Logistics
Report

For the

High Resolution Helicopter Magnetic and
Gamma-ray Spectrometric Airborne Geophysical Survey

Flown over

KLOTASSIN Project Properties: BBB, CCC and DDD Blocks, YT, Canada

From

Carmacks, Yukon

Carried out on behalf of

STRATEGIC METALS LTD.

By

New-Sense Geophysics Limited

Toronto, Canada
October 12th, 2010
(HMR100816-report)

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AMENDMENT RECORD

Rev	Date	Description	Report Section	Prepared by

DOCUMENT RECORD

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1. INTRODUCTION

A high sensitivity helicopter magnetic and gamma-ray spectrometric airborne survey was carried out for Strategic Metals Ltd. (Client) over three (3) project areas: BBB, CCC and DDD collectively known as Klotassin properties, located approximately 80 km west of Carmacks, Yukon, Canada.

New-Sense Geophysics (NSG) flew the survey under the terms of an agreement with Client dated August 16th, 2010.

The survey was flown between August 18th and August 21st, 2010. A total of 832 line kilometers of field magnetic and radiometric data was flown, collected, processed and plotted. These lines were flown in three (3) separate blocks listed below:

BBB Property	- 144 km
CCC Property	- 360 km
DDD Property	- 328 km

Geophysical equipment was comprised of 1 high-sensitivity Cesium-3 magnetometer mounted in a fixed stinger assemble and a 1024-channel spectrometer with four downward looking crystals (total 16 liters) and one upward looking crystal (total 4 liters). Airborne ancillary equipment included digital recorders, fluxgate magnetometer, radar altimeter and global positioning system (GPS) receiver, which provided accurate real-time navigation and subsequent flight path recovery. Surface equipment included a magnetic base station with GPS time synchronization and a PC-based field workstation, which was used to check the data quality and completeness on a daily basis.

The technical objective of the survey was to provide high-resolution total field magnetic and radiometric maps suitable for anomaly delineation, detailed structural evaluation, and identification of lithologic trends. Fully corrected magnetic and radiometric maps were prepared by New-Sense Geophysics Limited, in their Toronto office, after the completion of survey activities.

This report describes the acquisition, processing, and presentation of data for the Strategic Metals Ltd. Klotassin airborne survey over BBB, CCC, and DDD blocks, Yukon, Canada.

2. SURVEY LOCATION

Datum: NAD83
Projection: Universal Transverse Mercator Zone 8N
Local Datum Transform: North America (all Canada and USA subunits)

Table 2.1: BBB Property Coordinates

UTM Zone 8N			
NAD83_X	**NAD83_Y**	**WGS84_X**	**WGS84_Y**
364000	6903000	364000	6903000
367000	6903000	367000	6903000
367000	6899000	367000	6899000
364000	6899000	364000	6899000
364000	6903000	364000	6903000

Table 2.2: CCC Property Coordinates

UTM Zone 8N			
NAD83_X	**NAD83_Y**	**WGS84_X**	**WGS84_Y**
350000	6893111	350000	6893111
359093	6893111	359093	6893111
359093	6890000	359093	6890000
350000	6890000	350000	6890000
350000	6893111	350000	6893111

Table 2.3: DDD Property Coordinates

UTM Zone 8N			
NAD83_X	**NAD83_Y**	**WGS84_X**	**WGS84_Y**
357000	6884427	357000	6884427
364000	6884427	364000	6884427
364000	6880000	364000	6880000
357000	6880000	357000	6880000
357000	6884427	357000	6884427

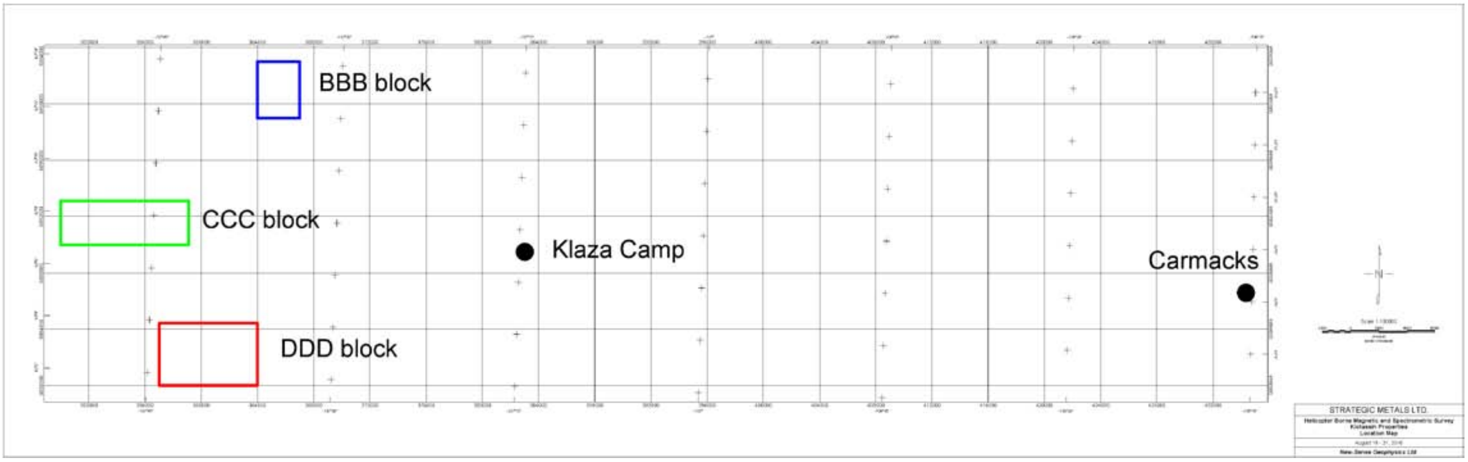


Figure 2.1 Location map depicting the outlines of the three (3) Klotassin properties: BBB (blue), CCC (green) and DDD (red). The coordinate system is NAD83, North America (all Canada and USA subunits), Zone 8N.

3. PERSONNEL

3.1 FIELD OPERATIONS

New-Sense Geophysics Ltd., Geophysicist:	Chris Evans
Fireweed Helicopters, Pilot:	Brent Vansickle

3.2 OFFICE DATA PROCESSING AND OFFSITE QA/QC

QA/QC (NSG):	Andrei Yakovenko
Data Processing and Grids (NSG):	Andrei Yakovenko Sean Plener Chris Evans
Maps (NSG):	Andrei Yakovenko Sean Plener
Logistics Report (NSG):	Andrei Yakovenko Sean Plener

3.3 PROJECT MANAGEMENT

New-Sense Geophysics Ltd.:	Andrei Yakovenko
Strategic Metals Ltd.**:**	W. Douglas Eaton

4. SURVEY PARAMETERS

Airborne Digital Record:
- Line Number
- Flight Number
- Radar Altimeter
- Total Field Magnetics
- Live Time
- Thorium counts
- Potassium counts
- Uranium counts
- Upward looking Uranium counts
- Cosmic counts
- Down Spectrum
- Total Counts
- Time (System and GPS)
- Raw Global Positioning System (GPS) data
- Magnetic compensation parameters (fluxgate mag.)

Base Station Record:
- Ambient Total Field Magnetics
- Raw Global Positioning System (GPS) data
- Time (System and GPS)

Table 4.1 Survey Parameters

Specifications	BBB	CCC	DDD
Traverse Line Spacing (m)	100	100	100
Control Line Spacing (m)	1000	1000	1000
Nominal Terrain Clearance (m)	35	35	35
Actual Terrain Clearance (avrg. m)	36	35	36
Navigation	GPS	GPS	GPS
Traverse Line Direction (deg.)	0, 180	90, 270	0, 180
Control Line Direction (deg.)	90, 270	0, 180	90, 270
Magnetic Data Measurement Interval (sec.)	0.1	0.1	0.1
Radiometric Data Measurement Interval (sec.)	1	1	1
Ground Speed (avrg. km/h)	112.0	113.6	108.2
Magnetic Measurement Interval (avrg. m/0.1sec.)	3.1	3.2	3.0
Radiometric Measurement Interval (avrg. /1.0sec.)	31.0	32.0	30.0

5. AIRCRAFT AND EQUIPMENT

5.1 AIRCRAFT

The aircraft used was a Bell 206B3 helicopter (C-FFWH) equipped with a Cesium magnetometer mounted in a fixed stinger assembly and RS-500 airborne spectrometer mounted in the storage compartment. The aviation company providing the aircraft service was Fireweed Helicopters based in Whitehorse, Yukon, Canada.

5.2 AIRBORNE GEOPHYSICAL SYSTEM

5.2.1 MAGNETOMETER

One Scintrex CS-3 optically pumped Cesium split beam sensor was mounted in a fixed stinger assembly. The magnetometer's Larmor frequency output was processed by a KMAG-4 magnetometer counter, which provides a resolution of 0.15 ppm (in a magnetic field of 50,000 nT, resolution equivalent to 0.0075 nT). The raw magnetic data was recorded at 50 Hz, anti-aliased with 51 point COSINE filter and resampled at 10 Hz .

5.2.2 MAGNETIC COMPENSATION

The proximity of the aircraft to the magnetic sensor creates a measurable anomalous response as a result of the aircrafts movement. The orientation of the aircraft with respect to the sensor and the motion of the aircraft through the earth's magnetic field are contributing factors to the strength of this response. A special calibration flight, Figure of Merit (i.e., FOM), was flown to record the information necessary to compensate for these effects.

The FOM maneuvers consist of a series of calibration lines flown at high altitude to gain information in each of the required line directions. During this procedure, pitch, roll and yaw maneuvers are performed on the aircraft (typical angle ranges are 10^o pitch, 10^o roll, and 10^o yaw). Each variation is conducted three times in succession (first pitch, then roll, then yaw), providing a complete picture of the aircraft's effects at designated headings in all orientations.

A three-axis Bartington fluxgate magnetometer (recorded at 50 Hz) was used to measure the orientation and rates of change of the magnetic field of the aircraft, away from localized terrestrial magnetic anomalies. The QC Tools digital compensation algorithm was then applied to generate a correction factor to compensate for permanent, induced, and eddy current magnetic responses generated by the aircrafts movements.

5.2.3 GPS NAVIGATION

A U-BLOX RCB-LJ sixteen channel GPS receiver, which is an integral component of the iNAV V3 computer system, was used to run the flight control system and provide precise positioning of the aircraft.

5.2.4 ALTIMETER

A TRA 3500 radar altimeter was mounted inside the stinger. This instrument operates with a linear performance over the range of 0 to 2,500 feet and records the terrain clearance of the sensors. The raw radar altimeter data was recorded at 50 Hz, anti-aliased with a 21 point COSINE filter and re-sampled at 10 Hz.

5.2.5 GEOPHYSICAL FLIGHT CONTROL SYSTEM

New-Sense's iNAV V3 geophysical flight control system monitored and recorded magnetometer, spectrometer, altimeter, and GPS equipment performance. Input from the various sensors was monitored every 0.005 seconds for the precise coordination of geophysical and positional measurements. The input was recorded fifty times per second (one time per second in the case of GPS and radiometric data).

GPS positional coordinates and terrain clearance were presented to the pilot by means of a panel mounted indicator display. The magnetometer response, forth difference, altimeter profile and profiles of the radiometric windows were also available on the touch screen display, for real-time monitoring of equipment performance.

5.2.6 SPECTROMETER

The RS-500 Airborne Spectrometer with RSX-5 detector pack, manufactured by Radiation Solutions Inc. (RSI), was used for the survey. The RS-500 spectrometer has a multi-peak gain stabilization algorithm and is capable of recording 1024 channels with accuracy of 0.1 to 10 counts/second.

The RS-500 is connected to a crystal pack comprising four downward looking crystals (16 liters total) and one upward looking crystal (4 liters total). The downward crystals record the radiometric spectrum from 410 KeV to 2810 KeV over 1024 discrete energy windows, as well as from a cosmic ray channel that detects photons with energy levels above 3.0 MeV. From these 1024 channels, the standard Total Count, Potassium, Uranium and Thorium channels are extracted. The upward crystal is used to measure and correct for atmospheric Radon interference. The shock-protected Sodium Iodide (Thallium) crystal package is unheated and automatically stabilizes with respect to the multiple peaks. The RS-500 provides raw data that has been automatically corrected for gain, base level, ADC offset, and dead time.

5.2.7 IDAS DIGITAL RECORDING

The output of the CS-3 magnetometer, fluxgate magnetometer, altimeter, temperature, pressure, GPS coordinates, and time (system and GPS), were recorded digitally on a Compact Flash drive at a sample rate of fifty times per second (one time per second for GPS) by the iNAV V3 system.

5.2.8 PRESSURE AND TEMPERATURE

A Honeywell Precision Pressure Transducer, model PPT0020AWN2VA-A, was used to record the ambient pressure and temperature during the survey. The device was mounted in the helicopter stinger. The pressure and temperature outputs units were mbar and degrees Celsius respectively.

5.2.9 SPECTROMETER DIGITAL RECORDING

The output of the RS-500 spectrometer, GPS coordinates and time (UTC) were recorded digitally on an internal RS-500 flash drive at a sample rate of 1 Hz. After each flight the data were copied and synchronized using UTC clock with the iDAS digital records.

5.3 GROUND MONITORING SYSTEM

5.3.1 BASE STATION MAGNETOMETER

A Scintrex CS-3 optically pumped cesium split beam sensor was used at the base of operations within the airport boundaries, in an area of low magnetic gradient and low/free from cultural electric & magnetic noise sources. The sensitivity and absolute accuracy of the ground magnetometer is +/- 0.01 nT. Data was recorded continuously at least every one second throughout all survey operations in digital form on a TC-10 data acquisition system. Both the ground and airborne magnetic readings were synchronized based on the GPS clock.

5.3.2 RECORDING

The output of the magnetic and GPS monitors was recorded digitally on a dedicated TC-10 computer. A visual record of the last three hours was graphically maintained on the computer screen to provide an up to date appraisal of magnetic activity. At the conclusion of each production flight raw GPS and magnetic data were transferred to the main field compilation computer.

5.4 FIELD COMPILATION SYSTEM

A field laptop computer was used for field data processing and presentation. The raw data was imported to Geosoft Oasis montaj for QA/QC and processing purposes. After the data was checked for quality control, the database with uncompensated magnetic readings was exported to QC Tools software package for magnetic compensation and base station data merging purposes. The compensated database was then imported back to Oasis for the subsequent and final processing.

6. PRE-SURVEY SPECTROMETER CALIBRATIONS

Pre-survey calibrations and testing of the RS-500 (SN 5503) airborne gamma-ray spectrometry system were carried out on August 15th, 2010 (from Braeburn lodge, YT) and August 20th, 2010 (from Carmacks, YT). For these calibrations and tests, the survey aircraft (registration C-FFWH) was mobilized in survey configuration. The installed equipment and configurations were selected to conform to contract technical specifications.

Calibration of the spectrometer system is a vital process to airborne gamma-ray spectrometry. The calibration of the spectrometer system involved three tests:

- **Calibration Pad** measurements, which are used to determine the "spectral overlap" (Compton scattering) coefficients. The calibration test was performed within a 12 month period before the survey by the manufacturer (Radiation Solutions Inc.), at its headquarters location in Mississauga, Ontario.

- **Cosmic Flight Test**, which is used to determine the aircraft background values and cosmic coefficients was conducted on August 15th, 2010.

- **Height Attenuation Test**, which determined the altitude attenuation was conducted on August 20th, 2010.

6.1 ENERGY WINDOWS

The airborne radiometric technique requires measurement of count rates for specific energy regions or windows in the natural gamma-ray spectrum. The standard energy regions (in accordance with the International Atomic Energy Agency (IAEA) 323), and their corresponding channel limits are:

Table 6.1 Downward spectrometer energy windows

Designation	Energy Limit (keV)		Channel Limit (inclusive)	
			Unit Values	
	Lower	Upper	Lower	Upper
Total Count (TC)	410	2810	137	937
K	1370	1570	457	523
U	1660	1860	553	620
Th	2410	2810	803	937
U (upward)	1660	1860	553	620
Cosmic	3200	infinity		

6.2 CALIBRATION PAD TEST

The Compton stripping coefficients as provided by RSI are listed below:

Table 6.2 Compton Stripping coefficients

Stripping Ratios	Spectrometer (SN 5503)	"normal" values
Th into U (alpha = a23/a33)	0.284	0.250
Th into K (beta = a13/a33)	0.432	0.400
U into K (gamma = a12/a22)	0.771	0.810
U into Th (a = a32/a22)	0.039	0.060
K into Th (b = a31/a11)	-0.001	0
K into U (g = a21/a11)	0.001	0.003

6.3 COSMIC FLIGHT TEST

In each of the spectral windows, the radiation increases exponentially with height due to radiation of cosmic origin. As well, the aircraft itself contributes a constant background to the count rate. By completing a series of flights within the same region, over a range of altitudes, these background contributions can be determined.

6.3.1 SETUP AND MEASUREMENT PROCEDURE

1. A resolution check was completed at the aircraft base using a Thorium source prior to the cosmic test to insure the sensitivity and accuracy of the spectrometer.
2. Once the aircraft reached the desired altitude (first at ~8000 feet), survey data were recorded for approximately ten minutes.
3. Step 2 was then repeated at the following remaining altitudes: 9,000, 10,000, 11,000 and 12,000 feet above sea level.

Table 6.3 Cosmic Test data from August 15th, 2010

	Cosmic Test Flight Data (average counts)					
Altitude (ft)	Cosmic	UU	K	U	Th	TC
7848	176	3	20	12	11	265
8914	203	3	23	13	13	338
9943	238	4	25	15	15	338
11117	381	4	27	17	19	383
12109	328	5	30	19	21	420

6.3.2 RESULTS FROM COSMIC FLIGHT TEST

At each altitude, the raw data for the five windows of interest (Th, K, U, TC, and U upward) were evaluated for quality. The mean values were then extracted and plotted against the cosmic background window (see Appendix A). The result is a linear trend, where the slope and intercept represent the cosmic stripping ratio and the aircraft background respectively. The results from the graphs are summarized below.

Table 6.4 Cosmic and Aircraft Background coefficients

Cosmic Flight Test Result From August 15th, 2010		
Element	**Cosmic**	**Aircraft Background**
K	0.0621	9.7817
U	0.0471	3.6567
Th	0.0646	0
TC	1.023	90.165
UU	0.0132	0.5736

6.4 ALTITUDE ATTENUATION TEST

The height attenuation of the spectrometer systems was calculated by flying a series of passes across a line over flat ground with uniform radioelement ground concentration. The test range was flown by acquiring data on a series of seven passes over a set path, at the following altitudes: 100, 150, 200, 250, 300, 400, 600, 800 and 1000 feet above ground.

6.4.1 RESULTS FROM ALTITUDE ATTENUATION TEST

The airborne data from the altitude attenuation test was checked for quality, edited and divided into lines, where each line represents a pass. The radiometric windows were then corrected for background (aircraft and cosmic) and stripped of Compton contributions. After averaging the data for each line, the four windows of interest (K, U, Th, and Total Count) were plotted against the altimeter in order to obtain the height attenuation. The results were obtained using an exponential regression, where the slope represents the attenuation coefficient and the ‘y’ intercept represents the counts at 0 feet (see Tables 6.7 and 6.8 and Appendix A).

Table 6.5 Height Attenuation coefficients from August 20th, 2010

Element	Altitude attenuation coefficients
K	-0.0088
U	-0.0046
Th	-0.0068
TC	-0.0067

6.5 RADON TEST STRIPS

On all survey flights, at least one radon normalization hover test was flown before or after data collection.

The test consisted of the helicopter flying a designated test area over relatively flat and dry terrain at nominal survey altitude near Klaza camp. The pilot was guided by the iDAS navigation system for approximately 5 minutes to allow for adequate statistics to be collected.

Since no noticeable radon fluctuations were observed, no radon corrections were applied to the data set.

6.6 RADIOELEMENT GROUND CONCENTRATIONS AND SYSTEM SENSITIVITIES

The radiometric ground concentrations were measured using a calibrated portable spectrometer (RSI-125) during the same time as the airborne altitude attenuation flights took place (i.e., August 20th, 2010). The sensor was positioned one meter above the soil and away from the operators' body in the vicinity of altitude attenuation test strip. Twenty 300-second measurements were taken over the length of the calibration range.

The resulting mean radiometric equivalent ground concentrations for the calibration range on August 20th, 2010 were as follows:

Table 6.6 Ground Concentrations from August 20th, 2010

Radio Element	Ground Concentration	
Potassium	1.71	%
Equivalent Uranium	2.21	ppm
Equivalent Thorium	10.31	ppm
Total	62.3	nGy/h

Using these ground concentrations and the altitude attenuation calibration flight data, the System Sensitivities were obtained:

$$S = N/C$$

Where:

- S is the sensitivity for each window
- N is the striped count rate in the window at the survey altitude (i.e, 35m)
- C is the respective ground radioelement concentration.

With the following results:

Table 6.7 Sensitivities @35m from August 20th, 2010

	Sensitivities @ 35m
K	55.00 $cps/(\%)$
U	4.01 $cps/(ppm)$
Th	2.35 $cps/(ppm)$
TC	14.81 $cps/(nGy/h)$

Note: Determining of radioelement ground concentrations and system sensitivities were not part of the singed agreement. Such data are made available to the client as a courtesy.

7. OPERATIONS AND PROCEDURES

7.1 FLIGHT PLANNING AND FLIGHT PATH

The block outline coordinates (section 2.0) were used to generate pre-calculated navigation files. The navigation files were used to plan flights at the designated traverse line spacing of 100 meters and control lines of 1000 meters.

Preliminary flight path maps and magnetic maps were plotted and updated, to monitor coverage of the survey area.

7.2 BASE STATION

Magnetic base station was established in magnetically quiet area in the vicinity of Klaza camp at Latitude: 62.119366; Longitude: -137.242554.

The base station readings were monitored to ensure that the diurnal variation were within the peak-to-peak envelope of 20 nT from a long chord distance equivalent to a period of two minutes.

7.3 AIRBORNE MAGNETOMETERS

An FOM test of the performance of the CS-3 and fluxgate magnetometers was performed in order to monitor the ability of the system to remove the effects of aircraft motion on the magnetic measurement.

The FOM maneuvers consisted of a series of calibration lines flown at high altitude (10,000+ ft above sea level) to gain information in each of the required line directions. During this procedure, pitch, roll and yaw maneuvers were performed on the aircraft.

The following ranges were used:

Pitch: 10-15^{o}
Roll: 10-15^{o}
Yaw: 10-15^{o}

See Appendix B for the FOM results as flown on August 17th 2010 and were used to compensate the magnetic data.

7.4 THORIUM RESOLUTION TESTS

In order to monitor the resolution of the crystal pack, a daily a resolution test of the spectrometer was performed in RadAssist (RSX-5 spectrometer interface program) using ~2000 thorium background counts per crystal.

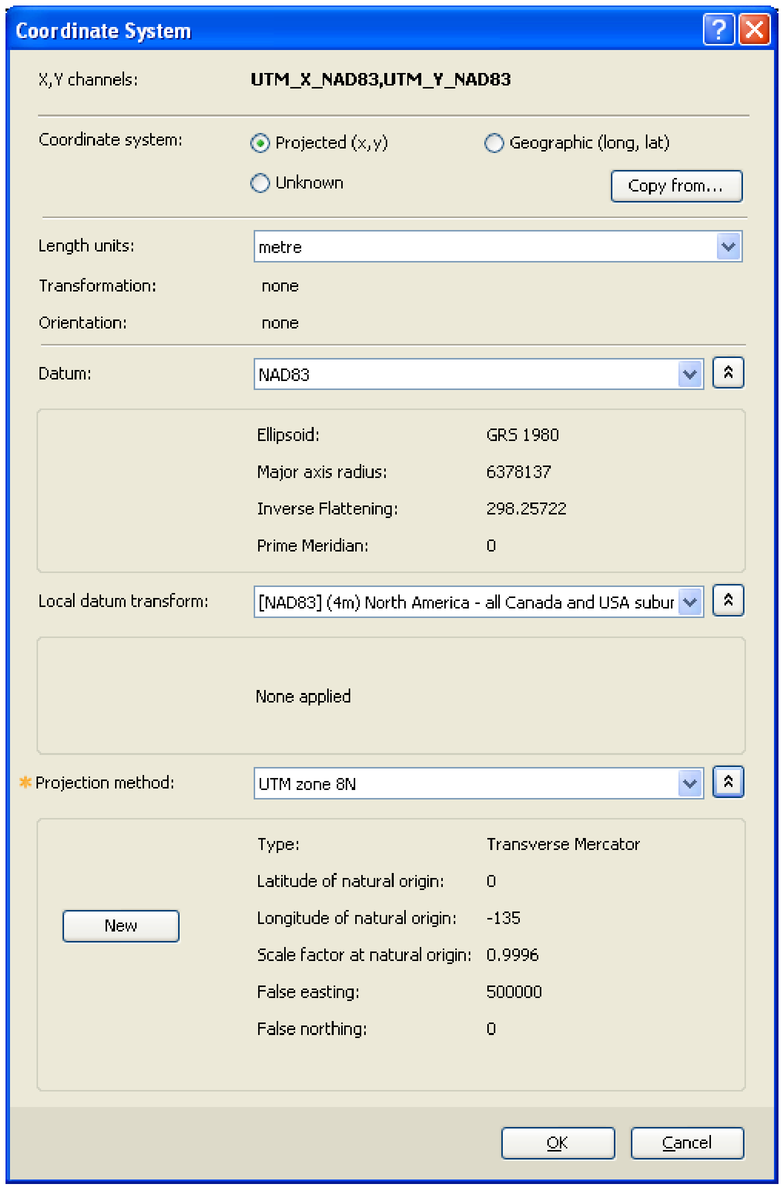
The results from the resolution tests were always found to be within the contract specifications (see Appendix D for the daily test results).

7.5 DATA COMPILATION

Data recorded by the airborne and base station systems was transferred to the field compilation system. As each flight was completed, the following compilation operations were carried out:

7.5.1 FLIGHT PATH CORRECTIONS

The navigational correction process yields a flight path expressed in WGS84, World and transformed to correspond to NAD83 UTM ZONE 8N North America.



All 1.0 Hz GPS records were linearly interpolated and resampled at 10 Hz (0.1 sec) intervals.

7.5.2 DIGITAL TERRAIN MODEL (DTM)

The DTM data were produced by first adjusting the GPS sensor height to that of the radar altimeter height (lowering GPS height by 2.1m). Next the radar altimeter channel (in meters) was subtracted from the GPS height data producing a raw DTM channel.

Due to changing satellite positions (constellation configuration) and varying atmospheric conditions, the receiver may measure slightly varying GPS heights line-to-line. In addition, due to rugged topography, the radar altimeter measures inaccurately when the helicopter is pitched forward position (example: approach a steep hill), as the radar beam would be directed away or down the slope. Because of these inherent errors, the raw DTM channel required leveling.

It was decided to apply a microlevelling technique to the raw DTM data developed by Paterson, Grant & Watson Limited and available through Geosoft Oasis montaj as miclev.GX extension (see Appendix F for full description of the procedure).

The following key microlevelling parameters were used:

Table 7.1 DTM microlevelling parameters per block

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (m)	Amplitude Limit Mode	Naudy Filter Limit
BBB	100	0	10	400	10.0	clip	0
CCC	100	90	10	400	5.0	clip	0
DDD	100	0	10	400	8.8	clip	500

The final DTM data were stored under DTM channel name.

7.5.3 MAGNETIC CORRECTIONS

First the 50 Hz aeromagnetic data from Cesium 3 and fluxgate magnetometers were filtered with a 51 cosine anti-aliasing algorithm and re-sampled at 10 Hz. Then the magnetic data from the Cesium 3 magnetometer was compensated for permanent, induced, and eddy current magnetic noise generated by the aircraft using data from the fluxgate magnetometer. The compensated magnetic data were then stored in the MAG_COMP channel.

7.5.3.1 DIURNAL CORRECTIONS

The compensated magnetic data were adjusted to account for diurnal variations. When the magnetic variations recorded at the base station recognized to be caused by man-made sources, (such as equipment, vehicles passing by the sensor), they were removed and gaps interpolated.

Diurnal variations recorded by the base station were filtered with a 101-point low pass filter. The filtered data was then subtracted directly from the aeromagnetic measurements to provide a first order diurnal correction.

After base station removal, the total magnetic field values become very small. To bring the total magnetic measurements back to 'normal' values, project averages from the base station readings were added back to the magnetic data.

Table 7.2 Base Station project averages per block

Block Name	Average Readings (nT)
BBB	57259.10
CCC	57266.94
DDD	57272.74

The resulting base station corrected data were stored in the MAG_DIURNAL_CORR channel.

7.5.3.2 LAG CORRECTIONS

There are two potential types of Lag offsets when collecting airborne data: time lag and distance lag.

NSG insures that there is no time lag in the data acquisition system by recording unique markers every 1-second based on the GPS time stamp (associated with the EXACT change in GPS positioning). This information is used to realign (if necessary) the individual data records.

The distance lag is determined by dividing the distance from the GPS antenna to the sensor head by the averaged sample rate distance.

Table 7.3 Lag corrections

Block Name	Horizontal Distance From GPS Antenna to Sensor Head (m)	Average Sample Interval (m)	Lag Applied to Magnetic Data (records)
BBB	9.2	3.1	-3
CCC	9.2	3.2	-3
DDD	9.2	3.0	-3

The lag corrections were applied to the MAG_DIURNAL_CORR channel and stored in the MAG_LAG_CORR channel.

7.5.3.3 HEADING CORRECTIONS

Optically pumped magnetic sensors have an inherent heading error, typically 1 to 2 nT peak-to-peak, as the sensor is rotated through 360 degrees. On flight line directions of the opposite heading, the affect is reasonably predictable.

Heading test flight was flown at magnetically quite area at 10,000+ ft above sea level altitude on August 17^{h}, 2010 with the following results:

Table 7.4 Heading Test flight results: August 17th, 2010

<table>
<tr><th>Direction (deg.)</th><th>Mean on line (nT)</th><th>Mean in direction (nT)</th><th>Mean on heading (nT)</th><th>Error (nT)</th></tr>
<tr><td>0</td><td>57141.00</td><td rowspan="2">57143.34</td><td rowspan="4">57139.66</td><td rowspan="2">-3.67</td></tr>
<tr><td>0</td><td>57145.67</td></tr>
<tr><td>180</td><td>57134.13</td><td rowspan="2">57135.99</td><td rowspan="2">3.67</td></tr>
<tr><td>180</td><td>57137.85</td></tr>
<tr><td>90</td><td>57123.43</td><td rowspan="2">57123.46</td><td rowspan="4">57124.25</td><td rowspan="2">0.79</td></tr>
<tr><td>90</td><td>57123.48</td></tr>
<tr><td>270</td><td>57125.15</td><td rowspan="2">57125.04</td><td rowspan="2">-0.79</td></tr>
<tr><td>270</td><td>57124.92</td></tr>
</table>

The following heading corrections tables were constructed and applied to the data set:

```
/ Geosoft Heading Correction Table
/=   Direction:real:i
/=   Correction:real
/      Direction   Correction
     0      -3.67
     90     0.79
     180    3.67
     270    -0.79
     360    -3.67
```

The heading corrected magnetic data were stored in MAG_HEADING_CORR channel.

7.5.3.4 IGRF CORRECTIONS

The total field strength of the International Geomagnetic Reference Field (IGRF, 2010 model) was calculated for every data point, based on the spot values of Latitude, Longitude and altitude. This IGRF was removed from the measured survey data on a point-by-point basis from the lag corrected channel.

After IGRF correction the total magnetic field values become negative. To bring the total magnetic measurements back to 'normal' values an average of IGRF values based on the whole project were added back to the magnetic data.

Table 7.5 IGRF averages per block

Block Name	Average Readings (nT)
BBB	57265.57
CCC	57224.80
DDD	57221.70

The IGRF corrections were applied to the MAG_HEADING_CORR channel and stored in the MAG_IGRF_CORR channel.

7.5.3.5 LEVELING CORRECTIONS

After the data were corrected for IGRF, a survey traverse/control line intercepts array/matrix (i.e., Simple Leveling) was created for determining differences in magnetic field at the intersection points. Somewhat rugged terrain of the survey blocks, which resulted in some line-to-line difference in altitude, and relatively strong magnetic anomalies made magnetic signal at some Traverse/Control line intersection points quite different. As a result, some of those intersection points needed to be manually adjusted in order to reduce line-to-line magnetic differences.

The resulting simple leveled magnetic data were stored in MAG_SIMPLE_LVL channel.

Further, it was decided to apply microlevelling techniques to the conventionally leveled magnetic data for CCC and DDD blocks only (see Appendix F for full description of the procedure).

The following key microlevelling parameters were used:

Table 7.6 Total Magnetic Intensity (TMI) microlevelling parameters

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (nT)	Amplitude Limit Mode	Naudy Filter Limit
BBB	NA	NA	NA	NA	NA	NA	NA
CCC	100	90	10	400	3.9	clip	100
DDD	100	0	10	400	26.7	clip	100

The resulting microleveled channels for CCC and DDD blocks were stored in MAG_MICLEV channel.

The final Total Magnetic Intensity (TMI) data were stored in TMI_FINAL channel. Note, for the CCC and DDD blocks, TMI_FINAL is copied directly from MAG_MICLEV channel; for the BBB block, TMI_FINAL is copied directly from MAG_SIMPLE_LVL channel.

7.5.4 VERTICAL DERIVATIVE

A 1-st Order Vertical Derivative (VDV) data were calculated using 2D FFT2 algorithm based on final TMI grids. The resulting VDV grids were then sampled back to the database.

The VDV data were stored under VDV channel.

7.5.5 GRIDDING

All the magnetic (TMI & VDV) and DTM grids were produced from the corresponding TMI_FINAL, VDV and DTM channels.

The data were gridded using a bi-directional line gridding method with a grid cell size of 15 meters, Akima interpolation method for across and down line spline and trend angles perpendicular to those of traverse line directions.

7.5.6 RADIOMETRIC DATA CORRECTIONS

7.5.6.1 LIVE TIME CORRECTIONS

The spectrometer uses the notion of “live time” to express the relative period of time the instrument was able to register new pulses per sample interval.

The live time correction is applied to the total count, potassium, uranium, thorium and upward uranium channels.

The formula used to apply the correction is as follows:

$$C_{LT} = C_{raw} \times \left(\frac{1000}{LT} \right)$$

Where:

- C_{LT} is the live time corrected channel

- C_{raw} is the raw channel
- LT is the Live Time channel

7.5.6.2 PRE-FILTERING

The cosmic channel data were processed with a 15-point low pass filter to remove spikes.

The radar altimeter channel while recorded at 50Hz was filtered with 21-point COSINE filter and then sampled to 1Hz.

7.5.6.3 AIRCRAFT AND COSMIC BACKGROUND

Aircraft background and cosmic stripping corrections (see section 6.3.2) were applied to the live corrected total count, potassium, uranium, thorium and upward uranium channels using the following formula:

$$C_{ac} = C_{LT} - \left(ac + bc \times cof\right)$$

Where:

- C_{ac} is the background and cosmic corrected channel
- C_{LT} is the live time corrected channel
- ac is the aircraft background for this channel
- bc is the cosmic stripping coefficient for this channel
- cof is the filtered cosmic channel

All negative counts after this correction step were replaced with zeroes.

7.5.6.4 RADON CORRECTION

No Radon corrections were applied to the data.

7.5.6.5 COMPTON STRIPPING

Following the background and cosmic corrections the potassium, uranium and thorium were corrected for spectral overlap (see section 6.2). First the stripping ratios α, β, and χ were modified according to altitude. Then an adjustment factor based on the reversed stripping ratio (a), uranium into thorium, was calculated.

$$\alpha h = \alpha + hef \times 0.00049$$
$$\beta h = \beta + hef \times 0.00065$$
$$\chi h = \chi + hef \times 0.00069$$

Where:

- α, β, χ are the Compton stripping coefficients
- $\alpha h, \beta h, \chi h$ are the height corrected Compton stripping coefficients
- hef is the height above ground in meters

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

$$ar = \frac{1}{1 - a\alpha h}$$

$$Th_c = (Th_{bc} - aU_{rc}) \times ar$$

$$U_c = (U_{rc} - Th_{bc}\alpha h) \times ar$$

$$K_c = K_{bc} - \beta h Th_c - \chi h U_c$$

Where:

- U_c, Th_c, and K_c are corrected Uranium, Thorium and Potassium
- $\alpha h, \beta h, \chi h$ are the height corrected Compton stripping coefficients
- U_{bc}, Th_{bc}, and K_{bc} are background and cosmic corrected Uranium, Thorium and Potassium
- ar is the backscatter correction
- a is the reverse stripping ratio U into Th

All negative counts after this correction step were replaced with zeroes.

7.5.6.6 EQUIVALENT HEIGHT AT STP

The following formula was used to calculate Equivalent Height at STP:

$$H_e = H \times \left(\frac{273.15}{T + 273.15} \right) \times \left(\frac{P}{1013.25} \right)$$

Where:

- H is the observed height

- H_e is the equivalent height at STP
- T is the temperature in degrees Celsius
- P is the barometric pressure in mbar.

7.5.6.7 ATTENUATION CORRECTIONS

The Total Count, Potassium, Uranium and Thorium data were then corrected to a nominal survey altitude of 35m (see section 6.4.1) using the following equation:

$$C_a = C \times e^{-\mu(h_0 - h_e)}$$

Where:

- C_a is the output altitude corrected channel
- C is the input channel
- μ is the attenuation correction for that channel
- h_e is the STP height
- h_0 is the nominal survey altitude

The altitude attenuation corrected data were then stored in U_CORR, Th_CORR, K_CORR and TC_CORR channels.

7.5.6.8 LEVELING OF ATTENUATION CORRECTED DATA

Microleveling techniques were applied to specific altitude attenuation corrected elements (i.e., some or all of K, Th, U and Total Count) on all of the survey blocks with the exception of CCC.

The following key microlevelling parameters were used (see Appendix F for full description of the procedure).

Table 7.7 Uranium microlevelling parameters

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (nT)	Amplitude Limit Mode	Naudy Filter Limit
BBB	100	0	20	400	3	clip	100
CCC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DDD	100	0	20	400	N/A	N/A	N/A

Table 7.8 Thorium microlevelling parameters

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (nT)	Amplitude Limit Mode	Naudy Filter Limit
BBB	100	0	20	400	3.2	clip	100
CCC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DDD	100	0	20	400	N/A	N/A	N/A

Table 7.9 Potassium microlevelling parameters

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (nT)	Amplitude Limit Mode	Naudy Filter Limit
BBB	100	0	20	400	3.7	clip	100
CCC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DDD	100	0	20	400	4.3	clip	100

Table 7.10 Total Count microlevelling parameters

Block Name	Line Spacing (m)	Line Direction (deg.)	Grid Cell Size (m)	Decorrugation Cutoff (m)	Amplitude Limit (nT)	Amplitude Limit Mode	Naudy Filter Limit
BBB	100	0	20	400	25.4	clip	0
CCC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DDD	100	0	20	400	68.0	clip	0

The resulting microleveled altitude attenuation corrected line data were then stored in the final U_FINAL_CORR, Th_FINAL_CORR, K_FINAL_CORR and TC_FINAL_CORR channels. Note, in the instances where no microlevelling was applied, the data in the final channels were copied directly from U_ CORR, Th_ CORR, K _CORR and TC _CORR.

7.5.6.9 CONVERSION TO APPARENT RADIOELEMNT CONCENTRATIONS

The next step is to convert the corrected potassium (K_FINAL_CORR channel), uranium (U_FINAL_CORR channel) and thorium (Th_FINAL_CORR channel) to apparent radioelement concentrations (see section 6.6) using the following formula:

$$eE = {C_{cor}}/{s}$$

Where:

- eE is the element concentration $K_{\%}$ and equivalent element concentration of U_{ppm} & Th_{ppm}
- s is the experimentally determined sensitivity
- C_{cor} is the fully corrected channel

The resulting apparent concentration data were stored in K_Percent, eU and eTh channels.

Note: Determining of apparent radioelement concentrations were not part of the singed agreement. Such data are made available to the client as a courtesy.

7.5.6.10 AIR ABSORPTION DOSE RATE

Finally the natural air absorption dose rate was determined using the following formula:

$$E = 13.078 \times K_{\%} + 5.675 \times eU_{ppm} + 2.494 \times eTh_{ppm}$$

Where:

- E is the air absorption rate (nGy/h)
- $K_{\%}$ is the concentration of potassium (%)
- eU_{ppm} is the equivalent concentration of potassium (ppm)
- eTh_{ppm} is the equivalent concentration of potassium (ppm)

The resulting natural air absorption rate data were stored in E channel.

Note: Determining of the absorption rate was not part of the singed agreement. Such data are made available to the client as a courtesy.

A detailed description of how most of the procedures, formulae and constants were determined could be found in:

I.A.E.A. *Report, Airborne Gamma Ray Spectrometer Surveying*, Technical Report Series No. 323, 1991.
and
I.A.E.A *Guidelines for Radioelement Mapping Using Gamma Ray Spectrometry Data*, Technical Document No. 1363, 2003.

7.5.6.11 GRIDDING

All the radiometric grids are in counts/sec units and were produced from U_FINAL_CORR, Th_FINAL_CORR, K_FINAL_CORR and TC_FINAL_CORR channels.

The data were gridded using a bi-directional line gridding method with a grid cell size of 25 meters, Akima interpolation method for across and down line spline and trend angles perpendicular to those of traverse line directions.

7.5.6.12 TERNARY MAP

The radioelement ternary map was produced by creating individual grids for each of the three radioelements (potassium, thorium and uranium), then assigning a specific colour to each. Cyan represents thorium, yellow uranium, and magenta potassium. The relative concentrations of the radioelements are represented by the blends of the three colours.

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8. MAP PRODUCTS AND DIGITAL DATA DELIVERABLES

The following is the list of items delivered to **STRATEGIC METALS Ltd.**

Hard Copy Maps for BBB, CCC and DDD Blocks @ 1:20,000 scale (x2):

- Maps of Total Magnetic Intensity
- Maps of 1st order Vertical Derivative
- Maps of Digital Terrain Model
- Maps of Ternary Image (Th, U and K)
- Maps of Potassium counts
- Maps of Thorium counts
- Maps of Uranium counts
- Maps of Total Count

Hard Copy Logistics Report (x2):

Digital Copy (DVD) Maps for BBB, CCC and DDD Blocks @ 1:20,000 scale (x2):

- Maps of Total Magnetic Intensity
- Maps of 1st order Vertical Derivative
- Maps of Digital Terrain Model
- Maps of Potassium counts
- Maps of Thorium counts
- Maps of Uranium counts
- Maps of Total Count
- Ternary Map of Th, U and K

Digital Copy Grids (DVD) for BBB, CCC and DDD Blocks (x2):

- Grids of Total Magnetic Intensity (nT)
- Grids of 1st order Vertical Derivative (nT/m)
- Grids of Digital Terrain Model (m above MSL)
- Grids of Potassium (counts/sec)
- Grids of Thorium (counts/sec)
- Grids of Uranium (counts/sec)
- Grids of Total Count (counts/sec)

Digital Copy (DVD) Databases for BBB, CCC and DDD Blocks (x2):

- Magnetics data databases: MAGNETIC_ *blockname* _BK.gdb (See Appendix C for details)
- Radiometric data database: RADIOMETRIC_ *blockname* _BK.gdb (See Appendix C for details)

<u>Digital Copy (DVD) Logistics Report (x2)</u>:

<u>Digital Copy (DVD) Weekly and Line Report (x2)</u>:

9. SUMMARY

This report describes the logistics of the survey, equipment used, field procedures, data acquisition and presentation of results.

The various maps included with this report display the magnetic and radiometric properties of the survey area. It is recommended that the survey results be reviewed in detail, in conjunction with all available geophysical, geological and geochemical information.

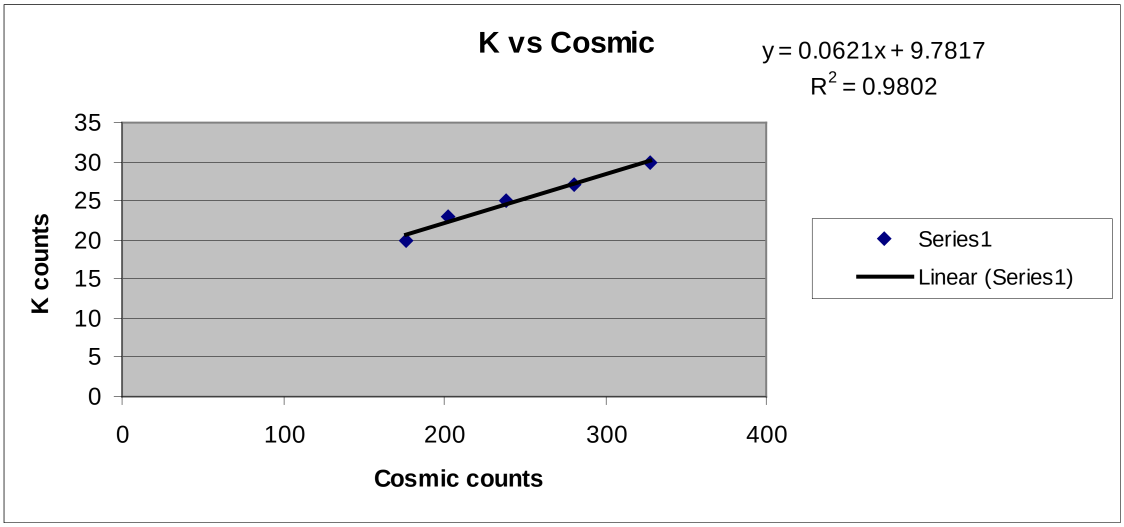
Further processing of the data may enhance subtle features that can be of importance for exploration purposes.

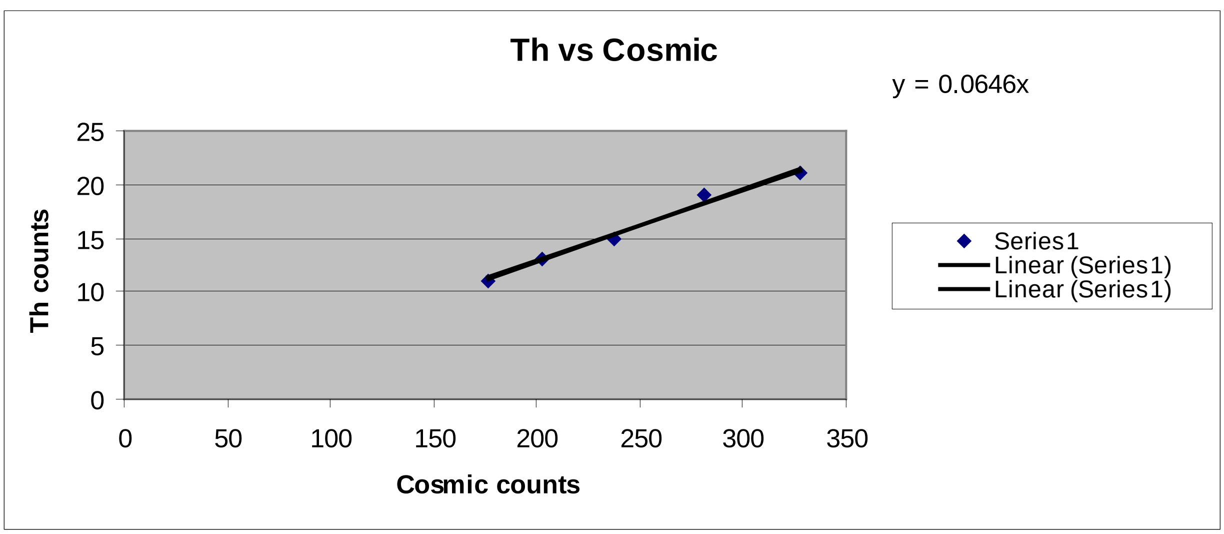
Respectfully submitted,

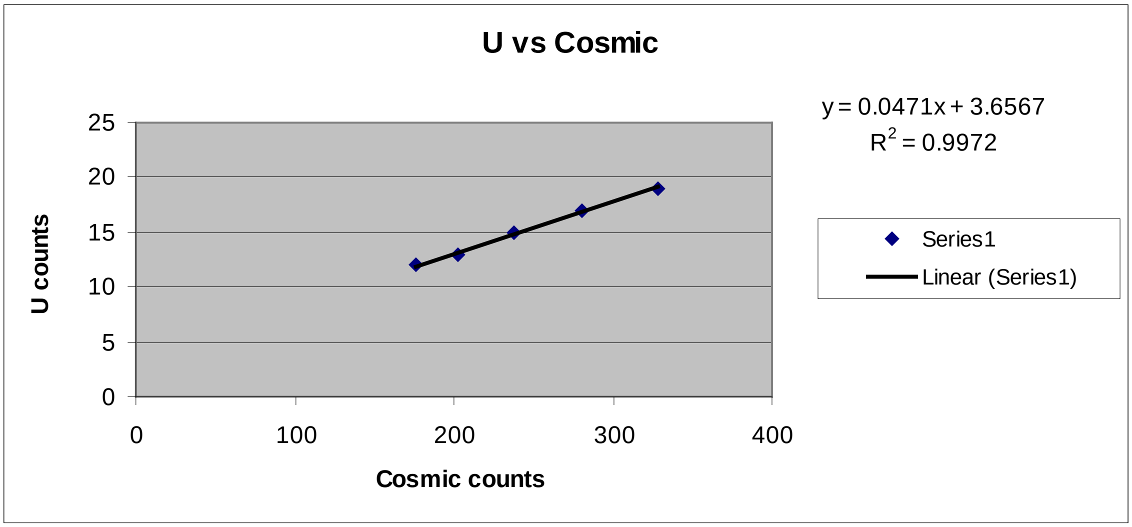
Andrei Yakovenko
New-Sense Geophysics Ltd.
Date: October 12th, 2010

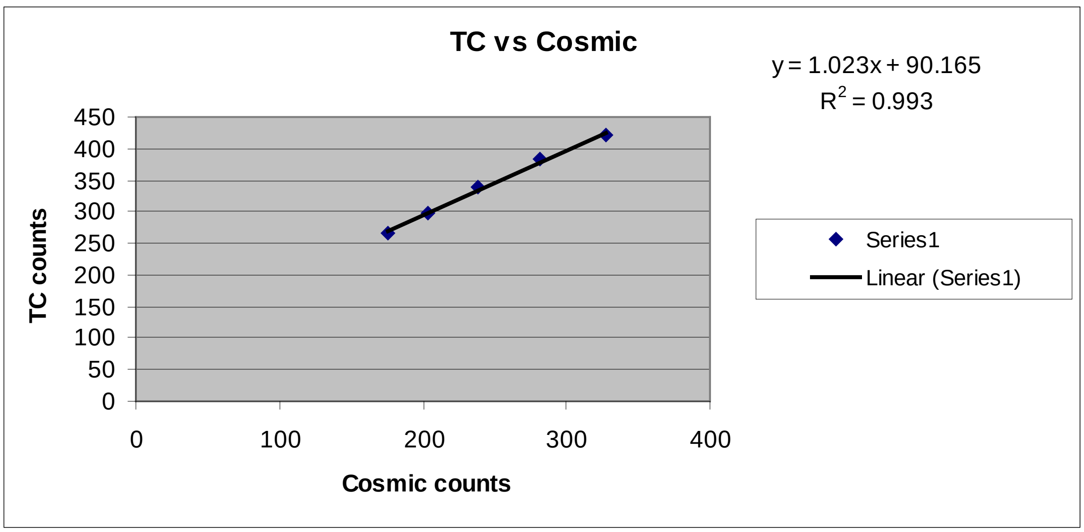
APPENDIX A: BACKGROUND AND COSMIC TESTS CHARTS

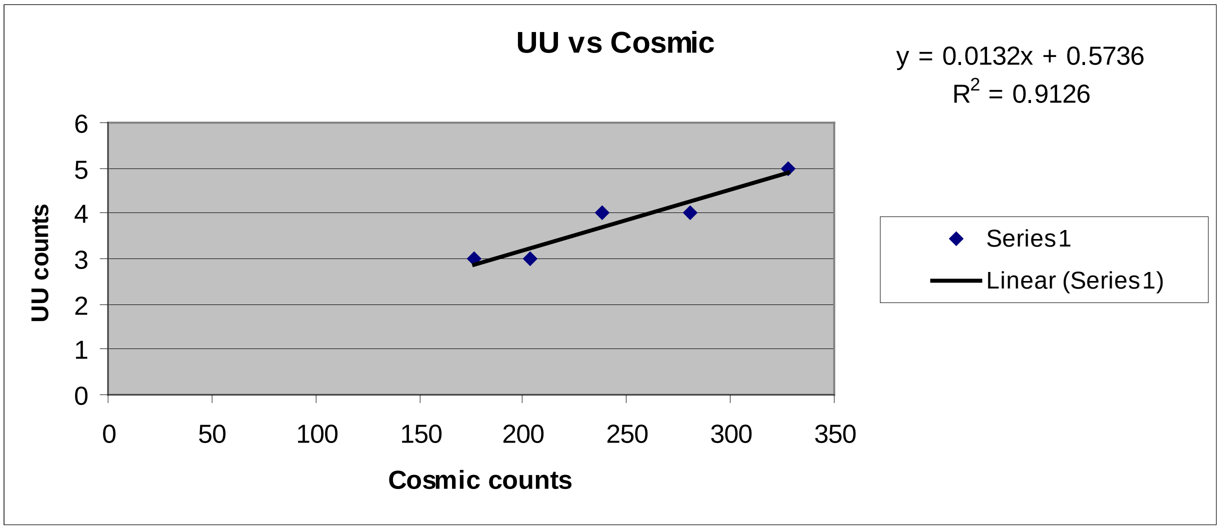
August 15, 2010





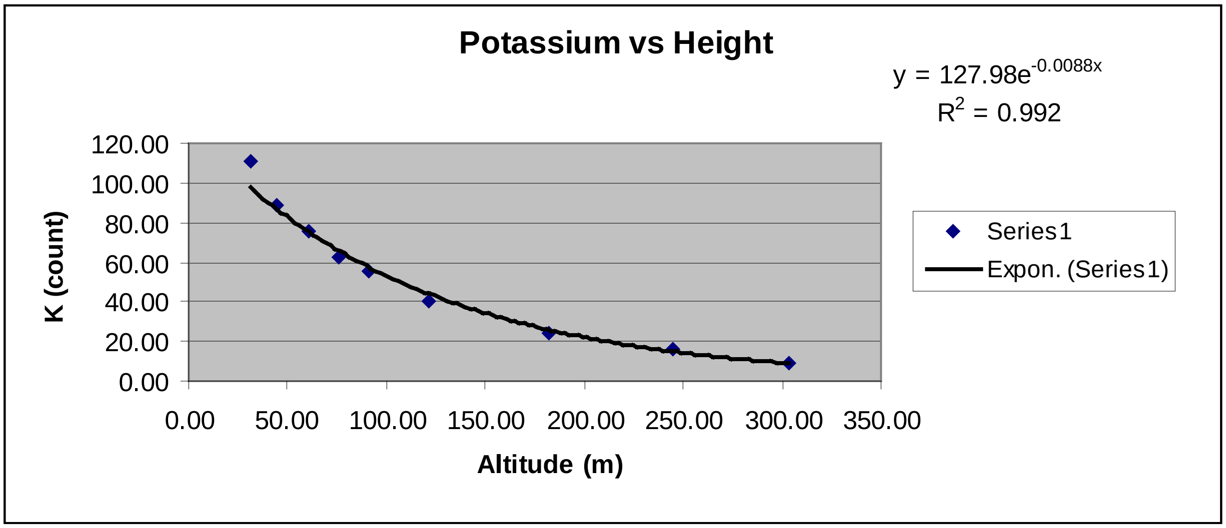

U vs Cosmic
y = 0.0471x + 3.6567
R2 = 0.9972
U counts
25
20
15
10
5
0
0
100
200
300
400
Cosmic counts
Series1
Linear (Series1)

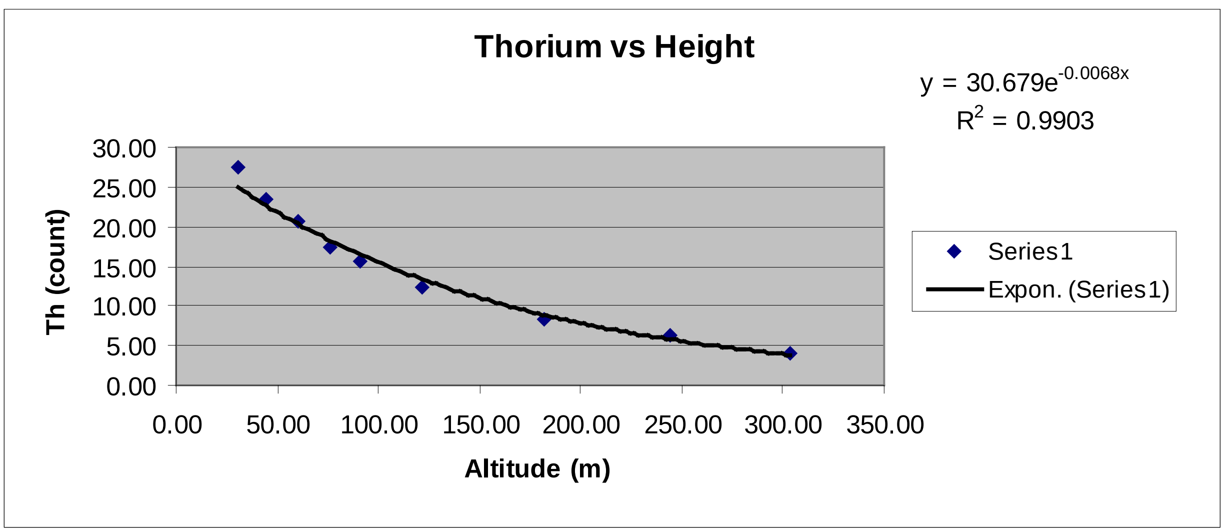

TC vs Cosmic
y = 1.023x + 90.165
R2 = 0.993
TC counts
450
400
350
300
250
200
150
100
50
0
0
100
200
300
400
Cosmic counts
Series1
Linear (Series1)

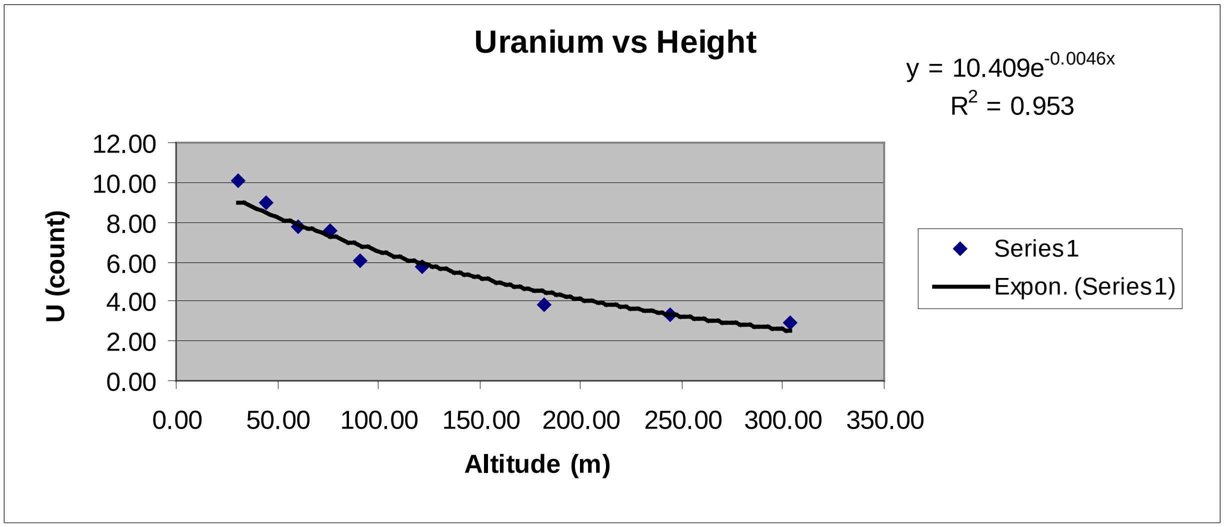

UU vs Cosmic
y = 0.0132x + 0.5736
R2 = 0.9126
UU counts
0
1
2
3
4
5
6
0
50
100
150
200
250
300
350
Cosmic counts
Series1
Linear (Series1)

Height Attenuation Test Charts

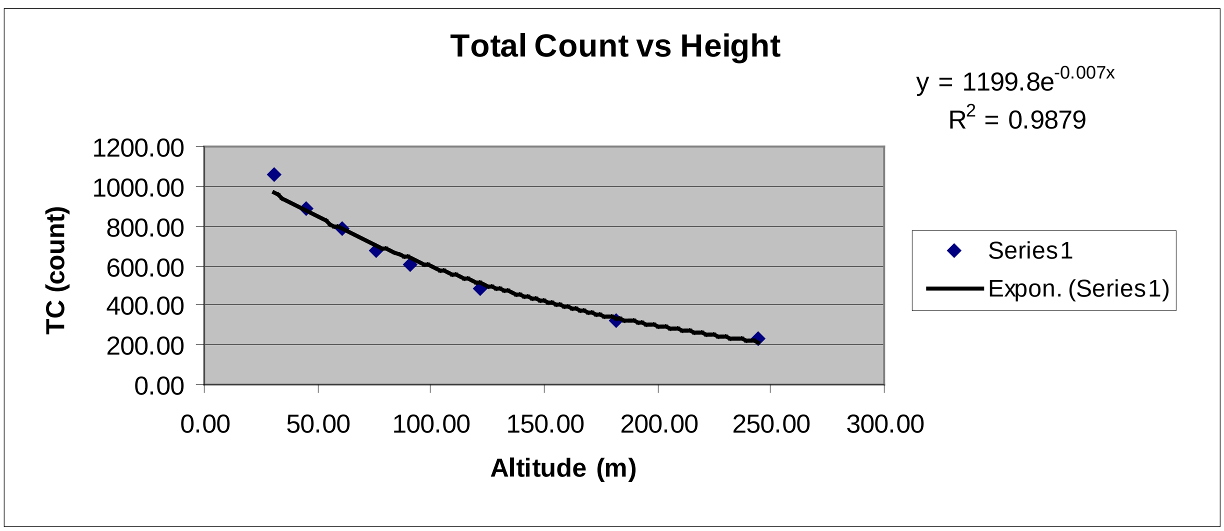
August 20, 2010







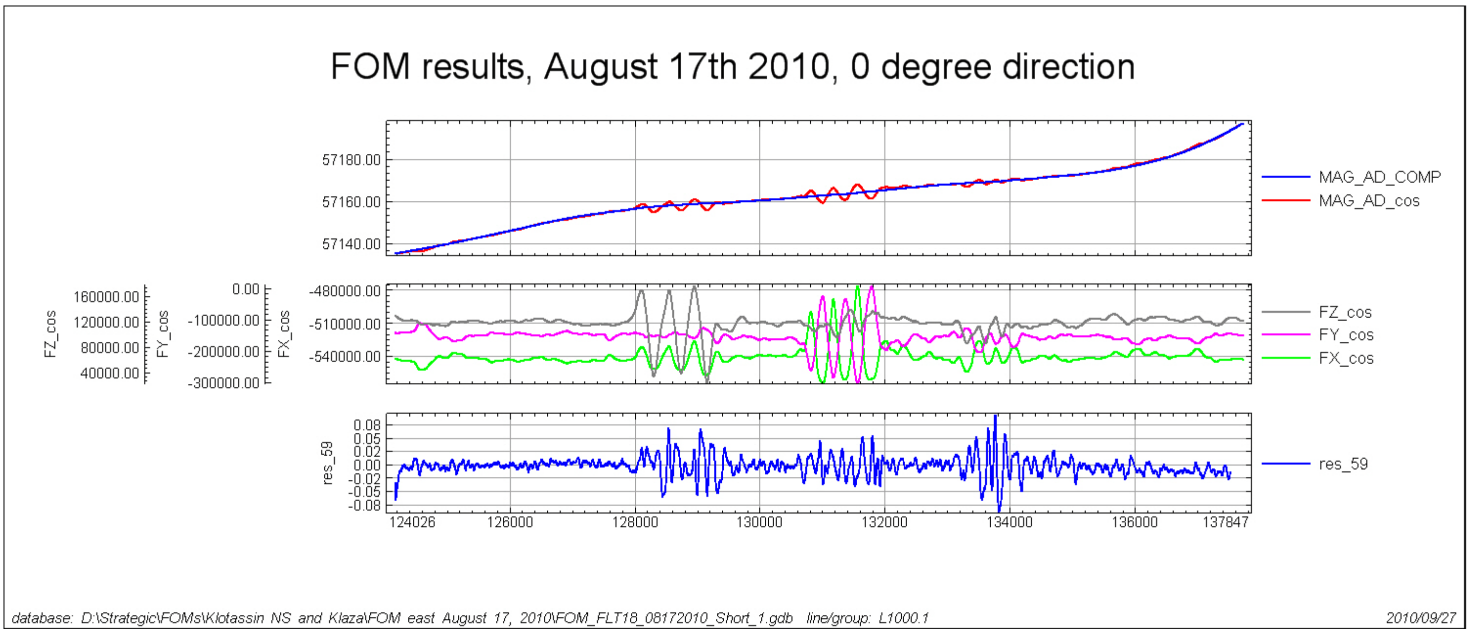
Uranium vs Height
y = 10.409e^-0.0046x
R^2 = 0.953
U (count)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Altitude (m)
Series1
Expon. (Series1)

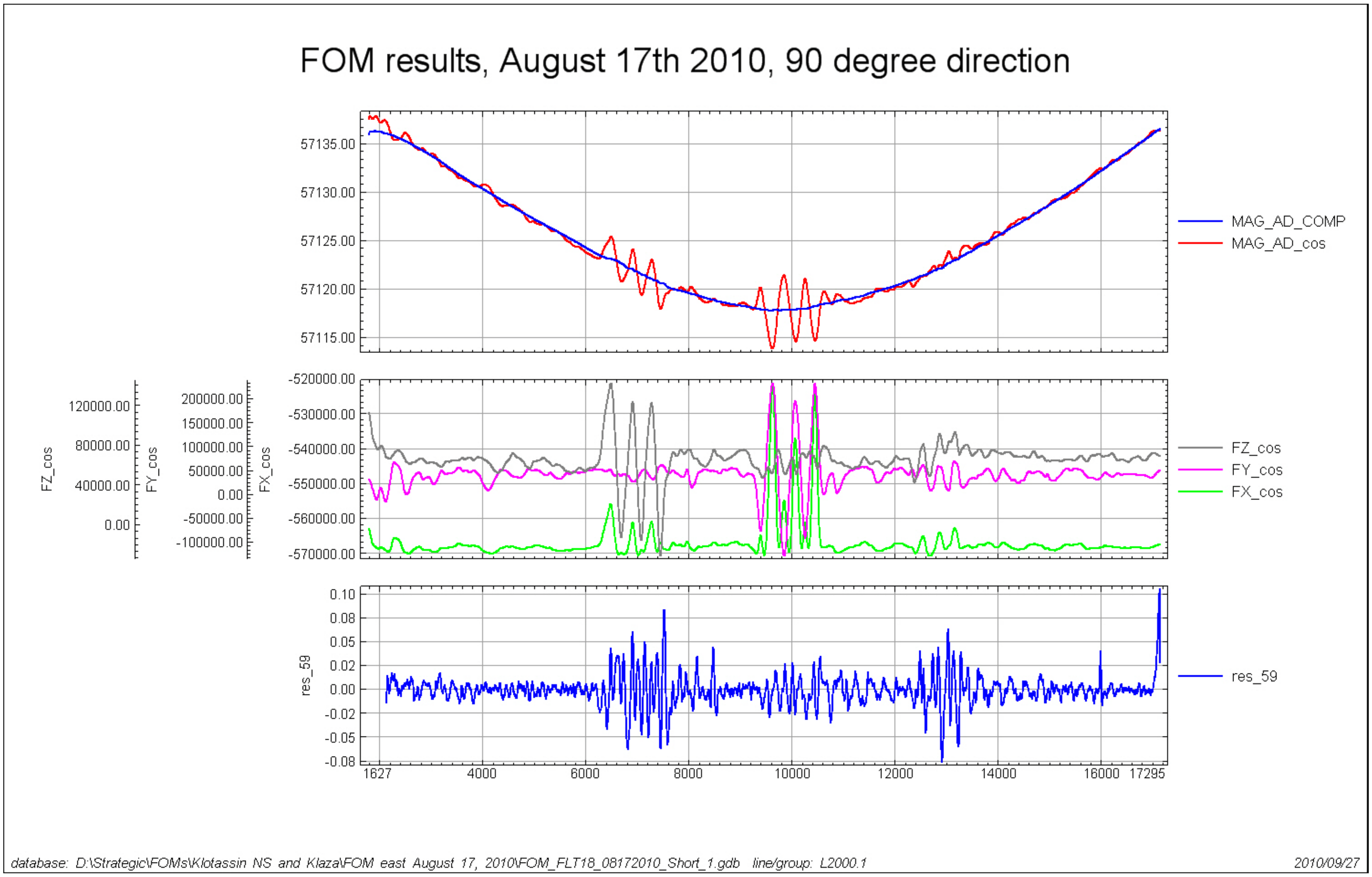


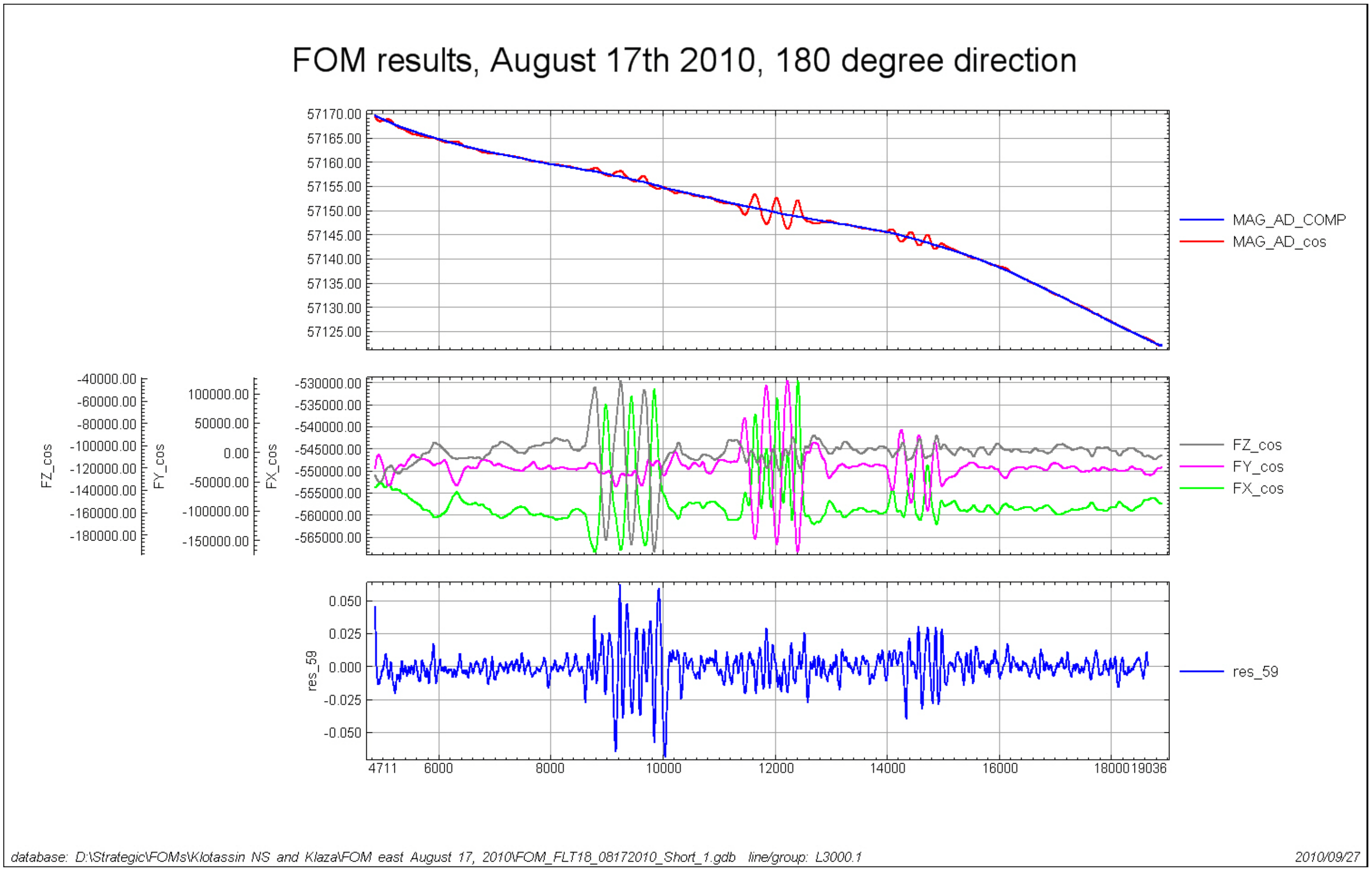
Total Count vs Height
y = 1199.8e^-0.007x
R^2 = 0.9879
TC (count)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Altitude (m)
Series1
Expon. (Series1)

APPENDIX B: FOM RESULTS

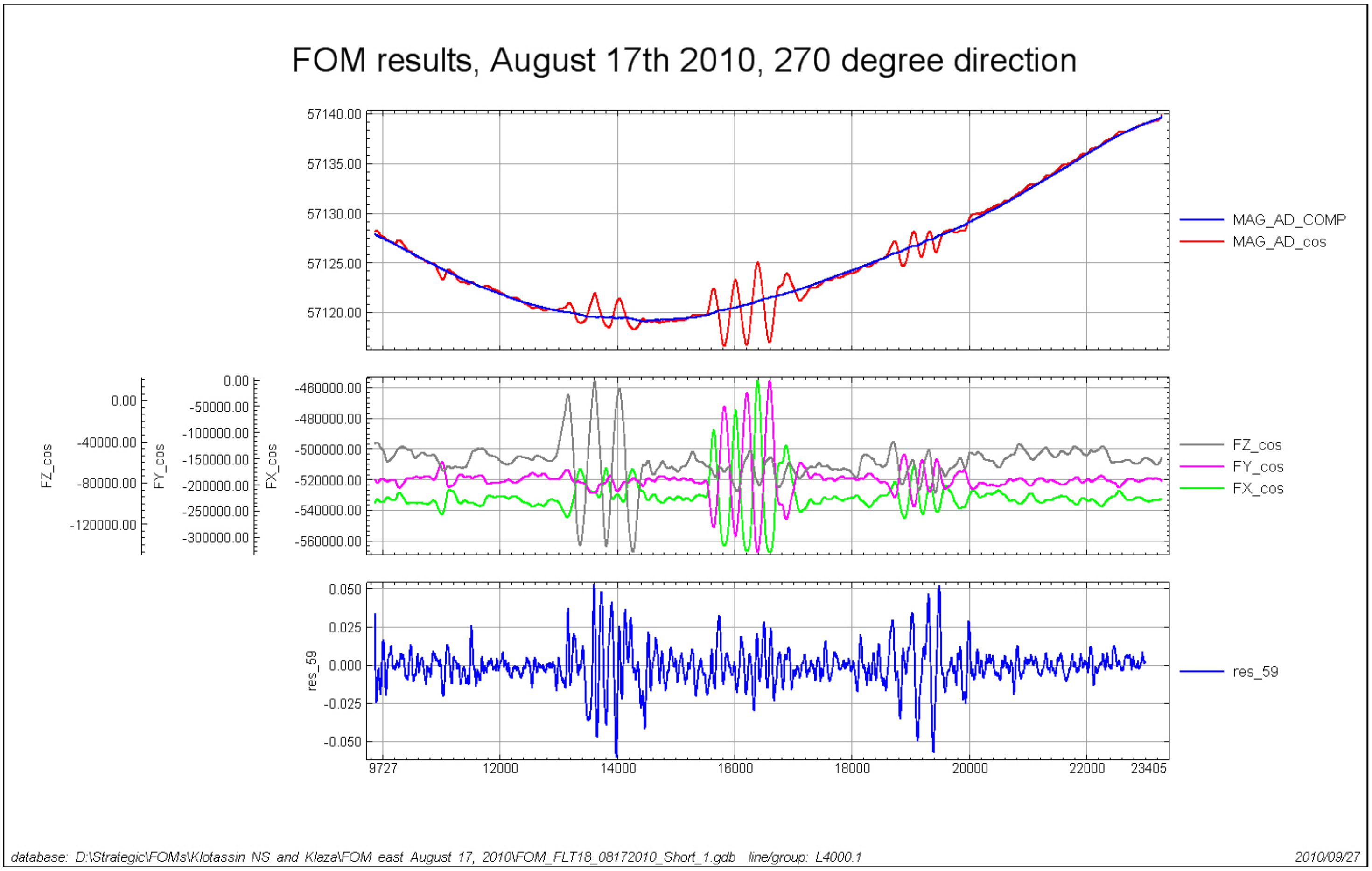
Strategic Metals, Yukon, FOM result, August 17th, 2010					
line	**direction**	**pitch**	**roll**	**yaw**	**total**
1000	**0**	0.125	0.085	0.175	0.385
2000	**90**	0.125	0.050	0.138	0.313
3000	**180**	0.138	0.050	0.055	0.243
4000	**270**	0.100	0.050	0.108	0.258
	total	0.488	0.235	0.475	**1.198**




FOM results, August 17th 2010, 90 degree direction
MAG_AD_COMP
MAG_AD_cos
FZ_cos
FY_cos
FX_cos
res_59
database: D:\Strategic\FOMs\Klotassin NS and Klaza\FOM east August 17, 2010\FOM_FLT18_08172010_Short_1.gdb line/group: L2000.1
2010/09/27



FOM results, August 17th 2010, 180 degree direction
MAG_AD_COMP
MAG_AD_cos
FZ_cos
FY_cos
FX_cos
res_59
database: D:\Strategic\FOMs\Klotassin NS and Klaza\FOM east August 17, 2010\FOM_FLT18_08172010_Short_1.gdb line/group: L3000.1
2010/09/27



FOM results, August 17th 2010, 270 degree direction
MAG_AD_COMP
MAG_AD_cos
FZ_cos
FY_cos
FX_cos
res_59
database: D:\Strategic\FOMs\Klotassin NS and Klaza\FOM east August 17, 2010\FOM_FLT18_08172010_Short_1.gdb line/group: L4000.1
2010/09/27

APPENDIX C: DATABASE DESCRIPTIONS

Magnetic Databases for BBB, CCC and DDD blocks

Database Name: MAGNETIC_*blockname*_BK.gdb
Format: Geosoft .gdb
Number of Channels: 28

Note: If the database is opened in Oasis montaj, please load included "*Magnetic database channel display.dbview*" file to insure that ALL the channels are displayed in the same order as listed below (Database menu -> Get Saved View).

Channel Name	Units	Description
LINE	number	Line number
FLIGHT	number	Flight number
DATE	date	Date flown (YYMMDD)
FIDUCIAL	number	Fiducial count (flight specific)
SYSTEM_CLOCK	milsec	KANA8 (A/D converter) counter
UTM_X_NAD83	meters	UTM East in NAD83, North America, Zone 8N
UTM_Y_NAD83	meters	UTM North in NAD83, North America, Zone 8N
LATITUDE_WGS84	degrees	GPS latitude, WGS 84, World
LONGITUDE_WGS84	degrees	GPS longitude, WGS 84, World
GPS_HEIGHT_WGS84	meters	GPS height (orthometric) above MSL, WGS 84, World
UTC_DAYSEC	decimal seconds	UTC daily second counter (0-86399)
FLUX_X	volts	Fluxgate x-axis
FLUX_Y	volts	Fluxgate y-axis
FLUX_Z	volts	Fluxgate z-axis
RAD_ALT_feet	feet	Radar altimeter, height above ground
MAG_RAW	nT	Raw magnetometer data
MAG_COMP	nT	Compensated magnetometer data
DIURNAL	nT	Base station magnetometer data (filtered with 101point low pass filter)
MAG_DIURNAL_CORR	nT	Base station (diurnal) corrected magnetometer data
MAG_LAG_CORR	nT	Lag corrected magnetometer data
MAG_HEADING_CORR	nT	Heading corrected magnetometer data
IGRF	nT	Calculated IGRF, using 2010 model
MAG_IGRF_CORR	nT	IGRF corrected magnetometer data
MAG_SIMPLE_LVL	nT	Conventionally (simple) leveled magnetometer data
MAG_MICLEV	nT	Microleveled magnetometer data (if applicable)
TMI_FINAL	nT	Final magnetometer data (a copy of either MAG_SIMPLE_LVL or MAG_MICLEV channels)
VDV	nT/m	1^{st} order Vertical Derivative (VDV)
DTM	meters	Calculated DTM channel

Radiometric Databases for BBB, CCC and DDD blocks

Database Name: RADIOMETRIC_ *blockname*_BK.gdb
Format: Geosoft .gdb
Number of Channels: 34

Note: If the database is opened in Oasis montaj, please load included "*Radiometric database channel display.dbview*" file to insure that ALL the channels are displayed in the same order as listed below (Database menu -> Get Saved View).

Channel Name	Units	Description
LINE	number	Line Number
FLIGHT	number	Flight Number
DATE	date	Date flown (YYMMDD)
FIDUCIAL	number	Fiducial count (line specific)
UTM_X_NAD83	meters	UTM East in NAD83, North America, Zone 8N
UTM_Y_NAD83	meters	UTM North in NAD83, North America, Zone 8N
LATITUDE_WGS84	degrees	GPS latitude, WGS 84, World
LONGITUDE_WGS84	degrees	GPS longitude, WGS 84, World
GPS_HEIGHT_WGS84	meters	GPS height (orthometric) above MSL, WGS 84, World
UTC_DAYSEC	seconds	UTC daily second counter (0-86399)
RAD_ALT_feet	feet	Radar altimeter, height above ground
PRESSURE	mbar	Ambient pressure output
TEMPERATURE	degrees C	Ambient temperature output
DOWN_LIVE_TIME	seconds	Live time channel
RAW_Potassium	counts/sec	Raw Potassium channel
RAW_Thorium	counts/sec	Raw Thorium channel
RAW_Uranium	counts/sec	Raw Uranium channel
RAW_TotCount	counts/sec	Raw Total Count channel
RAW_UpDet	counts/sec	Raw upward looking crystal Uranium channel
COSMIC	counts/sec	Raw Cosmic channel from downward looking crystals
SPECTRUM	counts/sec	1024 channel down spectrum
EQUIVALENT_HEIGHT_m	meters	Equivalent height above ground at STP
K_CORR	counts/sec	Live Time, Background, Cosmic, Compton Scattering and Altitude Attenuation corrected Potassium counts
Th_CORR	counts/sec	Live Time, Background, Cosmic, Compton Scattering and Altitude Attenuation corrected Thorium counts
U_CORR	counts/sec	Live Time, Background, Cosmic, Compton Scattering and Altitude Attenuation corrected Uranium counts
TC_CORR	counts/sec	Live Time, Background, Cosmic, Compton Scattering and Altitude Attenuation corrected Total Count counts
K_FINAL_CORR	counts/sec	Final Potassium counts; microleveled (if applicable, se section 7.5.6.8 for details)

Th_FINAL_CORR	counts/sec	Final Thorium counts; microleveled (if applicable, se section 7.5.6.8 for details)
U_FINAL_CORR	counts/sec	Final Uranium counts; microleveled (if applicable, se section 7.5.6.8 for details)
TC_FINAL_CORR	counts/sec	Final Total Count counts; microleveled (if applicable, se section 7.5.6.8 for details)
K_Percent	%	Estimated concentrations of Potassium
eTh	ppm	Estimated equivalent concentrations of Thorium
eU	ppm	Estimated equivalent concentrations of Uranium
DOSE_RATE	nGy/h	Natural air absorption Dose Rate

APPENDIX D: RSX-5 SPECTROMETER (SN 5503): DAILY RESOLUTION TESTS RESULTS

Executed 2010/08/20 12:21:28

Detector	Det 1 - SN:00318	Det 2 - SN:00037	Det 3 - SN:00040	Det 4 - SN:00032	Det 5 - SN:00038	Det 1 + 2 + 3 + 4
Status	Done	Done	Done	Done	Done	Done
Counts	2005	2008	2005	2003	2008	8021
Gain	0.971344	0.948381	0.981524	0.959283	1.045188	-
Peak	871.28 (+/- 0.401)	878.74 (+/- 0.677)	871.83 (+/- 0.599)	872.48 (+/- 0.654)	873.05 (+/- 0.935)	872.96 (+/- 0.310)
FWHM	3.95 (+/- 1.007)	4.06 (+/- 1.760)	4.90 (+/- 1.595)	4.73 (+/- 1.741)	6.32 (+/- 2.741)	4.55 (+/- 0.808)

Executed 2010/08/21 08:27:51

Detector	Det 1 - SN:00318	Det 2 - SN:00037	Det 3 - SN:00040	Det 4 - SN:00032	Det 5 - SN:00038	Det 1 + 2 + 3 + 4
Status	Done	Done	Done	Done	Done	Done
Counts	2017	2007	2008	2012	2001	8044
Gain	0.979845	0.953761	0.985191	0.961098	1.050286	-
Peak	871.35 (+/- 0.688)	878.21 (+/- 0.809)	872.74 (+/- 0.617)	872.16 (+/- 0.657)	871.59 (+/- 1.103)	873.09 (+/- 0.357)
FWHM	4.03 (+/- 1.813)	4.77 (+/- 2.345)	4.93 (+/- 1.694)	4.82 (+/- 1.830)	6.84 (+/- 3.407)	4.68 (+/- 0.945)

Executed 2010/08/21 12:41:40

Detector	Det 1 - SN:00318	Det 2 - SN:00037	Det 3 - SN:00040	Det 4 - SN:00032	Det 5 - SN:00038	Det 1 + 2 + 3 + 4
Status	Done	Done	Done	Done	Done	Done
Counts	2008	2001	2009	2007	2003	8025
Gain	1.007866	0.995107	1.022537	0.993067	1.091524	-
Peak	871.39 (+/- 0.512)	877.10 (+/- 1.007)	873.15 (+/- 0.556)	872.24 (+/- 0.714)	869.82 (+/- 1.035)	873.24 (+/- 0.377)
FWHM	4.11 (+/- 1.268)	5.10 (+/- 3.017)	4.68 (+/- 1.562)	5.41 (+/- 1.899)	6.69 (+/- 3.194)	4.77 (+/- 0.994)

Executed 2010/08/21 16:35:02

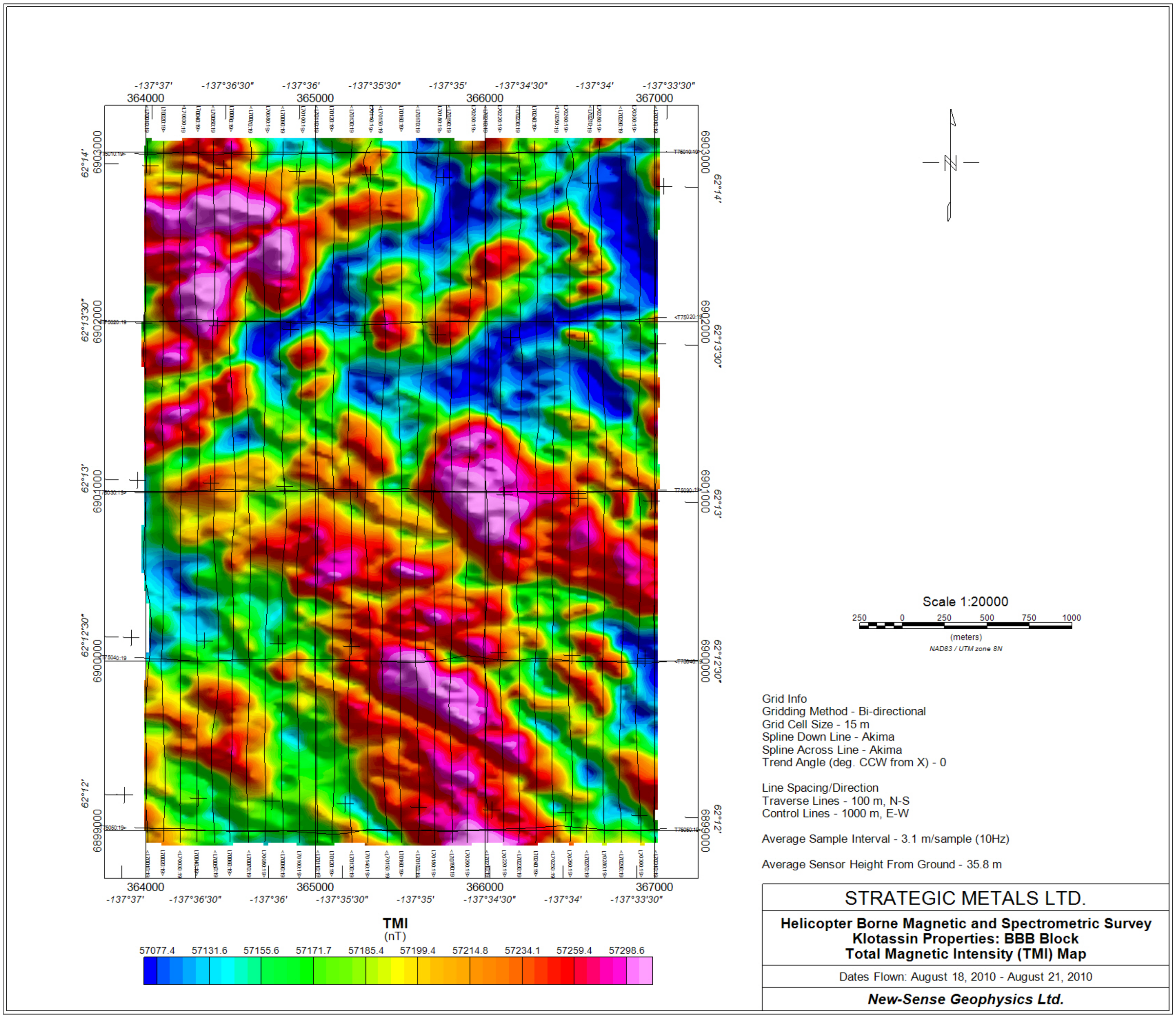
Detector	Det 1 - SN:00318	Det 2 - SN:00037	Det 3 - SN:00040	Det 4 - SN:00032	Det 5 - SN:00038	Det 1 + 2 + 3 + 4
Status	Done	Done	Done	Done	Done	Done
Counts	2017	2003	2010	2004	2001	8034
Gain	1.00248	0.996287	1.021197	0.992742	1.08771	-
Peak	871.84 (+/- 0.634)	877.34 (+/- 0.766)	873.05 (+/- 0.630)	870.40 (+/- 0.591)	867.76 (+/- 1.035)	872.39 (+/- 0.321)
FWHM	4.83 (+/- 1.672)	4.46 (+/- 2.166)	4.80 (+/- 1.697)	4.81 (+/- 1.596)	6.58 (+/- 3.152)	4.78 (+/- 0.831)

Executed 2010/08/21 21:11:28

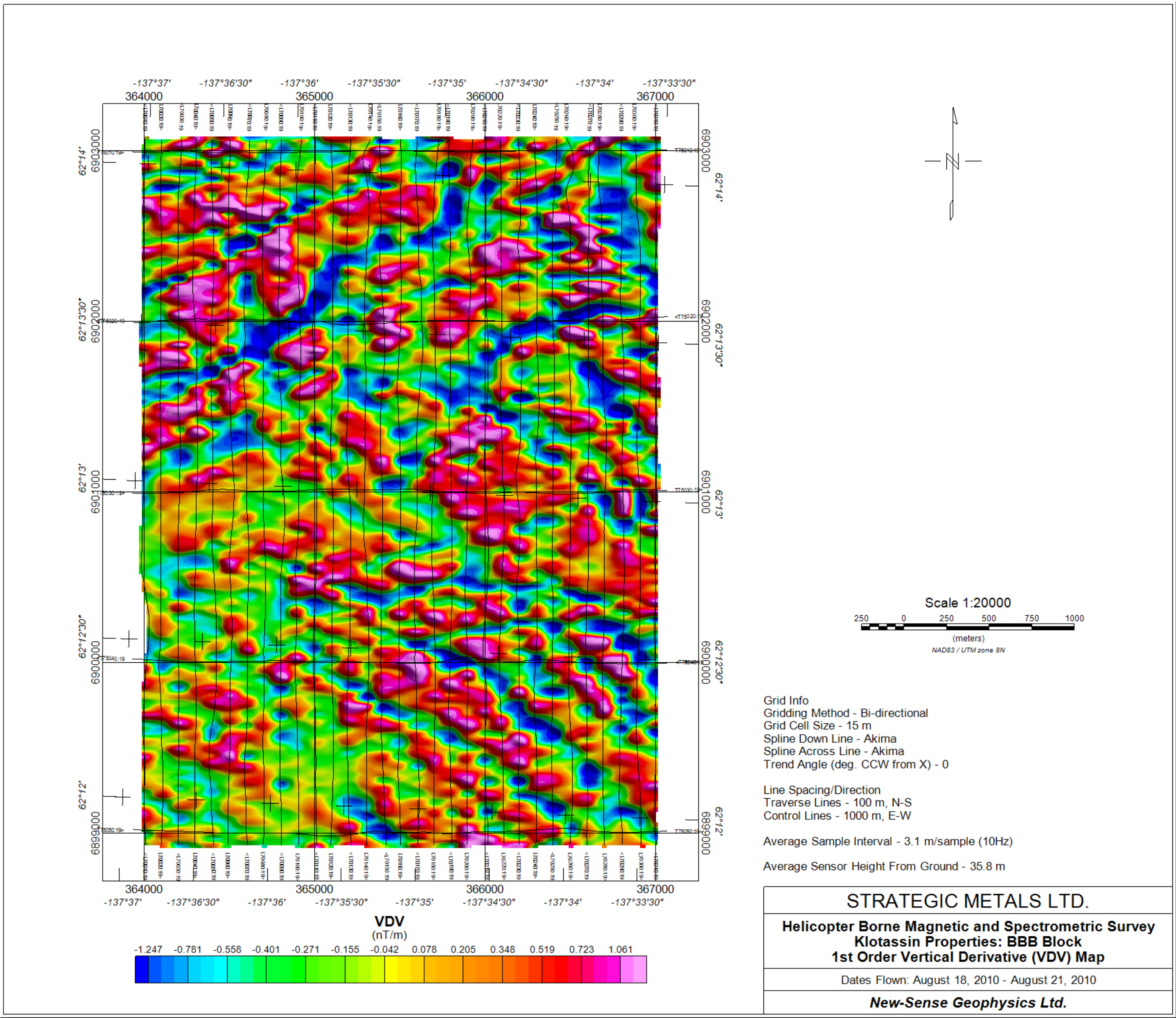
Detector	Det 1 - SN:00318	Det 2 - SN:00037	Det 3 - SN:00040	Det 4 - SN:00032	Det 5 - SN:00038	Det 1 + 2 + 3 + 4
Status	Done	Done	Done	Done	Done	Done
Counts	2004	2001	2003	2008	2004	8016
Gain	0.992341	0.984908	1.013699	0.981971	1.080414	-
Peak	872.06 (+/- 0.397)	878.97 (+/- 0.868)	872.26 (+/- 0.732)	872.46 (+/- 0.703)	869.45 (+/- 1.029)	873.39 (+/- 0.343)
FWHM	4.11 (+/- 0.993)	4.90 (+/- 2.460)	4.48 (+/- 1.973)	5.04 (+/- 1.853)	7.00 (+/- 3.020)	4.64 (+/- 0.894)

APPENDIX E: IMAGES OF FINAL MAPS

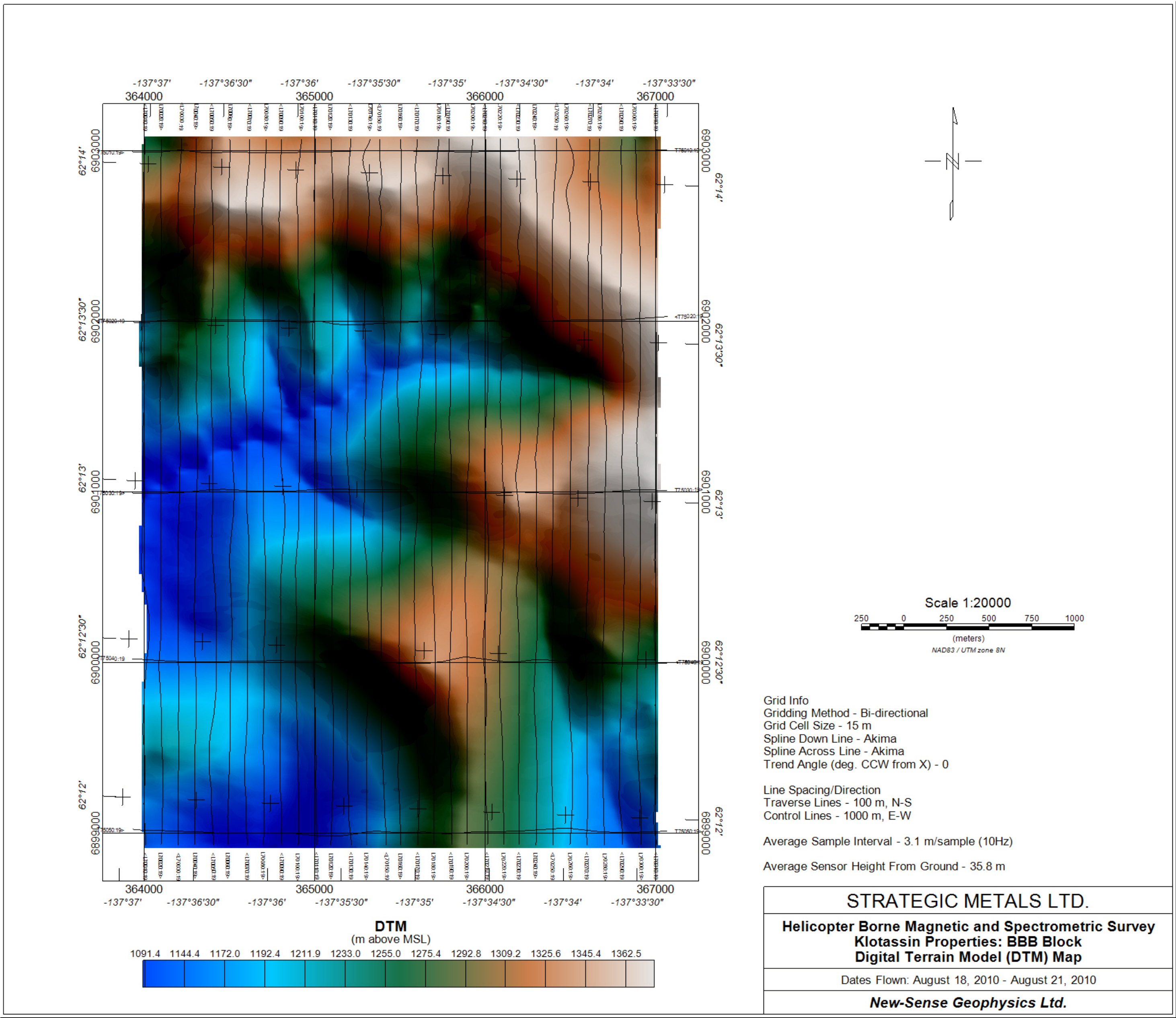
BBB Block Image of TMI FINAL Map



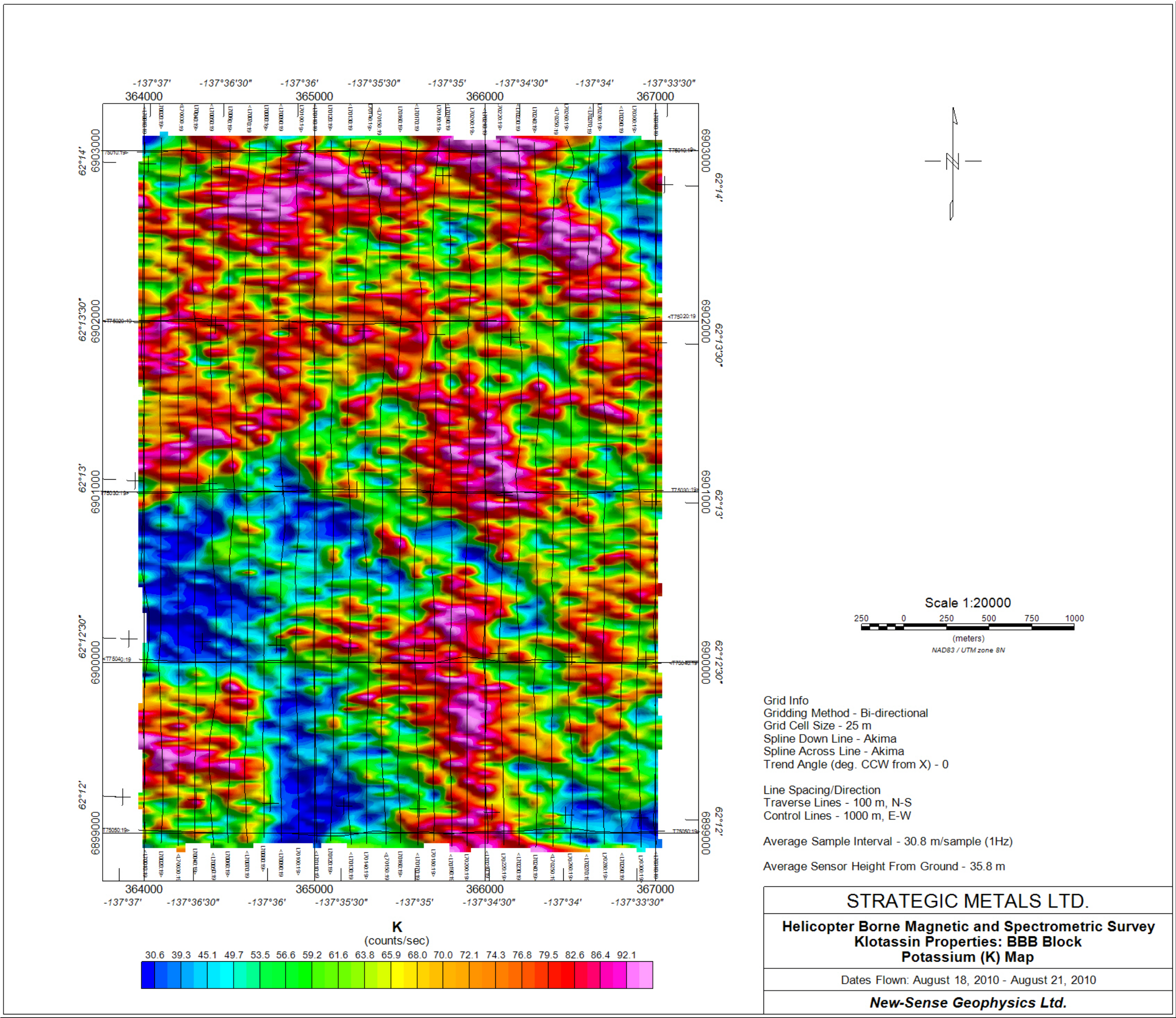
BBB Block Image of VDV Map



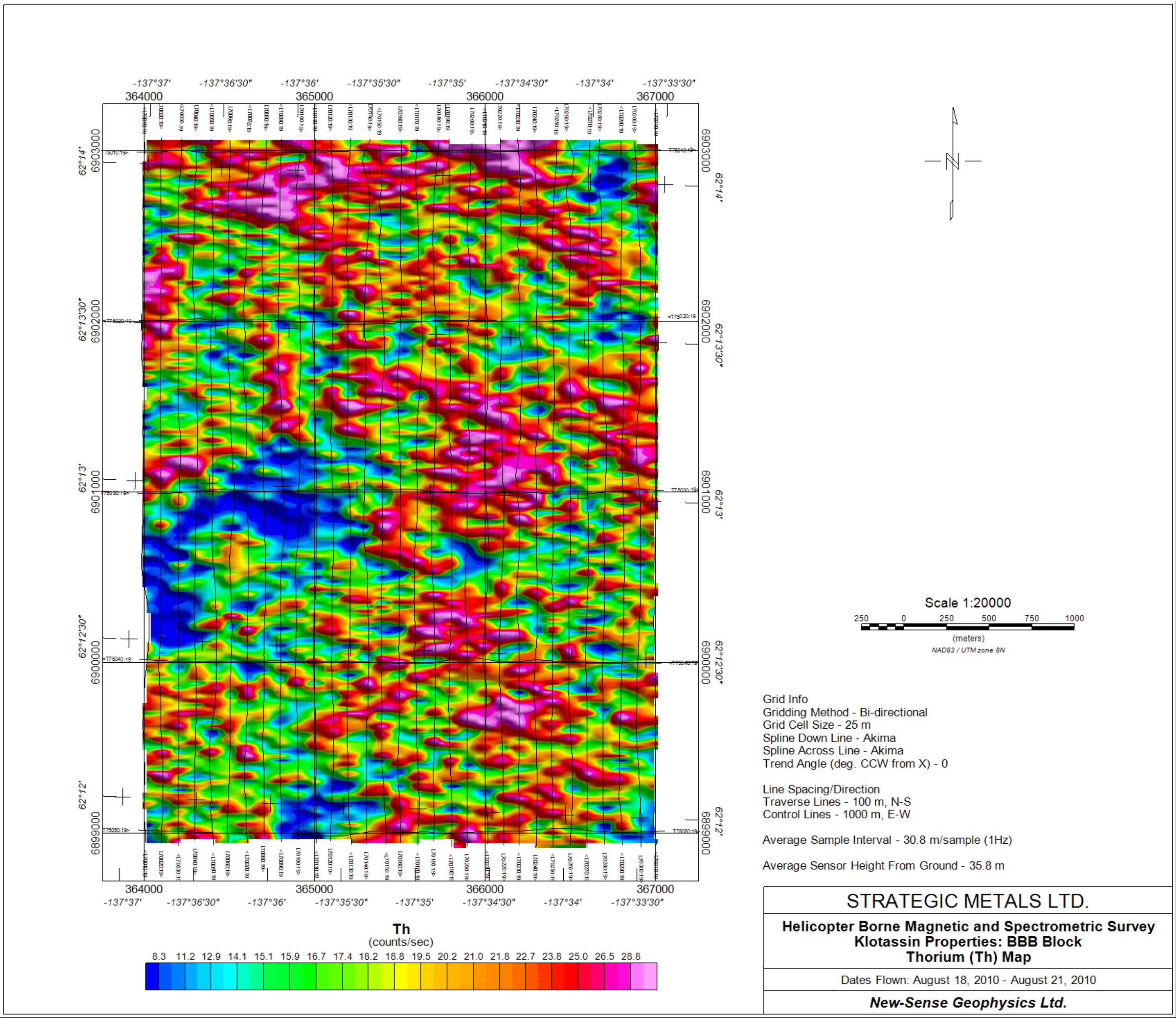
BBB Block Image of DTM Map



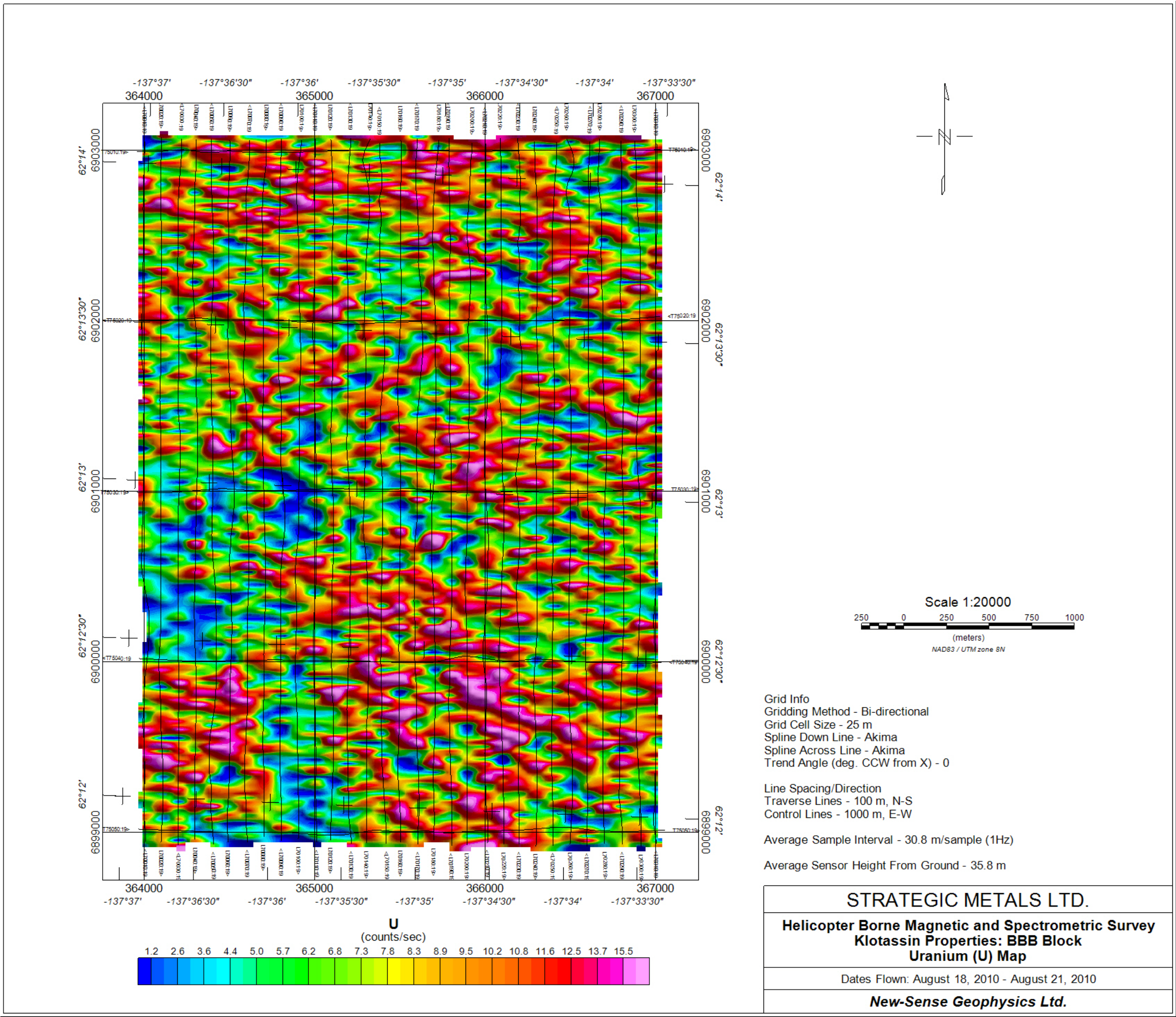
BBB Block Image of Potassium Map



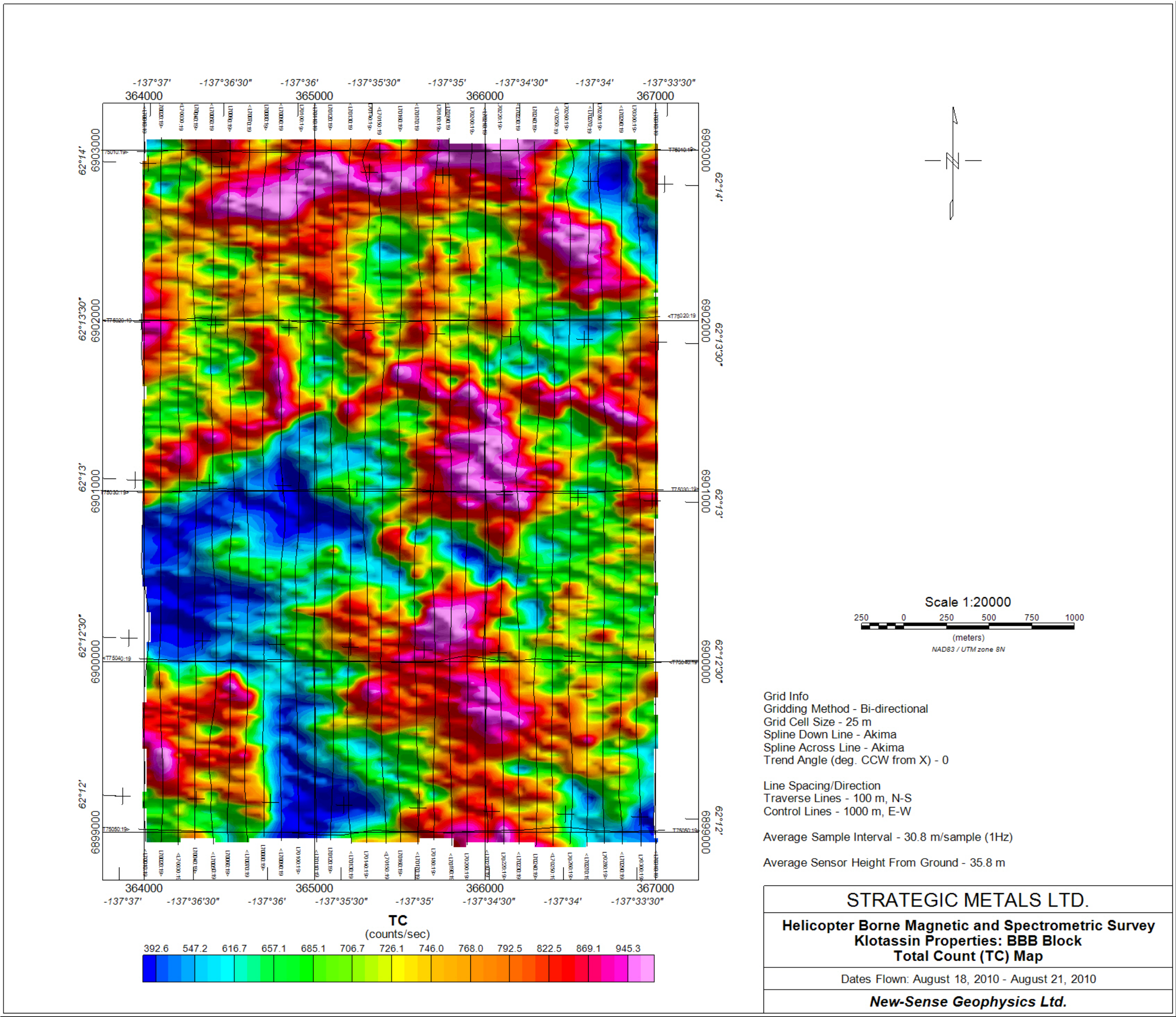
BBB Block Image of Thorium Map



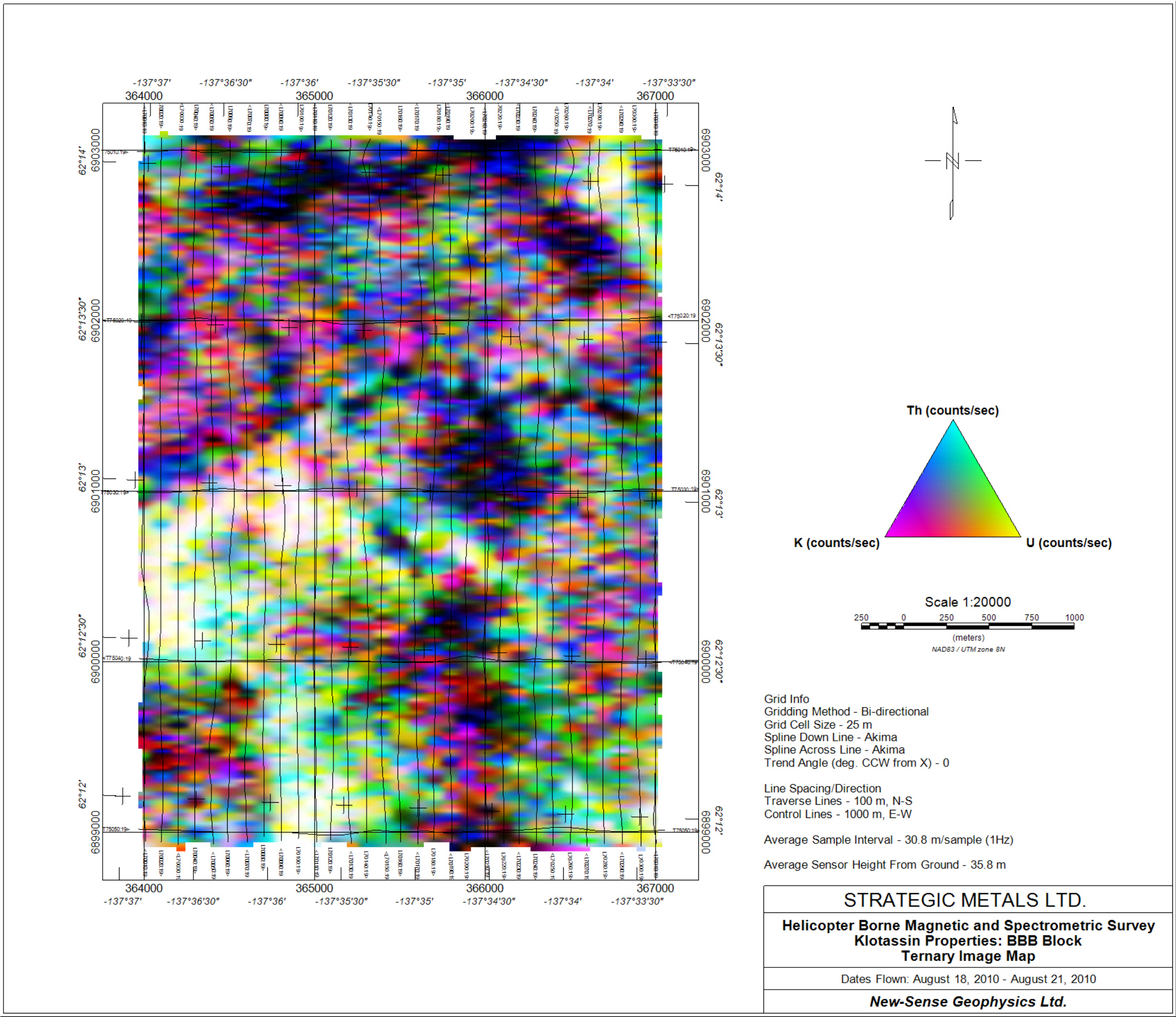
BBB Block Image of Uranium Map



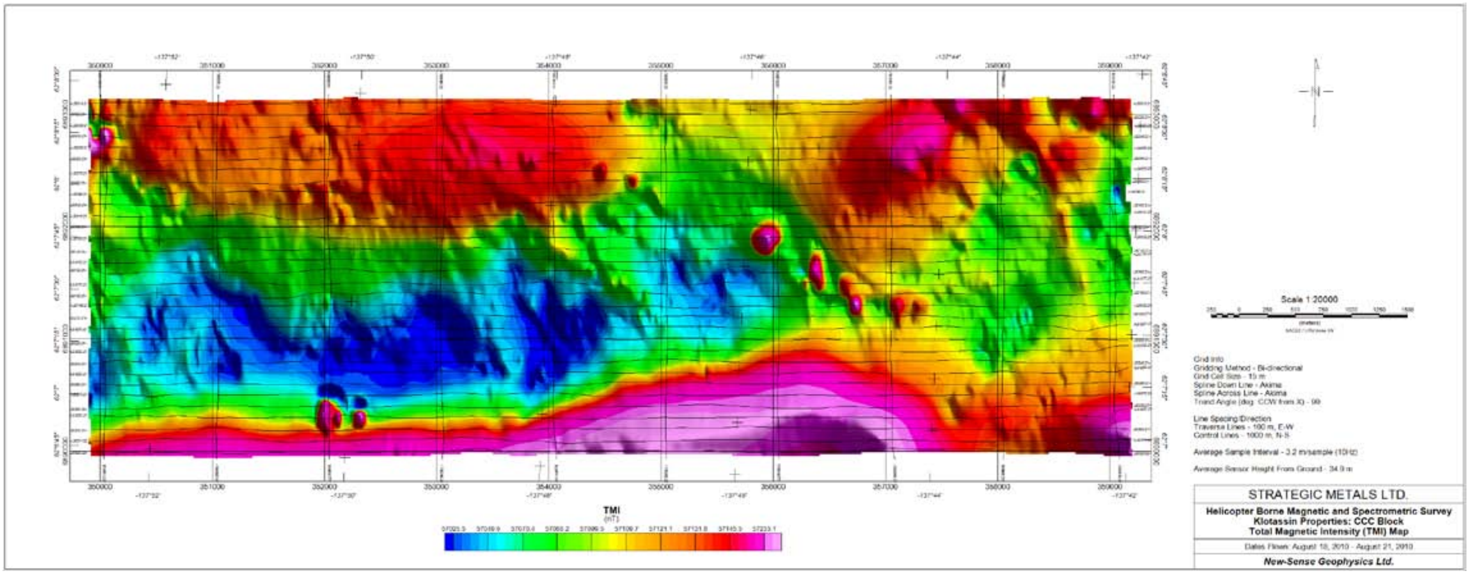
BBB Block Image of Total Count Map



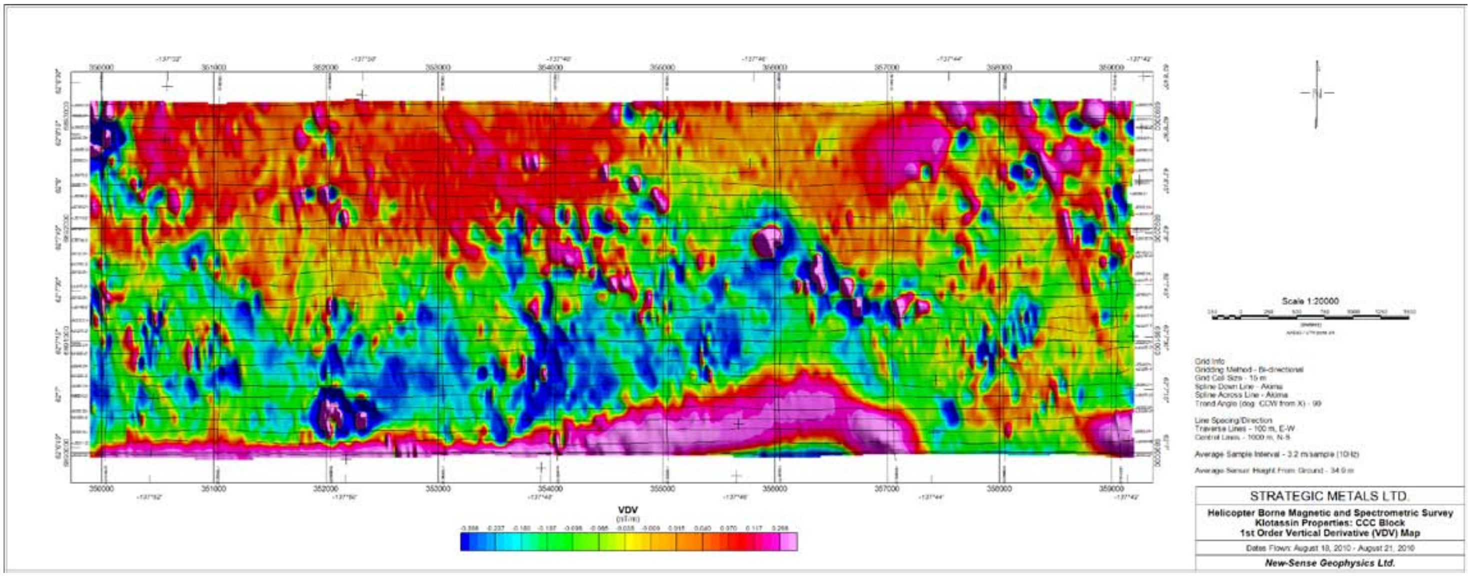
BBB Block Image of Ternary Map



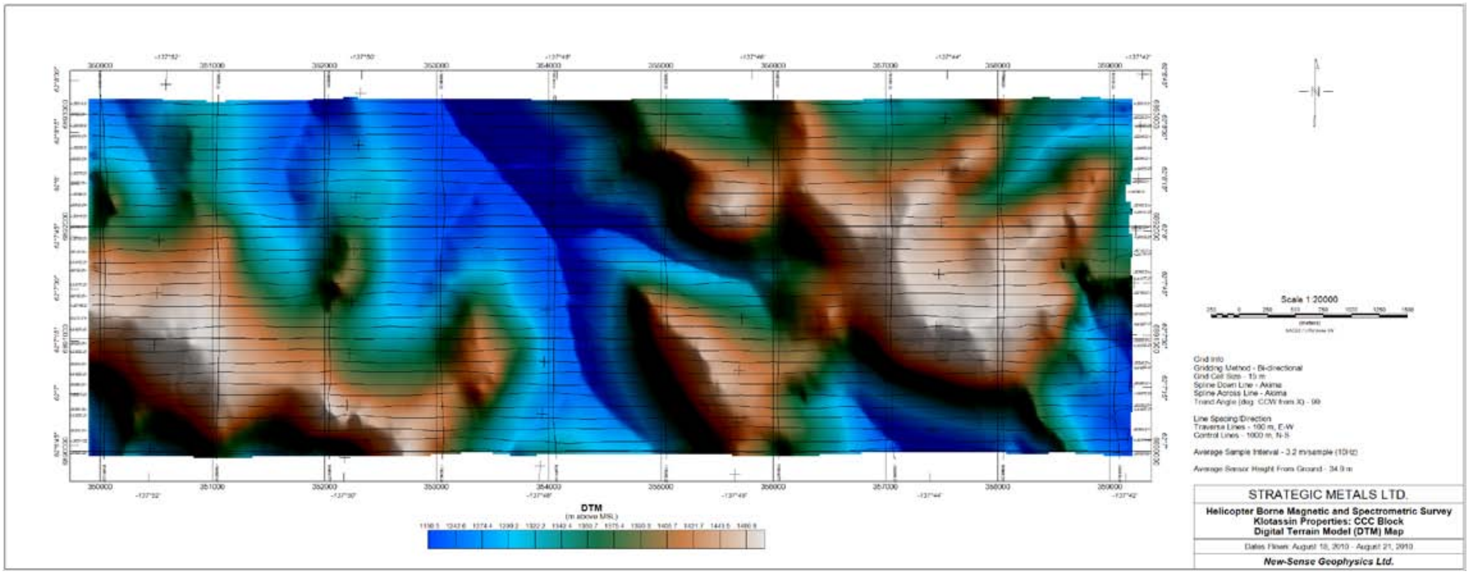
CCC Block Image of TMI FINAL Map



CCC Block Image of VDV Map



CCC Block Image of DTM Map



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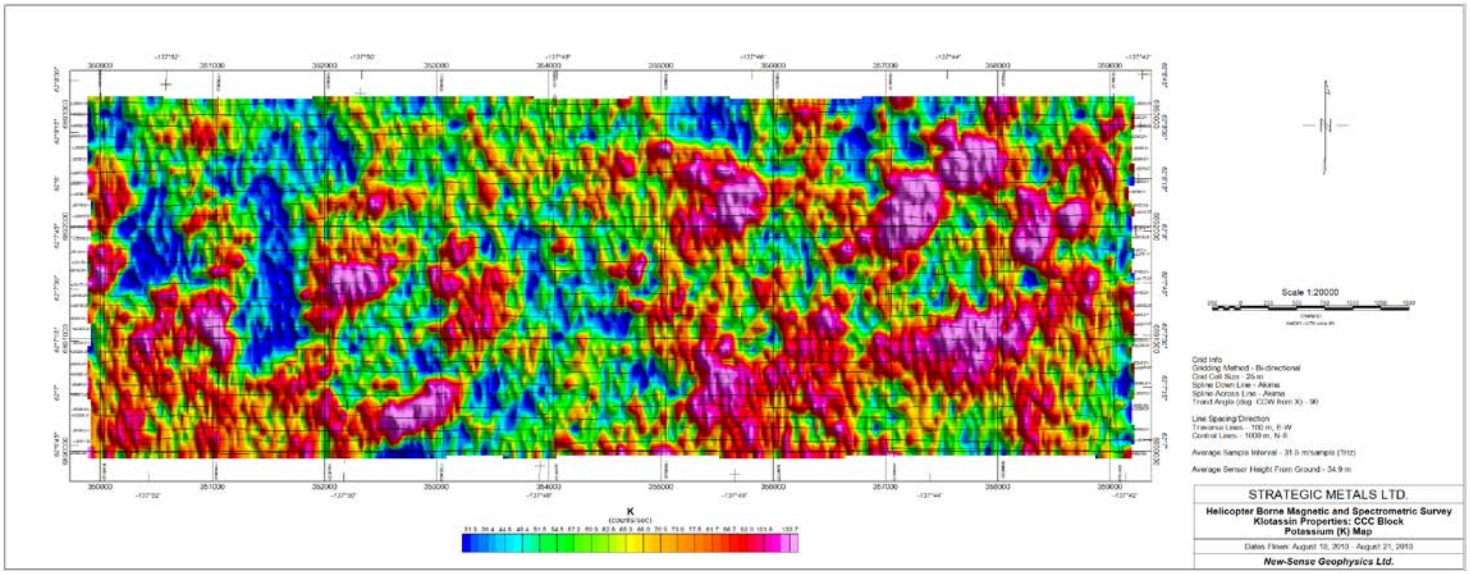
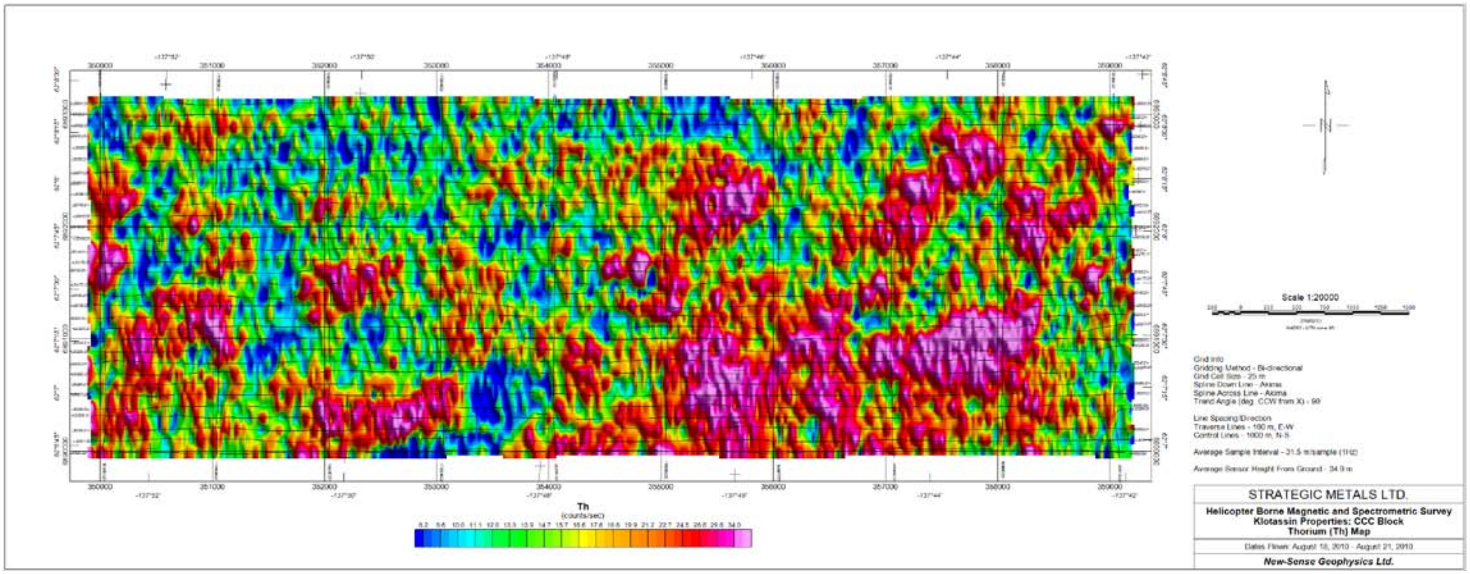


CCC Block Image of Thorium Map



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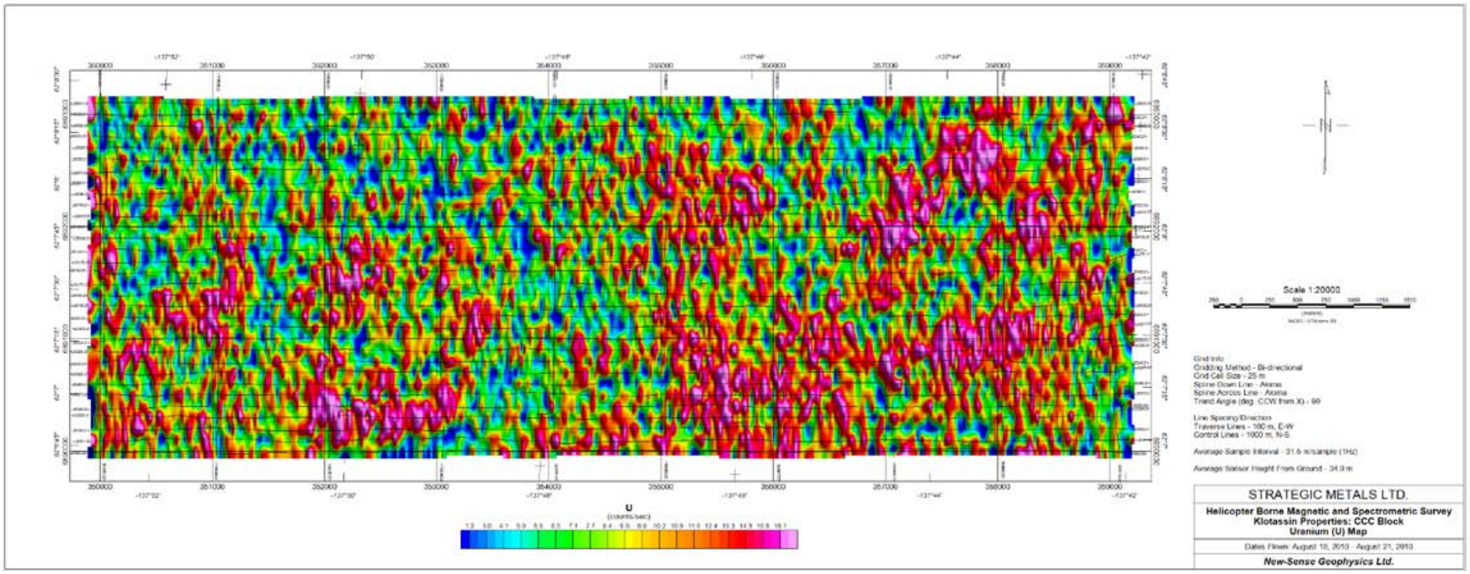
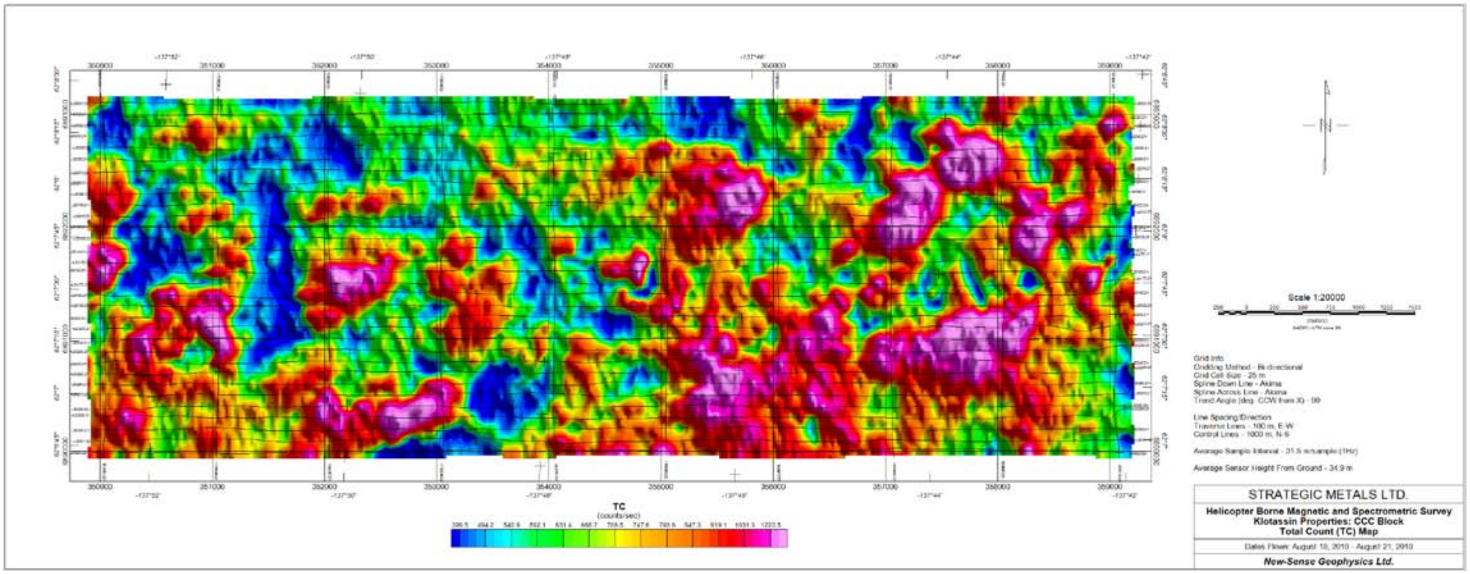
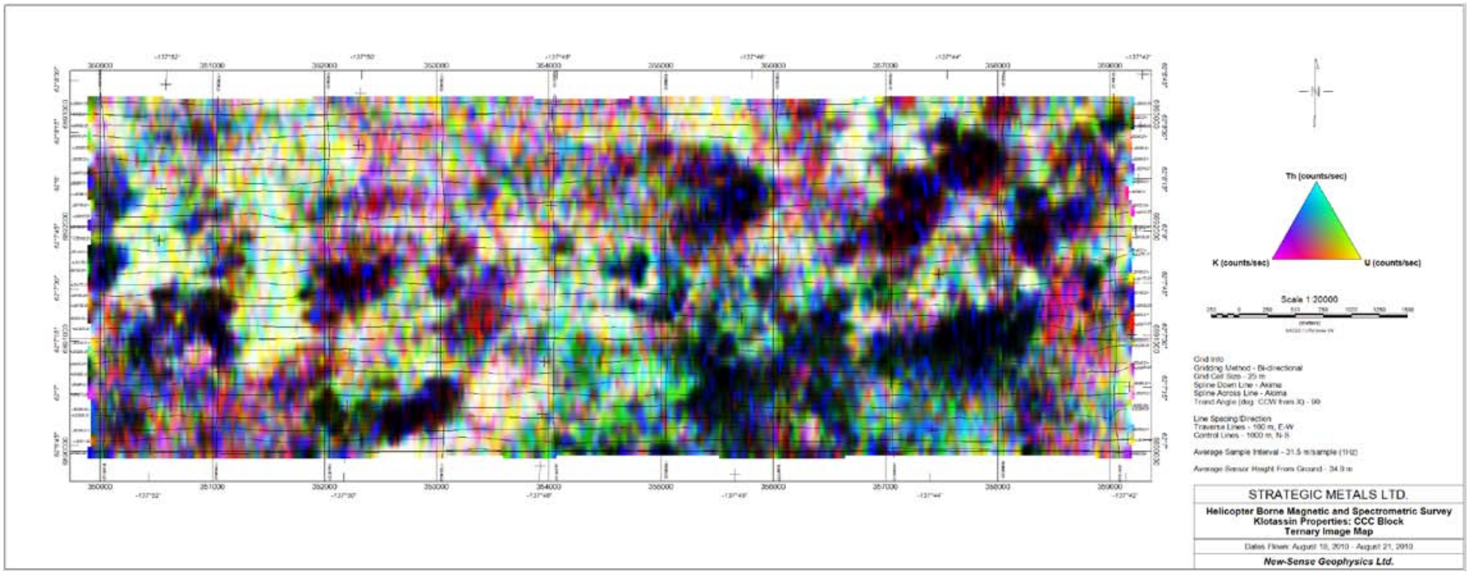


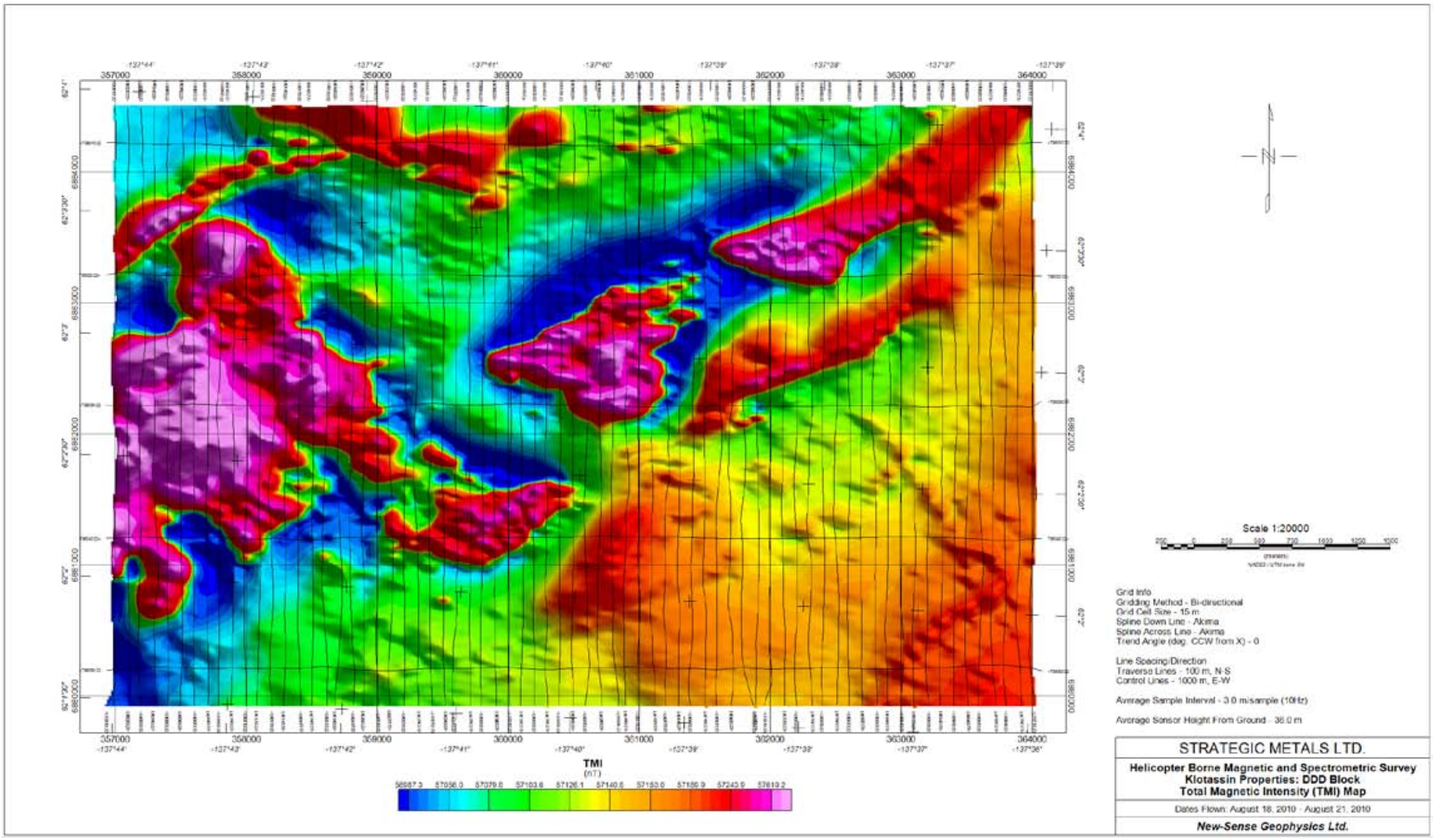
CCC Block Image of Total Count Map



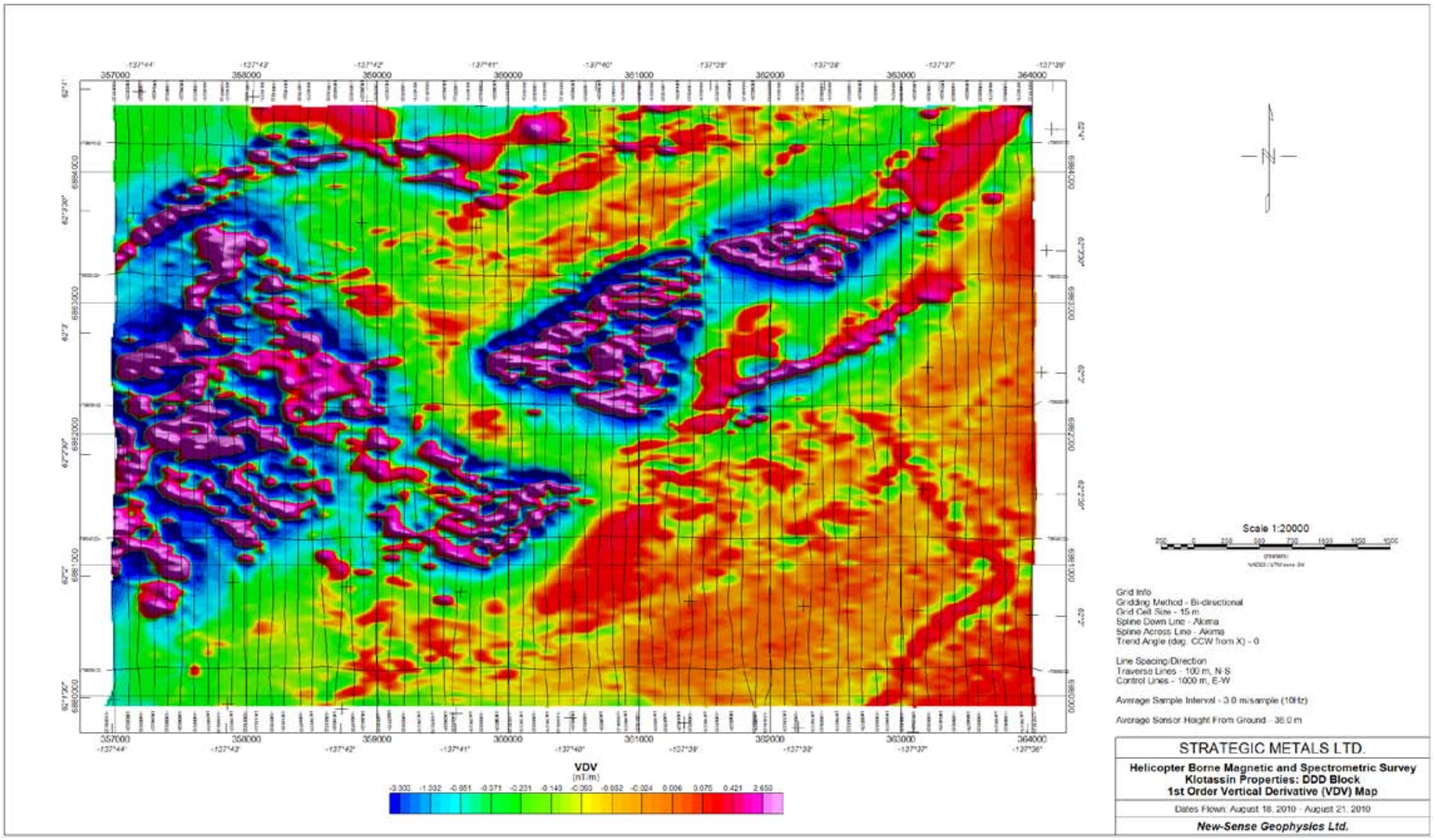
CCC Block Image of Ternary Map



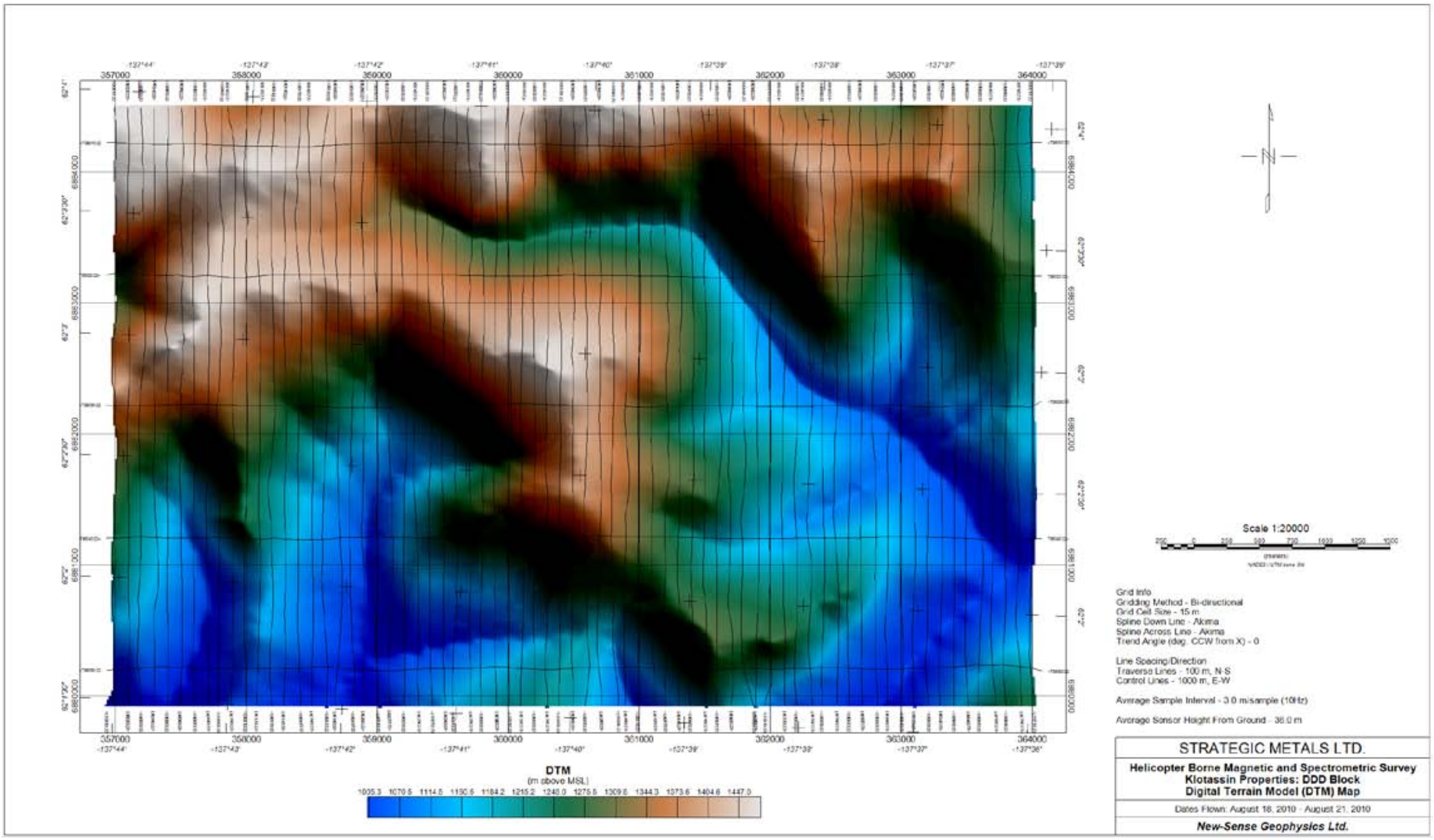
DDD Block Image of TMI FINAL Map



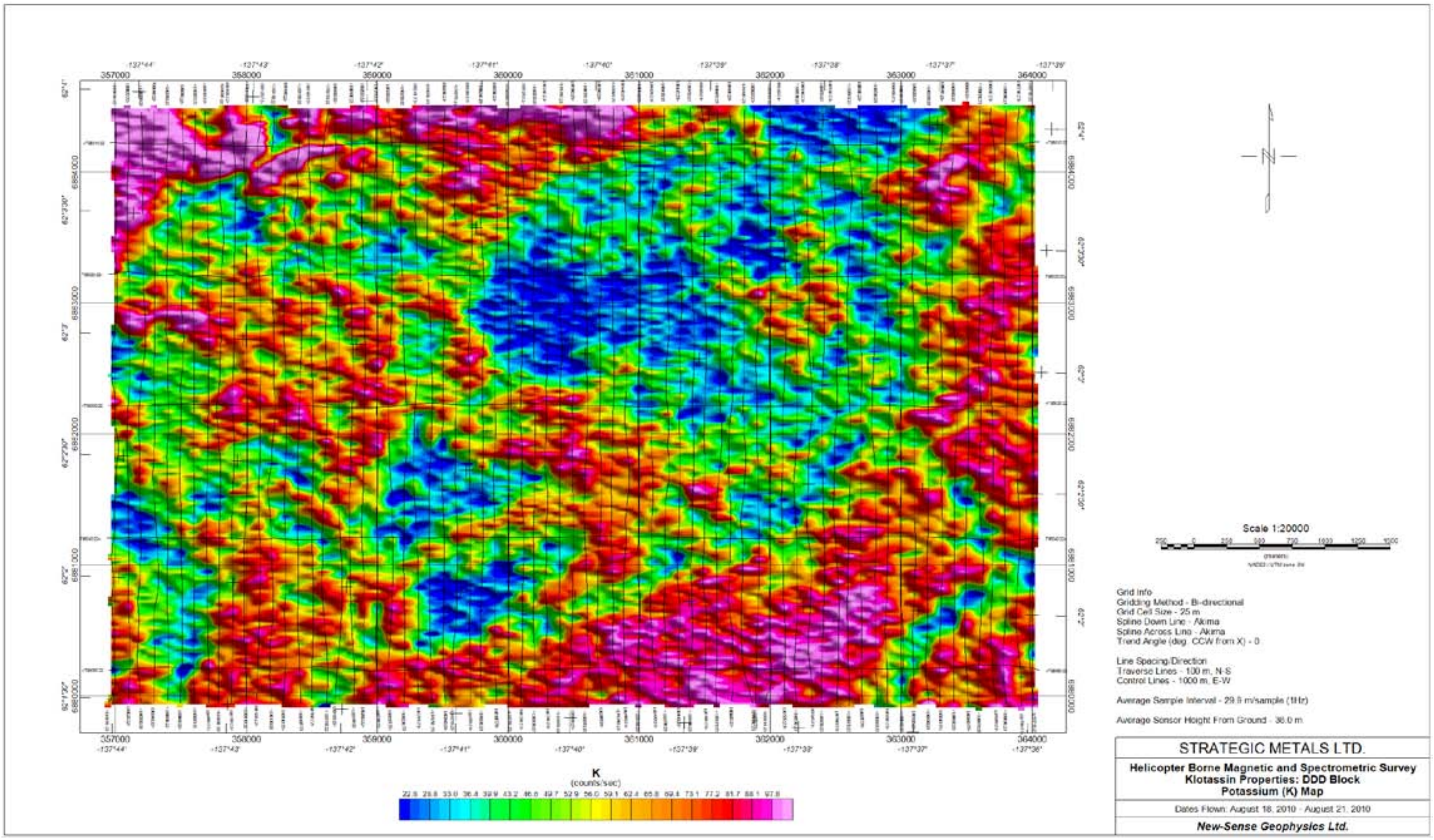
DDD Block Image of VDV Map



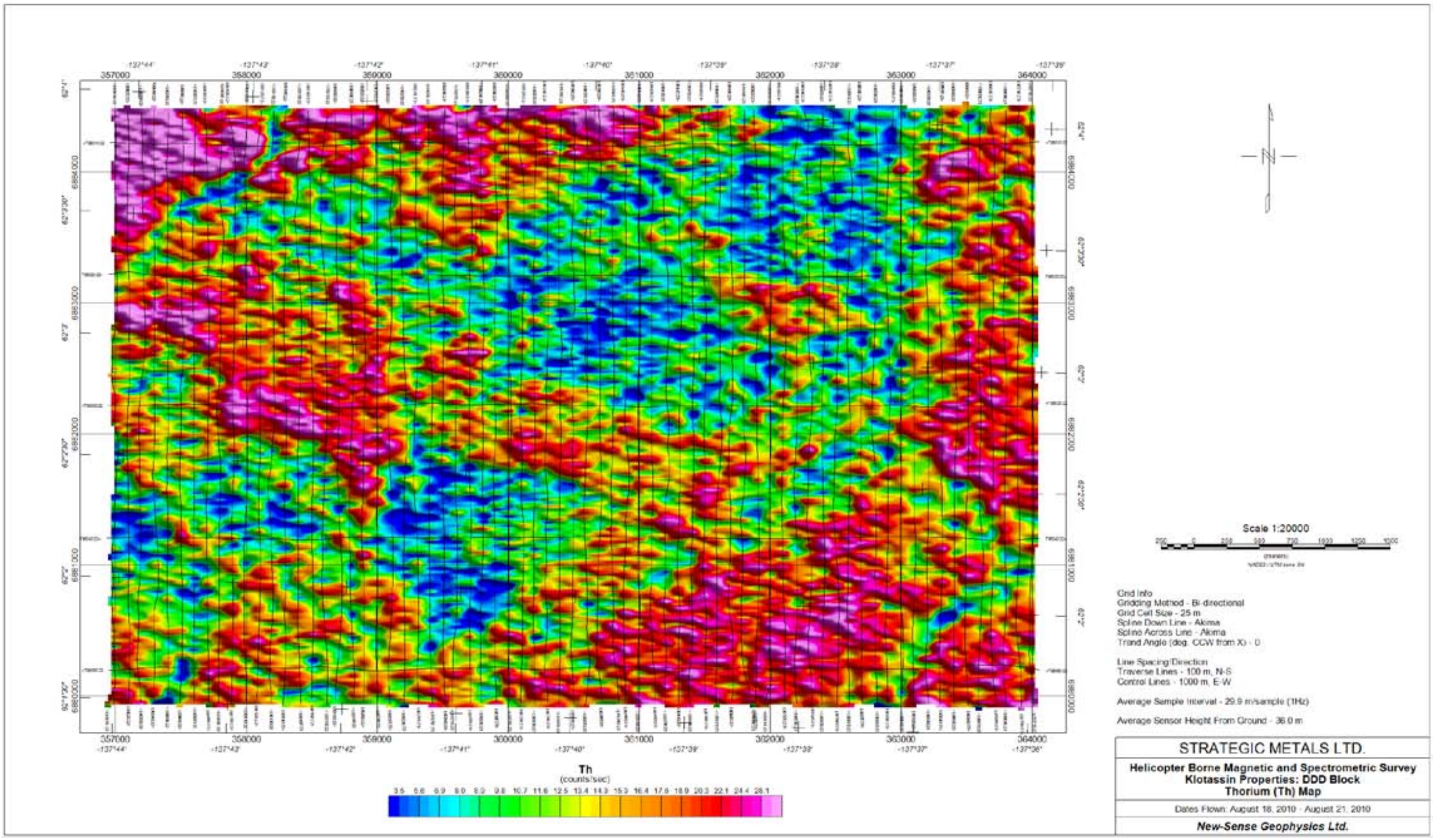
DDD Block Image of DTM Map



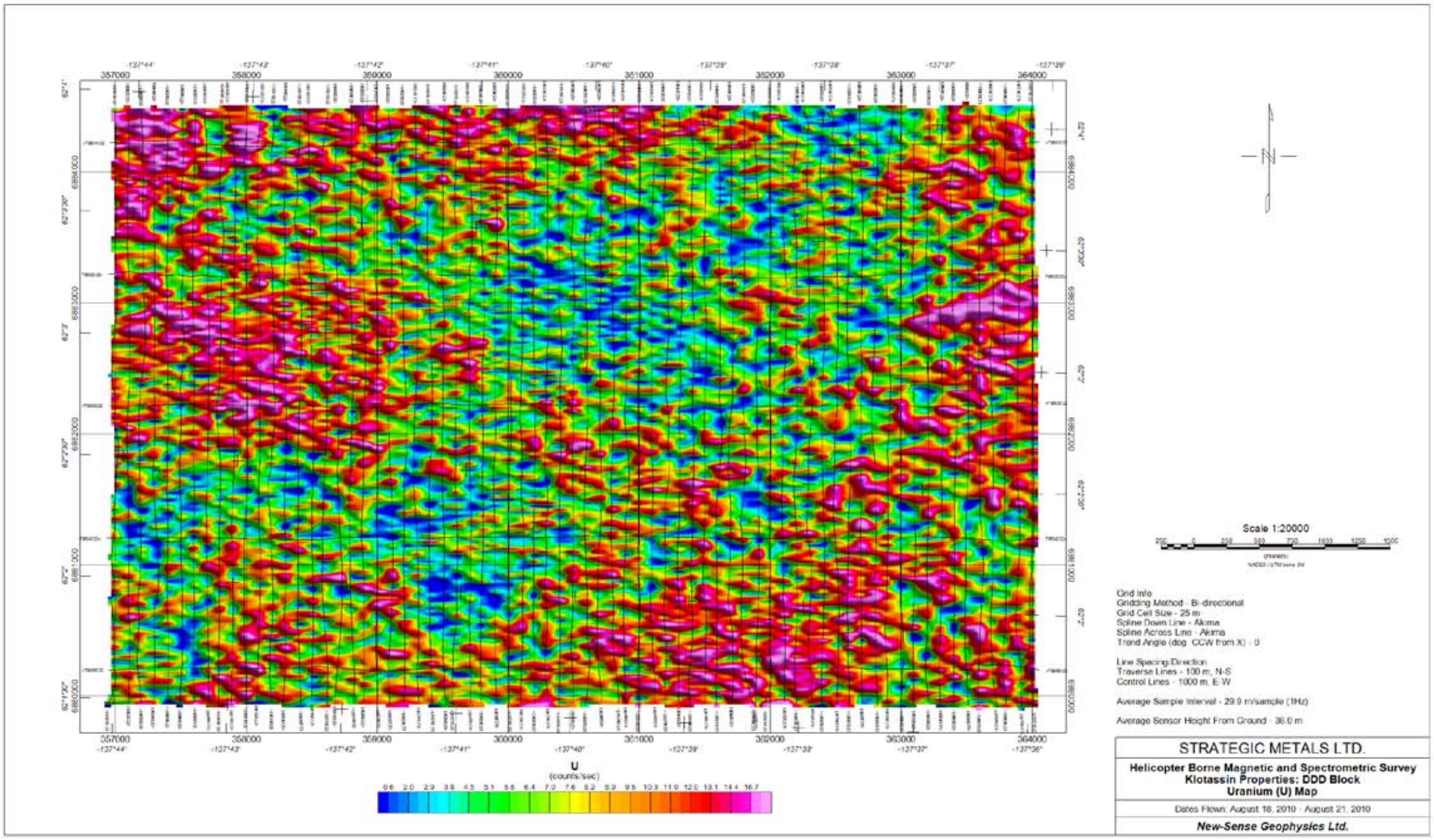
DDD Block Image of Potassium Map



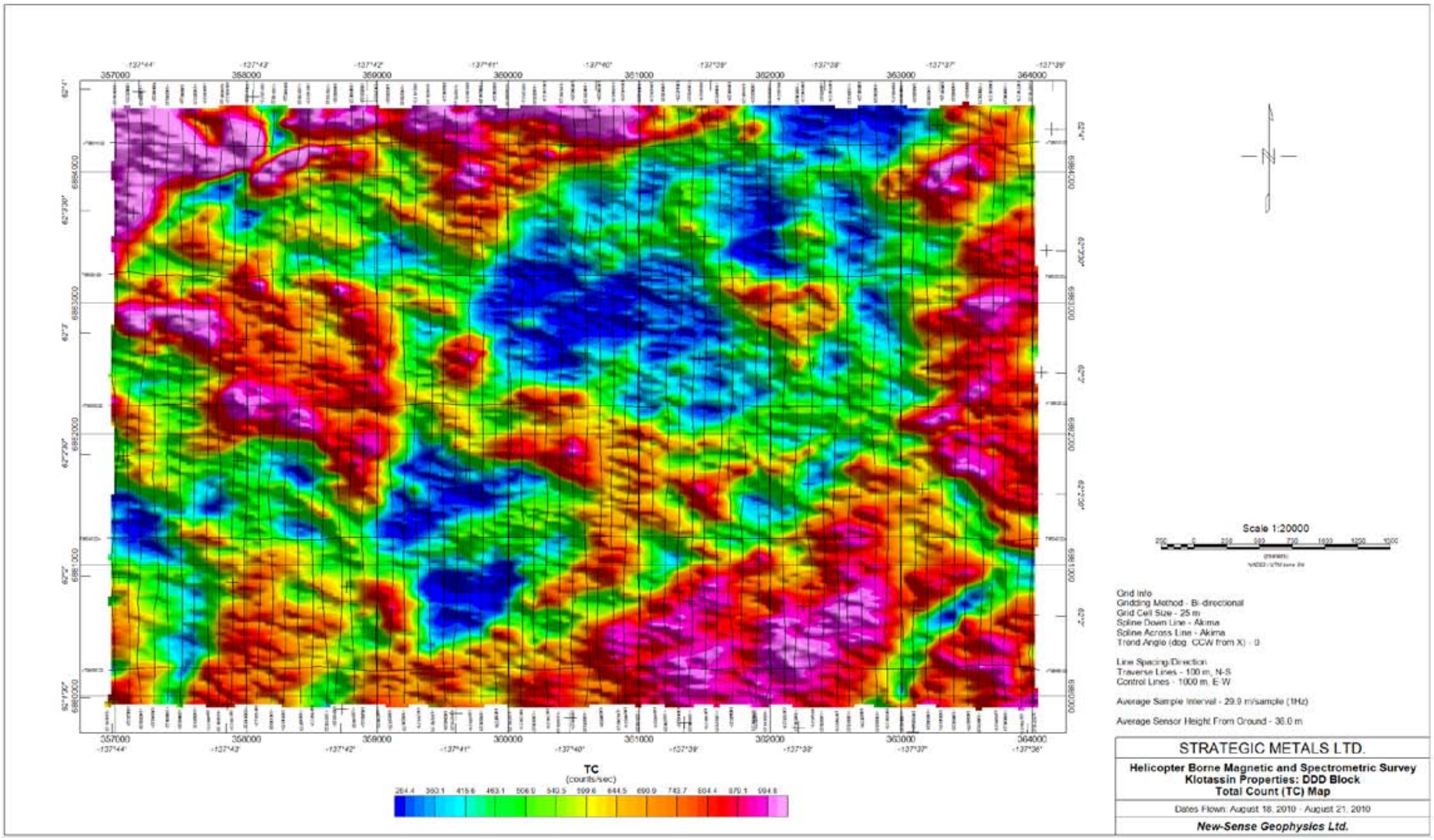
DDD Block Image of Thorium Map



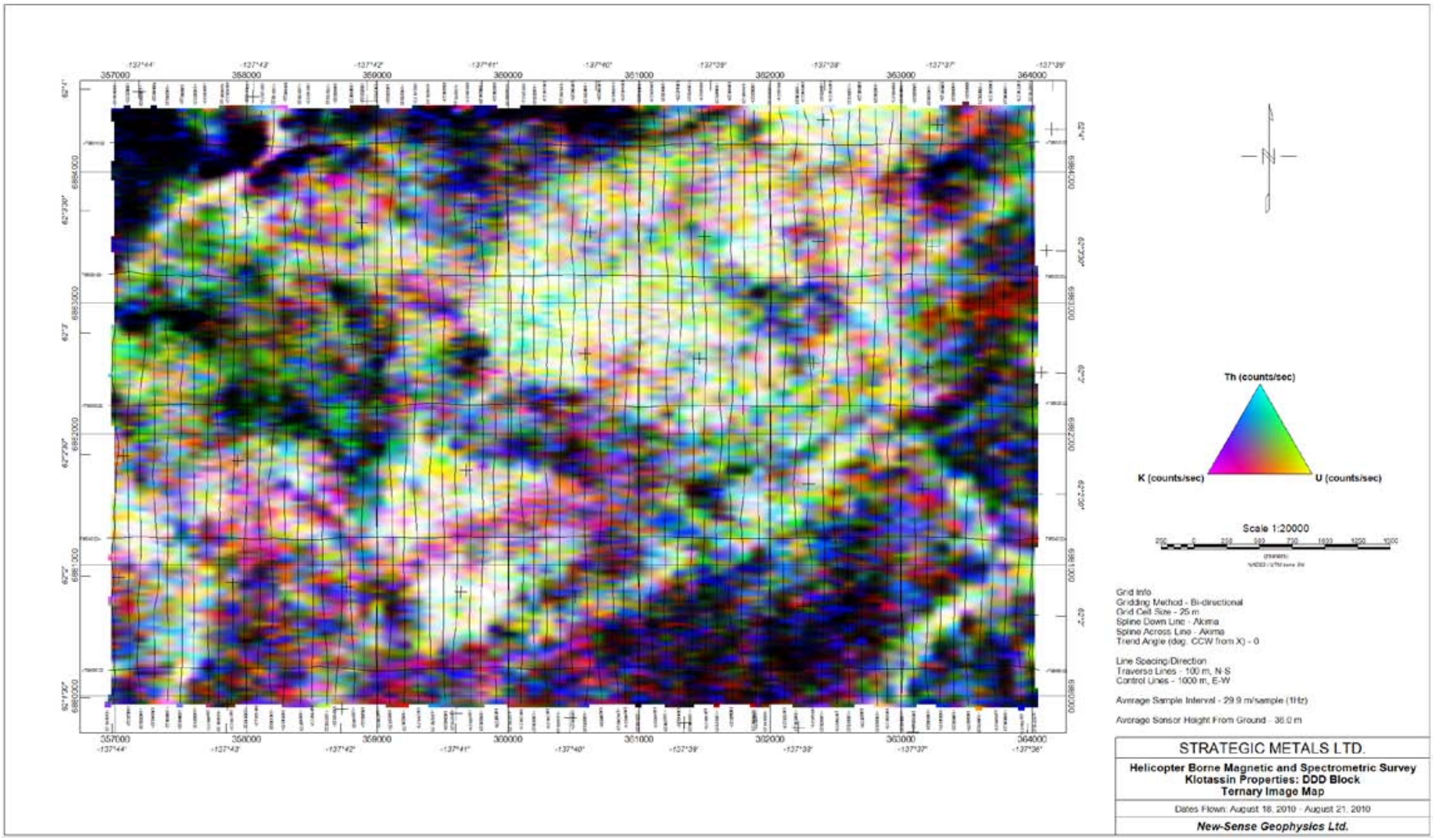
DDD Block Image of Uranium Map



DDD Block Image of Total Count Map



DDD Block Image of Ternary Map



APPENDIX F: MICROLEVELLING DESCRIPTION

As per PGW Microlevelling GX help file available through Geosoft Oasis montaj 7.2

DECORR.GX Version 3.0
Paterson, Grant & Watson Limited
March 2003

PARAMETERS: (miclev group parameters are used, so that values set will be passed to MICLEV.GX)

```
   miclev.Xchan = x channel (default "x")
         .Ychan = y channel (default "y")
         .Ochan = original data channel (no default)
         .Nchan = decorrugation noise channel (default "dcor_noise")
         .Space = flight line spacing
         .Dir   = flight line direction in degrees azimuth (clockwise
                  from North)
         .Cell  = cell size to use for gridding (default = line spacing/5)
         .Wlen  = decorrugation high-pass wavelength (default = 4 * line
                  spacing)
         .Ogrid = original output grid, new or existing
         .Nnoise= decorrugation noise grid
         .XY    = Xmin,Ymin,Xmax,Ymax            (optional)
         .LOGOPT= Log option                     (optional)
         .LOGMIN= Log minimum                    (optional)
         .DSF   = Low-pass desampling factor     (optional)
         .BKD   = Blanking distance              (optional)
         .TOL   = Tolerance                      (optional)
         .PASTOL= % pass tolerance               (optional)
         .ITRMAX= Max. iterations                (optional)
         .ICGR  = Starting coarse grid           (optional)
         .SRD   = Starting search radius         (optional)
         .TENS  = Internal tension (0-1)         (optional)
         .EDGCLP= Cells to extend beyond data    (optional)
```

DESCRIPTION:

decorr.gx and miclev.gx implement a procedure called micro-levelling which removes any low-amplitude component of flight line noise still remaining in airborne survey data after tie line levelling. Micro-levelling calculates a correction channel and adds it to the profile database. This correction is subtracted from the original data to give a set of levelled profiles, from which a final levelled grid may then be generated. Microlevelling has the advantage over standard methods of decorrugation that it better distinguishes flight line noise from geological signal, and thus can remove the noise without causing a loss in resolution of the data.

To microlevel data, first run decorr.gx, then miclev.gx. decorr.gx offers two options for the grid of the channel to be microlevelled. If a grid prepared from this channel already exists, it may be specified, and when prompted to overwrite, the user should answer no. If the user wishes to prepare a new grid of the channel to be microlevelled, the minimum curvature gridding algorithm (rangrid.gx) is applied. The advanced button provides access to the standard minimum curvature gridding parameters. Once the gridding is completed, decorr.gx applies a directional high-pass filter (see end note) perpendicular to the flight line direction, in order to produce a decorrugation noise grid. (The default grid cell size is 1/5 of the line spacing. The user may specify a different cell size if desired. A smaller cell size will give a more accurate result, but a larger cell size will make the gx run faster and use less disk space.) The noise grid is then extracted as a new channel in the database (default name is "dcor_noise"). This channel contains the line level drift component of the data, but it also contains some residual high-frequency components of the geological signal. miclev.gx applies amplitude limiting and low-pass filtering to the noise channel in order to remove this residual geological signal and leave only the component of line level drift, which is then subtracted from the original data to produce a levelled output channel named "miclev".

decorr.gx calculates default amplitude limit and filter length values for use in miclev.gx, but the skilled user may be able to set better values for these parameters based on an inspection of the noise grid. (The micro-levelling process is broken up into two separate GXes in order to allow the user to do this.) Flight line noise should appear in the decorrugation noise grid as long stripes in the flight-line direction, wheras geological anomalies should appear as small spots and cross-cutting lineaments, generally with a higher amplitude than the flight line noise, but with a shorter wavelength in the flight-line direction. The user can estimate the maximum amplitude of the flight line noise, and set the noise amplitude limit value accordingly. Similarly the user can estimate the minimum wavelength of the level drift along the flight lines, and set the low-pass Naudy filter width to half this wavelength. The defaults are to set the amplitude limit equal to the standard deviation of the noise grid, and to set the filter width equal to five times the flight line spacing.

There is an option of using either of two kinds of amplitude limiting. In "clip" mode any value outside the limit is set equal to the limit value. In "zero" mode any value outside the limit is set equal to zero. The clip mode makes more sense intuitively, but it has been found in practise that the zero mode may reject geologic signal better, depending on the particular data set. As a rule the zero mode works better on datasets in which the noise grid contains a lot of high-amplitude geological signals (e.g. shallow basement areas). For datasets in which the noise grid contains mainly flight line noise (e.g. sedimentary basins), the clip mode works better.

Microlevelling applies a level correction to the traverse lines only. If it is desired to grid the tie lines together with the micro-levelled traverse lines, then it may be necessary to also apply a level correction to the tie lines so that their values agree with the micro-levelled traverse lines at the intersections. This may be done as follows:

1) Copy the tie line values to the microlevelled channel.

2) Use intersct.gx to find cross-difference values for the microlevelled data.

3) Use xlevel.gx to load these cross-difference values to the tie lines.

4) Apply fulllev.gx to the tie lines. The output will be a set of tie

lines that matches the microlevelled traverse lines at all intersections.

5) Copy the microlevelled traverse line values into the same channel as the corrected tie line values.

Decorrugation Filter:

The decorrugation noise filter is a sixth-order high-pass Butterworth filter with a default cutoff wavelength of four times the flight line spacing, combined with a directional filter. The directional filter coefficient as a function of angle is F=(sin(a))^2, where a is the angle between the direction of propagation of a wave and the flight line direction,i.e. F=0 for a wave travelling along the flight lines, and F=1 for a wave travelling perpendicular to them. (Note this is the exact opposite of what is usually called a decorrugation filter, since the intention here is to pass the noise only, rather than reject it.)

The default cutoff wavelength (4 * line spacing) gives good results if the data is already fairly well levelled to start with. In cases where many lines are badly mis-levelled, it may be necessary to set a longer cutoff wavelength, at the risk of removing more geological signal.