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Assessment Report

Drone Magnetic Survey

Nighthawk Lake Property

Cody Township

Porcupine Mining Division

Prepared for:

Moneta Porcupine Mines Inc.

Prepared by:

Kevin Cool – Technical Report

Matthew Johnston – Geophysical Maps and Interpretation

Mining Claims:

156950,331082,161931,195954,269921,191907,221824,296405,119625,229760,102454,
119623,175909,128507,221825,229761,102455,191910,156951,119626,163026,119587,175869

December 3, 2021

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Appendices

List of Maps and Figures

1.0 Introduction

The Moneta Porcupine Mines Inc, ***Nighthawk Lake Property*** consists of a contiguous group of Patents, Leases and approximately 105 Active Mining Claims. This report covers a drone magnetic survey carried out across **23** of the Active Mining Claims.

A drone magnetic survey was conducted on a portion of ***Nighthawk Lake Property*** (see ***Figure 2***). Mining claims covered by this survey are located in Cody Township, Porcupine Mining Division. ***Table 1*** includes a list of mining claims, including the work value completed on each claim.

Between the dates of November 15 and November 23, 2021 the mining claims were surveyed using a Geometrics MFAM magnetometer mounted on a DJI M600 drone. Zen Geomap of Timmins, Ontario, carried out the magnetic survey on a contract basis for the client. The survey was performed to evaluate bedrock structure related to gold exploration within the survey grid area.

Data processing and maps were completed between November 15 and November 30, 2021 and the assessment report was prepared between November 15, and December 3, 2021.

2.0 Location and Access

The property is accessed by travelling east along Hwy 101 from Timmins for 31 km to Nighthawk Lake. Peninsula Road runs due south through the survey grid and was used as the primary access road throughout the project. ***Figure 1*** shows location and access.

Table 1 - List of Mining Claims covered by current survey						
		($)	(sq. m)			($)
	Anniversary	Work	Area	Area	Area %	Work
Claim #	Date	Required	Surveyed	Notes	of Total	Completed
156950	2024-02-26	200	12002	Portion of cell surveyed	0.36	85
331082	2025-02-26	200	61084	Full cell surveyed. Central area is Patent	1.82	435
161931	2025-02-26	200	182588	Full cell surveyed. NW part of cell is Patent	5.43	1299
195954	2022-02-26	400	213722	Full cell surveyed	6.35	1521
269921	2022-02-26	200	101277	Full cell surveyed. East part of cell is Patent	3.01	721
191907	2022-02-26	200	20566	Full cell surveyed. NE part of cell is Patent	0.61	146
221824	2022-02-26	200	204683	Full cell surveyed. NW part of cell is Patent	6.08	1457
296405	2022-02-26	400	213740	Full cell surveyed	6.35	1521
119625	2022-02-26	400	213740	Full cell surveyed	6.35	1521
229760	2022-02-26	200	175156	Full cell surveyed. NE part of cell is Patent	5.21	1247
102454	2022-02-26	200	75671	Portion of cell surveyed. North part of cell is Patent	2.25	539
119623	2022-02-26	200	24973	Portion of cell surveyed	0.74	178
175909	2022-02-26	400	213757	Full cell surveyed	6.35	1521
128507	2022-02-26	400	213757	Full cell surveyed	6.35	1521
221825	2022-02-26	400	213757	Full cell surveyed	6.35	1521
229761	2022-02-26	400	213757	Full cell surveyed	6.35	1521
102455	2022-02-26	400	115814	Portion of cell surveyed	3.44	824
191910	2022-02-26	200	5589	Portion of cell surveyed. Most of cell is Patent	0.17	40
156951	2022-02-26	200	172267	Full cell surveyed. South part of cell is Patent	5.12	1226
119626	2022-02-26	200	210801	Full cell surveyed. Small part of cell is Patent	6.26	1500
163026	2022-02-26	200	205739	Full cell surveyed. Small part of cell is Patent	6.11	1464
119587	2022-02-26	200	187041	Full cell surveyed. Small part of cell is Patent	5.56	1331
175869	2022-02-26	400	113537	Full cell surveyed	3.37	808
			3365018	Total Area Surveyed on Active Mining Claims	**100.00**	**23948**
			28460	Total Survey Cost ($)		
			3999000	Total Area Surveyed across Patents and Active Claims		
			23948	Total Survey Cost that relates to Active Claims ($)		

Table 1

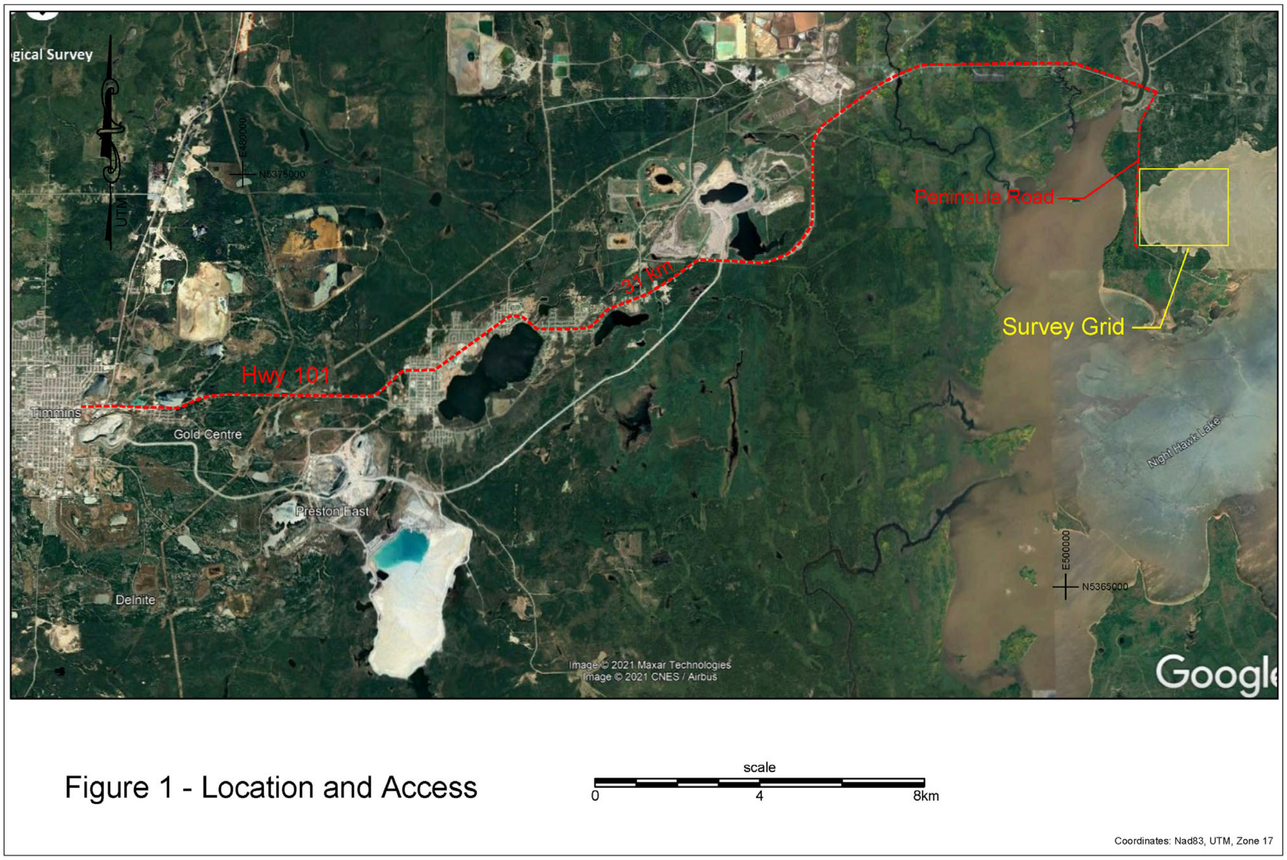


Figure 1 – Location and Access

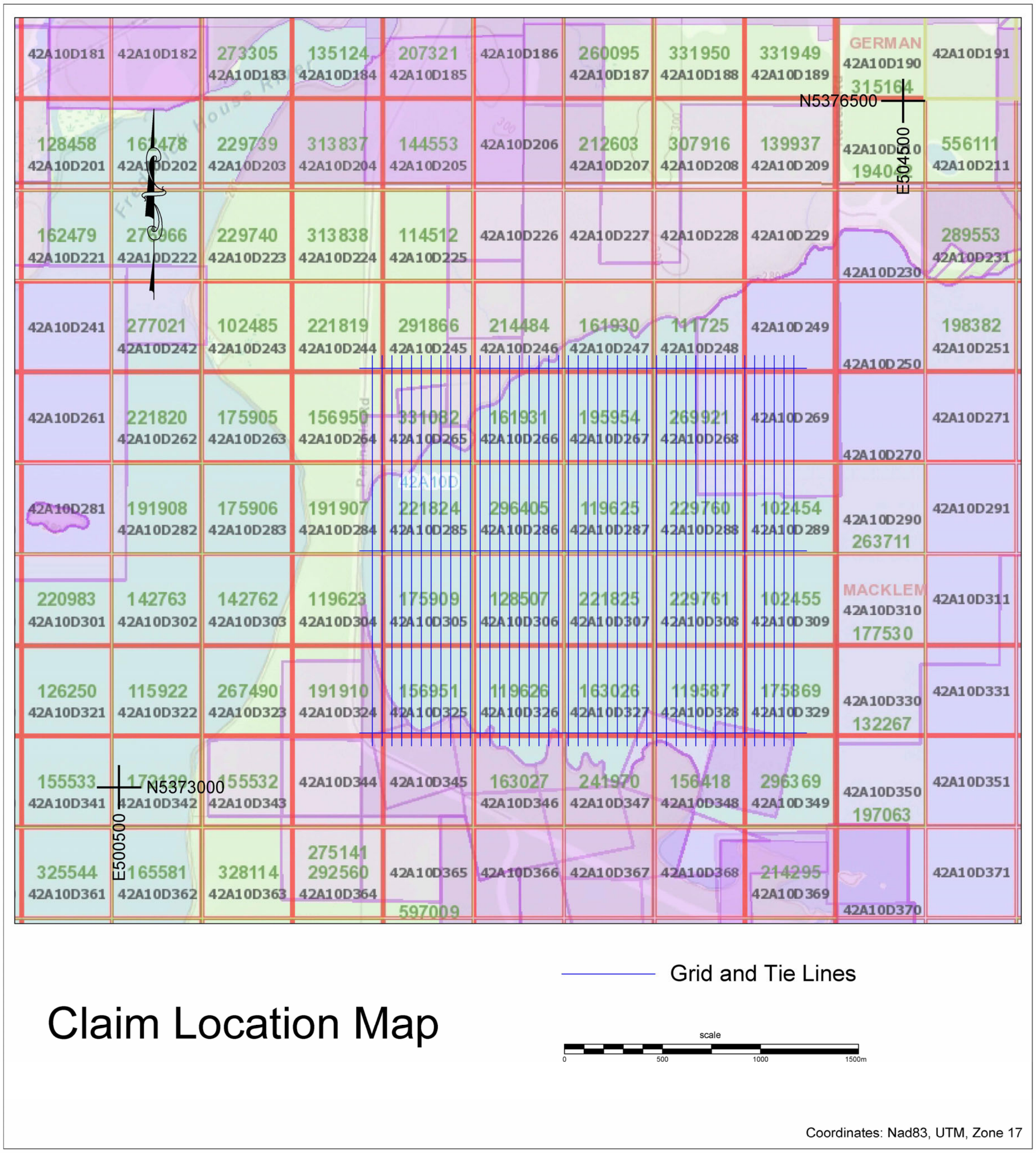


Figure 2 – Grid and Claim Location Map

3.0 Regional and Local Geology

Regional Geology

The ***Nighthawk Lake Property*** is located in Cody Township, 27 km East of Timmins, Ontario, Porcupine Mining Division. The area is host to several past producing gold deposits including the Aquarius, Hoyle Pond, Goldhawk, and Night Hawk Peninsular Mines.

The geology of Nighthawk Lake is comprised of a stratigraphic package of Archean rocks where Timiskaming sediments overlay Tisdale Assemblage volcanic rocks. South of the Destor Porcupine Fault Zone (DPFZ), the Tisdale Assemblage is comprised of ultramafic and mafic volcanic flows and intrusions which host gold mineralization. The ultramafics were found to be highly carbonatized with some poorly developed green carbonate and predominately talc-chlorite schist. These rocks have undergone varying degrees of deformation and alteration (talc chlorite, ankerite, green carbonate, and fuchsite).

(Reference; wording in above section is from the Moneta Gold Website, 2021)

The ***Nighthawk Lake Property*** straddles the Destor Porcupine Fault Zone (DPFZ).
Figure 3 is the regional geology & corporate activity map from Moneta Gold website, 2021.

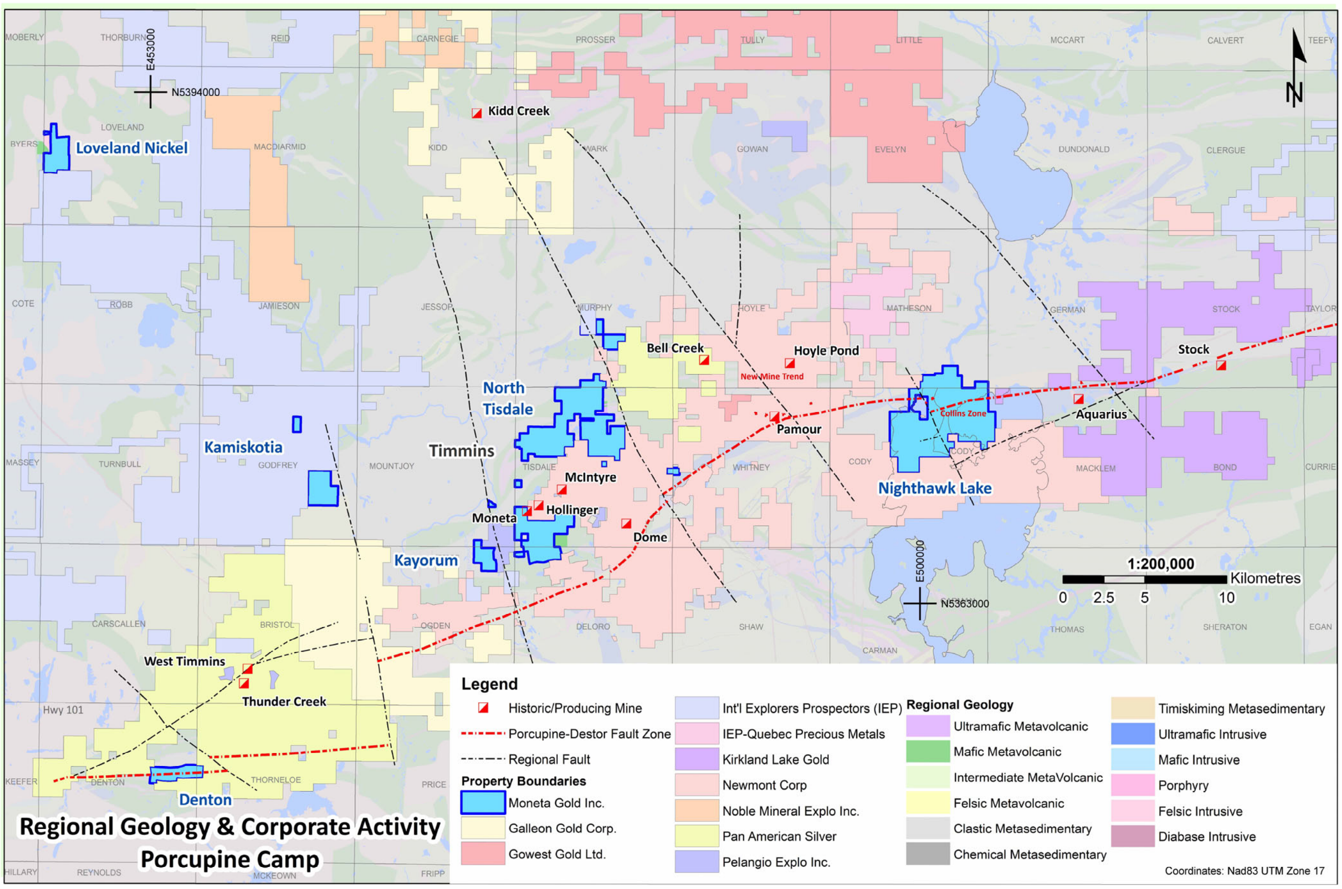
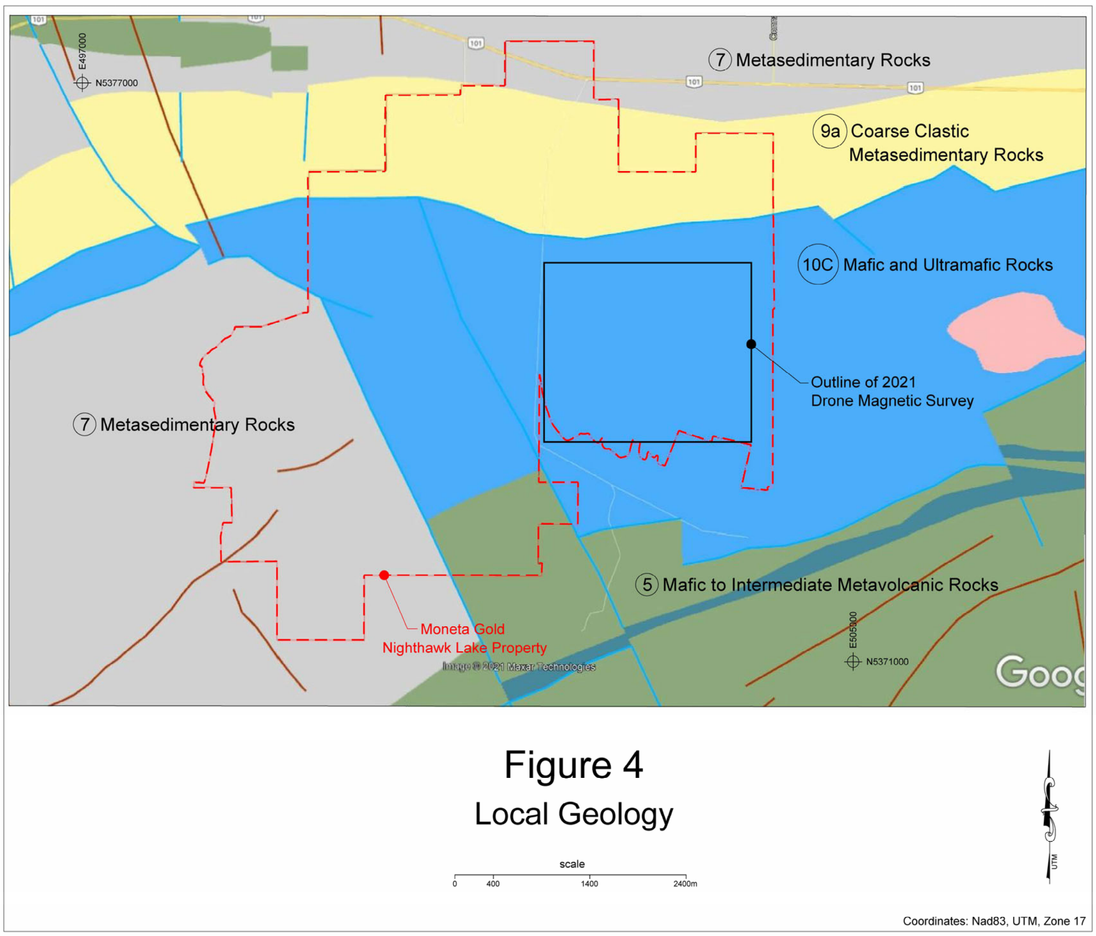


Figure 3

Local Geology

The ***Nighthawk Lake Property*** covers 4 rock units identified from MRD126 (Reference - Revised Bedrock 250K - OGS Earth).

The rock units are labelled on ***Figure 4*** and identified by grey, yellow, blue and green.



7 Metasedimentary Rocks
9a Coarse Clastic Metasedimentary Rocks
10C Mafic and Ultramafic Rocks
Outline of 2021 Drone Magnetic Survey
7 Metasedimentary Rocks
5 Mafic to Intermediate Metavolcanic Rocks
Moneta Gold Nighthawk Lake Property
E497000
N5377000
N5371000
Figure 4
Local Geology
scale
0 400 1400 2400m
Coordinates: Nad83, UTM, Zone 17

Figure 4

4.0 Property History

General

The current configuration of the ***Nighthawk Lake Property*** consists of original Legacy claims converted into a contiguous block of single cell and boundary cell mining claims. Past work across the original legacy claims includes airborne geophysics, diamond drilling, geochemistry, geology, ground geophysics, physical and other work.

Paragraph below is from Moneta Gold Website (2021);

Historical exploration work has been completed on the property over the past 80 years, with the primary focus on the Collins Patent Group at the DPFZ influenced contact between the Timiskaming age sediments and Tisdale age volcanics. Moneta's 1997-2016 drilling resulted in several gold intersections of economic merit (9.54 g/t @ 5.75 m, 3.83 g/t Au @ 6.40 m, and 1.84 g/t Au @29.80 m) over a strike length of 700 m. In 2017, the company completed two drill holes totaling 663 m in depth targeting the historic low-grade gold mineralized Collins Zone. Results of the program indicate several scattered low-grade gold intervals within strongly sheared ultramafic rocks.

(Reference; wording in above section is from the Moneta Gold Website, 2021)

Past work within the property – identified through MDI

There are 2 MDI showings within the ***Nighthawk Lake Property;***

MDI42A10SW00011 is plotted on ***Figure 5*** with reference to assessment file T-1463.
MDI42A10SW00004 is plotted on ***Figure 5*** with reference to assessment file T-133.

<u>Past airborne geophysical work – identified through AFRI</u>

The south-west quarter of the current ***Nighthawk Lake Property*** was flown in 1984 by Kidd Creek Mines Ltd. The helicopter borne survey was flown with mag sensor at approximately 54m mean height above terrain, with line spacing of 200m.

The current 2021 drone magnetic survey was flown to the north-east of previous Kidd Creek survey, at 50m line spacing with mag sensor at 50m height above terrain. ***Figure 5*** includes the outline of both surveys.

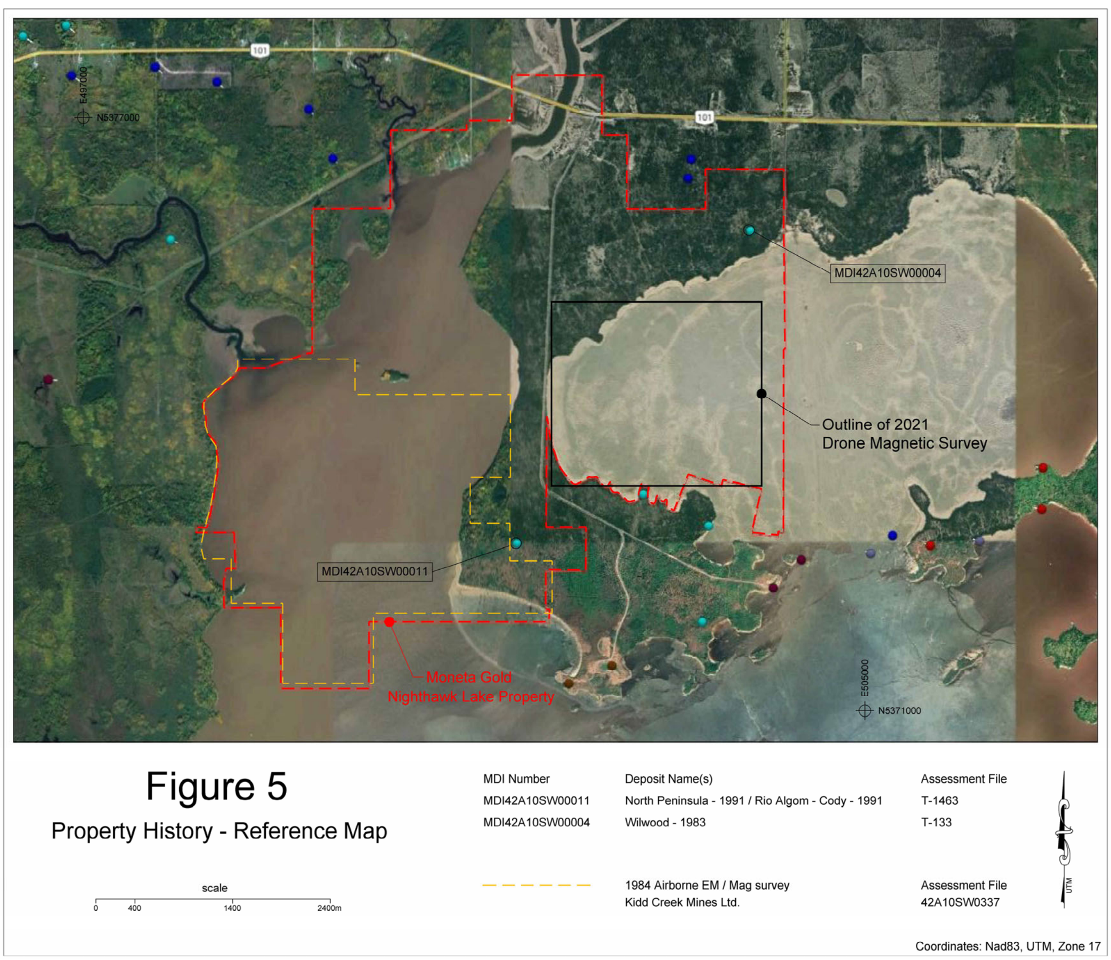


Figure 5

Past Work – carried out within the current survey grid

Table 2 is a list of past assessment work carried out within or proximal to the area covered by the current drone magnetic survey.

Table 2 - Past Assessment Work			
Work Type	Assessment File Number	Year	Performed For
Airborne Geophysics	42A10SW0337	1984	Kidd Creek Mines Ltd
Diamond Drilling	42A10SW0323	1970	Canadian Nickel Co Ltd
	42A10SW0317	1974	Hollinger Mines Ltd
	20000013770	2016	Moneta Porcupine Mines Inc
	20000006527	2010 - 2011	Moneta Porcupine Mines Inc
	20000007879	2006 - 2008	Moneta Porcupine Mines Inc
	20000002077	2006 - 2007	St Andrew Goldfields Ltd
	20000009088	2014	Moneta Porcupine Mines Inc
	42A10SW0327	1988	Shield Dev Co Ltd
	42A10SW0333	1987	J P Sheridan
	42A07NW8464	1991	Pamourex Minerals Inc
	42A10SW0325	1990	Pamourex Minerals Inc
Geochemistry	20000002077	2006 - 2007	St Andrew Goldfields Ltd
	20000013770	2016	Moneta Porcupine Mines Inc
	20000006527	2010 - 2011	Moneta Porcupine Mines Inc
	20000007879	2006 - 2008	Moneta Porcupine Mines Inc
	20000009088	2014	Moneta Porcupine Mines Inc
	42A10SW0332	1987	J P Sheridan
	42A10SW0327	1988	Shield Dev Co Ltd
	42A07NW8464	1991	Pamourex Minerals Inc
Geology	NA	NA	NA
Ground Geophysics	42ASW0003	1994	Asarco Expl Co of Can Ltd
	42A10SW0335	1982	W D Evans
	42A10SW0310	1981	Pamour Porcupine Mines
Physical	42A10SW0003	1994	Asarco Expl Co of Can Ltd
Other	42A10SW0335	1982	W D Evans
	42A10SW0332	1987	J P Sheridan

Table 2

5.0 Summary of 2021 Drone Magnetic Survey

The program consisted of 1 grid summarized as follows:

Surveyed Nov, 2021:	**Total 92.5 line kilometers**
Altitude:	**50m above ground level**
Area:	**Total Survey Area 399.9ha**
	Total Area covering Active Mining Claims 336.5ha

The grid lines were spaced 50 m apart and flown at an azimuth of 0 degrees with 3 tie lines spaced at approximately 930m intervals and flown at an azimuth of 90 degrees.
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. (Loc; **E501597 N5374260**)
Equipment specifications are provided in ***Appendix 1, 2 and 3***.
The survey covered 23 Active mining claims. (***Figure 2***)

6.0 Processing

Magnetometer data was collected on 2 Geometrics MFAM sensors operating at 1000hz. The data was 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 was then levelled based on tie lines.

7.0 Interpretation, Conclusions and Recommendations

The current survey was successful at identifying and mapping the magnetic anomalies at the Nighthawk project. The magnetic survey on the Nighthawk grid indicates a relatively quiet magnetic background with residual magnetic values ranging between -11 and 785 nT. The background magnetic field strength is 255 nT. The overall magnetic pattern is disrupted by several moderate strength anomalous magnetic highs of short strike length.

These magnetic responses are primarily located in the southeast portion of the grid area and are easily observed on the magnetic contour map. These magnetic anomalies may represent mafic diabase dikes, common to this geologic setting or possibly underlying mafic or ultramafic lithology. The most significant magnetic interpretation is the interpreted fault lineament bisecting the grid at an approximate azimuth of 60 degrees. This interpreted structural lineament divides the more active magnetic lithology to the southeast from the more quiescent magnetic domain in the northwest portion of the grid area. Several other interpreted lineaments are also shown on the contour maps.

The isomagnetic contour pattern suggests an underlying lithology striking in a northeast-southwest direction; notwithstanding the disruptive magnetic anomalies located within the grid area. All of the anomalies are easily identified on the contour maps. The results of the magnetic survey are presented as contoured total field and 1st vertical derivative maps.

The magnetic survey completed over the Nighthawk grid was successful in mapping the magnetic anomalies described above. More significantly, the interpreted structural lineaments are shown in good detail by the magnetic survey. These anomalies are thought to arise from bedrock sources and may have implications for follow-up exploration.

Any existing geological or geochemical information for the surveyed grid area will aid in further assessing any geophysical anomalies and should be incorporated into an overall assessment of the property prior to further exploration. Magnetic data collected by drone at high density and low altitude is ideal for 3D inversion modelling. The cost for this type of advanced modelling would start at approximately $2,000 and up to $8,000. 3D inversion modelling is recommended as the next step for evaluating Nighthawk property.

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

Statement of Qualifications

This is to certify that: MATTHEW JOHNSTON

I am a resident of North Bay; province of Ontario since November 1, 2017.

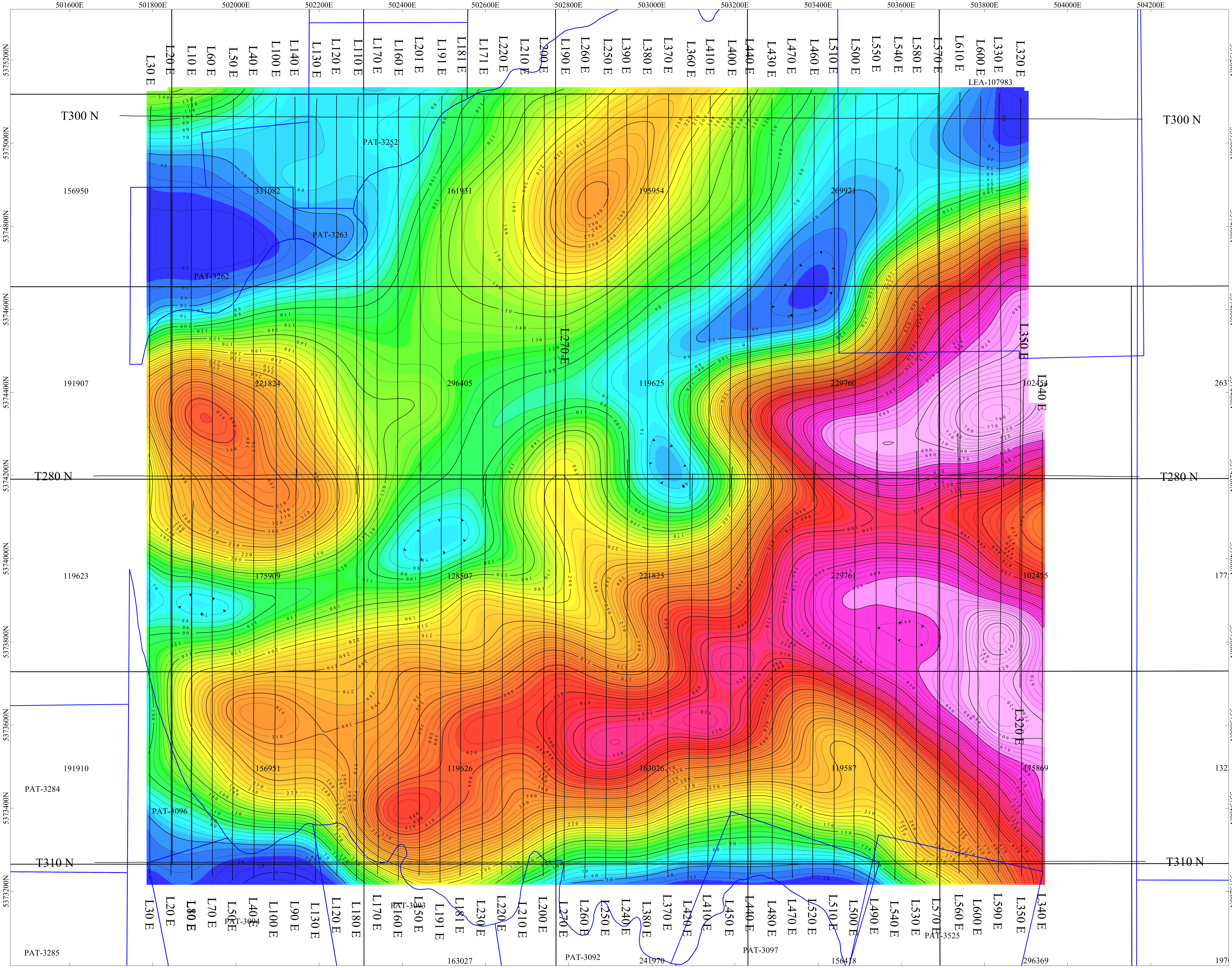
I am self-employed as a Consulting Geophysicist, based in North Bay, Ontario.

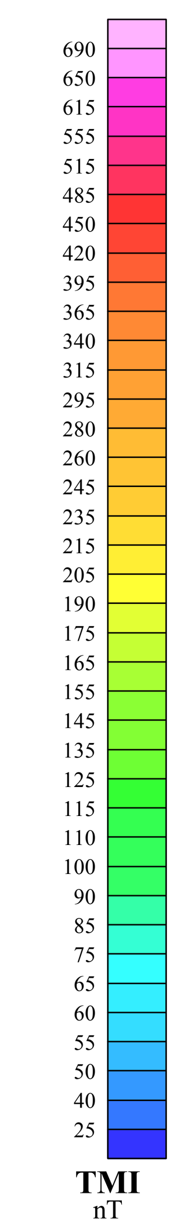
I have received a B.Sc. in geophysics from the University of Saskatchewan; Saskatoon, Saskatchewan in 1986.

I have been employed as a professional geophysicist in mining exploration, environmental and other consulting geophysical techniques since 1986.

I am a member in good standing with the Association of Professional Geoscientists of Ontario as a Practicing member; membership no. 2046

Signed in North Bay, Ontario, this December 3, 2021





Scale 1:5000

100 0 100 200 300

metres

NAD83 / UTM zone 17N

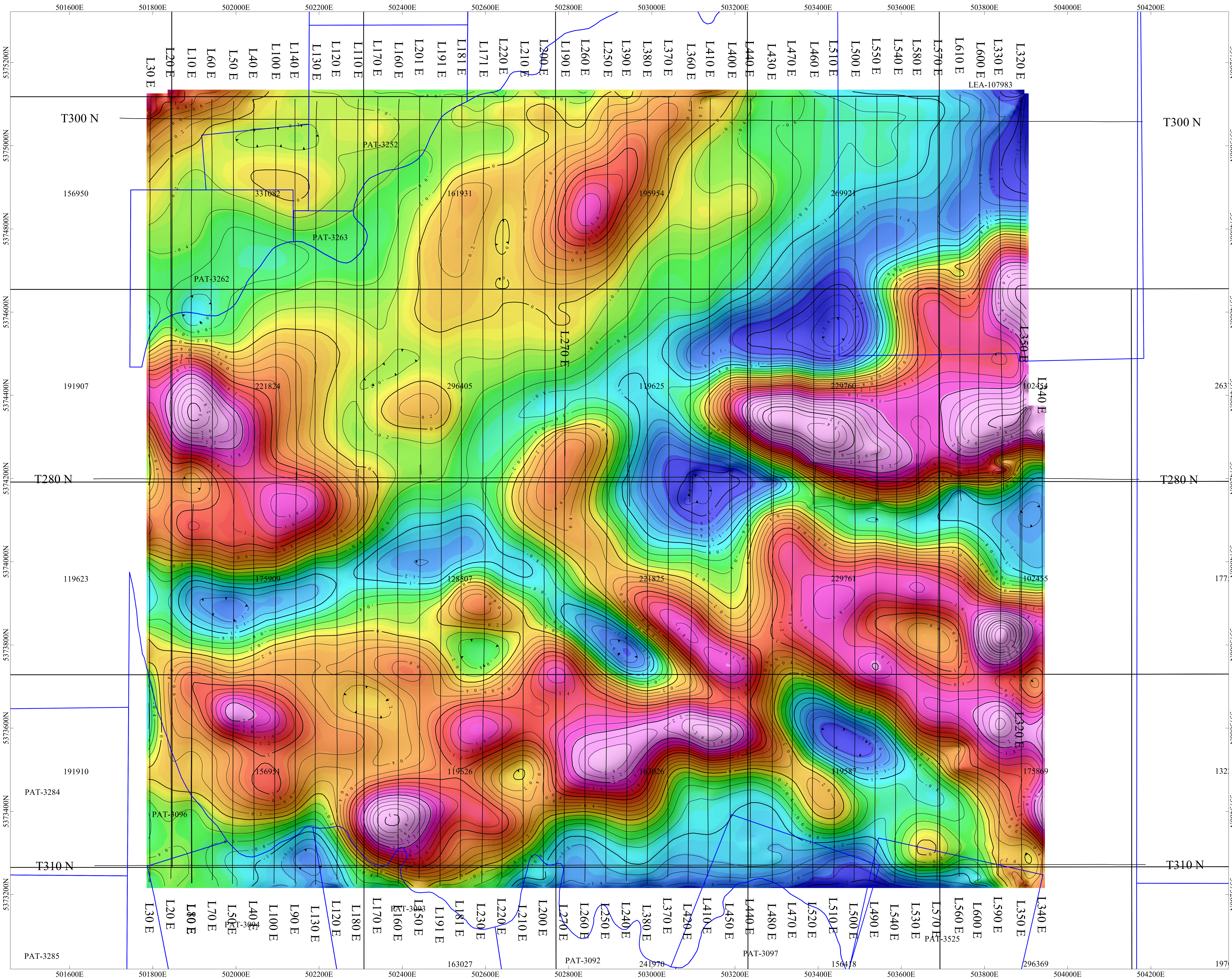
LINE KILOMETRES SURVEYED: 92.5

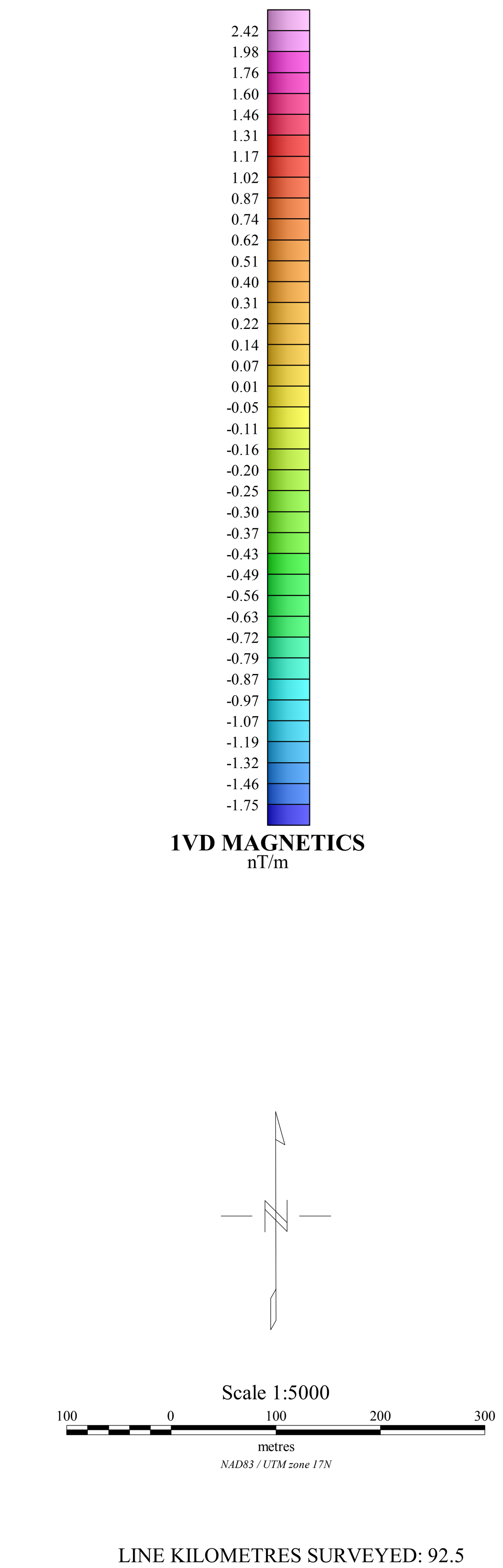
MONETA GOLD INC.

NIGHTHAWK LAKE PROJECT
DRONE MAGNETIC SURVEY - TMI CONTOURS
NOVEMBER 16-23, 2021

CODY TOWNSHIP - PORCUPINE MINING DIVISION
CLAIM NOS. POSTED ON MAP
CONTOUR INTERVAL =10, 50 nT
INSTRUMENT: GEOMETRICS MFAM SENSOR - M600 DRONE

SURVEYED BY: ZEN GEOMAP INC.





MONETA GOLD INC.

NIGHTHAWK LAKE PROJECT
DRONE MAGNETIC SURVEY - CALCULATED 1VD MAGNETICS
NOVEMBER 16-23, 2021

CODY TOWNSHIP - PORCUPINE MINING DIVISION
CLAIM NOS. POSTED ON MAP
CONTOUR INTERVAL =0.2, 1.0 nT/m
INSTRUMENT: GEOMETRICS MFAM SENSOR - M600 DRONE

SURVEYED BY: ZEN GEOMAP INC.

MONETA GOLD INC.
NIGHTHAWK LAKE PROJECT
DRONE MAGNETIC SURVEY - TMI CONTOURS
NOVEMBER 16-23, 2021
CODY TOWNSHIP - PORCUPINE MINING DIVISION
CLAIM NOS. POSTED ON MAP
CONTOUR INTERVAL =10, 50 nT
INSTRUMENT: GEOMETRICS MFAM SENSOR - M600 DRONE
SURVEYED BY: ZEN GEOMAP INC.
LINE KILOMETRES SURVEYED: 92.5
Scale 1:5000
metres
NAD83 / UTM zone 17N
Interpreted Fault/Structural Lineament
TMI
nT
T300 N
T280 N
T310 N
LEA-107983
PAT-3252
PAT-3263
PAT-3262
PAT-3284
PAT-3096
PAT-3285
PAT-3094
PAT-3093
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PAT-3097
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501800E
502000E
502200E
502400E
502600E
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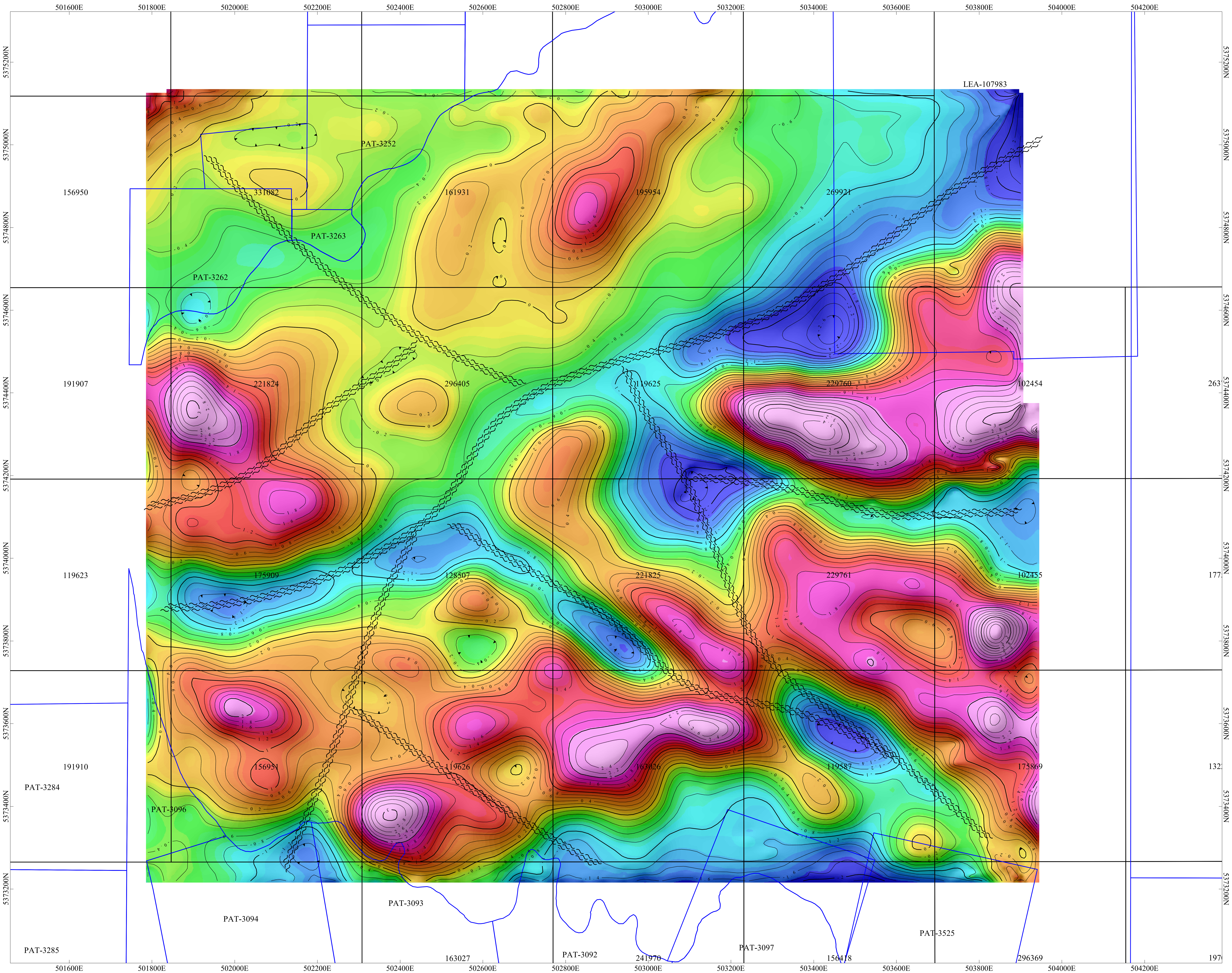
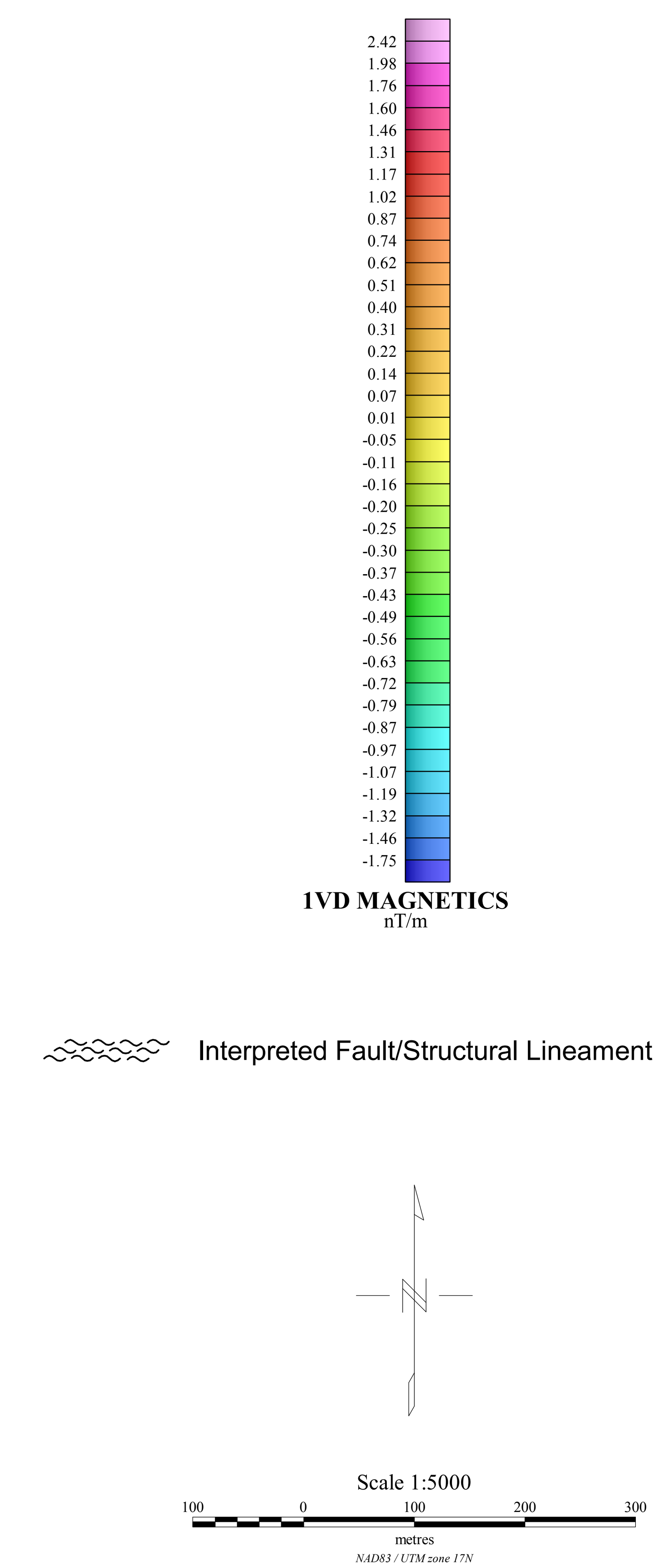




LINE KILOMETRES SURVEYED: 92.5

MONETA GOLD INC.

NIGHTHAWK LAKE PROJECT

DRONE MAGNETIC SURVEY - CALCULATED 1VD MAGNETICS

NOVEMBER 16-23, 2021

CODY TOWNSHIP -PORCUPINE MINING DIVISION
CLAIM NOS. POSTED ON MAP
CONTOUR INTERVAL =0.2, 1.0 nT/m
INSTRUMENT: GEOMETRICS MFAM SENSOR -M600 DRONE

SURVEYED BY: ZEN GEOMAP INC.

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. .

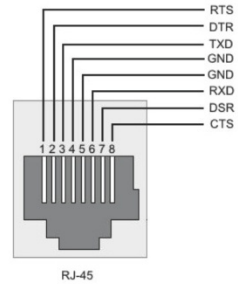


Figure 3: Serial Port Pinout

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.

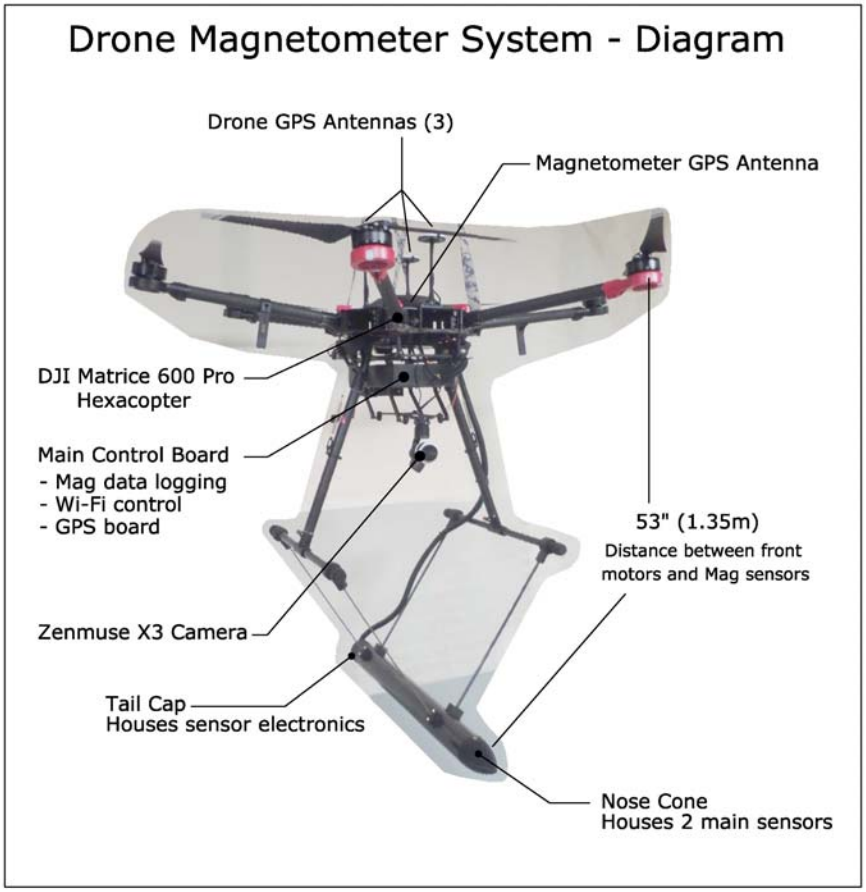
12) **Ethernet port with Power over Ethernet Compatibility**: The Tiva microcontroller contains a fully integrated Ethernet MAC and PHY. In addition, the Ethernet port can power the Development Kit via Power over Ethernet (PoE) using an Ethernet power injector.

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

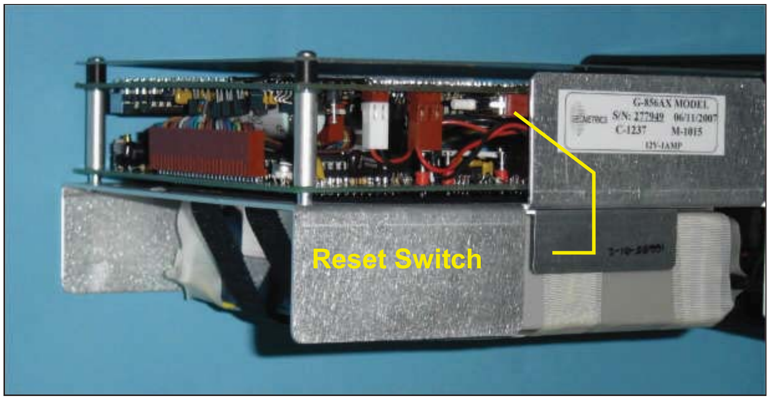


Figure 23. Internal reset switch.

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)

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	LiPo6S
Energy	129.96 Wh
Net Weight	680g
Operating Temperature	14° to 104° F (-10° to 40° C)
Max Charging Power	180 W

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

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.

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

Statement of Costs

$ 9000.00	9 flights @ $1,000 Nov 15, 2021
$13000.00	13 flights @ $1,000 Nov 23, 2021
$ 3560.00	Processing and Maps
$ 2900.00	Report

$28460.00	Total Survey Cost (total does not include HST)

<u>Calculation of Costs – Completed across 23 Active Mining Claims;</u>

The drone magnetic survey covered both Patent and Active Mining Claims.

3999000 sq. m (399.9ha)	Total area covered by survey
3365018 sq. m (336.5ha)	Portion of survey across 23 Active Mining Claims
84.14648%	Percent (%) of total cost that can be applied to Active Claims
$23948.00	**Total Survey Cost applied across 23 Active Mining Claims**

Table 1 provides detail of how costs are applied to each mining claim

Appendix V

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.;

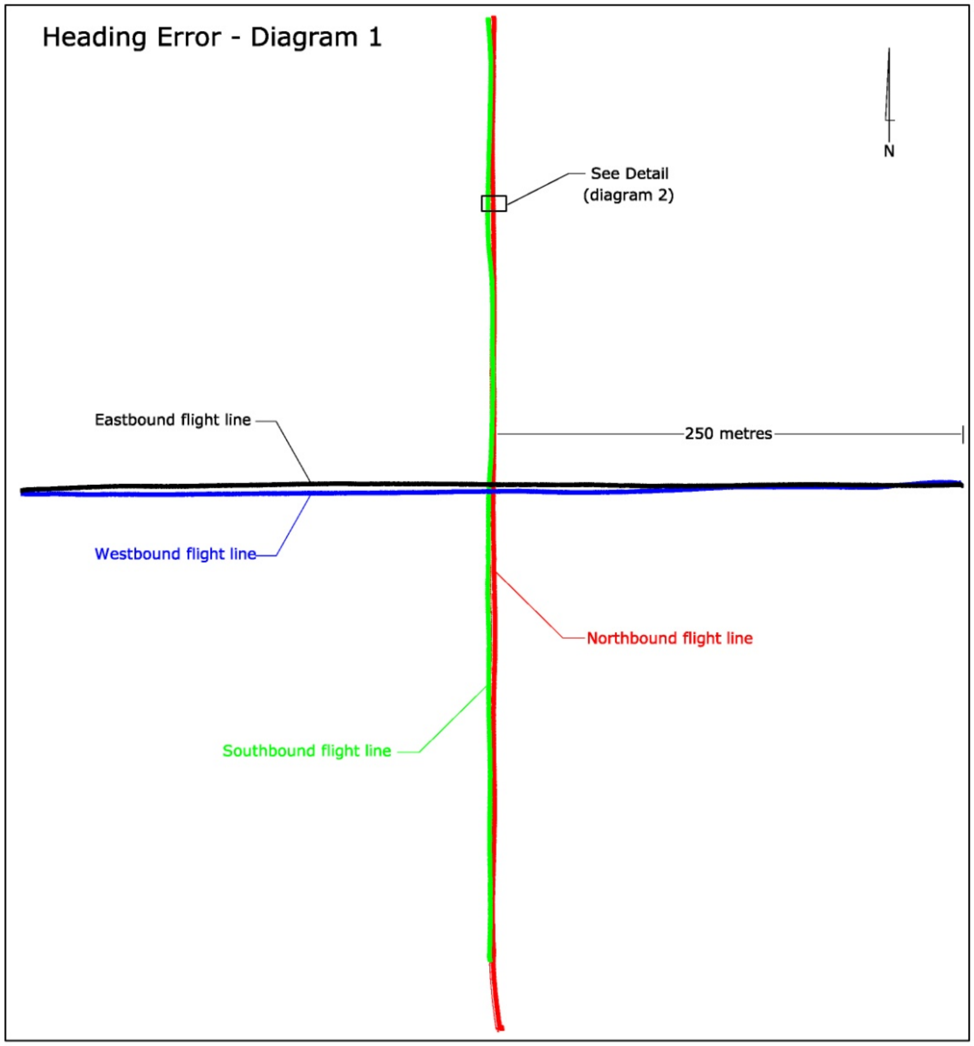
Heading Error

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.

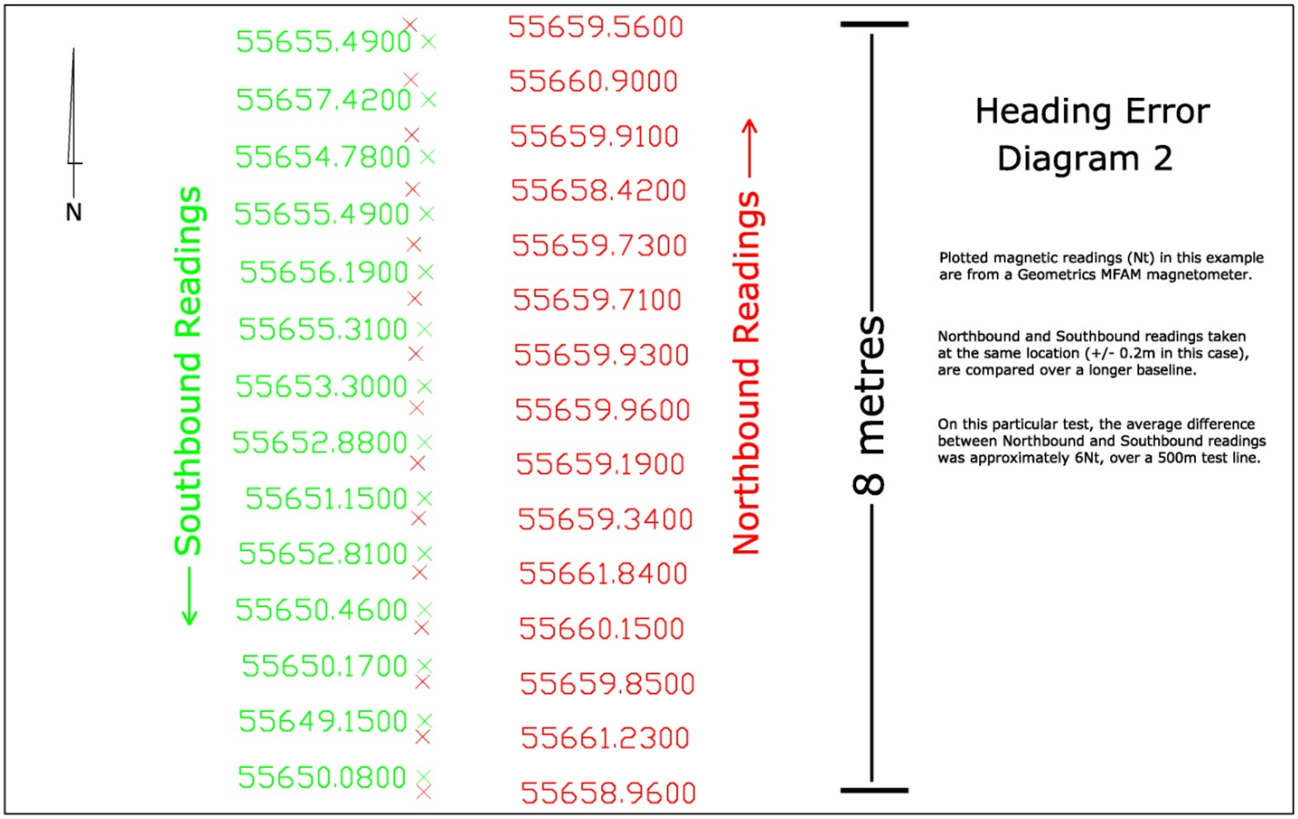
A cross-pattern is flown as shown in ***Diagram 1***, with 500 metre N-S and E-W lines.
Magnetic readings are collected along the same lines, flown in opposite directions.

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.

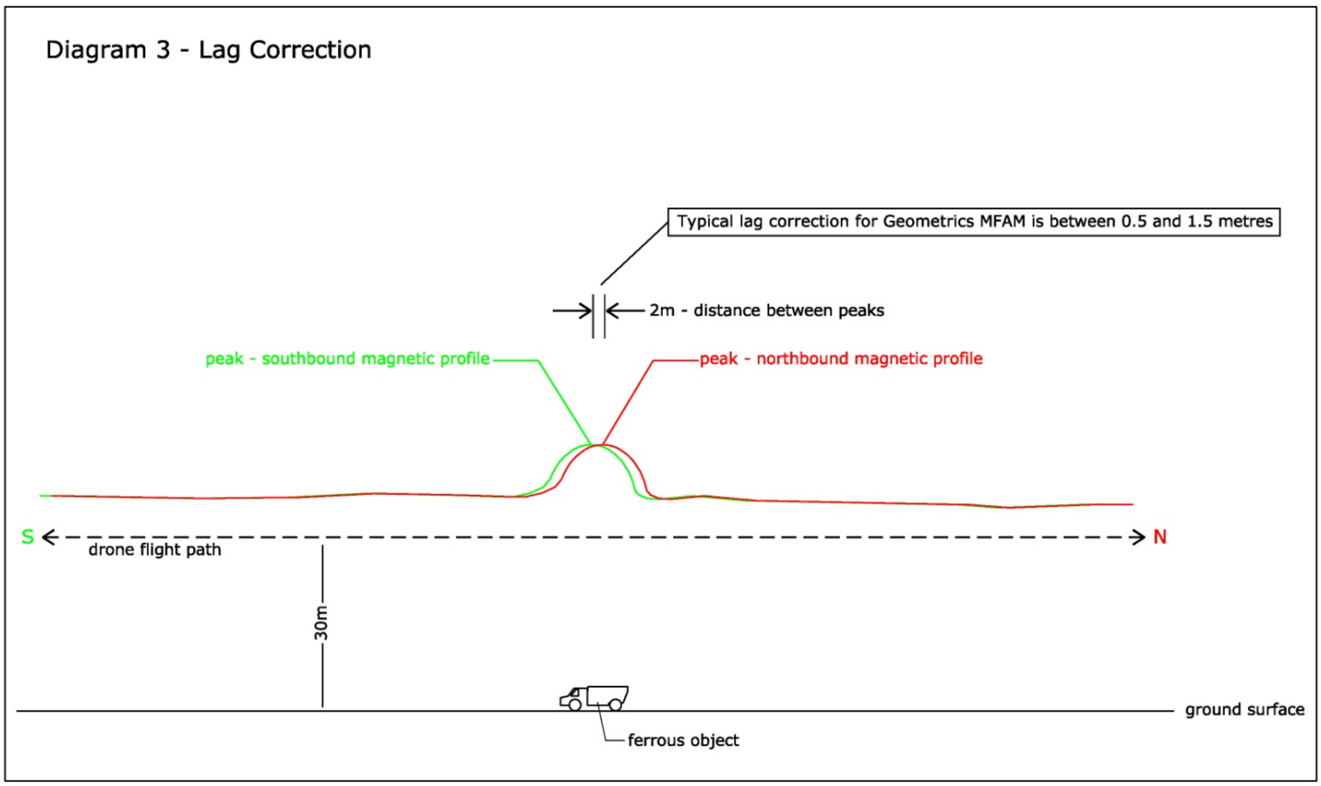
Each mag sensor will produce a unique result, however we typically apply a correction of 3Nt or less, to adjacent flight lines.

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.