



Ministry of Energy & Mines
Energy & Minerals Division
Geological Survey Branch

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TITLE OF REPORT [type of survey(s)] Report on a Helicopter-Borne Aerotem System Electromagnetic & Magnetic Survey	TOTAL COST
--	------------

AUTHOR(S) Jonathan Rudd SIGNATURE(S) [Signature]

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) _____ YEAR OF WORK 2010

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) 4881547

PROPERTY NAME FAME

CLAIM NAME(S) (on which work was done) FAME 1, FAME 2, FAME 3, FAME 4, FAME 5, FAME 6, FAME 7, FAME 8, FAME 9, FAME 10, FAME 11

COMMODITIES SOUGHT Gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN 0920 019

MINING DIVISION Clinton NTS 092010W

LATITUDE 50 ° 30 ' 00 " LONGITUDE 122 ° 45 ' 54 " (at centre of work)

OWNER(S)

1) Richard Billingsly 2) San Antonio Ventures Inc.

MAILING ADDRESS

#430-580 Hornby St
Vancouver, BC V6C 3B6

OPERATOR(S) (who paid for the work)

1) Max Investments Ltd. 2) _____

MAILING ADDRESS

3750 West 49th Ave
Vancouver, BC V6N 3T8

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Lower to Middle Jurassic volcanics intruded by granodiorites of the Mount Alex Plutonic Complex. Mineralization comprizes quartz vein breccias and stockworks associated with NW and NE trending structures.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS _____

(OVER)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
Airborne Geophysics	400 KM	All	

GEOLOGICAL (scale, area)

Ground, mapping _____
 Photo interpretation _____

GEOPHYSICAL (line-kilometres)

Ground
 Magnetic _____
 Electromagnetic _____
 Induced Polarization _____
 Radiometric _____
 Seismic _____
 Other _____
 Airborne 405.1 line km all claims All \$80,000

GEOCHEMICAL

(number of samples analysed for ...)

Soil _____
 Silt _____
 Rock _____
 Other _____

DRILLING

(total metres; number of holes, size)

Core _____
 Non-core _____

RELATED TECHNICAL

Sampling/assaying _____
 Petrographic _____
 Mineralographic _____
 Metallurgic _____

PROSPECTING (scale, area)

PREPARATORY/PHYSICAL

Line/grid (kilometres) _____
 Topographic/Photogrammetric (scale, area) _____
 Legal surveys (scale, area) _____
 Road, local access (kilometres)/trail _____
 Trench (metres) _____
 Underground dev. (metres) _____
 Other _____

TOTAL COST \$80,000

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



Aeroquest Job # 11-003

Fame Project

NTS 0902007, O10

For

**BC Geological Survey
Assessment Report
31886**

Max Investments Inc.

3750 West 49th Ave.
Vancouver, B.C., V6N 3T8

By



7687 Bath Road,
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Tel: (905) 672-9129
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www.aeroquest.ca

Report date: December 2010

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

Aeroquest Job # 11-003

Fame Project
NTS 0902O07, O10

For

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LIST OF MAPS (1:10,000)

- TMI-RTP – Total Magnetic Intensity Reduced to the Pole colour grid with contours and EM anomaly symbols.
- 1VD– First Vertical Derivative of TMI-RTP grid with contours, and EM anomaly symbols.
- EM Anomaly– Flight Path with EM anomaly symbols.
- Res – Apparent Resistivity (Early Time Channel) grid with contours

1. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Max Investments Inc, for Fame project near Big Creek Lodge, BC.

The principal geophysical sensor is Aeroquest's exclusive AeroTEM III (November) time domain helicopter 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 total survey coverage is 419 line-km, of which 405 line-km fell within the defined project area (Appendix 1). The survey was made up of one block, flown at 100 metre line spacing and at 90°/270° flight direction (Table 1). The survey flying described in this report took place on November 11th- November 14th, 2010. This report describes the survey logistics, the data processing, presentation, and provides the specifications of the survey.

2. PROPERTY

The Fame property consists of eleven contiguous mineral claims located in the Clinton Mining Division in Compliance with the regulations of the MEMPR of the Province of British Columbia, comprising approximately 3200 hectares (see Figure 1 for details).

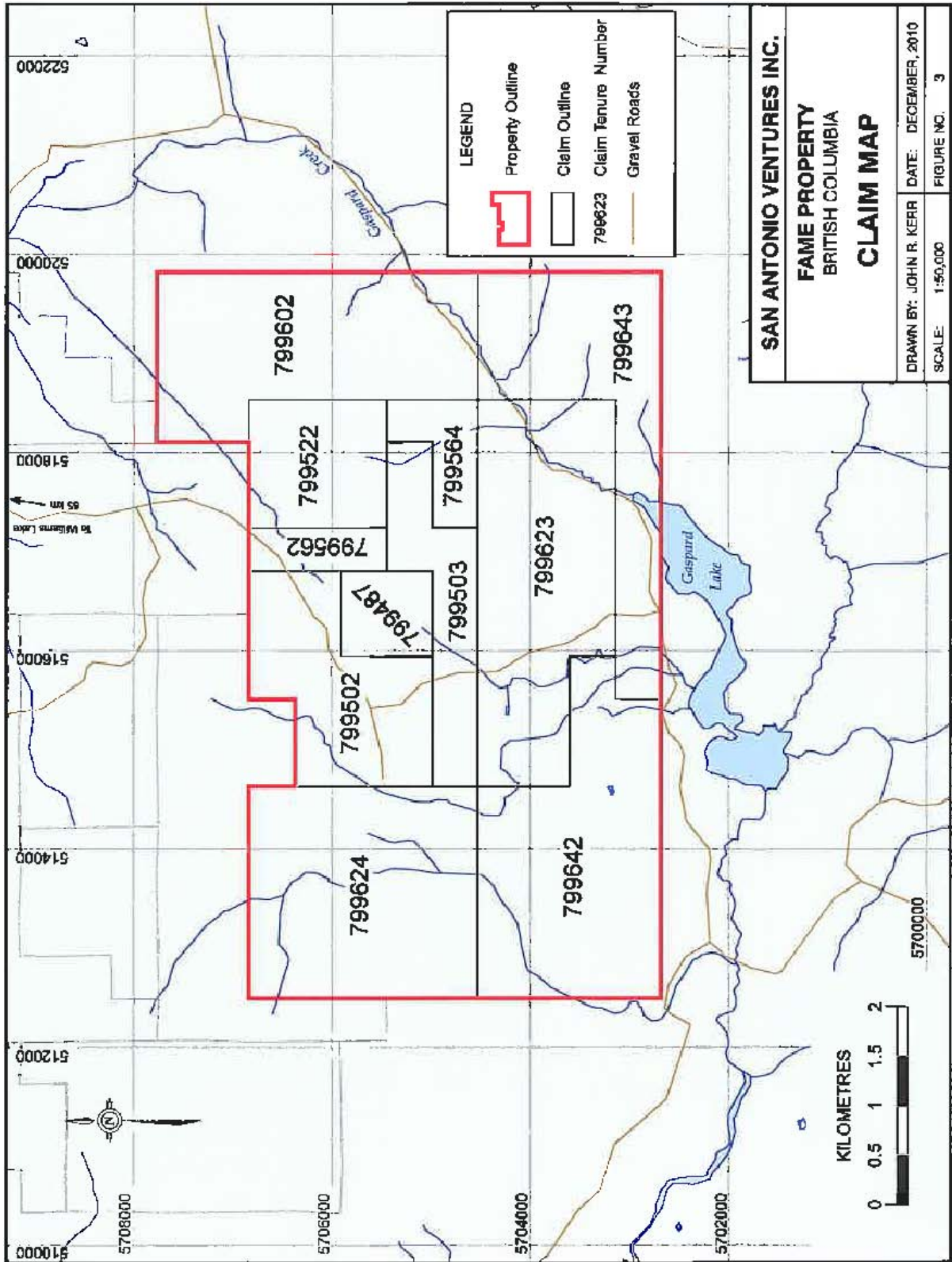


Figure 1: Claim Map - Fame Property

All eleven of the claims are recorded in the name of Richard John Billingsley (Billingsley) and the beneficial owners of the claims are 50% Billingsley and 50% Dwayne Kress (Kress). Billingsley and Kress have entered into an agreement dated September 27, 2010 with San Antonio paying \$40,000 and issuing 100,000 shares to the vendors on listing of San Antonio. Assessment work as prescribed by MEMPR of the Province of British Columbia is required to maintain the property in good standing. The following is a list of the eleven claims, with pertinent information regarding title, ownership, current term and size:

Tenure #	Claim Name	Owner	Map #	Issue Date	Good To	Area (ha)
799487	FAME 1	Billingsley	092O	2010/06/26	2016/06/26	80.489
799502	FAME 2	Billingsley	092O	2010/06/26	2016/06/26	281.677
799503	FAME 3	Billingsley	092O	2010/06/26	2016/06/26	181.132
799522	FAME 4	Billingsley	092O	2010/06/26	2016/06/26	181.098
799562	FAME 5	Billingsley	092O	2010/06/26	2016/06/26	60.354
799564	FAME 6	Billingsley	092O	2010/06/26	2016/06/26	80.513
799602	FAME 7	Billingsley	092O	2010/06/26	2016/06/26	462.801
799623	FAME 8	Billingsley	092O	2010/06/26	2016/06/26	483.135
799624	FAME 9	Billingsley	092O	2010/06/26	2016/06/26	503.023
799642	FAME 10	Billingsley	092O	2010/06/26	2016/06/26	503.281
799643	FAME 11	Billingsley	092O	2010/06/26	2016/06/26	382.544
					TOTAL	3,200.049

There are no surface rights affecting the Property. The Property is located in the southern Chilcotin Plateau of Central British Columbia, four kilometres north of Gaspard Lake, about 30 kilometres west southwest of Gang Ranch and some 55 kilometres south southwest of Riske Creek. The property straddles the boundary between NTS map sheets 92O/7 and 92O/0.

Access to the property is by logging roads, either from Williams Lake via the Farwell Canyon road, which leaves Highway 20 (the Bella Coola Hwy) at Riske Creek and proceeds southward across the Chilcotin River, or by the Canoe Creek Road which leaves Hwy 97 at Chasm, about 16 km north of Clinton and proceeds northwesterly to cross the Fraser River at Gang Ranch. For details, refer to the British Columbia Forest Service map "Cariboo Forest Region Recreation Map (East)", scale 1:350,000.

The terrain on the FAME Property is moderate, with gentle rolling topography, cut by a few steep sided gullies formed as melt-water channels in glacial overburden. Total property relief is about 270 m, ranging from 1,480 m at the southwest corner of the claim block to 1,750 m near the western edge of the claims. Forest cover was originally nearly complete, made up predominantly of lodgepole pine with local spruce and willows along watercourses, and a few aspen groves. A large proportion of the claim area has been clear-cut logged within the last decade. There are several small streams, some of them ephemeral, and no lakes.

Climatic conditions are typical of the southern Chilcotin plateau region. Summers are warm and generally dry; winters are cold but snowfall is light to moderate. Most of the property is snow-free from May to October. Normal exploration and drilling programs should be completed during this period.

Infrastructure, including power, water, and labour are all located 80 to 100 km to the east of the property in the small Cariboo cities. The property is well-facilitated from all aspects of a mining operation including adequate areas for plant, waste and tailing disposal, and other recovery designs. There are no apparent environmental concerns. The Blackdome deposit is currently being permitted for production, and is located 25 km to the southeast of the Fame Property.

No permits were required to complete the airborne survey.

3. HISTORY

Prospecting of the Taseko Lakes in the 1920s area led to identification of porphyry-style mineralization at the Prosperity and Poison Mountain deposits and several precious metal vein systems (including Blackdome, Bralorne, and Taylor/Windfall) in the vicinity of the Fame Property.

1986 – 1998: B.K. Bowen discovered a gold-bearing alteration zone in a logging road-cut in September, 1986, while working on a Government FAME grant. In 1987, follow-up of his showing by Bowen and his partner A.C. Gordon led to further discoveries and to the staking of the Fame and Fortune claims. Float and in-sit material with epithermal quartz vein characteristics yielded significant gold and silver values, and the material was seen to be similar in many aspects to that found at the nearby Blackdome Mine, which was at that time in full production (Bowen, 1988).

In February 1988, Canamax Resources Inc. optioned the property and staked a large area of the surrounding ground. In 1988, they carried out a program of soil sampling, geologic mapping, trenching, and 9 diamond drill holes in the original discovery area. The drilling results were disappointing, and the properties were returned to the vendors in March, 1989. Bowen and Gordon carried out a small amount of prospecting and sampling across a widespread area in 1989. In early 1990, Goldsmith Minerals Inc. took an option on the claims and conducted a reconnaissance geophysical survey (VLF-EM and resistivity) on three grids. Goldsmith subsequently drilled six NQ holes totalling 818 m to test four resistivity anomalies. Again, drill results were not encouraging. The claims were allowed to lapse in 1998.

1998-2001: Linda Caron located claims in 1998 and completed limited geochemistry over the property from 1999 – 2005.

2002-2009: There is no reported work for the property during this period.

2010: Kress and Billingsley acquired the property in 2010. San Antonio Ventures Inc. entered into an option agreement to earn a 100% interest in the property.

4. GEOLOGY

The claims are seen to be underlain by (presumed) Jurassic volcanic rocks and several bodies of granodiorite and foliated granodiorite. These units are locally overlain by Tertiary basalt and andesite tuff and cut by dikes of related andesites. Extensive overburden cover limits the interpretation of the geology based strictly on surface mapping. And there are limited geophysical or available drilling results to improve significantly on the concepts derived from the surface mapping.

The geological environment is suited to host a number of deposit types. The principal targets are structurally-controlled, low-sulphidation sold (silver) deposits similar in nature to the deposits at Blackdome Mountain, 25 km to the southeast. Other types of deposits that may occur on the property are porphyry and skarn copper/gold, vein gold, replacement and structurally controlled base and precious metal deposits.

Alteration and mineralization noted on the property are mainly related to the main structures and intrusive bodies. Five mineral prospects are reported on the property, all having been located, examined and sampled.

5. SURVEY AREA

The Project area (Figure 2) is located in southern B.C. The survey consisted of one block, Block Max (30.69 km²) with infills (5 km²) named Block Infill and is located approximately 20 kms southeast of Big Creek Lodge, B.C. The base of survey operations was at Big Creek Lodge, B.C.



Figure 2. Project Area

6. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Project Name	Line/Tie Spacing (metres)	Line Direction	Survey Coverage (line-km)	Date flown
Max Block	100/1000	90°/270°	360	November 11 th - 15 th , 2010
Infill Block	100/1000	90°/270°	59	November 11 th - 15 th , 2010

Table 1. Survey specifications summary

The survey coverage was calculated by summing 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 1000 metre, tie line spacing.

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 32 metres above the EM bird and 18 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



Job # 11003

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.

6.1. 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.

6.2. SYSTEM DRIFT

Unlike frequency domain electromagnetic systems, the AeroTEM III 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.

6.3. 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 streaming 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.

7. AIRCRAFT AND EQUIPMENT

7.1. AIRCRAFT

An Aerospatiale SA 315B helicopter - registration C-GLOV was used as survey platform. The helicopter was owned and operated by Hi-Wood Helicopters Ltd. 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 262 ft (80metres).



Figure 2. Helicopter C-GLOV used during the survey

7.2. MAGNETOMETER

The AeroTEM III 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, 18 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 62 metres (203 ft.). The magnetic data is recorded at 10 Hz by the ADAS.

7.3. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM III time domain towed-bird system (Figure). The current AeroTEM III transmitter dipole moment is 183 kNIA. The AeroTEM bird is towed 50 metres (164 ft) below the helicopter. More technical details of the system may be found in Appendix 5.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1.10 ms 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. Each channel width is 27.78 microseconds starting at the beginning of the transmitter pulse. This 200 channel data is referred to as the raw streaming data. The AeroTEM system has one separate EM data recording stream, the newly designed AeroDAS system which records the full waveform (Figure 54).

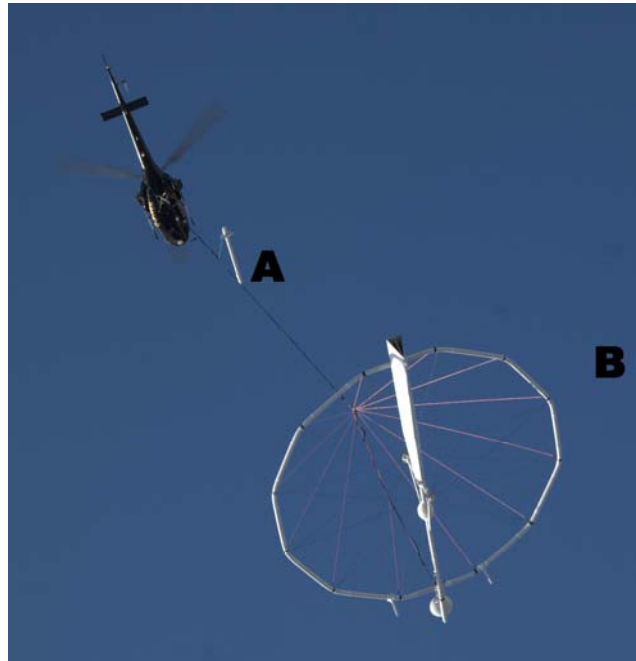


Figure 3. The magnetometer bird (A) and AeroTEM III EM bird (B)

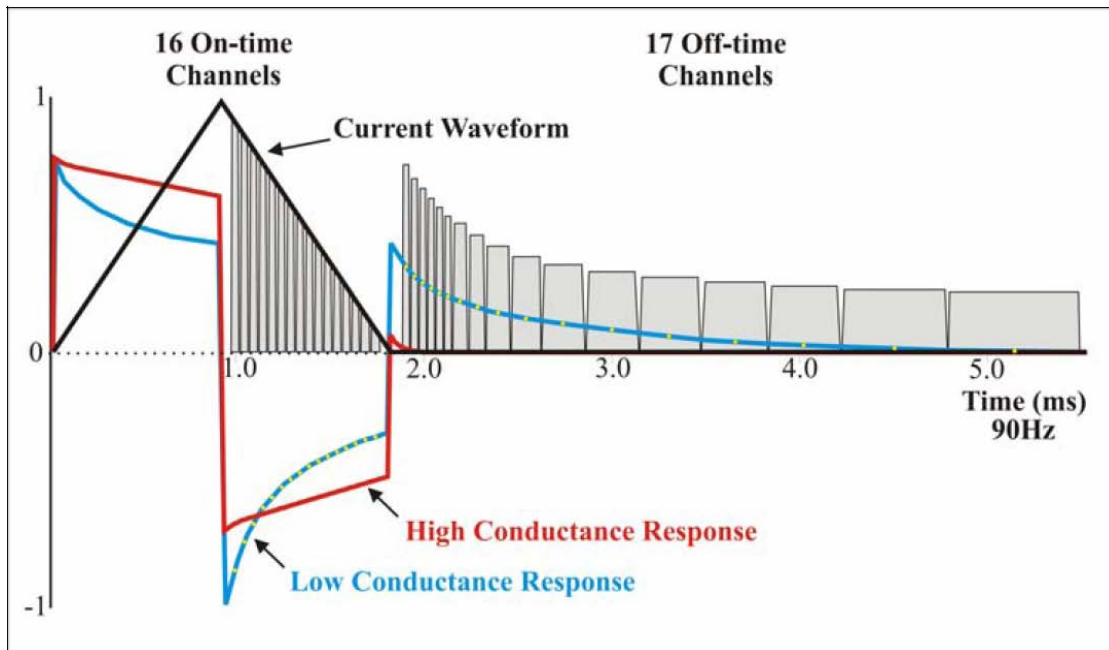


Figure 4. Schematic of Transmitter and Receiver waveforms

7.4. AERODAS ACQUISITION SYSTEM

The 200 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 55) onto a removable hard drive. In addition the magnetic, altimeter and position data are also recorded in it, 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.

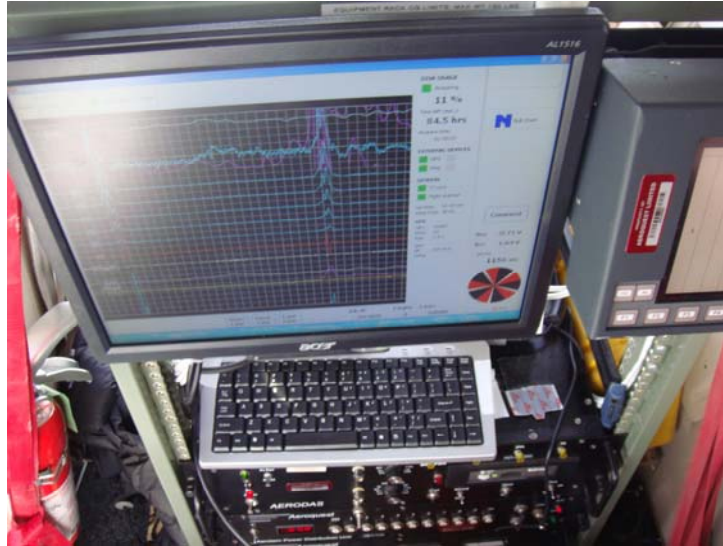


Figure 5. AeroTEM III Instrument Rack

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 -7.0654 us
 Average TxSwitch 890.8595 us
 Average TxOff 1722.1784 us
 Average TxPeak 438.0700 A

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
On1	5 - 5	27.8	125.0	132.1
On2	6 - 6	27.8	152.8	159.8
On3	7 - 7	27.8	180.6	187.6
On4	8 - 8	27.8	208.3	215.4
On5	9 - 9	27.8	236.1	243.2
On6	10 - 10	27.8	263.9	271.0
On7	11 - 11	27.8	291.7	298.7
On8	12 - 12	27.8	319.4	326.5
On9	13 - 13	27.8	347.2	354.3
On10	14 - 14	27.8	375.0	382.1
On11	15 - 15	27.8	402.8	409.8
On12	16 - 16	27.8	430.6	437.6
On13	17 - 17	27.8	458.3	465.4
On14	18 - 18	27.8	486.1	493.2
On15	19 - 19	27.8	513.9	521.0
On16	20 - 20	27.8	541.7	548.7

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOff (us)
Off0	66 - 66	27.8	1819.4	97.3
Off1	67 - 67	27.8	1847.2	125.0
Off2	68 - 68	27.8	1875.0	152.8
Off3	69 - 69	27.8	1902.8	180.6
Off4	70 - 70	27.8	1930.6	208.4
Off5	71 - 71	27.8	1958.3	236.2
Off6	72 - 74	83.3	2013.9	291.7
Off7	75 - 77	83.3	2097.2	375.0

Off8	78 - 80	83.3	2180.6	458.4
Off9	81 - 83	83.3	2263.9	541.7
Off10	84 - 88	138.9	2375.0	652.8
Off11	89 - 93	138.9	2513.9	791.7
Off12	94 - 100	194.4	2680.6	958.4
Off13	101 - 110	277.8	2916.7	1194.5
Off14	111 - 125	416.7	3263.9	1541.7
Off15	126 - 149	666.7	3805.6	2083.4
Off16	150 - 186	1027.8	4652.8	2930.6

7.5. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-859 caesium 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.

7.6. 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.

7.7. 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 6. Digital video camera typical mounting location.

7.8. 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 10N 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.

7.9. 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 streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

8. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Operations Project Manager: Troy Will
- Field Data Processor: Mihai Szentesy
- Field Operator: John Douglas
- Data Interpretation and Reporting: Jonathan Rudd and Asif Mirza

The survey pilot, Ted Slavin, was employed directly by the helicopter operator – HiWood Helicopters Ltd.

9. DELIVERABLES

9.1. HARDCOPY DELIVERABLES

The report includes a set of one 1:10,000 maps and the following three geophysical data products are delivered:

- TMI-RTP – Total Magnetic Intensity Reduced to the Pole colour grid with contours and EM anomaly symbols.
- 1VD– First Vertical Derivative of TMI-RTP grid with contours, and EM anomaly symbols.
- EM Anomaly– Flight Path with EM anomaly symbols.
- Res – Apparent Resistivity (Early Time Channel) grid with contours



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The coordinate/projection system for the maps is NAD83 – UTM Zone 10N. 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.

9.2. DIGITAL DELIVERABLES

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

9.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. All grids have 20 m cell size.

- TMI-RTP – Total Magnetic Intensity Reduced to the Pole grid
- 1VD– First Vertical Derivative of TMI-RTP grid
- Res – Apparent Resistivity (Early Time Channel) grid

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

Map files in Geosoft .map and Adobe PDF format.

9.2.4. Google Earth Files (.kmz)

Flight navigation lines, EM Anomalies and geophysical grids in Google earth kmz format. Double click to view in Google Earth.

9.2.5. Free Viewing Software (.EXE)

Geosoft Oasis Montaj Viewing Software

Adobe Acrobat Reader

Google Earth Viewer

9.2.6. Digital Copy of this Document (.PDF)

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10. 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 and 42-inch wide Hewlett Packard ink-jet plotters.

10.1. 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 10 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 10 (Central Meridian 123°W)

Central Scale Factor: 0.9996

False Easting, Northing: 500,000m, 0m

The background vector topography was sourced from Natural Resources Canada at 1:50000 scales and the background shading were derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metre resolution DEM data.

For reference, the latitude and longitude in WGS84 are also noted on the maps.

10.2. 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.

10.3. 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 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 cannot 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 TS “time stamp” and EM Fiducial are 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.

10.4. 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 10 nT.

11. INTERPRETIVE 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.

11.1. 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.

11.2. 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 77). 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 (Figure8). 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.

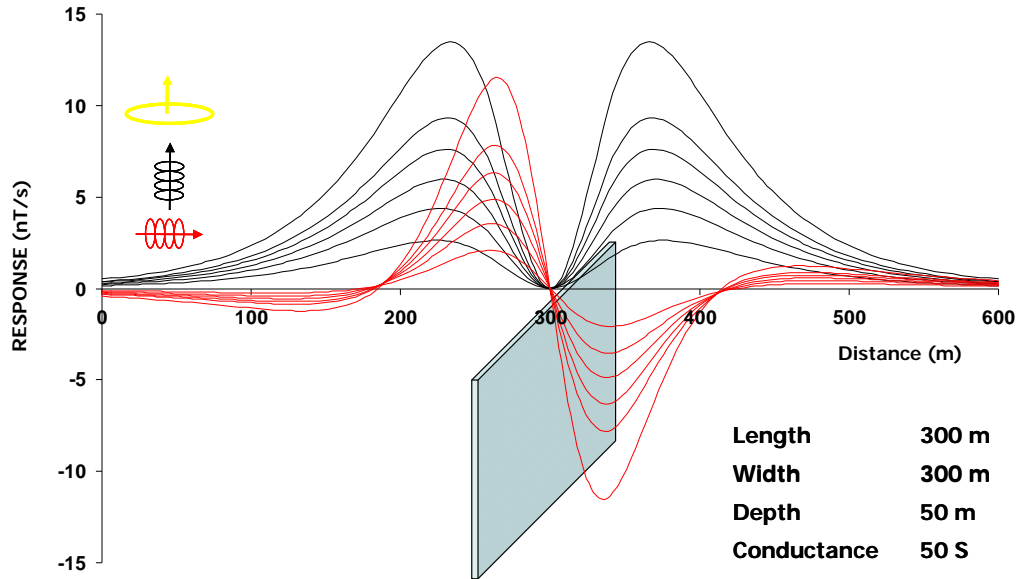


Figure 7. AeroTEM response to a ‘thin’ vertical conductor.

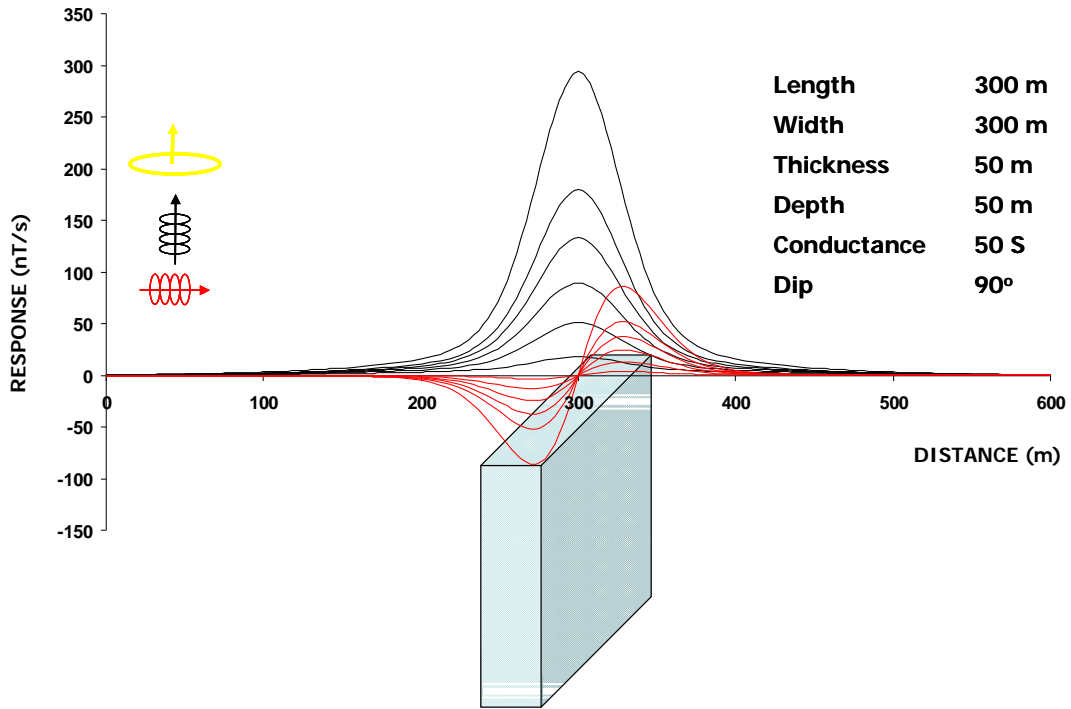


Figure 8. AeroTEM response for a 'thick' vertical conductor.

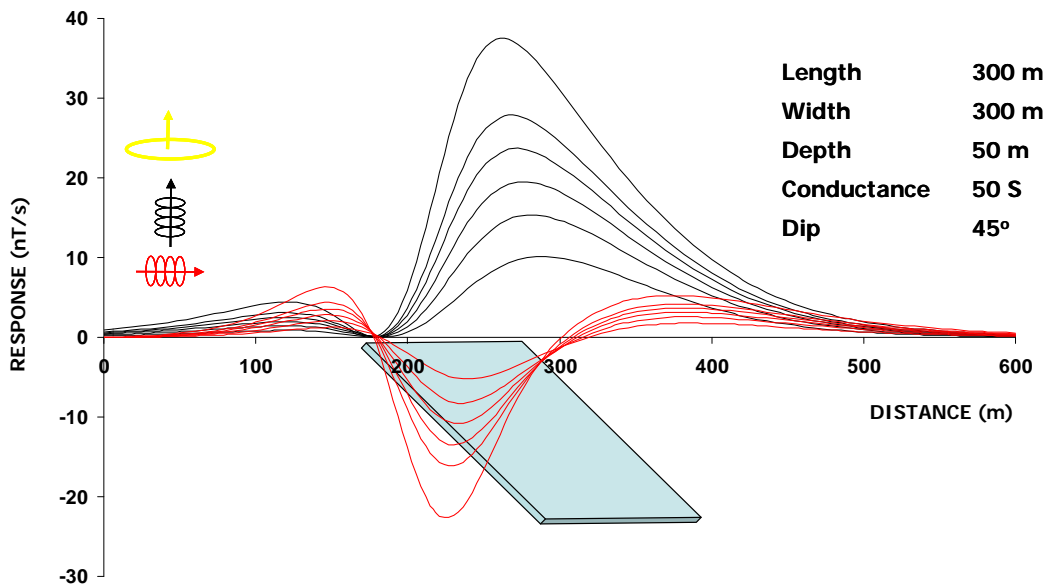


Figure 9. AeroTEM response over a 'thin' dipping conductor.



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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,

Doug Garrie, P.Geol.

Aeroquest Airborne

APPENDIX 1: SURVEY BOUNDARIES

The following table presents the block boundaries. All geophysical data presented in this report have been windowed to 100m outside of these boundaries. X and Y positions are in metres: NAD83 UTM Zone 10N.

Max Block:

X	Y
519860.13	5706820.46
519895.52	5702652.72
512488.44	5702652.71
512477.99	5706823.32

Infill Block:

X	Y
514511.74	5705948.76
518510.14	5705948.76
518510.98	5704638.63
514515.18	5704638.64

APPENDIX 2: 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
Lat_wgs84	dd.mm.ss	Latitude
Long_wgs84	dd.mm.ss	Longitude
X	m	UTM Easting (NAD83, Zone 10)
Y	m	UTM Northing (NAD83, Zone 10)
Galt	m	GPS elevation of magnetometer bird
Ralt	m	Helicopter radar altimeter (height above terrain)
bheight	m	Terrain clearance of EM bird
basemag	nT	Base station total magnetic intensity
magU	nT	Final levelled total magnetic intensity from upper magnetometer sensor (installed on the tail of the EM bird).
dtmf	m	Digital Terrain Model
Zon	nT/s	EM On-Time Z component Channels 1-16
Zoff	nT/s	EM Off-Time Z component Channels 0-16
Xon	nT/s	EM On-Time X component Channels 1-16
Xoff	nT/s	EM Off-Time X component Channels 0-16
pwrline		powerline monitor data channel
Grade		Classification from 1-7 based on conductance of conductor pick
Anom_Labels		Letter label of conductor pick (Unique per flight line)
Off_Con	S	Off-time conductance at conductor pick
Off_Tau	µs	Off-time decay constant at conductor pick
Anom_ID		EM Anomaly response style (K= thick, N = thiN)
Off_AllCon	S	Off-time conductance
Off_AllTau	µs	Off-time decay constant
TranOff	s	Transmitter turn off time
TranOn	s	Transmitter turn on time
TranPeak	A	Transmitter peak current
TranSwitch	s	Transmitter peak current time
Off_Pick		Anomaly pick channel
Depth	m	Depth from top of the conductor



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APPENDIX 3: AEROTEM ANOMALY LISTING

Max & Infill Blocks:

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10010	A	K	1.4	117.2	7	21:27:28	29.7	513147.8	5706793.2
10010	B		1.4	119.5	7	21:27:29	30.1	513168.1	5706793.6
10010	C	N	1.4	117.2	7	21:30:18	42.8	517505.3	5706797.5
10020	A	K	1.1	102.5	7	21:22:49	34.4	517919.1	5706697.7
10020	B	K	1.5	120.6	7	21:25:57	33.1	513213.5	5706703.1
10030	A	N	0.9	96.7	7	21:18:06	27.3	516229.4	5706593.7
10030	B	K	0.9	96.7	7	21:19:11	40.5	517912.5	5706596.9
10040	A	K	1.1	102.4	7	21:11:16	31.9	517898.4	5706496.8
10040	B	K	2.3	152.4	7	21:12:42	33.4	515934.6	5706498.1
10040	C		2.9	168.9	7	21:13:42	32.6	514456.5	5706498.1
10040	D		1.3	113.8	7	21:14:40	33.8	512859.4	5706500.4
10050	A		1.7	131.2	7	21:04:05	29.8	512812.2	5706389.9
10050	B		2.2	149.2	7	21:04:25	31.6	513281.1	5706396.2
10050	C	K	4.2	205.8	7	21:05:50	29.3	515300.5	5706396.7
10050	D	N	4.2	205.8	7	21:07:37	36.0	517868.3	5706392.1
10060	B		1.3	112.3	7	20:59:31	35.3	518159.4	5706297.8
10060	C	N	2.1	145.6	7	20:59:43	25.0	517890.0	5706297.2
10060	D	K	2.1	145.6	7	21:01:05	29.4	515816.2	5706302.0
10060	E	K	6.7	258.6	7	21:01:27	46.2	515278.2	5706297.6
10060	F		5.1	226.5	7	21:01:52	38.8	514589.0	5706296.7
10060	G		2.5	156.4	7	21:02:40	35.0	513253.2	5706305.0
10060	H		2.0	141.7	7	21:02:54	31.4	512850.1	5706301.5
10070	B		3.5	185.9	7	20:53:33	31.0	514590.8	5706197.9
10070	C		6.2	248.2	7	20:53:59	35.2	515204.0	5706198.2
10070	D	K	6.1	246.0	7	20:54:02	34.8	515260.5	5706196.2
10070	E		6.2	248.2	7	20:54:04	34.2	515306.6	5706194.9
10070	F	K	4.0	200.9	7	20:54:15	31.6	515570.9	5706196.3
10070	G		2.8	166.9	7	20:54:23	35.8	515735.3	5706196.4
10070	H		2.8	166.9	7	20:54:26	39.4	515802.3	5706197.8
10070	I	K	0.9	94.7	7	20:54:29	41.6	515874.7	5706197.0
10070	J		1.2	108.0	7	20:56:02	44.3	518091.7	5706200.3
10080	A		2.3	151.3	6	22:30:17	38.1	513033.7	5706099.7
10080	B	K	5.9	243.7	6	22:31:15	26.1	514701.0	5706091.1
10080	C		5.6	235.9	6	22:31:16	25.3	514728.8	5706091.6
10080	D		10.3	321.0	6	22:31:29	35.8	515106.9	5706103.2



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Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10080	E	K	10.4	322.1	6	22:31:30	34.7	515140.0	5706103.7
10080	F	K	6.8	260.1	6	22:31:42	32.4	515506.4	5706097.2
10090	A	K	9.1	301.5	6	22:26:47	31.2	515420.7	5705993.5
10090	B	K	12.2	349.4	6	22:27:04	23.6	515112.6	5705989.2
10090	C		11.6	340.9	6	22:27:07	26.4	515064.0	5705989.6
10090	D	K	7.6	275.1	6	22:27:23	29.0	514766.2	5705997.5
10090	E		3.4	184.6	6	22:28:44	37.7	513104.4	5705997.2
10100	A		3.7	192.8	6	22:18:34	38.6	513056.0	5705895.0
10100	B	K	5.8	240.0	6	22:19:02	28.3	513904.5	5705897.2
10100	C		6.2	249.8	6	22:19:04	27.4	513971.0	5705898.4
10100	D		6.2	249.8	6	22:19:08	34.7	514094.6	5705899.1
10100	E		8.9	298.8	6	22:19:32	27.9	514811.2	5705891.0
10100	F		7.8	279.5	6	22:19:54	29.6	515444.0	5705901.7
10110	A		12.8	357.1	6	22:15:23	32.5	515356.0	5705791.9
10110	B		9.2	302.9	6	22:15:52	28.7	514715.6	5705788.6
10110	C	K	9.2	303.3	6	22:15:54	25.6	514673.1	5705789.4
10110	D	K	5.8	241.1	6	22:16:25	26.2	513981.9	5705796.8
10110	E		3.2	177.7	6	22:17:03	29.3	513207.2	5705797.9
10120	A		2.2	146.5	6	22:07:22	33.6	513262.6	5705689.6
10120	B		6.8	259.7	6	22:07:38	36.9	513686.0	5705688.5
10120	C	K	10.3	321.6	6	22:08:10	32.8	514630.8	5705695.7
10120	D		10.0	316.0	6	22:08:12	34.9	514684.8	5705696.8
10120	E	K	11.9	344.6	6	22:08:36	32.8	515324.4	5705697.4
10130	A	K	*	*	6	22:02:01	24.0	518558.0	5705598.2
10130	B	K	19.0	435.9	6	22:04:22	26.9	515175.3	5705594.6
10130	C		19.0	435.9	6	22:04:27	32.1	515066.2	5705596.7
10130	D		11.5	339.5	6	22:04:38	37.2	514776.9	5705591.0
10130	E		13.9	373.4	6	22:04:43	41.7	514641.6	5705591.1
10130	F	K	11.1	332.5	6	22:04:47	38.9	514547.0	5705592.5
10130	G		2.6	160.0	6	22:05:37	32.3	513277.2	5705595.6
10140	A		2.7	162.6	6	21:55:47	40.5	513336.1	5705496.3
10140	B		10.8	329.1	6	21:56:38	39.3	514667.2	5705499.9
10140	C	K	6.3	251.1	6	21:57:39	27.6	516270.0	5705488.7
10140	D		6.3	251.2	6	21:58:17	33.4	517194.4	5705499.9
10140	E	K	1.2	108.7	6	21:58:26	29.5	517415.7	5705493.5
10150	A		2.2	147.2	6	21:51:34	37.8	517319.8	5705395.9
10150	B		2.0	142.5	6	21:52:05	31.6	516536.8	5705392.0
10150	C		6.3	249.9	6	21:52:16	31.2	516270.7	5705394.4



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Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10150	D	K	7.5	273.7	6	21:53:07	26.6	514873.6	5705395.3
10150	E		9.4	306.7	6	21:53:14	41.7	514679.5	5705391.0
10150	F		9.4	306.7	6	21:53:16	44.7	514608.0	5705390.5
10150	G		1.5	123.9	6	21:54:33	38.8	512571.3	5705397.8
10150	H	K	1.7	128.7	6	21:54:33	39.0	512554.6	5705397.7
10160	B		0.8	88.1	6	21:43:51	39.6	512581.7	5705296.4
10160	C	K	0.8	87.4	6	21:43:51	39.4	512592.0	5705296.4
10160	D		1.6	126.8	6	21:44:23	33.6	513445.0	5705298.9
10160	E		7.3	270.7	6	21:45:05	48.9	514627.3	5705294.4
10160	F	K	8.5	290.7	6	21:45:17	41.1	514927.3	5705299.0
10160	G		2.0	142.0	6	21:46:16	34.9	516485.6	5705298.0
10160	H		1.4	118.6	6	21:46:47	27.8	517274.4	5705297.1
10160	I	K	1.4	117.0	6	21:46:49	25.6	517318.8	5705296.8
10160	J	K	2.2	147.9	6	21:47:39	37.5	518537.5	5705299.9
10160	K	K	0.6	76.9	6	21:48:28	51.1	519555.0	5705295.0
10170	A	K	2.5	159.1	5	20:44:33	28.6	517261.1	5705199.8
10170	B	K	2.8	165.9	5	20:45:02	28.2	516530.2	5705196.4
10170	C		8.2	285.9	5	20:46:10	38.8	514654.2	5705194.2
10170	D		2.3	151.5	5	20:46:52	40.9	513508.7	5705201.3
10180	A		2.6	160.7	5	20:37:01	44.4	512744.7	5705098.4
10180	B	K	4.8	218.9	5	20:37:37	30.8	513618.1	5705096.0
10180	C		10.7	326.8	5	20:38:17	41.1	514659.6	5705099.5
10180	D		7.9	281.1	5	20:38:51	31.1	515580.2	5705101.9
10180	E		6.3	251.8	5	20:39:10	27.1	516071.1	5705091.3
10180	F	K	3.4	183.1	5	20:39:57	34.8	517289.4	5705099.6
10190	A	K	4.1	202.2	5	20:33:14	33.0	517235.8	5704998.1
10190	B	K	5.9	243.6	5	20:33:53	32.1	516220.4	5705000.9
10190	C		8.8	295.8	5	20:33:58	29.0	516085.3	5704997.7
10190	D		21.1	459.3	5	20:34:19	31.0	515489.0	5704996.7
10190	E		10.0	315.5	5	20:34:48	34.6	514689.0	5705005.1
10190	F		10.7	327.5	5	20:35:26	38.8	513661.1	5704989.1
10190	G	K	11.0	331.0	5	20:35:28	38.5	513630.8	5704989.7
10190	H		19.2	437.7	5	20:35:40	33.9	513274.2	5704994.6
10200	A	K	11.0	331.2	5	20:26:23	33.3	513650.1	5704897.9
10200	B		16.7	408.2	5	20:26:40	37.5	514117.6	5704896.2
10200	C		16.7	408.2	5	20:26:44	33.9	514225.7	5704896.3
10200	D		12.2	349.1	5	20:27:01	38.1	514673.9	5704896.0
10200	E	K	20.6	454.1	5	20:27:29	30.4	515420.6	5704901.8



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Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10200	F		7.1	265.7	5	20:27:50	30.3	515997.3	5704896.9
10200	G	N	33.1	575.3	5	20:28:34	27.1	517157.1	5704898.8
10200	H	K	33.1	575.3	5	20:28:37	27.4	517220.8	5704898.6
10210	A	K	26.5	514.9	5	20:22:07	28.1	517180.5	5704796.4
10210	B		8.7	295.1	5	20:23:00	33.3	515853.7	5704799.4
10210	C	K	15.3	391.1	5	20:23:17	37.3	515376.9	5704801.5
10210	D		9.0	299.3	5	20:23:43	37.9	514658.5	5704797.7
10210	E		17.5	418.6	5	20:24:01	33.9	514166.0	5704801.7
10210	F		8.1	284.7	5	20:24:18	45.1	513706.2	5704798.9
10210	G		13.6	369.1	5	20:24:49	38.9	512874.6	5704794.7
10210	H		13.9	373.4	5	20:24:59	47.0	512607.3	5704789.1
10210	I		13.9	373.4	5	20:25:03	47.6	512505.3	5704791.3
10220	C	K	13.7	370.2	5	20:14:16	49.4	512518.1	5704696.4
10220	D		13.7	370.2	5	20:14:19	46.2	512575.3	5704693.4
10220	E		9.9	313.9	5	20:15:08	37.1	513739.3	5704691.3
10220	F		20.9	457.0	5	20:15:21	35.1	514096.3	5704691.2
10220	G		11.3	335.8	5	20:15:46	38.5	514711.5	5704699.6
10220	H		57.9	760.6	5	20:16:12	38.4	515349.5	5704696.0
10220	I	K	10.8	329.1	5	20:16:33	29.2	515879.9	5704696.7
10220	J	K	24.5	494.6	5	20:17:17	30.5	517035.6	5704701.3
10220	K		6.1	246.4	5	20:17:20	29.6	517105.4	5704701.4
10220	L	K	6.9	263.2	5	20:17:23	28.9	517183.7	5704700.8
10230	A	K	39.8	631.1	5	20:10:47	34.8	517149.2	5704598.6
10230	B	K	28.5	534.2	5	20:10:52	35.1	517031.3	5704598.8
10230	C		10.8	328.0	5	20:11:38	28.3	515799.5	5704595.7
10230	D		16.7	409.0	5	20:11:51	34.6	515427.6	5704594.9
10230	E		17.8	422.3	5	20:12:17	42.3	514717.4	5704595.3
10230	F		9.3	304.6	5	20:12:41	42.4	514067.0	5704595.5
10230	G		16.7	408.7	5	20:13:32	36.0	512695.7	5704597.5
10240	C		65.6	810.1	5	20:02:50	33.8	512484.4	5704486.6
10240	D		65.6	810.1	5	20:02:54	30.9	512545.7	5704488.2
10240	E		32.4	568.9	5	20:02:59	29.6	512645.8	5704492.4
10240	F	K	10.4	322.8	5	20:03:48	45.4	513855.2	5704494.4
10240	G		37.8	614.8	5	20:04:24	41.3	514779.6	5704493.8
10240	H		37.8	614.8	5	20:04:28	41.5	514887.8	5704495.4
10240	I		44.0	663.0	5	20:04:38	31.7	515134.5	5704495.0
10240	J		29.9	546.9	5	20:04:47	24.4	515355.5	5704493.0
10240	K		11.7	341.3	5	20:05:07	26.7	515881.1	5704500.4



Job # 11003

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10240	L	K	8.4	289.0	5	20:05:52	34.1	517047.6	5704500.8
10250	A	K	16.9	411.4	5	19:58:59	35.6	517815.4	5704399.7
10250	B	K	11.4	336.9	5	20:00:23	29.4	515557.6	5704395.4
10250	C		27.4	523.9	5	20:00:38	28.8	515146.4	5704392.5
10250	D		30.0	548.1	5	20:00:54	37.2	514724.9	5704395.4
10250	E		10.1	318.2	5	20:01:18	38.8	514079.6	5704401.4
10250	F		22.5	474.2	5	20:02:14	28.7	512545.1	5704398.1
10260	C		25.7	507.3	5	19:46:07	28.1	512511.1	5704296.0
10260	D		25.7	507.3	5	19:46:09	27.4	512554.4	5704297.5
10260	E		3.0	174.1	5	19:46:48	36.5	513528.3	5704299.1
10260	F		12.0	346.9	5	19:47:13	28.7	514103.5	5704295.4
10260	G		23.1	480.5	5	19:47:27	40.5	514435.9	5704302.4
10260	H		23.5	484.4	5	19:47:51	34.8	515027.1	5704292.9
10260	I		14.5	380.6	5	19:48:01	35.8	515277.3	5704294.6
10260	J	K	14.5	380.6	5	19:48:06	34.1	515381.1	5704297.5
10260	K	K	27.8	527.2	5	19:48:32	32.9	516003.3	5704301.3
10260	L	K	1.7	129.4	5	19:49:46	38.2	517819.5	5704297.4
10270	A	K	1.4	116.0	5	19:42:07	42.2	517852.6	5704200.5
10270	B	K	15.6	394.3	5	19:43:20	36.3	515938.2	5704202.1
10270	C		37.7	613.9	5	19:43:21	35.7	515916.2	5704202.0
10270	D		16.3	404.3	5	19:43:48	29.3	515179.9	5704200.3
10270	E		18.1	425.4	5	19:44:09	41.3	514627.1	5704195.1
10270	F		8.4	289.7	5	19:44:25	34.3	514191.8	5704195.8
10270	G	K	5.1	226.5	5	19:44:27	34.0	514151.4	5704196.4
10270	H		8.3	287.3	5	19:45:01	33.4	513164.5	5704197.8
10270	I	K	15.6	395.2	5	19:45:14	29.3	512811.3	5704191.1
10280	B	K	22.2	471.6	5	19:34:53	29.7	512793.7	5704100.7
10280	C		16.3	404.2	5	19:35:09	33.6	513177.5	5704093.7
10280	D	K	5.5	235.0	5	19:35:49	29.2	514157.8	5704095.5
10280	E		8.3	287.4	5	19:35:51	30.4	514208.7	5704095.3
10280	F	K	6.8	261.5	5	19:35:56	31.7	514334.0	5704094.7
10280	G		26.9	518.6	5	19:36:19	34.8	514897.8	5704095.1
10280	H		1.3	111.7	5	19:37:46	35.2	517078.0	5704094.9
10280	I		7.0	265.4	5	19:39:28	32.6	519424.7	5704093.4
10290	A	K	2.1	144.4	5	19:31:05	27.1	517053.1	5703993.8
10290	B		25.2	502.2	5	19:32:27	32.5	514855.3	5703997.2
10290	C		7.9	280.2	5	19:32:46	41.4	514373.5	5703996.9
10290	D	K	9.6	309.2	5	19:32:49	39.0	514295.3	5703997.2



Job # 11003

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10290	E	K	7.8	279.1	5	19:32:55	32.2	514139.5	5703995.9
10290	F		11.3	336.6	5	19:33:34	47.2	513108.2	5703995.7
10290	G		11.3	336.6	5	19:33:37	42.4	513024.8	5703995.5
10290	H	K	16.8	409.5	5	19:33:45	42.8	512810.2	5703996.8
10300	B		7.5	274.6	5	19:23:36	29.1	513096.9	5703894.4
10300	C		7.3	269.9	5	19:24:32	33.4	514473.7	5703896.6
10300	D	K	1.0	101.0	5	19:26:17	32.9	517042.6	5703898.6
10310	A		2.7	165.4	5	19:17:49	40.3	519395.3	5703795.0
10310	B		2.2	147.7	5	19:18:16	45.4	518677.4	5703801.4
10310	C	K	0.9	93.0	5	19:19:37	31.3	517037.6	5703795.3
10310	D		21.3	461.0	5	19:20:56	32.7	514883.7	5703795.7
10310	E		21.3	461.0	5	19:21:00	30.9	514779.0	5703795.6
10310	F		8.2	285.9	5	19:21:07	31.8	514565.3	5703795.1
10310	G	K	7.3	270.7	5	19:21:08	31.1	514540.9	5703795.0
10310	H	K	6.0	245.1	5	19:22:01	32.4	513095.5	5703795.1
10320	A	K	4.8	218.2	5	19:11:37	29.8	513204.0	5703697.6
10320	B	K	5.0	224.1	5	19:12:33	32.1	514614.8	5703694.8
10320	C		7.6	275.6	5	19:12:35	34.4	514647.4	5703694.5
10320	D		15.1	387.9	5	19:12:58	43.3	515207.0	5703695.7
10320	E	K	12.9	359.6	5	19:12:59	40.9	515251.5	5703695.5
10320	F	K	0.6	76.3	5	19:14:10	26.1	516961.8	5703698.4
10320	G		2.2	147.0	5	19:15:46	36.5	518685.3	5703695.5
10320	H		3.1	174.9	5	19:15:55	34.9	518884.4	5703697.8
10320	I		2.4	153.3	5	19:16:13	27.1	519307.2	5703695.9
10320	J		3.3	182.7	5	19:16:26	36.5	519619.0	5703697.8
10330	A		2.6	160.5	5	19:06:00	34.6	519406.9	5703590.9
10330	B		1.9	137.3	5	19:07:00	61.7	517870.8	5703596.4
10330	C	K	1.4	116.9	5	19:07:00	60.1	517856.6	5703596.4
10330	D	K	11.9	344.7	5	19:08:44	42.3	515254.6	5703597.2
10330	E		12.4	351.6	5	19:08:44	41.8	515246.2	5703596.9
10330	F		11.2	335.2	5	19:08:57	34.1	514873.3	5703592.6
10330	G	K	2.6	161.6	5	19:09:48	32.0	513487.1	5703599.7
10330	H		4.3	208.3	5	19:10:00	33.6	513156.2	5703598.0
10340	A		1.5	122.2	5	19:00:29	34.2	513389.1	5703498.1
10340	B	K	1.0	98.2	5	19:00:31	34.8	513435.2	5703497.2
10340	C	K	11.2	334.2	5	19:01:36	39.3	515170.0	5703498.6
10340	D	K	0.2	44.8	5	19:02:35	31.7	516762.0	5703495.7
10340	E	N	0.2	44.8	5	19:03:21	52.3	517850.9	5703494.2



Job # 11003

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10350	A		3.4	183.1	4	18:00:58	40.7	513357.0	5703401.6
10350	B	K	4.2	205.4	4	18:01:00	40.4	513408.2	5703400.2
10360	A	K	11.6	340.4	4	17:57:50	45.6	515483.5	5703298.2
10360	B		16.0	399.7	4	17:57:51	44.3	515459.4	5703298.3
10360	C	K	1.6	127.4	4	17:58:47	39.1	513969.8	5703299.8
10360	D		2.1	145.0	4	17:58:49	38.9	513906.7	5703300.5
10360	E	K	3.7	191.7	4	17:59:09	42.7	513335.9	5703295.8
10370	A		9.2	303.1	4	17:50:10	40.4	513359.5	5703194.5
10370	B		9.2	303.1	4	17:50:14	40.5	513452.3	5703195.7
10370	C		2.6	162.0	4	17:50:28	36.2	513854.2	5703199.0
10370	D		3.5	188.0	4	17:53:17	45.4	518336.7	5703199.9
10380	A		4.3	208.2	4	17:45:20	58.1	518409.0	5703097.5
10380	B	K	10.0	315.7	4	17:47:10	44.6	515532.6	5703094.3
10380	C		10.6	326.1	4	17:47:12	43.9	515476.5	5703094.3
10380	D	K	2.9	171.1	4	17:48:09	42.5	513873.5	5703101.3
10390	A		4.6	215.0	4	17:39:51	40.9	513830.6	5702996.1
10390	B	K	3.2	180.0	4	17:39:53	40.2	513886.5	5702995.3
10390	C		16.6	407.5	4	17:40:47	52.0	515418.9	5702994.6
10390	D		1.8	134.0	4	17:42:24	42.9	518016.8	5702994.5
10390	E		2.8	167.0	4	17:42:40	50.3	518428.8	5702994.6
10400	A		1.6	126.8	4	17:34:18	48.0	519238.4	5702891.0
10400	B		3.0	172.2	4	17:34:49	68.4	518389.5	5702896.5
10400	C		2.6	161.2	4	17:35:03	60.4	518010.1	5702895.5
10400	D	N	5.2	228.4	4	17:37:15	36.8	514352.7	5702897.9
10400	E		6.3	250.8	4	17:37:15	36.7	514343.7	5702898.0
10400	F	K	5.2	228.4	4	17:37:31	39.3	513854.7	5702897.6
10400	G		7.4	271.8	4	17:37:33	39.4	513815.8	5702897.2
10410	A	K	77.0	877.6	4	17:28:26	37.3	512981.8	5702790.7
10410	B		10.7	326.9	4	17:28:57	39.9	513812.9	5702802.8
10410	C	N	77.0	877.6	4	17:29:14	35.2	514269.2	5702796.9
10410	D		0.5	72.5	4	17:32:25	38.6	519239.6	5702797.0
10420	A	N	14.2	376.3	4	17:23:20	50.8	519429.8	5702706.0
10420	B		1.2	110.0	4	17:24:28	49.7	517544.6	5702699.5
10420	C	N	14.2	376.3	4	17:26:26	44.4	514196.1	5702695.7
10420	D	K	14.2	376.3	4	17:26:37	46.4	513841.0	5702697.0
10420	E		24.8	497.7	4	17:26:39	45.5	513785.6	5702697.6
10420	F	N	14.2	376.3	4	17:27:04	41.3	513054.6	5702698.0
10420	G		36.7	606.1	4	17:27:07	44.5	512951.0	5702702.3



Job # 11003

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
20010	B		7.1	266.6	8	16:44:24	30.0	514782.4	5705949.9
20010	C		7.1	266.6	8	16:44:28	33.5	514896.3	5705948.5
20010	D		8.4	289.0	8	16:44:30	33.8	514939.0	5705947.2
20010	E	K	4.8	219.8	8	16:44:47	32.5	515420.3	5705947.8
20020	A		4.6	214.2	8	16:51:22	31.1	515362.0	5705846.8
20020	B		7.9	281.6	8	16:51:47	28.2	515010.0	5705847.6
20020	C		7.9	281.4	8	16:51:55	31.2	514899.0	5705847.5
20020	D		6.4	252.8	8	16:52:03	29.7	514782.2	5705843.2
20020	E	K	6.0	244.1	8	16:52:04	29.0	514764.7	5705843.6
20030	A	K	6.9	263.2	8	16:53:29	35.5	514639.2	5705746.2
20030	B		7.4	272.7	8	16:53:30	35.7	514675.5	5705746.4
20030	C		4.6	213.7	8	16:53:55	41.4	515383.5	5705750.7
20030	D	K	4.3	206.8	8	16:53:57	38.6	515430.7	5705751.3
20040	A	K	5.3	230.4	8	17:00:10	27.1	515277.9	5705646.4
20040	B		4.6	214.8	8	17:00:11	26.7	515260.3	5705646.0
20040	C		8.2	286.0	8	17:00:30	39.2	515017.3	5705648.7
20040	D		8.2	286.0	8	17:00:33	38.2	514971.4	5705646.8
20040	E		6.8	259.9	8	17:00:55	42.7	514633.7	5705649.3
20040	F	K	7.5	274.4	8	17:00:57	38.0	514602.3	5705649.7
20050	B	K	7.5	273.6	8	17:02:08	48.2	514569.0	5705545.1
20050	C		6.9	261.9	8	17:02:16	44.0	514798.8	5705541.3
20050	D	K	1.2	109.0	8	17:03:03	37.0	516290.6	5705545.3
20050	E		1.0	101.2	8	17:03:24	32.8	516949.0	5705543.7
20050	F		0.7	82.0	8	17:03:33	43.3	517246.3	5705550.0
20050	G		0.7	82.0	8	17:03:38	39.1	517410.9	5705547.3
20060	A		0.5	69.5	8	17:05:07	42.1	518417.8	5705447.8
20060	B	K	0.6	78.4	8	17:06:18	33.0	517384.8	5705446.7
20060	C		0.7	83.2	8	17:06:18	32.5	517374.5	5705446.8
20060	D		6.4	253.2	8	17:08:55	34.9	514813.8	5705446.6
20060	E		6.1	247.0	8	17:09:08	46.1	514582.7	5705449.8
20060	F	K	5.6	236.4	8	17:09:09	46.2	514562.5	5705449.7
20070	A		5.9	243.6	8	17:10:21	52.1	514827.7	5705348.6
20070	B	K	4.6	213.8	8	17:10:23	46.2	514895.5	5705349.6
20070	C	K	1.2	108.7	8	17:11:03	36.5	516184.8	5705346.4
20070	D		1.1	102.3	8	17:11:04	36.1	516208.3	5705346.0
20070	E		1.1	104.6	8	17:11:11	43.1	516481.0	5705346.8
20070	F		1.1	104.6	8	17:11:16	42.2	516622.2	5705345.3
20070	G		1.0	100.2	8	17:11:38	43.9	517327.0	5705349.0



Job # 11003

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
20070	H	K	1.0	98.6	8	17:11:39	42.3	517359.3	5705349.7
20080	A		1.7	128.6	8	17:14:30	40.9	517252.3	5705248.2
20080	B		1.5	122.7	8	17:15:11	33.2	516561.0	5705246.6
20080	C		2.5	157.0	8	17:15:32	39.1	516182.5	5705248.8
20080	D	K	6.3	250.9	8	17:16:46	34.5	514896.8	5705245.7
20080	E		5.9	242.9	8	17:16:50	35.4	514821.9	5705244.8
20080	F		7.2	267.7	8	17:17:04	48.2	514571.3	5705248.4
20090	A		7.4	271.3	8	17:18:07	49.7	514682.7	5705145.4
20090	B		3.3	182.6	8	17:18:34	37.7	515600.1	5705149.1
20090	C		3.3	182.6	8	17:18:37	37.3	515693.9	5705148.4
20090	D		2.7	164.9	8	17:18:49	34.4	516080.7	5705147.7
20090	E		0.9	96.2	8	17:19:44	43.2	517891.2	5705148.0
20090	F		0.9	96.2	8	17:19:53	41.0	518200.8	5705145.5
20100	A	K	2.5	156.7	8	17:23:25	31.2	516218.9	5705047.0
20100	B		2.7	165.4	8	17:23:26	30.0	516199.7	5705047.4
20100	C		3.6	189.1	8	17:23:29	30.8	516156.0	5705046.7
20100	D		3.6	189.1	8	17:23:33	34.6	516087.7	5705044.8
20100	E		5.3	230.3	8	17:24:05	37.5	515537.8	5705050.8
20100	F		10.0	315.6	8	17:24:52	32.5	514725.8	5705053.4
20100	G		14.3	378.0	8	17:25:06	42.0	514496.1	5705049.4
20110	B		16.1	400.6	8	17:26:01	53.0	514595.0	5704951.4
20110	C		7.9	280.7	8	17:26:30	38.0	515458.8	5704956.7
20110	D		4.3	208.3	8	17:26:49	35.3	516078.9	5704951.0
20110	E	N	1.8	134.0	8	17:27:22	34.2	517145.2	5704945.6
20110	F	K	1.8	134.0	8	17:27:24	36.7	517216.0	5704945.7
20110	G		1.8	132.8	8	17:27:25	36.9	517229.2	5704945.9
20120	A	K	4.3	208.4	8	17:30:15	30.2	517275.2	5704849.4
20120	B		3.6	190.1	8	17:30:22	34.6	517176.0	5704847.7
20120	C	K	5.4	231.9	8	17:30:24	31.5	517145.2	5704847.4
20120	D		221.9	1489.5	8	17:32:08	34.6	515393.5	5704845.6
20120	E		86.9	932.2	8	17:32:41	33.2	514759.8	5704850.8
20120	F		86.9	932.2	8	17:32:46	37.2	514671.2	5704849.7
20120	G		67.8	823.5	8	17:32:51	38.9	514585.8	5704849.8
20130	A		350.8	1873.0	8	17:33:57	57.7	514806.0	5704745.5
20130	B		340.4	1844.9	8	17:34:15	35.8	515356.6	5704748.7
20130	C		176.1	1326.9	8	17:34:33	33.3	515929.4	5704750.2
20130	D	K	836.4	2892.0	8	17:35:09	33.0	517049.1	5704745.7
20130	E		510.4	2259.3	8	17:35:12	34.6	517153.0	5704746.4

Line	Anom	ID	Cond (S)	Tau (μ s)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
20130	F	K	647.1	2543.8	8	17:35:14	36.4	517214.4	5704747.8
20140	A	K	210.6	1451.3	8	17:38:02	33.1	517174.9	5704649.4
20140	B	K	460.0	2144.7	8	17:38:09	32.3	517060.5	5704649.8
20140	C	K	26.7	516.7	8	17:39:04	34.6	516054.7	5704648.9
20140	D		30.0	547.9	8	17:39:18	30.1	515811.0	5704644.8
20140	E		69.5	833.4	8	17:39:47	47.5	515246.6	5704649.0
20140	F		26.0	509.9	8	17:40:16	41.8	514710.4	5704649.1

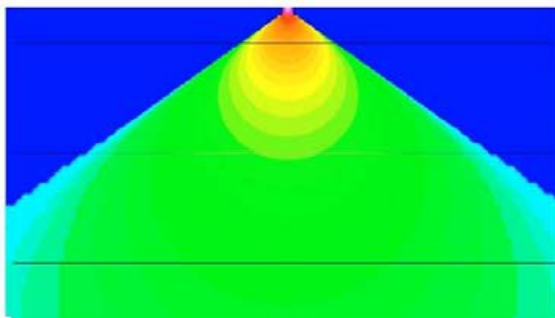
APPENDIX 4: AEROTEM DESIGN CONSIDERATIONS

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

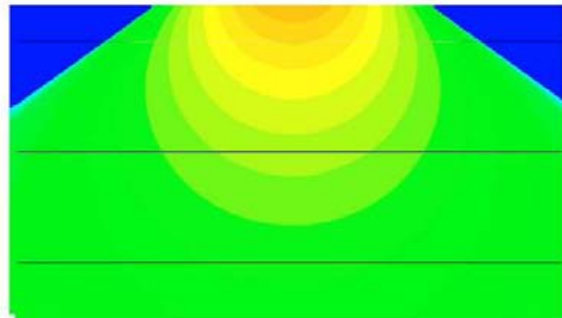
3a with high spatial resolution, and with great accuracy, means the helicopter EM systems provide more detail than any other EM configuration, airborne or ground-based. Spatial resolution is especially important in areas of complex geology and in the search for discrete conductors. With the advent of 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.

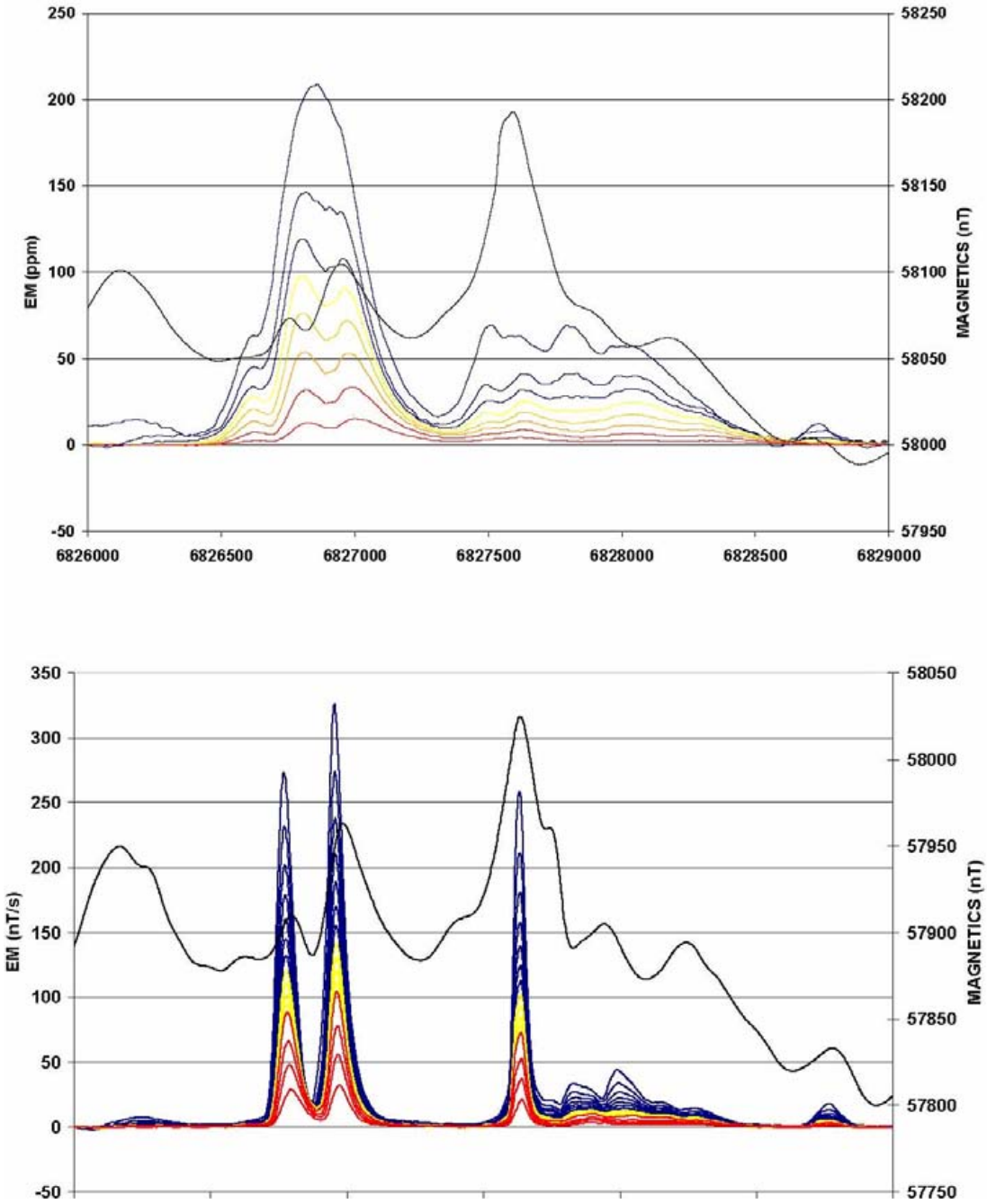


Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.

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 favourable 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.

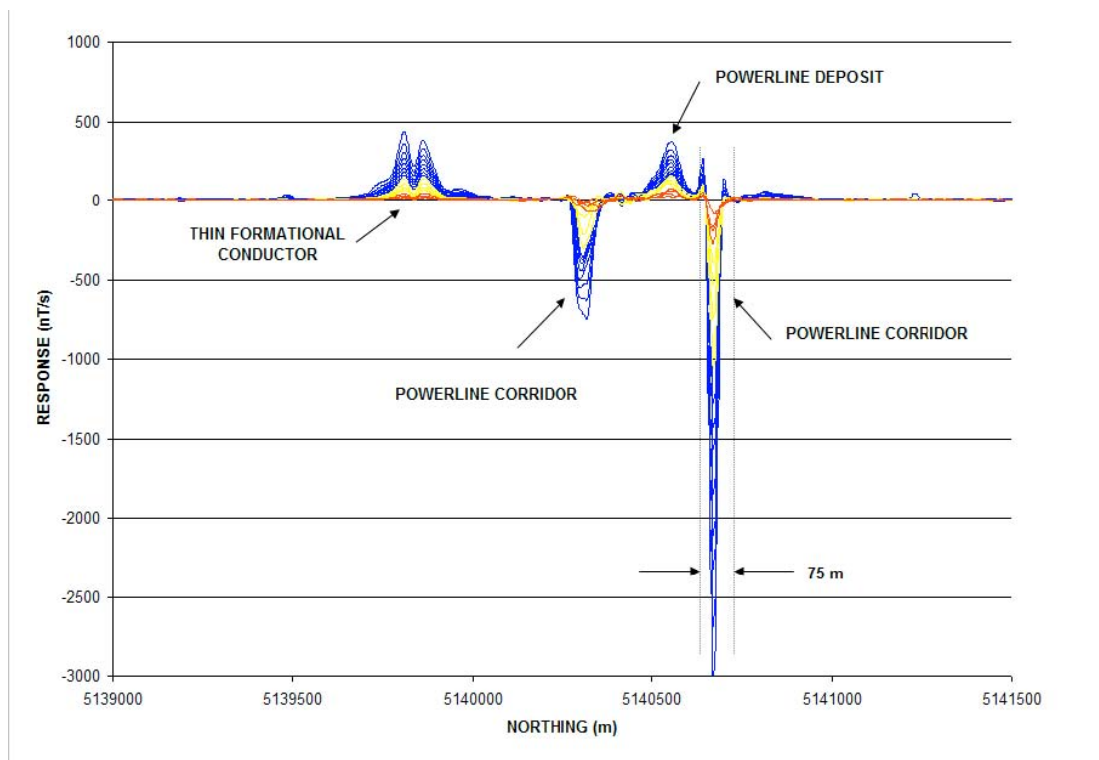


Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish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

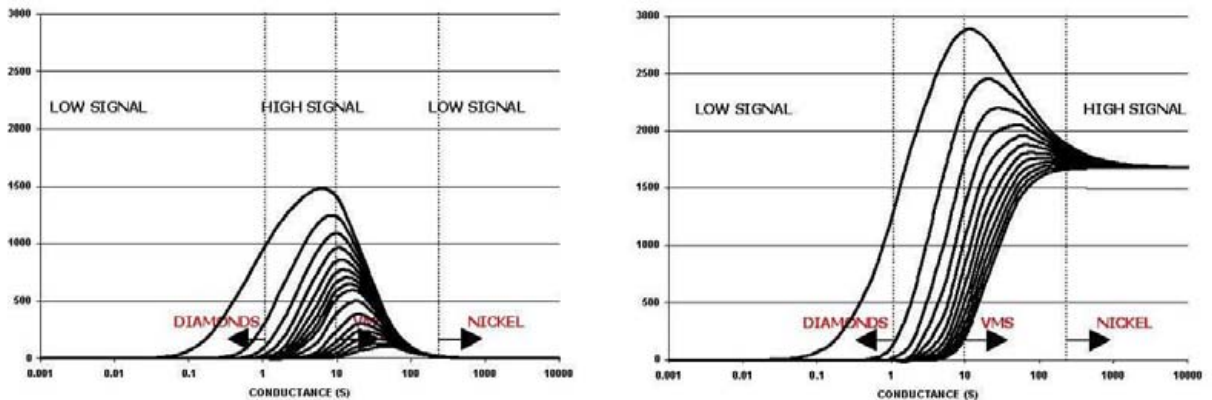
The peak response of a conductive target to an EM system is a function of the target conductance and the EM

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:

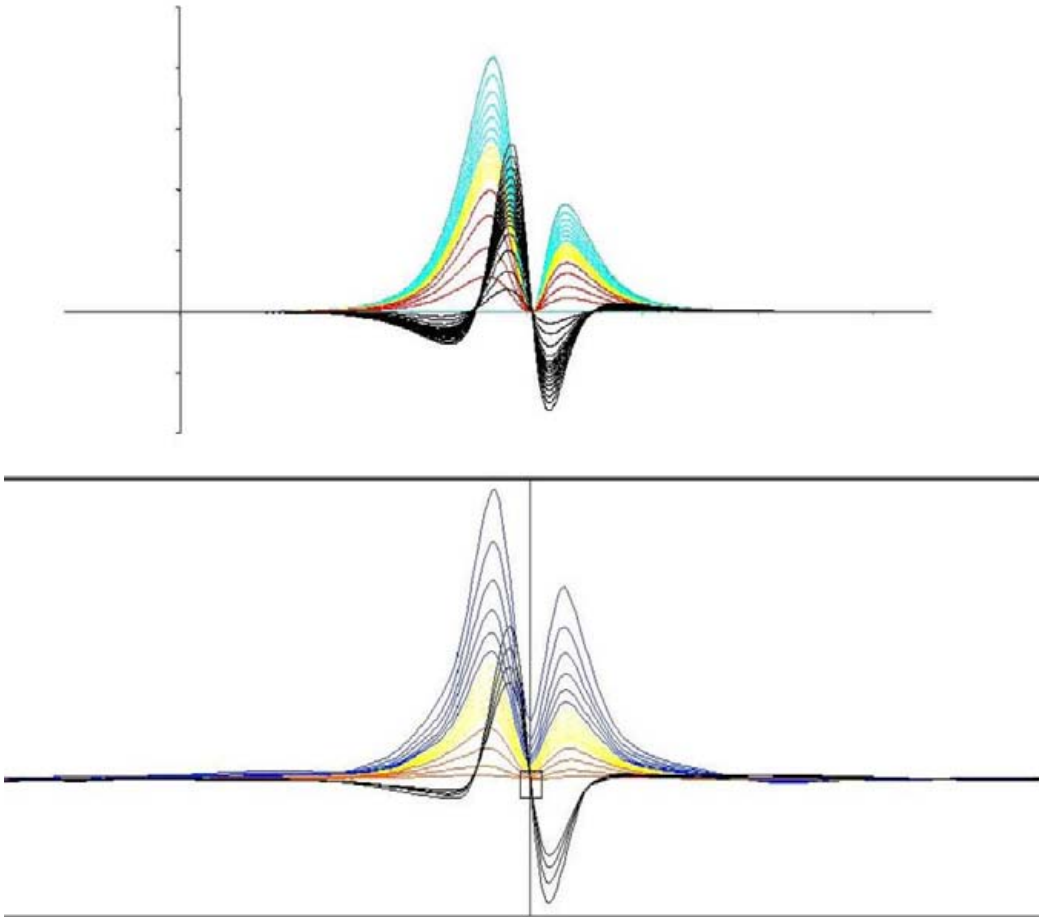


Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude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

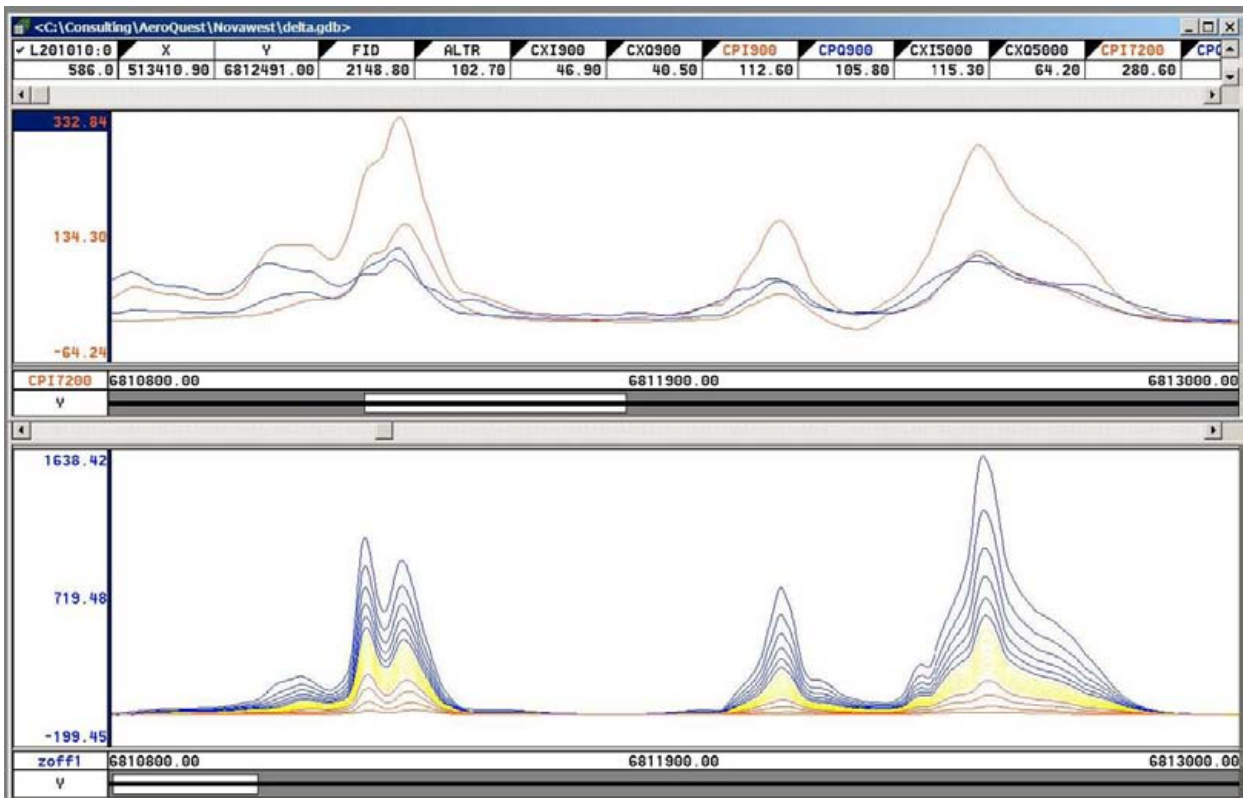


Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.

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 5: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 90 Hz
- Tx On Time – 1,833 (90 Hz) μ s
- Tx Off Time – 3,667 (90 Hz) μ s
- Loop Diameter - 10 m
- Peak Current - 455 A
- Peak Moment – 183,131 NIA
- Typical Z Axis Noise at Survey Speed = 5 nT/s peak to peak
- Sling Weight: 1000 lb
- Length of Tow Cable: 56.1 m
- Bird Survey Height: 30 m nominal

Receiver

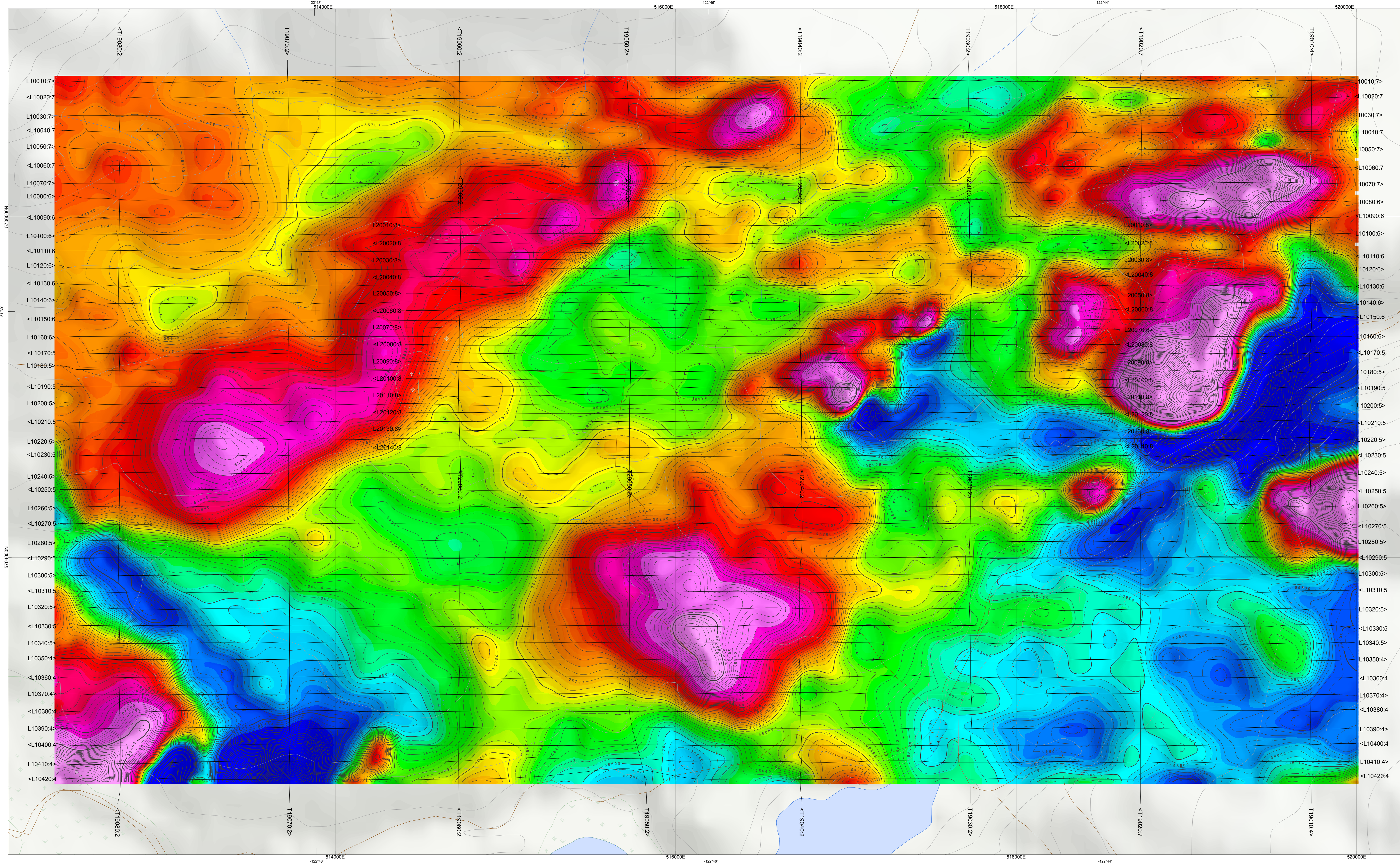
- Two Axis Receiver Coils (x, z) positioned inside the transmitter loop
- Selectable Time Delay to start of first channel 21.3 , 42.7, or 64.0 ms

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

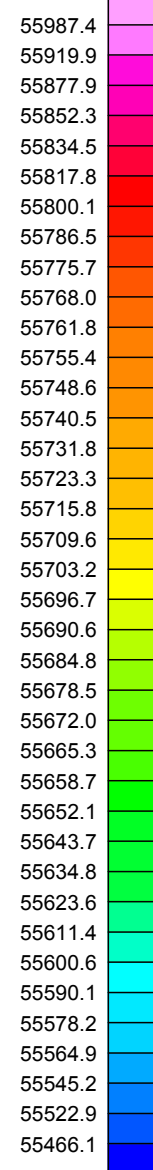
System Considerations

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 183.131 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.



The topographic data base was sourced from 1:50000 NRC (Natural Resources Canada) NTDB data.
 Background shading derived from NASA SRTM data.
 Inset data derived from Natural Resources Canada 'Atlas of Canada Base Maps'.

This map accompanies the technical report entitled 'Report on a Helicopter-Borne Magnetic and Electromagnetic Survey, Big Creek, British Columbia', by Aeroquest Limited, December 2010.



Contour Interval

- 10nT
- 20nT
- 100nT
- 500nT

Legend

- Roads / Trails
- Wetland
- Rivers

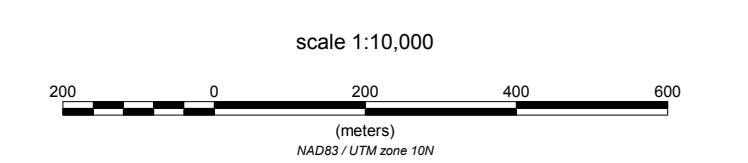
SURVEY SPECIFICATIONS:
 Survey flown: November 11 - 14, 2010
 Traverse/Tie line spacing: 100/1000 metres
 Traverse/Tie line direction: 90°/360°
 Nominal EM bird height: 30 metres
 Aircraft: Aerospatiale SA 315B (C-GLOV)

INSTRUMENTATION:
 Data acquisition: ADAS
 Magnetometer: Geometrics G-823A caesium vapour
 Installation: Towed bird 32 m above EM bird
 Sensitivity: 0.01 nano Tesla
 Electromagnetics: AeroTEM III System (November)
 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
 Inverse Flattening: 298.25722

MAP PROJECTION:
 Projection: Universal Transverse Mercator
 Central Meridian: 123°W (Zone 10)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m



Max Investments Inc.
 Big Creek, British Columbia

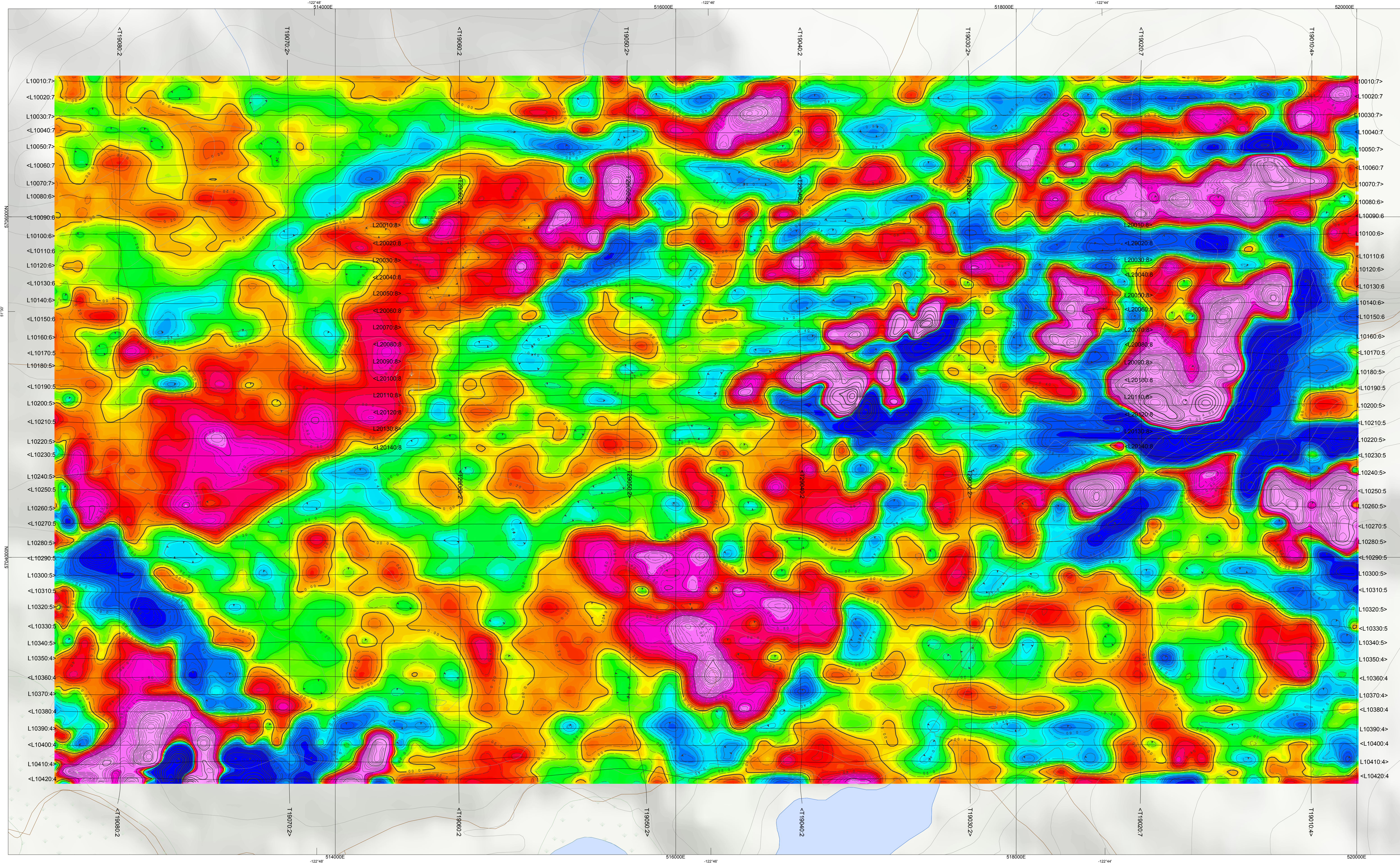
TOTAL MAGNETIC INTENSITY REDUCED TO THE POLE

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 NTS 092007, 010



7687 Bath Road, Mississauga, ON, Canada, L4T 3T1
 Tel: (905) 672-9128 Fax: (905) 672-7983
 www.aeroquest.ca

December 2010



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Grid North
 NAD83 - Zone 10N



Contour Interval

- 0.1 nT/m
- 0.2 nT/m
- 1 nT/m
- 5 nT/m

Legend:

- Roads / Trails
- Wetland
- Rivers

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1VD nT/m

scale 1:10,000

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 Big Creek, British Columbia

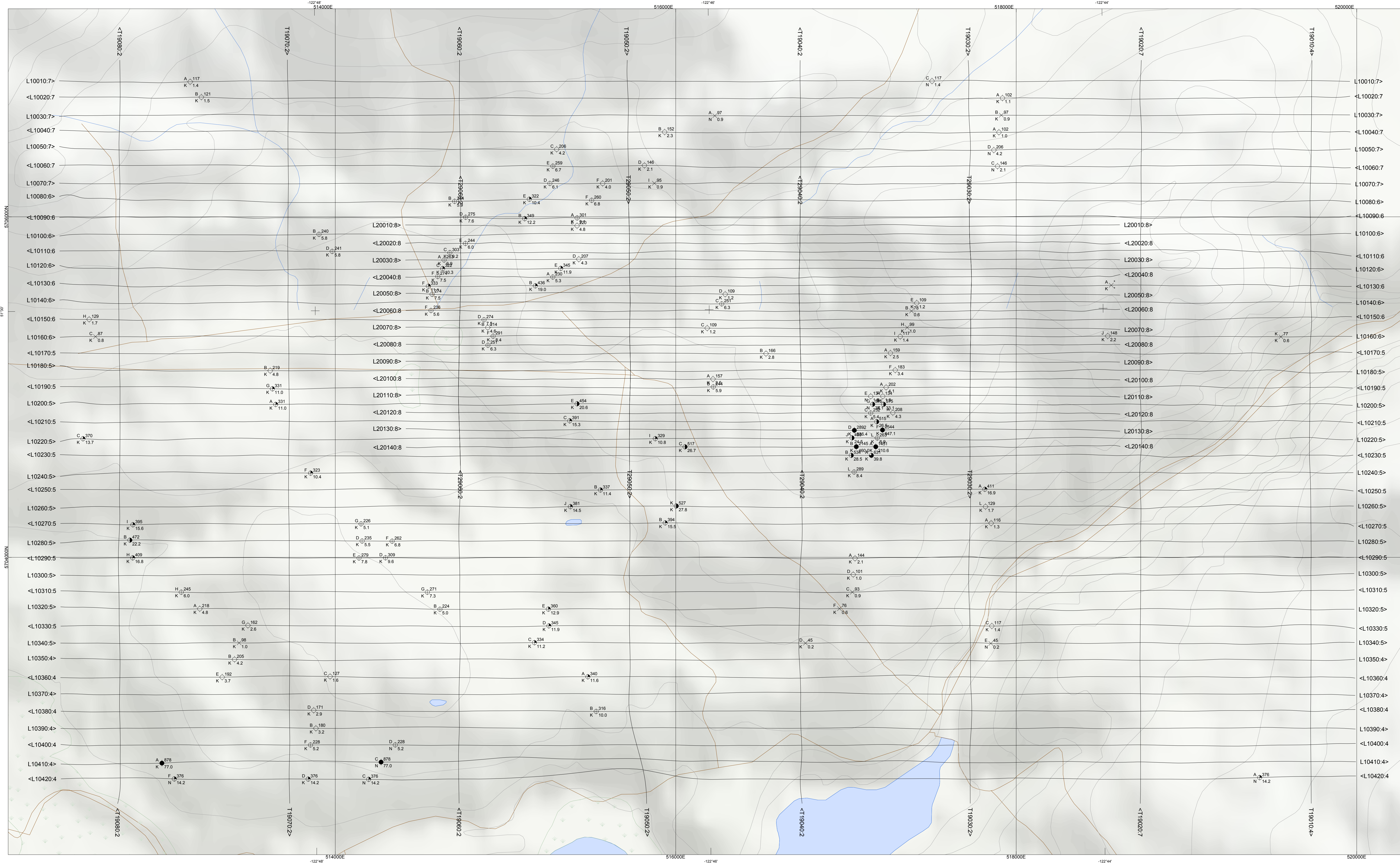
**FIRST VERTICAL
 DERIVATIVE OF TMI-RTP**

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Grid North
 NAD83 - Zone 10N



OP Time Anomaly Symbols

- +505
- 35-505
- 20-355
- 5-105
- 1-55
- 15

anomaly label
 decay constant (µs)
 IIR/EM source
 off-time conductance (S)

Roads / Trails
 Wetland
 Rivers

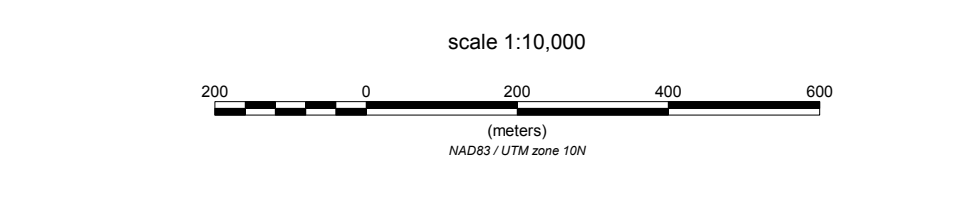
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 Aircraft: Aerospatiale SA 315B (C-GLOV)

INSTRUMENTATION:
 Data acquisition: ADAS
 Magnetometer: Geometrics G-823A caesium vapour
 Installation: Towed bird 32 m above EM bird
 Sensitivity: .001 nano Tesla
 Electromagnetics: AeroTEM III System (November)
 Configuration: Towed bird

NAVIGATION:
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 Navigation equipment: AGNAV with MID-TECH RX400p receiver
 Radar Altimeter: Terra TRA3000/TRI-30

POSITIONING:
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 Major Axis: 6378137.000
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MAP PROJECTION
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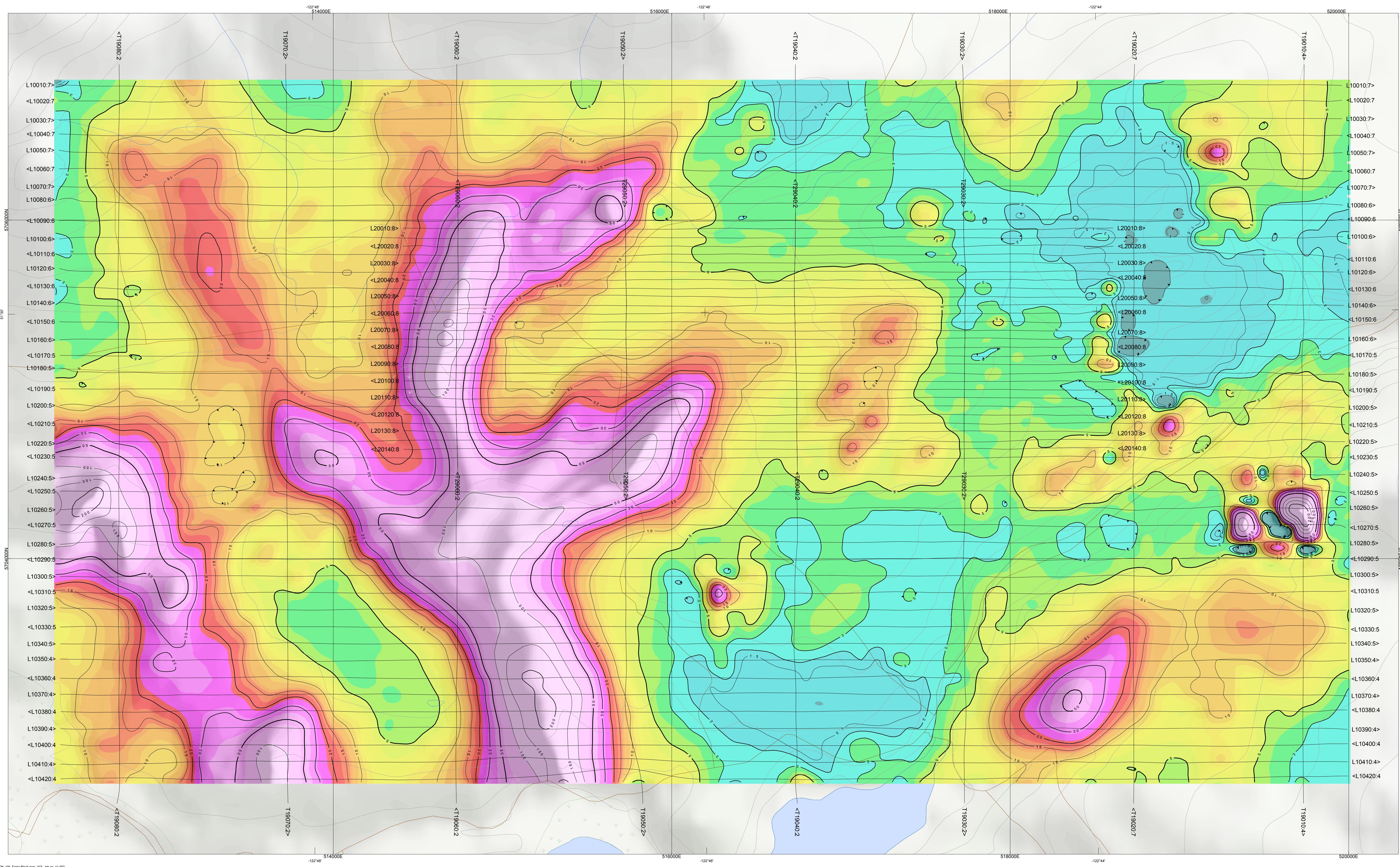
EM ANOMALIES

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Grid North
 NAD83 - Zone 10N



Apparent Conductivity Contours
 1, 2, 3, 5, 7, 10 etc. mS/m

- Roads / Trails
- Wetland
- Rivers

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 False Easting/Northing: 500,000m/0m

scale 1:10,000
 (metres)
 NAD83 UTM Zone 10N

Max Investments Inc.
 Big Creek, British Columbia

**APPARENT CONDUCTIVITY
 EARLY TIME**

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December 2010