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CANADIAN EXPLORATION SERVICES LTD

De Beers Group of Companies.

**Q2752 – Progenitor Claims
Magnetometer Survey**

**C Jason Ploeger, P.Geo.
Andrew Salerno, GIT.**

March 6, 2020

DE BEERS GROUP

Abstract

Canadian Exploration Services Limited (CXS) was contracted to perform a walking magnetometer survey over the Progenitor Claims. The survey was designed to investigate a magnetic bullseye which was identified in a previous airborne survey.

The target of the survey was a bullseye target identified from a historic airborne survey. The ground magnetic survey successfully outlined and georeferenced the location of this anomaly.

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1. SUMMARY

1.1 PROJECT NAME

This project is known as the **Progenitor Claims**.

1.2 CLIENT

De Beers Group

15 Consumer Road, Suite 300.
Toronto, Ontario
M2J 4Z2

1.3 OVERVIEW

Canadian Exploration Services Limited (CXS) performed both a Magnetometer survey over the Progenitor Claims for De Beers Group. A total of 22.44-line kilometres of magnetometer survey was read over the Progenitor Claims between February 25th, 2020 and March 1st, 2020. This consisted of 30945 magnetometer samples taken at a 2 second sample interval.

1.4 OBJECTIVE

A previous airborne magnetic survey indicated the presence of potential favorable geology. The objective of this survey was to provide a detailed magnetic plan of the previously identified signature.

1.5 SURVEYS & PHYSICAL ACTIVITIES UNDERTAKEN

Survey/Physical Activity	Dates	Total Days in Field	Total Line Kilometres
Magnetometer	February 25 th - March 1 st , 2020.	6	22.44

Table 1: Survey & Physical Activity Details Undertaken

1.6 SUMMARY OF RESULTS, CONCLUSIONS & RECOMMENDATIONS

The target of the survey was a bullseye target identified from an airborne survey. The ground magnetic survey successfully outlined and georeferenced the location of this anomaly.

1.7 CO-ORDINATE SYSTEM

Projection: UTM zone 17N

Datum: NAD83

UTM Coordinates near center of grid: 584175 Easting and 5217550 Northing

2. SURVEY LOCATION DETAILS

2.1 LOCATION

The Progenitor Claims are located approximately 9km northwest of Temagami, Ontario.

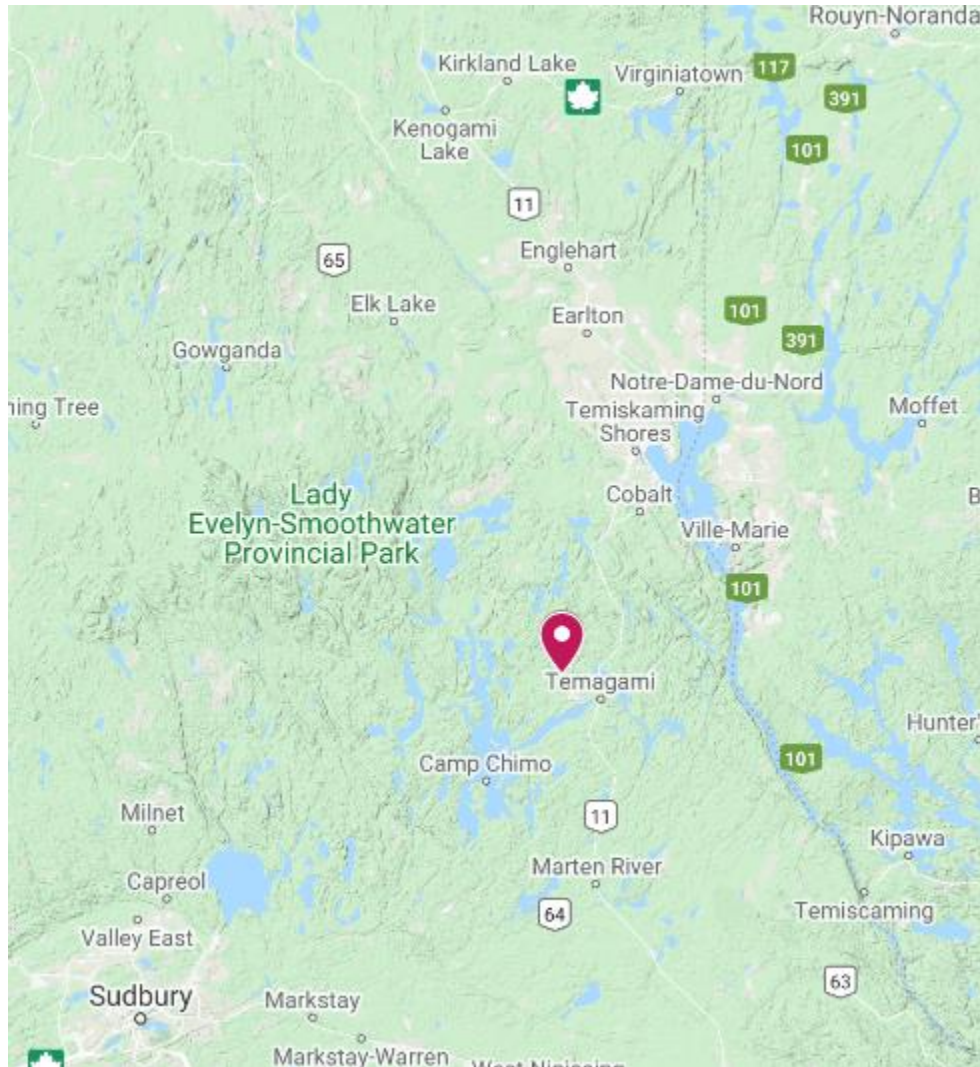


Figure 1: Location of the Progenitor Claims (Map data ©2020 Google)

2.2 ACCESS

The Progenitor Claims were accessed via snowmachine from Temagami, Ontario. This was by heading west on lake Temagami for 4.5 kilometers and crossing onto the historic Sherman Minesite. From here the snowmachines were used to travel an additional 12.4 kilometers north over a series of unnamed roads and trails.

2.3 MINING CLAIMS

The survey area covers a portion of mining claims located in Chambers and Strathy Townships, within the Sudbury Mining Division. The property is owned by Progenitor Metals Corp. The details of these claims are in the table below.

Cell Number	Cell Type	Ownership of Land	Township
512025	Claim	Progenitor Metals Corp	Chambers
512033	Claim	Progenitor Metals Corp	Chambers
512044	Claim	Progenitor Metals Corp	Chambers/Strathy
512043	Claim	Progenitor Metals Corp	Chambers
512032	Claim	Progenitor Metals Corp	Chambers
512036	Claim	Progenitor Metals Corp	Chambers/Strathy
182034	Claim	Progenitor Metals Corp	Chambers
311567	Claim	Progenitor Metals Corp	Chambers
217425	Claim	Progenitor Metals Corp	Chambers/Strathy

Table 2: Mining Land Cells Information

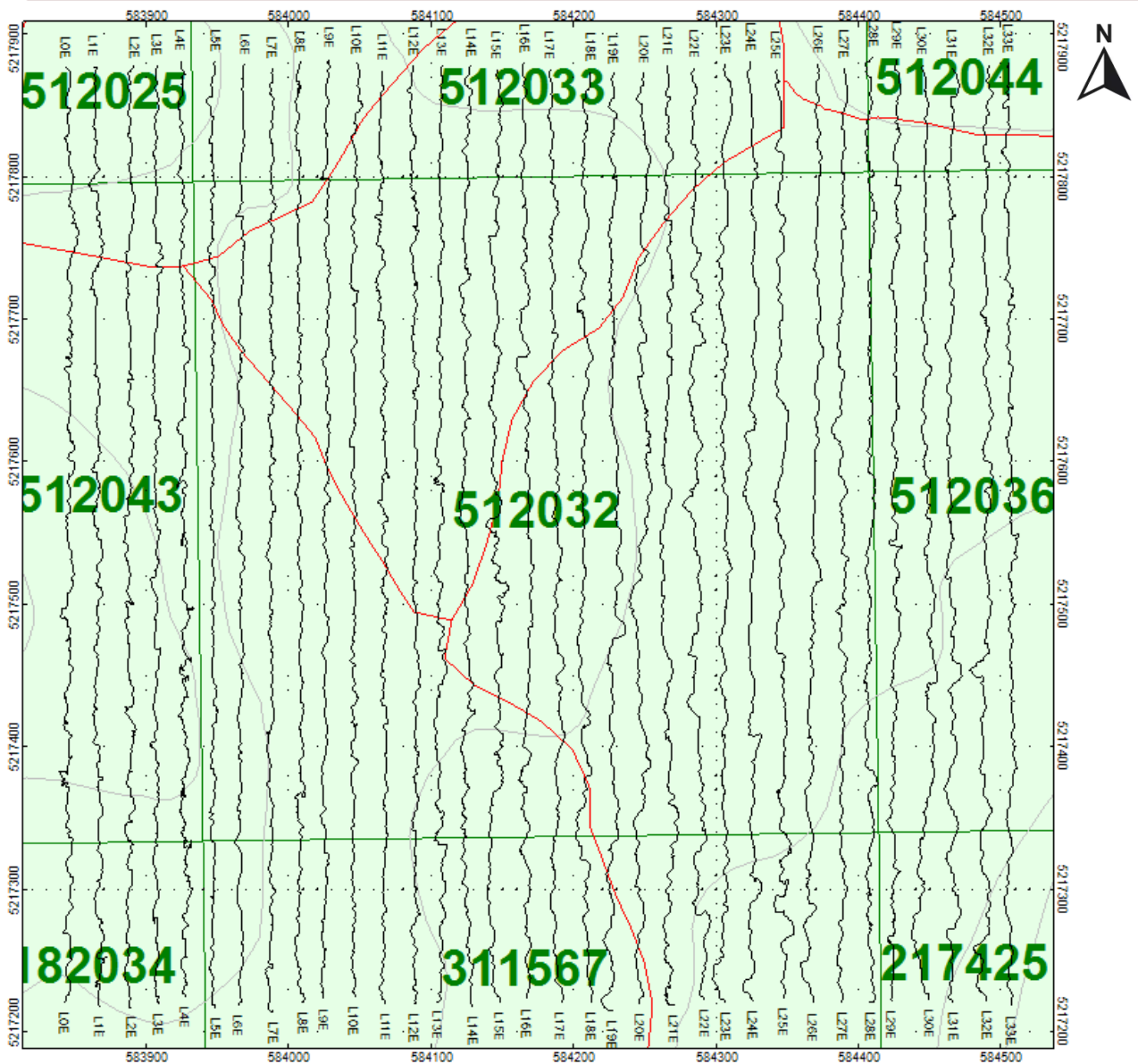


Figure 2: Operational Claim Map with Survey Traverses

2.4 PROPERTY HISTORY

Significant historical exploration has been carried out surrounding the survey area, however little work has been reported over the survey area. Some un-reported work may have been also previously performed as old pickets were observed during the survey. The following list describes details of the previous geoscience work which was collected by the Mines and Minerals division and provided by OGSEarth (MNMD & OGSEarth, 2020).

- **1998: Wabana Explorations Inc. (File 31M04SW2021)**

Airborne Geophysics

An airborne magnetometer and EM survey was flown by Sial Geosciences. Some followup prospecting as also performed.

- **1971: Copperfields Mining Corporation Ltd. (File 31M04SW0011)**
Ground EM and Magnetic Geophysical Surveys

Twenty miles of picket lines were established with lines spaced at 200 feet. On this grid a magnetometer, VLF and SP survey was conducted. The grid was also used for geologic mapping purposes.

2.5 TARGET OF INTEREST

An airborne magnetometer survey indicated a localized magnetic “bullseye” target. This target type is the exploration signature for kimberlites. The survey was designed to ground-truth and obtain better resolution for the airborne magnetic target.

3. PLANNING

3.1 EXPLORATION PERMIT/PLAN

The Magnetometer survey was performed over claims owned by Progenitor Metals Corp. For this survey no line cutting, or generators were needed, therefore no plan was required.

3.2 SURVEY DESIGN

This survey was designed to further identify and explore an airborne magnetic bullseye. To accomplish this a series of north-south traverse lines, centered over the airborne anomaly, were designed at a 20 meter line spacing. These traverse lines were then surveyed at a 2 second sample interval.

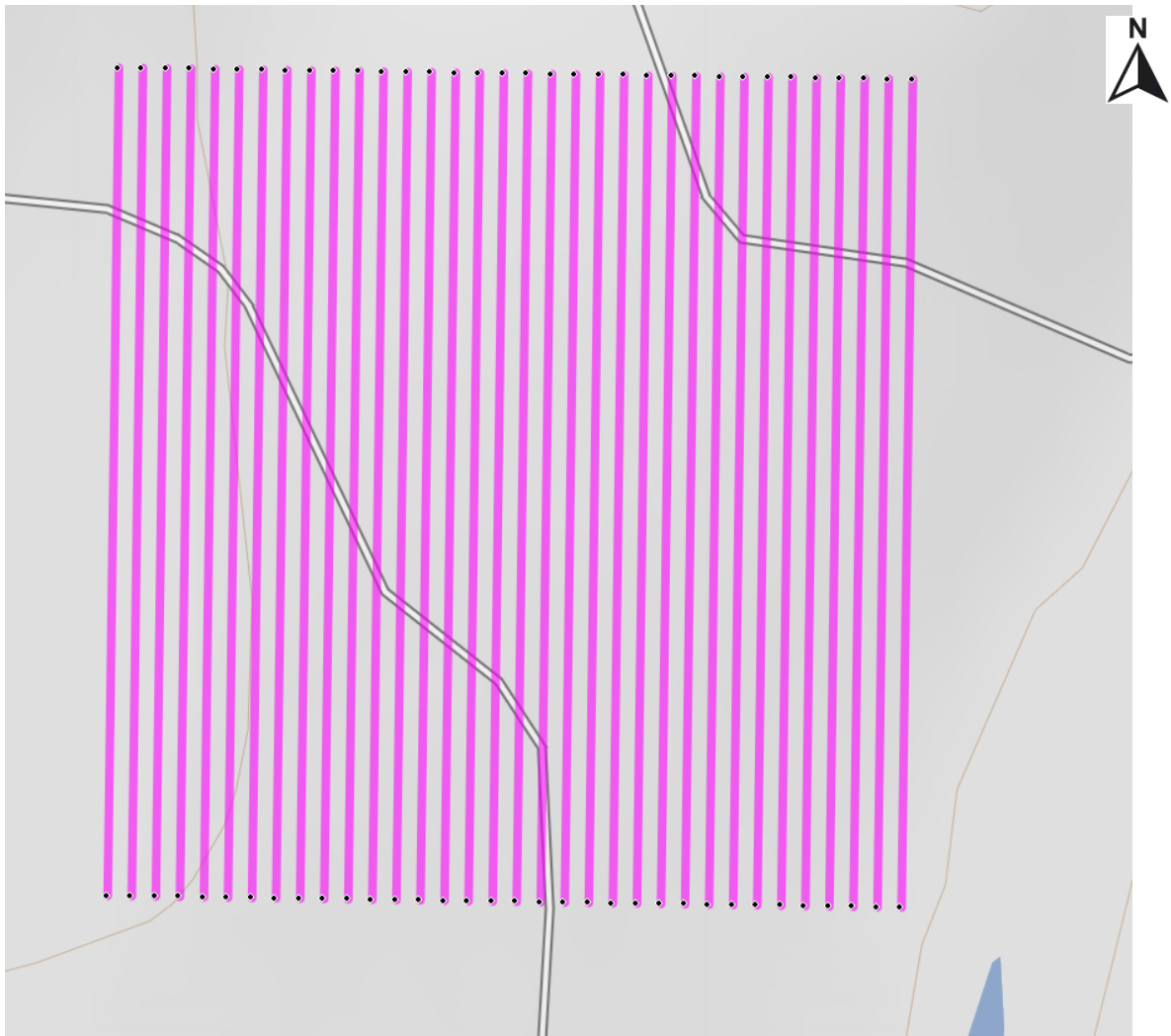


Figure 3: Survey Design

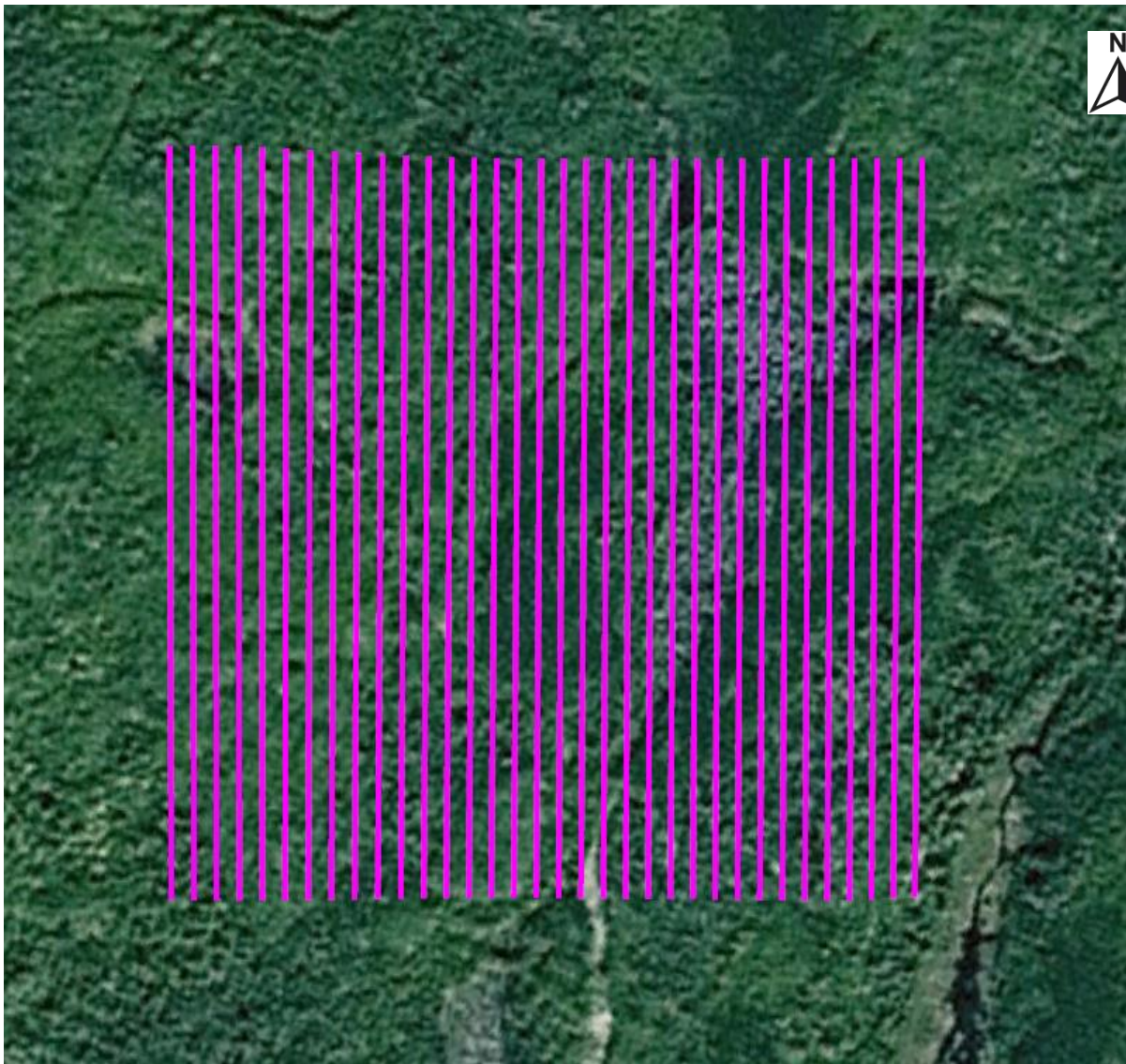


Figure 4: Survey design overlaid on Google Earth (Image ©2020 CNES/Airbus)

4. SURVEY WORK UNDERTAKEN

4.1 SUMMARY

CXS was contracted to perform a Magnetometer survey over the Progenitor Claims. A total of 22.44-line kilometres of Magnetometer sample was collected over the Progenitor Claims between February 25th, 2020 and March 1st, 2020. This consisted of 30945 magnetometer samples taken at a 2 second sample interval.

4.2 SURVEY GRID

No survey grid was used in this project. Traverses were completed based on GPS corridors and a general route plan.

4.3 DATA ACQUISITION

Magnetometer Survey

Magnetometer data acquisition took place between February 25th, 2020 and March 1st, 2020. One magnetometer was set in a fixed position (583856E, 5217738N) in a region of stable geomagnetic gradient to monitor and correct for daily diurnal drift. A second magnetometer was being operated to acquire magnetic data along traverses. This second unit was set to a walkmag mode with an integrated GPS and took a reading every 2 seconds. A GPS operator stayed a minimum of 10 metres away from the magnetometer operator, to refrain from causing any magnetic interference from the GPS and acted as a navigator.

A total of 22.44-line kilometres of both magnetometer measurements were taken. This consisted of 30945 magnetometer samples with corresponding GPS waypoints read at a 2 second interval over a 5-day field period. The following figure shows the path taken by the VLF EM magnetometer operators, while acquiring data.

At the beginning and end of each day, the magnetometer operator stopped at an designated area of low magnetic gradient. This data was used to level the operators ambient magnetic differences, each day.

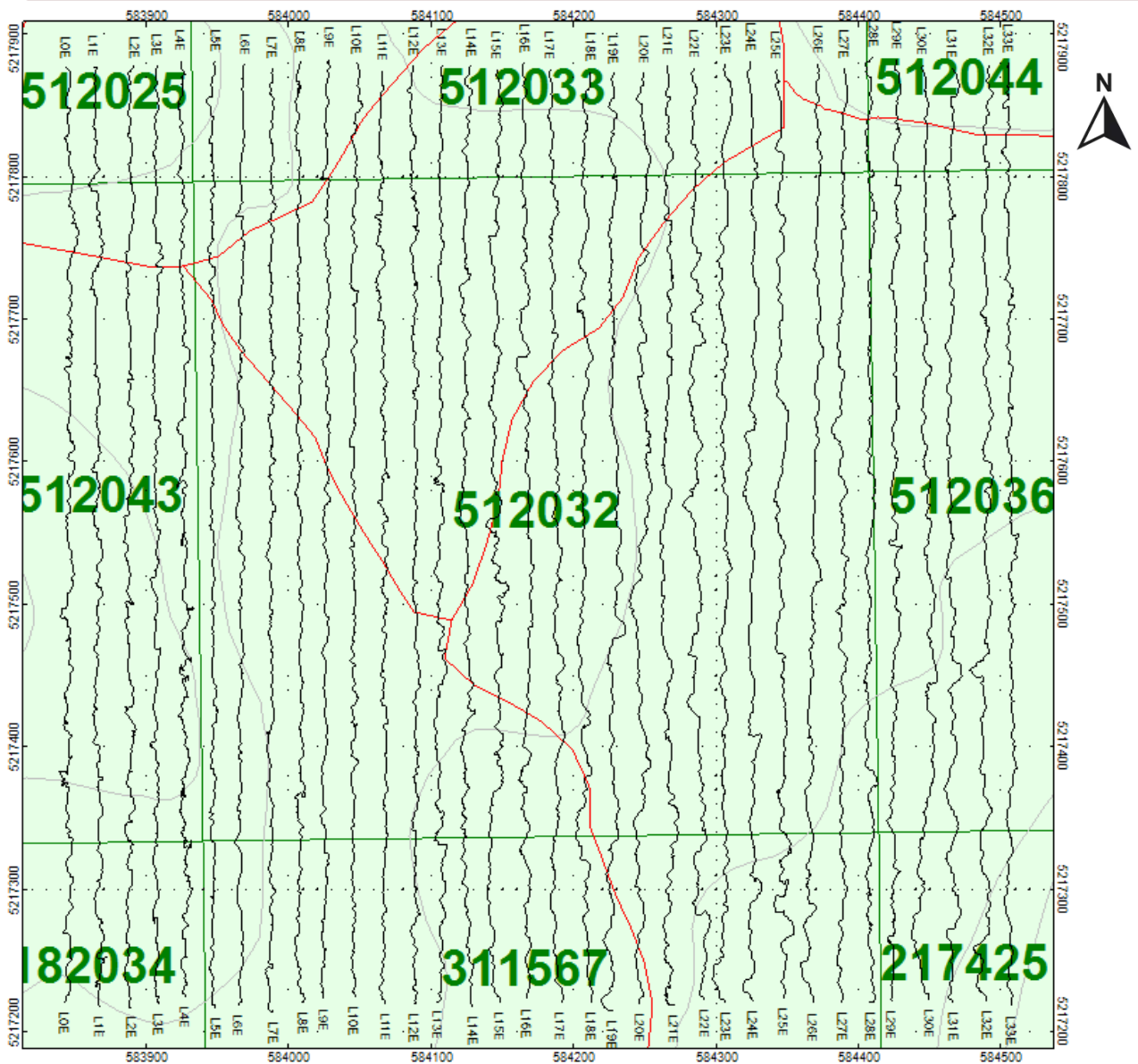


Figure 5: Traverses by Field Crew

4.4 SURVEY LOGS

Magnetometer Survey Log					
Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
February 25, 2020	Mobilize to Temagami. Spend day locating access.	-	-	-	-

Magnetometer Survey Log					
Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
February 26, 2020	Begin magnetometer survey.	33E	0	660	660
		32E	0	660	660
		31E	0	660	660
		30E	0	660	660
		29E	0	660	660
		28E	0	660	660
		27E	0	110	110
February 27, 2020	Continue magnetometer survey.	27E	110	660	550
		26E	0	660	660
		25E	0	660	660
		24E	0	660	660
		23E	0	660	660
		22E	0	660	660
		21E	0	660	660
		20E	0	660	660
		19E	0	260	260
February 28, 2020	Continue surveys.	19E	260	660	400
		18E	0	660	660
		17E	0	660	660
		16E	0	660	660
		15E	0	660	660
		14E	0	660	660
		13E	0	340	340
					4040
February 29, 2020	Continue surveys.	13E	340	660	320
		12E	0	660	660
		11E	0	660	660
		10E	0	660	660
		9E	0	660	660
		8E	350	660	310
					3270
March 1, 2020	Complete survey and	8E	0	350	350

Magnetometer Survey Log					
Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
	Demobilize.				
		7E	0	660	660
		6E	0	660	660
		5E	0	660	660
		4E	0	660	660
		3E	0	660	660
		2E	0	660	660
		1E	0	660	660
		0E	0	660	660
					5630
Total	22.44 Line Kilometres				

Table 3: Survey Log

4.5 PERSONNEL

Crew Member / Contractor	Position	Resident	Province
Bruce Lavalley	GPS Operator	Britt	Ontario
Claudia Moraga	Magnetometer Operator	Britt	Ontario
Jason Ploeger, P.Geo	Senior Geophysicist/ Magnetometer Operator	Larder Lake	Ontario
Mathew Cliche	Technician	Larder Lake	Ontario
Andrew Salerno, GIT	GPS Operator	Larder Lake	Ontario

Table 4: Magnetometer and VLF EM Survey Personnel

4.6 FIELD NOTES: CONDITIONS & CULTURE

The average temperature over the field between February 25th, 2020 and March 1st, 2020 was -13.9°C. The lowest recorded temperature during the survey period was – 29.7°C with a high of -1°C. Generally, the weather conditions were sunny, however the 28th was a major snowstorm, which closed the highway.

No culture that could impact the data was observed during the survey.

4.7 SAFETY

Canadian Exploration Services Ltd prides itself in creating and maintaining a safe work

environment for its employees. Each crew member is briefed on the jobsite location, equipment safety, standard operating procedures along with our health and safety manual. An emergency response plan is generated relating to the specific job and with the jobsite predominantly in the field, which is unpredictable, morning safety briefings are essential. Topics are generally chosen based off jobsite characteristics of the area, weather conditions, timing and crew experience. All possible topics discussed during a survey, dependent on field conditions and time of the year, are listed in the following table.

Safety Topic	Protocol
Active Work Site	Be aware of surrounding activities – drilling, mine monitoring, and traffic. Caution when working near roads, and post safety signs to alert passers-by of ongoing geophysical surveys.
ATV	Conduct circle check before operating an ATV. Ensure brakes and tires are in good working condition. Drive at reasonable speeds according to terrain to avoid accidents. The use of helmets is mandatory.
Extreme Temperatures	With temperatures down to -40, there is an increased risk of cold related injuries (i.e. frostbite, hypothermia). Dress accordingly and take breaks to warm up if necessary. Bring extra clothing to anticipate for possible drop in temperature throughout the day. With temperatures up to +30C, there is an increased risk of heat stroke. Keep hydrated throughout the day and in shaded areas if possible.
Communication	Check in with the crew leader or any crew member when working individually to inform the team of your safety and well-being.
Heavy Lifting	When lifting equipment individually, always lift with your legs rather than your back. Always ask fellow crew members for help when lifting or moving heavy and large equipment (i.e. transmitter, generator, snowmobile, etc.).
Hunting Seasons	There may be more traffic during hunting season. Be careful when crossing. Wear proper (high-visibility) attire to avoid being mistaken for an animal in the bush.
Power Protocol	When in doubt, always assume that power is on and stay clear of survey circuits until confirmed otherwise.
Power Tools	Be alert when operating power tools – chainsaw, Tanaka, etc. Do not operate equipment when unsure of safety instructions for the specific tool.
Rain	Terrains may be slippery. Traverse carefully to avoid slipping, especially when ascending, descending, or walking along side of hills. When there is a chance of thunderstorm, notify person in-charge of transmitter when thunder is heard. Be extra careful

Safety Topic	Protocol
	with power protocol due to increased risk of shock. Bring extra clothing in case gear gets too wet and heavy.
Sharp Tools	Be careful when handling tools such as a machete and knives to avoid injuries. Inform another crew member of any injuries.
Slips, Trips and Falls	Increased risk of hidden hazards with snow coverage. Proper use of snow shoes is encouraged to avoid injuries from slipping, tripping, or falling. 3 points of contact is encouraged.
Snowmobile	Proper use of PPE (i.e. safety helmet, high visibility attire, etc.). Practice safety checks before operating snowmobiles. Ensure that engines and brakes are in good working condition. Ensure that oil, coolant, and gasoline levels are sufficient for distance of travel. Check that snowmobile is physically safe to operate (i.e. no broken parts).
Truck and Trailer	Conduct safety checks prior to operation of company trucks to ensure engines, brakes, tires, and etc. are in good working condition prior to operating vehicle. Conduct circuit checks when mobilizing and de-mobilizing trailers.
Water Hazards	Creeks, lakes, and swamps may not be fully frozen even under very low temperatures. The use of a stick or pole is encouraged for testing water bodies prior to crossing.
Wildlife	Always be aware of surroundings, keeping an eye out for animals such as bears, moose and wolves. Carry bear spray when in the field during the summer.
Winter Driving	Snow accumulation, freezing rain and icy conditions create added road hazards. Road into field sites may be rough. Drive at appropriate speeds according to road conditions.

Table 5: General Safety Topic Protocols

Emphasized daily topics discussed in the field for this project include:

Date	Safety Topic
February 25, 2020	Chainsaw refresher and chainsaw PPE inspection.
February 26, 2020	Ice safety and using the SFSC trails.
February 27, 2020	Extreme terrain and snoeshoes. Remove snowshoes and 3 point contact.
February 28, 2020	Circuit checks, winter driving, and equipment checks for de-mobilization.
February 29, 2020	Circle checks on skidoos. Make sure nothing freezes and that the fluids are topped up.
March 1, 2020	Working and skidoing in cold weather

Table 6: Daily Safety Topics

5. INSTRUMENTATION & METHODS

5.1 INSTRUMENTATION

The survey was conducted with a GSM-19 v7 Overhauser magnetometer in 2 second walkmag mode with a second GSM-19 magnetometer in base station mode for diurnal correction.

The GSM-19 measures the Earth's magnetic field with less than 0.1 nT sensitivity, 0.01 resolution, and 0.2 nT absolute accuracy over its full temperature range.

5.2 THEORETICAL BASIS

Magnetometer Survey

The GSM-19 Overhauser magnetometer measures the Earth's magnetic field in a multi-step process that provides better results by using the Overhauser effect. The Overhauser effect occurs when a special liquid (with unpaired electrons) is combined with hydrogen atoms. The unpaired electrons couple with the protons within the hydrogen atom, to produce a two-spin system. This electron-proton coupling is then disturbed once exposed to secondary polarization from a strong radio frequency (RF) magnetic field. The unpaired electrons transfer their stronger polarization to hydrogen atoms, which allows an increased polarization of protons in the sensor liquid. Thus, generating a strong precession signal, which causes a deflection of the proton magnetization into the plane of precession. A pause then allows the electrical transient to die off. This leaves the proton precession signal to slowly decay above the noise level. Following this slow decay, the proton precession frequency is counted, measured and converted into magnetic field units. Finally, the results are stored in memory with the date, time, and coordinates of the measurements. In the base station mode, only the time and total field are stored (GEM Systems, 2007).

5.3 SURVEY SPECIFICATIONS

Magnetometer Survey

Base station corrected Total Magnetic Field surveying was used for this magnetometer survey. Two synchronized GSM-19 v7 Overhauser magnetometers of identical type were needed. One magnetometer unit was set in a fixed position in a region of stable geomagnetic gradient, and away from possible cultural effects (i.e. moving vehicles) to monitor and correct for daily diurnal drift of the magnetic field. This magnetometer, given the term 'base station', stored the time, date and total field measurement at fixed time intervals over the survey day. A second, remote mobile unit was set to magnetometer mode. Simultaneous magnetometer and GPS readings were taken at 2 second increments along a corridor. The remote magnetometer stored the UTM coordinates time, date, and the total field measurements, simultaneously.

6. QUALITY CONTROL & PROCESSING

6.1 DATA QC & PROCESSING

For optimal data quality, when conducting the survey, ferromagnetic objects were kept away from the operator, so as not to impair the quality of measurements. A sensor was mounted on a backpack at a height of approximately 2-metres, in order to optimally minimize localized near-surface geologic noise. Noise spikes and/or nulls during acquisition were noted and repeats at those locations were taken until the readings normalized. These noise spikes and nulls were removed during post processing.

A location was also selected in a location of low geomagnetic gradient. At the beginning and end of each survey day, the magnetometer operator would occupy this location and acquire some data. This data was used to level the dataset each day, as the daily magnetic signatures of the operators would vary slightly.

At the end of a survey day, the mobile and base-station units were linked, via RS-232 ports, for diurnal drift and other magnetic activity (ionospheric and spheric) corrections using internal software. Diurnally corrected magnetic data (Total Field Magnetic; TFM) was gridded using the Minimum Curvature Gridding option in Geosoft Oasis (Figure 6). If necessary, lines were returned to and repeated and/or manual edits were made.

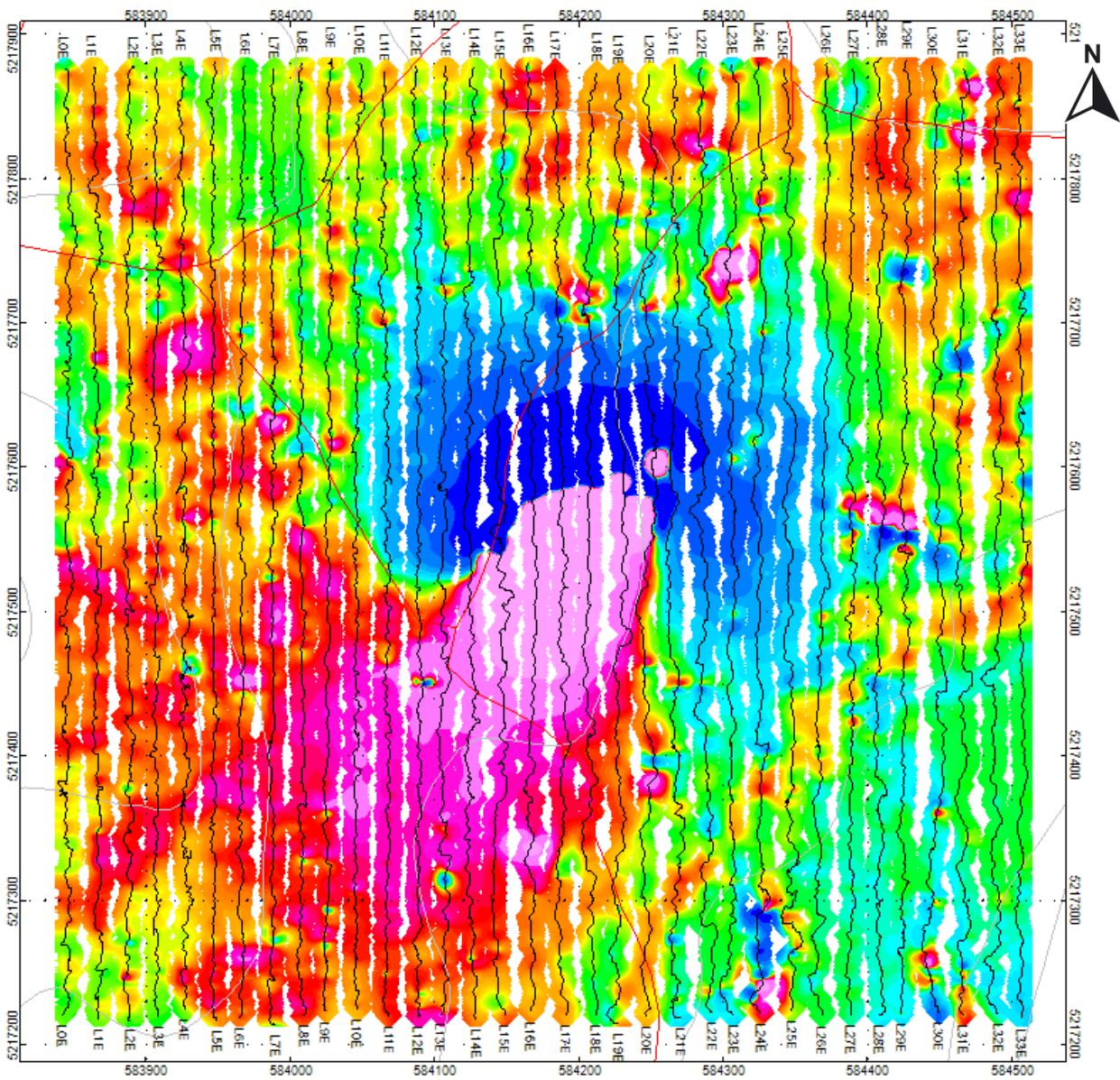


Figure 6: Diurnally Corrected Mag Grid (TFM)

7. RESULTS, INTERPRETATION & CONCLUSIONS

7.1 RESULTS

The following figures show the results obtained from the magnetic survey over the Progenitor Claims.

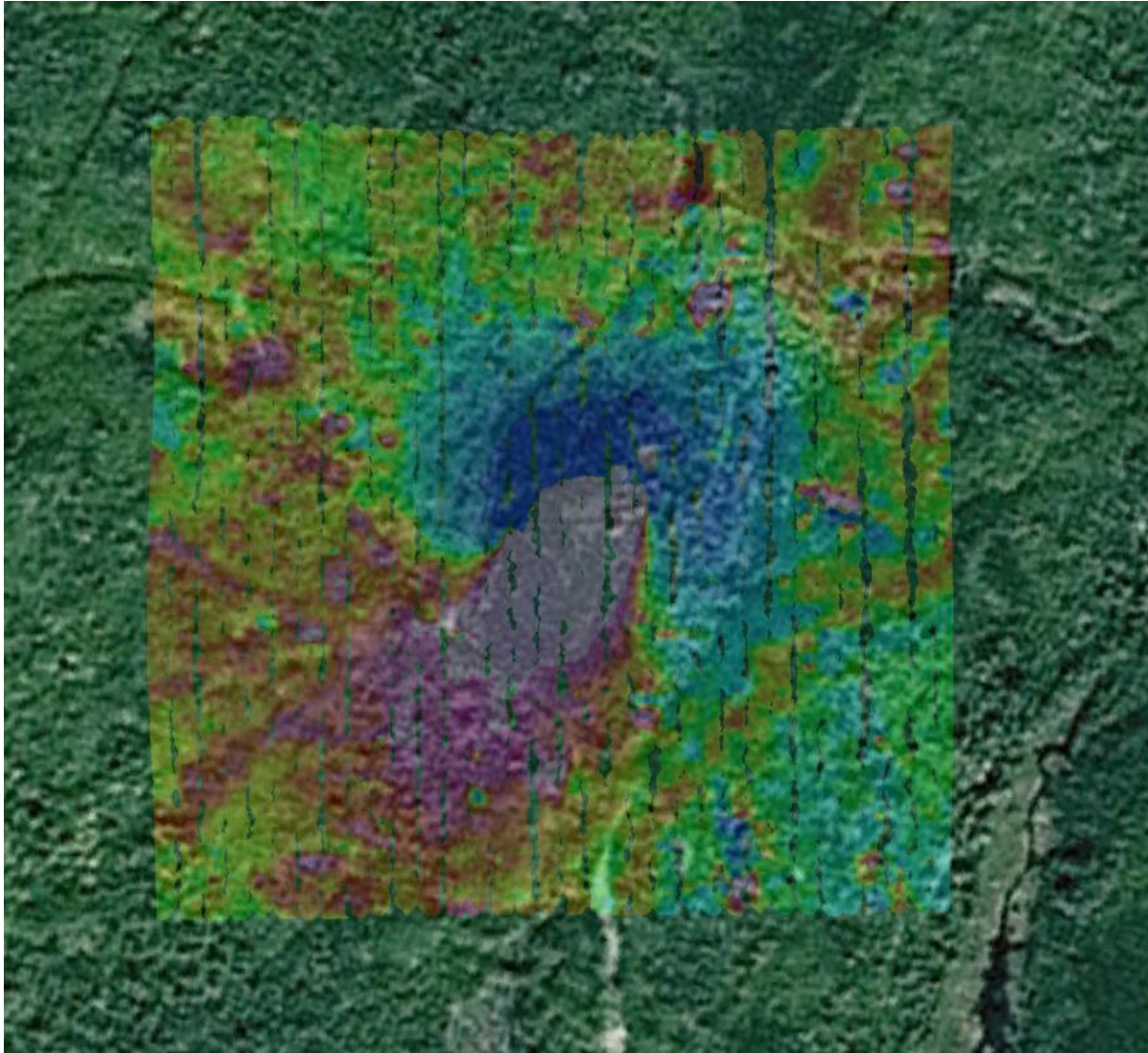


Figure 7: Magnetic plan over the Progenitor Claims on Google Earth. (Image ©2020 CNES/Airbus)

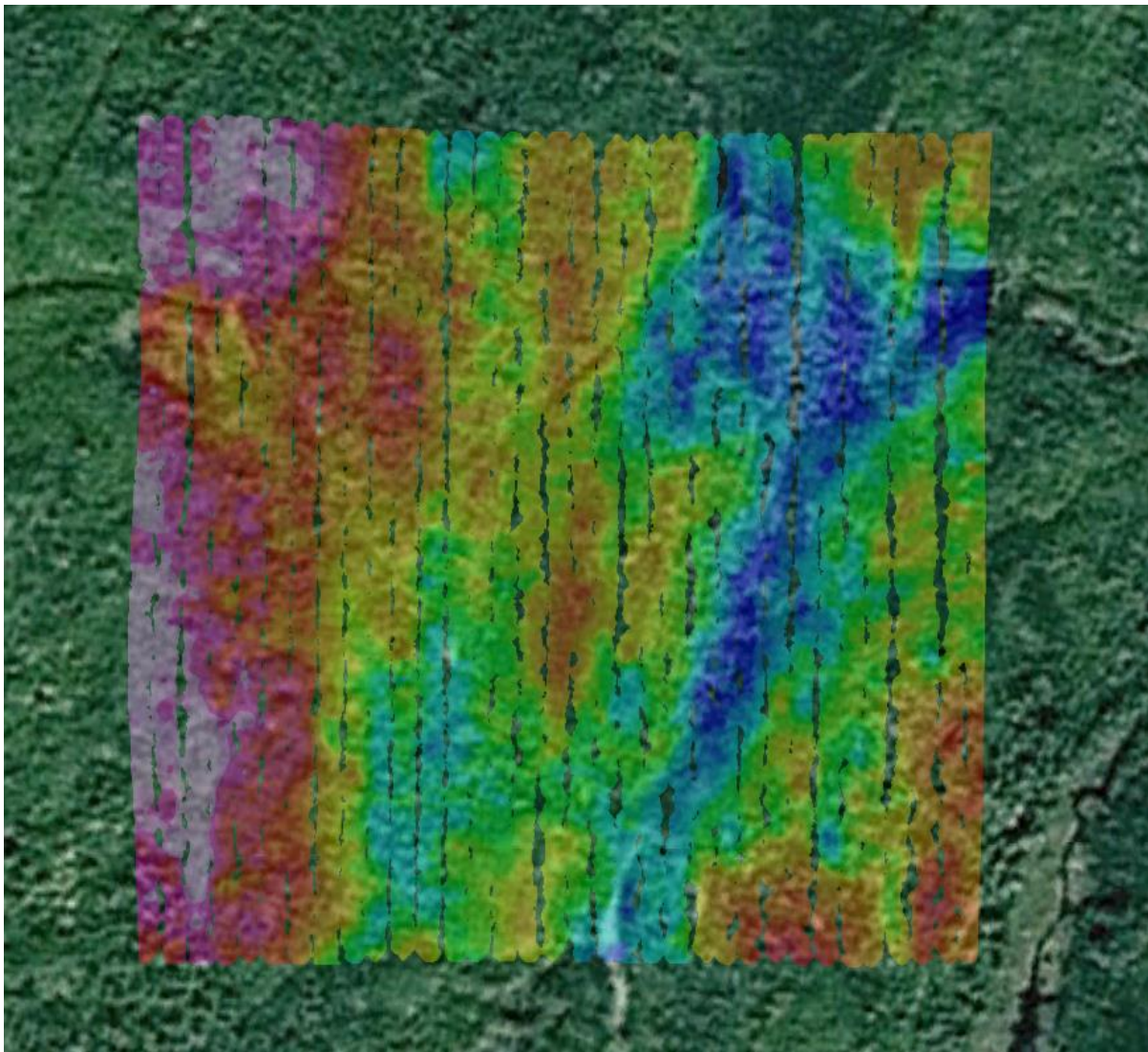


Figure 8: Measured elevation from GPS (Image ©2020 CNES/)

7.2 INTERPRETATIONS

The dataset indicates the presence of a magnetic bullseye near the center of the survey area.

7.3 RECOMMENDATIONS

A compilation of the historic work on the property is recommended. This may better identify the magnetic bullseye.

It is also recommended that prospecting be carried out over the bullseye area. The field crew reported some topography along with areas that may contain outcropping in the bullseye area. If outcrop exists, a better identification of the source of the magnetic signature may be made.

7.4 CONCLUSIONS

The target of the survey was a magnetic bullseye target identified from a historic air-borne survey. The ground magnetic survey successfully outlined and georeferenced the location of this anomaly.

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, C. Jason Ploeger, hereby declare that:

1. I am a professional geophysicist with residence in Larder Lake, Ontario and am presently employed as a Geophysicist and Geophysical Manager of Canadian Exploration Services Ltd. of Larder Lake, Ontario.
2. I am a Practising Member of the Association of Professional Geoscientists, with membership number 2172.
3. I graduated with a Bachelor of Science degree in geophysics from the University of Western Ontario, in London Ontario, in 1999.
4. I have practiced my profession continuously since graduation in Africa, Bulgaria, Canada, Mexico and Mongolia.
5. I am a member of the Ontario Prospectors Association, a Director of the Northern Prospectors Association and a member of the Society of Exploration Geophysicists.
6. I do not have nor expect an interest in the properties and securities of **DeBeers Group of Companies**.
7. I am responsible for the final processing and validation of the survey results and the compilation of the presentation of this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.



C. Jason Ploeger, P.Geo., B.Sc.
Geophysical Manager
Canadian Exploration Services Ltd.

Larder Lake, ON
March 6, 2020

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Andrew Salerno, hereby declare that:

1. I am a Geoscientist-in-Training with residence in Larder Lake, Ontario and am presently employed as a Junior Geologist with Canadian Exploration Services Ltd. of Larder Lake, Ontario.
2. I graduated with a Bachelor of Science Honors specialization in geology from the University of Waterloo, in Waterloo, Ontario, in 2018.
3. I am currently undergoing the Geoscientist-in-Training to later become a practicing member of the Association of Professional Geoscientists.
4. I do not have nor expect an interest in the properties and securities of **De-Beers Group of Companies**.
5. I am responsible for assisting with the final processing and validation of the survey results and the compilation of the presentation of this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.



Andrew Salerno, GIT, B.Sc.
Junior Geologist

Larder Lake, ON
April 30, 2019

APPENDIX B

EQUIPMENT SPECIFICATIONS

GSM 19



Specifications

Overhauser Performance

Resolution: 0.01 nT
Relative Sensitivity: 0.02 nT
Absolute Accuracy: 0.2nT
Range: 20,000 to 120,000 nT
Gradient Tolerance: Over 10,000nT/m
Operating Temperature: -40°C to +60°C

Operation Modes

Manual: Coordinates, time, date and reading stored automatically at min. 3 second interval.
Base Station: Time, date and reading stored at 3 to 60 second intervals.
Walking Mag: Time, date and reading stored at coordinates of fiducial.
Remote Control: Optional remote control using RS-232 interface.
Input/Output: RS-232 or analog (optional) output using 6-pin weatherproof connector.

Operating Parameters

Power Consumption: Only 2Ws per reading. Operates continuously for 45 hours on standby.
Power Source: 12V 2.6Ah sealed lead acid battery standard, other batteries available
Operating Temperature: -50°C to +60°C

Storage Capacity

Manual Operation: 29,000 readings standard, with up to 116,000 optional. With 3 VLF stations: 12,000 standard and up to 48,000 optional.
Base Station: 105,000 readings standard, with up to 419,000 optional (88 hours or 14 days uninterrupted operation with 3 sec. intervals)
Gradiometer: 25,000 readings standard, with up to 100,000 optional. With 3 VLF stations: 12,000, with up to 45,000 optional.

Omnidirectional VLF

Performance Parameters: Resolution 0.5% and range to $\pm 200\%$ of total field.
Frequency 15 to 30 kHz.

Measured Parameters: Vertical in-phase & out-of-phase, 2 horizontal components, total field coordinates, date, and time.

Features: Up to 3 stations measured automatically, in-field data review, displays station field strength continuously, and tilt correction for up to $\pm 10^\circ$ tilts.

Dimensions and Weights: 93 x 143 x 150mm and weighs only 1.0kg.

Dimensions and Weights

Dimensions:

Console: 223 x 69 x 240mm

Sensor: 170 x 71mm diameter cylinder

Weight:

Console: 2.1kg

Sensor and Staff Assembly: 2.0kg

Standard Components

GSM-19 magnetometer console, harness, battery charger, shipping case, sensor with cable, staff, instruction manual, data transfer cable and software.

Taking Advantage of a “Quirk” of Physics

Overhauser effect magnetometers are essentially proton precession devices except that they produce an order-of magnitude greater sensitivity. These "supercharged" quantum magnetometers also deliver high absolute accuracy, rapid cycling (up to 5 readings / second), and exceptionally low power consumption.

The Overhauser effect occurs when a special liquid (with unpaired electrons) is combined with hydrogen atoms and then exposed to secondary polarization from a radio frequency (RF) magnetic field. The unpaired electrons transfer their stronger polarization to hydrogen atoms, thereby generating a strong precession signal-- that is ideal for very high-sensitivity total field measurement. In comparison with proton precession methods, RF signal generation also keeps power consumption to an absolute minimum and reduces noise (i.e. generating RF frequencies are well out of the bandwidth of the precession signal).

In addition, polarization and signal measurement can occur simultaneously - which enables faster, sequential measurements. This, in turn, facilitates advanced statistical averaging over the sampling period and/or increased cycling rates (i.e. sampling speeds).

The unique Overhauser unit blends physics, data quality, operational efficiency, system design and options into an instrumentation package that exceeds proton precession and matches costlier optically pumped cesium capabilities (GEM Systems, 2007).

APPENDIX C

REFERENCES

Google. (2020). *Location of the Progenitor Claims*. Retrieved March 5, 2020 from [https://www.google.ca/maps/@ 584215E, 5217475N zone 17T](https://www.google.ca/maps/@584215E,5217475N,zone17T)

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APPENDIX D

DIGITAL DATA

The digital data contains

- 1) PDF copy of this report
- 2) PDF copy of the maps
- 3) Raw data in ascii format

Data Columns:

- 1 – UTMX (*m*)
- 2 – UTM Y (*m*)
- 3 – Elevation (*m*)
- 5 – UNCORRECTED MAG (*nT*)
- 6 – SIGNAL QUALITY (*sq*)
- 7 – CORRECTED MAG (*cor-nT*)

APPENDIX E

LIST OF MAPS (IN MAP POCKET)

Grid Sketch (1:2500)

- 1) Q2752-DeBeers-Progenitor-Traverse-Claims

Magnetometer Plan Map (1:2500)

- 2) Q2752-DeBeers-Progenitor-Mag

Topo Plan Map (1:2500)

- 3) Q22752-DeBeers-Progenitor-Topo

TOTAL MAPS = 3

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