

# ASSESSMENT WORK REPORT

## AIRBORNE MAGNETIC-RADIOMETRIC SURVEY REPORT ON QUO CLAIMS PROPERTY

AT DOYLE CREEK AREA

NTS Map Sheet No: 115J/10, 115J/11, 115J/14  
Latitude: 62°40' N Longitude: 139°03' W

Whitehorse Mining District  
YUKON TERRITORY

Work date: July 27, 2011 to Mar 15, 2012

Claims owner: Canadian Dehua Lvliang International Mines Group Inc.

By: Raymond Xie  
Date: Aug.20, 2012

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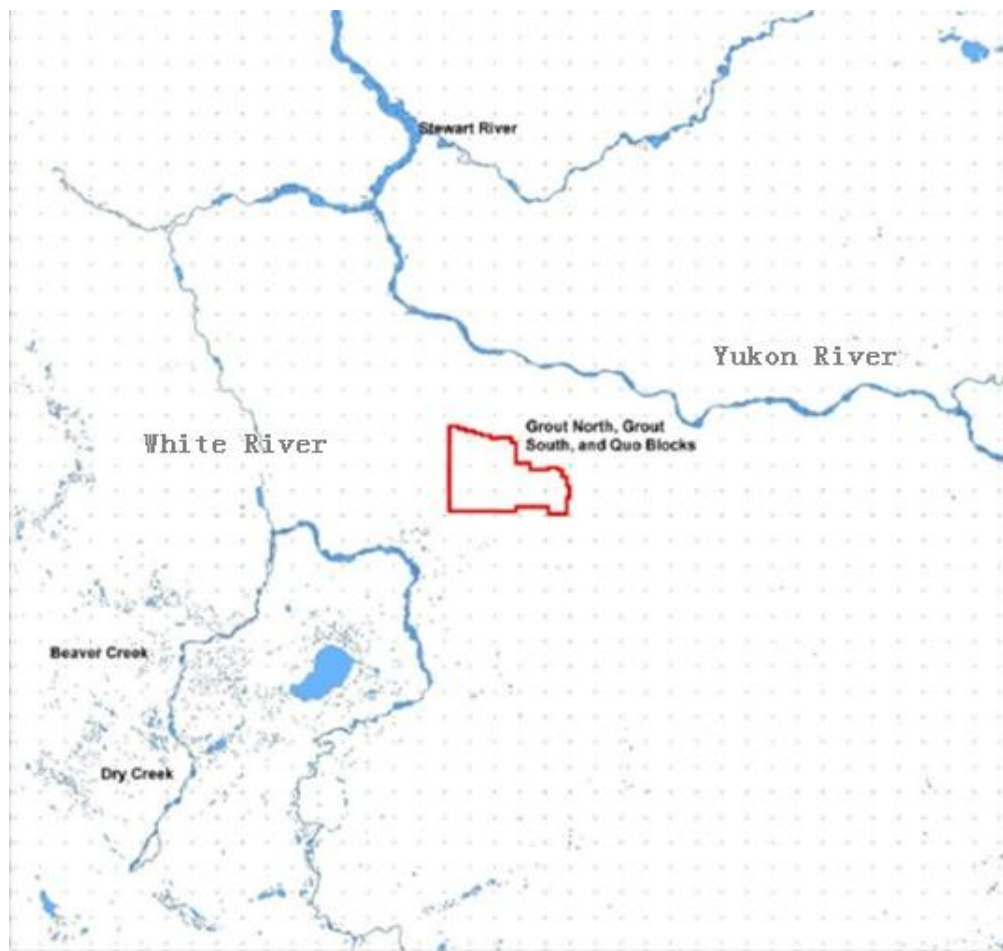
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## 1. INTRODUCTION

Quo Claims Group (Quo Property), including 649 claims, located at east of the White River and south of the Yukon River (Figure 1). The blocks are approximately 145 km south of Dawson, 85 km northeast of Beaver Creek, Yukon Territory. NTS Map Sheets are 115J/10, 115J/11, and 115J/14. The property is 100 % held by Canadian Dehua International Mines Group Inc. (Dehua Mines), in Whitehorse Mining District, Yukon Territory. Its Latitude and Longitude are 62 °40' N, 139 °03' W respectively.

In summer of 2010-2011, an airborne survey was carried out by Precision GeoSurveys Inc. Airborne magnetic and radiometric data were collected to serve in the exploration of the Quo blocks which has geological settings that are prospective for porphyry-type copper, molybdenum, and gold ore deposits. The survey was suspended for a time due to weather and financial conditions, and will be resuming in 2012.



**Fig.1 Location of Quo Claims**

A total of 750 line kilometers were flown in 2010-2011, which was not including tie lines. Magnetic and radiometric data set in required formats was collected used for post geological and mineral exploration targeting interpretation.

## 2. QUO CLAIM GROUPS

Quo Claims Group (Quo Property), including 649 claims (Table 1, Fig 2). There is no vehicle road to property. Access was by helicopter from Carmacks or Beaver Creek.

Table1 List of Quo Claims

CLAIM NAME AND NO.	GRANT NO.	EXPIRY DATE	RENEW TO
QUO 1-5	YD57925-YD57929	13/04/2012	13/04/2013
QUO 6-19	YD57930-YD57943	21/04/2012	21/04/2013
QUO 20-37	YD57944-YD57961	13/04/2012	13/04/2013
QUO 38-53	YD57962-YD57977	21/04/2012	21/04/2013
QUO 54-127	YD57978-YD58051	13/04/2012	13/04/2013
QUO 128-143	YD58052-YD58067	21/04/2012	21/04/2013
QUO 144-155	YD58068-YD58079	13/04/2012	13/04/2013
QUO 156-349	YD58080-YD58273	21/04/2012	21/04/2013
QUO 350-357	YD58274-YD58281	12/05/2012	12/05/2013
QUO 358-637	YD57625-YD57904	13/04/2012	13/04/2013
QUO 638-649	YD57905-YD57916	21/04/2012	21/04/2013

649 claims

Note: Renew date based on acceptance of this report.

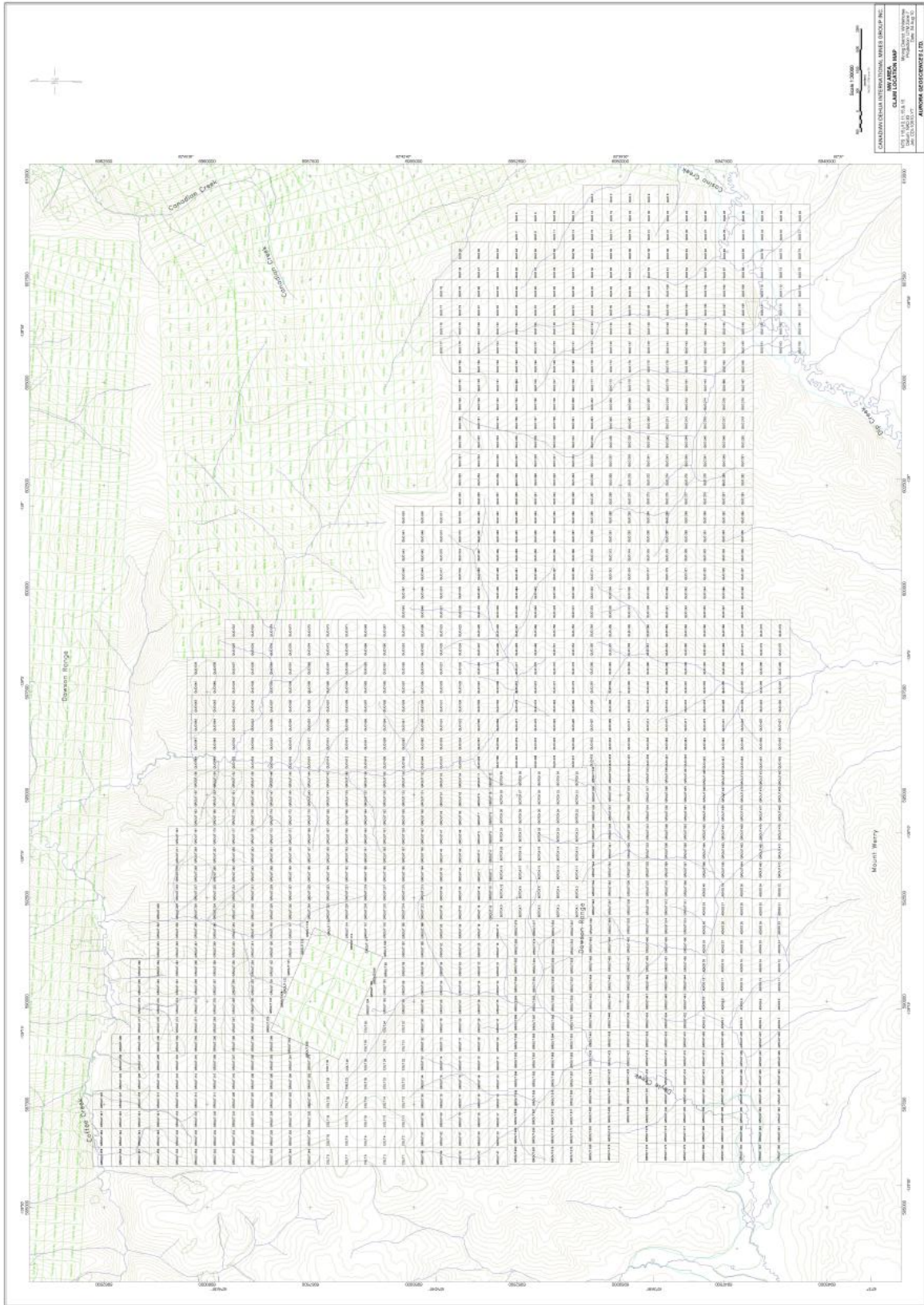


Fig.2 Distribution Map of Quo Claims

### 3. AIRBORNE MAGNETIC AND RADIOMETRIC SURVEY

Precision GeoSurveys flew the blocks using a Bell 206 BIII Jet Ranger mounted magnetometer, spectrometer and related AGIS equipment. The survey lines were flown at 100 m spacing at N 0/180° heading, and the tie lines were flown at 1 km spacing at a heading EW90°/270° (Figures 3 and 4). The average survey elevation was 30 meters vertically above ground surveyed.

The geodetic system used for this survey is WGS 84 and the area is contained in zone 7N.



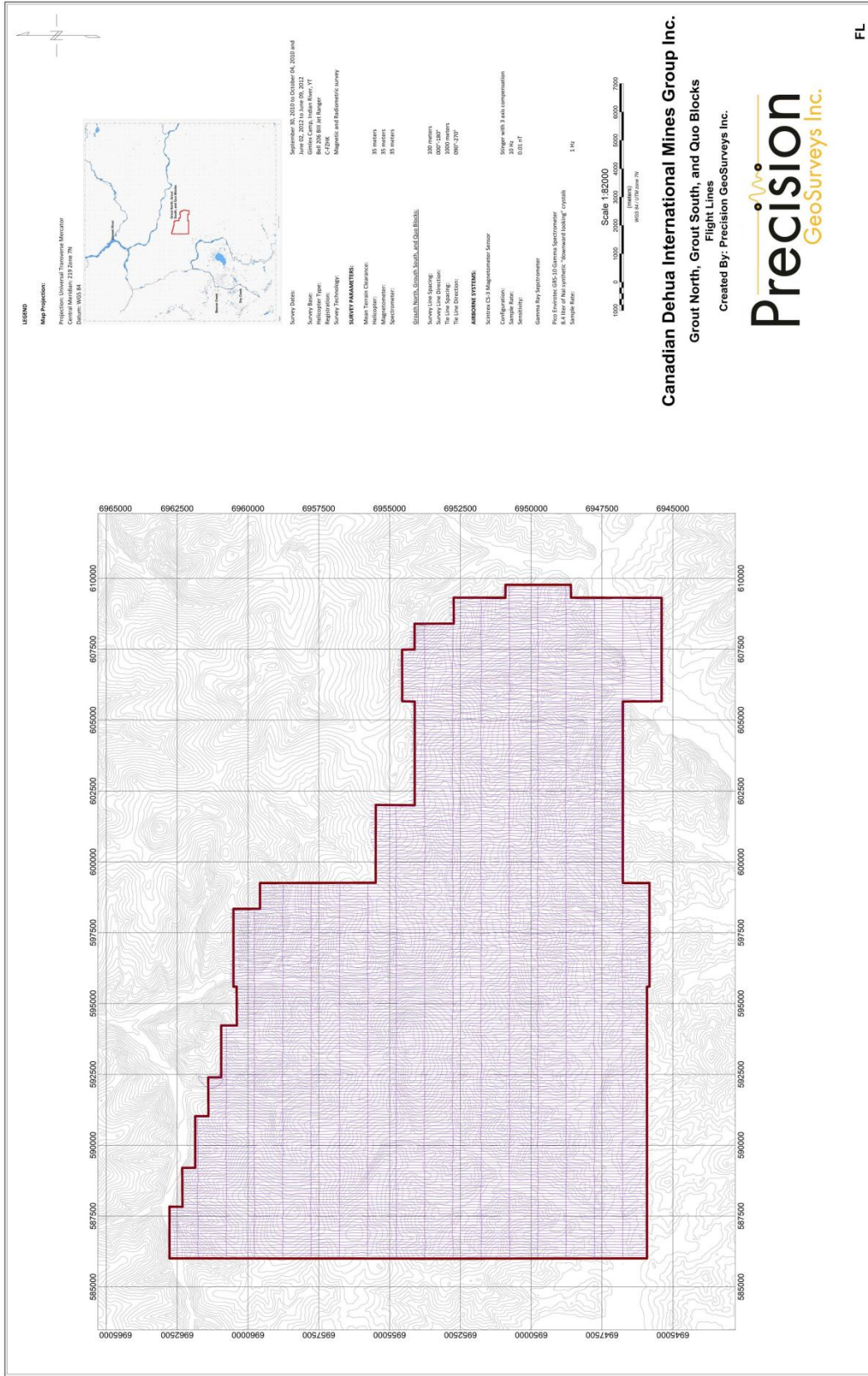


Fig.3-4 Plot of Airborne Survey Lines

## **3.1 Geophysical data**

### **3.1.1 Magnetic Data:**

Magnetic surveying is probably the most common airborne survey type to be conducted for both mineral and hydrocarbon exploration. The type of survey specifications, instrumentation, and interpretation procedures, depend on the objectives of the survey. Fig. 5 presents total magnetic intensity of Quo and Grout claim groups (uncompleted and unprocessed).

The data usually used for geological mapping to aid in mapping lithology, structure and alteration in both hard rock environments and for mapping basement lithology, structure and alteration in sedimentary basins or for regional tectonic studies.

### **3.1.2 Radiometric Data:**

Radiometric surveys detect and map natural radioactive emanations, called gamma rays, from rocks and soils. All detectable gamma radiation from earth materials come from the natural decay products of three primary elements; uranium, thorium, and potassium. The purpose of radiometric surveys is to determine either the absolute or relative amounts of U, Th, and K in surface rocks and soils.

Fig. 6 shows total radioactivity count of Quo and Grout claim groups (uncompleted and unprocessed).

## **3.2 Base Station Details**

Two magnetic base stations were set up before every flight to ensure that diurnal activity is recorded during the survey flights. In this case, the base stations were located in the bushes close to the east side of the property.

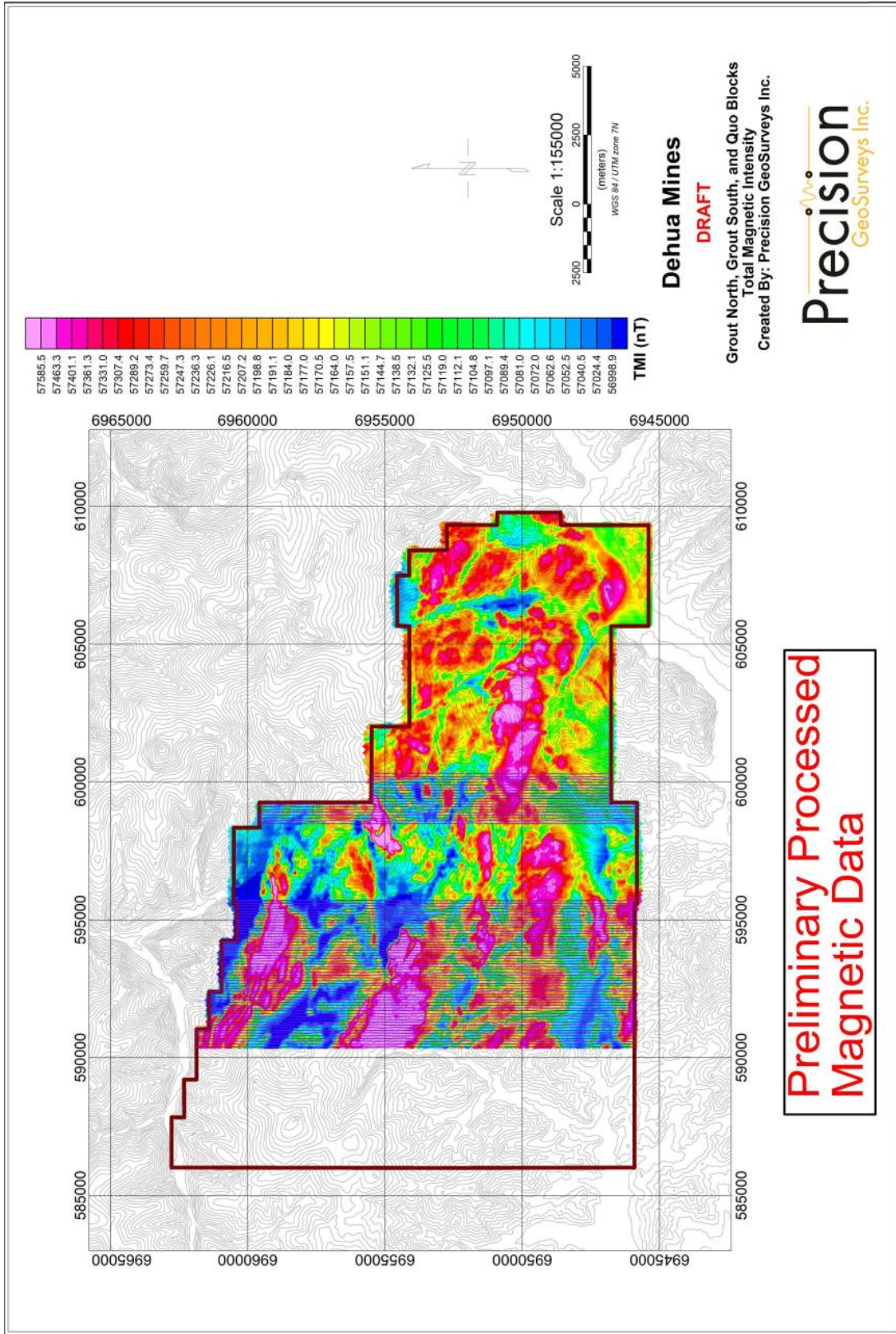
Base station recordings were reviewed at regular intervals to ensure that no data were collected during periods with high diurnal activity (greater than 5 nT change per minute). The base stations were installed at a magnetically noise-free area, away from metallic items such as steel objects, vehicles, or power lines. The magnetic variations recorded from the stationary base station are removed from the magnetic data recorded in flight to ensure that the anomalies seen are real and not due to solar activity.

## **3.3 Equipment**

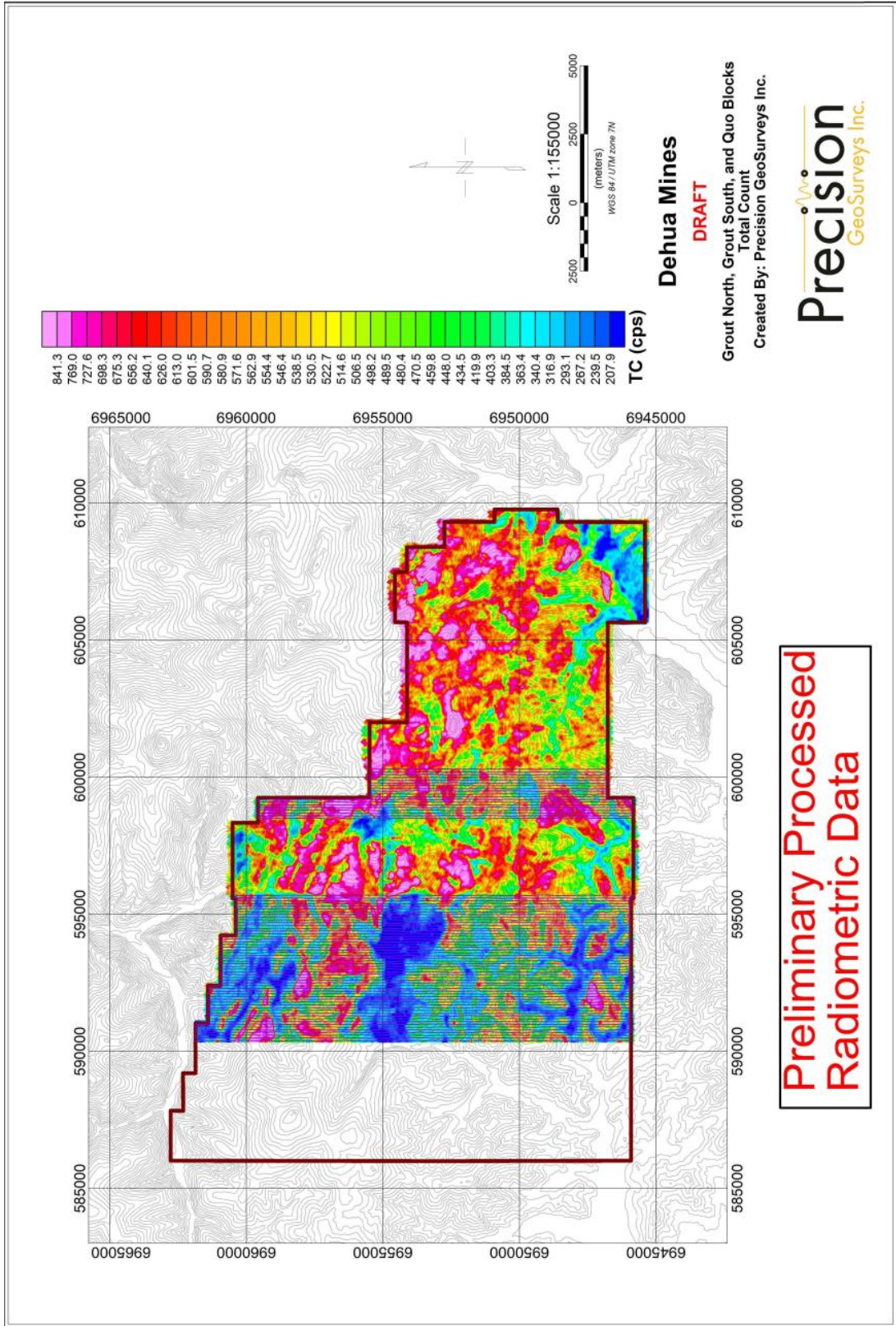
For this survey, a magnetometer, spectrometer, base stations, laser altimeter, and a data acquisition system were required to carry out the survey and collect quality, high resolution data. The survey magnetometer is carried in an approved “stinger” configuration to enhance flight safety and improve data quality in this mountainous terrain.

### **AGIS**

The Airborne Geophysical Information System, AGIS, is the main computer used in data recording, data synchronizing, displaying real-time QC data for the geophysical operator, and the generation of navigation information for the pilot display system.



**Fig.5 Map of Total Magnetic Intensity, Quo Block**



**Fig. 6 Total Radioactivity Count, Quo block**

## Magnetometer

The magnetometer used by Precision GeoSurveys is a Scintrex cesium vapor CS-3 magnetometer. The CS-3 is a high sensitivity/low noise magnetometer with automatic hemisphere switching and a wide voltage range, the static noise rating for the unit is +/- 0.01 nT. On the AGIS screen the operator can view the raw magnetic response, the magnetic fourth difference, aircraft position, and the survey altitude for immediate QC of the magnetic data. The magnetic data are recorded at 10 Hz. A magnetic compensator is also used to remove noise created by the movement of the helicopter as it pitches, rolls and yaws within the Earth's geomagnetic field.

## Spectrometer

The IRIS, or Integrated Radiometric Information System is a fully integrated, gamma radiation detection system containing 8.4 litres of NaI (Tl) downward looking crystals. The IRIS is equipped with upward-shielding high density RayShield® gamma-attenuating material to minimize cosmic and solar gamma noise. Real time data acquisition, navigation and communication tasks are integrated into a single unit that is installed in the rear of the aircraft. Information such as total count, counts of various radioelements (K, U, Th, etc.), temperature, cosmic radiation, barometric pressure, atmospheric humidity and survey altitude can all be monitored on the AGIS screen for immediate QC. All the radiometric data are recorded at 1 Hz.

## Base Station

For monitoring and recording of the Earth's diurnal magnetic field variation, Precision GeoSurveys operates two GEM GSM-19T magnetometer base stations continuously throughout the airborne data acquisition survey. The base stations are mounted as close to the survey blocks, and in an area with low magnetic gradient, as possible to give accurate magnetic field data. They are also mounted in an area away from electric transmission power lines and moving ferrous objects, such as aircrafts and motor vehicles. The GSM-19T has an accuracy of +/- 0.2 nT at 1 Hz.

## Laser Altimeter

The pilot is provided with terrain guidance and clearance with an Acuity AccuRange AR3000 laser altimeter. This is attached at the aft end of the magnetometer boom. The AR3000 sensor is a time-of-flight sensor that measures distance by a rapidly modulated and collimated laser beam that creates a dot on the target surface. The maximum range of the laser altimeter is 300 m off of natural surfaces with 90% reflectance and 3 km off special reflectors. Within the sensor unit, reflected signal light is collected by the lens and focused onto a photodiode. Through serial communications and analog outputs, the distance data are transmitted and collected by the AGIS at 10 Hz.

## 3.4 Data Acquisition Magnetometer Checks

At the start of the survey, airborne magnetometer system tests were conducted. The three tests conducted were the compensation flight, heading error test, and the lag test.

### Compensation Flight Test

During aeromagnetic surveying noise is introduced to the magnetic data by the aircraft

itself. Movement in the aircraft (roll, pitch and yaw) and the permanent magnetization of the aircraft parts (engine and other ferric objects) are large contributing factors to this noise. To remove this noise a process called magnetic compensation is implemented. The magnetic compensation process starts with a test flight at the beginning of the survey. These maneuvers provide the data that are required to calculate the necessary parameters for compensating the magnetic data.

### Heading Error Test

To determine the magnetic heading effect a cloverleaf pattern flight test is conducted. The cloverleaf test is flown in the same heading as the survey and tie lines. For each direction, it must fly over a recognizable feature on the ground in order to estimate the heading error.

### Lag Test

Followed by the compensation flight, a lag test is conducted. This is performed to determine the relationship between the time the digital reading was recorded by the instrument and the time for the position fix for fiducial of the reading was obtained by the GPS system.

The test was flown in the four orthogonal headings over an identifiable magnetic anomaly at survey speed and height. A lag of 6 fiducials (0.6 seconds) was determined from the lag test.

## 3.5 Data Processing

After all the data are collected after a survey flight several procedures are undertaken to ensure that the data meet a high standard of quality. All data were processed using Pico Envirotec software and Geosoft Oasis Montaj geophysical processing software.

### Magnetic Processing

Before any processing and editing of the raw magnetic data, the data obtained from the compensation flight test must be applied to the raw magnetic data first. A computer program called PEIComp is used to create a model from the compensation flight test for each survey to remove the noise induced by aircraft movement; this model is applied to each survey flight so the data can be further processed.

Filtering is applied to the laser altimeter data to remove vegetation clutter and to show the actual ground clearance.

The processing of the magnetic data involved the correction for diurnal variations. The base station data collected is edited, plotted and merged into a Geosoft (.gdb) database daily. The airborne magnetic data is corrected for diurnal variations by subtracting the observed magnetic base station deviations. Following the diurnal correction was a lag correction. A lag correction of 0.6 seconds was applied to the total magnetic field data to compensate for the lag in the recording system as the magnetometer sensor flies 5.70 m ahead of the GPS antenna. Lastly, a heading correction was applied to the data.

Some filtering of the magnetic data is also required. A Non Linear filter was used for spike removal. The 1D Non-Linear Filter is ideal for removing very short wavelength, but high amplitude features from data. The 1D Non-Linear Filter is used to locate and remove data that is recognized as noise. The algorithm is 'non-linear' because it looks at

each data point and decides if that datum is noise or a valid signal. If the point is noise, it is simply removed and replaced by an estimate based on surrounding data points. Parts of the data that are not considered noise are not modified. The low pass filter smoothes out the magnetic profile to remove isolated noise.

The corrected magnetic data from the survey and tie lines was used to level the data all together. Two forms of levelling are applied to the corrected data: conventional leveling and micro-levelling. Lastly, micro-leveling is applied to the corrected conventional leveled data. This will remove any residual line-direction-related noise, and any low amplitude component of flight line noise, that still remains in the data after tie line leveling.

Lastly, the final step in processing was leveling and merging of the survey data from this year to the data collected in 2010. This was accomplished by finding the differences between common data points and taking the average to determine a leveling constant between the data collected at different times.

### Radiometric Processing

Calibrating the spectrometer system in the helicopter is the first and vital step before the airborne radiometric data can be processed. Once calibration of the system has been complete, the radiometric data are processed by windowing the full spectrum to create channels for U, K, Th and total count. A 5-point Hanning filter was applied to the Cosmic window before going any further with processing the radiometric data.

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

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

where:  $C_{ac}$  is the background and cosmic corrected channel;  $C_t$  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;  $\text{Cos}_f$  is the filtered cosmic channel.

The background radon contribution is first removed followed by Compton stripping. Spectral overlap corrections are applied on to potassium, uranium, and thorium as part of the Compton stripping process. Lastly, attenuation corrections are applied to the data which involves nominal survey altitude corrections.

With all corrections applied to the radiometric data, the final step is to convert the corrected potassium, uranium, and thorium to apparent radioelement concentrations.

Some outlined data procession procedure can only be carried after and completion of the whole Guo-Grout claims survey and the flying of tie lines in 2012.

### Reference

- Precision GeoSurveys Inc. Airborne Geological survey Report Gonzo-Block Property report.2011-2012

## Appendix I

### Statement of Expenditure for Gonzo Property Claims Group

Total expenditure applied for Quo property assessment work in 2011-2012: \$ **55883.64**

#### 2011-2012 Working Expenditure on Quo Claims

item	unit cost	unit	amount
airborne magnetic survey			47250.00
Manpower expense			3500.00
Accommodation			1375.00
Tool and equipment			
Transportation			1200.00
Communication			
Other supplies			
Consulting			
Sample assay			
Office supplies			
Insurance			
Safety and labor protection			
other expenditure			2558.64
<b>Total:</b>			<b>55883.64</b>