

# IP/RESISTIVITY SURVEY SUMMARY INTERPRETATION/LOGISTICS REPORT

PROTEUS PROPERTY
COBALT, ONTARIO, CANADA
ON BEHALF OF
INTERVIA INC.
(COBALT, ONTARIO, CANADA)

## **SUMMARY**

An Induced Polarization survey employing the Gradient Array was conducted by Quantec Geoscience Ltd. at the Proteus Property, Cobalt, Ontario, Canada, during September 24<sup>th</sup> to October 04<sup>th</sup>, 2011.

The objective of the survey was to delineate IP/Resistivity signatures related to:

- 1) known occurrence of gold bearing disseminated pyrite mineralization hosting in a fault area paralleled by a VLF-EM conductor axis
- 2) Potential metallic sulphide-arsenide mineralized zones prospectively hosting silver-cobalt, of the style historically mined in the Cobalt Mining Camp

in order to determine possible targets for drilling.

Reconnaissance Gradient Array coverage was completed over Lines 300N, 400N, 500N, 600N, 700N, 800N, 900N and 1000N. Detailed, Multiple Gradient Array coverage was completed over Line 800N. The total survey coverage was 14.8 kilometres.

The results have delineated low to very high Apparent Resistivity (50  $\Omega$ -m to 11,600  $\Omega$ -m) and very low to low Apparent Chargeability (0 mV/V to 10.5 mV/V). Two weak to moderate chargeable zones have been detected and delineated, which may be consistent with the target models.

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#### 1 Introduction

This report presents the logistics of the IP/Resistivity data acquired from 2011/09/24 to 2011/10/04 over the <u>Proteus Property</u>, on behalf of <u>INTERVIA INC.</u>.

#### 1.1 SURVEY OBJECTIVES

The objective of the survey was to delineate IP/Resistivity signatures related to:

- 1) known occurrence of gold bearing disseminated pyrite mineralization hosting in a fault area paralleled by a VLF-EM conductor axis.
- 2) Potential metallic sulphide-arsenide mineralized zones prospectively hosting silver-cobalt, of the style historically mined in the Cobalt Mining Camp.

in order to determine possible targets for drilling.

#### 1.2 GENERAL SURVEY INFORMATION

Quantec Project No.: CA00903C

Client: INTERVIA INC.

Client Address: 1 Presley Street

Cobalt, Ontario, POJ 1CO

Canada

Client representative: Gino Chitaroni

Phone: (705) 679-5500

Email: info@polymetinc.com

**Project Name:** Proteus Property

Survey Type: IP/Resistivity

**Project Survey Period:** 2011/09/24 to 2011/10/04

**General Location:** Approximately 5 km East of Cobalt, in Lorrain Twp.

Province: Ontario
Country: Canada

Nearest Settlement: Cobalt

Datum & Projection: NAD 83 Zone 17T

**Latitude & Longitude:** Approx. 79°37′3.641″W, 47°22′38.081″N

**UTM position:** Approx. 604349m E, 5248014m N

**NTS:** 31 M/5

## **List of Claims Surveyed:**

| Claim No. | No. of Units | Due Date     |
|-----------|--------------|--------------|
| 4248871   | 7            | May 18,2012  |
| 4242314   | 1            | June 19,2011 |
| 4248375   | 1            | July 8,2012  |

<u>Table 1-1: List of Claims Surveyed</u><sup>1</sup>

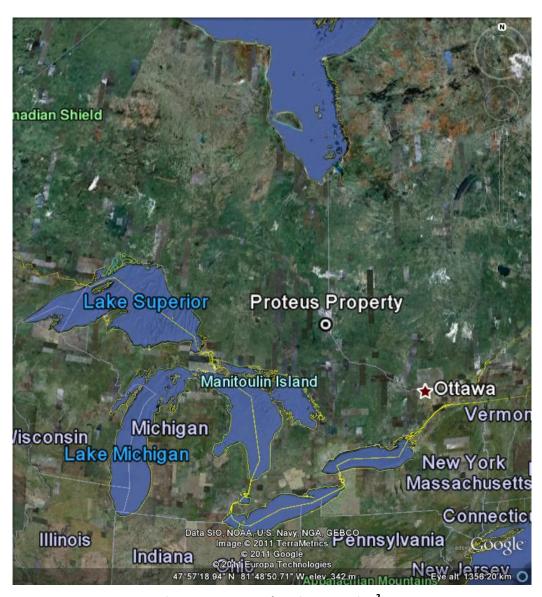


Figure 1-1: General Project Location<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> VLF-EM Survey Assessment Report, Meegwich Consultants Inc.2011

<sup>&</sup>lt;sup>2</sup> Image downloaded from http://maps.google.ca.

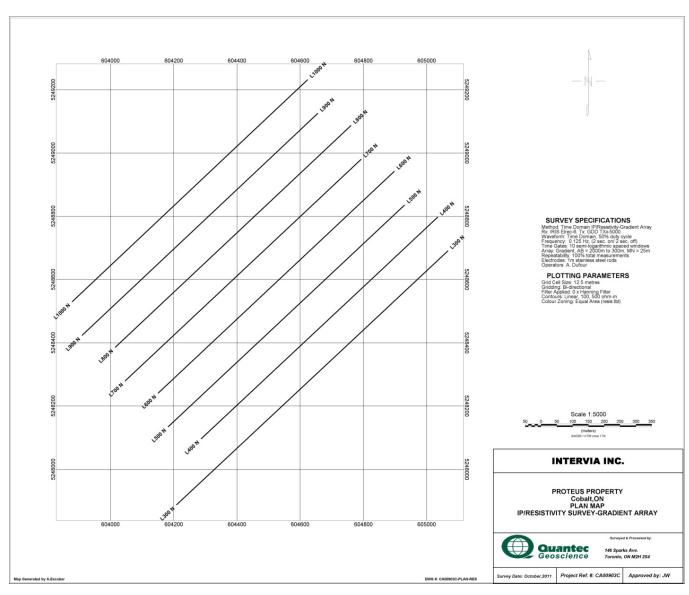


Figure 1-2: Line Location Map.

## **2 SURVEY LOGISTICS**

#### 2.1 Access

Base of Operation: Econo Lodge

998006 Highway 11

New Liskeard, Ontario

POJ 1PO

Mode of Access: By truck, ATV, and on foot

2.2 SURVEY GRID AREA

**Established by**: by client prior to survey execution

**Coordinate Reference System**: Grid referenced to UTM Coordinates

Datum & Projection: UTM NAD83

**Grid Azimuth**: 47° (See Fig 1-2)

**Line separation:** 100m

Station Interval: 25 meters

Note: UTM (NAD83) track points acquired by handheld GPS were provided by the client.

#### 2.3 Production and Coverage

**Survey Period/days:** September 24<sup>th</sup>, to October, 04<sup>th</sup>, 2011

11 days

Survey Days (read time): 6 days

Set up: 1 day

Mob/Demob: 2 days

Safety Inductions: 0 days

Weather/Down Days: 1 day

Number of Lines surveyed: 8

**Total Survey Coverage:** 14.8 km

Table 2-1: Surveyed Line-start and -end point

| Line      | Grid Co | ordinate | Coverage |
|-----------|---------|----------|----------|
| 2         | Start   | End      | (m)      |
| L300N     | 600E    | 450W     | 1050     |
| L400N     | 400W    | 600E     | 1000     |
| L500N     | 600E    | 450W     | 1050     |
| L600N     | 400W    | 650E     | 1050     |
| L700N     | 600E    | 450W     | 1050     |
| L800N     | 400W    | 650E     | 1050     |
| L900N     | 600E    | 450W     | 1050     |
| L1000N    | 400W    | 650E     | 1050     |
| L800N-AB2 | 600E    | 450W     | 1050     |
| L800N-AB3 | 600E    | 450W     | 1050     |
| L800N-AB4 | 450W    | 600E     | 1050     |
| L800N-AB5 | 600E    | 450W     | 1050     |
| L800N-AB6 | 450W    | 450E     | 900      |
| L800N-AB7 | 325E    | 325W     | 650      |
| L800N-AB8 | 225W    | 225E     | 450      |
| L800N-AB9 | 125E    | 125W     | 250      |
|           |         | Total    | 14800    |

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## 2.4 Personnel

Project Manager: Jeff Warne, Barrie,ON

Responsible Geophysicist: Jeff Warne, Barrie,ON

Field Crew: Alain Dufour, Trois Riviere, QC

Eric Dufour, Val d'Or,QC Jake Shortt, Swastika, ON Shawn Jones, North Bay, ON

#### 2.5 Instrumentation

IP Receiver: IRIS Elrec-6

**IP Transmitter:** GDD TXii-5000

IP Power Supply: Honda EM6500 (240V, 1 phase, 60 Hz)

**Electrodes:** Ground contacts using stainless steel rods;

#### 2.6 SURVEY SPECIFICATIONS

#### **2.6.1 GEOMETRY**

**Survey Array:** Gradient, Multiple Gradient (see Fig 2-2)

**Array Specifications**: Gradient: MN =25m, AB = 2800m

Multiple Gradient: MN = 25m, AB =2400m to 300m

Transmit Electrode Locations: AB1, C1 @ 1300W, 625N, C2 @ 1500E, 550N

AB2, C1 @ 1100W, 550N, C2 @ 1300E, 550N AB3, C1 @ 900W, 550N, C2 @ 1100W, 550N AB4, C1 @ 670W, 800N, C2 @ 900E, 800N AB5, C1 @ 600W, 800N, C2 @ 700E, 800N AB6, C1 @ 500W, 800N, C2 @ 500E, 800N AB7, C1 @ 350W, 800N, C2 @ 350E, 800N AB8, C1 @ 250W, 800N, C2 @ 250E, 800N AB9, C1 @ 150W, 800N, C2 @ 150E, 800N

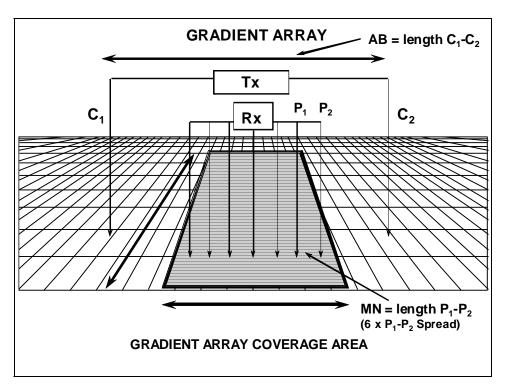


Figure 2-1: General Layout of the Gradient Array.

## 2.6.2 ACQUISITION & PROCESSING

**Input Waveform:** 0.125 Hz square wave at 50% duty cycle

(2 seconds On/Off)

**Receiver Decay Sampling:** 10 semi-logarithmic spaced windows (see Table 2-2).

Measured Parameters: Chargeability in millivolts/volt

(time slices + total area under decay curve)
Primary Voltage in millivolts and Input Current in
amperes for Resistivity calculation according to the

electrode array geometry factor.

Table 2-2: Semi-Log IP Decay Curve Sampling (2 Sec. Cycle).

| Slice                 | Duration (msec) | Start (msec) | End (msec) | Mid-Point (msec) |
|-----------------------|-----------------|--------------|------------|------------------|
| T <sub>D</sub>        | 80              | 0            | 80         | N/A              |
| T <sub>1</sub>        | 80              | 80           | 160        | 120              |
| T <sub>2</sub>        | 80              | 160          | 240        | 200              |
| T <sub>3</sub>        | 80              | 240          | 320        | 280              |
| T <sub>4</sub>        | 80              | 320          | 400        | 360              |
| T <sub>5</sub>        | 160             | 400          | 560        | 480              |
| <b>T</b> <sub>6</sub> | 160             | 560          | 720        | 640              |
| T <sub>7</sub>        | 160             | 720          | 880        | 800              |
| T <sub>8</sub>        | 320             | 880          | 1200       | 1040             |
| T <sub>9</sub>        | 320             | 1200         | 1520       | 1360             |
| T <sub>10</sub>       | 320             | 1520         | 1840       | 1680             |
| TOTAL                 | 1760            |              |            |                  |

## 2.6.3 ACCURACY AND REPEATABILITY

**Chargeability:** less than  $\pm$  0.5 mV/V

**Resistivity:** less than 10% cumulative error from Primary

voltage and Input current measurements

Repeats per Station: 0-4

#### 2.7 DATA PRESENTATION

#### 2.7.1 DIGITAL DATA

#### **Raw Data**

The measured data were transferred from the Elrec-6 instrument to notebook computer using Idump software provided by Geosoft.

The Elrec -6 dump files are in ASCII text format. Unedited dump files are archived, named according to date of survey (ddmmyy), eg 290911.dmp. Each file may contain more than one transmit dipoles, refer to production log for date on which each transmit dipole was surveyed. Corrections to electrode locations were made, if required, using text editor software, and the edited file archived, named according to line, and transmit dipole, e.g. L8N28.dmp. The data were then imported to Geosoft Oasis Montaj Montaj

#### **Processed Data**

Using the Geosoft® Oasis Montaj™ IP database system, Apparent Resistivity values were recalculated based on corrected electrode locations. Chargeability measurements with excessive standard deviation (> 1 mV/V) were rejected and repeat measurements averaged. It is important to note that the Oasis database includes both the Apparent Resistivity as calculated within the database (column "ResCalc") and Apparent Resistivity as calculated and stored by the IP receiver at the time of measurement, (column "Ro"). Since these values are correct only if the electrode locations are correct, there may be disagreement where electrode location corrections have been applied. ResCalc is utilized in the data presentation.

The complete data set are archived in Geosoft® Oasis montaj™ ".gdb" format Database files.

## 2.7.2 MAPS

Real section map of apparent resistivity and total chargeability results for Line 800N, at a scale of 1:5000.

Chargeability Plan Map at a scale of 1:5000.

Resistivity Plan Map at a scale of 1:5000

The maps are provided in Oasis ".map" file format.

#### 2.7.3 ARCHIVE

The data and map are archived in digital form, as described above, on CD, provided in the CD pocket.

## 3 DISCUSSION OF RESULTS

The IP/Resistivity survey over the Proteus Property was completed successfully without incident. The surveys have, in general, successfully acquired results of excellent quality. Some of the measurements were eliminated in the QC stage because of insufficient signal or low accuracy.

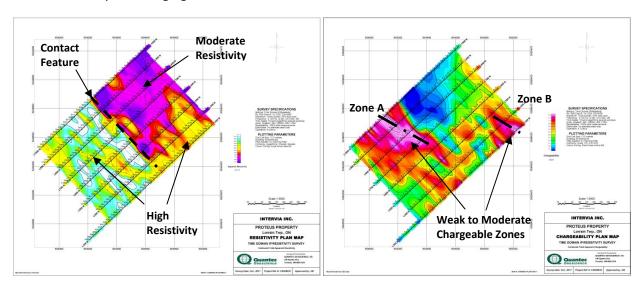
The IP/Resistivity surveys have quantified apparent, bulk volume average DC resistivity and chargeability at the Proteus Property area.

The bulk volume resistivity is primarily influenced by subsurface variations in porosity, permeability and moisture saturation. Significant concentrations of interconnected conductive mineralization, such as massive sulphides, if present, also influence the bulk volume resistivity.

The chargeability is a near-direct indicator of the presence of metallic mineralization, based on the polarization of minerals that possess metallic properties. These include most metallic sulphides, with the notable exception of sphalerite, those native metals that occur naturally, as well as some metallic oxides, and graphite.

Both conductivity and chargeability result from the mobility of electrons within metals. However, whereas electronic conduction occurs within metals, polarization occurs at the interfaces between metallic grains and pore fluids. For this reason, not only the volume content, but also the distribution and texture of chargeable mineralization within host rocks are important factors influencing bulk volume chargeability.

Figures 3-1(a), 3-1(b), below display the reconnaissance gradient Apparent Resistivity and Apparent Chargeability results respectively. Low to very high Apparent Resistivity results ranging from 50  $\Omega$ -m to 11,600  $\Omega$ -m have been delineated. The Apparent Chargeability results measured at the Proteus property were low to very low, ranging from 0 to 10.5 mV/V.



<u>Figure 3-1, Reconnaissance Gradient results, (a): Apparent Resistivity, (b): Apparent Chargeability.</u>

Moderate resistivity occurs in the north quarter of the coverage, likely, in part, related to increased low resistivity overburden cover. High resistivity is prevalent underlying the remainder of the grid. A southeast to northwest trending boundary between moderate resistivity to the northeast, and high resistivity to the southwest has been delineated crosscutting lines 500N to 1000N, centered at 100E. The

contact-like feature closely parallels a VLF conductor axis interpreted in previous work. A break/offset in the boundary signature at line 800N suggests additional complexity in the subsurface.

The reconnaissance apparent chargeability is, overall, subtly higher in correspondence with higher resistivity, also consistent with overburden effect. Two weak to moderate chargeable zones are delineated. Zone A crosscuts line 700N centered at 0, to line 1000N centered at 100W, and remains open to the northwest. Zone B crosscuts lines 300N to line 400N centered at 475E, and remains open to the southeast. The apparent resistivity associated with the chargeable zones is locally increased.

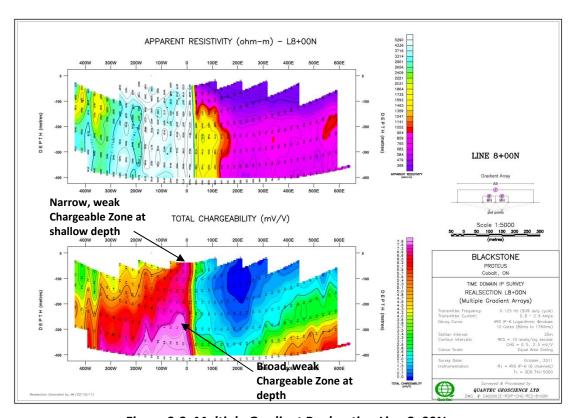


Figure 3-2: Multiple Gradient Realsection Line 8+00N.

Figure 3-2 displays the detailed, multiple gradient apparent resistivity and apparent chargeability results acquired over line 800N. A narrow, weak chargeable zone is delineated centered under 25W to 0 at depth approaching but less than 100 meters. The zone may be southwest dipping. A broad, weak to moderate chargeable zone is also delineated, centered under 50W at depth of 200 meters plus.

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It is recommended that the present geophysical results be considered in relation to results of previous exploration work pertaining to the area, including magnetics, ground or airborne EM, and drilling information.

Respectfully Submitted

Toronto, ON, the 15/12/2011,

G.R. Jeffrey Warne Senior Project Manager Quantec Geoscience Ltd A. Escobar
Data Processor
Quantec Geoscience Ltd

## 4 STATEMENTS OF QUALIFICATION

## **G.R. JEFFREY WARNE**

I, G.R. Jeffrey, declare that:

I am a senior geophysical project manager with residence in Barrie, Ontario and am presently employed in this capacity with Quantec Geoscience Ltd., Toronto, Ontario;

I studied Engineering Geophysics in the Faculty of Applied Science at Queen's University in Kingston, Ontario, completing all but two of the course requirements for a B.Sc. (Eng) in 1981.

I have practiced my profession continuously since May,1981 in Canada, the United States, Australia, Agentina, Bulgaria, Chile, Ireland, Mexico, Peru, Portugal and Serbia.

I have no interest, nor do I expect to receive any interest in the properties or securities of **INTERVIA INC.**, its subsidiaries or its joint-venture partners;

I am responsible for this project; I have supervised the data acquisition, evaluated the survey data, the survey results and can attest that these accurately and faithfully reflect the data acquired on site, I oversaw the preparation and have co-authored this report, and the statements made in this report represent my professional opinion in consideration of the information available to me at the time of writing this report.

Toronto, Ontario October, 2011

G.R. Jeffrey Warne

Senior Project Manager

Quantec Geoscience Ltd.

fflllame

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## A. ESCOBAR

I, Aurea Escobar, declare that:

I am a data processor with residence in Newmarket, Ontario and am presently employed in this capacity with Quantec Geoscience Ltd., Toronto, Ontario;

I have obtained a partial certificate of a Bachelor's in Applied Science from the Technological University of Mexico in Mexico City. I have continued my studies at York University in Toronto, Ontario in a Bachelor's of Science Honours in Earth Science (Geomatics).

I have practiced my profession continuously since September 2010 in Canada.

I have no interest, nor do I expect to receive any interest in the properties or securities of **INTERVIA INC.**, its subsidiaries or its joint-venture partners;

I was the data processor responsible for this project. I compiled and edited this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Toronto, Ontario

October, 2011

A.Escobar.

**Data Processor** 

Quantec Geoscience Ltd.

## 5 DIGITAL ARCHIVE

The CD or DVD attached to this report contains a copy of all the inversion results, final processed data, including the survey files, the daily processing (and field) notes, and an electronic copy of this report (with all appendices).

## **A** PRODUCTION SUMMARY

|            | Proteus Project   |                   |               |             |             |              |
|------------|---|-------------------|---------------|-------------|-------------|--------------|
| DATE       | Field Activities and Observations   | Line              | Line<br>Start | Line<br>End | Read<br>(m) | TOTAL<br>(m) |
| 09/24/2011 | Mobiliza  | tion to New Lis   | keard.        |             |             |              |
| 09/25/2011 | Spot grid, bring w  | rires in and star | t laying      | out AB      |             |              |
| 09/26/2011 | Finish doing AB, bring wire to truck.   |                   |               |             |             |              |
|            | Test TX and current   |                   |               |             |             |              |
|            | Went to Kirkland Lake, rent an ATV and a trailer.  ½ Survey day.              |                   |               |             |             |              |
| 09/27/2011 | Survey L300N and L400N.   | L300N             | 600E          | 450W        | 1050m       |              |
|            | Survey L400N  | L400N             | 400W          | 600E        | 1000m       |              |
|            | A bit of waste of time in the morning, but went good when started.            |                   |               |             |             | 2050m        |
| 09/28/2011 | Survey L500N.   | L500N             | 600E          | 450W        | 1050m       |              |
|            | Survey L600N  | L600N             | 400W          | 650E        | 1050m       |              |
|            | Survey L700N  | L700N             | 600E          | 450W        | 1050m       |              |
|            | Survey L800N  | L800N             | 400W          | 650E        | 1050m       |              |
|            |   |                   |               |             |             | 4200m        |
| 09/29/2011 | Problems with Genset. Carburator fixed it.                                    |                   |               |             |             |              |
|            | Changed AB's.   |                   |               |             |             |              |
|            | Not enough current(.4,.5)   |                   |               |             |             |              |
|            | Went to buy gerry cans and salt. Put salted water on rods. Take lots of time. |                   |               |             |             |              |
|            | Heavy rain.Tested current but got sparks on the Tx.                           |                   |               |             |             |              |
|            | Thunder storm, shut everything down.  |                   |               |             |             |              |
|            | ½ Survey day  |                   |               |             |             |              |
| 09/30/2011 | Bad weather day.  |                   |               |             |             |              |
| 10/01/2011 | Survey L800N with AB2   | L800N             | 600E          | 450W        | 1050m       |              |
|            | Survey L900N with AB1   | L900N             | 600E          | 450W        | 1050m       |              |
|            | Survey L1000N with AB1  | L1000N            | 400W          | 650E        | 1050m       |              |
|            |   |                   |               |             |             | 3150m        |
| 10/02/2011 | Survey L800N with AB3-550N  | L800N-AB3         | 600E          | 450W        | 1050m       |              |
|            | Survey AB4-800N   | L800N-AB4         | 450W          | 600E        | 1050m       |              |
|            | Survey AB5-800N   | L800N-AB5         | 600E          | 450W        | 1050m       |              |
|            | Reeled up wires   |                   |               |             |             |              |

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|                                       |                       |           |      |      |        | 3150m |
|---------------------------------------|-----------------------|-----------|------|------|--------|-------|
| 10/03/2011                            | Survey L800N with AB6 | L800N-AB6 | 450W | 450E | 900m   |       |
|                                       | Survey L800N with AB7 | L800N-AB7 | 325E | 325W | 650m   |       |
|                                       | Survey L800N with AB8 | L800N-AB8 | 225W | 225E | 450m   |       |
|                                       | Survey L800N with AB9 | L800N-AB9 | 125E | 125W | 250m   |       |
|                                       | Reeled up wires       |           |      |      |        |       |
|                                       |                       |           |      |      |        | 2250m |
|                                       | Demobilization        |           |      |      |        |       |
| Total Survey Coverage (line km) 14800 |                       |           |      |      | 14800m |       |

## B AN INTRODUCTION TO DIRECT CURRENT (DC) RESISTIVITY AND INDUCED POLARISATION (IP) METHODS

The resistivity is among the most variable of all geophysical parameters, with a range exceeding 10<sup>6</sup>. Because most minerals are fundamentally insulators, with the exception of massive accumulations of metallic and sub metallic ores (electronic conductors) which are rare occurrences, the resistivity of rocks depends primarily on their porosity, permeability and particularly the salinity of fluids contained (ionic conduction), according to Archie's Law. In contrast, the chargeability responds to the presence of polarisable minerals (metals, sub metallic sulphides and oxides, and graphite), in amounts as minute as parts per hundred. Both the quantity of individual chargeable grains present and their distribution with in subsurface current flow paths are significant in controlling the level of response. The relationship of chargeability to metallic content is straightforward, and the influence of mineral distribution can be understood in geologic terms by considering two similar, hypothetical volumes of rock in which fractures constitute the primary current flow paths. In one, sulphides occur predominantly along fracture surfaces. In the second, the same volume percent of sulphides are disseminated throughout the rock. The second example will, in general, have significantly lower intrinsic chargeability.

The collected data sets are reduced to apparent resistivity and total chargeability as explained in the following figures and equations.

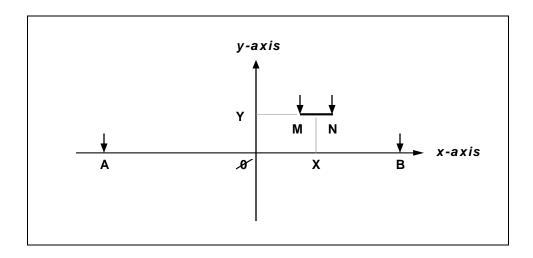


Figure B-1: Gradient Electrode Array.

Referring to the diagram (Figure B-1) for the gradient array electrode configuration and nomenclature<sup>3</sup>,

where: the origin **0** is selected at the center of **AB** 

x is the abscissa of the mid-point of MN (positive or negative)

y is the ordinate of the mid-point of MN (positive or negative)

the geometric parameters are in addition to a = AB/2 and b = MN/2

The gradient array apparent resistivity is given by:

$$\rho a = K \frac{VP}{I} \quad ohm - metres$$

$$where: \quad K = \frac{2\pi}{(AM^{-1} - AN^{-1} - BM^{-1} + BN^{-1})}$$

$$AM = \sqrt{(a+x-b)^2 + y^2}$$

$$AN = \sqrt{(a+x+b)^2 + y^2}$$

$$BM = \sqrt{(x-b-a)^2 + y^2}$$

$$BN = \sqrt{(x+b-a)^2 + y^2}$$

\_

<sup>&</sup>lt;sup>3</sup> From Terraplus\BRGM, <u>IP-6 Operating Manual</u>, Toronto, 1987.

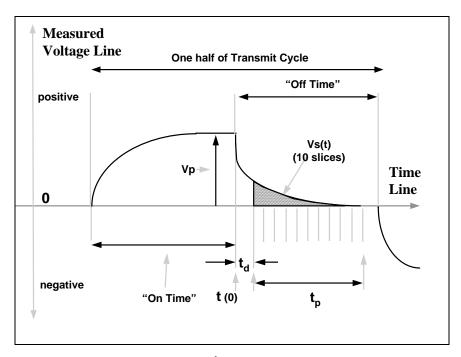


Figure B-2: Time Domain IP/Resistivity Measured Parameters.

Using the diagram (Figure B-2) for the Total Chargeability, the total apparent chargeability is given by 4:

$$\mathbf{M}_{\mathrm{T}} = \frac{1}{t_{\mathrm{p}} V_{\mathrm{p}}} \sum_{i=1 \, \mathrm{to} \, 10} \int_{t_{i}}^{t_{i+1}} V s \quad (t) \, dt \qquad \text{millivolts per volt}$$

where ti, ti+1 are the beginning and ending times for each of the chargeability slices.

<sup>&</sup>lt;sup>4</sup> From Telford, et al., <u>Applied Geophysics</u>, Cambridge U Press, New York, 1983.

## **C** REFERENCES

## C.1 DIRECT CURRENT (DC) AND INDUCED POLARISATION (IP) METHODS

Cogan, H., 1973, Comparison of IP electrode arrays, Geophysics, 38, 737 - 761.

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## **D** Instruments Specifications

## **D.1** IRIS ELREC 6 RECEIVER SPECIFICATIONS

## **IRIS Elrec-6 Receiver**

(From IRIS Instruments Operating Manual)



## Weather proof case

**Dimensions:** 31 cm x 21 cm x 21 cm

Weight: 6 kg with dry cells

7.8 kg with rechargeable battery.

**Operating temperature:** -20°C to 70°C

(-40°C to 70°C with optional screen heater)

Storage:  $(-40^{\circ}\text{C to }70^{\circ}\text{C})$ 

**Power supply:** 6 x 1.5 V dry cells (100 hr. @ 20°C) or

2 x 6 V NiCad rechargeable (in series) (50 hr. @ 20°C) or

1 x 12 V external

Input channels: 6

**Input impedance:** 10 M ohm

**Input overvoltage protection:** up to 1000 volts

**Input voltage range:** 10 V maximum on each dipole

15 V maximum sum over ch. 2 to 6

#### QUANTEC GEOSCIENCE LTD

SP compensation: 6 automatic  $\pm$  10 V with linear drift correction up to 1 mV/s Noise rejection: 50 to 60 Hz powerline rejections 100 dB common mode rejection (for Rs= 0) automatic stacking **Primary voltage resolution:** 1 μV after stacking accuracy: 0.3% typically; maximum 1 over whole temperature range Secondary voltage windows: up to 10 windows; 3 preset window specs .plus programmable fully sampling. 10 ms Sampling rate: 10 ms, minimum 40  $\mu V$ Synchronization accuracy: **Chargeability resolution:** 0.1 mV/V typically 0.6%. maximum 2% of reading  $\pm$  1 accuracy: mV/V for  $V_p > 10 mV$ **Battery test:** manual and automatic before each measurement **Grounding resistance:** 0.1 to 467 kohm

Memory capacity:

Data transfer:

2505 records, 1 dipole/record

serial link @ 300 to 19200 baud

## D.2 ELREC 6 – RECEIVER DUMP FILE FORMAT

```
* IP 6 (V9.1) *
```

\*======\*

#77 Jul 1 1980 11:57

dipole 1 trigger 1 domain Time T wave Programmable wind. Grad. RCTGL array

V= 331.605 Sp= -319 I= 1350.00 Rs= 0.50

Ro= 6679.4 Ohm-m M= 11.97 E= 0.4

M1= 40.44 M2= 33.55 M3= 29.48 M4= 26.68

M5= 20.95 M6= 15.52 M7= 12.50 M8= 9.77

M9= 7.50 M10= 6.05

cycle 19 Time= 2000 V\_D= 1260 M\_D= 40

T\_M1= 20 T\_M2= 30 T\_M3= 30 T\_M4= 30

T\_M5= 180 T\_M6= 180 T\_M7= 180 T\_M8= 360

T\_M9= 360 T\_M10= 360

Spacing config.: Imperial grid

XP=-1300.0 Line= 400.0

D= -100.0 AB/2= 2500.0

## D.3 GDD TXII-5000 TRANSMITTER

## **GDD Model TXII-5000**



## 8. SPECIFICATIONS

**Size:** TxII-5000W with a blue carrying case: 35 x 52 x 70 cm

TxII-5000W only: 26 x 45 x 55 cm

Weight: TxII-5000W with a blue carrying case: ~ 56kg

TxII-5000W only: ~40 kg

Operating Temperature : -40 °C to 65 °C (-40 °F to 150 °F)

Time Base: 2 s ON+, 2 s OFF, 2 s ON-

Optional: 1, 2, 4 or 8 s 0.5, 1, 2 or 4 s

DC

Output current: 0.030 A to 10 A (normal operation)

0.0 A to 10 A (cancel open loop)

Maximum of 5 A in DC mode

**Rated Output Voltage:** 150V to 2400V

Up to 4800V in a master/slave configuration

LCD Display:

Output current, 0.001 A resolution

Output power

Ground resistance (when the transmitter is turned off)

**Power source :** 220-240 V / 50-60 Hz

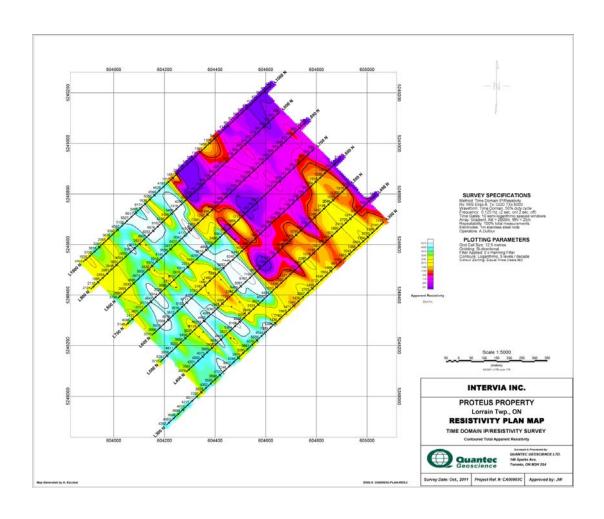
## **E** GEOSOFT LIST OF MAPS

IP/Resistivity Survey Maps at scale of <u>1:5000</u>.

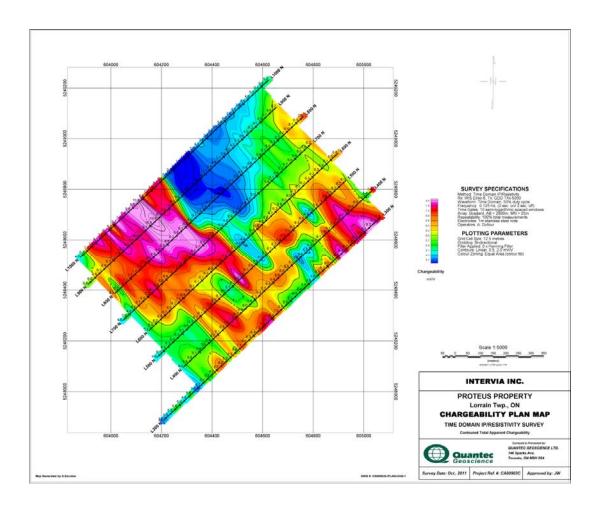
| Description                | Drawing No.                 | Map # |
|----------------------------|-----------------------------|-------|
| Resistivity Plan Map       | CA00903C-PLAN-RES-1         | 1     |
| Chargeability Plan Map     | CA00903C-PLAN-CHG-1         | 2     |
| Real Section Map Line 800N | CA00903C-RSIP-CHG-RES-8+00N | 3     |
| (Multiple Gradient Arrays) |                             |       |

## F GEOSOFT PLAN MAPS

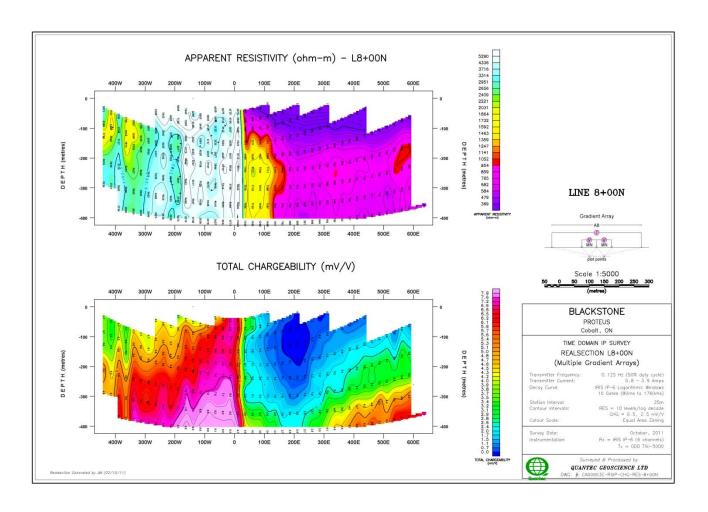
## F.1 RESISTIVITY PLAN MAP



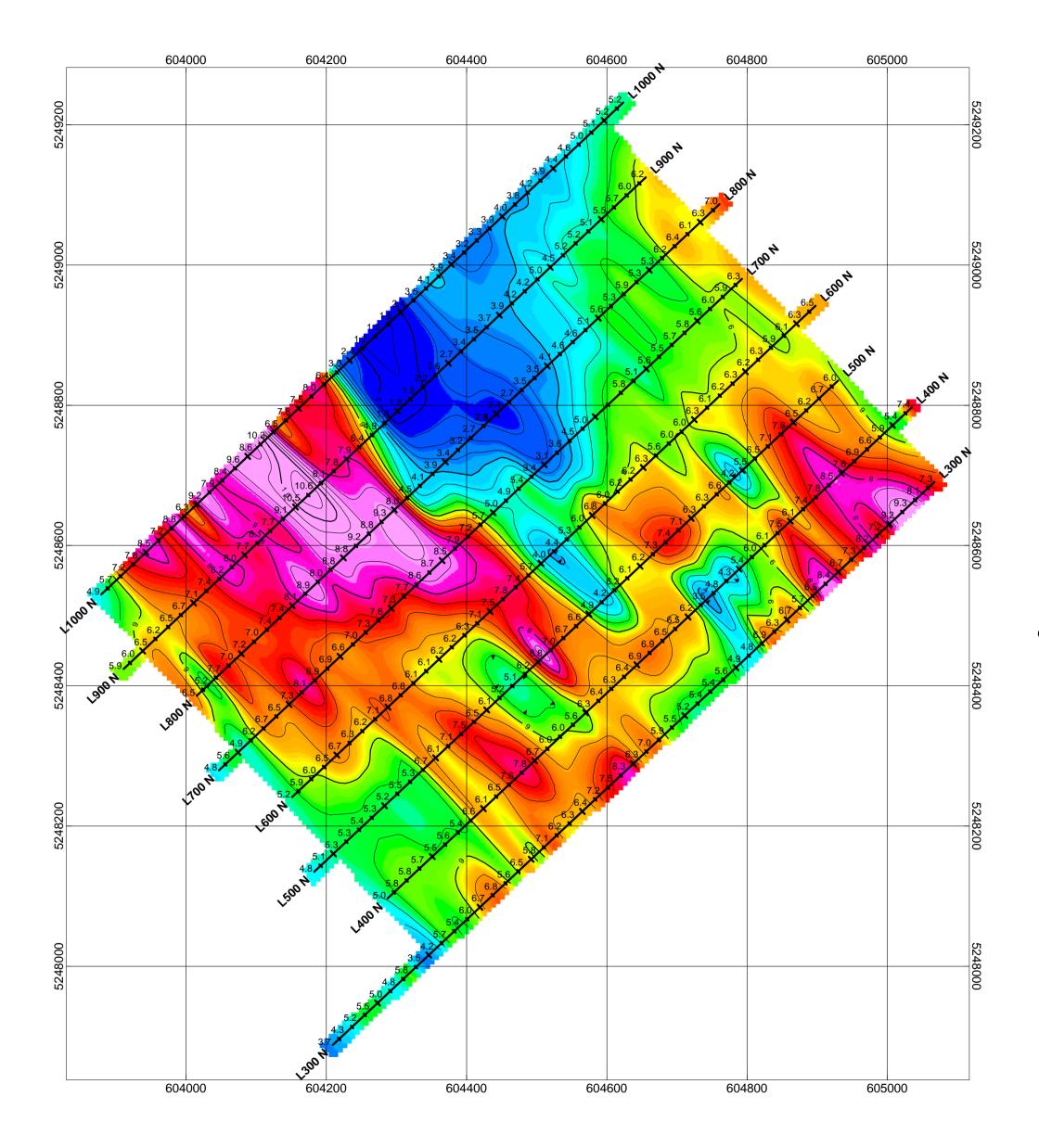
## F.2 CHARGEABILITY PLAN MAP

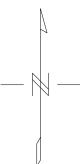


## G GEOSOFT REAL SECTION OF LINE 800N (MULTIPLE GRADIENT ARRAY).



| Quantec Geoscience Ltd Summary Table |                           |  |  |  |
|--------------------------------------|---------------------------|--|--|--|
| CLI                                  | IENT                      |  |  |  |
| Client / Company Name                | INTERVIA INC.             |  |  |  |
| Client Main Location                 | (Cobalt, Ontario, Canada) |  |  |  |
| Client Representative                | Gino Chitaroni            |  |  |  |
| Phone Number                         | (705) 679-5500            |  |  |  |
|                                      |                           |  |  |  |
| Fax Number                           | (705) 679-5519            |  |  |  |
| Email Contact (if available)         | info@polymetinc.com       |  |  |  |
| PRO                                  | DJECT                     |  |  |  |
| Project Grid Name                    | Proteus Property          |  |  |  |
| Project Grid Location                | Cobalt, Ontario, Canada   |  |  |  |
| Survey Type                          | IP/Resistivity            |  |  |  |
| Survey Period (YY/MM/DD to YY/MM/DD) | 2011/09/24 to 2011/10/04  |  |  |  |
| Quantec Project Number               | CA00903C                  |  |  |  |
| Responsible Geophysicist             | G.R. Jeffrey Warne        |  |  |  |
| Data Processor                       | A. Escobar                |  |  |  |
| REF                                  | PORT                      |  |  |  |
| Report Date                          | 15/12/2011                |  |  |  |
| Quantec Template Version             | 2011.2                    |  |  |  |





## **SURVEY SPECIFICATIONS**

Method: Time Domain IP/Resistivity
Rx: IRIS Elrec-6, Tx: GDD TXii-5000
Waveform: Time Domain, 50% duty cycle
Frequency: 0.125 Hz, (2 sec. on/ 2 sec. off)
Time Gates: 10 semi-logarithmic spaced windows
Array: Gradient, AB = 2800m, MN = 25m
Repeatability: 100% total measurements
Electrodes: 1m stainless steel rods
Operators: A. Dufour Operators: A. Dufour

## PLOTTING PARAMETERS

Grid Cell Size: 12.5 metres Gridding: Bi-directional Filter Applied: 0 x Hanning Filter Contours: Linear, 0.5, 2.0 mV/V Colour Zoning: Equal Area (colour.tbl)

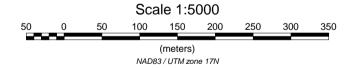


7.9 7.4

6.4 6.2

6.0

5.7 5.4



## INTERVIA INC.

## **PROTEUS PROPERTY** Lorrain Twp., ON **CHARGEABILITY PLAN MAP**

TIME DOMAIN IP/RESISTIVITY SURVEY

**Contoured Total Apparent Chargeability** 



Surveyed & Processed by: QUANTEC GEOSCIENCE LTD. 146 Sparks Ave. Toronto, ON M2H 2S4

Survey Date: Oct., 2011

Project Ref. #: CA00903C

Approved by: JW

## Proteus property Survey Lines over Claim Map

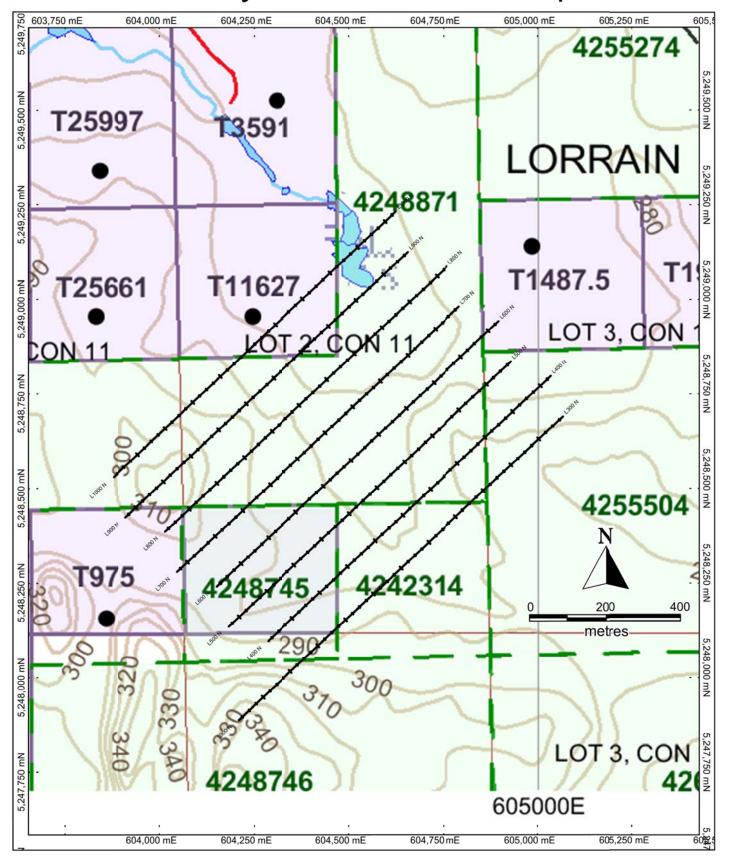
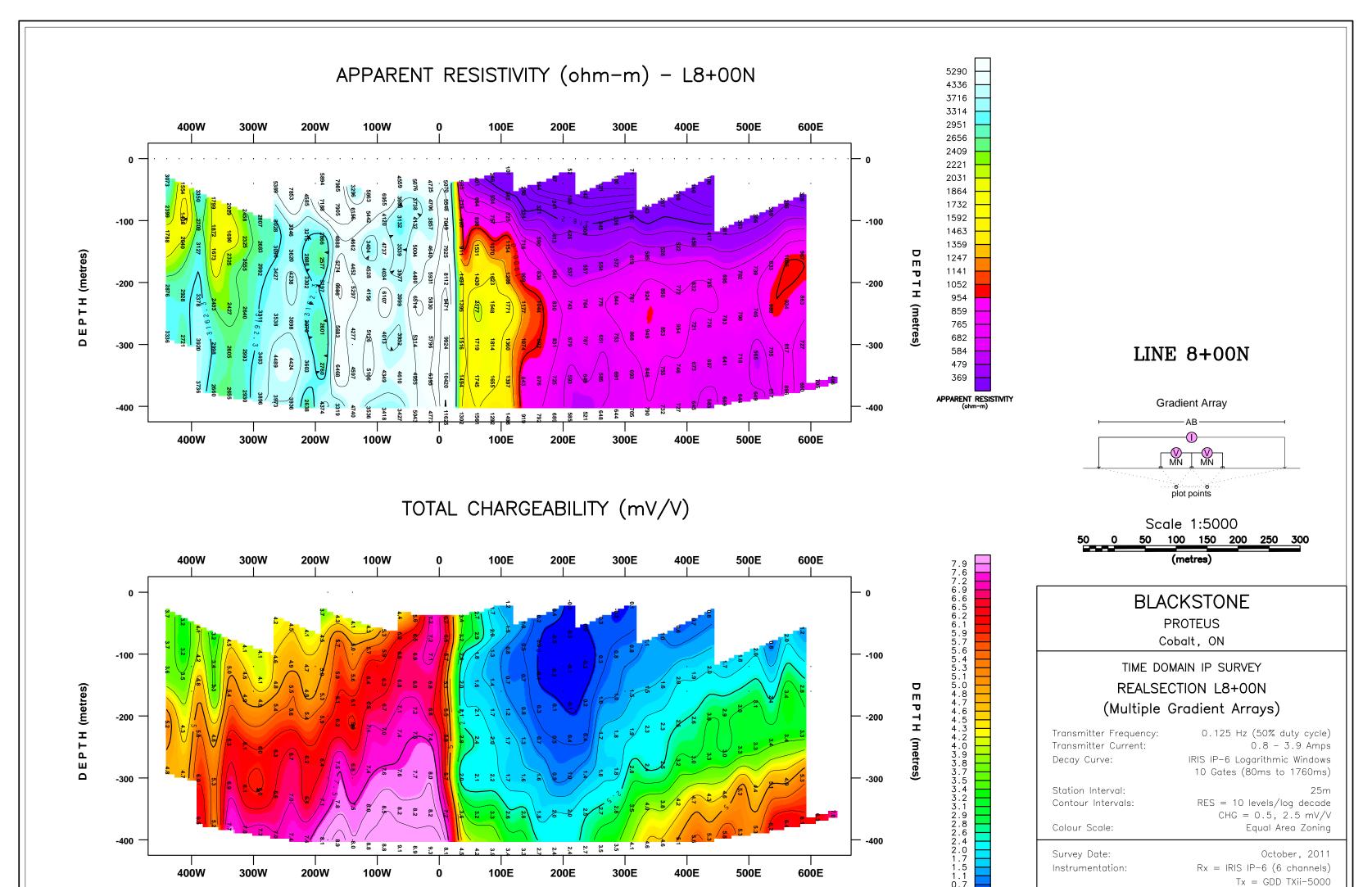


Figure (1-2 revised)



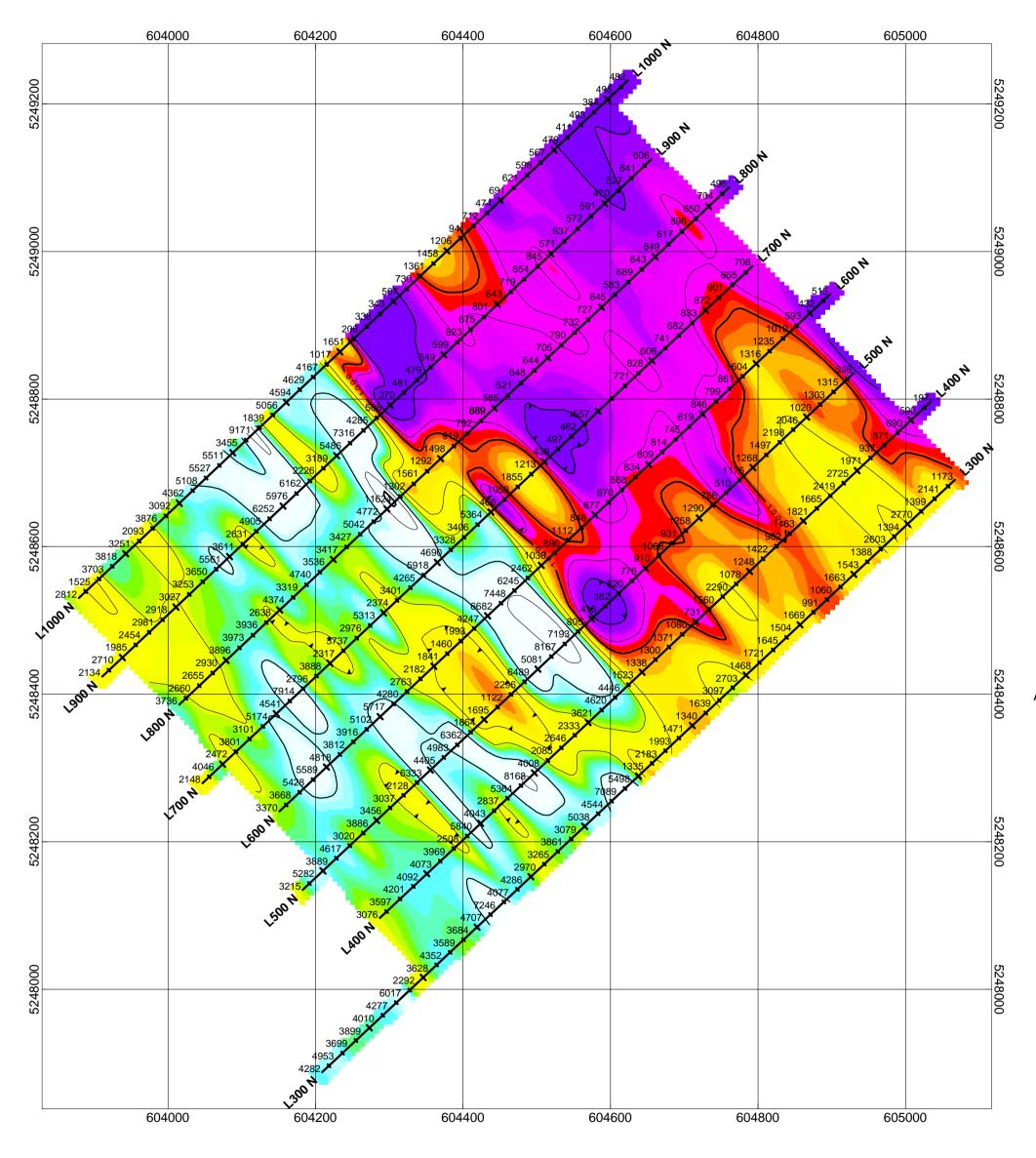
Realsection Generated by JW (02/10/11)

Surveyed & Processed by:

QUANTEC GEOSCIENCE LTD

DWG. #: CA00903C-RSIP-CHG-RES-8+00N

TOTAL CHARGEABILITY





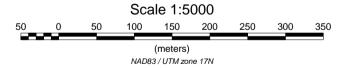
## SURVEY SPECIFICATIONS

Method: Time Domain IP/Resistivity
Rx: IRIS Elrec-6, Tx: GDD TXii-5000
Waveform: Time Domain, 50% duty cycle
Frequency: 0.125 Hz, (2 sec. on/ 2 sec. off)
Time Gates: 10 semi-logarithmic spaced windows
Array: Gradient, AB = 2800m, MN = 25m
Repeatability: 100% total measurements
Electrodes: 1m stainless steel rods
Operators: A.Dufour

## PLOTTING PARAMETERS

Grid Cell Size: 12.5 metres Gridding: Bi-directional Filter Applied: 0 x Hanning Filter Contours: Logarithmic, 5 levels / decade Colour Zoning: Equal Area (resis.tbl)





## **INTERVIA INC.**

## PROTEUS PROPERTY Lorrain Twp., ON RESISTIVITY PLAN MAP

TIME DOMAIN IP/RESISTIVITY SURVEY

**Contoured Total Apparent Resistivity** 



Surveyed & Processed by: QUANTEC GEOSCIENCE LTD. 146 Sparks Ave. Toronto, ON M2H 2S4

Survey Date: Oct., 2011

Project Ref. #: CA00903C

Approved by: JW