APPENDIX III

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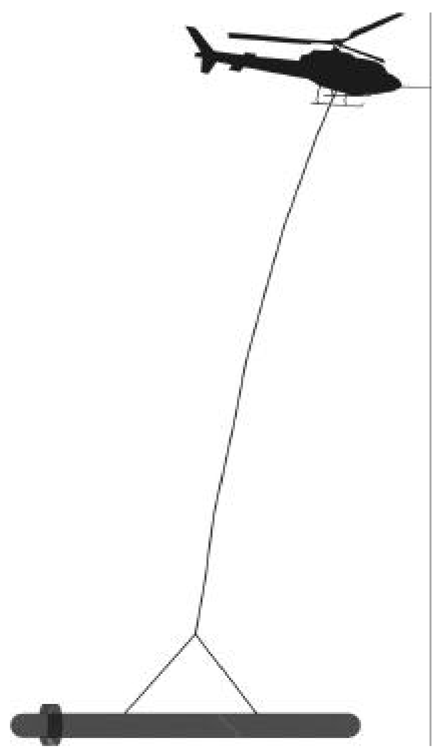
Report # 06041

DIGHEM SURVEY
FOR
HATHOR EXPLORATION LIMITED
ESKAY AREA CLAIMS,
NORTHWESTERN BRITISH COLUMBIA

NTS: 104B/9, 11, 14



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SUMMARY

This report describes the logistics, data acquisition, processing and presentation of results of a DIGHEM airborne geophysical survey carried out for Hathor Exploration Limited, over properties located near Eskay Creek, British Columbia. Total coverage for blocks 2, 7, 8 and 9 amounted to 618.7 km. The survey was flown from July 5th to October 12th, 2006.

The purpose of the survey was to detect zones of conductive mineralization, to locate zones of potassic alteration and to provide information that could be used to map the geology and structure of the survey areas. This was accomplished by using a DIGHEM multi-coil, multi-frequency electromagnetic system, supplemented by a high sensitivity cesium magnetometer, and a 256 channel spectrometer. The information from these sensors was processed to produce maps that display the magnetic, radiometric, and conductive properties of the survey areas. A GPS electronic navigation system ensured accurate positioning of the geophysical data with respect to the base maps.

The survey data were processed and compiled in the Fugro Airborne Surveys Toronto office. Map products and digital data were provided in accordance with the scales and formats specified in the Survey Agreement.

The survey properties contain several anomalous features, many of which are considered to be of moderate to high priority as exploration targets. Many of the inferred bedrock conductors appear to warrant further investigation using appropriate surface exploration

techniques. Areas of interest may be assigned priorities on the basis of supporting geophysical, geochemical and/or geological information. After initial investigations have been carried out, it may be necessary to re-evaluate the remaining anomalies based on information acquired from the follow-up program.

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APPENDICES

1. INTRODUCTION

A DIGHEM electromagnetic/resistivity/magnetic/radiometric survey was flown for Hathor Exploration Limited, from July 5th to October 12th, 2006, over survey blocks located near Eskay Creek, Northwestern British Columbia. The survey areas can be located on NTS map sheets 104 B/9, 11, 14 (Figures 2 & 3).

Survey coverage consisted of approximately 618.7 line-km, including 66.6 line-km of tie lines. Flight lines for block 2 were flown in an azimuthal direction of 0°/180°, and flight lines for blocks 7 through 9 were flown in an azimuthal direction of 90°/270°, all blocks a line separation of 150 metres. Tie lines were flown orthogonal to the traverse lines with a line separation of 1500 meters.

Summary of Line Km for Block 2, Block 7 –9

Block 2	229.1 km
Block 7	125 km
Block 8	104.4 km
Block 9	160.2 km

The survey employed the DIGHEM electromagnetic system. Ancillary equipment consisted of a magnetometer, radar and barometric altimeters, video camera, analog and digital recorders, a 256-channel spectrometer and an electronic navigation system. The instrumentation was installed in an AS350B3 turbine helicopter (Registration C-FYZF) that was provided by Great Slave Helicopters Ltd. The helicopter flew at an average airspeed of 90 km/h with an EM sensor height of approximately 30 metres. The spectrometer crystal package was housed within the helicopter, with a nominal terrain clearance of 60 metres.

In some portions of the survey areas, the steep topography forced the pilot to exceed normal terrain clearance for safety reasons. It is possible that some weak conductors may have escaped detection in areas where the bird height exceeded 120 m. In difficult areas where near-vertical climbs were necessary, the forward speed of the helicopter was reduced to a level that permitted excessive bird swinging. This problem, combined with the severe stresses to which the bird was subjected, gave rise to aerodynamic noise levels that are slightly higher than normal on some lines. Where warranted, reflights were carried out to minimize these adverse effects.

Figure 1: Fugro Airborne Surveys RESOLVE EM bird with AS350-B3

2. SURVEY OPERATIONS

The base of operations for the survey was established at Bell II Lodge, British Columbia. The survey areas can be located on NTS map sheets 104B/9, 11, 14.

Table 2-1 lists the corner coordinates of the survey areas in NAD83, UTM Zone 9 North, central meridian 129° West.

Table 2-1

Nad83 Utm Zone 9

Block	Corners	X-UTM (E)	Y-UTM (N)
06041-2	1	427400	6281777
Block 2	2	434938	6281573
	3	434812	6276905
	4	427273	6277109
06041-7	1	365097	6289591
Block 7	2	368325	6289503
	3	368188	6284442
	4	364960	6284530
06041-8	1	355209	6283186
Block 8	2	356508	6283150
	3	356579	6285749
	4	360177	6285652
	5	360076	6281903
	6	355178	6282036
06041-9	1	354450	6293899
Block 9	2	358929	6293778
	3	358781	6288315

	4	354302	6288436

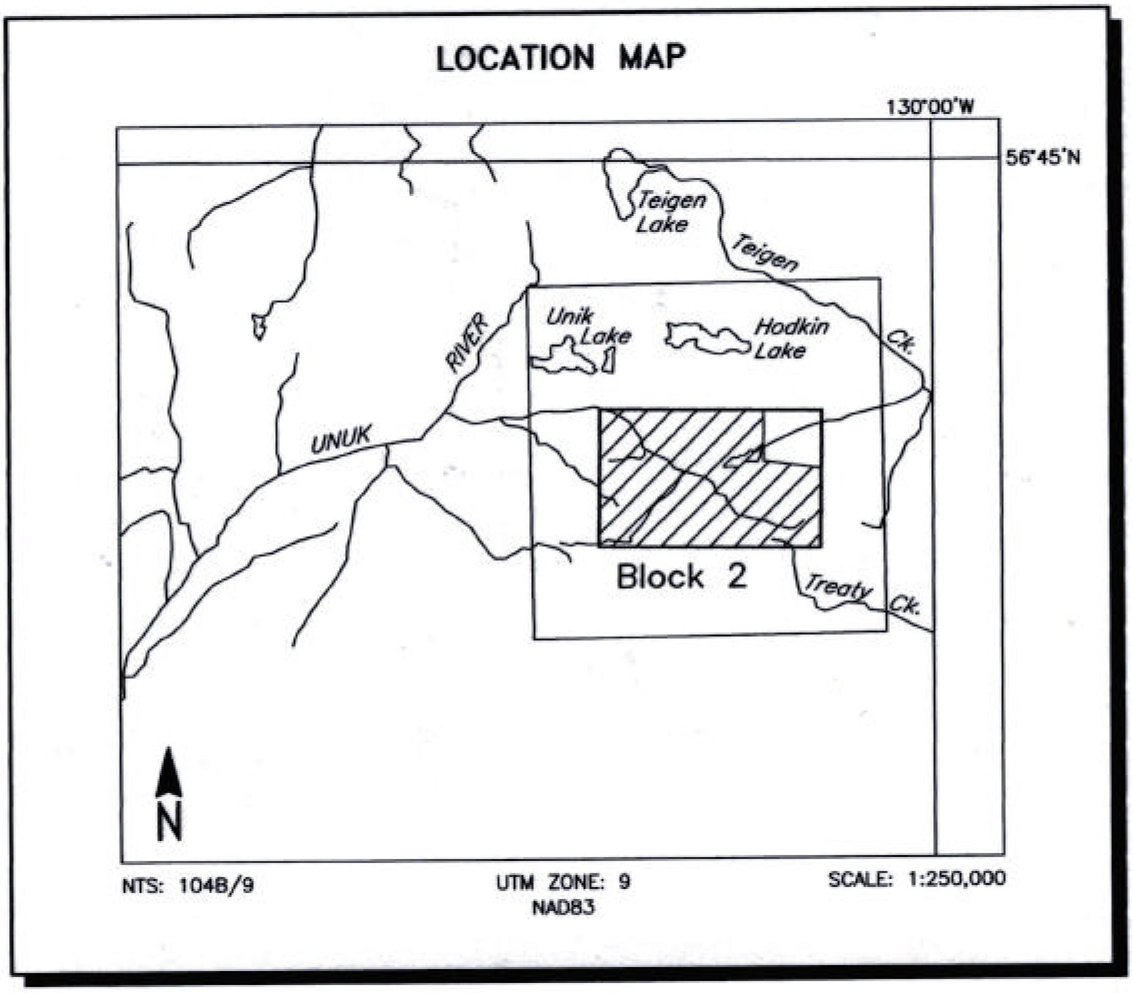

Figure 2
Location Map and Sheet Layout
Eskay Claims Survey Area
Block 2
Job # 06041

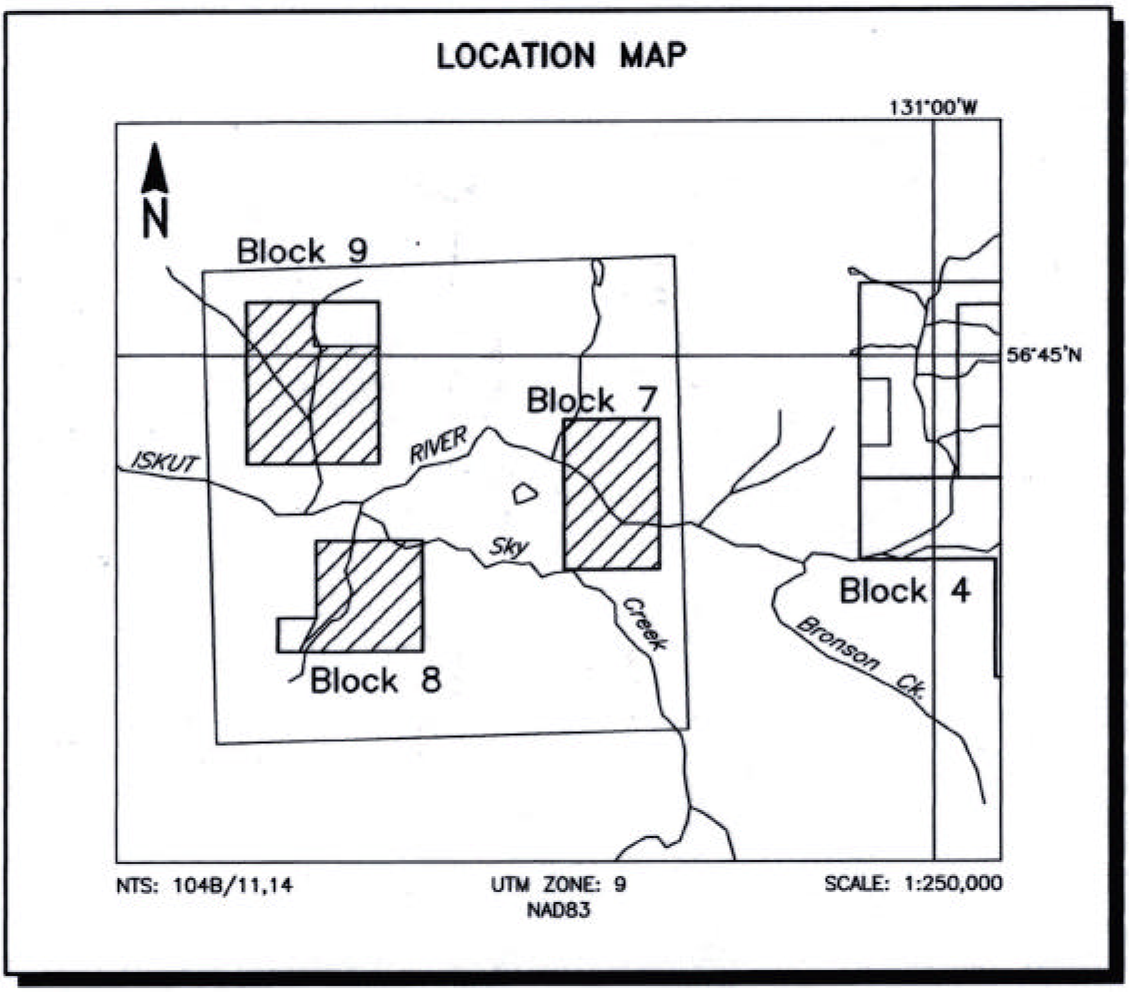

Figure 3
Location Map and Sheet Layout
Eskay Claims Survey Area
Blocks 7, 8 & 9
Job # 06041

The survey specifications were as follows:

Block 2

Parameter	Specifications
Traverse line direction	0°/180°
Traverse line spacing	150 m
Tie line direction	90°/270°,
Tie line spacing	1500 m
Sample interval	10 Hz, 3.3 m @ 120 km/h
Aircraft mean terrain clearance	58 m
EM sensor mean terrain clearance	30 m
Mag sensor mean terrain clearance	30 m
Average speed	90 km/h
Navigation (guidance)	±5 m, Real-time GPS
Post-survey flight path	±2 m, Differential GPS

Blocks 7 - 9

Parameter	Specifications
Traverse line direction	90°/270°
Traverse line spacing	150 m
Tie line direction	0°/180°,
Tie line spacing	1500 m
Sample interval	10 Hz, 3.3 m @ 120 km/h
Aircraft mean terrain clearance	58 m
EM sensor mean terrain clearance	30 m
Mag sensor mean terrain clearance	30 m
Average speed	90 km/h
Navigation (guidance)	±5 m, Real-time GPS
Post-survey flight path	±2 m, Differential GPS

3. SURVEY EQUIPMENT

This section provides a brief description of the geophysical instruments used to acquire the survey data and the calibration procedures employed. The geophysical equipment was installed in an AS350B3 helicopter. This aircraft provides a safe and efficient platform for surveys of this type.

Electromagnetic System

Model: DIGHEM V – BKS52

Type: Towed bird, symmetric dipole configuration operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres for 900 Hz, 1000 Hz, 5500 Hz and 7200 Hz, and 6.3 metres for the 56,000 Hz coil-pair.

Coil orientations, frequencies and dipole moments

Atm^2	orientation		nominal	actual
211	coaxial	/	1000 Hz	1116 Hz
211	coplanar	/	900 Hz	872 Hz
67	coaxial	/	5500 Hz	5666 Hz
56	coplanar	/	7200 Hz	7233 Hz
15	coplanar	/	56,000 Hz	55,460 Hz

Channels recorded:

5 in-phase channels
5 quadrature channels
2 monitor channels

Sensitivity:

0.06 ppm at 1000 Hz Cx
0.12 ppm at 900 Hz Cp
0.12 ppm at 5,500 Hz Cx
0.24 ppm at 7,200 Hz Cp
0.60 ppm at 56,000 Hz Cp

Sample rate: 10 per second, equivalent to 1 sample every 3.3 m, at a survey speed of 120 km/h.

The electromagnetic system utilizes a multi-coil coaxial/coplanar technique to energize conductors in different directions. The coaxial coils are vertical with their axes in the flight direction. The coplanar coils are horizontal. The secondary fields are sensed simultaneously by means of receiver coils that are maximum coupled to their respective transmitter coils. The system yields an in-phase and a quadrature channel from each transmitter-receiver coil-pair.

In-Flight EM System Calibration

Calibration of the system during the survey uses the Fugro AutoCal automatic, internal calibration process. At the beginning and end of each flight, and at intervals during the flight, the system is flown up to high altitude to remove it from any “ground effect” (response from the earth). Any remaining signal from the receiver coils (base level) is measured as the zero level, and is removed from the data collected until the time of the next calibration. Following the zero level setting, internal calibration coils, for which the response phase and amplitude have been determined at the factory, are automatically triggered – one for each frequency. The on-time of the coils is sufficient to determine an accurate response through any ambient noise. The receiver response to each calibration coil “event” is compared to the expected response (from the factory calibration) for both phase angle and amplitude, and any phase and gain corrections are automatically applied to bring the data to the correct value.

In addition, the outputs of the transmitter coils are continuously monitored during the survey, and the gains are adjusted to correct for any change in transmitter output.

Because the internal calibration coils are calibrated at the factory (on a resistive halfspace) ground calibrations using external calibration coils on-site are not necessary for system calibration. A check calibration may be carried out on-site to ensure all systems are working correctly. All system calibrations will be carried out in the air, at sufficient altitude that there will be no measurable response from the ground.

The internal calibration coils are rigidly positioned and mounted in the system relative to the transmitter and receiver coils. In addition, when the internal calibration coils are calibrated at the factory, a rigid jig is employed to ensure accurate response from the external coils.

Using real time Fast Fourier Transforms and the calibration procedures outlined above, the data are processed in real time, from measured total field at a high sampling rate, to in-phase and quadrature values at 10 samples per second.

Airborne Magnetometer

Model:	Scintrex CS2 sensor
Type:	Optically pumped cesium vapour
Sensitivity:	0.01 nT

Sample rate: 10 per second

The magnetometer sensor was mounted on the tail of the EM bird, 28 m below the helicopter.

Magnetic Base Station

Primary

Model: Fugro CF1 base station with timing provided by integrated GPS

Sensor type: Geometrics G822A

Counter specifications:	Accuracy:	±0.1 nT
	Resolution:	0.01 nT
	Sample rate	1 Hz
GPS specifications:	Model:	Marconi Allstar
	Type:	Code and carrier tracking of L1 band, 12-channel, C/A code at 1575.42 MHz
	Sensitivity:	-90 dBm, 1.0 second update
	Accuracy:	Manufacturer's stated accuracy for differential corrected GPS is 2 metres

Environmental Monitor specifications: Temperature:

- Accuracy: ±1.5ºC max
- Resolution: 0.0305ºC
- Sample rate: 1 Hz
- Range: -40ºC to +75ºC

Barometric pressure:

- Model: Motorola MPXA4115A
- Accuracy: ±3.0º kPa max (-20ºC to 105ºC temp. ranges)
- Resolution: 0.013 kPa
- Sample rate: 1 Hz
- Range: 55 kPa to 108 kPa

Backup

Model: GEM Systems GSM-19T

Type: Digital recording proton precession

Sensitivity: 0.10 nT

Sample rate: 3 second intervals

A digital recorder is operated in conjunction with the base station magnetometer to record the diurnal variations of the earth's magnetic field. The clock of the base station is synchronized with that of the airborne system, using GPS time, to permit subsequent removal of diurnal drift. The Fugro CF1 was the primary magnetic base station. It was located at Iskut River, latitude 56°46’38.70927”N, longitude 130°34’59.06892”W, at an elevation of 292.2 metres above the ellipsoid. The CF1 was later moved to Bell II Lodge, latitude 56°44’41.56093”N, longitude 129°47’45.88900”W, at an elevation of 553.0 metres above the ellipsoid. The back-up GEM Systems GSM-19T was set up at the same location.

Figure 2-8: Fugro CF1

Navigation (Global Positioning System)

<u>Airborne Receiver for Real-time Navigation & Guidance</u>

Model:	Novatel OEM IV.
Type:	Code and carrier tracking of L1-C/A code at 1575.42 MHz and L2-P code at 1227.0 MHz. Dual frequency, 24-channel.
Sample rate:	10 Hz update.
Accuracy:	Better than 1 metre in differential mode.
Antenna:	Aero AT1675 mounted on tail of aircraft

Primary Base Station for Post-Survey Differential Correction

Model:	Novatel OEM IV
Type:	Code and carrier tracking of L1-C/A code at 1575.42 MHz and L2-P code at 1227.0 MHz. Dual frequency, 24-channel.
Sample rate:	10 Hz update.
Accuracy:	Better than 1 metre in differential mode.

Secondary GPS Base Station

Model:	Marconi Allstar OEM, CMT-1200
Type:	Code and carrier tracking of L1 band, 12-channel, C/A code at 1575.42 MHz
Sensitivity:	-90 dBm, 1.0 second update
Accuracy:	Manufacturer's stated accuracy for differential corrected GPS is 2 metres.

The Novatel OEM IV is a line of sight, satellite navigation system that utilizes time-coded signals from at least four of forty-eight available satellites. Both Russian GLONASS and American NAVSTAR satellite constellations are used to calculate the position and to provide real time guidance to the helicopter. A similar system was used as the primary base station receiver. The mobile and base station raw XYZ data were recorded, thereby permitting post-survey differential corrections for theoretical accuracies of better than 2 metres. A Marconi Allstar GPS unit, part of the CF-1, was used as a secondary (back-up) base station.

Each base station receiver is able to calculate its own latitude and longitude. For this survey, the primary GPS station was located at Iskut River latitude 56°46’38.70927”N, longitude 130°34’59.06892”W, at an elevation of 292.2 metres above the ellipsoid. On July 14, the base station was moved to Bell II Lodge, latitude 56°44’41.56093”N, longitude 129°47’45.88900”W, at an elevation of 553.0 metres above the ellipsoid. The GPS records data relative to the WGS84 ellipsoid, which is the basis of the revised North American Datum (NAD83). Conversion software is used to transform the WGS84 coordinates to the NAD83 UTM system displayed on the maps.

Figure 2-9: Fugro Primary GPS base station

Radar Altimeter

Manufacturer:	Sperry
Model:	RT220
Type:	Short pulse modulation, 4.3 GHz
Sensitivity:	0.3 m
Sample rate:	2 per second

The radar altimeter measures the vertical distance between the helicopter and the ground. This information is used in the processing algorithm that determines conductor depth.

Barometric Pressure and Temperature Sensors

Model:	DIGHEM D 1300	
Type:	Motorola MPX4115AP analog pressure sensor AD592AN high-impedance remote temperature sensors	
Sensitivity:	Pressure:	150 mV/kPa
	Temperature:	100 mV/°C or 10 mV/°C (selectable)
Sample rate:	10 per second	

The D1300 circuit is used in conjunction with one barometric sensor and up to three temperature sensors. Two sensors (baro and temp) are installed in the EM console in the aircraft, to monitor pressure (KPA), and internal (T1) operating temperature. A third sensor is installed in the bird to monitor the external (T2) temperature.

Digital Data Acquisition System

Manufacturer: Fugro

Model: HeliDAS

Recorder: Ultra II Compact Flash Memory Card

The stored data are downloaded to the field workstation PC at the survey base, for verification, backup and preparation of in-field products.

Video Flight Path Recording System

Type: Panasonic WVCL322 Colour Video Camera

Recorder: Panasonic AG-720

Format: NTSC (VHS)

Fiducial numbers are recorded continuously and are displayed on the margin of each image. This procedure ensures accurate correlation of data with respect to visible features on the ground.

Spectrometer

Manufacturer: Exploranium

Model:	GR-820
Type:	256 Multichannel, Potassium stabilized
Accuracy:	1 count/sec.
Update:	1 integrated sample/sec.

The GR-820 Airborne Spectrometer employs two downward looking crystals (1024 cu.in.- 16.8 L) and one upward looking crystal (256 cu.in.- 4.2 L). The downward crystal records the radiometric spectrum from 410 KeV to 3 MeV over 256 discrete energy windows, as well as a cosmic ray channel which detects photons with energy levels above 3.0 MeV. From these 256 channels, the standard Total Count, Potassium, Uranium and Thorium channels are extracted. The upward crystal is used to measure and correct for Radon.

The shock-protected Sodium Iodide (Thallium) crystal package is unheated, and is automatically stabilized with respect to the Potassium peak. The GR-820 provides raw or Compton stripped data that has been automatically corrected for gain, base level, ADC offset and dead time.

The system is calibrated before and after each flight using three accurately positioned hand-held sources. Additionally, fixed-site test lines are flown to determine if there are any differences in background. This procedure allows corrections to be applied to each survey flight, to eliminate any differences that might result from changes in temperature or humidity.

4. QUALITY CONTROL AND IN-FIELD PROCESSING

Digital data for each flight were transferred to the field workstation, in order to verify data quality and completeness. A database was created and updated using Geosoft Oasis Montaj and proprietary Fugro Atlas software. This allowed the field personnel to calculate, display and verify both the positional (flight path) and geophysical data on a screen or printer. Records were examined as a preliminary assessment of the data acquired for each flight.

In-field processing of Fugro survey data consists of differential corrections to the airborne GPS data, verification of EM calibrations, drift correction of the raw airborne EM data, spike rejection and filtering of all geophysical and ancillary data, verification of flight videos, calculation of preliminary resistivity data, diurnal correction, and preliminary leveling of magnetic data.

All data, including base station records, were checked on a daily basis, to ensure compliance with the survey contract specifications. Reflights were required if any of the following specifications were not met.

Navigation - Positional (x,y) accuracy of better than 10 m, with a CEP (circular error of probability) of 95%.

Flight Path	-	No lines to exceed ±25% departure from nominal line spacing over a continuous distance of more than 1 km, except for reasons of safety.
Clearance	-	Mean terrain sensor clearance of 30 m, ±10 m, except where precluded by safety considerations, e.g., restricted or populated areas, severe topography, obstructions, tree canopy, aerodynamic limitations, etc.
Airborne Mag	-	The non-normalized 4^{th} difference will not exceed 1.6 nT over a continuous distance of 1 kilometre excluding areas where this specification is exceeded due to natural anomalies.
Base Mag	-	Diurnal variations not to exceed 10 nT over a straight line time chord of 1 minute.
EM	-	Spheric pulses may occur having strong peaks but narrow widths. The EM data area considered acceptable when their occurrence is less than 10 spheric events exceeding the stated noise specification for a given frequency per 100 samples continuously over a distance of 2,000 metres.

Frequency	Coil Orientation	Peak to Peak Noise Envelope (ppm)
900 Hz	horizontal coplanar	10.0
1000 Hz	vertical coaxial	5.0
5500 Hz	vertical coaxial	10.0
7200 Hz	horizontal coplanar	20.0
56,000 Hz	horizontal coplanar	40.0

5. DATA PROCESSING

Flight Path Recovery

The raw range data from at least four satellites are simultaneously recorded by both the base and mobile GPS units. The geographic positions of both units, relative to the model ellipsoid, are calculated from this information. Differential corrections, which are obtained from the base station, are applied to the mobile unit data to provide a post-flight track of the aircraft, accurate to within 2 m. Speed checks of the flight path are also carried out to determine if there are any spikes or gaps in the data.

The corrected WGS84 latitude/longitude coordinates are transformed to the coordinate system used on the final maps. Images or plots are then created to provide a visual check of the flight path.

Electromagnetic Data

EM data are processed at the recorded sample rate of 10 samples/second. Sferic rejection median and Hanning filters are then applied to reduce noise to acceptable levels.

EM test profiles are then created to allow the interpreter to select the most appropriate EM anomaly picking controls for a given survey area. The EM picking parameters depend on several factors but are primarily based on the dynamic range of the resistivities within the survey area, and the types and expected geophysical responses of the targets being sought.

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. The automatic selection algorithm is intentionally oversensitive to assure that no meaningful responses are missed. Using the preliminary map in conjunction with the multi-parameter stacked profiles, the interpreter then classifies the anomalies according to their source and eliminates those that are not substantiated by the data. The final interpreted EM anomaly map includes bedrock, surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

Apparent Resistivity

The apparent resistivities in ohm-m are generated from the in-phase and quadrature EM components for all of the coplanar frequencies, using a pseudo-layer half-space model. The inputs to the resistivity algorithm are the in-phase and quadrature amplitudes of the secondary field. The algorithm calculates the apparent resistivity in ohm-m, and the apparent height of the bird above the conductive source. Any difference between the apparent height and the true height, as measured by the radar altimeter, is called the pseudo-layer and reflects the difference between the real geology and a homogeneous halfspace. This difference is often attributed to the presence of a highly resistive upper layer. Any errors in the altimeter reading, caused by heavy tree cover, are included in the pseudo-layer and do not affect the resistivity calculation. The apparent depth estimates, however, will reflect the altimeter errors. Apparent resistivities calculated in this manner may differ from those calculated using other models.

In areas where the effects of magnetic permeability or dielectric permittivity have suppressed the in-phase responses, the calculated resistivities will be erroneously high. Various algorithms and inversion techniques can be used to partially correct for the effects of permeability and permittivity.

Apparent resistivity maps portray all of the information for a given frequency over the entire survey area. This full coverage contrasts with the electromagnetic anomaly map, which provides information only over interpreted conductors. The large dynamic range afforded by the multiple frequencies makes the apparent resistivity parameter an excellent mapping tool.

The preliminary apparent resistivity maps and images are carefully inspected to identify any lines or line segments that might require base level adjustments. Subtle changes between in-flight calibrations of the system can result in line-to-line differences that are more recognizable in resistive (low signal amplitude) areas. If required, manual level adjustments are carried out to eliminate or minimize resistivity differences that can be attributed, in part, to changes in operating temperatures. These leveling adjustments are usually very subtle, and do not result in the degradation of discrete anomalies.

After the manual leveling process is complete, revised resistivity grids are created. The resulting grids can be subjected to a microleveling technique in order to smooth the data for contouring. The coplanar resistivity parameter has a broad 'footprint' that requires very little filtering.

The calculated resistivities for the 900 Hz, 7200 Hz and 56000 Hz coplanar frequencies are included in the XYZ and grid archives. Values are in ohm-metres on all final products.

Dielectric Permittivity and Magnetic Permeability Corrections[1]

In resistive areas having magnetic rocks, the magnetic and dielectric effects will both generally be present in high-frequency EM data, whereas only the magnetic effect will exist in low-frequency data.

The magnetic permeability is first obtained from the EM data at the lowest frequency, because the ratio of the magnetic response to conductive response is maximized and because displacement currents are negligible. The homogeneous half-space model is used. The computed magnetic permeability is then used along with the in-phase and quadrature response at the highest frequency to obtain the relative dielectric permittivity, again using the homogeneous half-space model. The highest frequency is used because the ratio of dielectric response to conductive response is maximized. The resistivity can

[1] Huang, H. and Fraser, D.C., 2001 Mapping of the Resistivity, Susceptibility, and Permittivity of the Earth Using a Helicopter-borne Electromagnetic System: Geophysics 106 pg 148-157.

then be determined from the measured in-phase and quadrature components of each frequency, given the relative magnetic permeability and relative dielectric permittivity.

Resistivity-depth Sections (optional)

The apparent resistivities for all frequencies can be displayed simultaneously as coloured resistivity-depth sections. Usually, only the coplanar data are displayed as the close frequency separation between the coplanar and adjacent coaxial data tends to distort the section. The sections can be plotted using the topographic elevation profile as the surface. The digital terrain values, in metres a.m.s.l., can be calculated from the GPS Z-value or barometric altimeter, minus the aircraft radar altimeter.

Resistivity-depth sections can be generated in three formats:

(1) Sengpiel resistivity sections, where the apparent resistivity for each frequency is plotted at the depth of the centroid of the in-phase current flow[2]; and,

(2) Differential resistivity sections, where the differential resistivity is plotted at the differential depth[3].

(3) Occam[4] or Multi-layer[5] inversion.

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2 Sengpiel, K.P., 1988, Approximate Inversion of Airborne EM Data from Multilayered Ground: Geophysical Prospecting 36, 446-459.

3 Huang, H. and Fraser, D.C., 1993, Differential Resistivity Method for Multi-frequency Airborne EM Sounding: presented at Intern. Airb. EM Workshop, Tucson, Ariz.

Both the Sengpiel and differential methods are derived from the pseudo-layer half-space model. Both yield a coloured resistivity-depth section that attempts to portray a smoothed approximation of the true resistivity distribution with depth. Resistivity-depth sections are most useful in conductive layered situations, but may be unreliable in areas of moderate to high resistivity where signal amplitudes are weak. In areas where in-phase responses have been suppressed by the effects of magnetite, or adversely affected by cultural features, the computed resistivities shown on the sections may be unreliable.

Both the Occam and multi-layer inversions compute the layered earth resistivity model that would best match the measured EM data. The Occam inversion uses a series of thin, fixed layers (usually 20 x 5m and 10 x 10m layers) and computes resistivities to fit the EM data. The multi-layer inversion computes the resistivity and thickness for each of a defined number of layers (typically 3-5 layers) to best fit the data.

Total Magnetic Field

A fourth difference editing routine was applied to the magnetic data to remove any spikes. The aeromagnetic data were corrected for diurnal variation using the magnetic base station data. The results were then leveled using tie and traverse line intercepts. Manual adjustments were applied to any lines that required leveling, as indicated by shadowed

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[4] Constable et al, 1987, Occam's inversion: a practical algorithm for generating smooth models from electromagnetic sounding data: Geophysics, 52, 289-300.

[5] Huang H., and Palacky, G.J., 1991, Damped least-squares inversion of time domain airborne EM data based on singular value decomposition: Geophysical Prospecting, 39, 827-844.

images of the gridded magnetic data. The manually leveled data were then subjected to a microleveling filter.

Calculated Vertical Magnetic Gradient

The diurnally-corrected total magnetic field data were subjected to a processing algorithm that enhances the response of magnetic bodies in the upper 500 m and attenuates the response of deeper bodies. The resulting vertical gradient map provides better definition and resolution of near-surface magnetic units. It also identifies weak magnetic features that may not be evident on the total field map. However, regional magnetic variations and changes in lithology may be better defined on the total magnetic field map.

EM Magnetite (optional)

The apparent percent magnetite by weight is computed wherever magnetite produces a negative in-phase EM response. This calculation is more meaningful in resistive areas.

Magnetic Derivatives (optional)

The total magnetic field data can be subjected to a variety of filtering techniques to yield maps or images of the following:

enhanced magnetics

second vertical derivative

reduction to the pole/equator

magnetic susceptibility with reduction to the pole

upward/downward continuations

analytic signal

All of these filtering techniques improve the recognition of near-surface magnetic bodies, with the exception of upward continuation. Any of these parameters can be produced on request.

Digital Elevation (optional)

The radar altimeter values (ALTR – aircraft to ground clearance) are subtracted from the differentially corrected and de-spiked GPS-Z values to produce profiles of the height above the ellipsoid along the survey lines. These values are gridded to produce contour maps showing approximate elevations within the survey area. The calculated digital terrain data are then tie-line leveled and adjusted to mean sea level. Any remaining subtle line-to-line discrepancies are manually removed. After the manual corrections are applied, the digital terrain data are filtered with a microleveling algorithm.

The accuracy of the elevation calculation is directly dependent on the accuracy of the two input parameters, ALTR and GPS-Z. The ALTR value may be erroneous in areas of heavy tree cover, where the altimeter reflects the distance to the tree canopy rather than the ground. The GPS-Z value is primarily dependent on the number of available satellites. Although post-processing of GPS data will yield X and Y accuracies in the order of 1-2 metres, the accuracy of the Z value is usually much less, sometimes in the ±10 metre range. Further inaccuracies may be introduced during the interpolation and gridding process.

Because of the inherent inaccuracies of this method, no guarantee is made or implied that the information displayed is a true representation of the height above sea level. Although this product may be of some use as a general reference, THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.

Contour, Colour and Shadow Map Displays

The geophysical data are interpolated onto a regular grid using a modified Akima spline technique. The resulting grid is suitable for image processing and generation of contour maps. The grid cell size is 20% of the line interval.

Colour maps are produced by interpolating the grid down to the pixel size. The parameter is then incremented with respect to specific amplitude ranges to provide colour "contour" maps.

Monochromatic shadow maps or images are generated by employing an artificial sun to cast shadows on a surface defined by the geophysical grid. There are many variations in the shadowing technique. These techniques can be applied to total field or enhanced magnetic data, magnetic derivatives, resistivity, etc. The shadowing technique is also used as a quality control method to detect subtle changes between lines.

Multi-channel Stacked Profiles

Distance-based profiles of the digitally recorded geophysical data are generated and plotted at an appropriate scale. These profiles also contain the calculated parameters that are used in the interpretation process. These are produced as worksheets prior to interpretation, and are also presented in the final corrected form after interpretation. The profiles display electromagnetic anomalies with their respective interpretive symbols. Table 5-1 shows the parameters and scales for the multi-channel stacked profiles.

In Table 5-1, the log resistivity scale of 0.06 decade/mm means that the resistivity changes by an order of magnitude in 16.6 mm. The resistivities at 0, 33 and 67 mm up from the bottom of the digital profile are respectively 1, 100 and 10,000 ohm-m.

Table 5-1. Multi-channel Stacked Profiles

Channel Name (Freq)	Observed Parameters	Scale Units/mm
MAGF	total magnetic field (fine)	5 nT
MAGF	total magnetic field (coarse)	50 nT
ALTBIRD	EM sensor height above ground	6 m
TC	Total Counts	50 cps
K	Potassium counts	10 cps
TH	Thorium counts	2 cps
U	Uranium counts	2 cps
CXI1000	vertical coaxial coil-pair in-phase (1000 Hz)	2 ppm
CXQ1000	vertical coaxial coil-pair quadrature (1000 Hz)	2 ppm
CPI900	horizontal coplanar coil-pair in-phase (900 Hz)	4 ppm
CPQ900	horizontal coplanar coil-pair quadrature (900 Hz)	4 ppm
CXI5500	vertical coaxial coil-pair in-phase (5500 Hz)	4 ppm
CXQ5500	vertical coaxial coil-pair quadrature (5500 Hz)	4 ppm
CPI7200	horizontal coplanar coil-pair in-phase (7200 Hz)	8 ppm
CPQ7200	horizontal coplanar coil-pair quadrature (7200 Hz)	8 ppm
CPI56K	horizontal coplanar coil-pair in-phase (56,000 Hz)	8 ppm
CPQ56K	horizontal coplanar coil-pair quadrature (56,000 Hz)	8 ppm
CXSP	coaxial spherics monitor	
	Computed Parameters	
DIFI (mid freq.)	difference function in-phase from CXI and CPI	5 ppm
DIFQ (mid freq.)	difference function quadrature from CXQ and CPQ	5 ppm
RES900	log resistivity	.06 decade
RES7200	log resistivity	.06 decade
RES56K	log resistivity	.06 decade
DEP900	apparent depth	6 m
DEP7200	apparent depth	6 m
DEP56K	apparent depth	6 m

Radiometrics

All radiometric data reductions performed by Fugro rigorously follow the procedures described in the IAEA Technical Report[6].

All processing of radiometric data was undertaken at the natural sampling rate of the spectrometer, i.e., one second. The data were not interpolated to match the fundamental 0.1 second interval of the EM and magnetic data.

The following sections describe each step in the process.

Pre-filtering

The radar altimeter data were processed with a 15-point median filter to remove spikes.

Reduction to Standard Temperature and Pressure

The radar altimeter data were converted to effective height (h_e) in feet using the acquired temperature and pressure data, according to the following formula:

[6] Exploranium, I.A.E.A. Report, Airborne Gamma-Ray Spectrometer Surveying, Technical Report No. 323, 1991.

$$h_e = h * \frac{273.15}{T + 273.15} * \frac{P}{1013.25}$$

where: *h* is the observed crystal to ground distance in feet

T is the measured air temperature in degrees Celsius

P is the barometric pressure in millibars

Live Time Correction

The spectrometer, an Exploranium GR-820, uses the notion of "live time" to express the relative period of time the instrument was able to register new pulses per sample interval. This is the opposite of the traditional "dead time", which is an expression of the relative period of time the system was unable to register new pulses per sample interval.

The GR-820 measures the live time electronically, and outputs the value in milliseconds. The live time correction is applied to the total count, potassium, uranium, thorium, upward uranium and cosmic channels. The formula used to apply the correction is as follows:

$$C_{lt} = C_{raw} * \frac{1000.0}{L}$$

where: C_{lt} is the live time corrected channel in counts per second

C_{raw} is the raw channel data in counts per second

L is the live time in milliseconds

Intermediate Filtering

Two parameters were filtered, but not returned to the database:

- Radar altimeter was smoothed with a 3-point Hanning filter (h_{ef}).
- The Cosmic window was smoothed with a 9-point Hanning filter (Cos_f).

Aircraft and Cosmic Background

Aircraft background and cosmic stripping corrections were applied to the total count, potassium, uranium, thorium and upward uranium channels using the following formula:

$$C_{ac} = C_{lt} - (a_c + b_c * \mathrm{Cos}_f)$$

where:

C_{ac} is the background and cosmic corrected channel

C_{lt} is the live time corrected channel

a_c is the aircraft background for this channel

b_c is the cosmic stripping coefficient for this channel

Cos_f is the filtered Cosmic channel

Radon Background

The determination of calibration constants that enable the stripping of the effects of atmospheric radon from the downward-looking detectors through the use of an upward-looking detector is divided into two parts:

1) Determine the relationship between the upward- and downward-looking detector count rates for radiation originating from the ground.

2) Determine the relationship between the upward- and downward-looking detector count rates for radiation due to atmospheric radon.

The procedures to determine these calibration factors are documented in IAEA Report #323 on airborne gamma-ray surveying. The calibrations for the first part were determined as outlined in the report.

The latter case normally requires many over-water measurements where there is no contribution from the ground. Where this is not possible, it is standard procedure to establish a test line over which a series of repeat measurements are acquired. From these repeat flights, any change in the downward uranium window due to variations in radon background would be directly related to variations in the upward window and the other downward windows.

The validity of this technique rests on the assumption that the radiation from the ground is essentially constant from flight to flight. Inhomogeneities in the ground, coupled with deviations in the flight path between test runs, add to the inaccuracy of the accumulated results. Variations in flying heights and other environmental factors also contribute to the uncertainty.

The use of test lines is a common solution for a fixed-wing acquisition platform. The ability of rotary wing platforms to hover at a constant height over a fixed position eliminates a number of the variations which degrade the accuracy of the results required for this calibration.

A test site was established in or near the survey area. The tests were carried out at the start and end of each day, and at the end of each flight. Data were acquired over a four-minute period at the nominal survey altitude (60 m). The data were then corrected for live time, aircraft background and cosmic activity.

Once the survey was completed, the relationships between the counts in the downward uranium window and in the other four windows due to atmospheric radon were determined using linear regression for each of the hover sites. The following equations were used:

$$u_r = a_u Ur + b_u$$

$$K_r = a_K U_r + b_K$$

$$T_r = a_T U_r + b_T$$

$$I_r = a_I U_r + b_I$$

where: u_r is the radon component in the upward uranium window

K_r, U_r, T_r and I_r are the radon components in the various windows of the downward detectors

the various "a" and "b" coefficients are the required calibration constants

In practice, only the "a" constants were used in the final processing. The "b" constants, which are normally near zero for over-water calibrations, were of no value as they reflected the local distribution of the ground concentrations measured in the five windows.

Compton Stripping

Following the radon correction, the potassium, uranium and thorium are corrected for spectral overlap. First, α,β and γ the stripping ratios, are modified according to altitude. Then an adjustment factor based on a, the reversed stripping ratio, uranium into thorium, is calculated. (Note: the stripping ratio altitude correction constants are expressed in change per metre. A constant of 0.3048 is required to conform to the internal usage of height in feet):

$$\alpha_h = \alpha + h_{ef} * 0.00049$$

$$\alpha_r = \frac{1.0}{1.0 - a * \alpha_h}$$

$$\beta_h = \beta + h_{ef} * 0.00065$$

$$\gamma_h = \gamma + h_{ef} * 0.00069$$

where: α, β, γ are the Compton stripping coefficients

α_h, β_h, γ_h are the height corrected Compton stripping coefficients

h_{ef} is the height above ground in metres

α_r is the scaling factor correcting for back scatter

a is the reverse stripping ratio

The stripping corrections are then carried out using the following formulas:

$$Th_c = (Th_{rc} - a * U_{rc}) * \alpha_r$$

$$K_c = K_{rc} - \gamma_h * U_c - \beta_h * Th_c$$

$$U_c = (U_{rc} - \alpha_h * Th_{rc}) * \alpha_r$$

where: U_c, Th_c and K_c are corrected uranium, thorium and potassium

α_h,β_h,γ_h are the height corrected Compton stripping coefficients

U_{rc}, Th_{rc} and K_{rc} are radon-corrected uranium, thorium and potassium

α_r is the backscatter correction

Attenuation Corrections

The total count, potassium, uranium and thorium data are then corrected to a nominal survey altitude, in this case 200 feet. This is done according to the equation:

$$C_a = C * e^{m(h_{ef} - ho)}$$

where: C_a is the output altitude corrected channel

C is the input channel

e^{μ} is the attenuation correction for that channel

h_{ef} is the effective altitude

h_0 is the nominal survey altitude to correct to

6. PRODUCTS

This section lists the final maps and products that have been provided under the terms of the survey agreement. Other products can be prepared from the existing dataset, if requested. These include magnetic enhancements or derivatives, percent magnetite, resistivities corrected for magnetic permeability and/or dielectric permittivity, digital terrain, resistivity-depth sections, inversions, and overburden thickness. Most parameters can be displayed as contours, profiles, or in colour.

Base Maps

Base maps of the survey area were produced by scanning published topographic maps to a bitmap (.bmp) format. This process provides a relatively accurate, distortion-free base that facilitates correlation of the navigation data to the map coordinate system. The topographic files were combined with geophysical data for plotting the final maps. All maps were created using the following parameters:

Projection Description:

Datum:	NAD 83
Ellipsoid:	GRS80
Projection:	UTM (Zone: 9 North)
Central Meridian:	129 ° West
False Northing:	0
False Easting:	500000
Scale Factor:	0.9996
WGS84 to Local Conversion:	Molodensky
Datum Shifts:	DX: 0 DY: 0 DZ: 0

The following parameters are presented on 2 map sheets, at a scale of 1:20000. All maps include flight lines and topography, unless otherwise indicated. Preliminary products are not listed.

Final Products

	No. of Map Sets		
	Mylar	Blackline	Colour
EM Anomalies		2 x 2	2 x 2
Total Magnetic Field			2 x 2
Calculated Vertical Magnetic Gradient			2 x 2
Apparent Resistivity 7200 Hz			2 x 2
Apparent Resistivity 56,000 Hz			2 x 2
Radiometrics - Total Count			2 x 2
- Potassium			2 x 2
- Uranium			2 x 2
- Thorium			2 x 2

Additional Products

Digital Archive (see Archive Description)	1 CD-ROM
Survey Report	2 copies
Multi-channel Stacked Profiles	All lines

7. SURVEY RESULTS

General Discussion

Tables 7-1 through 7-4 summarize the EM responses in the four survey areas, with respect to conductance grade and interpretation. The apparent conductance and depth values shown in the EM Anomaly lists appended to this report have been calculated from "local" in-phase and quadrature amplitudes of the Coaxial 5500 Hz frequency. The picking and interpretation procedure relies on several parameters and calculated functions. For this survey, the Coaxial 5500 Hz responses and the mid-frequency difference channels were used as two of the main picking criteria. The 7200 Hz coplanar results were also weighted to provide picks over wider or flat-dipping sources. The quadrature channels provided picks in areas where the in-phase responses might have been suppressed by magnetite.

The anomalies shown on the electromagnetic anomaly maps are based on a near-vertical, half plane model. This model best reflects "discrete" bedrock conductors. Wide bedrock conductors or flat-lying conductive units, whether from surficial or bedrock sources, may give rise to very broad anomalous responses on the EM profiles. These may not appear on the electromagnetic anomaly map if they have a regional character rather than a locally anomalous character.

TABLE 7-1 EM ANOMALY STATISTICS

ESKAY BLOCK 2

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	>100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	0
3	5 - 10	0
2	1 - 5	9
1	<1	80
*	INDETERMINATE	74
TOTAL		163

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	0
B	DISCRETE BEDROCK CONDUCTOR	1
S	CONDUCTIVE COVER	148
H	ROCK UNIT OR THICK COVER	11
E	EDGE OF WIDE CONDUCTOR	3
L	CULTURE	0
TOTAL		163

(SEE EM MAP LEGEND FOR EXPLANATIONS)

TABLE 7-2 EM ANOMALY STATISTICS

ESKAY BLOCK 7

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	>100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	1
3	5 - 10	2
2	1 - 5	29
1	<1	13
*	INDETERMINATE	76
TOTAL		121

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	7
B	DISCRETE BEDROCK CONDUCTOR	7
S	CONDUCTIVE COVER	8
H	ROCK UNIT OR THICK COVER	87
E	EDGE OF WIDE CONDUCTOR	12
L	CULTURE	0
TOTAL		121

(SEE EM MAP LEGEND FOR EXPLANATIONS)

TABLE 7-3 EM ANOMALY STATISTICS

ESKAY BLOCK 8

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	>100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	0
3	5 - 10	0
2	1 - 5	7
1	<1	4
*	INDETERMINATE	41
TOTAL		52

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	0
B	DISCRETE BEDROCK CONDUCTOR	4
S	CONDUCTIVE COVER	36
H	ROCK UNIT OR THICK COVER	11
E	EDGE OF WIDE CONDUCTOR	1
L	CULTURE	0
TOTAL		52

(SEE EM MAP LEGEND FOR EXPLANATIONS)

TABLE 7-4 EM ANOMALY STATISTICS

ESKAY BLOCK 9

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	>100	0
6	50 - 100	0
5	20 - 50	0
4	10 - 20	0
3	5 - 10	0
2	1 - 5	22
1	<1	17
*	INDETERMINATE	50
TOTAL		89

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	0
B	DISCRETE BEDROCK CONDUCTOR	0
S	CONDUCTIVE COVER	45
H	ROCK UNIT OR THICK COVER	41
E	EDGE OF WIDE CONDUCTOR	3
L	CULTURE	0
TOTAL		89

(SEE EM MAP LEGEND FOR EXPLANATIONS)

These broad conductors, which more closely approximate a half-space model, will be maximum coupled to the horizontal (coplanar) coil-pair and should be more evident on the resistivity parameter. Resistivity maps, therefore, may be more valuable than the electromagnetic anomaly maps, in areas where broad or flat-lying conductors are considered to be of importance. Contoured resistivity maps, based on the 7200 Hz and 56kHz coplanar data are included with this report.

Excellent resolution and discrimination of conductors was accomplished by using a fast sampling rate of 0.1 sec and by employing a “common” frequency (5500/7200 Hz) on two orthogonal coil-pairs (coaxial and coplanar). The resulting difference channel parameters often permit differentiation of bedrock and surficial conductors, even though they may exhibit similar conductance values.

Anomalies that occur near the ends of the survey lines (i.e., outside the survey area), should be viewed with caution. Some of the weaker anomalies could be due to aerodynamic noise, i.e., bird bending, which is created by abnormal stresses to which the bird is subjected during the climb and turn of the aircraft between lines. Such aerodynamic noise is usually manifested by an anomaly on the coaxial in-phase channel only, although severe stresses can affect the coplanar in-phase channels as well.

Magnetics

A Fugro CF-1 cesium vapour magnetometer was operated at the survey base to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to permit subsequent removal of diurnal drift. A GEM Systems GSM-19T proton precession magnetometer was also operated as a backup unit.

The total magnetic field data have been presented as contours on the base maps using a contour interval of 5 nT where gradients permit. The maps show the magnetic properties of the rock units underlying the survey areas.

The total magnetic field data have been subjected to a processing algorithm to produce maps of the calculated vertical gradient. This procedure enhances near-surface magnetic units and suppresses regional gradients. It also provides better definition and resolution of magnetic units and displays weak magnetic features that may not be clearly evident on the total field maps.

There is some evidence on the magnetic maps that suggests that the survey areas have been subjected to deformation and/or alteration. These structural complexities are evident on the contour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction.

If a specific magnetic intensity can be assigned to the rock type that is believed to host the target mineralization, it may be possible to select areas of higher priority on the basis of the total field magnetic data. This is based on the assumption that the magnetite content of the host rocks will give rise to a limited range of contour values that will permit differentiation of various lithological units.

The magnetic results, in conjunction with the other geophysical parameters, have provided valuable information that can be used to effectively map the geology and structure in the survey areas.

Apparent Resistivity

Apparent resistivity maps, which display the conductive properties of the survey areas, were produced from the 7200 Hz and 56,000 Hz coplanar data. The maximum resistivity values, which are calculated for each frequency, are 8,000 and 20,000 ohm-m respectively. These cutoffs eliminate the erratic higher resistivities that would result from unstable ratios of very small EM amplitudes.

In general, the resistivity patterns show moderately poor agreement with the magnetic trends. This suggests that many of the resistivity lows are probably related to conductive cover, rather than bedrock sources.

Several resistivity highs are due to excessive flying heights, while others are at least partially due to magnetic suppression.

Electromagnetic Anomalies

The EM anomalies resulting from this survey appear to fall within one of three general categories. The first type consists of discrete, well-defined anomalies that yield marked inflections on the difference channels. These anomalies are usually attributed to conductive sulphides or graphite and are generally given a "B", "T" or "D" interpretive symbol, denoting a bedrock source. There are very few anomalies of this type except on Block 7.

The second class of anomalies comprises moderately broad responses that exhibit the characteristics of a half-space and do not yield well-defined inflections on the difference channels. Anomalies in this category are usually given an "S" or "H" interpretive symbol. The lack of a difference channel response usually implies a broad or flat-lying conductive source such as overburden. Some of these anomalies could reflect conductive rock units, zones of deep weathering, the weathered tops of plugs or pipes, or broad alteration zones, all of which can yield “non-discrete” signatures.

The effects of conductive overburden are evident over portions of the survey areas. Although the difference channels (DIFI and DIFQ) are extremely valuable in detecting bedrock conductors that are partially masked by conductive overburden, sharp undulations in the bedrock/overburden interface can yield anomalies in the difference channels which may be interpreted as possible bedrock conductors. Such anomalies usually fall into the "S?" or "B?" classification but may also be given an "E" interpretive symbol, denoting a resistivity contrast at the edge of a conductive unit.

The "?" symbol does not question the validity of an anomaly, but instead indicates some degree of uncertainty as to which is the most appropriate EM source model. This ambiguity results from the combination of effects from two or more conductive sources, such as overburden and bedrock, gradational changes, or moderately shallow dips. The presence of a conductive upper layer has a tendency to mask or alter the characteristics of bedrock conductors, making interpretation difficult. This problem is further exacerbated in the presence of magnetite.

The third anomaly category includes responses that are associated with magnetite. Magnetite can cause suppression or polarity reversals of the in-phase components, particularly at the lower frequencies in resistive areas. The effects of magnetite-rich rock units are usually evident on the multi-parameter geophysical data profiles as negative excursions of the lower frequency in-phase channels. These are evident primarily on Block 8.

In areas where EM responses are evident primarily on the quadrature components, zones of poor conductivity are indicated. Where these responses are coincident with magnetic anomalies, it is possible that the in-phase component amplitudes have been suppressed by the effects of magnetite. Poorly-conductive magnetic features can give rise to resistivity anomalies that are only slightly below or slightly above background. If it is expected that poorly-conductive economic mineralization could be associated with magnetite-rich units, most of these weakly anomalous features will be of interest. In areas where magnetite causes the in-phase components to become negative, the apparent conductance and depth of EM anomalies will be unreliable. Magnetite effects usually give rise to overstated (higher) resistivity values and understated (shallow) depth calculations.

As potential targets within the area may be associated with massive to weakly disseminated sulphides, which may or may not be hosted by magnetite-rich rocks, it is impractical to assess the relative merits of EM anomalies on the basis of conductance. It is recommended that an attempt be made to compile a suite of geophysical "signatures" over any known areas of interest. Anomaly characteristics are clearly defined on the multi-parameter geophysical data profiles that are supplied as one of the survey products.

Potential Targets in the Survey Areas

The electromagnetic anomaly maps show the anomaly locations with the interpreted conductor type, dip, conductance and depth being indicated by symbols. Direct magnetic correlation is also shown if it exists. The strike direction and length of the conductors are indicated only where anomalies can be correlated from line to line with a reasonable degree of confidence.

Block 2

Block 2 comprised 229 km of coverage. The property straddles a tributary of the Unuk River, which extends from the northwestern corner to the southeastern corner. The property is flanked by ice fields in the northeast, east, and south. Coverage in the northeastern portion was incomplete, due to the very steep terrain.

Magnetic relief is relatively flat, exhibiting a regional increase in background of about 80 nT, from SW to NE. The vertical gradient map shows a few subtle linear trends that strike SE or ESE. At least three NE to NNE linears are also evident. An arcuate magnetic anomaly is associated with the south shore of a small lake in the NE, through EM anomaly 20330B.

A moderately conductive trend with a coincident radiometric high follows the riverbed in the northwestern quadrant of the property. These anomalous responses are attributed to conductive alluvium in the river valley.

A stronger resistivity low is associated with a small lake in the NE. Although part of this is due to conductive overburden, it is interesting to note that the resistivity low continues well beyond the lake area, both to the NW and SE. On a few lines, the lower resistivities are evident at the lower frequencies, indicating an increase in conductivity with depth or the presence of a resistive cap. The anomalous responses between 20210C and 20330C generally indicate a buried half-space.

Anomaly 20360A is the only anomaly on this block that indicates a discrete (thin) bedrock conductor, although there are several weaker or poorly defined responses that could be due to weakly conductive faults. Anomaly 20360A coincides with a small creek that drains into the northeastern lake, but there is no evidence on the magnetic data to suggest that this is fault controlled. However, the anomaly is located near a possible E-W contact that can be inferred from the vertical gradient data.

With the exception of 20360A, and the buried conductive unit between 20210C and 20330C, most of the anomalies on this block are associated with creeks or low-lying areas, and have been attributed to surficial sources. Anomaly 20330B, in the lake, is the only response that yields magnetic correlation.

Block 7

The broad Iskut River valley extends from the west end of line 70110 to the east end of line 70260. The valley yields resistivity values of less than 600 ohm-m on the 56 kHz. However, the most conductive zones on the 56 kHz occur NE of the river, from anomaly 70030A to 79030B on the eastern tie line. The northern edge of this conductive zone correlates closely with a SE-trending contact that can be inferred from the magnetic data.

The conductive zone itself is relatively non-magnetic, although anomalies 70090A and 70140C both yield weak magnetic correlation.

The magnetic patterns define four distinct magnetic units in Block 7, all of which exhibit a general SE strike direction. Three of these give rise to well-defined resistivity highs.
The strongest magnetic unit occurs beyond the northeastern corner. The second unit extends SE through 70020B. The third unit is SW of the river valley, centered near fiducial 920 on line 70170. The fourth unit is an elongate feature that is centered near fiducial 1712 on line 70260 within the Iskut River valley. In addition to these major magnetic units, there are at least four smaller and weaker anomalies that might also be of interest.

The resistivity patterns show marked differences between the high (56 kHz) and low (900 Hz) frequencies. The strongest resistivity low on the property occurs on the 900 Hz parameter. This highly conductive zone occurs at a probable depth of about 45 m, at anomaly 70220C, near the northeastern contact of the elongate magnetic high. Values of less than 4 ohm-m are evident on the deeper 900 Hz frequency, while the near-surface (56 kHz) values are approximately 500 ohm-m.

The half-width of the magnetic unit suggests an estimated depth of about 40 m (dyke model) to 130 m (vertical cylinder). Therefore, it is possible that the magnetic anomaly and the conductive unit could be due to a common causative source, even though their patterns differ. It is possible, however, that similar results could be obtained from a very conductive buried clay layer that overlies a separate magnetic source. Further work is recommended to check the causative source of this deep, highly conductive unit within the Iskut River valley,

Similarly low resistivities of less than 10 ohm-m are evident at depth, near the western end of 70090 and the eastern end of 70260, both of which are part of the broad, valley-hosted conductive zone. A separate low is observed in an adjacent valley in the southwestern corner of the grid. A weak, oval magnetic high correlates with the northwestern conductor, between 70070A and 70070B.

In addition to the highly conductive, flat-lying zones in the river valley, there is a very interesting narrow resistivity low that strikes south from 70260C. This low reflects one or more thin, west-dipping bedrock conductors that exhibit a strike length of more than 1.2 km. This conductive trend remains open to the south, beyond the property boundary. The conductor is generally non-magnetic, and could therefore be due to graphite. The most conductive portion is near 70320B and 70330B, near a magnetic contact.

It is recommended that additional work be carried out to check the source and southern extent of this interesting thin conductor.

There is a potassium high in the northwest corner near 79010C, and a smaller circular high east of 70280B.

Block 8

This block is located about 5 km west of Block 7, south of the Iskut River. The area is relatively resistive, with only two conductive zones showing on the 900 Hz resistivity. One of these occurs near the south edge of the valley. It strikes east from 80010A, parallel to the traverse lines. The magnetic trend is also east-west n this area, but there is no clearly-defined contact on either the total field or vertical gradient data.

The strong resistivity low at 80010B suggests a conductive zone at depth or off to one side of the survey line. The tie line anomaly at 89040C is very weak but also suggests the likelihood of a buried source in the valley. This is considered to be a relatively low priority target.

A second, more attractive resistivity low strikes in a southwesterly direction, from 89040B to 80160B. There are gaps in resistivity data near the NE end of this trend, because of high flying over steep ravines. Gaps are also evident near fiducial 500 on line 80100.

The more conductive portions, near 80140B and 80160B could be due to two separate conductors, although the resistivity patterns suggest a SW trend, with a possible discontinuity caused by the ridge of high ground near fiducial 2220 on line 80150.

The significance of the bedrock conductors between 80130B and 80160B is enhanced by the presence of an obvious magnetic contact near 80130B and the distinct SSW-trending magnetic high through 80150A. The contact-related 80130B, and the deep, wider magnetic anomalies at 80140B, 80150B and 80160B, are all considered to be attractive targets that warrant further investigation.

Weakly conductive magnetite-rich sources are evident from 80170B to 80230D. The estimated magnetite content at 80180B and 80230D is greater than 15%. This anomalous trend in the southeastern corner of the property may also warrant follow-up, particularly if poorly conductive skarn-hosted mineralization is expected in the area.

There is another poorly-defined magnetic trend in the southwestern quadrant of the property. This magnetic high loosely forms a semicircular, ring-like structure that strikes NNE from 80230A to 80190A, east along line 80170 and then southeast through 80230C. The 56 kHz resistivity also exhibits a very similar coincident pattern.

There is a possibility that this incomplete, ring-like structure could represent a weakly conductive alteration halo around a large non-magnetic and more resistive core. Conductive responses near the inferred perimeter of this zone, such as 80220B, may warrant further investigation even though they are very weak.

There is a moderately strong potassium high near the central portion of the resistive core. Although the shape of this radiometric high does not agree exactly with the resistivity high, it does tend to enhance the significance of this resistive zone. Strong K values are evident near 80251A, and this anomalous response remains open to the south.

Block 9

Block 9, located north of the Iskut River, consisted of 160 km of coverage. Topography is relatively flat south of line 90270, but quite severe in the northeastern area. The steep topography necessitated excessive flying heights in the north portion, resulting in low signal drop-outs in the calculated resistivities. The Hoodoo River bisects the grid, striking south, parallel to tie line 99020.

Magnetic relief varies from about 56150 nT to a high of more than 57,635 nT on line 90280. The western half is dominated by the high on line 90280 and a smaller circular plug-like high east of 90160A. The eastern half of the property is more complex, with at least five separate magnetic units north of line 90290. The Hoodoo River follows a major magnetic low.

Possible NNE and NW breaks, contacts, or non-magnetic intrusions can be inferred from the vertical gradient data. Strikes vary from NW (4 linears) to NE (2 linears), with one or two E-W features. Radiometric highs are restricted to the units east of the Hoodoo River, with the exception of a potassium high on line 90290 at fiducial 1520.

No “discrete” bedrock conductors were observed on this block, but there are several moderately strong, broad or flat-lying buried units that might be of interest. Most of the surficial soruces are defined on the 56 kHz resistivity, while the deeper, stronger zones are seen on the 900 Hz resistivity.

Anomaly 90101A is located northeast of a SE-trending creek. It gives rise to an oblate resistivity low that is located near the western contact of a south-trending magnetic unit. This could be due to a pod of clay-rich material, but its estimated depth is approximately 45-50 m. Resistivities of less than 100 ohm-m are evident on the lower frequencies. The eastern contact of this resistivity low, at 90101B, is coincident with a magnetic peak.

A second, circular resistivity low occurs at 90200A, near the centre of the property, immediately west of the Hoodoo River. This conductive zone is located on the southern flank of a similarly-shaped circular magnetic high on line 90170 and appears to be associated with a WNW-trending linear magnetic low. The magnetic peak is about 600 m north of the centre of the resistivity low. The lower resistivity on the low frequency suggests an increase in conductivity with depth. This conductor is overlain by a more resistive layer with a thickness of at least 20 m. The effects of magnetite are evident at fiducial 1700 on the western edge of the conductive zone. Additional work is recommended to check the causative source of this interesting anomaly, even though it could be due to a buried layer of conductive alluvium west of the Hoodoo River.

Anomaly 90240C is part of a broad, conductive zone near the eastern property boundary. The core of this unit lies at an apparent depth of more than 35 m, and occurs in close proximity to two intersecting linear trends that are evident on the vertical gradient data. These inferred breaks strike 016° and 325° from the vicinity of 90240C.

Broad, flat-lying conductive zones underlie the Iskut River Valley, near 90310B and 90370A. The latter zone is open to the south. Both are non-magnetic, and are likely due to conductive cover. A weaker resistivity low at the western end of lines 90280 to 90320 is also considered to be a very low priority target.

A prominent resistivity high is associated with a small knoll at fiducial 2600 on line 90240. This plug-like high is at least partially due to the effects of magnetite suppression. The small magnetic low and very weak resistivity low at fiducial 2123 on line 90260 could be due to an alteration zone near the centre of the strong magnetic unit.

Most of the remaining anomalies on Block 9 have been attributed to conductive cover. However, there are a few that occur on relatively high ground and others that appear to be associated with magnetic highs or lows, which could be indicative of bedrock sources.

8. CONCLUSIONS AND RECOMMENDATIONS

This report provides a very brief description of the survey results and describes the equipment, data processing procedures and logistics of the survey over four blocks flown in the Eskay Creek area in 2006.

There are very few anomalies in the survey blocks that are typical of massive sulphide responses. However, the survey was successful in locating a few moderately strong or broad conductors that may warrant additional work. The various maps included with this report display the magnetic, radiometric and conductive properties of the survey areas. It is recommended that a complete assessment and detailed evaluation of the survey results be carried out, in conjunction with all available geophysical, geological and geochemical information. Particular reference should be made to the multi-parameter data profiles that clearly define the characteristics of the individual anomalies.

With the exception of Block 7, most anomalies in the area are moderately weak and poorly-defined. Many have been attributed to conductive overburden or deep weathering, although a few appear to be associated with magnetite-rich rock units. Others coincide with magnetic gradients that may reflect contacts, faults or shears. Such structural breaks are considered to be of particular interest as they may have influenced mineral deposition within the survey areas.

The interpreted bedrock conductors and anomalous targets defined by the survey should be subjected to further investigation, using appropriate surface exploration techniques. Anomalies that are currently considered to be of moderately low priority may require upgrading if follow-up results are favourable.

It is also recommended that additional processing of existing geophysical data be considered, in order to extract the maximum amount of information from the survey results. Current software and imaging techniques often provide valuable information on structure and lithology, which may not be clearly evident on the contour and colour maps. These techniques can yield images that define subtle, but significant, structural details.

Respectfully submitted,

FUGRO AIRBORNE SURVEYS CORP.

Paul A. Smith
Geophysicist

PAS/sdp

R06041FEB.07

APPENDIX A

LIST OF PERSONNEL

The following personnel were involved in the acquisition, processing, interpretation and presentation of data, relating to a DIGHEM airborne geophysical survey carried out for Hathor Exploration Ltd., in the Eskay Creek Area, northwestern British Columbia.

David Miles	Manager, Helicopter Operations
Emily Farquhar	Manager, Data Processing and Interpretation
Andy Semple	Geophysical Operator
Anton Bogatyrov	Geophysical Operator
Delvin Masilamani	Geophysical Operator
John Douglas	Geophysical Operator
Amir Soltanzadeh	Field Geophysicist
Jeff Flemmng	Field Geophysicist
Amanda Heydron	Field Geophysicist
Greg Charbonneau	Helicopter Pilot
Glen Charbonneau	Helicopter Pilot
Tom McMahon	Helicopter Pilot
Jeremy Chambers	Helicopter Mechanic
J.J. Holmstrom	Helicopter Mechanic
Igor Sram	Geophysical Data Processor
Paul Smith	Interpretation Geophysicist
Lyn Vanderstarren	Drafting Supervisor
Susan Pothiah	Word Processing Operator
Albina Tonello	Secretary/Expeditor

The survey consisted of 618 km of coverage, flown from July 5th to October 12th, 2006.

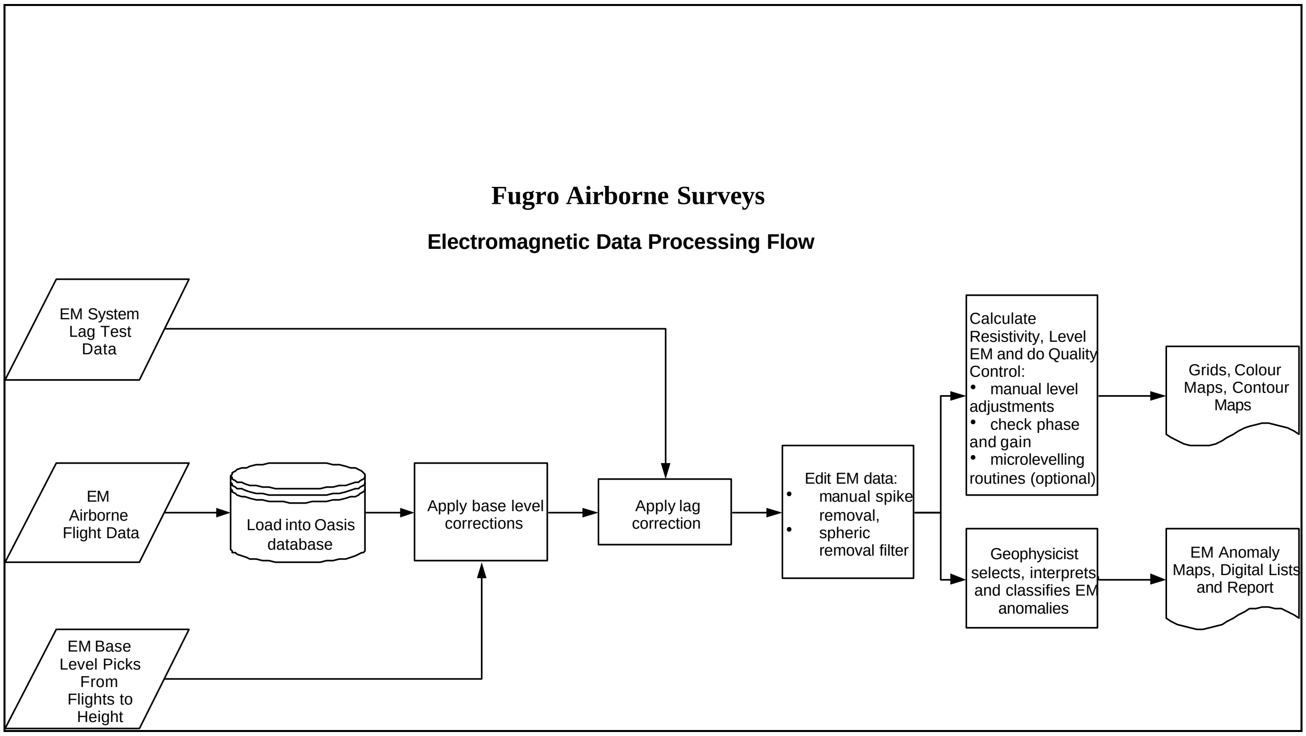
All personnel are employees of Fugro Airborne Surveys, except for the pilots and engineers who are employees of Great Slave Helicopters Ltd.

APPENDIX B

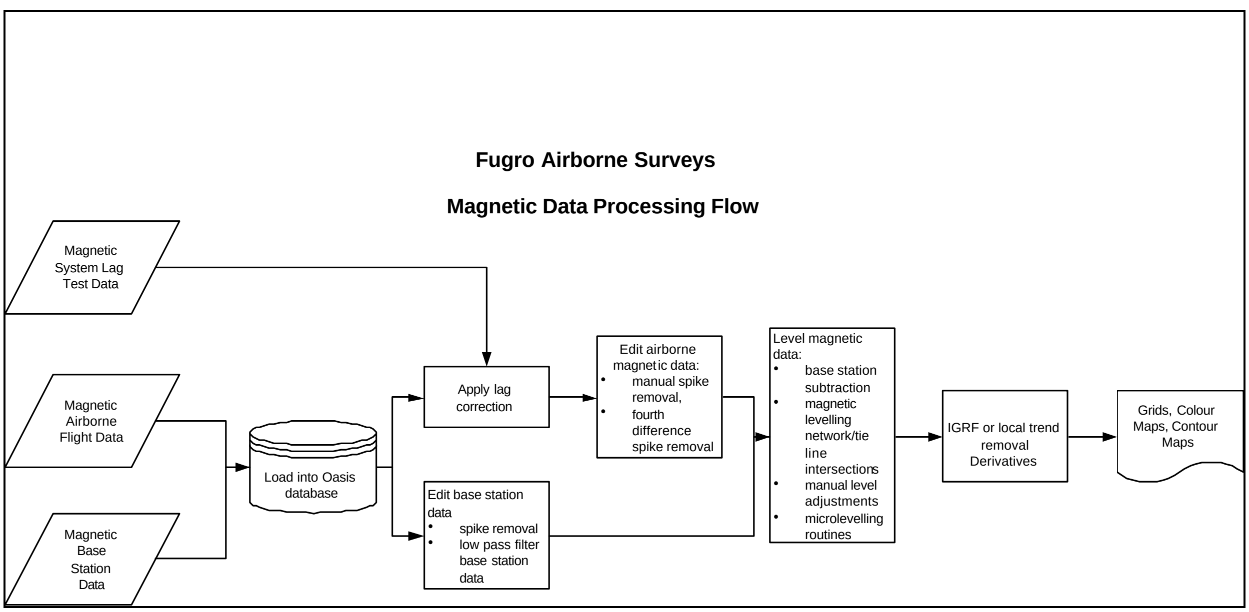
DATA PROCESSING FLOWCHARTS

APPENDIX B

Processing Flow Chart - Electromagnetic Data



Processing Flow Chart - Magnetic Data



APPENDIX C

BACKGROUND INFORMATION

BACKGROUND INFORMATION

Electromagnetics

Fugro electromagnetic responses fall into two general classes, discrete and broad. The discrete class consists of sharp, well-defined anomalies from discrete conductors such as sulphide lenses and steeply dipping sheets of graphite and sulphides. The broad class consists of wide anomalies from conductors having a large horizontal surface such as flatly dipping graphite or sulphide sheets, saline water-saturated sedimentary formations, conductive overburden and rock, kimberlite pipes and geothermal zones. A vertical conductive slab with a width of 200 m would straddle these two classes.

The vertical sheet (half plane) is the most common model used for the analysis of discrete conductors. All anomalies plotted on the geophysical maps are analyzed according to this model. The following section entitled **Discrete Conductor Analysis** describes this model in detail, including the effect of using it on anomalies caused by broad conductors such as conductive overburden.

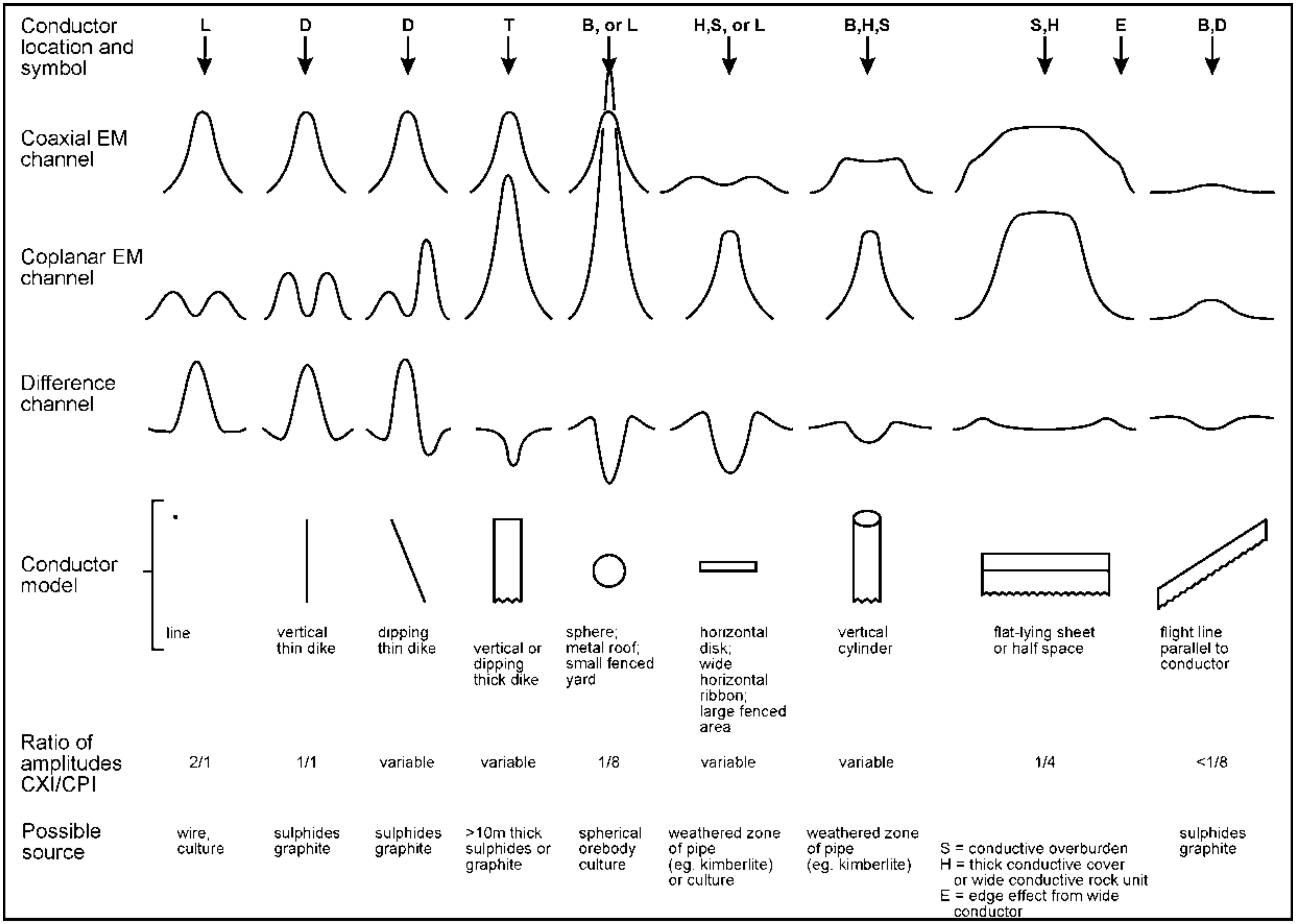
The conductive earth (half-space) model is suitable for broad conductors. Resistivity contour maps result from the use of this model. A later section entitled **Resistivity Mapping** describes the method further, including the effect of using it on anomalies caused by discrete conductors such as sulphide bodies.

Geometric Interpretation

The geophysical interpreter attempts to determine the geometric shape and dip of the conductor. Figure C-1 shows typical HEM anomaly shapes which are used to guide the geometric interpretation.

Discrete Conductor Analysis

The EM anomalies appearing on the electromagnetic map are analyzed by computer to give the conductance (i.e., conductivity-thickness product) in siemens (mhos) of a vertical sheet model. This is done regardless of the interpreted geometric shape of the conductor. This is not an unreasonable procedure, because the computed conductance increases as the electrical quality of the conductor increases, regardless of its true shape. DIGHEM anomalies are divided into seven grades of conductance, as shown in Table C-1. The conductance in siemens (mhos) is the reciprocal of resistance in ohms.



Typical HEM anomaly shapes

Figure C-1

The conductance value is a geological parameter because it is a characteristic of the conductor alone. It generally is independent of frequency, flying height or depth of burial, apart from the averaging over a greater portion of the conductor as height increases. Small anomalies from deeply buried strong conductors are not confused with small anomalies from shallow weak conductors because the former will have larger conductance values.

Table C-1. EM Anomaly Grades

Anomaly Grade	Siemens
7	> 100
6	50 - 100
5	20 - 50
4	10 - 20
3	5 - 10
2	1 - 5
1	< 1

Conductive overburden generally produces broad EM responses which may not be shown as anomalies on the geophysical maps. However, patchy conductive overburden in otherwise resistive areas can yield discrete anomalies with a conductance grade (cf. Table C-1) of 1, 2 or even 3 for conducting clays which have resistivities as low as 50 ohm-m. In areas where ground resistivities are below 10 ohm-m, anomalies caused by weathering variations and similar causes can have any conductance grade. The anomaly shapes from the multiple coils often allow such conductors to be recognized, and these are indicated by the letters S, H, and sometimes E on the geophysical maps (see EM legend on maps).

For bedrock conductors, the higher anomaly grades indicate increasingly higher conductances. Examples: the New Insco copper discovery (Noranda, Canada) yielded a grade 5 anomaly, as did the neighbouring copper-zinc Magusi River ore body; Mattabi (copper-zinc, Sturgeon Lake, Canada) and Whistle (nickel, Sudbury, Canada) gave grade 6; and the Montcalm nickel-copper discovery (Timmins, Canada) yielded a grade 7 anomaly. Graphite and sulphides can span all grades but, in any particular survey area, field work may show that the different grades indicate different types of conductors.

Strong conductors (i.e., grades 6 and 7) are characteristic of massive sulphides or graphite. Moderate conductors (grades 4 and 5) typically reflect graphite or sulphides of a less massive character, while weak bedrock conductors (grades 1 to 3) can signify poorly connected graphite or heavily disseminated sulphides. Grades 1 and 2 conductors may not respond to ground EM equipment using frequencies less than 2000 Hz.

The presence of sphalerite or gangue can result in ore deposits having weak to moderate conductances. As an example, the three million ton lead-zinc deposit of Restigouche Mining Corporation near Bathurst, Canada, yielded a well-defined grade 2 conductor. The 10 percent by volume of sphalerite occurs as a coating around the fine grained massive pyrite, thereby inhibiting electrical conduction. Faults, fractures and shear zones may produce anomalies that typically have low conductances (e.g., grades 1 to 3). Conductive rock formations can yield anomalies of any conductance grade. The conductive materials in such rock formations can be salt water, weathered products such as clays, original depositional clays, and carbonaceous material.

For each interpreted electromagnetic anomaly on the geophysical maps, a letter identifier and an interpretive symbol are plotted beside the EM grade symbol. The horizontal rows of dots, under the interpretive symbol, indicate the anomaly amplitude on the flight record. The vertical column of dots, under the anomaly letter, gives the estimated depth. In areas where anomalies are crowded, the letter identifiers, interpretive symbols and dots may be obliterated. The EM grade symbols, however, will always be discernible, and the obliterated information can be obtained from the anomaly listing appended to this report.

The purpose of indicating the anomaly amplitude by dots is to provide an estimate of the reliability of the conductance calculation. Thus, a conductance value obtained from a large ppm anomaly (3 or 4 dots) will tend to be accurate whereas one obtained from a small ppm anomaly (no dots) could be quite inaccurate. The absence of amplitude dots indicates that the anomaly from the coaxial coil-pair is 5 ppm or less on both the in-phase and quadrature channels. Such small anomalies could reflect a weak conductor at the surface or a stronger conductor at depth. The conductance grade and depth estimate illustrates which of these possibilities fits the recorded data best.

The conductance measurement is considered more reliable than the depth estimate. There are a number of factors that can produce an error in the depth estimate, including the averaging of topographic variations by the altimeter, overlying conductive overburden, and the location and attitude of the conductor relative to the flight line. Conductor location and attitude can provide an erroneous depth estimate because the stronger part of the conductor may be deeper or to one side of the flight line, or because it has a shallow dip. A heavy tree cover can also produce errors in depth estimates. This is because the depth estimate is computed as the distance of bird from conductor, minus the altimeter reading. The altimeter can lock onto the top of a dense forest canopy. This situation yields an erroneously large depth estimate but does not affect the conductance estimate.

Dip symbols are used to indicate the direction of dip of conductors. These symbols are used only when the anomaly shapes are unambiguous, which usually requires a fairly resistive environment.

A further interpretation is presented on the EM map by means of the line-to-line correlation of bedrock anomalies, which is based on a comparison of anomaly shapes on adjacent lines. This provides conductor axes that may define the geological structure over portions of the survey area. The absence of conductor axes in an area implies that anomalies could not be correlated from line to line with reasonable confidence.

The electromagnetic anomalies are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geology when planning a follow-up program. The actual conductance values are printed in the attached anomaly list for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of conductors in terms of length, strike and dip, geometric shape, conductance, depth, and thickness. The accuracy is comparable to an interpretation from a high quality ground EM survey having the same line spacing.

The appended EM anomaly list provides a tabulation of anomalies in ppm, conductance, and depth for the vertical sheet model. No conductance or depth estimates are shown for weak anomalous responses that are not of sufficient amplitude to yield reliable calculations.

Since discrete bodies normally are the targets of EM surveys, local base (or zero) levels are used to compute local anomaly amplitudes. This contrasts with the use of true zero levels which are used to compute true EM amplitudes. Local anomaly amplitudes are shown in the EM anomaly list and these are used to compute the vertical sheet parameters of conductance and depth.

Questionable Anomalies

The EM maps may contain anomalous responses that are displayed as asterisks (*). These responses denote weak anomalies of indeterminate conductance, which may reflect one of the following: a weak conductor near the surface, a strong conductor at depth (e.g., 100 to 120 m below surface) or to one side of the flight line, or aerodynamic noise. Those responses that have the appearance of valid bedrock anomalies on the flight profiles are indicated by appropriate interpretive symbols (see EM legend on maps). The others probably do not warrant further investigation unless their locations are of considerable geological interest.

The Thickness Parameter

A comparison of coaxial and coplanar shapes can provide an indication of the thickness of a steeply dipping conductor. The amplitude of the coplanar anomaly (e.g., CPI channel) increases relative to the coaxial anomaly (e.g., CXI) as the apparent thickness increases, i.e., the thickness in the horizontal plane. (The thickness is equal to the conductor width if the conductor dips at 90 degrees and strikes at right angles to the flight line.) This report refers to a conductor as <u>thin</u> when the thickness is likely to be less than 3 m, and <u>thick</u> when in excess of 10 m. Thick conductors are indicated on the EM map by parentheses "(

)". For base metal exploration in steeply dipping geology, thick conductors can be high priority targets because many massive sulphide ore bodies are thick. The system cannot sense the thickness when the strike of the conductor is subparallel to the flight line, when the conductor has a shallow dip, when the anomaly amplitudes are small, or when the resistivity of the environment is below 100 ohm-m.

Resistivity Mapping

Resistivity mapping is useful in areas where broad or flat lying conductive units are of interest. One example of this is the clay alteration which is associated with Carlin-type deposits in the south west United States. The resistivity parameter was able to identify the clay alteration zone over the Cove deposit. The alteration zone appeared as a strong resistivity low on the 900 Hz resistivity parameter. The 7,200 Hz and 56,000 Hz resistivities showed more detail in the covering sediments, and delineated a range front fault. This is typical in many areas of the south west United States, where conductive near surface sediments, which may sometimes be alkalic, attenuate the higher frequencies.

Resistivity mapping has proven successful for locating diatremes in diamond exploration. Weathering products from relatively soft kimberlite pipes produce a resistivity contrast with the unaltered host rock. In many cases weathered kimberlite pipes were associated with thick conductive layers that contrasted with overlying or adjacent relatively thin layers of lake bottom sediments or overburden.

Areas of widespread conductivity are commonly encountered during surveys. These conductive zones may reflect alteration zones, shallow-dipping sulphide or graphite-rich units, saline ground water, or conductive overburden. In such areas, EM amplitude changes can be generated by decreases of only 5 m in survey altitude, as well as by increases in conductivity. The typical flight record in conductive areas is characterized by in-phase and quadrature channels that are continuously active. Local EM peaks reflect either increases in conductivity of the earth or decreases in survey altitude. For such conductive areas, apparent resistivity profiles and contour maps are necessary for the correct interpretation of the airborne data. The advantage of the resistivity parameter is that anomalies caused by altitude changes are virtually eliminated, so the resistivity data reflect only those anomalies caused by conductivity changes. The resistivity analysis also helps the interpreter to differentiate between conductive bedrock and conductive overburden. For example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows.

The apparent resistivity is calculated using the pseudo-layer (or buried) half-space model defined by Fraser (1978)[7]. This model consists of a resistive layer overlying a conductive

[7] Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, v. 43, p.144-172

half-space. The depth channels give the apparent depth below surface of the conductive material. The apparent depth is simply the apparent thickness of the overlying resistive layer. The apparent depth (or thickness) parameter will be positive when the upper layer is more resistive than the underlying material, in which case the apparent depth may be quite close to the true depth.

The apparent depth will be negative when the upper layer is more conductive than the underlying material, and will be zero when a homogeneous half-space exists. The apparent depth parameter must be interpreted cautiously because it will contain any errors that might exist in the measured altitude of the EM bird (e.g., as caused by a dense tree cover). The inputs to the resistivity algorithm are the in-phase and quadrature components of the coplanar coil-pair. The outputs are the apparent resistivity of the conductive half-space (the source) and the sensor-source distance. The flying height is not an input variable, and the output resistivity and sensor-source distance are independent of the flying height when the conductivity of the measured material is sufficient to yield significant in-phase as well as quadrature responses. The apparent depth, discussed above, is simply the sensor-source distance minus the measured altitude or flying height. Consequently, errors in the measured altitude will affect the apparent depth parameter but not the apparent resistivity parameter.

The apparent depth parameter is a useful indicator of simple layering in areas lacking a heavy tree cover. Depth information has been used for permafrost mapping, where positive apparent depths were used as a measure of permafrost thickness. However, little quantitative use has been made of negative apparent depths because the absolute value of the negative depth is not a measure of the thickness of the conductive upper layer and, therefore, is not meaningful physically. Qualitatively, a negative apparent depth estimate usually shows that the EM anomaly is caused by conductive overburden. Consequently, the apparent depth channel can be of significant help in distinguishing between overburden and bedrock conductors.

Interpretation in Conductive Environments

Environments having low background resistivities (e.g., below 30 ohm-m for a 900 Hz system) yield very large responses from the conductive ground. This usually prohibits the recognition of discrete bedrock conductors. However, Fugro data processing techniques produce three parameters that contribute significantly to the recognition of bedrock conductors in conductive environments. These are the in-phase and quadrature difference channels (DIFI and DIFQ, which are available only on systems with “common” frequencies on orthogonal coil pairs), and the resistivity and depth channels (RES and DEP) for each coplanar frequency.

The EM difference channels (DIFI and DIFQ) eliminate most of the responses from conductive ground, leaving responses from bedrock conductors, cultural features (e.g., telephone lines, fences, etc.) and edge effects. Edge effects often occur near the perimeter of broad conductive zones. This can be a source of geologic noise. While edge effects yield anomalies on the EM difference channels, they do not produce resistivity anomalies. Consequently, the resistivity channel aids in eliminating anomalies due to edge effects. On the other hand, resistivity anomalies will coincide with the most highly conductive sections of conductive ground, and this is another source of geologic noise. The recognition of a bedrock conductor in a conductive environment therefore is based on the anomalous responses of the two difference channels (DIFI and DIFQ) and the resistivity channels (RES). The most favourable situation is where anomalies coincide on all channels.

The DEP channels, which give the apparent depth to the conductive material, also help to determine whether a conductive response arises from surficial material or from a conductive zone in the bedrock. When these channels ride above the zero level on the depth profiles (i.e., depth is negative), it implies that the EM and resistivity profiles are responding primarily to a conductive upper layer, i.e., conductive overburden. If the DEP channels are below the zero level, it indicates that a resistive upper layer exists, and this usually implies the existence of a bedrock conductor. If the low frequency DEP channel is below the zero level and the high frequency DEP is above, this suggests that a bedrock conductor occurs beneath conductive cover.

Reduction of Geologic Noise

Geologic noise refers to unwanted geophysical responses. For purposes of airborne EM surveying, geologic noise refers to EM responses caused by conductive overburden and magnetic permeability. It was mentioned previously that the EM difference channels (i.e., channel DIFI for in-phase and DIFQ for quadrature) tend to eliminate the response of conductive overburden.

Magnetite produces a form of geological noise on the in-phase channels. Rocks containing less than 1% magnetite can yield negative in-phase anomalies caused by magnetic permeability. When magnetite is widely distributed throughout a survey area, the in-phase EM channels may continuously rise and fall, reflecting variations in the magnetite percentage, flying height, and overburden thickness. This can lead to difficulties in recognizing deeply buried bedrock conductors, particularly if conductive overburden also exists. However, the response of broadly distributed magnetite generally vanishes on the in-phase difference channel DIFI. This feature can be a significant aid in the recognition of conductors that occur in rocks containing accessory magnetite.

EM Magnetite Mapping

The information content of HEM data consists of a combination of conductive eddy current responses and magnetic permeability responses. The secondary field resulting from conductive eddy current flow is frequency-dependent and consists of both in-phase and quadrature components, which are positive in sign. On the other hand, the secondary field resulting from magnetic permeability is independent of frequency and consists of only an in-phase component which is negative in sign. When magnetic permeability manifests itself by decreasing the measured amount of positive in-phase, its presence may be difficult to recognize. However, when it manifests itself by yielding a negative in-phase anomaly (e.g., in the absence of eddy current flow), its presence is assured. In this latter case, the negative component can be used to estimate the percent magnetite content.

A magnetite mapping technique, based on the low frequency coplanar data, can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to 1/4% magnetite by weight when the EM sensor is at a height of 30 m above a magnetitic half-space. It can individually resolve steep dipping narrow magnetite-rich bands which are separated by 60 m. Unlike magnetometry, the EM magnetite method is unaffected by remanent magnetism or magnetic latitude.

The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed. EM magnetite maps can be generated when magnetic permeability is evident as negative in-phase responses on the data profiles.

Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden.

The Susceptibility Effect

When the host rock is conductive, the positive conductivity response will usually dominate the secondary field, and the susceptibility effect[8] will appear as a reduction in the in-phase, rather than as a negative value. The in-phase response will be lower than would be predicted by a model using zero susceptibility. At higher frequencies the in-phase conductivity response also gets larger, so a negative magnetite effect observed on the low frequency might not be observable on the higher frequencies, over the same body. The

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[8] Magnetic susceptibility and permeability are two measures of the same physical property. Permeability is generally given as relative permeability, μ_r, which is the permeability of the substance divided by the permeability of free space ($4 \pi \times 10^{-7}$). Magnetic susceptibility *k* is related to permeability by $k=\mu^r-1$. Susceptibility is a unitless measurement, and is usually reported in units of 10^{-6}. The typical range of susceptibilities is –1 for quartz, 130 for pyrite, and up to 5×10^5 for magnetite, in 10^{-6} units (Telford et al, 1986).

susceptibility effect is most obvious over discrete magnetite-rich zones, but also occurs over uniform geology such as a homogeneous half-space.

High magnetic susceptibility will affect the calculated apparent resistivity, if only conductivity is considered. Standard apparent resistivity algorithms use a homogeneous half-space model, with zero susceptibility. For these algorithms, the reduced in-phase response will, in most cases, make the apparent resistivity higher than it should be. It is important to note that there is nothing wrong with the data, nor is there anything wrong with the processing algorithms. The apparent difference results from the fact that the simple geological model used in processing does not match the complex geology.

Measuring and Correcting the Magnetite Effect

Theoretically, it is possible to calculate (forward model) the combined effect of electrical conductivity and magnetic susceptibility on an EM response in all environments. The difficulty lies, however, in separating out the susceptibility effect from other geological effects when deriving resistivity and susceptibility from EM data.

Over a homogeneous half-space, there is a precise relationship between in-phase, quadrature, and altitude. These are often resolved as phase angle, amplitude, and altitude. Within a reasonable range, any two of these three parameters can be used to calculate the half space resistivity. If the rock has a positive magnetic susceptibility, the in-phase component will be reduced and this departure can be recognized by comparison to the other parameters.

The algorithm used to calculate apparent susceptibility and apparent resistivity from HEM data, uses a homogeneous half-space geological model. Non half-space geology, such as horizontal layers or dipping sources, can also distort the perfect half-space relationship of the three data parameters. While it may be possible to use more complex models to calculate both rock parameters, this procedure becomes very complex and time-consuming. For basic HEM data processing, it is most practical to stick to the simplest geological model.

Magnetite reversals (reversed in-phase anomalies) have been used for many years to calculate an “FeO” or magnetite response from HEM data (Fraser, 1981). However, this technique could only be applied to data where the in-phase was observed to be negative, which happens when susceptibility is high and conductivity is low.

Applying Susceptibility Corrections

Resistivity calculations done with susceptibility correction may change the apparent resistivity. High-susceptibility conductors, that were previously masked by the susceptibility effect in standard resistivity algorithms, may become evident. In this case the susceptibility corrected apparent resistivity is a better measure of the actual resistivity of the earth. However, other geological variations, such as a deep resistive layer, can also reduce the in-phase by the same amount. In this case, susceptibility correction would not be the best method. Different geological models can apply in different areas of the same data set. The effects of susceptibility, and other effects that can create a similar response, must be considered when selecting the resistivity algorithm.

Susceptibility from EM vs Magnetic Field Data

The response of the EM system to magnetite may not match that from a magnetometer survey. First, HEM-derived susceptibility is a rock property measurement, like resistivity. Magnetic data show the total magnetic field, a measure of the potential field, not the rock property. Secondly, the shape of an anomaly depends on the shape and direction of the source magnetic field. The electromagnetic field of HEM is much different in shape from the earth's magnetic field. Total field magnetic anomalies are different at different magnetic latitudes; HEM susceptibility anomalies have the same shape regardless of their location on the earth.

In far northern latitudes, where the magnetic field is nearly vertical, the total magnetic field measurement over a thin vertical dike is very similar in shape to the anomaly from the HEM-derived susceptibility (a sharp peak over the body). The same vertical dike at the magnetic equator would yield a negative magnetic anomaly, but the HEM susceptibility anomaly would show a positive susceptibility peak.

Effects of Permeability and Dielectric Permittivity

Resistivity algorithms that assume free-space magnetic permeability and dielectric permittivity, do not yield reliable values in highly magnetic or highly resistive areas. Both magnetic polarization and displacement currents cause a decrease in the in-phase component, often resulting in negative values that yield erroneously high apparent resistivities. The effects of magnetite occur at all frequencies, but are most evident at the lowest frequency. Conversely, the negative effects of dielectric permittivity are most evident at the higher frequencies, in resistive areas.

The table below shows the effects of varying permittivity over a resistive (10,000 ohm-m) half space, at frequencies of 56,000 Hz (DIGHEM^{V}) and 102,000 Hz (RESOLVE).

Apparent Resistivity Calculations

Effects of Permittivity on In-phase/Quadrature/Resistivity

Freq (Hz)	Coil	Sep (m)	Thres (ppm)	Alt (m)	In Phase	Quad Phase	App Res	App Depth (m)	Permittivity
56,000	CP	6.3	0.1	30	7.3	35.3	10118	-1.0	1 Air

56,000	CP	6.3	0.1	30	3.6	36.6	19838	-13.2	5 Quartz
56,000	CP	6.3	0.1	30	-1.1	38.3	81832	-25.7	10 Epidote
56,000	CP	6.3	0.1	30	-10.4	42.3	76620	-25.8	20 Granite
56,000	CP	6.3	0.1	30	-19.7	46.9	71550	-26.0	30 Diabase
56,000	CP	6.3	0.1	30	-28.7	52.0	66787	-26.1	40 Gabbro
102,000	CP	7.86	0.1	30	32.5	117.2	9409	-0.3	1 Air
102,000	CP	7.86	0.1	30	11.7	127.2	25956	-16.8	5 Quartz
102,000	CP	7.86	0.1	30	-14.0	141.6	97064	-26.5	10 Epidote
102,000	CP	7.86	0.1	30	-62.9	176.0	83995	-26.8	20 Granite
102,000	CP	7.86	0.1	30	-107.5	215.8	73320	-27.0	30 Diabase
102,000	CP	7.86	0.1	30	-147.1	259.2	64875	-27.2	40 Gabbro

Methods have been developed (Huang and Fraser, 2000, 2001) to correct apparent resistivities for the effects of permittivity and permeability. The corrected resistivities yield more credible values than if the effects of permittivity and permeability are disregarded.

Recognition of Culture

Cultural responses include all EM anomalies caused by man-made metallic objects. Such anomalies may be caused by inductive coupling or current gathering. The concern of the interpreter is to recognize when an EM response is due to culture. Points of consideration used by the interpreter, when coaxial and coplanar coil-pairs are operated at a common frequency, are as follows:

1. Channels CXPL and CPPL monitor 60 Hz radiation. An anomaly on these channels shows that the conductor is radiating power. Such an indication is normally a guarantee that the conductor is cultural. However, care must be taken to ensure that the conductor is not a geologic body that strikes across a power line, carrying leakage currents.

2. A flight that crosses a "line" (e.g., fence, telephone line, etc.) yields a centre-peaked coaxial anomaly and an m-shaped coplanar anomaly.[9] When the flight crosses the cultural line at a high angle of intersection, the amplitude ratio of coaxial/coplanar response is 2. Such an EM anomaly can only be caused by a line. The geologic body that yields anomalies most closely resembling a line is the vertically dipping thin dike. Such a body, however, yields an amplitude ratio of 1 rather than 2. Consequently, an m-shaped coplanar anomaly with a CXI/CPI amplitude ratio of 2 is virtually a guarantee that the source is a cultural line.

3. A flight that crosses a sphere or horizontal disk yields centre-peaked coaxial and coplanar anomalies with a CXI/CPI amplitude ratio (i.e., coaxial/coplanar) of 1/8. In

[9] See Figure C-1 presented earlier.

the absence of geologic bodies of this geometry, the most likely conductor is a metal roof or small fenced yard.[10] Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.

4. A flight that crosses a horizontal rectangular body or wide ribbon yields an m-shaped coaxial anomaly and a centre-peaked coplanar anomaly. In the absence of geologic bodies of this geometry, the most likely conductor is a large fenced area.[5] Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.
5. EM anomalies that coincide with culture, as seen on the camera film or video display, are usually caused by culture. However, care is taken with such coincidences because a geologic conductor could occur beneath a fence, for example. In this example, the fence would be expected to yield an m-shaped coplanar anomaly as in case #2 above. If, instead, a centre-peaked coplanar anomaly occurred, there would be concern that a thick geologic conductor coincided with the cultural line.

6. The above description of anomaly shapes is valid when the culture is not conductively coupled to the environment. In this case, the anomalies arise from inductive coupling to the EM transmitter. However, when the environment is quite conductive (e.g., less than 100 ohm-m at 900 Hz), the cultural conductor may be conductively coupled to the environment. In this latter case, the anomaly shapes tend to be governed by current gathering. Current gathering can completely distort the anomaly shapes, thereby complicating the identification of cultural anomalies. In such circumstances, the interpreter can only rely on the radiation channels and on the camera film or video records.

Magnetic Responses

The measured total magnetic field provides information on the magnetic properties of the earth materials in the survey area. The information can be used to locate magnetic bodies of direct interest for exploration, and for structural and lithological mapping.

The total magnetic field response reflects the abundance of magnetic material in the source. Magnetite is the most common magnetic mineral. Other minerals such as ilmenite, pyrrhotite, franklinite, chromite, hematite, arsenopyrite, limonite and pyrite are also magnetic, but to a lesser extent than magnetite on average.

---

[10] It is a characteristic of EM that geometrically similar anomalies are obtained from: (1) a planar conductor, and (2) a wire which forms a loop having dimensions identical to the perimeter of the equivalent planar conductor.

In some geological environments, an EM anomaly with magnetic correlation has a greater likelihood of being produced by sulphides than one which is non-magnetic. However, sulphide ore bodies may be non-magnetic (e.g., the Kidd Creek deposit near Timmins, Canada) as well as magnetic (e.g., the Mattabi deposit near Sturgeon Lake, Canada).

Iron ore deposits will be anomalously magnetic in comparison to surrounding rock due to the concentration of iron minerals such as magnetite, ilmenite and hematite.

Changes in magnetic susceptibility often allow rock units to be differentiated based on the total field magnetic response. Geophysical classifications may differ from geological classifications if various magnetite levels exist within one general geological classification. Geometric considerations of the source such as shape, dip and depth, inclination of the earth's field and remanent magnetization will complicate such an analysis.

In general, mafic lithologies contain more magnetite and are therefore more magnetic than many sediments which tend to be weakly magnetic. Metamorphism and alteration can also increase or decrease the magnetization of a rock unit.

Textural differences on a total field magnetic contour, colour or shadow map due to the frequency of activity of the magnetic parameter resulting from inhomogeneities in the distribution of magnetite within the rock, may define certain lithologies. For example, near surface volcanics may display highly complex contour patterns with little line-to-line correlation.

Rock units may be differentiated based on the plan shapes of their total field magnetic responses. Mafic intrusive plugs can appear as isolated "bulls-eye" anomalies. Granitic intrusives appear as sub-circular zones, and may have contrasting rings due to contact metamorphism. Generally, granitic terrain will lack a pronounced strike direction, although granite gneiss may display strike.

Linear north-south units are theoretically not well-defined on total field magnetic maps in equatorial regions due to the low inclination of the earth's magnetic field. However, most stratigraphic units will have variations in composition along strike that will cause the units to appear as a series of alternating magnetic highs and lows.

Faults and shear zones may be characterized by alteration that causes destruction of magnetite (e.g., weathering) that produces a contrast with surrounding rock. Structural breaks may be filled by magnetite-rich, fracture filling material as is the case with diabase dikes, or by non-magnetic felsic material.

Faulting can also be identified by patterns in the magnetic total field contours or colours. Faults and dikes tend to appear as lineaments and often have strike lengths of several kilometres. Offsets in narrow, magnetic, stratigraphic trends also delineate structure. Sharp contrasts in magnetic lithologies may arise due to large displacements along strike-slip or dip-slip faults.

Gamma Ray Spectrometry

Radioelement concentrations are measures of the abundance of radioactive elements in the rock. The original abundance of the radioelements in any rock can be altered by the subsequent processes of metamorphism and weathering.

Gamma radiation in the range that is measured in the thorium, potassium, uranium and total count windows is strongly attenuated by rock, overburden and water. Almost all of the total radiation measured from rock and overburden originates in the upper .5 metres. Moisture in soil and bodies of water will mask the radioactivity from underlying rock. Weathered rock materials that have been displaced by glacial, water or wind action will not reflect the general composition of the underlying bedrock. Where residual soils exist, they may reflect the composition of underlying rock except where equilibrium does not exist between the original radioelement and the products in its decay series.

Radioelement counts (expressed as counts per second) are the rates of detection of the gamma radiation from specific decaying particles corresponding to products in each radioelements decay series. The radiation source for uranium is bismuth (Bi-214), for thorium it is thallium (Tl-208) and for potassium it is potassium (K-40).

The uranium and thorium radioelement concentrations are dependent on a state of equilibrium between the parent and daughter products in the decay series. Some daughter products in the uranium decay are long lived and could be removed by processes such as leaching. One product in the series, radon (Rn-222), is a gas which can easily escape. Both of these factors can affect the degree to which the calculated uranium concentrations reflect the actual composition of the source rock. Because the daughter products of thorium are relatively short lived, there is more likelihood that the thorium decay series is in equilibrium.

Lithological discrimination can be based on the measured relative concentrations and total, combined, radioactivity of the radioelements. Feldspar and mica contain potassium. Zircon, sphene and apatite are accessory minerals in igneous rocks that are sources of uranium and thorium. Monazite, thorianite, thorite, uraninite and uranothorite are also sources of uranium and thorium which are found in granites and pegmatites.

In general, the abundance of uranium, thorium and potassium in igneous rock increases with acidity. Pegmatites commonly have elevated concentrations of uranium relative to thorium. Sedimentary rocks derived from igneous rocks may have characteristic signatures that are influenced by their parent rocks, but these will have been altered by subsequent weathering and alteration.

Metamorphism and alteration will cause variations in the abundance of certain radioelements relative to each other. For example, alterative processes may cause uranium enrichment to the extent that a rock will be of economic interest. Uranium anomalies are more likely to be economically significant if they consist of an increase in the uranium relative to thorium and potassium, rather than a sympathetic increase in all three radioelements.

Faults can exhibit radioactive highs due to increased permeability which allows radon migration, or as lows due to structural control of drainage and fluvial sediments which attenuate gamma radiation from the underlying rocks. Faults can also be recognized by sharp contrasts in radiometric lithologies due to large strike-slip or dip-slip displacements. Changes in relative radioelement concentrations due to alteration will also define faults.

Similar to magnetics, certain rock types can be identified by their plan shapes if they also produce a radiometric contrast with surrounding rock. For example, granite intrusions will appear as sub-circular bodies, and may display concentric zonations. They will tend to lack a prominent strike direction. Offsets of narrow, continuous, stratigraphic units with contrasting radiometric signatures can identify faulting, and folding of stratigraphic trends will also be apparent.

APPENDIX D

DATA ARCHIVE DESCRIPTION

APPENDIX D

ARCHIVE DESCRIPTION

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Reference: CCD02498
Disc 1 of 1
Archive Date: January 29, 2007

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This archive contains FINAL DATA ARCHIVES of an airborne geophysical survey conducted
by FUGRO AIRBORNE SURVEYS CORP. over the Eskay Creek Areas, British Columbia on behalf
of the Hathor Exploration Ltd. during July 5 to October 12, 2006.

Job # 06041

--------------------------------------------------------------------------------

******* Disc 1 of 1 *******

\README.TXT          - this file

GRIDS\
NOTE: _# indicates block number.

            Grids in Geosoft binary (float) format
      RES900_2.GRD     - Apparent Resistivity 900 Hz coplanar
      RES7200_2.GRD    - Apparent Resistivity 7200 Hz coplanar
      RES56K_2.GRD     - Apparent Resistivity 56000 Hz coplanar
      MAG_2.GRD        - Total Magnetic Intensity nT
      CVG_2.GRD        - Calculated Vertical gradient from TMI grid nT/m
      K_2.GRD          - Potasium Counts (cps)
      U_2.GRD          - Uranium Counts (cps)
      TH_2.GRD         - Thorium Counts (cps)
      TC_2.GRD         - TOtal Counts (cps)
      RES900_7.GRD     - Apparent Resistivity 900 Hz coplanar
      RES7200_7.GRD    - Apparent Resistivity 7200 Hz coplanar
      RES56K_7.GRD     - Apparent Resistivity 56000 Hz coplanar
      MAG_7.GRD        - Total Magnetic Intensity nT
      CVG_7.GRD        - Calculated Vertical gradient from TMI grid nT/m
      K_7.GRD          - Potasium Counts (cps)
      U_7.GRD          - Uranium Counts (cps)
      TH_7.GRD         - Thorium Counts (cps)
      TC_7.GRD         - TOtal Counts (cps)
      RES900_8.GRD     - Apparent Resistivity 900 Hz coplanar
      RES7200_8.GRD    - Apparent Resistivity 7200 Hz coplanar
      RES56K_8.GRD     - Apparent Resistivity 56000 Hz coplanar
      MAG_8.GRD        - Total Magnetic Intensity nT
      CVG_8.GRD        - Calculated Vertical gradient from TMI grid nT/m
```

```
      K_8.GRD          - Potasium Counts (cps)
      U_8.GRD          - Uranium Counts (cps)
      TH_8.GRD         - Thorium Counts (cps)
      TC_8.GRD         - TOtal Counts (cps)
      RES900_9.GRD     - Apparent Resistivity 900 Hz coplanar
      RES7200_9.GRD    - Apparent Resistivity 7200 Hz coplanar
      RES56K_9.GRD     - Apparent Resistivity 56000 Hz coplanar
      MAG_9.GRD        - Total Magnetic Intensity nT
      CVG_9.GRD        - Calculated Vertical gradient from TMI grid nT/m
      K_9.GRD          - Potasium Counts (cps)
      U_9.GRD          - Uranium Counts (cps)
      TH_9.GRD         - Thorium Counts (cps)
      TC_9.GRD         - TOtal Counts (cps)


XYZ\
      Block2.XYZ      - ASCII line data archive in Geosoft XYZ format
      anBlock2.XYZ    - Geosoft Anomaly ASCII data archive
      Block7.XYZ      - ASCII line data archive in Geosoft XYZ format
      anBlock7.XYZ    - Geosoft Anomaly ASCII data archive
      Block8.XYZ      - ASCII line data archive in Geosoft XYZ format
      anBlock8.XYZ    - Geosoft Anomaly ASCII data archive
      Block9.XYZ      - ASCII line data archive in Geosoft XYZ format
      anBlock9.XYZ    - Geosoft Anomaly ASCII data archive

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All EM data in the archive is presented in the standard normalization convention for the coplanar coils. The ratio of coplanar to coaxial amplitudes for the same frequency is 4:1 over a layered earth.

Resistivity is calculated using a proprietary pseudo-layer half-space algorithm.

The coordinate system for all grids and XYZ files is projected as follows

```
Datum                                NAD 83
Spheroid                             WGS84 (GRS1980)
Projection                           UTM
Central meridian                     129 West
False easting                        500000
False northing                       0
Scale factor                         0.9996
Northern parallel                    N/A
Base parallel                        N/A
WGS84 to local conversion method     Molodensky
```

```
Delta X shift                    +0
Delta Y shift                    +0
Delta Z shift                    +0

--------------------------------------------------------------------------------
```

- Appendix D.4 -

If you have any problems with this archive please contact

Processing Manager
FUGRO AIRBORNE SURVEYS CORP.
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- Appendix D.5 -

Geosoft XYZ ARCHIVE SUMMARY

JOB TITLE: 06041

TYPE OF SURVEY :Fugro DIGHEM V EM, Magnetics, Resistivity, Radiometrics
AREA :Eskay Creek Areas, Blocks 2,7,8, and 9. British Columbia
CLIENT :Hathor Exploration Ltd.
****

NUMBER OF DATA FIELDS :   43

#	CHANNAME	TIME	UNITS / DESCRIPTION	
1	X	0.1	m	UTME-NAD83 (ZONE-9N)
2	Y	0.1	m	UTMN-NAD83 (ZONE-9N)
3	LAT	0.1	deg.m	Latitude NAD83
4	LON	0.1	deg.m	Longitude NAD83
5	ALTBIRDM	0.1	m	Bird height above ground
6	ALTHELIM	0.1	m	Heli height above ground
7	FID	0.1	s	Fiducial
8	DIURNAL	0.1	nT	Diurnal correction
9	MAGR	0.1	nT	Lagged and diurnal corrected Total Magnetic Field
10	MAGF	0.1	nT	Final Total Magnetic Field
11	CPI900	0.1	ppm	INPHASE-COPLANAR 872 HZ
12	CPQ900	0.1	ppm	QUADRATURE- COPLANAR 872 HZ
13	CXI1000	0.1	ppm	INPHASE-COAXIAL 1116 HZ
14	CXQ1000	0.1	ppm	QUAD- COAXIAL 1116 HZ
15	CXI5500	0.1	ppm	INPHASE -COAXIAL 5666 HZ
16	CXQ5500	0.1	ppm	QUAD -COAXIAL 5666 HZ
17	CPI7200	0.1	ppm	INPHASE -COPLANAR 7233 HZ
18	CPQ7200	0.1	ppm	QUAD -COPLANAR 7233 HZ
19	CPI56K	0.1	ppm	INPHASE-COPLANAR 55460 HZ
20	CPQ56K	0.1	ppm	QUAD-COPLANAR 55460 HZ
21	RES900	0.1	ohm-m	APPARENT RESISTIVITY - 872 Hz
22	RES7200	0.1	ohm-m	APPARENT RESISTIVITY - 7233 Hz
23	RES56K	0.1	ohm-m	APPARENT RESISTIVITY - 55460 Hz
24	DEP900	0.1	m	APPARENT DEPTH - 872 Hz
25	DEP7200	0.1	m	APPARENT DEPTH - 7233 Hz
26	DEP56K	0.1	m	APPARENT DEPTH - 55460 Hz
27	COSMIC	1.0	counts/s	Cosmic counts
28	LIVE_TIME	1.0	ms	Spetcrometer live time
29	URANUP	1.0	counts/s	Upward Uranium window
30	TC_RAW	1.0	counts/s	Total Count window - raw
31	TH_RAW	1.0	counts/s	Thorium window - raw
32	U_RAW	1.0	counts/s	Uranium window - raw
33	K_RAW	1.0	counts/s	Potassium window - raw
34	TC	1.0	counts/s	Total Count window - corrected
35	TH	1.0	counts/s	Thorium window - corrected
36	U	1.0	counts/s	Uranium window - corrected
37	K	1.0	counts/s	Potassium window - corrected

```
 38 PRESSURE    0.1    kpa          Air pressure
 39 TEMPERATURE 0.1    Celsius      Outside air tempreture
 40 Z           0.1    m            Height above mean sea level
 41 DTM         0.1    m            Digital Terrain Model
 42 FLT         0.1                 Survey fligth number
 43 DATE        0.1    Y/M/D        Date of the survey line
************************************************************************
ISSUE DATE          :January 18, 2007
FOR WHOM            :Hathor Exploration Ltd.
BY  WHOM            :FUGRO AIRBORNE SURVEYS
                     2270 ARGENTIA ROAD, PUNIT 2
                     MISSISSAUGA, ONTARIO,
                     CANADA  L5N 6A6
                     TEL. (905) 812-0212
                     FAX (905) 812-1504
```

APPENDIX E

EM ANOMALY LIST

EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20010			FLIGHT 129								
A	3654.8	S	427376	6277217	3.8	5.3	39.4	54.4	0.6	23	0
B	3632.7	S	427373	6277835	0.0	3.7	19.6	33.5	---	---	0
C	3600.6	S	427415	6278478	2.0	14.0	20.9	75.9	---	---	0
D	3542.6	S	427439	6279791	1.8	2.1	13.2	22.9	---	---	0
E	3453.5	S	427499	6281601	2.6	5.2	15.3	23.9	---	---	0
LINE 20020			FLIGHT 129								
A	3154.1	S	427533	6277203	7.5	18.8	41.4	92.0	0.5	2	0
B	3206.9	S?	427540	6278258	6.2	5.4	20.6	55.4	1.3	35	0
C	3216.2	S	427547	6278564	3.9	17.8	26.3	79.9	0.2	0	0
D	3271.3	S	427578	6279897	4.6	14.7	16.8	79.8	0.3	0	0
E	3352.0	S	427616	6281562	3.0	0.4	10.5	10.6	---	---	0
LINE 20030			FLIGHT 129								
A	3055.4	S?	427700	6278188	2.3	22.8	13.4	69.0	---	---	0
B	2985.7	S	427741	6279939	6.8	20.1	21.2	92.8	0.4	0	0
C	2898.4	S	427808	6281551	4.8	9.6	20.0	49.1	0.5	7	0
LINE 20040			FLIGHT 129								
A	2497.2	S	427829	6277600	4.1	0.0	9.9	59.1	---	---	0
B	2509.7	S?	427833	6277797	3.4	15.6	7.4	21.7	0.2	2	0
C	2611.0	S?	427887	6279909	5.8	27.9	18.2	100.5	0.3	0	0
D	2678.5	S	427912	6281338	2.6	0.4	23.2	59.9	---	---	0

CX = COAXIAL
CP = COPLANAR

Note:EM values shown above are local amplitudes

*Estimated Depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or magnetite/overburden effects

EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20050			FLIGHT 129								
A	2301.9	S	428042	6279878	4.1	11.5	13.6	71.7	0.4	5	0
B	2227.0	S	428094	6281301	4.7	2.8	16.7	32.9	---	---	0
LINE 20060			FLIGHT 129								
A	1912.7	S	428135	6277368	4.1	6.0	15.3	31.1	---	---	0
B	2094.2	S	428209	6281098	4.5	2.3	18.0	24.9	---	---	0
LINE 20073			FLIGHT 147								
A	1874.9	S	428282	6277429	6.1	4.2	19.4	31.8	1.7	21	0
LINE 20080			FLIGHT 129								
A	1823.8	S	428427	6277298	5.2	15.9	23.4	89.8	0.4	0	0
B	1652.1	S	428521	6280850	4.6	5.5	19.9	38.6	0.8	5	0
LINE 20090			FLIGHT 129								
A	1262.1	S	428553	6277176	5.1	12.8	41.3	154.2	0.4	10	0
B	1272.1	E	428572	6277515	5.8	13.0	45.6	74.7	0.5	0	0
C	1450.2	S	428699	6281580	4.9	17.8	27.0	90.1	0.3	0	0
LINE 20100			FLIGHT 129								
A	1183.4	S	428746	6277258	6.5	29.0	33.7	198.3	0.3	0	0
B	1176.0	S?	428753	6277476	7.6	25.1	36.8	124.8	---	---	0
C	1050.0	S	428816	6280141	2.2	1.2	6.3	1.9	---	---	0

CX = COAXIAL
CP = COPLANAR

Note: EM values shown above are local amplitudes

*Estimated Depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or magnetite/overburden effects

EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20100			FLIGHT 129								
D	1002.1	S	428856	6281526	4.5	13.4	37.9	131.9	0.4	0	0
E	996.2	S?	428859	6281681	2.9	15.7	25.5	99.4	---	---	0
LINE 20110			FLIGHT 129								
A	751.7	S	428874	6277485	5.6	12.1	33.5	118.8	0.5	8	0
B	867.4	S	428934	6280124	1.5	0.4	6.0	0.0	---	---	0
C	923.4	S	429005	6281671	2.4	2.6	5.2	15.7	---	---	0
LINE 20120			FLIGHT 95								
A	2995.5	S	429034	6277479	5.9	8.6	14.4	32.3	0.7	5	0
B	3005.4	S?	429024	6277796	4.2	13.6	3.6	48.8	0.3	0	0
C	3149.5	S	429122	6281153	3.0	4.1	18.5	34.9	---	---	0
LINE 20130			FLIGHT 95								
A	3450.0	S	429190	6277501	1.6	2.8	15.4	39.4	---	---	0
B	3395.3	S	429179	6278553	5.3	4.2	5.5	9.6	---	---	0
C	3280.0	S?	429291	6281204	1.4	2.5	2.1	17.5	---	---	0
D	3254.8	S	429288	6281631	3.7	17.7	26.4	115.7	0.2	0	0
LINE 20140			FLIGHT 95								
A	3523.5	S	429332	6277448	3.9	7.0	12.7	0.5	---	---	0
B	3637.7	S	429370	6279959	2.9	1.8	2.3	3.9	---	---	0
C	3678.1	S	429440	6280974	4.0	8.6	25.5	68.9	0.4	12	0

CX = COAXIAL
CP = COPLANAR

Note:EM values shown above are local amplitudes

*Estimated Depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or magnetite/overburden effects

EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20150			FLIGHT 95								
A	4082.3	S	429476	6277388	2.8	4.2	18.6	18.1	---	---	0
B	4015.7	S	429478	6278676	2.4	0.0	6.4	11.9	---	---	0
C	3971.7	S	429535	6279812	2.1	0.3	3.1	0.8	---	---	0
D	3929.5	S	429570	6280889	3.9	12.7	13.8	51.5	0.3	0	0
LINE 20160			FLIGHT 95								
A	4153.7	S	429648	6277335	3.1	0.0	22.3	55.6	---	---	0
B	4247.5	S	429669	6279687	2.8	1.8	7.8	0.4	---	---	0
C	4284.4	S	429704	6280650	5.5	16.1	30.7	129.4	0.4	0	0
D	4304.2	S	429727	6281103	2.9	6.2	23.4	98.7	---	---	0
LINE 20170			FLIGHT 95								
A	4703.2	S	429751	6277348	4.4	2.1	19.2	23.0	---	---	0
B	4515.3	S	429827	6280627	3.4	4.4	18.6	38.7	0.7	9	0
LINE 20180			FLIGHT 95								
A	4770.1	S	429931	6277324	4.1	0.2	16.8	34.2	---	---	0
B	4899.7	S	429979	6280205	3.7	3.9	8.3	41.5	---	---	0
C	4917.4	S	430005	6280702	3.8	12.7	25.0	110.3	---	---	0
D	4947.2	S	430032	6281139	3.8	10.0	22.4	117.7	0.4	14	0
LINE 20190			FLIGHT 95								
A	5273.8	S	430115	6279412	0.8	0.6	4.3	0.9	---	---	0

CX = COAXIAL
CP = COPLANAR

Note:EM values shown above are local amplitudes

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20190			FLIGHT 95								
B	5166.6	S?	430187	6281545	8.2	15.8	30.4	130.7	0.6	19	0
LINE 20200			FLIGHT 95								
A	5438.7	S	430224	6277502	3.5	16.4	17.0	72.3	0.2	0	0
B	5471.2	S	430238	6278377	4.1	1.9	12.3	22.4	---	---	0
C	5554.7	S	430297	6280638	6.5	16.1	69.0	143.8	0.5	0	0
D	5641.9	S	430320	6281507	2.3	7.4	0.0	23.3	---	---	0
LINE 20210			FLIGHT 95								
A	5922.4	S	430360	6277775	3.9	19.6	17.6	89.8	0.2	0	0
B	5901.3	S	430367	6278264	1.7	25.6	10.4	145.5	---	---	0
C	5766.6	H	430453	6281305	2.1	2.7	27.8	33.6	---	---	0
D	5747.8	S?	430475	6281568	5.3	17.4	26.1	98.9	0.3	12	0
LINE 20220			FLIGHT 95								
A	6125.5	E	430617	6280725	10.1	14.9	22.3	69.5	0.9	5	0
B	6139.2	H	430629	6280900	1.8	2.5	31.7	40.7	---	---	0
C	6168.7	H	430628	6281219	1.2	1.5	23.0	26.8	---	---	0
LINE 20230			FLIGHT 95								
A	6466.5	S	430681	6277786	2.0	1.2	15.1	26.6	---	---	0
B	6406.8	S	430740	6279353	5.2	6.8	15.6	21.8	0.8	21	0
C	6327.7	H	430761	6281092	9.4	22.1	41.5	76.2	0.6	1	0
D	6297.5	S?	430787	6281583	8.5	22.1	26.8	119.4	0.5	11	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20240			FLIGHT 95								
A	6719.9	S?	430921	6280548	13.6	21.6	59.1	118.8	0.9	1	0
B	6733.7	S?	430915	6280758	17.2	20.9	18.8	54.5	1.3	18	0
C	6750.8	S?	430901	6280969	7.5	27.9	77.6	258.6	0.4	0	0
LINE 20250			FLIGHT 109								
A	2714.4	S	430990	6277630	5.0	14.8	27.7	72.8	0.4	0	0
B	2698.5	S	430986	6278087	1.8	10.4	14.5	107.0	---	---	0
C	2644.2	S	431065	6279824	2.8	3.9	25.0	28.7	---	---	0
D	2604.7	H	431067	6280542	1.7	2.9	5.4	12.0	---	---	0
LINE 20260			FLIGHT 109								
A	2810.9	S	431097	6277119	3.3	7.7	26.3	73.5	0.4	21	0
B	2827.9	S	431121	6277659	7.1	17.5	25.4	74.4	0.5	0	0
C	2893.3	S	431170	6279799	5.0	3.3	30.6	12.5	1.7	38	0
D	2915.3	S?	431183	6280316	3.7	4.4	53.7	64.7	0.8	35	0
E	2947.0	S	431216	6280707	6.1	10.1	41.6	61.7	0.7	8	0
LINE 20270			FLIGHT 109								
A	3332.6	S	431274	6277167	1.6	3.8	12.7	2.4	---	---	0
B	3313.2	S	431274	6277679	3.9	5.3	11.0	19.7	0.7	32	0
C	3297.3	S	431304	6278178	2.9	10.7	20.1	89.4	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20280			FLIGHT 109								
A	3422.0	S	431428	6278057	5.2	12.0	27.2	118.9	0.5	4	0
B	3448.6	S	431458	6278825	4.5	6.3	7.7	31.5	0.7	4	0
C	3478.6	S	431470	6279707	9.3	18.1	58.4	101.9	0.6	0	0
D	3497.3	S?	431492	6280210	4.5	18.7	35.9	80.4	0.3	0	0
E	3516.2	S?	431512	6280448	5.6	8.7	19.9	23.2	---	---	0
LINE 20290			FLIGHT 109								
A	3987.5	S	431579	6277692	7.7	16.2	45.2	75.9	0.6	0	0
B	3922.0	S?	431630	6279674	4.5	5.4	29.1	41.2	0.8	0	0
LINE 20300			FLIGHT 109								
A	4100.7	S?	431734	6277740	9.0	22.6	45.7	116.8	0.5	0	0
B	4167.6	S?	431781	6279746	40.1	64.6	203.3	291.6	1.2	0	0
C	4188.2	S?	431812	6280274	14.8	16.9	65.8	85.1	1.3	4	0
D	4203.5	S?	431822	6280460	5.5	14.3	33.6	75.9	0.4	7	0
LINE 20320			FLIGHT 109								
A	4783.7	S	432068	6279824	4.0	14.2	38.9	70.3	0.3	0	0
B	4795.1	H	432078	6280137	0.6	7.2	20.7	51.5	---	---	0
C	4807.6	S	432095	6280353	1.7	5.3	30.4	41.2	---	---	0
LINE 20330			FLIGHT 109								
A	5362.4	S	432184	6278381	9.0	11.5	21.4	34.3	1.0	12	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20330			FLIGHT 109								
B	5411.2	S?	432253	6279902	13.2	24.9	60.0	118.7	0.7	0	10
C	5417.8	H	432257	6280108	0.0	0.0	28.0	0.0	---	---	0
LINE 20350			FLIGHT 147								
A	1529.7	S	432491	6278554	4.9	20.4	41.6	166.0	0.3	0	0
B	1571.3	S?	432528	6279553	3.5	3.4	19.8	16.3	0.9	41	0
LINE 20360			FLIGHT 147								
A	1267.4	B?	432703	6279596	5.0	3.6	15.2	14.9	---	---	0
LINE 20371			FLIGHT 145								
A	1570.9	S	432821	6278914	0.5	4.8	20.7	38.0	---	---	0
B	1546.6	H	432832	6279642	2.1	0.9	22.5	17.4	---	---	0
LINE 20380			FLIGHT 145								
A	2233.0	S	432964	6278802	0.9	2.7	21.7	44.4	---	---	0
B	2209.0	S?	433005	6279593	3.4	4.7	13.5	19.6	---	---	0
LINE 20390			FLIGHT 145								
A	2634.4	S	433077	6277801	3.1	2.7	14.7	38.7	---	---	0
B	2623.2	S	433105	6278198	2.9	8.8	10.9	52.9	---	---	0
C	2609.3	S	433106	6278703	0.7	0.9	36.1	90.8	---	---	0
D	2579.7	S?	433153	6279558	7.9	6.7	20.0	29.6	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20400			FLIGHT 145								
A	3067.9	S	433211	6277615	5.3	18.9	25.7	96.5	0.3	0	0
B	3038.8	S	433254	6278595	7.6	36.8	55.0	195.9	0.3	0	0
C	3024.5	S	433263	6279028	1.7	5.2	19.6	82.3	---	---	0
D	2998.2	S?	433282	6279606	2.4	2.8	13.1	7.3	---	---	0
LINE 20410			FLIGHT 95								
A	7213.0	S	433355	6277545	10.6	18.8	18.9	57.8	0.7	0	0
B	7182.6	S	433431	6278370	3.8	15.1	26.4	69.2	0.3	0	0
C	7163.5	S	433406	6278899	1.6	8.0	10.1	62.1	---	---	0
D	7129.9	S?	433405	6279377	9.8	20.4	38.2	83.4	0.6	0	0
LINE 20420			FLIGHT 95								
A	7345.7	S	433511	6277455	6.3	9.7	20.3	65.4	0.7	2	0
B	7376.1	S	433543	6278307	4.2	3.7	21.1	55.6	1.1	45	0
C	7384.0	S	433557	6278547	2.5	12.1	19.0	48.3	---	---	0
D	7425.1	S	433587	6279492	4.8	3.8	19.6	6.5	1.3	0	0
LINE 20430			FLIGHT 145								
A	3530.1	S	433675	6277414	2.6	9.7	29.4	88.0	---	---	0
B	3504.7	S	433694	6278200	8.7	28.2	33.0	133.2	0.4	0	0
C	3462.6	S	433716	6279161	2.2	2.5	21.4	61.8	---	---	0
D	3448.7	S?	433718	6279413	5.7	7.7	41.5	38.9	0.8	0	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20440			FLIGHT 145								
A	3868.0	S	433819	6277375	5.4	9.5	33.6	89.2	0.6	11	0
B	3792.1	S?	433863	6279241	5.4	7.9	67.0	50.6	0.7	5	0
LINE 20450			FLIGHT 145								
A	3939.1	S	433958	6277346	3.6	8.6	28.2	68.6	0.4	12	0
B	3957.2	S	433967	6277744	1.4	1.2	14.9	43.2	---	---	0
C	4001.1	S	434020	6278548	6.1	13.1	23.7	78.3	0.5	10	0
D	4018.4	S	434022	6278923	5.3	10.7	39.4	45.6	0.5	0	0
E	4028.0	S?	434016	6279114	11.2	24.3	29.3	17.7	0.6	0	0
LINE 20460			FLIGHT 145								
A	3707.8	S?	434165	6278984	9.6	11.1	41.4	49.6	1.1	6	0
B	3718.6	E	434171	6279263	9.0	14.9	52.6	40.1	0.7	2	0
LINE 20470			FLIGHT 145								
A	3320.4	S?	434286	6278118	6.2	8.8	32.6	78.6	0.8	21	0
B	3352.0	H	434315	6278893	1.2	3.7	46.6	18.4	---	---	0
LINE 20480			FLIGHT 145								
A	2740.2	S	434402	6277020	5.7	12.4	25.4	65.3	0.5	1	0
B	2756.7	S?	434416	6277371	3.3	9.6	9.3	60.9	0.3	12	0
C	2777.9	S	434433	6277723	3.6	2.4	13.6	28.1	---	---	0
D	2797.6	S	434436	6277947	2.0	10.7	22.9	77.9	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 20480			FLIGHT 145								
E	2841.5	H	434459	6278849	3.2	4.4	52.0	42.1	0.6	33	0
LINE 20490			FLIGHT 145								
A	2412.0	S	434580	6277861	4.0	5.9	16.0	62.1	0.6	34	0
LINE 20500			FLIGHT 145								
A	1890.1	S	434738	6278003	2.3	7.1	11.1	22.2	---	---	0
LINE 29012			FLIGHT 86								
A	2120.1	S	429243	6280879	4.6	10.5	10.2	70.7	0.4	0	0
B	2135.3	S	429654	6280851	5.9	16.3	20.8	113.0	0.4	2	0
C	2171.6	S	430555	6280842	4.9	5.1	39.4	71.9	1.0	33	0
D	2186.6	H	430929	6280864	5.0	5.5	22.6	25.7	0.9	26	0
E	2320.8	S?	434293	6280771	3.2	1.4	22.5	30.2	---	---	0
LINE 29021			FLIGHT 86								
A	1796.0	S	427914	6279446	2.0	0.0	4.5	11.1	---	---	0
LINE 29030			FLIGHT 86								
A	1049.7	S	431078	6277857	2.2	15.1	32.1	79.9	---	---	0
B	1072.5	S?	431725	6277797	18.2	36.3	83.5	241.1	0.8	3	0
C	1115.7	S	433072	6277782	5.3	16.7	17.6	82.4	---	---	0
D	1167.4	S	434267	6277753	1.2	1.3	30.3	77.6	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70010			FLIGHT 58										
A	3870.1	H	365808	6289518	2.7	1.7	10.6	8.2	1.4	4.3	---	---	0
LINE 70020			FLIGHT 58										
A	3637.6	H	365189	6289365	1.0	3.5	25.2	27.4	7.3	8.4	---	---	0
B	3656.0	H	365811	6289370	0.0	1.1	10.5	2.8	2.2	3.9	---	---	0
LINE 70030			FLIGHT 58										
A	3558.0	H	366102	6289196	3.6	0.8	31.2	21.4	8.3	13.6	---	---	0
B	3529.4	H	366987	6289164	2.0	0.9	8.0	18.6	1.4	3.3	---	---	0
LINE 70040			FLIGHT 58										
A	3353.4	H	366064	6289069	1.5	0.9	10.1	5.7	10.9	9.9	---	---	0
B	3381.0	H	366989	6289037	1.0	1.4	15.0	18.1	2.7	5.2	---	---	0
LINE 70050			FLIGHT 58										
A	3241.1	H	365912	6288894	1.5	3.2	6.5	8.2	4.0	1.7	---	---	0
B	3229.1	E	366277	6288888	3.8	2.7	39.1	14.2	15.6	18.0	---	---	0
LINE 70060			FLIGHT 58										
A	2994.0	H	365369	6288776	1.6	3.2	16.7	36.4	3.9	10.2	---	---	0
B	3026.0	E	366406	6288741	3.8	3.4	76.2	50.4	15.8	30.7	1.1	40	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70070			FLIGHT 58										
A	2909.7	H	365310	6288621	1.8	3.6	19.0	32.4	11.2	9.5	---	---	0
B	2895.2	H	365795	6288607	2.7	2.1	15.9	14.7	7.2	5.6	---	---	0
C	2872.5	E	366537	6288581	8.5	3.1	34.3	16.1	18.5	22.7	4.3	0	0
LINE 70080			FLIGHT 58										
A	2648.4	H	365288	6288495	2.2	3.8	18.6	33.7	11.1	9.4	---	---	0
B	2666.7	H	365806	6288477	2.4	2.0	13.4	10.4	7.5	3.8	---	---	0
C	2691.5	H	366585	6288451	16.3	13.2	176.6	124.9	59.8	84.9	1.9	13	0
LINE 70090			FLIGHT 58										
A	2444.0	H	365564	6288316	1.7	1.7	0.0	0.0	0.0	0.3	---	---	38
B	2416.8	H	366391	6288275	6.3	11.4	68.7	93.4	21.9	27.1	0.6	9	0
C	2408.6	H	366653	6288294	14.8	11.8	156.5	131.6	46.0	61.9	1.9	5	0
D	2387.7	H	367286	6288285	1.3	1.4	2.2	2.1	1.0	1.6	---	---	0
LINE 70100			FLIGHT 58										
A	2194.7	H	365440	6288186	4.2	3.9	15.5	26.3	9.5	10.8	1.1	48	0
B	2207.2	H	365841	6288170	9.4	8.8	61.0	78.9	25.3	27.3	1.4	20	0
C	2231.0	H	366599	6288141	9.3	9.7	66.1	64.1	11.9	27.7	1.2	6	0
D	2244.7	H	367052	6288127	2.0	0.5	65.1	17.1	18.2	22.2	---	---	0
E	2261.3	H	367557	6288105	1.0	0.1	0.4	1.6	0.2	1.2	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70110			FLIGHT 58										
A	2105.4	H	365239	6288021	2.5	3.8	85.4	8.6	60.0	42.0	---	---	0
B	2090.9	H	365731	6288017	3.1	4.3	26.9	40.1	15.5	15.5	0.6	43	17
C	2057.5	H	366802	6287989	4.8	4.6	35.4	28.2	9.6	14.5	1.0	14	0
D	2045.4	H	367185	6287965	6.3	3.1	44.4	24.8	16.8	26.3	2.7	11	0
LINE 70120			FLIGHT 58										
A	1846.7	H	365336	6287885	10.2	2.1	71.2	66.5	56.7	48.4	---	---	0
B	1872.2	H	366126	6287871	1.9	1.0	28.3	36.5	16.6	23.6	---	---	0
C	1894.9	H	366823	6287837	10.5	7.2	65.5	65.8	34.2	33.8	2.0	15	0
D	1911.5	H	367318	6287824	10.0	6.1	64.5	42.7	10.2	29.6	2.3	30	0
LINE 70130			FLIGHT 58										
A	1736.3	E	365486	6287718	6.2	1.5	68.1	60.7	29.0	27.6	---	---	0
B	1722.3	H	365912	6287710	1.5	2.0	16.8	5.9	6.4	4.6	---	---	0
C	1692.5	H	366806	6287681	7.4	9.0	83.7	57.1	75.3	31.9	0.9	12	0
D	1669.5	H	367496	6287654	3.3	1.4	36.7	7.4	12.2	18.0	---	---	0
LINE 70140			FLIGHT 58										
A	1488.0	H	365851	6287568	11.4	8.4	68.3	61.3	33.2	33.7	1.9	22	0
B	1516.0	H	366689	6287561	0.8	1.0	12.2	0.5	32.2	3.1	---	---	0
C	1545.2	H	367624	6287513	22.1	11.2	116.2	82.3	41.2	53.3	3.9	7	25
D	1564.2	B?	368244	6287515	10.4	10.3	51.1	48.3	2.2	15.3	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70150			FLIGHT 58										
A	1234.6	H	365914	6287418	7.8	4.0	83.4	34.6	33.2	43.4	2.7	37	0
B	1220.6	H	366388	6287390	9.2	5.0	57.2	45.9	46.5	35.8	2.7	32	0
C	1200.9	H	367037	6287370	2.9	1.3	6.6	7.4	20.2	9.5	---	---	0
D	1185.3	H	367524	6287366	10.4	1.8	62.7	9.8	61.5	29.3	---	---	0
LINE 70160			FLIGHT 58										
A	1035.5	H	366418	6287237	3.7	2.6	25.0	11.8	24.0	6.0	---	---	0
B	1054.0	H	367036	6287231	2.4	0.8	3.4	0.3	15.7	5.5	---	---	0
C	1070.5	H	367581	6287224	5.1	1.8	41.3	7.1	43.5	4.7	---	---	0
LINE 70170			FLIGHT 58										
A	875.2	H	366271	6287100	4.5	3.1	71.2	54.2	72.3	47.0	1.6	53	0
B	849.3	H	367092	6287062	2.6	1.4	13.7	3.5	19.5	4.5	---	---	0
C	830.7	H	367648	6287042	2.7	1.1	21.4	3.8	27.1	8.3	---	---	0
D	817.7	E	368028	6287041	5.6	4.0	48.6	25.2	39.1	22.3	---	---	0
LINE 70180			FLIGHT 58										
A	649.0	H	366385	6286966	4.8	1.4	28.5	13.2	25.3	5.4	---	---	0
B	676.2	H	367143	6286942	0.2	0.8	8.7	0.6	16.1	3.0	---	---	0
C	696.0	H	367764	6286914	2.5	1.0	9.5	0.7	23.4	1.3	---	---	0
LINE 70190			FLIGHT 58										
A	450.3	H	366400	6286784	6.4	7.9	85.4	39.6	83.3	43.4	0.9	20	0

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Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70190			FLIGHT 58										
B	428.0	H	367090	6286775	1.4	0.3	0.9	2.3	0.7	0.8	---	---	0
C	399.4	H	367924	6286749	2.8	0.8	27.6	1.8	32.8	16.3	---	---	0
LINE 70200			FLIGHT 50										
A	3027.5	H	366522	6286621	5.6	8.4	112.9	69.6	84.2	61.4	0.7	20	0
B	2997.6	H	367338	6286590	0.9	1.6	47.0	26.8	30.4	19.1	---	---	0
C	2982.0	H	367741	6286585	5.0	2.5	32.7	14.9	30.4	3.2	---	---	0
LINE 70210			FLIGHT 50										
A	2867.1	H	367294	6286499	5.6	4.9	33.8	33.8	15.6	15.3	1.3	45	0
B	2891.8	E	367919	6286451	12.5	2.3	88.5	51.7	79.0	50.5	---	---	0
LINE 70220			FLIGHT 50										
A	2519.2	B?	366621	6286329	8.3	13.4	62.1	75.4	8.3	27.5	0.7	9	0
B	2510.7	E	366882	6286328	6.3	0.7	48.5	46.3	88.8	16.7	---	---	0
C	2493.6	H	367383	6286306	3.5	4.3	33.8	40.1	19.5	16.7	0.7	48	0
D	2477.7	E	367857	6286294	6.3	2.4	79.6	52.9	86.8	32.7	---	---	0
LINE 70230			FLIGHT 50										
A	2358.9	H	367075	6286157	9.7	4.7	45.3	19.4	56.4	7.5	3.1	37	0
B	2372.0	H	367462	6286195	2.3	3.8	16.6	16.8	13.4	11.2	---	---	0
C	2382.7	E	367770	6286195	8.4	4.1	83.2	52.4	90.2	40.6	3.0	44	0
D	2394.4	H	368112	6286166	3.5	4.6	38.6	24.7	7.1	11.6	0.7	40	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70240			FLIGHT 50										
A	2178.8	H?	366364	6286046	1.9	4.0	12.6	8.8	3.6	4.0	---	---	0
B	2157.4	E	366989	6286011	16.5	3.2	82.8	47.9	91.6	46.6	13.7	31	0
C	2153.9	H	367103	6286004	3.3	0.3	82.8	0.1	66.1	46.6	---	---	0
D	2138.4	H	367607	6285995	7.7	3.6	58.5	8.1	54.9	30.9	3.1	41	0
E	2123.7	H	368096	6285996	3.9	5.2	53.0	34.7	54.5	30.7	0.7	33	0
LINE 70250			FLIGHT 50										
A	1946.4	H	366638	6285866	1.7	0.0	5.3	1.0	7.6	3.9	---	---	0
B	1965.1	H	367226	6285879	1.8	2.5	33.8	22.1	46.2	19.6	---	---	0
C	1991.2	H	368031	6285871	4.3	2.4	68.7	17.7	80.4	43.8	---	---	0
LINE 70260			FLIGHT 50										
A	1792.3	S?	365365	6285773	2.4	5.8	17.0	19.7	1.3	5.2	---	---	17
B	1743.4	H	366733	6285712	3.7	2.8	29.0	0.3	25.8	12.6	---	---	0
C	1740.1	D	366813	6285712	12.2	3.1	29.0	13.0	25.8	12.6	8.5	32	0
D	1726.1	H	367211	6285701	4.2	3.1	52.4	18.9	12.3	25.9	1.4	49	0
E	1697.8	H	368073	6285701	2.8	2.5	75.9	12.4	64.7	36.4	---	---	0
LINE 70270			FLIGHT 50										
A	1383.7	S?	366308	6285602	2.3	1.0	31.4	46.5	4.5	9.0	---	---	0
B	1397.1	D	366723	6285582	6.8	1.5	55.3	19.9	29.9	24.6	---	---	0
C	1421.3	H	367502	6285575	3.9	5.1	46.2	53.5	6.9	13.9	0.7	32	0
D	1440.5	H	368111	6285558	4.3	4.2	104.1	59.7	82.1	57.1	1.0	45	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70280			FLIGHT 50										
A	1184.4	S?	366409	6285437	7.7	8.6	58.1	73.2	7.1	18.7	1.1	27	0
B	1171.3	D	366772	6285435	18.6	5.6	86.0	40.1	40.0	37.8	7.6	20	0
C	1140.5	H	367463	6285411	2.2	5.9	61.9	57.3	7.5	25.2	---	---	0
D	1116.1	H	368174	6285375	1.7	1.5	77.6	0.0	29.1	33.7	---	---	0
LINE 70290			FLIGHT 50										
A	996.0	B	366763	6285268	6.1	8.4	19.6	9.1	9.6	10.0	0.8	7	0
B	1036.5	E	368103	6285268	4.8	4.2	47.4	44.7	7.9	15.8	1.2	43	0
LINE 70300			FLIGHT 50										
A	798.8	D	366736	6285144	0.9	0.9	27.2	4.8	16.3	12.7	---	---	0
B	797.0	D	366785	6285142	5.0	2.4	27.2	4.8	16.3	12.7	---	---	0
LINE 70310			FLIGHT 50										
A	563.7	H	364970	6285052	2.9	2.4	8.6	1.5	19.7	7.4	---	---	0
B	618.2	B	366687	6284996	3.3	0.4	7.5	0.0	6.6	3.2	---	---	0
C	659.2	S?	367997	6284939	2.4	2.7	20.5	30.4	0.9	6.5	---	---	0
LINE 70320			FLIGHT 50										
A	482.9	H	365075	6284884	1.4	3.7	14.2	7.7	16.1	6.5	---	---	0
B	422.5	D	366751	6284820	12.8	5.8	37.6	8.2	32.0	15.2	3.7	15	0
C	385.9	S?	367638	6284813	2.3	3.8	38.3	49.3	2.6	11.2	---	---	0
D	372.7	S?	367998	6284808	0.7	2.2	36.4	46.3	1.6	10.9	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 70330			FLIGHT 42										
A	641.5	H	365129	6284742	4.3	0.1	4.6	3.6	1.8	2.7	---	---	0
B	594.9	B	366669	6284714	2.8	1.3	44.6	10.7	37.0	19.3	---	---	0
C	592.1	D	366764	6284709	12.3	2.7	44.6	10.0	37.0	19.3	---	---	0
D	555.3	S?	367794	6284657	1.7	2.7	37.3	53.2	3.3	12.8	---	---	0
LINE 70340			FLIGHT 42										
A	360.7	H	365281	6284588	2.5	1.5	2.1	0.2	0.0	0.2	---	---	0
B	406.2	B	366623	6284523	0.8	2.2	9.8	4.4	7.1	4.4	---	---	0
C	447.7	S?	367866	6284511	4.1	3.2	38.2	36.9	3.7	11.9	1.3	37	0
LINE 79010			FLIGHT 40										
A	3563.6	H	365071	6284773	2.3	1.7	3.3	0.8	7.2	2.0	---	---	0
B	3672.4	H	365182	6288160	5.4	6.3	39.7	30.6	33.3	5.5	0.9	9	0
LINE 79020			FLIGHT 40										
A	3442.1	B?	366592	6284753	2.2	0.6	6.5	0.8	5.8	1.8	---	---	0
B	3415.6	H	366593	6285447	3.7	3.1	29.7	29.9	7.0	10.0	1.2	48	0
C	3380.8	E	366624	6286452	9.4	5.0	67.6	52.5	106.0	55.3	2.7	41	0
D	3362.8	H	366653	6287018	1.4	2.7	34.9	31.2	16.6	11.6	---	---	0
E	3337.9	H	366681	6287720	6.4	8.8	66.1	83.4	47.9	40.7	0.8	16	0
F	3316.0	H	366671	6288356	11.6	11.8	135.5	116.0	37.5	58.4	1.3	5	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 79030			FLIGHT 40										
A	3006.7	H	368105	6285875	1.0	2.2	3.7	1.0	49.7	7.6	---	---	0
B	3049.1	H?	368153	6287343	4.4	2.0	45.6	11.4	8.4	18.1	---	---	0

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Block 7

EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 80010			FLIGHT 22										
A	280.8	E	359098	6285597	12.1	8.5	87.6	51.7	20.7	37.8	2.1	0	0
B	273.3	H	359324	6285581	9.3	5.0	44.0	18.8	67.4	12.7	2.7	13	0
LINE 80020			FLIGHT 22										
A	531.7	H	359317	6285443	2.2	3.4	39.9	19.5	11.8	18.6	---	---	11
B	542.2	H	359637	6285438	4.3	2.5	25.2	3.6	12.2	14.1	---	---	0
LINE 80030			FLIGHT 22										
A	718.9	S?	358784	6285330	5.2	3.4	13.0	30.5	1.3	6.0	1.7	42	0
LINE 80070			FLIGHT 22										
A	1627.0	H?	359862	6284709	2.3	1.3	8.5	14.2	2.6	4.0	---	---	0
LINE 80090			FLIGHT 51										
A	190.3	S?	359540	6284391	0.7	4.5	10.1	29.9	0.7	2.7	---	---	0
LINE 80110			FLIGHT 115										
A	898.0	H	359519	6284126	1.2	1.9	4.5	4.9	3.2	1.6	---	---	0
LINE 80120			FLIGHT 115										
A	1404.0	H	359364	6283960	4.4	1.5	7.1	6.7	2.4	2.1	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 80130			FLIGHT 115										
A	1588.5	S?	358955	6283819	0.3	1.7	23.4	25.8	2.3	10.2	---	---	0
B	1564.2	B?	359115	6283819	11.3	15.7	95.4	166.0	11.1	31.7	1.0	10	0
LINE 80140			FLIGHT 115										
A	1931.7	S?	358551	6283665	5.2	5.2	16.8	27.5	13.3	7.6	1.1	18	639
B	1958.8	H	358896	6283657	5.1	9.3	37.5	36.9	15.2	15.6	0.5	5	301
LINE 80150			FLIGHT 115										
A	2233.5	B	358515	6283529	10.6	6.4	15.8	19.8	5.4	6.5	2.4	0	457
B	2227.2	B?	358597	6283517	7.3	4.3	17.4	22.2	5.5	4.8	2.2	15	0
C	2200.8	H	358945	6283527	0.9	1.7	17.4	19.3	9.5	8.3	---	---	12
LINE 80160			FLIGHT 115										
A	2516.0	S?	357988	6283366	1.9	1.2	10.2	13.1	10.9	2.3	---	---	0
B	2579.0	B	358498	6283341	3.7	4.4	27.7	17.2	11.7	5.5	0.8	32	0
LINE 80170			FLIGHT 115										
A	2946.0	S?	356774	6283275	4.1	2.6	8.5	23.5	5.3	3.2	---	---	0
B	2758.9	S?	359502	6283138	13.8	13.2	106.0	71.1	129.1	11.3	---	---	1223
LINE 80180			FLIGHT 115										
A	4918.7	S	359303	6283053	15.6	9.6	279.3	39.9	318.5	7.1	2.7	15	0
B	4931.2	S?	359555	6283049	1.4	13.1	292.3	65.3	337.6	11.7	---	---	1369

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 80190			FLIGHT 115										
A	4703.5	S?	356565	6282961	4.8	11.5	23.5	47.8	28.2	7.0	---	---	0
B	4692.0	S?	356770	6282990	8.7	1.9	15.9	41.8	28.2	5.9	---	---	0
C	4532.7	S	359326	6282885	4.0	6.6	124.5	47.4	159.3	7.3	---	---	0
D	4519.5	S?	359598	6282867	25.2	7.8	0.7	46.0	0.0	8.1	---	---	751
LINE 80200			FLIGHT 115										
A	4289.1	S?	358041	6282800	0.0	8.5	14.6	23.6	10.9	3.3	---	---	47
B	4382.7	S?	359321	6282766	2.1	10.4	72.3	58.8	65.4	8.3	---	---	30
C	4399.5	S?	359648	6282772	14.0	7.3	67.0	21.7	79.6	5.1	---	---	0
LINE 80210			FLIGHT 115										
A	4208.1	S	356470	6282676	2.5	2.1	4.7	19.7	4.0	2.5	---	---	0
B	4165.2	S?	357461	6282631	0.4	1.3	2.4	5.1	0.5	2.2	---	---	0
C	4068.3	S?	358727	6282621	15.2	1.3	14.6	14.1	12.7	1.8	---	---	265
D	4038.0	S	359385	6282572	1.5	8.4	17.6	14.7	16.9	2.8	---	---	12
E	4015.7	S?	359723	6282557	2.4	4.1	105.3	11.3	122.1	3.4	---	---	1266
LINE 80220			FLIGHT 115										
A	3739.8	S	356337	6282520	2.1	3.2	4.1	10.8	3.1	1.6	---	---	0
B	3805.0	S?	357985	6282505	3.6	2.4	15.8	12.5	18.1	2.5	---	---	487
C	3905.3	S	359539	6282454	4.8	5.2	7.4	32.4	5.0	3.9	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 80230			FLIGHT 115										
A	3692.5	S?	356262	6282382	1.5	2.6	3.9	22.6	1.1	3.5	---	---	313
B	3615.0	S?	357829	6282316	1.0	1.6	3.4	13.9	7.2	2.6	---	---	0
C	3596.0	S	358134	6282303	1.4	2.2	8.3	3.5	6.7	0.8	---	---	116
D	3480.8	S?	359959	6282242	0.0	7.3	289.7	24.9	339.1	8.0	---	---	1683
LINE 80240			FLIGHT 115										
A	3202.0	S	358087	6282190	6.5	0.8	27.9	3.9	30.2	0.9	---	---	0
B	3274.5	S?	359145	6282127	1.9	2.7	19.7	16.7	15.9	1.6	---	---	405
C	3311.0	S?	359747	6282151	12.4	5.9	74.6	45.1	102.4	6.7	---	---	0
LINE 80251			FLIGHT 112										
A	450.0	S	358256	6282045	1.0	1.4	22.8	1.2	23.2	0.4	---	---	0
B	509.0	S?	359146	6282012	2.3	2.4	15.9	19.3	18.4	2.3	---	---	358
C	557.0	S?	359834	6282005	0.2	8.3	25.9	31.8	27.4	4.4	---	---	41
LINE 89031			FLIGHT 115										
A	579.2	S?	358338	6283482	1.7	0.4	3.6	3.8	2.2	1.8	---	---	262
B	690.0	H	358383	6285680	2.5	2.2	7.0	7.6	1.3	2.2	---	---	0
LINE 89040			FLIGHT 115										
A	280.0	S	359765	6283087	1.6	3.6	10.8	12.8	9.9	3.5	---	---	0
B	174.1	H	359813	6284577	4.5	4.9	31.6	26.1	6.8	13.2	0.9	17	68
C	118.0	H	359873	6285603	3.4	2.2	25.7	7.2	5.9	9.7	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90010			FLIGHT 111										
A	6366.0	S	355412	6293842	1.0	0.3	9.6	14.0	6.7	2.6	---	---	0
LINE 90020			FLIGHT 111										
A	6216.8	S	355288	6293665	2.3	1.4	4.1	8.1	2.9	1.3	---	---	13
LINE 90030			FLIGHT 111										
A	6073.6	S	355343	6293523	0.9	1.6	10.3	11.1	2.9	2.8	---	---	0
LINE 90040			FLIGHT 111										
A	5889.2	S?	355027	6293385	2.5	2.4	5.3	10.2	2.5	1.9	---	---	58
LINE 90060			FLIGHT 111										
A	5576.4	S	355278	6293073	1.6	1.6	2.3	3.8	1.4	1.5	---	---	0
LINE 90070			FLIGHT 111										
A	5454.1	S?	355174	6292924	1.9	2.8	1.0	5.3	0.8	1.4	---	---	0
B	5383.0	S	356267	6292883	1.5	2.1	5.5	25.3	1.6	4.2	---	---	0
LINE 90080			FLIGHT 111										
A	5200.0	H	354590	6292817	0.0	0.7	4.5	7.4	1.4	2.1	---	---	18
LINE 90090			FLIGHT 111										
A	5150.5	H	354713	6292640	1.7	1.0	2.2	5.1	3.4	2.7	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90090			FLIGHT 111										
B	5133.6	E	355068	6292635	5.0	5.7	25.6	21.8	4.3	9.0	---	---	0
LINE 90101			FLIGHT 111										
A	4907.2	H	354843	6292503	3.5	3.5	42.2	34.4	10.6	20.3	0.9	50	0
B	4919.7	E	355089	6292490	6.1	4.7	58.7	41.5	2.3	23.3	---	---	43
LINE 90110			FLIGHT 111										
A	4645.3	H	354868	6292319	0.5	0.9	2.6	0.0	2.5	0.8	---	---	0
B	4503.5	S?	357731	6292235	1.8	4.9	5.9	25.0	0.4	4.2	0.3	12	0
LINE 90120			FLIGHT 111										
A	4142.0	H	354765	6292235	1.7	2.6	8.7	8.6	1.5	3.5	---	---	0
B	4224.3	S?	356466	6292137	0.0	5.6	3.4	26.7	0.5	3.6	---	---	0
C	4280.2	S?	357270	6292124	1.8	2.5	11.9	20.7	0.4	4.3	---	---	0
D	4344.3	H	357901	6292105	1.6	1.3	5.3	0.0	3.9	1.0	---	---	0
E	4359.0	H	358336	6292069	3.4	3.1	15.2	29.4	4.9	7.2	1.0	29	0
LINE 90130			FLIGHT 111										
A	3900.5	S?	357725	6291939	3.9	3.9	8.6	28.0	2.3	5.4	1.0	42	0
LINE 90140			FLIGHT 111										
A	3294.3	S?	357787	6291801	7.0	5.1	11.1	20.7	3.2	3.3	1.7	31	0
B	3320.3	S?	358511	6291796	0.9	2.1	12.3	1.6	3.6	2.0	---	---	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90150			FLIGHT 111										
A	2825.6	S	356261	6291707	3.2	1.6	16.8	21.1	2.4	5.3	2.1	42	0
B	2754.9	S?	357745	6291659	3.3	1.3	19.9	23.3	3.4	6.8	2.9	62	0
LINE 90160			FLIGHT 111										
A	2534.8	S?	356220	6291574	1.9	2.0	12.9	6.8	5.5	2.2	---	---	0
B	2558.2	S?	357002	6291529	4.5	1.9	24.5	44.4	2.6	8.2	---	---	0
C	2571.8	S	357309	6291508	1.0	2.7	14.0	35.5	1.3	5.2	0.2	28	0
D	2592.2	S?	357639	6291498	1.8	3.2	12.3	21.7	2.9	4.4	0.4	33	0
LINE 90170			FLIGHT 111										
A	2373.2	H	356188	6291399	1.3	1.8	17.5	8.7	4.2	4.1	0.5	59	0
B	2328.8	S?	357442	6291375	3.1	5.4	12.5	25.0	1.8	6.2	0.5	28	0
LINE 90180			FLIGHT 111										
A	2150.1	S	357024	6291242	2.7	2.2	15.0	40.5	3.1	4.7	1.1	33	0
B	2173.2	H	357482	6291228	1.9	2.2	23.1	25.2	0.7	7.4	0.6	57	16
C	2215.9	H	358687	6291154	0.7	0.8	19.6	19.1	3.5	7.1	0.4	89	38
LINE 90190			FLIGHT 111										
A	1952.2	H	356333	6291113	0.4	2.4	11.2	9.6	5.2	4.0	---	---	66
B	1941.7	H	356661	6291101	2.0	0.8	11.9	4.4	2.0	3.8	2.4	49	0
C	1906.3	S?	357594	6291045	1.9	0.7	17.8	14.9	7.7	4.1	2.5	93	0
D	1872.4	H	358496	6291073	2.4	6.5	22.3	28.9	1.6	8.3	0.3	15	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90200			FLIGHT 111										
A	1710.4	H	356221	6290947	0.9	0.4	16.4	5.3	6.1	8.4	---	---	32
B	1724.0	H	356647	6290931	1.9	0.6	30.3	13.8	3.5	10.7	3.7	70	0
C	1764.1	S?	357629	6290917	2.2	0.7	10.1	11.0	3.2	3.1	3.6	74	0
D	1786.0	H	358284	6290889	1.6	2.7	20.1	20.5	1.8	7.8	0.4	33	0
LINE 90210			FLIGHT 114										
A	3135.1	S	354573	6290851	2.0	0.7	3.0	4.9	1.6	1.2	---	---	0
B	3202.0	H	356187	6290811	1.6	1.1	17.6	9.5	5.7	8.8	---	---	0
C	3214.7	H	356606	6290799	1.7	1.3	20.4	17.9	1.9	8.4	1.0	47	0
D	3232.3	S	357113	6290792	2.3	3.4	9.5	16.8	1.4	3.8	0.5	31	0
E	3270.3	H	358299	6290751	2.2	0.9	12.9	19.6	1.8	6.1	2.3	70	0
LINE 90220			FLIGHT 114										
A	2990.3	H	356174	6290649	0.8	3.6	23.6	35.2	3.5	11.3	0.1	13	0
B	2973.6	H	356726	6290642	1.3	0.8	0.9	0.3	1.8	0.5	---	---	187
C	2911.7	H	358625	6290594	2.0	1.3	11.3	9.5	3.5	5.4	1.2	64	0
LINE 90230			FLIGHT 114										
A	2713.0	H	354558	6290573	0.4	0.8	5.2	2.4	1.8	1.4	---	---	0
B	2771.1	H	356490	6290505	3.0	1.3	9.0	13.1	1.8	4.1	---	---	0
C	2830.1	H	358471	6290446	3.4	2.0	24.0	21.1	5.5	9.2	1.7	43	11

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90240			FLIGHT 114										
A	2632.7	S	354558	6290385	1.7	1.9	8.6	20.0	2.3	5.3	---	---	0
B	2562.0	H	356264	6290352	1.7	0.0	5.8	10.3	2.5	5.2	---	---	92
C	2490.3	H	358592	6290280	2.8	1.9	16.1	10.4	5.8	5.6	1.4	42	0
LINE 90250			FLIGHT 114										
A	2225.7	S	354630	6290256	0.2	0.7	4.5	13.8	0.3	2.3	---	---	69
B	2273.4	H	356202	6290219	0.9	1.3	17.1	15.1	1.6	6.9	---	---	0
C	2282.0	S?	356525	6290224	1.9	0.1	9.4	10.1	3.9	3.1	---	---	0
D	2345.7	H	358799	6290124	0.6	0.0	7.8	3.7	2.9	4.4	---	---	0
LINE 90260			FLIGHT 114										
A	2146.8	S?	354767	6290105	2.4	0.5	6.3	8.6	2.0	2.2	---	---	0
B	2101.7	H	356150	6290044	1.8	1.1	14.9	11.7	2.0	3.8	1.3	83	0
C	2027.3	H	358620	6289975	0.8	1.4	6.9	3.2	4.2	4.8	---	---	0
LINE 90270			FLIGHT 114										
A	1847.0	S	354700	6289945	0.6	0.1	12.0	16.1	0.7	4.6	---	---	0
B	1894.2	S	356508	6289907	1.4	0.6	3.8	14.6	0.2	2.7	---	---	0
C	1921.0	S?	357560	6289882	1.4	0.0	6.0	2.0	4.4	2.4	---	---	0
LINE 90280			FLIGHT 114										
A	1771.6	S	354704	6289795	3.6	2.8	22.8	25.6	2.7	8.1	1.2	47	0
B	1719.8	S?	356523	6289736	0.3	1.2	3.0	21.1	0.3	4.7	---	---	0

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Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90290			FLIGHT 114										
A	1480.0	S	354520	6289645	1.6	1.4	4.1	2.2	1.6	1.3	---	---	0
B	1530.1	S?	356526	6289585	0.7	1.3	0.6	9.6	1.1	2.4	---	---	0
LINE 90300			FLIGHT 114										
A	1416.4	S	354415	6289511	1.5	0.7	3.9	3.5	1.3	2.0	---	---	0
B	1357.2	S?	356510	6289423	0.3	3.2	0.6	22.9	0.0	4.7	---	---	0
C	1323.3	H	357760	6289404	1.0	1.5	3.9	3.5	1.9	1.1	---	---	0
LINE 90310			FLIGHT 111										
A	1405.4	S?	356488	6289271	1.5	2.9	1.9	27.7	0.0	4.3	---	---	0
B	1361.7	H	358131	6289239	1.9	1.0	16.8	11.9	5.0	7.1	1.7	72	0
LINE 90320			FLIGHT 111										
A	1225.4	S?	356618	6289150	1.7	1.8	3.7	20.8	0.0	4.1	---	---	0
B	1249.7	S?	357556	6289115	1.9	1.9	13.2	22.4	4.6	5.8	0.8	62	0
C	1264.3	H	358135	6289096	0.9	1.5	6.3	7.6	1.5	2.9	---	---	0
LINE 90330			FLIGHT 111										
A	1002.0	H	358301	6288937	1.0	0.5	2.9	0.9	0.9	1.6	---	---	0
LINE 90340			FLIGHT 111										
A	893.7	S?	357746	6288808	3.6	1.5	14.3	17.0	2.7	4.3	2.7	66	0
B	912.3	S?	358486	6288784	1.4	0.8	20.0	20.7	2.3	7.3	1.3	71	0

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EM Anomaly List

Label	Fid	Interp	XUTM m	YUTM m	CX 5500 HZ Real ppm	CX 5500 HZ Quad ppm	CX 7200 HZ Real ppm	CX 7200 HZ Quad ppm	CP 900 HZ Real ppm	CP 900 HZ Quad ppm	Vertical Dike COND siemens	Vertical Dike DEPTH* m	Mag. Corr NT
LINE 90350			FLIGHT 111										
A	614.5	H	358691	6288621	1.8	4.7	16.5	35.7	10.2	8.3	0.3	14	0
LINE 90360			FLIGHT 111										
A	535.7	H	358599	6288489	0.2	0.3	2.6	12.8	7.1	4.9	---	---	0
LINE 90370			FLIGHT 111										
A	237.0	H	358539	6288350	0.3	1.5	2.7	11.1	6.3	0.7	---	---	0
LINE 99010			FLIGHT 41										
A	427.0	S?	355182	6292381	2.9	2.3	12.3	20.5	1.1	4.1	1.1	53	0
LINE 99020			FLIGHT 41										
A	746.1	H	356627	6290987	5.3	4.2	39.0	24.6	4.3	15.6	1.4	32	0
LINE 99035			FLIGHT 111										
A	6688.0	H	358068	6288631	1.3	2.9	13.2	20.1	0.6	5.1	0.3	39	0
B	6706.9	H	358055	6289238	2.1	1.2	26.5	16.8	11.0	10.7	1.6	69	0
C	6781.3	S?	358121	6291116	1.5	3.0	10.6	18.0	1.4	4.1	---	---	11
D	6840.5	E	358129	6292132	2.0	1.7	17.4	3.2	17.2	1.6	0.9	58	39

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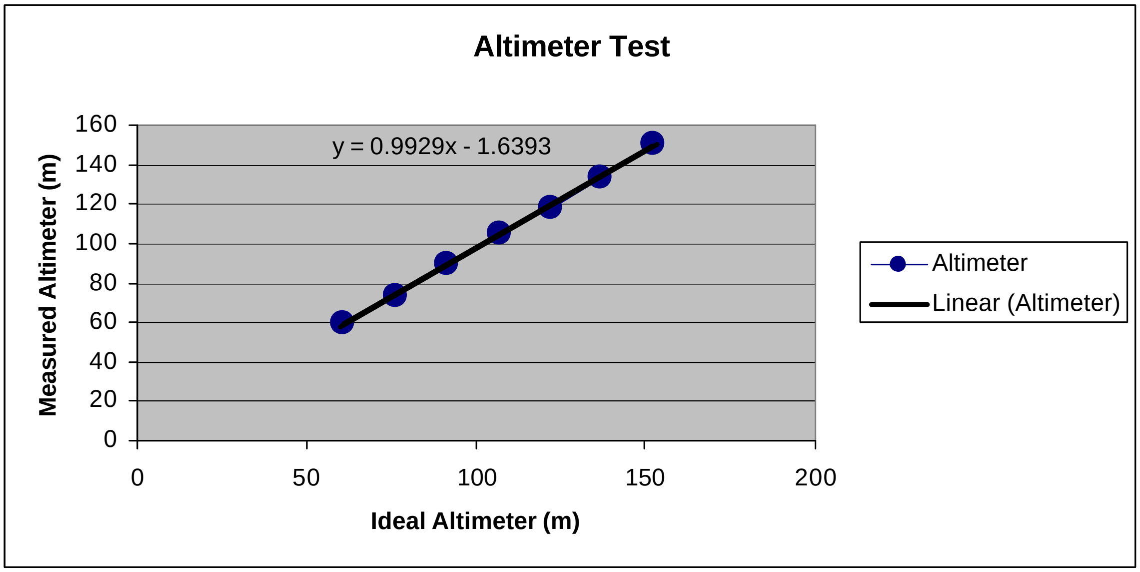
APPENDIX F

TESTS AND CALIBRATIONS

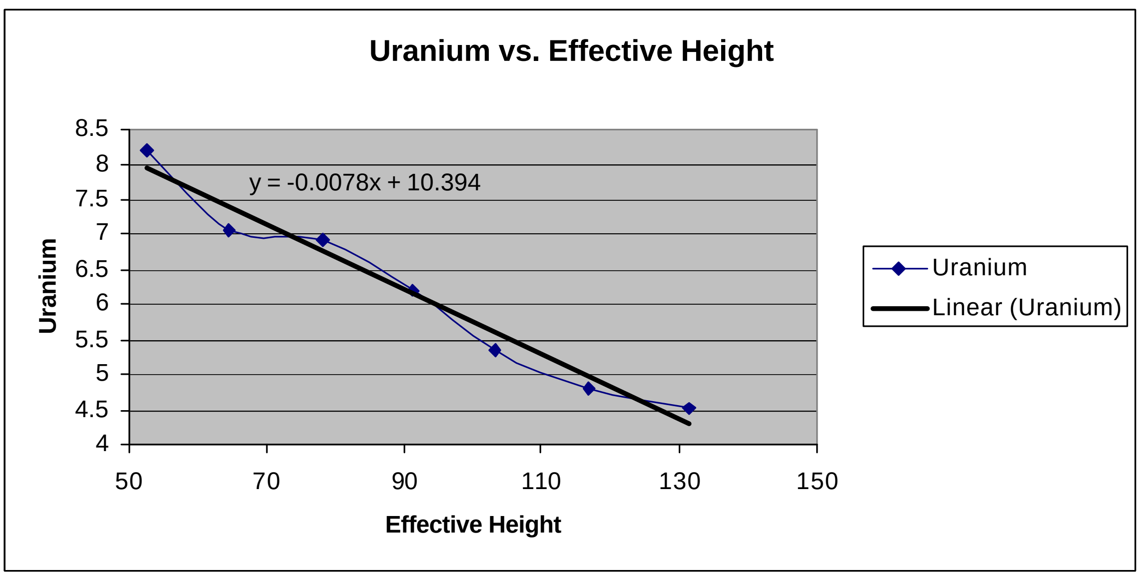
APPENDIX F

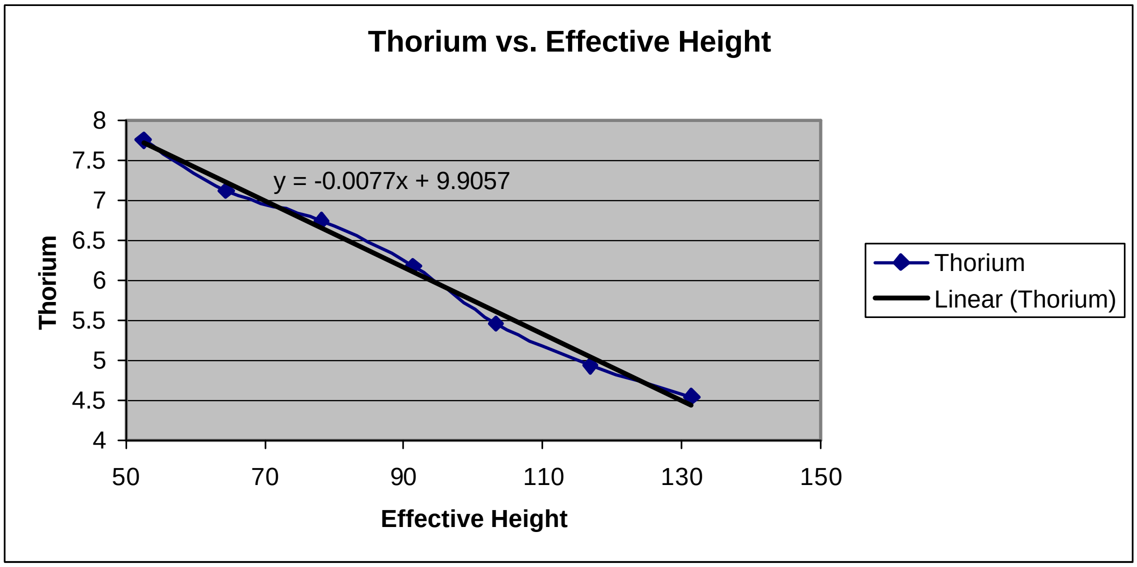
TESTS AND CALIBRATIONS

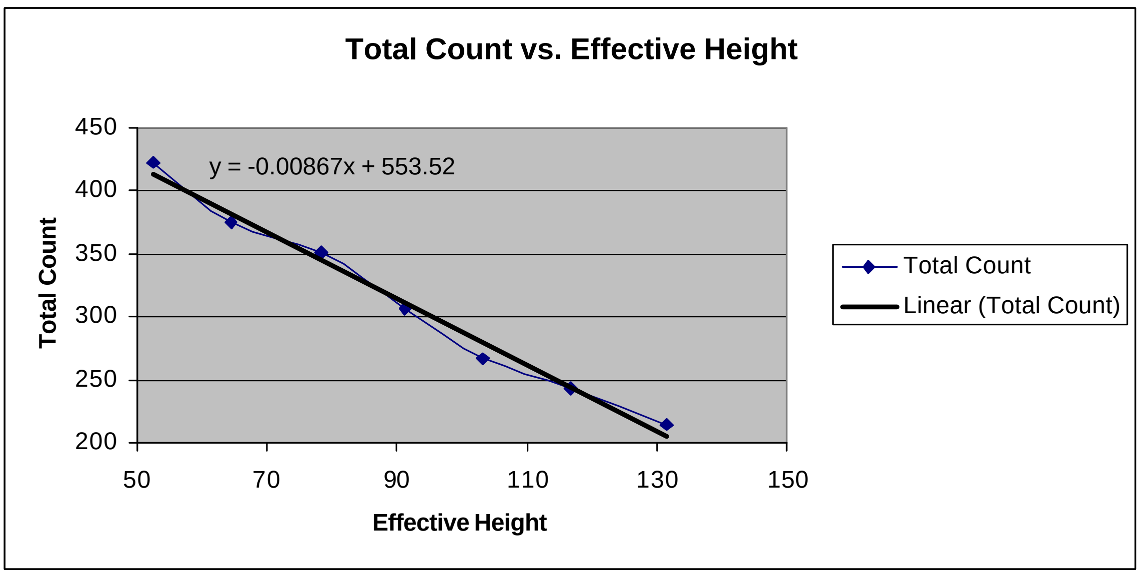
ALTIMETER TEST

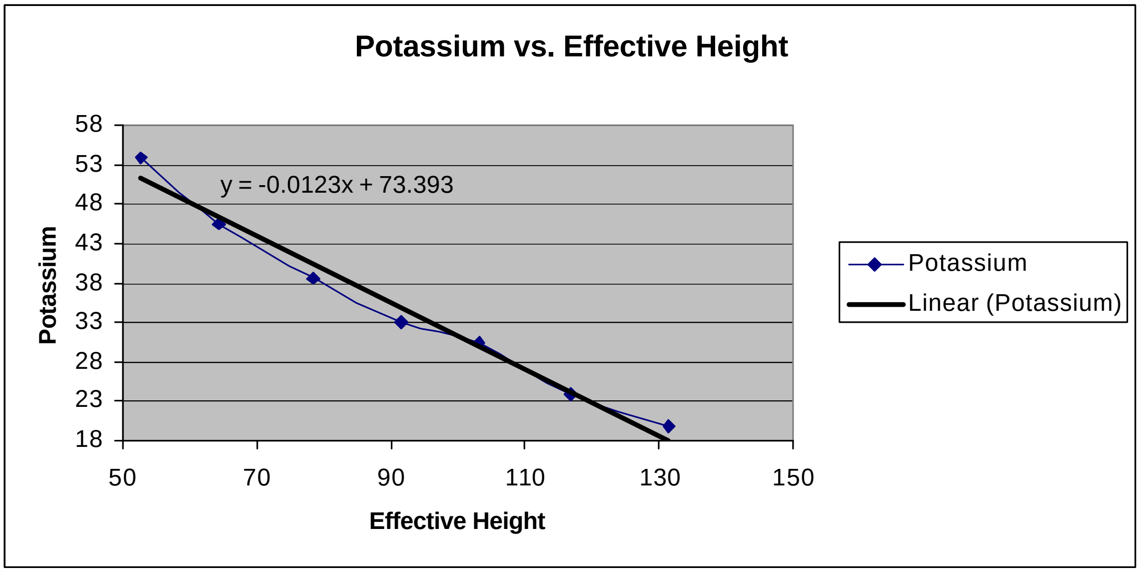


ALTITUDE ATTENUATION TESTS

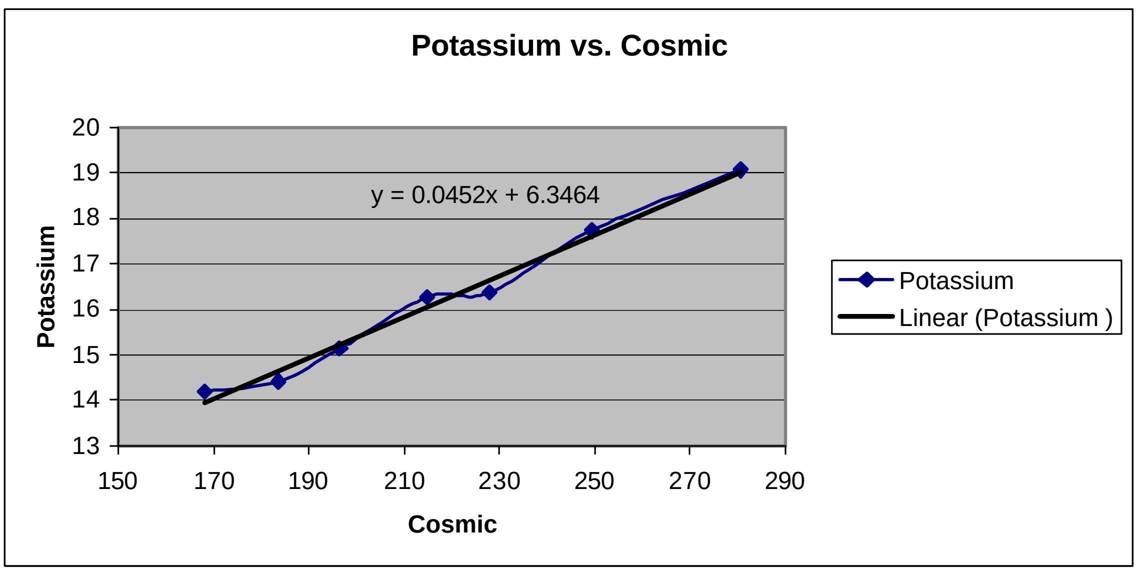


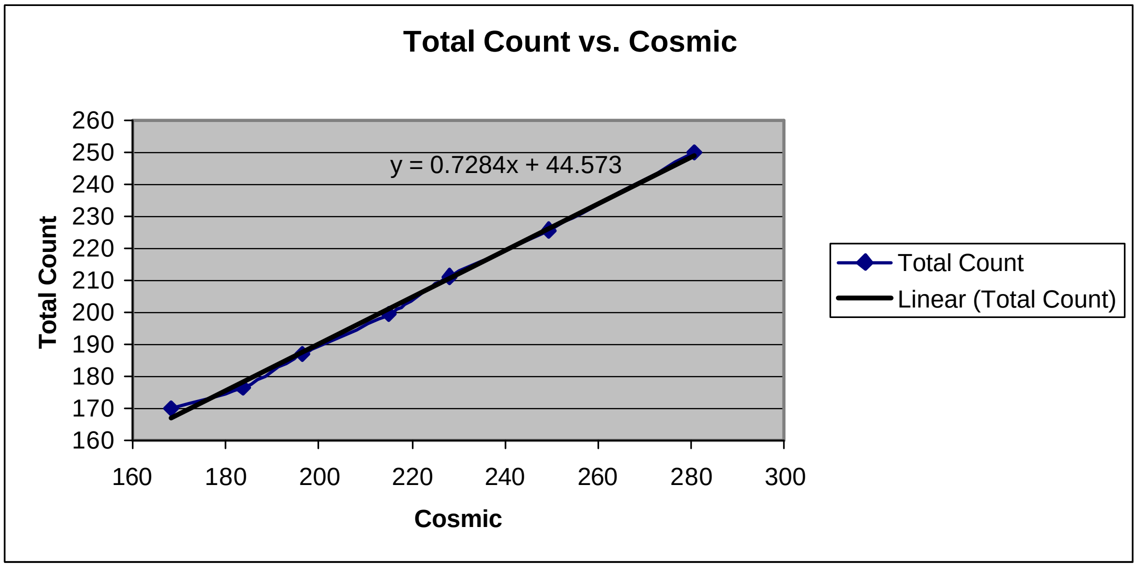

Thorium vs. Effective Height
y = -0.0077x + 9.9057
Thorium
Linear (Thorium)
8
7.5
7
6.5
6
5.5
5
4.5
4
50
70
90
110
130
150
Effective Height

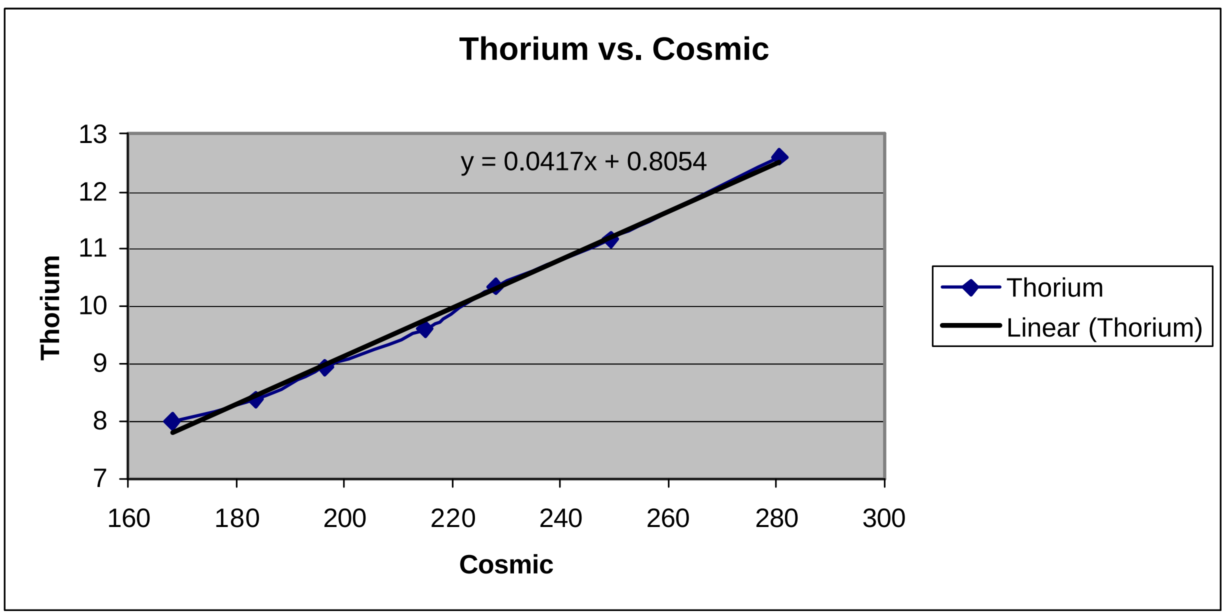

Total Count vs. Effective Height
y = -0.00867x + 553.52
Total Count
Linear (Total Count)
450
400
350
300
250
200
50
70
90
110
130
150
Effective Height

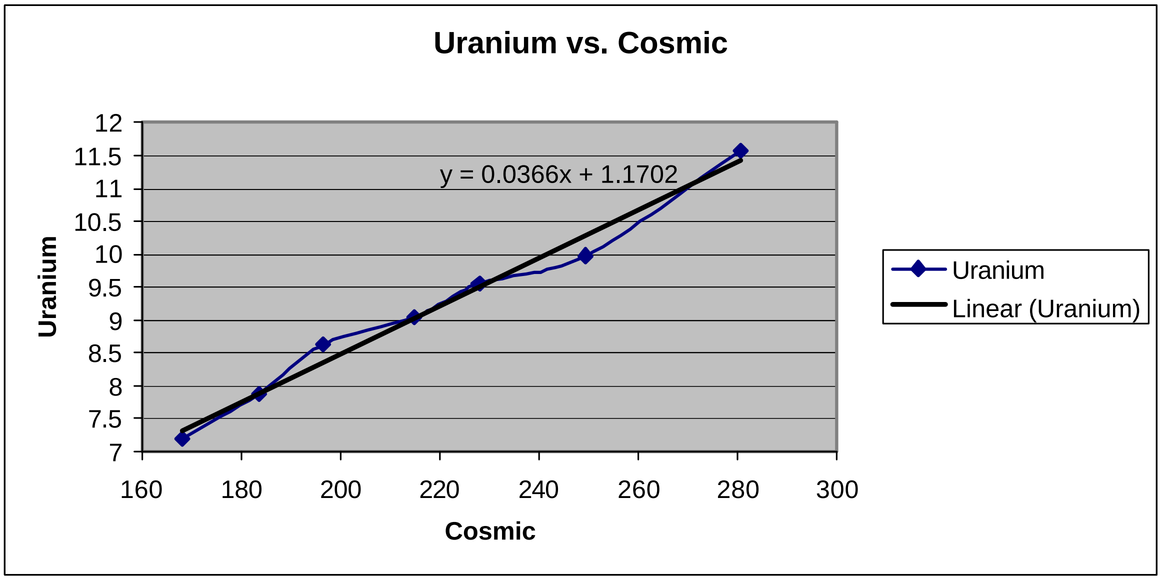


COSMIC TESTS

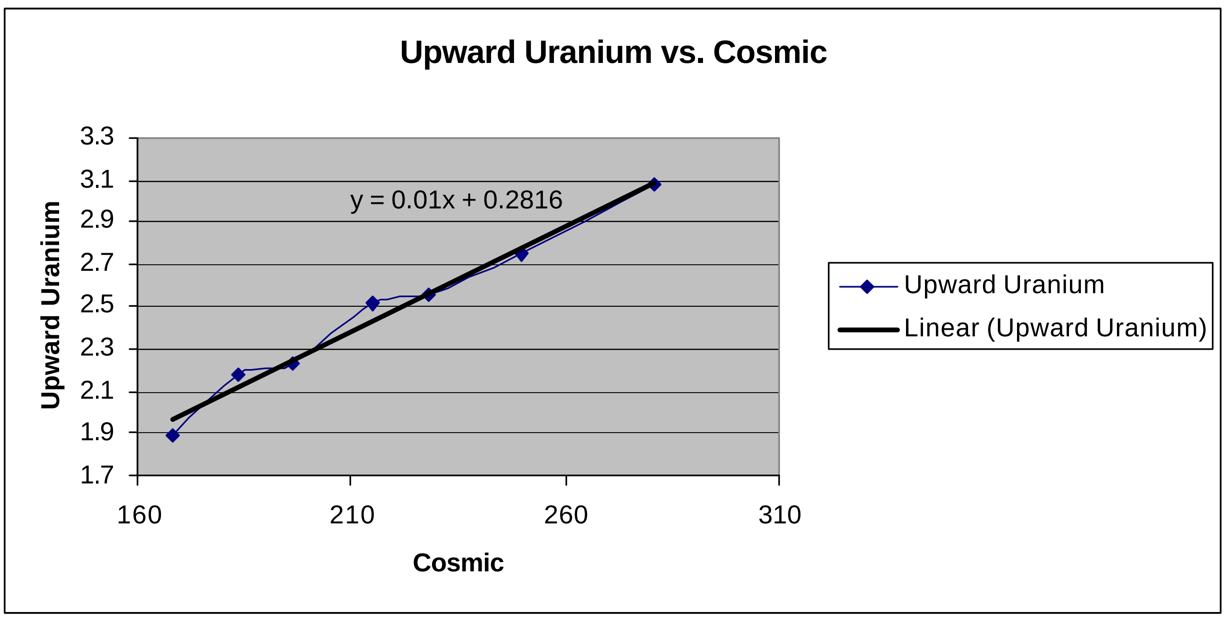



Total Count vs. Cosmic
y = 0.7284x + 44.573
Total Count
260
250
240
230
220
210
200
190
180
170
160
160
180
200
220
240
260
280
300
Cosmic
Total Count
Linear (Total Count)


Thorium vs. Cosmic
y = 0.0417x + 0.8054
Thorium
13
12
11
10
9
8
7
160
180
200
220
240
260
280
300
Cosmic
Thorium
Linear (Thorium)



Uranium vs. Cosmic
y = 0.0366x + 1.1702
Uranium
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
160
180
200
220
240
260
280
300
Cosmic
Uranium
Linear (Uranium)



Upward Uranium vs. Cosmic
y = 0.01x + 0.2816
Upward Uranium
3.3
3.1
2.9
2.7
2.5
2.3
2.1
1.9
1.7
160
210
260
310
Cosmic
Upward Uranium
Linear (Upward Uranium)

APPENDIX G

RADIOMETRIC PROCESSING CONTROL FILE

APPENDIX G

RADIOMETRIC PROCESSING CONTROL FILE

```
//////////////////////////////////////////////////
 Atlas Control/Workspace File
//////////////////////////////////////////////////

CONTROL_BEGIN

  PROGRAM  = AGSCorrection
  VERSION  = 1.4.0


   ### Corrections to apply ###
       CorrectionType = Yes  Filtering
       CorrectionType = Yes  LiveTimeCorrection
       CorrectionType = Yes  CosmicAircraftBGRemove
       CorrectionType = Yes  CalcEffectiveHeight
       CorrectionType = No   RadonBGRemove
       CorrectionType = Yes  ComptonStripping
       CorrectionType = Yes  HeightCorrection
       CorrectionType = No   ConvertToConcentration


   ### Main I/O settings ###
       MainChannelIO|TC       = TC_DOWN    --> TC_1
       MainChannelIO|K        = K_DOWN     --> K_1
       MainChannelIO|U        = U_DOWN     --> U_1
       MainChannelIO|Th       = TH_DOWN    --> TH_1
       MainChannelIO|UpU      = U_UP       --> U_UP_1
       MainChannelIO|Cosmic   = COSMIC     --> COSMIC_1
       MainChannelIO|Spectrum = GR820_DOWN --> GR820_DOWN_1

   ### Control Channel I/O settings ###
       ControlChannel|RadarAltimeter     = ALTRAD_MT   [metres]
       ControlChannel|Pressure/Barometer = KPA         [kPa]
       ControlChannel|Temperature        = TEMP_EXT


   ### Input for correction ###
       InputForCorrection    = ROIs


   ### Pre-filtering settings ###
       Filtering|TC      = 0
       Filtering|K       = 0
       Filtering|U       = 0
       Filtering|Th      = 0
```

```
    Filtering|UpU     = 0
    Filtering|Cosmic  = 9
    Filtering|RadarAltimeter     = 3
    Filtering|Pressure/Barometer = 3
    Filtering|Temperature        = 3

### Live-time correction settings ###
    LiveTimeChannel             = LIVE_TIME
    LiveTimeUnits               = milli-seconds
    ApplyLiveTimeCorrToUpU      = Yes

### Cosmic correction settings ###
    CosmicCorrParam|TC      = 0.728377,  44.5732
    CosmicCorrParam|K       = 0.045203,  6.34639
    CosmicCorrParam|U       = 0.036585,  0.88524
    CosmicCorrParam|Th      = 0.041705,  0.225439
    CosmicCorrParam|UpU     = 0.009999,  0.281611
    CosmicCorrParam|SpectrumBackgroundFile    =

### Effective-Height settings ###
    EffectiveHeightOutputChannel = EffectiveHeight
    EffectiveHeightOutputUnits   = metres

### Special Stripping (Compton Stripping) ###
    ComptonCorrParam_Stripping_Alpha     = 0.235000
    ComptonCorrParam_Stripping_Beta      = 0.395000
    ComptonCorrParam_Stripping_Gamma     = 0.738000
    ComptonCorrParam_AlphaPerMetre       = 0.000000
    ComptonCorrParam_BetaPerMetre        = 0.000000
    ComptonCorrParam_GammaPerMetre       = 0.000000
    ComptonCorrParam_GrastyBackscatter_a = 0.055000
    ComptonCorrParam_GrastyBackscatter_b = 0.001000
    ComptonCorrParam_GrastyBackscatter_g = 0.002000

### Height Correction settings ###
    SurveyHeightDatum     = 85.000000
    AttenuationCorrControl = 0
    HeightCorrParam|TC      = -0.008677, 200.000000
    HeightCorrParam|K       = -0.012332, 200.000000
    HeightCorrParam|U       = -0.007869, 200.000000
    HeightCorrParam|Th      = -0.007701, 200.000000

### Concentration settings ###
   ConcentrationParam|K       = Concentration_K,  0.000000
   ConcentrationParam|U       = Concentration_U,  0.000000
   ConcentrationParam|Th      = Concentration_Th,  0.000000
   AirAbsorbedDoseRateParam   = DoseRate,  0.000000
```

```
    NaturalAirAbsorbedDoseRateParam = NaturalDoseRate,  0.000000,
0.000000, 0.000000


CONTROL_END
```

APPENDIX H

GLOSSARY

APPENDIX H

GLOSSARY OF AIRBORNE GEOPHYSICAL TERMS

Note: The definitions given in this glossary refer to the common terminology as used in airborne geophysics.

altitude attenuation: the absorption of gamma rays by the atmosphere between the earth and the detector. The number of gamma rays detected by a system decreases as the altitude increases.

apparent- : the ***physical parameters*** of the earth measured by a geophysical system are normally expressed as apparent, as in "apparent ***resistivity*"**. This means that the measurement is limited by assumptions made about the geology in calculating the response measured by the geophysical system. Apparent resistivity calculated with ***HEM***, for example, generally assumes that the earth is a ***homogeneous half-space*** – not layered.

amplitude: The strength of the total electromagnetic field. In ***frequency domain*** it is most often the sum of the squares of ***in-phase*** and ***quadrature*** components. In multi-component electromagnetic surveys it is generally the sum of the squares of all three directional components.

analytic signal: The total amplitude of all the directions of magnetic ***gradient***. Calculated as the sum of the squares.

anisotropy: Having different ***physical parameters*** in different directions. This can be caused by layering or fabric in the geology. Note that a unit can be anisotropic, but still **homogeneous**.

anomaly: A localized change in the geophysical data characteristic of a discrete source, such as a conductive or magnetic body: something locally different from the **background**.

B-field: In time-domain **electromagnetic** surveys, the magnetic field component of the (electromagnetic) **field**. This can be measured directly, although more commonly it is calculated by integrating the time rate of change of the magnetic field **dB/dt**, as measured with a receiver coil.

background: The "normal" response in the geophysical data – that response observed over most of the survey area. **Anomalies** are usually measured relative to the background. In airborne gamma-ray spectrometric surveys the term defines the **cosmic**, radon, and aircraft responses in the absence of a signal from the ground.

base-level: The measured values in a geophysical system in the absence of any outside signal. All geophysical data are measured relative to the system base level.

base frequency: The frequency of the pulse repetition for a ***time-domain electromagnetic*** system. Measured between subsequent positive pulses.

bird: A common name for the pod towed beneath or behind an aircraft, carrying the geophysical sensor array.

bucking: The process of removing the strong ***signal*** from the ***primary field*** at the ***receiver*** from the data, to measure the ***secondary field***. It can be done electronically or mathematically. This is done in ***frequency-domain EM***, and to measure ***on-time*** in ***time-domain EM***.

calibration coil: A wire coil of known size and dipole moment, which is used to generate a field of known ***amplitude*** and ***phase*** in the receiver, for system calibration. Calibration coils can be external, or internal to the system. Internal coils may be called Q-coils.

coaxial coils: **[CX]** Coaxial coils in an HEM system are in the vertical plane, with their axes horizontal and collinear in the flight direction. These are most sensitive to vertical conductive objects in the ground, such as thin, steeply dipping conductors perpendicular to the flight direction. Coaxial coils generally give the sharpest anomalies over localized conductors. (See also ***coplanar coils***)

coil: A multi-turn wire loop used to transmit or detect electromagnetic fields. Time varying ***electromagnetic*** fields through a coil induce a voltage proportional to the strength of the field and the rate of change over time.

compensation: Correction of airborne geophysical data for the changing effect of the aircraft. This process is generally used to correct data in ***fixed-wing time-domain electromagnetic*** surveys (where the transmitter is on the aircraft and the receiver is moving), and magnetic surveys (where the sensor is on the aircraft, turning in the earth's magnetic field.

component: In ***frequency domain electromagnetic*** surveys this is one of the two **phase** measurements – ***in-phase or quadrature***. In "multi-component" electromagnetic surveys it is also used to define the measurement in one geometric direction (vertical, horizontal in-line and horizontal transverse – the Z, X and Y components).

Compton scattering: gamma ray photons will bounce off electrons as they pass through the earth and atmosphere, reducing their energy and then being detected by ***radiometric*** sensors at lower energy levels. See also ***stripping***.

conductance: See ***conductivity thickness***

conductivity: [s] The facility with which the earth or a geological formation conducts electricity. Conductivity is usually measured in milli-Siemens per metre (mS/m). It is the reciprocal of ***resistivity***.

conductivity-depth imaging: see ***conductivity-depth transform***.

conductivity-depth transform: A process for converting electromagnetic measurements to an approximation of the conductivity distribution vertically in the earth, assuming a ***layered earth***. (Macnae and Lamontagne, 1987; Wolfgram and Karlik, 1995)

conductivity thickness: [s**t**] The product of the ***conductivity***, and thickness of a large, tabular body. (It is also called the "conductivity-thickness product") In electromagnetic geophysics, the response of a thin plate-like conductor is proportional to the conductivity multiplied by thickness. For example a 10 metre thickness of 20 Siemens/m mineralization will be equivalent to 5 metres of 40 S/m; both have 200 S conductivity thickness. Sometimes referred to as conductance.

conductor: Used to describe anything in the ground more conductive than the surrounding geology. Conductors are most often clays or graphite, or hopefully some type of mineralization, but may also be man-made objects, such as fences or pipelines.

coplanar coils: **[CP]** In HEM, the coplanar coils lie in the horizontal plane with their axes vertical, and parallel. These coils are most sensitive to massive conductive bodies, horizontal layers, and the ***halfspace***.

cosmic ray: High energy sub-atomic particles from outer space that collide with the earth's atmosphere to produce a shower of gamma rays (and other particles) at high energies.

counts (per second): The number of ***gamma-rays*** detected by a gamma-ray ***spectrometer*****.** The rate depends on the geology, but also on the size and sensitivity of the detector.

culture: A term commonly used to denote any man-made object that creates a geophysical anomaly. Includes, but not limited to, power lines, pipelines, fences, and buildings.

current channelling: See current gathering.

current gathering: The tendency of electrical currents in the ground to channel into a conductive formation. This is particularly noticeable at higher frequencies or early time channels when the formation is long and parallel to the direction of current flow. This tends to enhance anomalies relative to inductive currents (see also ***induction***). Also known as current channelling.

daughter products: The radioactive natural sources of gamma-rays decay from the original "parent" element (commonly potassium, uranium, and thorium) to one or more lower-energy "daughter" elements. Some of these lower energy elements are also radioactive and decay further. ***Gamma-ray spectrometry*** surveys may measure the gamma rays given off by the original element or by the decay of the daughter products.

dB/dt: As the ***secondary electromagnetic field*** changes with time, the magnetic field [**B**] component induces a voltage in the receiving ***coil***, which is proportional to the rate of change of the magnetic field over time.

decay: In ***time-domain electromagnetic*** theory, the weakening over time of the ***eddy currents*** in the ground, and hence the ***secondary field*** after the ***primary field*** electromagnetic pulse is turned off. In ***gamma-ray spectrometry***, the radioactive breakdown of an element, generally potassium, uranium, thorium, or one of their ***daughter*** products.

decay constant: see time constant.

decay series: In ***gamma-ray spectrometry***, a series of progressively lower energy ***daughter products*** produced by the radioactive breakdown of uranium or thorium.

depth of exploration: The maximum depth at which the geophysical system can detect the target. The depth of exploration depends very strongly on the type and size of the target, the contrast of the target with the surrounding geology, the homogeneity of the surrounding geology, and the type of geophysical system. One measure of the maximum depth of exploration for an electromagnetic system is the depth at which it can detect the strongest conductive target – generally a highly conductive horizontal layer.

differential resistivity: A process of transforming ***apparent resistivity*** to an approximation of layer resistivity at each depth. The method uses multi-frequency HEM data and approximates the effect of shallow layer ***conductance*** determined from higher frequencies to estimate the deeper conductivities (Huang and Fraser, 1996)

dipole moment: [NIA] For a transmitter, the product of the area of a ***coil***, the number of turns of wire, and the current flowing in the coil. At a distance significantly larger than the size of the coil, the magnetic field from a coil will be the same if the dipole moment product is the same. For a receiver coil, this is the product of the area and the number of turns. The sensitivity to a magnetic field (assuming the source is far away) will be the same if the dipole moment is the same.

diurnal: The daily variation in a natural field, normally used to describe the natural fluctuations (over hours and days) of the earth's magnetic field.

dielectric permittivity: **[**e**]** The capacity of a material to store electrical charge, this is most often measured as the relative permittivity [ε_r], or ratio of the material dielectric to that of free space. The effect of high permittivity may be seen in HEM data at high frequencies over highly resistive geology as a reduced or negative ***in-phase***, and higher ***quadrature*** data.

drape: To fly a survey following the terrain contours, maintaining a constant altitude above the local ground surface. Also applied to re-processing data collected at varying altitudes above ground to simulate a survey flown at constant altitude.

drift: Long-time variations in the base-level or calibration of an instrument.

eddy currents: The electrical currents induced in the ground, or other conductors, by a time-varying ***electromagnetic field*** (usually the ***primary field***). Eddy currents are also induced in the aircraft's metal frame and skin; a source of ***noise*** in EM surveys.

electromagnetic: **[EM]** Comprised of a time-varying electrical and magnetic field. Radio waves are common electromagnetic fields. In geophysics, an electromagnetic system is one which transmits a time-varying ***primary field*** to induce ***eddy currents*** in the ground, and then measures the ***secondary field*** emitted by those eddy currents.

energy window: A broad spectrum of ***gamma-ray*** energies measured by a spectrometric survey. The energy of each gamma-ray is measured and divided up into numerous discrete energy levels, called windows.

equivalent (thorium or uranium): The amount of radioelement calculated to be present, based on the gamma-rays measured from a **daughter** element. This assumes that the ***decay series*** is in equilibrium – progressing normally.

exposure rate: in radiometric surveys, a calculation of the total exposure rate due to gamma rays at the ground surface. It is used as a measurement of the concentration of all the **radioelements** at the surface. See also: **natural exposure rate**.

fiducial, or fid: Timing mark on a survey record. Originally these were timing marks on a profile or film; now the term is generally used to describe 1-second interval timing records in digital data, and on maps or profiles.

Figure of Merit: **(FOM)** A sum of the 12 distinct magnetic noise variations measured by each of four flight directions, and executing three aircraft attitude variations (yaw, pitch, and roll) for each direction. The flight directions are generally parallel and perpendicular to planned survey flight directions. The FOM is used as a measure of the **manoeuvre noise** before and after **compensation.**

fixed-wing: Aircraft with wings, as opposed to "rotary wing" helicopters.

footprint: This is a measure of the area of sensitivity under the aircraft of an airborne geophysical system. The footprint of an ***electromagnetic*** system is dependent on the altitude of the system, the orientation of the transmitter and receiver and the separation between the receiver and transmitter, and the conductivity of the ground. The footprint of a ***gamma-ray spectrometer*** depends mostly on the altitude. For all geophysical systems, the footprint also depends on the strength of the contrasting ***anomaly***.

frequency domain: An ***electromagnetic*** system which transmits a ***primary field*** that oscillates smoothly over time (sinusoidal), inducing a similarly varying electrical current in the ground. These systems generally measure the changes in the ***amplitude*** and ***phase*** of the ***secondary field*** from the ground at different frequencies by measuring the **in-phase** and **quadrature** phase components. See also ***time-domain***.

full-stream data: Data collected and recorded continuously at the highest possible sampling rate. Normal data are stacked (see ***stacking***) over some time interval before recording.

gamma-ray: A very high-energy photon, emitted from the nucleus of an atom as it undergoes a change in energy levels.

gamma-ray spectrometry: Measurement of the number and energy of natural (and sometimes man-made) gamma-rays across a range of photon energies.

gradient: In magnetic surveys, the gradient is the change of the magnetic field over a distance, either vertically or horizontally in either of two directions. Gradient data is often measured, or calculated from the total magnetic field data because it changes more quickly over distance than the ***total magnetic field***, and so may provide a more precise measure of the location of a source. See also ***analytic signal***.

ground effect: The response from the earth. A common calibration procedure in many geophysical surveys is to fly to altitude high enough to be beyond any measurable response from the ground, and there establish ***base levels*** or ***backgrounds***.

half-space: A mathematical model used to describe the earth – as infinite in width, length, and depth below the surface. The most common halfspace models are ***homogeneous*** and ***layered earth***.

heading error: A slight change in the magnetic field measured when flying in opposite directions.

HEM: Helicopter ElectroMagnetic, This designation is most commonly used for helicopter-borne, ***frequency-domain*** electromagnetic systems. At present, the transmitter and receivers are normally mounted in a ***bird*** carried on a sling line beneath the helicopter.

herringbone pattern: A pattern created in geophysical data by an asymmetric system, where the **anomaly** may be extended to either side of the source, in the direction of flight. Appears like fish bones, or like the teeth of a comb, extending either side of centre, each tooth an alternate flight line.

homogeneous: This is a geological unit that has the same ***physical parameters*** throughout its volume. This unit will create the same response to an HEM system anywhere, and the HEM system will measure the same apparent ***resistivity*** anywhere. The response may change with system direction (see ***anisotropy***).

HTEM: Helicopter Time-domain ElectroMagnetic, This designation is used for the new generation of helicopter-borne, ***time-domain*** electromagnetic systems.

in-phase: the component of the measured ***secondary field*** that has the same phase as the transmitter and the ***primary field***. The in-phase component is stronger than the ***quadrature*** phase over relatively higher ***conductivity***.

induction: Any time-varying electromagnetic field will induce (cause) electrical currents to flow in any object with non-zero ***conductivity***. (see ***eddy currents***)

induction number: also called the "response parameter", this number combines many of the most significant parameters affecting the ***EM*** response into one parameter against which to compare responses. For a ***layered earth*** the response parameter is mws**h**^{2} and for a large, flat, ***conductor*** it is mws**th**, where m is the ***magnetic permeability***, w is the angular ***frequency***, s is the **conductivity**, t is the thickness (for the flat conductor) and h is the height of the system above the conductor.

inductive limit: When the frequency of an EM system is very high, or the **conductivity** of the target is very high, the response measured will be entirely **in-phase** with no **quadrature** (**phase** angle =0). The in-phase response will remain constant with further increase in conductivity or frequency. The system can no longer detect changes in conductivity of the target.

infinite: In geophysical terms, an "infinite' dimension is one much greater than the ***footprint*** of the system, so that the system does not detect changes at the edges of the object.

International Geomagnetic Reference Field: **[IGRF]** An approximation of the smooth magnetic field of the earth, in the absence of variations due to local geology. Once the IGRF is subtracted from the measured magnetic total field data, any remaining variations are assumed to be due to local geology. The IGRF also predicts the slow changes of the field up to five years in the future.

inversion, or **inverse modeling**: A process of converting geophysical data to an earth model, which compares theoretical models of the response of the earth to the data measured, and refines the model until the response closely fits the measured data (Huang and Palacky, 1991)

layered earth: A common geophysical model which assumes that the earth is horizontally layered – the ***physical parameters*** are constant to ***infinite*** distance horizontally, but change vertically.
magnetic permeability: **[m]** This is defined as the ratio of magnetic induction to the inducing magnetic field. The relative magnetic permeability [μ_r] is often quoted, which is the ratio of the rock permeability to the permeability of free space. In geology and geophysics, the ***magnetic susceptibility*** is more commonly used to describe rocks.

magnetic susceptibility: **[k]** A measure of the degree to which a body is magnetized. In SI units this is related to relative ***magnetic permeability*** by $k=\mu_r-1$, and is a dimensionless unit. For most geological material, susceptibility is influenced primarily by the percentage of magnetite. It is most often quoted in units of 10^{-6}. In HEM data this is most often apparent as a negative ***in-phase*** component over high susceptibility, high ***resistivity*** geology such as diabase dikes.

manoeuvre noise: variations in the magnetic field measured caused by changes in the relative positions of the magnetic sensor and magnetic objects or electrical currents in the aircraft. This type of noise is generally corrected by magnetic **compensation**.

model: Geophysical theory and applications generally have to assume that the geology of the earth has a form that can be easily defined mathematically, called the model. For example steeply dipping **conductor**s are generally modeled as being **infinite** in horizontal and depth extent, and very thin. The earth is generally modeled as horizontally layered, each layer infinite in extent and uniform in characteristic. These models make the mathematics to describe the response of the (normally very complex) earth practical. As theory advances, and computers become more powerful, the useful models can become more complex.

natural exposure rate: in radiometric surveys, a calculation of the total exposure rate due to natural-source gamma rays at the ground surface. It is used as a measurement of the concentration of all the natural **radioelements** at the surface. See also: **exposure rate**.

noise: That part of a geophysical measurement that the user does not want. Typically this includes electronic interference from the system, the atmosphere (***sferics***), and man-made sources. This can be a subjective judgment, as it may include the response from geology other than the target of interest. Commonly the term is used to refer to high frequency (short period) interference. See also ***drift***.

Occam's inversion: an ***inversion*** process that matches the measured ***electromagnetic*** data to a theoretical model of many, thin layers with constant thickness and varying resistivity (Constable et al, 1987).

off-time: In a ***time-domain electromagnetic*** survey, the time after the end of the ***primary field pulse***, and before the start of the next pulse.

on-time: In a ***time-domain electromagnetic*** survey, the time during the ***primary field pulse***.

overburden: In engineering and mineral exploration terms, this most often means the soil on top of the unweathered bedrock. It may be sand, glacial till, or weathered rock.

Phase, phase angle: The angular difference in time between a measured sinusoidal electromagnetic field and a reference – normally the primary field. The phase is calculated from $\tan^{-1}$(***in-phase / quadrature***).

physical parameters: These are the characteristics of a geological unit. For electromagnetic surveys, the important parameters are ***conductivity***, ***magnetic permeability*** (or ***susceptibility***) and ***dielectric permittivity***; for magnetic surveys the parameter is magnetic susceptibility, and for gamma ray spectrometric surveys it is the concentration of the major radioactive elements: potassium, uranium, and thorium.

permittivity: see ***dielectric permittivity***.

permeability: see ***magnetic permeability***.

primary field: the EM field emitted by a transmitter. This field induces ***eddy currents*** in (energizes) the conductors in the ground, which then create their own ***secondary* fields**.

pulse: In time-domain EM surveys, the short period of intense ***primary*** field transmission. Most measurements (the ***off-time***) are measured after the pulse. **On-time** measurements may be made during the pulse.

quadrature: that component of the measured ***secondary field*** that is phase-shifted 90° from the ***primary field***. The quadrature component tends to be stronger than the ***in-phase*** over relatively weaker ***conductivity***.

Q-coils: see ***calibration coil***.

radioelements: This normally refers to the common, naturally-occurring radioactive elements: potassium (K), uranium (U), and thorium (Th). It can also refer to man-made radioelements, most often cobalt (Co) and cesium (Cs)

radiometric: Commonly used to refer to ***gamma ray*** spectrometry.

radon: A radioactive daughter product of uranium and thorium, radon is a gas which can leak into the atmosphere, adding to the non-geological background of a gamma-ray spectrometric survey.

receiver: the ***signal*** detector of a geophysical system. This term is most often used in active geophysical systems – systems that transmit some kind of signal. In airborne ***electromagnetic*** surveys it is most often a ***coil***. (see also, ***transmitter***)

resistivity: **[r]** The strength with which the earth or a geological formation resists the flow of electricity, typically the flow induced by the ***primary field*** of the electromagnetic transmitter. Normally expressed in ohm-metres, it is the reciprocal of ***conductivity***.

resistivity-depth transforms: similar to ***conductivity depth transforms***, but the calculated ***conductivity*** has been converted to ***resistivity***.

resistivity section: an approximate vertical section of the resistivity of the layers in the earth. The resistivities can be derived from the ***apparent resistivity***, the ***differential resistivities***, ***resistivity-depth transforms***, or ***inversions***.

Response parameter: another name for the **induction number**.

secondary field: The field created by conductors in the ground, as a result of electrical currents induced by the ***primary field*** from the ***electromagnetic*** transmitter. Airborne ***electromagnetic*** systems are designed to create and measure a secondary field.

Sengpiel section: a ***resistivity section*** derived using the ***apparent resistivity*** and an approximation of the depth of maximum sensitivity for each frequency.

sferic: Lightning, or the ***electromagnetic*** signal from lightning, it is an abbreviation of “atmospheric discharge”. These appear to magnetic and electromagnetic sensors as sharp “spikes” in the data. Under some conditions lightning storms can be detected from hundreds of kilometres away. (see ***noise***)

signal: That component of a measurement that the user wants to see – the response from the targets, from the earth, etc. (See also ***noise***)

skin depth: A measure of the depth of penetration of an electromagnetic field into a material. It is defined as the depth at which the primary field decreases to 1/e of the field at the surface. It is calculated by approximately 503 x √(resistivity/frequency). Note that depth of penetration is greater at higher ***resistivity*** and/or lower ***frequency***.

spectrometry: Measurement across a range of energies, where ***amplitude*** and energy are defined for each measurement. In gamma-ray spectrometry, the number of gamma rays are measured for each energy ***window***, to define the ***spectrum***.

spectrum: In ***gamma ray spectrometry***, the continuous range of energy over which gamma rays are measured. In ***time-domain electromagnetic*** surveys, the spectrum is the energy of the **pulse** distributed across an equivalent, continuous range of frequencies.

spheric: see ***sferic***.

stacking: Summing repeat measurements over time to enhance the repeating ***signal***, and minimize the random ***noise***.
stripping: Estimation and correction for the gamma ray photons of higher and lower energy that are observed in a particular ***energy window***. See also ***Compton scattering***.

susceptibility: See ***magnetic susceptibility***.

tau: [t] Often used as a name for the ***time constant***.

TDEM: ***time domain electromagnetic***.

thin sheet: A standard model for electromagnetic geophysical theory. It is usually defined as a thin, flat-lying conductive sheet, ***infinite*** in both horizontal directions. (see also ***vertical plate***)

tie-line: A survey line flown across most of the ***traverse lines***, generally perpendicular to them, to assist in measuring ***drift*** and ***diurnal*** variation. In the short time required to fly a tie-line it is assumed that the drift and/or diurnal will be minimal, or at least changing at a constant rate.

time constant: The time required for an ***electromagnetic*** field to decay to a value of 1/e of the original value. In ***time-domain*** electromagnetic data, the time constant is proportional to the size and ***conductance*** of a tabular conductive body. Also called the decay constant.

Time channel: In ***time-domain electromagnetic*** surveys the decaying ***secondary field*** is measured over a period of time, and the divided up into a series of consecutive discrete measurements over that time.

time-domain: ***Electromagnetic*** system which transmits a pulsed, or stepped ***electromagnetic*** field. These systems induce an electrical current (***eddy current***) in the ground that persists after the ***primary field*** is turned off, and measure the change over time of the ***secondary field*** created as the currents ***decay***. See also ***frequency-domain***.

total energy envelope: The sum of the squares of the three ***components*** of the ***time-domain electromagnetic secondary field***. Equivalent to the ***amplitude*** of the secondary field.

transient: Time-varying. Usually used to describe a very short period pulse of ***electromagnetic*** field.

transmitter: The source of the ***signa*l** to be measured in a geophysical survey. In airborne ***EM*** it is most often a **coil** carrying a time-varying electrical current, transmitting the ***primary field***. (see also ***receiver***)

traverse line: A normal geophysical survey line. Normally parallel traverse lines are flown across the property in spacing of 50 m to 500 m, and generally perpendicular to the target geology.

vertical plate: A standard model for electromagnetic geophysical theory. It is usually defined as thin conductive sheet, ***infinite*** in horizontal dimension and depth extent. (see also ***thin shee***t)

waveform: The shape of the ***electromagnetic pulse*** from a ***time-domain*** electromagnetic transmitter.

window: A discrete portion of a ***gamma-ray spectrum*** or ***time-domain electromagnetic decay***. The continuous energy spectrum or ***full-stream*** data are grouped into windows to reduce the number of samples, and reduce ***noise***.

Version 1.5, November 29, 2005
Greg Hodges,
Chief Geophysicist
Fugro Airborne Surveys, Toronto

Common Symbols and Acronyms

k Magnetic susceptibility
e Dielectric permittivity
m**,** m_r Magnetic permeability, relative permeability
r**,** r_a Resistivity, apparent resistivity
s**,** s_a Conductivity, apparent conductivity
s**t** Conductivity thickness
t Tau, or time constant
W**m** ohm-metres, units of resistivity
AGS Airborne gamma ray spectrometry.
CDT Conductivity-depth transform, conductivity-depth imaging (Macnae and Lamontagne, 1987; Wolfgram and Karlik, 1995)
CPI, CPQ Coplanar in-phase, quadrature
CPS Counts per second
CTP Conductivity thickness product
CXI, CXQ Coaxial, in-phase, quadrature
FOM Figure of Merit
fT femtoteslas, normal unit for measurement of B-Field
EM Electromagnetic
keV kilo electron volts – a measure of gamma-ray energy
MeV mega electron volts – a measure of gamma-ray energy 1MeV = 1000keV
NIA dipole moment: turns x current x Area
nT nanotesla, a measure of the strength of a magnetic field
nG/h nanoGreys/hour – gamma ray dose rate at ground level
ppm parts per million – a measure of secondary field or noise relative to the primary or radioelement concentration.
pT/s picoteslas per second: Units of decay of secondary field, dB/dt
S siemens – a unit of conductance
x: the horizontal component of an EM field parallel to the direction of flight.
y: the horizontal component of an EM field perpendicular to the direction of flight.
z: the vertical component of an EM field.

References:

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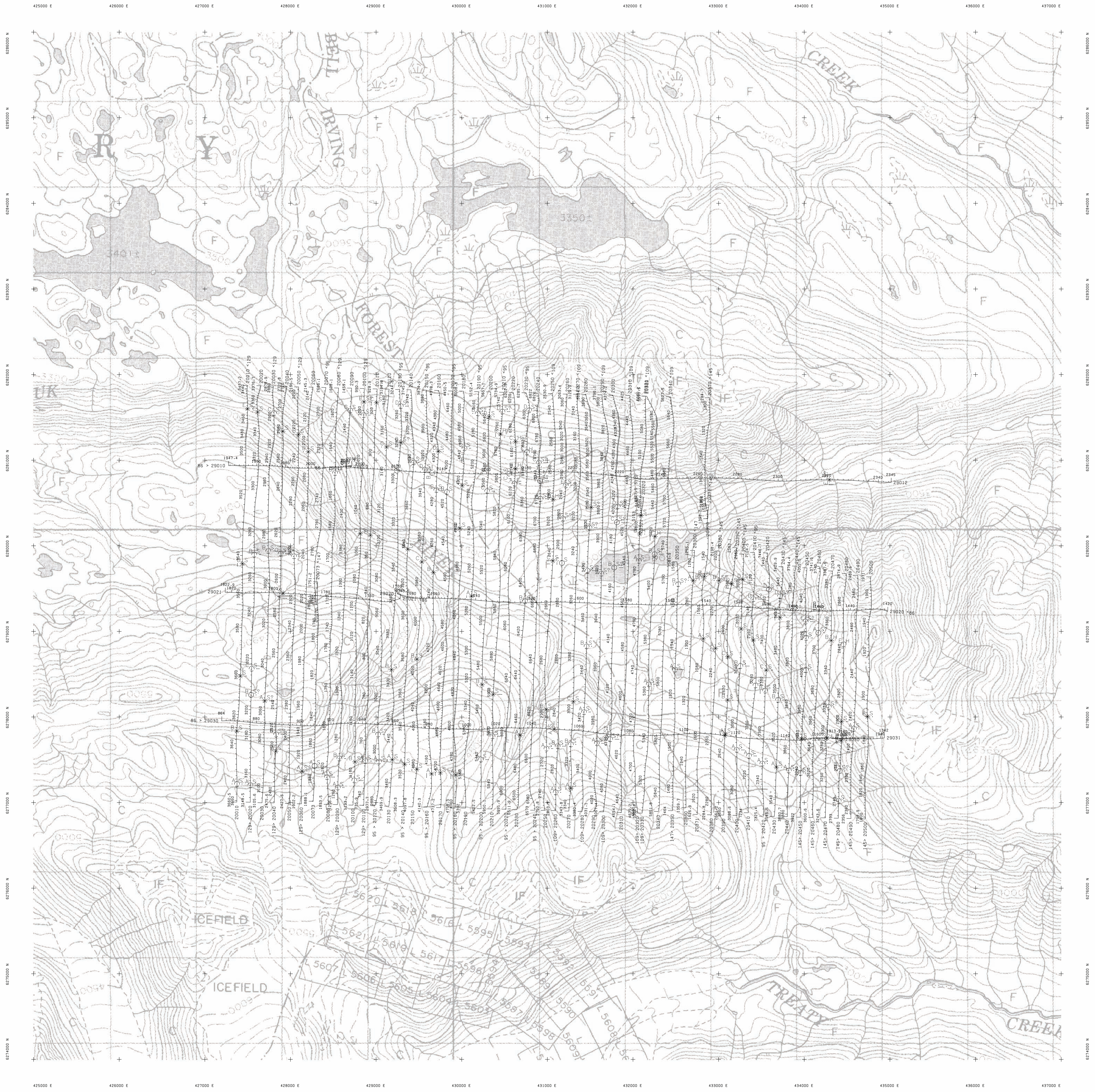


TECHNICAL SUMMARY

Navigation . . . . Differentially-corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

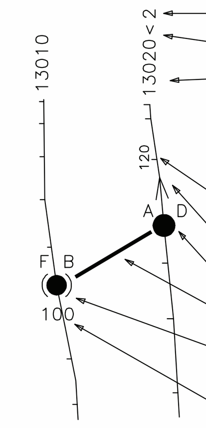
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

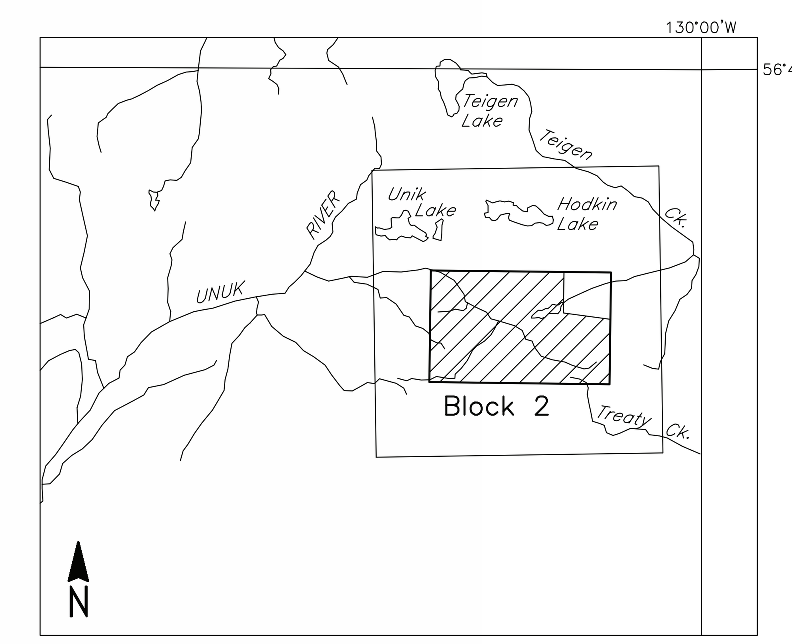
Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

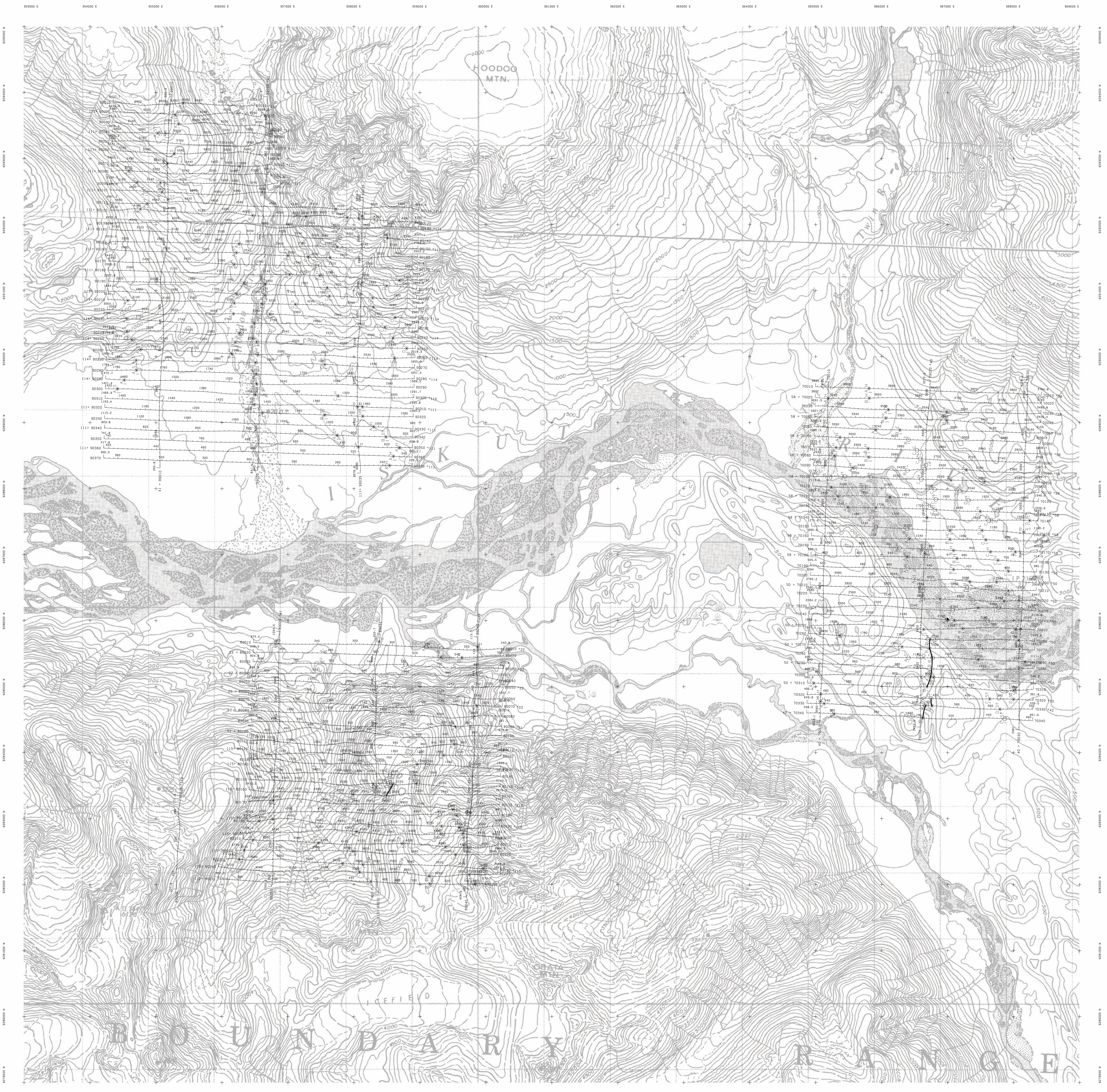
ELECTROMAGNETIC ANOMALIES

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

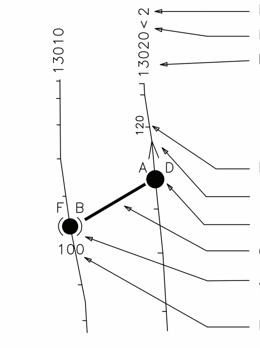
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕ (one quarter filled)	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

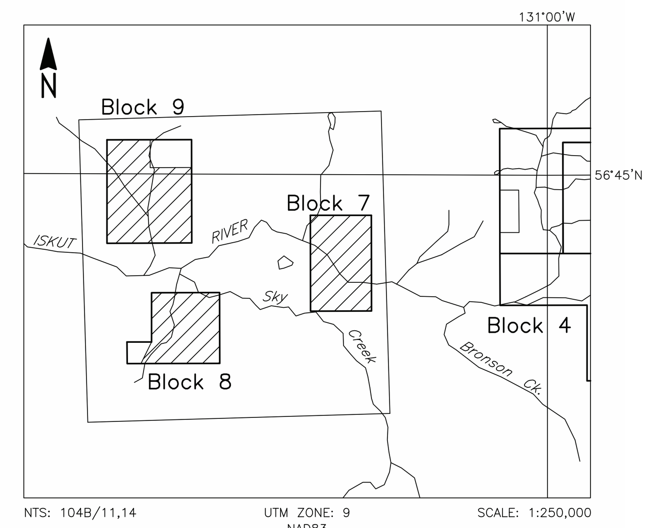
Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

LOCATION MAP



NTS: 104B/11,14
UTM ZONE: 9
NAD83
SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

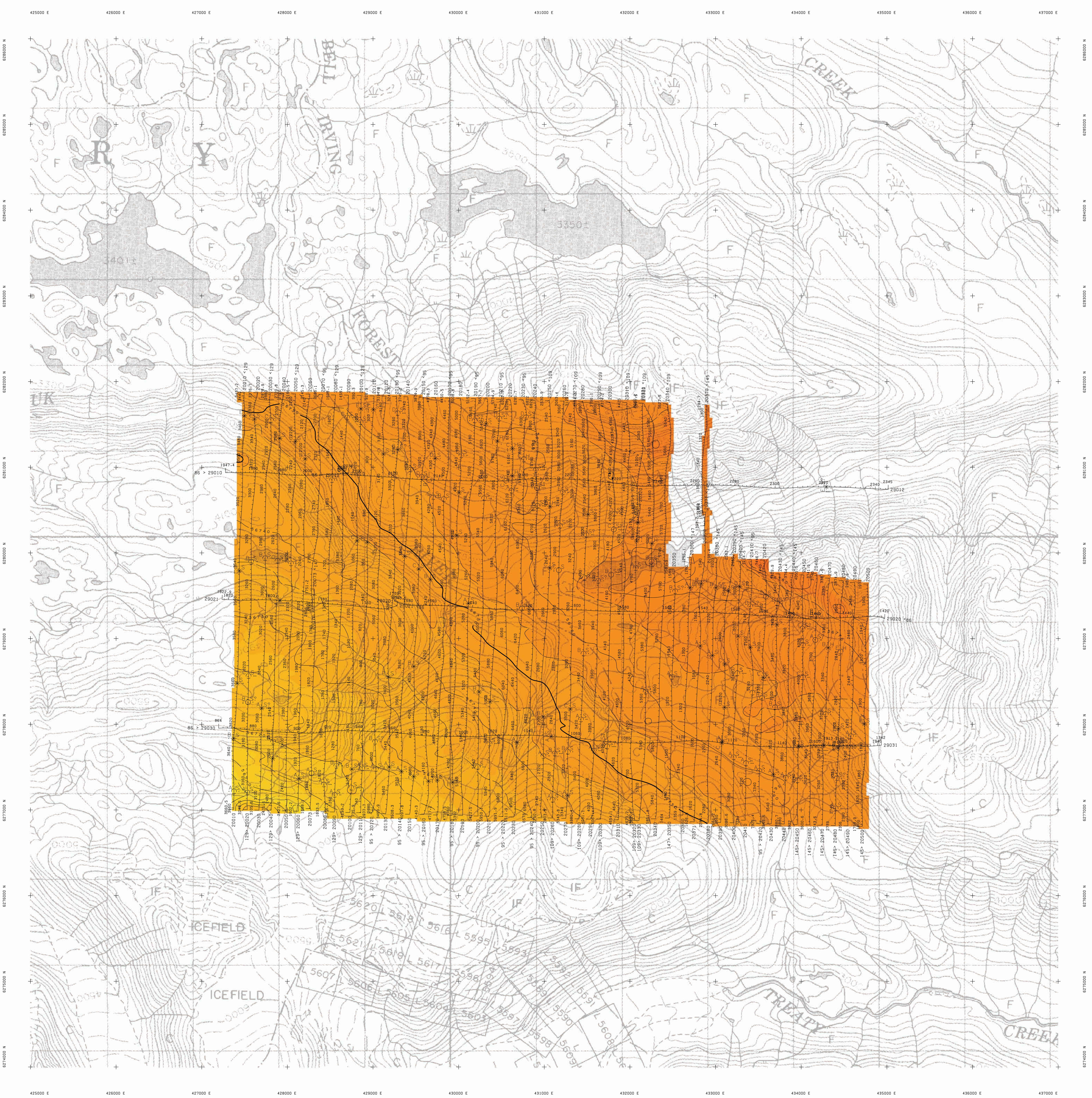
ELECTROMAGNETIC ANOMALIES

FUGRO DIGHEM V/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM^{V}
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

nT

57483
57329
57230
57153
57091
57044
57006
56974
56949
56923
56901
56882
56864
56847
56831
56817
56803
56790
56777
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56512
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56483
56466
56450
56429
56407
56381
56350
56315
56273
56218
56115

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⋮ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

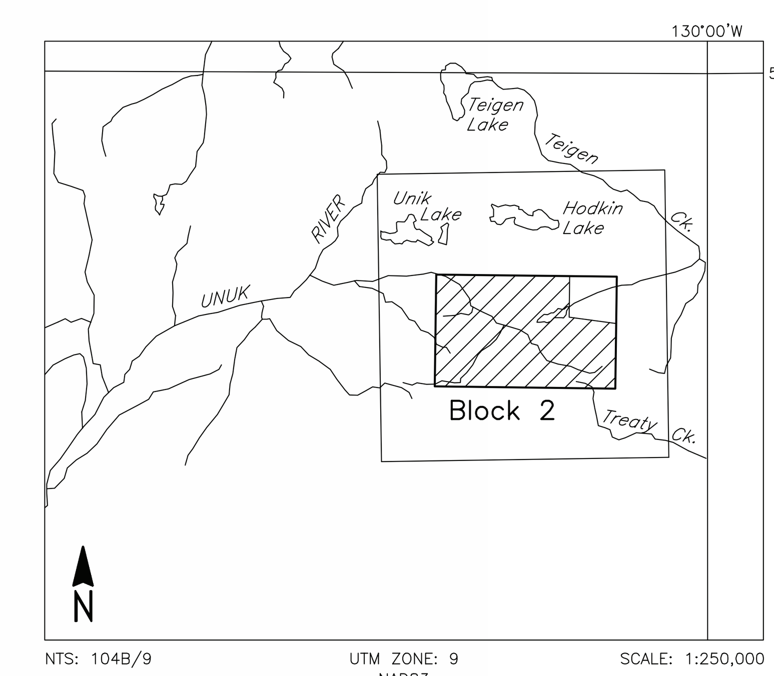
13010
13020<2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
120
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
100
Magnetic correlation in nT (gammas)

TOTAL MAGNETIC FIELD CONTOURS

. . . . 250 nT
. . . . 50 nT
. . . . 10 nT
. . . . 5 nT
. . . . magnetic low

Magnetic inclination within the survey area: 74 degrees N
Magnetic declination within the survey area: 22 degrees E

LOCATION MAP



NTS: 104B/9
UTM ZONE: 9
NAD83
SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

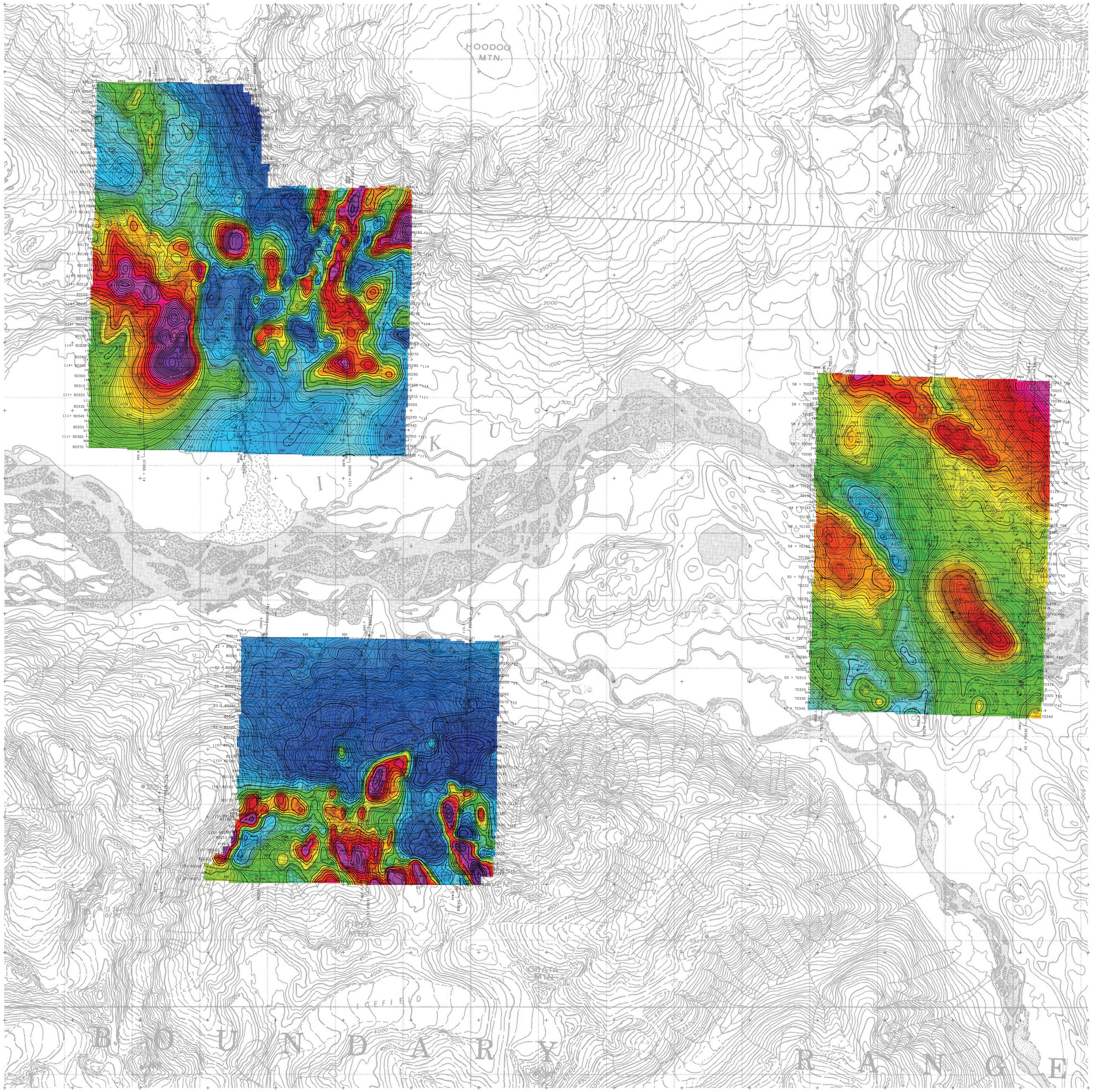
TOTAL MAGNETIC FIELD

FUGRO DIGHEM^{V}/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM^{V}
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol

Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⋮ 60 m

Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

nT

57483
57329
57230
57153
57091
57044
57006
56974
56949
56923
56901
56882
56864
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56350
56315
56273
56218
56115

FLIGHT LINES WITH EM ANOMALIES

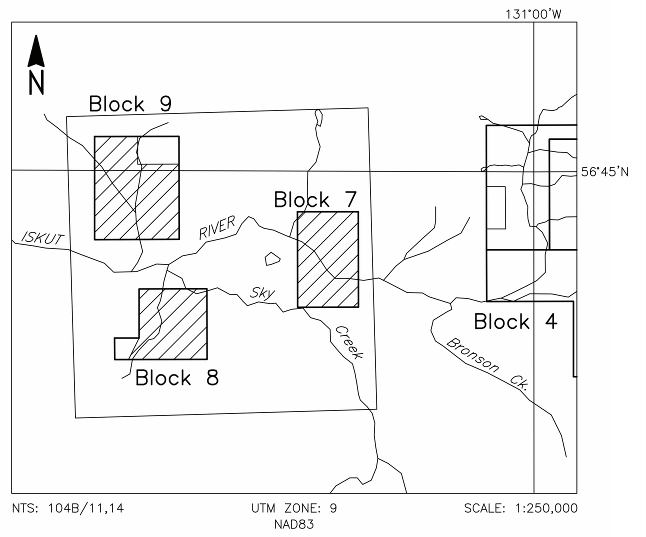
13010
13020 < 2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

TOTAL MAGNETIC FIELD CONTOURS

. . . . 250 nT
. . . . 50 nT
. . . . 10 nT
. . . . 5 nT
. . . . magnetic low

Magnetic inclination within the survey area: 74 degrees N
Magnetic declination within the survey area: 22 degrees E

LOCATION MAP



NTS: 104B/11,14 — UTM ZONE: 9 NAD83 — SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

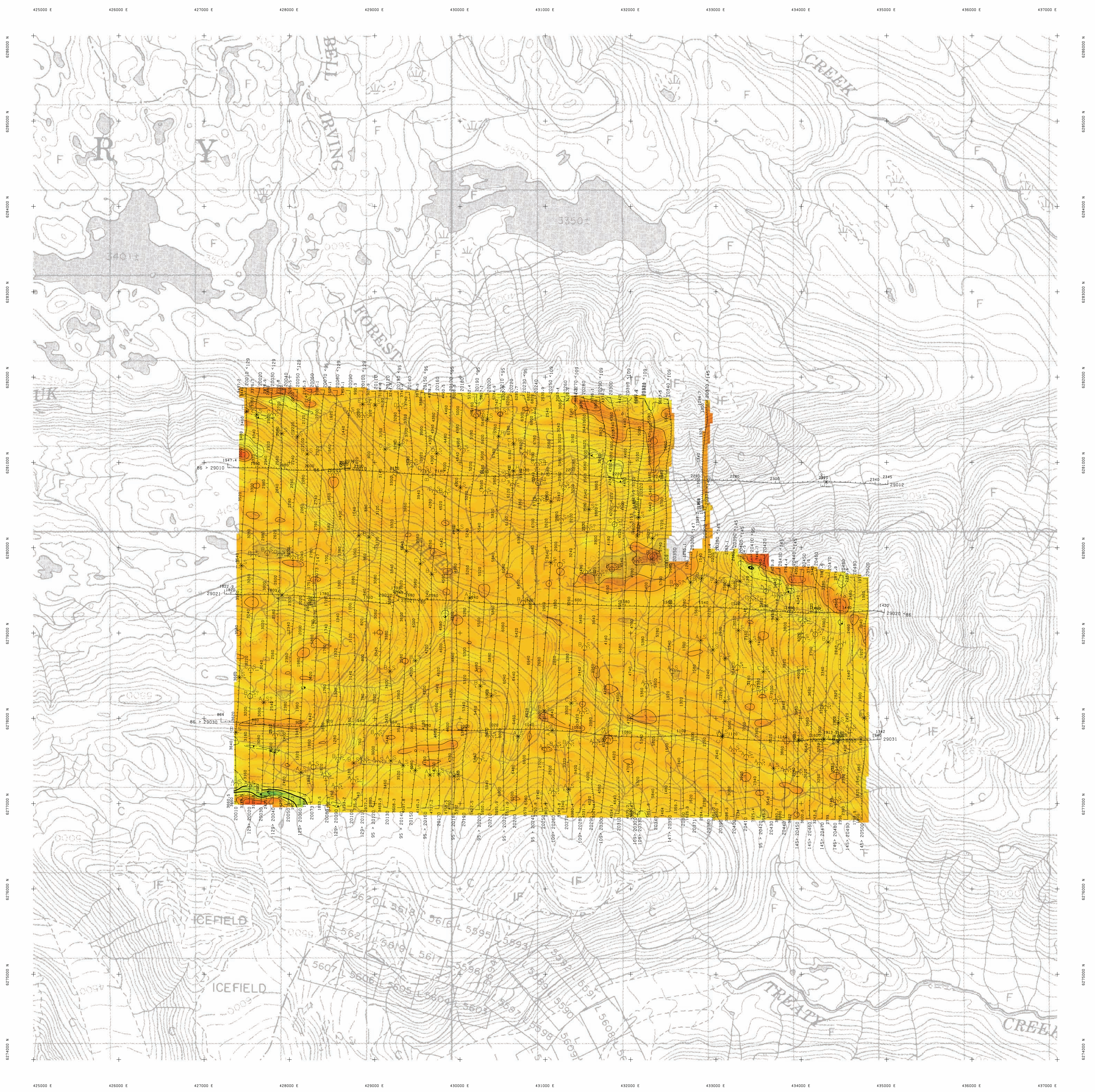
TOTAL MAGNETIC FIELD

FUGRO DIGHEM^{V}/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	30 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEM[V]
Spectrometer	GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
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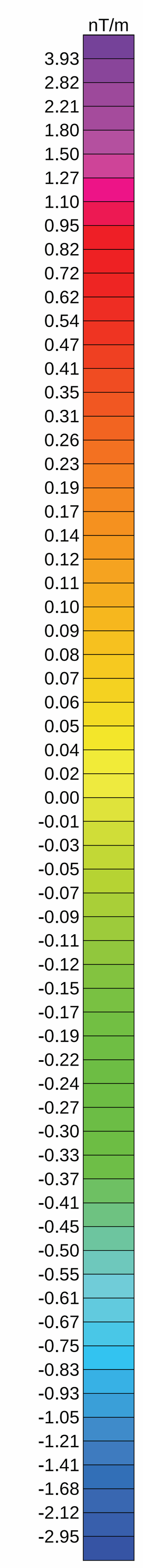


ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⁝ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

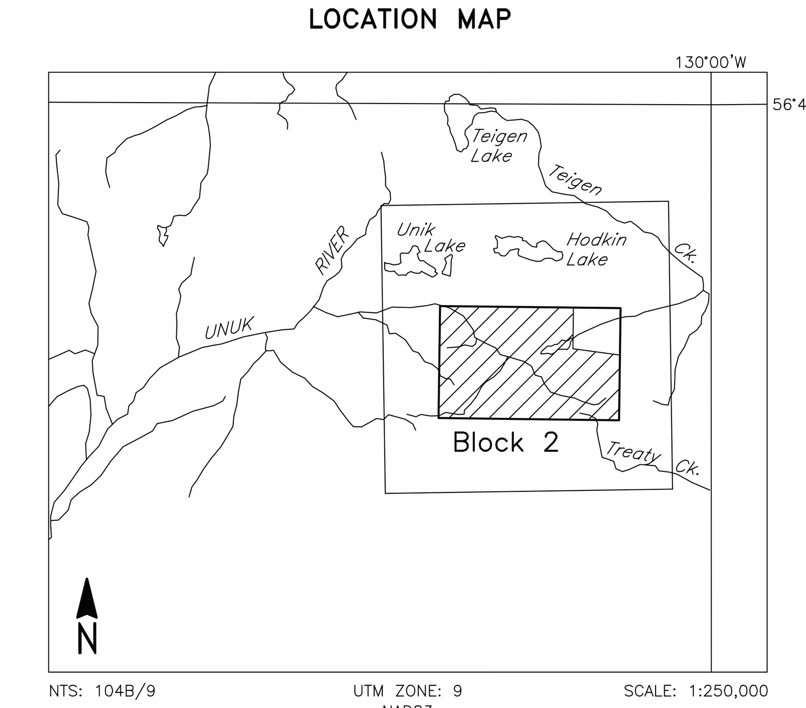
FLIGHT LINES WITH EM ANOMALIES

13010
13020<2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CALCULATED VERTICAL GRADIENT CONTOURS

————	. . . . 2.5 nT/metre
————	. . . . 0.5 nT/metre
————	. . . . 0.1 nT/metre
— — — —	. . . . 0.05 nT/metre

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

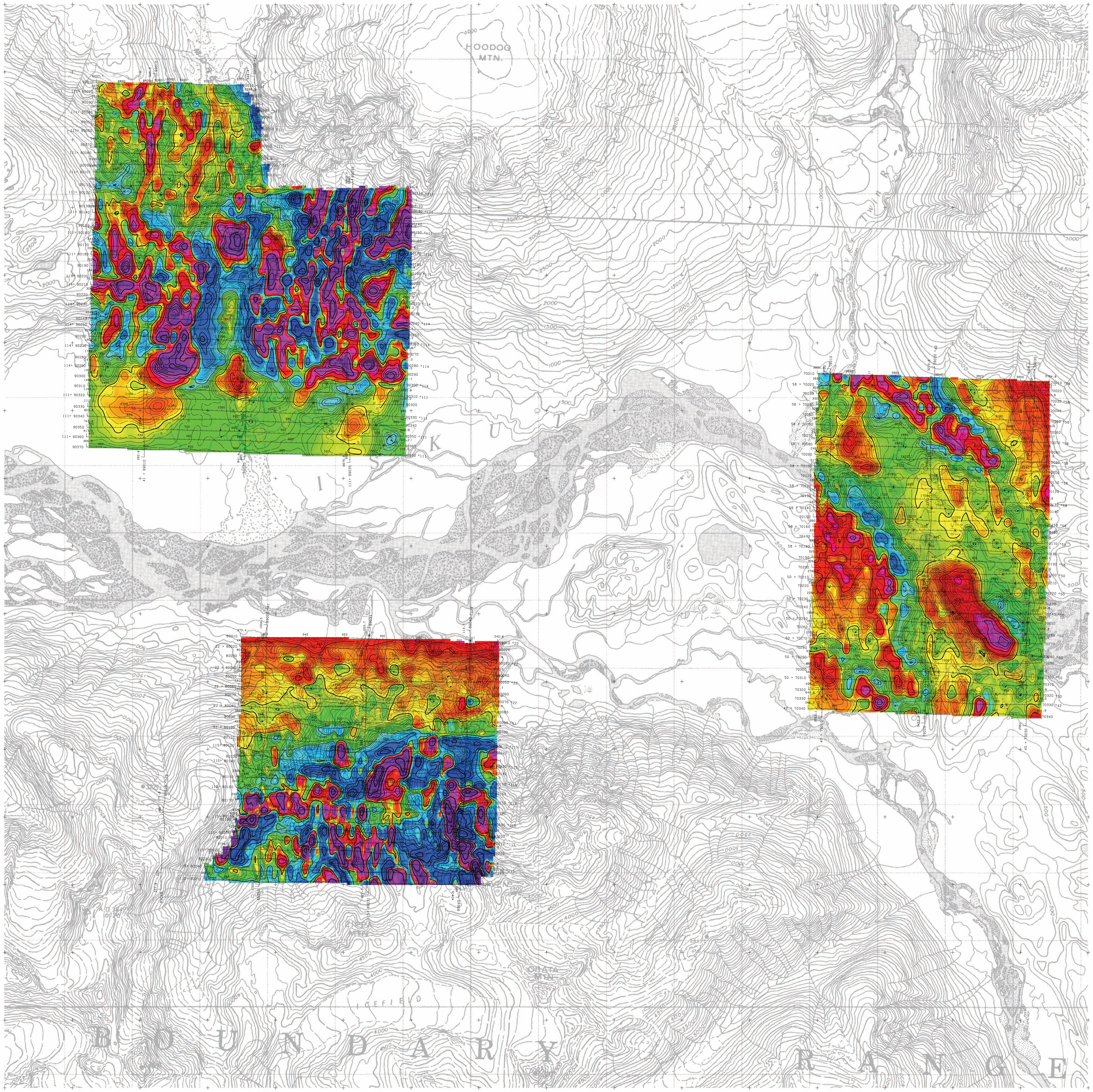
CALCULATED VERTICAL MAGNETIC GRADIENT

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM[V]
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
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56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
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S	Conductive cover ("horizontal thin sheet")
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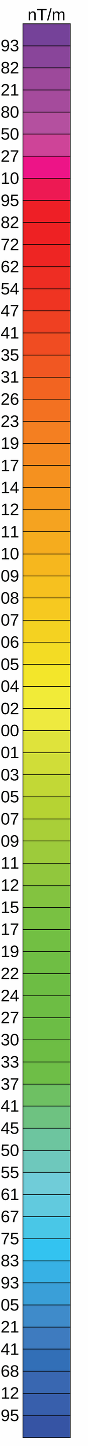
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence



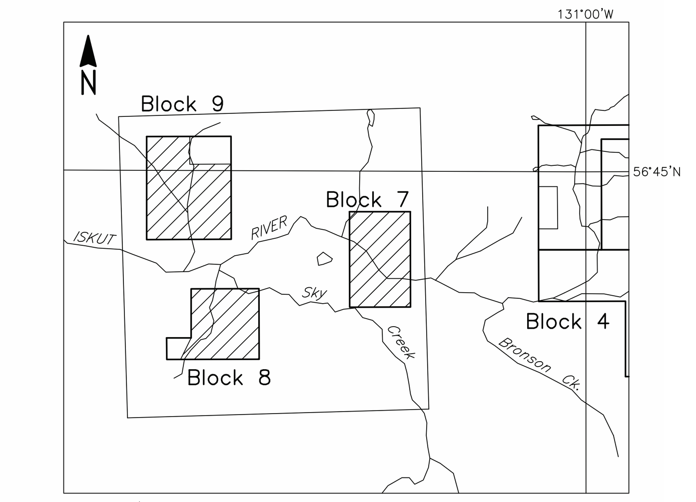
FLIGHT LINES WITH EM ANOMALIES

Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CALCULATED VERTICAL GRADIENT CONTOURS

. . . . 2.5 nT/metre
. . . . 0.5 nT/metre
. . . . 0.1 nT/metre
. . . . 0.05 nT/metre

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

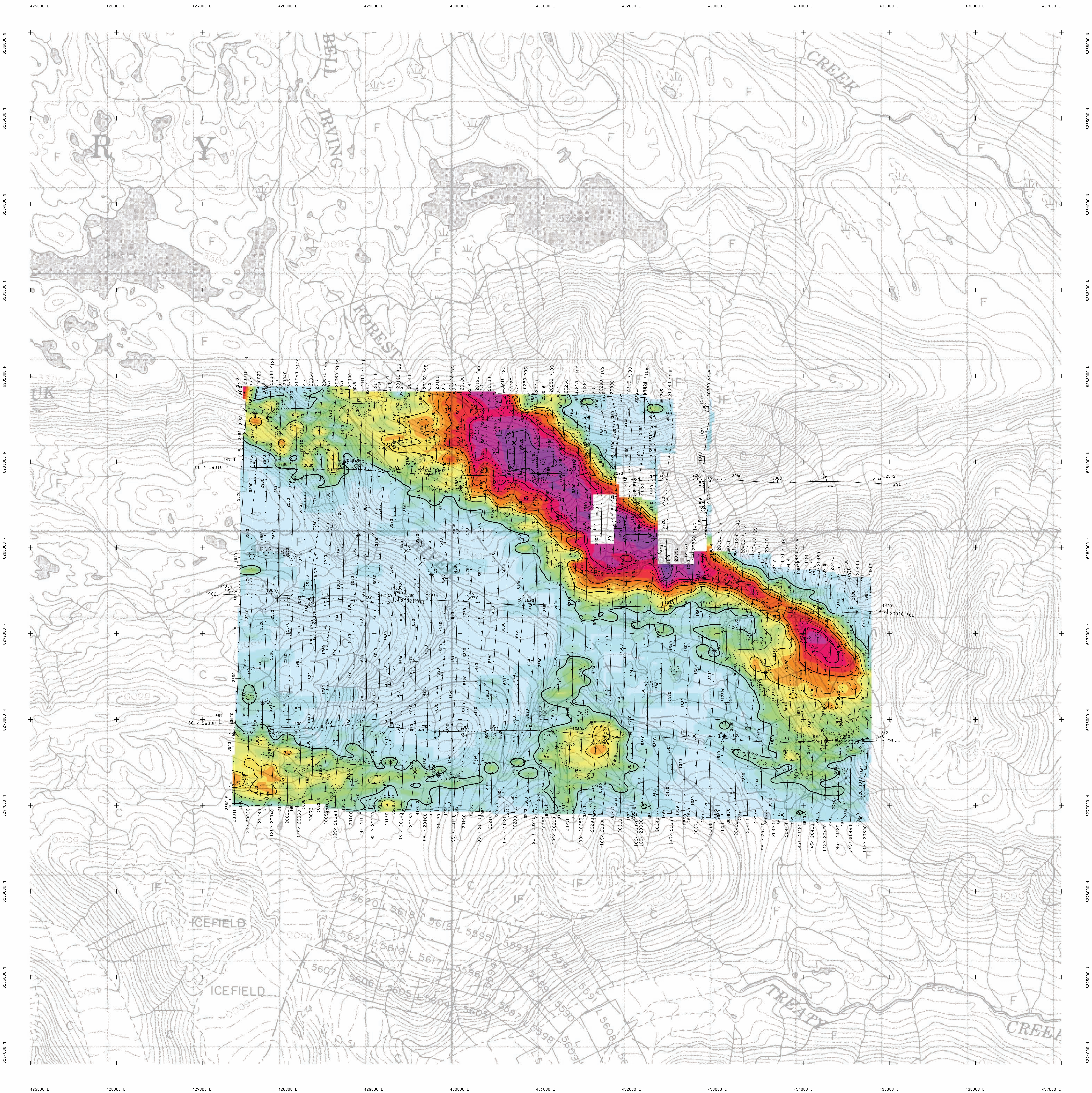
CALCULATED VERTICAL MAGNETIC GRADIENT

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially-corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM^{V}
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ohm·m

1081
1080
1052
999
939
876
811
745
678
611
544
478
411
346
282
221
164
108
52

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	*	Questionable anomaly

Anomaly identifier
Interpretive symbol
C H
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⋮ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

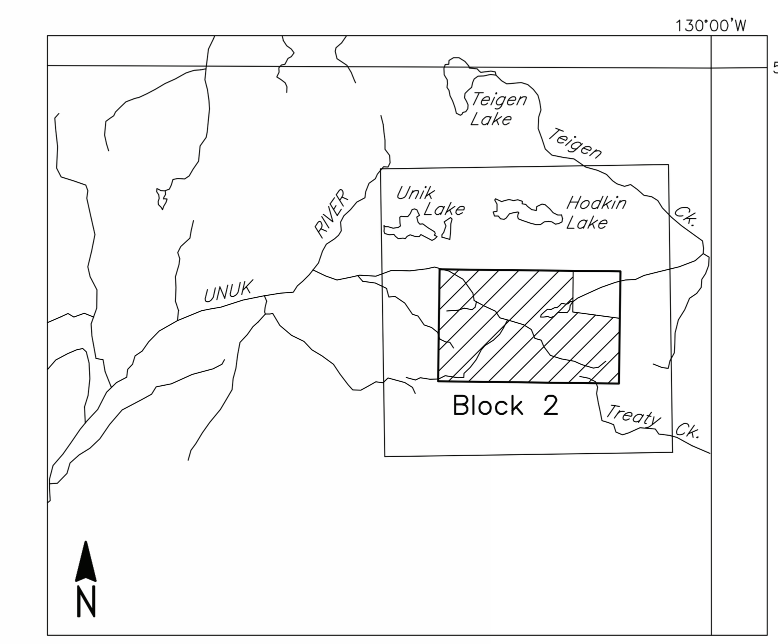
13010
13020 < 2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
120
A D
F B
100
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm-m at 10 intervals per decade.
Apparent resistivity calculated using a pseudo-layer half-space model (Fraser 1978).

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

APPARENT RESISTIVITY
900 Hz COPLANAR

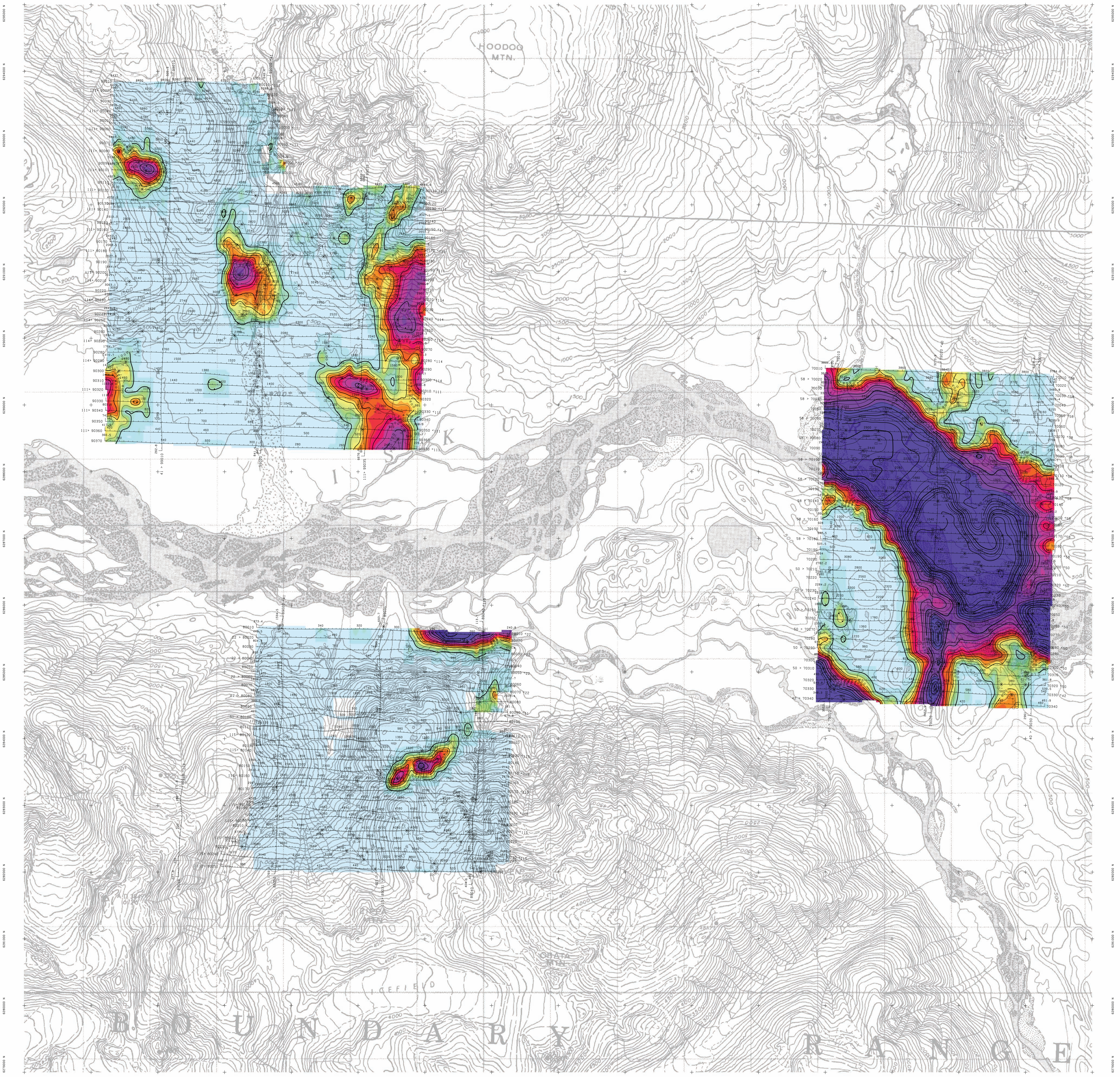
FUGRO DIGHEM^{V}/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

ohm·m

1081
1080
1052
999
939
876
811
745
678
611
544
478
411
346
282
221
164
108
52

FLIGHT LINES WITH EM ANOMALIES

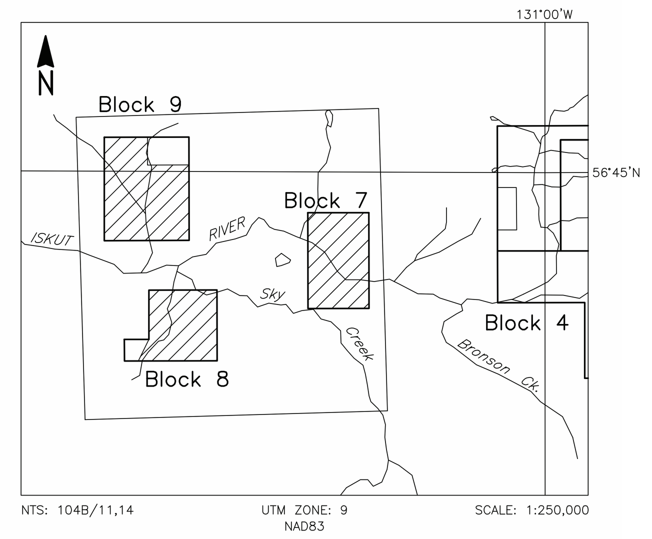
13010
13020 < 2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade. Apparent resistivity calculated using a pseudo–layer half–space model (Fraser 1978).

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

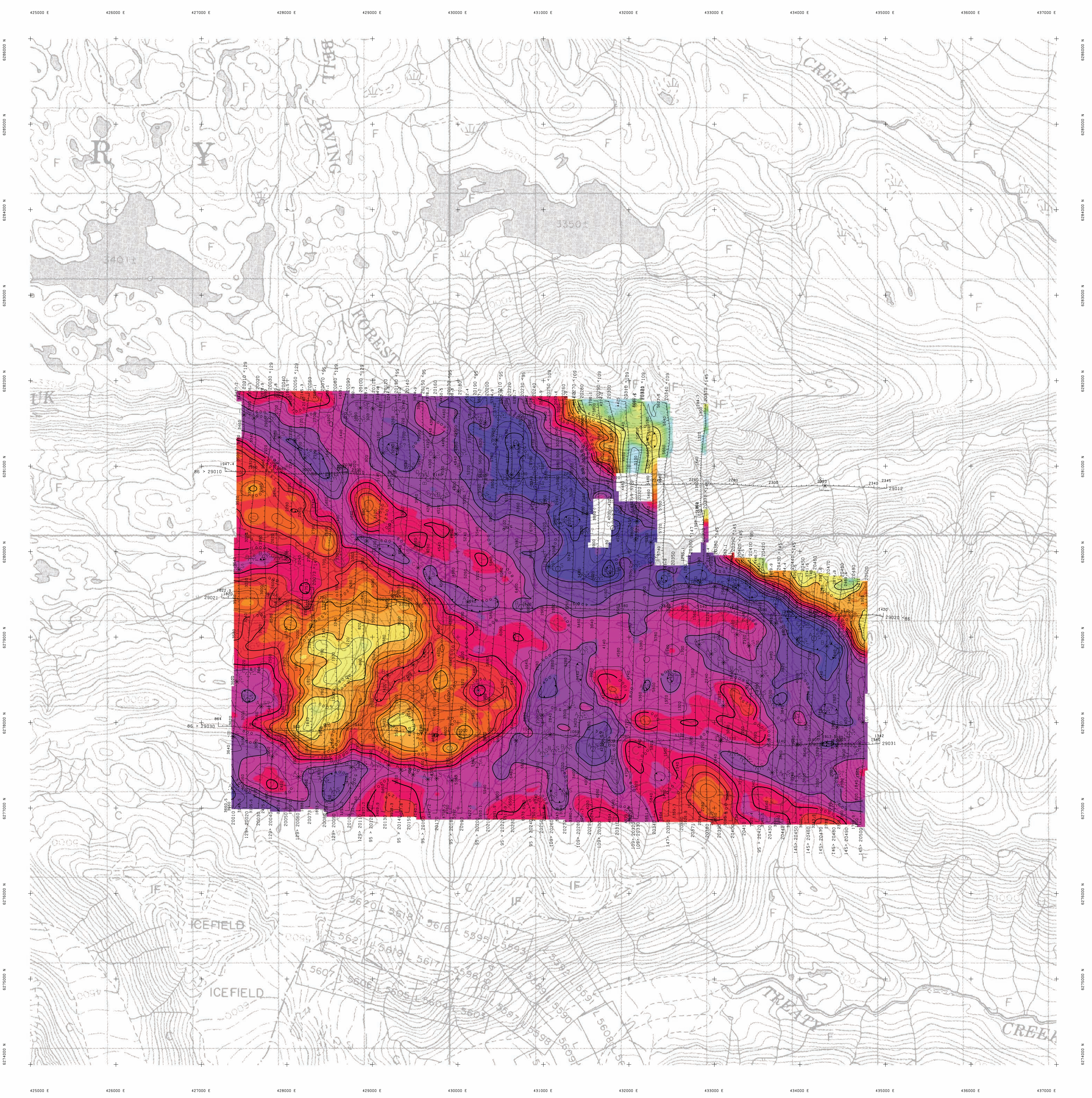
APPARENT RESISTIVITY 900 Hz COPLANAR

FUGRO DIGHEM V/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	30 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEM[V]
Spectrometer	GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ohm·m

8101
8100
8058
7906
7662
7342
6911
6369
5701
4894
4000
3086
2293
1690
1228
867
609
409
238

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

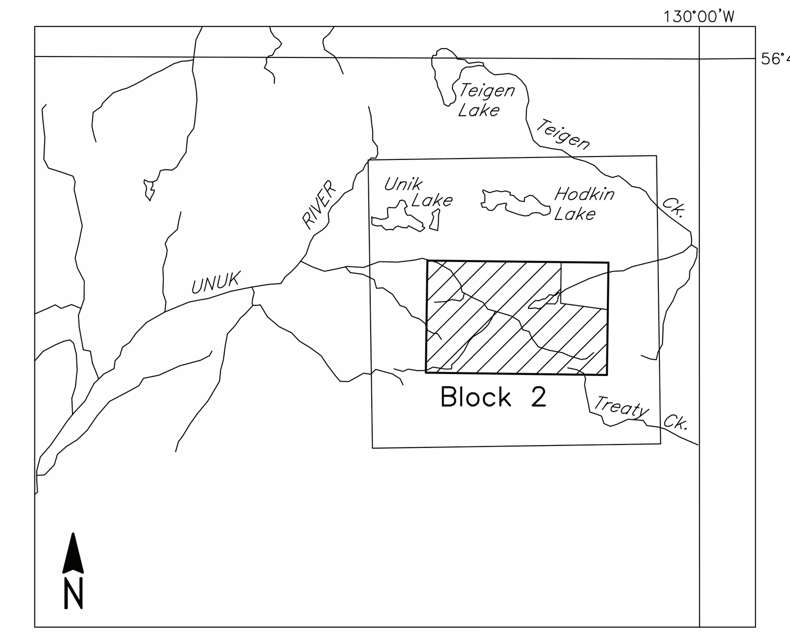
13010
13020 < 2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade. Apparent resistivity calculated using a pseudo-layer half-space model (Fraser 1978).

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

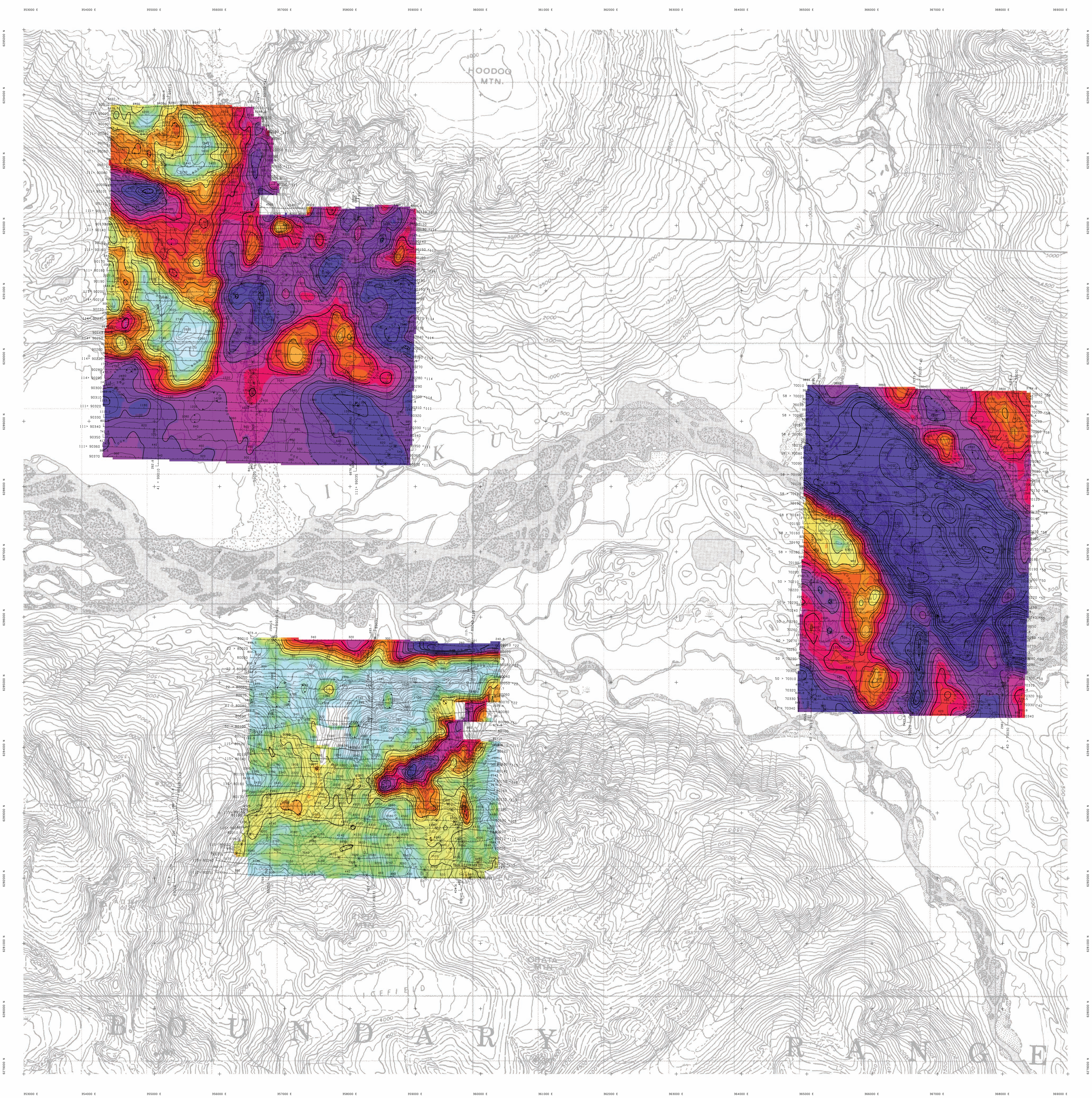
APPARENT RESISTIVITY 7200 Hz COPLANAR

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	30 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEM V
Spectrometer	GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier; Interpretive symbol

Depth is greater than: . 15 m; : 30 m; ⋮ 45 m; ⁞ 60 m

Inphase and Quadrature of coaxial coil is greater than: . 5 ppm; .. 10 ppm; ... 15 ppm; .... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

ohm·m

8101, 8100, 8058, 7906, 7662, 7342, 6911, 6369, 5701, 4894, 4000, 3086, 2293, 1690, 1228, 867, 609, 409, 238

FLIGHT LINES WITH EM ANOMALIES

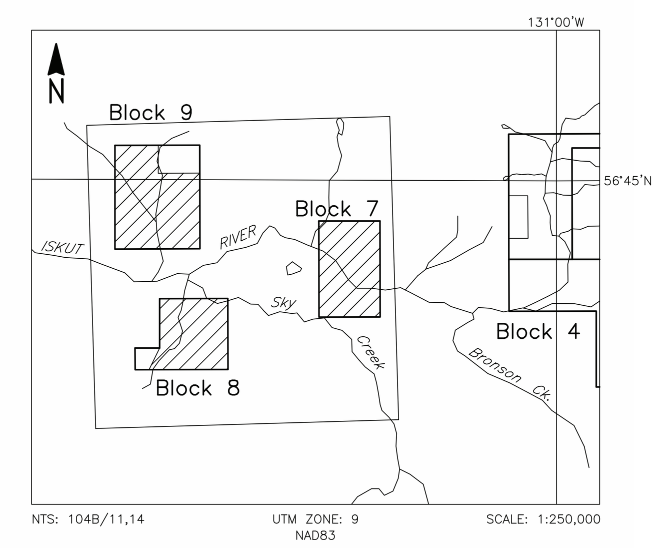
- Flight number
- Flight direction
- Flight line number: 11020 – Reflight Number, Line Number, Area Number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000, 800, 600, 500, 400, 300, 250, 200, 150, 125, 100

Contours in ohm–m at 10 intervals per decade. Apparent resistivity calculated using a pseudo–layer half–space model (Fraser 1978).

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

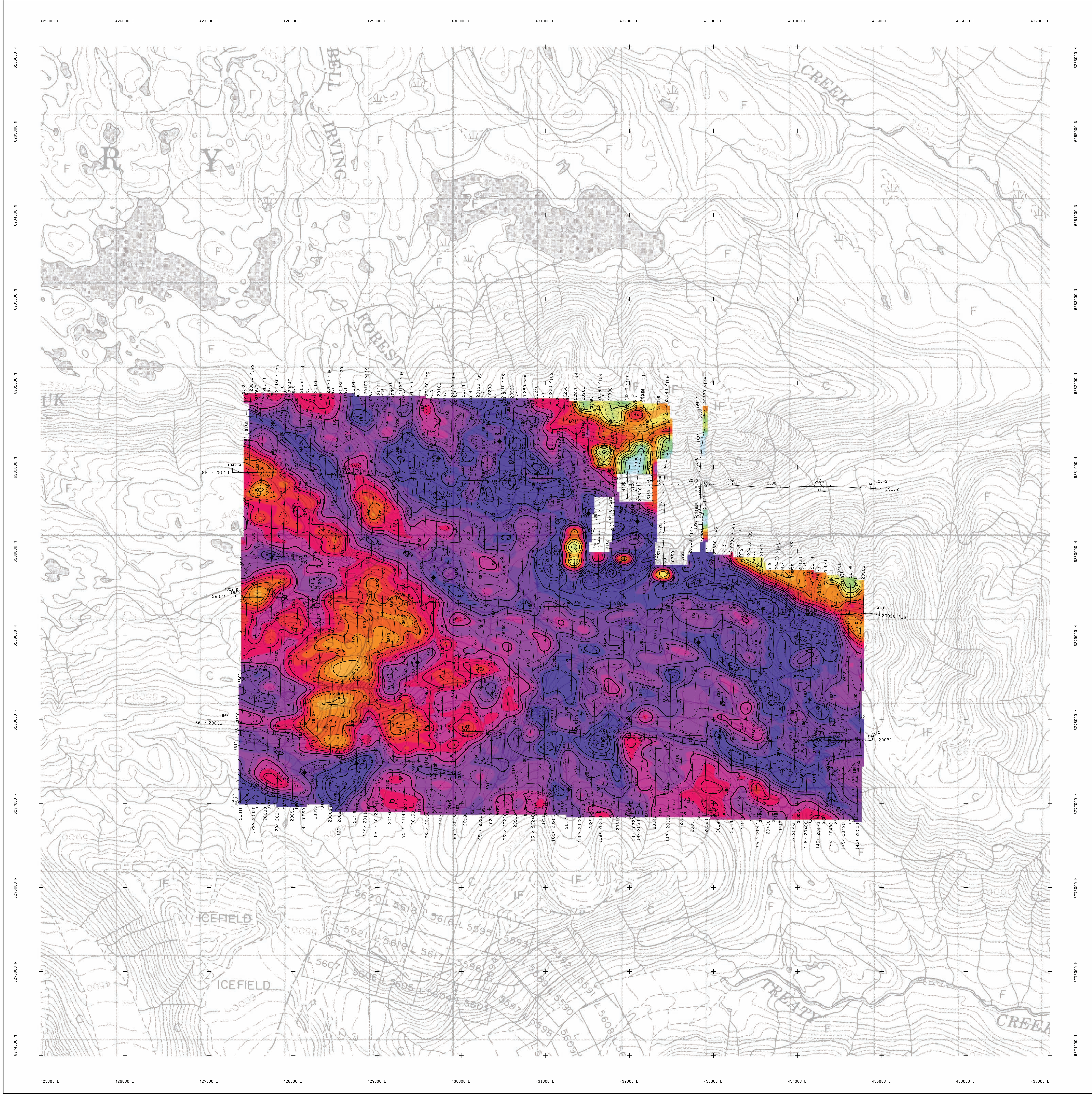
APPARENT RESISTIVITY 7200 Hz COPLANAR

FUGRO DIGHEM V/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	30 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEM^{V}
Spectrometer	GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ohm·m: 20000, 19654, 18321, 16725, 15080, 13415, 11679, 9793, 7830, 6104, 4801, 3798, 2989, 2335, 1749, 1281, 918, 664, 452

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6		50–100 siemens
5		20–50 siemens
4		10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1		< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier; Interpretive symbol; Depth is greater than: · 15 m, : 30 m, ⋮ 45 m, ⁞ 60 m; Inphase and Quadrature of coaxial coil is greater than: . 5 ppm, .. 10 ppm, ... 15 ppm, ... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

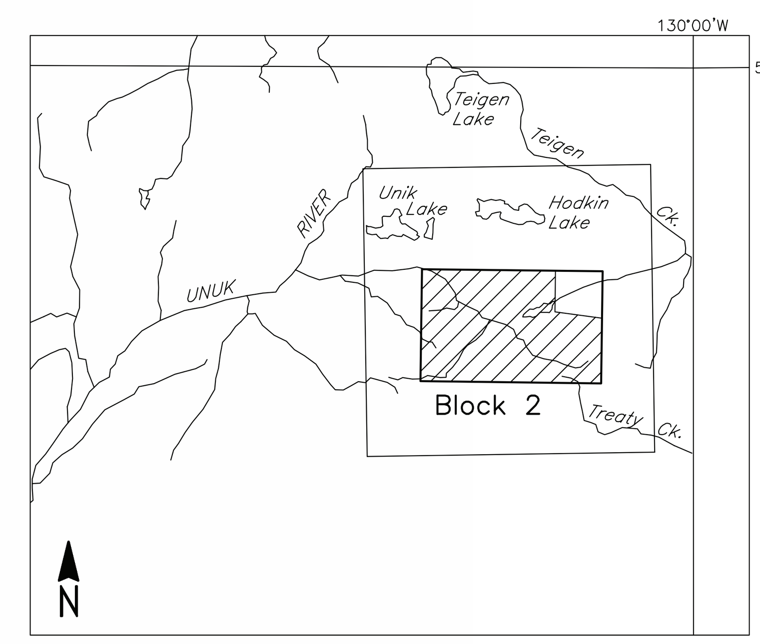
- Flight number
- Flight direction
- Flight line number (11020: Reflight Number, Line Number, Area Number)
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000, 800, 600, 500, 400, 300, 250, 200, 150, 125, 100

Contours in ohm–m at 10 intervals per decade. Apparent resistivity calculated using a pseudo-layer half-space model (Fraser 1978).

LOCATION MAP



NTS: 104B/9 — UTM ZONE: 9 NAD83 — SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

APPARENT RESISTIVITY 56,000 Hz COPLANAR

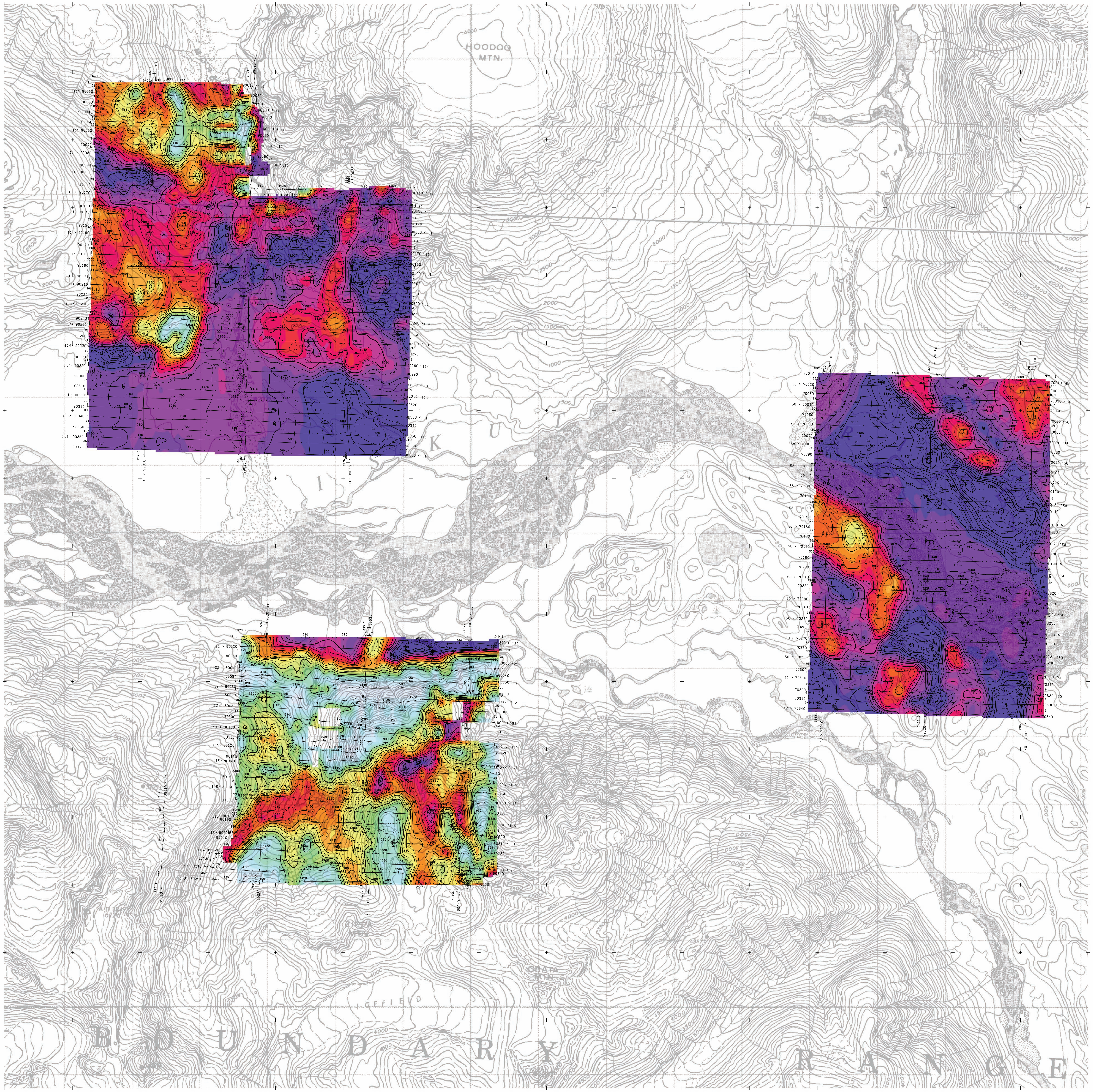
FUGRO DIGHEM^{V}/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 — 1 — 2 Km; 0 — 1 Mi

Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 30 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]
Spectrometer GR820

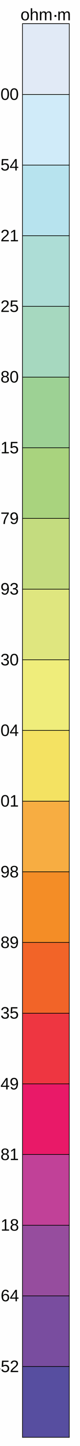
Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

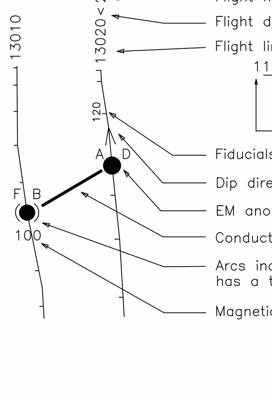
Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⋮ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence



FLIGHT LINES WITH EM ANOMALIES



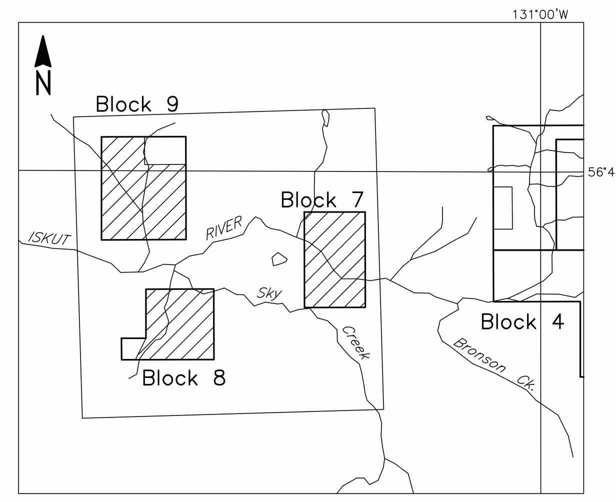
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade. Apparent resistivity calculated using a pseudo–layer half–space model (Fraser 1978).

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

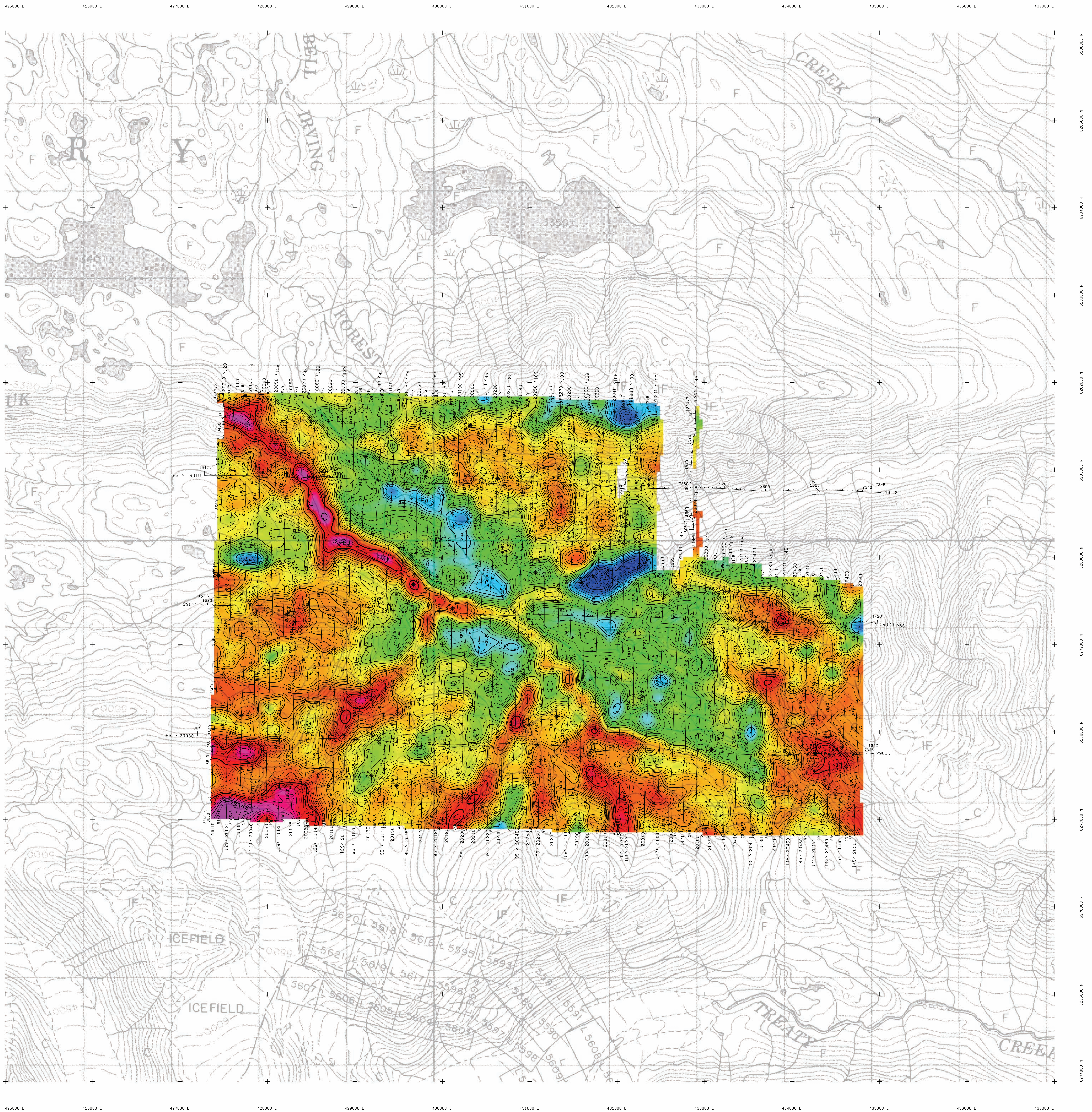
APPARENT RESISTIVITY
56,000 Hz COPLANAR

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

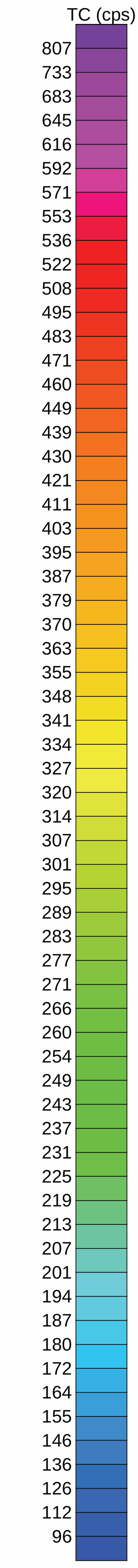
Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TC (cps)



TECHNICAL SUMMARY

Navigation . . . . Differentially-corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM^V
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

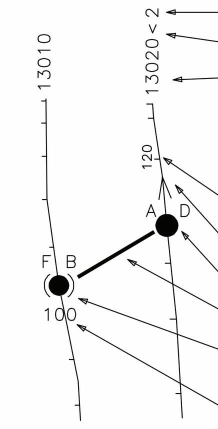
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⁝ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

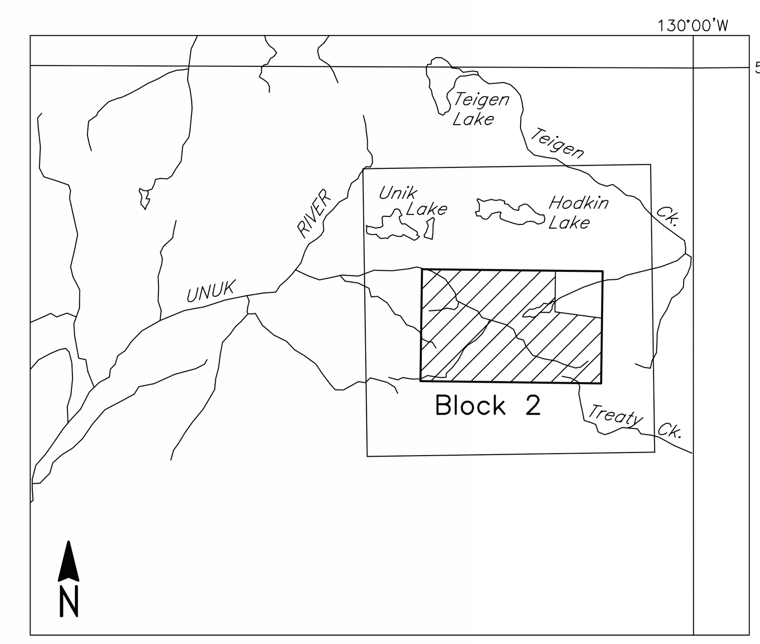


Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

. . . . 500 cps
. . . . 100 cps
. . . . 20 cps
. . . . 10 cps
. . . . low

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

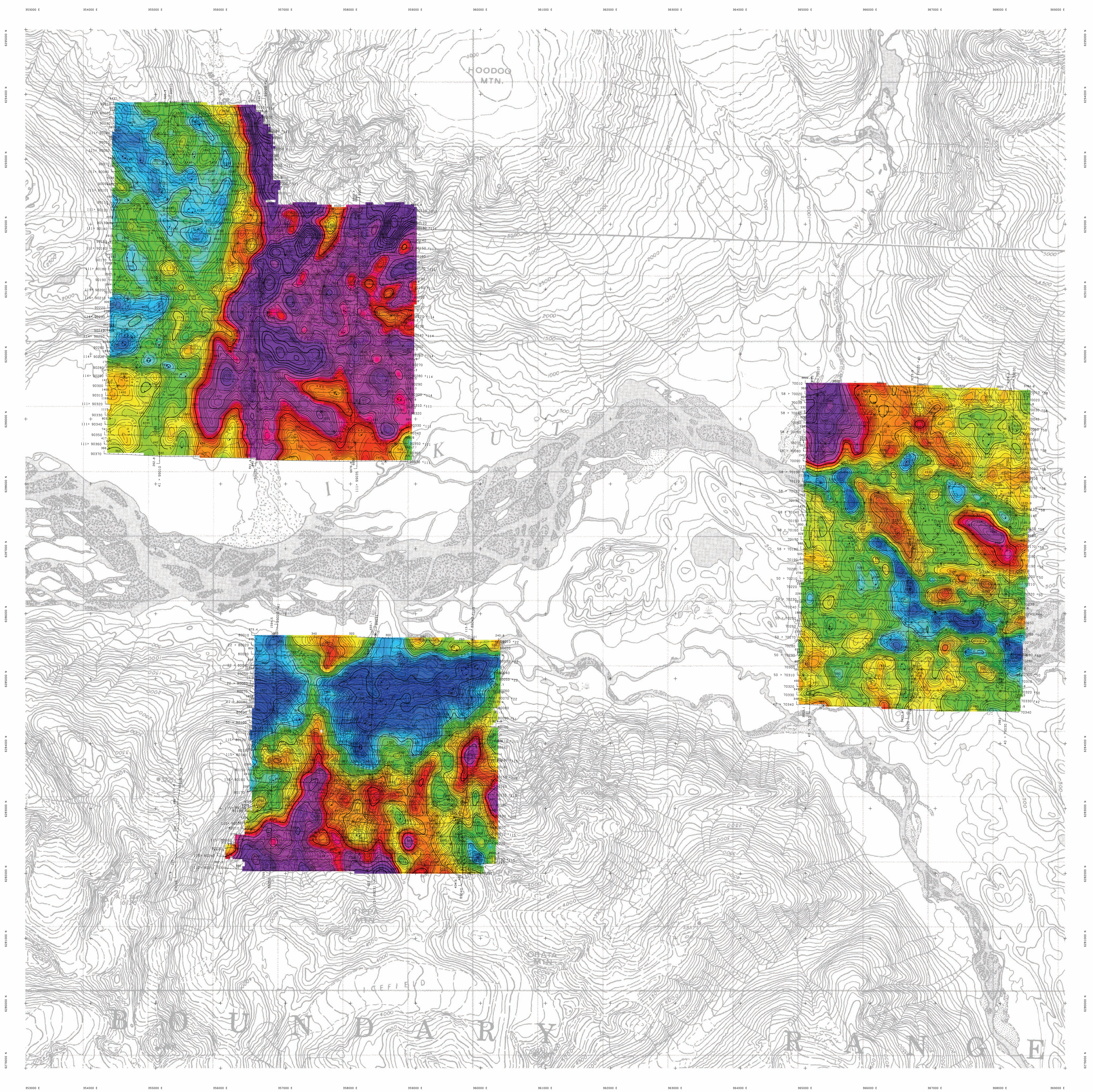
RADIOMETRIC TOTAL COUNT

FUGRO DIGHEM^V/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially-corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◓	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

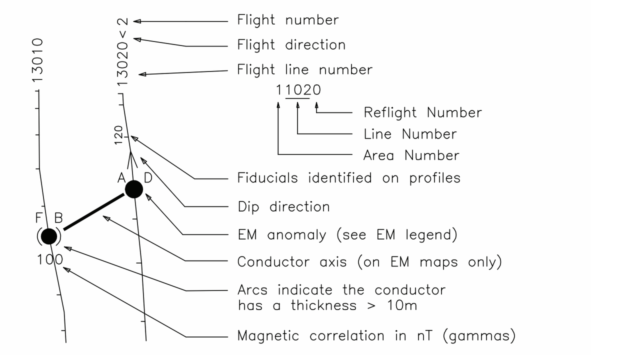
Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⁝ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

TC (cps)

807, 733, 683, 645, 616, 592, 571, 553, 536, 522, 508, 495, 483, 471, 460, 449, 439, 430, 421, 411, 403, 395, 387, 379, 370, 363, 355, 348, 341, 334, 327, 320, 314, 307, 301, 295, 289, 283, 277, 271, 266, 260, 254, 249, 243, 237, 231, 225, 219, 213, 207, 201, 194, 187, 180, 172, 164, 155, 146, 136, 126, 112, 96

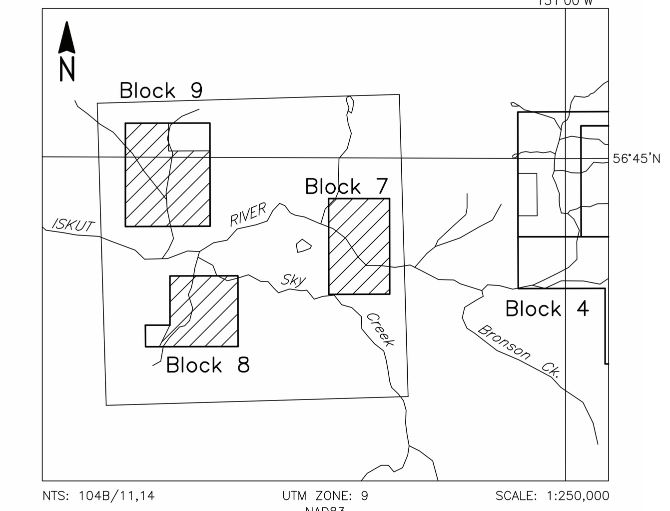
FLIGHT LINES WITH EM ANOMALIES



CONTOUR INTERVALS

. . . . 500 cps
. . . . 100 cps
. . . . 20 cps
. . . . 10 cps
. . . . low

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

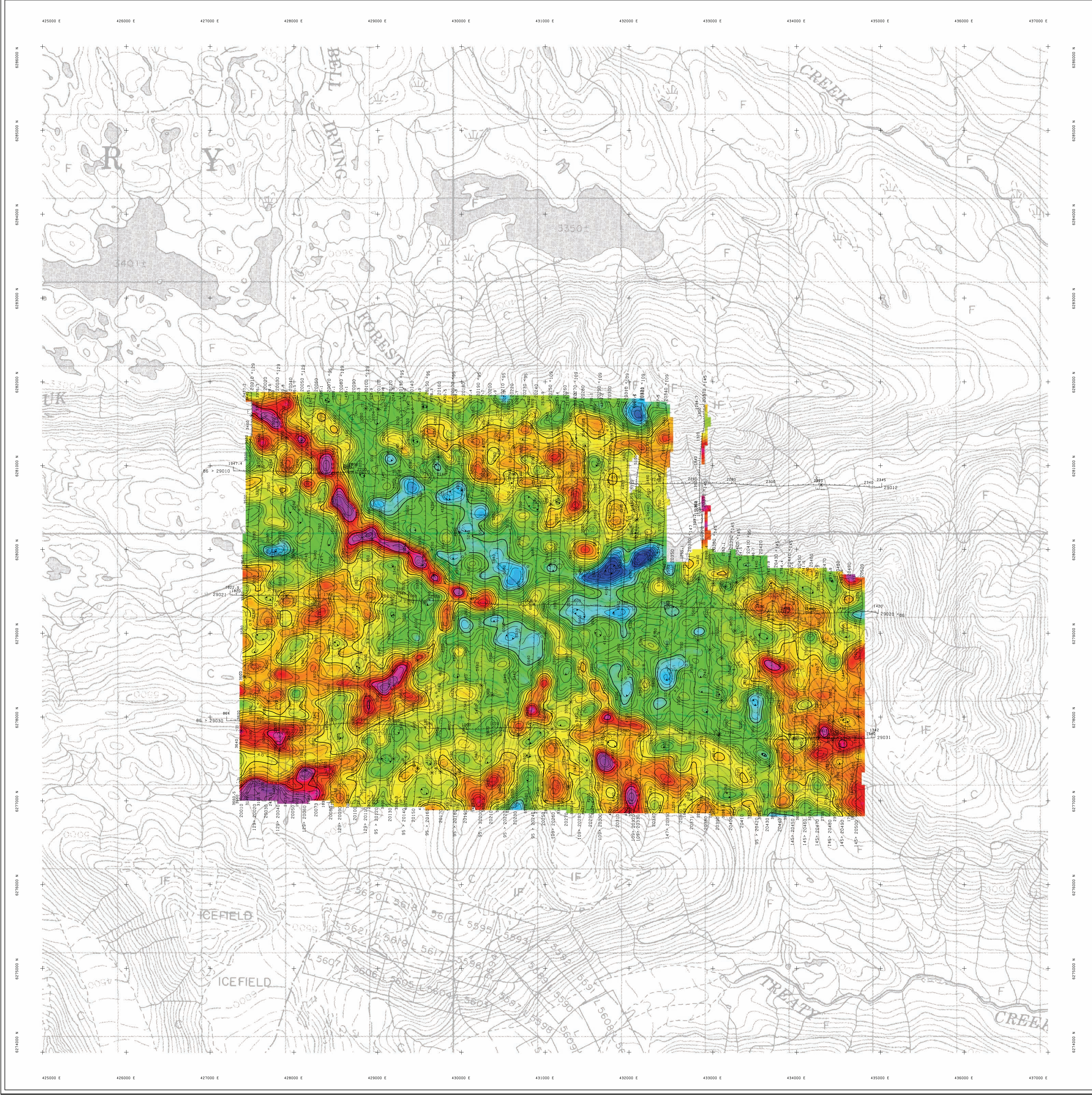
RADIOMETRIC TOTAL COUNT

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

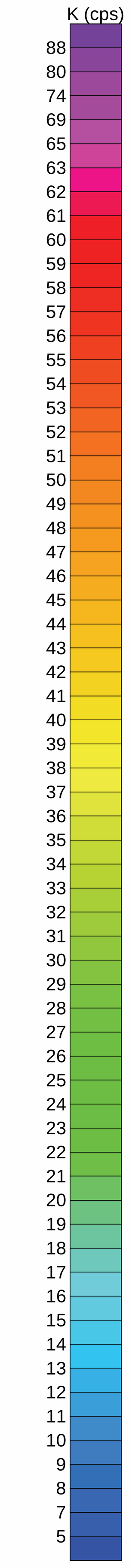
FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	38 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEM^V
Spectrometer	GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar



ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — Depth is greater than: · 15 m, : 30 m, ⋮ 45 m, ⁞ 60 m — Inphase and Quadrature of coaxial coil is greater than: . 5 ppm, .. 10 ppm, ... 15 ppm, ... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

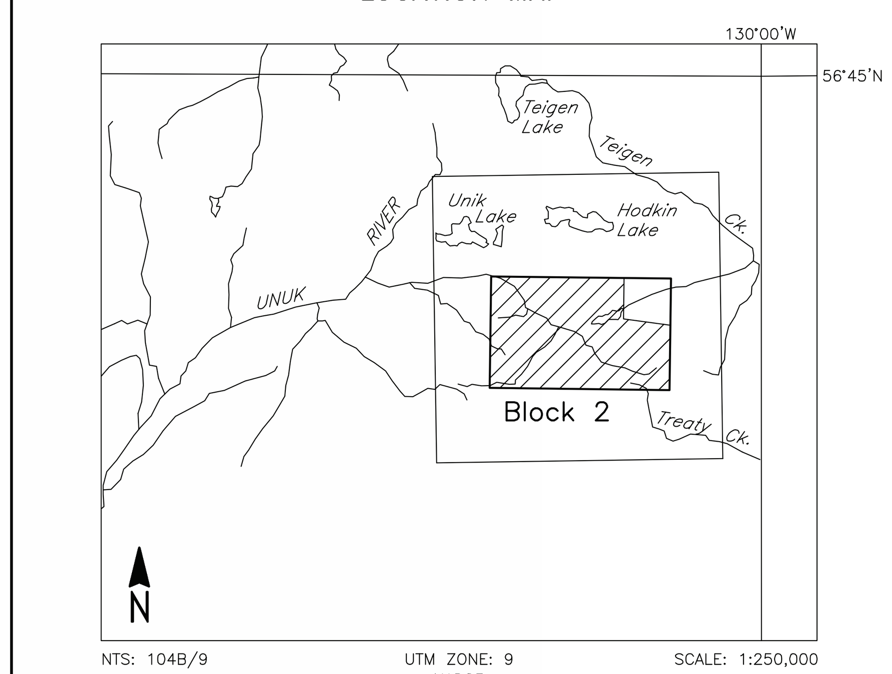
FLIGHT LINES WITH EM ANOMALIES

- Flight number
- Flight direction
- Flight line number
  - 11020: Reflight Number, Line Number, Area Number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

heavy solid line	100 cps
solid line	20 cps
thin line	4 cps
dashed line	2 cps
hachured closed contour	low

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

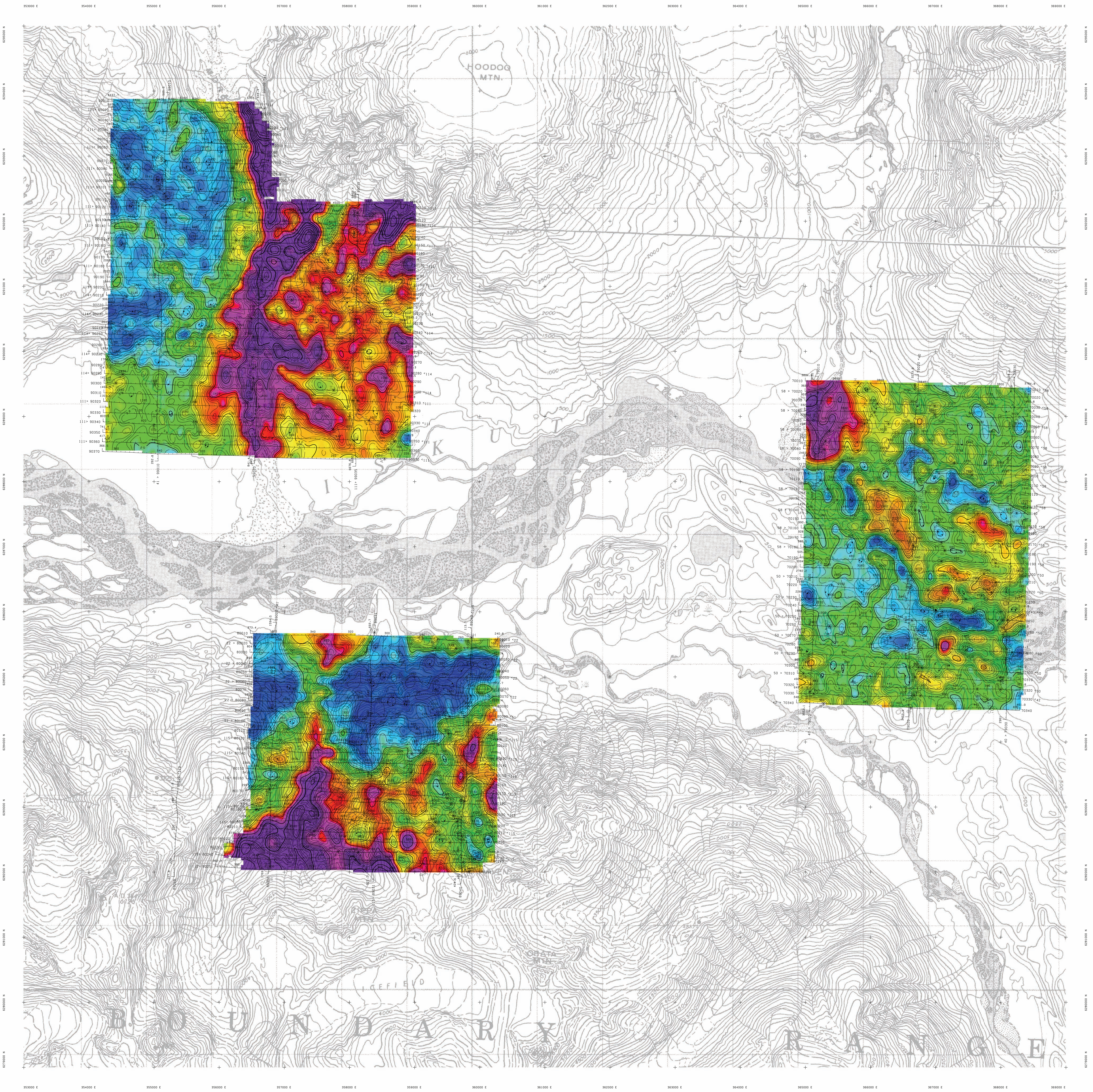
RADIOMETRIC POTASSIUM COUNTS

FUGRO DIGHEM^V/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEMV
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

K (cps)
88
80
74
69
65
63
62
61
60
59
58
57
56
55
54
53
52
51
50
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48
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7
5

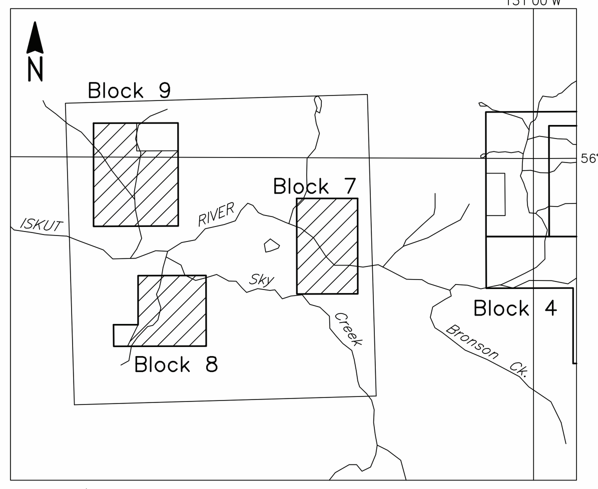
FLIGHT LINES WITH EM ANOMALIES

13010
13020<2
Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

. . . . 100 cps
. . . . 20 cps
. . . . 4 cps
. . . . 2 cps
. . . . low

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

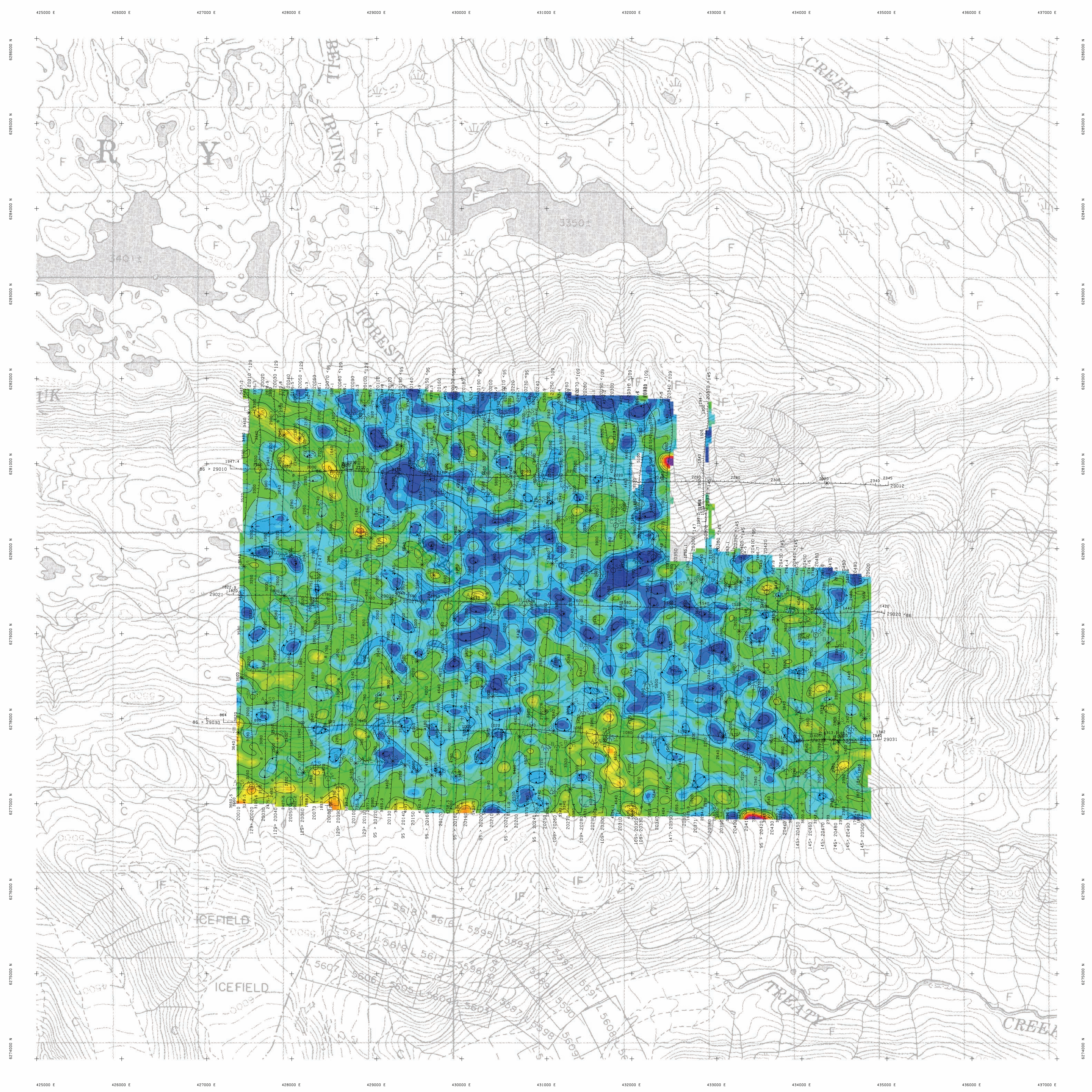
RADIOMETRIC POTASSIUM COUNTS

FUGRO DIGHEMV/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

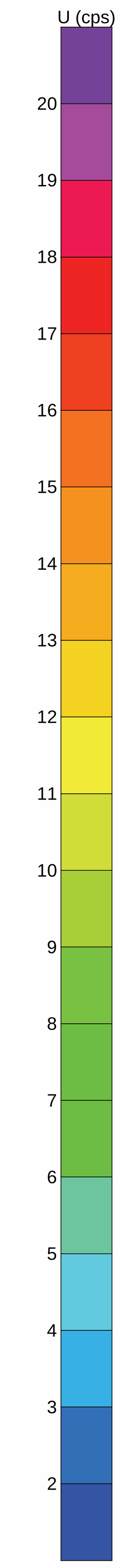
FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially-corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM[V]
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar



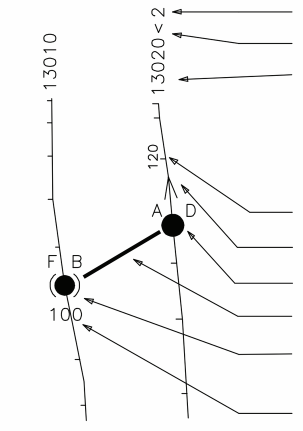
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
. 15 m
: 30 m
⋮ 45 m
⋮ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

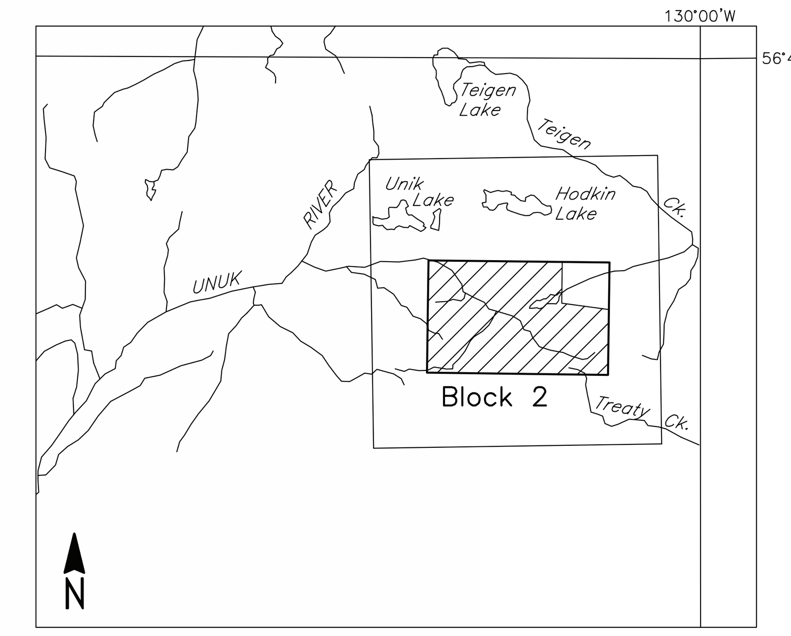


Flight number
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

. . . . 100 cps
. . . . 20 cps
. . . . 4 cps
. . . . 2 cps
. . . . low

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

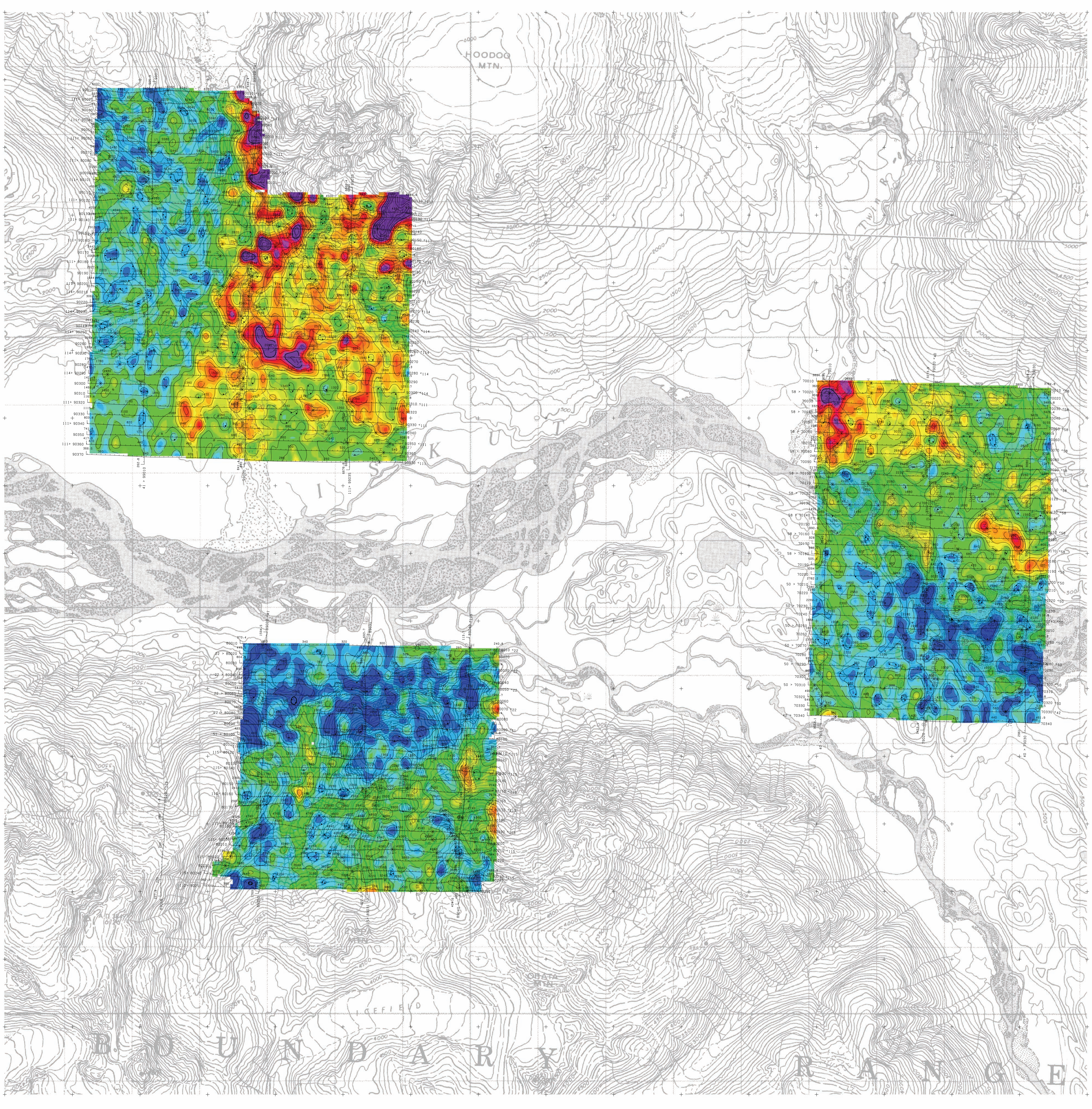
RADIOMETRIC URANIUM COUNTS

FUGRO DIGHEM[V]/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V
Spectrometer GR820

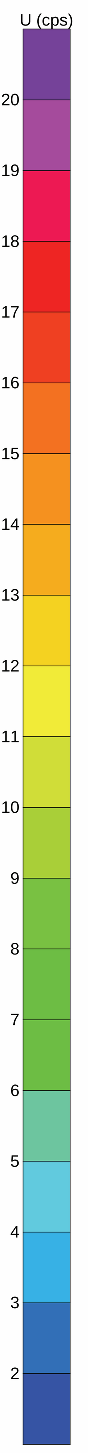
Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol
Depth is greater than: · 15 m; : 30 m; ⋮ 45 m; ⋮ 60 m
Inphase and Quadrature of coaxial coil is greater than: . 5 ppm; .. 10 ppm; ... 15 ppm; .... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence



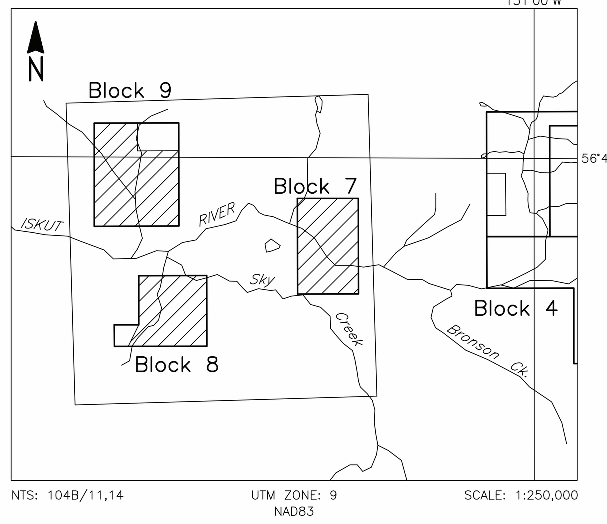
FLIGHT LINES WITH EM ANOMALIES

13020 < 2
Flight number
Flight direction
Flight line number
11020: Reflight Number; Line Number; Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

————	100 cps
————	20 cps
————	4 cps
— — — —	2 cps
(ellipse)	low

LOCATION MAP



NTS: 104B/11,14 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCKS 7–9, B.C.

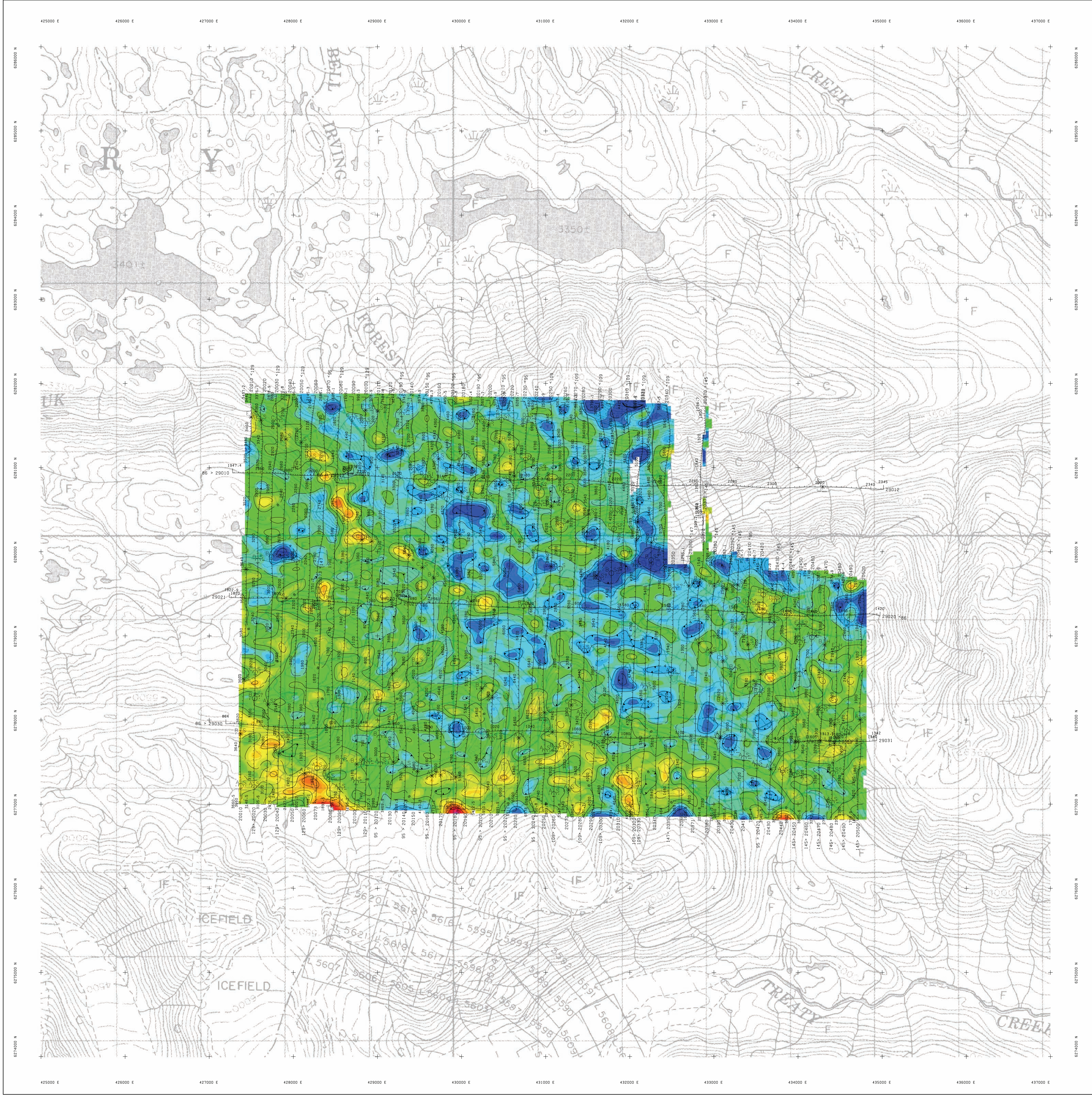
RADIOMETRIC URANIUM COUNTS

FUGRO DIGHEM V/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

0 1 2 Km
0 1 Mi
Scale 1:20 000

FUGRO AIRBORNE SURVEYS



TECHNICAL SUMMARY

Navigation . . . . Differentially–corrected GPS
Data reduction grid interval . . . . 38 metres
Terrain clearance . . . . Helicopter, Spectrometer 57 m
Electromagnetic sensor 30 m
Magnetometer 30 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V
Spectrometer GR820

Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

Th (cps): 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◒	20–50 siemens
4	◔	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier; Interpretive symbol; Depth is greater than: · 15 m, : 30 m, ⁝ 45 m, ⁞ 60 m; Inphase and Quadrature of coaxial coil is greater than: . 5 ppm, .. 10 ppm, ... 15 ppm, ... 20 ppm

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

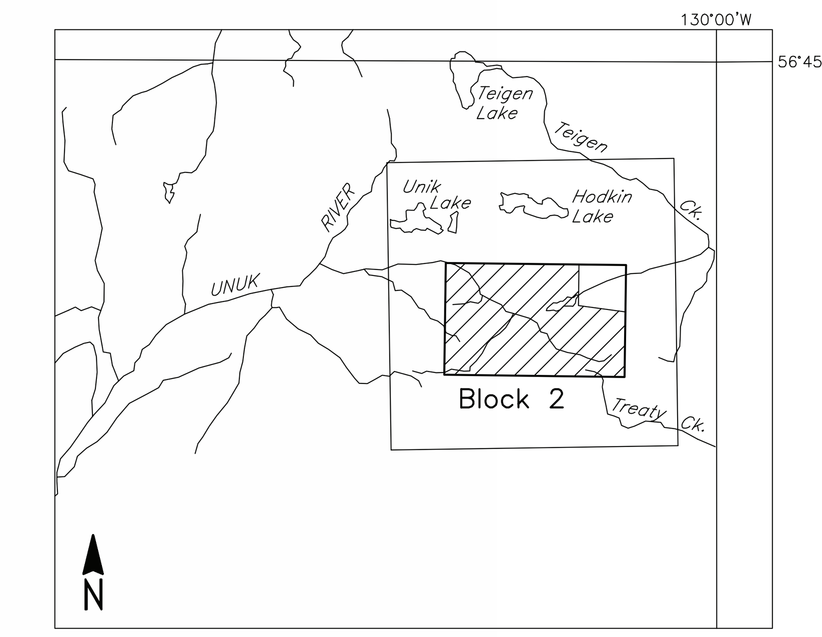
FLIGHT LINES WITH EM ANOMALIES

Flight number
Flight direction
Flight line number
11020: Reflight Number, Line Number, Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CONTOUR INTERVALS

────	100 cps
────	20 cps
────	4 cps
— — —	2 cps
⬭	low

LOCATION MAP



NTS: 104B/9 UTM ZONE: 9 NAD83 SCALE: 1:250,000

HATHOR EXPLORATION LIMITED
ESKAY AREA BLOCK 2, B.C.

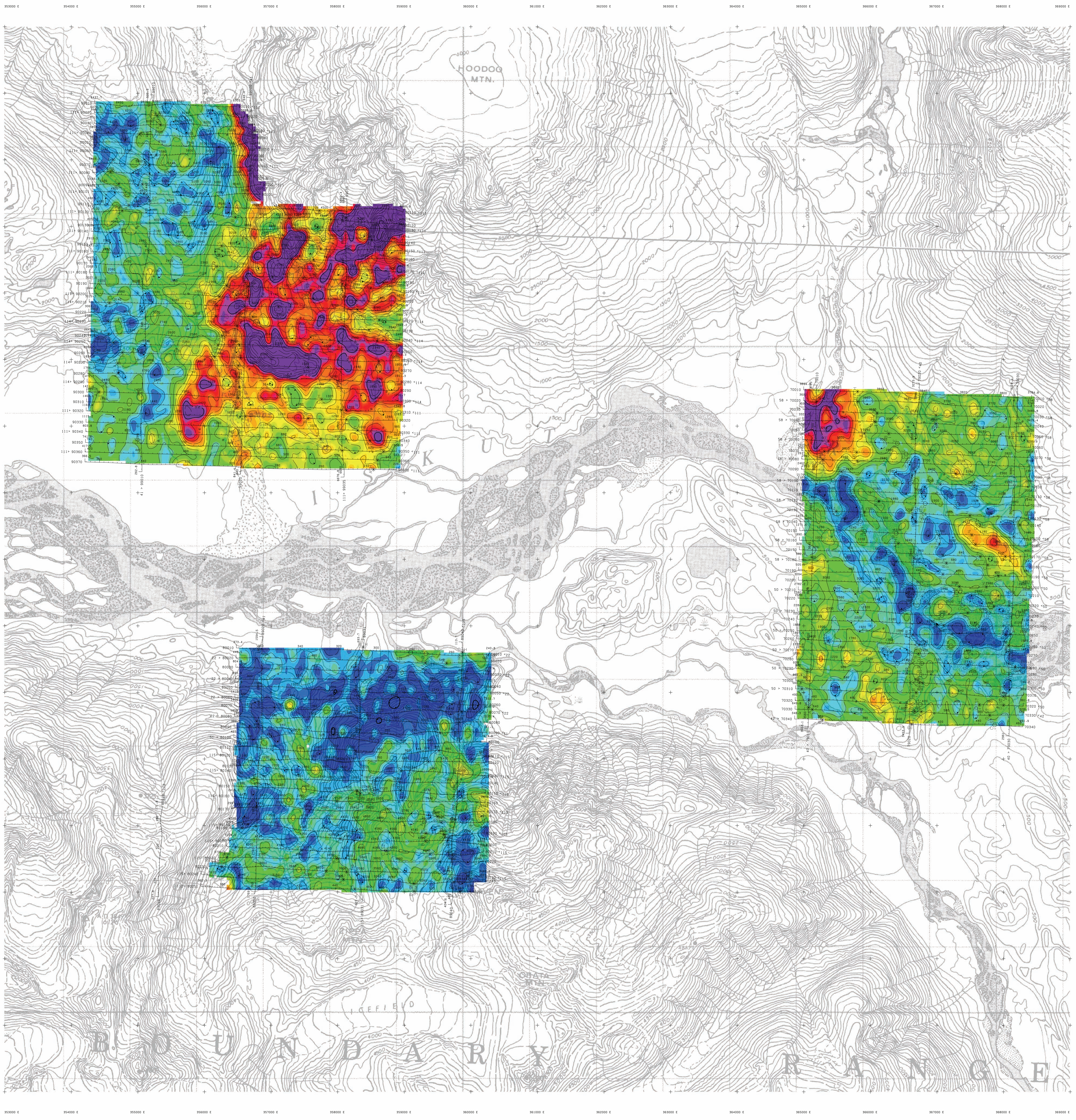
RADIOMETRIC THORIUM COUNTS

FUGRO DIGHEM V/RAD SURVEY	NTS: 104B/9	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

Scale 1:20 000 (0 – 1 – 2 Km; 0 – 1 Mi)

FUGRO AIRBORNE SURVEYS



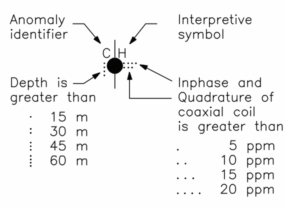
TECHNICAL SUMMARY

Navigation	Differentially-corrected GPS
Data reduction grid interval	38 metres
Terrain clearance	Helicopter, Spectrometer 57 m Electromagnetic sensor 30 m Magnetometer 30 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Cesium / 0.01 nT
Electromagnetic system	DIGHEMV
Spectrometer	GR820

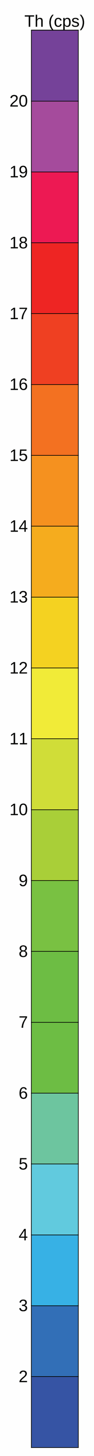
Frequency	Sensitivity	Coil Orientation
1000 Hz	.06 ppm	Vertical coaxial
5500 Hz	.12 ppm	Vertical coaxial
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

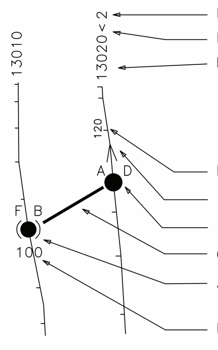
Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
5	◓	20–50 siemens
4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly



Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence



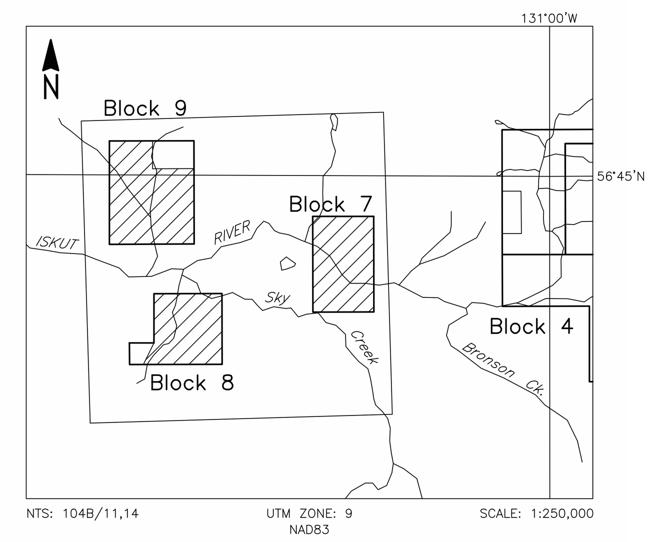
FLIGHT LINES WITH EM ANOMALIES



CONTOUR INTERVALS

(heavy line)	100 cps
(medium line)	20 cps
(thin line)	4 cps
(dashed line)	2 cps
(closed contour with ticks)	low

LOCATION MAP



HATHOR EXPLORATION LIMITED

ESKAY AREA BLOCKS 7–9, B.C.

RADIOMETRIC THORIUM COUNTS

FUGRO DIGHEMV/RAD SURVEY	NTS: 104B/11,14	GEOPHYSICIST:
DATE: OCTOBER, 2006	JOB: 06041	SHEET: 1

Fugro Airborne Surveys

Scale 1:20 000 (0 – 1 – 2 Km; 0 – 1 Mi)

FUGRO AIRBORNE SURVEYS