Ontario

We are committed to providing accessible customer service.
If you need accessible formats or communications supports, please contact us.

Nous tenons à améliorer l'accessibilité des services à la clientèle.
Si vous avez besoin de formats accessibles ou d'aide à la communication, veuillez nous contacter.

GOLDEN MALLARD CORP
Geophysical and Exploration Consulting

GEOPHYSICAL REPORT
MONTCALM PROJECT
2023 Borehole IP/Resistivity Surveys
Montcalm Township, Ontario

For:

Mink Ventures Corporation
Suite 4100
66 Wellington Street West
Toronto, ON
M5K 1B7

Report Author:

Blaine Webster, P.Geo
Golden Mallard Corp.
127 Castle Glen Cres.
Kanata, Ontario
K2L 4G9, Canada

Submitted: March 15, 2023

Golden Mallard Ref: 23-01

Table of Contents

1. Executive Summary 1
2. Introduction 3
3. Property Description and Location 4
4. History 8
5. Geology 8
6. Borehole Induced Polarization (IP)/Resistivity Survey Objectives 10
7. Borehole Coordinates 10
8. Survey Methodology and Coverage 12
9. Processing and Inversions 16
10. Interpretation 16
11. Conclusions and Recommendations 43
12. Digital Project Archive 43
13. References 44
14. Signature Page 45

List of Figures

Figure 3.1-1: Regional Location Map 5
Figure 3.2-1: Property Claim Map 6
Figure 3.3-1: Survey Area Map 7
Figure 7-1: Drillhole Location Map 11
Figure 7-2: Drillhole Location Map in 3D (angled view) 12
Figure 8.1-1: Modern Pole-Dipole (Detection) Array Schematics in 2D 13
Figure 8.2-1: Modern Borehole Gradient (Detection) Array Schematics in 2D 14
Figure 8.3-1: Cross-hole/Mise-a-la-masse Array Schematics (Wondimu et al. 2018) 15
Figure 10.1-1: Chargeability Profile Map of Borehole MTC-19-06 17
Figure 10.1-2: Resistivity Profile Map of Borehole MTC-19-06 18
Figure 10.1-3: Chargeability Profile Map of Borehole MTC-19-07 19
Figure 10.1-4: Resistivity Profile Map of Borehole MTC-19-07 19
Figure 10.1-5: Chargeability Profile Map of Borehole MTC-19-08 20
Figure 10.1-6: Resistivity Profile Map of Borehole MTC-19-08 21
Figure 10.1-7: Chargeability Profile Map of Borehole WTM-05-12 22
Figure 10.1-8: Resistivity Profile Map of Borehole WTM-05-12 22
Figure 10.1-9: Chargeability Profile Map of Borehole WTM-05-13 23
Figure 10.1-10: Resistivity Profile Map of Borehole WTM-05-13 24
Figure 10.2-1: Chargeability Profile Map of Borehole MTC-19-06 25
Figure 10.2-2: Resistivity Profile Map of Borehole MTC-19-06 26
Figure 10.2-3: Chargeability Profile Map of Borehole MTC-19-07 27
Figure 10.2-4: Resistivity Profile Map of Borehole MTC-19-07 27
Figure 10.2-5: Chargeability Profile Map of Borehole MTC-19-08 28
Figure 10.2-6: Resistivity Profile Map of Borehole MTC-19-08 29
Figure 10.2-7: Chargeability Profile Map of Borehole WTM-05-12 30

Figure 10.2-8: Resistivity Profile Map of Borehole WTM-05-12 30
Figure 10.2-9: Chargeability Profile Map of Borehole WTM-05-13 31
Figure 10.2-10: Resistivity Profile Map of Borehole WTM-05-13 32
Figure 10.3-1: 3D Conductivity Model Data Misfit 34
Figure 10.3-2: 3D Chargeability Model Data Misfit 34
Figure 10.3-3: 3D Conductivity Model Depth Slice at (Depth = 200m) 36
Figure 10.3-4: 3D Chargeability Model Depth Slice at (Depth = 200m) 36
Figure 10.3-5: 3D Conductivity Model Depth Slice at (Depth = 300m) 37
Figure 10.3-6: Chargeability Model Depth Slice at (Depth = 300m) 38
Figure 10.3-7: 3D Conductivity Model Depth Slice at (Depth = 400m) 39
Figure 10.3-8: Chargeability Model Depth Slice at (Depth = 400m) 40
Figure 10.3-9: Conductivity Model Depth Slice at (Depth = 500m) 41
Figure 10.3-10: 3D Chargeability Model Depth Slice (Depth = 500m) 42

List of Tables

Table 1-1: Digital Project Archive Folder Structure 2
Table 2.1-1:List of Abbreviations 3
Table 3.3-1: Survey Area Claim Information 7
Table 7-1: Collar Information of the Surveyed Holes 10
Table 8.4-1: Borehole IP/Resistivity Survey Coverage 15
Table 10.1-1: Summary of Pole-Dipole Data Interpretations 24
Table 10.2-1: Summary of Gradient Data Interpretations 32
Table 11-1: Proposed Drillhole Collar Information 43
Table 12-1: Digital Project Archive Folder Structure 43

List of Appendices

Appendix A: Certificate of Qualifications
Appendix B: Production Report
Appendix C: Instrument Specification Sheets

Digital Project Archive Only

Appendix D: Pole-Dipole and Gradient Profiles, Level Plan Maps, and 3D Models
Appendix E: Survey Data in Binary Format

1. Executive Summary

Borehole induced polarization (IP)/resistivity surveys were conducted on the Montcalm Project (the "Property") for Mink Ventures Corporation ("Mink") of Toronto, Ontario by Golden Mallard Corp. ("Golden Mallard") of Kanata, Ontario.

The Property is located in Montcalm Township, approximately 62 km west-northwest of Timmins in northeastern Ontario. The Property is located within 1:50,000 scale NTS map sheet 42B/09. The survey area was centred on UTM co-ordinates 415656E, 5387796N (NAD83 Zone 17N).

Five (5) boreholes were surveyed: MTC-19-06, MTC-19-07, MTC-19-08, WTM-05-12, WTM-05-13. The electrical IP/resistivity method was employed. The pole-dipole (radial detection), the gradient (directional) and the cross-hole array measurement configurations were used for the survey.

Field work was conducted over 27 days from January 7, 2023 to February 2, 2023. The survey crew was made up of Dennis Palos of Newmarket, Ontario, Ray Miekle, of North Bay, Ontario, Rob Matthew of Timmins, Ontario, and Arnel Charette, of Timmins, Ontario.

The objective of the borehole IP/resistivity surveys was to identify/map chargeability and resistivity anomalies which may warrant further investigation and drilling to target economic Ni-Cu mineralization. The geophysical surveys provided images of IP/resistivity anomalies over the surveyed areas.

Based on survey results, four (4) drillholes have been proposed to target potential economic Ni-Cu mineralization.

This report includes an overview of data acquisition and survey operations including survey coverage and technical information about the borehole IP/resistivity surveys. The report also includes interpretation of geophysical data and recommendations. The resistivity and chargeability profile maps and colour contour level plan maps produced from the borehole IP/resistivity survey are presented as screen captured images in the interpretation section of this report. The level plan maps produced from the 3D models are provided as Oasis Montaj Geosoft map files.

Appendices to the main report contain a certificate of qualifications, production report, and instrument specification sheets. The report and appendices are included in an accompanying Digital Project Archive which contains raw data, profiles, level plan maps and 3D models. The raw IP/resistivity data is provided in binary file format. The profile maps are provided in pdf file format. The level plan maps produced from the 3D models are provided as Oasis Montaj Geosoft map files. The 3D chargeability and resistivity models are provided as Geosoft project map files and also in xyz file formats.

Table 1-1 shows the digital project archive folder structure.

Table 1-1: Digital Project Archive Folder Structure

Folder Structure	Content and Description
Main Folder	Geophysical Report 23-01 – Mink Ventures Corp.
Appendix A	Certificate of Qualifications
Appendix B	Production Report
Appendix C	Instrument Specifications
Appendix D	Pole-Dipole and Gradient profiles, level plan maps, and 3D models in different file formats
Appendix E	Survey Data in binary file format

2. Introduction

Borehole induced polarization (IP)/resistivity surveys were conducted on the Montcalm Project (the "Property") for Mink Ventures Corporation ("Mink") of Toronto, Ontario by Golden Mallard Corp. ("Golden Mallard") of Kanata, Ontario.

Field work was conducted over 27 days from January 7, 2023 to February 2, 2023. The survey crew was made up of Dennis Palos of Newmarket, Ontario, Ray Miekle, of North Bay, Ontario, Rob Matthew of Timmins, Ontario, and Arnel Charette, of Timmins, Ontario.

2.1. List of Abbreviations

Table 2 contains a list of abbreviations.

Units of measurement used in this report conform to the metric system. All currency in this report is Canadian dollars (C$ or $) unless otherwise noted.

Table 2.1-1:List of Abbreviations

List of Abbreviations			
µ	Micron	kVA	kilovolt-amperes
µg	Microgram	kW	kilowatt
a	Annum	kWh	kilowatt-hour
A	Ampere	L	litre
bbl	Barrels	lb	pound
Btu	British thermal units	L/s	litres per second
°C	degree Celsius	m	metre
C$	Canadian dollars	M	mega (million); molar
cal	Calorie	m^2	square metre
cfm	cubic feet per minute	m^3	cubic metre
cm	Centimetre	MASL	metres above sea level
cm^2	square centimetre	m^3/h	cubic metres per hour
d	Day	mi	mile
dia	Diameter	min	minute
dmt	dry metric tonne	µm	micrometre
dwt	dead-weight ton	mm	millimetre
°F	degree Fahrenheit	mph	miles per hour
ft	Foot	MVA	megavolt-amperes
ft^2	square foot	MW	megawatt
ft^3	cubic foot	MWh	megawatt-hour
ft/s	foot per second	oz	Troy ounce (31.1035g)
g	Gram	oz/st, opt	ounce per short ton
G	giga (billion)	ppb	part per billion
Gal	Imperial gallon	ppm	part per million

g/L	gram per litre	psia	pound per square inch absolute
Gpm	Imperial gallons per minute	psig	pound per square inch gauge
g/t	gram per tonne	RL	relative elevation
gr/ft^3	grain per cubic foot	s	second
gr/m^3	grain per cubic metre	st	short ton
ha	Hectare	stpa	short ton per year
hp	Horsepower	stpd	short ton per day
hr	Hour	t	metric tonne
Hz	Hertz	tpa	metric tonne per year
in.	Inch	tpd	metric tonne per day
in^2	square inch	US$	United States dollar
J	Joule	USg	United States gallon
k	kilo (thousand)	USgpm	US gallon per minute
kcal	Kilocalorie	V	volt
kg	Kilogram	W	watt
km	Kilometre	wmt	wet metric tonne
km^2	square kilometre	wt%	weight percent
km/h	kilometre per hour	yd^3	cubic yard
kPa	Kilopascal	yr	year

3. Property Description and Location

3.1. Location and Access

The Property is located in Montcalm Township, approximately 62 km west-northwest of Timmins in northeastern Ontario. The Property is located within 1:50,000 scale NTS map sheet 42B/09. The survey area was centred on UTM co-ordinates 415656E, 5387796N (NAD83 Zone 17N). Access is via Highway 101 from Timmins followed by a network of logging and drill roads. Figure 3.1-1 gives a regional location map.

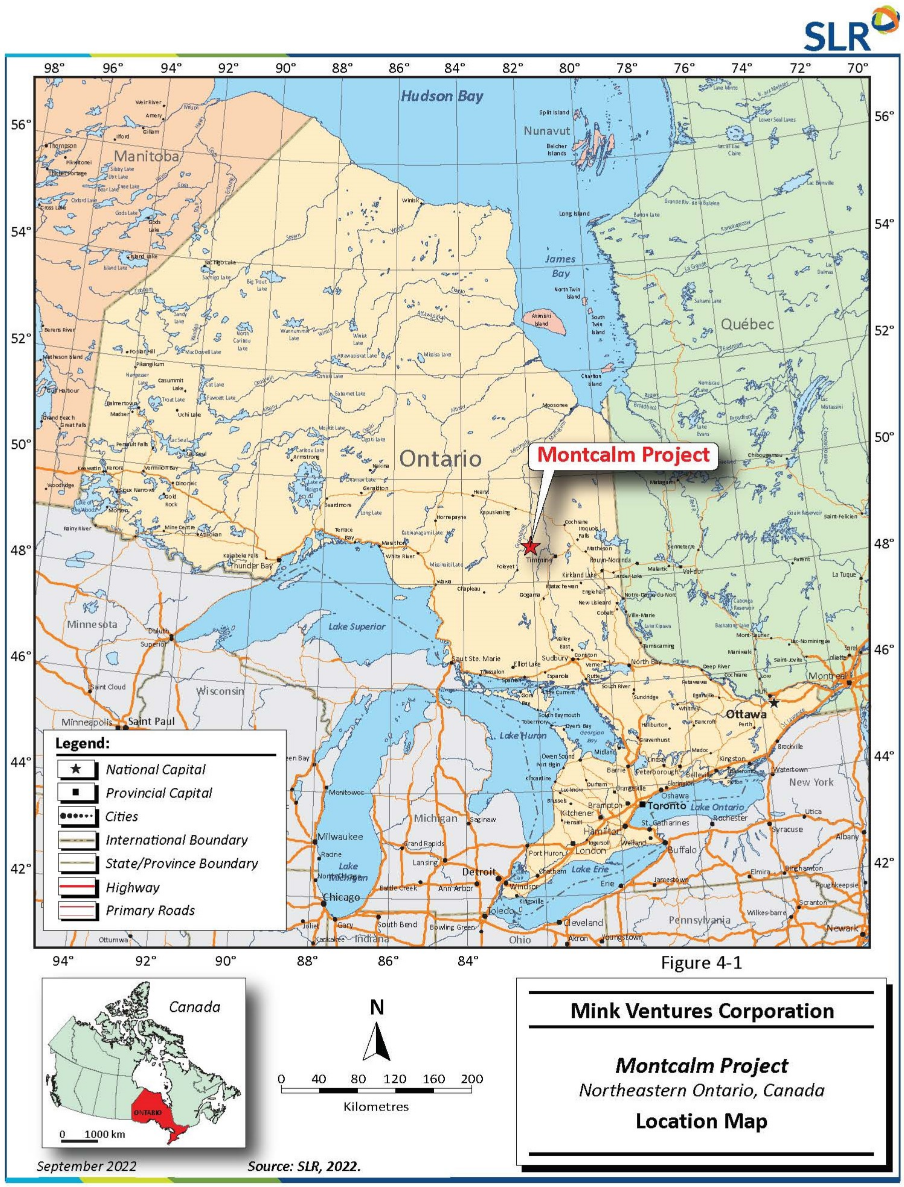


Figure 3.1-1: Regional Location Map

3.2. Land Tenure

The Property consists of a contiguous block of 196 claim units comprising 177 single cell claims and 19 boundary cell claims covering an area of approximately 3,964 ha in the Porcupine Mining Division. The claims are held by Voltage Metals Inc. of Toronto with Mink holding an option to acquire an 80% interest in the Property subject to certain terms and conditions. Figure 3.2-1 provides a map of the claims which comprise the Property.

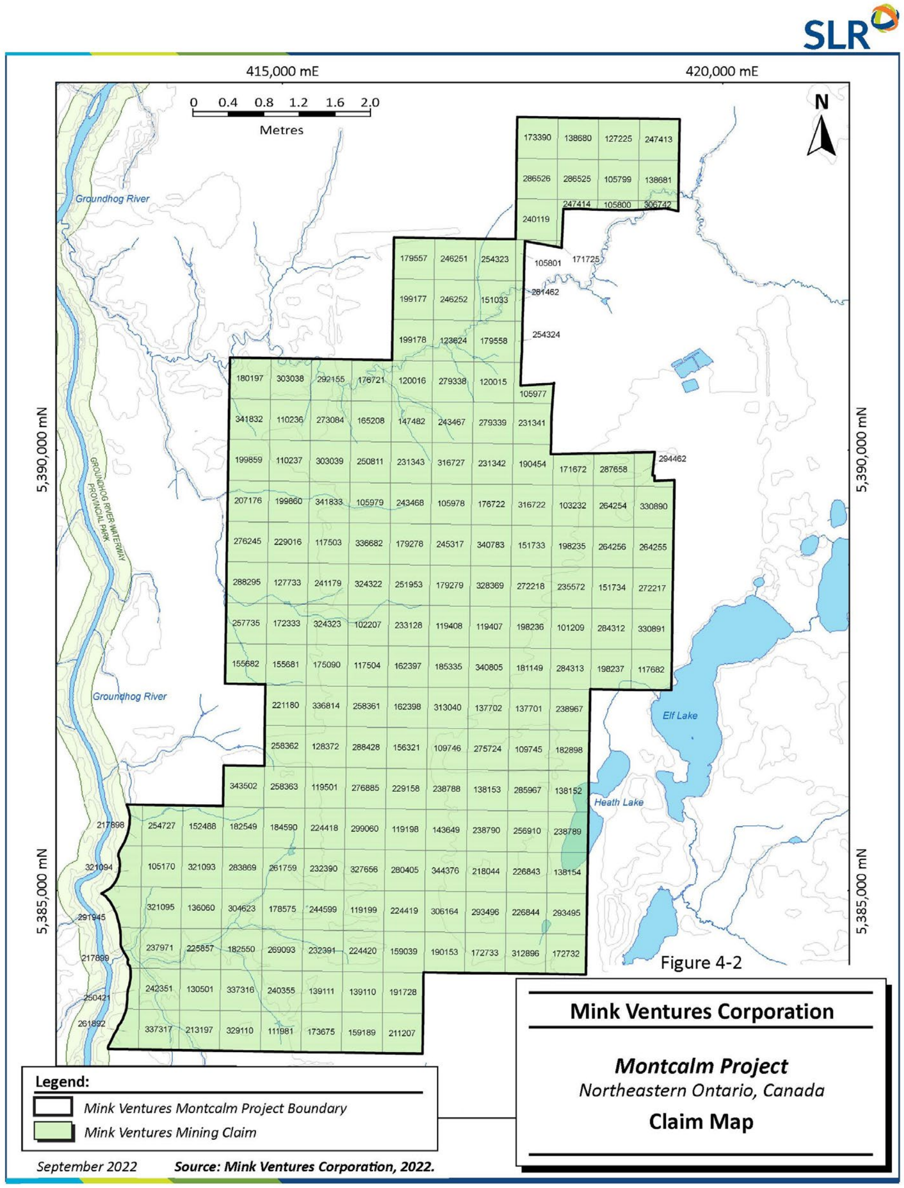


Figure 3.2-1: Property Claim Map

3.3. Survey Area

The surveys were carried out on unpatented mining claims 102207, 117504, 127733, 155681, 155682, 162397, 162398, 172333, 175090, 221180, 233128, 241179, 251953, 257735, 258361, 288295, 324322, 324323, 336814.

The claims are covered by exploration permit PR-22-000231 issued pursuant to O. Reg 308/12.

Figure 3.3-1 shows the survey area.

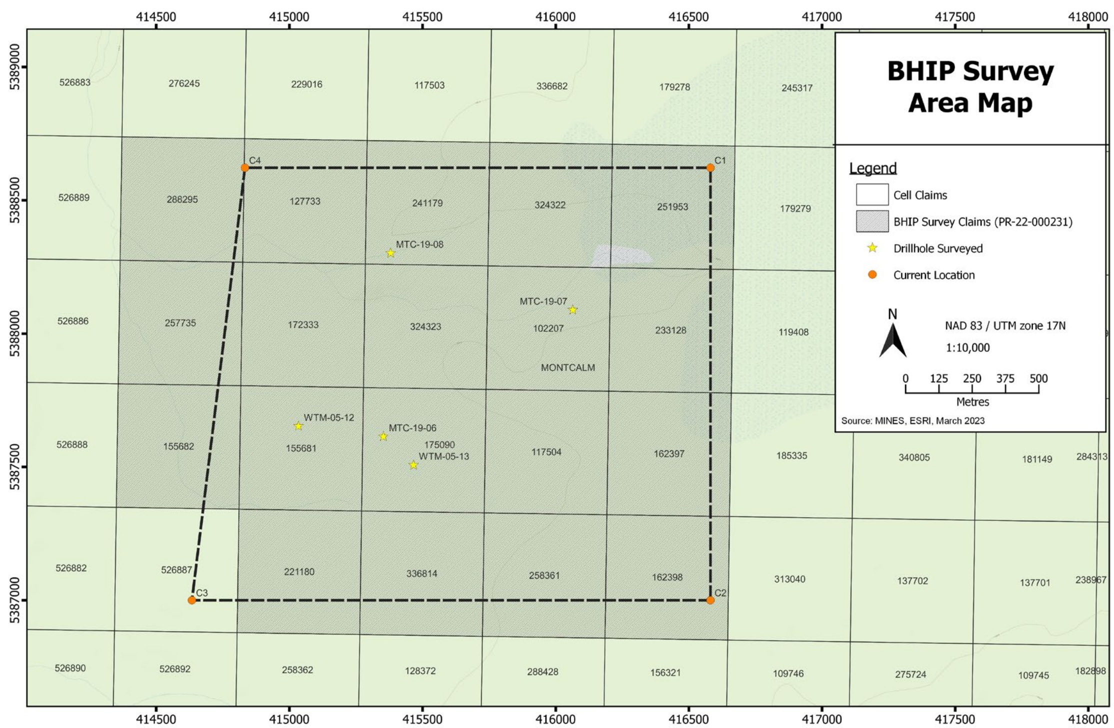


Figure 3.3-1: Survey Area Map

Table 3.3-1 provides information about claims within the survey area.

Table 3.3-1: Survey Area Claim Information

Tenure ID	Anniversary Date	Tenure Type	Tenure Status	Registered Holder
102207	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
117504	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
127733	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
155681	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
155682	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
162397	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
162398	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
172333	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
175090	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
221180	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
233128	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
241179	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
251953	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
257735	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
258361	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
288295	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)

324322	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
324323	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)
336814	22-Mar-2023	Single Cell Mining Claim	Active	Voltage Metals Inc. (10005183)

4. History

The following is taken from Chamois (2022).

The exploration history of the Property prior to 1959 is unknown. Following the discovery of the Kidd Creek deposit in 1963, the general area was explored mainly for massive sulphide copper-zinc mineralization. The focus of exploration changed in 1976 with the discovery of the Montcalm Ni-Cu deposit by Geophysical Engineering Limited on behalf of a consortium comprised of Teck Corporation Limited (Teck), Metallgesellschaft of Canada Limited, and Domik Exploration Limited.

From 1995 to 1997, KRL Resources Corporation (KRL) and Teck were active on portions of the Property. KRL completed ground geophysical surveys and drilled two holes. Teck also drilled two holes.

From 2003 to 2009, Aurora Platinum Corp. (Aurora), Pacific Northwest Capital Corporation (PNC), and International Nickel Ventures Corporation (INV) were active on portions of the Property. Aurora and PNC completed airborne EM surveys and INV completed ground geophysical surveys. These companies drilled a total of 17 holes to test geophysical anomalies.

From 2018 to 2019, Pancontinental Resources Corporation (PRC) completed airborne EM and gravity surveys over portions of the Property and drilled ten holes, mainly to test EM conductors.

5. Geology

The following is taken from Chamois (2022).

The Project lies within the westernmost part of the Abitibi Subprovince of the Superior Province in northeastern Ontario. In very general terms, the Abitibi Subprovince consists of Late Archean metavolcanic rocks, related synvolcanic intrusions, and clastic metasedimentary rocks, intruded by Archean alkaline intrusions and Paleoproterozoic diabase dykes.

The Project area has been subjected to regional metamorphism to the lower greenschist facies and locally to the lower amphibolite facies proximal to the margins of large granitoid intrusions.

The Property is located within the Montcalm Greenstone Belt (MGB). Most of the area is underlain by rocks of Neoarchean age. The oldest lithologies are mafic metavolcanic flows and felsic to intermediate pyroclastic rocks locally interbedded with clastic and chemical metasedimentary rocks and ultramafic flows. The supracrustal rocks have been partially divided into the large, dominantly mafic metavolcanic Montcalm assemblage, the dominantly intermediate pyroclastic metavolcanic Nova assemblage, and the composite Oates assemblage. They were intruded by the MGC in the north and the Strachan Gabbroic Complex (SGC) in the south. Both complexes are layered. The metavolcanic and gabbroic rocks were then intruded to the south and east by the Nat River Granitoid Complex, by an unnamed granitoid complex to the north, and by much smaller felsic to intermediate stocks in western Strachan Township, northern Belford Township, and northwestern Nova Township. All rock types are crosscut by Paleoproterozoic diabase dykes, mainly of the Matachewan swarm, and some diabase dykes of an unknown (possibly Abitibi) swarm. Lamprophyre dykes are common locally. The western edge of the area was truncated by the high-grade metamorphic terrane of the Kapuskasing Structural Zone (KSZ).

The Neoarchean rocks were subjected to at least two, possibly three, periods of deformation.

The supracrustal and gabbroic rocks were affected by regional, lower to middle amphibolite grade metamorphism. Upper amphibolite grade metamorphism was observed locally. Contact metamorphism produced narrow, sometimes overlapping, zones of granoblastic textures near the various granitoid intrusions. A second regional metamorphic event may have accompanied the emplacement of the KSZ.

The Property is underlain almost exclusively by lithologies comprising the MGC. The MGC is divided into four zones on the basis of petrology and geochemistry: a Pyroxenite Zone which consists of ortho-cumulus textured pyroxenite-hornblendite and pegmatitic gabbro units: a Gabbro Zone of mesocumulus to adcumulus textured plagioclase-clinopyroxene gabbros; an Anorthositic Gabbro Zone, characterized by a plagioclase-porphyritic texture; and a Ferroan Gabbro Zone commonly with cumulus Fe-Ti oxides.

The MGC appears to be gradational into overlying metavolcanic rocks. Compositional layering within the MGC suggests that the sill faces south.

Endogenous mafic and ultramafic dykes cut all MGC cumulate lithologies and a subvertical felsic dyke suite, including a slightly younger subvertical quartz monzonite-granodiorite dyke, cuts the Ni-Cu deposit.

The MGC was subjected to two deformational events. Regional deformation consistent with a broad doming to the northwest, created a penetrative, subvertical fabric generally parallel to the intrusion contacts. Later regional granitoid emplacement created contact strain zones along the eastern and southern margins of the MGC.

No economically significant mineralization has been identified on the Property to date.

6. Borehole Induced Polarization (IP)/Resistivity Survey Objectives

The objective of the borehole IP/resistivity surveys was to identify/map chargeability and resistivity anomalies which may warrant further investigation and drilling to target economic Ni-Cu mineralization. The geophysical surveys provided images of IP/resistivity anomalies over the surveyed areas.

7. Borehole Coordinates

Table 7-1 provides collar coordinates for the surveyed boreholes. Figure 7-1 provides a map of borehole locations. Figure 7-2 provides 3D borehole traces.

Table 7-1: Collar Information of the Surveyed Holes

Hole-ID	East	North	Elevation	Dip	Azimuth	Depth
MTC-19-06	415353	5387614	289	-52	270	576
MTC-19-07	416064	5388089	290	-50	270	312
MTC-19-08	415380	5388302	293	-70	105	324
WTM-05-12	415034	5387653	292	-45	315	231
WTM-05-13	415466	5387507	291	-45	315	225

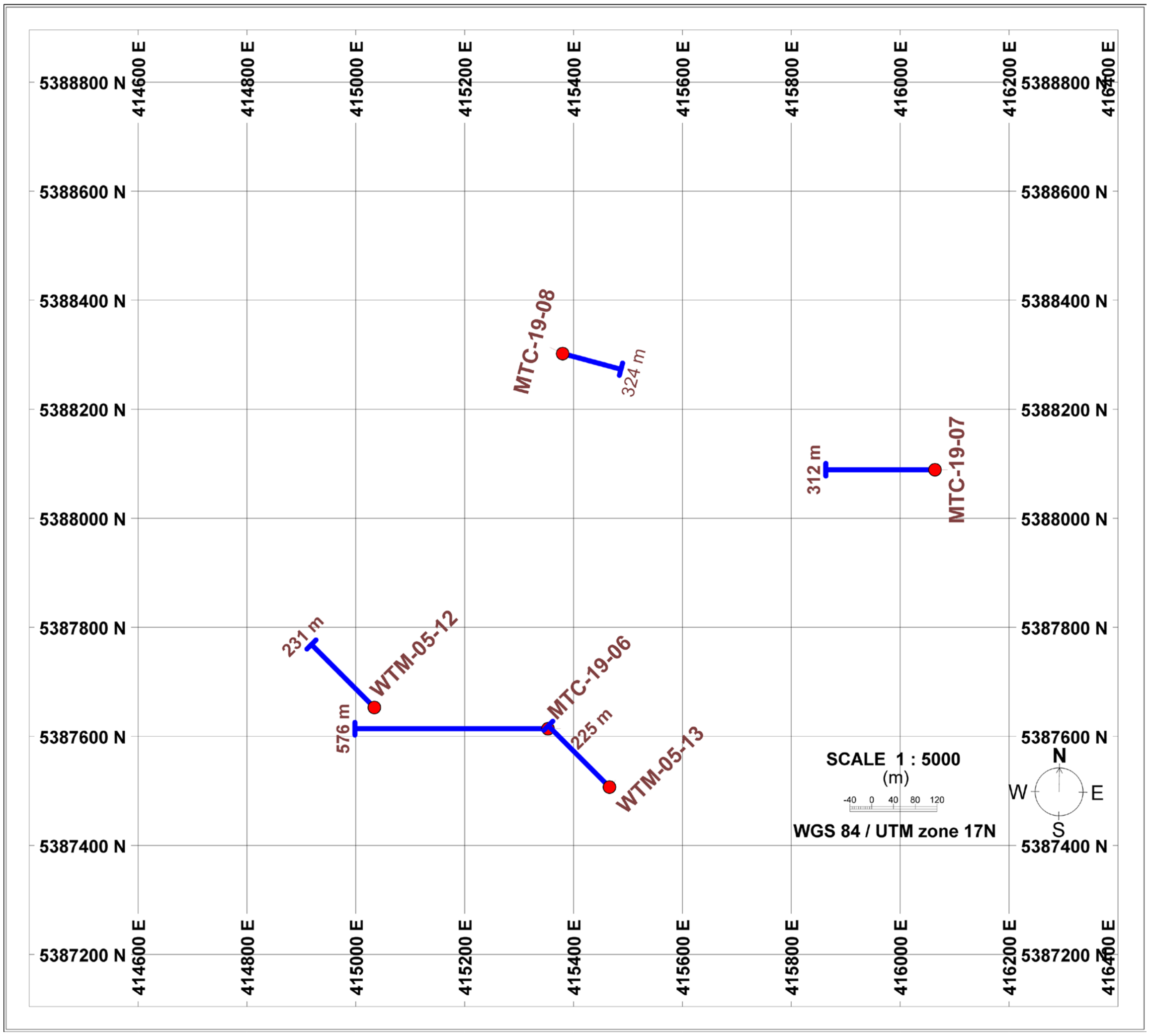


Figure 7-1: Drillhole Location Map

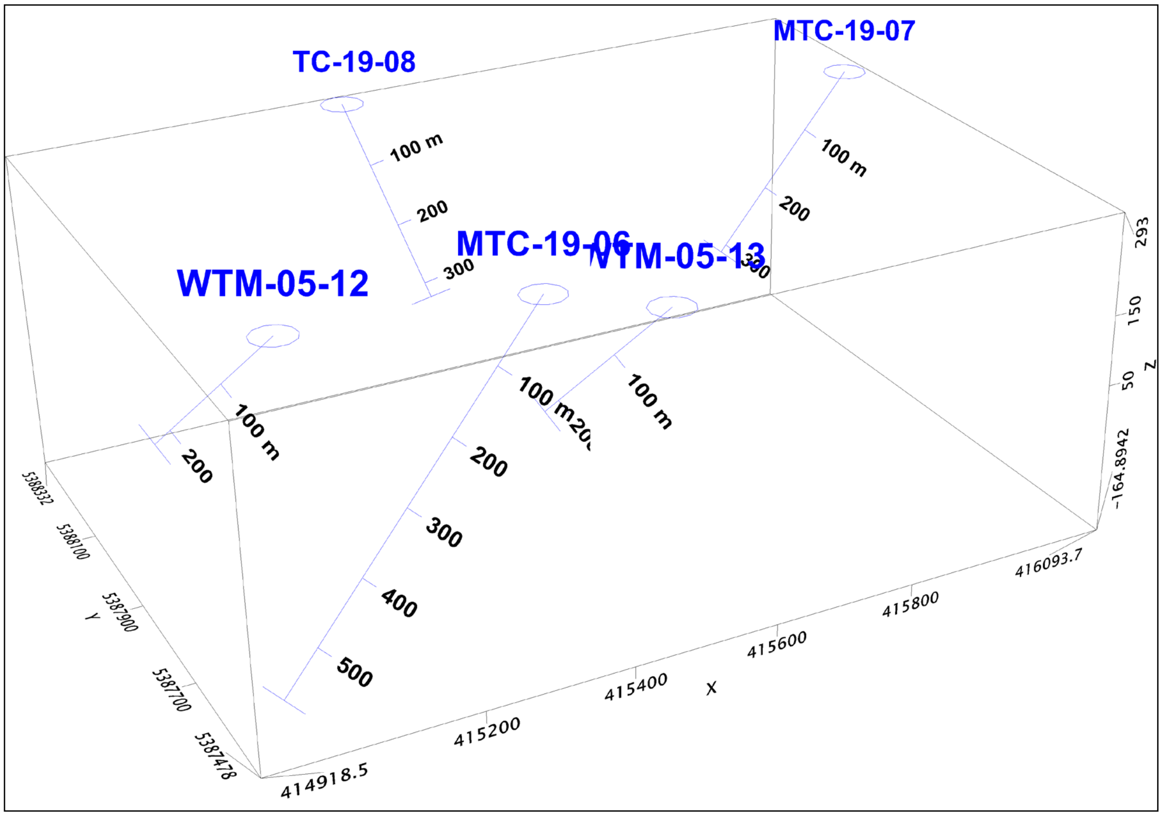


Figure 7-2: Drillhole Location Map in 3D (angled view)

8. Survey Methodology and Coverage

Different geophysical methods (including electrical, gravity, magnetic, electromagnetic, etc.) have been used to map ore minerals/deposits. Each of the methods has its own advantages or disadvantages when applied to help solve a given problem (geological, hydrogeolgical, environmental, etc.). The selection of specific geophysical method to map ore minerals/deposits may depend on its achievements in the past, sensitiveness, effectiveness and accompanied cost. Accordingly, the electrical IP/resistivity method was employed. The pole-dipole, the gradient and the cross-hole measurement configurations were employed in this survey and are described in the following subsections.

8.1. Pole-Dipole (Radial Detection) Array

A pole-dipole (radial detection) array with electrode separations of a = 25m were used to determine the distance of the anomaly source from the drill hole trace and how the anomaly changes radially from the hole. This array is also described as a borehole pole-dipole survey as it resembles a surface pole-dipole survey except that the geometry is inclined along the axis of the hole and the usual subsurface half-space used in calculating the resistivity is replaced by a full three-dimensional distribution of current.

A single electrode is positioned on the surface at a distance away from the survey line (usually several 100's of meters). This electrode is used as the "Infinity" electrode (C1) for current injection. The second current electrode (C2) is put in front of few (at least > 2) potential electrodes at a fixed distance (25m). The potential electrodes are used for measuring the potential differences between the dipoles, usually forming the P_1-P_2, P_2-P_3, P_3-P_4, … P_{n-1} – P_n dipoles. In this survey a maximum of three dipoles were used for acquiring the pole-dipole data. Figure 8.1-1 shows the pole-dipole array schematics.

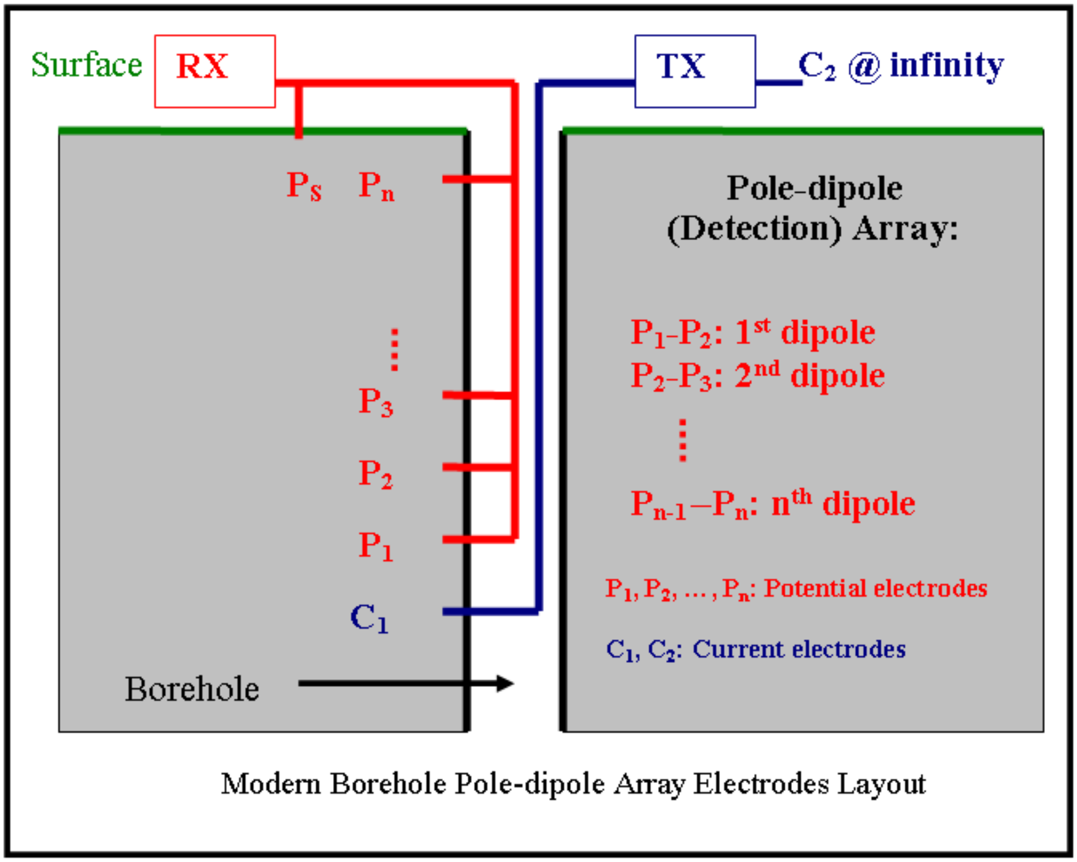


Figure 8.1-1: Modern Pole-Dipole (Detection) Array Schematics in 2D

8.2. Gradient (Directional) Array

The borehole gradient array is one form of directional surveys used to determine the direction of the mineralization with respect to the boreholes so that 3D shapes of the mineralization can be mapped (Wondimu, et al., 2018). The gradient array survey configuration consists of injecting four directional gradient currents into the ground in North, East, South and West directions. Generally, the distance of the gradient currents normal to the boreholes is the same as the average length of the boreholes.

The current electrodes make a rectangular loop around the boreholes at calculated distances from the collars. The current is injected from North, East, South and West directions. The gradient currents are fixed while the data is recorded using potential electrodes that are mobile, down or up the borehole. The separations of the potential electrodes may depend on the size of the target whereas the separations of the current electrodes depend on the length of the boreholes and field conditions (access to place the electrodes). Figure 8.2-1 shows the borehole gradient array schematics in 2D.

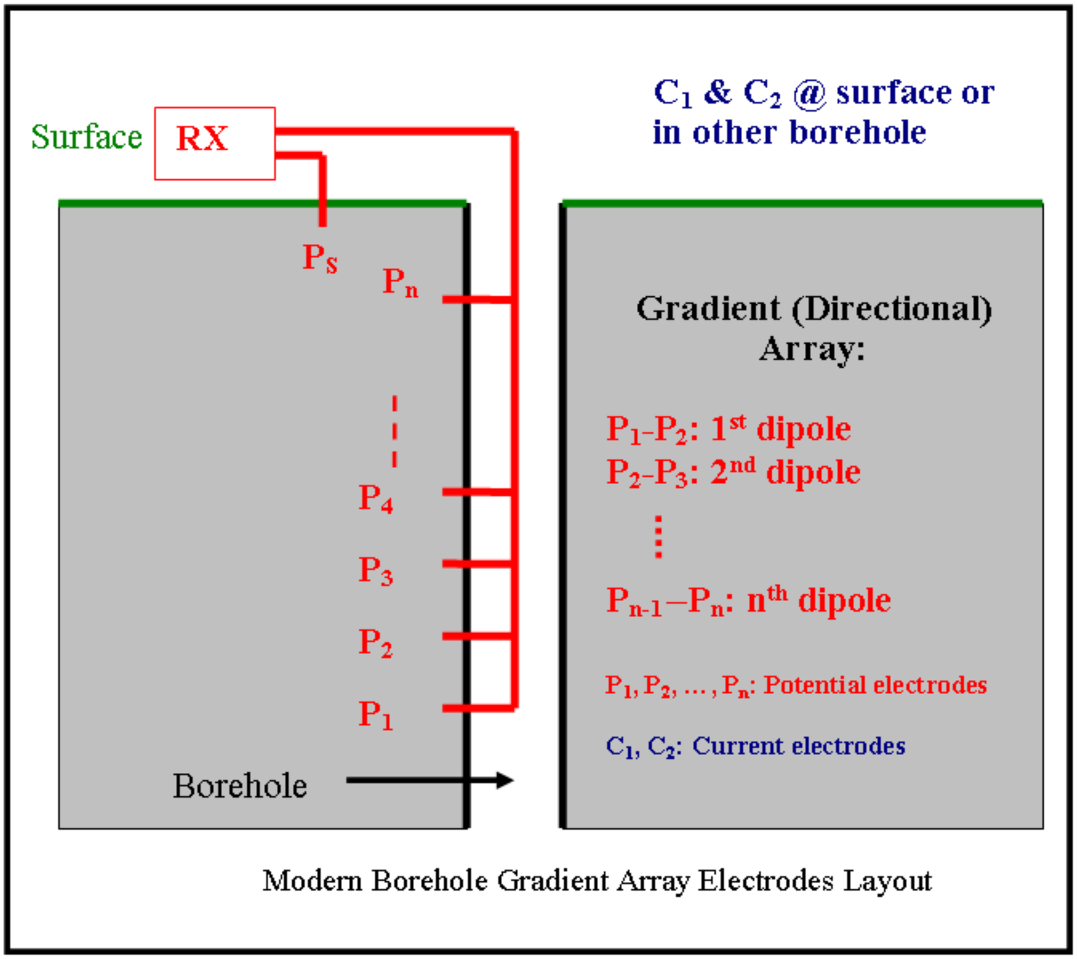


Figure 8.2-1: Modern Borehole Gradient (Detection) Array Schematics in 2D

8.3. Cross-hole (Mise-à-la-Masse)

This method is used where some part of the conductive zone is already located and exposed, either as outcrop or in drill hole. The near current electrode is embedded in the zone itself, the other being a large distance away on surface. The potential electrodes are moved about, either on surface or in drill holes. The extent, dip, strike and continuity of the zone will be better indicated by introducing the current directly into it rather than by the usual mapping techniques. Potential readings were taken using 50m dipole. Figure 8.3-1 shows the cross-hole (mise-à-la-masse) array schematics.

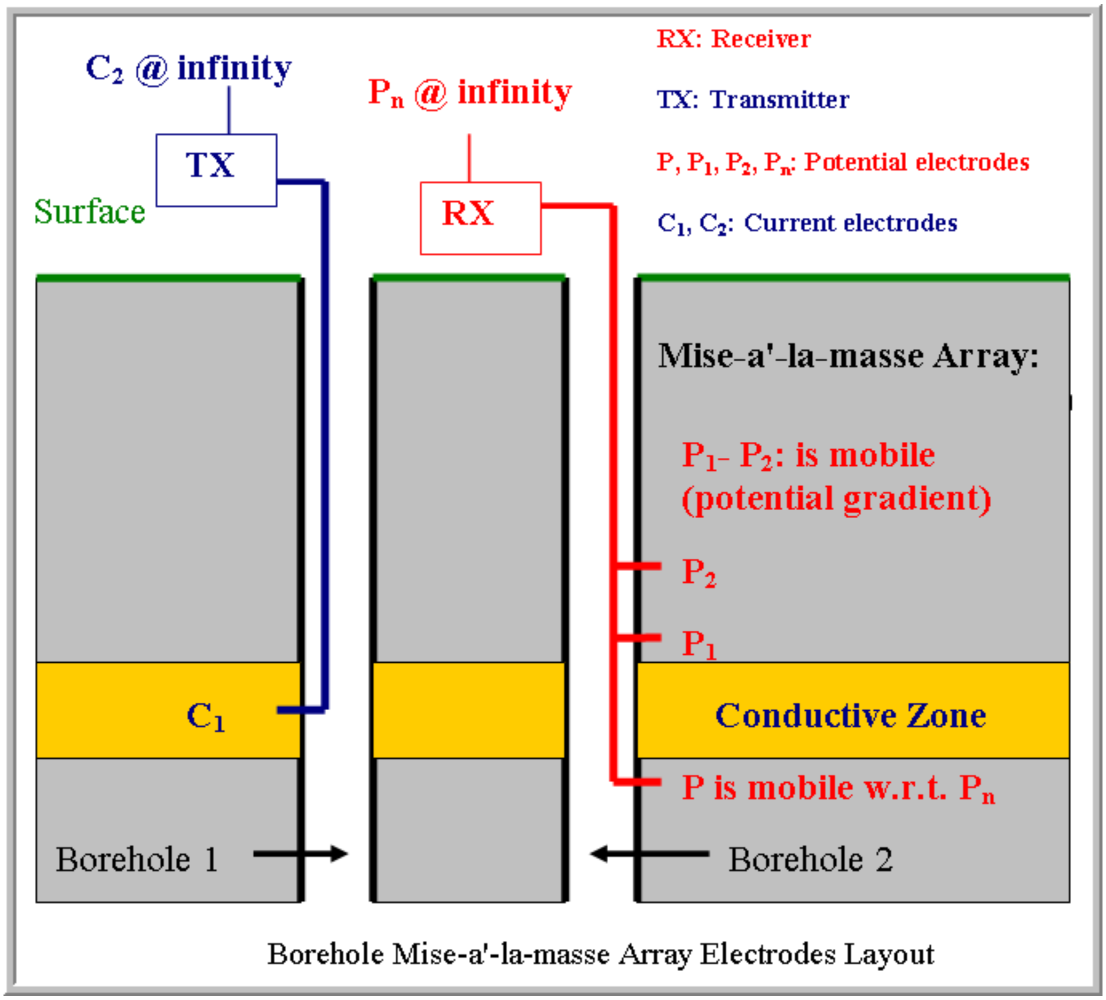


***Figure 8.3-1*: Cross-hole/Mise-a-la-masse Array Schematics (Wondimu et al. 2018)**

8.4. Survey Coverage and Array Types

Table 8.4-1 shows the survey coverage for each array type.

***Table 8.4-1:* Borehole IP/Resistivity Survey Coverage**

Hole-ID	Depth	Dipole Lengths	Coverage / Array type		
MTC-19-06	576	25m, 30m, 50m,	Pole-Dipole	Gradient	Cross-hole
MTC-19-07	312	12.5m, 25m, 30m	Pole-Dipole	Gradient	
MTC-19-08	324	12.5m, 25m, 30m	Pole-Dipole	Gradient	
WTM-05-12	231	12.5m, 25m, 30m	Pole-Dipole	Gradient	
WTM-05-13	225	12.5m, 25m, 30m	Pole-Dipole	Gradient	Cross-hole

8.5. Data Quality Control and Assurance

The data acquisition over each hole at different depths was repeated for quality control and assurance (QC/QA). At the end of every survey day, the IP and resistivity data are dumped from the acquisition instrument to a personal computer (PC). The output file from the instrument is in binary file formats (*.bin). The data are checked for quality and quantity on the site. The data are archived and checked at the end of the acquisition day and then transferred to Golden Mallard Corp., Kanata, Ontario for further processing and assessment.

9. Processing and Inversions

All raw data was recorded and downloaded to a processing computer and archived at Golden Mallard Corp.'s core digital archive. The routine data processing is carried out using Golden Mallard Corp.'s proprietary process. Plots of the raw data are reviewed by the Sr. Geophysicist on a daily basis during the survey. The maps, sections, final inversion models of the IP/Resistivity results are included in the report.

3D chargeability and conductivity models have been computed from the gradient and cross-hole data set using DCIP3D inversion algorithm developed by the University of British Columbia. The 3D models were computed with a 50 m and 25 m grid cell sizes. The 25 m grid cell size model is better in resolving anomalies and hence used for the interpretation of the targets identified.

9.1. Data Presentation

The borehole IP/resistivity data is presented as profile maps, colour contour level plan maps and 3D block models as desired. The pole-dipole, the gradient and the cross-hole profiles are plotted using standard depth and position conventions. The plotting position for the pole-dipole data is $[C_1+ (P_1+P_2)/2]/2$, where C_1 is the current injection position and P_1 and P_2 are potential electrode positions. The plotting position for the gradient data is $(P_1+P_2)/2$.

10. Interpretation

The profiles of pole-dipole and gradient are interpreted based on the association of chargeability and resistivity. The colour contour level plan maps extracted from the respective 3D Voxels are interpreted based on the association of chargeability and conductivity (reciprocal of resistivity). The probable/potential target areas are indicated by doted lines on the screen captured 3D depth slice level plan maps. Geophysical results should be compared with subsurface geological model of the area for choosing any potential targets prior to drilling. The pole-dipole profiles interpretation is based on the n = 1 dipole data.

10.1. Profiles of Pole-Dipole Data

10.1.1.1. Borehole MTC-19-06

From the chargeability profile map of borehole MTC-19-06, four off-hole chargeability anomalies are observed. The approximate chargeability anomaly centers along downhole depth are indicated by arrows. Figures 10.1-1 and 10.1-2 show chargeability and resistivity profiles of borehole MTC-19-06 respectively. The chargeability anomalies associations with resistivity for all boreholes are given in Table 10.1-1.

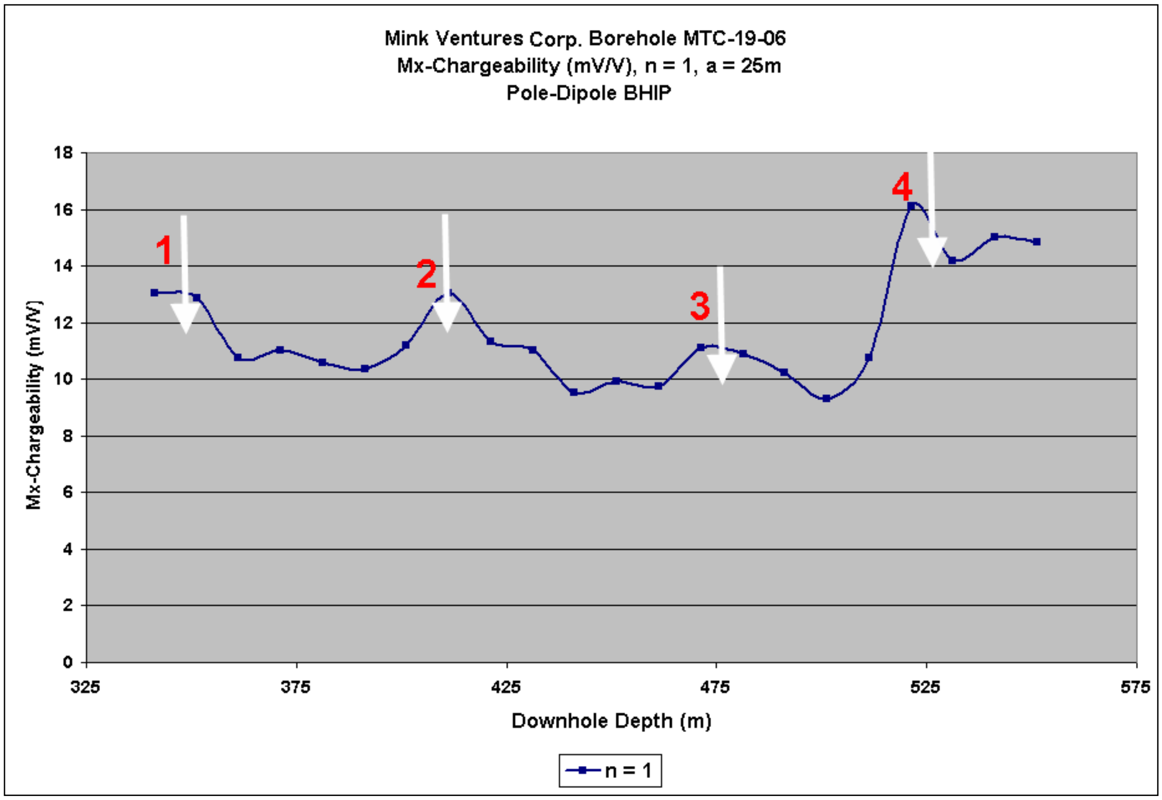


Figure 10.1-1: Chargeability Profile Map of Borehole MTC-19-06

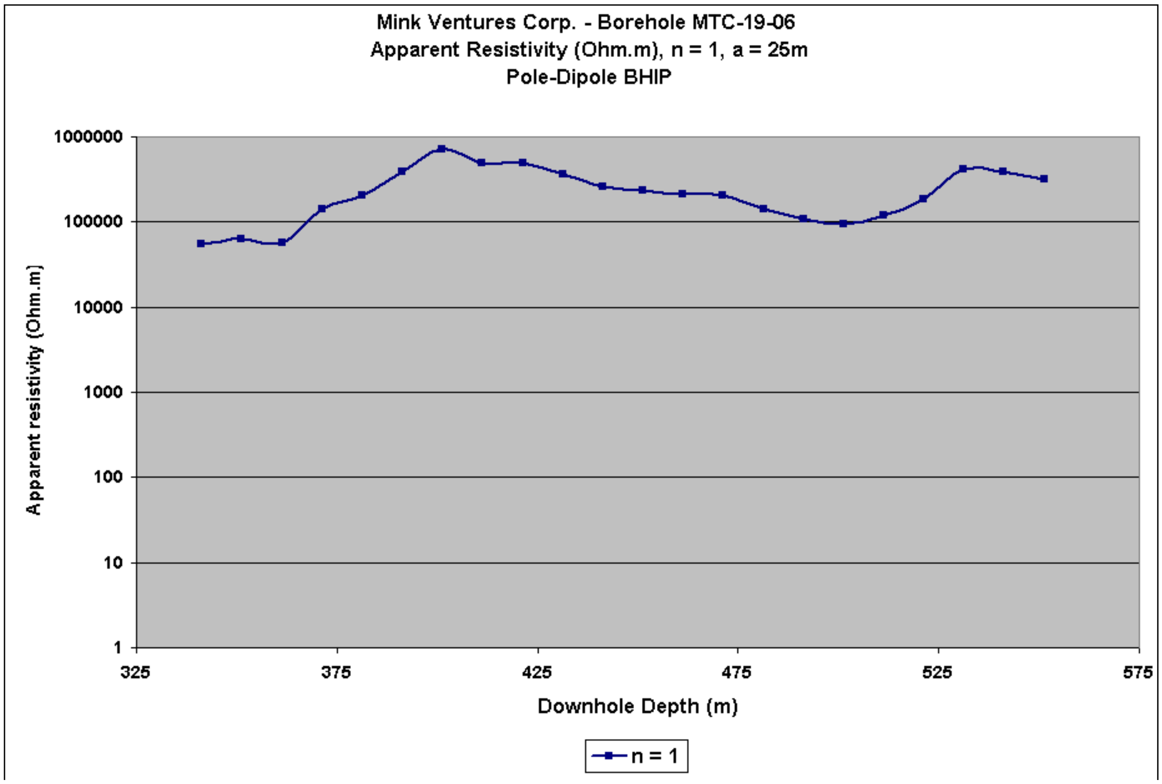
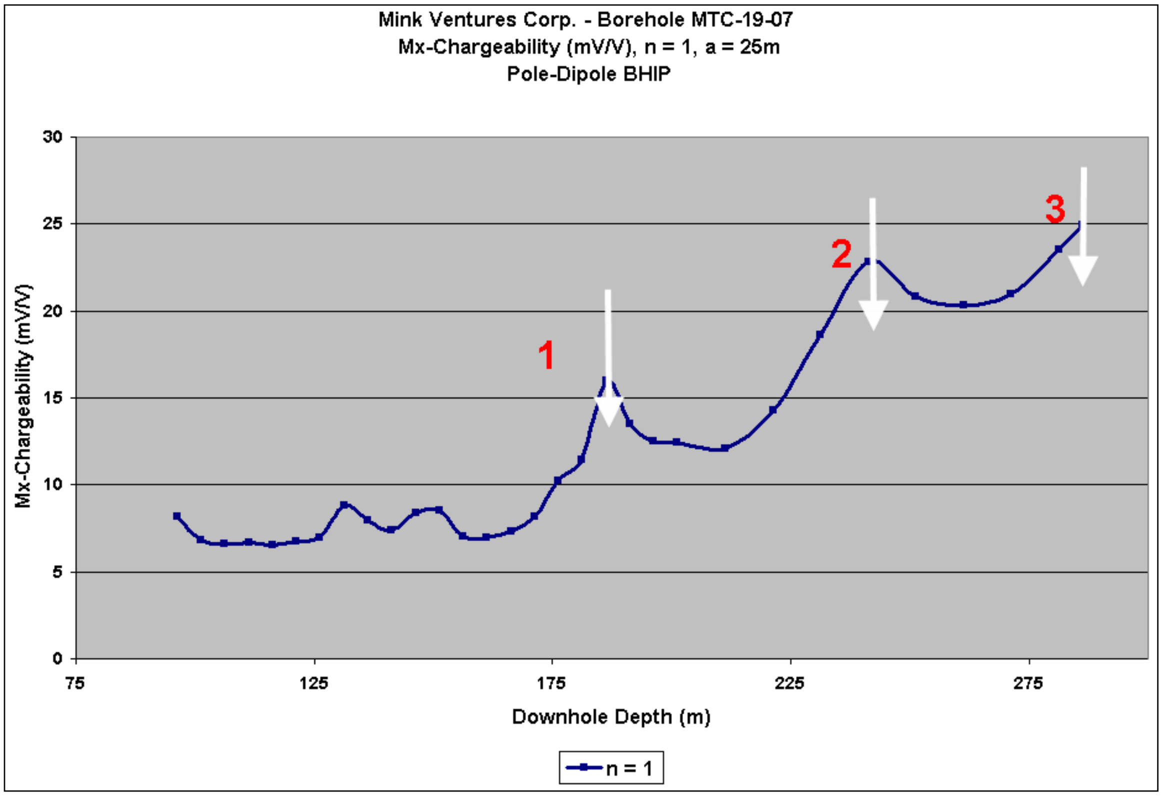


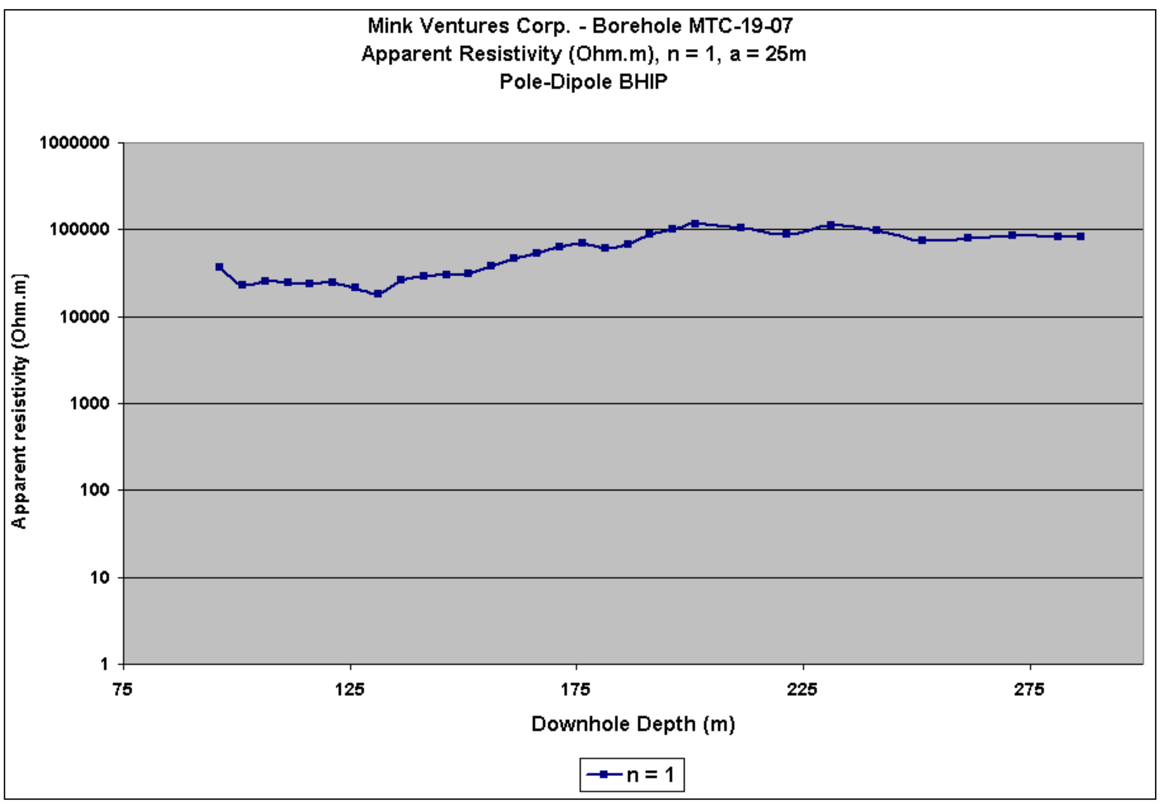
Figure 10.1-2: Resistivity Profile Map of Borehole MTC-19-06

10.1.1.2. Borehole MTC-19-07

From the chargeability profile map of borehole MTC-19-07, three off-hole chargeability anomalies are observed. The approximate chargeability anomaly centers along downhole depth are indicated by arrows. Figures 10.1-3 and 10.1-4 show chargeability and resistivity profiles of borehole MTC-19-07 respectively.



<u>Figure 10.1-3: Chargeability Profile Map of Borehole MTC-19-07</u>



<u>Figure 10.1-4: Resistivity Profile Map of Borehole MTC-19-07</u>

10.1.1.3. Borehole MTC-19-08

From the chargeability profile map of borehole MTC-19-08, three off-hole chargeability anomalies are observed. The approximate chargeability anomaly centers are indicated by arrows. Figures 10.1-5 and 10.1-6 show chargeability and resistivity profiles of borehole MTC-19-08 respectively.

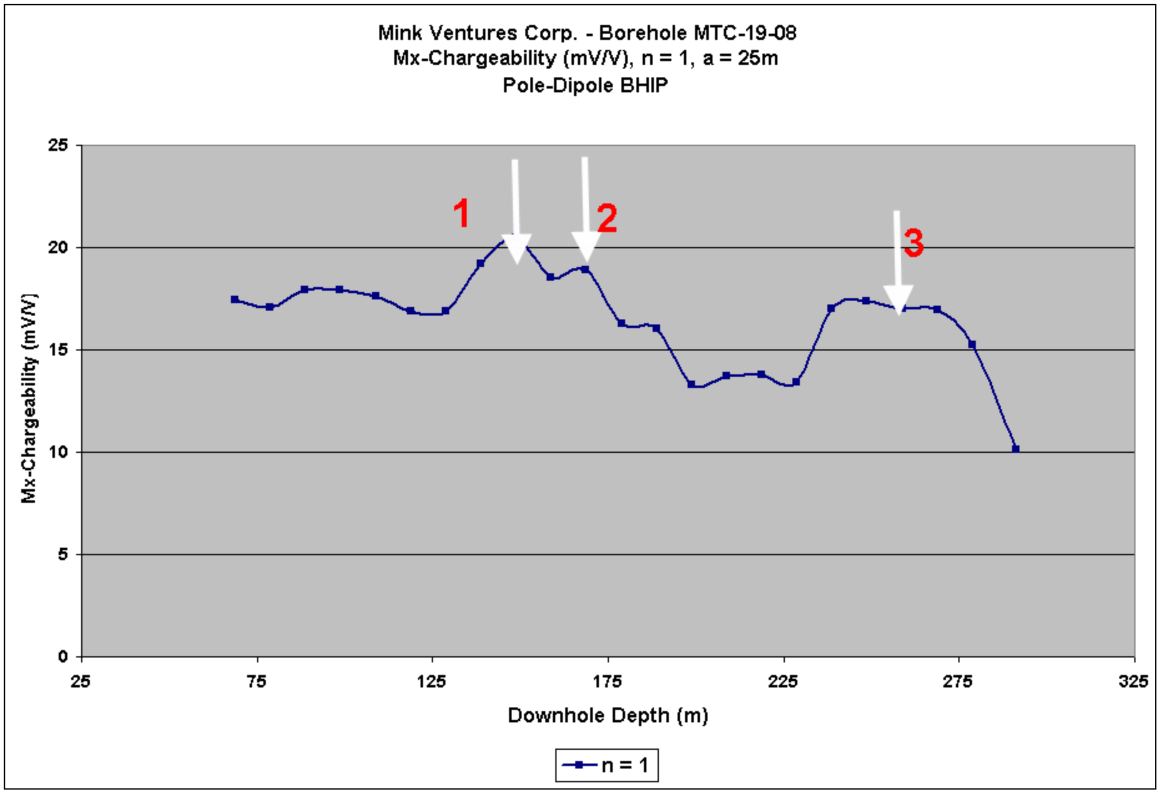


Figure 10.1-5: Chargeability Profile Map of Borehole MTC-19-08

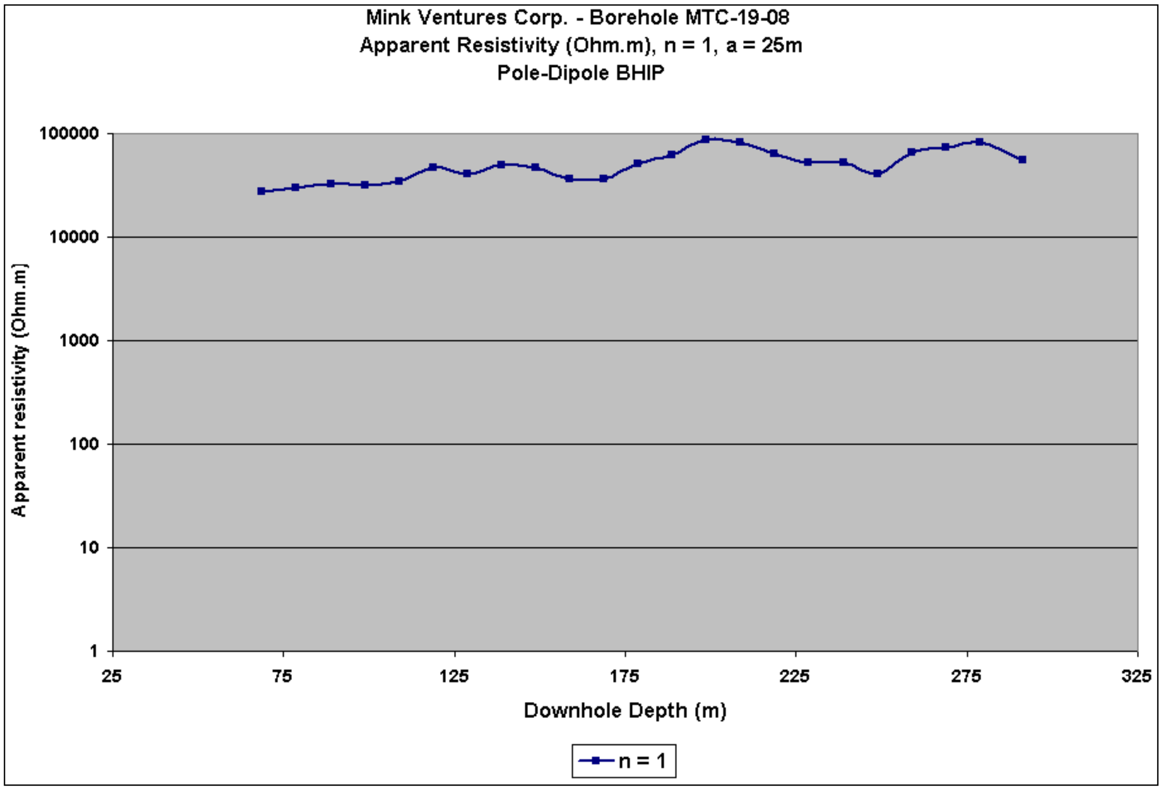


Figure 10.1-6: Resistivity Profile Map of Borehole MTC-19-08

10.1.1.4. Borehole WTM-05-12

From the chargeability profile map of borehole WTM-05-12, two off-hole chargeability anomalies are observed. The approximate chargeability anomaly centers are indicated by arrows. Figures 10.1-7 and 10.1-8 show chargeability and resistivity profiles of borehole WTM-05-12 respectively.

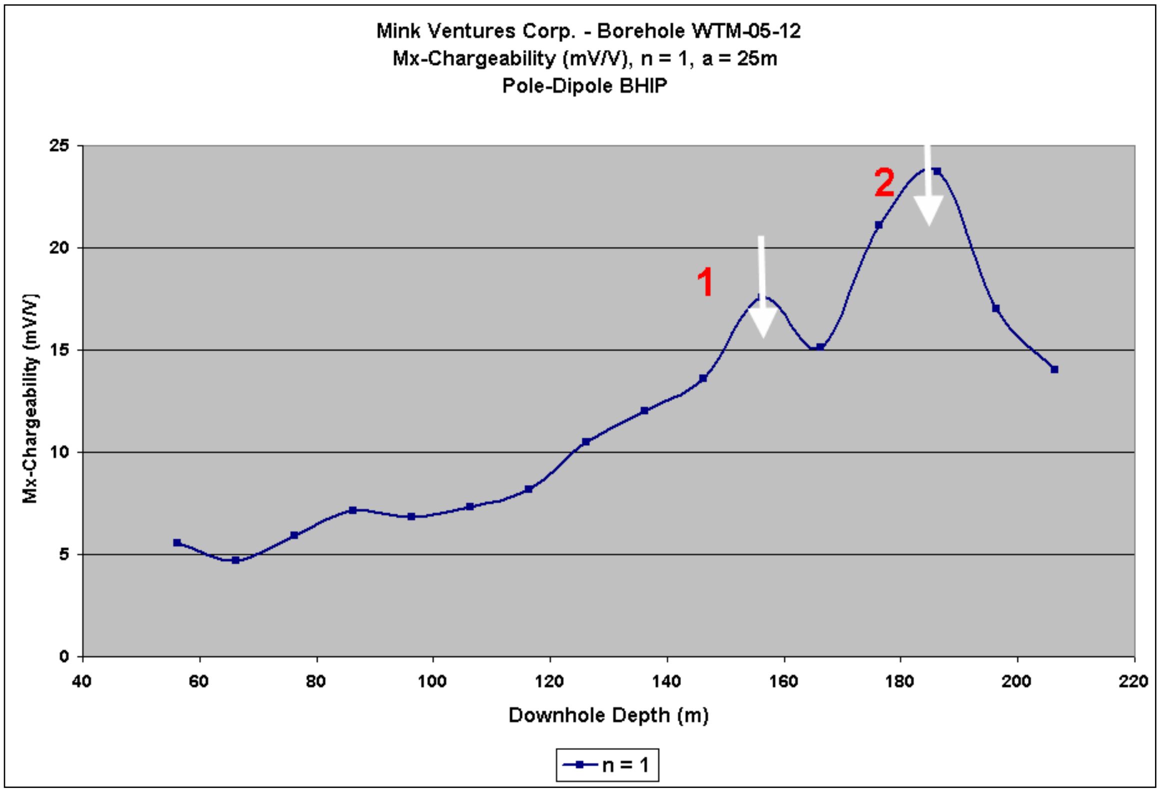


Figure 10.1-7: Chargeability Profile Map of Borehole WTM-05-12

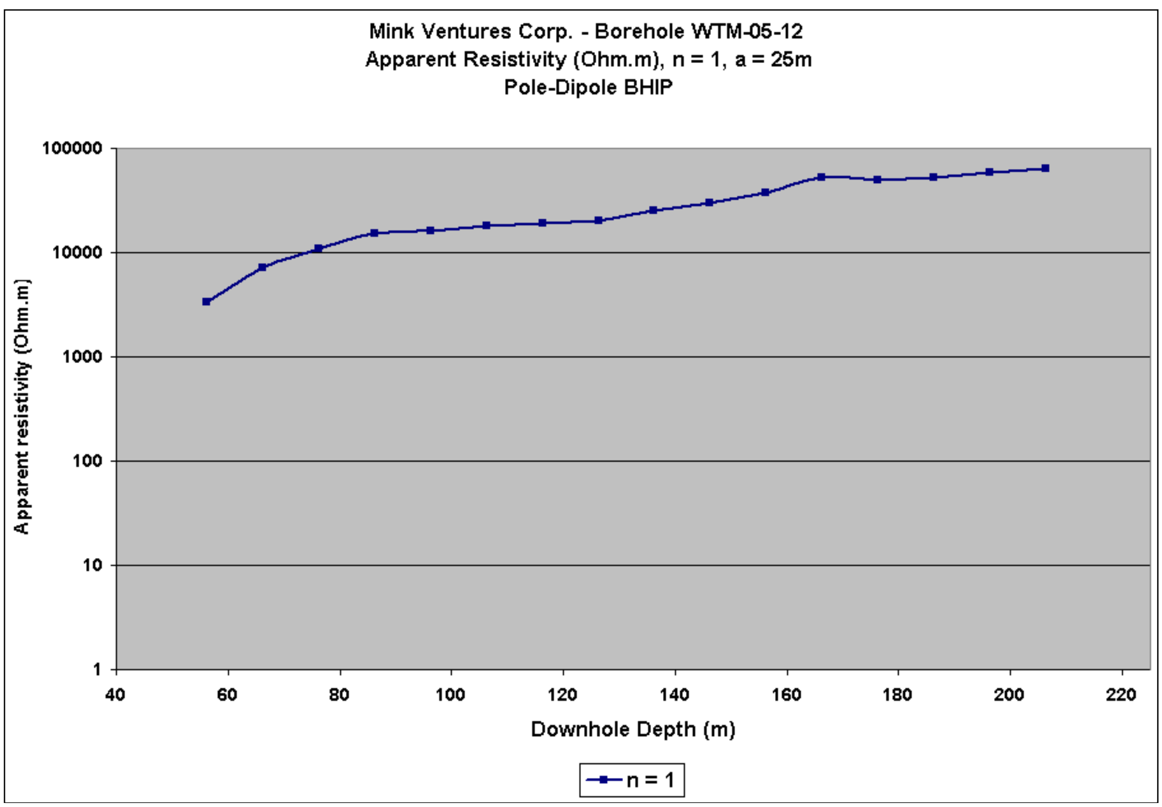


Figure 10.1-8: Resistivity Profile Map of Borehole WTM-05-12

10.1.1.5. Borehole WTM-05-13

From the chargeability profile map of borehole WTM-05-13, five off-hole chargeability anomalies are observed. The approximate chargeability anomaly centers are indicated by arrows. Figures 10.1-9 and 10.1-10 show chargeability and resistivity profiles of borehole WTM-05-13 respectively.

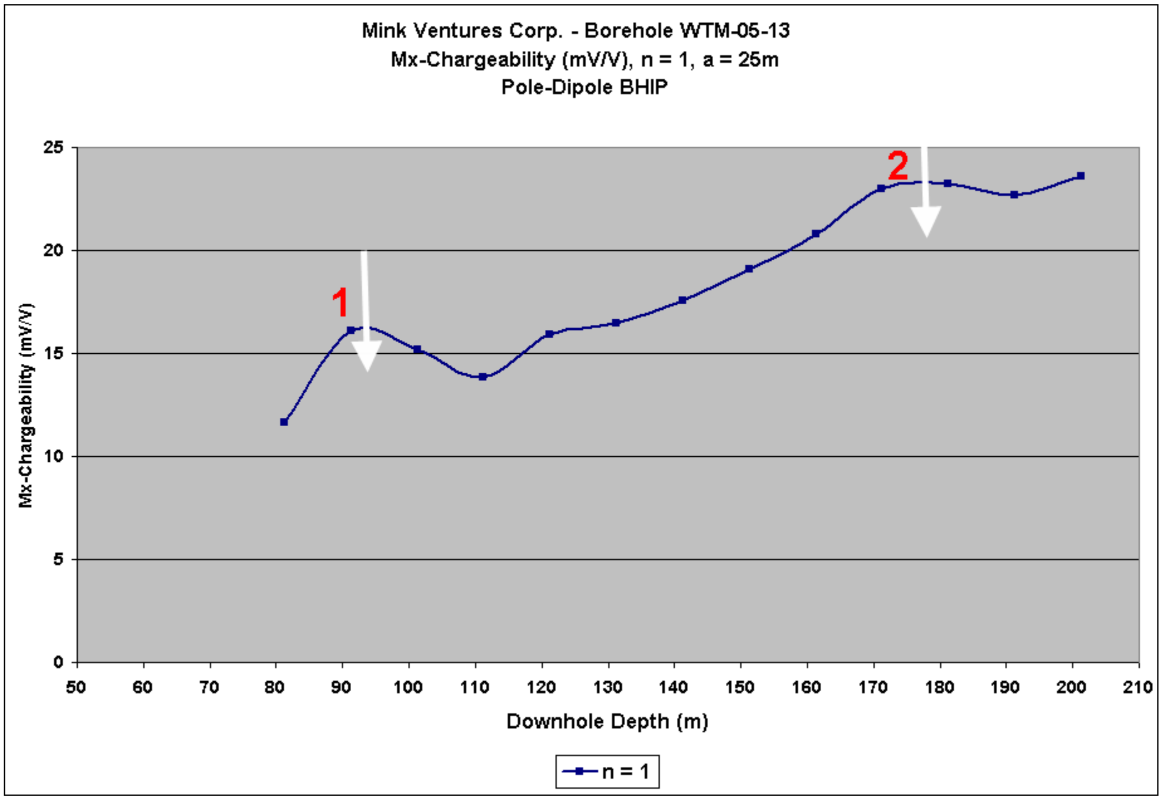


Figure 10.1-9: Chargeability Profile Map of Borehole WTM-05-13

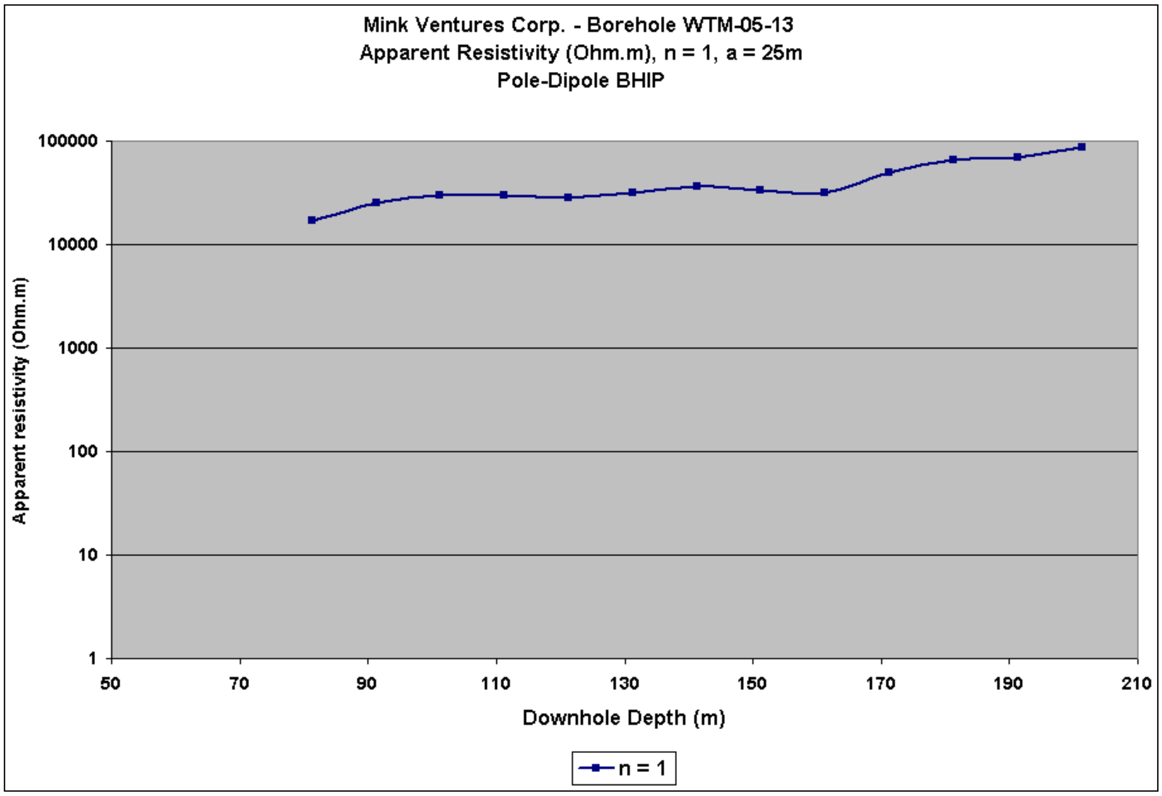


Figure 10.1-10: Resistivity Profile Map of Borehole WTM-05-13

Table 10.1-1 shows the summary of pole-dipole data interpretations.

Table 10.1-1: Summary of Pole-Dipole Data Interpretations

Hole-ID	Approximate Downhole Depth (m)	Anomaly #	Chargeability	Resistivity
MTC-19-06	345	1	Moderate	high
MTC-19-06	410	2	Moderate	high
MTC-19-06	476	3	Moderate	high
MTC-19-06	526	4	Moderate	high
MTC-19-07	186	1	Moderate	high
MTC-19-07	241	2	strong	high
MTC-19-07	286	3	strong	high
MTC-19-08	148	1	strong	high
MTC-19-08	158	2	strong	high
MTC-19-08	258	3	Moderate	high
WTM-05-12	156	1	strong	high
WTM-05-12	186	2	strong	high

WTM-05-13	95	1	strong	high
WTM-05-13	181	2	strong	high

10.2. Profiles of Gradient Data

10.2.1.1. Borehole MTC-19-06

From the chargeability profile map of borehole MTC-19-06, three off-hole chargeability anomalies are observed around downhole depth of 105m, 210m, and 475m respectively. The approximate chargeability anomaly centers are indicated by arrows. The anomalies are numbered in the figures. Figures 10.2-1 and 10.2-2 show chargeability and resistivity profiles of borehole MTC-19-06 respectively. The chargeability anomaly association with resistivity for all boreholes is given in Table 10.2-1.

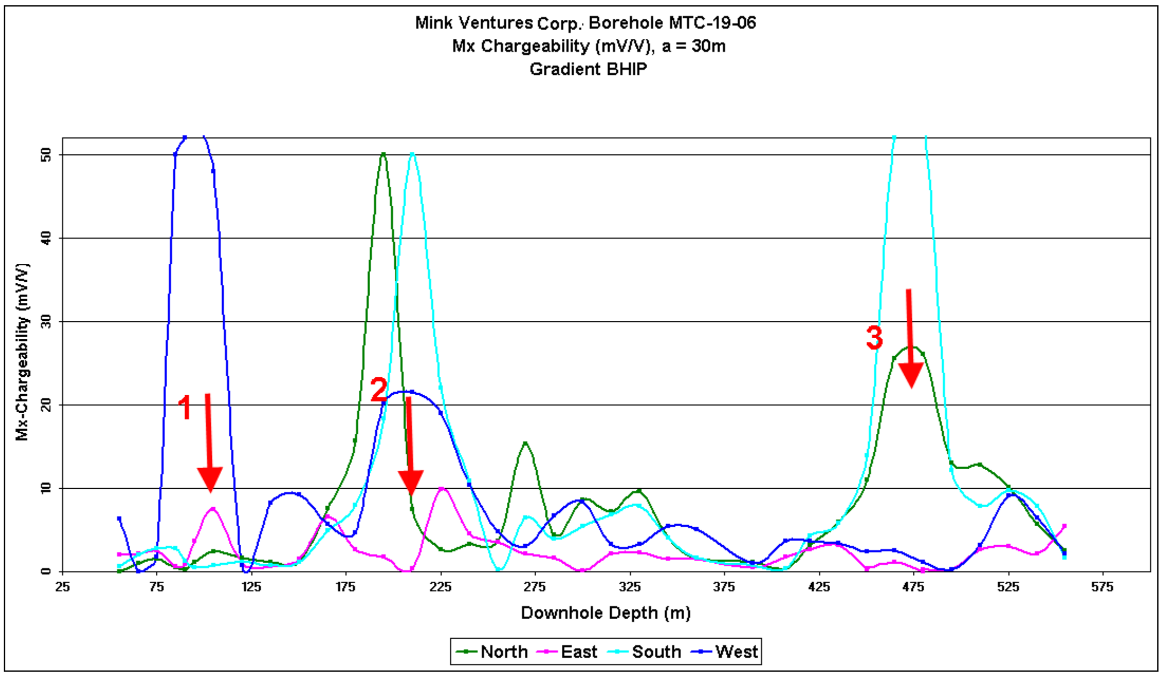


Figure 10.2-1: Chargeability Profile Map of Borehole MTC-19-06

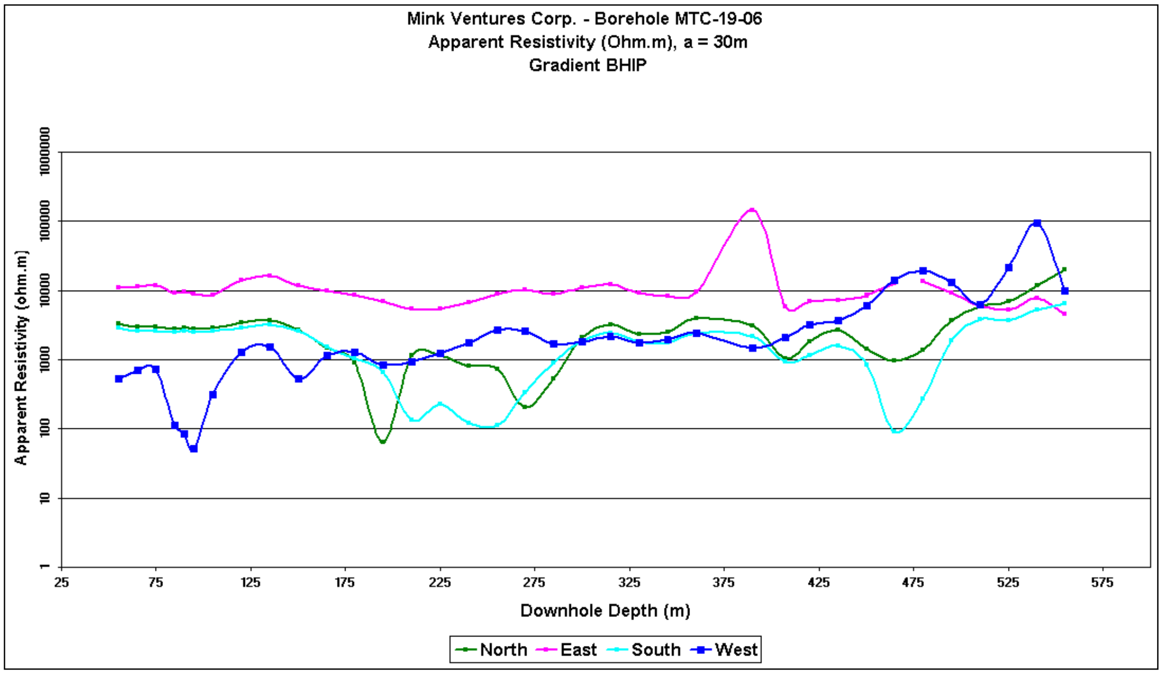


Figure 10.2-2: Resistivity Profile Map of Borehole MTC-19-06

10.2.1.2. Borehole MTC-19-07

From the chargeability profile map of borehole MTC-19-07, two off-hole chargeability anomalies are observed around downhole depth of 120m and 280m respectively. The approximate chargeability anomaly centers in the profile map are numbered and indicated by arrows. Figures 10.2-3 and 10.2-4 show chargeability and resistivity profiles respectively.

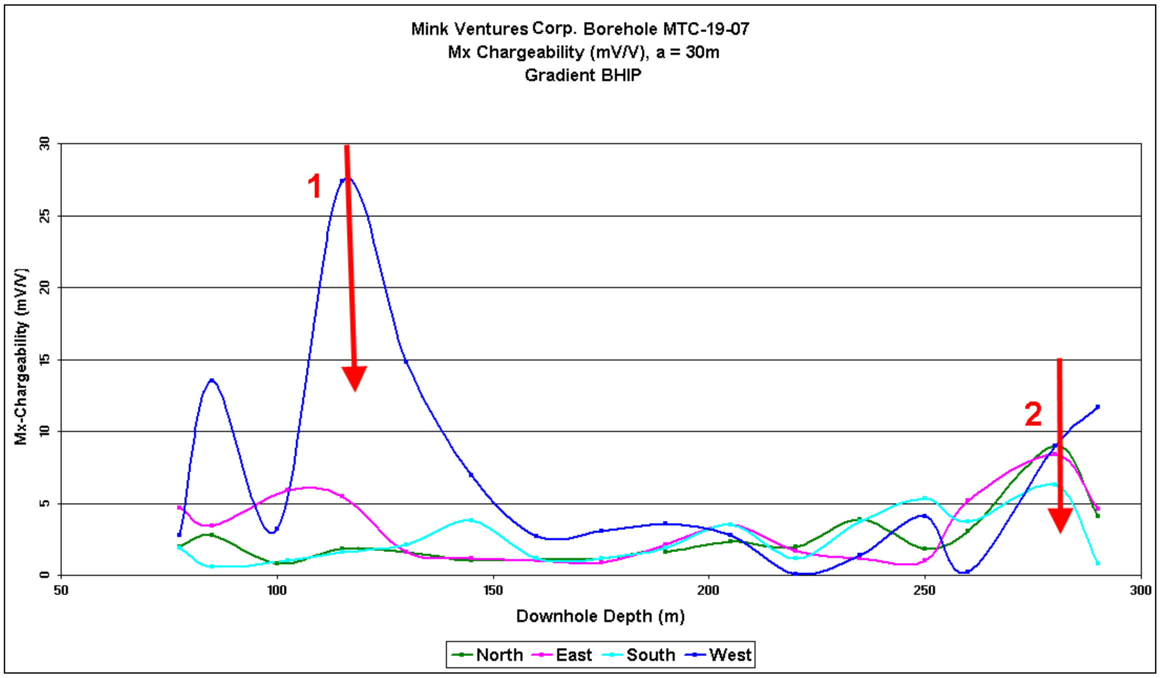


Figure 10.2-3: Chargeability Profile Map of Borehole MTC-19-07

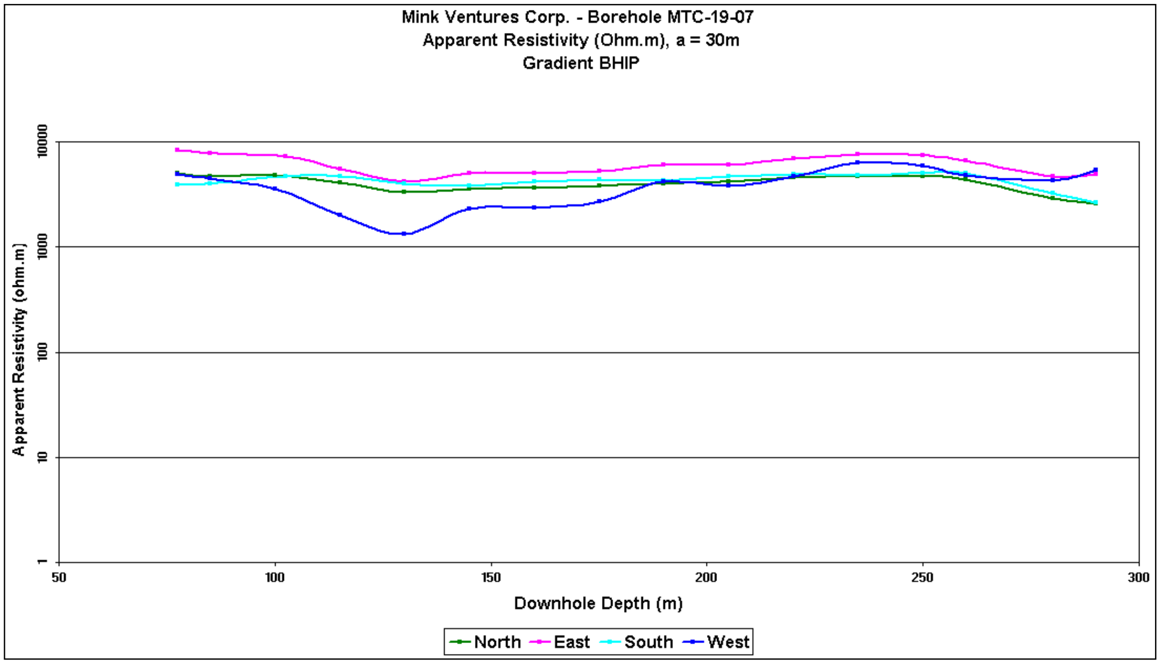


Figure 10.2-4: Resistivity Profile Map of Borehole MTC-19-07

10.2.1.3. Borehole MTC-19-08

From the chargeability profile map of borehole MTC-19-08, two off-hole chargeability anomalies are observed around downhole depth of 100m and 260m respectively. The approximate chargeability anomaly centers in the profile map are numbered and indicated by arrows. Figures 10.2-5 and 10.2-6 show chargeability and resistivity profiles respectively.

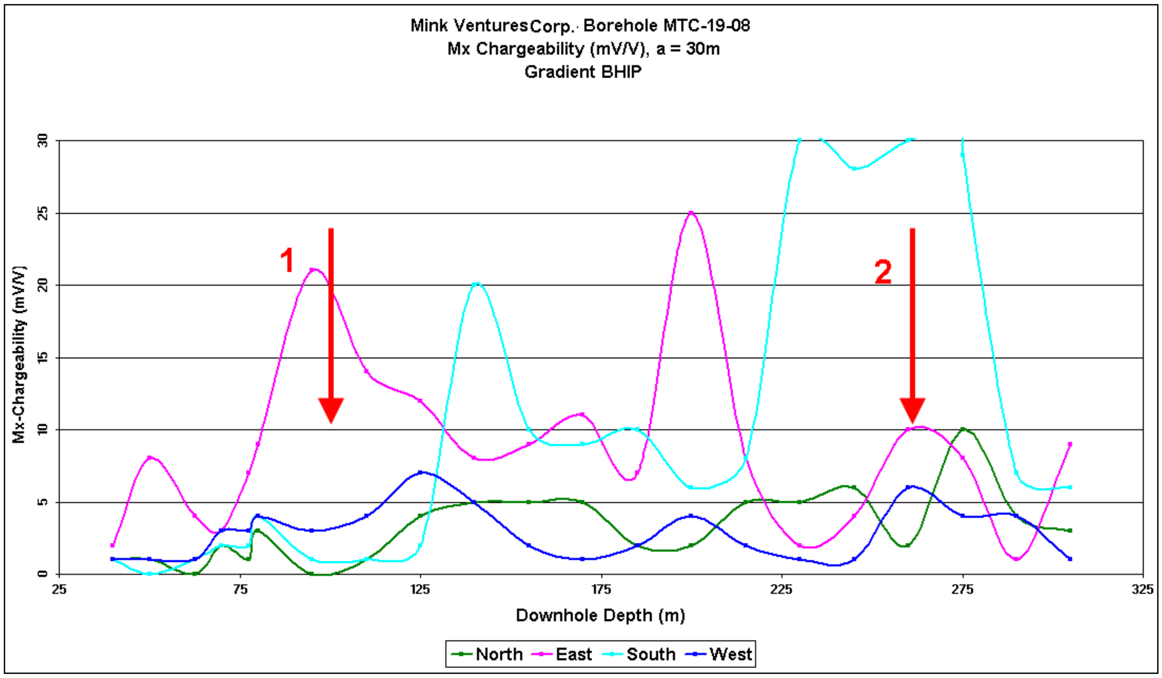


Figure 10.2-5: Chargeability Profile Map of Borehole MTC-19-08

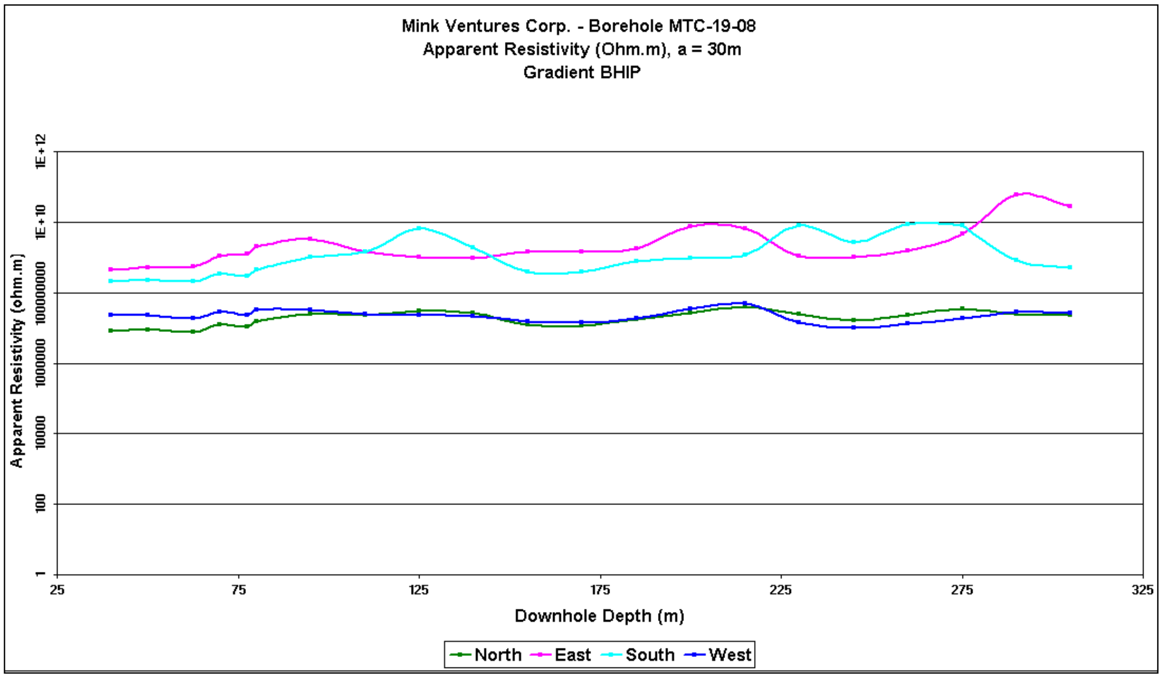


Figure 10.2-6: Resistivity Profile Map of Borehole MTC-19-08

10.2.1.4. Borehole WTM-05-12

From the chargeability profile map of borehole WTM-05-12, three off-hole chargeability anomalies are observed around downhole depth of 90m, 130m and 190m respectively. The approximate chargeability anomaly centers in the profile map are numbered and indicated by arrows. Figures 10.2-7 and 10.2-8 show chargeability and resistivity profiles respectively.

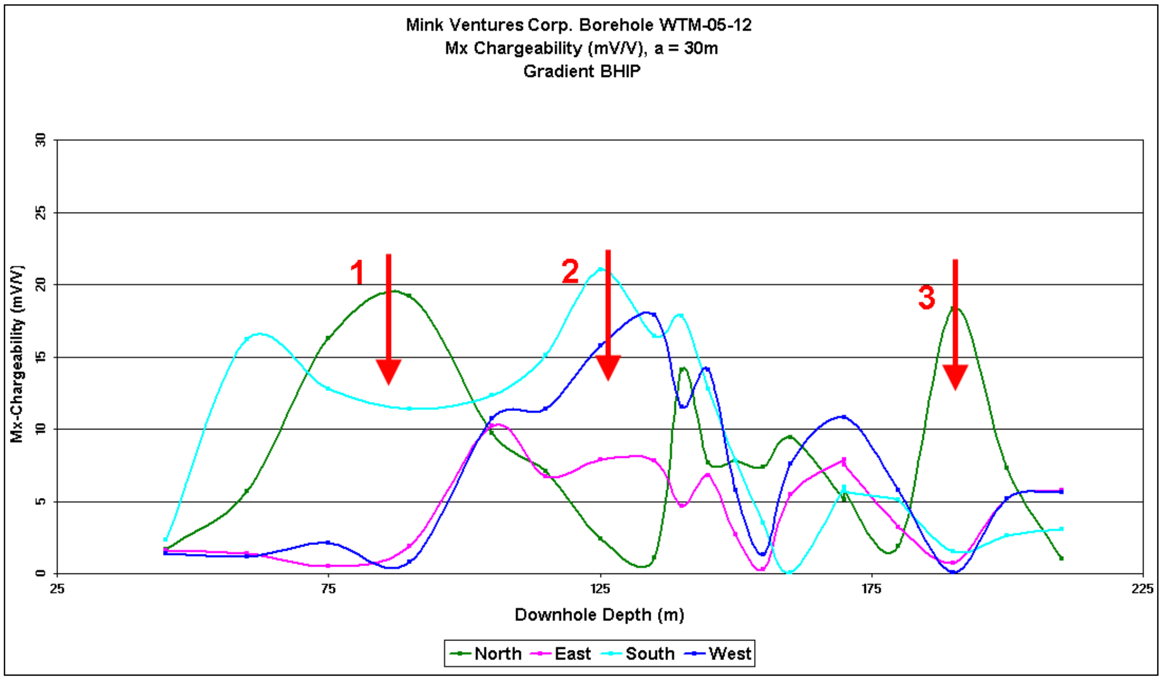


Figure 10.2-7: Chargeability Profile Map of Borehole WTM-05-12

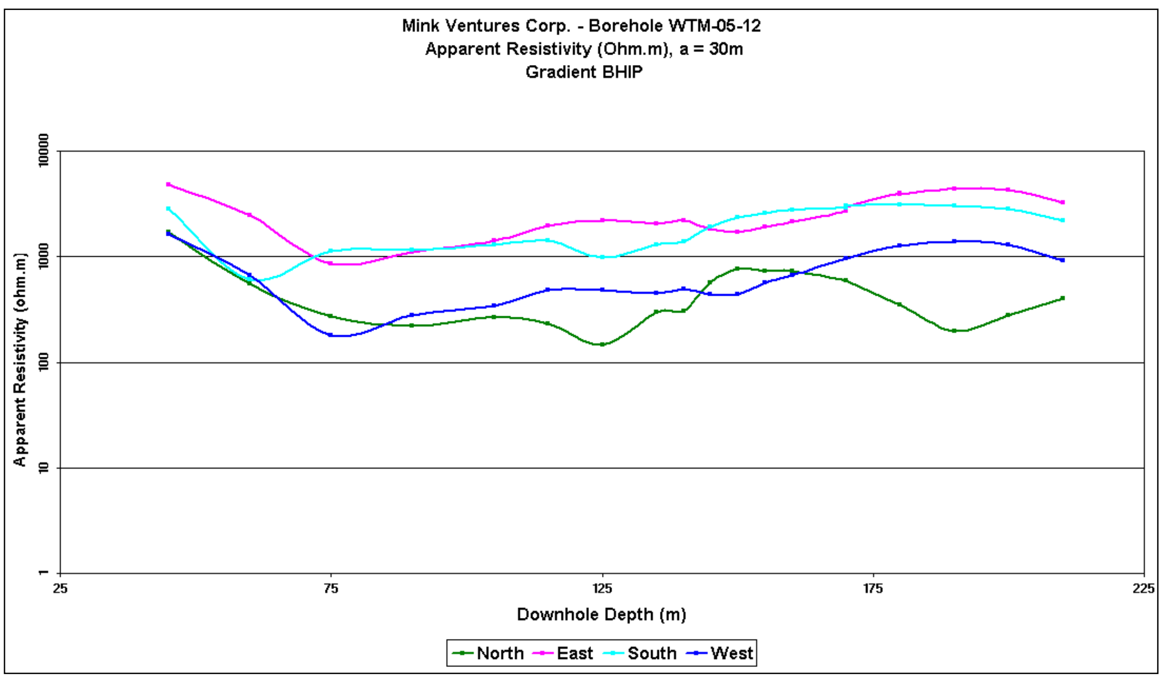


Figure 10.2-8: Resistivity Profile Map of Borehole WTM-05-12

10.2.1.5. Borehole WTM-05-13

From the chargeability profile map of borehole WTM-05-13, one off-hole chargeability anomalies is observed around downhole depth of 100m. The approximate chargeability anomaly center in the profile map is numbered and indicated by an arrow. Figures 10.2-9 and 10.2-10 show chargeability and resistivity profiles respectively.

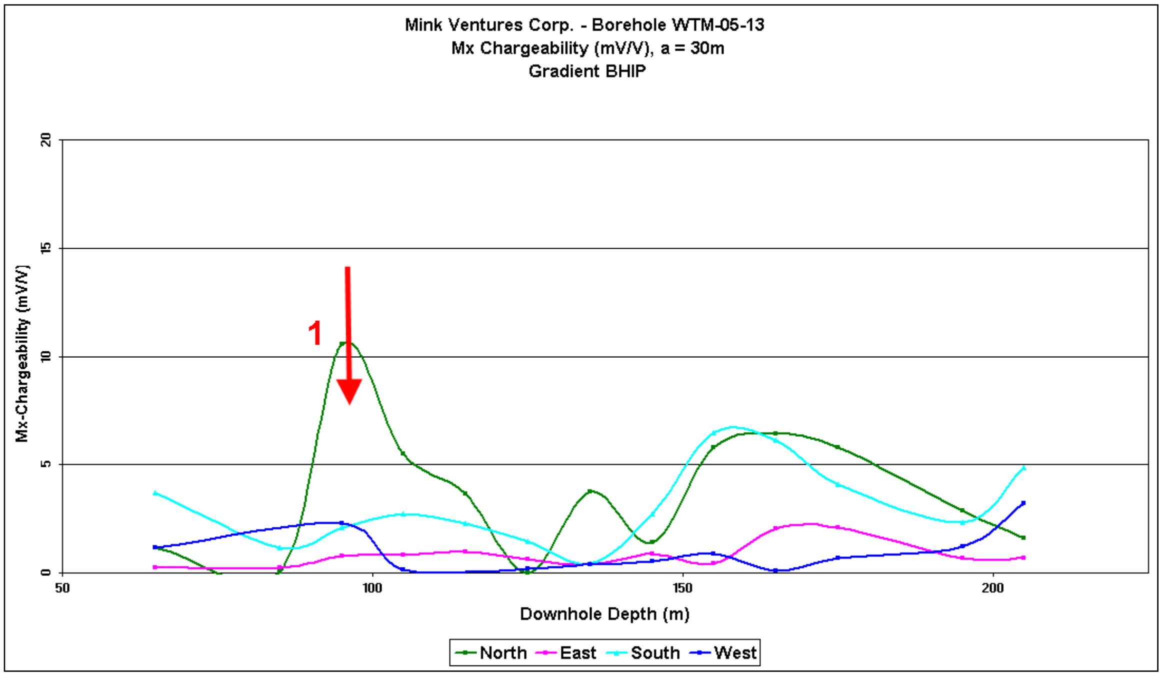


Figure 10.2-9: Chargeability Profile Map of Borehole WTM-05-13

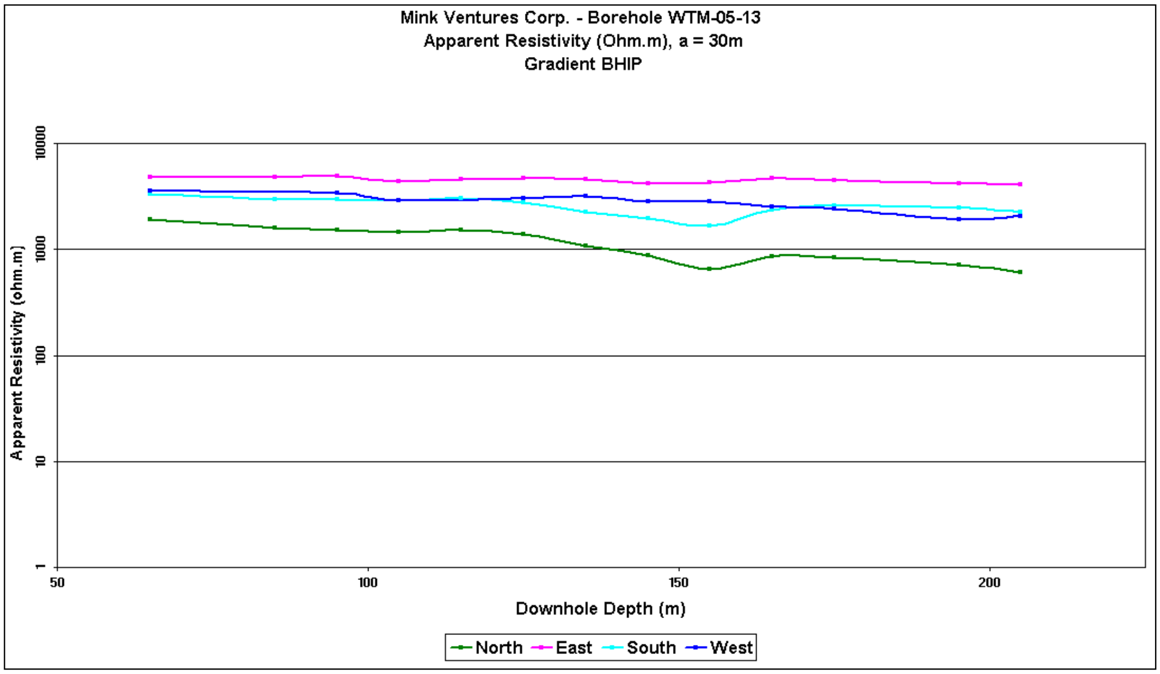


Figure 10.2-10: Resistivity Profile Map of Borehole WTM-05-13

Table 10.2-1 shows the associations of chargeability anomalies with resistivity and anomaly preferred directions.

Table 10.2-1: Summary of Gradient Data Interpretations

Hole-ID	Downhole Depth (m)	Anomaly #	Chargeability	Resistivity	Preferred Direction
MTC-19-06	105	1	strong	low	west
MTC-19-06	210	2	strong	low	north, south west
MTC-19-06	475	3	strong	low	north, south
MTC-19-07	120	1	strong	moderate	west
MTC-19-07	280	2	moderate	moderate	west
MTC-19-08	100	1	strong	high	east
MTC-19-08	260	2	strong	high	south
WTM-05-12	90	1	strong	low	north, south
WTM-05-12	130	2	strong	low	south, west
WTM-05-12	190	3	strong	low	north
WTM-05-13	100	1	moderate	moderate	north

10.3. 3D Models

3D chargeability and resistivity models from downhole gradient and cross-hole arrays IP/resistivity data have been computed. The grid cell size of a single cell for resistivity and chargeability models was 25m X 25m X 25m. A total of 105,840 grid cells were used for the computation of the 3D models. The models are provided as chargeability and resistivity distribution level plan maps extracted from the respective 3D model voxels in Geosoft and Geotiff file formats. The 3D models are also provided in *.xyz file formats. The models are discussed in the following subsections.

10.3.1.1. Combined 3D Gradient and Cross-hole Models

The 3D chargeability and resistivity models computed from the combined gradient and cross-hole data are presented as level plan maps extracted from the 3D models. Only selected level plan maps (screen captures) are used in this report as desired. In the level plan maps, the potential anomalies/targets are shown by dotted lines.

The reliability of the 3D inversions are ultimately controlled and judged by the data misfit between the observed and predicted data. This in turn depends on the inversion parameters. For all of the 3D inversions, appropriate inversion parameters are determined and used to recover the geophysical models. This is done through several and time consuming inversion computations with variable inversion parameters until a close resemblance between the observed and the predicted data is obtained. In other words, several inversions have been attempted with variable inversion parameters before achieving this results.

Note that the distributions of the boreholes/geometry were not ideal for carrying out 3D inversion model computation as the surveyed boreholes distributions are scattered randomly in the survey area. This in turn will have effect on the credibility of computed models. The best effort has been made in the computation of the 3D models.

10.3.1.2. Observed and Predicted Data Misfits of the 3D Models

Figures 10.3-1 and 10.3-2 show the 3D chargeability and resistivity model data misfits respectively. Based on the data misfits, the computed 3D models are geophysically reliable. Moreover, when the inversions are constrained by a prior geological information, then more reliable models can be produced. Constrained geophysical models serve as one of the best tools for interpretation.

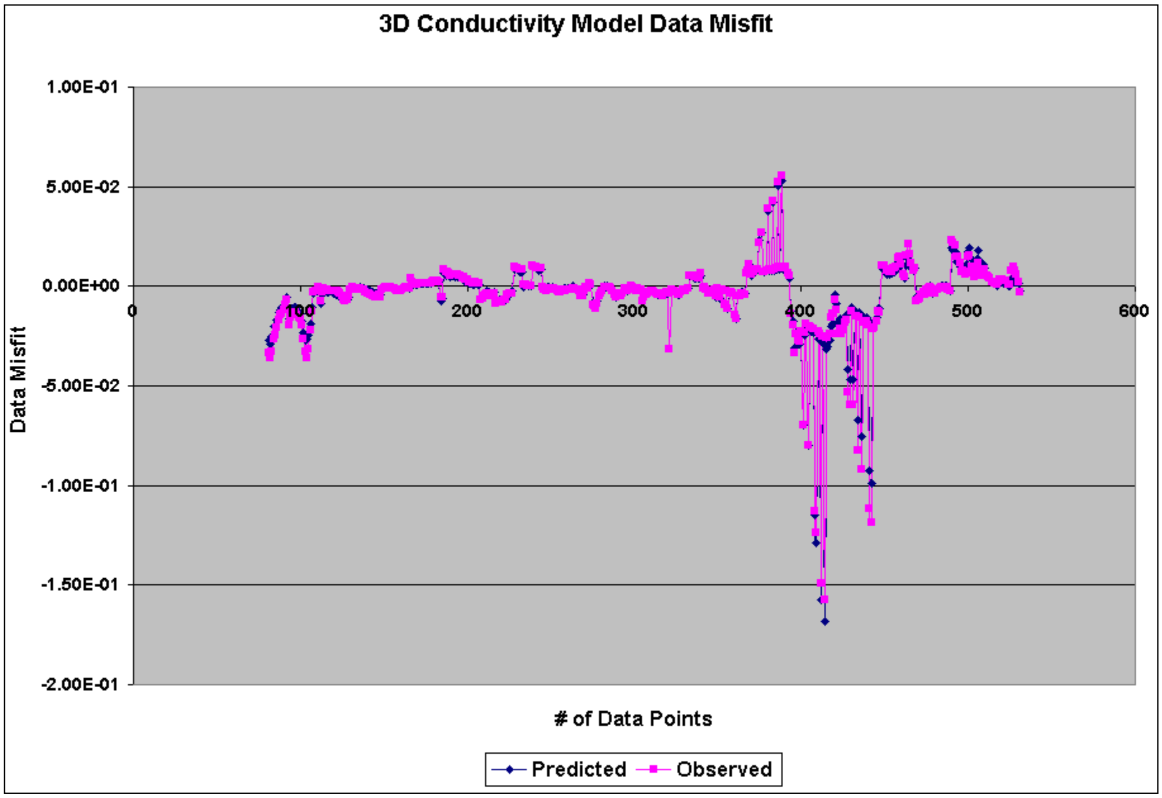


Figure 10.3-1: 3D Conductivity Model Data Misfit

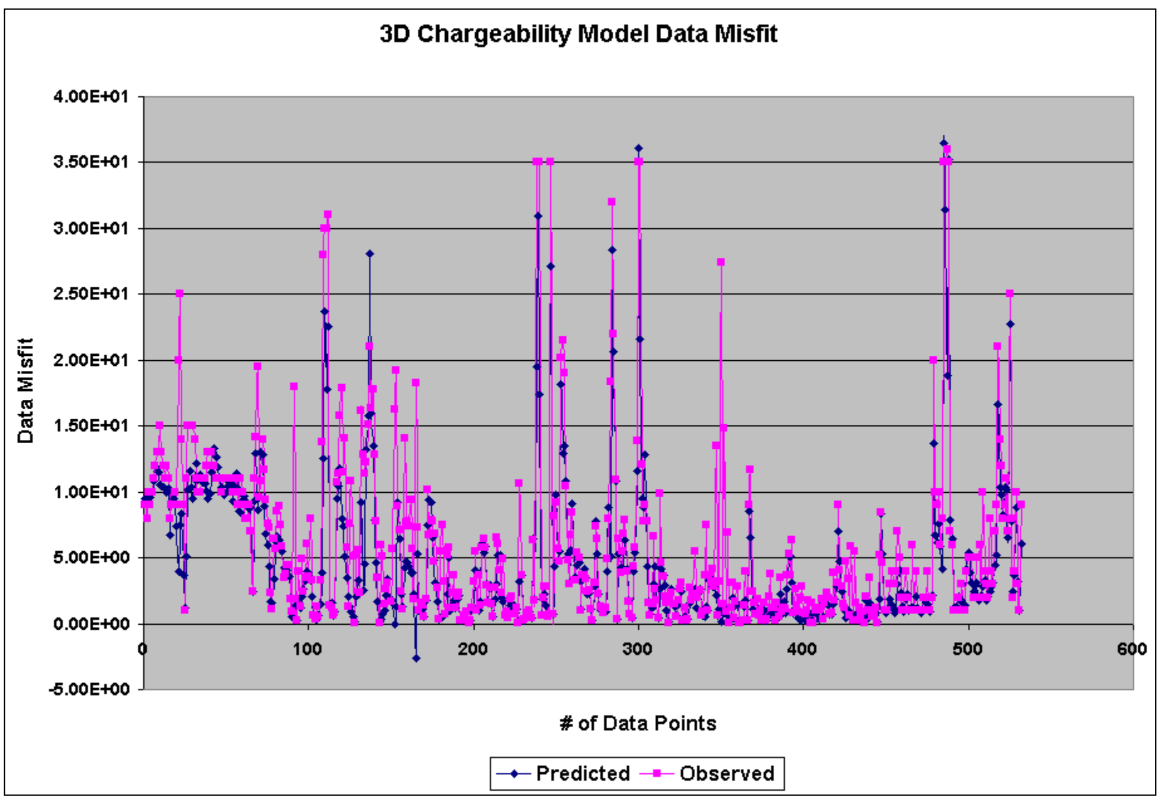


Figure 10.3-2: 3D Chargeability Model Data Misfit

10.3.1.3. 3D Models Depth Slice Level Plan Maps

In this section, some potential/probable target anomalies are selected from the Depth slice level plan maps extracted from the 3D models. The potential/probable target anomalies are shown only for selected vertical depths (200m, 300m, 400m and 500m). The vertical depths are approximate. The potential/probable target anomalies in the figures are indicated by white colour dotted lines. Note that the guiding model is conductivity as the chargeability models shift positions slightly by their nature. For anomalies observed outside of the black polygon, the confidence is very little and inside of the blue rectangle the confidence is low. The potential target selection is not exhaustive.

10.3.1.4. 3D Conductivity and Chargeability Depth slices (Depth = 200m)

The potential targets over the 3D conductivity and chargeability models depth slices are given in Figure 10.3-3 and Figure 10.3-4 respectively.

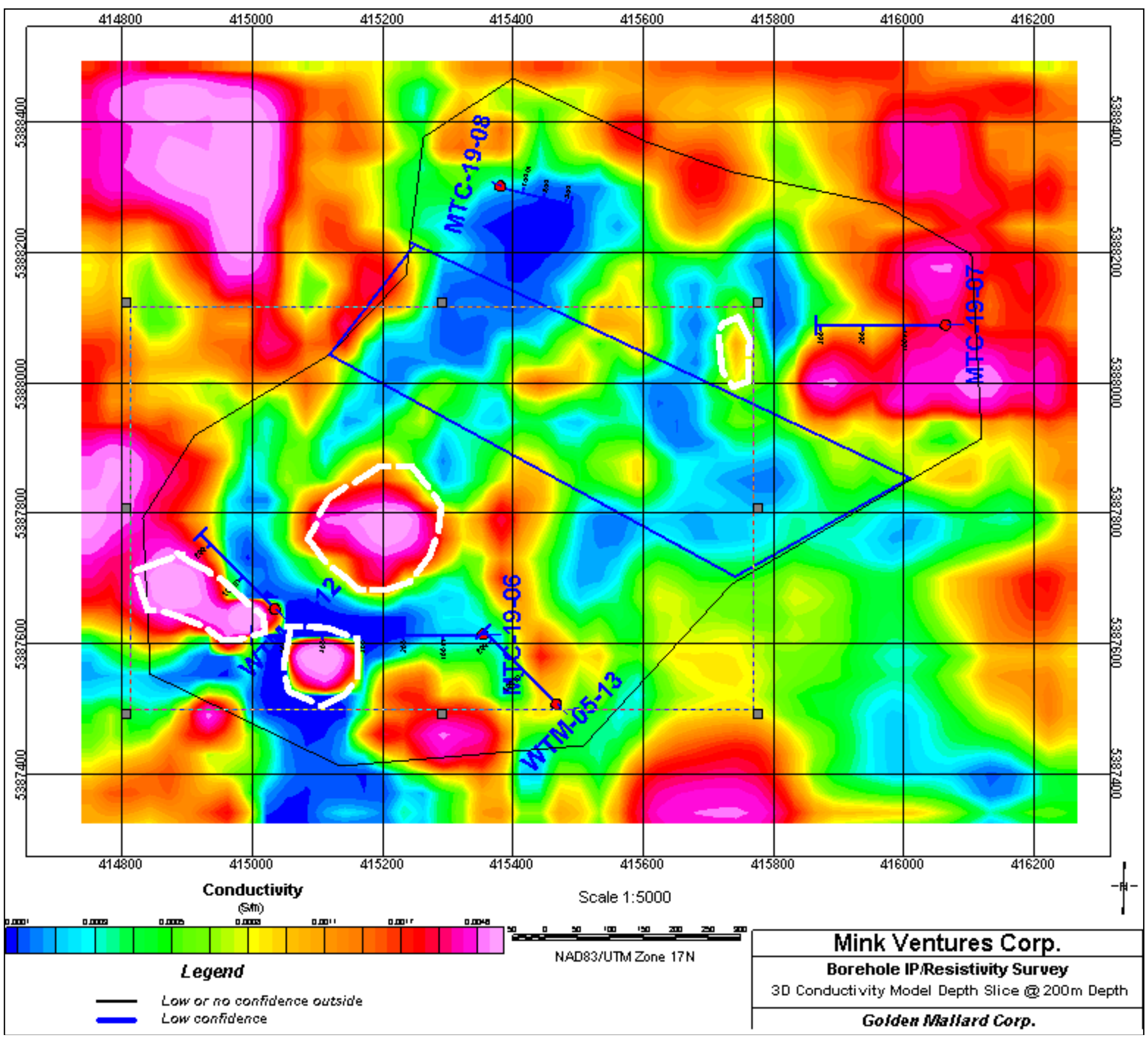


Figure 10.3-3: 3D Conductivity Model Depth Slice at (Depth = 200m)

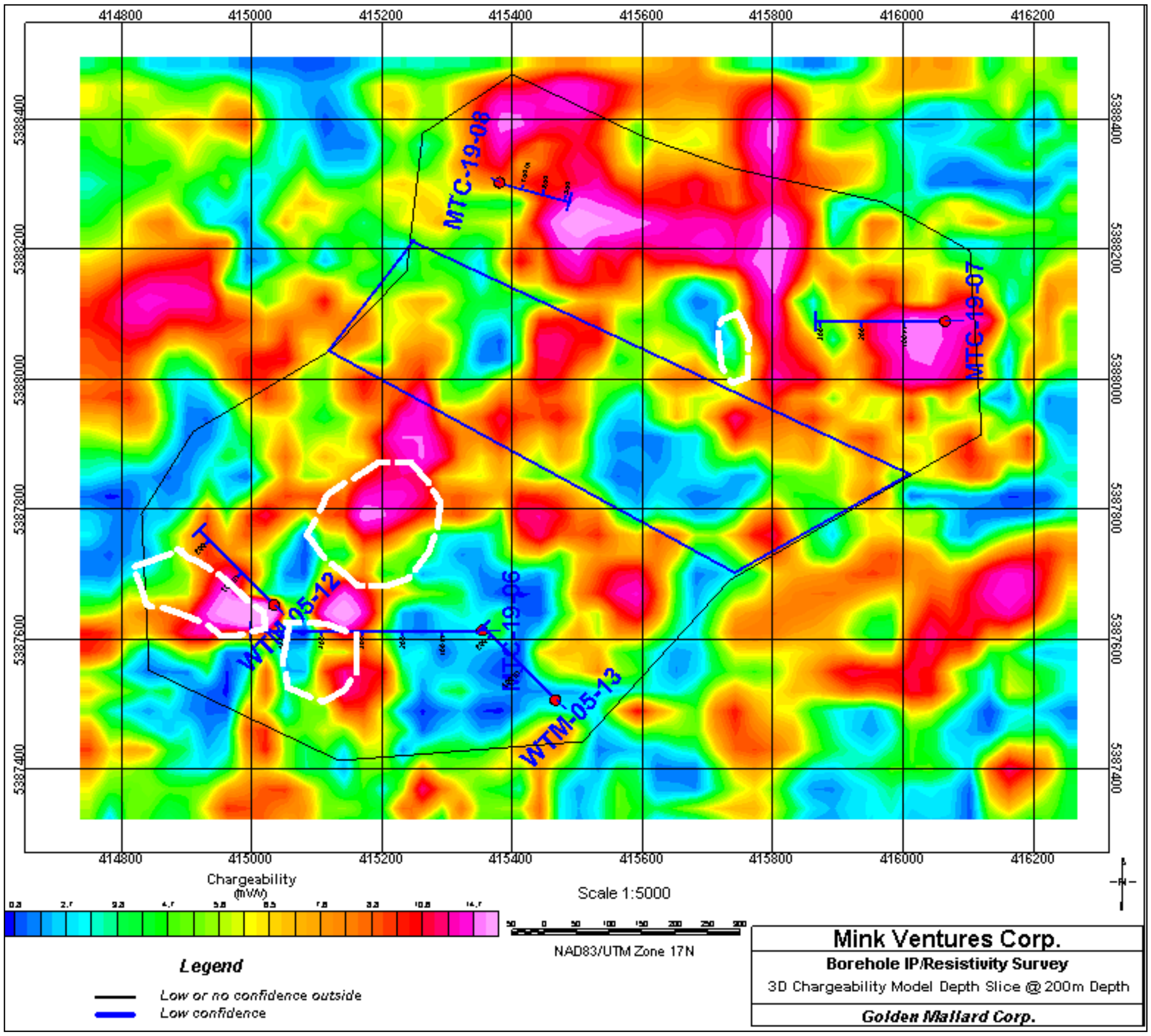


Figure 10.3-4: 3D Chargeability Model Depth Slice at (Depth = 200m)

10.3.1.5. 3D Conductivity and Chargeability Depth slices (Depth = 300m)

The potential targets over the 3D conductivity and chargeability models depth slices are given in Figure 10.3-5 and Figure 10.3-6 respectively.

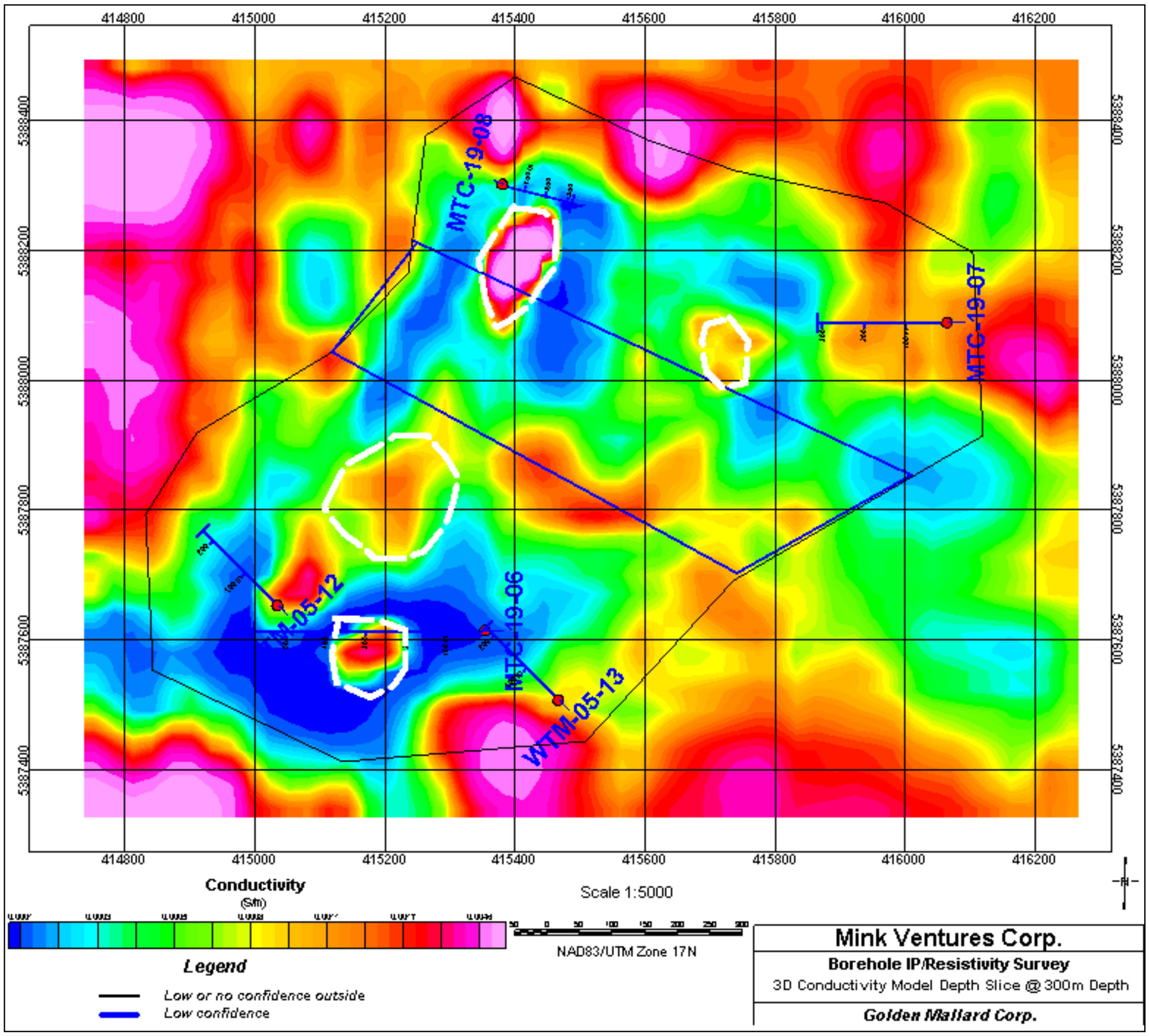


Figure 10.3-5: 3D Conductivity Model Depth Slice at (Depth = 300m)

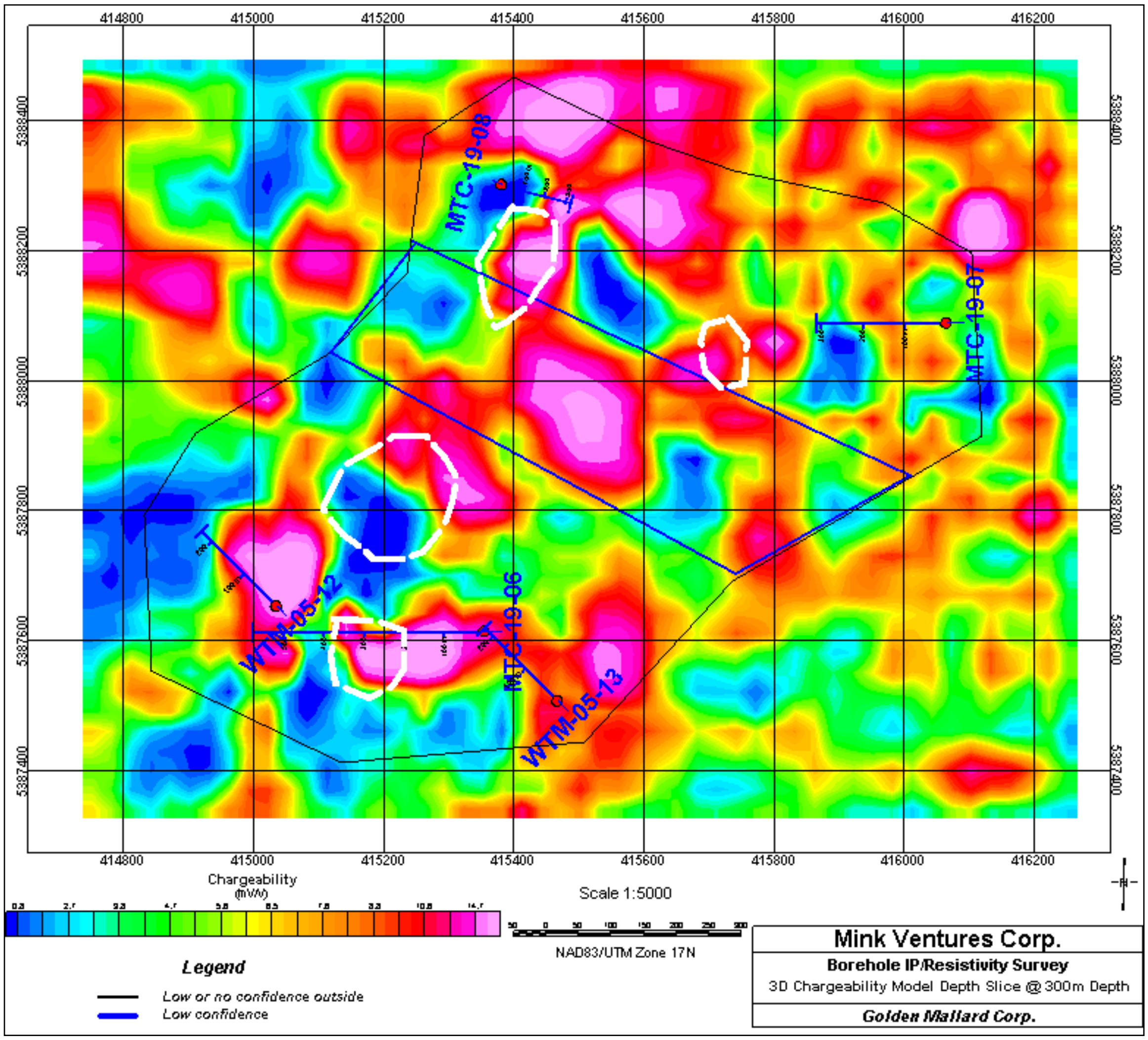


Figure 10.3-6: Chargeability Model Depth Slice at (Depth = 300m)

10.3.1.6. 3D Conductivity and Chargeability Depth slices (Depth = 400m)

The potential targets over the 3D conductivity and chargeability models depth slices are given in Figure 10.3-7 and Figure 10.3-8 respectively.

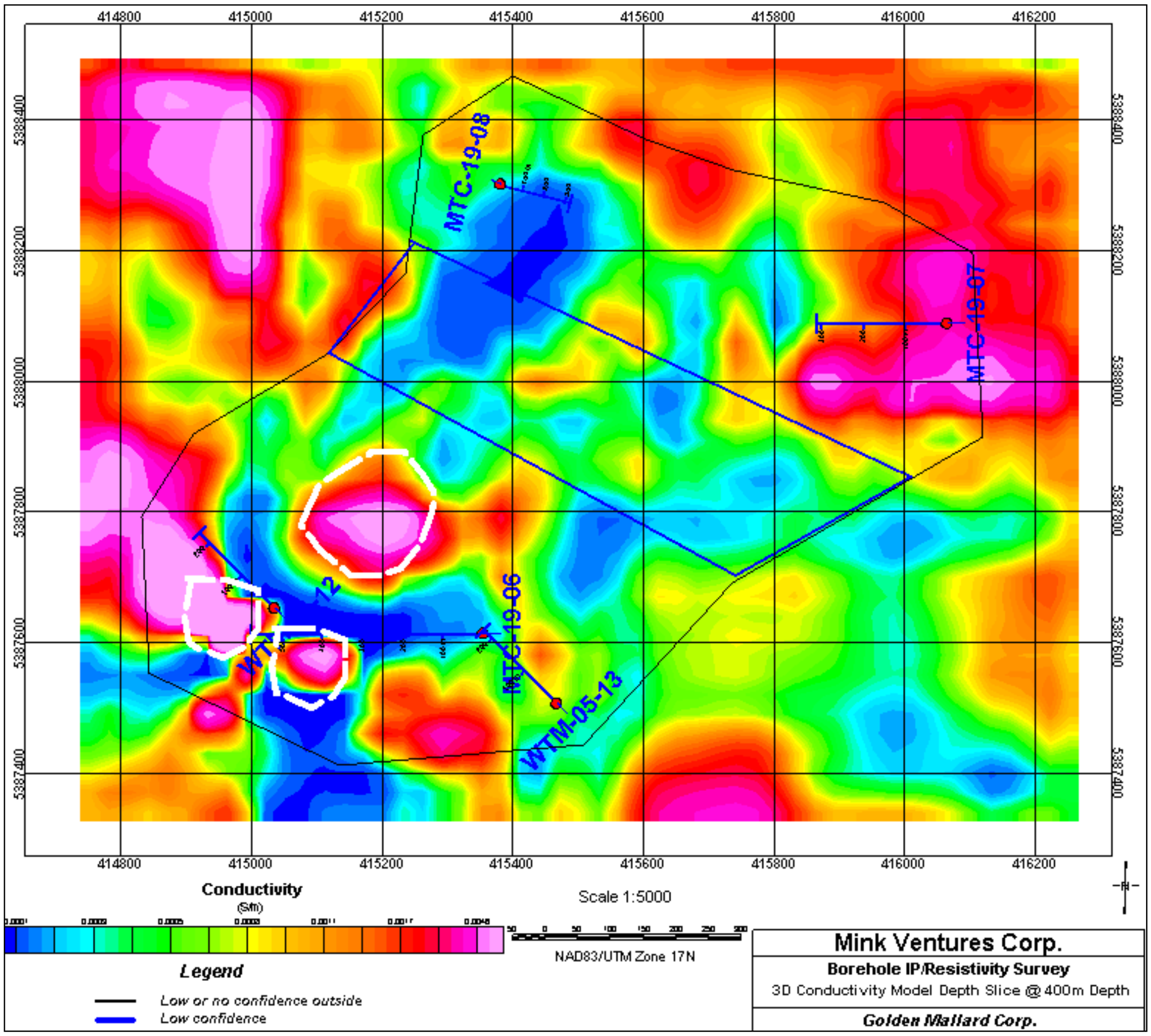


Figure 10.3-7: 3D Conductivity Model Depth Slice at (Depth = 400m)

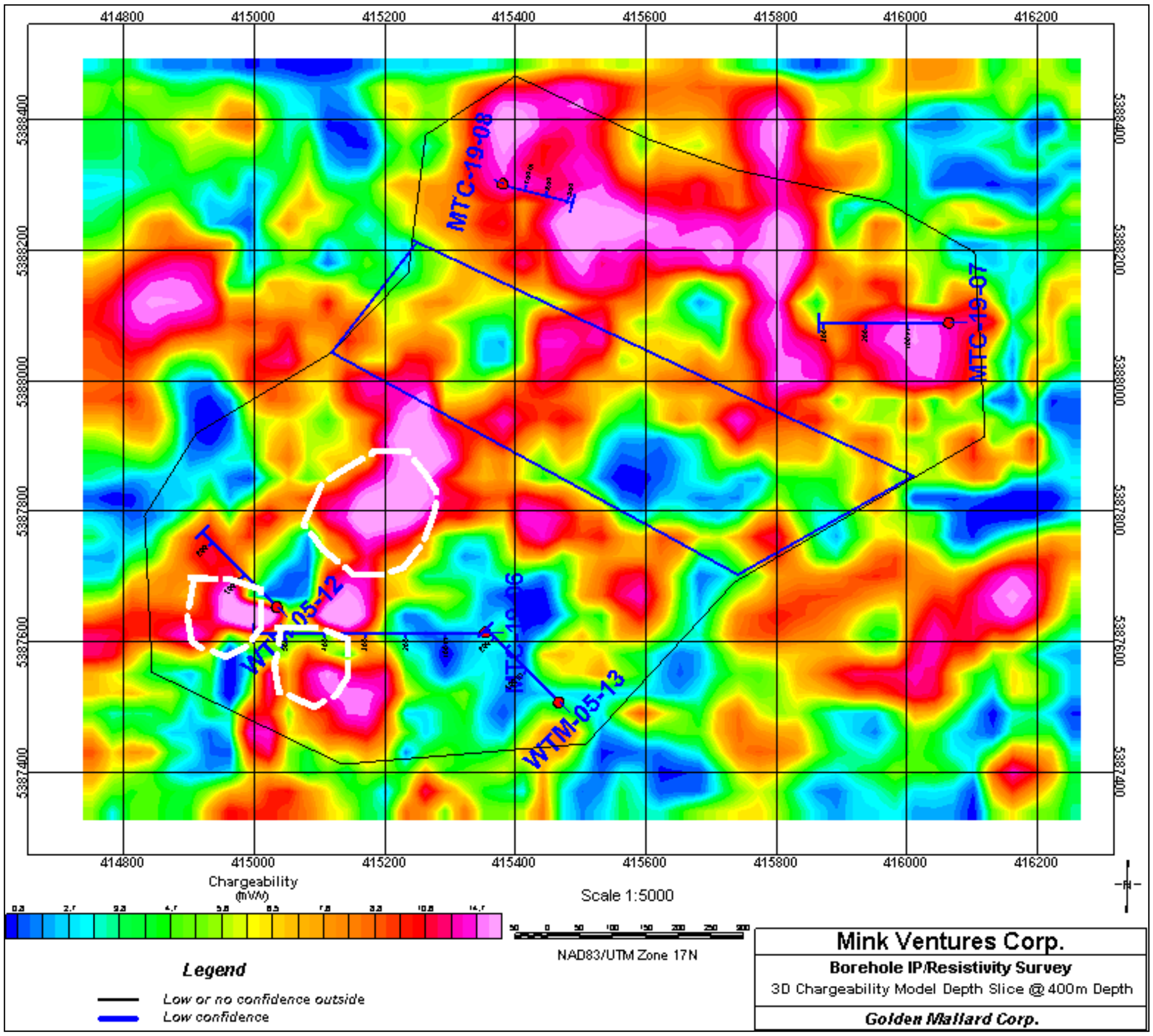


Figure 10.3-8: Chargeability Model Depth Slice at (Depth = 400m)

10.3.1.7. 3D Conductivity and Chargeability Depth slices (Depth = 500m)

The potential targets over the 3D conductivity and chargeability models depth slices are given in Figure 10.3-9 and Figure 10.3-10 respectively.

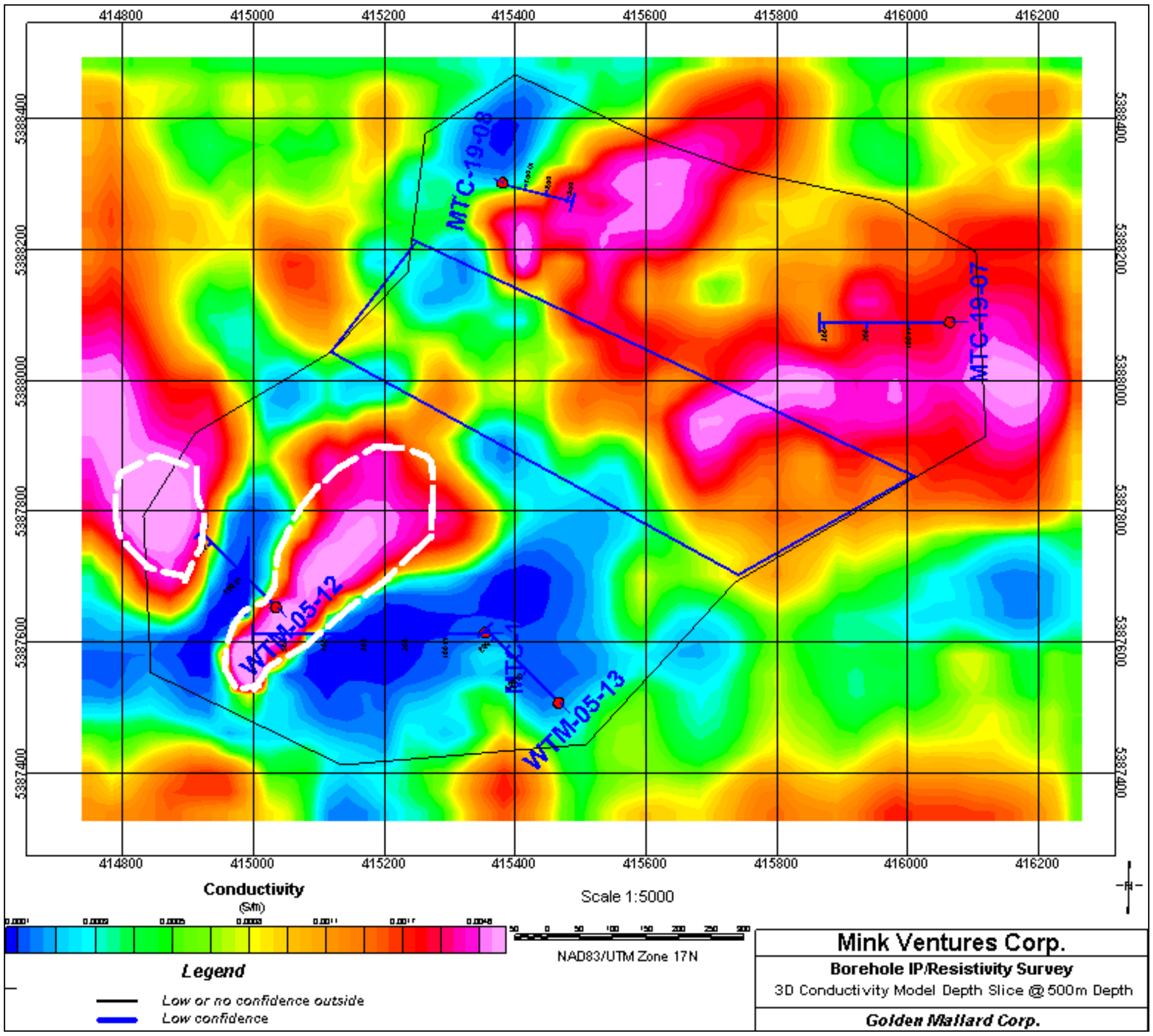


Figure 10.3-9: Conductivity Model Depth Slice at (Depth = 500m)

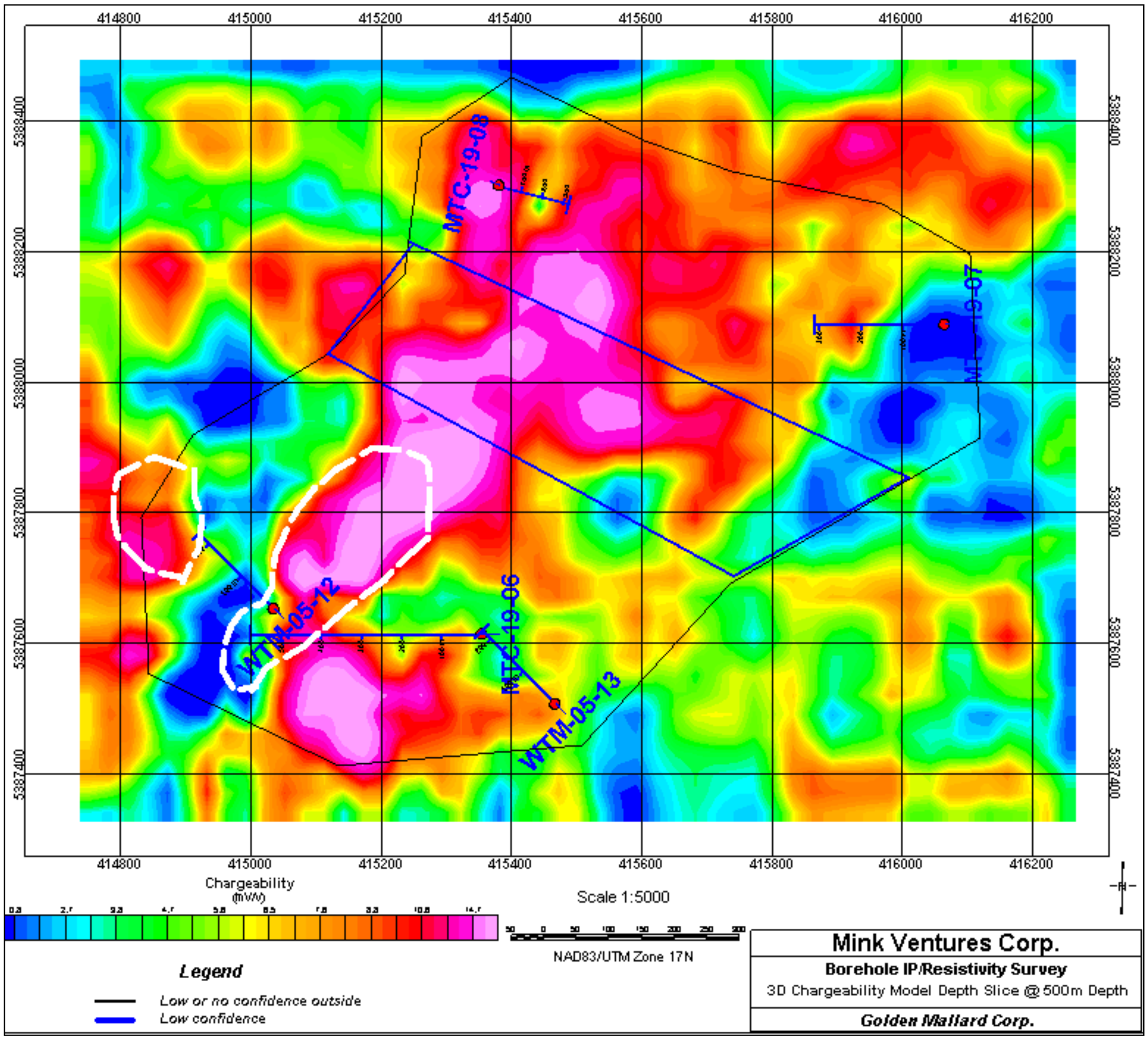


Figure 10.3-10: 3D Chargeability Model Depth Slice (Depth = 500m)

11. Conclusions and Recommendations

Based on the results of the survey, potential/probable target anomalies have been identified and shown on the depth slice plan maps of conductivity and chargeability at various depths. However, the potential target identification is not exhaustive. Four (4) test drillholes have been proposed around MTC-19-06 and MTC-19-07. The collar information of the proposed drill holes are shown below in Table 11-1.

Table 11-1: Proposed Drillhole Collar Information

Hole-ID	Easting	Northing	Elevation	Dip	Azimuth	Depth
MT-23-1	415280	5387940	289	-64	210	650
MT-23-2	415490	5387770	289	-52	270	650
P1	415930	5388088	270	-50	270	300
P2	415890	5388058	270	-50	270	400

The identified potential/probable target anomalies can be correlated with the geological model (if any) and knowledge of the area for further exploration decision making. If a drilling decision is made, then drill holes should be spotted based on high conductivity 5387770and high chargeability anomalies.

12. Digital Project Archive

The report and appendices are included in an accompanying Digital Project Archive which contains raw data, profiles, level plan maps and 3D models. The raw IP/Resistivity data is provided in binary file format. The profile maps are provided in pdf file format. The level plan maps produced from the 3D models are provided as GeoTiff and Oasis Montaj Geosoft map files. The 3D chargeability and resistivity models are provided in xyz file formats.

Table 12-1 shows the digital project archive folder structure.

Table 12-1: Digital Project Archive Folder Structure

Folder Structure	Content and Description
Main Folder	Geophysical Report 23-01 – Mink Ventures Corp.
Appendix A	Certificate of Qualifications
Appendix B	Production Report
Appendix C	Instrument Specifications
Appendix D	Pole-Dipole, and Gradient profiles, level plan maps and

	3D models in different file formats
Appendix E	Survey Data in binary file format

13. References

Chamois, Paul, 2018, Technical Report on the Montcalm Project, Cochrane District, Northeastern Ontario, Canada Report for NI 43-101: https://minkventures.com/pdf/2022-montcalm-ni43-101.pdf (accessed March 2023).

.

Wondimu, H.D, Mammo, T., Webster, B., 2018, 3D joint inversion of Gradient and Mise-a-la-Masse borehole IP/Resistivity data and its application to magmatic sulfide mineral deposit exploration: Acta Geophysica, 66, 1031–1045.

14. Signature Page

This report is submitted to Mink Ventures Corporation on March 15, 2023.

Sincerely,

Blaine Webster, B.Sc., P.Geo.
President, Golden Mallard Corp.
Kanata, Ontario
March 15, 2023

APPENDIX A

Certificate of Qualifications

Blaine Webster
President
Golden Mallard Corp.

127 Castle Glen Cres.
Kanata, Ontario K2L 4G9
Tel: (647) 533-9708
Email: blaine.r.webster@gmail.com

I, Blaine Webster, B. Sc., P. Geo., do hereby certify that:

1. I graduated with a Bachelor of Science degree in Geophysics from the University of British Columbia in 1970.

2. I am a member of the Association of Professional Geoscientists of Ontario (Membership #1045).

3. I have worked as a geophysicist for a total of 53 years since my graduation from university and have been involved in minerals exploration for base, precious and noble metals and uranium throughout much of the world.

4. I am responsible for the overall preparation of this report. The technical information in this report is derived from geophysical surveys conducted by Golden Mallard Corp. for Mink Ventures Corporation and information provided by Mink Ventures Corporation

Blaine Webster, B. Sc., P. Geo.
March 15, 2023

PROFESSIONAL GEOSCIENTIST
BLAINE R. WEBSTER
PRACTISING MEMBER
1045
ONTARIO

APPENDIX B

Production Report

Date	Production Notes	Personnel
2023-01-05	DP mobilize from Toronto. Pickup equipment Ottawa	DP
2023-01-06	DP and RM each drive North Bay to Timmins	DP RM
2023-01-07	go to mine, attempt to get in on road	DP RM Rob
2023-01-08	attempt south access, get to within 700 m of hole	DP RM Rob
2023-01-09	cut to MTC-19-06, dummy probe it to 575 m	DP RM Rob, two linecutters
	locate WTM-05-13, needs clearing	
	almost found MAC-05-28 area, needs clearing	
	found WTM-05-12, did not find WTM-05-12a	
	set up survey tent, hauled in gear	
	comment: cutting required to access:	
	05-28 350 m, 05-13 150 m, C4 1 km from 05-28	
	C3 620m, C2 1.2 km. MAC-96-17 900 m,	
	C1 1 km from 96-17	
	Total cutting required 4.7 km	
	(wide lines to DH, straight path to C1, C2, C3, C4)	
2023-01-10	cut access to C3. Installed C3, tested OK	DP RM RM, two linecutters
	Started cutting acces to C2, laid out part of wire	
	Drained water from hole 13 area	
	dummy probed hole 13 to 205	
	set up survey equipment	
	Found MTC-19-08.	
	hauled in remainder of equipment.	
2023-01-11	line cutters cut towards C2 and laid out wire	DP RM RM AC, two linecutters
	BHIP PDP MTC-19-06 C1 62.5 to 340, a=12.5m	
2023-01-12	trail cut to C1 and installed C1	DP RM RM AC, two linecutters
	partial trail towards C4	
	BHIP PDP MTC-19-06 C1 30 to 570, a=12.5m	
	BHIP PDP MTC-19-06 C1 80 to 360, a=25m	
	with P2 on casing at depth 25 m	
	dummy probing attempt on DH 8, but frozen	
2023-01-13	line cutters completed C4	DP RM RM AC, two linecutters
	BHIP PDP MTC-19-06 C1 360 to 570, a=25m	
	BHIP PDP MTC-19-06 C1 570 to 510, a=50m	

	set up crosshole current in WTM-05-13 at 152 m	
	note: trouble with beaver dam over road.	
2023-01-14	BHIP MTC-19-06 X-Hole, P1:65 to 570, a=25m	DP RM RM AC
	with CA in WTM-05-1 at 152 m, CB on C3	
2023-01-15	Ice in casing of hole 8 has been partially melted	DP RM RM AC, two linecutters
	Lines cutters made an access to hole 12	
	cutters cleaned out around hole 13	
	In mild weather, hole 8 has been thawed	
	hole 8 dummy probed to 305 m	
	BHIP MTC-19-06 X-Hole, P1:65 to 385, a=25m	
	BHIP MTC-19-06 X-Hole, P1:385 to 570, a=50m	
	with CA in MTC-19-08 at 301 m, CB on C3	
2023-01-16	found hole 19-07, needs more access	DP RM AC
	dummy probing on dh 12, good to 230 m	
	BHIP MTC-19-06 Gradient, 40 to 570 m, a=30m	
2023-01-17	moved tent poles and tent to hole 12	DP RM AC
	moved some equipment to hole 12	
	located access road to hole 7	
	WTM-05-12 drill pad requires more cleaning	
2023-01-18	Set up tent over WTM-05-12	DP RM AC
	moved over remainder of gear	
	routed g1-C1 wire to hole 12 for infinity	
	started BHIP PDP WTM-05-12 WITH a=12.5m	
	improved trail to hole 12	
2023-01-19	thawed ice in casing of MTC-19-07	DP RM AC
	dummy probed hole 7 to around 310 m	
	WTM-05-12 PDP, 12.5 m first pass problem	
	WTM-05-12 PDP, 12.5 m second pass. OK	
	(C1 from 52.5 to 222.5, last move to 228.5	
	WTM-05-12 PDP, 15 m, C1 75 down to 225	
2023-01-20	line cutters prepared tent poles at 7, 8, and 13	DP RM AC, two linecutters
	We rewired the gradients electrodes to 05-12	
2023-01-21	read WTM--5-12 with cross-hole, CA in Hole 13	DP RM AC
	used two surface electrodes C3 and C4	
	removed equipment from hole 12	
2023-01-22	move equipment from staging area to DH 7	DP RM RM AC
	start setting up tent frame with available logs	
	cut 7 more trees to complete the tent frame	
	set up survey tent over MTC-19-07	
	run access wire from C1, C4, partial C2	

2023-01-23	complete all gradient access wires	DP RM RM AC
	read MTC-19-07 PDP 12.5m	
	read MTC-19-07 PDP 25 m	
	start reading gradient	
	lost one DH electrode	
2023-01-24	completed gradient MTC-19-07 65 to 305	DP RM RM AC
	removed equipment from hole 7	
	cleaned up site at hole 13, leveled ground	
	rolled up some of the access wire.	
2023-01-25	completed installation at WTM-05-13	DP RM RM AC
	read WTM-05-13 PDP 12.5m	
	read WTM-05-13 PDP 25 m	
	rewired gradient wires to hole 13	
	started searching for hole 28	
2023-01-26	read WTM-05-13 gradient	DP RM RM AC
	read WTM-05-13 CrossHole, because time permits	
	searched again for hole 28	
	hole 8 clean up alders etc. before installation	
2023-01-27	take down survey tent at hole 13	DP RM RM AC
	move gear to hole 8	
	set up survey tent over MTC-19-08	
	remove gradient wires from hole 13	
	check old cut line as per map on MAC-97-28.PDF	
2023-01-28	Thaw ice from casing with tiger torch	DP RM RM AC
	read MTC-19-08 PDP 12.5m, CA 50 to 320	
	search for DH 28 in new search area	
	partial gradient re-wiring	
2023-01-29	morning -32 degrees, thaw out everything	DP RM RM AC
	Almost complete gradient re-wiring	
	read MTC-19-08 PDP 25m, CA 100 to 320	
2023-01-30	completed gradient re-wiring	DP RM RM AC
	read MTC-19-08 Gradient, 25 to 320	
	searched again for hole 28, did not find it.	
2023-01-31	picked up current electrodes and reeled up wire.	DP RM RM AC
	hauled out equipment. to be completed.	
2023-02-01	teardown and cleanup	DP RM RM AC
2023-02-02	teardown and cleanup. DP to Toronto	DP RM RM AC
2023-02-03	RM demobilize to North Bay	RM
2023-02-04	DP demobilize truck and equipment to Ottawa	DP

APPENDIX C

Instrument Specifications

IP Receiver

IRIS INSTRUMENTS

ELREC Pro

ELREC Pro unit with its graphic LCD screen

10 CHANNELS

IP RECEIVER FOR

MINERAL EXPLORATION

- **10 simultaneous dipoles**
- **20 programmable chargeability windows**
- **High accuracy and sensitivity**

ELREC Pro: this new receiver is a new compact and low consumption unit designed for high productivity Resistivity and Induced Polarization measurements. It features some high capabilities allowing to work in any field conditions.

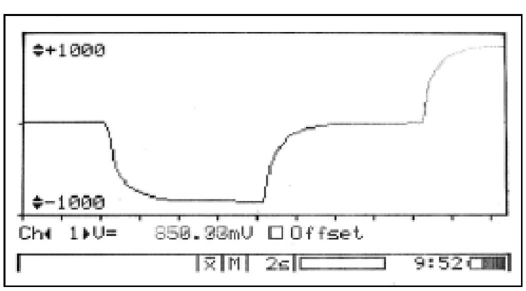
Reception dipoles: the ten dipoles of the ELREC Pro offer an high productivity in the field for dipole-dipole, gradient or extended poly-pole arrays.

Programmable windows: beside classical arithmetic and logarithmic modes, ELREC Pro also offers a Cole-Cole mode and a twenty fully programmable windows for a higher flexibility in the definition of the IP decay curve.

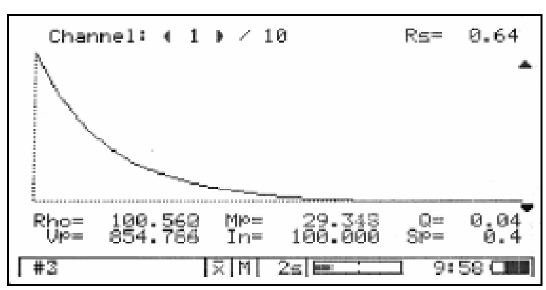
IP display: chargeability values and IP decay curves can be displayed in real time thanks to the large graphic LCD screen. Before data acquisition, the ELREC Pro can be used as a one channel graphic display, for monitoring the noise level and checking the primary voltage waveform, through a continuous display process.

Internal memory: the memory can store up to 21 000 readings, each reading including the full set of parameters characterizing the measurements. The data are stored in flash memories not requiring any lithium battery for safeguard.

Switching capability: thanks to extension *Switch* Pro box(es) connected to the ELREC Pro unit, the 10 reception electrodes can be automatically switched to increase the productivity in-the-field.



Monitoring of the Primary voltage waveform before acquisition



Display of numeric values and IP decay curve during acquisition

ELREC Pro

FIELD LAY-OUT OF AN ELREC PRO UNIT

The ELREC Pro unit has to be used with an external transmitter, such as a VIP transmitter.
The automatic synchronization (and re-synchronization at each new pulse) with the transmission signal, through a waveform recognition process, gives an high reliability of the measurement.
Before starting the measurement, a grounding resistance measuring process is automatically run ; this allows to check that all the electrodes are properly connected to the receiver.

Extension *Switch* Pro box(es), with specific cables, can be connected to the ELREC Pro unit for an automatic switching of the reception electrodes according to preset sequence of measurements ; these sequences have to be created and uploaded to the unit from the ELECTRE II software.

Extension Switch Pro box able to drive 24 - 48 - 72 or 96 electrodes

The use of such boxes allows to save time in case of the user needs to measure more than 10 levels of investigation or in case of large 2D or 3D acquisition.

DATA MANAGING

PROSYS software allows to download data from the unit. From this software, one has the opportunity to visualize graphically the apparent resistivity and the chargeability sections together with the IP decay curve of each data point. Then, one can process the data (filter, insert topography, merge data files…) before exporting them to "txt" file or to interpretation software: RES2DINV or RESIX software for pseudo-section inversion to true resistivity (and IP) 2D section.
RES3DINV software, for inversion to true resistivity (and IP) 3D data.

FEATURES

TECHNICAL SPECIFICATIONS

- Input voltage:
  Max. input voltage: 15 V
  Protection: up to 800V
- Voltage measurement:
  Accuracy: 0.2 % typical
  Resolution: 1 µV
  Minimum value: 1 µV
- Chargeability measurement:
  Accuracy: 0.6 % typical
- Induced Polarization (chargeability) measured over to 20 automatic or user defined windows
- Input impedance: 100 MΩ
- Signal waveform: Time domain (ON+,OFF,ON-,OFF) with a pulse duration of 500 ms - 1 s - 2 s - 4 s - 8 s
- Automatic synchronization and re-synchronization process on primary voltage signals
- Computation of apparent resistivity, average chargeability and standard deviation
- Noise reduction: automatic stacking number in relation with a given standard deviation value
- SP compensation through automatic linear drift correction
- 50 to 60Hz power line rejection
- Battery test

GENERAL SPECIFICATIONS.

- Data flash memory: more than 21 000 readings
- Serial link RS-232 for data download
- Power supply: internal rechargeable 12V, 7.2 Ah battery ; optional external 12V standard car battery can be also used
- Weather proof
- Shock resistant fiber-glass case
- Operating temperature: -20 °C to +70 °C
- Dimensions: 31 x 21 x 21 cm
- Weight: 6 kg

IRIS INSTRUMENTS - 1, avenue Buffon, B.P. 6007 - 45060 Orléans Cedex 2, France
Phone: +33 (0)2 38 63 81 00 - Fax: +33 (0)2 38 63 81 82
E-mail: info@iris-instruments.com - Web site: www.iris-instruments.com

IP Transmitter

INSTRUMENTATION GDD INC.

Canadian Manufacturer of Geophysical Instrumentation since 1976
Sales, Rental, Customer Service, R&D and Field training

Induced Polarization Transmitter

Tx II - 3600W Model

Tx II - 5000W Model

NEW

Link two GDD IP 3600W or 5000W transmitters together to double power.

Tx II - 3600W Model

Its power (3600W) combined with a Honda generator makes it particularly suitable for pole-dipole Induced Polarization surveys.

- **Protection against short circuits even at zero (0) ohm**
- **Output voltage range: 150 V – 2400 V / 14 steps**
- **Power source: 220-240 V / 50-60 Hz**
- **Displays electrode contact, transmitting power and current**

This 3600W Induced Polarization (IP) transmitter works from a standard 220-240 V source and is well adapted to rocky environments where a high output voltage of up to 2400 V is needed. Moreover, in highly conductive overburden, at 350 V, the highly efficient TxII-3600W transmitter is able to send current up to 10 A. By using this IP transmitter, you obtain fast and high-quality IP readings even in the most difficult conditions. Link two GDD 3600W IP transmitters together and transmit up to 7200W.

Tx II – 5000W Model

Its high power (5000W) makes it particularly suitable for deep pole-dipole Induced Polarization surveys or in very resistive ground.

- **Protection against short circuits even at zero (0) ohm**
- **Output voltage range: 150 V – 2400 V / 14 steps**
- **Power source: 220-240 V / 50- 60 Hz**
- **Displays electrode contact, transmitting power and current**

This 5000W Induced Polarization (IP) transmitter works from a standard 220-240 V source and is well adapted to rocky environments where a high output voltage of up to 2400 V is needed. Moreover, in highly conductive overburden, at 500 V, the highly efficient TxII-5000W transmitter is able to send current up to 10 A. By using this IP transmitter, you obtain fast and high-quality IP readings even in the most difficult conditions. Link two GDD 5000W IP transmitters together and transmit up to 10 000W.

SPECIFICATIONS

TxII - 3600W

- Size : 53 cm x 44 cm x 22 cm
- Weight : approximately 32,6 kg
- Operating temperature : -40 °C to 65 °C

TxII - 5000W

- Size : 53 x 44 x 22 cm and 38 x 33 x 16 cm
- Weight : approximately 28 kg and 17 kg
- Operating temperature : -40 °C to 65°C

COMPONENTS

TxII - 3600W

- TX built in a Pelican transportation box
- 20 A / 240 V power cable extension
- 20 / 30 A cable extension
- Instruction manual
- Yellow Master-Slave cable (optional)
- Blue protective case (optional)

TxII – 5000W

- TX built in a Pelican transportation box
- Transfo built in a Pelican transportation box
- 20 A / 240 V power cable extension
- 20 / 30 A cable extension
- Instruction manual
- Yellow Master-Slave cable (optional)
- Blue protective case (optional)

DISPLAYS

- Output current: accuracy of ± 0.001 A.
- Electrode contact displayed when not transmitting.
- Output power displayed when transmitting.

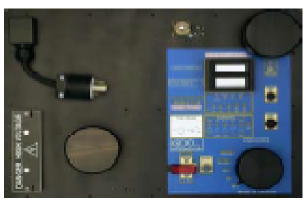
CONTROLS

- Switch ON / OFF
- Output voltage selector : 150 V, 180 V, 350 V, 420 V, 500 V, 600 V, 700 V, 840 V, 1000 V, 1200 V, 1400 V, 1680 V, 2000 V, 2400 V

ELECTRICAL CHARACTERISTICS

- Time base : 2 seconds ON, 2 seconds OFF / 0.5, 1, 2, 4 sec. / 1, 2, 4, 8 sec. / DC
- Output current : 0.030 to 10 A (normal operation) 0.000 to 10 A (with cancel open loop)
- Output voltage : 150 to 2400 V / 14 steps
- Ability to link two transmitters together to double power

Tx II - 3600W Model



Tx II - 5000W Model

PURCHASE OPTION
50 % of the rental fees of the last 4 months of rental will be credited towards the purchase of the rented instrument.

RENTAL PERIOD
Starts on the day the instrument leaves our office in Quebec to the day of its return to our office.

WARRANTY
Standard one year warranty on parts and labour. Repairs to be done at GDD's office in Quebec, Canada.

SERVICE
Any instrument manufactured by GDD that breaks down while under warranty or service contract is replaced free of charge during repairs (upon request and subject to instruments availability).

OTHER COSTS
Taxes, duties, insurances, preparation fees and shipment cost extra if applicable.

PAYMENT
Visa, Mastercard, American Express, checks or bank drafts

INSTRUMENTATION GDD INC.

3700, boul. de la Chaudière, suite 200
Québec (Québec), Canada, G1X 4B7
Phone: +1 (418) 877-4249
Fax: +1 (418) 877-4054
Web Site: www.gdd.ca
Email: gdd@gddinstrumentation.com

Specifications subject to change without notice.

Instruments available for rental or sale

Printed in Quebec, Canada, 2007