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

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





# **BATTERY MINERAL RESOURCES LTD. Q2406b – Iron Mask Project - Cobra Magnetometer Survey** C Jason Ploeger, P.Geo. – August 9, 2017



#### **Abstract**

CXS was contracted by Battery Mineral Resources to perform approximately 1.5 kilometres of magnetometer work over the Iron Mask Property.

The survey indicated the presence of numerous north-south magnetically elevated anomalies.

BATTERY MINERAL RESOURCES LTD. Q2406b – Iron Mask Project - Cobra Magnetometer Survey

C Jason Ploeger, P.Geo. - August 9, 2017



# **TABLE OF CONTENTS**

1.		SURVEY DETAILS	3
	1.1	PROJECT NAME	3
	1.2	CLIENT	3
	1.3	LOCATION	3
	1.4	ACCESS	4
	1.5	SURVEY GRID	4
2.		SURVEY WORK UNDRTAKEN	5
	2.1	Survey Log	5
	2.2	Personnel	5
	2.3	SURVEY SPECIFICATIONS	5
3.		OVERVIEW OF SURVEY RESULTS	6
	3.1	SUMMARY	6
LI	ST OF	APPENDICES	
ΑP	PEND	IX A: STATEMENT OF QUALIFICATIONS IX B: THEORETICAL BASIS AND SURVEY PROCEDURES IX C: INSTRUMENT SPECIFICATIONS	

# **LIST OF TABLES AND FIGURES**

APPENDIX D: LIST OF MAPS (IN MAP POCKET)

Figure 1: Location of the Iron Mask Project	3
Figure 2: Claim Map with the Iron Mask Project - Cobra Traverses	
Figure 3: Magnetometer Plan of Iron Mask - Cobra on Google Earth	
Table 1: Survey Log	5





#### 1. SURVEY DETAILS

#### 1.1 PROJECT NAME

This project is known as the **Iron Mask Project – Cobra Property**.

#### 1.2 CLIENT

Battery Mineral Resources Ltd. Level 36 Governor Phillip Tower 1 Farer Place Sydney Australia

#### 1.3 LOCATION

The Iron Mask Project is located approximately 16 km west of Windy Lake, Ontario. The survey area covers a portion of mining claims 1249906 and 4222196 located in Hart Township, within the Sudbury Mining Division.



Figure 1: Location of the Iron Mask Project





#### 1.4 Access

Access to the property was via a 4x4 pickup truck and ATV. The Windy Lake Road is travelled west from highway 144 at Windy Lake. Near kilometer 13 can be found the Fox Lake Road which is travelled heading west for approx. 3 kilometers. At that point, an ATV trail is taken, heading north for approx. 3 kilometers.

#### 1.5 SURVEY GRID

The traversed lines were established using a GPS in conjunction with the execution of the survey. The GPS operator would establish sample locations while remaining approximately 12.5m in front of the magnetometer operator. GPS waypoints, magnetic samples were taken every 12.5m along these controlled traverses. The GPS used was a Garmin GPSMAP 62s with an external antenna for added accuracy.

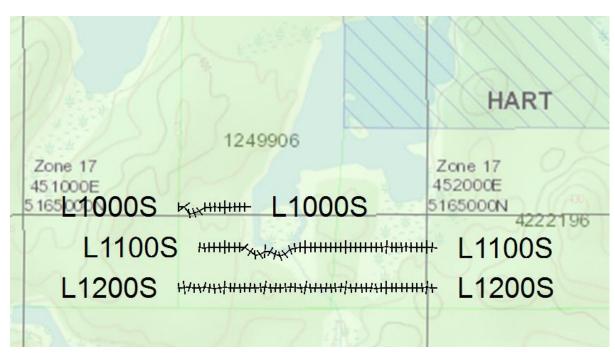


Figure 2: Claim Map with the Iron Mask Project - Cobra Traverses





#### 2. SURVEY WORK UNDRTAKEN

#### 2.1 SURVEY LOG

Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
	Locate survey area and conduct magnetometer survey. Area flooded and numerous fallen				
	trees.	1200S	612.5W	25E	637.5
		1100S	562.5W	25E	587.5
		1000S	612.5W	437.5W	175

Table 1: Survey Log

#### 2.2 Personnel

Patrick McGuinty of Pickering, Ontario conducted all the magnetic data collection while Claudia Moraga of Britt, Ontario was responsible for the GPS control and GPS waypoint collection.

#### 2.3 SURVEY SPECIFICATIONS

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

A total of 1.4 line kilometers of magnetometer was read over the Iron Mask Project on August 8, 2017. This consisted of 112 magnetometer samples taken at a 12.5 meters sample interval.





#### 3. OVERVIEW OF SURVEY RESULTS

#### 3.1 SUMMARY

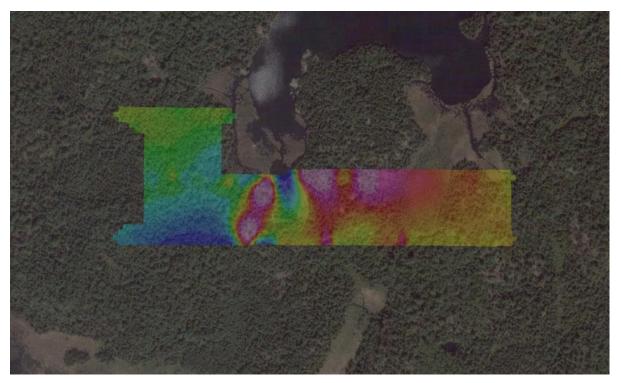


Figure 3: Magnetometer Plan of Iron Mask - Cobra on Google Earth

No culture that would affect the data was reported during the survey. The area was surveyed was flooded and a large amount of deadfall was noted.

The survey indicates the presence of a north-south trend within the magnetic fabric. The strongest part of these trends appears near 350W-375W on line 1100S. At this location, the response was so strong, that the magnetometer lost tune. This most likely represents an iron formation.

Parallel to this feature, near 300W and 200W on line 1100S, magnetically elevated regions occur. These regions are not as intense as the primary anomaly however both exhibit marked increases in the magnetic response. This may indicate the presence of two additional mineralized zones. The lower response indicates a lower concentration of magnetite, which may indicate the existence of additional mineralization.

I would recommend cutting a grid and performing an IP survey over this area. I would also recommend prospecting the areas of the magnetic anomalies.





#### **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 Inc. of Larder Lake, Ontario.
- 2. I am a Practicing 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.
- 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 **Battery Mineral Resources.**
- 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 Inc.

Larder Lake, ON August 9th, 2017





#### **APPENDIX B**

#### THEORETICAL BASIS AND SURVEY PROCEDURES

#### TOTAL FIELD MAGNETIC SURVEY

Base station corrected Total Field Magnetic surveying is conducted using at least two synchronized magnetometers of identical type. One magnetometer unit is 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. This magnetometer, given the term 'base station', stores the time, date and total field measurement at fixed time intervals over the survey day. The second, remote mobile unit stores the coordinates, time, date, and the total field measurements simultaneously. The procedure consists of taking total magnetic measurements of the Earth's field at stations, along individual profiles, including Tie and Base lines. A 2 meter staff is used to mount the sensor, in order to optimally minimize localized near-surface geologic noise. At the end of a survey day, the mobile and base-station units are linked, via RS-232 ports, for diurnal drift and other magnetic activity (ionospheric and sferic) corrections using internal software.

For the gradiometer application, two identical sensors are mounted vertically at the ends of a rigid fiberglass tube. The centers of the coils are spaced a fixed distance apart (0.5 to 1.0m). The two coils are then read simultaneously, which alleviates the need to correct the gradient readings for diurnal variations, to measure the gradient of the total magnetic field.





#### **APPENDIX C**

#### **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 ±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 ±10° 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





# **APPENDIX C**

#### **GARMIN GPS MAP 62S**



Physical & Performanc	Physical & Performance:				
Unit dimensions, WxHxD:	2.4" x 6.3" x 1.4" (6.1 x 16.0 x 3.6 cm)				
Display size, WxH:	1.43" x 2.15" (3.6 x 5.5 cm); 2.6" diag (6.6 cm)				
Display resolution, WxH:	160 x 240 pixels				
Display type:	transflective, 65-K color TFT				
Weight:	9.2 oz (260.1 g) with batteries				
Battery:	2 AA batteries (not included); NiMH or Lithium recom- mended				
Battery life:	20 hours				
Waterproof:	yes (IPX7)				
Floats:	no				





High-sensitivity re- ceiver:	yes			
Interface:	high-speed USB	-speed USB and NMEA 0183 compatible		
Maps & Memory:				
Basemap:		yes		
Preloaded maps:		no		
Ability to add maps:		yes		
Built-in memory:		1.7 GB		
Accepts data cards:		microSD™ card (not included)		
Waypoints/favorites/loc	cations:	2000		
Routes:		200		
Track log:		10,000 points, 200 saved tracks		
Features & Benefits:				
Automatic routing (turn on roads):	by turn routing	yes (with optional mapping for detailed roads)		
Electronic compass:		yes (tilt-compensated, 3-axis)		
Touchscreen:		no		
Barometric altimeter:		yes		
Camera:		no		
Geocaching-friendly:		yes (paperless)		
Custom maps compatil	ole:	yes		
Photo navigation (navigoration otagged photos):	gate to ge-	yes		
Outdoor GPS games:		no		



Hunt/fish calendar:	yes
Sun and moon information:	yes
Tide tables:	yes
Area calculation:	yes
Custom POIs (ability to add additional points of interest):	yes
Unit-to-unit transfer (shares data wire-lessly with similar units):	yes
Picture viewer:	yes
Garmin Connect™ compatible (online community where you analyze, categorize and share data):	yes

Specifications obtained from www.garmin.com





# **APPENDIX D**

### LIST OF MAPS (IN MAP POCKET)

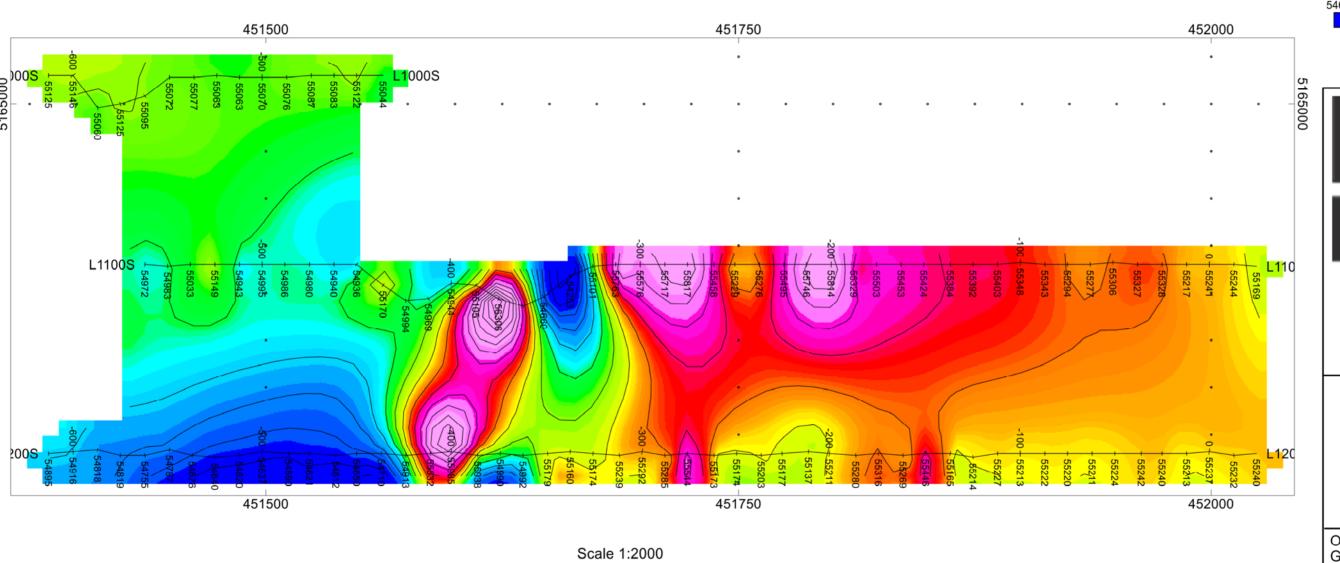
Magnetometer Plan Map (1:2000)

1) Q2406b-Battery-Cobra-Mag-Cont

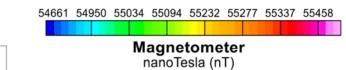
Traverse Plan Map (1:20000)

1) Q2406b-Battery-Cobra-Traverse

**TOTAL MAPS = 2** 



NAD83 / UTM zone 17N



# BAT+ERY MINERAL RESOURCES

# IRON MASK PROJECT - COBRA Hart Township, Ontario

TOTAL FIELD MAGNETIC CONTOURED PLAN MAP
Base Station Corrected

Posting Level: 0nT
Field Inclination/Declination: 71.6degN/10.9degW
Station Seperation: 12.5 meters
Total Field Magnetic Contours: 100nT

GSM-19 OVERHAUSER MAGNETOMETER v7

Operated By: Patrick McGuinty GPS Operated By: Claudia Moraga Processed by: C Jason Ploeger, P.Geo. Map Drawn By: C Jason Ploeger, P.Geo. August 2017



Drawing: Q2406b-Battery-Cobra-Mag-Cont

