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## SKEAD HOLDINGS LTD.

# Magnetometer and VLF EM Surveys Over the Cunningham-B Ext Property

Cunningham Property
Cunningham Township, Ontario



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#### 1. SURVEY DETAILS

#### 1.1 PROJECT NAME

This project is known as the **Cunningham-B Ext Property**.

#### 1.2 CLIENT

SKEAD HOLDINGS LTD.

28 Ford St. Sault Ste. Marie, Ontario P6A 4N4

#### 1.3 LOCATION

The Cunningham-B Ext Property is located in Cunningham Township approximately 10km northeast of Sultan, Ontario. The survey area covers claims numbered 4259265, 4259266 and 4259267, located in Cunningham Township, within the Porcupine Mining Division.

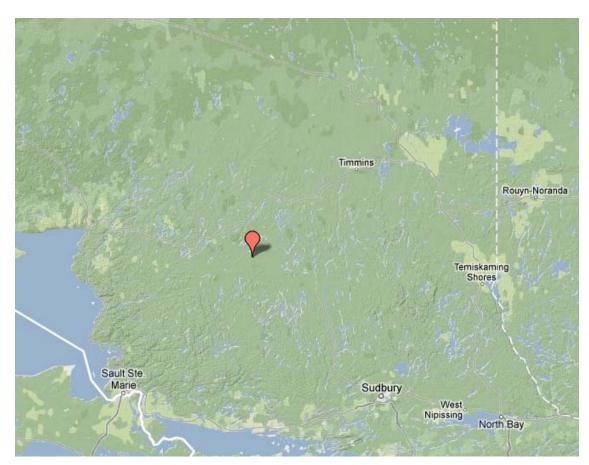


Figure 1: Location of the Cunningham-B Ext Property



#### 1.4 Access

Access to the property was attained with a 4x4 truck on Highway 129 for approximately 28 km southeast from the Town of Chapleau to Regional Rd 667 for approximately 47km east. From that point, ATVs were used to travel for an additional 10km north on an old logging road to the beginning of the property. The rest of the property was then accessed by ATVs trails and on foot.

#### 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 and VLF 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.

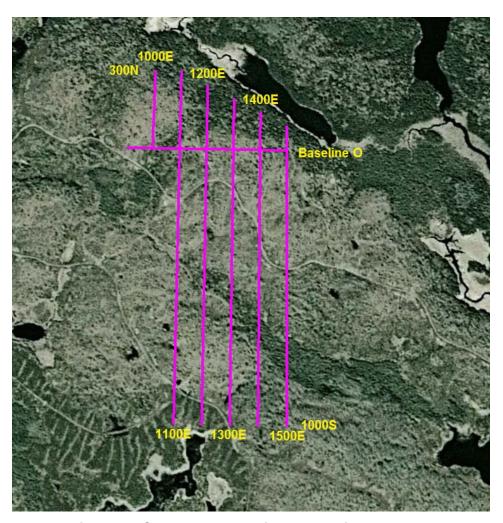


Figure 2: Google Image with Magnetic Traverses



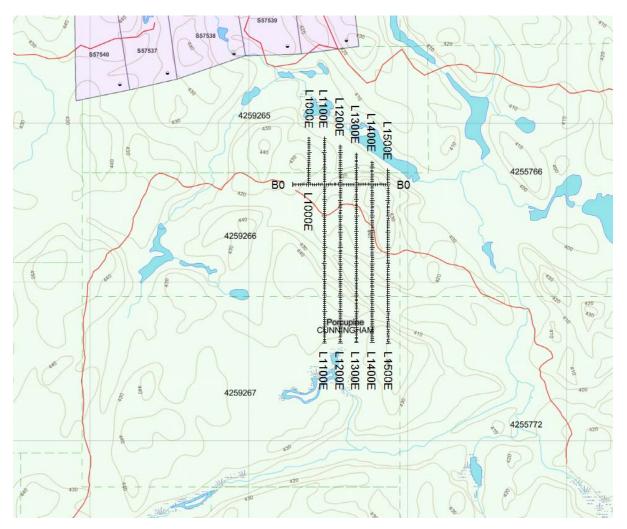


Figure 3: Claim Map with Cunningham-B Ext Property Traverses



#### 2. SURVEY WORK UNDERTAKEN

#### 2.1 SURVEY LOG

			Min	Max	Total Survey
Date	Description	Line	Extent	Extent	(m)
June 11, 2014	Locate survey area and begin				
	survey.	1000E	0	300N	300
		1100E	1000S	300N	1300
		1200E	1000S	250N	1250
		1300E	150S	200N	350
		0N	900E	1500E	600
June 12, 2014	Complete magnetic survey.	1300E	1000S	150S	850
		1400E	1000S	150N	1150
		1500E	1000S	100N	1100

Table 1: Survey Log

#### 2.2 Personnel

Jason Ploeger of Larder Lake, Ontario, conducted all the magnetic and VLF EM data collection with Bruce Lavalley of Britt, Ontario responsible for GPS control and way-point 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 6.9 line kilometers of magnetometer and VLF EM was read over the Cunningham Property between June 11<sup>th</sup> and June 12<sup>th</sup>, 2014. This consisted of 552 magnetometer samples taken at a 12.5m sample interval.



#### 3. OVERVIEW OF SURVEY RESULTS

#### 3.1 SUMMARY INTERPRETATION

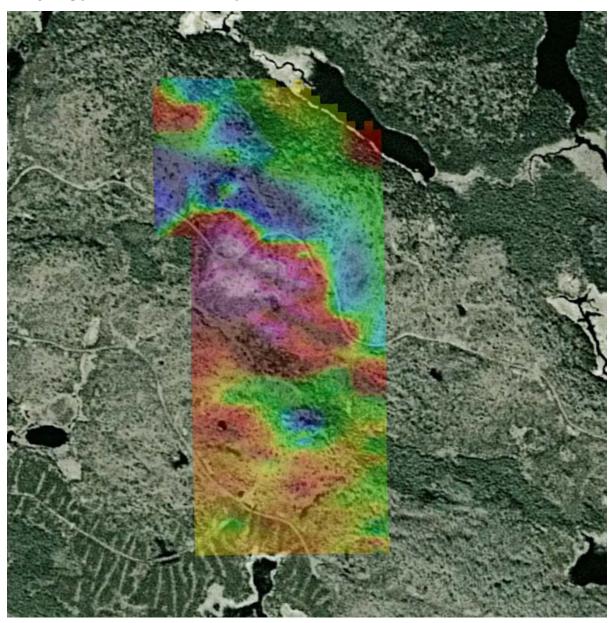


Figure 4: Google Image with Magnetic Overlay

An intense magnetic signature occurs within the survey area. Magnetic fluctuations were so intense within this magnetic anomaly that the magnetometer was knocked out of tune and it was impossible to obtain an accurate reading. These locations were removed from the dataset. This anomaly ranges from 50S through 450S on lines 1100E through 1300E. The magnetic signature is constrained to the north and south from this survey and to the west by a historic magnetic survey. The anomaly is open to the east; however, the width is greatly reduced. The strength of this magnetic anomaly indicates a strong probability of an iron formation.



Flanking the southern edge of this anomaly is a strong VLF EM signature. This may be a result of a structural feature or a sulphide unit along the contact of the magnetic anomaly and the country rock.

A second VLF axis occurs within the magnetic anomaly and extends from 1100E at 300S to 1400E at 400S. This anomaly again may indicate a structural feature but more than likely indicates the presence of a mineralized horizon.

This magnetic anomaly and VLF signature should be further investigated. There is a strong potential of mineralization within this unit. I would recommend cutting a grid and performing a followup program. This program should include, geology, MMI Survey and an IP Survey.



#### **APPENDIX A**

#### STATEMENT OF QUALIFICATIONS

- I, C. Jason Ploeger, hereby declare that:
- 1. I am a professional geophysicist with residence in Larder Lake, Ontario and am presently employed as a Geophysicist and Geophysical Manager of Canadian Exploration Services Ltd. of Larder Lake, Ontario.
- 2. I am a 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 **Skead Holdings Ltd.**
- 7. I am responsible for the final processing and validation of the survey results and the compilation of the presentation of this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.



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

> Larder Lake, ON June 25, 2014



#### **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.

#### **VLF Electromagnetic**

The frequency domain VLF electromagnetic survey is designed to measure both the vertical and horizontal in-phase (IP) and Quadrature (OP) components of the anomalous field from electrically conductive zones. The sources for VLF EM surveys are several powerful radio transmitters located around the world which generate EM radiation in the low frequency band of 15-25kHZ. The signals created by these long-range communications and navigational systems may be used for surveying up to several thousand kilometers away from the transmitter. The quality of the incoming VLF signal can be monitored using the field strength. A field strength above 5pT will produce excellent quality results. Anything lower indicates a weak signal strength, and possibly lower data quality. A very low signal strength (<1pT) may indicate the radio station is down.

The EM field is planar and horizontal at large distances from the EM source. The two components, electric (E) and magnetic (H), created by the source field are orthogonal to each other. E lies in a vertical plane while H lies at right angles to the direction of propagation in a horizontal plane. In order to ensure good coupling, the strike of possible conductors should lie in the direction of the transmitter to allow the H vector to pass through the anomaly, in turn, creating a secondary EM field.

The VLF EM receiver has two orthogonal aerials which are tuned to the frequency



of the transmitting station. The direction of the source station is located by rotating the sensor around a vertical axis until a null position is found. The VLF EM survey procedure consists of taking measurements at stations along each line on the grid. The receiver is rotated about a horizontal axis, right angles to the traverse and the tilt recorded at the null position.



#### **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 & 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 receiver:	yes	
Interface:	high-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/locations:	2000
Routes:	200
Track log:	10,000 points, 200 saved tracks

Features & Benefits:	
Automatic routing (turn by turn routing on roads):	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 compatible:	yes
Photo navigation (navigate to geotagged photos):	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 <sup>™</sup> 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)

Posted contoured TFM plan map (1:2500)

1) SKEAD-CUNNINGHAM-B EXT-EXT-MAG-CONT

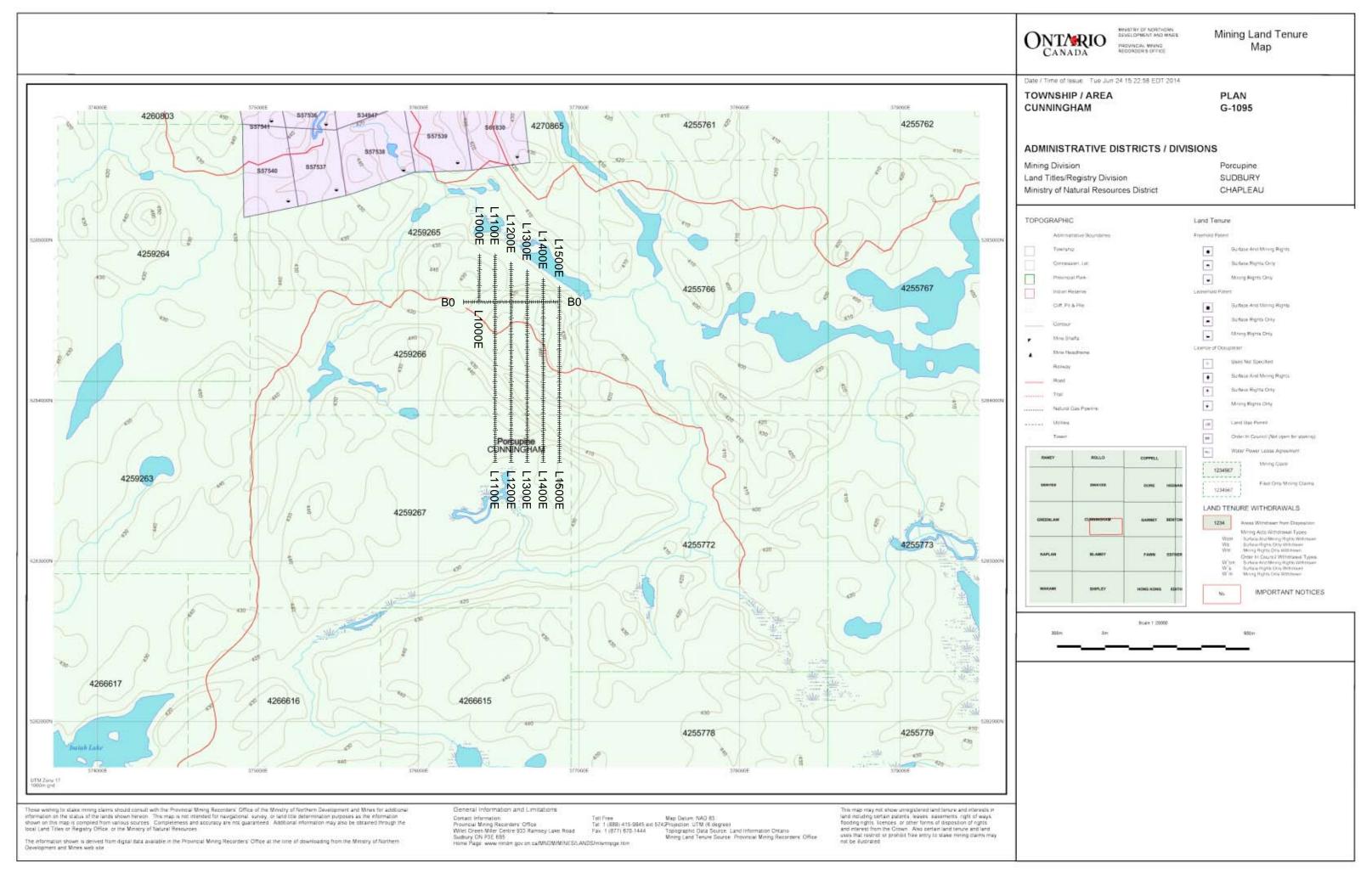
Posted VLF EM Profiles with Contoured Fraser Filter Plan Map (1:2500)

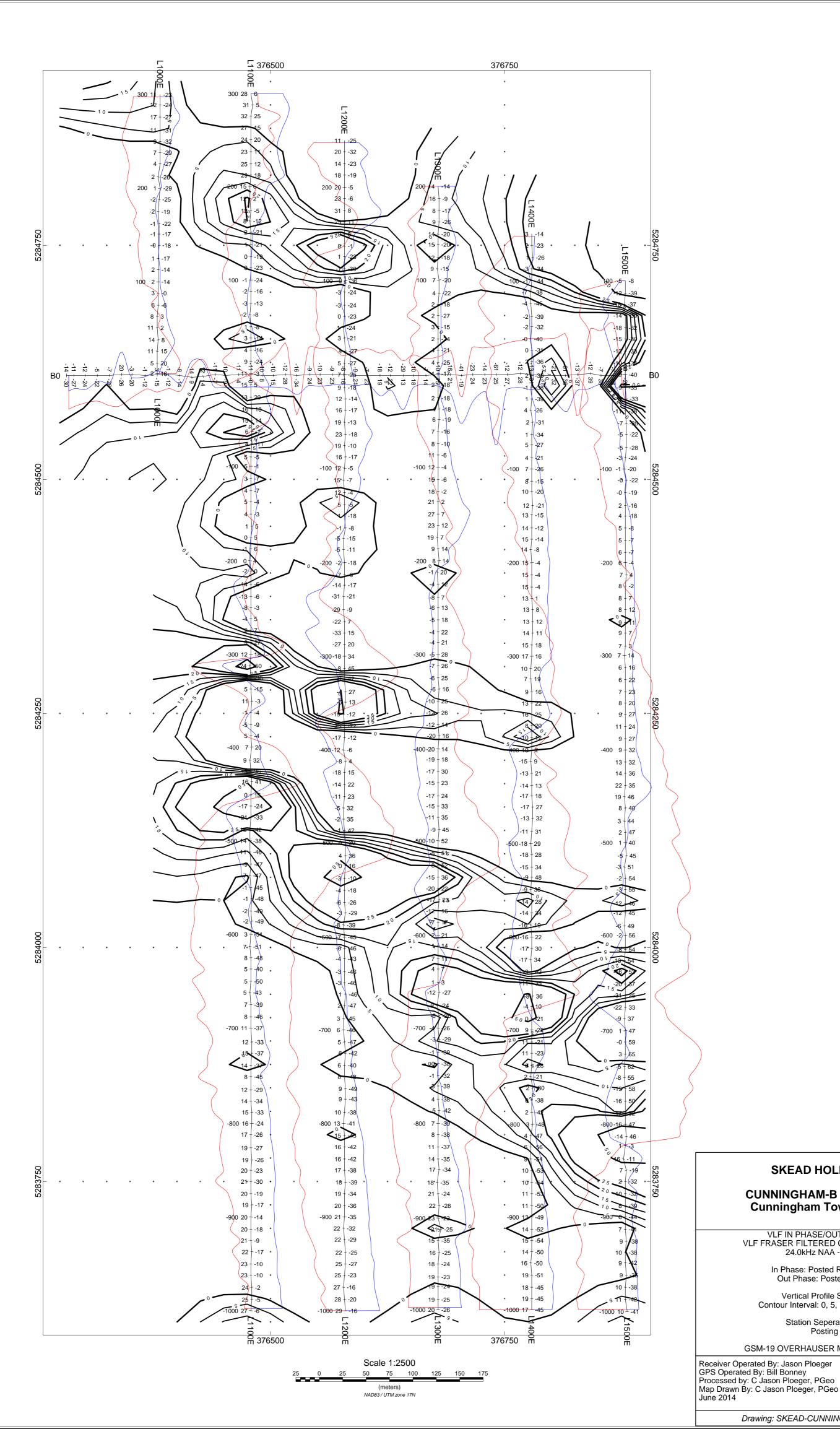
2) SKEAD-CUNNINGHAM-B EXT-EXT -VLF-NAA

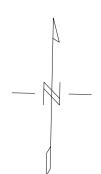
Claim Map with Magnetic Traverses (1:20000)

3) SKEAD-CUNNINGHAM-B EXT-EXT -GRID

**TOTAL MAPS=3** 







#### **SKEAD HOLDINGS LTD.**

#### **CUNNINGHAM-B EXT PROPERTY Cunningham Township, Ontario**

VLF IN PHASE/OUT PHASE PROFILE VLF FRASER FILTERED CONTOURED PLAN MAP 24.0kHz NAA - CUTLER USA

> In Phase: Posted Right/Bottom (Red) Out Phase: Posted Left/Top (Blue)

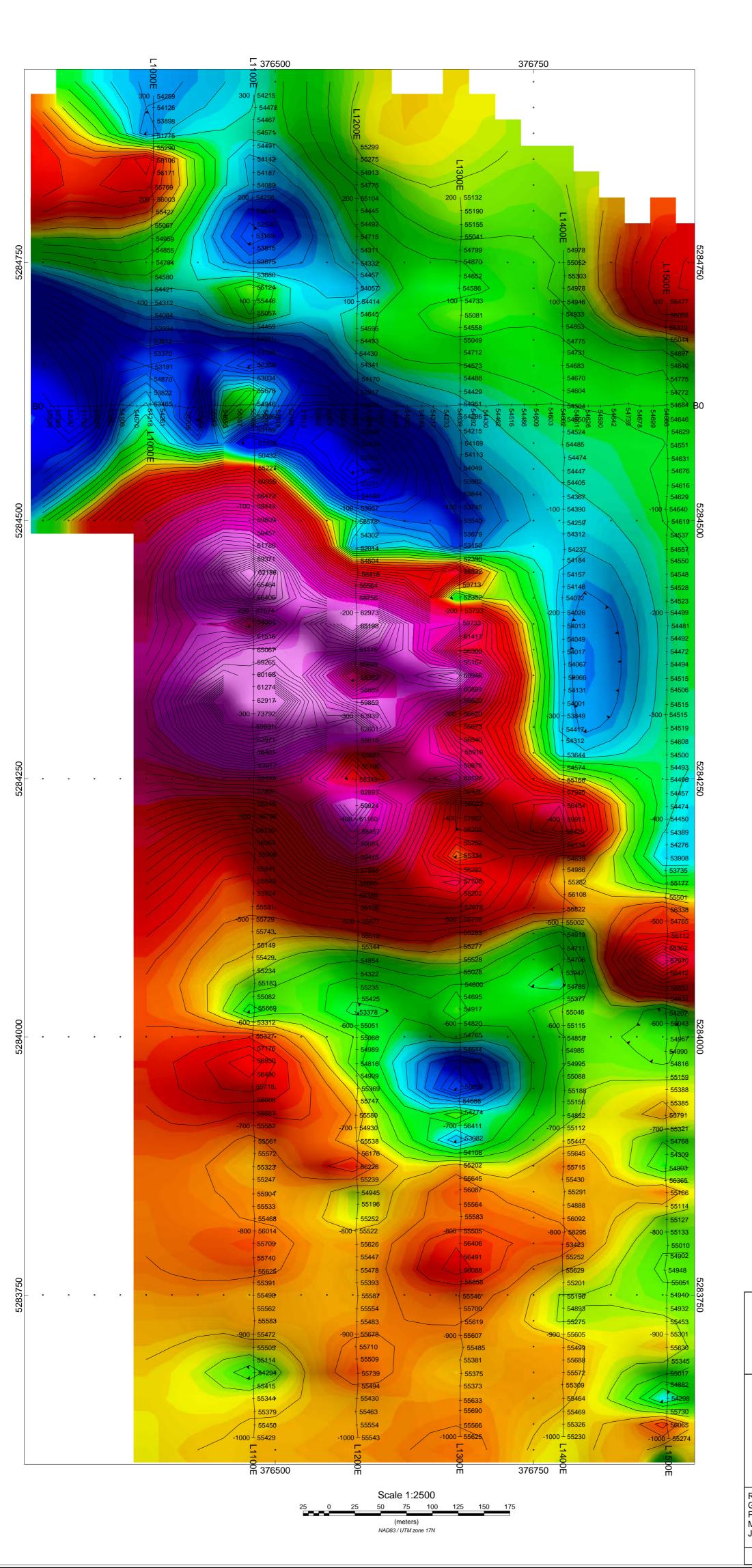
Vertical Profile Scales: 2 %/mm Contour Interval: 0, 5, 10, 15, 20, 25, 50, 100

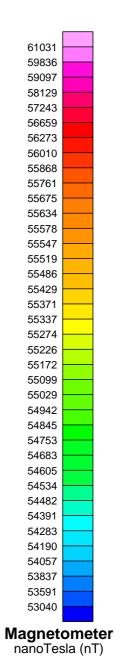
> Station Seperation: 25 meters Posting Level: 0

GSM-19 OVERHAUSER MAGNETOMETER/VLF v7

CANADIAN EXPLORATION SERVICES LTD

Drawing: SKEAD-CUNNINGHAM B-EXT-VLF-NAA







### **CUNNINGHAM-B EXT PROPERTY Cunningham Township, Ontario**

TOTAL FIELD MAGNETIC CONTOURED PLAN MAP Base Station Corrected

Posting Level: 0nT
Field Inclination/Declination: 74degN/12degW
Station Seperation: 12.5 meters
Total Field Magnetic Contours: 200nT

GSM-19 OVERHAUSER MAGNETOMETER/VLF v7

Receiver Operated By: Jason Ploeger GPS Operated By: Bill Bonney Processed by: C Jason Ploeger, PGeo Map Drawn By: C Jason Ploeger, PGeo June 2014



Drawing: SKEAD-CUNNINGHAM B-EXT-MAG-CONT