2011 Assessment Work Report

A Helicopter-Borne AeroTEM System

Electromagnetic & Magnetic Survey

Performed on Claims

4249413

4250203

4250204

4250205

4250206

4250207

Greenlaw Township, Porcupine Mining Division, Ontario

Prepared for

Sino Minerals Corp. (SMC)

(145 Riviera Drive, Unit 7, Markham,
Ontario L3R 5J6, Canada)

Submitted by **Keystone Associates Inc**. for SMC

June 12, 2011

Table of Content

List of Figures

List of Tables

List of Appendices

1. Introduction

SMC's Greenlaw Property and claims were acquired or staked by SMC through 2010 and 2011 due to its potential of hosting Au, Ag, Cu, Pb and Zn. In October 2010, a Helicopter-borne survey was performed to gather valuable geophysical information as basis for further exploration work.

2. Claims, Location, and Access

2.1 Property Description and Ownership

The Greenlaw Property consists of 18 unpatented claims. This Report involves 6 contiguous claims of those claims, i.e., 4249413, 4250203, 4250204, 4250205, 4250206, 4250207 **(Table 1) (Figure 1) (Table 2),** covering approximately 13 km².

Table 1: Greenlaw Property Claim Identity

Township/Area	Claim Number	Recording Date	Due Date
Greenlaw	4249413	2009-Jul-20	2011-Jul-20
Greenlaw	4250203	2009-Jun-24	2011-Jun-24
Greenlaw	4250204	2009-Jun-24	2011-Jun-24
Greenlaw	4250205	2009-Jun-24	2011-Jun-24
Greenlaw	4250206	2009-Jun-24	2011-Jun-24
Greenlaw	4250207	2009-Jun-24	2011-Jun-24

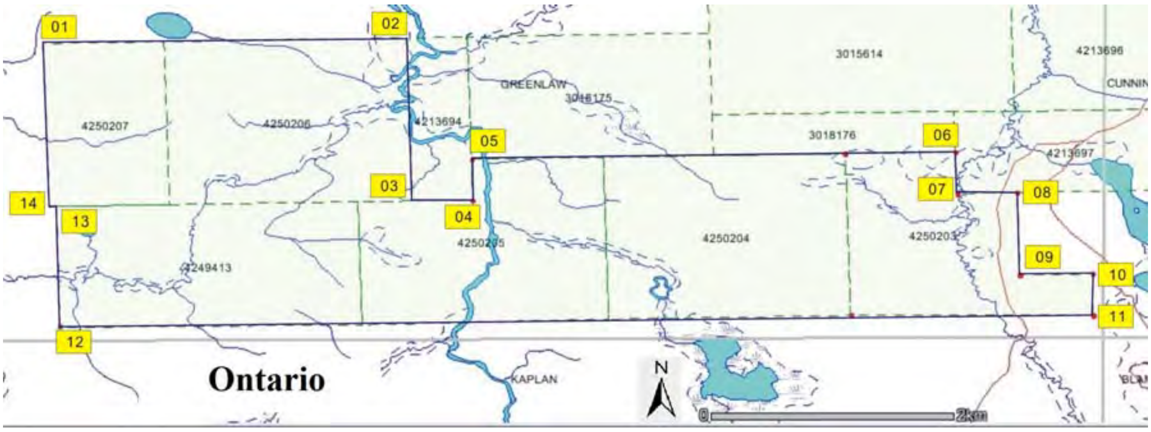


Figure 1: Greenlaw Property Layout

Table 2: Greenlaw Property Co-ordinates

Infl. Point	Longitude/Latitude		Infl. Point	Longitude/Latitude	
01.	82° 49’ 16.50” W	47° 41’ 48.51” N	08	82° 44’ 7.80” W	47° 41’ 1.27” N
02.	82° 47’ 19.46” W	47° 41’ 48.51” N	09	82° 44’ 7.80” W	47° 40’ 35.32” N
03.	82° 47’ 19.46” W	47° 40’ 58.58” N	10	82° 43’ 43.82” W	47° 40’ 35.32” N
04.	82° 47’ 0.49” W	47° 40’ 58.58” N	11	82° 43’ 43.82” W	47° 40’ 22.43” N
05	82° 47’ 0.49W	47° 41’ 11.82” N	12	82° 49’ 11.31” W	47° 40’ 22.43” N
06	82° 44’ 27.30” W	47° 41’ 14.15” N	13	82° 49’ 12.20” W	47° 40’ 56.79” N
07	82° 44’ 27.30” W	47° 41’ 1.27” N	14	82° 49’ 14.35” W	47° 40’ 56.79” N

2.2 Property Location and Access

SMC's Greenlaw Property is located in Greenlaw area, Porcupine Division, Ontario, and approximately 10 km northwest of Sultan and 45 km southeast of Chapleau (**Figure 2**) (**Figure 3**)

Figure 2: Greenlaw Property Location Map

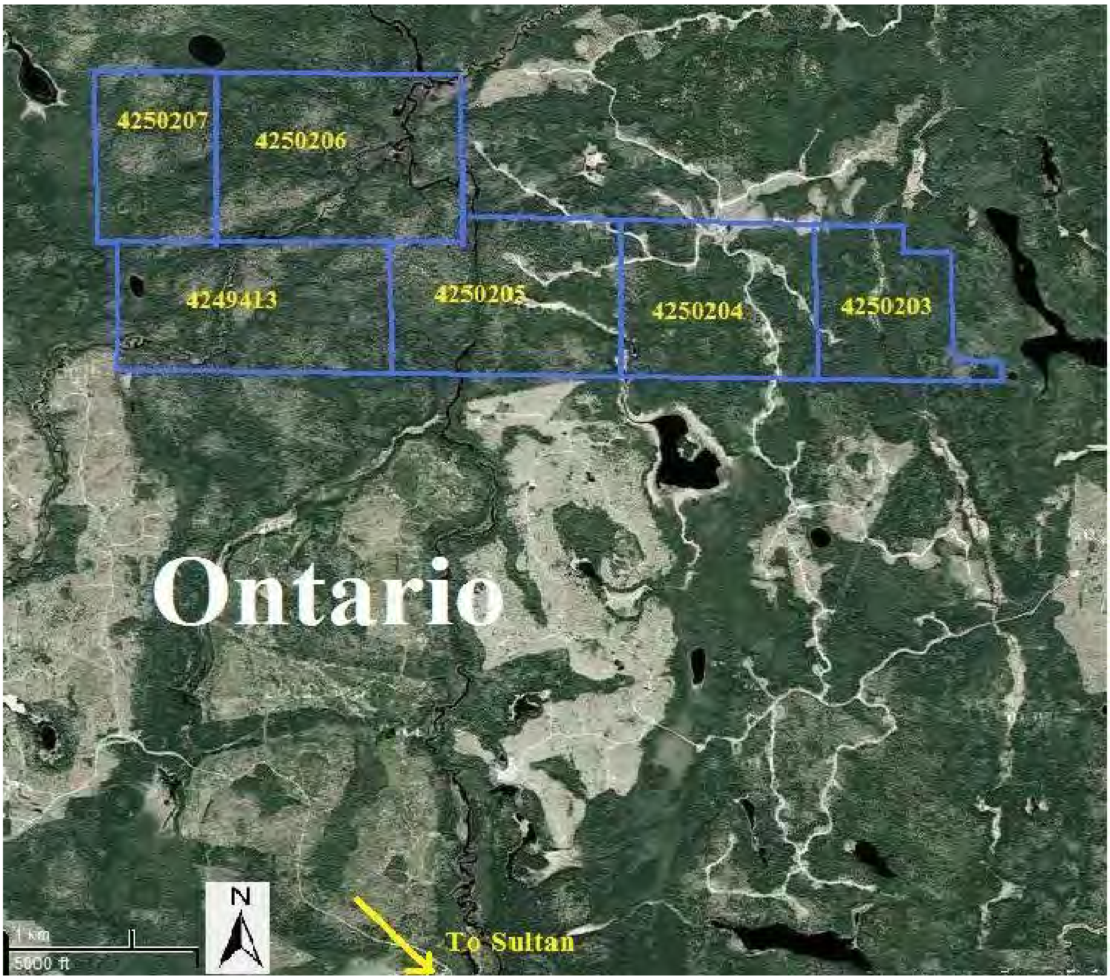


Figure 3: Greenlaw Claim Access Map

3. Regional Geological Setting

The terrain is quite flat for this area. Greenlaw had elevations in the order of 400-450m above sea level. Greenlaw area had plentiful lakes, rivers and marshes. (**Figure 4)**

The property is located in the neo-archean Swayze Greenstone Belt, a westbound extension of the Abitibi Greenstone Belt **(Figure 5)**. The Greenstone Belt's crustal rock stratum is defined by Kenogamissi bedrock in the east, Ramsay-Algoma Gneiss cluster in the South, and Kapuskasing Granulite stratum in the West. In the east, the Swayze Greenstone Belt and the Abitibi Greenstone Belt are connected by a thin rock stratum.

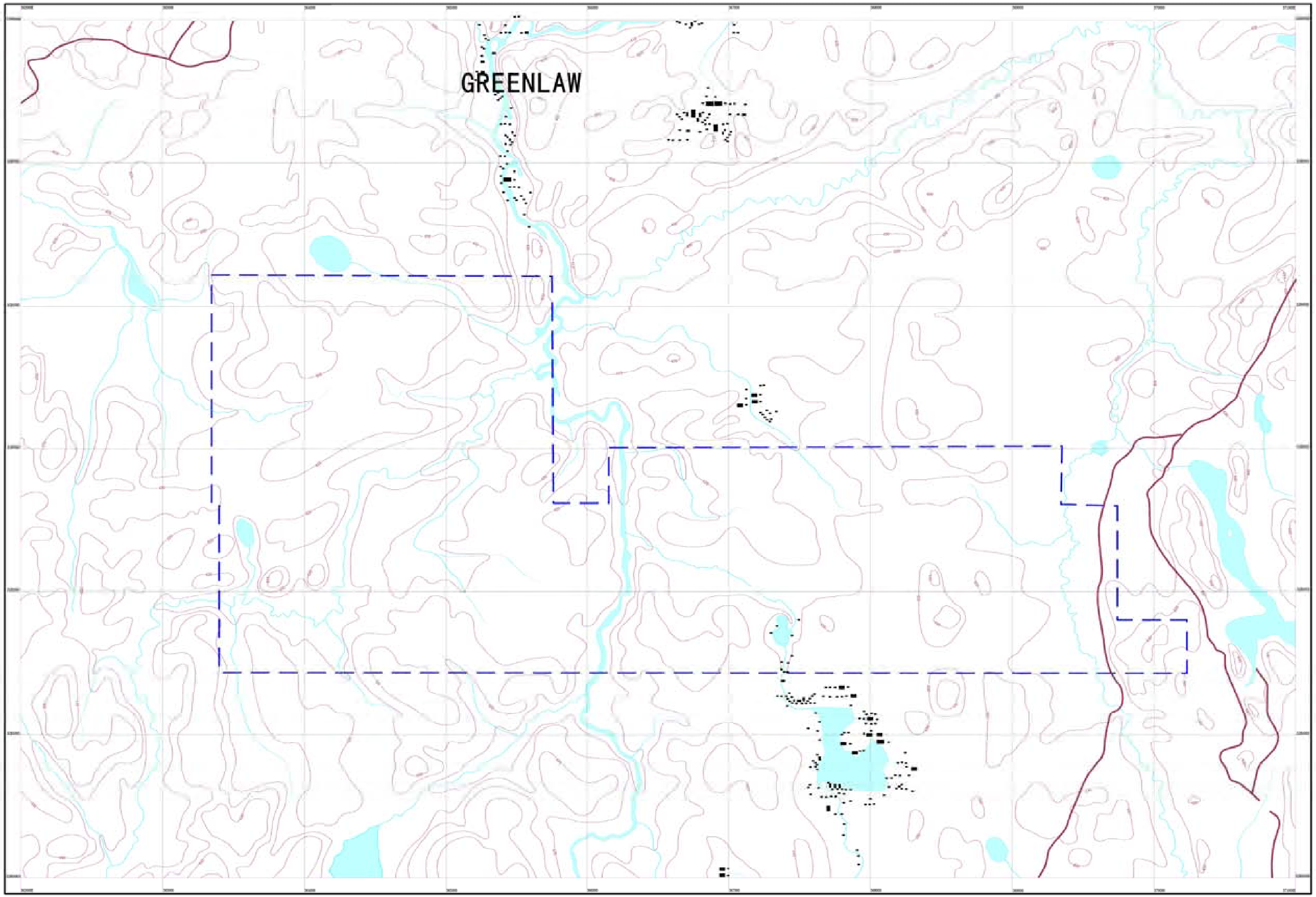


Figure 4: Greenlaw Terrain Map

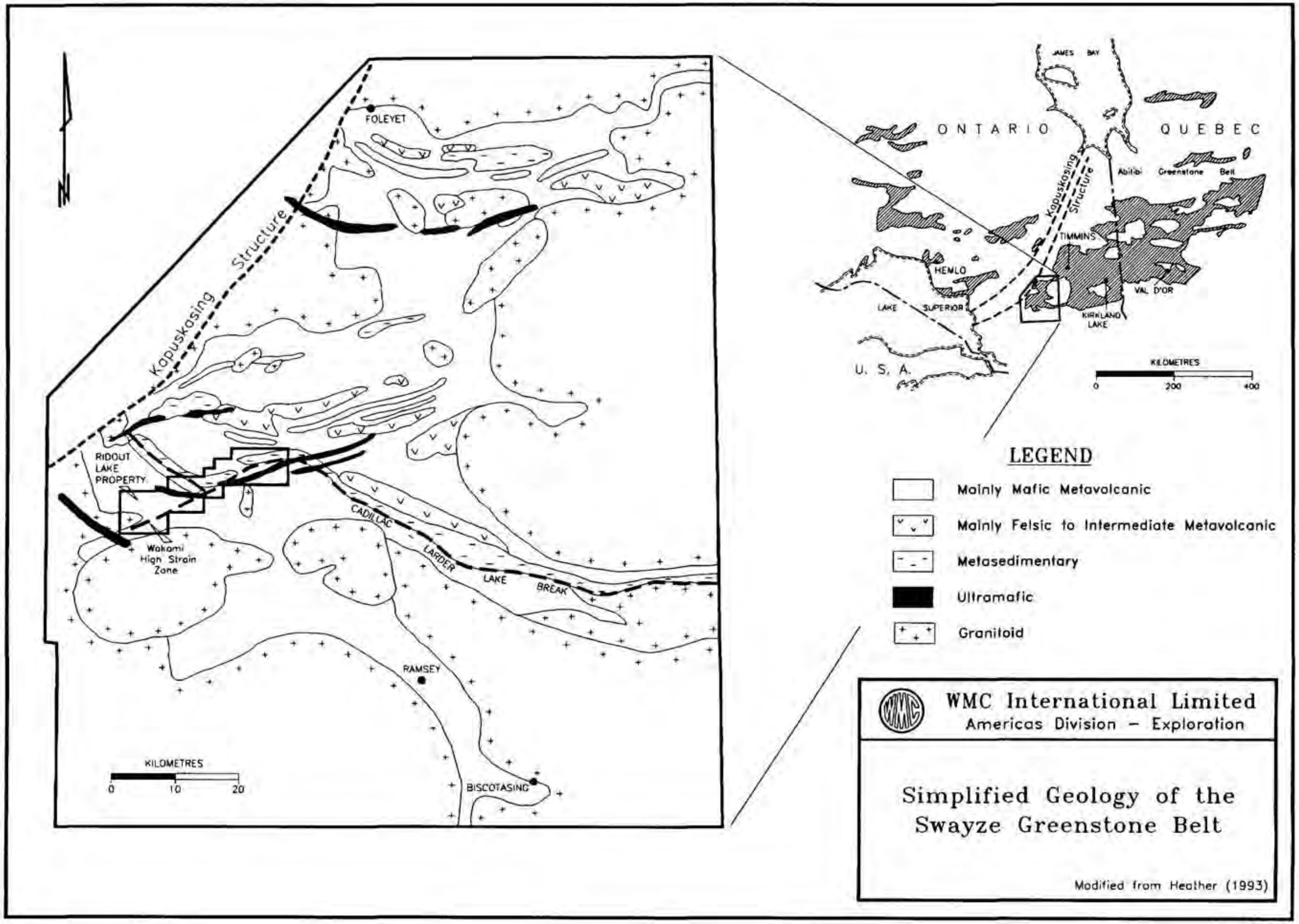


Figure 5: Greenlaw Geology Map

4. Helicopter-borne Survey 2010

4.1 General information of geophysical survey

In order to better understand the property geology and collect its magnetic and electromagnetic information, in October, 2010, a helicopter-borne geophysical survey was carried out by Aroquest Limited (Aroquest Job# 10-077) on behalf of SMC over its Greenlaw property.

The total survey coverage for the area was 248 line-km, of which 230 line-km fell within the defined project area **(Figure 6).** The survey was flown at 100 metres line spacing with a 0º/180°flight line direction.

The survey was performed on Claims: 4249413, 4250203, 4250204, 4250205, 4250206, and 4250207 (**Table 1)**.

Dates flown: October 7-8, 2010

For all detailed information about the Helicopter-borne survey, including EM maps please refer to **Appendix 1**.

Figure 6: Greenlaw Flight Path

4.2 Survey Results

The survey was successful in mapping the magnetic and conductive properties of the geology throughout the survey area. A short summary is given below.

4.2.1 Magnetic Response

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. This data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration. The sources for anomalous magnetic responses are generally thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic minerals such as pyrrhotite.

4.2.2 EM Anomolies

The EM anomalies on the maps are classified by conductance and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the x-component response **(Figure 7)**. For a vertically orientated thick source (say, greater than 10 metres), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response **(Figure 8)**. Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source **(Figure 9)**. In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the 'thin' pick will be located over the edge of the source, whereas the 'thick' pick will fall over the downdip 'heart' of the anomaly.

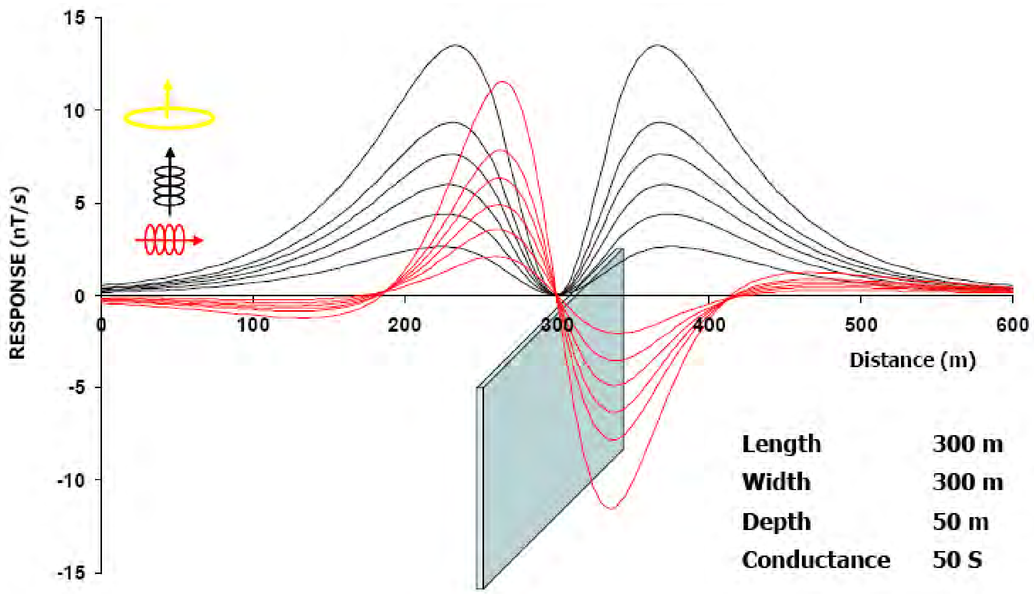


Figure 7: AeroTEM response to a 'thin' vertical conductor

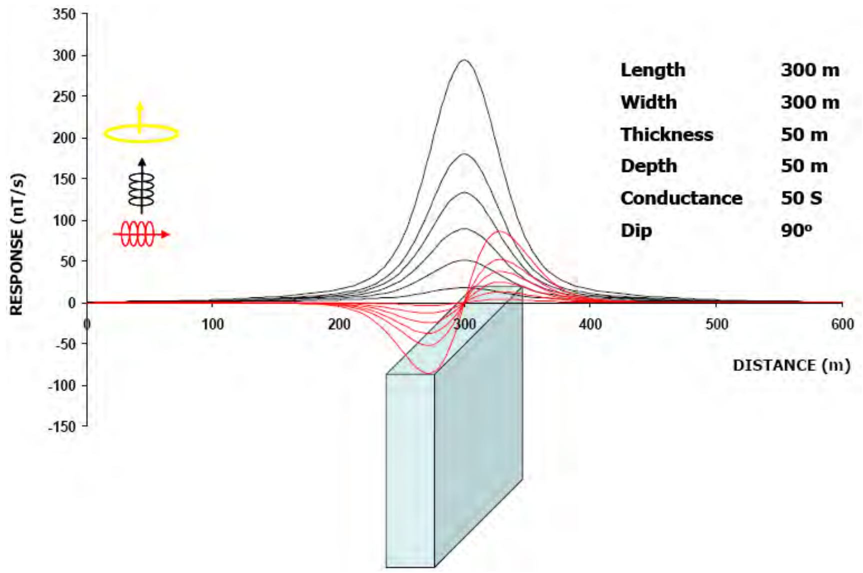


Figure 8: AeroTEM response for a 'thick' vertical conductor

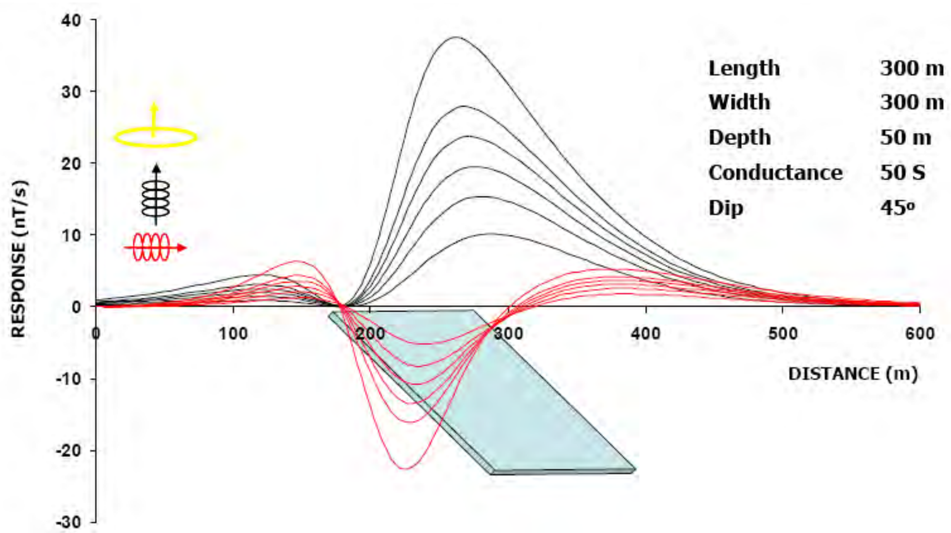


Figure 9: AeroTEM response over a 'thin' dipping conductor

4.2.3 Conclusion

All cases should be considered when analyzing the interpreted picks and prioritizing for follow-up. Specific anomalous responses which remain as high priority should be subjected to numerical modeling prior to drill testing to determine the dip, depth and probable geometry of the source.

5. References

Zhenquan Gao & Yinghong Xu
Report on a Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Survey, 2010

Report on a Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Survey

Greenlaw Projects

Greenlaw Area,Procupine Division,Ontario

Sino Minerals Corp.
145 Riviera Drive, Unit 7,
Markham, ON, L3R 5J6

Prepared by Dr. Zhenquan Gao & Yinghong Xu

Apr. 15，2011

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF MAPS SCALE (1:10,000)

1. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of SinoMinerals Corp. over their Greenlaw survey area located in Northern Ontario. The principal geophysical sensor is Aeroquest's exclusive AeroTEM IV ('Romeo' System) helicopter time domain electromagnetic system which is employed in conjunction with a high-sensitivity caesium vapour magnetometer. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer. Full-waveform streaming EM data is recorded at 36,000 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers. The streaming EM data along with ancillary data recorded with AeroDAS acquisition system.

The total survey coverage for the block was 248 line-km, of which 230 line-km fell within the defined project area **(Appendix 1).** The survey was flown at 100 metres line spacing with a 0º/180°flight line direction. The survey flying described in this report took place between October 2nd and 8th, 2010. This report describes the survey logistics, the data processing, presentation, and provides a brief overview of the results.

Performed on Claims: 4249413, 4250203, 4250204, 4250205, 4250206, 4250207.

Dates flown :Oct. 7-8, 2010

Holder of the land covered by the survey: Sino Minerals Corp.

Address of Sino Minerals Corp.: 145 Riviera Drive, Unit 7, Markham, Ontario L3R 5J6, Canada

2. SURVEY AREA

The Project block is located in Northern Ontario. The Greenlaw block lies over 180 km north of the Nairn block. Towns close to this include Chapleau 45 km to the west and Sultan, 10km to the south（**figure 1**）. Project terrain was quite flat for this area. Greenlaw had elevations in the order of 400-450m above sea level. Greenlaw area had plentiful lakes, rivers and marshes.
The base of survey operations for Greenlaw was at Chapleau.

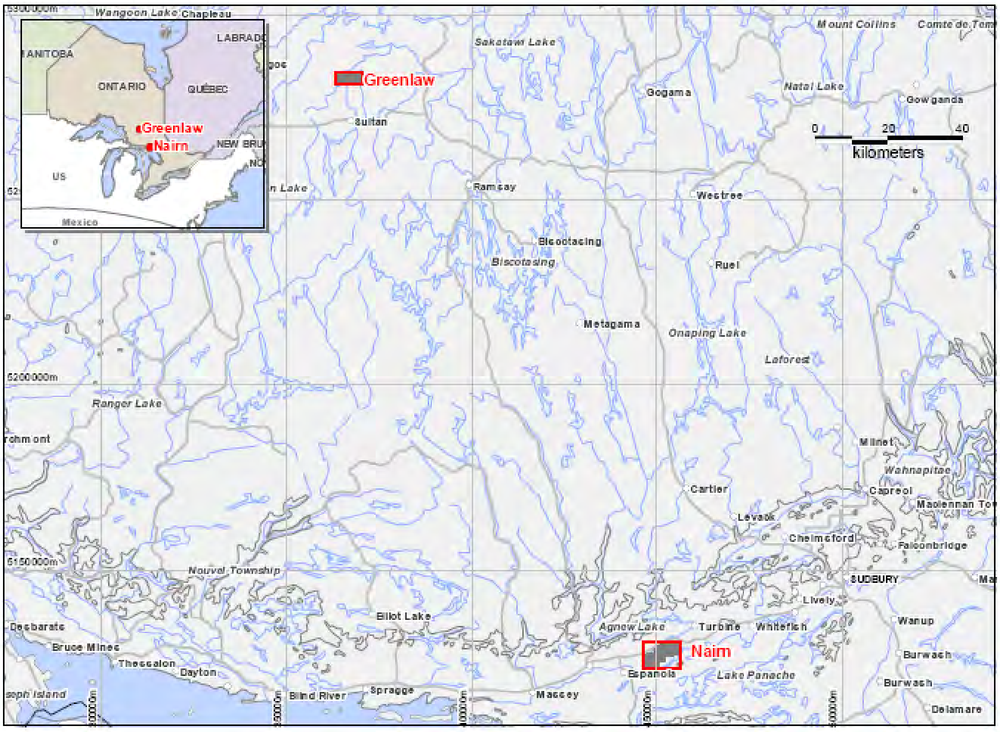


Figure 1. Project Location Overview

3. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Project Name	Line Spacing (metres)	Line Direction	Survey Coverage (line-km)	Dates flown
Greenlaw	100	0°/180°	242	**Oct. 7- 8, 2010**

Table 1. Survey specifications summary.

The survey coverage was calculated by adding up the along-line distance of the survey lines and control (tie) lines as presented in the final Geosoft database. The survey was flown with a line spacing of 100 metres. The control (tie) lines were flown perpendicular to the survey lines with a spacing of 1000 metres（**figure 2**）.

Figure 2. Greenlaw Flight Path

The nominal EM bird terrain clearance is 30 metres, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 36 metres above the EM bird and 17 metres below the helicopter **(Figure 3)**. Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 36,000 samples per second and is processed to generate final data at 10 samples per second. The 10 samples per second translate to a geophysical reading about every 1.5 to 2.5 metres along the flight path.

3.1. NAVIGATION

Navigation is carried out using a GPS receiver, an AGNAV2 system for navigation control, and AeroDAS data acquisition system which records the GPS coordinates. The x-y-z position of the aircraft, as reported by the GPS, is recorded at 0.2 second intervals. The system has a published accuracy of less than 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

3.2. SYSTEM DRIFT

Unlike frequency domain electromagnetic systems, the AeroTEM IV system has negligible drift due to thermal expansion. The operator is responsible for ensuring the instrument is properly warmed up prior to departure and that the instruments are operated properly throughout the flight. The operator maintains a detailed flight log during the survey noting the times of the flight and any unusual geophysical or topographic features. Each flight included at least two high elevation 'background' checks. During the high elevation checks, an internal 5 second wide calibration pulse in all EM channels was generated in order to ensure that the gain of the system remained constant and within specifications.

3.3. FIELD QA/QC PROCEDURES

On return of the pilot and operator to the base, usually after each flight, the AeroDAS streaming EM data and ancillary data are carried on removable hard drives and FlashCards, respectively and transferred to the data processing work station. At the end of each day, the base station magnetometer data on FlashCard is retrieved from the base station unit.

Data verification and quality control includes a comparison of the acquired GPS data with the flight plan; verification of the base station magnetometer data and conversion to ASCII format XYZ data; and loading, processing and conversion of the steaming EM data from the removable hard drive. All data is then merged to an ASCII XYZ format file which is then imported to an Oasis database for further QA/QC and for the production of EM, magnetic contour, and flight path maps.

Survey lines which show excessive deviation from the intended flight path are re-flown. Any line or portion of a line on which the data quality did not meet the contract specification was noted and re-flown.

4. AIRCRAFT AND EQUIPMENT

4.1. AIRCRAFT

A Eurocopter (Aerospatiale) AS350 B3 "A-Star" helicopter - registration C-FFKA was used as survey platform. The helicopter was owned and operated by V. Kelner Helicopters, Thunder Bay, Ontario. Installation of the geophysical and ancillary equipment was carried out by Aeroquest Surveys personnel in conjunction with a licensed aircraft engineer. The survey aircraft was flown at a nominal terrain clearance of 83 metres.

4.2. MAGNETOMETER

The Aeroquest airborne survey system employs the Geometrics G-823A caesium vapour magnetometer sensor installed in a two metre towed bird airfoil attached to the main tow line, 17 metres below the helicopter **(Figure 3)**. The sensitivity of the magnetometer is 0.001 nanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer bird is 66 metres. The magnetic data is recorded at 10 Hz by the AeroDAS system.

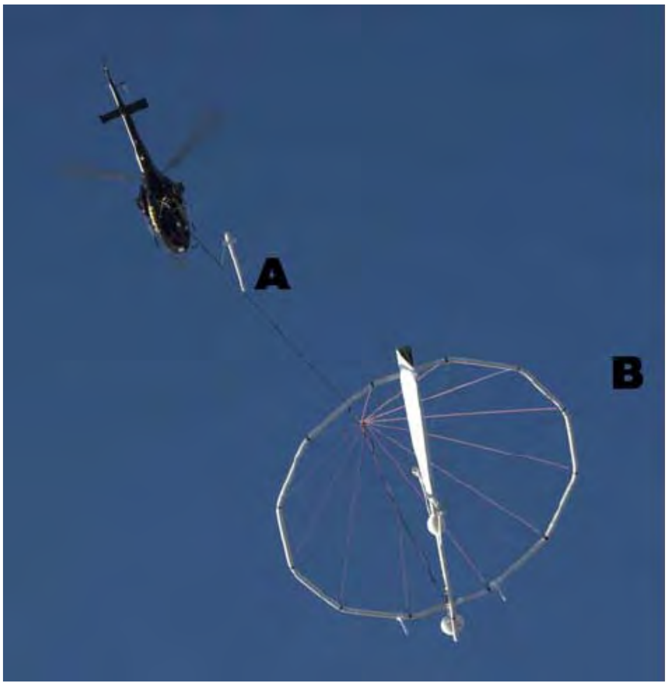


Figure 3.The magnetometer bird (A) and AeroTEM IV EM bird (B)

4.3. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM IV time domain towed bird system **(Figure 3)**. The current AeroTEM IV transmitter dipole moment is 247 kNIA. The AeroTEM bird is towed 53 metres below the helicopter. More technical details of the system can be found in **Appendix 5**.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1946 µs and a base frequency of 90 Hz **(Figure 4)**. The current alternates polarity every on-time pulse. During every Tx on-off cycle (180 per second), 200 contiguous channels of raw X and Z component (and a transmitter current monitor, itx) of the received waveform are measured. The channel time widths are defined in Section 4.4 below. This 200 channel data is referred to as the raw streaming data. The AeroTEM system has one EM data recording streams, the newly designed AeroDAS system which records the full waveform **(Figure 5)**.

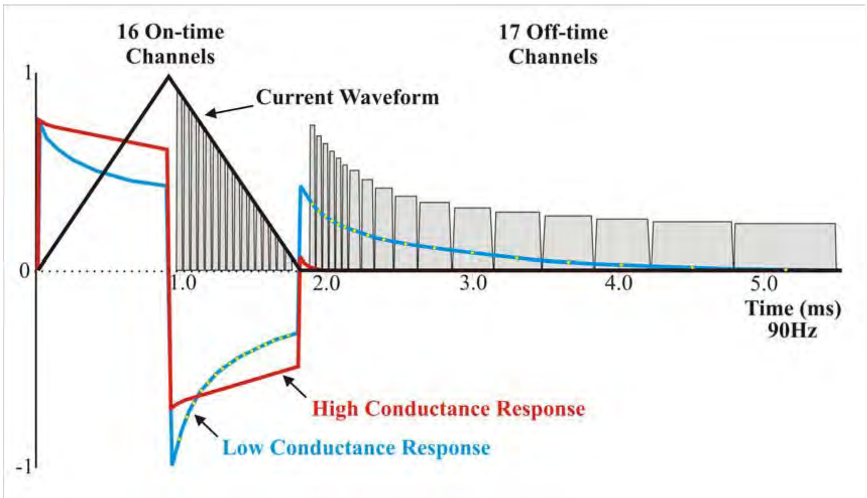


Figure 4.Schematic of Transmitter and Receiver waveforms

Figure 5. AeroTEM IV Instrument Rack

4.4. AERODAS ACQUISITION SYSTEM

The 200 channels of raw streaming data are recorded by the AeroDAS acquisition system onto a removable hard drive. In addition the magnetic, altimeter and position data are also recorded in it **(Figure 5)**, six channels of real time processed off-time EM decay in the Z direction and one in the X direction can be viewed on a color monitor on board, these channels are derived by a binning, stacking and filtering procedure on the raw streaming data.The primary use of the displayed EM data (Z1 to Z6, X1), magnetic and altimeter is to provide for real-time QA/QC on board.

The streaming data are processed post-survey to yield 33 stacked and binned on-time and off-time channels at a 10 Hz sample rate. The timing of the final processed EM channels is described in the following table:

Average TxOn -9.1818 us
Average TxSwitch 1001.9931 us
Average TxOff 1935.0222 us
Average TxPeak 385.2267 A

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
On1	5-5	27.8	125	134.2
On2	6-6	27.8	152.8	162
On3	7-7	27.8	180.6	189.7
On4	8-8	27.8	208.3	217.5
On5	9-9	27.8	236.1	245.3

On6	10-10	27.8	263.9	273.1
On7	11-11	27.8	291.7	300.8
On8	12-12	27.8	319.4	328.6
On9	13 - 13	27.8	347.2	356.4
On10	14 - 14	27.8	375	384.2
On11	15 - 15	27.8	402.8	412
On12	16 - 16	27.8	430.6	439.7
On13	17 - 17	27.8	458.3	467.5
On14	18 - 18	27.8	486.1	495.3
On15	19 - 19	27.8	513.9	523.1
On16	20 - 20	27.8	541.7	550.8

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
Off0	72 - 72	27.8	1986.1	51.1
Off1	73 - 73	27.8	2013.9	78.9
Off2	74 - 74	27.8	2041.7	106.6
Off3	75 - 75	27.8	2069.4	134.4
Off4	76 - 76	27.8	2097.2	162.2
Off5	77 - 77	27.8	2125	190
Off6	78 - 80	83.3	2180.6	245.5
Off7	81 - 83	83.3	2263.9	328.9
Off8	84 - 86	83.3	2347.2	412.2
Off9	87 - 89	83.3	2430.6	495.5
Off10	90 - 94	138.9	2541.7	606.6
Off11	95 - 99	138.9	2680.6	745.5
Off12	100 - 105	166.7	2833.3	898.3
Off13	106 - 115	277.8	3055.6	1120.5
Off14	116 - 129	388.9	3388.9	1453.9
Off15	130 - 152	638.9	3902.8	1967.8
Off16	153 - 187	972.2	4708.3	2773.3

4.5. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-823 caesium vapour magnetometer system with integrated GPS. Data logging and UTC time synchronisation was carried out within a proprietary logger (PDA), with the GPS providing the timing signal. The data logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.001 nT. The sensor was placed on a tripod in an area of low magnetic gradient and free of cultural noise sources. A continuously updated display of the base station values was available for viewing and regularly monitored to ensure acceptable data quality and diurnal variation.

4.6. RADAR ALTIMETER

A Terra TRA 3500/TRI-30 radar altimeter is used to record terrain clearance. The antenna was mounted on the outside of the helicopter beneath the cockpit. Therefore, the recorded data reflect the height of the helicopter above the ground. The Terra altimeter has an altitude accuracy of +/- 1.5 metres.

4.7. VIDEO TRACKING AND RECORDING SYSTEM

A high resolution digital colour 8 mm video camera（figure 6） is used to record the helicopter ground flight path along the survey lines. The video is digitally annotated with GPS position and time and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.

Figure 6. Digital video camera typical mounting location

4.8. GPS NAVIGATION SYSTEM

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with

controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations located on the east and west coasts collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of less than 3 metres.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 17N projection. The real-time differentially corrected GPS positional data was recorded by the AeroDAS system in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

4.9. DIGITAL ACQUISITION SYSTEM

The AeroTEM received waveform sampled during on and off-time at 200 channels per decay, 180 times per second, was logged by the proprietary AeroDAS data acquisition system. The channel sampling commences at the start of the Tx cycle and the width of each channel is 27.78 µs. In addition the positional and secondary geophysical data, (i.e. magnetic, radar altimeter, GPS position, and UTC time) was recorded on a removable hard-drive and later backed-up onto DVD-ROM from the field-processing computer.

5. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Manager of Operations: Lee Harper
- Field Data Processors: Theo Cociorba
- Field Operator: Graeme Lilie
- Data Processing and Reporting: Theo Cociorba, Marion Bishop
- the person who supervised the survey : Chris Vaughan

The survey pilots, Fabien Petit, and aircraft engineer, Ben Lambert, were employed directly by the helicopter operator – V. Kelner Helicopters.

Addresses of Aeroquest : 7687 Bath Road, Mississauga, ON, L4T 3T1

Tel: (905) 672-9129 Fax: (905) 672-7083

Chris Vaughan's Addresses:CGI Controlled Geophysics Inc. 189 Clark Ave Thornhill, ON L3T 1T3, Canada

6. DELIVERABLES

6.1. HARDCOPY DELIVERABLES

The report includes maps at a scale of 1:10,000. The survey area is covered by two map sheets and four geophysical data products are delivered as listed below:

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours EM anomaly
- symbols.
- DTM – Digital Terrain Model with line contours EM anomaly symbols.
- Z1-OFF – AeroTEM Z1 Off-time with line contours and EM anomaly symbols.
- EM - AeroTEM Off-Time Profiles channels 3-15 with EM anomaly symbols.

The coordinate/projection system for the maps is NAD83 – UTM Zone 17N. For reference, the latitude and longitude in WGS84 are also noted on the maps.

All the maps show flight path trace, skeletal topography, and conductor picks represented by an anomaly symbol classified according to calculated on-time conductance. The anomaly symbol is accompanied by postings denoting the calculated off-time conductance, a thick or thin classification and an anomaly identifier label. The anomaly symbol legend is given in the margin of the maps. The magnetic field data is presented as superimposed line contours with a minimum contour interval of 2nT.

6.2. DIGITAL DELIVERABLES

6.2.1. Final Database of Survey Data (.GDB)

The geophysical profile data is archived digitally in a Geosoft GDB binary format database. A description of the contents of the individual channels in the database can be found in Appendix 2.

6.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. Cell size for all grid files is 25 metres.

- Total Magnetic Intensity (10077_mag_projectname.grd)
- Digital Terrain Model (10077_dtm_ projectname.grd)
- AeroTEM OFFTIME Chanel1 (10077_zoff1_ projectname.grd)

6.2.3. Digital Versions of Final Maps (.MAP, .PDF)

Map files in Geosoft .map and Adobe PDF format.

6.2.4. Google Earth Survey Files (.kmz)

Flight navigation lines, EM anomalies, EM Profiles, geophysical grids and contours in Google earth KMZ format. Double click to view flight lines in Google Earth.

6.2.5. Free Viewing Software (.EXE)

- Geosoft Oasis Montaj Viewing Software
- Adobe Acrobat Reader
- Google Earth Viewer

6.2.6. Digital Copy of this Document (.PDF)

Adobe PDF format of this document.

7. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software and Geosoft Oasis Montaj software. Maps were generated using 36-inch wide Hewlett Packard ink-jet plotters.

7.1. BASE MAP

The geophysical maps accompanying this report are based on positioning in the NAD83 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 17 North. A summary of the map datum and projection specifications is given following:

- Ellipse: GRS 1980
- Ellipse major axis: 6378137m eccentricity: 0.081819191

- Datum: North American 1983 - Canada Mean
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 17 (Central Meridian 81ºW)
- Central Scale Factor: 0.9996
- False Easting, Northing: 500,000m, 0m

For reference, the latitude and longitude in WGS84 are also noted on the maps. The background vector topography was sourced from Natural Resources Canada 1:50000 National Topographic Database data and the background shading were derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metres resolution DEM data.

7.2. FLIGHT PATH & TERRAIN CLEARANCE

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5 Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter. The raw Digital Terrain Model (DTM) was derived by taking the GPS survey elevation and subtracting the radar altimeter terrain clearance values. The calculated topography elevation values are relative and are not tied in to surveyed geodetic heights.

Each flight included at least two high elevation ‘background’ checks. These high elevation checks are to ensure that the gain of the system remained constant and within specifications.

7.3. ELECTROMAGNETIC DATA

The raw streaming data, sampled at a rate of 36,000 Hz (200 channels, 180 times per second) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Surveys. Processing involves the compensation of the X and Z component data for the primary field waveform. Coefficients for this compensation for the ystem transient are determined and applied to the stream data. The stream data are then pre-filtered, stacked, binned to the 33 on and off-time channels and checked for the effectiveness of the compensation and stacking processes. The stacked data is then filtered, levelled and split up into the individual line segments. Further base level adjustments may be carried out at this stage.

The final field processing step was to merge the processed EM data with the other data sets into a Geosoft GDB file. The EM fiducial is used to synchronize the two datasets. The processed channels are merged into ‘array format; channels in the final Geosoft database as Zon, Zoff, Xon, and Xoff.
The filtering of the stacked data is designed to remove or minimize high frequency noise that cannot be sourced from the geology. Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the on-time Z channel responses correlated with X channel responses. The auto-picked anomalies were reviewed and edited by a geophysicist on a line by line basis to discriminate between thin and thick conductor types. Anomaly picks locations were migrated and removed as required. This process ensures theoptimal representation of the conductor centres on the maps.

At each conductor pick, estimates of the off-time conductance have been generated based on a horizontal plate source model for those data points along the line where the response amplitude is sufficient to yield an acceptable estimate. Some of the EM anomaly picks do not display a Tau value; this is due to the inability to properly define the decay of the conductor usually because of low signal amplitudes. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. For high conductance sources, the on-time conductance values may be used, since it provides a more accurate measure of high-conductance sources. Each symbol is also given an identification letter label, unique to each flight line. Conductor picks that did not yield an acceptable estimate of offtime conductance due to a low amplitude response were classified as a low conductance source. Please refer to the anomaly symbol legend located in the margin of the maps.

7.4. MAGNETIC DATA

Prior to any levelling the magnetic data was subjected to a lag correction of -0.1 seconds and a spike removal filter. The filtered aeromagnetic data were then corrected for diurnal variations using the magnetic base station and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied. The corrected profile data were interpolated on to a grid using bi-directional gridding with a grid cell size of 25 metres. The final levelled grid provided the basis for threading the presented contours which have a minimum contour interval of 5nT (Greenlaw).

8. GENERAL COMMENTS

The survey was successful in mapping the magnetic and conductive properties of the geology throughout the survey area. Below is a brief interpretation of the results. For a detailed interpretation please contact Aeroquest Surveys.

8.1. MAGNETIC RESPONSE

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. This data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration. The sources for anomalous magnetic responses are generally thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic minerals such as pyryhotite.

8.2. EM ANOMALIES

The EM anomalies on the maps are classified by conductance (as described earlier in the report) and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the xcomponent response**(Figure 7)**. For a vertically orientated thick source (say, greater than 10 metres), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response **(Figure 8)**. Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source **(Figure9)**. In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the 'thin' pick will be located over the edge of the source, whereas the 'thick' pick will fall over the downdip 'heart' of the anomaly.

The channel Off_Channel is provided in the EM database and the anomaly database and is populated with conductor information. The channel data represents the channel off-time channel that was used to select the conductor (0-17). The anomaly channels including off_channel have been reviewed in the final processing of the EM dataset.

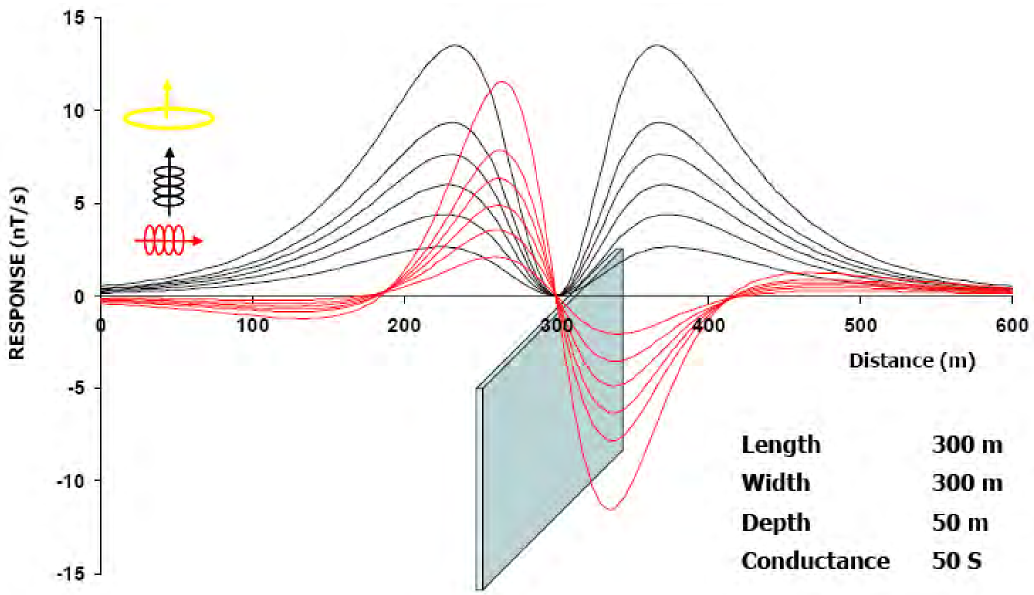


Figure 7.AeroTEM response to a 'thin' vertical conductor

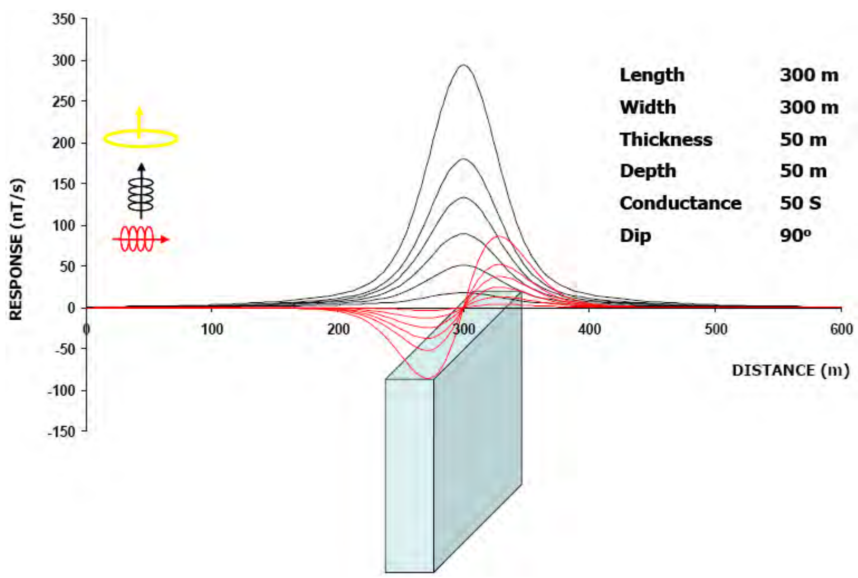


Figure 8. AeroTEM response for a 'thick' vertical conductor

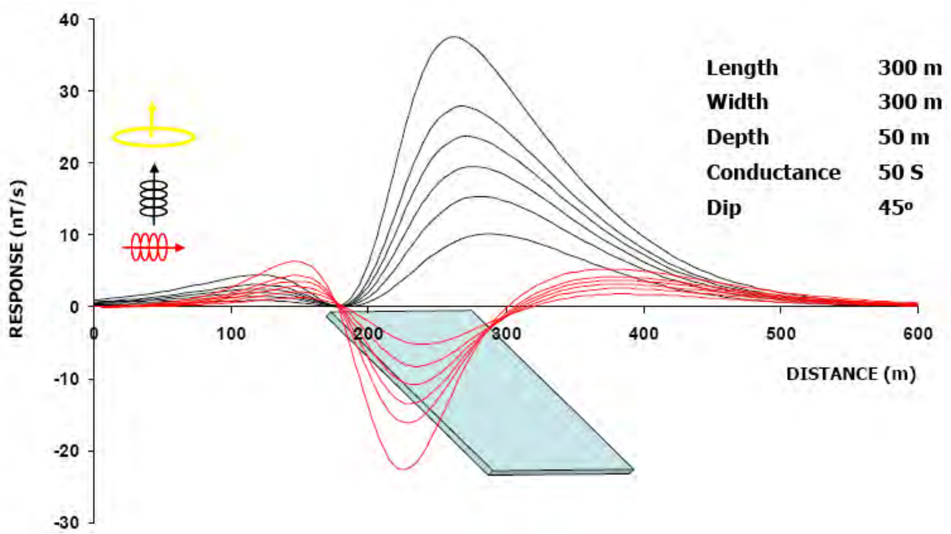


Figure 9. AeroTEM response over a 'thin' dipping conductor

All cases should be considered when analyzing the interpreted picks and prioritizing for follow-up. Specific anomalous responses which remain as high priority should be subjected to numerical modeling prior to drill testing to determine the dip, depth and probable geometry of the source.

9. References

Ken Lapierre HBSc.

2002 Preliminary Geological Report on the Nairn Ni-Cu-Co-PGM in Nairn Township Ontario For Mustang Minerals Corp.

Peter C. Wood.

2003 Exploration Report on the Nairn Property Nairn Township Sudbury, Ontario For Mustang Minerals Corp.

Ken J. Lapierre.

2004 Report on a Helicopter-Borne Magnetic and Electromagnetic Survey Nairn Property Nairn Township, Sudbury Area, Ontario

10. Certificate of Qualification

I, Wenshan Zhang, of the city of Beijing, China, do hereby certify that:

Ph.D.in majors of Geologyical resources and geological engineering as well as metallurgical engineering; associate professor; expert in geological exploration and mining; general manager of Beijing Donia resources Co.,Ltd. Dr. Zhang has extensive academic and busniees experiences in minerals resources exploration and mining development. He used to join Japan Akia unoversity as visiting schoolar and visiting resources. He worked in Inco company in Canada as exploration manager, and a Sino-foregin joint venture Jike Mining Co., Ltd(Changchun) as general manager; Dr. Zhang also worked as senior geologist for Anglo American Group and senior geologist and manager for business development of Vale, Brazil.

Dated this 25th day of April, 2010, Beijing, China
Wenshan Zhang

I, Yinghong Xu, of the city of Beijing, China, do hereby certify that:

1. I am a geologist with Beijing Donia Resources Co., Ltd.
2. I graduated from China University of Geoscience (Beijing) with his master degree in Minerals, Lithology and Deposits area in July 2009.
3. I have participated in mineral property survey of 1:50000 regional gelogy in Taipu siqi of Inner Mongolia as a group leader. I have been also engaged in geological survey for metal resources both in Canada and Laos.
4. The information contained in this report and accompanying maps is based on personal observations and direct supervision of the field work; and, I have no direct interest in the claims mentioned in this report.

Dated this 25th day of April, 2010, Beijing, China
Yinghong Xu

APPENDIX 1: SURVEY BOUNDARIES

The following table presents the block boundaries. All geophysical data presented in this report have been windowed to 100m outside these outlines. X and Y positions are in NAD83 UTM Zone 17.

Greenlaw Property

X(Easting)	Y(Northing)
363340	5281300
363340	5284300
370240	5284300
370240	5281300

APPENDIX 2: AEROTEM ANOMALY LISTING

Greenlaw Property

Line	Anom	ID	Cond (S)	Tau (μs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10010	A	K	19.9	446.5	13	17:18:25	42.9	363371.3	5281702.8
10010	B	N	19.9	446.5	13	17:18:26	40.1	363370.2	5281732.7
10010	C	K	141.8	1191.0	13	17:18:31	39.9	363370.2	5281841.2
10020	A	K	115.1	1072.6	13	17:16:26	44.2	363472.5	5281861.0
10030	A	K	167.7	1295.0	13	17:11:59	40.3	363582.4	5281871.3
10030	B	N	84.4	918.7	13	17:12:03	41.3	363582.2	5281972.7
10030	C	K	374.7	1935.6	13	17:13:07	31.9	363580.8	5283429.3
10030	D	N	374.7	1935.6	13	17:13:09	31.2	363580.1	5283462.2
10030	E	K	47.7	690.9	13	17:13:11	32.9	363579.5	5283498.6
10040	A	K	92.2	960.1	13	17:09:07	26.4	363677.4	5283530.5
10040	B	N	92.2	960.1	13	17:09:08	26.9	363676.5	5283495.0
10040	C	K	202.7	1423.7	13	17:09:10	29.7	363674.9	5283447.2
10040	D	K	175.6	1325.2	13	17:10:07	39.4	363674.6	5281889.3
10050	A	K	84.5	919.3	13	17:06:04	42.2	363782.7	5281924.9
10050	B	K	285.6	1689.9	13	17:07:12	29.2	363781.6	5283479.7
10050	C	N	285.6	1689.9	13	17:07:14	30.1	363783.9	5283533.8
10060	A	N	162.6	1275.1	13	17:03:13	30.7	363879.4	5283525.6
10060	B	K	162.6	1275.1	13	17:03:15	29.2	363880.2	5283486.7
10060	C	K	21.3	461.5	13	17:04:10	36.6	363883.4	5281962.7
10060	D	N	11.5	338.4	13	17:04:12	43.3	363882.3	5281910.2
10060	E	K	11.5	338.4	13	17:04:13	46.9	363881.9	5281871.3
10070	A	N	59.5	771.2	13	16:59:48	38.9	363972.5	5281913.4
10070	B	K	59.5	771.2	13	16:59:49	37.1	363973.2	5281940.9
10070	C	N	1.3	114.5	13	17:00:02	34.1	363991.6	5282231.2
10070	D	K	1.3	114.5	13	17:00:05	30.1	363992.2	5282310.0

10070	E	K	61.5	784.2	13	17:01:01	35.5	363981.9	5283489.3
10070	F	N	31.7	563.3	13	17:01:03	36.3	363984.6	5283542.1
10070	G	K	31.7	563.3	13	17:01:05	38.2	363986.1	5283578.4
10080	A	K	3.3	181.6	13	16:56:52	28.3	364074.9	5283619.8
10080	B	N	3.3	181.6	13	16:56:53	26.5	364073.2	5283567.8
10080	C	K	34.4	586.4	13	16:56:55	24.5	364071.1	5283503.2
10080	D	K	1.3	113.6	13	16:57:35	33.8	364076.8	5282336.2
10080	E	N	0.9	96.5	13	16:57:38	36.2	364074.3	5282267.4
10080	F	K	0.9	96.5	13	16:57:40	36.5	364070.8	5282198.2
10080	G	K	181.2	1346.1	13	16:57:50	40.2	364071.7	5281907.9
10091	A	K	11.6	341.0	13	16:53:40	35.0	364183.1	5281930.2
10091	B	N	11.6	341.0	13	16:53:42	34.8	364182.9	5281967.2
10091	C	K	12.2	348.7	13	16:53:44	34.7	364182.6	5282011.2
10091	D	K	1.9	137.1	13	16:53:52	30.5	364174.7	5282196.9
10091	E	N	1.2	110.2	13	16:53:55	32.9	364174.8	5282284.5
10091	F	K	1.2	110.2	13	16:53:58	31.1	364177.9	5282353.0
10091	G	K	41.9	647.4	13	16:54:55	27.4	364172.6	5283578.6
10091	H	N	9.8	313.3	13	16:54:56	26.9	364172.2	5283622.9
10091	I	K	9.8	313.3	13	16:54:58	28.5	364172.3	5283647.9
10100	A	K	2.4	154.2	13	16:42:52	30.4	364284.4	5283587.4
10100	B	N	4.0	198.8	13	16:43:38	41.6	364279.2	5282315.1
10100	C	K	4.0	198.8	13	16:43:42	38.9	364281.5	5282229.9
10100	D	K	35.3	594.1	13	16:43:47	36.2	364282.1	5282067.1
10100	E	N	47.1	686.1	13	16:43:50	35.4	364281.8	5281997.2
10100	F	K	47.1	686.1	13	16:43:52	34.6	364281.8	5281928.1
10110	A	K	142.6	1194.3	13	16:39:39	39.2	364381.1	5281928.0
10110	B	N	18.0	423.9	13	16:39:42	38.8	364379.9	5282009.1
10110	C	K	18.0	423.9	13	16:39:44	38.6	364379.8	5282054.8
10110	D	K	1.2	107.0	13	16:39:53	27.0	364383.2	5282267.6
10110	E	N	1.2	107.0	13	16:39:55	30.2	364382.2	5282317.4
10110	F	K	0.7	83.4	13	16:39:57	36.1	364380.1	5282372.3
10120	A	N	2.5	158.0	13	16:37:28	40.6	364462.0	5282329.8
10120	B	K	2.5	158.0	13	16:37:30	35.8	364463.1	5282253.8
10120	C	N	72.6	852.3	13	16:37:38	42.3	364478.0	5282037.2
10120	D	K	72.6	852.3	13	16:37:42	41.7	364482.8	5281928.4
10130	A	K	52.7	726.0	13	16:33:41	33.7	364577.6	5281918.1
10130	B	N	10.2	318.6	13	16:33:46	38.3	364579.7	5282034.7
10130	C	K	10.2	318.6	13	16:33:48	38.3	364581.0	5282088.7
10130	D	K	0.4	61.6	13	16:35:03	27.6	364568.0	5283756.7
10130	E	N	1.1	103.9	13	16:35:05	26.1	364567.0	5283791.2
10130	F	K	1.1	103.9	13	16:35:06	26.4	364566.1	5283826.7
10140	A	K	27.2	521.8	13	16:30:44	30.6	364686.2	5283863.8
10140	B	N	27.2	521.8	13	16:30:45	30.3	364685.8	5283831.5

10140	C	K	10.4	322.2	13	16:30:47	32.2	364685.1	5283788.5
10140	D	K	107.4	1036.3	13	16:31:53	39.0	364689.8	5281907.1
10150	A	K	6.0	245.4	13	16:27:02	32.1	364794.4	5281282.9
10150	B	K	14.5	380.5	13	16:27:19	28.5	364798.9	5281666.2
10150	C	N	14.5	380.5	13	16:27:20	27.9	364797.6	5281690.1
10150	D	K	13.9	372.6	13	16:27:22	28.2	364794.2	5281731.3
10150	E	K	126.3	1123.7	13	16:27:30	35.2	364777.7	5281904.8
10150	F	N	16.0	400.4	13	16:27:37	41.1	364778.6	5282075.3
10150	G	K	16.0	400.4	13	16:27:39	39.4	364779.5	5282124.7
10150	H	K	72.6	851.7	13	16:28:52	32.6	364780.3	5283825.8
10150	I	N	25.6	506.1	13	16:28:54	32.4	364779.6	5283873.4
10150	J	K	25.6	506.1	13	16:28:54	32.8	364779.3	5283894.2
10160	A	K	9.8	313.0	13	16:24:23	33.5	364882.9	5283943.1
10160	B	N	9.8	313.0	13	16:24:24	31.2	364884.0	5283911.8
10160	C	K	58.2	762.8	13	16:24:26	30.8	364885.0	5283856.8
10160	D	K	15.6	394.5	13	16:25:30	36.8	364876.8	5282140.7
10160	E	N	15.6	394.5	13	16:25:32	35.8	364878.1	5282096.3
10160	F	K	41.9	647.1	13	16:25:44	30.6	364880.1	5281767.1
10160	G	N	39.2	625.9	13	16:25:46	29.8	364880.0	5281713.3
10160	H	K	39.2	625.9	13	16:25:47	29.7	364879.8	5281684.7
10160	I	K	40.8	638.8	13	16:26:00	35.2	364875.2	5281296.8
10160	J	N	40.8	638.8	13	16:26:02	37.0	364875.3	5281239.8
10170	A	K	4.6	215.2	13	16:20:37	34.0	364982.5	5281252.5
10170	B	K	113.1	1063.5	13	16:21:08	31.5	364982.3	5281912.0
10170	C	N	21.1	458.9	13	16:21:14	35.4	364978.7	5282039.9
10170	D	K	21.1	458.9	13	16:21:16	36.3	364977.7	5282081.4
10170	E	K	7.0	263.8	13	16:22:40	24.0	364986.7	5283894.1
10170	F	N	7.0	263.8	13	16:22:42	23.4	364985.0	5283930.7
10180	A	K	1.7	131.0	13	16:17:26	40.6	365094.0	5284001.7
10180	B	N	1.7	131.0	13	16:17:28	37.5	365094.1	5283946.7
10180	C	K	2.0	141.5	13	16:17:31	32.8	365094.4	5283877.4
10180	D	K	11.1	332.6	13	16:18:24	37.5	365081.9	5282496.8
10180	E	N	11.1	332.6	13	16:18:26	41.6	365082.7	5282434.1
10180	F	K	105.2	1025.5	13	16:18:46	35.1	365080.3	5281924.2
10180	G	N	10.0	316.8	13	16:18:53	27.9	365079.3	5281733.5
10180	H	K	10.0	316.8	13	16:18:55	27.6	365080.0	5281698.2
10190	A	K	13.9	373.3	13	16:13:51	31.6	365168.3	5281710.0
10190	B	N	13.9	373.3	13	16:13:52	31.1	365167.7	5281736.1
10190	C	K	67.7	823.1	13	16:13:57	32.0	365172.3	5281843.6
10190	D	N	67.7	823.1	13	16:13:58	33.7	365173.3	5281858.9
10190	E	K	86.9	932.0	13	16:13:59	37.8	365176.2	5281900.1
10190	F	N	86.9	932.0	13	16:14:02	41.2	365178.4	5281959.3
10190	G	K	2.2	148.7	13	16:14:28	35.9	365178.4	5282528.5

10190	H	K	8.9	297.5	13	16:15:35	31.4	365183.8	5283907.7
10190	I	N	13.8	370.8	13	16:15:38	32.4	365183.1	5283963.0
10190	J	K	13.8	370.8	13	16:15:40	31.9	365183.4	5284005.4
10200	A	K	16.5	406.5	13	16:10:29	30.8	365279.4	5284030.8
10200	B	N	16.5	406.5	13	16:10:30	33.7	365279.5	5284001.5
10200	C	K	45.8	676.6	13	16:10:32	39.9	365280.5	5283938.0
10200	D	K	2.9	168.7	13	16:11:22	30.6	365280.2	5282586.9
10200	E	K	9.6	310.2	13	16:11:45	34.4	365282.8	5281980.5
10200	F	N	9.6	310.2	13	16:11:49	40.3	365284.0	5281866.4
10200	G	N	16.8	410.4	13	16:11:53	38.1	365285.0	5281739.9
10200	H	K	16.8	410.4	13	16:11:55	37.5	365284.9	5281691.4
10210	A	K	60.8	779.8	13	16:07:24	36.6	365386.6	5281843.7
10210	B	N	60.8	779.8	13	16:07:25	37.1	365385.7	5281868.7
10210	C	K	45.3	673.4	13	16:07:27	38.3	365385.1	5281911.7
10210	D	K	1.4	120.0	13	16:07:59	28.1	365376.2	5282588.6
10220	A	K	0.3	52.6	13	16:05:08	37.7	365486.1	5282585.8
10220	B	K	40.3	634.4	13	16:05:22	38.7	365475.7	5282181.3
10220	C	N	40.3	634.4	13	16:05:23	39.0	365476.0	5282145.1
10220	D	K	27.0	519.2	13	16:05:25	38.8	365476.2	5282100.5
10220	E	N	27.0	519.2	13	16:05:26	39.0	365476.4	5282053.5
10220	F	K	81.6	903.2	13	16:05:31	39.5	365477.6	5281910.3
10230	A	K	1.2	111.2	13	16:01:03	39.9	365584.0	5281601.8
10230	B	K	152.2	1233.7	13	16:01:16	33.2	365565.9	5281905.5
10230	C	K	0.1	33.9	13	16:01:48	32.8	365591.8	5282627.1
10240	A	N	33.2	576.3	13	15:57:56	30.7	365689.9	5284344.8
10240	B	K	33.2	576.3	13	15:59:23	35.6	365675.4	5281935.3
10250	A	K	106.0	1029.6	13	15:54:56	31.6	365779.2	5281925.1
10250	B	K	0.2	49.1	13	15:55:36	27.3	365794.1	5282862.1
10250	C	K	35.8	598.6	13	15:56:30	26.1	365784.5	5284048.0
10260	A	K	211.7	1454.9	13	15:47:52	26.6	365894.6	5283987.2
10260	B	K	0.3	58.4	13	15:48:29	41.0	365890.9	5282941.5
10260	C	K	0.2	44.7	13	15:48:35	42.5	365885.8	5282793.6
10260	D	K	127.4	1128.6	13	15:49:08	42.0	365879.8	5281910.6
10270	A	N	36.5	604.2	13	15:45:02	36.7	365979.9	5282000.1
10270	B	K	36.5	604.2	13	15:46:15	38.6	365974.3	5283687.6
10270	C	N	31.5	561.0	13	15:46:21	37.0	365978.8	5283840.1
10270	D	K	31.5	561.0	13	15:46:28	33.3	365984.8	5283976.4
10270	E	N	30.7	553.9	13	15:46:30	35.0	365986.1	5284031.8
10270	F	K	30.7	553.9	13	15:46:32	35.9	365986.3	5284066.3
10280	A	K	2.9	169.9	13	15:41:48	44.1	366078.3	5283891.8
10280	B	N	2.9	169.9	13	15:41:50	42.5	366078.9	5283855.4
10280	C	K	117.5	1083.7	13	15:41:56	41.3	366073.6	5283679.0
10280	D	K	75.7	870.3	13	15:42:51	32.9	366092.2	5282070.6

10280	E	N	75.7	870.3	13	15:42:52	30.5	366091.4	5282044.9
10280	F	K	53.6	732.0	13	15:42:54	26.7	366090.8	5281996.5
10290	A	K	41.2	641.6	13	15:38:47	33.0	366184.5	5282029.8
10290	B	K	122.9	1108.5	13	15:40:00	33.8	366180.3	5283662.4
10290	C	N	2.4	154.9	13	15:40:09	35.9	366181.9	5283845.6
10290	D	K	2.4	154.9	13	15:40:11	34.2	366182.6	5283902.1
10300	A	K	35.5	595.6	13	15:35:40	30.2	366281.8	5283837.3
10300	B	K	106.4	1031.4	13	15:35:48	34.4	366277.6	5283609.2
10300	C	K	40.5	636.6	13	15:36:43	36.7	366276.7	5282047.3
10310	A	K	89.8	947.4	13	15:33:48	30.8	366379.4	5283573.3
10310	B	N	6.0	243.9	13	15:33:56	36.7	366376.7	5283772.6
10310	C	K	6.0	243.9	13	15:33:59	36.3	366377.6	5283826.6
10320	A	N	87.4	934.6	13	15:29:27	34.7	366477.4	5283796.2
10320	B	K	87.4	934.6	13	15:29:32	38.3	366477.6	5283670.6
10330	A	K	113.5	1065.5	13	15:27:29	26.7	366575.5	5283622.4
10330	B	K	12.4	352.5	13	15:27:43	31.9	366576.0	5283930.5
10340	A	K	8.6	293.3	13	15:22:50	32.3	366668.6	5283927.6
10340	B	N	61.3	782.7	13	15:22:51	35.1	366668.1	5283891.5
10340	C	K	61.3	782.7	13	15:22:53	37.3	366668.8	5283859.9
10340	D	N	61.3	782.7	13	15:22:54	40.7	366670.7	5283811.8
10340	E	K	116.5	1079.1	13	15:23:01	33.4	366681.6	5283617.9
10350	A	K	7.9	280.9	13	15:21:02	36.1	366780.1	5283602.6
10350	B	N	7.9	280.9	13	15:21:04	36.3	366779.2	5283633.9
10350	C	K	79.2	890.0	13	15:21:05	36.6	366777.9	5283668.6
10350	D	K	18.7	432.0	13	15:21:18	33.1	366773.3	5283924.2
10350	E	N	0.9	95.2	13	15:21:20	34.1	366773.7	5283975.6
10350	F	K	0.9	95.2	13	15:21:21	34.7	366773.4	5284008.4
10360	A	N	3.5	187.9	13	15:16:29	29.9	366875.5	5283972.0
10360	B	K	3.5	187.9	13	15:16:30	29.6	366874.6	5283924.4
10360	C	N	3.5	187.9	13	15:16:35	34.9	366874.3	5283790.0
10370	A	K	2.3	149.9	13	15:12:48	31.3	366989.3	5283717.9
10370	B	N	2.3	149.9	13	15:12:50	31.9	366988.1	5283755.6
10370	C	K	3.7	193.2	13	15:12:52	32.1	366986.5	5283795.3
10370	D	N	3.7	193.2	13	15:12:55	32.4	366983.3	5283874.3
10380	A	K	8.2	286.6	13	15:08:14	38.5	367076.7	5283699.6
10390	A	K	9.6	310.0	13	15:06:11	31.6	367183.1	5283652.7
10400	A	K	12.8	357.5	13	15:01:32	35.7	367277.4	5283727.6
10410	A	K	47.3	687.8	13	14:59:40	33.2	367387.6	5283746.6
10410	B	N	9.8	312.7	13	14:59:43	31.8	367387.4	5283813.8
10410	C	K	9.8	312.7	13	14:59:45	31.7	367385.5	5283862.5
10420	A	K	17.2	415.2	12	13:56:33	33.5	367475.9	5283844.2
10420	B	N	17.2	415.2	12	13:56:34	31.9	367476.1	5283812.6
10420	C	K	23.0	479.8	12	13:56:36	30.7	367476.9	5283760.6

10430	A	K	9.8	312.7	12	13:54:46	28.1	367581.7	5283675.0
10430	B	N	9.8	312.7	12	13:54:50	28.6	367578.8	5283764.6
10430	C	K	9.6	310.5	12	13:54:54	27.3	367576.7	5283869.3
10440	A	N	90.3	950.4	12	13:50:09	37.9	367675.6	5283769.1
10440	B	K	90.3	950.4	12	13:50:13	41.8	367676.1	5283653.7
10450	A	K	54.0	734.8	12	13:48:14	32.6	367778.4	5283730.0
10460	A	N	10.6	325.1	12	13:43:26	35.9	367865.0	5284104.6
10460	B	K	10.6	325.1	12	13:43:29	36.3	367865.5	5284036.2
10460	C	N	10.6	325.1	12	13:43:33	35.5	367871.2	5283934.3
10460	D	K	131.4	1146.5	12	13:43:41	38.9	367884.2	5283720.2
10470	A	K	40.0	632.4	12	13:41:39	34.7	367984.7	5283714.2
10470	B	K	32.5	570.3	12	13:41:58	32.3	367976.8	5284160.9
10480	A	K	180.3	1342.8	12	13:36:47	39.0	368089.6	5284141.7
10480	B	K	8.0	283.6	12	13:37:05	34.4	368074.9	5283716.5
10490	A	K	17.2	415.1	12	13:34:49	34.5	368172.2	5283557.6
10490	B	N	17.2	415.1	12	13:34:55	38.4	368172.7	5283682.3
10490	C	K	5.0	223.4	12	13:35:14	36.9	368184.7	5284122.9
10490	D	N	3.9	196.7	12	13:35:16	34.5	368185.3	5284158.7
10490	E	K	3.9	196.7	12	13:35:17	33.7	368185.2	5284189.6
10500	A	K	61.2	782.4	12	13:29:51	33.9	368299.2	5284184.6
10500	B	N	61.2	782.4	12	13:29:52	32.3	368298.8	5284162.5
10500	C	K	194.5	1394.6	12	13:29:54	29.7	368296.8	5284119.9
10500	D	K	34.2	585.0	12	13:30:15	38.0	368274.6	5283638.4
10510	A	K	86.5	929.9	12	13:28:09	34.1	368383.6	5283617.9
10510	B	K	38.3	618.5	12	13:28:30	28.4	368369.7	5284099.8
10510	C	N	19.0	435.6	12	13:28:32	32.9	368371.0	5284145.7
10510	D	K	19.0	435.6	12	13:28:34	36.2	368372.6	5284172.1
10510	E	N	19.0	435.6	12	13:28:41	43.1	368378.3	5284335.3
10520	A	N	2.1	143.6	12	13:23:13	43.0	368488.2	5284356.1
10520	B	K	2.1	143.6	12	13:23:15	43.0	368488.1	5284297.5
10520	C	N	5.4	232.0	12	13:23:22	27.3	368487.4	5284133.8
10520	D	K	5.4	232.0	12	13:23:23	26.4	368487.1	5284103.2
10520	E	N	5.4	232.0	12	13:23:26	31.7	368486.4	5284033.1
10520	F	K	19.4	440.5	12	13:23:42	40.7	368489.2	5283640.6
10520	G	N	19.4	440.5	12	13:23:44	39.4	368491.5	5283603.1
10520	H	K	29.6	543.6	12	13:23:47	33.1	368494.8	5283529.0
10530	A	K	38.6	621.1	12	13:21:31	33.7	368575.9	5283502.5
10530	B	N	40.1	633.1	12	13:21:34	34.9	368577.9	5283571.6
10530	C	K	40.1	633.1	12	13:21:36	35.4	368577.4	5283610.7
10530	D	K	0.1	26.7	12	13:22:06	38.0	368562.6	5284294.8
10530	E	N	0.1	26.7	12	13:22:08	37.9	368565.2	5284345.0
10540	A	K	10.4	322.8	12	13:17:13	38.8	368686.0	5283630.2
10540	B	N	10.4	322.8	12	13:17:15	36.4	368690.4	5283577.3

10540	C	K	7.3	271.0	12	13:17:18	33.6	368694.7	5283506.1
10550	A	K	3.4	185.2	12	13:14:42	35.2	368776.3	5283413.4
10550	B	K	17.7	420.6	12	13:15:14	30.0	368777.5	5284111.2
10560	A	K	11.1	333.0	12	13:08:33	23.1	368865.1	5284228.0
10560	B	N	11.1	333.0	12	13:08:34	21.8	368862.6	5284209.5
10560	C	K	11.1	332.5	12	13:08:36	23.2	368854.6	5284160.9
10570	A	K	4.6	214.3	12	13:07:10	29.6	368974.9	5284079.4
10630	A	K	2.6	161.8	12	12:41:42	33.4	369583.3	5283086.1
10640	A	K	8.0	283.1	12	12:38:04	30.7	369687.4	5283187.9
10640	B	N	8.0	283.1	12	12:38:09	33.7	369678.7	5283074.7
10640	C	K	23.2	481.8	12	12:38:37	35.0	369675.6	5282382.4
10650	A	K	48.2	694.6	12	12:34:35	38.7	369784.2	5282109.4
10650	B	N	48.2	694.6	12	12:34:36	37.2	369785.1	5282142.7
10650	C	K	142.8	1194.9	12	12:34:43	31.0	369789.5	5282310.7
10650	D	N	142.8	1194.9	12	12:34:46	32.2	369787.5	5282386.4
10650	E	K	62.1	788.0	12	12:34:51	33.7	369785.8	5282499.1
10650	F	N	192.9	1388.9	12	12:34:58	31.2	369786.5	5282698.1
10650	G	K	192.9	1388.9	12	12:35:02	30.8	369788.5	5282790.2
10650	H	K	161.1	1269.4	12	12:35:08	29.1	369788.9	5282943.0
10650	I	N	29.5	542.8	12	12:35:13	30.0	369785.1	5283078.2
10650	J	K	29.5	542.8	12	12:35:18	29.7	369784.4	5283188.6
10660	A	K	0.8	87.0	12	12:31:16	30.2	369878.1	5283504.8
10660	B	K	20.7	454.9	12	12:31:31	30.7	369887.5	5283172.5
10660	C	N	20.7	454.9	12	12:31:33	30.2	369888.7	5283130.8
10660	D	K	77.5	880.5	12	12:31:38	31.1	369884.2	5283010.1
10660	E	K	121.4	1101.9	12	12:31:47	28.3	369879.9	5282819.4
10660	F	N	137.0	1170.4	12	12:31:51	27.9	369881.8	5282721.4
10660	G	K	137.0	1170.4	12	12:31:54	28.6	369882.7	5282659.7
10660	H	N	137.0	1170.4	12	12:31:55	29.2	369883.0	5282625.8
10660	I	K	71.4	844.8	12	12:31:59	29.8	369883.6	5282531.3
10660	J	N	98.1	990.2	12	12:32:05	33.2	369880.3	5282371.0
10660	K	K	98.1	990.2	12	12:32:10	39.3	369883.0	5282259.8
10660	L	K	2.2	147.6	12	12:32:35	36.1	369885.2	5281689.7
10670	A	K	2.9	171.3	12	12:27:24	33.9	369993.2	5281445.4
10670	B	K	140.0	1183.2	12	12:27:56	36.8	369979.4	5282193.7
10670	C	N	9.5	308.8	12	12:28:02	34.6	369974.3	5282332.2
10670	D	K	9.5	308.8	12	12:28:04	32.9	369971.7	5282388.8
10670	E	N	9.5	308.8	12	12:28:08	30.0	369972.5	5282481.7
10670	F	K	34.0	583.0	12	12:28:15	33.2	369979.0	5282666.4
10670	G	N	85.1	922.3	12	12:28:17	35.4	369980.0	5282721.9
10670	H	K	85.1	922.3	12	12:28:19	35.5	369980.7	5282754.7
10670	I	K	63.8	798.9	12	12:28:25	36.5	369982.3	5282909.0
10680	A	K	14.9	386.5	12	12:24:30	37.4	370085.5	5283633.2

10680	B	K	30.6	553.1	12	12:25:05	32.4	370078.8	5282851.5
10680	C	K	10.7	327.1	12	12:25:23	29.7	370078.8	5282452.1
10680	D	N	5.8	241.6	12	12:25:35	36.5	370087.5	5282173.7
10680	E	K	5.8	241.6	12	12:25:39	33.0	370088.7	5282100.4
10680	F	N	5.8	241.6	12	12:25:46	28.4	370074.1	5281945.5
10680	G	K	12.0	346.0	12	12:26:09	41.8	370067.0	5281426.4
10690	A	K	18.8	434.1	12	12:20:42	29.2	370175.7	5281348.6
10690	B	K	167.4	1293.9	12	12:21:03	30.8	370174.7	5281838.3
10690	C	N	11.0	331.6	12	12:21:08	38.3	370174.4	5281972.1
10690	D	K	11.0	331.6	12	12:21:12	38.4	370177.1	5282059.3
10690	E	K	9.6	309.2	12	12:21:28	31.6	370174.8	5282440.1
10690	F	N	42.2	649.9	12	12:21:31	36.1	370176.2	5282517.2
10690	G	K	42.2	649.9	12	12:21:34	37.7	370178.0	5282587.6
10690	H	N	42.2	649.9	12	12:21:38	37.7	370180.6	5282697.2
10690	I	K	137.4	1172.2	12	12:21:51	36.0	370181.3	5283018.7
10690	J	K	7.4	271.6	12	12:22:19	31.0	370181.1	5283684.3
19010	A	K	10.2	319.7	12	12:00:15	36.1	364679.1	5283794.6
19010	B	K	22.3	471.7	12	12:00:54	42.2	365909.1	5283805.9
19010	C	N	22.3	471.7	12	12:00:55	42.2	365942.8	5283806.9
19010	D	K	48.8	698.6	12	12:01:00	38.6	366092.3	5283810.0
19010	E	N	13.8	371.0	12	12:01:05	37.5	366250.6	5283806.6
19010	F	K	13.8	371.0	12	12:01:08	34.6	366352.9	5283801.6
19010	G	N	54.4	737.8	12	12:01:12	33.1	366480.0	5283795.7
19010	H	K	54.4	737.8	12	12:01:15	34.9	366577.4	5283793.0
19010	I	K	4.6	215.2	12	12:01:28	32.1	366985.7	5283791.5
19010	J	K	5.1	225.7	12	12:01:40	35.7	367343.2	5283791.7
19010	K	K	144.9	1203.8	12	12:01:58	30.4	367893.0	5283798.8
19010	L	K	7.5	273.4	12	12:03:13	39.8	370255.4	5283790.0
19020	A	K	74.9	865.6	12	12:05:26	28.2	370331.5	5282803.5
19020	B	K	98.7	993.6	12	12:05:46	38.6	369934.4	5282798.5
19020	C	N	137.1	1171.0	12	12:05:52	36.5	369809.3	5282800.0
19020	D	K	137.1	1171.0	12	12:05:55	34.6	369763.8	5282802.1
19020	E	K	0.2	48.6	12	12:09:22	36.3	365908.5	5282799.8
19020	F	N	0.2	48.6	12	12:09:27	34.9	365836.6	5282801.5
19030	A	K	156.1	1249.6	12	12:14:03	33.0	363294.2	5281802.2
19030	B	K	324.3	1800.7	12	12:14:13	45.1	363594.6	5281816.0
19030	C	N	68.0	824.3	12	12:14:16	41.8	363675.9	5281817.7
19030	D	K	68.0	824.3	12	12:14:17	42.2	363704.3	5281818.0
19030	E	K	30.5	552.6	12	12:14:57	30.9	364847.1	5281789.2
19030	F	K	20.6	453.7	12	12:15:16	38.9	365433.6	5281800.3
19030	G	N	31.4	560.2	12	12:15:24	36.5	365666.8	5281801.2
19030	H	K	31.4	560.2	12	12:15:29	39.4	365809.2	5281800.3

APPENDIX 3: DESCRIPTION OF DATABASE FIELDS

The GDB file is a Geosoft binary database. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

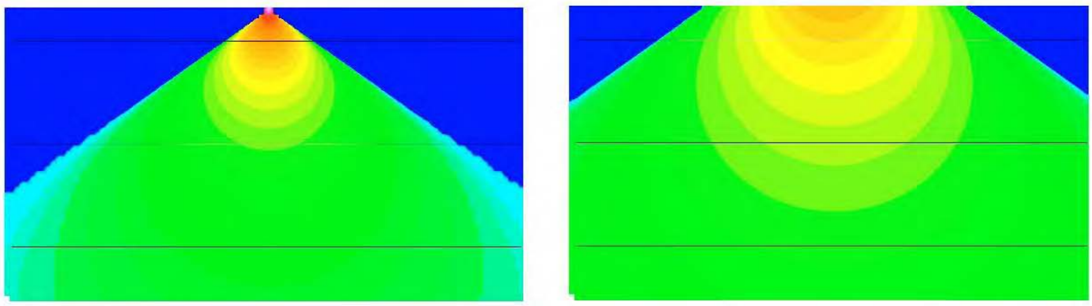
COLUMN	UNITS	DESCRIPTOR
line		Line number
flight		Flight #
emfid		AERODAS Fiducial
utctime	hh:mm:ss.ss	UTC time
x	m	UTM Easting (NAD83, Zone 15)
y	m	UTM Northing (NAD83, Zone 15)
galt	m	GPS altitude of Mag bird
bheight	m	Terrain clearance of EM bird
dtm	m	Digital Terrain Model
basemag	nT	Base station total magnetic intensity
mag	nT	Final levelled total magnetic intensity
Dtm	m	Digital Terrain Model
Zon	nT/s	Processed Streaming On-Time Z component Channels 1-16
Zoff	nT/s	Processed Streaming Off-Time Z component Channels 0-16
Xon	nT/s	Processed Streaming On-Time X component Channels 1-16
Xoff	nT/s	Processed Streaming Off-Time X component Channels 0-16
pwrline		Power line monitor data channel
Grade		Classification from 1-7 based on conductance of conductor pick
Anom_labels		Alphanumeric label of conductor pick
Anom_ID		Anomaly Character (K= thicK, N = thiN)
Off_AllCon	S	Off-time conductance
Off_AllTau	μs	Off-time decay constant
Off_con	S	Off-time conductance
Off_Tau	μs	Off-time decay constant
TranOff	ms	Transmission turn-off time
TranOn	ms	Transmission turn-on time
TranPeak	A	Transmission peak current
TranSwitch	ms	Transmission peak current time

APPENDIX 4: AEROTEM DESIGN CONSIDERATIONS

Helicopter-borne EM systems offer an advantage that cannot be matched from a fixed-wing platform. The ability to fly at slower speed and collect data with high spatial resolution, and with great accuracy, means the helicopter EM systems provide more detail than any other EM configuration, airborne or ground-based. Spatial resolution is especially important in areas of complex geology and in the search for discrete conductors. With the advent of helicopter-borne high-moment time domain EM systems the fixed wing platforms are losing their *only* advantage – depth penetration.

Advantage 1 – Spatial Resolution

The AeroTEM system is specifically designed to have a small footprint. This is accomplished through the use of concentric transmitter-receiver coils and a relatively small diameter transmitter coil (5 m). The result is a highly focused exploration footprint, which allows for more accurate "mapping" of discrete conductors. Consider the transmitter primary field images shown in Figure 1, for AeroTEM versus a fixed-wing transmitter.

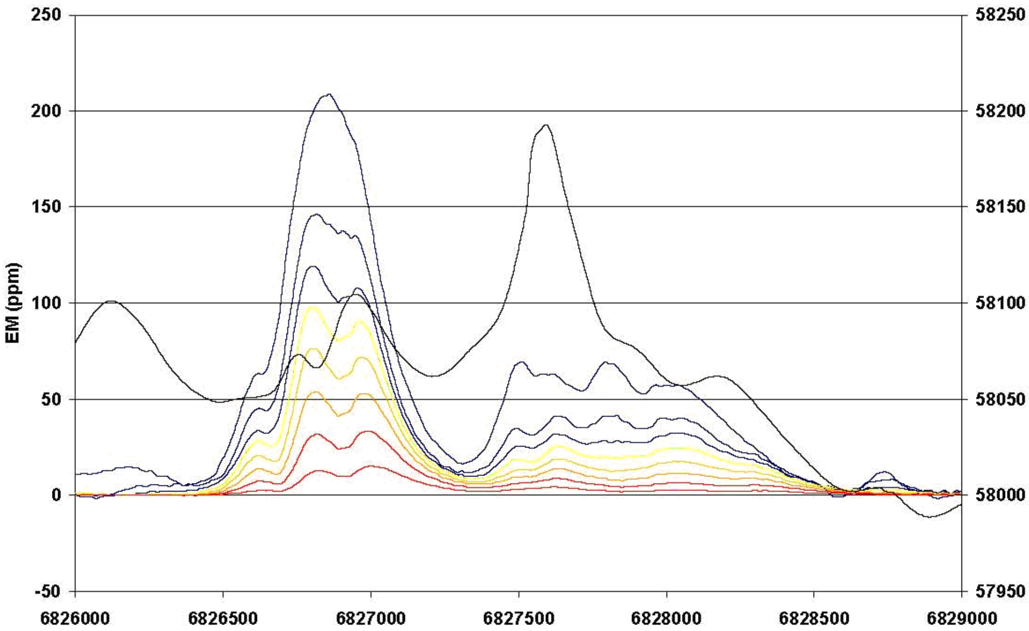


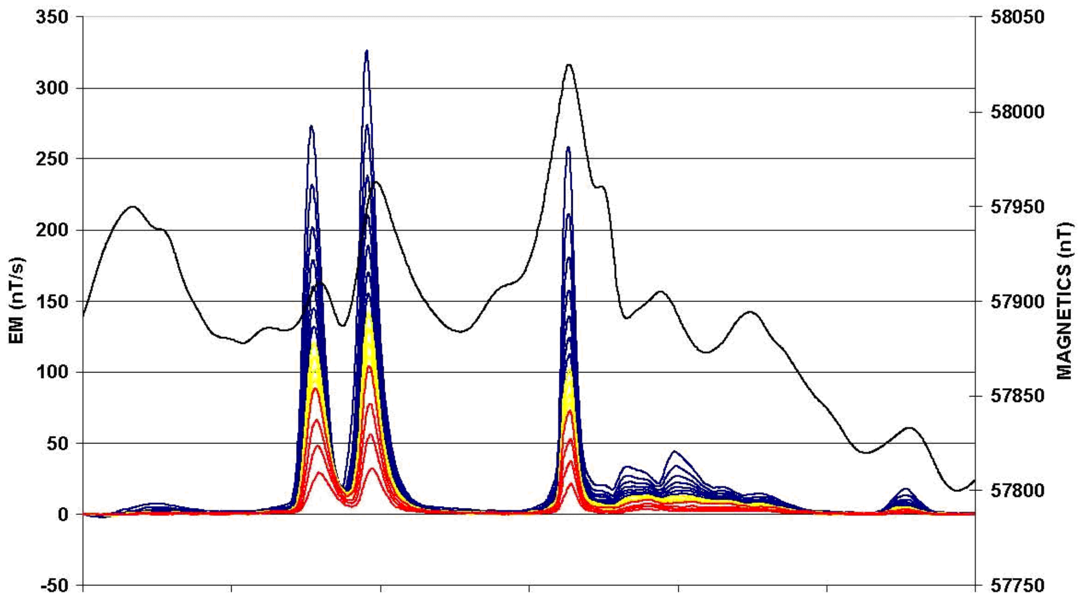
The footprint of AeroTEM at the earth's surface is roughly 50m on either side of transmitter

The footprint of a fixed-wing system is roughly 150 m on either side of the transmitter

Figure 1. A comparison of the footprint between AeroTEM and a fixed-wing system, highlights the reater resolution that is achievable with a transmitter located closer to the earth's surface. The AeroTEM footprint is one third that of a fixed-wing system and is symmetric, while the fixed-wing system has even lower spatial resolution along the flight line because of the separated transmitter and receiver configuration.

At first glance one may want to believe that a transmitter footprint that is distributed more evenly over a larger area is of benefit in mineral exploration. In fact, the opposite is true; by energizing a larger surface area, the ability to energize and detect discrete conductors is reduced. Consider, for example, a comparison between AeroTEM and a fixed-wing system over the Mesamax Deposit (1,450,000 tonnes of 2.1% Ni, 2.7% Cu, 5.2 g/t Pt/Pd). In a test survey over three flight lines spaced 100 m apart, AeroTEM detected the Deposit on all three flight lines. The fixed-wing system detected the Deposit only on two flight lines. In exploration programs that seek to expand the flight line spacing in an effort to reduce the cost of the airborne survey, discrete conductors such as the Mesamax Deposit can go undetected. The argument often put forward in favour of using fixed-wing systems is that because of their larger footprint, the flight line spacing can indeed be widened. Many fixed-wing surveys are flown at 200 m or 400 m. Much of the survey work performed by Aeroquest has been to survey in areas that were previously flown at these wider line spacings. One of the reasons for AeroTEM's impressive discovery record has been the strategy of flying closely spaced lines and finding all the discrete near-surface conductors. These higher resolution surveys are being flown within existing mining camps, areas that improve the chances of discovery.





F

igure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.

The small footprint of AeroTEM combined with the high signal to noise ratio (S/N) makes the system more suitable to surveying in areas where local infrastructure produces electromagnetic noise, such as power lines and railways. In 2002 Aeroquest flew four exploration properties in the Sudbury Basin that were under option by FNX Mining Company Inc. from Inco Limited. One such property, the Victoria Property, contained three major power line corridors.

The resulting AeroTEM survey identified all the known zones of Ni-Cu-PGE mineralization, and detected a response between two of the major power line corridors but in an area of favorable geology. Three boreholes were drilled to test the anomaly, and all three intersected sulphide. The third borehole encountered 1.3% Ni, 6.7% Cu, and 13.3 g/t TPMs over 42.3 ft. The mineralization was subsequently named the Powerline Deposit.

The success of AeroTEM in Sudbury highlights the advantage of having a system with a small footprint, but also one with a high S/N. This latter advantage is achieved through a combination of a high-moment (high signal) transmitter and a rigid geometry (low noise). Figure 3 shows the Powerline Deposit response and the response from the power line corridor at full scale. The width of power line response is less than 75 m.

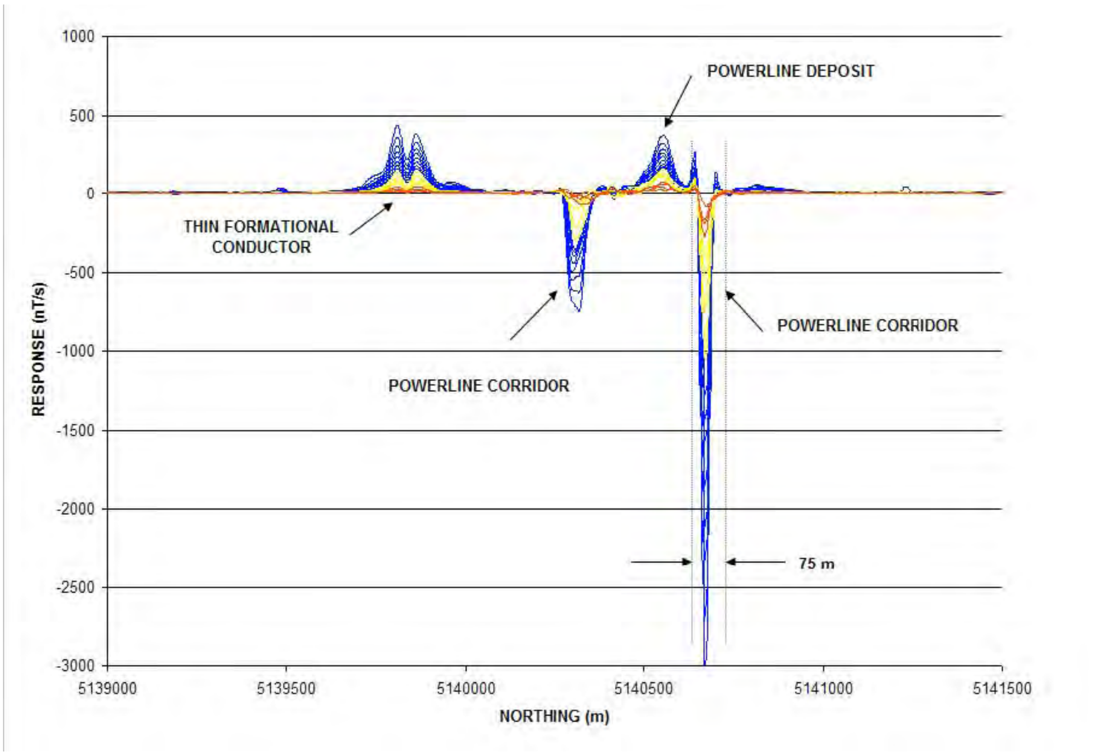


Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish this response from that of two closely spaced conductors is by interpreting the X-axis coil response.

Advantage 2 – Conductance Discrimination

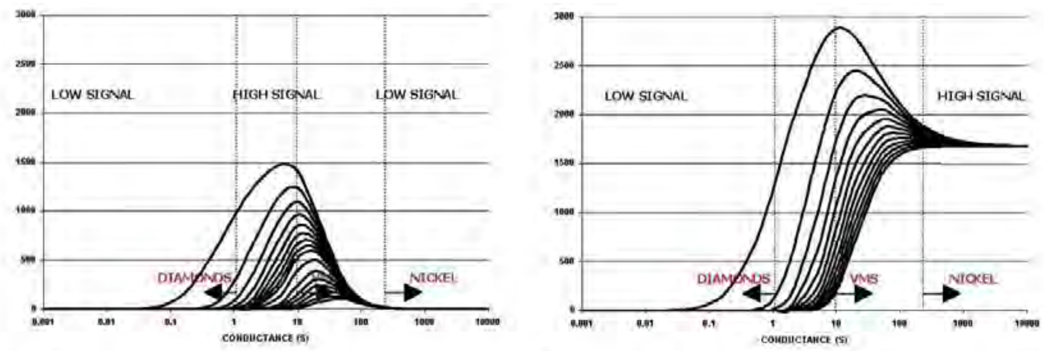
The AeroTEM system features full waveform recording and as such is able to measure the on-time response due to high conductance targets. Due to the processing method (primary field removal), there is attenuation of the response with increasing conductance, but the AeroTEM on-time measurement is still superior to systems that rely on lower base frequencies to detect high conductance targets, but do not measure in the on-time.

The peak response of a conductive target to an EM system is a function of the target conductance and the EM system base frequency. For time domain EM systems that measure only in the off-time, there is a drop in the peak response of a target as the base frequency is lowered for all conductance values below the peak system response. For example, the AeroTEM peak response occurs for a 10 S conductor in the early off-time and 100 S in the late off-time for a 150 Hz base frequency. Because base frequency and conductance form a linear relationship when considering the peak response of any EM system, a drop in base frequency of 50% will double the conductance at which an EM system shows its peak response. If the base frequency were lowered from 150 Hz to 30 Hz there would be a fivefold increase in conductance at which the peak response of an EM occurred.

However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with low base frequencies are not suitable for general exploration unless the target conductance is more than 100 S, or the target is covered by conductive overburden.

Despite the excellent progress that has been made in modeling software over the past two decades, there has been little work done on determining the optimum form of an EM system for mineral exploration. For example, the optimum configuration in terms of geometry, base frequency and so remain unknown. Many geophysicists would argue that there is no single ideal configuration, and that each system has its advantages and disadvantages. We disagree.

When it comes to detecting and discriminating high-conductance targets, it is necessary to measure the pure in phase response of the target conductor. This measurement requires that the measured primary field from the transmitter be subtracted from the total measured response such that the secondary field from the target conductor can be determined. Because this secondary field is in-phase with the transmitter primary field, it must be made while the transmitter is turned on and the transmitter current is changing. The transmitted primary field is several orders of magnitude larger than the secondary field. AeroTEM uses a bucking coil to reduce the primary field at the receiver coils. The only practical way of removing the primary field is to maintain a rigid geometry between the transmitter, bucking and receiver coils. This is the main design consideration of the AeroTEM airframe and it is the only time domain airborne system to have this configuration.



The off-time AeroTEM response for the 16 channel configuration.

The on-time response assuming 100% removal of the measured primary field.

Figure 4. The off-time and on-time response nomogram of AeroTEM for a base frequency of 150 Hz. The on-time response is much stronger for higher conductance targets and this is why on-time measurements are more important than lower frequencies when considering high conductance targets in a resistive environment.

Advantage 3 – Multiple Receiver Coils

AeroTEM employs two receiver coil orientations. The Z-axis coil is oriented parallel to the transmitter coil and both are horizontal to the ground. This is known as a maximum coupled configuration and is optimal for detection. The X-axis coil is oriented at right angles to the transmitter coil and is oriented along the line-of-flight.

This is known as a minimum coupled configuration, and provides information on conductor orientation and thickness. These two coil configurations combined provide important information on the position, orientation, depth, and thickness of a conductor that cannot be matched by the traditional geometries of the HEM or fixedwing systems. The responses are free from a system geometric effect and can be easily compared to model type curves in most cases. In other words, AeroTEM data is very easy to interpret. Consider, for example, the following modeled profile:

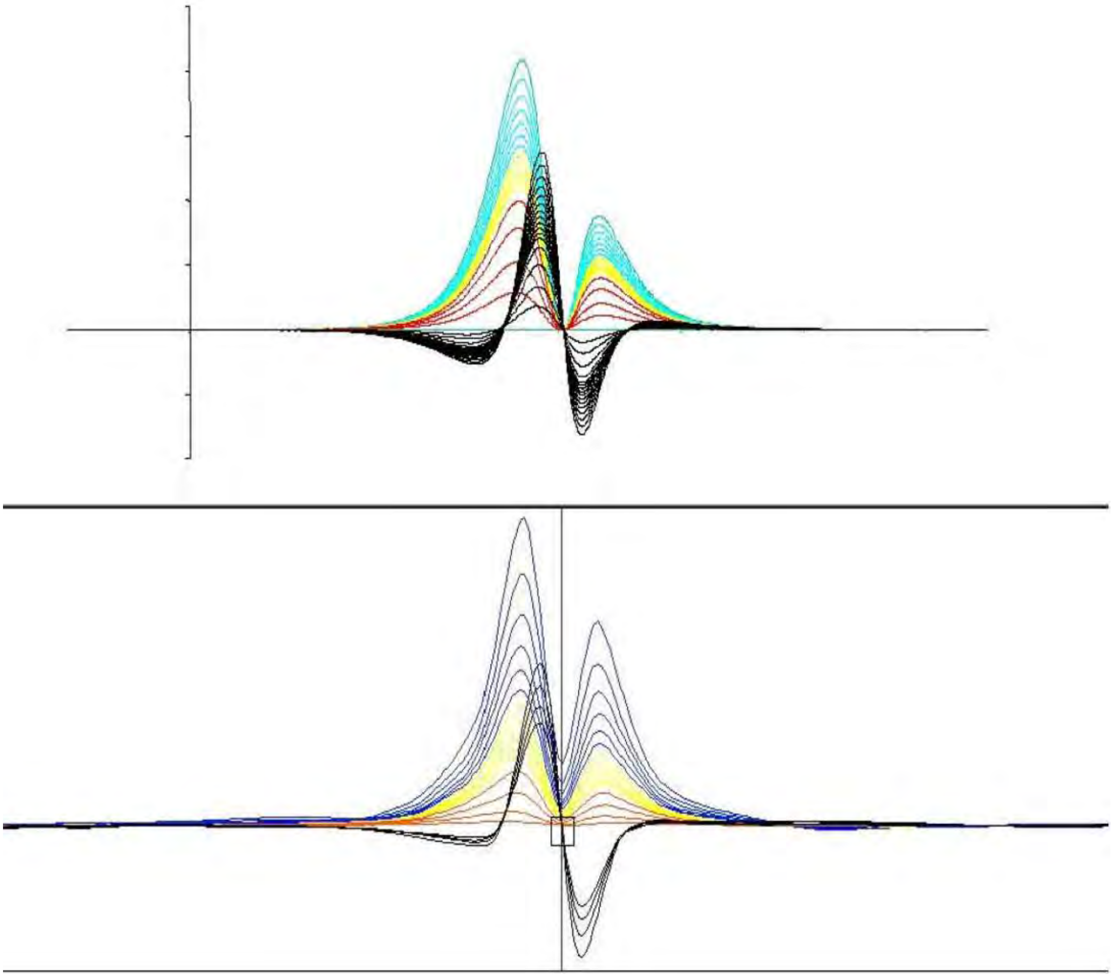


Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude Z-axis peak. Using the X-axis cross-over is the only way of differentiating the Z-axis response from being two closely spaced conductors.

HEM versus AeroTEM

Traditional helicopter EM systems operate in the frequency domain and benefit from the fact that they use narrowband as opposed to wide-band transmitters. Thus all of the energy from the transmitter is concentrated in a few discrete frequencies. This allows the systems to achieve excellent depth penetration (up to 100 m) from a transmitter of modest power. The Aeroquest Impulse system is one implementation of this technology.

The AeroTEM system uses a wide-band transmitter and delivers more power over a wide frequency range. This frequency range is then captured into 16 time channels, the early channels containing the high frequency information and the late time channels containing the low frequency information down to the system base frequency. Because frequency domain HEM systems employ two coil configurations (coplanar and coaxial) there are only a maximum of three comparable frequencies per configuration, compared to 16 AeroTEM off-time and 12

AeroTEM on-time channels.

Figure 6 shows a comparison between the Dighem HEM system (900 Hz and 7200 Hz coplanar) and AeroTEM (Z-axis) from surveys flown in Raglan, in search of highly conductive Ni-Cu-PGM sulphide. In general, the AeroTEM peaks are sharper and better defined, in part due to the greater S/N ratio of the AeroTEM system over HEM, and also due to the modestly filtered AeroTEM data compared to HEM. The base levels are also better defined in the AeroTEM data. AeroTEM filtering is limited to spike removal and a 5-point smoothing filter. Clients are also given copies of the raw, unfiltered data.

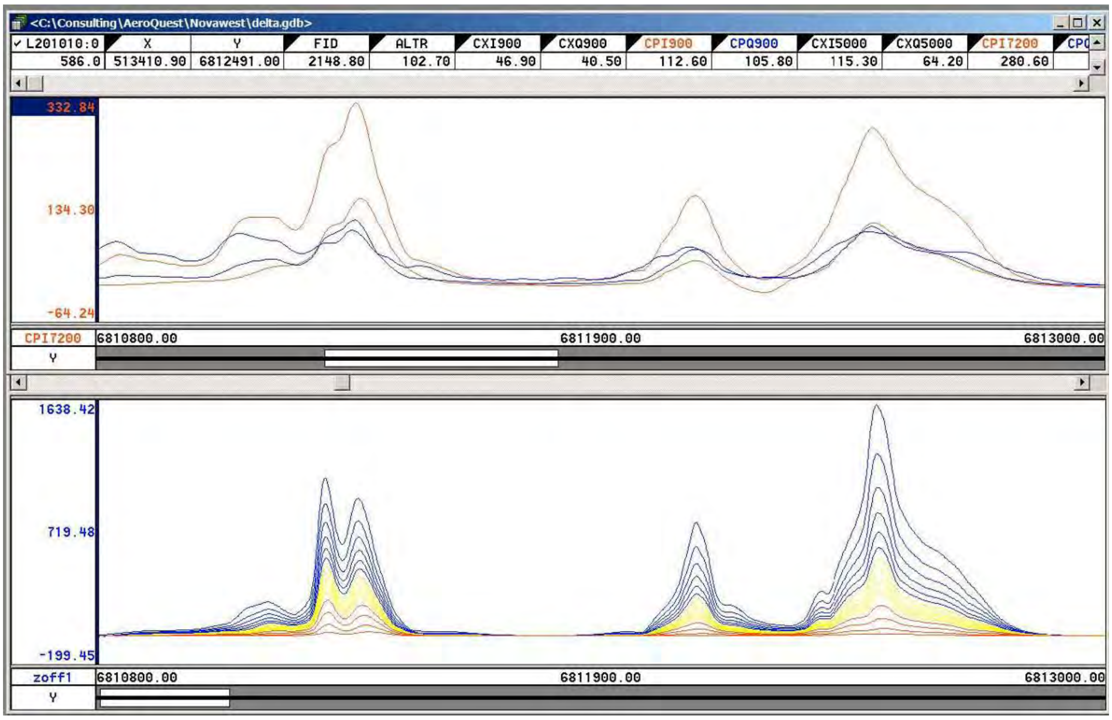


Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.

Aeroquest Surveys is grateful to the following companies for permission to publish some of the data from their respective surveys: Wolfden Resources, FNX Mining Company Inc, Canadian Royalties, Nova West Resources, Aurogin Resources, Spectrem Air. Permission does not imply an endorsement of the AeroTEM system by these companies.

APPENDIX 5: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 90 Hz
- Tx On Time – 1,900 (90 Hz) μs

- Tx Off Time – 3,600 (90 Hz) µs
- Loop Diameter - 12 m
- Peak Current - 410 A
- Peak Moment – 247,000 NIA
- Typical Z Axis Noise at Survey Speed = 10 nT/s peak to peak
- Sling Weight: 1200 lb
- Length of Tow Cable: 53 m
- Bird Survey Height: 30 m nominal

Receiver

• Two Axis Receiver Coils (x, z) positioned at a horizontal offset of 1m and 4.8 m from the centre of transmitter loop, respectively.

• Selectable Time Delay to start of first channel 28 , 55, or 83 ms

Display & Acquisition

• AERODAS Digital recording at 36000 samples per second (27.778 µs channel width)

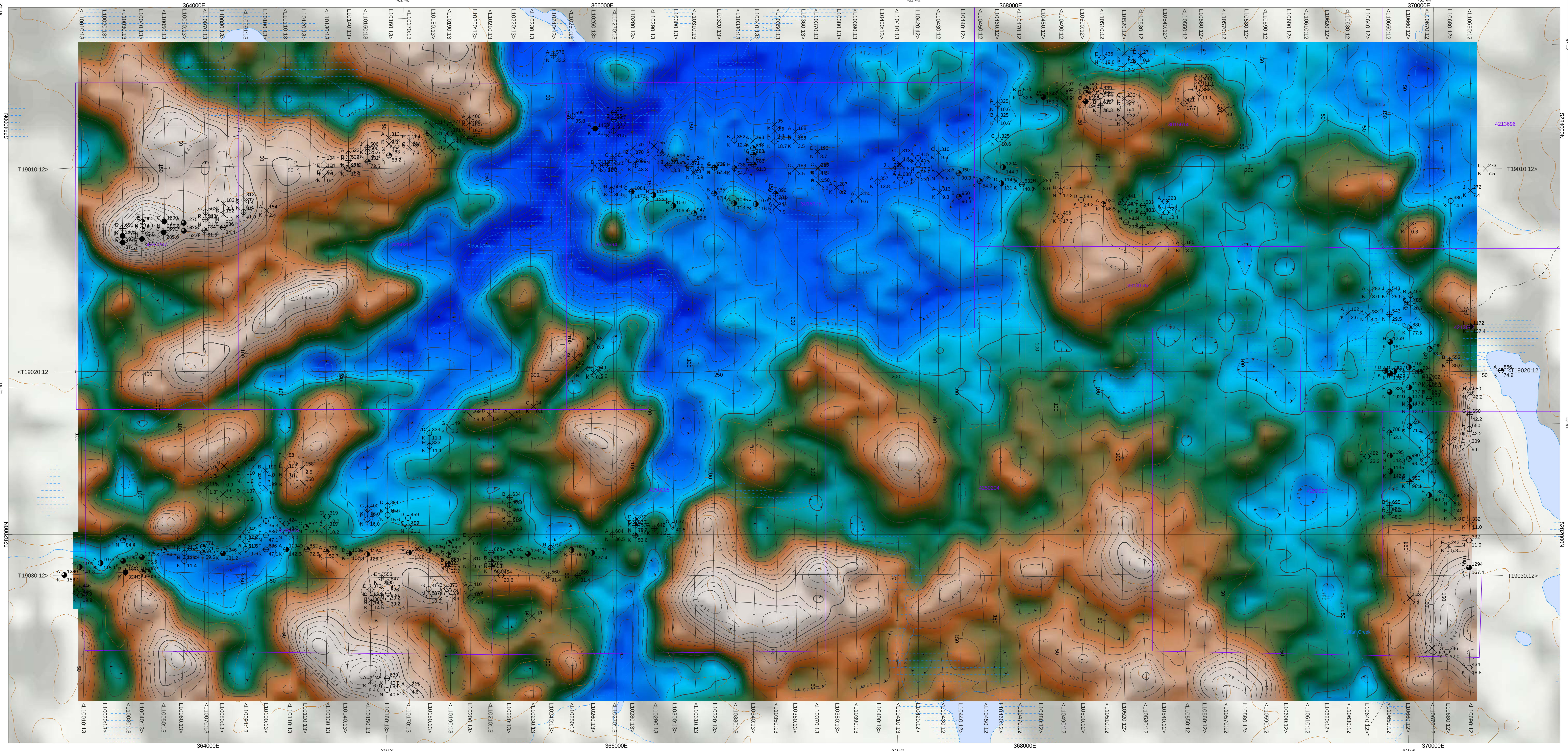
• Recording & Display Rate = 10 readings per second.

• On-board display - six channels Z-component and 1 X-component

System Considerations

Comparing a fixed-wing time domain transmitter with a typical moment of 500,000 NIA flying at an altitude of 120 m with a Helicopter TDEM at 30 m, notwithstanding the substantial moment loss in the airframe of the fixed wing, the same penetration by the lower flying helicopter system would only require a sixty-fourth of the moment. Clearly the AeroTEM system with 230,000 NIA has more than sufficient moment. The airframe of the fixed wing presents a response to the towed bird, which requires dynamic compensation. This problem is non-existent for AeroTEM since transmitter and receiver positions are fixed. The AeroTEM system is completely portable, and can be assembled at the survey site within half a day.

DIGITAL TERRAIN MODEL



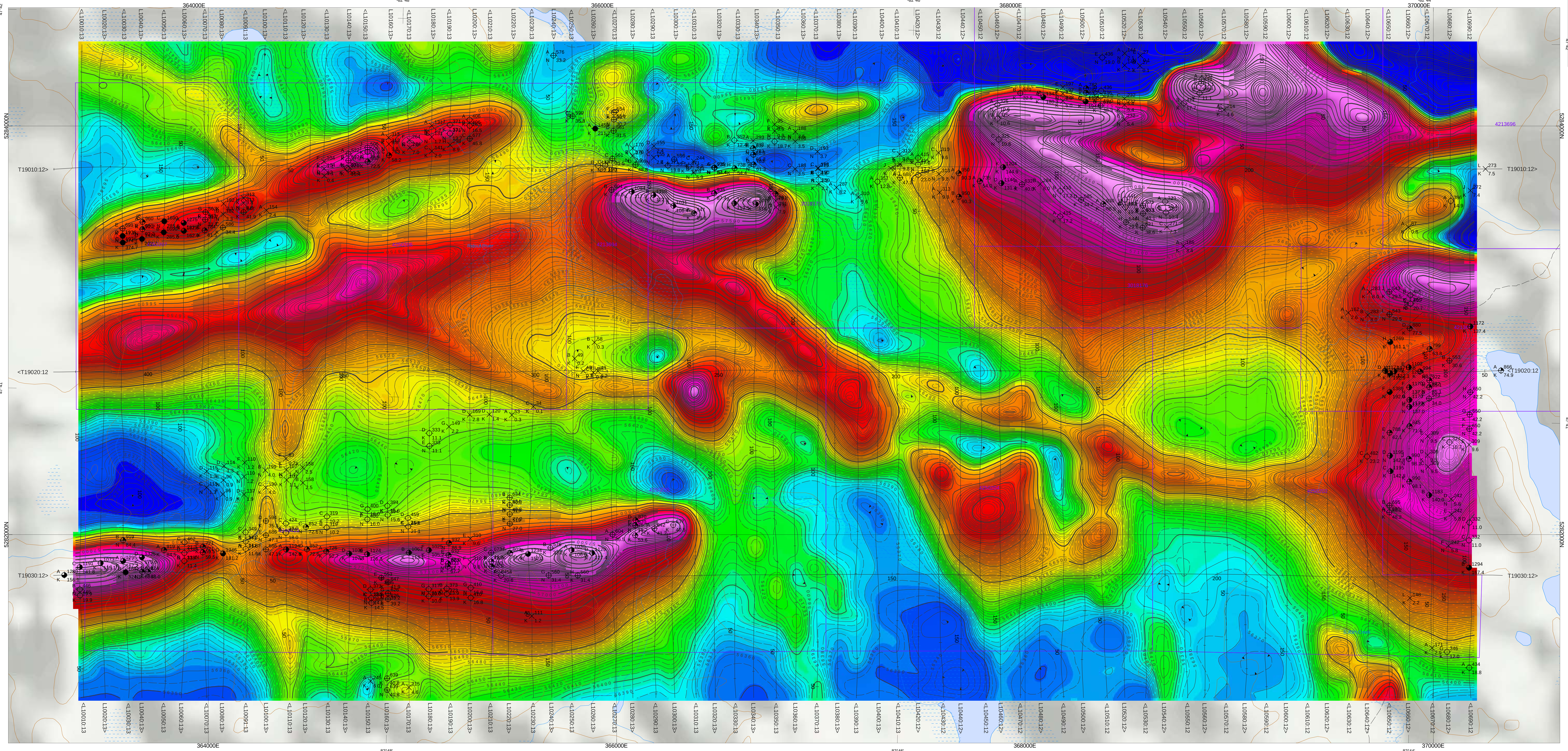
Grid Parameters:
DTM Grid
Shadow Inclination: 45º
Shadow Declination: 0º
Scale: 55.1
Brightness: 100%
Contrast: 26%

446.3
442.6
440.2
438.4
436.8
435.5
434.3
433.3
432.3
431.5
430.8
430.1
429.5
429.0
428.5
428.0
427.6
427.1
426.6
426.2
425.7
425.2
424.7
424.3
423.8
423.4
422.9
422.5
422.1
421.8
421.4
421.0
420.7
420.3
419.9
419.6
419.2
418.7
418.2
417.7
417.1
416.6
415.9
415.2
414.4
413.6
412.9
412.1
411.1
409.2
406.2

DTM
m

Contour Interval
2m
4m
20m
100m

TOTAL MAGNETIC INTENSITY



Grid Parameters:
TMI Grid
Shadow Inclination: 45º
Shadow Declination: 0º
Scale: 1.1
Brightness: 100%
Contrast: 26%

57620.0
57241.2
57057.8
56929.8
56840.9
56780.9
56735.6
56699.0
56666.9
56637.7
56611.3
56589.8
56570.2
56553.2
56536.9
56522.1
56508.3
56496.5
56485.9
56476.1
56467.3
56458.6
56451.3
56444.2
56437.7
56431.0
56424.4
56417.8
56411.4
56405.2
56398.7
56392.2
56385.0
56377.6
56369.8
56362.1
56350.2
56308.6

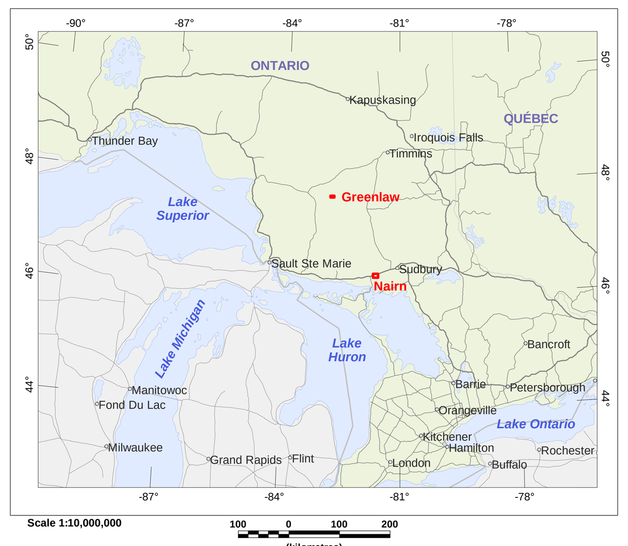
TMI
nT

Contour Interval
5 nT
10 nT
50 nT
250 nT

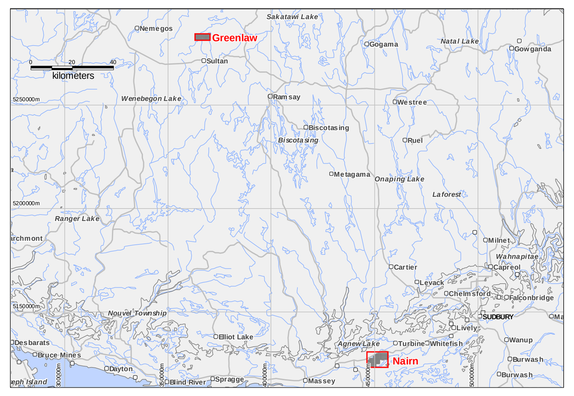
Grid North
NAD83 - Zone 17

The topographic data base was sourced from 1:50000 NRC (Natural Resources Canada) NTDB data and from the client.
Background shading derived from NASA SRTM data
Inset Data derived from Geocommunity 1:1000000 data

This map accompanies the technical report entitled 'Report on an Airborne Electromagnetic and Magnetic Survey, Chapleau, Ontario, Canada', by Aeroquest Limited, December 2010.



Scale 1:10,000,000



Grid Parameters:
SRTM Background Grid
Shadow Inclination: 45º
Shadow Declination: 45º
Scale: 53.9
Brightness: 100%
Contrast: 25%

Off-Time Anomaly Symbols

>200S ....
150-200S ....
100-150S ....
50-100S ....
25-50S ....
10-25S ....
<10S ....

anomaly label A, decay constant (µs) 125, thicK/thiN source K, off-time conductance (S) 36

SURVEY SPECIFICATIONS:
Survey flown: Oct. 7 - 8, 2010
Traverse/Tie line spacing: 100/1000 metres
Traverse/Tie line direction: (0°/180°)/(90°/270°)
Nominal EM bird height: 30 metres
Aircraft: Eurocopter AS350B3 (C-FFKA)

INSTRUMENTATION:
Data acquisition: ADAS
Magnetometer: Geometrics G-823A caesium vapour
Installation: Towed bird 30 m above EM bird
Sensitivity: .001 nanoTesla
Electromagnetics: AeroTEM IV System (Romeo)
Configuration: Towed bird

NAVIGATION:
Navigation: Differential Global Positioning System (DGPS)
Navigation equipment: AGNAV with MID-TECH RX400p receiver
Radar Altimeter: Terra TRA3000/TRI-30

POSITIONING
Datum: NAD83
Major Axis: 6378137.000
Eccentricity: 0.081819191

MAP PROJECTION
Projection: Universal Transverse Mercator
Central Meridian: 81°W (Zone 17)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m

scale 1:10,000
200 0 200 400 600
(metres)
NAD83 / UTM zone 17N

Sino Minerals Corporation
Chapleau, Ontario

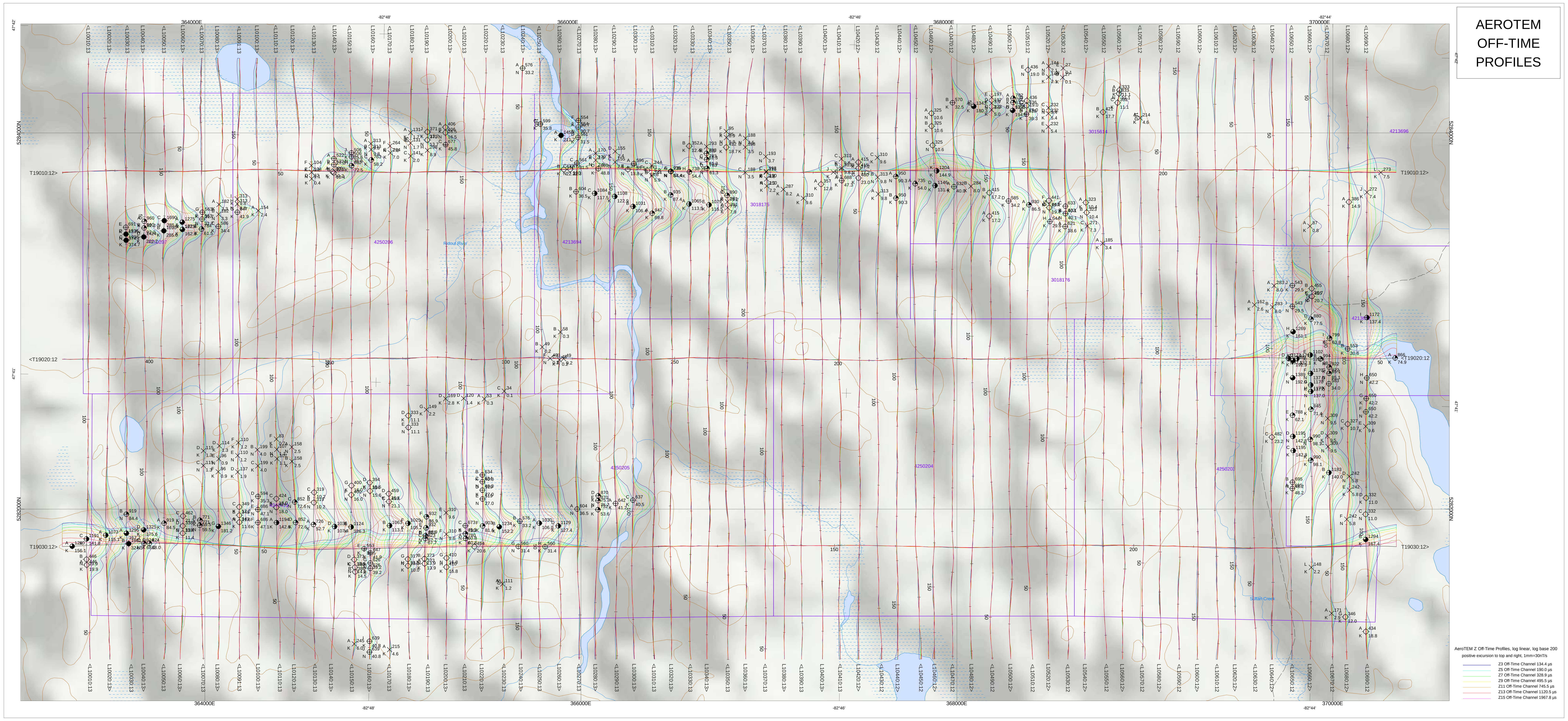
Total Magnetic Intensity & DTM Greenlaw Block

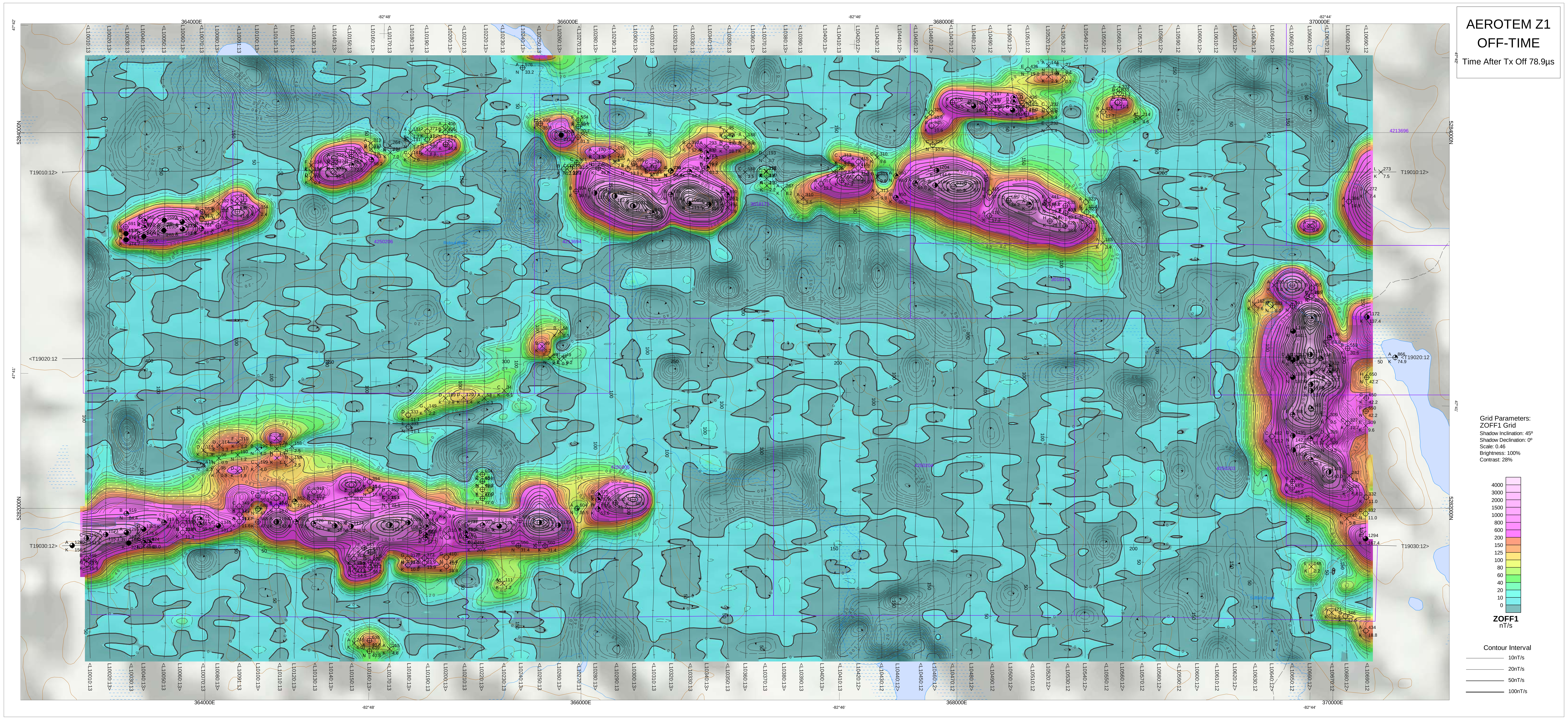
NTS 041O10

AEROQUEST AIRBORNE
7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
Tel: (905) 672-9129 Fax: (905) 672-7083
www.aeroquest.ca

December 2010

TMI & DTM

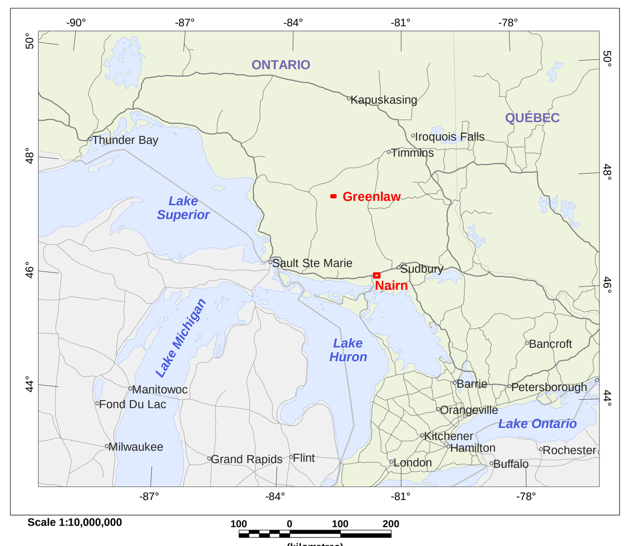


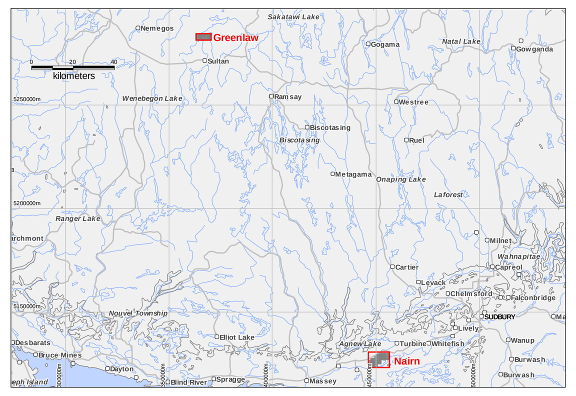


Grid North
NAD83 - Zone 17

The topographic data base was sourced from 1:50000 NRC (Natural Resources Canada) NTDB data and from the client.
Background shading derived from NASA SRTM data
Inset Data derived from Geocommunity 1:1000000 data

This map accompanies the technical report entitled 'Report on an Airborne Electromagnetic and Magnetic Survey, Chapleau, Ontario, Canada', by Aeroquest Limited, December 2010.





Grid Parameters:
SRTM Background Grid
Shadow Inclination: 45º
Shadow Declination: 45º
Scale: 53.9
Brightness: 100%
Contrast: 25%

Off-Time Anomaly Symbols

>200S
150-200S
100-150S
50-100S
25-50S
10-25S
<10S

anomaly label A — 125 decay constant (µs)
thicK/thiN source K — 36 off-time conductance (S)

SURVEY SPECIFICATIONS:
Survey flown: Oct. 7 - 8, 2010
Traverse/Tie line spacing: 100/1000 metres
Traverse/Tie line direction: (0°/180°)/(90°/270°)
Nominal EM bird height: 30 metres
Aircraft: Eurocopter AS350B3 (C-FFKA)
INSTRUMENTATION:
Data acquisition: ADAS
Magnetometer: Geometrics G-823A caesium vapour
Installation: Towed bird 30 m above EM bird
Sensitivity: .001 nanoTesla
Electromagnetics: AeroTEM IV System (Romeo)
Configuration: Towed bird
NAVIGATION:
Navigation: Differential Global Positioning System (DGPS)
Navigation equipment: AGNAV with MID-TECH RX400p receiver
Radar Altimeter: Terra TRA3000/TRI-30
POSITIONING
Datum: NAD83
Major Axis: 6378137.000
Eccentricity: 0.081819191
MAP PROJECTION
Projection: Universal Transverse Mercator
Central Meridian: 81°W (Zone 17)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m

scale 1:10,000

200 0 200 400 600
(metres)
NAD83 / UTM zone 17N

Sino Minerals Corporation
Chapleau, Ontario

Electromagnetics Products
Greenlaw Block

NTS 041O10

AEROQUEST AIRBORNE
7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
Tel: (905) 672-9129 Fax: (905) 672-7083
www.aeroquest.ca

December 2010

EM Products