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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

BC Geological Survey
Assessment Report
38435

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geophysics

TOTAL COST: 40,375.71

AUTHOR(S): C.C. (Chuck) Downie

SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): N/A

YEAR OF WORK: 2019

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): SOW 5743566 2019/JUNE/04;
SOW-M 5753880 2019/SEPT/04

PROPERTY NAME: Vulcan

CLAIM NAME(S) (on which the work was done): 398960 406826 406827 408455 1067959 1067976 1067977 1067978 1067979 10679
1067981

COMMODITIES SOUGHT: Ag-Pb-Zn

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 82FNE160, 82FNE104, 82FNE093, 82FNE102, 82FNE101

MINING DIVISION: Ft. Steele

NTS/BCGS: 082F009 & 082F016

LATITUDE: 49 ° 46 ' 12 " **LONGITUDE:** 116 ° 19 ' 1 " **(at centre of work)**

OWNER(S):
1) Eagle Plains Resources Ltd.
2)

MAILING ADDRESS:
Suite 200, 44-12th Avenue South
Cranbrook, British Columbia, Canada V1C 2R7

OPERATOR(S) [who paid for the work]:
1) Eagle Plains Resources Ltd.
2)

MAILING ADDRESS:
Suite 200, 44-12th Avenue South
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PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Proterozoic, Cretaceous, Purcell Supergroup, Aldridge Formation, Hall Lake Fault, Albite, Tourmaline, Calc-Silicate, Epidote
Pyrrhotite, Pyrite, Arsenopyrite, Chalcopyrite, Galena, Magnetite, Scheelite, Sphalerite, Lower-Middle Aldridge Contact,
Fragmental, White Creek Batholith, Moyie Intrusion, New Granite Intrusion, AMT, 3DIP

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 3300, 3498, 4713, 7689, 11735, 12931, 13124
14197A&B, 14198A&B, 15239, 22267, 22709, 24651, 28185A&B, 28939, 32170, 32852, 32893, 33554, 35013 36577 37454

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization	2.8 line km	1067978 1067979 1067981	$40,375.71
Radiometric			
Seismic			
Other	AMT 2.8 line km	1067978 1067979 1067981	
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	$40,375.71

2019 TECHNICAL REPORT
FOR THE
VULCAN PROPERTY

Fort Steele Mining Division, Southeastern British Columbia
NTS Map Sheets 82F009 & 82F016
Latitude 49°46’ N, Longitude 116°21' W

Prepared for

Eagle Plains Resources Ltd.
Suite 200, 44-12th Avenue South
Cranbrook, British Columbia
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By

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September 03rd, 2019

SUMMARY

The Vulcan Property is located in the Purcell Mountains approximately 30.0 kilometers northwest of the historic Sullivan Mine at Kimberley, British Columbia. The 6361.51 hectares (ha) property consists of 14 claims and is 100% owned by Eagle Plains Resources Ltd., with no underlying royalties or encumbrances.

The principle exploration target on the property is a Sullivan-type sediment-hosted massive sulfide deposit. The Sullivan Deposit originally contained 160 million tons of ore averaging 6.5% Pb, 5.6% Zn and 67.0 gpt Ag (Lydon et al., 2001). At the Vulcan, the styles of mineralization, host rocks and alteration share strong similarities to the geology of the Sullivan Deposit. The best sulfide mineralization at Vulcan is exposed in a surface showing. Strataform pyrrhotite-galena-sphalerite mineralization occurs on the "Sullivan Horizon" in a 7.5 meter thick zone which includes 1.5 meters averaging 1.6% combined Pb-Zn. Grab samples of this zone assay up to 5.5% Pb-Zn and 22 gpt Ag.

The Vulcan property has been tested by historic drilling on five separate occasions. The most comprehensive testing occurred in the early 1990s by Ascot Resources. In 1991 a five hole, 1,003.0 meter drill program was completed; all holes were drilled within the current boundaries of the Vulcan property. In 1992 three holes were drilled to the west of the Jurak 1 claim in the West Basin area. The West Basin program, totaling 1,535.0 meters of drilling, explored the Lower-Middle Aldridge contact (LMC) to vertical depths of 300.0 meters, roughly 600.0-800.0 meters down-dip of 1991 intersections. Though 1992 drilling indicated the presence of Sullivan-type stratigraphy and alteration in all holes, significant base-metal mineralization was not encountered.

Work conducted on the Vulcan property in 2005 included reprocessing and reinterpretation of 1995 EM geophysical data and the development and implementation of a GIS database. In 2005, as part of a data compilation on an unrelated project in southeast British Columbia, Eagle Plains requested an independent contractor, Condor Geophysics, to verify and reprocess Geoterrex-Dighem (now Fugro Airborne Surveys) EM survey data collected in 1995 by a joint partnership between BC Ministry of Employment and Investment, Energy and Minerals division, BC Geological Survey Branch and the Geological Survey of Canada. During the course of the data verification by Condor, it was found that the GPS height and the barometric altimeter height were both corrupted, rendering the original geophysical maps and related data included in the 1996 public release unsuitable for accurate geophysical interpretation. After considerable effort Condor was able to arrange for the government to supply replacement SRTM (Shuttle Radar Topography Mission) elevation data that has reasonable resolution and based on this new data set were able to produce a new interpretation of the 1995 data. As the 1995 survey also covered the Vulcan property area Eagle Plains contracted Condor to correct and reinterpret the EM data for the area referred to as the St. Mary Block. Compilation work included scanning, rectifying and digitizing the historic geology maps, creating a drill-hole database, imputing the historic drill logs, and the creation and interpretation of new sections. A geochemistry database was also generated utilizing historic rock, silt and soil sample data. The geochemistry and drill-hole databases allow for a more organized approach to the interpretation of the geology of the Vulcan Property area.

Based on the results from the 2005 program, further work was recommended for the property to better define the down-dip projection of the Lower-Middle Aldridge contact, the stratigraphic horizon that hosts the nearby Sullivan Deposit. In 2006, Eagle Plains carried out a helicopter borne time domain geophysical survey on the project. A total of 125.5 line-kilometers at 200.0 meter spacing was flown on April 29th, 2006. Initial results from the survey indicate that the survey imaged the known mineralized structures and has also identified areas for further follow-up exploration. The total cost of the 2006 program was $39,178.84.

In 2010 local prospectors Craig Kennedy, Michael Kennedy, Sara Kennedy and Shawn Kennedy completed a prospecting program on what was known as the Moly Pritchard Property (now within the current extent of the Vulcan Project) on behalf of Kootenay Gold Inc. The work program was directed toward prospecting an altered structural zone which was exposed by logging activities earlier in the year. The prospecting program discovered an altered and mineralized shear zone described as a carbonate-epidote skarn with quartz veining, silicification, tourmaline-biotite and sericite associated with copper mineralization (C. Kennedy, 2011). The newly discovered mineral showing is located approximately 180.0 meters east of Dewar Creek, and was exposed by road building activities. The total cost of the 2010 program was $8,242.00.

In 2011, Fugro Airborne was contracted to conduct a 318.0 line-kilometer heliborne gravity gradiometry (AGG) survey of the Vulcan property with north-south transverse line spacing of 100.0 meters and 2,000.0 meter spaced tie lines. The survey was successful in identifying possible discordant structures spatially associated with the Hilo 2 showing. The nature of the gravity anomaly remains unknown. The total cost of the 2011 exploration program was approximately $118,583.19.

In 2011, Fjordland Exploration Inc., completed a modest work program on what was known as the Moly Pritchard Area, which is now part of the Vulcan Project. The program resulted in the collection of 204 B-horizon soil samples collected from 50.0 meter spaced stations. A total of 10 survey lines were completed spaced 200.0 meter apart covering approximately 1.8 kilometers of the inferred LMC as projected by Brown et al., in 2011. The remaining 5 survey lines were designed to cover the northern and southern extensions of the shear zone defined by the 2010 prospecting program. The survey was successful in identifying two coincident Pb-Zn anomalies, one in the western portion of the the grid associated with the Vulcan 5 Minfile Showing and the second at the inferred LMC in the northern part of the grid. Values up to 76 ppm Pb and 716 ppm Zn occur in the western anomaly and 199 ppm Pb and 504 ppm Zn occur in the northern anomaly. In 1984 Cominco drilled a borehole (Vu-84-4) which is spatially located between the two soil anomalies. The hole intersected Aldridge Formation metasedimentary rocks and gabbroic intrusions which contained a few stringer veins hosting minor concentrations of sulphide including pyrite, pyrrhotite, arsenopyrite, galena and chalcopyrite (Peters, 2012). The 2011 soil sampling survey was also successful in outlining a gold-in-soil anomaly over two stations (MPB L1 100 E & 150E) containing 244 and 775 ppb Au respectively located approximately 500.0 meters north along strike from the mineral showing discovered in 2010. Total expenditures of the 2011 work program were approximately $20,000.00.

In 2012 a small work program consisted of completing due diligence work to confirm the historical results at the Hilo 3 showing along with doing geological evaluation on the showing and most prospective location to put a drill pad to test the down dip extension of the mineralization. The sample collected at the showing returned 10.6 g/t Ag, 0.9% Pb and 0.7 % Zn over 1.0 meters. The total cost of the 2012 exploration program was approximately $10,800.00.

The 2014 work program consisted of soil and silt geochemical surveys focused on the Lower-Middle Aldridge contact (LMC) on the eastern limb of the Vulcan anticline. A total of 210 soil samples from 8 contour lines, 4 silt samples and 2 rock samples were collected during the two-day field program. The soil geochemical survey successfully defined a 800.0 meter long by 100.0 meter wide multi-element geochemical anomaly (Pb-Zn) in proximity to the projected LMC horizon, however the results do not suggest significant metal enrichment near surface. The total cost of the 2014 exploration program was $21,000.00.

The 2016 work program consisted of geochemical sampling, geologic mapping, ground based geophysics and remote sensing (orthophoto acquisition). A total of 574 soil samples from 20 survey lines totaling 14.3 line-kilometers, 56 rock samples, 7.6 line-kilometers of magnetometer survey from 13 survey lines, 110 geological stations and 215.0 ha of orthophoto were acquired during the 37 field-day program. Total expenditures for the 2016 work program were approximately $47,280.00 dollars.

The 2016 exploration program was successful in confirming and expanding the (Pb-Zn) anomaly defined by Fjordland in 2011 on the southern slope of Mt. Patrick. The 2011 and 2016 soil data sets when combined, outline a 2,100.0 meter long by 50.0-100.0 meter wide multi-element (Pb-Zn) anomaly (> 90th percentile) which correlate with the inferred position of the LMC horizon on the western limb of the Vulcan anticline, located directly northeast of Dewar Creek. Maximum values returned from the 2016 soil sample survey were 235 ppm Pb and 489 ppm Zn. The northeastern end of the anomaly remains open and is located approximately 4.0 kilometers southwest of the mineral occurrences by Jurak Lake. The southwestern end of the anomaly appears to end at Dewar Creek, however significant Quaternary cover on the western side of Dewar Creek may have inhibited the ability to detect Pb-Zn in the soil profile. Rock sampling of the Middle and Lower Aldridge Formation metasedimentary rocks failed to return any significant Pb-Zn results in proximity to the LMC in the 2016 work area. A series of 7 channel samples were completed across the shear zone hosted mineral occurrence discovered during the 2010 field program. Results from the sampling program returned peak values of 832 ppm Cu over 1.0 meters true width (MMVUR013) and 555 ppm Cu over 1.65 meters true width (MMVUR15 & MMVUR016). Copper mineralization (chalcopyrite-bornite) occurs with magnetite in quartz-carbonate veinlets. The copper values are anomalous, but not economically significant at this location.

The 7.6 line-kilometers of magnetometer survey was successful in providing better resolution on two magnetic anomalies identified by the 1996 St Mary Block airborne geophysical survey. A total of 5 lines were completed on the first grid, and 4 of the 5 lines successfully outlined a positive magnetic response on top of, and along strike from the known magnetite-pyrite±chalcopyrite-bornite bearing mineral occurrence. The magnetometer appears to be an excellent prospecting tool for magnetite bearing shear zones, especially in areas of Quaternary cover where bedrock exposure is limited. The second grid was designed to improve the resolution of a positive magnetic anomaly detected by the 1996 St Mary Block geophysics survey west of Dewar Creek, and more importantly west (down-dip) of the inferred LMC. The 8 survey lines successfully outlined two positive magnetic anomalies located approximately 125.0 meters west of the inferred LMC contact. The anomalies occur along strike from gabbro rubble crop. Due to the variable magnetic nature of the Moyie intrusions one cannot be certain that the magnetic anomalies are reflective of mafic intrusive, but it is a possibility given the distribution of gabbro rubble crop in the area north of the magnetometer survey. Another plausible consideration is that the magnetic anomalies parallel stratigraphy, and may represent magnetic mineralization hosted within the Aldridge Formation metasedimentary rocks.

Geologic mapping completed in 2016 aided in refining the position of the Lower-Middle Aldridge contact on the western limb of the Vulcan anticline to the north by approximately 200.0 meters. This is significant because it suggests that historic drilling by Cominco in 1984 in the mapping area did not successfully test the LMC, but instead was drilling Lower Aldridge Formation metasedimentary rocks. In addition several Moyie intrusions in the Dewar Creek area were re-positioned on the map, and their contacts better defined as a result of the program.

Mapping of borehole Vu-85-1 provided critical stratigraphic information helping to constrain the current interpretation of the LMC and provided insight into various styles of mineralization and alteration in the mapping area. Inspection of diamond drill hole Vu-85-1, located in the center of the soil anomaly revealed pervasive albite-tourmaline alteration and fracture/vein controlled Pb-Zn mineralization. The mineralization as observed within Vu-85-1 represents one potential source for the soil geochemical anomaly observed in the 2011 & 2016 samples. The source of the hydrothermal fluids responsible for the pervasive albite-tourmaline alteration remains unclear. The alteration does not appear to be related to a Moyie intrusion, or to any significant mineralization. The alteration has selectively replaced thin-bedded, permeable strata within the Lower Aldridge Formation. Similar alteration was also observed within a boulder located 3.5 kilometers south of Vu-85-1, in proximity to the newly discovered copper-bearing occurrence. This type of alteration requires further study to understand if it is related to a "Sullivan-type" hydrothermal system.

The 2016 mapping program also indicated that the southern extension of the LMC contact does not continue as was defined by Brown et al., in their 2011 compilation, but is terminated at an unknown location in proximity to the St. Mary River by a splay of the Hall Lake Fault Zone. Further work is required in the southwestern most portion of the property to assist in refining the position of the Hall Lake Thrust Fault and the overall structural architecture of the deformation zone. Furthermore it is critical that future mapping efforts resolve the relative offset of stratigraphic units within the fault zone in order to refine where the southern extension of the LMC is located on the western side of Dewar Creek.

Review of historical drill hole data in the West Basin target area in 2016 has raised questions around whether drill hole Vu-92-3 was drilled deep enough to adequately test "Sullivan time". The northern portion of the property, more specifically the West Basin target area displays many geologic similarities to the Sullivan Deposit, and represents a high-priority exploration target. It is recommended that one drill hole be completed to test "Sullivan time" at this location.

The 2017 work program consisted of geophysics interpretation, geochemical sampling and geologic mapping. The geophysics interpretation was completed by SJ Geophysics. The field work was completed by TerraLogic Exploration Inc. Total expenditures for the 2017 work program were approximately $60,500.00 dollars.

The 2019 work program consisted of 2.8 line-kilometres of IP and AMT geophysics and was completed by SJ Geophysics. Total expenditures for the 2019 work program were approximately $40,375.00 dollars. The 2019 program identified anomalies consistent with a Sullivan type deposit model. The geophysical anomalies are coincident with the inferred position of the Lower Middle Aldridge contact, a Pb-Zn soil anomaly identified by 2011 & 2016 field programs, and a historic UTEM geophysical anomaly identified by Cominco in 1985.

The Vulcan Project holds potential to host SEDEX type mineralization with samples collected on the property returning up to 1.6% combined Pb-Zn over 1.5 meters from the time equivalent LMC or "Sullivan time" stratigraphic horizon.

Further exploration on the Vulcan Project is warranted. Recommendations for future work include:

- Re-logging and pXRF analysis of historic Cominco drill holes;
- Prospecting and mapping along ridges between the West Basin and the Dewar Creek FSR;
- Acquisition of orthophoto imagery to assist in mapping alpine portions of the property and to assist with project planning;
- Diamond drill testing from the Dewar Creek FSR to test the down-dip potential for Sullivan-type mineralization in proximity to the Pb-Zn anomaly identified by the 2011 & 2016 field programs and the IP/ MT anomalies identified by 2019 geophysical survey;
- Drill testing of targets in the West Basin area;
- Borehole EM and/or a combination of UTEM, borehole EM, IP and MT methods should be considered to facilitate sub-surface exploration and refinement of future drilling in the target areas;
- Computer modeling of surface and diamond drill hole geological data to refine future drill targets;

A Multi-Year Area-Based Permit is currently active on the Vulcan Property, and the permitted activities include the recommended diamond drilling outlined above.

Table of Contents

List of Figures

List of Tables

List of Appendices

INTRODUCTION

Location

The Vulcan property is located in the Dewar Creek-White Creek area 30.0 kilometers northwest of Kimberley, in southeastern British Columbia (Refer to Figure 1). The claims are centered at approximately Latitude 49°46' N, Longitude 116°21'W on 1:50,000 NTS map sheets 82F009 & 82F016. The Vulcan claims were originally acquired to cover four strata-bound silver, lead, zinc and copper occurrences, hosted in Aldridge Formation rocks, and have been added upon to cover the strike and down-dip extensions of the target horizon along the southwestern side of the property.

Tenure

The property consists of 3 legacy and 11 MTO cell claims located in the Fort Steele Mining Division. The total property area is 6,351.5 hectares (ha). Refer to Table 1 for a complete list of the mineral tenure and their respective expiry dates, and Figure 2 for their geographic location.

The property is currently owned 100 % by Eagle Plains Resources Ltd. There are, to the best knowledge of the author, no liens or encumbrances on the claims. The title was researched using the British Columbia Mineral Titles Division on-line database.

Table 1 – Vulcan Tenure Summary

Tenure Number	Claim Name	Area (Ha)	Owner	Issue Date (MM/DD/YY)	Good to Date* (MM/DD/YY)
398960	JURAK 1	450	Eagle Plains Resources Ltd. (100%)	16/12/02	09/06/24
408455	VC	450	Eagle Plains Resources Ltd. (100%)	03/03/04	09/06/24
406826	VC	150	Eagle Plains Resources Ltd. (100%)	21/11/03	09/06/24
406827	VC	41	Eagle Plains Resources Ltd. (100%)	21/11/03	09/06/24
1067959	VULCAN	333.6	Eagle Plains Resources Ltd. (100%)	17/05/19	25/12/21
1067976	VULCAN	479.4	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1067977	VULCAN	459.0	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1067978	VULCAN	584.2	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1067979	VULCAN	375.7	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1067980	VULCAN	208.8	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1067981	VULCAN	208.8	Eagle Plains Resources Ltd. (100%)	15/05/19	25/12/21
1070469	VULCAN	1065.1	Eagle Plains Resources Ltd. (100%)	19/08/19	19/08/20
1070472	VULCAN	1024.2	Eagle Plains Resources Ltd. (100%)	19/08/19	19/08/20
1070584	VR	522.7	Eagle Plains Resources Ltd. (100%)	23/08/19	23/08/20

*Upon government approval of the 2019 Technical Report.

Accessibility, Climate, Local Resources, Infrastructure and Physiography

Access

The property is accessible by road, by proceeding 50.0 kilometers west of Kimberley on the St. Mary River Forest Service Road (FSR), then 8.0 kilometers north on the Dewar Creek logging road. A 4x4 access road was built by Cominco in 1979 to access the West Basin area; the road extends 2.5 kilometers east of the Dewar Creek FSR 8.0 kilometers marker and into the Vulcan property. The road has steep (+15%) grades and several tight switchbacks; its current condition is unknown. This road extends to an alpine meadow at 2,025.0 meter elevation, and ends in West Basin, approx. 1.5 kilometers northwest of the peak of Mt. Patrick, on the Jurak 1 claim. Access to Jurak Lake basin is by an old pack trail (2.00 hours on foot from the end of the road). The eastern half of the property can also be accessed by traveling north on the St. Mary – White Creek FSR.

The West Basin 4x4 road was restored and water barred at the close of the 1992 program, but still provides a popular recreational access route to St. Mary Alpine Park. Alternate access to the alpine portions of the property is by helicopter charter from Cranbrook, British Columbia (0.35 hrs one way).

Local Resources and Infrastructure

Rail facilities are located at Cranbrook, 50.0 kilometers south east of the property, which could be used to ship ore to the Teck-Cominco smelter at Trail, British Columbia, approximately 130.0 kilometers west of the Vulcan property. Direct air service is provided from Calgary and Vancouver to the Cranbrook Airport, located approximately 40.0 kilometers east of the property. There is a well-established mining support industry in the area, to service the southeastern British Columbia coal mines and, until 2001, the Sullivan Mine in Kimberley.

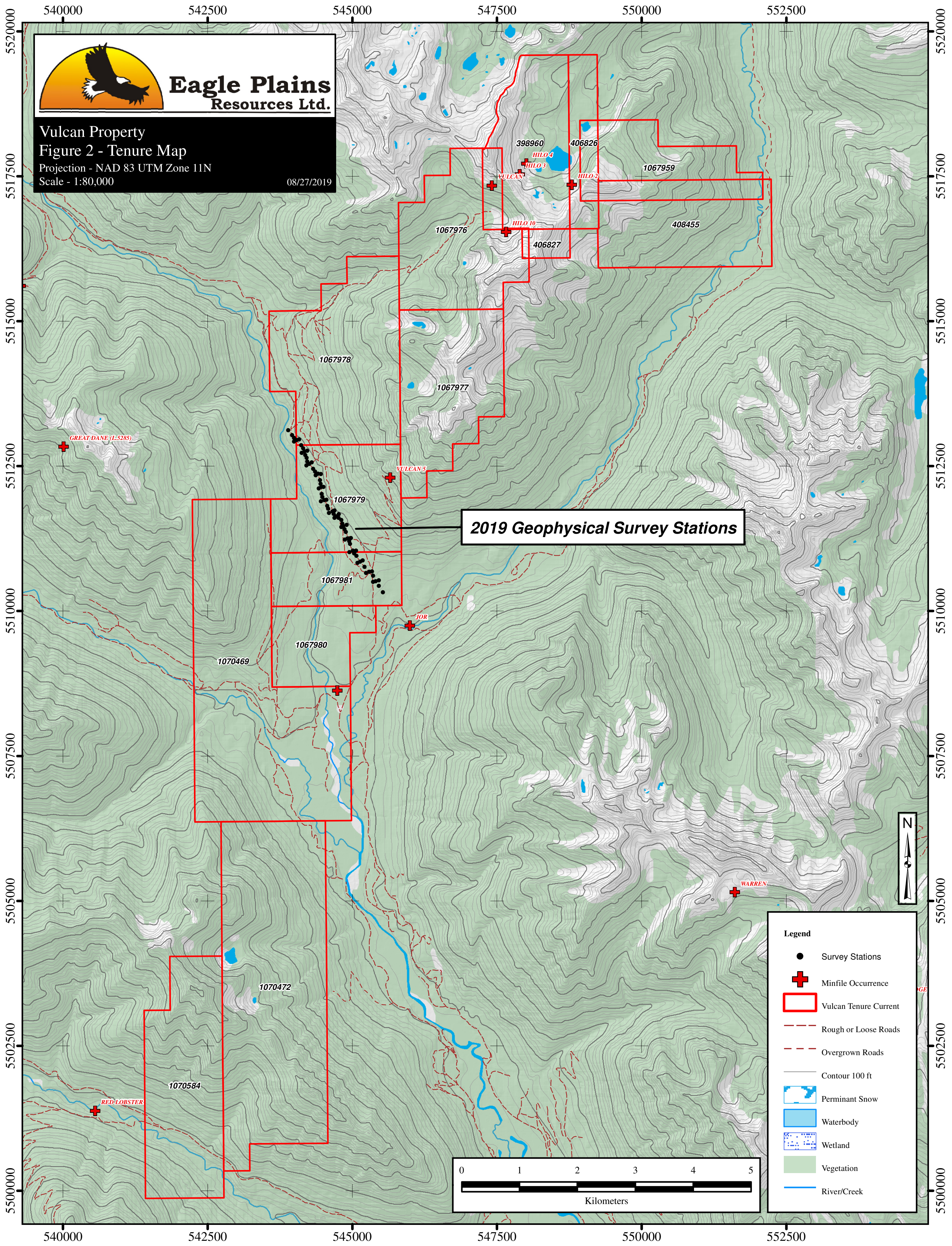
Physiography

The claims are located in the Purcell Mountain Range. The northern half of the claims covers rugged mountainous areas up to 3,300.0 meters elevation. The northeastern part of the claims covers more moderately sloping mountainous terrain and includes parts of the wider, more flat White Creek valley at approximately 1,240.0 meters elevation. The tree line is gradual, with sparse tamarack persisting to approximately 2,400.0 meters. The southern half of the claims covers rugged mountainous areas and the broad St. Mary River valley.

Climate

The weather is typical of the Purcell Range, with moderate to dry summers and heavy snowfall in the winters. Most of the property is free from snow beginning in May until October, and the road infrastructure allows drilling from April to November.

TSX-V: EPL
Eagle Plains Resources Ltd.
Vulcan Property
Figure 1 - Property Location Map
Projection - NAD 83 UTM Zone 11N
Scale - 1:7,500,000
1/30/2018
140°0'0"W
130°0'0"W
120°0'0"W
60°0'0"N
50°0'0"N
N
Whitehorse
Yukon Territory
Northwest Territory
Alaska
British Columbia
Alberta
Terrace
Prince George
Calgary
Vulcan Property
Cranbrook
Vancouver
Victoria
Pacific Ocean
Washington
Idaho
0
125
250
375
500
Kilometers



Eagle Plains
Resources Ltd.
Vulcan Property
Figure 2 - Tenure Map
Projection - NAD 83 UTM Zone 11N
Scale - 1:80,000
08/27/2019
540000
542500
545000
547500
550000
552500
5520000
5517500
5515000
5512500
5510000
5507500
5505000
5502500
5500000
398960
406826
1067959
408455
406827
1067976
1067978
1067977
1067979
1067981
1067980
1070469
1070472
1070584
HILO 4
HILO 3
VULCAN
HILO 2
HILO 10
VULCAN 5
JOR
GREAT DANE (L.5285)
RED LOBSTER
WARREN
2019 Geophysical Survey Stations
N
Legend
Survey Stations
Minfile Occurrence
Vulcan Tenure Current
Rough or Loose Roads
Overgrown Roads
Contour 100 ft
Perminant Snow
Waterbody
Wetland
Vegetation
River/Creek
0
1
2
3
4
5
Kilometers

PROPERTY WORK HISTORY

The following property work history summary has been elaborated upon by the authors after the work completed by Higgs, 2012.

The northern part of the Vulcan property was originally staked by Cominco in 1957. During 1957-58, Cominco conducted prospecting, detailed mapping, trail building and an experimental magnetometer-electromagnetic survey. Three short pack sack drill holes were also completed on the Main Showing, the results of which are unknown to the author.

The Hilo and Vulcan Ag-Pb-Zn±Cu-W showings were discovered during this period and the mineralization was recognized as being controlled at least in part by stratigraphy. Widespread tourmaline alteration was also noted and observed to be controlled by stratigraphy. A strong similarity between the Vulcan and the Sullivan Mine was documented by O.E. Owens of Cominco at this time. Lead-zinc-silver mineralization was noted to "occur in the same type of rocks, at the same point in the stratigraphic succession, (Lower-Middle Aldridge Contact, LMC) and as the same type of mineralization" as at Sullivan (Owens, 1958).

Recommendations for deep drilling were made, with such a program to be deferred until after regional geological studies were completed.

In 1971, Texas Gulf Sulfur re-sampled the showings and conducted detailed geological mapping of the Main Showing area. The property was called Hilo at this time. No further work was done by Texas Gulf.

In the 1970s, regional stratigraphic correlation studies by Cominco established that the Vulcan mineralization occurs on the LMC. Regional studies also suggested that the Sullivan type setting defined by the 1958 work was unique, and appeared to be localized in the northwestern part of the current Vulcan claims.

The Vulcan was staked again by Cominco Ltd. in 1976. A 4x4 access road was constructed to the property, and a single drill test of the LMC was completed (Vu-79-1, 188.0 meters) from the road. No mineralization or lithogeochemical anomalies were found at the LMC which was marked by a distinctive pyrrhotite laminated wacke underlain by fragmental rocks. Minor weak Pb-Zn mineralization was located in the Lower Aldridge Formation in this hole (1.1 meters @ 0.35% Pb, 0.30% Zn).

The property boundaries were extended to the south in 1982.

In 1983, Cominco conducted rock geochemical sampling of the fragmental unit and LMC sequence throughout the Vulcan 1-3 claims. Several Pb-Zn-As anomalies were delineated by this work.

A surface UTEM and HLEM survey was conducted in 1984 covering the LMC and fragmental unit on the Jurak 1 claim. Eight UTEM lines (1.2 - 1.8 kilometers length) were surveyed from one transmitter loop. Weak UTEM anomalies were interpreted as indicating a "weak extensive (larger than loop dimension) conductor, with depth to top varying from 100.0 meters to 200.0 meters" (Visser, 1984). The conductor was located in the area of the completed Cominco drill hole.

Cominco's work program on the West Basin Zone was discontinued following this survey. The objective of subsequent Cominco work was to locate and evaluate the LMC on the more accessible ground to the south of the current Vulcan property.

Mapping, contour and grid soil geochemistry and UTEM/HLEM surveys were completed. Patchy soil Pb-Zn anomalies were outlined on the lower slopes of Mt. Patrick along the projection of the LMC. UTEM and HLEM anomalies were located on the inferred LMC extension and over the Lower

Aldridge Formation. Five drill holes (Vu-84-1 to 4 and Vu-85-1) totaling 970.8 meters were completed by Cominco to test the best geophysical anomalies. All holes with the exception of Vu-85-1 were entirely within the Lower Aldridge, and the anomalies were found to be caused by graphite and pyrrhotite (±chalcopyrite) mineralization. The LMC remains untested in this area, and additional weak geophysical anomalies occur on the possible projection of the LMC.

No further Cominco work programs were carried out in the 1986-90 period.

Ascot resources acquired the option on the Vulcan Claims in 1991. Additional claims were staked in August of that year, and in late September, Ascot carried out a five hole, 1,003.0 meter drill program over 2.6 kilometers of LMC strike length. The objectives of the Ascot program were to use drilling and down hole EM surveys to define the distribution of base metal sulfides and of the sub-basin which forms the sulfide host at shallow to intermediate depths (to roughly 200.0 meters), in order that deeper drill tests could be planned.

Ascot conducted a three hole, 1,825.8 meter follow-up drill program in 1992 to provide deep down-dip testing of the Lower/Middle Aldridge Formation contact. Upon completion of this drilling, Ascot directed attention to the White Creek area, located 7.0 kilometers to the south of West Basin. A stratiform sulphide-bearing showing was discovered in the White Creek area earlier in that summer which returned values of 0.42% Pb, 0.35% Zn, and 4.2 g/t Ag over 1.0 meter. A 5.0 line- kilometer UTEM geophysical survey was completed which indicated the presence of two weak to moderate-strength conductors, one which was associated with the mineralized zone. One further drill hole: VU-92-4 was drilled to test the geophysical conductors at depth. The hole intersected a mineralized zone which they traced back to the surface showing, but mineralization was weaker than at surface.

In 1996, Abitibi Mining Corp., on behalf of Hastings Management Corp., completed a one hole, 209.1 meter drill program on what was known as the PMR-red claim block to test Aldridge rocks for “Sullivan time” (R. Woodfill, 1996). The borehole was interpreted to have intercepted metasedimentary rocks of the Lower Aldridge Formation, further drilling was not recommended. No samples were taken for assay. Total exploration expenditures for the 1996 program were $15,341.00.

Since acquiring the Vulcan Property in 2002, Eagle Plains Resources Ltd., has expanded its claims to the current tenure holdings outlined in Table 1 and Figure 2.

Work conducted on the Vulcan property in 2005 included reprocessing and reinterpretation of 1995 EM geophysical data and the development and implementation of a GIS database. In 2005, as part of a data compilation on an unrelated project in southeastern British Columbia, Eagle Plains requested an independent contractor, Condor Geophysics, to verify and reprocess Geoterrex-Dighem (now Fugro Airborne Surveys) EM survey data collected in 1995 by a joint partnership between BC Ministry of Employment and Investment, Energy and Minerals division, BC Geological Survey Branch and the Geological Survey of Canada. During the course of the data verification by Condor, it was found that the GPS height and the barometric altimeter height were both corrupted, rendering the original geophysical maps and related data included in the 1996 public release unsuitable for geophysical interpretation. After considerable effort Condor was able to arrange for the government to supply replacement SRTM (Shuttle Radar Topography Mission) elevation data that has reasonable resolution and based on this new data set were able to produce a new interpretation of the 1995 data. As the 1995 survey also covered the Vulcan claim area Eagle Plains contracted Condor to correct and reinterpret the EM data for the area referred to as the St. Mary Block. Compilation work included scanning, rectifying and digitizing the historic geology maps, creating a drill-hole database, imputing the historic drill logs, and the creation and interpretation of new sections. A geochemistry database was also implemented utilizing historic rock, silt and soil sample data. The geochemistry and drill-hole databases will allow for a more organized approach to the interpretation of the geology of the Vulcan. Base data for the area covered by the Vulcan claim block was also acquired, processed and integrated into the GIS in order to facilitate map creation and improve data visualization.

The 2006 Eagle Plains Resources exploration program at the Vulcan Project consisted of an AeroTEMII high resolution Time Domain Electro Magnetic geophysical survey. Data collection was done by Aeroquest Limited. A total of 125.5 line- kilometers of survey were flown on April 29th, 2006 with helicopter support provided by Bighorn Helicopters using an AStar 350B2.

The airborne survey defined a number of geophysical anomalies. The most interesting feature is located in the southwestern part of the survey. The contoured Aerotem Z-1 Off-time profile shows a distinct feature that roughly traces the contact between Lower and Middle Aldridge rocks. The anomaly appears to correspond with rocks located stratigraphically below the Lower-Middle Aldridge contact, and may represent a new, untested target between the Hilo 10 and Vulcan Minfile occurrences.

There is another feature located at UTM 5518000 N along the boundary with the Purcell Wilderness Conservancy. It appears to be a single point anomaly feature spatially associated with the hanging wall of a Moyie Sill.

Total 2006 exploration expenditures by Eagle Plains Resources Ltd., on the Vulcan Project were $37,228.84.

In 2010 local prospectors Craig Kennedy, Michael Kennedy, Sara Kennedy and Shawn Kennedy completed a prospecting program on what was known as the Moly Pritchard Property (now within the current extent of the Vulcan Project) on behalf of Kootenay Gold Inc. The work program was directed toward prospecting an altered structural zone which was exposed by logging activities earlier in the year. The prospecting program discovered an altered shear zone described as a carbonate-epidote skarn with associated quartz veining, silicification, tourmaline-biotite and sericite bleaching (C. Kennedy, 2011). These alterations are associated with copper and arsenic mineralization (C. Kennedy, 2011). The newly discovered mineral showing is located approximately 180.0 meters east of Dewar Creek, and was exposed by road building activities. The total cost of the 2010 program was $8,242.00.

In 2011, Fugro Airborne was contracted by Eagle Plains Resources Ltd., to conduct a 318.0 line-kilometre heliborne gravity gradiometry (AGG) survey of the Vulcan property with a North-South transverse line spacing of 100.0 meters and 2,000.0 meter spaced tie lines. The survey was successful in identifying possible discordant structures spatially associated with the Hilo 2 showing. The nature of the gravity high remains unknown but could represent a mineralized structure associated with proterozoic growth faults that has not been detected at surface. The total cost of the 2011 exploration program was approximately $118,583.19.

In 2011, Fjordland Exploration Inc., completed a modest work program on what was known as the Moly Pritchard Area, which is now part of the Vulcan Project. The program resulted in the collection of 169 B-horizon soil samples collected from 50.0 meter spaced stations. A total of 10 survey lines were completed spaced 200.0 meter apart covering approximately 1.8 kilometers of the inferred LMC as projected by Brown et al., in 2011. The survey was successful in identifying two coincident Pb-Zn anomalies, one in the western portion of the the grid associated with the Vulcan 5 Minfile Showing and the second at the inferred LMC in the northern part of the grid. Values up to 76 ppm Pb and 716 ppm Zn occur in the western anomaly and 199 ppm Pb and 504 ppm Zn occur in the northern anomaly. In 1984 Cominco drilled a borehole (Vu-84-4) which is spatially located between the two soil anomalies. The hole intersected Aldridge Formation metasedimentary rocks and Gabbroic intrusions which contained a few stringer veins hosting minor concentrations of sulphide including pyrite, pyrrhotite, arsenopyrite, galena and chalcopyrite (Peters, 2012).

In 2012 a small work program consisted of completing due diligence work to confirm the historical results at the Hilo 3 showing along with doing geological evaluation on the showing and most prospective location to put a drill pad to test the down dip extension of the mineralization. The sample collected at the showing returned 10.6 g/t Ag, 0.9% Pb and 0.7 % Zn over 1.0 meter. The total cost of the 2012 exploration program was approximately $10,800.00.

The 2014 work program consisted of soil and silt geochemical surveys focused on the Lower-Middle Aldridge contact (LMC) on the eastern limb of the Vulcan anticline. A total of 210 soil samples from 8 contour lines, 4 silt samples and 2 rock samples were collected during the two-day field program. The soil geochemical survey successfully defined an 800.0 meter long 100.0 meter wide multi-element geochemical anomaly (Pb-Zn) in proximity to the projected LMC horizon, however the results do not suggest significant metal enrichment near surface. The total cost of the 2014 exploration program was $21,000.00.

The 2016 work program consisted of geochemical sampling, geologic mapping, ground based geophysics and remote sensing (orthophoto acquisition). A total of 574 soil samples from 20 survey lines totaling 14.3 line-kilometers, 56 rock samples, 7.6 line- kilometers of magnetometer survey from 13 survey lines, 110 geological stations and 215.0 ha of orthophoto were acquired during the 37 field-day program. Total expenditures for the 2016 work program were approximately $47,280.00 dollars.

The 2016 exploration program was successful in confirming and expanding the (Pb-Zn) anomaly defined by Fjordland in 2011 on the southern slope of Mt. Patrick. The 2011 and 2016 soil data sets when combined, outline a 2,100.0 meter long by 50.0-100.0 meter wide multi-element (Pb-Zn) anomaly (> 90^{th} percentile) which correlate with the inferred position of the LMC horizon on the western limb of the Vulcan anticline, located directly northeast of Dewar Creek. Maximum values returned from the 2016 soil sample survey were 235 ppm Pb and 489 ppm Zn. The northeastern end of the anomaly remains open and is located approximately 4.0 kilometers southwest of the Main Showings by Jurak Lake. The southwestern end of the anomaly appears to end at Dewar Creek, however significant Quaternary cover on the western side of Dewar Creek may have inhibited the ability to detect Pb-Zn in the soil profile. Rock sampling of the Middle and Lower Aldridge Formation metasedimentary rocks failed to return any significant Pb-Zn results in proximity to the LMC in the 2016 work area. A series of 7 channel samples were completed across the shear zone hosted mineral occurrence discovered during the 2010 field program. Results from the sampling program returned peak values of 832 ppm Cu over 1.0 meter true width (MMVUR013) and 555 ppm Cu over 1.65 meter true width (MMVUR15 & MMVUR016). Copper mineralization (chalcopyrite-bornite) occurs with magnetite in quartz-carbonate veinlets. The copper values are anomalous, but not economically significant at this location.

The 7.6 line- kilometers of magnetometer survey was successful in providing better resolution on two magnetic anomalies identified by the 1996 St Mary Block airborne geophysical survey. A total of 5 lines were completed on the first grid, and 4 of the 5 lines successfully outlined a positive magnetic response on top of, and along strike from the known magnetite-pyrite±chalcopyrite-bornite bearing mineral occurrence. The magnetometer appears to be an excellent prospecting tool for magnetite bearing shear zones, especially in areas of Quaternary cover where bedrock exposure is limited. The second grid was designed to improve the resolution of a positive magnetic anomaly detected by the 1996 St Mary Block geophysics survey west of Dewar Creek, and more importantly west (down-dip) of the inferred LMC. The 8 survey lines successfully outlined two positive magnetic anomalies located approximately 125.0 meters west of the inferred LMC contact. The anomalies occur along strike from gabbro rubble crop. Due to the variable magnetic nature of the Moyie intrusions one cannot be certain that the magnetic anomalies are reflective of mafic intrusive, but it is a possibility given the distribution of gabbro rubble crop in the area north of the magnetometer survey. Another plausible consideration is that the magnetic anomalies parallel stratigraphy, and may represent magnetic mineralization hosted within the Aldridge Formation metasedimentary rocks.

Geologic mapping in 2016 aided in refining the position of the Lower-Middle Aldridge contact on the western limb of the Vulcan anticline to the north by approximately 200.0 meters. This is significant because it suggests that historic drilling by Cominco in 1984 in the mapping area did not successfully test the LMC, but instead was drilling Lower Aldridge Formation metasedimentary rocks. In addition several Moyie intrusions in the Dewar Creek area were re-positioned on the map, and their contacts better defined as a result of the program.

Mapping of borehole Vu-85-1 provided critical stratigraphic information helping to constrain the current interpretation of the LMC and provided insight into various styles of mineralization and alteration in the mapping area. Inspection of diamond drill hole Vu-85-1, located in the center of the soil anomaly revealed pervasive albite-tourmaline alteration and fracture/vein controlled Pb-Zn mineralization. The mineralization as observed within Vu-85-1 represents one potential source for the soil geochemical anomaly observed in the 2011 & 2016 samples. The source of the hydrothermal fluids responsible for the pervasive albite-tourmaline alteration remains unclear. The alteration does not appear to be related to a Moyie intrusion, or to any significant mineralization. The alteration has selectively replaced, thin-bedded, permeable strata within the Lower Aldridge Formation. Similar alteration was also observed within a boulder located 3.5 kilometers south of Vu-85-1, in proximity to the newly discovered copper-bearing occurrence. This type of alteration requires further study to understand if it is related to a "Sullivan-type" hydrothermal system.

The 2016 mapping program also indicated that the southern extension of the LMC contact does not continue as was defined by Brown et al., in their 2011 compilation, but is terminated at an unknown location in proximity to the St. Mary River by a splay of the Hall Lake Fault Zone. Further work is required in the southwestern most portion of the property to assist in refining the position of the Hall Lake Thrust Fault and the overall structural architecture of the deformation zone. Furthermore it is critical that future mapping efforts resolve the relative offset of stratigraphic units within the fault zone in order to refine where the southern extension of the LMC is located on the western side of Dewar Creek.

Review of historical drill hole data in the West Basin target area has raised questions around whether drill hole Vu-92-3 was drilled deep enough to adequately test "Sullivan time". The northern portion of the property, more specifically the West Basin target area displays many geologic similarities to the Sullivan Deposit, and represents a high-priority exploration target. It is recommended that one drill hole be completed to test "Sullivan time" at this location.

The 2017 work program consisted of geophysics interpretation, geochemical sampling and geologic mapping. The geophysics interpretation was completed by SJ Geophysics. The field work was completed by TerraLogic Exploration Inc. Total expenditures for the 2017 work program were approximately $60,500.00 dollars.

The 2017 field program resulted in the collection of 352 b-horizon soil samples from 15 lines covering over 8.4 line-kilometers, 3 rock samples, 1 till sample and 6 bulk stream sediment samples from three different target areas. The first target area was designed to investigate and duplicate a highly anomalous gold-in-soil value reported during the Fjordland Exploration Inc. work program in 2011. The second target area, comprised of a grid and a single line along the valley bottom of White Creek, was designed to test the potential for base and/or precious metal enrichment associated with a magnetic anomaly (heli-borne geophysical survey from 1996) adjacent to the Hall Lake Fault Zone. The third target area consisted of 3 lines which were designed to extend and expand upon lines from the 2014 to test for base metal enrichment across the inferred trace of the LMC.

The 2017 surface mapping campaign focused on the southwestern limb and hinge zone of the Vulcan anticline, more specifically on the trace of the Hall Lake fault zone. Outcrop exposure in the mapping area is excellent along avalanche paths/creeks draining off of the the eastern slopes of Mt. Patrick and western slopes of Mt. Levesque, moderate in forested slopes on Mt. Patrick and rare in lowlands along the St. Mary River and White Creek.

A previously unmapped granitoid intrusion of unknown age was discovered along a tributary of White Creek. Intense biotite-scapolite and calc-silicate skarn was observed within the contact aureole of the intrusion. Three traverses of the Hall Lake Fault Zone were completed west of White Creek. The fault zone is characterized by complex isoclinal folding, pervasive axial planar crenulation cleavage and mylonite. Sampling of the fault zone did not return results of economic significance.

(*after Visser & Pezzot, 2017*)

The 2017 geophysics interpretation project was designed to review historical geophysical data across the Vulcan and K9 properties in southeastern British Columbia. Particular attention was focused on determining whether recently mapped geological trends and exploration targets were detected on a regional scale Dighem Magnetic and EM survey completed in 1997. It was the hope that geophysical signatures might help determine whether known targets extend beyond their currently mapped extent, or if similar anomalies may be mapping new occurrences.

Both the historic magnetic and EM surveys confirm the north to north-northeast striking geology across the target area. Subtle magnetic high trends likely trace Moyie (gabbroic) sills within the Aldridge formation. Narrow, variable spaced pyrrhotitic and/or graphitic horizons are likely sources for the observed conductive anomalies.

The geophysical surveys show it is unlikely that there are any large, highly conductive, near surface massive sulphide bodies in the study area. Extensive, near surface zones of weakly conductive material have likely masked any geophysical signatures from deeper conductors.

The UTEM technique has the best chance of detecting any deep conductors. All of the historical data (due to equipment limitations at the time of the survey) was collected at a base frequency of 30 Hz. Any future surveys should be completed at a much lower base frequency, such as 3 or 5 Hz, so the weak response from the extensive near surface conductors can dissipate, leaving the ability to see deeper, strong conductors.

GEOLOGICAL SETTING

Regional Geology

(open citation, T. Termuende, 1992 and references therein from AR 22709)

The regional geologic setting of the Vulcan Property is shown in Figure 3. The map has been modified from a compilation map by Massey *et al*. (2005), and more detailed 1:50,000 compilation maps by Brown *et al*. (2011), Brown and MacLeod (2011) and Glombick *et al*. (2011a/b).

The Vulcan property and adjacent area is underlain by rocks of the Purcell Supergroup on the western flank of the Purcell Anticlinorium, a broad, north-plunging arch-like structure in Helikian and Hadrynian aged rocks. The anticlinorium is allocthonous, carried eastward and onto the underlying cratonic basement by generally north trending thrusts throughout the Laramide Orogeny during late mesozoic and early tertiary time (Price, 1981). The oldest rocks exposed in the area are greenish, rusty weathering thin bedded siltites and quartzites of the +4,000.0 meter thick Lower Aldridge Formation, along with the facies-related, dominantly fluvial Fort Steele Formation (the bases of which are unexposed). The Sullivan deposit is located some 20.0-30.0 meters below the upper contact of the Lower Aldridge Formation. Overlying the Lower Aldridge is a continuous section of Middle Aldridge quartz wackes, subwackes and argillites some +3,000.0 meters thick. Within the Middle Aldridge formation, fourteen varved marker horizons can be correlated over hundreds of kilometers, and represent the only accurate stratigraphic control currently employed by geoscientists. A number of aerially extensive, locally thick gabbroic sills are present within the Lower and Middle Aldridge Formations. These sills and dykes; the "Moyie Sills", locally were intruded into wet, unconsolidated sediments, and have been dated to 1,445 Ma, providing a minimum age for Aldridge sedimentation and formation of the Sullivan deposit. The Middle Aldridge is overlain conformably by the Upper Aldridge, 300.0 to 400.0 meters of thin, fissile, rusty weathering siltite/argillite.

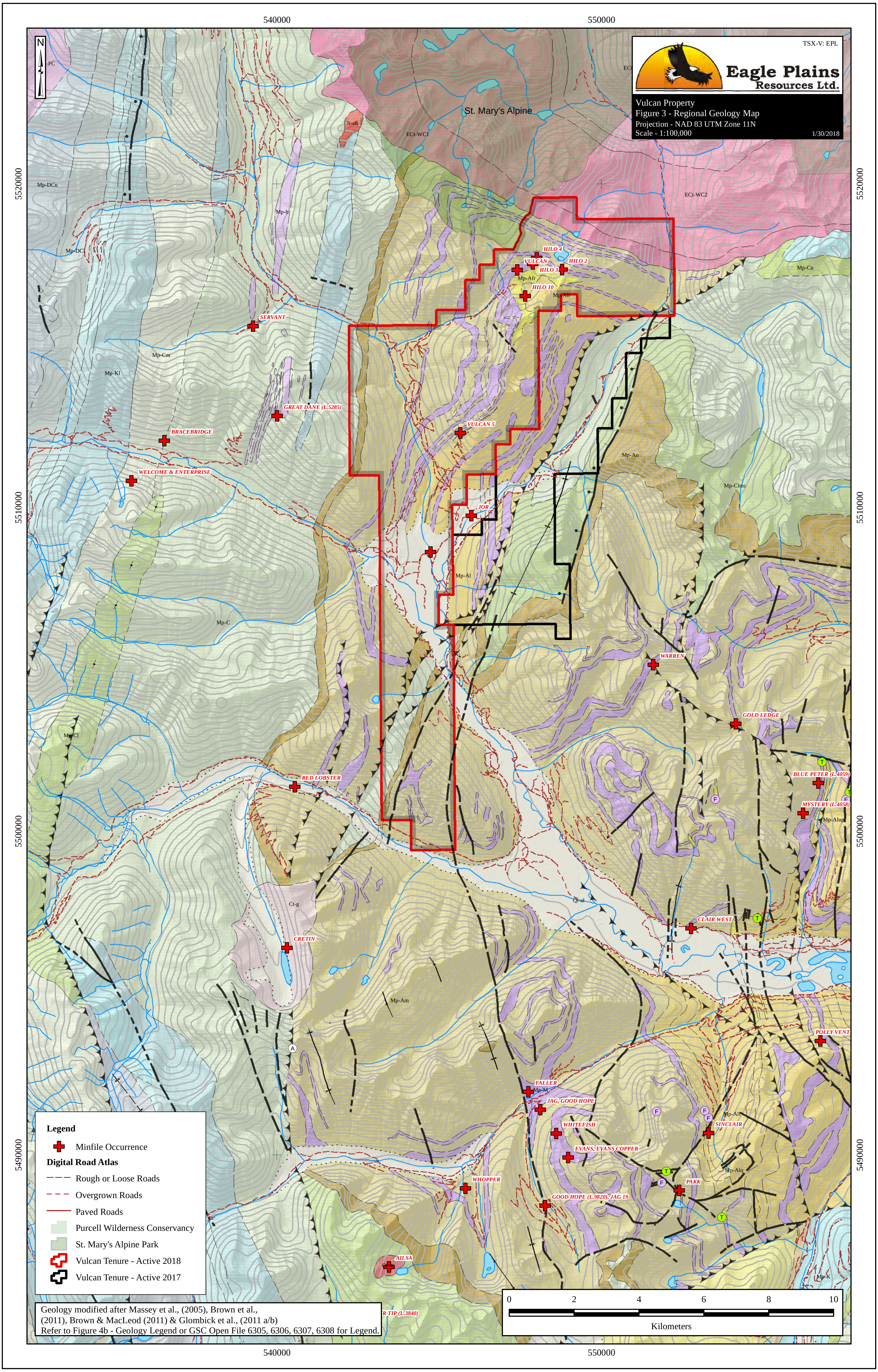
Conformably overlying the Aldridge Formation is the Creston Formation, comprising approximately 1,800.0 meters of grey, green and maroon, cross-bedded and ripple marked platformal quartzites and mudstones. The Kitchener-Siyeh Formation, which includes 1,200.0 to 1,600.0 meters of grey-green and buff colored dolomitic mudstone are shallow water sediments overlies the Creston Formation.

The upper portion of the Purcell Supergroup consists of the Dutch Creek and Mount Nelson Formations. The Dutch Creek formation consists of approximately 1,200.0 m of dark grey, calcareous dolomitic mudstones. Overlying the Dutch Creek formation is the Mount Nelson formation, 1,000.0 meters of grey-green and maroon mudstone and calcareous mudstones. This unit marks the top of the Purcell Supergroup.

The Purcell Supergroup in the Sullivan area was deposited along a tectonically active basin margin. Dramatic thickness and facies variations record Purcell-age growth faults and contrast with gradual changes characteristic of most Purcell rocks elsewhere. These faults reflect deep crustal structures that modified incipient Purcell rifting, and led to the development of an intracratonic basin in middle Proterozoic time.

Structure

The structural geology of the region has broadly warped westerly dipping stratigraphy cut by northerly-trending normal faults. This structure is typical of the west limb of the core of the Purcell Anticlinorium, a large north-plunging feature formed during the development of the Rocky Mountain Thrust and Fold belt. The dominant fault in the area is the Hall Creek thrust fault which is interpreted to transect the eastern portion of the Vulcan Property. The Hall Creek fault thrusts the Aldridge formation over the younger Creston formation to the east. The sedimentary units of the Purcell Supergroup are bounded to the north by the mid-Cretaceous White Creek Batholith. Near this intrusion, structures are more complicated, folds become tighter and metamorphic grade is stronger.



TSX-V: EPL
Eagle Plains Resources Ltd.
Vulcan Property
Figure 3 - Regional Geology Map
Projection - NAD 83 UTM Zone 11N
Scale - 1:100,000
1/30/2018
540000
550000
5520000
5510000
5500000
5490000
St. Mary's Alpine
ECt-WC1
ECt-WC2
Jr-ub
Mp-DCu
Mp-DC
Mp-b
Mp-Cm
Mp-Kl
Mp-C
Mp-Cl
Mp-Cu
Mp-Afr
Mp-Al
Mp-Au
Mp-Clmc
Mp-Am
Mp-Alup
Mp-Alt
Mp-Alq
Mp-K
Ct-g
Qt-al
HILO 4
HILO 2
HILO 3
HILO 10
VULCAN
SERVANT
GREAT DANE (L.5285)
BRACEBRIDGE
WELCOME & ENTERPRISE
VULCAN 5
JOR
WARREN
GOLD LEDGE
BLUE PETER (L.4059)
MYSTERY (L.4058)
RED LOBSTER
CRETIN
CLAIR WEST
POLLY VENT
FALLER
JAG, GOOD HOPE
WHITEFISH
EVANS, EVANS COPPER
SINCLAIR
PAKK
WHOPPER
GOOD HOPE (L.9820), JAG 19
AILSA
R-TIP (L.3840)
Legend
Minfile Occurrence
Digital Road Atlas
Rough or Loose Roads
Overgrown Roads
Paved Roads
Purcell Wilderness Conservancy
St. Mary's Alpine Park
Vulcan Tenure - Active 2018
Vulcan Tenure - Active 2017
Geology modified after Massey et al., (2005), Brown et al., (2011), Brown & MacLeod (2011) & Glombick et al., (2011 a/b)
Refer to Figure 4b - Geology Legend or GSC Open File 6305, 6306, 6307, 6308 for Legend.
0
2
4
6
8
10
Kilometers

Property Geology

The most recent geology work on the property was done by McCuaig in 2016-2017. Prior to mapping completed during the 2016-2017 programs the last geological mapping program was completed under the direction of McCartney (1991) and also appears in the 1992 Geological Report for the Vulcan Property by Tim Termuende. The following local geology descriptions from the West Basin (or Main Showing area) are provided as open citation from the 1992 report by Tim Termuende, and have been added upon where possible by the author. The geologic descriptions and references of the Sullivan Deposit are based upon the work of the following geoscientists: Hamilton et al., (1982 & 1983), Leitch et al., (1991), Leitch (1992), Leitch and Turner (1992), Lydon, J.W. (1996), Turner and Leitch (1992) and Turner et al., (1992). A summary of the findings of the 2017 mapping program can be found under the 2017 work program portion of the report.

West Basin

The West Basin area is relatively unique in its geologic characteristics, containing features similar to those seen within the Sullivan Mine itself, and associated with adjacent Sullivan-North Star Corridor.

These features are summarized below:

a) A stratigraphic sequence which is directly correlative with the Sullivan Deposit. This includes Lower Aldridge rocks in contact with the overlying Middle Aldridge sequence (the Lower-Middle Contact, or LMC), with an intraformational conglomerate and strata-controlled mineralization. This sequence has been mapped on the property over a 3.0 kilometers strike length, and in thickness to 250.0 meters;

b) Alteration including tourmaline and albite are present and in association with the LMC;

c) Stratiform lead-zinc-silver mineralization has been noted in boreholes and on surface, and is stratigraphically located within the "Sullivan-Time" horizon. Showings have returned values of 1.6 % combined Pb-Zn over 1.5 meters within a weakly mineralized section 7.5 meters thick.

Rock Types

<u>Lower and Middle Aldridge Formation Siliciclastics</u>

The Lower Aldridge Formation regionally consists of a rhythmic succession of laminated to thin bedded fine grained wacke (argillite) and quarzitic wacke (argillaceous quartzite). The sequence is characterized by minor amounts of fine grained disseminated pyrrhotite which imparts a characteristic rusty weathering nature to Lower Aldridge outcrops. Beds are typically graded, and local crossbedding occurs. Intervals of massive to thick bedded quarzitic wacke or quartz arenite also occur (e.g. "footwall quartzite" unit at the Sullivan Mine). Massive to poorly bedded lenses of intraformational conglomerate occur locally near the top of the Lower Aldridge Formation and are composed of Aldridge rock types in a wacke matrix.

The Middle Aldridge Formation is predominantly medium to thick bedded light grey weathering quartzitic wacke turbidites consisting of medium grained massive quartz-rich bases overlain by thin wacke-subwacke (argillite) tops. Rip up clasts and flame structures commonly occur in the bases of the quartzite beds and are indicative of a high energy, rapid deposition. Subordinate amounts of Lower Aldridge type lithologies are interbedded within the Middle Aldridge. Gabbro sills of the Moyie Intrusions intrude both Lower and Middle Aldridge, and are locally observed as dykes which crosscut stratigraphy.

Fragmental (Conglomerate)

This unit occurs near the top of the Lower Aldridge Formation. Many textural variations have been noted. The most common type contains rounded medium to fine grained biotitic quartzitic wacke fragments and flat light grey subwacke fragments in a massive fine grained wacke matrix. Disseminated pyrrhotite commonly replaces the biotite-rich clasts, which locally become semi-massive pyrrhotite. Fragments comprise between 15-35 % of the rock, average 2.0-3.0 centimeters and are matrix supported. The matrix usually contains finely disseminated pyrrhotite, and the unit always weathers to a very rusty brown. Wacke and mudstone fragments are generally smaller and more angular than the quartzitic fragments.

Bedding is rare within the fragmental rock type itself, although intervals of normal bedded Lower Aldridge sediment commonly occur within it. Prominent slump folds commonly occur at the base of fragmental intervals. Fragmental rocks locally contain quartz-feldspar-amphibole-biotite-pyrrhotite concretions (?) often with a pale bleached or a dark biotite-rich halo.

It was noted during 1992 work that the size of fragment, sorting, degree of flattening, and imbrication is directly related to the units' position relative to the regional fold straddling the West Basin/Jurak Lake ridge. Along the flanks of the fold, matrix-supported, smaller, well-sorted fragments were flattened to coin-shaped dimensions, while near the Main Showing area (closer to the fold nose area), fragments were clast-supported, larger, poorly imbricated, and only poorly to moderately sorted. Though much of this textural variation may be attributed to fold-related stresses, there is evidence which suggests a proximity to a source area for the fragmental, a possibility supported by the presence of higher grade mineralization within the Main Showing area itself.

Two theories are considered plausible for the formation of the fragmentals. They may be large slump conglomerate units formed during graben-type faulting and tilting at the close of Lower Aldridge time. Alternatively they may be extruded onto the sea floor during dewatering of the Lower Aldridge sequence, perhaps utilizing zones of cross-strata permeability related to sub-basin development. There is evidence that both of these processes have a role in the formation of fragmentals of the Aldridge Formation.

Conglomeratic Rocks

These rocks are similar in all respects to the fragmental but contain <10% clasts, usually in a massive wacke matrix. Clast types are similar to those in the fragmental unit and are unsorted. Clasts are matrix supported. Fragments tend to be smaller than in the true fragmental. This rock type grades into massive wacke.

Massive Wacke

Massive wackes commonly occur near the top of the Lower Aldridge and are usually interbedded with conglomeratic wacke or fragmental. This rock type is believed to represent a settling out of fine material following fragmental formation and is of a similar composition to the fragmental matrix. Massive wackes are believed to represent more distal settings to the fragmentals, being further removed from the fractures or fault scarps which control fragmental development. They may also accumulate at the top of fragmental sections, as a settling out of suspended clay/silt after conglomerate deposition.

Pyrrhotite Laminated Wacke/Subwacke

This unit occurs immediately below the Lower Aldridge-Middle Aldridge contact (LMC) in holes Vu-92-2 and Vu-92-3, also in Vu-91-1 to 5 and in Vu-79-1, and averages approximately 8.0 meters in thickness. This lithology is interpreted as an argillaceous sub-basin facies and forms a cap to the fragmental rock units within the sub-basin. The unit is directly correlated with the mineralized sequence at the Sullivan Mine. Similar rock types are often interbedded within the upper 50.0 meters of the fragmental and over the lowermost 20.0-30.0 meters of the Middle Aldridge.

Texturally the rock type is a fine grained wacke to subwacke, similar to the massive wacke units, but it contains distinctive dark biotite-pyrrhotite rich laminations. The laminations are usually 1.0-2.0 millimeters thick and separated by several cm of massive wacke. The pyrrhotite usually occurs as fine grained disseminations within the dark laminations, but is clearly strata-controlled. Traces of chalcopyrite were observed with the pyrrhotite in Vu-92-2 and Vu-92-3. Within hole Vu-92-3, this unit was locally albitized, and appears creamy white in coloration, within which pyrrhotite lamination widths were observed to increase.

Gabbro

The gabbro intrusions are generally sill-like and consist of medium to coarse grained amphibole-plagioclase with minor biotite and chlorite. Minor disseminated pyrrhotite is common. In places, the gabbroic intrusions have sharp chilled margins, locally with albite-chlorite or biotite alteration selvages in adjacent sediments. Gabbro contacts can also be gradual, with coarse calc-silicate assemblages replacing adjacent sediments.

The gabbroic intrusions are often locally altered. Chlorite-biotite (+ calcite) alteration is common. Intensive alteration to massive chlorite-biotite was noted in hole Vu-92-2, and may be observed on the northeast-facing slope above the Main Showing. According to G.S.C. geologists, this feature is seen within cores from the Sullivan area, and is known locally as "granophyre" (Termuende, 1992).

Calc-silicate Unit

No calc-silicate units were recognized in core during the 1992 Cominco drill program, suggesting them to be a localized feature, apparently restricted to the up-dip regions of the LMC horizon. Calc-silicate units occur as conformable lenses adjacent to the mineralized zone in the Main Showing exposure, where they exhibit strong continuous parallel banding features. A continuous stratabound unit of coarse to medium grained calc-silicate rock also occurs in laminated wacke just below the LMC to the west of Mount Patrick (up-dip of Vu-91-4). Here it is 1.0-3.0 meters thick. Similar coarse calc-silicate was observed crosscutting the fragmental unit southeast of Vu-91-1 but this zone is poorly exposed.

The calc-silicate is a mottled to banded, coarse to medium grained rock with a quartz-feldspar-tremolite-chlorite-calcite mineralogy. Garnet, epidote, albite and biotite are common accessories. The mineralogy of this rock type is similar to the mineralogy of alteration observed in the footwall vent system of the Sullivan Mine by workers on the GSC/BCDM Sullivan Project. Termuende (1992) noted that although this rock type was identified at surface, and at shallow depth in Vu-91-1,2,4 and 5, it was not found in the deep drill holes in 1992.

Several calc-silicate units have also been noted as selective replacement and discordant dyke-like bodies hosted within metasedimentary rocks adjacent to an unnamed granitoid intrusion 400 meters east of White Creek, and over 5.0 kilometers south of the main showings.

Alteration and Mineralization

Alteration

Various alteration types are recognized within the property. Most commonly noted is silicification, which consists of microcrystalline replacement (partial to complete) of silica within detrital units. Coarser grained units common to the Middle Aldridge package (quartzites, quartzitic wackes) seemed most susceptible to this alteration, likely due to their increased permeability at one time.

Albite alteration was identified in both holes Vu-92-2 and Vu-92-3. In Vu-92-2 it was noted within a fine to medium bedded wacke of the Lower Aldridge below the contact with a thick gabbro unit (479.3-485.1 meters). It is also found within the same unit directly above the fragmental contact (499.1-501.5 meters), and as irregular, patchy occurrences within gabbroic material. In Vu-92-3, it is far more prevalent, occurring below the LMC; locally within the pyrrhotite-laminated wacke, and as pervasive alteration within the underlying conglomeratic wacke and into the turbiditic fine-laminated wacke below (323.2-360.1 meters). This entire interval has a light bleached appearance, and is visually very similar to the Concentrator Hill Horizon southeast of the Sullivan deposit, though it is geochemically less enriched.

Tourmaline alteration was noted in holes Vu-92-1 to Vu-92-3. Tourmaline was seen often as centimetre-scale veins within all rock-types, and as fine acicular needles within quartz and/or calcite veinlets. Pervasive tourmaline alteration, as seen associated with Sullivan-type mineralization within the Sullivan-North Star Corridor, was not recognized in core.

Chlorite/biotite alteration, as discussed above, is seen predominantly within gabbro and varies greatly in intensity. Commonly at intrusive contacts, replacement is complete within the both the gabbro and the host rock, obliterating relict textures. Biotite alteration is also common within finer bedded and massive intervals, particularly in Lower Aldridge rocks.

Sericite alteration was common in all drill holes, occurring as coatings on fracture surfaces in all rock types.

Mineralization

Mineralization seen in core at Vulcan consists primarily of fine disseminated pyrrhotite within all rock types. Millimetre to centimetre-wide quartz and/or calcite veins were common to all rock types, and generally carry minor pyrrhotite, locally with trace chalcopyrite, galena and sphalerite.

These stringers were also seen to host fine, acicular tourmaline needles to 0.5 centimeters in length. Minor pyrrhotite±chalcopyrite, pyrite stringers were also noted in all lithologies and in all holes, and appeared to show no preferred orientation.

The most significant form of mineralization to Sullivan-type exploration is the pyrrhotite-laminated wacke. This unit, located directly beneath the Lower-Middle Aldridge Contact (LMC), was noted in all completed West Basin holes (including 1991 drilling), and consists of strata-controlled Fe±Ag-Pb-Zn sulfides hosted by a biotite-rich, locally albite-altered laminated wacke to subwacke. Pyrrhotite occurs in dark biotite-rich laminations which are usually 1.0-2.0 millimeters thick and are separated by several centimetres of massive wacke. The pyrrhotite usually occurs as fine grained disseminations within the dark laminations, but is clearly strata-controlled. This interval may be directly correlated with the sequence hosting stratiform mineralization at the Sullivan Mine. This mineral type is exposed at the Main Showing, where pyrrhotite-sphalerite-galena mineralization occurs over 7.5 meters, with values to 0.35 % Pb, 1.25 % Zn returned over 1.5 meters (previous Cominco sampling). McCartney collected several grab samples of this material in 1991, the best of which assayed 5.50 % Pb-Zn combined and 22.0 gpt Ag. Exploration activity elsewhere in the East Kootenay area has indicated that this anomalous horizon is widespread, and typical of the "Sullivan-Time" stratigraphic interval.

Skarn type mineralization has also been noted at the Hilo 4 occurrence adjacent to Jurak Lake. The showing was historically referred to as the “Old Workings” where massive concentrations of scheelite, pyrrhotite and chalcopyrite with lesser concentrations of arsenopyrite, pyrite, galena and sphalerite are hosted within veins and are selectively replacing diorite. Tourmaline, garnet and actinolite alteration are associated with the mineralization (Minfile 082FNE102). The calc-silicate units as described above are suspected to be related to this style of mineralization.

Structure

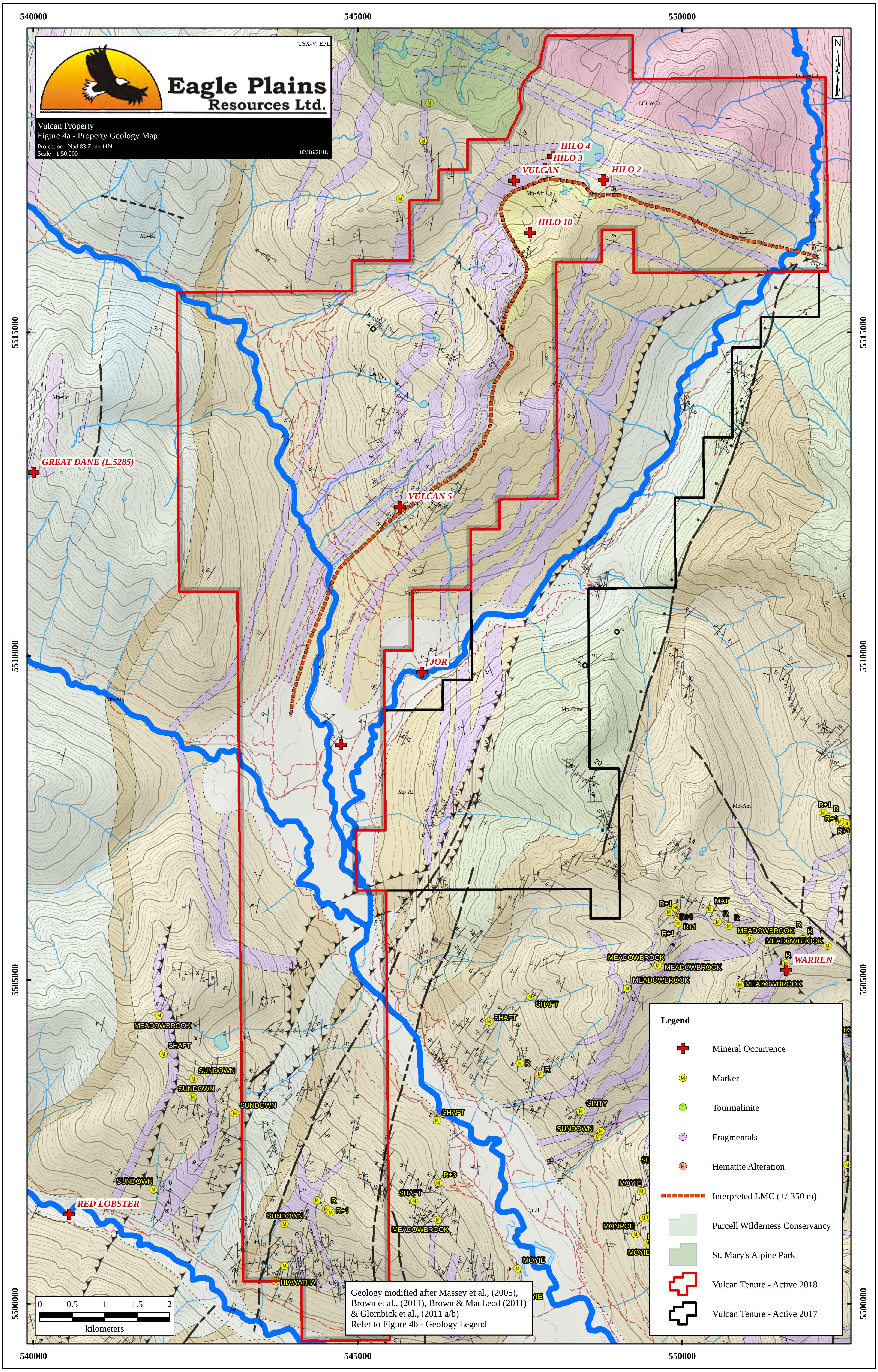
The main structural feature of the West Basin area is a broad open anticlinal fold plunging steeply to the northwest. O.E. Owens of Cominco conducted the most recent mapping of the West Basin area and describes the structure as follows (Owens, 1958):

"The Lower Aldridge rocks have been folded into large north-south trending anticlines and synclines, and they have been refolded into a west plunging anticline by the intrusion of the White Creek batholith. Within these major folds are numerous smaller closed folds. Some of these strike north-south; others as in West Basin strike east-west. The smaller folds appear to pinch out within short distances and their plunge is variable.

The Middle Aldridge rocks are relatively slightly folded except near the granite. They are part of a thick homoclinal series dipping westward.

North-south trending, steeply dipping faults are common in the eastern part of the map area. These are usually related in space to tight folds and are probably genetically related to them.

Sulfide mineralization was not observed to have any spatial relationship to folds or faults”.


Eagle Plains Resources Ltd.
TSX-V: EPL
Vulcan Property
Figure 4a - Property Geology Map
Projection - Nad 83 Zone 11N
Scale - 1:50,000
02/16/2018
GREAT DANE (L.5285)
VULCAN
HILO 2
HILO 3
HILO 4
HILO 10
VULCAN 5
JOR
WARREN
RED LOBSTER
Legend
Mineral Occurrence
Marker
Tourmalinite
Fragmentals
Hematite Alteration
Interpreted LMC (+/-350 m)
Purcell Wilderness Conservancy
St. Mary's Alpine Park
Vulcan Tenure - Active 2018
Vulcan Tenure - Active 2017
Geology modified after Massey et al., (2005), Brown et al., (2011), Brown & MacLeod (2011) & Glombick et al., (2011 a/b)
Refer to Figure 4b - Geology Legend
kilometers

TSX-V: EPL

Eagle Plains Resources Ltd.

Vulcan Property

Figure 4b - Geology Legend 1/30/2018

Geology Legend

Geological Contacts

- Amphibolite
- Contact Approx; Dikes Dash
- Contact Arbitrary
- Contact_Assumed; Dikes_Dot; Sill Dashed; Sill Dotted
- Contact Compiler
- Contact Defined; Sill Solid
- Contact Quaternary
- Contact Subdivided
- Dolomite Breccia
- Fault Approximate
- Fault Assumed
- Fault Defined
- Fault Normal Approximate
- Fault Normal Assumed
- Fault Normal Defined
- Fault_Reverse App; Fault Thrust_Approximate
- Fault_Reverse Assumed; Fault Thrust Ass
- Fault Thrust Defined
- Granitic
- Leaderlines
- Marker Approximate
- Marker Assumed
- Matthew Creek Metamorphic
- Sullivan Ore Body
- Sullivan Graben
- Tourmalinite
- Trench
- Unconformity

Geology

- Ct-FC - FRY CREEK BATHOLITH: Leucomonzogranite; biotitemonzogranite; biotite-muscovite monzogranite in westernmost exposures
- Ct-g - Massive, fine to medium grained biotite monzogranite
- ECt-WC1 - WHITE CREEK BATHOLITH: Biotite-epidote granodiorite.
- ECt-WC2 - WHITE CREEK BATHOLITH: Hornblende granodiorite.
- ECt-WC3 - WHITE CREEK BATHOLITH: Biotite monzogranite with megacrysts of potassium feldspar; aplite and pegmatite.
- ECt-WC4 - WHITE CREEK BATHOLITH: Biotite -muscovite leucomonzogranite.
- ECt-WC5 - WHITE CREEK BATHOLITH: Biotite monzogranite.
- Jr-ub - Ultramafic rocks, serpentinized peridotite.
- Mp-Afr - ALDRIDGE FORMATION: Fragmental rocks interpreted as sedimentary debris flows, breccias formed in dewatering pathways, mud volcano debris, and hydrothermal breccias: stratiform and discordant matrix- and framework-supported fragmental rocks consisting
- Mp-Al - ALDRIDGE FORMATION: LOWER: rusty brown weathering, thin- to medium-bedded, quartz wacke, quartz arenite.
- Mp-All - ALDRIDGE FORMATION: Lower siltites; siltstone, argillite, minor quartzite.
- Mp-Alq -ALDRIDGE FORMATION: “Footwall quarzites”: grey quartzite, quartz wacke.
- Mp-Alup - Upper siltites: argillite, minor quartzite.
- Mp-Am - ALDRIDGE FORMATION: MIDDLE grey to rusty weathering, thick- to thin-bedded, quartzofeldspathic wacke, intercalated argillite and siltite,
- Mp-Au - ALDRIDGE FORMATION: UPPER: rusty brown weathering, grey to dark grey, fissile to platy, laminated silty argillite and siltite.
- Mp-C - light grey, mauve, or green siltstone and argillite;thin to medium-bedded quartz arenite, quartz wacke;lenticular bedding, ripples,cross-bedding, and mudcracks occur locally.
- Mp-Clmc - CRESTON FORMATION: Mud-cracked member
- Mp-Cm - CRESTON FORMATION: MIDDLE: light grey, mauve, or purple, thin to medium-bedded quartz arenite; quartz wacke; lesser grey siltstone and argillite; white quartzite interbeds; lenticular bedding, ripples, cross-bedding, and mudcracks occur locally.
- Mp-Cu - green siltstone; black or purple argillite and siltstone.
- Mp-K - KITCHENER FORMATION: Undivided meta-sedimentary rocks: thin-bedded, brown-weathering dolomitic silt stone and green argillite.
- Mp-Kl - KITCHENER FORMATION: LOWER: green and beige siltstone, dark grey argillite; dolomitic siltstone.
- Mp-M - MOYIE INTRUSTIONS: “Moyie sills”: dark-green to black, medium to fine-grained gabbro and hornblende quartz diorite sills and dikes; several to hundreds of metres thick.
- Mp-b - Post-Moyie Instrusions:(nicol creek feeders?) Mafic sills and rare dikes hosted in Kitchener Formation. Olive green, massive to plagioclase porphyritic.
- Qt-al - Unconsolidated sediments: alluvium; colluvium; diamictite

2019 WORK PROGRAM

The 2019 work program consisted of 2.8 line-kilometres of hybrid Volterra Magnetotelluric (MT)/Volterra Induced 3D Polarization (3DIP) geophysics survey and was completed by SJ Geophysics, 11966 95A Avenue, Delta, British Columbia, V4C 3W2. The survey data was collected between May 07 – June 01, 2019. The objective of the program was to use deep penetrating geophysics to explore the potential for a Sullivan style massive sulphide deposit along the southern flank of Mt. Patrick. The primary focus of the survey was on the LMC interpreted to be located at the center of the survey line.

Survey Parameters and Instrumentation

The MT and 3DIP data was acquired along one survey line. The line was oriented at Az 332.5° and survey stations were spaced at 50m along the line.

The Volterra Distributed Acquisition System was utilized to acquire the geophysical data. Each four-channel Volterra acquisition unit records the full waveform signal from the attached sensor. Different sensor configurations are available, allowing for a varying suite of geophysical techniques such as induced polarization (IP), electromagnetics (EM), magnetotellurics (MT), controlled source audio-frequency magnetotellurics (CSAMT), etc. to be measured. The recorded full-waveform data is then passed through proprietary signal processing software to calculate the relevant geophysical attributes.

The 3DIP data was acquired along a single line, configured using a cross array with in-line and cross-line dipoles. The in-line dipoles were 100 m in length and the cross-line dipoles were 50 m in length. Along the receiver line, potential electrodes were set up every 100 m. Two additional electrodes were set up at a perpendicular distance of 50 m, forming a cross. The first cross was located 100 m into the array and every 200 m thereafter. A Volterra acquisition unit was setup at the center of each grouping of five electrodes and wired to form four dipoles in a cross.

The MT data was acquired in scalar mode, with only the Ex component of the electric field measured. The electric dipoles laid out for the 3DIP survey were also utilized to measure the magnetotelluric electric field response. Three sets of induction magnetometers were laid out along the line. Each set consisted of one parallel magnetometer (Hx) and one perpendicular magnetometer (Hy) to measure the magnetic field.

Acquisition of the MT data occurred overnight on May 28 and May 30. In addition, short interval MT data was acquired whenever the IP transmitter was not actively transmitting. This includes periods of time after data acquisition units were setup and before IP injections began for the day. The electric dipoles for the stations had a length of 100 m, and the induction magnetometers were highly sensitive ANT-23 B-Field coils.

Total expenditures for the 2019 work program were approximately $40,375.00 dollars. Refer to Appendix I for Statements of Qualification for TerraLogic Exploration Inc., personnel involved with the collection, management and reporting of data for the 2019 Vulcan Project. Refer to Appendix II for a detailed summary of project expenditures.

2019 PROGRAM RESULTS

Geophysics Program

(Open Citation after SJ Geophysics, 2019)

The main focus of the combined IP (resistivity and IP) and MT survey was the MT to determine if there were any deep seated conductive bodies with similar dimensions and conductivity to the Sullivan deposit. The Volterra method of laying out the full line of electrodes for the MT survey was simple and it required little additional effort to also collect IP data. The advantage of combining the IP and MT surveys is to achieve much better resolution of the near surface and also show any indications of problematic static shift issues. Although, with proper inversion routines, static shift is not as big an issue as it was in the past because it is part of the real data, very similar to the pant leg effects you used to see in IP pseudosections that are no longer use. The IP and MT inversion sections are shown in Figures 6 and 7.

Resistivity and Induced Polarization

The main interest of the IP survey was the resistivity data, as it should correlate well with the resistivity data from the MT survey, but with a much higher near surface resolution and a much shallower depth penetration. The resistivity inversion shows an extreme range of resistivities, from a high of thousands of ohm-m to a low of a few ohm-m as. This is shown in the inverted resistivity section (Figures 6 and 7).

This is suggestive of a very siliceous rich layer, such as a quartzite, interlain with layers that contain very thin bands of massive sulphides or thicker graphitic sediments or a combination of both. The results appear to show a number of synclines along the survey line. The most distinctive of these is a near surface resistivity that is located at about station 1600N that correlates very well with the UTEM survey results from 1985 (Assessment Report, 1985_Cominco_14198A) which suggested an extensive weakly conductive plate dipping to the west. This resistivity low, along with the adjacent resistivity high, has the appearance of being the southern arm of a syncline with the other arm located at about 2600N along the survey line. This northern arm would null couple with the UTEM and therefore not give much of a response. However, there is some indication in the historical UTEM data of the very low resistivity response seen in both the IP and MT at the bottom of the syncline.

There is some indication from the weaker near surface response that there may be a second thinner, low resistivity layer below the main layer. There is some suggestion in the IP data that this unit may be dipping to the south, but previous drilling suggest it dips to the north, therefore suggesting that there may be a series of synclines along this line. The writer is not familiar enough with the local geology to make a clear interpretation of this.

The chargeability, as shown in Figure 6, does not appear follow this very low resistivity unit. The higher resistivity unit directly above the low resistivity unit suggests there may be disseminated sulphides in this higher resistivity unit.

MT

The MT survey was designed to search for a possible deep seated low resistivity target. Due to the extreme resistivity contrast near surface, which included some very high resistivity zones, it is difficult to get good near surface information without utilizing very high frequencies in the AMT band above 1-2 kHz. Since we had very good near surface data from the IP survey we utilized the lower AMT/MT frequencies between 1.9 Hz and 1790 Hz for the MT inversion and interpretations. The inverted MT data is displayed as a section along the survey line in Figures 6 and 7.

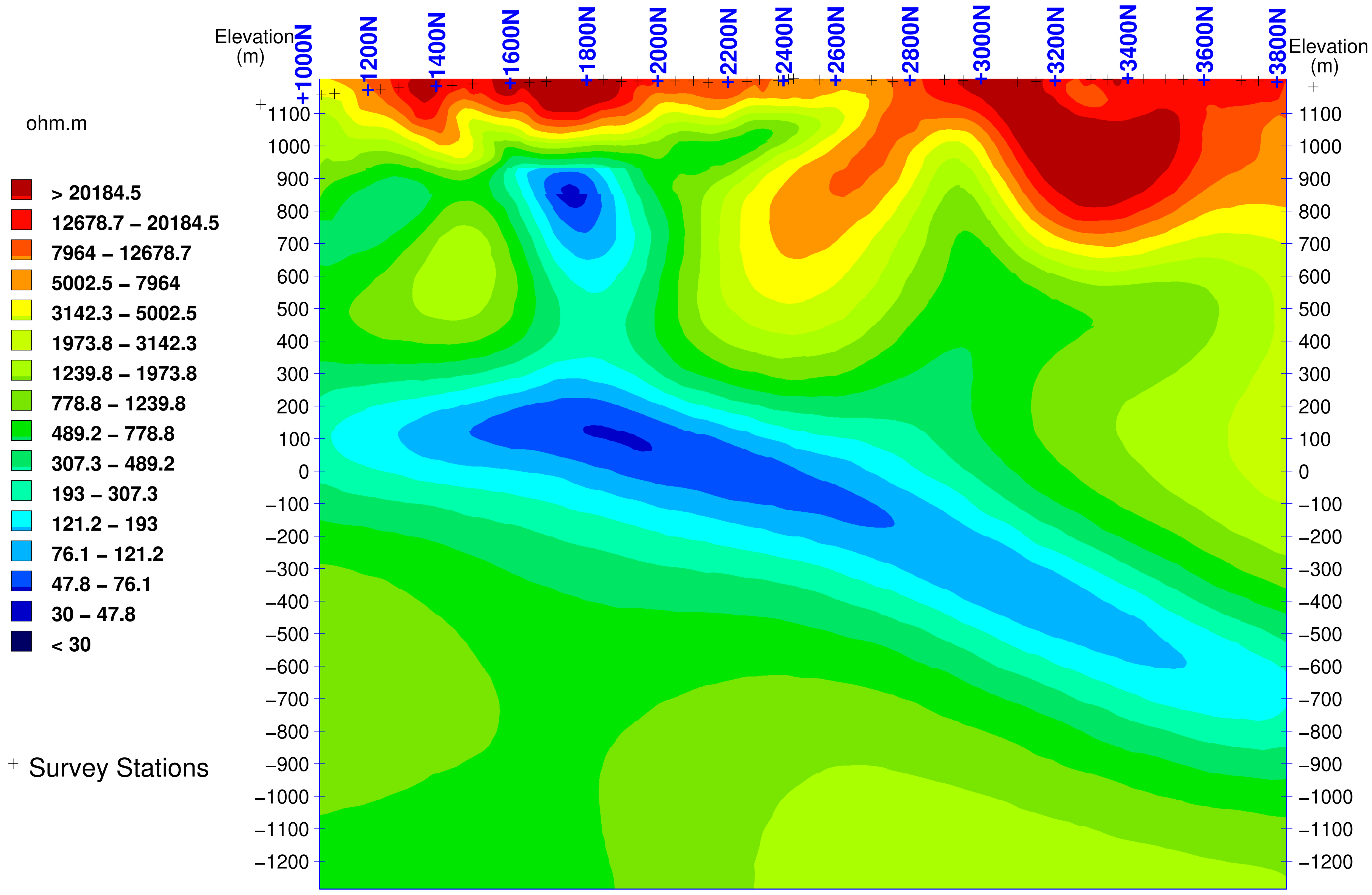
As expected, the near surface results from the MT were much smoother than the IP, but similar with the very high resistivity near surface and an indication of the low resistivity synclines, especially between

1600N and 2600N. There is a distinct low resistivity at the bottom of the interpreted syncline located at about 1800N at a depth of about 400 m (elevation 800 m).

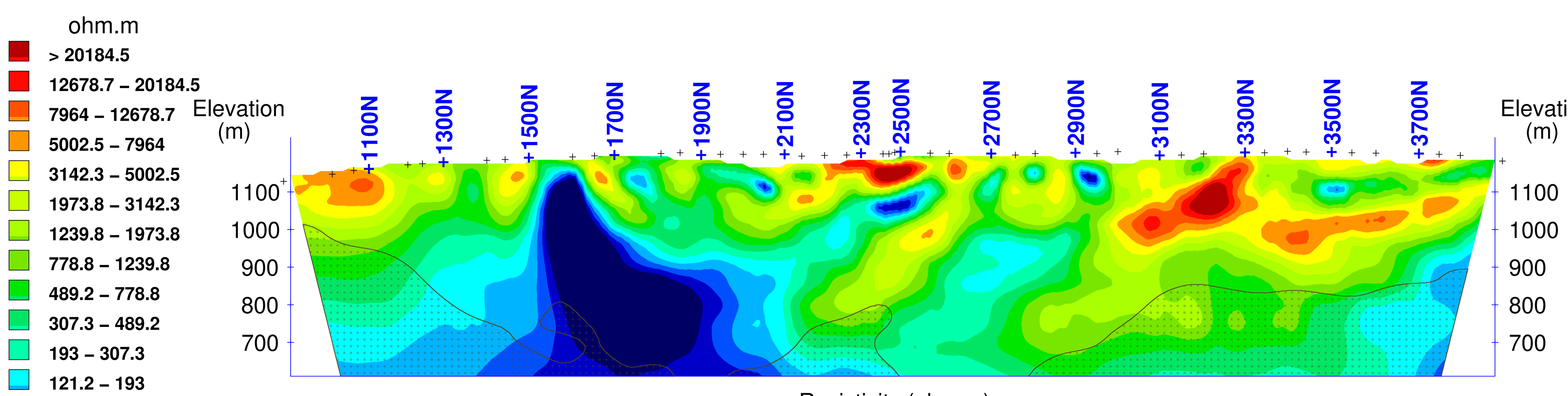
The main difference between the IP resistivity and the MT is the depth of penetration. The depth penetration of the IP on this survey is about 500 m, whereas the MT appears to resolve data to about 2 km. Therefore, there is no correlation between the IP and MT on the low resistivity layer noted on the MT section at a depth of about 1 km on the south to about 1.8 km in the north. This northerly dipping low resistivity layer appears to have its lowest resistivity directly below the deepest part of the above mentioned syncline located at about 1800N. It is not clear if this correlation of low resistivity zone below 1800N is an artifact of the inversion due to the proximity of the low resistivity layers in this area, or if they are distinct low resistivity units.

A complete copy of the geophysics interpretation report provided by SJ Geophysics can be found in Appendix III.

544000E
544500E
545000E
545500E
546000E
5513500N
5513000N
5512500N
5512000N
5511500N
5511000N
5510500N
5510000N
LEGEND
Survey Stations
Induction Magnetometers
Potential Dipole
Roads
Streams
Elevation Contours (20m)
FIGURE 5
N
W
E
S
Datum: WGS84
Projection: UTM Zone 11N
0E
1E
2E
3700N
3500N
3300N
3100N
2900N
2700N
2500N
2300N
2100N
1900N
1700N
1500N
1300N
1100N
0
250
500
750
1000
meters
VOLTERRA
GEOPHYSICS

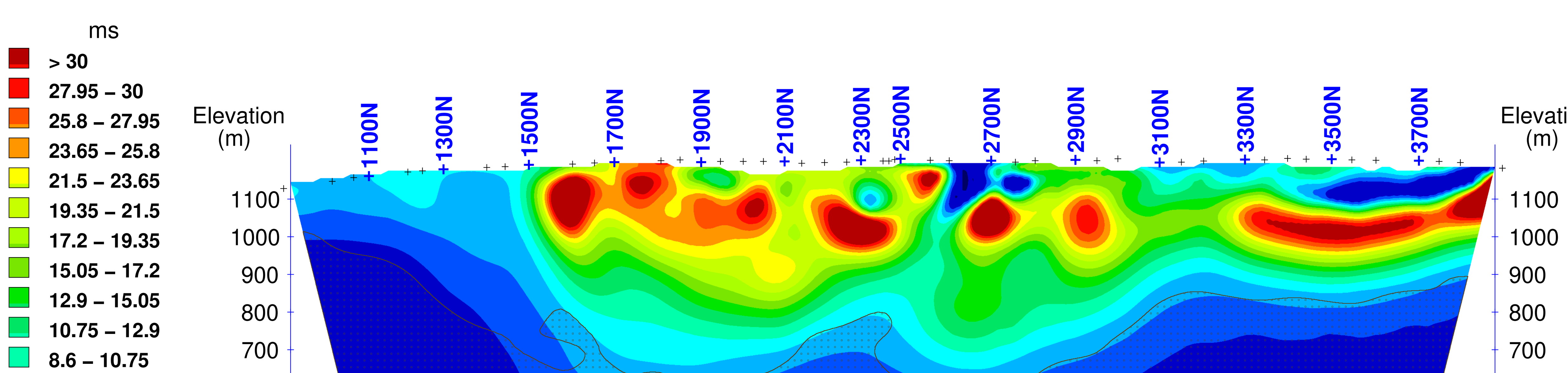


Magnetotelluric (MT) – Resistivity (ohm.m)



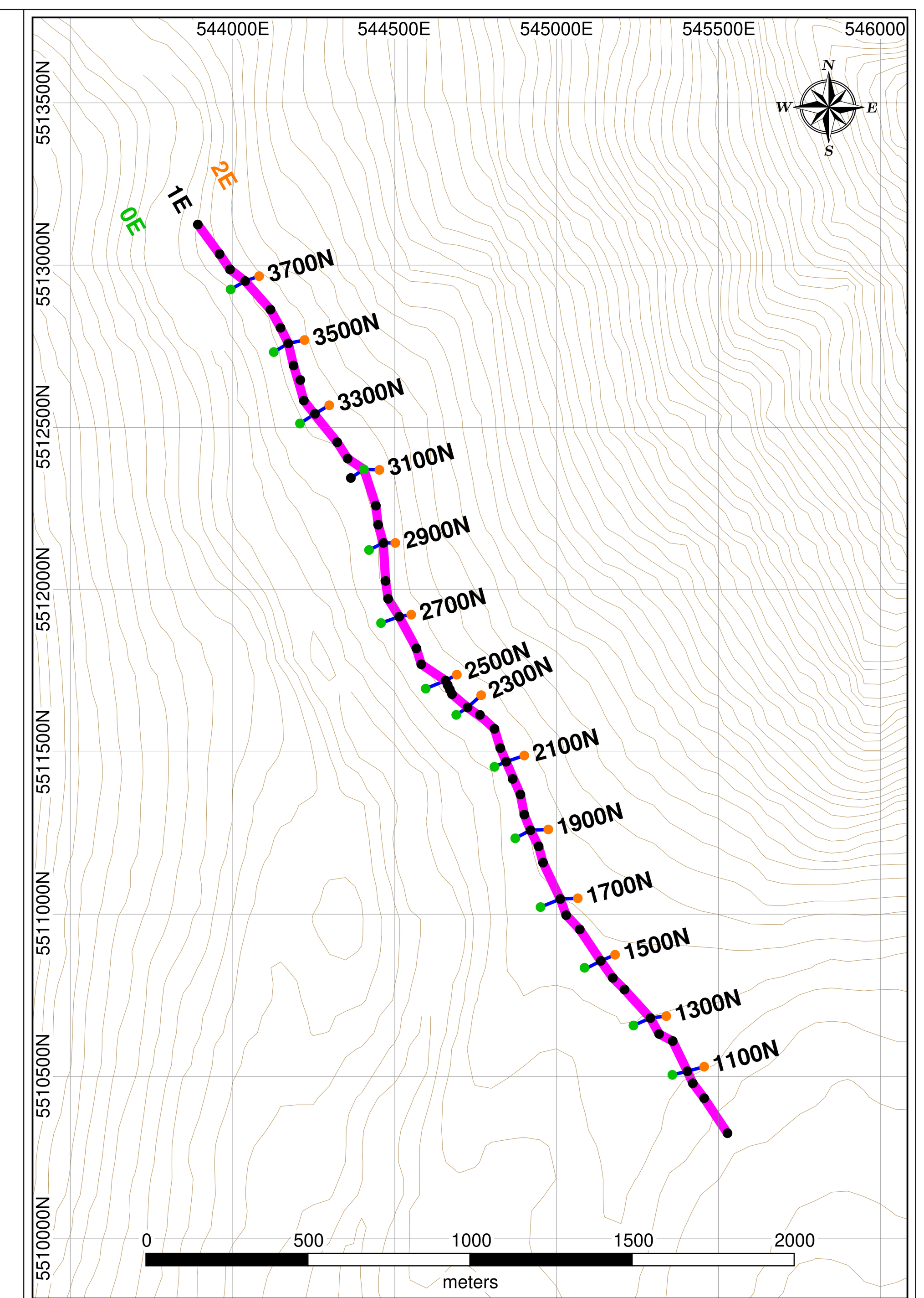
Resistivity (ohm.m)

Survey Stations
Area of Low Model Confidence



Chargeability (ms)

Survey Stations
Area of Low Model Confidence



INDEX MAP: 1E

Project Information:
Survey by: SJ Geophysics Ltd.
Survey Type: Volterra–2DIP & MT
Survey Date: May–June, 2019

Instrumentation:
Transmitter: GDD TxII
Receiver: Volterra Acquisition Unit
Array Type: Distributed 3DIP

Inversion Parameters:
Inversion by: SJ Geophysics Ltd.
Inversion Software IP: UBC–GIF DCIP3D
Resistivity Inversion Model: dcinv3d_Local–r1i07.con
Chargeability Inversion Model: ipinv3d_Local–r1i03.chg
Apparent Chargeability Integration : 50–1950 ms
Inversion Software MT: MARE2DEM
Magnetotelluric Inversion Model: MT–I35LOC.con

Colour Classification:
Resistivity: Logarithmic
Chargeability: Linear

Mapping Information:
Index Map Datum: WGS84
Index Map Projection: UTM Zone 11N
Section Map Projection: Local Coordinate System
Mapping Date: 24–Jul–2019

0 200 400 600 800 1000
meters

FIGURE 6

Terralogic Exploration Service

Vulcan Project

Kimberly, B.C., Canada

Volterra–2DIP & MT

3D Inversion Models

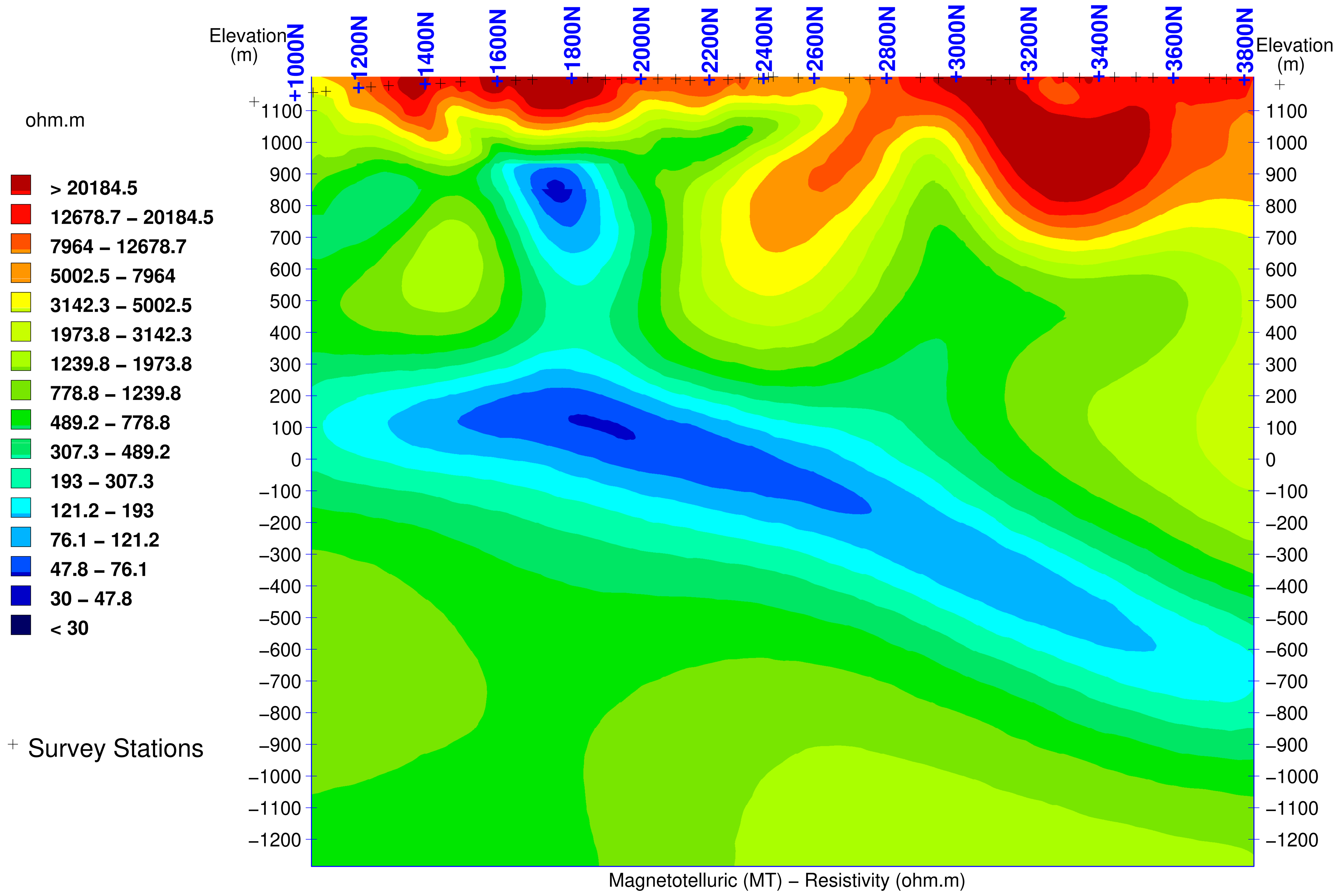
Run 1 : Including Cross–Dipoles

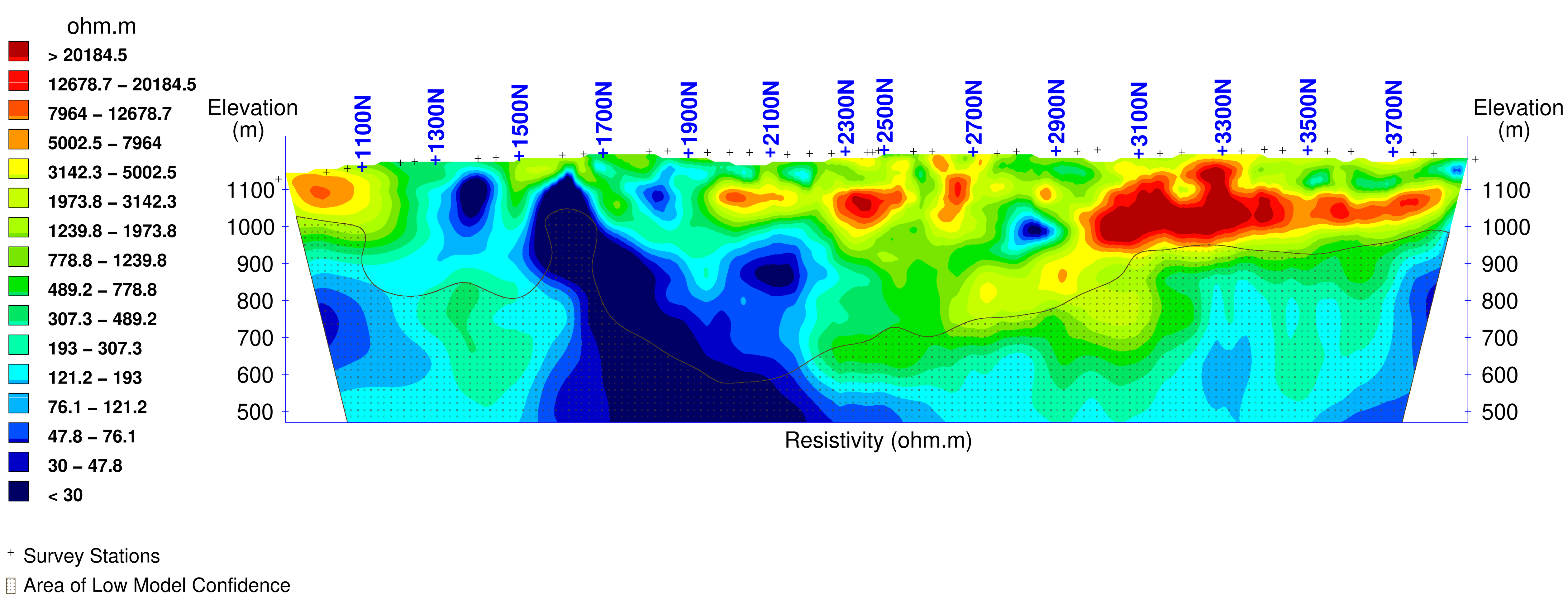
Resistivity & Chargeability

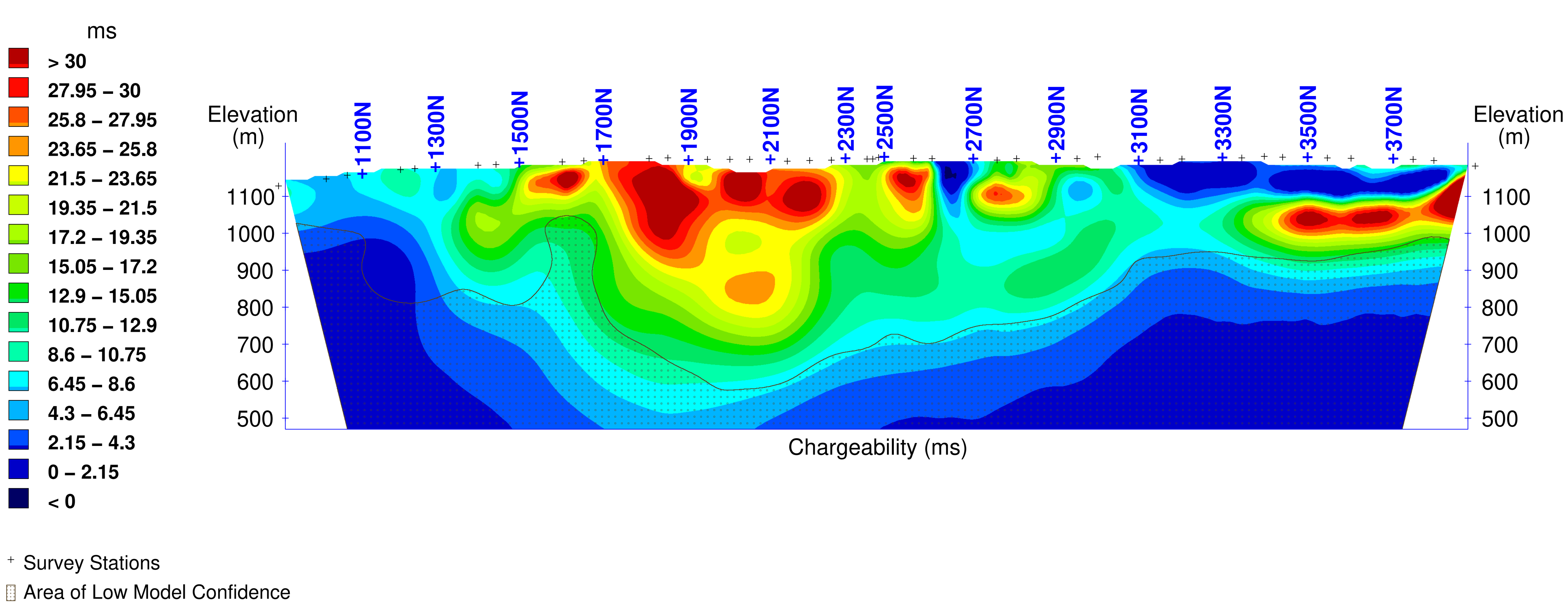
Cross Section: 1E

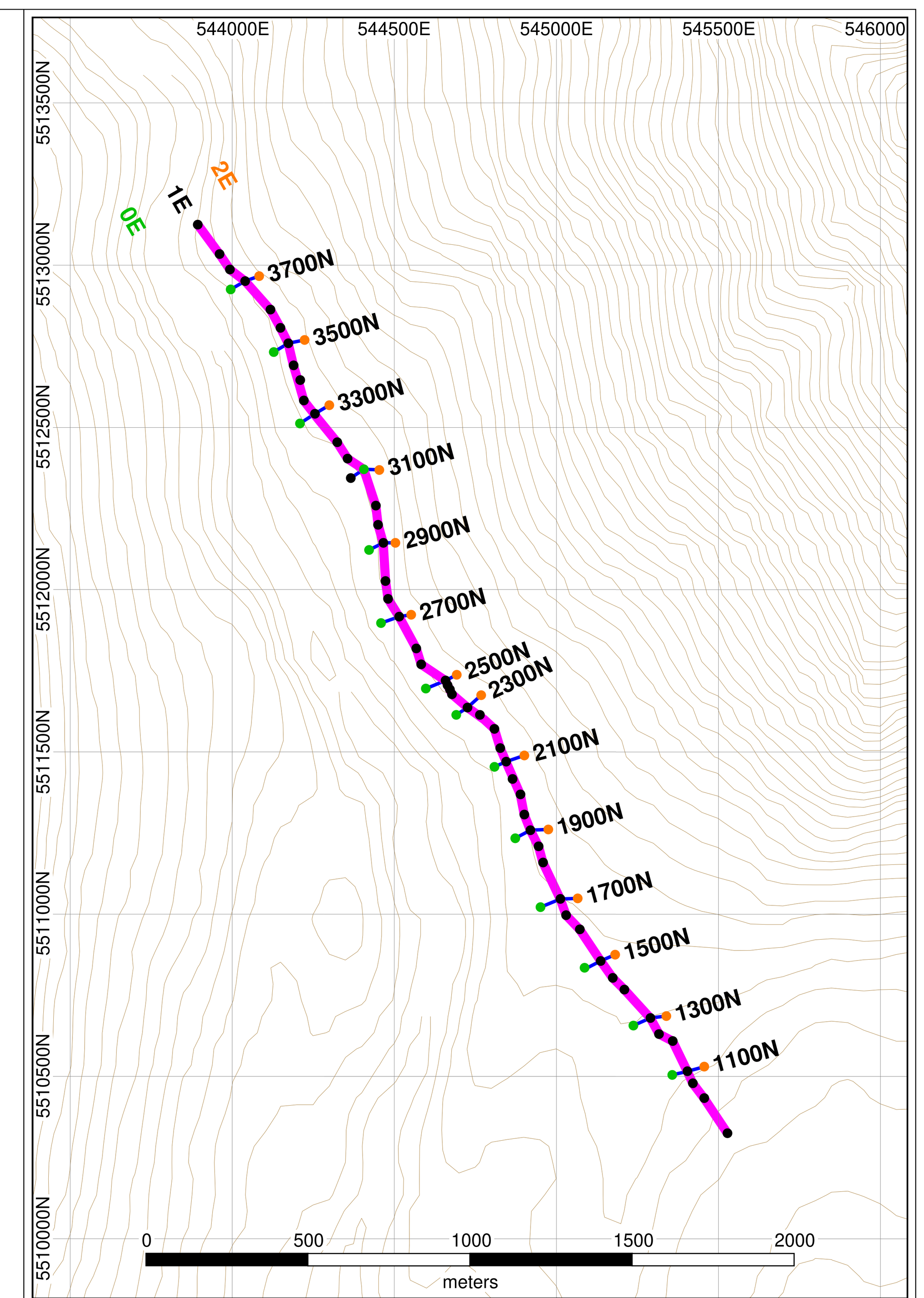
VOLTERRA

GEOPHYSICS Science on Target









INDEX MAP: 1E

Project Information:
Survey by: SJ Geophysics Ltd.
Survey Type: Volterra–2DIP & MT
Survey Date: May–June, 2019

Instrumentation:
Transmitter: GDD TxII
Receiver: Volterra Acquisition Unit
Array Type: Distributed 3DIP

Inversion Parameters:
Inversion by: SJ Geophysics Ltd.
Inversion Software IP: UBC–GIF DCIP3D
Resistivity Inversion Model: dcinv3d_Local–r2i10.con
Chargeability Inversion Model: ipinv3d_Local–r2i03.chg
Apparent Chargeability Integration : 50–1950 ms
Inversion Software MT: MARE2DEM
Magnetotelluric Inversion Model: MT–l35LOC.con

Colour Classification:
Resistivity: Logarithmic
Chargeability: Linear

Mapping Information:
Index Map Datum: WGS84
Index Map Projection: UTM Zone 11N
Section Map Projection: Local Coordinate System
Mapping Date: 24–Jul–2019

0 200 400 600 800 1000
meters

Terralogic Exploration Service

Vulcan Project

Kimberly, B.C., Canada

Volterra–2DIP & MT

3D Inversion Models

Run 2 : Excluding Cross–Dipoles

Resistivity & Chargeability

Cross Section: 1E

VOLTERRA

GEOPHYSICS Science on Target

Mapping By : S.J.V. Consultants Ltd. 11966–95A Avenue, Delta, British Columbia, Canada V4C 3W2 (604) 582–1100 www.sjgeophysics.com

CONCLUSIONS

The Vulcan property has potential to host SEDEX-type mineralization and is well located with respect to local infrastructure. The property is road-accessible, and is within reasonable distance from a high-voltage hydro-electric line. Rail facilities are located 50.0 kilometers southeast of the property. The southern part of the property that is the focus of the current work has seen limited shallow drill testing. Recent geological mapping, core relogging and structural interpretation by Eagle Plains indicates that most of the historic holes were collared below the prospective LMC horizon and none of the holes tested the prospective target area identified in 2019. Additionally at least one of the holes drilled in the West Basin target area may not have reached “Sullivan time”.

The 2019 IP and MT geophysical program identified anomalies consistent with a Sullivan type deposit model. The 2019 geophysical anomalies are coincident with the inferred position of the Lower Middle Aldridge contact, a Pb-Zn soil anomaly identified by 2011 & 2016 field programs, and a historic UTEM geophysical anomaly identified by Cominco in 1985.

The near surface low resistivity layers seen in both the IP and MT data are not associated with a coincident chargeability high and are likely not disseminated sulphides or graphitic sediments. However the signature would be consistent with a distal “Concentrator Hill” type, thin massive sulphide horizon. These near surface low resistivity layers appear to come to surface and should therefore be followed up with correlation to local geological mapping and possible historical drill hole data.

The much deeper low resistivity layer is beyond the depth resolution the IP, therefore cannot be correlated to any chargeability leaving it more open to interpretation. Although the MT data is poorly constrained as it was a single line survey, the data collected was of good quality. In terms of a Sullivan type model imposed on the steeply dipping stratigraphy seen in the area of the survey, the deeper low resistivity target could represent a vent proximal sulphide body down dip from the mapped LMC.

RECOMMENDATIONS

Future exploration on the Vulcan Project is warranted. The following recommendations provide a systematic approach to explore the property for base metals:

Phase I

- The 1991 and 1992 holes on the Vulcan property, specifically Vu-91-4 and Vu-92-3 should be located with a differential GPS to get an accurate location for modeling and targeting purposes;
- Re-logging and pXRF analysis of historic Cominco drill core Vu-84-1 to Vu-84-4 and Vu-85-1 to assist in geological modeling and exploration targeting for Sullivan-type mineralization in the area northeast of Dewar Creek; the historic drill core is currently stored at the Vine property and the East Kootenay Chamber of Mines core storage facility and is readily accessible;
- Prospecting and mapping along ridges between the West Basin and the Dewar Creek FSR;
- Acquisition of orthophoto imagery to assist in mapping alpine portions of the property and to assist with project planning;

Phase II

- A single road accessible diamond drill hole, should be drilled from the Dewar Creek FSR to test the down-dip potential for Sullivan-type mineralization. The hole should be designed to test the inferred LMC in proximity to the Pb-Zn anomaly identified by the 2011 & 2016 field programs and the low resistivity MT anomaly identified at Station 1800N;.
- Evaluation of historic borehole logs from the 1992 drill program suggest that Vu-92-3 did not reach target depth. A single road accessible diamond drill hole, approximately 700.0 meters in length, should be drilled from the road west of Vu-92-3 to test for Sullivan-type mineralization down-dip of the Hilo showings. The proposed hole represents a high-priority exploration target in the West Basin area;
- Borehole EM and/or a combination of UTEM, borehole EM, IP and MT methods should be considered to facilitate sub-surface exploration and refinement of future drilling in the target areas;

Phase III

- A single helicopter-supported diamond drill hole, approximately 300.0–400.0 meters in length, should be drilled further to the north of the Main Zone (Hilo 3) to intersect the Sullivan-type mineralization observed and at surface further down dip;
- Other helicopter-supported and road accessible diamond drilling will be recommended based upon the results of the drilling outlined in Phase II;
- Computer modeling of surface and diamond drill hole geological data to refine future drill targets;

The Phase I program could be completed for approximately $20,000.00 dollars. Phase II could be completed for approximately $500,000.00 dollars, and can be modified depending on the exploration budget available for early stage drilling. A Phase III budget would be determined based upon the success of Phase II drilling results. A Multi-Year Area-Based Permit is currently active on the Vulcan Property, and the permitted activities include the recommended diamond drilling outlined above.

REFERENCES

AeroQuest Limited (2006): Report on a Helicopter-Borne AeroTEMII Electromagnetic and Magnetometer Survey, Aeroquest Job # 05083; prepared for Eagle Plains Resources Ltd.

Brown, D.A., MacLeod, R.F., Wagner, C.L., and Chow, W. (compilers) (2011a): Geology, Grassy Mountain, British Columbia; Geological Survey of Canada, Open File 6309, scale 1:50 000.

Brown, D.A. and MacLeod, R.F. (compilers) (2011b): Geology, Boswell, British Columbia. Geological Survey of Canada, Open File 6310, scale 1:50 000.

Downie, C.C., and Hendrickson, G.W. (2006): Geological Report on the Vulcan Property; BCEMPR Assessment Report #28185; prepared for Eagle Plains Resources Ltd.

Downie, C.C. (2007): 2006 Geological Report for the Vulcan Property; BCEMPR Assessment Report #28939; prepared for Eagle Plains Resources Ltd.

Gallagher, C.S. (2012): 2011 Geophysical Report on the Vulcan Property. BCEMPR Assessment Report #32852; prepared for Eagle Plains Resources Ltd.

Glombick, P., Brown, D.A., and MacLeod, R.F. (compilers) (2011a): Geology, Yahk, British Columbia; Geological Survey of Canada, Open File 6153, (revised), scale 1:50 000.

Glombick, P., Brown, D.A. and MacLeod, R.F. (compilers) (2011b): Geology, Creston, British Columbia; Geological Survey of Canada, Open File 6152, (revised), scale 1:50 000.

Hamilton, J.M. et al., (1983): Geology of the Sullivan Deposit, Kimberley, B.C. in Short Course in Sediment Hosted Stratiform Lead-Zinc Deposits, M.A.C.

Hamilton, J.M. et al., (1982): Geology of the Sullivan Orebody, Kimberley, B.C., Canada; in Precambrian Sulfide Deposits, H.S. Robinson Memorial Volume, Geological Association of Canada, Special Paper 25, pp. 597-665.

Higgs, A.H. (2012): 2012 Geological and Geochemical Report for the Vulcan Property, BCEMPR Assessment Report # 33554, prepared for Navy Resources Corporation.

Kennedy, C. (2011): Assessment Report Moly Pritchard Property. BCEMPR Assessment Report #32170 Prepared on behalf of Kootenay Gold Inc.

Leitch, C.H.B. et al., (1991): The Vent Complex of the Sullivan Stratiform Sediment Hosted Pb-Zn Deposit, B.C.: Preliminary Petrographic and Fluid Inclusion Studies. G.S.C. Current Research, July 1991.

Leitch, C.H.B. (1991): The District Scale Sullivan-North Star Alteration Zone, Sullivan Mine Area, B.C.: A Preliminary Petrographic Study.

Leitch, C.H.B. (1992): Mineral Geochemistry of Selected Silicates, Carbonates, and Sulphides in the Sullivan and North Star Strataform Zn-Pb deposits, British Columbia, and in Distict-Scale Altered and Unaltered Sediments; in Current Research, Part E.; Geological Survey of Canada, Paper 92-1E, p.83-93.

Leitch, C.H.B. (1992): A Progress Report of Fluid Inclusion Studies of Veins From the Vent Zone, Sullivan Stratiform Sediment-Hosted Zn-Pb Deposit, British Columbia; in Current Research, Part E.; Geological Survey of Canada, Paper 92-1E, p.71-82.

Leitch, C.H.B., and Turner, R.J.W. (1992): Preliminary Field and Petrographic Studies of the Sulphide-Bearing Network Underlying the Western Orebody, Sullivan Strataform Sediment-Hosted Zn-Pb Deposit, British Columbia; in Current Research, Part E.; Geological Survey of Canada, Paper 92-1E, p.61-70.

Lydon, J.W. (1996): Sedimentary exhalative sulphides (Sedex); Geology of Canadian Mineral Deposit Types, (ed.) O.R. Eckstrand, W.D. Sinclair, and R.I. Thorpe; Geological Survey of Canada, Geology of Canada, no. 8, p. 130-152 (also Geological Society of America, The Geology of North America, v. P-1).

Lydon, J.W., Höy, T., Slack, J.F., Knapp, M.E. (2001). The Geological Environment of the Sullivan Deposit, British Columbia. Geological Association of Canada, Mineral Deposits Division, MMD Special Volume No. 1.

Massey, N., MacIntyre, D.G., Desjardins, P.J. and Cooney, R.T. (2005): Geology of British Columbia, Geoscience Map 2005-3, scale 1:1 000 000.

McCartney, I.D. (1991): Diamond Drilling Report, Vulcan Property, East Kootenay District, B.C. BCEMPR Assessment Report # 22267.

Owens, O.E. (1958): Vulcan Group – Geological Report, 1958 Season. Internal Cominco Report.

Peters, L.J. (2012): Assessment Report on the St. Mary Property. BCEMPR Assessment Report # 32893, Prepared For Operator Fjordland Exploration Inc.

Price, R.A., (1981). The Cordilleran foreland thrust and fold belt in southern Canadian Rocky Mountains; in Thrust and Nappe Tectonics, (ed.) K.R. McClay and N.J. Price; Geological Society of London, Special Publication 9, p. 427-488.

Silic, J. (1986): Interpretation Report on the UTEM Surface and Downhole Surveys on the Vulcan South Property. Internal Cominco Report.

SJ Geophysics, Tryon, A. and Visser, S. (2019): Volterra MT & 3DIP On the Vulcan Project; prepared for Terralogic Exploration Inc.

Termuende, T.J. (1992) Diamond Drilling Report on the Vulcan Property; prepared for Ascot Resources Ltd. BCEMPR Assessment Report # 22709.

Turner, R.J.W., and Leitch, C.H.B. (1992): Relationship of Albitic and Chloritic Alteration to Gabbro Dykes and Sills at the Sullivan Deposit and Nearby Area, Southeastern British Columbia; in Current Research, Part E.; Geological Survey of Canada, Paper 92-1E, p.95-105.

Turner, R.J.W. et al., (1992): Guide to the Tectonic, Stratigraphic and Magmatic Setting of the Middle Proterozoic Stratiform Sediment- Hosted Sullivan Zn-Pb Deposit, Southeastern British Columbia; in A field guide to accompany the Sullivan Project-Ocean Drilling Project Field Trip, Kimberley, B.C., 24-25 September, 1992.

Visser, S.J. (1984): Geophysical Report on UTEM Survey on the Vulcan 1-3 Claims. Internal Cominco Report.

Visser, S.J. et al., (1984): Internal Report to Compliment the 1984 Assessment Report on the UTEM Survey on the Vulcan 1-3 Claims. Internal Cominco Report.

Visser, S.J. et al., (1992): UTEM Electromagnetic Survey on the Vulcan Property, for Ascot Resources Ltd.

Visser, S., and Pezzot, E.T., (2017): Geophysical Interpretation Report on Airborne Magnetic and Electromagnetic Surveys, Vulcan and K9 Projects, 49°46'N, 116°22'W, Kootenay Lake Area, N.T.S. 82F/09, 82F16, Fort Steele Mining Division, BC, Canada.

Woodfill, R.D. (1996): Assessment Report on Drilling PMR/Red Claim Group. BCEMPR Assessment Report # 24651, Prepared on behalf of Abitibi Mining Corporation and Hastings Management

Corporation.

Appendix I
Statement of Qualifications

STATEMENT OF QUALIFICATIONS

I, C.C. (Chuck) Downie do hereby certify that:

I am the VP Exploration and a Director of Eagle Plains Resourcers Ltd. with business address: Suite 200, 44-12th Avenue South, Cranbrook, BC, V1C 2R7.

I have been directly involved with work on the Vulcan property since 2002.

I graduated with a Bachelor of Science Degree from the University of Alberta in 1988.

I have worked as a geologist for 31 years since my graduation from university.

I am currently a member in good standing with APEGBC, Registration Number 20137

I have written the assessment report titled "2019 Technical Report Report for the Vulcan Property", and dated September 03rd , 2019 for the exploration program conducted by Eagle Plains Resources Ltd.

Dated this 03rd day of September 2019, in Cranbrook, British Columbia.

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C.C. (Chuck) Downie, P.Geo

Appendix II
Statement of Expenditures

The following expenditures were incurred on the Vulcan property for the purposes of mineral exploration between May 27, 2019 - September 03, 2019

SJ Geophysics Volterra Distributed Acquisition System MT / 3DIP Survey 2.8 line kms all in cost including accommodation / meals / travel		$30,150.28
Terralogic Personnel Mike McCuaig, P.Geo planning / field supervision / logistics Dave Roberts / Jake Marchi Geological Technicians geophysical assistants Jesse Campbell, B.Sc. GIS / report figures		$4,357.50
Equipment Rental		
4 x 4 truck including mileage		$632.40
radios		$180.00
field kit / supplies		$60.00
	Total Equipment Rental:	$872.40
Fuel		$222.98
Report Writing C. Downie, P.Geo 2.5 days @ $700/day		$1,750.00
Handling Fees on disbursements		$3,022.55
	TOTAL:	**$40,375.71**

Appendix III
Geophysics Report

Geophysical Report Prepared

for

Terralogic Exploration Inc.

Volterra MT & 3DIP

on the

Vulcan Project

Kimberly, BC, Canada

Survey conducted by SJ Geophysics Ltd.
May – June, 2019

Report prepared by
SJ Geophysics
July 2019

Table of Contents

Index of Figures

Index of Tables

1. Survey Summary

SJ Geophysics Ltd. was contracted by Terralogic Exploration Inc. to acquire Volterra MT and 3DIP data on their Vulcan Property. The MT and 3DIP data was acquired along one survey line. Table 1 provides a brief summary of the project.

Client	Terralogic Exploration Inc.
Project Name	Vulcan
Project Number	SJ829
Location (approx. centre of grid)	Latitude: 49° 45' 24" N Longitude: 116° 22' 52" W 544575E 5511775N; WGS84 UTM Zone 11N
Survey Type	Volterra Magnetotelluric (MT) Volterra 3D Induced Polarization (3DIP)
Total Line Kilometres	3DIP: 2800 m (in-line dipoles) & 1400 m (cross-line dipoles) MT: 2800 m with 3 induction magnetometer stations
Production Dates	May 28 – May 31, 2019

Table 1: Survey Summary

The objective of the Volterra MT and 3DIP survey was to image geologic structures that may indicate the possibility of a lead/zinc deposit similar to the Sullivan Mine.

2. Location and Access

The Vulcan project is located in southeastern British Columbia, Canada (Figure 1). It is situated near the headwaters of St Mary's River, approximate 31 km west of Kimberly, BC.

Figure 1: Overview map of the Vulcan project

The closest town to the survey area is Kimberly. The project area can be accessed from Kimberly by the following directions:

- Drive south on Kimberley Hwy/Wallinger Ave/BC-95A for 5.7 km
- Turn right onto St Mary's Lake Rd and continue for 23.8 km
- Continue onto St Mary's River Rd and drive 21.2 km

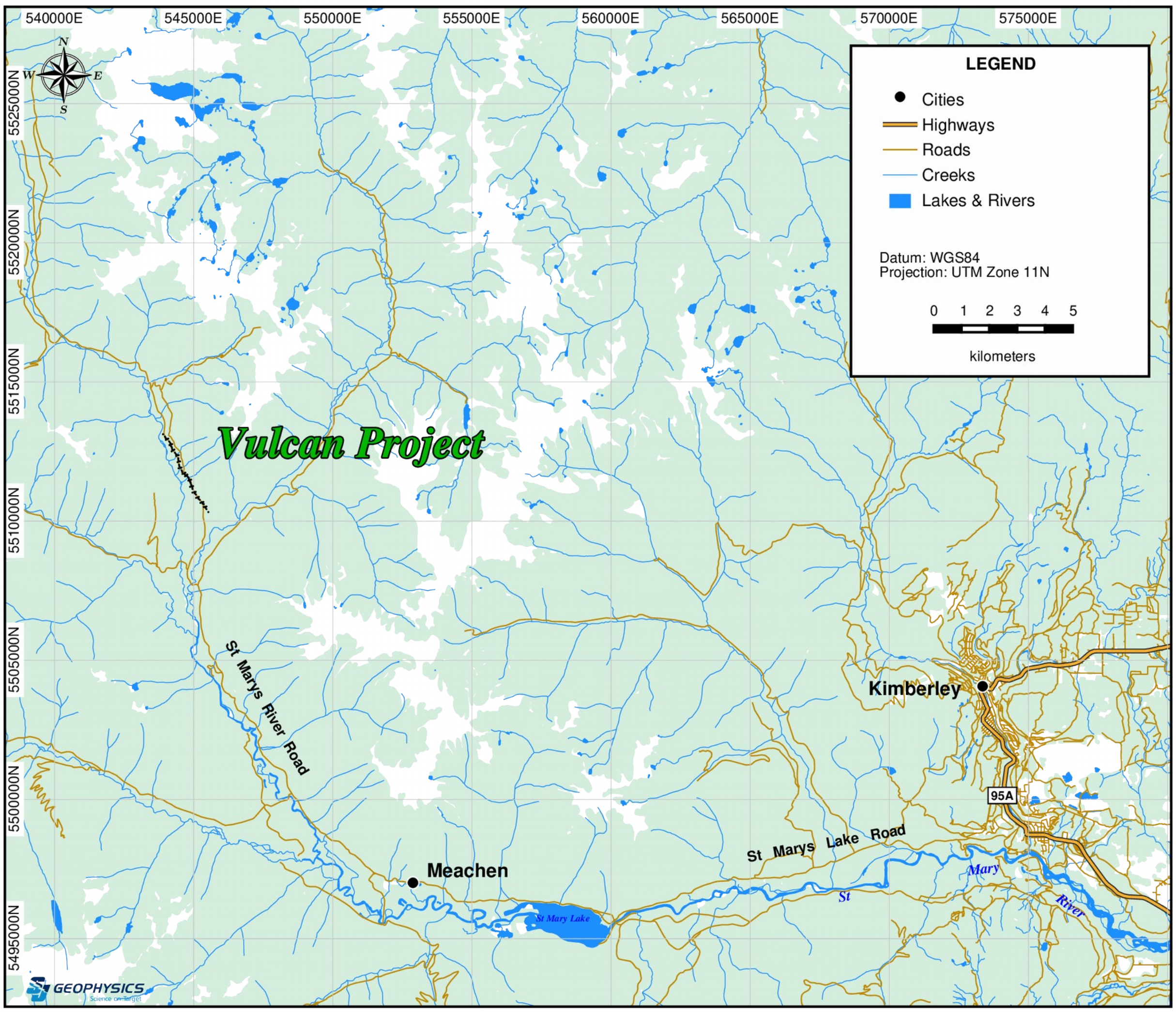


Figure 2: Location map for the Vulcan project

3. Survey Grid

The survey grid consisted of a single survey line located along a mostly straight forestry service road. No line preparations were completed in advance of the survey. All stations were located in the field in real-time using handheld GPS units. Stations were not flagged or marked. Location data at each survey station was collected with Garmin GPSMap 64s handheld GPS units. The GPS data was collected in the WGS84 UTM 11N coordinate system. The survey grid parameters are summarized in Table 2 and displayed in Figure 3.

Grid	Vulcan
Number of Surveyed Lines	1
Survey Line Azimuth	~ 332.5º
Line Spacing	N/A
Station Spacing (In-line) **Station Spacing (Cross-line)**	50 m 50 m

Table 2: Grid parameters

The line and station labels for the grid were based on a local coordinate system. Please refer to Appendix A for a detailed breakdown of the survey line.

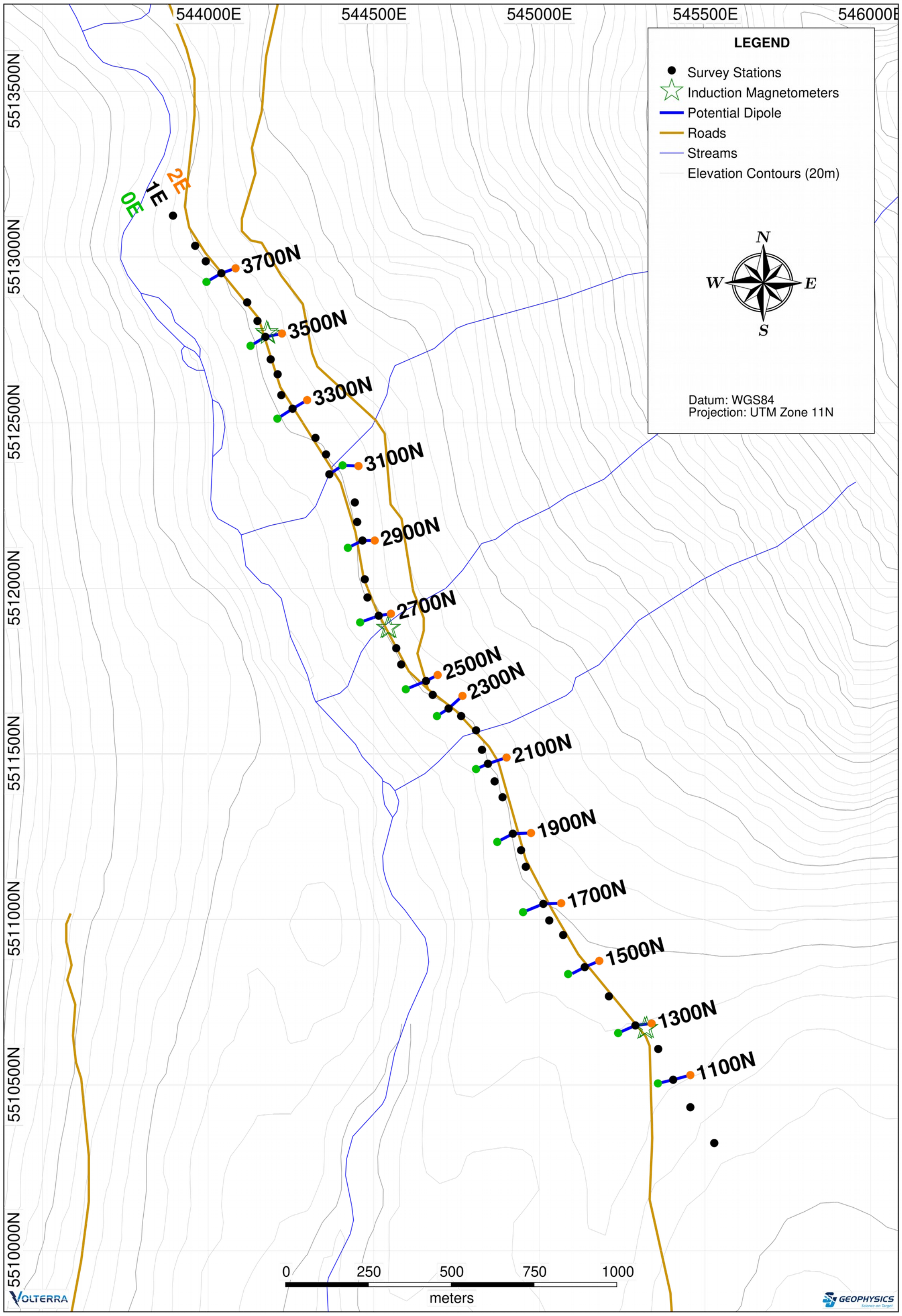


Figure 3: Grid Map showing the Vulcan grid

4. Survey Parameters and Instrumentation

4.1. Volterra Distributed Acquisition System

The Volterra Distributed Acquisition System was utilized to acquire the geophysical data. Each four-channel Volterra acquisition unit records the full waveform signal from the attached sensor. Different sensor configurations are available, allowing for a varying suite of geophysical techniques such as induced polarization (IP), electromagnetics (EM), magnetotellurics (MT), controlled source audio-frequency magnetotellurics (CSAMT), etc. to be measured. The recorded full-waveform data is then passed through proprietary signal processing software to calculate the relevant geophysical attributes (ie. apparent resistivity/chargeability for IP surveys).

4.2. Volterra-3DIP Survey

The Volterra Distributed Acquisition System was utilized for the induced polarization survey. The 3DIP data was acquired along a single line, configured using a cross array with in-line and cross-line dipoles. The in-line dipoles were 100 m in length and the cross-line dipoles were 50 m in length. Along the receiver line, potential electrodes were set up every 100 m. Two additional electrodes were set up at a perpendicular distance of 50 m, forming a cross. The first cross was located 100 m into the array and every 200 m thereafter. A Volterra acquisition unit was setup at the center of each grouping of five electrodes and wired to form four dipoles in a cross. A schematic representation of the cross array is shown in Figure 4.

Current injections occurred at the center of the in-line dipoles at least every 200 m. Two remote electrodes were utilized, one north and one south of the survey line. At each injection station, one readings was acquired with each remote. The current injections were controlled using a GDD TxII transmitter. Details of the survey configuration are summarized in Table 3.

Receiver dipoles were set up using 50 cm long and 10 mm diameter stainless steel electrodes hammered into the ground and connected into the array by single or double conductor wire. The electrodes used for current injections were significantly bigger (1 m x 15 mm) with two to four electrodes used at each injection site to improve ground contact. Current electrodes were connected to the current transmitter by a single conductor wire.

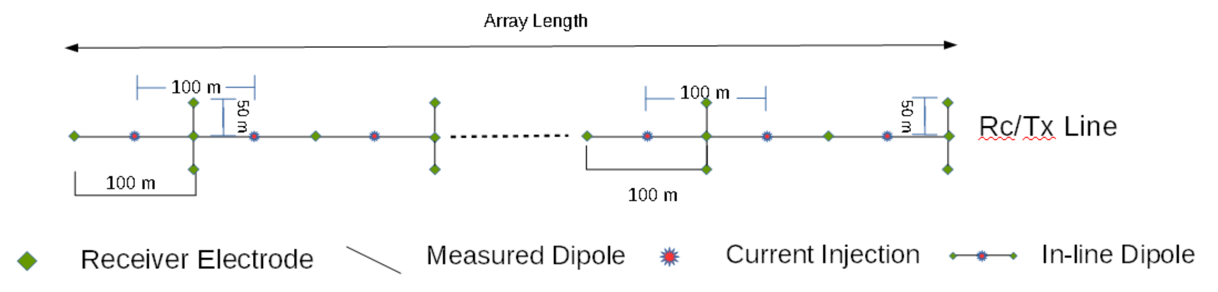


Figure 4: Schematic representation of the cross array

Array Type	Volterra 3D Distributed Array
Array Configuration	Cross Array
Acquisition Set	1 Line (Tx & Rc)
Active Array Length per Receiver Line	2800 m
Total Active Dipoles per Current Injection	56
Dipole Length	100 m (in-line), 50 m (cross-line)
Current Interval	100 m, 200 m

Table 3: Volterra-3DIP Survey parameters

The transmitter and IP signal recording/processing parameters used for the survey are described in Table 3. The full instrument specifications are listed in Appendix B.

IP Transmitter	GDD TxII 3600 W (SN# 270)
Duty Cycle and Waveform	50%, Square
Cycle and Period	2 sec on / 2 sec off; 8 second
IP Signal Recording	Volterra Acquisition Unit (Dabtube 8000 & 8200 Series)
Reading Length	120 seconds
IP Signal Processing	CSProc (SJ Geophysics proprietary software)
Vp Delay, Vp Integration	1200 ms, 600 ms

IP Transmitter	GDD TxII 3600 W (SN# 270)
Mx Delay, # of Windows Width (Window Width)	50 ms, 26 26, 28, 30, 32, 34, 36, 39, 42, 45, 48, 52, 56, 60, 65, 70, 75, 81, 87, 94, 101, 109, 118, 128, 140, 154, 150 (50–1950 ms)
Mx Integration (Inversion)	200 – 1800 ms (windows 6–25)
Properties Calculated	Vp, Mx, Sp, Apparent Resistivity and Chargeability

Table 4: IP transmitter and reading parameters

Two remote electrode stations were utilized over the course of the survey. The locations of the remote current electrodes are listed in Table 5 below.

Name	**Label**	**Easting**	**Northing**
L1 South Remote	L1E 900N	545528	5510325
L1 North Remote	L1E 4100N	543894	5513125
WGS 84 UTM Zone 11N			

Table 5: Location of IP remote sites

4.3. Volterra MT Survey

The Volterra Distributed Acquisition System was utilized for the magnetotelluric (MT) data acquisition. The MT data was acquired in scalar mode, with only the Ex component of the electric field measured. The electric dipoles laid out for the 3DIP survey were also utilized to measure the magnetotelluric electric field response. Three sets of induction magnetometers were laid out along the line. Each set consisted of one parallel magnetometer (Hx) and one perpendicular magnetometer (Hy) to measure the magnetic field.

Acquisition of the MT data occurred overnight on May 28 and May 30. In addition, short interval MT data was acquired whenever the IP transmitter was not actively transmitting. This includes periods of time after data acquisition units were setup and before IP injections began for the day. The MT induction magnetometer stations were configured as illustrated in Figure 5. The electric dipoles for the stations had a length of 100 m, and the induction magnetometers were highly sensitive ANT-23 B-Field coils.

The location of the MT induction magnetometer stations are listed in Table 6. The detailed instrument specifications are described in Appendix B.

Name	Easting	Northing
L1E 1250N	545324	5510672
L1E 2625N	544547	5511880
L1E 3510N	544181	5512768
WGS84 UTM Zone 11N		

Table 6: Locations of MT induction magnetometer stations

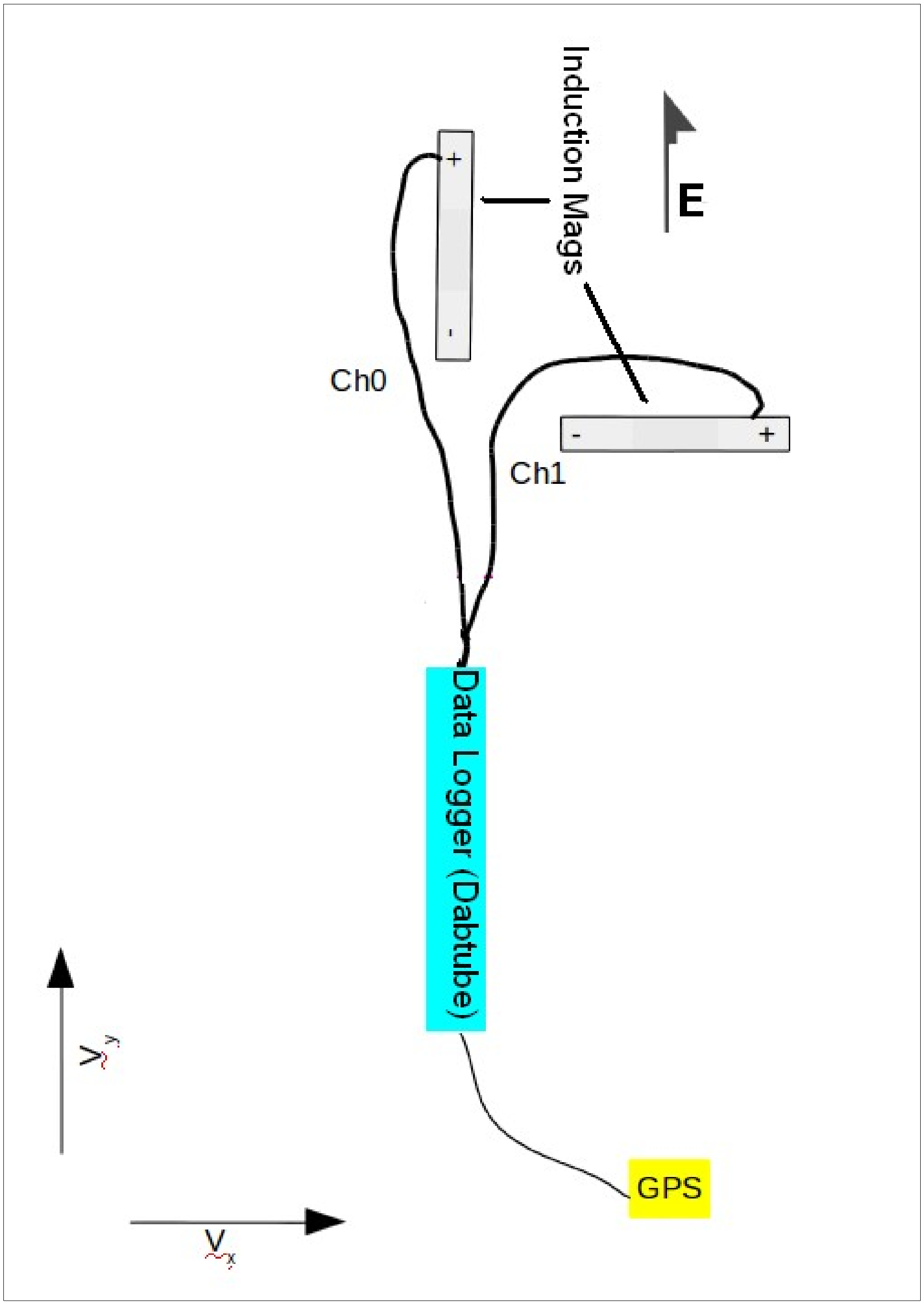


Figure 5: MT induction magnetometer station configuration

5. Field Logistics

The SJ Geophysics field crew consisted of one field geophysicist and one field technician to perform the day-to-day operations of the survey. This team oversaw all operational aspects including field logistics, data acquisition and initial field data quality control. Table 7 lists the SJ Geophysics crew members on this project. Two local helpers were provided by the client to assist the geophysical crew in the operation of the survey.

Crew Member Name	Role	Dates on Site
Alex Tryon	Field Geophysicist	May 28 – May 31, 2019
Jasmin Smallwood	Field Technician	May 28 – May 31, 2019

Table 7: Details of the SJ Geophysics crew on site

The SJ Geophysics crew mobilized to the project site on May 27 and demobilized from the project site to Delta, BC on June 1. The first day on site was May 28 and the crew remained on site through May 31.

During the course of the geophysical survey, the SJ Geophysics crew conducted a project start up safety meeting as well as daily tailgate meetings. The project safety meeting included a comprehensive review of safe work practices specific to our geophysical surveys and field operations. At the tailgate meetings, personnel discussed issues related to weather conditions (including ramifications on the survey/personal safety), encounters with or sightings of potentially problematic wildlife, efficient organization of daily tasks, and any other work-related questions or concerns.

The SJ Geophysics crew was accommodated at an Airbnb rental unit in Kimberly. The accommodations consisted of a basement suite with individual rooms and a four-piece bathroom. Internet was provided at the accommodation. Groceries were purchased for breakfasts and lunches with dinners eaten at local restaurants. SJ Geophysics provided a 4x4 pickup truck for the duration of the project. A truck radio was utilized for communication on logging roads accessing the project. On the survey grid handheld radios were utilized for communication.

Magnetotelluric Survey:

The scalar MT survey was the main priority. On May 28, the crew setup the electric dipole array in the morning and acquisition units and the MT induction magnetometer sites in the afternoon. The Volterra data acquisition units were left overnight May 28 to collect MT data and again overnight on May 30. Short interval MT was collected on May 29 and 30, whenever the IP transmitter was turned off. Three sets of induction magnetometers were setup each survey day for both the IP or MT data acquisition. On May 28, the southern site had data collection issues and on May 30, the northern MT reference site was chewed by an animal.

Volterra-3DIP Survey:

The Volterra-3DIP data was acquired on May 29 and May 30 during the day. The IP survey proceeded slower than expected due to the limited experience of field personnel. Additional time was spent training the crew on wire connections. Current leakage was a problem during some readings and took significant time to locate and repair. All suspect data with current leakage was removed from the data set prior to inversion modelling.

During the Volterra-3DIP survey, each acquisition day began with the setup of the Volterra acquisition units along the receiver lines and the setup of the transmitter site. If necessary, breaks in the receiver and current wire was located and repaired. Prior to field data acquisition, a contact resistivity test was performed using a small waveform generator attached in parallel to a given Volterra acquisition channel. This was done for each dipole in the array, and allowed the operator to identify breaks in the wire or areas of poor ground contact which could degrade input signal quality. Furthermore, this test allowed the operator to inspect the raw signal, ensuring that the Volterra acquisition units were functioning correctly, and to ensure that the receiver was synchronizing with the correct GPS time.

Upon completion of these tasks, acquisition would begin. During acquisition stages, a dedicated 'transmitter' Volterra acquisition unit and a current monitor were used to measure the current being injected at each station. An Android tablet with an in-house Volterra software app was used to record the current injection start time and duration.

6. Field Data Processing & Quality Assurance Procedures

6.1. Locations

Good quality location data is the first step to the successful analysis and interpretation of geophysical survey data. Garmin GPSMAP 64s handheld GPS units were utilized to collect location information with measurements taken at every survey station. The quality of the location data and labeling were checked every night using QGIS. Any inconsistent measurements were discarded and the remaining points, referred to as control points, were incorporated into a database using proprietary software called Location Manager. Any missing or discarded survey station locations were re-acquired the following day.

6.2. Volterra-3DIP Data

The Volterra-IP data go through a series of quality assurance checks both in the field and in the office to ensure that the data is of good quality. At the end of each acquisition day the recorded signal was downloaded from the Volterra acquisition units to a personal computer. The signals were then clipped to the GPS time windows of each current injection, lightly filtered for noise, and imported into SJ Geophysics' proprietary QA/QC software package called JavIP. This software package integrates location data with DCIP data in order to calculate the apparent resistivity and apparent chargeability values. JavIP contains interactive quality control tools to allow the field geophysicist to display decay curves, view a dot plot of the calculated parameters, and manually reject bad data points.

The majority of the data points flagged for removal were due to null-coupling, a phenomena typical in IP surveys related to the survey configuration. Null-coupling occurs when a receiver dipole is sub-parallel to lines of constant potential, leading to a significant decrease in signal strength and corresponding poor data quality. Additional data can also be deemed untrustworthy due to low signal quality or dipoles being inadvertently disconnected (usually due to animal activity).

After the first data quality review in the field, the database was delivered to SJ Geophysics' head office for a second review. The data were then carefully checked to ensure that erroneous data points had been removed and were not passed along to the final stage of processing: the inversion.

6.3. Volterra-MT Data

The MT data go through a series of quality assurance (QA) checks both in the field and in the office to ensure that the data are of good quality. The synchronized MT time-series data recorded for each induction magnetometer and electric dipole were trimmed and prepared for each MT acquisition period. A basic QA procedure included verification that each data channel was recording useful MT signal. Time series were verified to be free of overwhelming local noise (e.g. powerline noise).

More detailed checks of the data were performed at the processing stage using proprietary SJ Geophysics software tools. Those included calculating correlations between time-series in the relevant channels, and coherencies between Fourier transforms of the data channels. In addition, the orthogonal components of electric and magnetic fields must be better correlated than the parallel ones. We use these facts to detected flipped polarities in the dipoles, swapped channels, and remove particularly noisy data points.

7. Data Quality

7.1. Locations

The location data collected on the project was of good quality. GPS accuracy was good for the in-line dipoles and current injections, however the GPS accuracy was lower for the cross dipoles, located in thick forest with step hills and cliffs going up or down from the road. The thick canopy and variable terrain reduced the GPS accuracy for the cross dipoles. For the inversion modelling, the NTS 50K DEM was utilized rather than the GPS elevations.

7.2. Volterra-3DIP Data

The collected 3DIP survey data on the Vulcan project was of fair quality. The ground contact resistance on the survey grid varied greatly from one dipole to the next due to the steep and varied terrain resulting in potential rods located in very different surface conditions. For example, one dipole could be located on the side of the road, in good firm dirt, with the other located 50 m away and 25 m lower in elevation, within decaying forest floor organic matter.

Two remotes were used for most readings, ensuring that both directions from the injection site had a strong signal from at least one of the two readings. The voltage potentials (Vp) varied across the survey area with the furthest offsets averaging less than 1 mV and closer injections achieving considerably higher averages around 500 mV. The highest Vp's were observed when the injection station and receiver dipoles were within very close proximity.

The chargeability decay curve quality was good, especially when Vp's were high. The measured signals were observed to be weak on the far offset dipoles, where the decays curves were very noisy and had to be removed during data QC. The lowest quality curves were observed on far-offset dipoles, primarily when the voltage potentials were less than 1 mV.

7.3. Volterra-MT Data

The data were processed as scalar MT with dipoles oriented parallel to line 1E and using the induction magnetometers oriented perpendicular to the line. Data processing is done statistically by dividing it into shorter time series (ensembles), and calculating apparent resistivity, phase, for each ensemble. A coherence value is also calculated which tends to be large when the signal is a result of a far-field natural source. All data used had a coherence of 90% or higher.

The data that was processed was collected on May 30 using a sampling rate of 4000 Hz. The data was collected concurrently with the IP survey conducted that day between times when the current injections were taking place. Readings with a minimum duration of two minutes were selected. Several frequencies in the range from 1.9 Hz to 1790 Hz were analyzed. This covers the full range between the dead band (0.1 and 1 Hz) and the Nyquist limit of the data acquisition unit.

Data quality was evaluated by generating scatter plots of the (log) apparent resistivity and phase of the ensembled data. Good quality data is clustered in one place on the plot. An algorithm was used to estimate the phase and apparent resistivity in the presence of background signal. If the background was too large for a given data point, that data point was removed from the analysis. The MT signal-to-noise ratio was found to be large enough using the data that was processed. Errors are estimated by analyzing the measured apparent resistivity and phase distributions. These are statistical errors and can be adjusted to account for other sources of error (eg. locations).

The Volterra-MT data collected was generally of good quality for most stations on line 1E. A number of stations collected poor MT data and had to be completely excluded. These stations were

- 1E1650 and 1E1750 (lack of good GPS on data acquisition unit)
- 1E2350, 1E2450, 1E2550, 1E2850 and 1E2950 (low signal to noise ratio)

8. Interpretation

The main focus of the combined IP (resistivity and IP) and MT survey was the MT to determine if there were any deep seated conductive bodies with similar dimensions and conductivity to the Sullivan deposit. The Volterra method of laying out the full line of electrodes for the MT survey was simple and it required little additional effort to also collect IP data. The advantage of combining the IP and MT surveys is to achieve much better resolution of the near surface and also show any indications of problematic static shift issues. Although, with proper inversion routines, static shift is not as big an issue as it was in the past because it is part of the real data, very similar to the pant leg effects you used to see in IP pseudosections that are no longer use. The IP and MT inversion sections are shown in Appendix D.

8.1. Resistivity and Induced Polarization

The main interest of the IP survey was the resistivity data, as it should correlate well with the resistivity data from the MT survey, but with a much higher near surface resolution and a much shallower depth penetration. The resistivity inversion shows an extreme range of resistivities, from a high of thousands of ohm-m to a low of a few ohm-m as. This is shown in the inverted resistivity section (Figure 6).

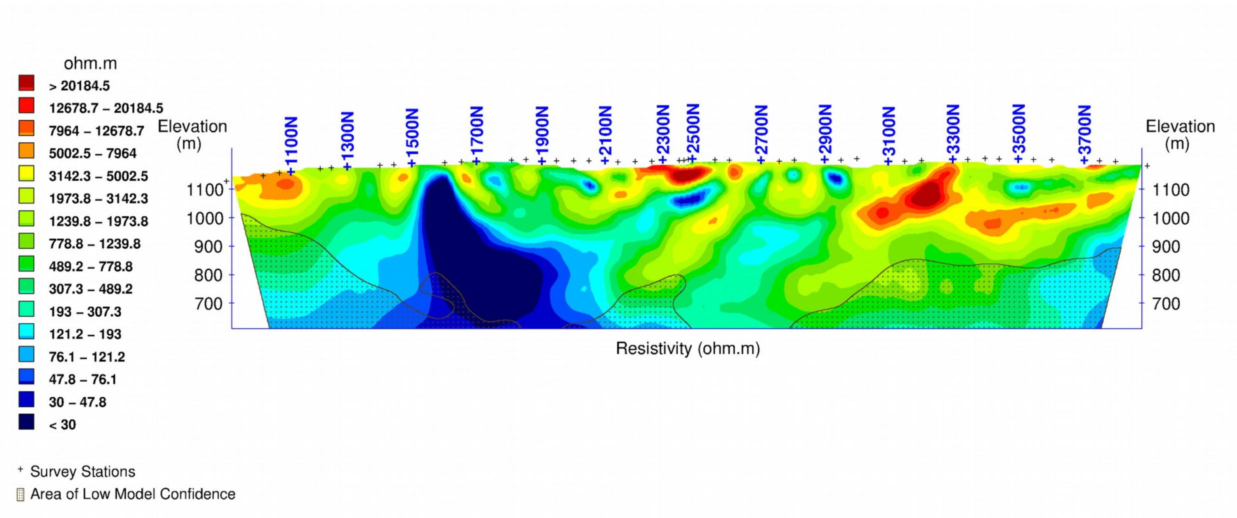


Figure 6: Inverted 3DIP resistivity section

This is suggestive of a very siliceous rich layer, such as a quartzite, interlain with layers that contain very thin bands of massive sulphides or thicker graphitic sediments or a combination of both. The results appear to show a number of synclines along the survey line. The most distinctive of these is a near surface resistivity that is located at about station 1600N that correlates very well with the UTEM survey results from 1985 (Assessment Report, 1985_Cominco_14198A) which suggested an extensive weakly conductive plate dipping to the west. This resistivity low, along with the adjacent resistivity high, has the appearance of being the southern arm of a syncline with the other arm located at about 2600N along the survey line. This northern arm would null couple with the UTEM and therefore not give much of a response. However, there is some indication in the historical UTEM data of the very low resistivity response seen in both the IP and MT at the bottom of the syncline.

There is some indication from the weaker near surface response that there may be a second thinner, low resistivity layer below the main layer. There is some suggestion in the IP data that this unit may be dipping to the south, but previous drilling suggest it dips to the north, therefore suggesting that there may be a series of synclines along this line. The writer is not familiar enough with the local geology to make a clear interpretation of this.

The chargeability, as shown in Figure 7, does not appear follow this very low resistivity unit.

The higher resistivity unit directly above the low resistivity unit suggests there may be disseminated sulphides in this higher resistivity unit.

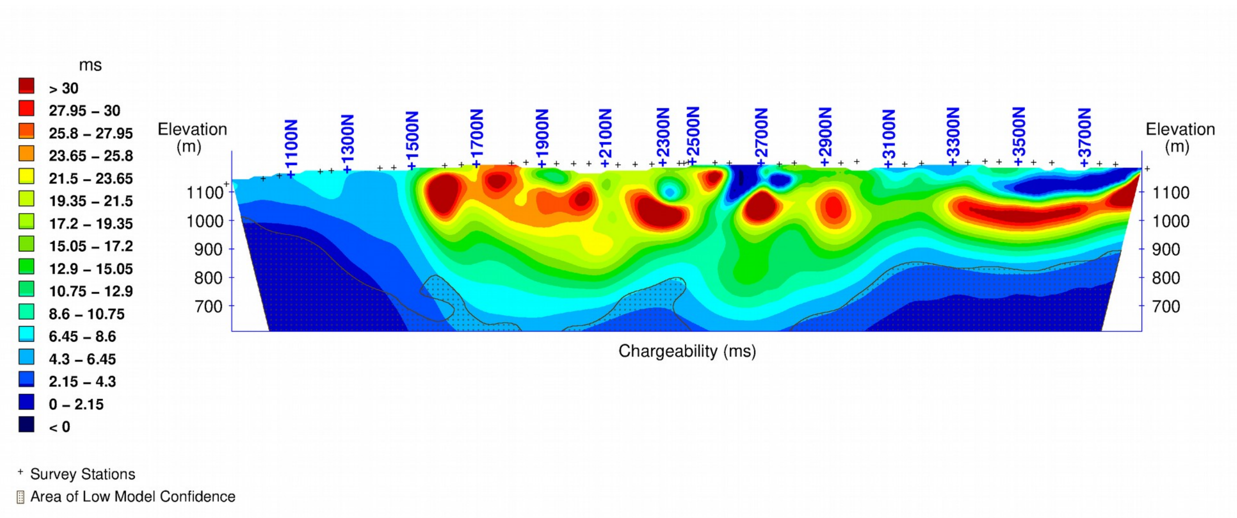


Figure 7: Inverted 3DIP chargeability section

8.2. MT

The MT survey was designed to search for a possible deep seated low resistivity target. Due to the extreme resistivity contrast near surface, which included some very high resistivity zones, it is difficult to get good near surface information without utilizing very high frequencies in the AMT band above 1-2 kHz. Since we had very good near surface data from the IP survey we utilized the lower AMT/MT frequencies between 1.9 Hz and 1790 Hz for the MT inversion and interpretations. The processed MT data is shown as frequency versus apparent resistivity plots in Appendix E. The inverted MT data is displayed as a section along the survey line in Figure 8.

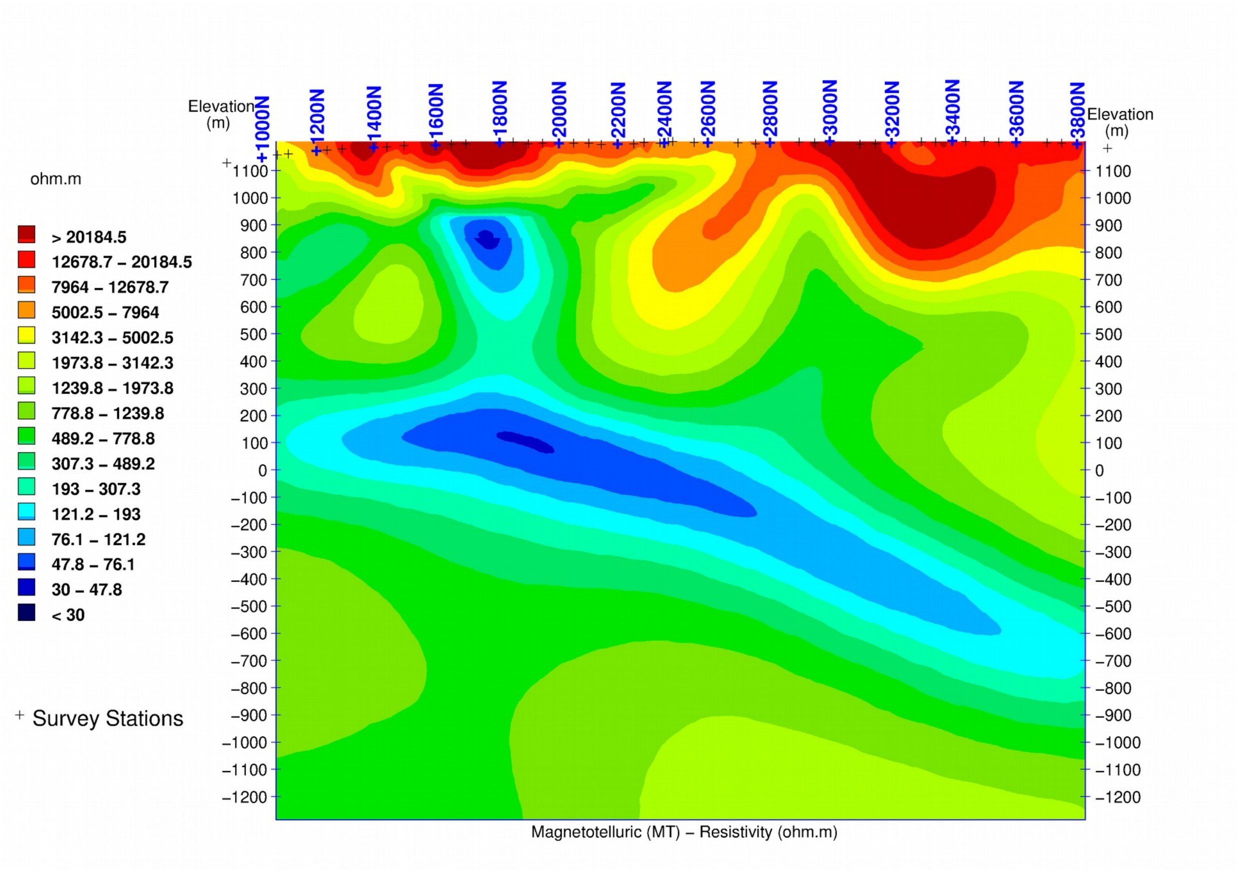


Figure 8: Inverted MT resistivity section

As expected, the near surface results from the MT were much smoother than the IP, but similar with the very high resistivity near surface and an indication of the low resistivity synclines, especially between 1600N and 2600N. There is a distinct low resistivity at the bottom of the interpreted syncline located at about 1800N at a depth of about 400 m (elevation 800 m).

The main difference between the IP resistivity and the MT is the depth of penetration. The depth penetration of the IP on this survey is about 500 m, whereas the MT appears to resolve data to about 2 km. Therefore, there is no correlation between the IP and MT on the low resistivity layer noted on the MT section at a depth of about 1 km on the south to about 1.8 km in the north. This northerly dipping low resistivity layer appears to have its lowest resistivity directly below the deepest part of the above mentioned syncline located at about 1800N. It is not clear if this correlation of low resistivity zone below 1800N is an artifact of the inversion due to the proximity of the low resistivity layers in this area, or if they are distinct low resistivity units.

8.3. Discussion and Conclusions

It is unclear what geological formation would be the cause of the near surface low resistivity layers seen in both the IP and MT data since there does not seem to be a chargeability anomaly directly associated with these lows. Due to the absence of chargeability it is likely not disseminated sulphides or graphitic sediments. It is possible that it could be due to a very thin massive sulphide layer. These near surface low resistivity layers appear to come to surface and should therefore be followed up with correlation to local geological mapping and possible historical drill hole data.

The much deeper low resistivity layer is beyond the depth resolution the IP, therefore cannot be correlated to any chargeability leaving it more open to interpretation.

I would suggest following up this low resistivity zone located at about 1800N with additional geophysical surveying along strike to see if these anomalies may be strike limited (change in resistivity along strike) or more of a lithological formation. The additional geophysics could involve a more detailed IP/MT or TEM survey. A TEM survey would require collecting data from multiple loops due to the changes in dip of the low resistivity layers.

If a decision was made to drill this area, then it definitely should be followed up with Borehole EM.

9. Geophysical Inversion

The purpose of geophysical inversion is to estimate the 3D distribution of subsurface physical properties (density, resistivity, chargeability, and magnetic susceptibility) from a series of geophysical measurements collected at the surface. Unfortunately this is a challenging problem – the subsurface distribution of physical properties is complex and only a finite number of measurements can be collected. These complications lead to an under-determined problem. As a result, there are many different possible 3D physical property models that can be obtained which mathematically fit the observed data. Utilizing known geological and geophysical information to evaluate the model allows the best or most geologically realistic model to be selected and leads to a better understanding of the subsurface.

Geophysical inversions are commonly performed for every survey carried out by SJ Geophysics. Several inversion programs are available, but SJ Geophysics primarily uses the UBC-GIF algorithms (e.g. DCIP2D, DCIP3D, MAG3D, GRAV3D) which were developed by a consortium of major mining companies under the auspices of the University of British Columbia's Geophysical Inversion Facility.

In general, multiple inversions are carried out for each dataset and the resultant inversion models are compared with known information to evaluate the model. For example, known geology, drill assays, the estimated depth of investigation, and the quality of the input data are all used during the evaluation. The most geologically reasonable model that fits the data is then chosen as the best model. When available, additional information such as geological boundaries and down-hole geophysical data can be incorporated into the inversion in order to constrain the inversion model.

Once the final inversion model is selected, the model is gridded and mapped for interpretation. Typically, cross-sections and plan maps are created, sliced at different depths beneath the surface. The inversion results can be visualized in 3D using open source software packages such as Mayavi and Paraview in both 2D and 3D views. Additional data can then be overlain to aid in interpretation and help facilitate the identification of potential drilling targets.

10. Deliverables

This logistics report and maps are provided as digital copies only. A brief description of the provided data is below.

- 3DIP Data – Raw DCIP data exported as a .txt file
- MT Apparent Resistivity / Frequency plots
- Locations – Locations of survey stations with NTS 50K DEM elevations
- Grid Map
- Logistics & Interpretation Report
- 3D Inversions Models
    - UBC – Inverted models in UBC-GIF standard format (Local & UTM coordinates)
    - XYZ – ASCII format of models converted from UBC-GIF inversion models. The value at the centre of each model cell is given (con, res, chg, sen)
    - VTK – Inverted models in open-source vtk format: res, con, chg, and sen
    - UBC - inverted model in UBC-GIF standard format: .chg, .con, .res, sensitivity, and mesh files. Local and UTM coordinates.
- 3D Inversion Maps
    - Resistivity and chargeability section map along survey line
- MT Inversion Models
    - XYZ – ASCII format of model converted from MARE2D inversion model.
    - VTK – Inverted model in open-source vtk format: res.
- MT Inversion Maps
    - Resistivity section map along survey line

Respectfully submitted,

Alex Tryon, B.Sc.

Field Geophysicist

Syd Visser, B.Sc., P.Geo

Geophysicist / Geologist

Statement of Qualifications

Syd Visser

I, Syd J. Visser, of 11762 - 94th Avenue, Delta, British Columbia, hereby certify that,

1) I am a graduate from the University of British Columbia, 1981, where I obtained a B.Sc. (Hon.) Degree in Geology and Geophysics.
2) I am a graduate from Haileybury School of Mines, 1971.
3) I have been engaged in mining exploration since 1968.
4) I am a professional Geoscientist registered in British Columbia.

Signed by: ___________________________

Syd Visser, B.Sc., P.Geo.

Geophysicist/Geologist

Date: ___________________________

Appendix A: Survey Details

Vulcan IP/MT Grid

Line	Series	Type	Start Station	End Station	Survey Length (m)
1	E	Tx/Rc	1000	3800	2800

Total Linear Meters = 2,800

Rc = Receiver Line, Tx = Transmitter Line

Vulcan MT Induction Magnetometer Stations

Line	Series	Station
1	E	1250
1	E	2625
1	E	3510

# of Unique Stations = 3

Appendix B: Instrument Specifications

Volterra Acquisition Unit (Dabtube 8200 Series)

Technical:

Input impedance:	20 MΩ
Input overvoltage protection:	5.6 V
ADC bit resolution:	24-bit
Internal memory:	Storage Capacity 64 GB
Number of inputs:	4
Synchronization:	GPS
Selectable Sampling Rates (samples/second):	128000, 64000, 32000, 16000, 8000, 4000, 2000, 1000
Common mode rejection:	More than 80 dB (for Rs=0)
Voltage sensitivity:	Range: -5.0 to +5.0 V (24 bit)
Features	Programmable Gain, AC/DC coupling

General:

Dimensions:	Diameter: 43 mm, Length: 405 mm
Weight:	0.5 kg
Battery:	5.0 VDC nominal
Operating temperature range:	-40 ºC to 40 ºC

GDD IP Transmitter – TxII-3600W

Input voltage:	120 V / 60 Hz or 240 V / 50 Hz (optional)
Output power:	3.6 kW maximum (7.2 kW in Master/Slave)
Output voltage:	150 to 2400 V (4800 V in Master Slave)
Output current:	5 mA to 10 A
Time domain:	1, 2, 4, 8 second on/off cycle
Operating temp. range:	-40 °C to +65 °C
Display:	Digital LCD read to 0.001 A
Dimensions:	34 x 21 x 39 cm
Weight:	20 kg

Surface Axial Induction Magnetometer (Ant -23)

Frequency range:	0.1 Hz to 40,000 Hz 0.1 Hz to 10,000 Hz (Units 1723, 1823, 1123)
Sensitivity in pass band:	100 mV/nT
Noise level:	12 fT per √Hz at 1 Hz

Appendix C: Geophysical Techniques

IP Method

The time domain IP technique energizes the ground by injecting square wave current pulses via a pair of current electrodes. During current injection, the apparent (bulk) resistivity of the ground is calculated from the measured primary voltage and the input current. Following current injection, a time decaying voltage is also measured at the receiver electrodes. This IP effect measures the amount of polarizable (or “chargeable”) particles in the subsurface rock.

Under ideal circumstances, high chargeability corresponds to disseminated metallic sulfides. Unfortunately, IP responses are rarely uniquely interpretable as other rock materials are also chargeable, such as some graphitic rocks, clays, and some metamorphic rocks (e.g., serpentinite). Therefore, it is prudent from a geological perspective to incorporate other data sets to assist in interpretation.

IP and resistivity measurements are generally considered repeatable to within about five percent. However, changing field conditions, such as variable water content or electrode contact, reduce the overall repeatability. These measurements are influenced to a large degree by the rock materials near the surface or, more precisely, near the measurement electrodes. In the past, interpretation of a traditional IP pseudosection was often uncertain because strong responses located near the surface could mask a weaker one at depth. Geophysical inversion techniques help to overcome this uncertainty.

Volterra-3DIP Method

Three dimensional IP surveys are designed to take advantage of recent advances in 3D inversion techniques. Unlike conventional 2DIP, the electrode arrays in 3DIP are not restricted to an in-line geometry. This means that data can be collected from a large variety of azimuths simultaneously leading to a highly sampled dataset containing more information about the Earth's physical properties. In an ideal world, a 3DIP survey would consist of randomly located current injections and receiver dipoles with random azimuths. Unfortunately, logistical considerations usually prohibit a completely randomized approach.

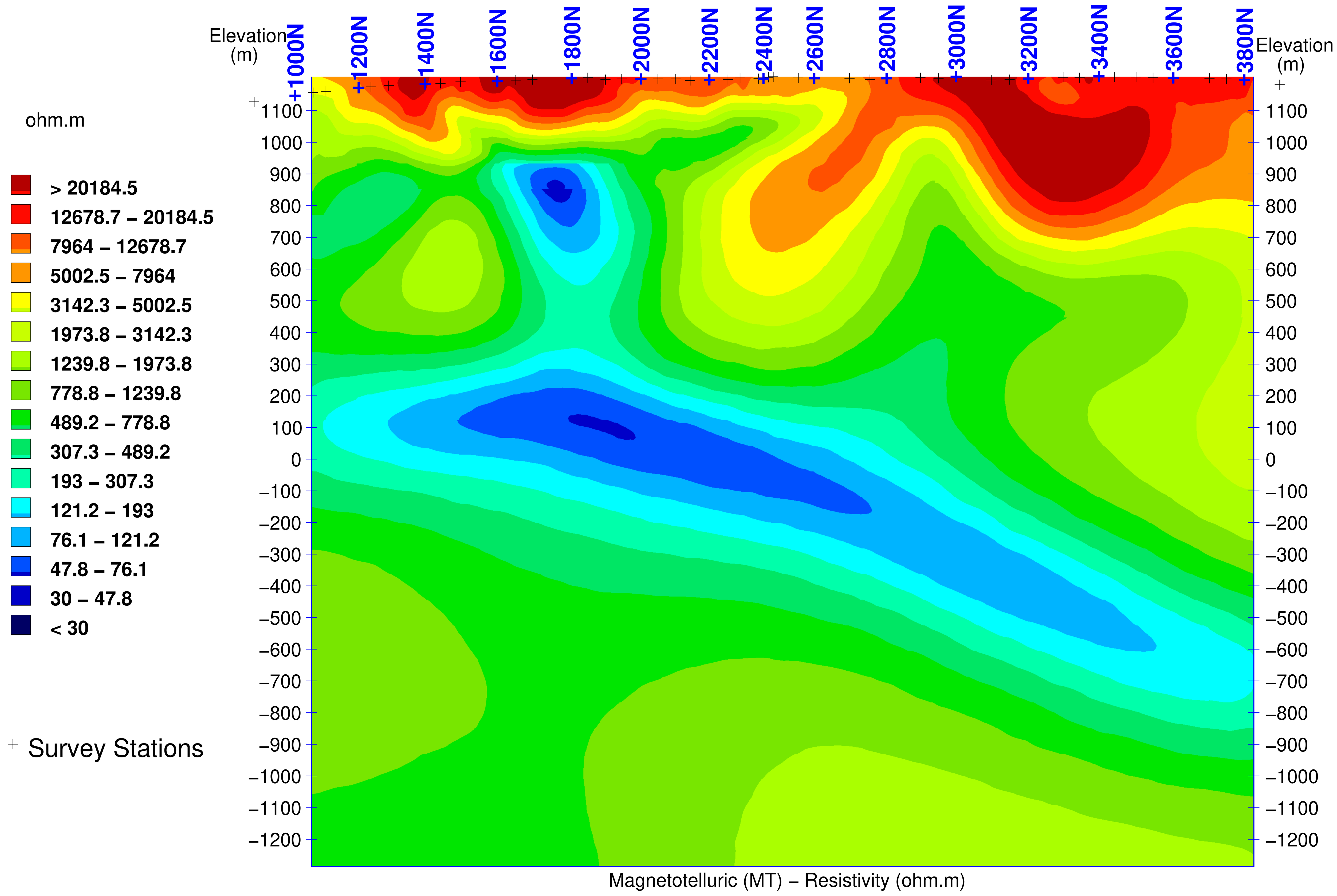
The Volterra-3DIP distributed acquisition system is based on state-of-the-art 4-channel, full-waveform, 32-bit Volterra acquisition units. The system is highly flexible and can utilize any number of Volterra units. The Volterra-3DIP system's untethered, distributed design, eliminates the need for specialized receiver cables and a centralized receiver control station. The dipoles can be in any orientation, can have varying lengths, and completely avoid inaccessible areas if necessary.

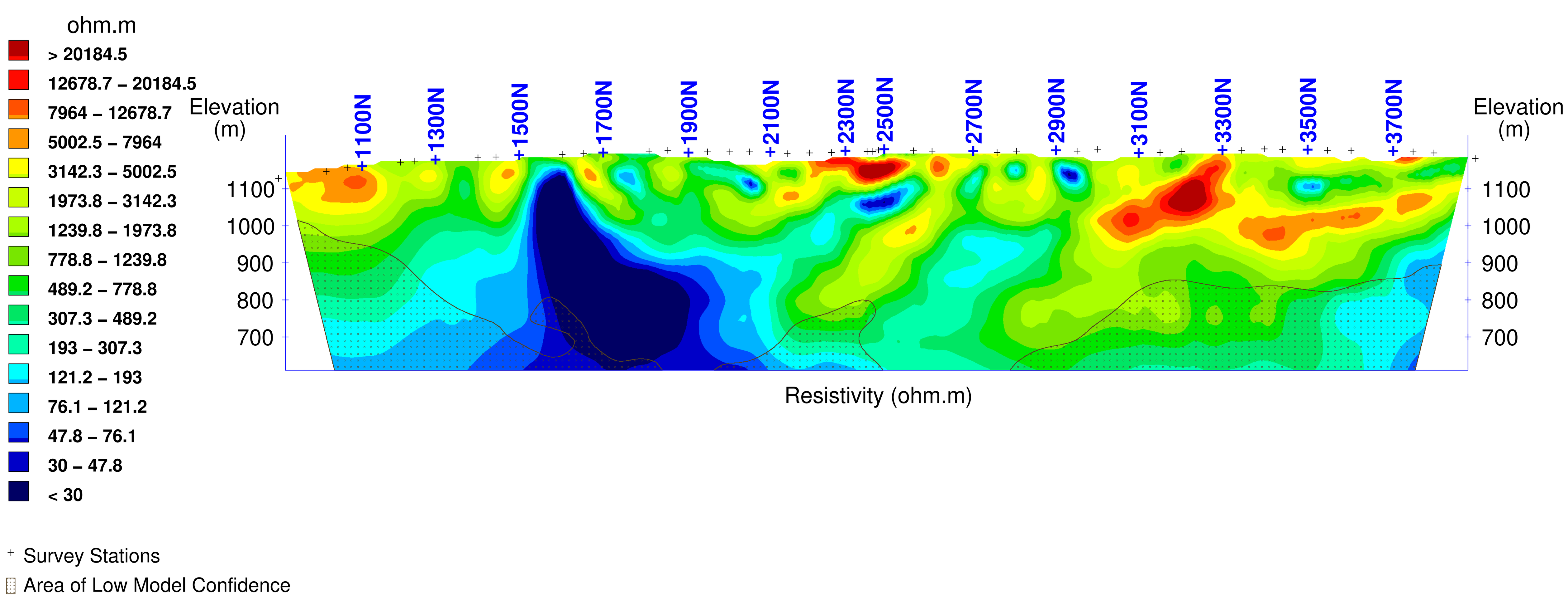
A typical Volterra-3DIP configuration establishes alternating current and receiver lines in sets of 5, but can be customized based on the project. The current lines are located on adjacent lines to the receiver line and current injections are performed sequentially at fixed increments (25 m, 50 m, 100 m, 200 m) along each current line. By injecting current at multiple locations along each current line, the data acquisition rates are significantly improved over conventional surveys. Customized receiver arrays are utilized to provide greater cross-line focus for a better azimuthal distribution of the data. Cross-dipoles are frequently used to maximize signal coupling and improve the surface resolution.

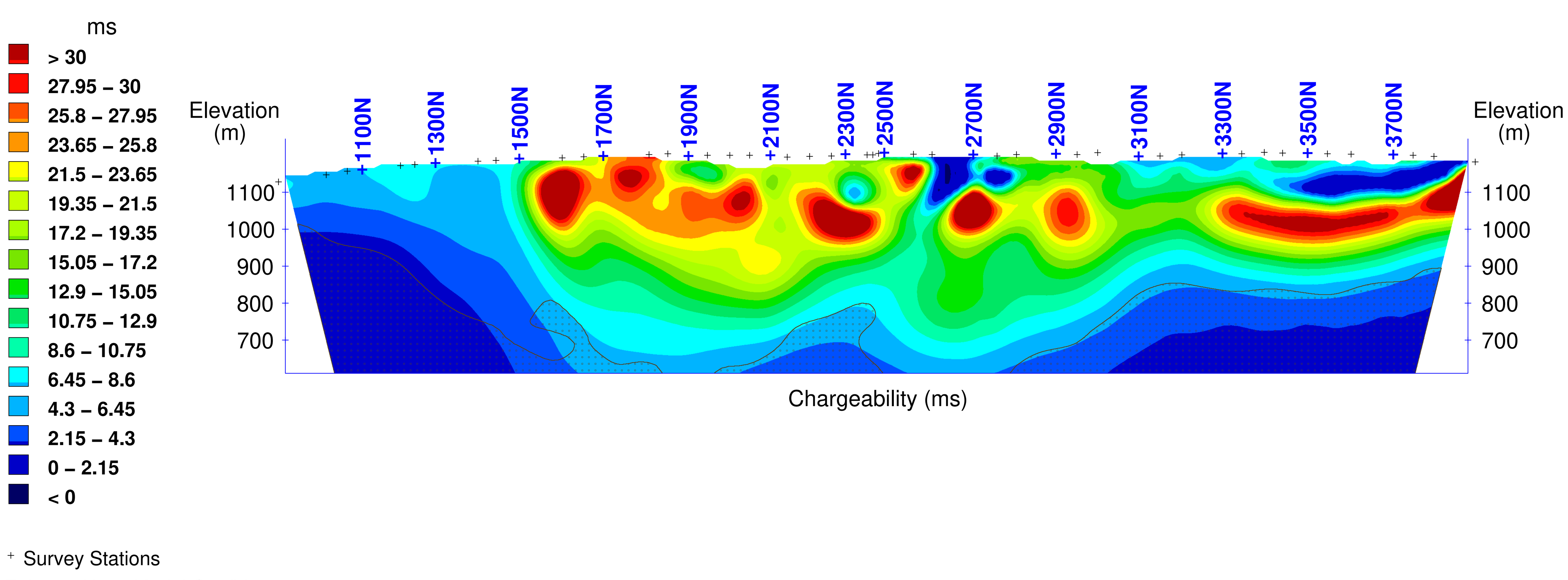
Volterra MT Method

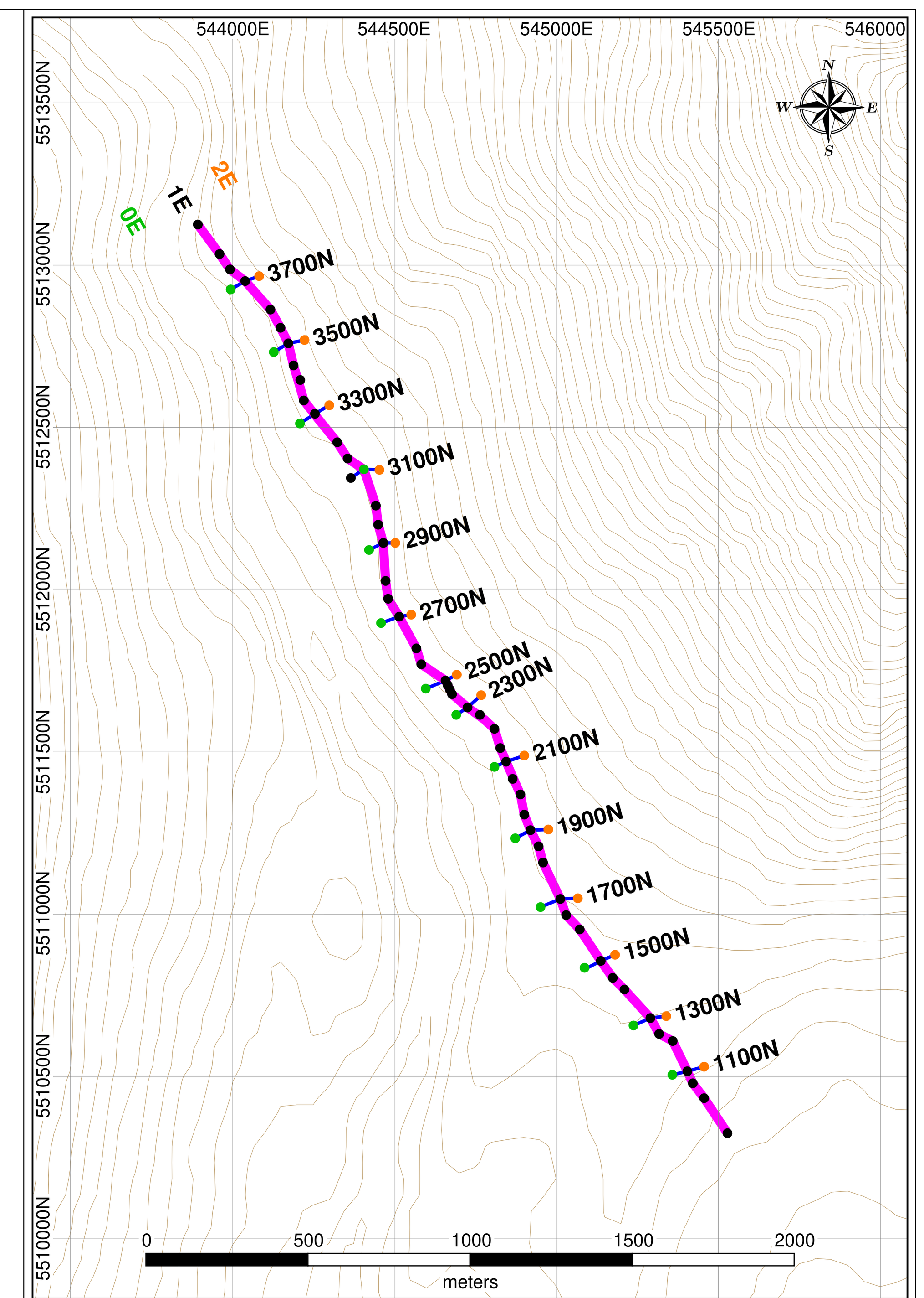
The magnetotelluric (MT) method is a geophysical technique that uses naturally occurring electromagnetic (EM) fields for resistivity measurements. In traditional MT processing, data is collected from individual stations, each consisting of magnetometers (to give Hx, Hy) and a pair of non-collinear dipoles (to give Ex and Ey.) Scalar MT utilizes data from stations consisting of a single orthogonal set of a dipole and a magnetometer (for example Ex and Hy). The end result is an electromagnetic sounding at a specific location. MT data are analyzed in the frequency domain to obtain estimates of the resistivity of the subsurface.

Appendix D: IP & MT Inversion Sections









INDEX MAP: 1E

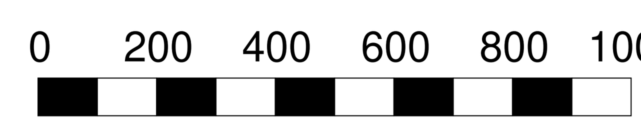
Project Information:
Survey by: SJ Geophysics Ltd.
Survey Type: Volterra–2DIP & MT
Survey Date: May–June, 2019

Instrumentation:
Transmitter: GDD TxII
Receiver: Volterra Acquisition Unit
Array Type: Distributed 3DIP

Inversion Parameters:
Inversion by: SJ Geophysics Ltd.
Inversion Software IP: UBC–GIF DCIP3D
Resistivity Inversion Model: dcinv3d_Local–r1i07.con
Chargeability Inversion Model: ipinv3d_Local–r1i03.chg
Apparent Chargeability Integration : 50–1950 ms
Inversion Software MT: MARE2DEM
Magnetotelluric Inversion Model: MT–l35LOC.con

Colour Classification:
Resistivity: Logarithmic
Chargeability: Linear

Mapping Information:
Index Map Datum: WGS84
Index Map Projection: UTM Zone 11N
Section Map Projection: Local Coordinate System
Mapping Date: 24–Jul–2019



Terralogic Exploration Service

Vulcan Project

Kimberly, B.C., Canada

Volterra–2DIP & MT

3D Inversion Models

Run 1 : Including Cross–Dipoles

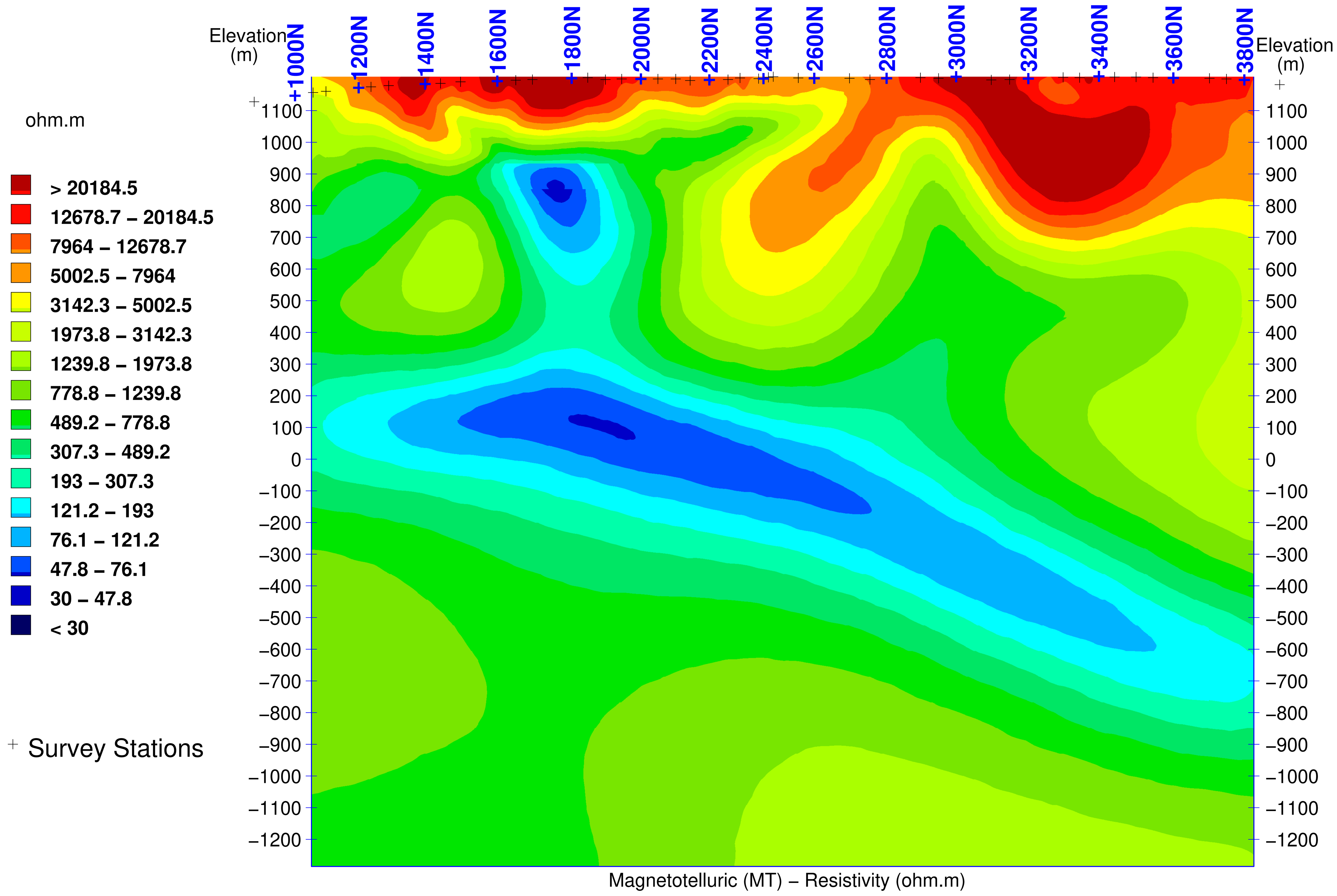
Resistivity & Chargeability

Cross Section: 1E

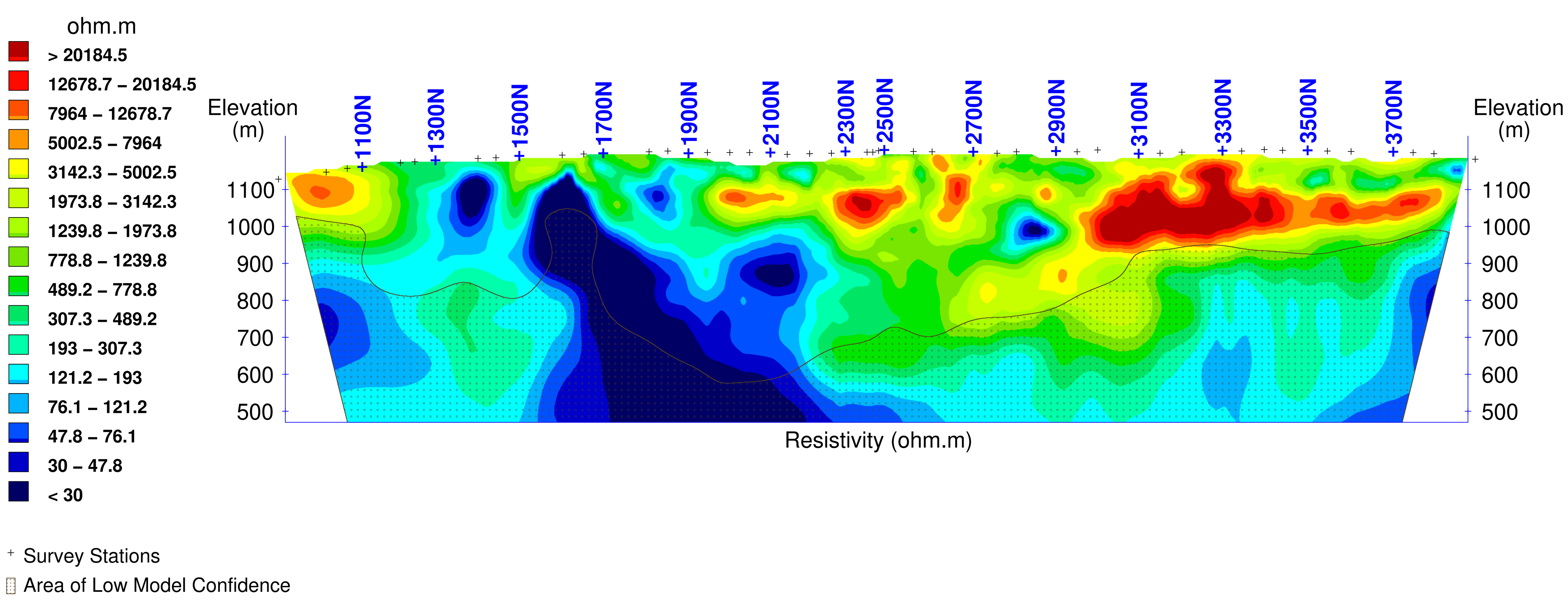
VOLTERRA

SJ GEOPHYSICS Science on Target

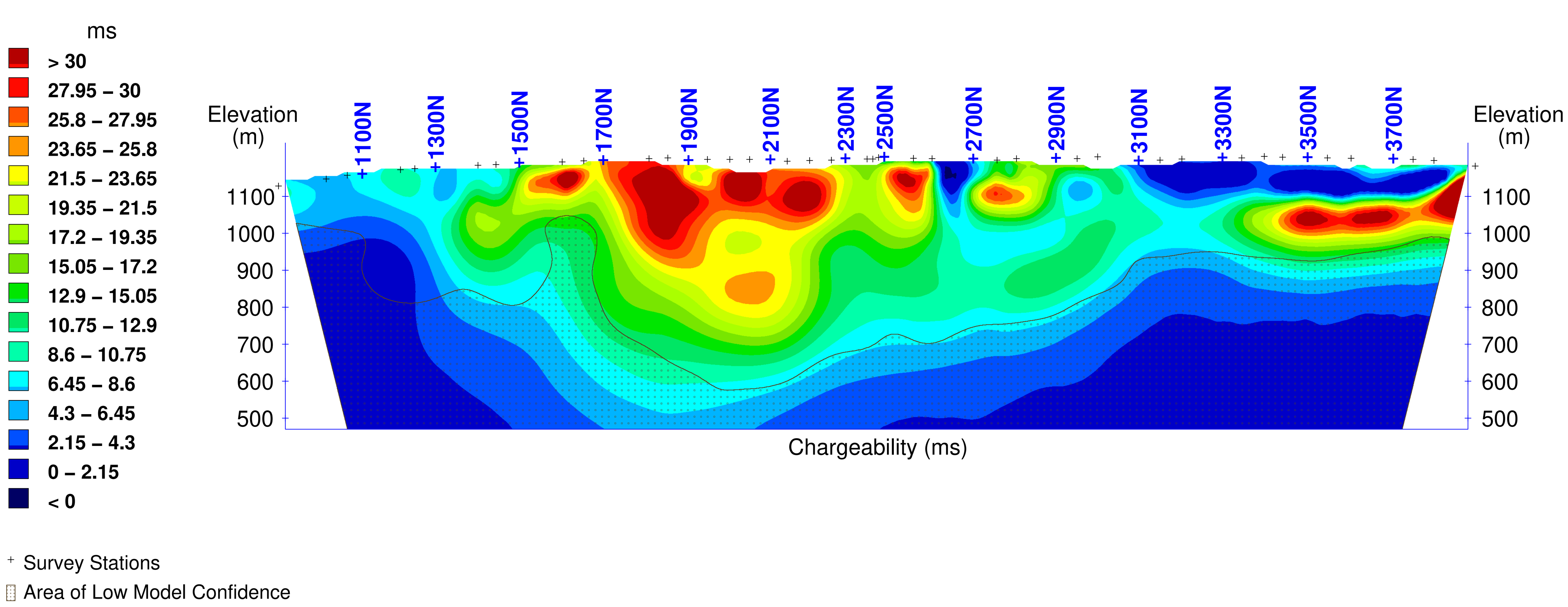
Mapping By : S.J.V. Consultants Ltd. 11966–95A Avenue, Delta, British Columbia, Canada V4C 3W2 (604) 582–1100 www.sjgeophysics.com



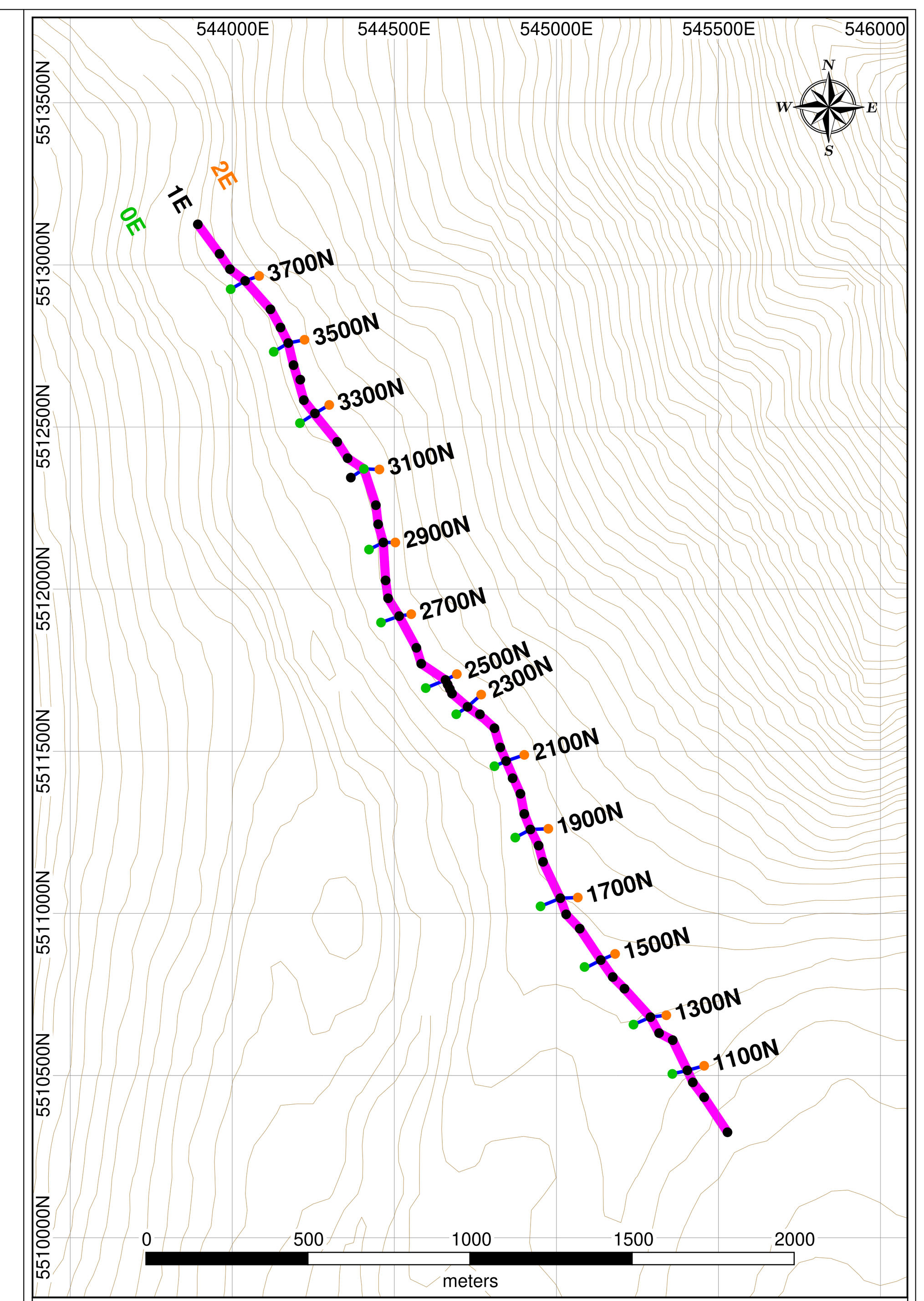
Magnetotelluric (MT) – Resistivity (ohm.m)



Resistivity (ohm.m)



Chargeability (ms)



INDEX MAP: 1E

Project Information:
Survey by: SJ Geophysics Ltd.
Survey Type: Volterra–2DIP & MT
Survey Date: May–June, 2019

Instrumentation:
Transmitter: GDD TxII
Receiver: Volterra Acquisition Unit
Array Type: Distributed 3DIP

Inversion Parameters:
Inversion by: SJ Geophysics Ltd.
Inversion Software IP: UBC–GIF DCIP3D
Resistivity Inversion Model: dcinv3d_Local–r2i10.con
Chargeability Inversion Model: ipinv3d_Local–r2i03.chg
Apparent Chargeability Integration : 50–1950 ms
Inversion Software MT: MARE2DEM
Magnetotelluric Inversion Model: MT–I35LOC.con

Colour Classification:
Resistivity: Logarithmic
Chargeability: Linear

Mapping Information:
Index Map Datum: WGS84
Index Map Projection: UTM Zone 11N
Section Map Projection: Local Coordinate System
Mapping Date: 24–Jul–2019

0 200 400 600 800 1000
meters

Terralogic Exploration Service

Vulcan Project

Kimberly, B.C., Canada

Volterra–2DIP & MT

3D Inversion Models

Run 2 : Excluding Cross–Dipoles

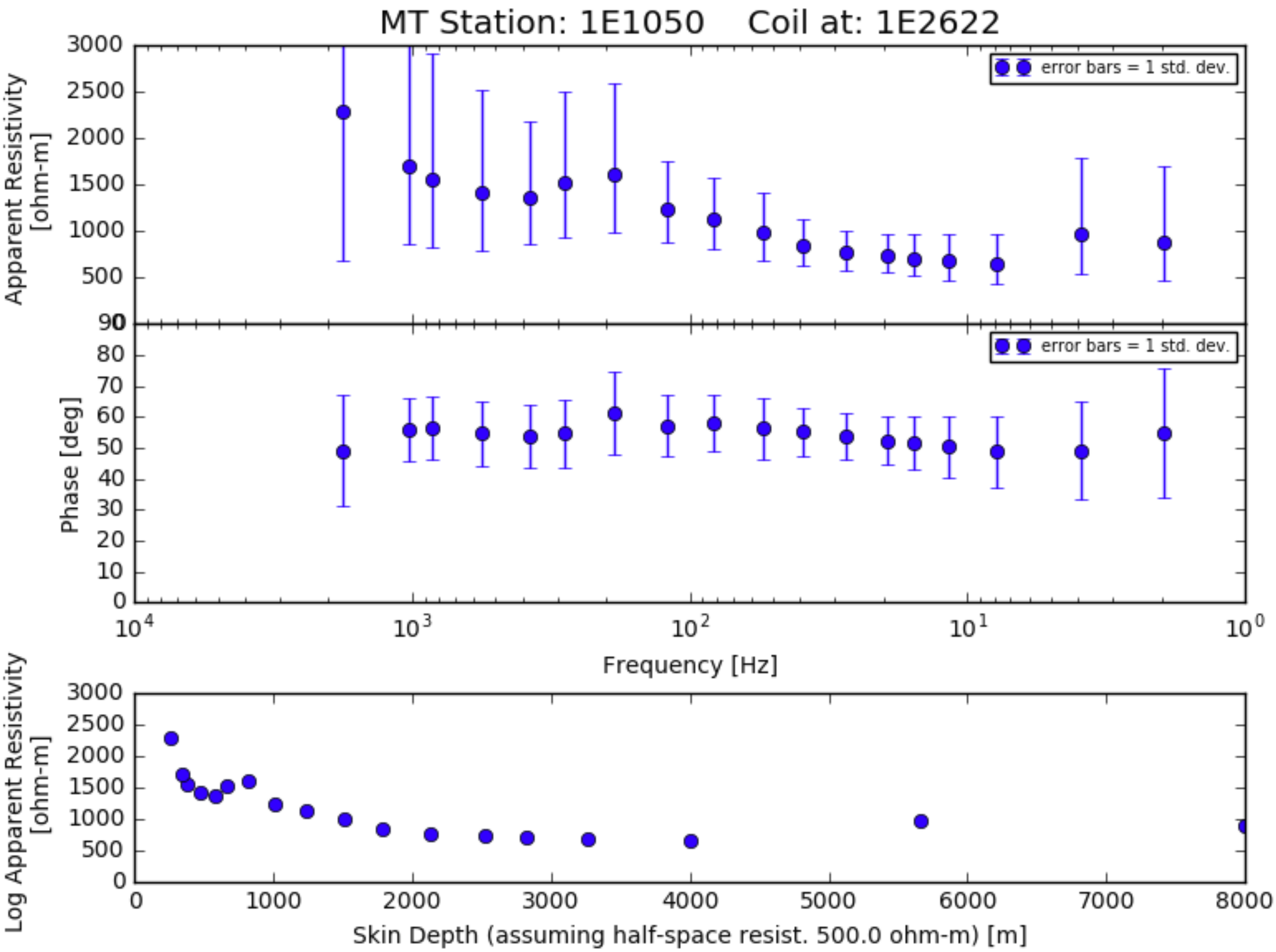
Resistivity & Chargeability

Cross Section: 1E

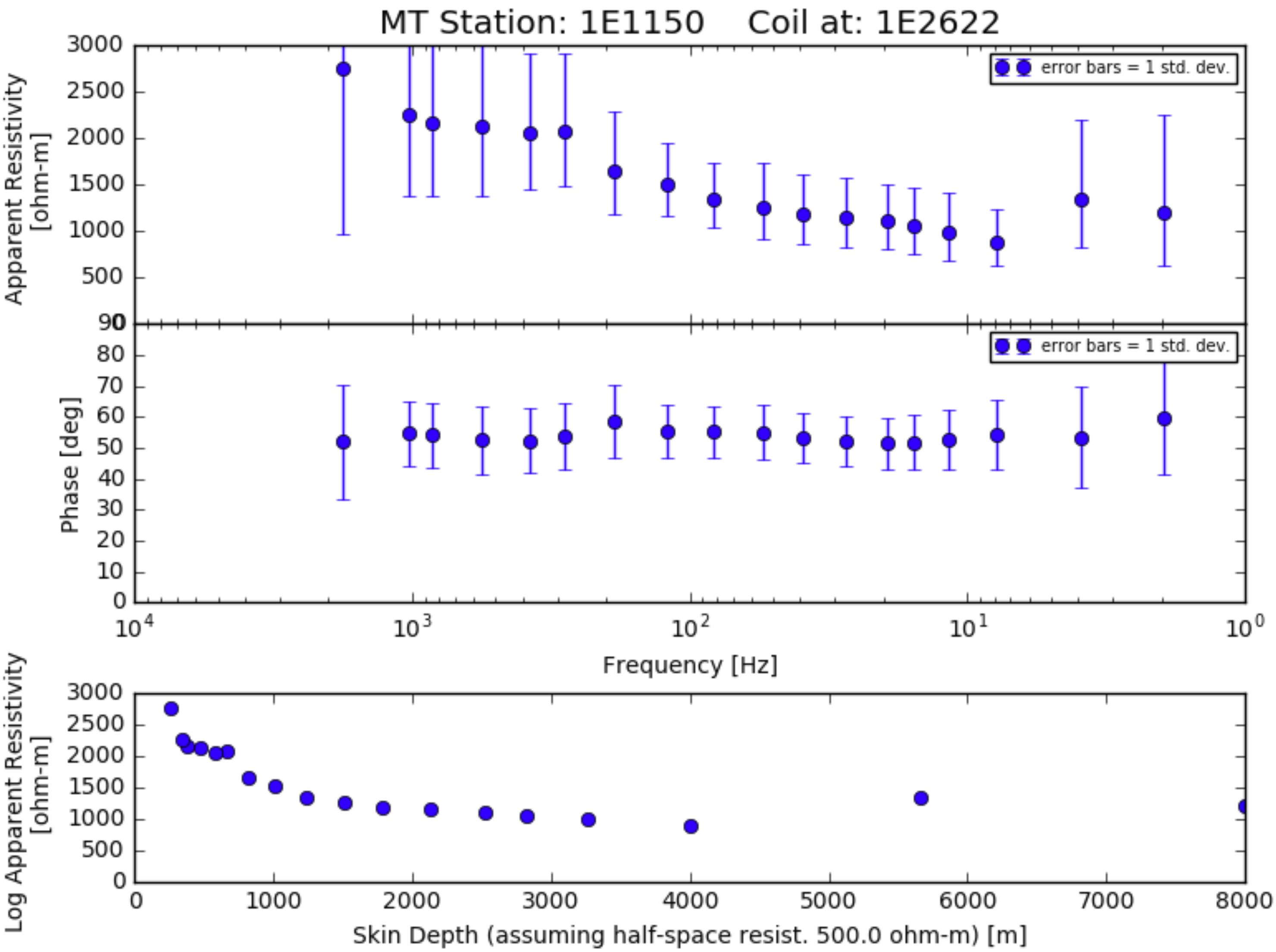
VOLTERRA

SJ GEOPHYSICS Science on Target

Appendix E: MT Apparent Resistivity / Phase Plots



MT Station: 1E1050 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]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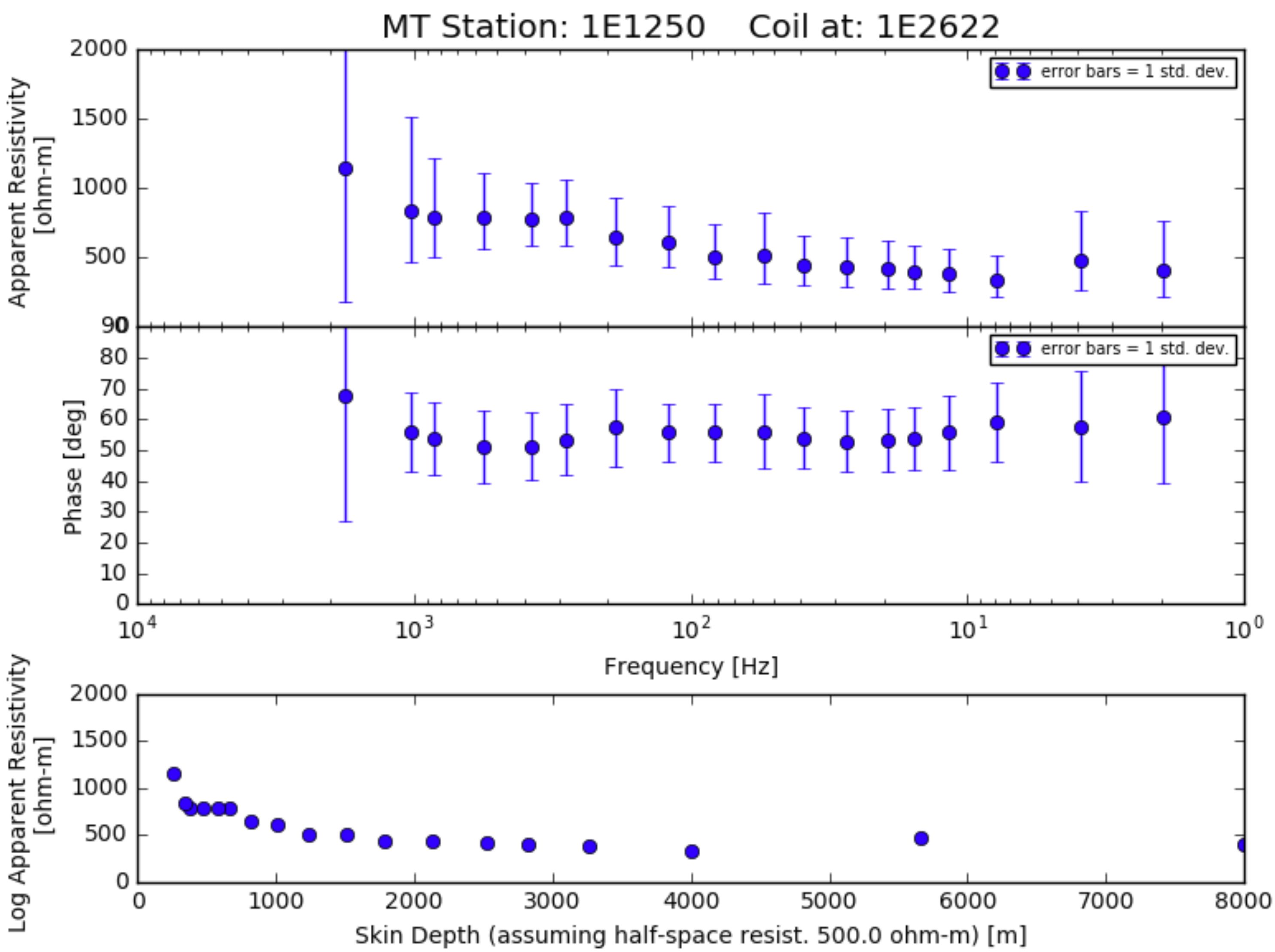
Apparent Resistivity
[ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity
[ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]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Apparent Resistivity [ohm-m]
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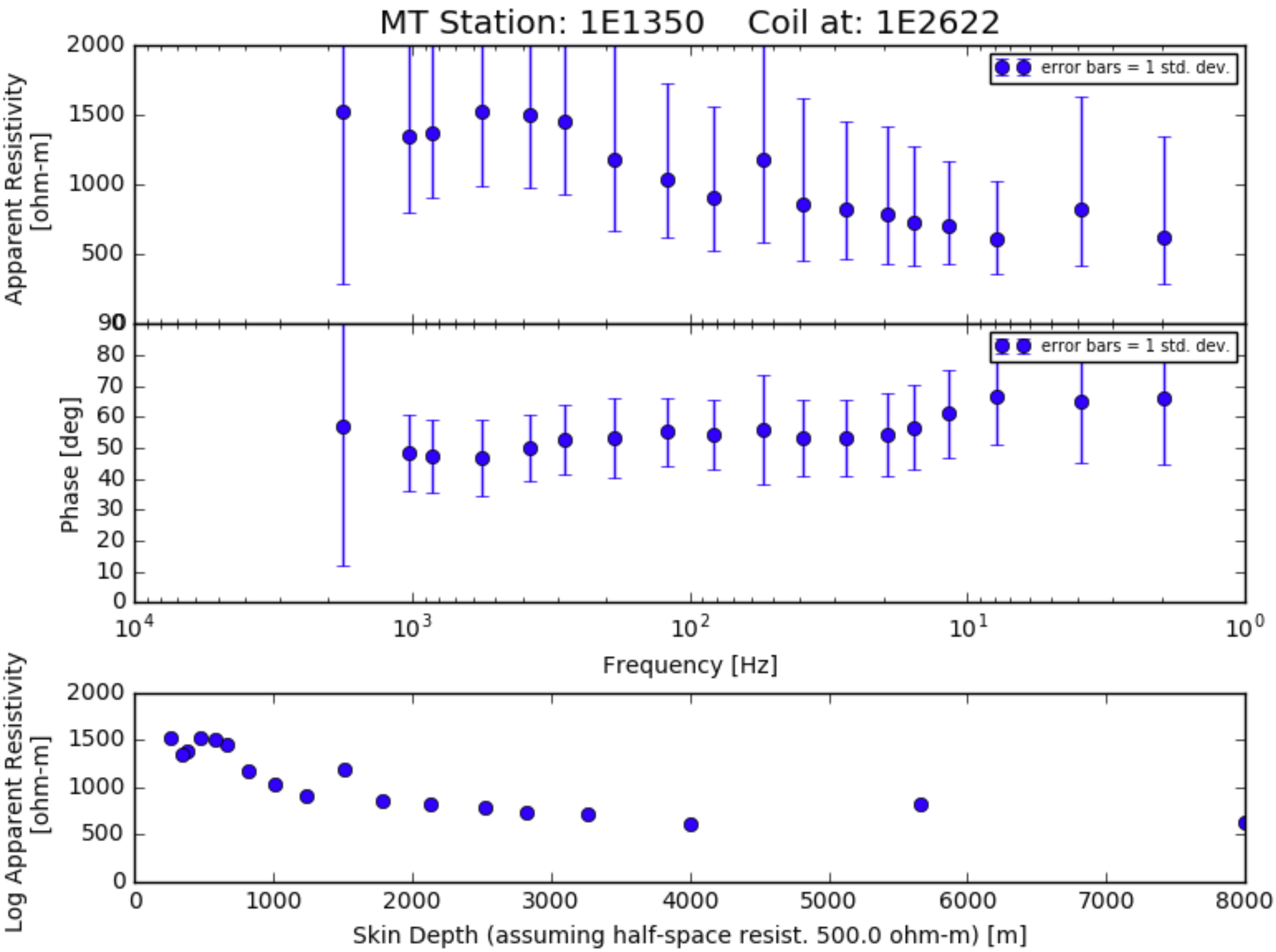
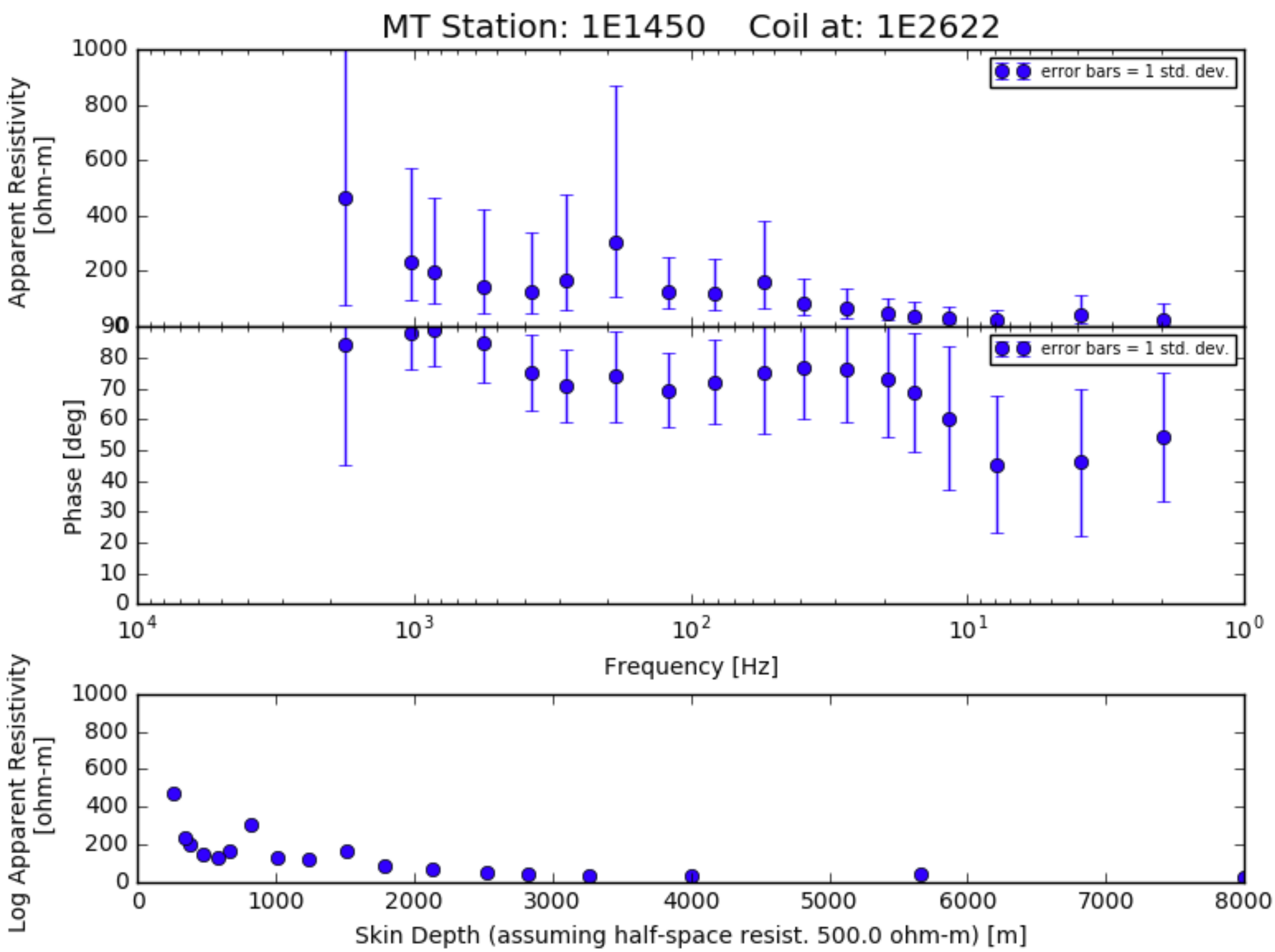
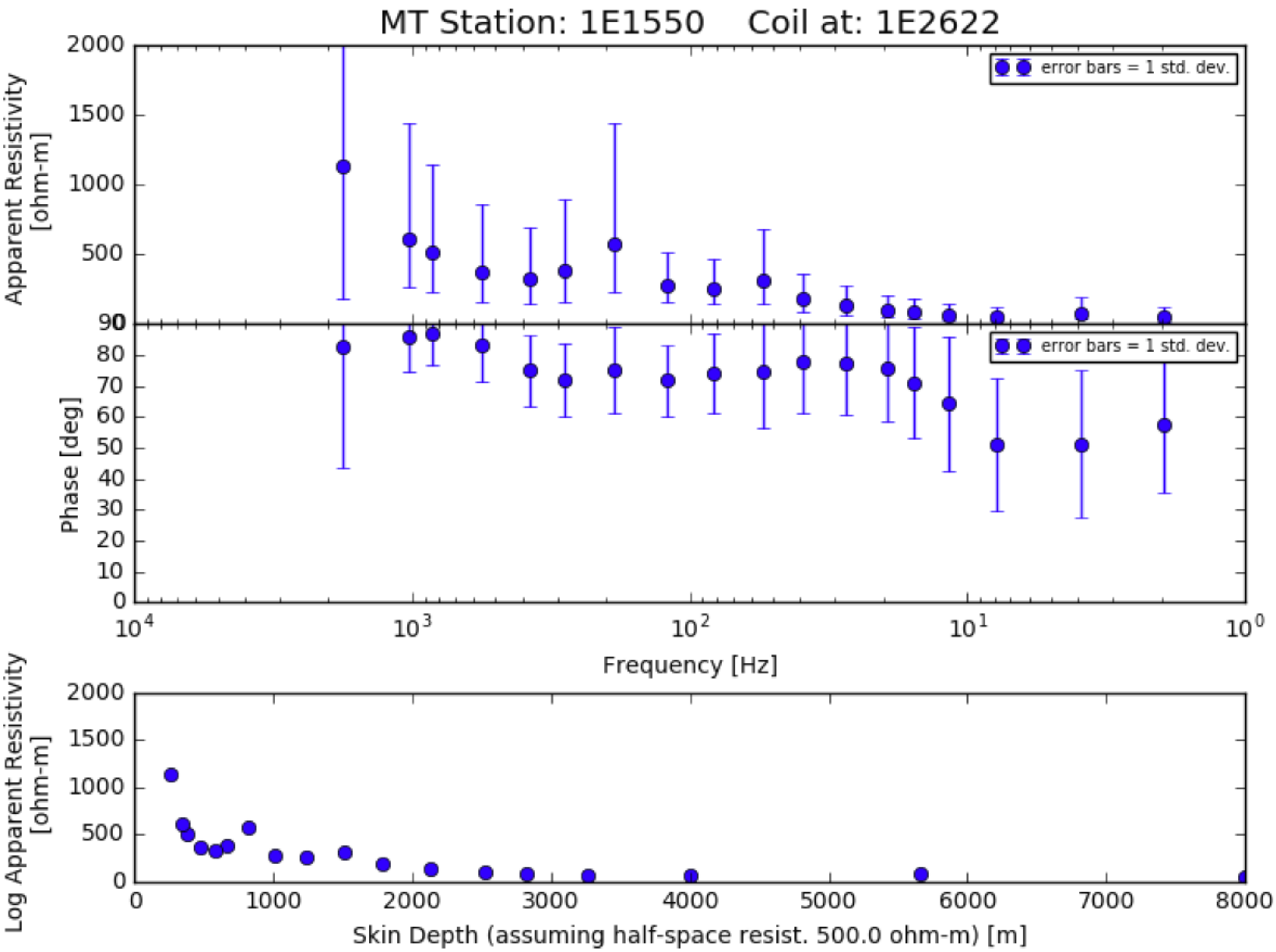
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



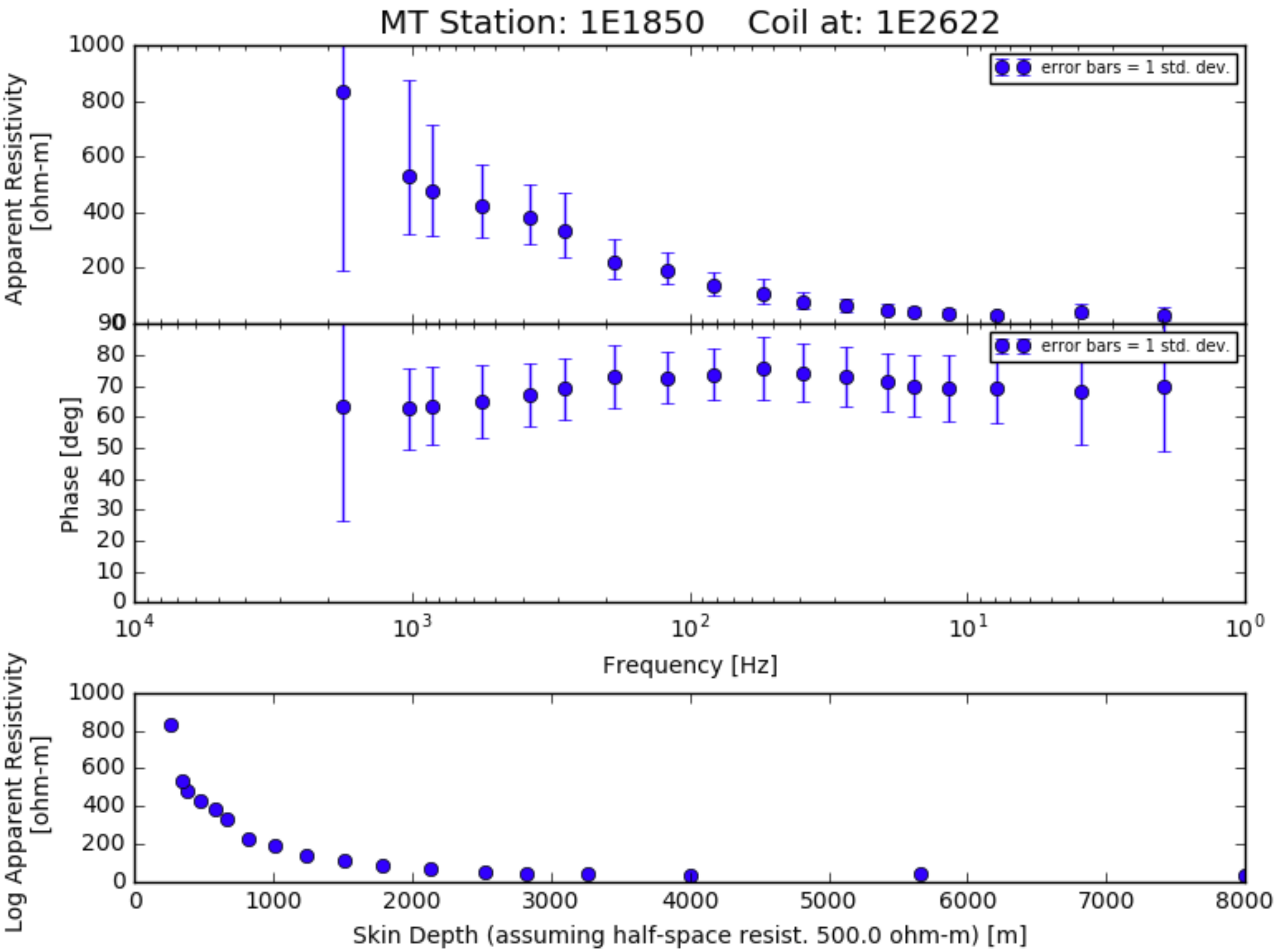
MT Station: 1E1350 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

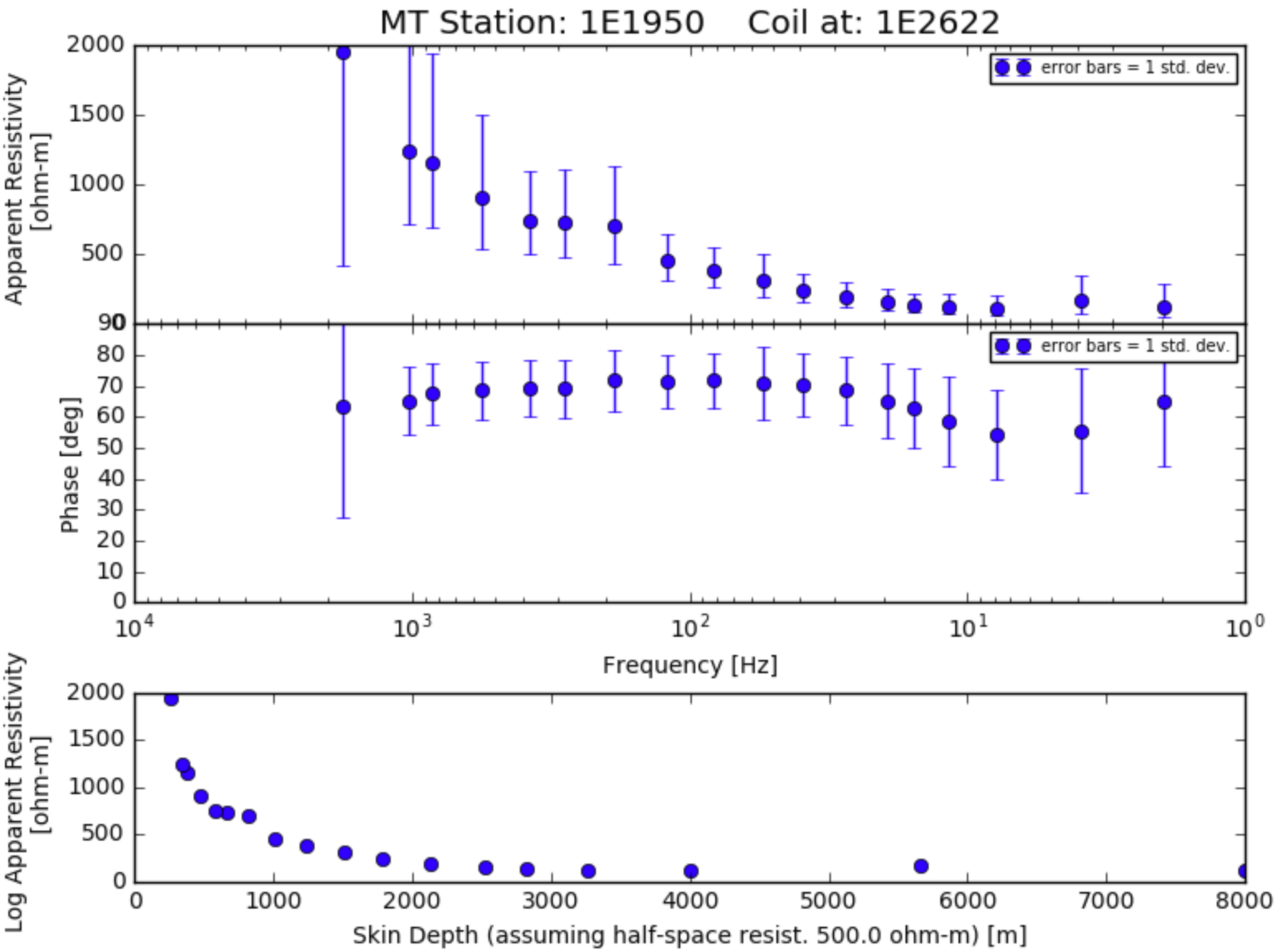


MT Station: 1E1450 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

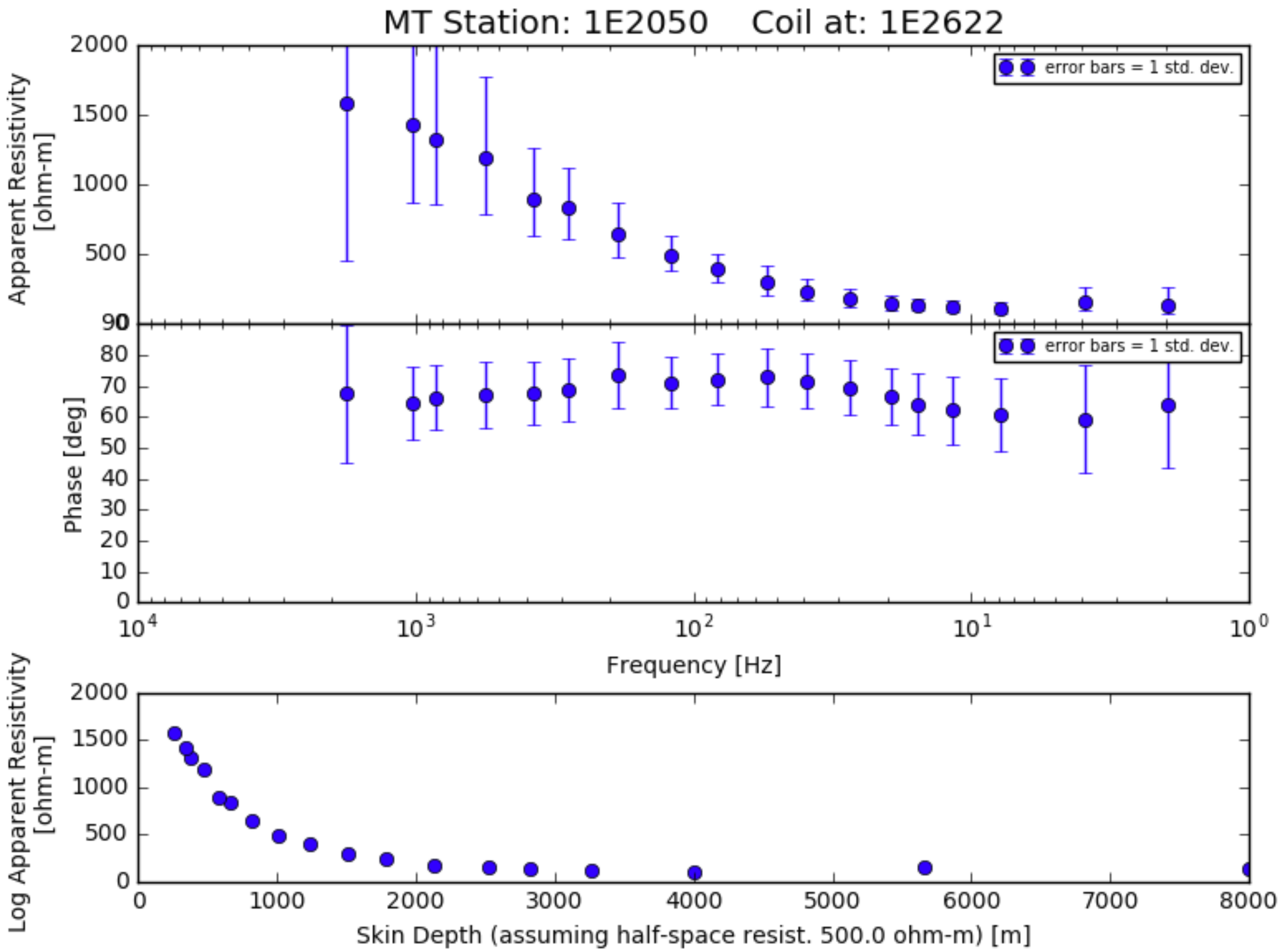


MT Station: 1E1550   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
2000
1500
1000
500
0
Phase [deg]
90
80
70
60
50
40
30
20
10
0
10^4
10^3
10^2
10^1
10^0
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
0
1000
2000
3000
4000
5000
6000
7000
8000
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

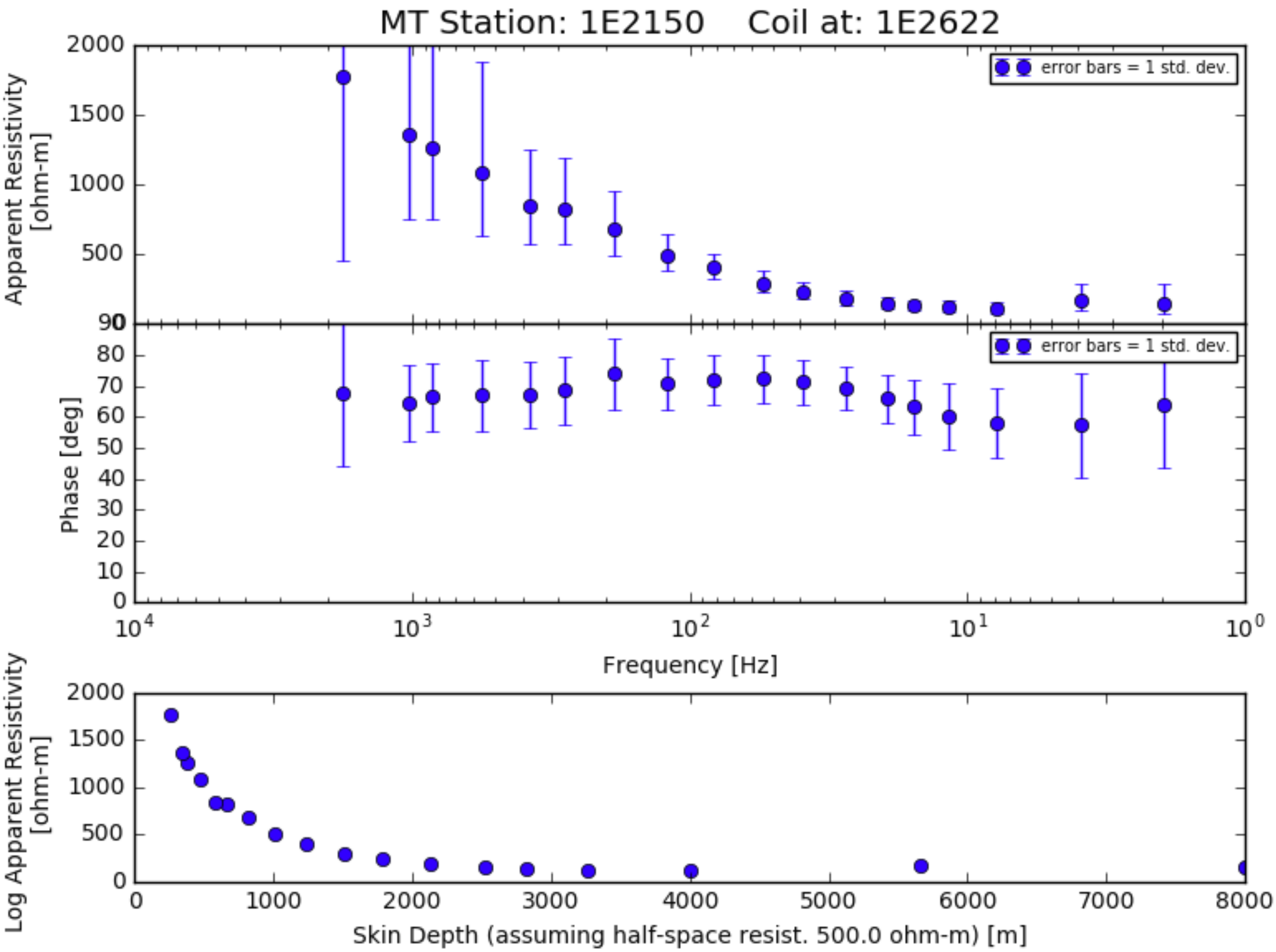

MT Station: 1E1850 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
1000
800
600
400
200
0
Phase [deg]
90
80
70
60
50
40
30
20
10
0
10^4
10^3
10^2
10^1
10^0
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
0
1000
2000
3000
4000
5000
6000
7000
8000
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



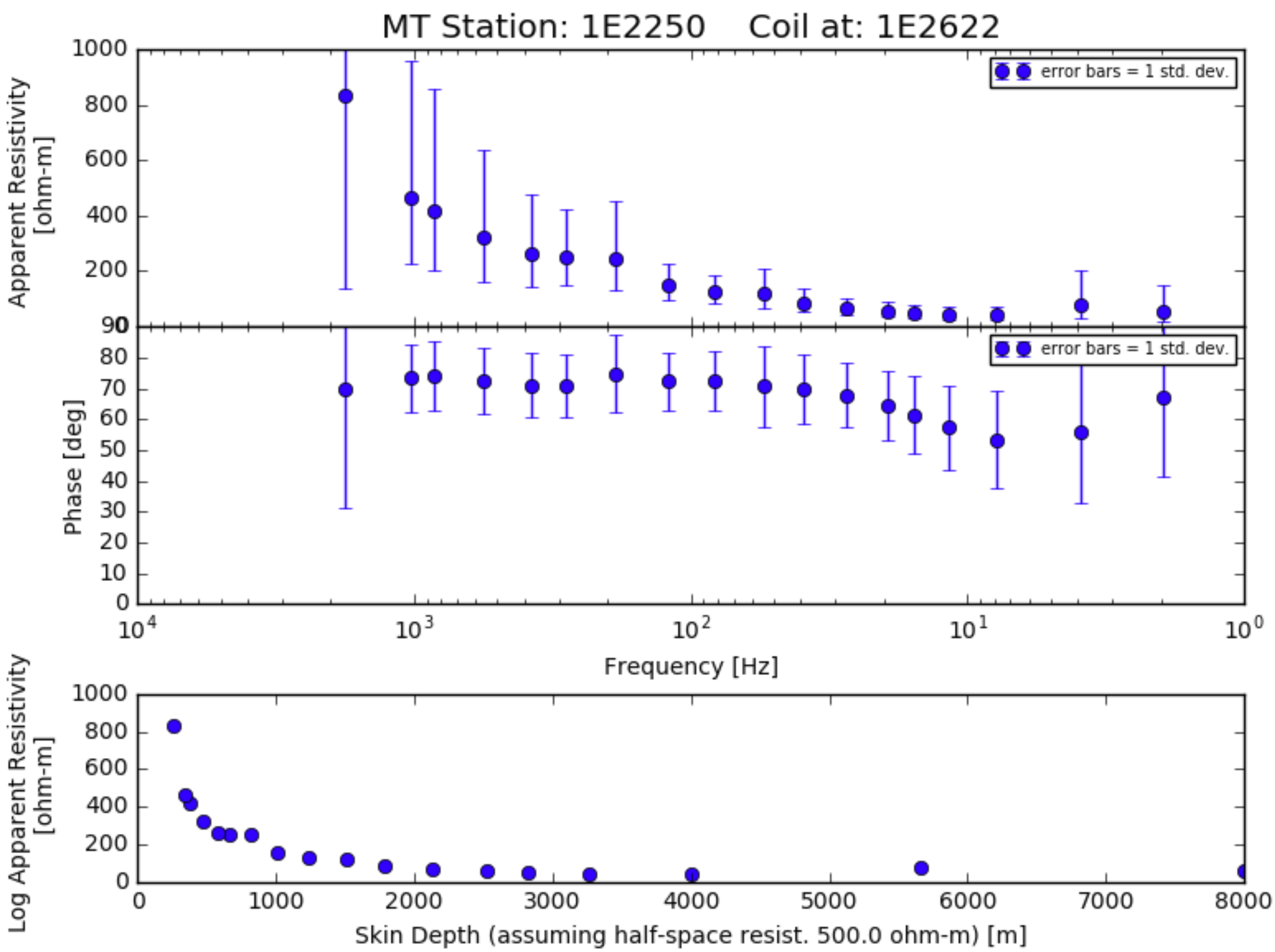
MT Station: 1E1950   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



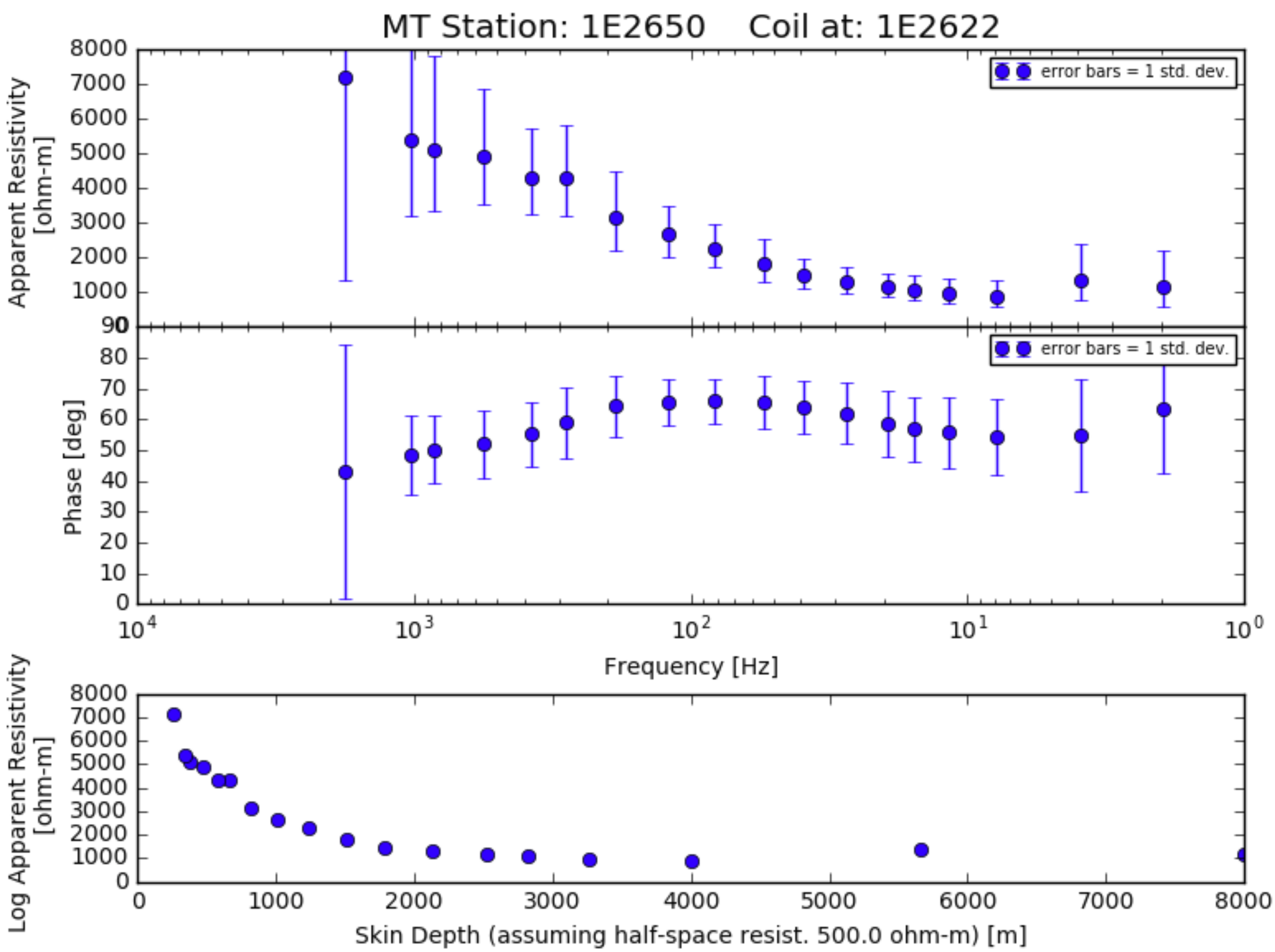
MT Station: 1E2050 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

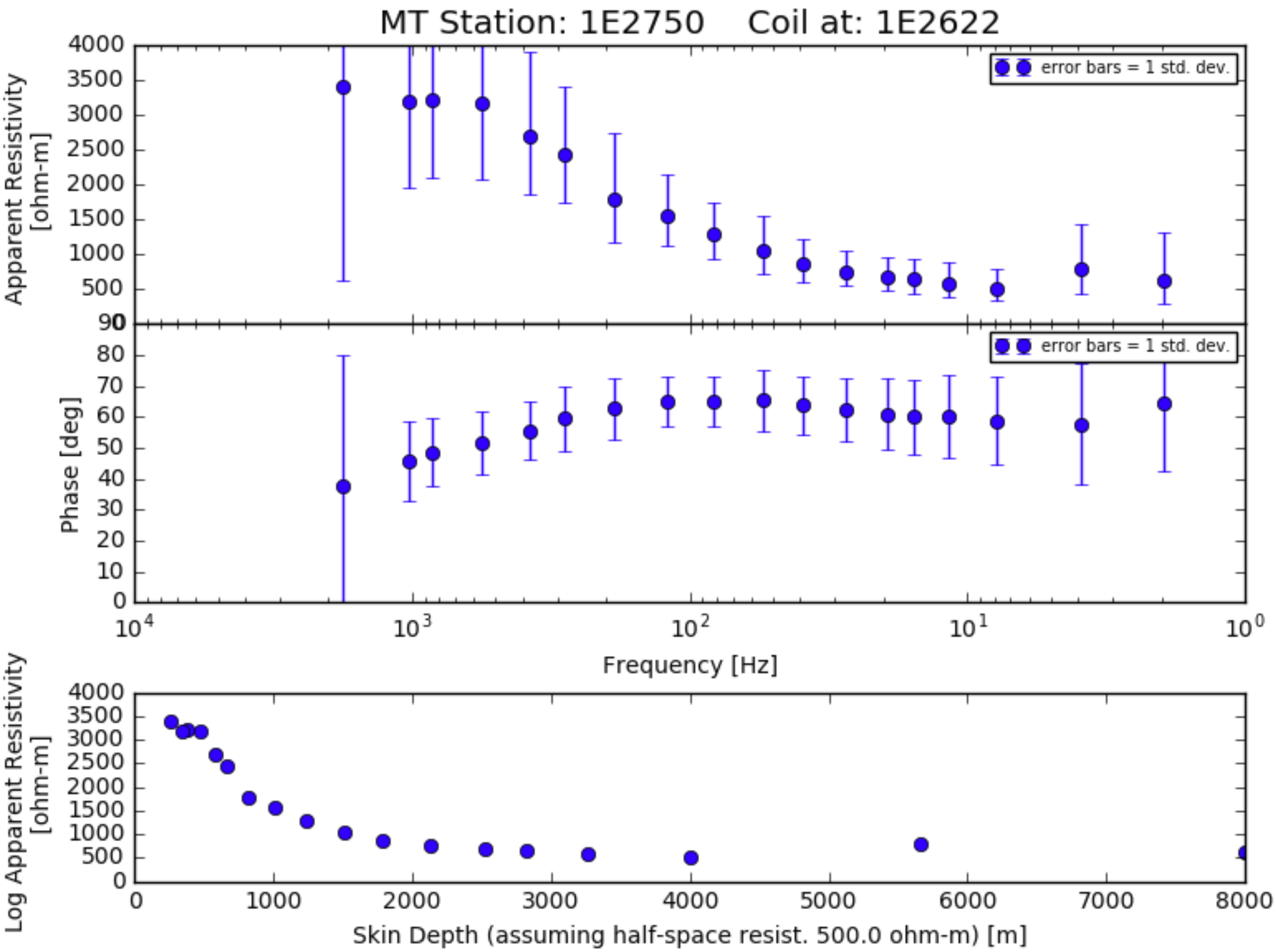


MT Station: 1E2150 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



MT Station: 1E2250 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E2650   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E2750   Coil at: 1E2622
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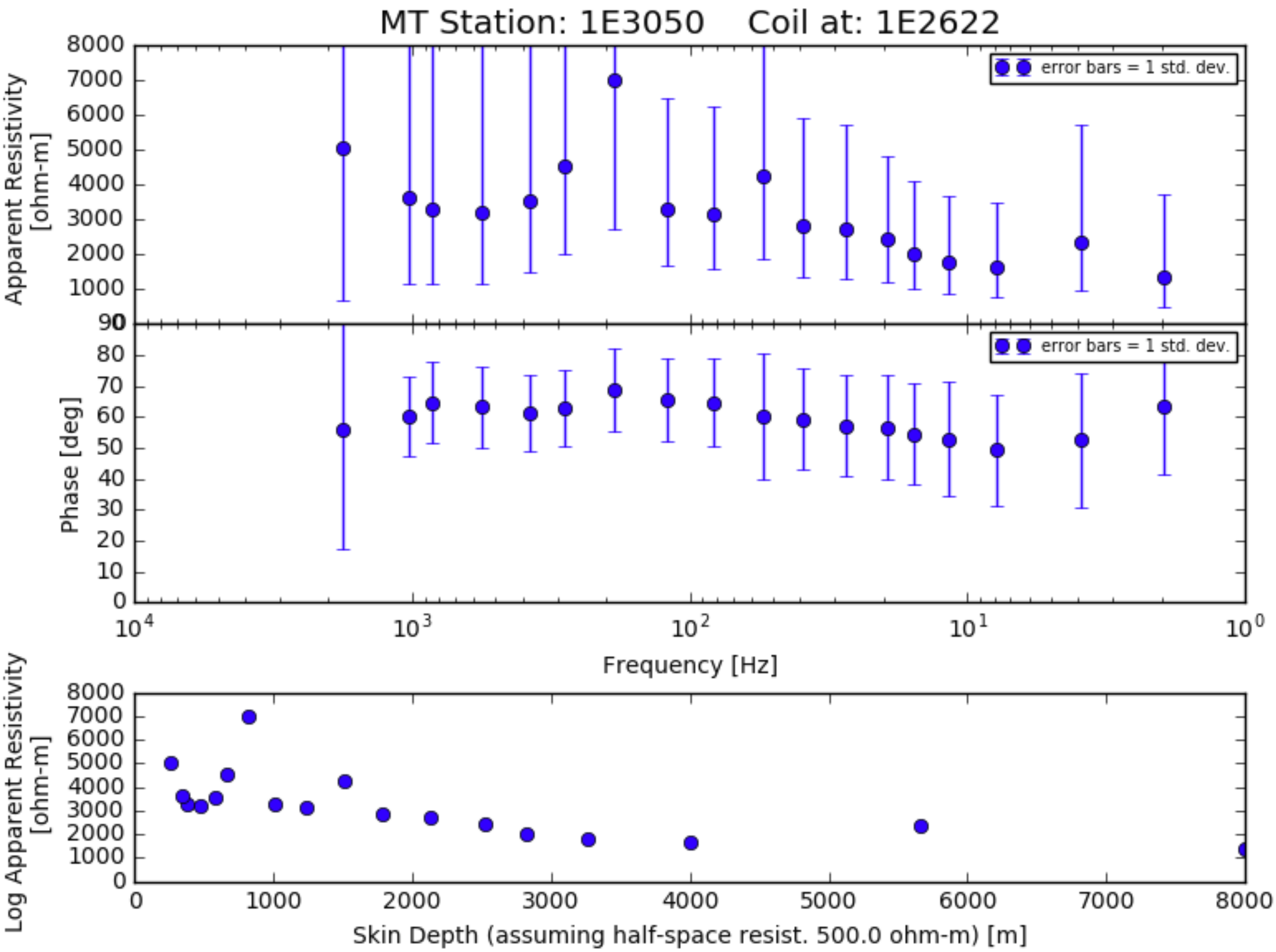
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



MT Station: 1E3050   Coil at: 1E2622
Apparent Resistivity [ohm-m]
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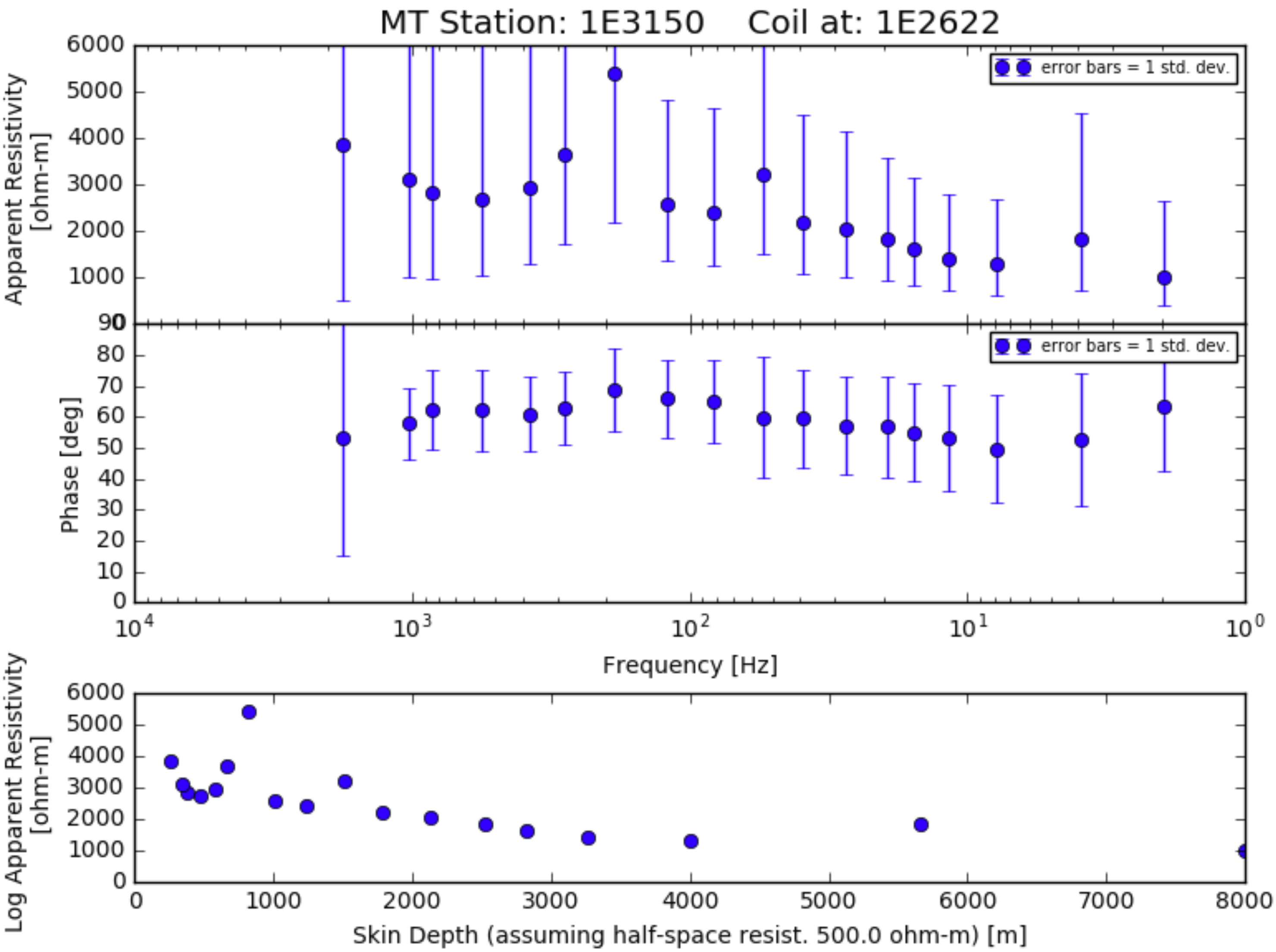
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E3150 Coil at: 1E2622
Apparent Resistivity [ohm-m]
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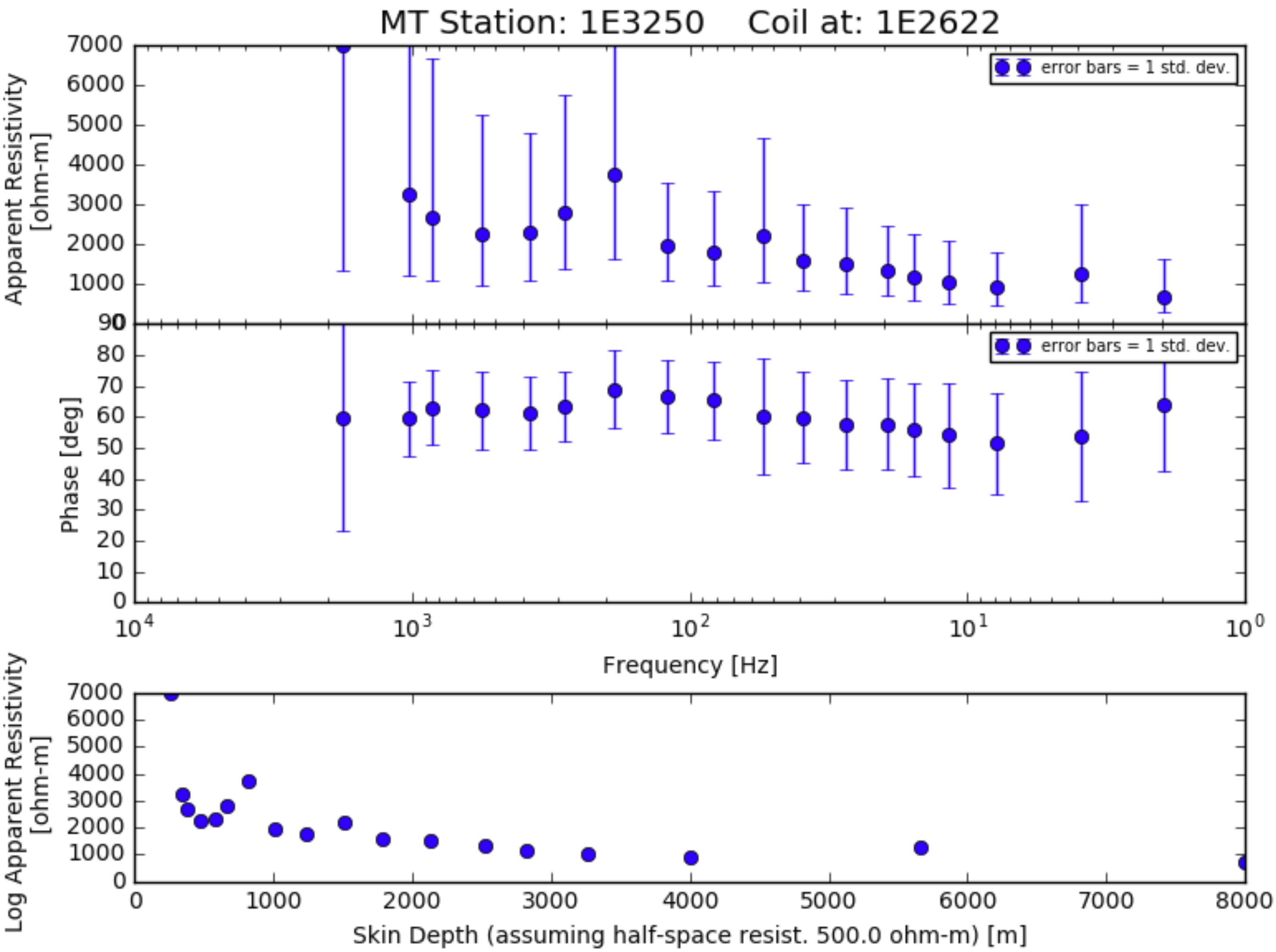
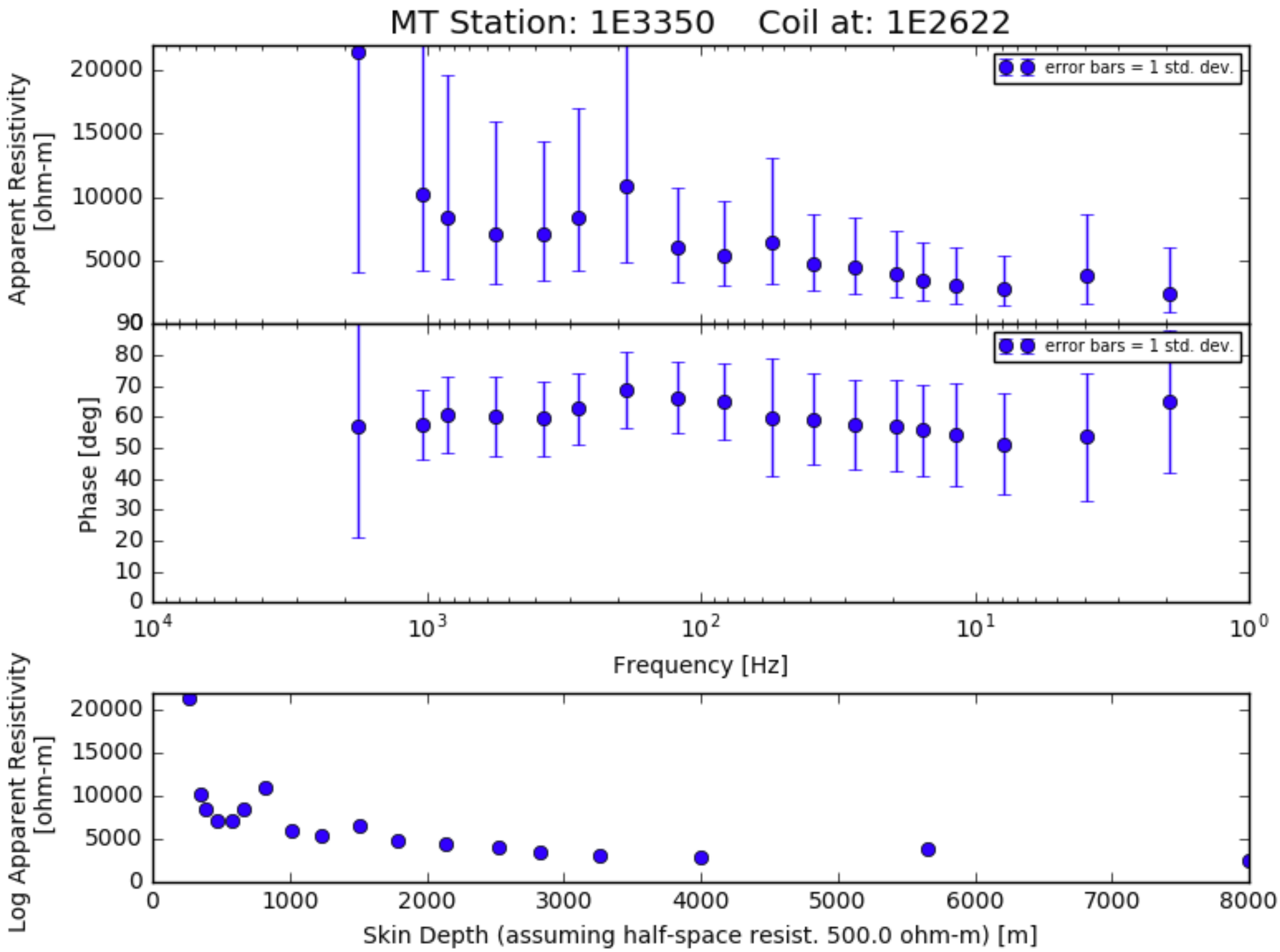
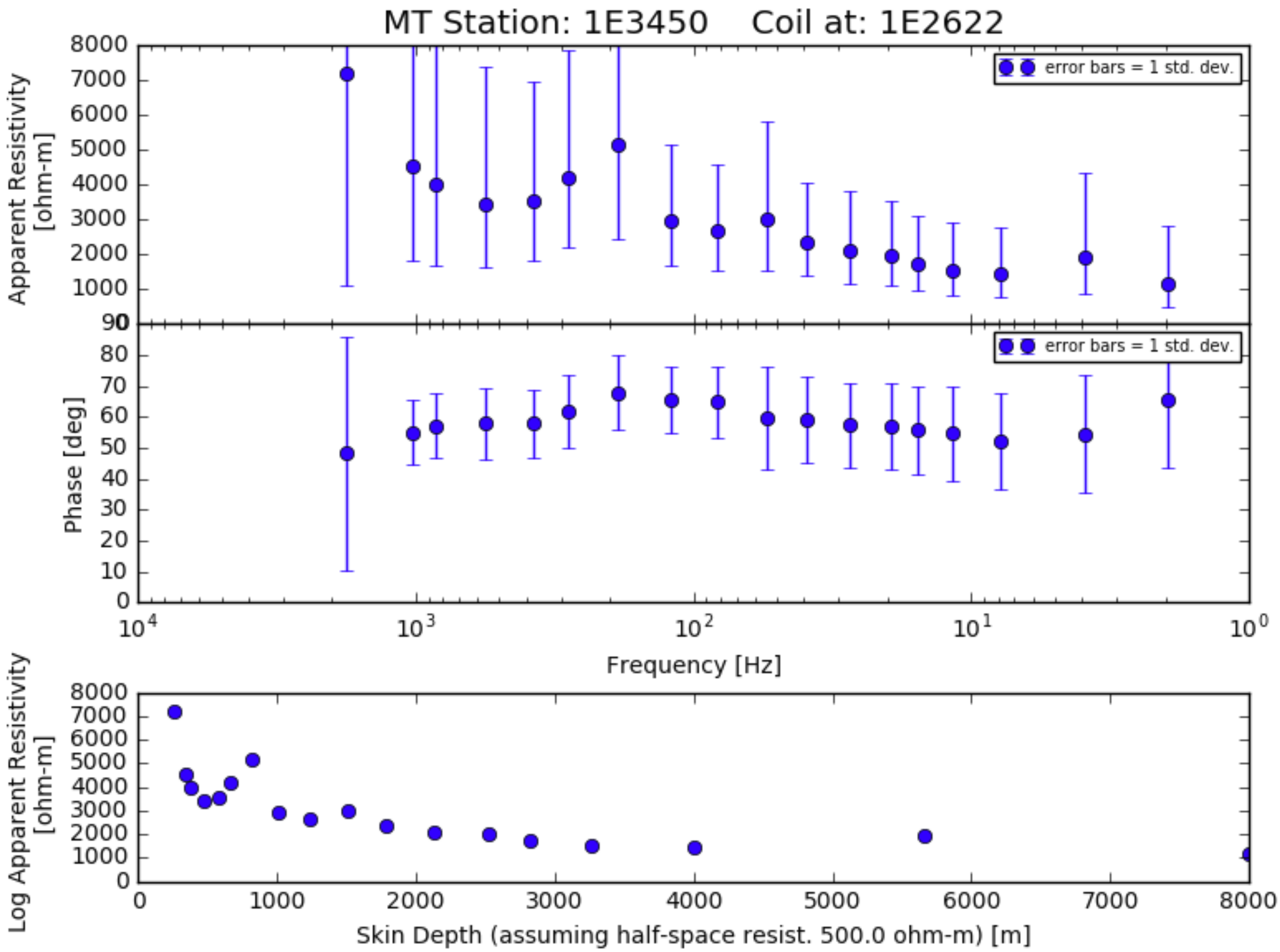
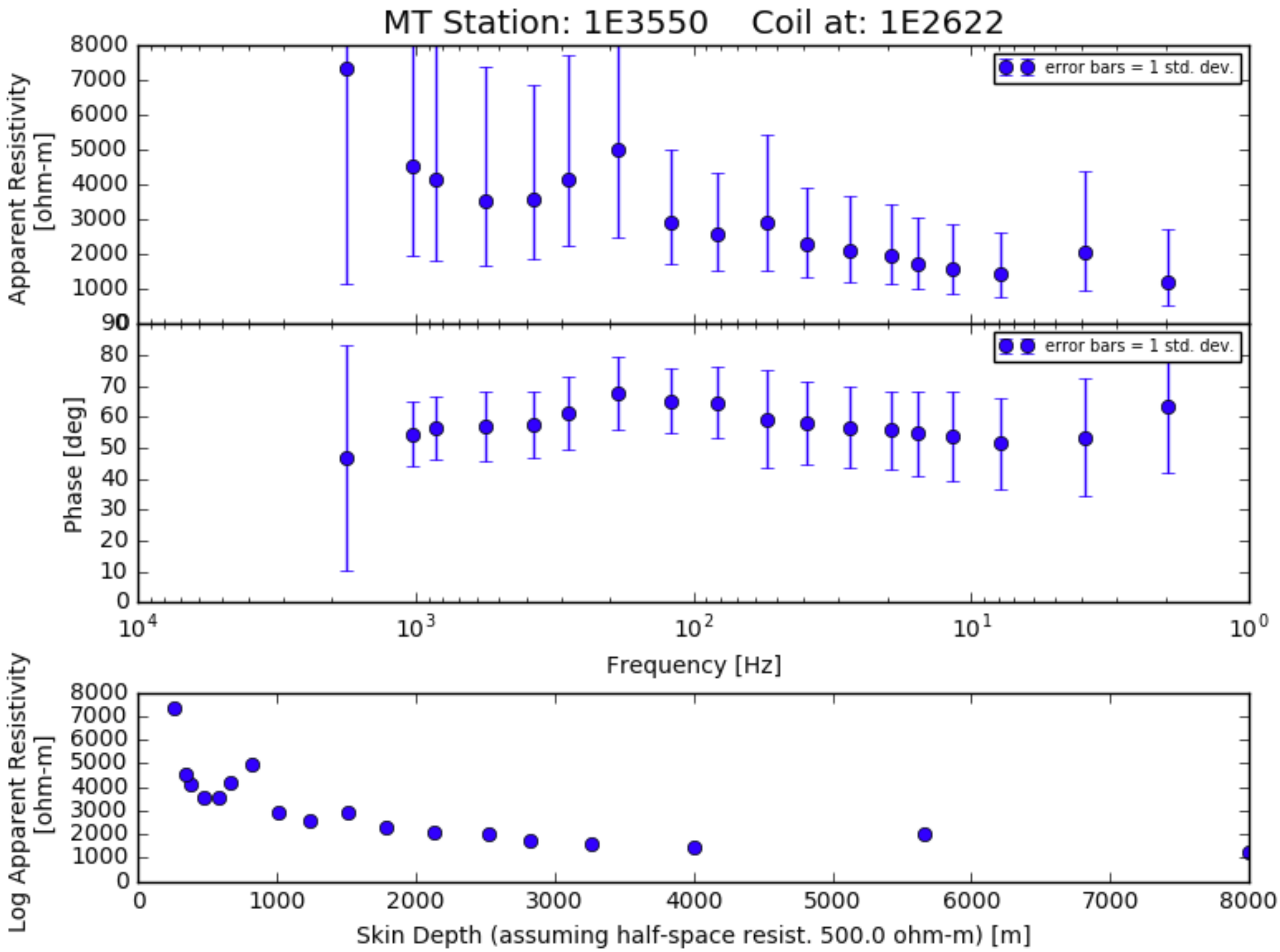
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

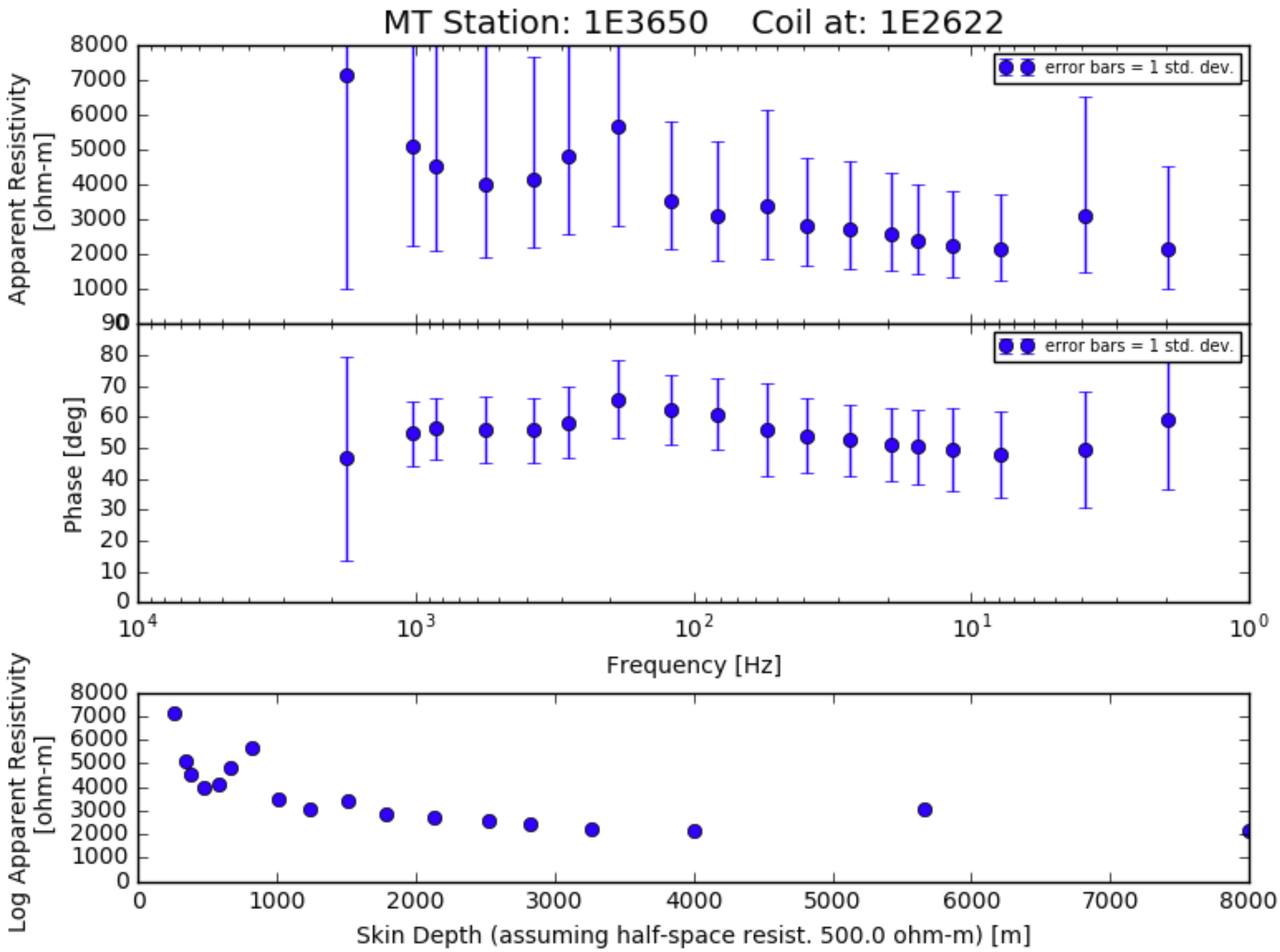


MT Station: 1E3250 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]

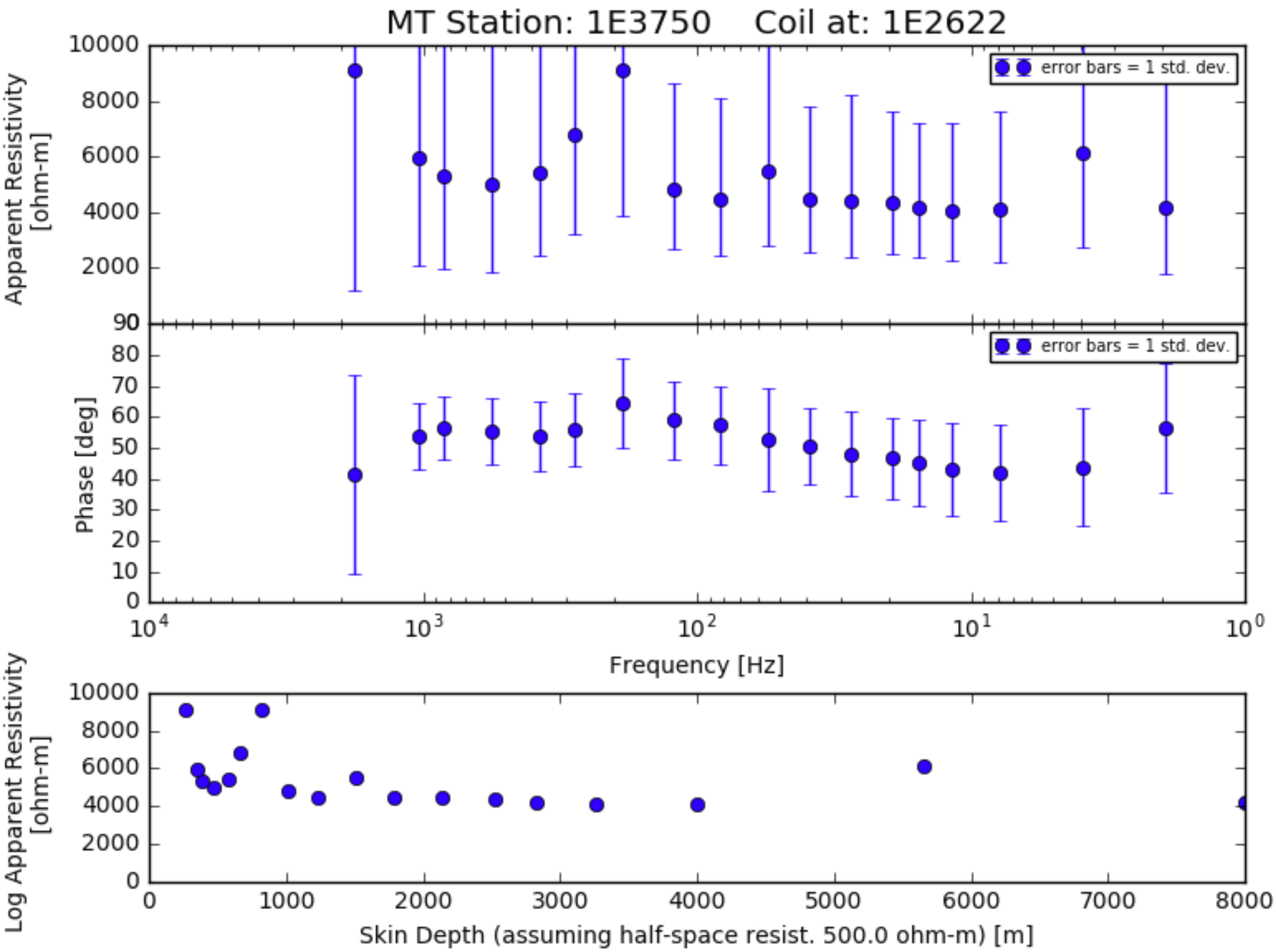

MT Station: 1E3350   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E3450   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E3550 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]



MT Station: 1E3650   Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
error bars = 1 std. dev.
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]


MT Station: 1E3750 Coil at: 1E2622
Apparent Resistivity [ohm-m]
error bars = 1 std. dev.
Phase [deg]
Frequency [Hz]
Log Apparent Resistivity [ohm-m]
Skin Depth (assuming half-space resist. 500.0 ohm-m) [m]