Ontario

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.

Report on the 2024 Airborne Geophysical Program, Sky Lake Project, Pickle Lake, Ontario

Patricia Mining Division

UTM NAD 83 (Zone 17) 577300 mE, 5482000 mN

NTS 52O07SE, 52O02NE, 52O08SW and 52O01NW

FOR

NewOrigin Gold

Suite 1601 – 110 Yonge Street

Toronto, Ontario

M5C 1T4

Robert Valliant, PhD.

August 13, 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

INTRODUCTION

This report details the results of the summer 2024 airborne geophysical survey covering a portion of the Sky Lake Property which is 100%-owned by NewOrigin Gold Corp. (“NewOrigin”) (previously Tri Origin Exploration). The survey was conducted by Geotech Limited and took place between June 30 and July 10, 2024. This report is being submitted to the Ministry of Energy, Northern Development and Mines (MENDM) for assessment credits.

Lodging and general logistics were carried out from Pickle Lake, Ontario. Aircraft and equipment were located at the Pickle Lake airport. Project planning and report preparation was conducted by NewOrigin staff during June, July and August, 2024.

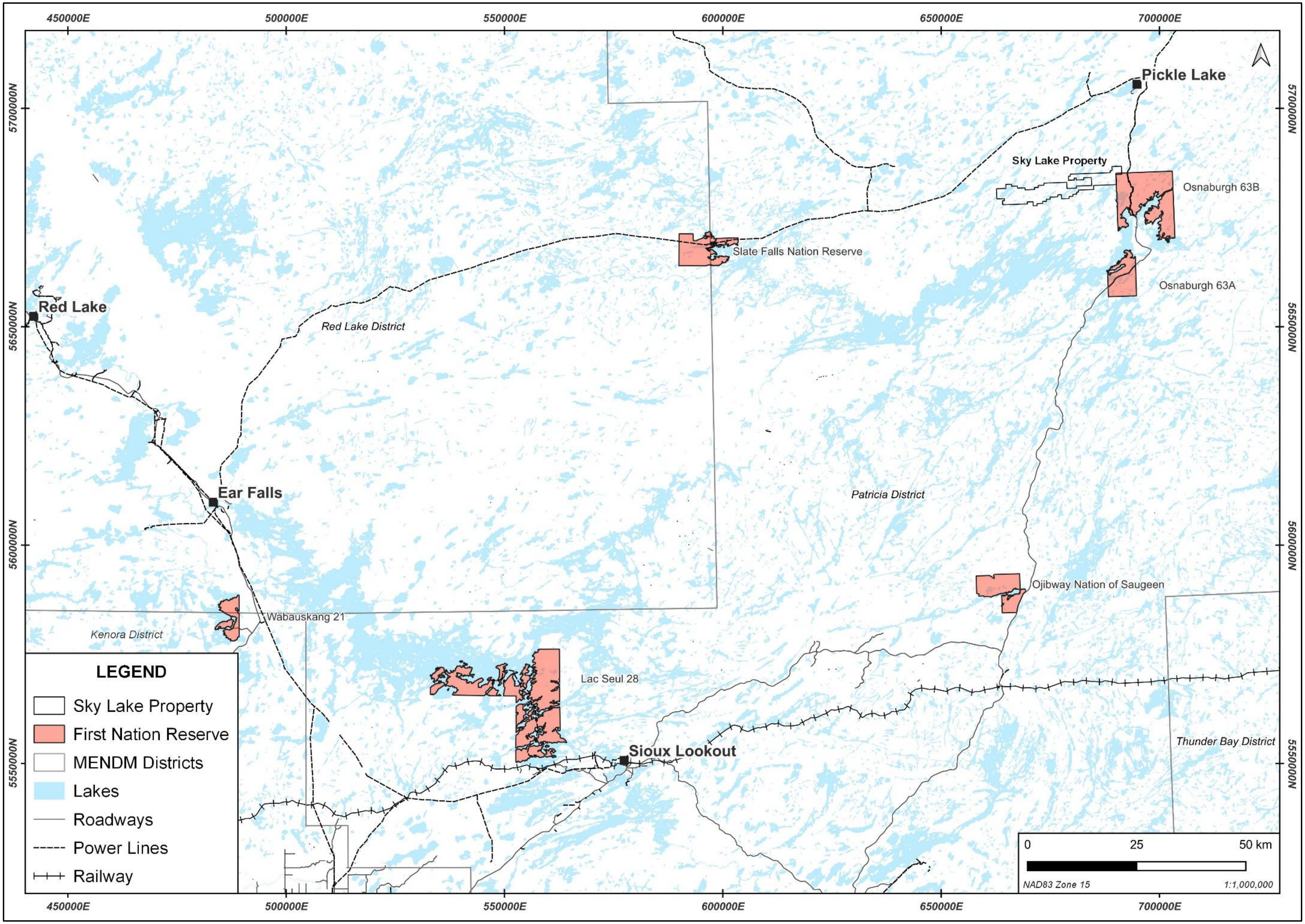
PROPERTY LOCATION, ACCESS & PHYSIOGRAPHY

NewOrigin’s Sky Lake property is located in the Patricia Mining Division of northwestern Ontario. The property is situated west of Highway 599, approximately 25 km south of Pickle Lake, Ontario, 284 km north of Ignace, Ontario and 516 km northwest of Thunder Bay, Ontario. The centre of the property is located at UTM NAD83 Zone 15 676,685 mE, 5,681,450 mN. Topographic map coverage for the area is provided by Canadian National Topographic system (‘NTS’) map sheets NTS 52O07SE, 52O02NE, 52O08SW and 52O01NW.

The property can be accessed year-round by helicopter or float plane. During late-spring and summer months, the property is also accessible by boat through waterways travelling from the eastern-most coast of Lake St. Joseph approximately 55 km to Matapesatakun Bay. Highway 599 is at the eastern boundary of the property and a winter trail suitable for transporting light equipment extends westward from the highway just north of the property boundary for approximately 8 kilometres.

Drainage at the centre part of the property is southward via Matapesatakun Creek from Bancroft Lake to Lake St. Joseph, 374 m above sea level. Maximum relief is in the order of 35 metres, with the highest elevations along southwest-trending drumlins distributed across the property. Most of the area is covered either by water (lakes, ponds, and streams) and overburden, typically low-lying swamps, muskeg, and boulder tills. Mature birch forest is sporadic and mostly associated with the well-drained soil of the drumlins. Overburden is generally less than 10 m in thickness. Outcrop is generally less than 1% of the area, and more common in the central portion of the property, between Bancroft Lake and Matapesatakun Bay.

Figure 1. Sky Lake Property Location



CLAIMS & OWNERSHIP

The Sky Lake property is comprised of 446 contiguous single cell mining claims (fig. 2) and a contiguous block of 28 patent claims and 1 mining license of occupation (fig. 3) known as the Koval patent claims. The total land package covers approximately 9,000 hectares ('ha'), equivalent to 90 square kilometres ('km^2'). All mining claims are currently in good legal standing, registered in the name of NewOrigin Gold Corp. (MLAS client # 203126). The company currently holds two active Exploration Permits over the centre of the property covering all patented claims and 203 single cell claims (PR-21-000340 & PR-21-000352).

A list of claims held by NewOrigin and claims covered by the recent airborne survey is included as Appendix A.

Figure 2. Single Cell Mining Claims

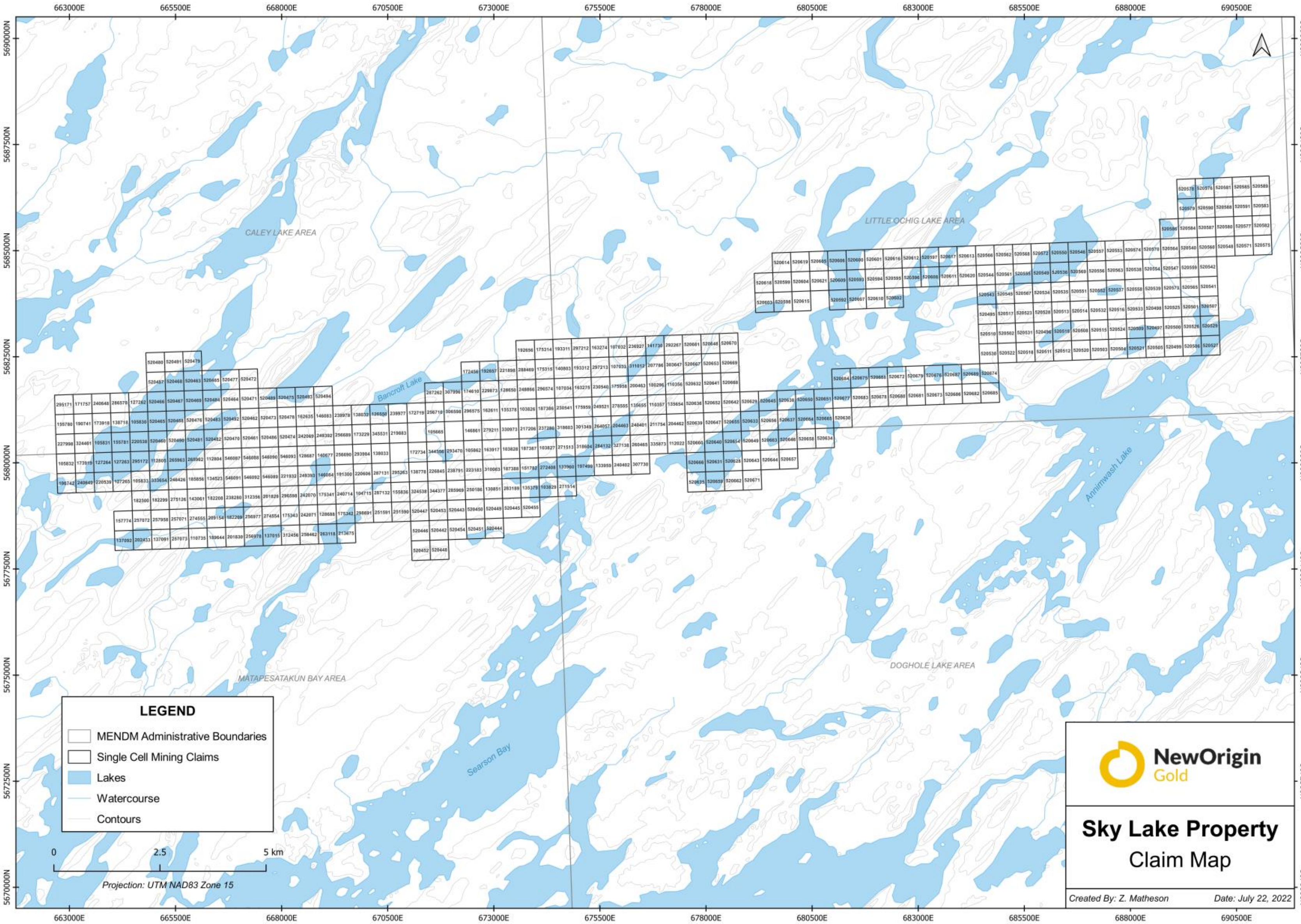
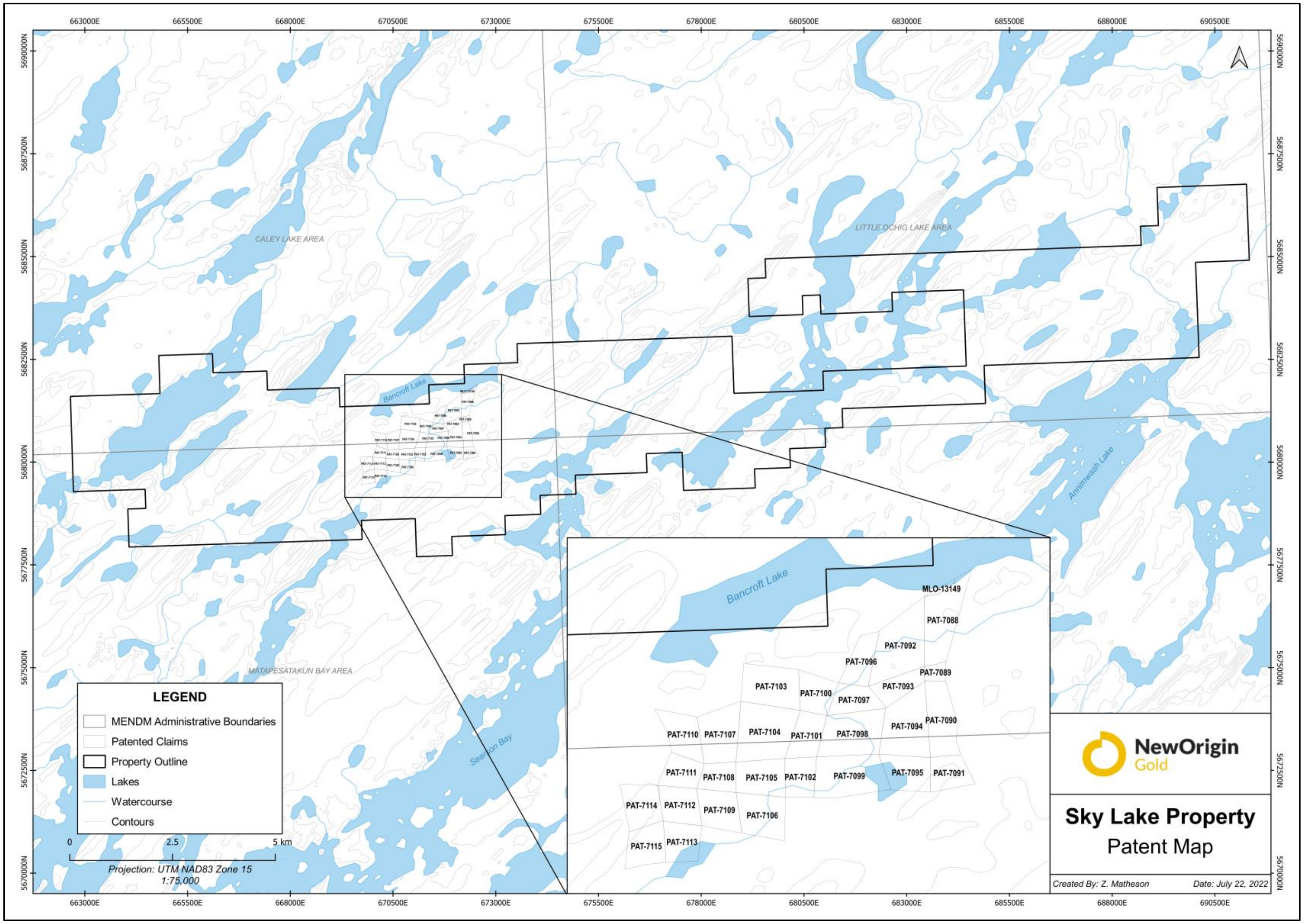


Figure 3: Patented Mining Claims (Koval Claim Group)



REGIONAL AND PROPERTY GEOLOGY

The Sky Lake Property is near the eastern-most margin of the Archean-age Meen-Dempster Greenstone Belt of the Uchi subprovince (Figure 4). As summarized by Hollings et al. (2000), Corfu & Stott (1991; 2011) and Young et al. (2006), the Uchi subprovince comprises anastomosing bands of Neoarchean age volcanic and sedimentary rocks intruded by felsic and mafic stocks, dikes and sills. A range of ages determined for the volcanic rocks across the subprovince suggest that most of the belts grew in an oceanic back-arc and subduction-related setting by southward accretion of crust onto an older paleocontinent to the north, referred to as the Northern Caribou Terrane (NCT). The NCT forms the core of the Sachigo subprovince, as well as portions of the Uchi subprovince which includes the Meen-Dempster and Pickle Lake greenstone belts which are considered to be the oldest greenstone assemblages in the Uchi subprovince (Young et al, 2006). Geochronologic ages for the assemblages range from at least 2.84 Ga along the northern margin of the belt to 2.74 Ga along the southern margin. Rocks in the region have been metamorphosed to greenschist facies with localized amphibolite facies rocks along the margins of younger granitic plutons. The stratigraphic section for the Meen-Dempster and Pickle Lake greenstone belts in the region around the Sky Lake property is comprised of three main tectonic assemblages. These include the 2.84 to 2.75 Ga Kaminiskag assemblage, the ~2.83 Ga Meen assemblage, and the ~2.74 Ga Confederation assemblage.

The Sky Lake property is underlain by an east-northeast trending, steeply dipping sequence of metavolcanic and metasedimentary rocks that are locally crosscut by narrow discontinuous feldspar porphyry dikes and granitic sills. A gabbroic stock has also been mapped in the north-central portion of the property. The local stratigraphic section at Sky Lake has been inferred to belong to the Confederation assemblage referenced above.

Three principal map units comprise the local stratigraphic sequence (Figure 5). The ‘Northern Mafic Volcanic Sequence’ (‘NMVS’) underlies the northern third of the property. It consists mainly of massive flows with some pillowed flows and tuffs and minor felsic volcanic rocks and oxide-sulphide-silicate facies iron formation. The latter has been mapped in the area east of the Koval patents, described as two parallel bands which converge along strike to the east (Jones & Adams, 1987). The central portion of the property is underlain by the ‘Central Volcanic-Sedimentary Sequence’ (‘CVSS’) comprising andesitic tuffs and volcaniclastic rocks enclosed by mafic flows and tuffs to the north and pillowed flows and pillow breccias to the south as well as minor intercalated clastic sedimentary rocks and dacitic volcanic units. Felsic volcanic rocks have been mapped in the southwestern area of the patented claims and massive mafic volcanic rocks are locally interlayered with the metasediments. The southern portion of the property, the ‘Southern Sedimentary Sequence’ (‘SSS’), is underlain by a sequence of fine clastic metasediments, mainly siltstone with lesser wacke and argillite.

The local structural framework for the property has not been thoroughly documented. Limited detailed structural information collected during past mapping and drilling campaigns is due to the extensive cover by glacial overburden and swampy areas which limit bedrock exposure. Based on field work conducted by NewOrigin and historic work by past operators at the Sky Lake property, lithologies are seen to be striking ENE-WSW and steeply south dipping with localized, small scale, isoclinal folding. Structural measurement across the property have been taken from surface during various mapping programs as well as bedding and schistosity measurements taken during previous drill programs. S_2 bedding parallel foliation is commonly observed at surface, and in places is seen to be crenulated. Lineations, where measured, plunge moderately, however the current data set available is variable. Shearing is commonly observed, specifically in moderately to strongly sericite altered felsic-intermediate volcanic rocks and metasediments within the CVSS.

ECONOMIC GEOLOGY AND PAST PRODUCTION

Historically, gold production in the Pickle Lake area has been from structurally-controlled vein-type deposits or sulphidic ores spatially associated with, or contained within, bands of Algoman (chert-magnetite) iron formation. The most important of these were the past producing Pickle Crow and Central Patricia mines (operated from 1935 to 1966 and 1934 to 1951, respectively) which collectively produced 2,068,020 ounces of gold from 4,966,820 tons of ore for an average grade of 0.416 ounces of gold per ton. The past producing Golden Patricia Mine of Barrick Gold Corp., located about 40 km west-northwest of the Sky Lake property within the Meen-Dempster greenstone belt, also produced 619,796 ounces of gold from 1,216,165 tonnes of milled ore (Ministry of Northern Development and Mines, MDI File MDI52O06SE00005). The gold mineralization at Golden Patricia was primarily associated with siliceous, sericitic and sulphidic rock and veins in close proximity to banded iron formation. The Dona Lake deposit mined by Placer Dome Ltd is located 20 kilometres northeast of Sky Lake in a similar geological setting. It operated from 1989 until 1994 and produced 246,500 ounces of gold from 939,237 tonnes of ore (Ministry of Northern Development and Mines, MDI File MDI52O08NE00010).

Ultramafic intrusive rocks of the Uchi Subprovince are also known to host copper-nickel mineralization. The past producing Thierry Mine, located 30 km north-northeast of the Sky Lake property, produced 113.6 million pounds of copper, 2.8 million pounds of nickel, 17,500 ounces of platinum, 47,000 ounces of palladium, 17,000 ounces of gold, and 900,000 ounces of silver from 5.8 million tons of ore between 1976 and 1982 (Ministry of Northern Development and Mines, MDI File MDI52O08NW00003).

The relationship between gold ores and sulphidic iron formation and base metal ores and sulphide-rich rock are justification for the use of both magnetic and electromagnetic surveying at the Sky Lake property.

Figure 4: Regional Geology, NW Ontario

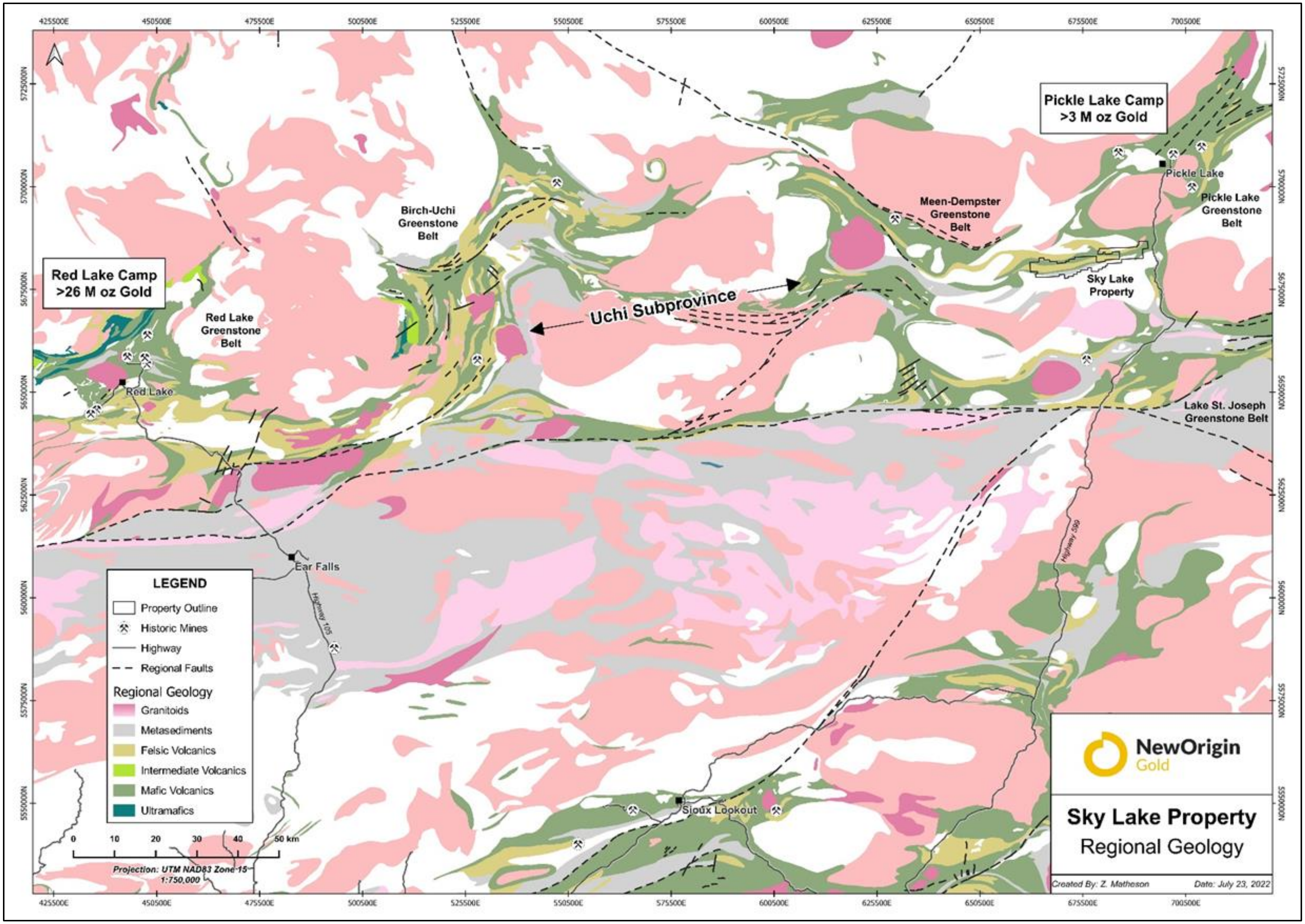
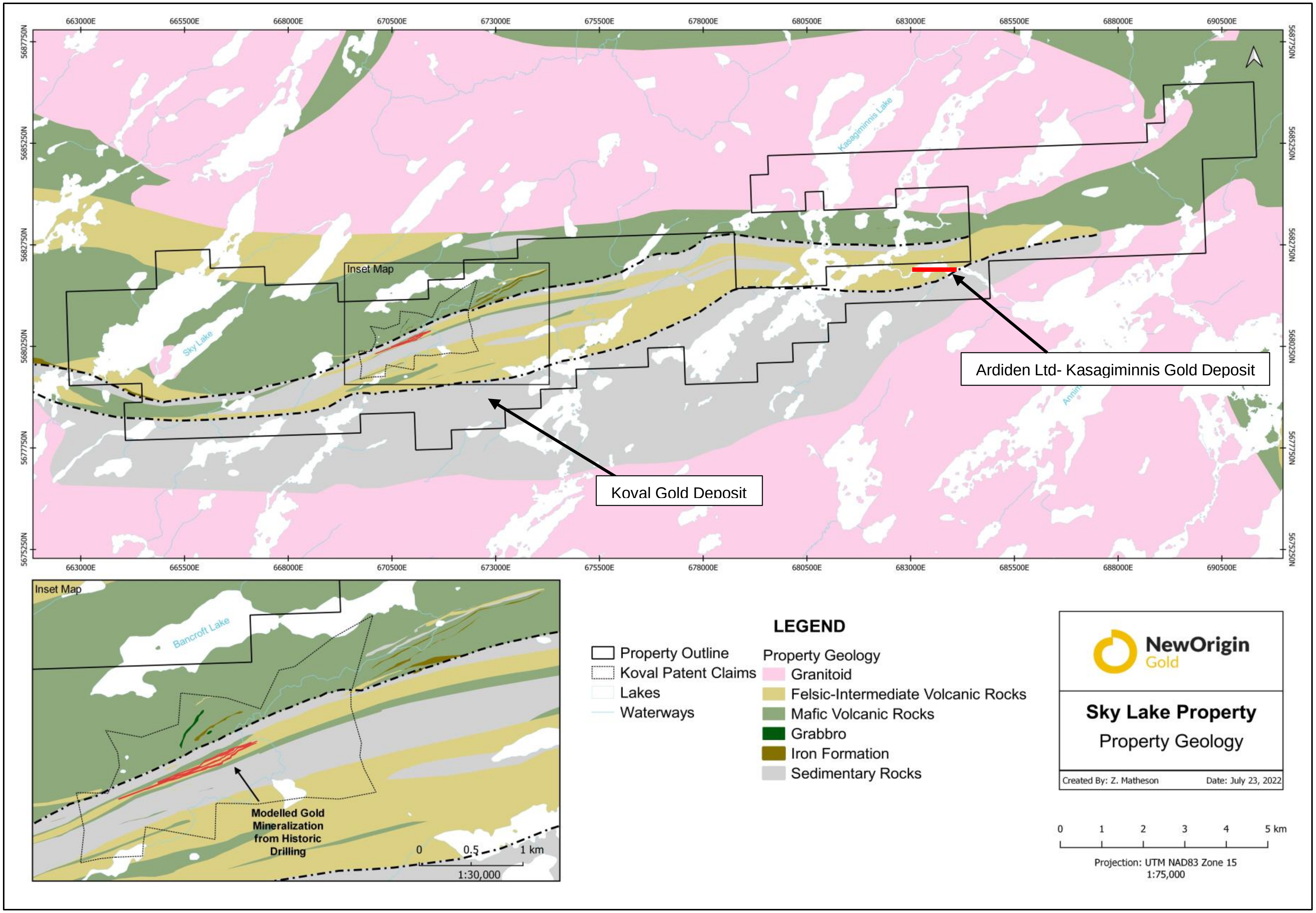


Figure 5: Property Geology Map



HISTORIC EXPLORATION ACTIVITIES

Exploration has been conducted sporadically by various companies on the Sky Lake property since gold was first discovered south of Bancroft Lake in 1953 by prospector Ben Ohman in the Koval area. This initiated a short-lived staking and exploration rush in the Meen-Dempster belt. Table 1 lists exploration programs conducted on and around the Koval discovery until 2009 when Tri Origin (now NewOrigin) staked the ground surrounding the Koval claims. With the exception of airborne geophysical surveys completed in 1975 and 2004 and the airborne survey completed by Tri Origin in 2009 over the western portion of its property, all of the exploration programs conducted at Sky Lake have involved some combination of traditional early-stage ground-based field methods which have included:

- Reconnaissance prospecting
- Line cutting of local reference grids
- Geologic mapping
- Geochemical sampling of outcrops, hand dug trenches and glacial till
- Geophysical surveys: mostly magnetics and VLF and minor Induced Polarization- (‘IP’)
- Diamond drilling

Table 1: Exploration History of the Sky Lake Project

Year	Owner / Optionor	Activities	No. Drill Holes	Total Meters (Feet)
1953	B. Ohman / Koval Family	• Initial discovery of surface gold showing and staking of 45 mining claims by prospector Ben Ohman and Koval family		
1954	B. Ohman	• Prospector Ben Ohman discovers additional gold showings along trend of Koval discovery zone ESE of Bancroft Lake.		
1953 – 1973	Hasaga Gold Mines	• Hasaga negotiates purchase option with B. Ohman and Kovals, stakes additional 63 claims surrounding optioned ground • Surface prospecting, line cutting, trenching, chip and channel sampling, geologic mapping – 16 small trenches • Diamond drilling • Operations suspended at the end of 1954 • 28 of original 45 Koval claims surveyed and patented in 1960 • Hasaga GM amalgamated into Long Lac Mines in 1973	88	6,389 m (20,962 ft)
1973	UMEX	• Diamond drilling	1	113 m (371 ft)
1974 – 1978	Long Lac Mines	• 1974 Ground magnetics survey & geological mapping • 1975 Induced Polarization (IP) survey & geological mapping • 1977 Diamond drilling	13	1,541 m (5,057 ft)
1982	493217 Ontario Ltd.	• VLF EM geophysical survey • Limited surface trenching		
1983 – 1984	Moss Resources Ltd.	• Ground magnetics and VLF EM surveys • Induced Polarization (IP) survey • Geologic mapping, trenching and sampling • Humus geochemical sampling • Glacial till mapping • Diamond drilling	20	1,523 m (4,996 ft)
1984 – 1985	Golden Maverick Resources	• Geological mapping; rock, soil and humus sampling		

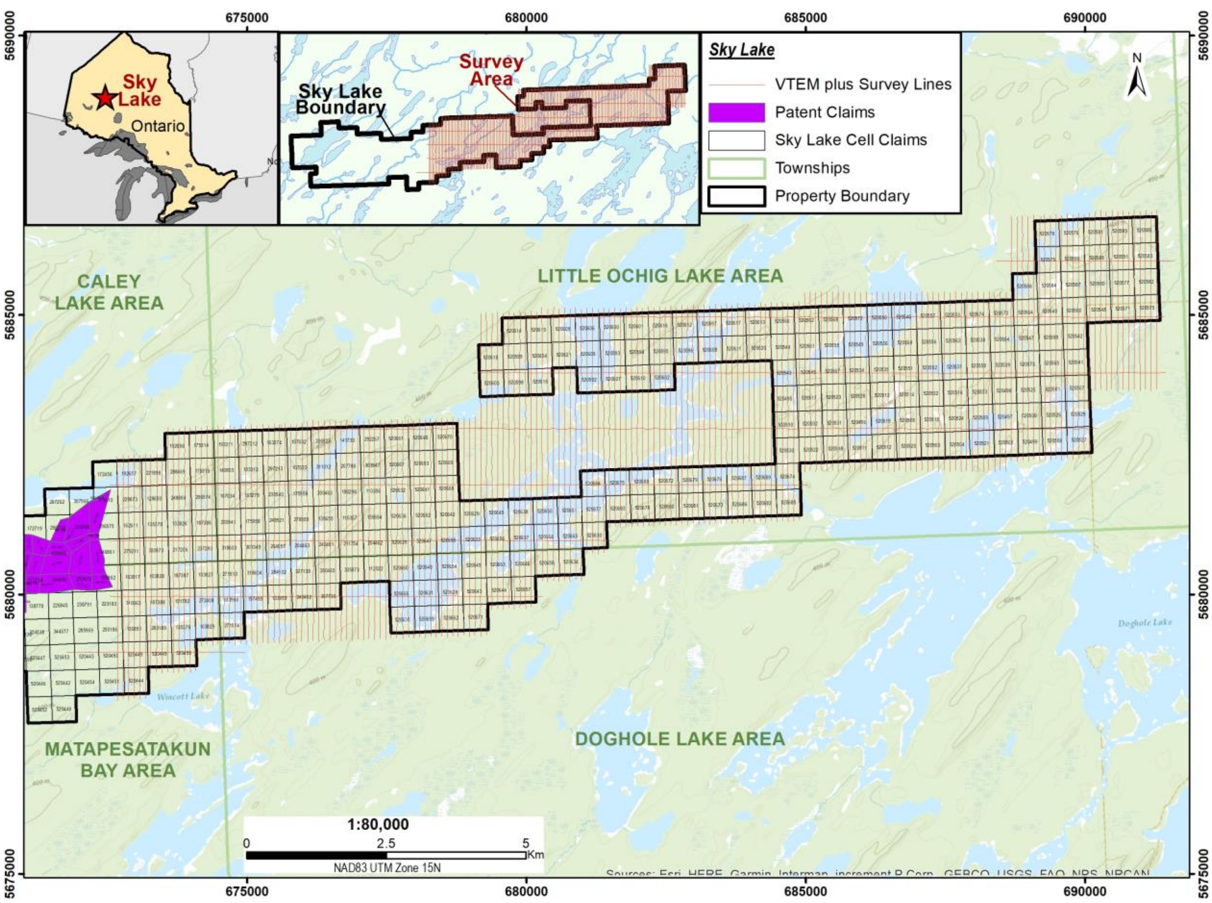
Table 1: Exploration History of the Sky Lake Project				
1985-1986	Golden Terrace Resources	• Diamond drilling	18	3,607 m (11,834 ft)
1986 – 1987	Power Explorations	• Diamond drilling	30	2,889 m (9,478 ft)
1987	669977 Ontario Ltd.	• Geological mapping, prospecting and soil sampling		
1987	LAC Minerals Ltd.	• Geological Mapping and rock sampling • Line cutting and IP surveying • Diamond drilling	24	5,225 m (17,143 ft)
1988	Golden Terrace Resources	• Diamond drilling	2	122 m (400 ft)
1988 – 1990	Bond Gold	• Geological mapping & sampling • Ground magnetics and HLEM surveys • Diamond drilling	6	509 m (1,670 ft)
1995-1996	Barrick Gold	• Barrick acquires LAC Minerals Ltd. • Barrick retains Koval patents and drops unpatented claims • Limited trench sampling		
1996	Moss Resources	• Moss options Koval claims from Barrick Gold • Diamond drilling	8	790 m (2,592 ft)
2004	Terex Resources McVicar Resources	• Helicopter borne Electromagnetic survey • Aeromagnetic survey		
2009 - Present	Tri Origin / NewOrigin	• 2009 Aeroquest flew a helicopter-borne AeroTEM over the western half of the current property boundaries • 2010 Line cutting, geochemical surveying (humus & soil), prospecting and reconnaissance. • 2011 Line cutting, geochemical surveying (soil and humus), prospecting and geological mapping. An IP survey and ground magnetics survey was completed on portions of the cut grid in 2011. • 2012 Geochemical surveys (soil and humus), prospecting and geological mapping. Seven diamond drill holes were completed to test IP anomalies. • 2015 Line cutting, geochemical surveying (soil and humus), prospecting, geological mapping and IP surveying. • 2016 Koval patent claims were optioned from Barrick Gold and included in the Sky Lake Property. • 2017 Line cutting, prospecting and geological mapping was completed on the newly acquired Koval claims. • 2019 “Deep looking” Induced Polarization focusing on Koval Claims. • 2022 Soil Geochemistry and prospecting east of Koval patent claims • 2023 NI 43-101 report on the Sky Lake property	7	1,180.2 m
2018-2023	Ardiden Limited	• Ardiden’s Kasagiminnis claims located within the east-central part of NewOrigin’s Sky Lake property • Airborne geophysical survey • 2018 to 2021 Diamond drilling programs. • 2019 Resource of 790,000 tonnes grading 4.3 grams per tonne for 110,000 ounces of gold reported at Kasagiminnis deposit (JORC compliant)		

SUMMARY OF WORK COMPLETED

NewOrigin has compiled and reviewed all previous exploration data conducted at its Sky Lake property. The company recognized that there was a lack of geophysical information over the eastern half of its current land holdings. The company previously completed a detailed airborne magnetic and electromagnetic survey over the Koval patent claims and its property holdings west of the patents during 2009. Property east of the patent claims was acquired after completion of the 2009 survey. The subsequent discovery of gold east of the patent claims and delineation of resources by Ardiden Limited (Ardiden public documents, 2018 to 2023) and results form a soil geochemistry survey conducted by NewOrigin during 2022 eastward along trend from the Koval claims prompted the need for property-wide geophysical coverage.

A magnetic and electromagnetic survey outline was prepared and subsequently contracted to Geotech Limited of Aurora, Ontario. Between June 30th and July 10th, 2024, a "VTEM" airborne survey which totaled 809 line kilometres of data collection was conducted. The North-South traverse lines were 100m apart, and the East-West tie lines were 1000m apart.

Figure 6 - Flight line location plan



Survey progress was as follows;

Summary:

A 768 line-km grid was originally planned on the sky lake property, however a 809.0 line-km grid was required in order to complete the survey program over the property.

Standby (4 days)

Jul 02, 03, 04, 07

Completion:

10-Jul-24: Demob from site.

Flight Logs:

09-Jul-24: 68 km flown. One production flight completed. Flight path completed.

08-Jul-24: 217 km flown. Two production flights completed.

07-Jul-24: 85 km flown. One production flight completed. Limited production due to thunderstorm, strong winds in afternoon.

06-Jul-24: 207 km flown. Two production flights completed. AME arrived onsite.

05-Jul-24: 191 km flown. Two production flights completed.

04-Jul-24: Recon flight completed. No production flights possible due to low ceilings all day.

03-Jul-24: No recon flight or production flights possible due to rain, low ceilings all day. Crewmember arrived onsite.

02-Jul-24: No recon flight or production flights possible due to rain, low ceilings all day.

Mobilization:

01-Jul-24: Helicopter, VTEM loop arrived onsite. Local logistics; base stations set up and sampled.

30-Jun-24: Crew, equipment arrived onsite in Pickle Lake, ON. Helicopter unable to ferry to Pickle Lake due to weather.

All flights and equipment preparation were staged from the Pickle Lake airport. Detailed survey parameters, logistics, survey data and results are included in the Geotech report on Helicopter-Borne Versatile Time Domain Electromagnetic and Horizontal Magnetic Gradiometer Geophysical Survey attached to this report as Appendix B.

DISCUSSION OF RESULTS

The airborne survey detected and traced several distinct, east and east-northeast trending magnetic anomalies along the northern edge of the survey area. These magnetic trends extend from the westernmost boundary of the survey area to the easternmost end of NewOrigin's property. They are believed to be associated with ferruginous rock and magnetite/sulphide-bearing iron formation. Historical diamond drilling during the 1980's east of the Koval patent claims intersected anomalous gold values within these magnetic trends (Jones and Adams, 1987). The Kasagiminnis gold deposit located on claims held by Ardiden Ltd which are partially surrounded by NewOrigin claims (fig. 5) is also associated with distinctive magnetic features along these trends. Elsewhere, the majority of these magnetic features have not been prospected and no detailed geological maps are available for the area.

The survey also detected both discrete (short strike length) and extensive (long strike length) electromagnetic anomalies. Except for a few of the discrete anomalies at the northwest part of the survey area investigated by Power Corp and Moss Resources in the 1980's the cause of these newly detected anomalies remains unknown. Government assessment files do not contain reports on detailed ground exploration in the vicinity of these anomalies. Additional work is required to better understand and prioritize these anomalies for further investigation.

The Geotech survey report which describes the results of the airborne survey is attached to this report as Appendix B. The location, description and a more detailed discussion of the magnetic and electromagnetic responses are contained in the Geotech report.

CONCLUSIONS AND RECOMMENDATIONS

The survey was successful in providing detailed coverage of the eastern portion of NewOrigin's property. The quality of data was very good and no significant hinderances from overburden cover or man-made utilities were encountered.

New electromagnetic anomalies and magnetic responses were detected. The historical coincidence of gold and base metal occurrences with both magnetic and electromagnetic anomalies in the Pickle Lake region clearly indicates that additional work to determine the source of these anomalies is warranted.

Based on these conclusions the following recommendations are made:

- Integrate the current "VTEM" magnetic and electromagnetic data with results from the 2009 "AeroTem" survey covering the western portion of NewOrigin's property.
- Detailed modelling of electromagnetic anomalies should be conducted to determine which anomalies best represent responses expected from buried sulphide deposits.
- Complete modelling and inversions of magnetic data to aid in geological mapping and to select targets possibly associated with gold mineralization.
- Complete detailed mapping, rock and soil sampling at the site of airborne electromagnetic anomalies.
- Identify the bedrock source of magnetic anomalies through prospecting and mapping.

Completion of these tasks will allow prioritization of targets and follow-up diamond drilling.

REFERENCES

Ardiden Limited 2018 to 2023. Corporate website www.ardiden.com.au/project/kasagiminnis-gold-deposit and various news releases filed with the Australian Securities Exchange.

Canam, P., Guest, N., Wert, M., 2010. Report on the 2010 geology mapping program, Sky Lake Property, Pickle Lake, Ontario. Ontario Assessment File 20000005590.

Corfu, F., Stott, G., 2011, U-Pb geochronology of the central Uchi subprovince, Superior Province: Canadian Journal of Earth Sciences, v. 30(6), p. 1176-1196.

Hewton, M., Valliant, W., 2015. Report on the 2015 Mineral Soil and Humus Geochemical Program, Sky Lake Property, Pickle Lake, Ontario. Ontario Assessment File 20000014670.

Hollings, P., Stott, G., Wyman, D., 2000, Trace element geochemistry of the Meen-Dempster greenstone belt, Uchi subprovince, Superior Province, Canada: back-arc development on the margins of an Archean protocontinent. Canadian Journal of Earth Sciences, v. 37(7), p. 1021-1038.

Jones, L.M., Adams, J.H., 1987, Report of diamond drilling on the Ben Lake property, Bancroft Lake area, Kenora Mining Division (Patricia Portion), Ontario for Power Explorations Inc.: NewOrigin company files, 196 p.

Kendle, F., 2012. Report on the 2012 Geochemical Program, Sky Lake Property, Pickle Lake, Ontario. Ontario Assessment File 20000008028.

Kendle, F., Hewton, M., 2016. Report on Major Oxide and Trace Element Rock Geochemistry, Sky Lake Property, Pickle Lake, Ontario. Ontario Assessment File 20000019445.

Kendle, F, Ruhl, M, Patrizio, N, Valliant, M, 2017, Report on the 2017 Field Work Koval Option, Sky Lake Property, Pickle Lake, Ontario. Ontario Assessment File 20000015477.

Matheson, Z., 2022, Report on the 2022 Geochemical Surveying and Reconnaissance Program, Sky Lake Project, Pickle Lake, Ontario. Ontario Assessment File 20000020974.

Petersen, M. and Matheson, Z., 2023, NI 43-101 Technical Report on the Sky Lake Gold Project, Patricia Mining Division, Ontario, Canada. NewOrigin Gold Corp- SEDAR filing.

Stott, G., 1996, The geology and tectonic history of the Central Uchi Subprovince: Ontario Geologic Survey, Open File Report 5952, 178 p.

Stott, G., Corfu, F., 1991, Superior province, Uchi subprovince in Geology of Ontario, eds: P.C. Thurston, Williams, H.R., Sutcliffe, R.H., Stott, G.M.: Ontario Geological Survey, Spec. Vol. 4, Pt 1, ch. 6, p. 145 – 238.

Young, M.D., McNicoll, V., Helmstaedt, H., Skulski, T., Percival, J.A., 2006, Pickle Lake revisited: New structural, geochronological and geochemical constraints on greenstone belt assembly, western Superior Province: Canada, Canadian Journal of Earth Sciences, vol. 43, p. 821 – 846.

STATEMENT OF QUALIFICATIONS

I, **Robert Valliant** of 4173 Concession Road 11, Ramara, Ontario:

1. I am a director of and consultant to NewOrigin Gold Corp.
2. I graduated with a Bachelor of Science in Geology (BSc. Hons Geology) from University of Waterloo in 1977 and a PhD in economic geology from the University of Western Ontario in 1981.
3. I have worked as a geologist for more than 45 years.
4. I am responsible for the technical report titled "Report on the 2024 Sky Lake Airborne Geophysical Program, Pickle Lake, Ontario".
5. My knowledge of the property as described herein was obtained by site visits during the 1980's and 2010 and 2020's and literature review.
6. I have no direct interest, nor do I expect to receive any interest in the mining claims that comprise the Sky Lake Property.
7. I am not aware of any material fact or material change with respect to the subject matter of this Assessment Report that is not reflected in the Assessment Report, the omission to disclose which makes the report misleading.
8. I consent to the filing of this Assessment Report with the Ontario government or any pertinent organization if deemed necessary such as any stock exchange and other regulatory authority and inclusive of any publication by same for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.
9. Dated this 13th day of August, 2024.

Robert Valliant

APPENDIX A

Claim List

Sky Lake Property Claims Covered by Geophysics

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
1	103826	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
2	103827	SCMC	Active	2022-10-11	20.23	MATAPESATAKUN BAY AREA, LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA, CALEY LAKE AREA
3	103828	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA, CALEY LAKE AREA
4	103829	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA, DOGHOLE LAKE AREA
5	105862	SCMC	Active	2023-01-09	11.76	MATAPESATAKUN BAY AREA, CALEY LAKE AREA
6	107032	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
7	107033	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
8	107034	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
9	110356	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
10	110357	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
11	112022	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
12	128650	SCMC	Active	2023-01-09	20.22	CALEY LAKE AREA
13	130851	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
14	133959	SCMC	Active	2022-10-11	20.23	DOGHOLE LAKE AREA
15	133960	SCMC	Active	2022-10-11	20.23	DOGHOLE LAKE AREA
16	135378	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
17	135379	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
18	135654	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
19	135655	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
20	140803	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
21	141730	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
22	146861	SCMC	Active	2023-01-09	14.64	CALEY LAKE AREA
23	151782	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
24	162611	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
25	163274	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
26	163275	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
27	163917	SCMC	Active	2023-01-09	20.22	MATAPESATAKUN BAY AREA, CALEY LAKE AREA
28	172456	SCMC	Active	2023-01-09	20.22	CALEY LAKE AREA
29	174610	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
30	175314	SCMC	Active	2022-10-11	12.46	LITTLE OCHIG LAKE AREA, CALEY LAKE AREA
31	175315	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA, CALEY LAKE AREA
32	175958	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
33	175959	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
34	180296	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
35	187386	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, CALEY LAKE AREA
36	187387	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA, CALEY LAKE AREA
37	187388	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
38	192656	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
39	192657	SCMC	Active	2023-01-09	20.22	CALEY LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
40	193311	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
41	193312	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
42	197499	SCMC	Active	2022-10-11	20.22	DOGHOLE LAKE AREA
43	200463	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
44	204462	SCMC	Active	2022-10-11	20.24	LITTLE OCHIG LAKE AREA
45	204463	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
46	207786	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
47	211754	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
48	217206	SCMC	Active	2023-01-09	20.24	CALEY LAKE AREA
49	221898	SCMC	Active	2023-01-09	2.73	CALEY LAKE AREA
50	223183	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
51	229873	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
52	230540	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
53	230541	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
54	236927	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
55	237280	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA, CALEY LAKE AREA
56	240401	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
57	240402	SCMC	Active	2022-10-11	20.23	DOGHOLE LAKE AREA
58	248866	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
59	249521	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
60	250186	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
61	260465	SCMC	Active	2022-10-11	20.24	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
62	264057	SCMC	Active	2022-10-11	20.24	LITTLE OCHIG LAKE AREA
63	271513	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
64	271514	SCMC	Active	2022-10-11	20.23	DOGHOLE LAKE AREA
65	272408	SCMC	Active	2022-10-11	20.23	MATAPESATAKUN BAY AREA, DOGHOLE LAKE AREA
66	278555	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
67	279211	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
68	283189	SCMC	Active	2023-01-09	20.23	MATAPESATAKUN BAY AREA
69	284132	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
70	288469	SCMC	Active	2023-01-09	20.22	CALEY LAKE AREA
71	292267	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
72	296574	SCMC	Active	2022-10-11	7.56	LITTLE OCHIG LAKE AREA, CALEY LAKE AREA
73	296575	SCMC	Active	2023-01-09	20.22	CALEY LAKE AREA
74	297212	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
75	297213	SCMC	Active	2022-10-11	20.22	LITTLE OCHIG LAKE AREA
76	301349	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
77	303647	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
78	307730	SCMC	Active	2022-10-11	0.12	DOGHOLE LAKE AREA
79	310063	SCMC	Active	2023-01-09	15.16	MATAPESATAKUN BAY AREA
80	311012	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA
81	318603	SCMC	Active	2022-10-11	20.24	LITTLE OCHIG LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
82	318604	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
83	327138	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
84	330973	SCMC	Active	2023-01-09	20.23	CALEY LAKE AREA
85	335873	SCMC	Active	2022-10-11	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
86	520444	SCMC	Active	2022-05-03	20.23	MATAPESATAKUN BAY AREA
87	520445	SCMC	Active	2022-05-03	20.24	MATAPESATAKUN BAY AREA
88	520449	SCMC	Active	2022-05-03	20.24	MATAPESATAKUN BAY AREA
89	520450	SCMC	Active	2022-05-03	20.23	MATAPESATAKUN BAY AREA
90	520451	SCMC	Active	2022-05-03	20.23	MATAPESATAKUN BAY AREA
91	520455	SCMC	Active	2022-05-03	20.24	MATAPESATAKUN BAY AREA
92	520495	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
93	520496	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
94	520497	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
95	520498	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
96	520499	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
97	520500	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
98	520501	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
99	520502	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
100	520503	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
101	520504	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
102	520505	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
103	520506	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
104	520507	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
105	520508	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
106	520509	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
107	520510	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
108	520511	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
109	520512	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
110	520513	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
111	520514	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
112	520515	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
113	520516	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
114	520517	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
115	520518	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
116	520519	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
117	520520	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
118	520521	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
119	520522	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
120	520523	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
121	520524	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
122	520525	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
123	520526	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
124	520527	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
125	520528	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
126	520529	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
127	520530	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
128	520531	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
129	520532	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
130	520533	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
131	520534	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
132	520535	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
133	520536	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
134	520537	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
135	520538	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
136	520539	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
137	520540	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
138	520541	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
139	520542	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
140	520543	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
141	520544	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
142	520545	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
143	520546	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
144	520547	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
145	520548	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
146	520549	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
147	520550	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
148	520551	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
149	520552	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
150	520553	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
151	520554	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
152	520555	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
153	520556	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
154	520557	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
155	520558	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
156	520559	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
157	520560	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
158	520561	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
159	520562	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
160	520563	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
161	520564	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
162	520565	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
163	520566	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
164	520567	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
165	520568	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
166	520569	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
167	520570	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
168	520571	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
169	520572	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
170	520573	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
171	520574	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
172	520575	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
173	520576	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
174	520577	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
175	520578	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
176	520579	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
177	520580	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
178	520581	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
179	520582	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
180	520583	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
181	520584	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
182	520585	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
183	520586	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
184	520587	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
185	520588	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
186	520589	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
187	520590	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
188	520591	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
189	520592	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
190	520593	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
191	520594	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
192	520595	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
193	520596	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
194	520597	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
195	520598	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
196	520599	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
197	520600	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
198	520601	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
199	520602	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
200	520603	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
201	520604	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
202	520605	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
203	520606	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
204	520607	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
205	520608	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
206	520609	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
207	520610	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
208	520611	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
209	520612	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
210	520613	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
211	520614	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
212	520615	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
213	520616	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
214	520617	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
215	520618	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
216	520619	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
217	520620	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
218	520621	SCMC	Active	2022-05-03	20.21	LITTLE OCHIG LAKE AREA
219	520628	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
220	520629	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
221	520630	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
222	520631	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
223	520632	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
224	520633	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
225	520634	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
226	520635	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
227	520636	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
228	520637	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
229	520638	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
230	520639	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
231	520640	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
232	520641	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
233	520642	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
234	520643	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
235	520644	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
236	520645	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
237	520646	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
238	520647	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
239	520648	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
240	520649	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
241	520650	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
242	520651	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
243	520652	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
244	520653	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
245	520654	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
246	520655	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
247	520656	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
248	520657	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
249	520658	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
250	520659	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
251	520660	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
252	520661	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
253	520662	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA

Count	Tenure ID	Title Type	Tenure Status	Anniversary Date	Area (ha)	Township
254	520663	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA, DOGHOLE LAKE AREA
255	520664	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
256	520665	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
257	520666	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
258	520667	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
259	520668	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
260	520669	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
261	520670	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
262	520671	SCMC	Active	2022-05-03	20.23	DOGHOLE LAKE AREA
263	520672	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
264	520673	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
265	520674	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
266	520675	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
267	520676	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
268	520677	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
269	520678	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
270	520679	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
271	520680	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
272	520681	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
273	520682	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
274	520683	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
275	520684	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
276	520685	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
277	520686	SCMC	Active	2022-05-03	20.23	LITTLE OCHIG LAKE AREA
278	520687	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
279	520688	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA
280	520689	SCMC	Active	2022-05-03	20.22	LITTLE OCHIG LAKE AREA

APPENDIX B

Geotech VTEM Report

VTEM™ Plus

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

PROJECT:	SKY LAKE PROJECT
LOCATION:	PICKLE LAKE, ONTARIO
FOR:	NEWORIGIN GOLD CORP.
SURVEY FLOWN:	JUNE-JULY 2024
PROJECT:	GL240151

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

SKY LAKE PROJECT
Pickle Lake, Ontario

During June 30th to July 10th, 2024, Geotech Ltd. carried out a helicopter-borne geophysical survey for NewOrigin Gold Corp. over the Sky Lake Project near Pickle Lake, Ontario.

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 809 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 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 Components,
- B-Field Z Component Channel grid,
- dB/dt Z Component Channel grid,
- dB/dt X Component Fraser Filtered Channel grid,
- Total Magnetic Intensity (TMI),
- Calculated Vertical Gradient (CVG) of Total Magnetic Intensity (TMI),
- Magnetic Total Horizontal Gradient (TotHG),
- Magnetic Tilt-Angle Derivative (TiltDrv),
- Calculated Time Constant (Tau) with Calculated Magnetic Vertical Derivative contours,
- Power Line Monitor (PLM),
- Resistivity Depth Images (RDI) sections and depth slices are presented (pdf format).

Digital data includes 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 for NewOrigin Gold Corp. over the Sky Lake Project situated near Pickle Lake, Ontario (Figure 1).

Bob Valliant represented NewOrigin Gold Corp. 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(X), and Cross-line Horizontal (Y) components of the EM fields using an induction coil, and a horizontal magnetic gradiometer using two caesium magnetometers. A total of 809 line-km of geophysical data were acquired during the survey.

The crew was based out of Pickle Lake (Figure 2) in Ontario for the acquisition phase of the survey. Survey flying started on July 5th and was completed on July 9th, 2024.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in August 2024.

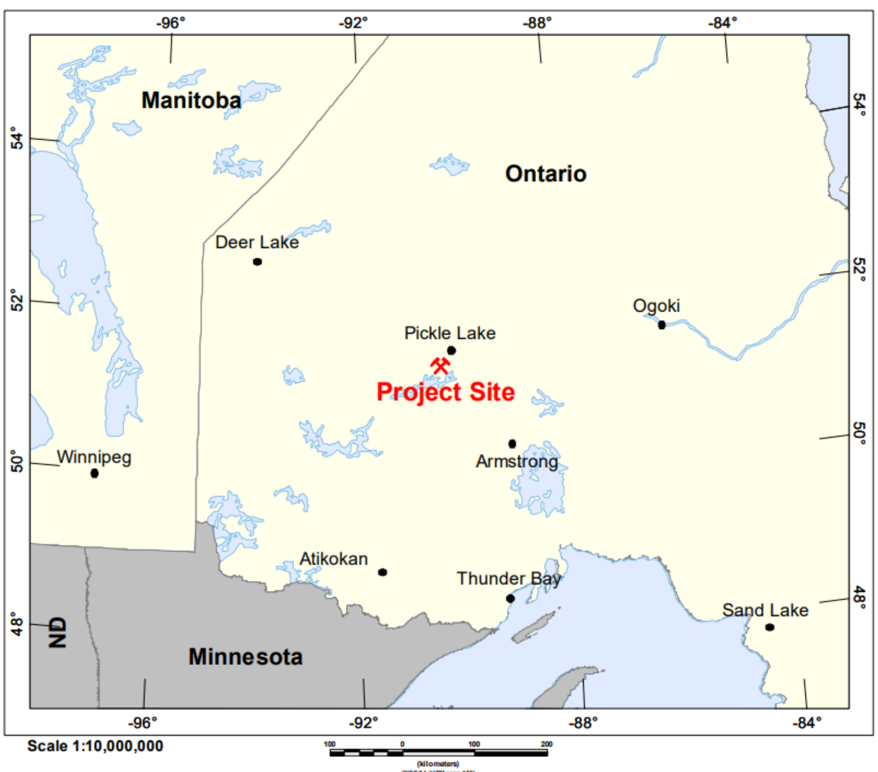


Figure 1: Survey location

1.2 SURVEY AND SYSTEM SPECIFICATIONS

The Sky Lake Project survey area is located approximately 25 kilometres southwest of Pickle Lake, Ontario (Figure 2).

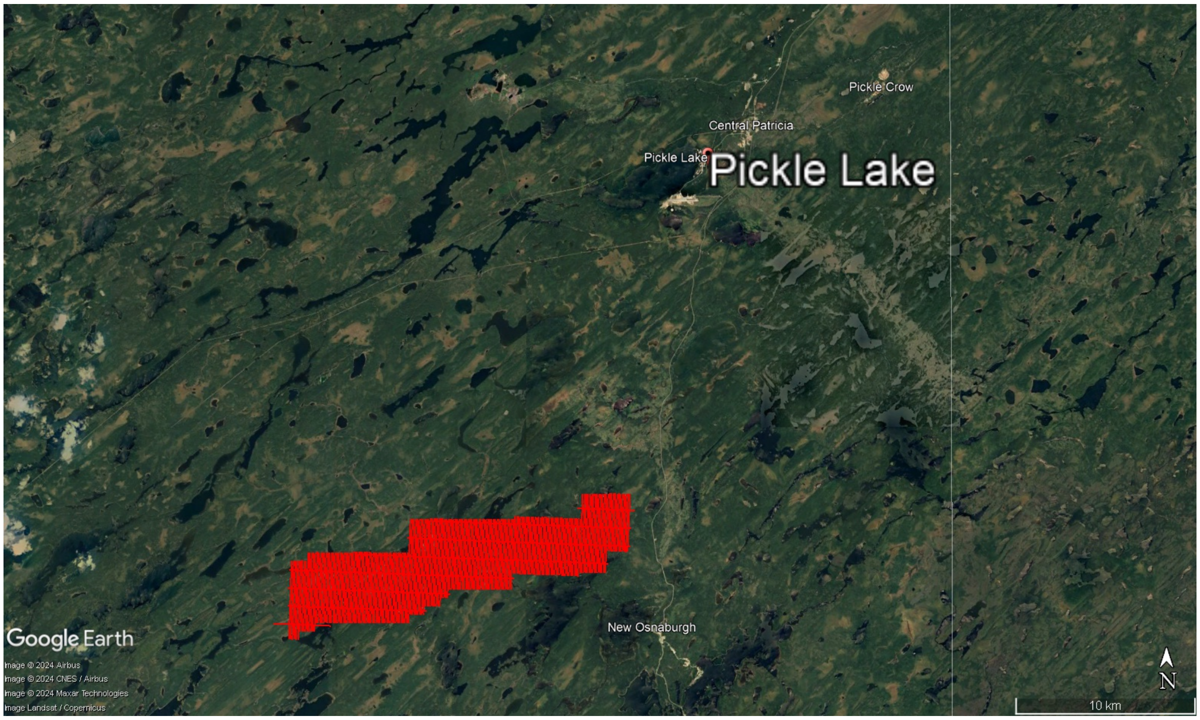


Figure 2: Survey area location on Google Earth.

The Sky Lake Project survey area was flown in a north - south (N-000° / N-180° E azimuth) direction with traverse line spacing of 100 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines at 1000 metre spacing.

For more detailed information on the flight spacings and line directions, see Table 1.

1.3 TOPOGRAPHIC RELIEF AND CULTURAL FEATURES

Topographically, the Sky Lake Project survey area exhibits moderate relief with elevations ranging from 372 to 424 metres above mean sea level over an area of 75 square kilometres (Figure 3).

There are visible signs of culture such as roads, trails and powerlines within the Sky Lake Project area. There are several lakes and rivers in and around the survey area.

Figure 3: Flight path 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 Line-km	Actual[1] Line-km	Flight direction	Line numbers
Sky Lake	Traverse: 100	75	768	809	N000°E / N180°E	L1000-L2860
	Tie: 1000				N090°E / N270°E	T3000-T3070
TOTAL		**75**	**768**	**809**		

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

2.2 SURVEY OPERATIONS

Survey operations were based out of Pickle Lake, Ontario. The following table shows the timing of the flying.

Table 2: Survey Schedule

Date	Comments
30-Jun	Crew, equipment arrived onsite in Pickle Lake, ON. Helicopter unable to ferry to Pickle Lake due to weather.
01-Jul	Helicopter, VTEM loop arrived onsite. Local logistics; base stations set up and sampled.
02-Jul	No recon flight or production flights possible due to rain, low ceilings all day.
03-Jul	No recon flight or production flights possible due to rain, low ceilings all day. Crew member arrived onsite.
04-Jul	Recon flight completed. No production flights possible due to low ceilings all day.
05-Jul	191 km flown. Two production flights completed.
06-Jul	207 km flown. Two production flights completed. AME arrived onsite.
07-Jul	85 km flown. One production flight completed. Limited production due to thunderstorm, strong winds in afternoon.
08-Jul	217 km flown. Two production flights completed.
09-Jul	68 km flown. One production flight completed. Flight path completed.
10-Jul	Demobilisation from site.

[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.

2.3 FLIGHT SPECIFICATIONS

During the survey, the helicopter was maintained at a mean altitude of 86 metres above the ground with an average survey speed of 84 km/hour. This allowed for an average Transmitter-receiver loop terrain clearance of 49 metres and a magnetic sensor clearance of 59 metres.

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

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

2.4 AIRCRAFT AND EQUIPMENT

2.4.1 Survey Aircraft

The survey was flown using Eurocopter Aerospatiale (A Star) 350 B3 helicopter, registration C-FBZN. 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 system with the serial number 16 was 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 & Y-direction coils to measure the in-line and cross-line dB/dt and calculate B-Field responses. The Transmitter-receiver loop was towed at a mean distance of 49 metres below the aircraft as shown in Figure 5.

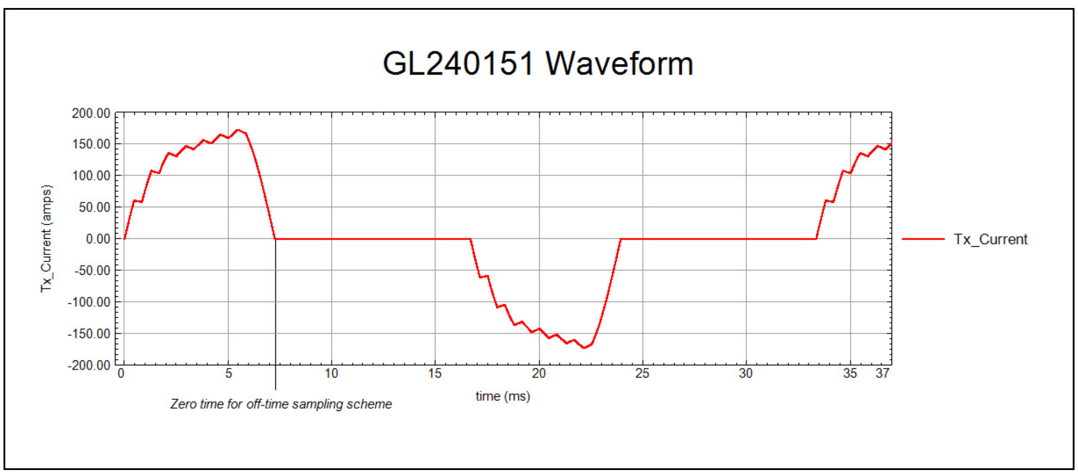


Figure 4: VTEM™ Transmitter Current Waveform

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

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
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
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 & Y Components: 20 - 46 time gates

Table 4: VTEM™ System Specifications

Transmitter	Receiver
• Transmitter loop diameter: 26 m • Number of turns: 4 • Effective Transmitter loop area: 2123.71 m^2 • Transmitter base frequency: 30 Hz • Peak current: 178.7 A • Pulse width: 7.24 ms • Waveform shape: Bi-polar trapezoid • Peak dipole moment: 379507.84 nIA • Average transmitter-receiver loop terrain clearance: 49 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

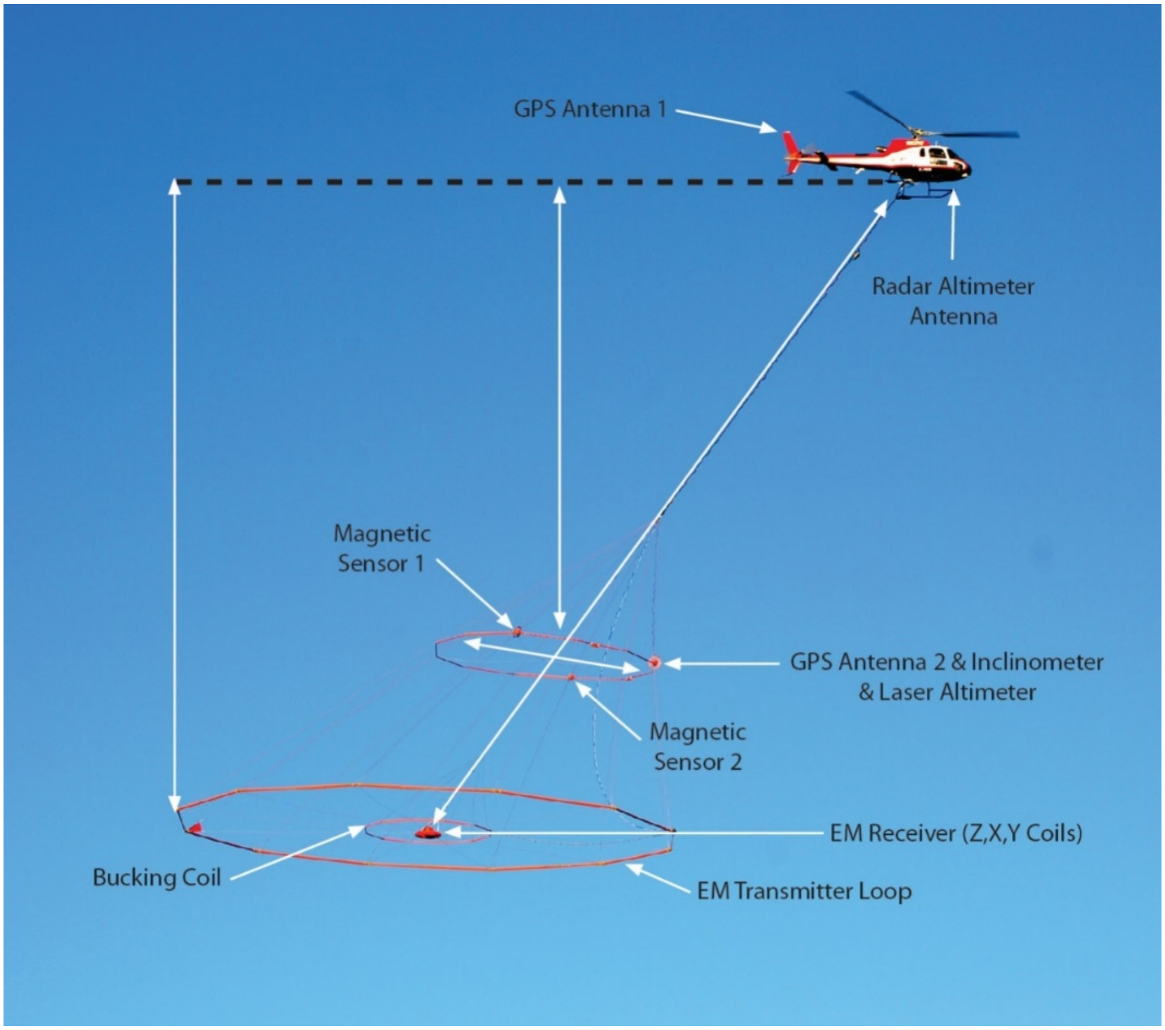


Figure 5: VTEM™plus System Configuration.

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 also the transfer function of 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 sensors.

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 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 co-ordinates 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

2.5 BASE STATION

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

The base station magnetometer sensor was installed at a secured location near the landing zone at 51.442969° N, 90.230223° W; away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

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

FIELD:

Project Manager:	Tristan Rice (Office)
Data QC:	Zihao Han
Crew chief:	Sanath Kodytuakku
Operator:	Benjamin Dobrosielski

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

Pilot:	Charles Barlow
Mechanical Engineer:	John Lee

OFFICE:

Preliminary Data Processing:	Bahram Yousefi
Final Data Processing:	Bahram Yousefi
Data QA/QC:	Shuang Wang
Reporting/Mapping:	Ruya Emen
Final Review:	Gaurav Nailwal Karl Kwan

The Data Processing phase was carried out under the supervision of Karl Kwan, Principal 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 WGS 84 Datum, UTM Zone 15 North coordinate system in Oasis Montaj.

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

4.2 ELECTROMAGNETIC DATA

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 and dB/dt responses in the Z component. B-field Z component time channel 30 recorded at 0.880 milliseconds after the termination of the impulse is also presented as a colour image. Calculated Time Constant (TAU) with Calculated Magnetic Vertical Derivative contours is presented in Appendix C and E. Resistivity Depth Image (RDI) is also presented in Appendix F and G.

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 three 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.

Because the X component polarity is dependent on the flight line direction, a convolution Fraser Filter (Figure 6) is applied to X component data. In this case positive FF anomalies always correspond to "plus-to-minus" X data crossovers independent of the flight line direction.

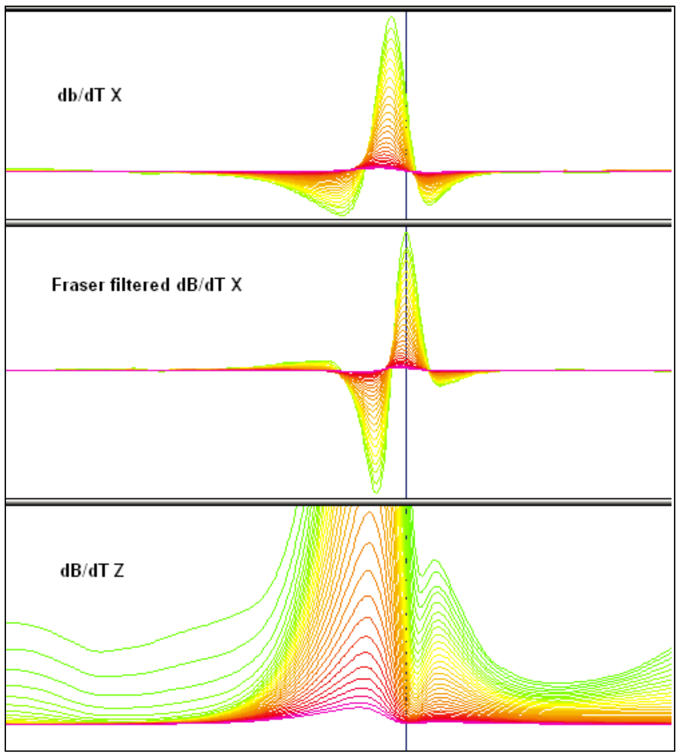


Figure 6: X, Fraser filtered X and Z components for a "thin" sub-vertical conductor.

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 crossline (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 crossline (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 are also created. The total horizontal derivative or gradient is defined as:

THDR = sqrt (Hx*Hx+Hy*Hy), where Hx and Hy are crossline 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 crossline gradients can help to enhance crossline linear features during gridding.

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

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

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of 25 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

4.4 TAU PARAMETER AND CVG

The processed VTEM survey results are presented as a calculated dB/dt Z-Component time constant (Tau), which is an indicator of geological unit's electrical conductance.

An explanation of the EM time constant calculation is provided in Appendix E. The TAU dB/dt map is presented in Appendix C. The map is accompanied by an overlay of the calculated vertical gradient of TMI anomaly contours for tracing possible EM-MAG anomaly correlations.

The CVG contour layer, on the top of TAU color grid, is generally more representative of the smaller scale and shallower magnetic sources in comparison with the TMI. The calculated vertical derivative (CVG) is designed to emphasize structures and lithological units that may not otherwise be seen on the TMI due to the nearby presence of stronger magnetic responses, showing a high resolution in terms of individual structures.

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

Maps were produced at scale of 1:20,000 for best representation of the survey size and line spacing. The coordinate/projection system used was WGS84 Datum, UTM Zone 15N. 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 1:20,000 in Geosoft MAP format, as follows:

GL240151_**_dBdt:	dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL240151_**_BField:	B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL240151_**_BFz30:	B-field late time Z Component Channel 30, Time Gate 0.880 ms colour image.
GL240151_**_SFxFF22:	Fraser Filtered dB/dt X Component Channel 22, Time Gate 0.290 ms colour image.
GL240151_**_SFz30:	VTEM dB/dt Z Component Channel 30, Time Gate 0.880 ms colour image.
GL240151_**_TauSF_CVG:	dB/dtz Calculated Time Constant (Tau) with Calculated Magnetic Vertical Derivative contours.
GL240151_**_TMI:	Total magnetic intensity colour image and contours.
GL240151_**_CVG:	Calculated Vertical Gradient (CVG) of TMI colour image.
GL240151_**_TiltDrv:	Magnetic Tilt Angle Derivative colour image.
GL240151_**_TotHG:	Magnetic Total Horizontal Gradient colour image.
GL240151_**_PLM:	Power Line Monitor (PLM).

Where ** represents client name and map scale.
E.g., *GL240151_NewOrigin_20K_TMI.map*

- Maps are also presented in PDF format.

- The topographic database was derived from 1:50,000 CANVEC data. Background shading is from ASTER GDEM (https://appeears.earthdatacloud.nasa.gov/). Inset data derived from the Geocommunities (www.geocomm.com)

- A Google Earth file *GL240151_NewOrigin.kmz* showing the flight path of the blocks is included. Free versions of Google Earth software can be downloaded from: https://earth.google.com/intl/earth/download/ge/agree.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 GDB Data Format

Channel name	Units	Description
X	metres	UTM Easting WGS84 Zone 15 North
Y	metres	UTM Northing WGS84 Zone 15 North
Longitude	Decimal Degrees	WGS84 Longitude data
Latitude	Decimal Degrees	WGS84 Latitude data
Z	metres	GPS antenna elevation (above Geoid)
Zb	metres	EM bird elevation (above Geoid)
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
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	Diurnal corrected total magnetic field intensity at the centre of the loop
TMI3	nT	Leveled total magnetic field intensity at the centre of the loop
CVG	nT/m	Calculated Vertical Derivative Total Magnetic Intensity
Hginline	nT/m	Calculated in-line gradient
Hgcxline	nT/m	Measured cross-line gradient
SFz[4]	$pV/(A*m^4)$	Z dB/dt 0.021 millisecond time channel
SFz[5]	$pV/(A*m^4)$	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

Channel name	Units	Description
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
SFz[15]	pV/(A*m^4)	Z dB/dt 0.110 millisecond time channel
SFz[16]	pV/(A*m^4)	Z dB/dt 0.126 millisecond time channel
SFz[17]	pV/(A*m^4)	Z dB/dt 0.145 millisecond time channel
SFz[18]	pV/(A*m^4)	Z dB/dt 0.167 millisecond time channel
SFz[19]	pV/(A*m^4)	Z dB/dt 0.192 millisecond time channel
SFz[20]	pV/(A*m^4)	Z dB/dt 0.220 millisecond time channel
SFz[21]	pV/(A*m^4)	Z dB/dt 0.253 millisecond time channel
SFz[22]	pV/(A*m^4)	Z dB/dt 0.290 millisecond time channel
SFz[23]	pV/(A*m^4)	Z dB/dt 0.333 millisecond time channel
SFz[24]	pV/(A*m^4)	Z dB/dt 0.383 millisecond time channel
SFz[25]	pV/(A*m^4)	Z dB/dt 0.440 millisecond time channel
SFz[26]	pV/(A*m^4)	Z dB/dt 0.505 millisecond time channel
SFz[27]	pV/(A*m^4)	Z dB/dt 0.580 millisecond time channel
SFz[28]	pV/(A*m^4)	Z dB/dt 0.667 millisecond time channel
SFz[29]	pV/(A*m^4)	Z dB/dt 0.766 millisecond time channel
SFz[30]	pV/(A*m^4)	Z dB/dt 0.880 millisecond time channel
SFz[31]	pV/(A*m^4)	Z dB/dt 1.010 millisecond time channel
SFz[32]	pV/(A*m^4)	Z dB/dt 1.161 millisecond time channel
SFz[33]	pV/(A*m^4)	Z dB/dt 1.333 millisecond time channel
SFz[34]	pV/(A*m^4)	Z dB/dt 1.531 millisecond time channel
SFz[35]	pV/(A*m^4)	Z dB/dt 1.760 millisecond time channel
SFz[36]	pV/(A*m^4)	Z dB/dt 2.021 millisecond time channel
SFz[37]	pV/(A*m^4)	Z dB/dt 2.323 millisecond time channel
SFz[38]	pV/(A*m^4)	Z dB/dt 2.667 millisecond time channel
SFz[39]	pV/(A*m^4)	Z dB/dt 3.063 millisecond time channel
SFz[40]	pV/(A*m^4)	Z dB/dt 3.521 millisecond time channel
SFz[41]	pV/(A*m^4)	Z dB/dt 4.042 millisecond time channel
SFz[42]	pV/(A*m^4)	Z dB/dt 4.641 millisecond time channel
SFz[43]	pV/(A*m^4)	Z dB/dt 5.333 millisecond time channel
SFz[44]	pV/(A*m^4)	Z dB/dt 6.125 millisecond time channel
SFz[45]	pV/(A*m^4)	Z dB/dt 7.036 millisecond time channel
SFz[46]	pV/(A*m^4)	Z dB/dt 8.083 millisecond time channel
SFx[20]	pV/(A*m^4)	X dB/dt 0.220 millisecond time channel
SFx[21]	pV/(A*m^4)	X dB/dt 0.253 millisecond time channel
SFx[22]	pV/(A*m^4)	X dB/dt 0.290 millisecond time channel
SFx[23]	pV/(A*m^4)	X dB/dt 0.333 millisecond time channel
SFx[24]	pV/(A*m^4)	X dB/dt 0.383 millisecond time channel
SFx[25]	pV/(A*m^4)	X dB/dt 0.440 millisecond time channel
SFx[26]	pV/(A*m^4)	X dB/dt 0.505 millisecond time channel
SFx[27]	pV/(A*m^4)	X dB/dt 0.580 millisecond time channel
SFx[28]	pV/(A*m^4)	X dB/dt 0.667 millisecond time channel
SFx[29]	pV/(A*m^4)	X dB/dt 0.766 millisecond time channel
SFx[30]	pV/(A*m^4)	X dB/dt 0.880 millisecond time channel
SFx[31]	pV/(A*m^4)	X dB/dt 1.010 millisecond time channel
SFx[32]	pV/(A*m^4)	X dB/dt 1.161 millisecond time channel
SFx[33]	pV/(A*m^4)	X dB/dt 1.333 millisecond time channel
SFx[34]	pV/(A*m^4)	X dB/dt 1.531 millisecond time channel

Channel name	Units	Description
SFx[35]	pV/(A*m^4)	X dB/dt 1.760 millisecond time channel
SFx[36]	pV/(A*m^4)	X dB/dt 2.021 millisecond time channel
SFx[37]	pV/(A*m^4)	X dB/dt 2.323 millisecond time channel
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 for time channels 20 to 46
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	UTM Easting WGS84 Zone 15 North
Yg	metres	UTM Northing WGS84 Zone 15 North
Dist:	metres	Distance from the beginning of the line
Depth:	metres	array channel, depth from the surface
Z:	metres	array channel, depth from sea level
AppRes:	Ohm-m	array channel, Apparent Resistivity
TR:	metres	EM system height from sea level
Topo:	metres	digital elevation model
Radarb:	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
SF:	pV/(A*m^4)	array channel, dBz/dT
MAG:	nT	Total Magnetic Intensity data
CVG:	nT/m	Calculated Vertical Gradient data
DOI:	metres	Depth of Investigation: a measure of VTEM depth effectiveness
PLM:		60Hz Power Line Monitor

- Databases of the VTEM Waveforms “GL240151_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:

GL240151_**_DEM:	Digital Elevation Model (metres)
GL240151_**_BFz30:	B-Field Z Component Channel 30 (Time Gate 0.880 ms)
GL240151_**_SFxFF22:	Fraser Filtered dB/dt X Component Channel 22 (Time Gate 0.290 ms)
GL240151_**_SFz8:	dB/dt Z Component Channel 8 (Time Gate 0.042 ms)
GL240151_**_SFz30:	dB/dt Z Component Channel 30 (Time Gate 0.880 ms)
GL240151_**_SFz42:	dB/dt Z Component Channel 42 (Time Gate 4.641 ms)
GL240151_**_TauBF:	B-Field Z Component, Calculated Time Constant (ms)
GL240151_**_TauSF:	dB/dt Z Component, Calculated Time Constant (ms)
GL240151_**_TMI3:	Total Magnetic Intensity (nT)
GL240151_**_CVG:	Calculated Vertical Gradient (nT/m)
GL240151_**_Hgcxline	Measured Cross-line Gradient of TMI (nT/m)
GL240151_**_Hginline	Measured In-Line Gradient (nT/m)
GL240151_**_TiltDrv:	Magnetic Tilt derivative (radians)
GL240151_**_TotHG:	Magnetic Total Horizontal Gradient (nT/m)
GL240151_**_PLM:	60Hz Power Line Monitor (meters)

Where ** represents client name.
E.g., *GL240151_NewOrigin_TMI.grd*

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

A helicopter-borne versatile time domain electromagnetic (VTEM™ plus) geophysical survey has been completed on behalf of NewOrigin Gold Corp. over the Sky Lake Project, situated near Pickle Lake, Ontario.

The total area coverage is 75 km^2 and the total survey line coverage is 809 line-kilometres over one survey 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 scales of 1:20,000. A formal interpretation has not been included in this report, however, RDI resistivity-depth imaging has been performed in support of the VTEM data.

Based on the geophysical results obtained, a number of electromagnetic and magnetic anomalies of interest have been identified over the project area including several mid-late-channel conductive signatures. The relationships between the EM and magnetics are highlighted in our TAU dBz/dt EM decay constant map with magnetic CVG contours (Appendix C) and the RDI resistivity-depth image sections with profiles (Appendix G).

The Sky Lake Project is understood to be prospective for gold mineralisation (https://www.neworigingold.com/). As a result, both the magnetic and EM data are likely to be of exploration interest. If EM conductors are of interest for the exploration program, we recommend that EM anomaly picking, and Maxwell plate modelling be performed on the anomalies of greatest interest prior to ground follow up and drill testing. For non-conductive targets, more advanced 1D layered earth modelling of the EM data will prove useful in highlighting weakly anomalous resistive and conductive features of interest, as compared to the RDI imaging products being provided. 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 blocks. Finally, we recommend that more advanced, integrated interpretation be performed, such as SOM (self-organizing maps) in order to better correlate the 1D EM and 3D Magnetic modelling in 2D-3D and these results further evaluated against the known geology for future targeting.

Respectfully submitted[2],

Zihao Han
Geotech Ltd.

Bahram Yousefi
Geotech Ltd.

[2] Final data processing of the EM and Magnetic data was carried out by Bahram Yousefi, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Karl Kwan, Principal Geophysicist.

Ruya Emen
Geotech Ltd.

Ruya Emen
Geotech Ltd.

Karl Kwan, M.Sc. P.GEO (Limited, ON)
Principal Geophysicist
Geotech Ltd.

Gaurav Nailwal
Geotech Ltd.

August 2024

APPENDIX A

SURVEY AREA LOCATION MAP

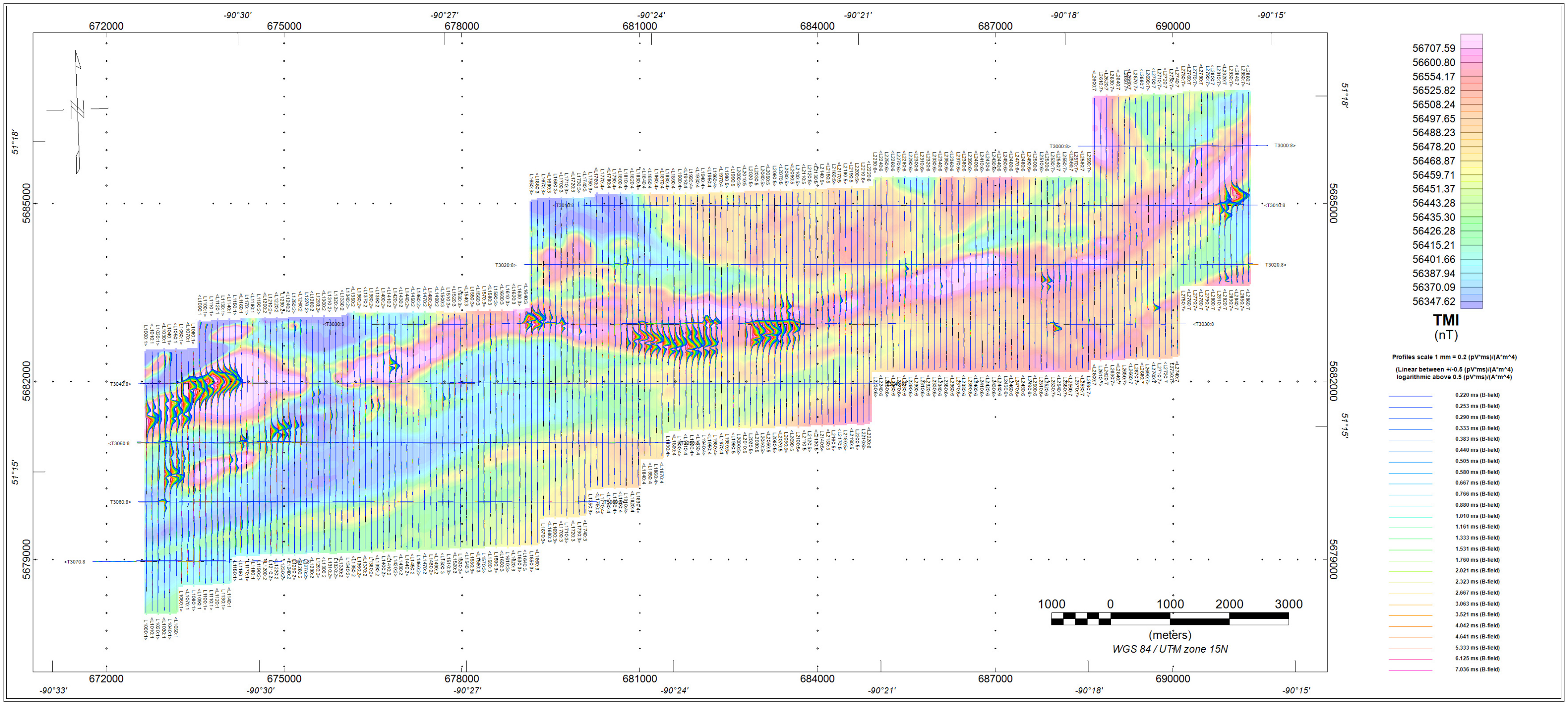
Overview of the Survey Area

APPENDIX B
SURVEY AREA COORDINATES

Sky Lake Project	
WGS84 UTM Zone 15N	
X	Y
672612.8	5682550.6
672612.8	5682550.6
672645.0	5678095.0
673208.0	5678078.9
673208.0	5678545.4
674108.7	5678609.7
674124.8	5679044.0
679336.5	5679237.0
679336.5	5679703.5
680124.7	5679719.6
680108.6	5680153.9
681025.5	5680202.2
681009.4	5680684.7
681427.6	5680684.7
681427.6	5681135.1
684918.2	5681263.8
684934.3	5682180.7
688633.9	5682164.6
688617.8	5682357.6
690146.0	5682405.9
690097.7	5683644.5
691320.2	5683612.3
691352.4	5686942.0
688633.9	5686829.4
688601.7	5685446.0
684966.4	5685446.0
684982.5	5685301.3
679143.5	5685124.3
679111.3	5683226.2
673497.5	5683049.3
673513.6	5682582.8

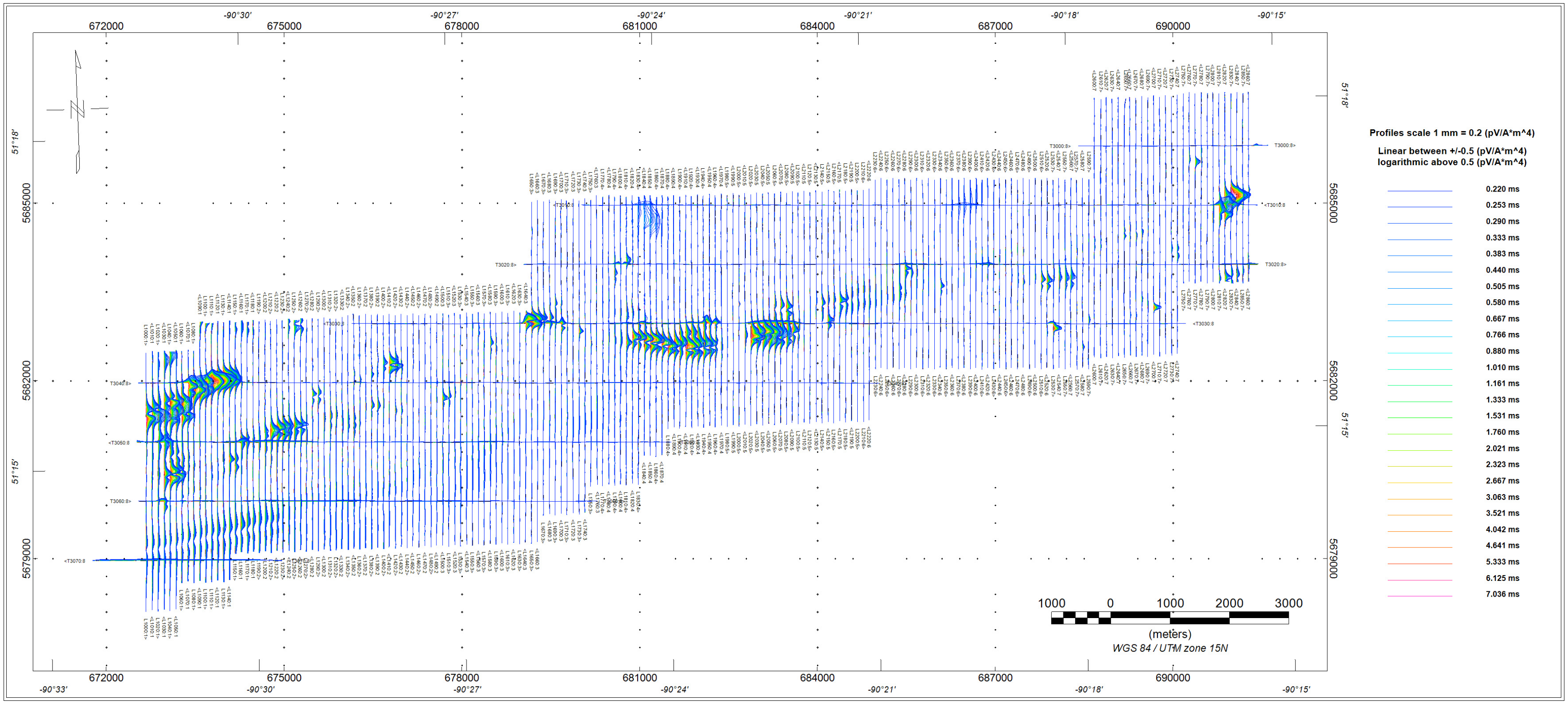
APPENDIX C

GEOPHYSICAL MAPS[1] - Sky Lake Project

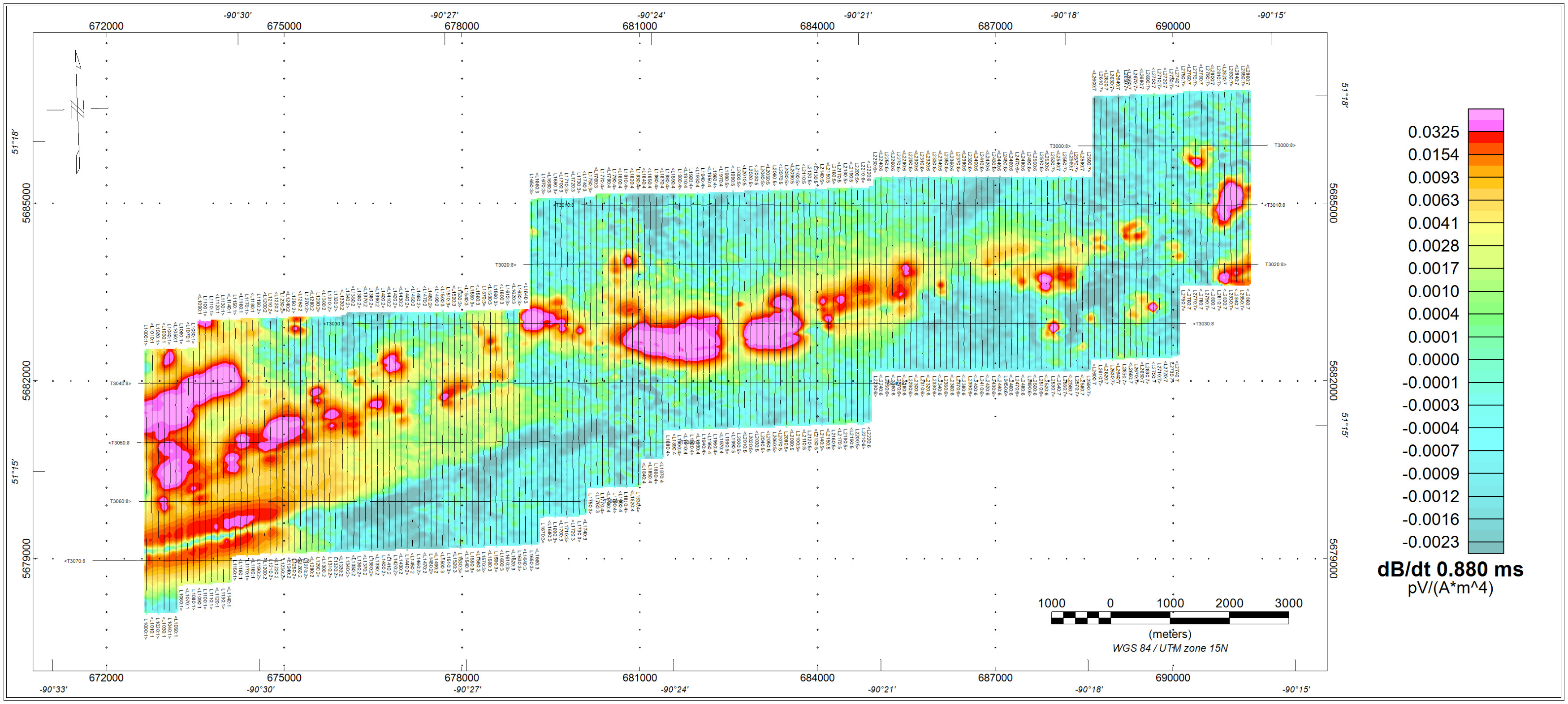


Sky Lake Project: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear-logarithmic scale, over Total Magnetic Intensity

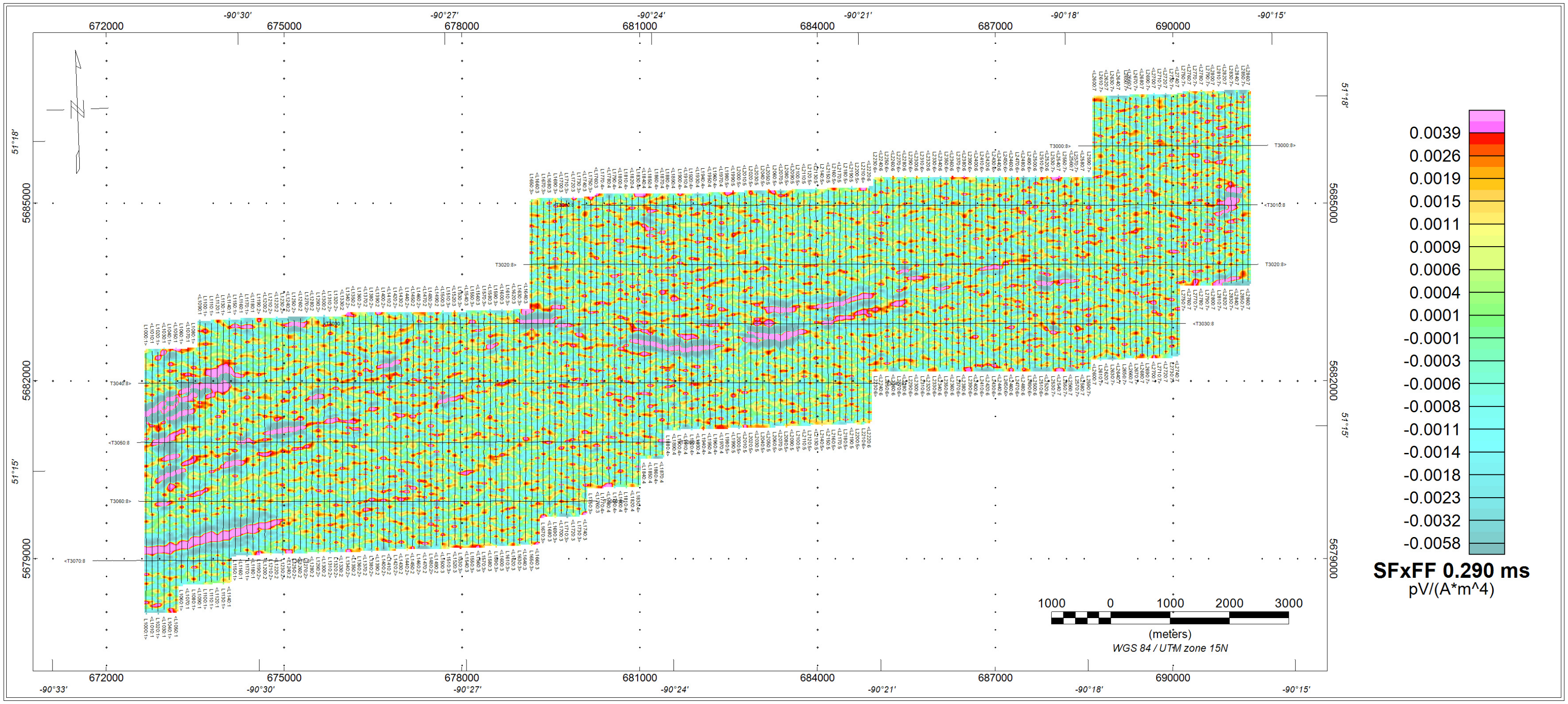
[1] Full size geophysical maps are also available in PDF format on the final DVD



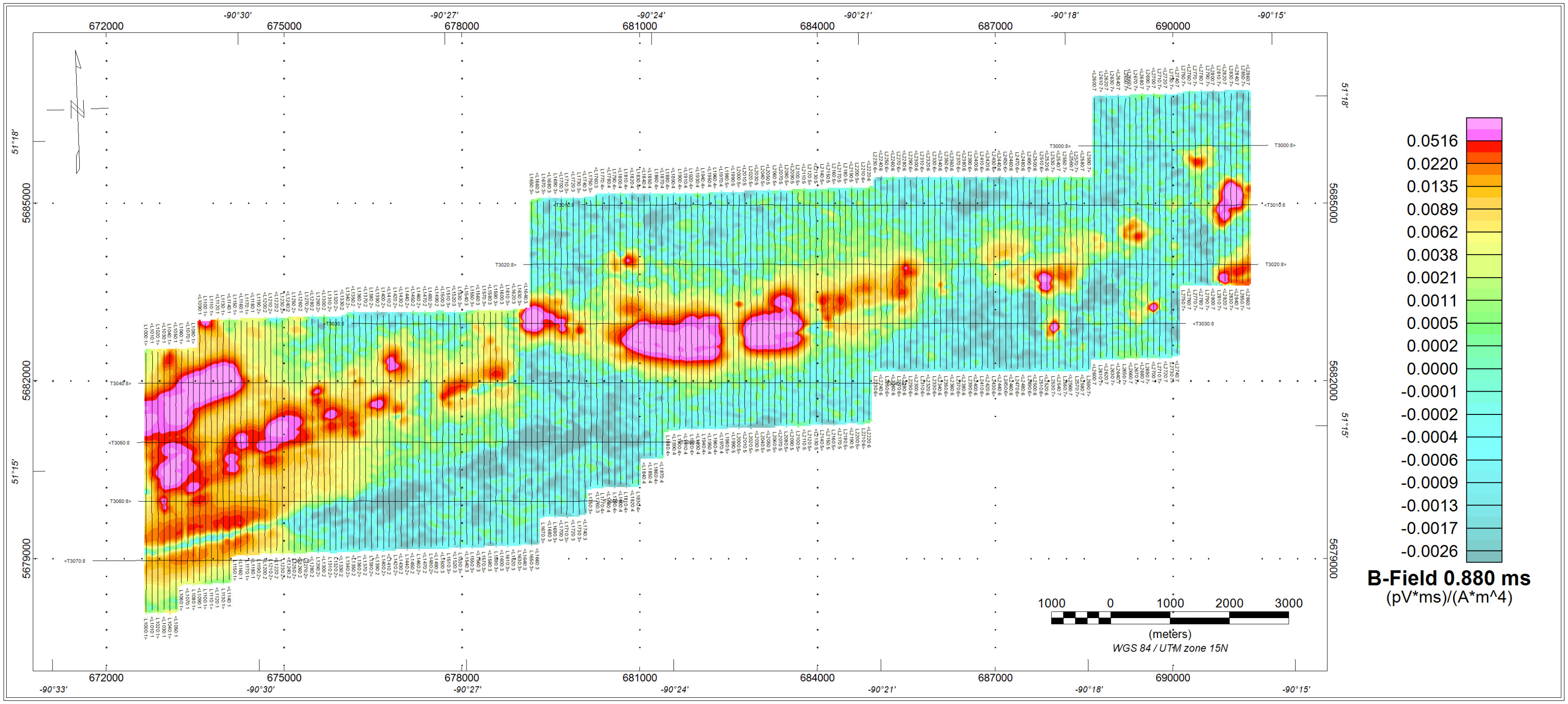
Sky Lake Project: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear-logarithmic scale



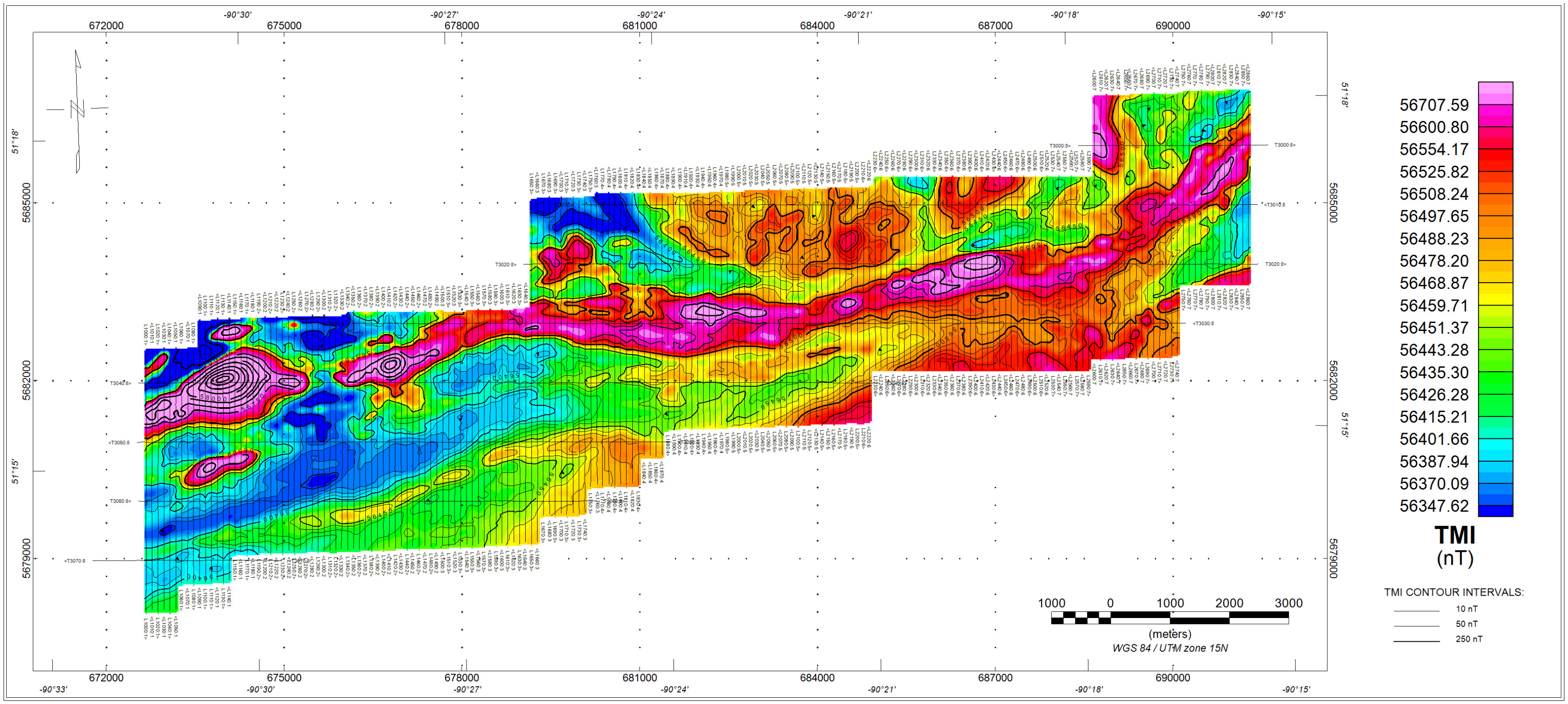
Sky Lake Project: dB/dt Z Component Channel 30 (Time Gate 0.880 ms)



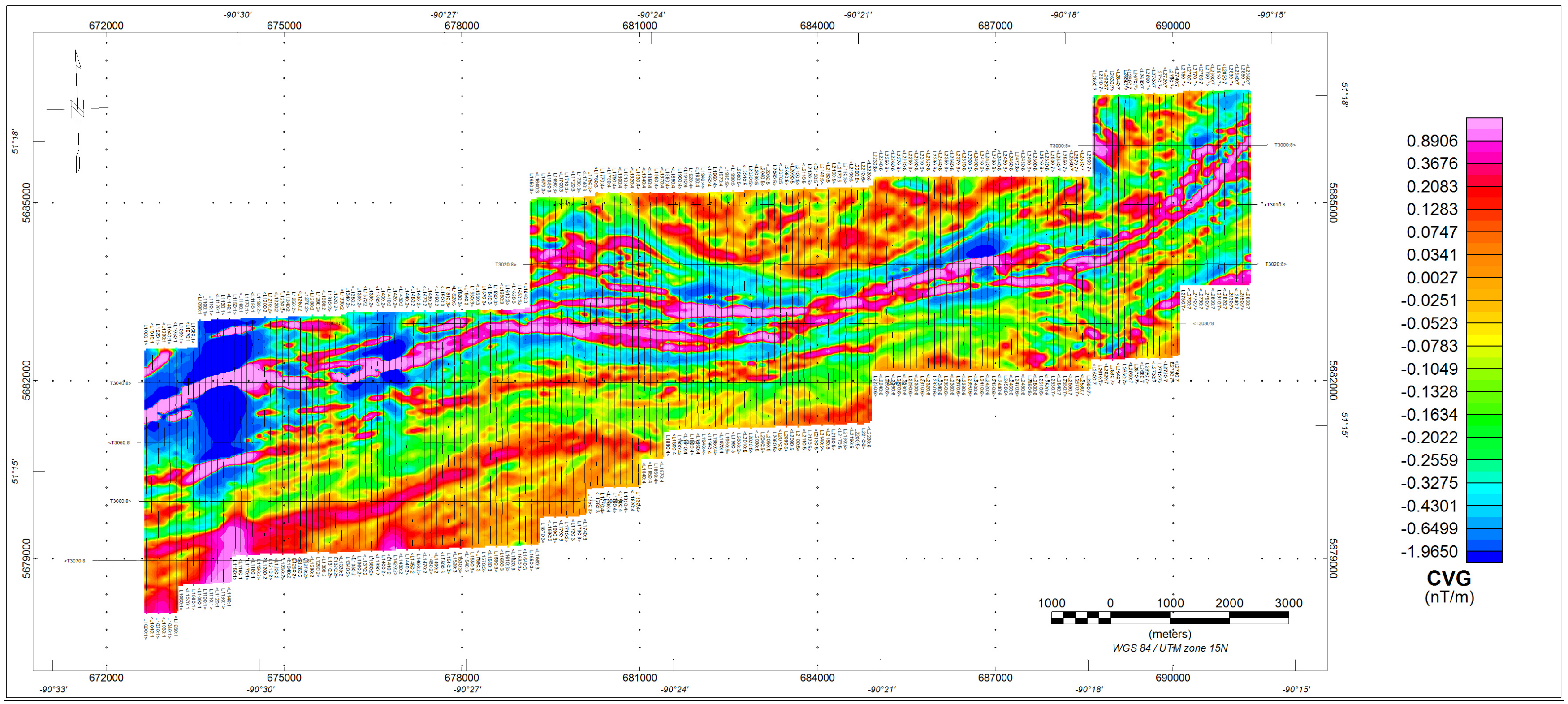
Sky Lake Project: Fraser Filtered dB/dt X Component, Channel 22, Time Gate 0.290 ms



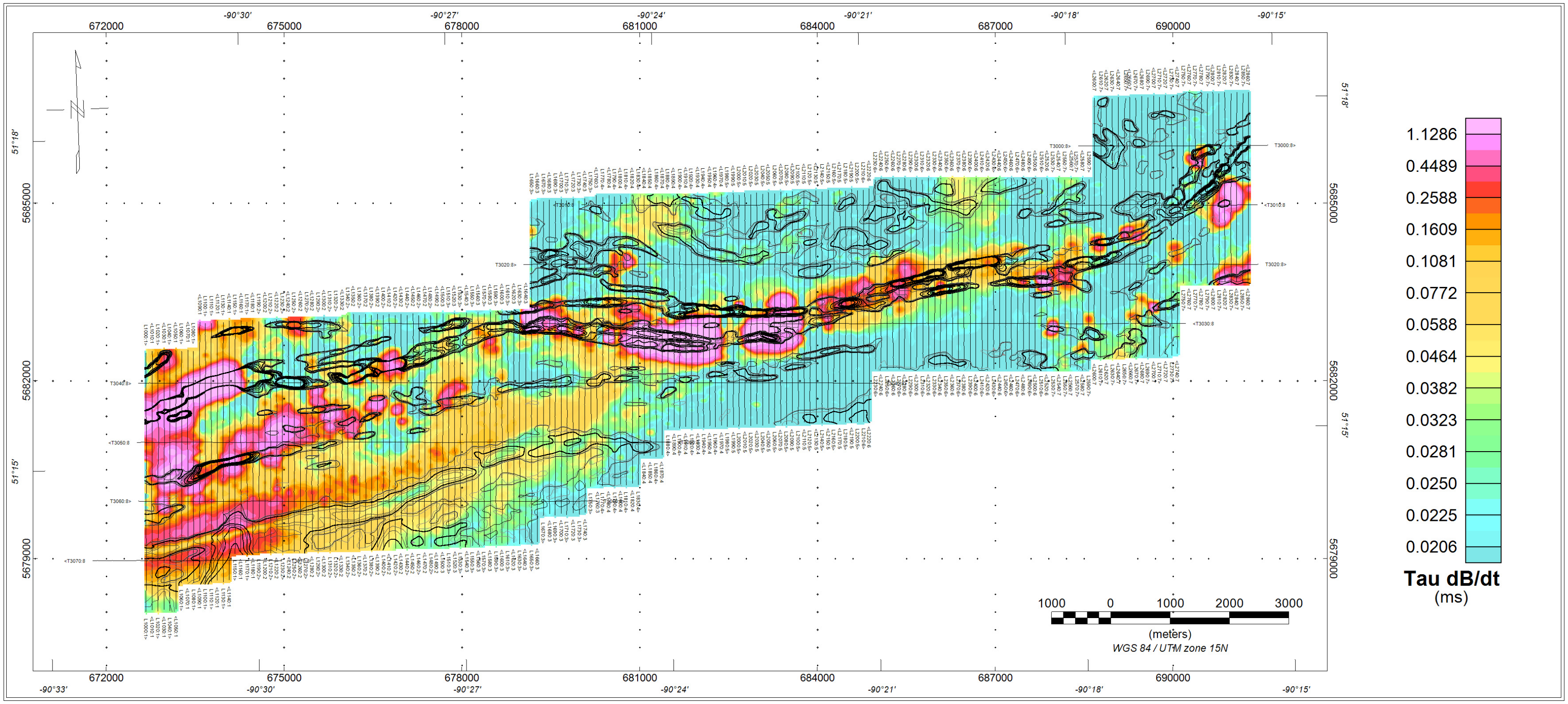
Sky Lake Project: VTEM B-Field Z Component Channel 30, Time Gate 0.880 ms



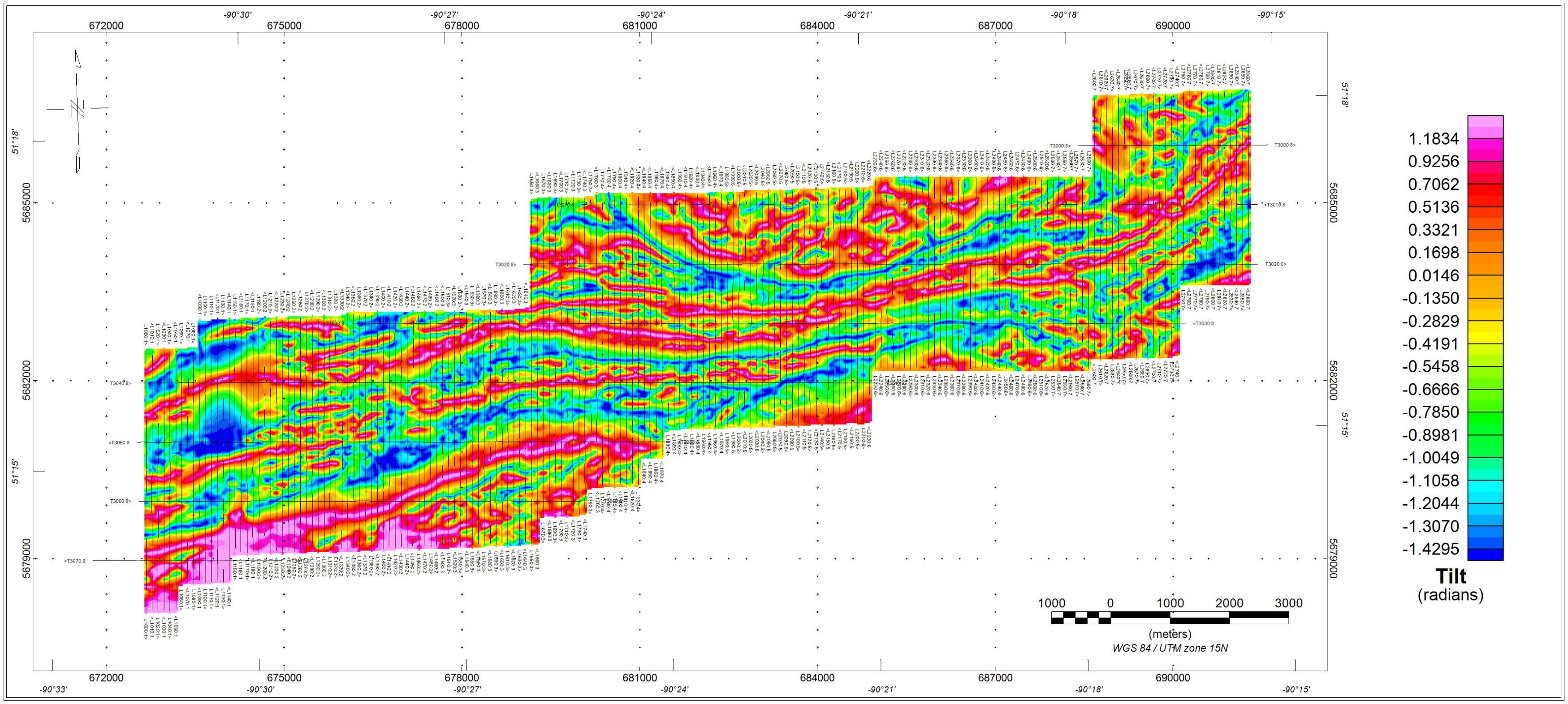
Sky Lake Project: Total Magnetic Intensity (TMI)



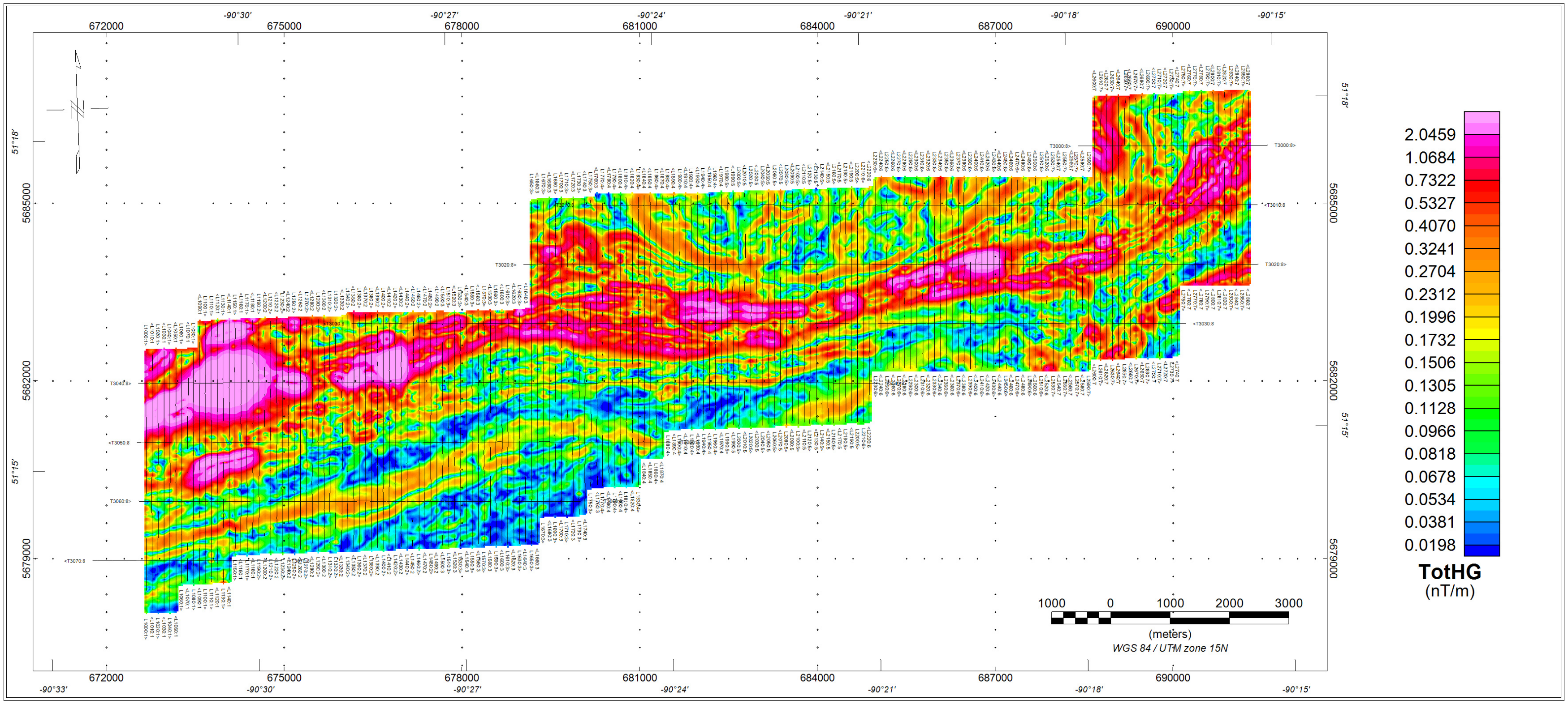
Sky Lake Project: Calculated Vertical Magnetic Gradient (CVG)



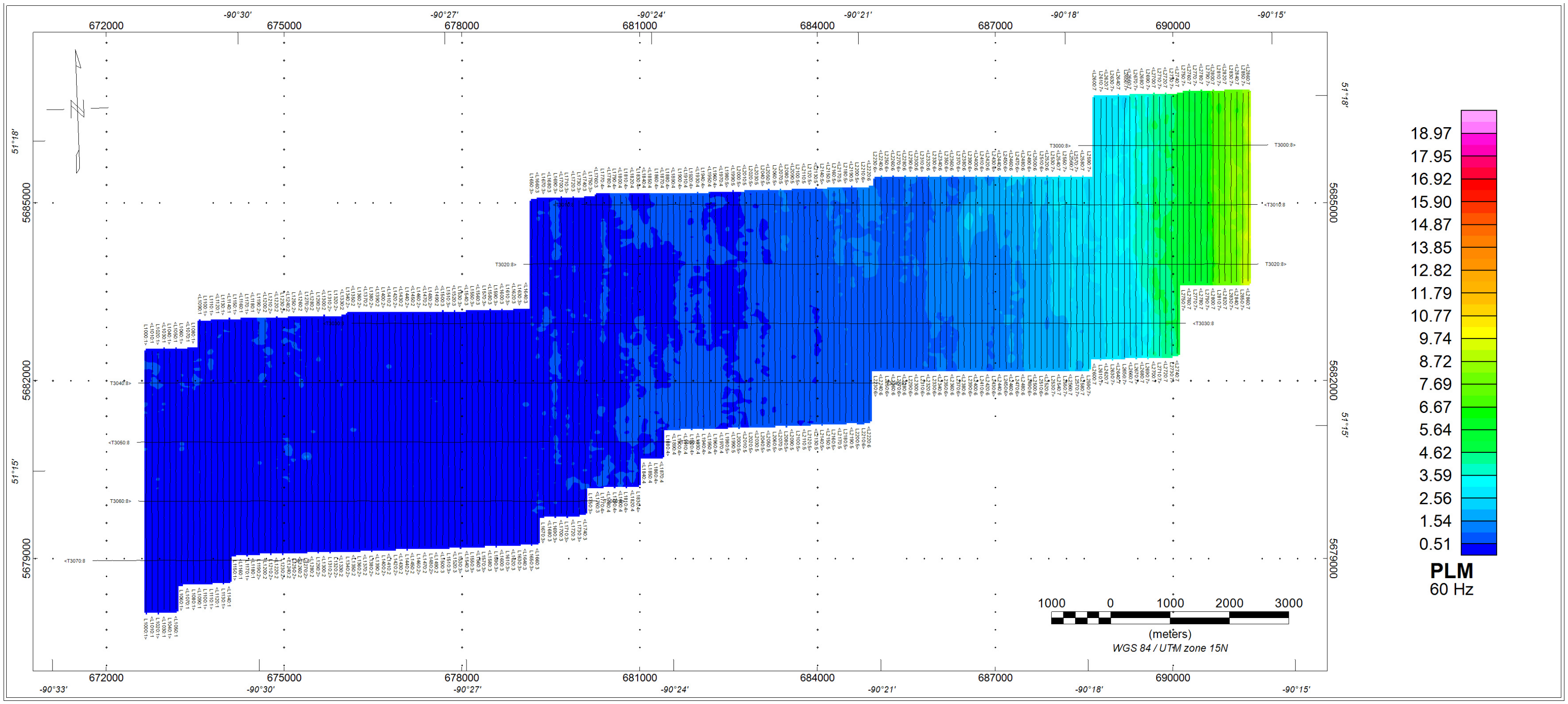
Sky Lake Project: Z-component dB/dt Calculated EM Decay Time Constant (Tau) with Calculated Vertical Magnetic Derivative contours



Sky Lake Project: Magnetic Tilt-Angle Derivative



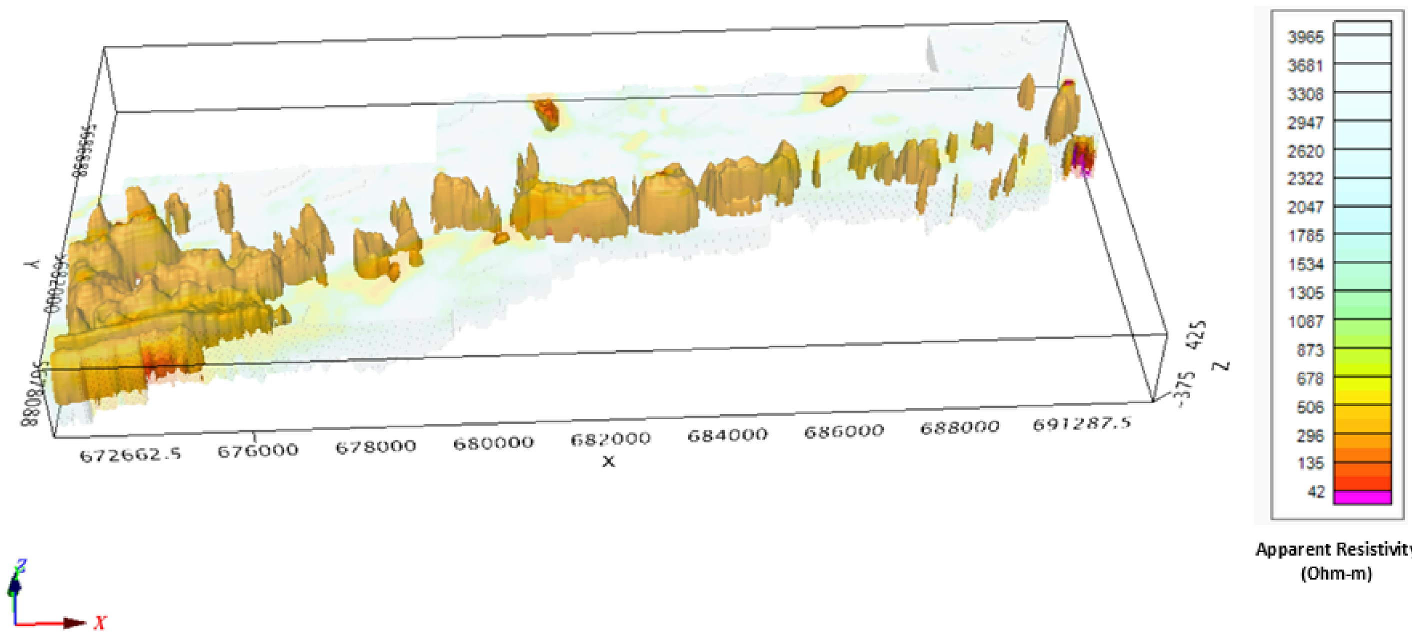
Sky Lake Project: Total Magnetic Horizontal Gradient



Sky Lake Project: Power Line Monitor (PLM)

RESISTIVITY DEPTH IMAGE (RDI) MAP

3D View of RDI Apparent Resistivity Voxel



Apparent Resistivity
(Ohm-m)

NewOrigin Gold Corp.
Sky Lake Block
Pickle Lake, Ontario

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.

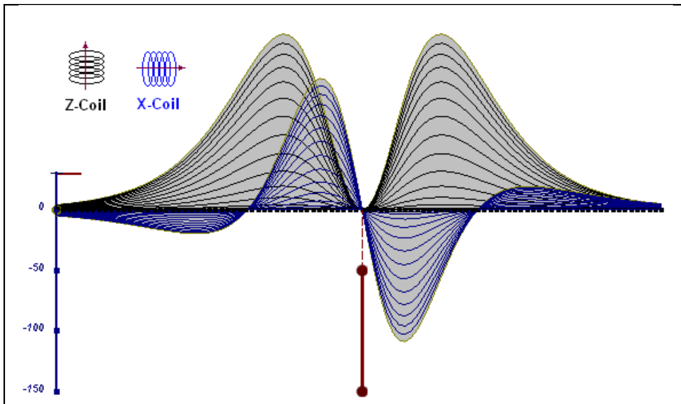


Figure D-1: vertical thin plate

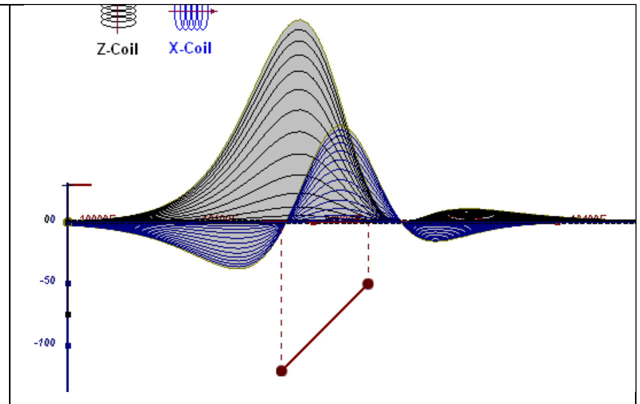


Figure D-2: inclined thin plate

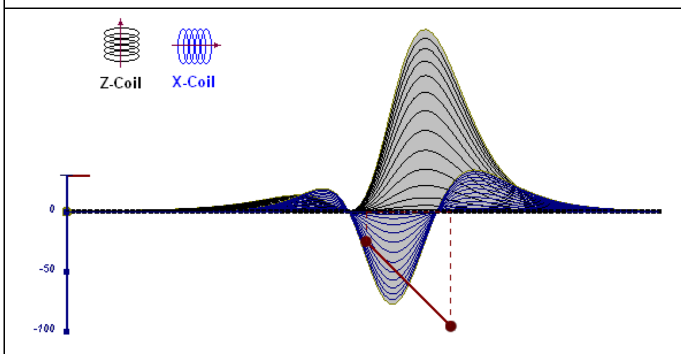


Figure D-3: inclined thin plate

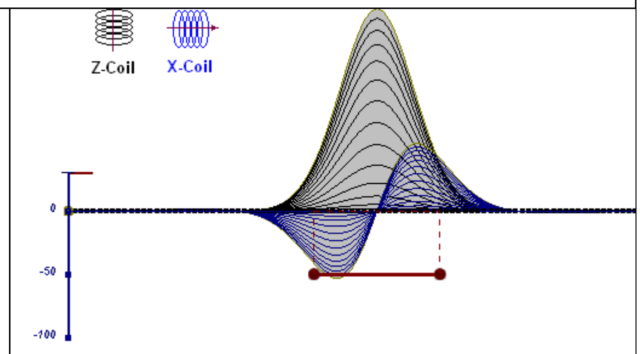


Figure D-4: horizontal thin plate

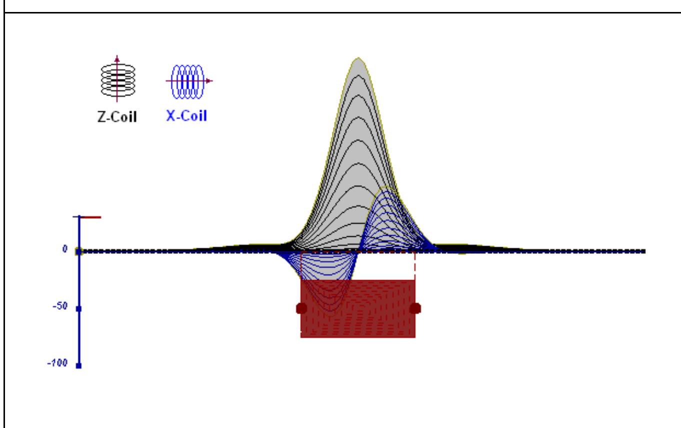


Figure D-5: horizontal thick plate (linear scale of the response)

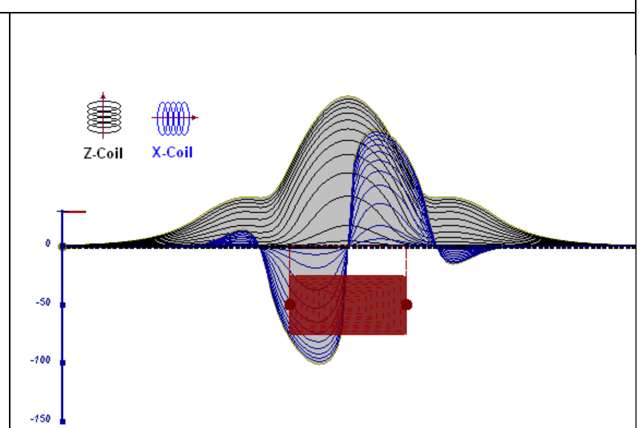


Figure D-6: horizontal thick plate (log scale of the response)

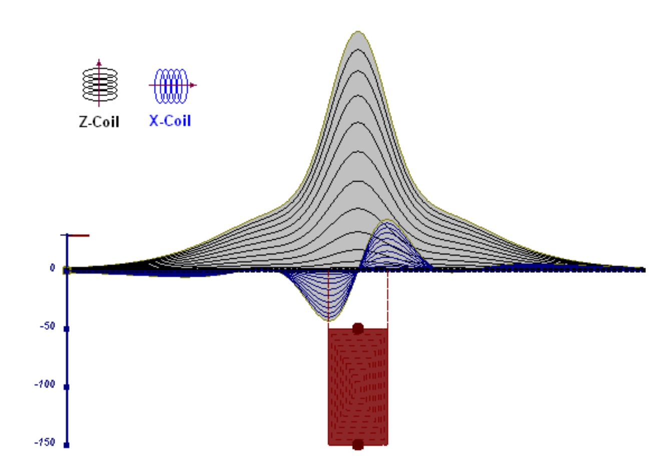


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

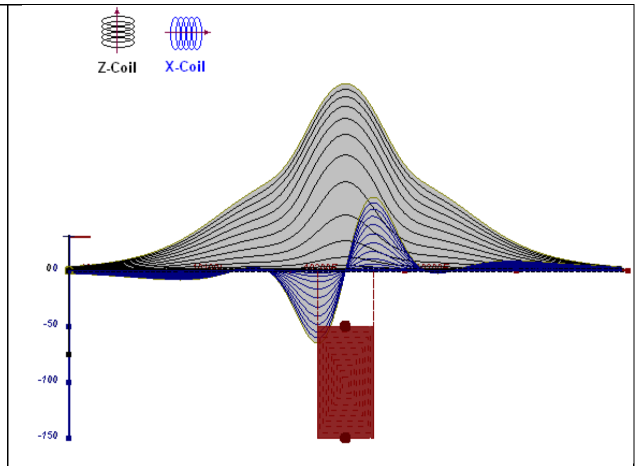


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

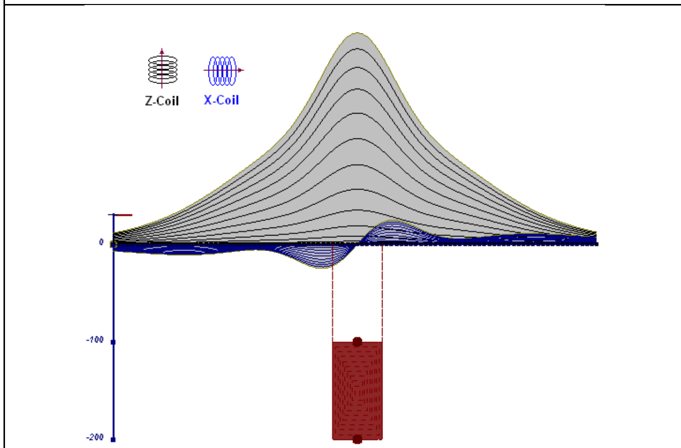


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

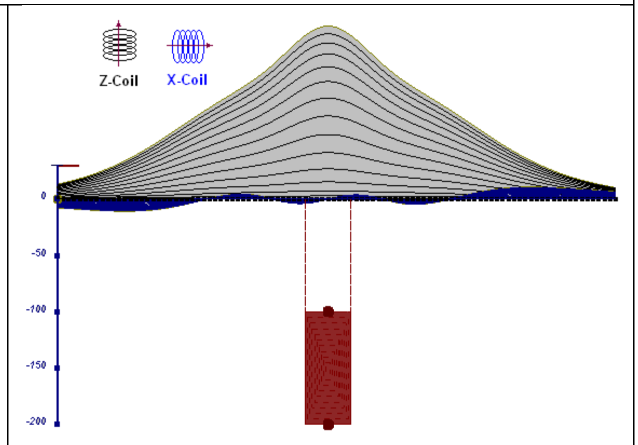


Figure D-10: vertical thick plate (linear scale of the response). Depth / horizontal thickness=2.5

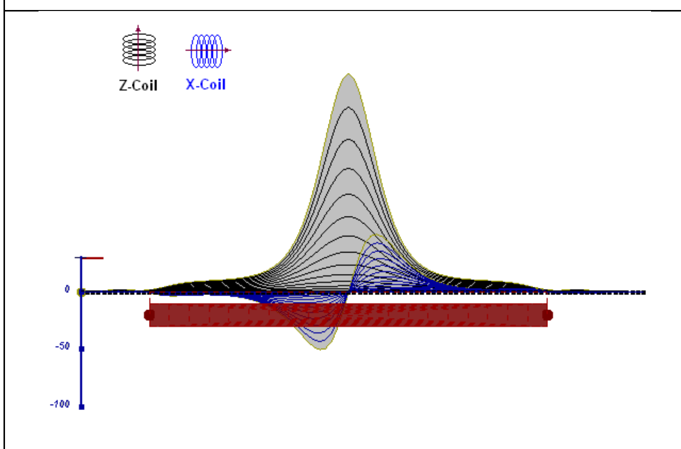


Figure D-11: horizontal thick plate (linear scale of the response)

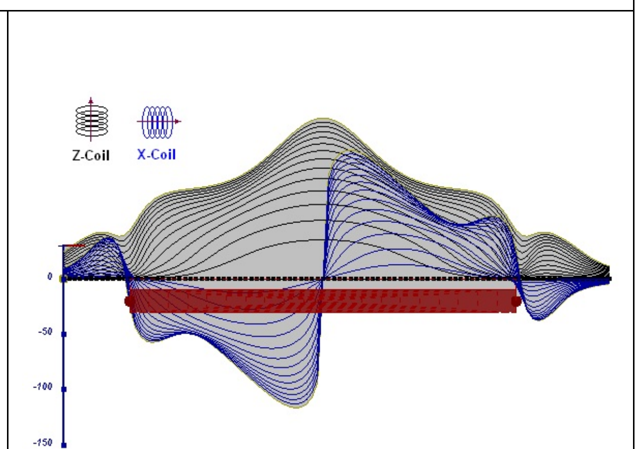


Figure D-12: horizontal thick plate (log scale of the response)

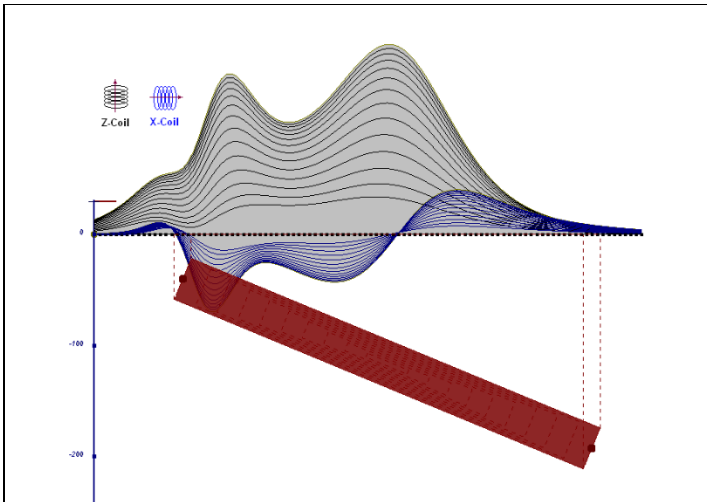


Figure D-13: inclined long thick plate

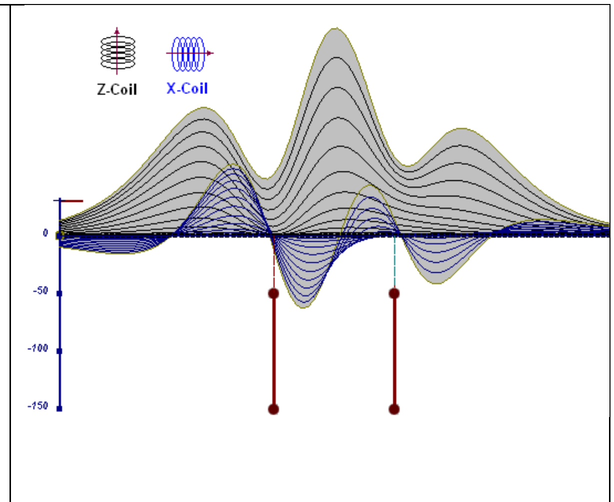


Figure D-14: two vertical thin plates

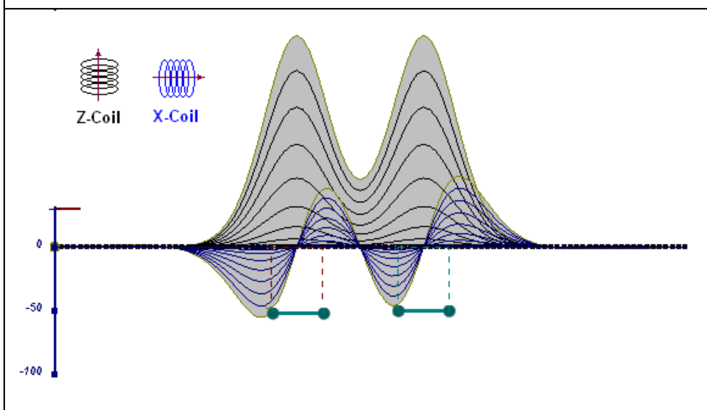


Figure D-15: two horizontal thin plates

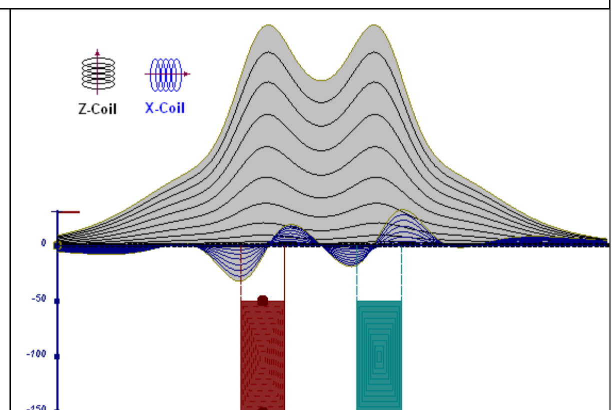


Figure D-16: two vertical thick plates

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

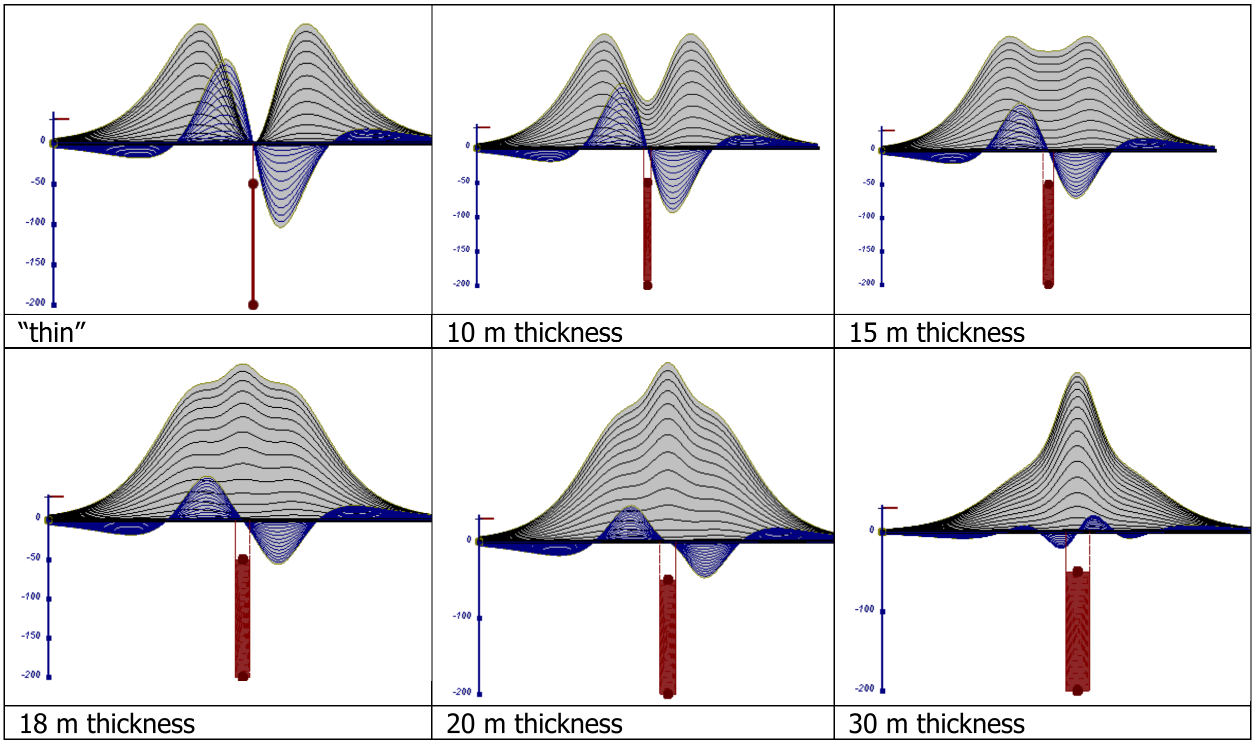


Figure D-17: Conductive vertical plate, depth 50 m, strike length 200 m, depth extent 150 m.

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 conductance beneath the surface from TEM measurements.

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

THEORY

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

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

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

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

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and small τ, have high initial amplitude but decay rapidly with time[1] (Fig. E1).

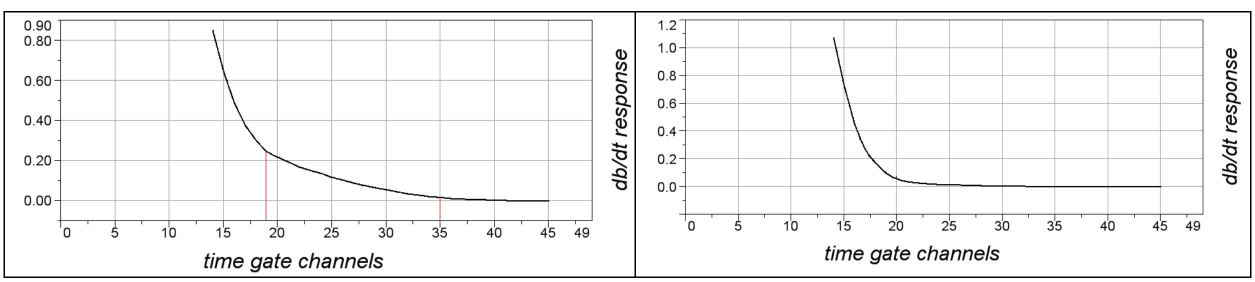


Figure E-1: Left – presence of good conductor, right – poor conductor.

[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.

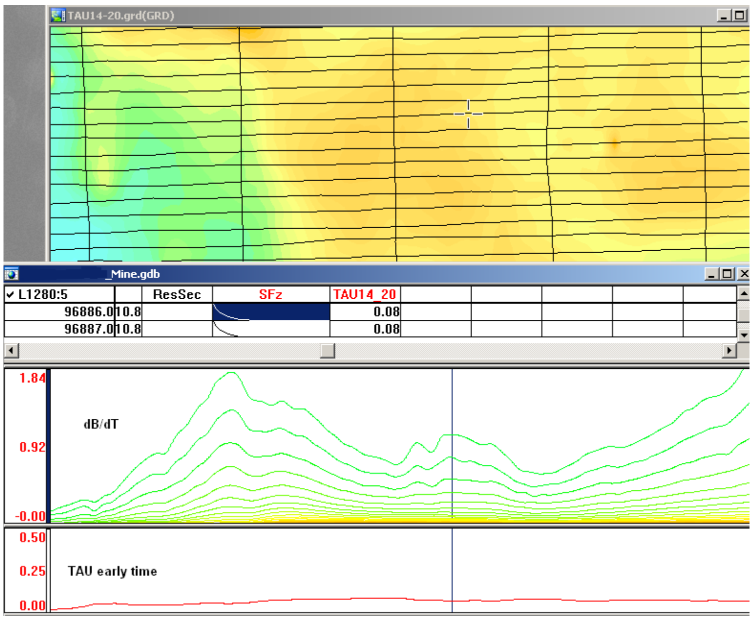


Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

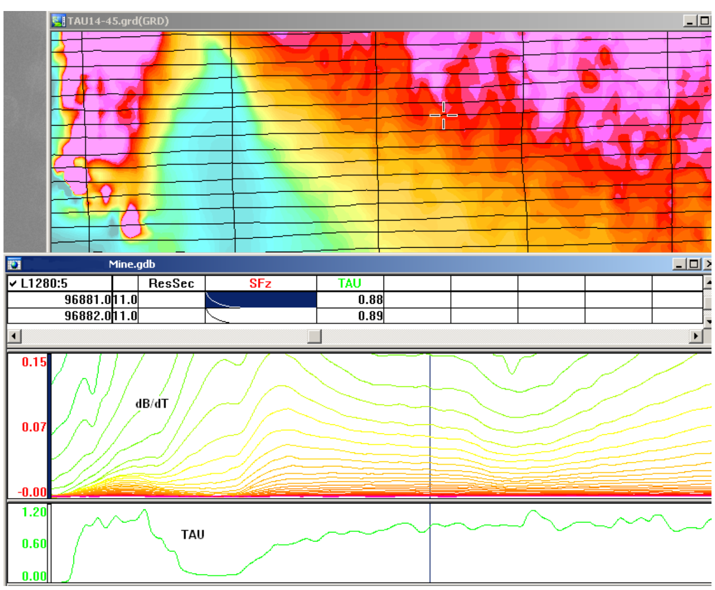


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

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.

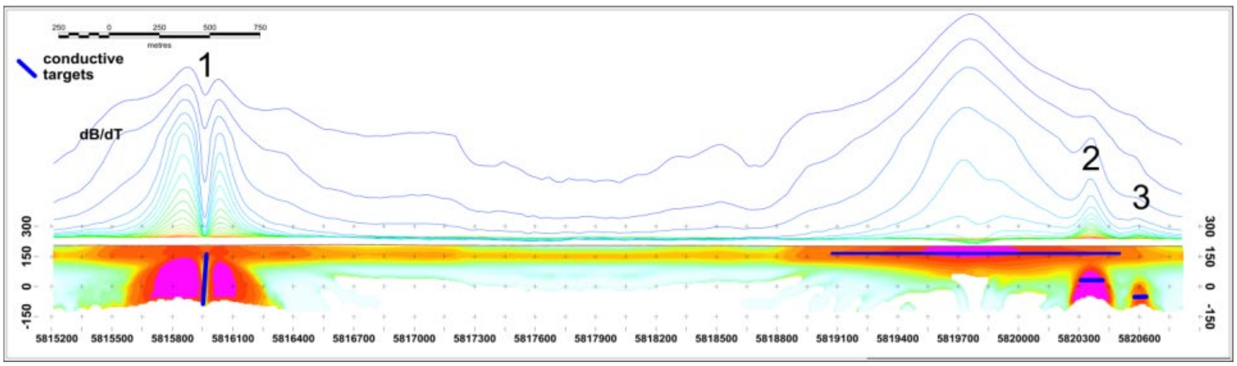


Figure E-4: dB/dt profile and RDI with different depths of targets.

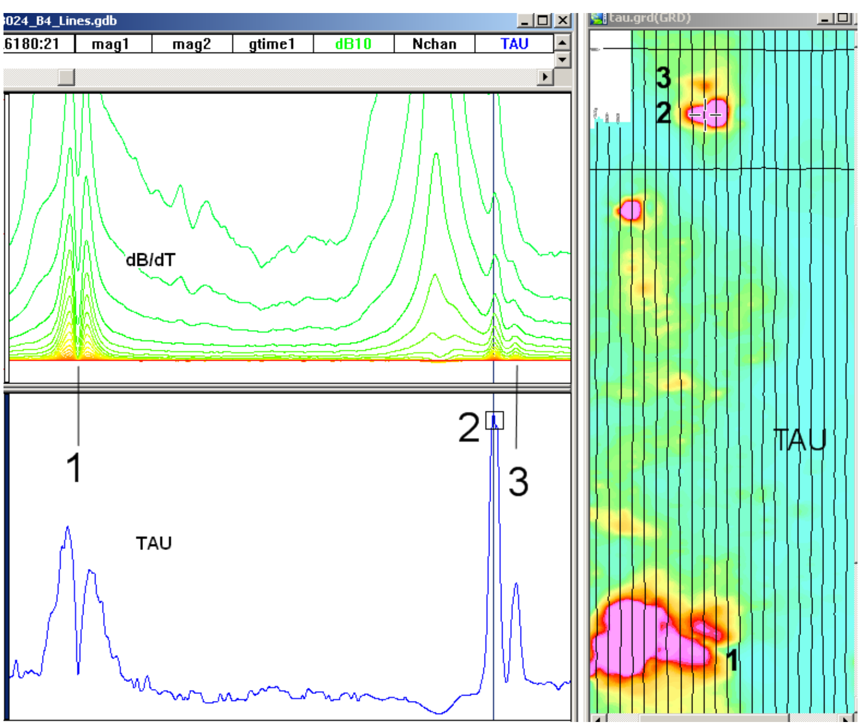


Figure E-5: Map of total TAU and dB/dt profile.

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 E6). 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.

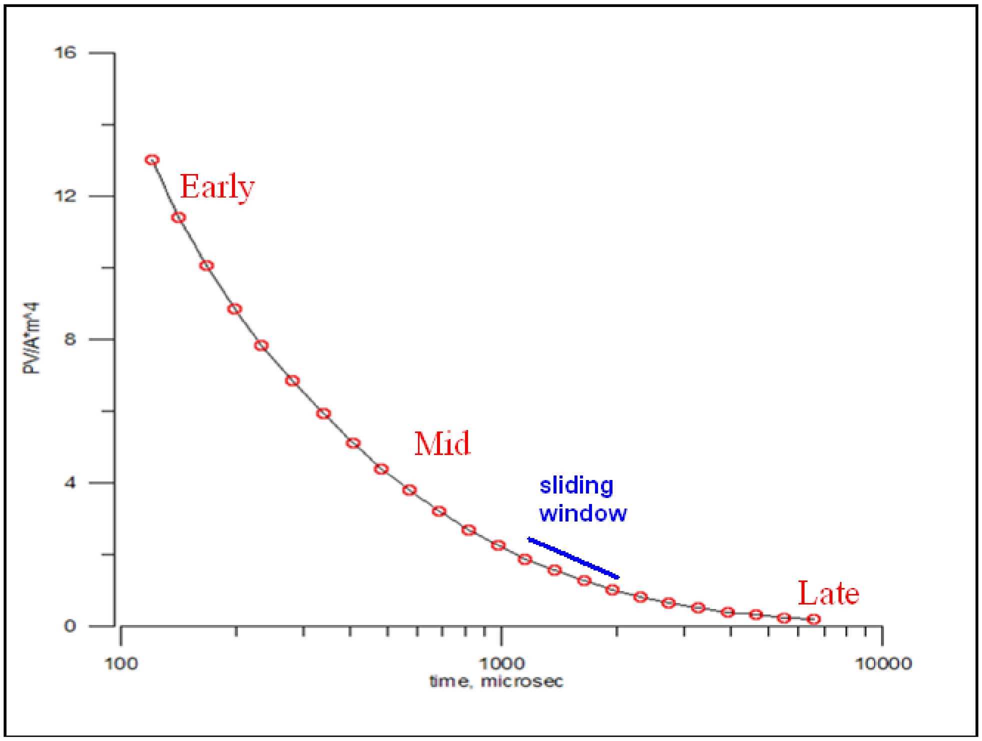


Figure E-6: Schematic VTEM dB Z /dt decay showing Geotech sliding-Tau method for calculating TAU.

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 RDI algorithm for Resistivity-Depth Imaging is based on scheme of the apparent resistivity transform by Meju (1998)[1] for the TEM response in a conductive half-space. The program was developed by Geotech Ltd. 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 EM plate forward modeling with RDI sections from the synthetic responses (VTEM system) are presented below.

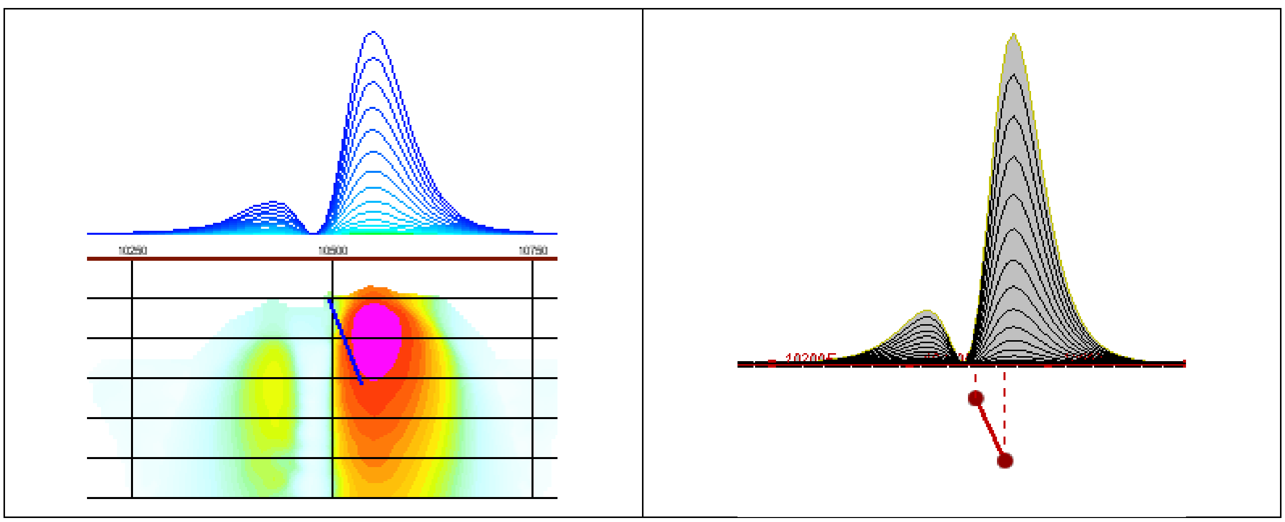


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extent 100 m).

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

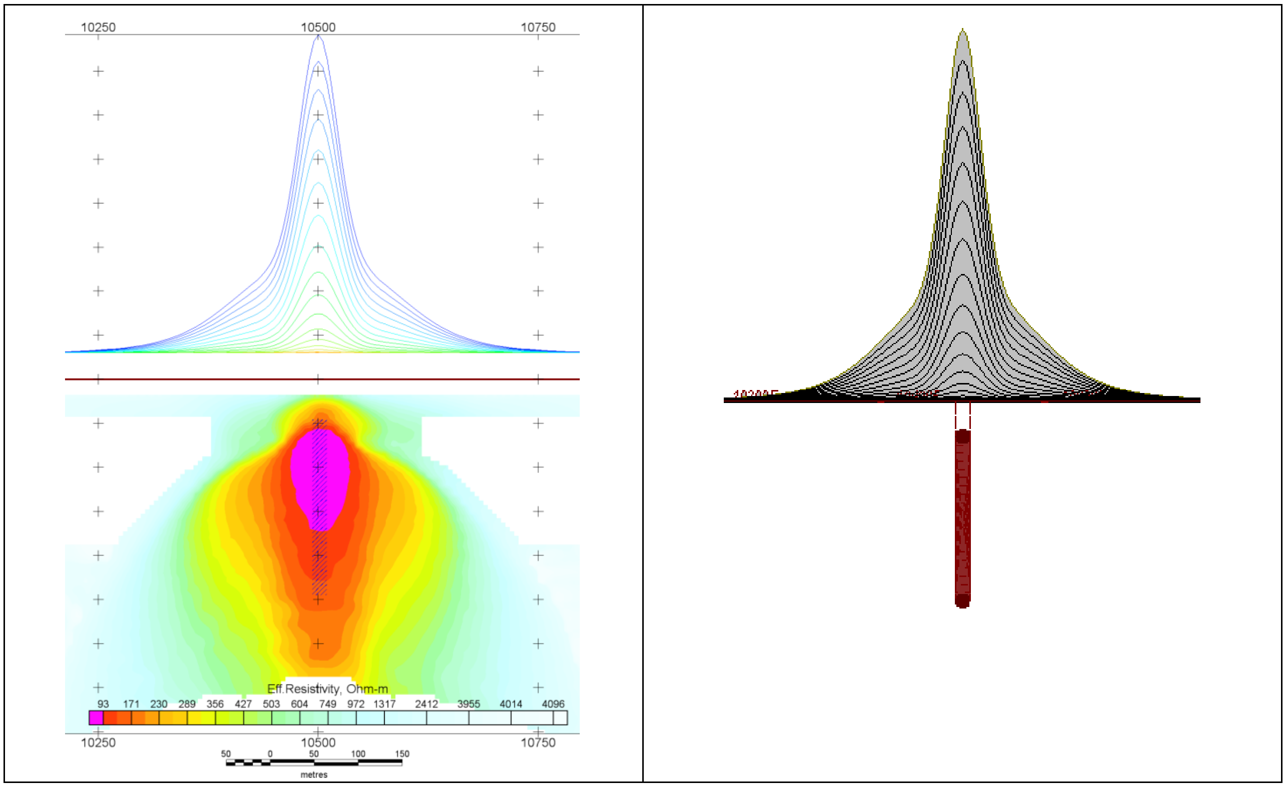


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extent 200 m).

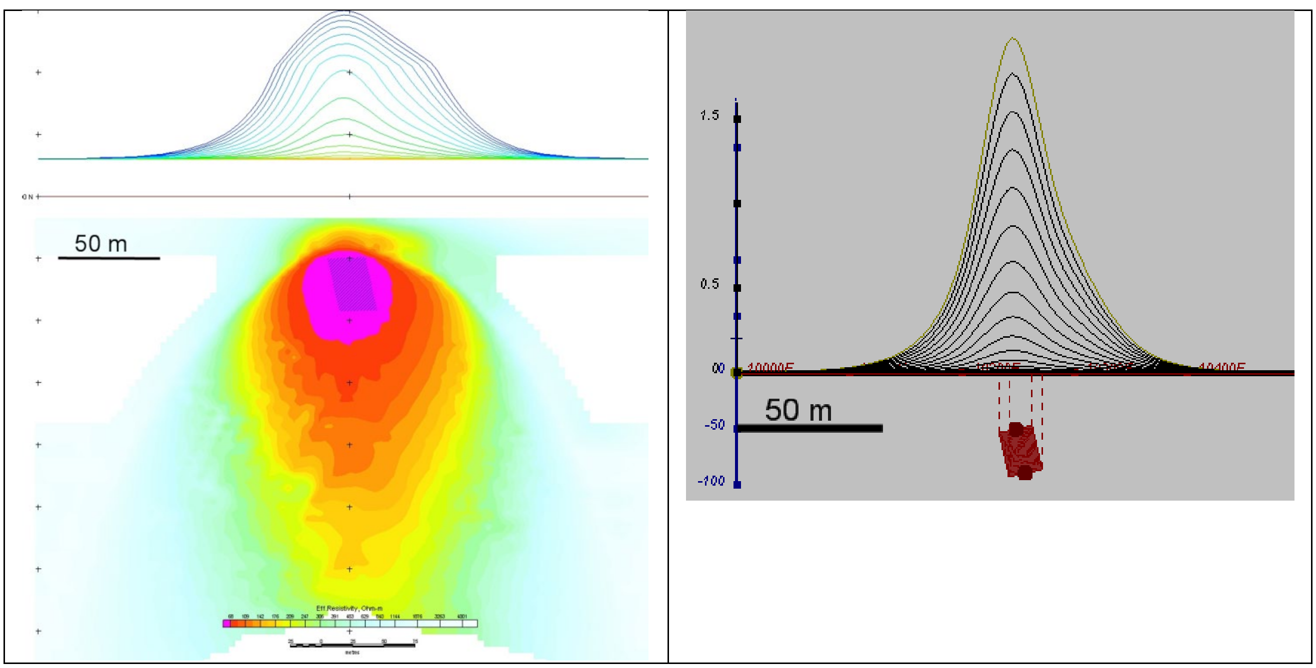


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extent, 30 m thickness

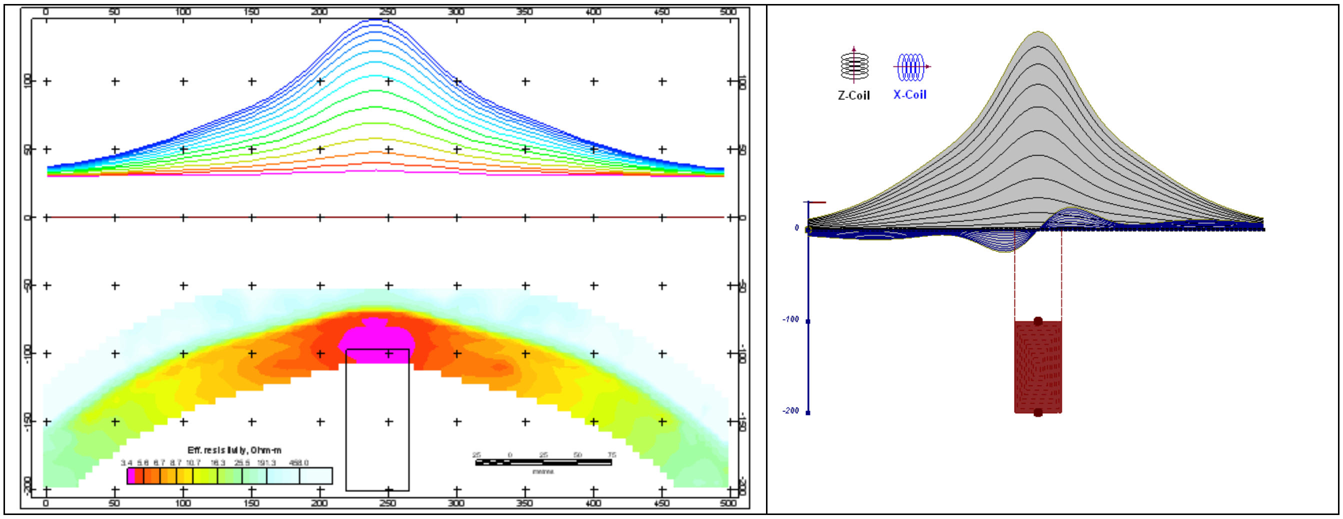


Figure F-4: Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extent 100 m). 19-44 chan.

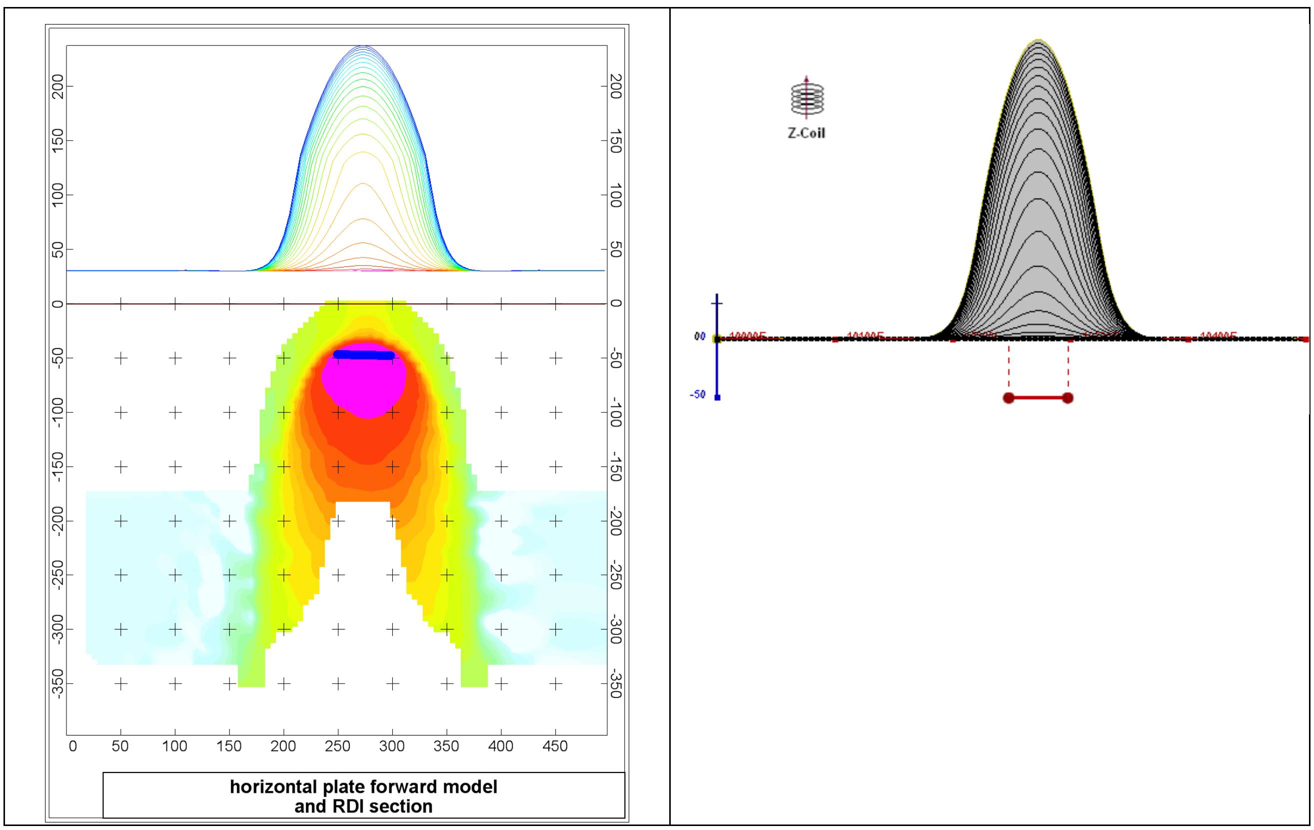


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

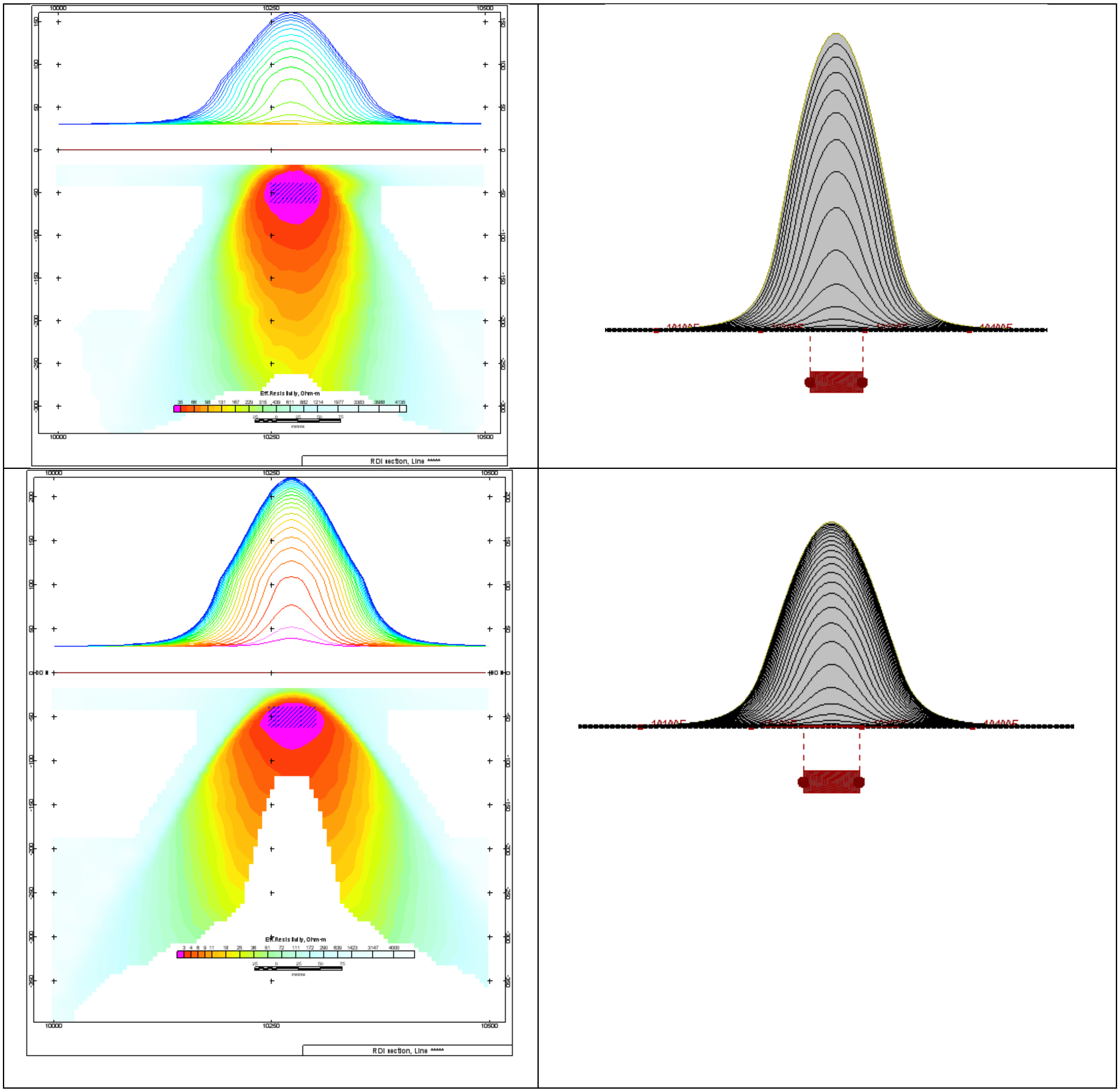


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below).

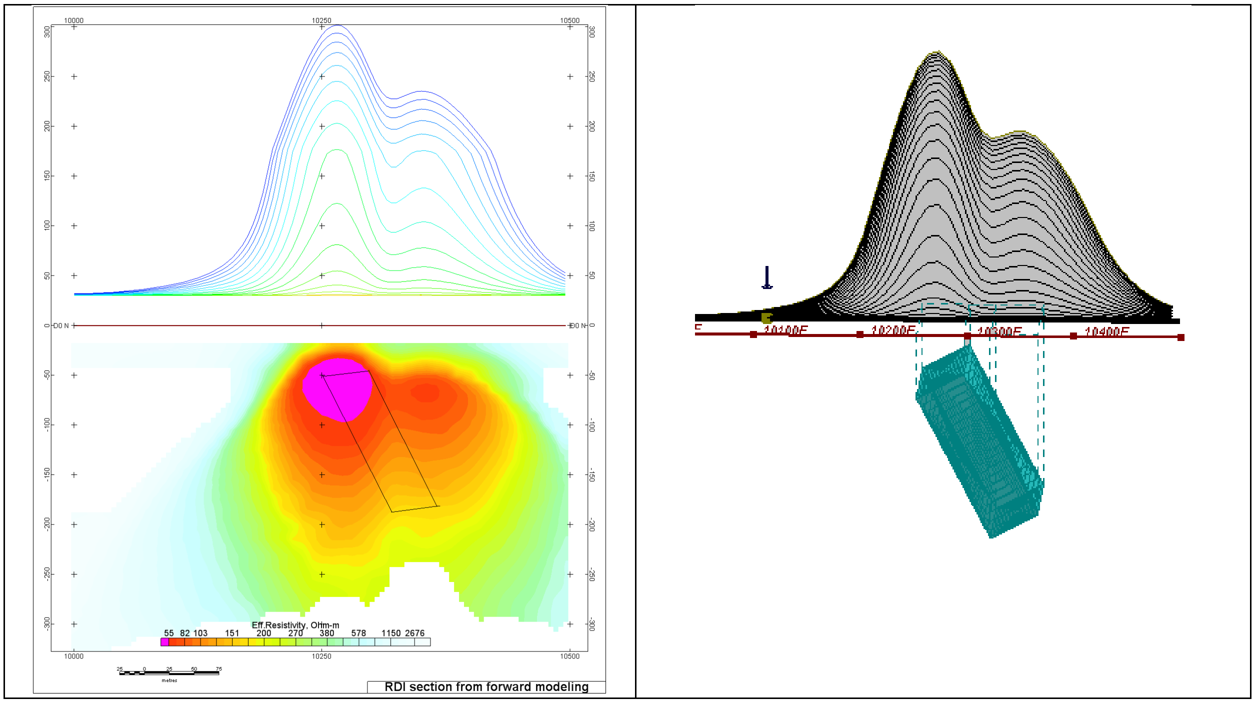


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extent 150 m, depth to the target 50 m.

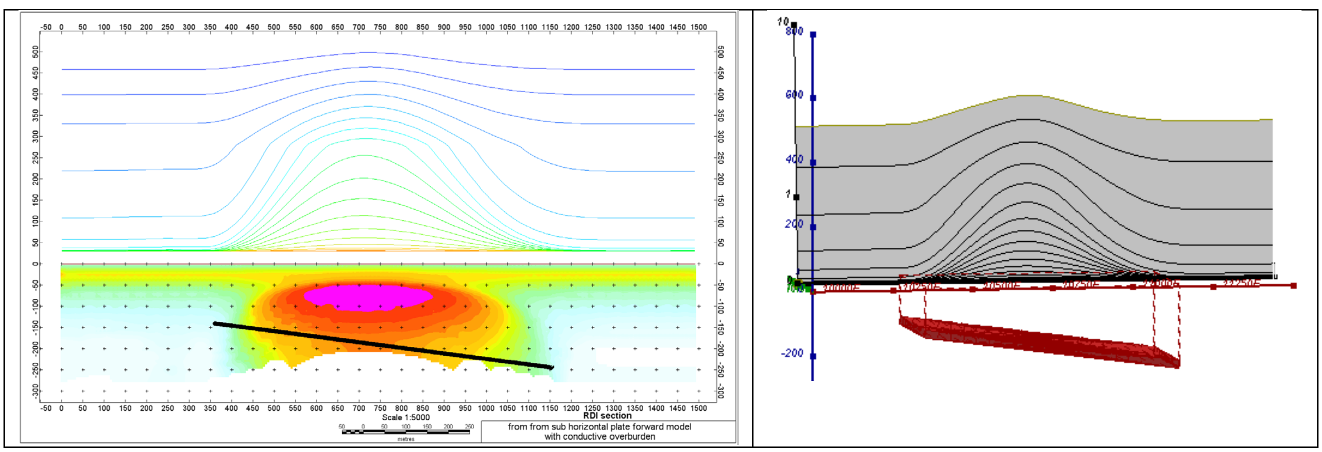


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

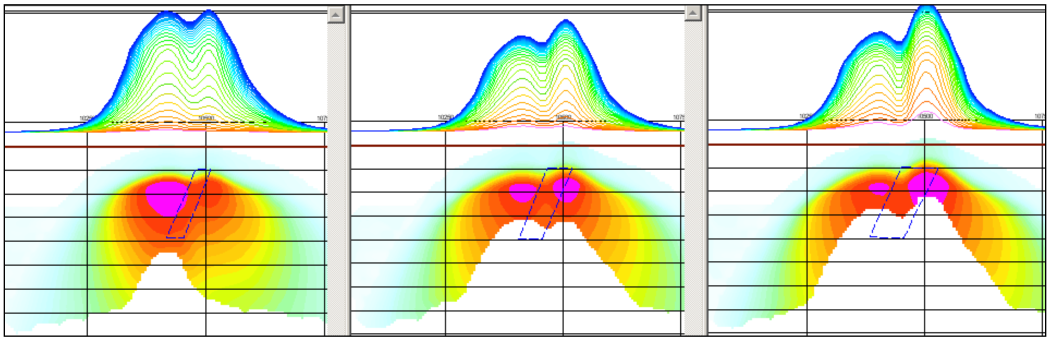


Figure F-9: Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

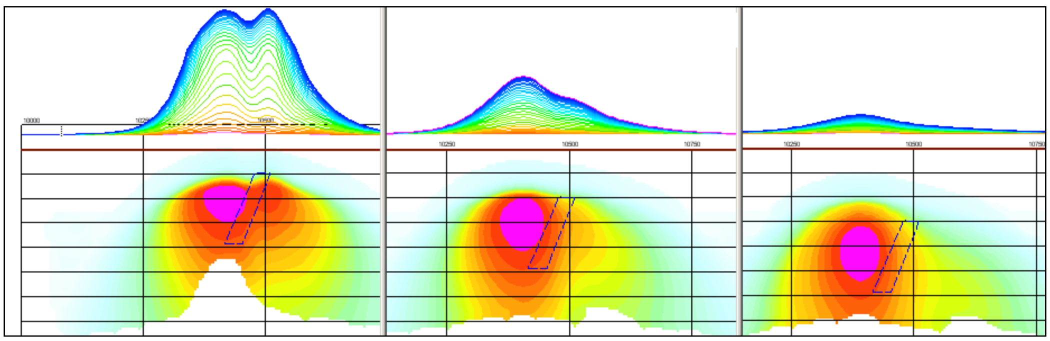


Figure F-10: Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

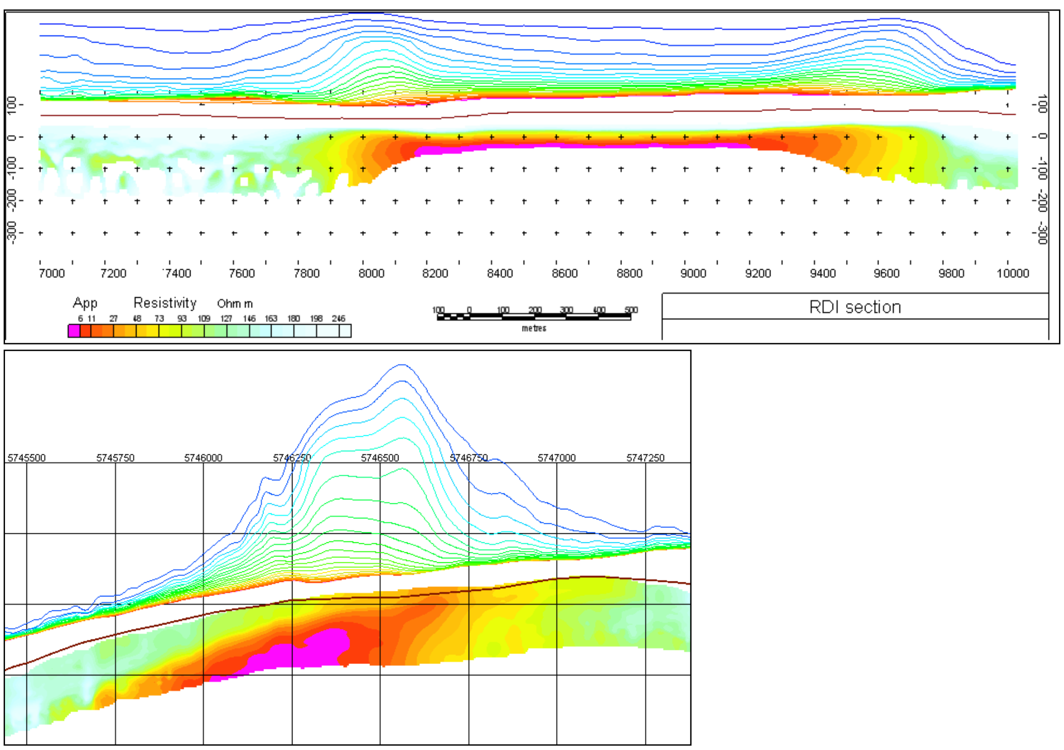
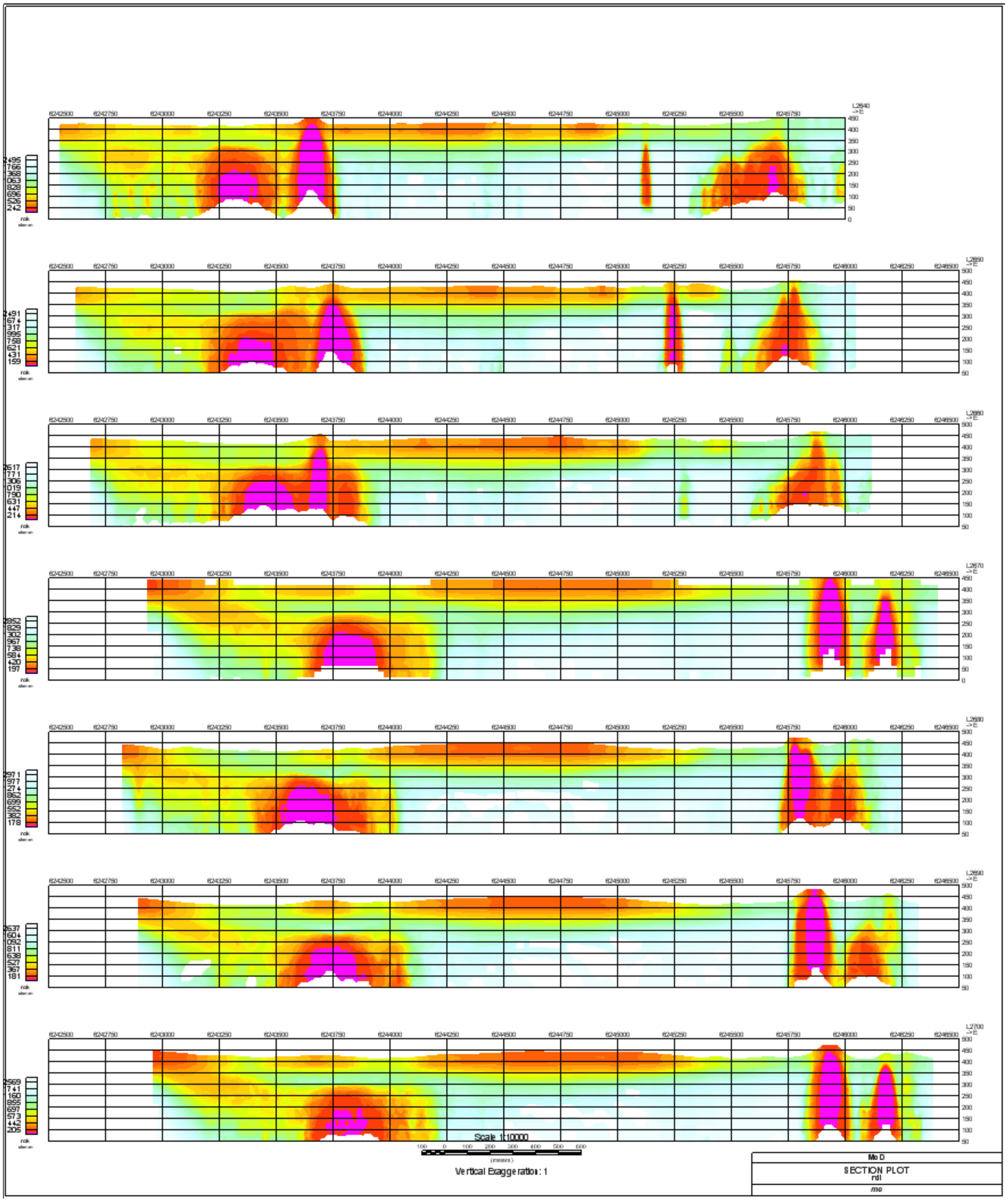


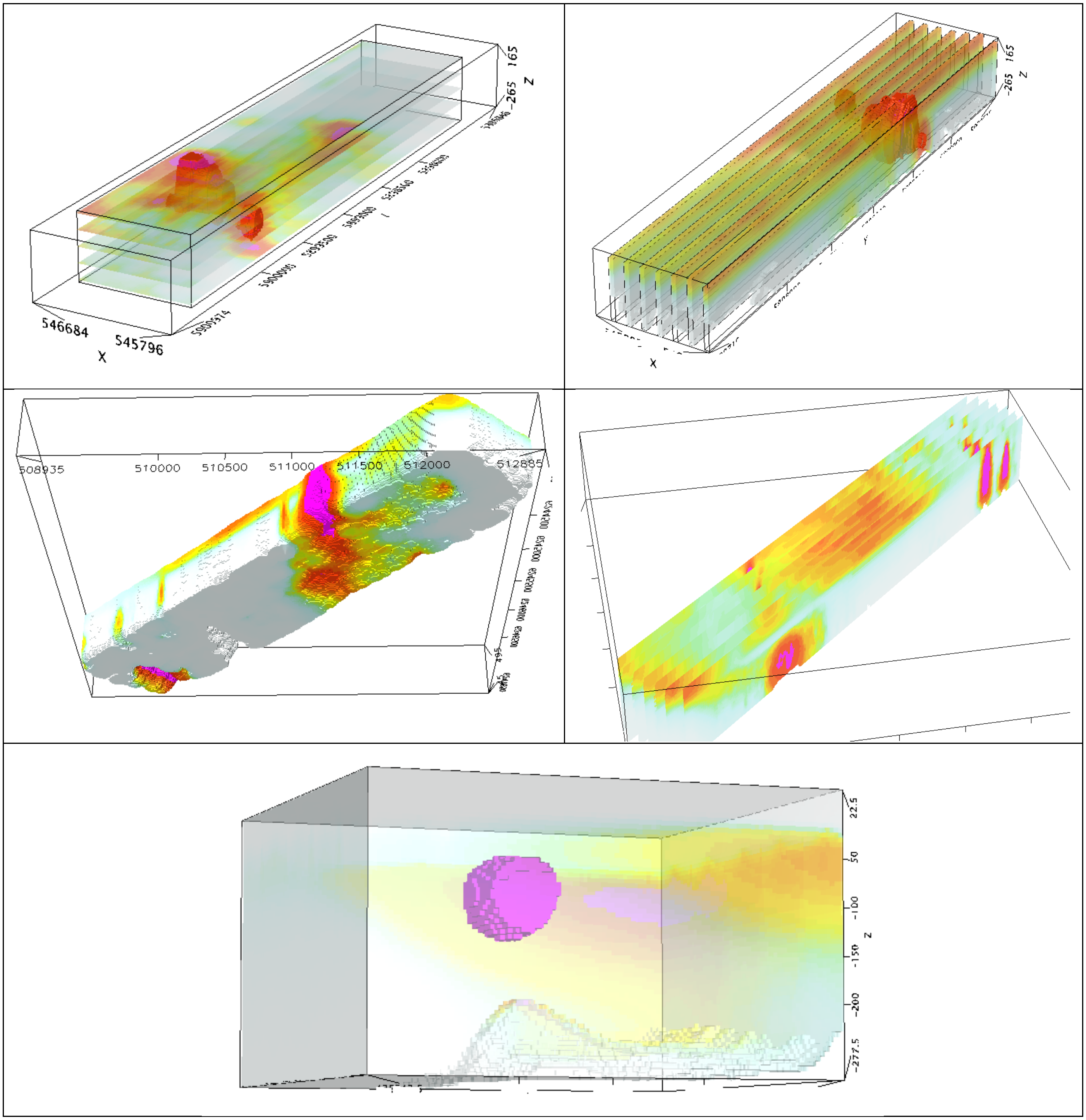
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers.

FORMS OF RDI PRESENTATION

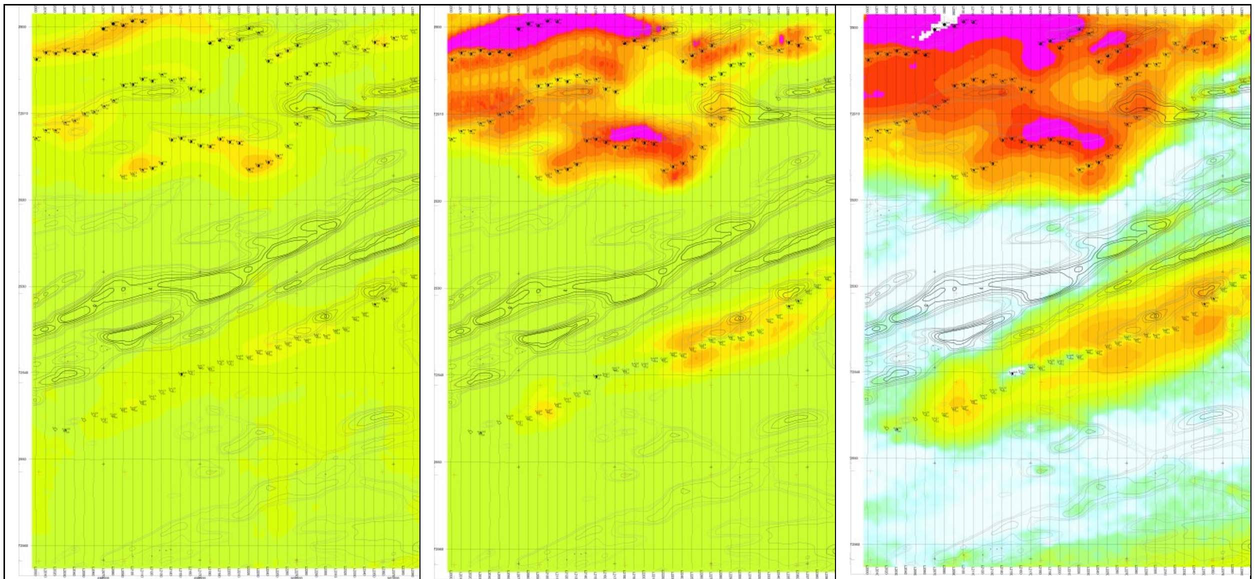
PRESENTATION OF SERIES OF LINES



3D PRESENTATION OF RDIS

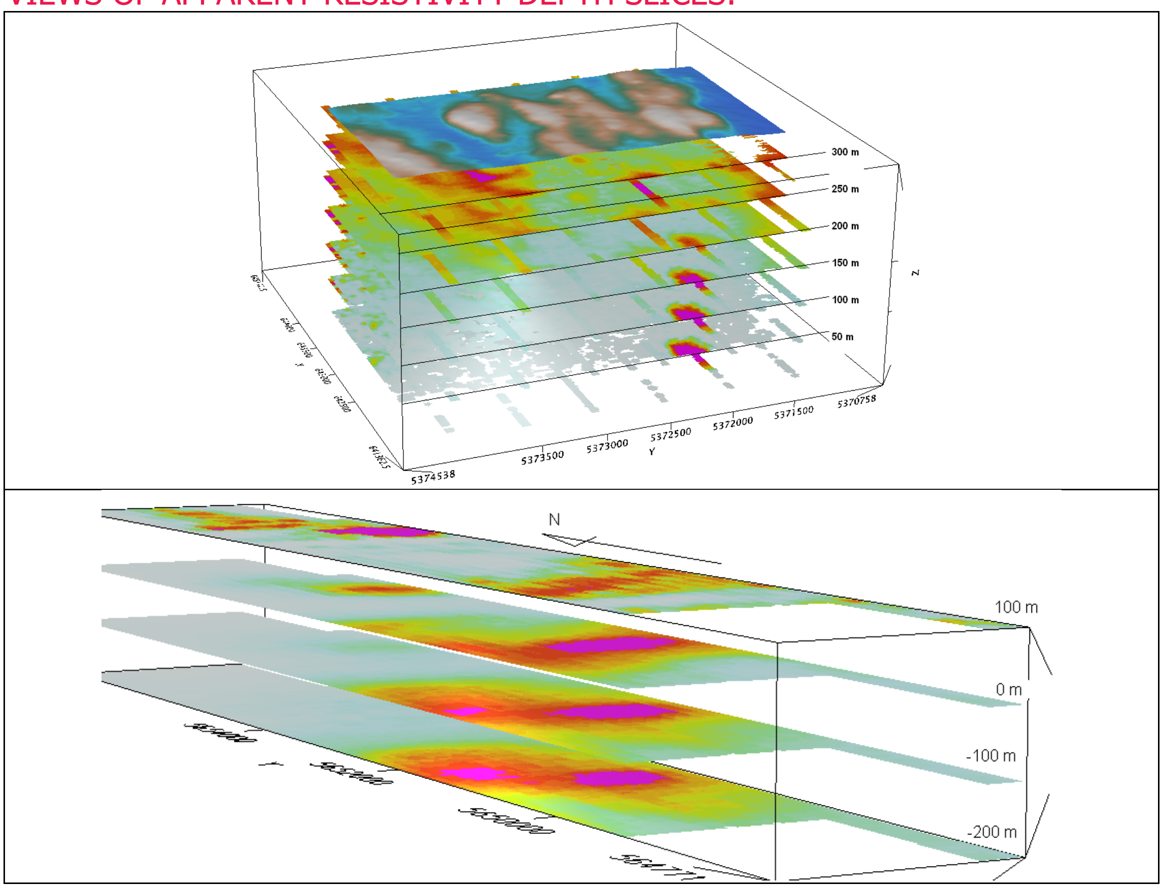


APPARENT RESISTIVITY DEPTH SLICES PLANS:



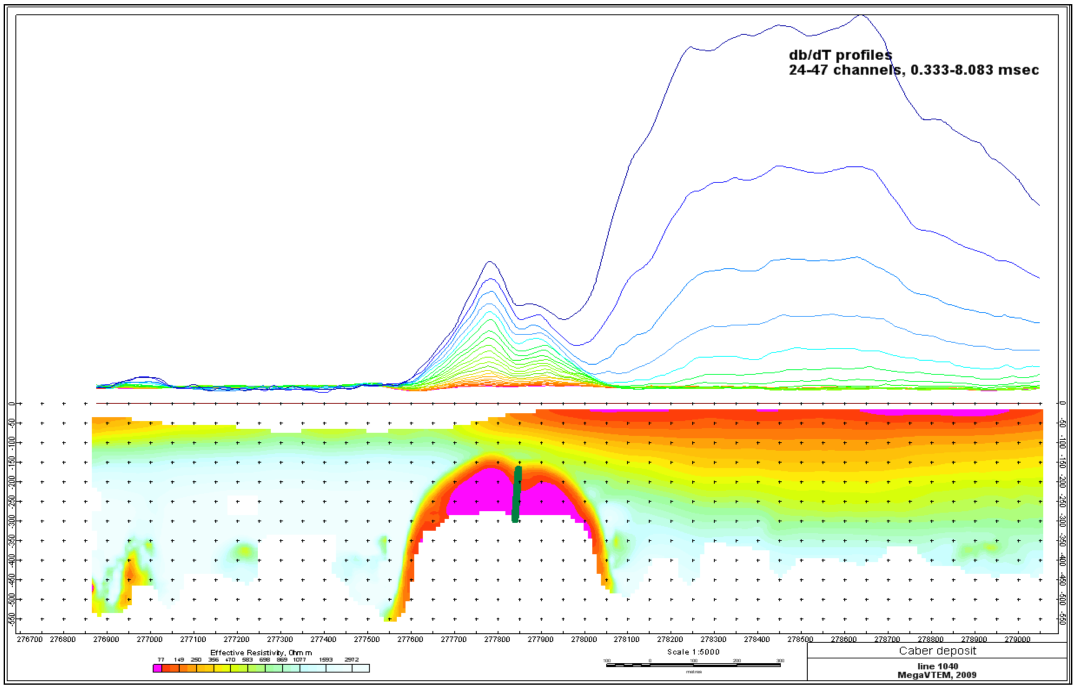
0 m (surface)	-100 m	-200 m

3D VIEWS OF APPARENT RESISTIVITY DEPTH SLICES:

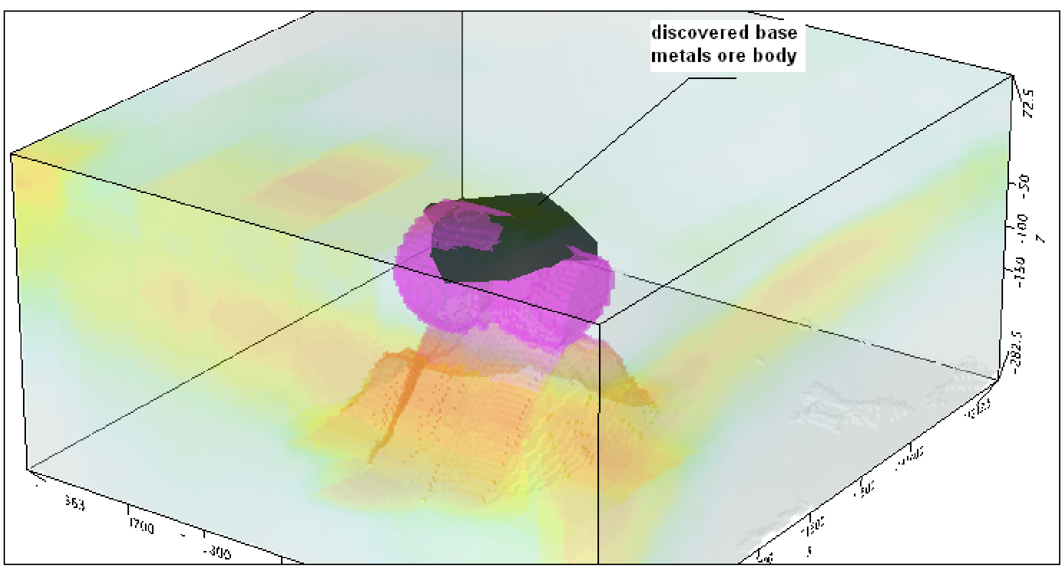


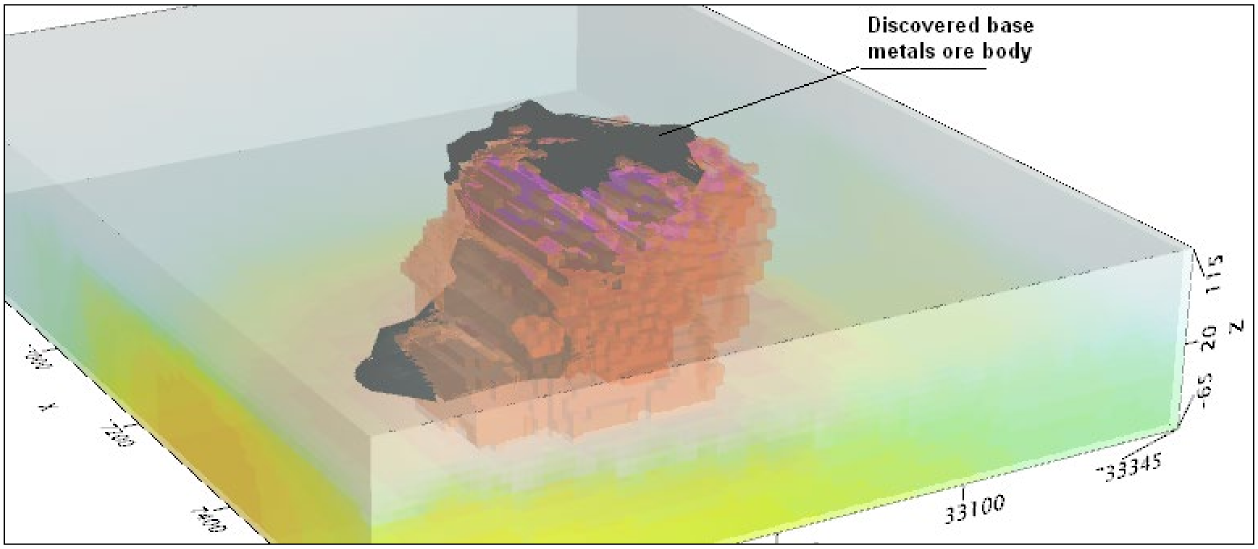
REAL BASE METAL TARGETS IN COMPARISON WITH RDIS:

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):





Geotech Ltd.
April 2011

APPENDIX G
RESISTIVITY DEPTH IMAGES (RDI)

Please see RDI Folder on DVD for the PDF's