

# Report on a Helicopter-Borne Gamma Ray Spectrometer and Magnetic Gradiometer Survey



**Aeroquest Job # 05039**

**ROK Property**

Iskut Area, British Columbia  
NTS 104H

For



701-675 Hastings Street West,  
Vancouver, BC, V6B 1N2

by

** AEROQUEST LIMITED**

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January, 2006

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### 1.2. Appendices

- Appendix 1: Survey Block Co-ordinates
- Appendix 2: Description of Database Fields
- Appendix 3: Mining Claim Information

### 1.3. List of Maps (1:20,000)

The report includes a single 1:20,000 map plate containing four geophysical data products listed below:

#### PLATE 1

- Top Left Panel: Coloured Total Magnetic Intensity (TMI) with line contours.
- Top Right Panel: Coloured Vertical Magnetic Gradient (VG) with line contours.
- Bottom Left Panel: Gamma Ray Spectrometer coloured Total Count (TC) with line contours.
- Bottom Right Panel: Gamma Ray Spectrometer coloured Equivalient Thorium to Potassium Ratio (eTh/K).

## 2. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Firesteel Resources Inc. on the ROK Property, Stikine Region, northwestern British Columbia. The first principal geophysical sensor is Aeroquest's new TRI-DIRECTIONAL magnetic gradiometer system which employs four (4) optically pumped Potassium sensors. The second principal sensor was the Aeroquest's Airborne Gamma Ray Spectrometer (AGRS) system, which utilizes as four downward looking NaI crystals used as the main gamma-ray sensors and one upward looking crystal for monitoring non-geologic sources. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, digital video acquisition system, and a base station magnetometer.

The airborne survey was flown at 200 m line spacing with a total survey coverage of 611.4 line-km. The survey flying described in this report took place on October 13<sup>th</sup> - 14<sup>th</sup>, 2005.

This report describes the survey logistics, the data processing, presentation, and provides a brief interpretation of the results.

## 3. SURVEY AREA

The ROK Property is situated in mountainous terrain in northwestern British Columbia approximately 195 km North of Stewart, B.C. and 8 km south of the town of Iskut (Figure 1). Access is via helicopter or truck from Highway 37 along a poorly maintained road that follows the north shore of Ealue Lake. Figure 2 shows the recorded survey flight path. The survey block boundary coordinates are tabulated in Appendix 1. The local geology is presented in Figure 3. The mining claims covered by this survey (partially or fully) and owned by Firesteel Resources is tabulated in Appendix 3.

The helicopter and survey crew were based at the Iskut Motor Inn, located on Highway 37 just north of the survey block. Primary installation of the geophysical equipment in the helicopter was carried out at the Pacific Western Helicopter base in Prince George, B.C. The gradiometer bird was transported by truck from Milton, ON, and installation was completed at the Iskut Motor Inn base.



Figure 1. Regional location map of the project area

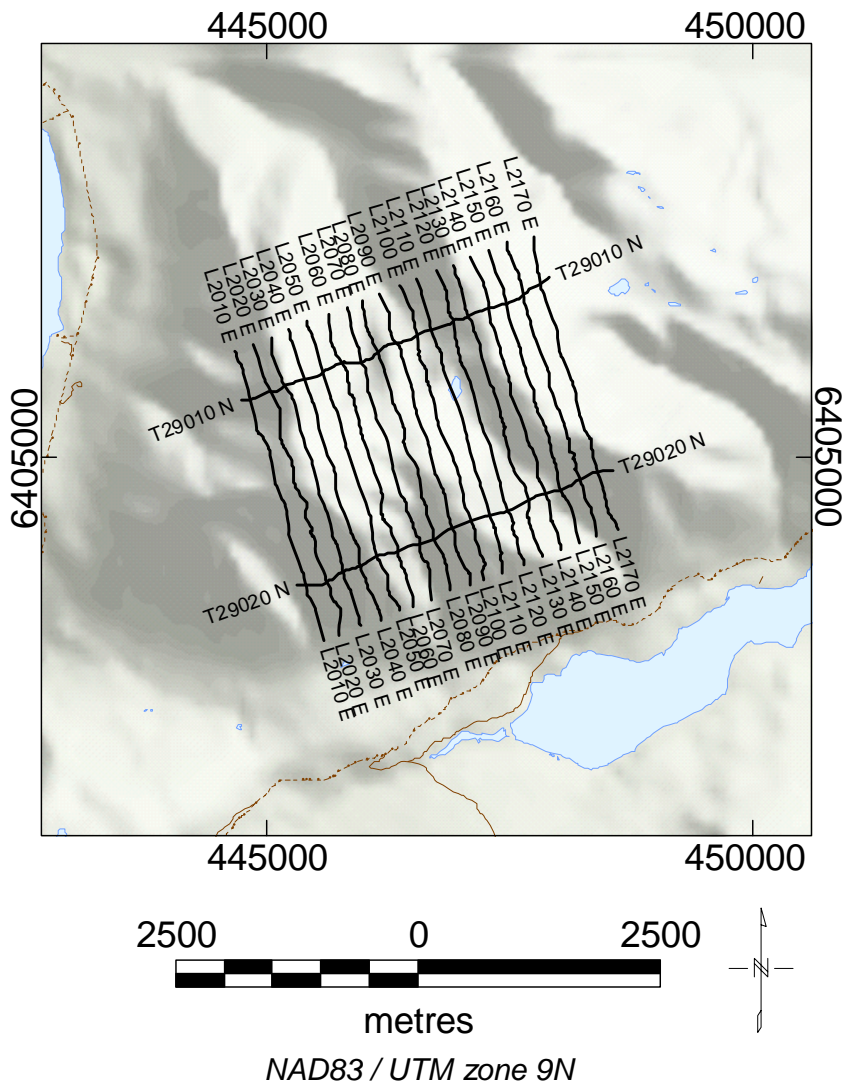


Figure 2. ROK Area survey blocks showing surveyed flight path

#### 4. GEOLOGICAL SETTING AND PREVIOUS WORK

(From Firesteel Resources Web site <http://www.firesteelresources.com>, January, 2006)

“The prospect is one of a large number of porphyry copper-gold prospects contained within or adjacent to alkalic or sub-alkalic sub-volcanic intrusive complexes in coeval volcanic and sedimentary rocks of late Triassic and early Jurassic age. This is the setting for several major copper-gold deposits and prospects in the Quesnel and Stikine Terranes throughout the length of British Columbia, from

Copper Mountain in the south to Stikine Copper (Galore Creek in the northwest. While the deposits and occurrences in the Stikine – Kinaskan Lake area have some differences from other deposits of the “alkaline porphyry” clan, they are clearly part of the family.

The ROK is an Alkalic Type porphyry prospect. It is one on many similar prospects that occur in the northern portion of the province where the mineralization contains significantly elevated gold values relative to copper. Examples include Red Chris, Copper Canyon, Galore Creek, GJ and Kemess. The Red-Chris prospect is the closest – being located 10 kilometres to the southeast. This deposit has a resource in excess of 500 MT @ 0.35% Cu and 0.47 g/t Au, including a higher-grade core containing 120MT @ 0.58% Cu and 0.47 g/t Au. Past drilling at the GJ prospect has yielded a number of significant gold-copper intersections including; 76 meters @0.36% copper and 1.4 g/t gold as well as 68 meters @ 0.70% copper and 1.9 g/t gold. The Galore Creek deposit (100 km to the northwest) hosts a resource of 284 MT @ 0.67% Cu. These alkalic deposits are structurally controlled to the extent that emplacement of the coeval intrusions is commonly related to fault structures.

A significant exploration program was carried out this year at the Red Chris Property and the resources were increased. The GJ porphyry copper-gold prospect (owned by Canadian Gold Hunters) will be drilled in 2004.

A complex pile of intermediate volcanic rocks belonging to the Triassic Stuhini Group primarily underlies the Property. Lying within and apparently conformable with the volcanic rocks is a relatively thin succession of tuffaceous clastic rocks and interbedded limestone. Several irregular stocks of alkalic to sub-alkalic monzonite have intruded the supracrustal package. These are likely contemporaneous and coeval with the pre-Toodoggone volcanic pile; in fact they are classic sub-volcanic intrusives. The main type of mineralization comprises chalcopyrite and pyrite and gold, which are related to alteration and quartz veining which, in many places, form intense stockworks.

The ROK porphyry copper – gold prospect has been intermittently explored since the late 1960’s. Work on the property over the years has included widespread geological mapping and geochemical surveys, grid-based geophysics (magnetics, IP, and VLF-EM), extensive surface trenching in 1991 (18 trenches totalling 1,184 m in length), percussion drilling and a total of 1,792 meters of diamond drilling in 18 holes, completed in campaigns in 1976, 1980, 1990 and 1991. No work has been done since 1991.

The trenching and diamond drilling have, for the most part, tested two zones of quartz-chalcopyrite stockwork mineralization. Several intervals of impressive grade were obtained in these trenching and drilling programs.

A compilation of all of the exploration results suggests that there is potential for discovery of a zone of stockwork mineralization below the area lying between the two known mineralized zones. The I.P. surveys have delineated several large and strong anomalies between these two zones. Significantly, these anomalies are present at depth below the cover of Triassic volcanic flow and tuffs as well as the Lower Jurassic “Toodoggone Volcanics. It is also possible that one or more bodies of skarn mineralization may occur at depth to the north and east of the Main Zone. The skarns would be related to the contact of the dioritic intrusive stocks with the westward dipping limey and argillaceous sedimentary strata.



Additional potential exists at an open, untested Cu/Au soil anomaly towards the southeast portion of the ROK property. High grade sheeted quartz veins could also be present on the property.

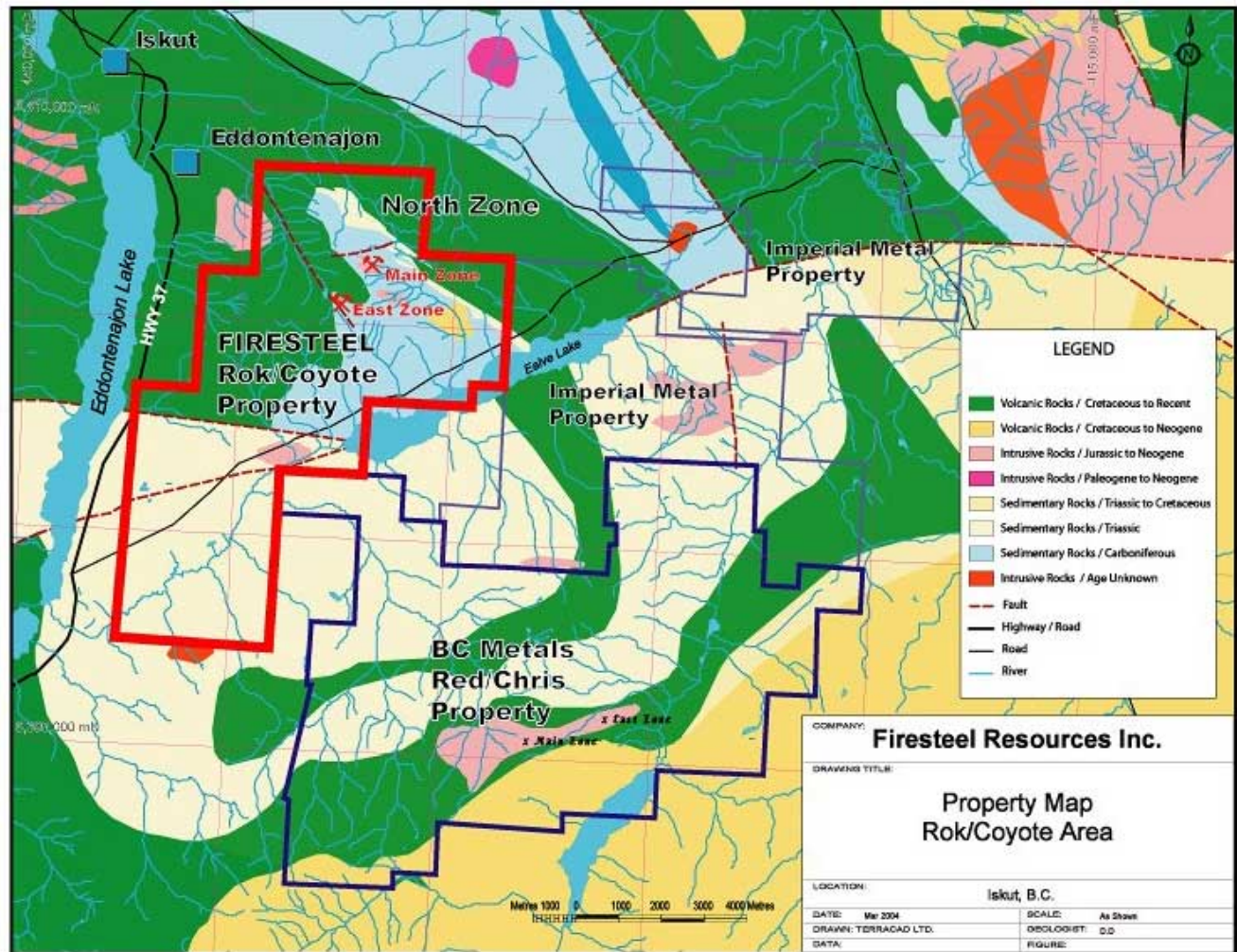


Figure 3. ROK/Coyote property geology

These can be circular or tabular, pipe-like zones that are much richer in gold and copper than typical disseminated sulphide mineralization. At ROK one of these zones has been identified near the Main Zone. Given the significant elevation range between the Main Zone and some of the lower, talus covered areas, particularly the area with elevated copper and gold in soil anomalies, the potential for finding more of the sheeted quartz veins is good.

A two-stage program of I.P. surveying and diamond drilling is recommended in the general area between the South and Main zones to test for a large, buried coherent mass of “porphyry-style” copper-gold mineralization. The IP and soil geochemical coverage should be expanded to the east and the gold/copper skarn potential in the vicinity of the outcropping limestone units should be assessed.”

## 5. SURVEY SPECIFICATIONS AND PROCEDURES

### 5.1. Flight Path and Survey Coverage Specifications

The general survey flying specifications are summarised in the following table:

Survey / Map Area Name	Line Spacing (m)	Line/Tie Direction (azimuth)	Survey Coverage (line-km)	Date(s) Flown (2005)
ROK Property	200	343 / 69	611.4	<b>October 13<sup>th</sup> - 14<sup>th</sup></b>

The total survey coverage (611.4 km) was calculated by adding up the survey and control (tie) line lengths as presented in the final Geosoft database, after windowing the datasets to the survey block outlines. Two tie (control) lines were flown approximately perpendicular to the survey line direction at a spacing of 2 km.

The nominal gradiometer bird terrain clearance was 40 m but was periodically higher or lower over due to mountainous terrain and the capability of the aircraft. Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.05 second for the gradiometer. The 20 samples per second translates to a gradiometer reading about every 75 centimeters to 1.5 metres along the flight path. The gamma-ray spectrometer, radar altimeter, and GPS determined position were recorded at a 1 second sampling interval.

### 5.2. Navigation

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

## 6. AIRCRAFT AND EQUIPMENT

### 6.1. Aircraft

A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter - registration C-GBKV was used as survey platform. The helicopter was owned and operated by Pacific Western Helicopters, Prince George, BC. Installation of the gamma ray spectrometer and ancillary equipment was carried out by AeroQuest Limited at the Pacific Western helicopter base in Prince George. The aircraft was then ferried to the survey base (Iskut Motor Inn, Iskut BC). The gradiometer bird was transported to the survey base by truck and assembled. The survey aircraft was flown at a nominal terrain clearance of 55 m.



Figure 4. Survey helicopter C-GBKV (Pacific Western) at the Iskut Motor Inn survey base.

## 6.2. Magnetic Gradiometer System

The Aeroquest TRI-DIRECTIONAL magnetic gradiometer system employs four (4) GSMP-30<sup>a</sup> (optically pumped Potassium) sensors in a 3D sensor geometry (Figure 5). This allows for measurements of the total field, vertical gradient and horizontal gradients both along and cross lines. The magnetic data is collected at a rate of 20Hz, and recorded by a dedicated Windows-based computer. The specifications of this system are as follows:

- 0.001 nT/ $\sqrt{\text{Hz}}$  sensitivity
- +/- 0.1 nT absolute accuracy
- 5,000 nT/m gradient tolerance
- 10,000 - 125,000 nT dynamic range
- 10° to 80° and 100° to 170° orientation range
- Heading error less than 0.1 nT combined for sensor spins on all
- All orientations from 10° to 80° and 360° full rotation about axis
- 2 metre standoffs between axis and sensors





Figure 5. Magnetic Gradiometer Bird.



Figure 6. The gradiometer bird (A), and GPS antenna (B). The AGRS system is located in the helicopter cabin.

### **6.3. Airborne Gamma Ray Spectrometer (AGRS) System**

The Aeroquest AGRS system consists of a GRS410 sensor pack (Figure 7), which is installed on the floor of the helicopter cabin and a acquisition system designed and manufactured by Pico Envirotec.

The system has 4 downward looking NaI crystals used as the main sensors and 1 upward looking crystal for monitoring non-geologic sources. The system features automatic peak detection and real-time calibration to ensure spectrum stability and a high quality final product. The full spectrum is recorded (256 or 512 channels) to allow for subsequent noise reduction processing such as NASVD. The data are processed to produce the standard IAGA ROI channels – Total Count, Potassium, Uranium and Thorium. The potassium, and equivalent uranium and thorium concentrations are also derived and ratios of these concentrations are computed to enhance the interpretation of the survey results.



Figure 7. Aeroquest AGRS system. A. AGRS Sensor (Crystal Pack), B. Data acquisition computer.

#### 6.4. Magnetometer Base Station

An integrated GPS and magnetometer base station is set up to monitor and record the diurnal variations of the Earth's magnetic field. The sensor, GPS and magnetic, receiver/signal processor is a dedicated unit for purposes of instrument control and/or data display and recording. The unit uses a common recording reference using the GPS clock.

The base station was a Geometrics G858 optically pumped Caesium gas magnetometer coupled with a Garmin GPS18 GPS sensor. Data logging and magnetometer control was provided by the unit's internal software. The logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.01 nT. The sensor was placed on a tripod away from potential noise sources near the camp. A continuously updated profile plot of the magnetometer value is available for viewing on the unit's display.

#### 6.5. Radar Altimeter

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

## **6.6. Video Tracking and Recording System**

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

## **6.7. GPS Navigation System**

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on the east and west coasts, collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 9N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

## **7. PERSONNEL**

The following AeroQuest personnel were involved in the project:

- Manager of Operations: Bert Simon
- Field Data Processor: Sean Scrivens, Matthew Pozza
- Field Operator: Troy Will
- Data Interpretation and Reporting: Jonathan Rudd, Matthew Pozza, Marion Bishop

The survey pilot, Rick Clawson and AME, Bruce Gaines were employed directly by the helicopter operator – Pacific Western Helicopters Ltd.

## 8. DELIVERABLES

The report includes a single 1:20,000 map plate containing four geophysical data products listed below:

### PLATE 1

- Top Left Panel: Coloured Total Magnetic Intensity (TMI) with line contours.
- Top Right Panel: Coloured Vertical Magnetic Gradient (VG) with line contours.
- Bottom Left Panel: Gamma Ray Spectrometer coloured Total Count (TC) with line contours.
- Bottom Right Panel: Gamma Ray Spectrometer coloured Equivalient Thorium to Potassium Ratio (eTh/K).

All the maps show flight path trace and survey line numbers and claim boundaries/numbers. Topographic line contours with a shaded background and lake/ river outlines are overlain for reference on all maps.

The geophysical profile data is archived digitally in Geosoft GDB binary format databases. A description of the contents of the individual channels in the database can be found in Appendix 3. A copy of this digital data is archived at the Aeroquest head office in Milton.

## 9. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software, and Geosoft Oasis montaj software. Maps were generated using a 48-inch wide Hewlett Packard 4000ps plotter.

### 9.1. Base Map

The geophysical maps accompanying this report are based on positioning in the NAD83 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 9 north. A summary of the map datum and projection specifications is as follows:

- Datum: NAD83
- Ellipse major axis: 6378137m eccentricity: 0.08181919084
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 9 N
- Central Scale Factor: 0.9996
- False Easting, Northing: 500,000m, 0m

The base map contains topographic and land feature data derived from 1:20,000 For reference, the latitude and longitude in NAD83 are also noted on the maps. The shaded topographic background was produced from NASA SRTM data.



## 9.2. Flight Path & Terrain Clearance

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter.

## 9.3. Magnetic Gradient Data

Merging of the recorded magnetic data with the various recorded ancillary data was done post flight using the GPS time stamp as a reference. Prior to any leveling the magnetic data was subjected to a lag correction of -0.05 seconds and a spike removal filter. Then the magnetic gradients profile channels were produced (Vertical, Horizontal, and Total gradient) from the total-field sensor readings. The corrected profile data were interpolated on to a grid using a random grid technique (Minimum Curvature Gridding with tension) with a grid cell size of ¼ of the line spacing. The production of the total-field grid was carried out by first applying a correction for diurnal variations using the magnetic base station, and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied.

## 9.4. Radiometric Data

### Equipment and General Adherence to IAEA Standards

Aeroquest Limited generally adopts the standards for airborne gamma-ray spectrometry (the radiometric method) as laid out in the IAEA Technical Report 323 – Airborne Gamma-Ray Spectrometry Surveying.

### Spectral Calibration

When calibrated (with thorium source about once a year) linearity of the each detector is measured and linearity correction coefficients are calculated. When operating in real time (collecting data), the linearity of each detector is mathematically corrected for each measurement. Individual detector tracking (tuning) and linearity correction provide better fit of the individual spectra that are being summed and therefore a sharper (better resolution) spectrum is obtained.

Calibration of the 5 detectors was carried out on April 27, 2005 as follows:

Crystal	S/N	Cs resolution (%)
1	SAM359	7.9
2	SAM358	8.4
3	SAM355	8.4
4	SAM357	8.4
5	SAM356	9.1

### **Data Quality Assurance and Control**

The spectrometer data are referenced to the other ancillary data sets using the Pico Envirotec data acquisition system (Figure 7). After each flight, preliminary ROI channels are generated and profiles are then plotted from the digital data to check for any missing data, spikes or data corrupted by other noise sources. Where necessary, the data are corrected or flagged for re-flight depending on the severity or duration of the noise.

### **Dead-time Correction**

Generally, the first data reduction step for radiometric data is dead-time correction. Because the GRS-10 dead time is virtually nil, this correction is only applied where the total count rates are extremely high. Dead-time correction is made to each window using the expression  $N=n/(1-T)$  where N is the corrected count; n is the raw recorded count; and T is the dead-time.

### **Filtering to Prepare for Background Corrections**

The radar altimeter data are filtered in order to ensure that no noise sources from the altimeter data are introduced to the radiometric data processing. The upward looking data are also filtered to improve the count statistics. A typical filter width ranges from 10 to 20s. In order to establish radon background levels from the upward-looking detector data, temporary heavily filtered upward and downward looking uranium and downward looking thorium data are utilized. The original unfiltered data are, of course, retained. All filtering will be carried out in consultation with the Client Representative if requested by the Client.

### **Cosmic and Aircraft Background**

Cosmic and aircraft background expressions are determined for each spectral window as described in chapter 4 of the IAEA Technical Report 323. The general form of these expressions is  $N = a + bC$ , where N is the combined cosmic and aircraft background for each window; a is the aircraft background in the window; C is the cosmic channel count; and b is the cosmic stripping factor for the window.

The expressions are evaluated for each ROI window for each sample and used as a subtractive correction for the data.

### **Radon Background**

Correction of the data for variations in background due to radon is a multi-step process. First, test flights at various elevations over water are carried out in the field to establish the contribution of atmospheric radon to the ROI windows. A least squares analysis of the data from these test flights yields the constants for equations 4.9 to 4.12 (IAEA Report 323). Second, the response of the upward looking detector to radiation from the ground is established. Here a departure from the IAEA Report has been recommended by Grasty and Hovgaard (1996). The expression for the radon component in the downward looking uranium window is given by  $U_r = (u - a_1U - a_2T + a_2bT - bu)/(a_u - a_1 - a_2aT)$  (see Eq. 4.3 – IAEA 323) where,  $U_r$  is the radon background detected in the downward U window; u is the measured count in the upward uranium window; U is the measured count in the downward uranium window; T is the measured count in the downward thorium window;  $a_1$ ,  $a_2$ ,  $a_u$  and  $aT$  are proportionality factors; and  $b_u$  and  $bT$  are constants determined experimentally. Using  $a_1$  or  $a_2$  (see above) in this equation will result in a good estimate of  $U_r$  permitting correction of the other ROI windows.

Survey altitude test data will be collected and used to establish atmospheric background and calibrate the upward and downward looking detector systems. Variations in count rates due to soil moisture content and altimeter variations can largely be overcome by a normalization procedure using the thorium count. The procedure correlates the thorium count to the uranium count assuming the contribution to each ROI from the ground is proportional.

### **Computation of Effective Height Above Ground Level**

Radar altimeter data are used in adjusting the stripping ratios for altitude and to carry out the height attenuation corrections. They are then converted to effective height ( $h_e$ ) at STP by the expression  $h_e = (h * 273.15)/(T + 273.15) * (P/1013)$ , where  $h$  is the observed radar altitude;  $T$  is the temperature in degrees C; and  $P$  is the barometric pressure in mbars

### **Compton Stripping Correction**

The stripping ratios  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $a$ ,  $b$  and  $g$  are determined during tests over calibration pads. The principal ratios  $a$ ,  $\beta$  and  $g$  should be adjusted for temperature, pressure and altitude (above ground) before stripping is carried out. These stripping ratios are used to remove the contribution in each of the three ROI windows from higher energy sources, leaving only the contribution from potassium, uranium and thorium.

### **Altitude Attenuation Correction**

The altitude attenuation correction corrects the data in each of the ROI windows for the effects of altitude. The count rates decrease exponentially with altitude and therefore the counts are corrected to a constant altimeter datum at the nominal survey height of 30m.

### **Apparent Radioelement Concentrations**

The corrected count rate data can be converted to estimate the ground concentrations of each of the three radioelements, potassium, uranium and thorium. The procedure assumes an infinite horizontal slab source geometry with a uniform radioelement concentration. The calculation assumes radioactive equilibrium in the U and Th decay series. Therefore the U and Th concentrations are assigned as equivalent concentrations using the nomenclature  $eU$  and  $eTh$ .

An estimate of the air absorbed dose rate can be made from the apparent concentrations,  $K\%$ ,  $eU$  ppm and  $eTh$  ppm.

### **Computation of Radioelement Ratios**

Standard ratioing of the three radioelements ( $eU/eTh$ ,  $eU/K$  and  $eTh/K$ ) can be carried out and presented in profile or plan map form. In order to ensure statistical confidence in generating these ratios, we generally take the following precautions:

- Reject all data point where the apparent potassium concentration is less than 0.25% as these measurements are likely taken over water.
- Carry out cumulative summing along the survey line of each radioelement, rejecting areas where the summation does not exceed a certain threshold value (usually 100 counts for both numerator and denominator).
- Compute the ratios using the cumulative sums.

## 10. RESULTS AND INTERPRETATION

The survey was successful in mapping the magnetic and radioelement response of the geology throughout the survey area. The following is a brief summary and interpretation of the results. For a detailed interpretation of the survey data please contact Aeroquest Limited.

### 10.1. Magnetic Response

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

The total magnetic intensity data (PLATE 1- top left panel) shows the magnetic response ranges from lows of approximately 56860 nT to highs of 58560 nT, with an average background of 57500 nT. The most prominent feature of the total field map is a broad oblate magnetic highs that trends northwest across the survey block and generally parallels the mountainous terrain. The highest magnetic response is observed in the extreme northeast corner of the survey block and likely defines an intrusive or volcanic unit. Immediately to the west of this feature (L21150) is a discrete magnetic response that may be reflecting an isolated intrusion. No significant radiometric response is observed over this feature, however a subtle high in the eTh/K ratio map is evident. Further to the south along L21150 another magnetic high is encountered that trends east northeast. The lateral extent of this feature is enhanced in the vertical magnetic gradient map (Plate 1 - top right map panel). The vertical magnetic gradient data provides an enhanced view of subtle magnetic variation in the near surface bedrock.

### 10.2. Radiometric Response

The radiometric data indicate the apparent concentrations of potassium, uranium, and thorium in the rocks and soils at the surface. Because these elements are concentrated in the Earth's silicate crust, their concentrations tend to vary for different lithologic materials. The radiometric data therefore provide information on the lithologic characteristics and distribution of the overlying geologic materials. The depth of measurement is on the order of 30 cm and the circular area measured by the spectrometer has a diameter equal to approximately four times the altitude of the helicopter above the ground.

The Total Count map is presented in the bottom left panel of Plate 1 and shows a fairly quiescent radioactivity with slightly elevated counts along the south western edge of the survey block. The area of high counts is steeply with steep slopes in the topography and may be reflecting thinning overburden cover.

A thorium/potassium ratio map was selected for presentation in order to identify areas with possible potassic alteration associated with copper-gold mineralization (Plate 1 – Bottom Right Panel). Note that in this product areas of high potassium counts relative to thorium counts will appear as lows in the map. For this reason the colour scale on the map has been inverted from a standard presentation, with hot colours representing lows and cold colours representing highs. One possible zones of potassic alteration are visible in the southwest and north northwest of the survey block. The radioelement

response in the north northwest occurs north of a magnetic high (within a magnetic low). Other than this, the ratio maps do not show any obvious correlation to the magnetic responses in the survey area.

All of the magnetic and radioelement responses should be reviewed in conjunction with any available geological and geochemical information. Prioritization should be based on all available information.

Respectfully submitted,

Matt Pozza, M.Sc.  
Aeroquest Limited  
January, 2006

## APPENDIX 1 – SURVEY BLOCK CORNER COORDINATES

The approximate outline of the data collected for this project is defined in the following table. Positions are in NAD83 / UTM zone 9N.

Easting (m) Northing (m)

444700.4	6406039.0
447698.0	6407199.9
448616.6	6404339.5
445569.3	6403163.2

APPENDIX 2 - Description of Database Fields

Due to the greatly different sample rates of the magnetic and radiometric data in the survey (20Hz vs. 1Hz) they are presented as separate databases for efficiency. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

Database (05039\_ ROK\_Mag\_final.gdb):

Column	Units	Description
Line		Survey Line #
Flight		Helicopter Flight #
utctime	hh:mm:ss.s	UTC time
Distance	m	Distance from start of survey line
X	m	UTM Easting (NAD83)
Y	m	UTM Northing (NAD83)
ralt	m	radar altitude of aircraft
MagT	nT	Top sensor magnetic field reading
MagA	nT	Aft sensor magnetic field reading
MagL	nT	Left sensor, magnetic field reading
MagR	nT	Right sensor, magnetic field reading
Mag_3DAS	nT/m	3-D analytic signal (total magnetic gradient)
Mag_HG	nT/m	Horizontal magnetic gradient
Mag_VG	nT/m	Vertical magnetic gradient

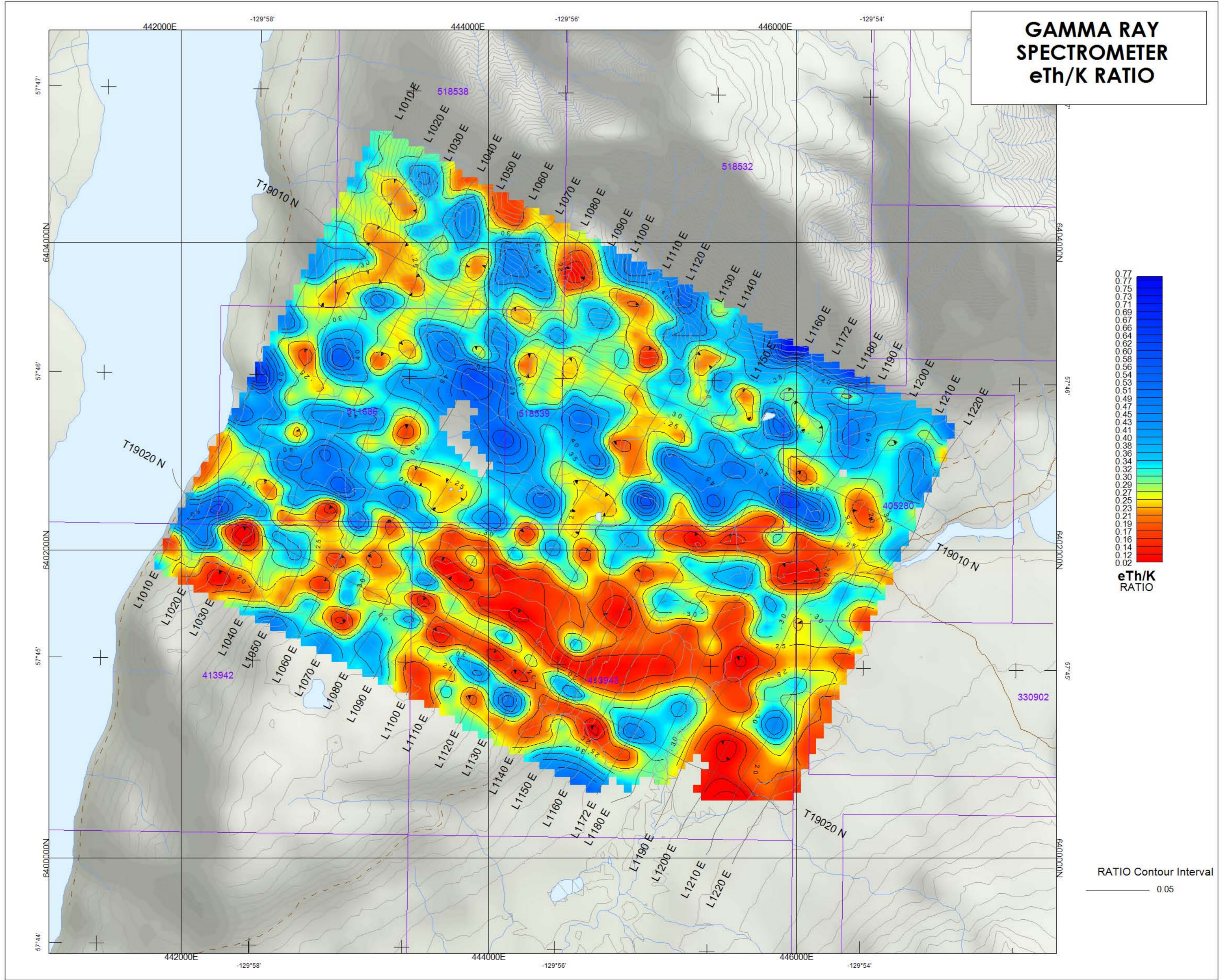
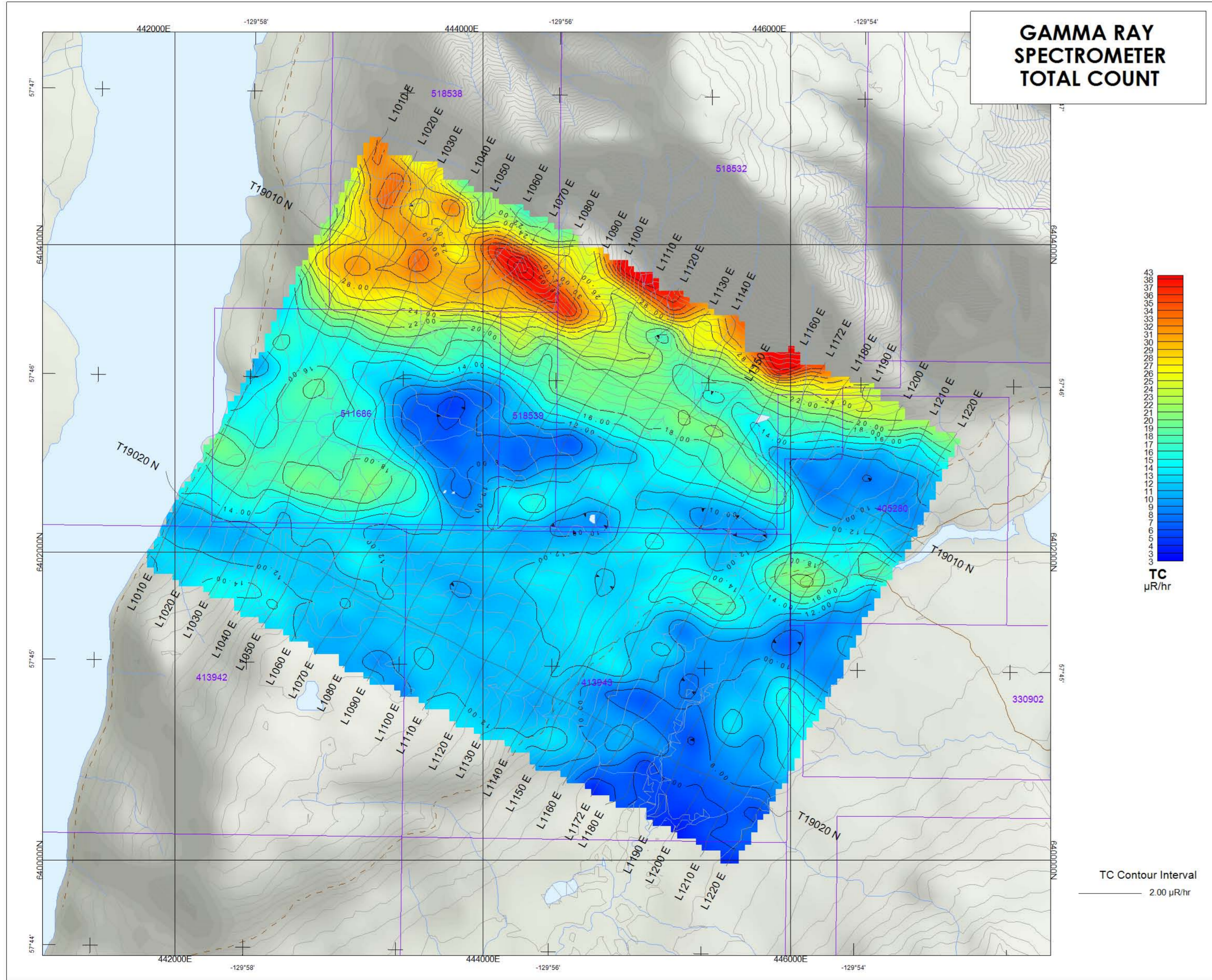
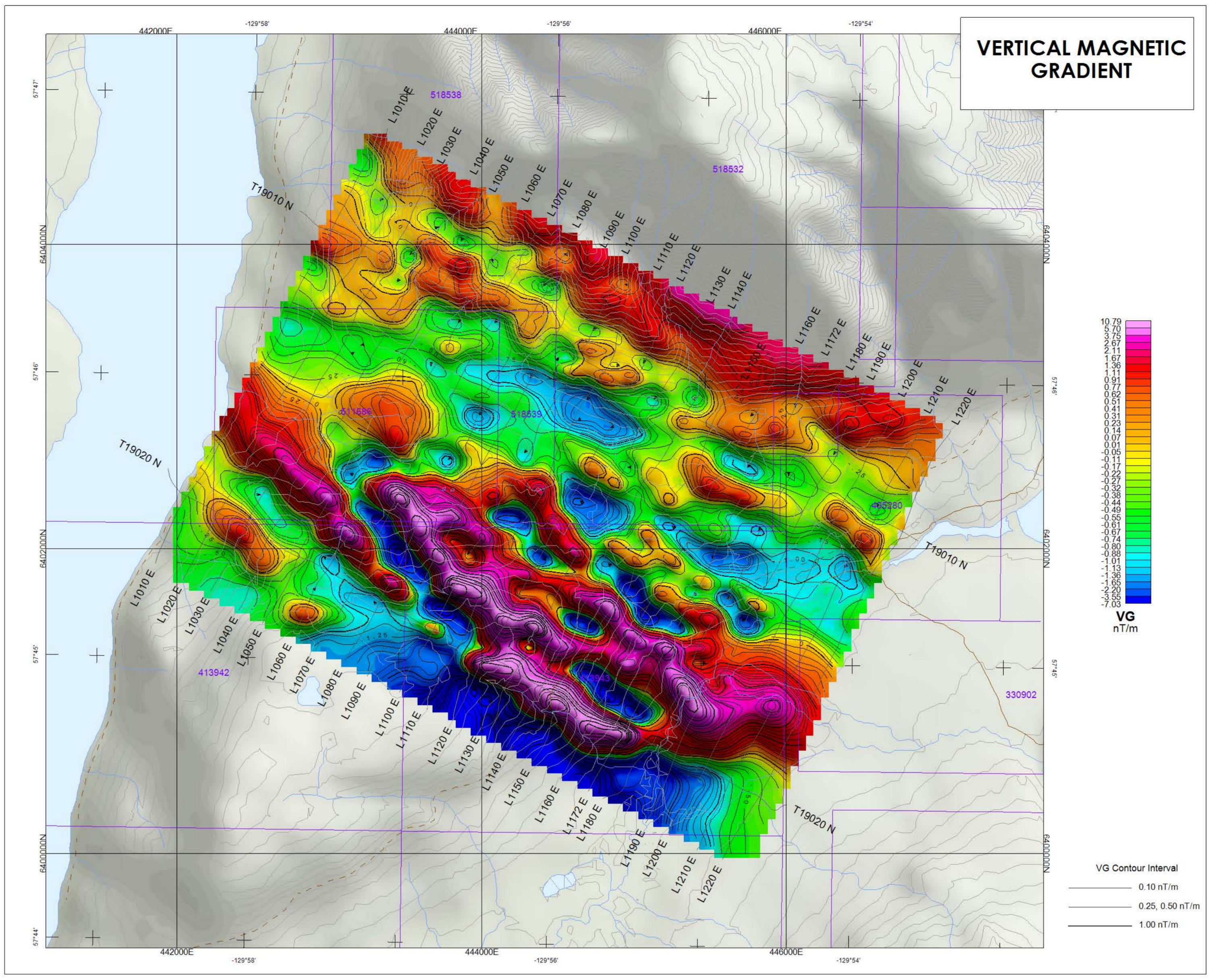
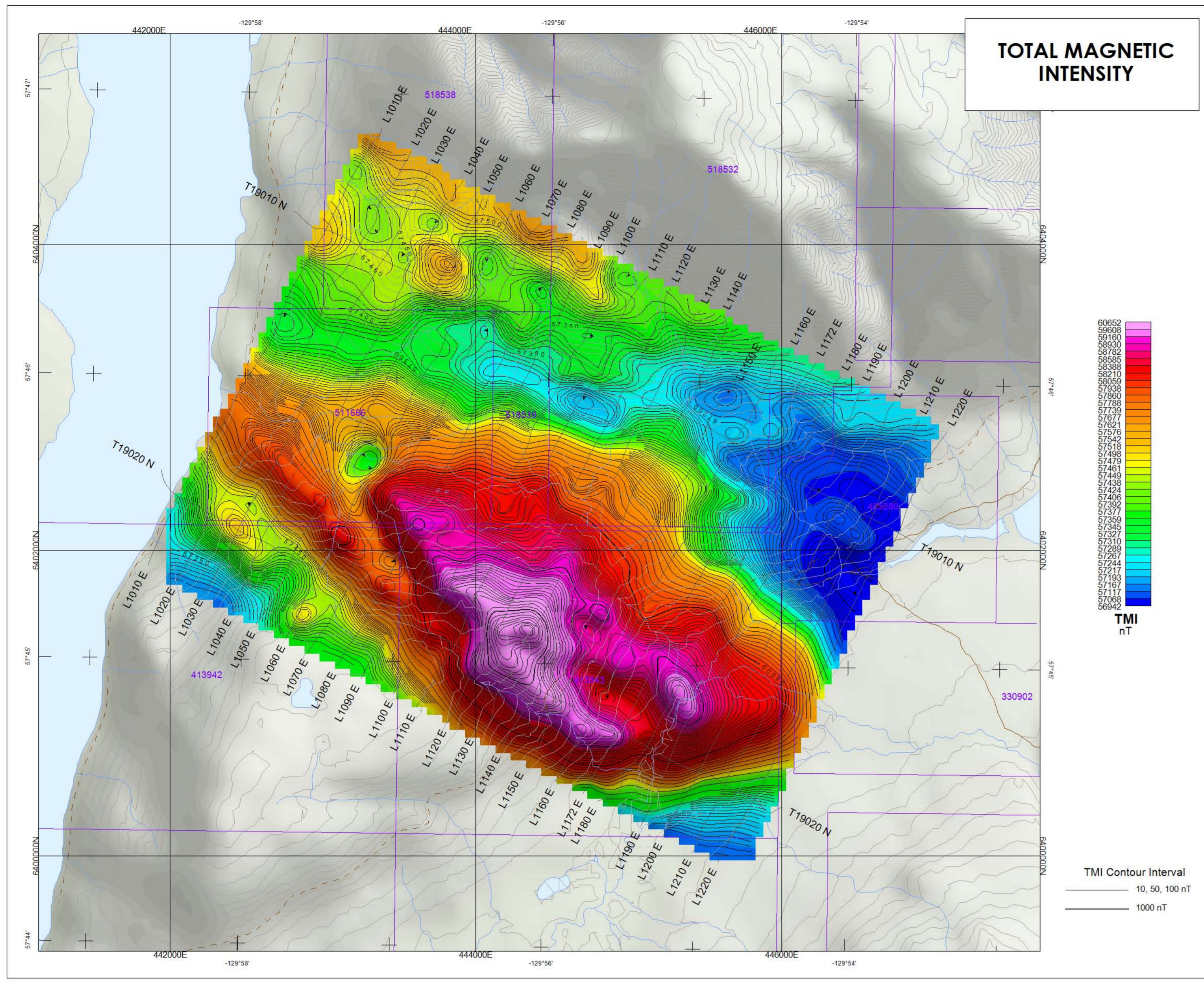
Database (05039\_ ROK\_Spec\_final.gdb):

Column	Units	Description
Line		Survey Line #
Flight		Helicopter Flight #
utctime	hh:mm:ss.s	UTC time
Distance	m	Distance from start of survey line
X	m	UTM Easting (NAD83)
Y	m	UTM Northing (NAD83)
ralt	m	radar altitude of aircraft
Balt	m	Barometric altitude of the aircraft
Galt_m	m	GPS altitude of the aircraft
dtm	m	digital terrain model
BaroT_deg	°C	Barometric air temperature
TC	µR/hr	AGRS Total Count
eTh	ppm	equivalent Thorium
eU	ppm	equivalent Uranium
K	%	Potassium ground concentration
eTh_K_ratio		Ratio of eTh to K

**APPENDIX 3 – MINING CLAIM INFORMATION**

Tenure Number	Claim Name	Owner	NTS	Mining Division	Area (ha)
405283	RMC 6	FIRESTEEL RESOURCES INC.	104H071	LIARD	500
405282	RMC 5	FIRESTEEL RESOURCES INC.	104H071	LIARD	400
518532		FIRESTEEL RESOURCES INC.	104H		949
518538	ISK1	FIRESTEEL RESOURCES INC.	104H		414
518539	ISK2	FIRESTEEL RESOURCES INC.	104H		51





Topographic data base was supplied by client  
Topo contours derived from N.A.S.A. SRTM (Shuttle Radar Topography Mission) data  
Inset data derived from Natural Resources Canada "Atlas of Canada Base Maps"

This map accompanies the technical report entitled "Report on a Helicopter-Borne Magnetic and Electromagnetic Survey, Coyote Project," by Aeroquest Limited, January 2006

Grid North  
NAD83-Zone9

Scale 1:10,000,000

**SURVEY SPECIFICATIONS:**  
 Survey flown: October 13-14, 2005  
 Traverse line spacing: 200 metres  
 Traverse line direction: NNE-SSW (28°)  
 Nominal bird height: 30 metres  
 Aircraft: Aerospatiale A-Star 350B2 (C-GBKv)  
**INSTRUMENTATION:**  
 Magnetic Gradiometer: 4 x GEM Systems GSMP-30 potassium vapour  
 Sensor Configuration: Triaxial towed bird  
 Sensitivity: 0.001nT/rHz  
 Gamma Ray Spectrometer: PicoEnvirotech AGIS GRS 10-5  
 Downward looking crystals vol. - 16.8L (1024cu in)  
**NAVIGATION:**  
 Navigation: Differential Global Positioning System (DGPS)  
 Navigation equipment: AGNAV with MID-TECH RX400p receiver  
 Radar Altimeter: Terra TRA3000TRI-30  
**DATA PROCESSING:**  
 Magnetics: diurnal, telline and micro-leveling corrections  
**POSITIONING:**  
 Datum: NAD83  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191  
**MAP PROJECTION:**  
 Projection: Universal Transverse Mercator  
 Central Meridian: 129°W (Zone 9)  
 Central Scale Factor: 0.9998  
 False Easting/Northing: 500,000m/0m

Scale 1:20,000

Firesteel Resources Inc.  
Stewart Area, British Columbia  
**Coyote Property**  
NTS 104H13, 104H12

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January 2006