We are committed to providing accessible customer service.
If you need accessible formats or communications supports, please contact us.

Nous tenons à améliorer l'accessibilité des services à la clientèle.
Si vous avez besoin de formats accessibles ou d'aide à la communication, veuillez nous contacter.

ADDENDUM REPORT TO PELANGIO EXPLORATION VTEM GEOPHYSICAL REPORT
ON THE GOWAN PROPERTY
GOWAN TOWNSHIP
PORCUPINE MINING DIVISION
TIMMINS ONTARIO

By: J. Kevin Filo P.Geo. **July 20, 2021**

TABLE OF CONTENTS

FIGURES

Introduction

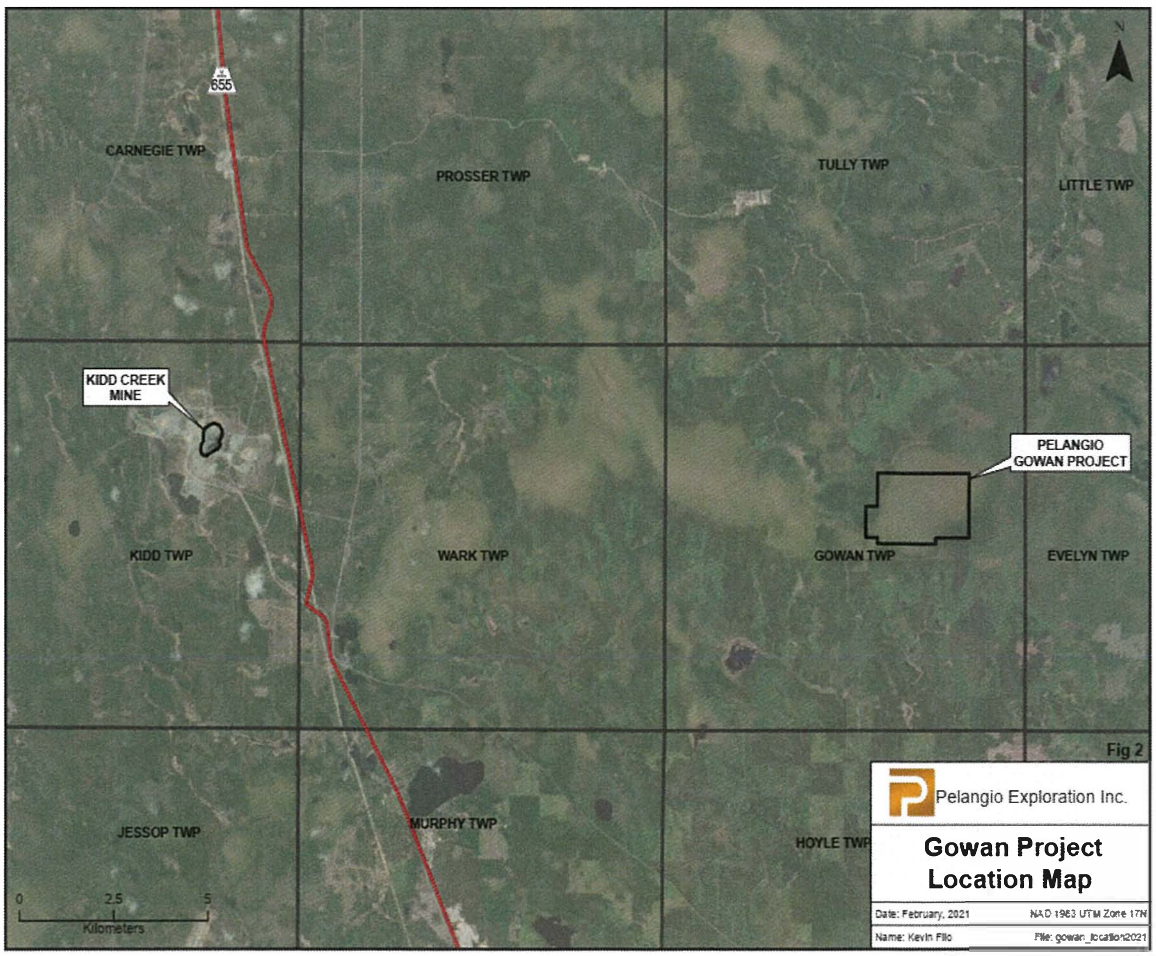
At the request of the Ministry of Energy, Northern Development and Mines supplemental information was requested with respect to the Gowan Property geology, history, and other pertinent information to support the filing of a recently submitted airborne geophysical report. This addendum report was submitted to fulfill this request and should be read in conjunction with the VTEM airborne report as it is supplemental to the airborne document.

Figure 1: General Location Map

Property Location , Property Details and Access

The Gowan Property is located in the northeast portion of Gowan Township approximately 26 km northwest of the City of Timmins or about 16 km east of Glencore's Kidd Creek Mine (fig.1 and 2). The Gowan Property is comprised of 31 mining cells and covers an area of approximately 352 hectares as shown in the accompanying claim map (fig.3). Access to the property during summer months in via helicopter from Timmins as excessive muskeg does not allow for summer ground access. In winter months the property can be access from the village of Hoyle located just off Highway 101 or approximately 15 road km from Timmins. From Hoyle the Ice Chest Lake cottage road can be accessed towards the north for about 10 km. At this point access to the property is via a series of hold drill roads heading west to the northern portion of the property. The property is about 2km to west of the Ice Chest Lake road.

Figure 2: Location Map



Property History

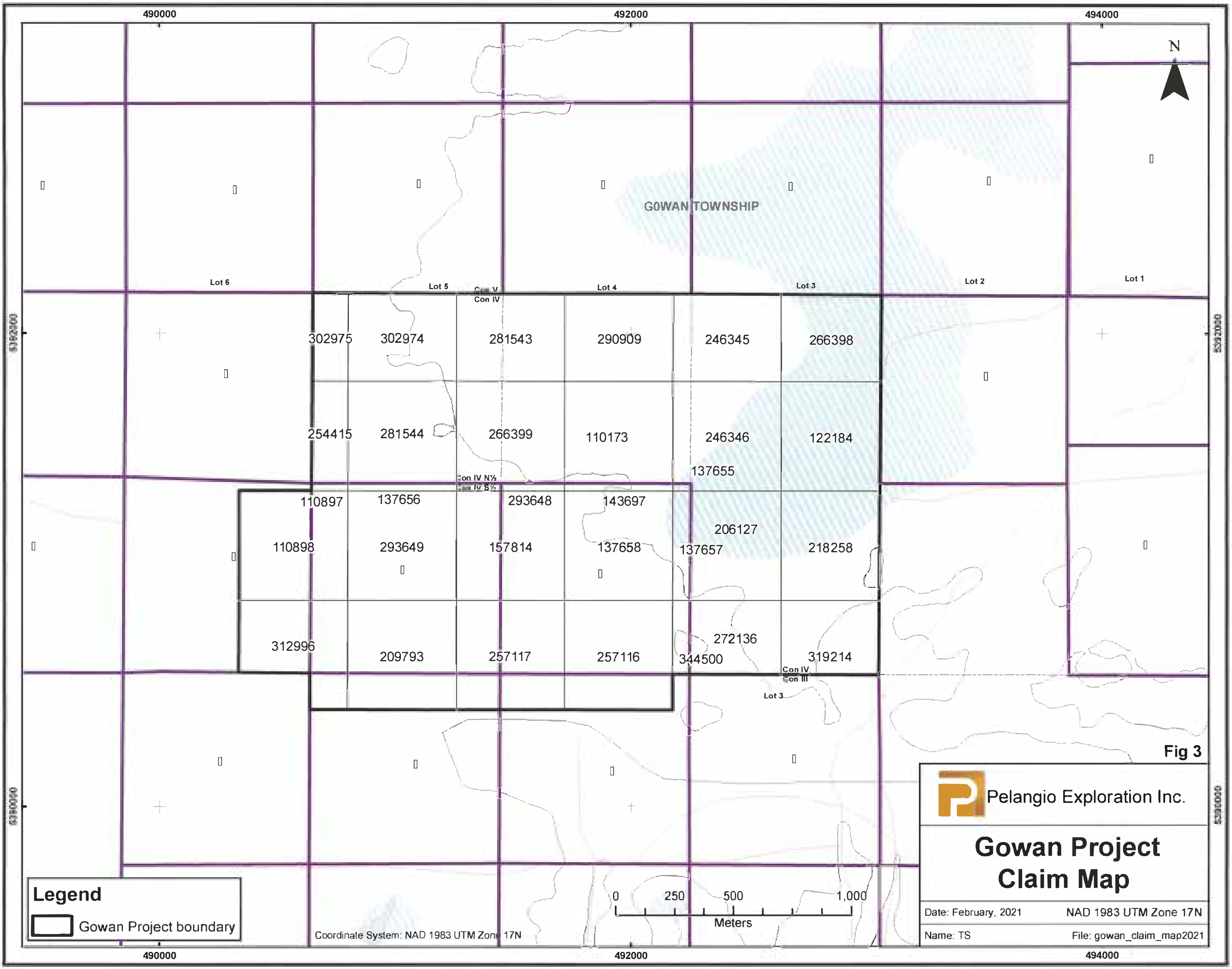
The following information provides a chronological history of the work conducted on the Gowan property prior to Pelangio Exploration's work. Full details on all historical work can be obtained in assessment reports located at the Ontario resident geologists office in Timmins Ontario and/or reports and survey map conducted by the Ontario Geological Survey. OGS maps and survey data are also available for detailed review at the Resident Geologist office in Timmins. A compilation map has been compiled to reflect the various programs conducted over the years as shown in the accompanying figure 4.

Alamo Petroleum, 1974 to 1975:
Alamo Petroleum conducted an induced polarization (IP) survey on cut one grid covering the majority of the current subject property. This work resulted in the detection of a series of IP anomalies. Alamo Petroleum in a follow up program completed 4 drill holes to test four specific anomalies. The highlight of a program was drill hole 2 which returned a significant low grade copper mineralization over a width of 36 feet. Hole 4 also intersected two short intervals of copper and zinc mineralization. Further testing of other IP anomalies and step out hole from the zones of mineralization were recommended. The Alamo report also documented some historical RC holes which contained significant gold and copper mineralization in bedrock samples.

Newmont Mining Corp of Canada Ltd., 1977:
Newmont conducted a drill program to follow up on work completed by Alamo. Newmont completed four drill holes. The highlight of the Newmont program was Newmont drill hole 1 which undercut Alamo Petroleum hole 2. The Newmont hole intersected the down dip semi massive sulphide zone found in the Alamo hole 2. The Newmont hole also returned a broad low grade copper intercept over 28.5 feet. No significant results were noted in the other Newmont holes and no further work was conducted.

Ontario Geological Survey Airborne, 1988 (Map 81064):
The OGS completed an airborne survey over Gowan Township in 1988. Over the Gowan property the survey outlined a number of airborne electromagnetic anomalies, a number of these anomalies were associated and/or proximal to a number of strong magnetic responses.

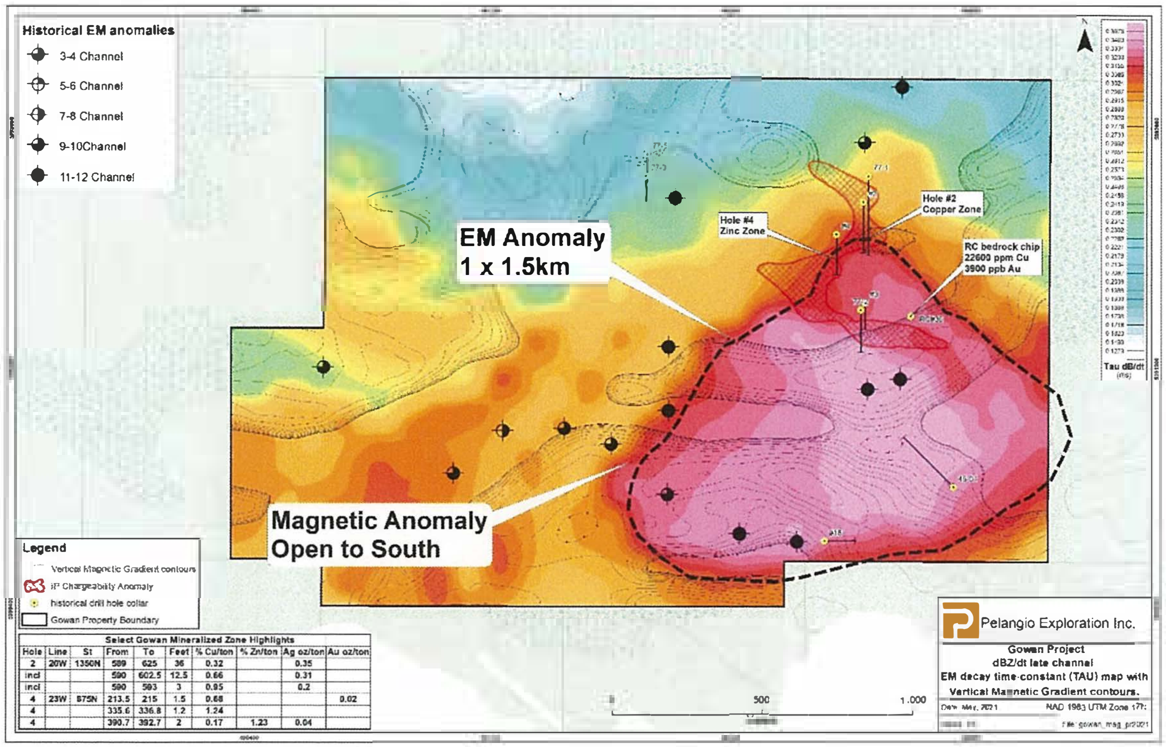
Amex Exploration Inc, 2018:
In 2018 Amex Exploration contracted Exsics Exploration to conduct a moving coil pulse electromagnetic survey over a portion of the Gowan Property to ground truth the OGS airbone electromagnetic anomalies defined in the 1988 survey. The survey failed to confirm the anomalies and the property was dropped.



490000
492000
494000
N
GOWAN TOWNSHIP
Lot 6
Lot 5
Lot 4
Lot 3
Lot 2
Lot 1
Con V
Con IV
302975
302974
281543
290909
246345
266398
254415
281544
266399
110173
246346
122184
137655
Con IV N½
Con IV S½
110897
137656
293648
143697
206127
110898
293649
157814
137658
137657
218258
312996
209793
257117
257116
272136
344500
319214
Con IV
Con III
Lot 3
Fig 3
Pelangio Exploration Inc.
Gowan Project
Claim Map
Date: February, 2021
NAD 1983 UTM Zone 17N
Name: TS
File: gowan_claim_map2021
0
250
500
1,000
Meters
Coordinate System: NAD 1983 UTM Zone 17N
Legend
Gowan Project boundary

Pelangio Exploration 2021:
Pelangio conducted a down hole mise a la masse survey on Newmont hole 77-1 and no significant results were noted.

FIGURE 4: GOWAN PROJECT COMPILATION MAP, REFERENCE, ALAMOS PETROLEUM, (1974-1975), NEWMONT MINING (1977) AND OGS MAP 81064, (1988) and Pelangio VTEM (2021)



Select Gowan Mineralized Zone Highlights

Hole	Line	St	From	To	Feet	% Cu/ton	% Zn/ton	Ag oz/ton	Au oz/ton
2	20W	1350N	589	625	36	0.32		0.35	
incl			590	602.5	12.5	0.66		0.31	
incl			590	593	3	0.95		0.2	
4	23W	875N	213.5	215	1.5	0.68			0.02
4			335.6	336.8	1.2	1.24			
4			390.7	392.7	2	0.17	1.23	0.04	

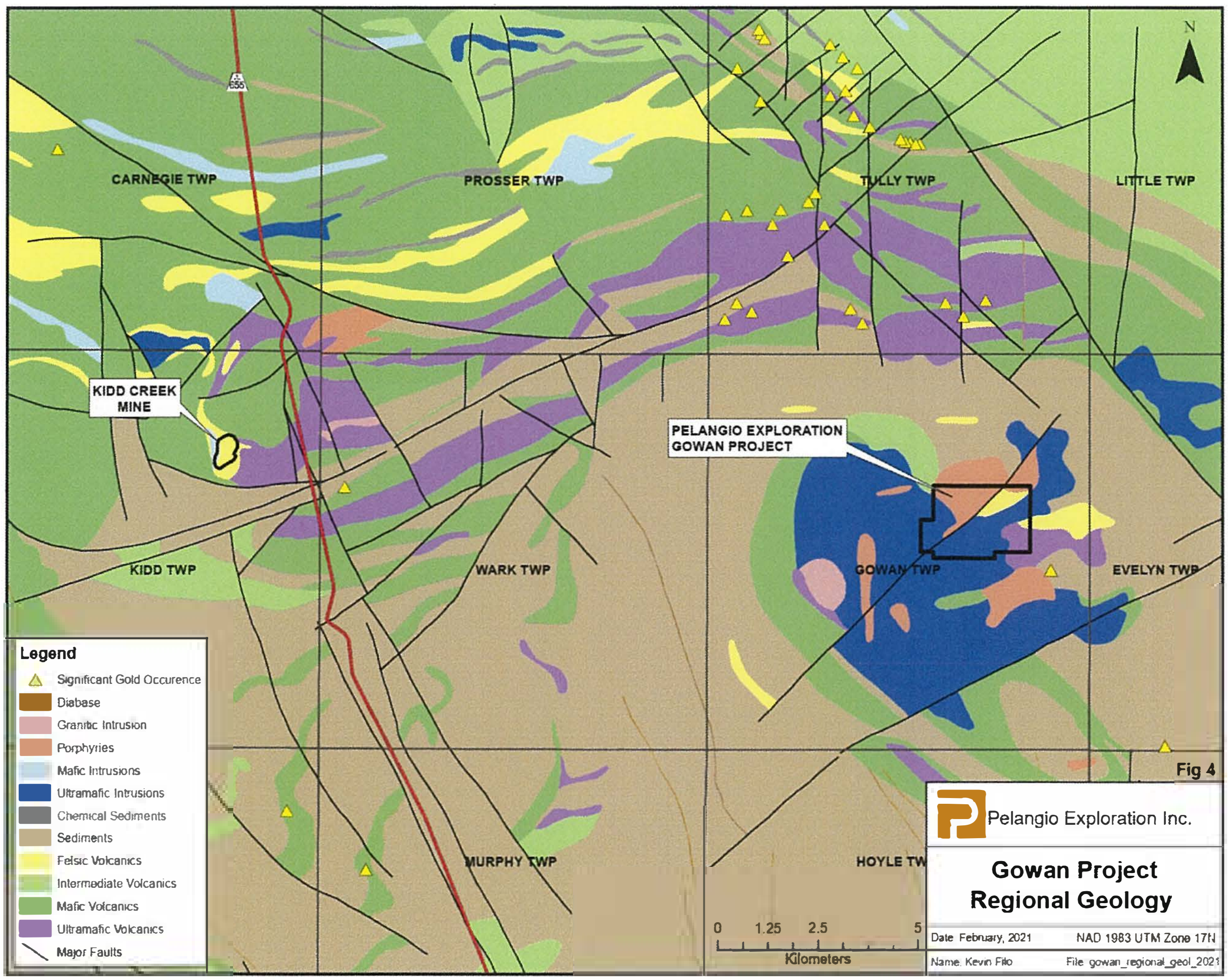
Geology (see figs. 4 and 5)

General Geology:

B. Berger in OGS Report 229 on Hoyle and Gowan Townships provides excellent documentation of the geology in these townships. Both townships have extensive overburden cover and limited rock exposure. Berger's interpretation in these townships relied heavily on available drill hole data and airborne magnetic surveys.

According to Berger both Hoyle and Gowan Twps. are underlain by NeoArchean ultramafic, mafic, felsic and metasedimentary rocks; and ultramafic and felsic intusive rocks. The supracrustal rocks with the two townships are divided into three assemblages; these are the Tisdale, Hoyle and Kidd-Munro assemblages.

REGIONAL GEOLOGY MAP, FIGURE 4, REFERENCE, HOYLE AND GOWAN TOWNSHIPS OGS REPORT 229

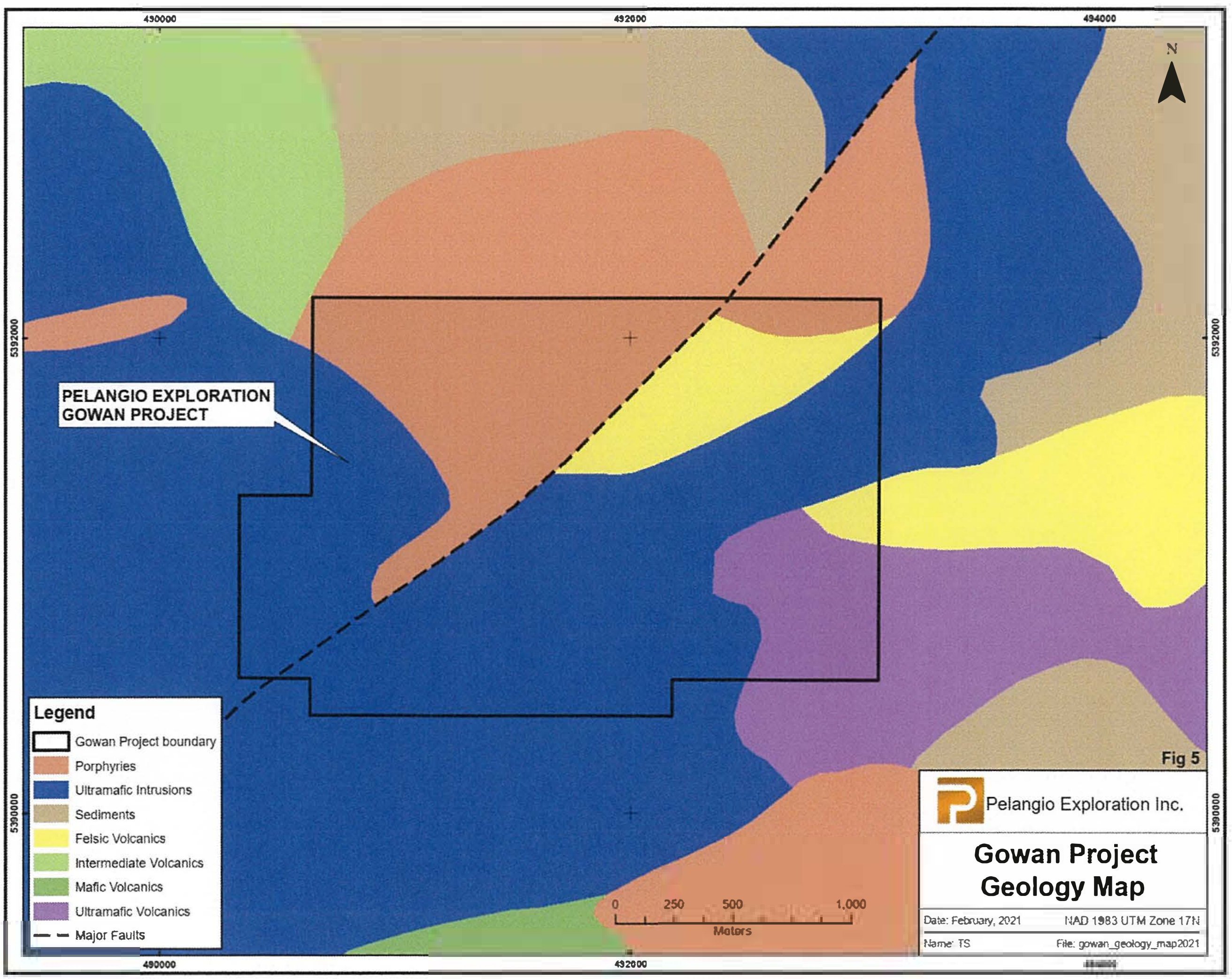


The Hoyle and Kidd Munro assemblages are present in Gowan Township. The Hoyle Assemblage is made up of clastic metasedimentary rocks and the Kidd Assemblage is made up of ultramafic, mafic to intermediate, and felsic metavolcanic rocks and related ultramafic and felsic intrusive rocks. All of these units are cut by NeoArchean to Paleoproterezoic diabase dykes which are generally northerly trending.

With regard to structure, Berger notes there is a foliation parallel to stratigraphy and a 2nd foliation oriented at 45-60 degrees. This 2nd foliation is particularly significant with respect to gold deposition in Hoyle Twp. Berger's mapping also outlined the presence of three major northeast trending faults which had previously gone unnoticed; one of these faults passes through the current subject property.

Metamorphism has affected all of the rock units in Hoyle and Gowan Townships; the metamorphic grade is lower greenschist. Berger also states that ultramafic rocks caused a thermal metamorphic aureole in central Gowan Twp. and the resulting meta-sedimentary rocks often contain porphyroblastic biotite and occasionally some garnet.

PROPERTY GEOLOGY, FIGURE 5, REFERENCE, HOYLE AND GOWAN TOWNSHIPS OGS REPORT 229.



Gowan Property Geology

Some limited drill data and airborne geophysical surveys provide some information with respect to the heavily overburden covered Gowan property as interpreted by Burger in the accompanying figure 5. The north-northeastern portion of the property is interpreted to be underlain by a felsic volcanic package and large felsic intrusive body. The southern portion of the property in underlain by both ultamafic volcanics and ultramafic volcanics.

A distinct northeasterly trending fault is interpreted strike across the entire property. This fault is representative of the major structural feature on the property.

With respect to economic potential, historical drilling in the mid 1970's demonstrated the presence of some semi massive sulphide intercepts with associated and copper and zinc mineralization (see fig.4) associated with felsic volcanics. These intercepts and suggest good environment for the discovery of Cu-Zn volcanogenic massive sulphide (VMS) deposits. The southern portion of the property contains substantial ultramafic volcanics and instrusives, a prospective environment for nickel copper sulphide deposit. It should be noted that the inordinately large VTEM target covers both of these distinct environments. (see fig.4).

Conclusions and Recommendations

Subsequent to the completion of the VTEM survey and with consultation of geophysical consultants a deep penetrating induced polarization survey was recommended to cover the central portion of the anomaly. This survey will be completed in the near future in order further evaluate the main target for drilling.

Respectfully Submitted,

J.Kevin Filo, P.Geo.

Bibliography

Berger, B.R., 1998; Pre-Cambrian Geology, Hoyle and Gowan Townships, Ontario Geological Report 229, Accompanied by Gowan Township Map 2522, Scale 1:20000.

Grant, J., 2018; Moving Coil Coil Pulse EM report on the Gowan Township Property for Axex Exploration; Ontario Government Assessment Report.

Grant, J., 2021; Mis a la Masse Report on the Gowan Township Property for Pelangio Exploration; Ontario Government Assessment Report

Middleton, RSM., 1974; Induced Polarization – Resistivity Survey for Alamo Petroleum, East Claim Group, Gowan Township Ontario; Ontario Government Assessment Report.

Middleton, RSM., 1975; Diamond Drill Report for Alamo Petroleum, Gowan Township; Ontario Government Assessment Report.

Newmont Mining Corp of Canada Ltd.1977; Diamond Drill Logs and Maps; Ontario Government Assessment Report.

Ontario Geological Survey, 1988; Airborne Electromagnetic Survey, Timmins Area, Gowan Township, District of Cochrane and Temiskaming Ontario by Geoterrex Limited, for Ontario Geological Survey, Geophysical/Geochemical Series Map 81064. Scale 1:20000. Survey and Compilation from March 1987 to October 1987.

CERTIFICATE OF AUTHOR

I, J. Kevin Filo, P. Geo. do hereby certify that:

1. I am a consultant of:

   Pelangio Exploration
   Cedar Hill
   Connaught Ontario

2. I graduated with an Honours Bachelor of Science Degree in Geology from Laurentian University in Sudbury in 1980.

3. I am a member of the Association of Professional Geologists of Ontario (Reg. No. 0220).

4. I have worked as a geologist for a total of 40 years since my graduation from university.

5. I am responsible for the writing of the current subject report; the report is non independent as I am currently an officer of the corporation.

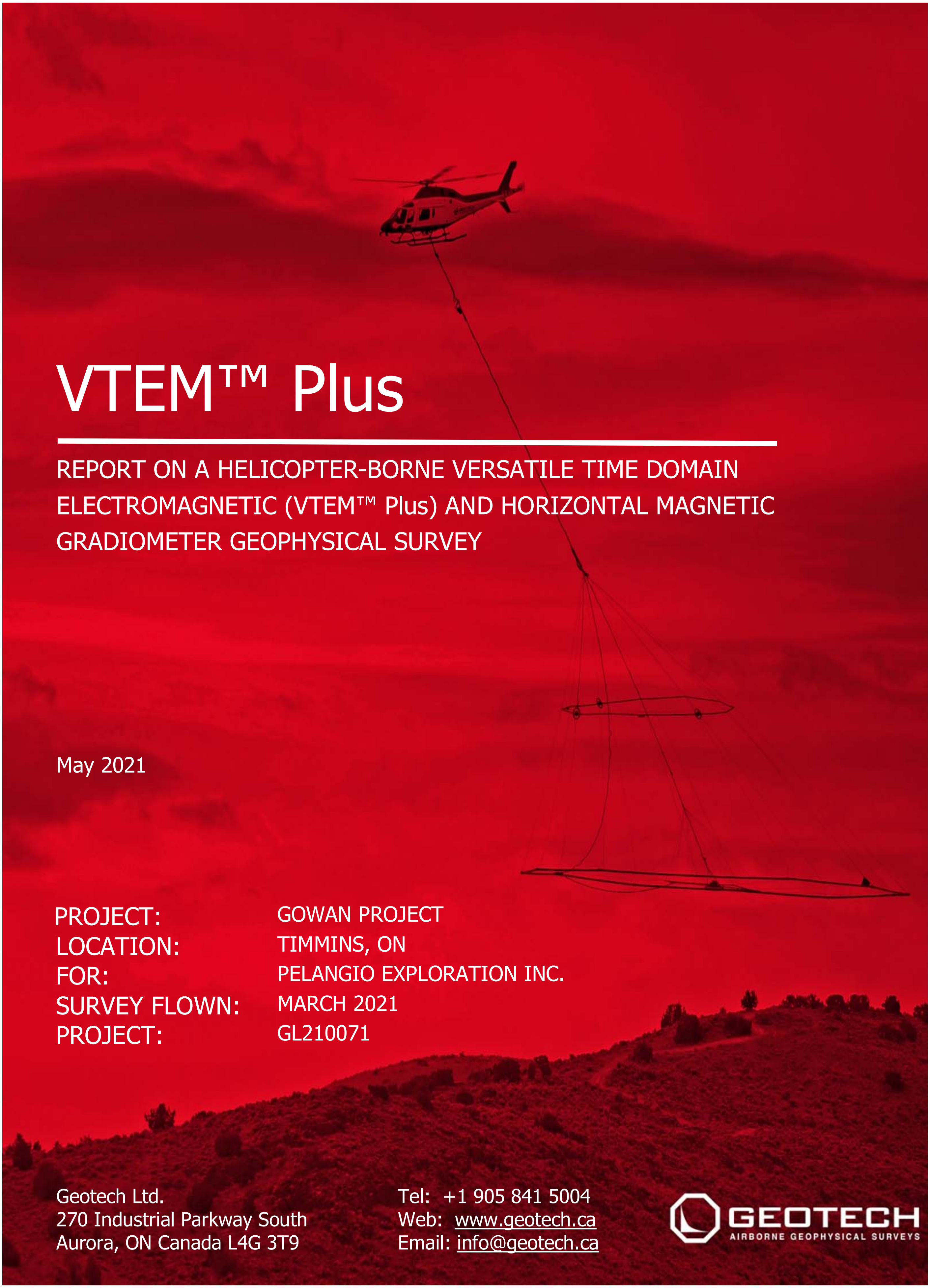
6. I am not aware of any material fact or material change with respect to the subject matter of the report that is not reflected in the report, the omission to disclose which would make the report misleading.

7. I am not independent of the issuer. I presently control a number of shares in Pelangio Exploration and I am the Vice President of Corporate Development for Pelangio Exploration.

Dated this 20 Day of July, 2021

____

Signature of Qualified Person
J. Kevin Filo, P.Geo. (Ont.#0220)



VTEM™ Plus

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM™ Plus) AND HORIZONTAL MAGNETIC GRADIOMETER GEOPHYSICAL SURVEY

May 2021

PROJECT:	GOWAN PROJECT
LOCATION:	TIMMINS, ON
FOR:	PELANGIO EXPLORATION INC.
SURVEY FLOWN:	MARCH 2021
PROJECT:	GL210071

Geotech Ltd.
270 Industrial Parkway South
Aurora, ON Canada L4G 3T9

Tel: +1 905 841 5004
Web: www.geotech.ca
Email: info@geotech.ca

GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

EXECUTIVE SUMMARY

GOWAN PROJECT
TIMMINS, ON

Between March 22nd and March 24th, 2021, Geotech Ltd. carried out a helicopter-borne geophysical survey over the Gowan Project near Timmins, ON.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM™ Plus) system and a horizontal magnetic gradiometer with two caesium sensors. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 94 line-kilometres of geophysical data were acquired during the survey.

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 preliminary 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
- B-Field Z Component Channel grid
- dB/dt Z Component Channel grid
- Fraser Filtered X Component Channel grid
- Total Magnetic Intensity (TMI)
- Calculated Vertical Derivative of TMI (CVG)
- Magnetic Total Horizontal Gradient
- Magnetic Tilt-Angle Derivative
- Calculated Time Constant (Tau) with Calculated Vertical Derivative of TMI contours
- Resistivity Depth Images (RDI) sections, depth-slices, and voxel are presented.

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

The survey report describes the procedures for data acquisition, equipment used, 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 Gowan Project near Timmins, ON (Figure 1 & Figure 2).

Kevin Filo represented Pelangio Exploration 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 Full-Waveform processing. Measurements consisted of Vertical (Z), In-line and Cross-line Horizontal (X & Y) components of the EM fields using an induction coil and a horizontal magnetic gradiometer using two caesium magnetometers. A total of 94 line-km of geophysical data were acquired during the survey.

The crew were based out of Timmins, ON (Figure 2) for the acquisition phase of the survey. Survey flying started on March 22nd and was completed on March 24th, 2021.

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 in May 2021.

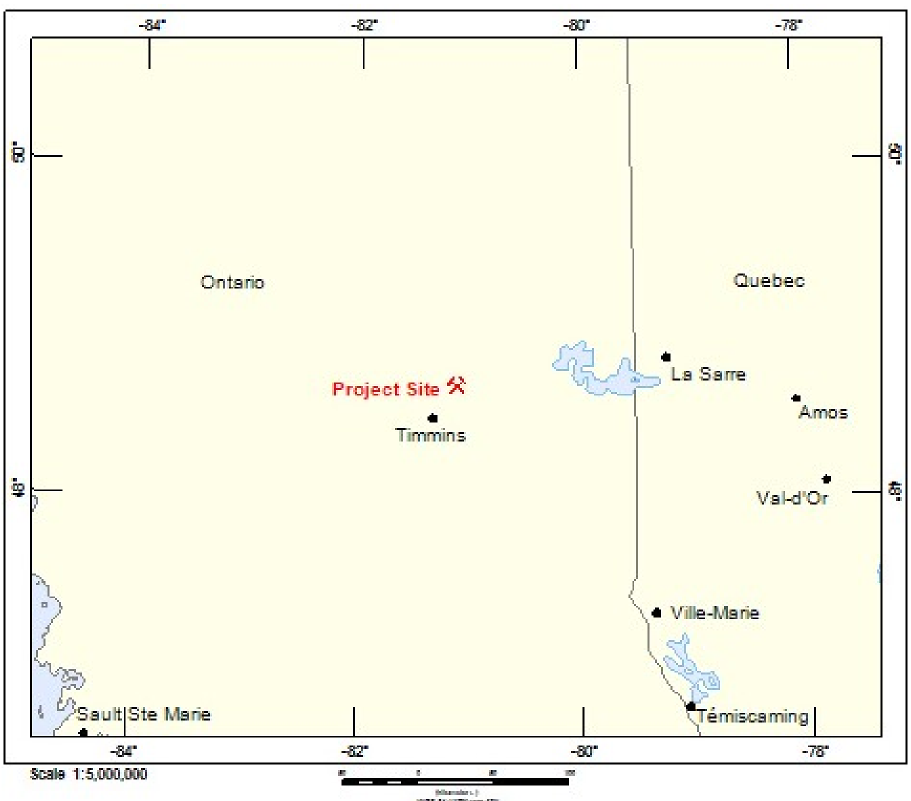


Figure 1: Survey location

1.2 SURVEY AND SYSTEM SPECIFICATIONS

The survey area is located approximately 26 km northeast of Timmins, ON (Figure 2).

Figure 2: Survey area location map on Google Earth.

The Gowan Project survey area was flown in a south to north (N 0° E azimuth) direction with traverse line spacings of 100 metres, as depicted in Figure 3. Tie lines were flown perpendicular to traverse lines at 1000 metre line spacings. For more detailed information on the flight spacings and directions, see Table 1.

1.3 TOPOGRAPHIC RELIEF AND CULTURAL FEATURES

Topographically, the survey area exhibits minimal relief with elevations ranging from 301 to 315 metres over an area of 9 square kilometres (Figure 3).

There are no signs of cultures within the Gowan project survey area expect for a minor road.

Figure 3: Gowan Project flight paths over a Google Earth Image.

2. DATA ACQUISITION

2.1 SURVEY AREA

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

Table 1: Survey Specifications

Survey block	Line spacing (m)	Area (km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Gowan Project	Traverse: 100	9	90	94	N000°E / N180°E	L1000 – L1270
	Tie: 1000				N090°E / N270°E	T2000 – T2010
Total		9	90	94		

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

2.2 SURVEY OPERATIONS

Survey operations were based out of Timmins, ON from March 22nd to 24th, 2021. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Comments
22-March	Mobilization to Timmins
23-March	Production Flight Completed - 90 km flown
24-March	Demobilization

2.3 FLIGHT SPECIFICATIONS

During the survey, the helicopter was maintained at a mean altitude of 83 metres above the ground with an average survey speed of 89 km/hour. This allowed for an actual average Transmitter-receiver loop terrain clearance of 48 metres and a magnetic sensor clearance of 73 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.

[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.

2.4 AIRCRAFT AND EQUIPMENT

2.4.1 SURVEY AIRCRAFT

The survey was flown using a Eurocopter Aerospatiale (A-Star) 350 B3 helicopter, registration C-FVTM. The helicopter is owned and operated by Geotech Aviation Ltd. 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) full receiver-waveform streamed data recorded system. The "full waveform VTEM system" uses the streamed half-cycle recording of transmitter and receiver waveforms to obtain a complete system response calibration throughout the entire survey flight. VTEM with the serial number 32 had been used for the survey. The VTEM™ transmitter current waveform is shown diagrammatically in Figure 4.

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

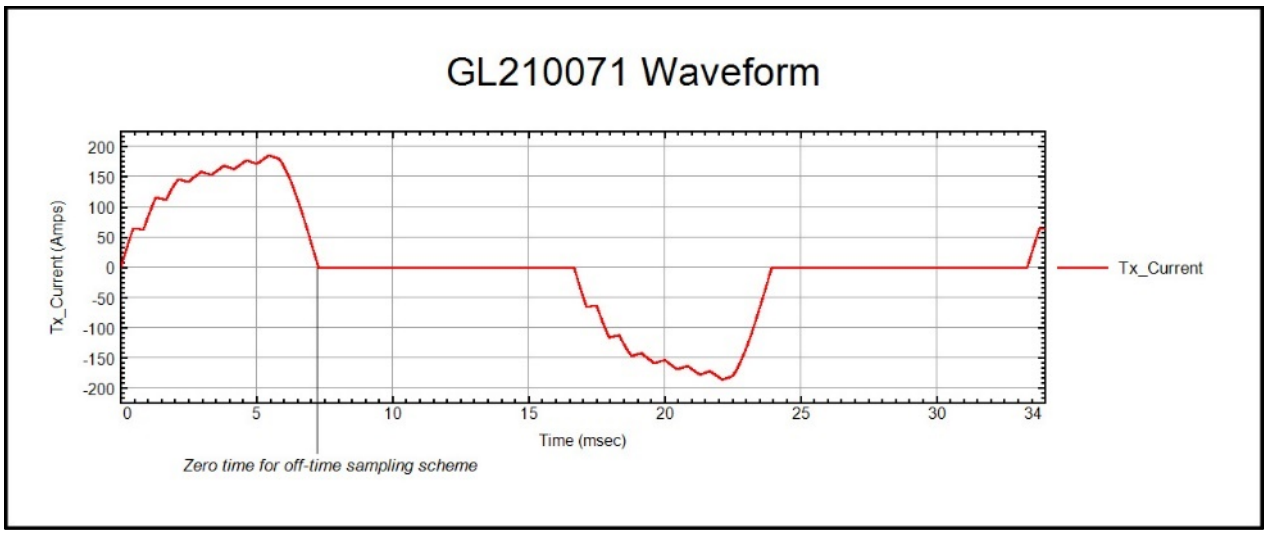


Figure 4: VTEM™ Transmitter Current Waveform

The VTEM™ decay sampling scheme is shown in

Table 3 below. Forty-three time measurement gates were used for the final data processing in the range from 0.021 to 8.083 msec. Zero time for the off-time sampling scheme is equal to the current pulse width and is defined as the time near the end of the turn-off ramp where the dI/dt waveform falls to 1/2 of its peak value.

Table 3: Off-Time Decay Sampling Scheme

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
4	0.018	0.023	0.021	0.005
5	0.023	0.029	0.026	0.005
6	0.029	0.034	0.031	0.005
7	0.034	0.039	0.036	0.005
8	0.039	0.045	0.042	0.006
9	0.045	0.051	0.048	0.007
10	0.051	0.059	0.055	0.008
11	0.059	0.068	0.063	0.009
12	0.068	0.078	0.073	0.010
13	0.078	0.090	0.083	0.012
14	0.090	0.103	0.096	0.013
15	0.103	0.118	0.110	0.015
16	0.118	0.136	0.126	0.018
17	0.136	0.156	0.145	0.020
18	0.156	0.179	0.167	0.023
19	0.179	0.206	0.192	0.027
20	0.206	0.236	0.220	0.030
21	0.236	0.271	0.253	0.035
22	0.271	0.312	0.290	0.040
23	0.312	0.358	0.333	0.046
24	0.358	0.411	0.383	0.053
25	0.411	0.472	0.440	0.061
26	0.472	0.543	0.505	0.070
27	0.543	0.623	0.580	0.081
28	0.623	0.716	0.667	0.093
29	0.716	0.823	0.766	0.107
30	0.823	0.945	0.880	0.122
31	0.945	1.086	1.010	0.141
32	1.086	1.247	1.161	0.161
33	1.247	1.432	1.333	0.185
34	1.432	1.646	1.531	0.214
35	1.646	1.891	1.760	0.245
36	1.891	2.172	2.021	0.281
37	2.172	2.495	2.323	0.323
38	2.495	2.865	2.667	0.370
39	2.865	3.292	3.063	0.427
40	3.292	3.781	3.521	0.490
41	3.781	4.341	4.042	0.560
42	4.341	4.987	4.641	0.646

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
43	4.987	5.729	5.333	0.742
44	5.729	6.581	6.125	0.852
45	6.581	7.560	7.036	0.979
46	7.560	8.685	8.083	1.125

Z Component: 4 - 46 time gates
X Component: 20 - 46 time gates
Y Component: 20 – 46 time gates

Table 4: VTEM™ System Specifications

Transmitter	Receiver
• Transmitter loop diameter: 26 m • Number of turns: 4 • Effective Transmitter loop area: 2123.7 m^2 • Transmitter base frequency: 30 Hz • Peak current: 185.5 A • Pulse width: 7.27 ms • Waveform shape: Bi-polar trapezoid • Peak dipole moment: 393,949 nIA • Average transmitter-receiver loop terrain clearance: 48 metres	• X -Coil diameter: 0.32 m • Number of turns: 245 • Effective coil area: 19.69 m^2 • Y -Coil diameter: 0.32 m • Number of turns: 245 • Effective coil area: 19.69 m^2 • Z-Coil diameter: 1.2 m • Number of turns: 100 • Effective coil area: 113.04 m^2

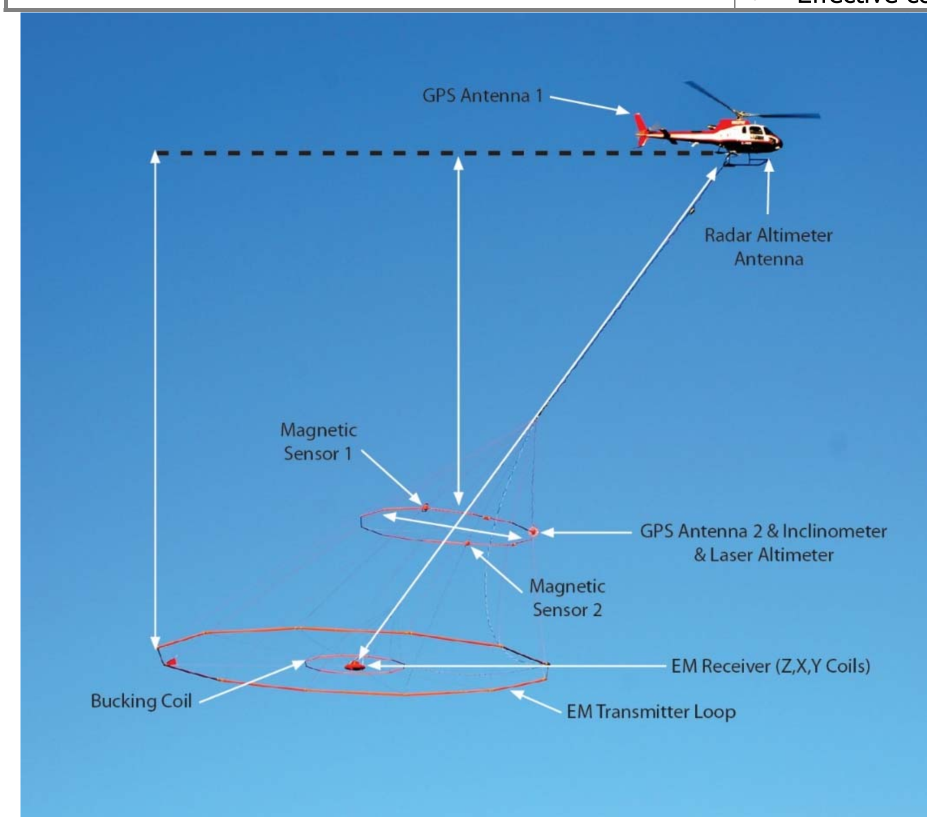


Figure 5: VTEM™plus System Configuration.

2.4.3 Full Waveform VTEM™ Sensor Calibration

The calibration is performed on the complete VTEM™ system installed in and connected to the helicopter, using special calibration equipment. This calibration takes place on the ground at the start of the project prior to surveying.
The procedure takes half-cycle files acquired and calculates a calibration file consisting of a single stacked half-cycle waveform. The purpose of the stacking is to attenuate natural and man-made magnetic signals, leaving only the response to the calibration signal.

This calibration allows the transfer function between the EM receiver and data acquisition system and the transfer function between the current monitor and data acquisition system to be determined. These calibration results are then used in VTEM full waveform processing.

2.4.4 Horizontal Magnetic Gradiometer

The horizontal magnetic gradiometer consists of two Geometrics split-beam field magnetic sensors with a sampling interval of 0.1 seconds. These sensors are mounted 12.5 metres apart on a separate loop, 10 metres above the Transmitter-receiver loop. A GPS antenna and Gyro Inclinometer is installed on the separate loop to accurately record the tilt and position of the magnetic gradiometer bird.

2.4.5 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 5).

2.4.6 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 5). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with WAAS active, it is 1.0 m. The coordinates of the survey area were set-up prior to the survey and the information was fed into the airborne navigation system. The second GPS antenna is installed on the additional magnetic loop together with Gyro Inclinometer.

2.4.7 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 5

Table 5: Acquisition Sampling Rates

Data Type	Sampling
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec
Inclinometer	0.1 sec
Laser	0.1 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 in a secured location 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:	Adrian Sarmasag (Office)
Data QC:	Nick Venter
Crew chief:	Roberto Di Bari
Operator:	n/a

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

Pilot:	Steve McGreer
Mechanical Engineer:	n/a

OFFICE:

Preliminary Data Processing:	Nick Venter
Final Data Processing:	Emily Data
Data QA/QC:	Zihao Han Jean Legault
Reporting/Mapping:	Moyosore Lanisa

Processing and Interpretation phases were carried out under the supervision of Zihao Han & Jean M. Legault, M.Sc.A, P.Eng, P.Geo – Chief Geophysicist. The customer relations were looked after by David Hitz.

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 WGS84 Datum, UTM Zone 17N 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

The Full Waveform EM specific data processing operations included:

- Half cycle stacking (performed at time of acquisition).
- System response correction.
- Parasitic and drift removal.

A three-stage digital filtering process was used to reject major sferic events and to reduce noise levels. 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 and X components. B-field Z component time channels recorded at 0.880 milliseconds after the termination of the impulse is also presented as a colour image. Calculated Time Constant (TAU) with Calculated Vertical Derivative contours is presented in Appendix C and E.

VTEM™ has three 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. The Y-axis coil is oriented parallel to the ground and across the line-of-flight. The combination of the X, Y and Z coils configuration provides information on the position, depth, dip, and thickness of a conductor. Generalized modeling results of VTEM data, are shown in Appendix D.

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 (Appendix D, Figure D-16).

Because of X component polarity is under line-of-flight, convolution Fraser Filter (Figure 6) 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 independent of the flight direction.

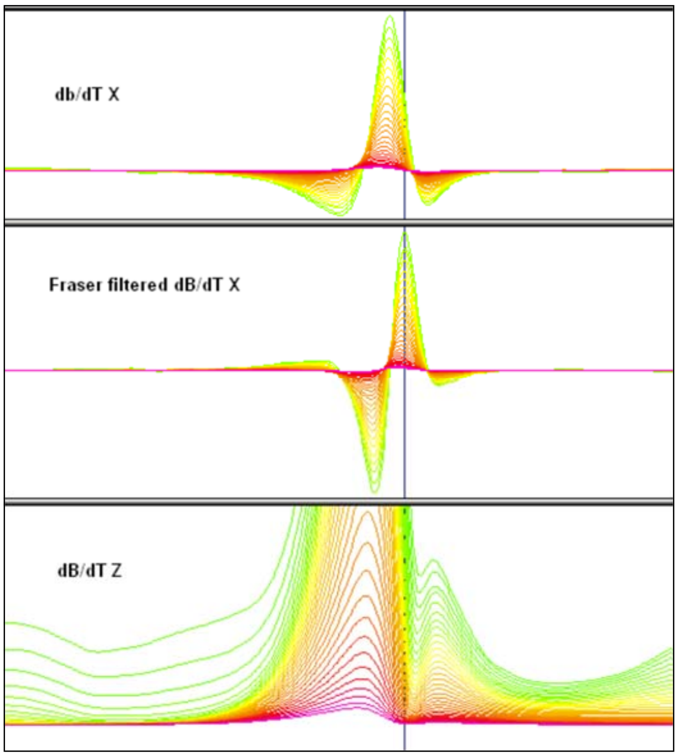


Figure 6: Z, X and Fraser filtered X (FFx) components for "thin" target.

4.3 HORIZONTAL MAGNETIC GRADIOMETER DATA

The horizontal gradients data from the VTEM™ Plus are measured by two magnetometers 12.5 m apart on an independent bird mounted 10m above the VTEM™ loop. A GPS and a Gyro Inclinometer help to determine the positions and orientations of the magnetometers. The data from the two magnetometers are corrected for position and orientation variations, as well as for the diurnal variations using the base station data.

The position of the centre of the horizontal magnetic gradiometer bird is calculated from the GPS utilizing in-house processing tool in Geosoft. Following that total magnetic intensity is calculated at the center of the bird by calculating the mean values from both sensors. In addition to the total intensity advanced processing is done to calculate the in-line and cross-line (or lateral) horizontal gradient which enhance the understanding of magnetic targets. The in-line (longitudinal) horizontal gradient is calculated from the difference of two consecutive total magnetic field readings divided by the distance along the flight line direction, while the cross-line (lateral) horizontal magnetic gradient is calculated from the difference in the magnetic readings from both magnetic sensors divided by their horizontal separation.

Two advanced magnetic derivative products, the total horizontal derivative (THDR), and tilt angle derivative and are also created. The total horizontal derivative or gradient is defined as:

THDR = sqrt(Hx*Hx+Hy*Hy), where Hx and Hy are cross-line and in-line horizontal gradients.

The tilt angle derivative (TDR) is defined as:

TDR = arctan(Vz/THDR), where THDR is the total horizontal derivative, and Vz is the vertical derivative.

Measured cross-line gradients can help to enhance cross-line linear features during gridding.

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 1:5,000 for best representation of the survey size and line spacing. The coordinate/projection system used was WGS84 Datum, UTM Zone 17N. All maps show the flight path trace and topographic data; latitude and longitude are also noted on maps.

The results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and a colour magnetic TMI contour map.

- Maps at 1:5,000 in Geosoft MAP format and clipped to claim boundaries, as follows:

GL210071_Pelangio_5K_dBdt:	dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL210071_Pelangio_5K_BField:	B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL210071_Pelangio_5K_BFz30:	B-field Z Component Channel 30, Time Gate 0.880 ms colour image.
GL210071_Pelangio_5K_SFz30:	VTEM dB/dt Z Component Channel 30, Time Gate 0.880 ms colour image
GL210071_Pelangio_5K_SFxFF20:	Fraser Filtered dB/dt X Component Channel 20, Time Gate 0.220 ms colour image.
GL210071_Pelangio_5K_TMI:	Total Magnetic Intensity (TMI) colour image and contours.
GL210071_Pelangio_5K_CVG:	Calculated Vertical Derivative (CVG) of TMI colour image.
GL210071_Pelangio_5K_TauSF:	dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours.
GL210071_Pelangio_5K_TotHG:	Magnetic Total Horizontal Gradient colour image
GL210071_Pelangio_5K_TiltDrv:	Magnetic Tilt Angle Derivative colour image

- Maps are also presented in PDF format.

- The topographic data base was derived from ASTER GDEM (https://gdex.cr.usgs.gov/gdex). Inset data is from Geocommunities (www.geocomm.com)

- A Google Earth file *GL210071_Pelangio.kmz* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

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 6.

Table 6: Geosoft Preliminary GDB Data Format

Channel name	Units	Description
X	metres	Easting WGS84 Zone 17N
Y	metres	Northing WGS84 Zone 17N
Longitude	Decimal Degrees	WGS84 Longitude data
Latitude	Decimal Degrees	WGS84 Latitude data
Z	metres	GPS antenna elevation
Zb	metres	EM bird elevation
Radar	metres	Helicopter terrain clearance from radar altimeter
Radarb	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
DEM	metres	Digital Elevation Model from radar
Gtime	Seconds of the day	GPS time
Mag1L	nT	Measured Total Magnetic field data (left sensor)
Mag1R	nT	Measured Total Magnetic field data (right sensor)
Basemag	nT	Magnetic diurnal variation data
Mag2LZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field left mag
Mag2RZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field right mag
TMI2	nT	Calculated from diurnal corrected total magnetic field intensity of the centre of the loop
TMI3	nT	Microleveled total magnetic field intensity of the centre of the loop
Hginline		Calculated in-line gradient
Hgcxline		Measured cross-line gradient
CVG	nT/m	Calculated Magnetic Vertical Gradient of TMI
SFz[4]	pV/(A*m4)	Z dB/dt 0.021 millisecond time channel
SFz[5]	pV/(A*m4)	Z dB/dt 0.026 millisecond time channel
SFz[6]	pV/(A*m^4)	Z dB/dt 0.031 millisecond time channel
SFz[7]	pV/(A*m^4)	Z dB/dt 0.036 millisecond time channel
SFz[8]	pV/(A*m^4)	Z dB/dt 0.042 millisecond time channel
SFz[9]	pV/(A*m^4)	Z dB/dt 0.048 millisecond time channel
SFz[10]	pV/(A*m^4)	Z dB/dt 0.055 millisecond time channel
SFz[11]	pV/(A*m^4)	Z dB/dt 0.063 millisecond time channel
SFz[12]	pV/(A*m^4)	Z dB/dt 0.073 millisecond time channel
SFz[13]	pV/(A*m^4)	Z dB/dt 0.083 millisecond time channel
SFz[14]	pV/(A*m^4)	Z dB/dt 0.096 millisecond time channel

Channel name	Units	Description
SFz[15]	pV/(A*m⁴)	Z dB/dt 0.110 millisecond time channel
SFz[16]	pV/(A*m⁴)	Z dB/dt 0.126 millisecond time channel
SFz[17]	pV/(A*m⁴)	Z dB/dt 0.145 millisecond time channel
SFz[18]	pV/(A*m⁴)	Z dB/dt 0.167 millisecond time channel
SFz[19]	pV/(A*m⁴)	Z dB/dt 0.192 millisecond time channel
SFz[20]	pV/(A*m⁴)	Z dB/dt 0.220 millisecond time channel
SFz[21]	pV/(A*m⁴)	Z dB/dt 0.253 millisecond time channel
SFz[22]	pV/(A*m⁴)	Z dB/dt 0.290 millisecond time channel
SFz[23]	pV/(A*m⁴)	Z dB/dt 0.333 millisecond time channel
SFz[24]	pV/(A*m⁴)	Z dB/dt 0.383 millisecond time channel
SFz[25]	pV/(A*m⁴)	Z dB/dt 0.440 millisecond time channel
SFz[26]	pV/(A*m⁴)	Z dB/dt 0.505 millisecond time channel
SFz[27]	pV/(A*m⁴)	Z dB/dt 0.580 millisecond time channel
SFz[28]	pV/(A*m⁴)	Z dB/dt 0.667 millisecond time channel
SFz[29]	pV/(A*m⁴)	Z dB/dt 0.766 millisecond time channel
SFz[30]	pV/(A*m⁴)	Z dB/dt 0.880 millisecond time channel
SFz[31]	pV/(A*m⁴)	Z dB/dt 1.010 millisecond time channel
SFz[32]	pV/(A*m⁴)	Z dB/dt 1.161 millisecond time channel
SFz[33]	pV/(A*m⁴)	Z dB/dt 1.333 millisecond time channel
SFz[34]	pV/(A*m⁴)	Z dB/dt 1.531 millisecond time channel
SFz[35]	pV/(A*m⁴)	Z dB/dt 1.760 millisecond time channel
SFz[36]	pV/(A*m⁴)	Z dB/dt 2.021 millisecond time channel
SFz[37]	pV/(A*m⁴)	Z dB/dt 2.323 millisecond time channel
SFz[38]	pV/(A*m⁴)	Z dB/dt 2.667 millisecond time channel
SFz[39]	pV/(A*m⁴)	Z dB/dt 3.063 millisecond time channel
SFz[40]	pV/(A*m⁴)	Z dB/dt 3.521 millisecond time channel
SFz[41]	pV/(A*m⁴)	Z dB/dt 4.042 millisecond time channel
SFz[42]	pV/(A*m⁴)	Z dB/dt 4.641 millisecond time channel
SFz[43]	pV/(A*m⁴)	Z dB/dt 5.333 millisecond time channel
SFz[44]	pV/(A*m⁴)	Z dB/dt 6.125 millisecond time channel
SFz[45]	pV/(A*m⁴)	Z dB/dt 7.036 millisecond time channel
SFz[46]	pV/(A*m⁴)	Z dB/dt 8.083 millisecond time channel
SFx[20]	pV/(A*m⁴)	X dB/dt 0.220 millisecond time channel
SFx[21]	pV/(A*m⁴)	X dB/dt 0.253 millisecond time channel
SFx[22]	pV/(A*m⁴)	X dB/dt 0.290 millisecond time channel
SFx[23]	pV/(A*m⁴)	X dB/dt 0.333 millisecond time channel
SFx[24]	pV/(A*m⁴)	X dB/dt 0.383 millisecond time channel
SFx[25]	pV/(A*m⁴)	X dB/dt 0.440 millisecond time channel
SFx[26]	pV/(A*m⁴)	X dB/dt 0.505 millisecond time channel
SFx[27]	pV/(A*m⁴)	X dB/dt 0.580 millisecond time channel
SFx[28]	pV/(A*m⁴)	X dB/dt 0.667 millisecond time channel
SFx[29]	pV/(A*m⁴)	X dB/dt 0.766 millisecond time channel
SFx[30]	pV/(A*m⁴)	X dB/dt 0.880 millisecond time channel
SFx[31]	pV/(A*m⁴)	X dB/dt 1.010 millisecond time channel
SFx[32]	pV/(A*m⁴)	X dB/dt 1.161 millisecond time channel
SFx[33]	pV/(A*m⁴)	X dB/dt 1.333 millisecond time channel
SFx[34]	pV/(A*m⁴)	X dB/dt 1.531 millisecond time channel
SFx[35]	pV/(A*m⁴)	X dB/dt 1.760 millisecond time channel
SFx[36]	pV/(A*m⁴)	X dB/dt 2.021 millisecond time channel
SFx[37]	pV/(A*m⁴)	X dB/dt 2.323 millisecond time channel

Channel name	Units	Description
SFx[38]	$pV/(A*m^4)$	X dB/dt 2.667 millisecond time channel
SFx[39]	$pV/(A*m^4)$	X dB/dt 3.063 millisecond time channel
SFx[40]	$pV/(A*m^4)$	X dB/dt 3.521 millisecond time channel
SFx[41]	$pV/(A*m^4)$	X dB/dt 4.042 millisecond time channel
SFx[42]	$pV/(A*m^4)$	X dB/dt 4.641 millisecond time channel
SFx[43]	$pV/(A*m^4)$	X dB/dt 5.333 millisecond time channel
SFx[44]	$pV/(A*m^4)$	X dB/dt 6.125 millisecond time channel
SFx[45]	$pV/(A*m^4)$	X dB/dt 7.036 millisecond time channel
SFx[46]	$pV/(A*m^4)$	X dB/dt 8.083 millisecond time channel
SFy	$pV/(A*m^4)$	Y dB/dt data for time channels 20 to 46
BFz	$(pV*ms)/(A*m^4)$	Z B-Field data for time channels 4 to 46
BFx	$(pV*ms)/(A*m^4)$	X B-Field data for time channels 20 to 46
BFy	$(pV*ms)/(A*m^4)$	Y B-Field data for time channels 20 to 46
SFxFF	$pV/(A*m^4)$	Fraser Filtered X dB/dt
NchanBF		Latest time channels of TAU calculation
TauBF	ms	Time constant B-Field
NchanSF		Latest time channels of TAU calculation
TauSF	ms	Time constant dB/dt
PLM		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 4 – 46, and X & Y component data from 20 – 46, as described above.

- Database of the Resistivity Depth Images in Geosoft GDB format, containing the following channels:

Table 7: Geosoft Resistivity Depth Image GDB Data Format

Channel name	Units	Description
Xg	metres	Easting WGS84 Zone 17N
Yg	metres	Northing WGS84 Zone 17N
Dist	metres	Distance from the beginning of the line
Depth	metres	array channel, depth from the surface
Z	metres	array channel, depth
AppRes	Ohm-m	array channel, Apparent Resistivity
TR	metres	EM system height
Topo	metres	digital elevation model
Radarb	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
SF	pV/(A*m^4)	array channel, Z dB/dT
MAG	nT	TMI data
CVG	nT/m	CVG data
DOI	metres	Depth of Investigation: a measure of VTEM depth effectiveness
PLM		60Hz Power Line Monitor

- Database of the VTEM Waveform "GL210071_Waveform.gdb" in Geosoft GDB format, containing the following channels:

Table 8: Geosoft database for the VTEM waveform

Channel name	Units	Description
Time	milliseconds	Sampling rate interval, 5.2083 microseconds
Tx_Current	amps	Output current of the transmitter

- Geosoft Resistivity Depth Image Products:

Sections:	Apparent resistivity sections along each line in .GRD and .PDF format
Slices:	Apparent resistivity slices at selected depths from 25m to depth of investigation, at an increment of 25m in .GRD and .PDF format
Voxel:	3D Voxel imaging of apparent resistivity data clipped by digital elevation and depth of investigation

- Grids in Geosoft GRD and GeoTIFF format, as follows:

GL210071_BFz30:	B-Field Z Component Channel 30(Time Gate 0.880 ms)
GL210071_SFxFF20:	Fraser Filtered dB/dt X Component Channel 20 (Time Gate 0.220ms)
GL210071_SFz25:	dB/dt Z Component Channel 25 (Time Gate 0.440 ms)
GL210071_SFz30:	dB/dt Z Component Channel 30 (Time Gate 0.880 ms)
GL210071_SFz35:	dB/dt Z Component Channel 35 (Time Gate 1.760 ms)
GL210071_TauBF:	B-Field Z Component, Calculated Time Constant (ms)
GL210071_TauSF:	dB/dt Z Component, Calculated Time Constant (ms)
GL210071_TMI:	Total Magnetic Intensity (nT)
GL210071_CVG:	Calculated Vertical Derivative(nT/m)
GL210071_Hgcxline:	Measured Cross-Line Gradient (nT/m)
GL210071_Hginline:	Measured In-Line Gradient (nT/m)
GL210071_TotHGrad:	Magnetic Total Horizontal Gradient (nT/m)
GL210071_Tilt_Drv:	Magnetic Tilt derivative (radians)
GL210071_DEM:	Digital Elevation Model (m)
GL210071_PLM:	60Hz Power Line Monitor

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.

6. CONCLUSIONS AND RECOMMENDATIONS

Between March 22nd and 24th, 2021, a helicopter-borne versatile time domain electromagnetic (VTEM™plus) horizontal magnetic gradiometer geophysical survey has been completed over the Gowan Project near Timmins, ON, on behalf of Pelangio Exploration Inc.

The total area coverage was 9 km^2 and the total survey line coverage was 94 line kilometres over a single block. The principal sensors included a Time Domain EM system, and a horizontal magnetic gradiometer system with two caesium magnetometers. Results have been presented as stacked profiles, and contour colour images at a scale of 1:5,000. A formal interpretation has not been included in this study, however RDI resistivity-depth imaging have been performed in support of the VTEM data.

Based on the geophysical results obtained, a large (~1.0km NS x 1.5km EW) nearly-circular to triangular-like shaped EM anomaly is defined in the southeastern portion of the block, which is partially coincident with a prominent ~1500 nT magnetic high (see Figure 7). This magnetic high anomaly is complex shaped and possibly a zoned magnetite rich intrusion, and it is only partly defined by the survey, extending further south of the property. The EM and magnetic anomalies appear to be part of a broader ENE- WSW trending weakly conductive package, as shown in the TAU time-constant map with magnetic CVG contours (see Figure 7 and Appendix C). The EM anomaly lacks distinctive x-component consistent with a vertical plate response and appears instead to be a broadly conductive body. Maximum dB_Z/dt time constants range from about 0.3 to 0.37 ms, which is in the moderate-high range. Based on the RDI (resistivity-depth-imaging) images in Appendix G, the property is partly covered by 50-100m of cover and the main EM anomaly lies below it and extends to >400m depth. The apparent resistivity of the anomalous zones is estimated to be as low as 35 ohm-m within the main anomaly approx. 100 ohm-m over adjacent lines. The estimated maximum depth of investigation is approx. 550-600m.

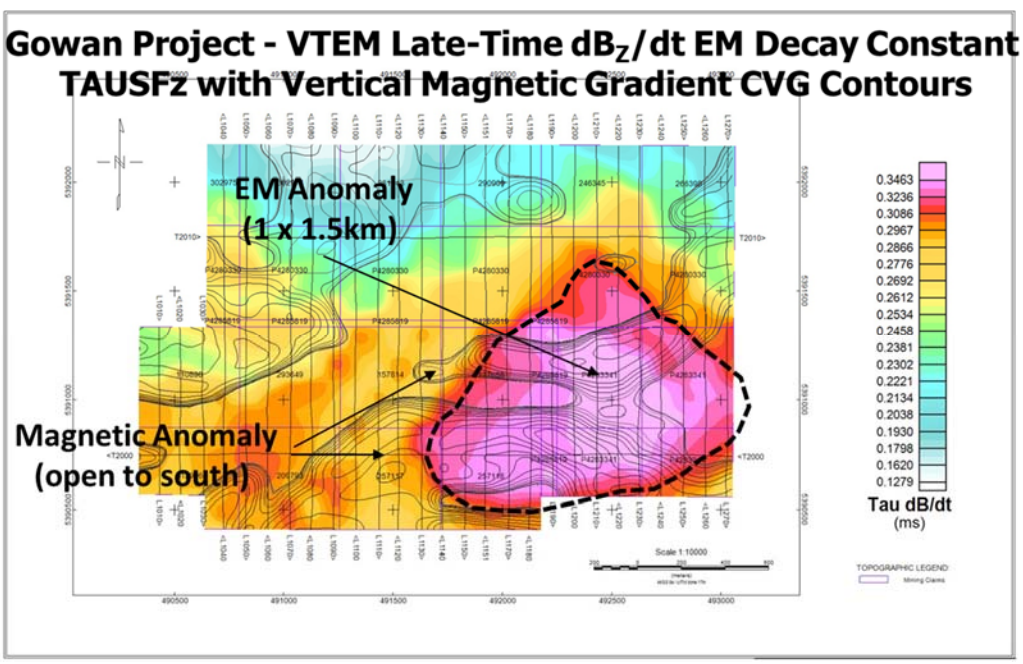


Figure 7 – Gowan Project dB_Z/dt late channel EM decay time-constant (TAU) map with vertical magnetic gradient contours.

The Gowan Project is understood to be prospective for Kidd-style Cu-Zn VMS style mineralization. It is quite likely that both EM and magnetic results will be of exploration interest. We therefore recommend Maxwell plate modeling of EM anomalies be performed with test drill hole parameters planning prior to ground follow up and drill testing. More advanced 1D layered earth modeling of EM data will prove useful in establishing the source depth and vertical extent of conductive features of interest, both in plan and in cross-section. Magnetic CET structural and lineament analysis as well as 3D MVI magnetic inversions will be useful for mapping structure, alteration and lithology in 2D-3D space across the property. We recommend that more advanced, integrated interpretation be performed on these geophysical data and these results further evaluated against known geology for future targeting.

Respectfully submitted[2],

Nick Venter
Geotech Ltd.

Emily Data
Geotech Ltd.

Jean M. Legault, M.Sc.A, P.Eng, P.Geo
Geotech Ltd.

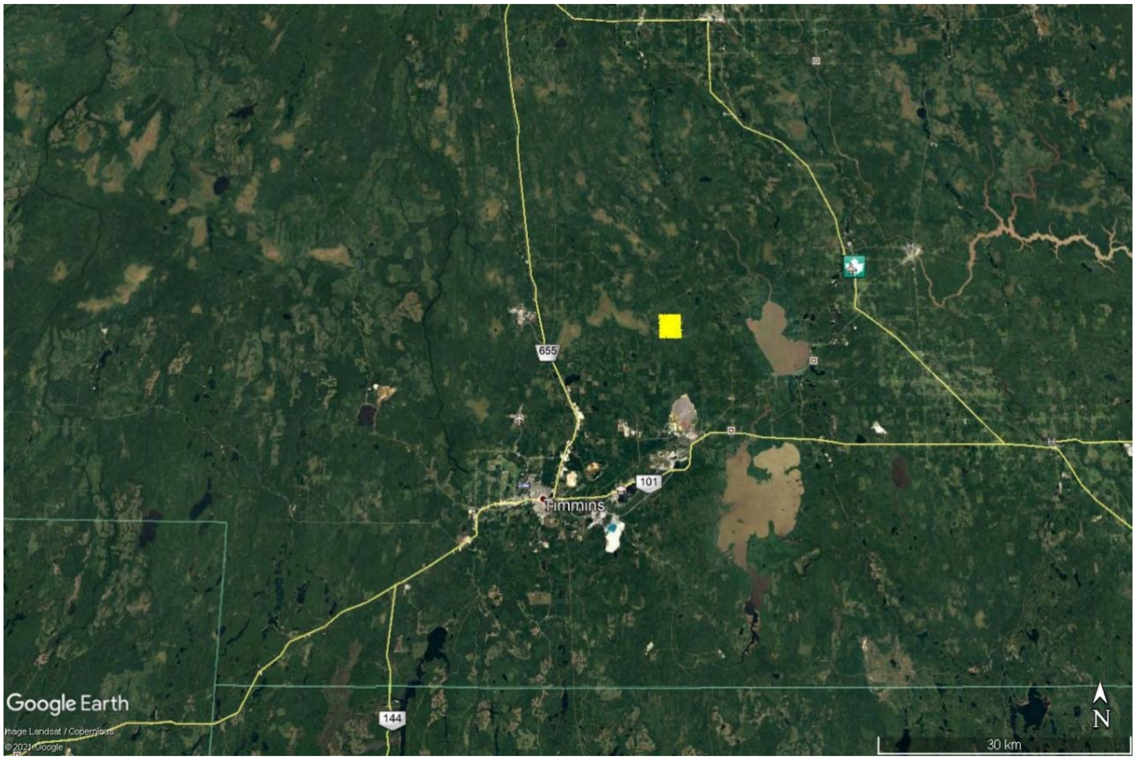
Moyosore Lanisa
Geotech Ltd.

May 2021

[2] Final data processing of the EM and magnetic data was be carried out in Aurora, Ontario, under the supervision of Jean M. Legault, M.Sc.A., P.Eng, P.Geo – Chief Geophysicist.

APPENDIX A

SURVEY AREA LOCATION MAP



Overview of the Survey Area

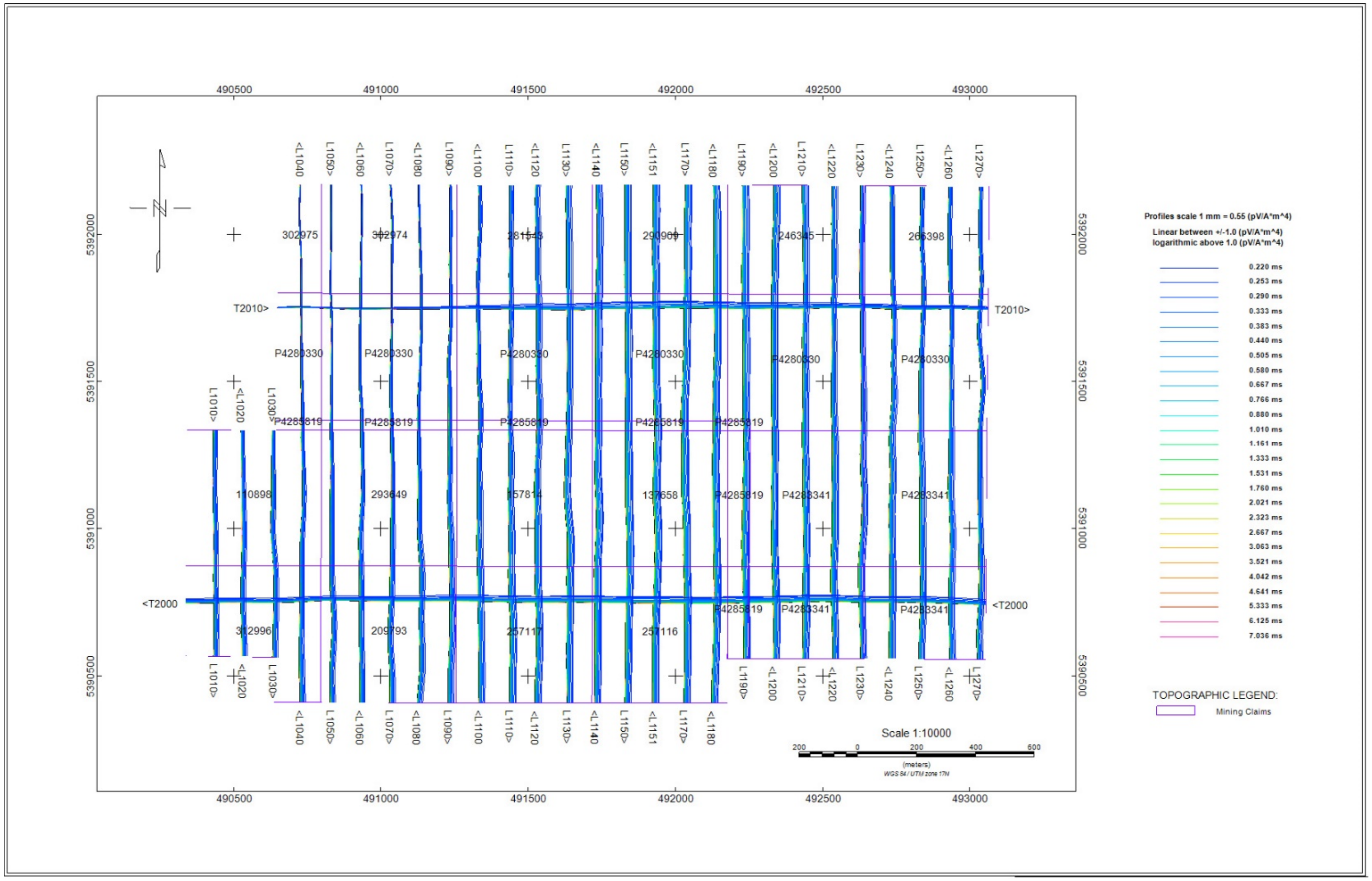
APPENDIX B

SURVEY AREA COORDINATES

(WGS84 UTM Zone 17N)

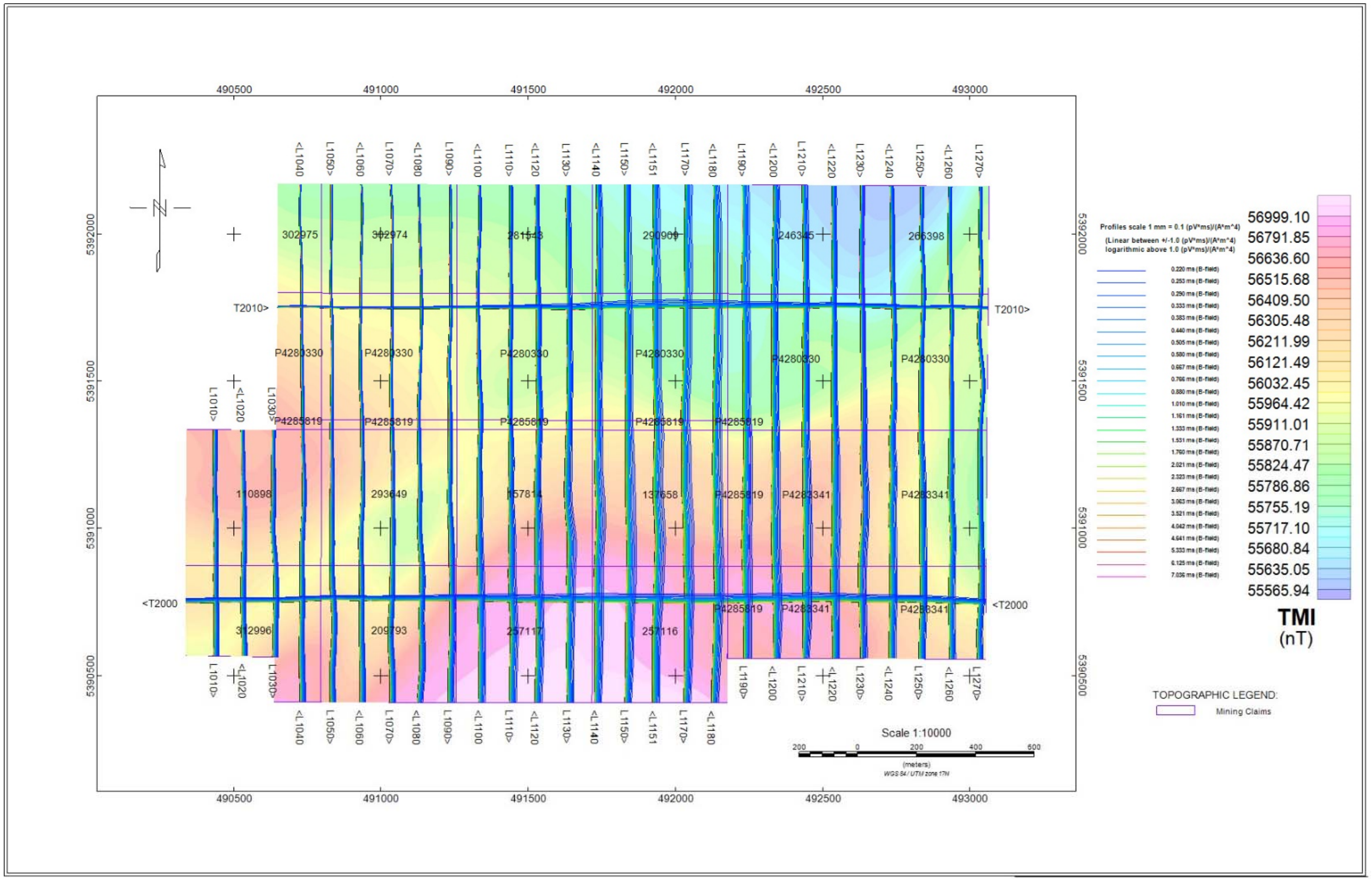
X	Y
493059	5392867
490300	5392906
490283	5392839
490279	5389681
493058	5389695
493072	5389803
493091	5392873
493057	5392868

APPENDIX C - GEOPHYSICAL MAPS[1]

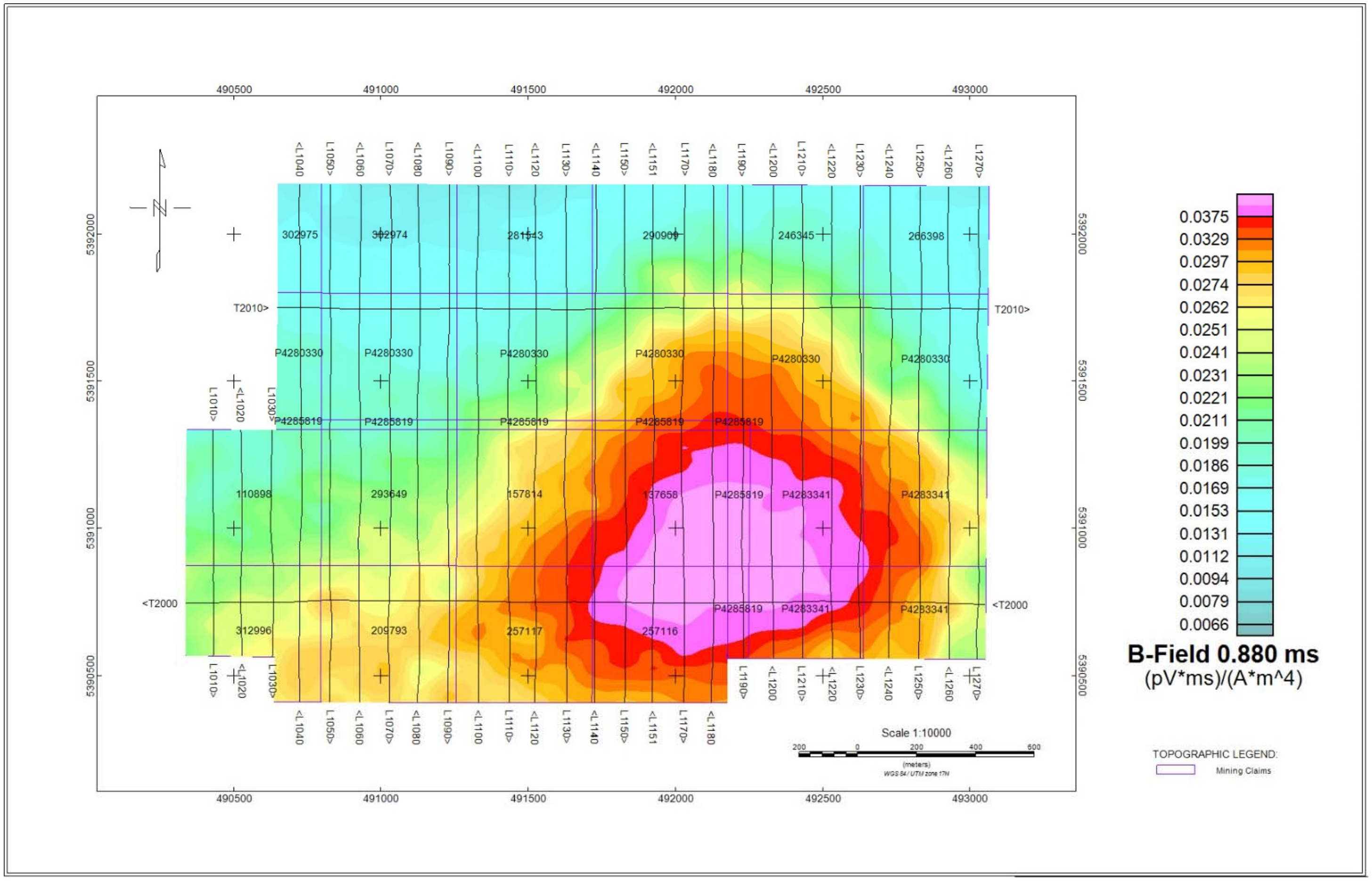


dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms

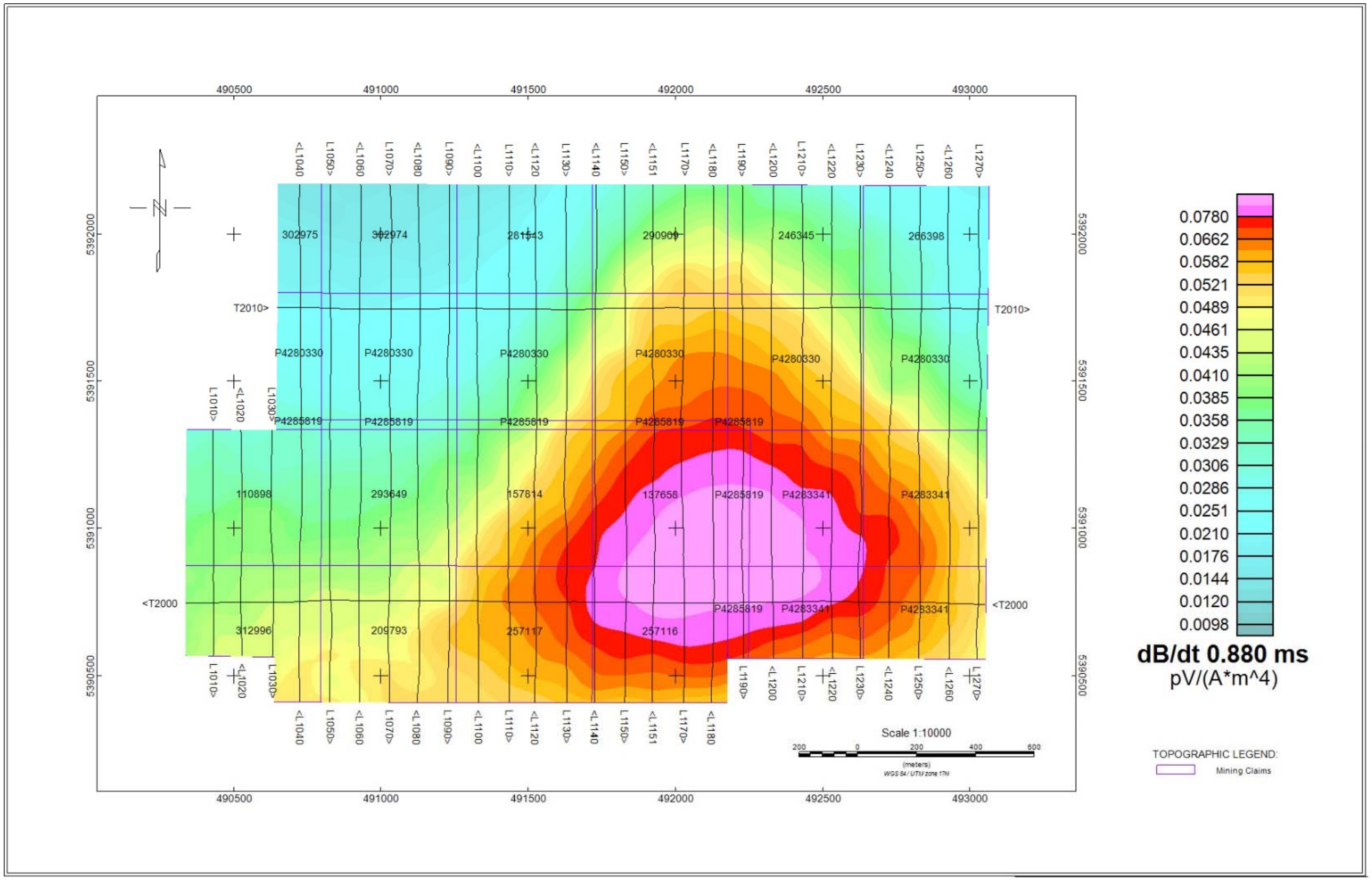
[1] Complete full size geophysical maps are also available in PDF format located in the final data maps folder.



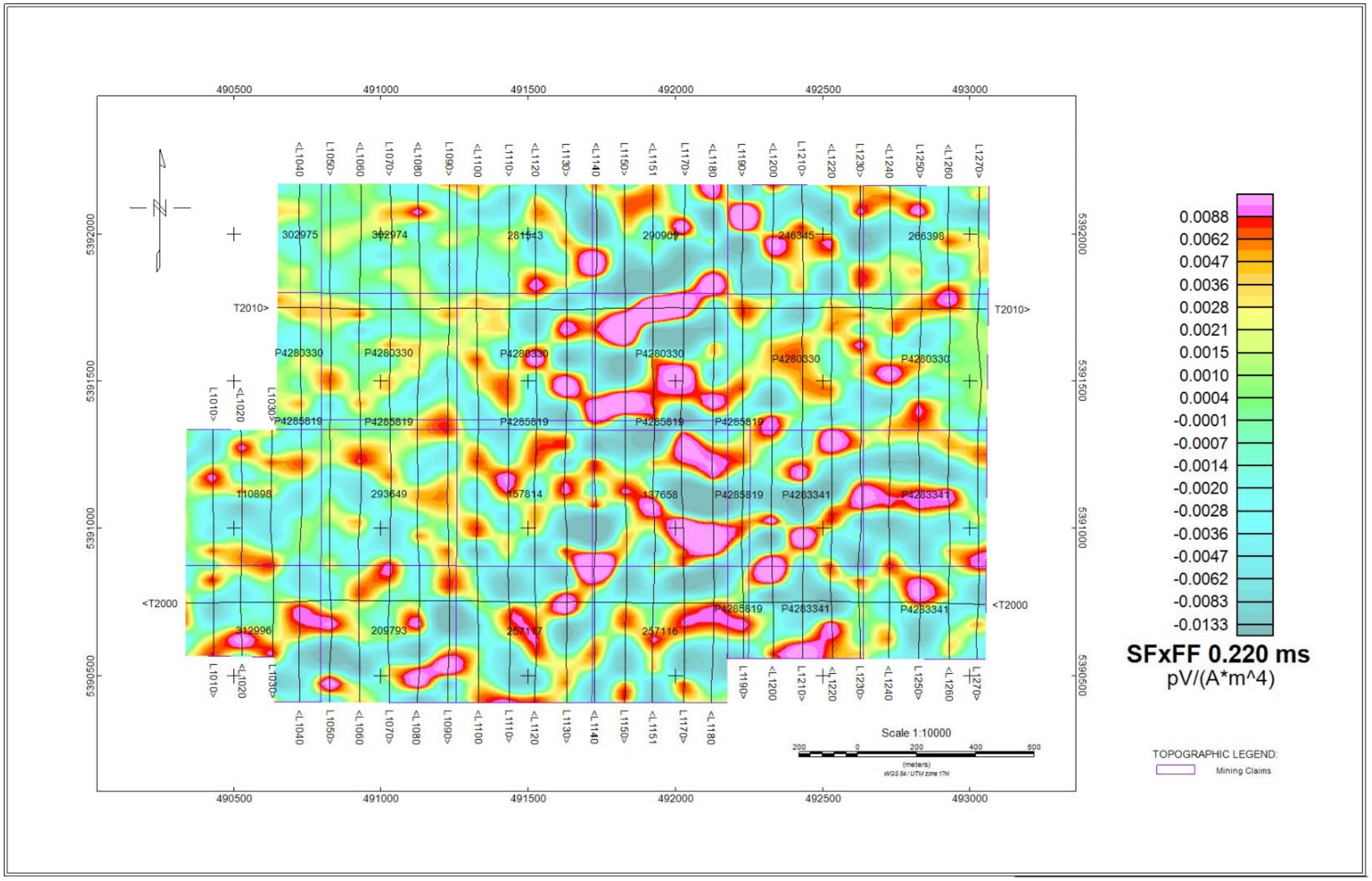
B-field profiles Z Component, Time Gates 0.220 – 7.036 ms over RTP colour image



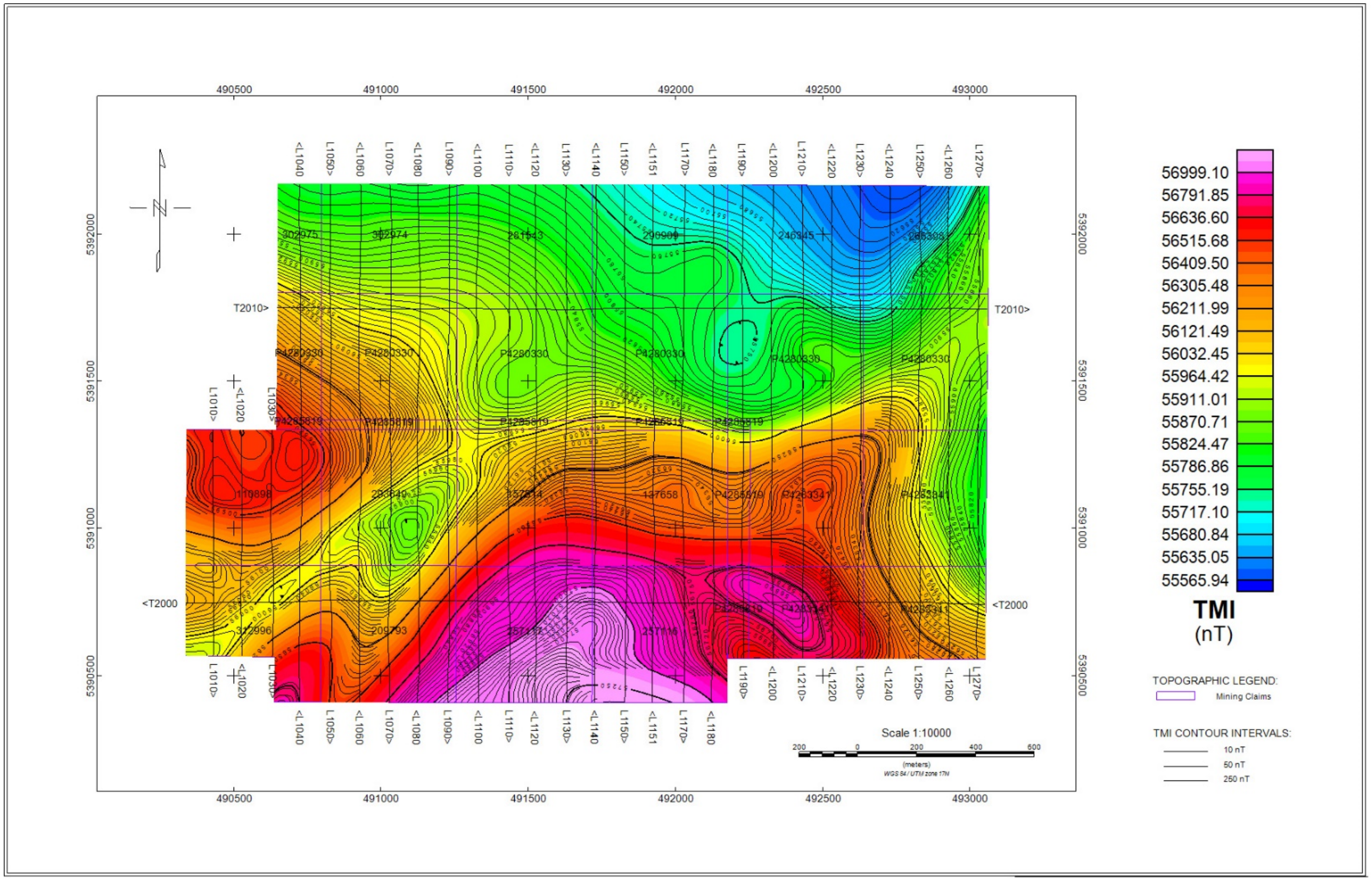
B-field Z Component Channel 30, Time Gate 0.880 ms colour image



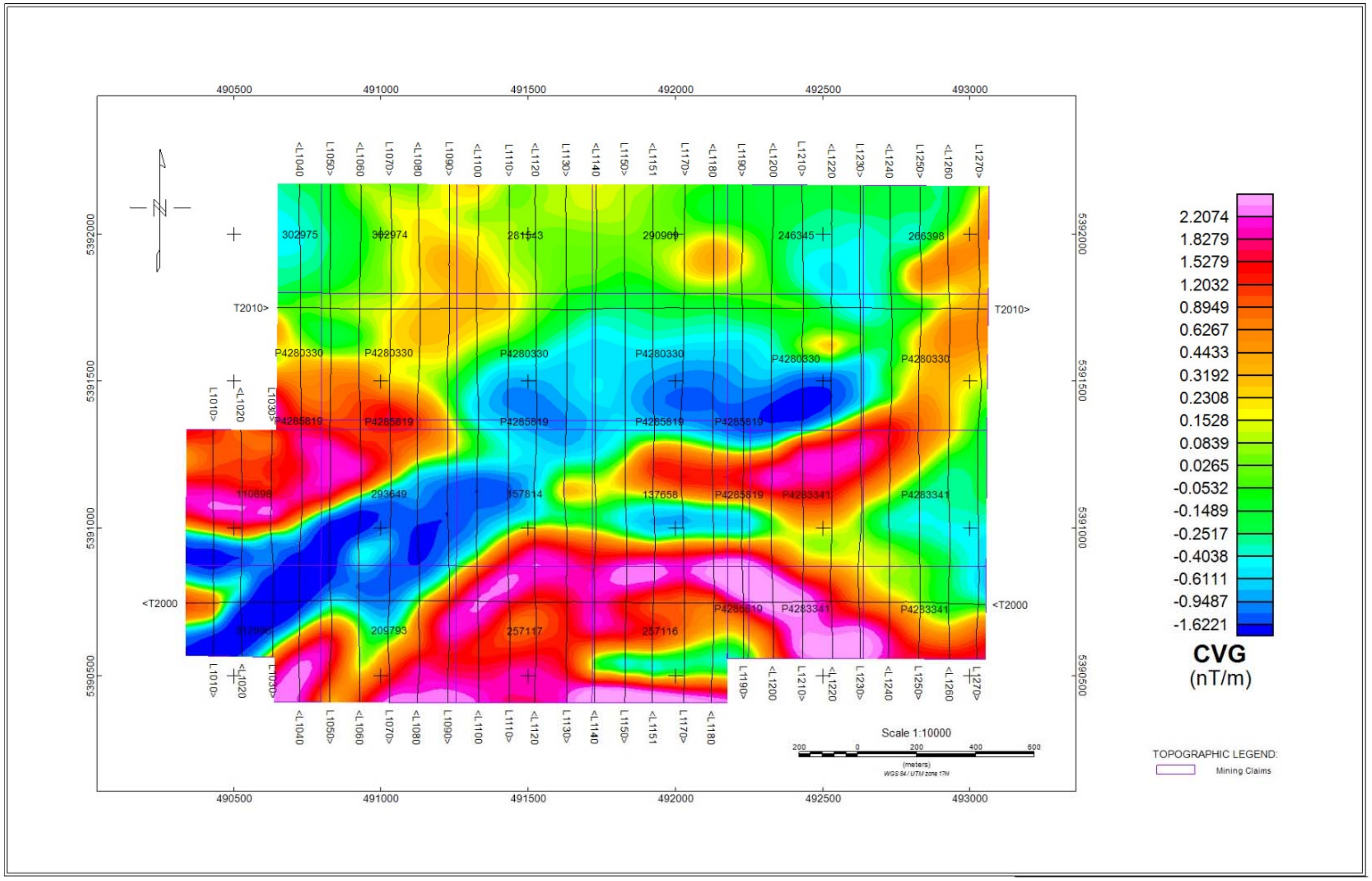
VTEM dB/dt Z Component Channel 30, Time Gate 0.880 ms colour image



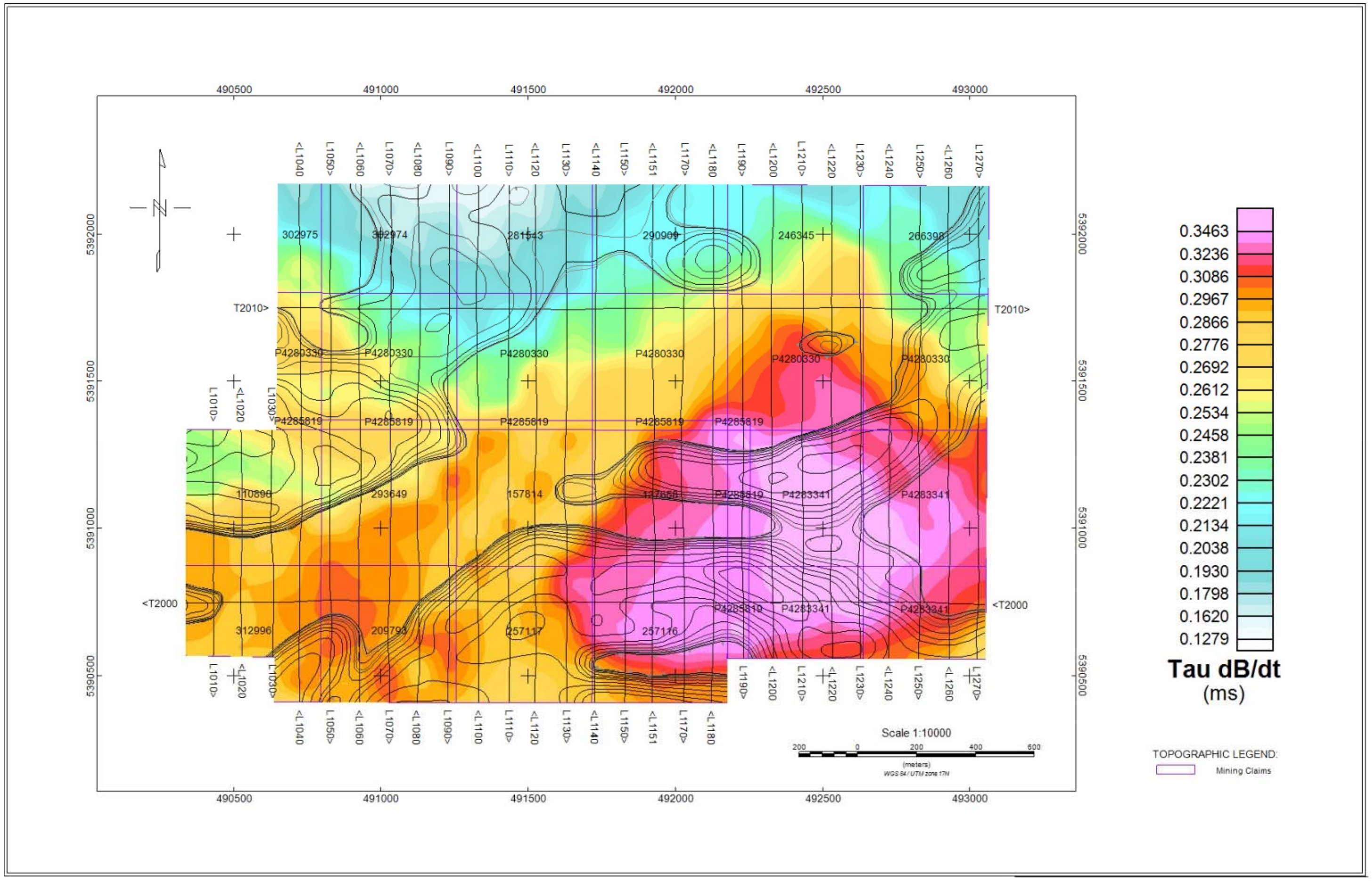
Fraser Filtered dB/dt X Component Channel 20, Time Gate 0.220 ms colour image



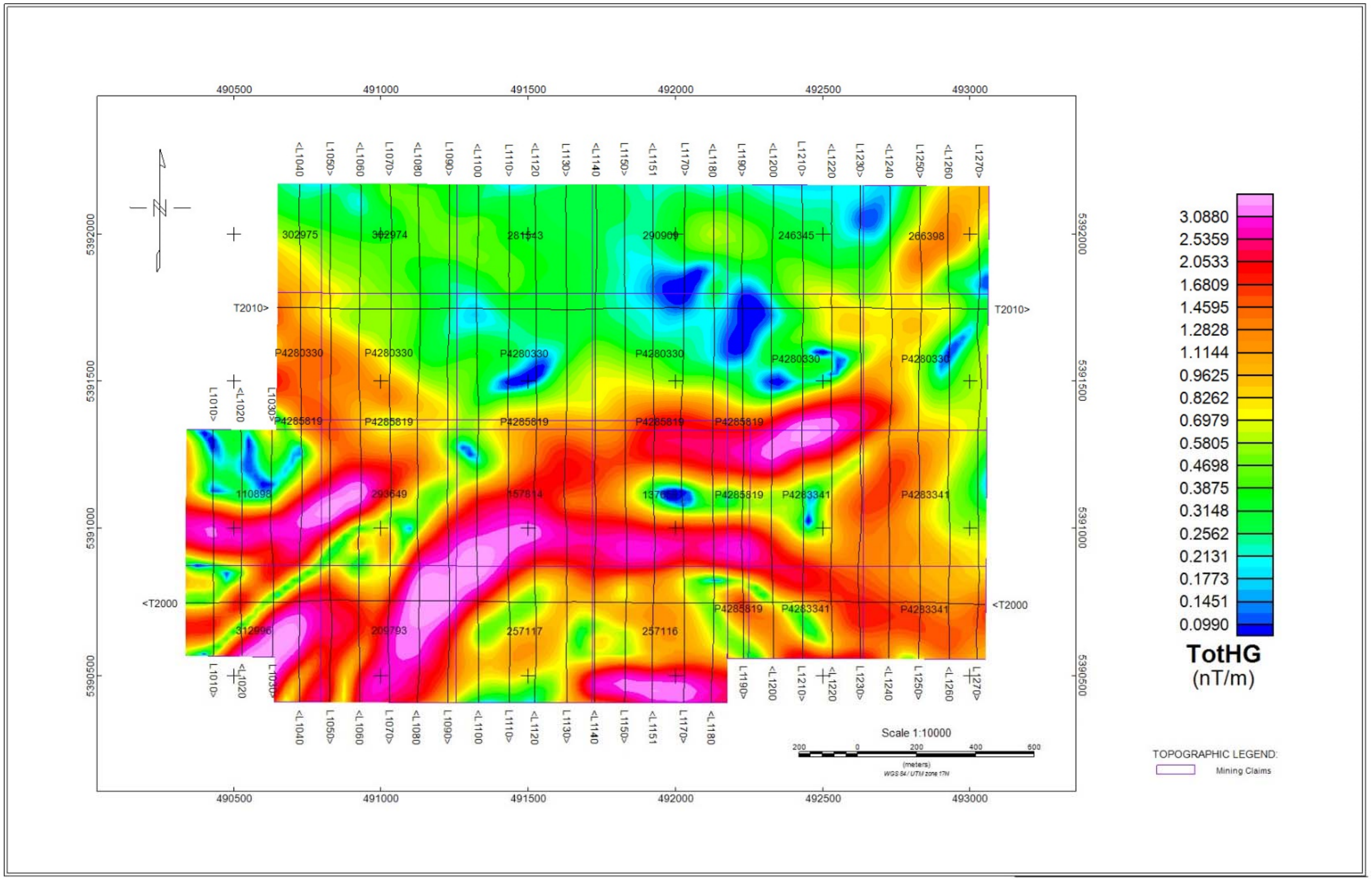
Total Magnetic Intensity (TMI) colour image and contours



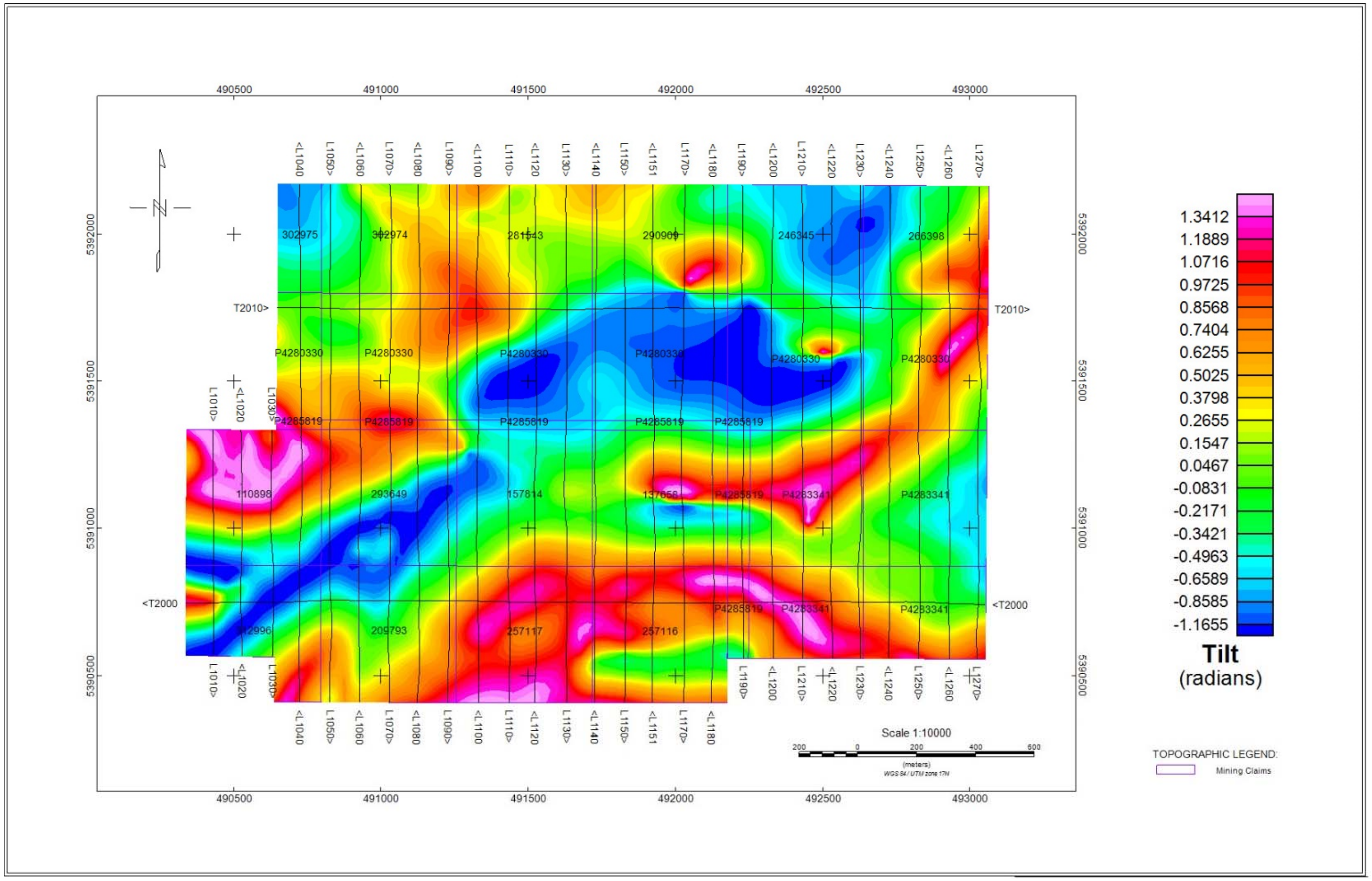
Calculated Vertical Gradient (CVG) colour image.



dB/dt Z-Component Calculated Time Constant (Tau) with Calculated Vertical Gradient (CVG) contours

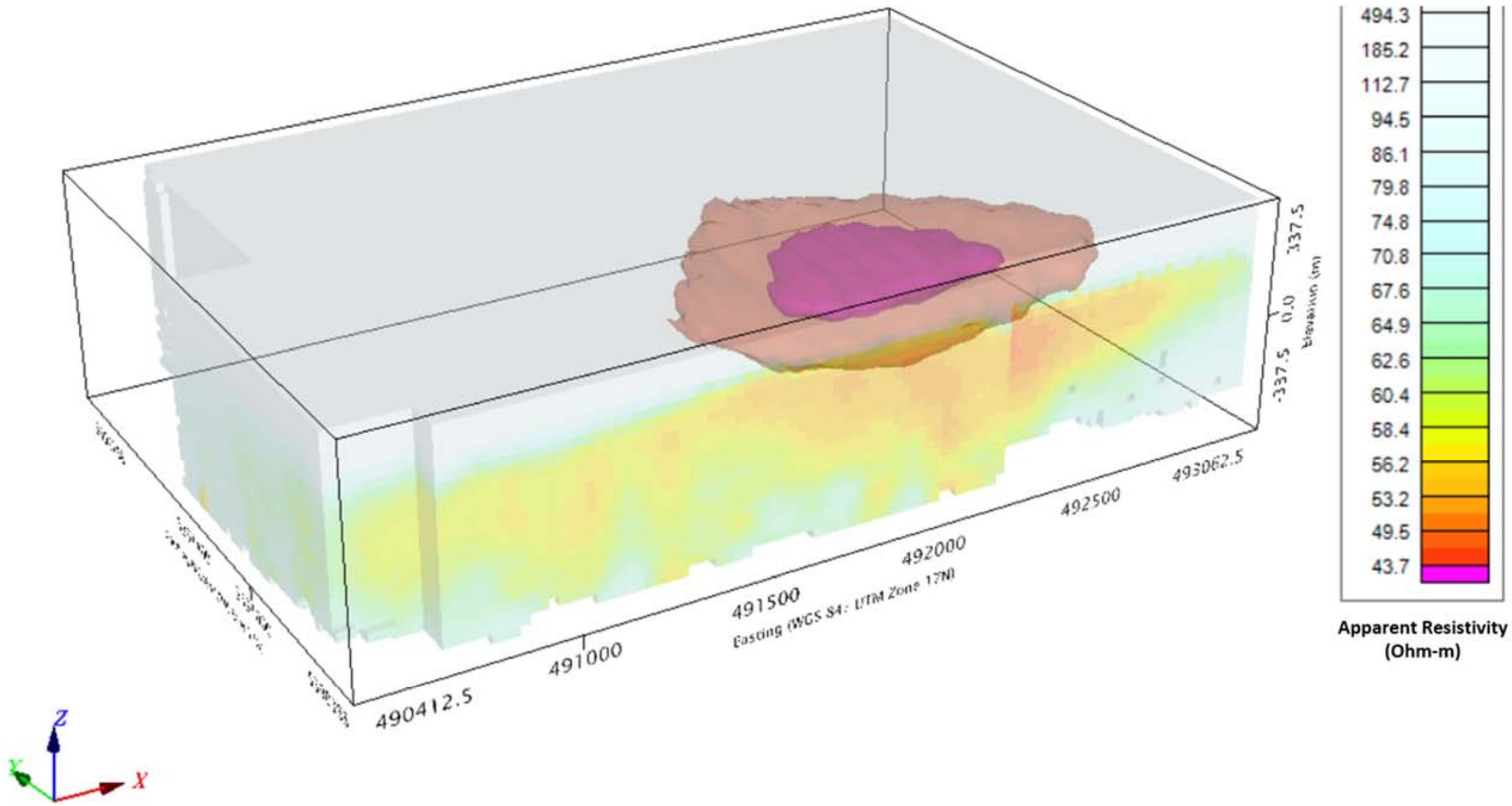


Magnetic Total Horizontal Gradient colour image



Magnetic Tilt Angle

RESISTIVITY DEPTH IMAGE (RDI) MAP



Pelangio Exploration Inc.
Gowan Project Project
3D View of Resistivity-Depth Image (RDI) Resistivity Voxel

APPENDIX D

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 D1 to D15). 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.

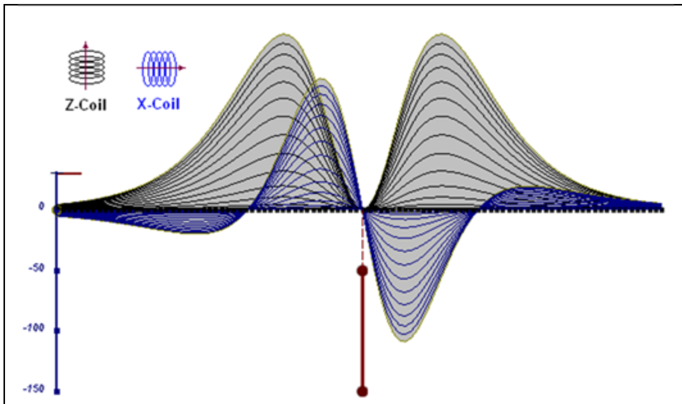


Figure D-1: vertical thin plate

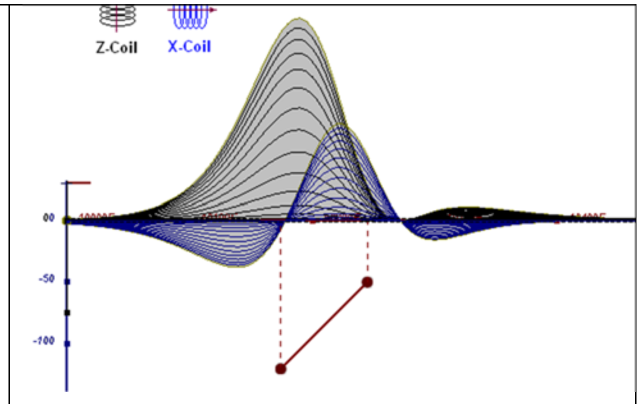


Figure D-2: inclined thin plate

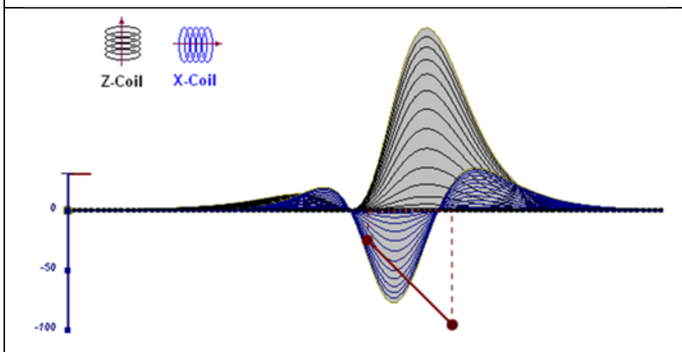


Figure D-3: inclined thin plate

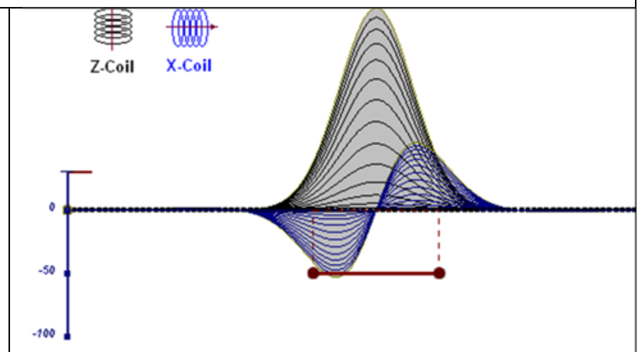


Figure D-4: horizontal thin plate

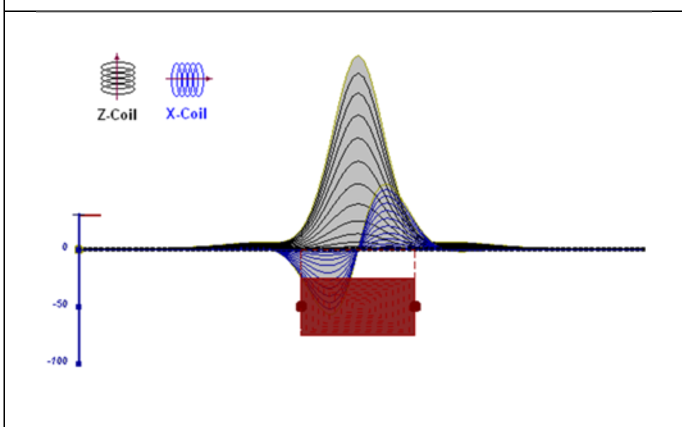


Figure D-5: horizontal thick plate (linear scale of the response)

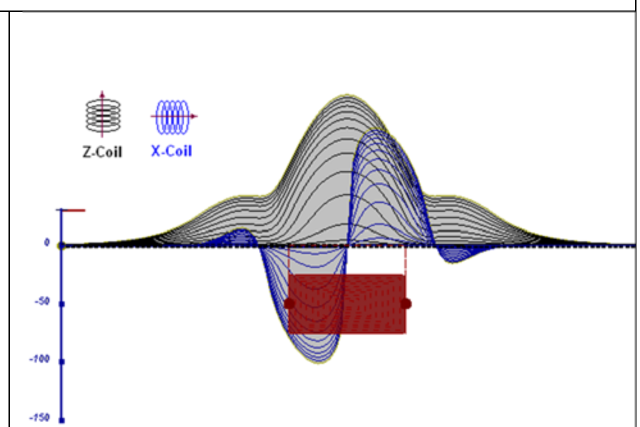


Figure D-6: horizontal thick plate (log scale of the response)

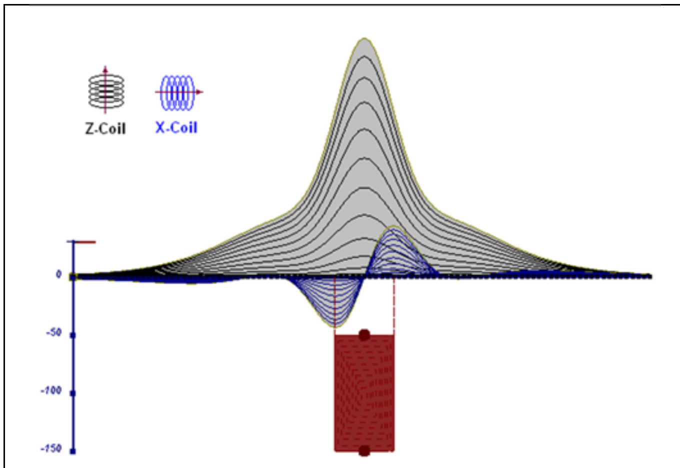


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

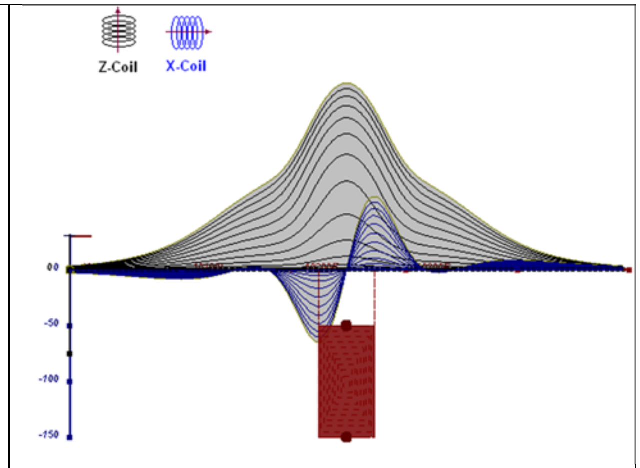


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

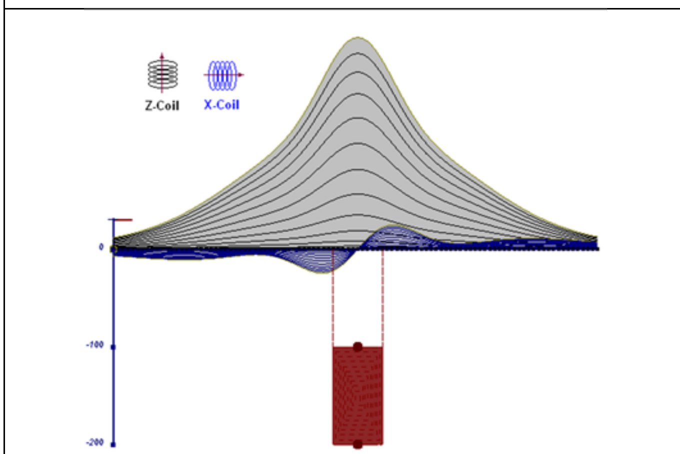


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

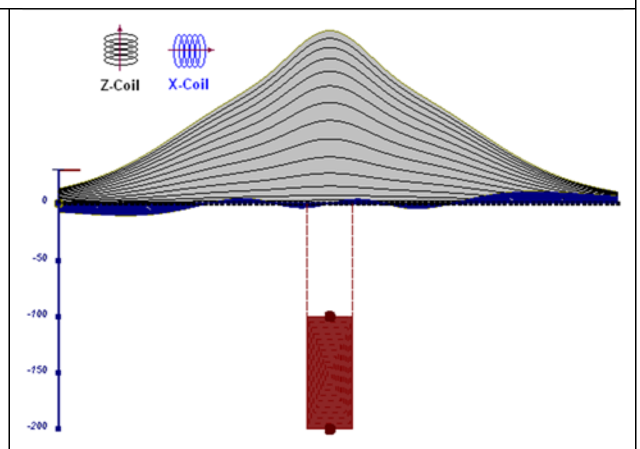


Figure D-10: vertical thick plate (linear scale of the response). Depth / horizontal thickness=2.5

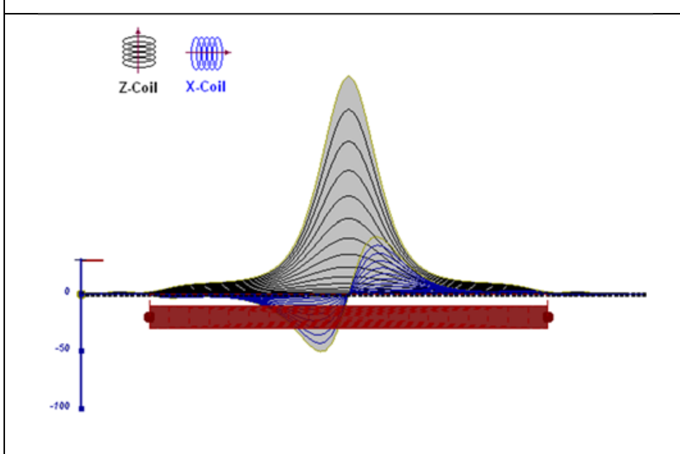


Figure D-11: horizontal thick plate (linear scale of the response)

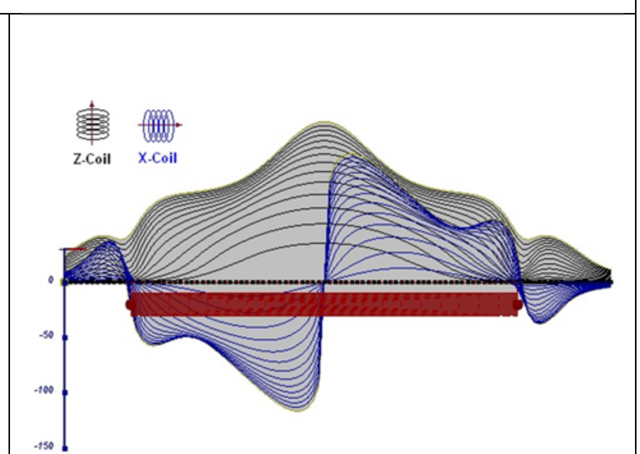


Figure D-12: horizontal thick plate (log scale of the response)

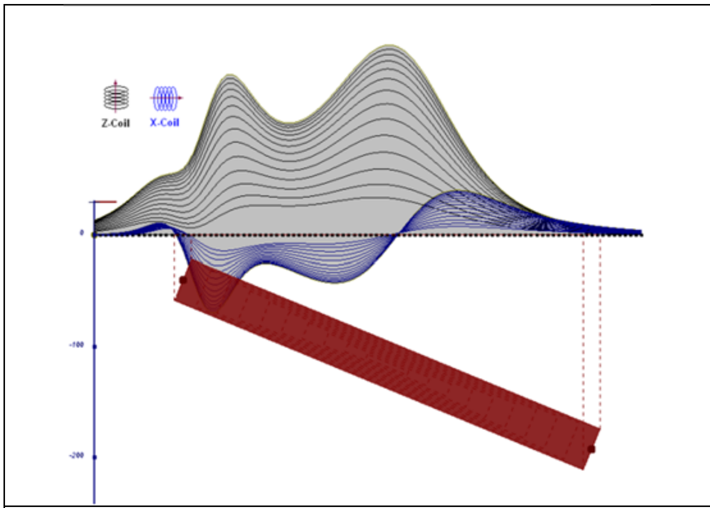


Figure D-13: inclined long thick plate

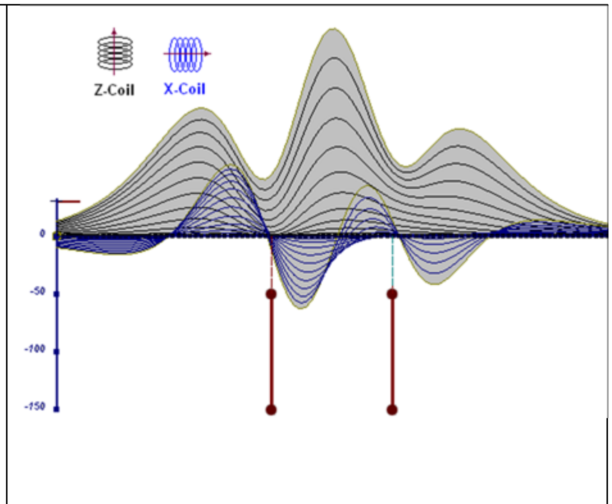


Figure D-14: two vertical thin plates

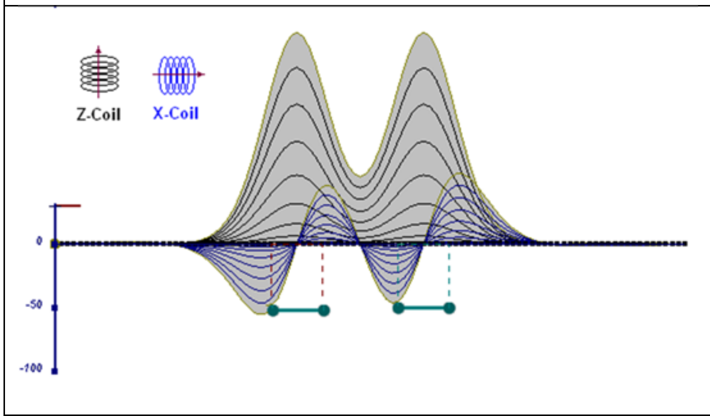


Figure D-15: two horizontal thin plates

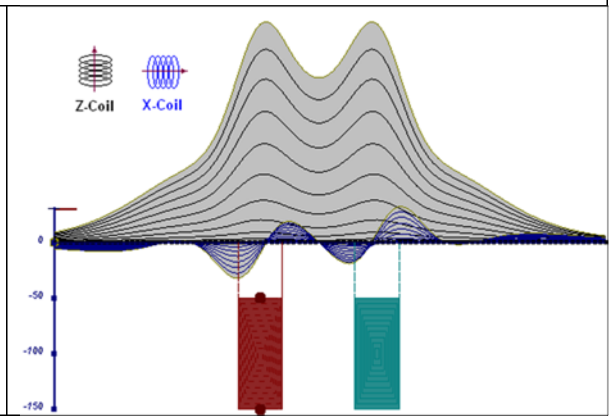


Figure D-16: two vertical thick plates

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

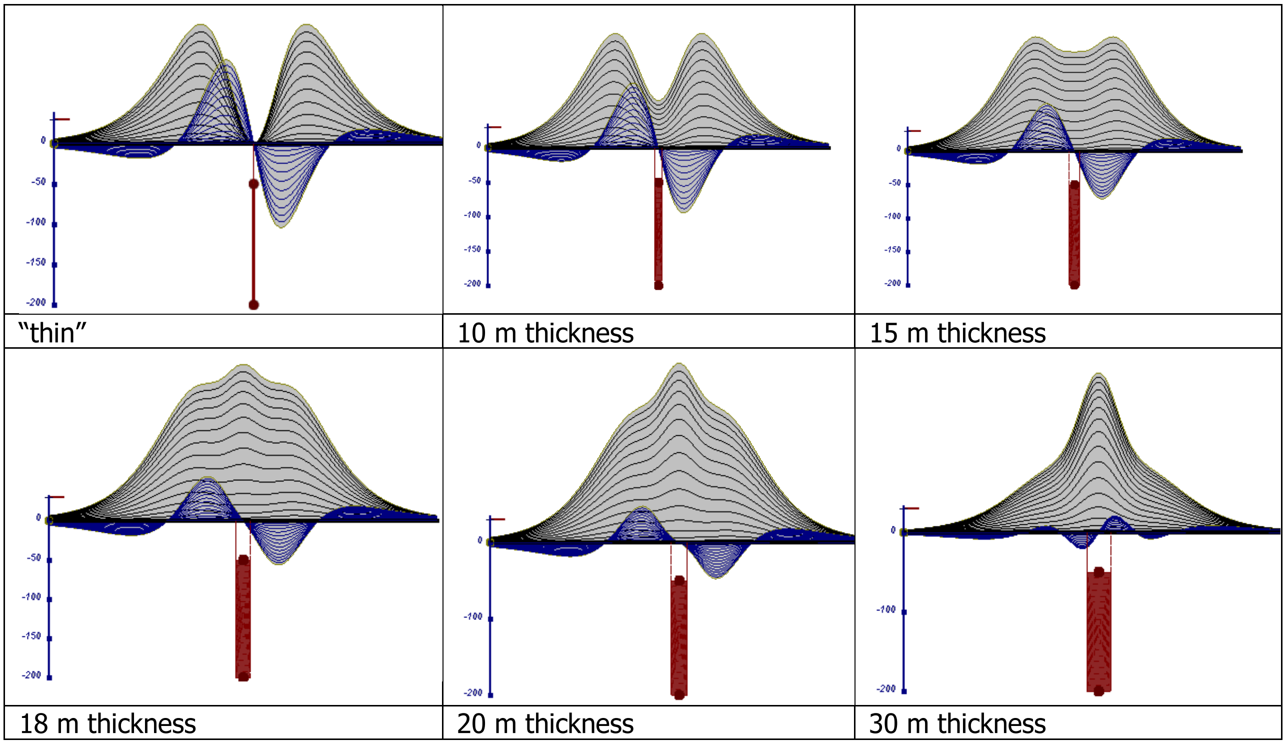


Figure D-17: Conductive vertical plate, depth 50 m, strike length 200 m, depth extends 150 m.

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX E

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,

$$e_0 \propto (1 / \tau)\, e^{-(t/\tau)}$$

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. E1).

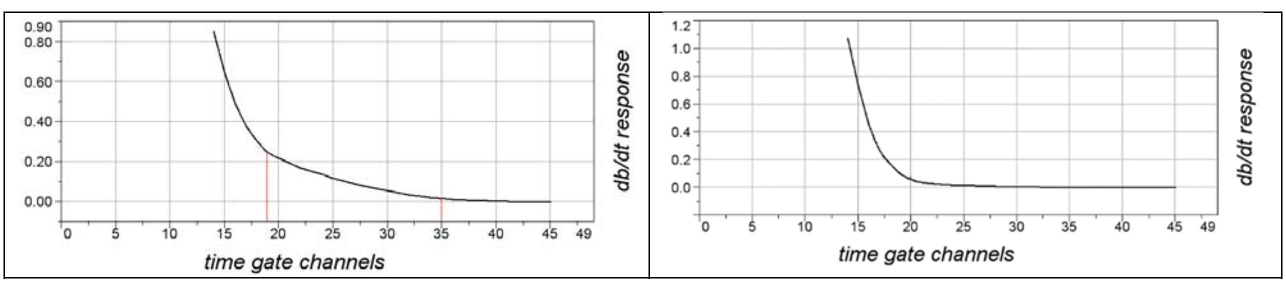


Figure E-1: Left – presence of good conductor, right – poor conductor.

[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.

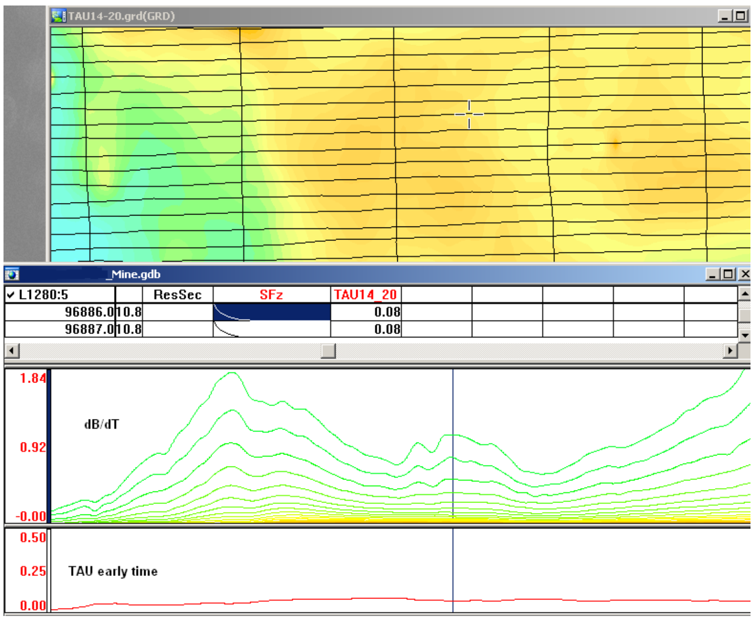


Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

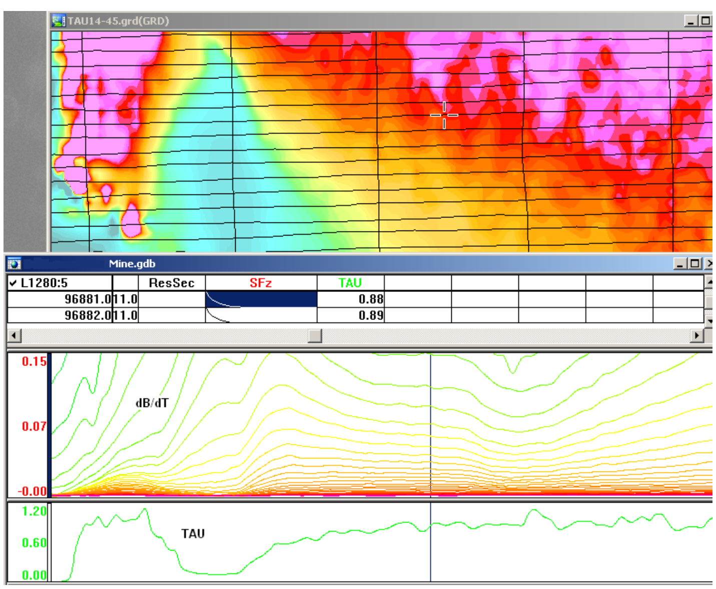


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

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.

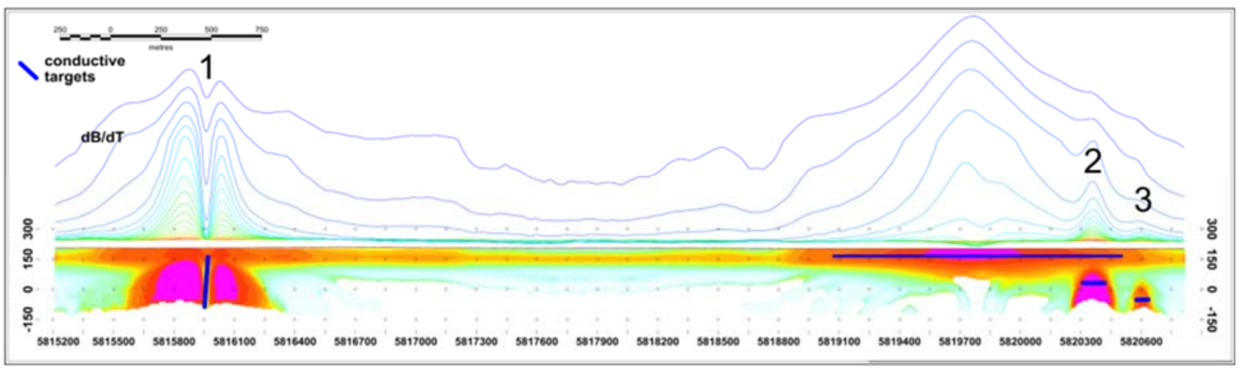


Figure E-4: dB/dt profile and RDI with different depths of targets.

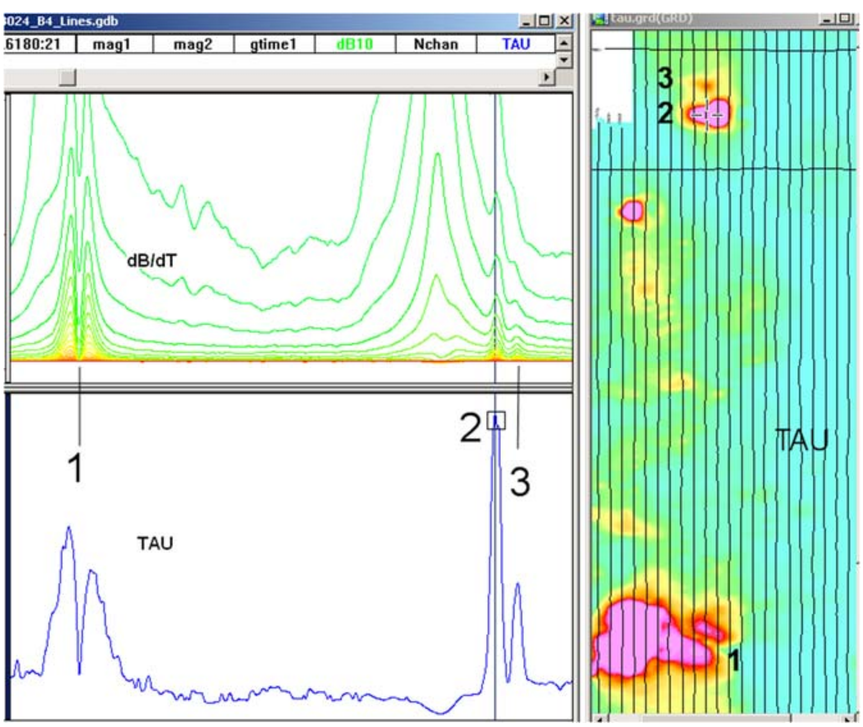


Figure E-5: Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the "sliding Tau" in-house program developed at Geotech. 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.

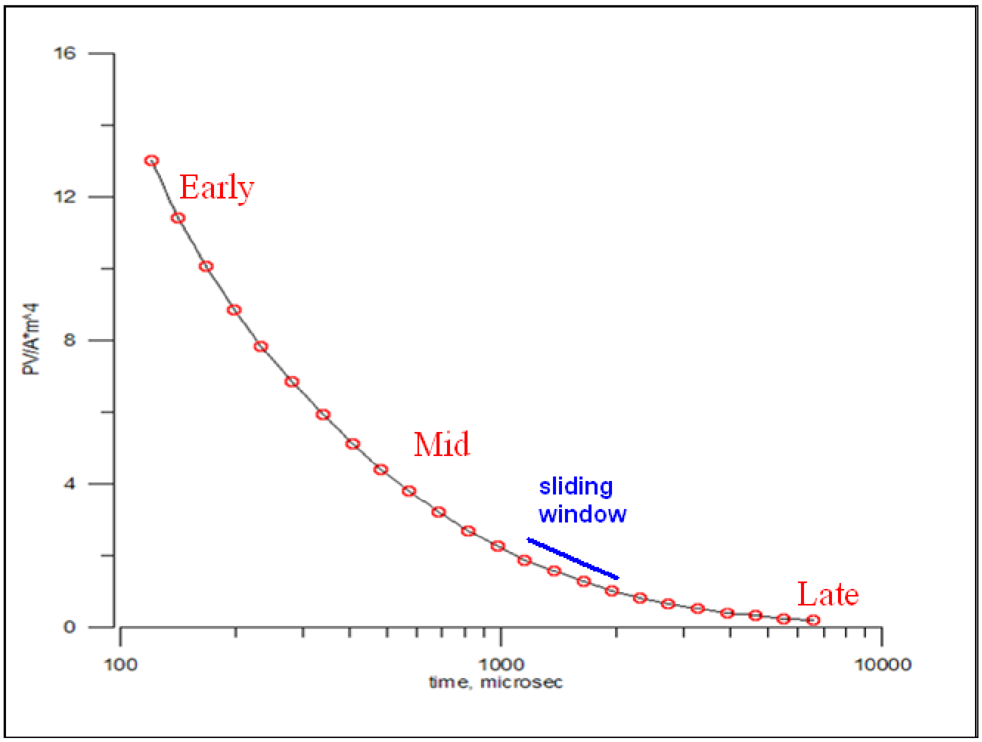


Figure E-6: Typical dB/dt decays of VTEM data

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX F

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 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).

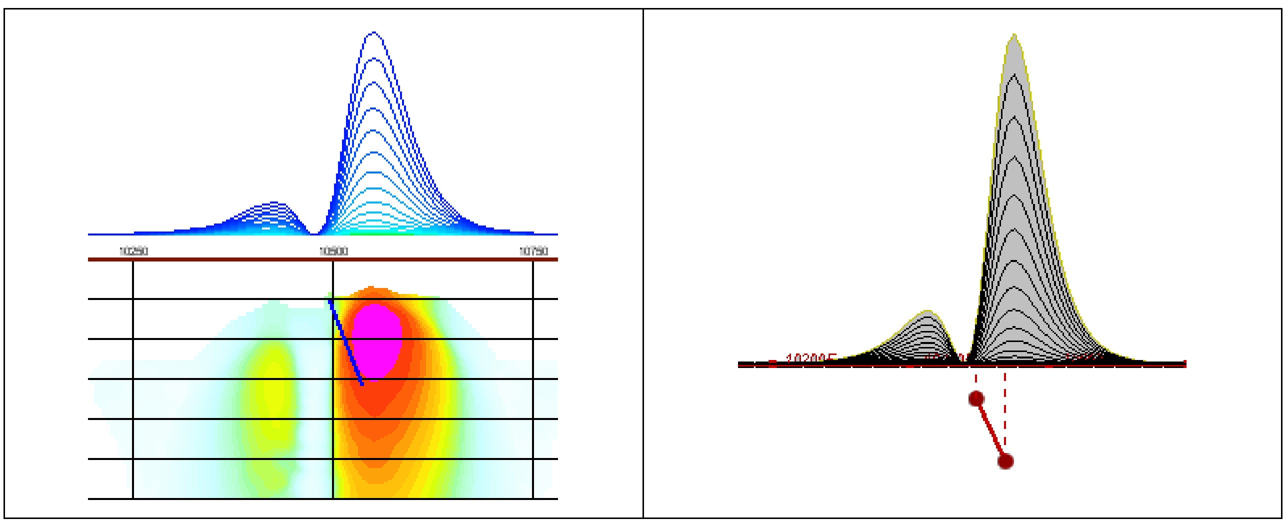


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degrees, depth extend 100 m).

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

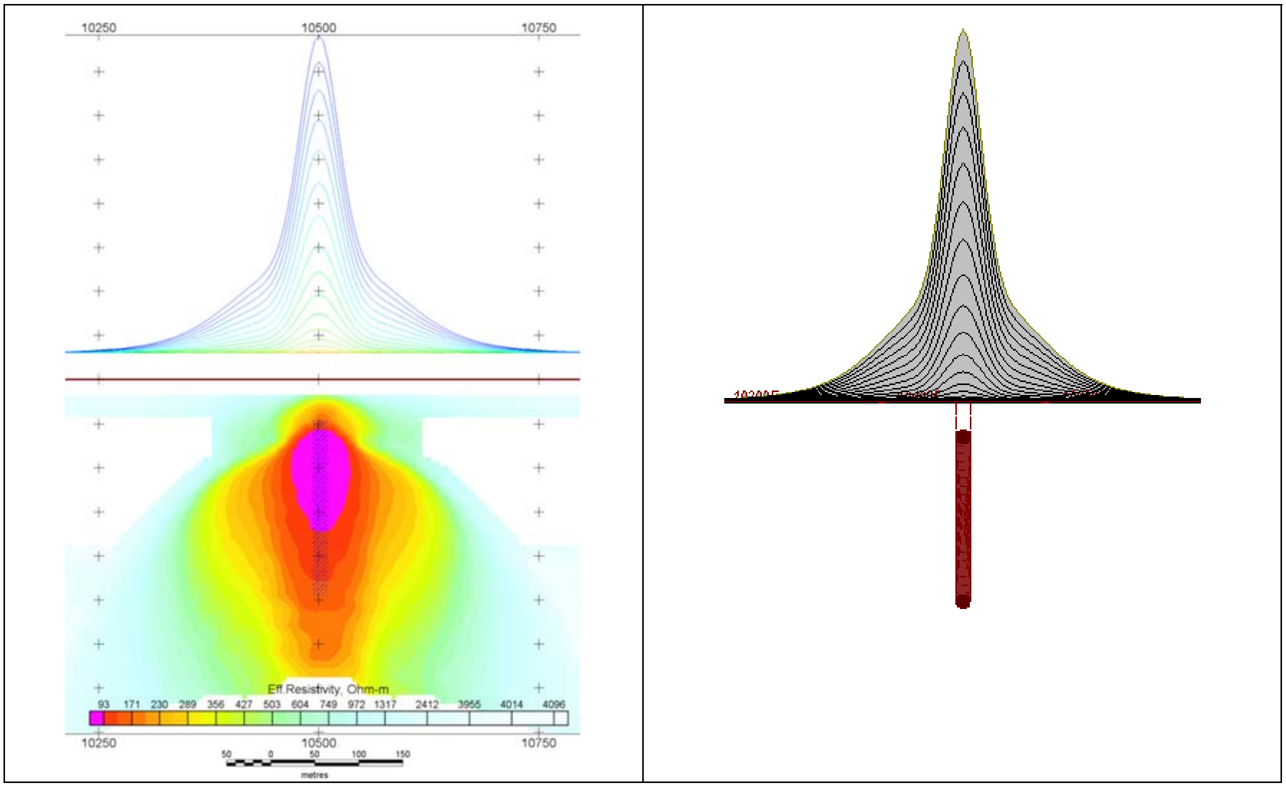


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

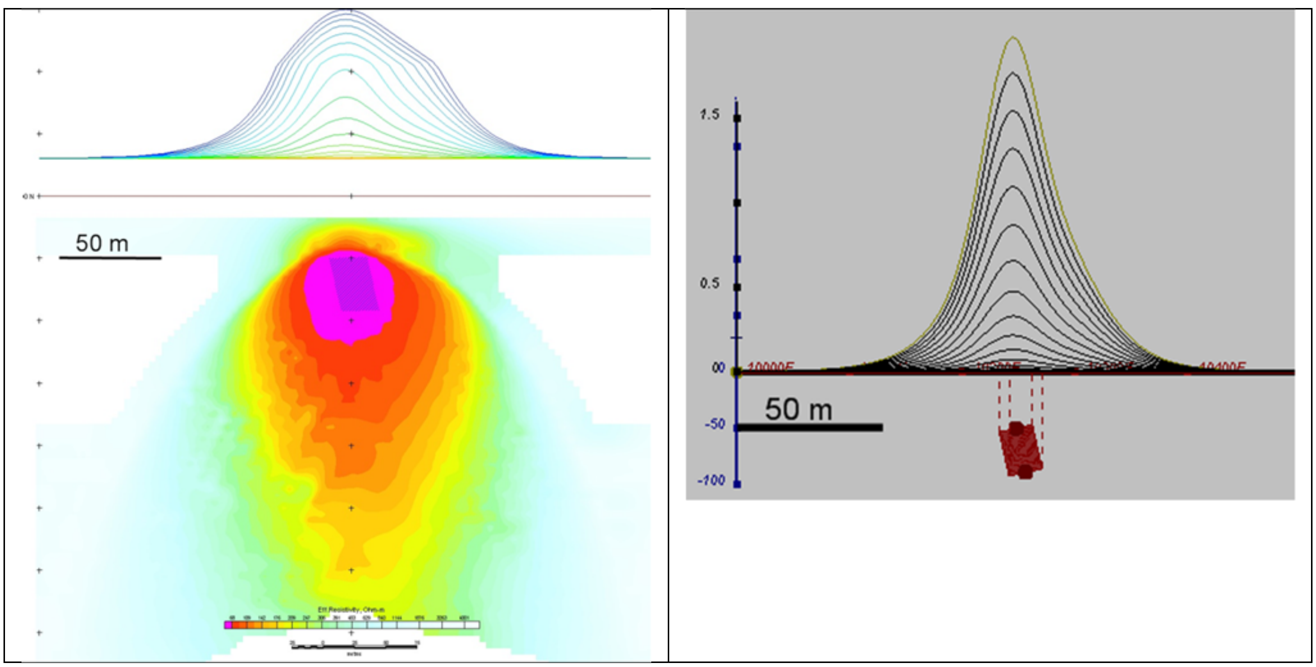


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness.

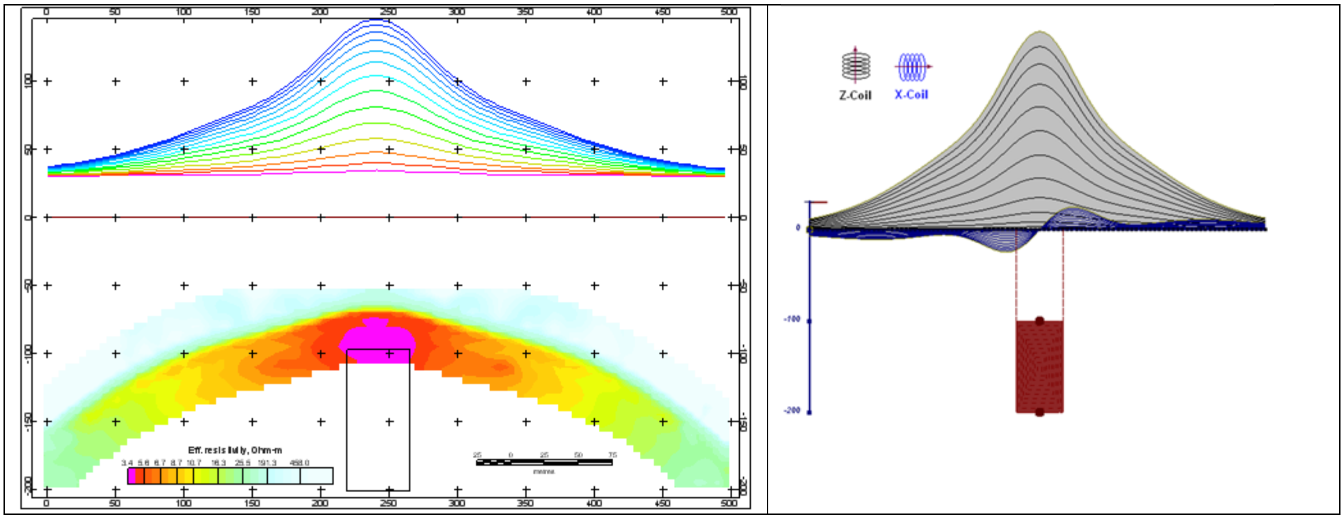


Figure F-4: Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

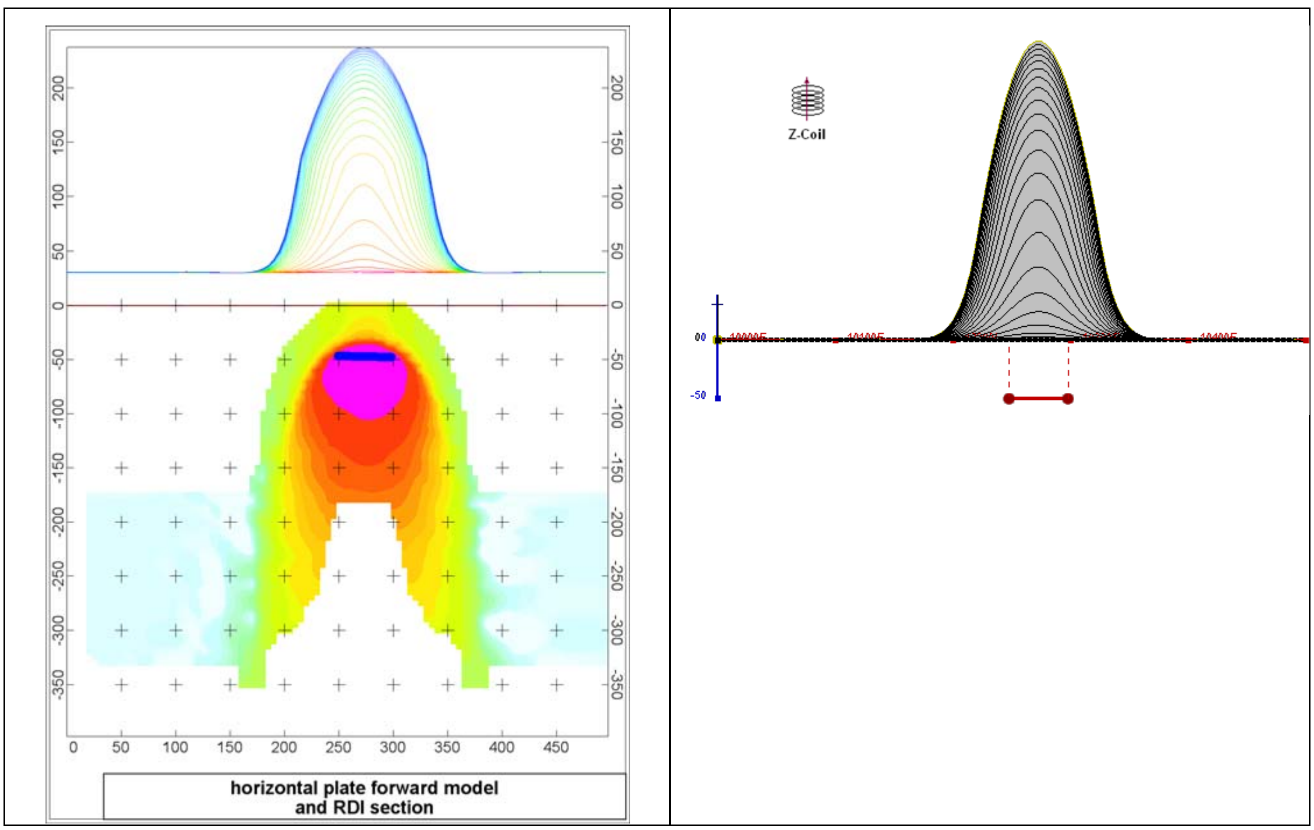


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

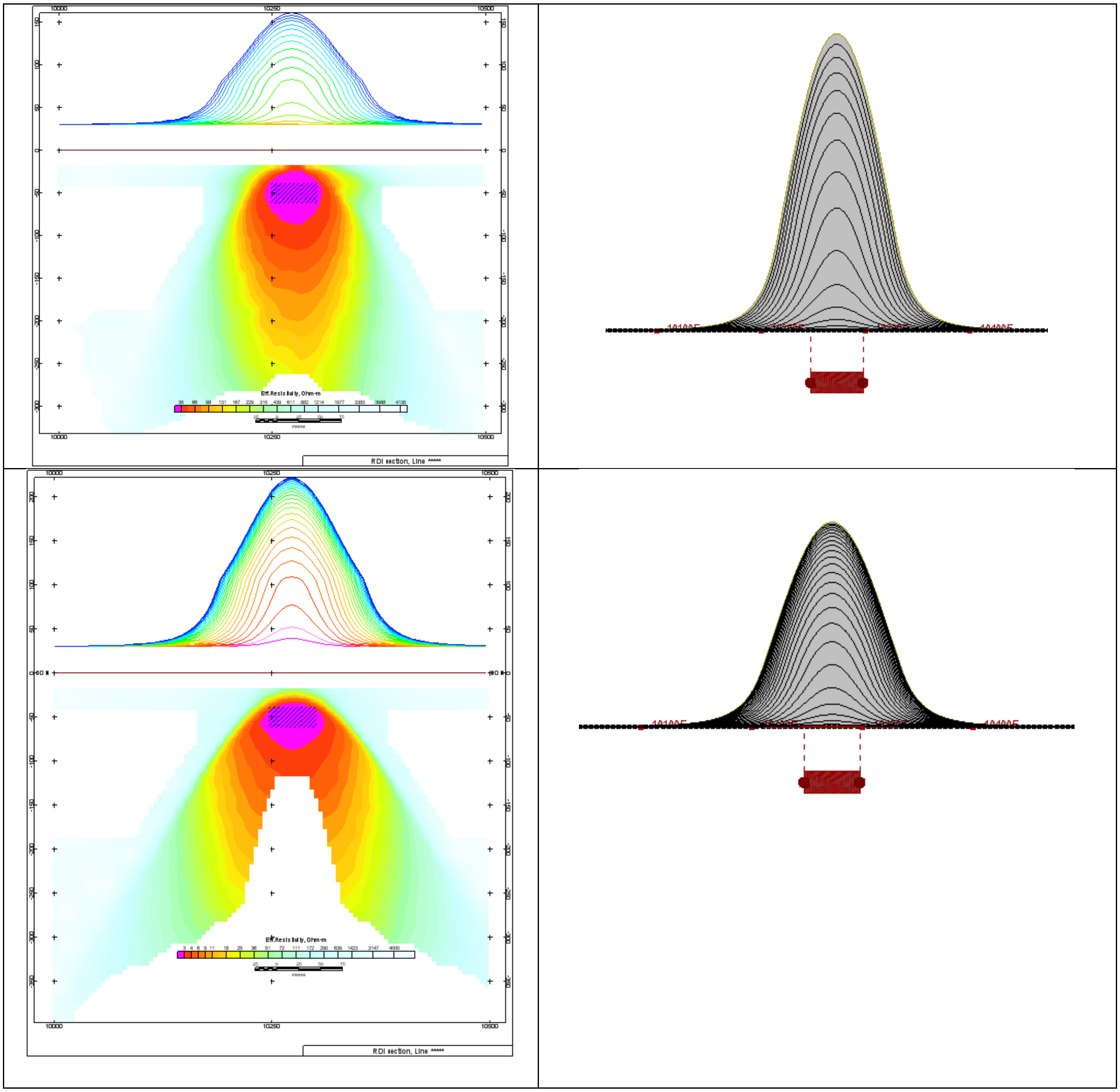


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below).

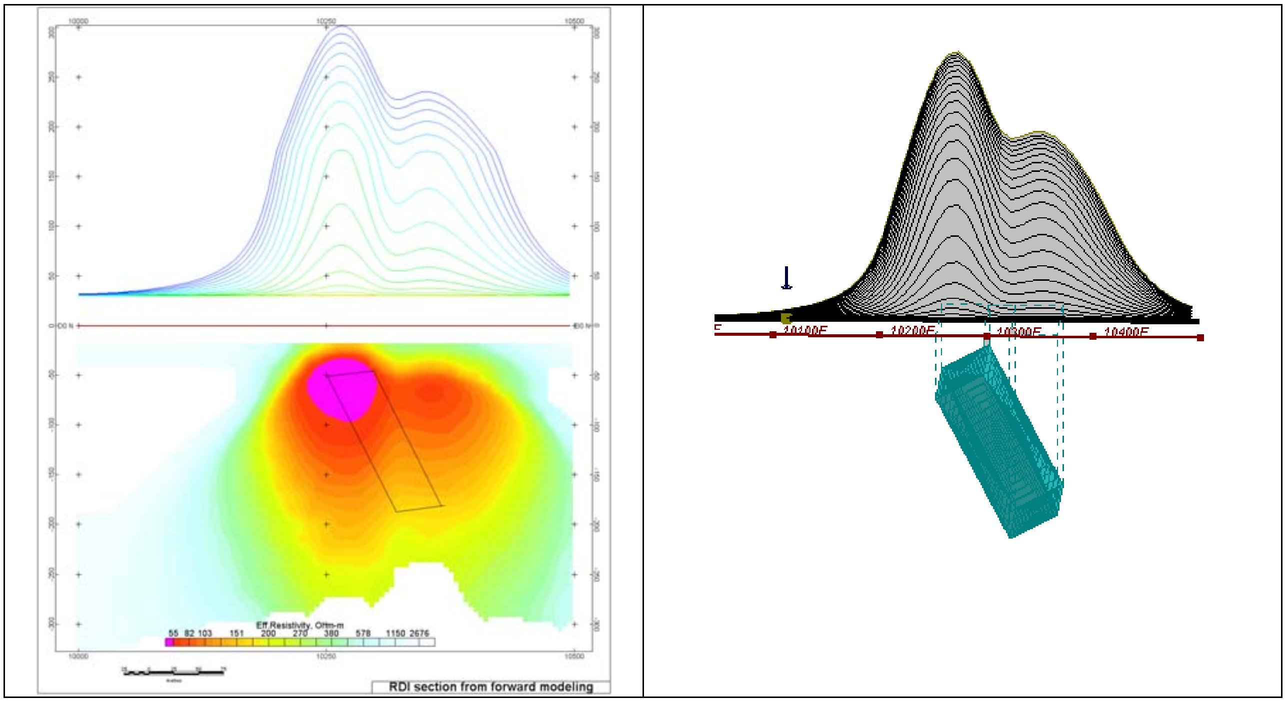


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

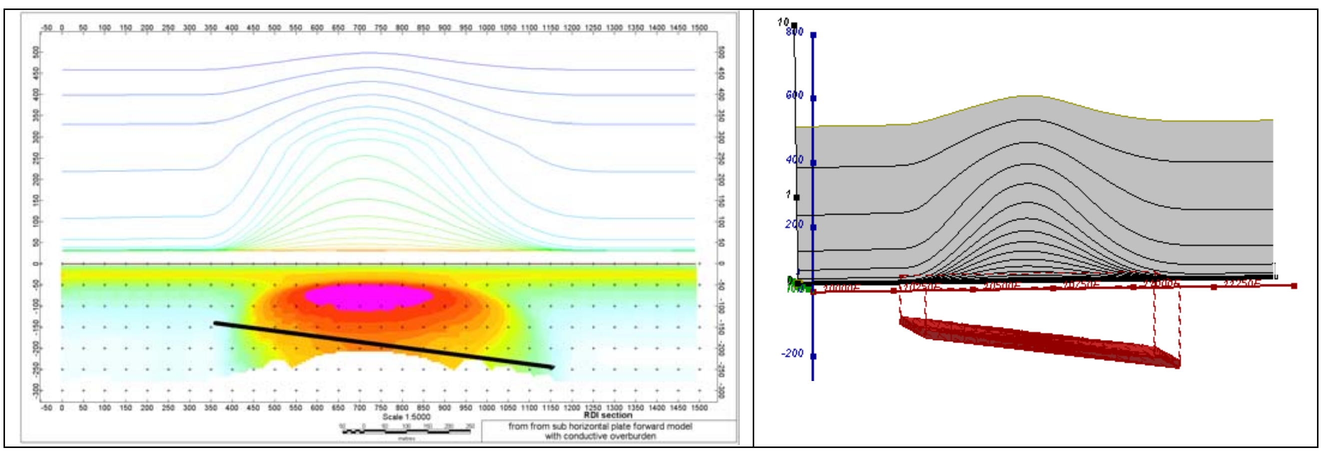


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

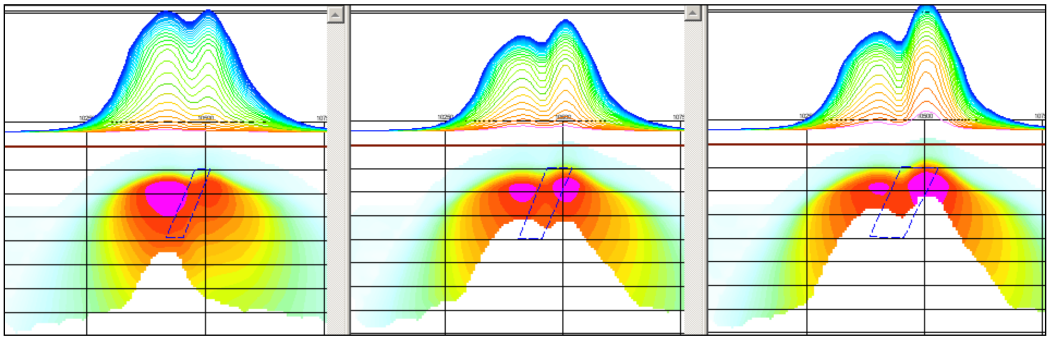


Figure F-9: Maxwell plate models and RDIs from the calculated response for "thick" dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

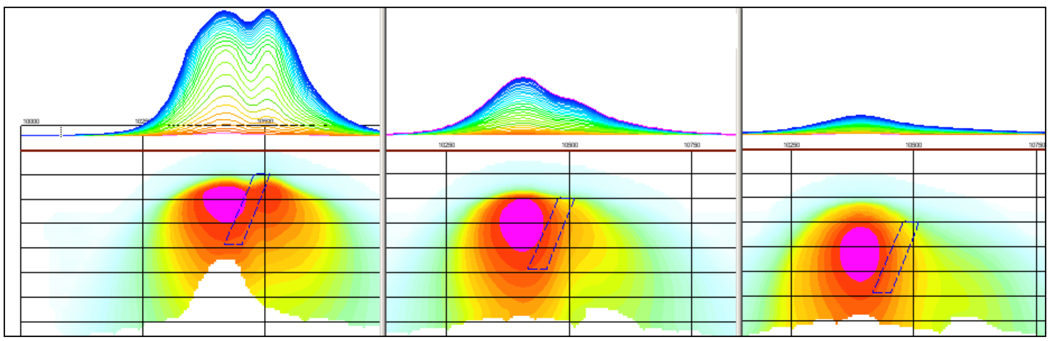


Figure F-10: Maxwell plate models and RDIs from the calculated response for "thick" (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

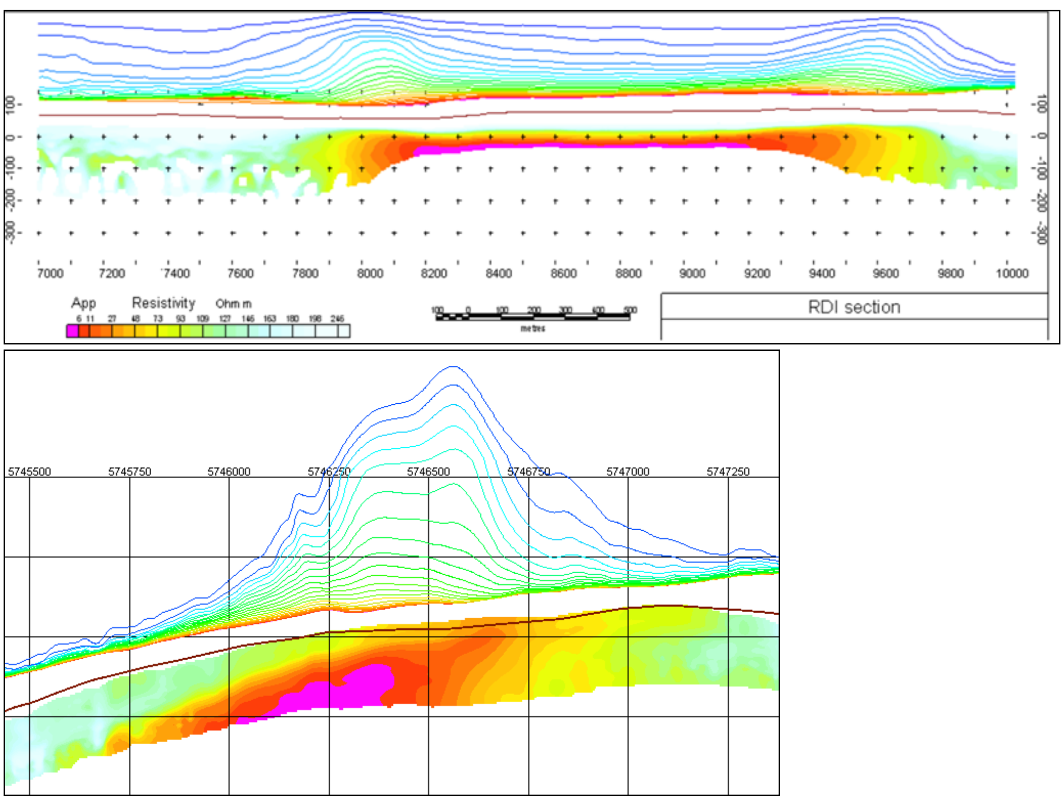
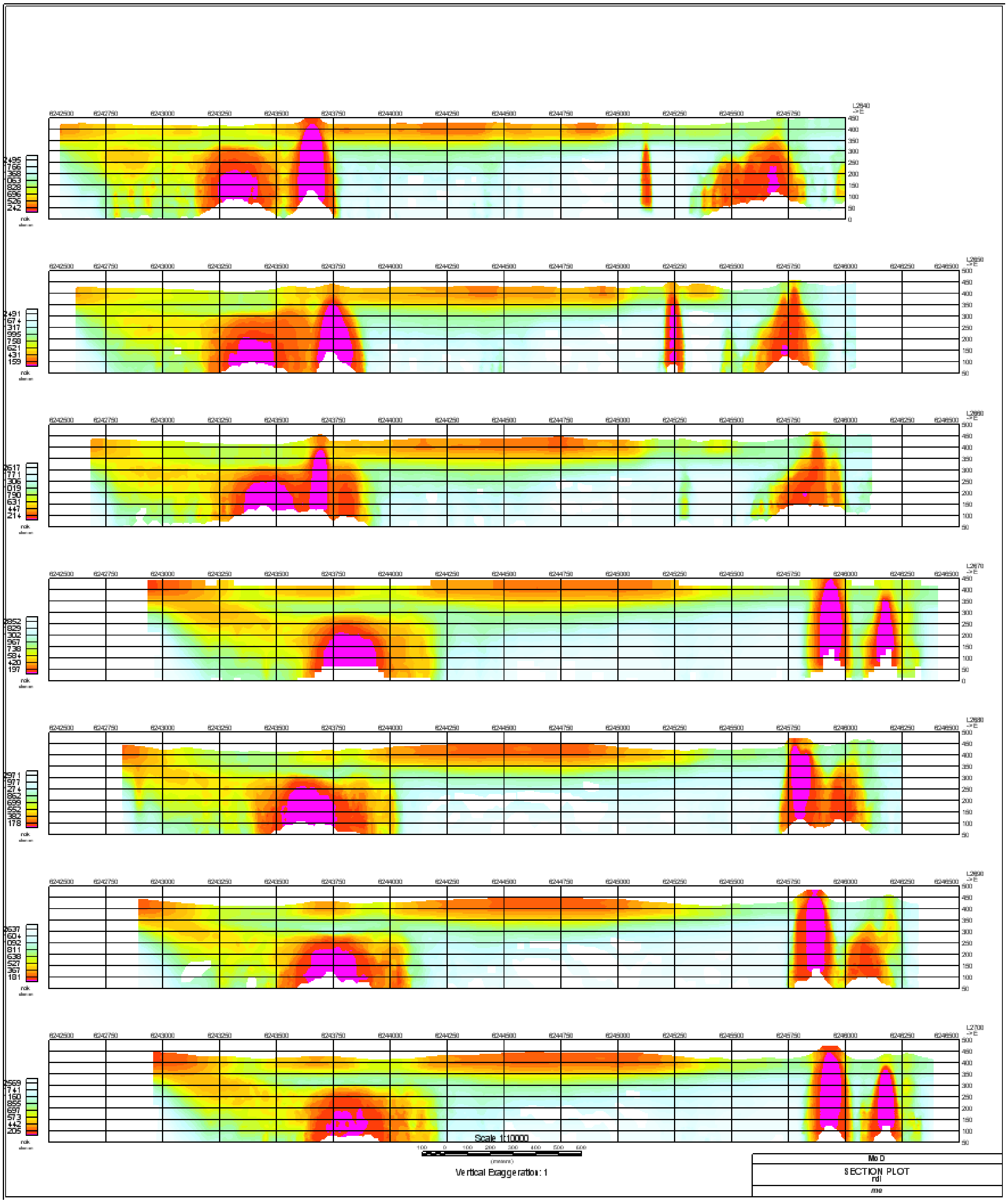


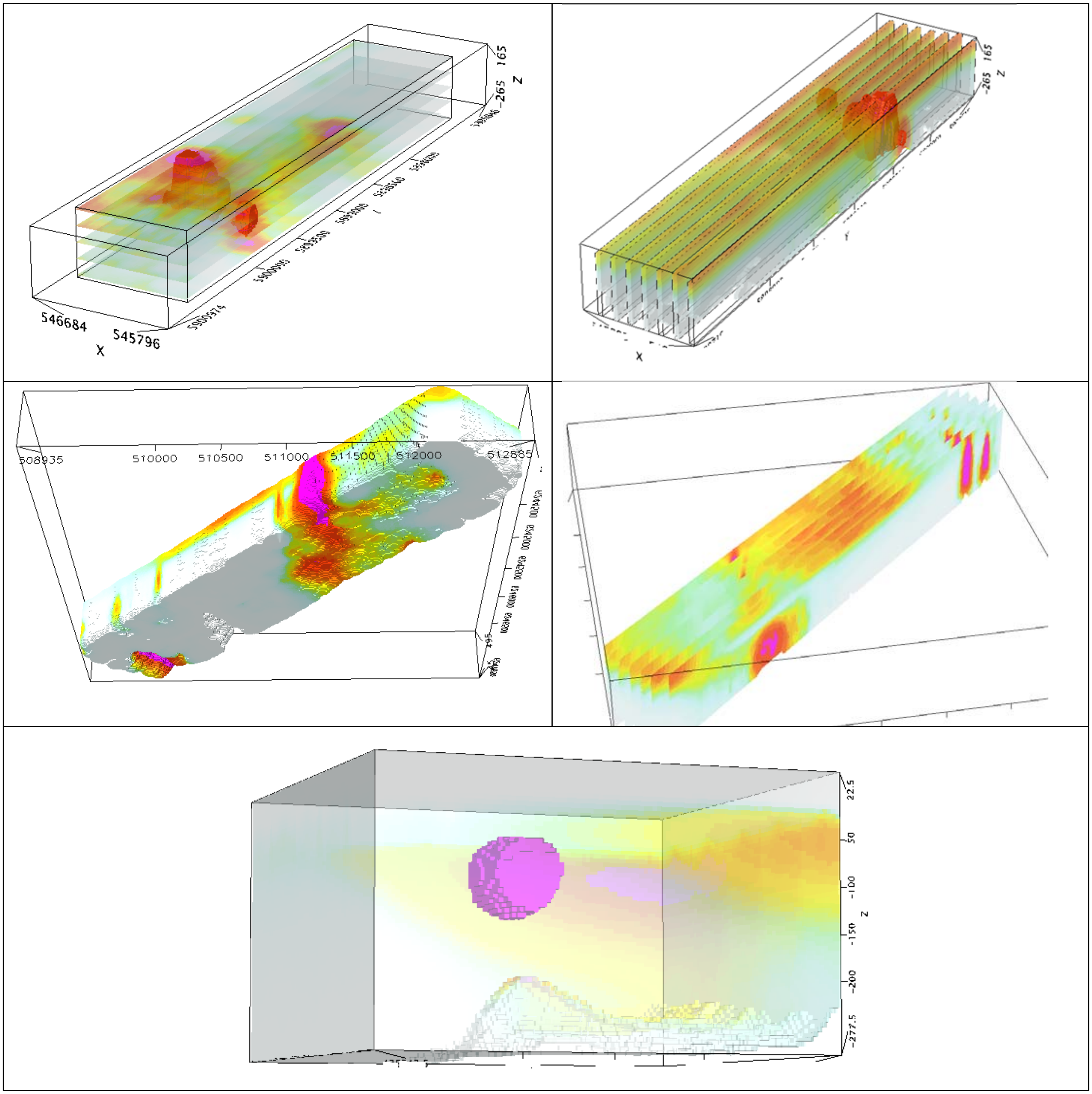
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers.

FORMS OF RDI PRESENTATION

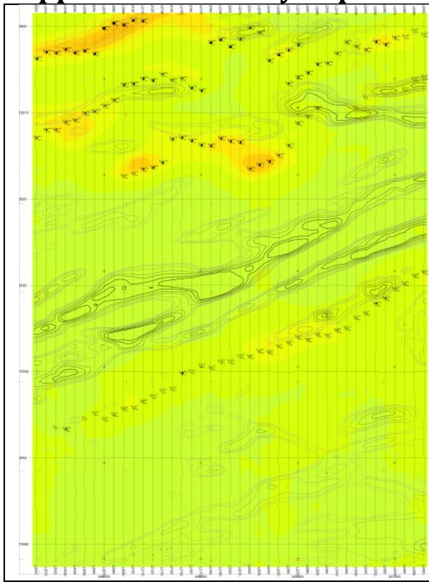
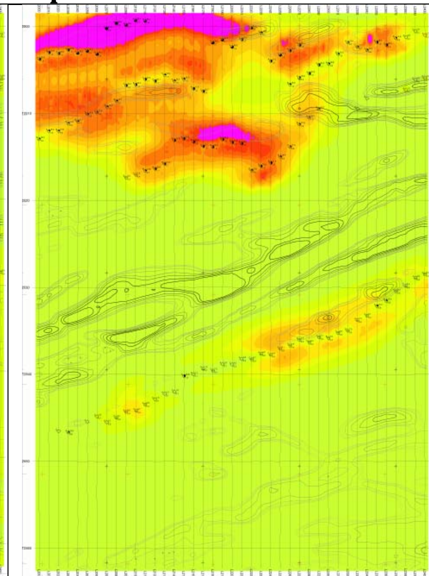
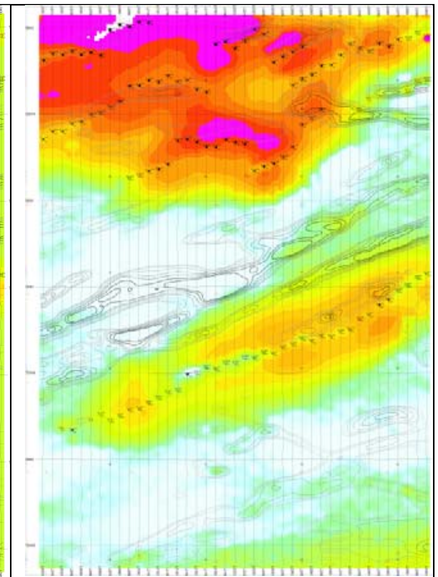
Presentation of series of lines



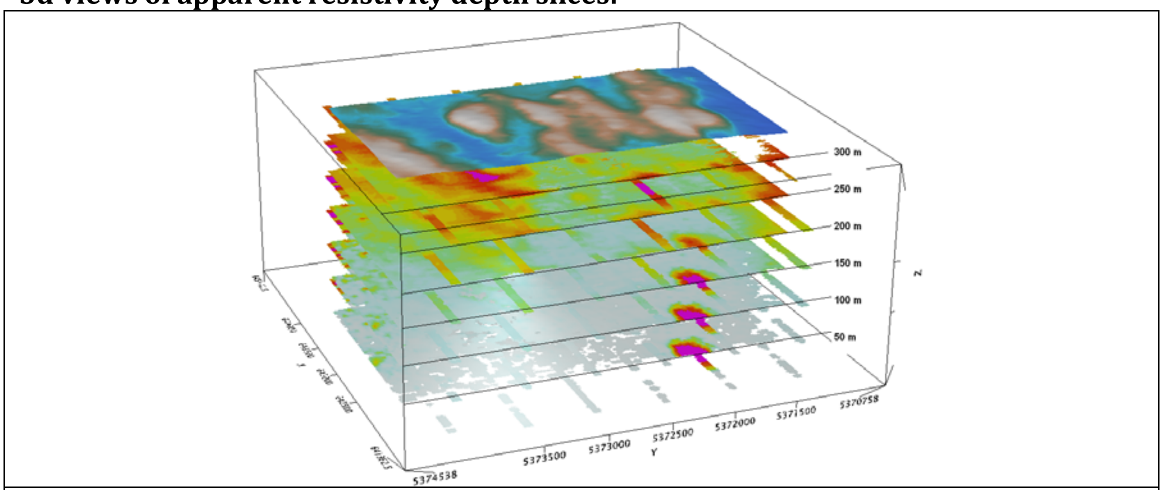
3d presentation of RDIs

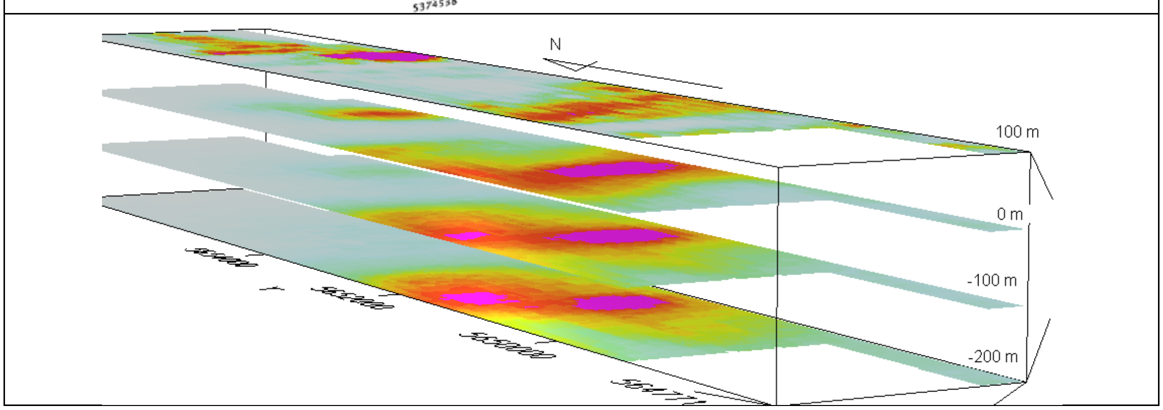


Apparent Resistivity Depth Slices plans:

		
0 m (surface)	-100 m	-200 m

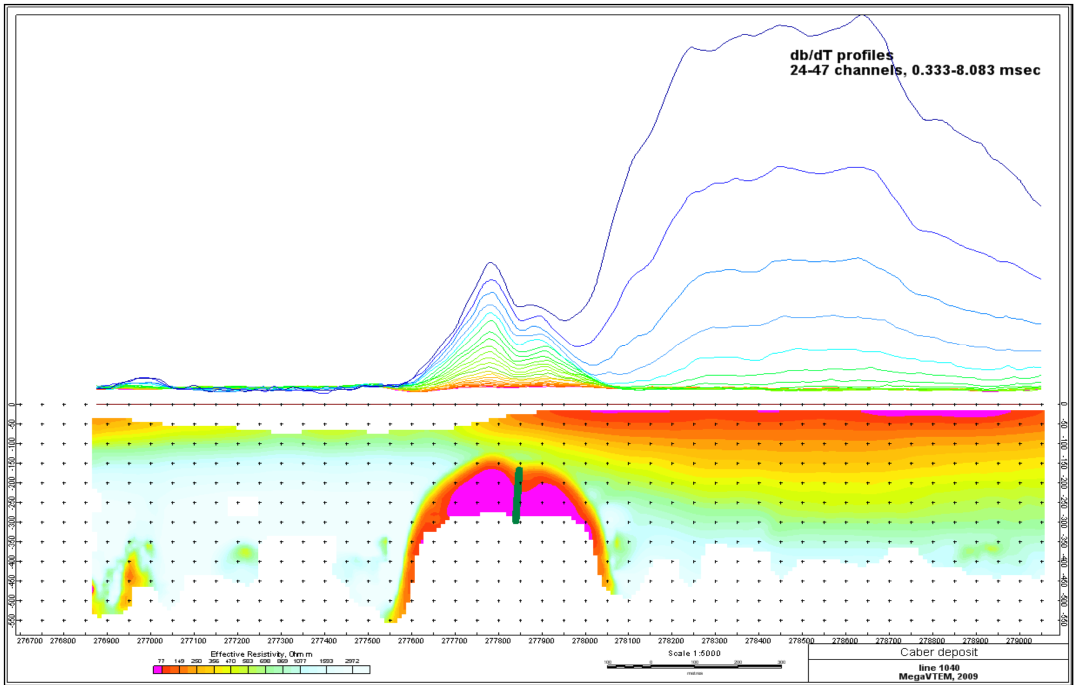
3d views of apparent resistivity depth slices:



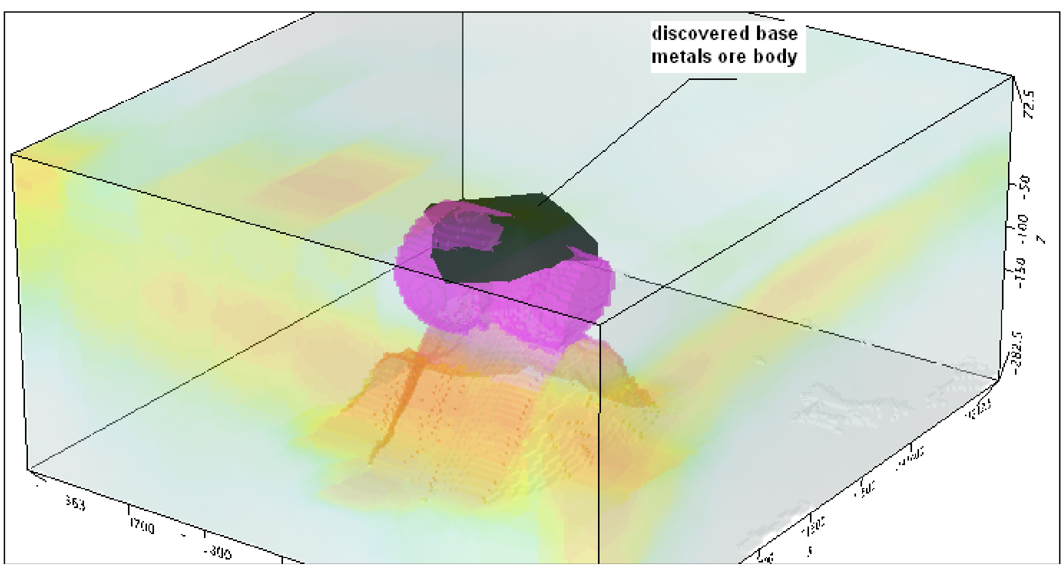


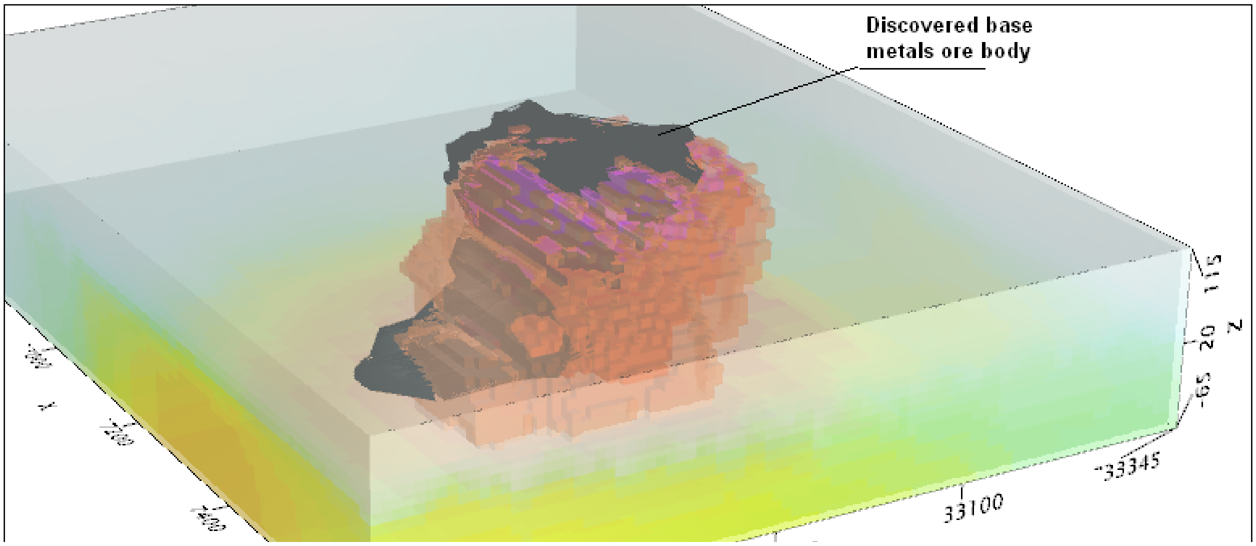
Real base metal targets in comparison with RDIs:

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):





Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.
April 2011

APPENDIX G

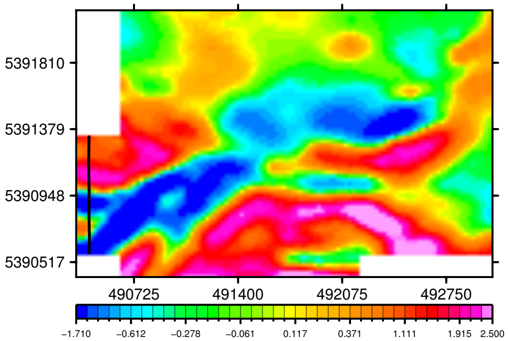
RESISTIVITY DEPTH IMAGES (RDI)

Please see RDI Folder on DVD for the PDF's

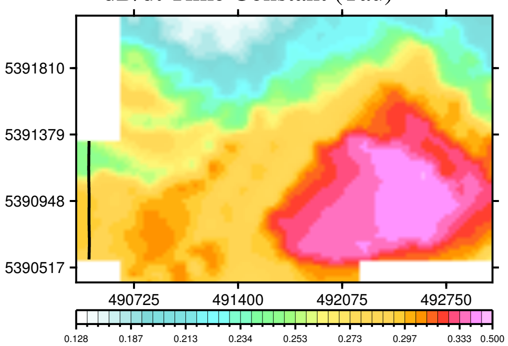
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

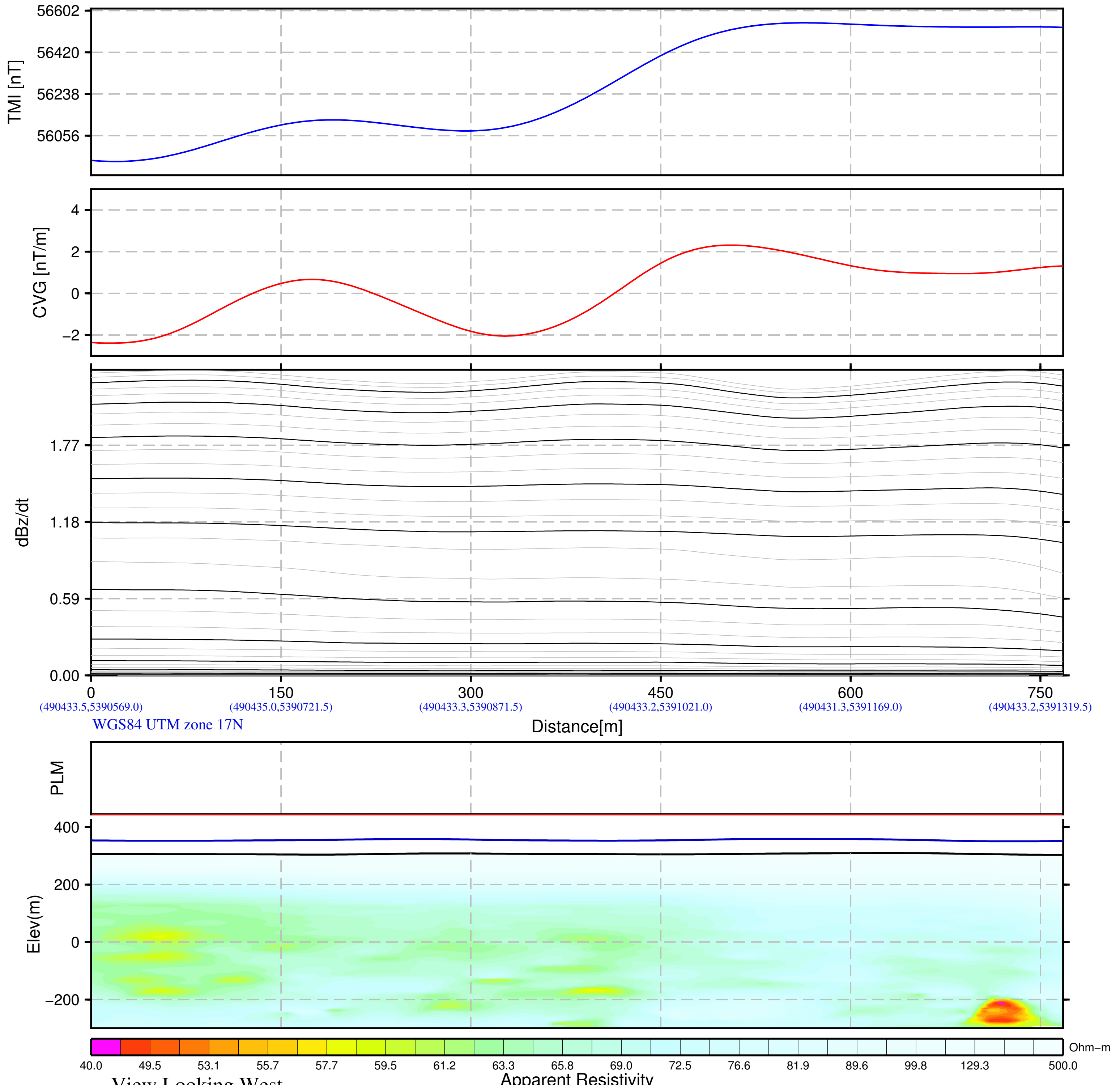
Resistivity Depth Image (RDI) for Line 1010

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





View Looking West

Pelangio Exploration Inc.
Gowan Project
Timmins, ON

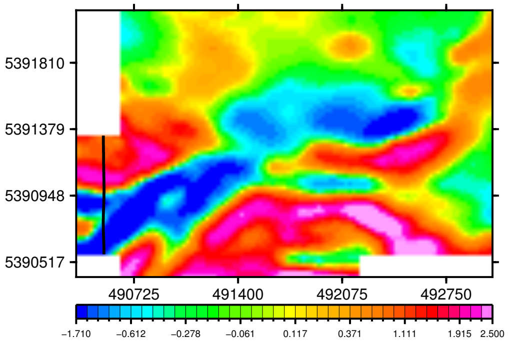
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

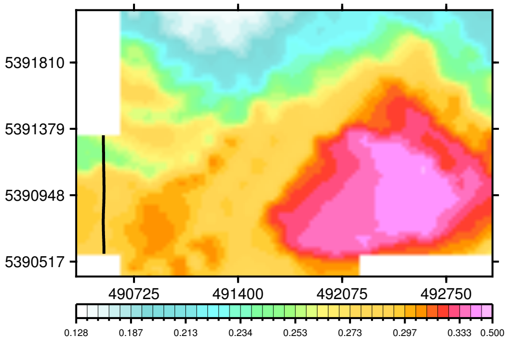
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

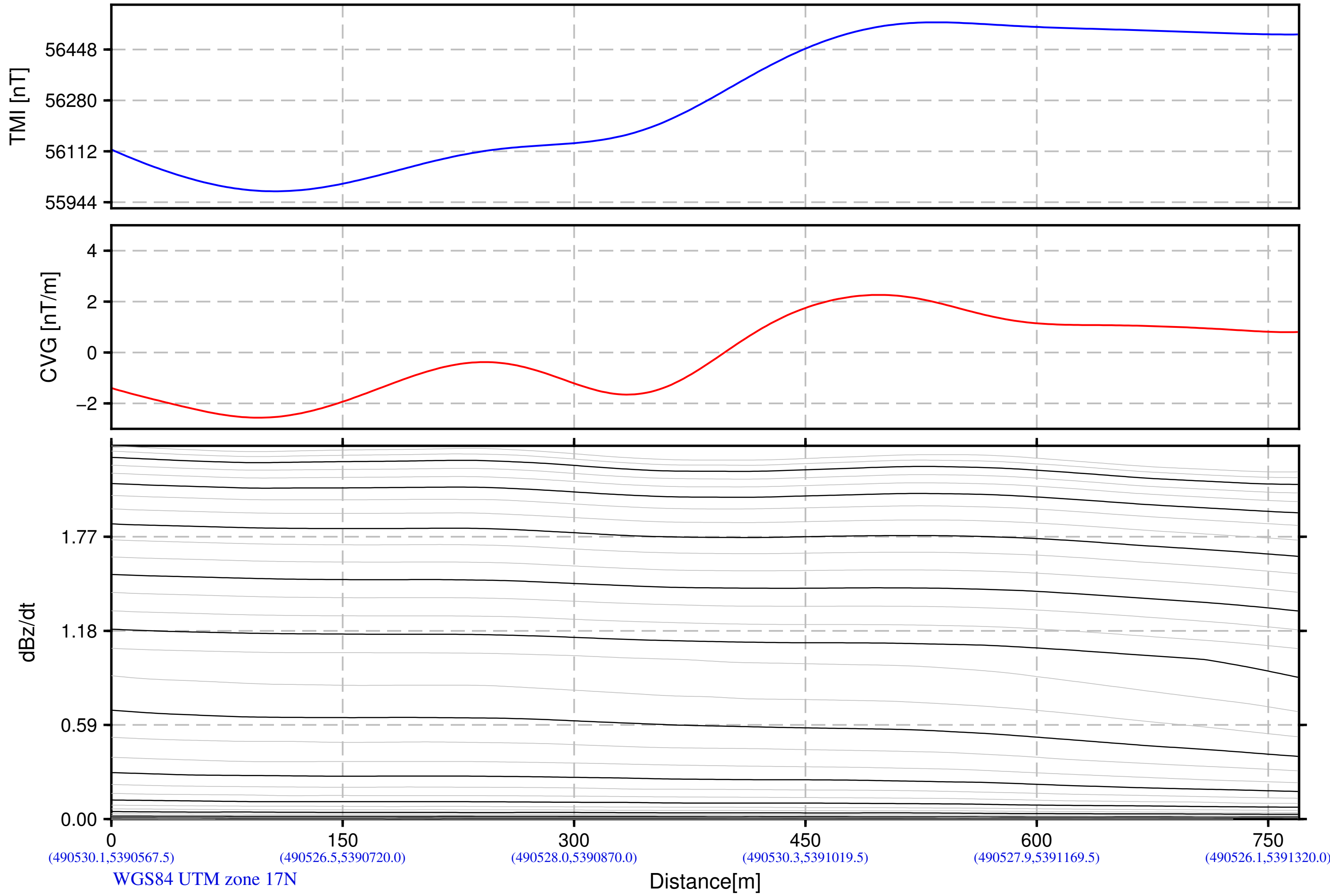
Resistivity Depth Image (RDI) for Line 1020

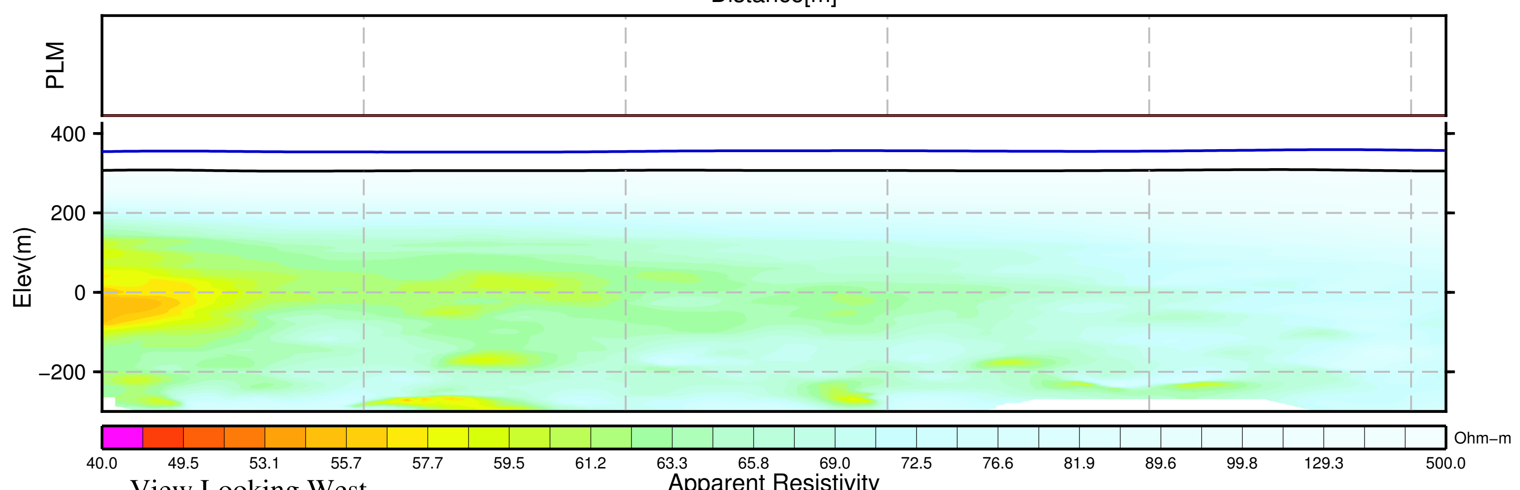
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking West

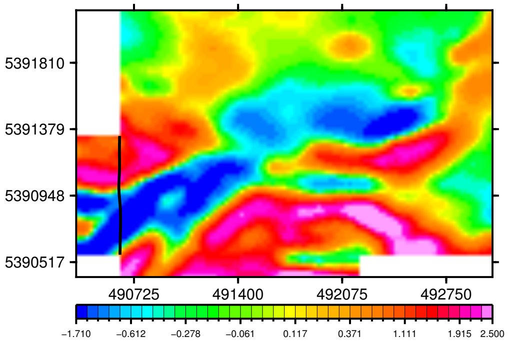
Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

(V1.0)

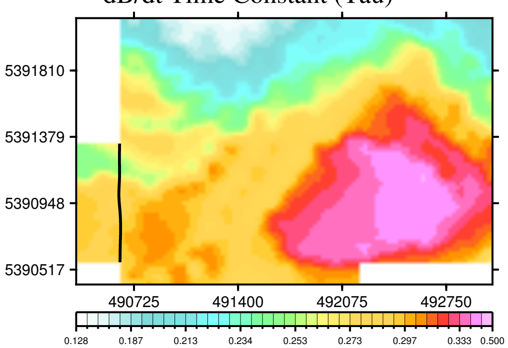
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

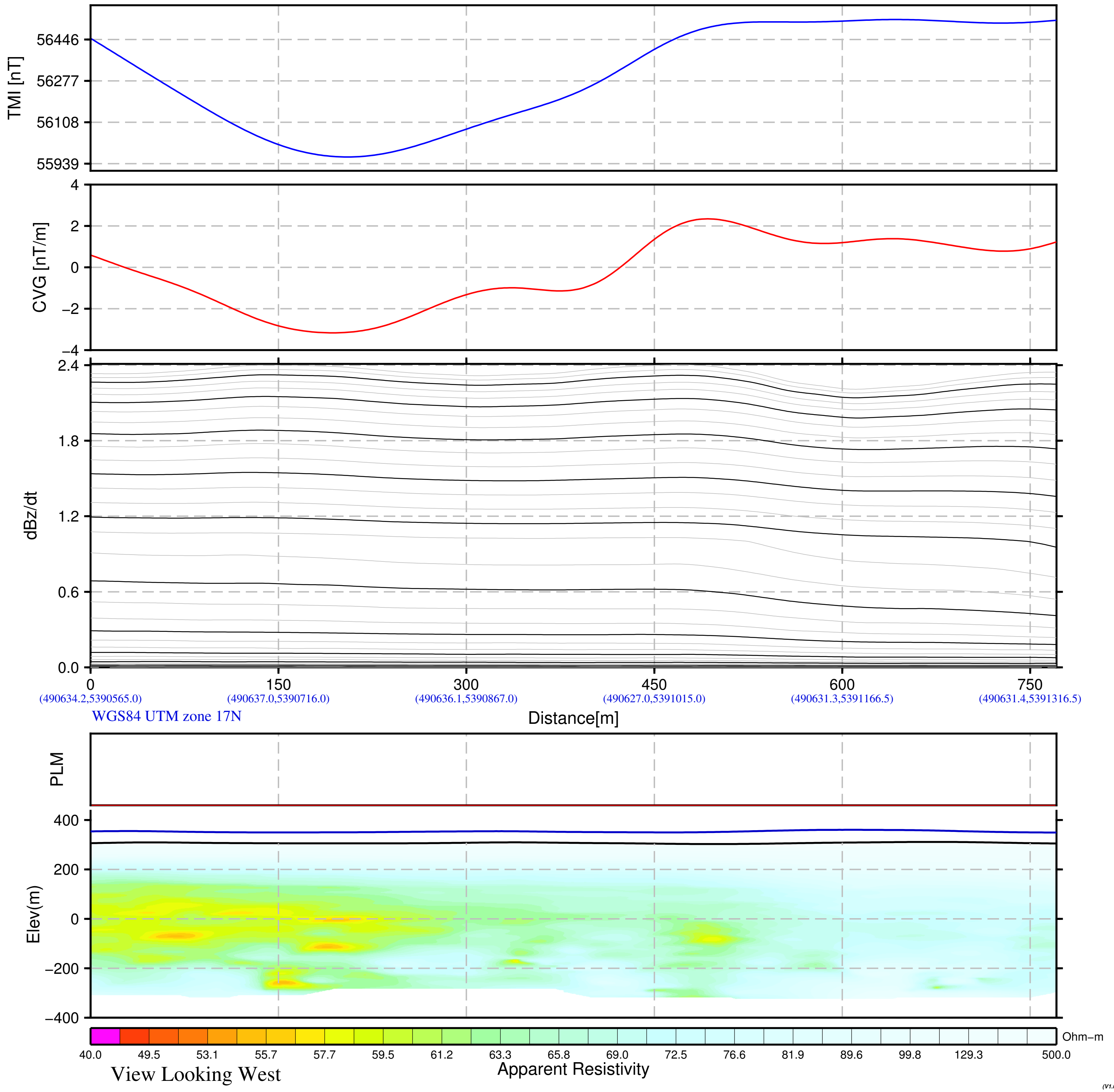
Resistivity Depth Image (RDI) for Line 1030

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





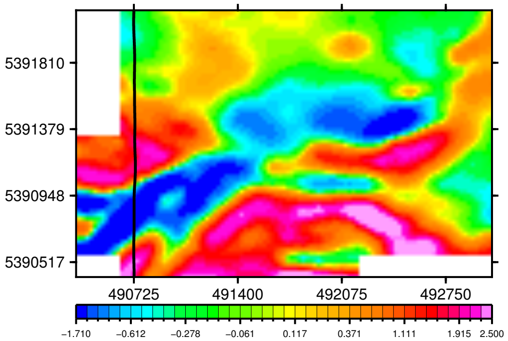
Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

(V1.0)

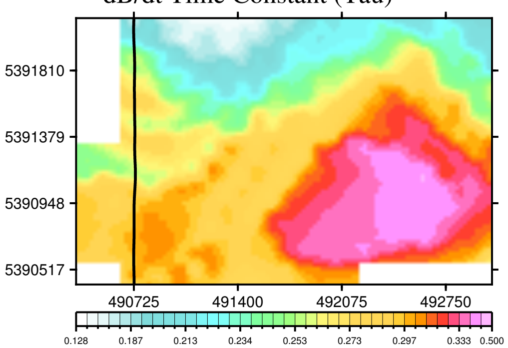
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

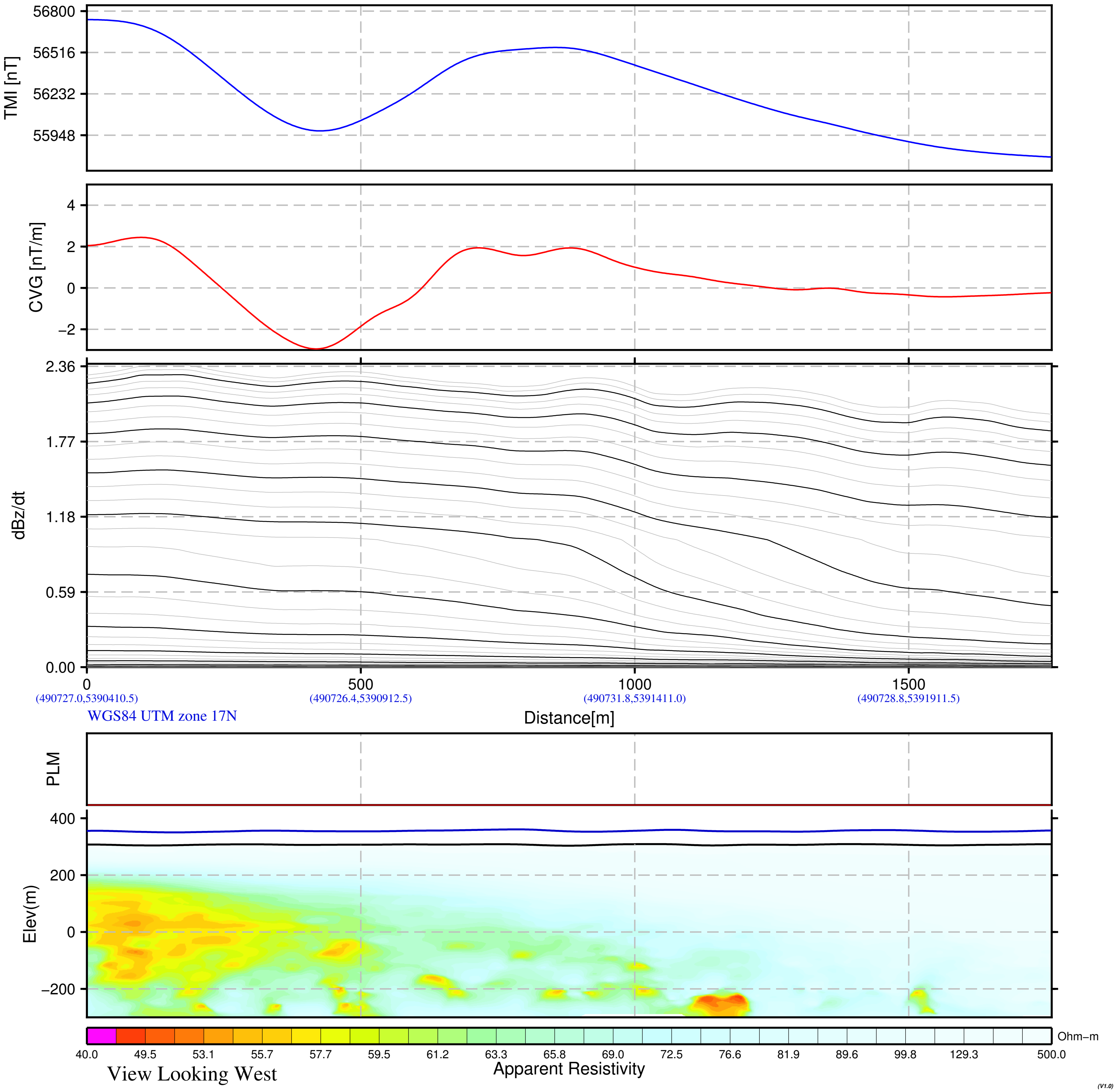
Resistivity Depth Image (RDI) for Line 1040

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)



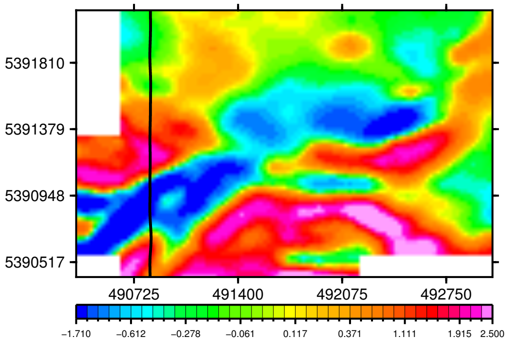


Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

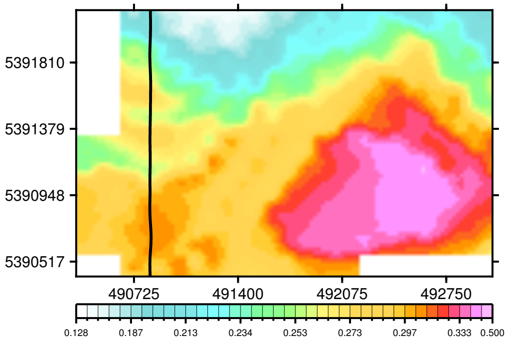
(V1.0)

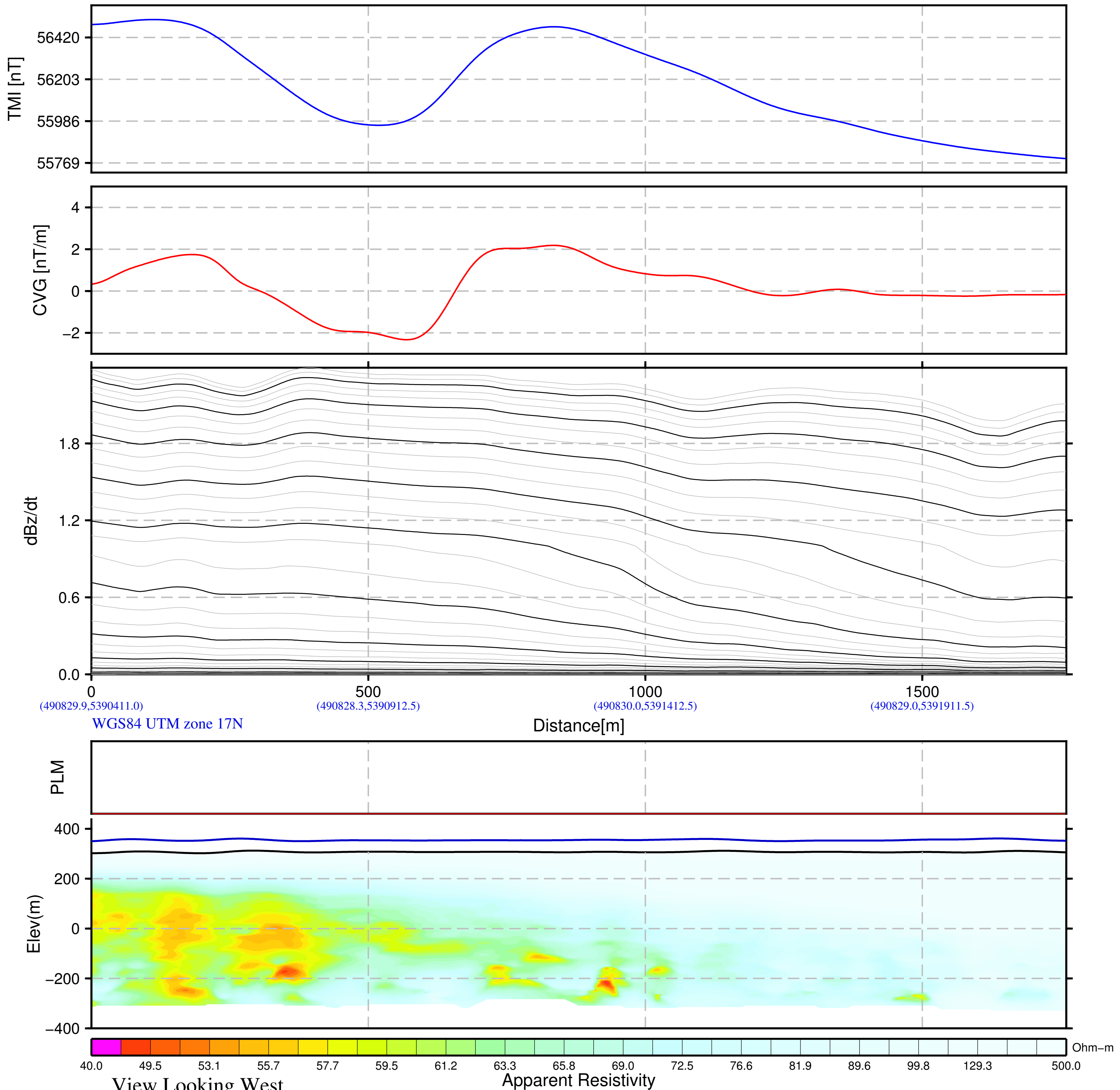
Resistivity Depth Image (RDI) for Line 1050

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





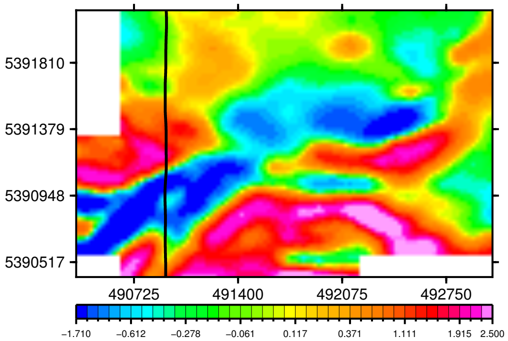
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

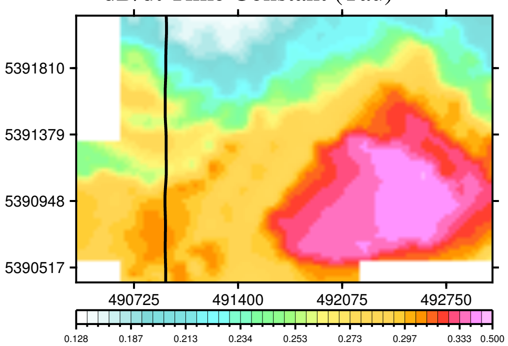
2021/ 5/11

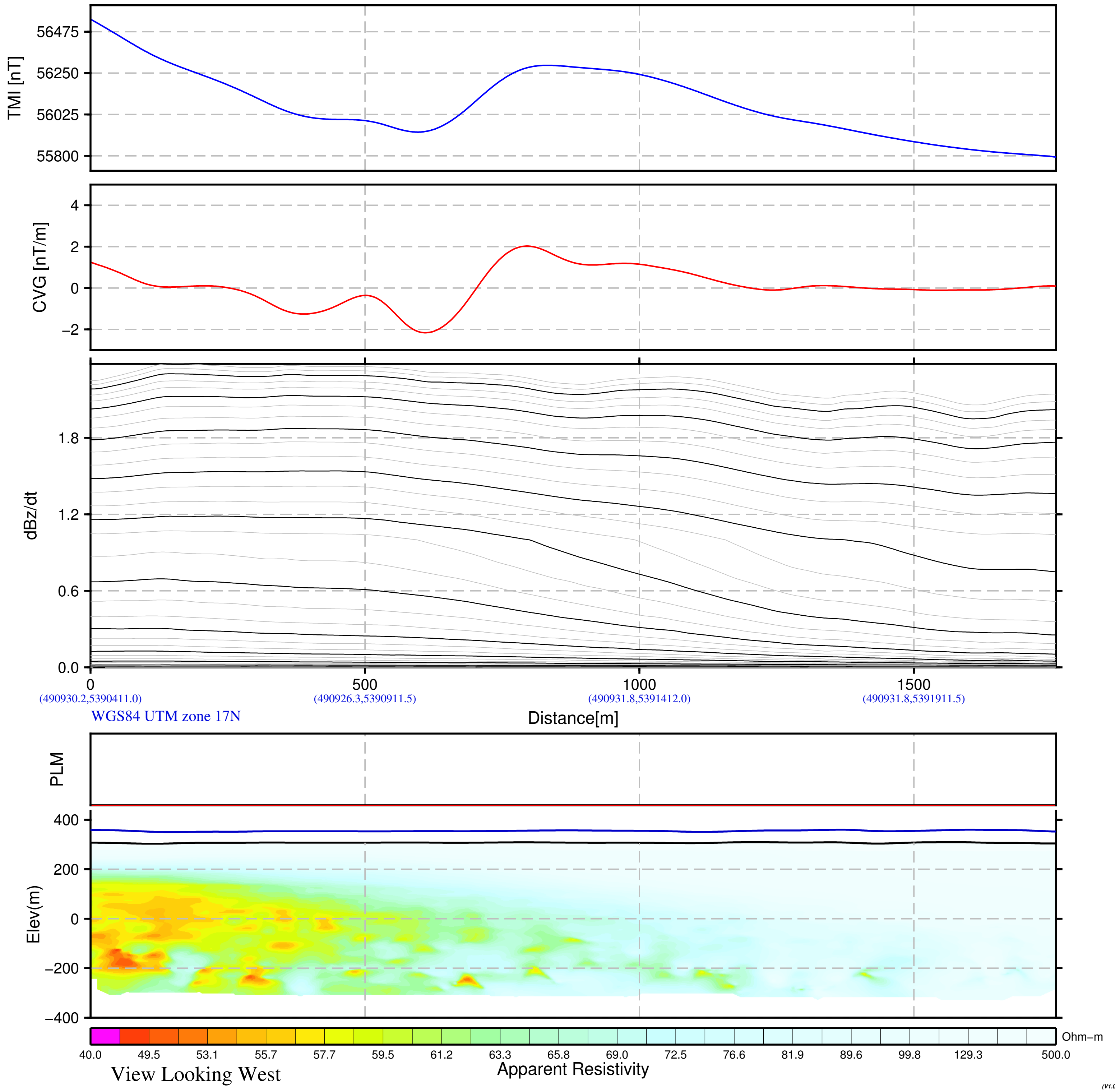
Resistivity Depth Image (RDI) for Line 1060

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

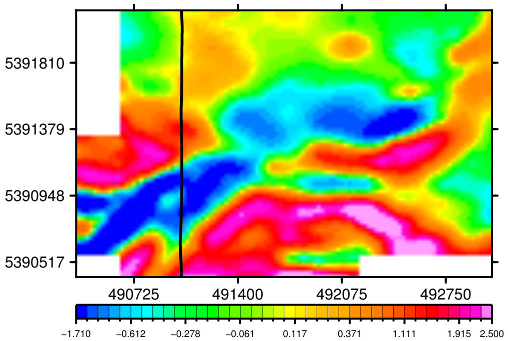
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

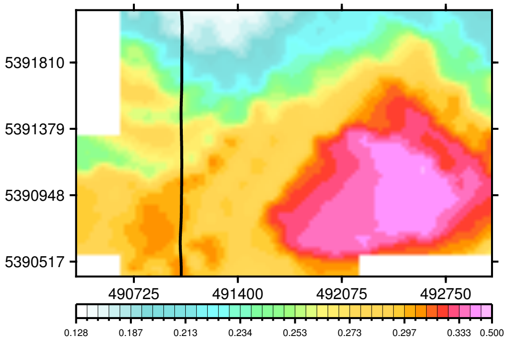
Resistivity Depth Image (RDI) for Line 1070

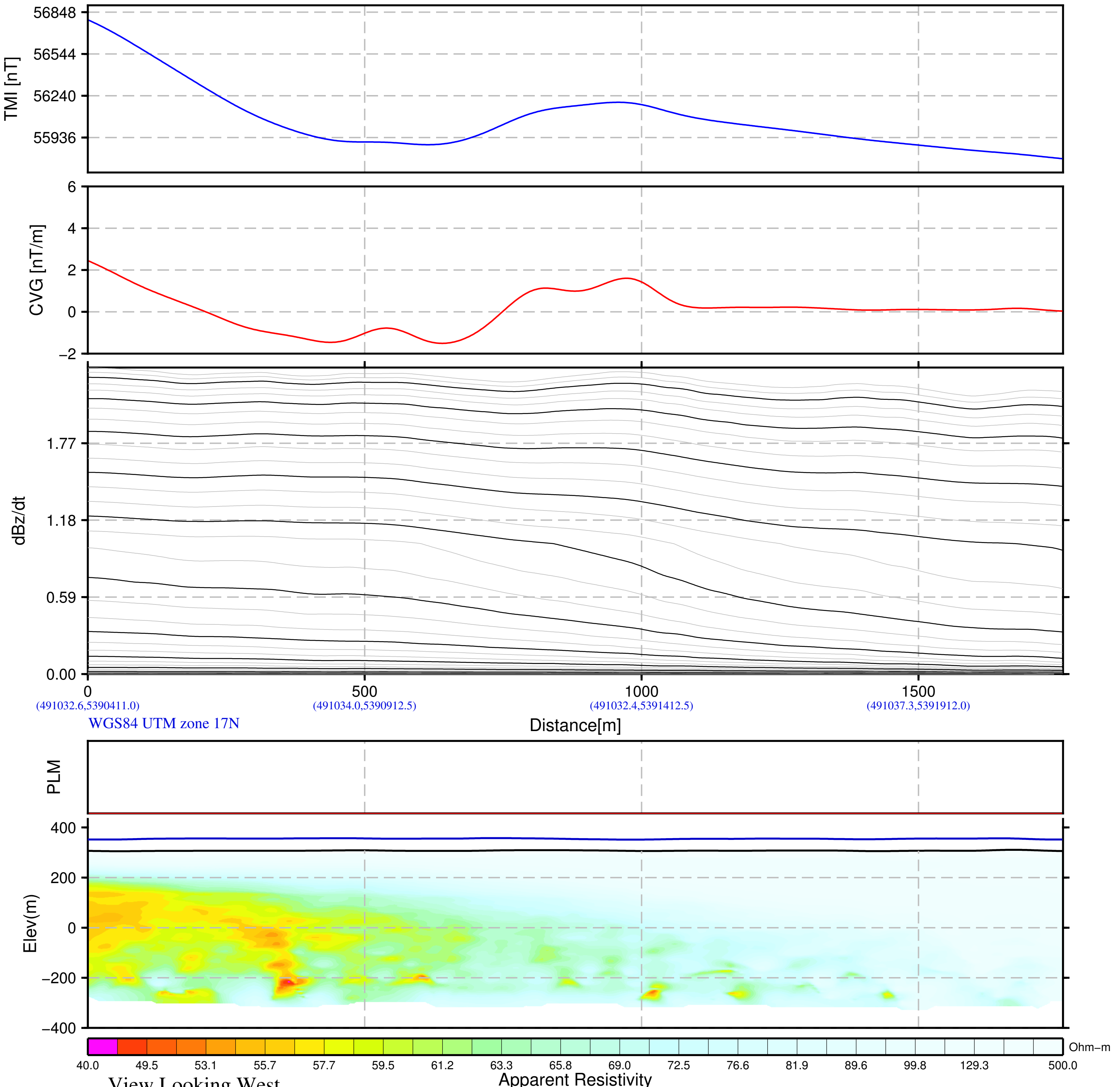
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

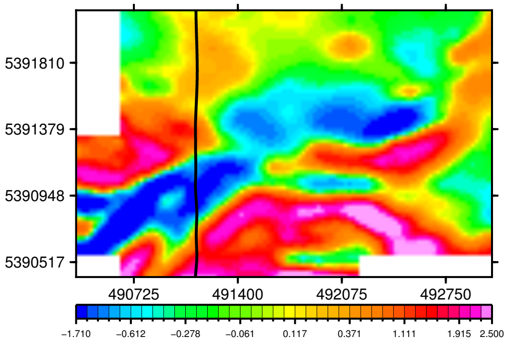
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

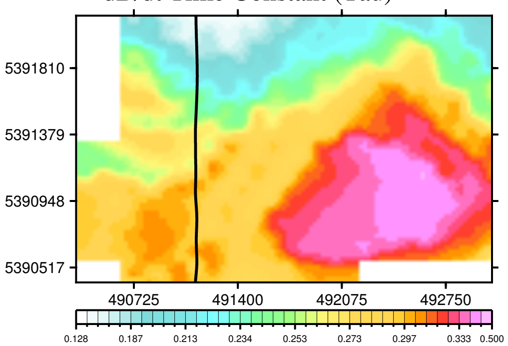
Resistivity Depth Image (RDI) for Line 1080

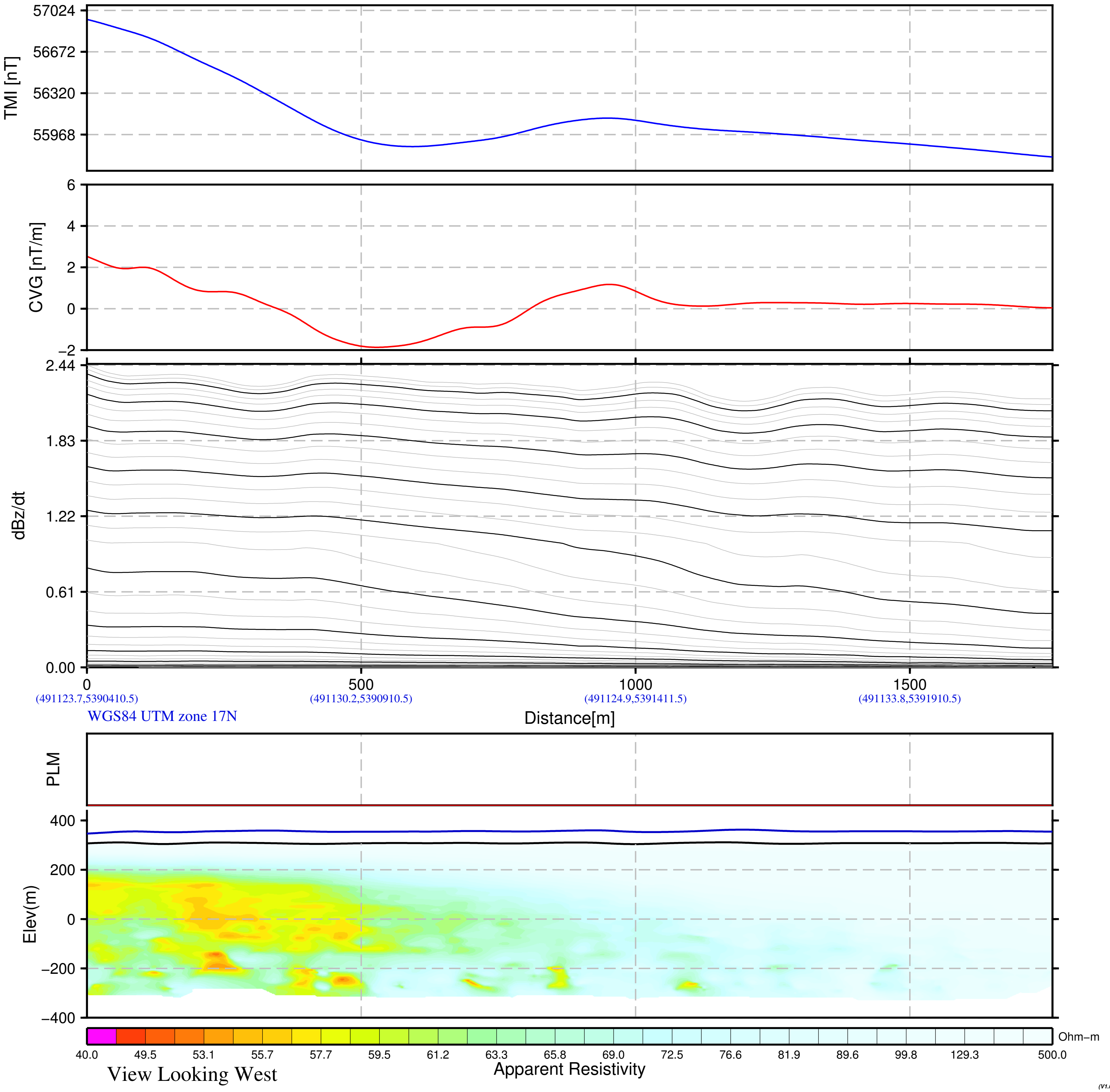
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

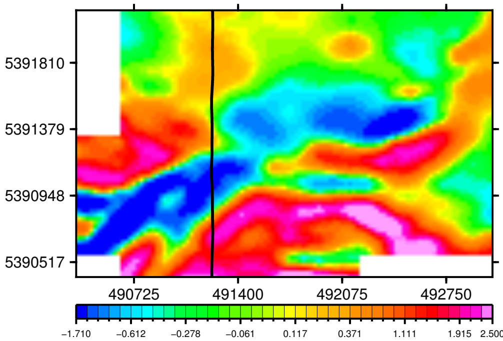
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

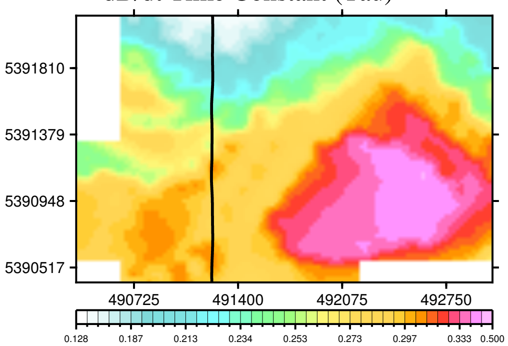
Resistivity Depth Image (RDI) for Line 1090

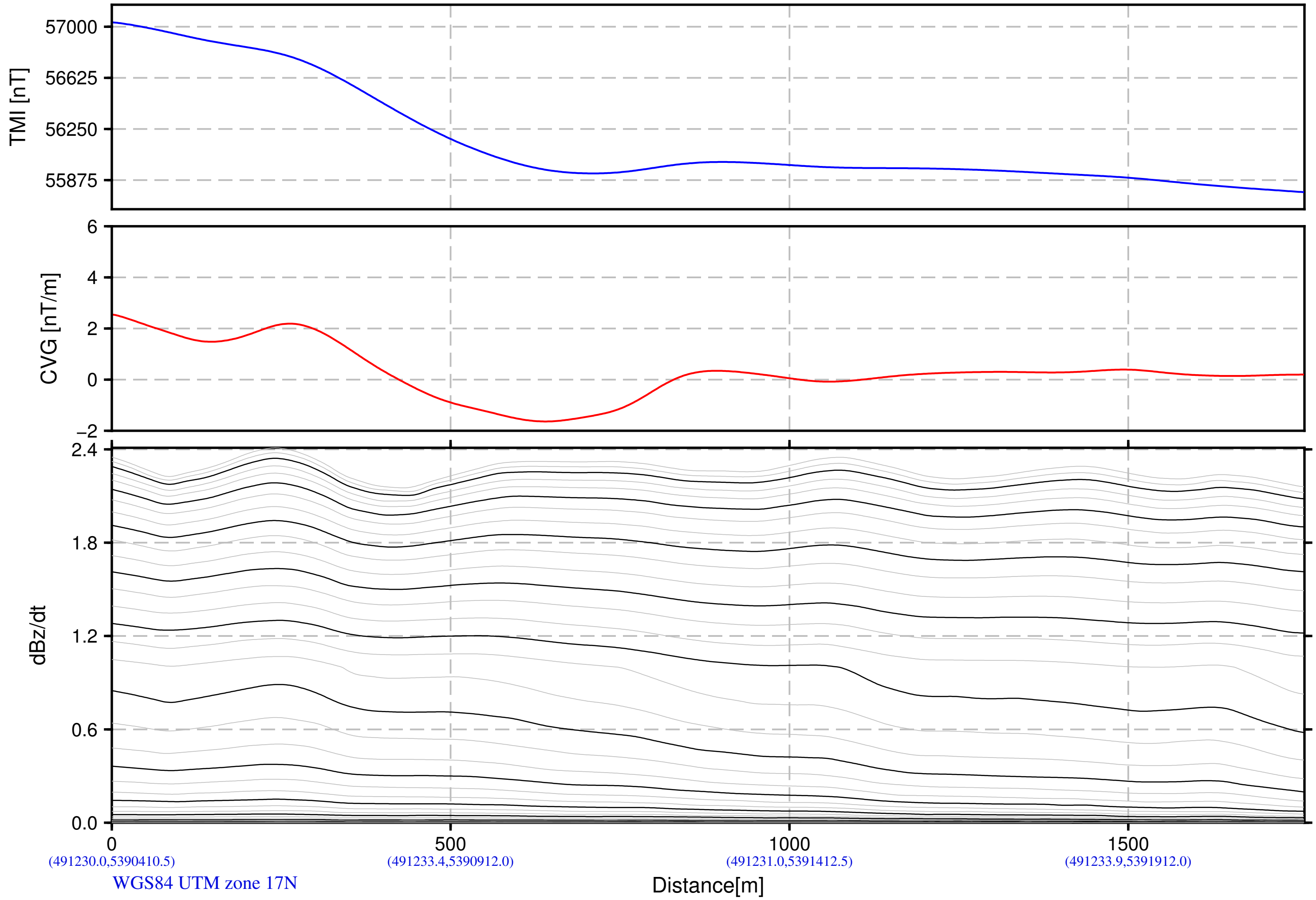
GEOTECH AIRBORNE GEOPHYSICAL SURVEYS

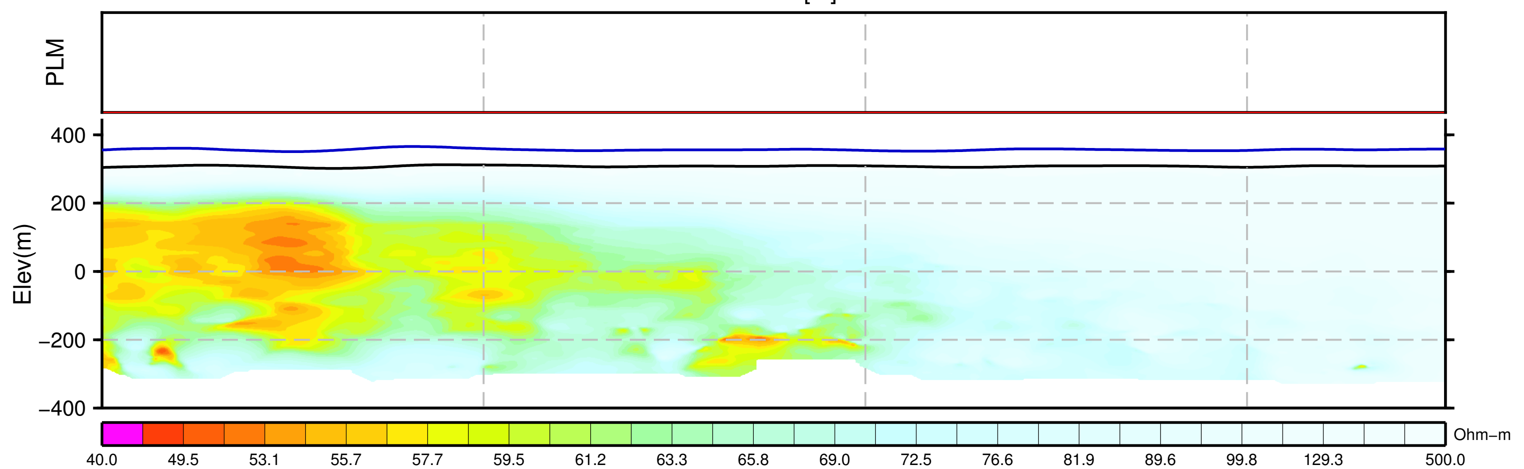
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking West

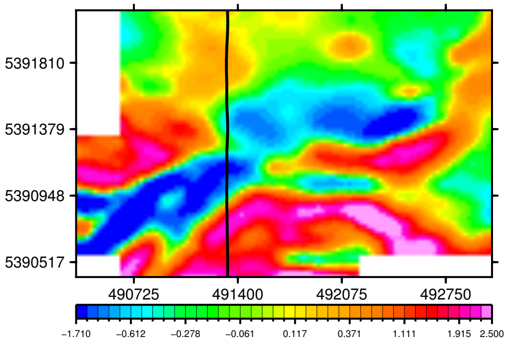
Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

(V1.0)

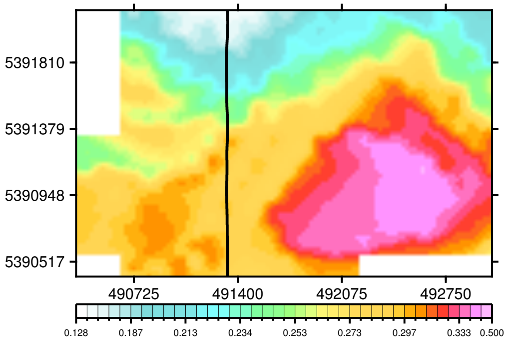
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

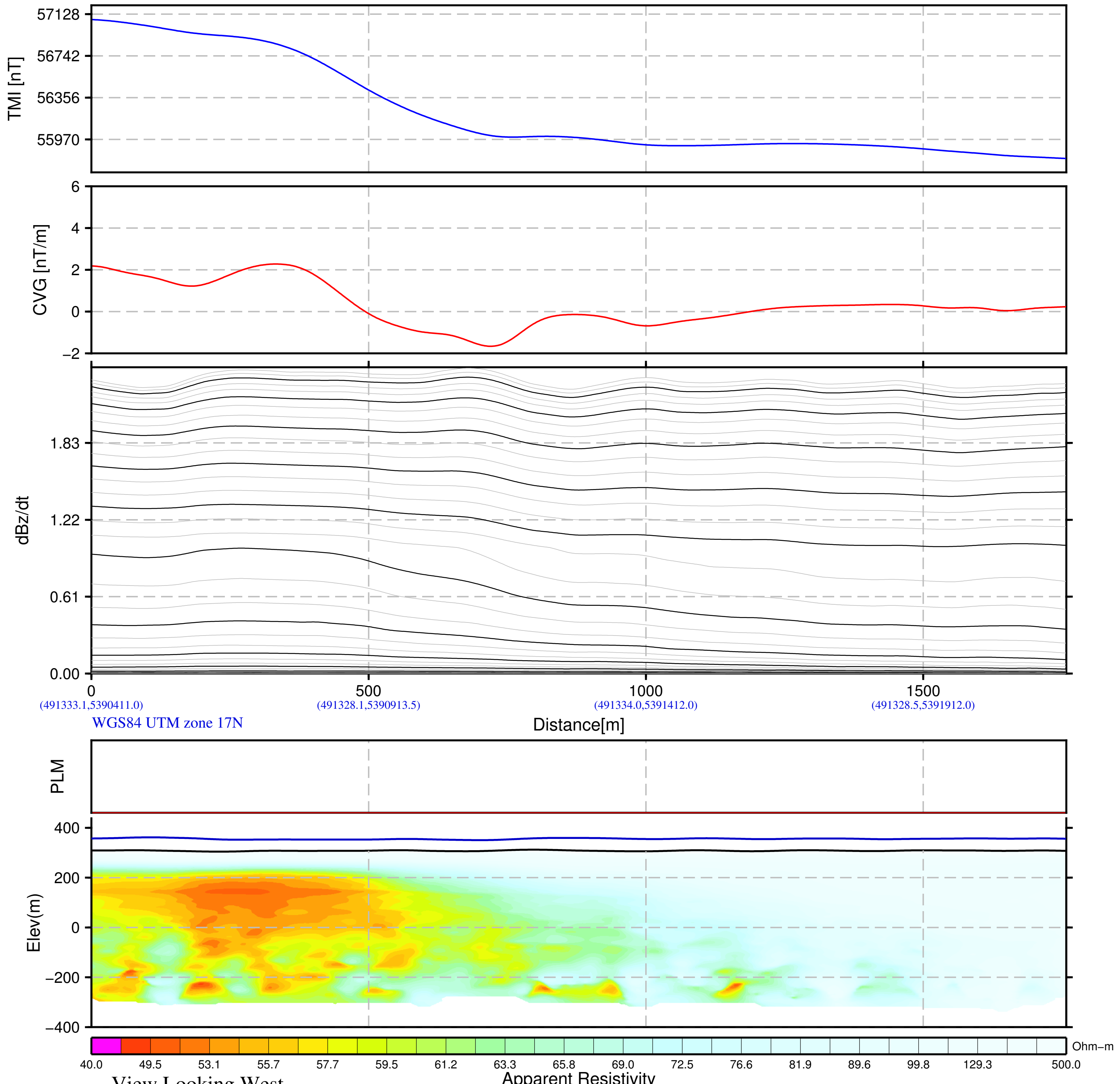
Resistivity Depth Image (RDI) for Line 1100

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





View Looking West

Pelangio Exploration Inc.
Gowan Project
Timmins, ON

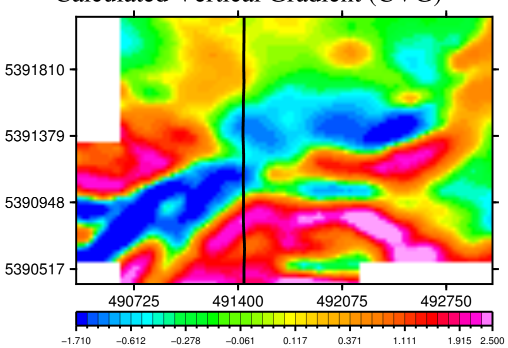
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

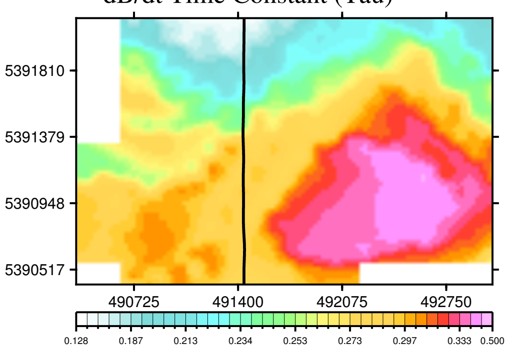
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

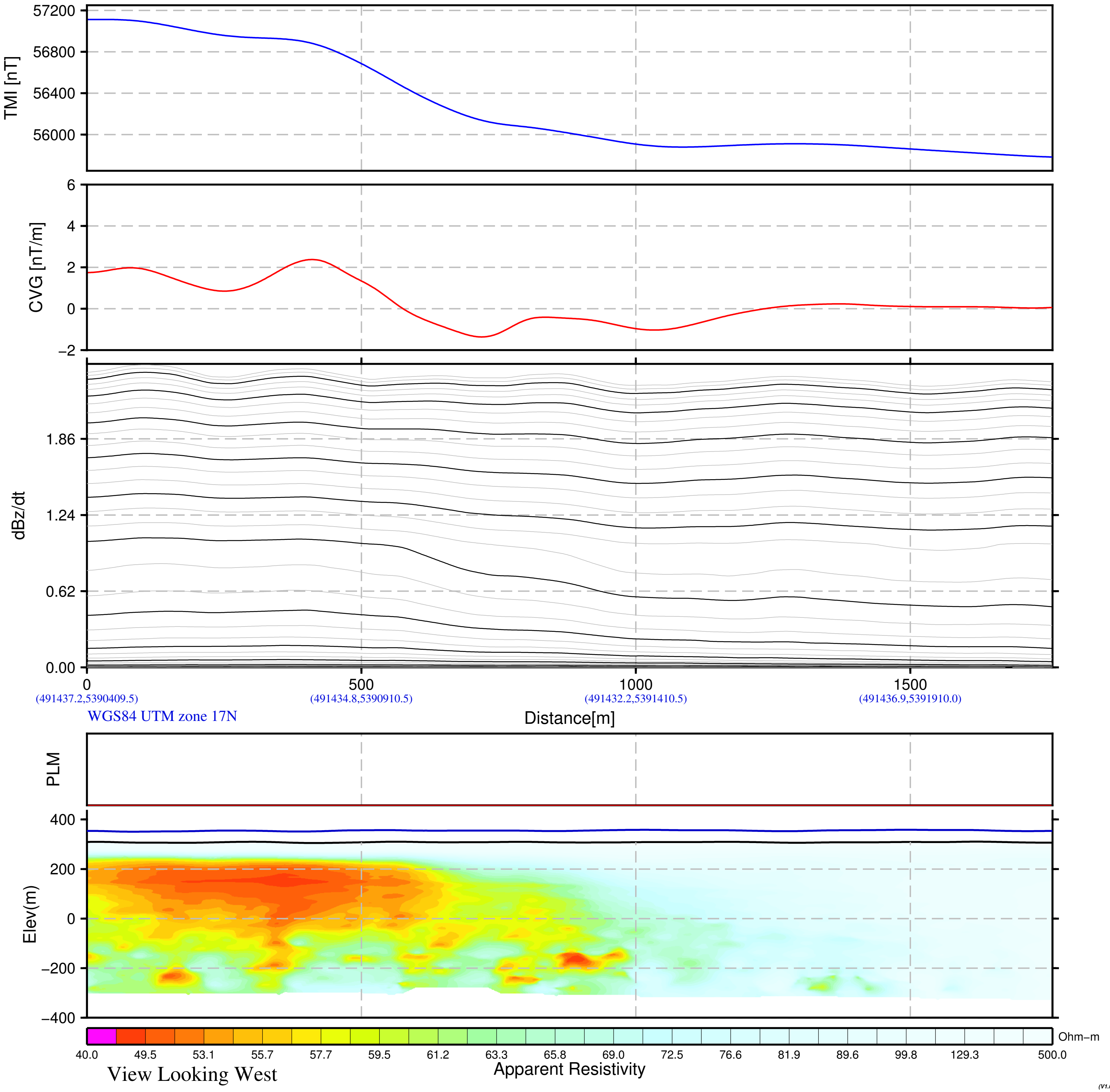
Resistivity Depth Image (RDI) for Line 1110

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

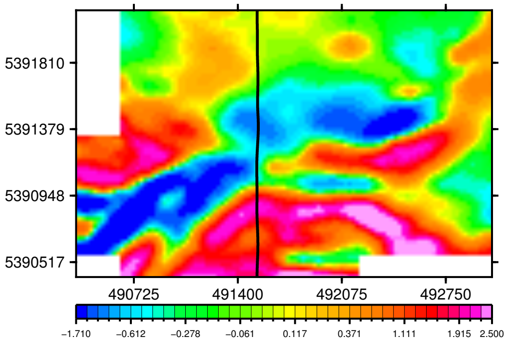
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

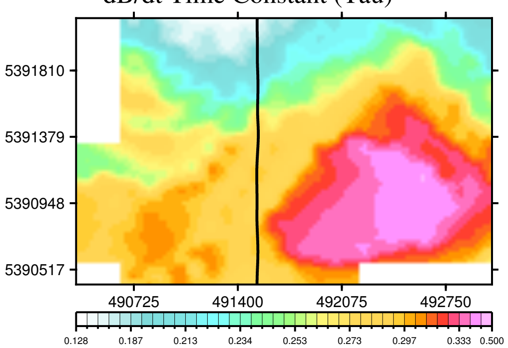
(V1.0)

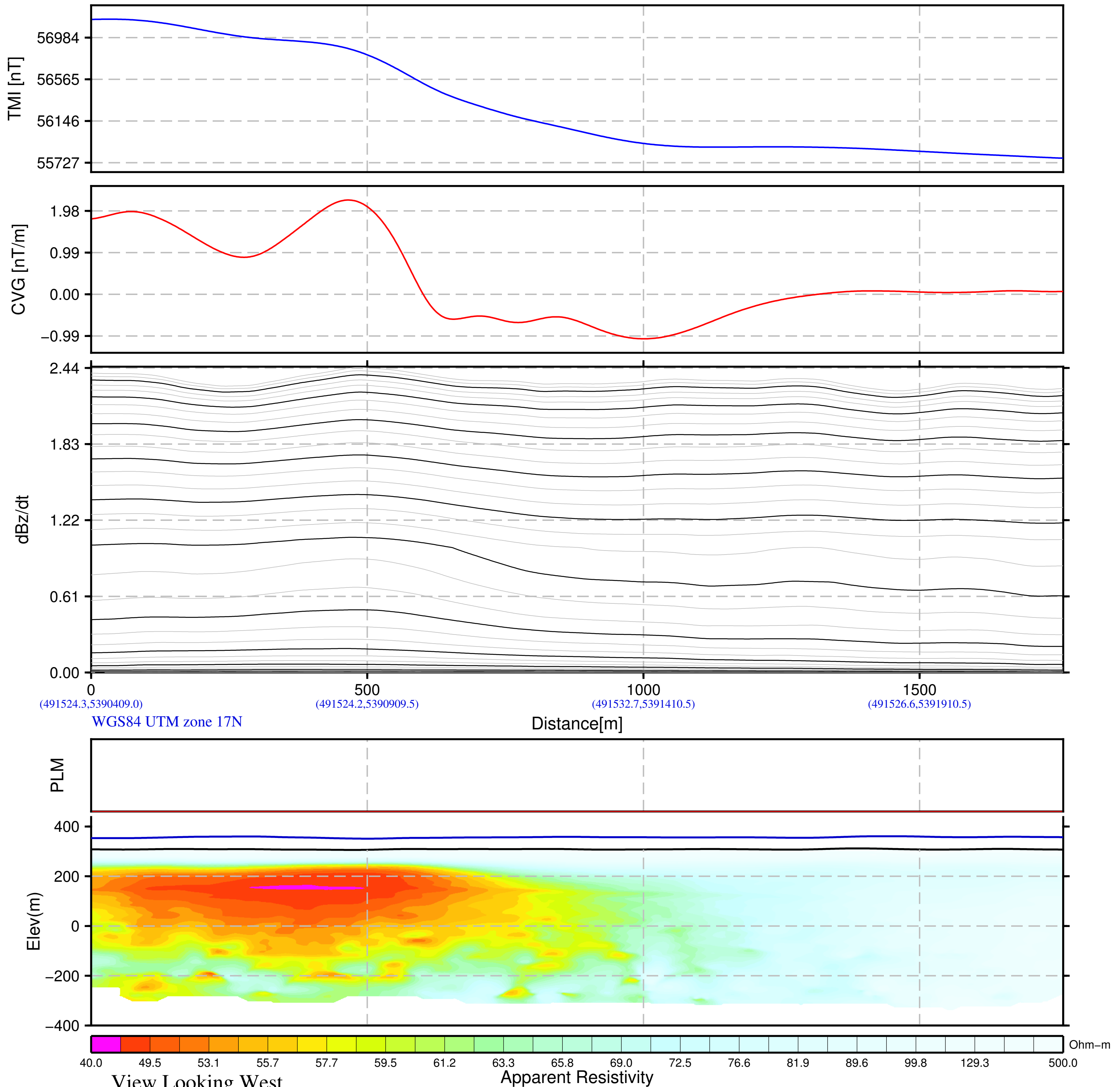
Resistivity Depth Image (RDI) for Line 1120

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)



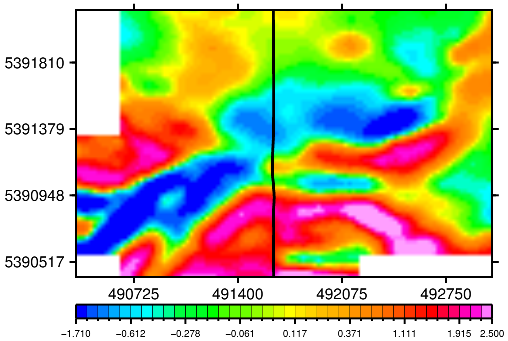


Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

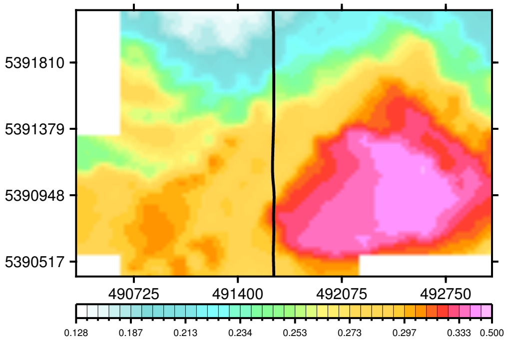
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

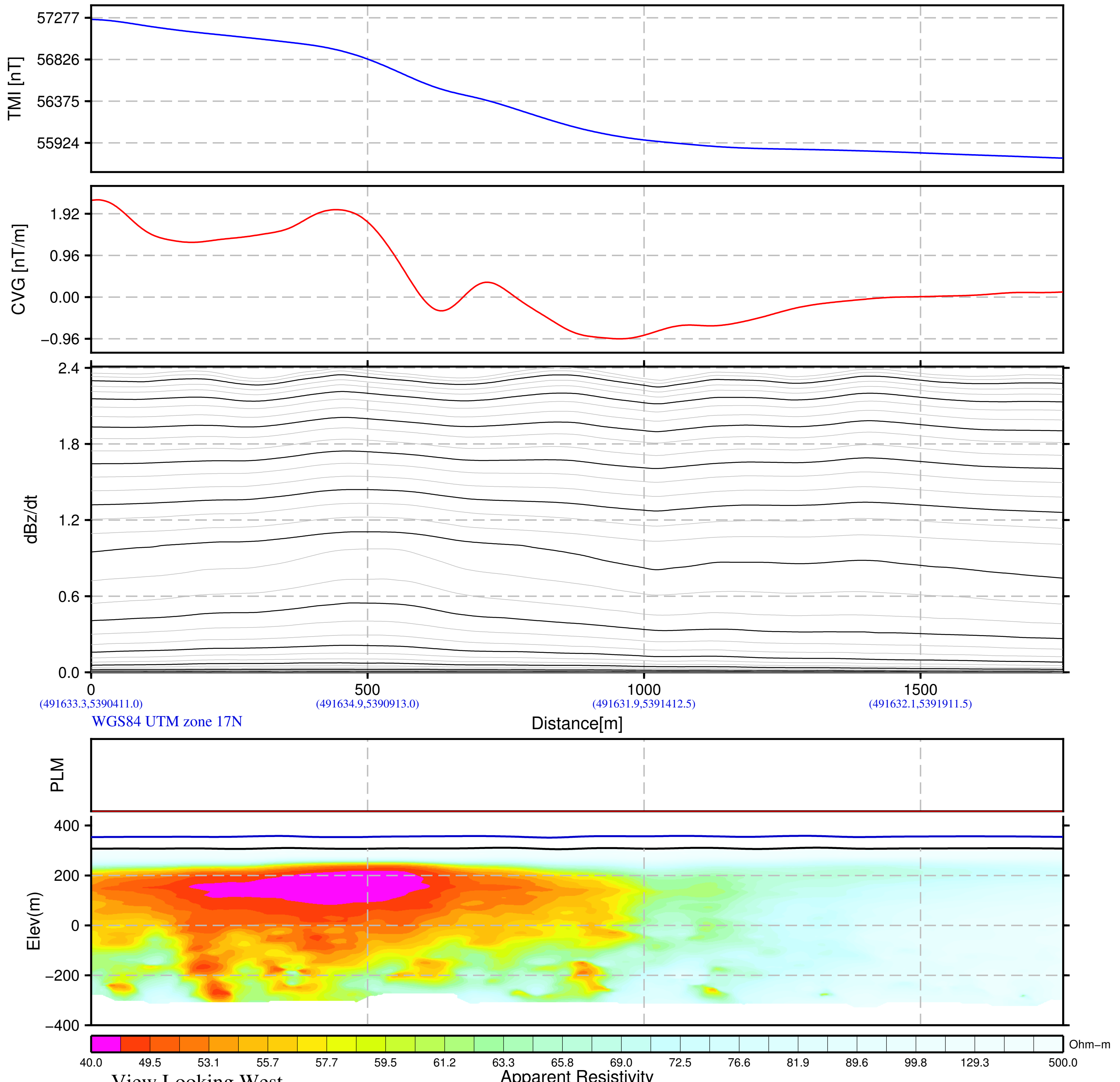
Resistivity Depth Image (RDI) for Line 1130

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





View Looking West

Pelangio Exploration Inc.
Gowan Project
Timmins, ON

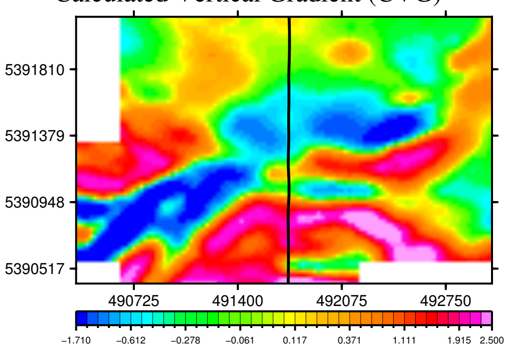
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

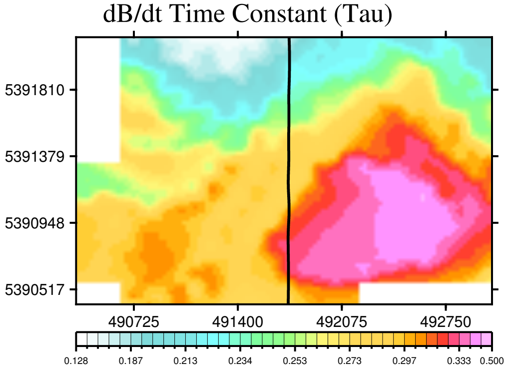
2021/ 5/11

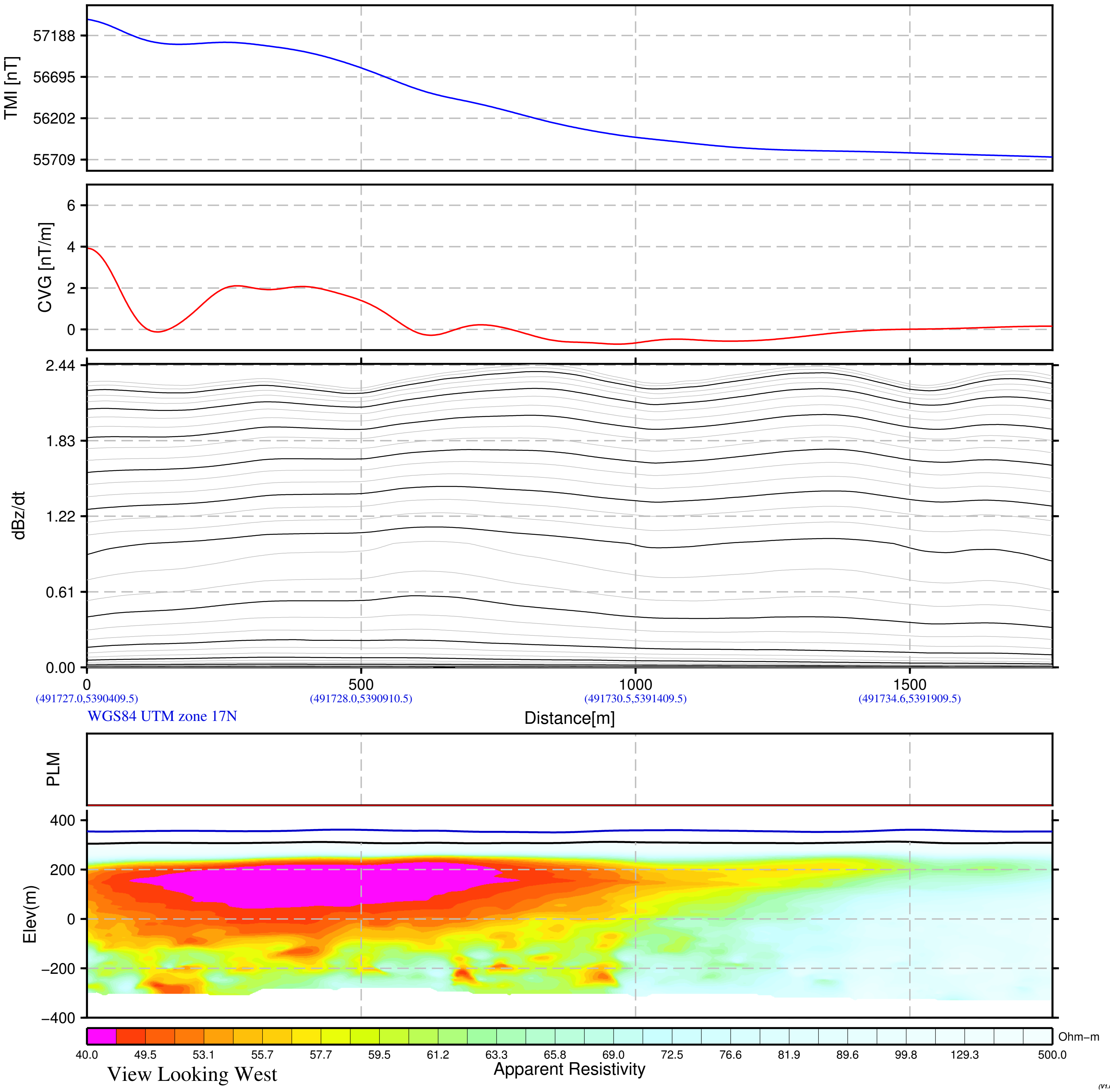
(V1.0)

GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

Resistivity Depth Image (RDI) for Line 1140







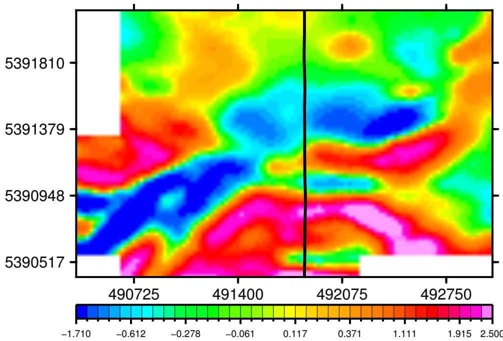
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

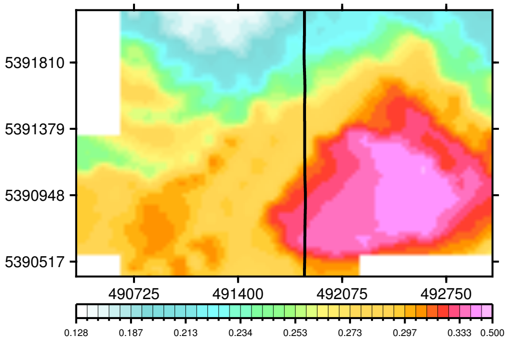
2021/ 5/11

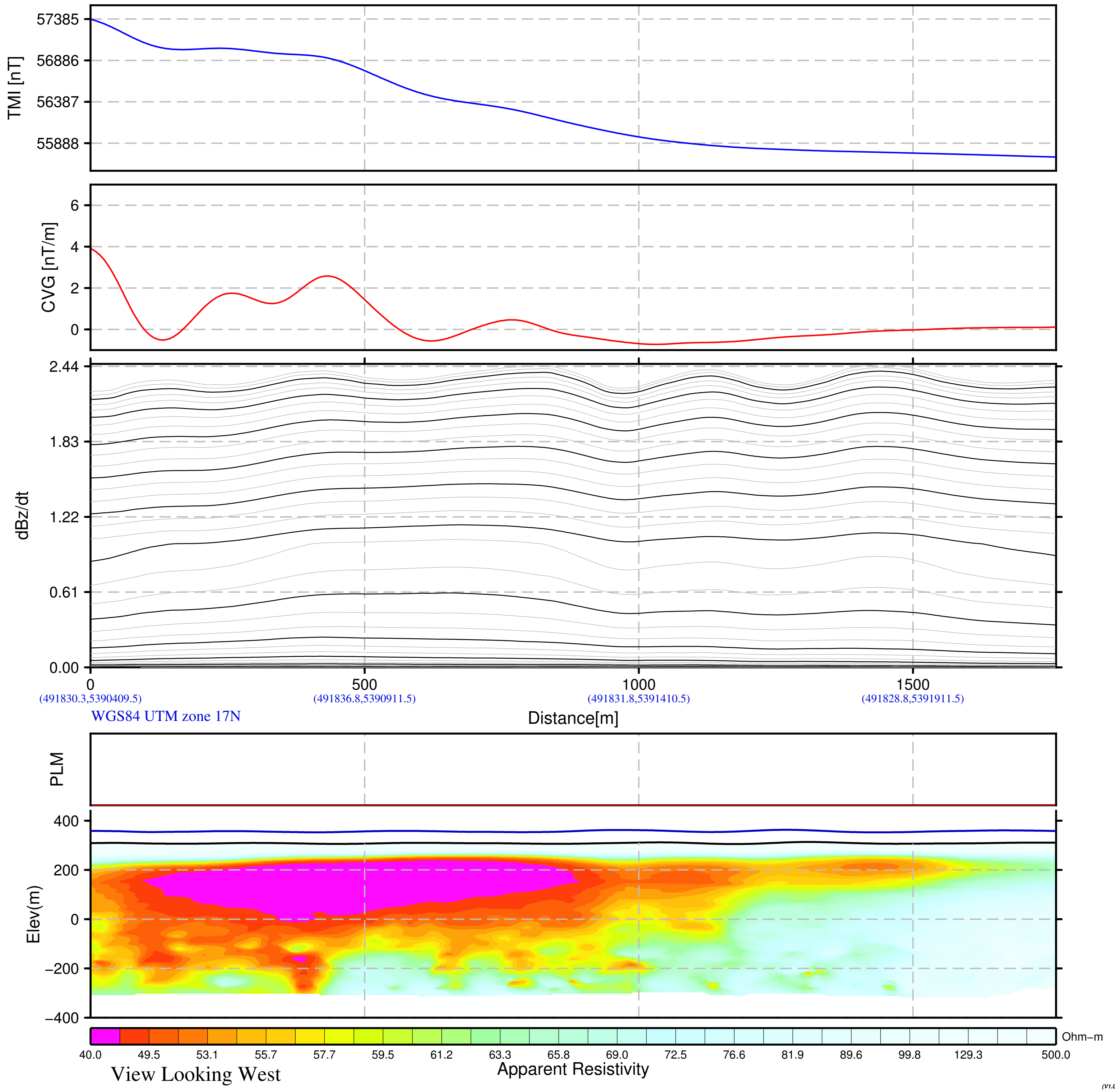
Resistivity Depth Image (RDI) for Line 1150

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





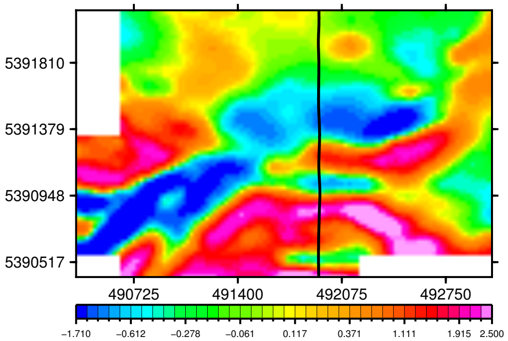
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

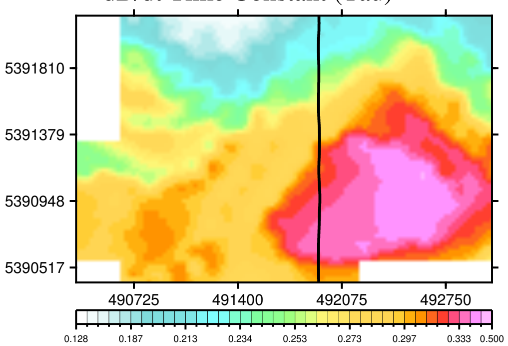
2021/ 5/11

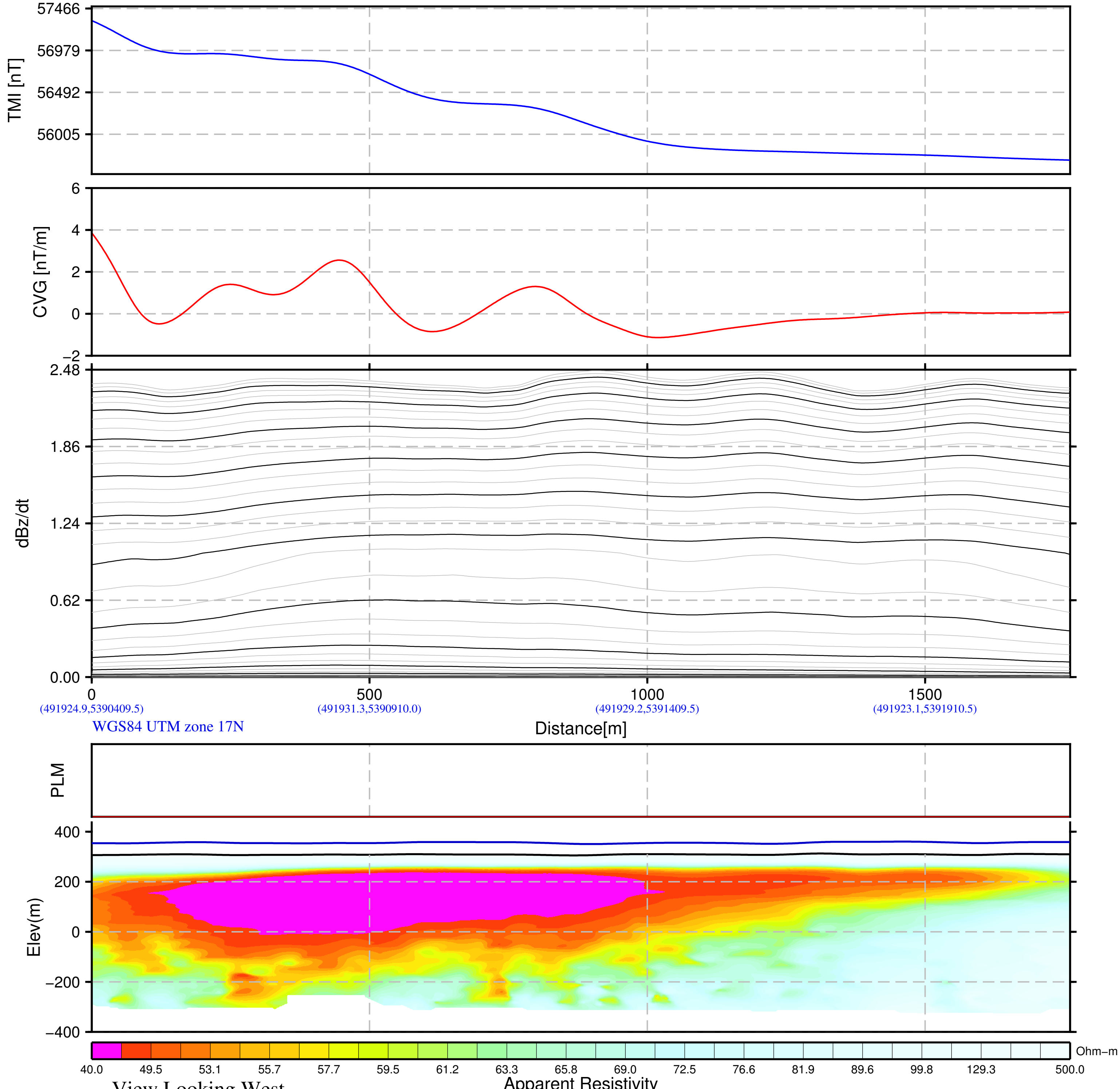
Resistivity Depth Image (RDI) for Line 1151

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





View Looking West

Pelangio Exploration Inc.
Gowan Project
Timmins, ON

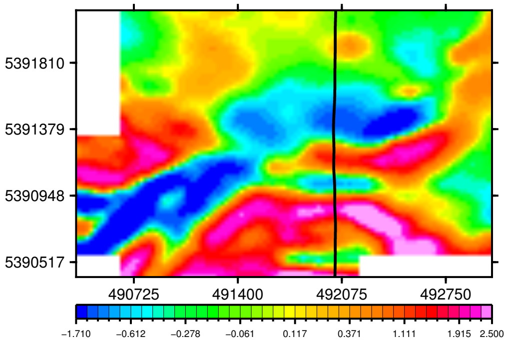
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

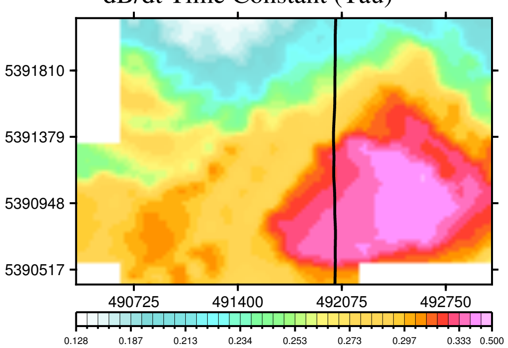
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

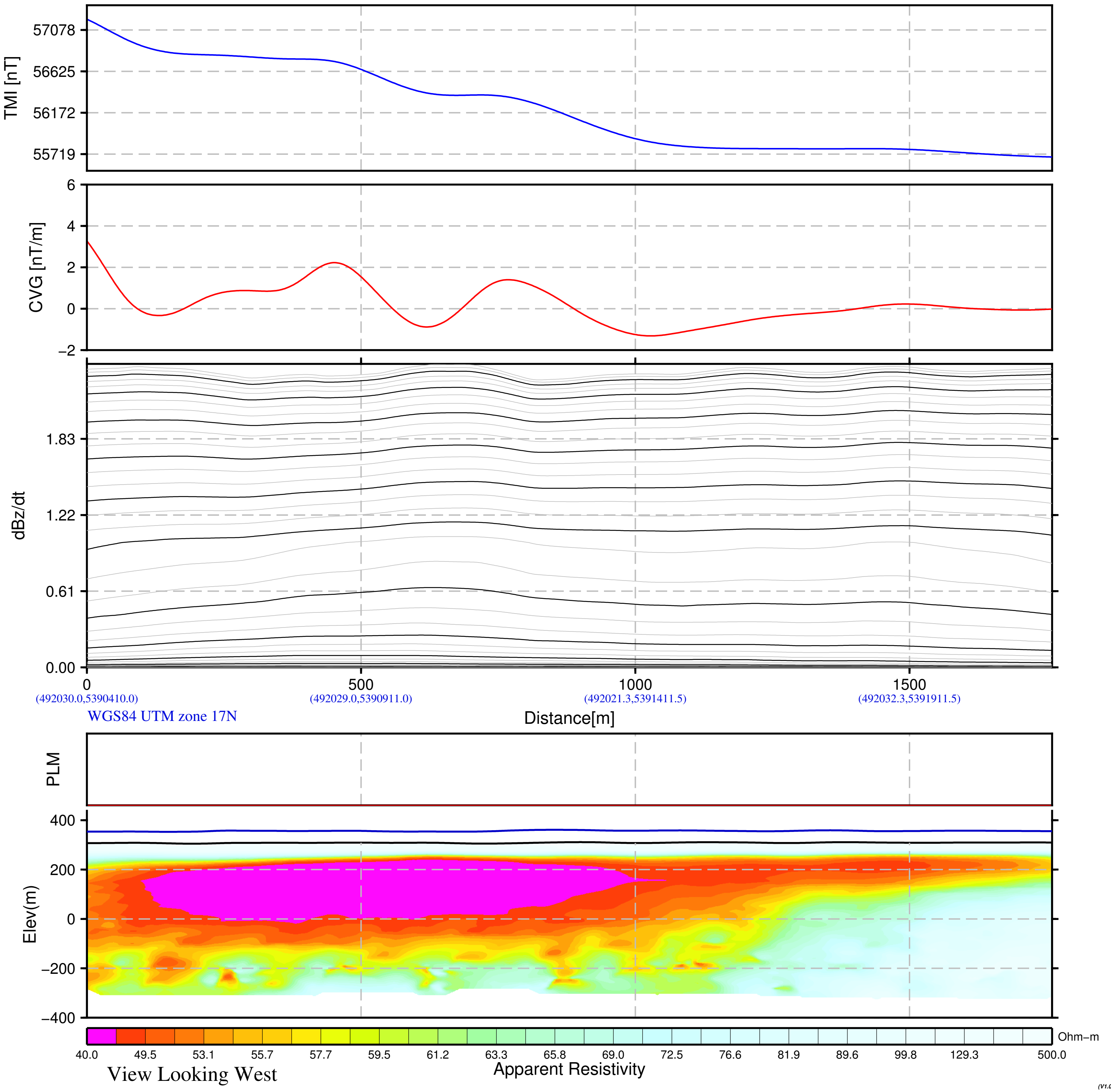
Resistivity Depth Image (RDI) for Line 1170

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

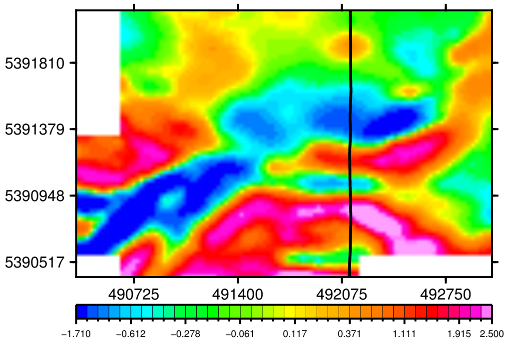
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

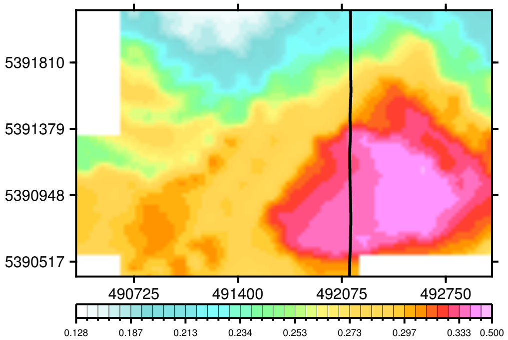
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

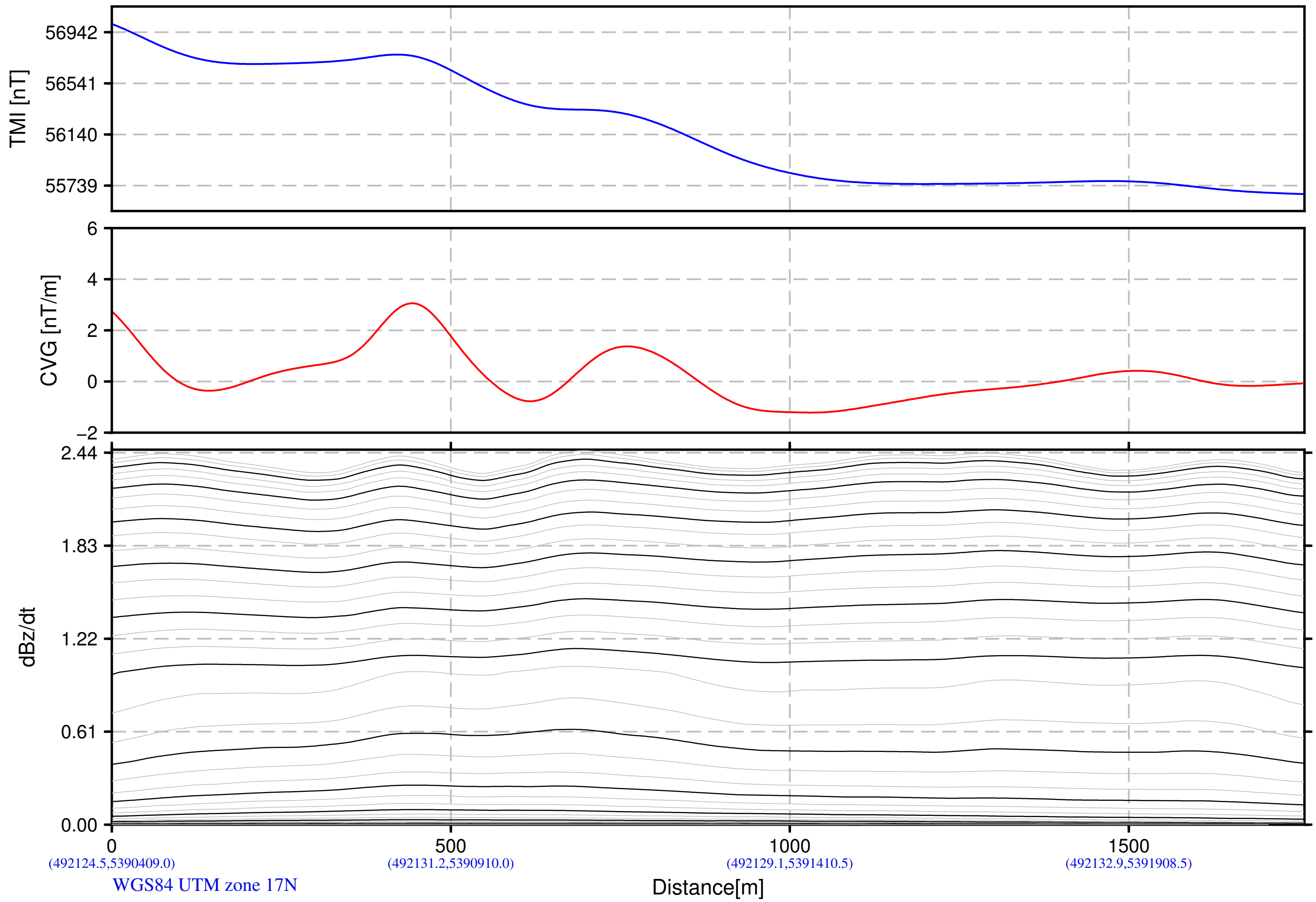
Resistivity Depth Image (RDI) for Line 1180

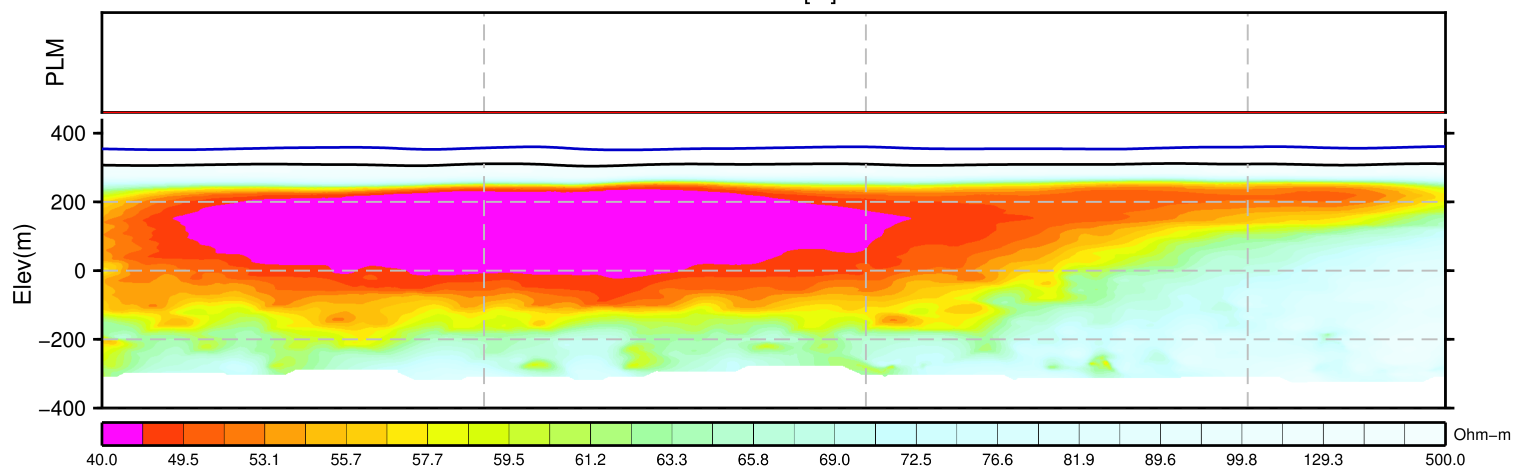
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking West

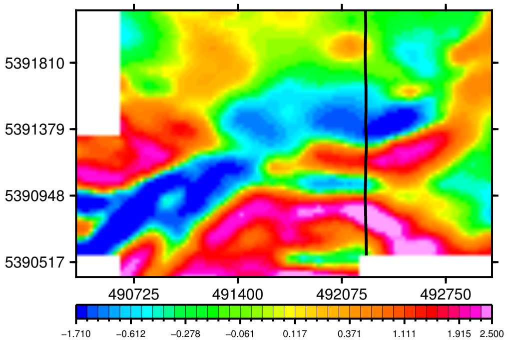
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

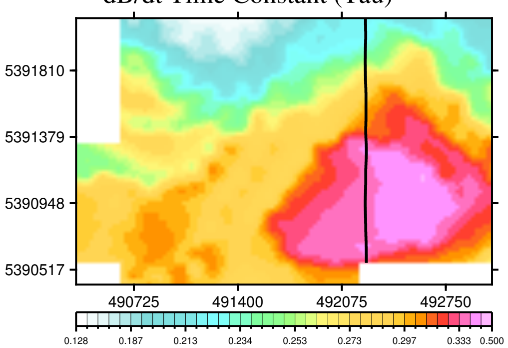
2021/ 5/11

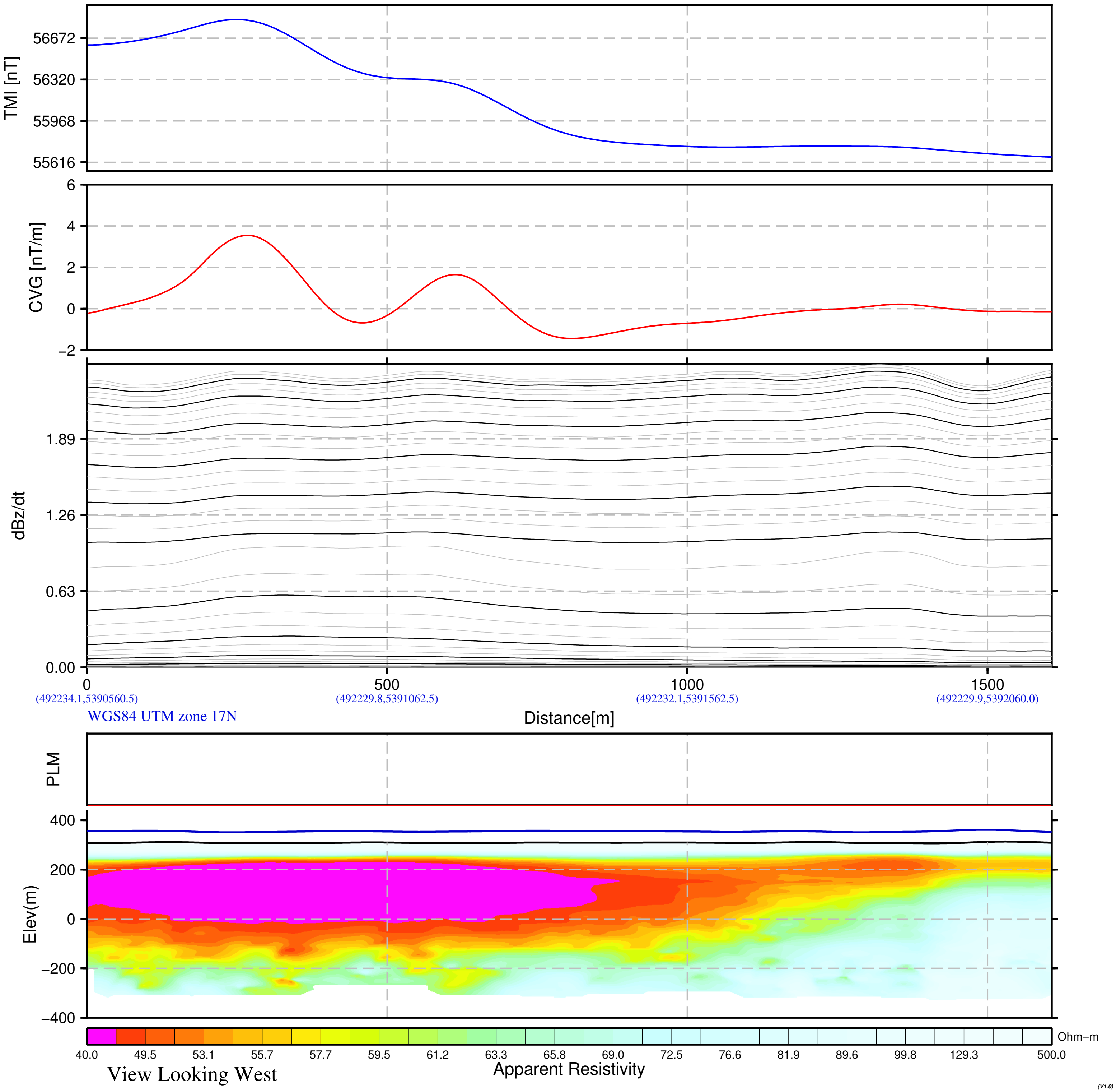
Resistivity Depth Image (RDI) for Line 1190

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

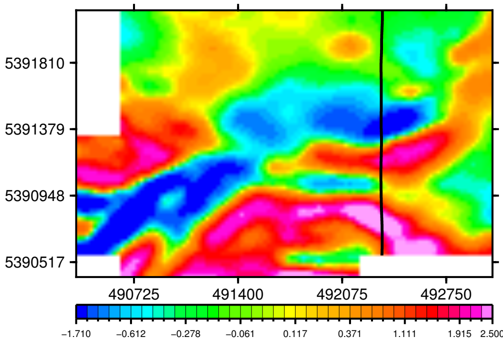
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

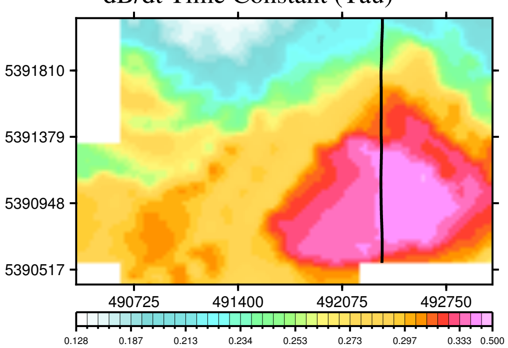
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

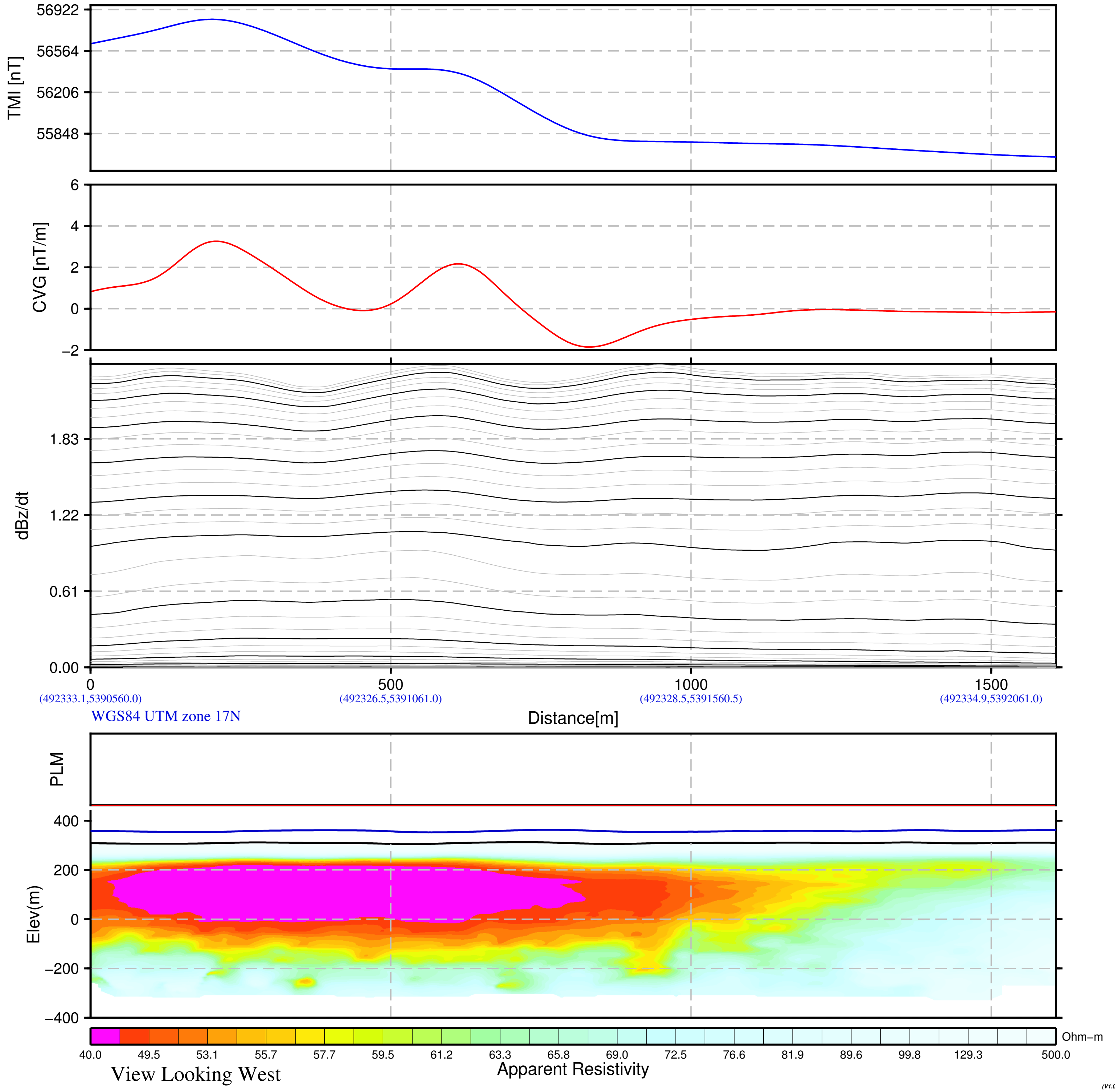
Resistivity Depth Image (RDI) for Line 1200

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

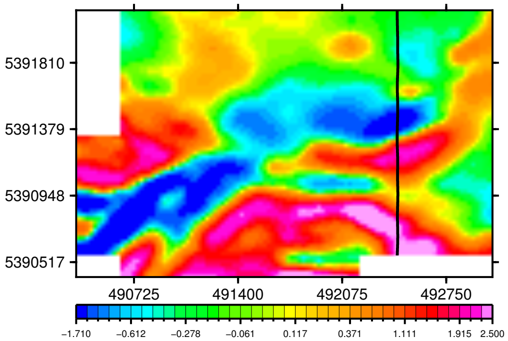
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

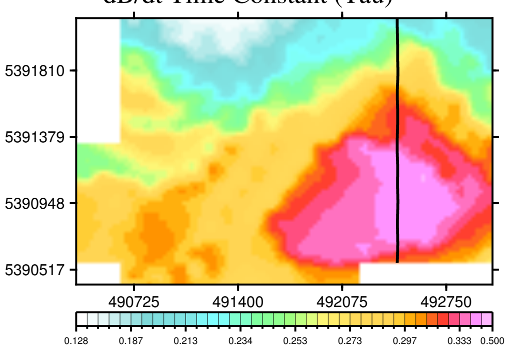
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

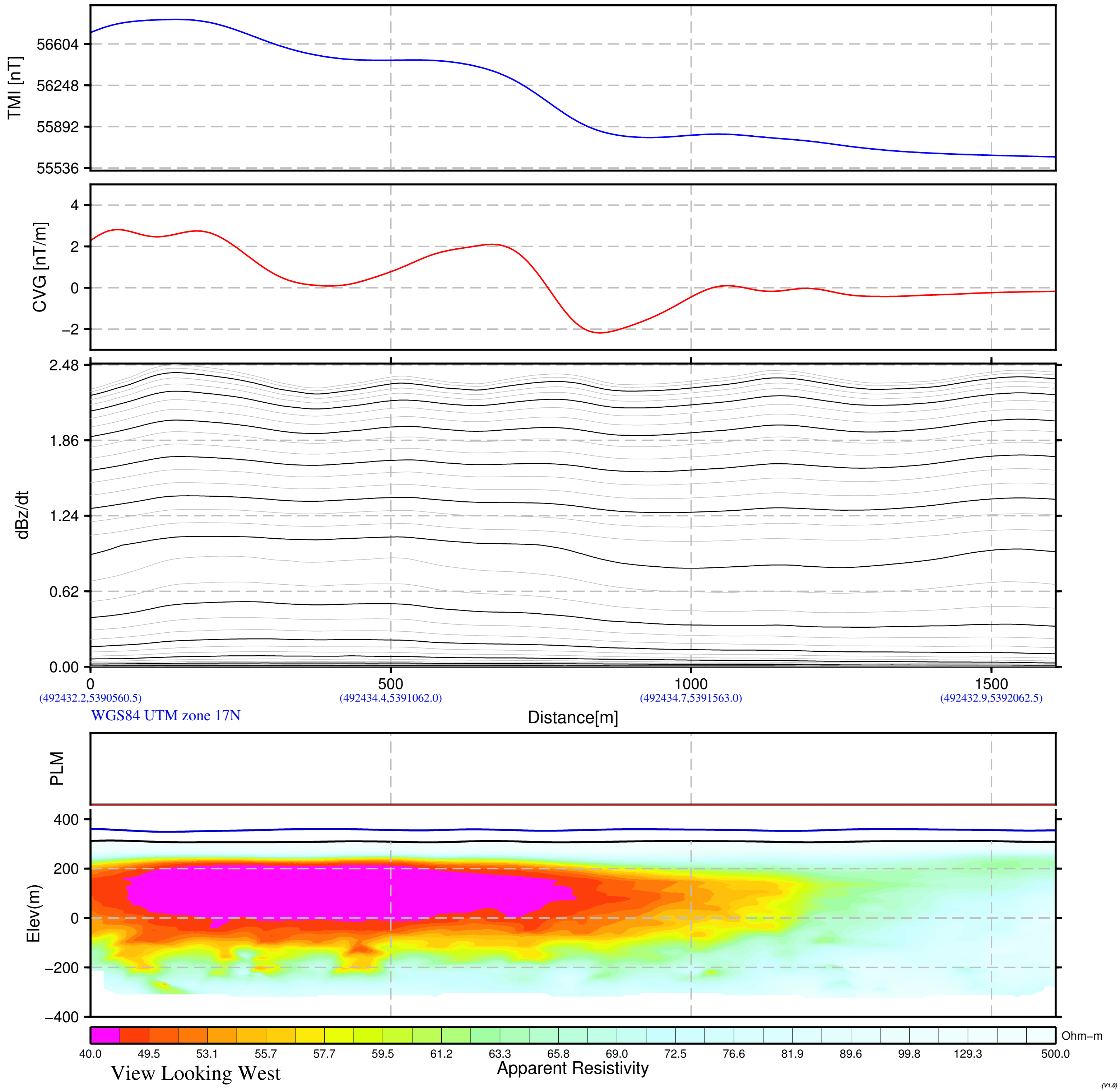
Resistivity Depth Image (RDI) for Line 1210

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

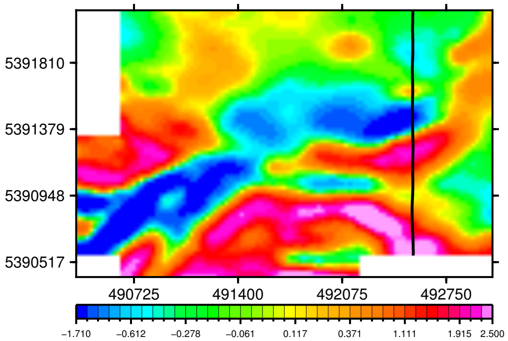
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

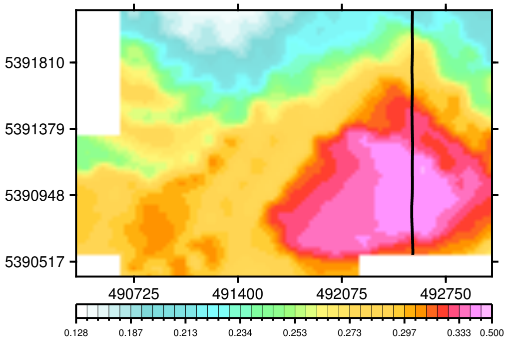
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

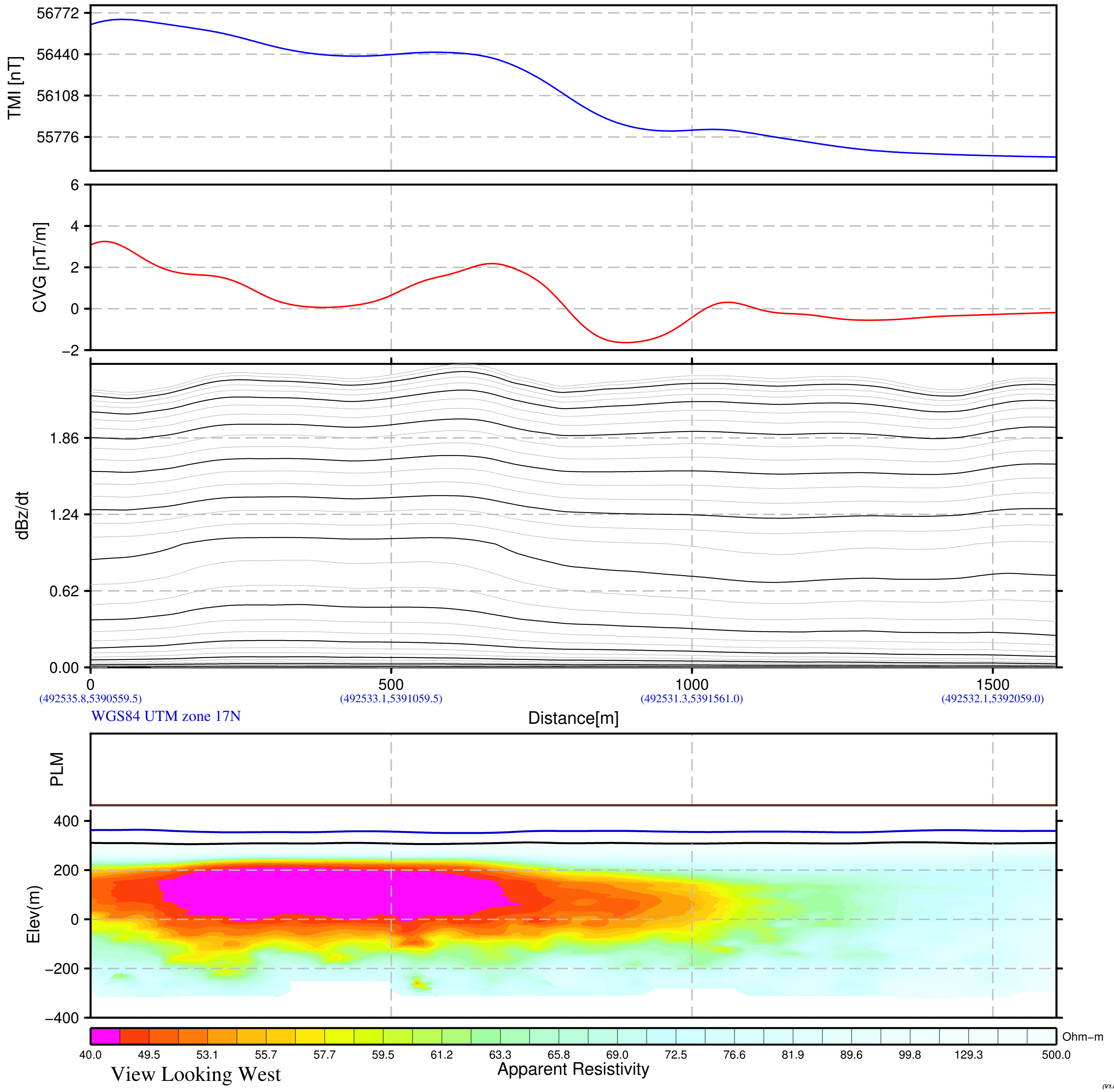
Resistivity Depth Image (RDI) for Line 1220

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

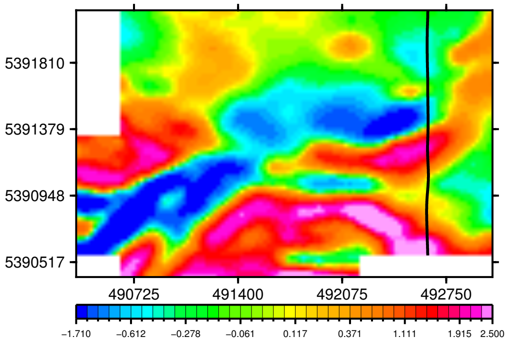
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

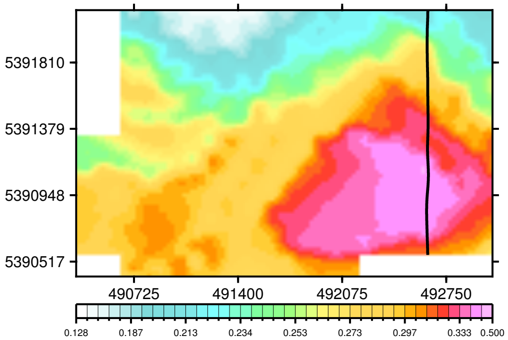
GEOTECH AIRBORNE GEOPHYSICAL SURVEYS

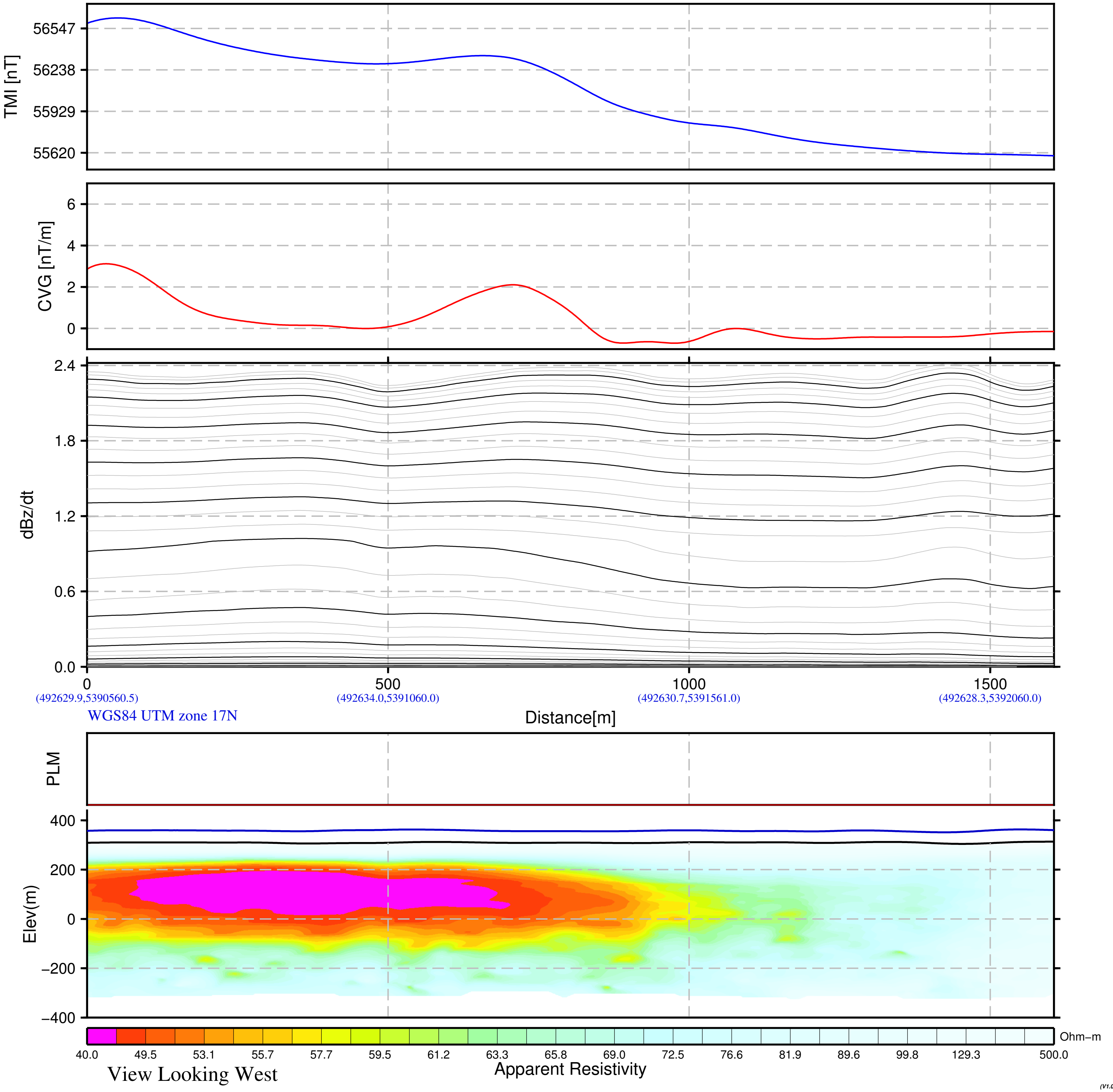
Resistivity Depth Image (RDI) for Line 1230

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

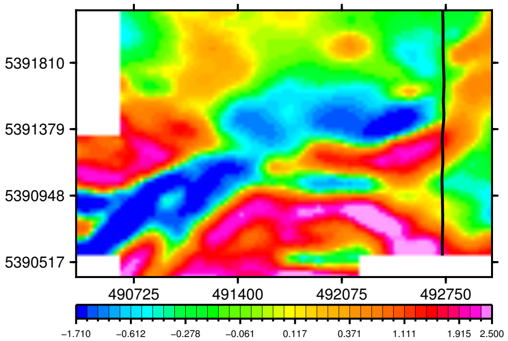
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

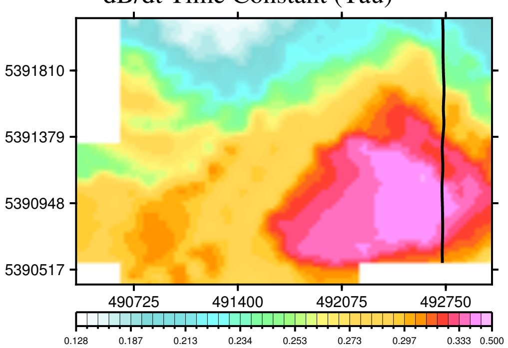
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

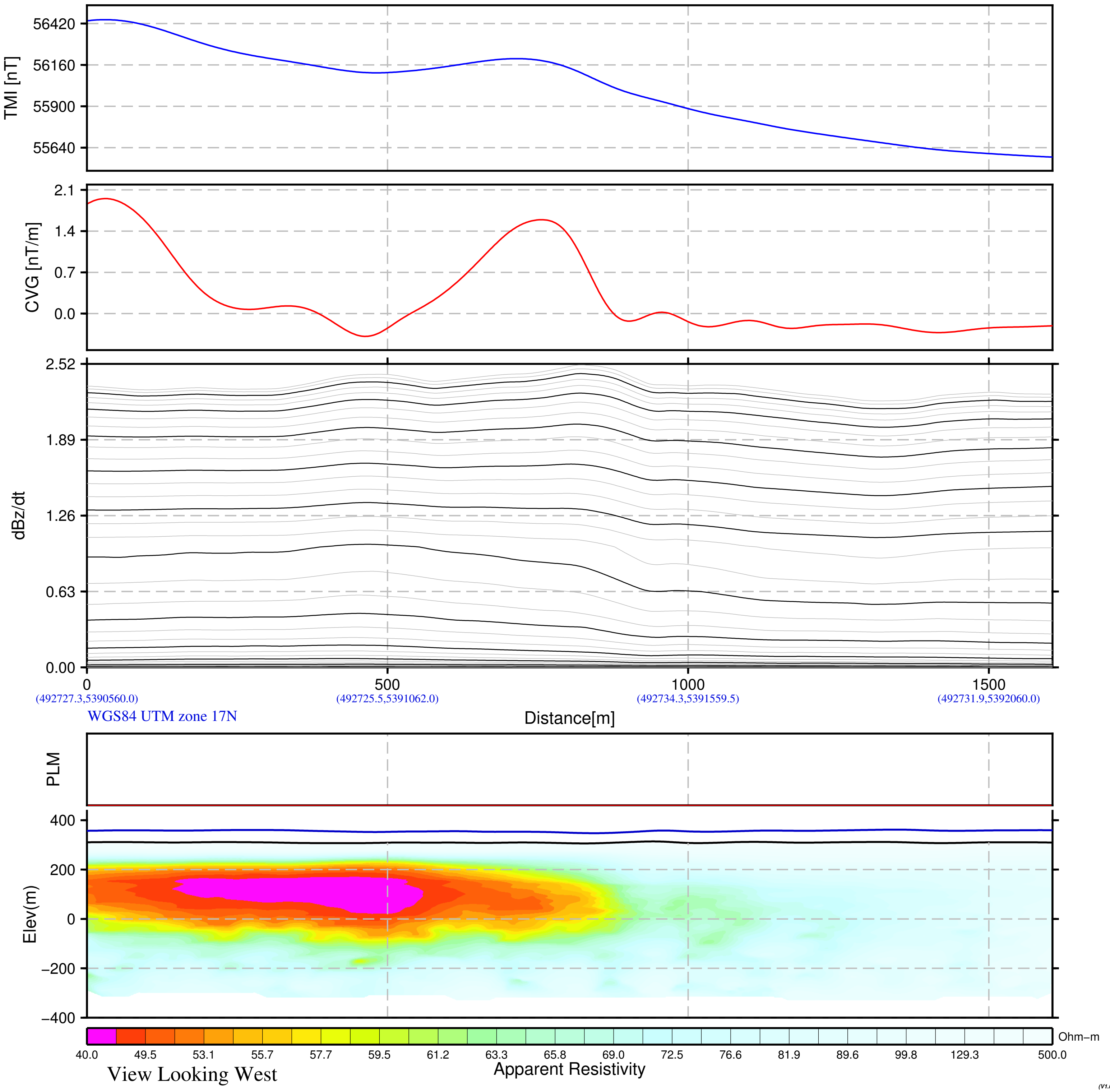
Resistivity Depth Image (RDI) for Line 1240

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

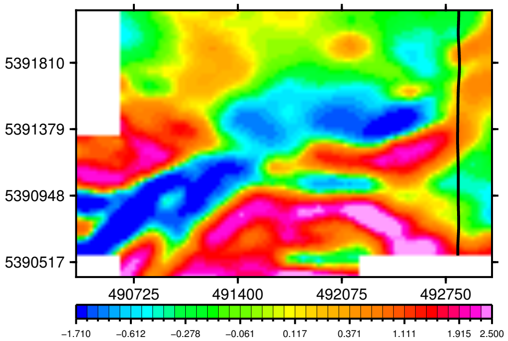
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

2021/ 5/11

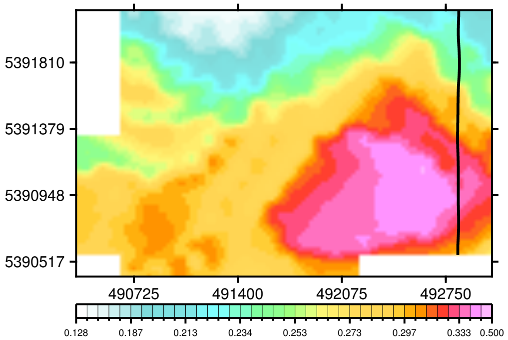
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

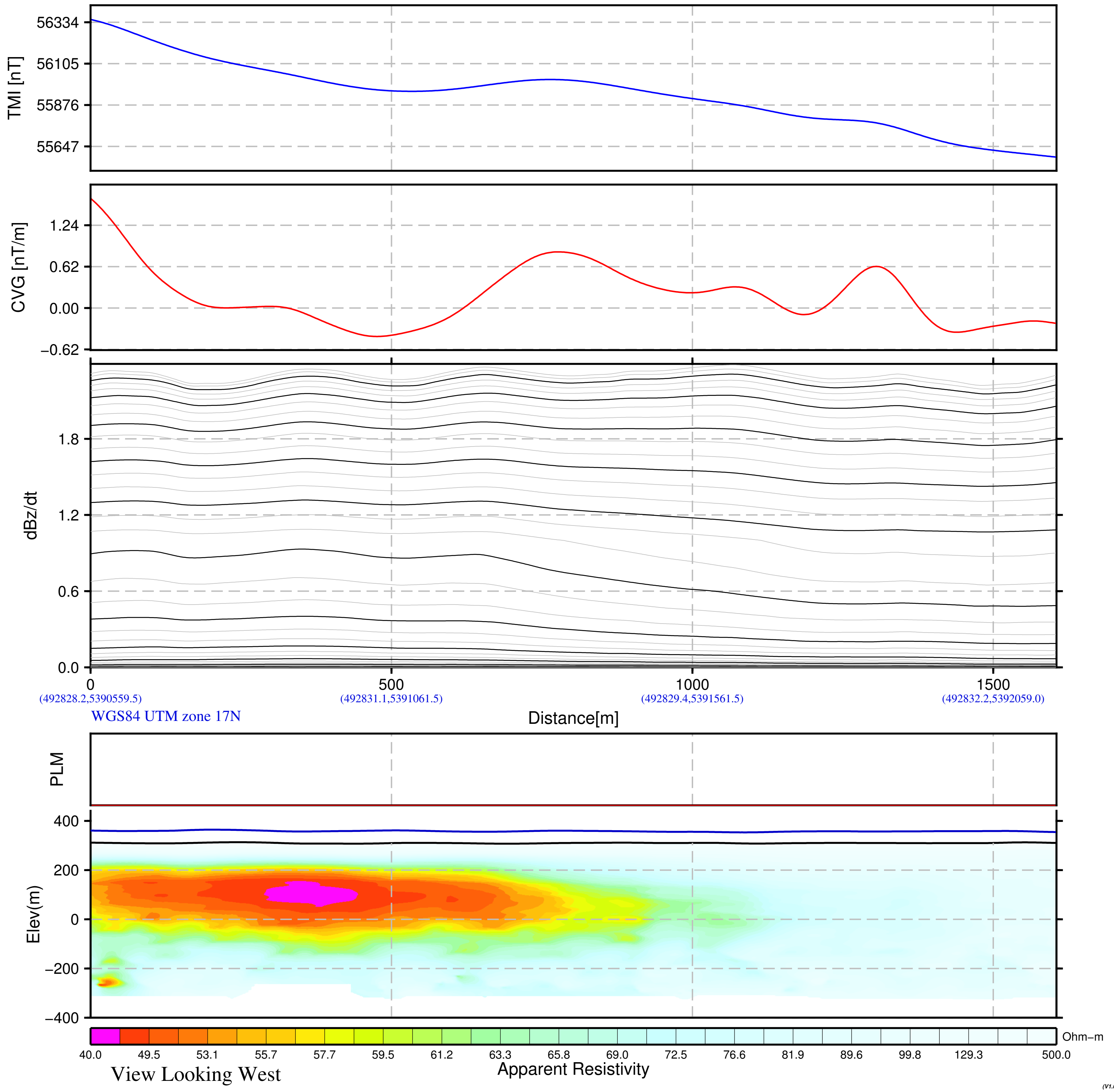
Resistivity Depth Image (RDI) for Line 1250

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

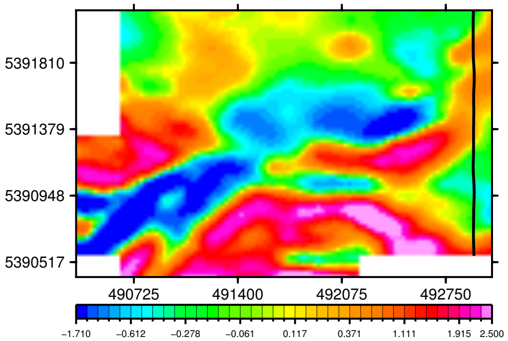
2021/ 5/11

(V1.0)

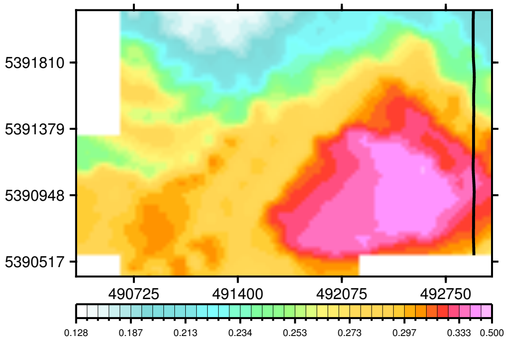
Resistivity Depth Image (RDI) for Line 1260

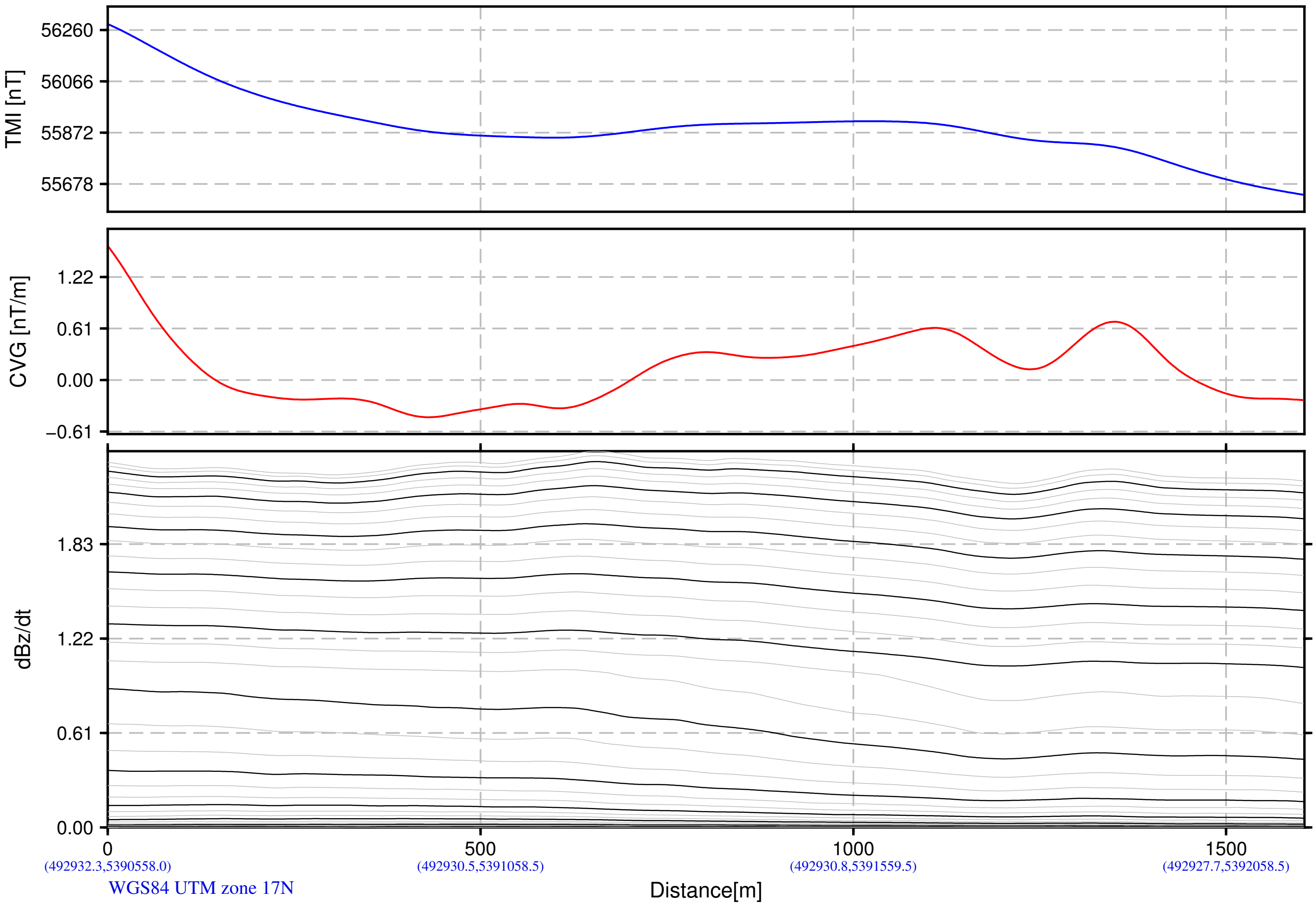
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

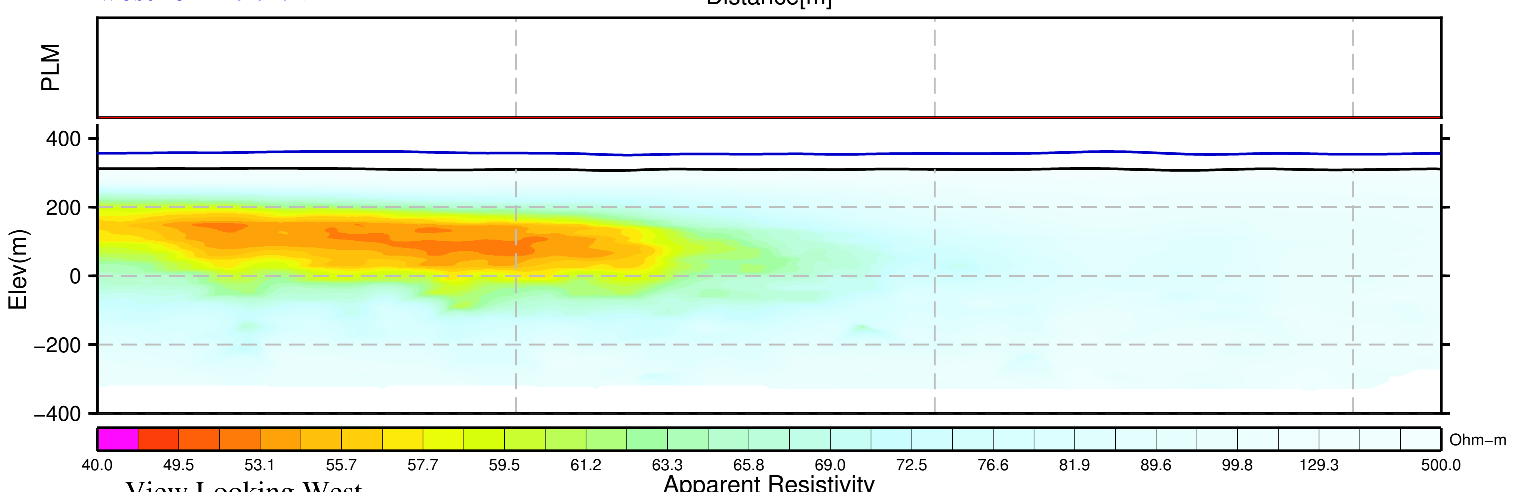
Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)







View Looking West

Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

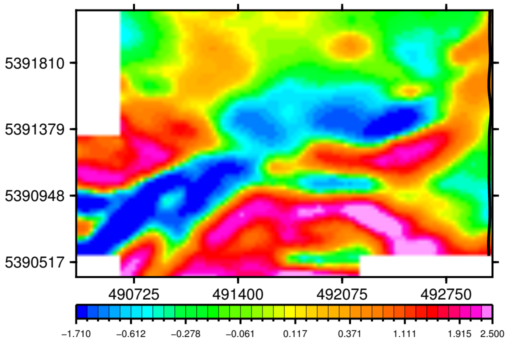
2021/ 5/11

(V1.0)

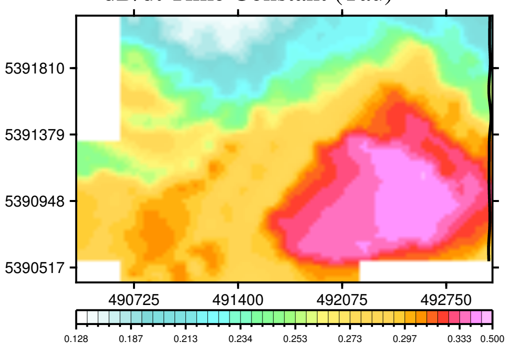
Resistivity Depth Image (RDI) for Line 1270

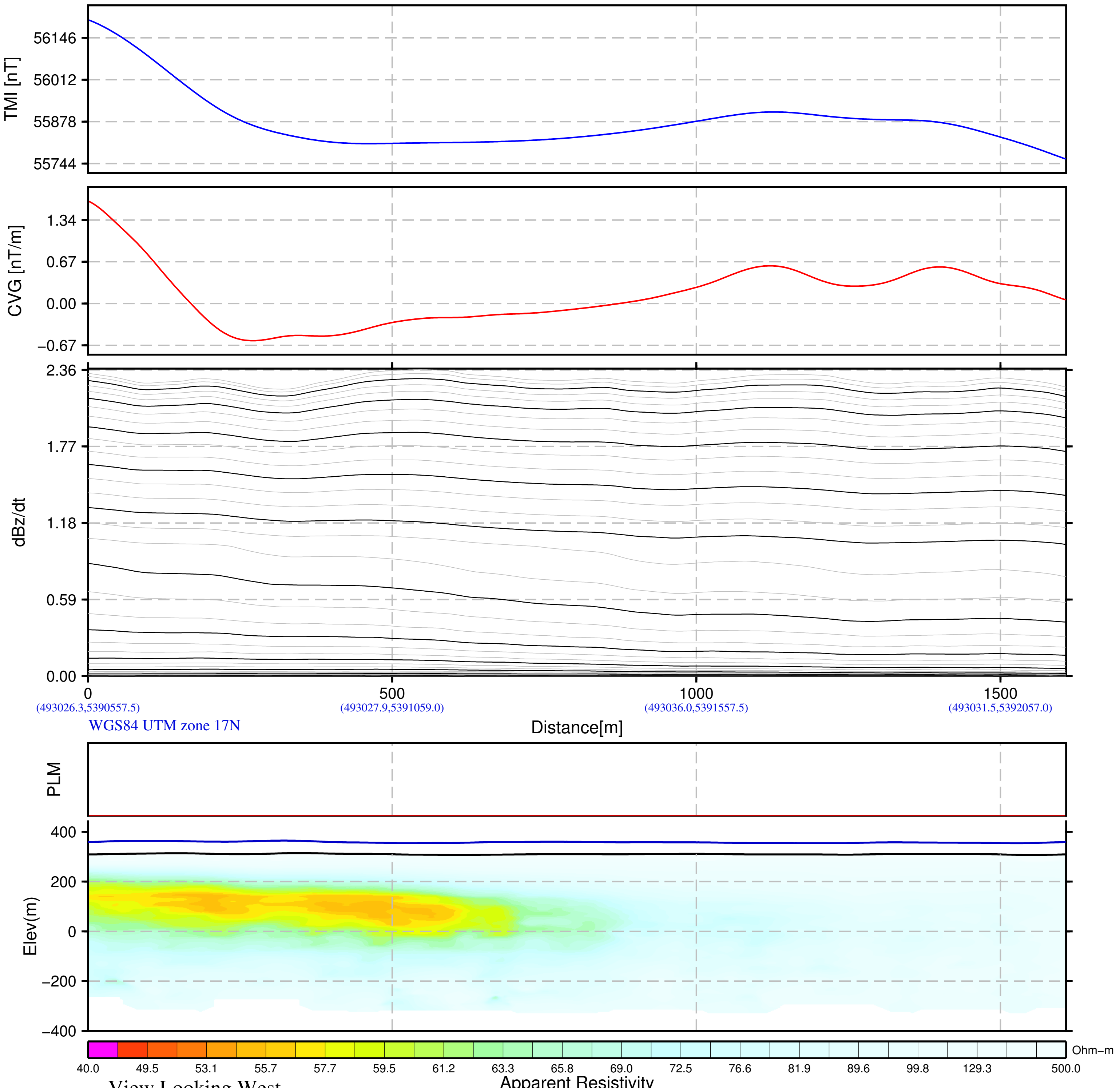
GEOTECH AIRBORNE GEOPHYSICAL SURVEYS

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)



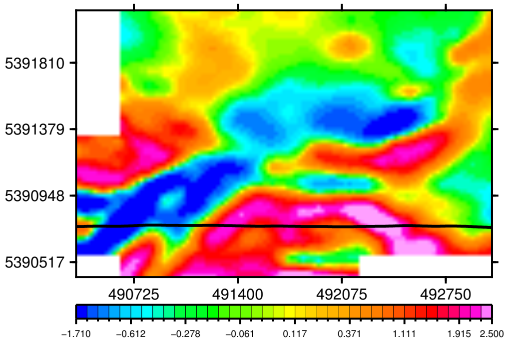


View Looking West

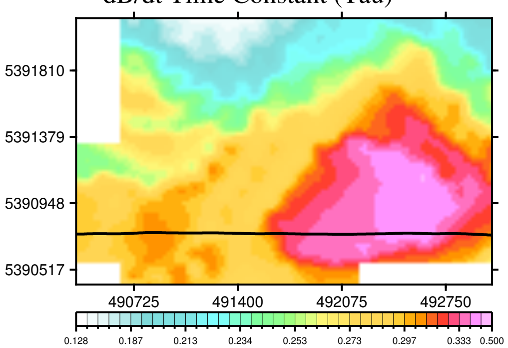
Pelangio Exploration Inc. Gowan Project Timmins, ON
VTEM System:VTEM32 Plus Job Number:GL210071 Resistivity Depth Image (RDI) Flown by Geotech Ltd. Processed by Geotech Ltd. 270 Industrial Parkway South Aurora, Ontario, Canada L4G 3T9 www.geotech.ca
2021/ 5/11

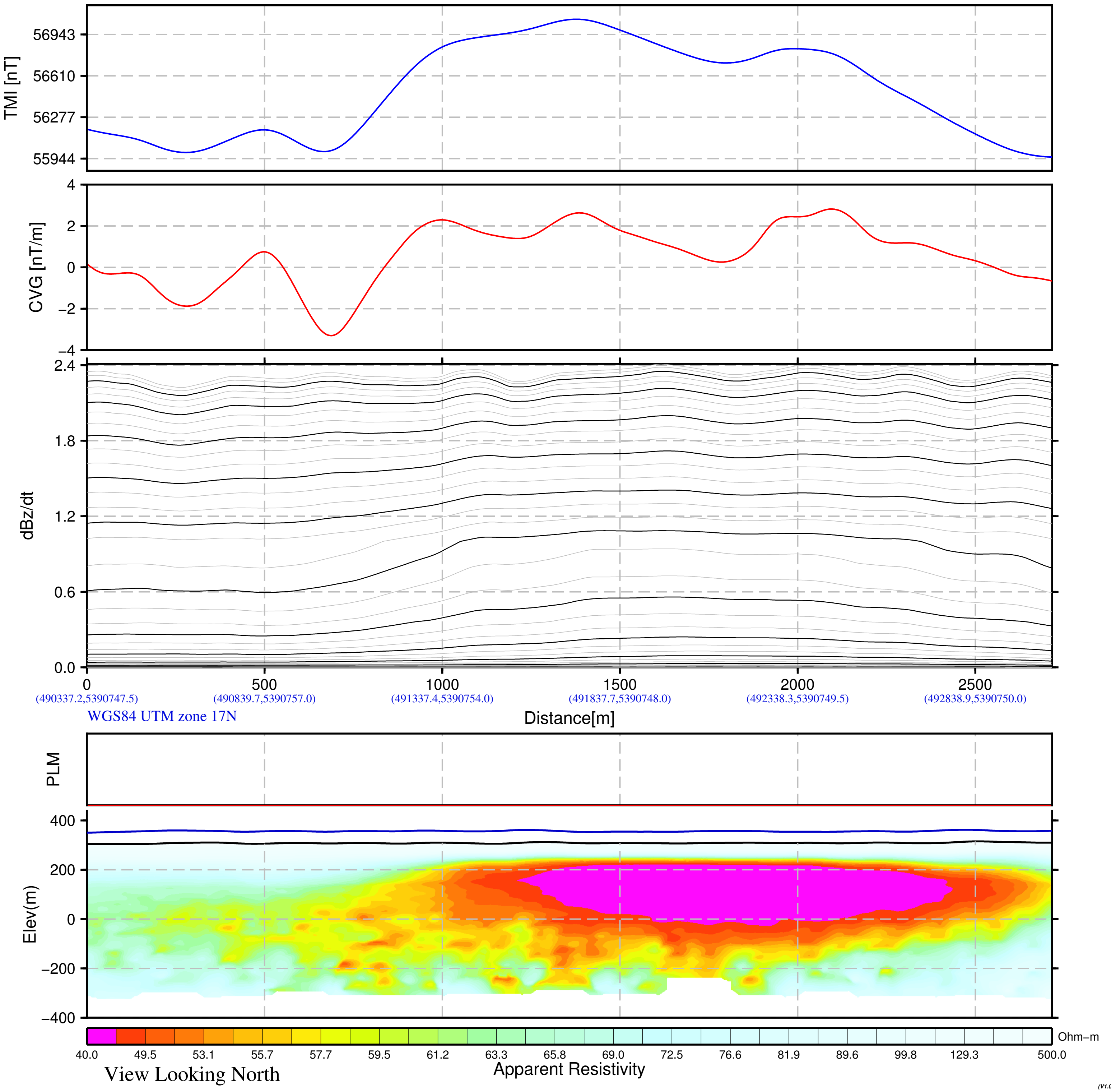
Resistivity Depth Image (RDI) for Tie 2000

Calculated Vertical Gradient (CVG)



dB/dt Time Constant (Tau)





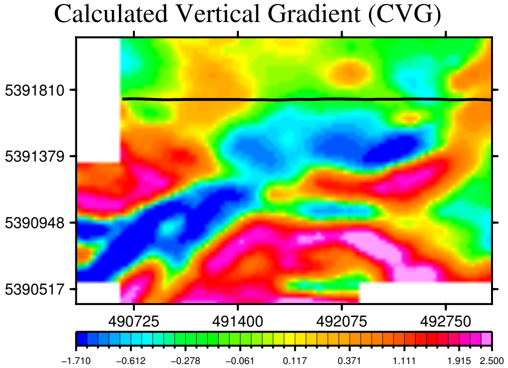
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

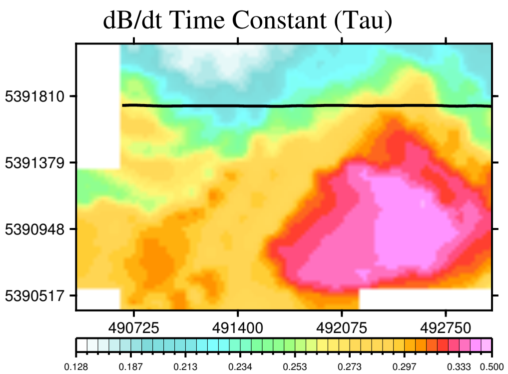
VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

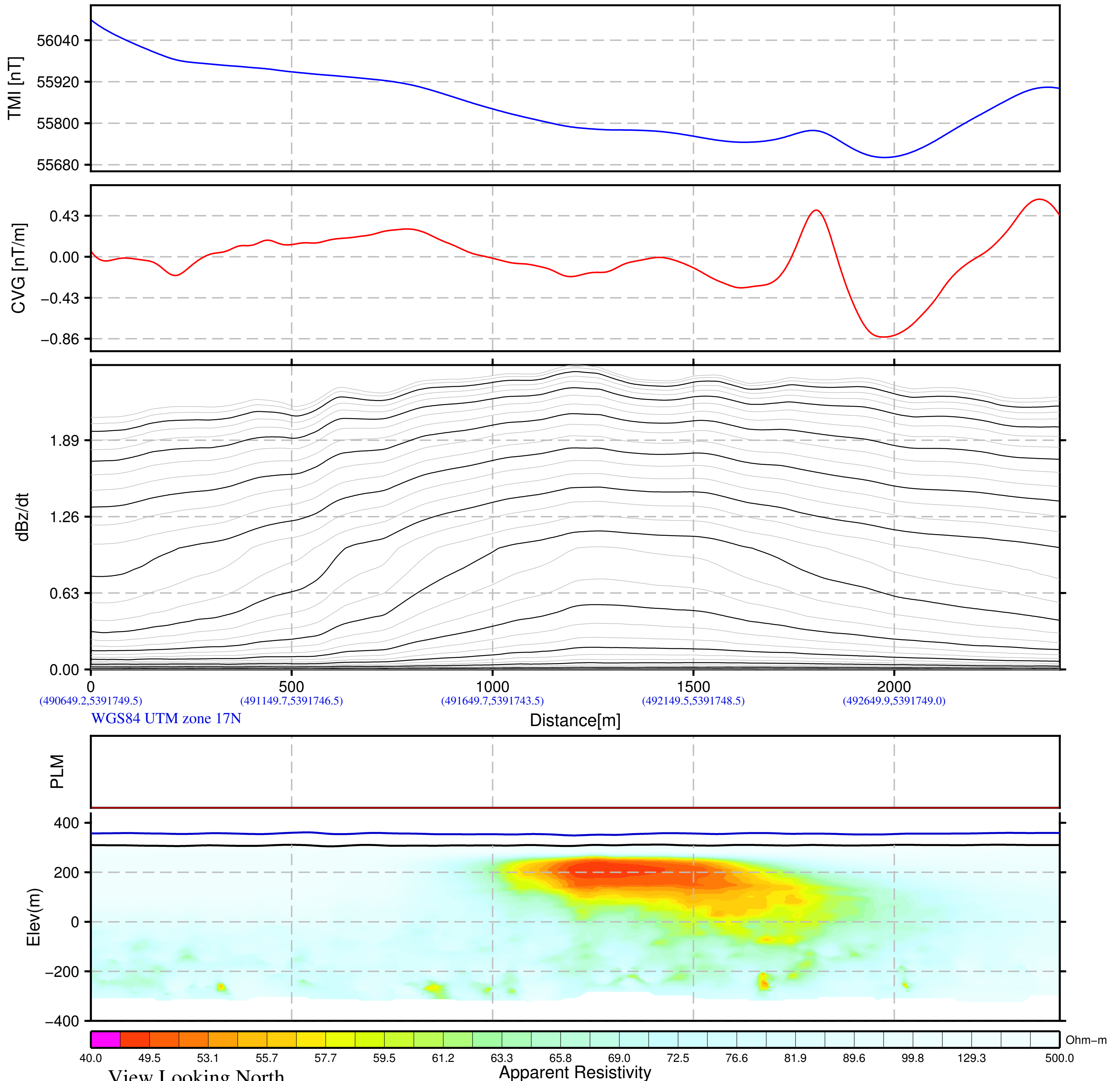
2021/ 5/11

GEOTECH AIRBORNE GEOPHYSICAL SURVEYS

Resistivity Depth Image (RDI) for Tie 2010







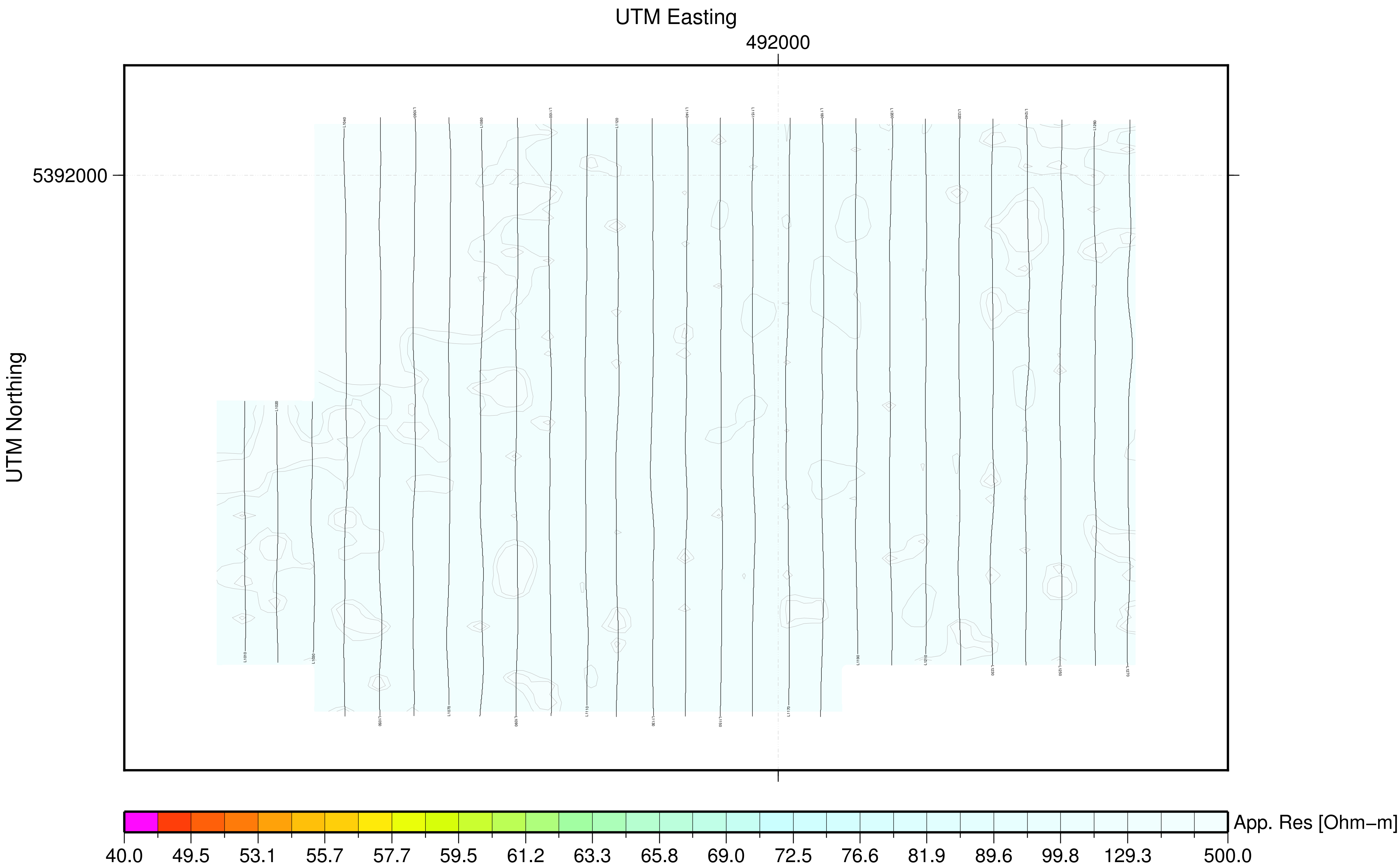
Pelangio Exploration Inc.
Gowan Project
Timmins, ON

VTEM System:VTEM32 Plus
Job Number:GL210071
Resistivity Depth Image (RDI)
Flown by Geotech Ltd.
Processed by Geotech Ltd.
270 Industrial Parkway South
Aurora, Ontario, Canada L4G 3T9
www.geotech.ca

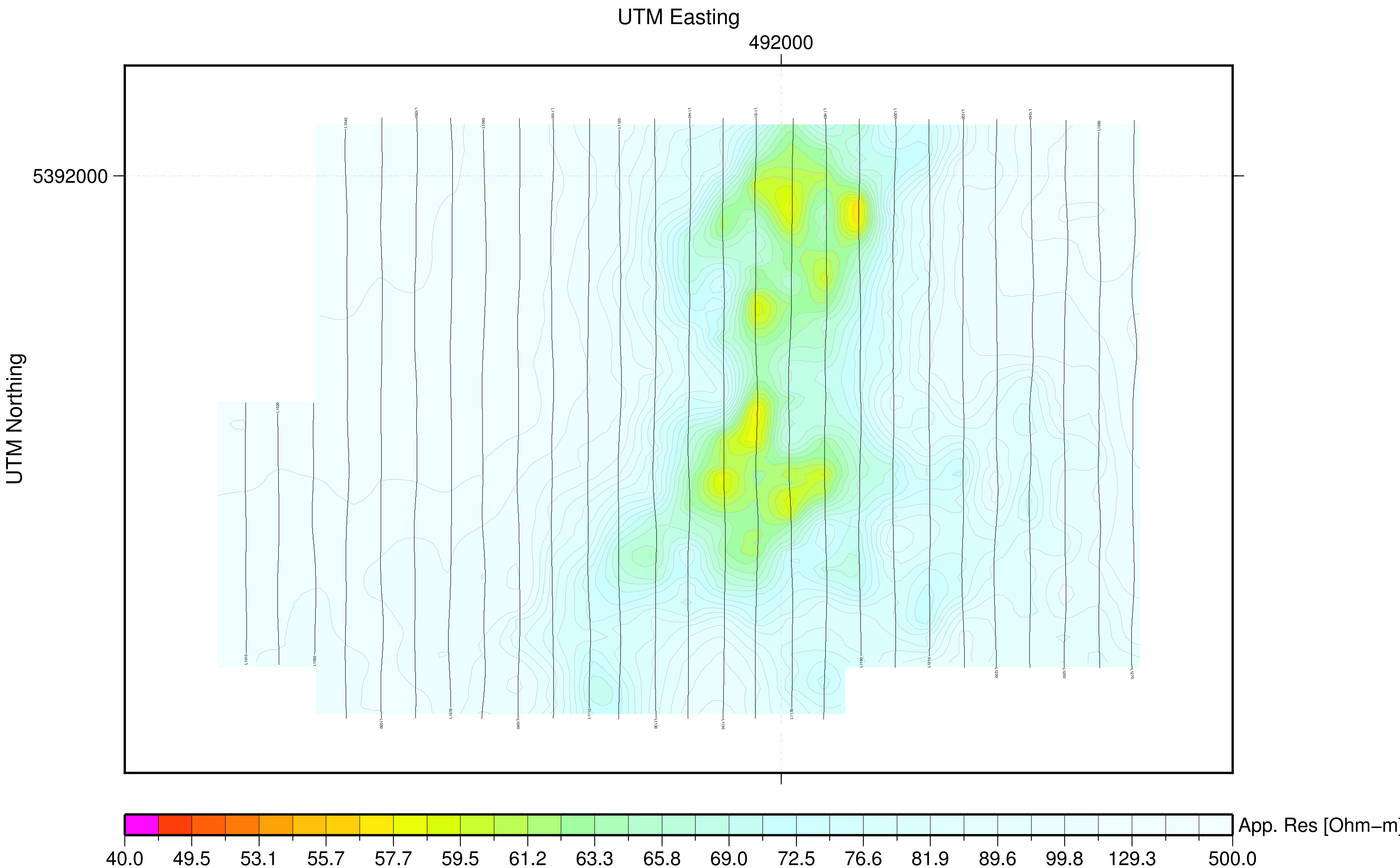
2021/ 5/11

VTEM RDI: Resistivity Depth Slice at 025m of depth

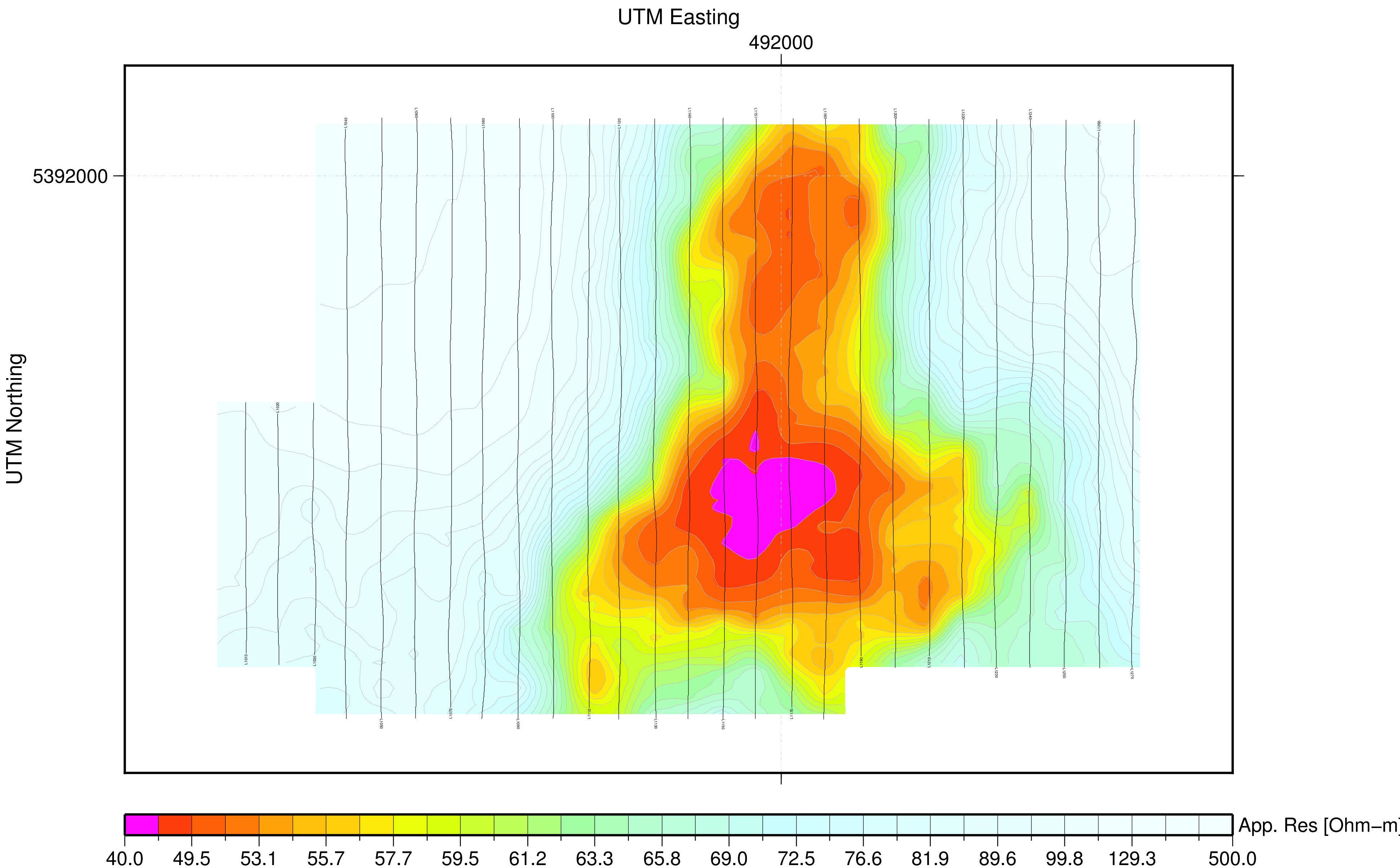
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS



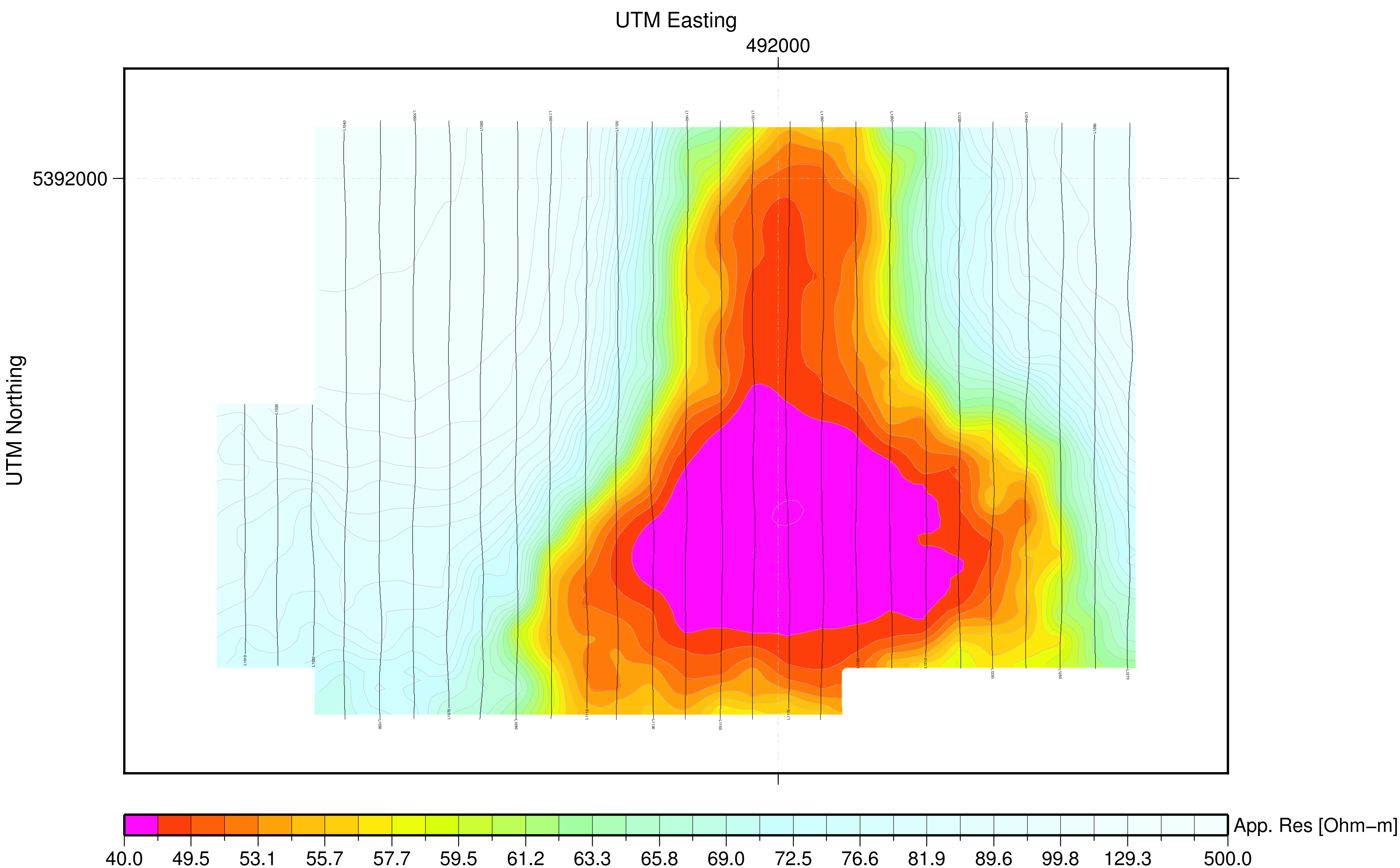
VTEM RDI: Resistivity Depth Slice at 050m of depth



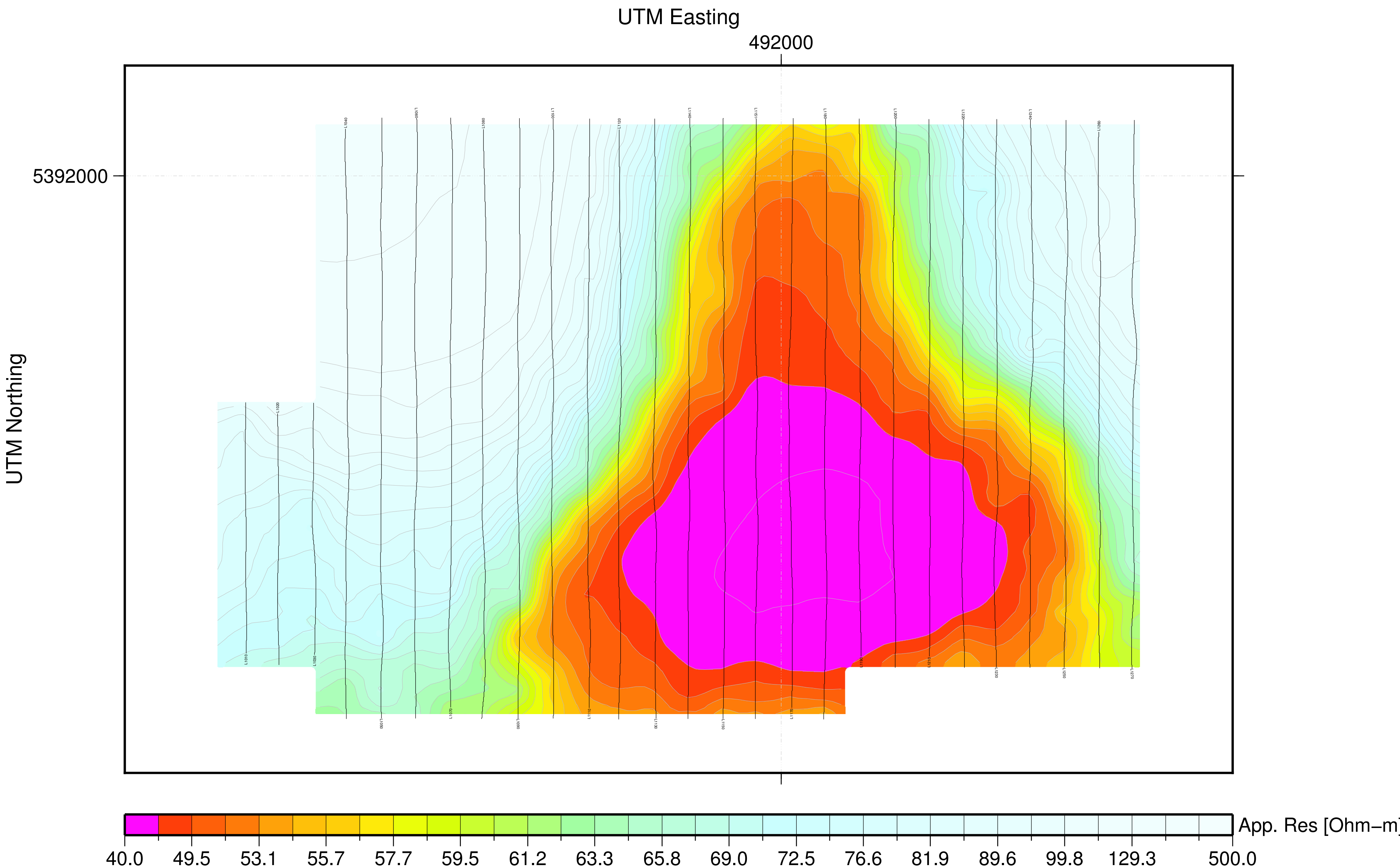
VTEM RDI: Resistivity Depth Slice at 075m of depth



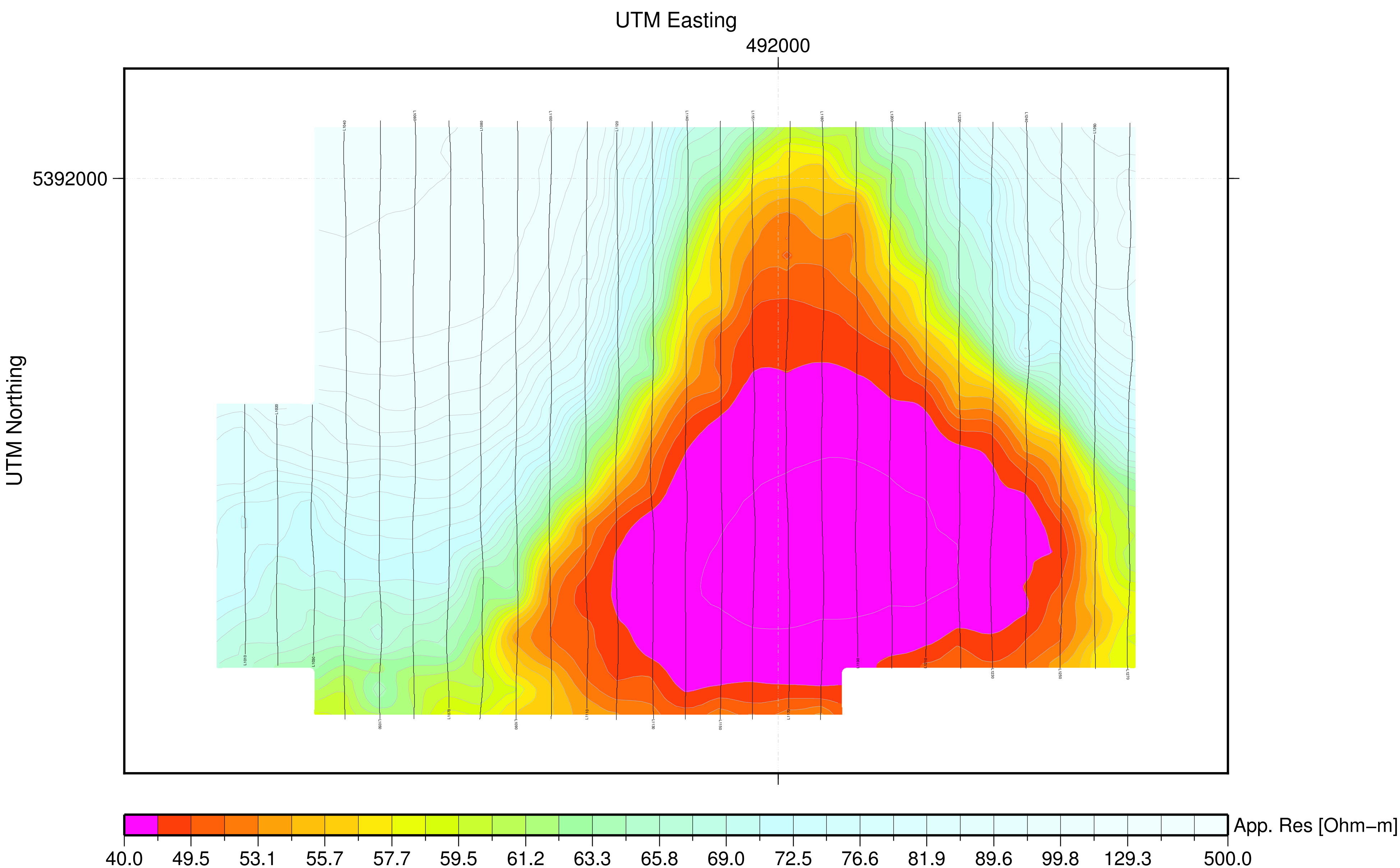
VTEM RDI: Resistivity Depth Slice at 100m of depth



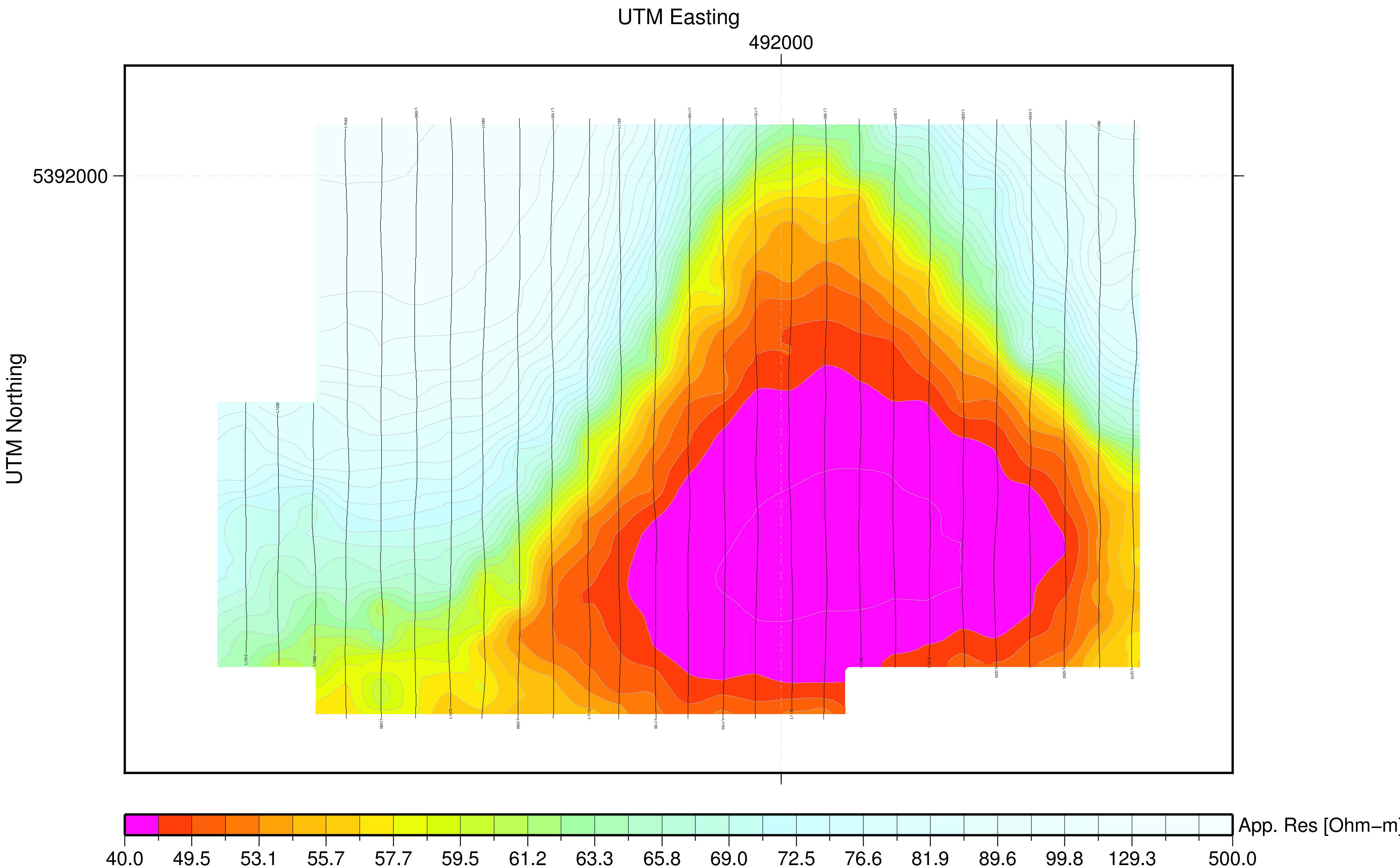
VTEM RDI: Resistivity Depth Slice at 125m of depth



VTEM RDI: Resistivity Depth Slice at 150m of depth

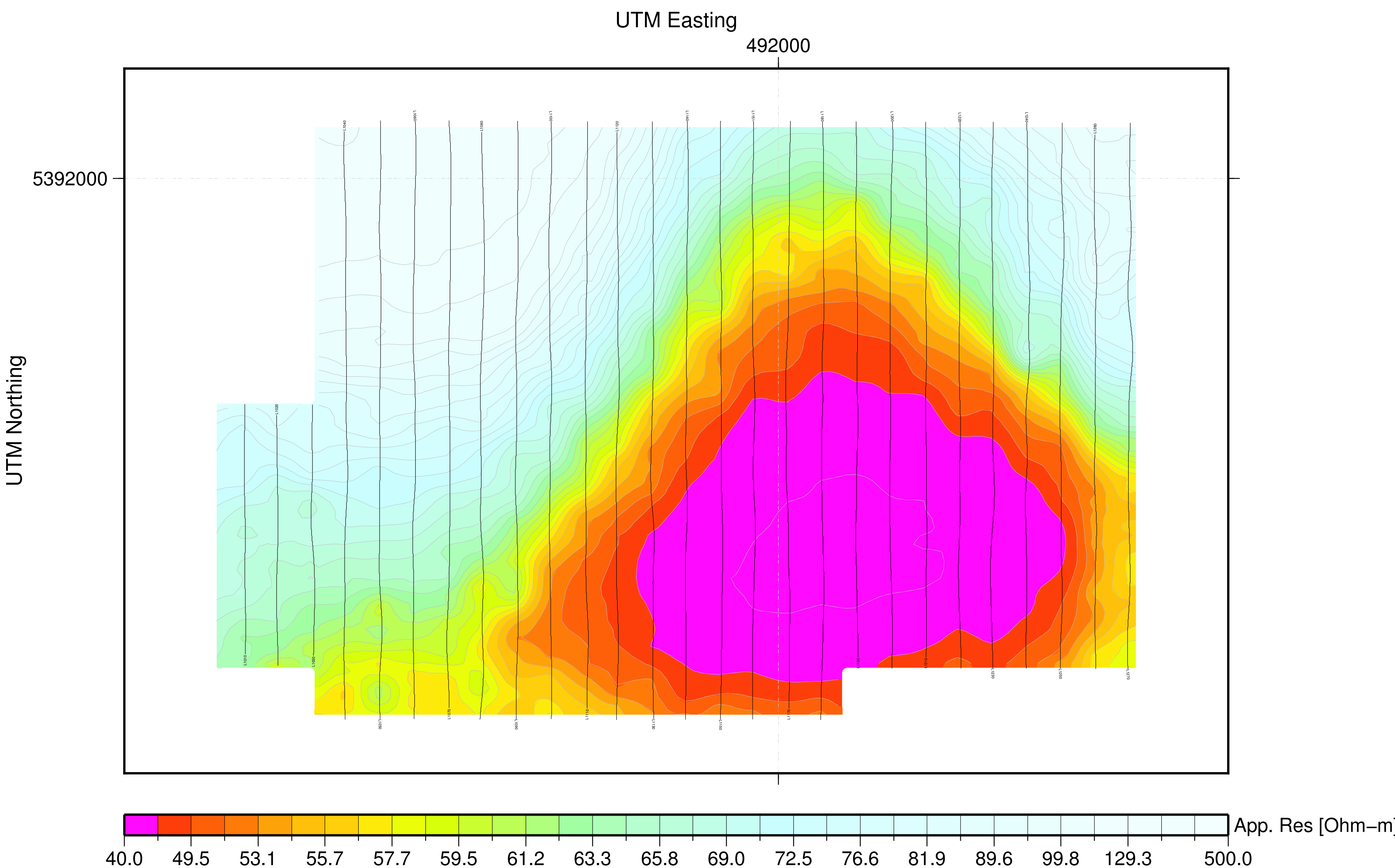


VTEM RDI: Resistivity Depth Slice at 175m of depth



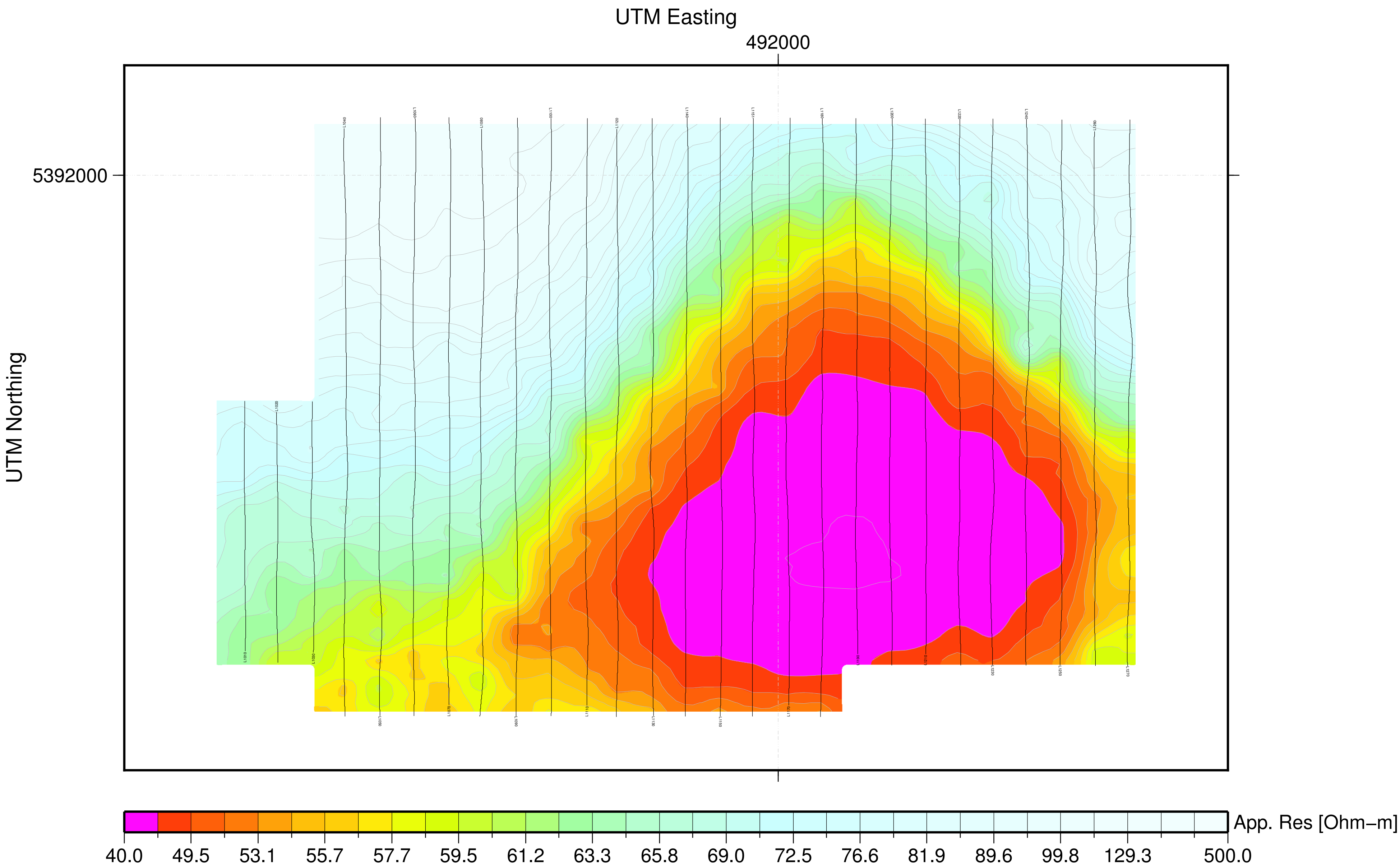
GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 200m of depth

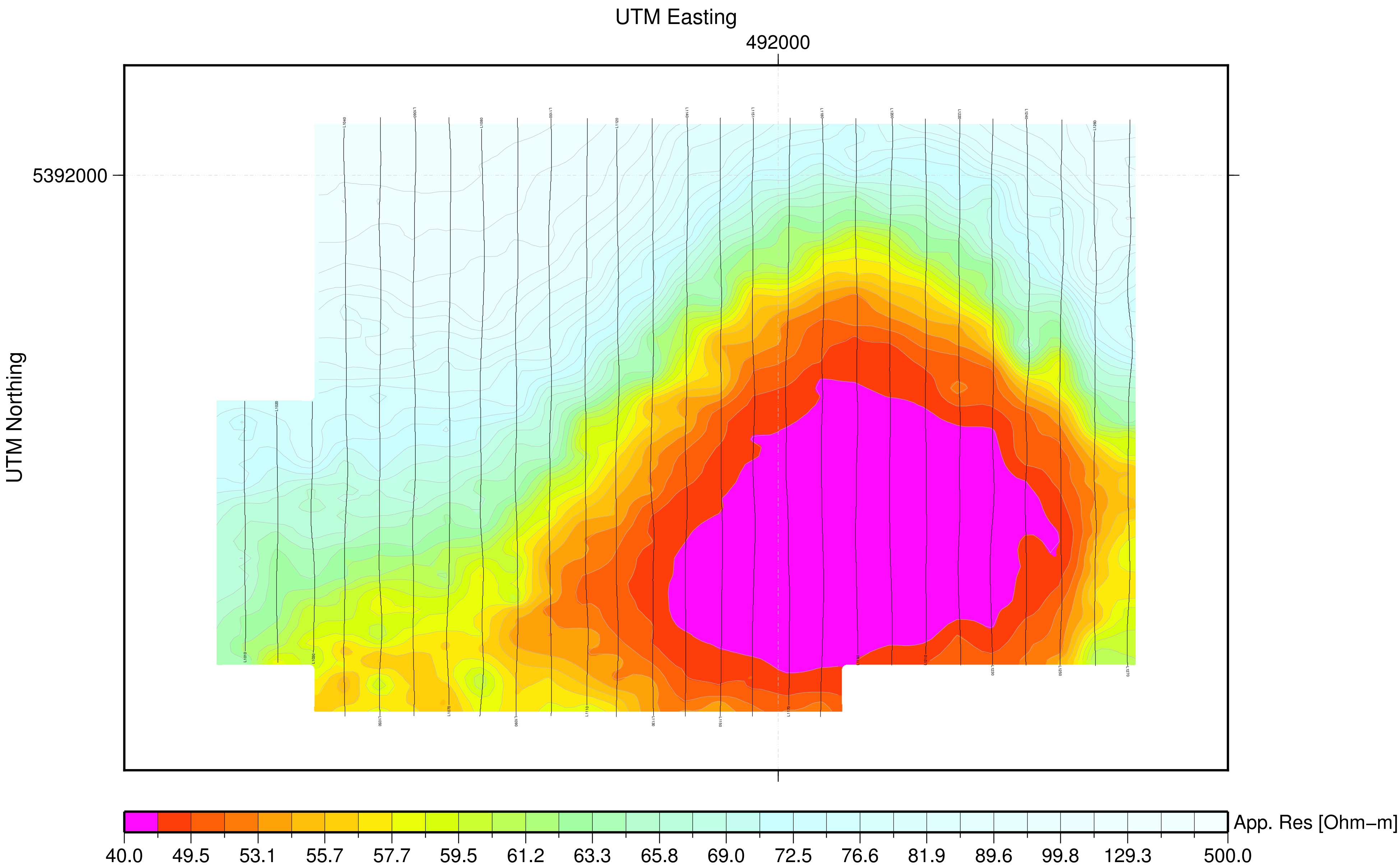


GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

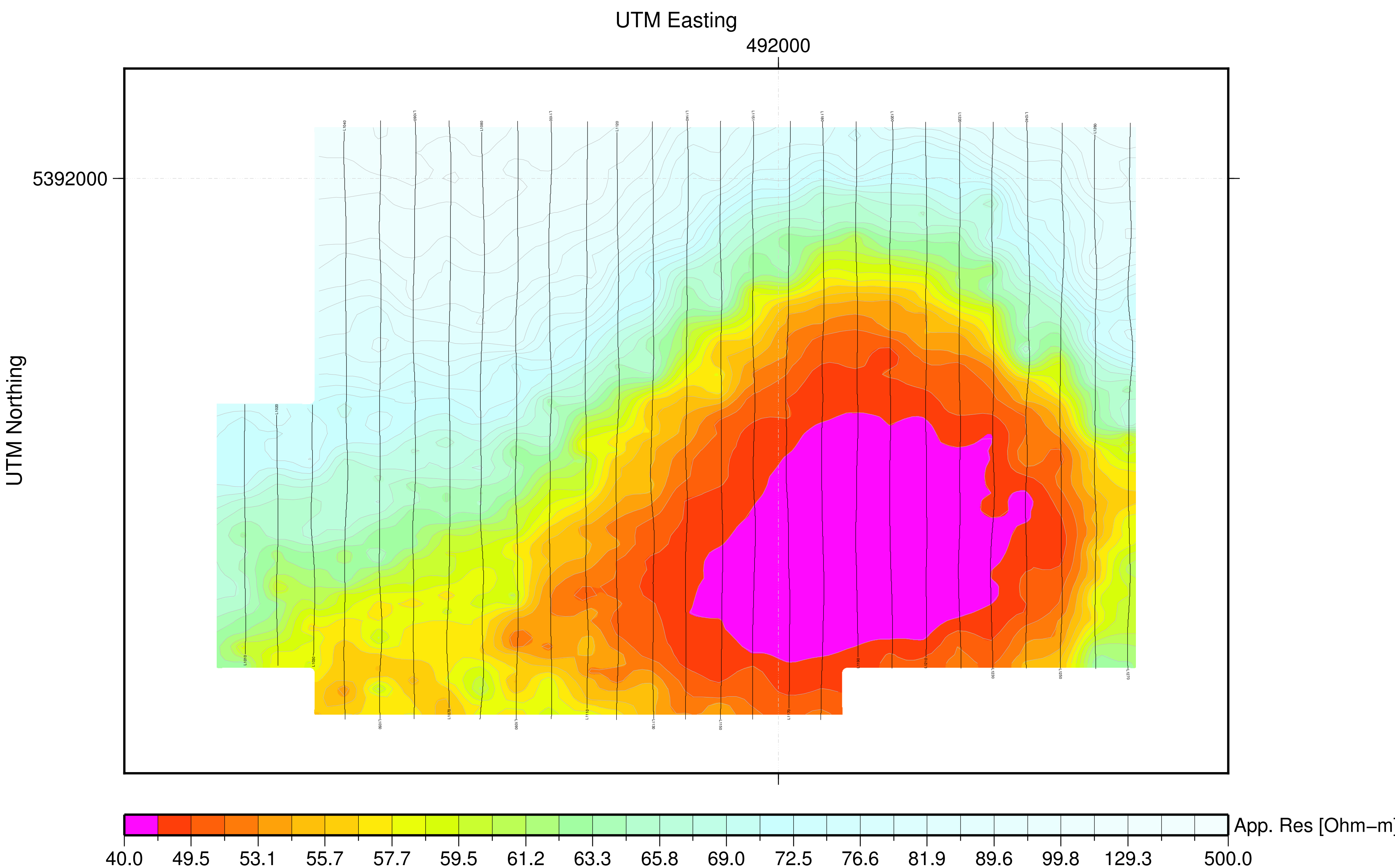
VTEM RDI: Resistivity Depth Slice at 225m of depth



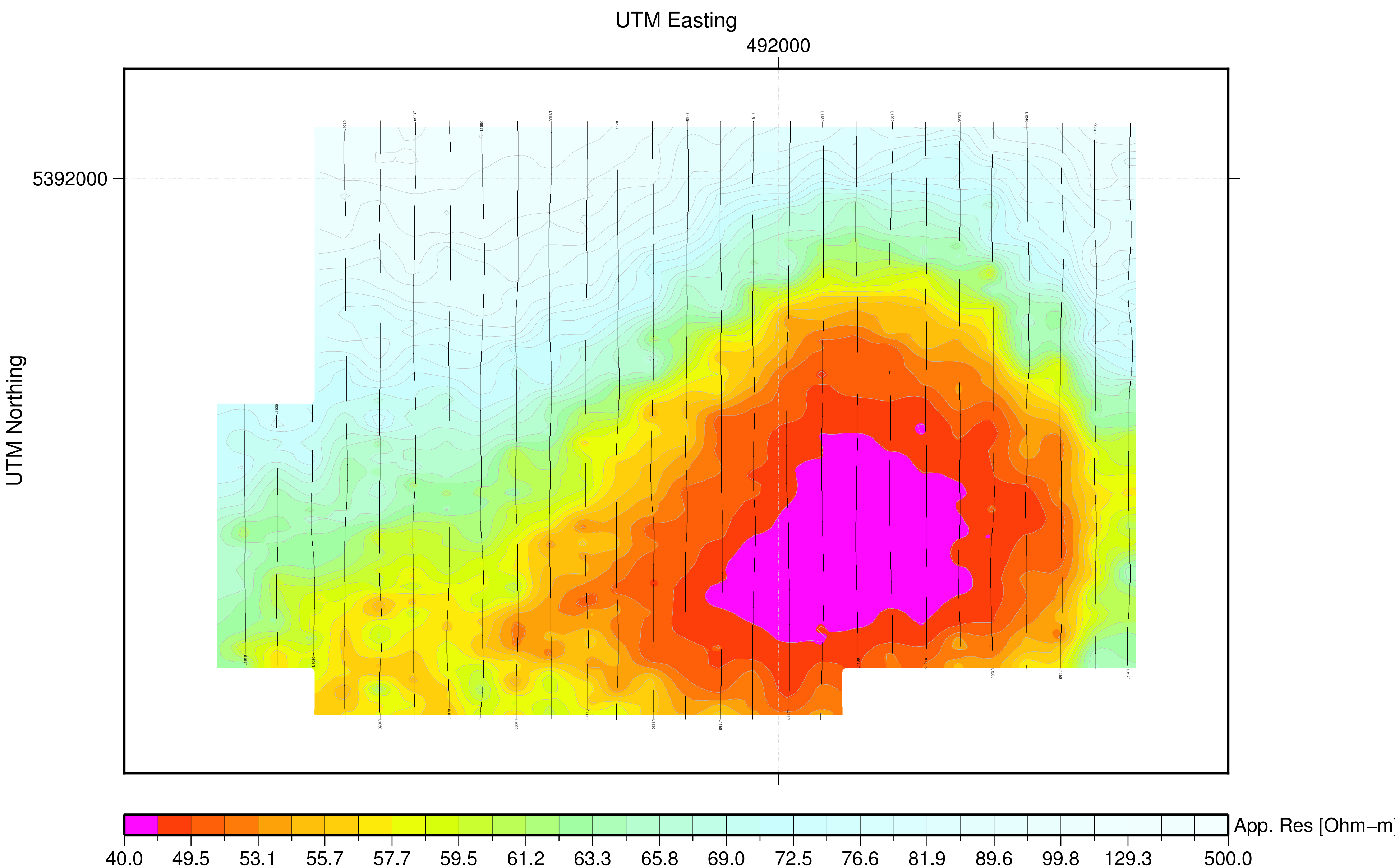
VTEM RDI: Resistivity Depth Slice at 250m of depth



VTEM RDI: Resistivity Depth Slice at 275m of depth

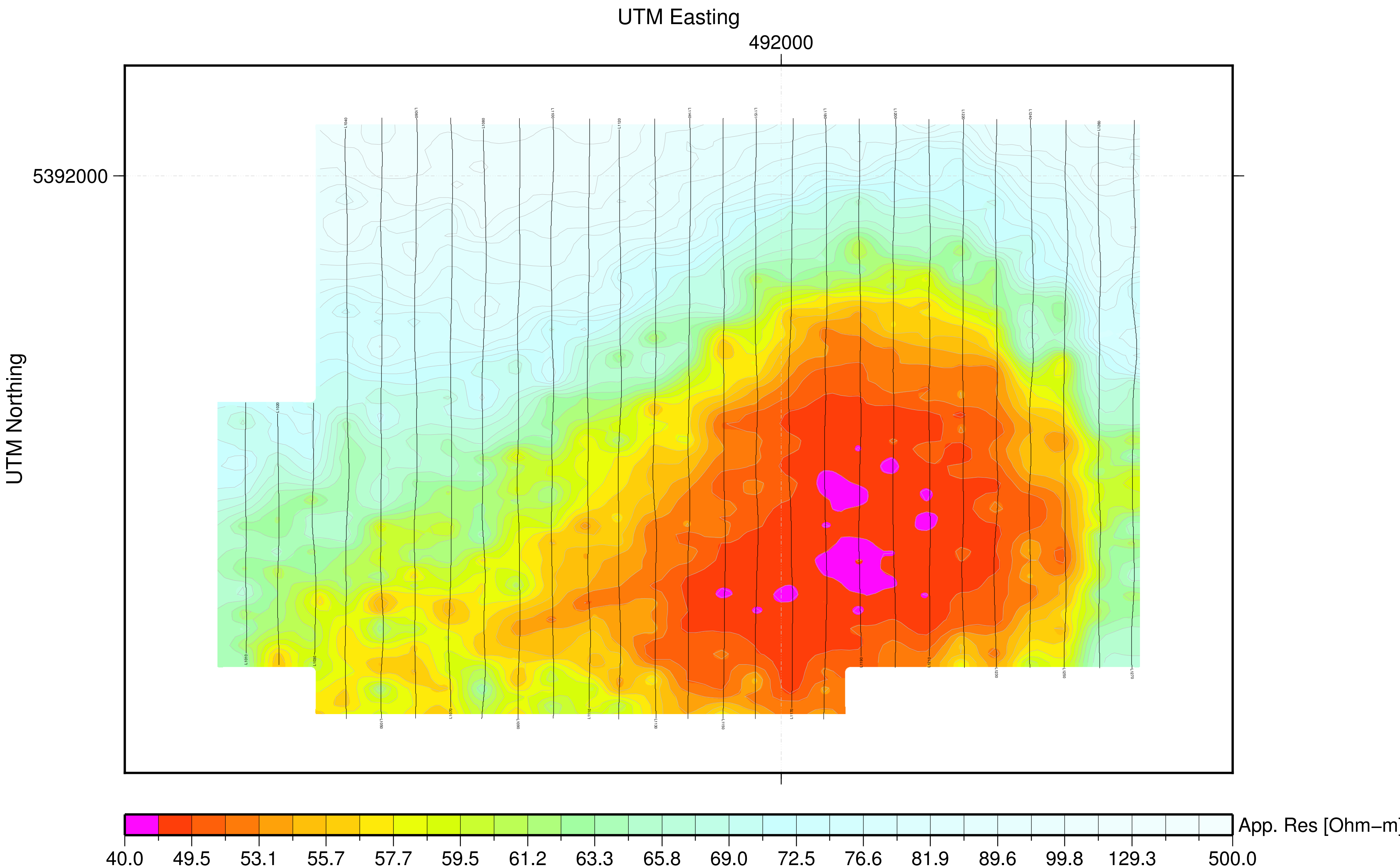


VTEM RDI: Resistivity Depth Slice at 300m of depth

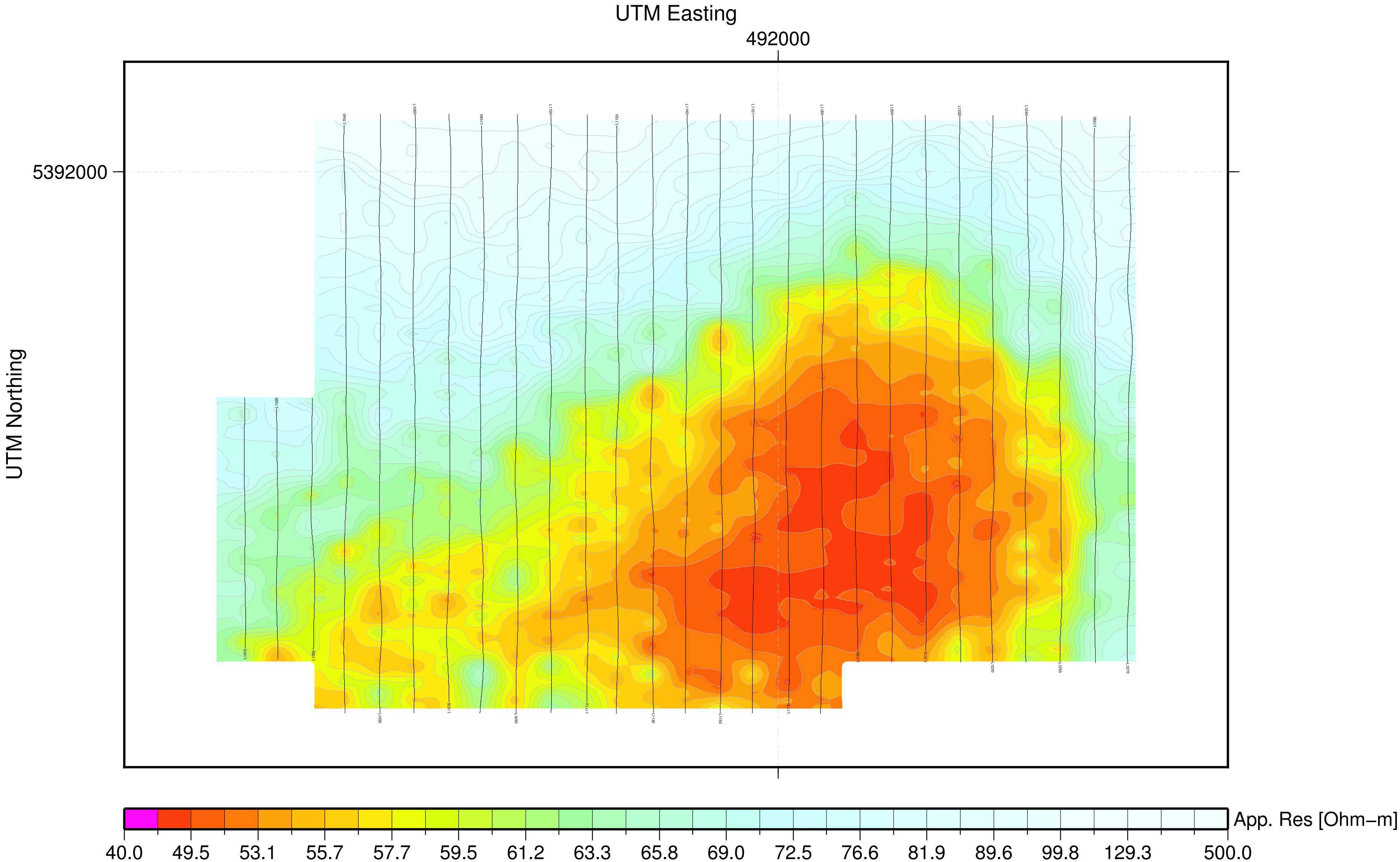


GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

VTEM RDI: Resistivity Depth Slice at 325m of depth

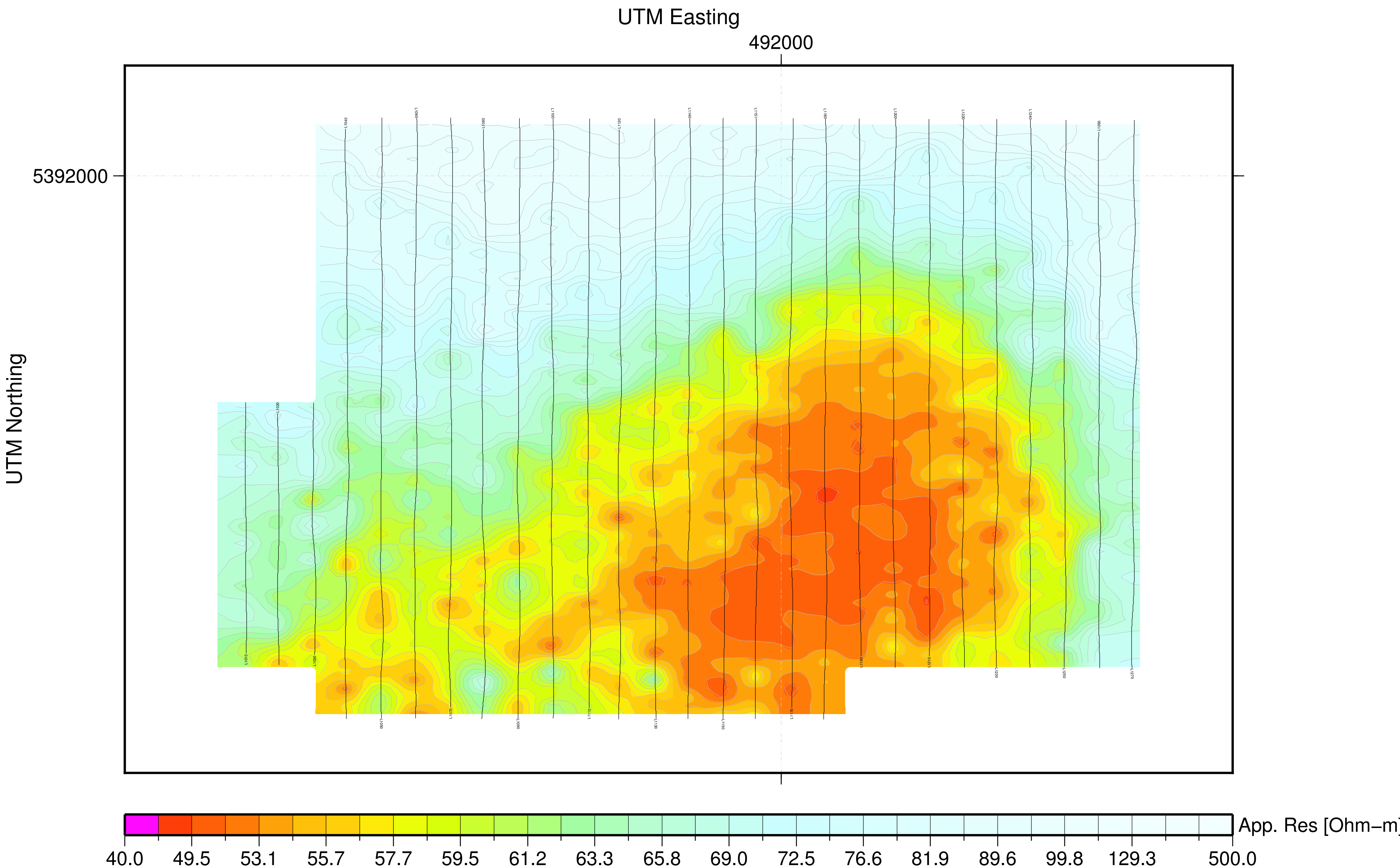


VTEM RDI: Resistivity Depth Slice at 350m of depth

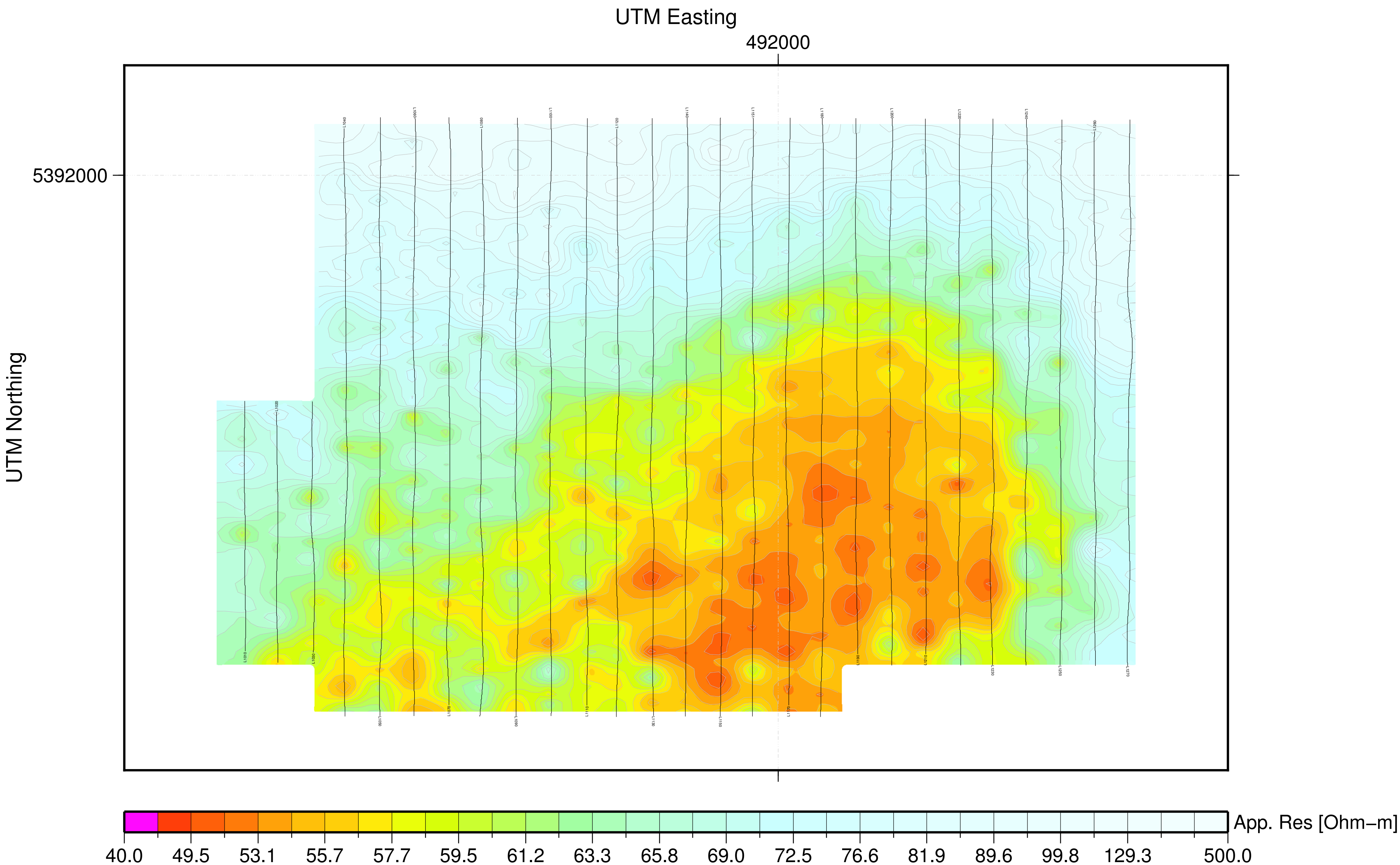


GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

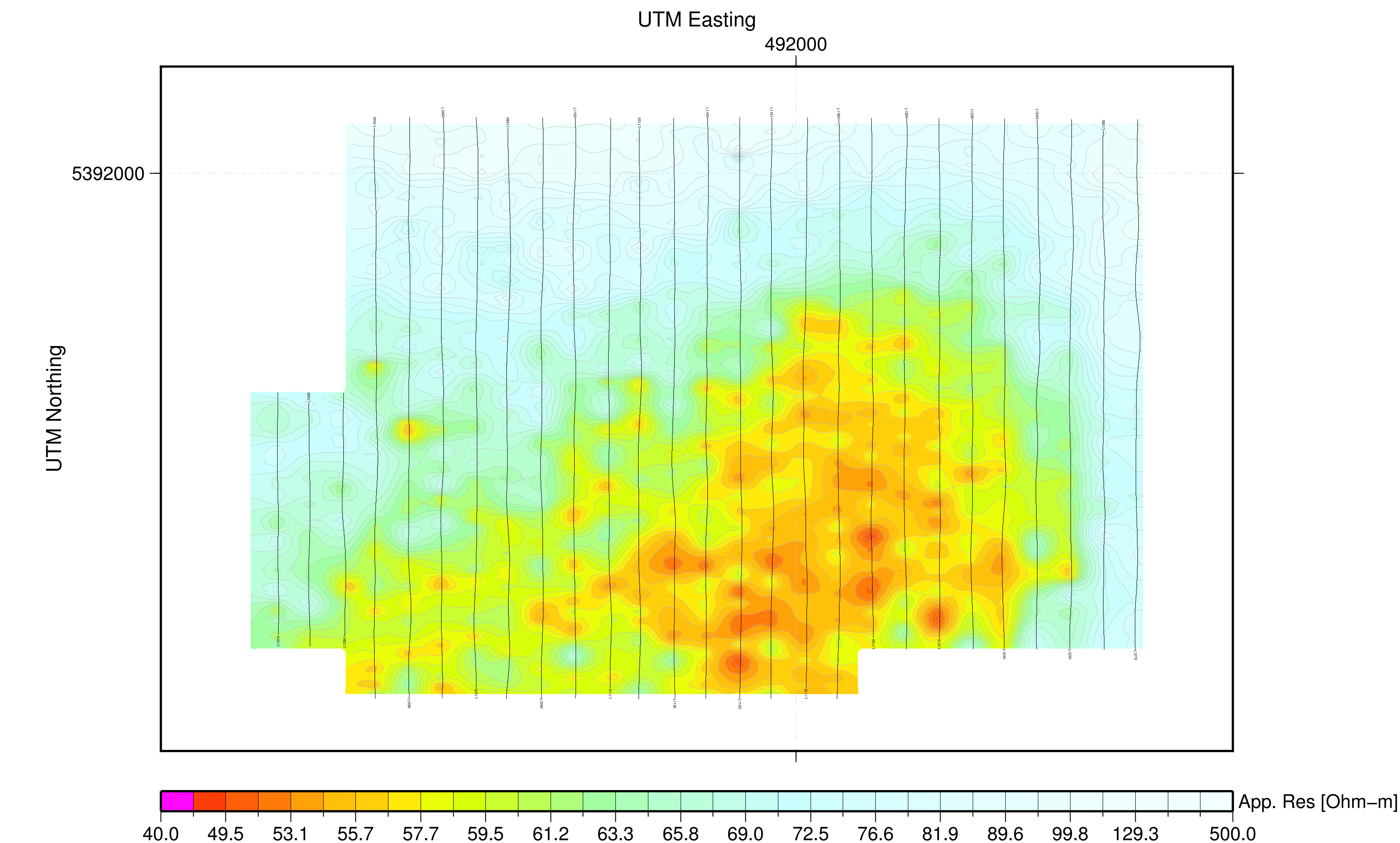
VTEM RDI: Resistivity Depth Slice at 375m of depth



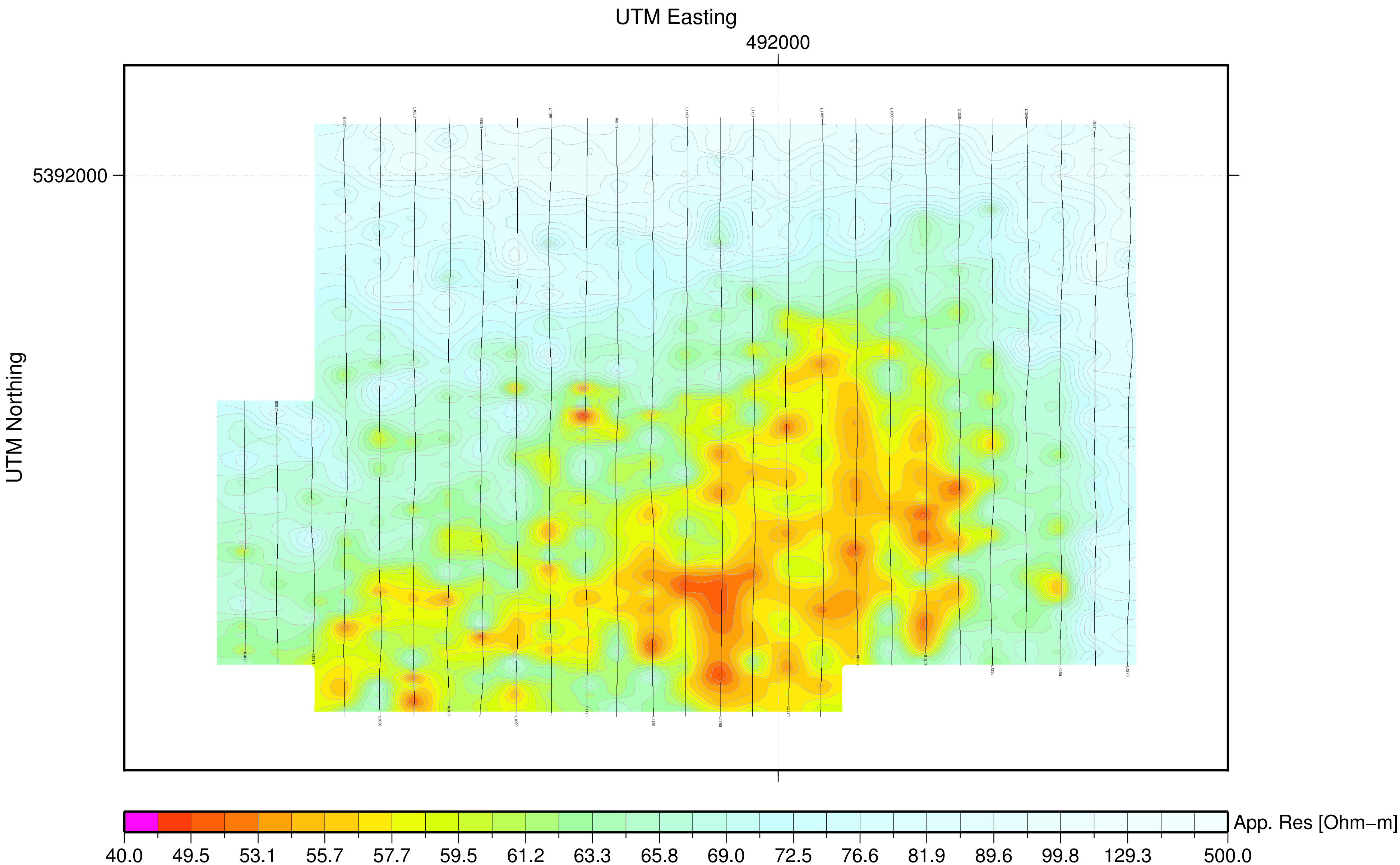
VTEM RDI: Resistivity Depth Slice at 400m of depth



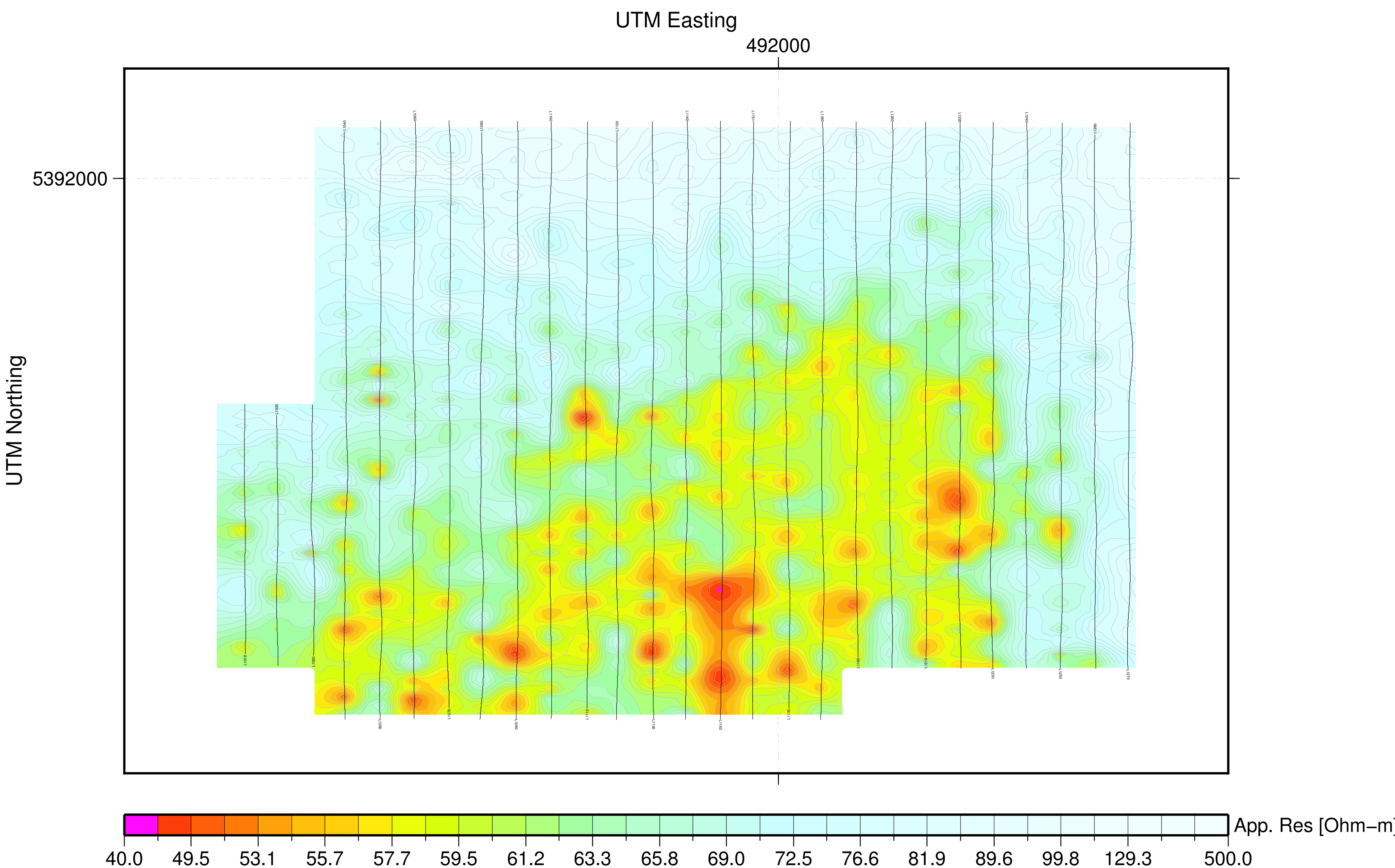
VTEM RDI: Resistivity Depth Slice at 425m of depth



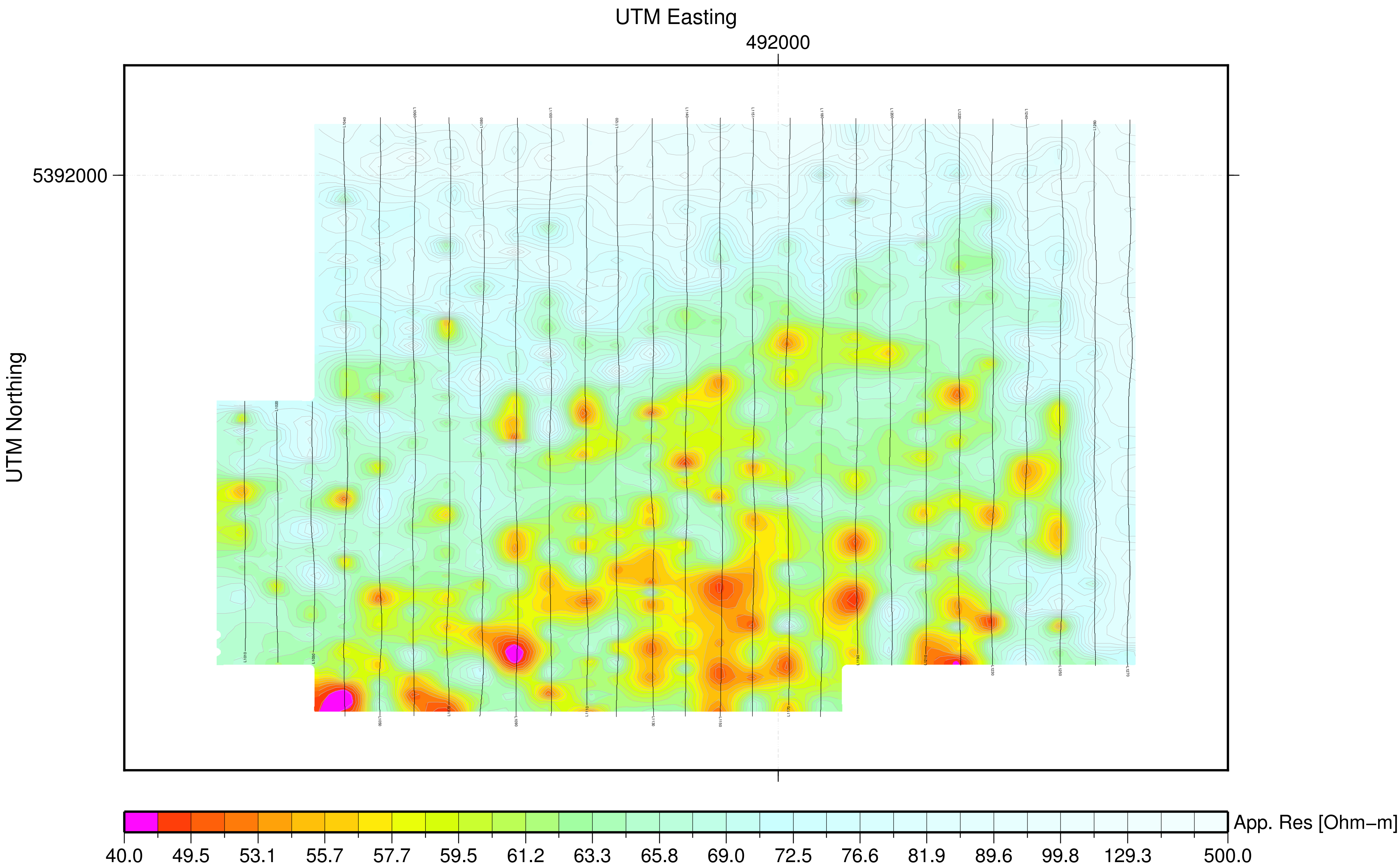
VTEM RDI: Resistivity Depth Slice at 450m of depth



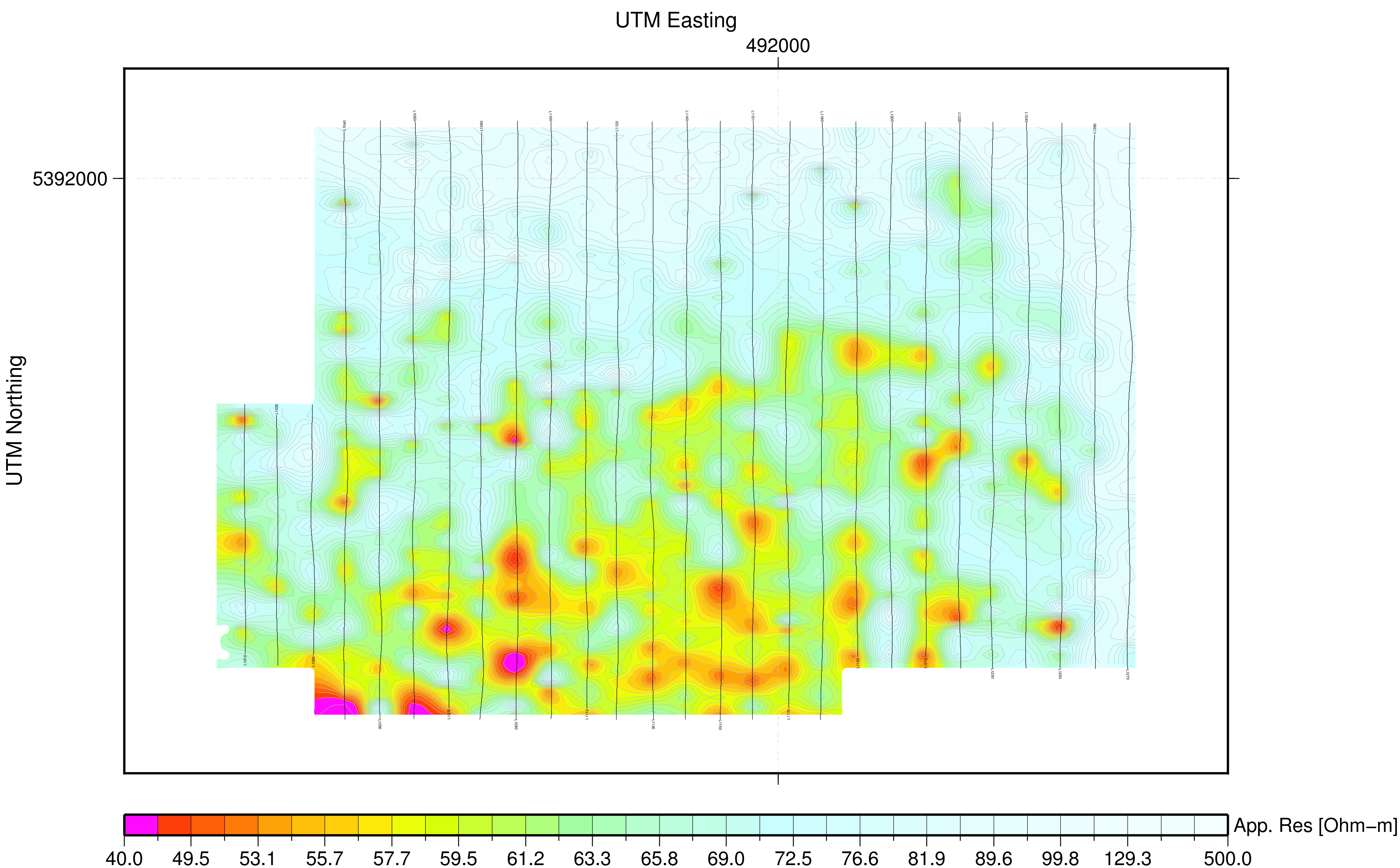
VTEM RDI: Resistivity Depth Slice at 475m of depth



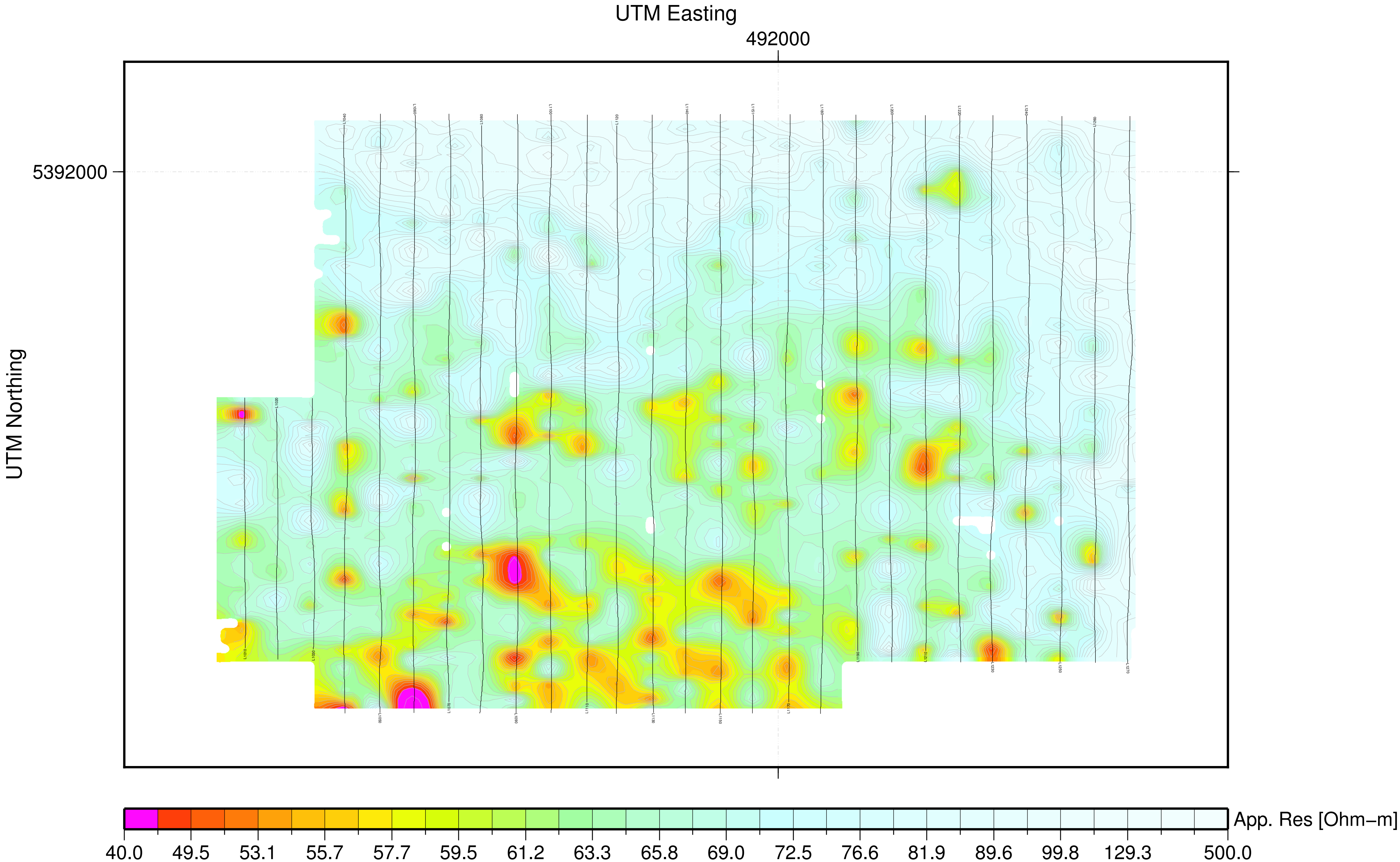
VTEM RDI: Resistivity Depth Slice at 500m of depth



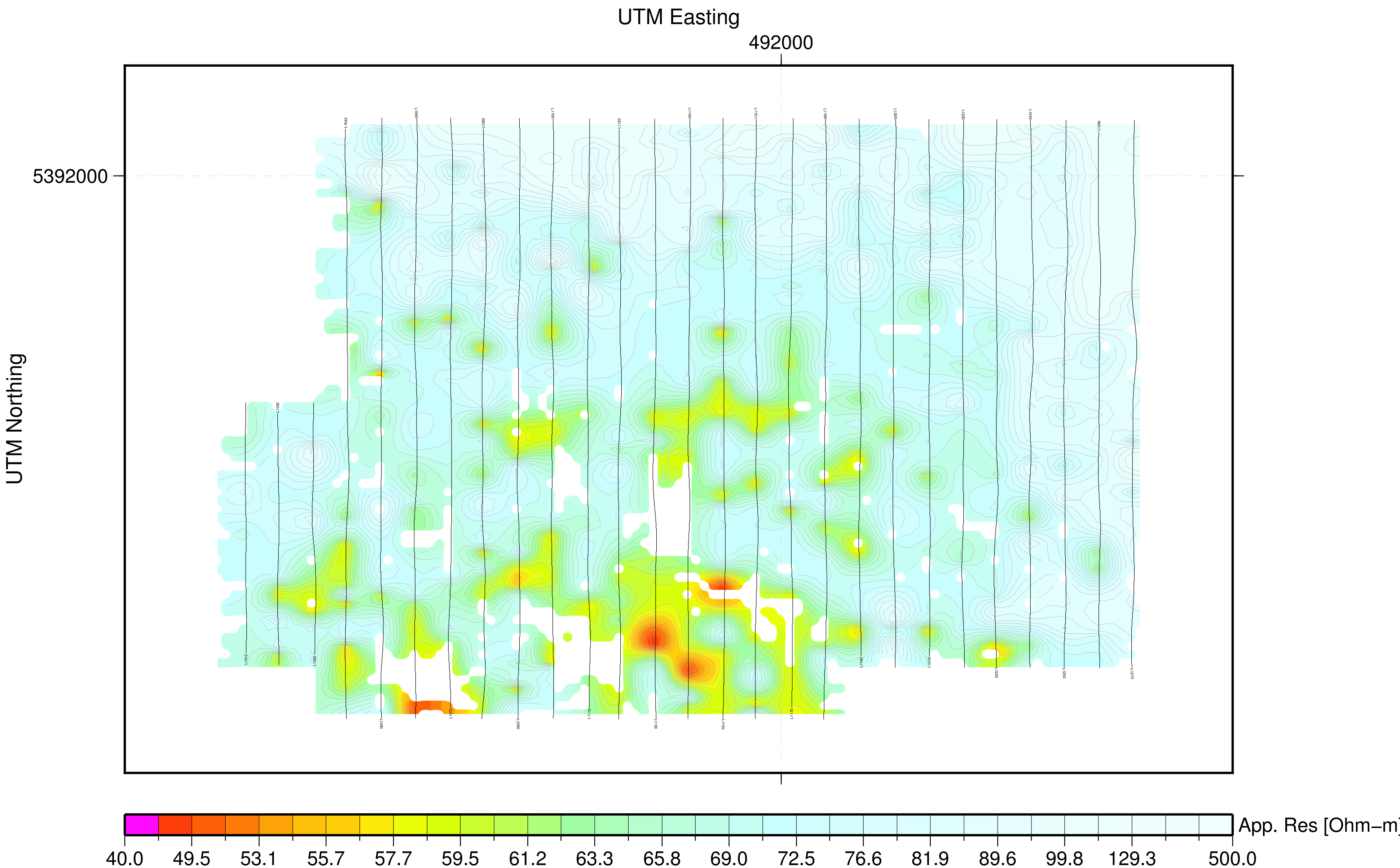
VTEM RDI: Resistivity Depth Slice at 525m of depth



VTEM RDI: Resistivity Depth Slice at 550m of depth



VTEM RDI: Resistivity Depth Slice at 575m of depth



VTEM RDI: Resistivity Depth Slice at 600m of depth