ASSESSMENT REPORT ON THE 2011 GEOTECH LTD. HELICOPTER-BOURNE VTEM & AREOMAGNETOMETER GEOPHYSICAL SURVEY OVER THE SNOW CLAIMS RED MOUNTAIN AREA, YUKON

Mayo Mining Districts, Yukon

Location: 1. 380 km NE of Whitehorse, Yukon
2. Claims/Grants

Claim Name	Claim Number	Grant Number
Snow	1 - 8	YD34991-98

3. NTS Map Area 115 P/15
4. Latitude: 63° 57'N
Longitude: 136° 45'W

For: 0748962 B.C. Ltd.
Vancouver, BC
Canada

By: Jim Michaelis, H.BSc.

Work Performed Dates: September 18th to 28th, 2011

Report Date: June 2012

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1. SUMMARY

The Snow claims are just to the south of the Red Mountain intrusion within the McQuesten map area (115 P 15), Yukon. The claims are accessible by helicopter, from Mayo (55 km SE) or Dawson City (135 Km W). A four wheel drive road leads from the Clear Creek road to placer gold workings on Hobo Creek, which flows northwest from the property to the South Klondike River. The property is a target for Tintina Gold Belt – Tombstone Suite (91 ± 1 Ma) intrusion related gold mineralization. These occurrences and deposits can range between low-grade disseminated gold, to high-grade vein and vein-breccia gold mineralization. The claims cover the main Red Mountain Tombstone Suite intrusion of biotite granite to quartz monzonite composition. The intrusion cuts lower mid-Proterozoic Gull Lake Formation quartzite, phyllites and shales with minor limestone proximal to the Snow Claims.

AM Gold Inc. contracted Geotech Ltd. to fly a helicopter-borne VTEM & aeromagnetic geophysical survey over their entire property in the fall of 2011. A total of 679 line-kilometres were collected between September 18th to 28th, 2011. This survey also covered the eight Snow claims. A total of 16 line-kilometres were flown over the eight Snow claims.

2. INTRODUCTION

Intense exploration in the Yukon has been spurred by activity of Underworld Resources, recently acquired by Kinross, south of Dawson City, the Eagle Gold Project, owned by Victoria Gold, 29km east of Red Mountain, and the Atac discovery northeast of Keno Hill. All three of these properties are located within this major structural belt.

Significant gold mineralization related to a porphyry intrusive body to the north of the Snow claims has been outlined by AM Gold Inc. The gold mineralization is associated with broad zones of disseminated sulphide with higher grade mineralization being associated with areas with steeply dipping sheeted sulphide-bearing quartz vein zones as well as multi-generational quartz veining, sometimes stockworked. The gold mineralization is hosted in quartz monzonite porphyry intrusive rock and also in the encasing meta-sedimentary sandstone and quartzite rocks as well.

The eight Snow claims were staked by David B. Stevenson June 3rd, 2010. They were then transferred to 0748962 B.C. Ltd. in April 2012.

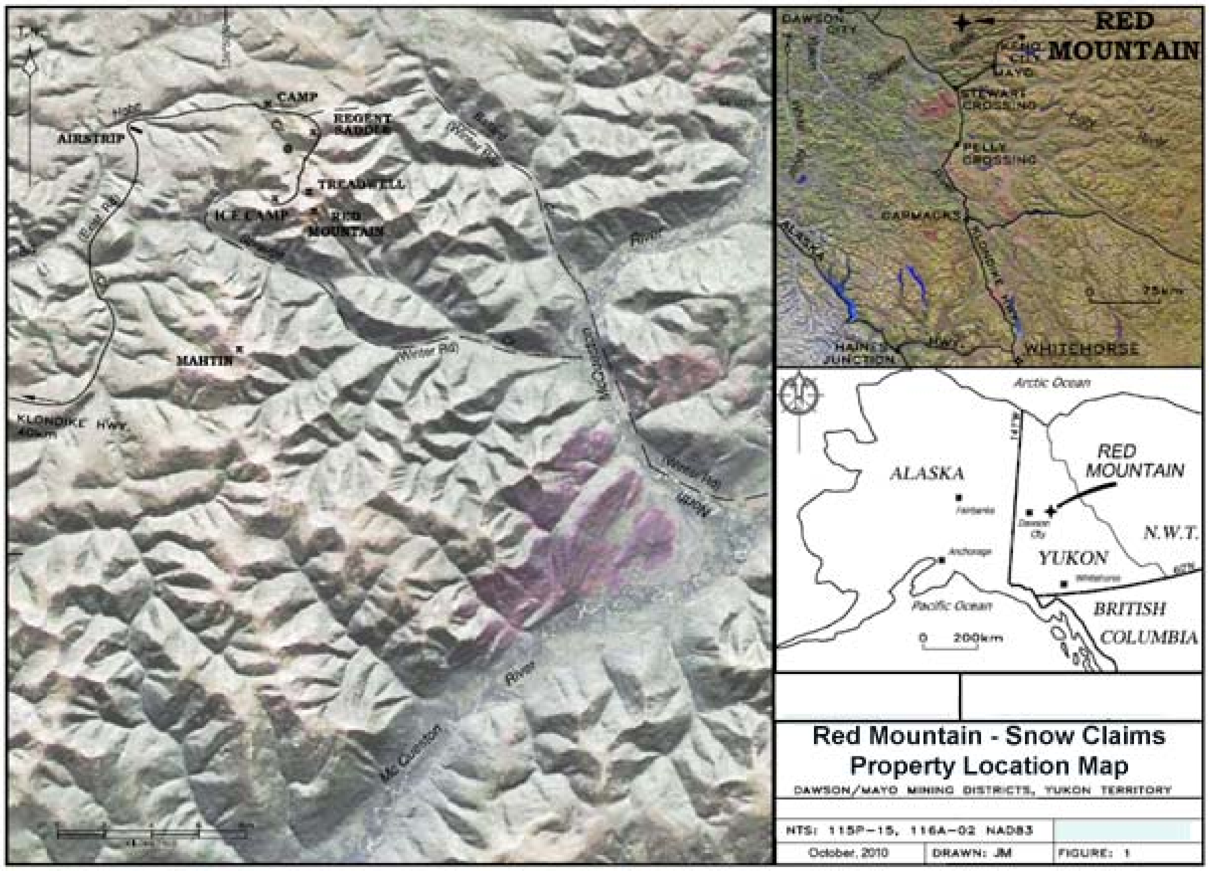
AM Gold Inc. contracted Geotech Ltd. to fly a helicopter-borne VTEM & aeromagnetic geophysical survey over their entire property in the fall of 2011. A total of 679 line-kilometres were collected between September 18th to 28th, 2011. This survey also covered the eight Snow claims. Consideration has been made by 0748962 B.C. Ltd. to AM Gold Inc. to allow of the portion of the geophysical survey over the eight Snow claims to be applied to the required assessment work to secure these claims. The flight line direction was north-south flown at 100m line intervals over these claims. There were 20 flight lines, each at 0.8 km in length yielding a total of 16 line-kilometres over the eight Snow claims.

Further work of a geochemical nature is recommended on the Snow claims.

3. PROPERTY DESCRIPTION CLAIMS AND LOCATION

The claims are located 135 km east of Dawson City, Yukon (Figure 1). The claims are centred at approximately 63° 57" N latitude and 136° 45' W longitude within NTS map area 115 P/15.

Figure 1: Red Mountain Snow Claim Property Location Map

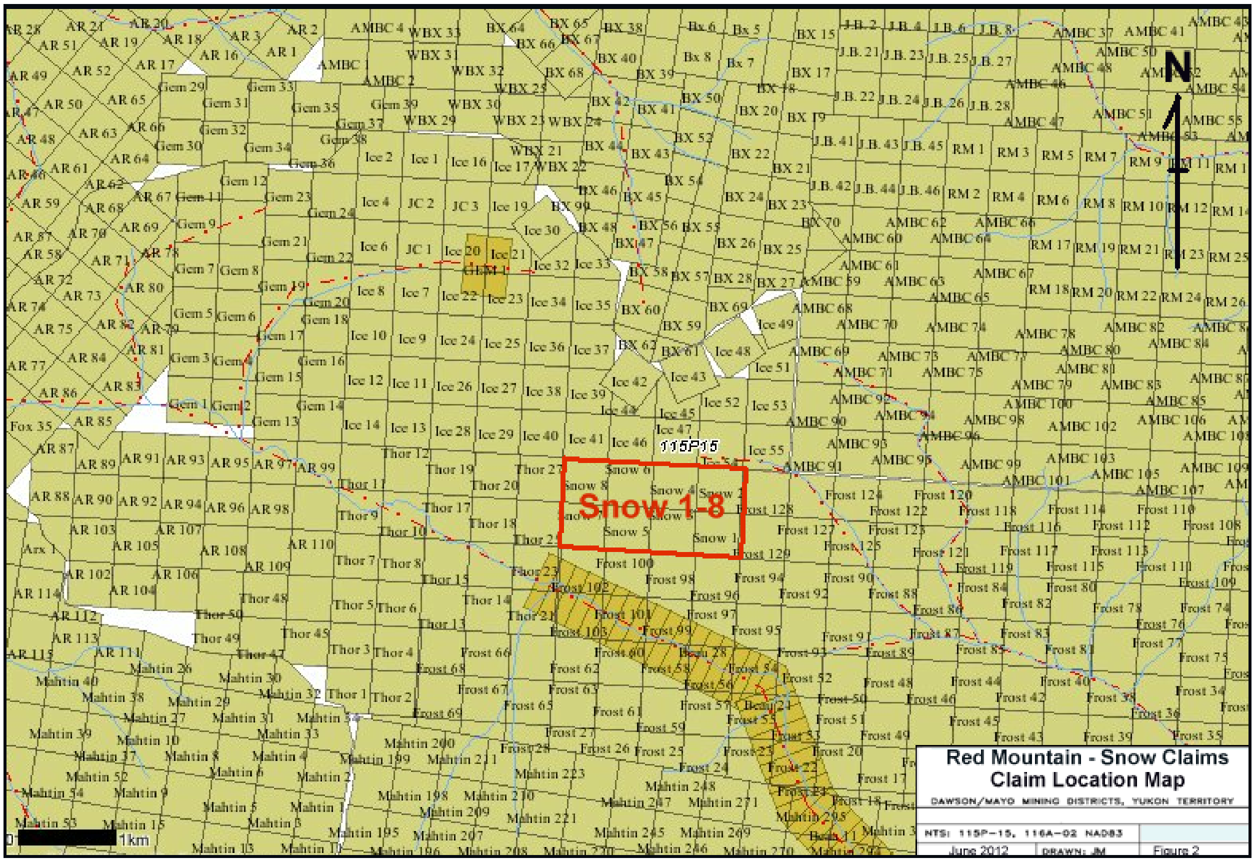


The property consists of contiguous claims approximately 146 ha in area. The 8 Snow claims are 100% owned by 0748962 B.C. Ltd.

The property is located within the Mayo Mining District of the Yukon Territory, approximately 135km east of Dawson City and 57km northwest of Mayo.. The location and configuration of the Property are shown in Figure 1, while claim identification and status are listed in Table 1. All claims are located within map block NTS 115/P/15.

The Crown holds control of the surface rights on the Property. In addition, the Property is located within the Traditional Territory of the Nacho Nyak Dun First Nation who is self-governing and who have settled their land claim. Claims constituting the Property have not been surveyed. Neither is the Property encumbered by any kind of environmental liability to the authors' knowledge.

Figure 2: Red Mountain – Snow Claim Location Map



The claim data for the 8 Snow claims as of June 2012 are as follows in Table 1.

Table 1:		**SNOW Claims Schedule**		
Claim Name	*Claim No.*	*Grant Number*	*Recording Date*	*Expiry Date*
SNOW	1 - 8	YD34991 - 998	June 4, 2010	June 3, 2012

4. ACCESS, INFRASTRUCTURE, PHYSIOGRAPHY AND CLIMATE

The Property is remote. Full time access is by helicopter, based either in Mayo 57km to the southeast, or alternatively from Dawson City. There is seasonal land access via the Clear Creek Road, which branches off the Klondike Highway (HWY 2). The former road provides four-wheel drive road access to the Property through the adjoining Regent Ventures Ltd. claims over

Hobo Creek. The Clear Creek Road is not maintained and is usable only during the summer months. Access is further hindered due to restricted crossings of Hobo Creek during fish spawning season in early spring.

The property is within the Nacho Nyak Dun First Nation traditional territory. The Village of Mayo (pop. 250) is the closest centre for obtaining groceries, fuel, accommodation, and some limited rental and contracted exploration services. A summer helicopter base is maintained at Mayo airport and on a year-round basis at Dawson City. A private airstrip is located approximately 10km west of the camp site of the Property with an airstrip located at Mayo as well. Mayo also hosts the Mayo District's Mining Recorders office and the Mining Land Use Inspections and Land Use and Resource Management Officer. There is a 5KW electrical power station immediately north of Mayo and a transmission line links Mayo and Dawson City.

The Property is situated in the partially non-glaciated Stewart Plateau. Although Pleistocene glaciation scoured major drainages, most of the Property, at higher elevation in particular, escaped the effects of glaciations. Topography is moderate to rugged and is characterized by rounded hills, ridges, and a dendritic drainage system. Elevations on the property range from 1,100m to 1,680m above sea level ("asl"). Outcrop exposure is poor to fair (approximately 5%) with almost no exposure on lower ridge slopes and forested areas. Most of the property is covered by felsenmeer *(a rock block field created by freeze-thaw weathering)* and talus fines. Ground vegetation cover below 1,200m elevation consists of alpine fur, sparse spruce forest, alder, dwarf willow and birch. The area above tree line is mostly lichen covered rock with sparse moss and alpine plant cover.

The area experiences an interior continental climate with precipitation of approximately 31cm annually. Warm summers and cold winters typify the area, with seasonal extremes ranging between 35°C and - 60°C in the summer and winter respectively. Permafrost is common, especially on the steeper north and east facing slopes and lower forested areas.

The exploration season normally extends from late May to late September, but cool rainy conditions and snowstorms are not uncommon in late August and September. The months of June through September are normally free of snow cover.

5. EXPLORATION HISTORY

The area was covered by regional 1:50,000 scale mapping completed in 1993 by the Canada/Yukon Geoscience Office (Murphy and Heon, 1994). Previous work in the general area has been summarized in assessment reports by: Doherty and vanRanden (1993, 1994, and 1995), Doherty and Hulstein (1992), Kidlark (1980), Potter (1988), a summary geological report by Crysi Exploration (1992), and published government reports and maps.

An airborne helicopter VTEM geophysical survey was flown by Geotech Ltd. jointly over the Acero-Martin Property and Regent's Ventures Ltd property in 2006. This encompassed the Snow Claim property as well.. The data from the survey was recently blended with other information and re-interpreted by both AM Gold Inc. and Regent Ventures Ltd.

6. GEOLOGICAL SETTING

The following regional and property geology discussion is summarized after Dorherty (2006):

6.1 Regional Geology

The Property is situated within the Selwyn Basin and part of the Ominica Belt (Wheeler et al., 1991). Abbott (1986) describes the Selwyn Basin as part of the cordilleran miogeocline comprised of Precambrian to Jurassic sedimentary rocks deposited along the western margin of ancient North America. The eastern margin of the basin is marked by the Paleozoic shale - carbonate contact while the western margin is defined by the Teslin fault or suture. The sedimentary basin was active from the late Proterozoic to Middle Jurassic time. All of the large stratabound, sediment hosted lead - zinc deposits in the northern Canadian Cordillera are found within the Selwyn Basin. The Tintina Gold belt is a metallogenic province extending for 2,000km across the central Yukon and Alaska and hosts a number of intrusive related gold deposits, such as Fort Knox, Donlin Creek, Dublin Gulch, and Brewery Creek.

The Eastern or Selwyn Plutonic Suite of granitoid intrusives are distributed along a northwest trending arcuate belt within the Selwyn Basin (Figure 2). The granitoids are mainly granitic in composition and are associated with tin, tungsten, and molybdenum mineralization. The Dublin Gulch gold deposit is hosted by a quartz monzonite pluton of the Tombstone Plutonic Suite.

Age dating by J. Mortensen at the University of British Columbia on the Red Mountain stock, proximal to the Property, yielded an age of 92.3 ±0.8Ma. The dike swarms on the Regent Saddle were dated at ca 92MA while the Sprague Creek stock (Mahtin) yielded an age of 91.0 ±0.2Ma, which is within the age range of the Tombstone Plutonic Suite (Murphy and Heon, 1994).

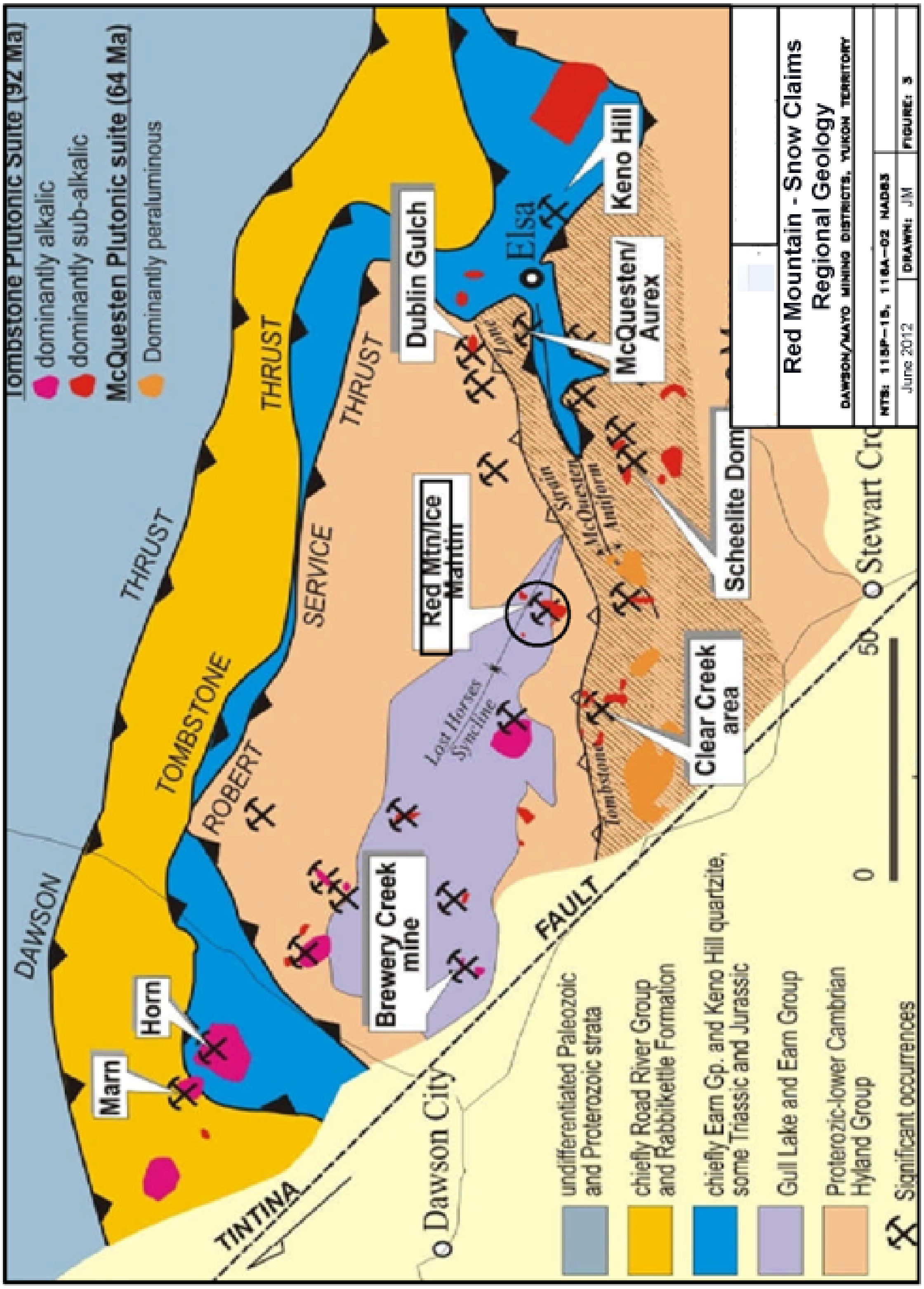
6.2 Property Geology

The geology of the Property has been mapped at various scales by a number of operators since the 1980’s. Part of the JC claims were mapped at a scale of 1:10 000 by Amax of Canada Ltd. (Kidlark, 1980). Additional mapping was completed in 1993-4 on the ICE claims primarily (Doherty and van Randen, 1994). The entire area was later covered by 1:50 000 scale regional mapping (Murphy and Heon, 1994) and Murphy (1997).

The property geology consists of strongly foliated, poly-deformed clastic and volcaniclastic rocks of Upper Proterozoic to Cambrian age.

The lowest stratigraphic unit exposed on the property is the Narchilla Formation, consisting of maroon and green variegated shales with lesser sandy limestone. Rocks of this formation are exposed on creek beds and valley bottoms. The white to tan, fine to coarse grained quartz-wacke (white grit unit) is exposed on road cuts at intermediate elevations, while grey to tan, non-calcareous shale form recessive rubble on hill tops and saddles, as well as in road cuts at upper elevations.

Figure 3: Red Mountain Area Regional Geology



The Narchilla Formation is overlain by the Cambrian Gull Lake Formation, which is comprised of four lithologic units:

1. volcanic and clastic rocks comprised of dark green massive to fragmental mafic metavolcanics,
2. light to dark grey, locally pebbly quartzite,
3. greenish-grey phyllite with millimetre scale lamminae,
4. tan to brown weathering, thinly bedded calcareous siltstone, sandstone, shale, and limestone.

The Gull Lake mafic volcanics are resistive and often form ridge tops. The above described sequence is intruded by a number of Tombstone suite quartz-monzonite intrusions. The intrusion to just to the north of Snow Claim Property cuts the Gull Lake Formation siltstones and quartzites.

7. GEOTECH VTEM AIRBORNE SURVEY

AM Gold Inc. contracted Geotech Ltd. to fly a helicopter-borne VTEM & aeromagnetic geophysical survey over their entire property in the fall of 2011. A total of 679 line-kilometres were collected between September 18th and 28th, 2011. This survey also covered the eight Snow claims. Consideration has been made by 0748962 B.C. Ltd. to AM Gold Inc. to allow of the portion of the geophysical survey over the eight Snow claims to be applied to the required assessment work to secure these claims. The flight line direction was north-south flown at 100m line intervals over these claims. There were 20 flight lines, each at 0.8 km in length yielding a total of 16 line-kilometres over the eight Snow claims. The proximity of the 8 Snow claims within the extent of the airborne geophysical survey is shown in Figures 4 and 5.

The Geotech report included in APPENDIX B provides a full description of the airbourne geophysical survey. The digital data from the survey is included in the DVD that accompanies this report. The data has yet to be fully assessed and interpreted.

8. INTERPRETATION AND CONCLUSIONS

As previously indicated, gold mineralization in the general area is related to broad zones of disseminated sulphide with higher grade mineralization being associated with areas with steeply dipping sheeted sulphide-bearing quartz vein zones as well multi-generational quartz veining, sometimes stockworked. The mineralized areas are hosted in quartz monzonite porphyry, metasedimentary rock, or a combination of the two.

A large airborne magnetic signature centered under the AM Gold Inc. ICE claims to the north, extends onto the Snow Claim Property, This suggests that a larger, intrusive body lies at depth, and likely represents the roots to the dikes in the general wider area. It also suggests that gold mineralization may be present at greater depths, in proximity to the postulated buried intrusion.

Figure 4: Snow Claims as Related to Survey Block Location Map

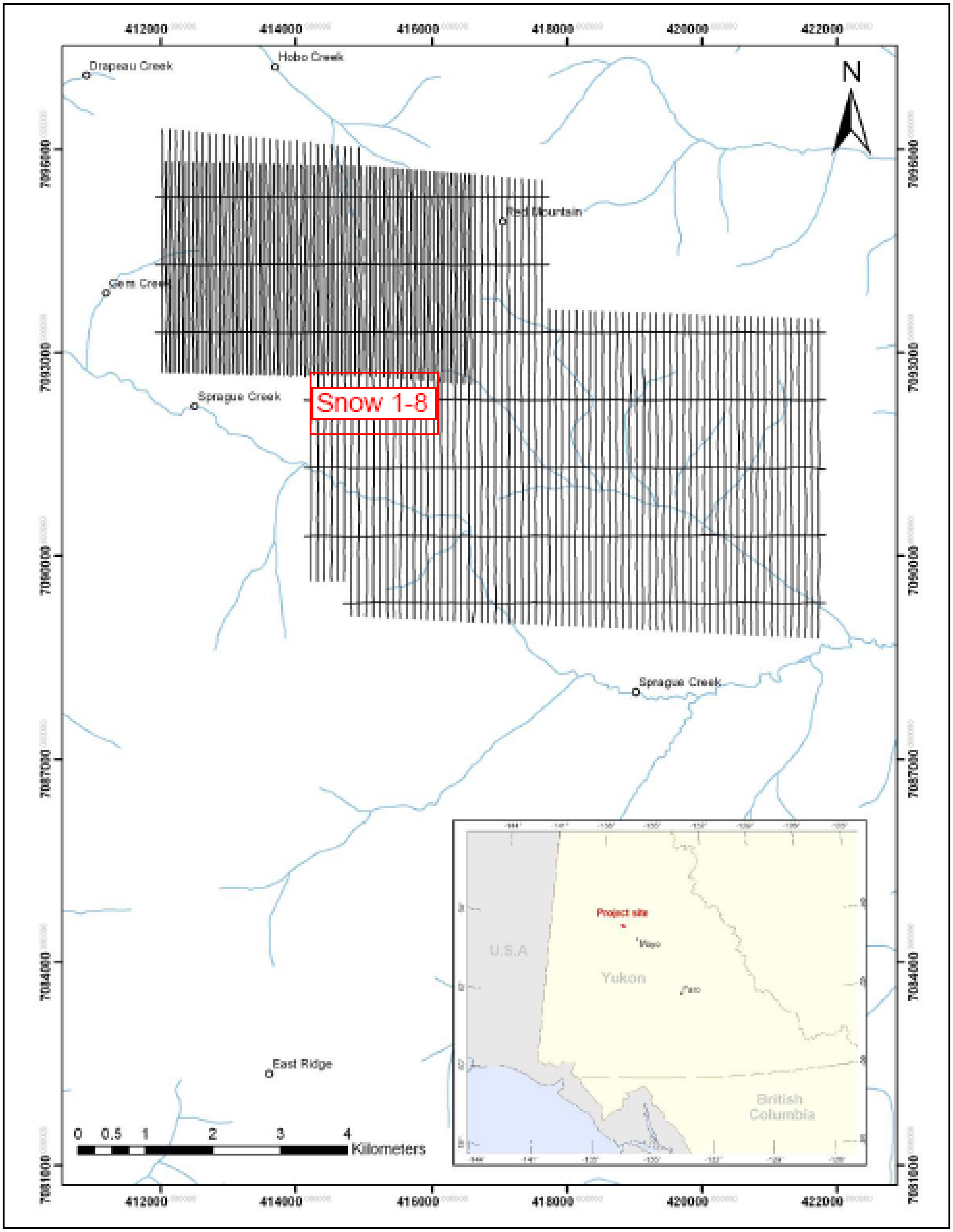
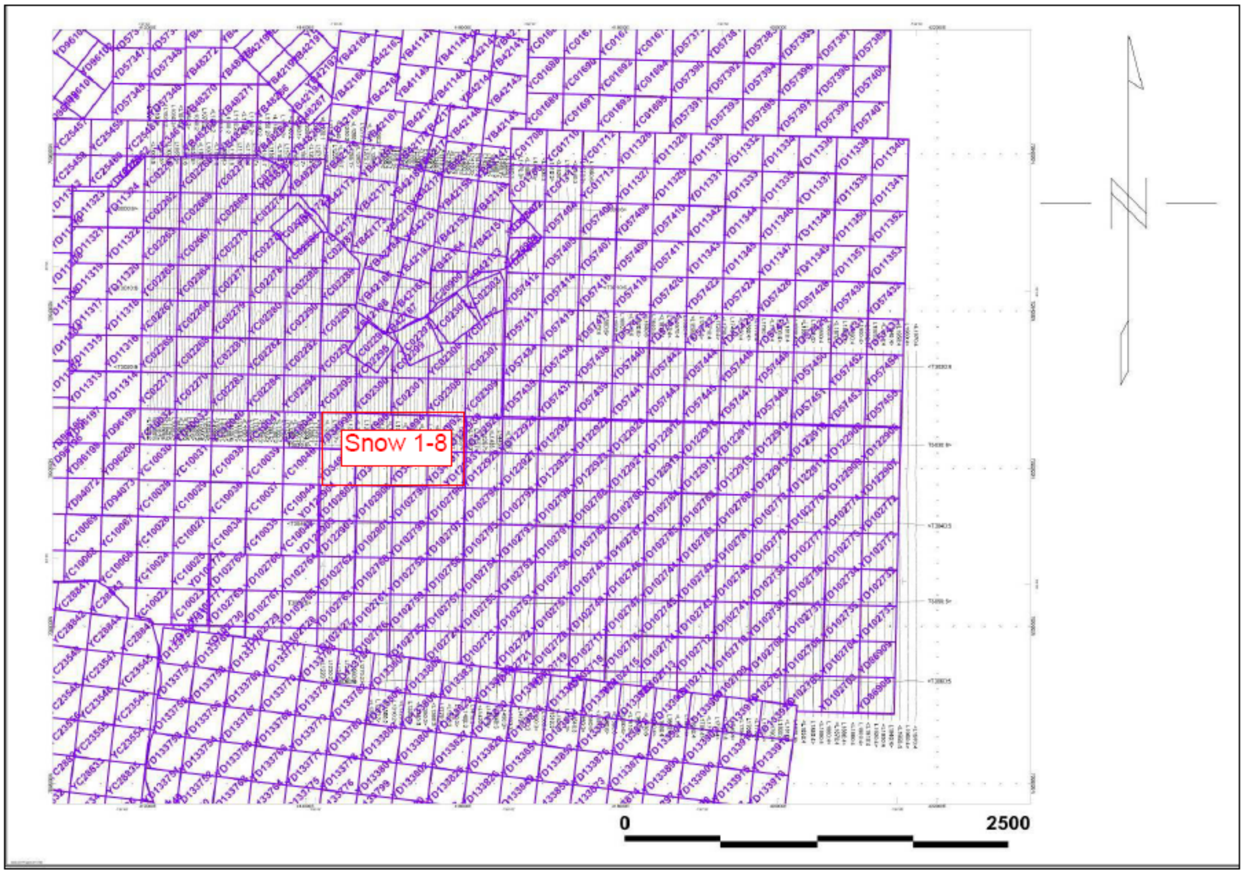


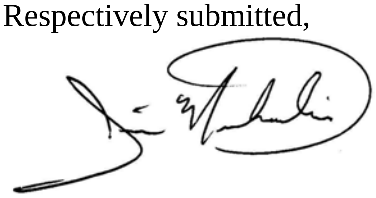
Figure 5: Survey Flight Lines over Mineral Claims



9. RECOMMENDATIONS

Further work of a geochemical nature for gold is recommended on the Snow claims. This would include heavy mineral concentrates and silt sampling from the drainages, soil sampling, and rock sampling.

Respectively submitted,



Jim Michaelis, H.Bsc.
June, 2012

10. REFERENCES

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11. CERTIFICATE OF QUALIFICATIONS AND DECLARATION

I, Jim A. Michaelis, do hereby certify that:

I currently have a business address at 26 Rodney Road, Dartmouth, Nova Scotia Canada B2Y 3V5

I am a graduate of McMaster University, Hamilton, Ontario, with an Honours Bachelor of Science degree – Geology, completed 1982.

I have worked intermittently as an exploration geologist for a total span of 30 years since my graduation, both domestically and internationally. Of this I have been a full time geologist for 16 years. My experience has been primarily focused in gold exploration and to a lesser degree in base metal, uranium and oil & gas exploration.

APPENDIX A

Statement of Expenditures

September 18, 2011 to September 28, 2011

SNOW Claims

Total Cost of Geotech VTEM Survey, includes:	$196,164
Mobilization of Crew & Equipment	
Fuel	
Flying time for Survey	
Standby Time	
Total Survey Line Kilometres	680
Total Cost per Kilometre	$288
Applicable Line Kilometres to SNOW Claims	16
Total Applicable Expenditures to 8 SNOW Claims	$4,615
Total Applicable Expenditures to each SNOW Claim	$577

Geotech Ltd.

245 Industrial Parkway North, Aurora, Ontario L4G 4C4
Tel: (905) 841-5004 Fax: (905) 841-0611 email: accounting@gmasl.ca

Date	Invoice #
10/28/2011	993545

Invoice To
AM Gold Inc. 369 Terminal Avenue, Suite 305 Vancouver, BC V6A 4C4

POSTED

PAID
NOV 08 2011

Terms	Project
Due on receipt	11262

Description	Qty	Rate	Amount	Tax
Helicopter-borne time domain electromagnetic geophysical survey with VTEM system				
Final Billing - One Hundred Percent (100%) minimum payment plus GST is due before delivery of final products.				
Contract (Red Mountain Property, Mayo, Yukon)				
Crew Mob/Demob Charges		20,000.00	20,000.00	GST
Helicopter Mob/Demob Charges		34,000.00	34,000.00	GST
Reconnaissance Flight		2,000.00	2,000.00	GST
For 679 line km Vtem survey @ $150.00/km	679	150.00	101,850.00	GST
Daily Ferries 4 days @ $2,000.00/day	4	2,000.00	8,000.00	GST
100% Minimum Survey Charge $165,850.00				
Plus				
Standby Days 6 @ $6,000.00/day	6	6,000.00	36,000.00	GST
DISCOUNT for Standby days (2) @ $6,000.00/day	-2	6,000.00	-12,000.00	GST
Fuel		3,800.09	3,800.09	GST
Fuel positioning		1,940.00	1,940.00	GST
10% Handling fee		574.01	574.01	GST
100% Total Survey Charge $196,164.10				
Less Previous Billing				
Inv#993375 (50%)		-87,325.00	-87,325.00	GST
Inv#993485 (95%)		-100,546.60	-100,546.60	GST
Business Number: 110859469				

Please Remit By Bank Transfer To:
ROYAL BANK OF CANADA
3300 Highway# 7 West,
Suite 100, Concord
Ontario L4K 4M3
SWIFT: ROYCCAT2
TRANSIT# 00192
ACCOUNT# 1114834

Subtotal	CAD 8,292.50
GST/HST	CAD 414.63
TOTAL	CAD 8,707.13

Geotech Ltd.

245 Industrial Parkway North, Aurora, Ontario L4G 4C4
Tel: (905) 841-5004 Fax: (905) 841-0611 email: accounting@gmasl.ca

Date	Invoice #
10/4/2011	993485

Invoice To
AM Gold Inc. 369 Terminal Avenue, Suite 305 Vancouver, BC V6A 4C4

POSTED

PAID
NOV 08 2011

Terms	Project
Due on receipt	11262

Description	Amount	Tax
Helicopter-borne time domain electromagnetic geophysical survey with VTEM system	100,546.60	GST
Interm Billing - Ninety Five Percent (95%) minimum payment plus GST is due when completion of flying and before releasing preliminary maps (in PDF format only).		
Contract (Red Mountain Property, Mayo, Yukon)		
Crew Mob/Demob Charges $20,000.00 Helicopter Mob/Demob Charges $34,000.00 Reconnaissance Flight $2,000.00 For 679 line km Vtem survey @ 150.00/km $101,850.00 Daily Ferries 4 days @ $2,000.00/day $8,000.00 100% Minimum Survey Charge $165,850.00		
95% of the minimum survey charge $157,557.50		
Plus Standby Days 6 @ $6,000.00/day $36,000.00 DISCOUNT for Standby days (2) @ $6,000.00/day ($12,000.00) Fuel $3,800.09 Fuel positioning $1,940.00 10% Handling fee $574.01		
Current Survey Charge $187,871.60		
Less Previous Billing Inv#993375 (50%) ($87,325.00)		
Net Billed Amount $100,546.60 Business Number 110859469		

Please Remit By Bank Transfer To:
ROYAL BANK OF CANADA
3300 Highway# 7 West,
Suite 100, Concord
Ontario L4K 4M3
SWIFT: ROYCCAT2
TRANSIT# 00192
ACCOUNT# 1114834

Subtotal	CAD 100,546.60
GST/HST	CAD 5,027.33
TOTAL	CAD 105,573.93

Geotech Ltd.

245 Industrial Parkway North, Aurora, Ontario L4G 4C4
Tel: (905) 841-5004 Fax: (905) 841-0611 email: accounting@gmasl.ca

Date	Invoice #
8/18/2011	993375

Invoice To
AM Gold Inc, 369 Terminal Avenue, Suite 305 Vancouver, BC V6A 4C4

POSTED

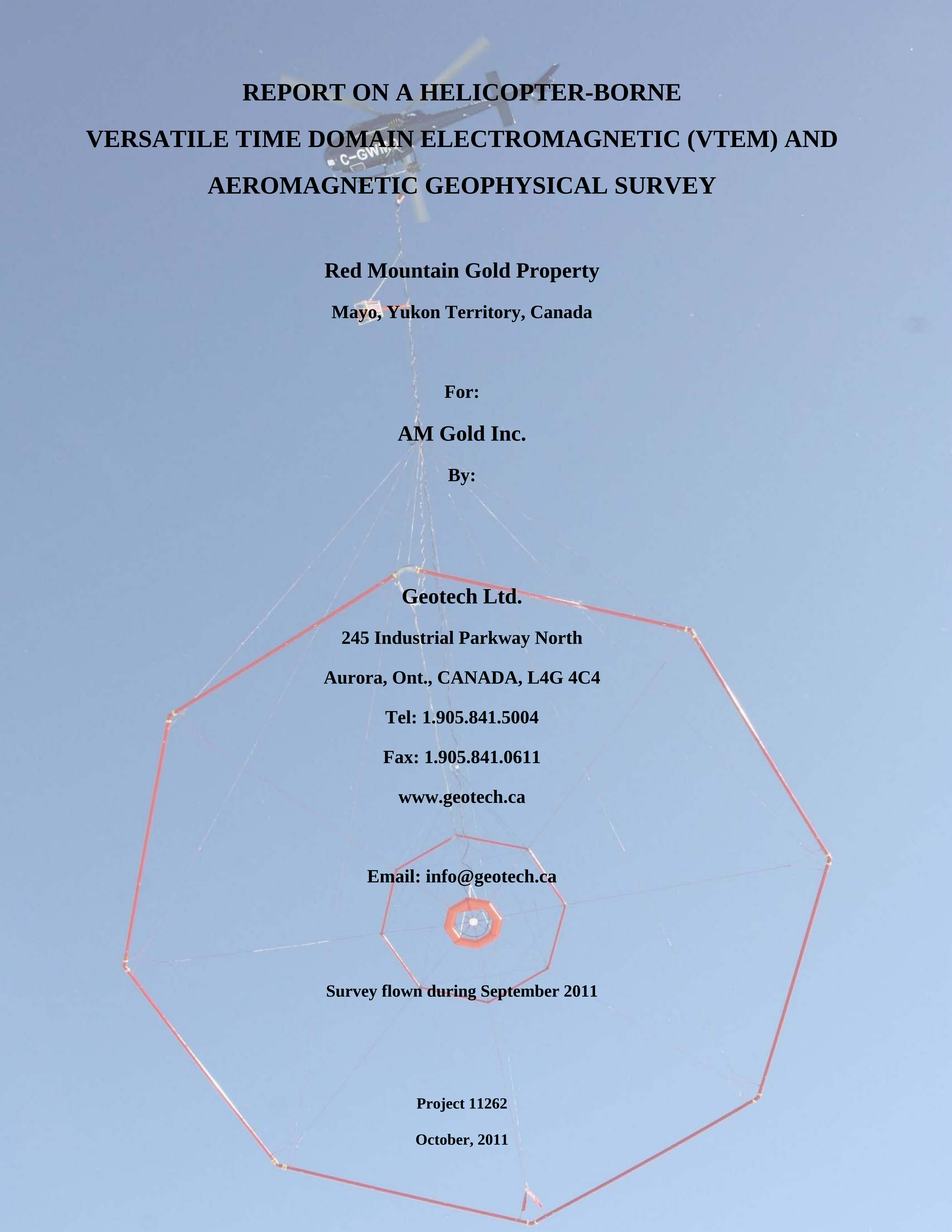
PAID
AUG 18 2011

Terms	Project
Due on receipt	11262

Description	Amount	Tax
Helicopter-borne time domain electromagnetic geophysical survey with VTEM system	87,325.00	GST
Interm Billing - Fifty Percent (50%) minimum payment plus GST is due before mobilization.		
Contract (Red Mountain Property, Mayo, Yukon)		
Crew Mob/Demob Charges $20,000.00		
Helicopter Mob/Demob Charges $34,000.00		
Reconnaissance Flight $2,000.00		
Estimated 679 line km @ 150.00/km $101,850.00		
Estimated Daily Ferries 4 days @ $2,000.00/day $8,000.00		
Estimated fuel and fuel positioning $8,800.00		
Estimated Minimum Survey Charge $174,650.00		
50% of the minimum survey charge $87,325.00		
Business Number: 110859469		

Please Remit By Bank Transfer To:
ROYAL BANK OF CANADA
3300 Highway# 7 West,
Suite 100, Concord
Ontario L4K 4M3
SWIFT: ROYCCAT2
TRANSIT# 00192
ACCOUNT# 1114834

Subtotal	CAD 87,325.00
GST/HST	CAD 4,366.25
TOTAL	CAD 91,691.25



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

Red Mountain Gold Property

Mayo, Yukon Territory, Canada

For:

AM Gold Inc.

By:

Geotech Ltd.

245 Industrial Parkway North

Aurora, Ont., CANADA, L4G 4C4

Tel: 1.905.841.5004

Fax: 1.905.841.0611

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Survey flown during September 2011

Project 11262

October, 2011

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

Red Mountain Gold Property
Mayo, Yukon Territory, Canada

Executive Summary

During September 18th to 28th 2011 Geotech Ltd. carried out a helicopter-borne geophysical survey over the Red Mountain Gold Property located near Mayo, Yukon Territory, 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 679 line-kilometres of geophysical data were acquired.

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:

- Total Magnetic Intensity
- B-Field Z Component Channel grid
- Calculated Time Constant (TAU)
- Electromagnetic stacked profiles of the B-field Z component
- Electromagnetic stacked profiles of the dB/dt Z component

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

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set. No formal Interpretation has been included.

1. INTRODUCTION

1.1 General Considerations

Geotech Ltd. performed a helicopter-borne geophysical survey over the Red Mountain Gold Property located near Mayo, Yukon Territory, Canada (Figure 1 & 2).

Gerald Aberle represented AM Gold 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) system with Z component measurements and aeromagnetics using a cesium magnetometer. A total of 679 line-km of geophysical data were acquired during the survey.

The crew was based out of Moose Creek Lodge in Mayo, Yukon Territory for the acquisition phase of the survey. Survey flying started on September 9th and was completed on September 28h, 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 October, 2011.

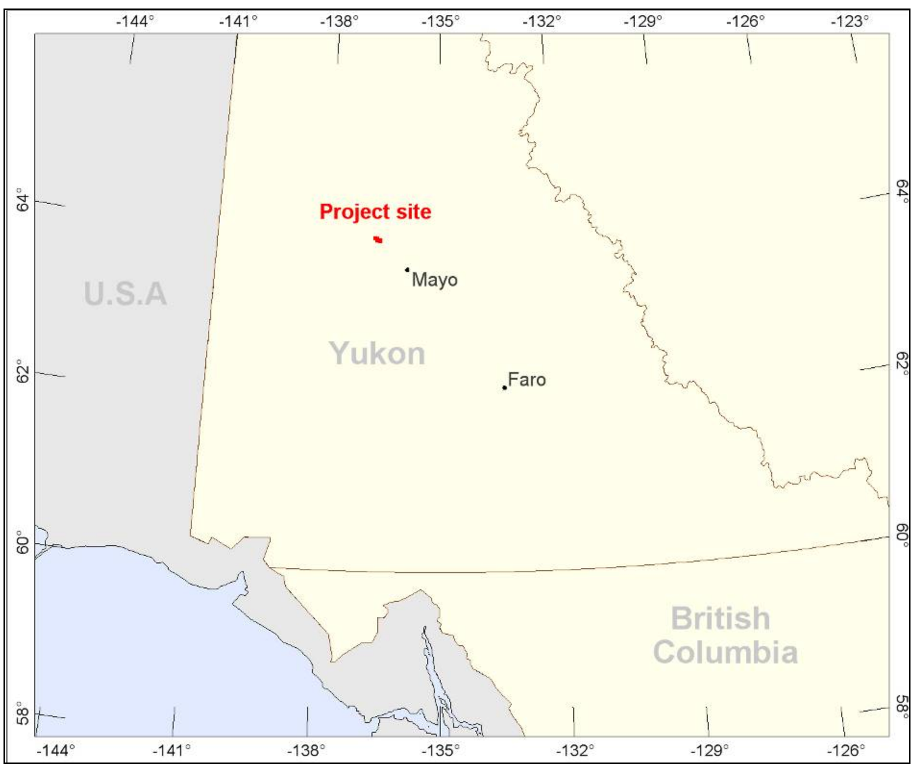


Figure 1 - Property Location

1.2 Survey and System Specifications

The Block is located approximately 50 kilometres northwest of Mayo, Yukon Territory (Figure 2).

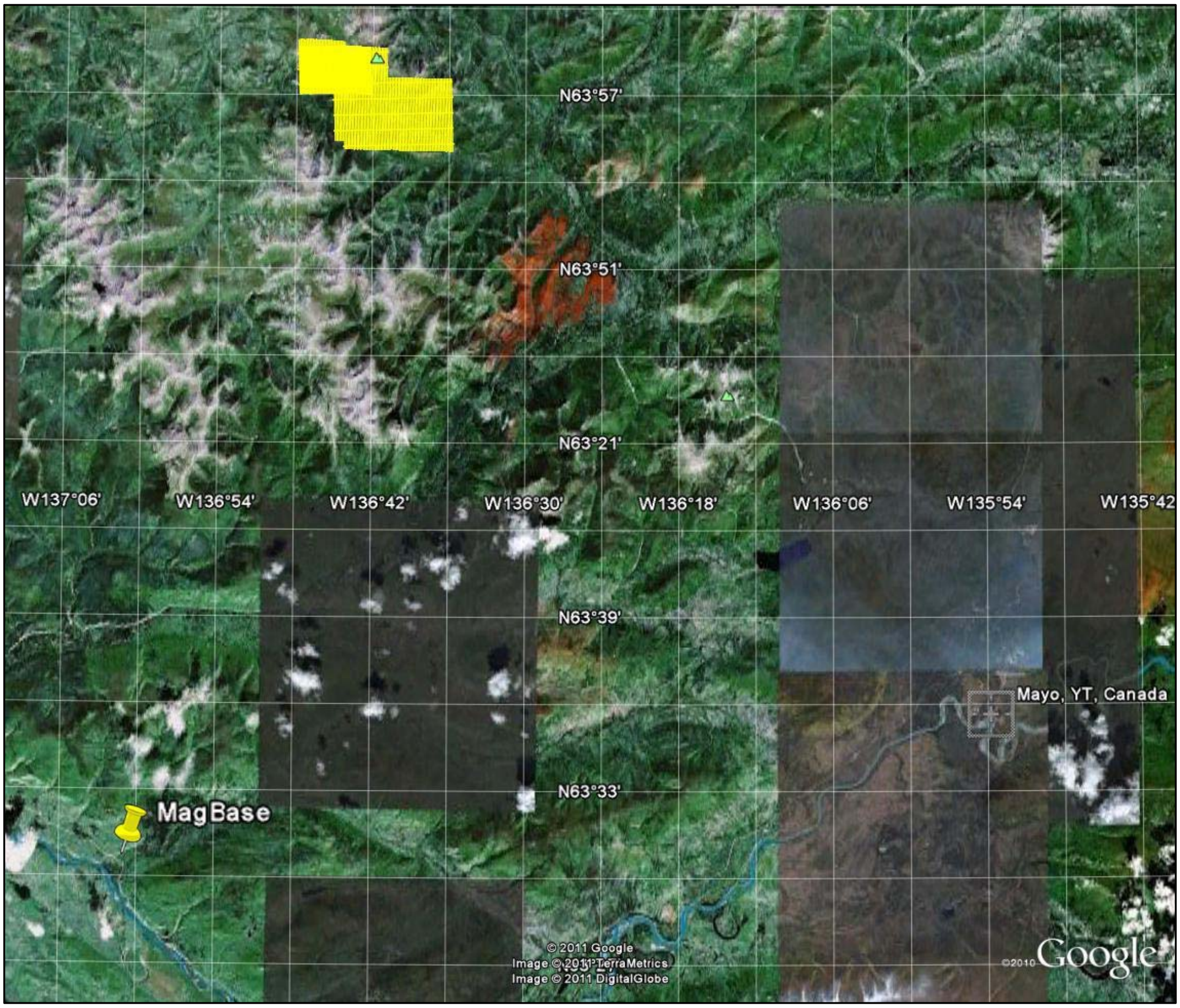


Figure 2 - Survey area location on Google Earth

The block was flown in a south to north (N 0° E azimuth) direction with traverse line spacing of 50 and 100 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres (N 90° E azimuth). For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

Topographically, the block exhibits a high relief with elevations ranging from 710 to 1761 metres above mean sea level over an area of 48 square kilometres (Figure 3). There are no visible signs of culture such as roads, trails, or buildings through out the block.

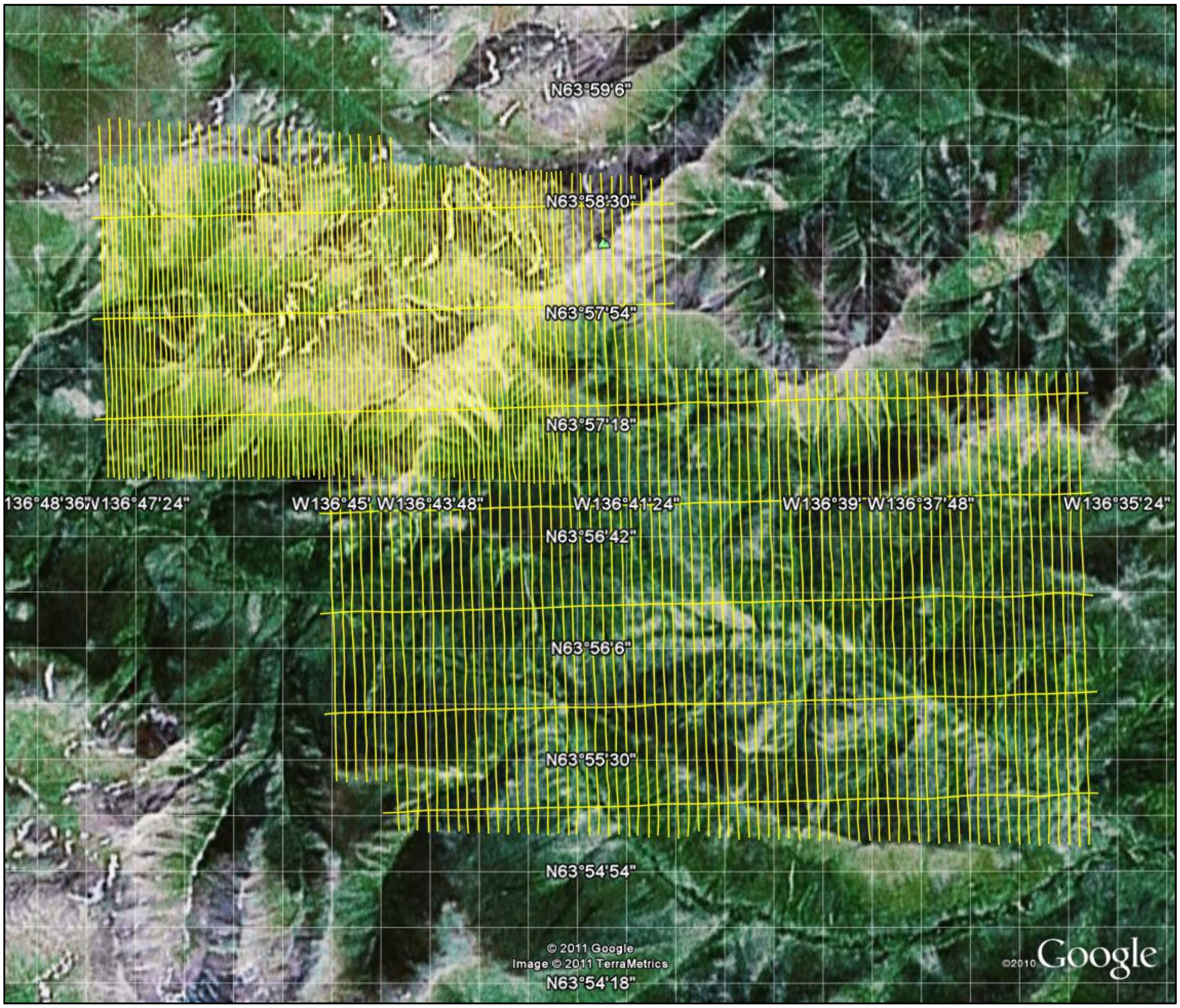


Figure 3 – Flight path over a Google Earth Image

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 Line-km	Line-km flown	Flight direction	Line numbers
Red Mountain project	Traverse: 50	48	628	385	N 0° E	L1000 - L1460
	Traverse: 100			258	N 0° E	L1470 - L1970
	Tie: 1500		51	52	N 90° E	T3000 - T3060
TOTAL		**48**	**679**	**695**		

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

2.2 Survey Operations

Survey operations were based out of Moose Creek Lodge, Yukon Territory from September 9th to 28th, 2011. The following table shows the timing of the flying.

Table 2 - Survey schedule

Date	Flight #	Flown km	Block	Crew location	Comments
Sept-9-2011				Mayo, YT	Crew mobilized
Sept-10-2011				Mayo, YT	Crew mobilized
Sept-11-2011				Mayo, YT	Crew mobilized
Sept-12-2011				Mayo, YT	Crew mobilized
Sept-13-2011				Mayo, YT	Crew mobilized
Sept-14-2011				Mayo, YT	System assembly
Sept-15-2011				Mayo, YT	Helicopter install completed and base station positioned
Sept-16-2011				Mayo, YT	No production due to mechanical issues – faulty cable
Sept-17-2011				Mayo, YT	Waiting on replacement part
Sept-18-2011	1	16		Mayo, YT	16km flown limited production due to technical issues
Sept-19-2011	2	124		Mayo, YT	124km flown
Sept-20-2011				Mayo, YT	No production due to weather
Sept-21-2011	3,4	312		Mayo, YT	312km flown
Sept-22-2011				Mayo, YT	No production due to weather
Sept-23-2011				Mayo, YT	No production due to weather
Sept-24-2011				Mayo, YT	No production due to weather
Sept-25-2011				Mayo, YT	No production due to weather
Sept-26-2011				Mayo, YT	No production due to weather
Sept-27-2011	5,6	128		Mayo, YT	128km flown
Sept-28-2011	7	99		Mayo, YT	Remaining kms were flown – flying complete

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 156 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 114 metres and a magnetic sensor clearance of 143 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) system. The configuration is as indicated in Figure 4.

The VTEM Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The EM bird was towed at a mean distance of 35 metres below the aircraft as shown in 4 and 6. The receiver decay recording scheme is shown diagrammatically in Figure 6.

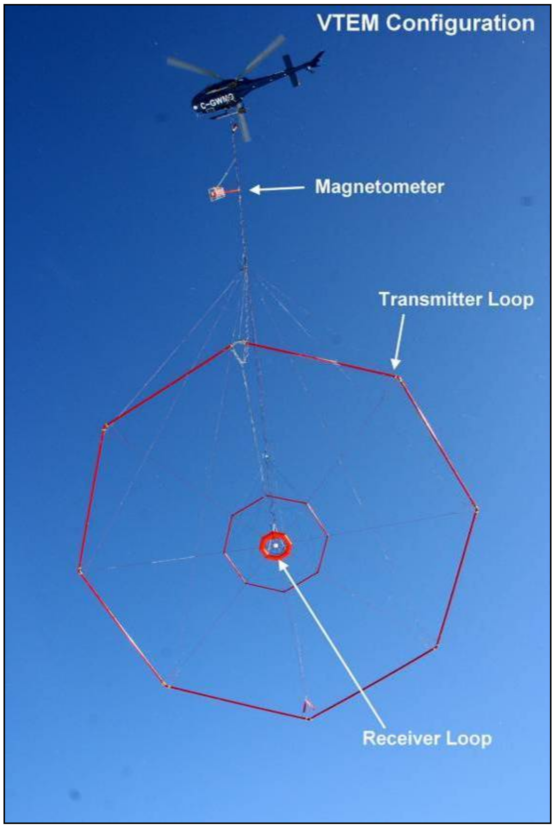


Figure 4 - VTEM Configuration, with magnetometer.

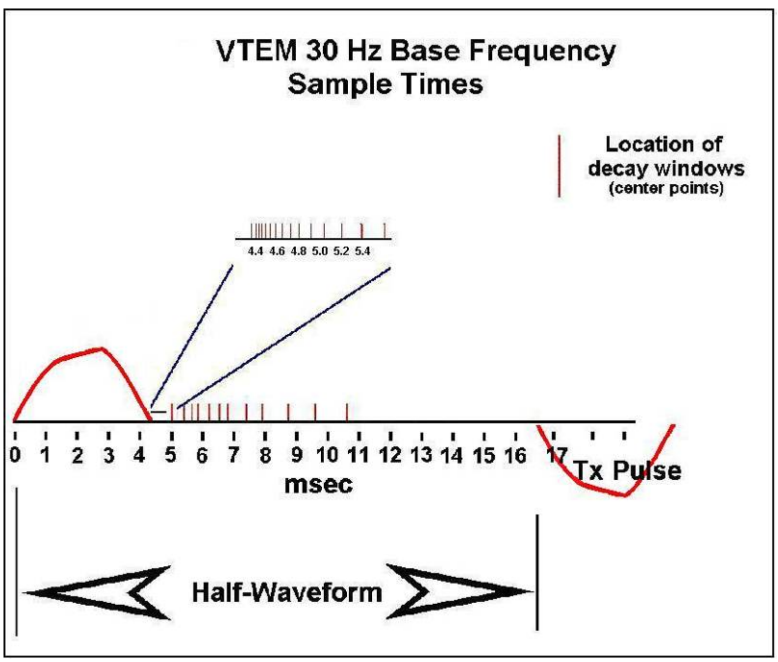


Figure 5 - VTEM Waveform & Sample Times

The VTEM 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 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 system parameters:

Transmitter Section

- Transmitter coil diameter: 17.6 m
- Number of turns: 4
- Transmitter base frequency: 30 Hz
- Peak current: 254 A
- Pulse width: 3.412 ms
- Duty cycle: 20 %
- Wave form shape: trapezoid
- Peak dipole moment: 247,177 nIA
- Nominal EM Bird terrain clearance: 114 metres above the ground
- Effective coil area: 973 m^2

Receiver Section

Z-Coil

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

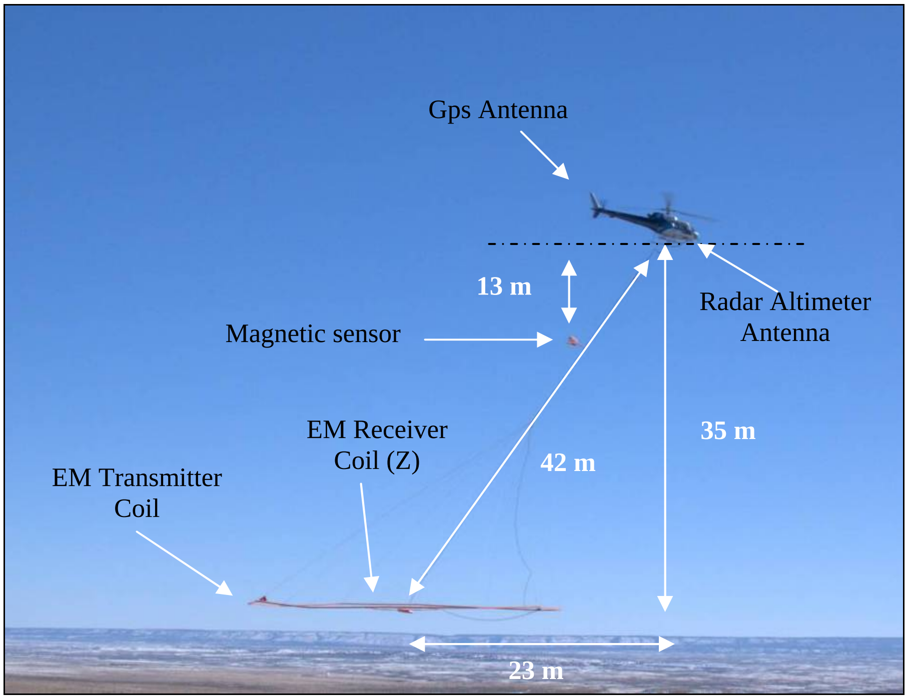


Figure 6 - VTEM System Configuration

2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped cesium 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 Cesium 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 (63º 30.4525'N, 137º 01.0508'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.

Field:

Project Manager:	Darren Tuck (Office)
Data QC:	Emilio Schein (Office)
Crew chief:	Ioan Serbu
Operator:	Jonathan Yantho

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

Pilot:	Alex Para
Mechanical Engineer:	Trent Tiviotdale

Office:

Preliminary Data Processing:	Neil Fiset
Final Data Processing:	Marta Orta
Final Data QC:	Alex Prikhodko
Reporting/Mapping:	Corrie Laver

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operations Officer. The processing and interpretation phase was under the supervision of Alexander Prikhodko, P. Geo, Ph.D. The overall contract management and customer relations were by Paolo 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 NAD83 Datum, UTM Zone 8 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. B-field Z component time channel recorded at 2.021 milliseconds after the termination of the impulse is also presented as a color image. Calculated Time Constant (TAU) with anomaly contours of Calculated Vertical Derivative of TMI is presented in Appendix D and F.Tau was calculated using noise level of 0.0285 for dB/dt and 0.032 for B-Field. Resistivity Depth Image (RDI) is also presented in Appendix D and G.

VTEM receiver coil orientation Z-axis coil is oriented parallel to the transmitter coil axis and is horizontal to the ground. Generalized modeling results of VTEM data, are shown in Appendix E.

Z component data produce double peak type anomalies for "thin" subvertical targets and single peak for "thick" targets.

The limits and change-over of "thin-thick" depends on dimensions of a TEM system the system's height and depth of a target. For example see Appendix E, Fig.E-16.

Graphical representations of the VTEM 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.

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 25 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

4.4 Terrain Effect

Survey areas with severe topographic variation are drape surveyed much better with helicopter systems than with fixed-wing systems. However, even helicopters systems have to operate within safety and physical limits. One of the effects visible on data at very steep slopes is that the uphill and downhill gradients of helicopter traverses are different. When flying uphill, the actual topography can be followed more accurately than when flying downhill. These differences between helicopter elevations on adjacent lines are illustrated below where the sensor elevation (radarB, left) is compared with the digital terrain model (DTM, middle). The effect of this on measured data (dBz/dt channel 15, right), and especially the early channels, is that data might appear unlevelled. The grids are in fact levelled, and correctly display the dependence of EM data on sensor altitude above surface. Data channels and grids can be micro-levelled for map display purposes, but when used in quantitative work, data should be used as provided.

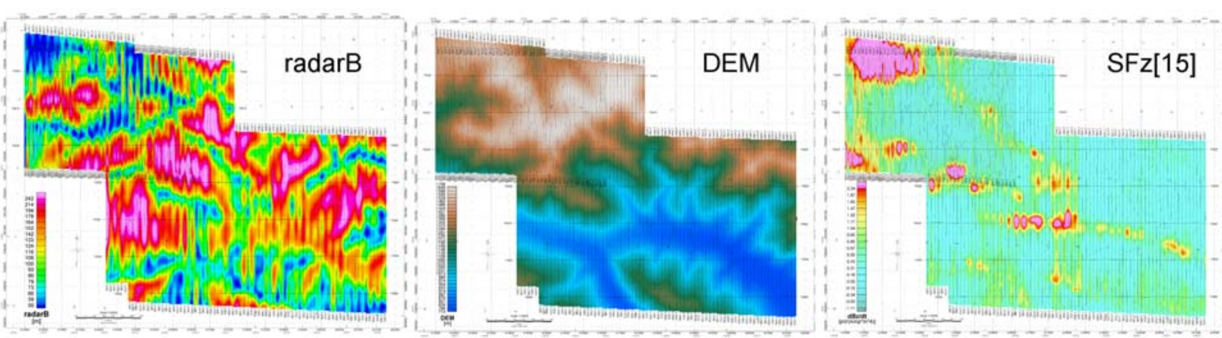


Figure 7 - Images of EM loop terrain clearance (left), digital elevation model (middle) and Early-time dBz/dt 0.110ms, channel 15 (right)

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 scale of 1:20,000 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 8 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.
- Total Magnetic Intensity (TMI) colour image and contours.
- VTEM dB/dt & B-Field Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

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 WGS84 Zone 8 North
Y:	metres	UTM Northing WGS84 Zone 8 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
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
BFz	$(pV*ms)/(A*m^4)$	Z B-Field data for time channels 14 to 45
PLM:		60 Hz power line monitor
CVG	nT/m	Calculated Magnetic Vertical Gradient
TauSF	milliseconds	Time Constant (Tau) calculated from dB/dt data
TauBF	milliseconds	Time Constant (Tau) calculated from B-Field data
Nchan_BF		Last channel where the Tau algorithm stops calculation, B-Field data

Channel name	Units	Description
Nchan_SF		Last channel where the Tau algorithm stops calculation, dB/dt data

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45.

- Database of the VTEM Waveform "11262_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:

  TMI: Total Magnetic Intensity (nT)
  BFz36: B-Field Z Component Channel 36 (Time Gate 2.021 ms)
  TAUSFz: dB/dt Calculated Time Constant (TAU)
  TAUBFz: B-Field Calculated Time Constant (TAU)
  CVG: Calculated Vertical Derivative of TMI (CVG)
  DEM: Digital Elevation Model

  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 1:20,000 in Geosoft MAP format, as follows:

  11262_20K_dBdtZ: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
  11262_20K_BfieldZ: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
  11262_20K_BFz36: B-Field late time Z Component Channel 36, Time Gate 2.021 ms colour image.
  11262_20K_TMI: Total Magnetic Intensity (TMI) and contours.
  11262_20K_TauSF: dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

  Maps are also presented in PDF format.

  The topographic data base was derived from 1:50,000 NRC (http://www.geogratis.ca)

- A Google Earth file *11262_AMgold.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) geophysical survey has been completed over the Red Mountain property, in the Mayo Mining District, central Yukon, Canada.

The total area coverage is 48 km^2. Total survey line coverage is 679 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 1:20,000. No formal Interpretation has been included.

6.2 Recommendations

Based on the geophysical results obtained, a number of TEM anomalies are identified across the Red Mountain property. These low conductive targets are mapping a trend that extends in north-west to south-east direction. Overburden of less than 50 metres thickness (as detected from RDIs) is observed on top of these conductive zones. These zones are identified as A, B, C, D and E in map below.

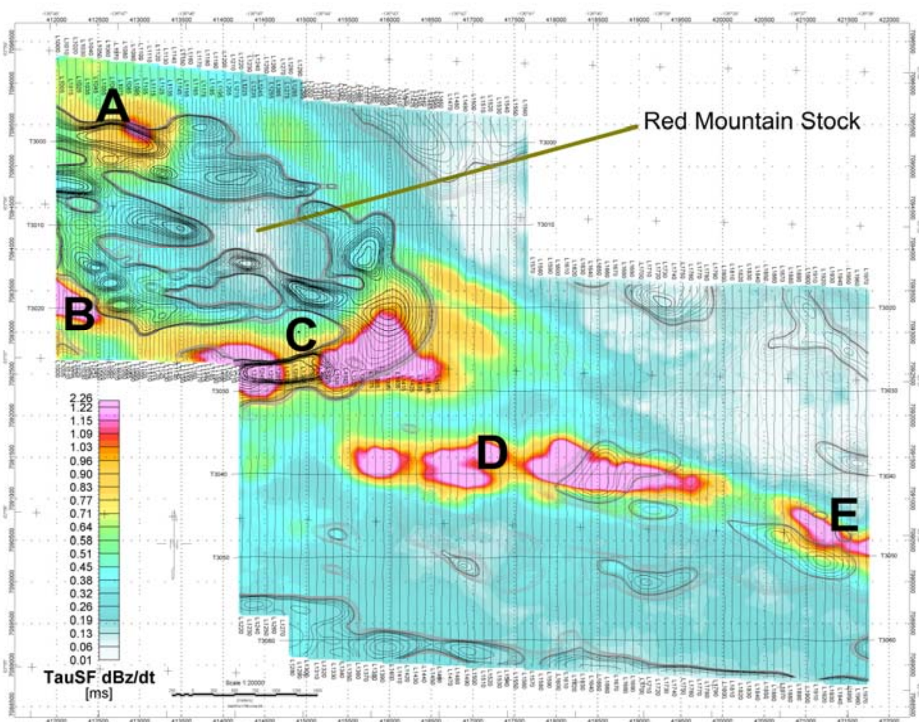


Figure 8 - Image of Tau (dBz/dt), CVG contours and identified EM anomalies.

Highest magnetic activity is found in the north-west part of the property (where the in-fills lines were flown at 50 metres line-spacing). This feature surrounds a low magnetic zone of plutonic rocks identified as the Red Mountain Stock[1], as shown in figure above.

Magnetic correlation with EM response is observed toward the south-east part of the infill section (anomaly zone C). A non-consecutive magnetic association is observed elsewhere.

We recommend a detailed interpretation of the available geophysical data, in conjunction with the geology. It will include resistivity depth imaging and Maxwell modeling prior to ground follow up and more drill testing.

Respectfully submitted[6],

Neil Fiset
Geotech Ltd.

Marta Orta
Geotech Ltd.

Alexander Prikhodko, P. Geo
Geotech Ltd.

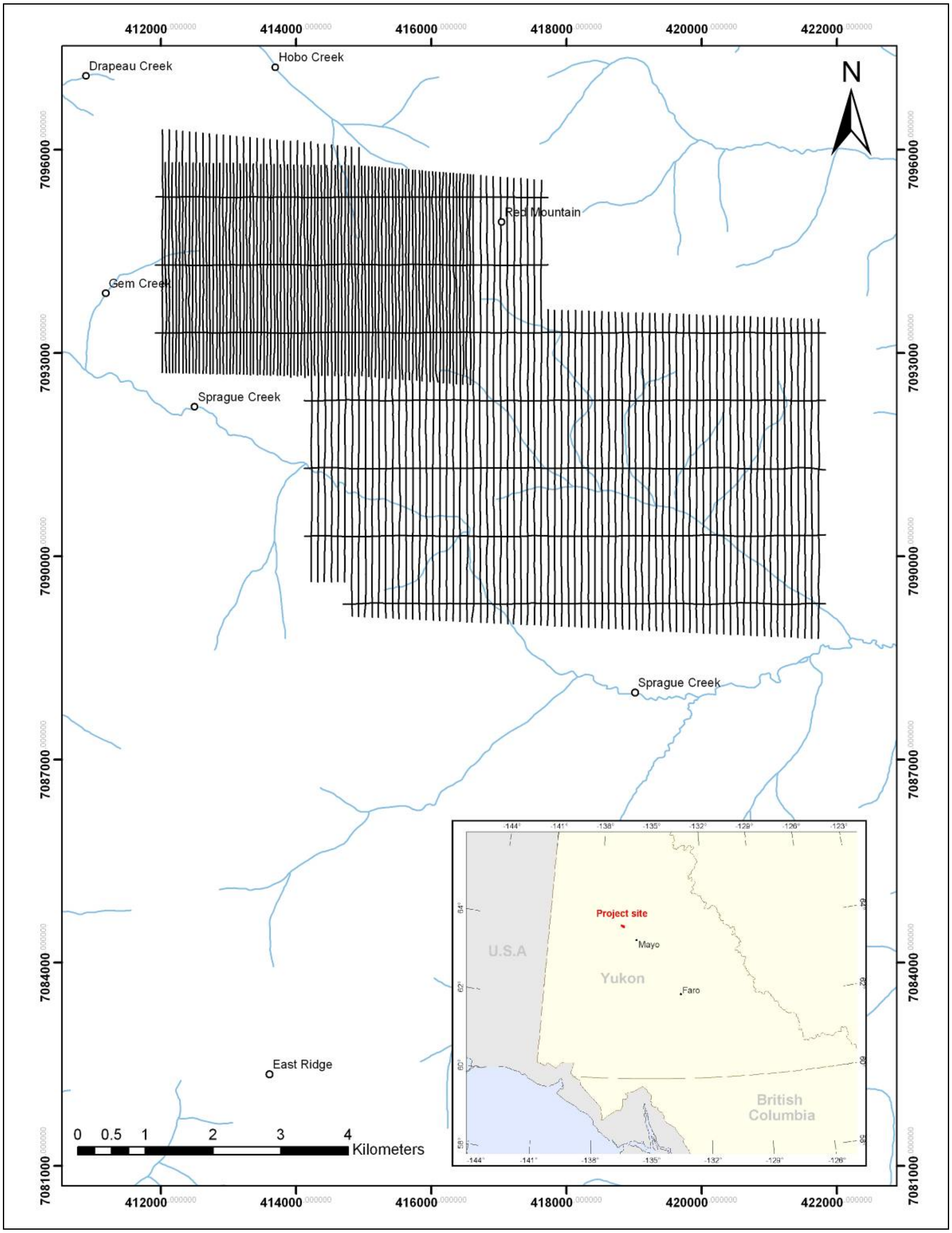
October 2011

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

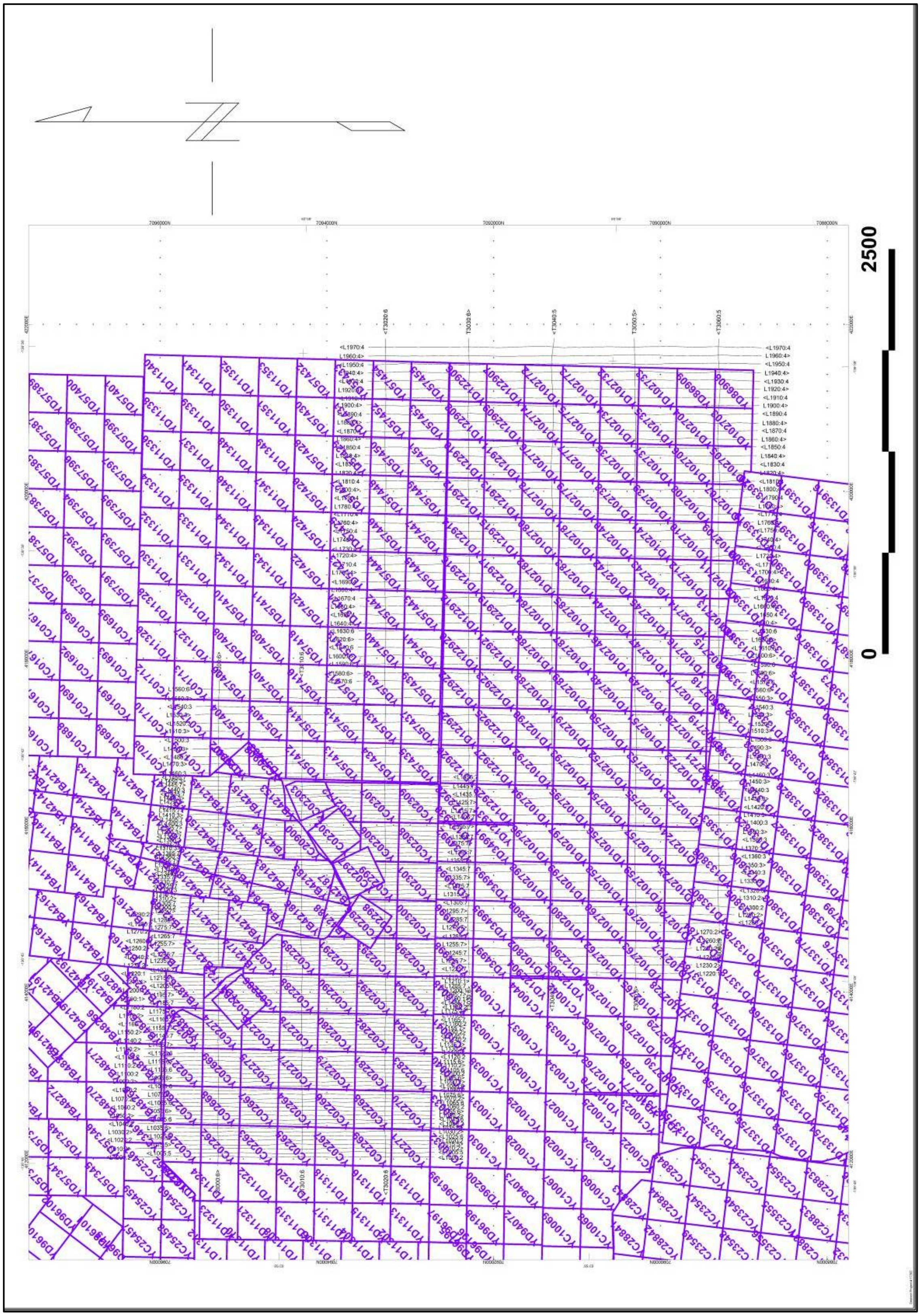
[1] Mining Yukon, Mining & Exploration Portal, Bedrock Geology
http://miningyukon.com/geologicalmapsdata/data/regionalprojectdata/

APPENDIX A

SURVEY BLOCK LOCATION MAP



Survey Overview of the Block



Mining Claims

APPENDIX B

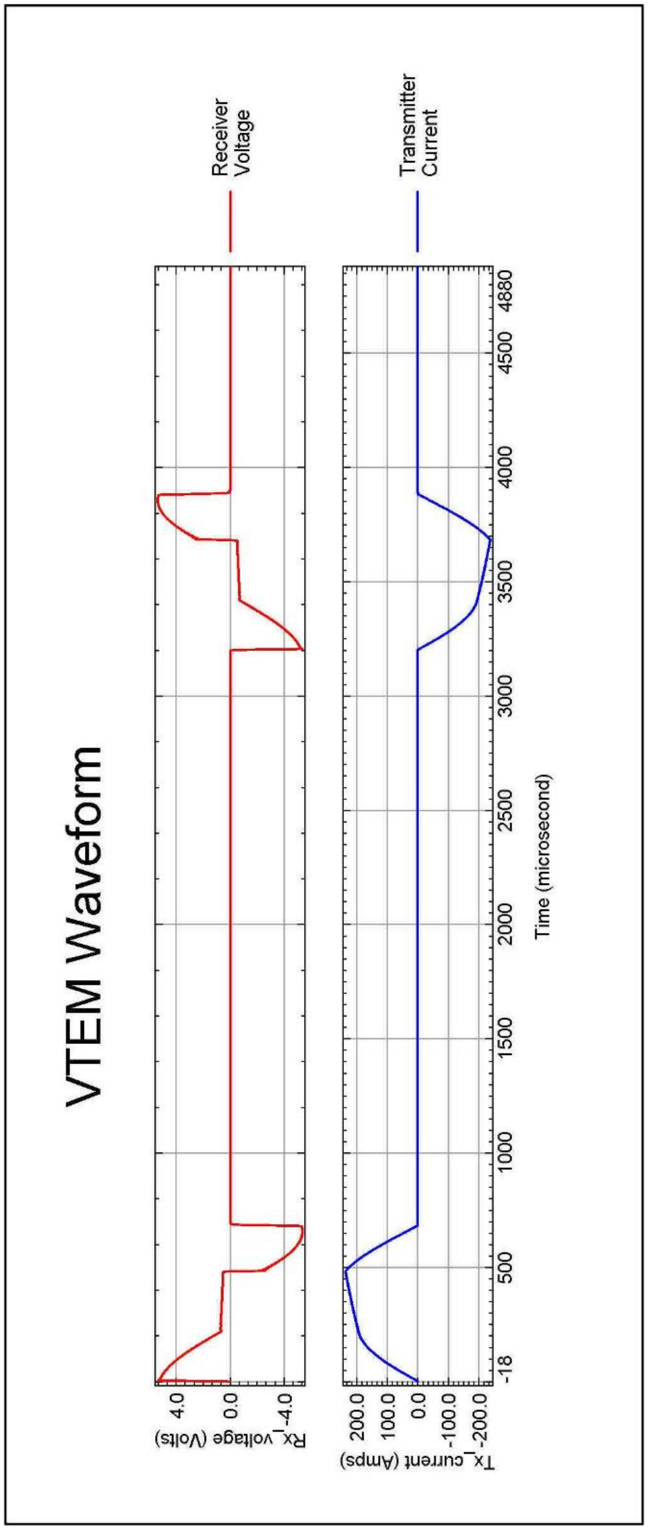
SURVEY BLOCK COORDINATES

(WGS 84, UTM Zone 8 North)

WGS84 UTM Zone 8N	
X	Y
412024.9	7096251.7
414981	7095975
415018.6	7095704.6
417647.9	7095499.4
417647.9	7093587.6
421732.7	7093445.5
421732.7	7088838.4
414750.6	7089170.6
414750.6	7089675
414175	7089675
414175	7092708.8
412024.9	7092764.3

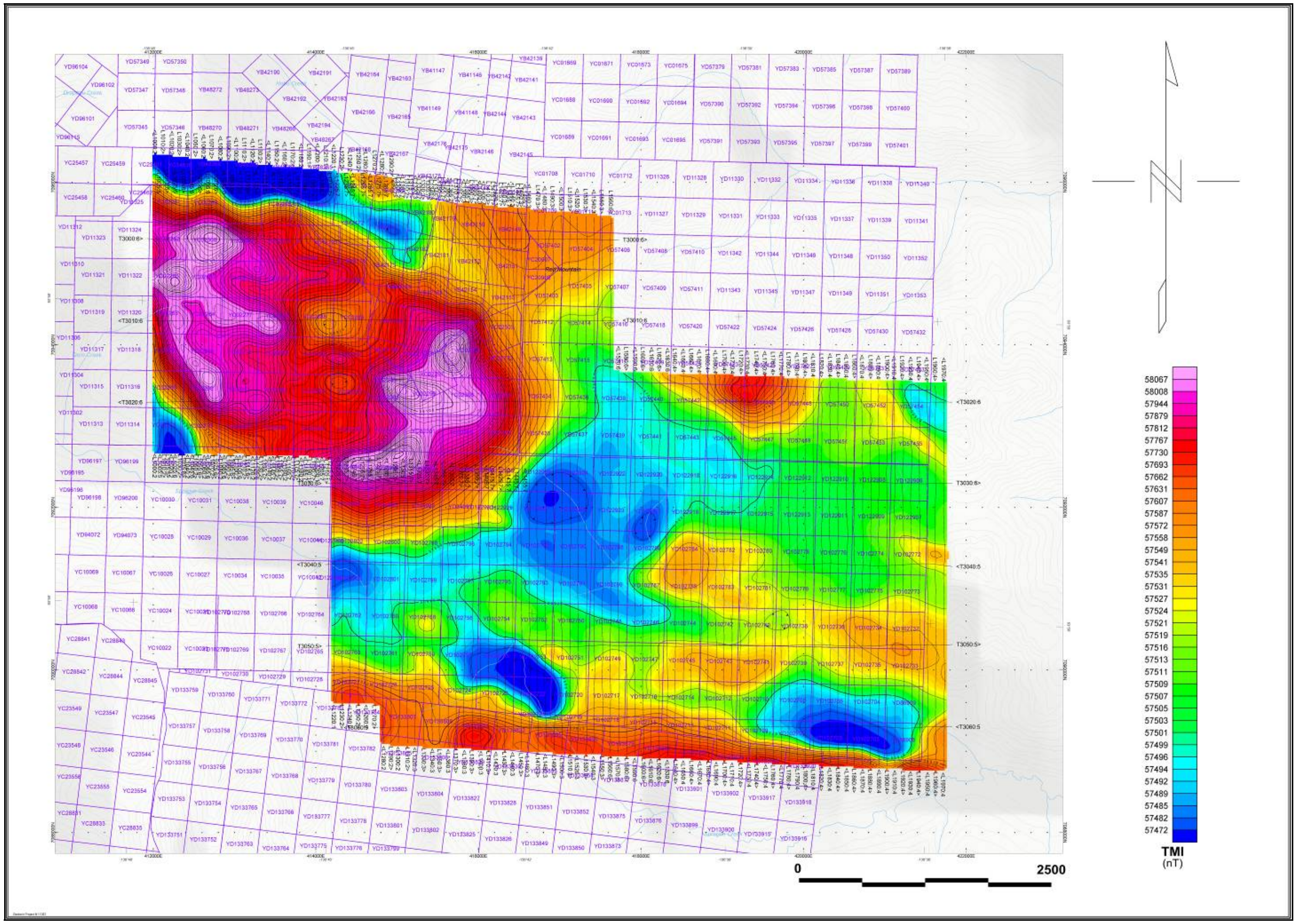
APPENDIX C

VTEM WAVEFORM



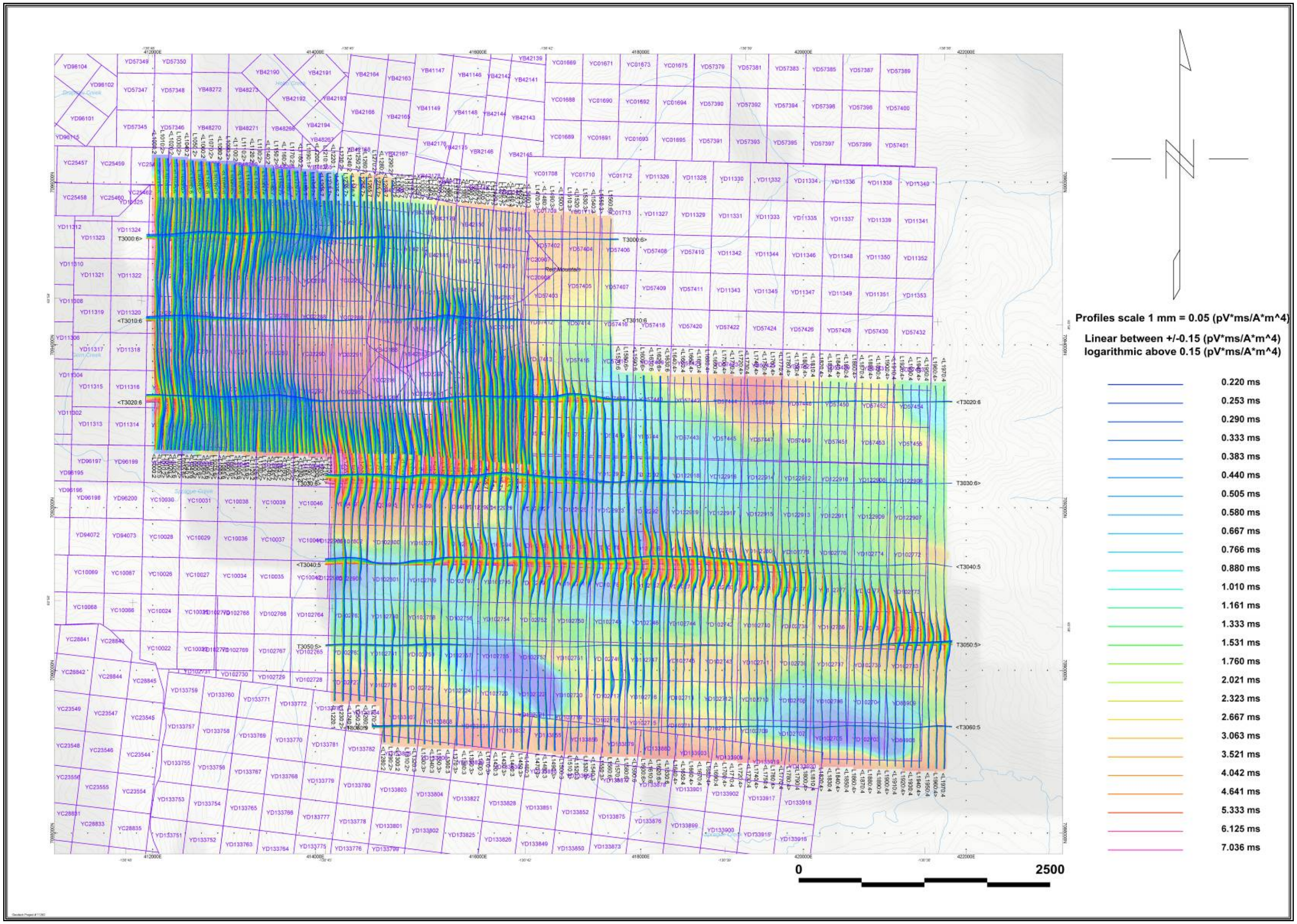
APPENDIX D

GEOPHYSICAL MAPS[1]

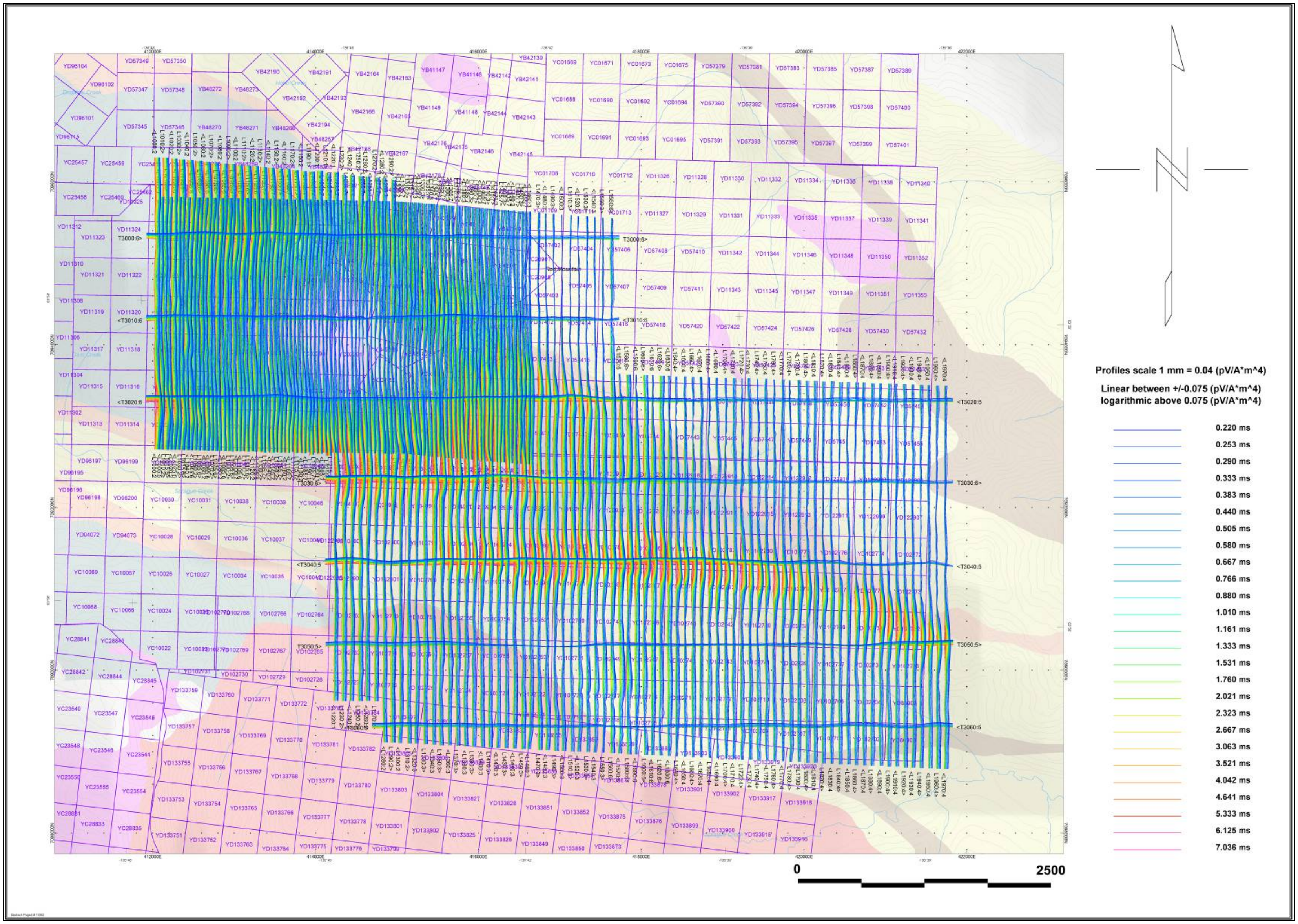


Total Magnetic Intensity (TMI)

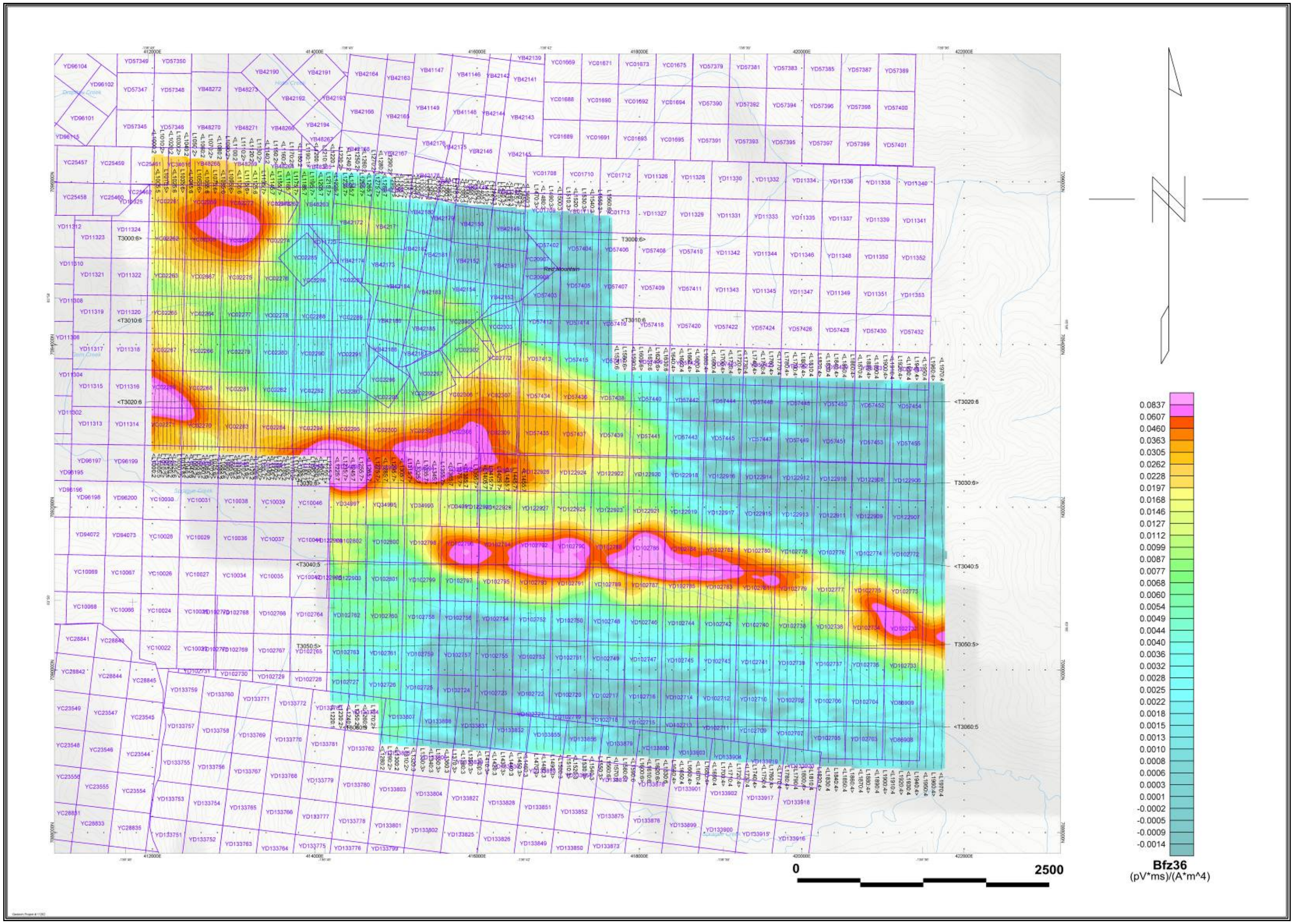
[1] Full size geophysical maps are also available in PDF format on the final DVD



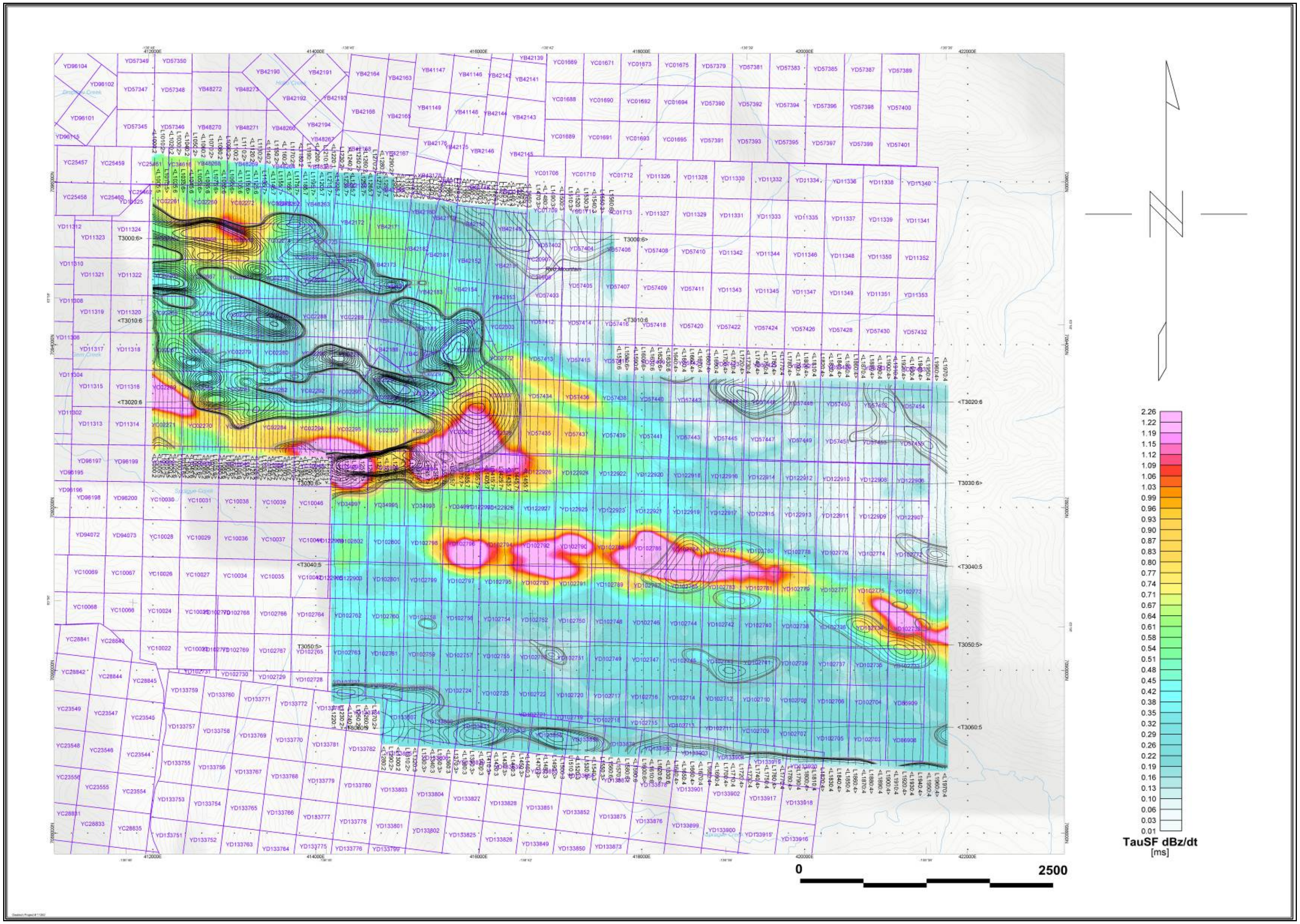
VTEM B-Field Profiles, Time Gates 0.220 to 7.036 ms



VTEM dB/dt Profiles, Time Gates 0.220 to 7.036 ms

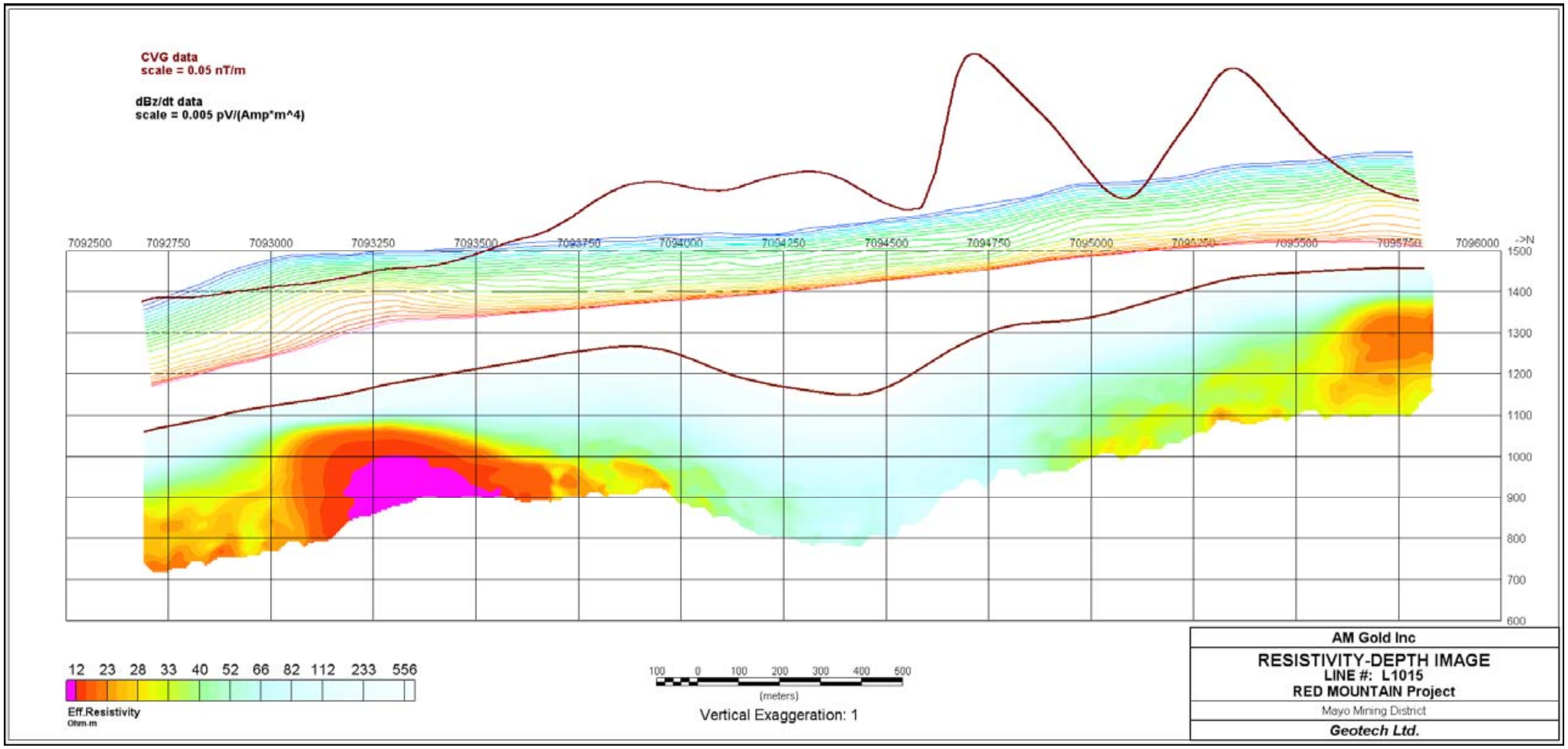


VTEM B-Field Channel 36, Time Gate 2.021 ms

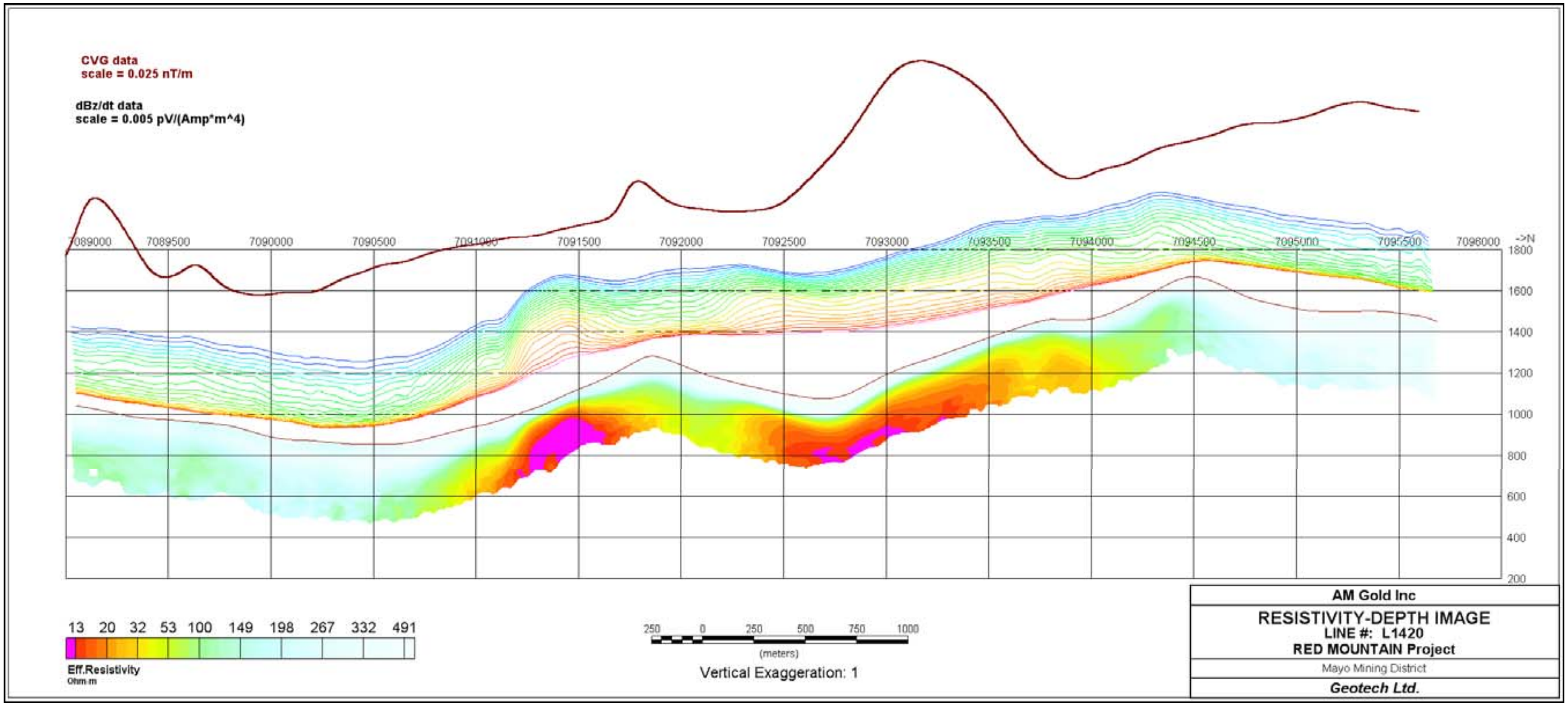


VTEM dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

Resistivity Depth Image (RDI) MAPS



Line 1015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dBz/dt data
scale = 0.005 pV/(Amp*m^4)
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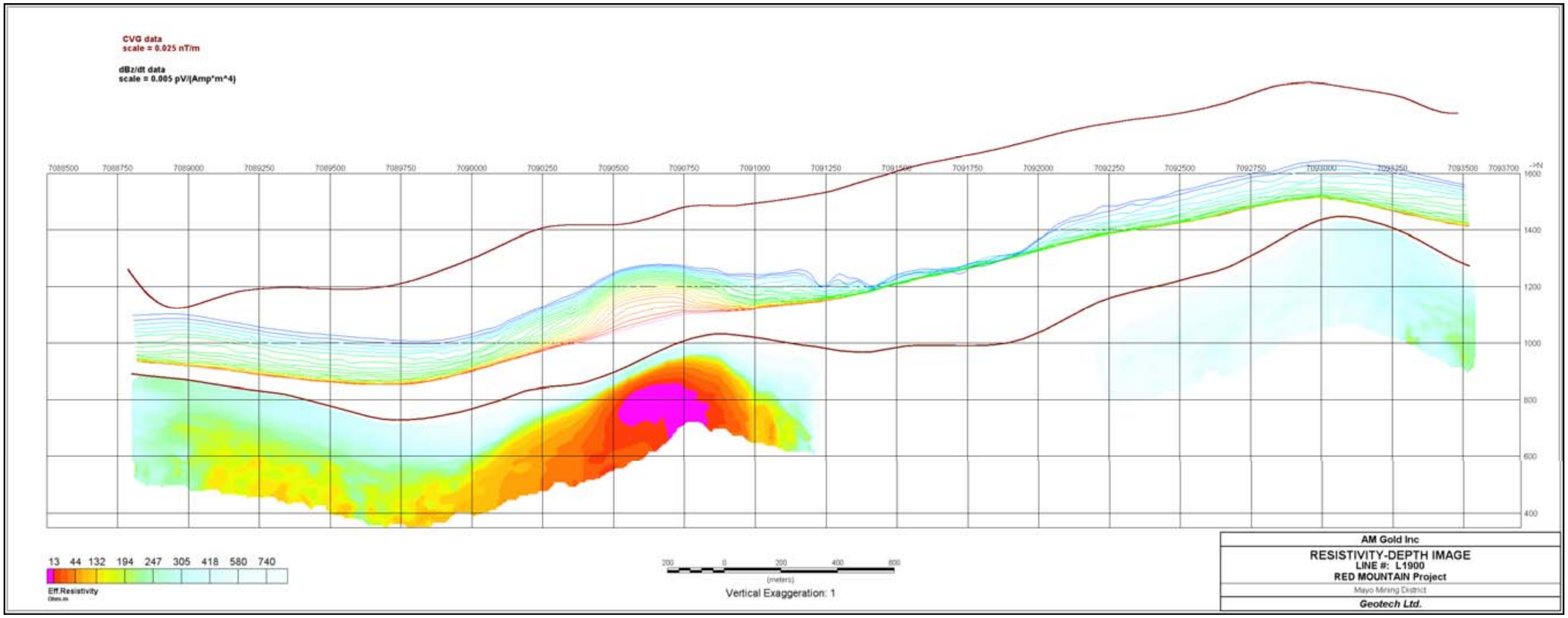
7092000
7092500
7093000
7093500
7094000
7094500
7095000
7095500
7096000
->N
1800
1600
1400
1200
1000
800
600
400
200
13 20 32 53 100 149 198 267 332 491
Eff.Resistivity
Ohm-m
250 0 250 500 750 1000
(meters)
Vertical Exaggeration: 1
AM Gold Inc
RESISTIVITY-DEPTH IMAGE
LINE #: L1420
RED MOUNTAIN Project
Mayo Mining District
Geotech Ltd.

Line 1420


CVG data
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dBz/dt data
scale = 0.005 pV/(Amp*m^4)
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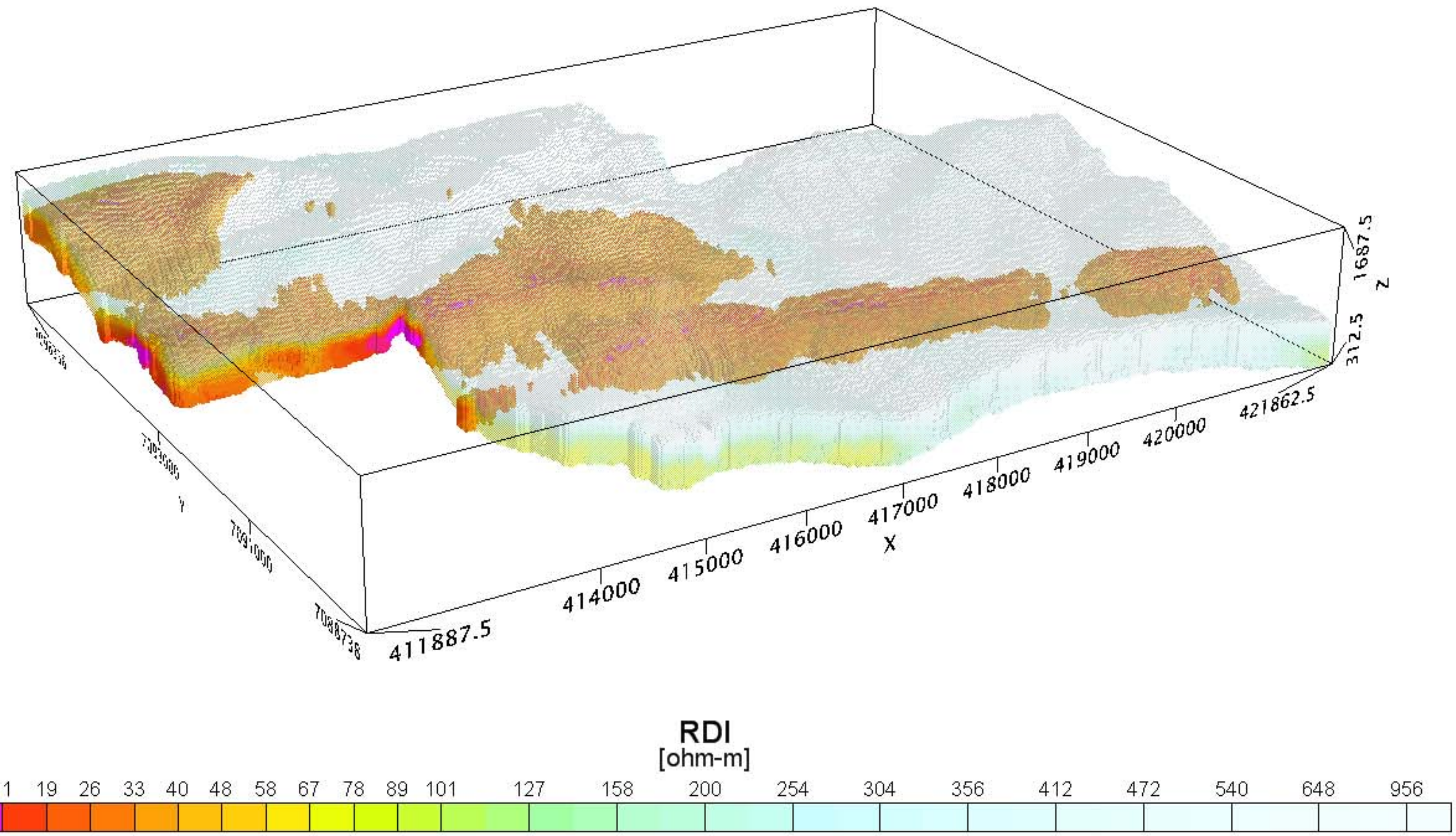
1600
1400
1200
1000
800
600
400
13 44 132 194 247 305 418 580 740
Eff.Resistivity
200 0 200 400 600
(meters)
Vertical Exaggeration: 1
AM Gold Inc
RESISTIVITY-DEPTH IMAGE
LINE #: L1900
RED MOUNTAIN Project
Mayo Mining District
Geotech Ltd.

Line 1900

Red Mountain project, Mayo Mining District
Resistivity-Depth Image



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.

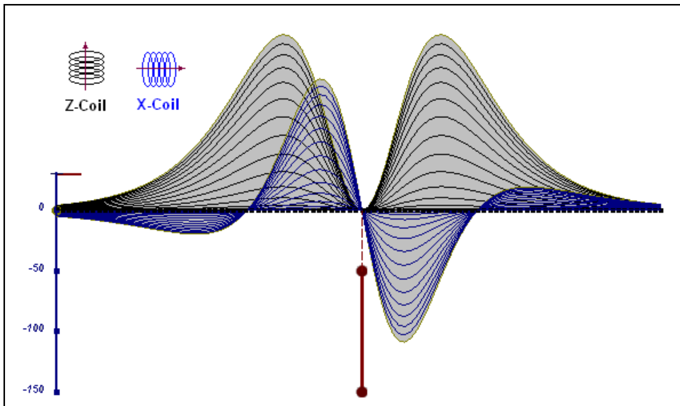


Fig E-1: vertical thin plate

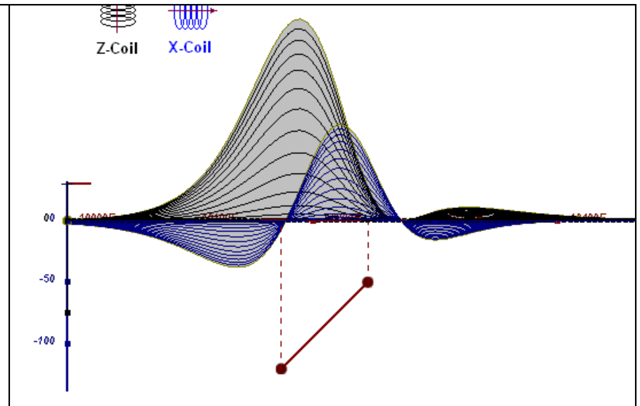


Fig E-2: inclined thin plate

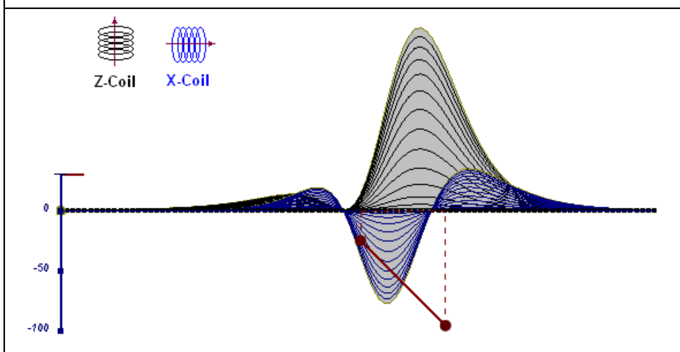


Fig E-3: inclined thin plate

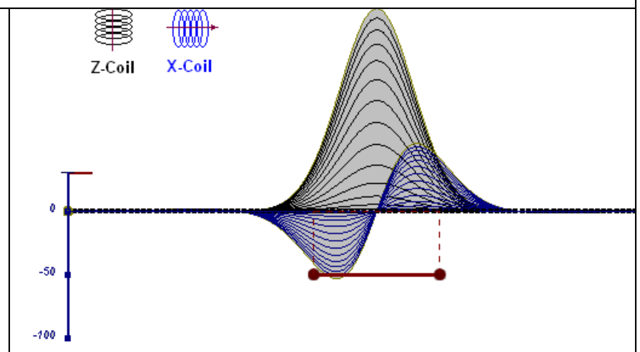


Fig E-4: horizontal thin plate

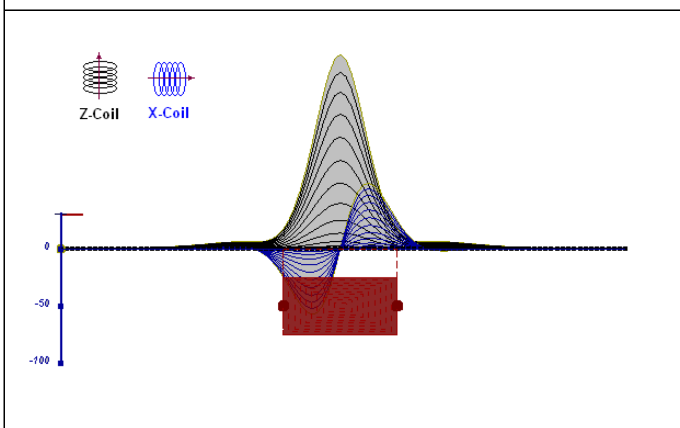


Figure E-5: horizontal thick plate (linear scale of the response)

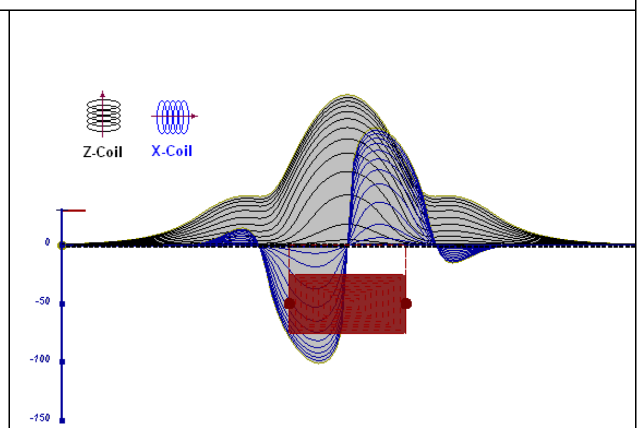


Figure E-6: horizontal thick plate (log scale of the response)

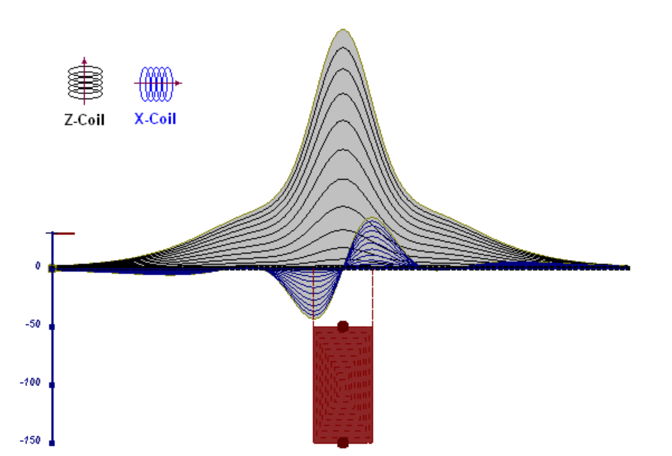


Figure E-7: vertical thick plate (linear scale of the response). 50 m depth

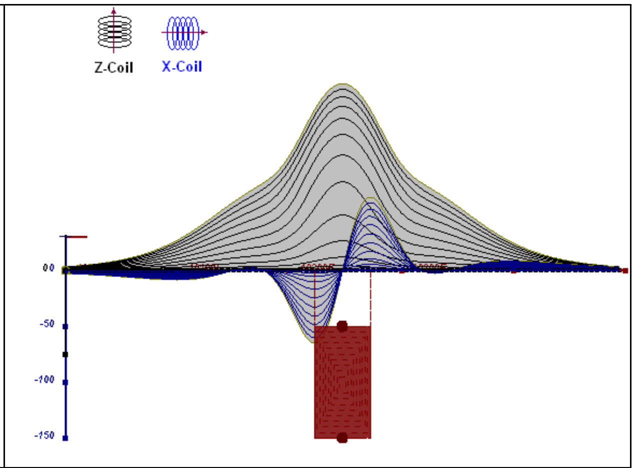


Figure E-8: vertical thick plate (log scale of the response). 50 m depth

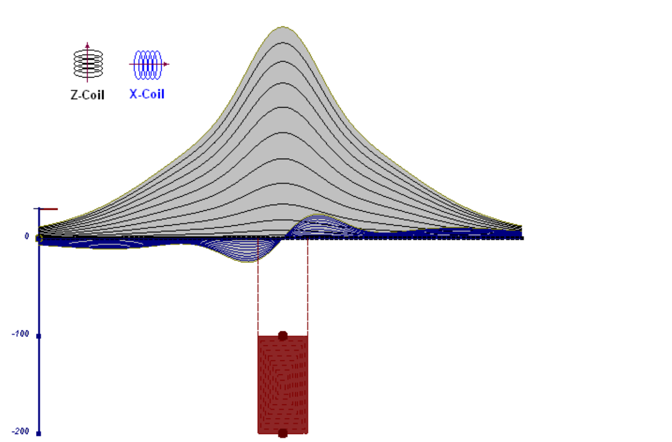


Fig E-9: vertical thick plate (linear scale of the response). 100 m depth

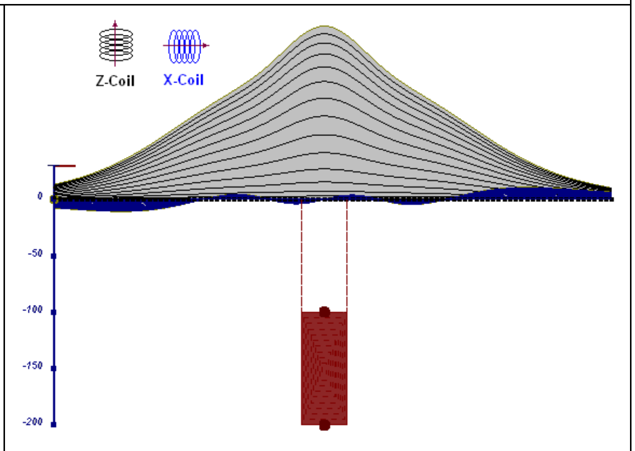


Fig E-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

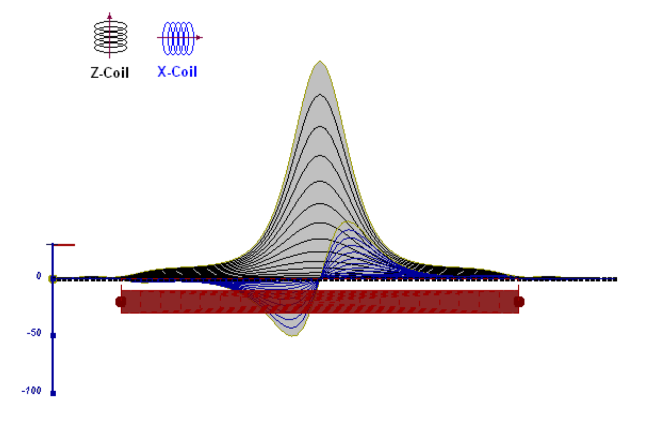


Fig E-10: horizontal thick plate (linear scale of the response)

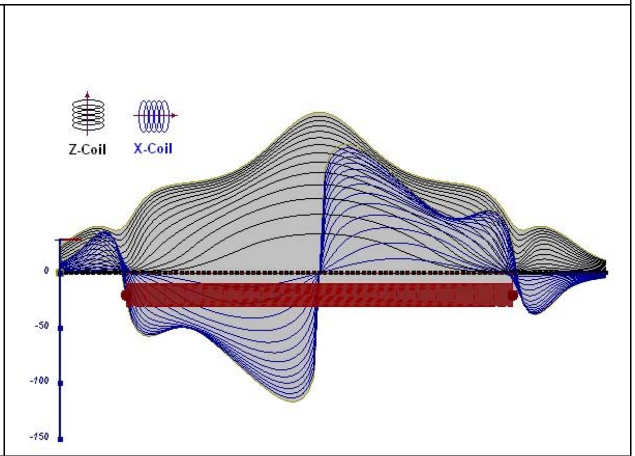


Fig E-11: horizontal thick plate (log scale of the response)

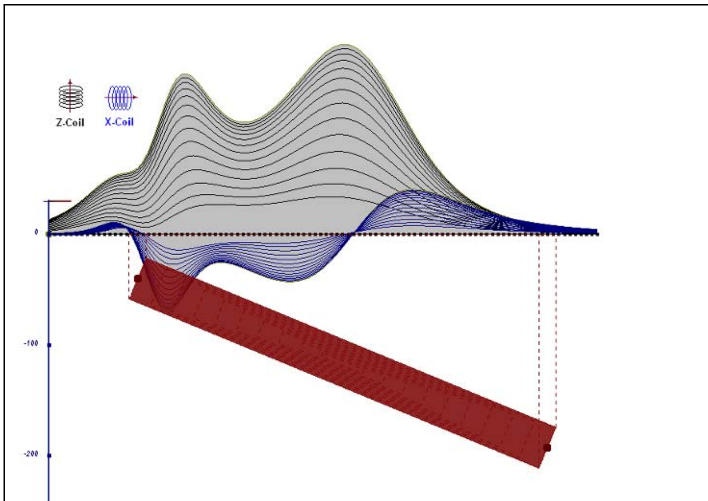


Fig E-12: inclined long thick plate

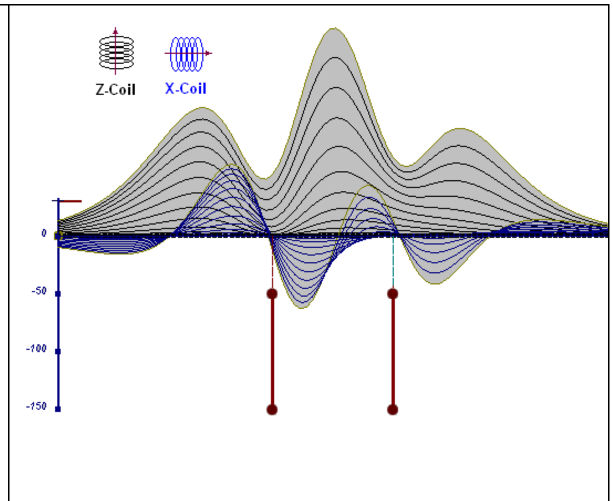


Fig E-13: two vertical thin plates

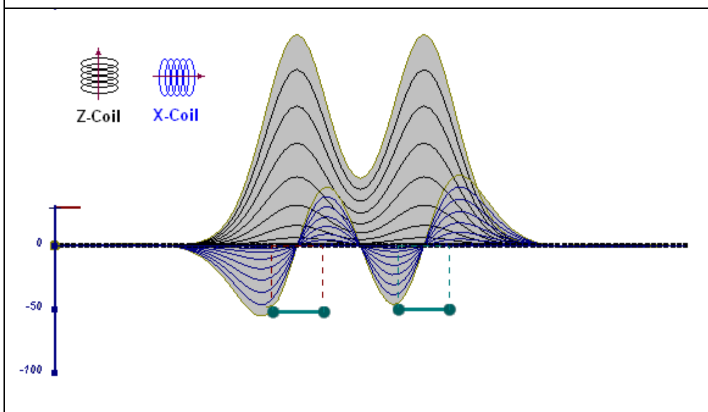


Fig E-14: two horizontal thin plates

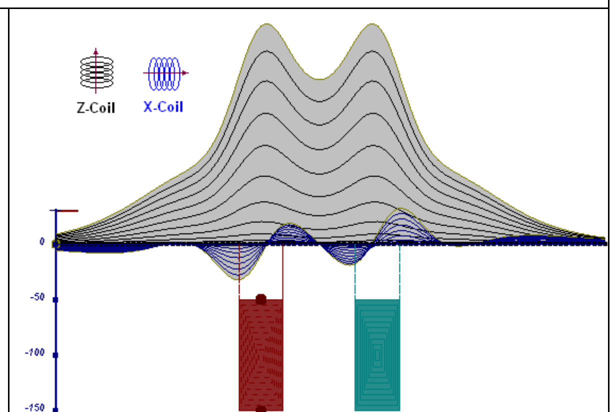


Fig E-15: two vertical thick plates

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

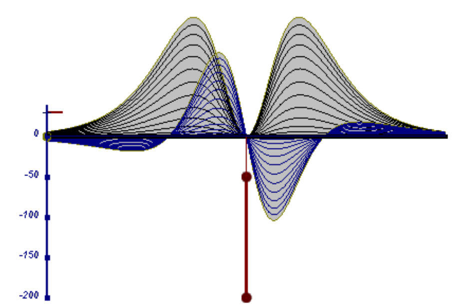
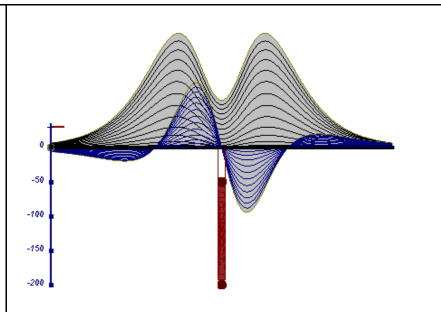
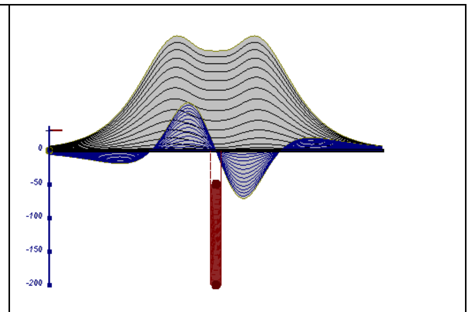
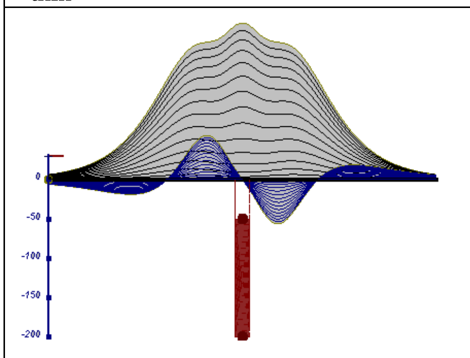
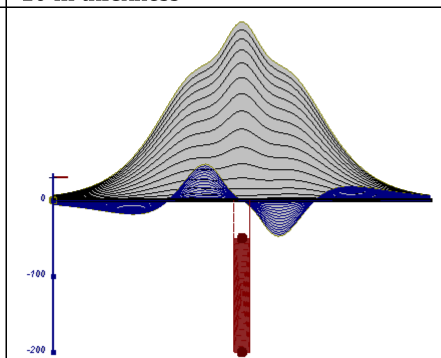
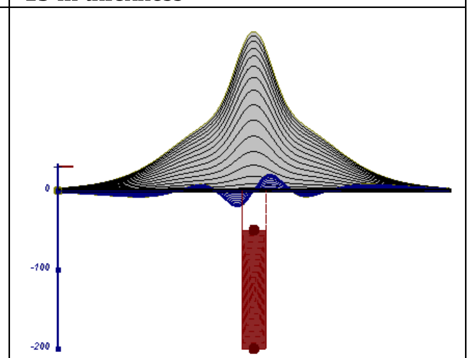
		
“thin”	10 m thickness	15 m thickness
		
18 m thickness	20 m thickness	30 m thickness

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

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Geotech Ltd.

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 conductances 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).

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

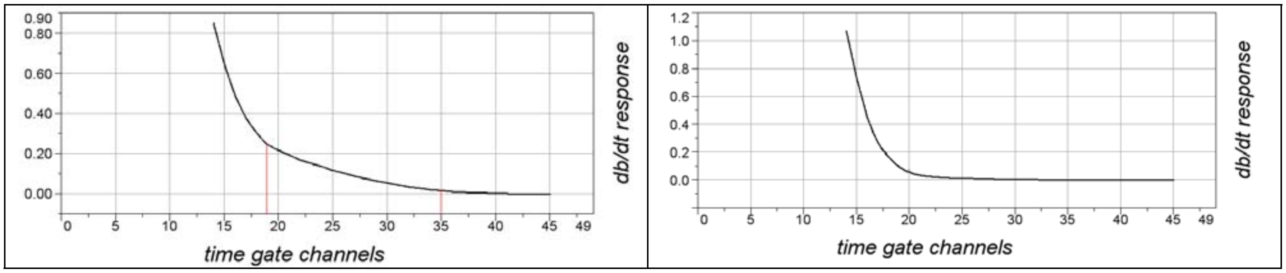

Figure F1 Left – presence of good conductor, right – poor conductor.

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.

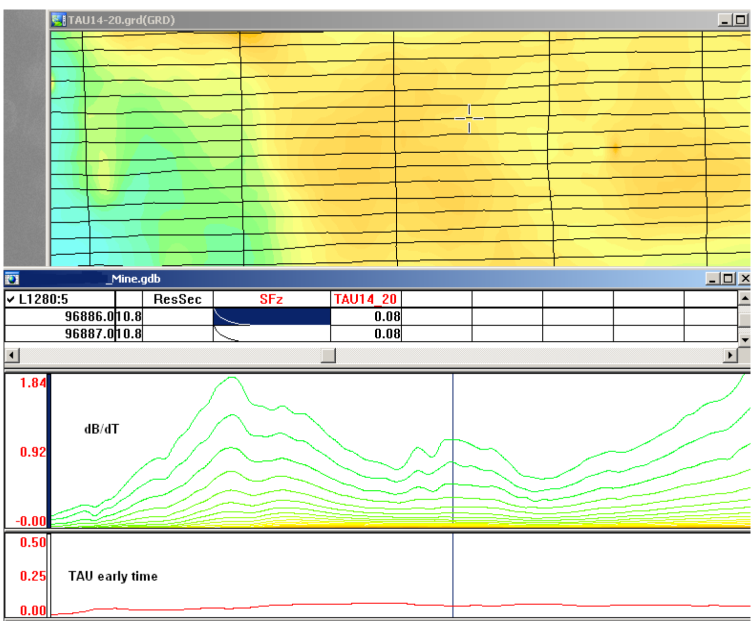

Figure F2 – Map of early time TAU. Area with overburden conductive layer and local sources.

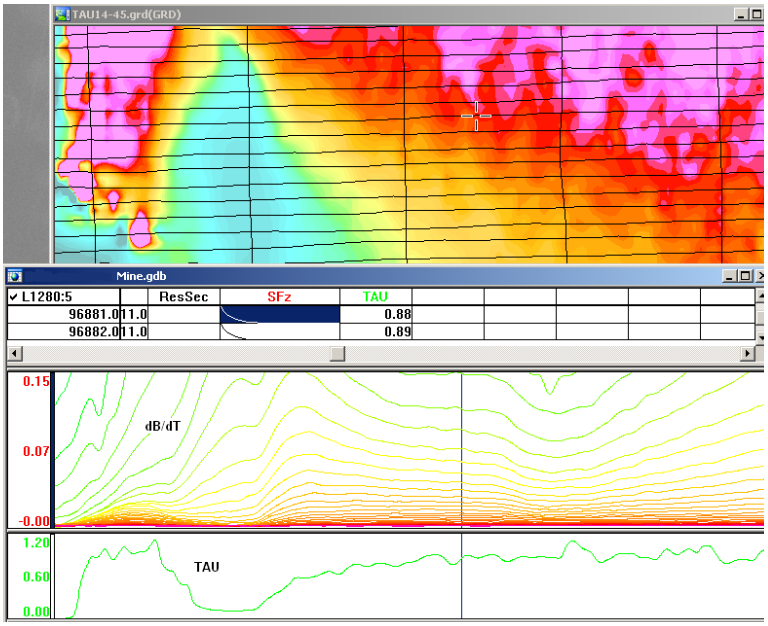

Figure F3 – Map of full time range TAU with EM anomaly due to deep highly conductive target.

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.

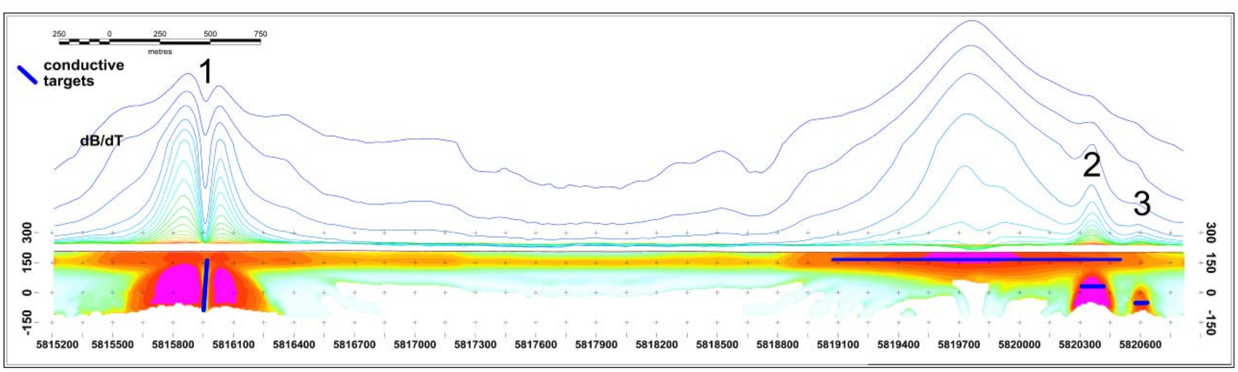

Figure F4 – dB/dt profile and RDI with different depths of targets.

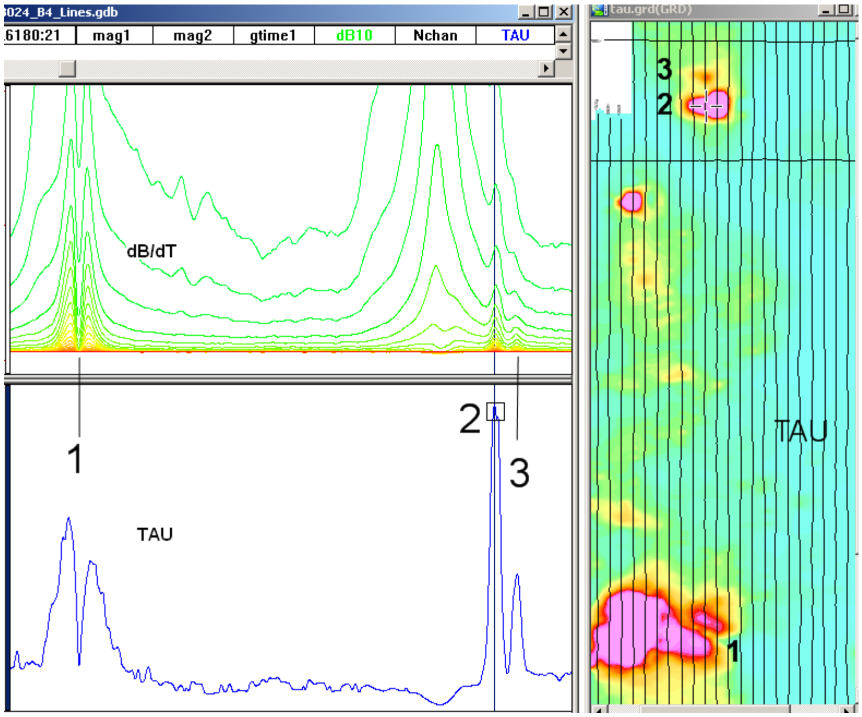

Figure F5 – Map of total TAU and dB/dt profile.

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.

[2] by A.Prikhodko

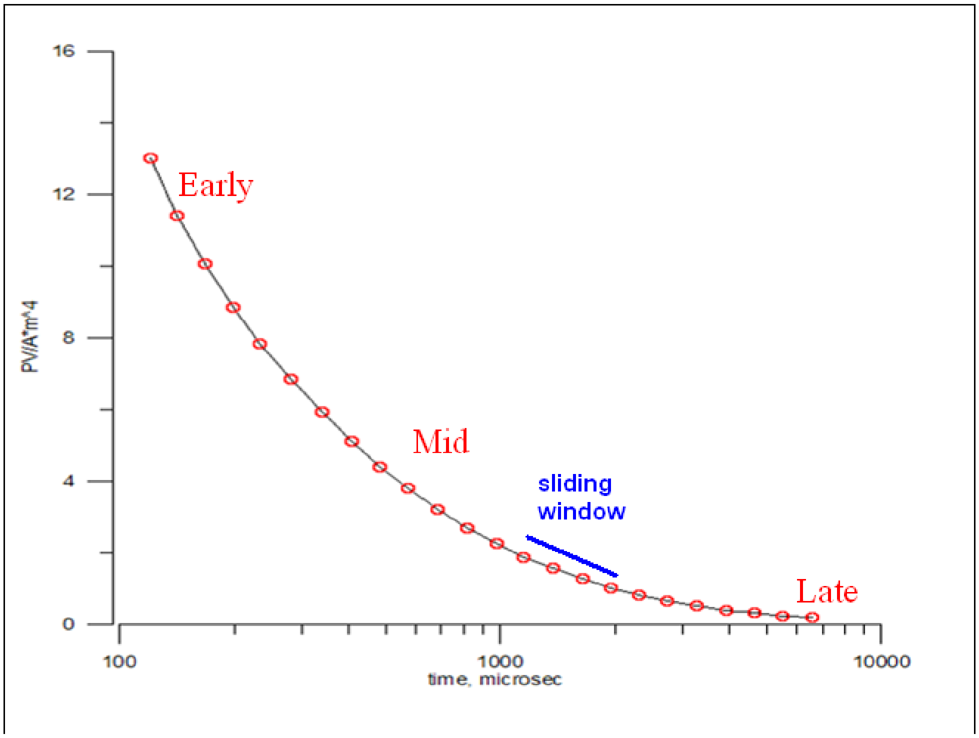

Figure F6 - Typical dB/dt decays of Vtem data

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September 2010

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)

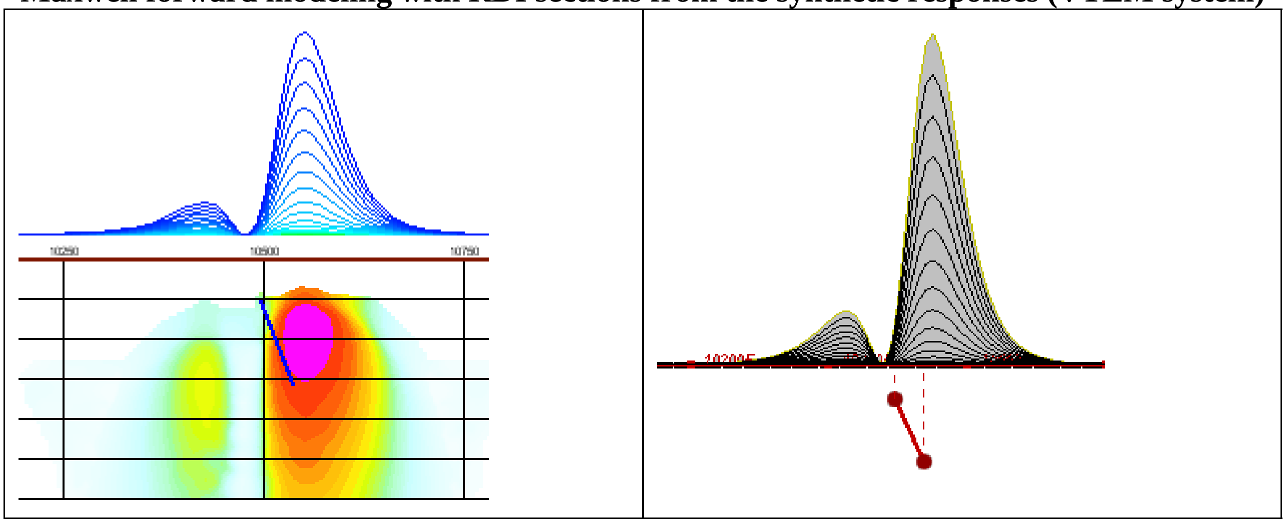


Fig. 1 Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extend 100 m).

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

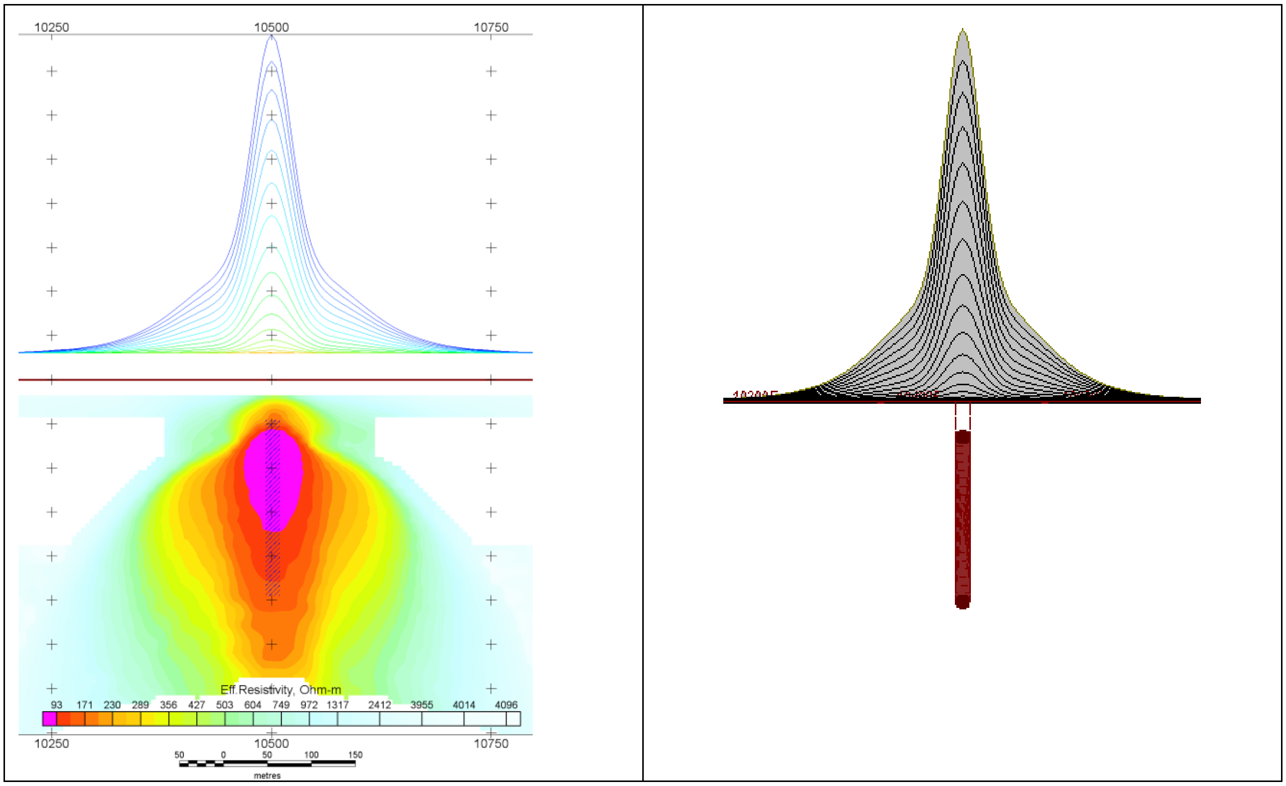


Fig. 2 Maxwell plate model and RDI from the calculated response for “thick” plate 18 m thickness, depth 50 m, depth extend 200 m).

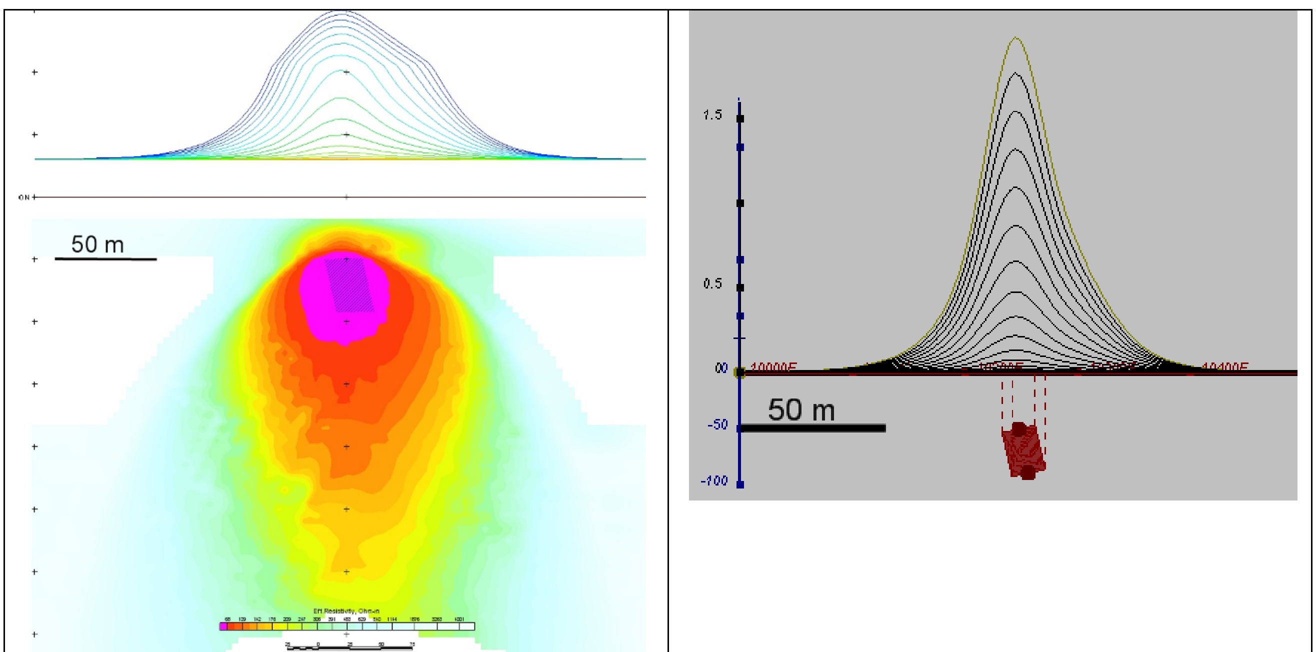


Fig.3 Maxwell plate model and RDI from the calculated response for bulk (“thick”) 100 m length, 40 m depth extend, 30 m thickness

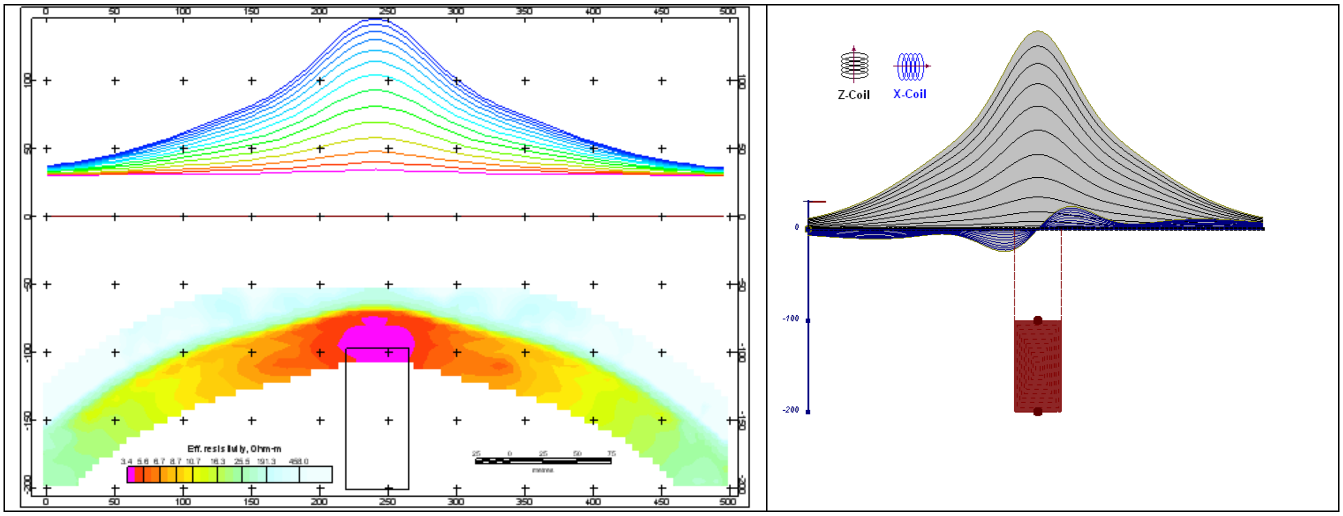


Fig. 4 Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

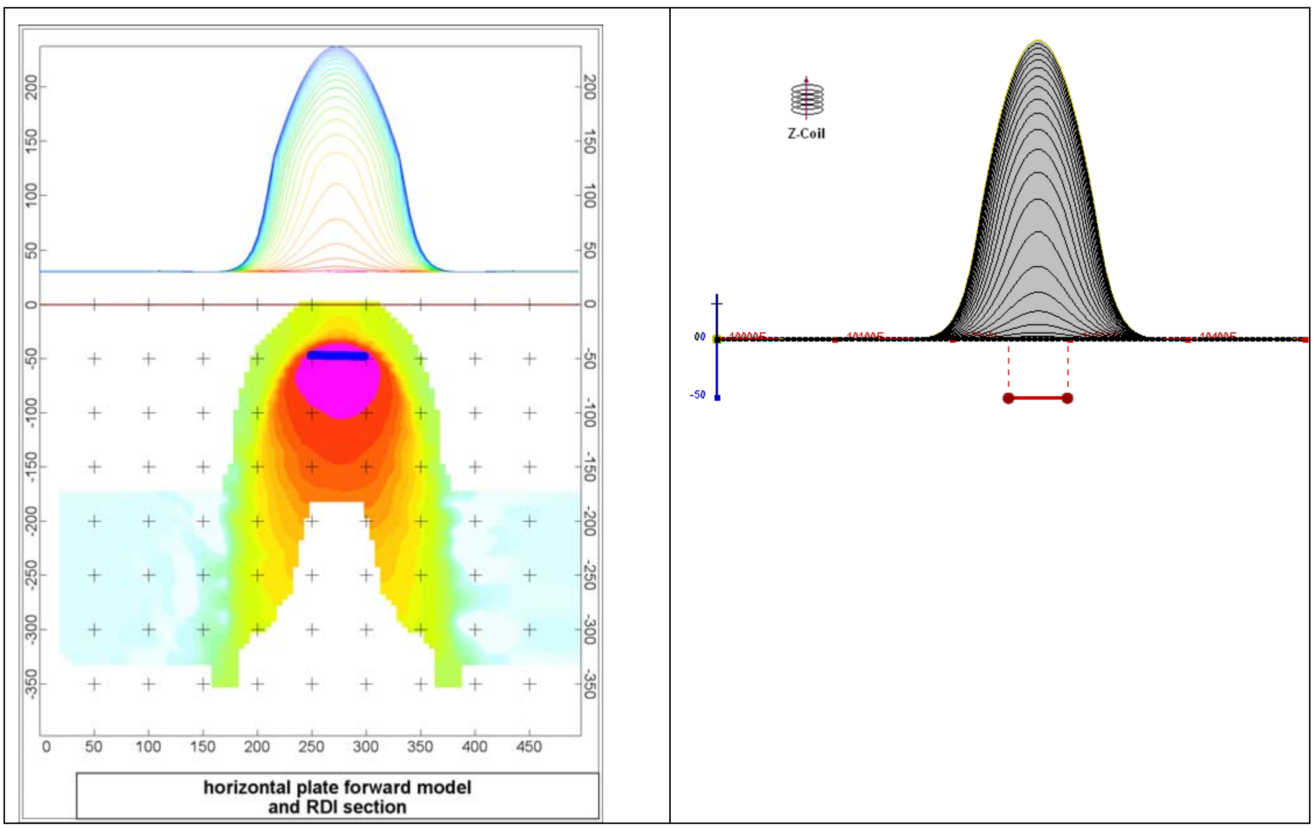


Fig. 5 Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

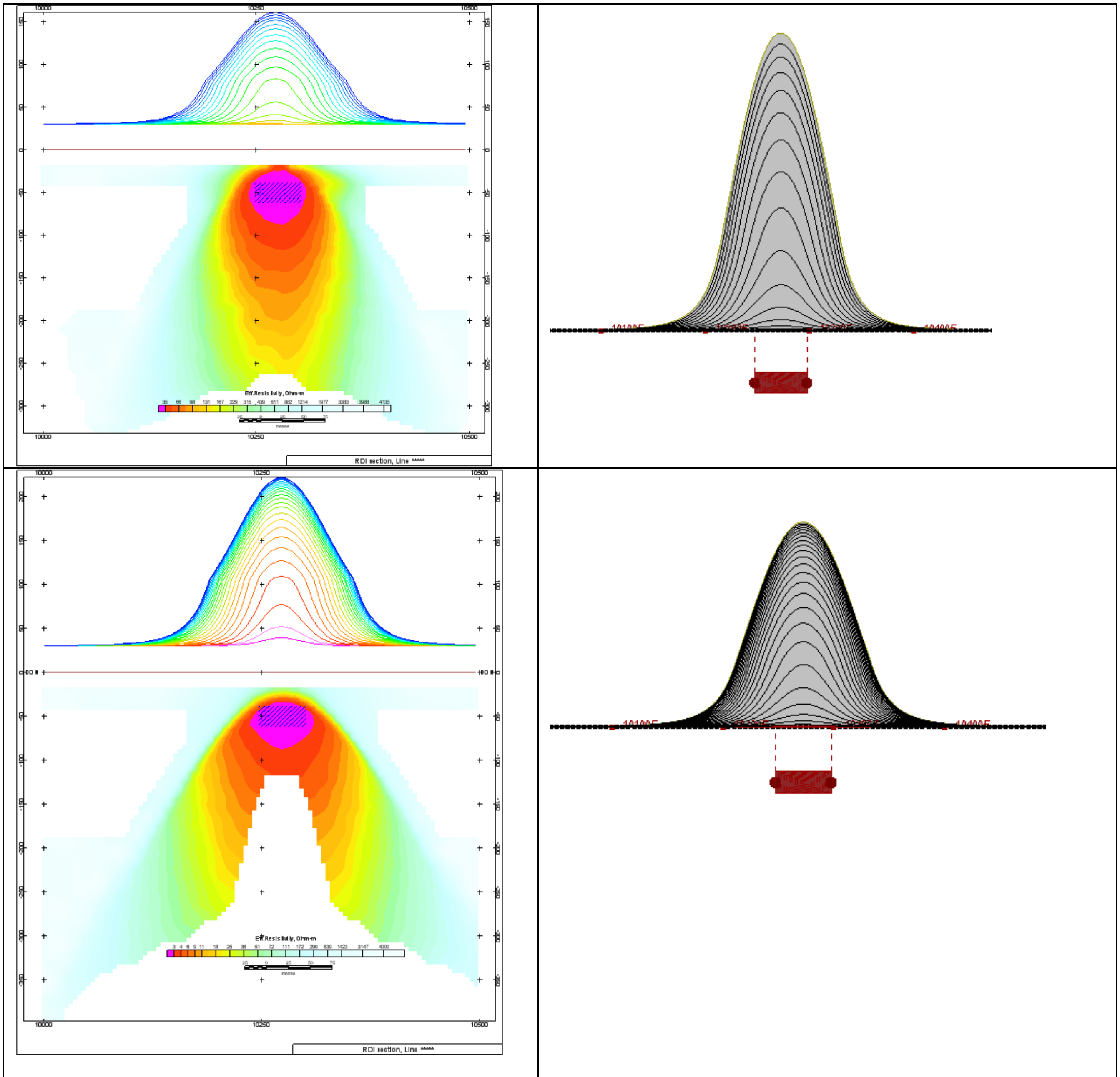


Fig.6 Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

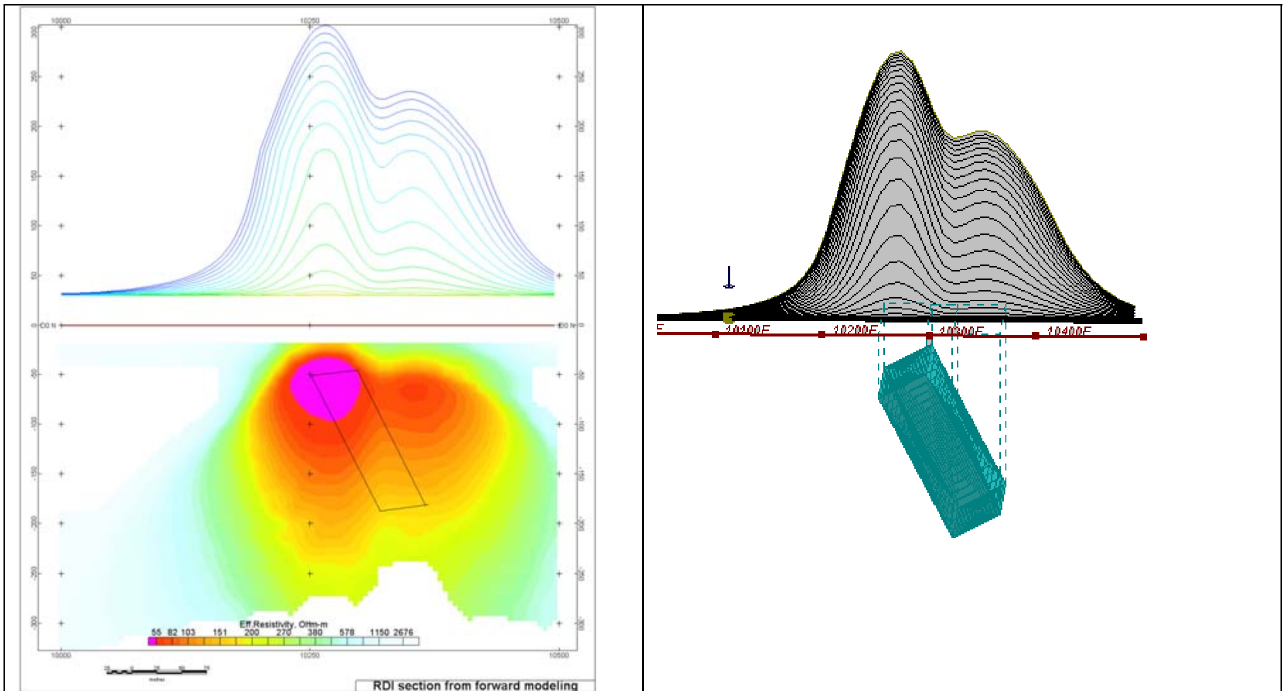


Fig.7 Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extend 150 m, depth to the target 50 m.

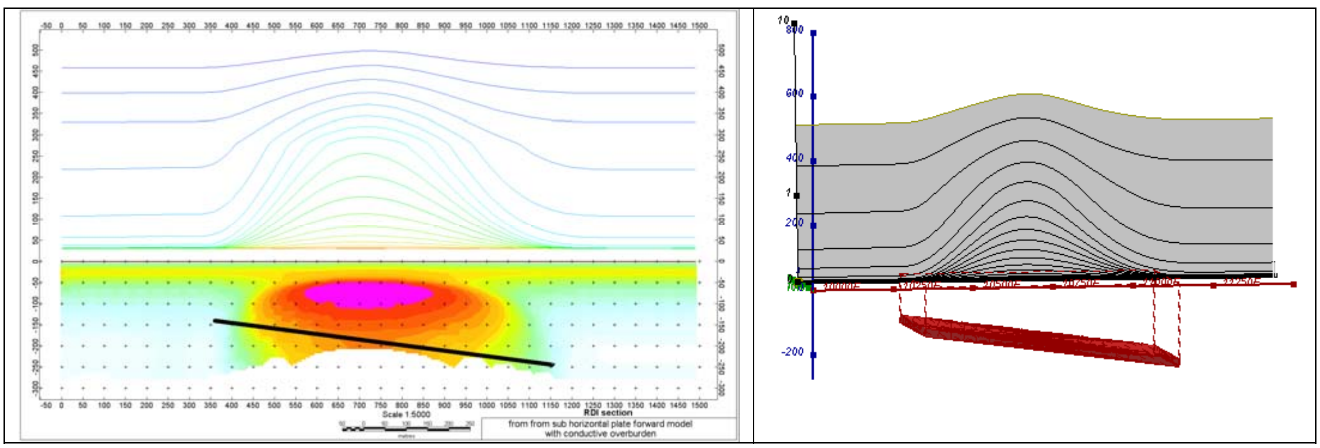


Fig.8 Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

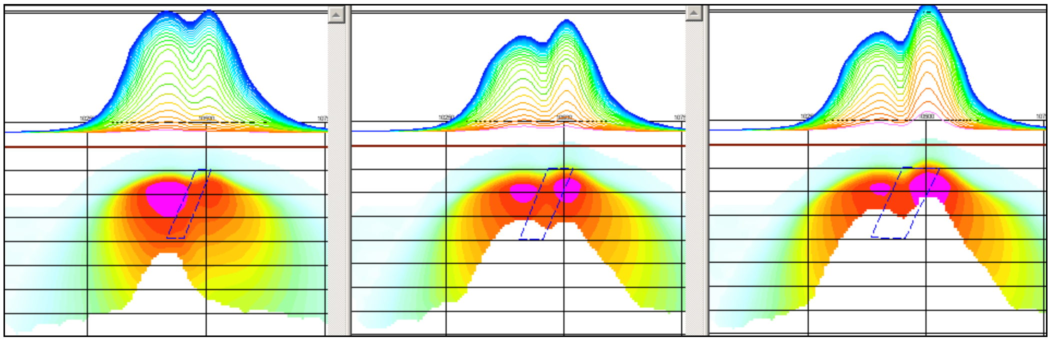


Fig.9 Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

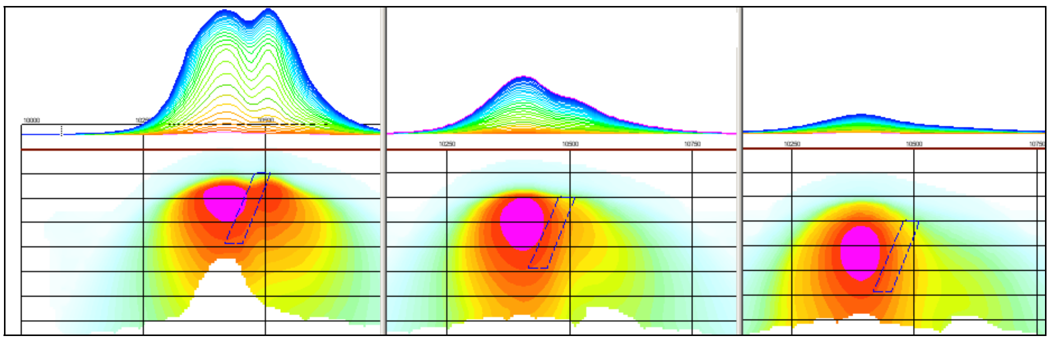


Fig.10 Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m),, conductivity 2.5 S/m.

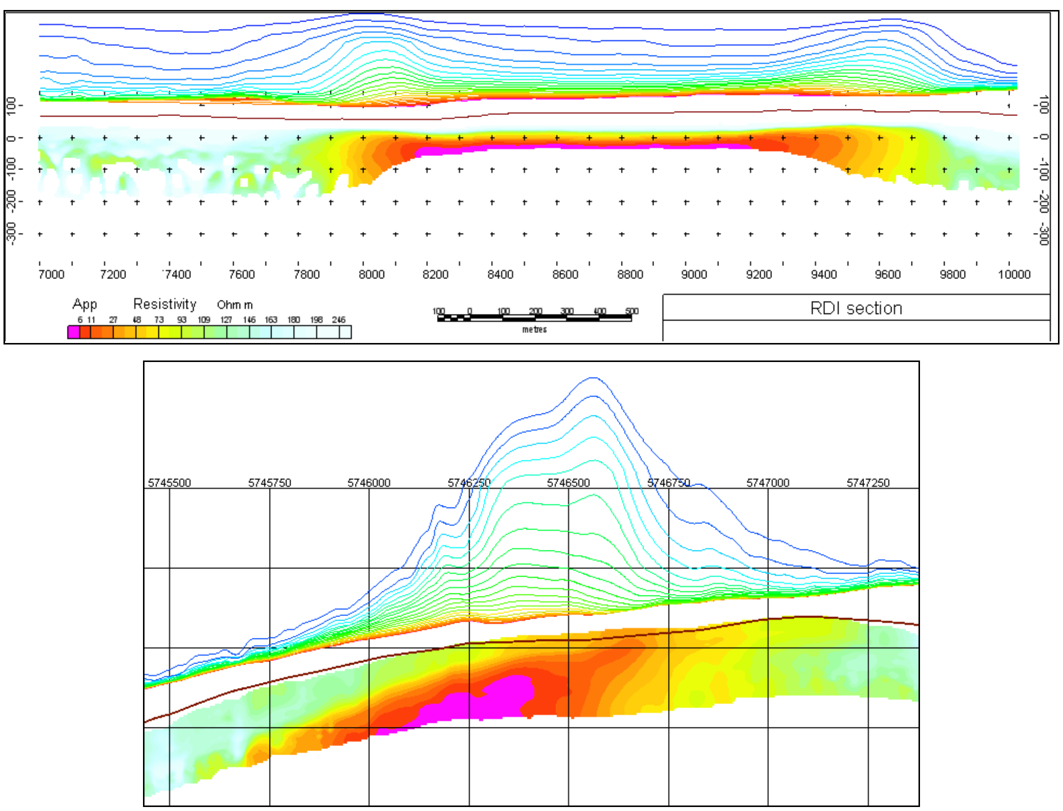
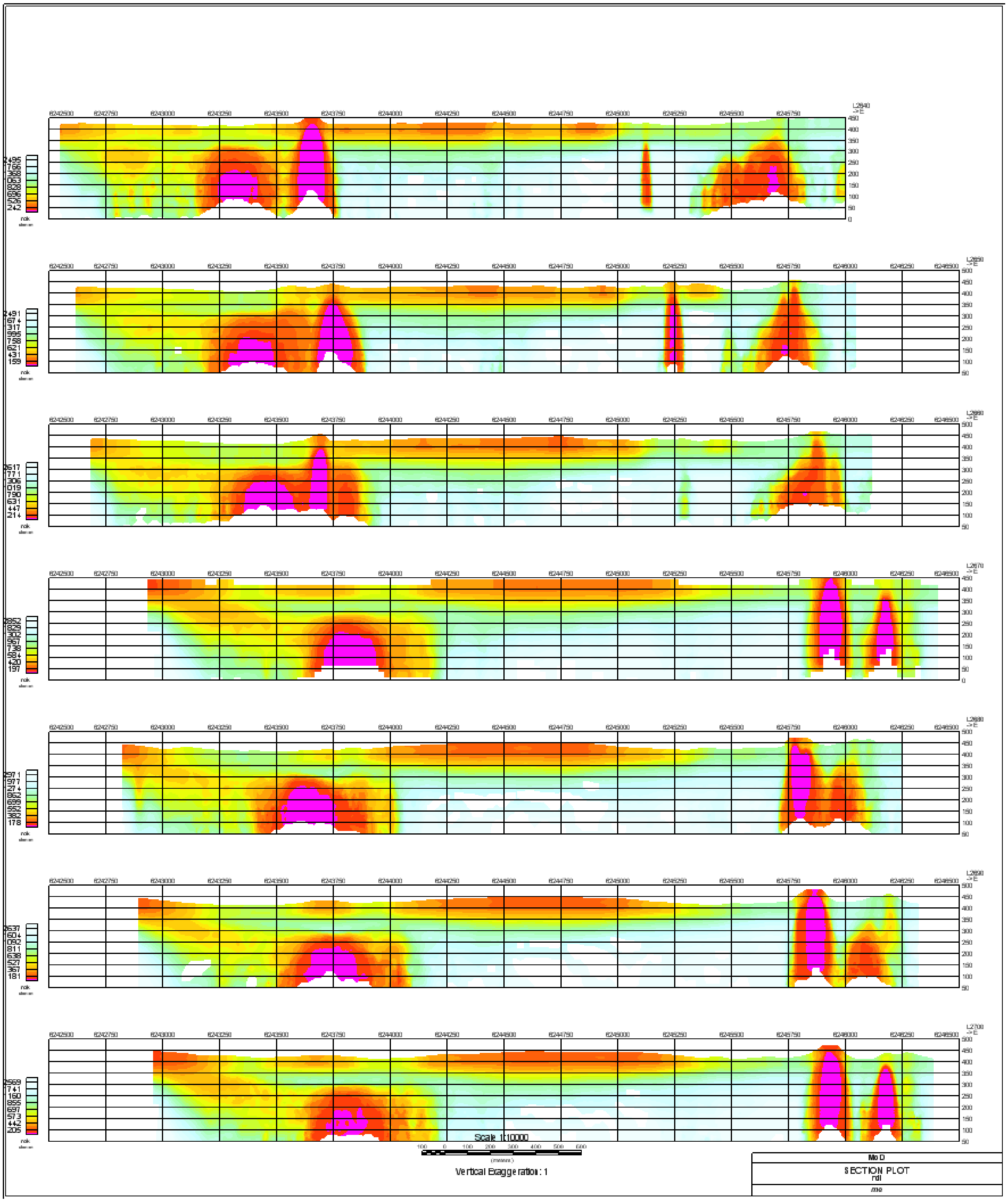


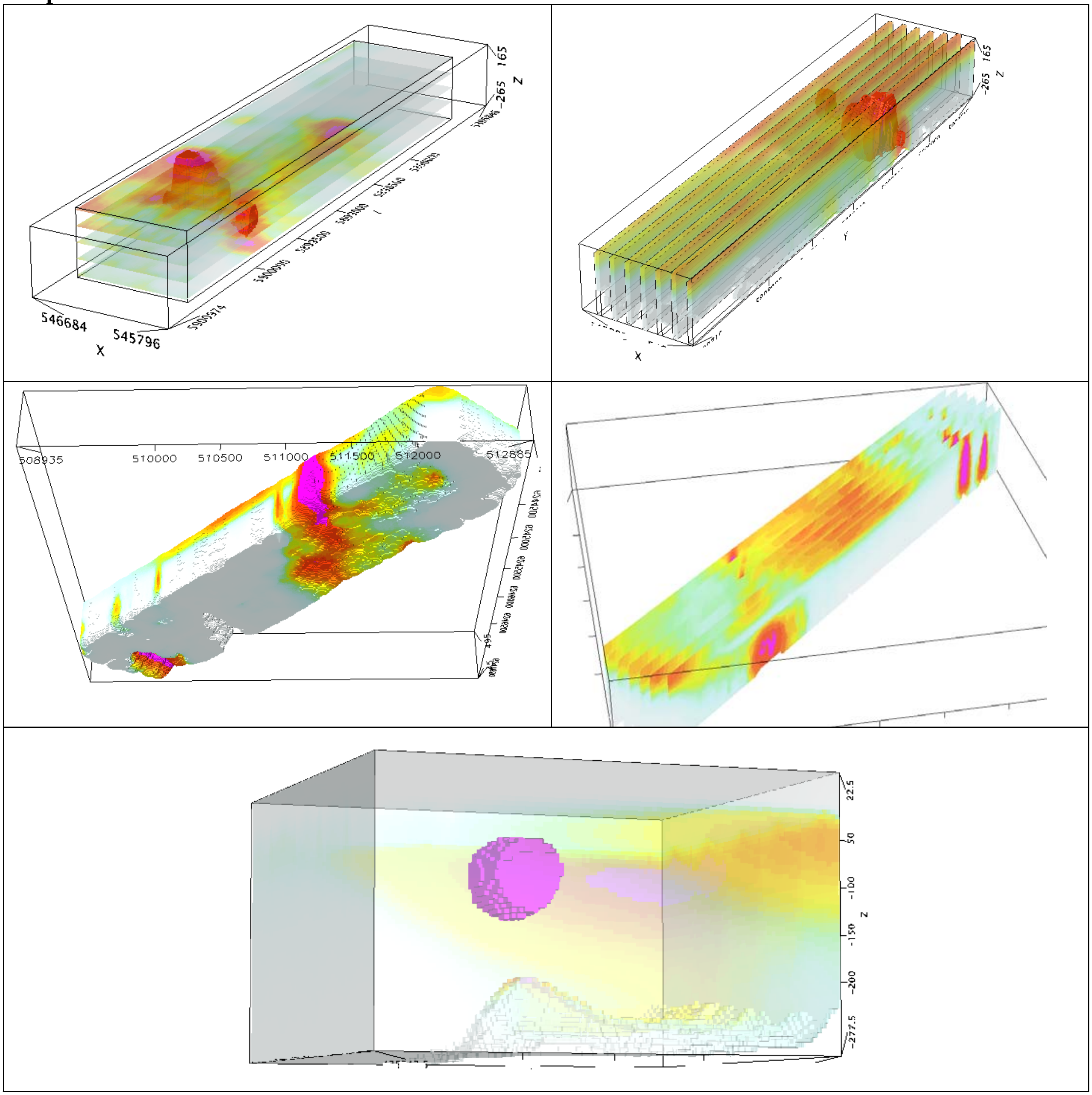
Fig.11 RDI section for the real horizontal and slightly dipping conductive layers

Forms of RDI presentation

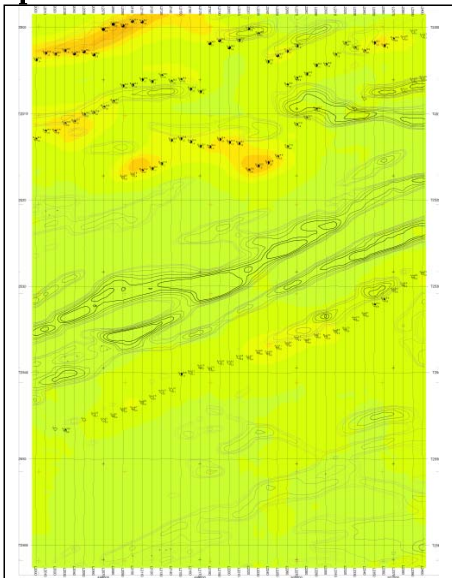
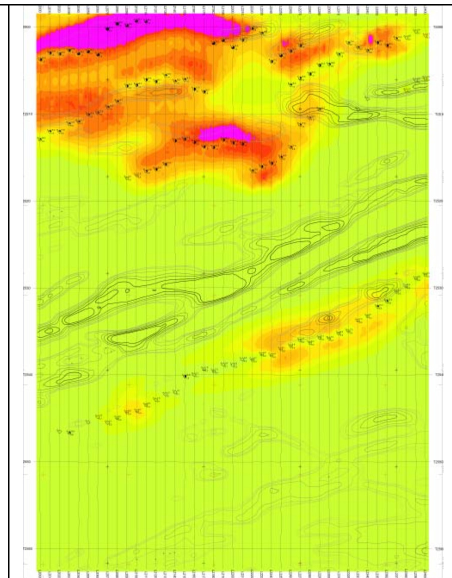
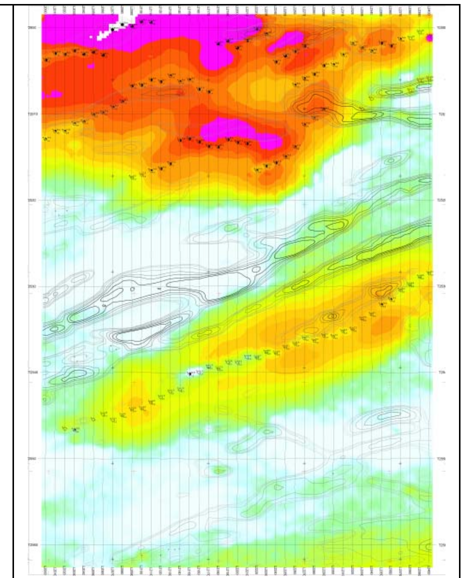
Presentation of series of lines



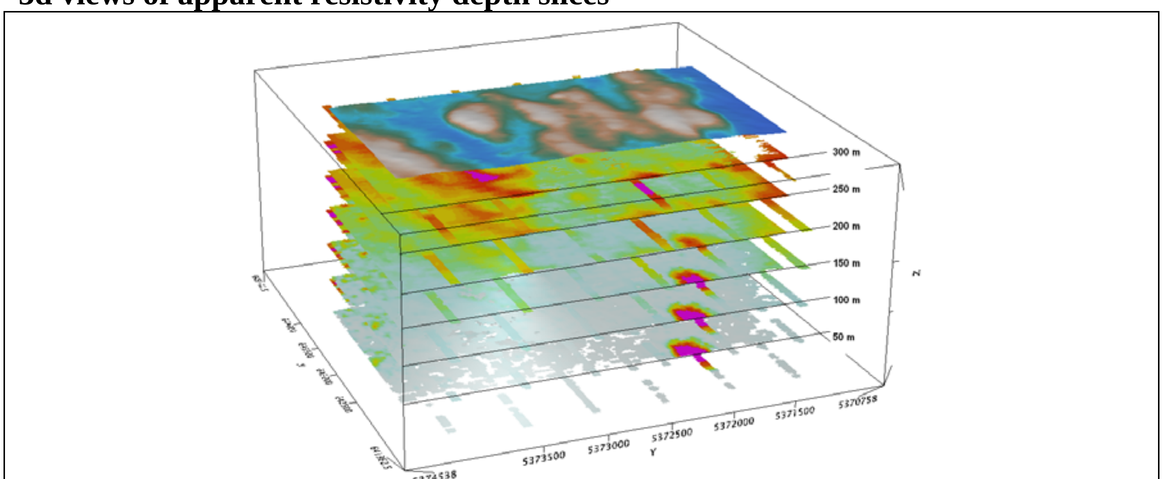
3d presentation of RDIs

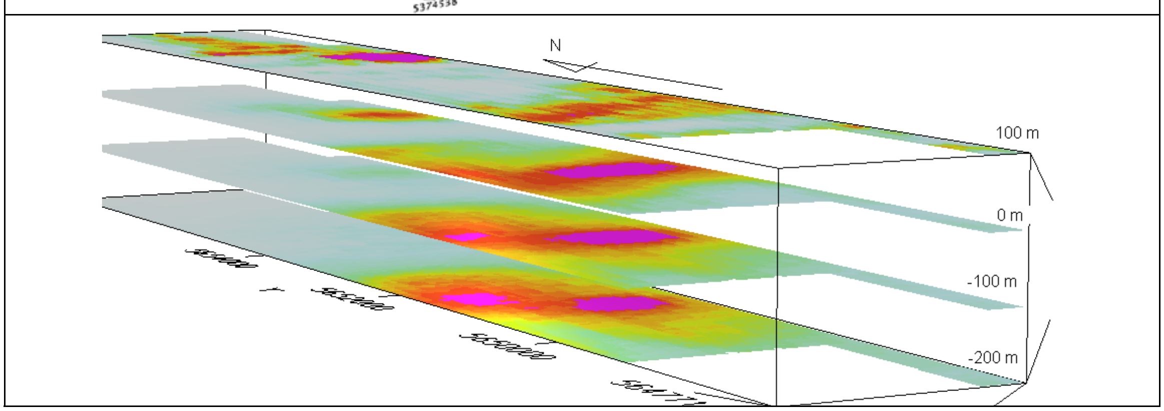


Apparent Resistivity Depth Slices plans

		
0 m (surface)	-100 m	-200 m

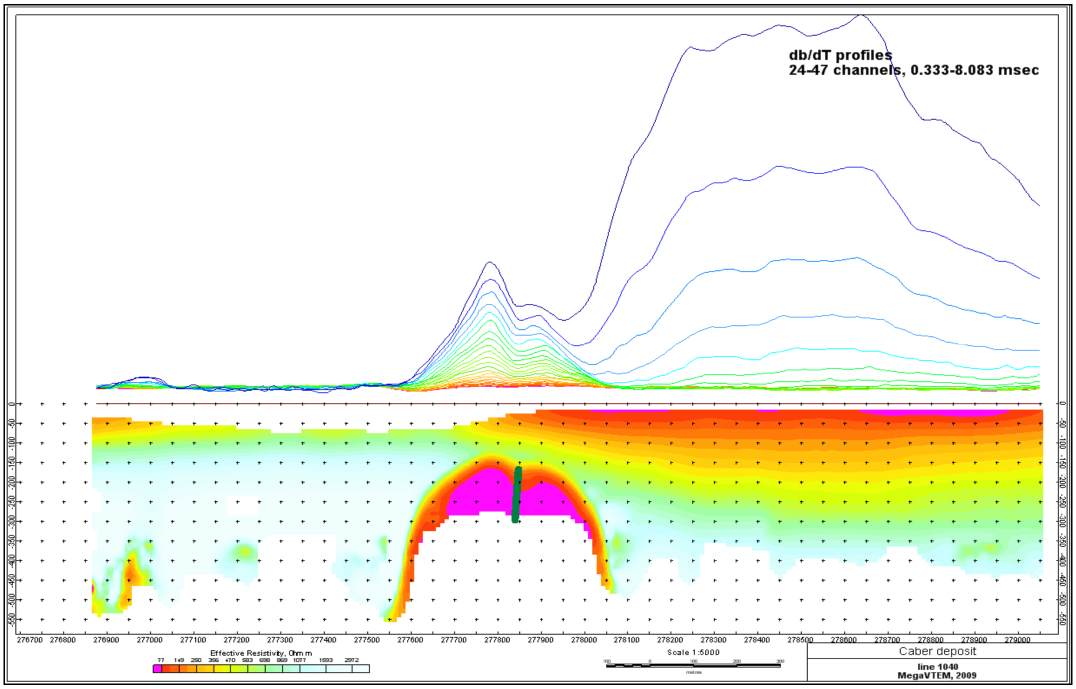
3d views of apparent resistivity depth slices



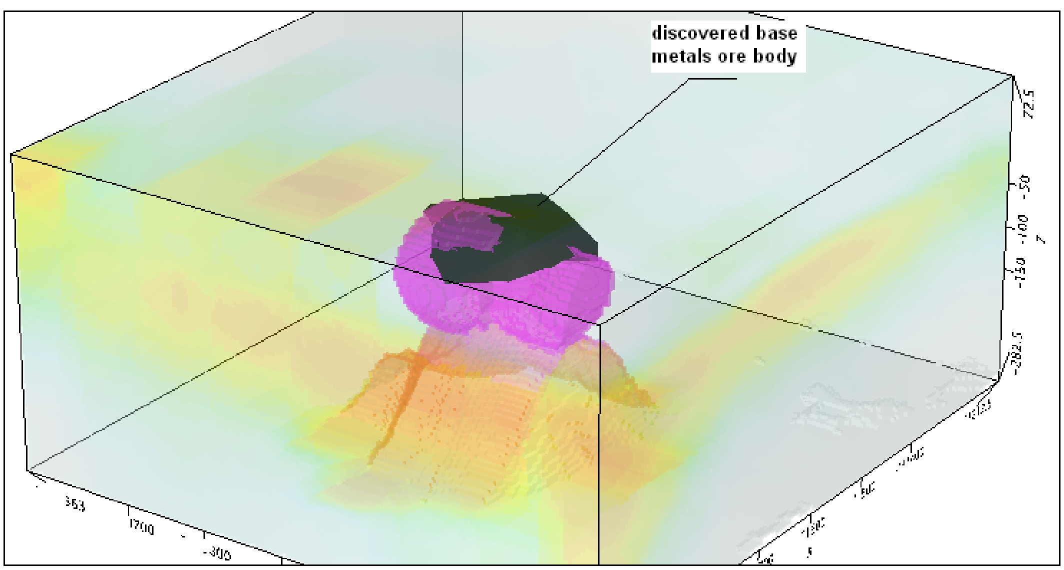


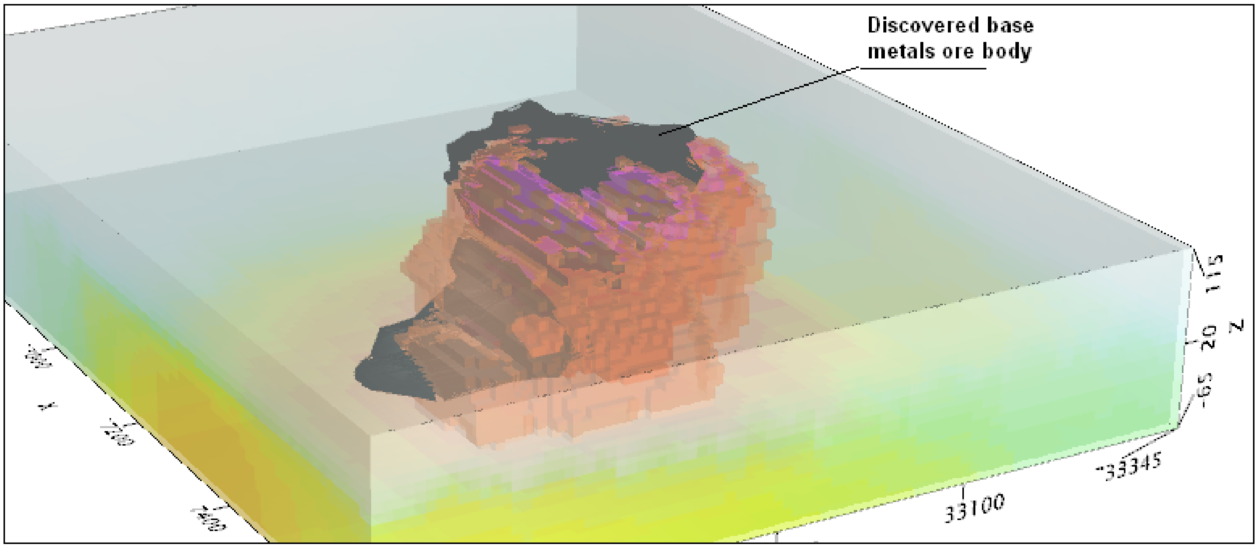
Real base metal targets in comparison with RDIs:

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



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





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Geotech Ltd.
April 2011