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ZEN GEOMAP INC.

Report

Drone Magnetic Survey

Spanish River Carbonatite Property
Venturi and Tofflemire Townships
Sudbury Mining Division

Prepared for:
Boreal Agrominerals Inc.
#25, 109 Ormont Drive
North York, ON
M9L 2Z1

Table of Contents

Appendices

List of Maps

Map

1.0 Introduction

Boreal Agrominerals holds 84 mining claims located in Venturi, Tofflemire, Hart and Ermatinger Townships, Sudbury Mining Division.

The 84 mining claims are listed in ***Appendix V.***

78 of the 84 mining claims form a contiguous block (the ***main block***).
The remaining 6 claims form a smaller block to the east in Ermatinger Twp.

The ***main block*** of 78 mining claims was the focus of the 2019 drone magnetic survey. A claim location map is presented as ***Figure 1.***

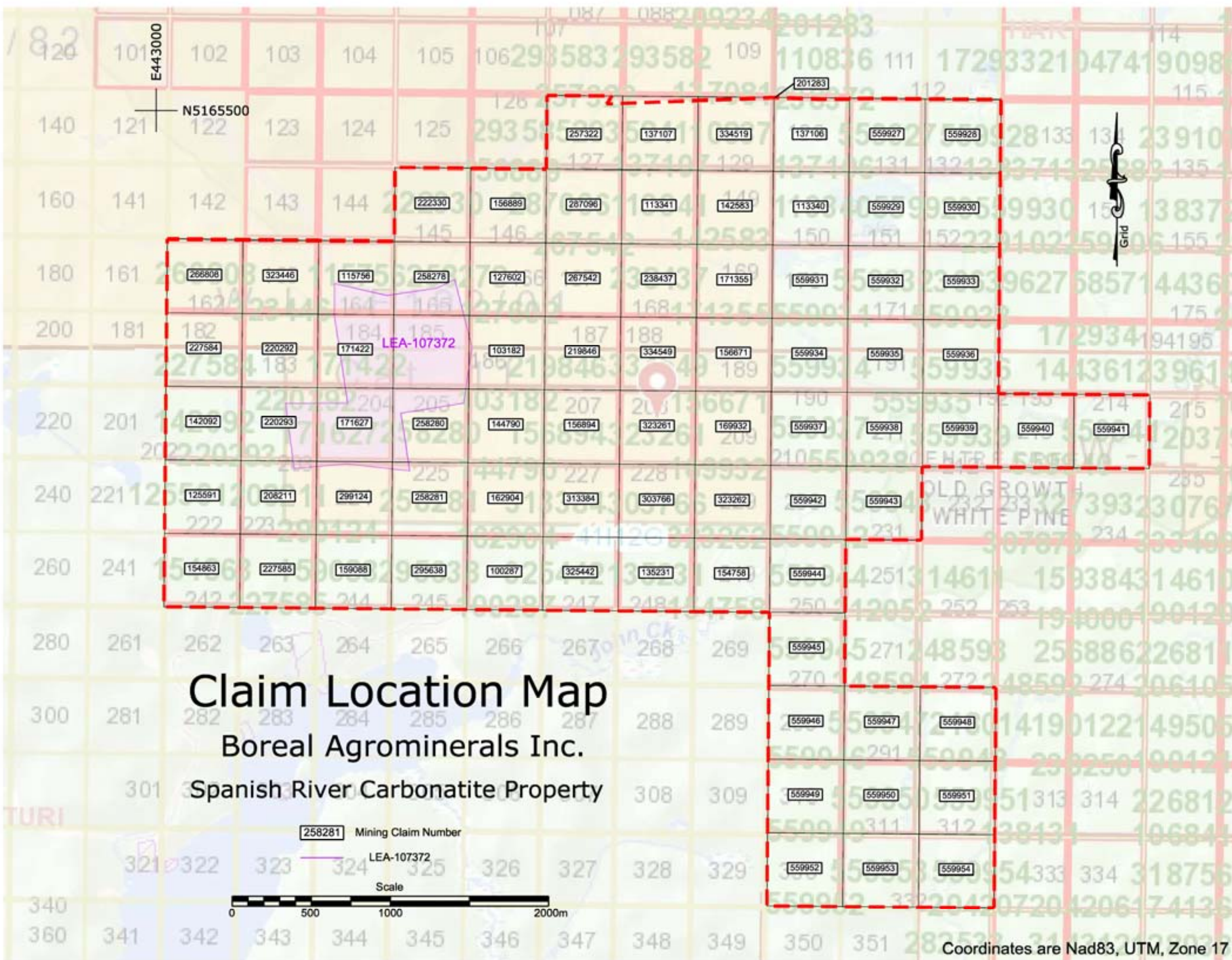


Figure 1 – Mining Claim Location Map

2.0 Location and Access

The property was accessed from Timmins, Ontario by travelling along Hwy 101 and 144 for 237km to the town of Cartier, then a further 26km along a well-maintained gravel road.

A Location and Access map (from Cartier to site) is presented as ***Figure 2.***

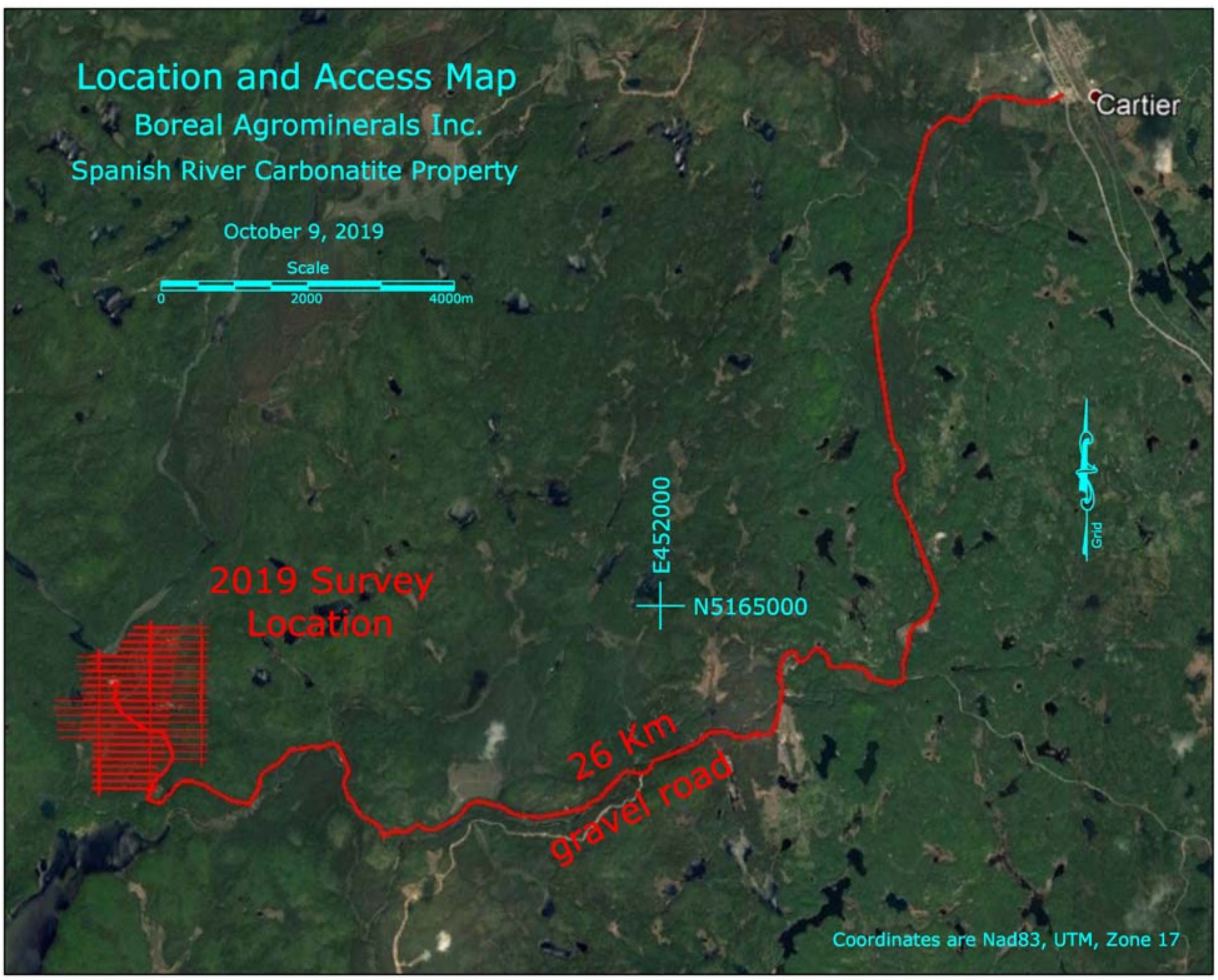


Figure 2 – Location and Access Map

3.0 Regional and Local Geology

Boreal Agrominerals has been producing and marketing Spanish River Carbonatite fertilizer since 1999.

The following section on regional and local geology was written by Mr. Chris Caron of Boreal Agrominerals. The same descriptions were used for assessment report purposes by Boreal in 2015. They are included below with permission from the author.

Regional Structural Geology

The Spanish River Carbonatite Complex lies within the Abitibi sub-province of the Superior province of the Canadian Shield. The complex occurs along a north-south striking fault zone along the west side of the Sudbury Basin. According to the 1987 O.G.S. Study 030, this fault system may be a graben structure branching off the Ottawa-Bonnechere graben, a system hosting carbonatite-alkalic rock complexes in the Nippising area. Air photos of the region also suggest the complex occurs at the point of intersection of a number of regional lineaments.

Carbonatite Complex Structure (Local Geology)

Shearing and brecciation of the enveloping quartz monzonite is common. Fractures are commonly filled with mafic pyroxenes, amphiboles and calcite. There is evidence in the trenching and the Union Carbide drill hole that blocks of fenite have peeled off the walls and are incorporated into the complex. Banding of fenite and sovite is common.

Post faulting has not been encountered at this time. The heterogenous mixture and lack of outcrop makes it very difficult at this time to suggest that post faulting has occurred.

Fenitized Quartz Monzonite (Local Geology)

The host rock enclosing the Spanish River Complex is massive, medium-grained pink quartz monzonite. In contact with the complex, the quartz monzonite has been fenitized. The granitic rock becomes mottled pink and green-blue in colour. Sodic amphibole and pyroxene have replaced the quartz in the quartz monzonite.

The fenitized quartz monzonite is brecciated and intruded by dark green mafic veins. Carbonatite is commonly associated with the veins and fracture fills. The closer to intrusive the greater the number of mafic and calcite filled fractures and veins.

Spanish River Carbonatite Complex – Transition Zone

The transition zone is predominantly fenite, but exhibits less brecciation and more banding. There is a marked increase of sovite veins, lenses and bands. The purity of the sovite in this zone varies from 45% CaC03 to nearly pure. The variations and types of accessory mineral found in the sovite are as follows:

- Vermiculite – 0 to 15%
- Biotite – 0 to 15%
- Magnetite – 0 to 5%
- Pyrrhotite – 0 to 5%
- Apatite – 0 to 5%

Overburden thickness overlying the transition zone varies from 0 to 15 metres. Bedrock exposed is highly oxidized and weathered. A seismic survey conducted in 1975 over this area suggested depths of overburden were 50 to 90 feet and that bedrock was covered by a dense layer that came to surface.

Spanish River Carbonatite Complex – Outer Core

The actual contact between the transition zone and outer core is not well defined and is based on the degree of sovite verses fenite present and overburden thickness. Where there is a sharp increase in overburden would be the logical location for the contact between the complex and altered host rock.

The approximate thickness of the outer core based on the above observations would be 200 metres. The outer core appears only to outcrop along the road where Vein No.3 is located. A vertical rotary percussion hole (TP-2) drilled in 1975 in this vicinity, encountered 15 feet of overburden. This is also the vicinity of test pits, which exposed decomposed sovite very similar to TP-2.

In the O.G.S. Study “Spanish River Carbonatite Complex” the outer core is described as the Outer Phase. The outer phase based on this report is comprised of syenite, pyroxenite, ijolite and biotite sovite.

For the purpose of this report the description of the composition for the outer core is from the Union Carbide drill hole;

“The outer core of the carbonatite-filled diatreme, composed of biotite amphibole sovite with some pyrrhotite and minor chalcopyrite and gramphite. There is no appreciable magnetite between 1066’4” and 1339’. Between 1339’ and 1495’ coarse magnetite is present in both sovite and the gramphite. For the purpose of logging this core, 3 rock types are recognized, gramphite, sovite inclusions, which may be either sovite with a high proportion of inclusions, or gramphite, which has been carbonated. In either case, the dark minerals constitute up to 50% of the rock. The proportions of sovite, inclusions and gramphite in this section are: 22%, 32% and 46% respectively”.

4.0 Type of Mineral Deposit

The client is exploring active mining claims and their existing mining lease M-107372 in an effort to identify future resources of the Spanish River Carbonatite fertilizer they have been producing and marketing since 1999.

5.0 Property History

The property has been the focus of at least 14 assessment reports over the years (1955 to current) according MDI 41I12SE00003 and summarized below:

1955 – Canadian Johns Manville Co. Ltd. – mapping, ground geophysics.

1960 – Jemnac Company Limited – trenching, sampling, vermiculite testing.

1968 – United Carbide Canada Limited – DD-1 (529m).

1975 – International Minerals and Chemical Corp – ground geophysics, radiometric survey.

1975 – International Minerals and Chemical Corporation – DD-4 (251m)

1977 – I Burns – stripping.

1994 – 1996 – Junior Mine Services Ltd. – sampling, mapping, trenching, bulk sampling.

1997 – I Burns – stripping and trenching.

1999 – 2000 – Agricultural Minerals Prospectors Inc. – property acquired, prospecting, soil sampling, geochemistry, trenching, 9000 tonne bulk sample.

2001 – Agricultural Mineral Properties – in production

6.0 Summary of 2019 Drone Magnetic Survey

Between the dates of October 8th and 19th, 2019 the Spanish River Carbonatite Property was surveyed using a Geometrics MFAM magnetometer mounted on a DJI M600 Pro hexacopter.

The program consisted of a drone magnetic survey carried out on a grid with 23 East-West lines spaced at 100 metres and 3 North-South tie lines spaced at 1400 metres.

Total line kilometers:	**36.4**
Altitude :	**40m above groundlevel**
Ground Speed:	**50km/h (14 m/second)**

A Geometrics MFAM magnetometer mounted on a DJI M600 Pro hexacopter drone was used to survey all grid lines.
A Geometrics G856AX proton procession magnetometer was operated as a base station throughout the survey to provide diurnal monitoring of the local magnetic field variations. The base station was located at UTM coordinate E444484 / N 5163971.

Equipment specifications are provided in ***Appendix I, II and III***.

<u>Survey covers 20 active Mining Claims and existing Mining Lease LEA-107372</u>

The 2019 drone magnetic survey covered all or part of 20 mining claims within the contiguous block shown in ***Figure 1.***

The survey outline is presented in red on ***Figure 3***, along with the location and claim number of 20 mining claims. Mining lease LEA-107372 was also covered by the 2019 magnetic survey.

The area of each mining claim was calculated using Acad software.
The provincial mining claim fabric, as downloaded through MNDM website, was used for this purpose. Areas are shown in blue on ***Figure 3***.

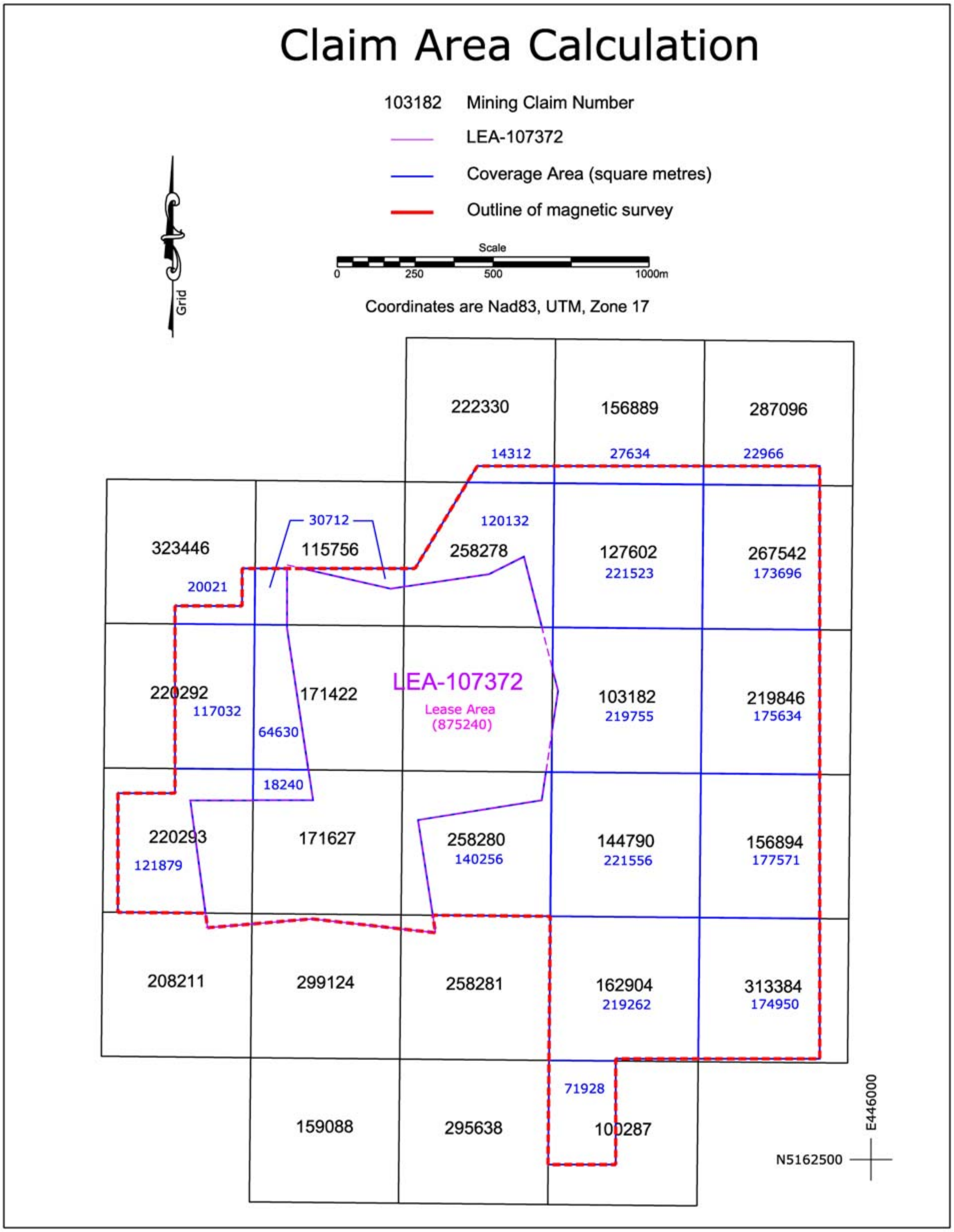


Figure 3 – Mining Claim Area Calculation

Summary of areas covered by survey

The survey area on 20 mining claims was calculated at 2353689 square metres.
The area of LEA-107372 was calculated at 875240 square metres.

2,353,689 – All or part of 20 mining claims
875,240 – Area of LEA-107372

3,228,929 – Total Survey Area (323 ha)

73% of the survey covered 20 mining claims.
27% of the survey covered LEA-107372

Reported Costs (Appendix IV – Receipts)

Costs reported in Appendix IV cover the entire survey (active mining claims and LEA-107372).

Mining claim numbers, coverage area on each mining claim, percent coverage and dollar value carried out on each claim are presented in table format as ***Figure 4***.

Work value carried out on 20 Mining Claims and LEA-107372			
	Survey Coverage	Survey Coverage	Survey Coverage
Claim	Area	%	dollar value
Number	(sq. metres)		$
222330	14312	0.44	45
156889	27634	0.86	87
287096	22966	0.71	72
323446	20021	0.62	63
115756	30712	0.95	97
258278	120132	3.72	379
127602	221523	6.86	698
267542	173696	5.38	548
220292	117032	3.62	369
171422	64630	2.00	204
103182	219755	6.81	693
219846	175634	5.44	554
220293	121879	3.77	384
171627	18240	0.56	58
258280	140256	4.34	442
144790	221556	6.86	699
156894	177571	5.50	560
162904	219262	6.79	691
313384	174950	5.42	552
100287	71928	2.23	227
LEA-107372	875240	27.11	2759
Total Area	**3228929**	100.00	**10180**
(Receipts in Appendix IV total $10,180 which does not include HST)			

Figure 4 – Work value on a per-claim basis

7.0 Processing

Magnetometer data were collected on 2 Geometrics MFAM sensors operating at 1000hz. The data were processed through a custom program operating in Python. This converts raw data from Geometrics MFAM into a format compatible with Geosoft Oasis Montaj.

Customized import templates were used within Geosoft, to identify and separate mag readings into organized grid and tie lines. This step eliminates extraneous mag data collected as the drone travels to and from the grid.

Grid and tie line data were corrected to remove ***heading error*** and ***lag***. Corrected grid data were then ***leveled*** based on tie lines.

Details on quality control, tests and calibrations and processing steps can be found in ***Appendix VI***.

8.0 Discussion of Results

The magnetic survey clearly shows the Spanish River Carbonatite intrusion as an intense mag-high anomaly. The exact interface with surrounding host rock is unknown, although magnetic contours 1260nt to 1960nt form the core of the anomaly. (See TMI – total magnetic intensity map at back of report).

Boreal Agrominerals has been marketing material found in the weathered cap of the deposit in the form of a "residuum". The 1st vertical derivative map shows more-subtle magnetic features and may help to delineate residuum material.

Namely, the mag-low anomaly presented on 1VD map with contour range between -1 and -4, outlines a feature worth investigating.

This anomaly is outlined on the Interpretive Map at back of report.

The results of the magnetic survey are presented as contoured TMI and 1st vertical derivative maps.

9.0 Conclusions and Recommendations

The magnetic survey completed over the Spanish River Carbonatite Property was successful at identifying new areas worth investigating on the ground.

Recommended follow-up includes the following:

1) Overlay any of the known Boreal workings onto 1VD and TMI maps.
2) Utilize new magnetic data to prepare detailed 1VD and TMI maps across areas of interest. This may include plotting mag readings at higher frequency, such as 20Hz. (Maps in this report were generated at 10Hz).
3) 3D inversion modeling of mag-low anomalies (potential residuum material) may help to further delineate target area in greater detail.
4) New target areas could be flown with tighter line spacing and at lower height above ground using drone magnetometer technology.

Statement of Qualifications

Author - Kevin Cool		
		Education
from	to	Description
	1983	Photography - 1 year, Humber College, Toronto Ontario
1988	1990	Survey Engineering Technician - 2 year honours diploma, Northern College Porcupine Campus
	2014	Received Permanent Prospectors Licence, by reason of having held a Prospector's Licence for 25 years or more
	2014	Aviation Ground School, Transport Canada Compliant Unmanned Aerial System training seminar
	2014	Radio Operators Certificate - Aeronautical
		Companies owned and operated
1990	2001	**General Surveys & Exploration** - mining, exploration, aggregate, construction survey and computer drafting.
2000	2005	**Big Red Diamond Corp.** - traded publicly on TSX Venture excahange under symbol DIA. Junior mining company exploring for diamonds.
		Participated in and managed regional-scale airborne geophysical programs, stream sampling, geochem sampling and camp construction.
		Property-scale work includes ground magnetometer, grid cutting and survey.
2005	2011	**True North Mineral Laboratories Inc.** - heavy mineral separation by heavy liquid. Crushing / pulverizing for other assay. 30+ employees.
		Provided services to the mining and exploration industry such as claim staking, till and geochem sampling, magnetometer survey.
2014	current	**UAV Timmins** - drone aerial mapping and survey. 1st company to apply drone air photo survey as valid mining claim assessment in Ontario.
2017	current	**Zen Geomap Inc.** - drone magnetometer survey. 1st company to apply drone mag survey as valid mining claim assessment in Ontario.

I, Kevin Scott Cool, of 15 Prospector St., Gold Centre in the City of Timmins, Province of Ontario, hereby certify that:

1) I am a graduate of Northern College of Applied Arts and Technology, May 26th 1990, Porcupine Campus, with a 2 year Honors Diploma in Survey Engineering Technology

2) I have subsequently operated above businesses, directly engaged with the mining and exploration industry.

3) I have been actively engaged in my profession since May, 1990, in all aspects of ground and airborne exploration programs including the planning and execution of regional and property-scale programs, supervision, data processing, maps, interpretation and reports.

Kevin Scott Cool

Zen Geomap
204-70C Mountjoy ST. N.
Timmins, ON P4N 4V7

Appendix I

Geometrics MFAM Magnetometer Specifications

System Basics

- System utilizes 2 MFAM sensors
- Sensors are controlled by 1 sensor module
- Sensor module communicates with a Texas Instruments main board
- Sensitivity: 0.00003nT
- Sensors operate at 1000Hz (collect 1000 readings per second on both sensors)

Technical Specifications

SPECIFICATIONS:

Mechanical:

Enclosure Dimensions: 9" x 6 5/8" x 1 3/16"
Sensor Cable length (Development box to Sensor): 20.5 inches

Power:

AC adapter: 13.5 to 16 Volts DC at 1.0A
Battery Pack: 12 volt 1800 mA-Hour Lithium Polymer

FEATURES:

1) **TIVA TM4C1294NCPDT Micro controller:** This is a 32 bit ARM Cortex-MF4 based microcontroller running at up to 120 MHz. It has 1024K of flash, with 256K bytes of RAM, and 6 KBytes of EEPROM.

2) **USB 2.0 Micro Connector:** USB functionality is provided by the TIVA microcontroller and TIVAWare support libraries.

3) **Four User LEDs:** Four user controlled LEDs are wired to TIVA microcontroller GPIO pins PK0, PK1, PN0, and PN1.

4) **Two User Switches:** Two user read switches are wired to the microcontroller pins PK6 and PJ1.

5) **One Microcontroller Reset Switch:** This switch is used to reset the microcontroller.

6) **Wi-Fi port for TI CC3100 Wi-Fi Booster Pack:** The Development board layout allows a TI CC3100 Wi-Fi Booster pack to be directly plugged in. Using TIVAWare libraries, software can be developed to allow Wi-Fi communication between the Development board and a computer.

7) **USB XDS110 Port for Firmware Downloading and Debugging:** This second USB port is used as a debug/firmware download interface between the TI Code Composer Studio development suite and the Development Kit.

8) **Two RS-232 Serial Ports with RJ-45 Connectors:** Two general purpose serial ports are available to the user. The first serial port is wired to TIVA microcontroller UART4, and supports RTS and CTS handshaking. The second serial port is wired to TIVA microcontroller UART5. This port supports only TxD and RxD. Both of these ports use +/- 8 volt voltage swings, and support baud rates up to 920 KBaud. Note that these two ports are wired as Data Terminal Equipment (DTE) Thus to connect either of these two ports to a computer it would need to connect through a null modem. .

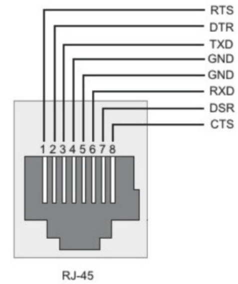


Figure 3: Serial Port Pinout

9) **On Board GPS Module:** An Adafruit GPS module is included with the Development Kit. It features 66 channels, -165 dBm sensitivity, and 3 Meter accuracy. An external GPS antenna is included so that signals can be received inside the box even with the cover in place. By default the GPS powers up to 9600 baud with several GPS sentences being output. The firmware that comes with the Development kit reconfigures the GPS to output only an RMC sentence at 115200 baud. This RMC string is sent with the output TCP data packet as described in the "Ethernet Data Format" section. The GPS is wired to UART7 on the TIVA microcontroller using 0-3.3 volt logic swings.

   The 1PPS pulse from this GPS goes to the MFAM development module and disciplines the cycle rate to exactly 1 kiloSamples per second.

10) **Micro SD Card Slot for Storing Data Locally:** A micro SD card slot is available for the user to read and write data using a SPI interface. It is connected to SPI port 1 of the TIVA microcontroller.

11) **10 MHZ Timing Reference Input Port:** This input port takes a 10 MHz reference signal from a GPS disciplined reference oscillator, buffers and squares it up, and sends it to the MFAM module. The purpose of this signal is to lock the MFAM clocking system to this reference signal so that the Larmor frequency can be measured to an absolute standard. At this time, the MFAM does not support this feature. This function will be implemented in the future.

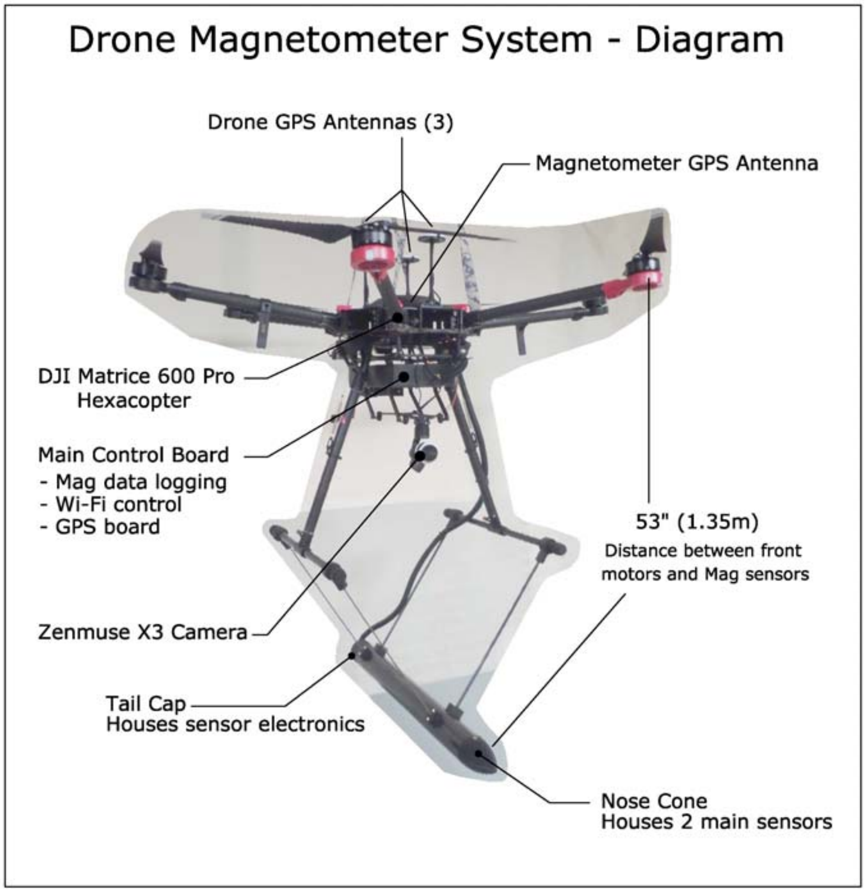
12) **Ethernet port with Power over Ethernet Compatibility**: The Tiva microcontroller contains a fully integrated Ethernet MAC and PHY. In addition, the Ethernet port can power the Development Kit via Power over Ethernet (PoE) using an Ethernet power injector.

13) **1.8 Amp-Hour Battery pack:** Three on board lithium/polymer batteries can power the system for 2 hours. A switch on the Development board allows the battery to be turned on/off. In addition, if the battery voltage falls below 8 volts the MFAM module will automatically shut down while keeping the microcontroller alive.

14) **Integrated Battery Charging system:** A lithium/polymer battery charging system is on board. If the battery switch is turned on, and the AC power adapter is plugged in, the batteries will be charged.

15) **Four Differential Analog Input Channels:** There are four differential analog inputs available for use. Channels 0 and 1 are +/- 2.5 volts full scale, while channels 2 and 3 are 0 to +5 volts full scale. In the firmware supplied with the Development kit (which sends MFAM/GPS data to the MFAMConsole program on the computer), all four channels are sampled synchronously with the MFAM data input to the Tiva are included in the data stream.

16) **On board Power/Status LEDs:** Several Status and Power LEDs are arranged along the front edge of the board. They include the four user LEDs, Power status LEDs (which power source is powering the board, and whether the battery is charging or the voltage low). They are listed in the Front and Back Panel Connection and Indicator section below.



Description and Location of components

The Geometrics MFAM magnetometer "main board" is attached directly below the central body of the DJI Matrice 600 Pro hexacopter drone. This box contains a small, Texas Instruments computer that collects and stores magnetometer readings on a micro-SD card. It also houses a 66 channel Adafruit GPS module, which operates independent of the (3) internal drone GPS modules. The Adafruit GPS collects and stores "GPS readings" (Lat / Long / Altitude / Time). The GPS readings are assigned to each mag reading, as the drone navigates along grid lines. A Wi-Fi module is attached to the Texas Instruments computer, which allows the operator to start and stop the magnetometer at a distance.

The Geometrics MFAM magnetometer operates using 2 separate mag sensors, attached to a "sensor module" with a flexible circuit board. The sensor module and 2 sensors are housed in a carbon graphite tube, which is mounted (suspended) 53 inches (1.35m) below the 2 front motors of the drone.

Magnetic shielding (mu-metal) is installed at 6 locations around the drone body, to provide additional shielding between drone components and the 2 mag sensors.

The magnetometer GPS antenna (for the internal Adafruit GPS) is mounted on top the drone body, to allow for clear signal. The vertical distance between this antenna and the 2 mag sensors, is 1.20m. This value is considered when reporting "mean terrain clearance", by subtracting 1.2m from the elevation assigned to each mag reading.

Appendix II

Geometrics G856AX
Proton procession magnetometer specifications

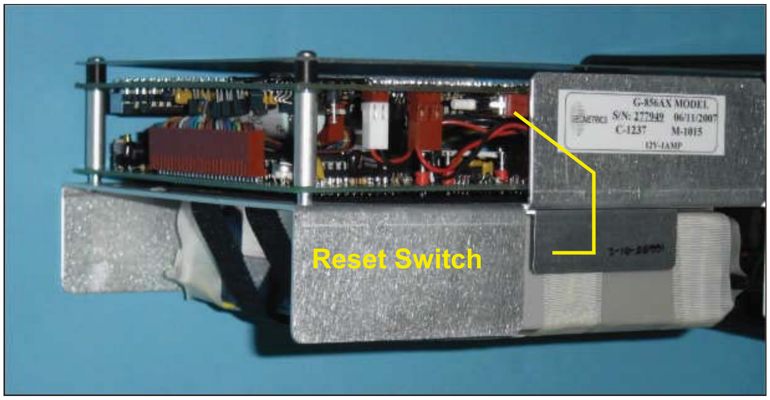


Figure 23. Internal reset switch.

Specifications

- Displays - Six digit display of magnetic field to resolution of 0.1 gamma or time to nearest second. Additional three-digit display of station, day of year, and line number.

- Resolution - Typically 0.1 gamma in average conditions. May degrade to lower resolution in weak fields, noisy conditions or high gradients.

- Absolute accuracy - One gamma, limited by remnant magnetism in sensor and crystal oscillator accuracy.

- Clock - Julian clock with stability of 5 seconds per month at room temperature and 5 seconds per day over the temperature range of -20 to +50 degrees Celsius.

- Tuning - Push button tuning from keyboard with current value displayed on request. Tuning range 20 to 90 µT.

- Gradient - Tolerates gradients to 1800 gammas/meter. When high Tolerance gradients truncate count interval, maintains partial reading to an accuracy consistent with data.

- Cycle Time - Complete field measurement in three seconds in normal operation. Internal switch selection for faster cycle (1.5 seconds) at reduced resolution or longer cycles for increased resolution.

- Manual Read - Takes reading on command. Will store data in memory on command.

- Memory - Stores more than 5700 readings in survey mode, keeping track of time, station number, line number day and magnetic field reading. In base station operation, computes for retrieval but does not store time of recording designated by sample interval, allowing storage of up to 12,000 readings.

- Output - Plays data out in standard RS-232 format at selectable baud rates. Also outputs data in real time byte parallel, character serial BCD for use with digital recorders.

- Inputs - Will accept an external sample command.

- Special - An internal switch allows:
  - adjustment of Functions polarization time and count time to improve performance in marginal areas or to improve resolution or speed operation
  - three count averaging
  - choice of lighted displays in auto mode.

- Physical -
  - Instrument console: 7 x 10 ½ x 3 ½ inches (18 x 27 x 9 cm), 6 LB (2.7 kg)
  - Sensor: 3 1/2 x 5 inches (9 x 13 cm), 4 LB (1.8 kg)
  - Staff: 1 inch x 8 feet (3cm x 2.5m), 2 LB (1kg)

- Environmental: Meets specifications from 1 to 40°C. Operates satisfactorily from -20 to 50°C.

- Power - Depending on version, operates from internal rechargeable Gel-cells or 9 D-cell flashlight batteries . May be operated from external power ranging from 12 to 18 volts external power. Power failure or replacement of batteries will not cause loss of data stored in memory.

- Standard system (P/N 16600-02) components:
  - Sensor (P/N 16076-01) and sensor cable (P/N 16134-01)
  - Console (P/N 16601-01)
  - Staff, one top section (P/N 16535-01), two middle sections (P/N 16536-01) and 1 bottom section (P/N 16537-01)
  - Carry harness (P/N 16002-02)
  - Two sets of rechargeable batteries (P/N 16697-01) and battery charger (P/N 16699-01)
  - Carrying case (P/N 16003-01)
  - Download cable (P/N 16492-01)
  - Hardcopy operation manual (P/N 18101-02)
  - Magnetometer CD (P/N 26648-01)

- Optional accessories:
  - Tripod kit for base-station operation (P/N 16708-02)
  - Gradiometer kit (P/N 166651-01)
  - Gradiometer carry/storage case (16003-01)

Appendix III - DJI Matrice 600 Pro Specifications

Specifications

• Aircraft	
Diagonal Wheelbase	1133 mm
Dimensions	1668 mm × 1518 mm × 727 mm with propellers, frame arms and GPS mount unfolded (including landing gear) 437 mm × 402 mm × 553 mm with propellers, frame arms and GPS mount folded (excluding landing gear)
Weight (with six TB47S batteries)	9.5 kg
Weight (with six TB48S batteries)	10 kg
Max Takeoff Weight Recommended	15.5 kg
Hovering Accuracy (P-GPS)	Vertical: ±0.5 m, Horizontal: ±1.5 m
Max Angular Velocity	Pitch: 300°/s, Yaw: 150°/s
Max Pitch Angle	25°
Max Wind Resistance	8 m/s
Max Ascent Speed	5 m/s
Max Descent Speed	3 m/s
Max Speed	40 mph / 65 kph (no wind)
Max Service Ceiling Above Sea Level	2170 propellers: 2500 m, 2195 propellers: 4500 m
Hovering Time* (with six TB47S batteries)	No payload: 32 min, 6 kg payload: 16 min
Hovering Time* (with six TB48S batteries)	No payload: 38 min, 5.5 kg payload: 18 min
Flight Control System	A3 Pro
Supported DJI Gimbals	Ronin-MX; ZENMUSE™ Z30, Zenmuse X5/X5R, Zenmuse X3, Zenmuse XT, Zenmuse Z15 Series HD Gimbal: Z15-A7, Z15-BMPCC, Z15-5D III, Z15-GH4
Retractable Landing Gear	Standard
Operating Temperature	14° to 104° F (-10° to 40° C)
• Remote Controller	
Operating Frequency	920.6 MHz to 928 MHz (Japan); 5.725 GHz to 5.825 GHz, 2.400 GHz to 2.483 GHz
Max Transmission Distance	FCC Compliant: 3.1 mi (5 km), CE Compliant: 2.2 mi (3.5 km) (Unobstructed, free of interference)
Transmitter Power (EIRP)	10 dBm @ 900M, 13 dBm @ 5.8G, 20 dBm @ 2.4G
Video Output Port	HDMI, SDI, USB
Operating Temperature	14° to 104° F (-10° to 40° C)
Battery	6000 mAh LiPo 2S
• Charger (Model: MC6S600)	
Voltage Output	26.1 V
Rated Power	600 W
Single Battery Port Output Power	100 W
• Standard Battery (Model: TB47S)	
Capacity	4500 mAh
Voltage	22.2 V
Battery Type	LiPo 6S
Energy	99.9 Wh
Net Weight	595 g
Operating Temperature	14° to 104° F (-10° to 40° C)
Max Charging Power	180 W
• Optional Battery (Model: TB48S)	
Capacity	5700 mAh
Voltage	22.8 V
Battery Type	LiPo 6S
Energy	129.96 Wh
Net Weight	680 g
Operating Temperature	14° to 104° F (-10° to 40° C)
Max Charging Power	180 W

CE1313 RoHS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

HDMI

DJI incorporates HDMI™ technology. The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

* Hovering time is based on flying at 10 meters above sea level in a no-wind environment and landing with a 10% battery level.

Download the detailed user manual at:
www.dji.com/matrice600-pro

※ This content is subject to change without prior notice.

Drone Operation and Ground Control Methods

The DJI Matrice 600 Pro drone is programmed to fly an automated flight path (the survey grid lines and tie lines), using software that is available and ready to use on a wide variety of drones. Zen Geomap uses UgCS software, Drone Deploy and Pix4D software;

- Drone Deploy and Pix4D, on simple grids that do not require advanced control with regards to following complex terrain (example – flying in relatively flat ground, using Google Earth or other simple elevation model).
- UgCS, in rugged terrain, where we obtain a detailed 3D terrain model (DEM or DTM) using photogrammetric drone prior to magnetic survey. In this case we upload our own, custom DEM into UgCS software and the DJI M600 drone will follow the terrain at a fixed offset.

Using a Drape

The automated flight path will always use (follow) a "drape" in one form or another.

- On simple grids in flat terrain, the drape is generated as an offset of a simple DEM, such as Google Earth or other coarse elevation model such as DEMs available on-line through USGS.
- In complex terrain, the drape is generated as an offset of our own, custom DEM.

All of our piloting software is capable of following a drape at a fixed offset. We typically program the drone to fly 50m above coarse DEMs, such as Google Earth, or USGS. When a custom DEM is available, we typically fly 25-30m above DEM.

The actual / final "height above terrain" (or mean terrain clearance), is determined in the field by our crews. They visually inspect and look for obstacles such as hills, trees, buildings and towers.

The height above terrain (or mean terrain clearance) is included in the logistical and assessment reports we prepare for our clients.

Ground Control Methods

The DJI M600 drone uses a combination of 3 separate GPS receivers and 3 separate barometers. This system developed by DJI is called the A3 Controller.

The A3 controller is designed to maintain a stable altitude, relative to the take-off point. Over a 5 year period (2014 to current), we have found the A3 controller to be reliable to sub-metre accuracy, when it comes to maintaining stable altitude over a typical 20 to 30 minute flight.

Based on this long-term record, we rely on the A3 controller to navigate the drone at a pre-programmed, fixed offset above DEM. Over the same 5 year period, we have observed consistent and accurate agreement between the A3 GPS locations and the Adafruit (Magnetometer) GPS locations. When plotted in plan view, the A3 GPS tracks have always agreed with the Adafruit tracks to approximately 1 metre accuracy.

The author if this report has been an active surveyor since 1990 and is familiar with real-time (RTK) GPS and post-processed GPS methods.

Appendix IV

Project Costs

1)Receipt 2019-52 Zen Geomap Inc.
2)Receipt 19011 Christopher Caron

ZEN GEOMAP INC.

70C Mountjoy St. N.
SUITE 204
Timmins, ON
P4N 4V7

Receipt 2019-52

To: Oct 16, 2019

Boreal Agrominerals Inc.
25, 109 Ormont Drive
North York, ON
M9L 2Z1

Drone Magnetic Survey – Boreal Property 100m Line Spacing

Please note: This receipt covers drone magnetic survey across 20 active mining claims and Mining Lease LEA-107372.

$5,000 – 5 flights @ $1,000
$ 305 – Mobe / Demobe from Timmins to site
$ 240 – Food and Lodging
$1,800 – Data processing and maps
$1,800 – Assessment Report

$9,145.00 – sub
1,188.85 - HST

$10,333.85 – Total work completed on 25 mining claims

PAID

Appendix V

List of 84 Mining Claims

Boreal Agrominerals Inc.

Venturi, Tofflemire, Hart and Ermatinger Townships

Sudbury Mining Division

Claim#	Type	Status	Issue Date	Anniversary Date	Owner Client#	Area /# of Cells
100287	Claim	Active	2018-04-10	2020-02-24	(411155) BOREAL AGROMINERALS INC.	1
103182	Claim	Active	2018-04-10	2020-02-24	(411155) BOREAL AGROMINERALS INC.	1
113340	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1
113341	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1
115756	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1
125591	Claim	Active	2018-04-10	2019-12-15	(411155) BOREAL AGROMINERALS INC.	1
127602	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1
135231	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1
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144790	Claim	Active	2018-04-10	2020-02-24	(411155) BOREAL AGROMINERALS INC.	1
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156894	Claim	Active	2018-04-10	2020-02-24	(411155) BOREAL AGROMINERALS INC.	1
159088	Claim	Active	2018-04-10	2019-09-24	(411155) BOREAL AGROMINERALS INC.	1
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219846	Claim	Active	2018-04-10	2020-02-24	(411155) BOREAL AGROMINERALS INC.	1
220292	Claim	Active	2018-04-10	2019-10-31	(411155) BOREAL AGROMINERALS INC.	1

220293	Claim	Active	2018-04-10	2019-10-26	(411155) BOREAL AGROMINERALS INC.	1
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Appendix VI

Quality Control / Tests and Calibrations / Processing Steps

Quality Control

Throughout the data acquisition phase, data are monitored closely for quality control and error-checking on all channels. Output from the Geometrics MFAM magnetometer includes a wide range of error codes, which are written to the raw data file to help diagnose problems when they occur in the field.

All data are checked on a daily basis, as field data are transferred to Zen Geomap offices in Timmins or North Bay, Ontario. When errors or problems occur, the field crew is instructed to re-fly problem areas.

Tests and Calibrations

The following tests and calibrations are carried-out on all magnetometer equipment and sensors employed by Zen Geomap Inc.;

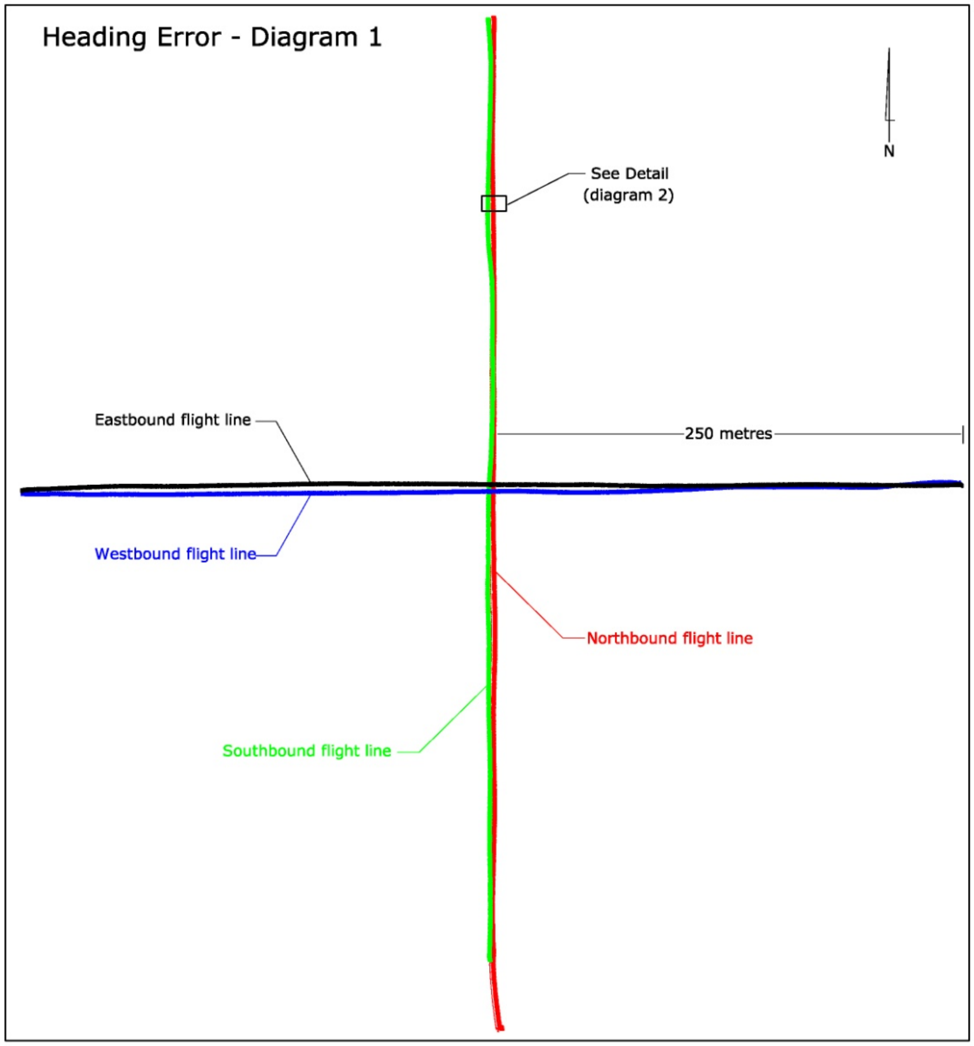
Heading Error

Upon receipt of a new magnetometer (or after significant repair or modification to any system component), a test flight is carried-out to determine heading error.

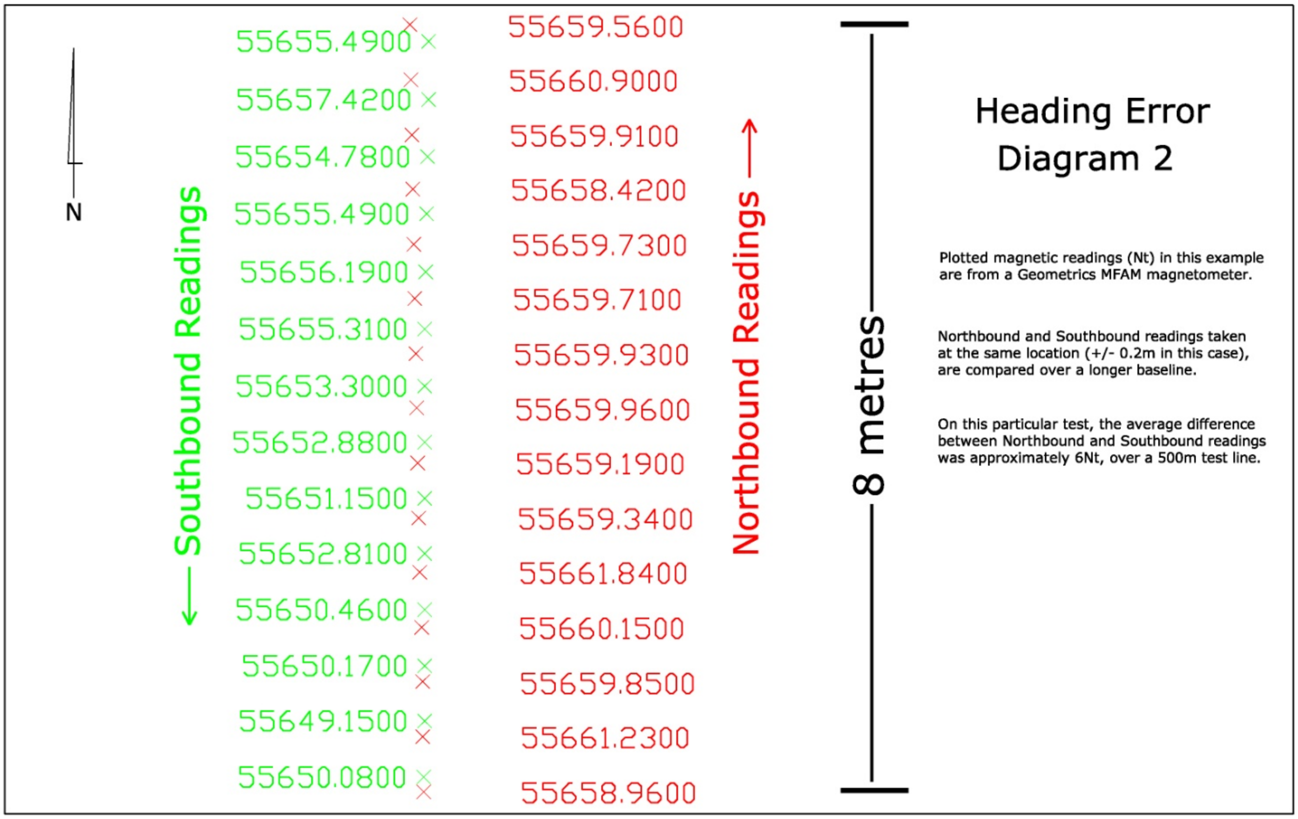
A cross-pattern is flown as shown in ***Diagram 1***, with 500 metre N-S and E-W lines.
Magnetic readings are collected along the same lines, flown in opposite directions.

Northbound and Southbound readings at the same location (+/- 0.2m in this example) are compared.
Eastbound and Westbound readings undergo the same process.

(See: Heading Error – ***Diagram 2***).



Example test flight by Zen Geomap, August, 2019



Example – Geometrics MFAM readings, August, 2019

The difference between Northbound and Southbound readings, averaged over a 500m baseline is calculated. The resulting value (6 Nt in above example), is used to apply a correction for heading error during processing.

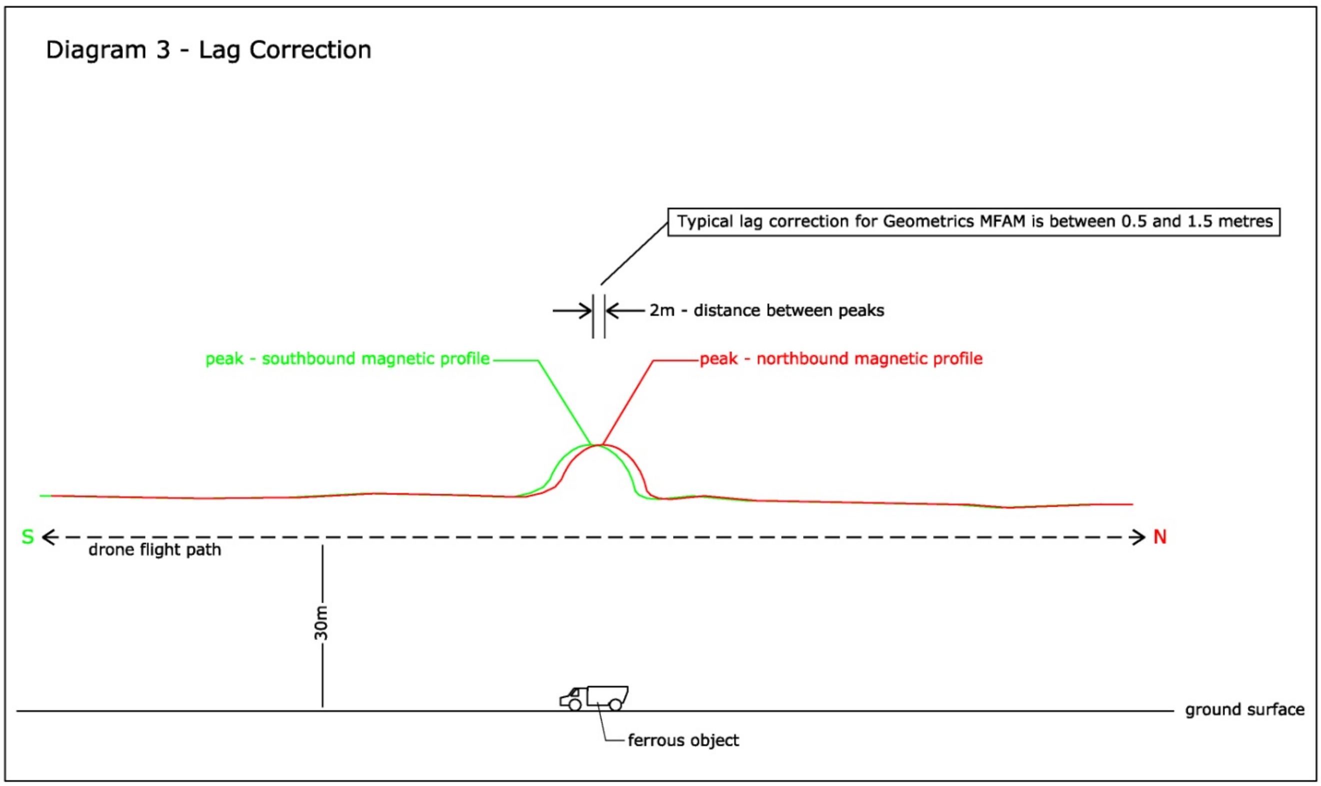
Each mag sensor will produce a unique result, however we typically apply a correction of 3Nt or less, to adjacent flight lines.

Lag Correction

Tests are performed to determine lag correction, by flying the drone magnetometer in opposite directions over top a ferrous object. Suitable objects include steel bridges, vehicles or heavy equipment.

Diagram 3 shows a typical flight test to determine lag correction.

A Geometrics MFAM magnetometer will typically have a lag error between 0.5 and 1.5 metres. Each mag sensor will produce a unique value. We typically apply a correction of 1m or less, to the location of magnetic readings on adjacent lines.



Diurnal Correction

A Geometrics G856AX proton procession magnetometer is operated as a base station on all projects, to provide diurnal monitoring of the local magnetic field variations. Adjustment may be applied to the raw MFAM readings, when variations exceed 10 or more Nt over the course of any flight. However, we typically re-fly grid lines, if the magnetic field variation is excessive.

The location (UTM coordinate) of the base station is included in the report body.

Processing Steps

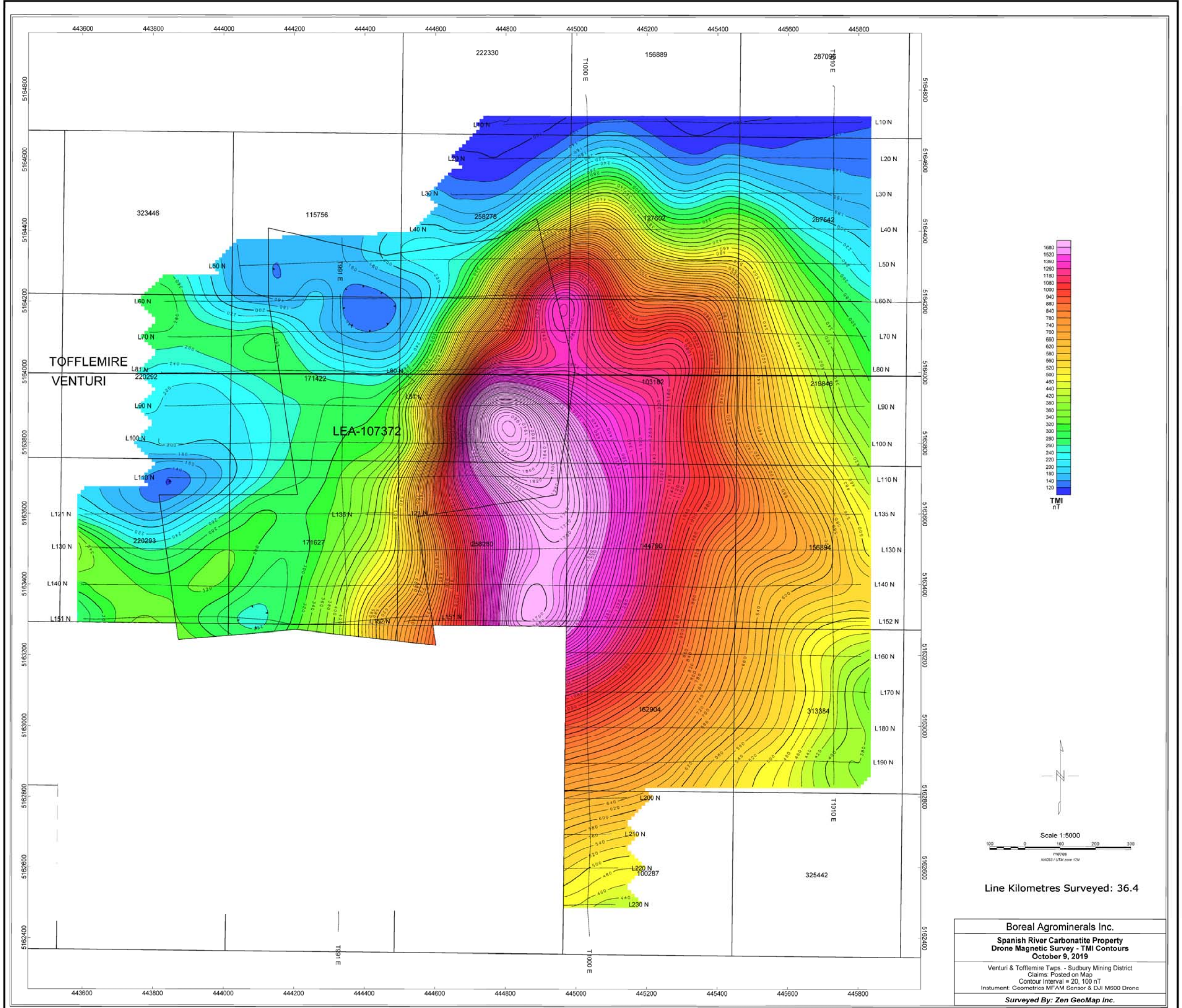
Diurnal is examined for flights covering tie lines.
If magnetic field variation is excessive during tie line flights, all readings across tie lines are corrected using the base station data.

Tie lines provide a framework for leveling grid lines.
Readings on grid lines (once corrected for heading error and lag), are translated to conform to the tie lines. This process involves adjusting individual grid line segments, based on tie line intersections.

Unlike conventional airborne survey, such as fixed-wing or helicopter, a drone will take-off and land multiple times during the course of a survey. The resulting ferry lines are removed from the overall dataset prior to processing. Zen Geomap has developed import templates that run in Geosoft Oasis Montaj, to accomplish this task.

Geometrics MFAM data is not directly compatible with industry-standard software such as Geosoft.
Zen Geomap has developed software (Python code) to convert raw MFAM data into a format compatible with Geosoft and other industry-standard geophysical software. The raw data from MFAM is processed through Python, prior to initial processing.

The Python code developed by Zen Geomap has been adopted by Geometrics, as the standard conversion software for drone-mounted MFAM. Geometrics has been the industry leader for airborne magnetometer equipment since 1969.



TOFFLEMIRE
VENTURI
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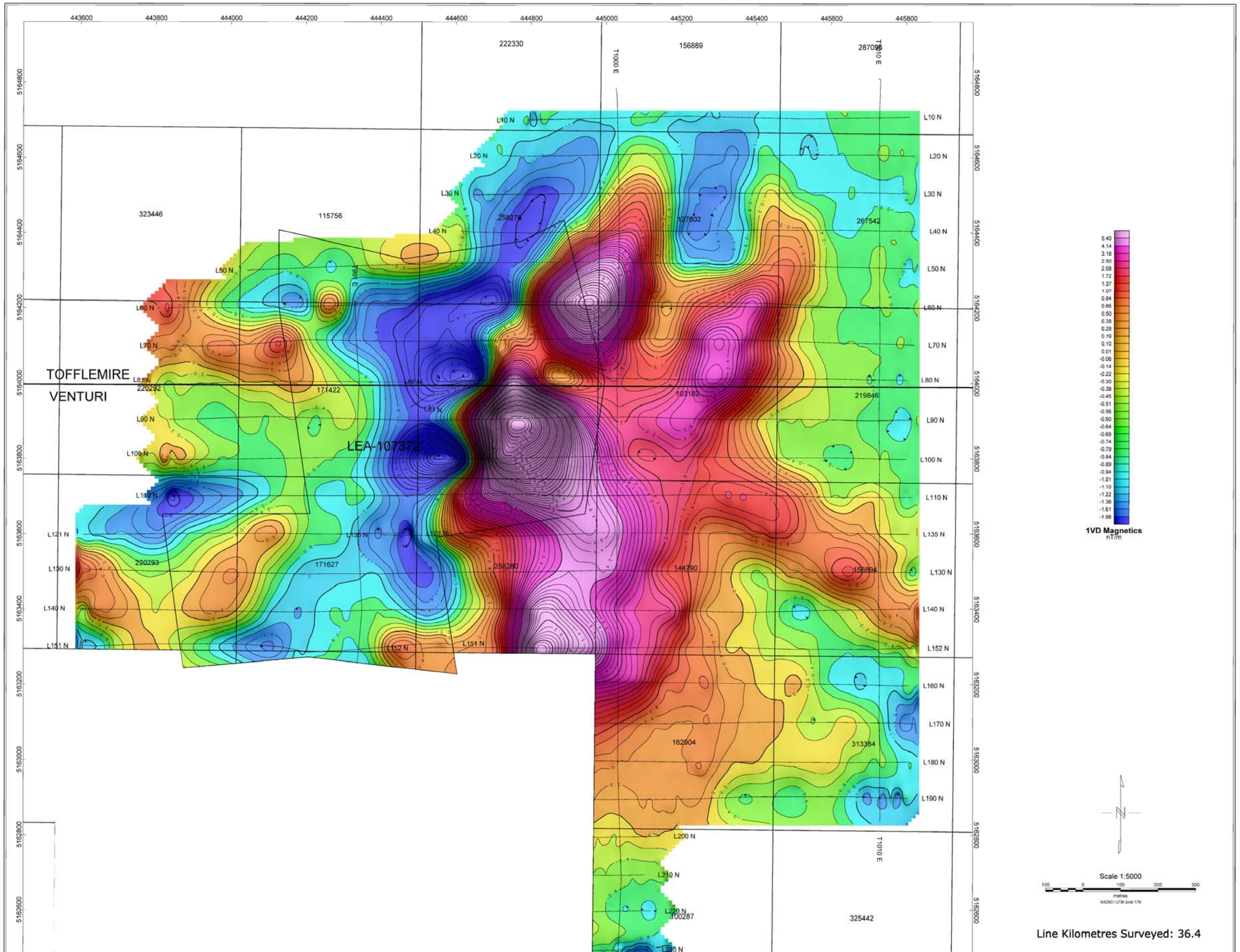
219846
220293
171627
258280
144790
156894
162904
313384
100287
325442
T1000 E
T991 E
T1010 E
TMI
nT
Scale 1:5000
metres
NAD83 / UTM zone 17N
Line Kilometres Surveyed: 36.4
Boreal Agrominerals Inc.
Spanish River Carbonatite Property
Drone Magnetic Survey - TMI Contours
October 9, 2019
Venturi & Tofflemire Twps. - Sudbury Mining District
Claims: Posted on Map
Contour Interval = 20, 100 nT
Instument: Geometrics MFAM Sensor & DJI M600 Drone
Surveyed By: Zen GeoMap Inc.

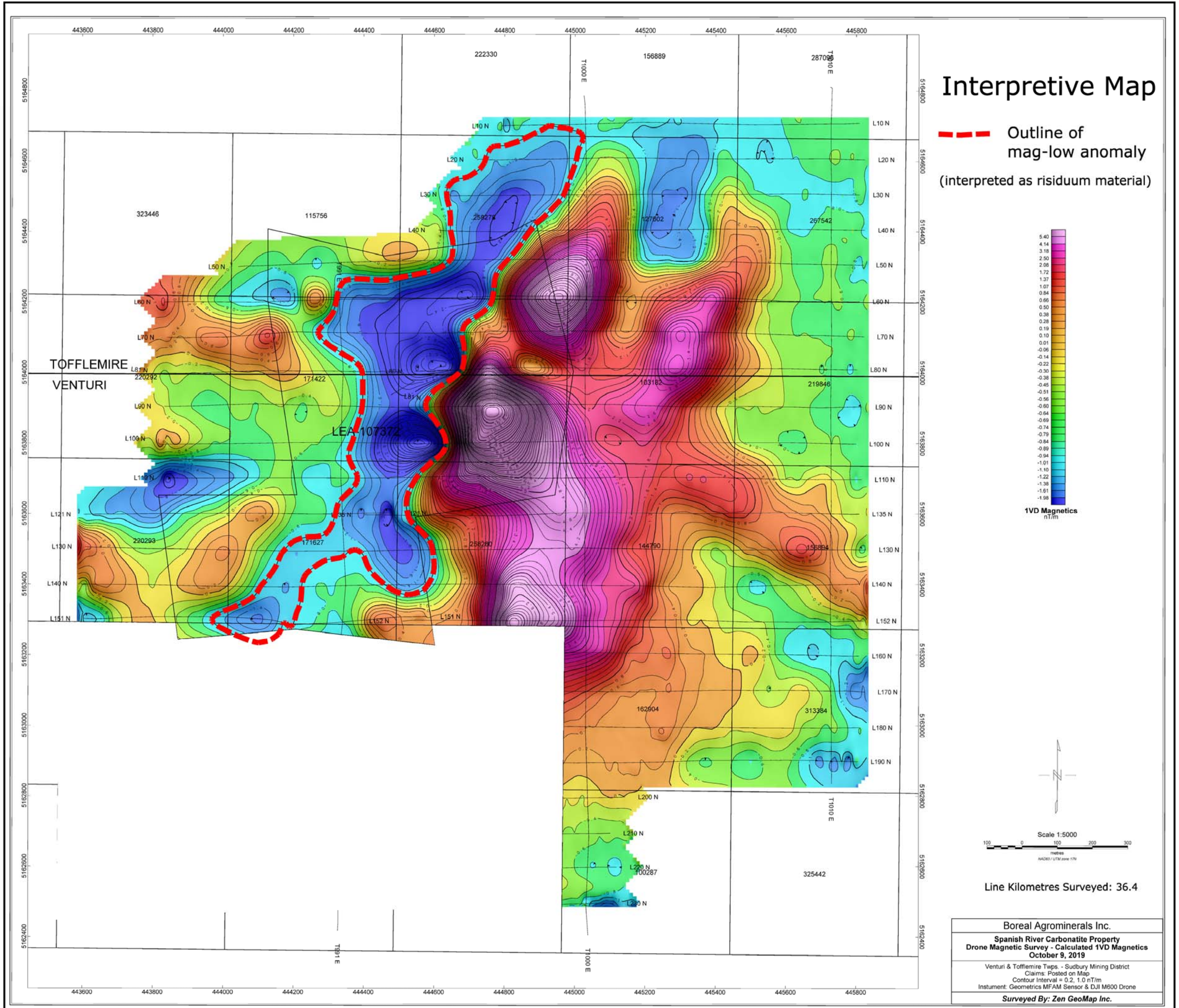


Boreal Agrominerals Inc.

Spanish River Carbonatite Property
Drone Magnetic Survey - Calculated 1VD Magnetics
October 9, 2019

Venturi & Tofflemire Twps. - Sudbury Mining District
Claims: Posted on Map
Contour Interval = 0.2, 1.0 nT/m
Instument: Geometrics MFAM Sensor & DJI M600 Drone

Surveyed By: Zen GeoMap Inc.



Interpretive Map
Outline of mag-low anomaly
(interpreted as risiduum material)
TOFFLEMIRE
VENTURI
LEA 107372
1VD Magnetics
nT/m
Scale 1:5000
Line Kilometres Surveyed: 36.4
Boreal Agrominerals Inc.
Spanish River Carbonatite Property
Drone Magnetic Survey - Calculated 1VD Magnetics
October 9, 2019
Venturi & Tofflemire Twps. - Sudbury Mining District
Claims: Posted on Map
Contour Interval = 0.2, 1.0 nT/m
Instument: Geometrics MFAM Sensor & DJI M600 Drone
Surveyed By: Zen GeoMap Inc.