

**REPORT ON A HELICOPTER-BORNE
VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM)
GEOPHYSICAL SURVEY**



**Raymond and Midlothian Blocks
Shining Tree, Ontario**

**For:
Laurion Mineral Exploration Inc.**

By

**Geotech Ltd.
245 Industrial Parkway North
Aurora, Ont., CANADA, L4G 4C4**

Tel: 1.905.841.5004

Fax: 1.905.841.0611

www.geotech.ca

Email: info@geotech.ca

Survey flown in March 2008

Project 8028

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REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC SURVEY

Raymond and Midlothian Blocks
Shining Tree, Ontario

Executive Summary

During March 4th to 9th, 2008 Geotech Ltd. carried out a helicopter-borne geophysical survey for Laurion Mineral Exploration Inc. over the Raymond and Midlothian blocks near the Shining Tree region in Ontario, Canada.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM) system and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 923 line-km were flown.

The survey operations were based in Shining Tree, Ontario. In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of digital data and map products, were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as electromagnetic stacked profiles and the following grids:

- Total magnetic intensity
- B-field time gate 1.151 ms

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

This report describes the logistics of the survey acquisition phase and the final data processing phase. A brief preliminary interpretation describing the highlights of the geophysical results is also provided.

1. INTRODUCTION

1.1 General Considerations

These services are the result of the Agreement made between Geotech Ltd. and Laurion Mineral Exploration Inc. to perform a helicopter-borne geophysical survey over the Raymond and Midlothian blocks, located near the region of Shining Tree in Ontario, Canada.

Cynthia Le Sueur-Aquin, President, acted on behalf of Laurion Mineral Exploration Inc. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of heliborne EM using the versatile time-domain electromagnetic (VTEM) system and aeromagnetics using a caesium magnetometer. A total of 923 line-km of geophysical data were acquired during the survey. The survey area is shown in Figure 1.

The crew was based in the region of Shining Tree, Ontario for the acquisition phase of the survey, as shown in Section 2 of this report. Survey flying started on March 4TH and was completed on Mach 9th, 2008

In-field data quality control and quality assurance as well as preliminary data processing were carried out daily during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in September, 2008.



Figure 1 - Survey Location

1.2 Survey and System Specifications

Both blocks were flown at a 100 metre traverse line spacing wherever possible (see Section 1.4) with a flight direction of N 000° E and N 180° E, while the tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres in the direction of N 090° E and N 270° E. For more detailed information on the flight spacing and direction see Table 1.

Where possible, the helicopter maintained a mean terrain clearance of 79 meters, which translates into an average height of 44 meters above ground for the bird-mounted VTEM system and 66 metres for the magnetic sensor.

The survey was flown using a Eurocopter Aerospatiale (Astar) helicopter. The Aerospatiale 350 B2 helicopter, registration C-FORS was used to fly the survey. Details of the survey specifications may be found in Section 2 of this report.

1.3 Topographic Relief and Cultural Features

The blocks (Figure 2) are located in north-eastern Ontario, approximately 35 kilometers north-east of the town of Shining Tree, ON. Topographically, these areas exhibit a moderate relief, with an elevation ranging from 346-478 metres above sea level for the Midlothian block and 327-457 for the Raymond block. Special care is recommended in identifying any potential cultural features from other sources that might be recorded in the data.

Figure 2 - Google Image with Flight Path



2. DATA ACQUISITION

2.1 Survey Area

The block (see Figure 2 and Location map, Appendix A) and general flight specifications are as follows:

Table 1 - Survey block

Survey block	Line spacing (m)	Area (Km ²)	Line-km	Flight direction	Line number
Midlothian	100 lines	35.7	335.4	N 0° E / N 180° E	L4010-L4780
	1000 ties		38.5	N 90° E / N 270° E	T4910-T4950
Raymond	100 lines	51.3	498.2	N 0° E / N 180° E	L5010-L5470
	1000 ties		50.6	N 90° E / N 270° E	T5800-T5900

Survey block boundaries coordinates are provided in Appendix B.

2.2 Survey Operations

Survey operations were based out of the 3 Bears Camp in Shining Tree, Ontario from March 4th to 9th 2008. The following table shows the timing of the flying.

Table 2 - Survey Schedule

Date	Flight #	Flown KM	Block	Crew location	Comments
04-Mar-08	1	52	MID	3 Bears Camp Shining Tree, Ontario	Mobilization, production in p.m.
05-Mar-08	2 - 4	206	MID	Shining Tree, Ontario	Production
06-Mar-08				Shining Tree, Ontario	No production – system maintenance and snow storm
07-Mar-08	5	59	MID	Shining Tree, Ontario	Production limited – helicopter issues
08-Mar-08	6 - 10	396	MID / RAY	Shining Tree, Ontario	Production
09-Mar-08	11 - 13	210	RAY / ELE	Shining Tree, Ontario	Production – SHINING TREE COMPLETE

2.3 Flight Specifications

The helicopter was maintained at a mean height of 79 meters above the ground with a nominal survey speed of 80 km/hour for the survey. This allowed for a nominal EM sensor terrain clearance was 44 meters and a magnetic sensor clearance of 66 meters. The data recording rates of the data acquisition was 0.1 second for electromagnetics and magnetometer, 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 meters along flight track. Navigation was assisted by a GPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

The operator was responsible for monitoring of the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel, operating remotely.

2.4 Aircraft and Equipment

2.4.1 Survey Aircraft

The survey was flown using a Eurocopter Aerospatiale 350 B2 helicopter, registration C-FORS. The helicopters were operated by Expedition Helicopters Ltd. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd.

2.4.2 Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The configuration is as indicated in Figure 2 below.

Receiver and transmitter coils are concentric and Z-direction oriented. The loops were towed at a mean distance of 35 meters below the aircraft as shown in Figure 4. The receiver decay recording scheme is shown diagrammatically in Figure 3.

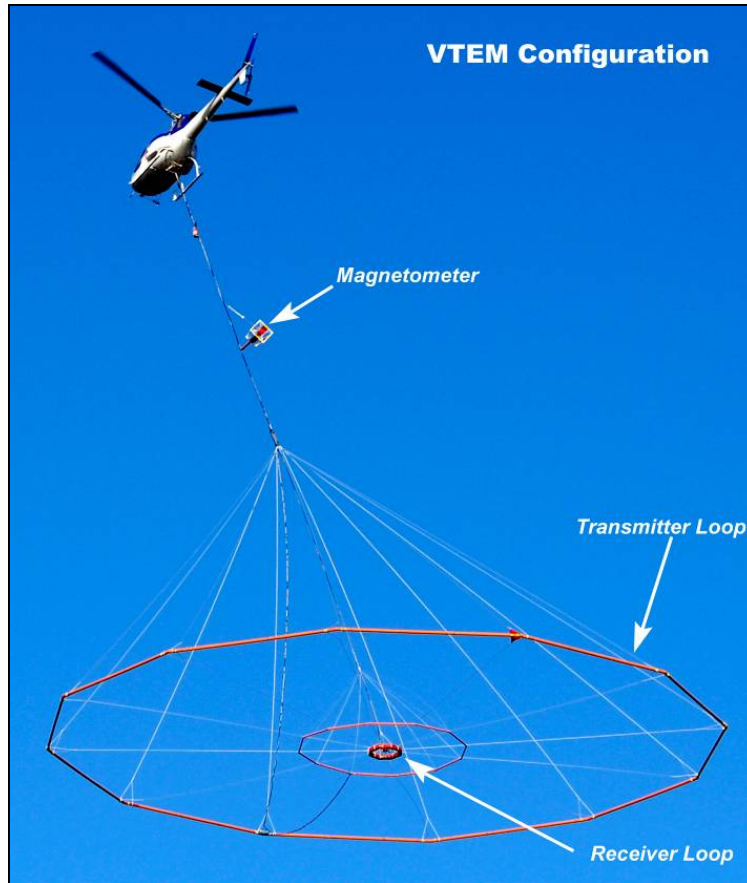


Figure 3 - VTEM Configuration

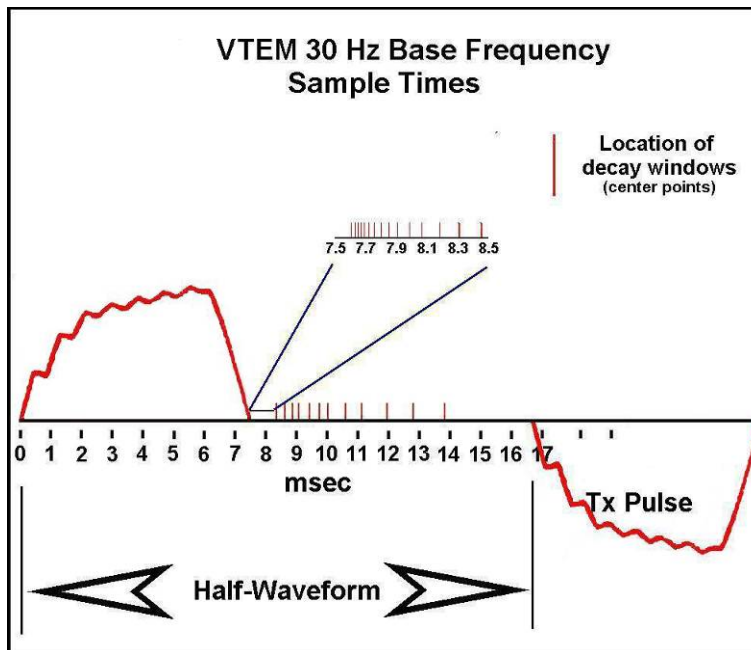


Figure 4 - VTEM Waveform & Sample Times

The complete VTEM decay sampling scheme is shown in Table 3 below. Twenty-four time measurement gates (ch10 to ch33) were used for the final data processing in the range from 120 ms to 6578 ms, as shown in Table 5.

Table 3 - Decay Sampling Scheme

VTEM Decay Sampling scheme				
Array Index	(Microseconds)			
	Time Gate	Start	End	Width
0	0			
1	10	10	21	11
2	21	16	26	11
3	31	26	37	11
4	42	37	47	11
5	52	47	57	10
6	62	57	68	11
7	73	68	78	11
8	83	78	91	13
9	99	91	110	19
10	120	110	131	21
11	141	131	154	24
12	167	154	183	29
13	198	183	216	34
14	234	216	258	42
15	281	258	310	53
16	339	310	373	63
17	406	373	445	73
18	484	445	529	84
19	573	529	628	99
20	682	628	750	123
21	818	750	896	146
22	974	896	1063	167
23	1151	1063	1261	198
24	1370	1261	1506	245
25	1641	1506	1797	292
26	1953	1797	2130	333
27	2307	2130	2526	396
28	2745	2526	3016	490
29	3286	3016	3599	583
30	3911	3599	4266	667
31	4620	4266	5058	792
32	5495	5058	6037	979
33	6578	6037	7203	1167
34	7828	7203	8537	1334
35	9245	8537	10120	1584

VTEM system parameters:

Transmitter Section

- Transmitter coil diameter: 26 m
- Number of turns: 4
- Transmitter base frequency: 30 Hz
- Peak current: 189 A
- Pulse width: 7.2 ms
- Duty cycle: 43%
- Peak dipole moment: 402,000 nIA
- Nominal terrain clearance: 44 m
-

Receiver Section

- Receiver coil diameter: 1.2 m
- Number of turns: 100.
- Effective coil area: 113.1 m²
- Wave form shape: trapezoid
- Power Line Monitor: 60 Hz
-

Magnetometer

- Nominal terrain clearance: 66 m

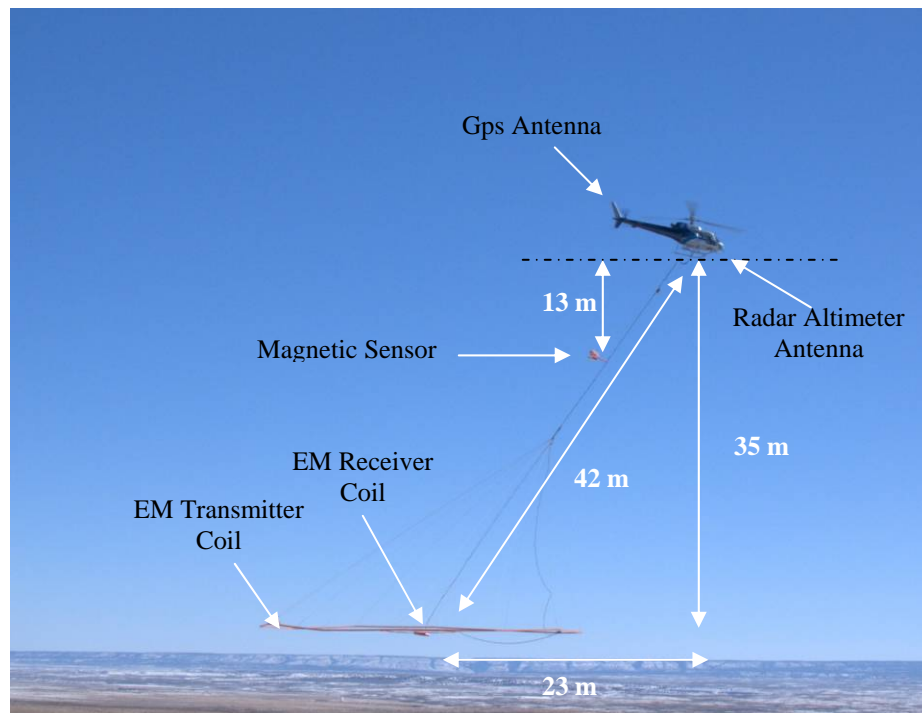


Figure 5 - Conventional VTEM system configuration

2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was a Geometrics optically pumped caesium vapour magnetic field sensor, mounted in a separated bird, 13 metres below the helicopter, as shown in Figure 4. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds. The magnetometer sends the measured magnetic field strength as nanoTesla to the data acquisition system via the RS-232 port.

2.4.4 Radar Altimeter

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit.

2.4.5 GPS Navigation System

The navigation system used was a Geotech PC based unit consisting of a NovAtel's CDGPS (Canada-Wide Differential Global Positioning System Correction Service) enabled OEM4-G2-3151W GPS receiver, The Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail. As many as 11 GPS and two CDGPS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with CDGPS active, it is 1.0 m. The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.

2.4.6 Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4.

Table 4 - Acquisition Sampling Rates

DATA TYPE	SAMPLING
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec

2.4.7 Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed in an isolated area behind the 3 Bears Camp (Lat N 47° 33' 55.15"/Long W 81° 15' 41.00"), away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

Field:

Project Manager:	Peter Cholewa (Office)
Crew chief:	Kevin Boyer
Operator:	Igor Katrashov

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Great Slave Helicopters Ltd.

Pilot:	Lorne Coleman
Mechanical Engineer:	Tyler McLennand

Office:

Data QC/QA:	Nick Venter
Preliminary Data Processing:	Nick Venter
Final Data Processing:	Nasreddine Bournas
Reporting/Mapping:	Wendy Acorn

Data acquisition phases were carried out under the supervision of Andrei Bagrianski, P. Geo, Surveys Manager. Processing phases were carried out under the supervision of Jean Legault, P. Geo, Manager of Processing and Interpretation. The overall contract management and customer relations were by Poalo Berardelli.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

4.1 Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM coordinate system (UTM Zone 17N) in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 Electromagnetic Data

A three stage digital filtering process was used to reject major spheric events and to reduce system noise. Local spheric activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major spheric events. The filter used was a 16 point non-linear filter.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for both B-field and dB/dt response. B-field time channel recorded at 1.151 milliseconds after the termination of the impulse is also presented as colour image.

Generalized modeling results of VTEM data, written by consultant Roger Barlow and Nasreddine Bournas, P. Geo., are shown in Appendix E.

Graphical representations of the VTEM output voltage of the receiver coil is shown in Appendix C.

4.3 Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data were edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data were corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along traverse lines. A micro-levelling procedure was applied to remove persistent low-amplitude components of flight-line noise remaining in the data.

The corrected magnetic data were interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 0.25 cm at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

5. DELIVERABLES

The final survey deliverables consists of the following:

5.1 Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results.

The survey report is provided in two paper copies and digitally in PDF format.

5.2 Maps

Final maps were produced at a scale of 1:10,000. The coordinate/projection system used was NAD83, UTM zone 17 north. All maps show the flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and color magnetic TMI contour maps.

The following maps are presented on paper:

- VTEM B-field profiles, Time Gates 0.234 – 6.578 ms in linear - logarithmic scale with TMI colour image.
- VTEM dB/dt profiles, Time Gates 0.234 – 6.578 ms in linear – logarithmic scale.
- VTEM B-field late time, Time Gate 1.151 ms colour image.
- Total magnetic intensity (TMI) colour image and contours.

5.3 Digital Data

- Two copies of the data and maps on DVD-ROM were prepared to accompany the report. Each DVD -ROM contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map format.
- Two copies of DVD-ROMs were prepared.

There are two (2) main directories;

Data	contains databases, grids and maps, as described below.
Report	contains a copy of the report and appendices in PDF

format.

Databases in Geosoft GDB format, containing the channels listed in Table 5.

Table 5 – Geosoft GDB Data Format.

Channel Name	Description
X:	X positional data (meters – NAD83, UTM zone 17 north)
Y:	Y positional data (meters – NAD83, UTM zone 17 north)
Z:	GPS antenna elevation (meters - ASL)
Radar:	Helicopter terrain clearance from radar altimeter (meters - AGL)
RadarB:	EM Bird terrain clearance from radar altimeter (meters - AGL)
DEM:	Digital elevation model (meters)
Gtime:	GPS time (seconds of the day)
Mag1:	Raw Total Magnetic field data (nT)
Mag2:	Diurnal corrected Total Magnetic field data (nT)
Mag3:	Leveled Total Magnetic field data (nT)
Basemag:	Magnetic diurnal variation data (nT)
SF[10]:	dB/dt 120 microsecond time channel (pV/A/m ⁴)
SF[11]:	dB/dt 141 microsecond time channel (pV/A/m ⁴)
SF[12]:	dB/dt 167 microsecond time channel (pV/A/m ⁴)
SF[13]:	dB/dt 198 microsecond time channel (pV/A/m ⁴)
SF[14]:	dB/dt 234 microsecond time channel (pV/A/m ⁴)
SF[15]:	dB/dt 281 microsecond time channel (pV/A/m ⁴)
SF[16]:	dB/dt 339 microsecond time channel (pV/A/m ⁴)
SF[17]:	dB/dt 406 microsecond time channel (pV/A/m ⁴)
SF[18]:	dB/dt 484 microsecond time channel (pV/A/m ⁴)
SF[19]:	dB/dt 573 microsecond time channel (pV/A/m ⁴)
SF[20]:	dB/dt 682 microsecond time channel (pV/A/m ⁴)
SF[21]:	dB/dt 818 microsecond time channel (pV/A/m ⁴)
SF[22]:	dB/dt 974 microsecond time channel (pV/A/m ⁴)
SF[23]:	dB/dt 1151 microsecond time channel (pV/A/m ⁴)
SF[24]:	dB/dt 1370 microsecond time channel (pV/A/m ⁴)
SF[25]:	dB/dt 1641 microsecond time channel (pV/A/m ⁴)
SF[26]:	dB/dt 1953 microsecond time channel (pV/A/m ⁴)
SF[27]:	dB/dt 2307 microsecond time channel (pV/A/m ⁴)
SF[28]:	dB/dt 2745 microsecond time channel (pV/A/m ⁴)
SF[29]:	dB/dt 3286 microsecond time channel (pV/A/m ⁴)
SF[30]:	dB/dt 3911 microsecond time channel (pV/A/m ⁴)
SF[31]:	dB/dt 4620 microsecond time channel (pV/A/m ⁴)
SF[32]:	dB/dt 5495 microsecond time channel (pV/A/m ⁴)
SF[33]:	dB/dt 6578 microsecond time channel (pV/A/m ⁴)
BF[10]:	B-field 120 microsecond time channel (pVms)/(Am ⁴)
BF[11]:	B-field 141 microsecond time channel (pVms)/(Am ⁴)

Channel Name	Description
BF[12]:	B-field 167 microsecond time channel (pVms)/(Am ⁴)
BF[13]:	B-field 198 microsecond time channel (pVms)/(Am ⁴)
BF[14]:	B-field 234 microsecond time channel (pVms)/(Am ⁴)
BF[15]:	B-field 281 microsecond time channel (pVms)/(Am ⁴)
BF[16]:	B-field 339 microsecond time channel (pVms)/(Am ⁴)
BF[17]:	B-field 406 microsecond time channel (pVms)/(Am ⁴)
BF[18]:	B-field 484 microsecond time channel (pVms)/(Am ⁴)
BF[19]:	B-field 573 microsecond time channel (pVms)/(Am ⁴)
BF[20]:	B-field 682 microsecond time channel (pVms)/(Am ⁴)
BF[21]:	B-field 818 microsecond time channel (pVms)/(Am ⁴)
BF[22]:	B-field 974 microsecond time channel (pVms)/(Am ⁴)
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BF[30]:	B-field 3911 microsecond time channel (pVms)/(Am ⁴)
BF[31]:	B-field 4620 microsecond time channel (pVms)/(Am ⁴)
BF[32]:	B-field 5495 microsecond time channel (pVms)/(Am ⁴)
BF[33]:	B-field 6578 microsecond time channel (pVms)/(Am ⁴)
Lon:	Longitude data (degree – WGS84)
Lat:	Latitude data (degree – WGS84)
PLM:	60 Hz power line monitor

Electromagnetic B-field and dB/dt data are found in array channel format between indexes 10 – 33, as described above.

- Database of the VTEM Waveform “VTEM_waveform.gdb” in Geosoft GDB format, containing the following channels:

Time: Sampling rate interval, 10.416 microseconds
 RX_Volt: Output voltage of the receiver coil (volt)
 TX_Curr: Output current of the transmitter (amps)

- Grids in Geosoft GRD format, as follow,

Mag.grd: Total magnetic intensity (nT)
 BF1151: B-Field Time Gate 1.151 ms

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 25 metres was used.

- Maps at 1:10,000 scale in Geosoft MAP format, as follows:

8028_TMI: B-field profiles, Time Gates 0.234 – 6.578 ms in linear logarithmic scale, with TMI colour image.
 8028_dBdt: dB/dt profiles, Time Gates 0.234 – 6.578 ms in linear logarithmic scale.
 8028_BF23: B-field late time, Time Gate 1.151 ms colour image.
 8028_TMI: Total magnetic intensity colour image and contours.

1:50,000 topographic vectors were taken from the NRCAN Geogratis database at; <http://geogratis.gc.ca/geogratis/en/index.html>.

- Google Earth files *8028_Shining_Tree.kml* showing the flight path of the block.

Free version of Google Earth software can be downloaded from, <http://earth.google.com/download-earth.html>

6. PRELIMINARY INTERPRETATION

6.1 Midlothian Property

6.1.1 Analysis of EM data

The Midlothian property comprises a large strong anomaly dominating the central area, as shown in Figure 5. Double peak anomalies caused by steeply dipping thin conductors are also observed in the north western part of the block. A strong anomaly is detected in the central area. Both types could potentially be associated with massive sulphide mineralization. A conductivity depth image was performed for line 4450, drawn in black, in Figure 6, through the central part of the main anomaly.

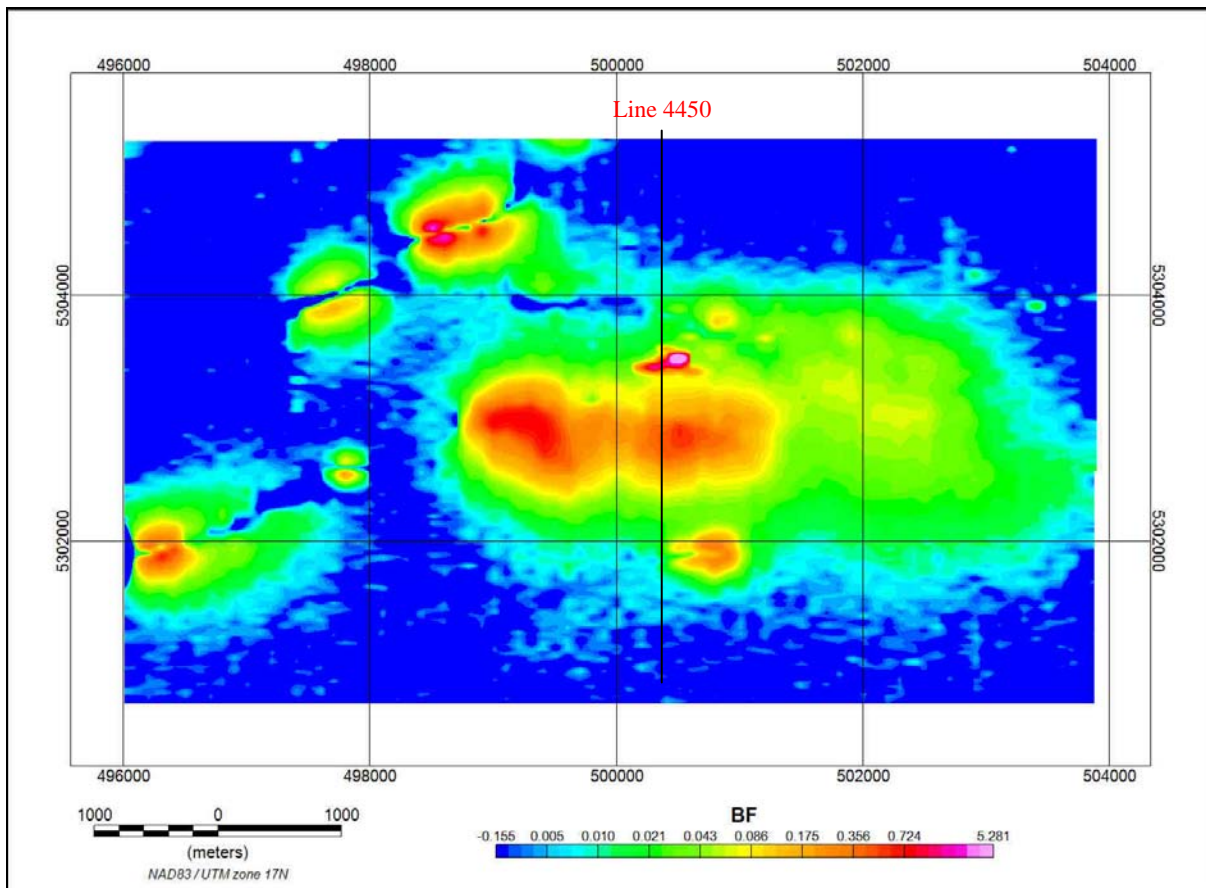


Figure 6 - Bfield (1.151 ms) image.

6.1.2 CDI Section

The conductivity depth image (CDI) along line 4450, shown in Figure 7, calculated using Emflow (Encom Technology Pty. Ltd., N Sidney, NSW, AU) indicates the presence of several shallow buried conductive zones. The strongest of these highly conductive zones could be associated with massive sulphide mineralization.

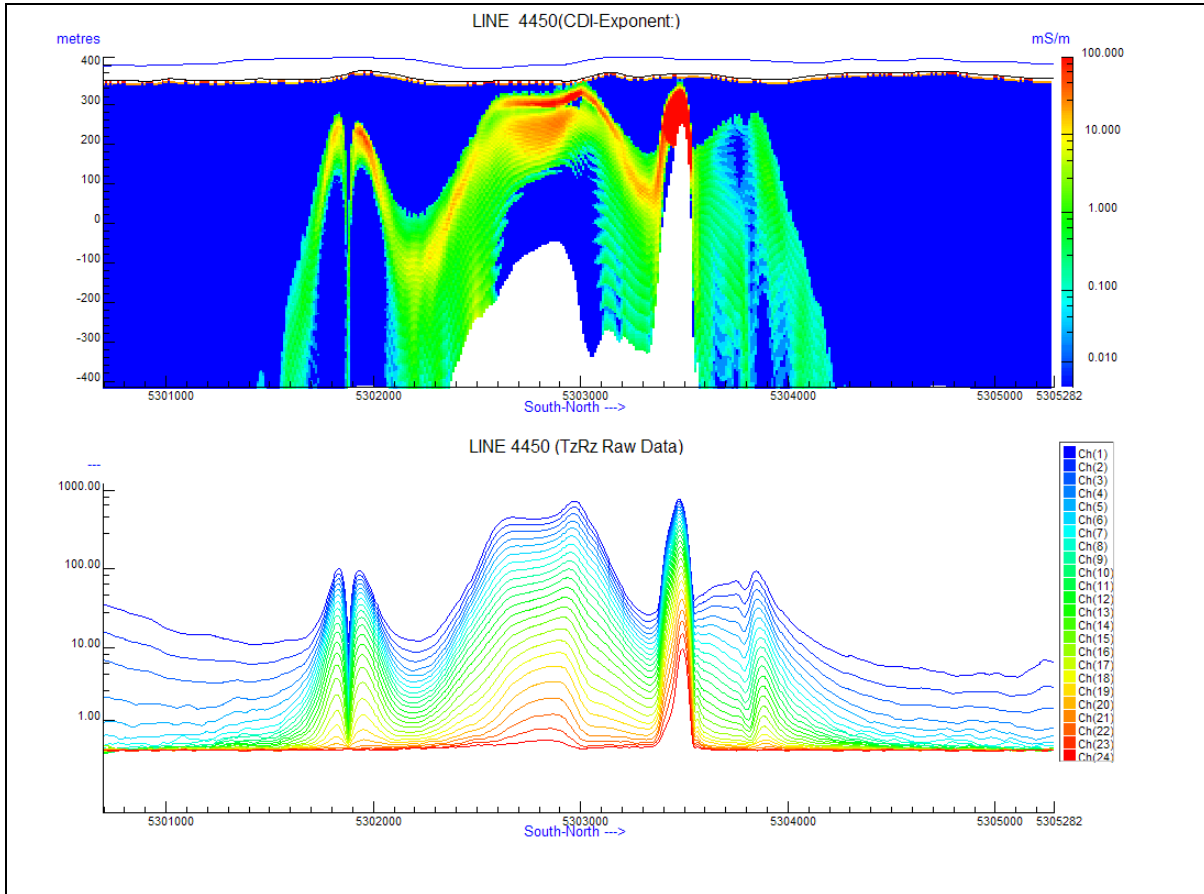


Figure 7 - Conductivity depth image for Line 4450

6.1.3 Analysis of the magnetic data

The total magnetic intensity field map highlights the presence of a strong lens shaped anomaly in the central part of the property oriented roughly in an east west direction. The amplitude of this anomaly (about 9000 nT) suggests an ultramafic source for this body. Other narrow lineaments are associated with EM anomalies and could be associated with massive sulphide zones.

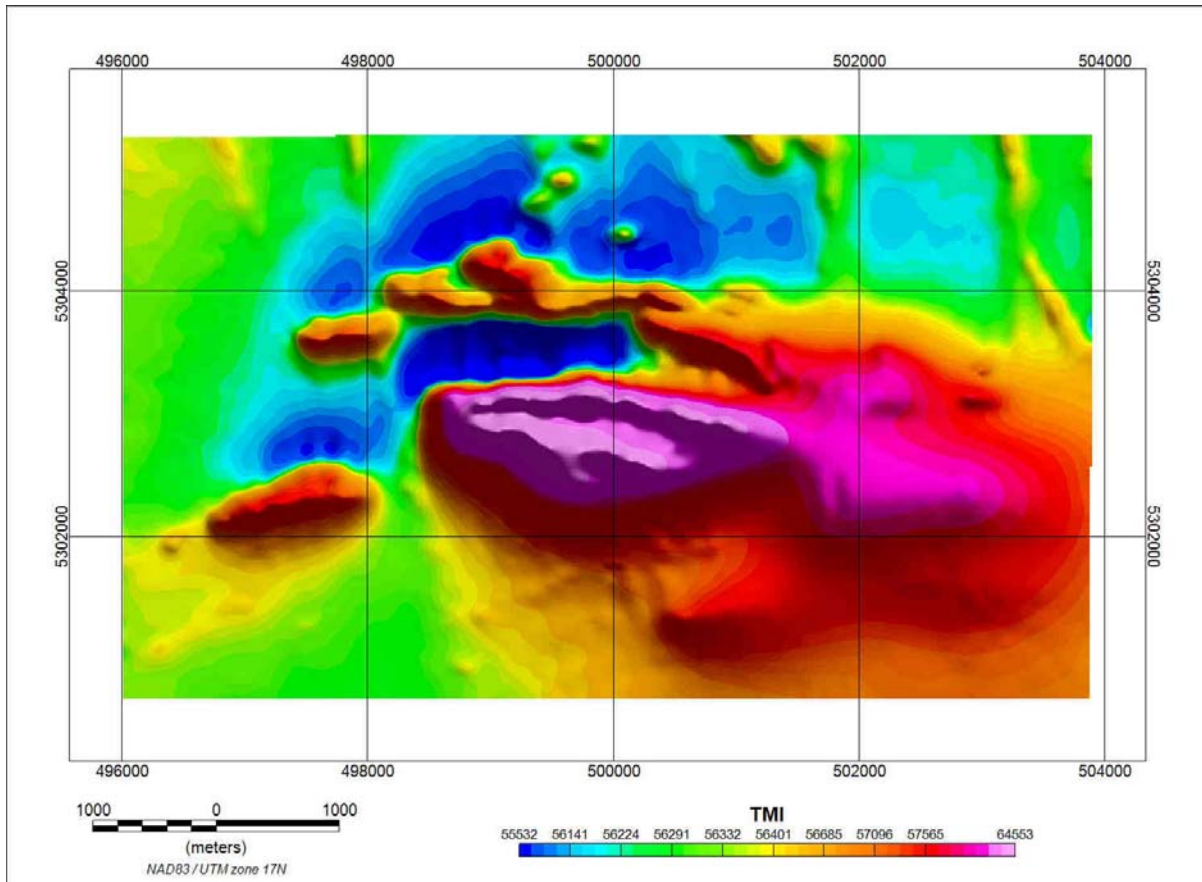


Figure 8 - EM color shaded relief of the total magnetic intensity image.

6.2 Raymond property

6.2.1 Analysis of the EM data

The EM results over the Raymond property indicates the existence of several significant but localized EM conductors including one interesting conductive anomaly located in the north portion of the block, that could be related to a sulphite mineralized zone. A conductivity depth image was performed for line 5250, drawn in black (Figure 9), directly through the centre of this EM anomaly.

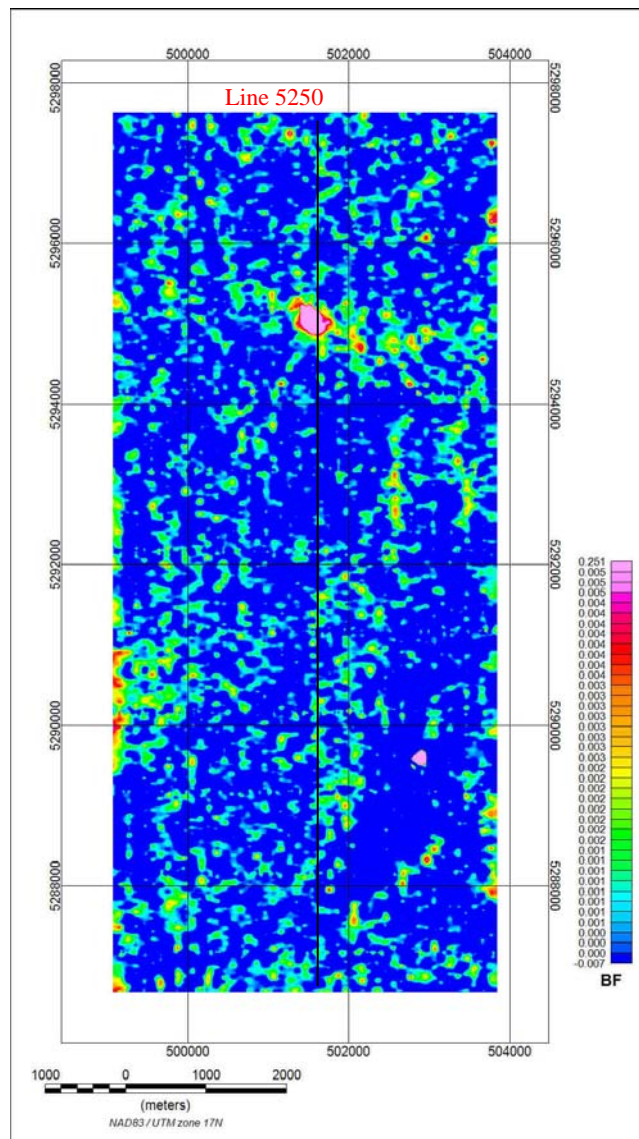


Figure 9 – B-field (1.151 ms) image.

6.2.2 CDI Section

The conductivity depth image (CDI) obtained for line 5250 using Emflow (Figure 10) clearly highlights a steeply dipping, confined bedrock conductor that is a potentially association with metallic sulphide mineralization.

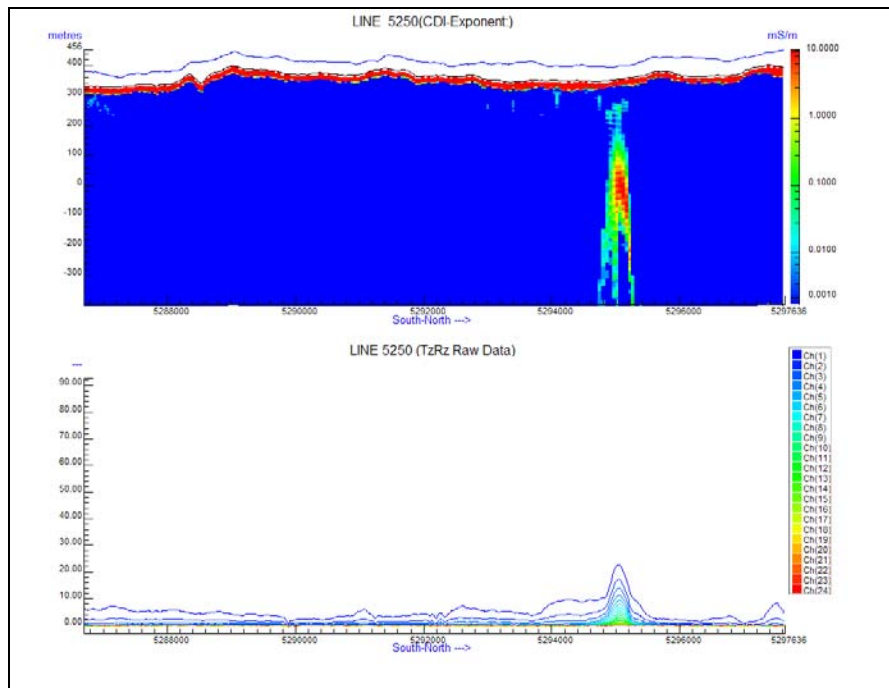


Figure 10 - Conductivity depth image for Line 5250

6.2.3 Analysis of the magnetic data

The total magnetic intensity (TMI) map shows a large and strong anomalous zone trending roughly in the NS direction. This anomaly is possibly related to a large mafic or ultramafic source. The EM anomaly occurs at the northern end of this magnetic body and is also a magnetic high suggesting a sulphite or mixed magnetite source. Strong, short wavelength magnetic lineaments are also observed in the southern and eastern parts of the map. These are likely related to mafic/ultramafic dyke like structures

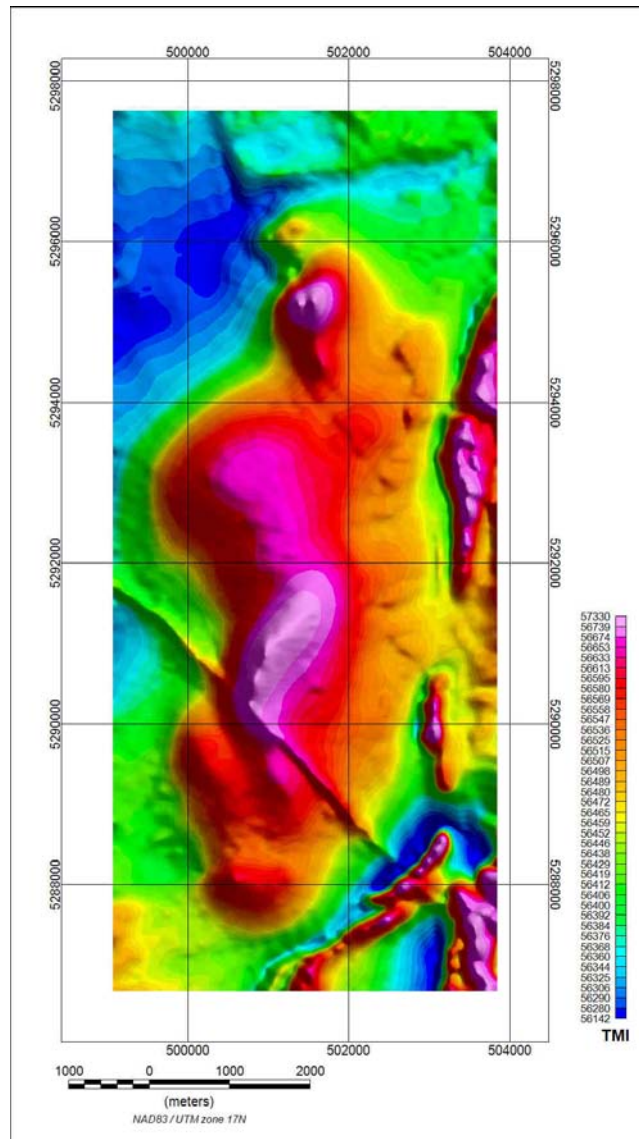


Figure 11 - Color shaded relief of the total magnetic intensity image.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

A helicopter-borne versatile time domain electromagnetic (VTEM) geophysical survey has been completed over the Raymond and Midlothian blocks near the region of Shining Tree, Ont., Canada.

The total area coverage is 87 km². Total survey line coverage is 923 line kilometres. The principal sensors included a Versatile Time Domain EM system and caesium magnetometer. Results have been presented as stacked profiles and contour colour images at a scale of 1:10,000.

The VTEM survey conducted over the two survey blocks detected several bedrock conductors of significance. Most of them are in good correlation with the magnetic anomalies, suggesting a possible sulphide or mixed magnetite association with these interpreted mineralized zones. The analysis of the magnetic data over the flown properties shows a high level of magnetic activity potentially associated with large mafic and ultramafic intrusions and with mafic volcanism (sills and dykes).

7.2 Recommendations

Based on the geophysical results obtained, several potentially interesting EM and magnetic anomalies were identified on the property. We therefore recommend a more detailed interpretation of the EM and magnetic data using inversion and modelling techniques to characterize them and to more accurately determine their parameters (depth, conductance, dip, etc.) prior to ground follow-up and drill testing.

In depth interpretation of the magnetic data based on structural analysis and 2D and 3D inversion techniques (Euler Deconvolution, analytic signal) is also recommended to map magnetic structures, faults, shear zones and fractures that control the mineralization.

Respectfully submitted¹,

Wendy Acorn
Geotech Ltd.

Jean Legault, P. Geo, P. Eng
Geotech Ltd.

Nasreddine Bournas PhD, P.Geo.(QC)

Geotech Ltd.

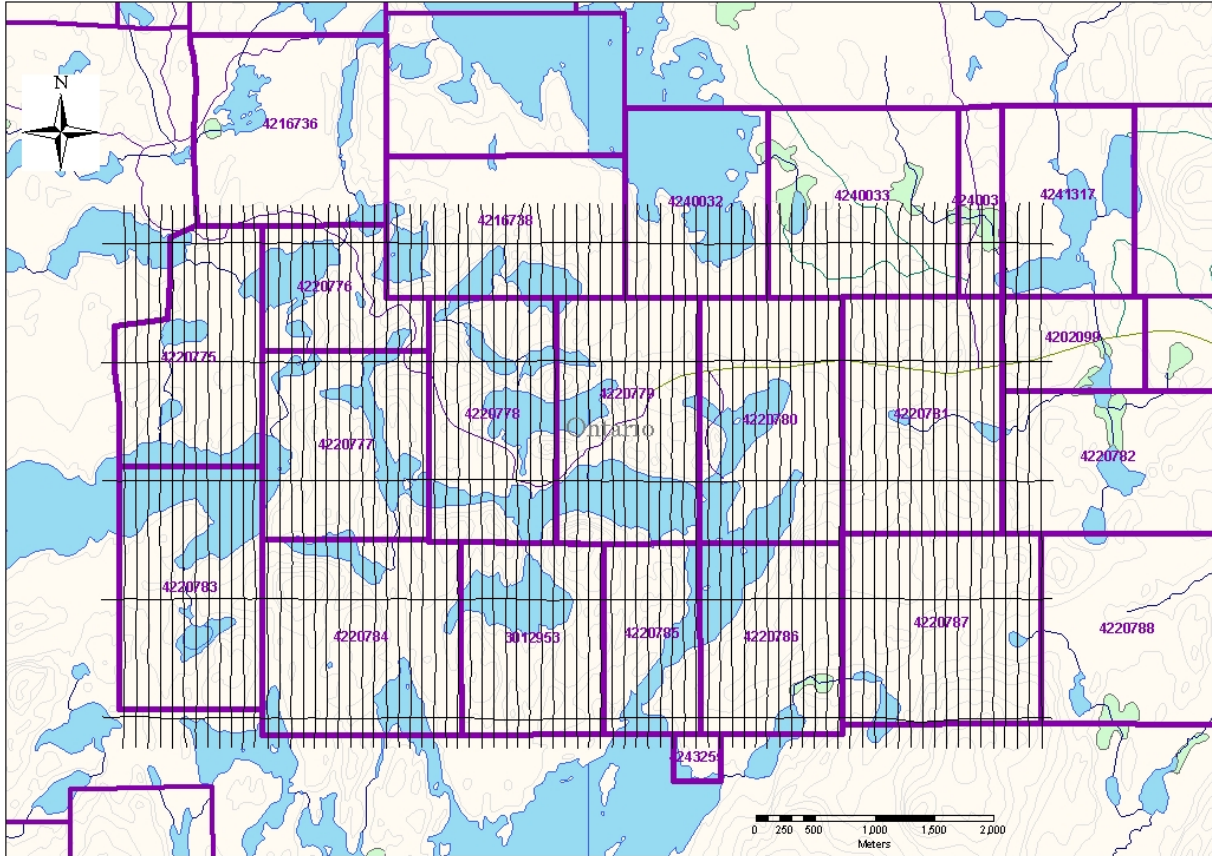
September 2008

¹Final data processing of the EM and magnetic geophysical data were carried out by Nasreddine Bournas PhD, P.Geo(QC) from the office of Geotech Ltd., in Aurora, Ontario, under the supervision of Jean Legault, P. Geo, Manager of Data Processing and Interpretation.

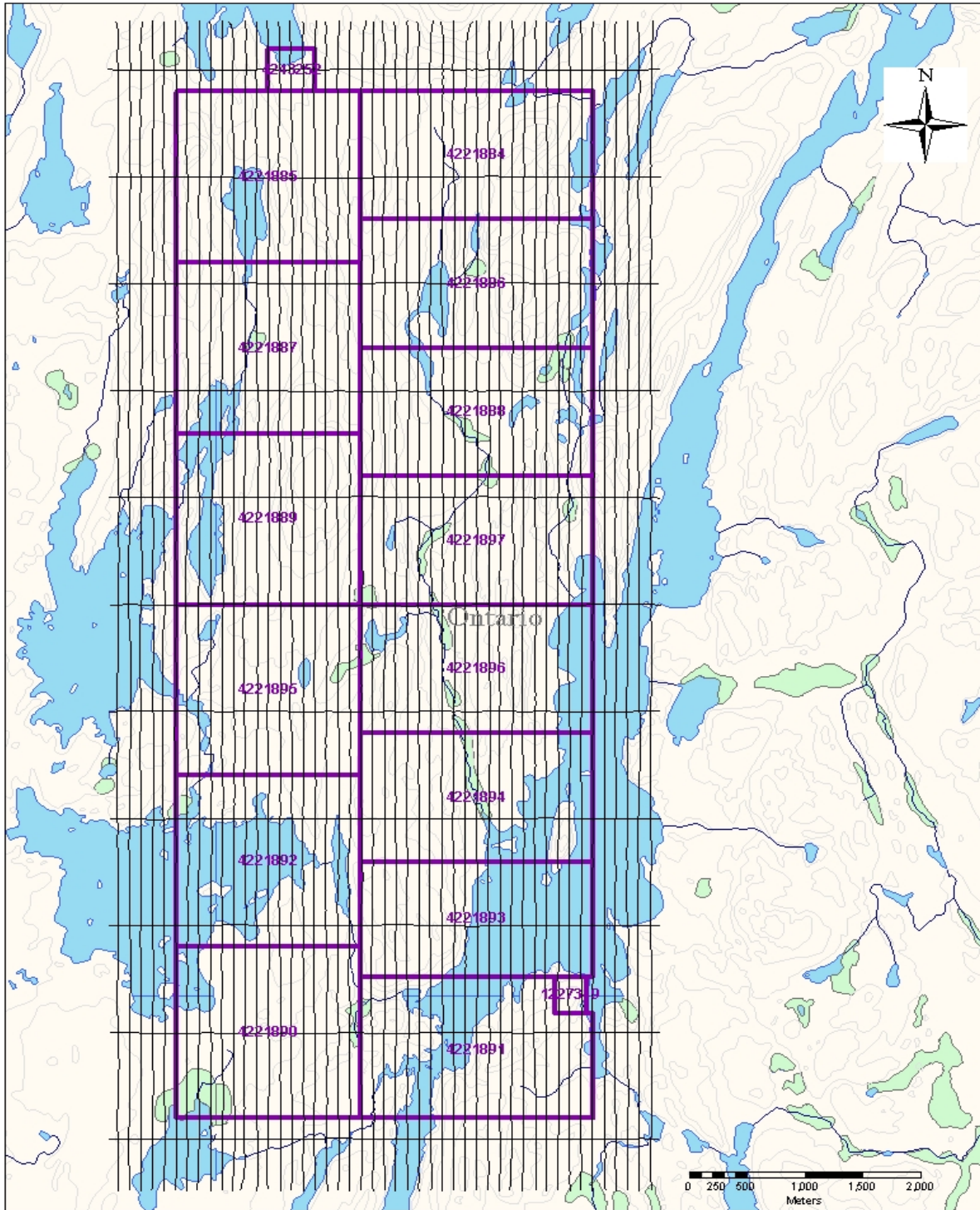
APPENDIX A
SURVEY BLOCK LOCATION MAP



Google Earth Location map of Block.



Mining Claims map for Midlothian Block.



Mining Claims map for Raymond Block.

APPENDIX B

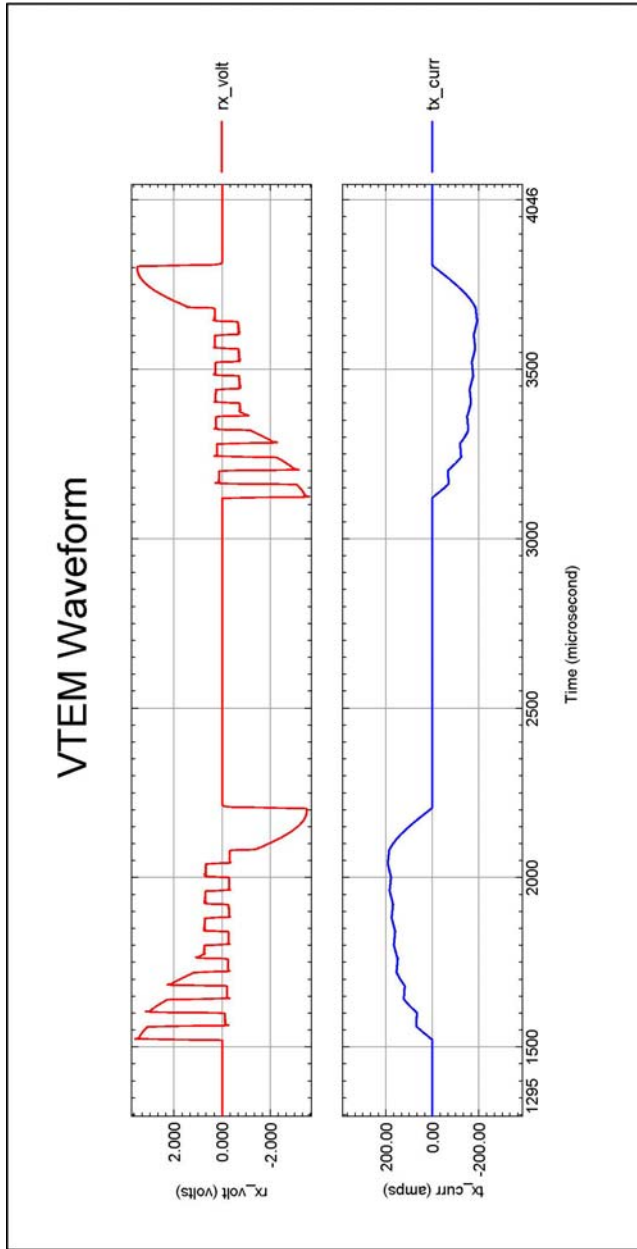
SURVEY BLOCK COORDINATES

(NAD83, UTM zone 17 north)

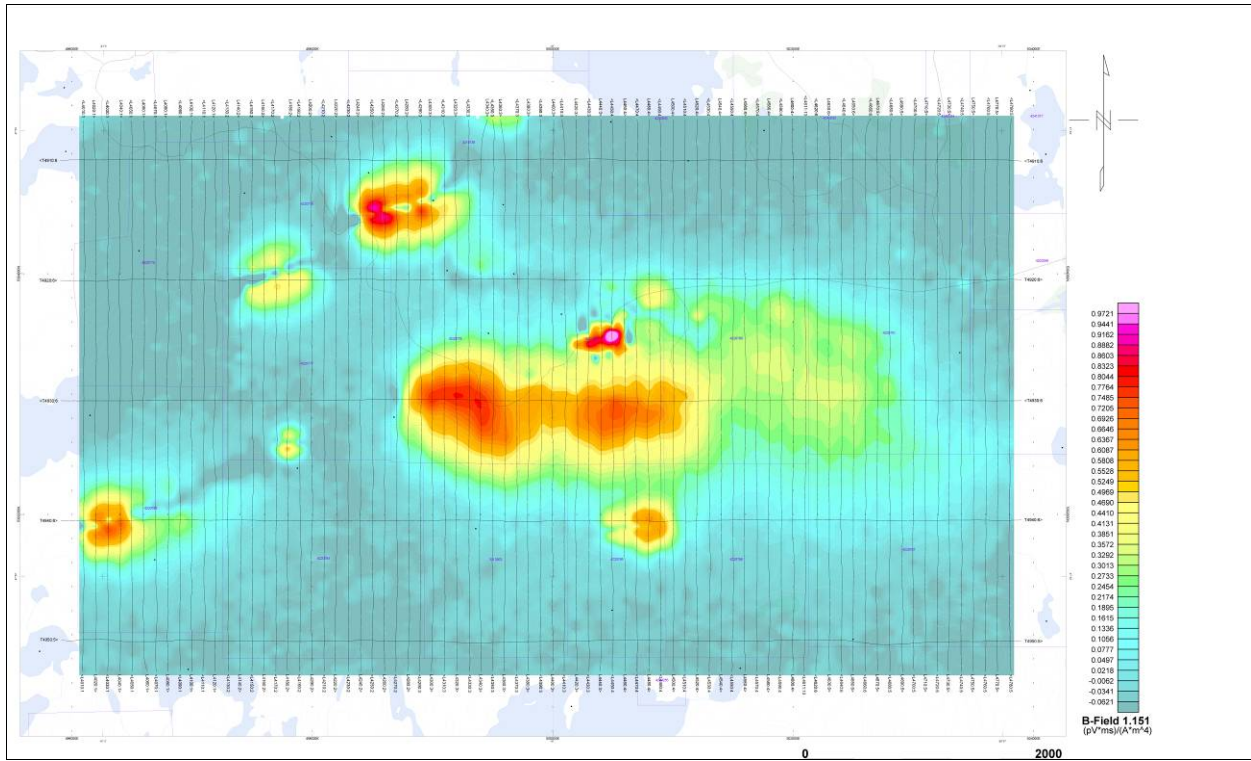
Raymond Block			Midlothian Block	
X	Y		X	Y
499150	5297475		496100	5300800
503750	5297475		496100	5305100
503750	5286875		503800	5305100
499150	5286875		503800	5300800

APPENDIX C

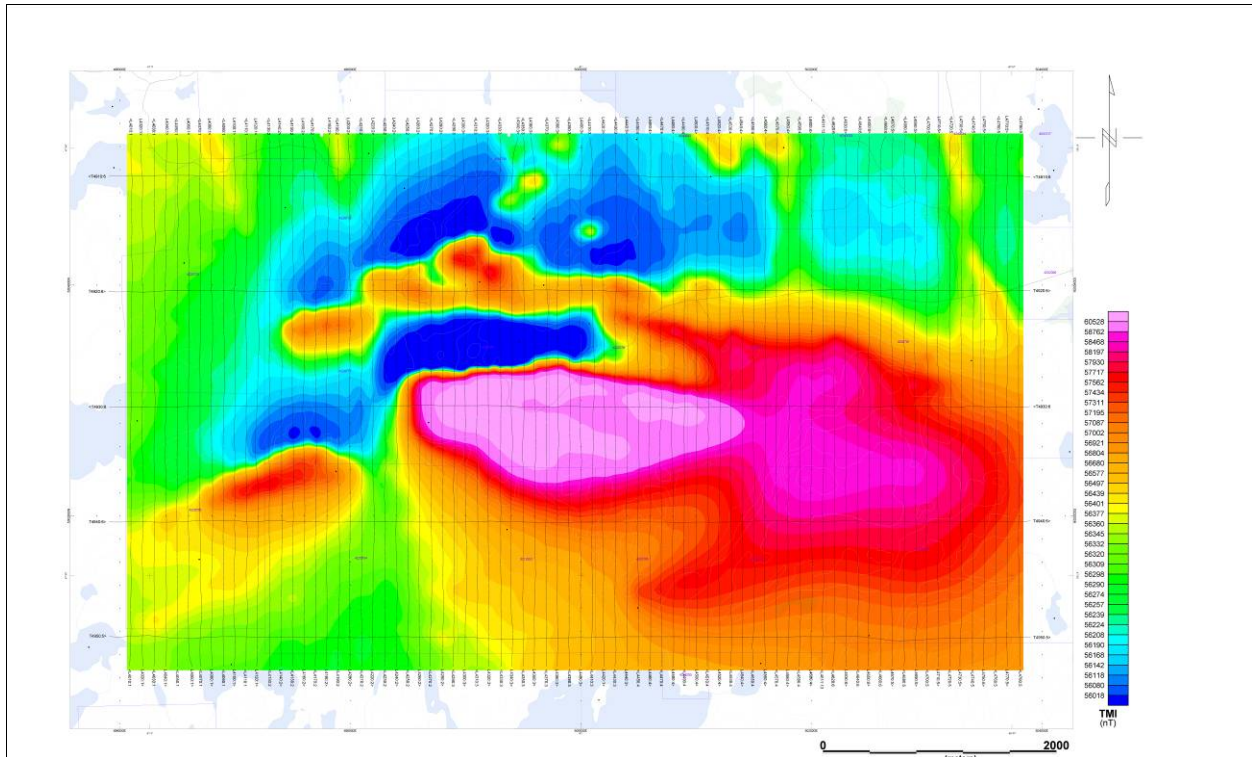
VTEM WAVEFORM



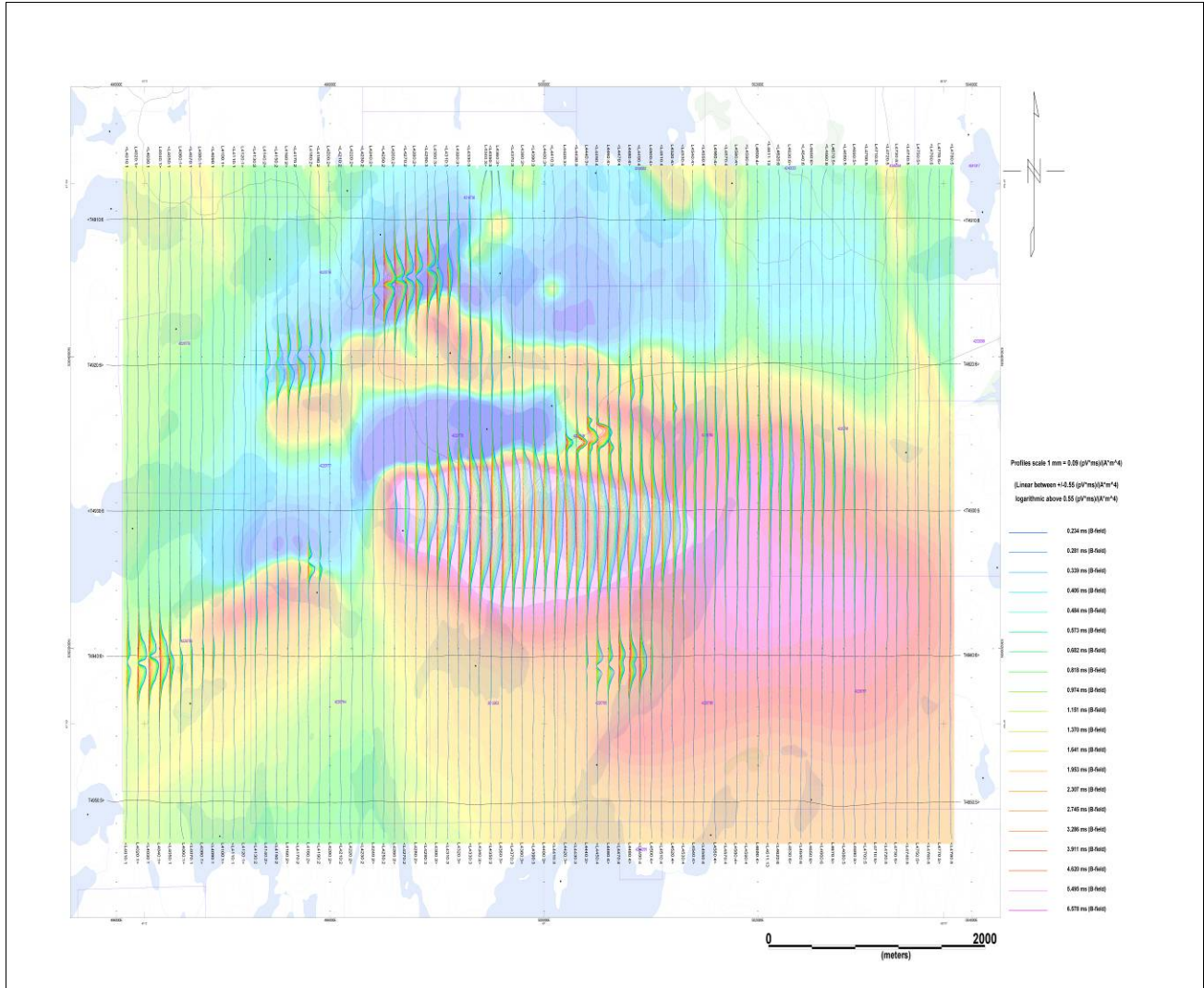
APPENDIX D
GEOPHYSICAL MAPS



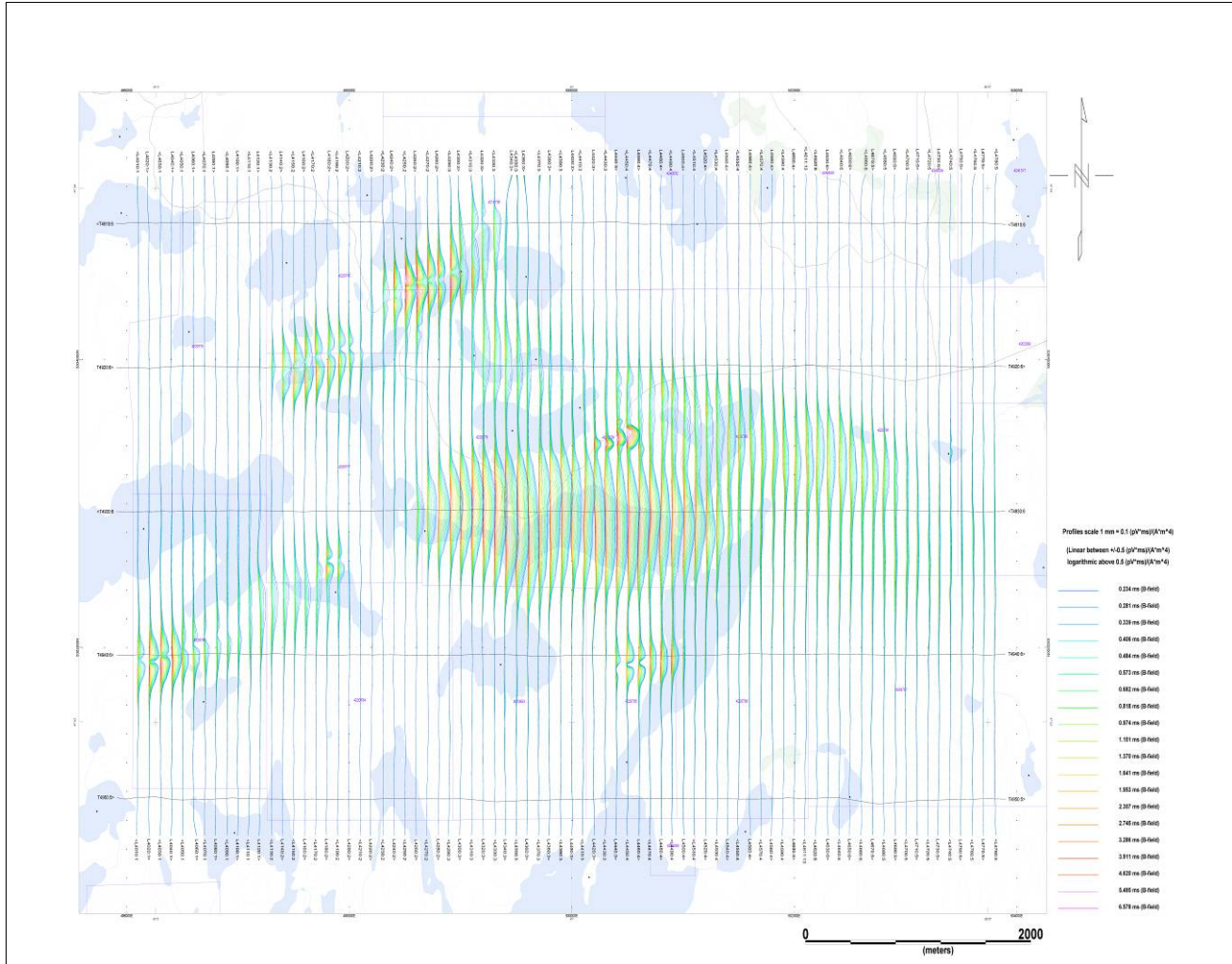
B-Field Grid for Midlothian Block - Time Gate 1.151 ms.



Total Magnetic Intensity Grid for Midlothian Block



B-Field Profiles with TMI Color Image for Midlothian Block



dB/dt Profiles for Midlothian Block

APPENDIX E

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 26.1 meters diameter transmitter loop that produces a dipole moment up to 625,000 nIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 30 Hz, the duration of each pulse is approximately 6.8 milliseconds followed by an off time where no primary field is present.

During turn-on and turn-off, a time varying field is produced (dB/dt) or B-field and an electromotive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

VTEM measurements are made partly during the transmitter On but primarily during the Off-time, when only the secondary fields representing the conductive targets encountered in the ground are present. The secondary fields are displayed both as dB/dt and calculated B-field responses.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

General Modeling Concepts

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models C1 to C18). The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.

- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.
- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.
- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated. Only concentric loop systems can map these varieties of target geometries.

The Maxwell TM EM modeling program (IMIT Technologies Ltd. Pty, Midland WA, AU) used to generate the following dB/dt and B-field off-time responses all assume a conductive plate in an infinitely resistive half-spaced host rock

Variation of Plate Depth

Geometries represented by plates of different strike length, depth extent, dip, plunge and depth below surface can be varied with characteristic parameters like conductance of the target, conductance of the host and conductivity/thickness and thickness of the overburden layer.

Diagrammatic models for a vertical plate are shown in Figures C-1 & C-2 and C-5 & C-6 at two different depths, all other parameters remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figures C-1 and C-2 show a plate where the top is near surface. Here, amplitudes of the dual peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figures C-5 and C-6 show a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.

Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figures C-3 & C-4 and C-7 and C-8 show a near surface plate dipping 80° at two different depths. Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an

empirical guide to dip angles from near 90° to about 30°. The method is not sensitive enough where dips are less than about 30°. For example, for a plate dipping 45°, the minimum shoulder starts to vanish. In Figures C-9 & C-10 and C-11 & C-12, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

In the special case where two plates are positioned to represent a synclinal structure. Note that the main characteristic is that the centre amplitudes are higher (approximately double) compared to the high shoulder of a single plate. This model is very representative of tightly folded formations where the conductors were once flat lying.

Variation of Prism Dip

Finally, with thicker, prism models, another algorithm is required to represent current on the plate. A plate model is considered to be infinitely thin with respect to thickness and incapable of representing the current in the thickness dimension. A prism model is constructed to deal with this problem, thereby, representing the thickness of the body more accurately.

Figures C-13 & C-14 and C-15 & C-16 show the same prism at the same depths with variable dips. Aside from the expected differences asymmetry prism anomalies show a characteristic change from a double-peaked anomaly to single peak signatures.

I. THIN PLATE

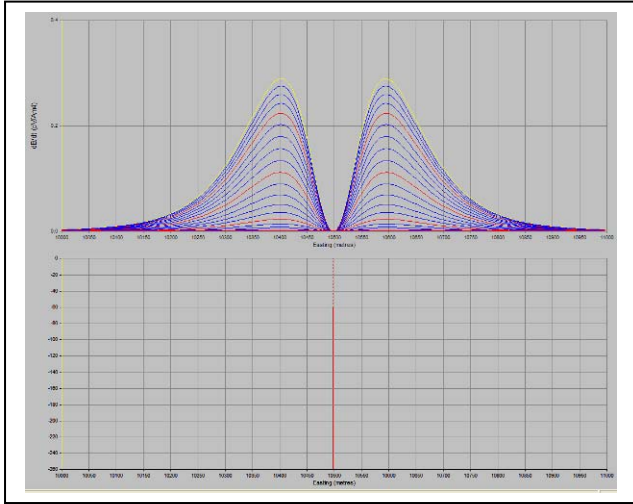


Figure C-1: dB/dt response of a shallow vertical thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

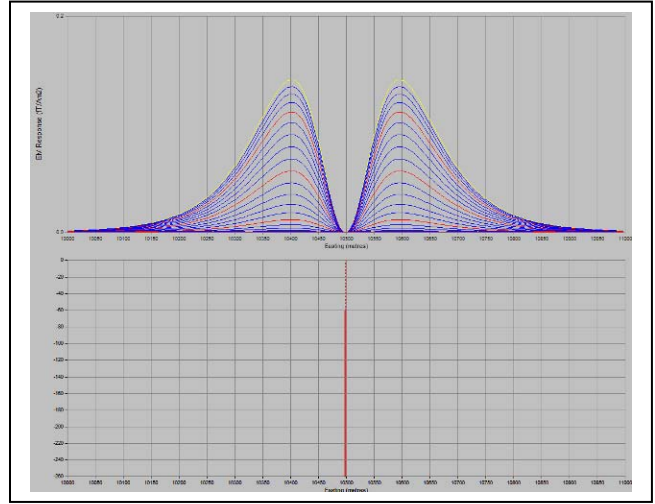


Figure C-2: B-field response of a shallow vertical thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

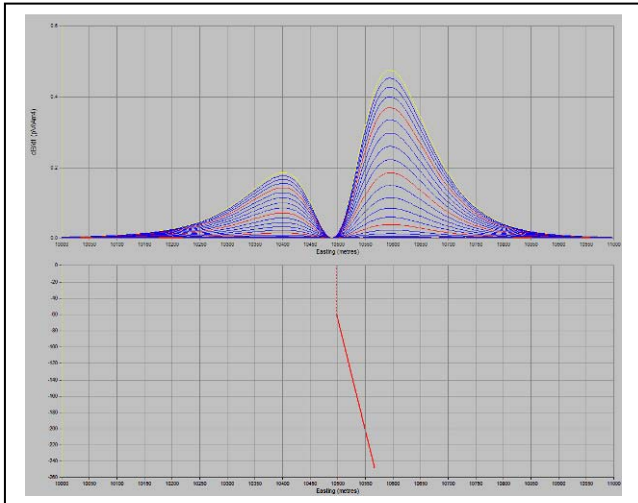


Figure C-3: dB/dt response of a shallow skewed thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

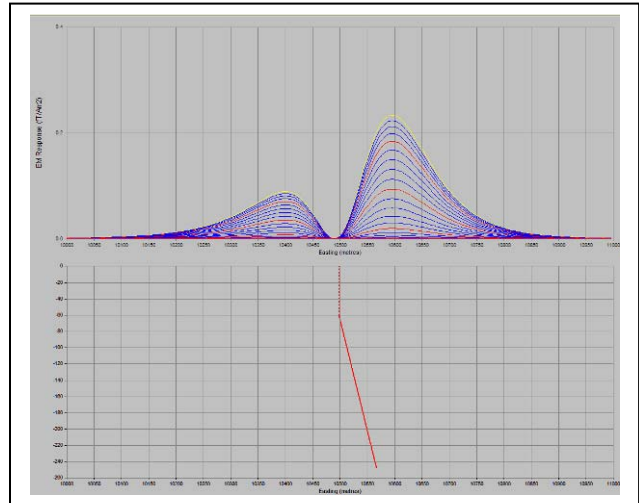


Figure C-4: B-field response of a shallow skewed thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

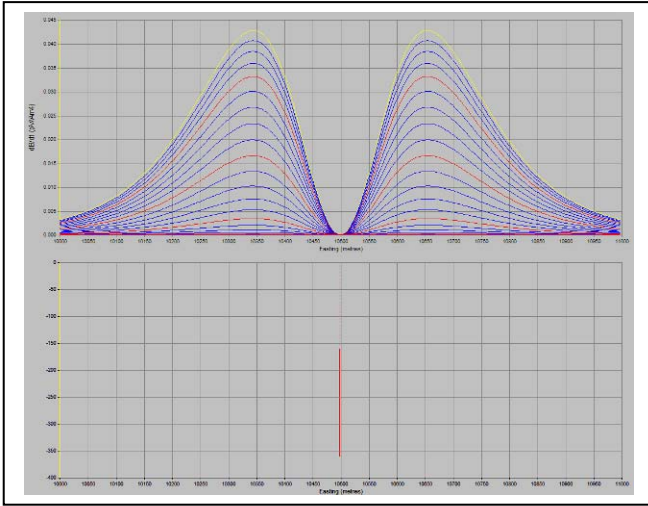


Figure C-5: dB/dt response of a deep vertical thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

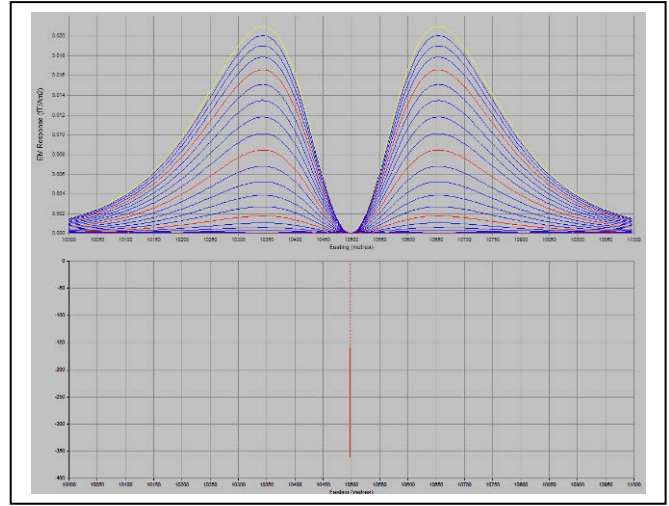


Figure C-6: B-Field response of a deep vertical thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.

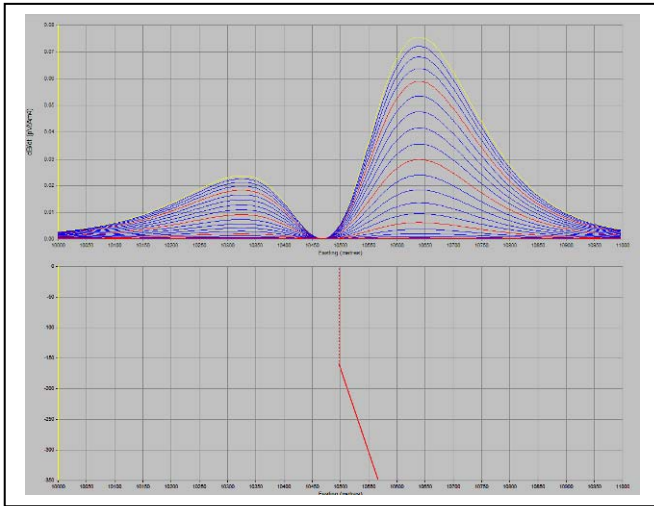


Figure C-7: dB/dt response of a deep skewed thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

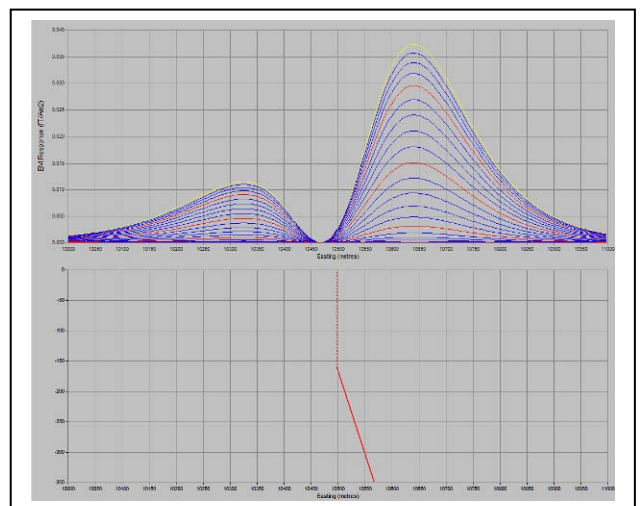


Figure C-8: B-field response of a deep skewed thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.

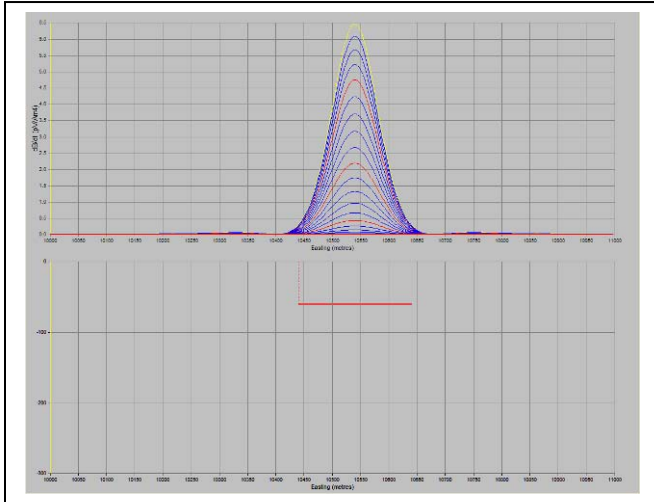


Figure C-9: dB/dt response of a shallow horizontal thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

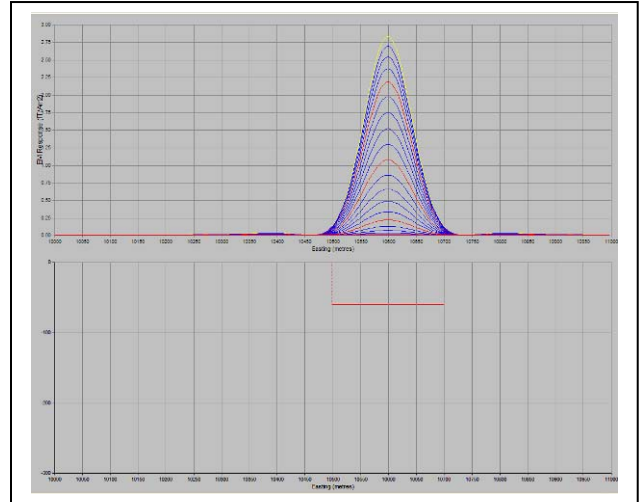


Figure C-10: B-Field response of a shallow horizontal thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

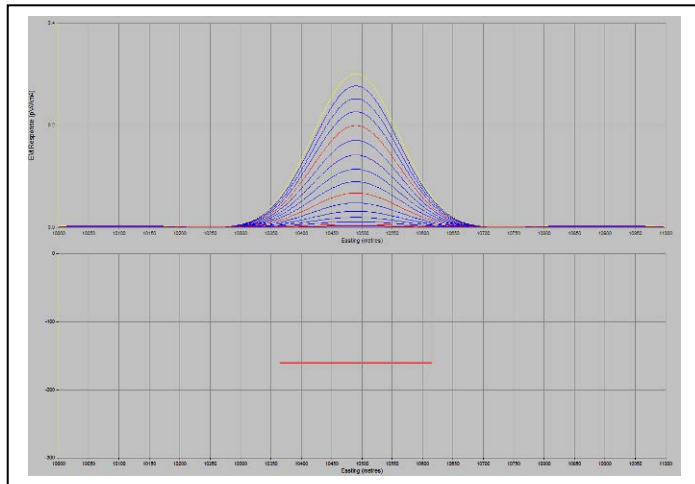


Figure C-11: dB/dt response of a deep horizontal thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

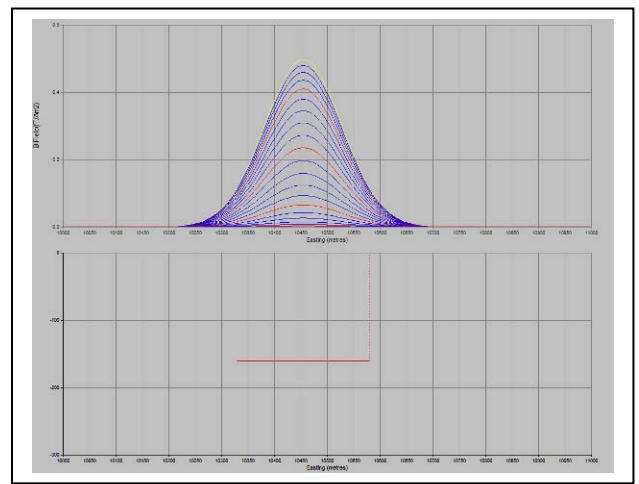


Figure C-12: B-Field response of a deep horizontal thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.

II. THICK PLATE

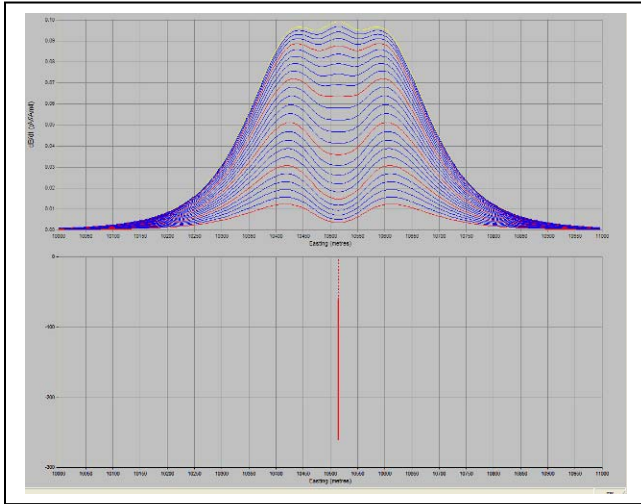


Figure C-13: dB/dt response of a shallow vertical thick plate. Depth=100 m, $C=12$ S/m, thickness=20 m. The EM response is normalized by the dipole moment and the Rx area.

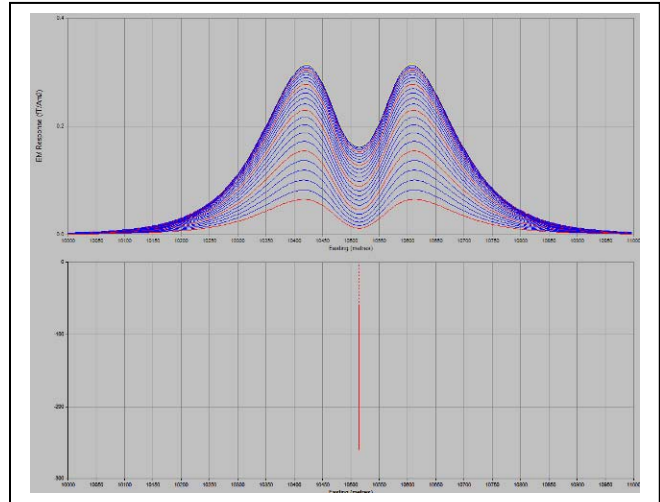


Figure C-14: B-Field response of a shallow vertical thick plate. Depth=100 m, $C=12$ S/m, thickness= 20 m. The EM response is normalized by the dipole moment.

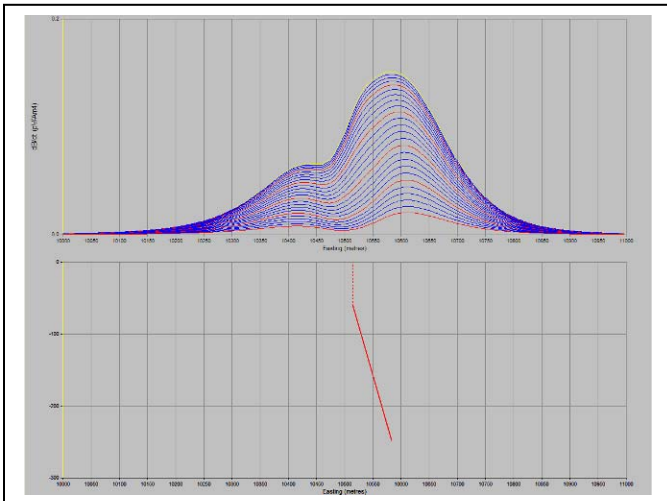


Figure C-15: dB/dt response of a shallow skewed thick plate. Depth=100 m, $C=12$ S/m, thickness=20 m. The EM response is normalized by the dipole moment and the Rx area.

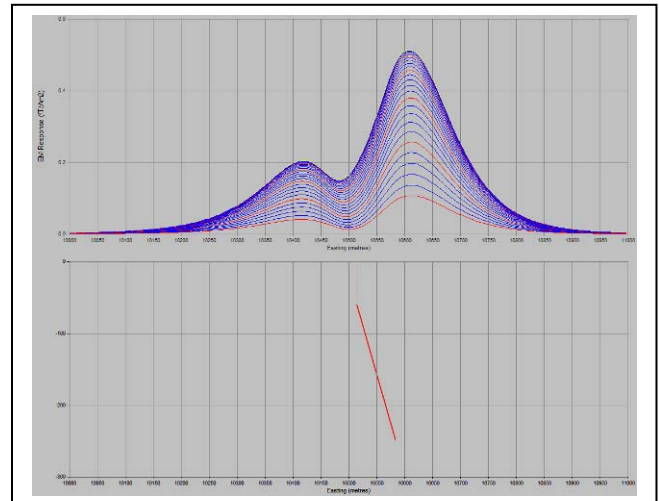


Figure C-16: B-Field response of a shallow skewed thick plate. Depth=100 m, $C=12$ S/m, thickness=20 m. The EM response is normalized by the dipole moment.

III. MULTIPLE THIN PLATES

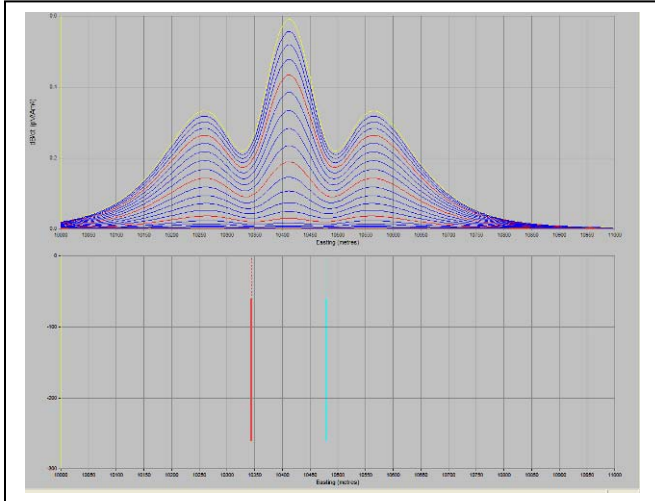


Figure C-17: dB/dt response of two vertical thin plates. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

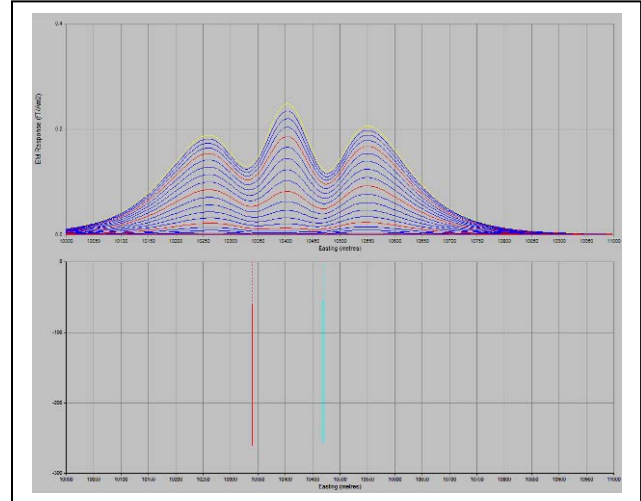


Figure C-18: B-Field response of two vertical thin plates. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

General Interpretation Principals

Magnetics

The total magnetic intensity responses reflect major changes in the magnetite and/or other magnetic minerals content in the underlying rocks and unconsolidated overburden. Precambrian rocks have often been subjected to intense heat and pressure during structural and metamorphic events in their history. Original signatures imprinted on these rocks at the time of formation have, in most cases, been modified, resulting in low magnetic susceptibility values.

The amplitude of magnetic anomalies, relative to the regional background, helps to assist in identifying specific magnetic and non-magnetic rock units (and conductors) related to, for example, mafic flows, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.

In addition to simple amplitude variations, the shape of the response expressed in the wave length and the symmetry or asymmetry, is used to estimate the depth, geometric parameters and magnetization of the anomaly. For example, long narrow magnetic linears usually reflect mafic flows or intrusive dyke features. Large areas with complex magnetic patterns may be produced by intrusive bodies with significant magnetization, flat lying magnetic sills or sedimentary iron formation. Local isolated circular magnetic patterns often represent plug-like igneous intrusives such as kimberlites, pegmatites or volcanic vent areas.

Because the total magnetic intensity (TMI) responses may represent two or more closely spaced bodies within a response, the second derivative of the TMI response may be helpful for distinguishing these complexities. The second derivative is most useful in mapping near surface linears and other subtle magnetic structures that are partially masked by nearby higher amplitude magnetic features. The broad zones of higher magnetic amplitude, however, are severely attenuated in the vertical derivative results. These higher amplitude zones reflect rock units having strong magnetic susceptibility signatures. For this reason, both the TMI and the second derivative maps should be evaluated together.

Theoretically, the second derivative, zero contour or color delineates the contacts or limits of large sources with near vertical dip and shallow depth to the top. The vertical gradient map also aids in determining contact zones between rocks with a susceptibility contrast, however, different, more complicated rules of thumb apply.

Concentric Loop EM Systems

Concentric systems with horizontal transmitter and receiver antennae produce much larger responses for flat lying conductors as contrasted with vertical plate-like conductors. The amount of current developing on the flat upper surface of targets having a substantial area in this dimension, are the direct result of the effective coupling angle, between the primary magnetic field and the flat surface area. One therefore, must not compare the amplitude/conductance of responses generated from flat lying bodies with those derived from near vertical plates; their ratios will be quite different for similar conductances.

Determining dip angle is very accurate for plates with dip angles greater than 30°. For angles less than 30° to 0°, the sensitivity is low and dips can not be distinguished accurately in the presence of normal survey noise levels.

A plate like body that has near vertical position will display a two shoulder, classic **M** shaped response with a distinctive separation distance between peaks for a given depth to top.

It is sometimes difficult to distinguish between responses associated with the edge effects of flat lying conductors and poorly conductive bedrock conductors. Poorly conductive bedrock conductors having low dip angles will also exhibit responses that may be interpreted as surficial overburden conductors. In some situations, the conductive response has line to line continuity and some magnetic correlation providing possible evidence that the response is related to an actual bedrock source.

The EM interpretation process used, places considerable emphasis on determining an understanding of the general conductive patterns in the area of interest. Each area has different characteristics and these can effectively guide the detailed process used.

The first stage is to determine which time gates are most descriptive of the overall conductance patterns. Maps of the time gates that represent the range of responses can be very informative.

Next, stacking the relevant channels as profiles on the flight path together with the second vertical derivative of the TMI is very helpful in revealing correlations between the EM and Magnetics.

Next, key lines can be profiled as single lines to emphasize specific characteristics of a conductor or the relationship of one conductor to another on the same line. Resistivity Depth sections can be constructed to show the relationship of conductive overburden or conductive bedrock with the conductive anomaly.

Roger Barlow
Consultant

Nasreddine Bournas, P. Geo.
Geophysicist
Geotech Ltd.

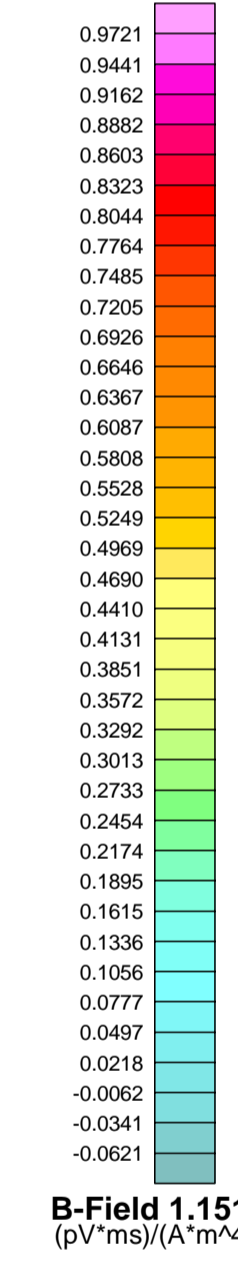
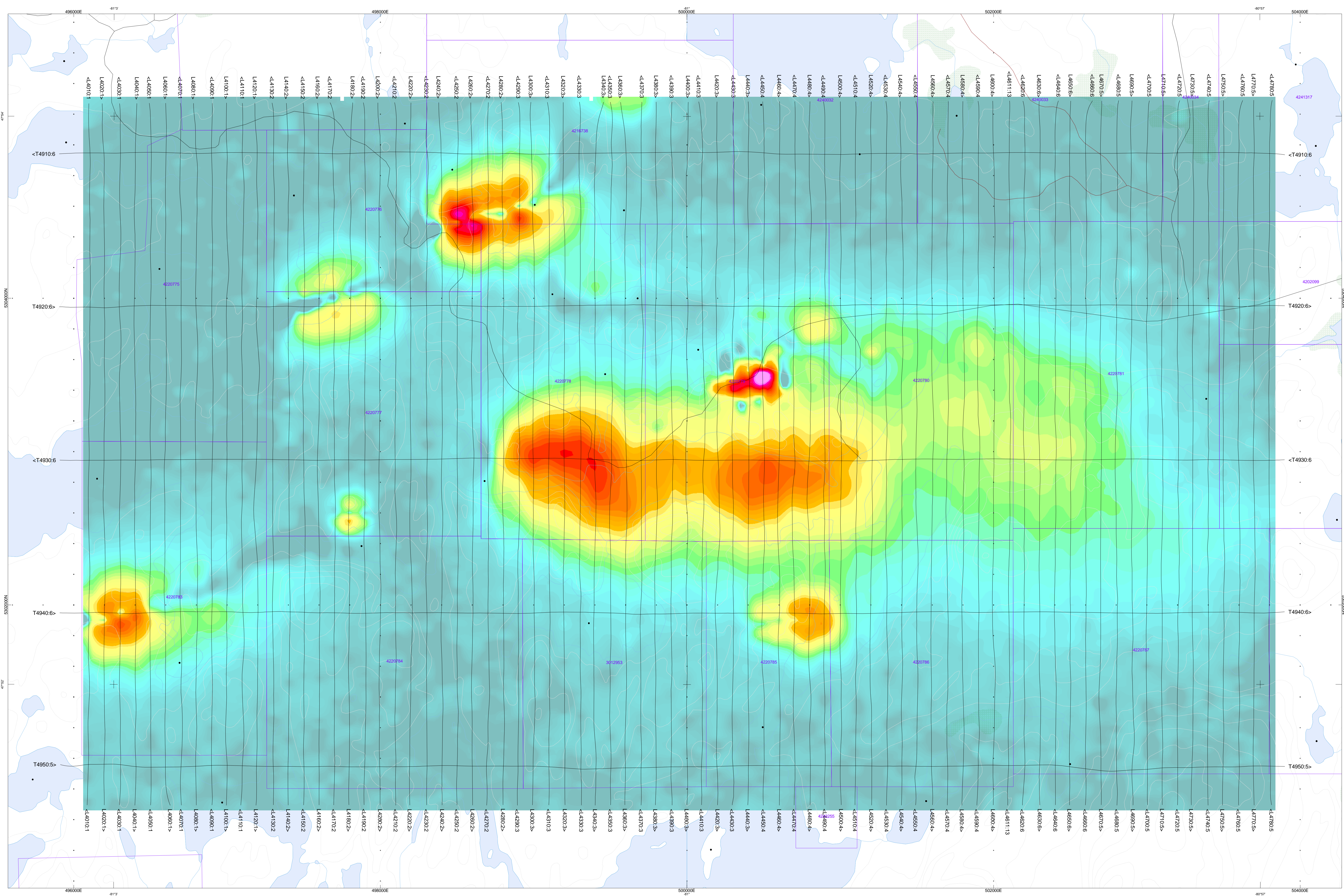
August 2008



SURVEY SPECIFICATIONS:
 Survey Date: March 4th to 9th, 2008
 Survey Base: Shining Tree, Ontario
 Aircraft: Aerospatiale A-Star 350 B2 (C-FORS)
 Nominal Survey Line Spacing: 100 Meters
 Nominal Survey Line Direction: N 0° E
 Nominal Tie Line Spacing: 1000 Meters
 Nominal Tie Line Direction: N 90° E
 Nominal Terrain Clearance: 79 Meters
 EM Loop: Towed at a mean distance of 35 meters below the Helicopter
 Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

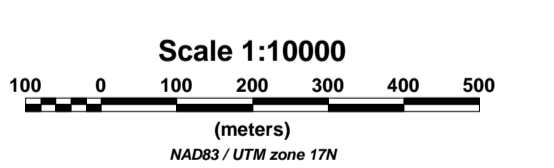
INSTRUMENTS
 Geotech Time Domain Electromagnetic System (VTEM)
 Concentric Rx/Tx Geometry
 Transmitter Loop: Diameter 26 Meters, Base Frequency 30 Hz
 Dipole Moment: 402,000 nA
 Transmitter Wave Form: Trapezoid, Pulse Width 7.2 ms.
 Geometrics High Sensitivity Cesium Magnetometer
 Map Resolution: 0.02 nT at 10 samples/m

MAP PROJECTION
 Datum: NAD 83
 Projection: Universal Transverse Mercator
 Central Meridian: 81°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m
 Major Axis: 6378137.000
 Eccentricity: 0.081819191
 NTS: 041P14.15.11.10



TOPOGRAPHIC LEGEND:

- contours
- Rivers
- Roads
- Lakes
- Wetlands
- Ontario Mining Claims



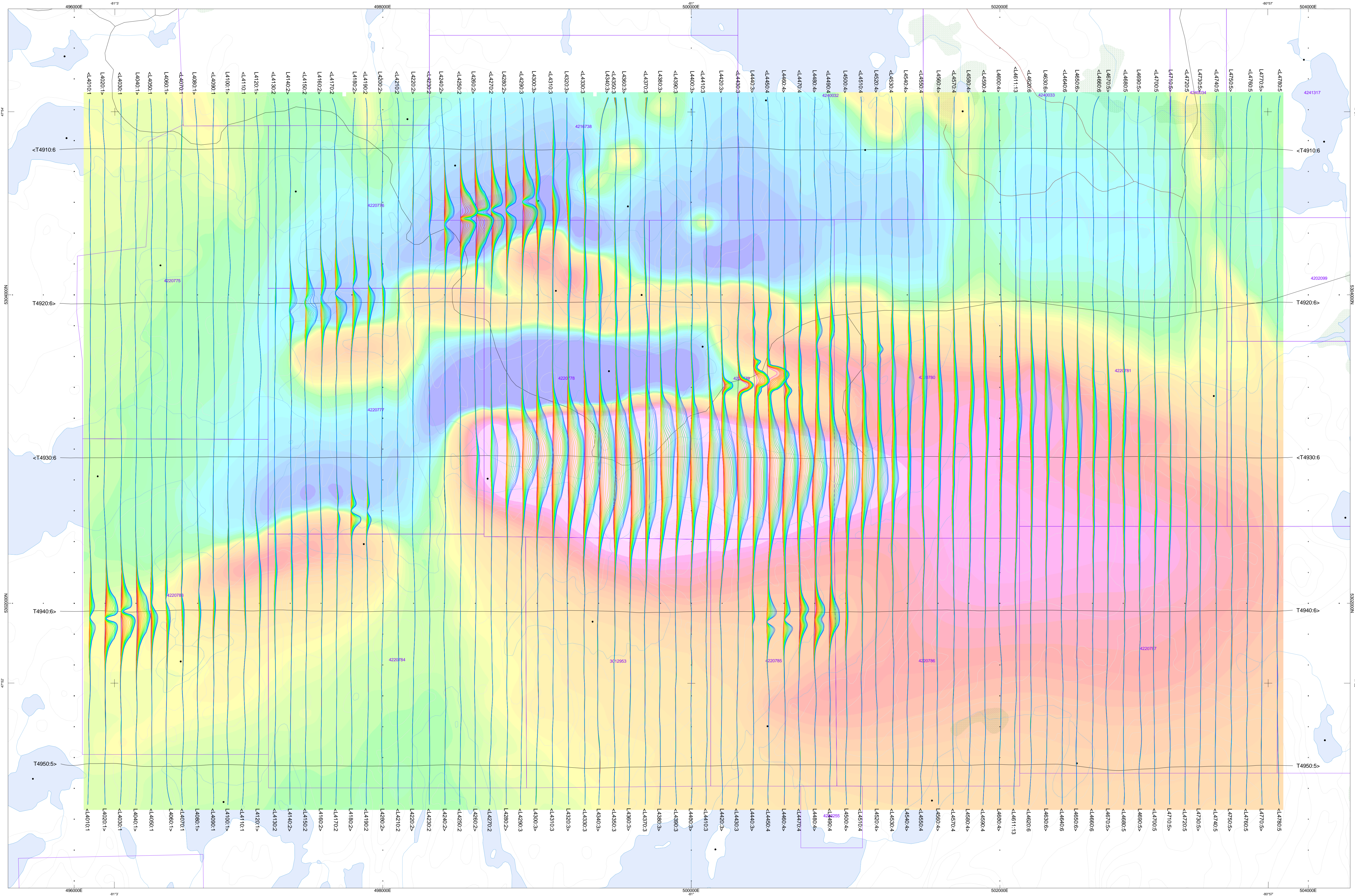
The topographic data base was derived from 1:50000 NRC (Natural Resources Canada) NTDB data
 Background shading is derived from NASA SRTM (Shuttle Radar Topography Mission) data
 Inset data derived from Geonominities 1:250,000 Canadian National Topographic Database
 Mining Claims are derived from the Geomatics Ministry of Northern Development and Mines
 (www.geocomm.com/www.geomatics.ca/http://www.mrdm.gov.on.ca)

Laurion Mineral Exploration Inc.
 Midlothian Block
 Shining Tree, Ontario

Geotech VTEM System
 B-Field Time Gate 1.151 ms

Flown and processed by Geotech Ltd.
 245 Industrial Parkway North,
 Aurora, Ontario, Canada L4G 4C4
 www.geotech.ca

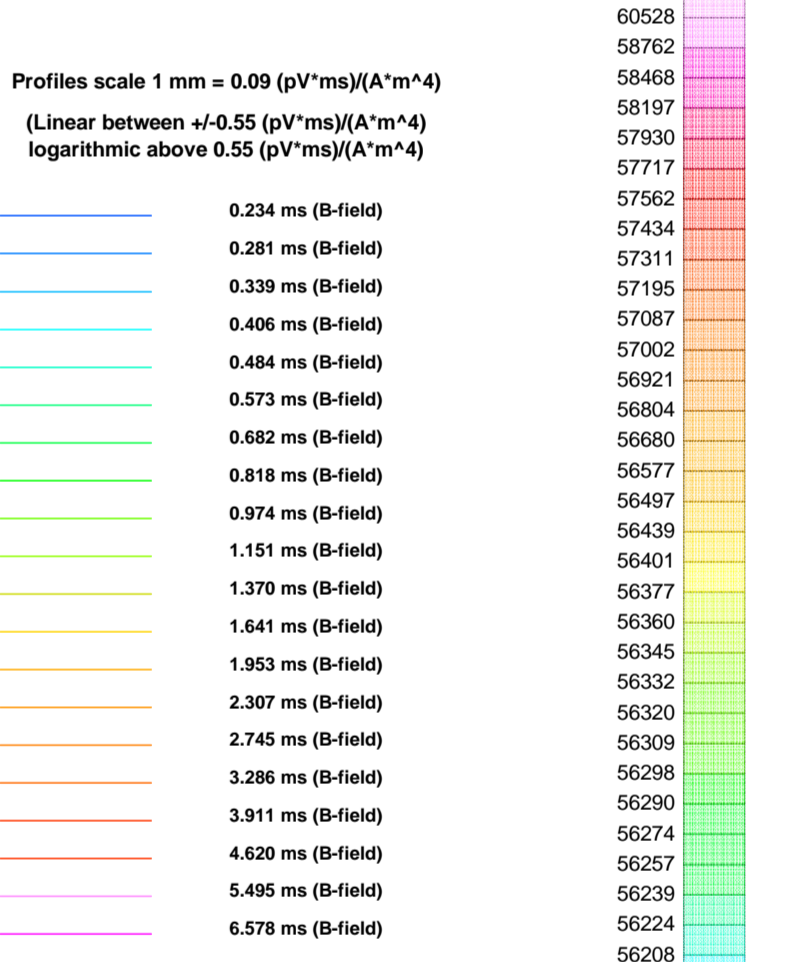
September 2008



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 Nominal Tie Line Spacing: 1000 Meters
 Nominal Tie Line Direction: N 90° E
 Nominal Terrain Clearance: 79 Meters
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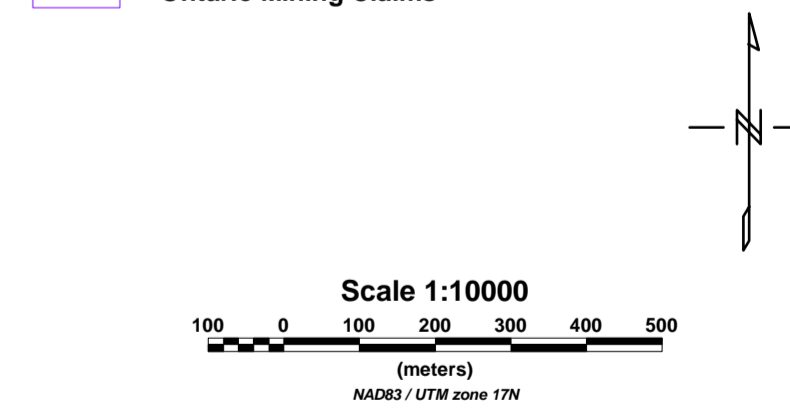
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 Concentric Rx/Tx Geometry
 Transmitter Loop: Diameter 26 Meters, Base Frequency 30 Hz
 Dipole Moment: 402,000 nA
 Transmitter Wave Form: Trapezoid, Pulse Width 7.2 ms.
 Geometrics: High Sensitivity Cesium Magnetometer
 Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION
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 NTS: 041P14, 15, 11, 10



TOPOGRAPHIC LEGEND:

- contours
- Rivers
- Roads
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- Ontario Mining Claims



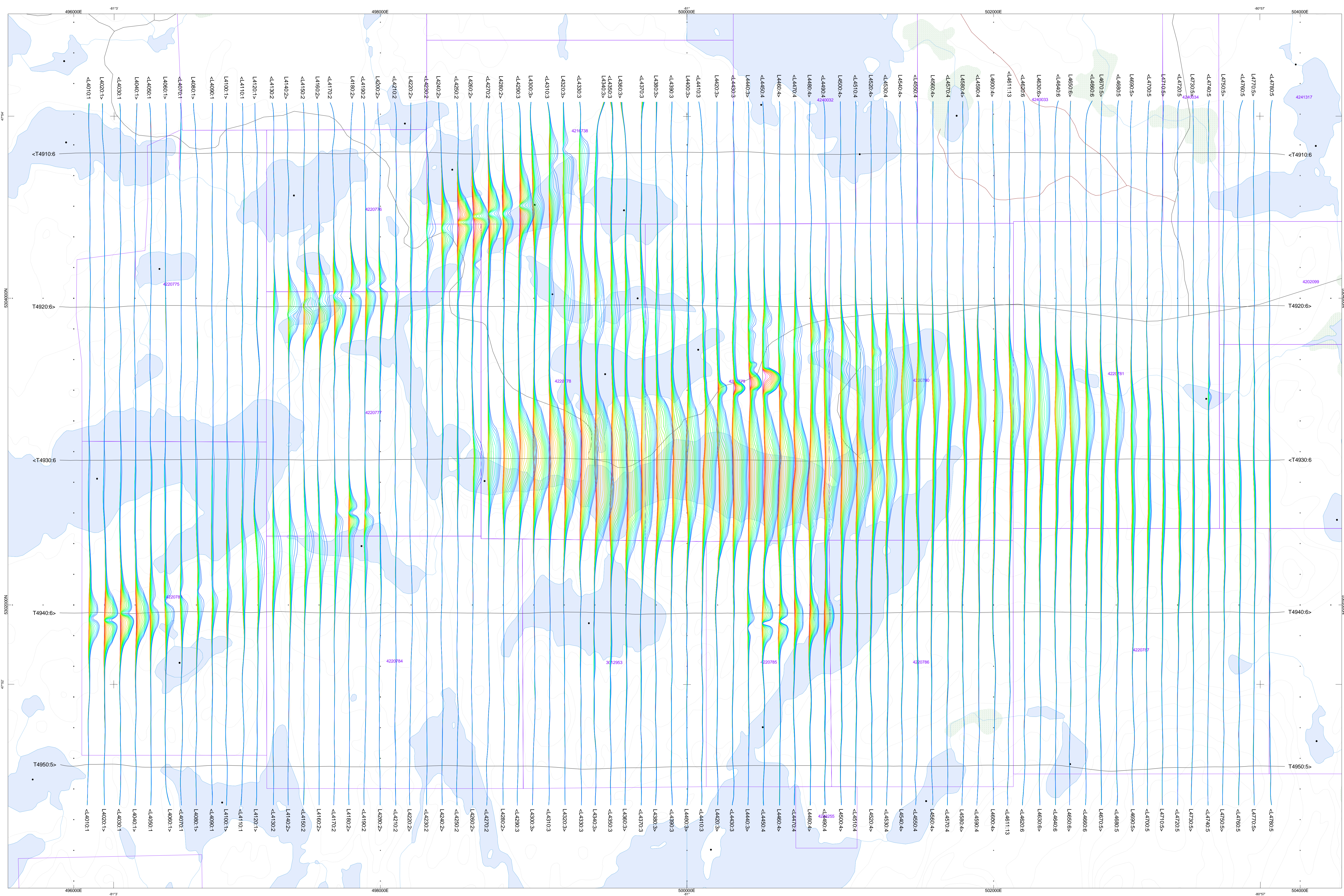
The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data. Background shading is derived from NAD83 SRTM (Shuttle Radar Topography Mission) data. Inset data derived from Geocommunities 1:250,000 Canadian National Topographic database. Mining Claims are derived from the Ontario Ministry of Northern Development and Mines (www.geocomm.com / www.geogratis.ca / <http://www.mdm.gov.on.ca>).

Laurion Mineral Exploration Inc.
Midlothian Block
Shining Tree, Ontario

Geotech VTEM System
 B-Field Profiles
 Time Channels 0.234 - 6.578 ms
 Over Total Magnetic Intensity

Flown and processed by Geotech Ltd.
 245 Industrial Parkway North,
 Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

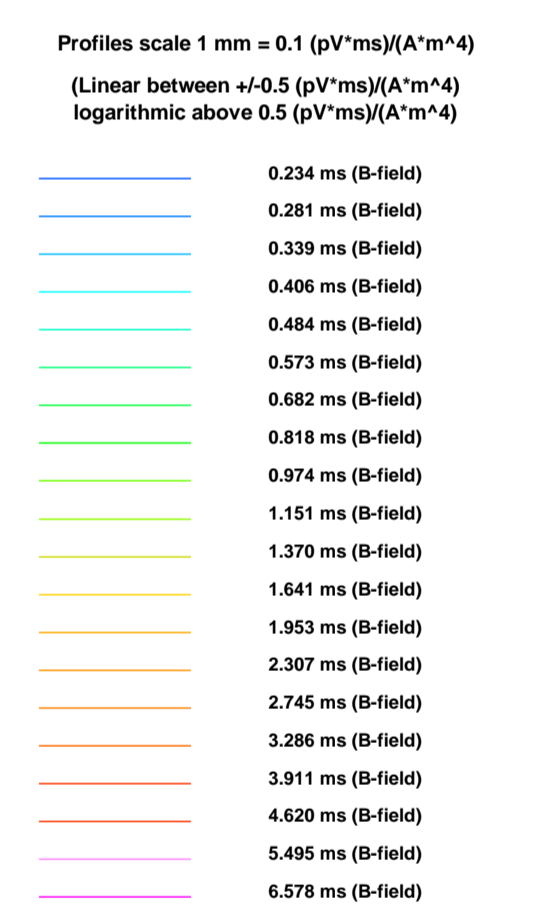
September 2008



SURVEY SPECIFICATIONS:
 Survey Date: March 4th to 6th, 2008
 Survey Base: Shining Tree, Ontario
 Aircraft: Aerospatiale A-Star 350 B2 (C-FORS)
 Nominal Survey Line Spacing: 100 Meters
 Nominal Survey Line Direction: N 0° E
 Nominal Tie Line Spacing: 1000 Meters
 Nominal Tie Line Direction: N 90° E
 Nominal Terrain Clearance: 79 Meters
 EM Loop: Towed at a mean distance of 35 meters below the Helicopter
 Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

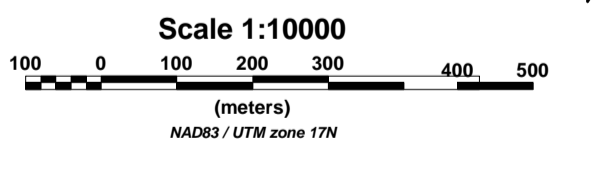
INSTRUMENTS
 Geotech Time Domain Electromagnetic System (VTEM)
 Concentric Rx/Tx Geometry
 Transmitter Loop: Diameter 26 Meters, Base Frequency 30 Hz
 Dipole Moment: 402,000 A·m
 Transmitter Wave Form: Trapezoid, Pulse Width 7.2 ms
 Geometrics High Sensitivity Cesium Magnetometer
 Map Resolution: 0.02 mT at 10 samples/m

MAP PROJECTION
 Datum: NAD 83
 Projection: Universal Transverse Mercator
 Central Meridian: 81°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m
 Major Axis: 6378137.000
 Eccentricity: 0.081819191
 NTS: 041P14.15.11.10



TOPOGRAPHIC LEGEND:

- contours
- Rivers
- Roads
- Lakes
- Wetlands
- Ontario Mining Claims



The topographic data base was derived from 1:50000 NRC (Natural Resources Canada) NTDB data. Background shading is derived from NARS SRTM (Shuttle Radar Topography Mission) data. Inset data derived from Geocommunities 1:250,000 Canadian National Topographic database. Mining Claims are derived from the Ontario Ministry of Northern Development and Mines. (www.geocomm.com/www.geomatics.ca/http://www.mndm.gov.on.ca)

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 Shining Tree, Ontario
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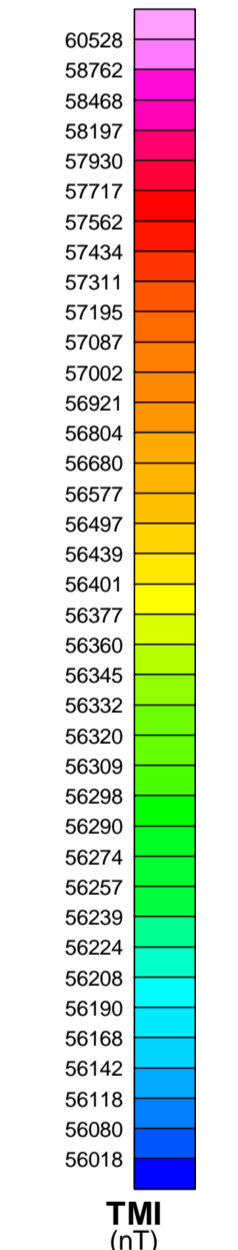
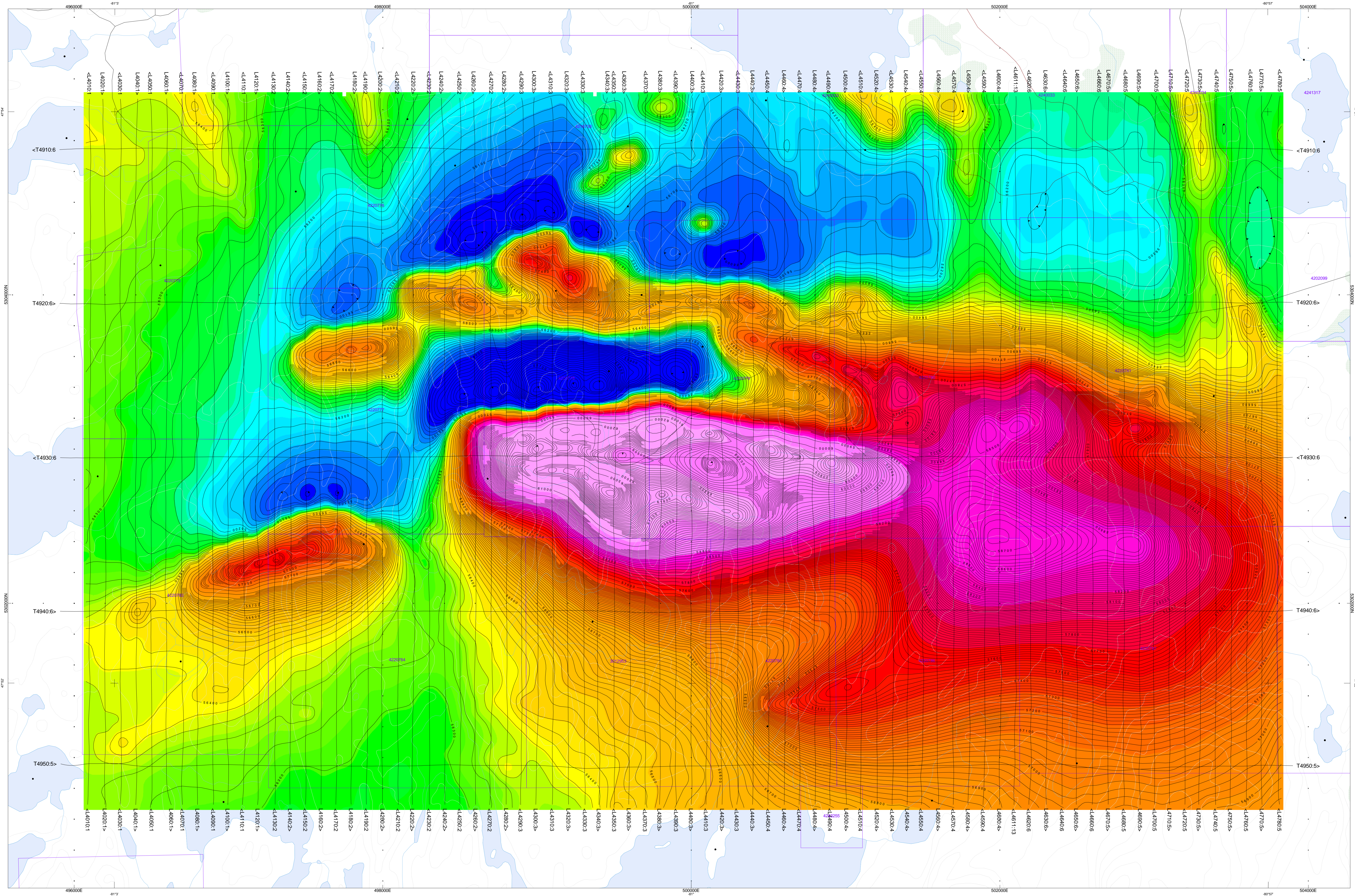
September 2008



SURVEY SPECIFICATIONS:
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 Nominal Survey Line Direction: N of E
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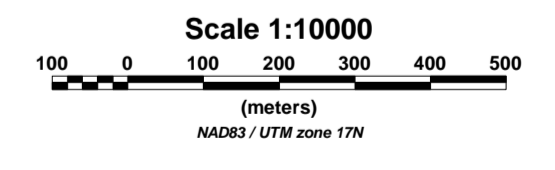
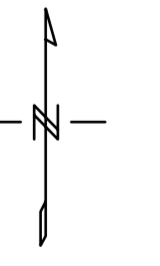
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 Major Axis: 6378137.000
 Eccentricity: 0.081819191
 NTS: 041P14,15,11,10



TMI Contour Intervals:
 — 20 nT
 — 100 nT
 — 1000 nT

TOPOGRAPHIC LEGEND:
 — contours
 — Rivers
 — Roads
 — Lakes
 — Wetlands
 — Ontario Mining Claims



The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data. Background shading is derived from NADA 58781 (Shuttle Radar Topography Mission) data. Inset data, derived from Geocommunities 1:250,000 Canadian National Topographic database. Mining Claims are derived from the Ontario Ministry of Northern Development and Mines (www.geocomm.com) (<http://www.geomatics.com>) (<http://www.mdm.gov.on.ca>)

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