ASSESSMENT REPORT
HAV PROPERTY – YUKON TERRITORY, CANADA

63°17’35” N, 139°01’38” W, Dawson Mining District

Prepared for:
EUREKA RESOURCES INC.

Prepared by:

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ASSESSMENT REPORT, 2017 AIRBORNE SURVEY
HAV PROPERTY – YUKON TERRITORY, CANADA

HAV 1-18, YE32475 – YE32492; HAV 19-36, YE32450 – YE32467;
HAV 37-54, YE32532 – YE32549; HAV 55-70, YE32414 – YE32429

Dawson Mining District, Yukon Territory, Canada
NTS: 115O06, 115O07

63°17’35” N, 139°01’38” W
UTM (NAD 83): 598910, 7019770, Zone 7

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1. EXECUTIVE SUMMARY

In May of 2017, Eureka Resources Inc. (Eureka) commissioned a combined "Airborne Inductively Induced Polarization" (AIIP) and an airborne total field magnetic survey (VTEM) across the Hav property. The survey was conducted by Geotech Ltd. and supervised by Aurora Geosciences Ltd. of Whitehorse, Yukon. The VTEM survey was designed to test for shallow conductive features and delineate the magnetic signature of the bedrock underlying the property.

In December of 2016, Eureka entered into an agreement to acquire a 100% interest in these properties from two vendors, Panarc Resources Ltd. and Heli Dynamics Ltd. The Hav property consists of 70 Yukon quartz mining claims covering 1,470 hectares, centered 86 kilometres southeast of Dawson City, Yukon. Although access is currently by helicopter, the northeastern corner of the property is located about 2.0 km west of the Maisy May Creek Road, seasonally accessible from the North Klondike Highway near Dawson City.

The HAV property is located within the Yukon-Tanana Terrane (YTT), a major accreted terrane comprised of variably metamorphosed, highly deformed intrusive, volcanic and sedimentary rocks primarily Neoproterozoic to late Paleozoic age, but includes significant Mesozoic- aged assemblages. The regional and property stratigraphy trends NNW – SSE. The central area of the property is underlain by a north-south trending unit of Proterozoic to Devonian-aged Nasina Series, "Snowcap Assemblage" carbonates, and flanked on both sides by Mississippian "Simpson Assemblage" metagranites to granodiorites. A small late Triassic to early Jurassic granodioritic "Minto Suite" stock has intruded older rocks in the extreme northwest property corner. The property is located within "Beringia", an area covering west-central Yukon and most of central Alaska unaffected by Pleistocene glaciation.

The main deposit setting is that of "Orogenic Gold" which is characterized by sizable auriferous quartz veins, potentially to 1.0 km in length and multiple metres in width. The orogenic setting has no evidence of intrusive activity, such as hornfels aureoles or contact metamorphic minerals; hence, "intrusion-related" mineralization is absent. Rather, the structural conduits are district-scale "crustal" faults that allow for hydrothermal fluid movement from a typically deep-seated source. Hard-rock gold mineralization in the Klondike area is considered to be of orogenic origin. An alternate "Intrusion-related gold" setting is possible at the HAV property which would include vein, stringer or stockwork lode mineralization, skarn and "Fort-Knox"-style mineralization.

Three sets of geophysical plots were provided by Geotech Ltd: "Early-Time Gate" and "Mid-Time Gate" EM plots and a Total Field Magnetic Intensity (TMI) plot. The Early-Time Gate plot reveals the presence of an arcuate feature possibly representing the contact aureole of a subsurface intrusion. This plot also delineates a Mesozoic aged stock in the northwest property corner, as well as a NW-SE trending conductive feature within a carbonate unit. The Mid-Time Gate plot indicates a possible NW-SE trending lineation in the northeastern property area. Both electromagnetic plots delineate the main lithological contacts with fair accuracy; the flanking units of Simpson Assemblage meta-intrusive rocks have a stronger conductive signature than the central Snowcap Assemblage carbonate unit. The TMI plot indicates a potential intrusion near, but not coincident with, the arcuate feature from the Early Time Gate plot and also marks the Mesozoic stock to the northwest.

Recommendations for further work include property-wide ridge-and-spur and contour soil geochemical sampling, systematic silt sampling along significant drainages, detailed geological mapping and prospecting. The recommended 10-day program includes mobilization and de-mobilization and is estimated to cost $59,343.

2. INTRODUCTION

Between May 6 and May 17, 2017, Eureka Resources Inc. (Eureka) commissioned a combined "Airborne Inductively Induced Polarization" (AIIP) and total field magnetic survey across the Hav property The Hav property is centered 86 km southeast of Dawson City, Yukon, and is located south of the main Klondike placer mining district extending southeast of Dawson City. Aurora Geosciences Ltd. of Whitehorse, Yukon, was retained as primary contractor, who retained Geotech Ltd. of the Town of Aurora, Ontario, Canada to conduct the survey.

2.1 Terms of Reference

The author has been requested to write this report using the following terms of reference:

a) To review and compile all available data obtained by Eureka during its 2017 airborne geophysical surveying program,

b) To submit an Assessment Report to the Dawson Mining Recorder, Ministry of Energy, Mines and Resources, Government of Yukon.

2.2 Terms, Definitions and Units

All costs contained in this report are in Canadian dollars (CDN$). Distances are reported in centimetres (cm), metres (m) and km (kilometres). The term "GPS" refers to "Global Positioning System" with co-ordinates reported in UTM NAD 83 projection, Zone 7. "Minfile Occurrence" refers to documented mineral occurrences on file with the Yukon Minfile, Department of Energy, Mines and Resources, Government of Yukon.

"Mag" and "EM" refer to "Magnetic" and "Electromagnetic" methods respectively of geophysical surveying. "IP" is an abbreviation for Induced Polarization surveying. "AIIP" stands for "Airborne Inductively Induced Polarization" study.

"Ma" refers to million years. "QAQC" refers to "Quality Assurance/ Quality Control".

The term "g/t" stands for grams per metric tonne. The term "ppm" stands for "parts per million, and "ppb" for "parts per billion". ICP-AES stands for "Inductively coupled plasma mass spectroscopy", and AA stands for "atomic absorption".

"CEO" stands for Chief Executive Officer. "NI 43-101" stands for National Instrument 43-101. Elemental abbreviations used in this report are:

Au: Gold
Ag: Silver
As: Arsenic
Pb: Lead
Sb: Antimony
Zn: Zinc

2.3 Sources of Information

Information on claim tenure, including adjacent properties, and regional geology was provided by the "Yukon Mapmaker Online" website of the Yukon Geology Survey at http://mapservices.gov.yk.ca/YGS/Load.htm. Information on regional geology was provided by the "Yukon Bedrock Geology" website and by the "YGS Mapmaker Online" website, both available at http://www.geology.gov.yk.ca/Web_map_gallery.html. Yukon "Minfile" information was provided by the "Yukon Mineral Occurrence" finder of the Yukon Geological Survey at http://yukon2.maps.arcgis.com.

3. PROPERTY DESCRIPTION AND LOCATION

3.1 Property Description

The Hav property comprises 70 Yukon quartz mining claims covering 1,470 hectares (3,631 acres). The property is geographically centered at 63°17'35" N, 139°01'38" W (UTM NAD 83 coordinates 598910, 7019770, Zone 7), along a ridgeline west of Maisy May Road 86 km south of Dawson City, Yukon. Placer claims in good standing cover the entire extent of Maisy May Creek and Patton Creek, a "left" tributary directly north of the property. Active and recently active placer workings extend along much of the linear Maisy May Creek watercourse and to areas east of the property. Although no all-season access roads extend on to the property, the property is centered roughly four kilometres southwest of the main Maisy May Creek access road.

Table 1 shows the claim status of the HAV 1-70 block as of Nov 23, 2017.

Table 1: Claim Status, HAV claim block

Claim Names	Grant No's	Expiry Date
HAV 1-18	YE32475 – YE32492	10-Jun-21
HAV 19-36	YE32450 – YE32467	10-Jun-21
HAV 37	YE32532	10-Jun-21
HAV 38	YE32533	10-Jun-22
HAV 39	YE32534	10-Jun-21
HAV 40	YE32535	10-Jun-22
HAV 41	YE32536	10-Jun-21
HAV 42	YE32537	10-Jun-22
HAV 43-54	YE32538 – YE32549	10-Jun-21
HAV 55-70	YE32414 – YE32429	10-Jun-22

There are no current exploration permits for hard rock exploration on the property. Activities allowed under a "Class 1" exploration permit comprise rock, soil and silt geochemical sampling, geological mapping, trenching (to a limit of 400 m^3 per claim), temporary trail construction (to a maximum of 3.0 km) and a maximum of 250 person-days in camp. The initial work did not require a land use permit but "Class 1 Notification", involving a formal application and waiting time of 25 days with possibility for extension, may be required by late February, 2018.

A gradation of permits, for Class 2 through Class 4 activities, is required for more significant programs like diamond drilling and reverse-circulation programs having a footprint exceeding Class 1 limits. Larger exploration programs require a "Class 3 Permit", valid for five years and acquired through the local Mining Recorder, Department of Energy, Mines and Resources (EMR), Government of Yukon.

Class 3 permit activities allow for sizable diamond drilling programs (dependent upon the number of clearings per claim), up to 5,000 m^3 of trenching per claim per year, the establishment of up to 15 km of new roads and 40 km of new trails, and up to a total of 200,000 tonnes of underground excavation work covering the duration of the exploration program. A "Yukon Water License" is required if water usage exceeds 300m^3/day. Additional licenses may be required for "Disposal of Special Waste", as well as a "Consolidated Environmental Act Permit" for proper disposal of camp waste and ash resulting from incineration, etc. A "Fuel Spill Contingency Plan" will also be required.

All applications for Class 2 through Class 4 require review by the Yukon Environmental and Socioeconomic Board (YESAB). YESAB will provide recommendations on whether the project may proceed, may proceed with modifications, or is not allowed to proceed. Following submission by YESAB, a Decision Body will determine whether to accept, reject or modify the recommendations, and whether a permit will be awarded and specific conditions applied.

The HAV property is located within Crown Land in the traditional territory of the Tr'ondek Hwech'in First Nation (THFN).

3.2 Land Tenure and Underlying Agreements

The Hav property is one of three Eureka claim blocks comprising the Luxor project, which also includes the Ophir and Sheba properties. In December of 2016, Eureka entered into an agreement to acquire a 100% interest in these properties from two vendors: Panarc Resources Ltd. (50%) and Heli Dynamics Ltd. (50%). The vendors will receive a total of 2,500,000 shares, released as 833,333 shares on the 6, 12 and 18-month anniversaries of the closing date. The vendors also retain a 2% Net Smelter return (NSR) royalty, which Eureka may purchase for CDN$1,000,000.

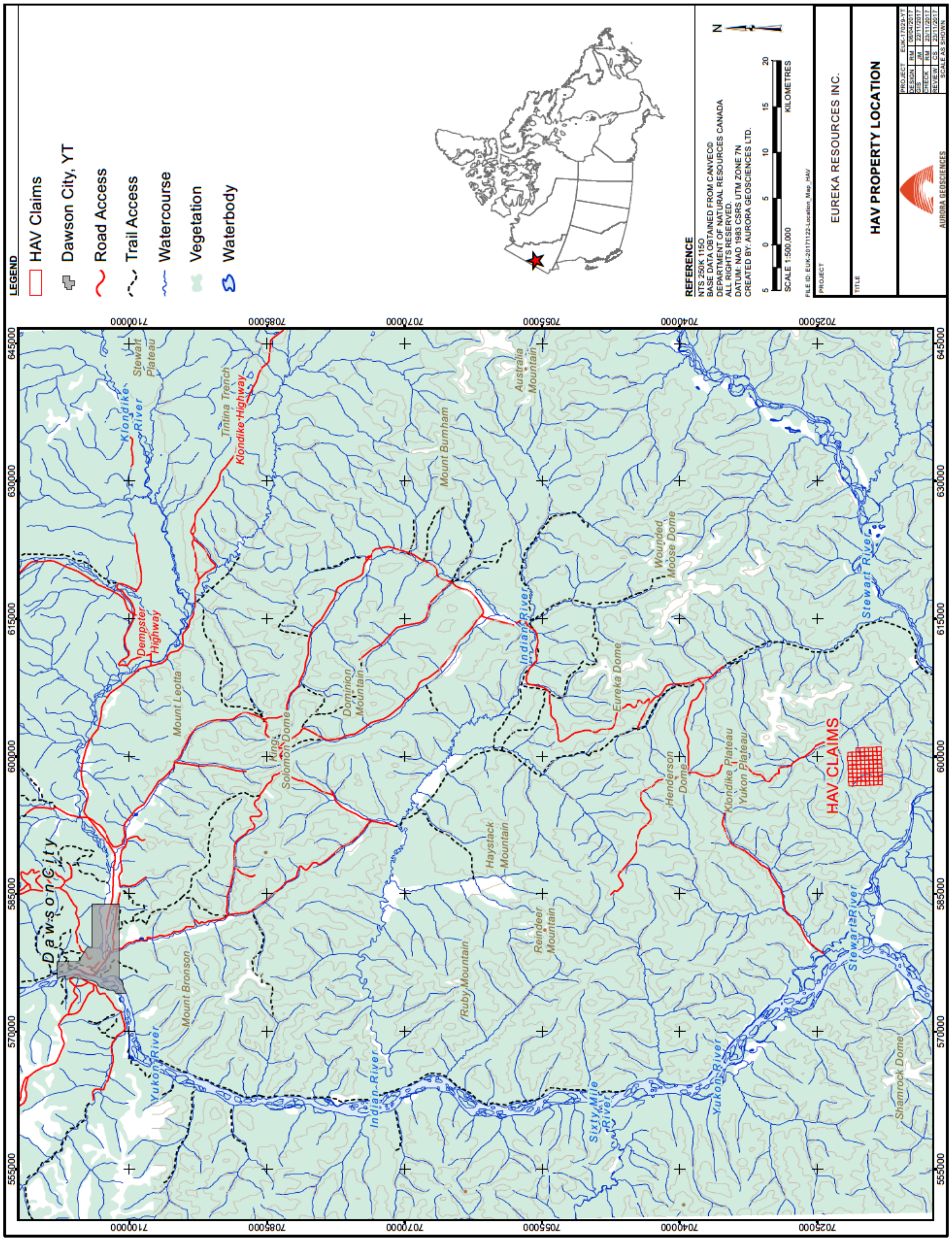

Figure 1: Hav Property Location Map

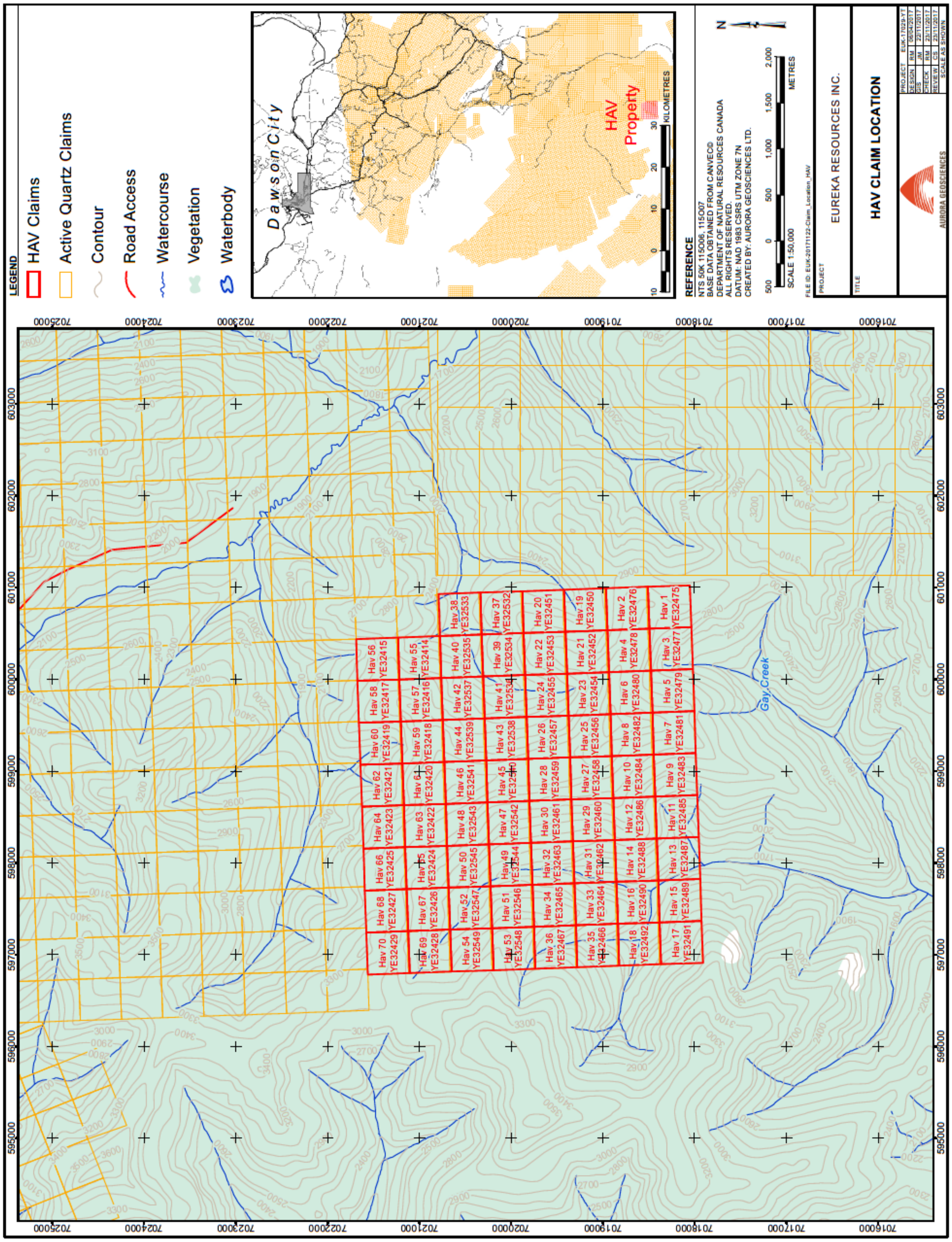

Figure 2: Hav Property Claim Map

4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Hav property is centered 86 km south of Dawson City, Yukon. Although there is no direct road access, the northeast corner of the property is located about 2.0 km from the Maisy May Road, a seasonally accessible placer mine access road extending along the east side of Maisy May Creek. The Maisy May Road extends south from the Henderson Creek Road which extends west from the upper reaches of Black Hills Creek road. The Black Hills Creek road extends southwest from the junction of the Dominion Creek and Sulphur Creek roads. All roads are maintained seasonally by private operators. The Dominion and Sulphur Creek roads are seasonally maintained by the Department of Highways and Public Works, Government of Yukon, and are accessible from mid-April to mid-October. Although Maisy May Creek is road-accessible, driving time in dry weather conditions averages 5-6 hours.

Note: Portions of the access roads, including parts of the Black Hills Creek road, may become refurbished and potentially accessible year-round, if Goldcorp Inc. commences construction of an access road extending from the North Klondike Highway near Dawson to the Coffee Property.

Access to the property is currently by helicopter from Dawson, with staging sites available along the Black Hills Creek road.

The terrain on the property is moderate to rugged, with fairly steep V-shaped valleys extending from a central ridgeline. In most areas, outcrop is scarce and confined mainly to stream valleys and ridgelines. Elevations range from 545 metres (1,790 feet) along a tributary of Gay Creek towards the southern boundary, to 1,010 metres (3,315 feet) along the main NNW – SSE extending ridgeline. The climate is continental subarctic, with short warm summers having daily highs commonly exceeding 20^{o}C, and long, cold winters with low temperatures averaging -25^{o} to -30^{o}C. Temperatures below -40^{o}C are not uncommon. North-facing slopes and some east-facing slopes are typically underlain by permafrost. Precipitation is light to moderate, although showers and thundershowers are common in summer. Maximum snowpack averages from 0.4 to 0.6m, depending on elevation. The field season is most commonly from late May to mid-September, highly dependent upon elevation and snow conditions. Drill programs can extend into October and November provided water can be kept from freezing.

Dawson City is a full-service community with a population of 1,319 (Wikipedia, 2016). The neighbouring communities increase the population to roughly 2,000. Dawson City has bulk fuel, grocery and hardware services, abundant accommodation, and government services including the Mining Recorder's office for the Dawson Mining District. Dawson City is located roughly 425 air-kilometres (550 road-kilometres) NNW of Whitehorse along the North Klondike Highway. Whitehorse, Yukon, is a full-service community with a population of about 29,000. Whitehorse has excellent accommodations, groceries, hardware, camp supplies, bulk fuel and expediting services. Whitehorse has a substantial skilled labour force, including professional geoscientists and tradespeople but a sizable operation may require staff from outside Yukon.

5. HISTORY

The Hav property was staked in 2016 by Panarc Resources Ltd. and Heli Dynamics Ltd. The block was optioned to Eureka Resources Inc. in late 2016.

Although the property area was explored for placer gold during the Klondike Gold Rush, there are no records of activity prior to 2011. The closest mineral occurrence to the HAV property is the Cooper anomaly (Minfile No. 115O 005) which lies some 10 km south of the property centre, along the lower watercourse of Cooper Creek directly north of the Stewart River. The Cooper Anomaly was first staked as the Rossland showing in 1898 and re-staked as the “Queen of the Hills” in 1900. No exploration results are available in the Yukon Minfile records. The immdeiate area is underlain mainly by Paleozoic metasediments and metaigneous rocks, intruded by Mesozoic and Eocene-aged intrusions along with Late Cretaceous, mafic to felsic, volcanics (Yukon Minfile, 2011) and covered by glacial overburden. The occurrence is located towards the southern end of a package of Devonian Snowcap Assemblage metasediments that underlie much of the Hav property.

Ryanwood Exploration Inc. staked the BREW 1-168 claims in June of 2009, during a staking rush triggered by favourable results from the nearby White Gold property. The Brew claims are located about 7 km southwest of the Cooper Anomaly. Ryanwood optioned the property to Aldrin Resource Corporation who conducted grid soil sampling and ground magnetic surveying. Also in June of 2009, B. Naughty staked the LUCKY 1-172 and STRIKE 1-114 claims northwest of the BREW property. Naughty optioned these claims to Alix Resources Corporation and Cloudbreak Resources Ltd. The Alix-Cloudbreak joint venture conducted geological mapping and geochemical sampling (Yukon Minfile, 2011).

6. GEOLOGICAL SETTING AND MINERALIZATION

6.1 Regional Geology

The Hav property is located within the Yukon-Tanana Terrane (YTT), a major accreted terrane comprised of variably metamorphosed and highly deformed intrusive, volcanic and sedimentary rocks (Gordey and Makepeace, 2001). The majority of this terrane ranges in age from Neoproterozoic to late Paleozoic and includes significant Mesozoic- aged assemblages. The YTT abuts the Selwyn Basin shelf and off-shelf sedimentary and volcanic rocks to the north which formed along the margins of the Ancient North American Continent. These two terranes are separated by the 65 Ma Tintina Fault Zone, a major transpressional fault representing a dextral displacement of roughly 450 km.

The major stratigraphic orientation is NNW-SSE at the Hav property which conforms to that of most of southwestern Yukon (Figure 3). Major stratigraphic groups and formations include an aerially extensive assemblage of Carboniferous Simpson Range intermediate to mafic orthogneiss, including tonalite (Yukon Geology Survey, “Mineral Occurrence Finder” website). Also prominent in the area, is an aerially extensive assemblage of Proterozoic to Devonian-aged Nasina Series, “Snowcap Assemblage” metaclastic rocks. The “Snowcap Assemblage” is comprised mainly of quartzite, psammite and pelites with minor greenstone and amphibolite. The HAV property area is underlain by a north-south trending unit of Snowcap Assemblage marble. An aerially extensive package of Carboniferous Finlayson Assemblage amphibolite lies east of the property and comprises primarily mafic volcanics and volcaniclastics. Late Cretaceous Carmacks Group rhyolitic to rhyodacitic tuffs, welded tuffs and lapilli tuffs occur throughout the project area.

6.2 Property Geology

The central area of the Hav Property is underlain by a north-south trending unit of Proterozoic to Devonian Snowcap Assemblage marble and carbonates (Unit PDS2, Figure 4). The Snowcap assemblage is flanked to the east by a package of Mississippian Simpson Assemblage metagranite to metagranodiorites (Unit MgSR). The eastern boundary of the Mississipian Assemblage lies in a NNW – SSE trending contact with Snowcap Assemblage metasediments (Unit PDS1) and intercalated Finlayson Assemblage metavolcanic rocks (DMF1). The intercalated Snowcap Assemblage metasediments and Finlayson Assemblage metavolcanics underlie the Maisy May Creek watercourse, the site of active placer mining as of 2017.

The western flank of the central Snowcap Assemblage carbonate unit is underlain by Simpson Assemblage metagranites to metagranodiorites. The extreme northwestern corner extends across a small Late Triassic to Early Jurassic-aged Minto Suite granitic to granodioritic stock.

RGS stream sediment geochemical sampling yielded an anomalous gold value of 16 ppb from a site roughly 2.5 km east of the property. The anomalous sample is coincident with a catchment area covering the extreme southeastern property area. (Figure 4).

6.3 Surficial Geology

The Hav property is located within “Beringia”, an area unaffected by Pleistocene glacial events. “Beringia” extends from west-central Yukon through the majority of central and western Alaska. Surficial deposits consist mainly of colluvium, as well as locales of “loess”, consisting of wind-blown fine sand to silt. Bedrock exposure is sparse, due to mechanical and chemical weathering of outcrop, except in areas of very rugged terrain.

Surficial deposits at lower elevations have been developed over much longer time periods than post-glacial overburden elsewhere in Yukon. This is particularly applicable to fluvial deposits. Local placer gold deposits have developed over much greater time periods than those in glaciated areas.

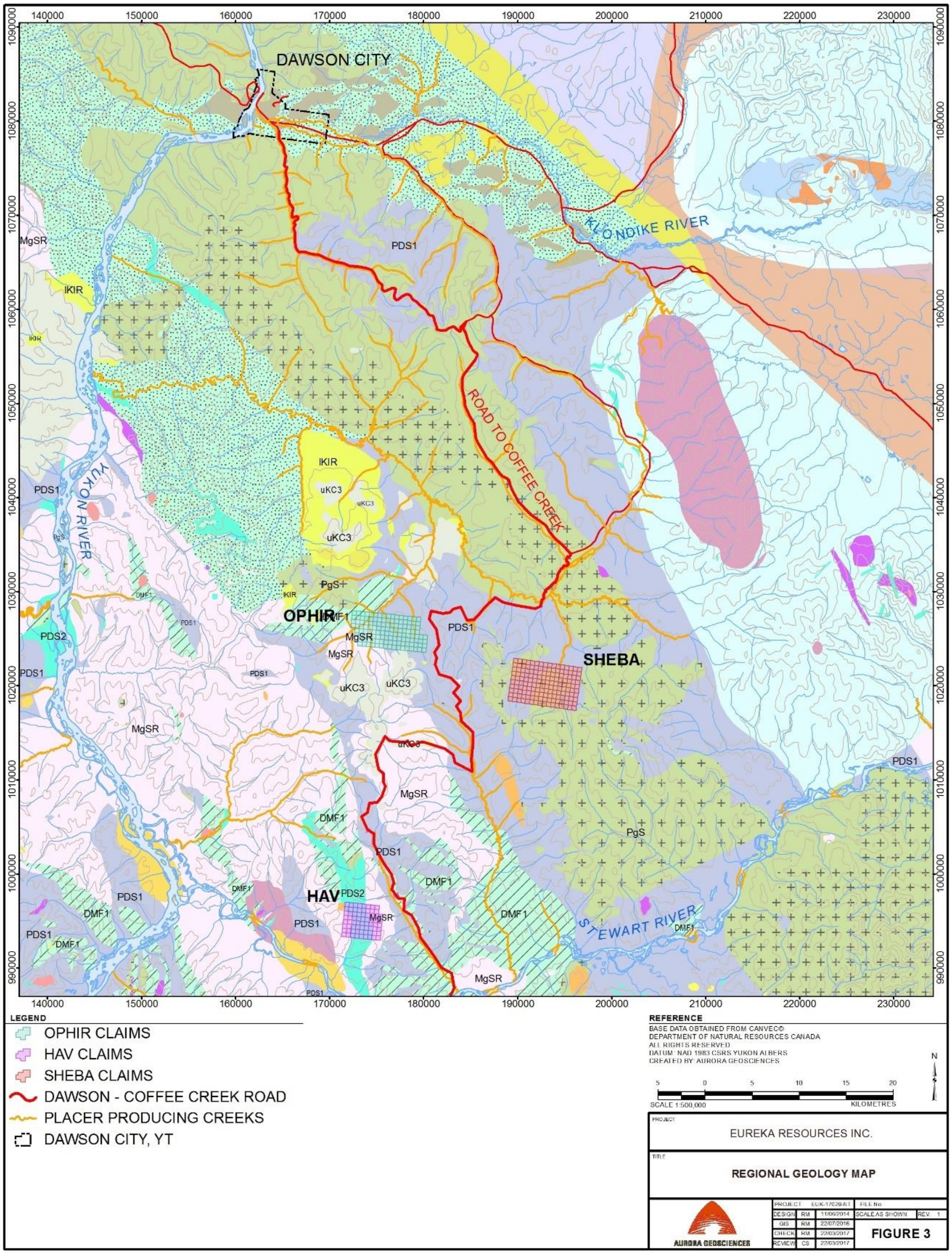

Figure 3: Regional Geology map, Klondike area

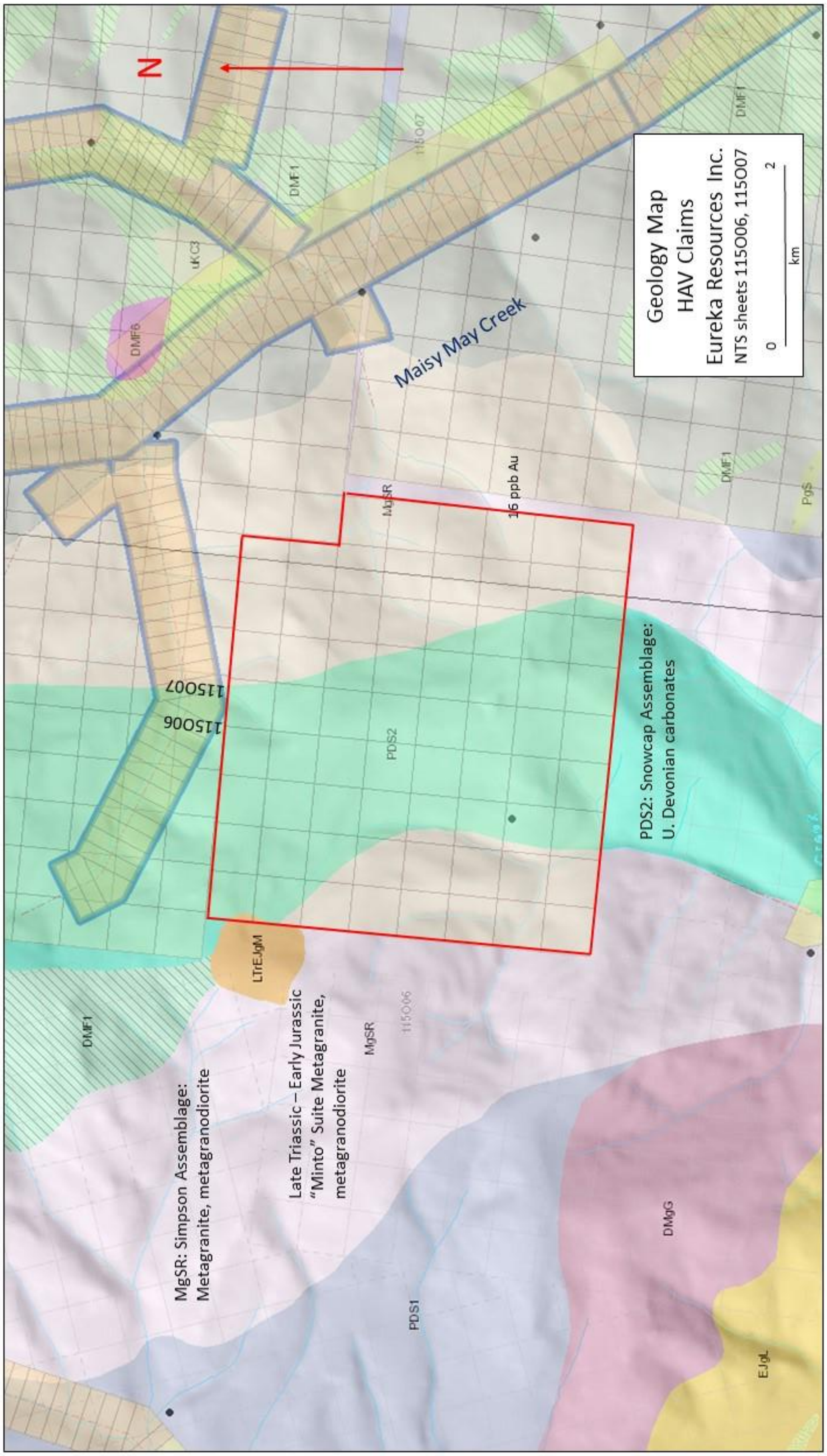

Figure 4: Hav Property Geology

7.0 DEPOSIT MODELS

The Hav Property is located south of the main Klondike placer mining camp extending southeast from the Klondike River, directly east of Dawson. Active placer mining operations along Maisy May Creek directly to the east, Henderson Creek about 16 km to the north, Black Hills Creek 13 km to the east, and Scroggie and Brewer Creek south of the Stewart River indicate the Klondike Camp may be considered to extend through these areas as well. To date, hard rock gold +/- silver occurrences are considered to have an orogenic origin. Fluid movement and metal emplacement are related to deep-seated crustal faults rather than local, shallowly emplaced intrusive bodies. The Klondike area is located within the 70 – 110 Ma Tintina Gold Belt; however, mineralized zones in the Klondike to date do not have the characteristics of intrusion-related systems. Mineralization typically consists of mesothermal quartz veins hosting gold +/- silver mineralization and marked by the typical pathfinder elements of arsenic (As), antimony (Sb), and, for silver, lead (Pb) and zinc (Zn). The dominant stratigraphic orientation is NNW – SSE (Figure 3), likely paralleling that of mineralized structures within the district.

The "Orogenic Gold" setting is characterized by larger auriferous quartz veins, up to 1.0 km in length and multiple metres in width. Mineralized quartz veining may be abundant in the orogenic setting but there is no evidence of intrusive activity, such as hornfels aureoles or contact metamorphic minerals, skarn or replacement-style mineralization (Hart and Lewis, 2005). The structural conduits are district-scale deep-seated "crustal" faults that allow hydrothermal fluid movement from a typically "unknown" source. The mechanism for fluid emplacement within local structures is similar to that of intrusion-related veining where mineralized zones develop from fluid movement along main fault conduits into areas of "structural preparation".

A second potential deposit setting is an Intrusion-Related Gold setting which is the main deposit model for mineralization within the Tintina Gold Belt. Mineralization is associated with a core intrusion, typically varying in composition from monzonite, quartz monzonite, granite, granodiorite to syenite. The intrusion is typically associated with dykes or intrusion-related apophyses which commonly occur as multiple magma pulses with varying compositions that become more felsic with progressive cooling and solidification of the intrusion. Intrusion-related settings include vein and stockwork lode settings, skarn, replacement-style and sheeted, "Fort Knox"-style deposits (Schulze, 2017).

At the HAV property, vein-style and Fort Knox-style gold settings are related to Intrusion-Related deposits. Vein-style deposits occur as vein, stringer and stockwork zones. Veins are typically planar structures, formed when siliceous metal-rich fluids pass through an open-space area, such as a fault zone. Silica is gradually deposited from the vein margins to the centre of the vein. Specific fluid pulses may result in metal-rich layers and may include precious metal-rich layers, within the vein. Stringer and stockwork zones occur when metal-rich siliceous fluids infiltrate brecciated or strongly fractured areas within the host rock. Vein deposits tend to be high grade and small tonnage while stringer and stockwork deposits tend to be lower grade and higher tonnage, due to the incorporation of unmineralized country rock.

Gold +/- silver vein mineralization is typically associated with a suite of "pathfinder elements"comprising arsenic, antimony, mercury, and, if proximal to the intrusion, bismuth. Arsenic is a particularly strong indicator of gold, as this element tends to precipitate from solution at the same temperature and pressure as gold.

A "Fort Knox"-style gold deposit consists of sheeted centimetre-scale quartz veins within a felsic, commonly monzonitic to quartz monzonitic intrusion. This setting forms where cooling and contraction of a solidifying magmatic intrusion result in parallel narrow joint planes across large peripheral portions of the intrusion. Late metal-enriched hydrothermal fluids infill the joints, creating sheeted veins which host the vast majority of gold mineralization within the entire deposit. Individual veins can host high-grade gold but the incorporation of very low-grade wall rock provides an overall large bulk-tonnage, low grade gold deposit. The "Fort Knox-style gold deposit" can host sizable gold resources like the namesake deposit near Fairbanks, Alaska which has produced more than 6 million ounces of gold (Wikipedia, 2016), (Schulze, 2017).

8. EXPLORATION PROGRAM

The 2017 work program consisted of a combined "Airborne Inductively Induced Polarization (AIIP)" and total field magnetic survey conducted by Geotech Ltd. between May 6 to 17, 2017. The airborne geophysical sensors included a "Versatile Time Domain Electromagnetic" (VTEM™ ET) system and a cesium magnetometer (Kwan and Prikhodko, 2017). The flight lines were oriented at an azimuth of N 70° E using a nominal line spacing of 100 metres. A total of 183 line-kilometres were flown.

The program was designed to identify resistive units at relatively shallow depths. The AIIP survey consisted of a series of up to 20 readings, or "time gates", spaced a few milliseconds apart and divided into "Early Time Gate" and "Mid Time Gate" plots. The early time gate plot favours identification of shallow, poorly conductive horizons. The mid-time gate plots are more adept at identifying deeper, more strongly conductive zones. Plots are provided for both time gates and for "Total Magnetic Intensity" (TMI).

The airborne surveys were supported by two personnel employed by Aurora Geosciences Ltd (Aurora who placed two fuel caches along the Black Hills Creek Road. The crew also established landing zones for safe operational procedures. Fuel caches were established by Sean Inkster and Aurora personnel. Upon completion of the program, any empty and full fuel drums and any waste were removed from the cache sites. A permit was not required for the fuel storage during this program.

Figure 5: Aerial survey by Geotech Ltd.

Figure 6: Aerial survey at landing zone near fuel cache

9. DISCUSSION AND INTERPRETATION

9.1. DISCUSSION

Near-surface sources for AIIP conductors include clays, most metallic sulphides, some oxides, including magnetite, and graphite (Kwan and Prikhodko, 2017). Early time gate plots help to detect surficial deposits like those along larger valley bottoms and stream drainages.

The Early-Time Gate plot (Figure 7) displays areas of conductivity associated with known lithologic units. A high conductivity feature is coincident with the eastern flanking package of Simpson Assemblage metaigneous rocks. An arcuate conductivity anomaly, located in the east-central property area, is delineating a “halo effect” from an unknown lithological unit. A moderately conductive feature is located in north-central areas, within the central Snowcap Assemblage carbonate unit. The extreme northwest corner is marked by a conductive feature roughly coincident with the Jurassic-aged granodiorite stock.

The Mid-Time Gate plot (Figure 8) reveals an area of strong conductivity north of the arcuate feature identified in the Early Time Gate plot. Another weaker feature is coincident with the western portion of the arcuate feature. The eastern Snowcap Assemblage metaigneous unit is marked by stronger conductivity, including a SSE-trending feature roughly coincident with the lithological boundary. Elsewhere, the central property area is underlain by the Snowcap Assemblage carbonates and marked by a lack of a conductive response. The southwestern area is underlain by Simpson Assemblage metaigneous rocks which have a subdued conductivity response.

The Total Magnetic Intensity (TMI) plot reveals a strong magnetic “high” response west of the strong conductive feature in the Mid-Time Gate plot (Figure 9). This strong magnetic “high” response may represent remnant magnetism, preceding crustal transport or rotation. There is a pronounced magnetic high feature in the extreme northwest corner of the survey area which is coincident with a Triassic-Jurassic intrusion. The western flanking Simpson Assemblage unit is delineated by a variable, but consistently elevated, magnetic signature.

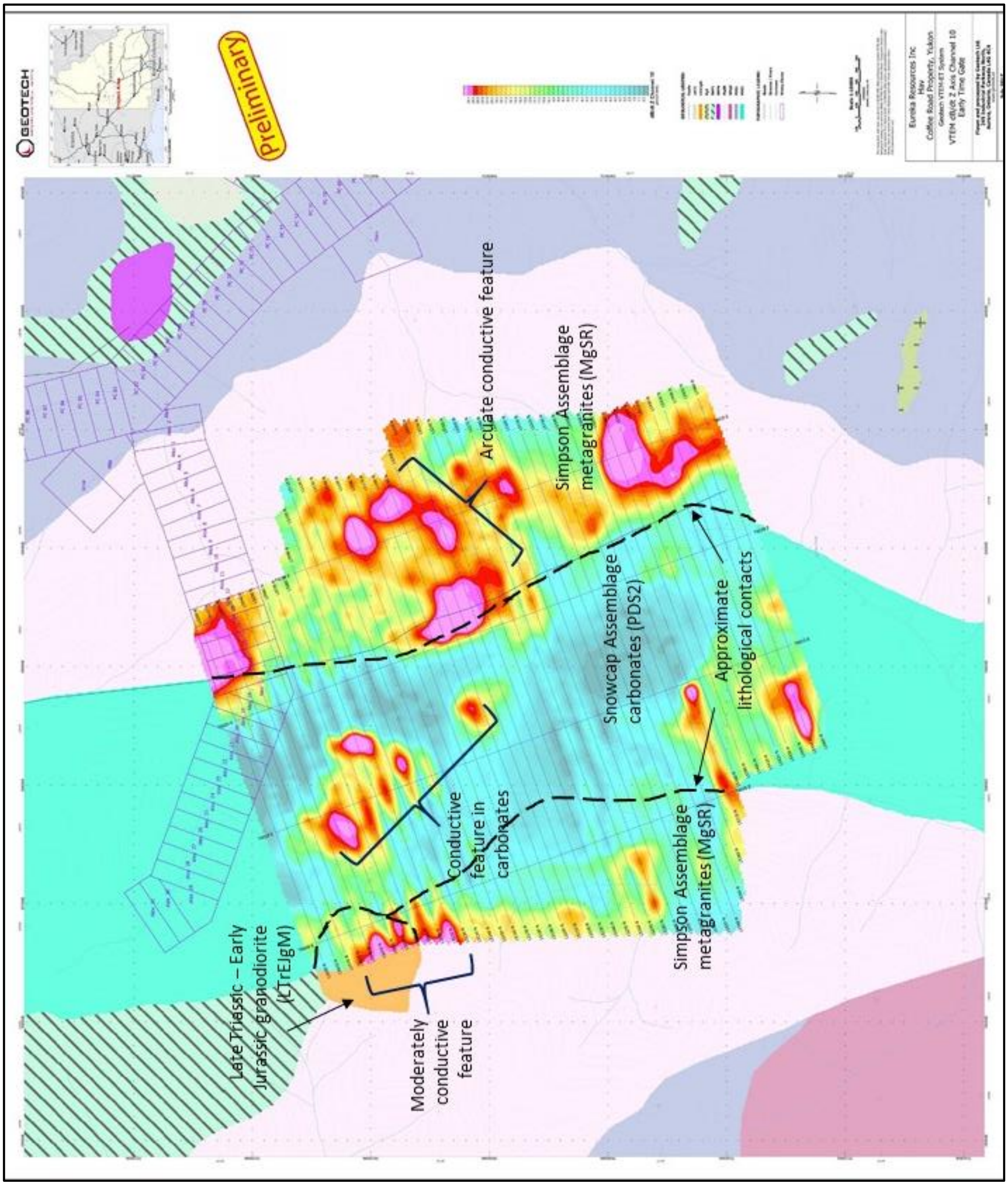

Figure 7: Early-Time Gate EM plot, Hav property (Geotech Ltd.)

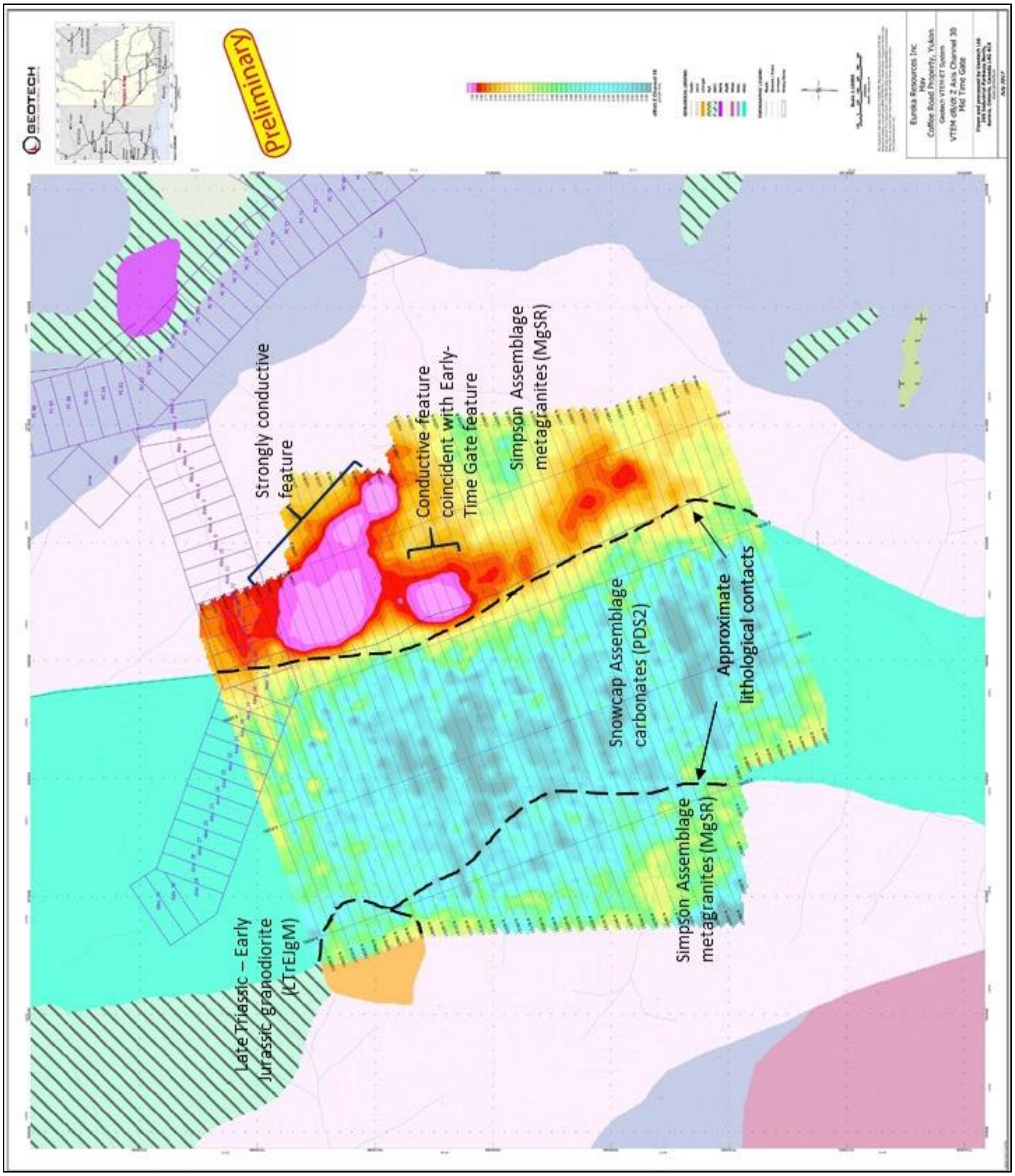

Figure 8: Mid-Time Gate EM plot, Hav property (Geotech Ltd.)

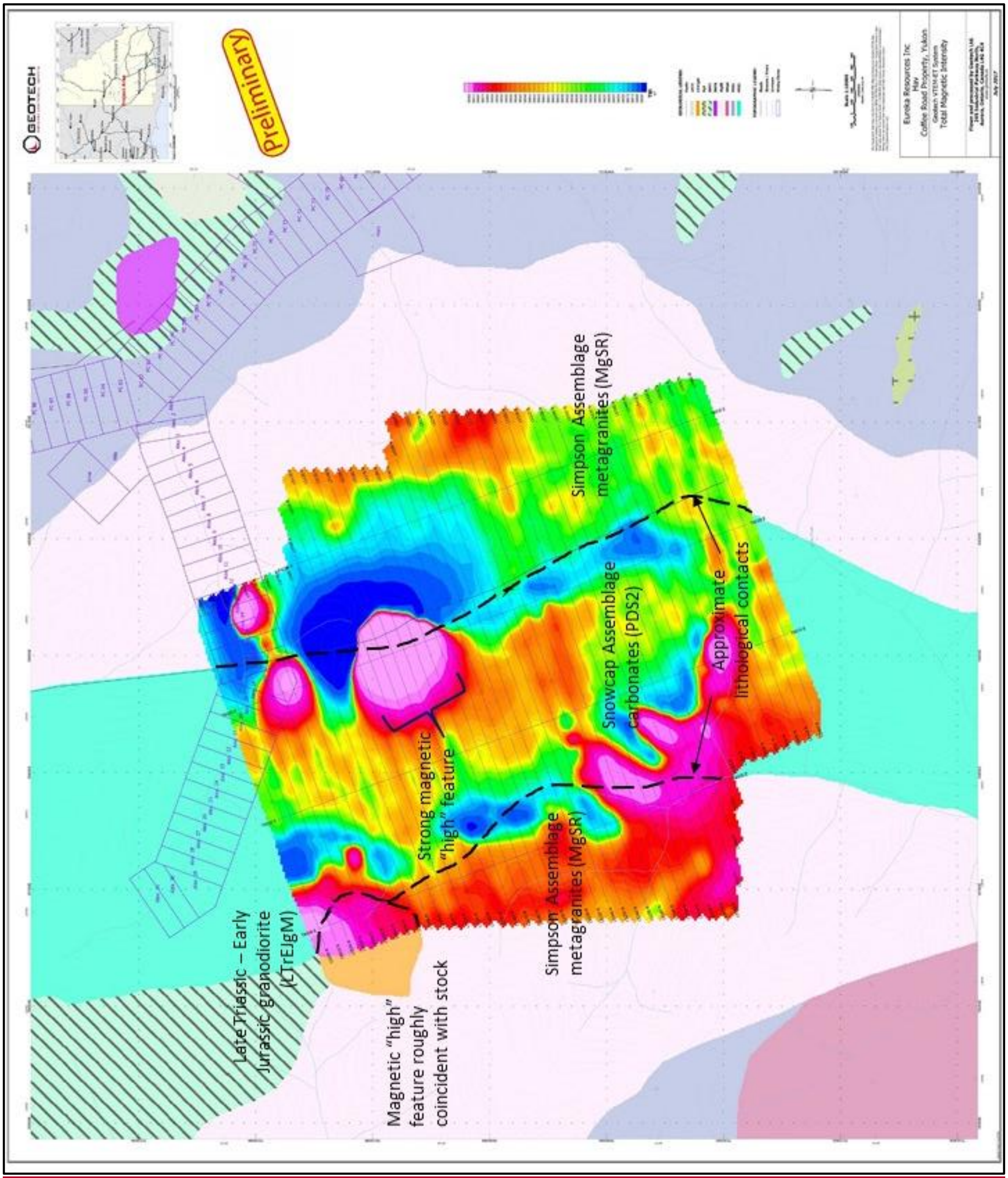

Figure 9: TMI Plot, Hav Property (Geotech Ltd.)

9.2 INTERPRETATION

The strong magnetic high feature in the north-central area has been interpreted by Geotech as a possible intrusion (Figures 10 and 13), although no Mesozoic or younger intrusive rocks are known in this area. Should the intrusion exist, it may have been emplaced along a zone of weakness between the central Snowcap Assemblage carbonates and eastern Simpson Assemblage metagranites.

The arcuate conductive response in the Early-Time Gate plot indicates a halo caused by alteration and potential mineral emplacement surrounding a reduced intrusive body. The arcuate conductive feature is not precisely coincident with the strong magnetic anomaly, indicating they might be due to separate sources.

The Mid-Time Gate plot shows a strong conductive feature in the northeastern area but does not have a corresponding signature on either the Early Time Gate plot or the TMI plot. The southeastern area is coincident with a part of the “halo” described on the “Early time gate” plot. The feature trends NW – SE, subparallel to the upper course of Patton Creek, which is a small stream directly to the north. The creek and conductive feature may be delineating a lineament in this area. The strong conductive feature is directly to the south and coincident with the western part of the “halo”, indicating a lithologic unit with moderate depth to near-surface expression.

A moderately conductive feature extending SSE from the strong conductor located in the NE (Figure 11) might be delineating the approximate lithological boundary between the Snowcap Assemblage carbonates and Simpson Assemblage metaigneous units. Both electromagnetic plots show a marked difference in response between the central carbonate unit and the flanking metaigneous units. Conductive features on both plots do not show a direct association with stream drainages, and are thus unlikely to represent surficial fluvial deposits.

The magnetic “high” feature in the extreme northwest of the TMI plot may represent the Jurassic Minto Suite stock, although it is not precisely coincident with the intrusion. The feature shows a moderate response in the Early Time Gate plot but essentially no response in the Mid-Time Gate plot, indicating a shallow source within or associated with the intrusion.

The AIIP report supplied by Geotech includes a plot showing potential gold targets, superimposed on a plot of “Apparent Chargeability” (Figure 13). This plot highlights the western property area, west of the interpreted intrusion, as prospective for gold and also delineates the location of several fault structures.

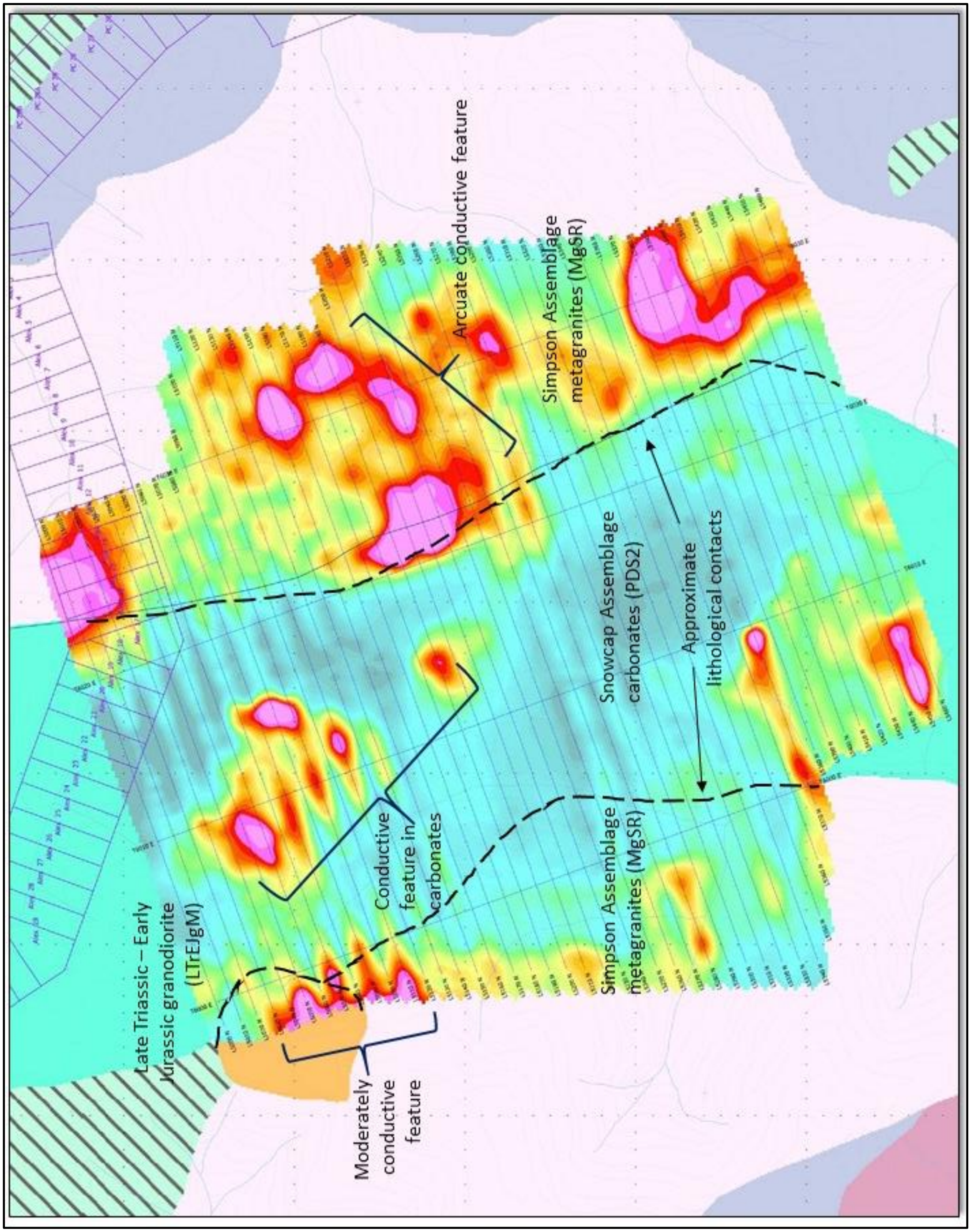

Figure 10: Interpretation of Early-Time Gate EM plot

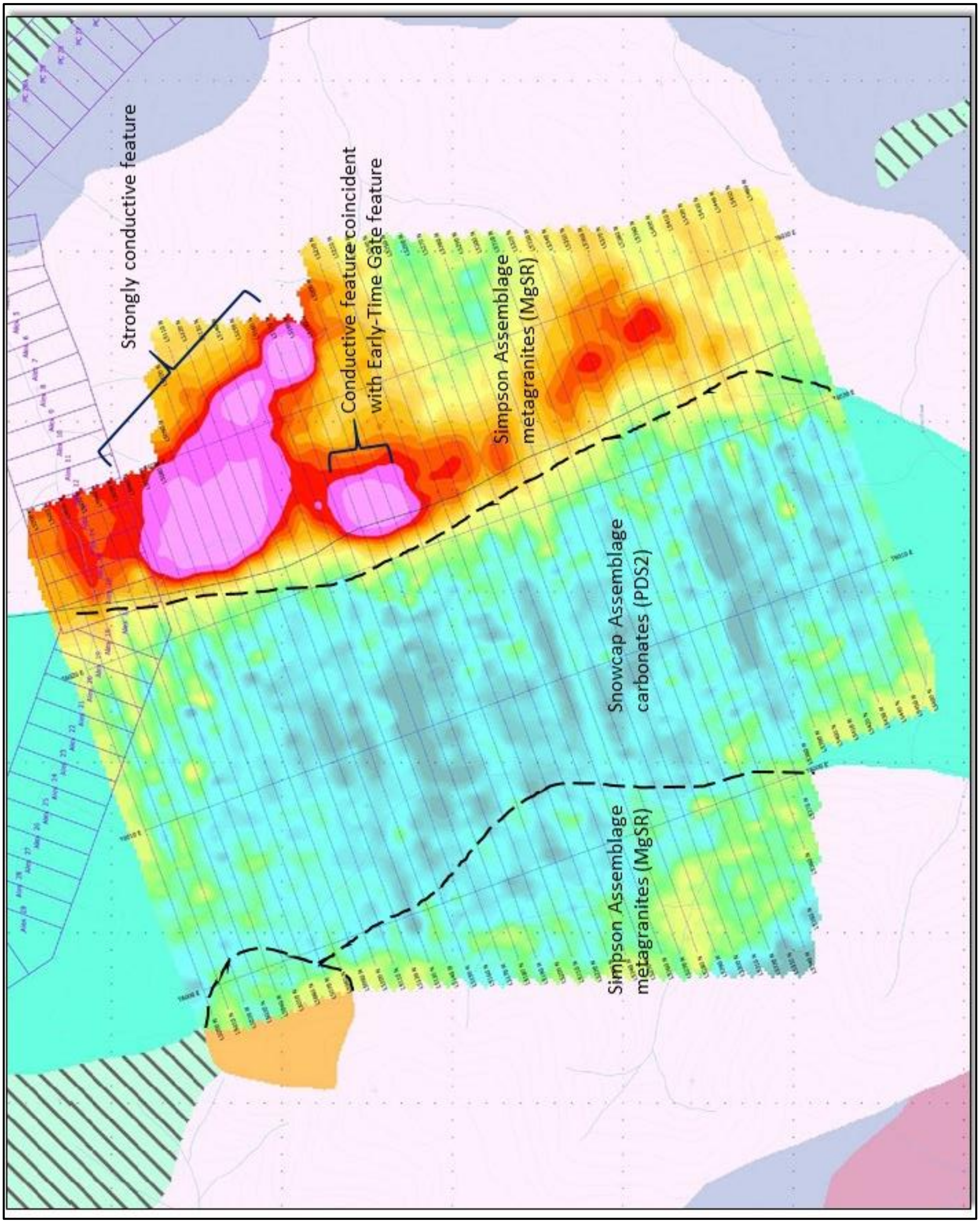

Figure 11: Interpretation of Mid-Time Gate EM Plot

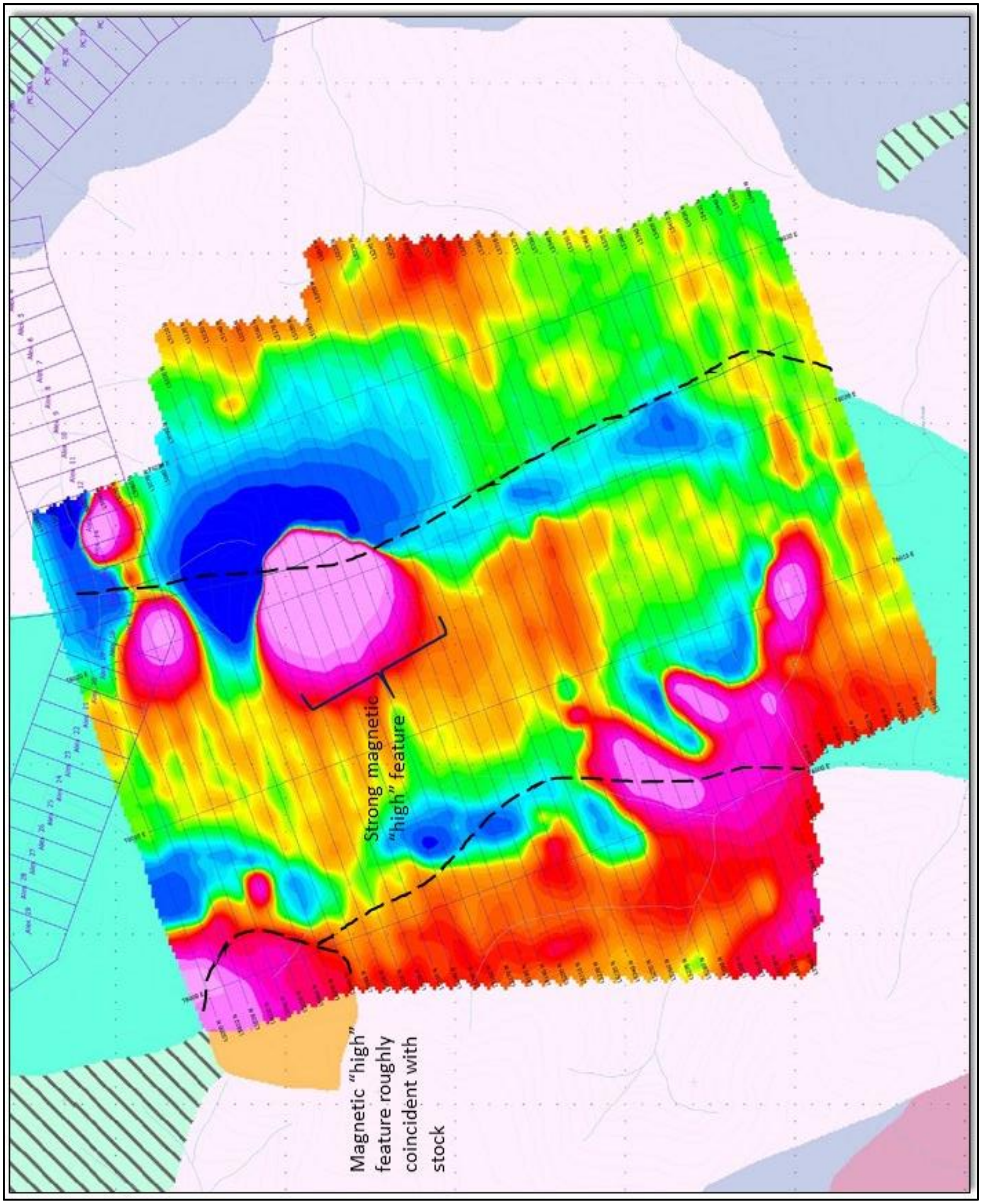

Figure 12: Interpretation of TMI Plot

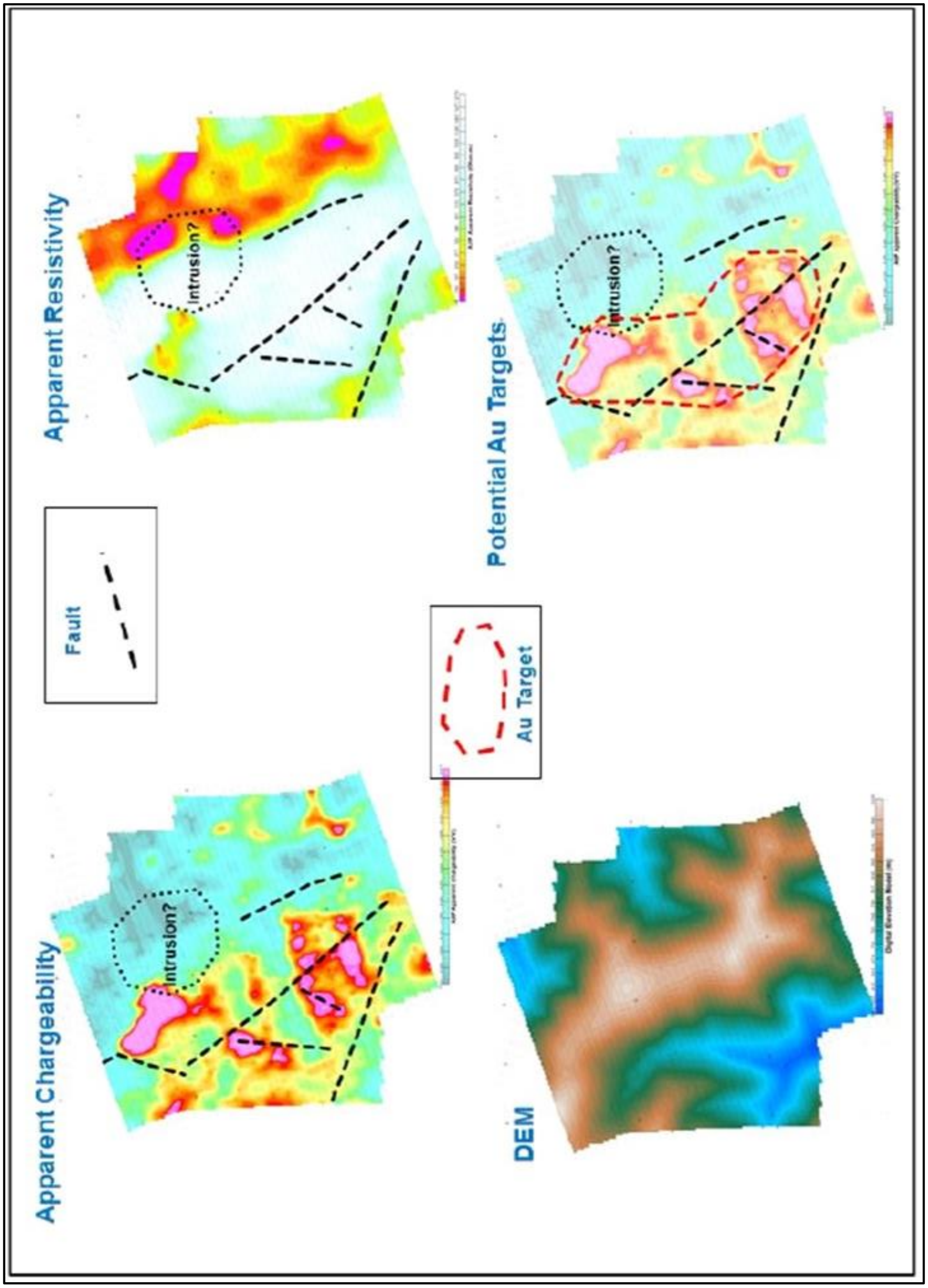

Figure 13: Plots, Interpretation (Kwan and Prikhodko, Geotech Ltd. 2017)

10. CONCLUSIONS

The following conclusions may be made from the 2017 AIIP survey on the Hav property:

- As of November 2017, only preliminary Early and Mid-time Gate electromagnetic plots have been provided. The Early-Time Gate plot indicates an arcuate conductive feature in the northeastern property area, delineating a contact aureole surrounding a buried intrusion. No intrusive bodies are known in this area.
- Both the Early and Mid-Time Gate plots indicate the lithological contacts between the central Snowcap Assemblage carbonates and the flanking Simpson Assemblage metagranites and metagranodiorites. The Simpson Assemblage has a consistently more pronounced conductive response.
- The Early Time Gate plot shows a fairly strong conductive response in the northwest corner of the property. The response is coincident with a small Late Triassic to Early Jurassic granitic to granodioritic stock, categorized as a “Minto-suite” stock. The TMI plot shows a strong magnetic “high” signature for this stock.
- The Mid-Time Gate plot shows a strong conductive response extending SE from the upper course of Patton Creek, a tributary of Eureka Creek. This feature may indicate a NNW-SSE trending lineament in the northeastern property area.
- The Total Magnetic Intensity (TMI) plot indicates the presence of a prominent magnetic “high” anomaly northwest of the arcuate conductive “halo” response in the Early Time Gate plot. If both responses can be attributed to intrusive bodies, they are likely to be representing separate units.
- Geotech has interpreted the presence of an intrusion coincident with the strong TMI response (Figure 13). Geotech has interpreted the presence of several property-scale faults within the western property area and has suggested the western area as prospective for gold.

11 RECOMMENDATIONS

11.1 Recommendations

Two areas of focus are recommended for the survey area. The first area is located in the northeast and hosts the prominent magnetic anomaly and the arcuate conductive feature. The second area is focusing around the Mesozoic Minto Suite stock in the northwest. Detailed geological mapping, prospecting and rock is recommended.

A program of property-wide ridge-and spur and contour soil geochemical sampling is recommended at a 50 metre station spacing. Several traverses covering the area hosting the magnetic and conductive features in the northeastern area are also suggested. These traverses should also comprise geological mapping, prospecting and rock sampling.

The geochemical sampling program should include stream silt sampling at a 250-metre station spacing, including tributaries, to test for anomalous metal content not detected from soil sampling.

This program would be conducted by a four-person crew operating for 10 days, including helicopter-supported mobilization and de-mobilization and travel time from Whitehorse. The program would be staged from Dawson City using a Whitehorse-based expeditor. The field program would require six days of traversing and two days for mobilization and de-mobilization out of Dawson. The recommended expenditures are estimated to be CDN$59,343, including 5% contingency.

Note: Logistical expenses may be reduced if this program is combined with other programs on properties held by Eureka Resources.

11.2 Recommended Budget

Personnel, crew boss: 10 person-days @ $600/day:		$ 6,000
Personnel, 2nd geologist: 10 person-days @ $550/day:		$ 5,500
Personnel, field technicians: 20 person-days @ $450/day:		$ 9,000
Soil, silt sampling: 240 samples @ $33/sample:		$ 7,920
Rock sampling: 28 samples @ $39/sample:		$ 1,092
Camp rental (all-in): 10 days @ $130/day:		$ 1,300
Expeditor support (all-in): 4 days @ $1,100/day:		$ 4,400
Helicopter support (Bell 407 or equivalent): 4.8 hours @ $2,100/hr, incl. fuel:		$10,080
Hotel lodging: 4 double rooms @ $135/night:		$ 540
Daily field expenses (including travel): 32 person-days @ $100/day:		$ 3,200
Job prep, camp and equipment:		$ 975
Job prep, Digital data, maps, etc.: 16 hours @ $85/hr:		$ 1,360
WCB:		$ 900
Field report:		$ 750
Assessment report: 35 hours @ 100/hr:		$ 3,500
	Sub-total:	**$56,517**
	5% contingency:	$ 2,826
	Proposed Total:	**$59,343**

12. REFERENCES

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Hart, C.J.R. and Lewis, L.L. 2005: "Gold Mineralization in the upper Hyland River area: a non-magnetic origin". Reference No. YEG2005_08, Yukon Geology Survey.

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Yukon Geology Survey, Energy Mines and Resources, 2017: Website at http://www.geology.gov.yk.ca/

Yukon Mining Recorder, Energy, Mines and Resources, 2017: Website at http://www.yukonminingrecorder.ca/

APPENDIX 1

CERTIFICATE OF QUALIFICATIONS, CONSENT, DATE AND SIGNATURES

I, Carl Schulze, BSc, with business and residence addresses in Whitehorse, Yukon Territory, do hereby certify that:

1. I am a graduate of Lakehead University with a B.Sc. degree in Geology obtained in 1984.

2. I am a Professional Geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia (registration number 25393), Association of Professional Geoscientists of Ontario (registration no. 1966) and with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG, registration number L3359).

3. I have been employed in mineral exploration as a geologist since 1984, primarily on projects in the Yukon Territory, Northwest Territories, Nunavut, Alaska and British Columbia.

4. I supervised the work described in this report and wrote this report.

5. I have no interest, direct or indirect, nor do I hope to receive any interest, direct or indirect, from Eureka Resources Inc. or any of its properties.

Dated this 30th day of November, 2017 in Whitehorse, Yukon Territory.

Respectfully Submitted,

Carl M. Schulze, BSc. P. Geo.

APPENDIX 2

STATEMENT OF EXPENDITURES

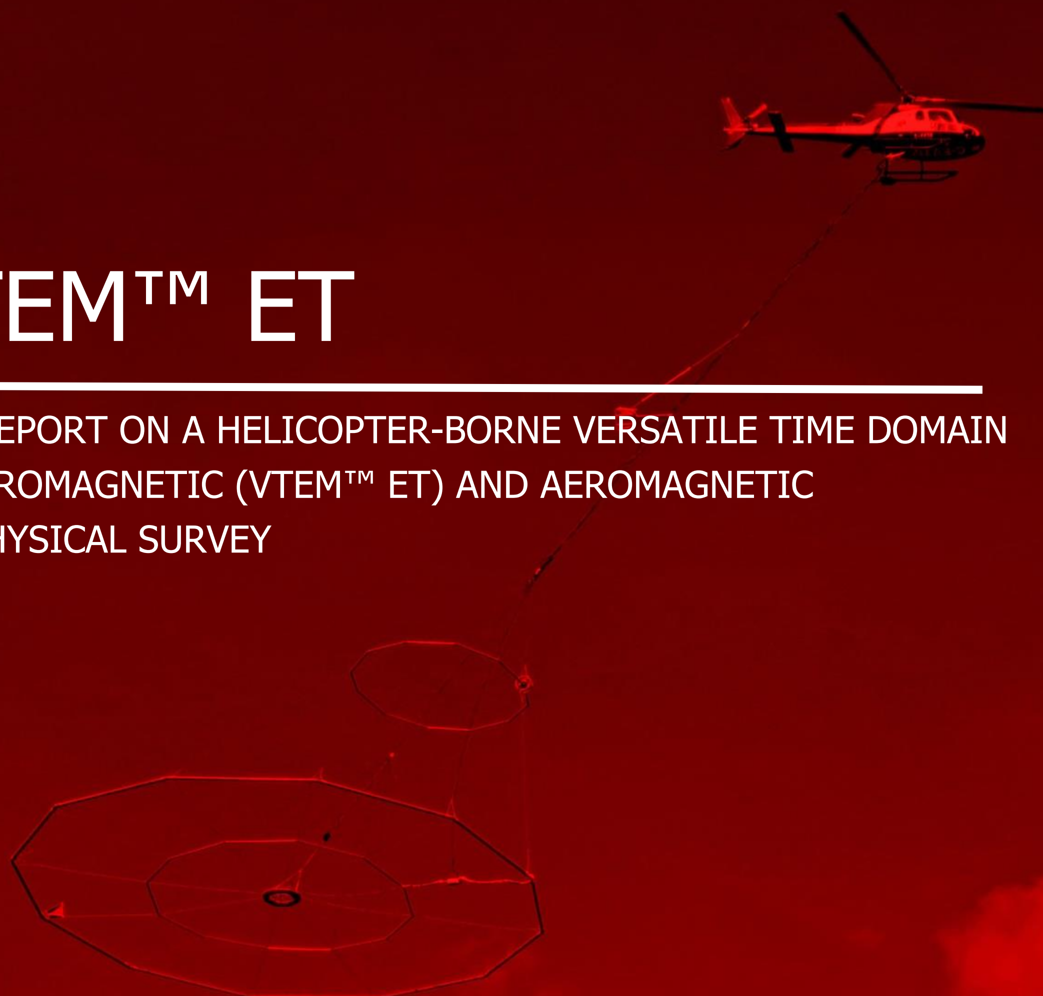
Statement of Expenditures

Invoice #995824, 11-Apr-2017:	$77,689.50
Invoice #995850, 15-May-2017:	$77,491.58
Invoice #995862, 5-June-2017:	$44,135.47
Invoice #995902, 1-Jul-2017:	$27,860.47
Total:	**$222,177.02**

Pro-rated: 15.0% of total flight lines: $33,326.55

APPENDIX 3

GEOTECH LTD. REPORT



VTEM™ ET

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

PROJECT:	OPHIR, SHEBA, HAV, TAK, AND ETTA
LOCATION:	COFFEE ROAD PROPERTY, YUKON
FOR:	EUREKA RESOURCES INC.
SURVEY FLOWN:	MAY 2017
PROJECT:	GL170103

Geotech Ltd.
245 Industrial Parkway North
Aurora, ON Canada L4G 4C4

Tel: +1 905 841 5004
Web: www.geotech.ca
Email: info@geotech.ca

GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

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EXECUTIVE SUMMARY

AIIP report on VTEM^{TM} ET surveys, Coffee Road Property, Yukon

During May 6th – 17th 2017 Geotech Ltd. carried out a helicopter-borne geophysical survey over the A1-Ophir, A2-Sheba, A3-Hav, A4-Tak, and A5-Etta blocks situated within the Coffee Road Property, Yukon.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM™ ET) system, and a caesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 1218 line-kilometers of geophysical data were acquired during the survey.

Geotech Ltd carried out airborne inductively induced polarization (AIIP) chargeability mapping of the VTEM data.

Final AIIP products are:

- AIIP databases;
- AIIP apparent chargeability and resistivity grids;
- AIIP report.

1. SURVEY LOCATION

The VTEM survey blocks were located south of Dawson City, Yukon, Figure 1.

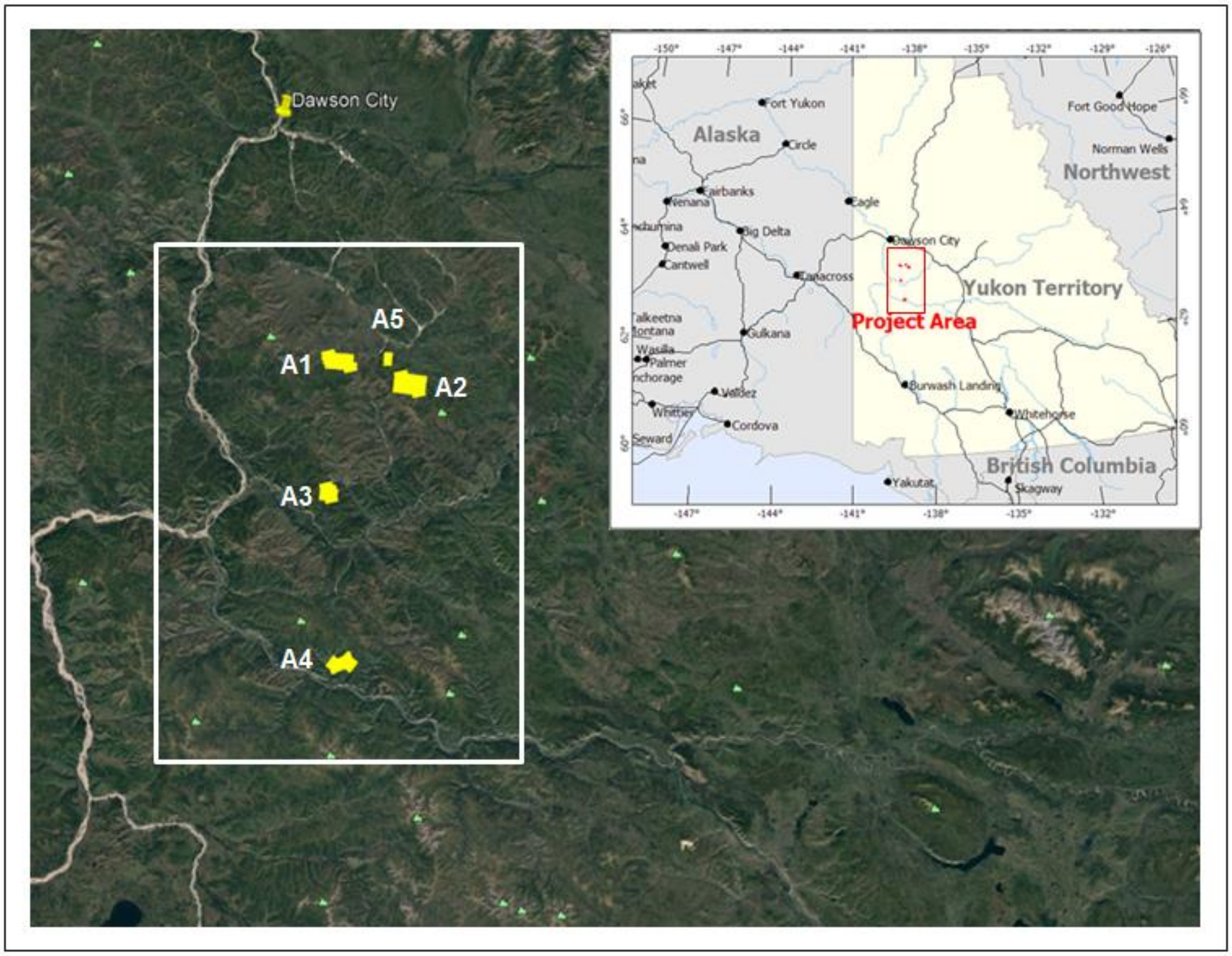

Figure 1: VTEM survey location (image from Google Earth).

The survey areas were flown in an east to west (N 70° E azimuth) direction over A1 (Ophir), A2 (Sheba), and A3 (Hav) blocks. The A4 (Tak) block was flown in a northeast to southwest (N 30° E azimuth), and the A5 (Etta) block was flown in a north to south (N 178° E azimuth). The nominal traverse line spacing is 100 metres.

Blocks A1, A5 and A2 are located approximately 60 kilometers SSE of Dawson City, Yukon. A4 is located approximately 126 kilometers south of Dawson City.

2. AIRBORNE INDUCTIVELY INDUCED POLARIZATION (AIIP)

The objective of AIIP mapping of VTEM data from is to derive Cole-Cole apparent chargeability and resistivity maps for a fixed frequency factor c.

2.1 AIIP EFFECTS IN VTEM DATA

Airborne VTEM™plus data from Coffee Road Property reflect mainly two physical phenomena in the earth:

1. Electromagnetic (EM) induction, related to sub-surface conductivity and governed by Faraday's Law of induction;

2. Induced polarization (IP) effect, related to the relaxation of polarized charges in the ground (Pelton et al., 1978, Weidelt, 1982, Kratzer and Macnae, 2012 and Kwan *et al*., 2015a and 2015b);

For mineral exploration, near-surface sources of AIIP are clays through membrane polarization (electrical energy stored at boundary layer) and most metallic sulphides, some oxides (i.e. magnetite) and graphite through electrode polarization (electrical charges accumulated through electrochemical diffusion at ionic-electronic conduction interfaces).

The absence of negative transients does not preclude the presence of AIIP (Kratzer and Macnae, 2012). The case is clearly illustrated in Figure 2, showing forward modeled VTEM decays over a chargeable half-space of different chargeabilities, using the Cole-Cole relaxation model (Appendix A). As chargeability value increases from m=0 (purely inductive), the rate of VTEM decay increases (pulling down) also in mid-times and eventually crosses into the negative when $m \approx 0.8$ V/V. But for vast majority of m values less than 0.8 V/V, there are no negatives in the VTEM decays.

The amount of deviation from the ideal inductive response of a half space with resistivity ρ_0 is a measure of the strength of AIIP.

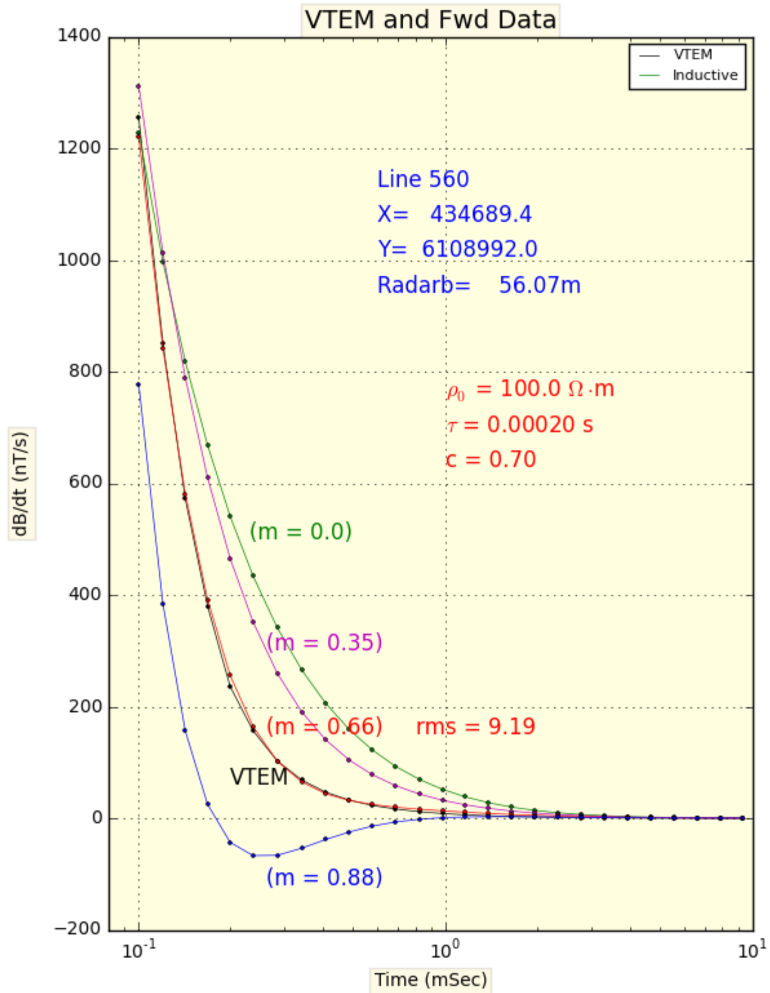

Figure 2: Forward modelled VTEM decays for different chargeability m values; the observed VTEM decay (black) was from Mount Milligan, British Columbia, fits well with the modeled decay (red) with m=0.66.

Numerous negative transients are observed in the VTEM data from A3 and A4. Some of them from L7120 of A4 (Tak) block are shown in Figure 3, providing unequivocal pieces of evidence that there are AIIP effects in the VTEM data.

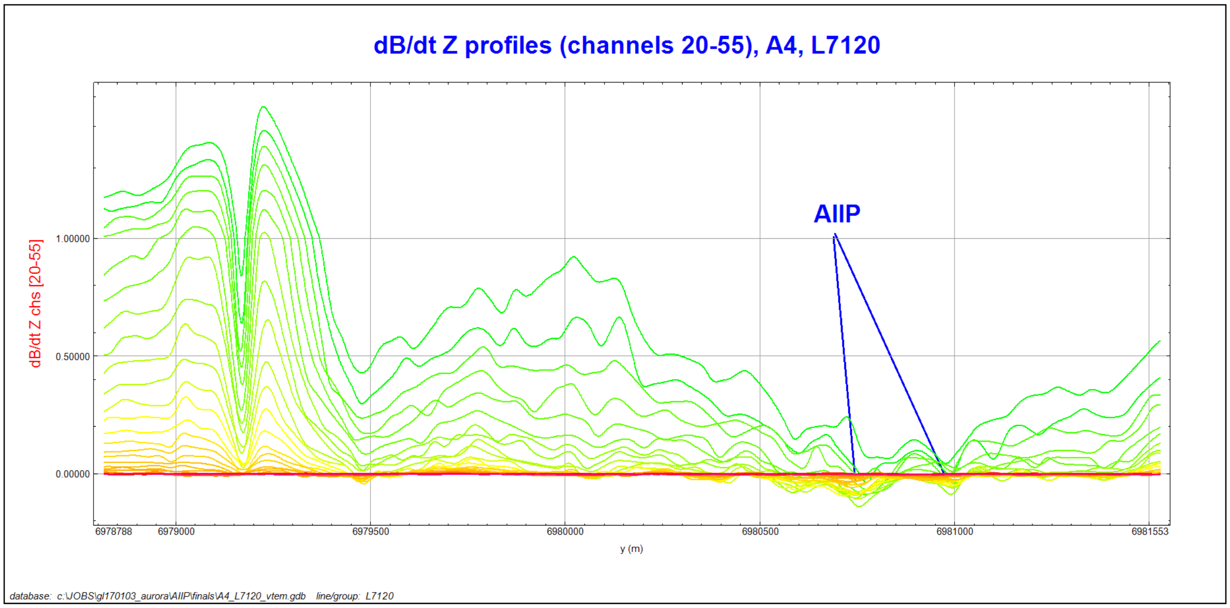

Figure 3: AIIP anomalies in L7120, A4 (Tak) block.

2.2 AIIP MAPPING

VTEM decays associated with AIIP can be studied using the empirical Cole-Cole complex resistivity model (Cole and Cole, 1941 and Pelton *et al*., 1978), shown in equation (1).

$$\rho(\omega) = \rho_0 \left[1 - m\left(1 - \frac{1}{1 + (i\omega\tau)^c}\right)\right] \tag{1}$$

In the equation above, ρ_0 is the DC resistivity, m ($0 \leq m \leq 1.0$) is the chargeability in (V/V), τ is the Cole-Cole time constant in second, $\omega = 2\pi f$, and c ($0 \leq c \leq 1.0$) is the frequency factor. The four parameters (ρ_0, m, τ and c) are characteristic of a polarizable ground.

In general, chargeability m and Cole-Cole time constant τ depend on the quantity and size of polarizable elements in the ground (Pelton *et al*., 1978). The frequency factor describes the size distribution of the polarizable elements (Luo and Zhang, 1998). When c=1, the time-domain decay modelled by Cole-Cole model represents the Debye decay, and when c=0.5, the time-domain decay is the Warburg decay (Wong, 1979).

The extraction of the four Cole-Cole parameters (ρ_0, m, τ and c) from airborne VTEM data is a difficult task. Kwan *et al*. 2015a developed an algorithm, based on Airbeo from CSIRO/AMIRA[1] (Chen & Raiche 1998; Raiche 1998), to extract the (ρ_0, m and τ) parameters while the frequency factor is fixed. There are two deficiencies in the algorithm; one, the precision of the derived (m_o, τ_o) depends on the final mesh size, and two, many of the inversions at the mesh locations far away from (m_o, τ_o) are not necessary.

[1] Commonwealth Scientific and Industrial Research Organization and Amira International;

An improved version of the AIIP mapping algorithm has since been developed by Geotech (Appendix A). The new method applies the Nelder-Mead Simplex minimization (Nelder and Mead, 1965) in the two-dimensional (m,τ) plane. At each required test point (m_i, τ_i), the optimal background resistivity ρ_0 is found by one-dimensional Golden-Section minimization for the user specified resistivity range. The algorithm uses only Airbeo's forward modeling kernel, which can generate synthetic VTEM data with high precision. The Nelder-Mead (NM) search algorithm is more efficient than the grid search method by Kwan *et al*. 2015a, and generates much more precise apparent chargeabilities, resistivities, and IP relaxation time constants. The improved NM AIIP mapping algorithm has been used to process the airborne time-domain electromagnetic data from numerous VTEM surveys since 2015.

AIIP processing is applied to VTEM data desampled to 10 m interval.

2.3 DETERMINATION OF FREQUENCY FACTOR C

The Geotech AIIP chargeability mapping algorithm described in Appendix A requires fixed frequency factor c, while the DC resistivity, chargeability m and IP relaxation time constant τ are allowed to vary. The determination of frequency factor c for selected VTEM data is carried out by interactive forward modelling software, also based on Airbeo from CSIRO/AMIRA. The locations of selected VTEM decays for c calculations, over EM induction time-constant TAU, are shown in Figure 4. Eighteen (18) frequency factor c values are determined from the selected VTEM decays. All c values equal to 0.7.

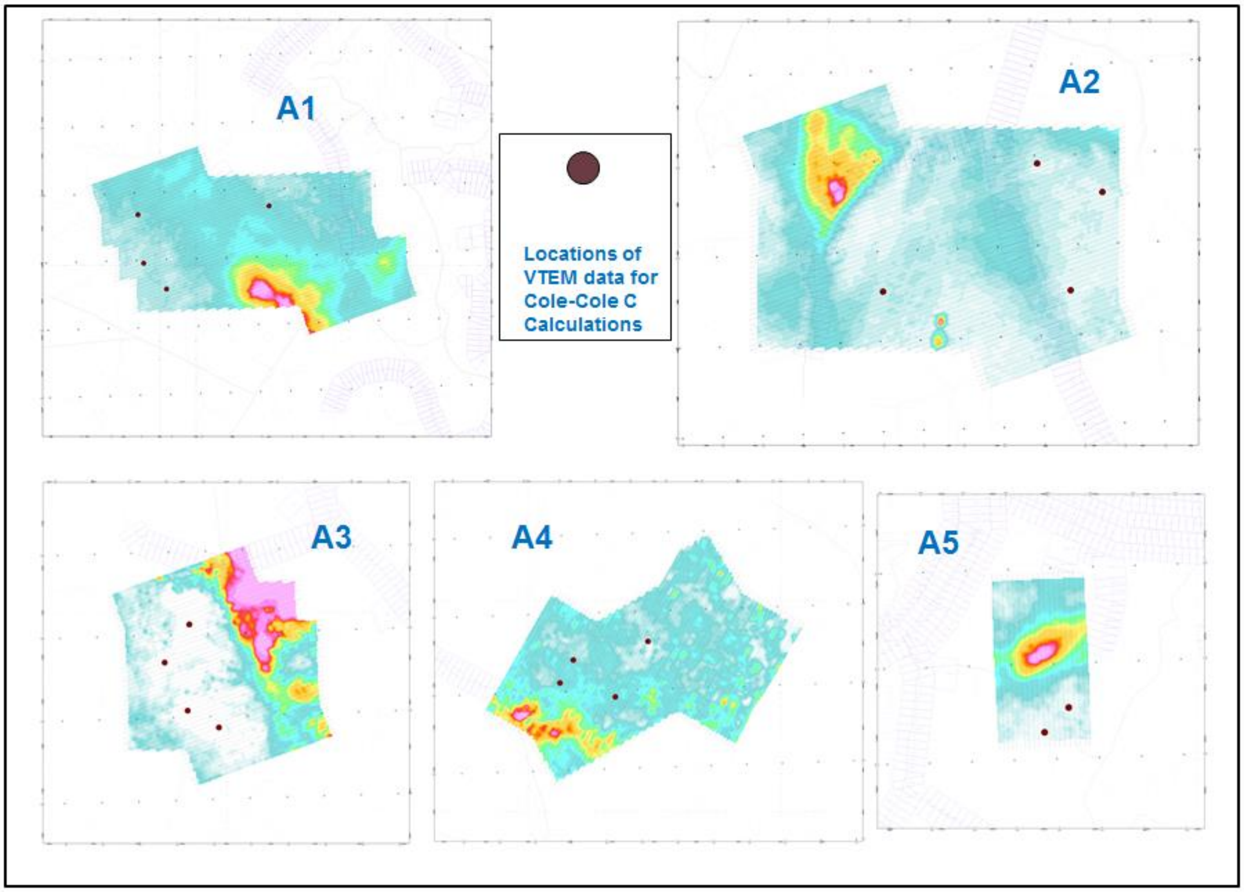

Figure 4: The locations of VTEM decays used for frequency factor c determination over time-constant TAU, areas A1 to A5.

Full Cole-Cole forward modelling results for four selected VTEM decays are shown in Figure 5.

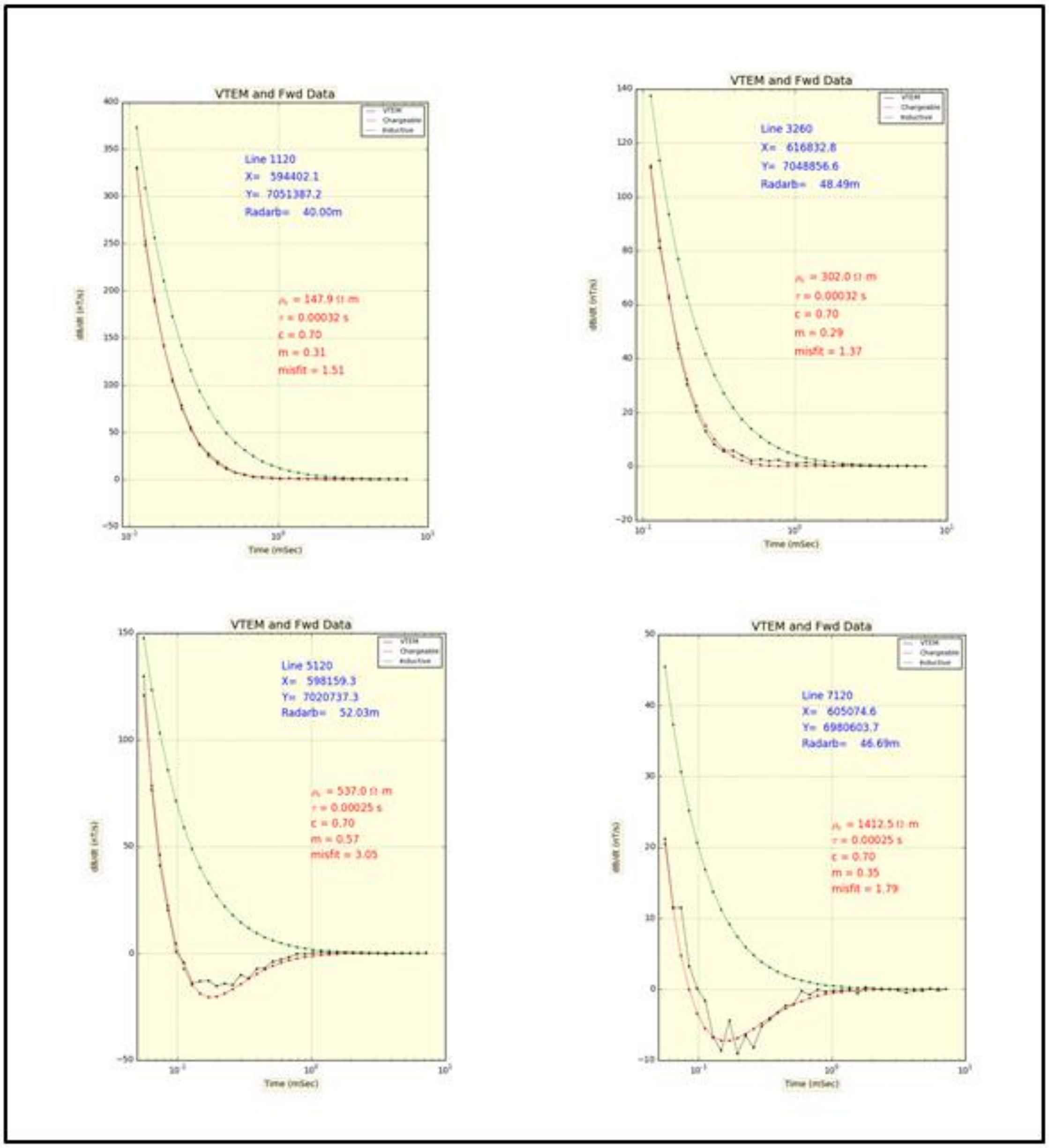

Figure 5: Cole-Cole parameters of four AIIP forward models and corresponding decays; purely inductive m=0 (green), observed data (black) and forward modeled data (red).

Typical Cole-Cole spectra for c=0.7 is shown in Figure 6. The width of the phase curve depends on c. For large c, the grain sizes of the polarizable material are distributed in a narrow range (or more uniformly distributed). The peak of the phase curve is related to the IP relaxation time-constant τ, or the average grain size of the polarizable materials.

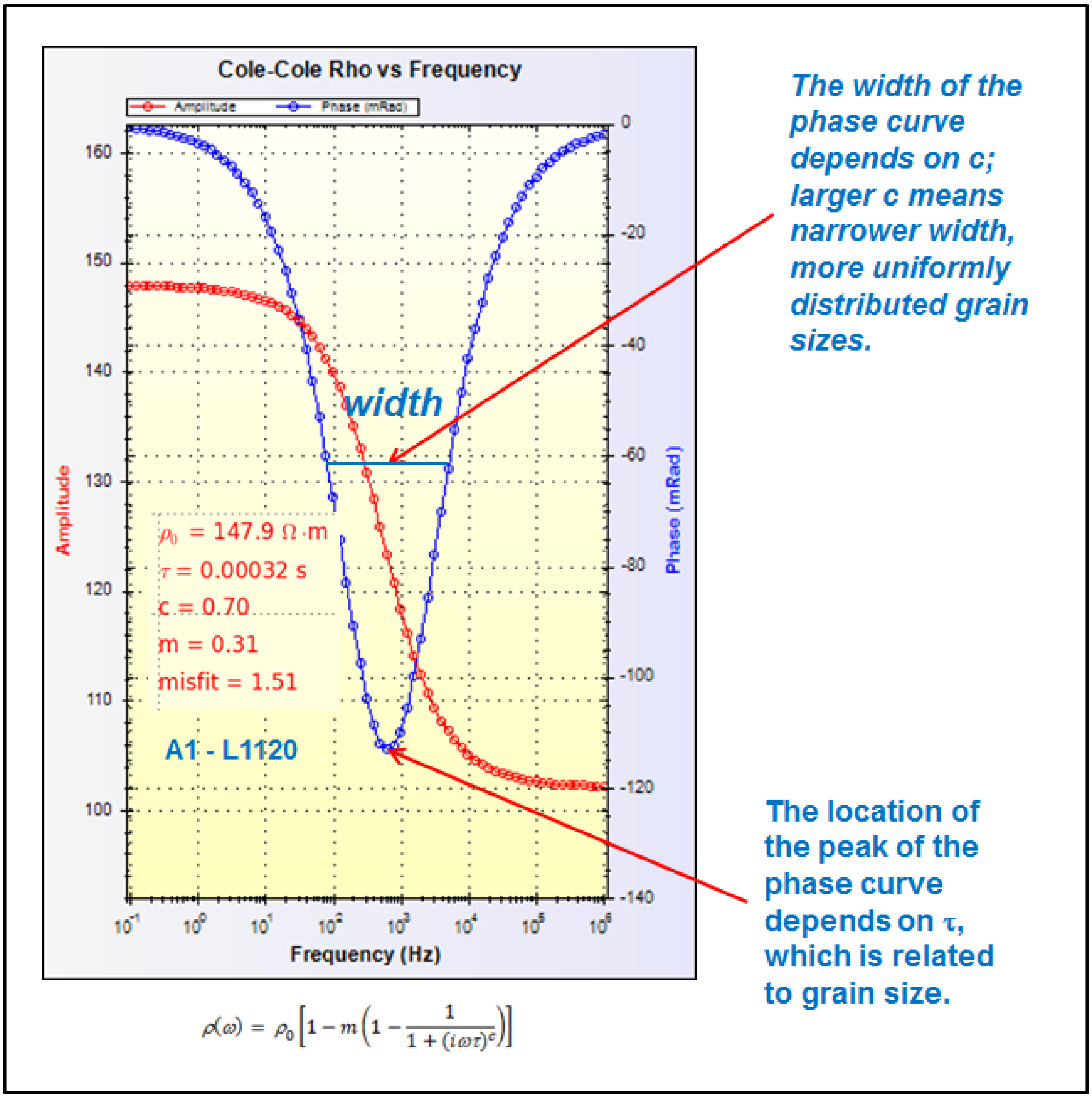

Figure 6: The relationship between the distribution of grain sizes and the frequency factor c is illustrated in the Cole-Cole spectra of c=0.7.

2.4 AIIP DEPTH OF INVESTIGATION

Using a buried chargeable prism in a uniform, non-polarizable ground, the depth of investigation of AIIP is studied. A 200 m by 200 m by 20 m prism of resistivity $\rho_1 = 10\ \Omega \cdot m$, $m = 0.5$ v/v, $\tau = 0.0002s$ *and* $c = 0.7$ is placed at various depths below ground in a resistive half space of resistivity $\rho_0 = 1{,}000\ \Omega \cdot m$, Figure 7. The size of the prism is within the footprint of the VTEM system, and the ground in the south of Coffee Road Property (A3 and A4) is quite resistive.

The software MarcoAir (CSIRO/AMIRA, Xiong and Tripp 1995) is used to generate the synthetic VTEM data in the AIIP depth of investigation. MarcoAir computes the airborne electromagnetic responses for prisms in layered earth. The Cole-Cole relaxation model is incorporated in MarcoAir.

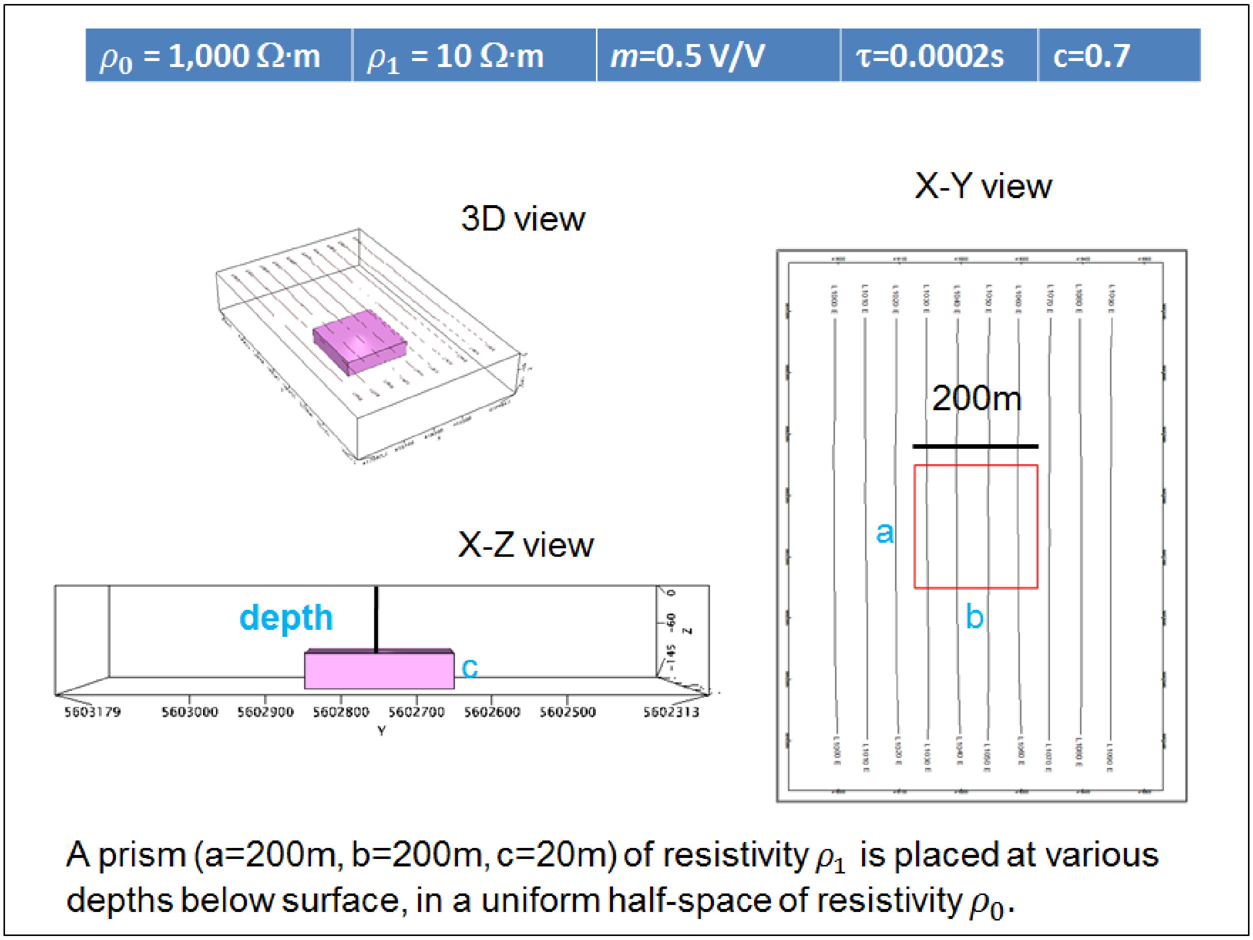

Figure 7: The setup of the 3D prismatic model for AIIP depth of investigation.

The AIIP apparent chargeability maps for the prisms buried at 50m, 75m and 100m depths are shown in Figure 8.

For the case of 50m deep prism, the maximum value of the recovered AIIP apparent chargeability is 0.58 V/V. The maximum recovered AIIP apparent chargeability for the 75m deep prism is 0.39 V/V. At 100m depth, maximum recovered AIIP apparent chargeability is 0.28 V/V, and the prism can still be detected and mapped by the VTEM system.

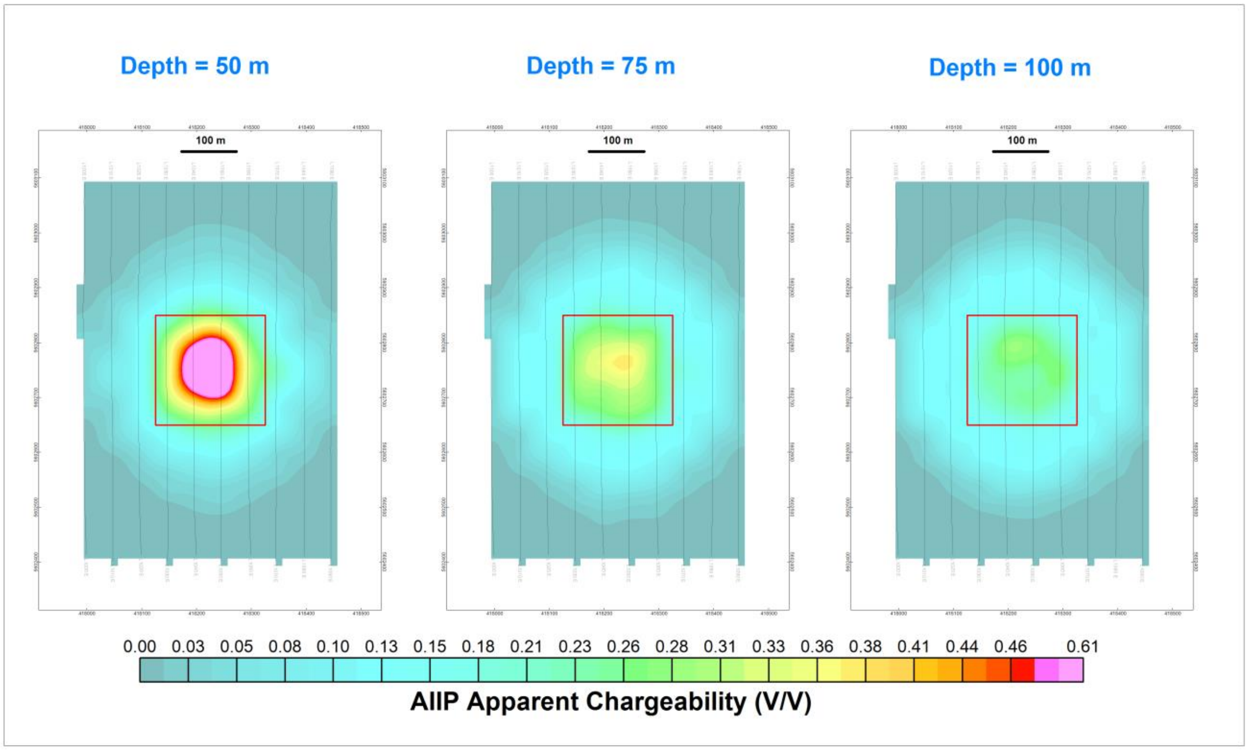

Figure 8: AIIP apparent chargeabilities for prisms located 50m, 75m and 100m below ground; the same color scheme is used.

The AIIP apparent resistivity maps for the prisms buried at 50m, 75m and 100m depths are shown in Figure 9.

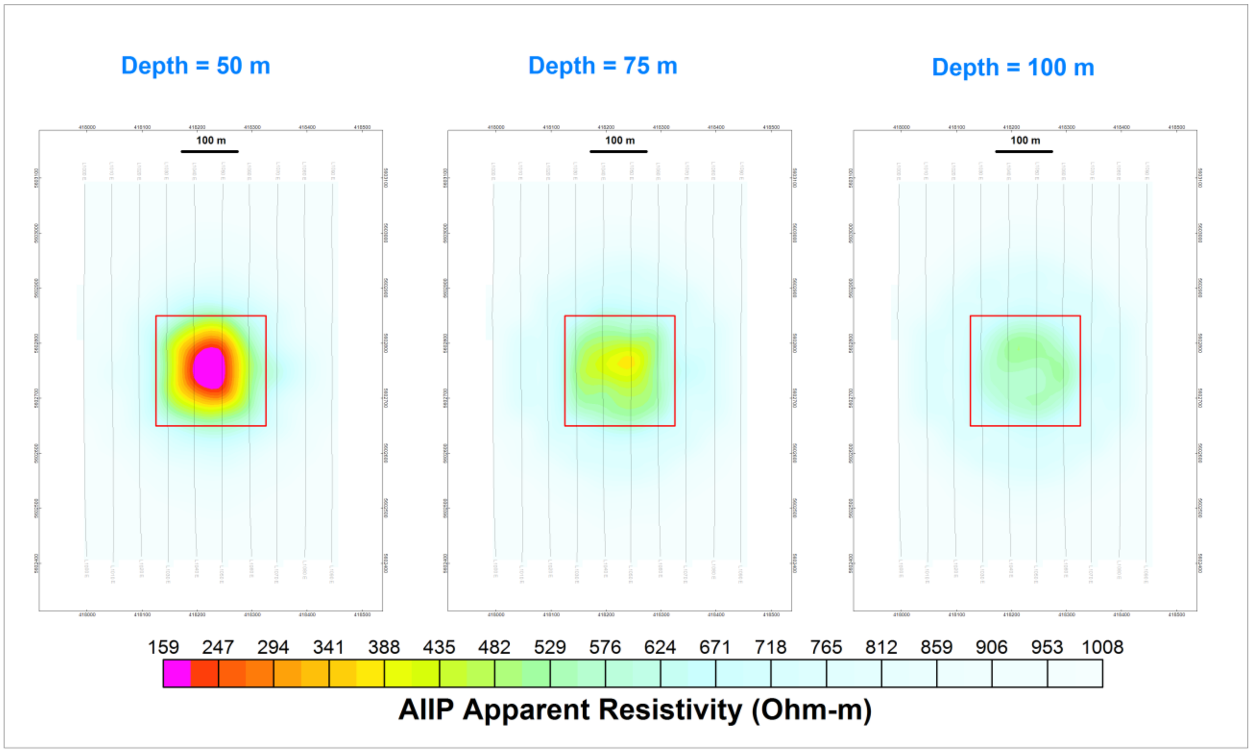

Figure 9: AIIP apparent resistivities for prisms located 50m, 75m and 100m below ground; the same color scheme is used.

At 100m depth in a resistive (1000 Ohm-m) host, a moderately chargeable prism may still be detectable by VTEM system, and the apparent chargeability (albeit weak) and resistivity recovered by AIIP mapping, as illustrated in Figure 10. Again, the expression of the AIIP effect in VTEM data is the distortion of the decay curve. Negative transient is not required to prove the existence of AIIP effect in VTEM data.

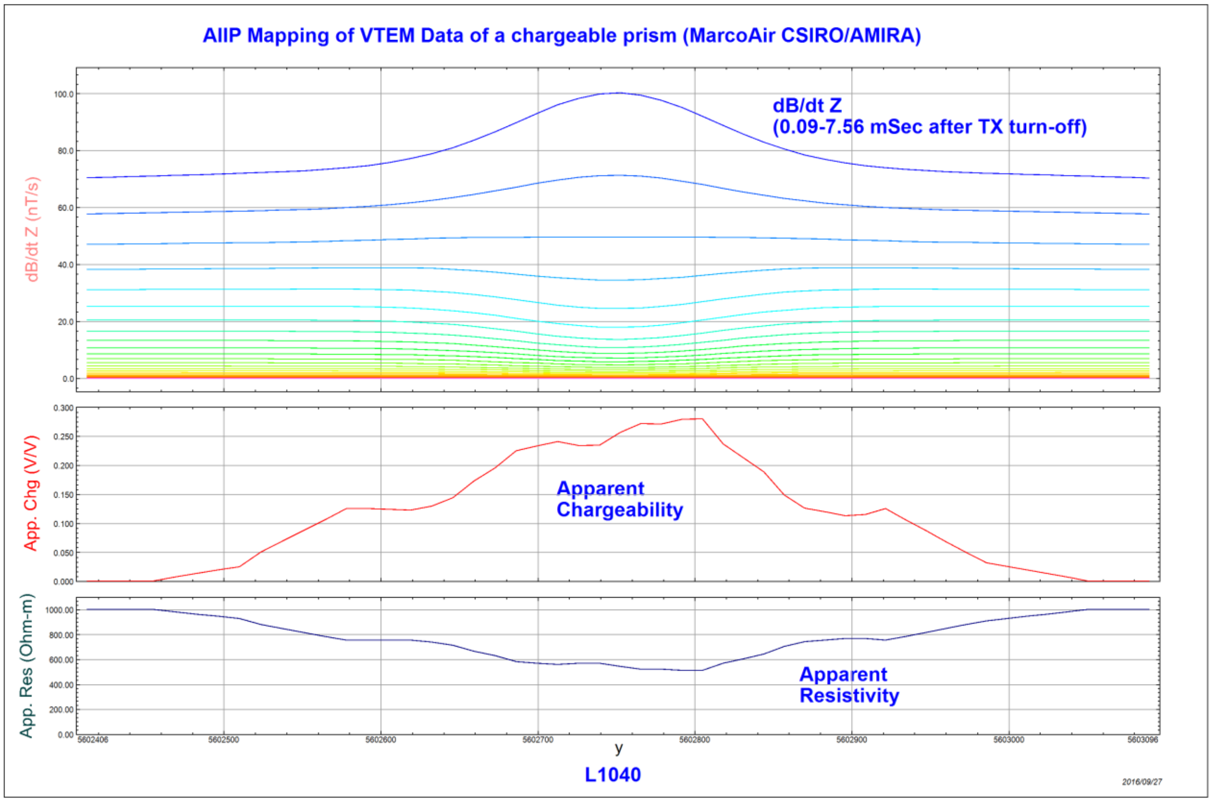

Figure 10: Forward modeled VTEM data of a chargeable prism at 100m depth, and recovered apparent chargeability and resistivity, synthetic line L1040 (just left of the prism centre).

3. AIIP CHARGEABILITY MAPPING RESULTS

3.1 GEOLOGY AND KNOWN GOLD MINERALIZATION

The discussions of the geology of the Coffee Road property are based mainly on the work by MacKenzie, Craw & Finnigan., 2014.

The basement of the Coffee Road property consists of the Paleozoic metamorphic rocks of the Yukon Tanana Terrane (YTT), Figure 11, Mackenzie, Craw & Finnigan, 2014. The basement rocks of VTEM areas A1, A3, A4 and western half of A5 are mainly undifferentiated schist and gneiss, and the basement of areas A2 and eastern half of A5 comprises mainly of Late Permian granitoid.

The basement rocks were deformed, folded and stacked during the Jurassic along regional-scale thrust faults. Greenschist facies shear zones and alteration developed during this time. Later stages of more brittle folding and fracturing subsequently developed and were locally infilled by orogenic quartz veins formed from fluids generated at depth within the thickened metamorphic pile. Hydrothermal alteration and disseminated gold mineralization in the White Gold District located just west of the Coffee Road property are structurally controlled by extensional fractures and EW striking Jurassic faults and shear zones, Mackenzie, Craw & Finnigan, 2014.

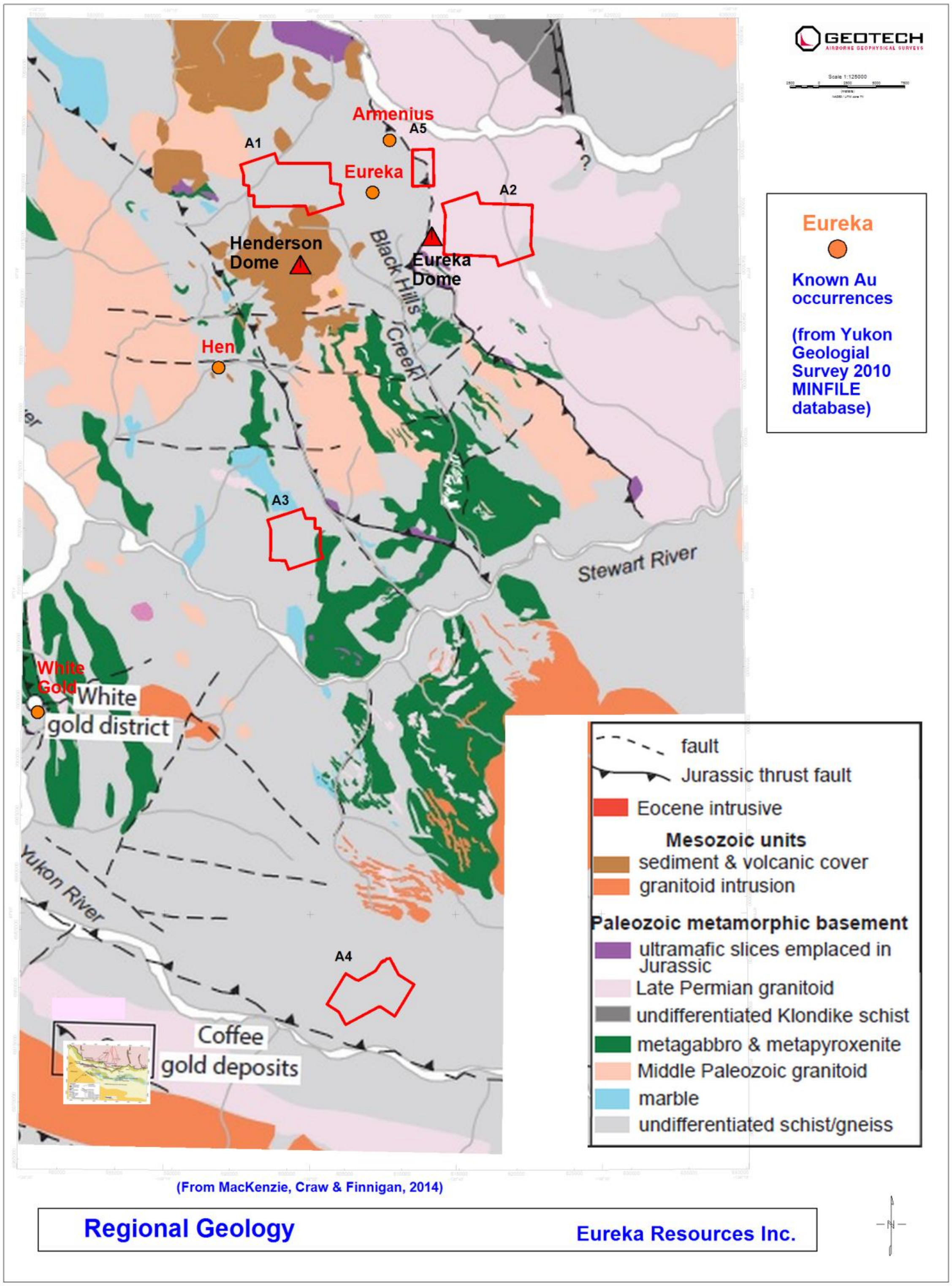

Figure 11: Regional geology of the Coffee Road Property, from MacKenzie, Craw & Finnigan, 2014, three known gold occurrences, i.e., Armenius, Eureka & Hen (from Yukon Geological Survey 2010 and appeared in Chapman et al., 2011) and the Coffee gold deposits (from Bultenhuis, Boyce & Finnigan, 2015) located west and southwest of A4.

Chapman, Mortensen & LeBarge, 2011 concluded that the placer gold deposits of the Indian River and Black Hills Creek (A1, A2 & A5) had formed mainly as a consequence of erosion of orogenic gold mineralization.

Bailey, 2013 proposed a Jurassic orogenic gold mineralization model for the Golden Saddle gold deposit, west and southwest of A3, in the White Gold District.

The Coffee deposits, west and southwest of A4, represent the shallower epizonal extensions of the mesozonal orogenic mineralization at the Boulevard deposit, a Cretaceous orogenic gold deposit, to the south (Buitenhuis, Boyce & Finnigan, 2015).

3.2 MAGNETIC DATA

Potential orogenic gold mineralization in the Coffee Road property is likely to be controlled by local scale geological structures such as fractures or faults, which can be mapped by the magnetic data.

The interpreted structures, i.e., faults, and possible thrusts and intrusions over the Calculated Vertical Gradient (CVG) data of the VTEM areas are shown in Figure 12.

The inferred faults may act as conduits or pathways for possible metamorphic or hydrothermal fluids, leading to possible hydrothermal alteration or even gold mineralization in host rocks.

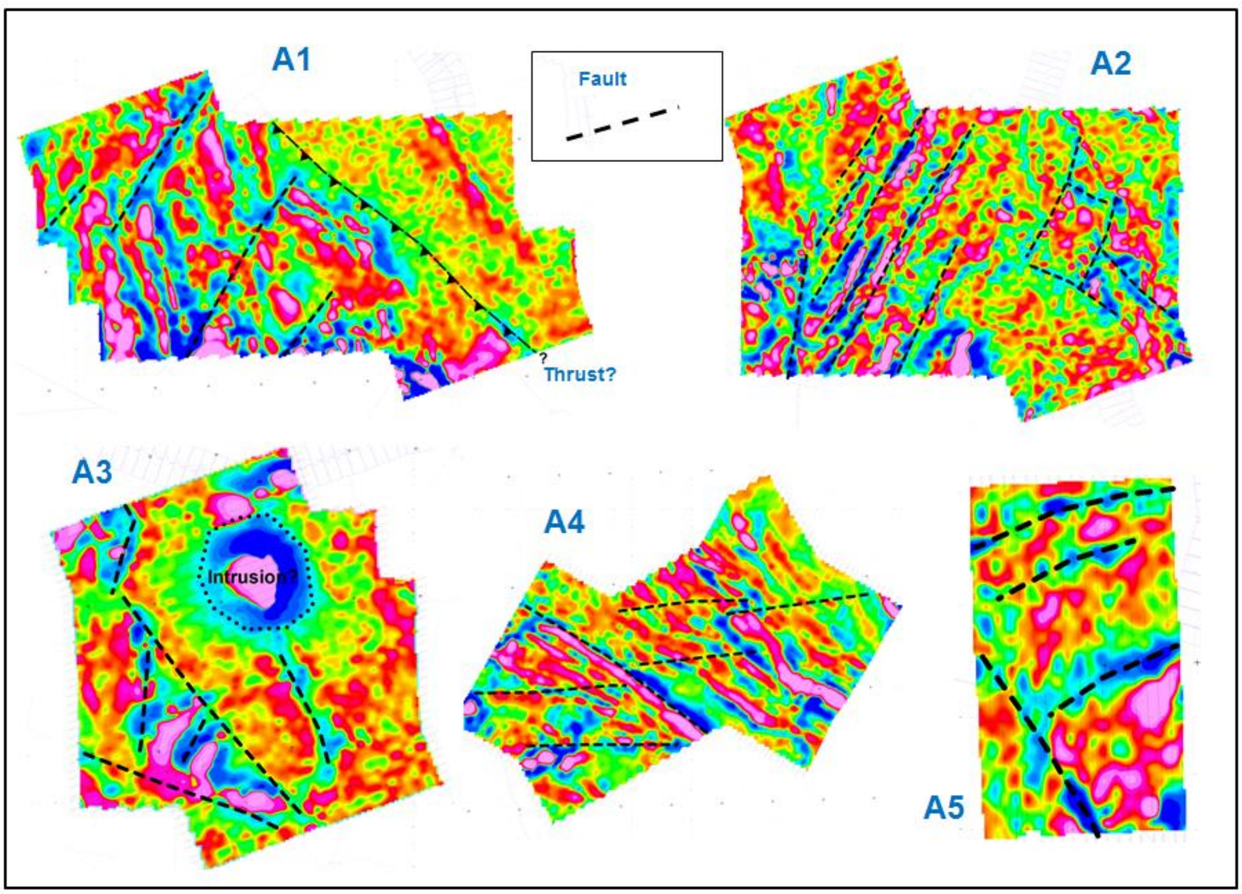

Figure 12: Inferred faults and possible thrust (A1) and intrusion (A3) over the CVG data of VTEM areas.

3.3 AIIP MAPS AND POTENTIAL GOLD PROSPECTS

The AIIP apparent chargeability and resistivity maps derived using frequency factor c of 0.7 of A1 block are shown in Figure 13. The strong conductive and chargeable zones don't appear to be coinciding with the drainages, implying that the conductive and chargeable materials are located within the hard rocks. The AIIP anomalies could be related to the fault zones, which acted as conduits for hydrothermal or metamorphic fluids possibly carrying sulphide minerals and even gold. The AIIP conductive and chargeable zones are selected as potential orogenic gold exploration prospects.

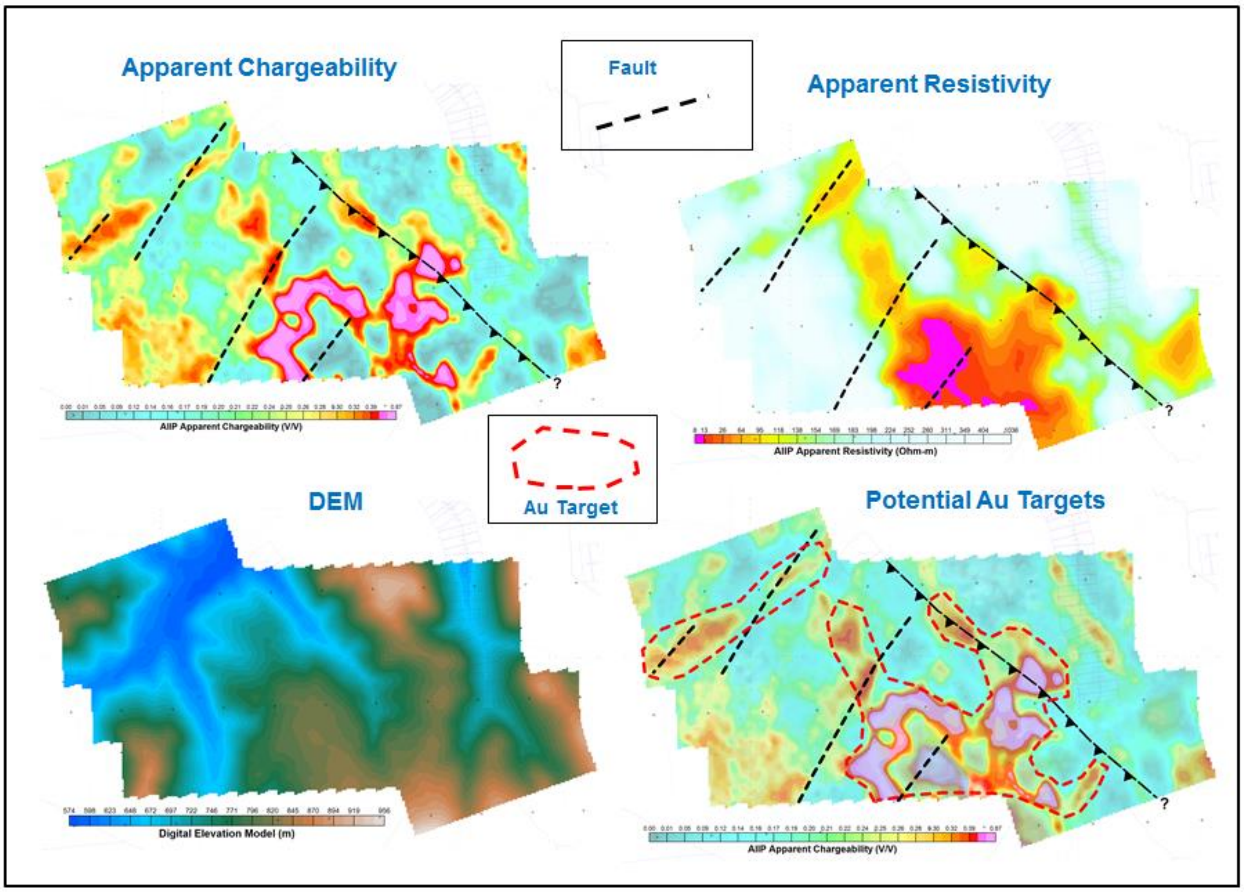

Figure 13: AIIP apparent chargeability, resistivity maps, DEM and potential gold targets, A1 block.

The AIIP apparent chargeability and resistivity maps of A2 block are shown in Figure 14. It appears that the conductive zones follow more or less the drainages. However, the chargeable anomalies in the west of the block don't appear to be related to drainages. These chargeable anomalies could be related to the NE-SW trending inferred faults in the same area. A potential orogenic gold exploration prospect for A2 is identified and shown over the AIIP apparent chargeability.

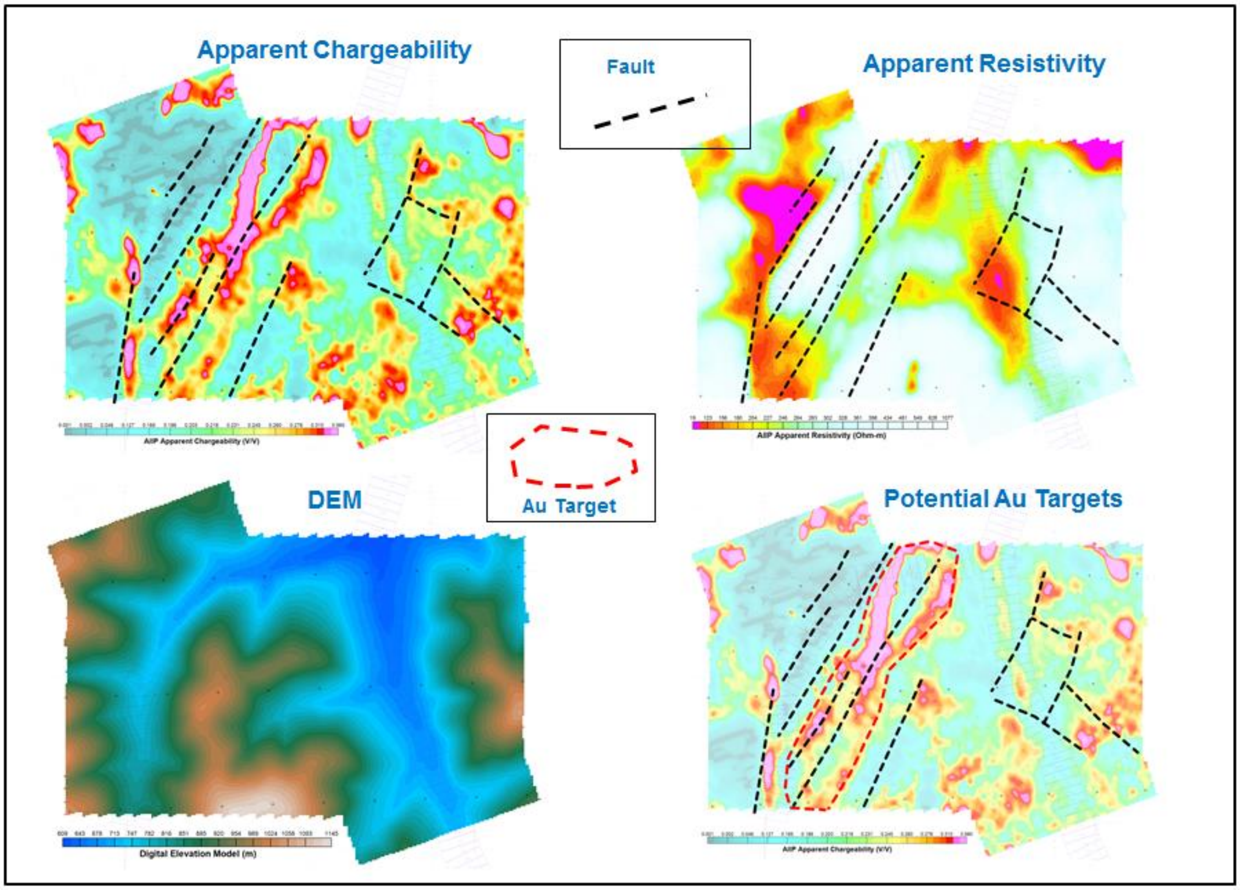

Figure 14: AIIP apparent chargeability, resistivity maps, DEM and potential gold targets, A2 block.

The AIIP apparent chargeability and resistivity maps of A3 block are shown in Figure 15. It appears that the AIIP anomalies do not follow the drainages. The chargeable anomalies are located within resistive terrains, implying that they could be possibly related to sulphide mineralization in quartz veins. A potential gold exploration prospect in the western half of A3 block is outlined and displayed over the AIIP apparent chargeability.

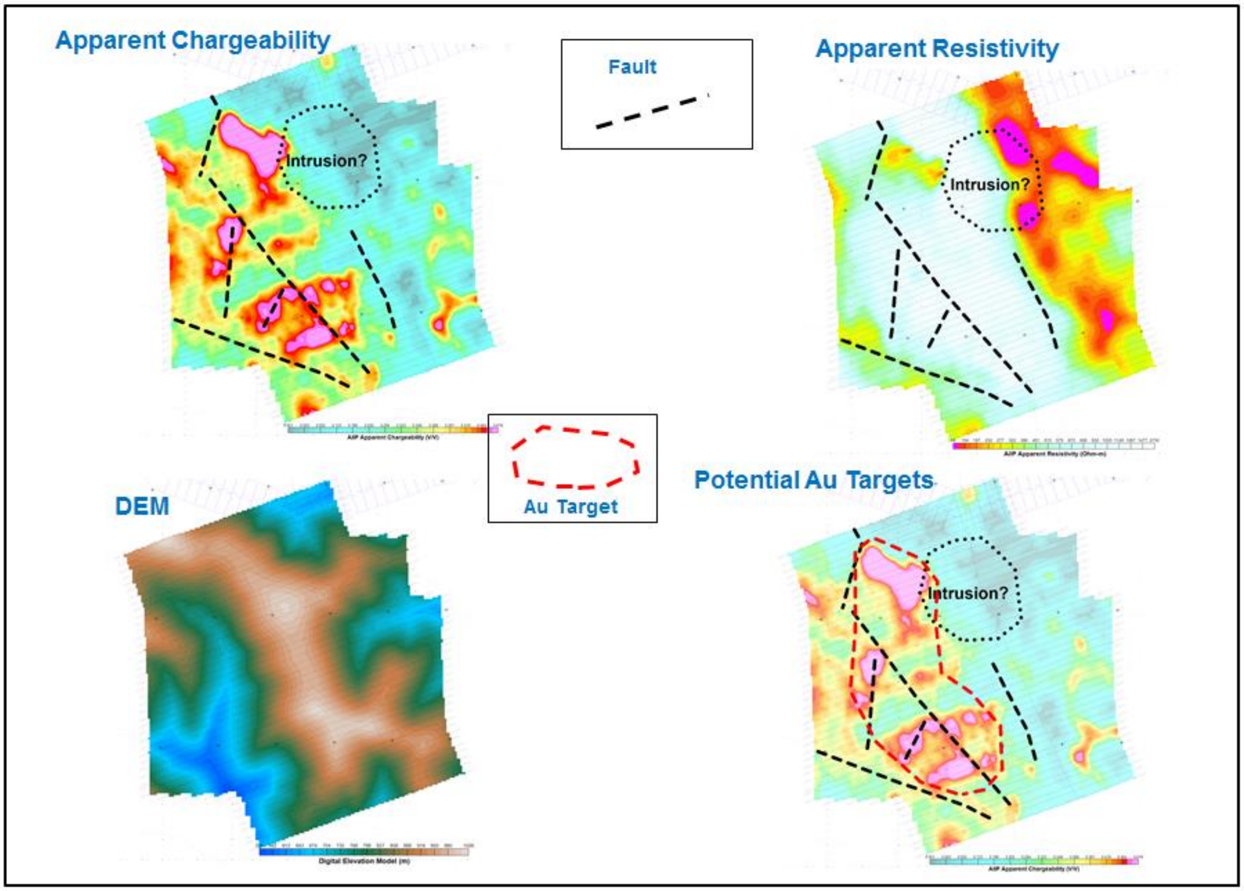

Figure 15: AIIP apparent chargeability, resistivity maps, DEM and potential gold targets, A3 block.

The AIIP apparent chargeability and resistivity maps of A4 block are shown in Figure 16. It appears that the AIIP apparent chargeability anomalies do not follow the drainages, but the AIIP apparent resistivity anomalies appear to follow the drainages closely in the SW portion of A4. The chargeable anomalies are located within resistive terrains in the NE of A4, implying that they could be possibly related to sulphide mineralization in quartz veins. The chargeable anomalies seem to trend parallel to the inferred faults. A potential gold exploration prospect in A4 block is identified and displayed over the AIIP apparent chargeability.

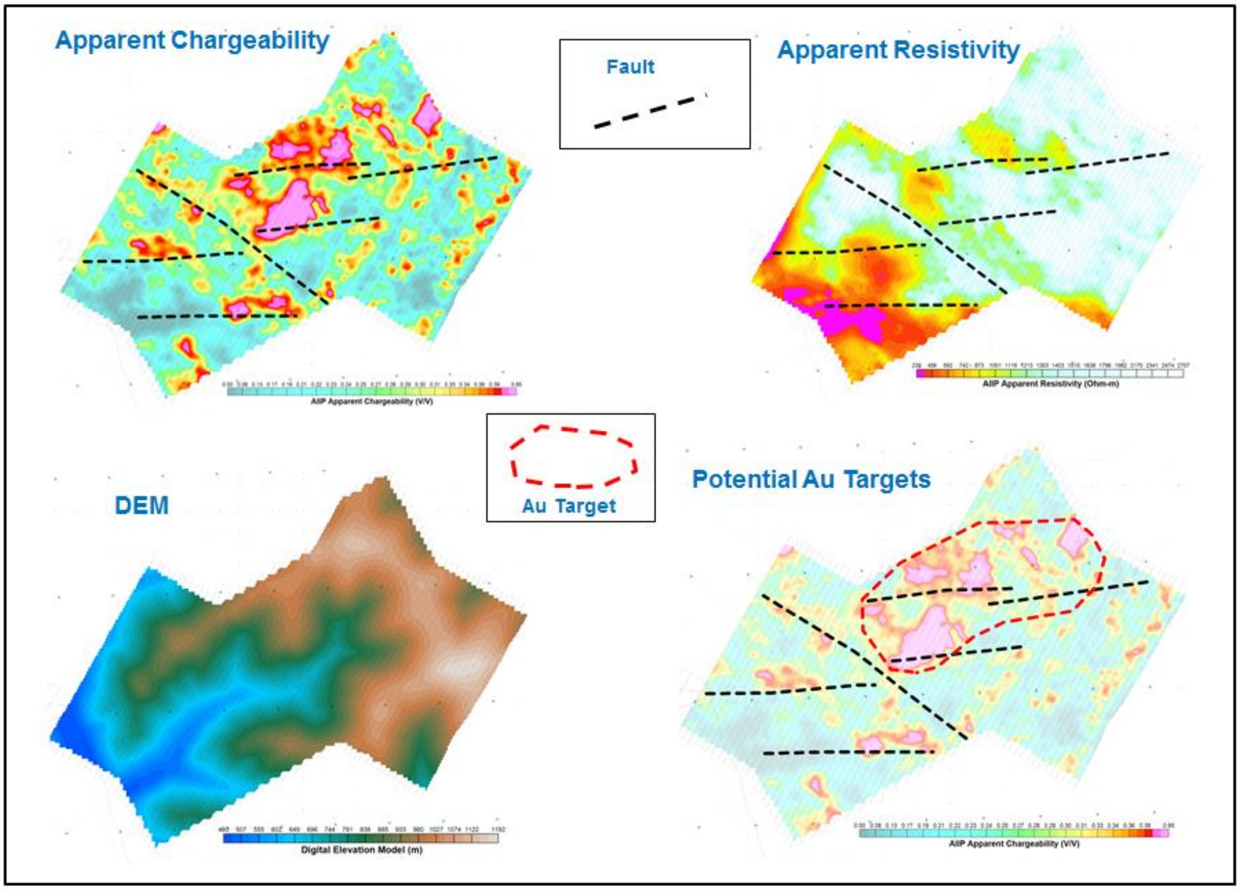

Figure 16: AIIP apparent chargeability, resistivity maps, DEM and potential gold targets, A4 block.

The AIIP apparent chargeability and resistivity maps of A5 block are shown in Figure 17. It appears that the AIIP anomalies don't follow the drainages. The chargeable anomalies in the south of the block are located in resistive terrains and they could be related to sulphides in quartz veins. The chargeable anomalies in the north are located very close to the central conductive zone, which is trending ENE direction and fairly conductive. The central conductive zone could be related to possible massive sulphide mineralization. Potential gold exploration prospects for A5 are identified and shown over the AIIP apparent chargeability.

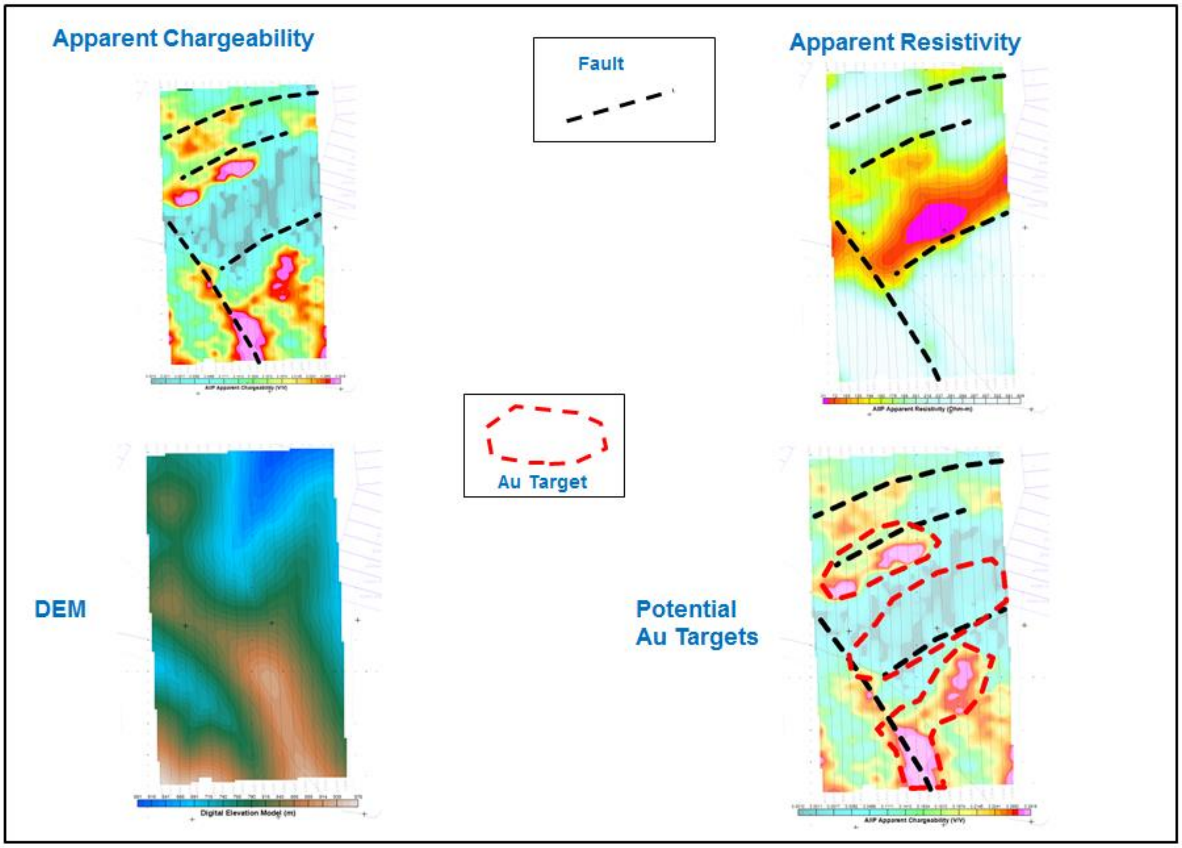

Figure 17: AIIP apparent chargeability, resistivity maps, DEM and potential gold targets, A5 block.

3.4 DISCUSSIONS OF AIIP SOURCES

The following discussions focus on the possible sources of AIIP and implications for the exploration of potential orogenic gold mineralization in the VTEM blocks.

There are three main sources of orogenic gold (Augustin & Gaboury, 2017 and references therein):

1. Intrusion-related sources (e.g. Porphyries);
2. Carbonaceous, pyrite-rich sedimentary rocks (Large *et al.*, 2011);
3. Plume-related basaltic rocks (Bierlein & Pisarevsky, 2008);

The first two possible sources of gold could be present in the VTEM blocks.

The majority of orogenic gold deposits formed proximal to regional terrane-boundary structures that acted as vertically extensive hydrothermal plumbing systems, and most deposits are sited in second or third order splays or fault intersections that define domains of low mean stress and correspondingly high fluid fluxes, McCuaig and Kerrich 1998.

The origin of gold in some types of orogenic gold deposits, such as turbidite-hosted, or sediment-hosted gold deposits, is an active research topic. Some of the conventional beliefs and new ideas from Large *et al*., 2011 regarding the carbonaceous pyrite-rich sedimentary source of gold for these deposits are listed below, representing two different theories. In either case, structure, i.e., fault, and hydrothermal activity are two of the most critical factors in the formation of the gold deposits.

Conventional Beliefs	***New Ideas (Large et al., 2011)***
Gold is coming from some deep sources or from crustal granite	Gold is already present in the sedimentary basin
Graphitic sediments are good trap rocks for gold	Graphitic sediments are ideal source rocks for Au & As and other trace elements
Gold is introduced late; i.e., syn-tectonic or post-tectonic	Gold is introduced early; i.e., pre-tectonic and moved around late during tectonism

Some AIIP results have indicated that some hydrothermal alteration products, i.e., hydrothermal pyrite, can generate conductive and chargeable responses in VTEM data. The linear conductive and chargeable trends tend to coincide with or to be locaed in close proximity to fault zones, which acted as conduits for hydrothermal or metamorphic fluids.

The hydrothermal alteration assemblages, i.e., sericitization, carbonatization, sulphidation (pyrite) and etc., are common to many orogenic gold deposits, Bierlein *et al*., 2000, and the recognition of extensive alteration halos around them, especially hydrothermal pyrites, by AIIP mapping represents a potentially powerful tool for gold exploration.

The hydrothermal alteration products in general are fine-grained.

4. CONCLUSIONS AND RECOMMENDATIONS

The AIIP chargeability mapping of VTEM data from the A1-Ophir, A2-Sheba, A3-Hav, A4-Tak, and A5-Etta blocks located within the Coffee Road Property, Yukon, has been carried out.

Potential exploration prospects for orogenic gold mineralization in the blocks are identified and they are recommended for follow-up.

Respectfully submitted,

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September 20, 2017

[2] The designation of P.Geo (Limited) by Association of Professional Geoscientists of Ontario permits the principal interpreter to practice in the field of exploration geophysics only.

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APPENDIX A: AIIP Mapping

INTRODUCTION

Data acquired by airborne in-loop time-domain electromagnetic (EM) systems, such as VTEM^{TM} (Witherly et al., 2004), reflect mainly two physical phenomena in the earth: (1) EM induction, related to ground conductivity, (2) Airborne Inductively Induced Polarization (AIIP), related to the relaxation of polarized charges in the ground (e.g., Kratzer & Macnae 2012 and Kwan *et al*., 2015).

It has been shown by Smith and West (1989) that the in-loop EM system is optimally configured to excite a unique AIIP response, including negative transients in mid to late times over resistive grounds, from bodies of modest chargeability.

Negative transients observed in airborne time domain EM data (e.g. Smith and Klein, 1996 and Boyko et al. 2001) are attributed to airborne inductive induced polarization (AIIP) effects. However, the absence of negative transients does not preclude the presence of AIIP, because of the IP effect takes finite time to build up or the IP effect may be obscured by the conductive ground (Kratzer and Macnae, 2012).

In mineral exploration, near-surface sources of AIIP are clays through membrane polarization (electrical energy stored at boundary layer) and most metallic sulphides and graphite through electrode polarization (electrical charges accumulated through electrochemical diffusion at ionic-electronic conduction interfaces). Some kimberlites in Lac de Gras kimberlite field are known to have AIIP signatures (Boyko *et al*., 2001).

The widely used theory to explain the IP effect is the empirical Cole-Cole relaxation model (Cole and Cole, 1941) for frequency dependent resistivity $\rho(\omega)$,

$$\rho(\omega) = \rho_0 \left[1 - m\left(1 - \frac{1}{1+(i\omega\tau)^c}\right)\right], \quad (1)$$

where ρ_0 is the low frequency asymptotic resistivity, m is the chargeability, τ is the IP relaxation time constant, $w = 2\pi f$, and c is the frequency factor.

The extraction of AIIP chargeability m using the Cole-Cole formulation from VTEM data had been demonstrated by Kratzer and Macnae, 2012 and Kwan *et al.*, 2015.

An improved version of AIIP chargeability mapping tool based on CSIRO/AMIRA Airbeo has been developed for VTEM system and tested on VTEM data from Mt Milligan, British Columbia, Canada, and Tullah, Tasmania.

IMPROVED AIIP MAPPING ALGORITHM

Search for *m* and τ using Airbeo forward modeling

The extraction of the four Cole-Cole parameters (ρ_0, m, τ and c) from airborne VTEM data can be a difficult task. The AIIP mapping algorithm originally developed by Kwan *et al*., 2015 suffers lack of precision for the derived apparent chargeability m and resistivity ρ_0, and is computationally very slow. Geotech has recently developed an improved version of AIIP mapping algorithm, based on Airbeo from CSIRO/AMIRA[1] (Chen & Raiche 1998; Raiche 1998) to extract the (ρ_0, m and τ) parameters while keeping the frequency factor c fixed. The new method applies the Nelder-Mead Simplex minimization (Nelder and Mead, 1965) in the two-dimensional (m,τ) plane. At each required test point (m_i, τ_i), the optimal background resistivity ρ_0 is found by one-dimensional Golden Section minimization (Press *et al*., 2002). The algorithm uses only Airbeo's forward modeling kernel, which can generate synthetic VTEM data with high precision. The Nelder-Mead AIIP mapping algorithm generates much more precise (ρ_0, m, τ) parameters.

The Nelder-Mead Simplex Minimization method can be explained in the five (5) moves, reflection, expansion, outside and inside contraction, and shrink, as illustrated in Figure 1.

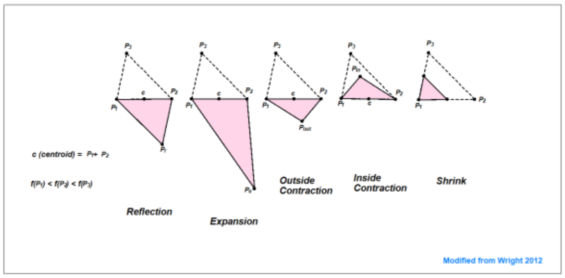

Figure 1: Nelder-Mead Simplex moves (modified from Wright 2012).

The Nelder-Mead Simplex minimization algorithm consists of following steps.

Let $f(\rho_0, \mathrm{m}, \tau)$ be the RMS error function defined as

[1] Commonwealth Scientific and Industrial Research Organization and Amira International;

$$f(\rho_0, \text{m}, \tau) = \frac{1}{N-1} (\sum_{i=0}^{N-1} (\text{f}(\rho_0, \text{m}, \tau, t_i) - v(t_i))^2)^{1/2} . \qquad (2)$$

Step 1 (Sorting)

Sort the vertices such that f(P_1) < f(P_2) < f(P_3). Point P_1 is the best point, P_2 is the next-to-worst point and P_3 is the worst point;

Step 2 (Reflection)

Reflect the worst point P_3, through the centroid of (P_1 and P_2) to obtain the reflected point P_r, and evaluate f(P_r).

If (f(P_1) < f(P_r) < f(P_2)), then replace the worst point P_3 with the reflected point P_r, and go to Step 5.

Step 3 (Expansion)

If (f(P_r) < f(P_1)), then extend the reflected point P_r, further pass the average of P_1 and P_2, to point P_e, and evaluate f(P_e)

(a) If f(P_e) < f(P_r), then replace P_3 with P_e, and go to Step 5
(b) Otherwise, replace the worst point P_3 with the reflected point P_r, and go to Step 5

Step 4 (Contraction or Shrink)

If the inequalities of Step 2 and 3 are not satisfied, then it is certain that the reflected point P_r is worse than the next-to-worst point P_2, (f(P_r) > f(P_2)) and, a smaller value of f might be found between P_3 and P_r. So try to contract the worst point P_3, to a point P_c between P_3 and P_r and evaluate f(P_c);

The best distance along the line from P_3 to P_r can be difficult to determine. Typical values of P_c are one-quarter and three-quarter of the way from P_3 to P_r. These are call inside and outside contraction points P_{in} and P_{out};

(a) If min(f(P_{in}), f(P_{out})) < f(P_2), then replace P_3 with the contraction point P_{in} or P_{out}, and to Step 5.

(b) Otherwise shrink the simplex into the best point, P_1, and go to Step 5.

Step 5 (Convergence Check)

Stop if the standard deviation of *f* is less than user-specified tolerance *RMSTOL*,

$$\sqrt{\frac{1}{n}\sum_{i=0}^{n-1}(f_i - f_{avg})^2} \leq RMSTOL$$

Perhaps the most important feature in the Nelder-Mead simplex method is Step (4b), the shrink. It allows the shape of the simplex to "adapt itself to the local landscape", Nelder and Mead, 1965. In essence, all the moves in the Nelder-Mead (NM) Simplex method are designed to move away from the worst point.

Han and Neumann 2006 showed that the NM simplex method deteriorates when the number of parameters to be minimized (n) increases. For n=1 or 2, NM convergence is acceptable. As n≥3, NM convergence slows dramatically as N increases. Due to this reason, Geotech applies the NM method only in the 2D (m,τ) plane, to ensure convergence as well as that all the NM moves can be checked visually.

AIIP MAPPING RESULTS

Mt. Milligan, British Columbia, Canada

Mt. Milligan Cu-Au deposit is located within Early Mesozoic Quesnel Terrane that hosts a number of Cu-Au porphyry deposits, Oldenburg et al, 1997. The Mt. Milligan intrusive complex consists dominantly of monzonitic rocks, including the MBX and Southern Star (SS) zones, all which host mineralization at Mt. Milligan (Figure 2). Mineralization in both zones consists of pyrite, chalcopyrite and magnetite with bornite localized along intrusive-volcanic contacts (Terrane Minerals Corp. NI 43-101, 2007). Copper-gold mineralization is primarily associated with potassic alteration with both copper grade and alteration intensity decreasing outwards from the monzonite stocks. Pyrite content increases dramatically outward from the stocks where it occurs in association with propylitic alteration, which forms a halo around the potassic-altered rocks.

Helicopter-borne VTEM surveys, including a small survey over Mt. Milligan, were carried out from July 29th to November 1st, 2007, on behalf of GeoscienceBC as part of the QUEST project in central British Columbia. The data were released to the public by GeoscienceBC and can be downloaded from http://www.geosciencebc.com.

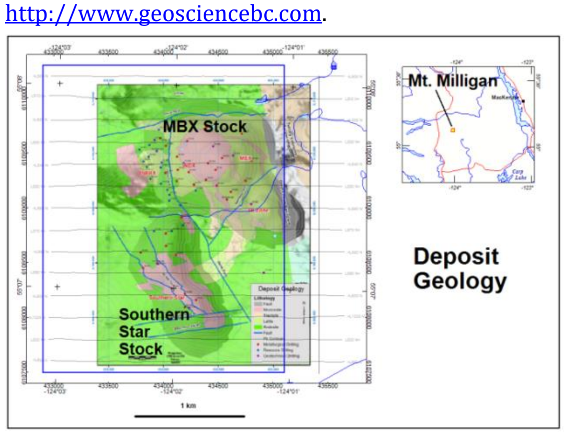

Figure 2: Mt. Milligan geology.

VTEM Z-component data, from 0.091 to 10.126 milliseconds in off-times, were processed to recover the AIP apparent chargeability. Very weak negative transients above noise level are observed in the VTEM data over two locations from survey lines near DWBX and SS. The inverted Cole-Cole chargeabilities are shown in Figure 3. Weak chargeabilities can be seen along the east and west flanks of the MBX stock, especially over DWBX, and in a small area southwest of SS stock. For comparison, the chargeability slice at 40m depth, created by UBC 3D airborne IP inversion of the same VTEM data from Kang *et al*., 2014, is also shown.

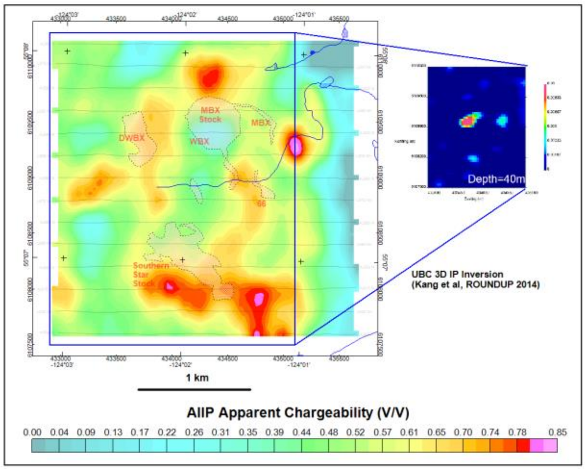

Figure 3: Mt. Milligan AIIP apparent chargeability.

The AIIP apparent resistivity of Mt. Milligan area is shown in Figure 4. A relatively low resistivity halo can be seen surrounding the SS stock.

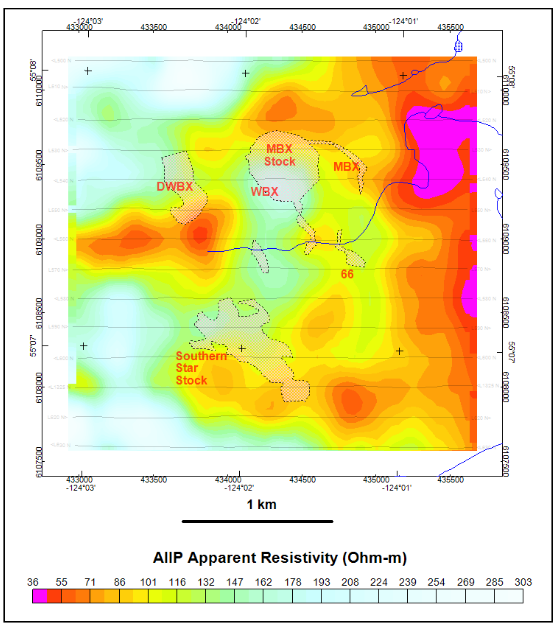

Figure 4: Mt. Milligan AIIP apparent resistivity.

Tullah, Tasmania

The most important metallogenic event in Tasmania occurred in Middle Cambrian as the post collisional proximal submarine volcanism and the deposition of the Mount Read Volcanics (MRV) and associated world-class deposits (Seymour *et al*., 2007).

The study area is located near Tullah, northwest Tasmania. The western half of the study area is covered by Late Cambrian quartz sandstone, Ordovician limestone and Quaternary alluvium and marine sediments (Figure). The eastern half is dominated by the Middle Cambrian volcanics (Corbett, 2002).

The Mount Lyell, located south of the study area, hosts 311 Mt 0.97% Cu and 0.31 g/t Au disseminated chalcopyrite-pyrite ore bodies in alteration assemblages of mainly quartz-sericite or quartz-chlorite-sericite.

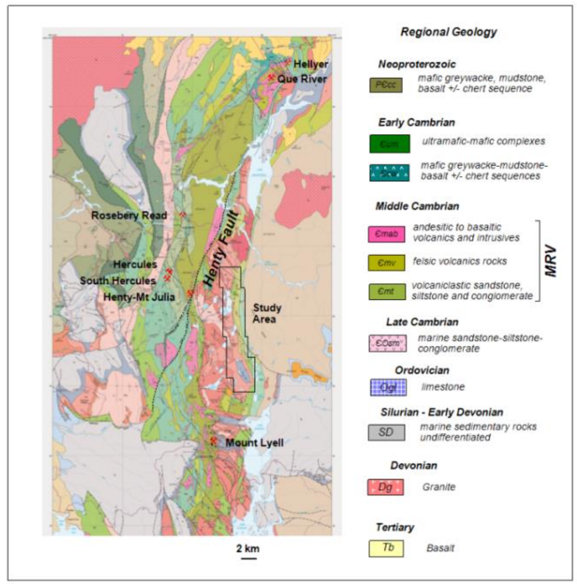

Figure 5: Regional geology of study area, Tullah, Tasmania.

From December 2012 to February 2013, Geotech carried out a helicopter-borne geophysical survey over the study area. Numerous negative transients were observed in the VTEM voltage data (Figure). The Z-component data, from 0.216 to 7.56 milliseconds in off-times, were processed for AIIP apparent chargeability.

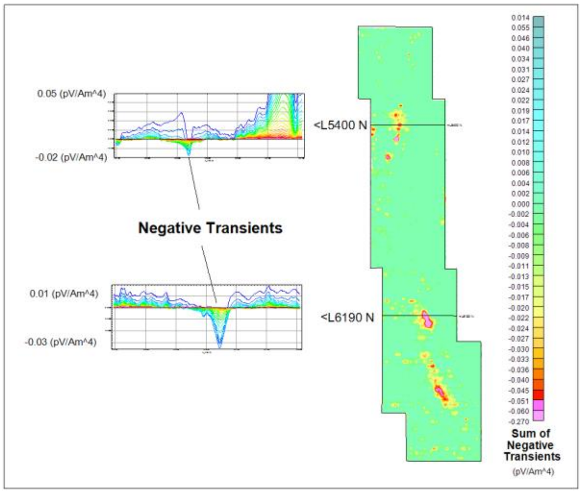

Figure 6: Sum of negative transients and two VTEM profiles, Tullah, Tasmania.

The amplitudes of VTEM data over resistive grounds are relatively now. If the number of decay data in the off-time windows is below a user specified noise threshold, then the decay will be skipped. The calculated AIIP apparent chargeability and resistivity of the study area are shown in Figure . The chargeability map follows the sum of negative transients closely. The sources of the AIIP could be clays or sulphides, or a combination of both.

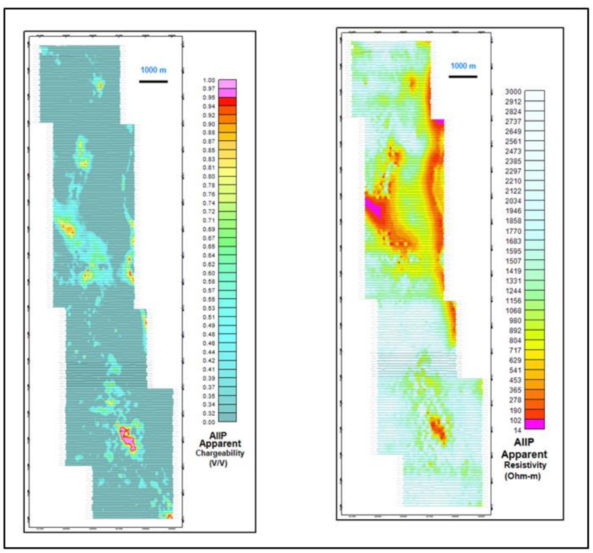

Figure 7: AIIP apparent chargeability and resistivity, Tullah, Tasmania.

DISCUSSION

For real VTEM data contaminated with noise and geology different from uniform half-space, two constraints, a restricted range of inverted apparent resistivity and the use of proper frequency factor, are required in order to for AIIP mapping tool to generate geologically meaningful outputs.

The range of acceptable inverted AIIP apparent resistivity can be estimated by other means and one of them is the Resistivity Depth Imaging (RDI) technique based on the transformation scheme described by Meju (1998).

Extensive discussions on frequency factor are provided in Pelton *et al*. (1978). A reasonable average of frequency factors can be obtained using AIIP forward modeling of VTEM decays of selected locations within a survey area. If the frequency factors are widely distributed, then AIIP mapping should be run using several frequency factors.

CONCLUSION

An improved version of AIIP mapping tool based on Airbeo (CSIRO/AMIRA) has been created for the in-loop VTEM system, which is optimally configured to excite a unique AIIP response, including negative transients in mid to late times over resistive grounds from bodies of modest chargeability. Test results on field VTEM data prove that the new AIIP mapping tool can work, if the inverted resistivity range is restricted and the proper frequency factor is used. The derived AIIP apparent chargeability map provides additional information for the interpretation of VTEM data.

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APPENDIX B: Final Deliverables

B1: Databases

A1_ch25t55_aiip_final.gdb;
A2_ch25t55_aiip_final.gdb;
A3_ch20t55_aiip_final.gdb;
A4_ch20t55_aiip_final.gdb;
A5_ch25t55_aiip_final.gdb;

Database channel descriptions;

A1, A2 and A5 blocks

Channel	Descriptions	Unit
x	UTM Easting (NAD83, UTM zone 7N)	meter
y	UTM Northing (NAD83, UTM zone 7N)	meter
radarb	EM TX-RX height above ground	meter
sfzo	Observed dB/dt Z component array (Ch 25 to 55), 31 chs	pV/Am^4
sfzc	Calculated dB/dt Z component array (Ch 25 to 55), 31 chs	pV/Am^4
chg_final	Final AIIP apparent chargeability	V/V
res_final	Final AIIP apparent resistivity	Ohm-m

A3 and A4 blocks

Channel	Descriptions	Unit
x	UTM Easting (NAD83, UTM zone 7N)	meter
y	UTM Northing (NAD83, UTM zone 7N)	meter
radarb	EM TX-RX height above ground	meter
sfzo	Observed dB/dt Z component array (Ch 20 to 55), 36 chs	pV/Am^4
sfzc	Calculated dB/dt Z component array (Ch 20to 55), 36 chs	pV/Am^4
chg_final	Final AIIP apparent chargeability	V/V
res_final	Final AIIP apparent resistivity	Ohm-m

B2: Grids

A#_chg_finalw.grd: AIIP apparent chargeability grids;
A#_res_final.grd: AIIP apparent chargeability grids;