

**PORCUPINE JOINT VENTURE**

RESISTIVITY/INDUCED POLARIZATION  
AND MAGNETIC FIELD SURVEYS

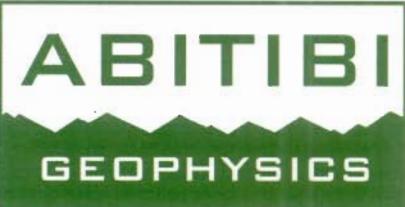
**BEAUMONT PROJECT — BEAUMONT GRID**  
TISDALE TOWNSHIP, DISTRICT OF COCHRANE,  
PORCUPINE MINING DIVISION, ONTARIO, CANADA

LOGISTICS AND INTERPRETATION REPORT

04N771C

SEPTEMBER 2004

2 . 30715



*Consultation et levés géophysiques au sol et en forage*  
Surface & Borehole Geophysical Surveys and Consulting



2 . 30715

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## ABSTRACT

On behalf of the Porcupine Joint Venture, magnetic field and resistivity/induced polarization surveys were performed on the part of the Beaumont Grid (Beaumont Project), located in Tisdale Township. The property lies in the Porcupine Gold Camp of northeastern Ontario. Two shafts were sunk and numerous pits and trenches were excavated in the 1920's to explore two gold occurrences (the North and the South zones) straddling the lot 2-3 line. The objective of the survey was to detect on-strike gold-bearing mineralization.

During the summer of 2004, a total of **2.8 km** of ground MAG and **9.5 km** of IP (pole-dipole,  $a = 25\text{ m}$ ,  $n = 1$  to 6) surveys were carried out to complete the existing coverage. Survey specifications, instrumentation control, data acquisition, processing and interpretation were all successfully performed within our quality system framework.

The resistivity/IP survey successfully detects the North and South gold bearing zones. In both cases, the geophysical signature suggests an extension to the east of the mineralized zones (anomalies **B-04** and **B-07** to be drill-tested on lines 12+00E and 10+00E as a first priority). A new target, **B-05**, lying south of the South zone, should also be drilled as a first priority on line 7+00E.

## 1. THE MANDATE

*PROJECT ID*

**Beaumont Project (Beaumont Grid)**  
 (Our reference: 04N771C)

*GENERAL LOCATION*

In the Porcupine Gold Camp, District of Cochrane, northeastern Ontario.

*CUSTOMER*

**Porcupine Joint Venture**

A Joint Venture of *Placer Dome (CLA) Ltd.* and *Kinross Gold Corp.*  
 1 Gold Mine Road, P.O. Box 70  
 South Porcupine, Ontario P0N 1N0  
 Telephone: (705) 235-6567      Fax: (705) 235-2499

*REPRESENTATIVES*

**Mr. Bill MacRae, M.Sc., P.Geo**

Exploration Geologist – Regional Exploration  
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**Mr. Paul Brown**

Project Geologist

*SURVEY TYPES*

- Ground total magnetic field
- Time domain resistivity/spectral IP

*GEOPHYSICAL OBJECTIVES*

- Assist in lithological discrimination and structural mapping
- Assess the on-strike potential for additional gold-bearing mineralization





## 2. THE BEAUMONT GRID (BEAUMONT PROJECT)

- LOCATION**

Northeast part of **Tisdale** Township, Concession 6, lots 2, 3 and 4.  
District of Cochrane, Porcupine Mining Division  
Ontario, Canada  
Centred on 48°32' N and 81°14' W  
NTS map number: **42A/11**
- NEAREST SETTLEMENT**

Timmins: 8 km SSW
- ACCESS**

A gravel road extending from Highway 655 in Murphy Township to Highway 101 in Whitney Township passes through the southern part of the claim group.
- GEOMORPHOLOGY**

The topography is relatively flat and low with muskegs and bogs in the more depressed areas. The grid drains towards the Craft Creek to the west and the North Porcupine River to the north.
- CULTURAL FEATURE**

None on the property that could have affect the geophysical measurements.
- LAND TENURE**

The claim numbers encompassed in the present survey are illustrated on the following page. The holders are *Placer Dome (CLA) Limited* (51 %) and *Kinross Gold Corporation* (49%).
- SURVEY GRID**

The survey grid was cut by R. Picard, subcontractor, prior to the geophysical campaign, starting from an existing grid. Sixteen cross-lines were cut and extended northerly and southerly to the claim boundaries (see the grid layout on page 5).  
  
GPS points recorded along the baseline and the tie-line were used to fine-tune the location of the grid.
- PROPERTY GEOLOGY<sup>(1)</sup>**

The claim group is largely underlain by volcanic rocks of komatiitic affinity, and lesser magnesium-rich and minor high iron tholeiitic basalts. The stratigraphy trends ENE, dips steeply south and faces south.  
  
The peridotitic komatiites are serpentinized and typically massive, polysutured, light grey to orange brown weathering and dark blue black to dark green on fresh surfaces. Where pervasively carbonatized (e.g. in the Beaumont shaft area), the fresh surface is medium to light grey brown.



Basaltic komatiite is mainly confined to the central part of the claim group and forms large outcrop areas in the northeast part of the property, along and south of TL 2000S. The basalts are both massive and pillowied, weather light to medium grey to buff/orange brown, and are light grey on the fresh surfaces.

Iron-rich tholeiitic basalt is largely confined to a narrow unit near the south part of the claim group. Both pillowied and massive varieties weather dark grey to orange brown and are dark green on fresh surfaces.

*STRUCTURE<sup>(1)</sup>*

Structurally the property appears to contain a steeply dipping, uniform southward facing sequence of flows. Foliations are weak to moderate and are for the most part parallel lithological contacts. The most prominent structural feature observed was ENE shearing along the peridotitic komatiite – Mg-tholeiite contact in the Beaumont shaft area.

*VEINING AND  
MINERALIZATION<sup>(1)</sup>*

Known mineralization on the claim group is largely confined to intensely carbonatized peridotitic komatiite and Mg-tholeiite in the Beaumont shaft area near BL 2400S and lines 7E and 8E. Here, three outcrops were power stripped:

- Trench 1 and Trench 3, within the peridotitic komatiite outcropping along strike from the Beaumont shaft,
- Trench 2, largely within the massive tholeiite south of the main shaft.

*COORDINATE SYSTEM*

Projection: Universal Transverse Mercator

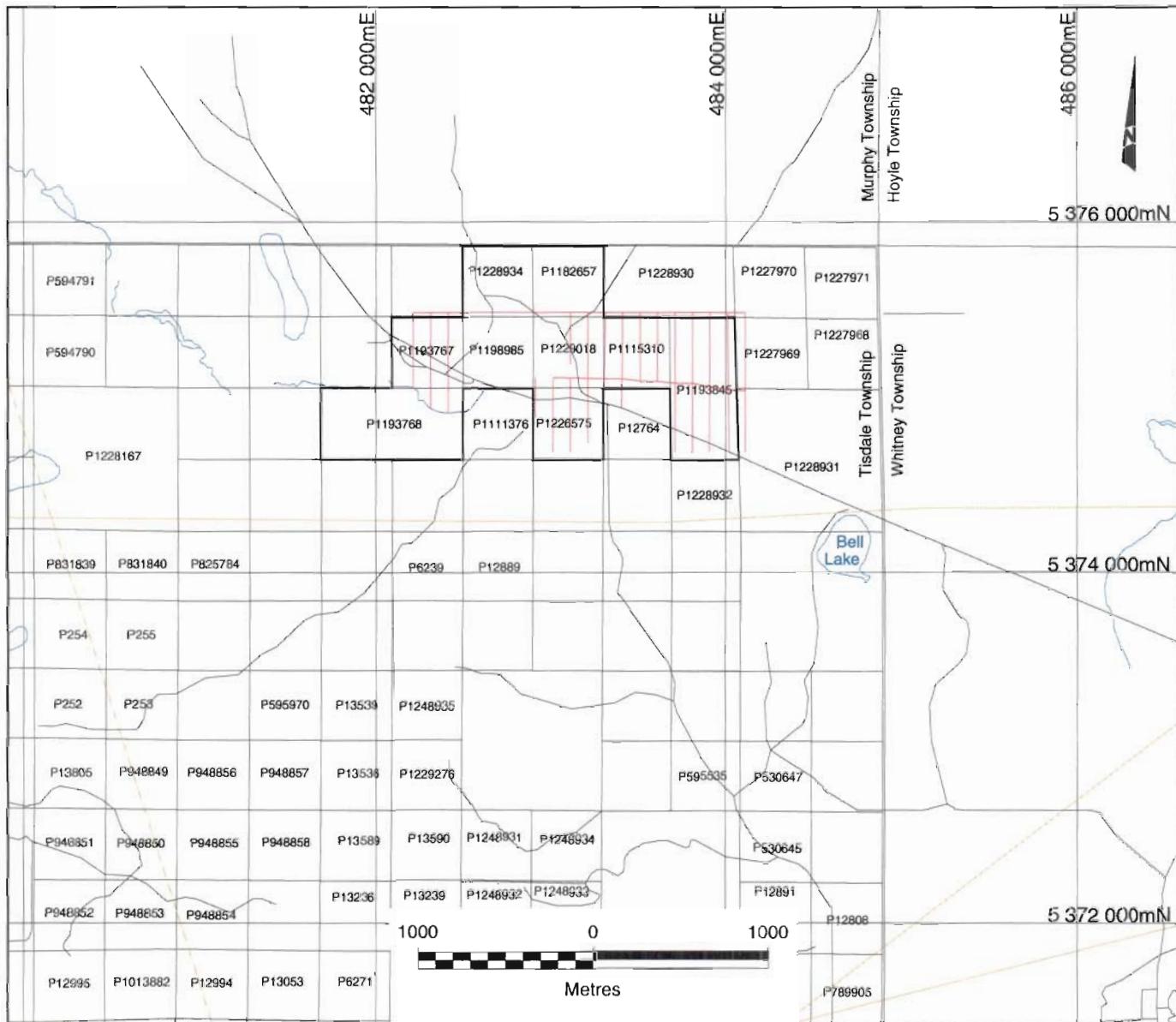
Datum: NAD27

Central meridian: 81°00' W (UTM Zone 17)

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<sup>(1)</sup> – TAKEN FROM :

GEOLOGICAL REPORT ON NORTHEAST TISDALE TOWNSHIP PROPERTY (BEAUMONT SHAFT CLAIMS), TISDALE TOWNSHIP, TIMMINS AREA, ONTARIO, BY D.R. PYKE AND K.M. CUNNISON, JANUARY 1999



INDEX OF CLAIMS AND SURVEY GRID COVERED BY THE PRESENT SURVEY



### 3. MAGNETIC FIELD SURVEY

<input type="checkbox"/> <i>TYPE OF SURVEY</i>	Measurement of the Total Field Intensity ( <b>TFI</b> ) every 12.5 m. TFI plotted values were corrected for diurnal variations using readings from a synchronized MAG base station.
<input type="checkbox"/> <i>PERSONNEL</i>	Gaétan Tremblay, Martin Dubois, Geo., Carole Picard, Tech. Pierre Bérubé, Eng., geophysical operator fieldwork supervision & logistics data processing & plotting QC & interpretation
<input type="checkbox"/> <i>DATA ACQUISITION</i>	August 15, 2004
<input type="checkbox"/> <i>SURVEY COVERAGE</i>	<b>2.8 line-km</b> , including the baseline and the tie-line
<input type="checkbox"/> <i>FIELD MAGNETOMETER</i>	<b>GEM Systems GSM-19</b> , s/n 44318 Proton precession gradiometer with Overhauser effect Resolution: 0.01 nT Absolute accuracy: 0.2 nT Gradient tolerance: >10 000 nT/m TF sensor: at a height of 1.8 m above ground.
<input type="checkbox"/> <i>BASE STATION</i>	<b>GEM Systems GSM-19</b> , s/n 61519 Proton precession magnetometer with Overhauser effect Resolution: 0.01 nT Absolute accuracy: 0.2 nT Cycle time: <b>10 seconds</b>
<input type="checkbox"/> <i>QUALITY CONTROLS</i> (RECORDS AVAILABLE UPON REQUEST)	<b>Before the survey:</b> <ul style="list-style-type: none"><li>✓ Magnetometers were successfully field-tested on Abitibi Geophysics' private control line.</li></ul> <b>Every day during data acquisition:</b> <ul style="list-style-type: none"><li>✓ Every morning, the operators had to successfully test for any magnetic contamination.</li><li>✓ In the evening, the crew chief reviewed the Base station recordings and the repeat stations using our proprietary <i>MAGneto™</i> processing and QC software. No active periods were encountered during the survey.</li></ul> <b>At the Base of Operations:</b> <ul style="list-style-type: none"><li>✓ Field QCs were inspected &amp; validated.</li><li>✓ All profiles were inspected and a few spurious readings caused by the presence of previously mentioned cultural features were removed from the database.</li></ul>

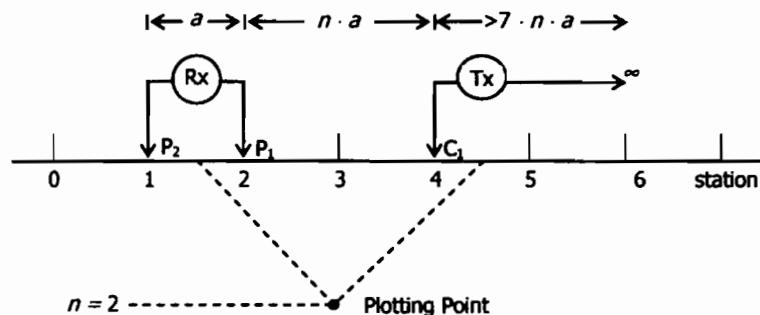
## 4. RESISTIVITY / INDUCED POLARIZATION SURVEY

*TYPE OF SURVEY*

Time domain resistivity/induced polarization

**Pole-dipole array, "a" = 25 m, "n" = 1 to 6**

Location of  $C_\infty$  (NAD27): 481 565 mE, 5 376 072 mN



*PERSONNEL*

Paul Mélançon,	crew chief
Yannick Mélançon,	field assistant
Roxane Croteau,	field assistant
Gaétan Tremblay,	field assistant
Louisette Laître,	field assistant
Martin Dubois, Geo.,	fieldwork supervision, logistics & QC
Carole Picard, Tech.,	data processing & plotting
Pierre Bérubé, Eng.,	interpretation

*DATA ACQUISITION*

From August 13 to 15, 2004

Any down time due to instrument breakdown, telluric noise or bad weather.

*SURVEY COVERAGE*

**9.5 km**

*IP TRANSMITTER (Tx)*

GDD Instruments TxIII, s/n 206

Power supply: Kodiak 1800 W

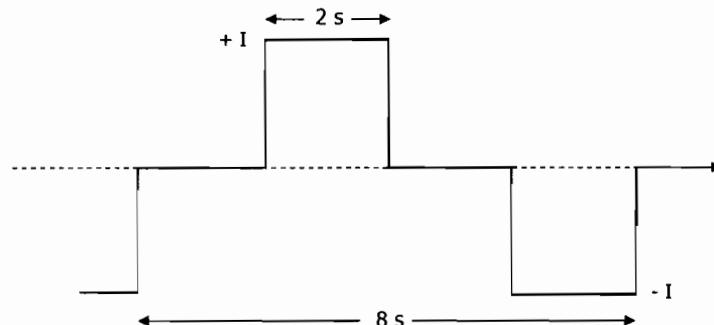
Maximum output: up to 1.8 kW or **10 A** or 2000 V

Electrodes: stainless steel stakes

Resolution: 1 mA on output current display **I**

Waveform: bipolar square wave with 50% duty cycle

Pulse duration: 2 seconds



*IP RECEIVER (Rx)*

IRIS Elrec-PRO, s/n 123 (10 input channels)

Electrodes: stainless steel stakes

**V<sub>p</sub>** Primary voltage measurement:

◊ Input impedance: 100 MΩ

◊ Resolution: 1 µV

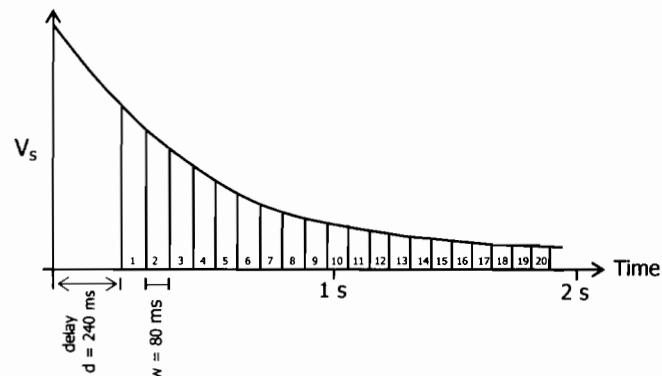
◊ Typical accuracy: 0.2%

**M<sub>a</sub>** Apparent chargeability measurement:

◊ Resolution: 0.1 mV/V

◊ Typical accuracy: 0.6%

◊ Arithmetic sampling mode, 20 time slices (M<sub>1</sub> to M<sub>20</sub>)



◊ All gates are normalized with respect to a standard decay curve for QC in the field.

*APPARENT RESISTIVITY CALCULATION*

$$\rho_a = 2 \cdot \pi \cdot \frac{V_p}{I} \cdot n \cdot (n + 1) \cdot a \quad (\text{in } \Omega \cdot \text{m})$$

Cumulative error: 5% max, mainly due to chaining accuracy.

*QUALITY CONTROL  
(RECORDS AVAILABLE UPON REQUEST)*

**Before the survey:**

- ✓ Transmitter & motor generator were checked for maximum output using calibrated loads.
- ✓ Receiver was checked using the Abitibi Geophysics SIMP™ certified and calibrated V<sub>p</sub> & M signal simulator.

**During data acquisition:**

- ✓ Rx & Tx cable insulation was verified every morning.
- ✓ Proprietary Software *Refusilo™* allowed a daily thorough monitoring of data quality and survey efficiency.
- ✓ Enough pulses were stacked: 6 pulses for every reading.

**At the Base of Operations:**

- ✓ Field QCs were inspected & validated.
- ✓ Each IP decay curve was analyzed with *Refusilo™*. The few gates that were rejected were not included in the calculation of the plotted M<sub>a</sub>.

*QUALITY STATISTICS*

<b>Pole-dipole: a = 25 m, n= 1 to 6</b>	<b>Beaumont Grid</b>
Average contact resistance at the R <sub>x</sub>	3.7 kΩ
Average output current across C <sub>1</sub> -C <sub>2</sub>	869 mA
Average measured voltage V <sub>p</sub> across P <sub>1</sub> -P <sub>2</sub> at n = 6	239 mV
Observed gates found to fit a pure electrode polarization relaxation curve	99.0 %
Average deviation of the validated normalized gates with respect to the plotted mean chargeabilities	0.05 mV/V at n = 1  0.12 mV/V at n = 6

## 5. DATA PROCESSING AND DELIVERABLES

*METAL FACTOR*

This parameter is not measured, but derived from the resistivity and chargeability values:

$$MF = 1000 * [\text{chargeability}] / [\text{resistivity}]^{1/2}$$

The conventional use of the metal factor has been to highlight sources that are both conductive and polarizable, such as semi-massive to massive sulphide occurrences.

But this parameter also compensates approximately the polarizability response for overburden thickness variations. Indeed, the bedrock being more polarizable than overburden, the chargeability profile will reflect the bedrock topography and look anomalous. Bedrock being also much more resistive than overburden, the ratio between these two values should produce a map that will minimize these effects.

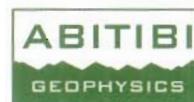
This product should be used with care because the above formula is too simple to describe the complete behaviour of resistivity and chargeability over the whole spectrum. In particular, when the overburden is very thin or very thick, the compensation effect of the metal factor will be poor.

A more important drawback of metal factor is that it might greatly damp the typical response of minor sulphides in resistive (silicified, carbonatized or sericitized) units.

*SPECTRAL IP PROCESSING*

The spectral analysis of the measured IP decay curve results in a quantitative evaluation of the IP time constant of the various sources. This parameter is the fingerprint of the mineral causing the IP response whereas chargeability is indicative of the amount of this polarizable mineral; both are complementary.

So spectral analysis may lead to mineral discrimination based upon the textural characteristics of the source (graphite, sulphides, oxides, clay minerals). Inversion of the IP decay curves was done using the Australian AGR robust core algorithm. A map of the time constant at a depth of 40 m is presented in addition to the resistivity, chargeability and metal factor maps.



*TRUE-DEPTH IP SECTIONS*

Apparent resistivity and chargeability pseudosections were inverted using our proprietary *image2D™* package. The process is fully automated as there is no need to guess a starting model or to filter the pseudosection to generate one. The ground is divided in cells of  $\frac{1}{4}$  side and a back-projection of the raw data is performed.

The result is a smooth earth model showing all conductive, resistive and polarizable sources. The resulting true-depth sections integrate all possible solutions, highlighting the most probable ones.

A synthetic example showing the ability of *image2D™* to resolve sources and to facilitate the location of DDH is presented on page 12.

*PRECISIONS CONCERNING  
*image2D™**

Imaging cannot create information that is not in the raw data set (pseudosections), i.e., the limitations of the technique and array that was used will still prevail. With pole-dipole, for instance, resolution is asymmetrical and vertical sources may show a false dip. However, noise is efficiently rejected, near-surface effects are easily identified and complex responses, such as two adjoining sources, a wide body or a dipping geological contact, are well resolved.

This imaging process will not recover intrinsic resistivities unless the source is very wide. However, as opposed to pseudosections, geological data from drill-holes may be superimposed on *image2D™* true-depth sections.

*MAPS PRODUCED*

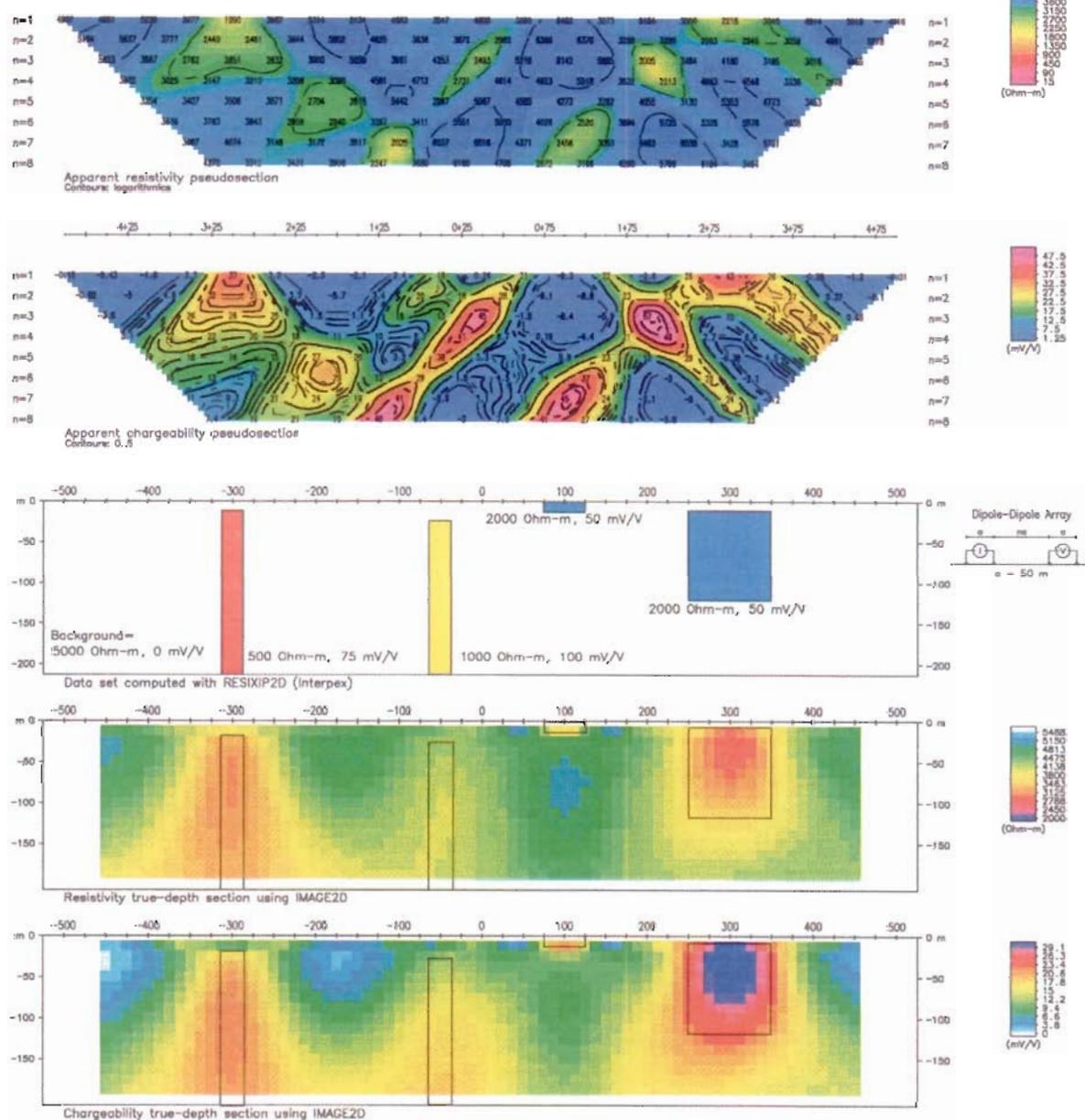
The following colour maps are delivered or inserted in pouches at the end of this report. Our Quality System requires that every final map be inspected by at least two qualified persons before being approved and included within a final report.

Map Number	Description	Scale
Lines 3+00W to 1+00W and 4+00E to 16+00E	Colour Apparent Resistivity & Chargeability Pseudosections and <i>image2D™</i> True-depth Sections with interpretation (16 plates inserted at the end of this report)	1:2 500
1.1	Ground Magnetic Field Survey – Total Field Profiles	1:5 000
1.2	Ground Magnetic Field Survey – Total Field Contours	1:5 000
1.3	Ground Magnetic Field Survey – Calculated Vertical Gradient Contours	1:5 000
8.2	IP Survey - <i>image2D™</i> Resistivity at a depth of 40 m	1:5 000
8.3	IP Survey - <i>image2D™</i> Chargeability at a depth of 40 m	1:5 000
8.4	IP Survey - <i>image2D™</i> Metal Factor at a depth of 40 m	1:5 000
8.5	IP Survey - <i>image2D™</i> Time Constant at a depth of 40 m	1:5 000
10.0	Geophysical Interpretation	1:5 000

### image2D™ demo on synthetic datasets

**Top half of figure:** classic apparent resistivity and chargeability pseudosections.

**Centre of plate:** the synthetic model that generates these pseudosections.



**Bottom half of figure:** the reconstructed resistivity and chargeability true-depth sections after inversion of the pseudosections using **image2D™**.  
The model is superimposed on these sections.

## 6. RESULTS AND RECOMMENDATIONS

### MAGNETIC FIELD MAPS

The survey covered a very small area between lines 4+00E and 8+00E. These results must be levelled and merged with the existing database in order to be adequately interpreted, especially for structure.

### RESISTIVITY MAP

The central part of the map 8.2 is characterized by very highly resistive ovoid-shaped zones. These zones have been reported on the Geophysical Interpretation Map (10.0) using the 2000  $\Omega\text{m}$  contour line (in blue). These resistive zones suggest silicification/carbonatization/sericitization of units having resisted weathering. The rock is believed to be outcropping or sub-cropping within these blue-shaded areas.

### CHARGEABILITY MAP

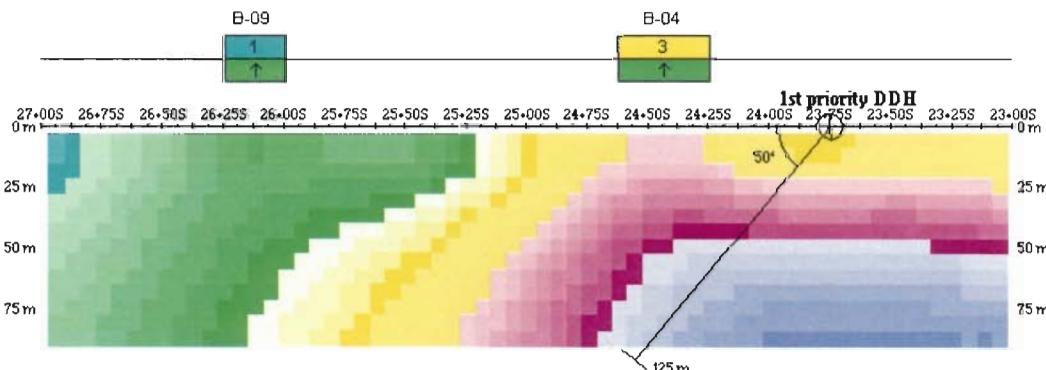
The *image2D™* chargeability map (8.3), plotted at a depth of 40 m, enables us to see that the resistive zones outlined on the Geophysical Interpretation Map are also polarizable. The metal factor map (8.4) suggests that this relationship is not only due to a bedrock ridge effect, but that disseminated metallic minerals are also present.

Ten resistivity/IP anomalies were interpreted on the Beaumont Grid. The inferred surface projection of the resistivity/IP signatures are shown along the survey lines on both the Geophysical Interpretation Map and the pseudosection plates. These anomalies have been correlated from line-to-line according to their strength, resistivity association, strike-trends and other similar characteristics. They are fully described in Appendix A.

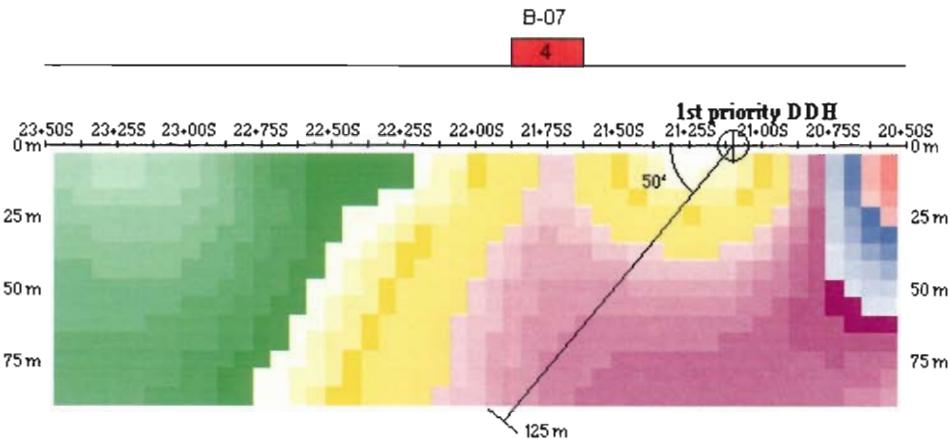
### BEAUMONT SHAFT AREA

The two known mineralized zones on the survey grid seem to correlate with combined moderate to strong polarizable anomaly and resistivity high.

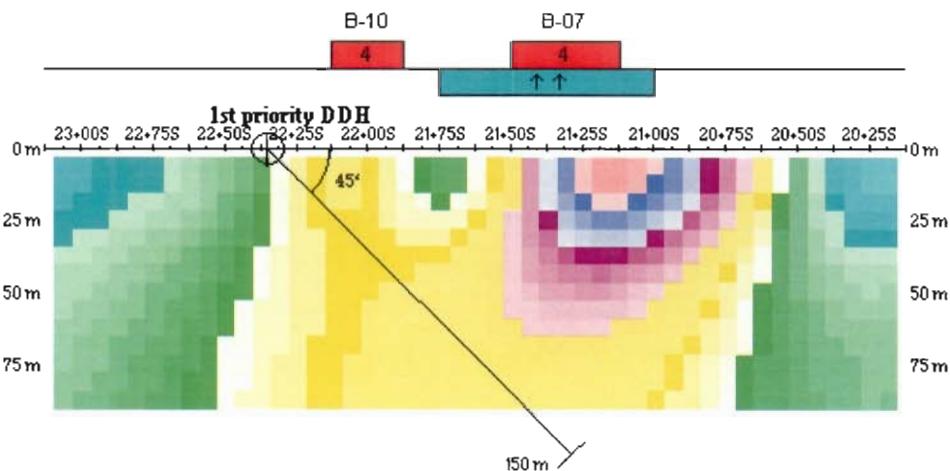
The western part of **B-04** coincides quite well with the South Zone. The anomaly pinches out between lines 8+00E and 9+00E. This is confirmed by hole #4. However, the anomaly reappears on line 12+00E (no data between 9+00E and 11+00E) and should be drill-tested at depth on line 12+00E:



The westernmost part of **B-07** correlates with the North Zone. Interestingly, the IP response is stronger to the east. A first priority DDH is recommended on line 10+00E:



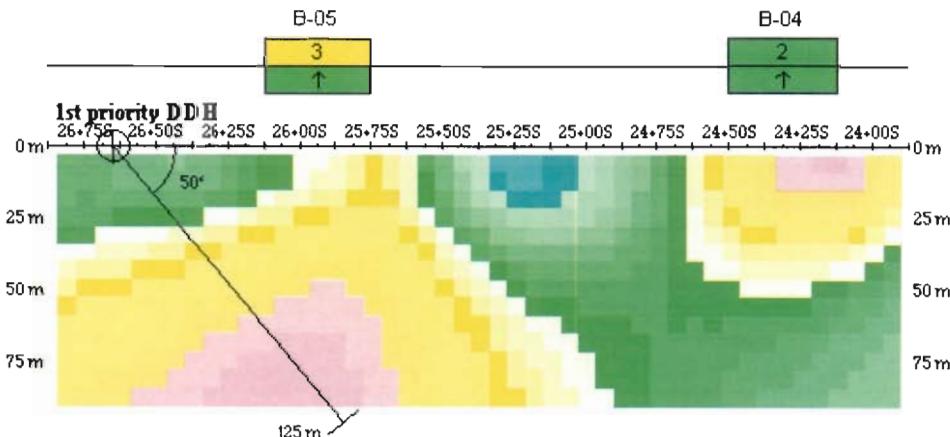
A second hole should be drilled further east, on line 14+00E, in order to test both **B-07** and **B-10**:



*OTHER EXPLORATION TARGETS*

**B-05** is the final first-priority target. The source is deep, strikes NE and is also located within a resistivity high.

It should be drill-tested on line 7+00E (line 8+00E is on the property boundary).



The source of **B-08** is sub-cropping. It is lying north of **B-07** (North Zone expression) and should be prospected on line 10+00E (second-priority target).

The interpretation of the geophysical data embodied in this report is essentially a geophysical appraisal of the Beaumont Grid. As such, it incorporates only as much geoscientific information as the author has on hand at the time. Geologists thoroughly familiar with the area are in a better position to evaluate the geological significance of the various geophysical signatures. Moreover, as time passes and information provided by follow-up programs are compiled, exploration targets recognized in this study might be down-graded or up-graded.

Respectfully submitted,  
Abitibi Geophysics Inc.

Pierre Bérubé, Eng.  
Geophysicist

## Appendix

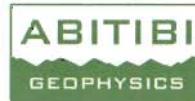


### Description of the resistivity/IP anomalies on the Beaumont Grid - Beaumont Project

Anomaly	Location		Contrast		Magnetic Association	Comments	Priority
	Line	Station	Charg.	Res.			
B-01	3+00W	23+13S	1	↑	N/A	Best response on the westernmost line. <b>Survey extension recommended, land position permitting.</b>	3
	2+00W	23+38S	?	↓	N/A		
	1+00W	23+50S	?	↓	N/A		
B-02	3+00W	22+00S	1	-	N/A	Uncertain continuity. Probably a bedrock ridge effect on line 1+00W. Likely to be abandoned.	5
	1+00W	21+81S	1	↑	N/A		
B-03	2+00W	24+25S	?	-	N/A	Could be related to B-04. Missing link probably lies outside the property.	5
	1+00W	24+50S	1	-	N/A		
B-04	4+00E	24+63S	1	↑	-	Likely to represent the South Zone. Seems to have already been drilled-tested between lines 7+00E and 8+00E (holes #2, 3 and 5). Pinches out before 9+00E (as demonstrated by hole #4) but as strong on line 12+00E as on 8+00E. <b>First priority DDH recommended on line 12+00E (deep source).</b>	1
	5+00E	24+50S	1	↑	-		
	6+00E	24+38S	1	↑(R)	-		
	7+00E	24+31S	2	↑(R)	-		
	8+00E	24+19S	3	↑(R)	-		
	9+00E	24+25S	?	-	N/A		
	12+00E	24+44S	3	↑	N/A		
	13+00E	24+50S	2	↑	N/A		
	14+00E	24+31S	1	↑	N/A		
	15+00E	24+50S	1	-	N/A		
	16+00E	24+50S	1	-	N/A		
B-05	5+00E	South End	2	-	-	Unknown source striking NE. <b>First-priority target to be drill-tested on line 7+00E (deep source).</b>	1
	6+00E	26+75S	2	↑	(+700nT)		
	7+00E	25+94S	3	↑	(+250nT)		
	8+00E	25+56S	4	↑	-		
	9+00E	South End	4	↑	N/A		
B-06	6+00E	25+75S	1	-	-	Single-line response. Likely to be abandoned.	5

## Appendix

### Description of the resistivity/IP anomalies on the Beaumont Grid - Beaumont Project



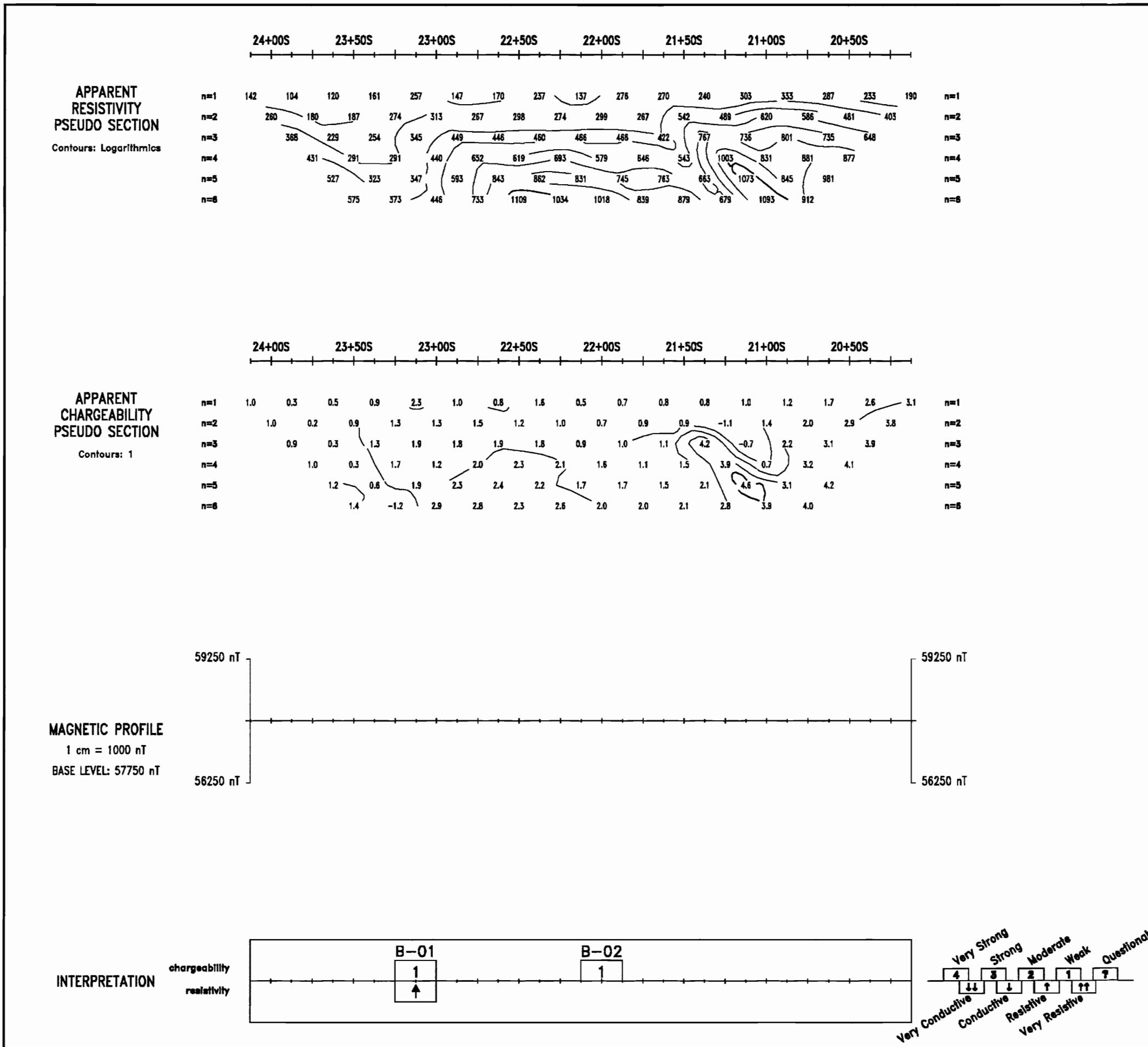
Anomaly	Location		Contrast		Magnetic Association	Comments	Priority
	Line	Station	Charg.	Res.			
B-07	7+00E	22+69S	3	↑	-	Coincides with the North Zone on lines 7+00E and 8+00E. Response is stronger eastward. <b>First-priority DDH recommended on lines 10+00E and 14+00E.</b>	1
	8+00E	22+50S	2	↑	-		
	9+00E	21+81S	4	↑	N/A		
	10+00E	21+75S	4	-	N/A		
	11+00E	21+69S	3	-	N/A		
	12+00E	21+81S	3	-	N/A		
	13+00E	21+56S	4	↑(R)	N/A		
	14+00E	21+31S	4	↑↑(R)	N/A		
	15+00E	21+81S	3	↑	N/A		
	16+00E	22+19S	2	↑	N/A		
B-08	7+00E	21+75S	2	↑	-	Lies 100-150 m north of <b>B-07</b> . Un-drilled target. Sub-cropping source on lines 9+00E and 10+00E. <b>To be prospected on line 10+00E.</b>	2
	8+00E	21+00S	2	↑	-		
	9+00E	20+44S	4	↑↑(R)	N/A		
	10+00E	20+44S	4	↑↑(R)	N/A		
	11+00E	20+75S	3	↑	N/A		
B-09	12+00E	26+13S	1	↑	N/A	Weakly polarizable resistive source. Likely a bedrock effect.	5
	14+00E	26+00S	?	-	N/A		
	15+00E	26+13S	1	↑	N/A		
	16+00E	26+13S	1	↑	N/A		
B-10	13+00E	22+25S	2	↓	N/A	Very limited strike extent. <b>Could be drill-tested using the same hole as B-07 on line 14+00E.</b>	2
	14+00E	22+00S	4	(R)	N/A		

**LEGEND:**

<b>Chargeability Increase</b>	
? = Marginal	
1 = Weak	
2 = Moderate	
3 = High	
4 = Very High	

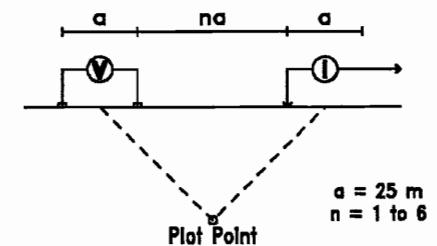
<b>Resistivity Increase</b>	
↑ = Resistive	
↑↑ = Very Resistive	
(R) = Wide Resistive Zone	
<b>Decrease</b>	
↓ = Conductive	
↓↓ = Very Conductive	

N/A: no data available

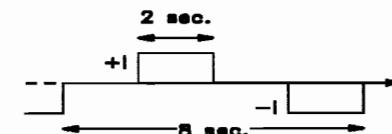


### INDUCED POLARIZATION SURVEY

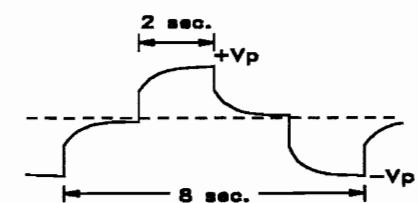
Pole-Dipole Array



Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



2 . . . . .

Scale 1 : 2500

25 0 25 50 75 100 125 150m

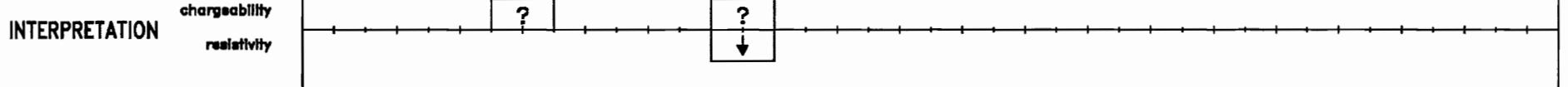
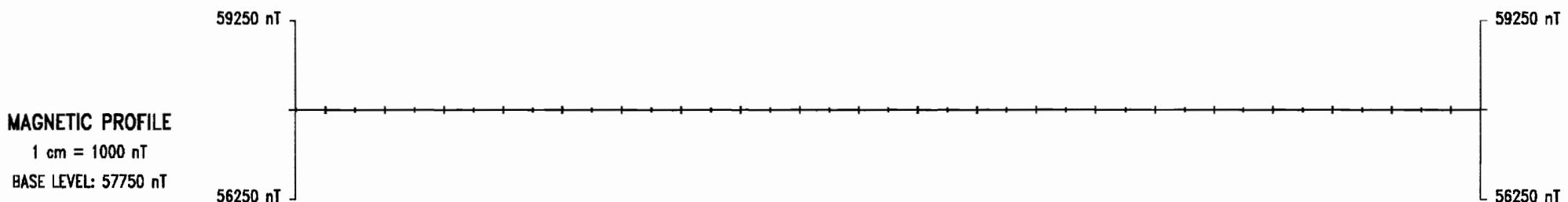
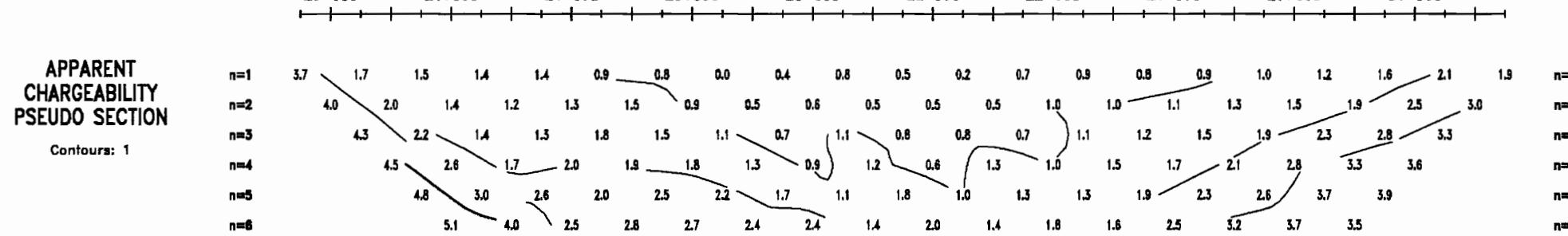
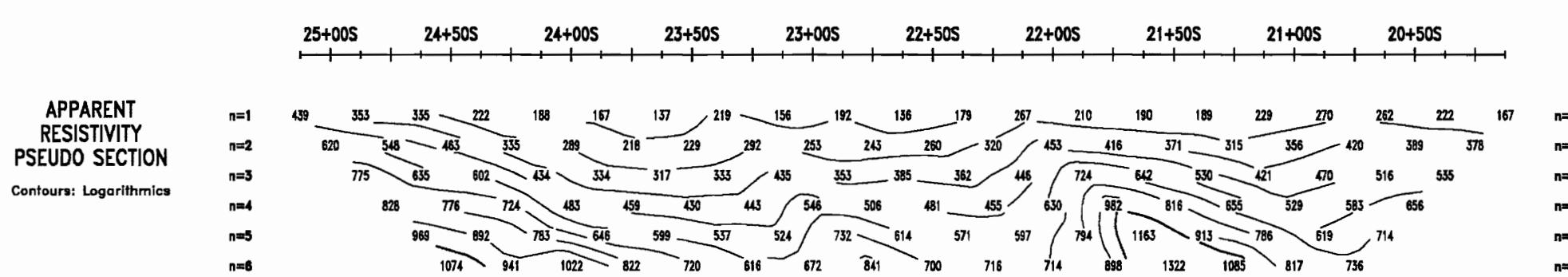
**Porcupine Joint Venture**

**Beaumont Project — Beaumont Grid**  
**Tisdale Township**  
**Ontario, Canada**

**Line 3+00W**

Interpreted by: P. Béribé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

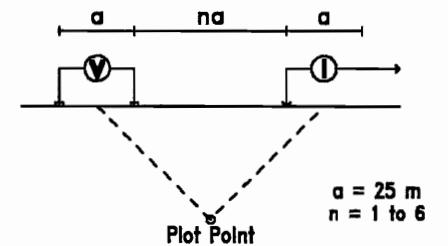
**ABITIBI**  
GEOPHYSICS



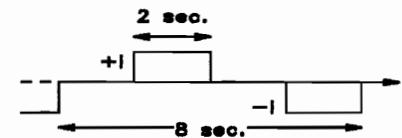
Very Conductive  
Conductive  
Resistive  
Very Resistive  
Very Strong  
Strong  
Moderate  
Weak  
Questionable

## INDUCED POLARIZATION SURVEY

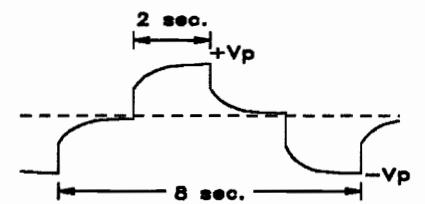
Pole-Dipole Array



Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



2 . 30715

Scale 1 : 2500  
25 0 25 50 75 100 125 150m

Porcupine Joint Venture

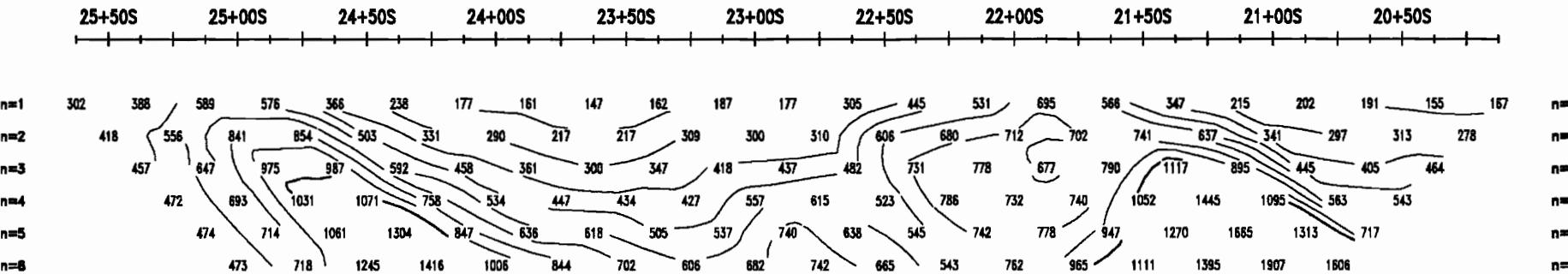
Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 2+00W

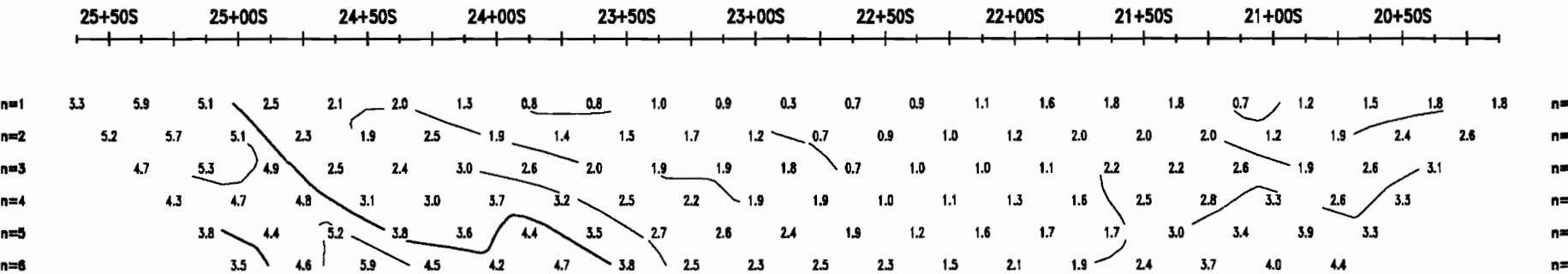
Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

**ABITIBI**  
GEOPHYSICS

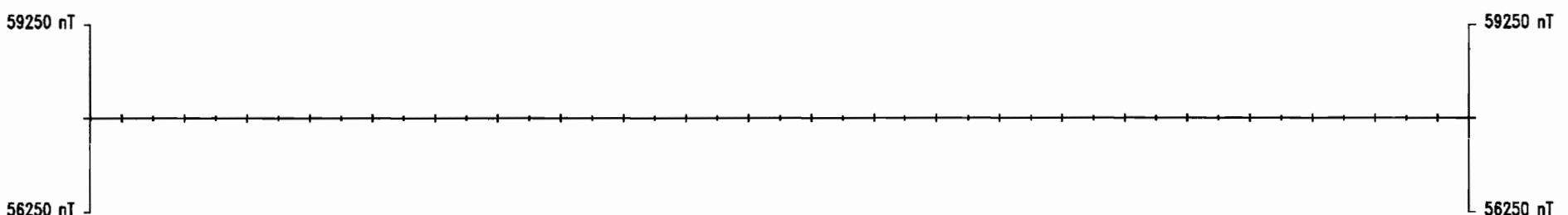
APPARENT  
RESISTIVITY  
SUITE SECTION  
Contours: Logarithmic



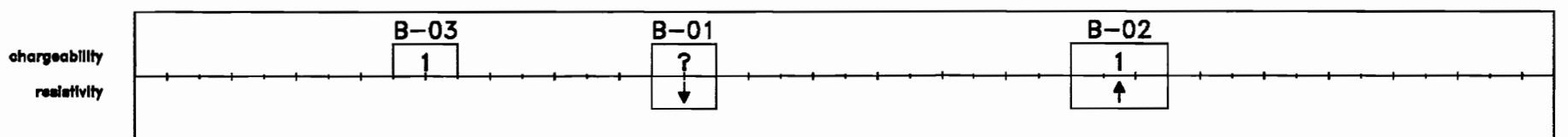
APPARENT  
CHARGEABILITY  
SUITE SECTION  
Contours: 1



MAGNETIC PROFILE  
m = 1000 nT  
LEVEL: 57750 nT



INTERPRETATION

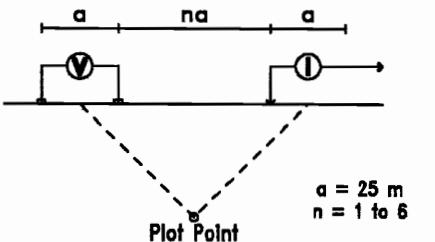


Very Strong  
Strong  
Moderate  
Weak  
Questionable

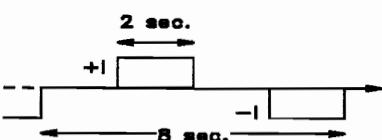
Very Conductive  
Conductive  
Resistive  
Very Resistive

INDUCED POLARIZATION SURVEY

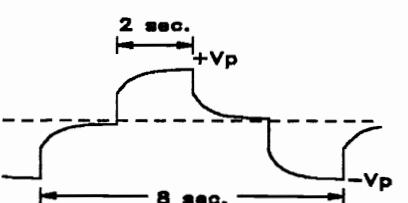
Pole-Dipole Array



Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



Scale 1 : 2500  
25 0 25 50 75 100 125 150m

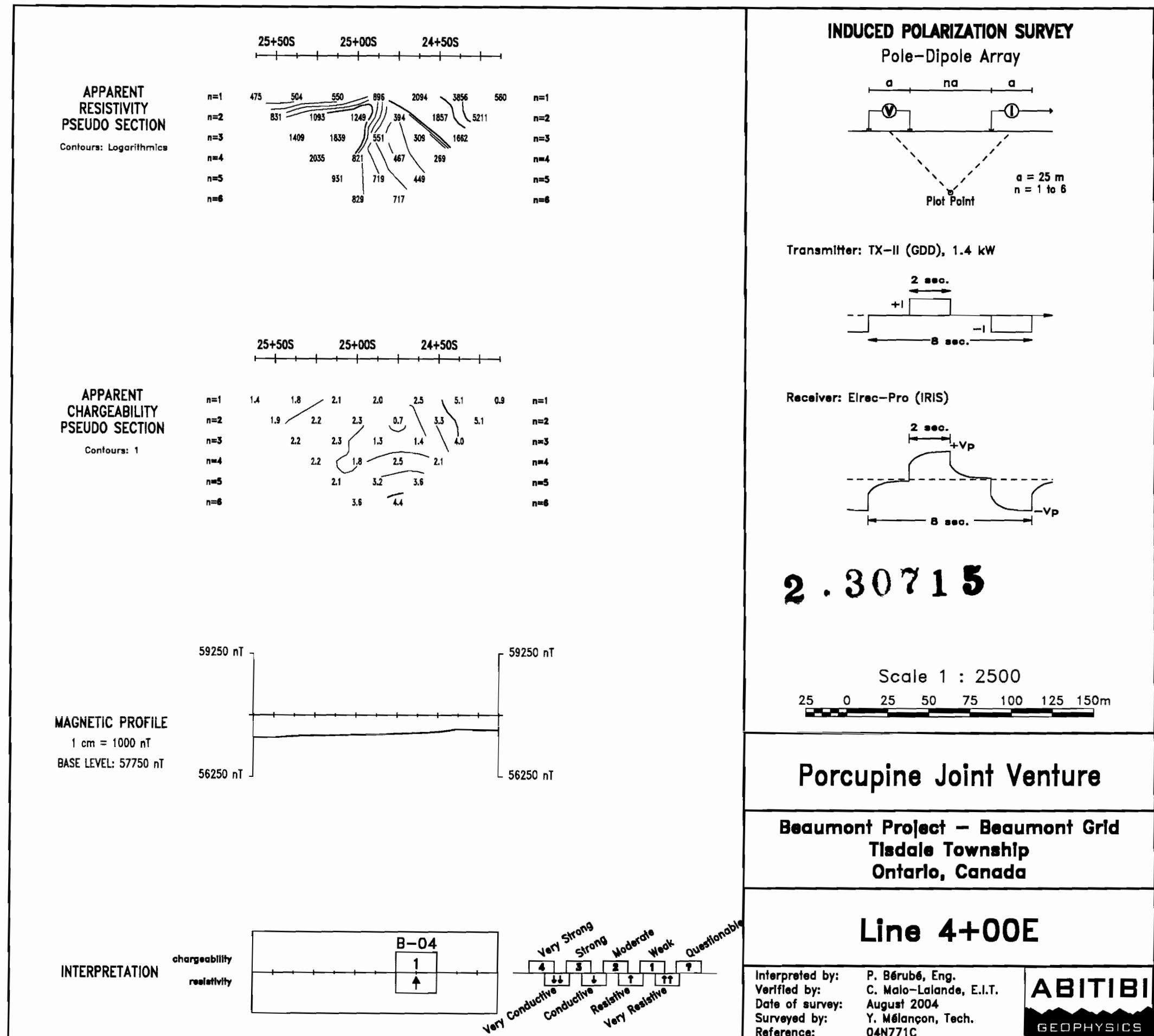
Porcupine Joint Venture

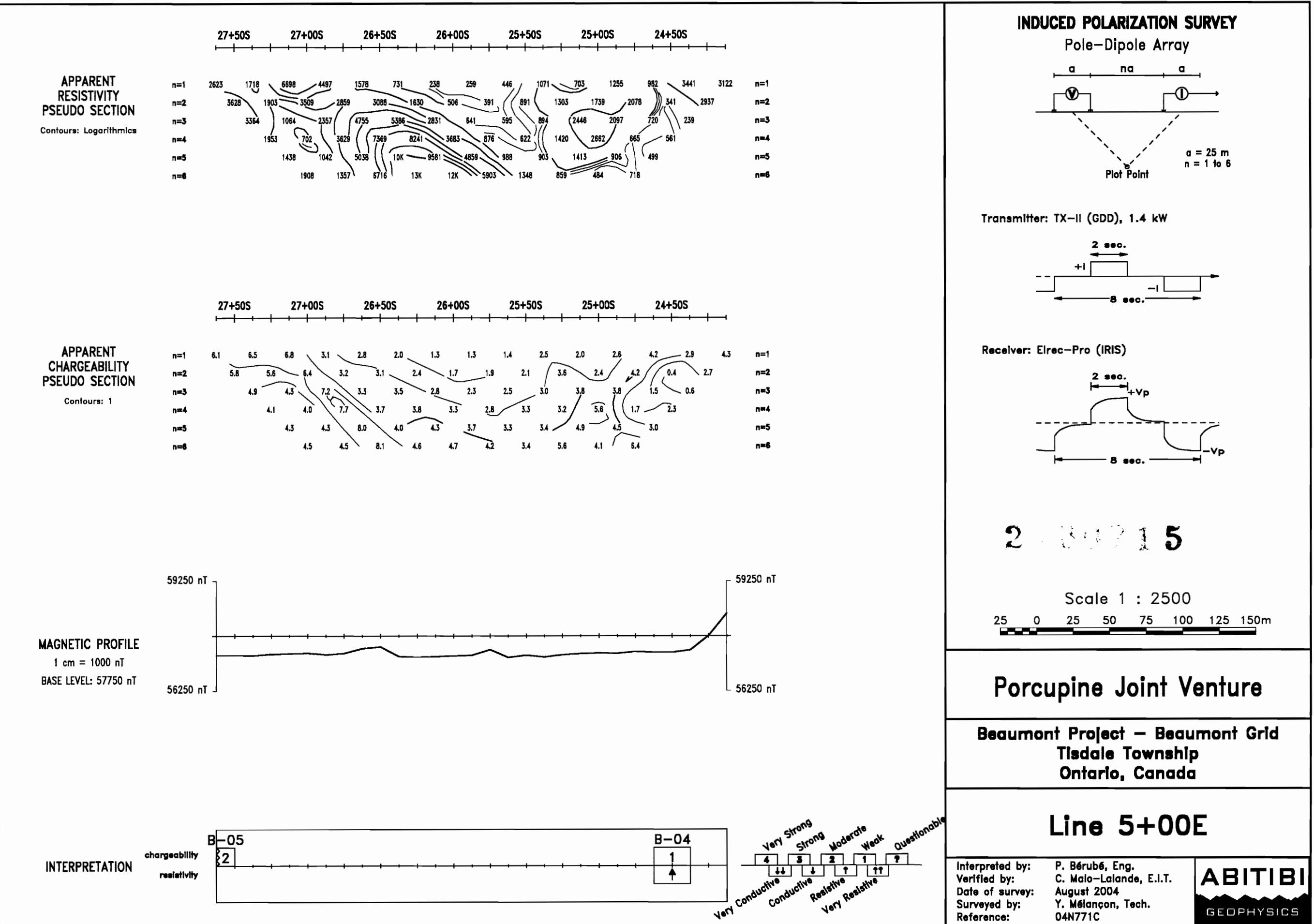
Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 1+00W

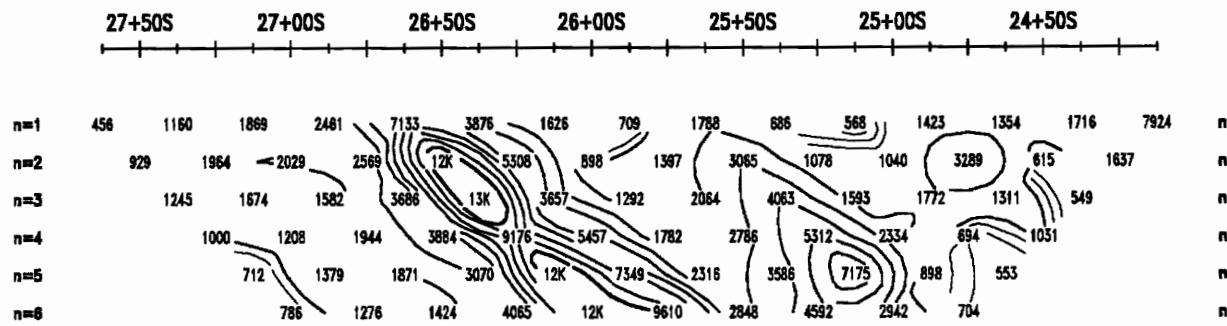
Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

ABITIBI  
GEOPHYSICS

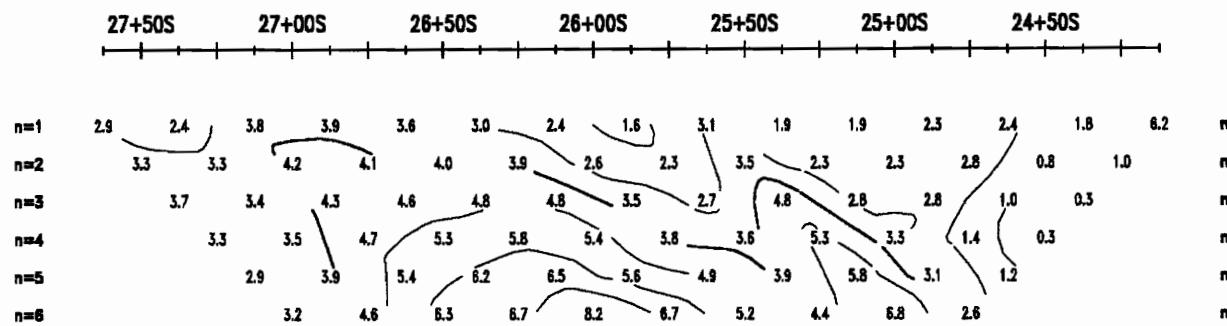




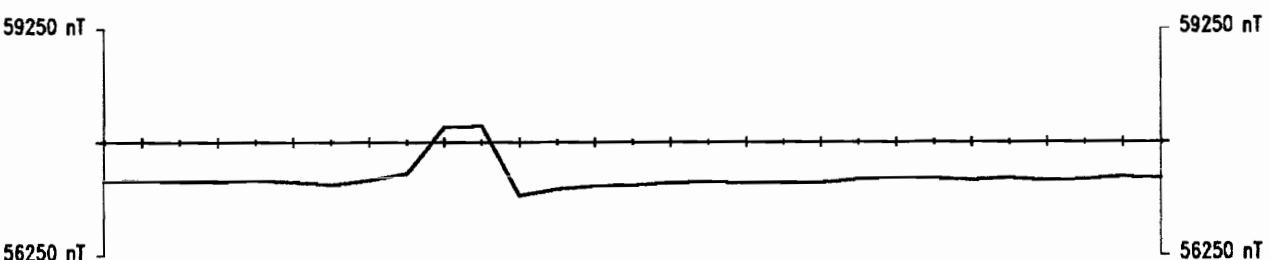
**APPARENT  
RESISTIVITY  
PSEUDO SECTION**  
Contours: Logarithmic



**APPARENT  
CHARGEABILITY  
PSEUDO SECTION**  
Contours: 1

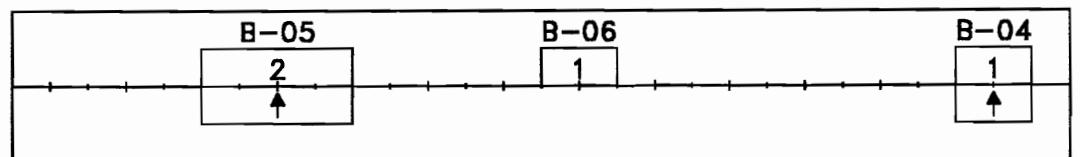


**MAGNETIC PROFILE**  
1 cm = 1000 nT  
BASE LEVEL: 57750 nT



**INTERPRETATION**

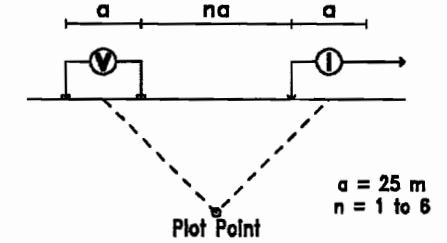
chargeability  
resistivity



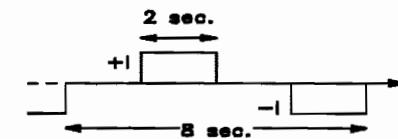
Very Strong  
Strong  
Moderate  
Weak  
Questionable  
Very Conductive  
Conductive  
Resistive  
Very Resistive

**INDUCED POLARIZATION SURVEY**

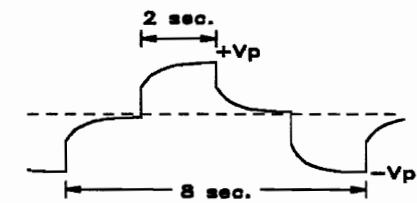
Pole-Dipole Array



Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



2 . 3 0 7 1 5

Scale 1 : 2500  
25 0 25 50 75 100 125 150m

**Porcupine Joint Venture**

**Beaumont Project – Beaumont Grid**  
Tisdale Township  
Ontario, Canada

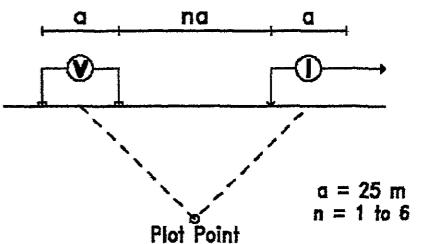
**Line 6+00E**

Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Melançon, Tech.  
Reference: 04N771C

**ABITIBI**  
GEOPHYSICS

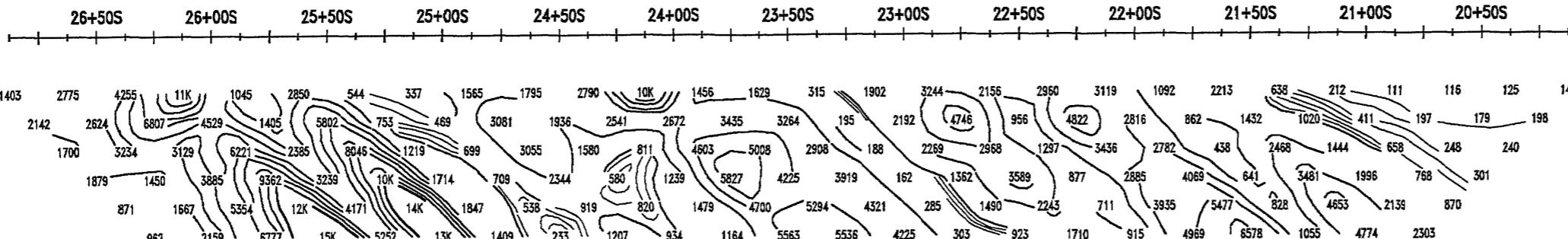
### INDUCED POLARIZATION SURVEY

Pole-Dipole Array



### APPARENT RESISTIVITY PSEUDO SECTION

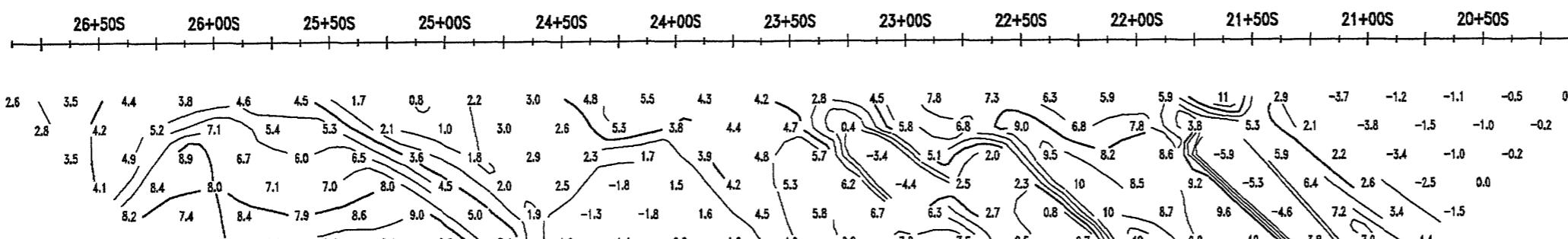
Contours: Logarithmic



$n=1$   
 $n=2$   
 $n=3$   
 $n=4$   
 $n=5$   
 $n=6$

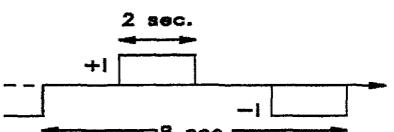
### APPARENT CHARGEABILITY PSEUDO SECTION

Contours: 1

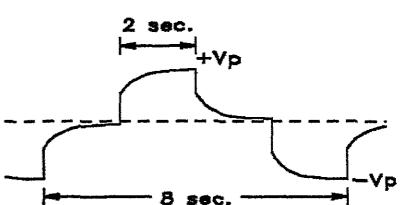


$n=1$   
 $n=2$   
 $n=3$   
 $n=4$   
 $n=5$   
 $n=6$

Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)

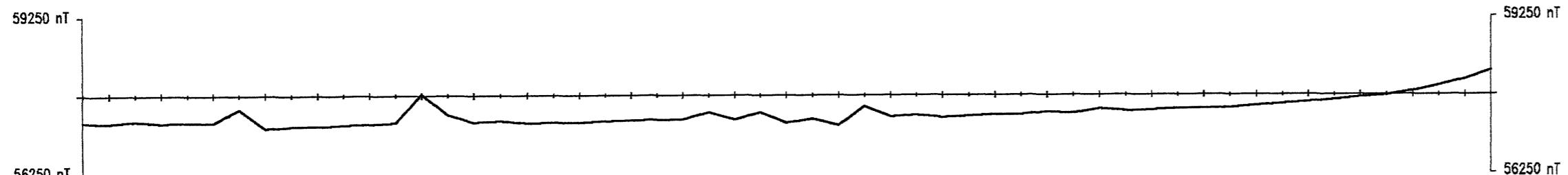


2.30715

### MAGNETIC PROFILE

1 cm = 1000 nT

BASE LEVEL: 57750 nT



Scale 1 : 2500

25 0 25 50 75 100 125 150m

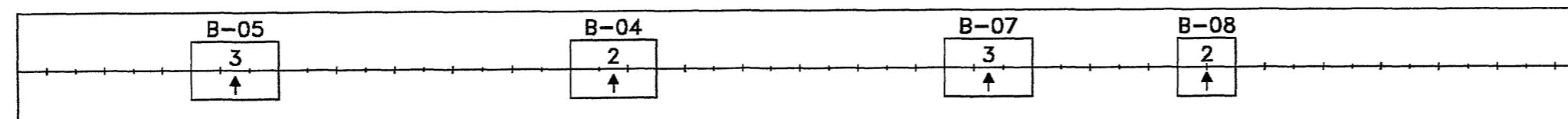
Porcupine Joint Venture

Beaumont Project - Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 7+00E

### INTERPRETATION

chargeability  
resistivity

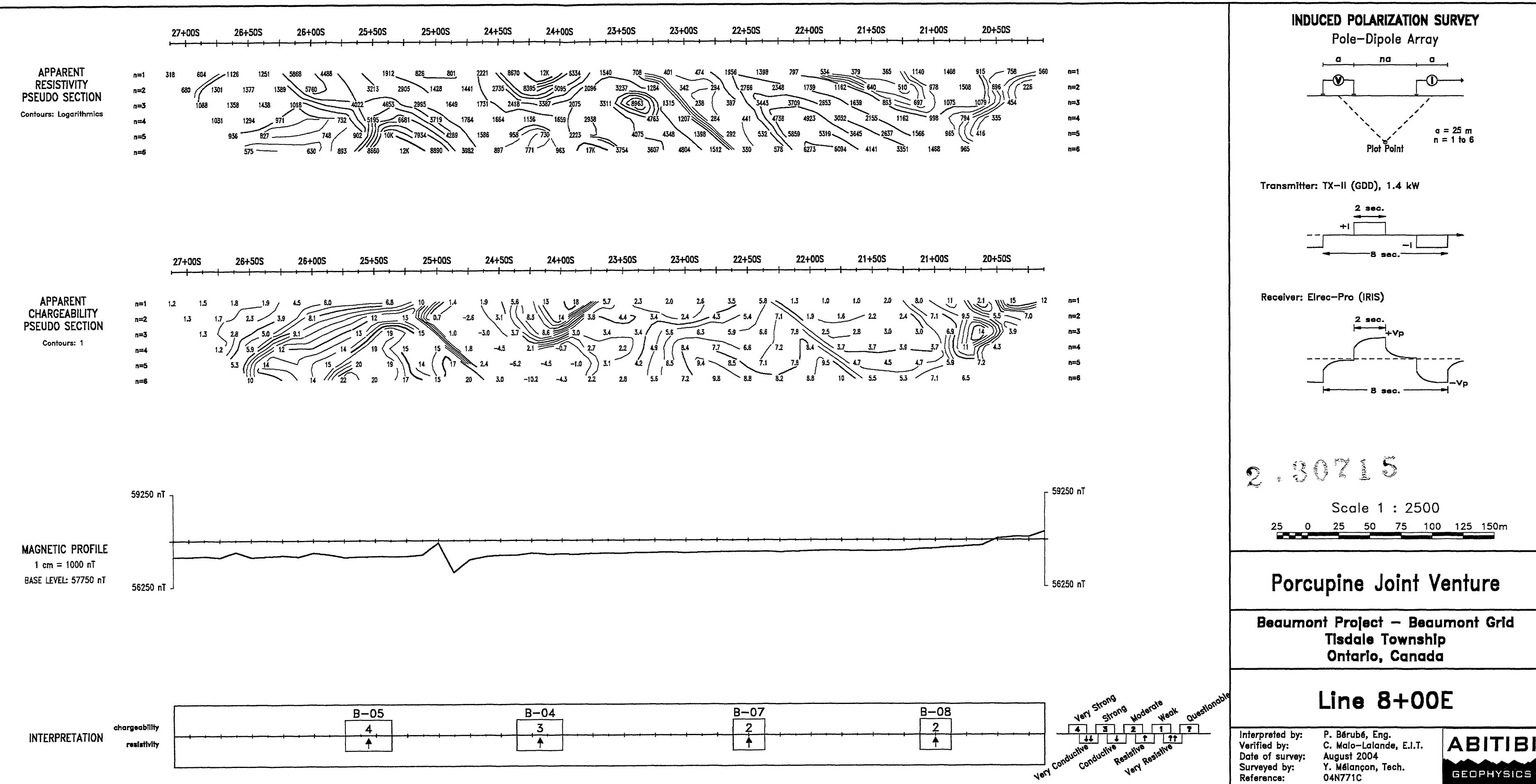


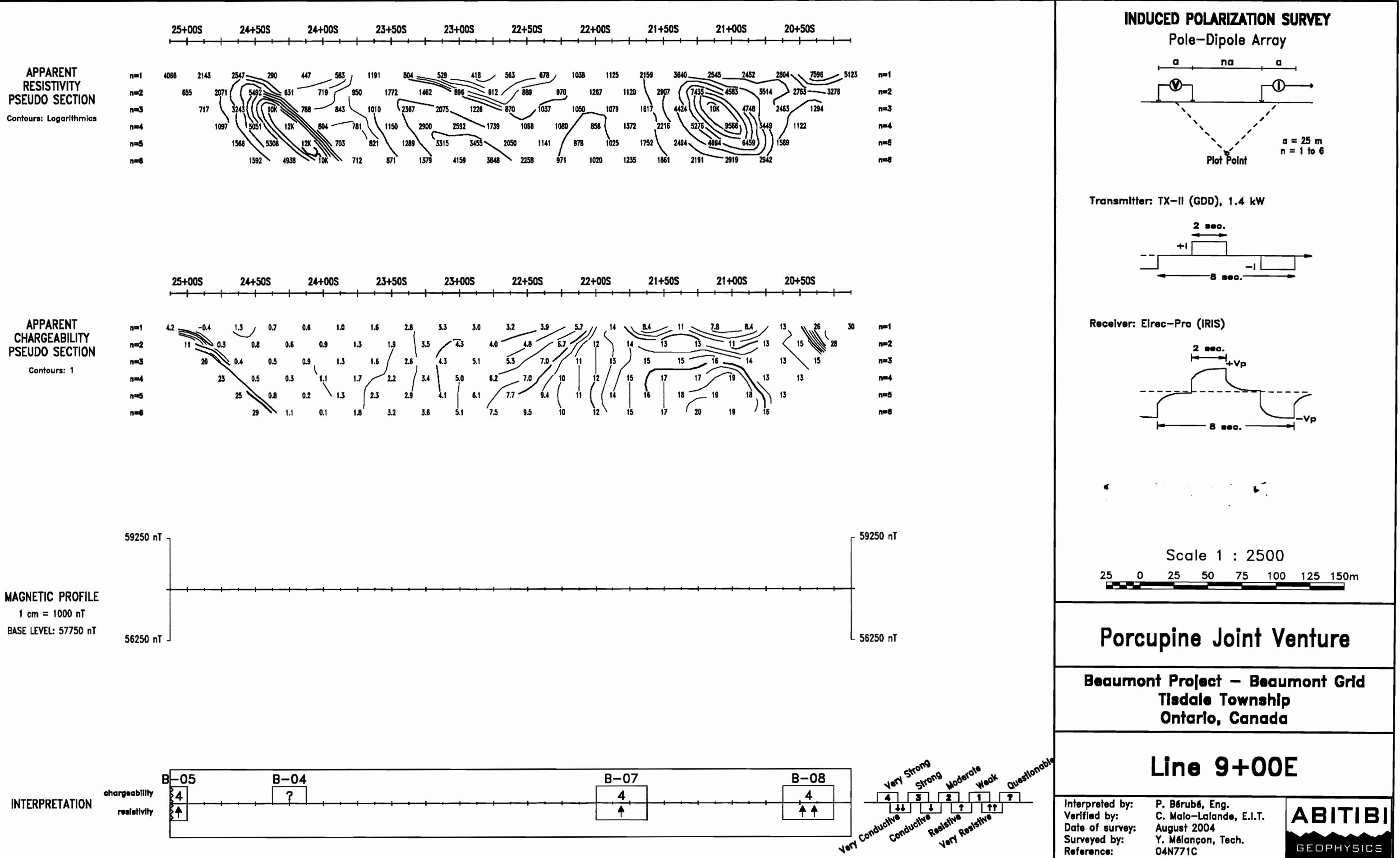
Very Conductive  
Conductive  
Resistive  
Very Resistive  
Very Strong  
Strong  
Moderate  
Weak  
Questionable

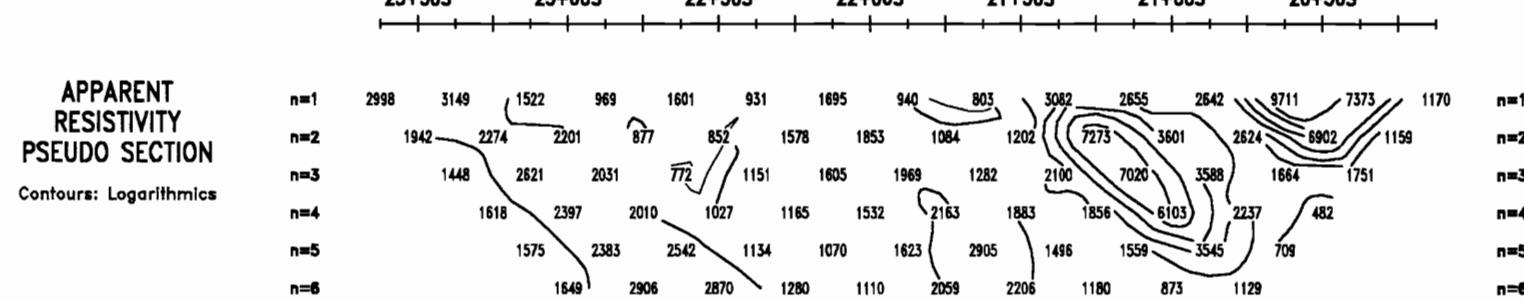
Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

ABITIBI

GEOPHYSICS

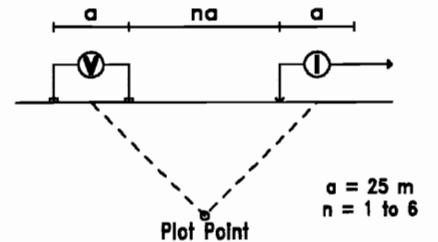




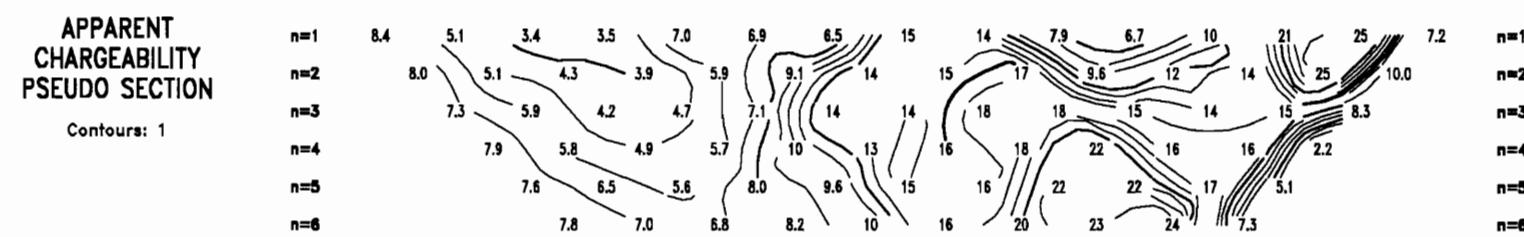
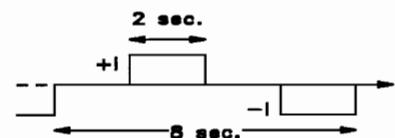


### INDUCED POLARIZATION SURVEY

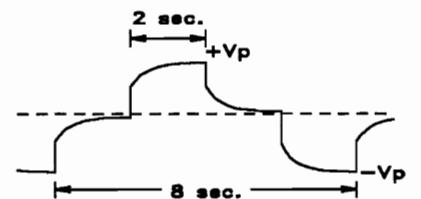
Pole-Dipole Array



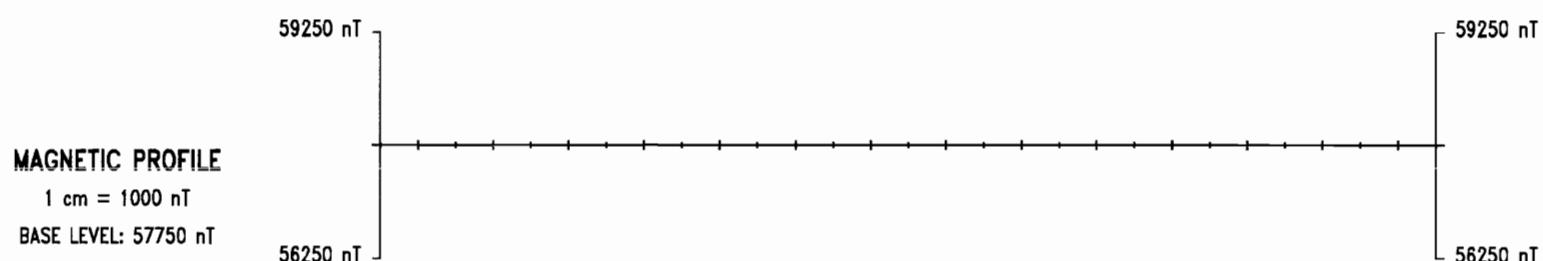
Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



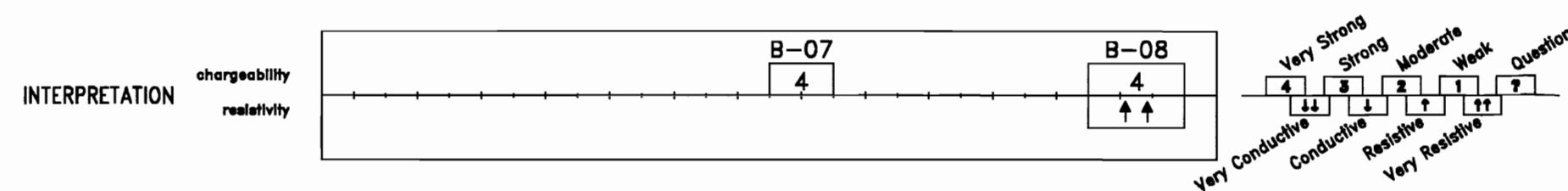
2 . 30715



Scale 1 : 2500  
25    0    25    50    75    100    125    150m

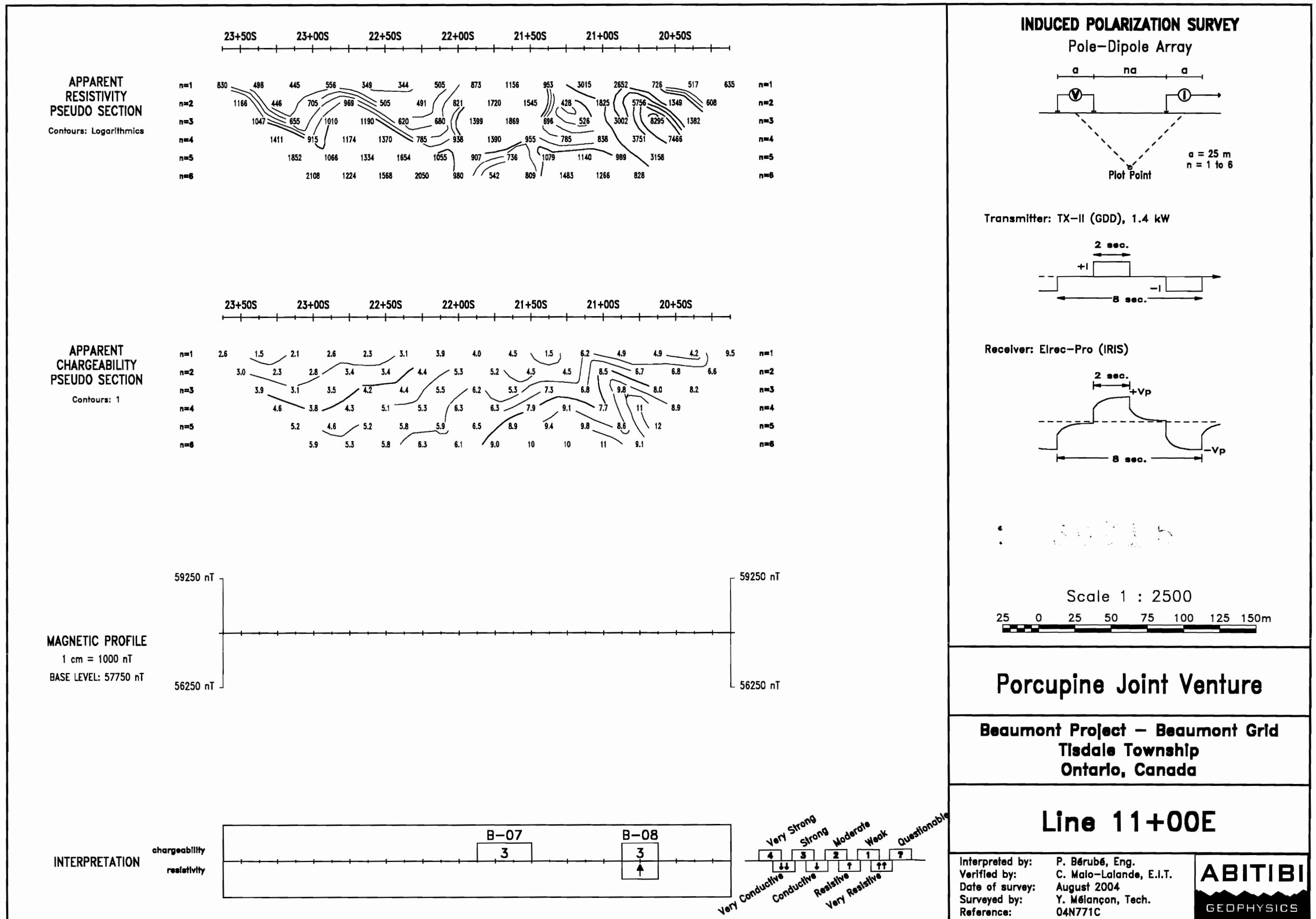
**Porcupine Joint Venture**

**Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada**



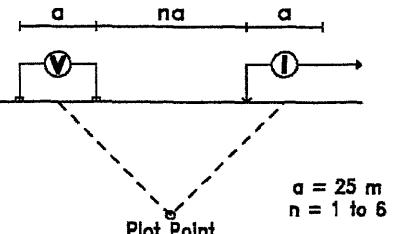
Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

**ABITIBI**  
GEOPHYSICS



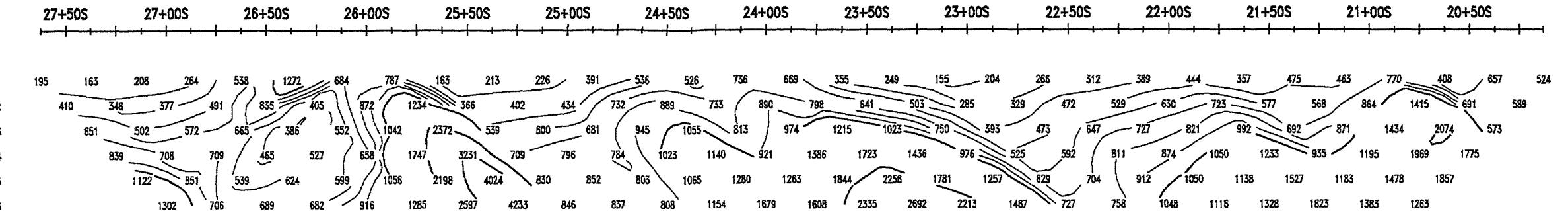
## INDUCED POLARIZATION SURVEY

Pole-Dipole Array



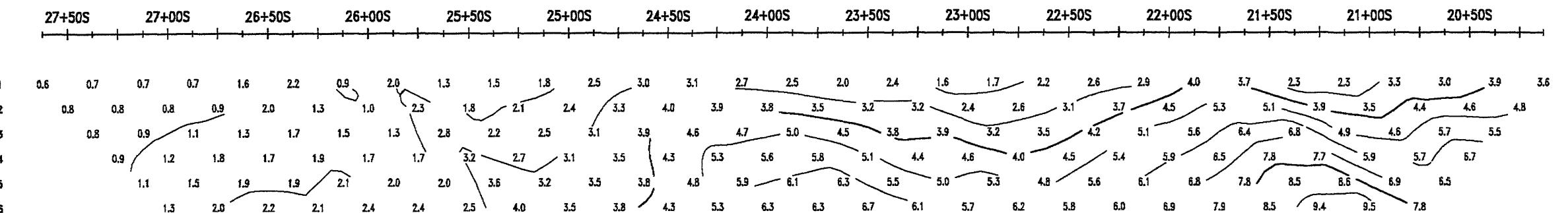
### APPARENT RESISTIVITY PSEUDO SECTION

Contours: Logarithmic



### APPARENT CHARGEABILITY PSEUDO SECTION

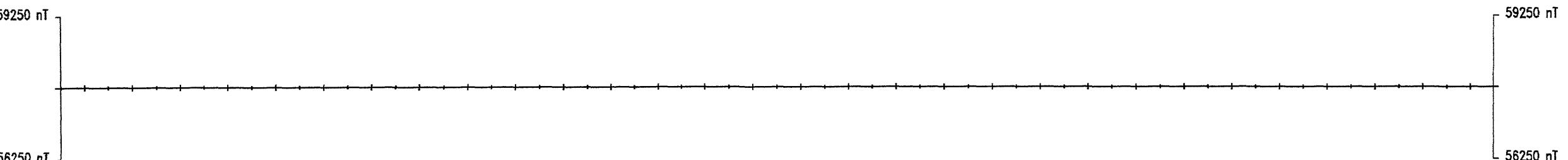
Contours: 1



### MAGNETIC PROFILE

1 cm = 1000 nT

BASE LEVEL: 57750 nT



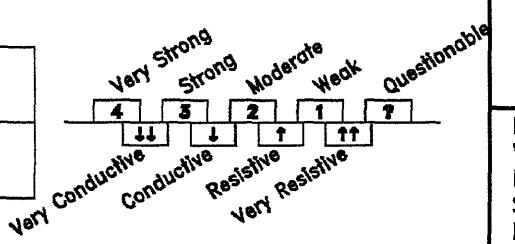
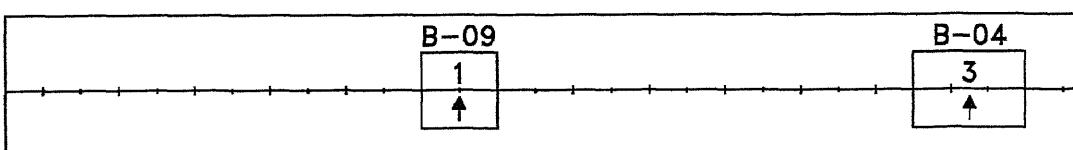
Porcupine Joint Venture

Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 12+00E

### INTERPRETATION

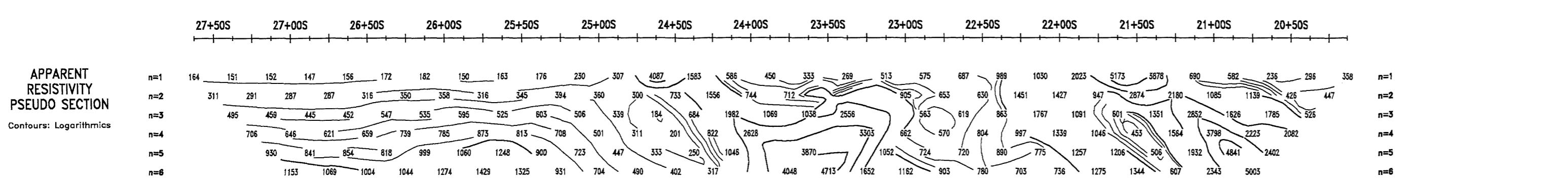
chargeability  
resistivity



Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélanson, Tech.  
Reference: 04N771C

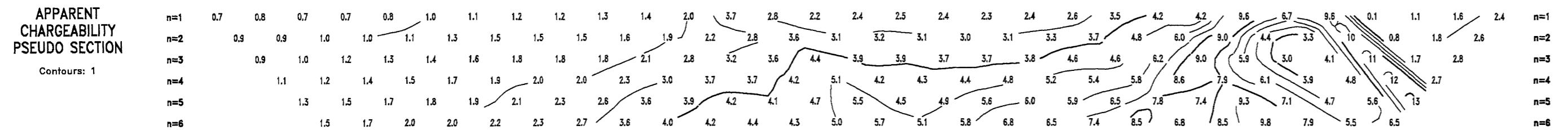
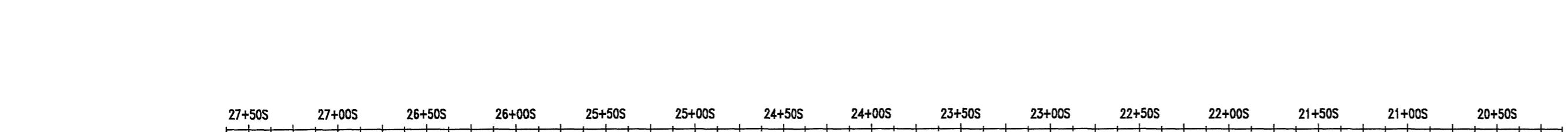
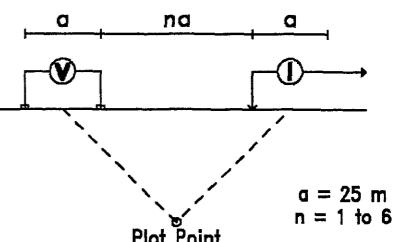
ABITIBI

GEOPHYSICS

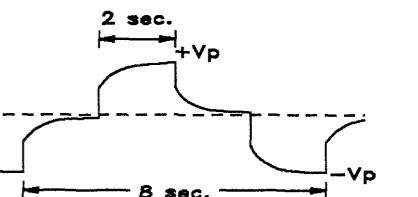


### INDUCED POLARIZATION SURVEY

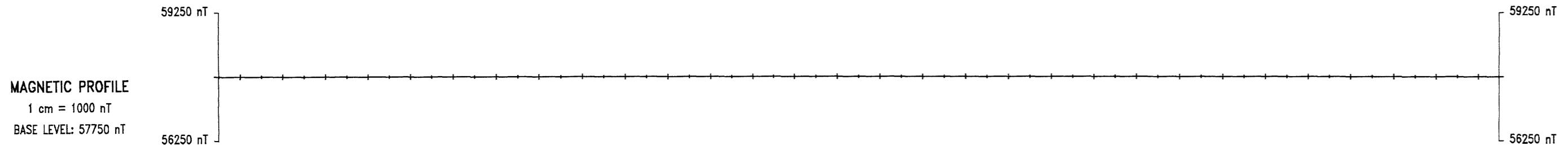
Pole-Dipole Array



Receiver: Elrec-Pro (IRIS)



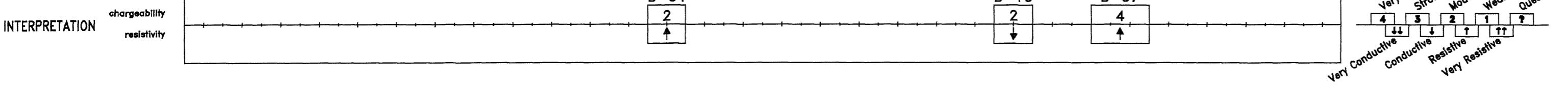
2 . 30715



Porcupine Joint Venture

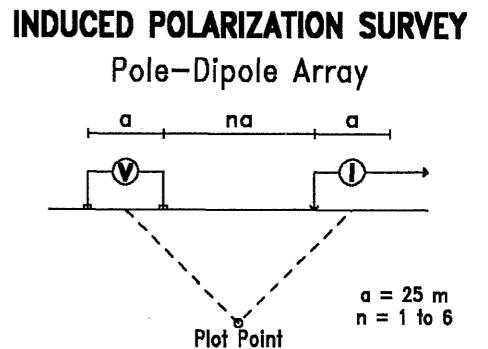
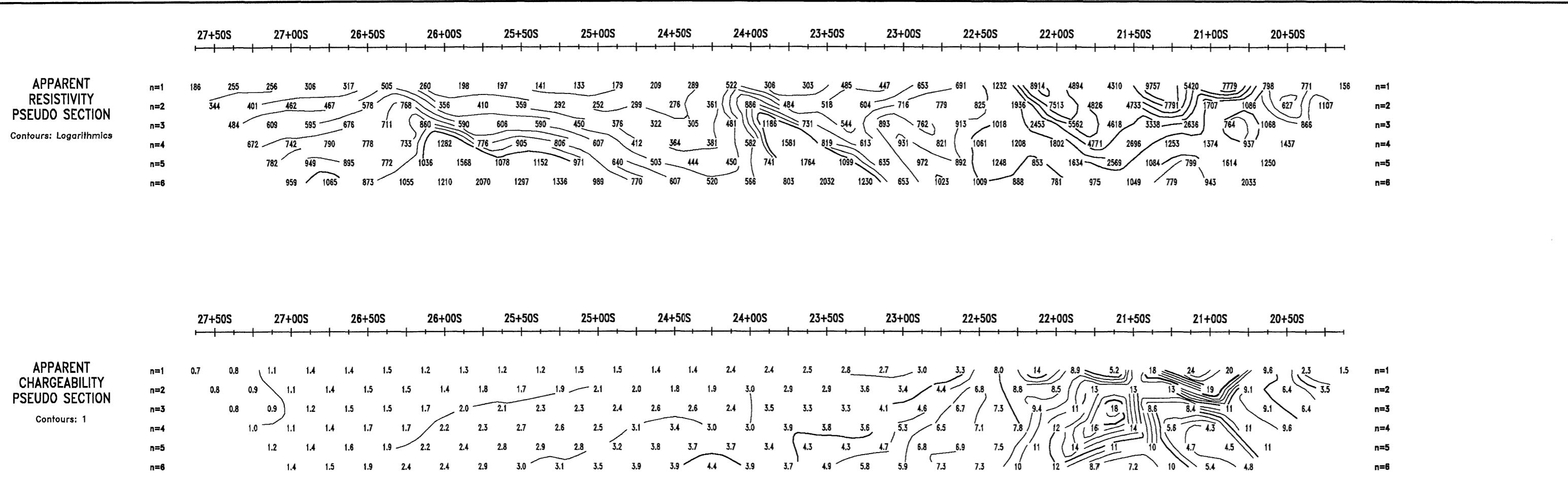
Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 13+00E

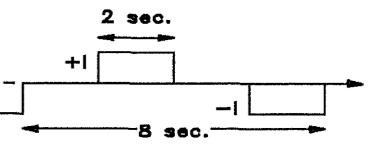


Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: D4N771C

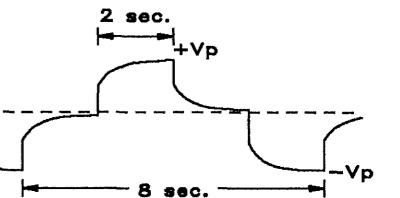
ABITIBI  
GEOPHYSICS



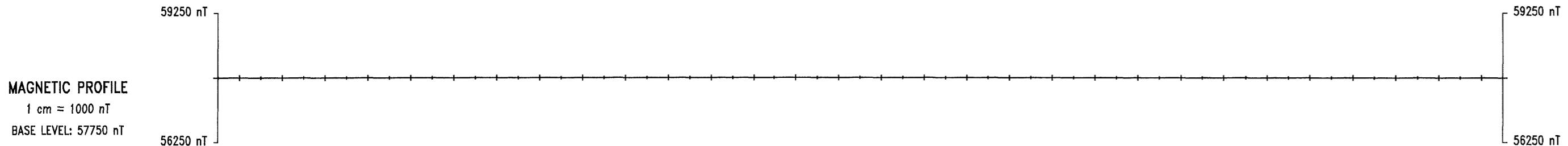
Transmitter: TX-II (GDD), 1.4 kW



Receiver: Elrec-Pro (IRIS)



2 . 30715



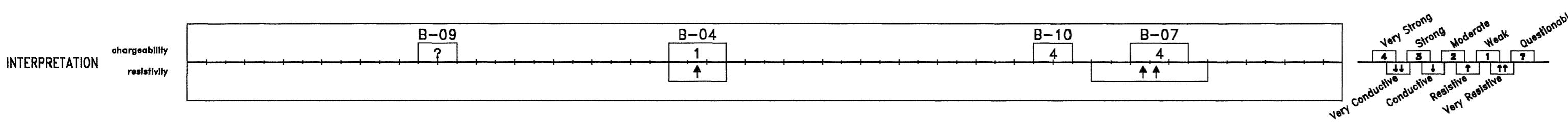
Scale 1 : 2500

25 0 25 50 75 100 125 150m

**Porcupine Joint Venture**

**Beaumont Project – Beaumont Grid**  
**Tisdale Township**  
**Ontario, Canada**

**Line 14+00E**

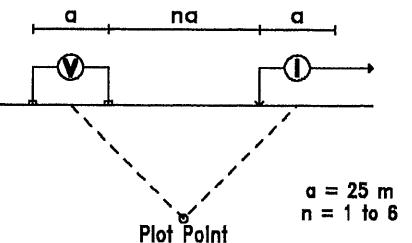


Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélançon, Tech.  
Reference: 04N771C

**ABITIBI**  
GEOPHYSICS

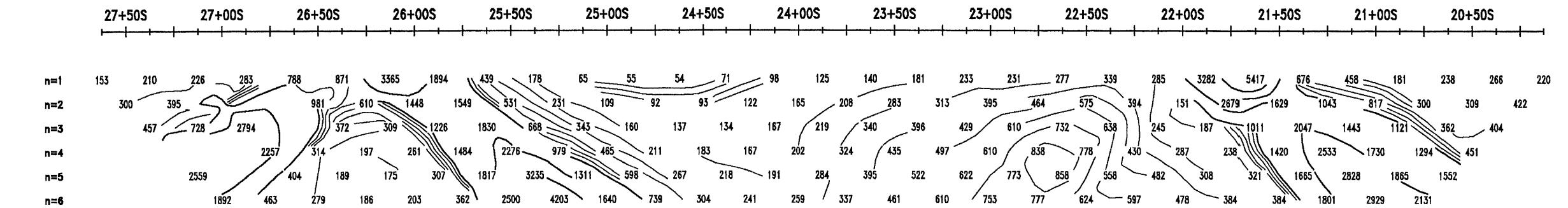
## INDUCED POLARIZATION SURVEY

Pole-Dipole Array

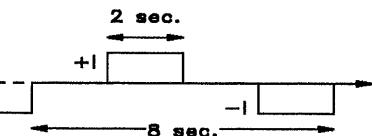


### APPARENT RESISTIVITY PSEUDO SECTION

Contours: Logarithmic

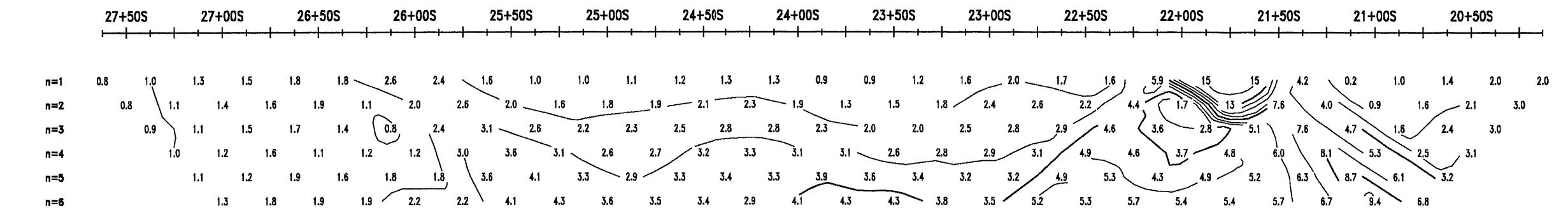


Transmitter: TX-II (GDD), 1.4 kW

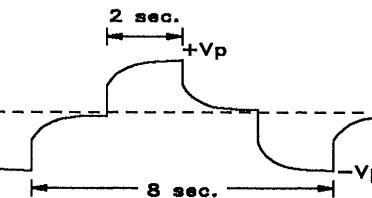


### APPARENT CHARGEABILITY PSEUDO SECTION

Contours: 1



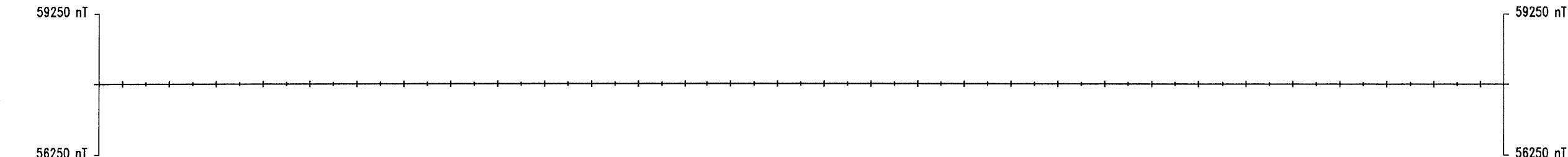
Receiver: Elrec-Pro (IRIS)



### MAGNETIC PROFILE

1 cm = 1000 nT

BASE LEVEL: 57750 nT



2 . 30715

Scale 1 : 2500

25 0 25 50 75 100 125 150m

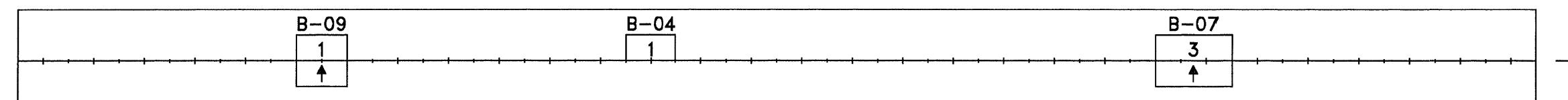
Porcupine Joint Venture

Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada

Line 15+00E

### INTERPRETATION

chargeability  
resistivity

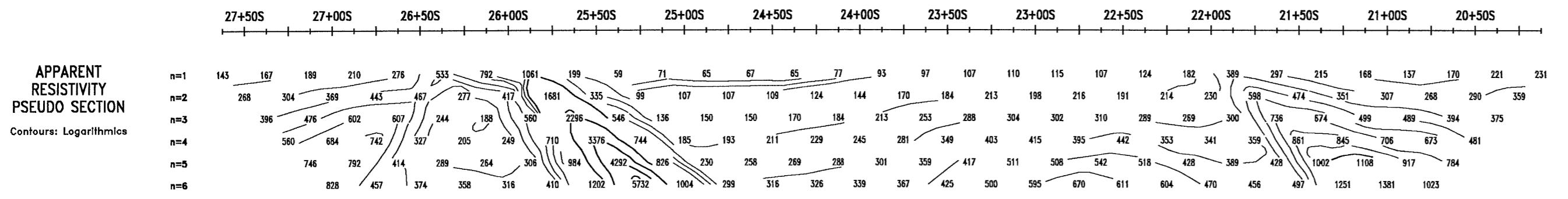


Very Strong  
Strong  
Moderate  
Weak  
Questionable

Conductive  
Conductive  
Resistive  
Very Resistive

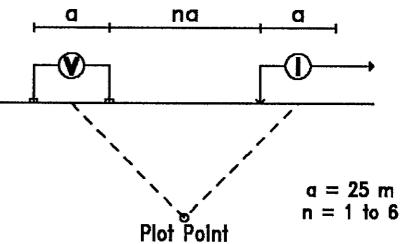
Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélanson, Tech.  
Reference: 04N771C

**ABITIBI**  
GEOPHYSICS

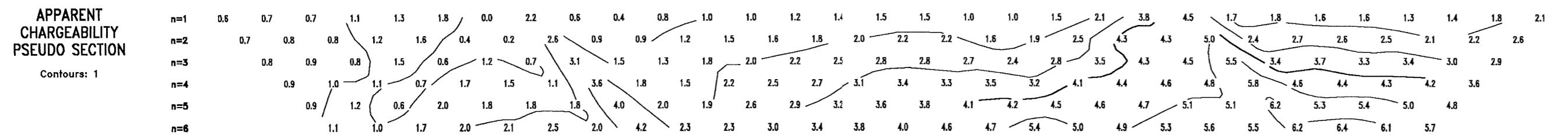
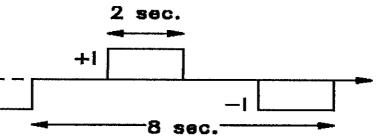


## INDUCED POLARIZATION SURVEY

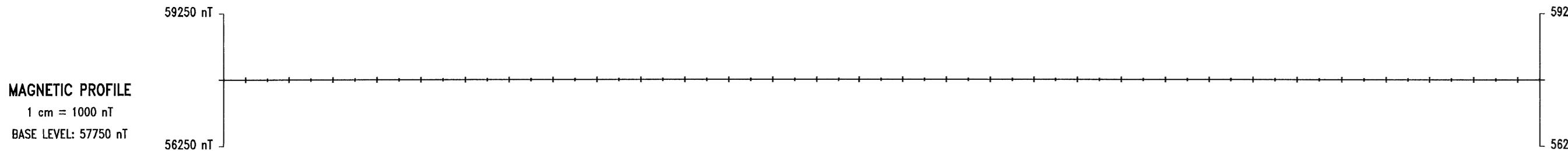
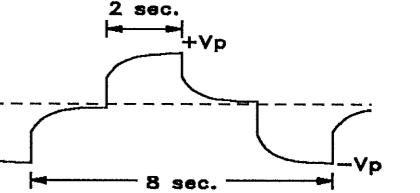
Pole-Dipole Array



Transmitter: TX-II (GDD), 1.4 kW

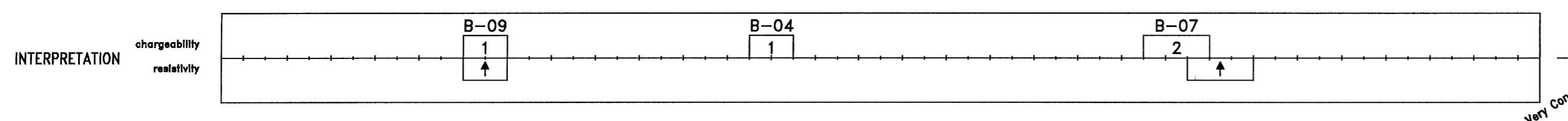


Receiver: Elrec-Pro (IRIS)



Porcupine Joint Venture

Beaumont Project – Beaumont Grid  
Tisdale Township  
Ontario, Canada



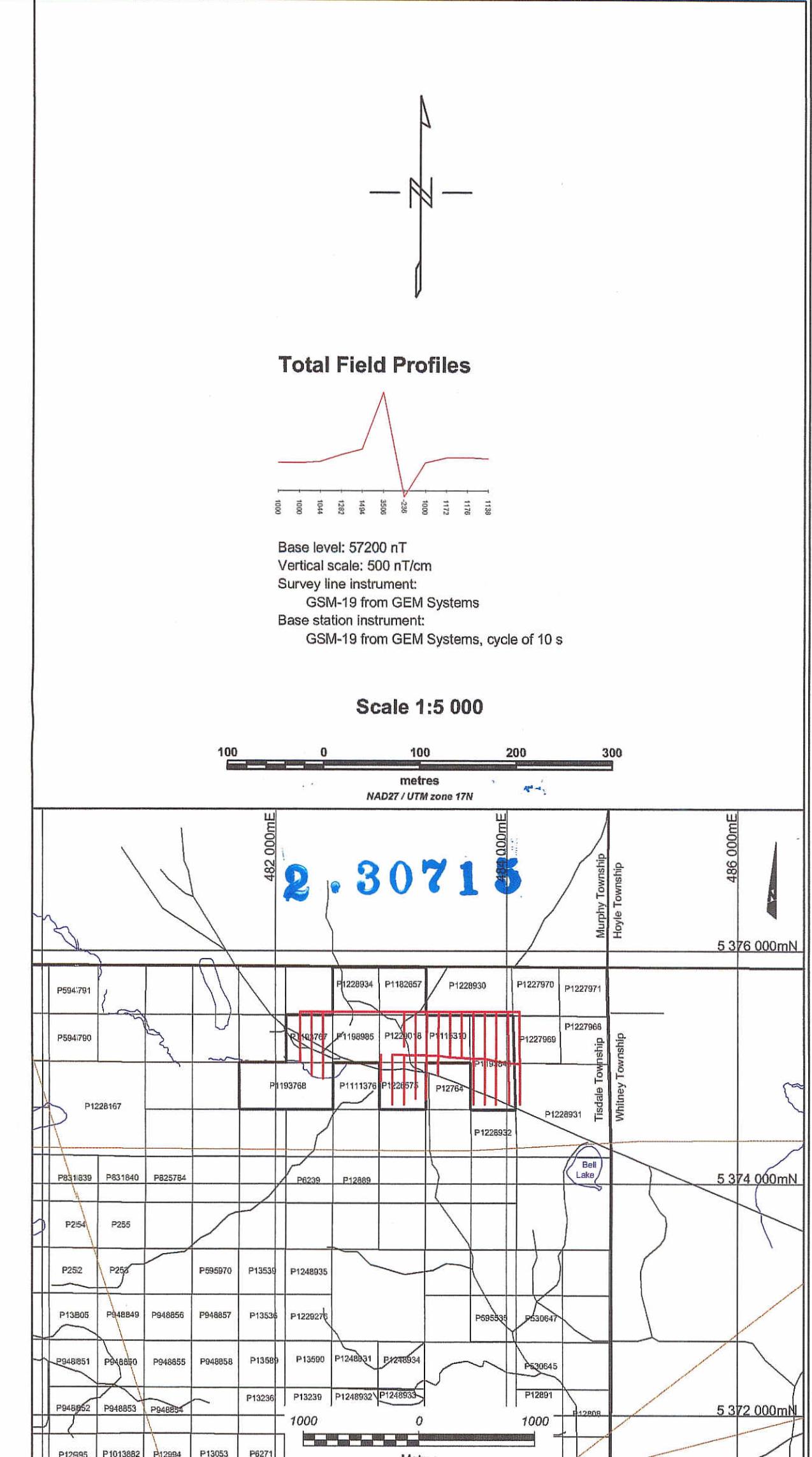
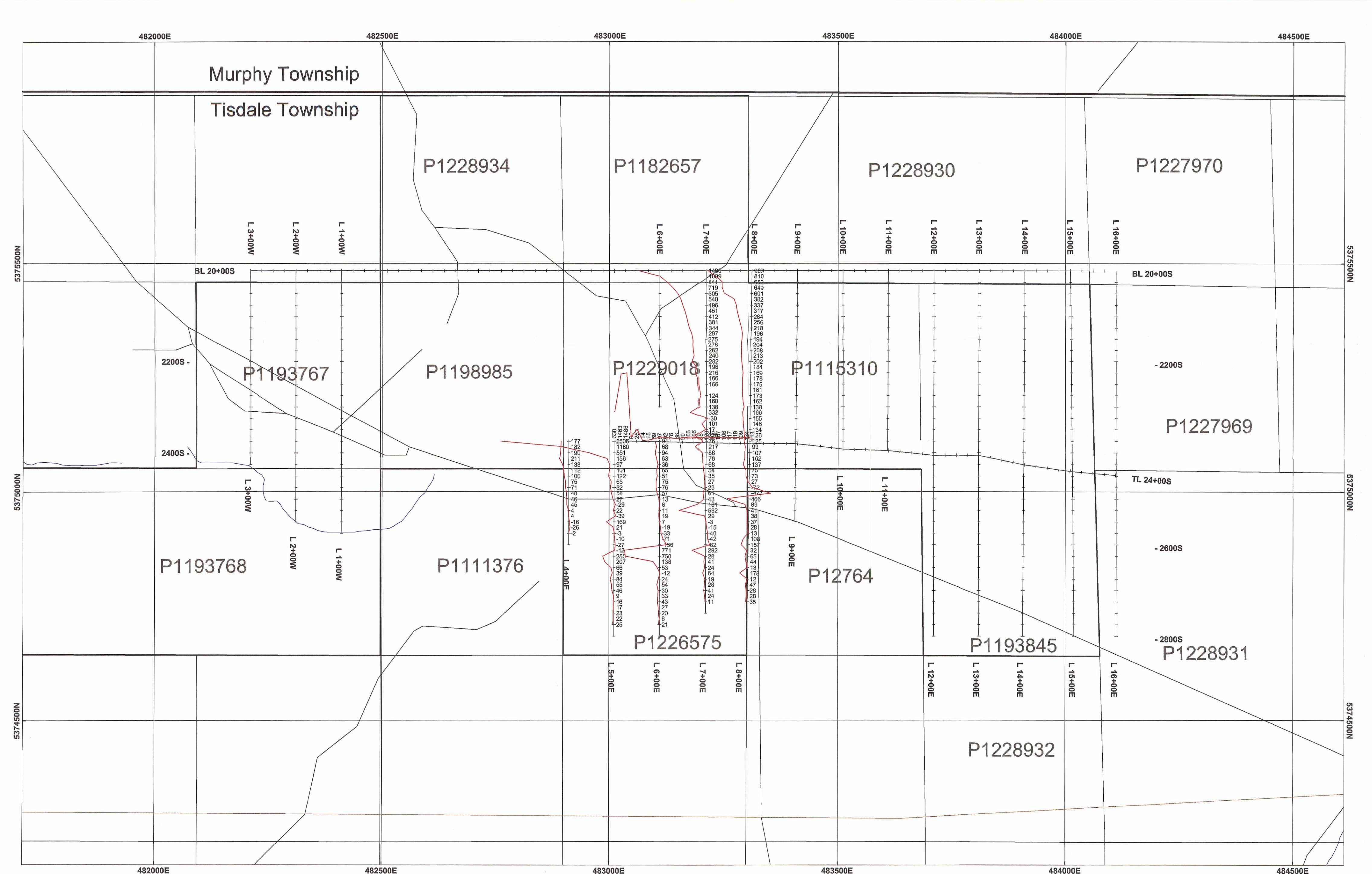
Very Strong  
Strong  
Moderate  
Weak  
Questionable

Very Conductive  
Conductive  
Resistive  
Very Resistive

Line 16+00E

Interpreted by: P. Bérubé, Eng.  
Verified by: C. Malo-Lalande, E.I.T.  
Date of survey: August 2004  
Surveyed by: Y. Mélancçon, Tech.  
Reference: 04N771C

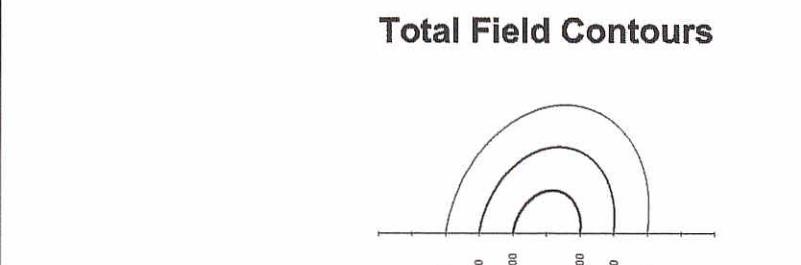
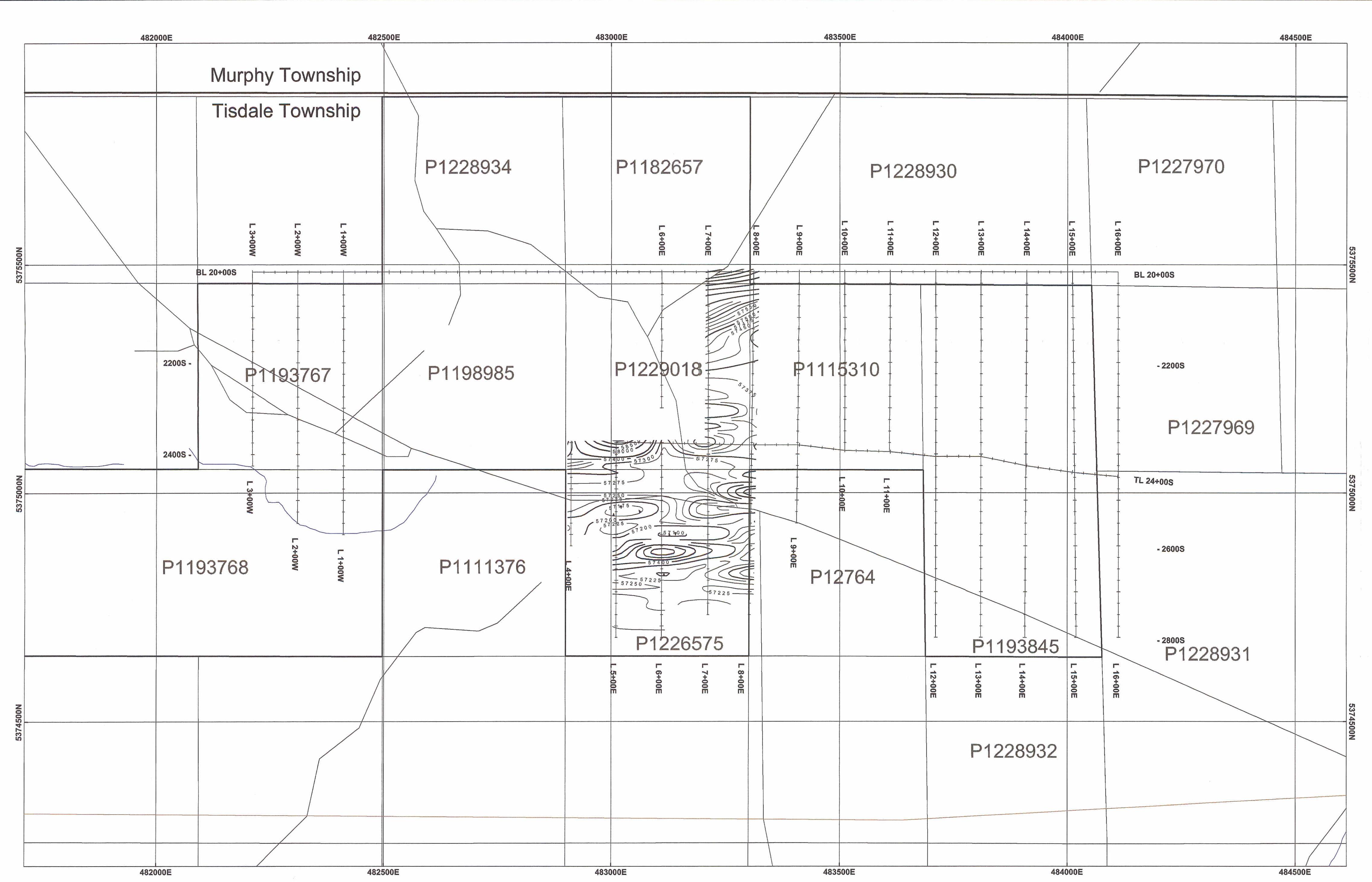
**ABITIBI**  
GEOPHYSICS



**Porcupine Joint Venture  
Beaumont Project - Beaumont Grid  
Tisdale Township, Ontario, Canada**

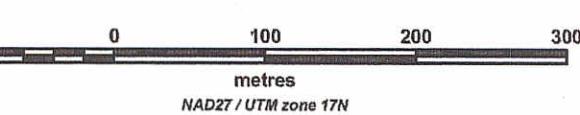
**Ground Magnetic Field Survey  
Total Field Profiles  
(nanoTesla)**

Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: G. Tremblay, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 1.1

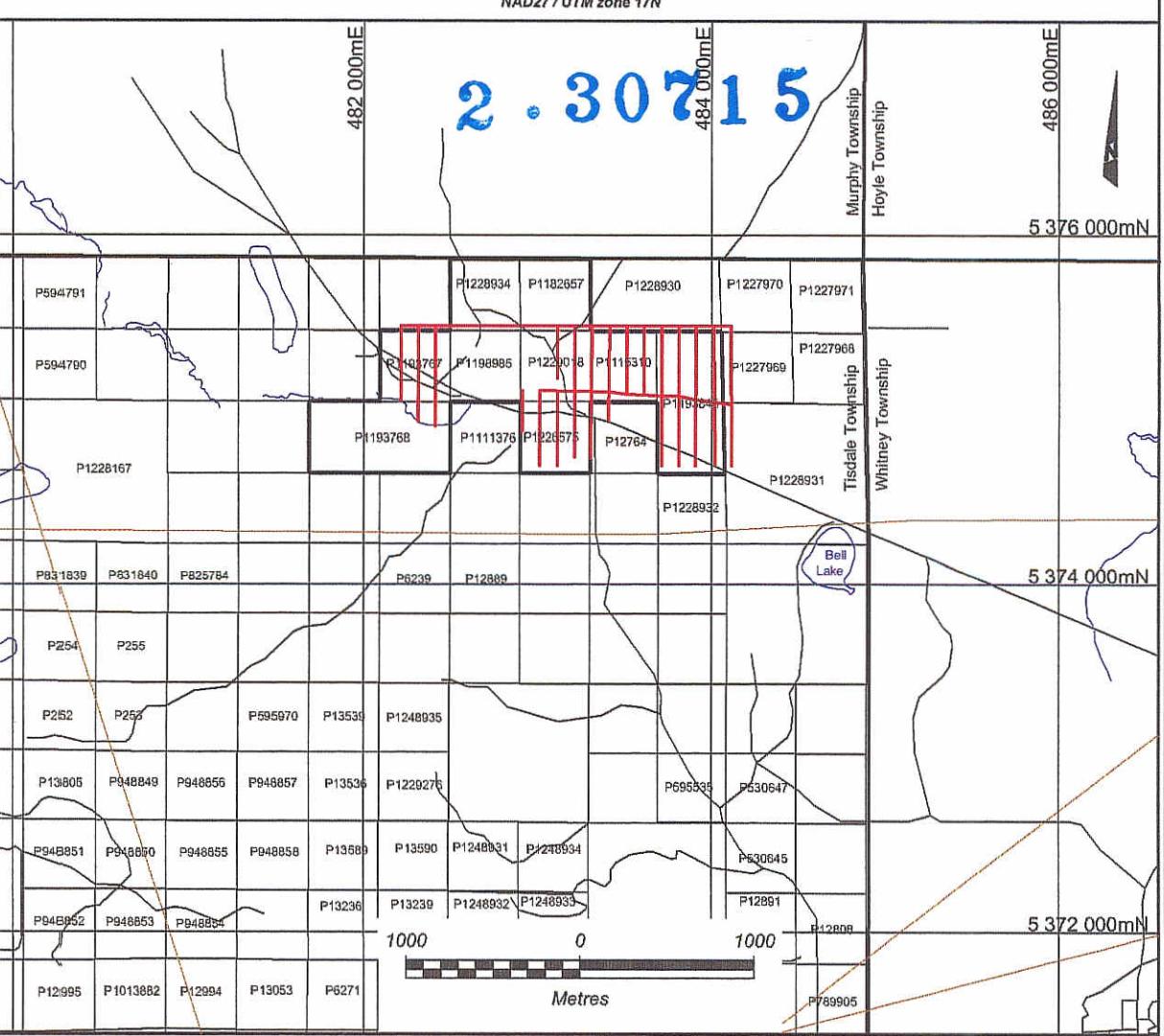


Base level: 57200 nT  
Units: nT  
Survey line instrument:  
GSM-19 from GEM Systems  
Base station instrument:  
GSM-19 from GEM Systems, cycle of 10 s

Scale 1:5 000



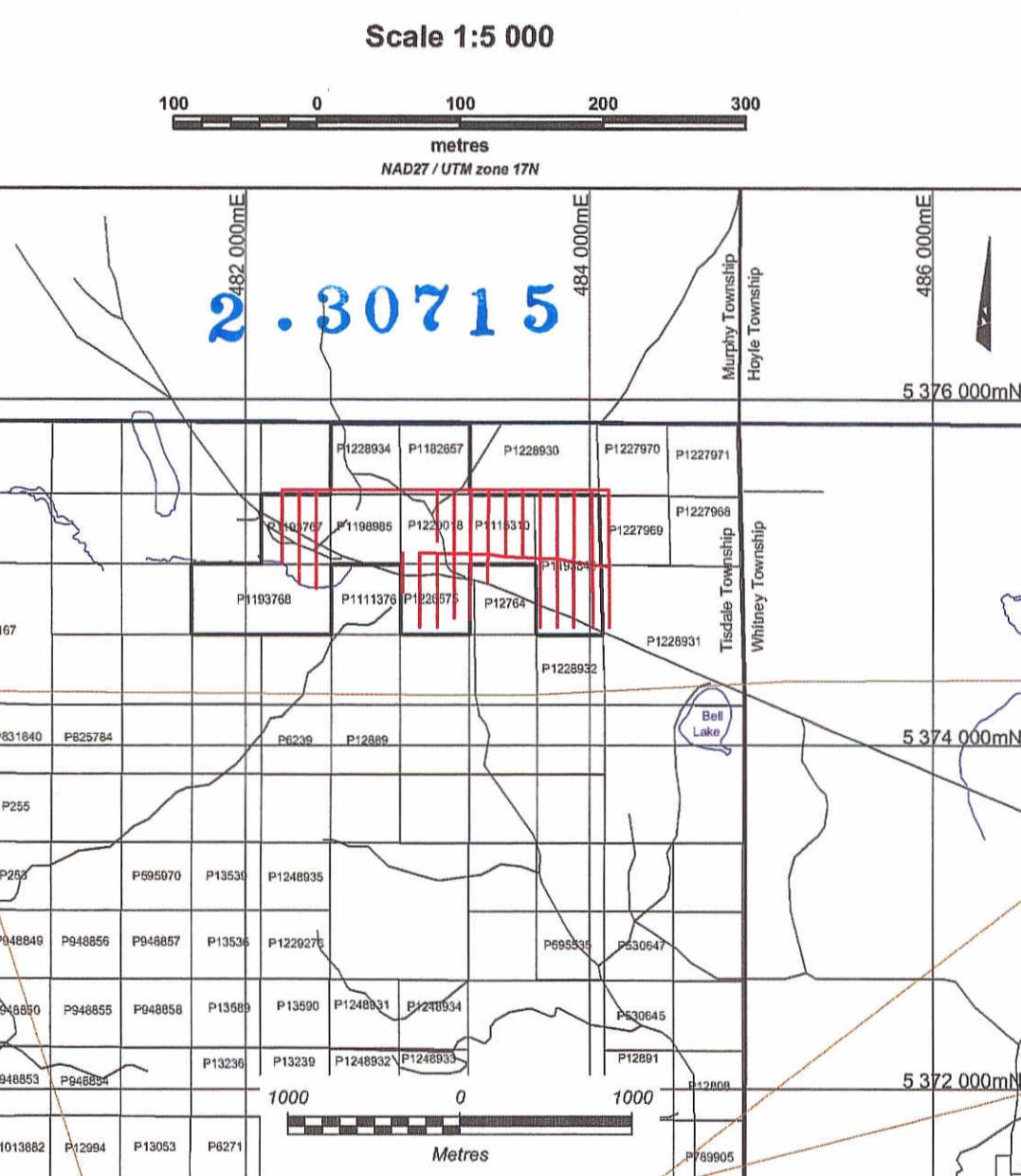
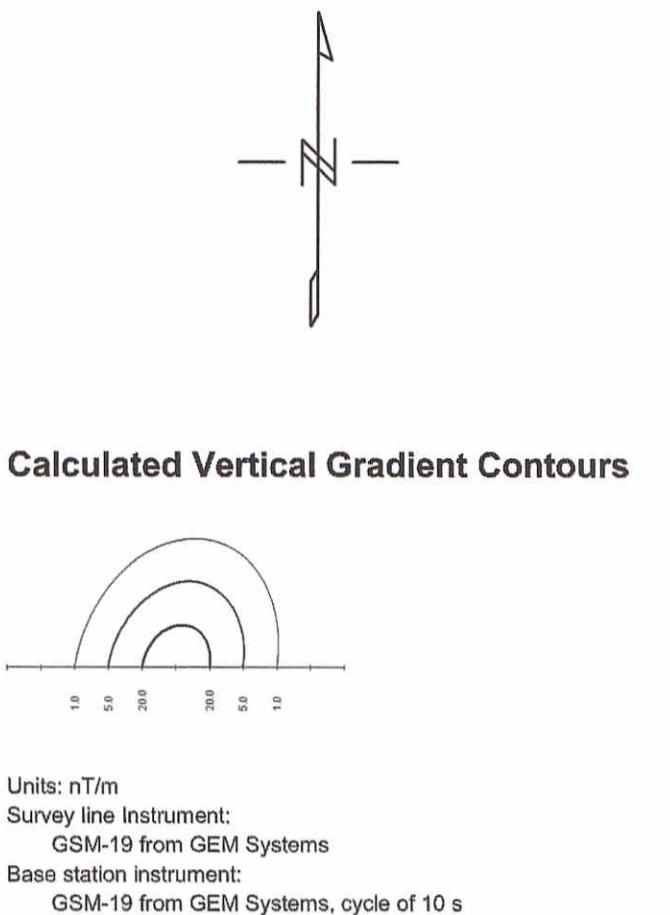
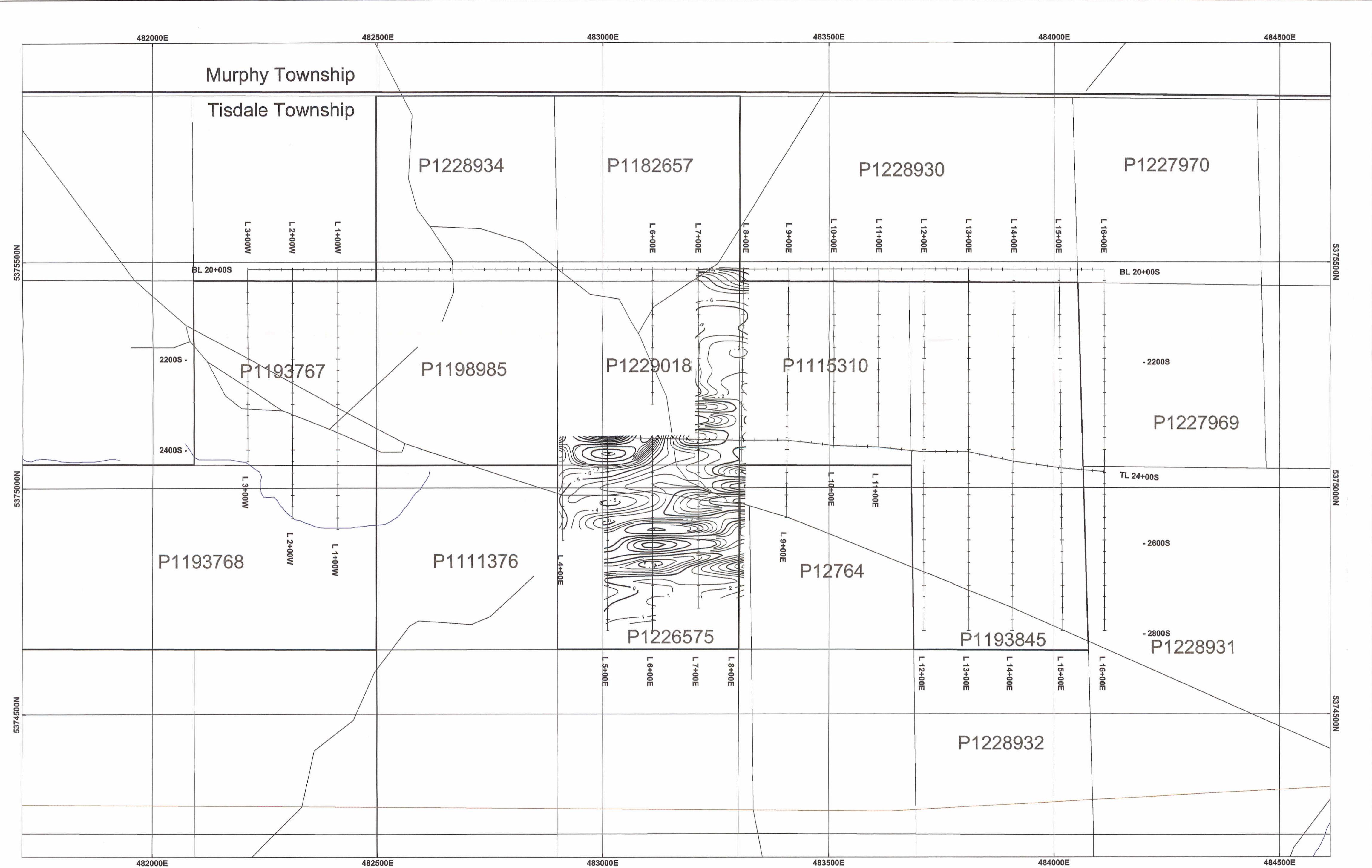
2 . 30715



**Porcupine Joint Venture**  
**Beaumont Project - Beaumont Grid**  
**Tisdale Township, Ontario, Canada**

**Ground Magnetic Field Survey**  
**Total Field Contours**  
**(nanoTesla)**

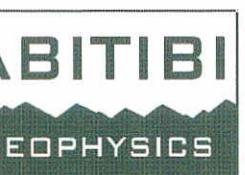
Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: G. Tremblay, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 1.2

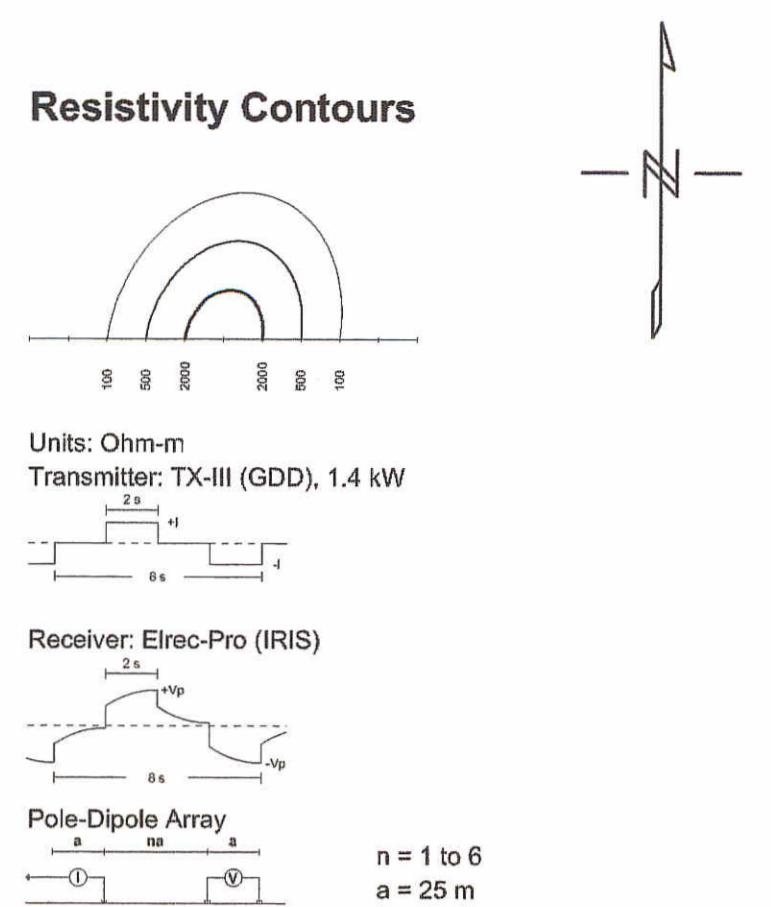
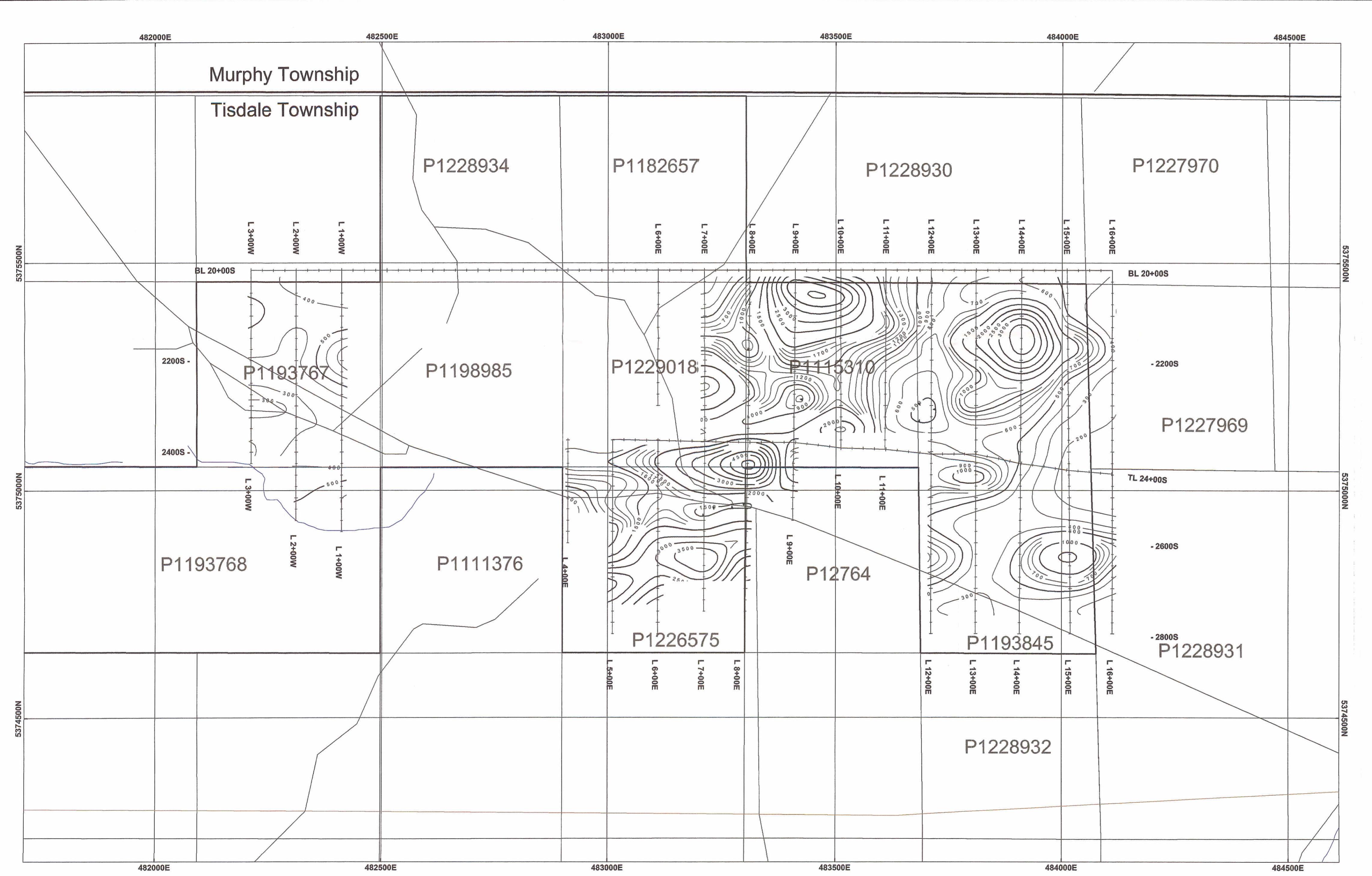


**Porcupine Joint Venture**  
**Beaumont Project - Beaumont Grid**  
**Tisdale Township, Ontario, Canada**

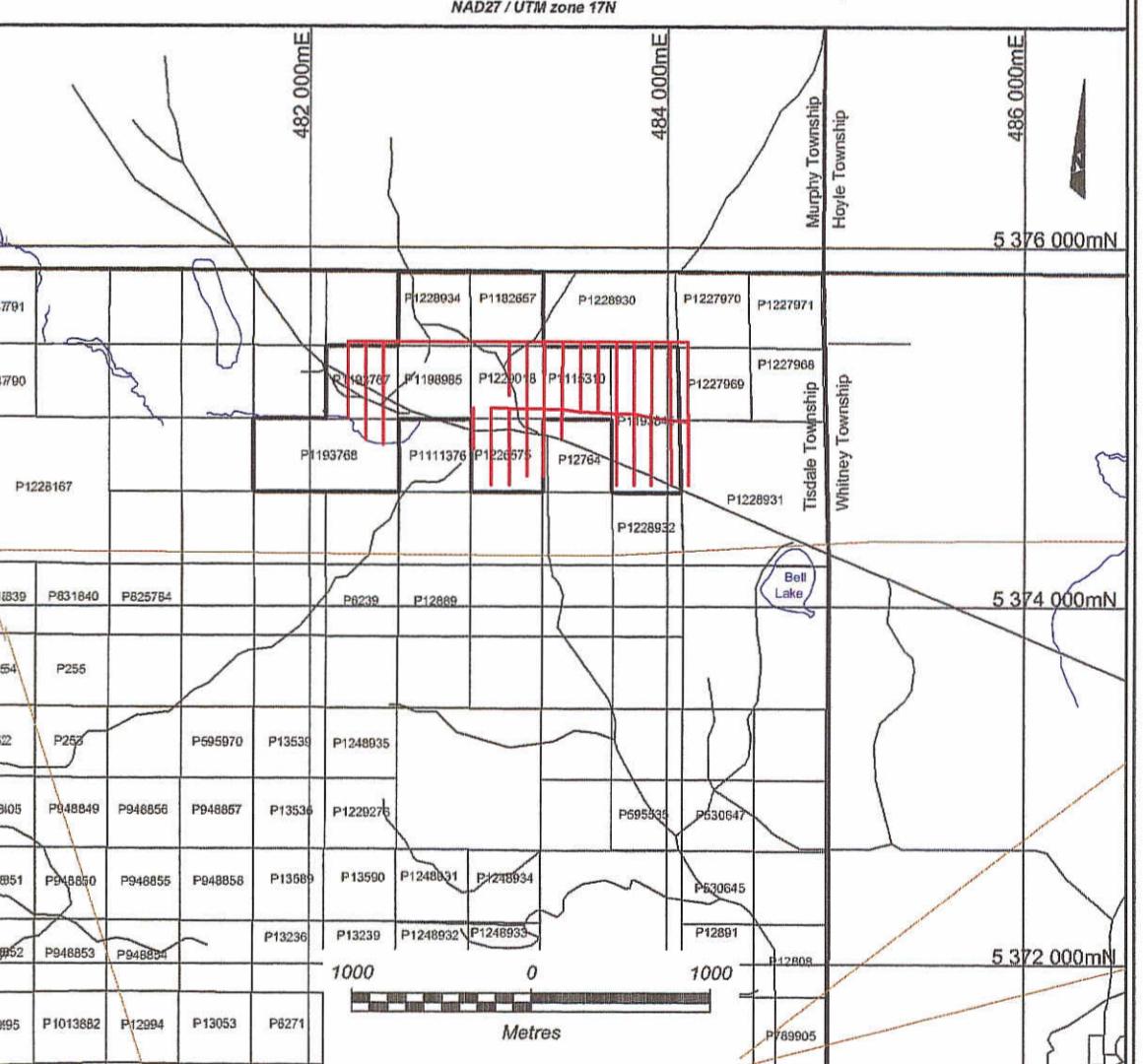
**Ground Magnetic Field Survey**  
**Calculated Vertical Gradient Contours**  
**(nT/m)**

Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: G. Tremblay, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 1.3





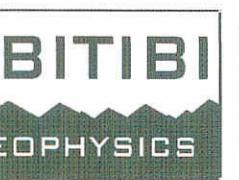
**Scale 1:5 000**  
100 0 100 200 metres NAD27 / UTM zone 17N 2 30715

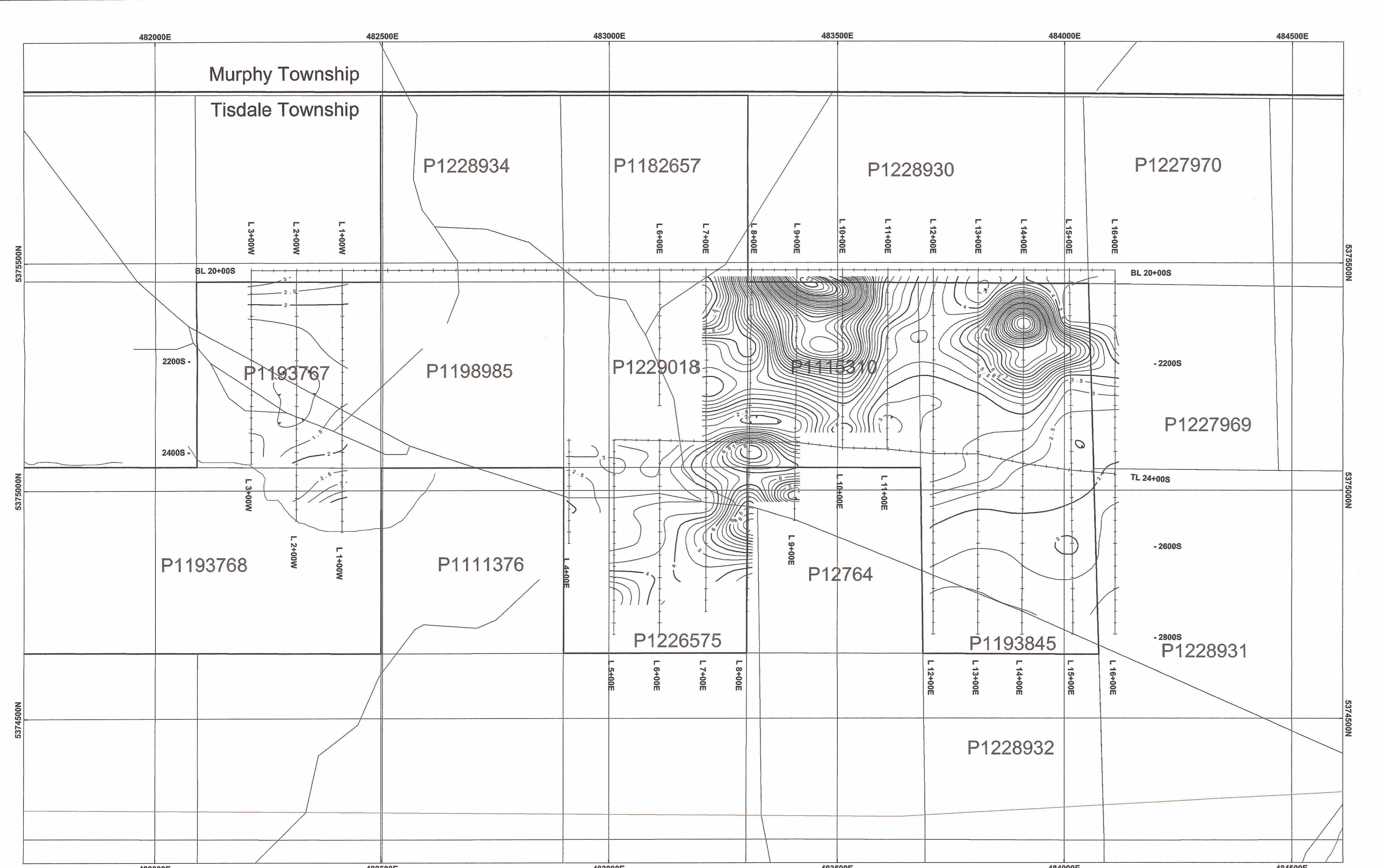


**Porcupine Joint Venture**  
**Beaumont Project - Beaumont Grid**  
**Tisdale Township, Ontario, Canada**

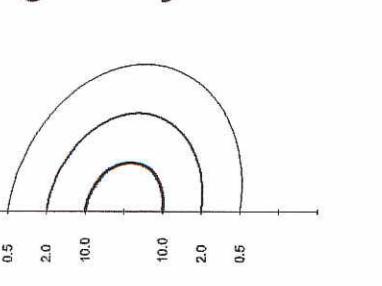
**Induced Polarization Survey**  
**image2D™ Resistivity at a depth of 40 m**  
**(Ohm-m)**

Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: Y. Mélançon, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 8.2





### Chargeability Contours



Units: mV/V

Transmitter: TX-III (GDD), 1.4 kW

Receiver: Elrec-Pro (IRIS)

Pole-Dipole Array

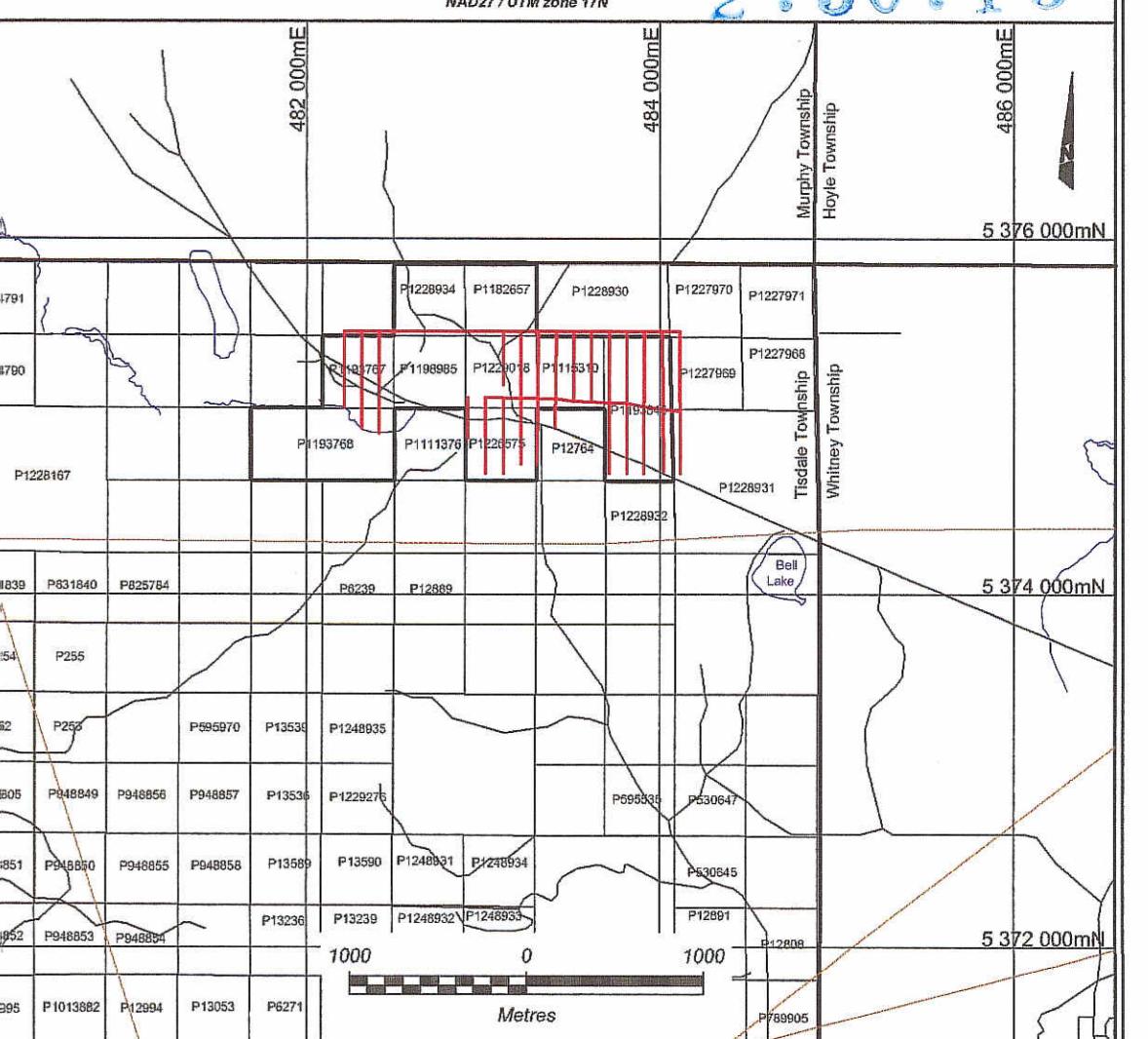
$n = 1$  to 6  
 $a = 25$  m

Scale 1:5 000

100 0 100 200 300  
metres

NAD27 / UTM zone 17N

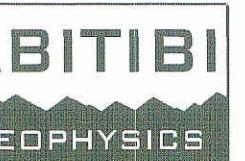
2.30715

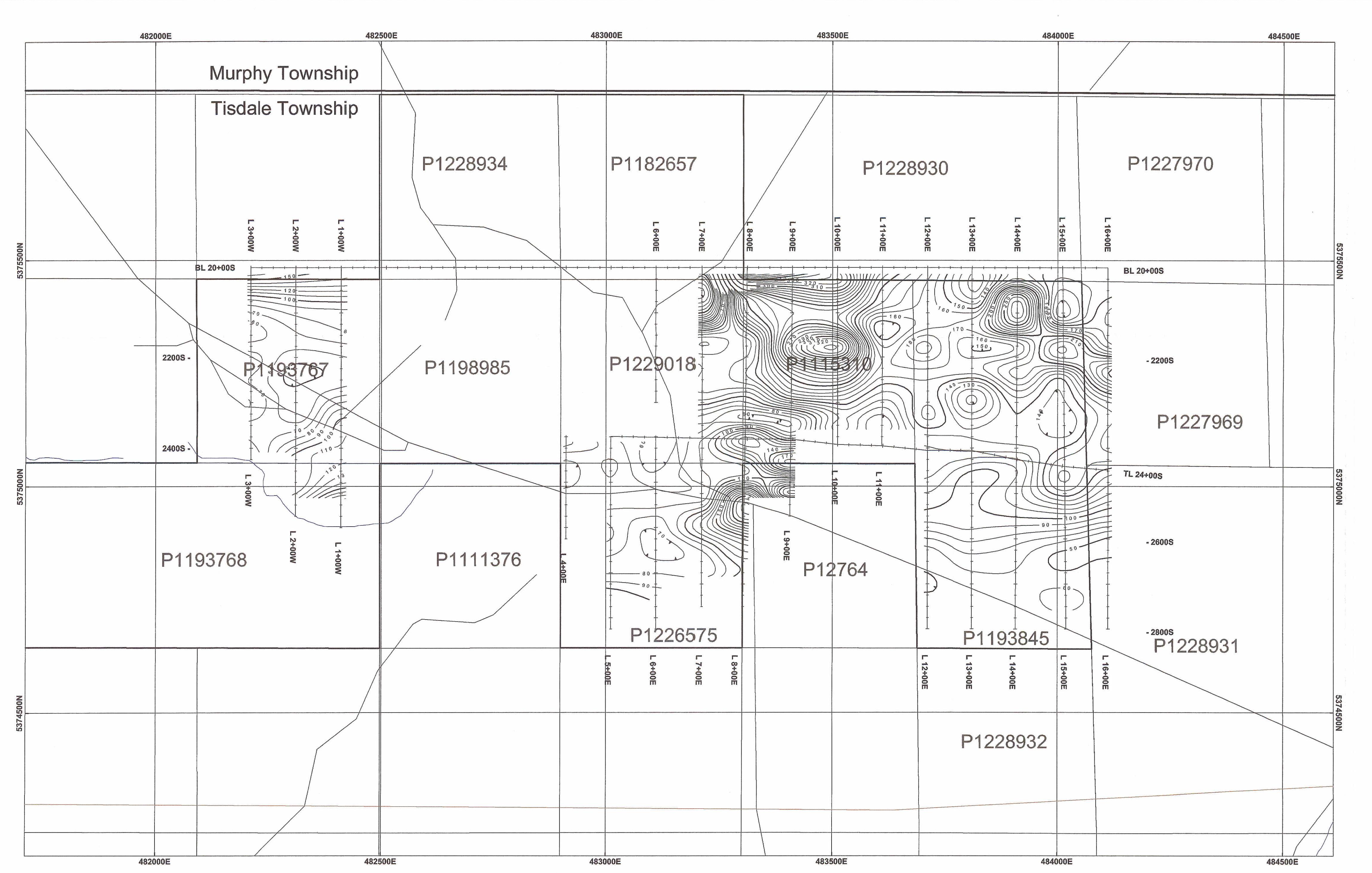


Porcupine Joint Venture  
Beaumont Project - Beaumont Grid  
Tisdale Township, Ontario, Canada

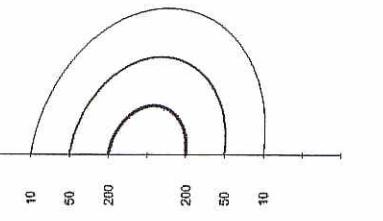
Induced Polarization Survey  
*image2D™* Chargeability at a depth of 40 m  
(mV/V)

Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: Y. Mélançon, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 8.3





### Metal Factor Contours



Transmitter: TX-III (GDD), 1.4 kW

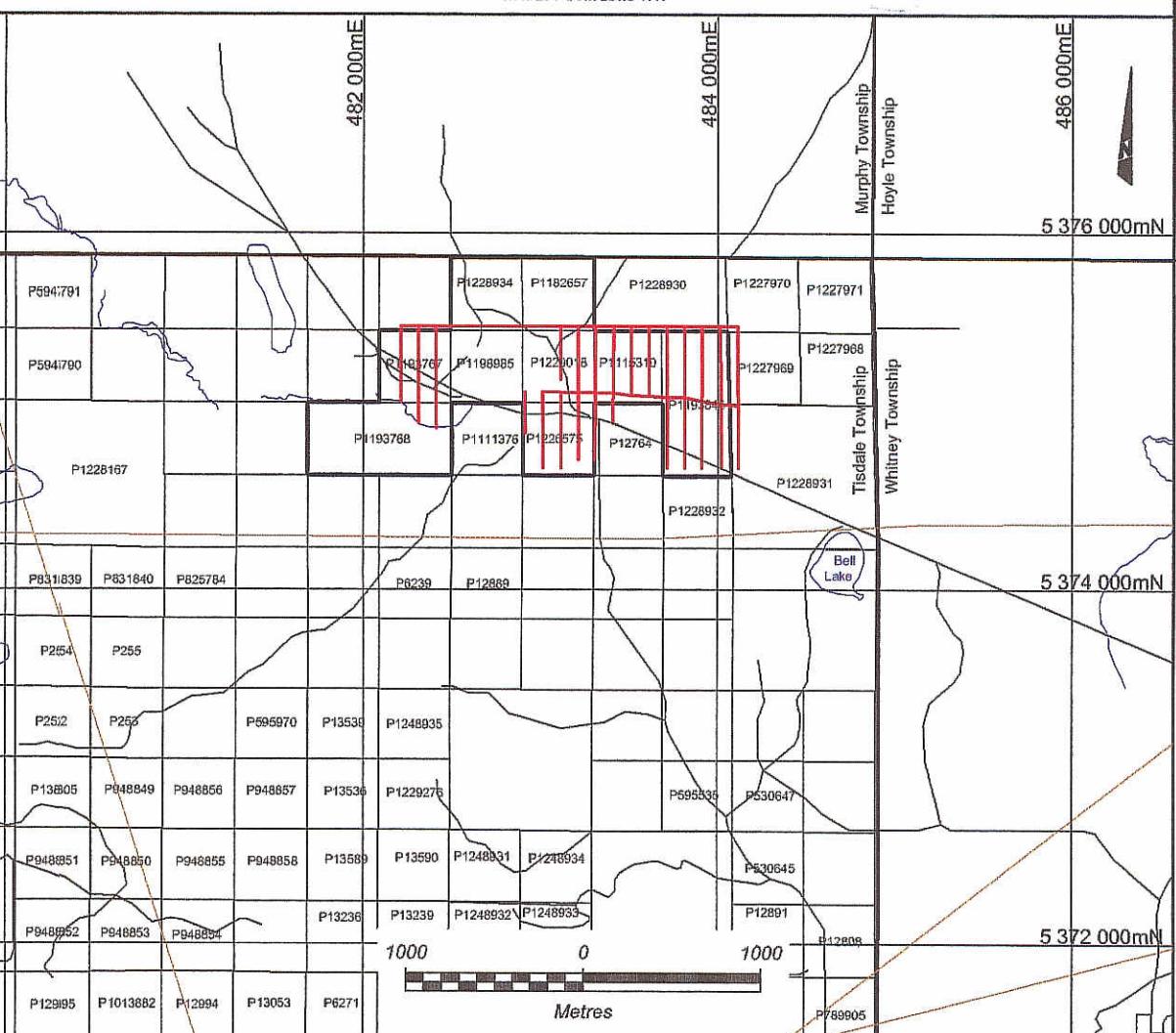
Receiver: Elrec-Pro (IRIS)

Pole-Dipole Array

$n = 1 \text{ to } 6$   
 $a = 25 \text{ m}$

Scale 1:5 000

100 0 100 200 300  
metres NAD27 / UTM zone 17N 2.30715

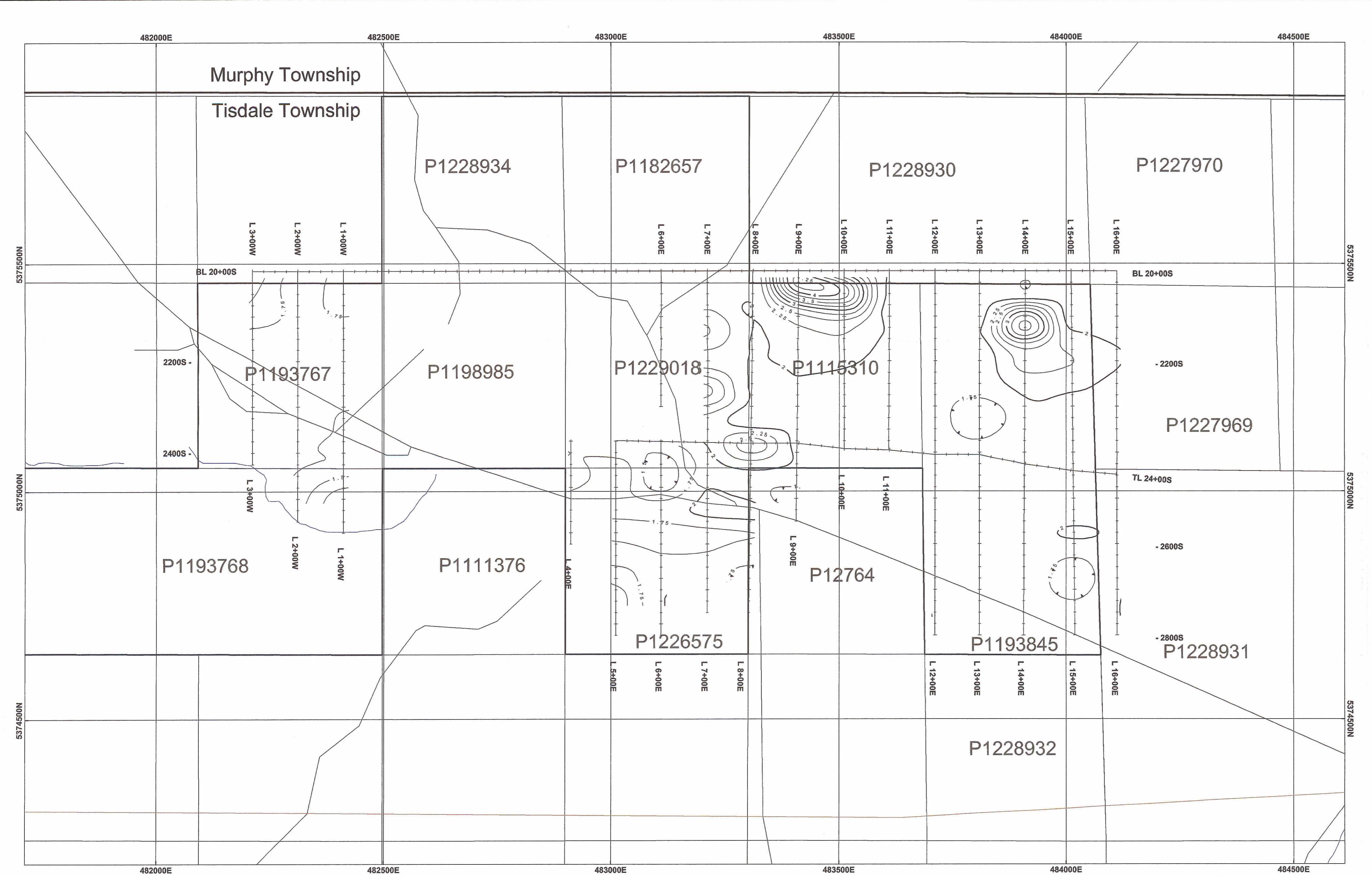


**Porcupine Joint Venture**  
**Beaumont Project - Beaumont Grid**  
**Tisdale Township, Ontario, Canada**

**Induced Polarization Survey**  
**image2D™ Metal Factor at a depth of 40 m**

	Interpreted by: P. Bérubé, Eng.	2004-09
	Surveyed by: Y. Mélançon, Tech.	2004-08
	Approved by: C. Malo-Lalande, E.I.T.	2004-09
	Reference map: 42A/11	Scale 1:5 000
	Project no: 04N771C	Map no: 8.4

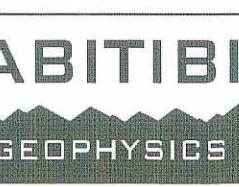
**ABITIBI**  
GEOPHYSICS

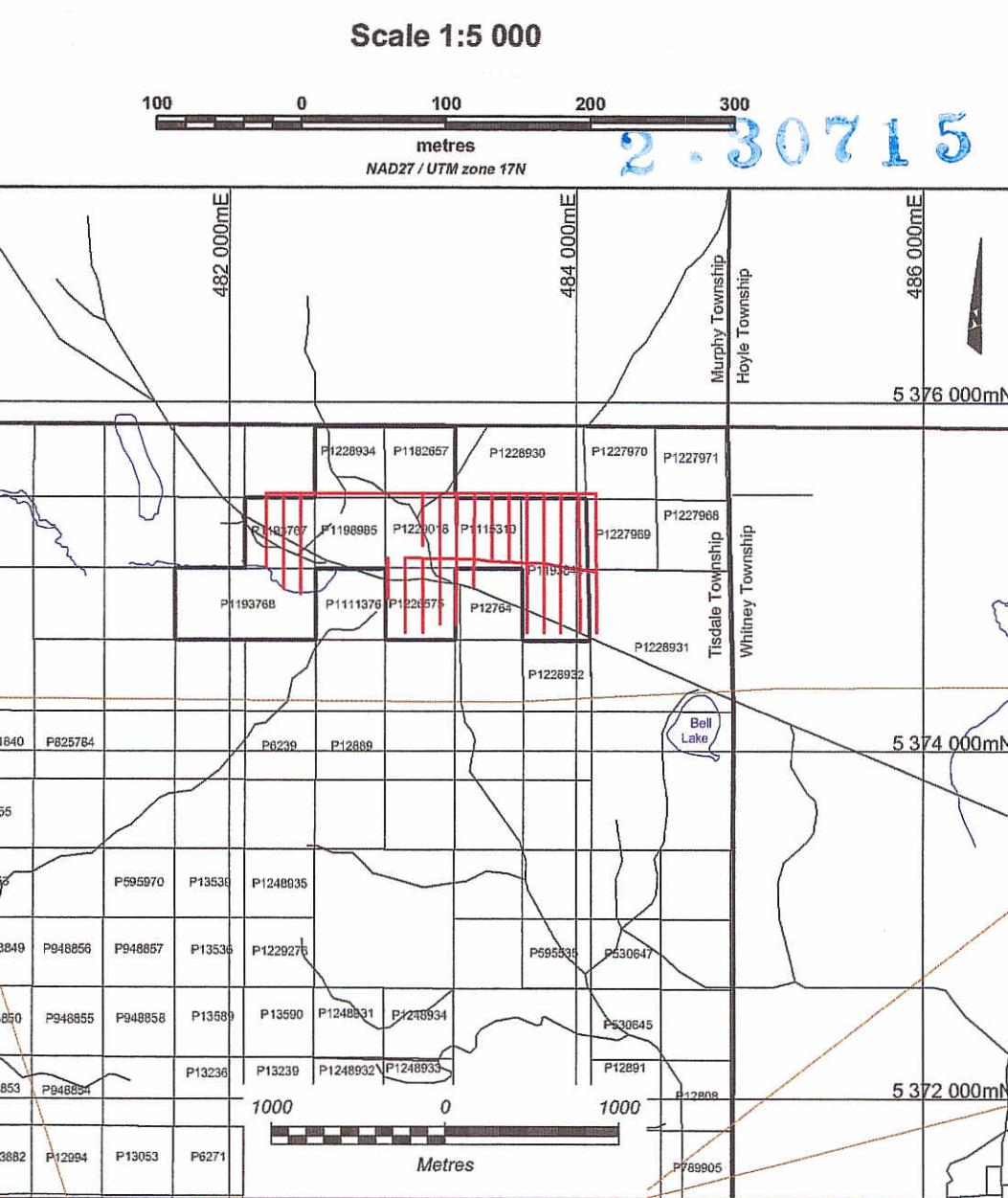
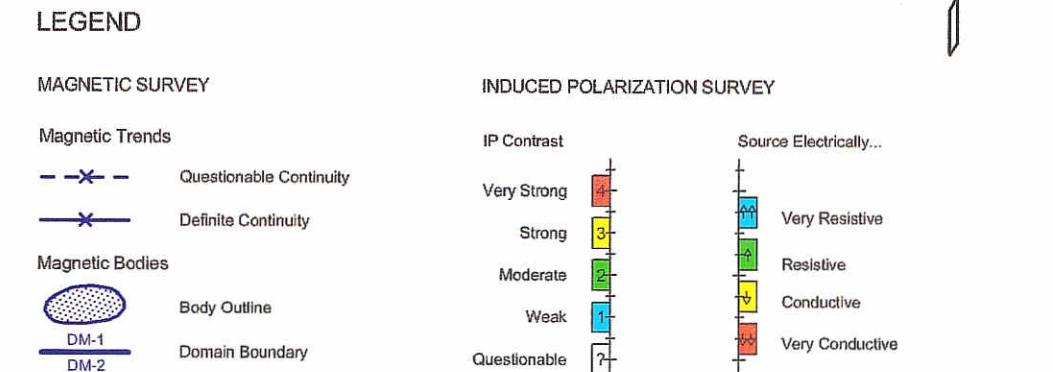
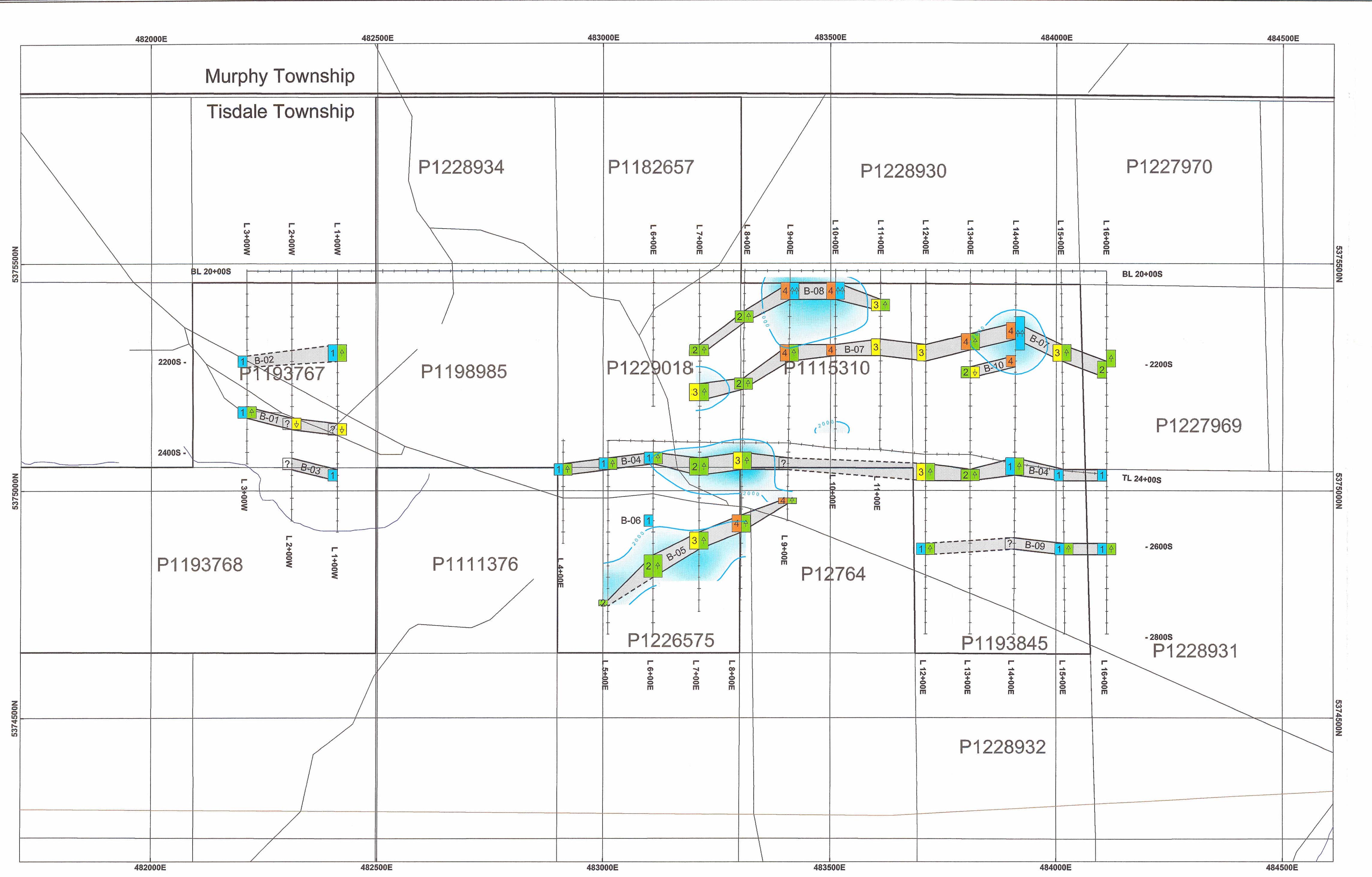


Porcupine Joint Venture  
Beaumont Project - Beaumont Grid  
Tisdale Township, Ontario, Canada

Induced Polarization Survey  
**image2D™** Time Constant at a depth of 40 m  
(seconds)

Interpreted by: P. Bérubé, Eng. 2004-09  
Surveyed by: Y. Mélançon, Tech. 2004-08  
Approved by: C. Malo-Lalande, E.I.T. 2004-09  
Reference map: 42A/11 Scale 1:5 000  
Project no: 04N771C Map no: 8.5





**Porcupine Joint Venture**  
**Beaumont Project - Beaumont Grid**  
**Tisdale Township, Ontario, Canada**

### Geophysical Interpretation

	Interpreted by: P. Bérubé, Eng.	2004-09
	Surveyed by: G. T. & Y. M.	2004-08
	Approved by: C. Malo-Lalande, E.I.T.	2004-09
	Reference map: 42A/11	Scale 1:5 000
	Project no: 04N771C	Map no: 10.0