ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: AIRBORNE GEOPHYSICS; VINE CLAIMS

TOTAL COST: $17,524.80

AUTHOR(S):Peter Klewchuk, P. GEO
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S):5116307

YEAR OF WORK:2011

PROPERTY NAME:VINE

CLAIM NAME(S) (on which work was done):832821, 938674, 380411, 380410, 380412, 380413, 380415, 380417, 380419, 505882, 380414, 380416, 380418, 380320, 380421, 380422, 380423, 380424

COMMODITIES SOUGHT:Pb-Zn-Ag-Au

MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN:

MINING DIVISION: Ft. Steele
NTS / BCGS:82G031/041
LATITUDE: __________° __________' __________"
LONGITUDE: __________° __________' __________" (at centre of work)
UTM Zone: 11 EASTING: 585500 NORTHING:5472800

OWNER(S):Spirit Gold Inc

MAILING ADDRESS:
1240-1140 Pender St. W.
Vancouver, BC
V6G 4G1

OPERATOR(S) [who paid for the work]:PJX Resources Inc.

MAILING ADDRESS:
5600 100 King St. W
Toronto, Ontario, M5X 1C9

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**) Proterozoic massive sulphide (Pb-Zn-Ag-Au) vein hosted in Belt-Purcell Supergroup Aldridge Fm. Mineralization is associated with a cross-cutting gabbro dyke.

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne	68.4 km	all	$15, 147.14
GEOCHEMICAL (number of samples analysed for …)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other	Report/ Admin.		$2,377.66
		TOTAL COST	$17524.80

ASSESSMENT REPORT

On

AIRBORNE GEOPHYSICS

VINE CLAIMS

Fort Steele Mining Division, SE B.C.

UTM 585500E 5472800N

TRIM 82G.031 & 82G.041

For

PJX Resources Inc.

Suite 5600 – 100 King Street West

Toronto, Ontario M5X 1C9

By

Peter Klewchuk, P. Geo.

March, 2012

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1.00 INTRODUCTION

1.10 Location and Access

The Vine property is located about 12 kilometers south of Cranbrook in SE B.C. The claims are just northeast of Moyie Lake, on TRIM maps 82G.031 and 82G.041, centered approximately at UTM coordinates 585500E 5472800N (Figures 1 & 2).

Access is by road south from Cranbrook along Highway 3/95 to Green Bay, then north on Hidden Valley Road.

1.20 Property

The Vine property includes 15 two-post or legacy claims and one four-unit mineral tenure (Figure 2). The claims are owned by Spirit Gold Inc. and are currently optioned to PJX Resources Inc.

1.30 Physiography

The Vine property is located just northeast of Moyie Lake, within the Moyie Range of the Purcell Mountains. Topography is at lower elevations between about 940 and 1300 meters with mainly rounded wooded slopes carrying a mixture of spruce, larch, fir and pine, with a portion of the property cleared for agriculture and grazing.

1.40 History

Exploration in the general Vine area in the mid 1960's by Cominco Ltd. led to the discovery of surface base metal mineralization at the Fors prospect which is a few kilometres southwest of the Vine. Cominco explored the Fors with soil geochemistry, surface and airborne geophysics and diamond drilling. The area of the current Vine claims was also originally staked by Cominco, in the mid 1970's, following the discovery of surface boulders of massive high-grade lead-zinc-silver sulphide mineralization. Subsequent exploration activity by Cominco exposed the Vine massive sulphide vein by trenching. The Vine Vein is generally similar to the St. Eugene veins, which are about 13 kilometers to the south (immediately east of Moyie Lake) and which were the site of the first mining operation in the East Kootenay District of B.C. Historical production from the St. Eugene deposits is about 1.3 million tons at 10.9% Pb, 2.72% Zn, 5.5 oz/ton Ag and .005 oz/ton Au.

Cominco Ltd. tested the Vine Vein structure with a few short diamond drill holes but their primary interest was a SEDEX style stratiform deposit at Sullivan Time, with the Vine Vein mineralization considered as a possible remobilization from SEDEX mineralization at depth. Property-wide diamond drilling by Cominco Ltd. in the Vine area established the presence of an anomalous Sullivan-type mud zone at Sullivan Time on and near the Vine property.

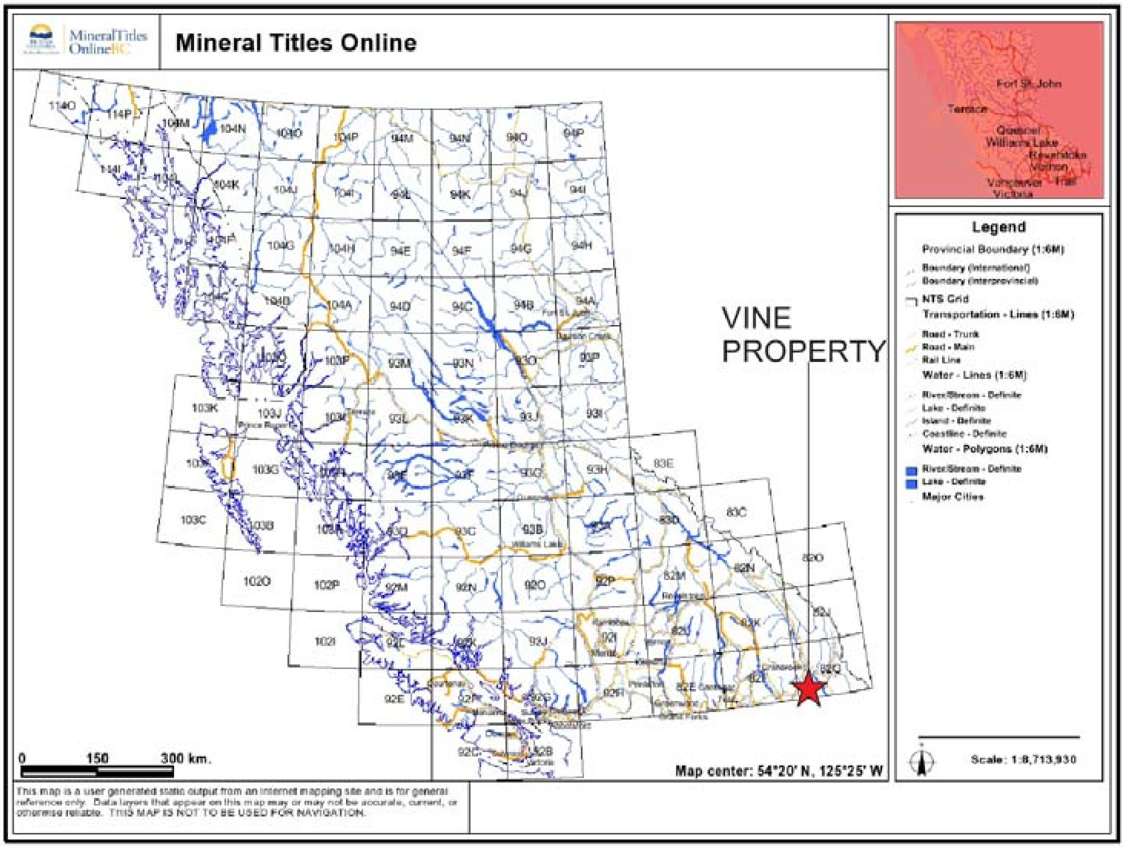


Figure 1. Vine Property Location Map

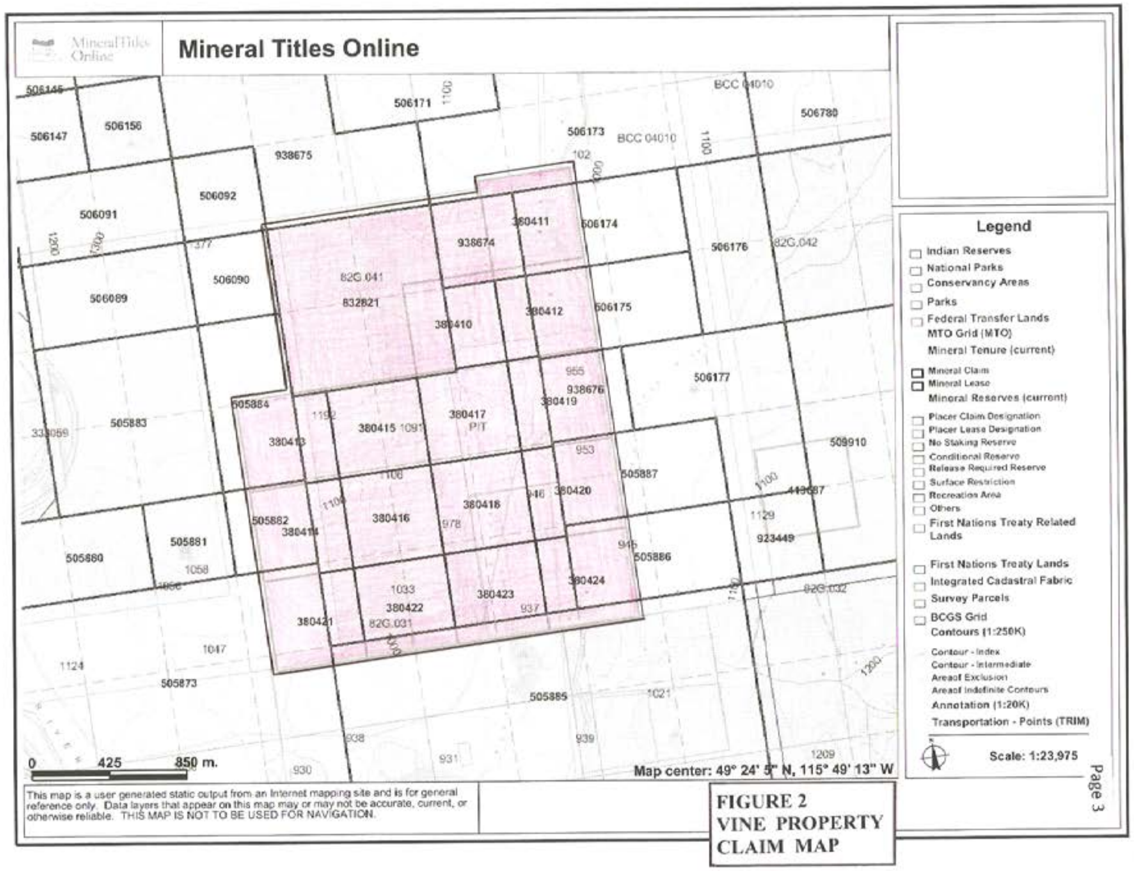


FIGURE 2
VINE PROPERTY CLAIM MAP

In 1989 Kokanee Explorations Ltd. acquired an option on the Vine Vein from Cominco Ltd. and conducted geophysics, geochemistry, geologic mapping, trenching and diamond drilling programs between 1989 and 1991. Their work provided sufficient detail to outline an in-house, pre NI 43-101 mineral resource at the Vine Vein of

'Proven Ore':	264,000 tons at 5.2% Pb, 2.24% Zn, 1.96 oz/t Ag and .056 oz/t Au
'Probable Ore':	337,000 tons at 4.22% Pb, 2.51% Zn, 1.16 oz/t Ag and .05 oz/t Au

Kokanee Explorations Ltd. was acquired by Consolidated Ramrod Gold Corp. in 1992. The claims covering the Vine Vein were eventually allowed to lapse and Supergroup Holdings staked the ground in September of 2000 and vended the property to Ruby Red Resources Inc. (now Spirit Gold Inc.).

1.50 Scope of Present Program

In late 2011 a helicopter-borne Versatile Time Domain Electromagnetic (VTEM) and Aeromagnetic geophysical survey was flown over the Vine property. A total of 68.4 line-kilometers were flown over the actual Vine claim block. The area of survey is shown on maps which accompany the attached Geotech Ltd. airborne survey report.

2.00 REGIONAL AND PROPERTY GEOLOGY

Mapping by Reesor (1981), Hoy and Diakow (1982), and Hoy (1984) has developed a good understanding of the geology and structure of the Cranbrook area of southeastern British Columbia. This area, which includes the Vine claims, is part of the Purcell Anticlinorium, a geologic sub-province which lies between the Rocky Mountain Thrust and Fold Belt to the east and the Kootenay Arc to the west.

The mesoproterozoic Purcell Supergroup which occurs within the core of the anticlinorium includes up to 11 kilometers of dominantly fine-grained clastic and carbonate rocks.

The Vine claims are underlain by rocks of the Precambrian Aldridge Formation which is a thick succession of predominantly impure quartzites and siltstones of turbidite affinity. These rocks are intruded by a series of gabbro to diorite composition sills and dikes which are called the Moyie intrusions. The Aldridge Formation is host to the world-class Sullivan SEDEX lead-zinc-silver deposit at Kimberley, about 40 kilometers north of the Vine. The Aldridge Formation is overlain by shallow water argillites, siltstones and quartzites of the Creston Formation and these are in turn overlain by carbonate-bearing siltstones and argillites of the Kitchener Formation.

The Moyie Fault is a major transverse fault which strikes northeasterly in the Vine area and crosses the southeast corner of the claim block. The fault dips steeply northwest and separates lower Middle Aldridge Formation rocks on the northwest from younger Kitchener Formation rocks on the southeast; an apparent vertical displacement of almost 5000 meters. The Creston Formation is not exposed on the Vine property.

The Vine Vein strikes west-northwest and dips steeply to the southwest at 70 to 80 degrees. It was traced by Kokanee Explorations Ltd. with geology, geophysics and geochemistry for about 5 kilometers; with trenching for about 2 kilometers and with diamond drilling for about 700 meters on strike and to a depth of about 700 meters. The vein structure is known to transect at least 1500 meters of Aldridge stratigraphy. It crosses the lower-middle Aldridge contact (the "Sullivan Horizon") and has base metal concentrations hosted by both middle Aldridge and lower Aldridge rocks.

Geologic mapping on the Vine property identified a sub-parallel trending fault structure northeast of the Vine Vein and a gabbro dike is known to occupy this structure, similar to the Vine Vein.

3.00 GEOTECH LTD. AIRBORNE SURVEY

In late 2011 a helicopter-borne Versatile Time Domain Electromagnetic (VTEM) and Aeromagnetic geophysical survey was flown over the Vine property. A total of 68.4 line-kilometers were flown over the actual Vine claim block.

A separate attached report by Geotech Ltd. describes the survey logistics, the data processing, presentation, and provides the specifications of the survey. The Geotech report does not include any detailed interpretation of the survey results.

4.00 DISCUSSION OF RESULTS

Anomalous electromagnetic and magnetic results provided by the Geotech Ltd. survey should be correlated to known bedrock geology of the Vine survey area. Careful evaluation of the airborne survey results may provide previously undetected exploration targets.

5.00 REFERENCES

Hoy, T., 1984. Geology of the Cranbrook sheet and Sullivan Mine area. NTS 82G/12, 82F/9. BC MEMPR Preliminary Map No. 54.

Hoy, T., and Diakow, L., 1982. Geology of the Moyie Lake area**.** BC MEMPR Preliminary Map No. 49.

Reesor, J.E., 1981. Geology of the Grassy Mountain Map Sheet. NTS 82F/8. Geol. Surv. Can. Open File 820.

6.00 STATEMENT OF COSTS

Airborne Geophysics Survey:	68.4 km @ $148.35/km	$10,147.14
	Standby Charges	5,000.00
Report; P Klewchuk	1 day @ $500/day	500.00
Total Cost		$15,647.14
12% Administration; survey preparation, office		$1,877.66
Total Applied Cost		$17,524.80

7.00 AUTHOR'S QUALIFICATIONS

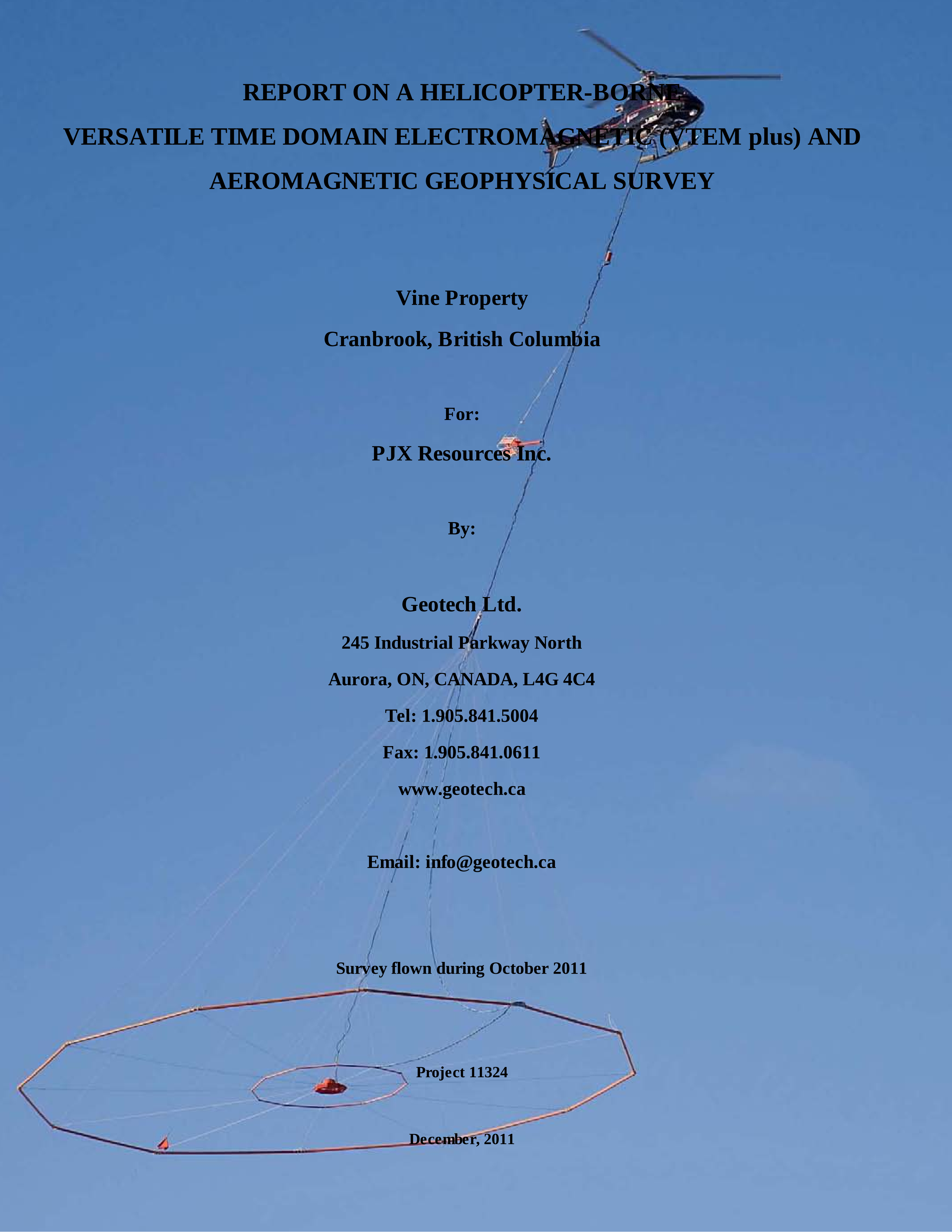
As author of this report I, Peter Klewchuk, certify that:

1. I am an independent consulting geologist with offices at 408 Aspen Road, Kimberley, B.C.
2. I am a graduate geologist with a B. Sc. degree (1969) from the University of British Columbia and an M. Sc. degree (1972) from the University of Calgary.
3. I am a Fellow of the Geological Association of Canada and a member of the Association of Professional Engineers and Geoscientists of British Columbia.
4. I have been actively involved in mining and exploration geology, primarily in the province of British Columbia, for the past 36 years.
5. I have been employed by major mining companies and provincial government geological departments.

Dated at Kimberley, British Columbia this 5th day of March, 2012.

____

Peter Klewchuk, P. Geo.



REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM plus) AND AEROMAGNETIC GEOPHYSICAL SURVEY

Vine Property

Cranbrook, British Columbia

For:

PJX Resources Inc.

By:

Geotech Ltd.

245 Industrial Parkway North

Aurora, ON, CANADA, L4G 4C4

Tel: 1.905.841.5004

Fax: 1.905.841.0611

www.geotech.ca

Email: info@geotech.ca

Survey flown during October 2011

Project 11324

December, 2011

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REPORT ON A HELICOPTER-BORNE
VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM plus) and
AEROMAGNETIC SURVEY

Vine Property
Cranbrook, British Columbia

Executive Summary

During October 22nd, 2011 to October 31st, 2011 Geotech Ltd. carried out a helicopter-borne geophysical survey over the Vine Property situated approximately 12 kilometres southwest of Cranbrook, British Columbia.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM plus) system, and a caesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 114 line-kilometres of geophysical data were acquired during the survey, however the flown data has been clipped to the mining claims of the Vine property for a total of 68.4 line-kilometres.

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 final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked profiles of the B-field Z Component,
- Electromagnetic stacked profiles of dB/dt Z Component,
- Colour grids of a B-Field Z Component Channel,
- Total Magnetic Intensity (TMI), and
- EM Time-constant dB/dt Z Component (Tau), are presented.

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

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 General Considerations

Geotech Ltd. performed a helicopter-borne geophysical survey over the over the Vine Property situated approximately 12 kilometres southwest of Cranbrook, British Columbia (Figure 1 & Figure 2).

John Keating represented PJX Resources Inc. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM plus) system with Z and X component measurements and aeromagnetics using a caesium magnetometer. A total of 114 line-km of geophysical data were acquired during the survey, however the flown data has been clipped to the mining claims of the Vine property for a total of 68.4 line-kilometres.

The crew was based out of Cranbrook (Figure 2) in British Columbia for the acquisition phase of the survey. Survey flying started on October 22nd, 2011 and was completed on October 31st, 2011.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis 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 December, 2011.

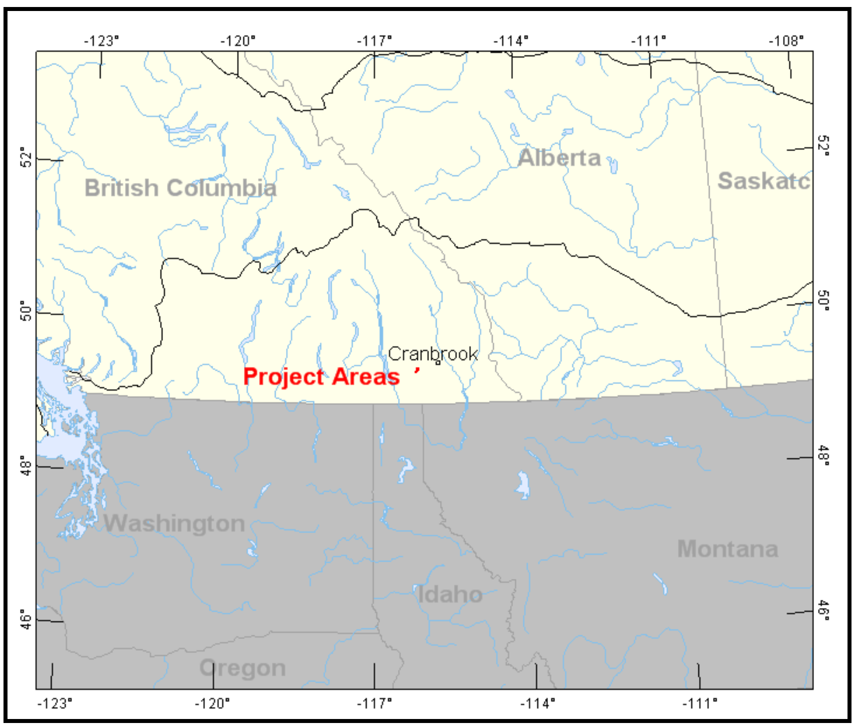


Figure 1 - Property Location.

1.2 Survey and System Specifications

The Vine Property situated approximately 12 kilometres southwest of Cranbrook, British Columbia.

Figure 2 - Survey area location on Google Earth.

The survey block was flown in an east to west (N 90° E azimuth) direction, with traverse line spacing of 75 metres in Figure 3. Tie lines were flown perpendicular to the traverse lines at a spacing of 750 meters. For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

Topographically, the Vine Property exhibits an extremely rugged relief with an elevation ranging from 940 to 1245 metres above mean sea level over an area of 4.6 square kilometres (Figure 3).

The survey block has various rivers and streams running through the survey area which connect various lakes. There are visible signs of culture such as transmission lines, roads and buildings located throughout the survey area.

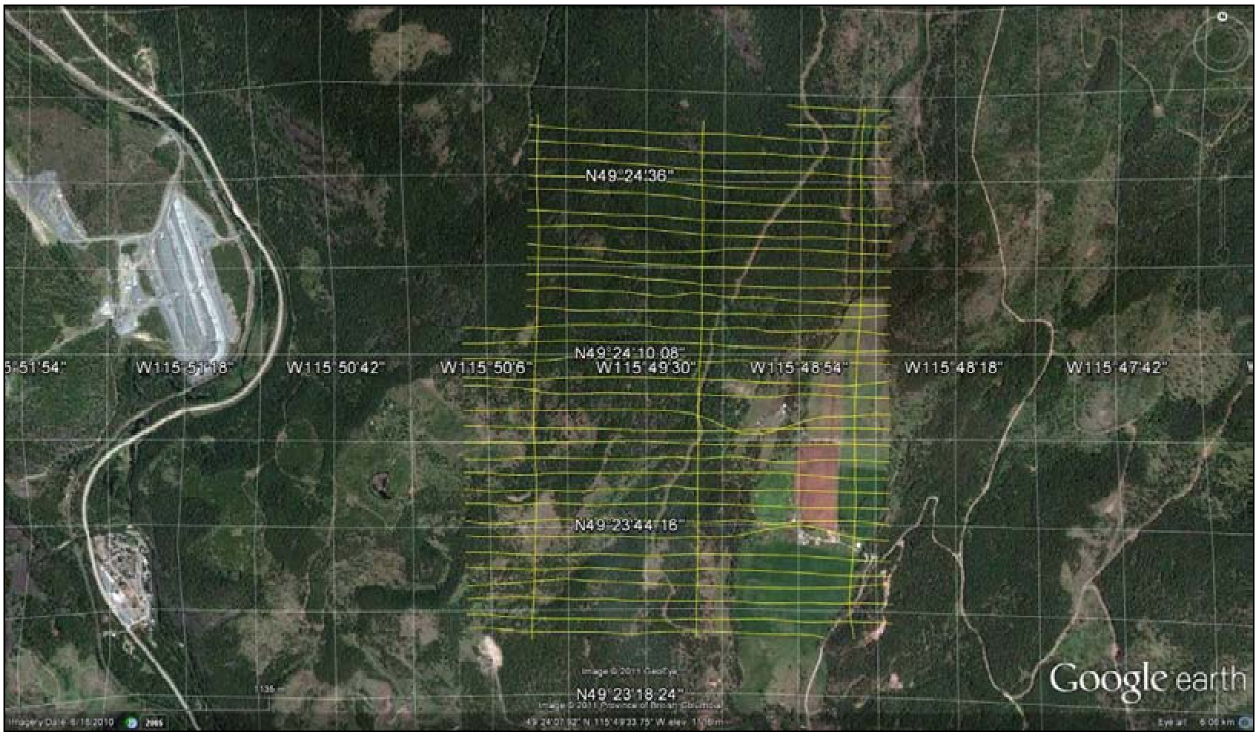


Figure 3 - Flight path over a Google Earth Image – Vine Property.

The survey area is covered by numerous mining claims, which are shown in Appendix A, and are plotted on all maps. The survey area is covered by NTS (National Topographic Survey) of Canada sheet 082G05.

2. DATA ACQUISITION

2.1 Survey Area

The survey block (see Figure 3 and Appendix A) and general flight specifications are as follows:

Table 1 - Survey Specifications

Survey block	Traverse Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Vine Property	Traverse: 75	4.6	114	61.1	N 90° E / N 270° E	L4000 – L4330
	Tie: 750			7.3	N 0° E / N 180° E	T4800 – T4820
TOTAL		4.6	114	68.4		

Survey block boundaries co-ordinates are provided in Appendix B.

2.2 Survey Operations

Survey operations were based out of Cranbrook, British Columbia from October 22nd, 2011 to October 31st, 2011. The following table shows the timing of the flying.

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned line-km, as indicated in the survey NAV files. However the flown data has been clipped to the mining claims of the Vine property for a total of 68.4 line-kilometres.

Date	Flight #	Flown km	Block	Crew location	Comments
10-20-2011				Cranbrook, BC	Crew arrived
10-21-2011				Cranbrook, BC	System installation and testing completed
10-22-2011	1	60	Vine	Cranbrook, BC	60km flown limited production due to weather
10-23-2011	2			Cranbrook, BC	Flight aborted due to technical issues
10-24-2011				Cranbrook, BC	Troubleshooting-need replacement parts
10-25-2011				Cranbrook, BC	Troubleshooting replacement parts arrived
10-26-2011				Cranbrook, BC	Troubleshooting
10-27-2011				Cranbrook, BC	Troubleshooting
10-28-2011				Cranbrook, BC	Troubleshooting
10-29-2011				Cranbrook, BC	Troubleshooting
10-30-2011				Cranbrook, BC	Troubleshooting
10-31-2011	3,4	55	Vine	Cranbrook, BC	55km flown limited production due to weather
11-1-2011	5,6			Cranbrook, BC	Remaining kms for other block was flown. Limited production due to technical issues
11-2-2011				Cranbrook, BC	No production due to technical issues
11-3-2011				Cranbrook, BC	No production due to weather
11-4-2011				Cranbrook, BC	No production due to weather
11-5-2011				Cranbrook, BC	No production due to weather
11-6-2011	7			Cranbrook, BC	Remaining kms for other block was flown. Limited production due to weather
11-7-2011	8,9,10			Cranbrook, BC	Remaining kms for other block was flown.
11-8-2011	11,12,13			Cranbrook, BC	Remaining kms for other block was flown.
11-9-2011				Cranbrook, BC	No production due to weather
11-10-2011				Cranbrook, BC	No production due to weather
11-11-2011	14			Cranbrook, BC	Remaining kms for other block was flown. Limited production due to weather
11-12-2011				Cranbrook, BC	No production due to weather
11-13-2011				Cranbrook, BC	No production due to weather
11-14-2011				Cranbrook, BC	No production due to weather
11-15-2011	15			Cranbrook, BC	Remaining kms for other block was flown. Limited production due to weather
11-16-2011	16,17,18			Cranbrook, BC	Remaining kms for other block was flown.
11-17-2011				Cranbrook, BC	No production due to weather
11-18-2011				Cranbrook, BC	No production due to weather
11-19-2011	19,20			Cranbrook, BC	Remaining kms for other block was flown – flying complete
11-20-2011				Cranbrook, BC	demobilization

Table 2 - Survey schedule

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 126 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 92 metres and a magnetic sensor clearance of 113 metres.

The on board operator was responsible for monitoring 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 features.

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.

2.4 Aircraft and Equipment

2.4.1 Survey Aircraft

The survey was flown using a Eurocopter Aerospatiale (Astar) 350 B3 helicopter, registration C-GTEQ. The helicopter is owned and operated by Geotech Aviation. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM plus) system. The configuration is as indicated in Figure 4.

The VTEM plus Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The receiver system for the project also included a coincident-coaxial X-direction coil to measure the in-line dB/dt and calculate B-Field responses. The EM bird was towed at a mean distance of 35 metres below the aircraft as shown in Figure 4 and Figure 6. The receiver decay recording scheme is shown in Figure 5.

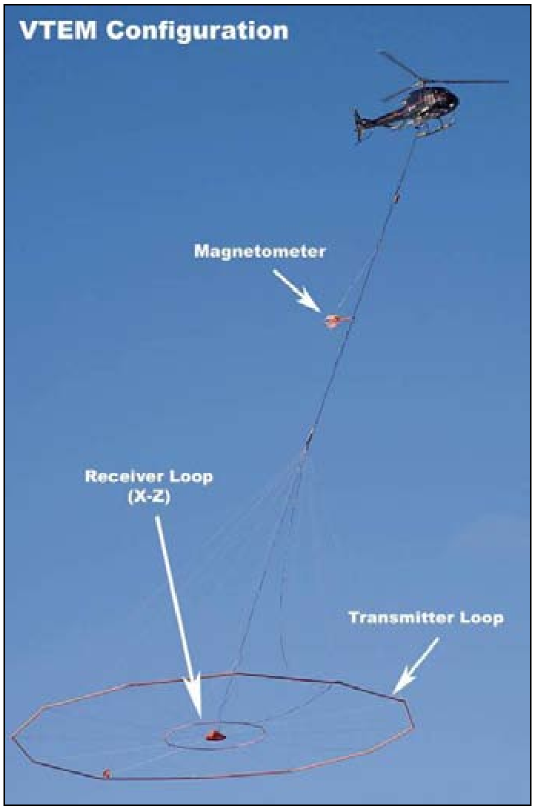


Figure 4 - VTEM plus Configuration, with magnetometer.

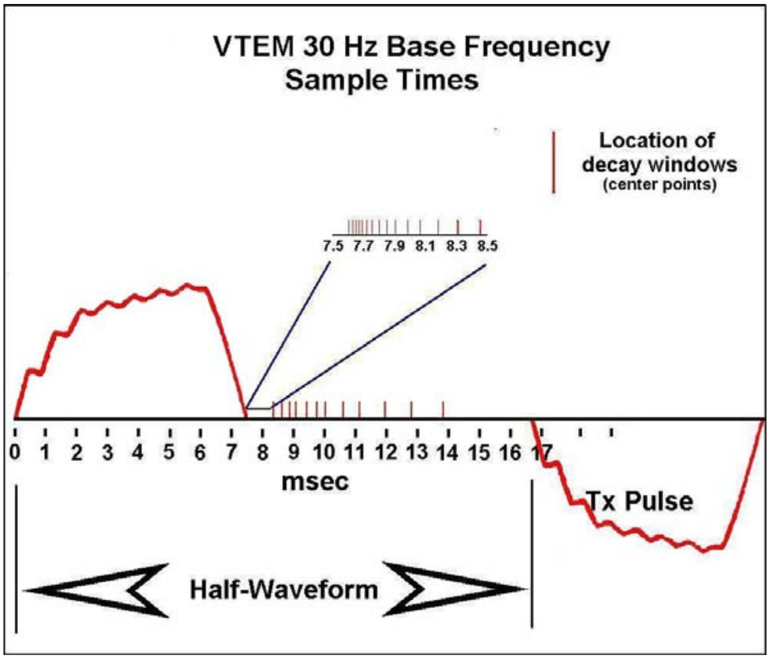


Figure 5 - VTEM plus Waveform & Sample Times.

The VTEM plus decay sampling scheme is shown in Table 3 below. Thirty-two time measurement gates were used for the final data processing in the range from 96 to 7036 μ sec.

Table 3 - Decay Sampling Scheme

VTEM plus Decay Sampling Scheme				
Index	**Middle**	**Start**	**End**	**Window**
	Microseconds			
14	96	90	103	13
15	110	103	118	15
16	126	118	136	18
17	145	136	156	20
18	167	156	179	23
19	192	179	206	27
20	220	206	236	30
21	253	236	271	35
22	290	271	312	40
23	333	312	358	46
24	383	358	411	53
25	440	411	472	61
26	505	472	543	70
27	580	543	623	81
28	667	623	716	93
29	766	716	823	107
30	880	823	945	122
31	1,010	945	1,086	141
32	1,161	1,086	1,247	161
33	1,333	1,247	1,432	185
34	1,531	1,432	1,646	214
35	1,760	1,646	1,891	245
36	2,021	1,891	2,172	281
37	2,323	2,172	2,495	323
38	2,667	2,495	2,865	370
39	3,063	2,865	3,292	427
40	3,521	3,292	3,781	490
41	4,042	3,781	4,341	560
42	4,641	4,341	4,987	646
43	5,333	4,987	5,729	742
44	6,125	5,729	6,581	852
45	7,036	6,581	7,560	979

VTEM plus system parameters:

Transmitter Section
- Transmitter coil diameter: 26 m
- Number of turns: 4
- Transmitter base frequency: 30 Hz
- Peak current: 162.3 A
- Pulse width: 7.130 ms
- Duty cycle: 43 %
- Wave form shape: trapezoid
- Peak dipole moment: 344,679.21 nIA
- Nominal EM Bird terrain clearance: 92 metres above the ground
- Effective coil area: 2123 m^2

Receiver Section

X-Coil
- X Coil diameter: 0.32 m
- Number of turns: 245
- Effective coil area: 19.69 m^2

Z-Coil
- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m^2

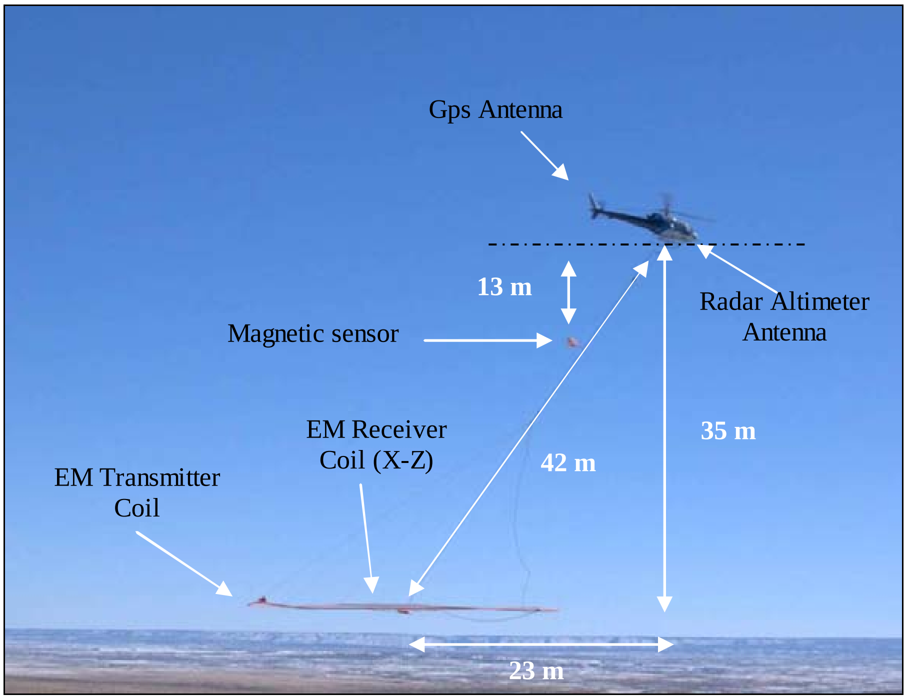


Figure 6 - VTEM plus System Configuration.

2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped caesium vapour magnetic field sensor mounted 13 metres below the helicopter, as shown in Figure 6. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds.

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 (Figure 6).

2.4.5 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's CDGPS (Canada-Wide Differential Global Positioning System Correction Service) enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an NovAtel GPS antenna mounted on the helicopter tail (Figure 6). 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

2.5 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 at the Cranbrook Golf Club (49°30'35.49"N, 115°44'32.62"W); 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.

<u>Field:</u>

Project Manager:	Darren Tuck (Office)
Data QC:	Neil Fiset (Office)
Crew chief:	Ioan Serbu Scott Trew Roger LeBlanc
Operator:	Rick Gotuzzo John West-Fiset

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Geotech Aviation.

Pilot:	Geo Rawlings Don McManus Brook Pennington Greg Heuring
Mechanical Engineer:	Jeff Rowat

<u>Office:</u>

Preliminary Data Processing:	Neil Fiset
Final Data Processing:	ZiHao Han
Final Data QA/QC:	Alexander Prikhodko
Reporting/Mapping:	Liz Johnson

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operating Officer. The processing and interpretation phase was under the supervision of Alexander Prikhodko, P. Geo. The customer relations were looked after by Mandy Long.

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 NAD83 Datum, UTM Zone 11 North coordinate system 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 sferic events and to reduce system noise. Local sferic 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 sferic events.

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 the B-field Z component and dB/dt responses in the Z component. B-field Z component time channel recorded at 2.021 milliseconds after the termination of the impulse is also presented as contour colour images. Calculated Time Constant (TAU) with anomaly contours of Calculated Vertical Derivative of TMI is presented in Appendix D and F. Resistivity Depth Image (RDI) is also presented in Appendix D and G.

VTEM plus has two receiver coil orientations. Z-axis coil is oriented parallel to the transmitter coil axis and both are horizontal to the ground. The X-axis coil is oriented parallel to the ground and along the line-of-flight. This combined two coil configuration provides information on the position, depth, dip and thickness of a conductor. Generalized modeling results of VTEM plus data are shown in Appendix E.

In general X-component data produce cross-over type anomalies: from "+ to – "in flight direction of flight for "thin" sub vertical targets and from "- to +" in direction of flight for "thick" targets. Z component data produce double peak type anomalies for "thin" sub vertical targets and single peak for "thick" targets.

The limits and change-over of “thin-thick” depends on dimensions of a TEM system.

Because of X component polarity is under line-of-flight, convolution Fraser filter (FF, Figure 7) is applied to X component data to represent axes of conductors in the form of grid map. In this case positive FF anomalies always correspond to “plus-to-minus” X data crossovers independently of direction of flight.

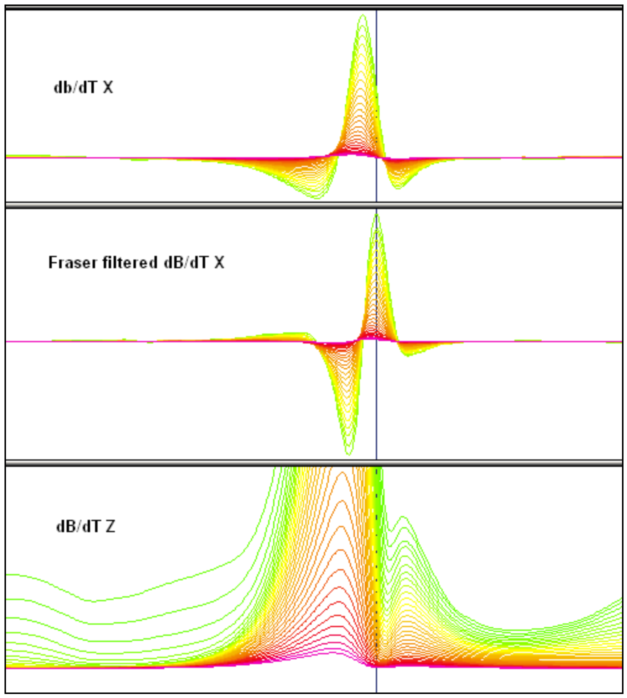


Figure 7 - Z, X and Fraser filtered X (FFx) components for “thin” target.

Graphical representations of the VTEM plus transmitter input current and the output voltage of the receiver coil are 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 was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was 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 was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 19 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

5. DELIVERABLES

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 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 11 North. All maps show the mining claims, 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 a color magnetic TMI contour map. The following maps are presented on paper;

- VTEM dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-field late time Z Component Channel 36, Time Gate 2.021 ms colour image.
- VTEM dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Total Magnetic Intensity
- Total Magnetic Intensity (TMI) colour image and contours.

5.3 Digital Data

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

- DVD structure.

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	Units	Description
X:	metres	UTM Easting NAD83 Zone 11 North
Y:	metres	UTM Northing NAD83 Zone 11 North
Z:	metres	GPS antenna elevation (above Geoid)
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
CVG	nT	Calculated Vertical Derivative of TMI
SFz[14]:	$pV/(A*m^4)$	Z dB/dt 96 microsecond time channel
SFz[15]:	$pV/(A*m^4)$	Z dB/dt 110 microsecond time channel
SFz[16]:	$pV/(A*m^4)$	Z dB/dt 126 microsecond time channel
SFz[17]:	$pV/(A*m^4)$	Z dB/dt 145 microsecond time channel
SFz[18]:	$pV/(A*m^4)$	Z dB/dt 167 microsecond time channel
SFz[19]:	$pV/(A*m^4)$	Z dB/dt 192 microsecond time channel
SFz[20]:	$pV/(A*m^4)$	Z dB/dt 220 microsecond time channel
SFz[21]:	$pV/(A*m^4)$	Z dB/dt 253 microsecond time channel
SFz[22]:	$pV/(A*m^4)$	Z dB/dt 290 microsecond time channel
SFz[23]:	$pV/(A*m^4)$	Z dB/dt 333 microsecond time channel
SFz[24]:	$pV/(A*m^4)$	Z dB/dt 383 microsecond time channel
SFz[25]:	$pV/(A*m^4)$	Z dB/dt 440 microsecond time channel
SFz[26]:	$pV/(A*m^4)$	Z dB/dt 505 microsecond time channel
SFz[27]:	$pV/(A*m^4)$	Z dB/dt 580 microsecond time channel
SFz[28]:	$pV/(A*m^4)$	Z dB/dt 667 microsecond time channel
SFz[29]:	$pV/(A*m^4)$	Z dB/dt 766 microsecond time channel
SFz[30]:	$pV/(A*m^4)$	Z dB/dt 880 microsecond time channel
SFz[31]:	$pV/(A*m^4)$	Z dB/dt 1010 microsecond time channel
SFz[32]:	$pV/(A*m^4)$	Z dB/dt 1161 microsecond time channel
SFz[33]:	$pV/(A*m^4)$	Z dB/dt 1333 microsecond time channel
SFz[34]:	$pV/(A*m^4)$	Z dB/dt 1531 microsecond time channel
SFz[35]:	$pV/(A*m^4)$	Z dB/dt 1760 microsecond time channel
SFz[36]:	$pV/(A*m^4)$	Z dB/dt 2021 microsecond time channel
SFz[37]:	$pV/(A*m^4)$	Z dB/dt 2323 microsecond time channel
SFz[38]:	$pV/(A*m^4)$	Z dB/dt 2667 microsecond time channel
SFz[39]:	$pV/(A*m^4)$	Z dB/dt 3063 microsecond time channel
SFz[40]:	$pV/(A*m^4)$	Z dB/dt 3521 microsecond time channel
SFz[41]:	$pV/(A*m^4)$	Z dB/dt 4042 microsecond time channel
SFz[42]:	$pV/(A*m^4)$	Z dB/dt 4641 microsecond time channel
SFz[43]:	$pV/(A*m^4)$	Z dB/dt 5333 microsecond time channel
SFz[44]:	$pV/(A*m^4)$	Z dB/dt 6125 microsecond time channel
SFz[45]:	$pV/(A*m^4)$	Z dB/dt 7036 microsecond time channel
SFx[20]:	$pV/(A*m^4)$	X dB/dt 220 microsecond time channel
SFx[21]:	$pV/(A*m^4)$	X dB/dt 253 microsecond time channel
SFx[22]:	$pV/(A*m^4)$	X dB/dt 290 microsecond time channel
SFx[23]:	$pV/(A*m^4)$	X dB/dt 333 microsecond time channel

Channel name	Units	Description
SFx[24]:	$pV/(A*m^4)$	X dB/dt 383 microsecond time channel
SFx[25]:	$pV/(A*m^4)$	X dB/dt 440 microsecond time channel
SFx[26]:	$pV/(A*m^4)$	X dB/dt 505 microsecond time channel
SFx[27]:	$pV/(A*m^4)$	X dB/dt 580 microsecond time channel
SFx[28]:	$pV/(A*m^4)$	X dB/dt 667 microsecond time channel
SFx[29]:	$pV/(A*m^4)$	X dB/dt 766 microsecond time channel
SFx[30]:	$pV/(A*m^4)$	X dB/dt 880 microsecond time channel
SFx[31]:	$pV/(A*m^4)$	X dB/dt 1010 microsecond time channel
SFx[32]:	$pV/(A*m^4)$	X dB/dt 1161 microsecond time channel
SFx[33]:	$pV/(A*m^4)$	X dB/dt 1333 microsecond time channel
SFx[34]:	$pV/(A*m^4)$	X dB/dt 1531 microsecond time channel
SFx[35]:	$pV/(A*m^4)$	X dB/dt 1760 microsecond time channel
SFx[36]:	$pV/(A*m^4)$	X dB/dt 2021 microsecond time channel
SFx[37]:	$pV/(A*m^4)$	X dB/dt 2323 microsecond time channel
SFx[38]:	$pV/(A*m^4)$	X dB/dt 2667 microsecond time channel
SFx[39]:	$pV/(A*m^4)$	X dB/dt 3063 microsecond time channel
SFx[40]:	$pV/(A*m^4)$	X dB/dt 3521 microsecond time channel
SFx[41]:	$pV/(A*m^4)$	X dB/dt 4042 microsecond time channel
SFx[42]:	$pV/(A*m^4)$	X dB/dt 4641 microsecond time channel
SFx[43]:	$pV/(A*m^4)$	X dB/dt 5333 microsecond time channel
SFx[44]:	$pV/(A*m^4)$	X dB/dt 6125 microsecond time channel
SFx[45]:	$pV/(A*m^4)$	X dB/dt 7036 microsecond time channel
BFz	(pV*ms)/(A*m4)	Z B-Field data for time channels 14 to 45
BFx	(pV*ms)/(A*m4)	X B-Field data for time channels 20 to 45
SFxFF	pV/(A*m4)	Fraser filtered X dB/dt
PLM:		60 Hz power line monitor
TauSF	milliseconds	Time Constant (Tau) calculated from dB/dt data
TauBF	milliseconds	Time Constant (Tau) calculated from B-Field data
NchanBF		Last channel where the Tau algorithm stops calculation, B-Field
NchanSF		Last channel where the Tau algorithm stops calculation, dB/dt

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45, and X component data from 20 – 45, as described above.

- Database of the VTEM Waveform "11324_Vine_waveform_final.gdb" in Geosoft GDB format, containing the following channels:

Time:	Sampling rate interval, 5.2083 microseconds
Rx_Volt:	Output voltage of the receiver coil (Volt)
Tx_Current:	Output current of the transmitter (Amp)

- Grids in Geosoft GRD format, as follows:

bb_BFz36:	B-Field Z Component Channel 36 (Time Gate 2.021 ms)
bb_TMI:	Total Magnetic Intensity (nT)
bb_CVG:	Calculated Vertical Derivative of TMI (nT/m)
bb_TauBF:	B-Field Calculated Time Constant (ms)
bb_TauSF:	dB/dt Calculated Time Constant (ms)
bb_DEM:	Digital Elevation Model (metres)

where bb represents the block name.

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 19 metres was used.

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

11324_ 10k_bb_dBdtz:	dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale over Geology.
11324_ 10k_bb_Bfield:	B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale over total magnetic intensity.
11324_ 10k_bb_BFz36:	B-field late time Z Component Channel 36, Time Gate 2.021 ms color image.
11324_ 10k _bb_TMI:	Total magnetic intensity (TMI) color image and contours.
11324_ 10k_bb_TauSF:	dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of Calculated Vertical Derivative of TMI.

where bb represents the block name.
Maps are also presented in PDF format.

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

- A Google Earth file *11324_ Vine (claims) _FP.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

A helicopter-borne versatile time domain electromagnetic (VTEM plus) geophysical survey has been completed over the Vine Property situated approximately 12 kilometres southwest of Cranbrook, British Columbia.

The total area coverage for the property is 4.6 km^2. Total survey line coverage is 68.4 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles, and contour color images at a scale of 1:10,000.

6.2 Recommendations

Based on the geophysical results obtained, A few conductive zones were identified across the property. All of these zones are considered as very low conductive anomalies. The largest and strongest EM anomaly is situated near the south edge of the block with the center around the cross of T4820 and L4330, which is also associated with magnetic anomalies (Figure 8).

Three Resistivity Depth Imaging (RDI) sections, from lines L4290, L4330 and T4820, are created to show in 2D sectional view the magnetic and conductive features along the traverses. RDIs show the depths of the conductors on the SW corner of the property are from 100m to more than 150m (reference on the L4290,L4330RDI, T4820RDI).

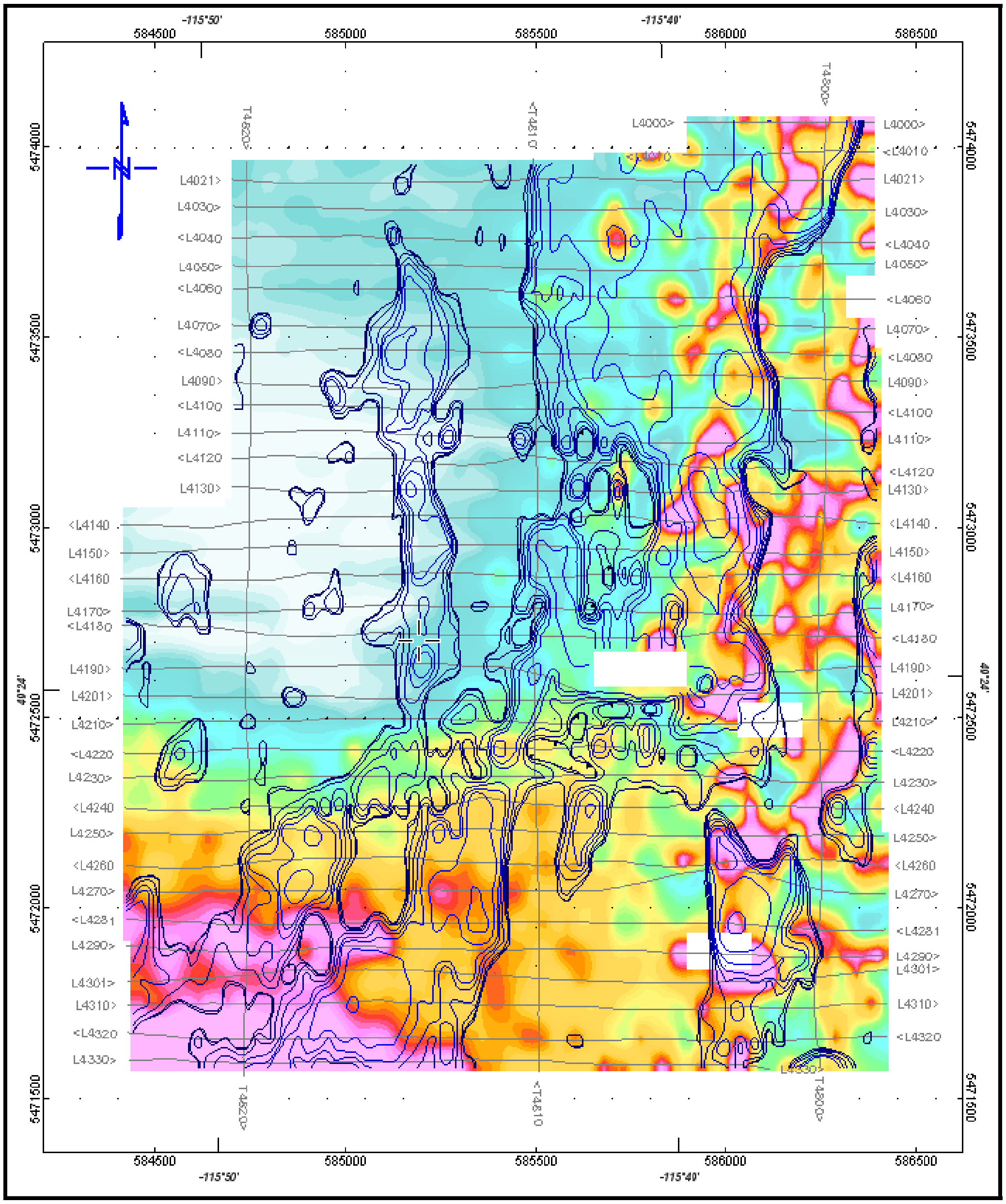


Figure 8 - TAU (dB/dt) grid overlain by contours of magnetic CVG with lines chosen for RDI sections.

If the conductors correspond to an exploration model on the area it is recommended picking anomalies with conductance grading and center localization of the targets, detail resistivity depth imaging and plate Maxwell modelling prior to ground follow up and drill testing.

Respectfully submitted[6],

Neil Fiset
Geotech Ltd.

Alexander Prikhodko, P.Geo.
Geotech Ltd.

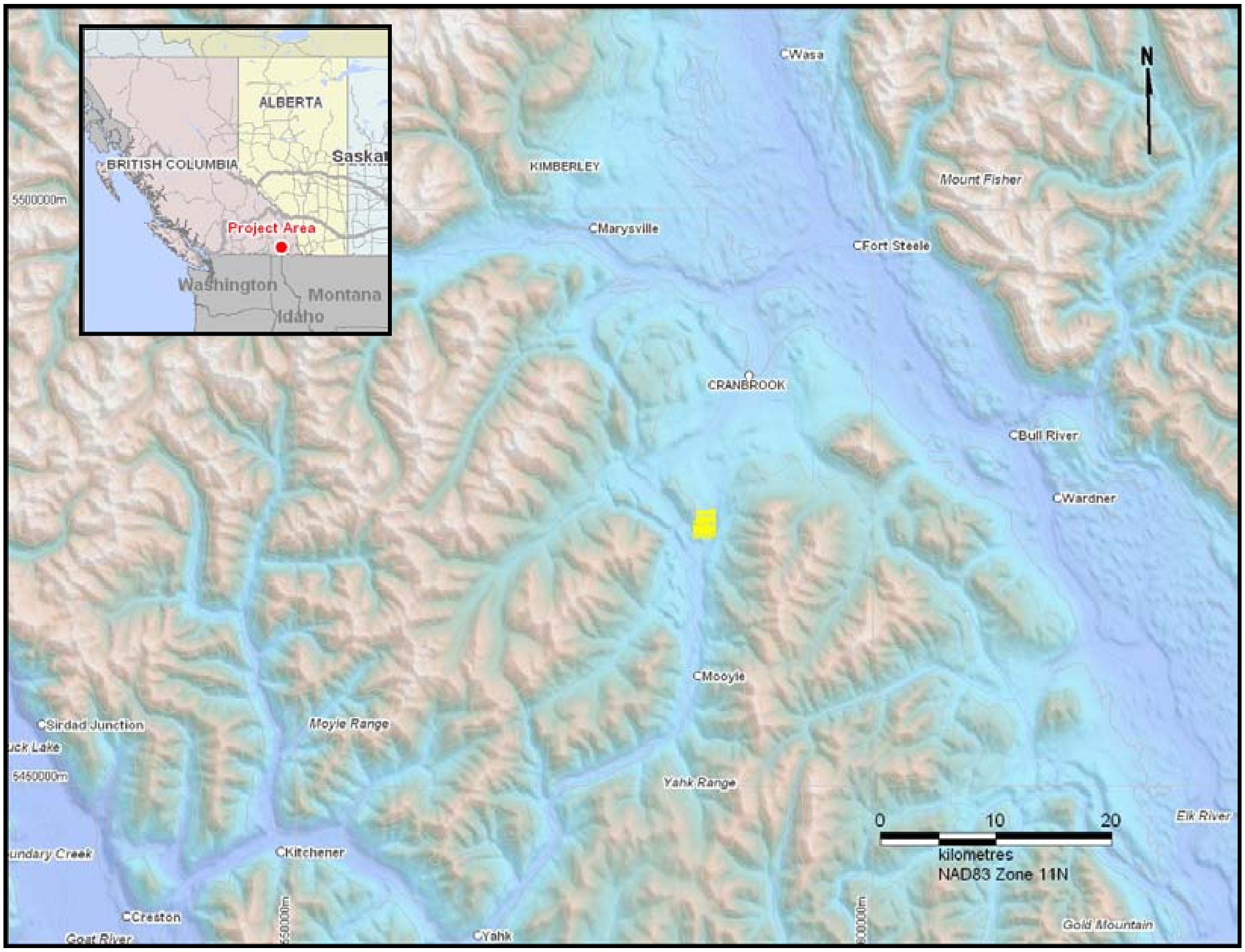
ZiHao Han
Geotech Ltd.

December 2011

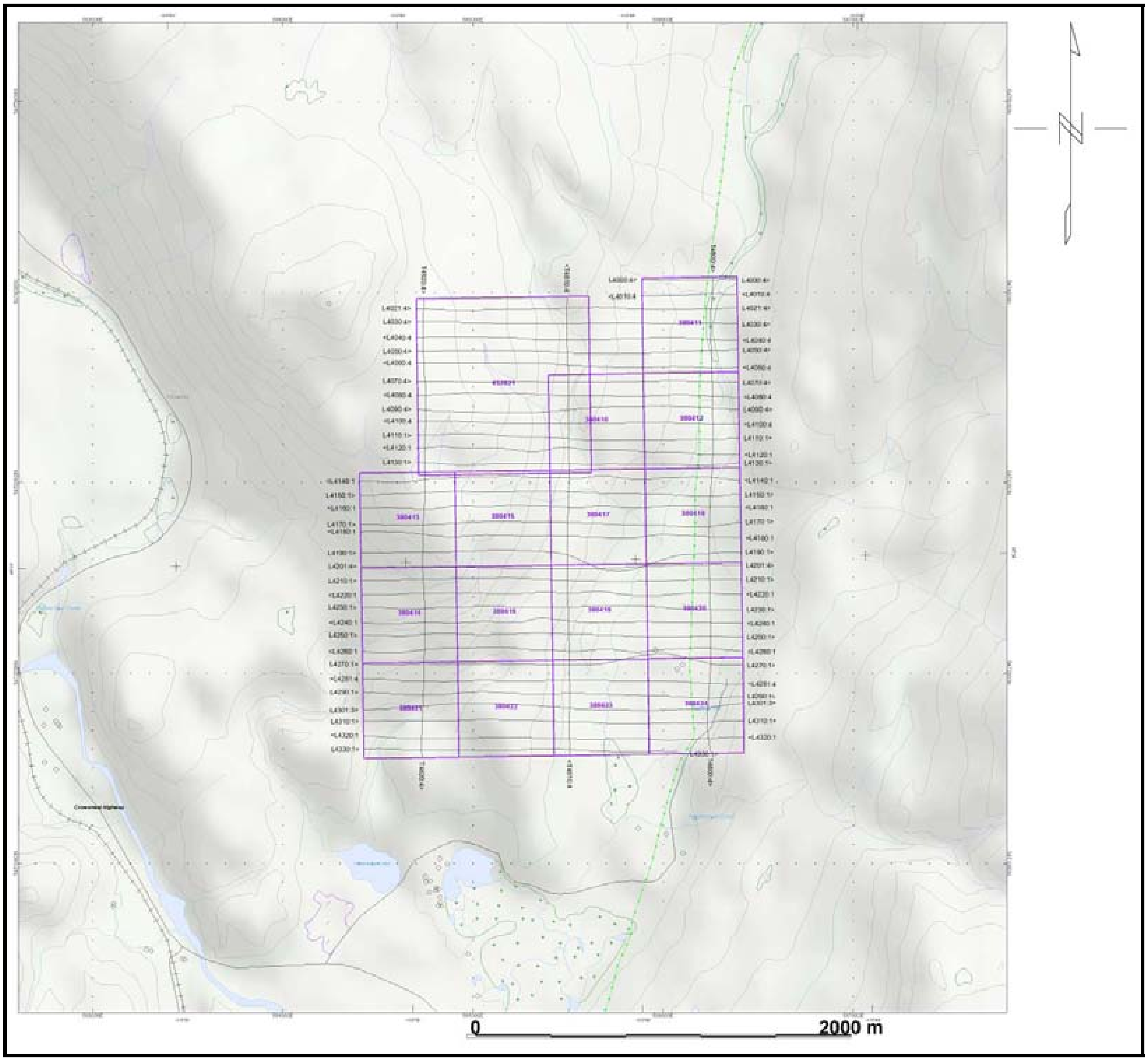
[6] Final data processing of the EM and magnetic data were carried out by ZiHao Han, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo., PhD, Senior Geophysicist, VTEM Interpretation Supervisor.

APPENDIX A

SURVEY BLOCK LOCATION MAP



Survey Overview of the Vine property



Mining claims - Vine Property

APPENDIX B

SURVEY BLOCK COORDINATES

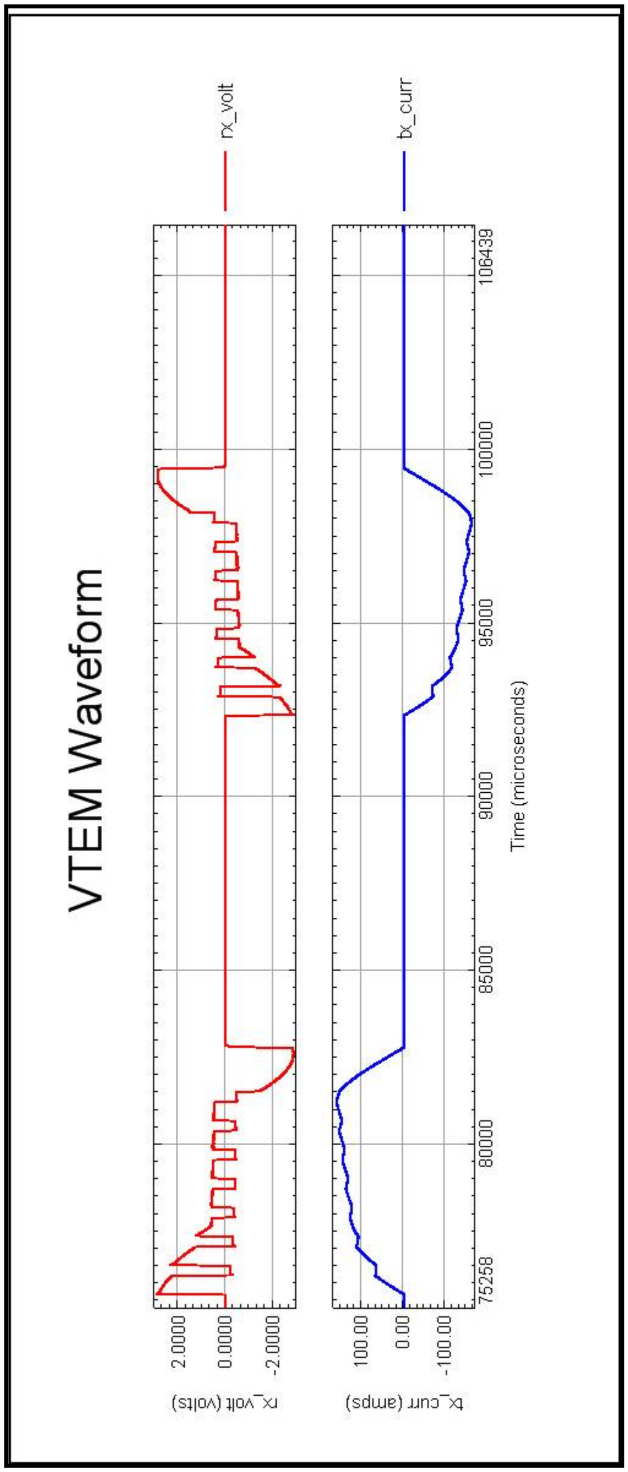
(WGS 84, UTM Zone 11 North)

Vine Property

X	Y
583607.3	5474080.7
583607.3	5471550.3
586607.3	5471550.3
586607.3	5474080.7

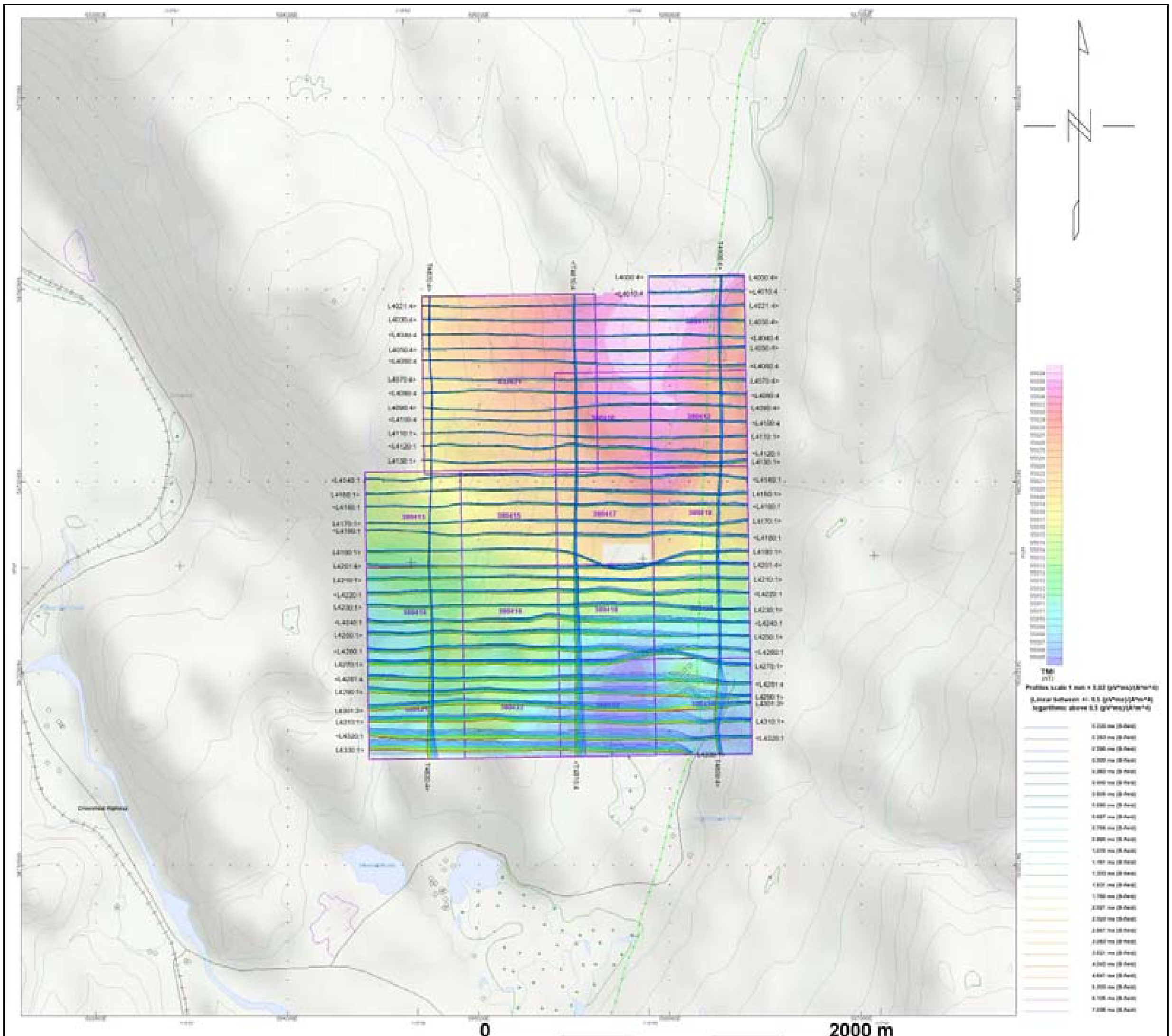
APPENDIX C

VTEM WAVEFORM



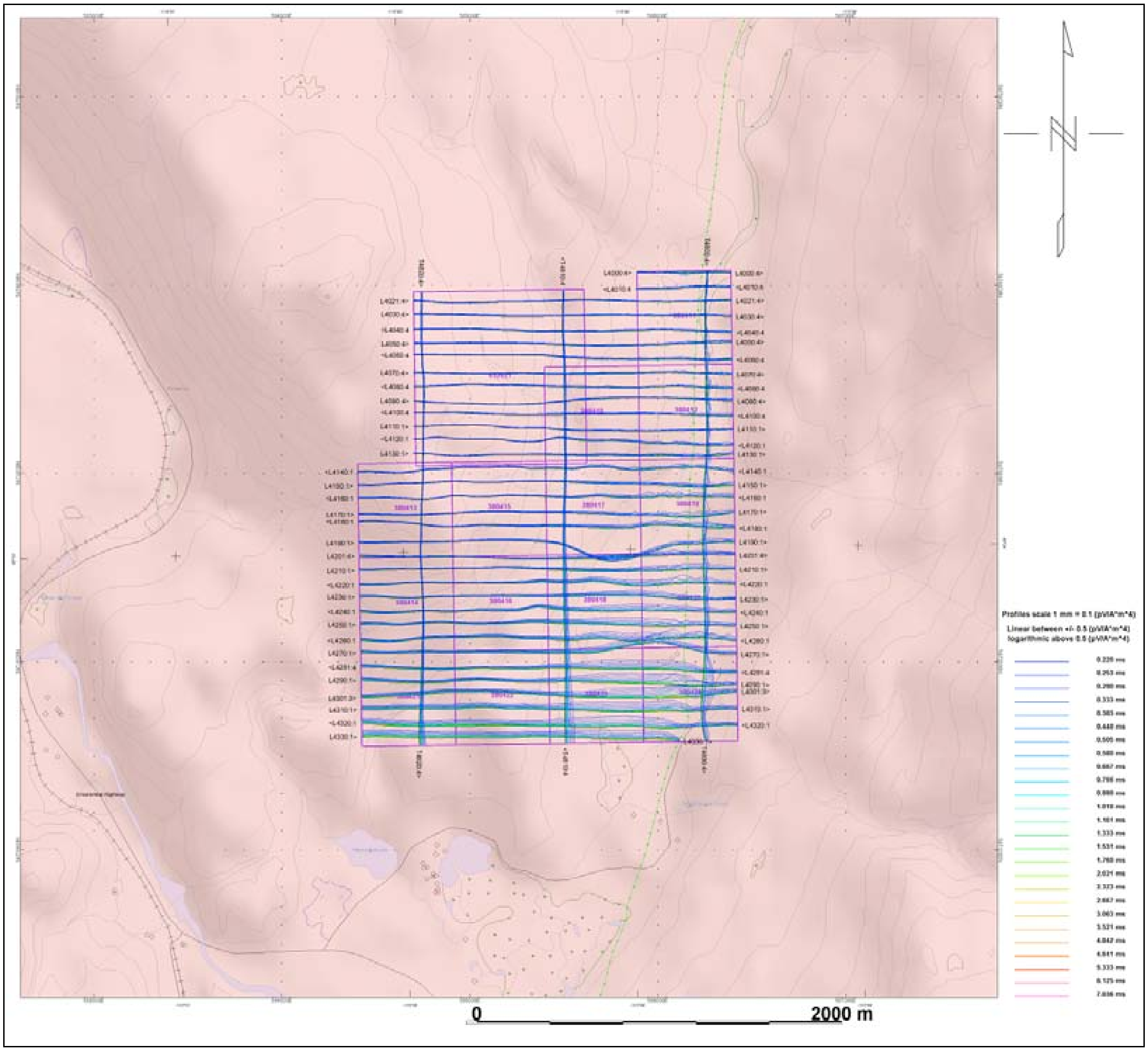
APPENDIX D

GEOPHYSICAL MAPS[1]

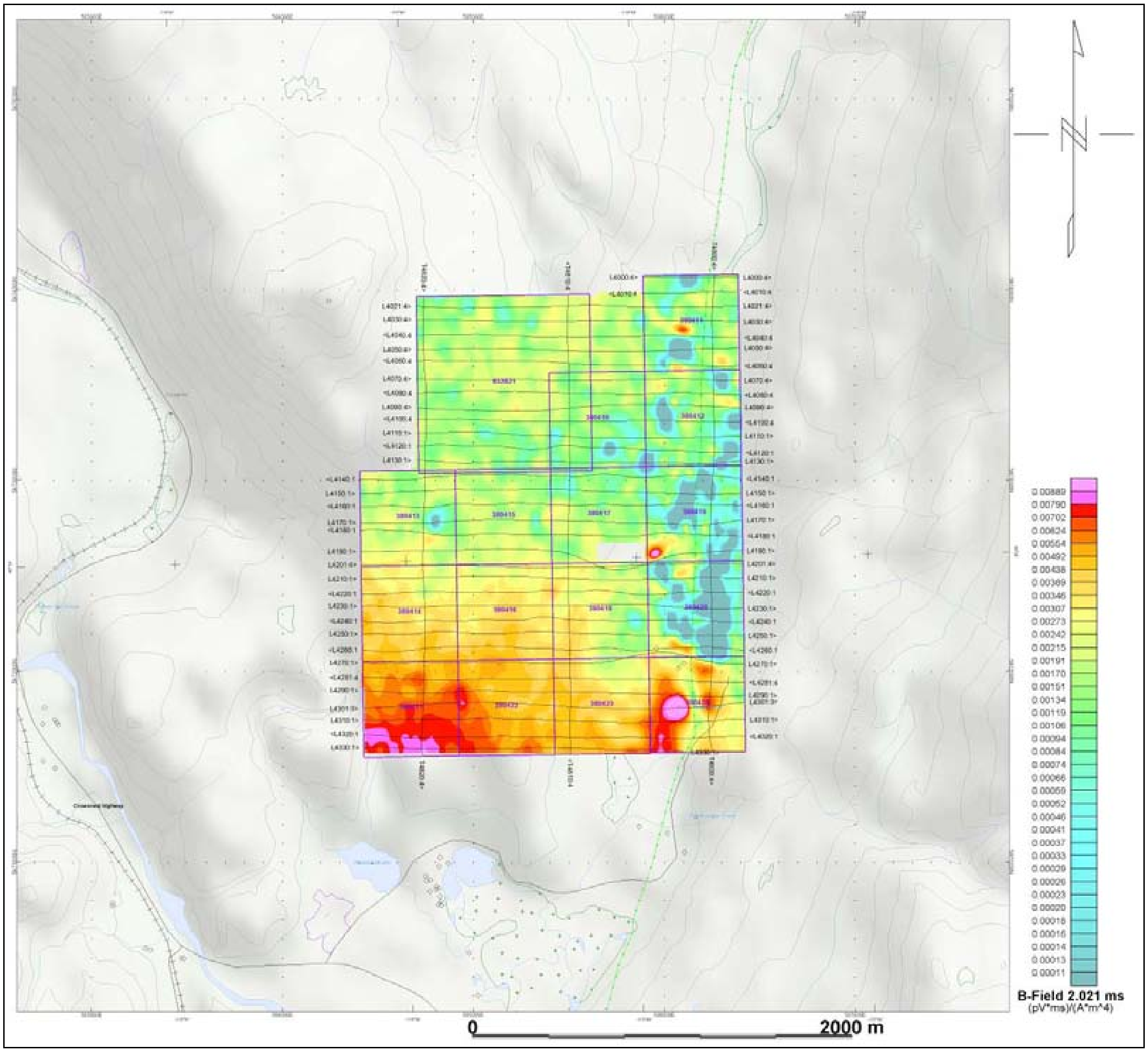


Vine Property - VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms

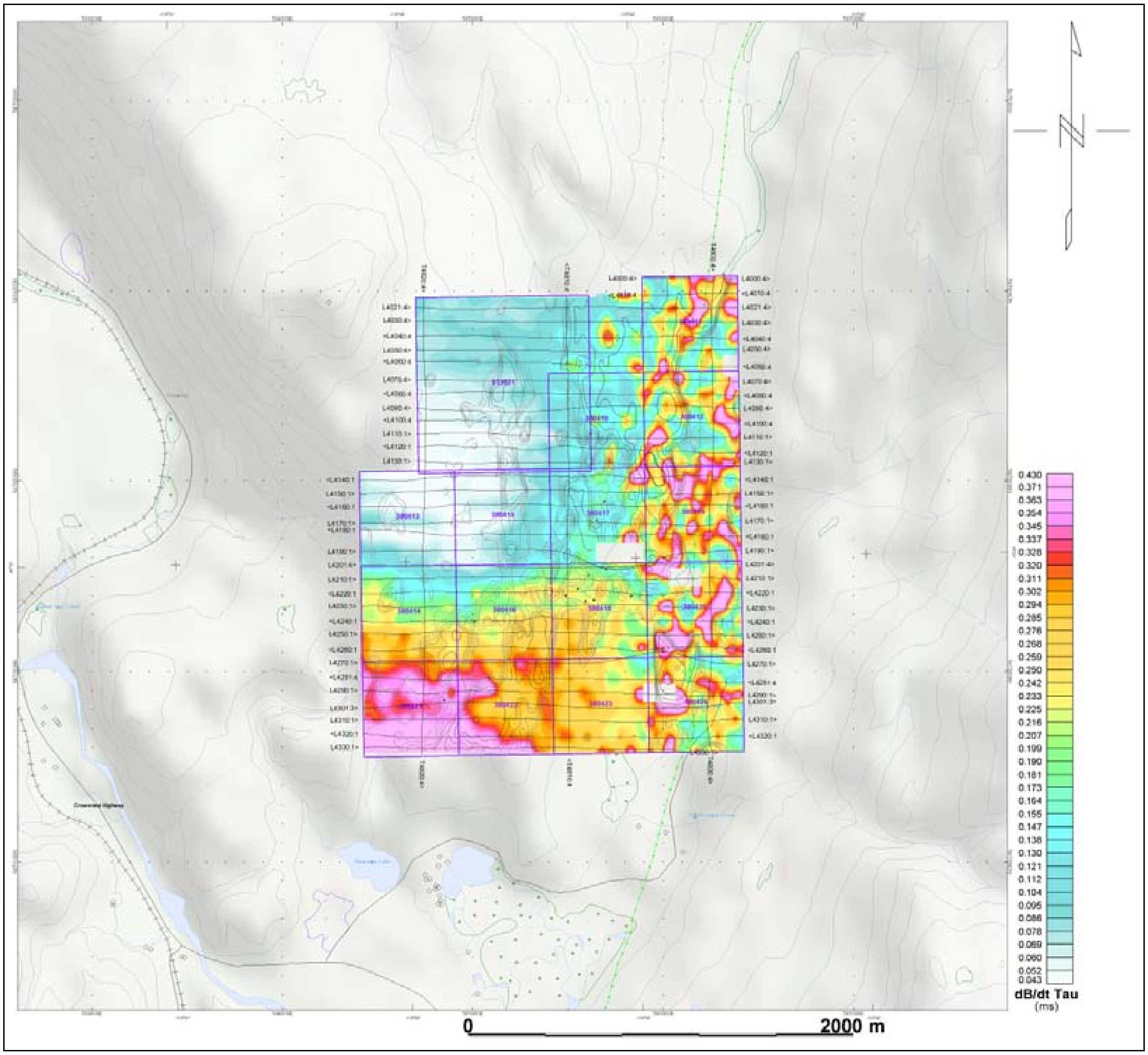
[1] Full size geophysical maps are also available in PDF format on the final DVD



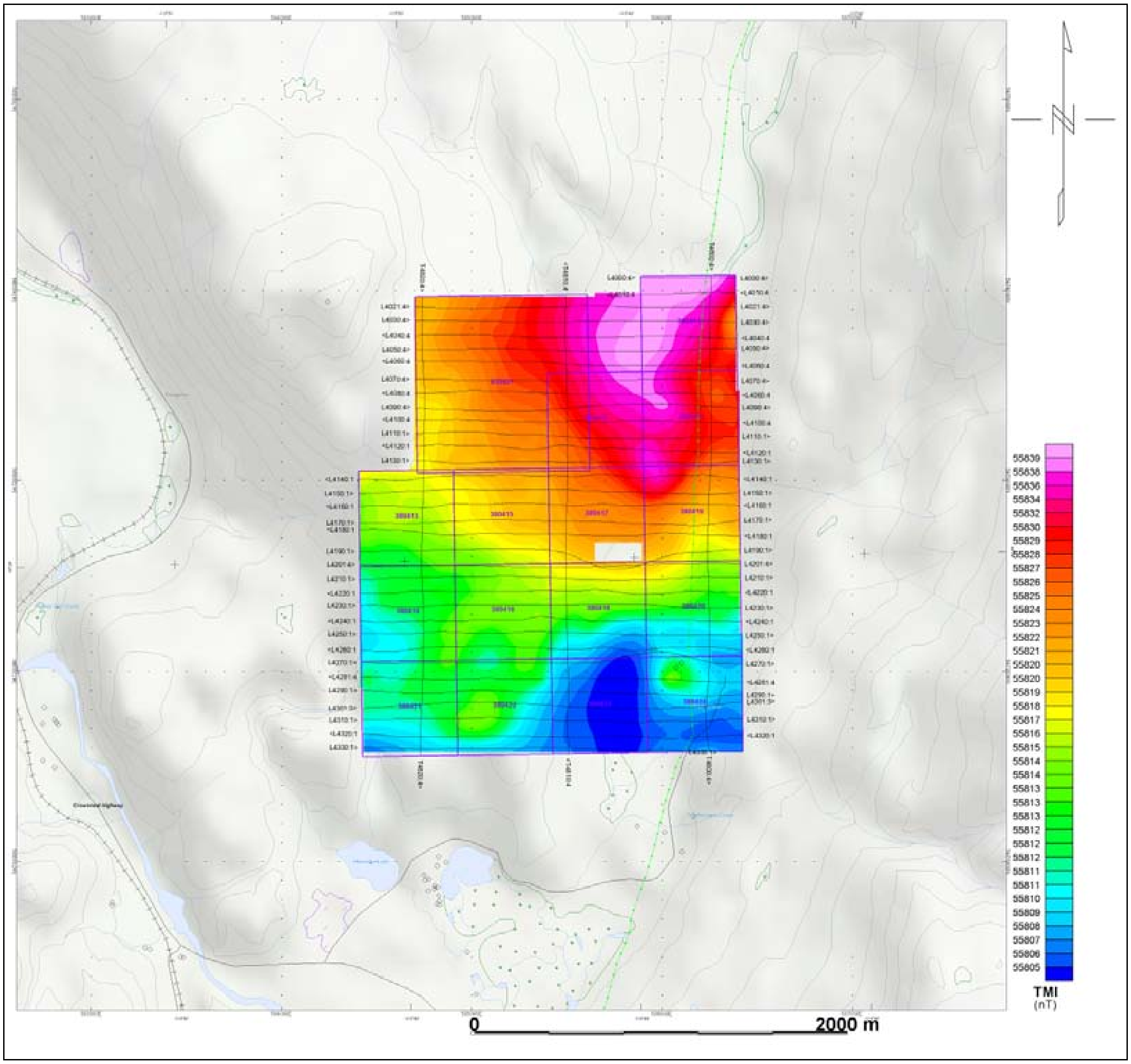
Vine Property - VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



Vine Property - VTEM B-Field Z Component Channel 36, Time Gate 2.021 ms



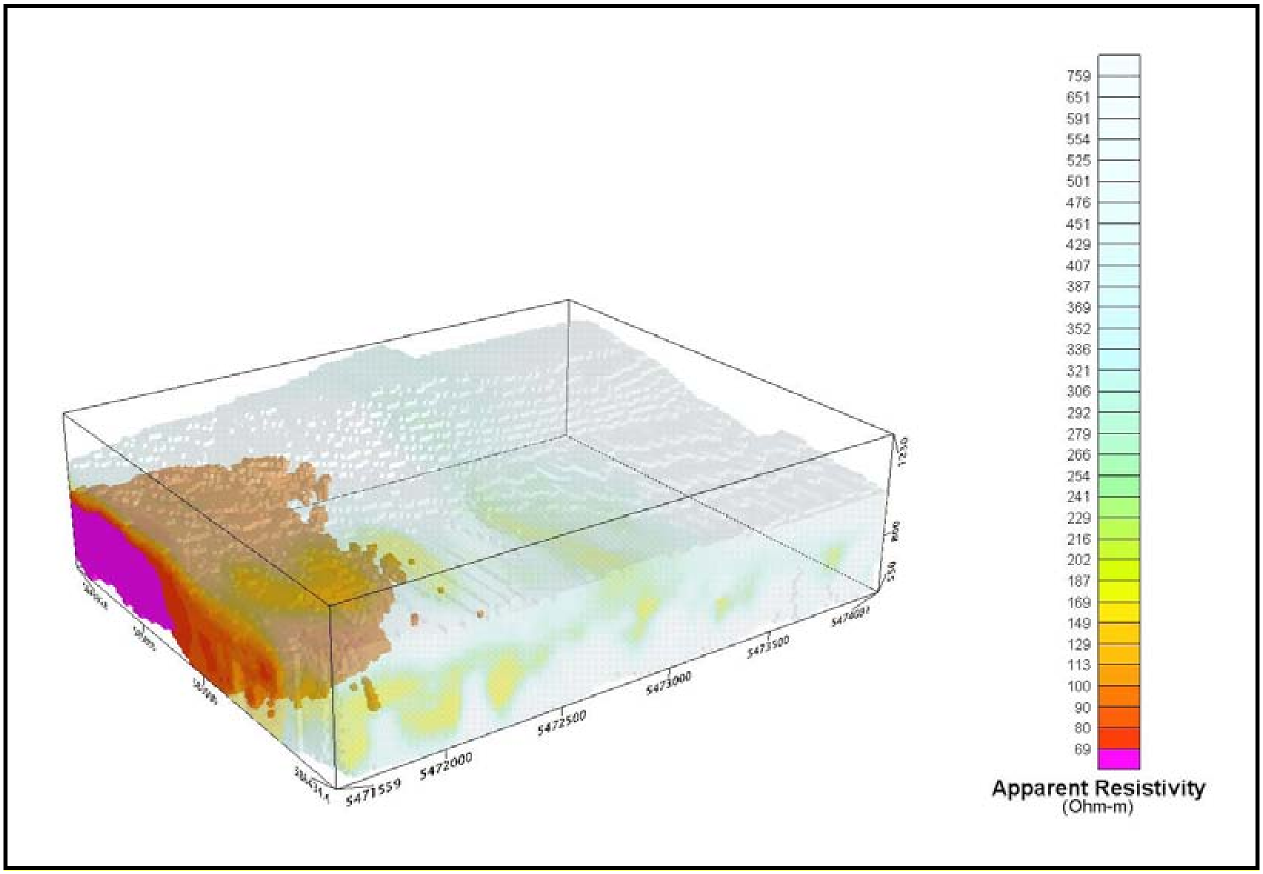
Vine Property – dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the Calculated Vertical Derivative of TMI



Vine Property - Total Magnetic Intensity (TMI)

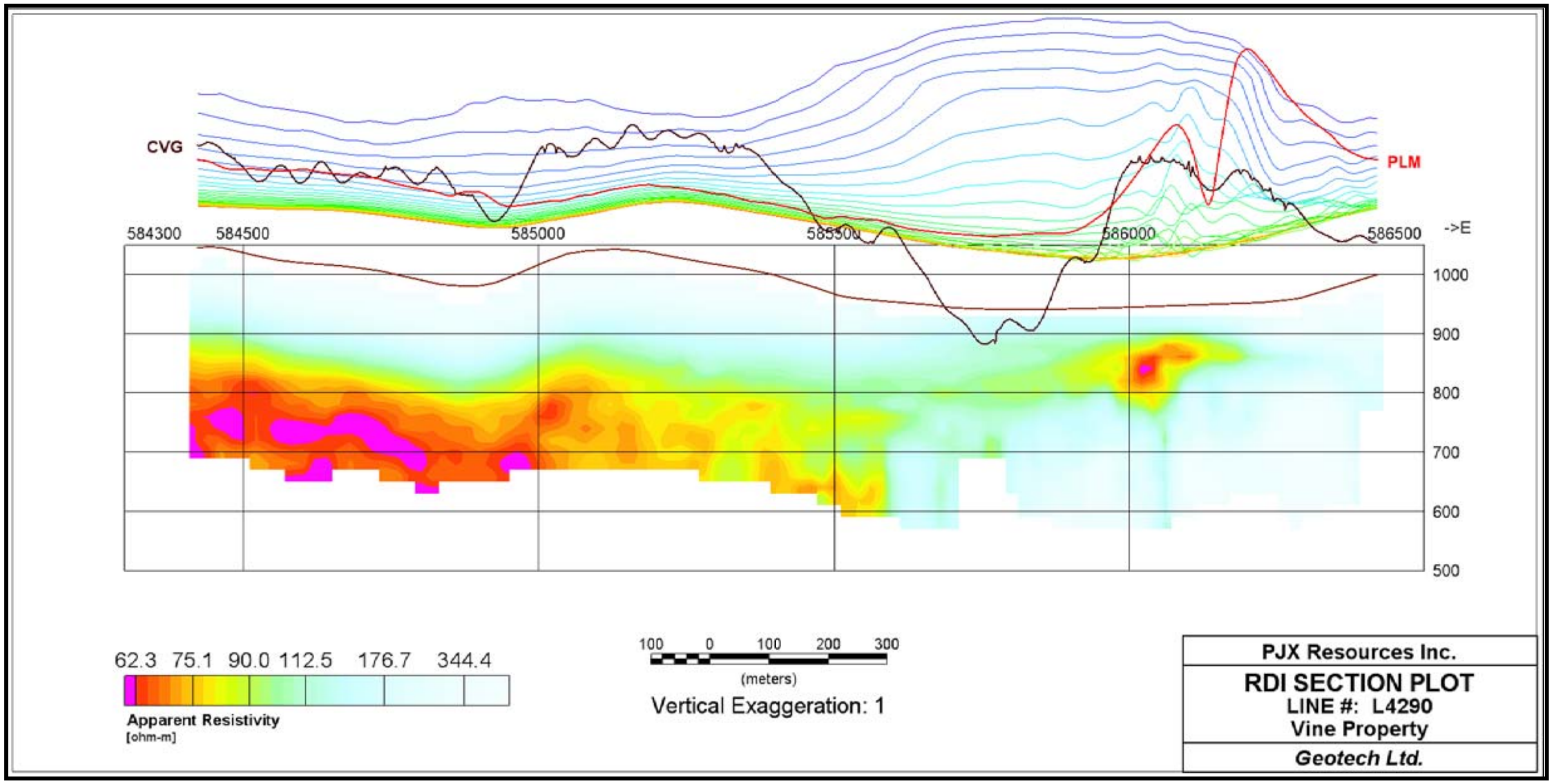
Resistivity Depth Image (RDI) MAPS

3D Resistivity Depth Images (RDI)

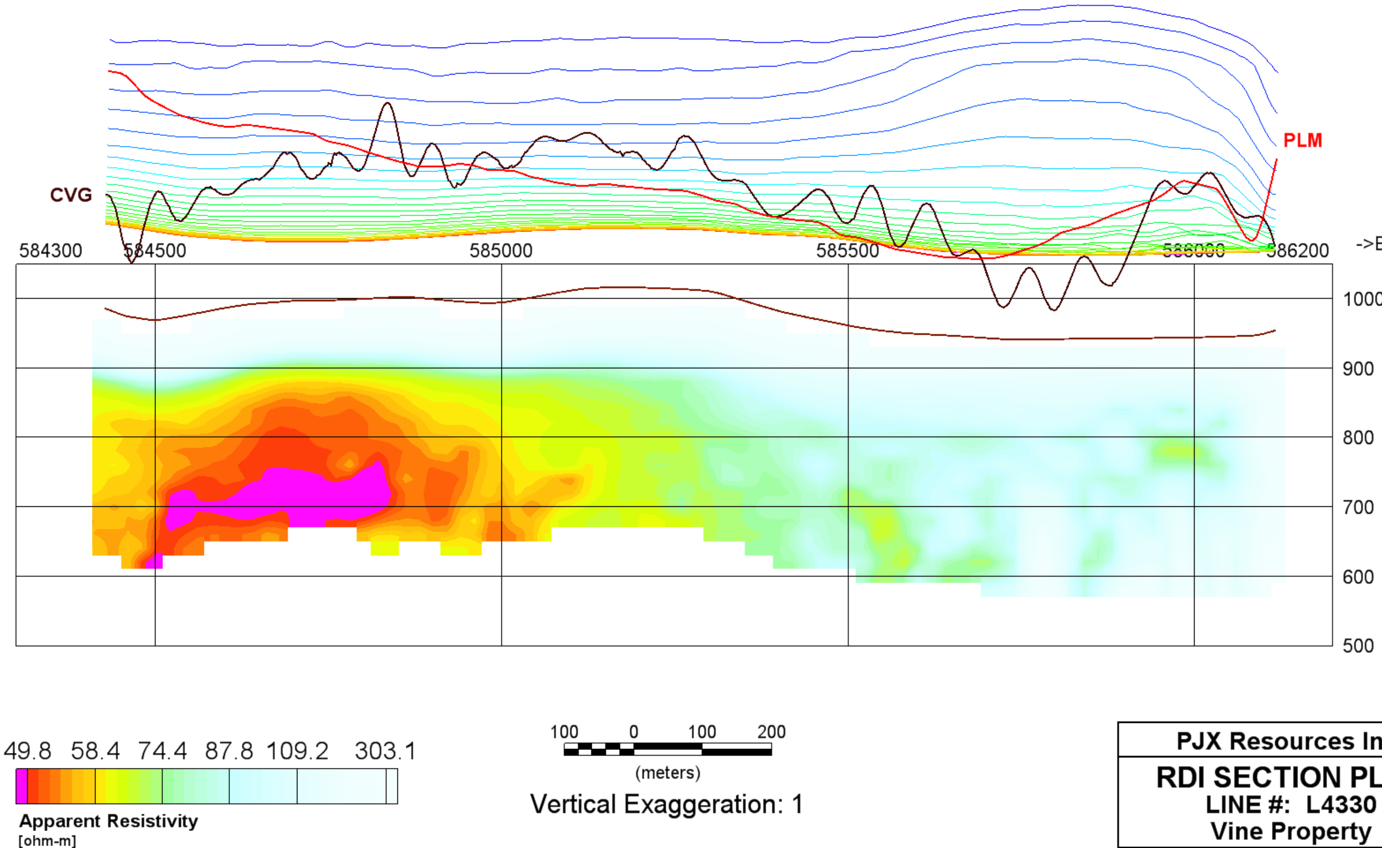


Vine Property

RDI Sections - Line 4290



RDI Sections - Line 4330

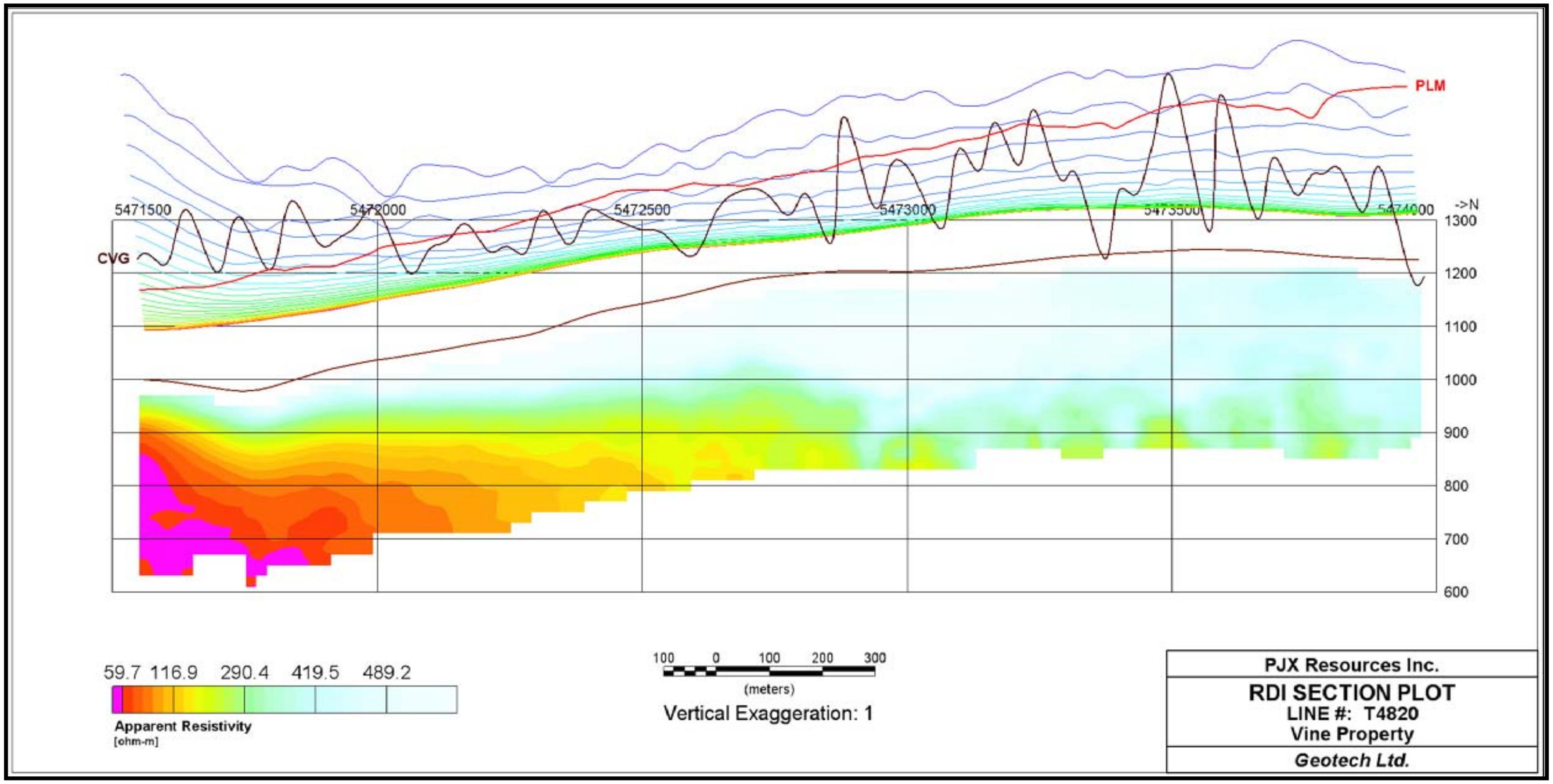


PJX Resources Inc.

RDI SECTION PLOT
LINE #: L4330
Vine Property

Geotech Ltd.

RDI Sections - Tie 4820



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 transmitter loop that produces a primary field. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive 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.

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.

A set of models has been produced for the Geotech VTEM® system dB/dT Z and X components (see models E1 to E15). The Maxwell ™ modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. 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.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

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 90º to about 30º. The method is not sensitive enough where dips are less than about 30º.

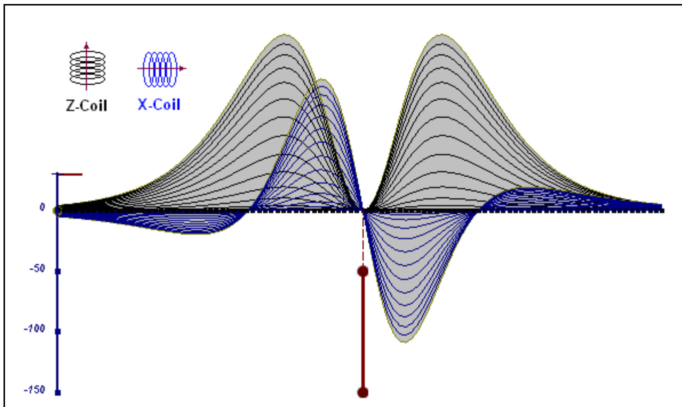


Fig E-1: vertical thin plate

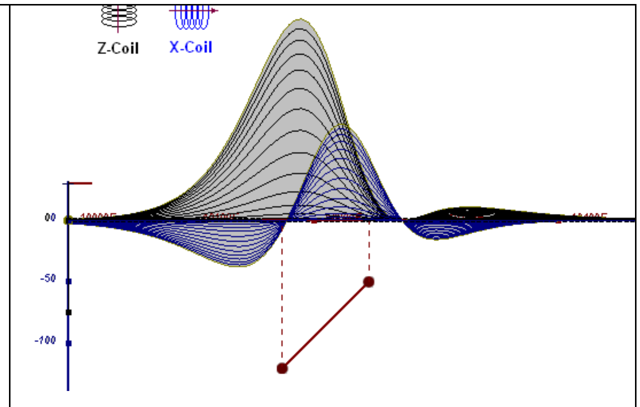


Fig E-2: inclined thin plate

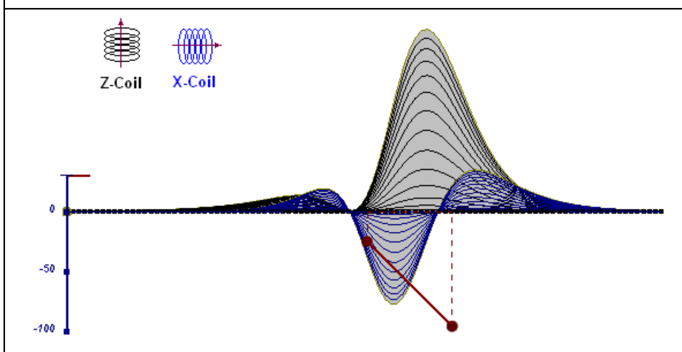


Fig E-3: inclined thin plate

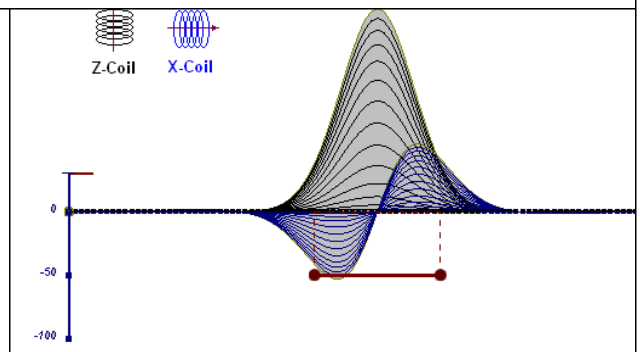


Fig E-4: horizontal thin plate

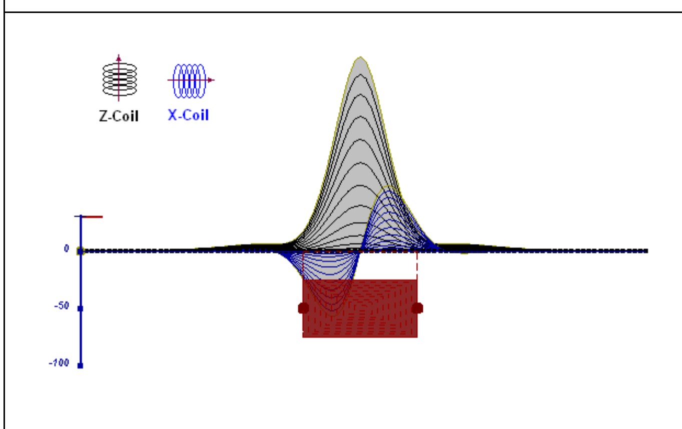


Figure E-5: horizontal thick plate (linear scale of the response)

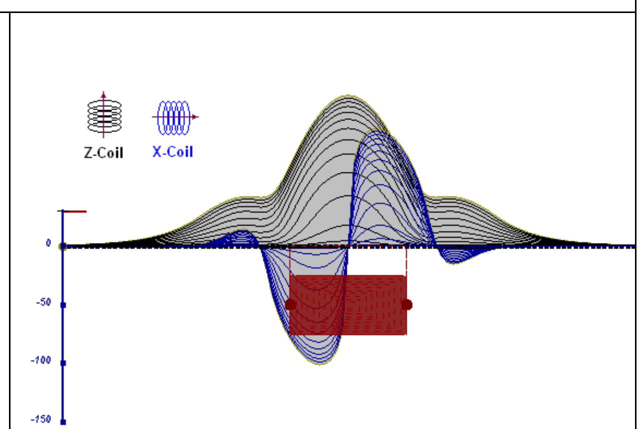


Figure E-6: horizontal thick plate (log scale of the response)

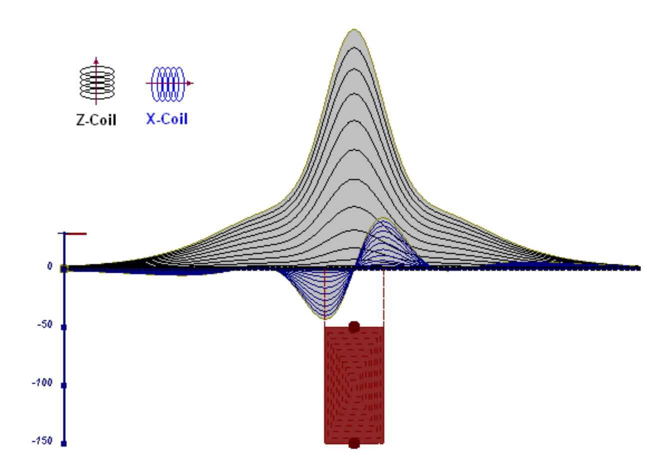


Figure E-7: vertical thick plate (linear scale of the response). 50 m depth

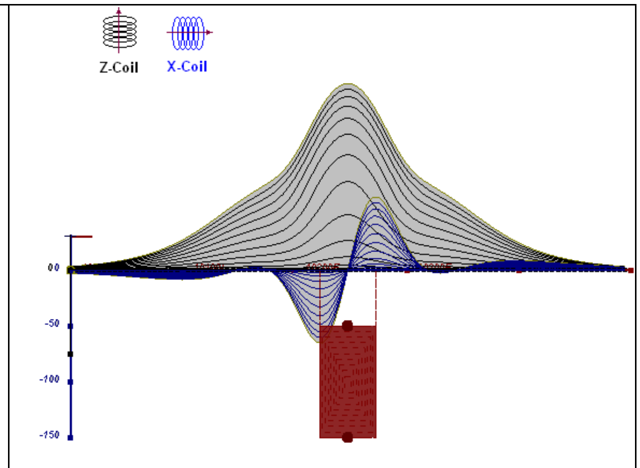


Figure E-8: vertical thick plate (log scale of the response). 50 m depth

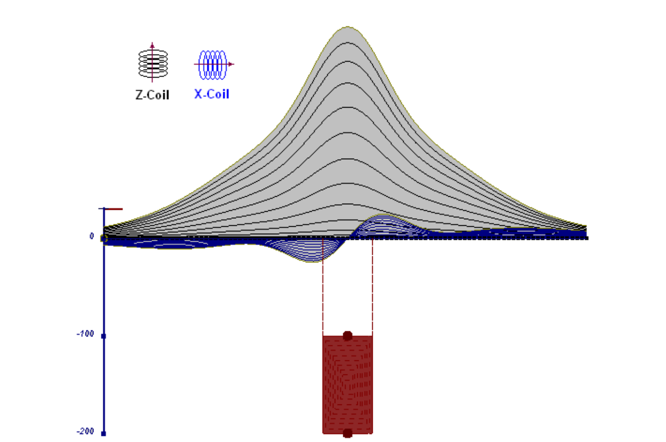


Fig E-9: vertical thick plate (linear scale of the response). 100 m depth

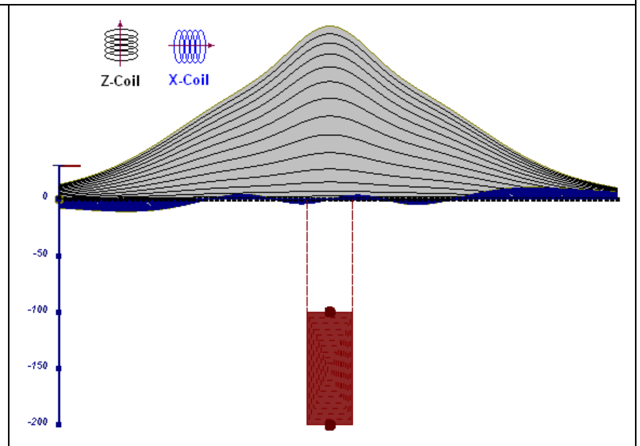


Fig E-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

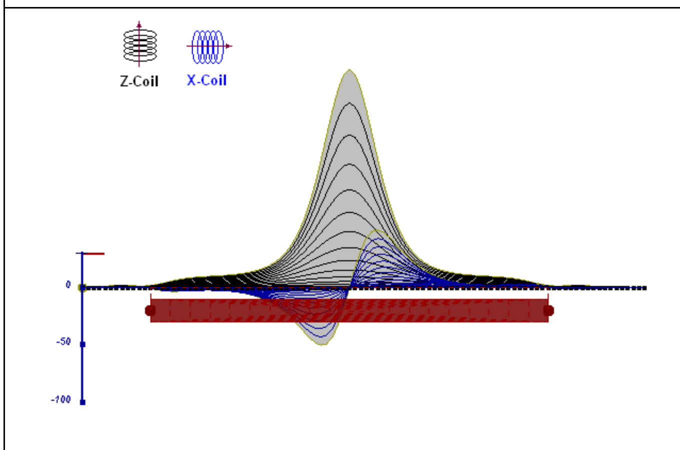


Fig E-10: horizontal thick plate (linear scale of the response)

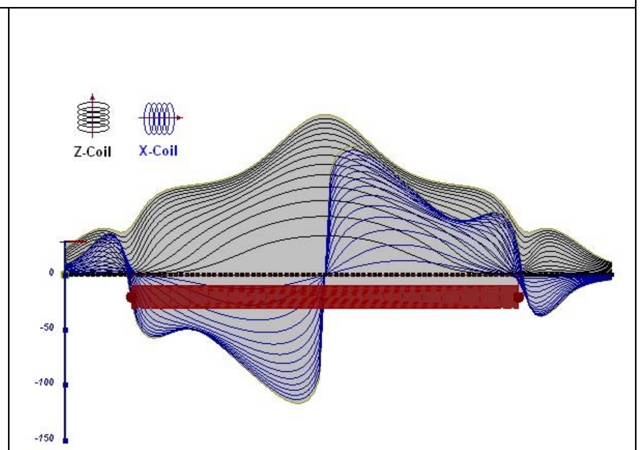


Fig E-11: horizontal thick plate (log scale of the response)

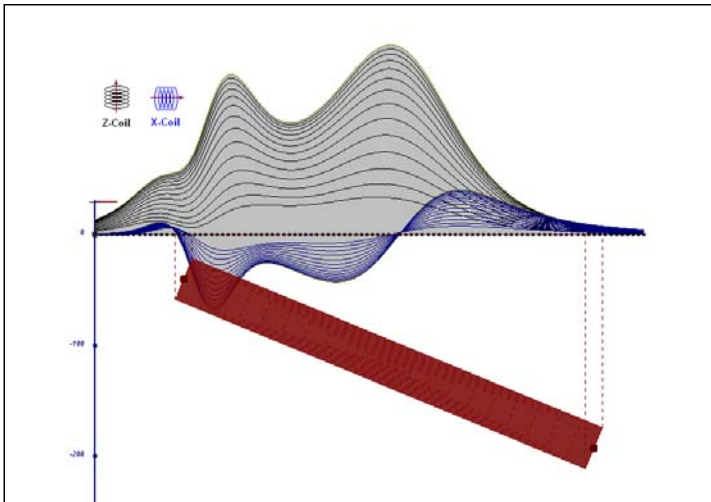


Fig E-12: inclined long thick plate

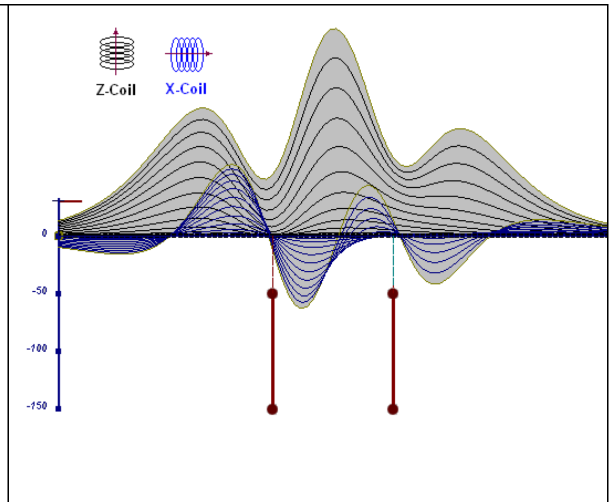


Fig E-13: two vertical thin plates

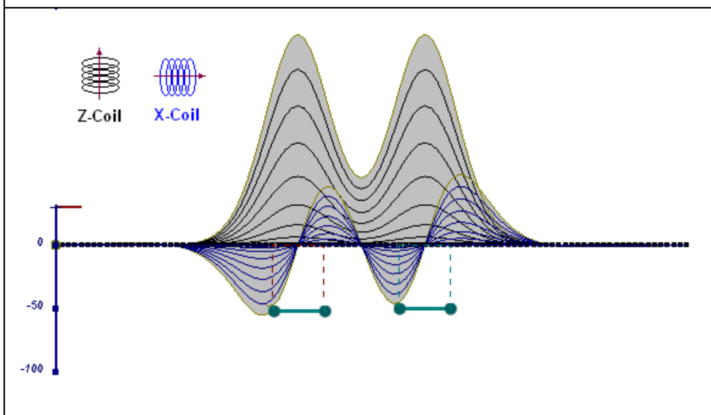


Fig E-14: two horizontal thin plates

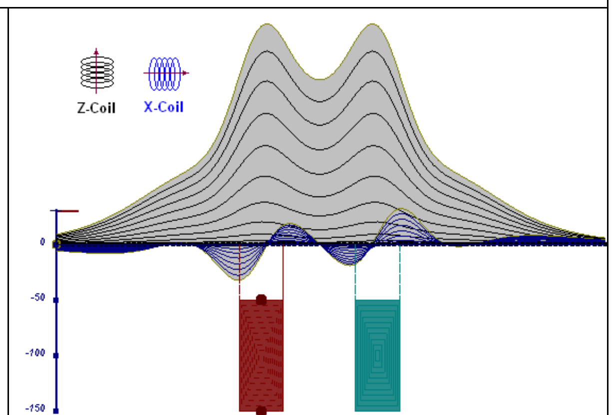


Fig E-15: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:

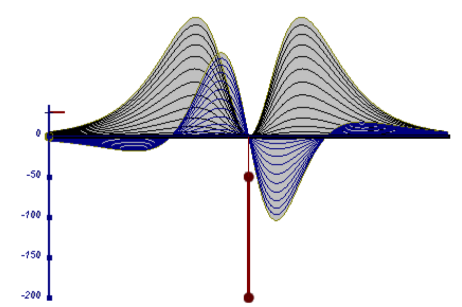
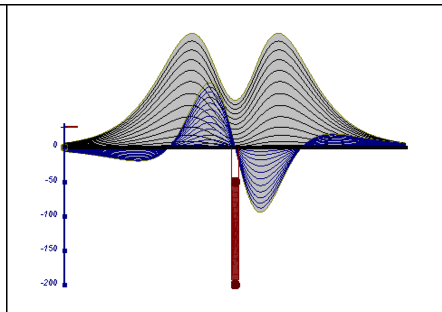
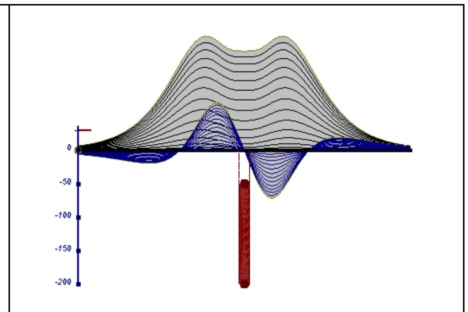
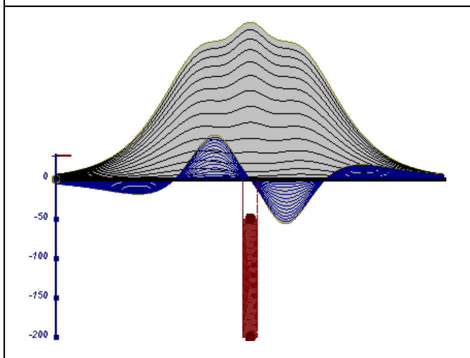
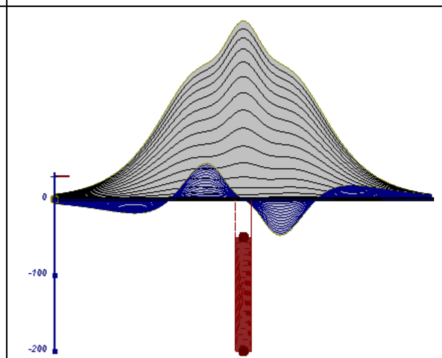
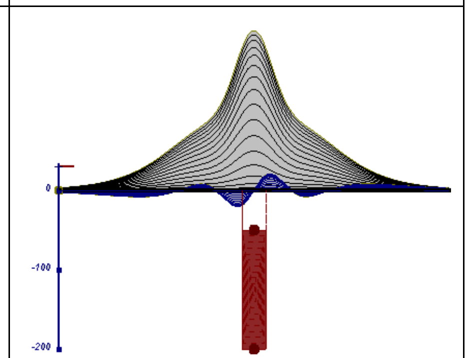
		
“thin”	10 m thickness	15 m thickness
		
18 m thickness	20 m thickness	30 m thickness

Fig.E-16 Conductive vertical plates, depth 50 m, strike length 200 m, depth extend 150 m.

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September 2010

APPENDIX F

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductance's beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

Theory

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage (**e_0**) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \; \alpha \; (1 / \tau) \; e^{-(t / \tau)}$$

Where,
τ = L/R is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and small τ, have high initial amplitude but decay rapidly with time[1] (Fig. F1).

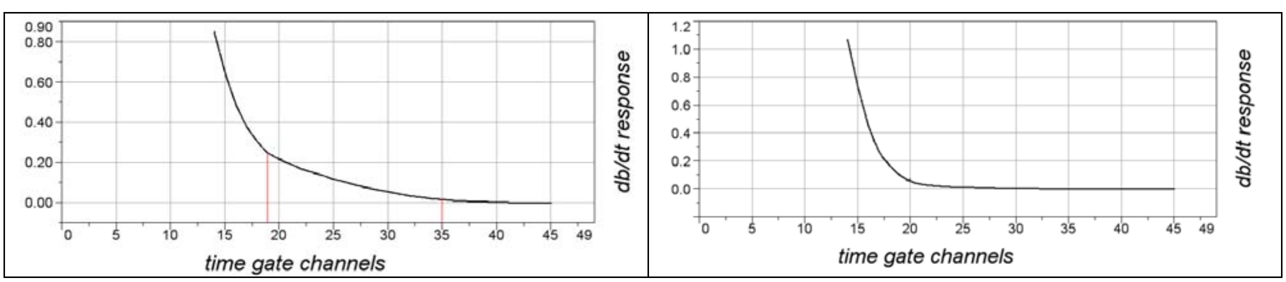

Figure F1 Left – presence of good conductor, right – poor conductor.

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the "conductance quality" of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

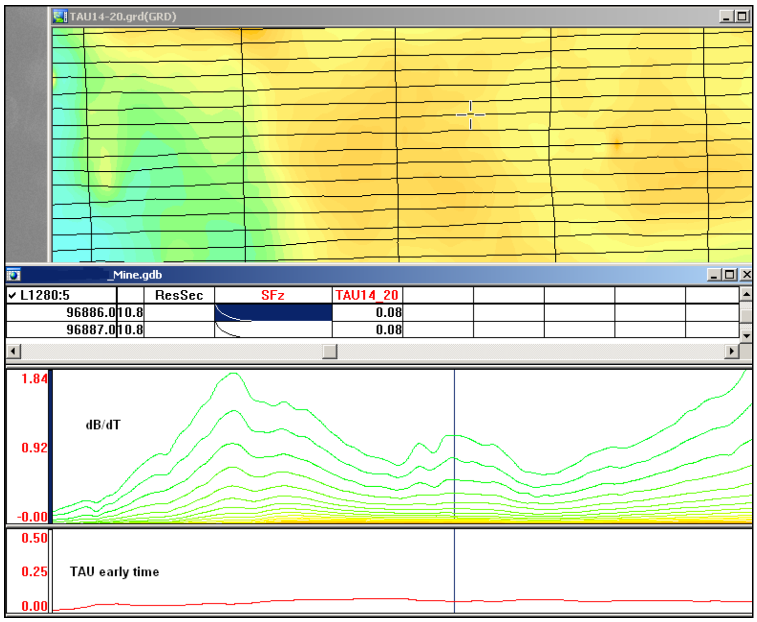

Figure F2 – Map of early time TAU. Area with overburden conductive layer and local sources.

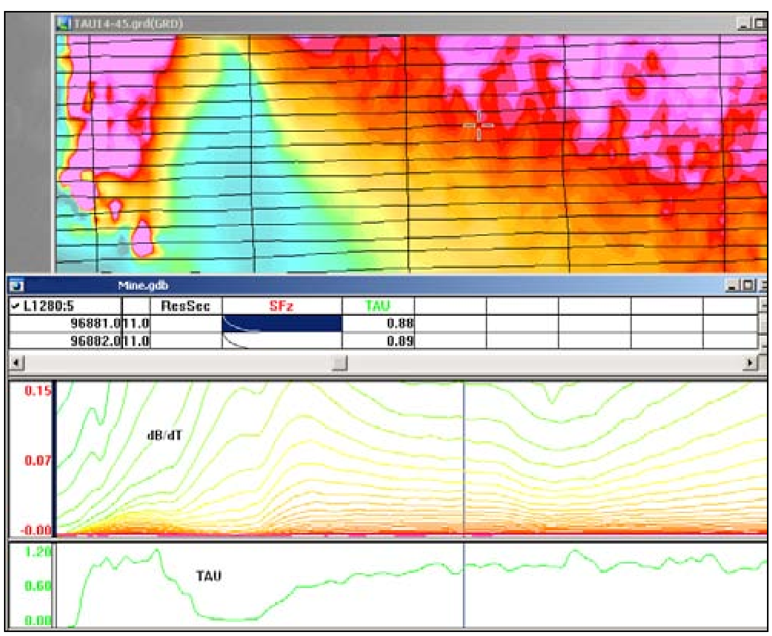

Figure F3 – Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

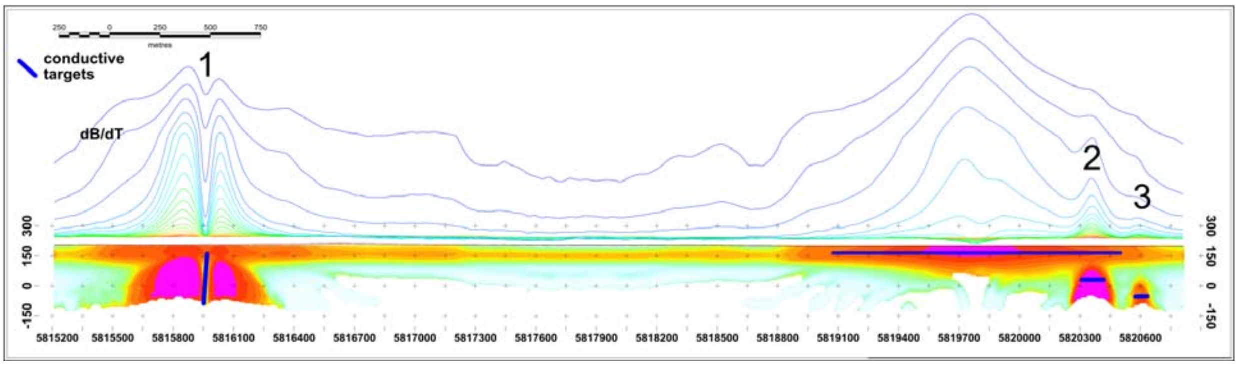

Figure F4 – dB/dt profile and RDI with different depths of targets.

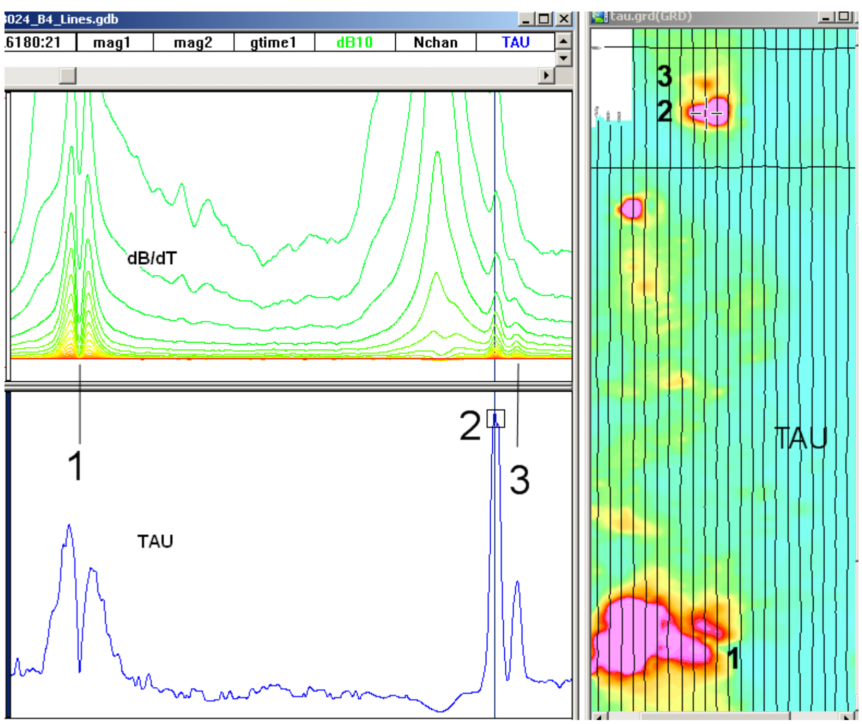

Figure F5 – Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the “sliding Tau” in-house program developed at Geotech[2]. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the “label” property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of “dummy” by default.

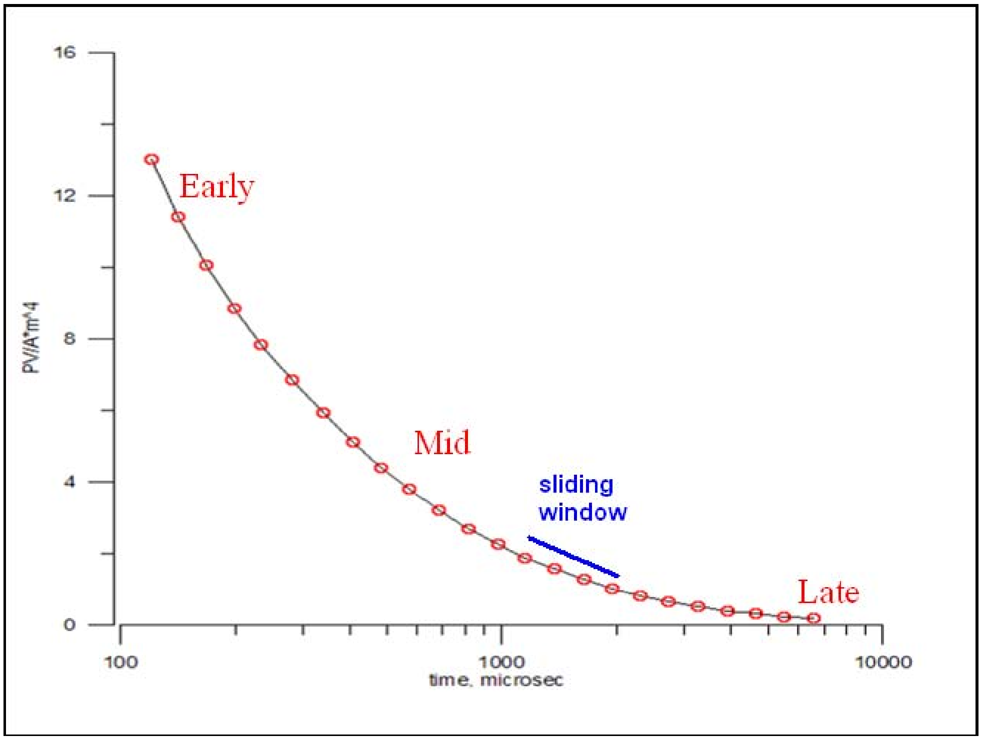

Figure F6 - Typical dB/dt decays of VTEM data

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September 2010

[2] by A.Prikhodko

APPENDIX G

TEM Resistivity Depth Imaging (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data.
The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system)

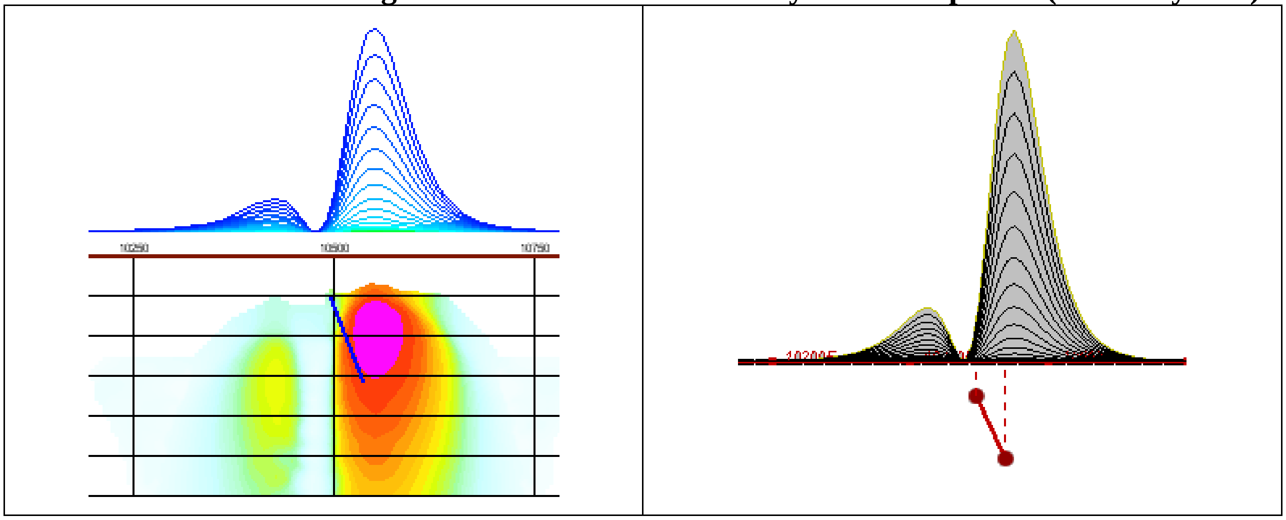


Fig. 1 Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

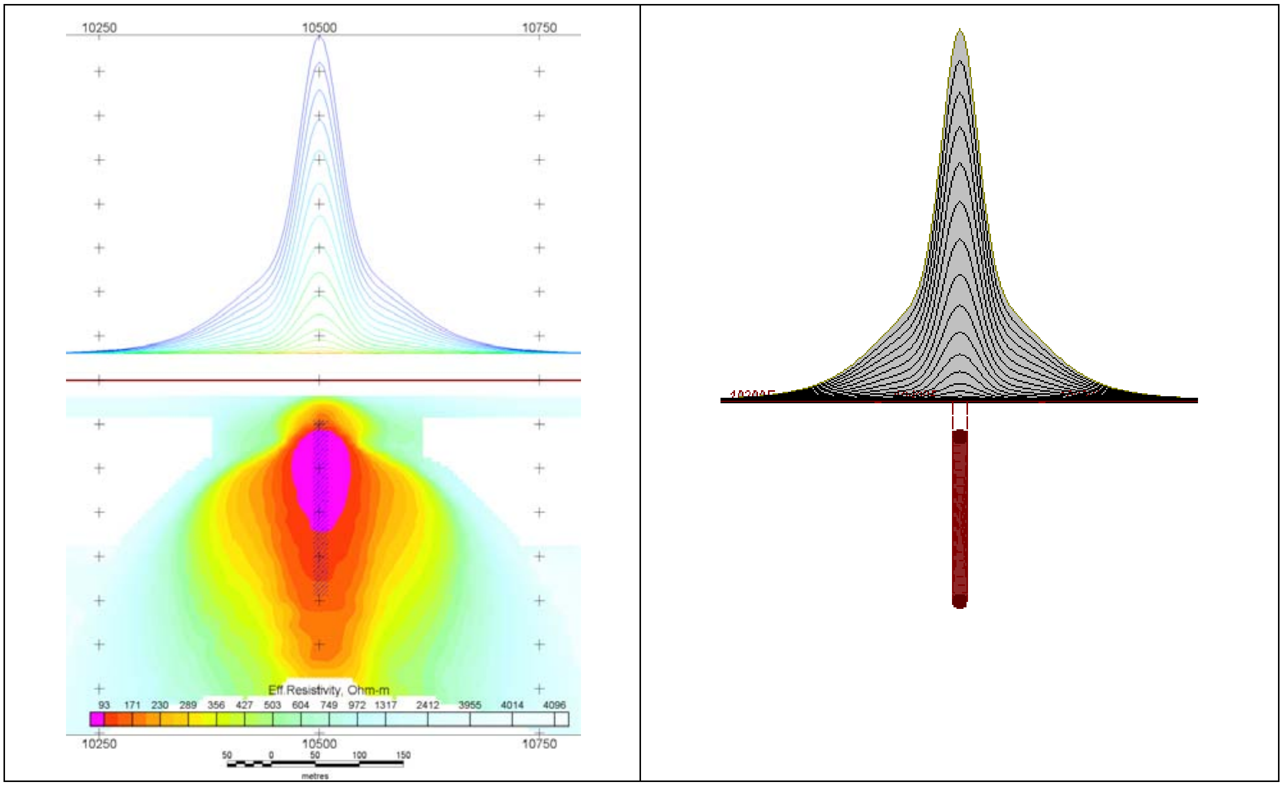


Fig. 2 Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

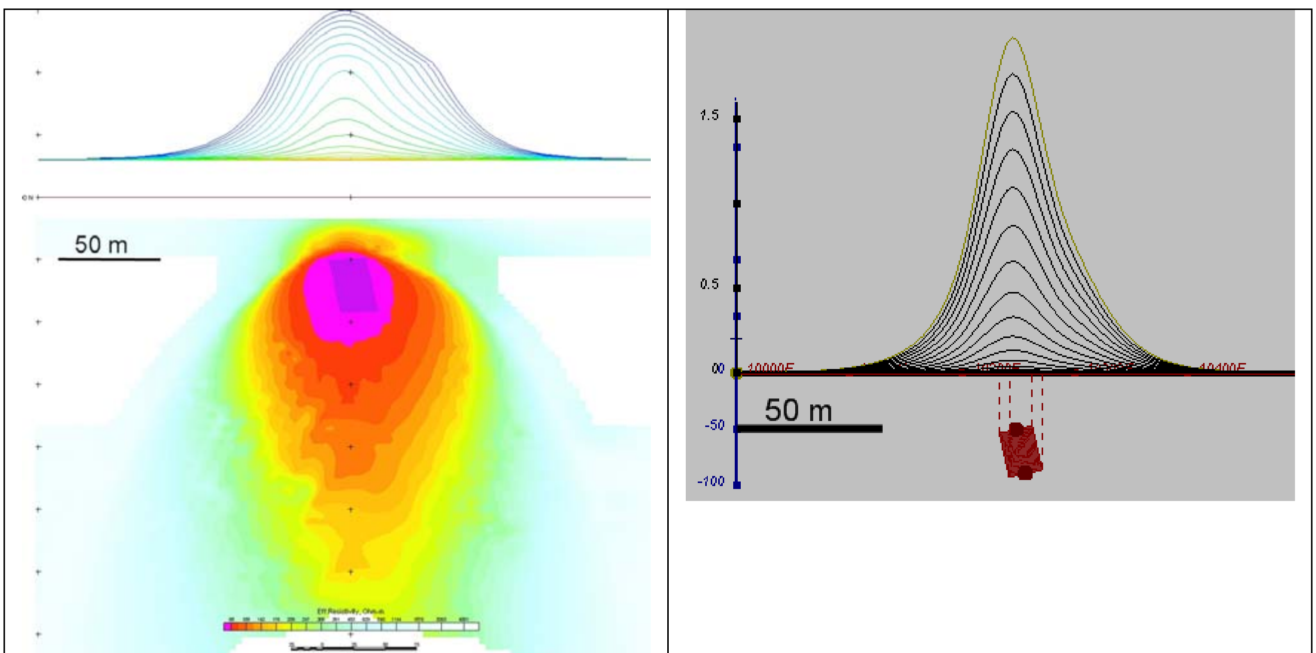


Fig.3 Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

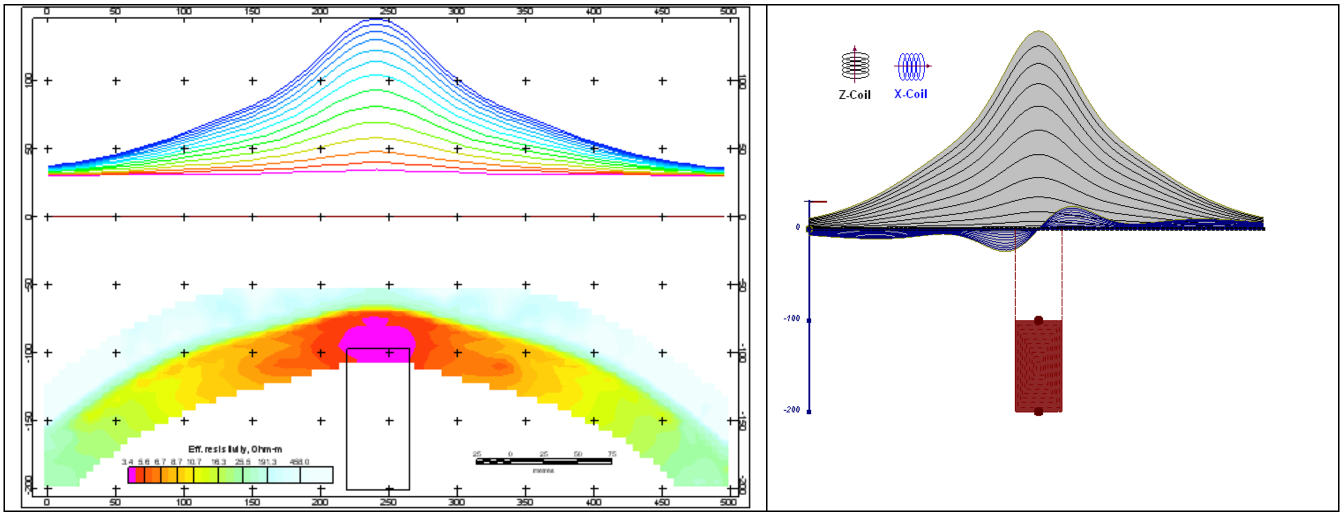


Fig. 4 Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

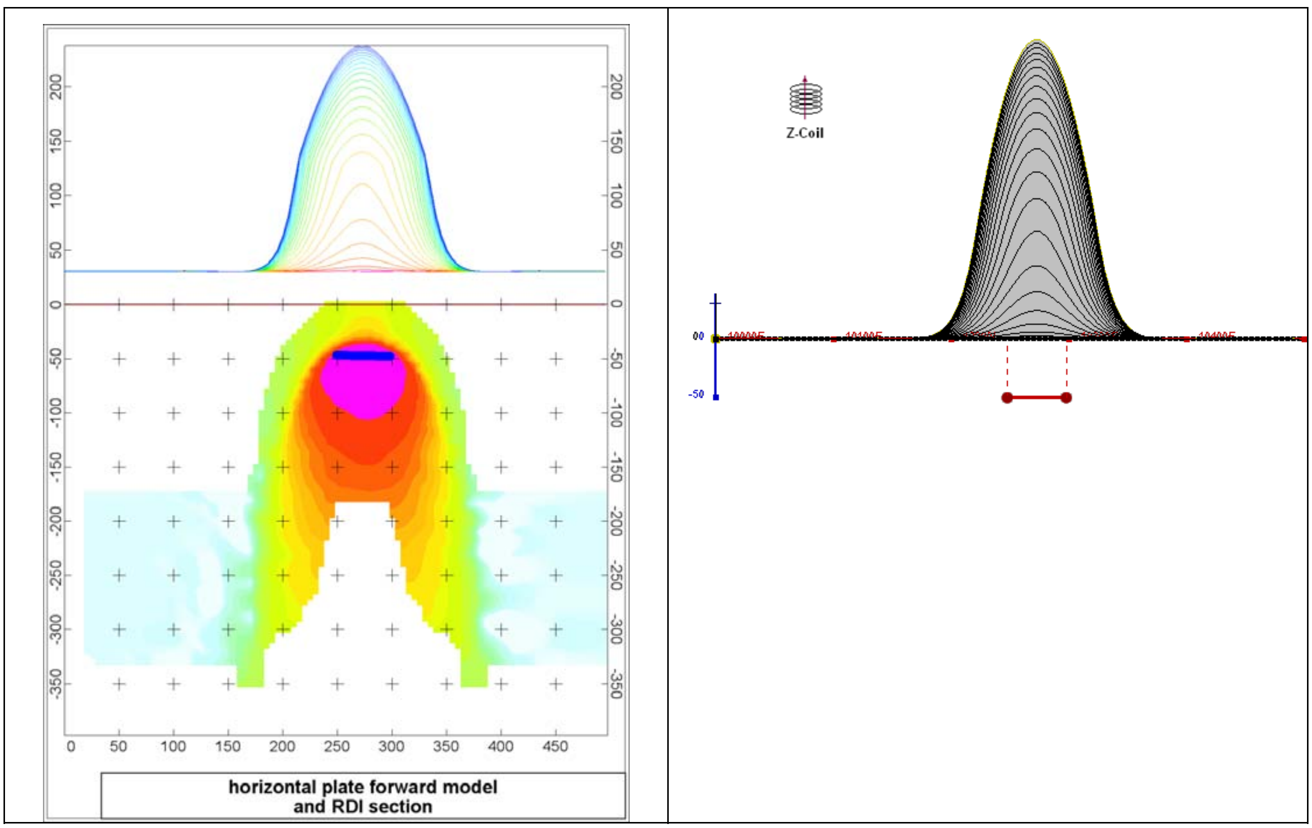


Fig. 5 Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

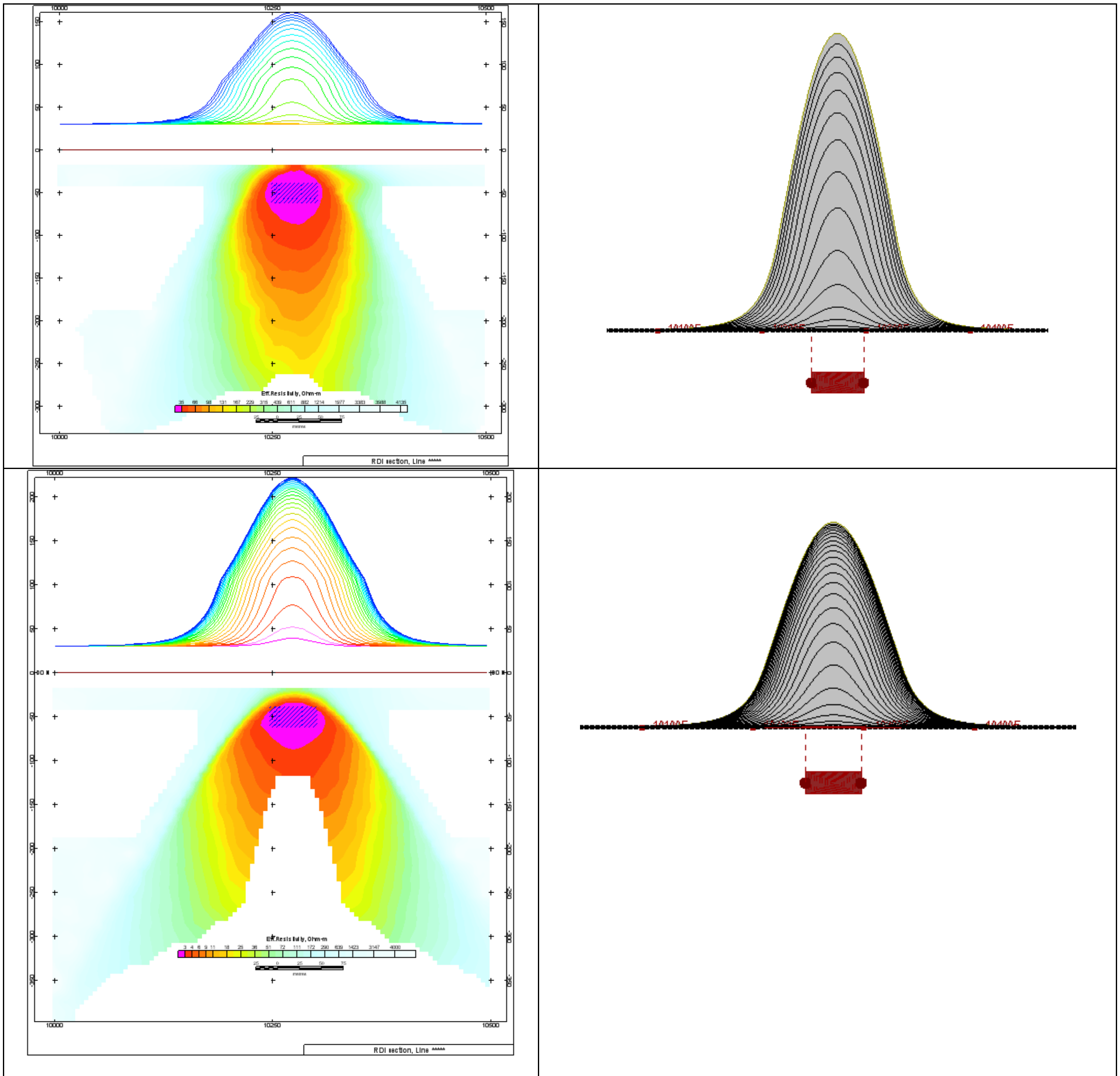


Fig.6 Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

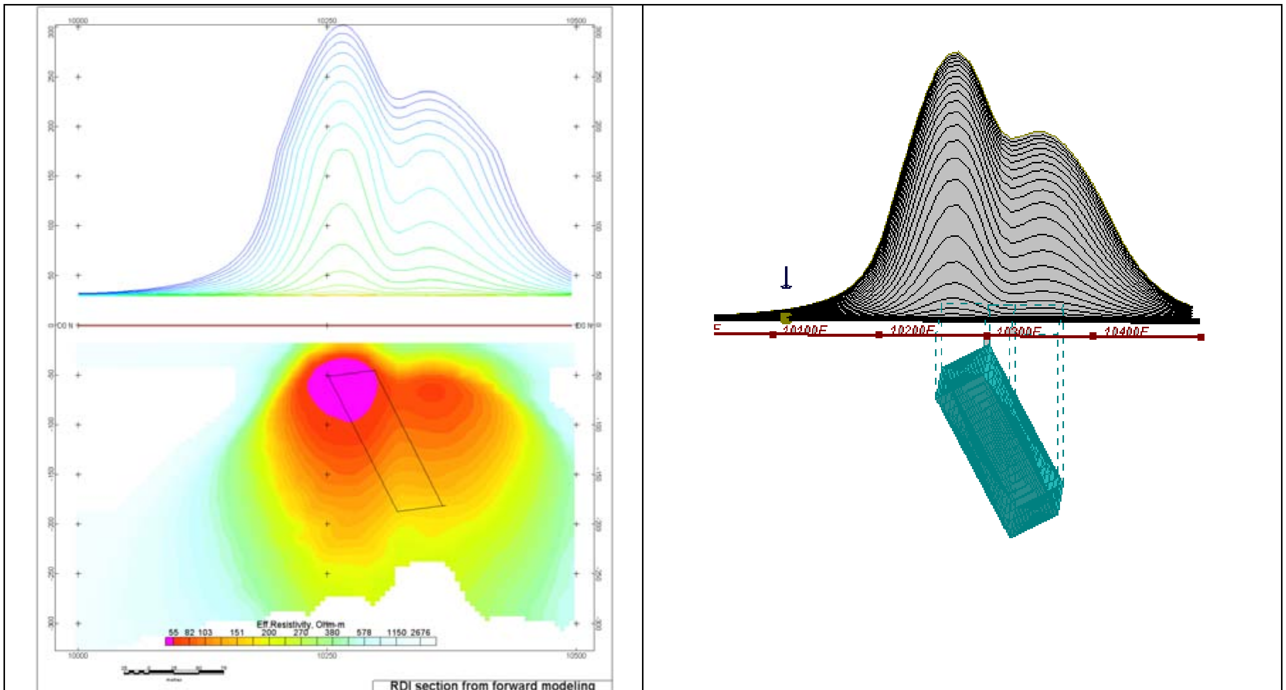


Fig.7 Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extend 150 m, depth to the target 50 m.

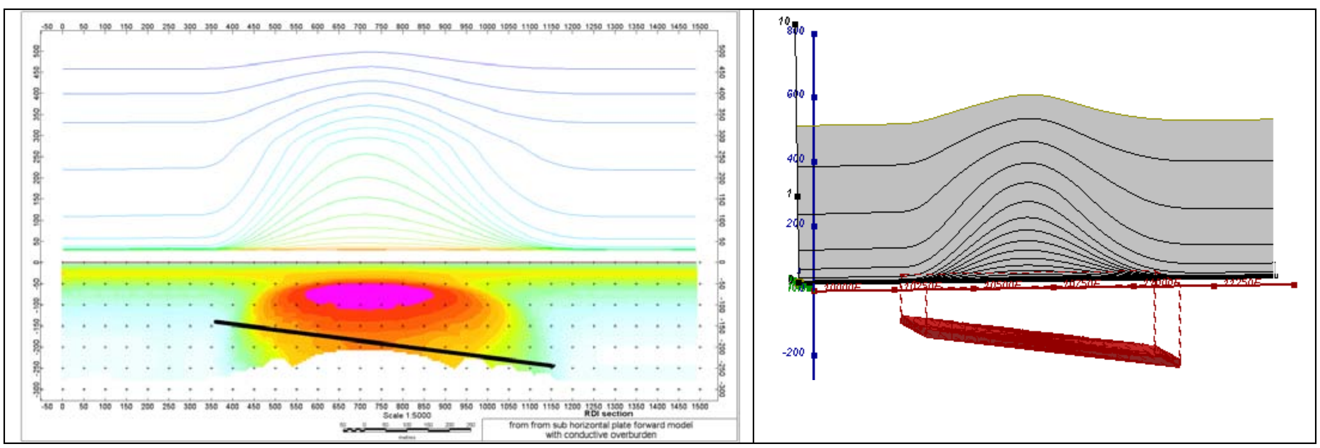


Fig.8 Maxwell plate model and RDI from the calculated response for the long, wide and deep sub horizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

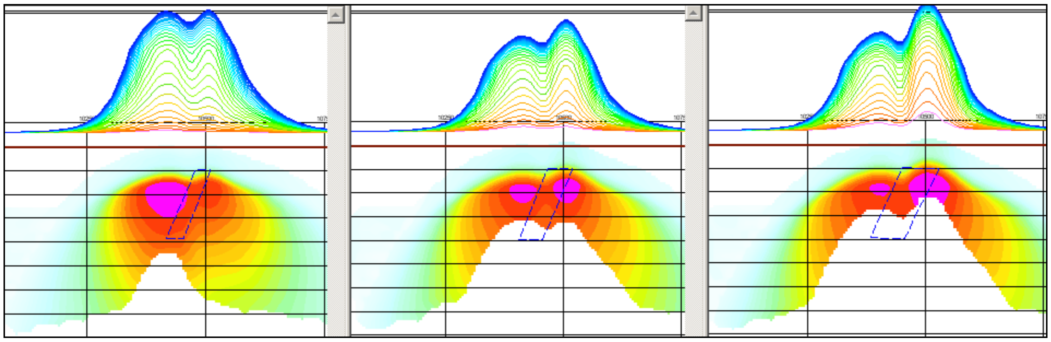


Fig.9 Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

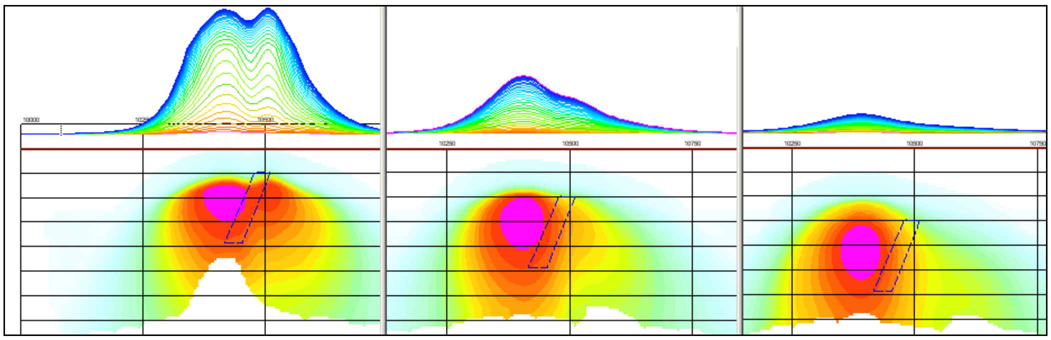


Fig.10 Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

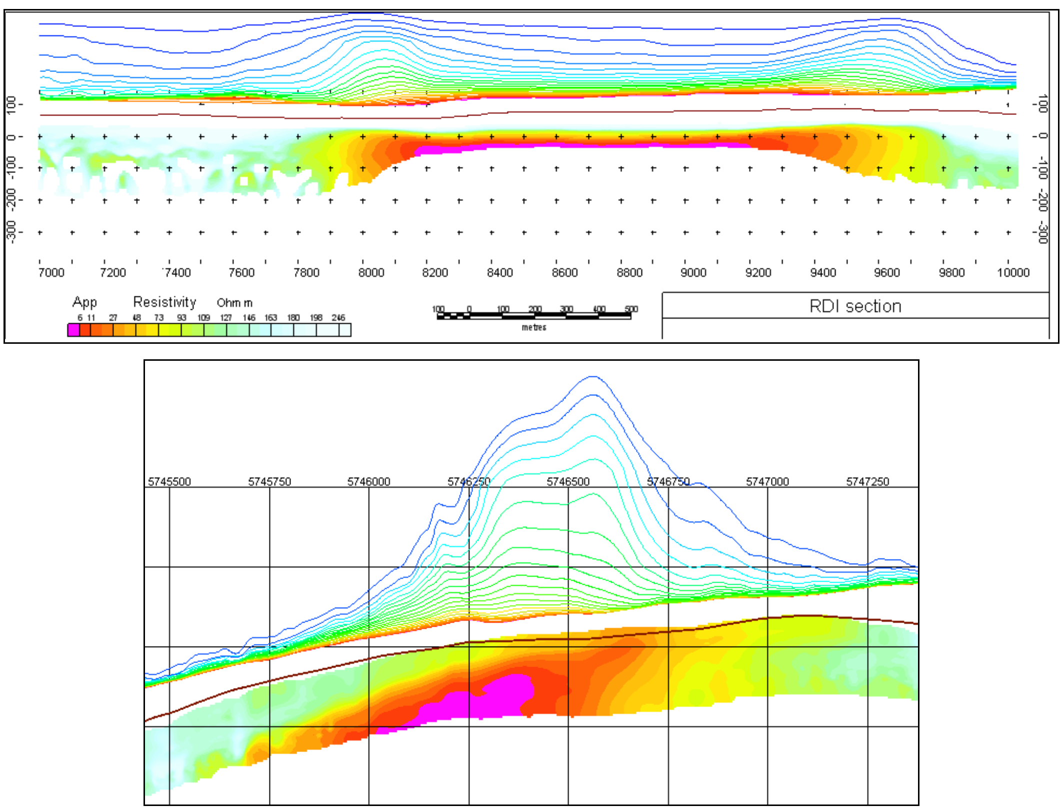
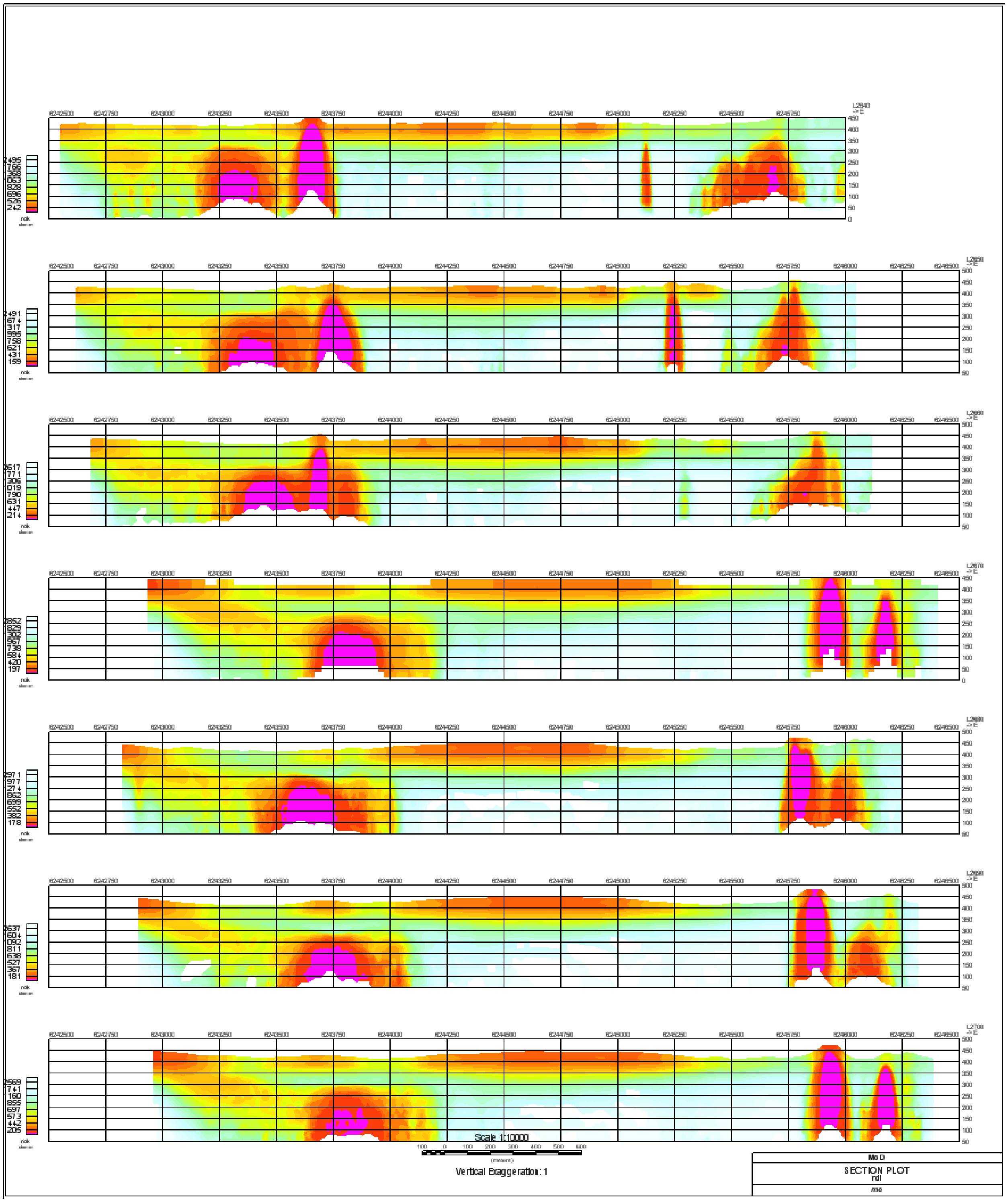


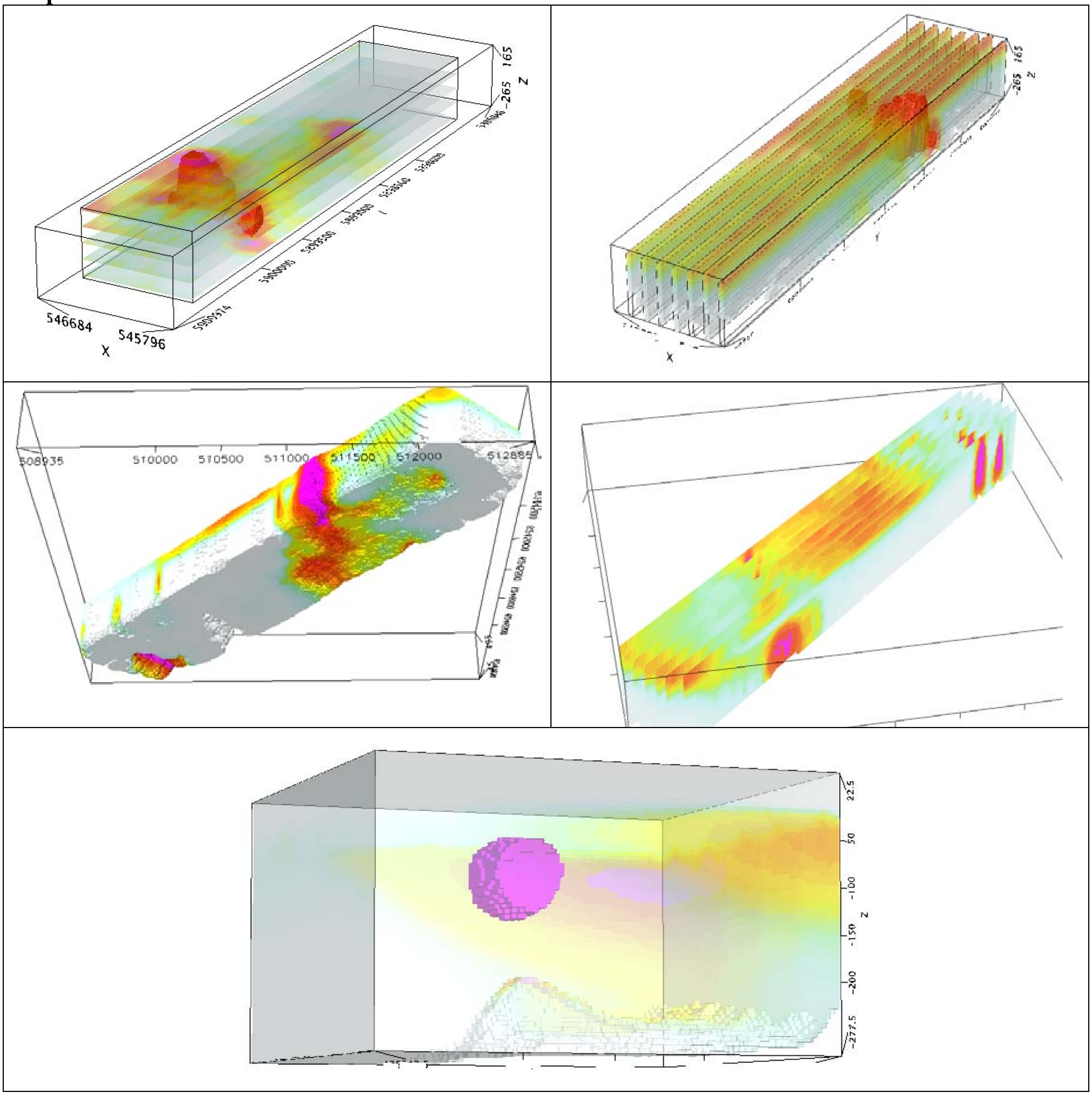
Fig.11 RDI section for the real horizontal and slightly dipping conductive layers

Forms of RDI presentation

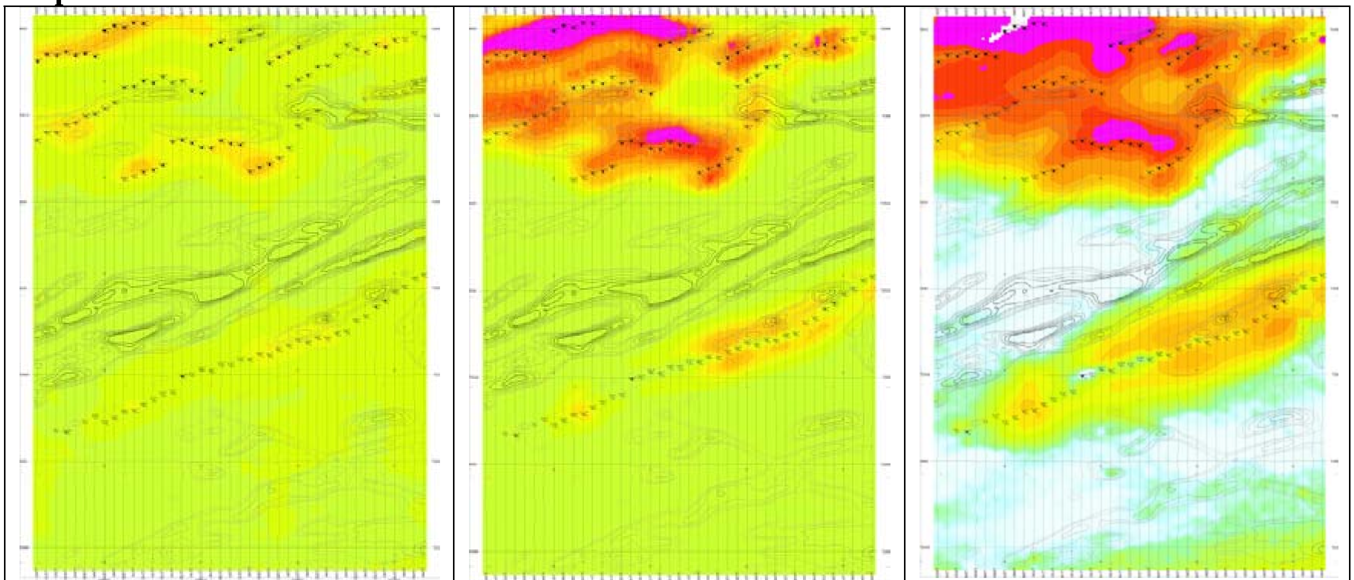
Presentation of series of lines



3d presentation of RDIs

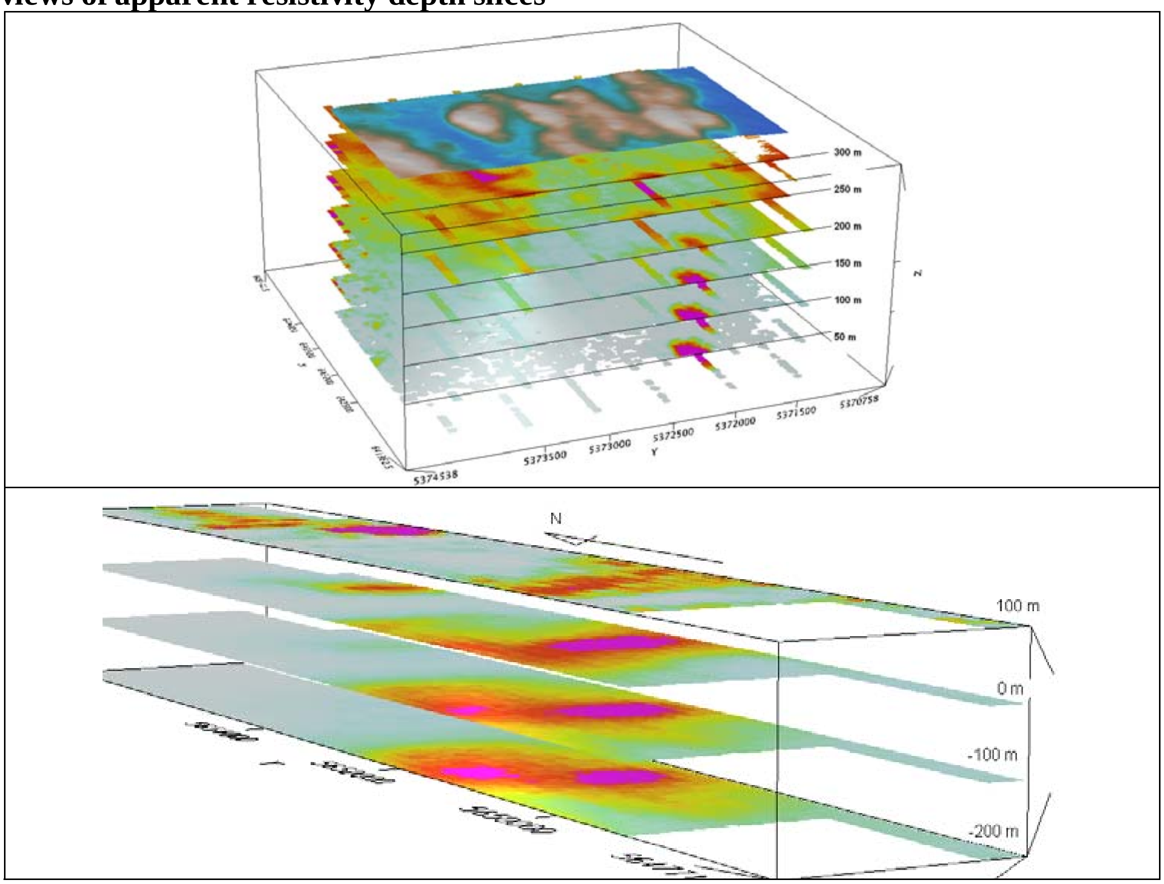


Apparent Resistivity Depth Slices plans



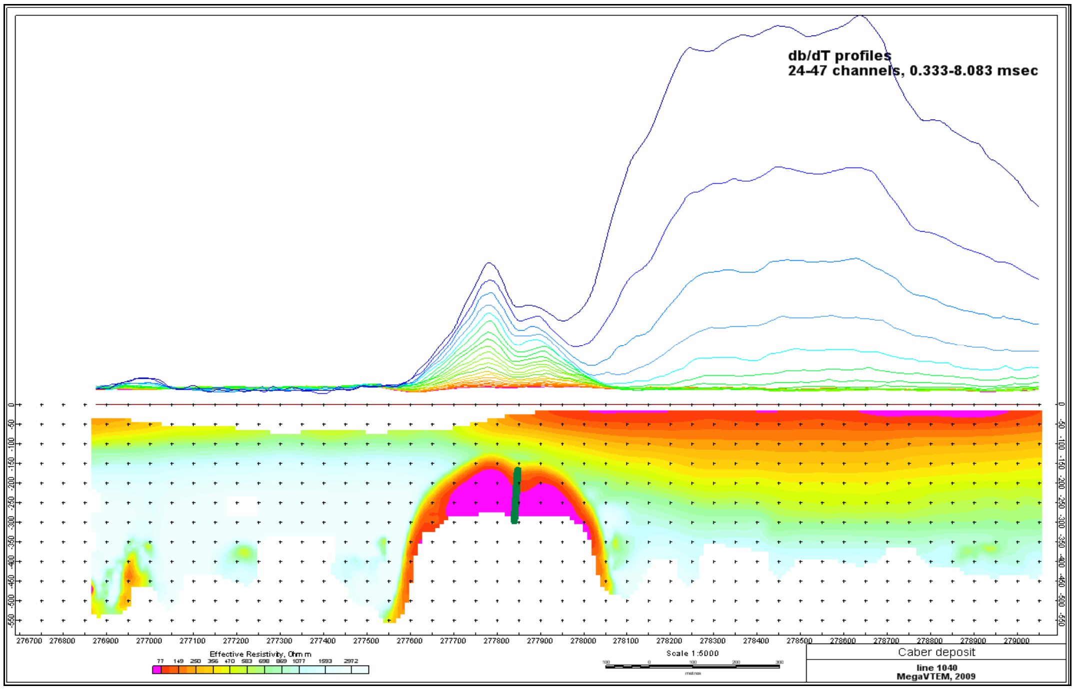
0 m (surface)	-100 m	-200 m

3d views of apparent resistivity depth slices

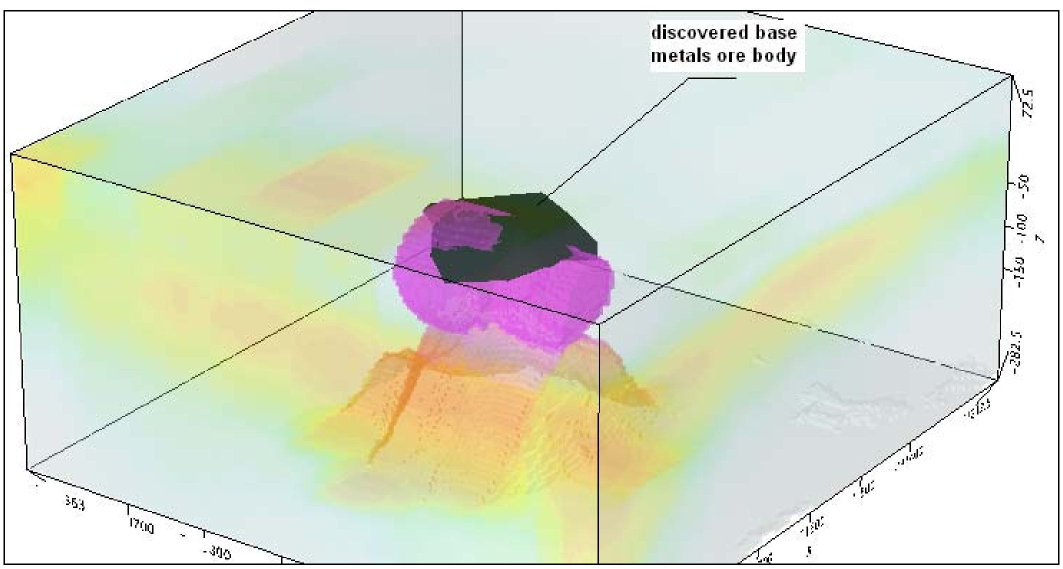


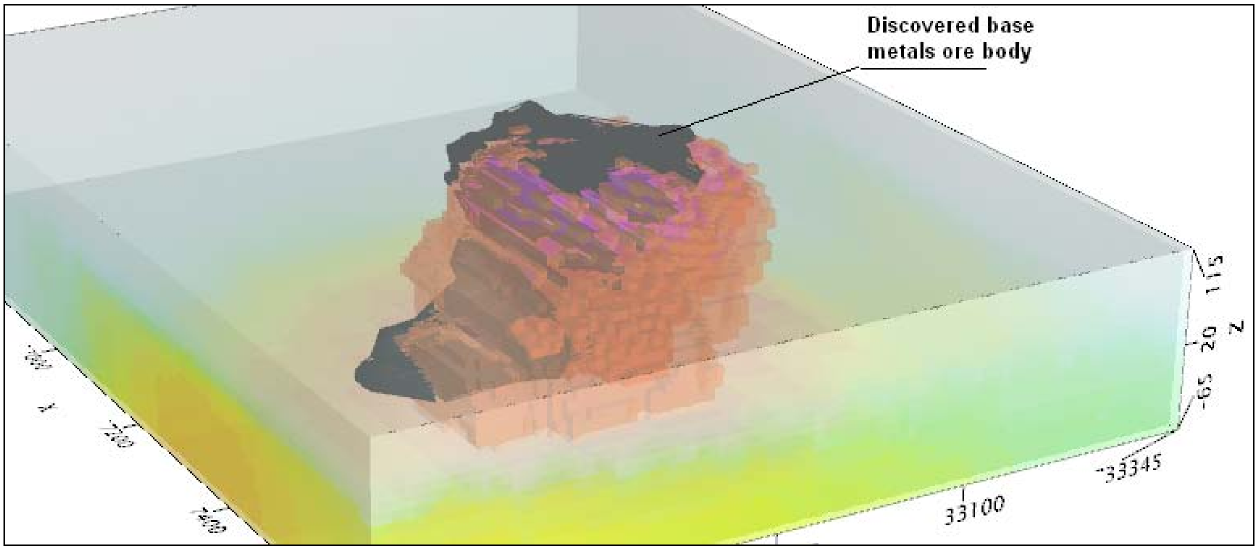
Real base metal targets in comparison with RDIs:

RDI section of the line over Caber deposit ("thin" sub vertical plate target and conductive overburden.



3d RDI voxels with base metals ore bodies (Middle East):





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April 2011

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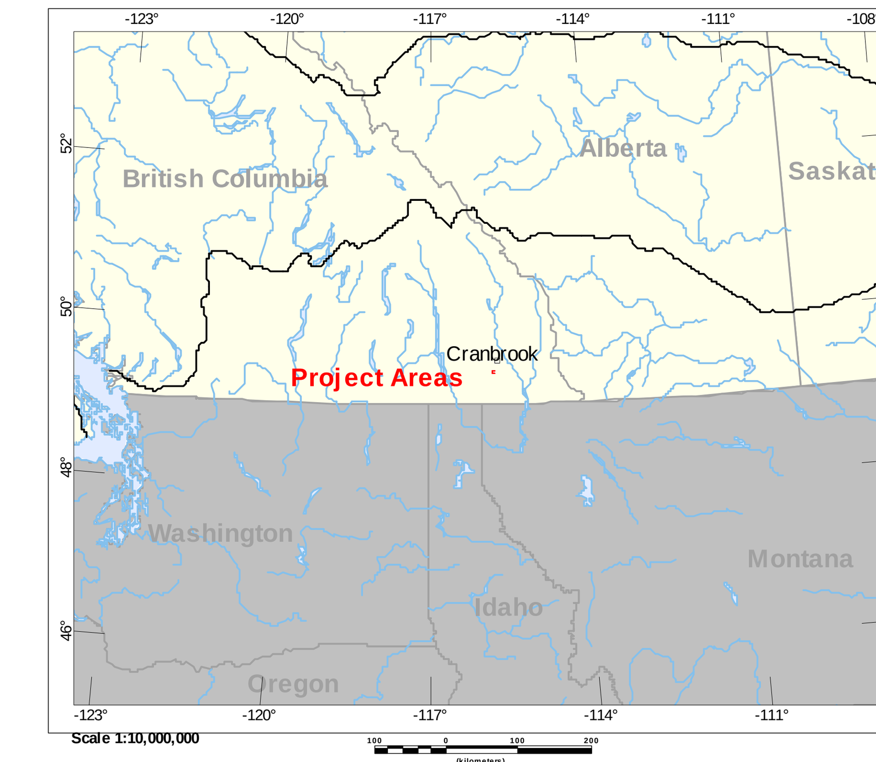
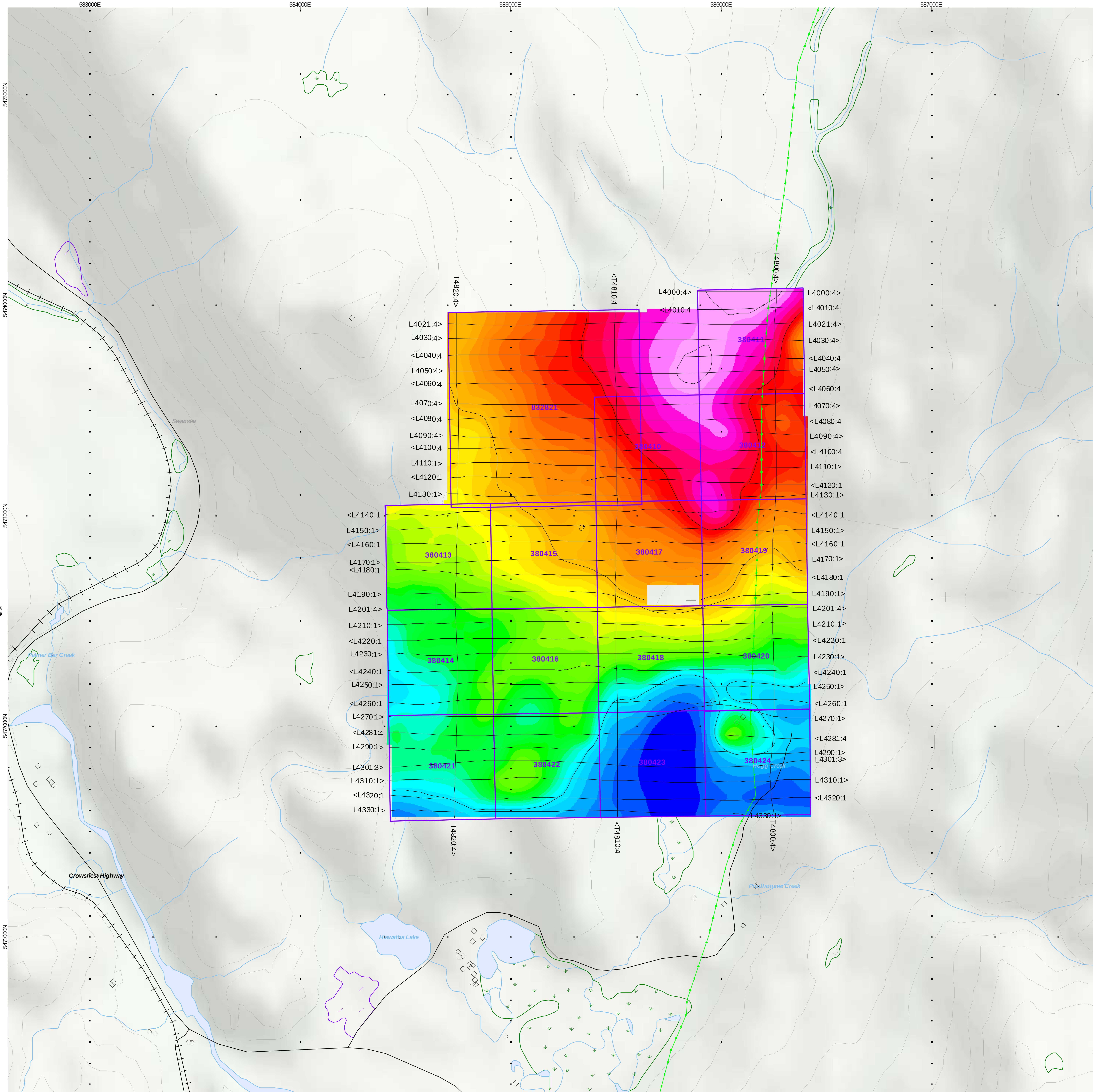


SURVEY SPECIFICATIONS:
- Survey Date: October 22nd - 31st, 2011
- Survey Base: Cranbrook, British Columbia
- Aircraft: Aerospatiale A-star 350 B3 C-GTEQ
- Nominal Survey Line Spacing: 75 Meters
- Nominal Survey Line Direction: N 90° E / N 270° E
- Nominal Tie Line Spacing: 750 Meters
- Nominal Tie Line Direction: N 0° E / N 180° E
- Nominal Terrain Clearance: 126 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
- X-Coil Loop: Diameter 0.32 Meters, Base Frequency 30 Hz
- Transmitter Loop: Diameter 26 Meters,Base Frequency 30 Hz
- Dipole Moment: 344,679.21 nIA
- Transmitter Wave Form: Trapezoid, Pulse Width 7.130 ms.
- Geometrics High Sensitivity Cesium Magnetometer
- Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION
- Datum: NAD83
- Projection: Universal Transverse Mercator
- Central Meridian: 117°W (Zone 11N)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m
- Major Axis: 6378137.000
- Eccentricity: 0.081819191
- NTS: 082G05



TMI (nT)

55839, 55838, 55836, 55834, 55832, 55830, 55829, 55828, 55827, 55826, 55825, 55824, 55823, 55822, 55821, 55820, 55820, 55819, 55818, 55817, 55816, 55815, 55814, 55813, 55813, 55813, 55812, 55812, 55812, 55811, 55811, 55810, 55809, 55808, 55807, 55806, 55805

TMI Contour Intervals:
- 10 nT
- 50 nT
- 250 nT

TOPOGRAPHIC LEGEND:
- Building
- Railway
- Transmission line
- Contours
- Roads
- Rivers / Lake Outlines
- Lakes / Ponds
- Wetlands
- Mining Claims
- Mining Areas

Scale 1:10000

100 0 100 200 300 400 500

(meters)

NAD83 / UTM zone 11N

The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data.
Background shading is derived from NASA SRTM (Shuttle Radar Topographic Mission) data.
Inset data derived from Geocommunities 1:250,000 Canadian National Topographic database.
Mining Claims are derived from the Province of British Columbia Data Distribution Service database.
(www.geogratis.ca)(www.geocomm.com)(https://apps.gov.bc.ca/pub/dwds/home.so)

PJX Resources Inc.
Vine Property
Cranbrook, British Columbia

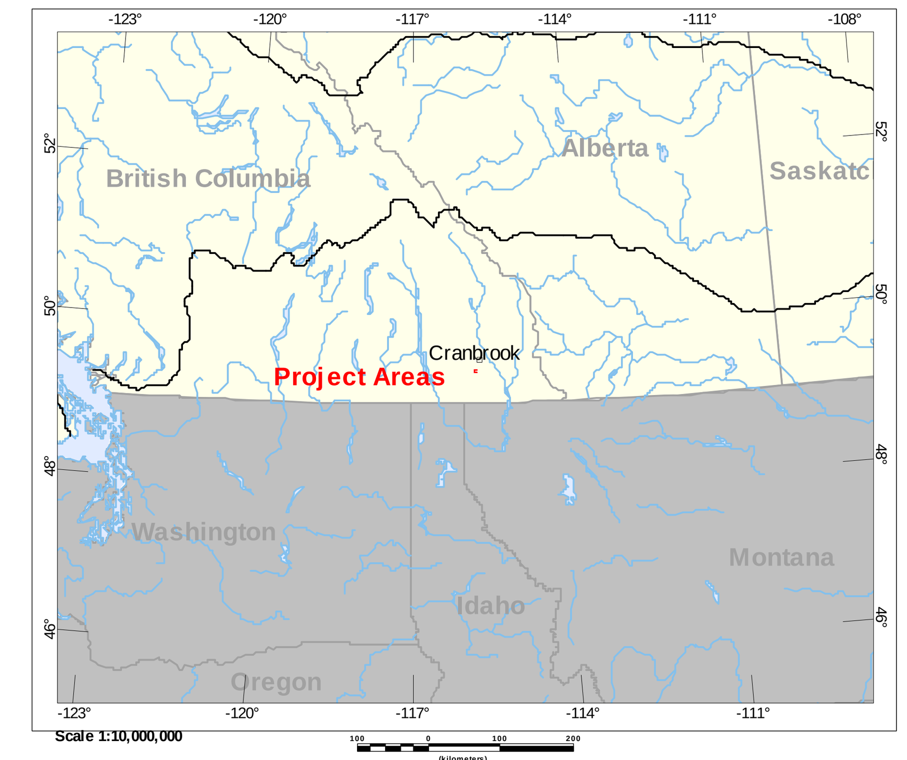
Geotech VTEM System
Total Magnetic Intensity (TMI)

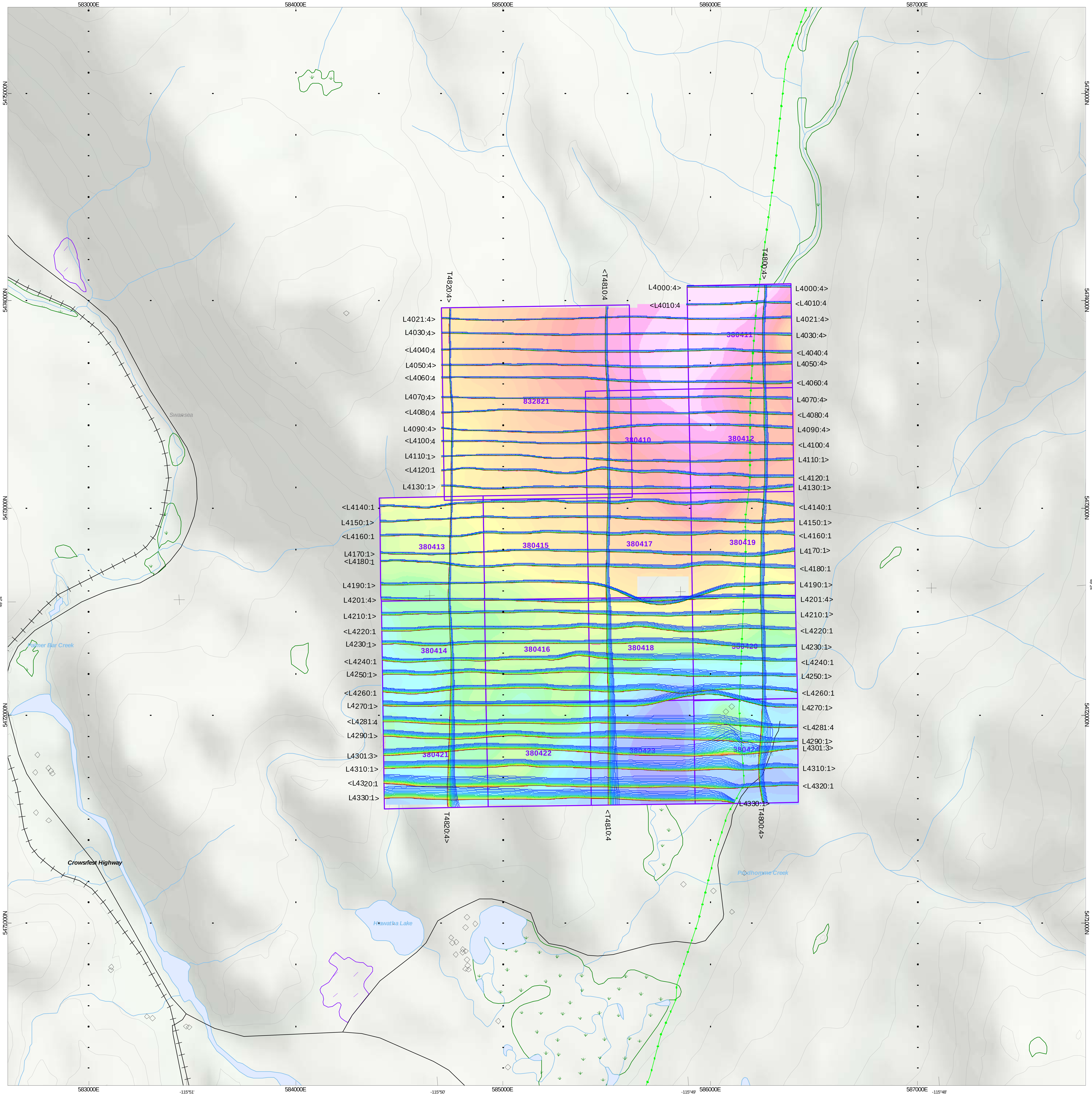
Flown and processed by Geotech Ltd.
245 Industrial Parkway North,
Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

December 2011

Geotech Project# 11324

GEOTECH LTD.





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NTS: 082G05

TMI (nT): 55839, 55838, 55836, 55834, 55832, 55830, 55829, 55828, 55827, 55826, 55825, 55824, 55823, 55822, 55821, 55820, 55820, 55819, 55818, 55817, 55816, 55815, 55814, 55814, 55813, 55813, 55813, 55812, 55812, 55812, 55811, 55811, 55810, 55809, 55808, 55807, 55806, 55805

Profiles scale 1 mm = 0.02 (pV*ms)/(A*m^4)

(Linear between +/- 0.5 (pV*ms)/(A*m^4) logarithmic above 0.5 (pV*ms)/(A*m^4)

0.220 ms (B-field)
0.253 ms (B-field)
0.290 ms (B-field)
0.333 ms (B-field)
0.383 ms (B-field)
0.440 ms (B-field)
0.505 ms (B-field)
0.580 ms (B-field)
0.667 ms (B-field)
0.766 ms (B-field)
0.880 ms (B-field)
1.010 ms (B-field)
1.161 ms (B-field)
1.333 ms (B-field)
1.531 ms (B-field)
1.760 ms (B-field)
2.021 ms (B-field)
2.323 ms (B-field)
2.667 ms (B-field)
3.063 ms (B-field)
3.521 ms (B-field)
4.042 ms (B-field)
4.641 ms (B-field)
5.333 ms (B-field)
6.125 ms (B-field)
7.036 ms (B-field)

TOPOGRAPHIC LEGEND:

Building
Railway
Transmission line
Contours
Roads
Rivers / Lake Outlines
Lakes / Ponds
Wetlands
Mining Claims
Mining Areas

Scale 1:10000

100 0 100 200 300 400 500
(meters)
NAD83 / UTM zone 11N

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PJX Resources Inc.
Vine Property
Cranbrook, British Columbia

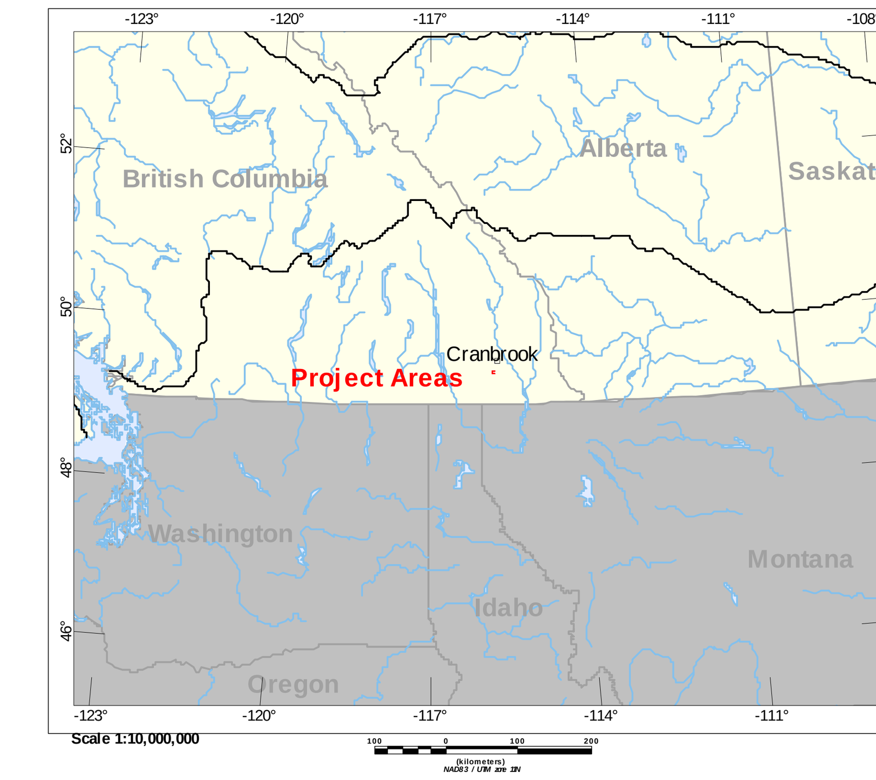
Geotech VTEM System
VTEM B-Field Z Component Profiles
Time Gate 0.220 - 7.036 ms
over Total Magnetic Intensity

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

December 2011

Geotech Project# 11324

GEOTECH LTD.



SURVEY SPECIFICATIONS:

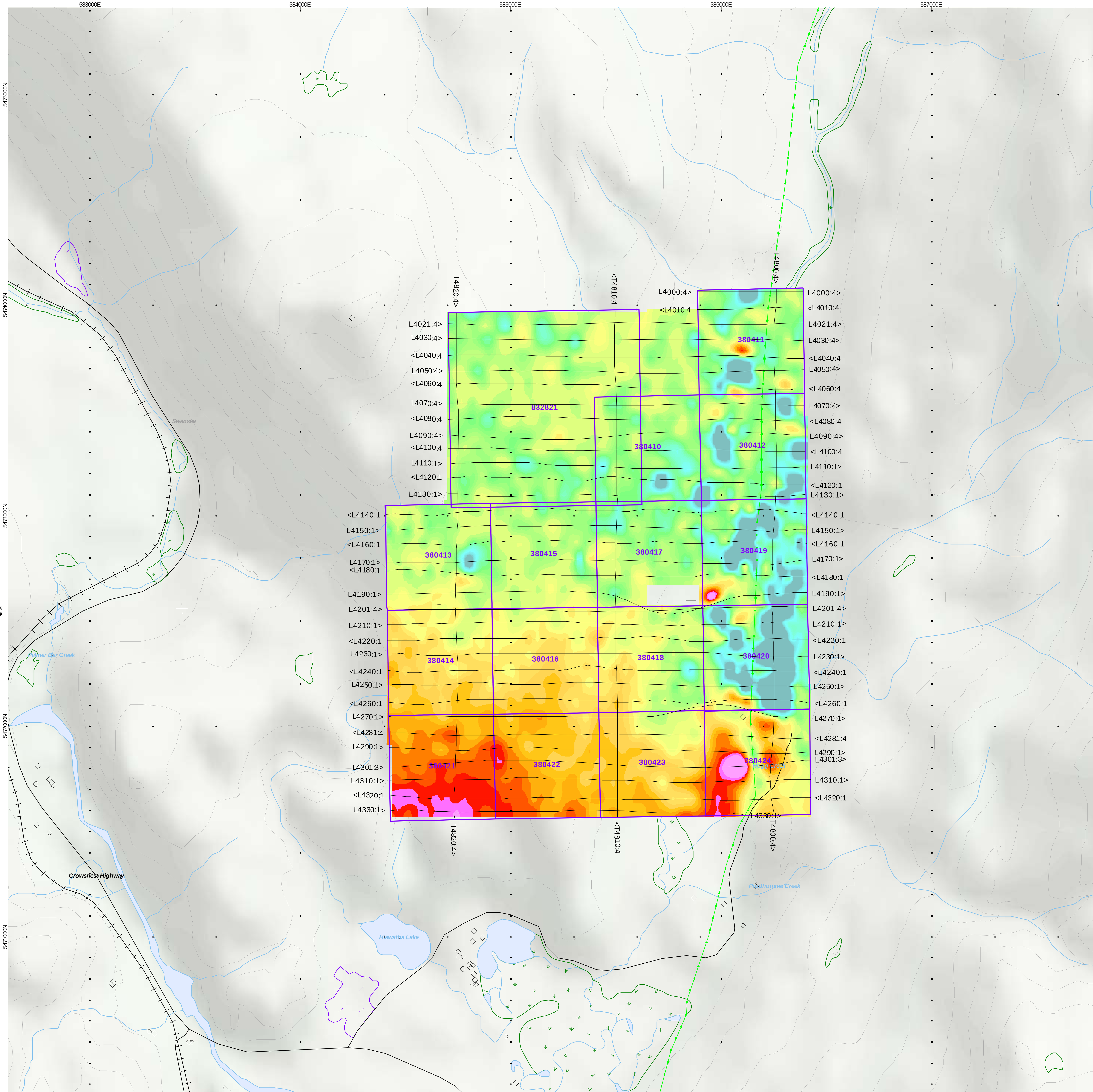
Survey Date: October 22nd - 31st, 2011
Survey Base: Cranbrook, British Columbia
Aircraft: Aerospatiale A-star 350 B3 C-GTEQ
Nominal Survey Line Spacing: 75 Meters
Nominal Survey Line Direction: N 90° E / N 270° E
Nominal Tie Line Spacing: 750 Meters
Nominal Tie Line Direction: N 0° E / N 180° E
Nominal Terrain Clearance: 126 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

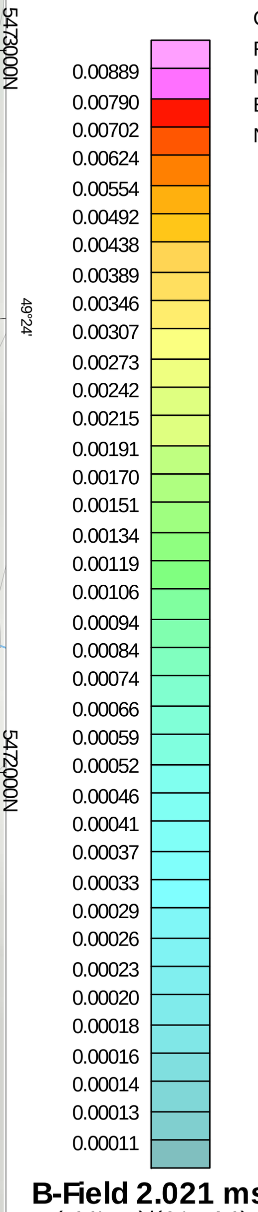
INSTRUMENTS

Geotech Time Domain Electromagnetic System (VTEM)
Concentric Rx/Tx Geometry
X-Coil Loop: Diameter 0.32 Meters, Base Frequency 30 Hz
Transmitter Loop: Diameter 26 Meters,Base Frequency 30 Hz
Dipole Moment: 344,679.21 nIA
Transmitter Wave Form: Trapezoid, Pulse Width 7.130 ms.
Geometrics High Sensitivity Cesium Magnetometer
Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

Datum: NAD83
Projection: Universal Transverse Mercator
Central Meridian: 117°W (Zone 11N)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m
Major Axis: 6378137.000
Eccentricity: 0.081819191
NTS: 082G05





B-Field 2.021 ms
(pV*ms)/(A*m^4)

TOPOGRAPHIC LEGEND:

- Building
- Railway
- Transmission line
- Contours
- Roads
- Rivers / Lake Outlines
- Lakes / Ponds
- Wetlands
- Mining Claims
- Mining Areas

N

Scale 1:10000

100 0 100 200 300 400 500
(meters)
NAD83 / UTM zone 11N

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PJX Resources Inc.
Vine Property
Cranbrook, British Columbia

Geotech VTEM System
VTEM B-Field Z Component
Channel 36
Time Gate 2.021 ms

Flown and processed by Geotech Ltd.
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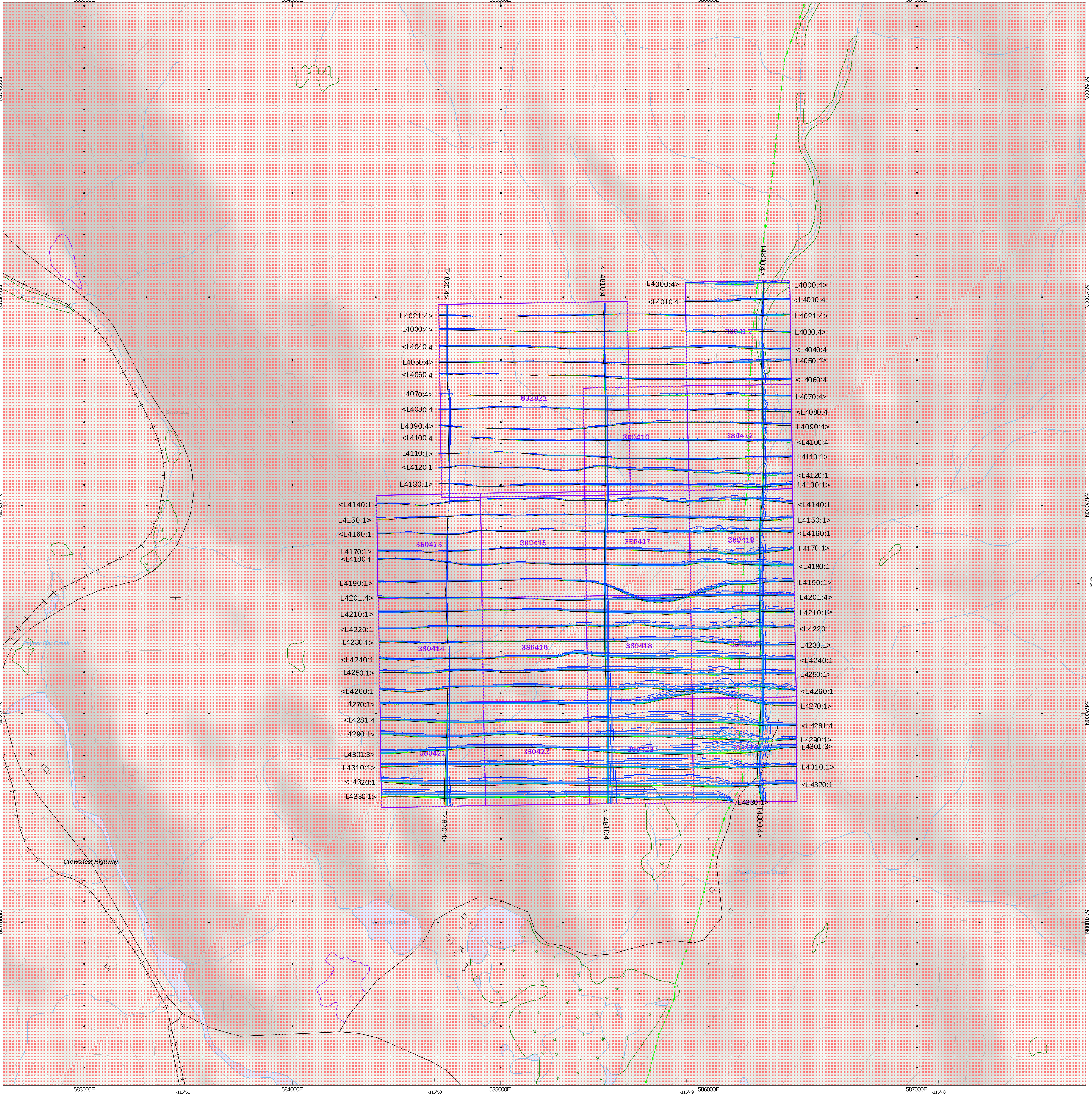

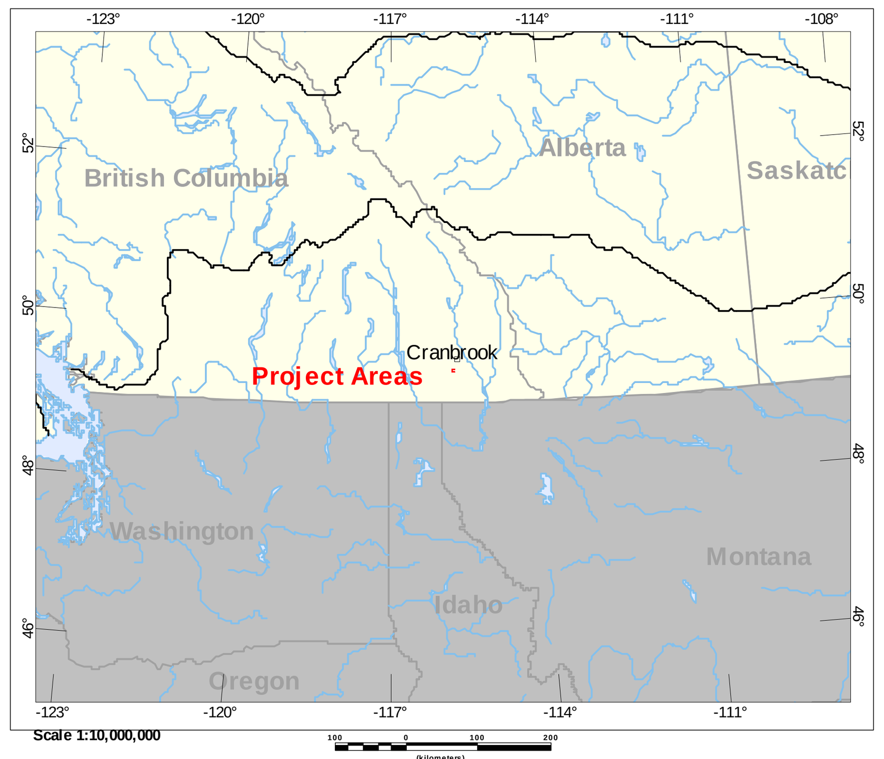

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NTS: 082G05

Profiles scale 1 mm = 0.1 (pV/A*m^4)

Linear between +/- 0.5 (pV/A*m^4)
logarithmic above 0.5 (pV/A*m^4)

0.220 ms
0.253 ms
0.290 ms
0.333 ms
0.383 ms
0.440 ms
0.505 ms
0.580 ms
0.667 ms
0.766 ms
0.880 ms
1.010 ms
1.161 ms
1.333 ms
1.531 ms
1.760 ms
2.021 ms
2.323 ms
2.667 ms
3.063 ms
3.521 ms
4.042 ms
4.641 ms
5.333 ms
6.125 ms
7.036 ms

Geology:
argillite/siltstone/quartzite/dolomite/limestone

TOPOGRAPHIC LEGEND:

Building
Railway
Transmission line
Contours
Roads
Rivers / Lake Outlines
Lakes / Ponds
Wetlands
Mining Claims
Mining Areas

Scale 1:10000

100 0 100 200 300 400 500

(meters)
NAD83 / UTM zone 11N

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PJX Resources Inc.
Vine Property
Cranbrook, British Columbia

Geotech VTEM System
VTEM dB/dt Z Component Profiles
Time Gate 0.220 - 7.036 ms
over Geology

Flown and processed by Geotech Ltd.
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Aurora, Ontario, Canada L4G 4C4
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December 2011

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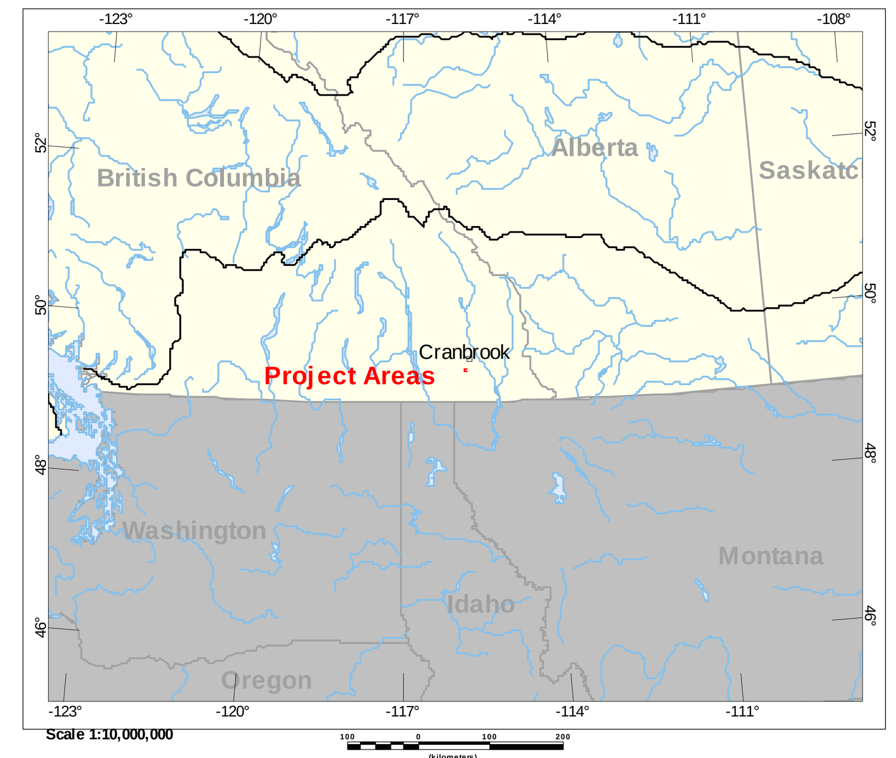

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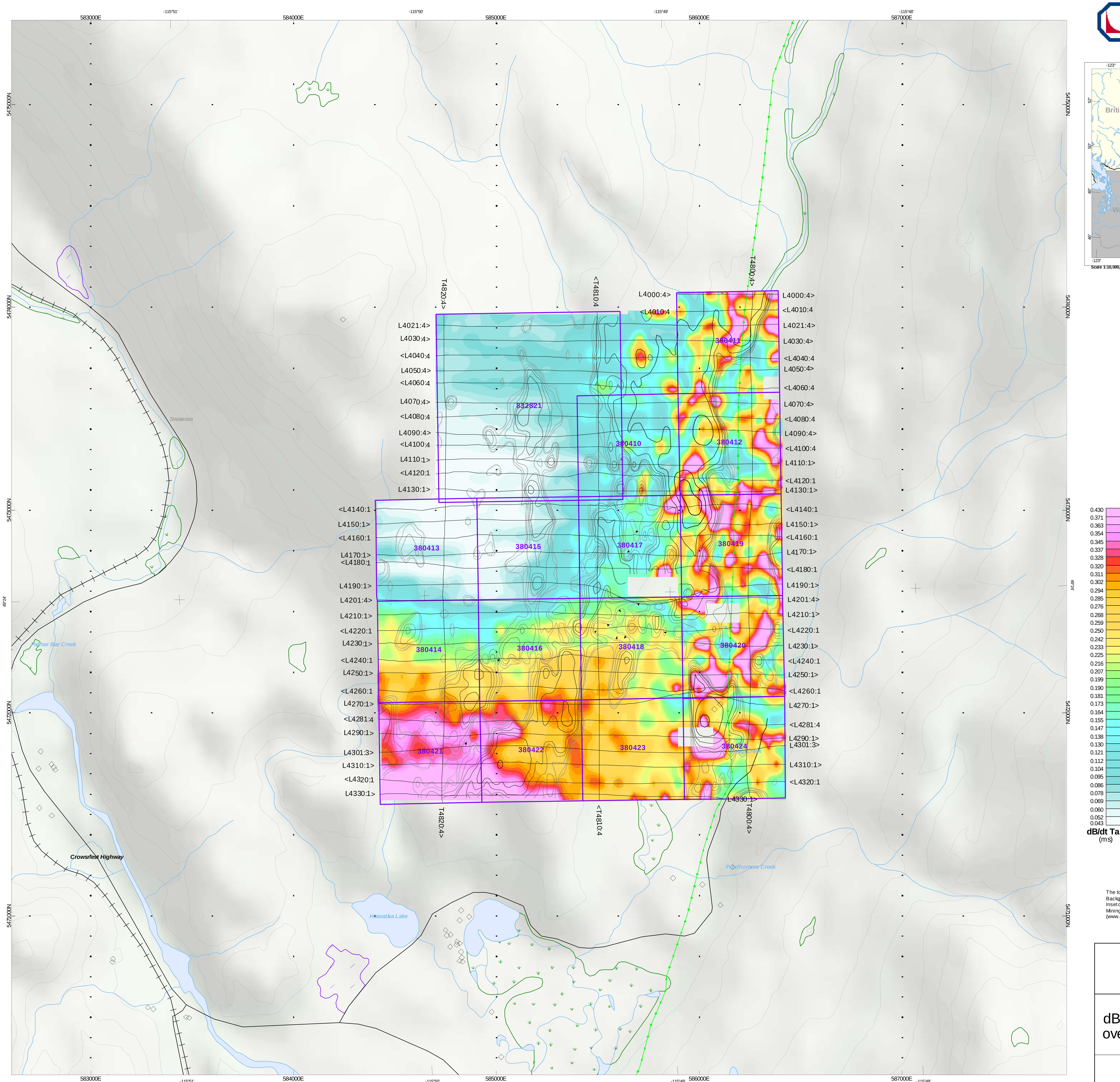

Scale 1:10000

(meters)

NAD83 / UTM zone 11N

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PJX Resources Inc.
Vine Property
Cranbrook, British Columbia

Geotech VTEM System
dB/dt Calculated Time Constant (Tau) over contours of anomaly areas of the **Calculated Vertical Derivative of TMI**

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

December 2011

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