

Report
On a Helicopter-Borne
Electromagnetic and Magnetic Survey

Carried out by

Aeroquest Ltd.

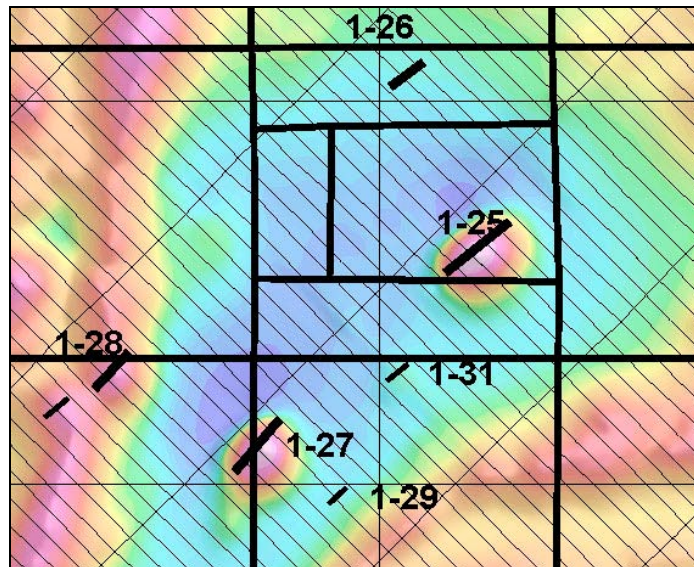
Under Contract to

Billiken Management

On behalf of Spider and KWG Resources Inc.
and Participating Companies

McFauld's Lake Area, James Bay Lowlands

Ontario, Canada



SCOTT HOGG & ASSOCIATES LTD

May 2008

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MAPS INCLUDED WITH THIS REPORT

- Total Magnetic Intensity – at 1:20,000 scale (10 sheets)
- Z Coil Off-Time EM Profiles – at 1:20,000 scale (10 sheets)
- Interpretation Map – at 1:50,000 scale (3 sheets)

1 INTRODUCTION

In late 2007, Noront Resources Ltd. wished to carry out an airborne magnetic and electromagnetic survey over its properties in the McFauld's Lake Area of Northern Ontario. Other companies, such as Spider Resources Inc. and KWG Resources Inc, with properties in the vicinity, wished to participate in the airborne geophysical program.

To meet the objectives of a multi-partner program, Noront arranged for Billiken Management Services to manage the operation. Billiken contracted Aeroquest Ltd. to fly the survey, on behalf of the participating companies using the AeroTem II helicopter transient electromagnetic system. Scott Hogg & Associates Ltd. were contracted to provide technical management, compilation and interpretation services.

The helicopter survey was flown in three separate blocks between October 15th and January 10th, 2008. A total of 13,711 line kilometers of data were collected, of which 3695 km were flown over Spider and KWG's property. The survey was based out of McFauld's Lake camp, managed by Billiken.

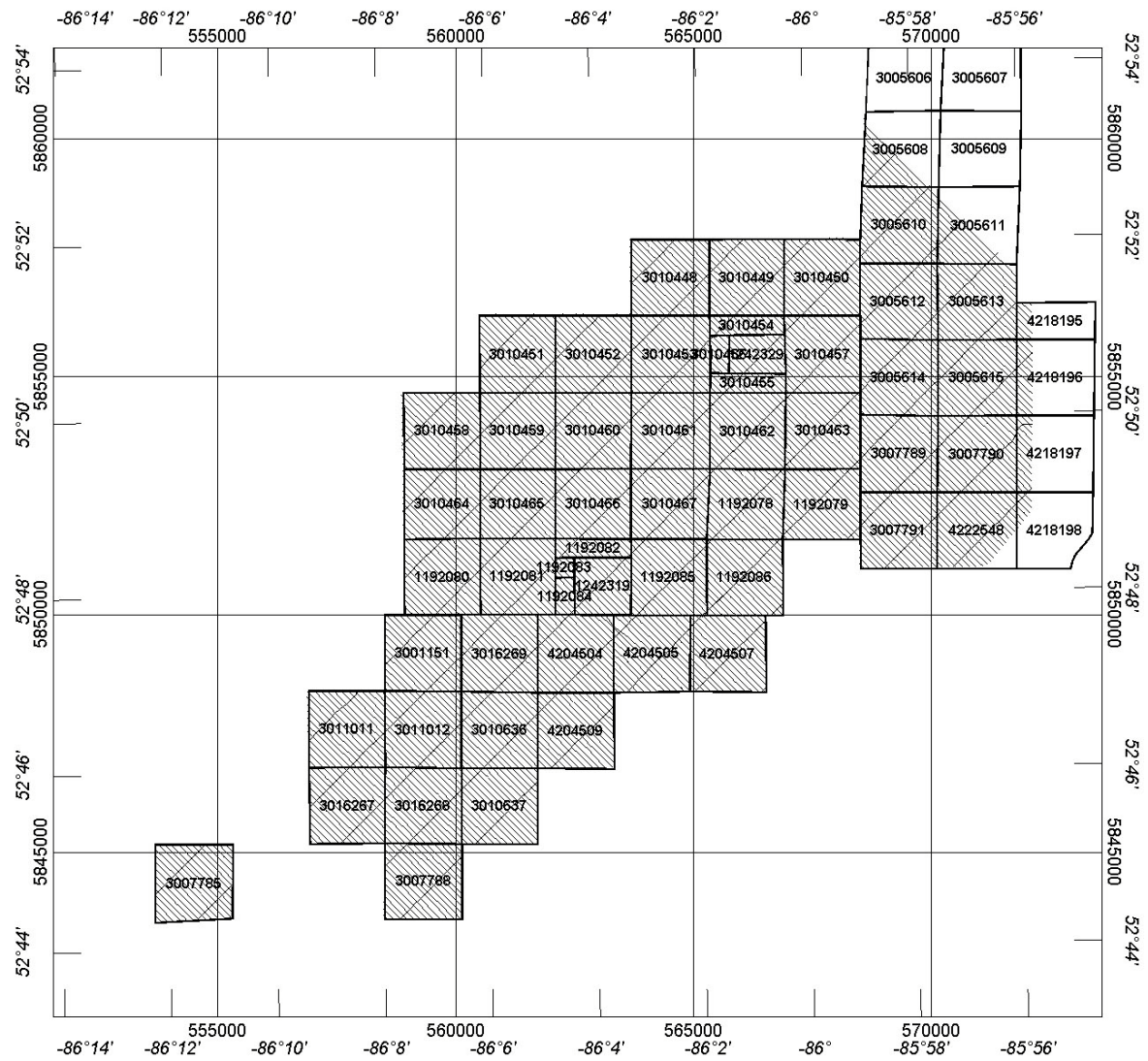
A compilation and review of the raw data had been carried out by Scott Hogg and Associates Ltd. The purpose of this preliminary report was to provide the survey participants with interim geophysical information and bring to their attention the more prominent electromagnetic anomalies that might be investigated. At the time of this report, final data has only just been released. Aeroquest's final maps are included with this report and Aeroquest's final report for the main survey may be found in Appendix I.

2 MINING CLAIMS

Mining claims, held by Spider and KWG Resources that were covered by the survey are:

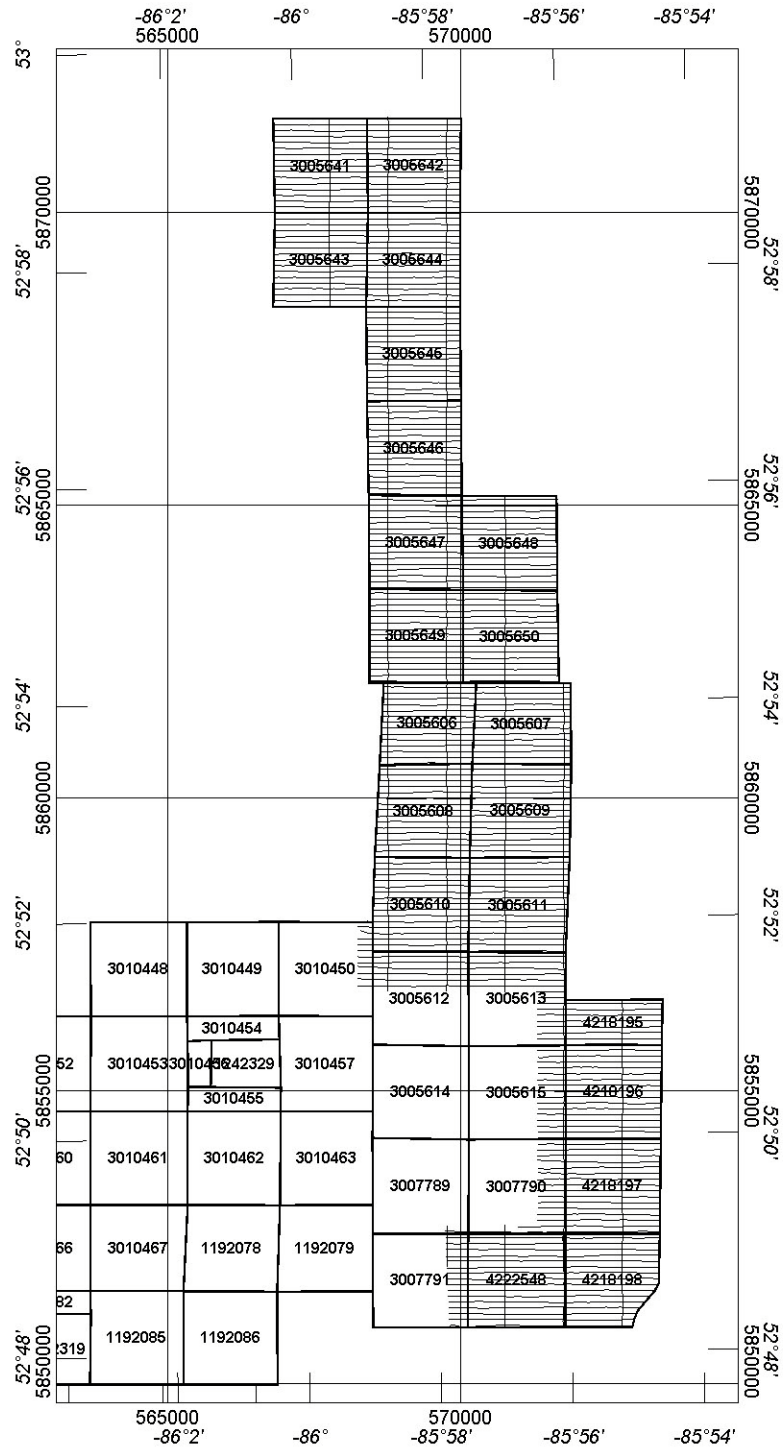
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Contiguity sketches of the claims may be found on the following four pages.

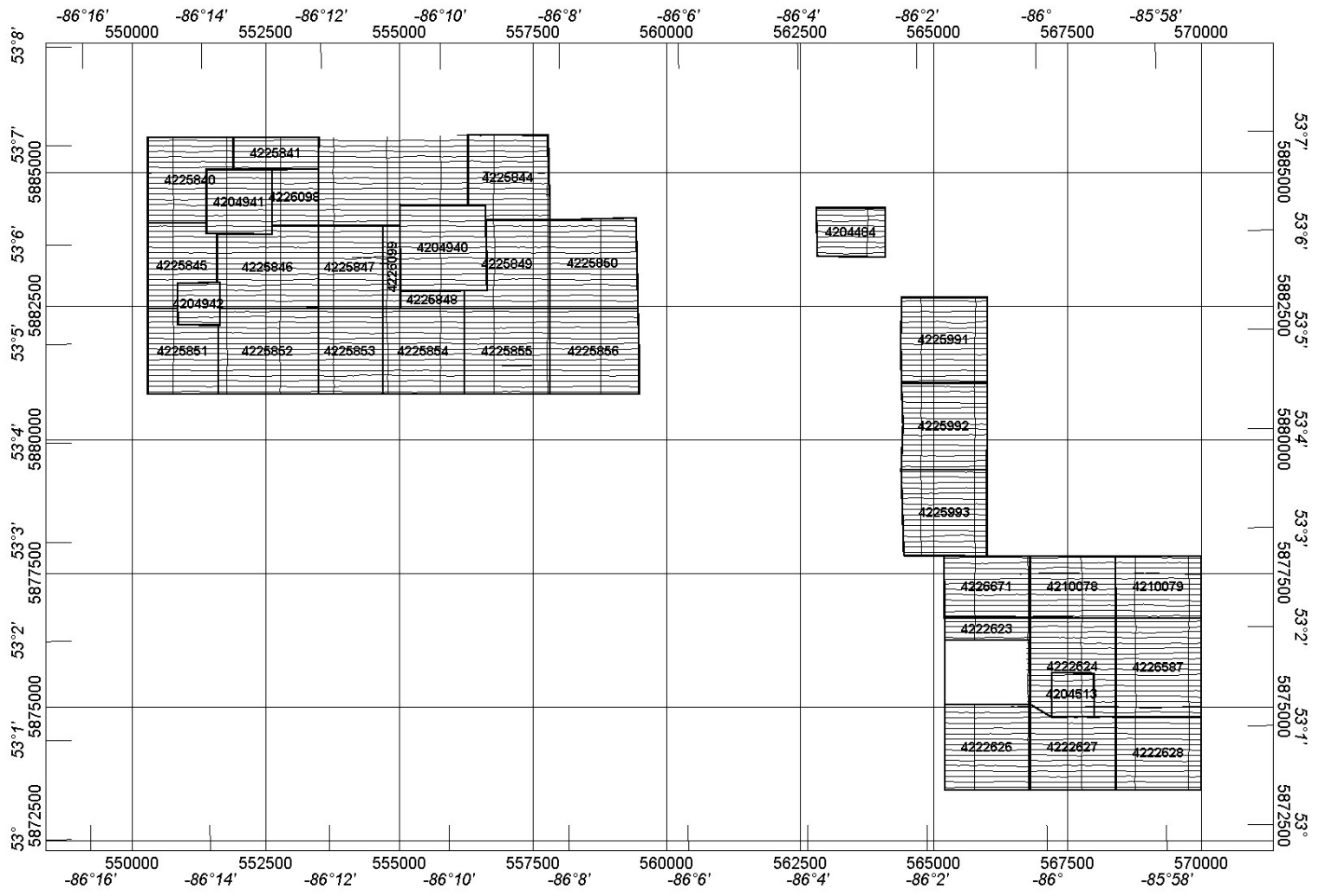


Block 01

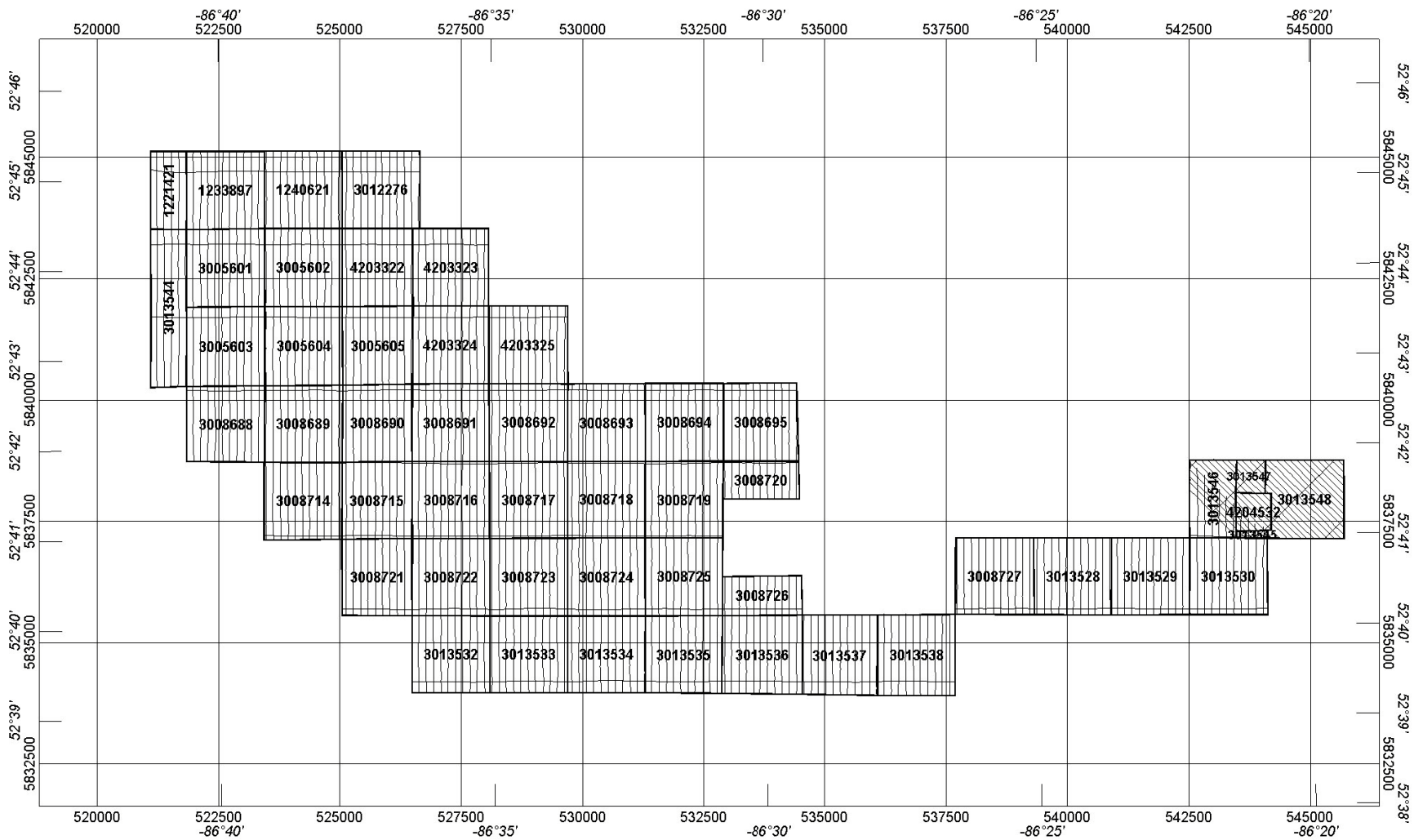
Flight Plan and Claim Contiguity



Block02 South
 Flight Plan and Claim Contiguity Sketch



Block02 North
Flight Plan and Claim Contiguity Sketch



Block 10 and Part of Block 01
 Flightplan and Claim Contiguity Sketch

3 SURVEY LOCATION

The figure below shows the Spider and KWG Resources claim group and the location of the McFauld's Lake Camp.

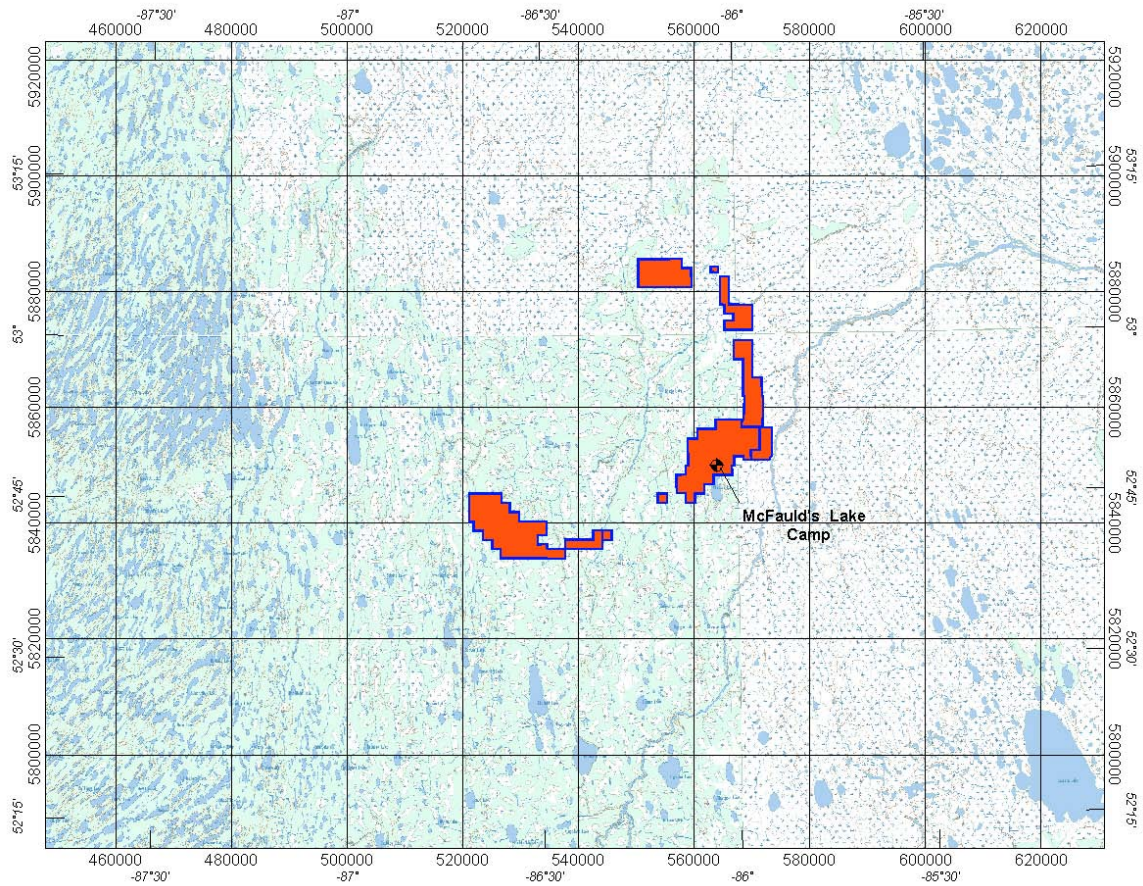


Figure 1 – Spider and KWG Resources Ltd. Survey Location Map

4 AIRBORNE SURVEY

A full description of the AeroTem II system can be found in Appendix I. Details of the system are summarized below.

4.1 AeroTem II Electromagnetic System

The AeroTem II system uses a superimposed dipole configuration with the receiver located within the transmitter loop. The transmitter axis is vertical (Z). The receiver has two independent axes; vertical Z and in the direction of flight X. The transmitter current waveform is a triangular ramp, repeated with reversing polarity at 150 Hz. The receiver measures the secondary field at intervals during and after the transmitter current pulse.

A plot of the transmitted pulse, along with on-time and off-time channels is presented in Figure 4.

The system was towed 36 metres below the helicopter at a nominal terrain clearance of 30 metres.

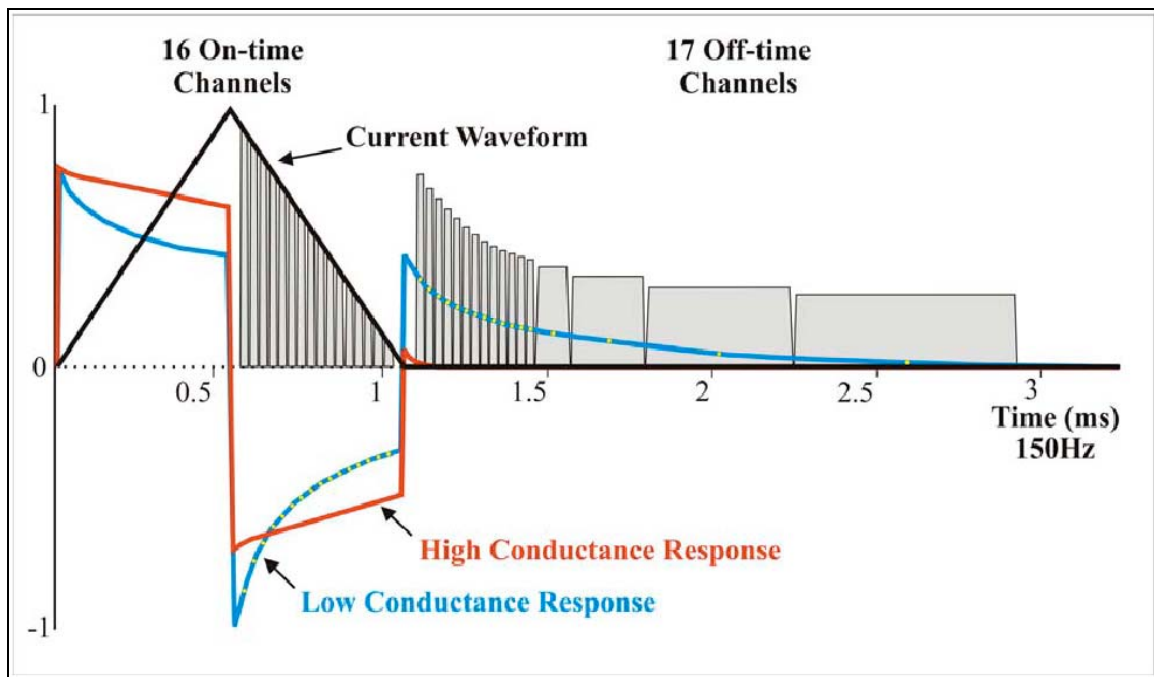


Figure 4 - AeroTem II System: The current waveform, or primary field B_p , is illustrated as black line together with the location of the On-time and Off-time channels. The receiver measures the derivative of the secondary field dB_s/dt , as illustrated by the red or blue profiles, for each of these channels. A anomaly from a high conductance source will decay more slowly than that of a low conductance source.

Time Channels

Channel:	Start Gate	End Gate	Start (us)	Stop (us)	Mid (us)	Width (us)
1 ON	25	25	651.0	677.0	664.0	26.0
2 ON	26	26	677.0	703.1	690.1	26.0
3 ON	27	27	703.1	729.1	716.1	26.0
4 ON	28	28	729.1	755.2	742.1	26.0
5 ON	29	29	755.2	781.2	768.2	26.0
6 ON	30	30	781.2	807.2	794.2	26.0
7 ON	31	31	807.2	833.3	820.3	26.0
8 ON	32	32	833.3	859.3	846.3	26.0
9 ON	33	33	859.3	885.4	872.3	26.0
10 ON	34	34	885.4	911.4	898.4	26.0
11 ON	35	35	911.4	937.4	924.4	26.0
12 ON	36	36	937.4	963.5	950.5	26.0
13 ON	37	37	963.5	989.5	976.5	26.0
14 ON	38	38	989.5	1015.6	1002.5	26.0
15 ON	39	39	1015.6	1041.6	1028.6	26.0
16 ON	40	40	1041.6	1067.6	1054.6	26.0
1 OFF	45	45	1171.8	1197.8	1184.8	26.0
2 OFF	46	46	1197.8	1223.9	1210.9	26.0
3 OFF	47	47	1223.9	1249.9	1236.9	26.0
4 OFF	48	48	1249.9	1276.0	1262.9	26.0
5 OFF	49	49	1276.0	1302.0	1289.0	26.0
6 OFF	50	50	1302.0	1328.0	1315.0	26.0
7 OFF	51	51	1328.0	1354.1	1341.1	26.0
8 OFF	52	52	1354.1	1380.1	1367.1	26.0
9 OFF	53	53	1380.1	1406.2	1393.1	26.0
10 OFF	54	54	1406.2	1432.2	1419.2	26.0
11 OFF	55	55	1432.2	1458.2	1445.2	26.0
12 OFF	56	56	1458.2	1484.3	1471.3	26.0
13 OFF	57	60	1484.3	1588.4	1536.4	104.2
14 OFF	61	68	1588.4	1796.8	1692.6	208.3
15 OFF	69	84	1796.8	2213.4	2005.1	416.6
16 OFF	85	110	2213.4	2890.4	2551.9	677.0

AeroTem II Time Gates: The blue shading indicates measurements taken during the transmitted pulse, the On-Time. The yellow shading indicates those taken during the Off-Time, following the pulse.

4.2 AeroTem II System Geometry and Response Shape

The system geometry, as defined by the relative orientation and position of the transmitter and receiver, influences the shape of response for a given geologic conductor or target. This response shape is sensitive to the form of the target but is largely independent of the conductivity of the target. The figure below presents the response shape for a thin sheet conductor in various orientations for a generalized superimposed dipole system. In the case of the AeroTem II, only the Tz-Rz and Tz-Rx combinations are relevant.

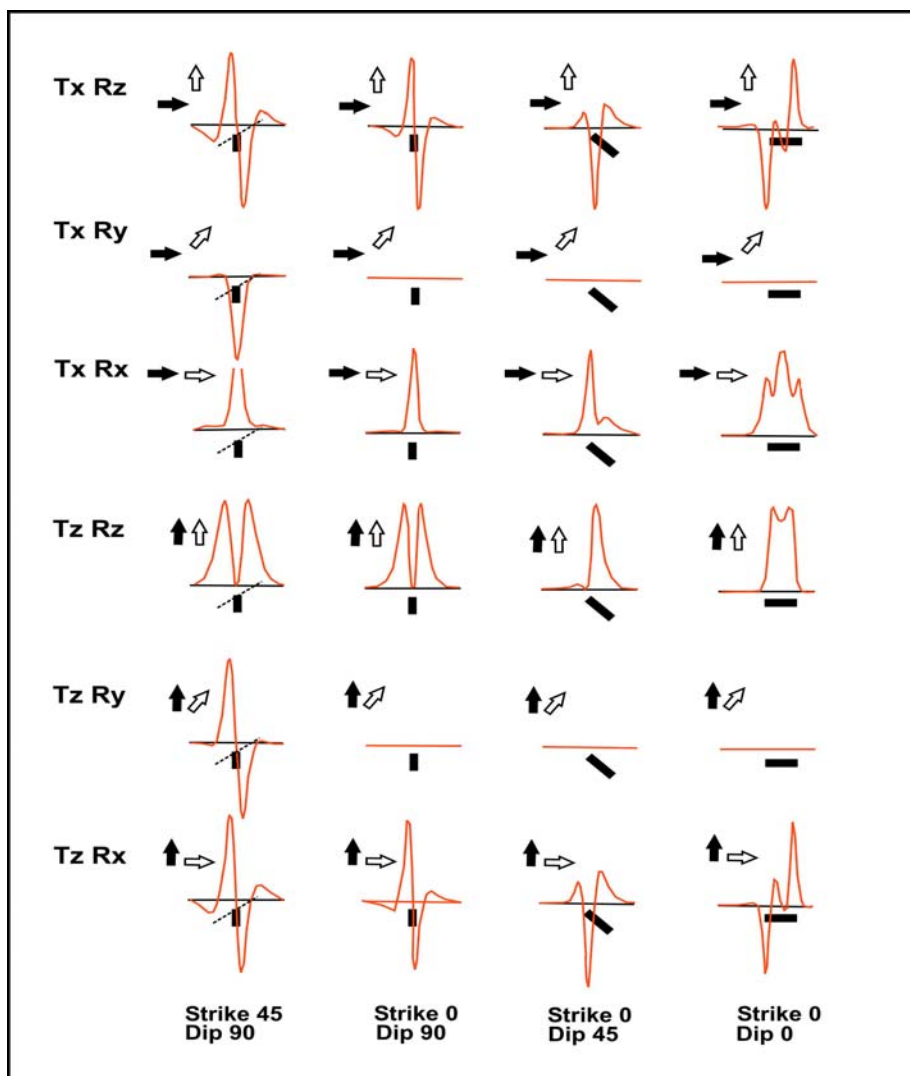


Figure 5 - Response shapes for a superimposed dipole electromagnetic system. A thin rectangular plate, 300 m in strike extent, 150 m in depth extent, 50 m below sensor with a conductance of 60 S was modelled with the University of Toronto Plate program. Strike and dip are indicated as are the axis of the transmitter and receiver antennae dipoles. The response amplitude has been normalized.

The Tz-Rz configuration is minimum coupled with a vertical thin sheet when the system is directly overhead. This results in an "M" shaped response. As the horizontal thickness of the conductor increases, induced currents can flow across the sheet and the central null is reduced. When the width is of the same order as the other dimensions, like a sphere, the null disappears completely and a simple broad peak over the conductor results. As the dip of the sheet decreases an asymmetry of the side lobes becomes evident with the greater amplitude on the down dip side. This asymmetry is most notable between about 60 and 30 degrees. With shallower dip the smaller lobe is relatively very weak and a slightly asymmetric single peak is the dominant signature. In the case of near horizontal conducting layers the response amplitude stabilizes within the unit but if the edges are sharply defined, edge effects will be noted.

4.3 Magnetometers

Two Geometrics optically pumped cesium sensors recorded the total magnetic field. One was located on the electromagnetic bird, the second sensor was towed 17 metres below the helicopter at a nominal terrain clearance of 47 metres. A magnetic base station was located at the base of operations and recorded variations were used for diurnal correction

5 COMPILATION AND PRESENTATION

5.1 Magnetics

The lower magnetometer in the electromagnetic bird was used for map compilation. Variations recorded by the magnetic base station were subtracted to remove diurnal magnetic variation. The corrected profile was gridded using at 25 metre cell size.

5.2 Electromagnetics

The raw electromagnetic data for Off-Time Z channels 3 and 10 were selected for map presentation. Channel 3 is in early-time and will respond to both low and high conductance features. Channel 10 is mid to late-time and will tend to favour the higher conductance features.

The profile data for these 2 channels was levelled to remove baseline drift. The corrected channels have been compiled as both profile maps and grids.

6 INTERPRETATION OVERVIEW

At the present time the electromagnetic data is available only in its raw form, as collected in the field. Most anomalies are identifiable at this stage but the reliable identification of weaker responses and reliable estimates of time-constants, conductivity and depth must await fully levelled and calibrated data.

The McFaulds VMS deposits discovered by Spider-KWG are copper-zinc bearing and have been compared to those in the Matagami area of Quebec. An electromagnetic signature has been identified at the sites, initially by the fixed-wing GeoTem system, as well as the VTEM and AeroTem helicopter systems. In addition to a conductivity anomaly the deposits tend to have an associated magnetic signature.

The conductivity expectations for a zinc rich VMS deposit are tempered by the fact that zinc sulphide is not a notable conductor as illustrated in table 1, below. Due to the usually associated presence of chalcopyrite and pyrrhotite, copper-zinc VMS deposits are often moderately conductive. It might be speculated that very rich zinc deposits may exist but remain undetected since the primary exploration method, electromagnetics, would be ineffective for a pure sphalerite deposit.

The Noront Eagle One is a copper-nickel VMS deposit. It also provided an electromagnetic signature on the fixed-wing and helicopter electromagnetic systems and has an associated magnetic anomaly. Nickel deposits can have very high associated conductivity.

A third deposit type in the area is the Spider, KWG, Freewest chrome-platinum-palladium discovery in a peridotite host. Conductivity expectations for such mineralization are variable; chromite is not a notable conductor but other sulphides in the formation may create a significant electromagnetic anomaly. The peridotite host is a notable magnetic rock.

Mineral		Conductivity (mhos/m)	Resistivity (ohm-m)
Millerite	NiS	3333333.33	3.00E-07
Niccolite	NiAs	50000.00	2.00E-05
Pyrrhotite	FeS	10000.00	1.00E-04
Arsenopyrite	FeAsS	1000.00	1.00E-03
Galena	PbS	500.00	2.00E-03
Chalcopyrite	CuFeS ₂	250.00	4.00E-03
Graphite	C	100.00	1.00E-02
Cassiterite	SnO ₂	5.00	2.00E-01
Pyrite	FeS ₂	3.33	3.00E-01
Magnetite	Fe ₃ O ₄	3.33	3.00E-01
Hematite	Fe ₂ O ₃	0.10	1.00E+01
Sphalerite	ZnS	0.01	1.00E+02

In the McFaulds Lake environment, a higher conductivity may be encouraging but is not considered a prerequisite for a significant deposit. Higher conductances might be considered more typical of the copper and nickel bearing mineralization while low to moderate conductances might be considered more typical of the copper-zinc or the chromitite-platinum group mineralization.

The conductivity anomalies of the known VMS deposits in the area are of limited size. This attribute of limited strike length is typical for VMS deposits in general. An isolated response, limited to a few flight lines is a normal expectation. A coincident or adjacent magnetic signature is also a common VMS attribute. A similar scale magnetic anomaly might be considered an encouraging factor but it should not be considered a prerequisite.

7 INTERPRETATION PROCEDURE

The analysis of the geophysical data was carried out on the full block without regard for property boundaries within. The electromagnetic profile data was reviewed line by line and anomalies of potential interest were identified. The location of the anomalies on each line was evaluated in a map presentation and conductor axes were interpreted.

All of the axes presented are interpreted to arise from conductors in the bedrock. Broad areas of elevated response that are interpreted to be associated with conductive overburden and sediments have not been included. The conductors have been provided a report identifier " Area# - reference# ". No significance is attached to the numerical sequence. The interpretation map was then divided in accordance with property boundaries and the map contents and related geophysical comments for the specific client are included with this report.

8 DISCUSSION AND RECOMMENDATIONS

- 1-12 This long conductor is aligned WSW-ENE and follows magnetic formation. The response is well defined and the shape implies a relatively narrow steeply dipping source. At the NE end there is evidence of a NNW dip developing. The strike length of 1700 m is not typical of the McFaulds style of mineralization but investigation may be warranted. Initial focus could be at the ENE end near conductor 13.
- 1-13 This short conductor is aligned SW-NE and lies adjacent to a small magnetic complex at the ENE end of conductor 12. Investigation is recommended and ground investigation should be extended to include the ENE end of conductor 12.
- 1-24 This short conductor is aligned SW-NE and is associated with a small isolated magnetic anomaly. The shape suggests a narrow width with steep dip to the northwest. Investigation is recommended.

Extending southwest from anomaly 24 is another conductive axis that follows a weak magnetic trend. The anomaly is broader than 24 and could be associated with conductive overburden. Ground investigation of anomaly 24 might be extended to the southwest to evaluate the northeastern end of this conductor and its possible relationship to the main conductor 24.

- 1-25 The McFaulds#1 anomaly is well defined on 3 lines and is coincident with a strong isolated magnetic anomaly. The profile shape is consistent with a near vertical dip and significant width.
- 1-26 The McFaulds#2 anomaly is a well-defined single line response. It has no obvious magnetic association. The profile shape is consistent with a near vertical dip and significant width.
- 1-27 The McFaulds#3 anomaly is a well-defined on the central profile with a minor response on adjacent lines. Like McFaulds#1 is has an associated strong isolated magnetic anomaly. The profile shape is consistent with a near vertical dip and significant width.
- 1-28 The McFaulds#4 anomaly is a well-defined on two flight lines and a secondary single line anomaly is evident just to the southwest. There is a suggestion of a related magnetic anomaly; however, a near NS trending linear magnetic zone is also present. There is a suggestion in the magnetic map of an EW fault that separates the two elements of anomaly 28. The profile shape is consistent with a near vertical dip and significant width.
- 1-29 To the southeast of the McFaulds#3 anomaly is a well-defined single line response with a shape that might indicate a dip to the northwest. There is no significant associated magnetic anomaly. Investigation is recommended.

- 1-30 To the south of the McFaulds#3 anomaly, there is an area of broad, high amplitude response that is suggestive of conductive overburden. Within this zone is a localized narrower response that might reflect bedrock mineralization. There is no corresponding magnetic response. The source of this anomaly may be similar to anomaly 29 and follow up might secondary to investigation of 29.
- 1-31 To the northeast of the McFaulds#3 anomaly is a weak single line response with a shape that might indicate a dip to the northwest. There is no significant associated magnetic anomaly. The source of this anomaly may be similar to anomaly 29 and follow up might secondary to investigation of 29.
- 1-32 There is the possibility of a weak conductor, aligned SSW-NNE at this location. There is no directly corresponding magnetic anomaly although the axis is aligned with the magnetic fabric. The anomaly is not typical of McFaulds style mineralization and no follow up is recommended at this time.
- 1-35 An isolated moderate amplitude single line anomaly. The anomaly has no direct magnetic association but is surrounded by a magnetic formation. Investigation is recommended.
- 2-01 A weak conductor on 2 flight lines. Aligned near NS with the magnetic fabric but no obvious direct magnetic correlation. Investigation suggested on lower priority.
- 2-20 A broad conductor axis, aligned with the magnetic fabric but may be associated with electrolytes in a fault or shear. Investigation is not recommended at this time.
- 10-02 A well defined response whose shape indicates a northern dip. It is a one line response on the flank of a SW-NE trending magnetic formation. Follow up investigation is recommended.
- 10-03 A very weak response that follows axis of a magnetic unit for several lines. No further investigation recommended at this time.
- 10-04 A very weak response that follows axis of a magnetic unit for several lines. The profile shape is suggestive of a shallow north dip. No further investigation recommended at this time.
- 10-06 A strong early to late time response that follows an axis defined by a sequence of isolated magnetic anomalies along the northern margin of a magnetic formation aligned WSW-ENE. The profile shape suggests a north dip and or multiple conductive bands. Follow up investigation is recommended with particular focus at the central magnetic anomaly.
- 10-07 A strong early to late time response that follows an axis defined by a sequence of isolated magnetic anomalies along the northern margin of a magnetic formation aligned WSW-ENE. The profile shape suggests a north dip and or multiple conductive bands. Follow up investigation is recommended with particular focus at the central magnetic anomaly.
- 10-08 A very weak response axis that continues the trend defined by the stronger responses to the northeast. No further investigation recommended at this time.

- 10-09 A very weak response that follows the north flank of a narrow magnetic unit. The profile shape is suggestive of a north dip. No further investigation recommended at this time.
- 10-10 A moderate to strong response that follows the north flank of a narrow magnetic unit. The profile shape is suggestive of a north dip. This is not a McFauld style short strike length conductor; however, where the response is strongest with higher conductance investigation is warranted.
- 10-11 A weak response that follows the north flank of a narrow magnetic unit. The profile shape is suggestive of a north dip. No further investigation recommended at this time.
- 10-12 A strong response that follows the north flank of a narrow magnetic unit. The profile shape is suggestive of a north dip. This is not a McFauld style short strike length conductor; however, investigation is warranted.
- 10-13 This small, localized conductor is best defined on the control line. The amplitude is low to moderate but the isolated nature is intriguing. Investigation may be warranted.
- 10-14 A moderate response that coincides with a somewhat isolated magnetic anomaly. Follow up investigation is warranted.
- 10-15 A well defined response of moderate to strong amplitude that follows a magnetic formation. To the south the formation and conductor strike NNE then both curve to strike eastward. The conductor follows the curve to the east but terminates while the magnetic unit continues. Follow up would be warranted but not necessarily along the entire trend. A focal point may become apparent after final processing.
- 10-16 A small, isolated one line response. The amplitude is low to moderate but the isolated nature is intriguing. Investigation may be warranted.
- 10-17 This conductor axis is flanked by weak magnetic axes. The profile shape suggests a northeast dip. The amplitude and conductance appear higher towards the eastern end. Follow up might be warranted.
- 10-18 This conductor axis is flanked by weak magnetic axes. The profile shape suggests a northeast dip. The amplitude and conductance appear higher in the central section. Follow up might be warranted.
- 10-19 A small, weak one line response. The amplitude is low and investigation is not recommended at this time.
- 10-20 A weak axis that follows a linear magnetic unit. No further investigation recommended at this time.
- 10-21 This strong response is expressed on two flight lines. The axis flanks a lower. The profile shape indicates a north dip. Follow up investigation is warranted.

- 10-22 A small, weak response on two flight lines. The amplitude is low and investigation is not recommended at this time.
- 10-23 A well defined response on two flight lines, between two magnetic anomalies. The amplitude is greatest at the eastern end and investigation is warranted.
- 10-24 A small, weak one line response. The amplitude is low and investigation is not recommended at this time.
- 10-25 This well defined response is expressed on one flight line with an associated magnetic unit adjacent to the south. Both the EM and magnetic anomalies may be very local or continue westward beyond the survey boundary. There is a suggestion in the profile shape of a southern dip. Follow up investigation is warranted.
- 10-26 This well defined response is expressed on one flight line with an associated magnetic unit. The discrete nature of both the magnetic and conductive body is encouraging and follow up investigation is recommended.

Respectfully submitted,

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Toronto, Canada
April 10, 2008

APPENDIX I – AEROQUEST REPORT

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



Aeroquest Job # 08055

Double Eagle Block

McFaulds Lake Camp, Ontario, Canada
NTS 043C13, 043D09, 043D16

For

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by



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Report date: February 2008

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- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- ZOFF0 – AeroTEM Z0 Off-time with line contours and EM anomaly symbols.
- EM – AeroTEM off-time profiles Z1 – Z11 and EM anomaly symbols.

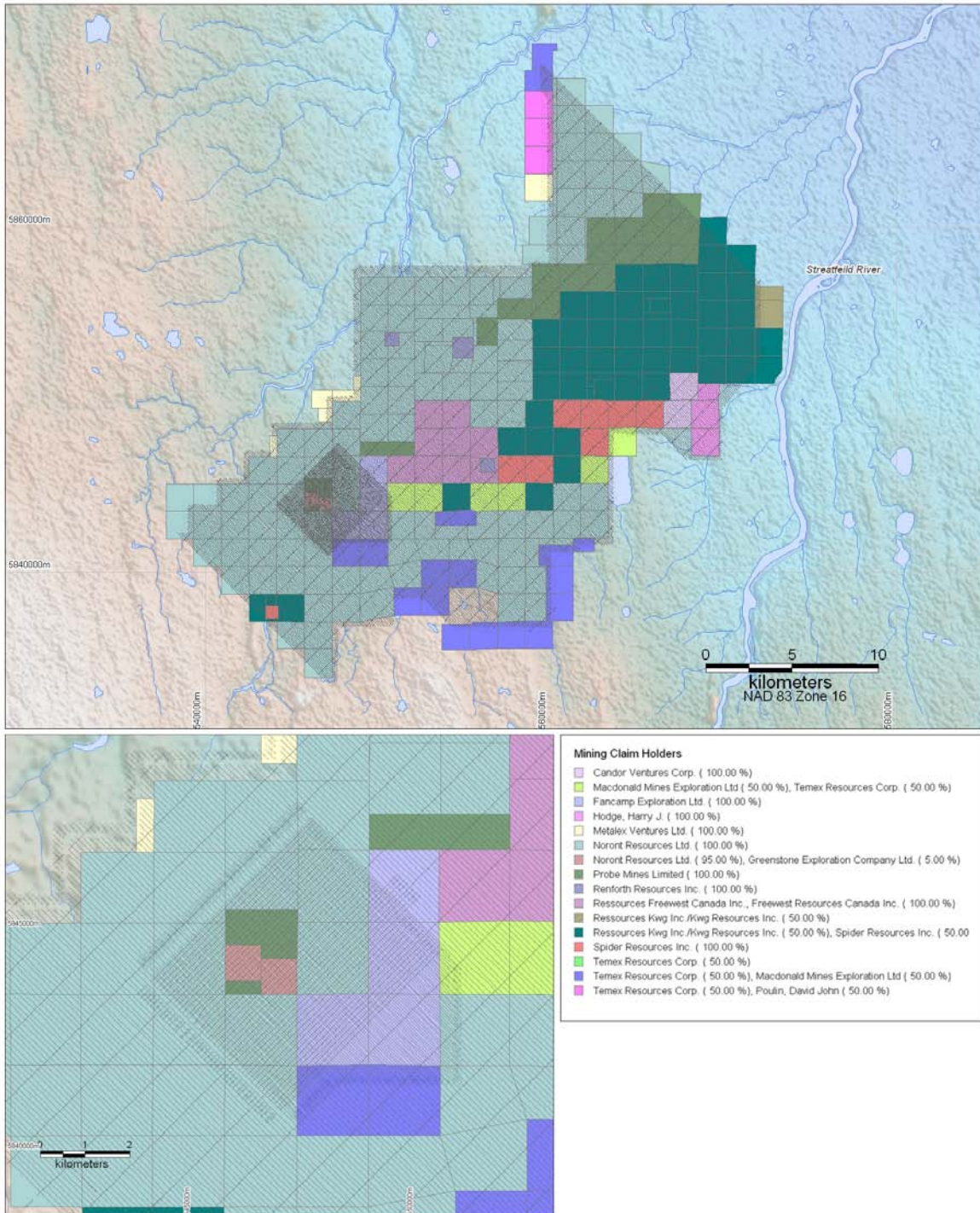


Figure 2. Project flight path and mining claims and shaded topography

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)	Date flown
Double Eagle	100	NW-SE (135°)	5830.5	October 15 to November 26, 2007
Infill	50	NE-SW (45°), NW-SE (135°)	445.7	October 15 to November 26, 2007

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, with infill at 50m. The control (tie) lines were flown perpendicular to the survey lines with a spacing of 1000 metres.

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 17 metres above the EM bird and 21 metres below the helicopter (Figure 4). A second magnetometer is installed on the tail of the EM bird. 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 an RMS DGR-33 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 less than 0.6 metres and for z less than 1.5 metres over a two-hour period.

3.2. SYSTEM DRIFT

Unlike frequency domain electromagnetic systems, the AeroTEM II 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 the RMS 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 and conversion of the RMS data to an ASCII format XYZ data file; 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 preliminary 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 reflown.

4. AIRCRAFT AND EQUIPMENT

4.1. AIRCRAFT

A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter - registration C-GPTY was used as survey platform. The helicopter was owned and operated by Hi-Wood Helicopters, Calgary, Alberta. Installation of the geophysical and ancillary equipment was carried out by Aeroquest Limited personnel in conjunction with a licensed aircraft. The survey aircraft was flown at a nominal terrain clearance of 220 ft (65 metres).



Figure 3. Helicopter registration number C-GPTY

4.2. MAGNETOMETER

The AeroTEM II 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, 21 metres below the helicopter (Figure 4). 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 51 metres (170 ft.). The magnetic data is recorded at 10 Hz by the RMS DGR-33.

4.3. MAGNETOMETER II

In addition to the main magnetometer bird on the main tow line, the AeroTEM II system includes an additional G-828A magnetometer installed on the tail of the EM bird (Figure 4). The sensor is located 37 metres below the helicopter and has a superior nominal terrain clearance of 31 m. Data is recorded at 300 samples a second and down sampled to 10 Hz by the AeroDAS acquisition system.



Figure 4. AeroTEM II EM bird. Arrow indicates the location of the second caesium magnetometer sensor.

4.4. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM II time domain towed-bird system (Figure 4, Figure 5). The current AeroTEM II transmitter dipole moment is 38.8 kNIA. The AeroTEM bird is towed 38 metres (125 ft) below the helicopter. More technical details of the system may be found in Appendix 4.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1.10 ms and a base frequency of 150 Hz (Figure 5). The current alternates polarity every on-time pulse. During every Tx on-off cycle (300 per second), 120 contiguous channels of raw X and Z component (and a transmitter current monitor, itx) of the received waveform are measured. Each channel width is 27.78 microseconds starting at the beginning of the transmitter pulse. This 120 channel data is referred to as the raw streaming data. The AeroTEM system has two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system which records the full waveform (Figure 6).

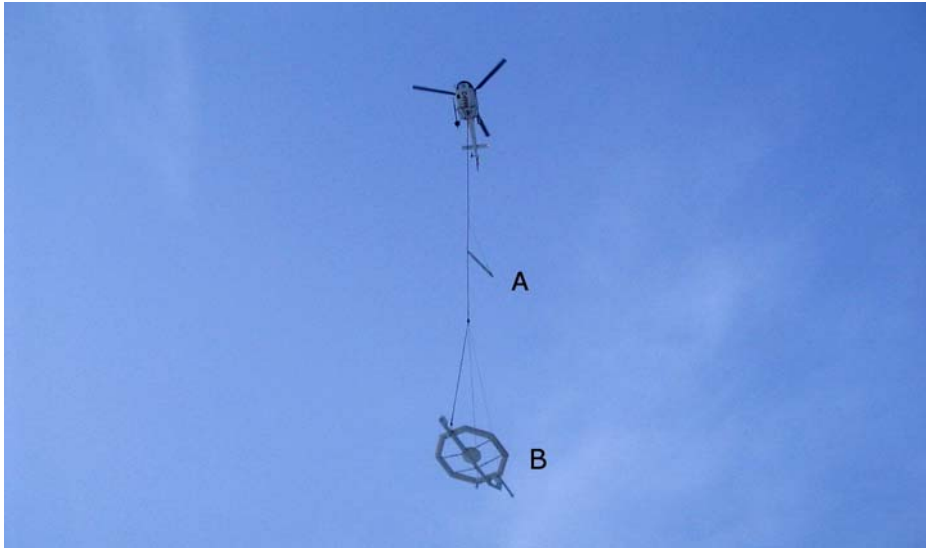


Figure 5. The magnetometer bird (A) and AeroTEM II EM bird (B)

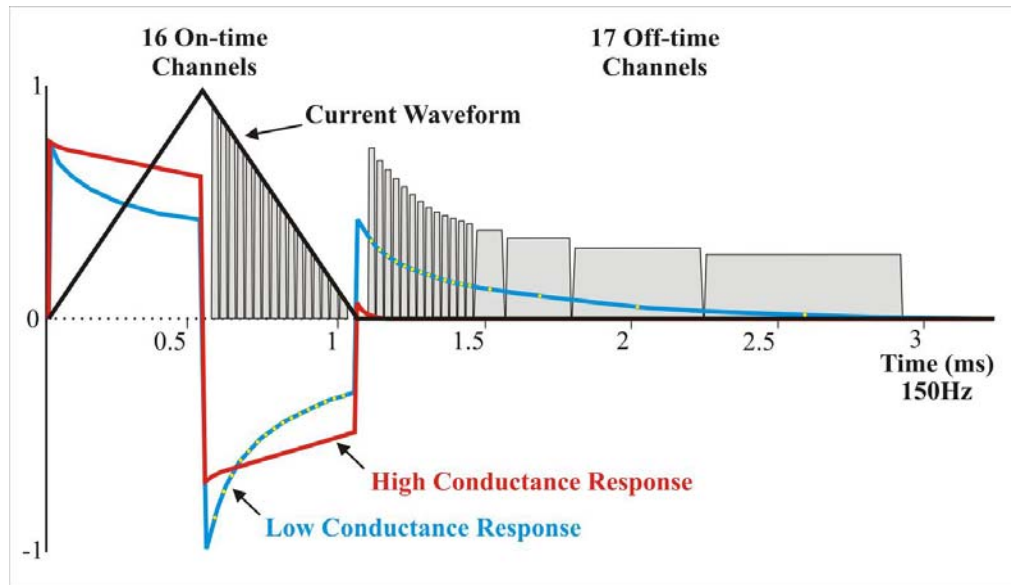


Figure 6. Schematic of Transmitter and Receiver waveforms

4.5. AERODAS ACQUISITION SYSTEM

The 120 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 7) onto a removable hard drive. 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	-3.9010 us
Average TxSwitch	582.2389 us

Channel	Sample	Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
On1	3	3 - 3	27.778	69.444	73.345
On2	4	4 - 4	27.778	97.222	101.123
On3	5	5 - 5	27.778	125.000	128.901
On4	6	6 - 6	27.778	152.778	156.679
On5	7	7 - 7	27.778	180.556	184.457
On6	8	8 - 8	27.778	208.333	212.234
On7	9	9 - 9	27.778	236.111	240.012
On8	10	10 - 10	27.778	263.889	267.790
On9	11	11 - 11	27.778	291.667	295.568
On10	12	12 - 12	27.778	319.444	323.345
On11	13	13 - 13	27.778	347.222	351.123
On12	14	14 - 14	27.778	375.000	378.901
On13	15	15 - 15	27.778	402.778	406.679
On14	16	16 - 16	27.778	430.556	434.457
On15	17	17 - 17	27.778	458.333	462.234
On16	18	18 - 18	27.778	486.111	490.012

Channel	Sample	Range	Time Width (us)	Time Center (us)	Time After TxOff (us)
Off0	44	44 - 44	27.778	1208.333	80.019
Off1	45	45 - 45	27.778	1236.111	107.797
Off2	46	46 - 46	27.778	1263.889	135.575
Off3	47	47 - 47	27.778	1291.667	163.353
Off4	48	48 - 48	27.778	1319.444	191.130
Off5	49	49 - 49	27.778	1347.222	218.908
Off6	50	50 - 51	55.556	1388.889	260.575
Off7	52	52 - 53	55.556	1444.444	316.130
Off8	54	54 - 55	55.556	1500.000	371.686
Off9	56	56 - 57	55.556	1555.556	427.241
Off10	58	58 - 60	83.333	1625.000	496.686
Off11	61	61 - 63	83.333	1708.333	580.019
Off12	64	64 - 67	111.111	1805.556	677.241
Off13	68	68 - 73	166.667	1944.444	816.130
Off14	74	74 - 81	222.222	2138.889	1010.575
Off15	82	82 - 94	361.111	2430.556	1302.241
Off16	95	95 - 114	555.556	2888.889	1760.575

4.6. RMS DGR-33 ACQUISITION SYSTEM

In addition to the magnetics, altimeter and position data, six channels of real time processed off-time EM decay in the Z direction and one in the X direction are recorded by the RMS DGR-33 acquisition system at 10 samples per second and plotted real-time on the analogue chart recorder. These channels are derived by a binning, stacking and filtering procedure on the raw streaming data. The primary use of the RMS EM data (Z1 to Z6, X1) is to provide for real-time QA/QC on board the aircraft.

The channel window timing of the RMS DGR-33 6 channel system is described in the table below.

RMS Channel	Start time (µs)	End time (µs)	Width (µs)	Streaming Channels
Z1, X1	1269.8	1322.8	52.9	48-50
Z2	1322.8	1455.0	132.2	50-54
Z3	1428.6	1587.3	158.7	54-59
Z4	1587.3	1746.0	158.7	60-65
Z5	1746.0	2063.5	317.5	66-77
Z6	2063.5	2698.4	634.9	78-101



Figure 7. AeroTEM II Instrument Rack., including AeroDAS and RMS DGR-33 systems, AeroTEM power supply, data acquisition computer and AG-NAV2 navigation system.

4.7. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-859 cesium vapour magnetometer system with integrated GPS. Data logging and UTC time synchronisation was carried out within the magnetometer, 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.

4.8. 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.

4.9. VIDEO TRACKING AND RECORDING SYSTEM

A high resolution digital colour 8 mm video camera 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 8. Digital video camera typical mounting location.

4.10. 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 16N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

4.11. DIGITAL ACQUISITION SYSTEM

The AeroTEM received waveform sampled during on and off-time at 120 channels per decay, 300 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 microseconds. The streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

The RMS Instruments DGR33A data acquisition system was used to collect and record the analogue data stream, i.e. the positional and secondary geophysical data, including processed 6 channel EM, magnetics, radar altimeter, GPS position, and time. The data was recorded on 128 Mb capacity FlashCard. The RMS output was also directed to a thermal chart recorder.

5. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Manager of Operations: Bert Simon
- Manager of Data Processing: Gord Smith
- Field Data Processor: Geoff Plastow, Ali Latrous, Ericka Solano, Tim Moore
- Field Operator: Viktor Shevchenko, Roberto Tito, Lennox Lewis, Claude Goulet, Ioan Serbu
- Data Interpretation and Reporting: Alex Prikhodko, Marion Bishop

The survey pilots, Joel Reavie and Ted Slavin, were employed directly by the helicopter operator – Hi-Wood Helicopters.

6. DELIVERABLES

6.1. HARDCOPY DELIVERABLES

The report includes a set of 12 1:20,000 maps and 3 1:10,000 maps. The survey area is covered by five map plates, four for the Double Eagle block and a single plate for the Infill area. Three geophysical data products are delivered as listed below:

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- ZOFF0 – AeroTEM Z0 Off-time with line contours and EM anomaly symbols.
- EM – AeroTEM off-time profiles Z1 – Z11 and EM anomaly symbols.

The coordinate/projection system for the maps is NAD83 – UTM Zone 16N. 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 off-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 and survey specifications are displayed on the left margin of the maps.

6.2. DIGITAL DELIVERABLES

6.2.1. Final Database of Survey Data (.GDB, .XYZ)

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. A copy of this digital data is archived at the Aeroquest head office in Mississauga.

6.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. Cell size for all grid files is 20 metres.

- Total Magnetic Intensity from Mag sensor on the tow cable (MagU)
- AeroTEM Z Offtime Channel 1 (ZOFF0)

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 Navigation Files (.KML)

Flight navigation lines in Google earth KML 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 16 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 16 (Central Meridian 87°W)
- 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 derived from Natural Resources Canada 1:250000 National Topographic Data Base data and the background shading was derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metre 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 (120 channels, 300 times per second) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Limited. Processing involves the compensation of the X and Z component data for the primary field waveform. Coefficients for this compensation for the system 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 filtering of the stacked data is designed to remove or minimize high frequency noise that can not be sourced from the geology.

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.

Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the off-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 the optimal 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 off-time 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 a bi-directional grid technique with a grid cell size of 20 metres. The final levelled grid provided the basis for threading the presented contours which have a minimum contour interval of 50 nT.

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 Limited.

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 pyrrhotite.

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 x-component response (Figure 9). 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 10). 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 11). 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.

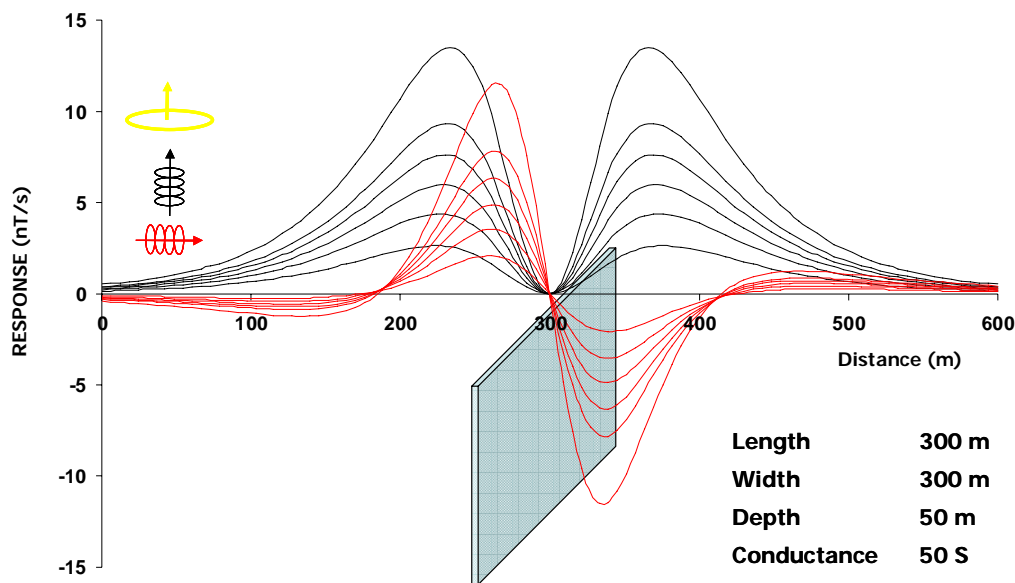


Figure 9. AeroTEM response to a ‘thin’ vertical conductor.

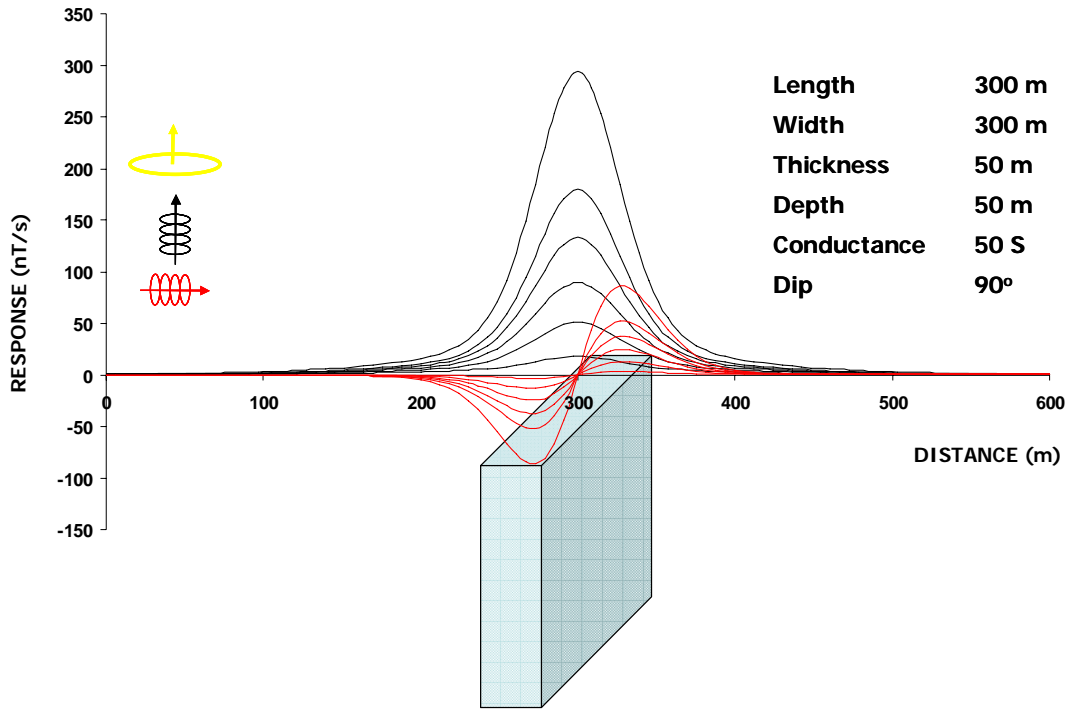


Figure 10. AeroTEM response for a 'thick' vertical conductor.

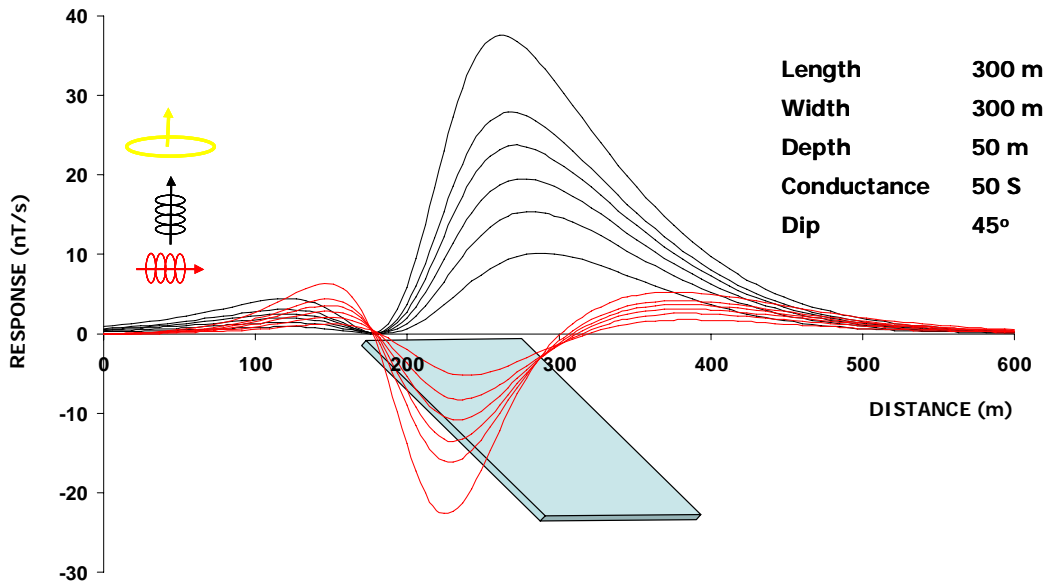


Figure 11. AeroTEM response over a 'thin' dipping conductor.



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.

Respectfully submitted,

Dr. Alex Prikhodko PhD
Geophysicist
Aeroquest Limited
February 2008

Reviewed By:

Doug Garrie
Aeroquest Limited
February 2008

APPENDIX 1: SURVEY BOUNDARIES

The following table presents the Extension block boundaries. All geophysical data presented in this report have been windowed to these outlines. X and Y positions are in metres: NAD83 UTM Zone 16N.

Double Eagle Block

X	Y
559461.2	5869468.8
572038.9	5856897.6
572040.8	5852334.0
572010.3	5852224.8
570011.3	5849722.5
569830.0	5849722.4
569830.0	5846612.0
567954.0	5846596.3
566468.6	5848101.6
563514.0	5848136.6
563498.8	5841786.6
563441.6	5841701.5
561601.4	5841701.5
561548.0	5841332.0
561441.4	5841298.9
559900.8	5841282.4
559902.1	5837039.4
559864.0	5836933.9
554174.2	5836935.5
552467.1	5838633.9
550834.3	5838610.3
550834.3	5837053.3
550763.2	5836984.8
547531.0	5836963.2
547523.4	5833718.3
546931.5	5833719.7
538456.9	5842189.8
539036.0	5842207.0
539034.7	5843762.7
539103.3	5843835.1
540660.3	5843835.1
540704.8	5843930.4
540704.8	5845345.2
542261.8	5845345.2
542289.8	5845458.2
542289.8	5846874.2
542335.5	5846966.9
543892.5	5846966.9
543896.3	5848516.3
543967.4	5848586.2
547054.8	5848610.3
547054.8	5850026.4
547114.5	5850107.7
548633.4	5850143.2
548633.4	5857641.3
548717.2	5857694.6
558732.0	5857715.2
558724.0	5858000.0
559850.0	5858005.0
559877.9	5867527.1
559459.0	5867951.3

Infill Block

X	Y
544118.9	5843897.1
547734.1	5847494.0
549277.5	5845950.3
549781.5	5845446.1
550656.6	5844570.9
550668.5	5841841.7
547893.7	5841841.7
547034.9	5840986.4

APPENDIX 2: MINING CLAIMS

From Government of Ontario ClaimMaps (February 2008)

Claim Number	Township Area	Recorded Holder	Due Date
3011929	BMA 527861 (G-4306)	Candor Ventures Corp. (100.00 %)	2008-JUN-08
3011934	BMA 527861 (G-4306)	Candor Ventures Corp. (100.00 %)	2008-JUN-08
4212364	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
4212366	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
4221150	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
4221151	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
4221152	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
4221153	BMA 527861 (G-4306)	Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %), Temex Resources Corp. (50.00 %)	2009-SEP-14
3012254	BMA 527862 (G-5131)	Fancamp Exploration Ltd. (100.00 %)	2008-APR-22
3012255	BMA 527862 (G-5131)	Fancamp Exploration Ltd. (100.00 %)	2008-APR-22
3012257	BMA 526862 (G-5130)	Fancamp Exploration Ltd. (100.00 %)	2008-APR-22
3012258	BMA 526862 (G-5130)	Fancamp Exploration Ltd. (100.00 %)	2008-APR-22
3011930	BMA 527854 (G-4219)	Hodge, Harry J. (100.00 %)	2008-JUN-08
3011933	BMA 527854 (G-4219)	Hodge, Harry J. (100.00 %)	2008-JUN-08
3011936	BMA 527854 (G-4219)	Hodge, Harry J. (100.00 %)	2008-JUN-08
4219841	BMA 527862 (G-5131)	Metalex Ventures Ltd. (100.00 %)	2009-OCT-26
4219863	BMA 527862 (G-5131)	Metalex Ventures Ltd. (100.00 %)	2009-OCT-26
4219865	BMA 527862 (G-5131)	Metalex Ventures Ltd. (100.00 %)	2009-OCT-26
4225787	BMA 527862 (G-5131)	Metalex Ventures Ltd. (100.00 %)	2009-DEC-20
4225791	BMA 527862 (G-5131)	Metalex Ventures Ltd. (100.00 %)	2009-DEC-20
4225804	BMA 528861 (G-4307)	Metalex Ventures Ltd. (100.00 %)	2009-DEC-20
1221423	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-AUG-27
3005622	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-AUG-27
3005667	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2008-NOV-27
3005668	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2008-NOV-27
3005669	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2008-NOV-27
3005670	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2008-NOV-27
3008260	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-JUL-31
3008261	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-JUL-31
3008266	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-JUL-31
3008267	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-JUL-31
3008687	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-OCT-08
3008773	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-AUG-27
3008774	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-AUG-27
3011019	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3011020	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3011021	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3011022	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3011024	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3011025	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2008-APR-14
3012256	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2008-APR-22
3012259	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-APR-22
3012260	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-APR-22



Claim Number	Township Area	Recorded Holder	Due Date
3012261	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-APR-22
3012262	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2008-APR-22
4215902	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4215903	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4215906	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4215907	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4215908	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4218188	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-DEC-03
4218887	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218888	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218889	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218890	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218901	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218902	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4218903	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4218904	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-04
4221428	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-DEC-03
4221429	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-DEC-03
4222679	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4225981	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4225982	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4225988	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4225989	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4225990	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4225998	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4225999	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226091	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226095	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226096	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226097	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226111	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226112	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226113	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226114	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-OCT-25
4226115	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226116	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226117	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226118	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226119	BMA 528861 (G-4307)	Noront Resources Ltd. (100.00 %)	2009-NOV-05
4226581	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226585	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226586	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226588	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226611	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226612	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226613	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226614	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226616	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226617	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09



Claim Number	Township Area	Recorded Holder	Due Date
4226624	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226625	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226626	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226627	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226628	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226631	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226632	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226633	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226635	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226636	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226639	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226640	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226651	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226652	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226653	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226654	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226655	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226656	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226657	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226658	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226659	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226661	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226662	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226663	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226665	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226672	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-NOV-21
4226675	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226676	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226677	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226678	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226679	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226680	BMA 526861 (G-5129)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226689	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226690	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-OCT-09
4226693	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226694	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226695	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226696	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226697	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226698	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226701	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226702	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226703	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226704	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226705	BMA 527861 (G-4306)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226707	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226708	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226709	BMA 526862 (G-5130)	Noront Resources Ltd. (100.00 %)	2009-SEP-12
4226710	BMA 527862 (G-5131)	Noront Resources Ltd. (100.00 %)	2009-SEP-12

Claim Number	Township Area	Recorded Holder	Due Date
3012264	BMA 526862 (G-5130)	Noront Resources Ltd. (95.00 %), Greenstone Exploration Company Ltd. (5.00 %)	2011-APR-28
3012265	BMA 526862 (G-5130)	Noront Resources Ltd. (95.00 %), Greenstone Exploration Company Ltd. (5.00 %)	2011-APR-28
3006707	BMA 527862 (G-5131)	Probe Mines Limited (100.00 %)	2008-JAN-04
3006708	BMA 526862 (G-5130)	Probe Mines Limited (100.00 %)	2008-JAN-04
3006709	BMA 526862 (G-5130)	Probe Mines Limited (100.00 %)	2008-JAN-04
3011921	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011922	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011923	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011924	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011925	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011926	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011927	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
3011928	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-DEC-08
4203872	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-NOV-17
4203873	BMA 528861 (G-4307)	Probe Mines Limited (100.00 %)	2009-NOV-17
4203874	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2009-NOV-17
4203875	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2009-NOV-17
4208213	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2008-MAR-07
4208214	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2008-MAR-07
4208215	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2008-MAR-07
4208216	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2008-MAR-07
4208219	BMA 527861 (G-4306)	Probe Mines Limited (100.00 %)	2008-MAR-07
4204946	BMA 527862 (G-5131)	Renforth Resources Inc. (100.00 %)	2008-JUN-05
4204947	BMA 527861 (G-4306)	Renforth Resources Inc. (100.00 %)	2008-JUN-05
4204948	BMA 527861 (G-4306)	Renforth Resources Inc. (100.00 %)	2008-JUN-05
3008268	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2010-AUG-11
3008269	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2008-AUG-11
3008793	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2009-AUG-11
3011027	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2008-APR-22
3011028	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2008-APR-22
3012250	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2011-APR-22
3012251	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2008-APR-22
3012252	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2008-APR-22
3012253	BMA 527861 (G-4306)	Ressources Freewest Canada Inc., Freewest Resources Canada Inc. (100.00 %)	2009-APR-22
4218195	BMA 527854 (G-4219)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %)	2009-DEC-10
4218196	BMA 527854 (G-4219)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %)	2009-DEC-10
1192078	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192079	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192080	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192081	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192082	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192083	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192084	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192085	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1192086	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-NOV-07
1242319	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2009-MAR-09
1242329	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2010-MAR-09
3001151	BMA 527861 (G-4306)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2008-APR-28
3005608	BMA 528854 (G-4190)	Ressources Kwg Inc./Kwg Resources Inc. (50.00 %), Spider Resources Inc. (50.00 %)	2008-APR-28

Claim Number	Township Area	Recorded Holder	Due Date
4204507	BMA 527861 (G-4306)	Spider Resources Inc. (100.00 %)	2008-JUN-05
4204509	BMA 527861 (G-4306)	Spider Resources Inc. (100.00 %)	2008-JUN-05
4204532	BMA 526862 (G-5130)	Spider Resources Inc. (100.00 %)	2008-MAR-02
4212364	BMA 527861 (G-4306)	Temex Resources Corp. (50.00 %)	2009-SEP-14
3015789	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
3015794	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4213083	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4220874	BMA 528861 (G-4307)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-NOV-09
4220875	BMA 528861 (G-4307)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-NOV-09
4221148	BMA 526862 (G-5130)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221149	BMA 526862 (G-5130)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221154	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221155	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221156	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221157	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4221164	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4223161	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4223162	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4223189	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4223190	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
4223191	BMA 526861 (G-5129)	Temex Resources Corp. (50.00 %), Exploration Miniere Macdonald Ltee/Macdonald Mines Exploration Ltd (50.00 %)	2009-SEP-14
3015791	BMA 528861 (G-4307)	Temex Resources Corp. (50.00 %), Poulin, David John (50.00 %)	2009-SEP-14
3015792	BMA 528861 (G-4307)	Temex Resources Corp. (50.00 %), Poulin, David John (50.00 %)	2009-SEP-14
3015793	BMA 528861 (G-4307)	Temex Resources Corp. (50.00 %), Poulin, David John (50.00 %)	2009-SEP-14

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 Nad83 Zone 16
y	m	UTM Nad83 Zone 16
Galtf	m	GPS altitude of Mag bird
bheight	m	Terrain clearance of EM bird
dtm	m	Digital Terrain Model
magU	nT	Final levelled total magnetic intensity from upper mag sensor installed in a bird 17 m above the EM bird.
magL	nT	Final levelled total magnetic intensity from lower mag sensor installed on the tail of the EM bird.
Basemagf	nT	Base station total magnetic intensity
pwrline		powerline monitor data channel
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
Zoff0	nT/s	Levelled Off-Time Z component Channels 0
TranOn	ms	Transmitter on
TranSwitch	ms	Transmitter switch
TranOff	ms	Transmitter off
TranPeak	ms	Transmitter peak
Off_Pick		Indicates a thick or thin conductor
Anom_labels		Alphanumeric label of conductor pick
Off_Con	S	Off-time conductance at conductor pick
Off_Tau	µs	Off-time decay constant at conductor pick
Anom_ID		Anomaly Character (K= thick, N = thin)
grade		Classification from 1-7 based on conductance of conductor pick
Off_allcon	S	Off-time conductance
Off_AllTau	µs	Off-time decay constant



APPENDIX 4: AEROTEM ANOMALY LISTING

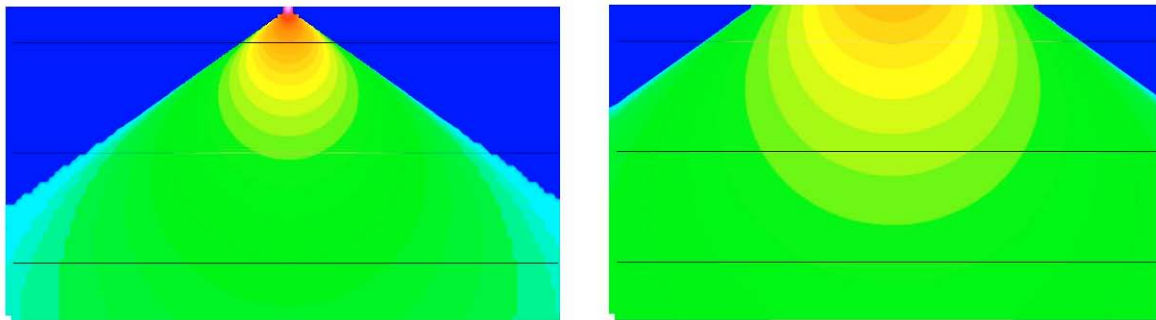
See accompanying DVD for Anomaly Listing

APPENDIX 5: 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 greater 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.

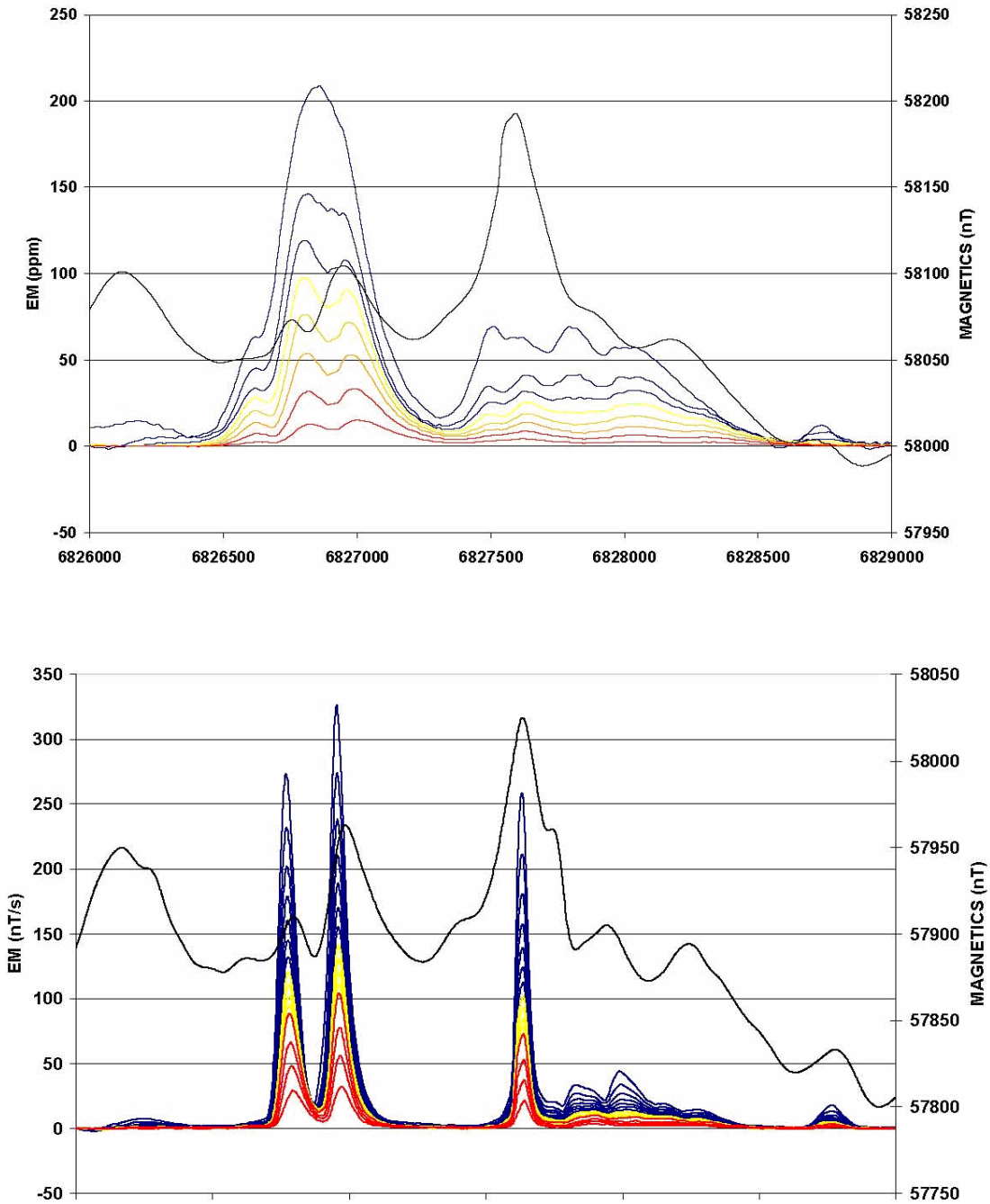


Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.

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.

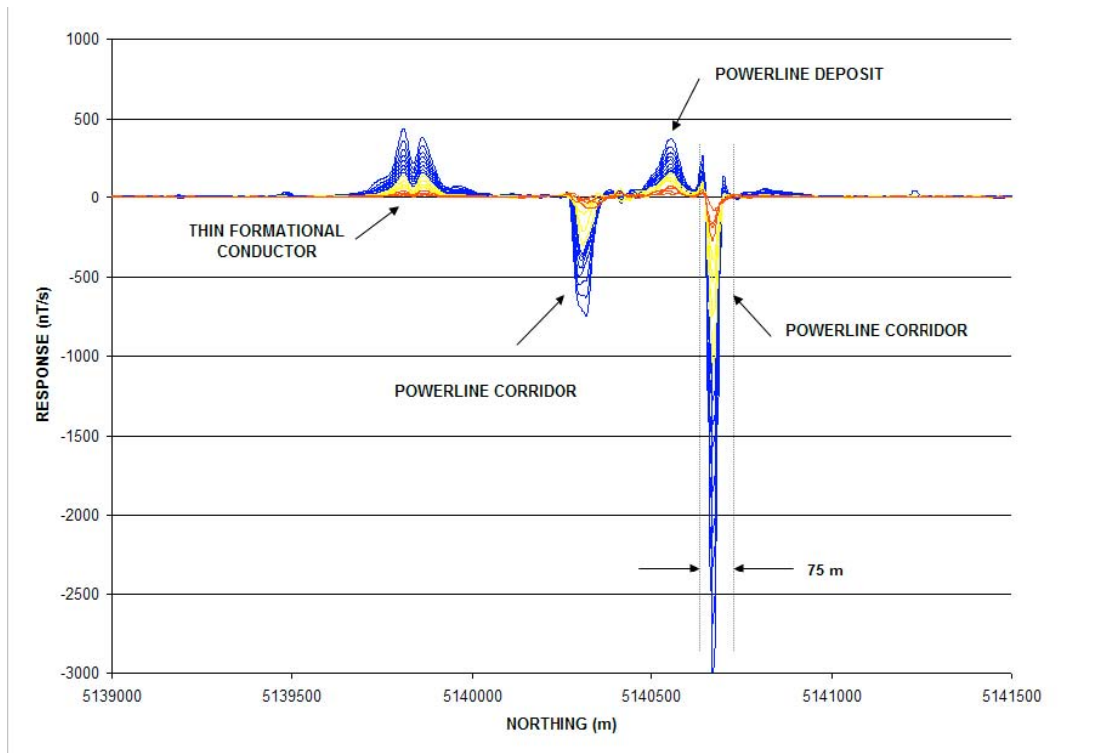


Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish 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.

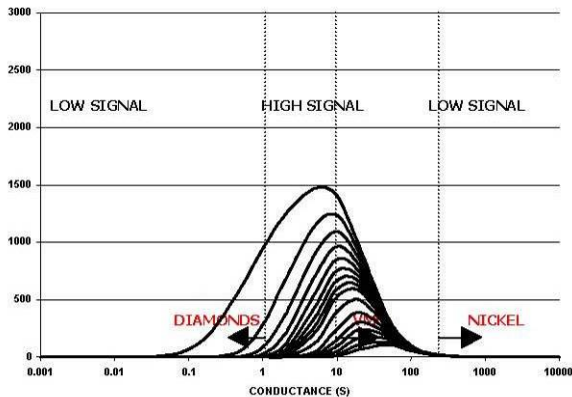
The peak response of a conductive target to an EM system is a function of the target conductance and the EM system base frequency. For time domain EM systems that measure only in the off-time, there is a drop in the peak response of a target as the base frequency is lowered for all conductance values 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.

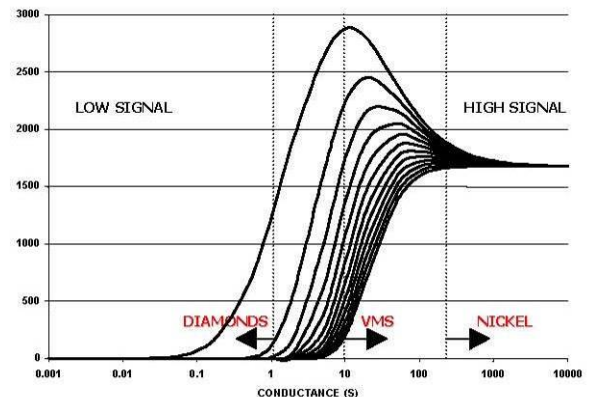
However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with 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 fixed-wing 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:

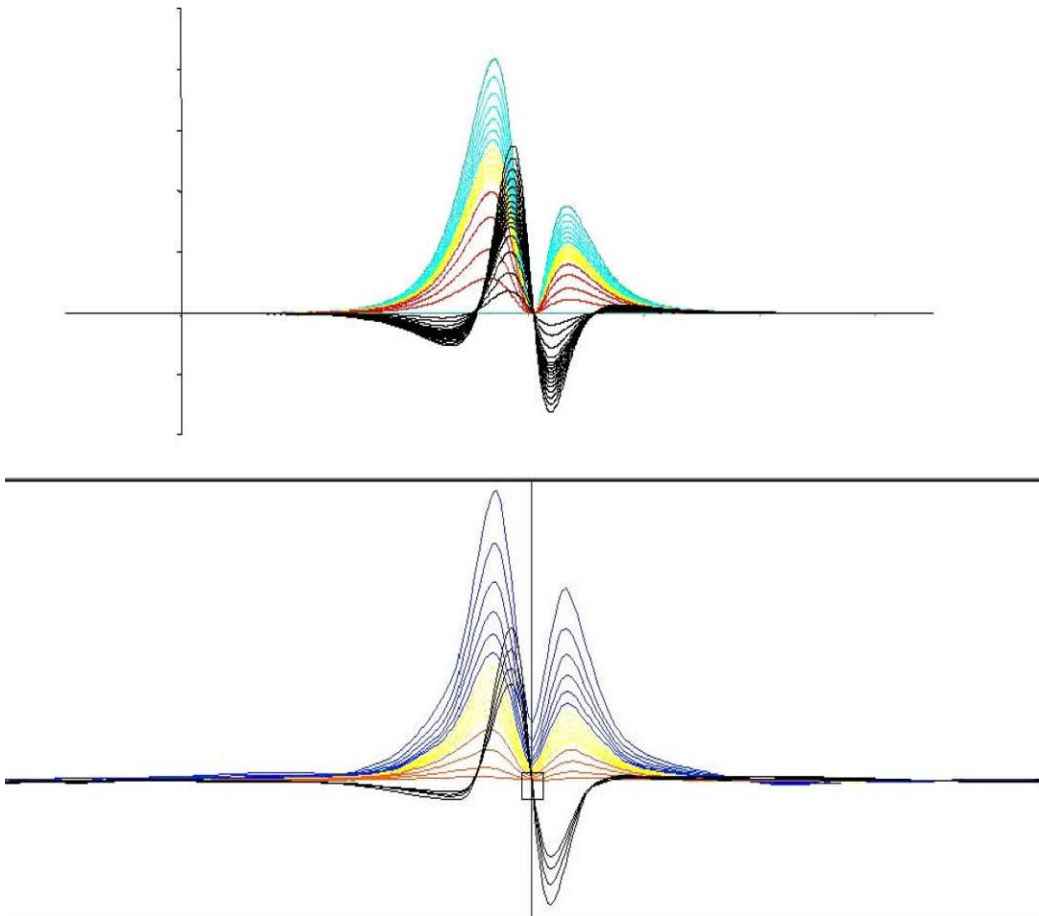


Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude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

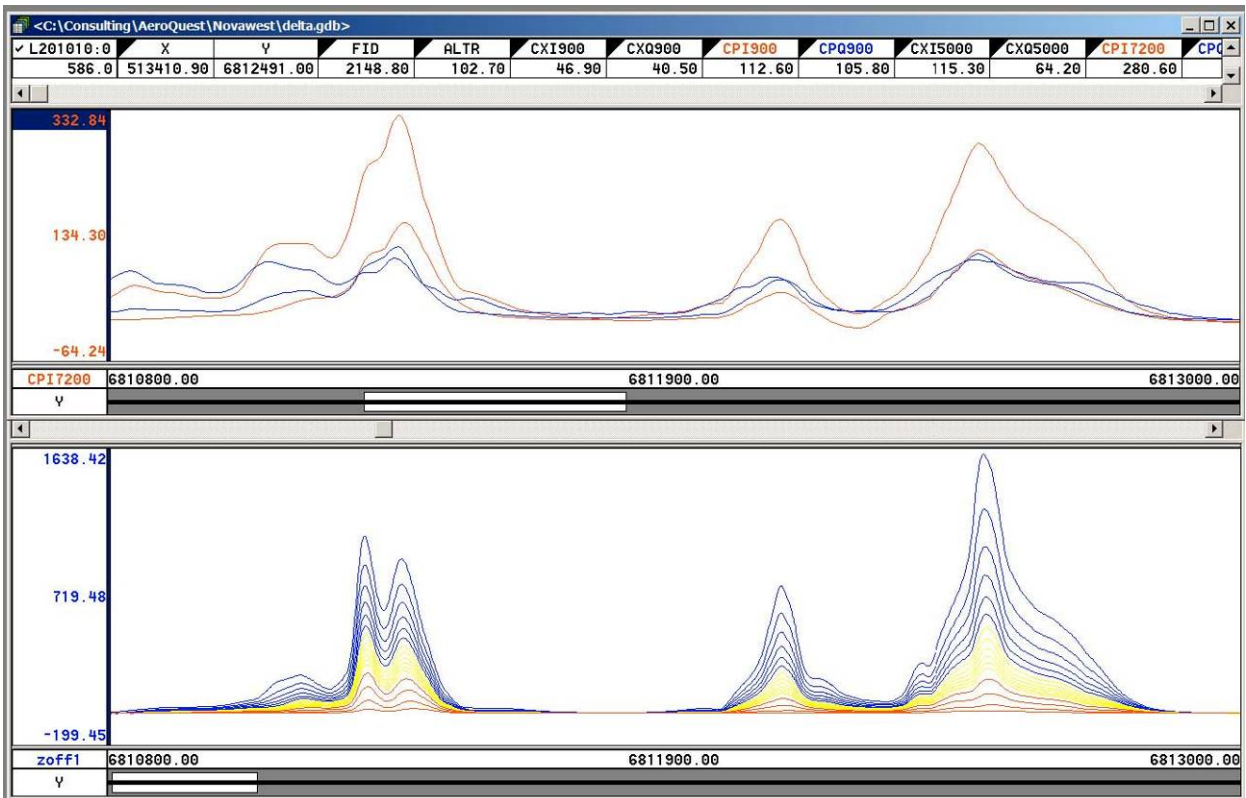


Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.

Aeroquest Limited 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 6: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 150 Hz
- Tx On Time - 1,150 (150 Hz) μ s
- Tx Off Time - 2,183 (150 Hz) μ s
- Loop Diameter - 5 m
- Peak Current - 250 A
- Peak Moment - 38,800 NIA
- Typical Z Axis Noise at Survey Speed = 5 nT peak to peak
- Sling Weight: 270 Kg
- Length of Tow Cable: 40 m
- Bird Survey Height: 30 m nominal

Receiver

- Two Axis Receiver Coils (x, z) positioned at centre of transmitter loop
- Selectable Time Delay to start of first channel 21.3 , 42.7, or 64.0 ms

Display & Acquisition

- AERODAS Digital recording at 120 samples per decay curve at a maximum of 300 curves per second (27.778 μ s channel width)
- RMS Channel Widths: 52.9, 132.3, 158.7, 158.7, 317.5, 634.9 μ s
- 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 nearly 40,000 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.