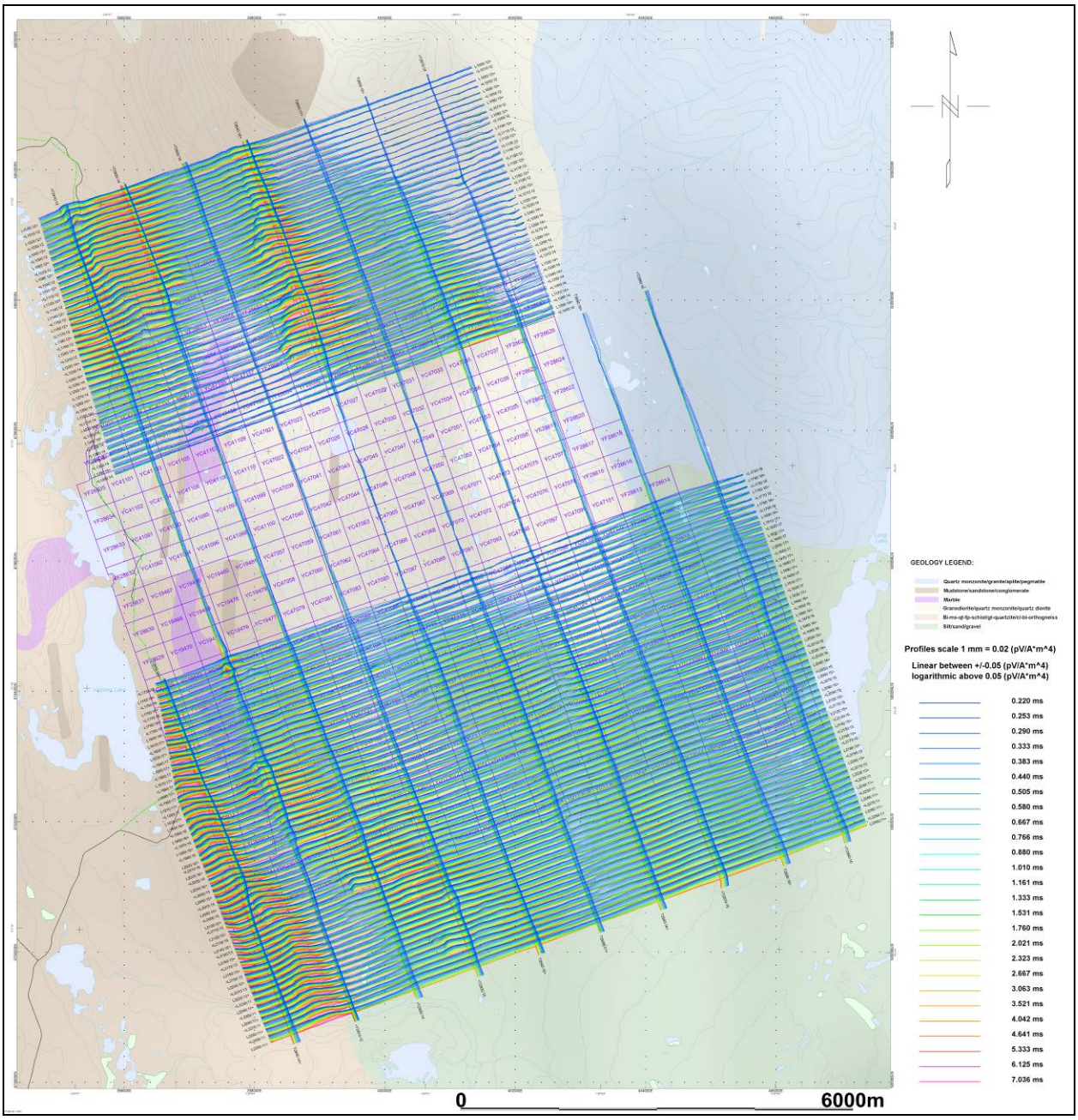
Hooch Property - Total Magnetic Intensity



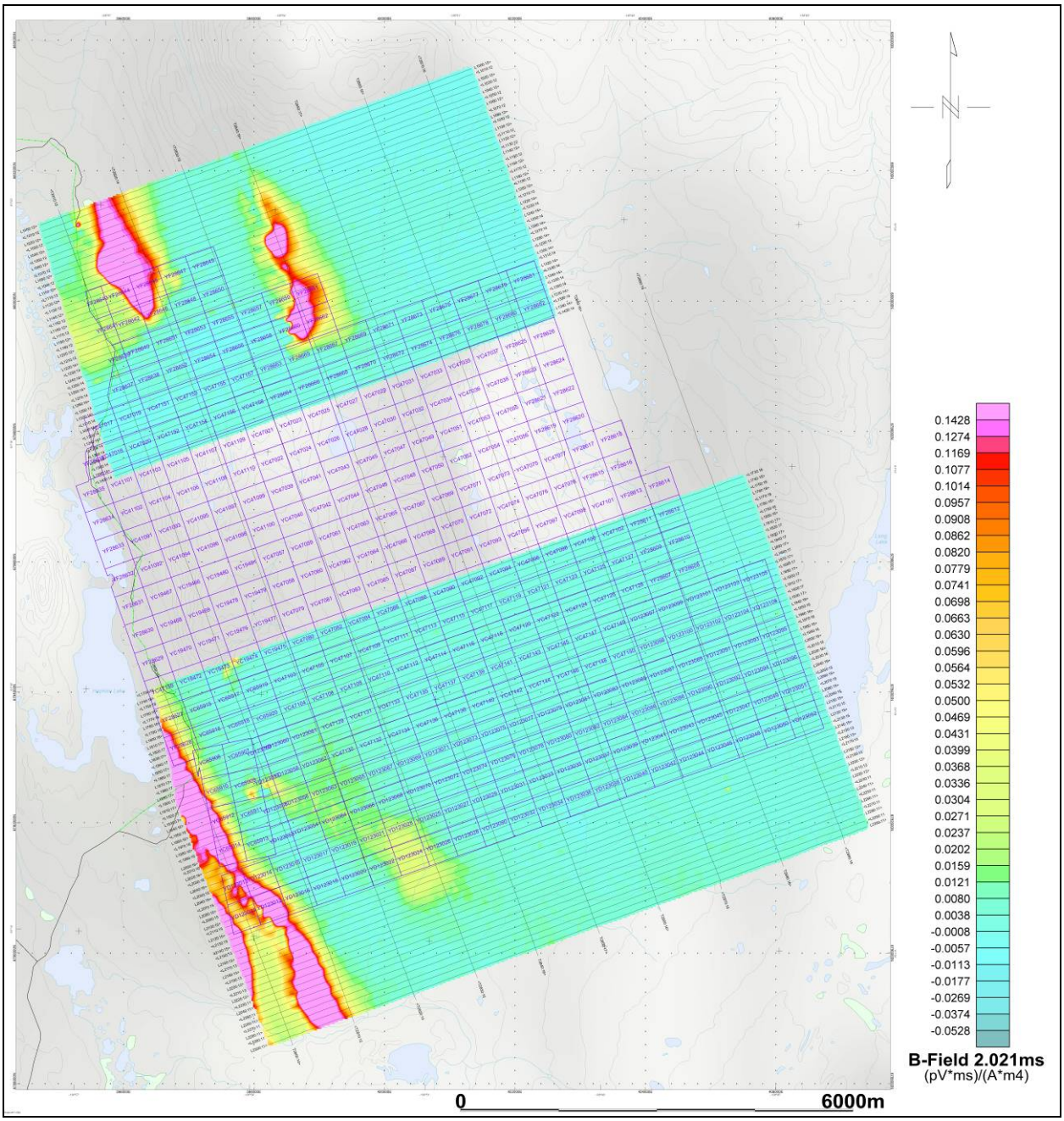
Hooch Property - VTEM dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI



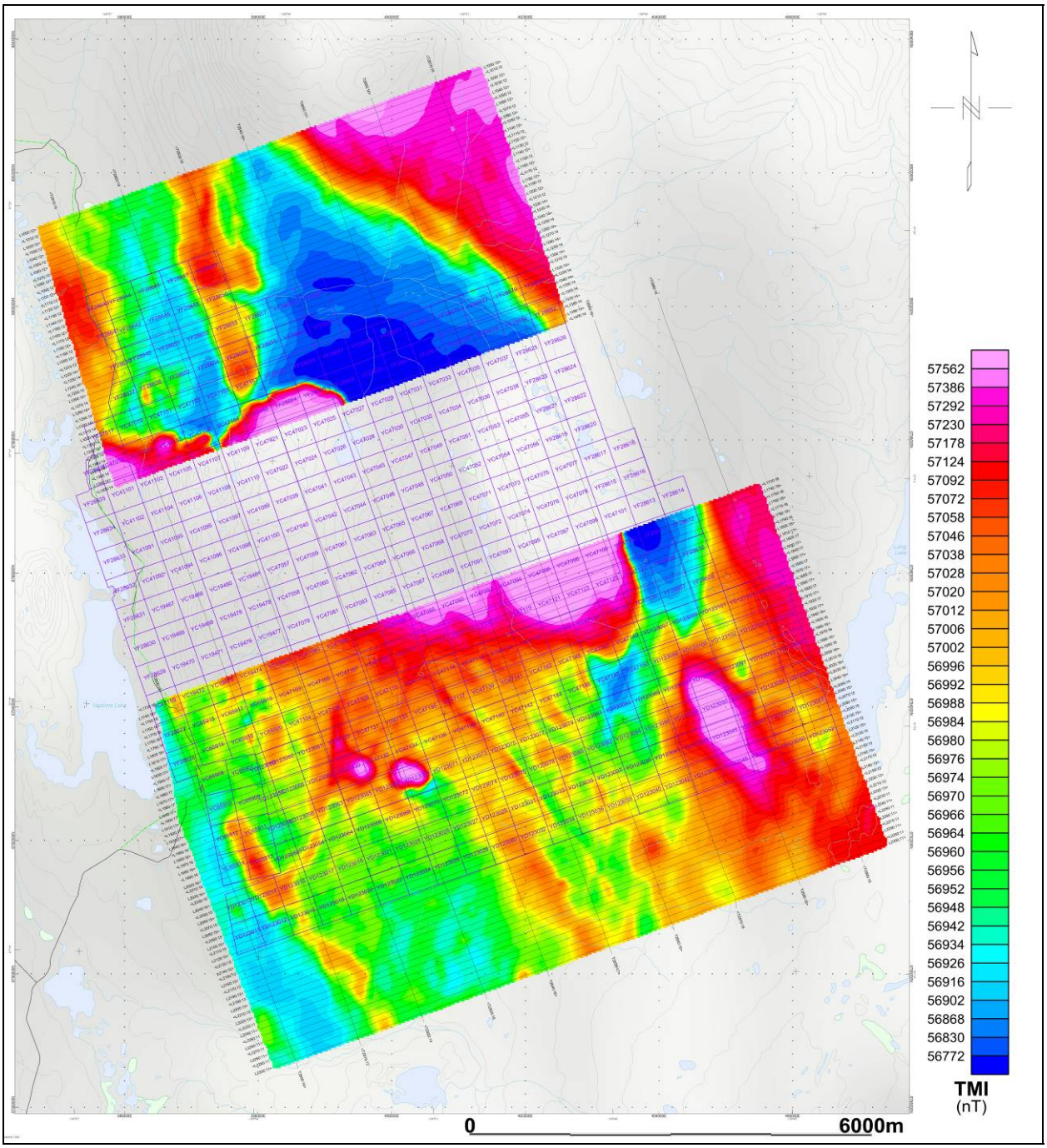
Hopper Property - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms



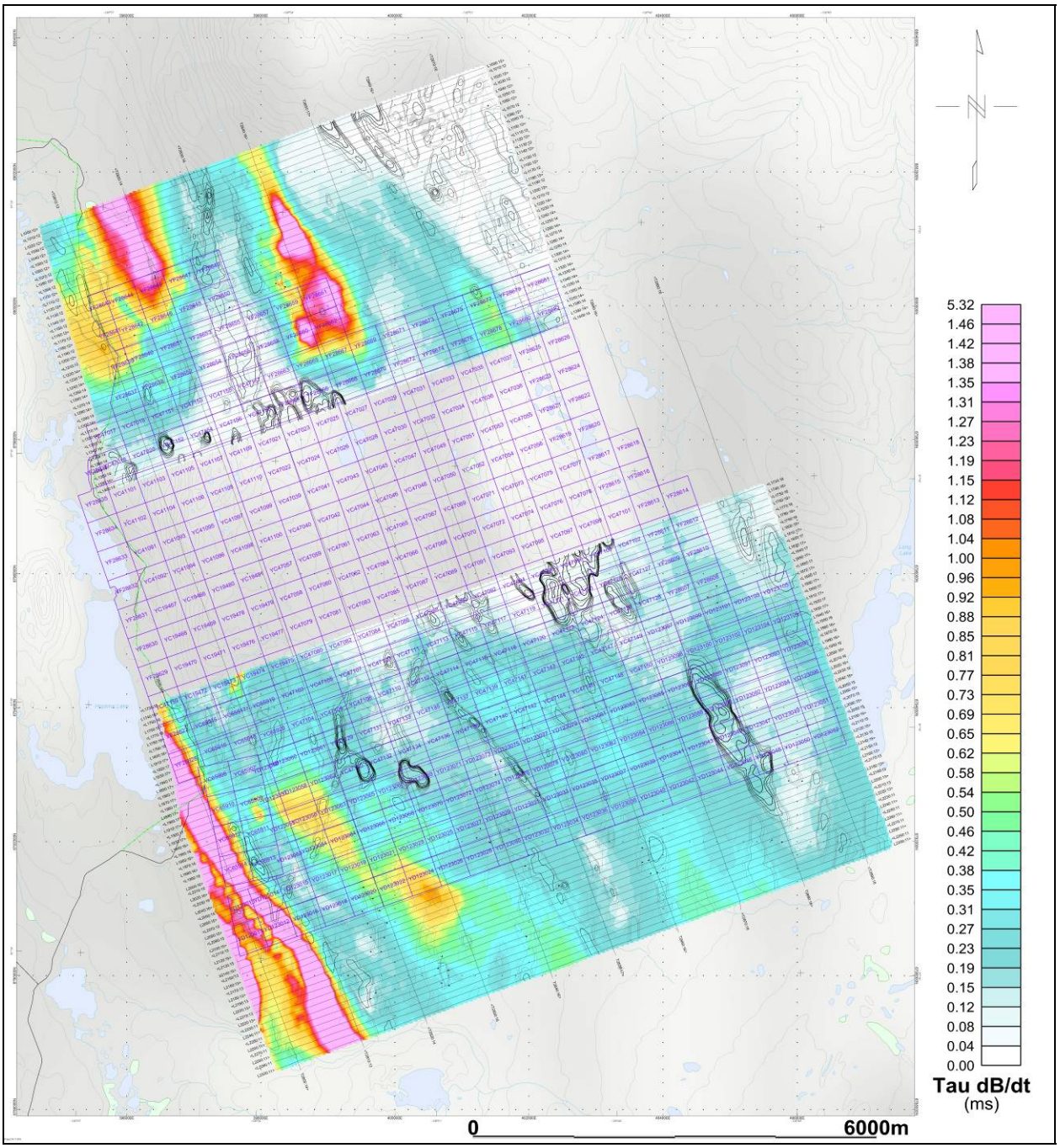
Hopper Property - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



Hopper Property - VTEM B-Field Channel 36, Time Gate 2.021 ms

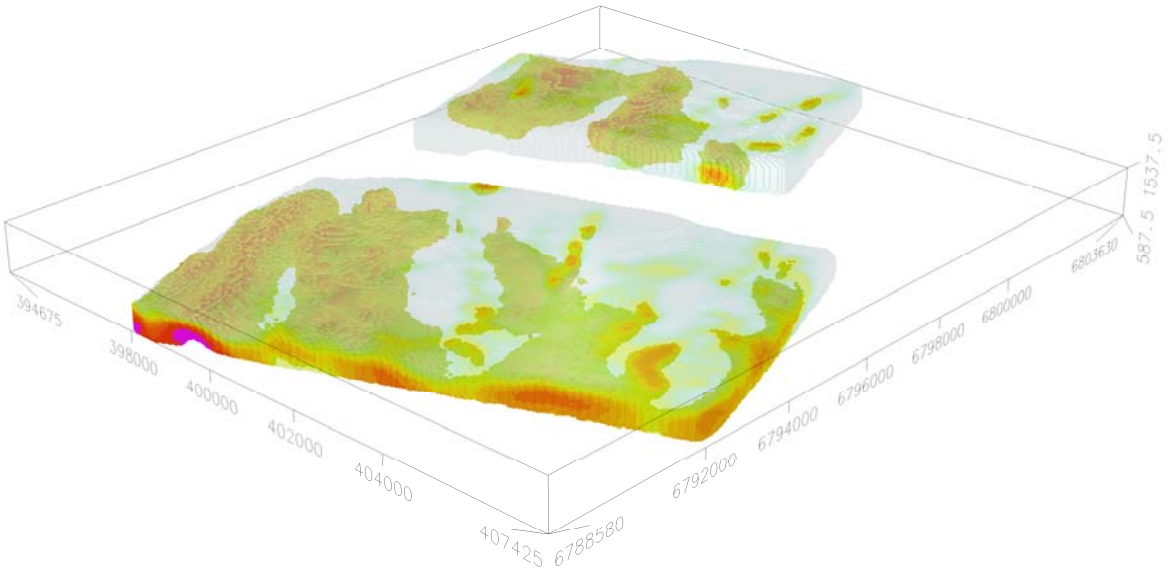


Hopper Property - Total Magnetic Intensity

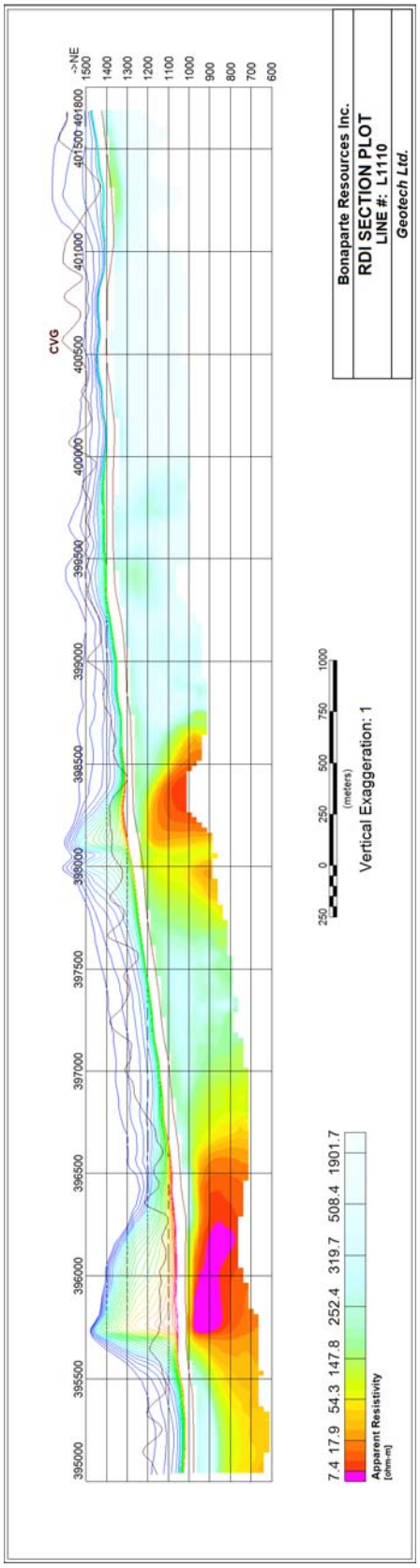


Hopper Property - VTEM dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

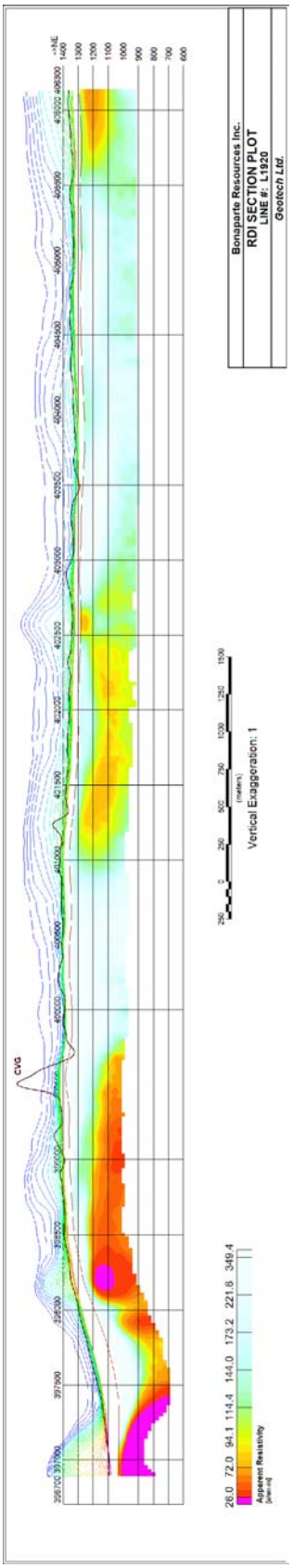
Resistivity Depth Image (RDI) MAPS



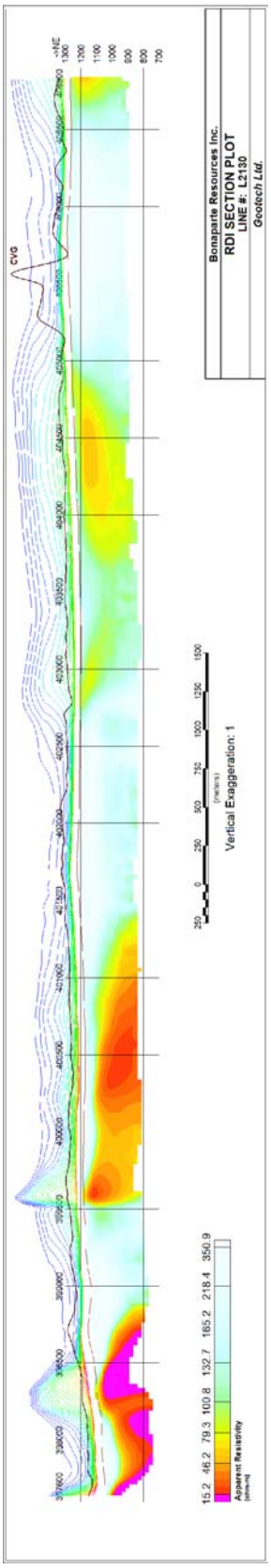
3D Resistivity-Depth Image (RDI) – Hopper Property



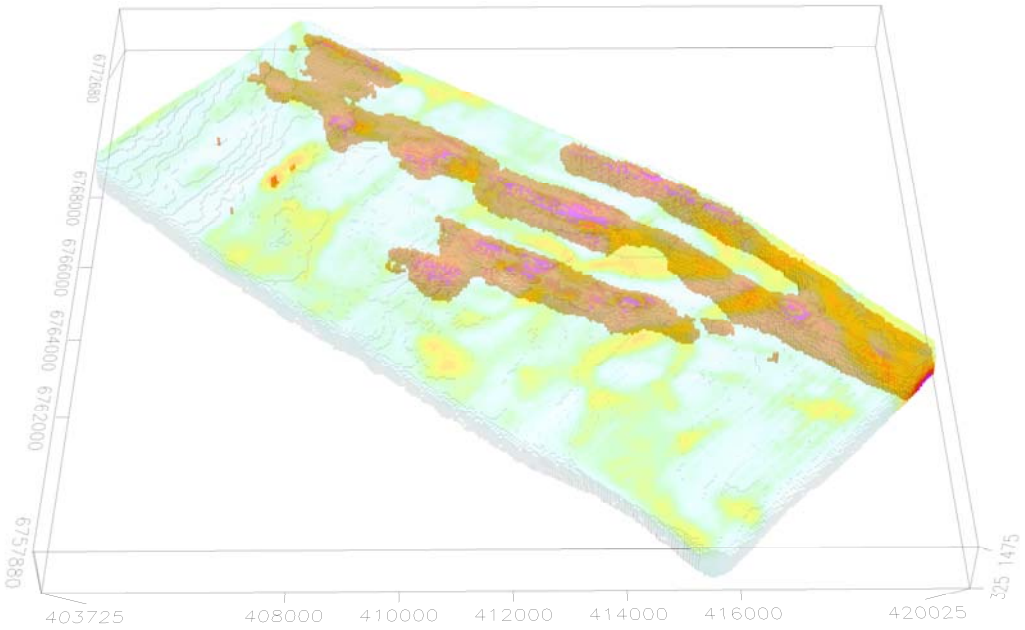
Line 1110 – Hopper Property



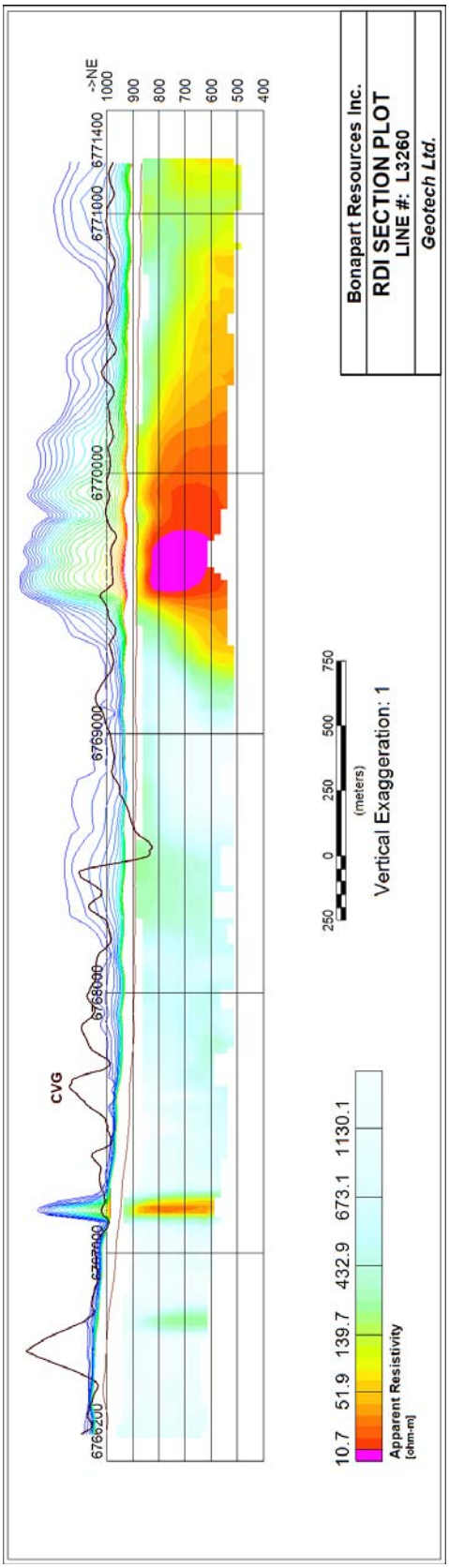
Line 1920 – Hopper Property



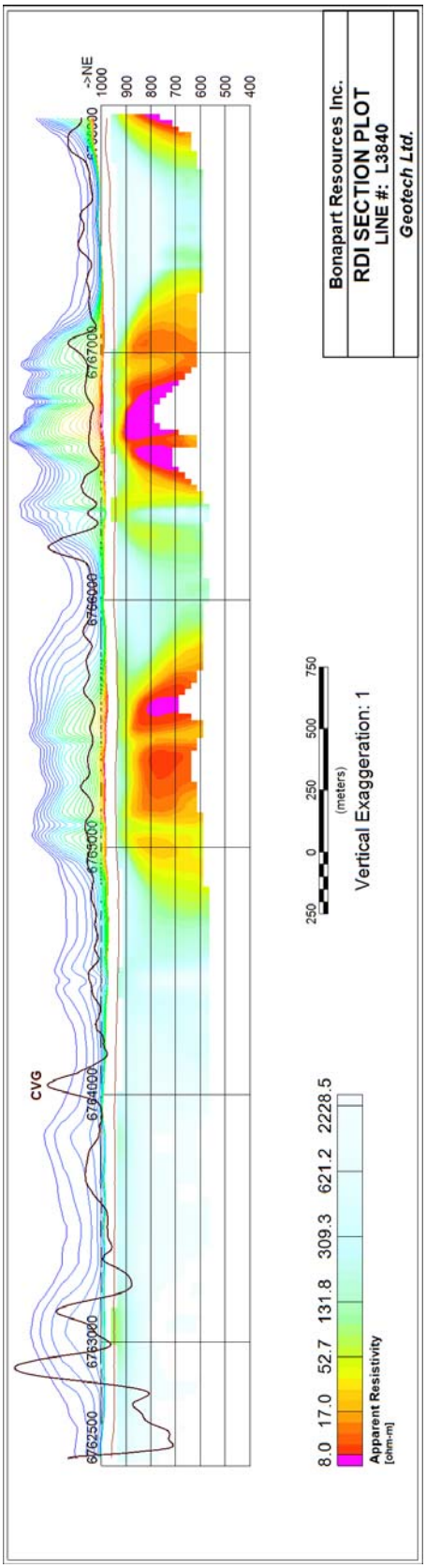
Line 2130 – Hopper Property



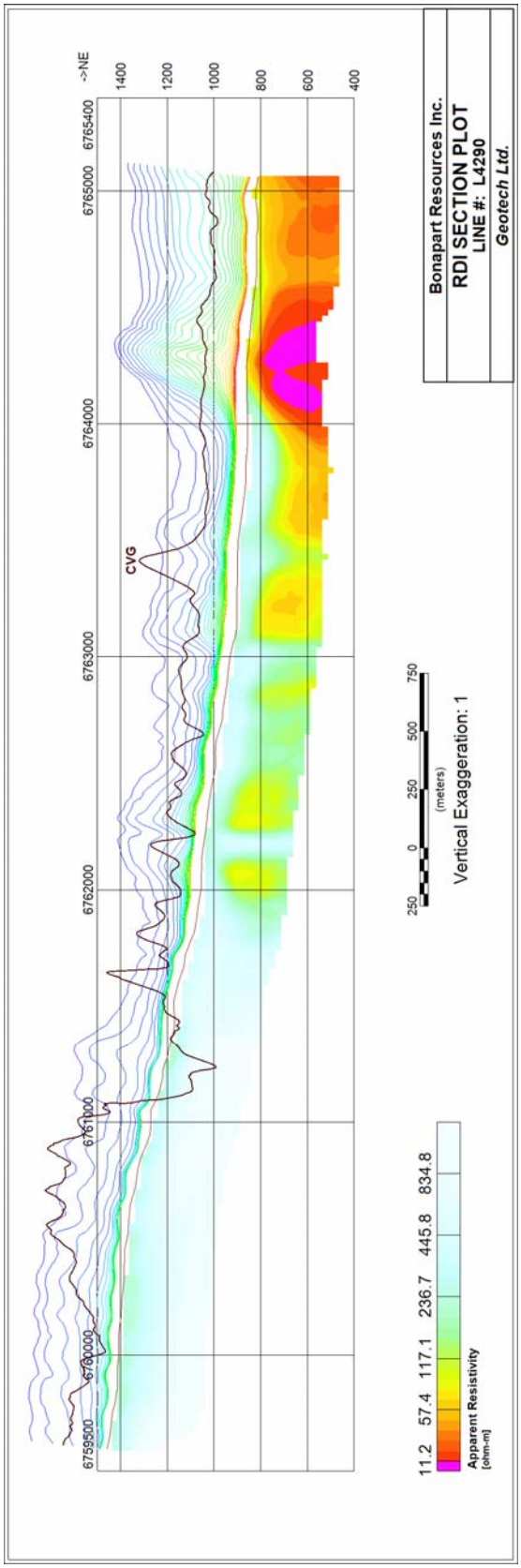
3D Resistivity-Depth Image (RDI) – Hooch Property



Line 3260 – Hooch Property



Line 3840 – Hooch Property



Line 4290 – Hooch Property

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 ^{TM} 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.

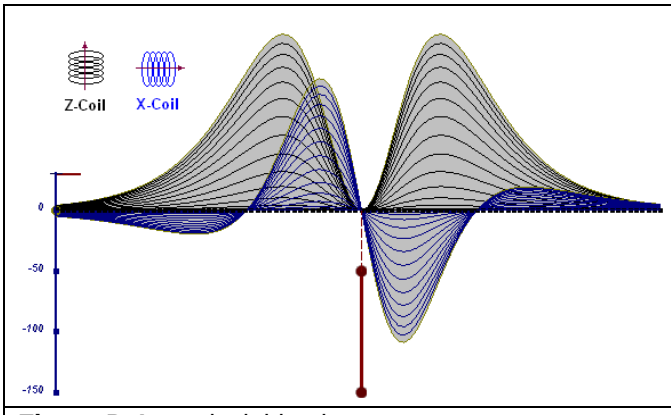


Figure D-1: vertical thin plate

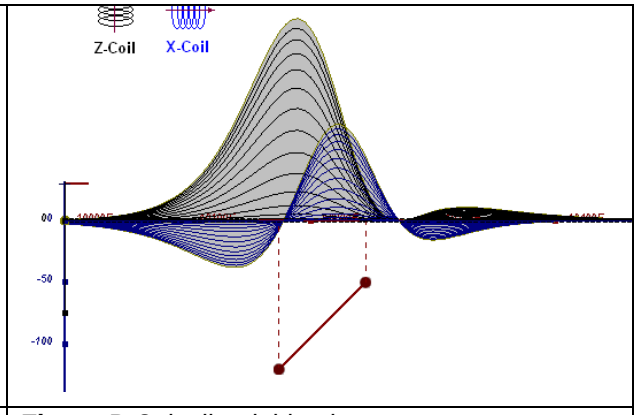


Figure D-2: inclined thin plate

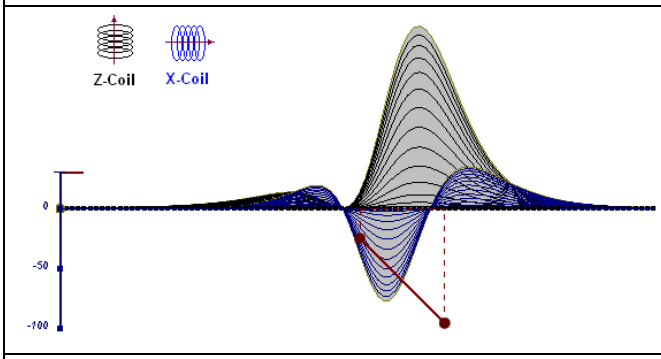


Figure D-3: inclined thin plate

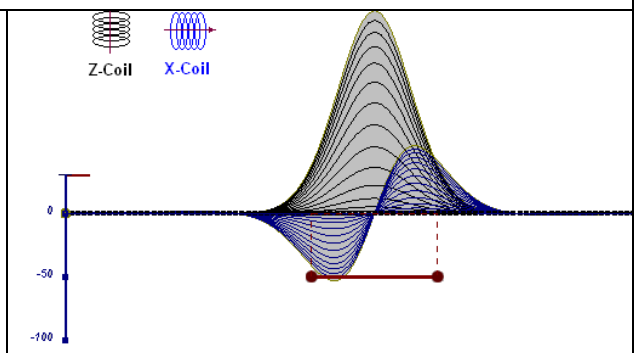


Figure D-4: horizontal thin plate

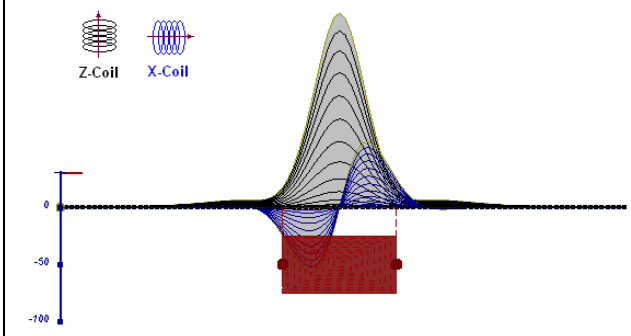


Figure D-5: horizontal thick plate (linear scale of the response)

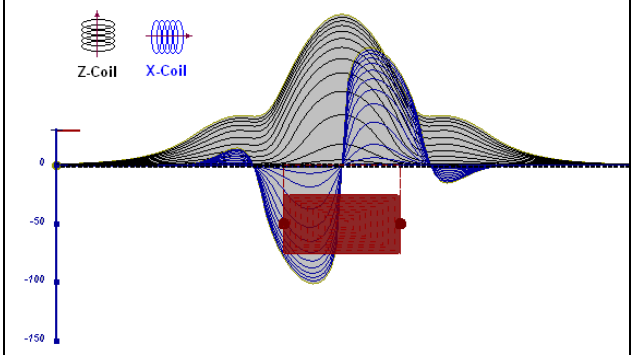


Figure D-6: horizontal thick plate (log scale of the response)

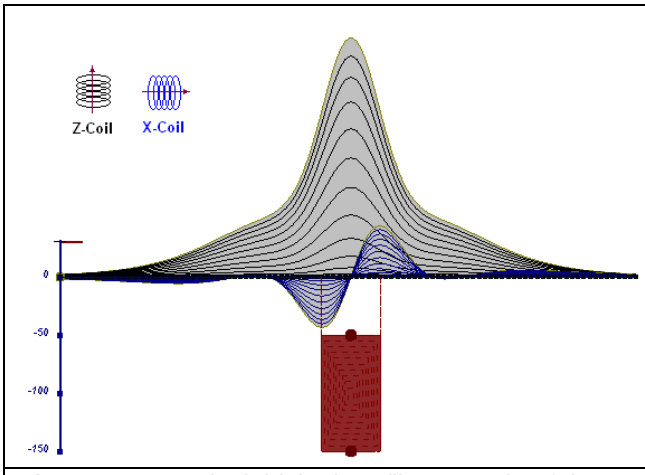


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

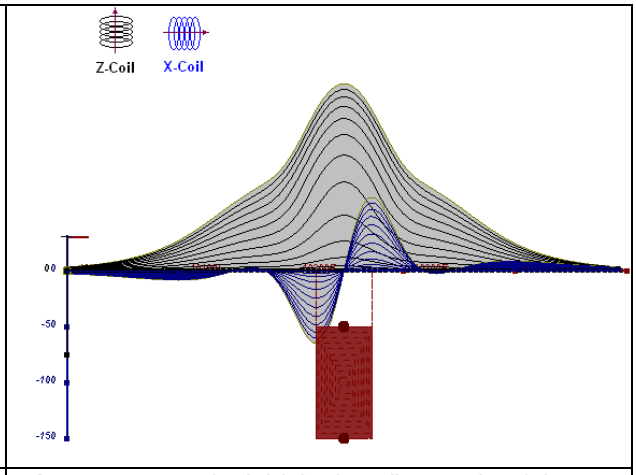


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

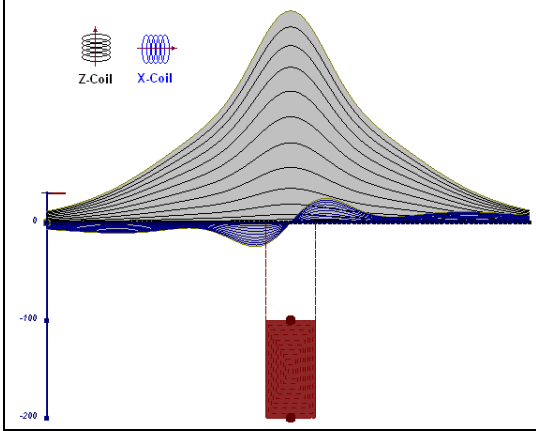


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

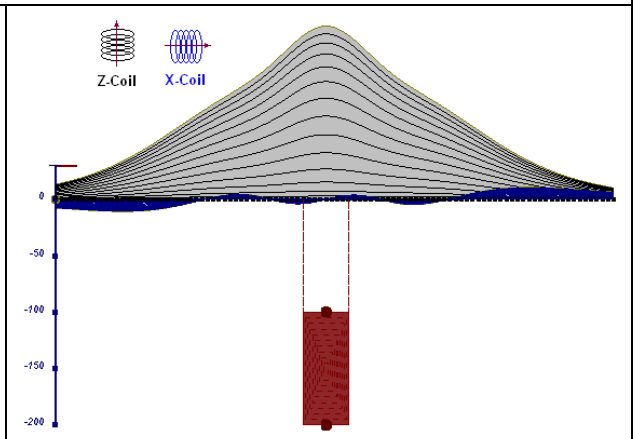


Figure D-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

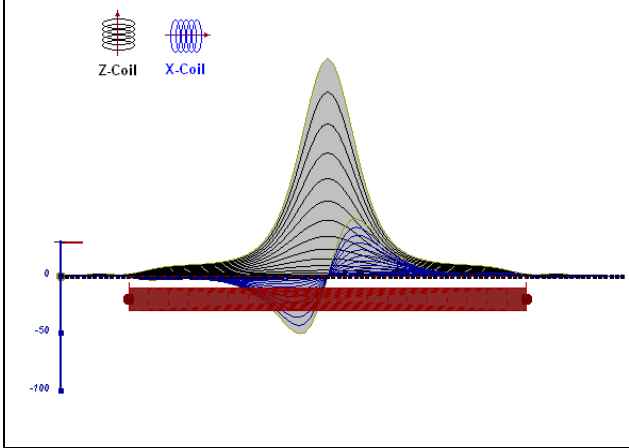


Figure D-10: horizontal thick plate (linear scale of the response)

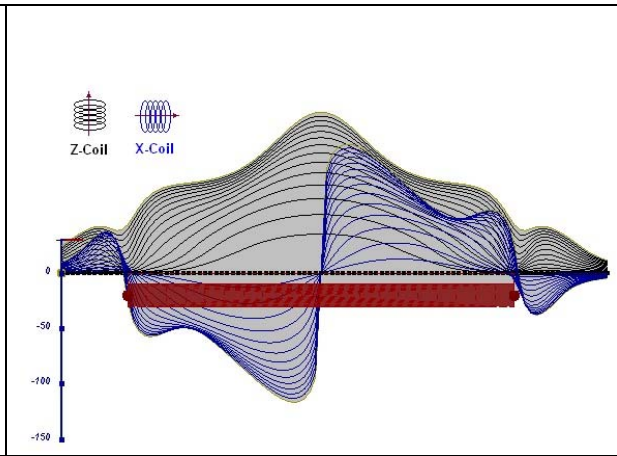


Figure D-11: horizontal thick plate (log scale of the response)

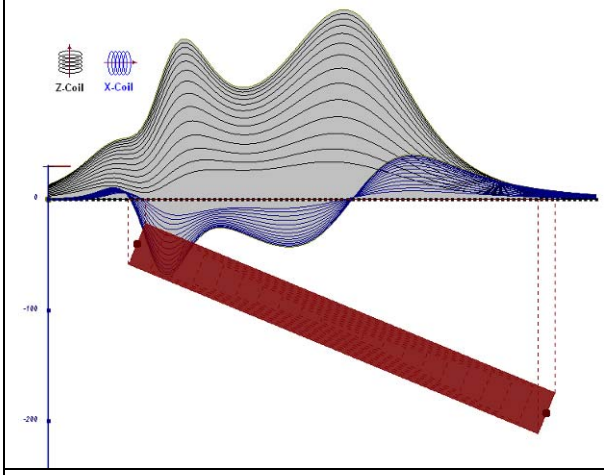


Figure D-12: inclined long thick plate

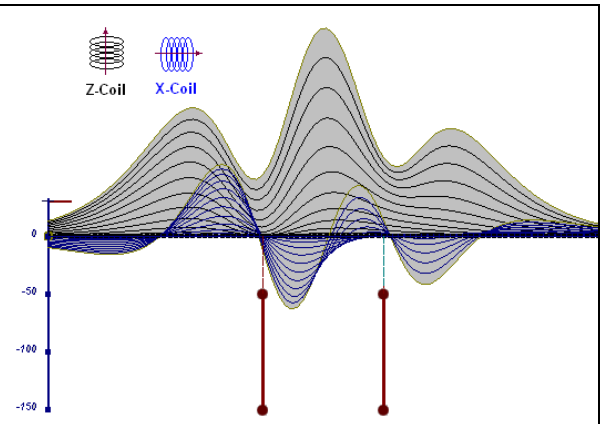


Figure D-13: two vertical thin plates

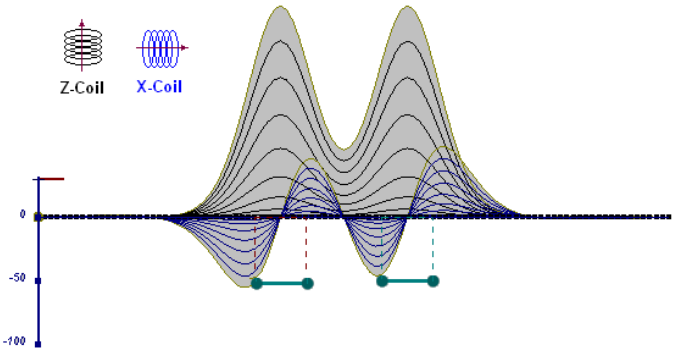


Figure D-14: two horizontal thin plates

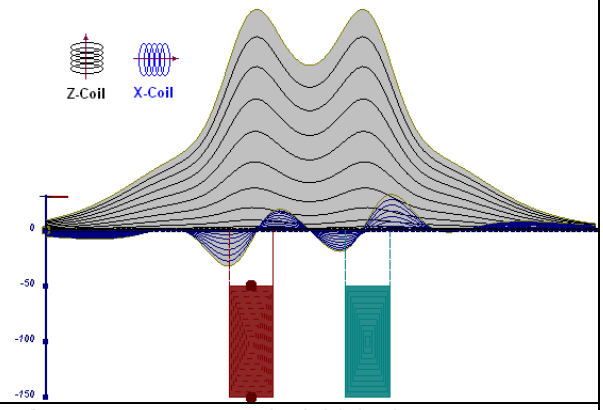
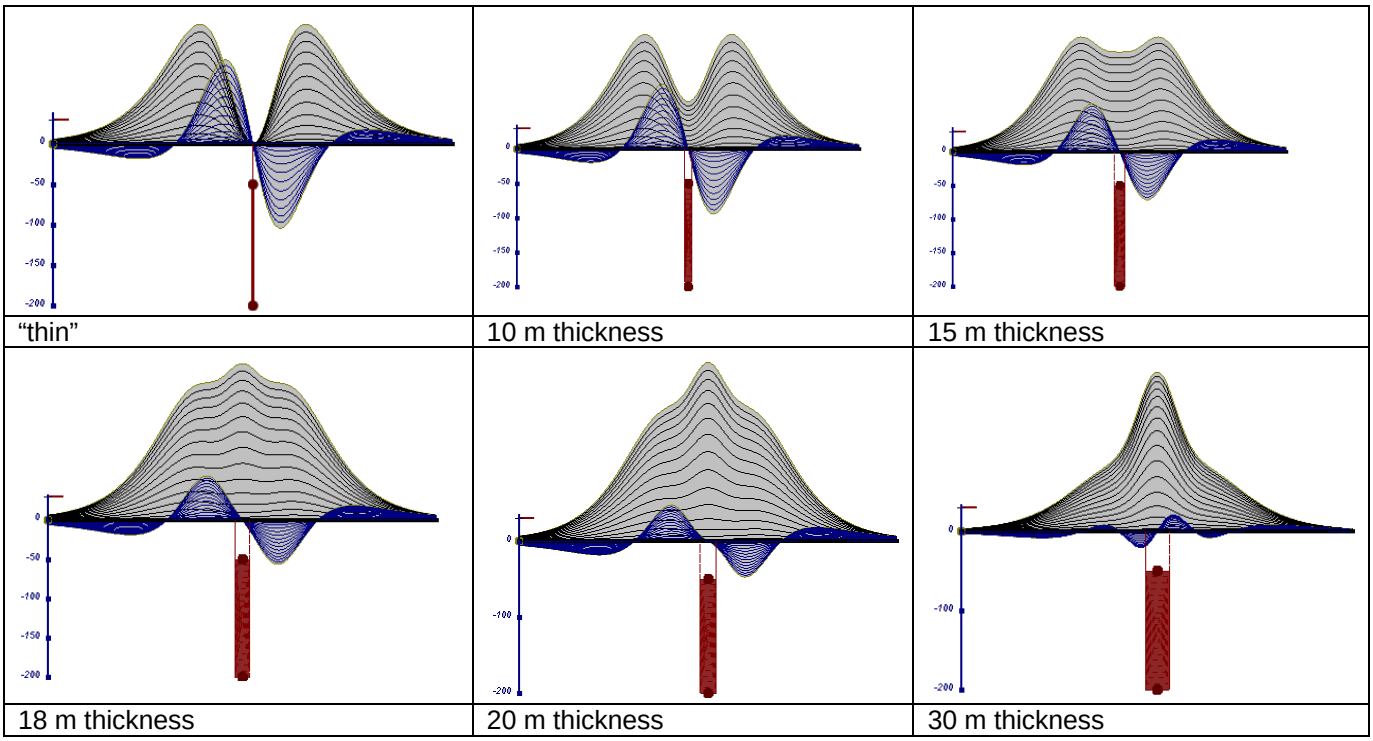


Figure D-15: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:



"thin"	10 m thickness	15 m thickness
18 m thickness	20 m thickness	30 m thickness

Figure D-16: Conductive vertical plate, depth 50 m, strike length 200 m, depth extend 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] (Figure E-1).

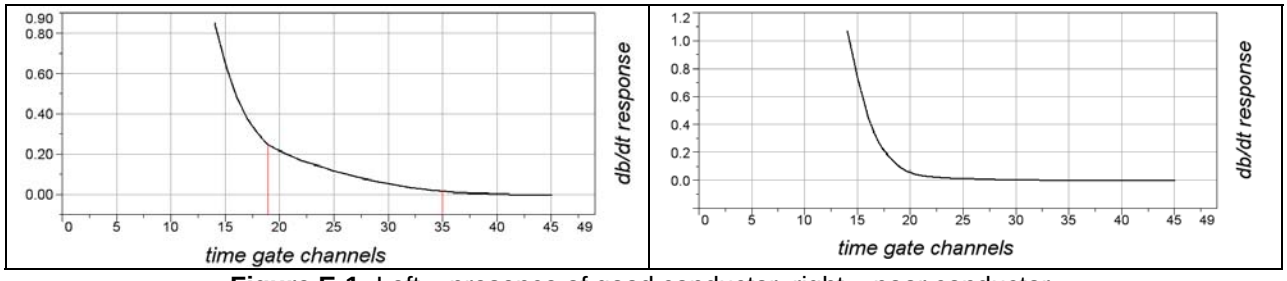


Figure E-1: Left – presence of good conductor, right – poor conductor.

[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.

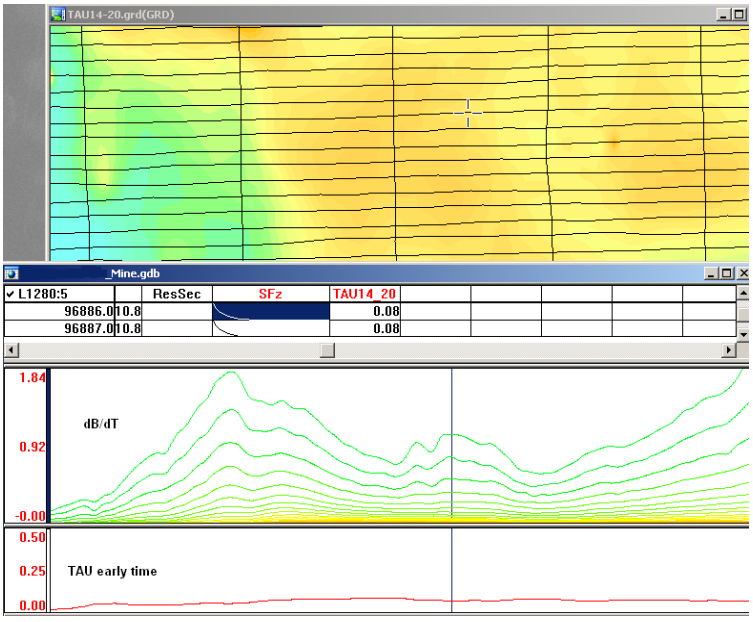


Figure E-2: Map of early time TAU Area with overburden conductive layer and local sources.

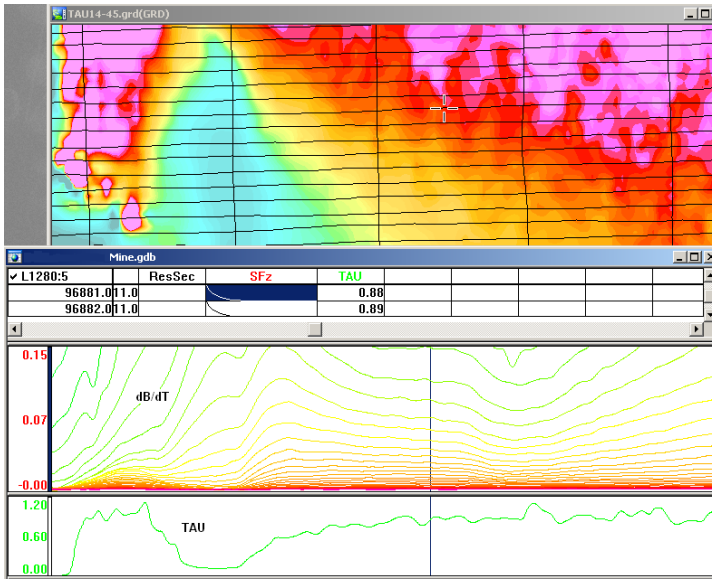


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

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.

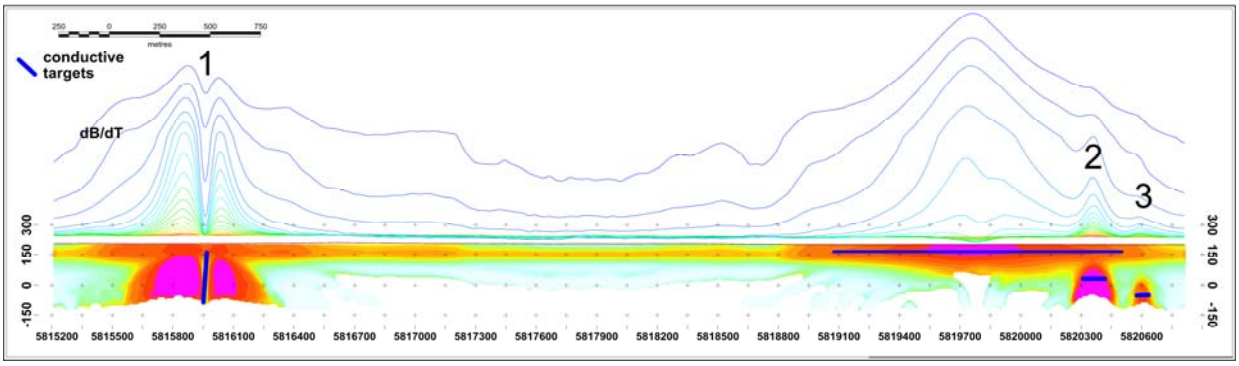


Figure E-4: dB/dt profile and RDI with different depths of targets.

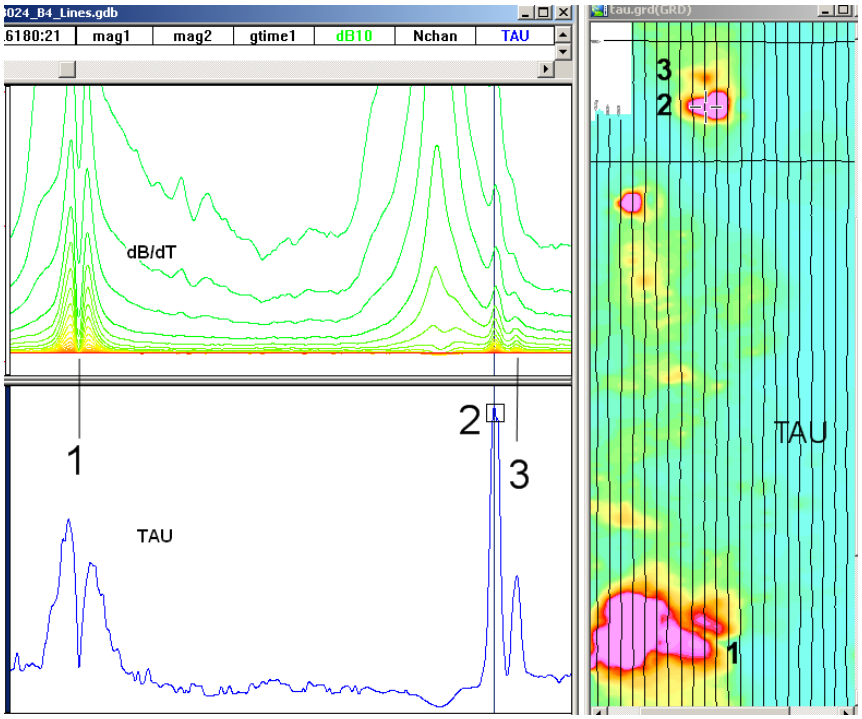


Figure E-5: Map of total TAU and dB/dt profile.

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 E-6). 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.

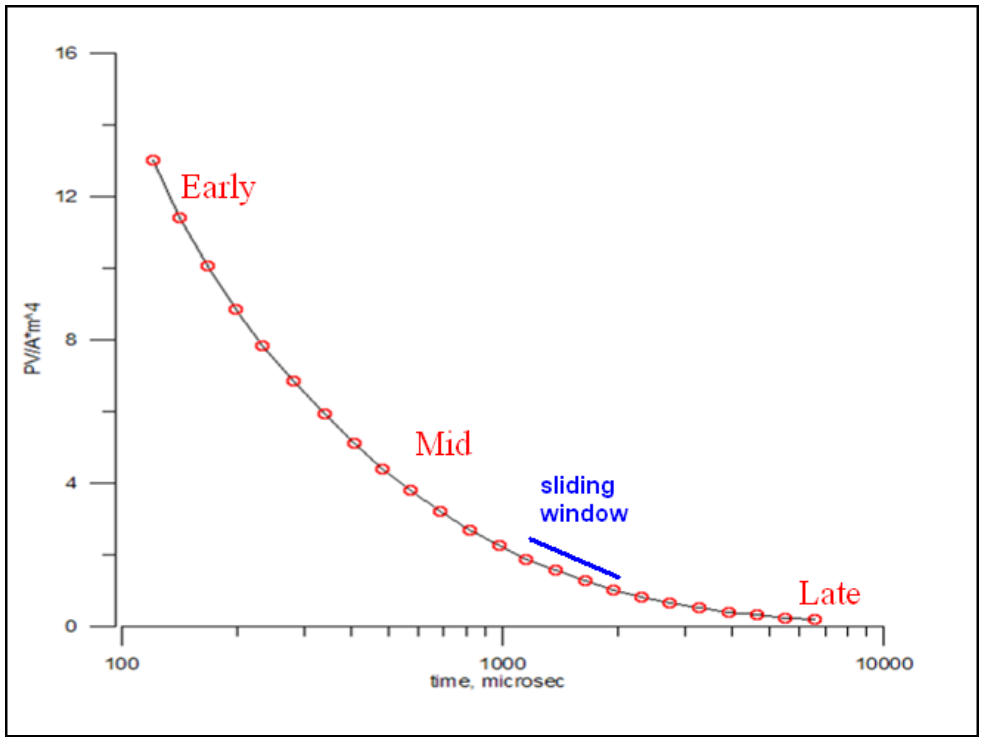


Figure E-6: Typical dB/dt decays of VTEM data

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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)

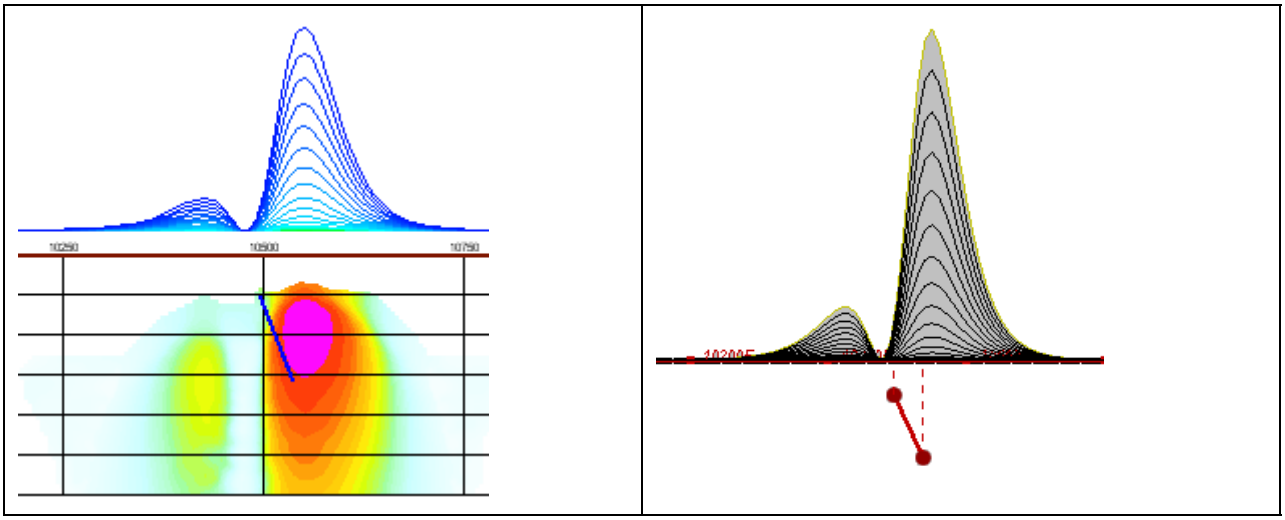


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive “thin” plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

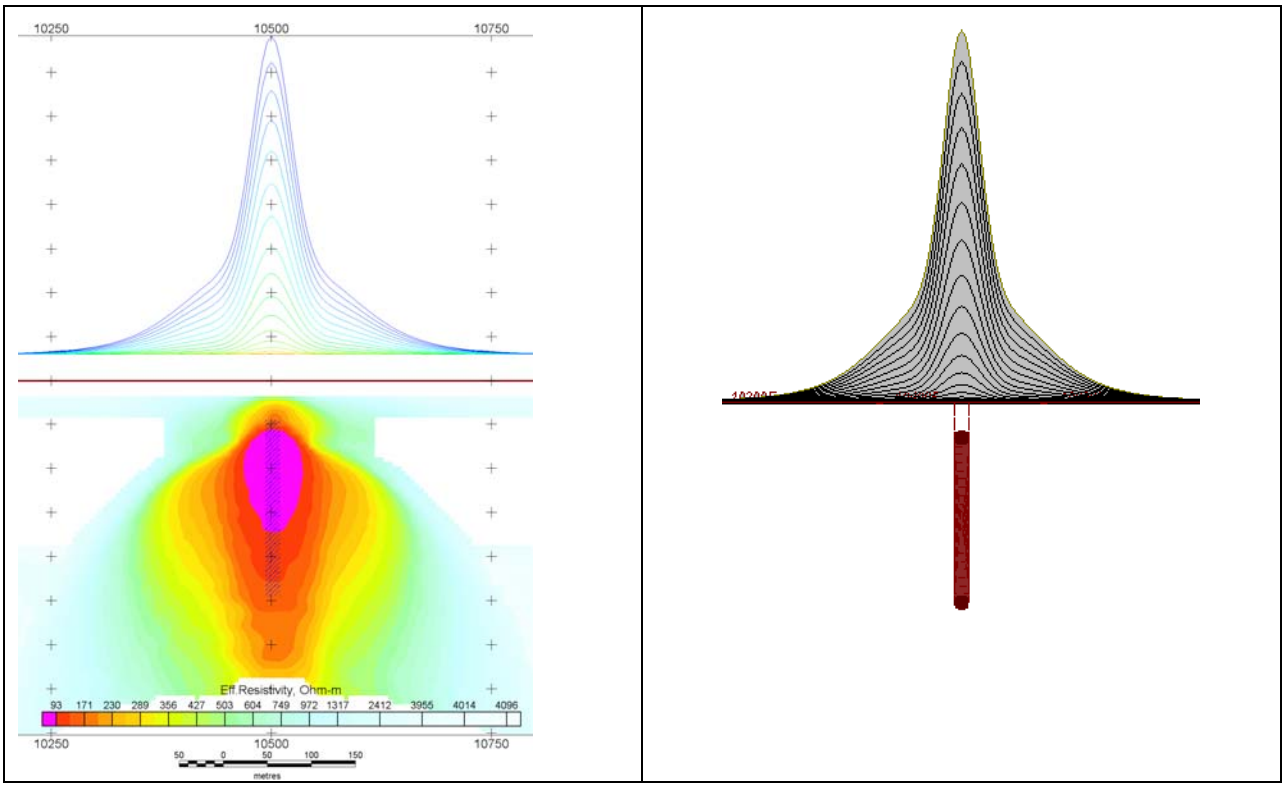


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

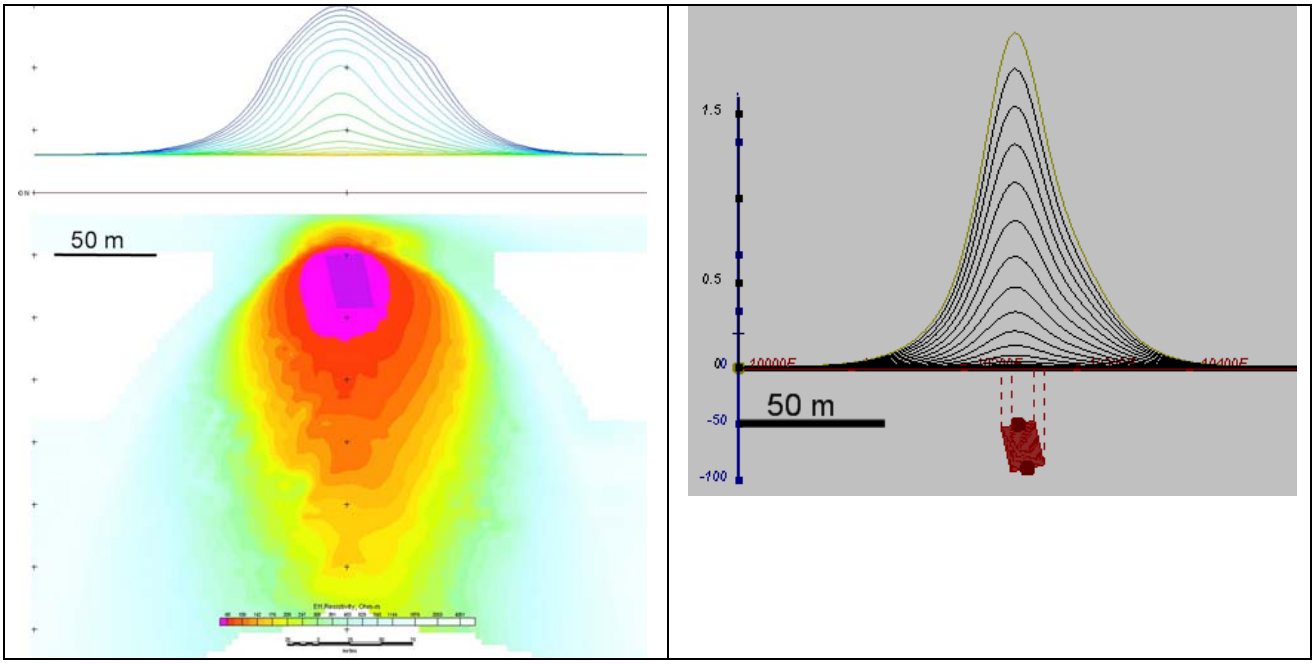


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

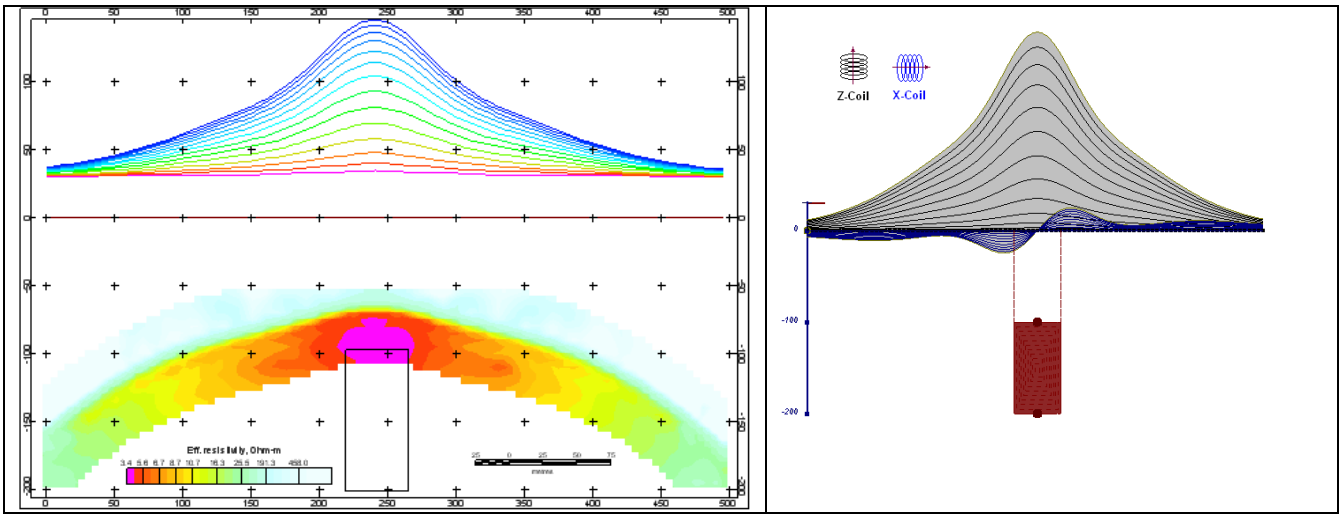


Figure F-4: Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

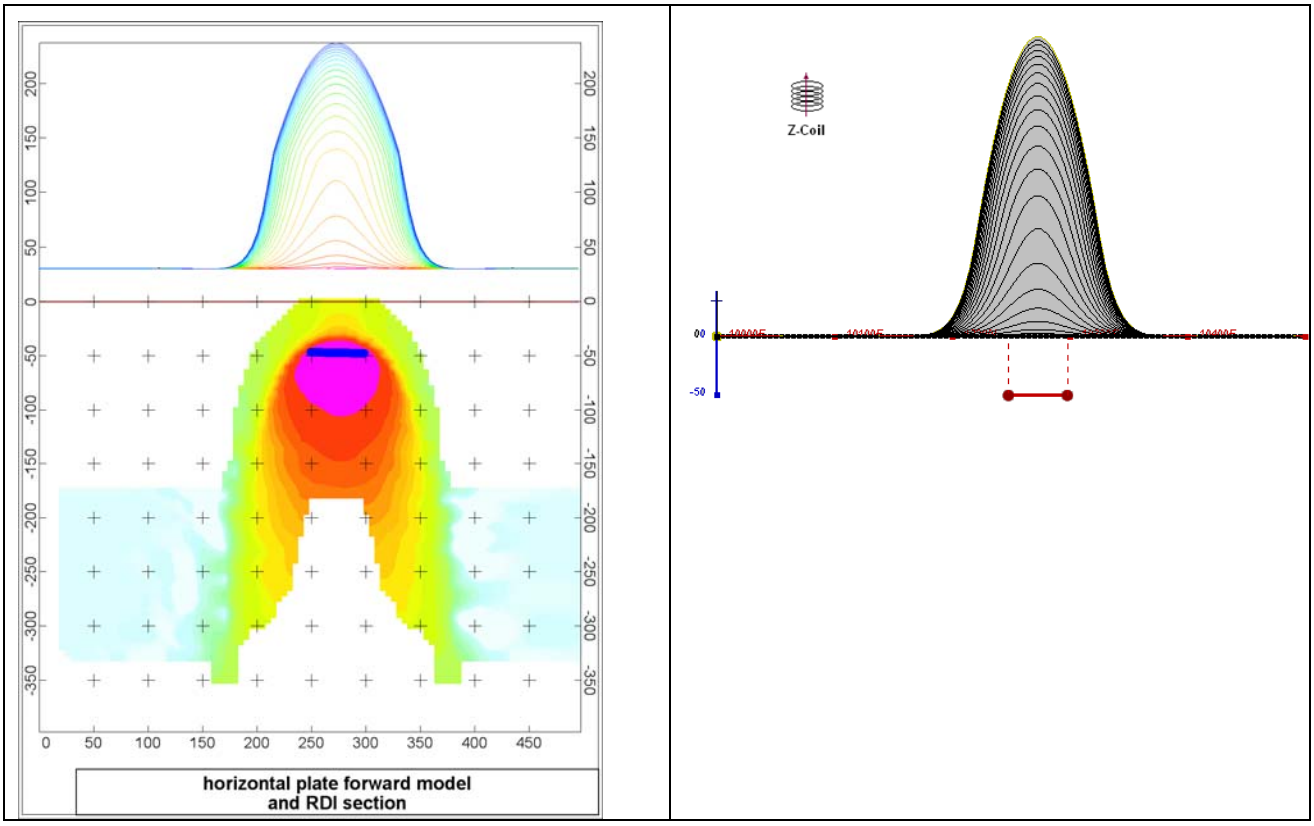


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

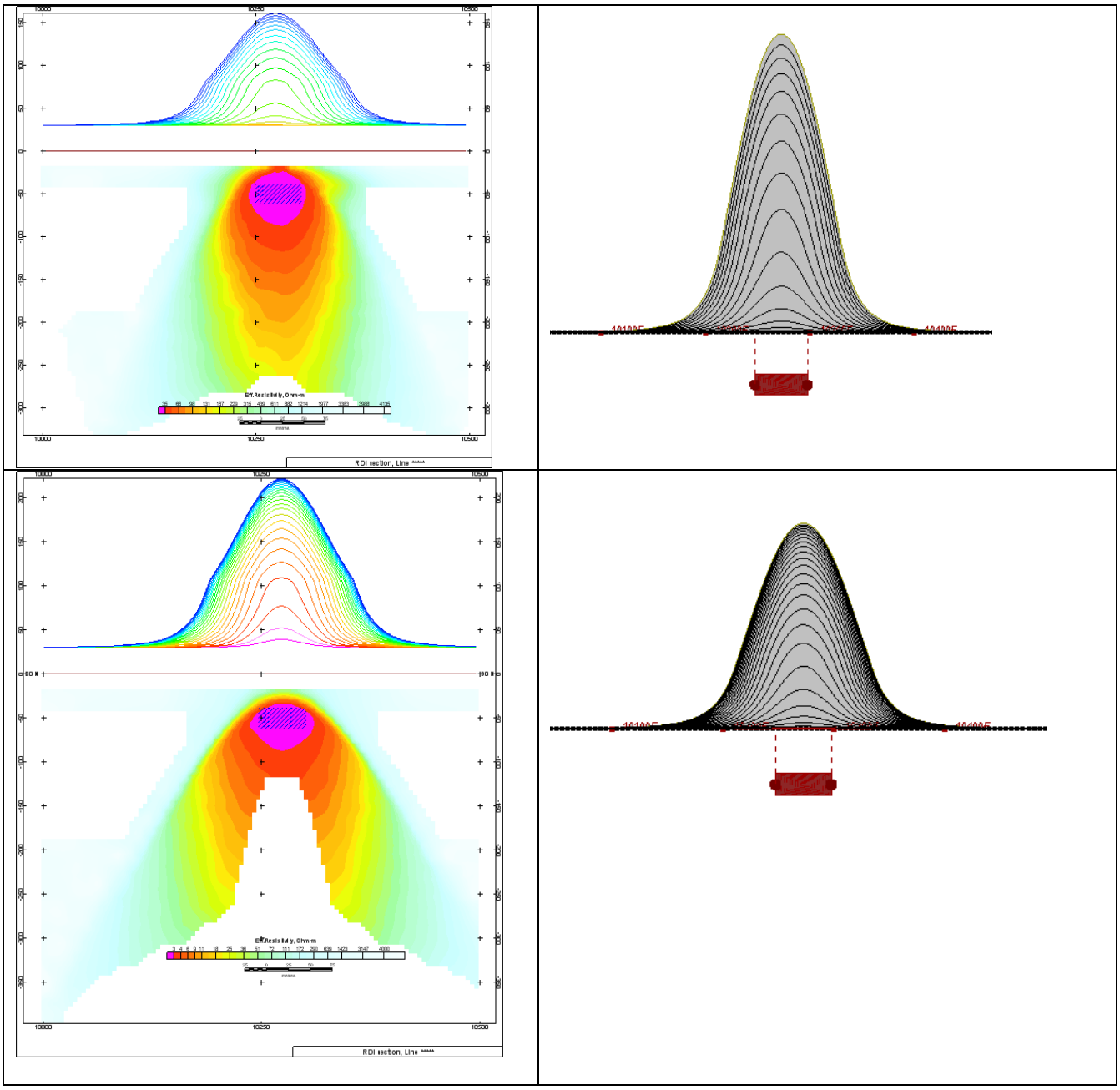


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

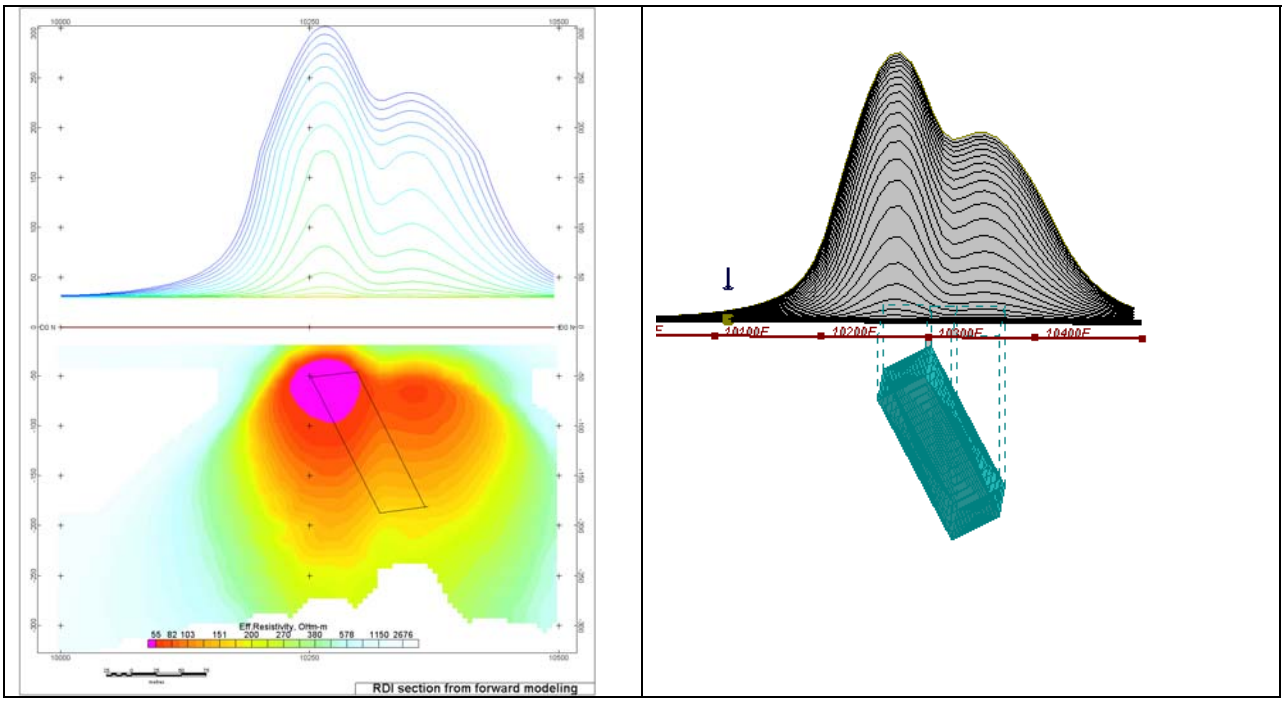


Figure G-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

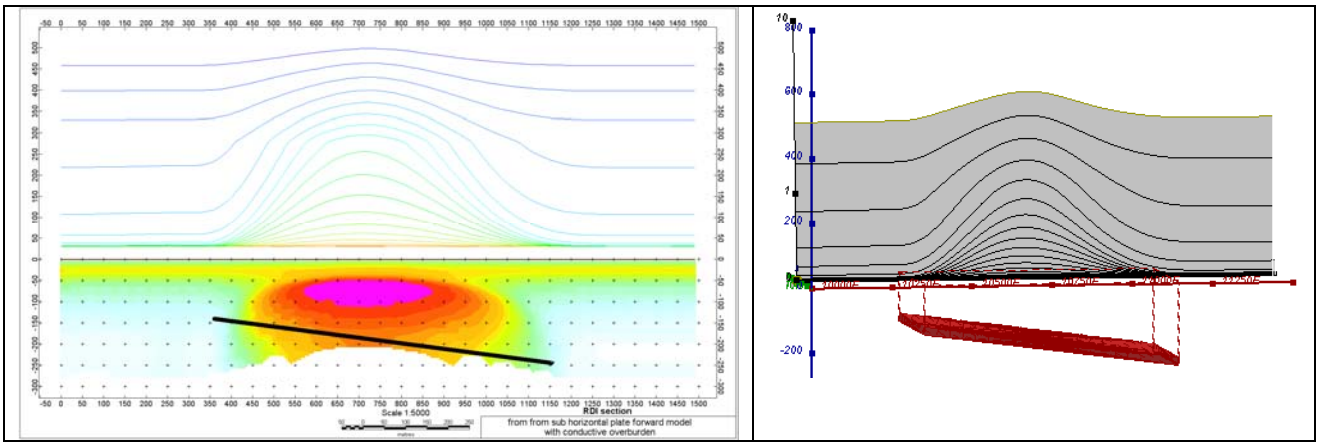


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

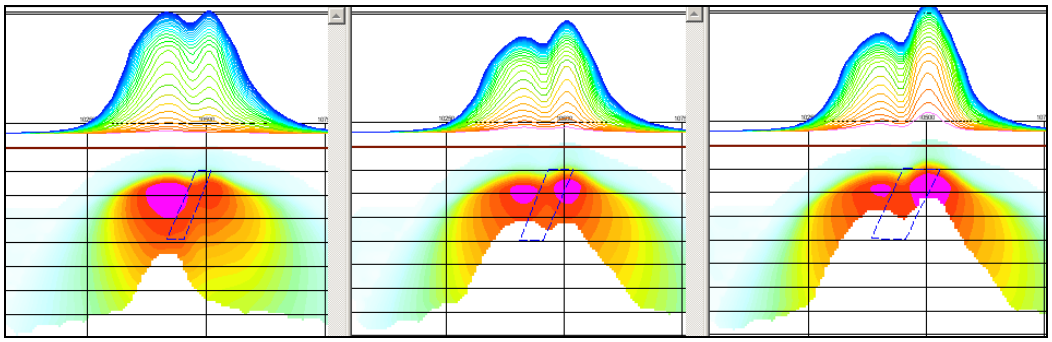


Figure F-9: Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

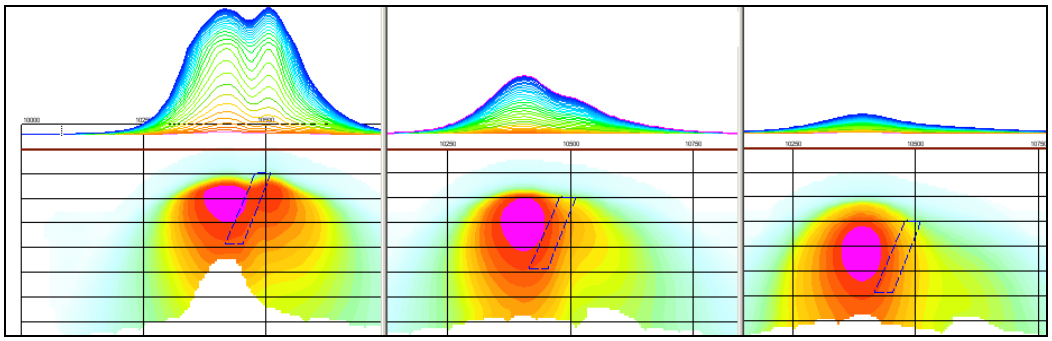


Figure F-10: Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m),, conductivity 2.5 S/m.

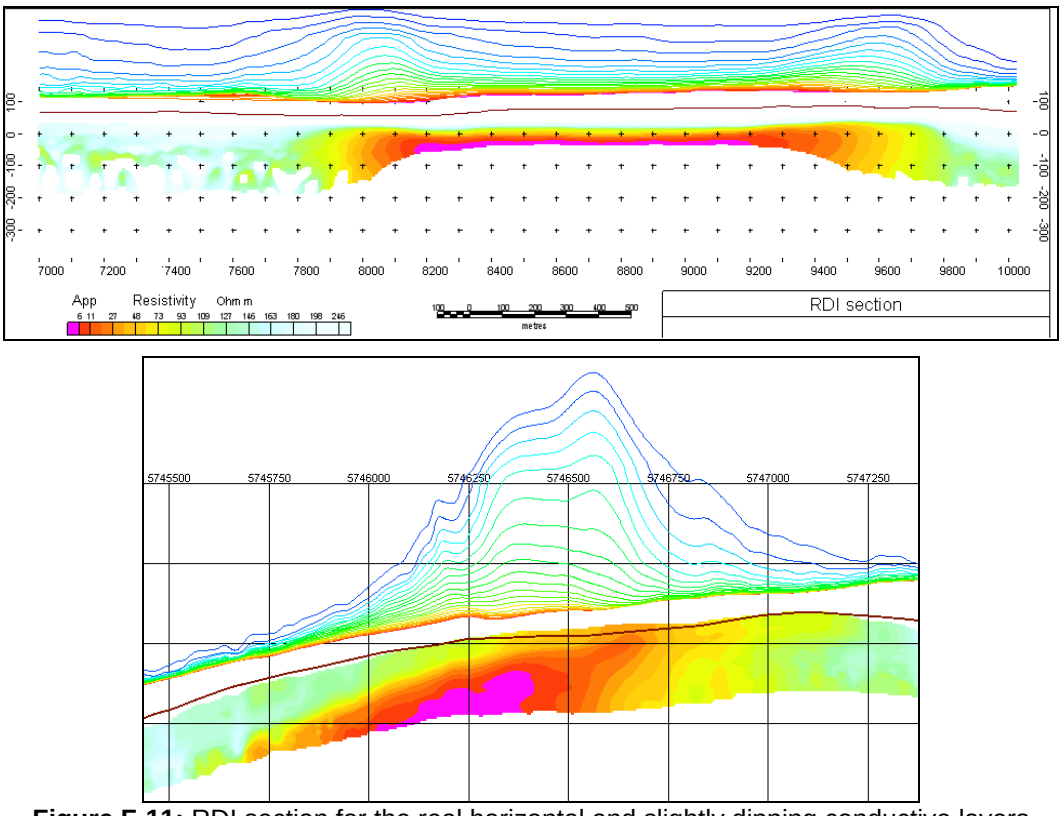
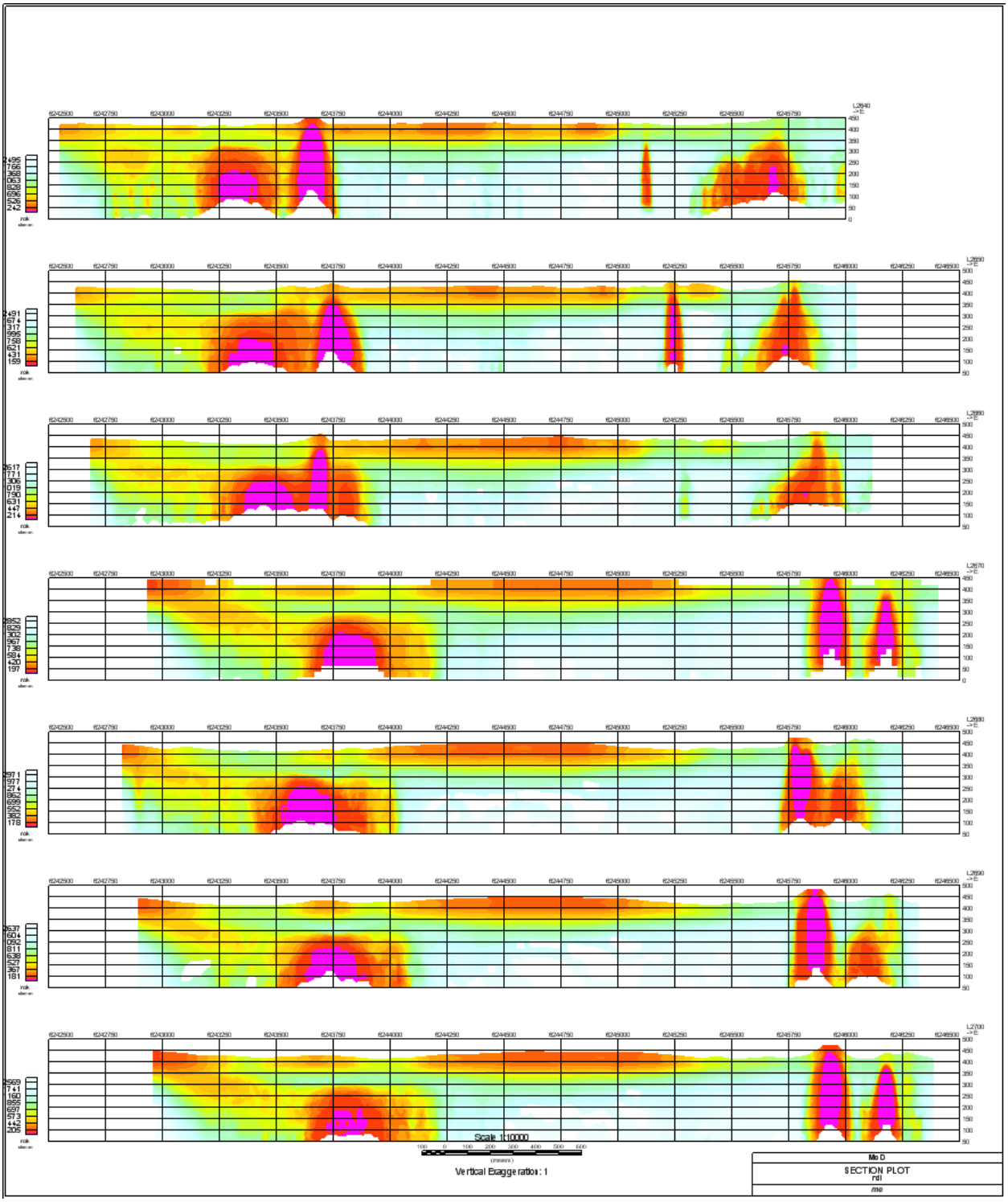


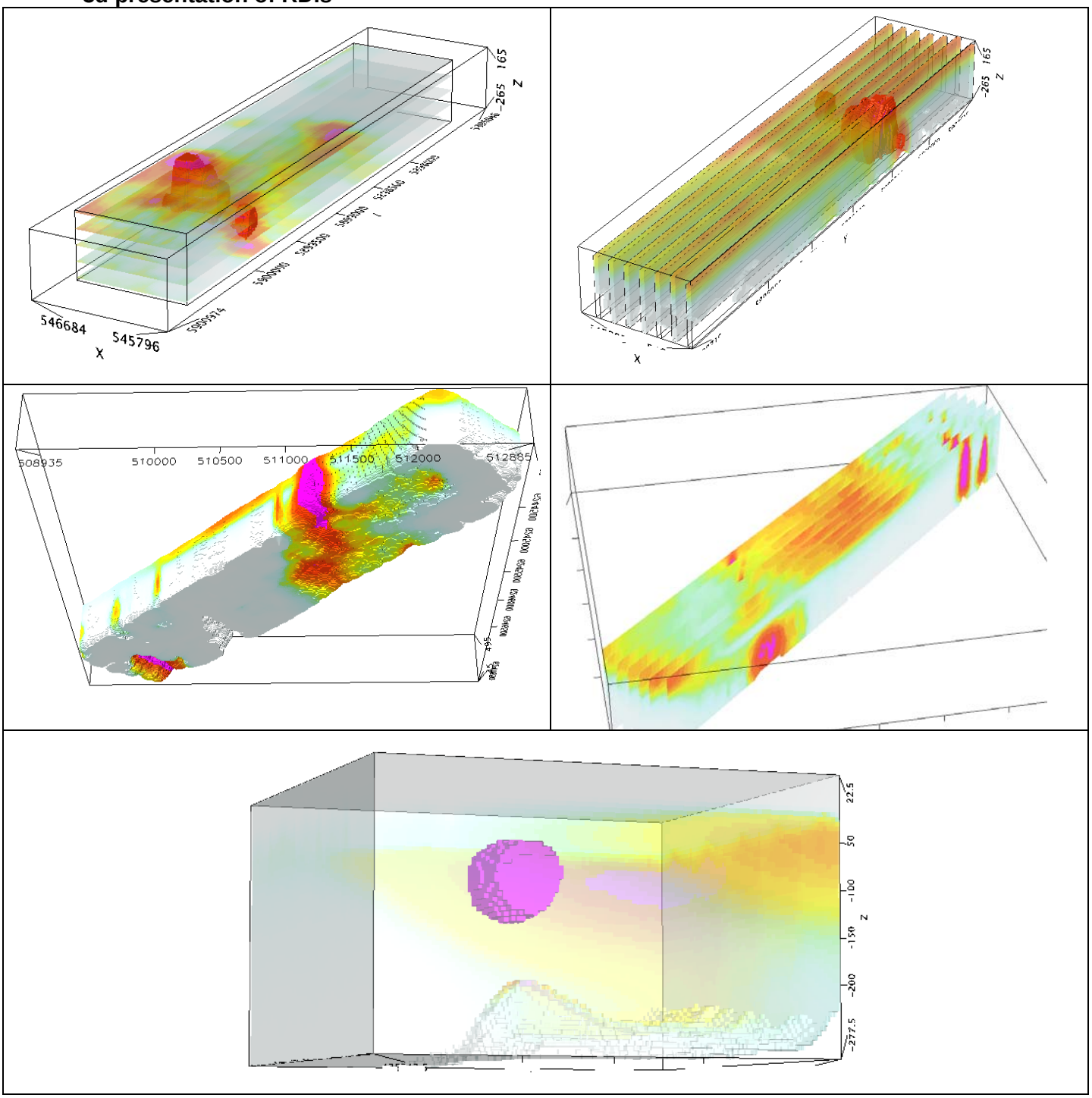
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers

FORMS OF RDI PRESENTATION

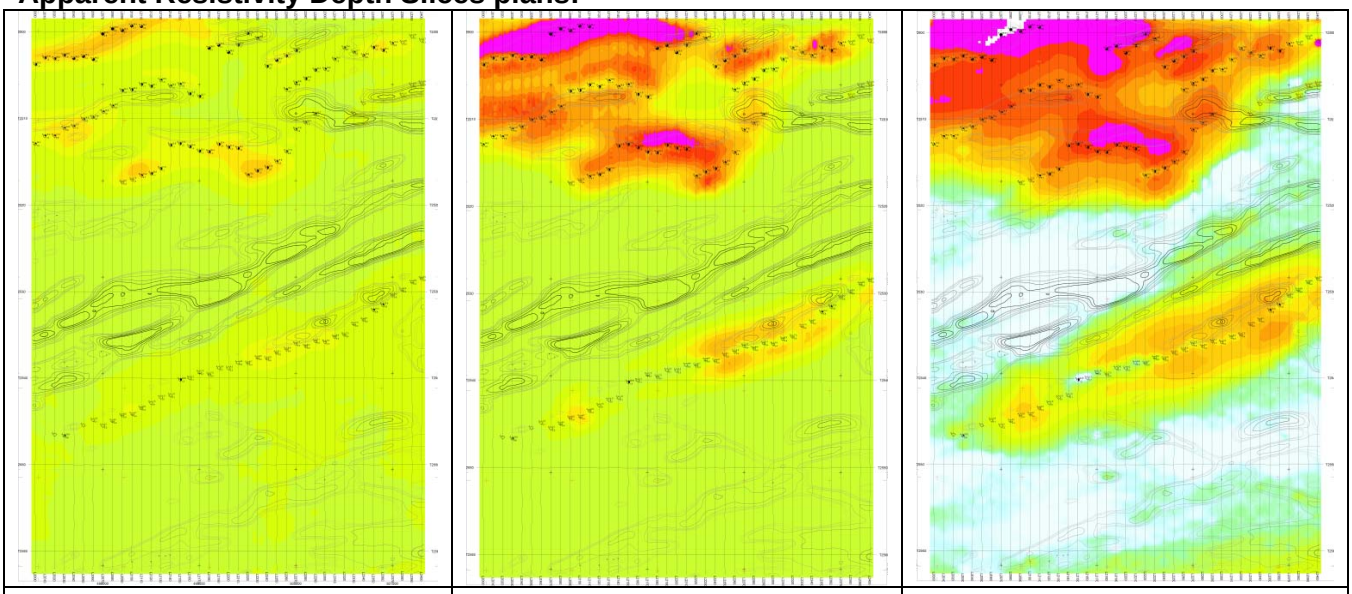
Presentation of series of lines



3d presentation of RDIs

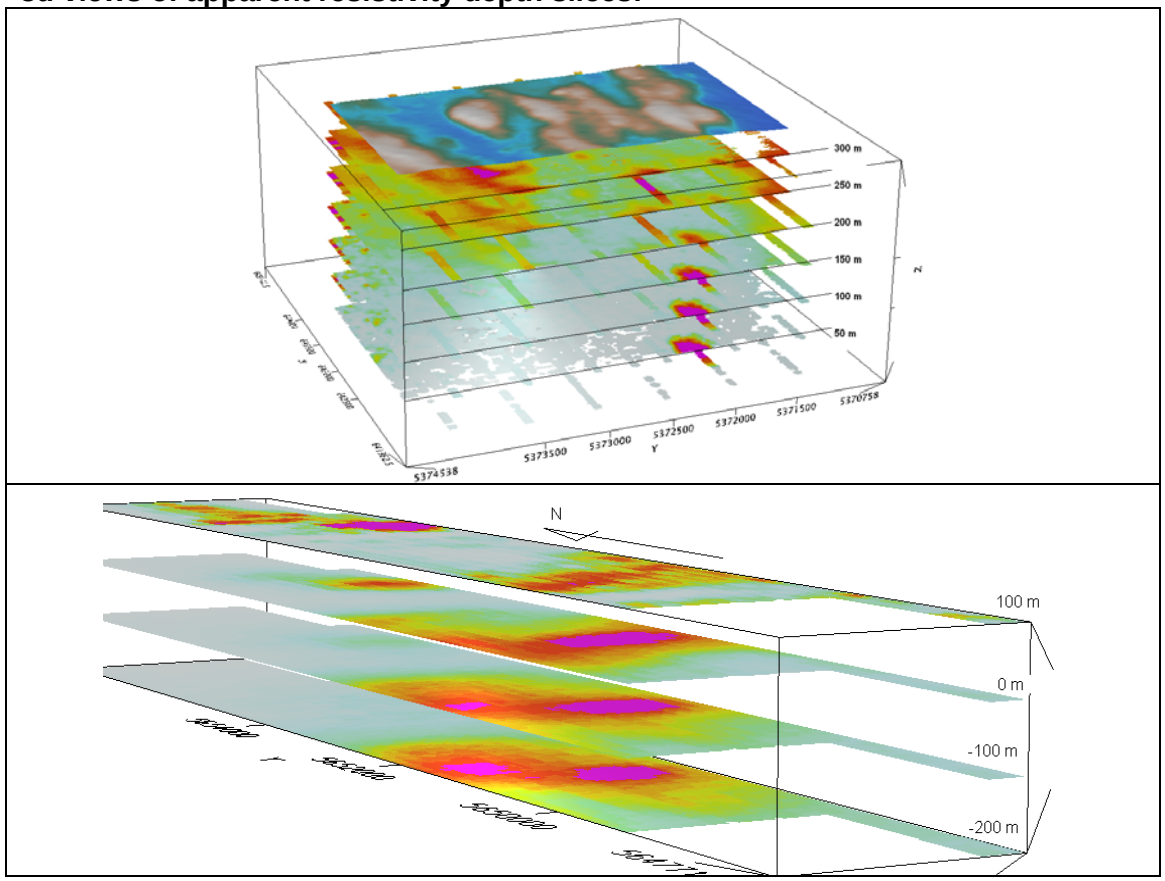


Apparent Resistivity Depth Slices plans:



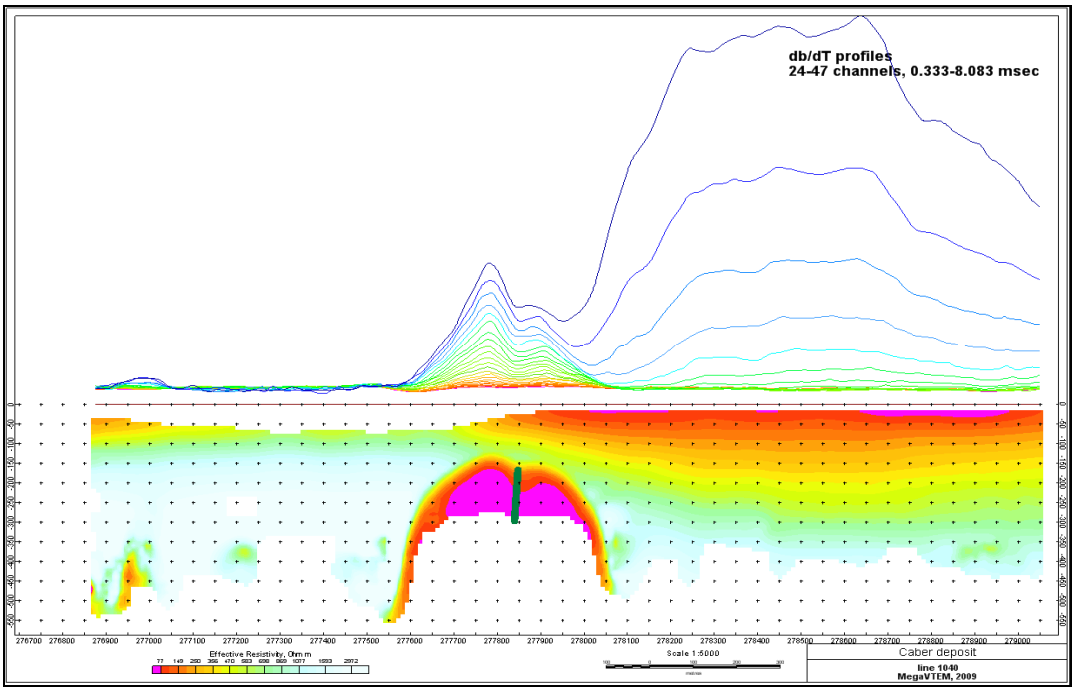
0 m (surface)	-100 m	-200 m

3d views of apparent resistivity depth slices:

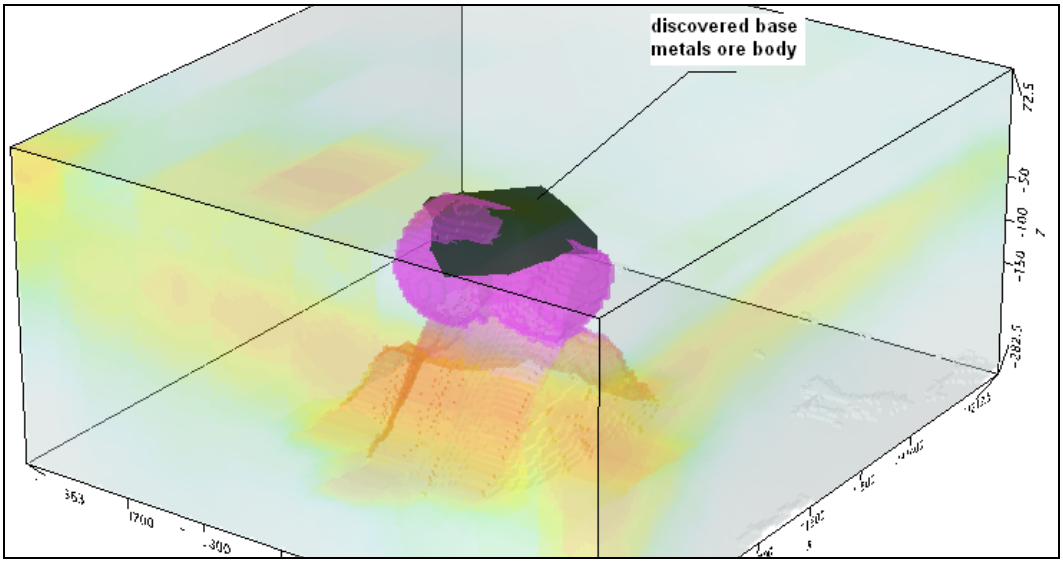


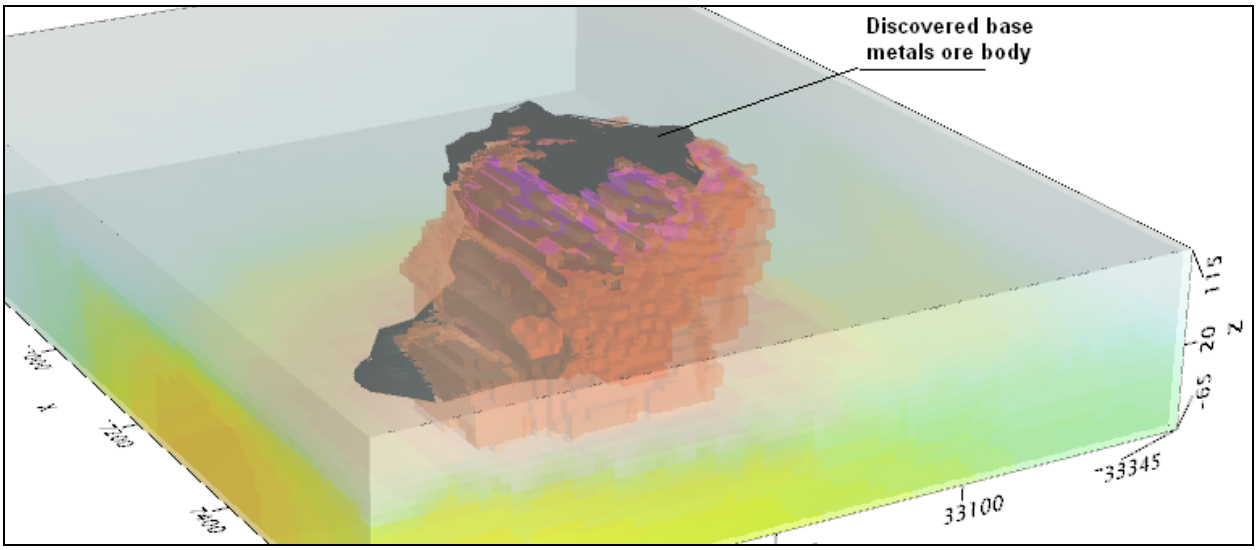
Real base metal targets in comparison with RDIs:

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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April 2011

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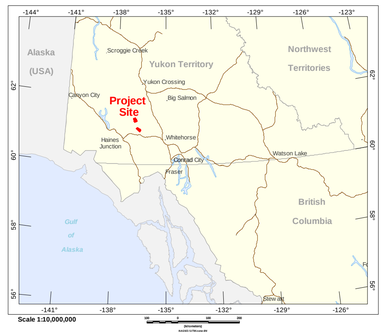

SURVEY SPECIFICATIONS:

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- Aircraft: Aerospatiale A-Star 350 B3 (C-GTEQ)
- Nominal Survey Line Spacing: 100 Meters
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- Geotech Time Domain Electromagnetic System (VTEM)
- Concentric Rx/Tx Geometry
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- Dipole Moment: 253,016 nIA
- Transmitter Wave Form: Trapezoid, Pulse Width 3.40 ms.
- Geometrics High Sensitivity Cesium Magnetometer
- Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

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- Projection: Universal Transverse Mercator
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- Central Scale Factor: 0.9996
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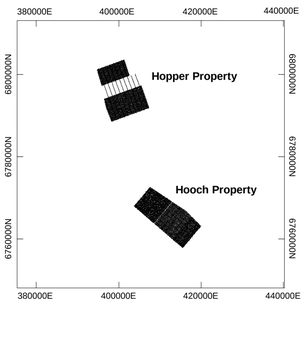
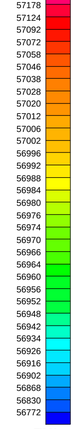
- Major Axis: 6378137.000
- Eccentricity: 0.081819191
- NTS: 115H01, 115H02, 115H07, 115A15 & 115H16





TMI Contour Intervals:

- 10 nT
- 50 nT
- 250 nT

TOPOGRAPHIC LEGEND:

- Roads
- Power Line
- Streams / Rivers
- Contours
- Lakes / Ponds
- Wetlands
- Mining Claims

Scale 1:20000

250 0 250 500 750 1000

(meters)

NAD83 / UTM zone 8N

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Bonaparte Resources Inc.
Hopper Property
Haines Junction, Yukon Territory

Geotech VTEM System

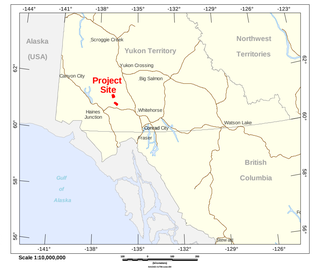
Total Magnetic Intensity (TMI)

Flown and processed by Geotech Ltd.
245 Industrial Parkway North,
Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

January 2012

Geotech Project # 11354

GEOTECH LTD.



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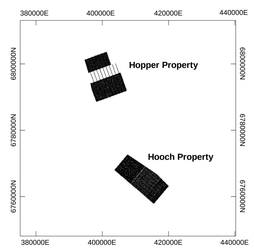

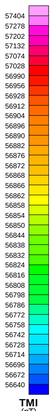

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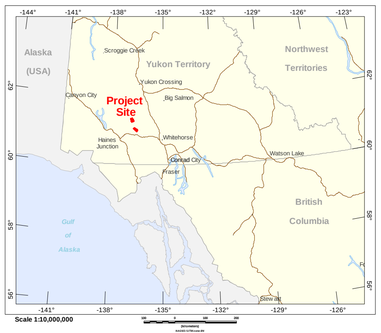

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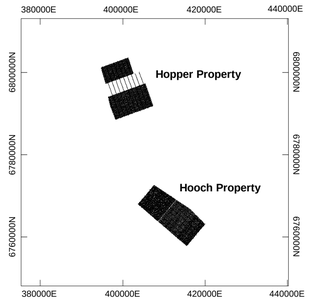

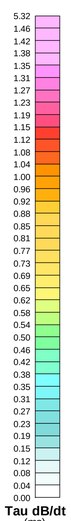

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Geotech VTEM System

dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

Flown and processed by Geotech Ltd.
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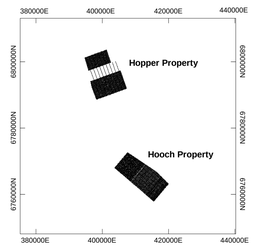

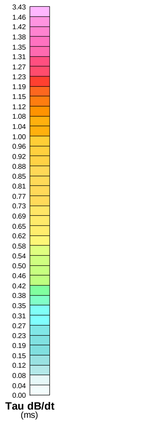

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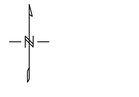

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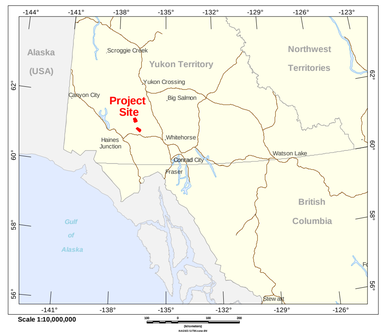

SURVEY SPECIFICATIONS:

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- Nominal Tie Line Spacing: 1000 Meters
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- Dipole Moment: 253,016 nIA
- Transmitter Wave Form: Trapezoid, Pulse Width 3.40 ms.
- Geometrics High Sensitivity Cesium Magnetometer
- Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

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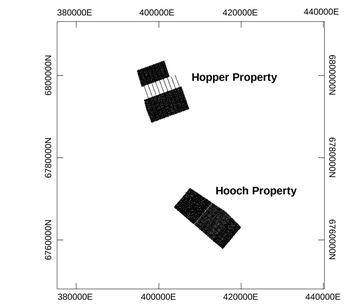
- Projection: Universal Transverse Mercator
- Central Meridian: 135°W (Zone 8)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m
- Major Axis: 6378137.000
- Eccentricity: 0.081819191
- NTS: 115H01, 115H02, 115H07, 115A15 & 115H16



Profiles scale 1 mm = 0.02 (pV/A*m^4)

Linear between +/-0.05 (pV/A*m^4)
logarithmic above 0.05 (pV/A*m^4)

	0.220 ms
	0.253 ms
	0.290 ms
	0.333 ms
	0.383 ms
	0.440 ms
	0.505 ms
	0.580 ms
	0.667 ms
	0.766 ms
	0.880 ms
	1.010 ms
	1.161 ms
	1.333 ms
	1.531 ms
	1.760 ms
	2.021 ms
	2.323 ms
	2.667 ms
	3.063 ms
	3.521 ms
	4.042 ms
	4.641 ms
	5.333 ms
	6.125 ms
	7.036 ms

GEOLOGY LEGEND:

- Quartz monzonite/granite/aplite/pegmatite
- Mudstone/sandstone/conglomerate
- Marble
- Granodiorite/quartz monzonite/quartz diorite
- Bi-ms-qt-fp-schist/gt-quartzite/cl-bi-orthogneiss
- Silt/sand/gravel

TOPOGRAPHIC LEGEND:

- Roads
- Power Line
- Streams / Rivers
- Contours
- Lakes / Ponds
- Wetlands
- Mining Claims

Scale 1:20000

250 0 250 500 750 1000

(meters)

NAD83 / UTM zone 8N

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Bonaparte Resources Inc.
Hopper Property
Haines Junction, Yukon Territory

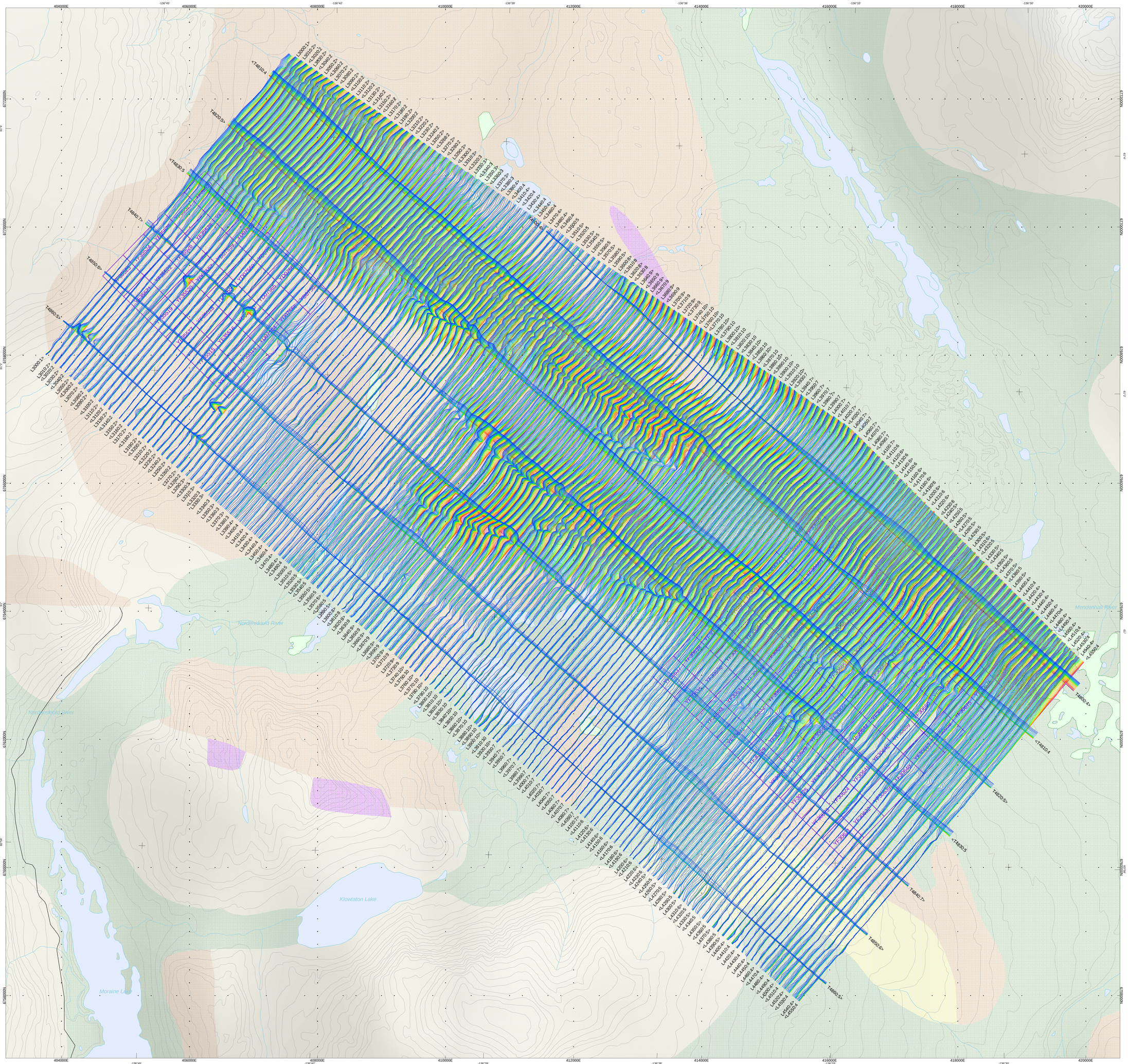
Geotech VTEM System

VTEM dB/dt Z Component Profiles
Time Gate 0.220 - 7.036 ms
over Geology

Flown and processed by Geotech Ltd.
245 Industrial Parkway North,
Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

January 2012

Geotech Project # 11354



GEOTECH LTD.

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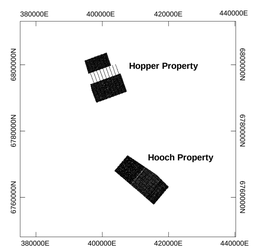

Profiles scale 1 mm = 0.015 (pV/A*m^4)

Linear between +/-0.05 (pV/A*m^4)
logarithmic above 0.05 (pV/A*m^4)

- 0.220 ms
- 0.253 ms
- 0.290 ms
- 0.333 ms
- 0.383 ms
- 0.440 ms
- 0.505 ms
- 0.580 ms
- 0.667 ms
- 0.766 ms
- 0.880 ms
- 1.010 ms
- 1.161 ms
- 1.333 ms
- 1.531 ms
- 1.760 ms
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- 4.641 ms
- 5.333 ms
- 6.125 ms
- 7.036 ms

GEOLOGY LEGEND:

- orthogneiss
- Marble
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TOPOGRAPHIC LEGEND:

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- Lakes / Ponds
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- Mining Claims

N

Scale 1:20000

250 0 250 500 750 1000 (meters)

NAD83 / UTM zone 8N

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January 2012

Geotech Project # 11354

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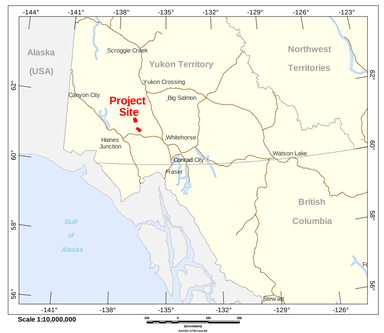

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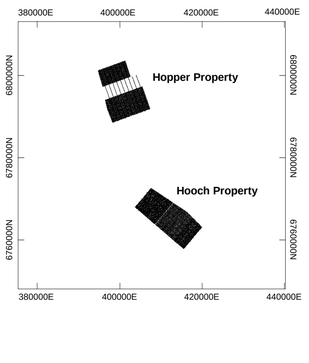

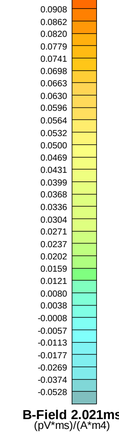

B-Field 2.021ms
(pV*ms)/(A*m4)

TOPOGRAPHIC LEGEND:

- Roads
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Scale 1:20000

250 0 250 500 750 1000
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Hopper Property
Haines Junction, Yukon Territory

Geotech VTEM System

VTEM B-Field Z Component
Channel 36, Time Gate 2.021 ms

Flown and processed by Geotech Ltd.
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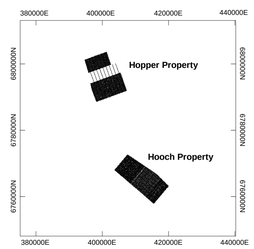

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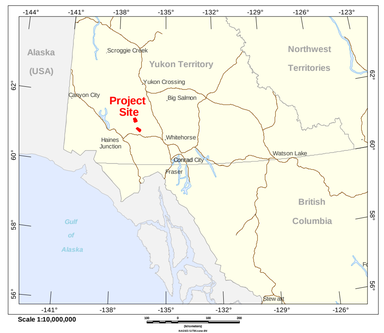

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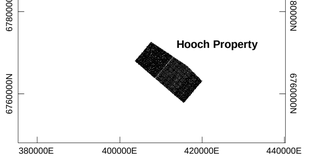

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Linear between +/-0.05 (pV*ms)/(A*m^4)
logarithmic above 0.05 (pV*ms)/(A*m^4)

0.220 ms (B-field)	57562
0.253 ms (B-field)	57386
0.290 ms (B-field)	57292
0.333 ms (B-field)	57230
0.383 ms (B-field)	57178
0.440 ms (B-field)	57124
0.505 ms (B-field)	57092
0.580 ms (B-field)	57072
0.667 ms (B-field)	57058
0.766 ms (B-field)	57046
0.880 ms (B-field)	57038
1.010 ms (B-field)	57028
1.161 ms (B-field)	57020
1.333 ms (B-field)	57012
1.531 ms (B-field)	57006
1.760 ms (B-field)	57002
2.021 ms (B-field)	56996
2.323 ms (B-field)	56992
2.667 ms (B-field)	56988
3.063 ms (B-field)	56984
3.521 ms (B-field)	56980
4.042 ms (B-field)	56976
4.641 ms (B-field)	56974
5.333 ms (B-field)	56970
6.125 ms (B-field)	56966
7.036 ms (B-field)	56964
	56960
	56956
	56952
	56948
	56942
	56934
	56926
	56916
	56902
	56868
	56830
	56772

TMI
(nT)

TOPOGRAPHIC LEGEND:

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Scale 1:20000

250 0 250 500 750 1000
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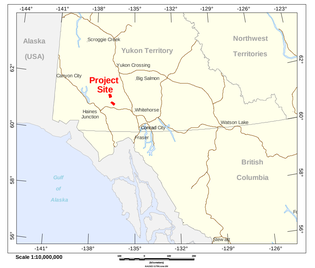

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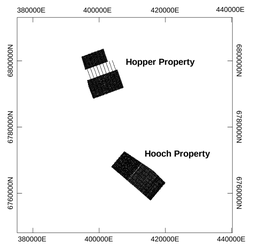

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Linear between +/-0.05 (pV*ms)/(A*m^4)
logarithmic above 0.05 (pV*ms)/(A*m^4)

0.220 ms (B-field)	57404
0.253 ms (B-field)	57278
0.290 ms (B-field)	57202
0.333 ms (B-field)	57132
0.383 ms (B-field)	57074
0.440 ms (B-field)	57028
0.505 ms (B-field)	56990
0.580 ms (B-field)	56956
0.667 ms (B-field)	56928
0.766 ms (B-field)	56912
0.880 ms (B-field)	56904
1.010 ms (B-field)	56896
1.161 ms (B-field)	56890
1.333 ms (B-field)	56882
1.531 ms (B-field)	56876
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3.521 ms (B-field)	56854
4.042 ms (B-field)	56850
4.641 ms (B-field)	56844
5.333 ms (B-field)	56838
6.125 ms (B-field)	56832
7.036 ms (B-field)	56824
	56816
	56808
	56798
	56786
	56772
	56758
	56742
	56728
	56714
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	56640

TMI
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250 0 250 500 750 1000
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January 2012

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096043

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
1016 – 510 West Hastings Street
Vancouver, B.C. V6B 1L8
Telephone: 604-688-2568 Fax: 604-688-2578

AFFIDAVIT

I, Joan Mariacher, of Vancouver, B.C. make oath and say:

That to the best of my knowledge the attached Statement of Expenditures for exploration work on the Moraine 1-72 mineral claims on claim sheets 115A/15 and 115H/1 and 2 is accurate.

Joan Mariacher

Sworn before me at Vancouver, B.C.

this 16th day of February 2012.

Barrister & Solicitor

IAN J. TALBOT
Barrister & Solicitor
281 East 5th Street
North Vancouver
British Columbia
Canada V7L 1L8

096043

Statement of Expenditures
Moraine 1-72 Mineral Claims
February 14, 2012

Contract VTEM Survey

Geotech Ltd.	$139,481.51