



Operations Report for

MPH CONSULTING LIMITED

High Resolution Magnetic, Radiometric &
XDS VLF-EM Helicopter Survey

Target 192 Project
Northern Ontario

December 9, 2011

Report #: B-342

Requested by:
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MPH CONSULTING LTD.

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1. Introduction

1.1. Executive Summary

This report describes the specifications and parameters of an airborne geophysical survey carried out for:

MPH CONSULTING LIMITED

501-133 Richmond Street West
Toronto, ON
M5H 2L3

Attention: Mr. Paul Sobie, P.Geo, President, Partner

Phone: 416-365-0930

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Email: psobie@mphconsulting.com

The survey was performed by:

TERRAQUEST LTD.,

2-2800 John Street, Markham
ON, Canada
L3R 0E2

Phone: 905-477-2800 ext. 22

Email: hb@terraquest.ca.

The purpose of the survey of this type is to collect geophysical data that can be used to prospect directly for economic minerals that are characterized by anomalous magnetic, conductive or radiometric responses. Secondly, the geophysical patterns can be used indirectly for exploration by mapping the geology in detail, including faults shear zones, folding, alteration zones and other structures.

To obtain this data, the area was systematically traversed by helicopter carrying geophysical equipment along parallel flight lines. The lines are oriented to intersect the geology and structure so as to provide optimum contour patterns of the geophysical data.

1.2. Location

The survey area is located in northern Ontario, approximately 1,250 km northwest of Thunder Bay, and 50 kilometres north of the airport at Sachigo Lake in the vicinity of Ney Lake. The survey is referred to as the Target 192 and the contract reference is B342. The survey outline is rectangular. The dimensions are 3.2 kilometres east-west and 3.6 kilometres north-south. The centre of the area is approximately 54 degrees 46 minute north and 92 degrees 00 minutes 30 seconds west. The NTS maps sheets are 53K/16 and 53J/13.



Location Map

2. SURVEY SPECIFICATIONS

2.1. LINES AND DATA

Target 192

Parameter	Specification	Instrument Precision
Aircraft Speed	46m/s 165.6 km/hr	
GPS, Mag, VLF-EM Sample Interval	4-5 m (10Hz)	
Radiometric Sample Interval	40-50 m (1Hz)	
Flight-line Interval	50 m	+/- 3m
Control-Line Interval	500 m	+/- 3m
Flight-Line Direction	000/180 degrees	
Control-line Direction	09/270 degrees	
Aircraft MTC	38.5 m	+/- 5m
Mag Sensor MTC	38.5 m	+/- 5m

2.2. SURVEY KILOMETRAGE

Survey Kilometers:			
64 Lines	234.2 km		
7 Tie	25.2 km		
Total	259.4 km		

2.3. NAVIGATION SPECIFICATIONS

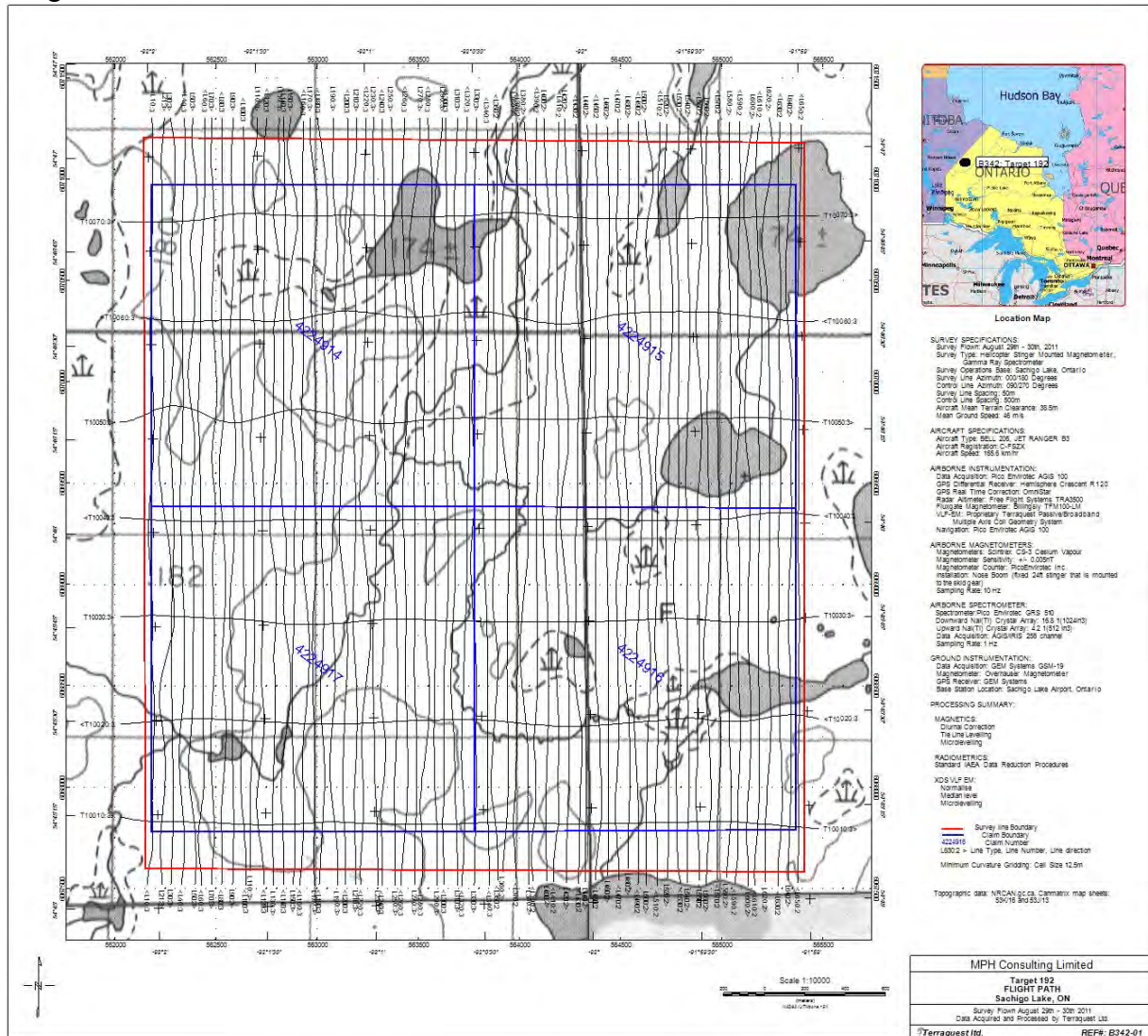
The following file is the navigation parameter file for the main block, and includes the survey corner coordinates in WGS 84 projection zone 15N, line spacing, and other navigational parameters.

UTM; L1 coordinate system "UTM" or "UPS" or "LAM"
 m; L2 lat/lon units: "deg"=degree or "m"=meters
 metric; L3 for speed and distance "metric" [m, km, km/h], "US" [ft,nm,knot]
 m; L4 for altitude "m" meters, "ft" feet
 PEI; L5 EQUIPMENT OWNER NAME
 PEI; L6 CLIENT NAME
 54.7487; Lat
 -92.0779; Lon
 267; CM
 0; dsx

0; dsy
 0; dsz
 562183.90; xSL
 6067797.00; ySL
 0; HSL
 50.00; spacing SL
 562182.80; xTL
 6067817.00; yTL
 90; HTL
 500.00; spacing TL
 c;562151.48; 6067607.88; c1
 c;562143.44; 6071210.39; c2
 c;565408.21; 6071182.25; c3
 c;565408.71; 6067583.39; c4
 c;562151.08; 6067599.21; c5
 c;562151.40; 6067609.23; c6
 ver; PEIConvert Version 5.4.20 // xyz for airborne survey

2.4. FLIGHT PLAN

Target 192 Block



2.5. TOLERANCES - REFLIGHT

1. Traverse Line Interval

Re-flights would take place if the flight line separation of the final differentially corrected flight path is greater than 1.25 of the intended line separation over a distance greater than 1 kilometre.

2. Terrain Clearance:

The aircraft mean terrain clearance was to be smoothly maintained at 40 metres MTC in a drape mode controlled by altimeter. Re-flights were done if the final differentially corrected altitude deviated from the specified flight altitude by +/-10m over a distance of 3 kilometres or more if, in the pilot's opinion, it was safe to do so.

3. Diurnal Variation:

Diurnal activity in the survey was limited to 20 nT deviations from 5-minute chord.

4. GPS Data:

GPS data included at least 4 satellites for navigation and flight path recovery. There were no significant gaps in any of the digital data including GPS and magnetic data.

5. Radio Transmission:

The aircraft pilot makes no radio transmission that interferes with magnetic response.

6. Sample Density:

A reflight is required if the sample density along one or more of the survey lines exceeds 10 metres over a cumulative total of 1000 metres for the magnetic survey, and 100 metres over a cumulative total of 1000 metres for the radiometric survey.

2.6. NAVIGATION

The satellite navigation system was used to ferry to the survey sites and to survey along each line. The survey coordinates were supplied by the client and were used to establish the survey boundaries and the flight lines. Generally, standard GPS provides accuracy for the most part better than 10 metres. Real-time GPS correction using the Hemisphere receiver and corrected by Omnistar broadcast services for North America improves the navigational accuracy to about 3 metres or less in the horizontal plane and 4-5 metres in the vertical direction.

3. AIRBORNE GEOPHYSICAL EQUIPMENT

The primary airborne geophysical equipment includes one high sensitivity cesium vapour magnetometer, a gamma ray spectrometer system and an optional XDS VLF-EM system. Ancillary support equipment includes a tri-axial fluxgate magnetometer, recorder, radar altimeter, barometric altimeter, GPS receiver with a real-time correction service, and a navigation system. The navigation system comprises a left/right indicator for the pilot and a screen showing the survey area, planned flight lines, and the real time flight path. All data were collected and stored by the data acquisition system. The following provides detailed equipment specifications:

3.1. EQUIPMENT SUMMARY

Helicopter	Bell 206, Jet Ranger III
Equipment:	
Magnetometer	Scintrex CS-3 Cesium Vapour
3-axis Magnetometer	Billingsley TFM100-LN
Gamma Ray Spectrometer	AGIS / IRIS 256 channel
Gamma Ray Detector Pack	1024 in ³ (16.8 litres) Downward 256 in ³ (4.2 litres) Upward
VLF-EM	Terraquest Ltd: XDS system
GPS Receiver	Hemisphere R120
Radar Altimeter	Free Flight Systems TRA3500
Barometric Altimeter	Sensym
Navigation & Data Acquisition	AGIS by PicoEnvirotec Inc.
Magnetic Specifications:	
Nose Boom	7.3 metres
Output Sample Rate	10 Hz
4 th difference noise envelope	0.10 nT
FOM index	<1.5 nT
Sensor Sensitivity	0.001 nT

3.2. SURVEY AIRCRAFT

The survey aircraft for this project was a Bell 206 Jet Ranger III, registration C-FSZX, owned and operated by Hélicoptères Panorama Ltée, Alma, Quebec. The aircraft has been specifically modified with a 7.3 metre long, 8.5” diameter nose boom (owned by Terraquest Ltd.) that is attached to the skids. The boom extends approximately 5 metres beyond the skids.

Typical Installations



3.3. SURVEY EQUIPMENT AND SPECIFICATIONS:

1. High Sensitivity Magnetometer:

A high-resolution cesium vapour magnetometer, manufactured by Scintrex is mounted in a nose boom that extends approximately 5 metres beyond the skids. Fluxgate tri-axial magnetometer, model TFM100-LN by Billingsley Magnetics Ltd., is mounted in front of the mid section of the boom to monitor aircraft manoeuvre and magnetic interference. The magnetic data is post-flight compensated for aircraft manoeuvre noise.

Type of Magnetometer Sensor	Cesium Vapour
Model	CS-3

Manufacturer	Scintrex Ltd.
Resolution	0.001 nT counting at 0.1 per second
Sensitivity	+/- 0.005 nT
Dynamic Range	15,000 to 100,000 nT
Fourth Difference	0.02 nT
Recorded Sample Rate	0.1 seconds
Noise Envelope	0.10nT

2. Tri-Axial Fluxgate Magnetic Sensor

Tri-Axial Fluxgate Magnetic Sensor	(for compensation, mounted in nose boom)
Model	TFM100-LN
Manufacturer	Billingsley Magnetics
Description	Low noise miniature triaxial fluxgate magnetometer
Axial Alignment	> Orthogonality > +/- 0.5 degree
Accuracy	< +/- 0.75% of full scale (0.5% typical)
Field Measurement	+/- 100,000 nanotesla
Linearity	< +/- 0.0035% of full scale
Sensitivity	100 microvolt/nanotesla
Noise	< 14 picotesla RMS/-Hz @ 1 Hz

3. Radiometrics System

Radiometrics Type	Gamma Ray Spectrometer
Model	GRS-5Plus
Manufacturer	Pico Envirotec Inc.
Downwards Volume	4 X 256 cubic inches down
Upwards Volume	1 X 256 cubic inches up
Software	Real Time Data Collection
Energy Detection Range	50KeV to 3 MeV
Count Rate	Up to 1000,000 pps communication
Collected Spectrum	256 Channels
Spectra Tracking	Individual detectors with recorded status of tuning
Time to Stabilization	Automatic on natural radionuclei
Spectra Stabilization	Automatic after system calibration
Windows (ROIs)	Additional to full spectra up to 22 special windows
Signal Sampling	20 MHz by internal 12 bit A to D for each detector
Peak Detector	Digital – time resolution 50 nsec.
Dead Time	Negligible for up to 60000 pulses/sec/detector
Pulse Rate per Detector	> 60000 pulses/sec. with negligible dead time
Channel Capacity	Serial among all units (detector, concentrator, host)

4. Radar Altimeter

Altimeter	Radar
Model	TRA3500

Manufacturer	Free Flight Systems
Type	Twin horn
Range	0 – 2500 ft
Accuracy	+ 5ft for 0-100 ft; 5% 100-500ft
Calibrate Accuracy	1%
Output	Digital for pilot, converted to analog for data acquisition

5. Barometric Altimeter

Altimeter	Barometric
Model	LX18001AN
Manufacturer	Sensym
Source	coupled to aircraft barometric system

6. Data Acquisition/Navigation System

Data Acquisition and Navigation System	Combined
Model	AGIS 100
Manufacturer	Pico Envirotec Inc.
Operating System	MSDOS
Microprocessor	CPU Pentium based
Ports	PCMCIA for data storage/retrieval, COM ports for data input
Graphic Display	LCF TFT color display, sun readable screen controls
Pilot Display	position, left/right, navigational info
Recording Media	standard hard drive, removable memory cards
Sampling	Selectable sampling for each input type: 1.0, 0.5, 0.25, 0.2, 0.1, 0.05 seconds (magnetometers at 0.05 seconds)
Inputs	12 differential analog input with 16 bit resolution

7. Magnetometer Processor

Magnetometer Processor	Stand-alone module
Model	MMS4
Manufacturer	Pico Envirotec Inc.
Input Range	20,000 – 100,000 nT
Sampling	1,000 per second
Bandwidth	Selectable 0.7, 1.0 or 2.0 Hz
Resolution	0.001 nT up to 100 sample per second

8. GPS Differential Receiver

GPS Receiver	Differential
Model	R120
Manufacturer	Hemisphere
Antenna	Dome AT1665

Channels	12 L1L2
Position Update	0.5 second for navigation
Correction Service	Real time correction subscription – Omnistar
Sample Rate	1 second
Accuracy	~ 3 meters

9. Terraquest XDS VLF-EM System

The XDS VLF-EM System is recently developed by Terraquest Ltd. It employs 3 orthogonal, air-core coils mounted in the pod of the nose boom, and coupled with a receiver-console, tuned to receive a frequency in the half power range of 22.0 kHz to 26.0 kHz (which simultaneously includes Cutler Maine NAA frequency 24 kHz, Lamoure North Dakota NML frequency 25.2 kHz and Seattle WA NLK frequency 24.8 kHz), and measures independently the X, Y and Z directions of the VLF field.

VLF - EM	
Model	XDS
Manufacturer	Terraquest Ltd.
Primary Source	Magnetic field component radiated from government VLF radio transmitter
Parameters Measured	X, Y and Z components, absolute field
Frequency Range	Half power range 22.0 - 26.0 kHz
Gain	Constant gain setting
Filtering	No filtering

4. Base Station Equipment

4.1. BASE STATION MAGNETOMETER & GPS

A proton Overhauser magnetic base station data was provided with time synchronization from an internal GPS base station receiver. The base station was provided as a package as follows:

Magnetometer Type	Overhauser
Model	GSM-19 v 7.0
Manufacturer	GEM Systems
Sample Rate	1/sec
Sensitivity	0.022 nT / vHz@1Hz
Resolution	0.01 nT
Absolute Accuracy	+/- 0.1 nT
GPS model	SuperStar II
GPS manufacturer	Novatel

5. TESTS AND CALIBRATIONS

5.1. MAGNETIC FIGURE OF MERIT

Compensation calibration tests were performed to determine the magnetic influence of aircraft maneuvers and the effectiveness of the aircraft compensation method. The aircraft flew a square pattern in the four survey directions at a high altitude over a magnetically quiet area and perform pitches ($\pm 5^\circ$), rolls ($\pm 10^\circ$) and yaws ($\pm 5^\circ$). The sum of the maximum peak-to-peak residual noise amplitudes in the total compensated signal resulting from the twelve maneuvers is referred to as the FOM. The FOM on this survey was 0.58 nT (see Appendix II).

5.2. MAGNETIC LAG

The magnetic lag was determined during processing by comparing discrete anomalies on adjacent lines flown in opposite directions.

5.3. RADAR ALTIMETER CALIBRATION

The radar altimeter was calibrated by a series of passes over the Wabush runway on July 22, 2011 flight FSZ001; see appendix.

5.4. RADIOMETRIC SAMPLE CHECKS

The performance and consistency of gamma ray system was checked once per flight day using sample pucks of uranium, thorium and cesium to ensure that there was no change in the system during the survey.

5.5. RADIOMETRIC REPEAT LINES

A transit line was chosen as a repeat line and reflight each flight day to monitor the effects of moisture content of the soil and ground throughout the survey period.

5.6. RADIOMETRIC SENSITIVITY FACTORS

The radiometric system sensitivity calibration was determined from measurements acquired over the Breckenridge calibration range monitored by the GSC. This calibration was done in spring of 2010 using a King Air with two packs and one of the packs was used in this survey; the results were divided by two (see Appendix VII).

5.7. RADIOMETRIC ALTITUDE ATTENUATION

The altitude attenuation was determined from the results of flying over the Breckenridge Test site near Ottawa on April 28, 2010 using a King Air with 2 packs (see Appendix VI).

5.8. RADIOMETRIC COMPTON COEFFICIENTS

A pad calibration was performed on this crystal pack on April 13, 2010 using the Pico Envirotec Inc. pads located in Holland Landing, ON (see Appendix V).

6. LOGISTICS

6.1. PERSONNEL

The contractor supplied the following properly qualified and experienced personnel to carry out the survey and to reduce, compile and report on the data:

Field:	Pilot	Patrick Cote (Panorama Helicopters Ltd.)
	Operator	Amit Praharaj
Office:	Chief Geophysicist	Allen Duffy (radiometrics)
	Processing Geophysicist	Carolyn Boone (magnetic, EM and maps)
	Manager	Charles Barrie

6.2. FIELD REPORTING

The aircraft and crew arrived in Sachigo Lake on August 27, 2011 and their gear arrived on Aug 28th by air shipment. The FOM was done on Aug 28 and the survey was completed successfully in two flights (#2, #3) on Aug 29th and 30th.

6.3. BASE OF OPERATIONS

The main base of operations was at the airport at Sachigo Lake. Accommodations for the crew were the responsibility and cost of Terraquest as follows:

First Nations: Bunkhouse

Contacts: Daniel 807 595 2506

Dean 807 -595-2506

Fuel was arranged in from drums through Morgan Fuels

The base station (combined high sensitivity magnetic and GPS) was set up at the airport as far away from cultural interference as possible, but there was still some cultural influence.

7. Data Processing

7.1. DATA QUALITY CONTROL

The field data were transmitted via internet back to the office to inspect the data for quality control and tolerances on all channels. This included any corrections to the flight path, making flight path plots, importing the base station data, creating a database on a flight-by-flight basis, and posting the data. All data were checked for continuity and integrity. Any errors or omission or data beyond tolerances were flagged for re-flight and the crew was notified ready for their flight in the morning. JPEG images of preliminary data were forwarded to the client during the survey.

7.2. FINAL MAGNETIC DATA PROCESSING

Raw magnetic data was post flight compensated for aircraft motion effects.

Adjustment of Diurnal Data:

Spike removal

Where required Cultural effects were filtered out with a 15pt low pass filter or deleted and the gaps were interpolated

Filter remainder of data with 5pt low pass filter to eliminate noise in base data

Adjustment of Total Field:

De-spiked

Removed spikes and the gaps were interpolated in the final database; however, the gaps were left in the raw database.

There has been no attempt to remove any cultural events.

Total Field Tie Line Levelling:

Diurnal corrected the Total Field (Total Field – Diurnal) + Diurnal average

Used Geosoft levelling system:

- Deleted all suspicious intersections during levelling of tie lines

- Created a line intersection table

- Deleted all suspicious intersections during levelling of survey lines

- Made small adjustments on remaining out of level lines

Total Field Micro-Levelling (TFMFIN):

Started with a rough de-corrugation

- Butterworth filter (cutoff wavelength 200 nT, filter order 8, pass)

- Directional Cosine (0 direction, 1 degree of function, high pass)

- Created an error grid and subtracted it from the levelled Total Field grid

Sampled the error grid into the database to limit micro-levelling changes

Limited values in the error channel to no greater than 12nT (77% of the data)
Ran low 5 pt low pass filter over error channel
Subtracted the error channel from the Levelled Total Field

Calculated Vertical Derivative:

Derivative in Z with order of differentiation as 1
Butterworth, wavelength 75 nT, filter order 8, low pass

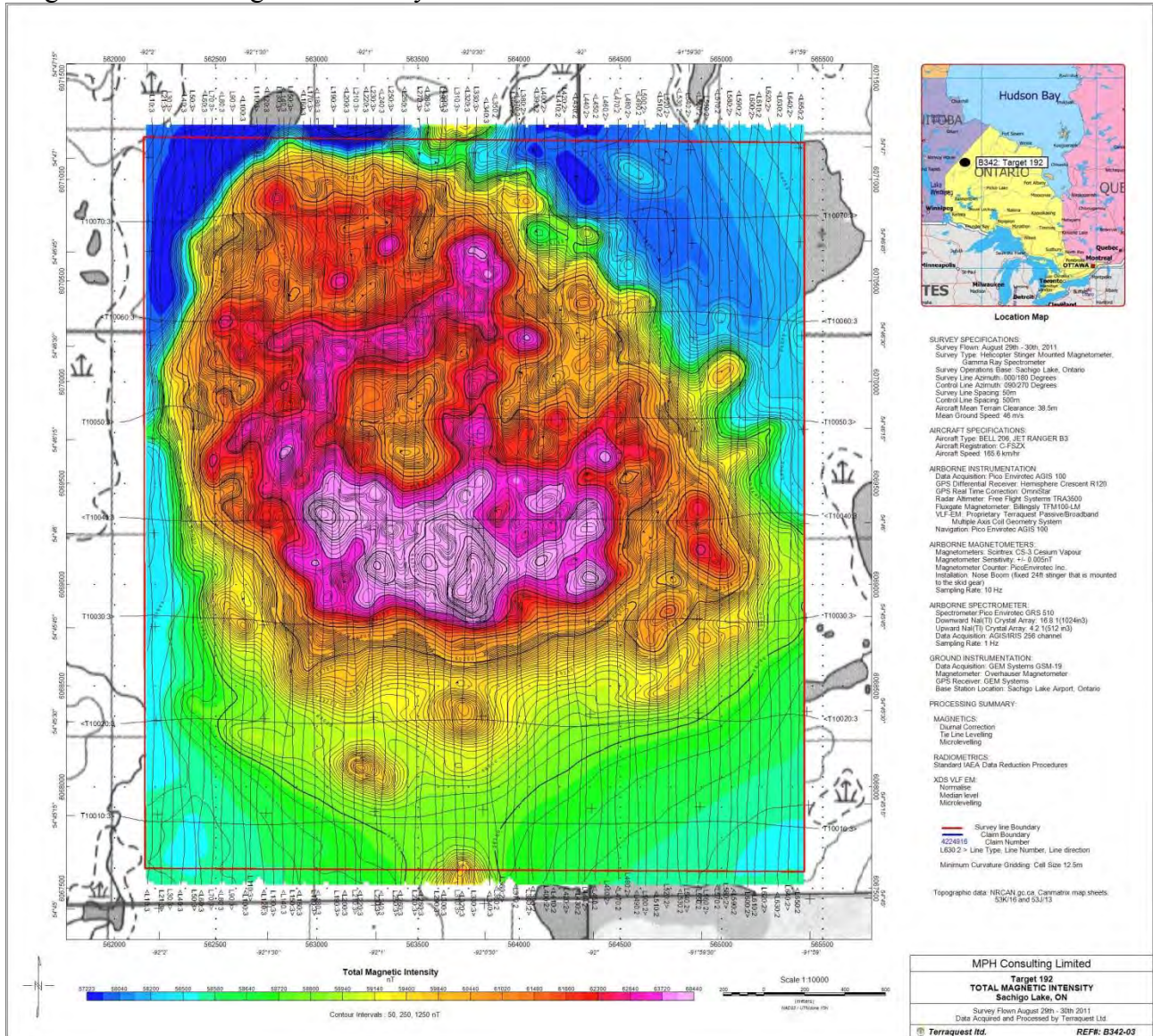
The vertical magnetic gradient was calculated from the final processed total magnetic field data grid. The finalized datasets were gridded with bidirectional procedure with a cell size of 12.5 metres.

The **tilt derivative** is calculated from the total magnetic intensity (TMI) using a Geosoft module. From the TMI, the vertical and horizontal derivatives are calculated; the tilt derivative is the arctan of the ratio of these derivatives, vertical over horizontal. A mild microlevelling of no greater than 0.03 radians (77% of the data) was applied.

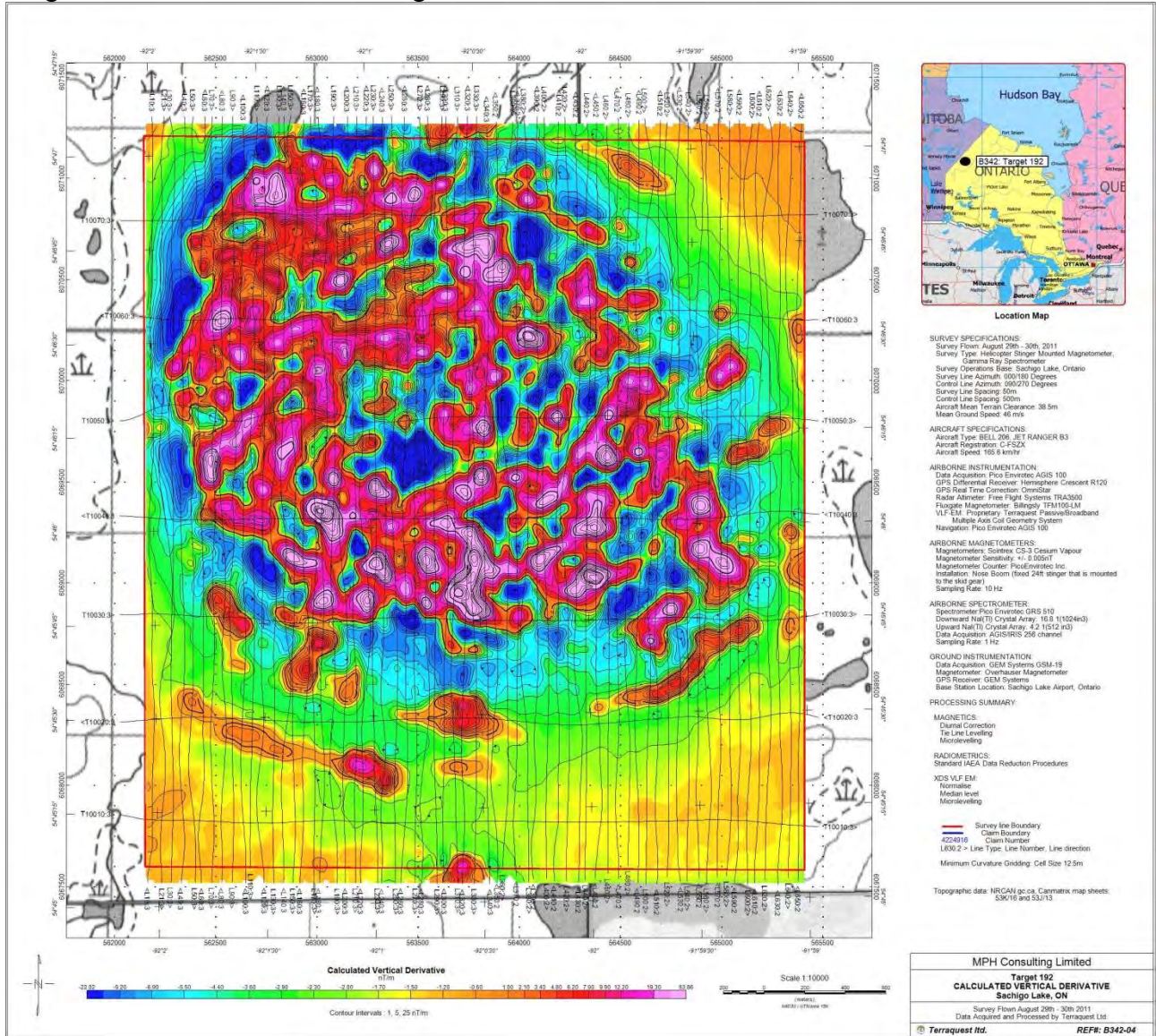
Calculated in radians and then converted into degrees, a tilt derivative of zero degrees represents no vertical gradient, only a horizontal gradient. A maximum value of the tilt derivative (+/- 1.57 radians or 90 degrees) represents a near zero horizontal gradient. The difference at map scale between 45 degrees (0.785 radians) and zero is an approximate indicator of the depth to top of source.

The final Total Magnetic Intensity was downward continued using a Geosoft module by 10 metres and then filtered with a mild Butterworth filter (50 nT cutoff) to reduce any ringing.

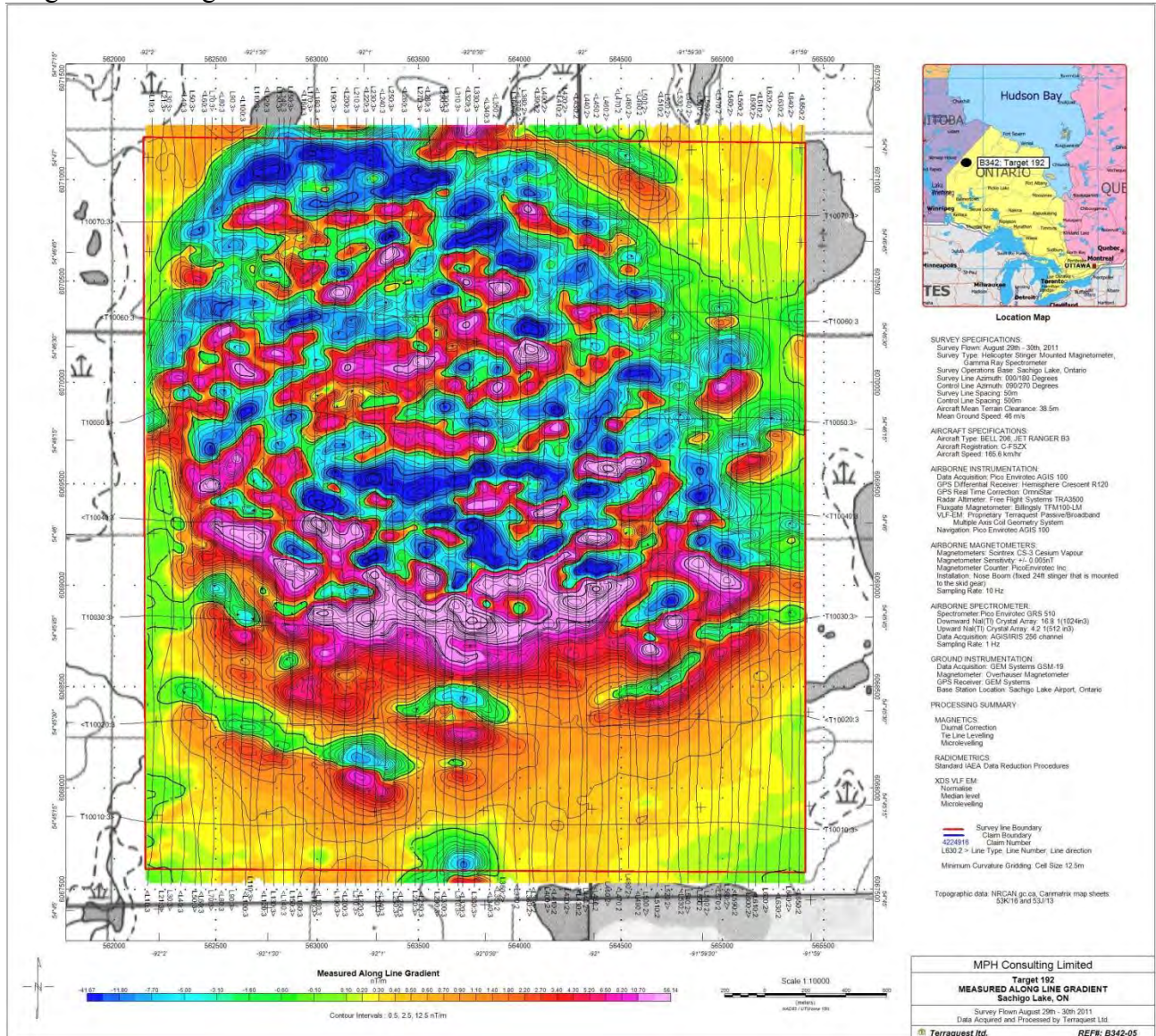
Target 192: Total Magnetic Intensity



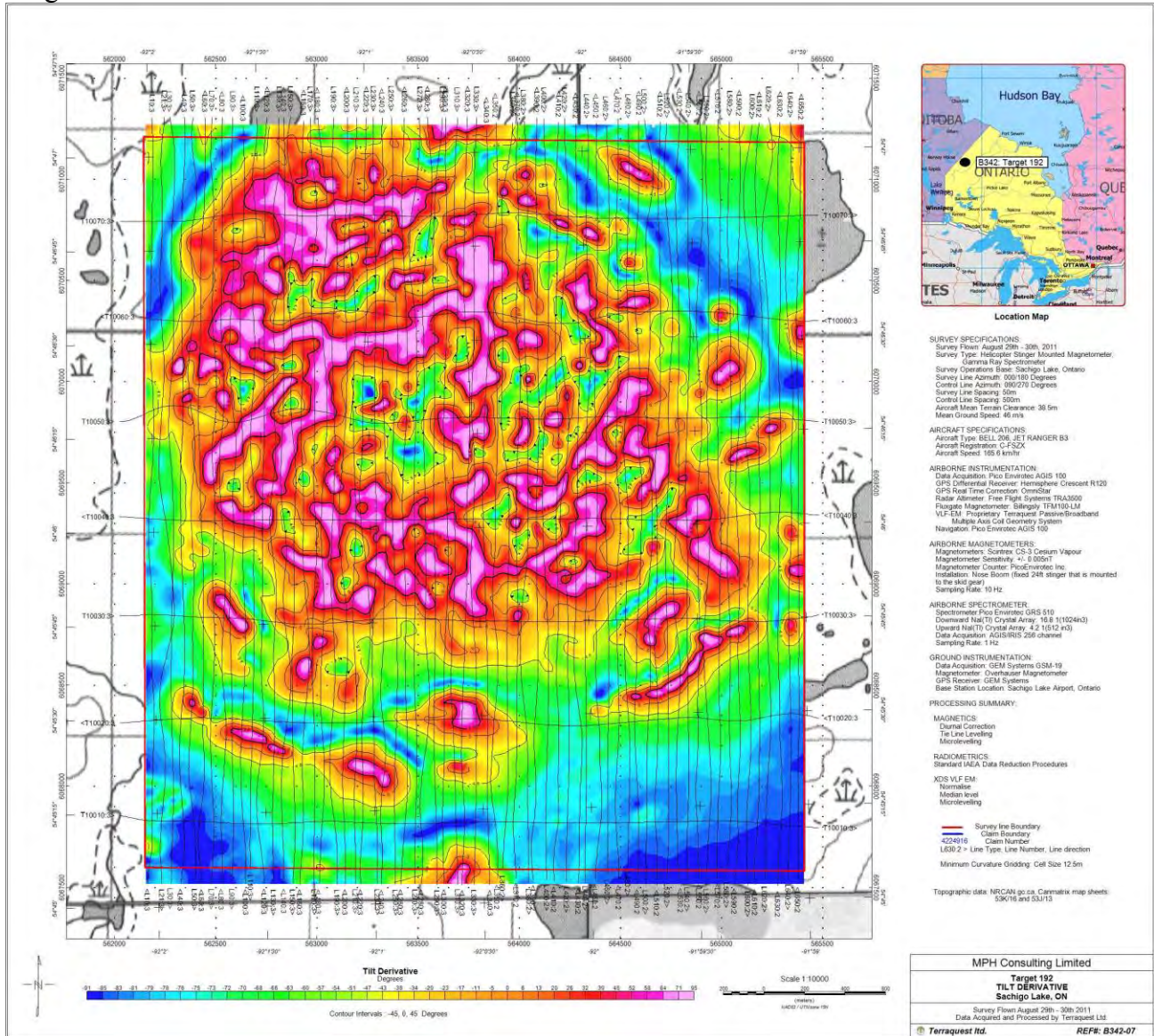
Target 192: Calculated Vertical Magnetic Derivative



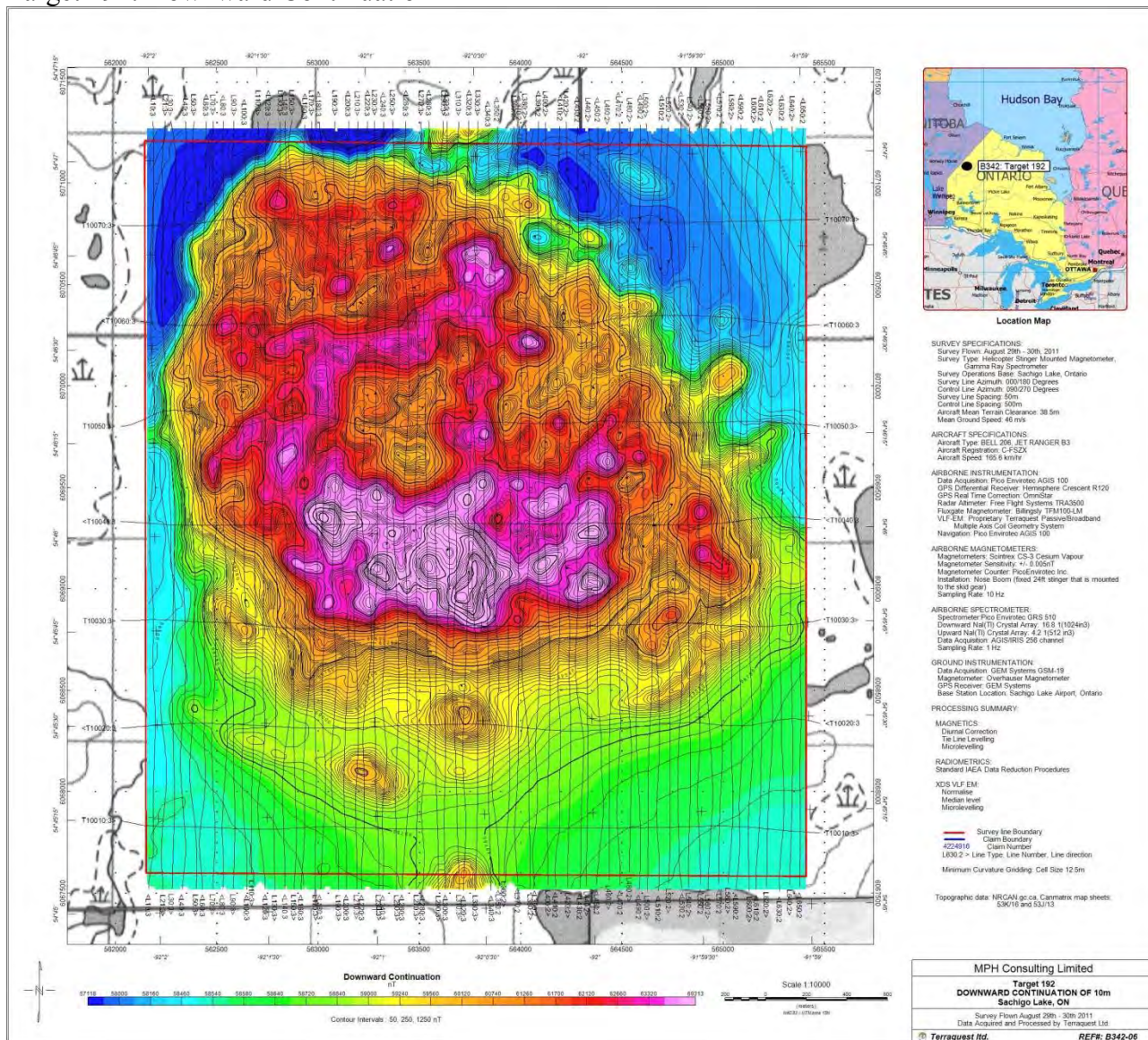
Target 192: Along Line Gradient



Target 192: Tilt Derivative



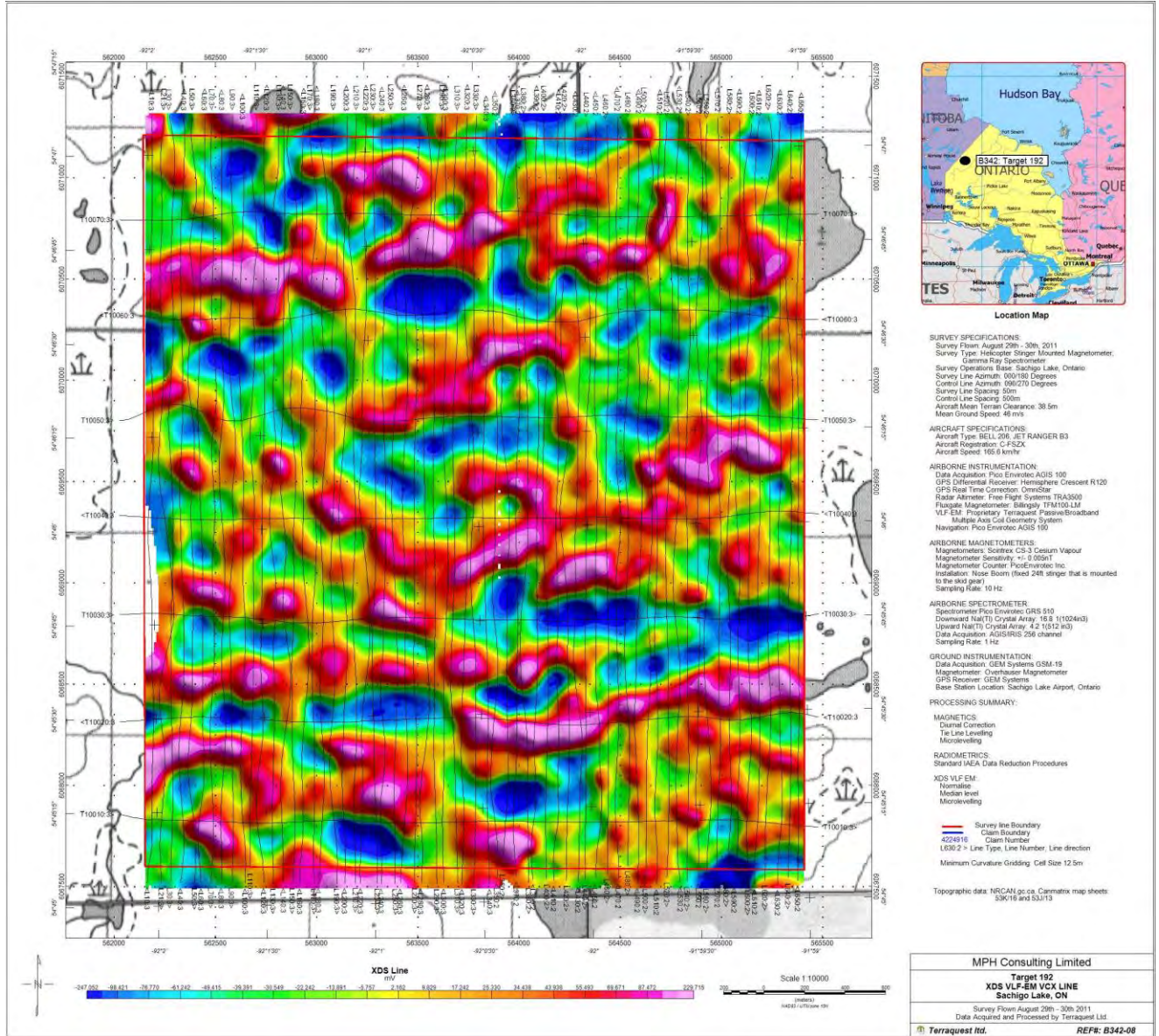
Target 192: Downward Continuation



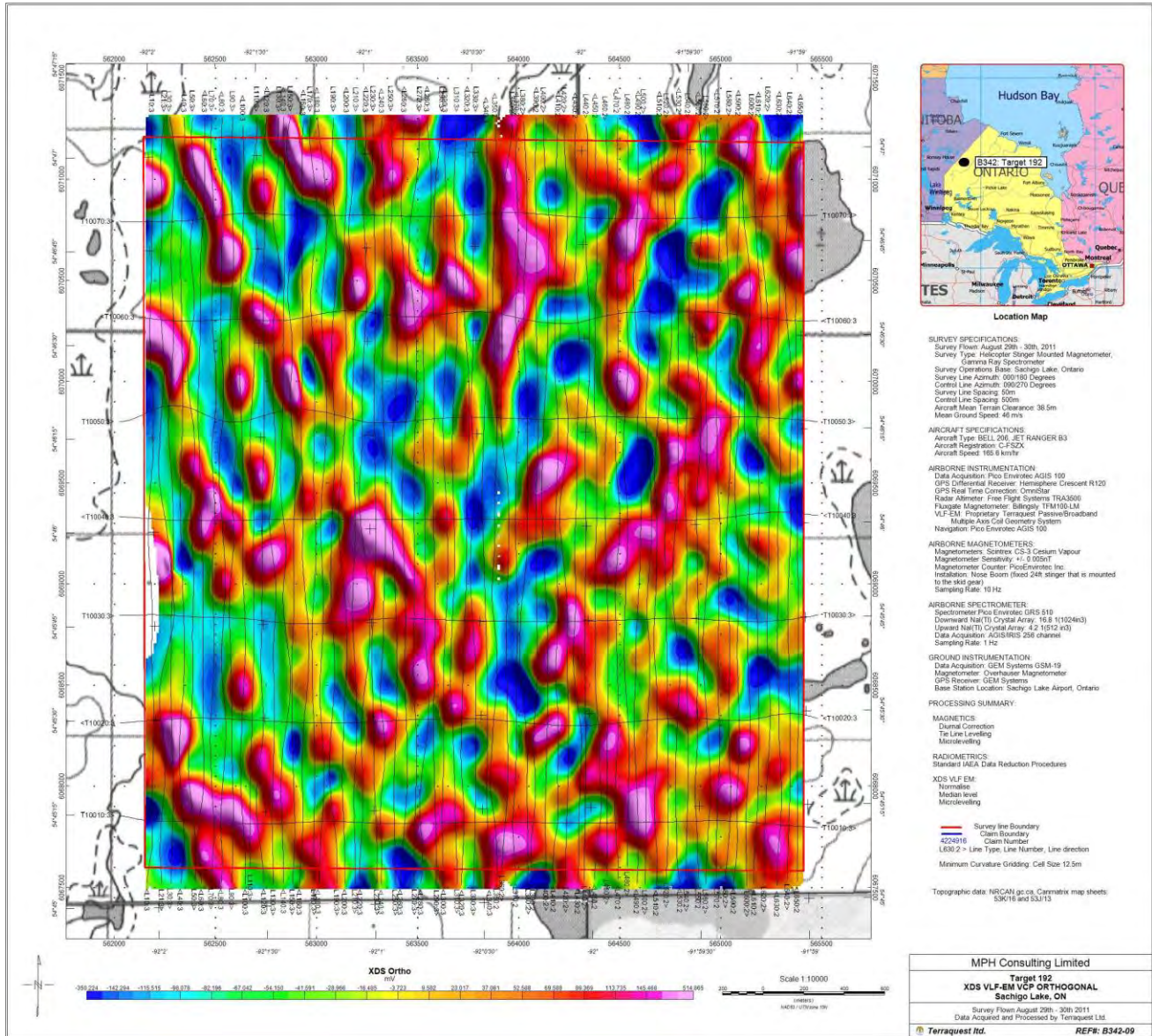
7.3. FINAL ELECTROMAGNETIC DATA PROCESSING

The Terraquest XDS system produced good resolution and consistent results. The signals in the half power range of 22.0 to 26.0 kHz (which include Cutler, North Dakota and Seattle transmitter signals), were normalized, mean leveled, low pass filter (5 points), grid stacked and micro-leveled. Standard deviation was also applied to the Ortho and Vertical channels for consistency. The data were gridded with a cell size of 12.5 metres and presented as contour plots of the respective fields.

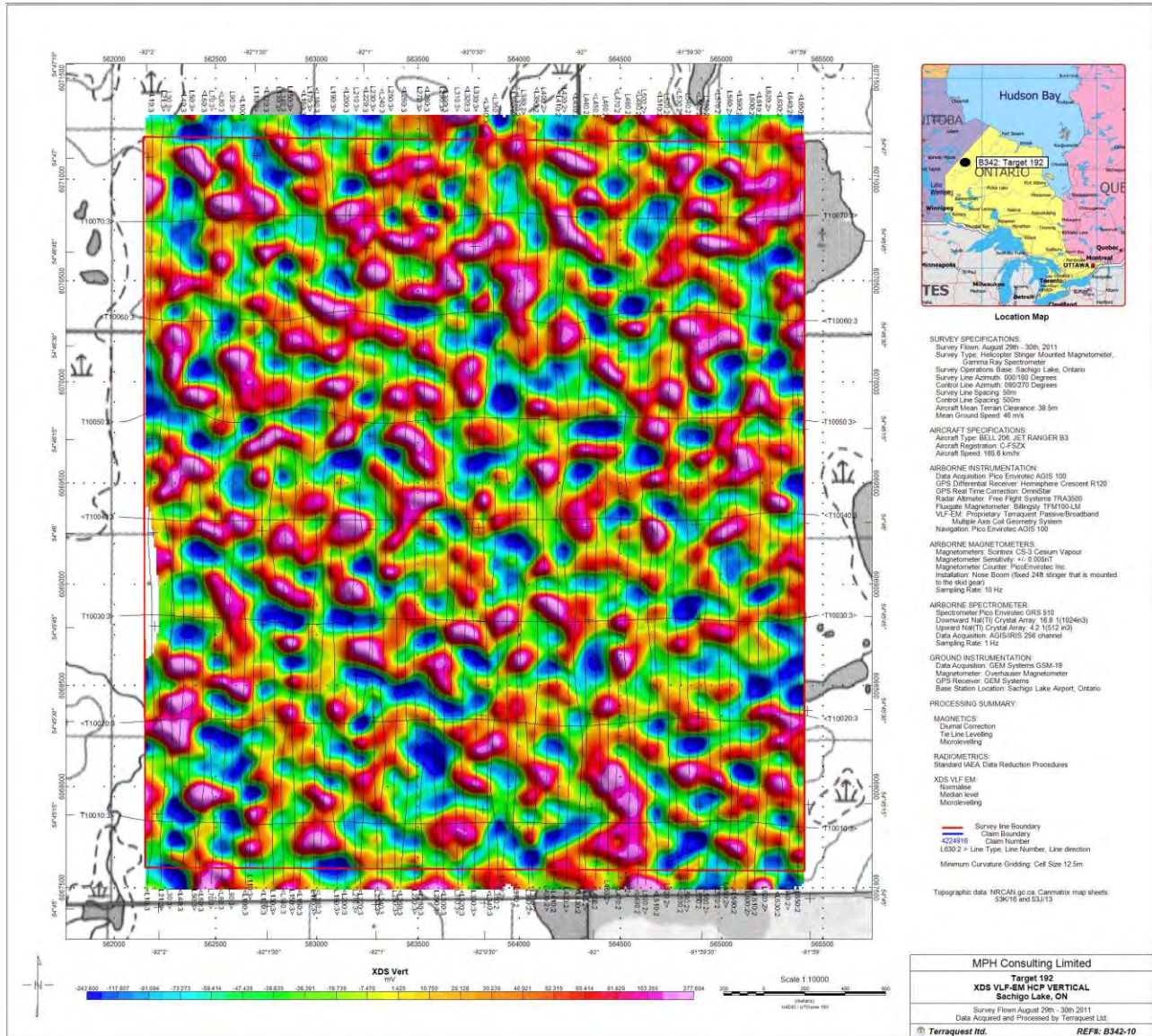
TARGET 192: LINE CHANNEL XDS VLF-EM



TARGET 192: ORTHO CHANNEL XDS VLF-EM



TARGET 192: VERTICAL CHANNEL XDS VLF-EM



7.4. FINAL RADIOMETRIC DATA PROCESSING

The radiometric data were processed according to guidelines established in the definitive IAEA Technical Report “Airborne Gamma Ray Spectrometer Surveying” (IAEA Technical Reports Series No. 323, 1991). The following specifics were performed:

- Recorded as a 256 channel spectrum, the four raw integral (or “terrestrial”) windows (Total Count, Potassium, Uranium and Thorium) were initially generated by summing the recorded counts between their appropriate channel limits – as specified below:
256 Channel ROI definitions (based on 0-255 channel indices):

Total Count:	30 - 233
Potassium:	115 - 131
Uranium:	139 - 156
Thorium:	201 - 233
Cosmic (>3 MeV):	255

- Since the PicoEnvirotec GRS410 Spectrometer does not suffer from conventional measurement “dead time”, no discrete correction for this effect need be applied.
- The raw count rates were corrected for static and ambient background sources (Aircraft, Cosmic and Radon) by using measurements from the frequent over-water crossings encountered during the survey and from pre- and post- flight over-water ‘background’ lines (where geologic radiation sources are suppressed).
- The background corrected measurements were corrected for Compton Scattering by application of “Stripping Coefficients” experimentally determined in a specific calibration exercise using standard large-scale radio-element sources (see Appendices).
- Count rates were further adjusted by correction to constant terrain clearance (altitude attenuation correction). This correction step includes the application of exponential attenuation coefficients, specific to each of the four integral windows, determined during a specific calibration procedure (see Appendices).
- As additionally recommended by the Geologic Survey of Canada, the final corrected count rates were passed through an optimized filter, sometimes referred to as a ‘Savitsky-Golay’ filter, designed to reduce sample overlap effects. This five-point convolution filter has the following (normalized) coefficients:

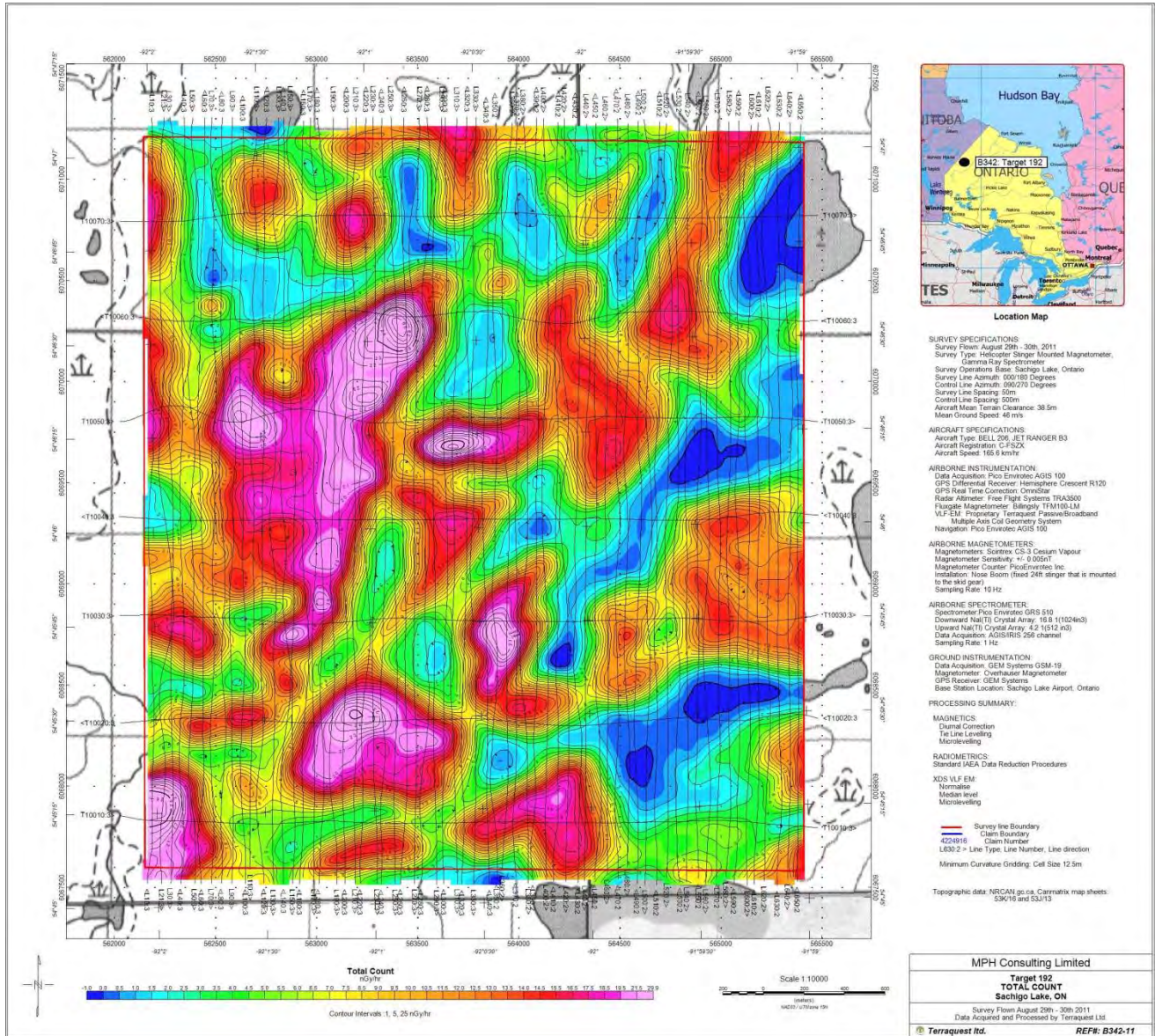
-0.0857, 0.3429, 0.4857, 0.3429, -0.0857

- Corrected radiometric data are delivered both as count rates (counts-per-second) and as effective ground units by application of sensitivity factors determined experimentally over the Geologic Survey of Canada’s test range (Breckenridge Calibration Range, Ottawa - see Appendices). Applicable ground units for each of the four integral windows are as follows:

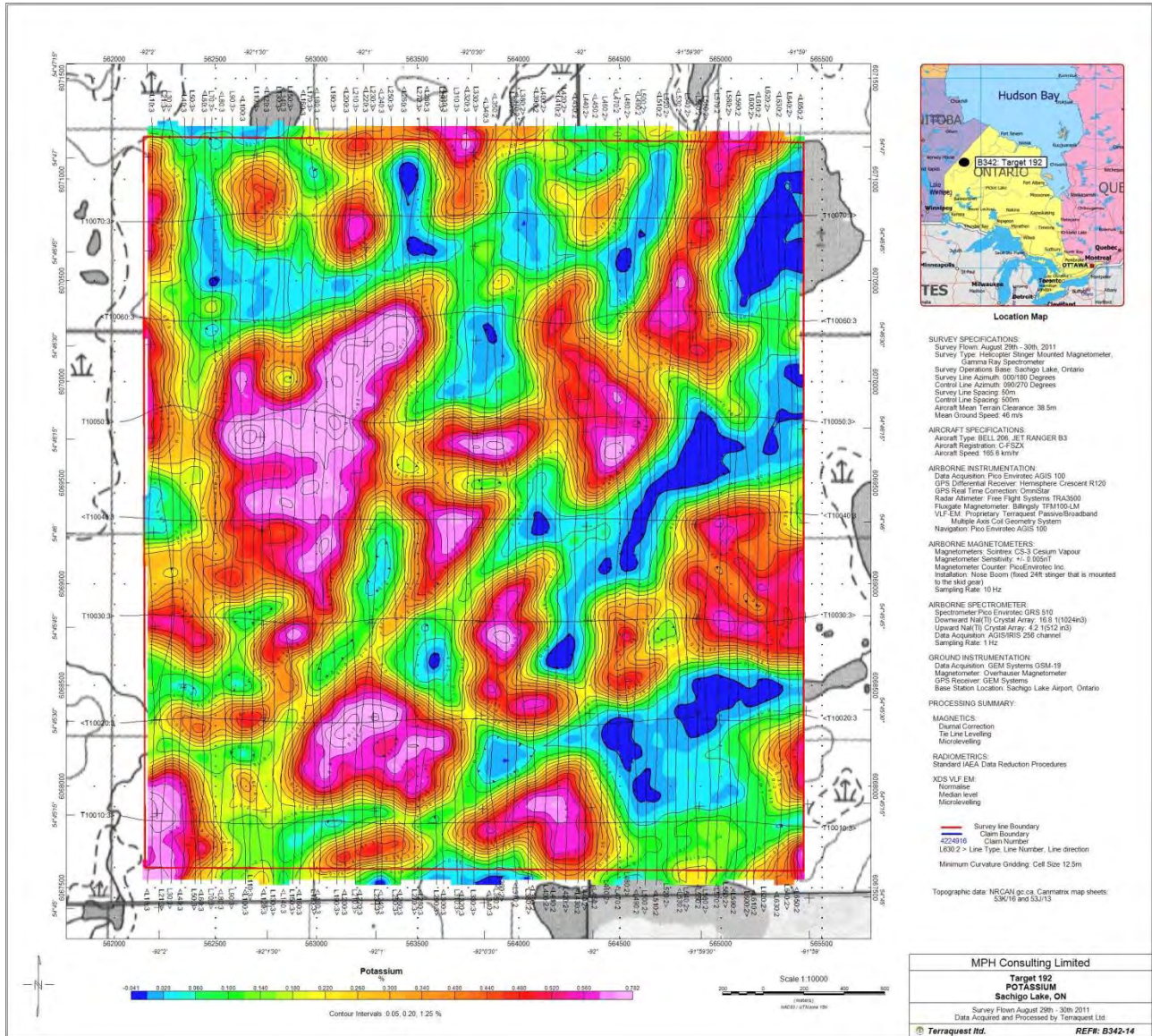
Total Count :	Exposure Rate, micro Gray/hour
Potassium :	Percent (%K)
Uranium:	Parts per Million equivalent Uranium (ppm eU)
Thorium:	Parts per Million equivalent Thorium (ppm eTh)

The radiometric data were gridded by minimum curvature method with a cell size of 12.5 metres and contoured.

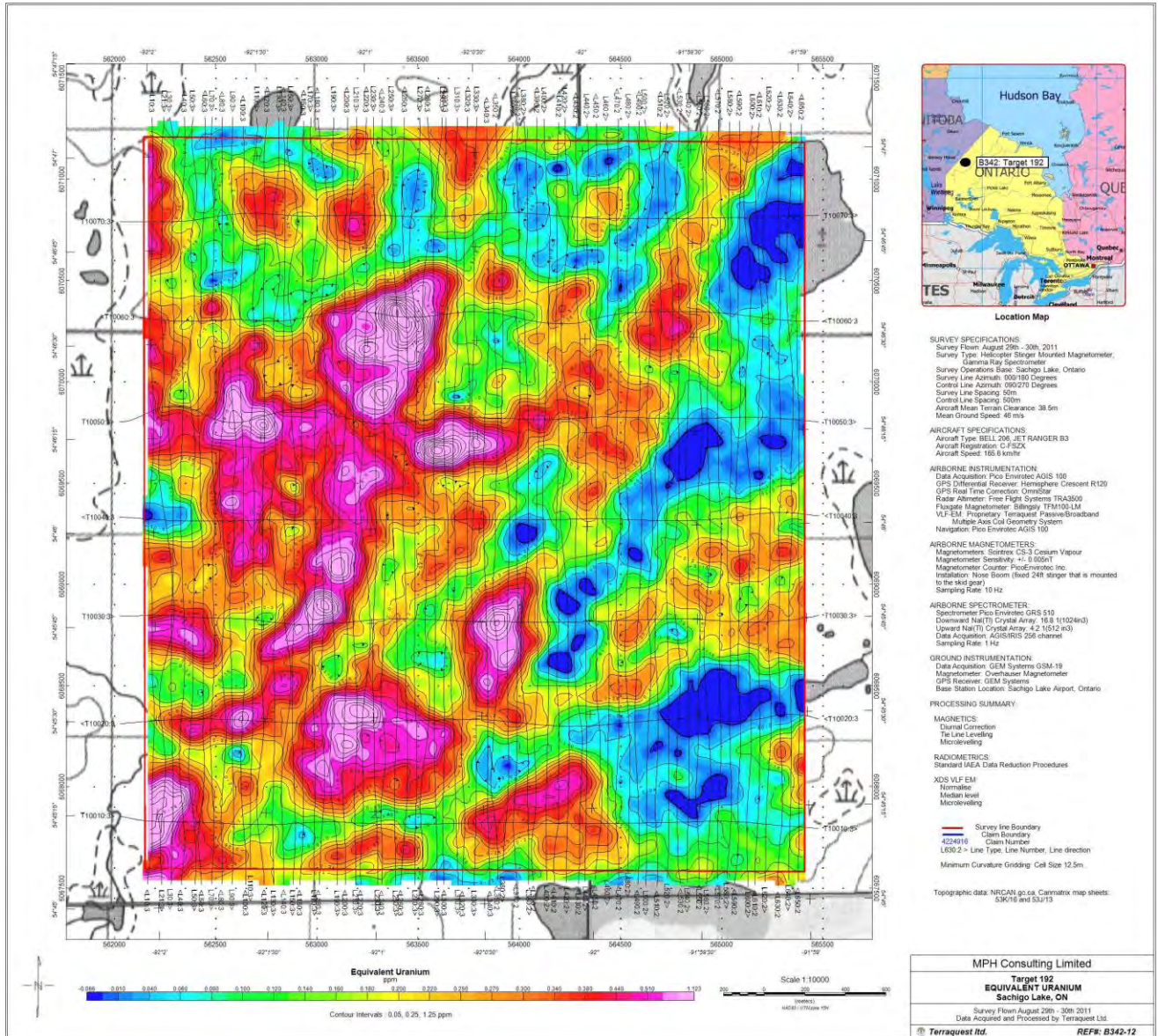
Total Count



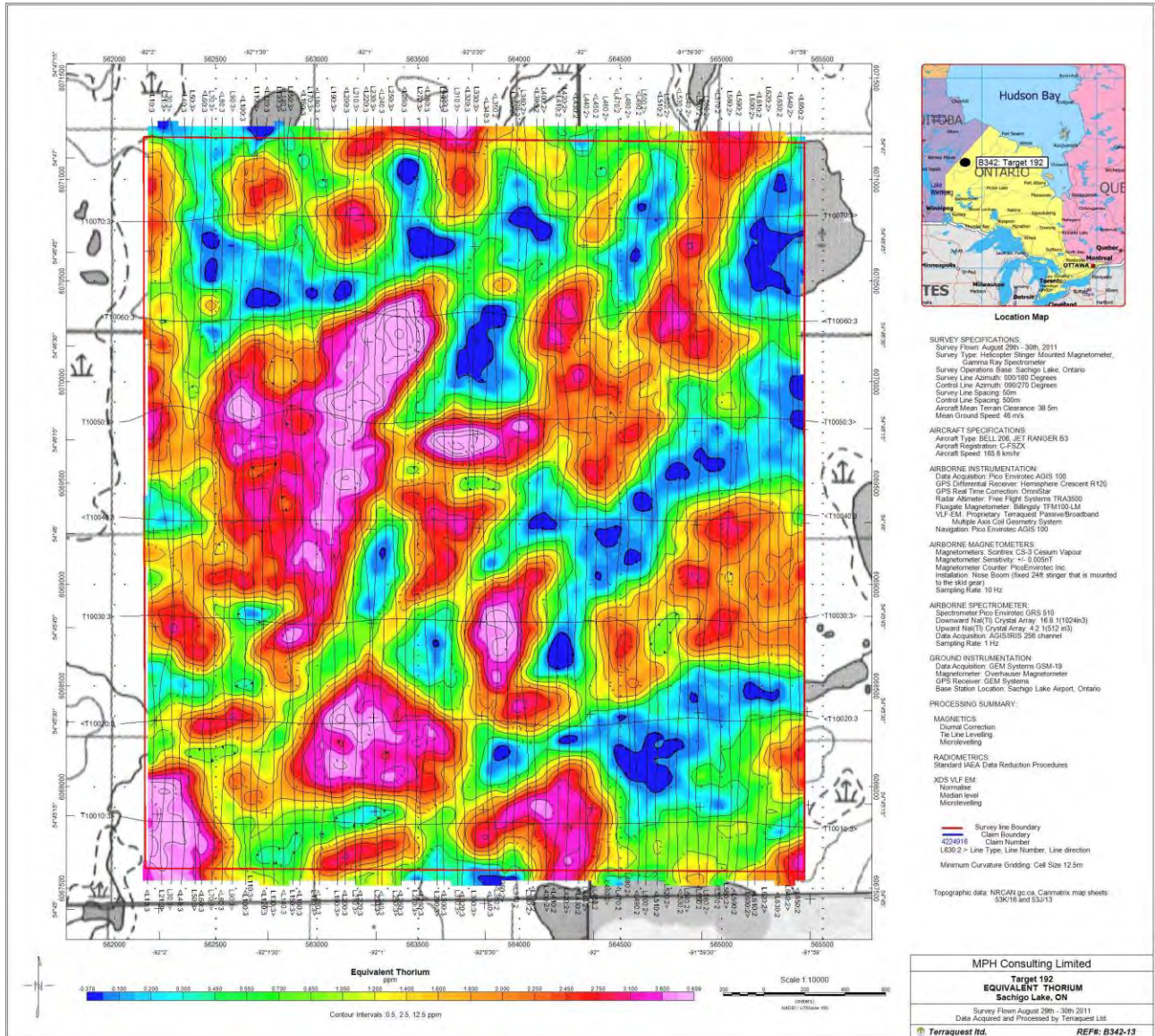
Potassium



Uranium



Thorium



7.5. LIST OF FINAL DELIVERABLES

Two copies of the following colour maps were produced at a scale of 1:10,000 with a topographic underlay as follows:

1. Flight Path
2. Digital Terrain Model (m)
3. Total magnetic intensity (TMI) (nT)
4. Calculated vertical gradient of measured total magnetic intensity (nT/m)
5. Measured along track gradient (nT/m)
6. Tilt derivative of TMI (radians/degrees)
7. Downward Continuation of TMI (nT)
8. XDS VLF-EM LINE component (volts)
9. XDS VLF-EM ORTHOGONAL component (volts)
10. XDS VLF-EM VERTICAL component (volts)
11. Total Count (nGy/hr)
12. Potassium (%)
13. Uranium (ppm)
14. Thorium (ppm)

The following digital products on DVD and report were produced:

- Digital Database Archives in GEOSOFT GDB & GBN formats (compatible with 4.1 or higher) and ASCII format (xyz)
- All GEOSOFT MAP and GRID files used to generate the above listed final maps
- JPEG and PDF images of maps
- 2 copies of Operations Report in PDF format with digital Archives in back pocket

8. SUMMARY

An airborne high sensitivity magnetometer, XDS VLF-EM and gamma ray spectrometer survey was performed over the Target 192 Block located approximately 50 kilometres north of Sachigo Lake airport with 38.5 metre mean terrain clearance, 50 metre line intervals, 500 metre tie line interval, aircraft speed of 46 m/sec and with GPS, magnetic and EM data sample points at approximately 4-5 metres along the flight lines. Radiometric data have 40-50 metre sample intervals. The base of operations was at the airport at Sachigo Lake, ON. A medium sensitivity magnetic and a GPS base station located at the airport recorded the diurnal magnetic activity and reference GPS time during the survey for adherence to survey tolerances.

The data were subjected to final processing and gridding with cell size of 12.5 metres to produce the following colour maps at a scale of 1:10,000:

- a) **Magnetics:** total magnetic intensity, vertical derivative and tilt derivative of nose boom sensor
- b) **XDS VLF-EM:** LINE, ORTHO and VERTICAL field coils
- c) **Radiometric:** total count, potassium, uranium and thorium

Respectfully Submitted,



Charles Barrie, M.Sc.
Vice President
Terraquest Ltd.

9. APPENDICES

9.1. APPENDIX I - CERTIFICATE OF QUALIFICATION

I, Charles Barrie, certify that I:

- 1) am registered as a Fellow with the Geological Association of Canada, as P.Geo. with the Association of Professional Geoscientists of Ontario and work professionally as a geologist,
- 2) hold an Honours degree in Geology from McMaster University, Canada, obtained in 1977,
- 3) hold an M.Sc. in Geology from Dalhousie University, Canada, obtained in 1980,
- 4) am a member of the Prospectors and Developers Association of Canada,
- 5) am a member of the Canadian Institute of Mining , Metallurgy and Petroleum,
- 6) have worked as a geologist for over thirty years,
- 7) am employed by and am an owner of Terraquest Ltd., specializing in high sensitivity airborne geophysical surveys, and
- 8) have prepared this operations and specifications report pertaining to airborne data collected by Terraquest Ltd.

Markham, Canada

Signed



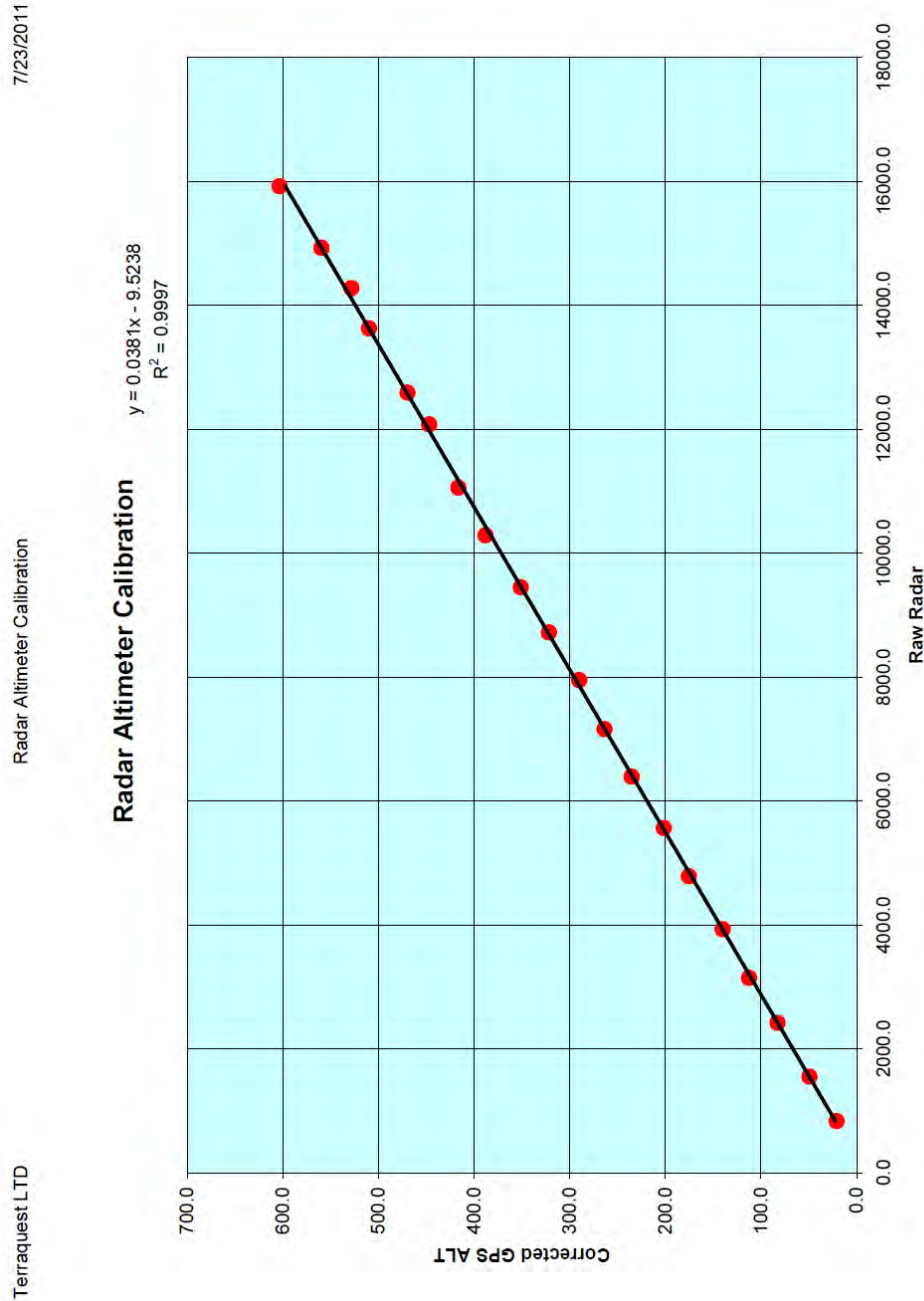
Charles Q. Barrie, M.Sc.
Vice President, Terraquest Ltd.

9.2. APPENDIX II – FIGURE OF MERIT

FOM INDEX : HELI ID - FLIGHT FSX001 27 AUG 2011 / BASE: Sachigo Lake, ON													
FOM TEST #1													
STINGER MAG													
DIR	TRAV FLG	LINE	PITCH		ROLL		YAW		P	R	Y	SUM	
			MAX	MIN	MAX	MIN	MAX	MIN					
E		9090	0.0500	-0.0900	0.0200	-0.0100	0.0300	-0.0400	0.14	0.03	0.07	0.24	
S	*	9180	0.0100	-0.0100	0.0100	-0.0200	0.0100	-0.0200	0.02	0.03	0.03	0.08	
W		9270	0.0200	-0.0300	0.0100	-0.0200	0.0200	-0.0200	0.05	0.03	0.04	0.12	
N	*	9000	0.0300	-0.0500	0.0200	-0.0300	0.0000	-0.0100	0.08	0.05	0.01	0.14	
									SUM	0.29	0.14	0.58	
									FOM	0.58			
									FOM TRAVERSE ONLY	0.22			
										(x2 :	0.44)	

9.3. APPENDIX III – RADAR ALTIMETER CALIBRATION

The radar altimeter was calibrated in the shop and verified in the field as follows:



Terraquest LTD

Radar Altimeter Calibration

B357: RADAR CALIBRATION DATA SUMMARY Calibration performed 22 July 2011, Flight FSZX001 (Wabush, NL)							
LINE	RAW RADAR	GPS ALT	CORRECTED GPS ALT	RAW RADAR	INTERCEPT		
					SLOPE	CALIBRATED RADAR ERROR *	
Ground Ref		546.00	0.0				
S100:1	837	566.97	21.0	837.0	22.4	-9.5238	1.4
S200:1	1554	595.38	49.4	1554.0	49.7	0.038129	0.3
S300:1	2421	628.62	82.6	2421.0	82.8		0.2
S400:1	3147	658.53	112.5	3147.0	110.5		-2.1
S500:1	3932	686.07	140.1	3932.0	140.4		0.3
S600:1	4788	721.36	175.4	4788.0	173.0		-2.3
S700:1	5566	747.69	201.7	5566.0	202.7		1.0
S800:1	6396	781.20	235.2	6396.0	234.3		-0.9
S900:1	7161	809.68	263.7	7161.0	263.5		-0.2
S1000:1	7954	835.96	290.0	7954.0	293.8		3.8
S1100:1	8722	867.78	321.8	8722.0	323.0		1.3
S1200:1	9450	897.13	351.1	9450.0	350.8		-0.3
S1300:1	10290	934.04	388.0	10290.0	382.8		-5.2
S1400:1	11060	962.45	416.4	11060.0	412.2		-4.3
S1500:1	12081	992.99	447.0	12081.0	451.1		4.1
S1600:1	12590	1015.43	469.4	12590.0	470.5		1.1
S1700:1	13631	1055.87	509.9	13631.0	510.2		0.3
S1800:1	14278	1074.21	528.2	14278.0	534.9		6.7
S1900:1	14930	1105.33	559.3	14930.0	559.7		0.4
S2000:1	15923	1149.34	603.3	15923.0	597.6		-5.7

* Error estimated as (Calibrated Radar) - (Corrected GPS Alt)

Imperial Units		
LINE	GPS ALT	CAL RAD
S100:1	68.8	73.458397
S200:1	162.0	163.15142
S300:1	271.1	271.60867
S400:1	369.2	362.42754
S500:1	459.5	460.62701
S600:1	575.3	567.70821

0

9.4. APPENDIX IV – COMPTON COEFFICIENTS

"" CALIBRATION OF K-U-TH WINDOW COUNTS FROM PAD MEASUREMENTS ""

PROGRAM PADWIN

Concentrations of Transportable Pads - Holland Landing - PEI Pads (Kieth

NUMBER OF PADS = 4

PAD CONCENTRATIONS:

	PCT K	PPM EU	PPM TH
B Pad	1.410 (.010)	.97 (.03)	2.26 (.10)
K Pad	8.710 (.090)	.32 (.02)	.74 (.10)
U Pad	1.340 (.020)	52.90 (.10)	3.40 (.14)
T Pad	1.340 (.020)	2.96 (.06)	136.00 (2.10)

GEOMETRIC CORRECTION FACTORS:

POTASSIUM	URANIUM	THORIUM
1.17	1.17	1.19

""B313 C-GGLS (Single Pack) 13APR2010 Holland Landing""

WINDOW COUNTS:

	TIME (M)	K COUNTS	U COUNTS	TH COUNTS
B Pad	758.0	128860.	15160.	13644.
K Pad	778.0	625512.	10892.	10892.
U Pad	640.0	269440.	226560.	28800.
T Pad	610.0	200690.	103700.	311100.

A-MATRIX FROM NONLINEAR REGRESSION:

8.753E+01 (1.098E+00)	4.926E+00 (4.319E-02)	1.161E+00 (2.438E-02)
-3.757E-02 (4.808E-02)	6.409E+00 (1.982E-02)	1.026E+00 (1.696E-02)
2.559E-01 (7.841E-02)	4.397E-01 (1.362E-02)	3.672E+00 (5.817E-02)

INVERSE A-MATRIX:

1.142E-02 (1.432E-04)	-8.699E-03 (1.284E-04)	-1.182E-03 (5.403E-05)
1.982E-04 (7.953E-05)	1.589E-01 (4.806E-04)	-4.447E-02 (2.760E-04)
-8.197E-04 (2.425E-04)	-1.842E-02 (6.521E-04)	2.777E-01 (4.410E-03)

WINDOW SENSITIVITIES FOR SMALL SOURCES:

K SENSITIVITY (A11) = 8.753E+01 (1.098E+00) COUNTS/ M PER PCT K
U SENSITIVITY (A22) = 6.409E+00 (1.982E-02) COUNTS/ M PER PPM EU
TH SENSITIVITY (A33) = 3.672E+00 (5.817E-02) COUNTS/ M PER PPM TH

WINDOW SENSITIVITIES FOR INFINITE SOURCES:

K SENSITIVITY (A11) = 1.024E+02 (1.284E+00) COUNTS/ M PER PCT K
U SENSITIVITY (A22) = 7.499E+00 (2.320E-02) COUNTS/ M PER PPM EU
TH SENSITIVITY (A33) = 4.370E+00 (6.922E-02) COUNTS/ M PER PPM TH

STRIPPING RATIOS:

TH INTO U (ALPHA = A23/A33): .2794 (.0015)
TH INTO K (BETA = A13/A33): .3163 (.0044)
U INTO K (GAMMA = A12/A22): .7686 (.0068)
U INTO TH (A = A32/A22): .0686 (.0021)
K INTO TH (B = A31/A11): .0029 (.0009)
K INTO U (G = A21/A11): -.0004 (.0005)

BACKGROUND COUNT RATES:

K WINDOW : 3.918E+01 (1.982E+00) COUNTS/M
U WINDOW : 1.152E+01 (3.409E-01) COUNTS/M
TH WINDOW : 8.913E+00 (5.185E-01) COUNTS/M

NUMBERS IN PARENTHESES ARE ESTIMATED STANDARD DEVIATIONS
Stop - Program terminated.

9.5. APPENDIX V – ALTITUDE ATTENUATION

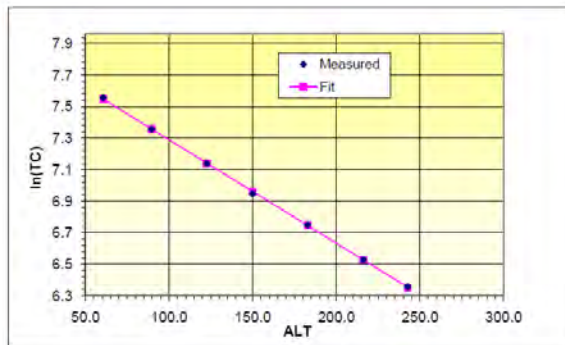
TERRAQUEST N41J / SDAS/PicoEnvirotec					
RADIOMETRIC ALTITUDE ATTENUATION CALIBRATION					
Performed : 28 April 2010, Breckenridge Test Range, Ottawa, Canada					
LINE	Average Clearance (metres)	TC (cor. CPS)	K (cor. CPS)	U (cor. CPS)	TH (cor. CPS)
L200:10	60.5	1991.7	209.4	29.5	45.3
L300:10	89.6	1629.5	160.4	24.0	38.2
L400:10	122.6	1310.9	120.7	19.9	30.4
L500:10	149.9	1081.8	96.7	16.0	25.2
L600:10	182.9	888.5	75.7	13.6	20.6
L700:10	216.2	712.1	56.9	11.4	17.1
L800:10	242.7	599.8	45.4	8.1	14.3

ALTITUDE ATTENUATION COEFFICIENTS					
Calculated by LSQ fit to : $\ln(N) = ALT \cdot \mu + \ln(N_0)$ relation					
TC	$\mu_{TC} =$	-0.006562	$\ln(N_0)_{TC} =$	7.9853	
K	$\mu_K =$	-0.008286	$\ln(N_0)_K =$	5.8269	
U	$\mu_U =$	-0.006665	$\ln(N_0)_U =$	3.7934	
Th	$\mu_{Th} =$	-0.006333	$\ln(N_0)_{Th} =$	4.1953	

U (Select) $\mu_U =$ -0.006697 $\ln(N_0)_U =$ 3.7889

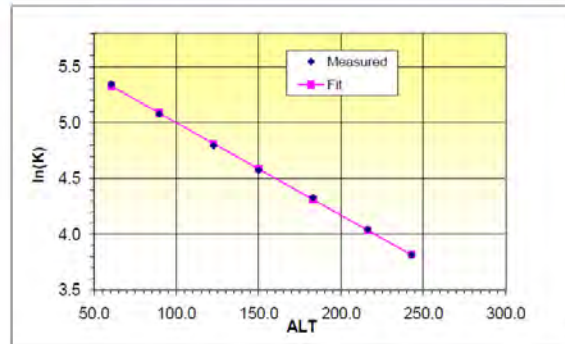
ALTITUDE DEPENDENCE: TOTAL COUNT

ALT	ln(N)	FIT
60.5	7.5968	7.5881
89.6	7.3960	7.3974
122.6	7.1785	7.1807
149.9	6.9863	7.0013
182.9	6.7895	6.7853
216.2	6.5693	6.5668
242.7	6.3968	6.3924



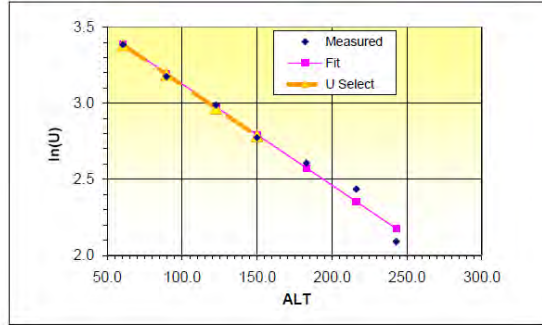
ALTITUDE DEPENDENCE: POTASSIUM

ALT	ln(N)	FIT
60.5	5.3440	5.3254
89.6	5.0774	5.0846
122.6	4.7936	4.8110
149.9	4.5713	4.5845
182.9	4.3265	4.3118
216.2	4.0411	4.0358
242.7	3.8146	3.8156



ALTITUDE DEPENDENCE: URANIUM

ALT	ln(N)	FIT
60.5	3.3854	3.3900
89.6	3.1764	3.1963
122.6	2.9892	2.9762
149.9	2.7738	2.7941
182.9	2.6079	2.5747
216.2	2.4362	2.3527
242.7	2.0906	2.1756

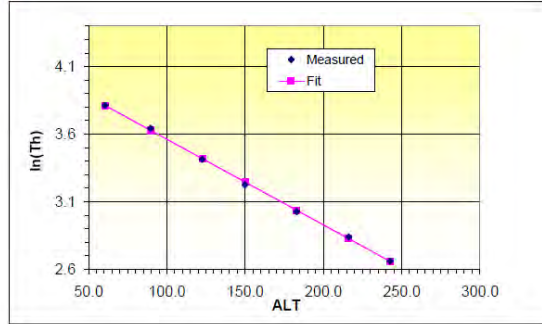


ALTITUDE DEPENDENCE: URANIUM (SELECT)

ALT	ln(N)	FIT
60.5	3.3854	3.3835
89.6	3.1764	3.1889
122.6	2.9892	2.9677
149.9	2.7738	2.7847

ALTITUDE DEPENDENCE: THORIUM

ALT	ln(N)	FIT
60.5	3.8135	3.8120
89.6	3.6434	3.6280
122.6	3.4144	3.4188
149.9	3.2257	3.2457
182.9	3.0272	3.0373
216.2	2.8397	2.8264
242.7	2.6624	2.6581



9.6. APPENDIX VI – SENSITIVITY FACTORS

Measured Ground Values:	
Dose Rate (TC) : nGy/hr	51.730
%K	1.935
ppm U	1.001
ppm Th	7.804

Ottawa Calibration, Breckendridge Test Line 28 April 2010

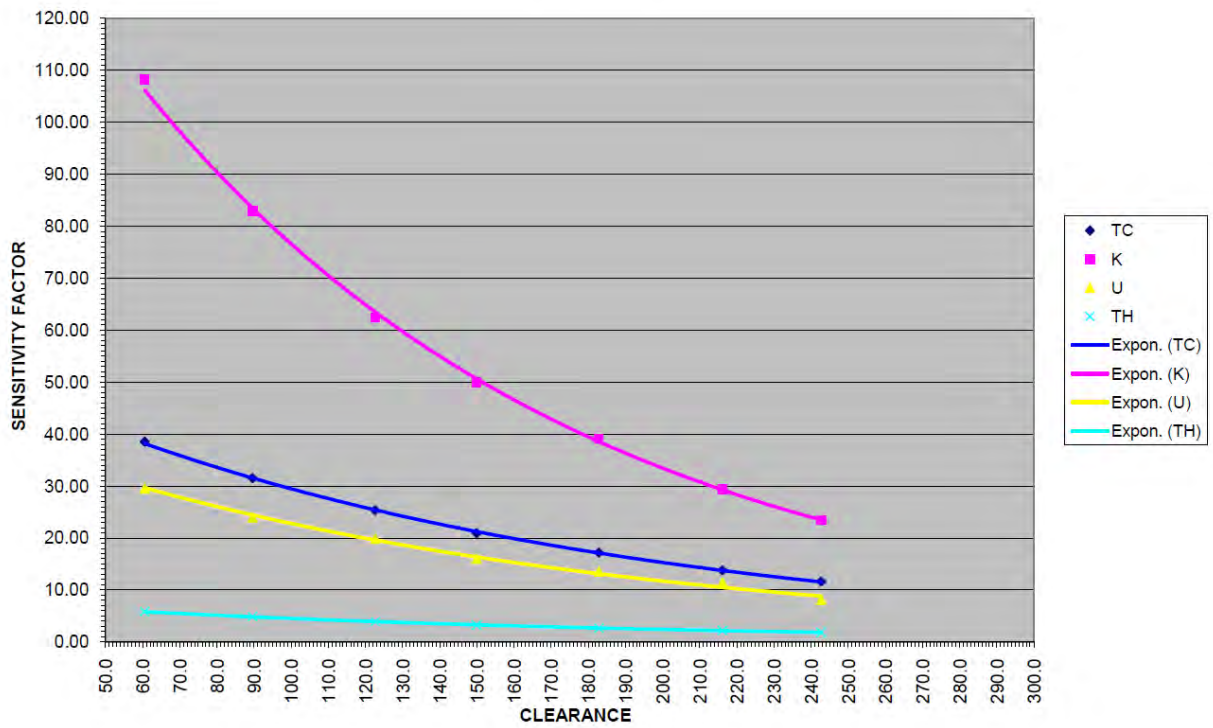
Line	Clearance (metres)	TC (cps)	K (cps)	U (cps)	Th (cps)	STC (cps/unit)	SK (cps/unit)	SU (cps/unit)	STH (cps/unit)
L200:10	60.5	1991.72	209.35	29.53	45.31	38.50	108.22	29.51	5.81
L300:10	89.6	1629.52	160.36	23.96	38.22	31.50	82.89	23.95	4.90
L400:10	122.6	1310.88	120.74	19.87	30.40	25.34	62.41	19.86	3.90
L500:10	149.9	1081.76	96.67	16.02	25.17	20.91	49.97	16.01	3.23
L600:10	182.9	888.49	75.68	13.57	20.64	17.18	39.12	13.56	2.64
L700:10	216.2	712.13	56.89	11.43	17.11	13.77	29.41	11.42	2.19
L800:10	242.7	599.83	45.36	8.09	14.33	11.60	23.45	8.09	1.84

Exponential Fit Parameters:		"m"	"b"
TC		0.9935	56.7818
K		0.9917	175.4029
U		0.9934	44.3812
TH		0.9937	8.5044

Calculated Sensitivities	
CLEARANCE:	40
TC	43.67
K	125.92
U	34.00
TH	6.60

Equivalent Single Pack Vals	
TC	21.84
K	62.96
U	17.00
TH	3.30

Sensitivity Factors



9.7. APPENDIX VII – README

Terraquest Ltd. Project B-342

December, 2011

for
MPH Consulting Limited
Sachigo Lake, ON

FINAL DATA ARCHIVE

CONTENTS >>>>>

1. ARCHIVE DVD INVENTORY
2. GEOSOFTE OASIS MONTAJ DATABASE (.GDB), BINARY (.GBN), AND ASCII (.XYZ) DATA FILE CONTENTS
3. DATA GRIDS
4. MAPS
5. JPEGS
6. PDFS
7. README
8. Report

1. ARCHIVE DVD INVENTORY

Inventory of project data files submitted (incl. associated sub-folder name) :

READMEB342.doc

Data\B342_MAG_EM.gbn
Data\ B342_MAG_EM.gdb
Data\ B342_MAG_EM.xyz
Data\ B342CLIENT_Radiometrics.gbn
Data\ B342CLIENT_Radiometrics.gdb

Grids\DigitalTerrainModel.grd,.gi
Grids\TotalMagneticIntensity.grd,.gi
Grids\CalculatedVerticalDerivative.grd,.gi
Grids\ AlongLineGradient.grd,.gi
Grids\XDSLLine.grd,.gi
Grids\XDSOrtho.grd,.gi
Grids\XDSvertical.grd,.gi
Grids\DownwardContinuation.grd,.gi
Grids\TiltDerivative.grd,.gi
Grids\STC.grd,.gi
Grids\SU.grd,.gi
Grids\STh.grd,.gi
Grids\SK.grd,.gi

Maps\ FlightPath.map,.gm
Maps\ DigitalTerrainModel.map,.gm
Maps\ TotalMagneticIntensity.map,.gm

Maps\ CalculatedVerticalDerivative.map,.gm
Maps\ MeasuredAlongLineGradient.map,.gm
Maps\DownwardContinuation.map,.gm
Maps\TiltDerivative..map.gm
Maps\TotalCount. map.gm
Maps\Uranium. map.gm
Maps\Thorium. map.gm
Maps\Potassium. map.gm
Maps\ XDSLine.map,.gm
Maps\ XDSOrtho.map,.gm
Maps\ XDSVert.map,.gm

JPEGS\ FlightPath.jpg
JPEGS\ DigitalTerrainModel.jpg
JPEGS\ TotalMagneticIntensity .jpg
JPEGS\ CalculatedVerticalDerivative.jpg
JPEGS\ MeasuredAlongLineGradient.jpg
JPEGS\DownwardContinuation.jpg
JPEGS\TiltDerivative.jpg
JPEGS\TotalCount.jpg
JPEGS\Uranium.jpg
JPEGS\Thorium.jpg
JPEGS\Potassium.jpg
JPEGS\ XDSLine.jpg
JPEGS\ XDSOrtho.jpg
JPEGS\ XDSVert.jpg

PDFS\ FlightPath.pdf
PDFS\ DigitalTerrainModel.pdf
PDFS\ TotalMagneticIntensity pdf
PDFS\ CalculatedVerticalDerivative.pdf
PDFS\ MeasuredAlongLineGradient. pdf
PDFS\DownwardContinuation.pdf
PDFS\TiltDerivative.pdf
PDFS\TotalCount.pdf
PDFS\Uranium.pdf
PDFS\Thorium.pdf
PDFS\Potassium.pdf
PDFS\ XDSLine..pdf
PDFS\ XDSOrtho.pdf
PDFS\ XDSVert..pdf

ReadMe\READMEB342.doc

2. GEOSOFT OASIS MONTAJ DATABASE (.GDB) , BINARY (.GBN) , AND ASCII (.XYZ)FILE CONTENTS

Traverse lines in the database are denoted with “L” and Tie lines are denoted with “T”.
Data files for TARGET 192 contain the following channels:

2.1 DATA (B342_MAG_EM.GDB,.GBN,.XYZ) --->

NAD83_X	UTM Easting Zone 15N [WGS 84] World / [NAD83] Canada; Central America; Mexico; USA (ex Hawaii Aleutian Islands) (m)
NAD83_Y	UTM Northing Zone 15N [WGS 84] World / [NAD83] Canada; Central America; Mexico; USA (ex Hawaii Aleutian Islands) (m)
TIME	Time (GPS UTC day-sec)
RADALT	Aircraft Radar Terrain Clearance (m)
GPSALT	Aircraft Elevation [WGS 84] World (m)
LAT_Deg	Latitude [WGS 84] World (decimal degrees)
LON_Deg	Longitude [WGS 84] World (decimal degrees)
VMX	X-component of Fluxgate Magnetometer (nT*10)
VMY	Y-component of Fluxgate Magnetometer (nT*10)
VMZ	Z-component of Fluxgate Magnetometer (nT*10)
TFUNC	Raw Sensor Total Magnetic Intensity (nT)
TFCMP	Compensated Sensor Total Magnetic Intensity (nT)
HY_Final	Along Line Component of Horizontal Magnetic Gradient (nT/m)
FNLDTM	Calculated Digital Terrain Model(m)
Tilt_Degrees	Tilt Derivative created using the FNLDTM (Degrees)**sampled in from grid
DownwardContin	Downward Continuation of 10m (nT) **sampled in from grid
XDSLNE_Final	Leveled XDS line component (v)
XDSORTHO_Final	Leveled XDS Orthogonal component (v)
XDSVERT_Final	Leveled XDS Vertical component (v)
FNLMTI	Micro-levelled Tie-line Levelled Compensated Tail Sensor Total Magnetic Intensity (nT) (survey lines only)
VDTMI	Vertical Derivative created using the FNLMTI (nT/m)**sampled in from grid

2.1 DATA (B342CLIENT_Radiometrics.GDB,.GBN) --->

NAD83_X	UTM Easting Zone 15N [WGS 84] World / [NAD83] Canada; Central America; Mexico; USA (ex Hawaii Aleutian Islands) (m)
NAD83_Y	UTM Northing Zone 15N [WGS 84] World / [NAD83] Canada; Central America; Mexico; USA (ex Hawaii Aleutian Islands) (m)
TIME	Time (GPS UTC day-sec)
RADALT	Aircraft Radar Terrain Clearance (m)
GPSALT	Aircraft Elevation [WGS 84] World (m)
LAT_Deg	Latitude [WGS 84] World (decimal degrees)
LON_Deg	Longitude [WGS 84] World (decimal degrees)
ISPID_cpt	Spectrum array for downward looking crystals
ISPIU_cpt	Spectrum array for upward looking crystals
RAWTC	Raw total count (cps)
RAWK	Raw potassium (cps)
RAWU	Raw uranium (cps)
RAWTH	Raw thorium (cps)
RAWUU	Raw uranium upward (cps)
RAWCOS	Raw cosmic (cps)
FTC	Corrected total count (cps)
FK	Corrected potassium (cps)
FU	Corrected uranium (cps)
FTH	Corrected thorium (cps)
STC	Corrected sensitivity Total Count in ground units (nGy/h)
SK	Corrected sensitivity potassium in ground units (%)
SU	Corrected sensitivity uranium in ground units (ppm)
STH	Corrected sensitivity thorium in ground units (ppm)

3. DATA GRIDS

The following Geosoft grids have been supplied for TARGET 192:

DigitalTerrainModel	12.5-m cell Calculated Digital Terrain Model(m)
Total Magnetic Intensity (nT)	12.5-m Micro-levelled Tie-line Levelled Compensated Tail Sensor TMI
CalculatedVerticalDerivative	12.5-m cell Vertical Derivative created using the FNL TMI (nT/m)
AlongLineGradient	12.5-m cell Along Line Component of Horizontal Magnetic Gradient (nT/m)
DownwardContinuation	12.5-m cell Calculated Downward Continuation by 10m (nT)
TiltDerivative	12.5-m cell Calculated Tilt Derivative using the FNL TMI (Degrees)
XDSLLine	12.5-m cell Leveled XDS line component (mv)
XDSOrtho	12.5-m cell Leveled XDS Orthogonal component (mv)
XDSVertical	12.5-m cell Leveled XDS Vertical component (mv)
STC	12.5-m cell Corrected sensitivity Total Count (nGy/hr)
SU	12.5-m cell Corrected sensitivity Uranium (ppm)
STh	12.5-m cell Corrected sensitivity Thorium (ppm)
SK	12.5-m cell Corrected sensitivity Potassium(%)

4. MAPS

The following map products at 1:10,000 scale have been supplied for TARGET 192

Map images are submitted in Geosoft 'Packed' Map (viewable with the Oasis montaj viewer available as a free download from Geosoft):

FlightPath	Flight Path on Topo Base
DigitalTerrainModel	Digital Terrain Model Contoured Colour Image, Flight Path on Topo Base
TotalMagneticIntensity	TMI Contoured Colour Image, Flight Path on Topo Base
CalculatedVerticalDerivative	Calculated Vertical Magnetic Derivative Contoured Colour Image, Flight Path on Topo Base
MeasuredAlongLineGradient	Along Line Horizontal Magnetic Gradient Contoured Colour Image, Flight Path on Topo Base
DownwardContinuation on Topo Base	Downward Continuation of the TMI by 10 m Contoured Colour Image, Flight Path on Topo Base
TiltDerivative	Tilt Derivative Contoured Colour Image, Flight Path on Topo Base
XDSLLine	Line component Colour Shaded Image, Flight Path on Topo Base
XDSOrtho	Orthogonal Component Colour Shaded Image, Flight Path on Topo Base
XDSVert	Vertical Component Colour Shaded Image, Flight Path on Topo Base
TotalCount	Total Count Contoured Colour Image, Flight Path on Topo Base
Uranium	Uranium Contoured Colour Image, Flight Path on Topo Base
Thorium	Thorium Contoured Colour Image, Flight Path on Topo Base
Potassium	Potassium Contoured Colour Image, Flight Path on Topo Base

5. JPEGS

The following map products at 1:10,000 scale have been supplied for the TARGET 192:

Map images are submitted High Quality JPEG compressed image (110 dpi):

FlightPath	Flight Path on Topo Base
DigitalTerrainModel	Digital Terrain Model Contoured Colour Image, Flight Path on Topo Base
TotalMagneticIntensity	TMI Contoured Colour Image, Flight Path on Topo Base
CalculatedVerticalDerivative	Calculated Vertical Magnetic Derivative Contoured Colour Image, Flight Path on Topo Base
MeasuredAlongLineGradient	Along Line Horizontal Magnetic Gradient Contoured Colour Image, Flight Path on Topo Base

DownwardContinuation on Topo Base	Downward Continuation of the TMI by 10 m Contoured Colour Image, Flight Path
TiltDerivative	Tilt Derivative Contoured Colour Image, Flight Path on Topo
XDSLLine	Line Component Colour Shaded Image, Flight Path on Topo Base
XDSOrtho	Orthogonal Component Colour Shaded Image, Flight Path on Topo Base
XDSVert	Vertical Component Colour Shaded Image, Flight Path on Topo Base
TotalCount	Total Count Contoured Colour Image, Flight Path on Topo
Uranium	Uranium Contoured Colour Image, Flight Path on Topo
Thorium	Thorium Contoured Colour Image, Flight Path on Topo
Potassium	Potassium Contoured Colour Image, Flight Path on Topo

6. PDFS

The following map products at 1:10,000 scale have been supplied for the TARGET 192:

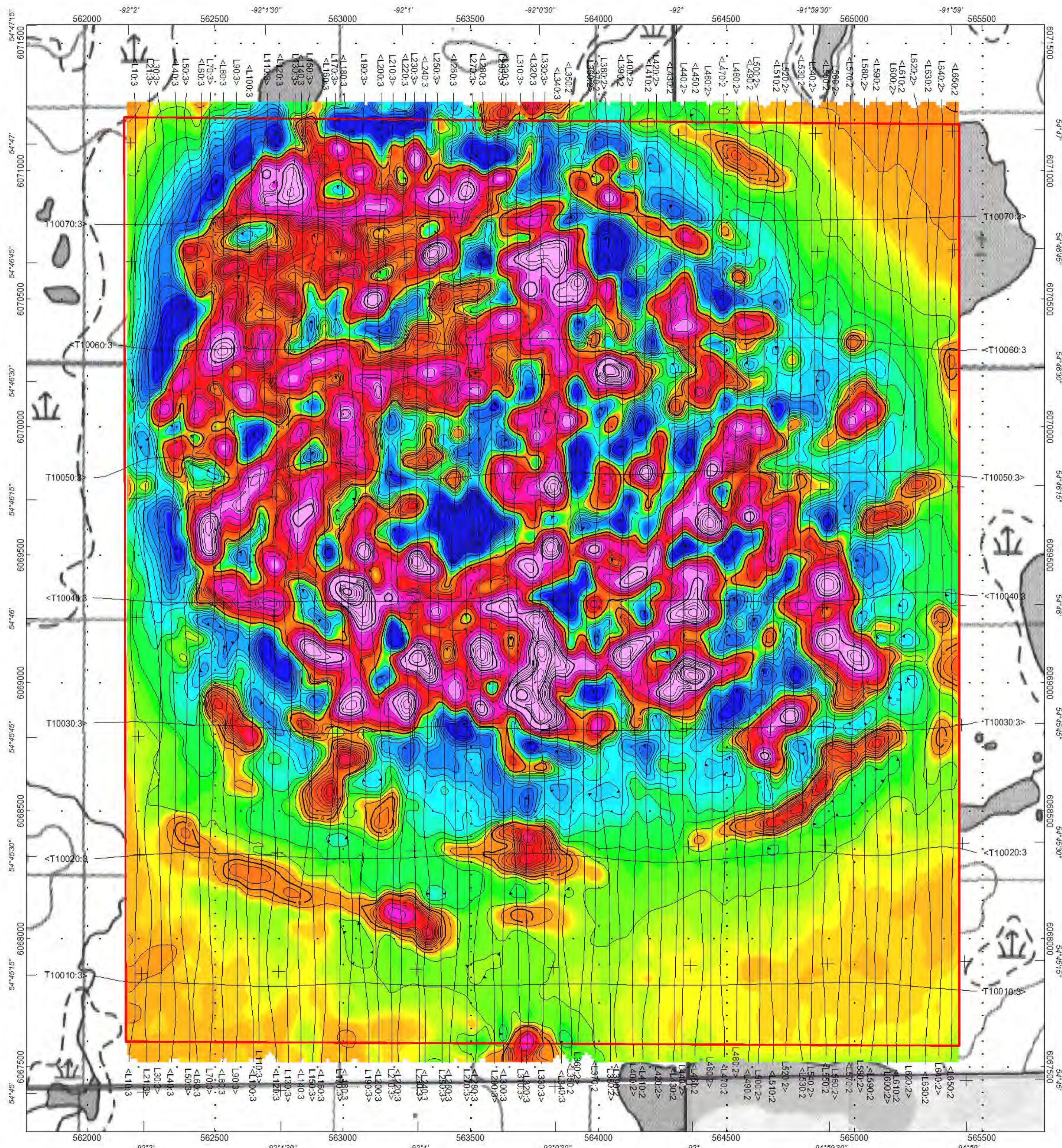
FlightPath	Flight Path on Topo Base
DigitalTerrainModel	Digital Terrain Model Contoured Colour Image, Flight Path on Topo Base
TotalMagneticIntensity	TMI Contoured Colour Image, Flight Path on Topo Base
CalculatedVerticalDerivative	Calculated Vertical Magnetic Derivative Contoured Colour Image, Flight Path on Topo Base
MeasuredAlongLineGradient	Along Line Horizontal Magnetic Gradient Contoured Colour Image, Flight Path on Topo Base
DownwardContinuation Topo Base	Downward Continued TMI by 10 m Contoured Colour Image, Flight Path on Topo Base
TiltDerivative	Tilt Derivative Contoured Colour Image, Flight Path on Topo
XDSLLine	Line component Colour Shaded Image, Flight Path on Topo Base
XDSOrtho	Orthogonal Component Colour Shaded Image, Flight Path on Topo Base
XDSVert	Vertical Component Colour Shaded Image, Flight Path on Topo Base
TotalCount	Total Count Contoured Colour Image, Flight Path on Topo
Uranium	Uranium Contoured Colour Image, Flight Path on Topo
Thorium	Thorium Contoured Colour Image, Flight Path on Topo
Potassium	Potassium Contoured Colour Image, Flight Path on Topo

7. README

READMEB342.DOC	Data Archive delivery documentation (this document).
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8. Report

Report\B-342-Heli-Report.pdf



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

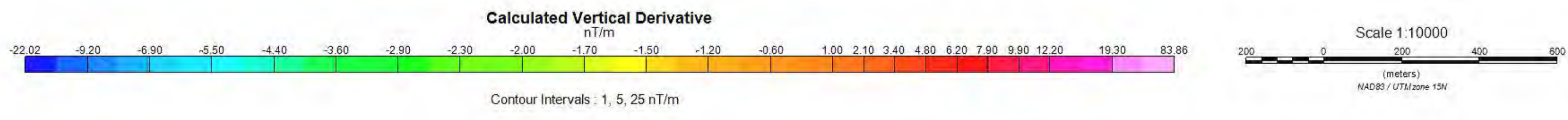
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13

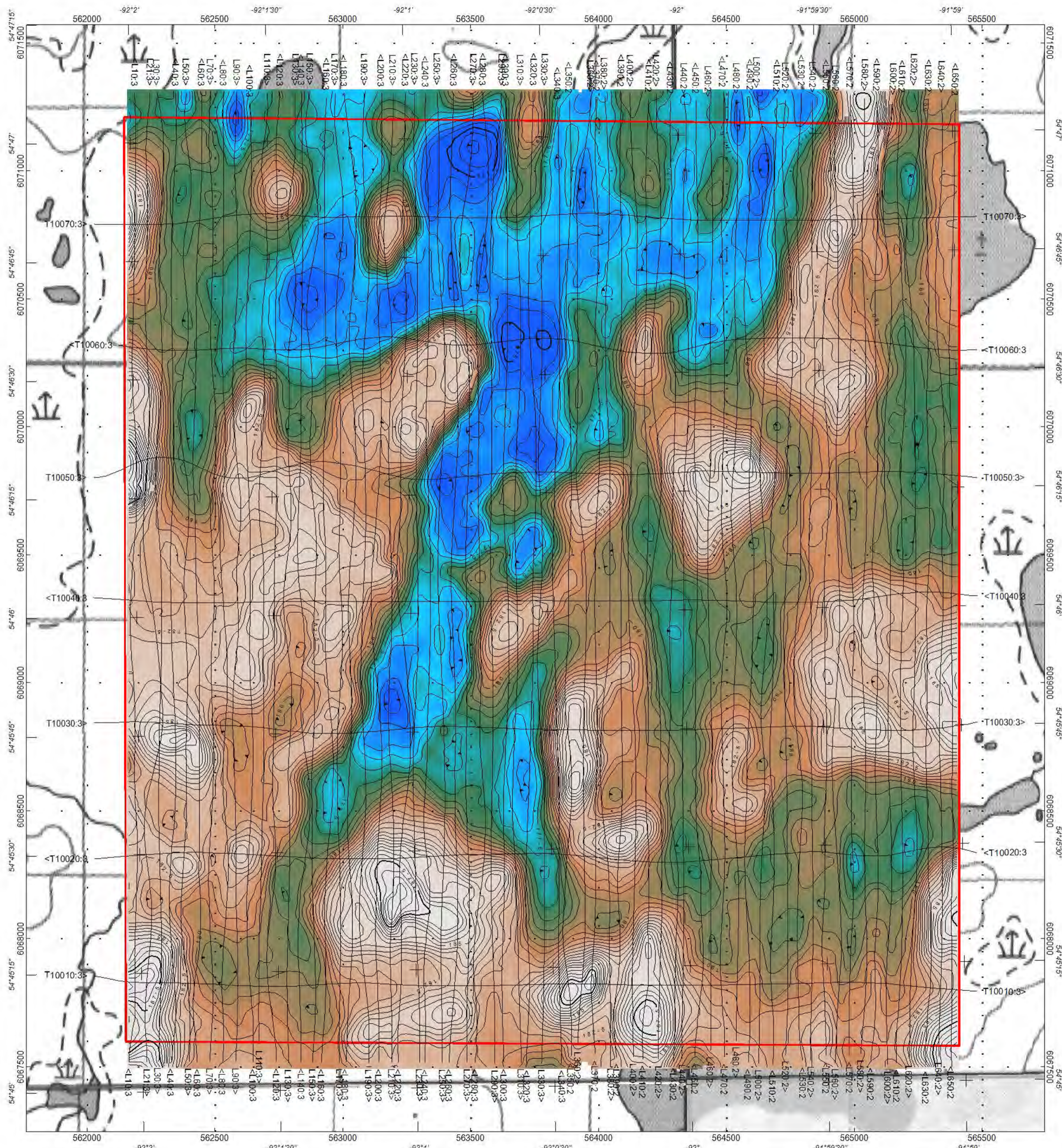


MPH Consulting Limited

Target 192
CALCULATED VERTICAL DERIVATIVE
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. **REF#: B342-04**



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer,
 Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

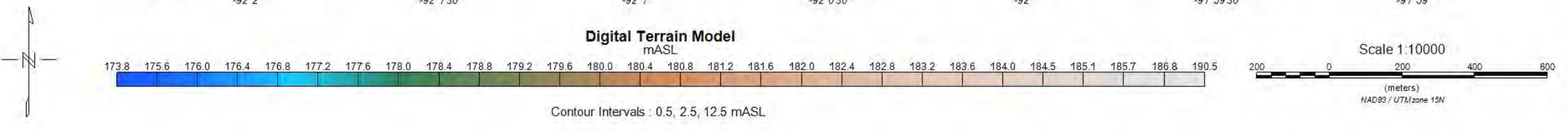
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

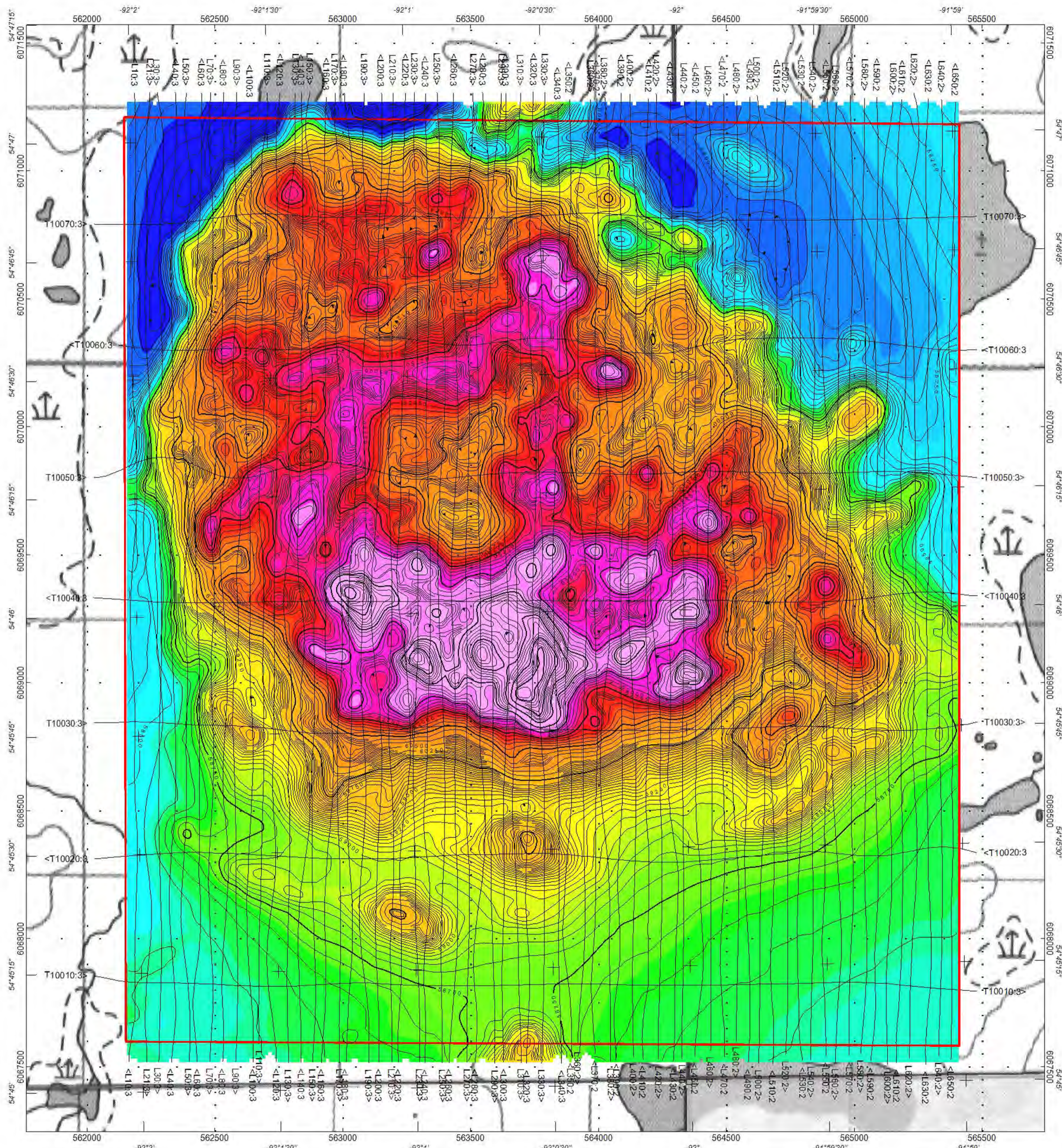
XDS VLF EM:
 Normalise
 Median level
 Microlevelling

— Survey line Boundary
 — Claim Boundary
 4224916 Claim Number
 L630.2 > Line Type, Line Number, Line direction
 Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13



MPH Consulting Limited
Target 192
DIGITAL TERRAIN MODEL
Sachigo Lake, ON
 Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.
Terraquest Ltd. REF#: B342-02



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

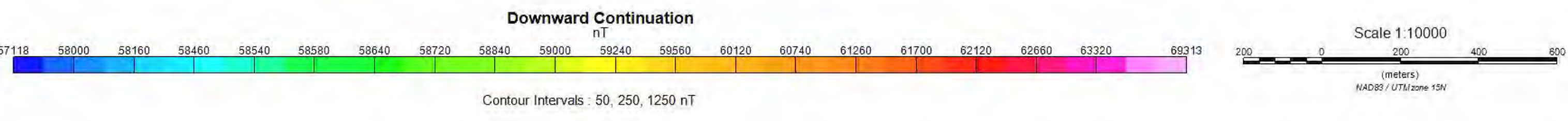
GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

- MAGNETICS:**
 - Diurnal Correction
 - Tie Line Levelling
 - Microlevelling
- RADIOMETRICS:**
 - Standard IAEA Data Reduction Procedures
- XDS VLF EM:**
 - Normalise
 - Median level
 - Microlevelling

- Survey line Boundary
- Claim Boundary
- 4224916 Claim Number
- L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets: 53K/16 and 53J/13

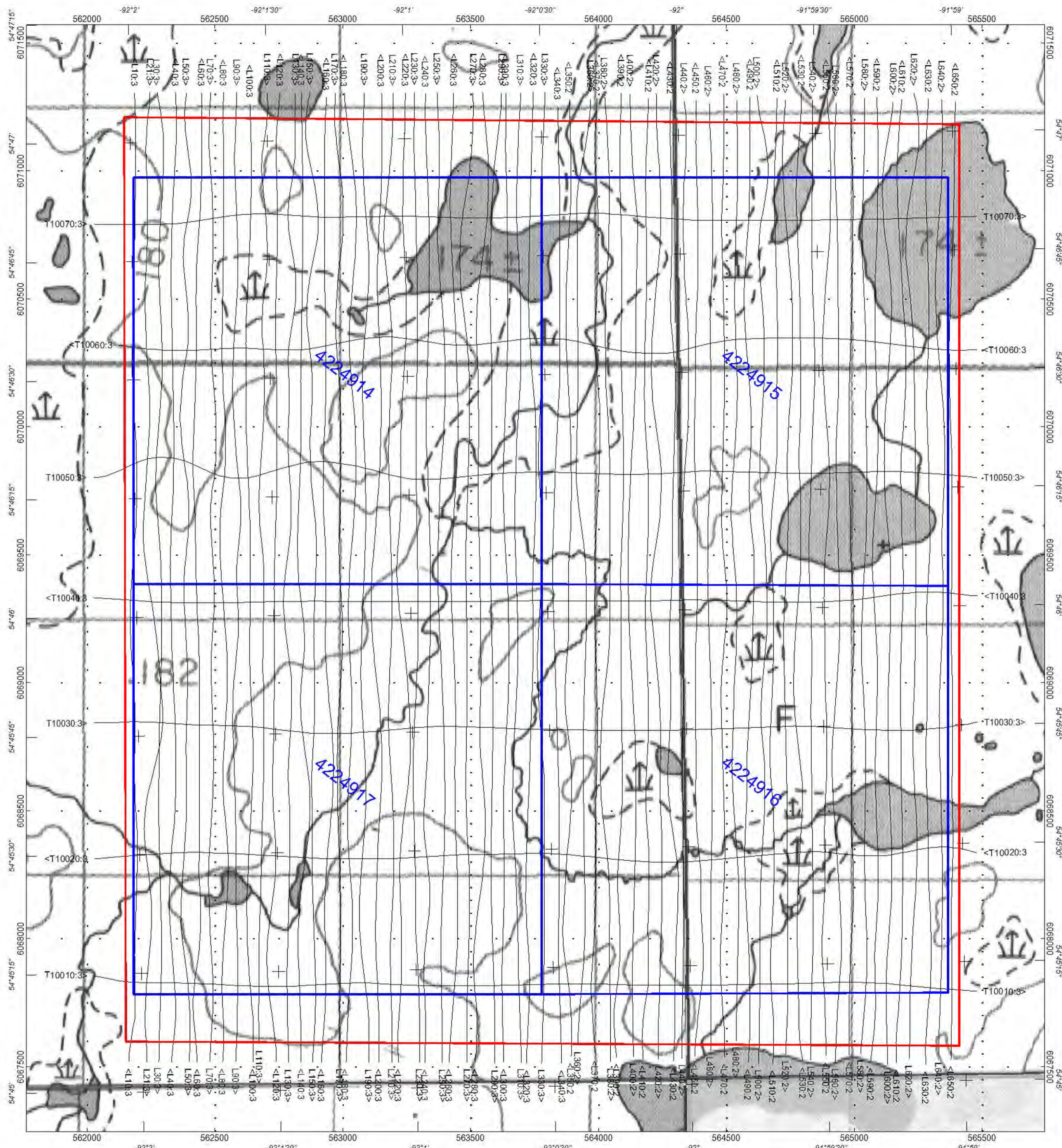


MPH Consulting Limited

Target 192
DOWNWARD CONTINUATION OF 10m
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. **REF#: B342-06**



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

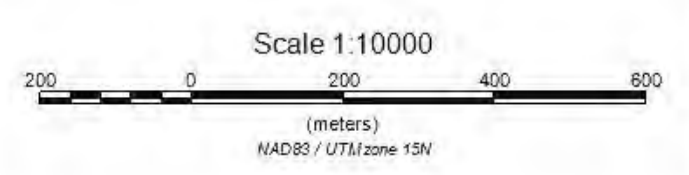
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630.2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13

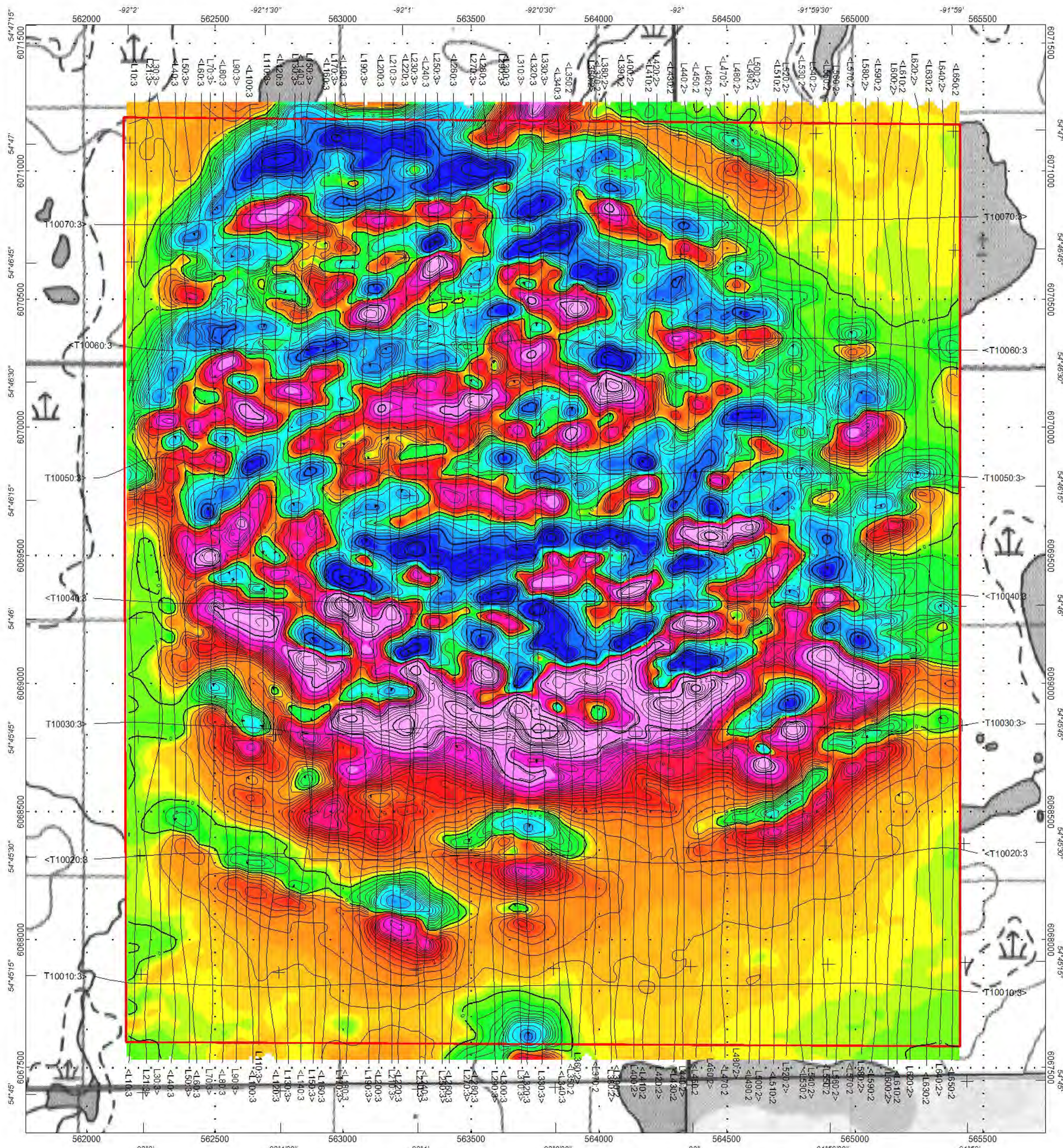


MPH Consulting Limited

**Target 192
FLIGHT PATH
Sachigo Lake, ON**

Survey Flown August 29th - 30th 2011
Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-01



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 (1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

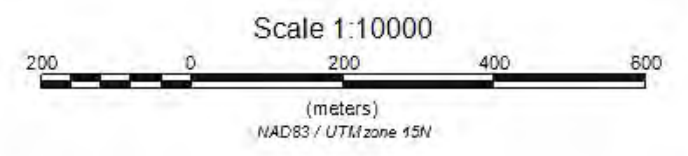
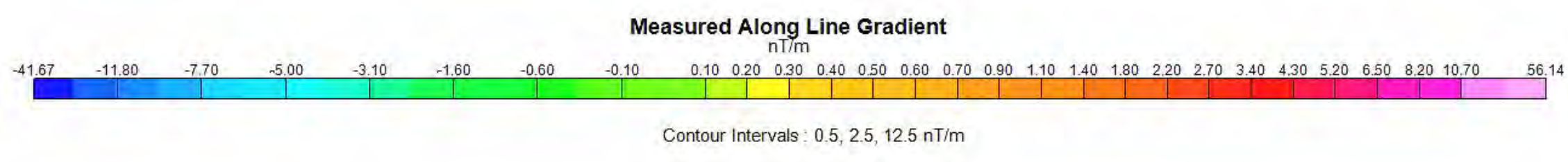
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
- Claim Boundary
- 4224916 Claim Number
- L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets: 53K/16 and 53J/13

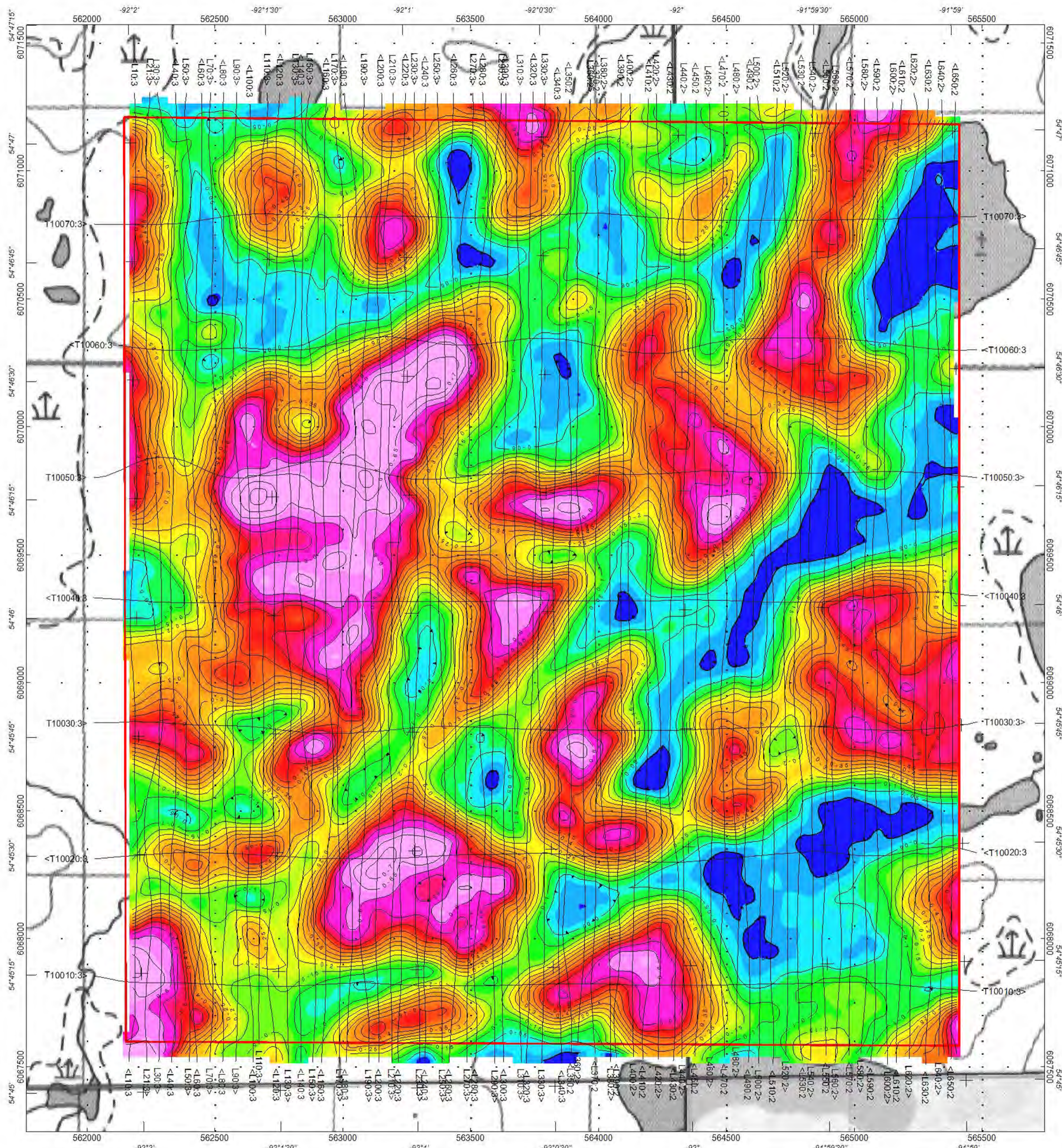


MPH Consulting Limited

Target 192
MEASURED ALONG LINE GRADIENT
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-05



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

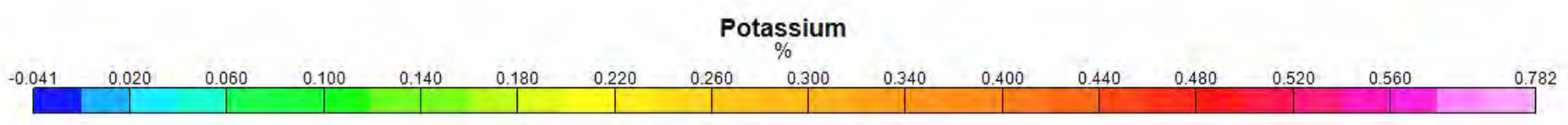
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

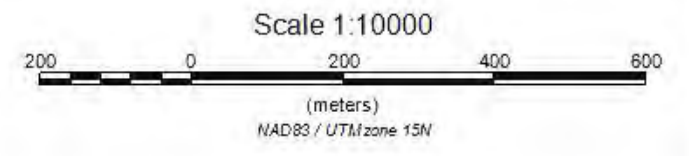
XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13



Contour Intervals: 0.05, 0.20, 1.25 %

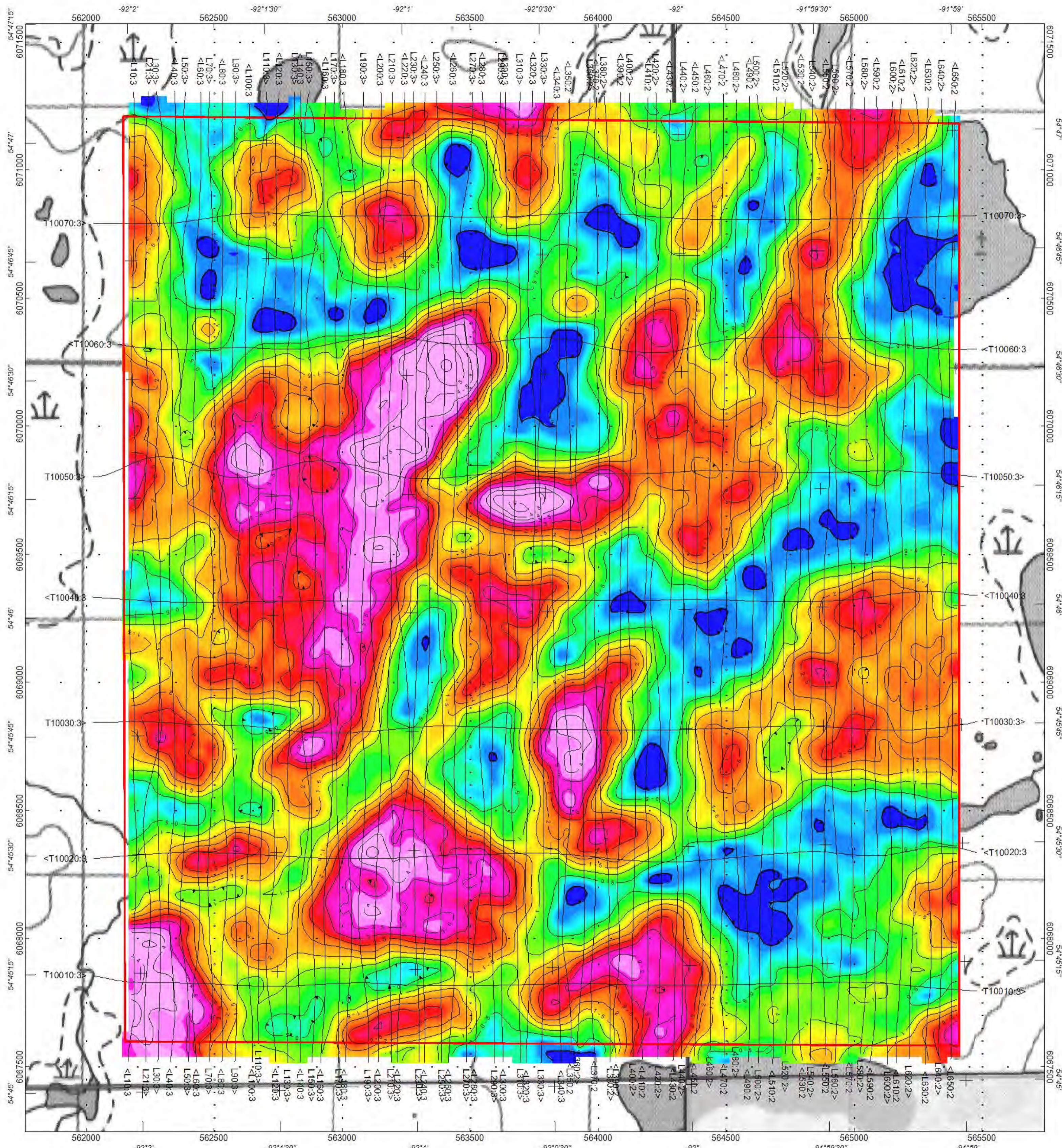


MPH Consulting Limited

**Target 192
POTASSIUM
Sachigo Lake, ON**

Survey Flown August 29th - 30th 2011
Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-14



SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

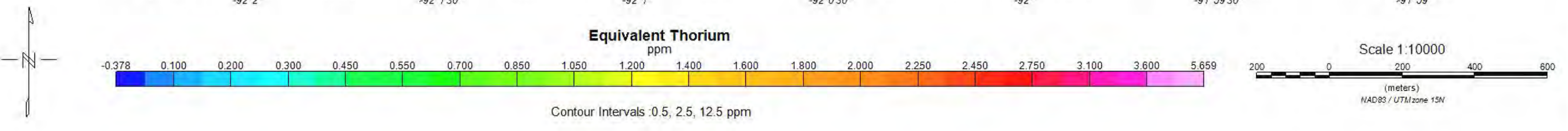
PROCESSING SUMMARY:
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

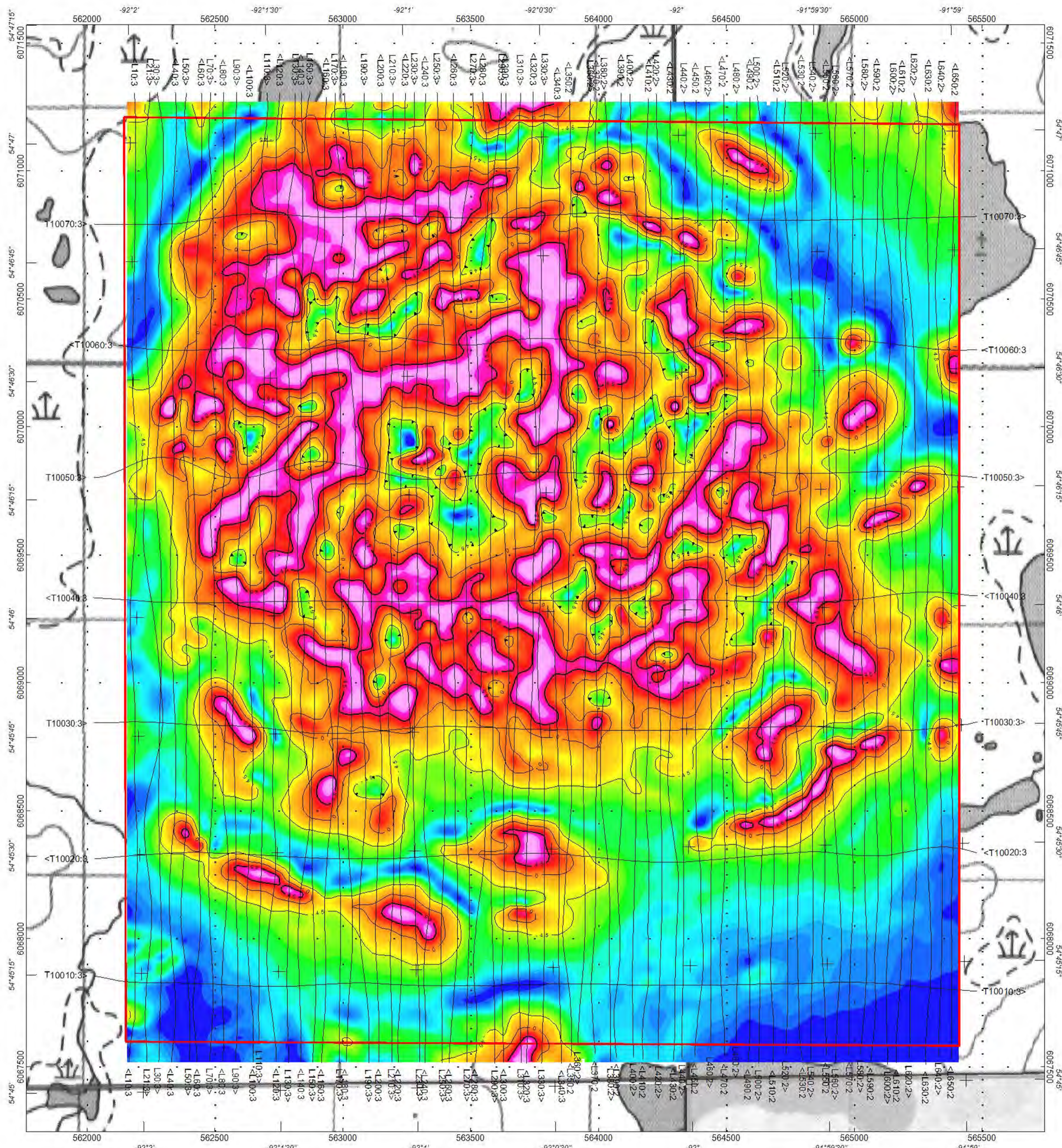
XDS VLF EM:
 Normalise
 Median level
 Microlevelling

— Survey line Boundary
 — Claim Boundary
 4224916 Claim Number
 L630:2 > Line Type, Line Number, Line direction
 Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13



MPH Consulting Limited
Target 192
EQUIVALENT THORIUM
Sachigo Lake, ON
 Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.
Terraquest Ltd. REF#: B342-13



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

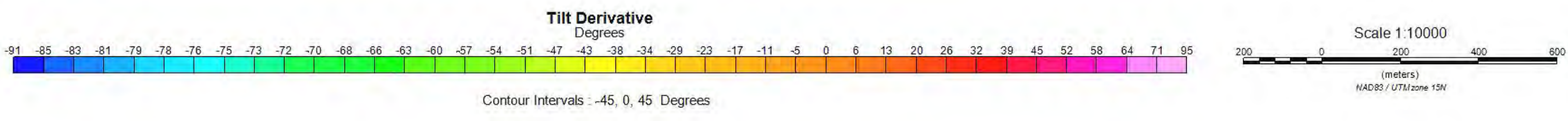
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630.2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13

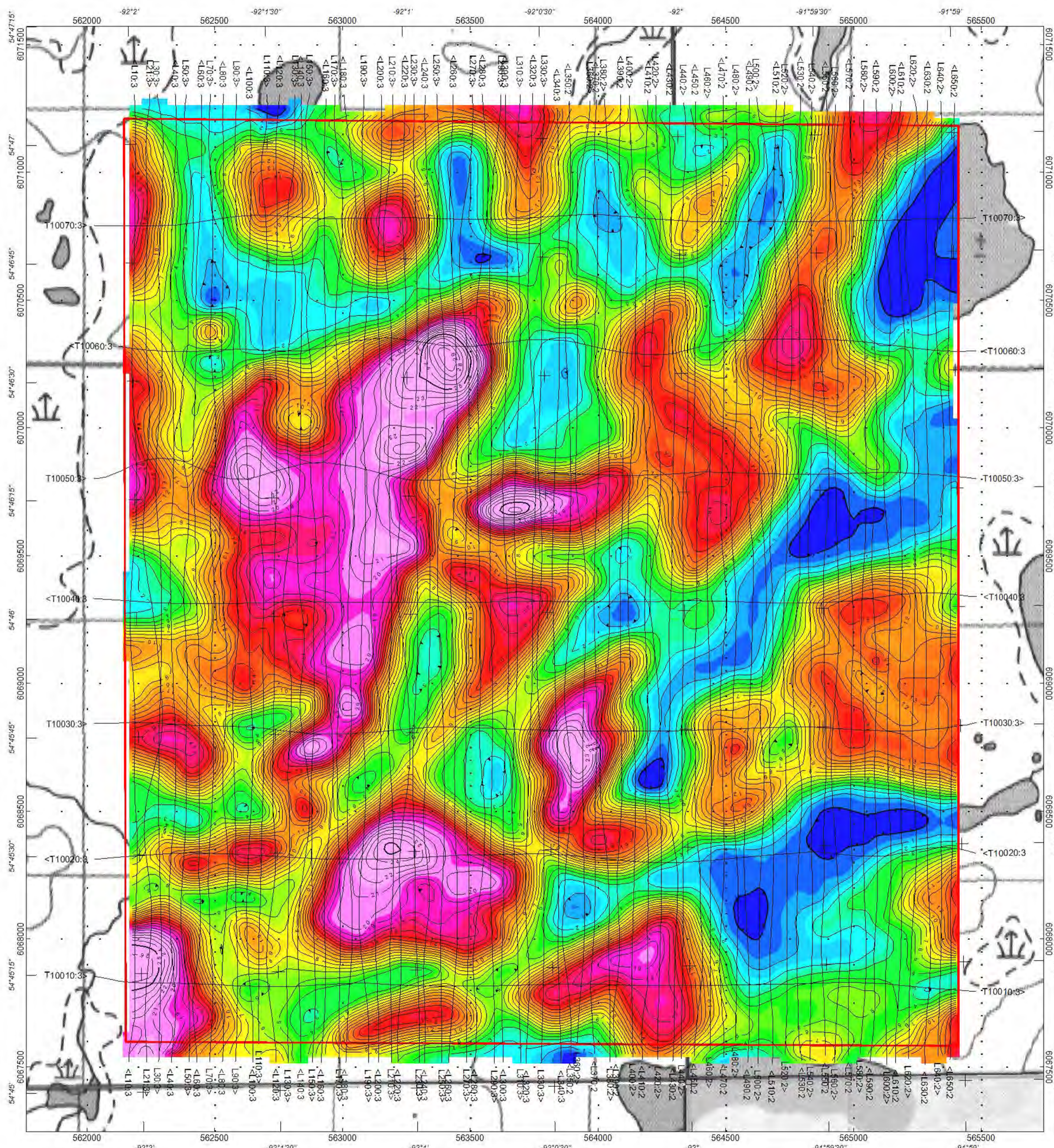


MPH Consulting Limited

**Target 192
TILT DERIVATIVE
Sachigo Lake, ON**

Survey Flown August 29th - 30th 2011
Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-07



Location Map

SURVEY SPECIFICATIONS:

Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:

Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:

Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:

Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:

Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:

Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

MAGNETICS:

Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:

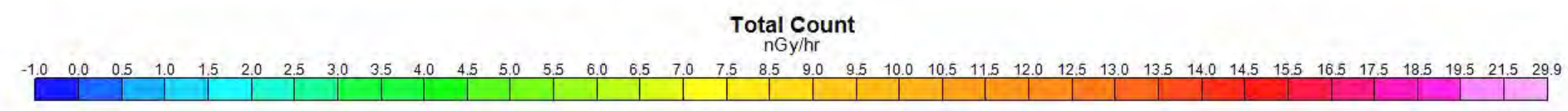
Standard IAEA Data Reduction Procedures

XDS VLF EM:

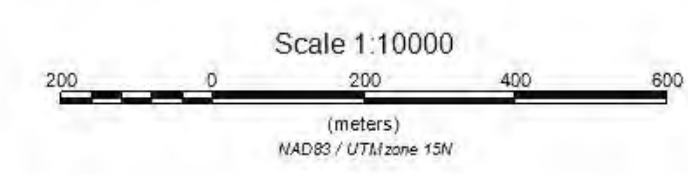
Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13



Contour Intervals :1, 5, 25 nGy/hr

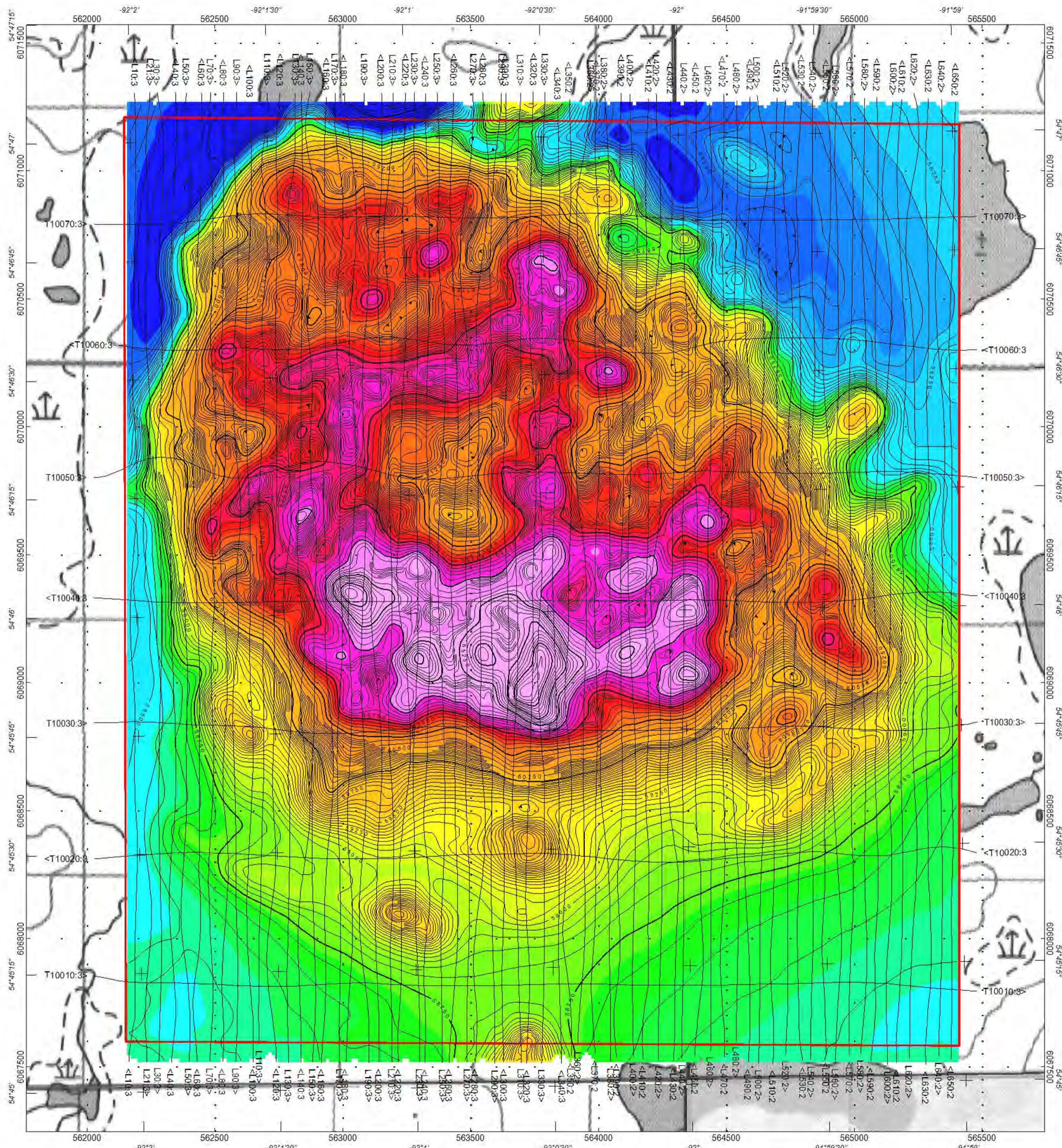


MPH Consulting Limited

Target 192
TOTAL COUNT
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. **REF#: B342-11**



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

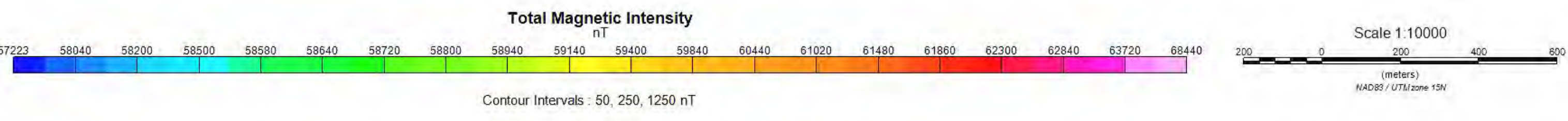
GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

- MAGNETICS:**
 - Diurnal Correction
 - Tie Line Levelling
 - Microlevelling
- RADIOMETRICS:**
 - Standard IAEA Data Reduction Procedures
- XDS VLF EM:**
 - Normalise
 - Median level
 - Microlevelling

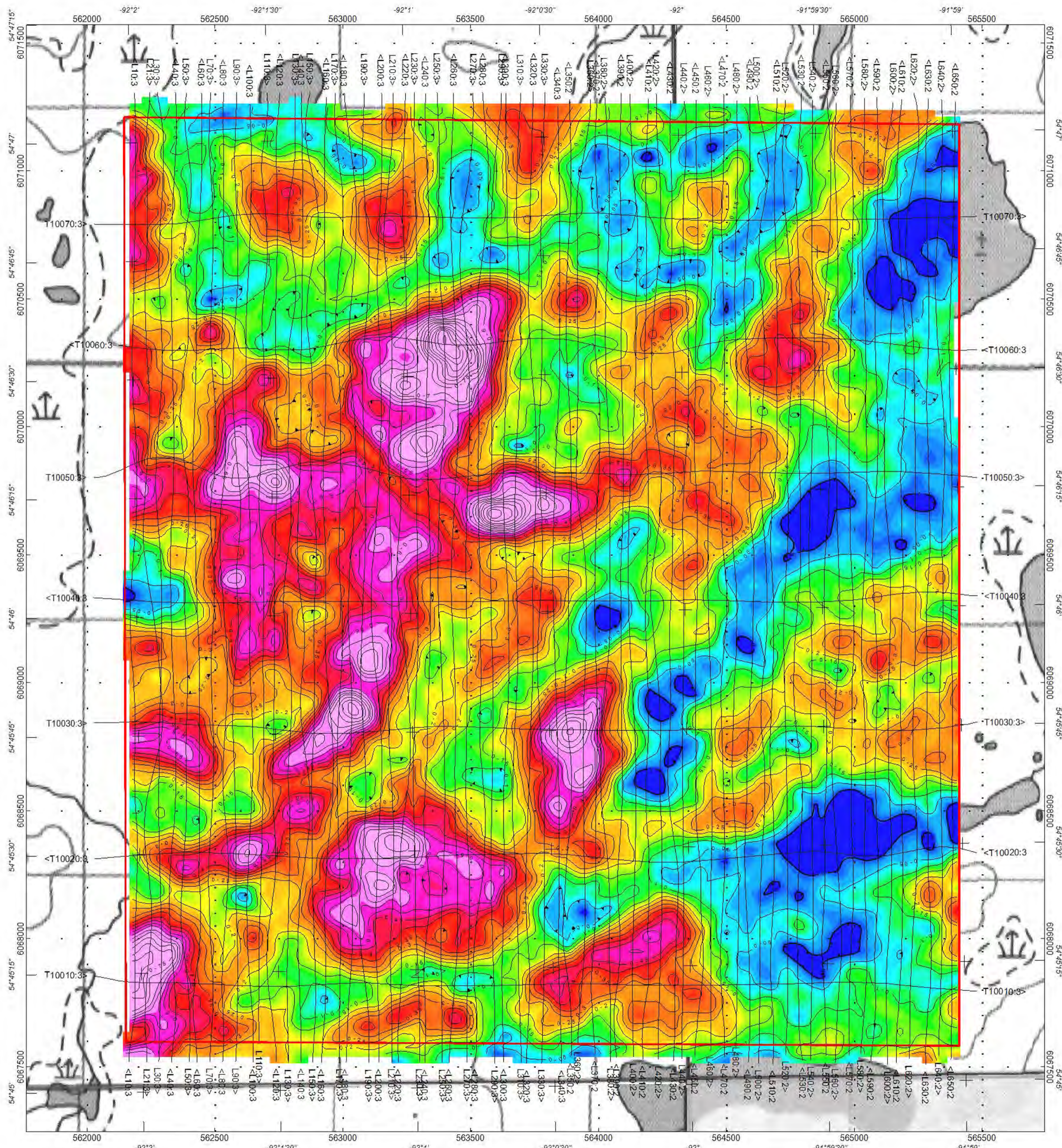
- Survey line Boundary
- Claim Boundary
- 4224916 Claim Number
- L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets: 53K/16 and 53J/13



MPH Consulting Limited
Target 192
TOTAL MAGNETIC INTENSITY
Sachigo Lake, ON
 Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-03



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

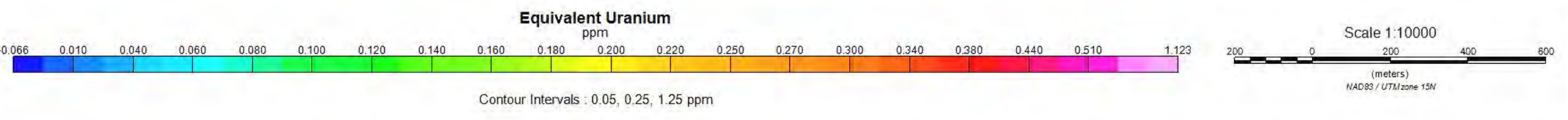
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630.2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13

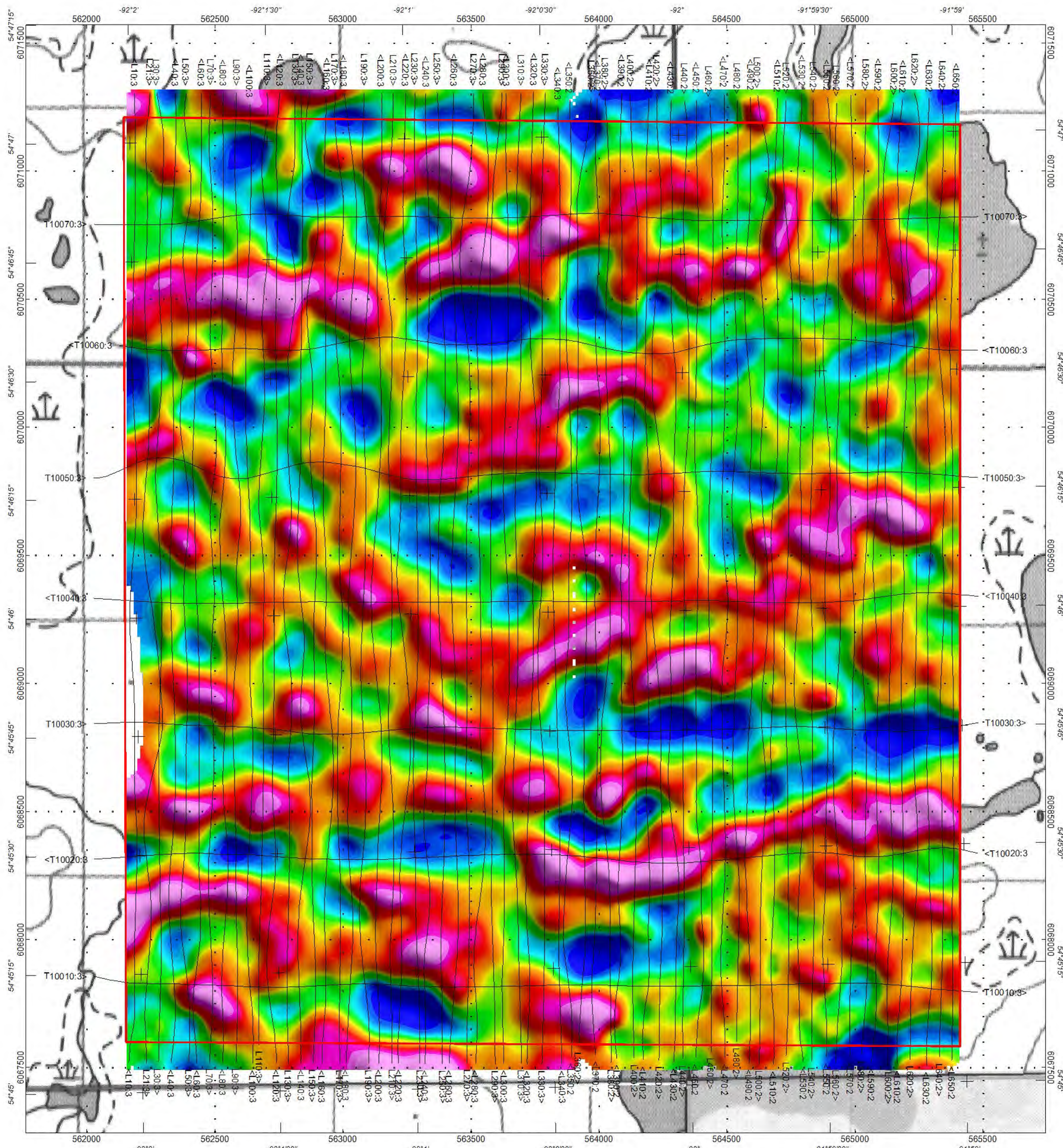


MPH Consulting Limited

Target 192
EQUIVALENT URANIUM
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-12



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 (1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 (512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF-EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets: 53K/16 and 53J/13

XDS Line
mV

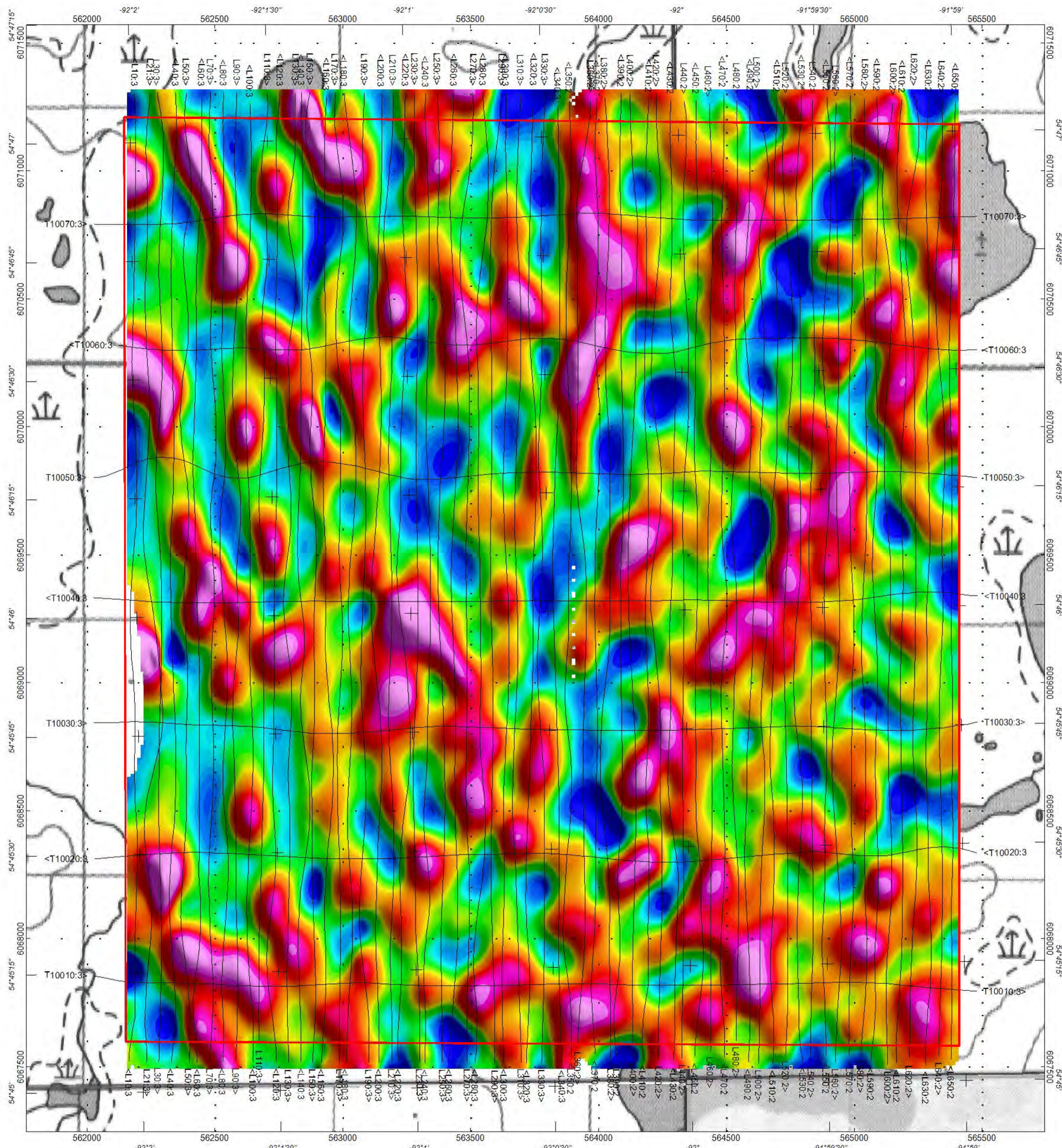
Scale 1:10000
(meters)
NAD83 / UTM zone 15N

MPH Consulting Limited

Target 192
XDS VLF-EM VCX LINE
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-08



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband
 Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 1(1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 1(512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

PROCESSING SUMMARY:

MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

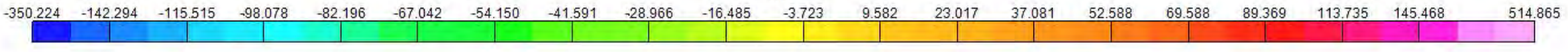
RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF EM:
 Normalise
 Median level
 Microlevelling

— Survey line Boundary
 — Claim Boundary
 4224916 Claim Number
 L630:2 > Line Type, Line Number, Line direction
 Minimum Curvature Gridding: Cell Size 12.5m

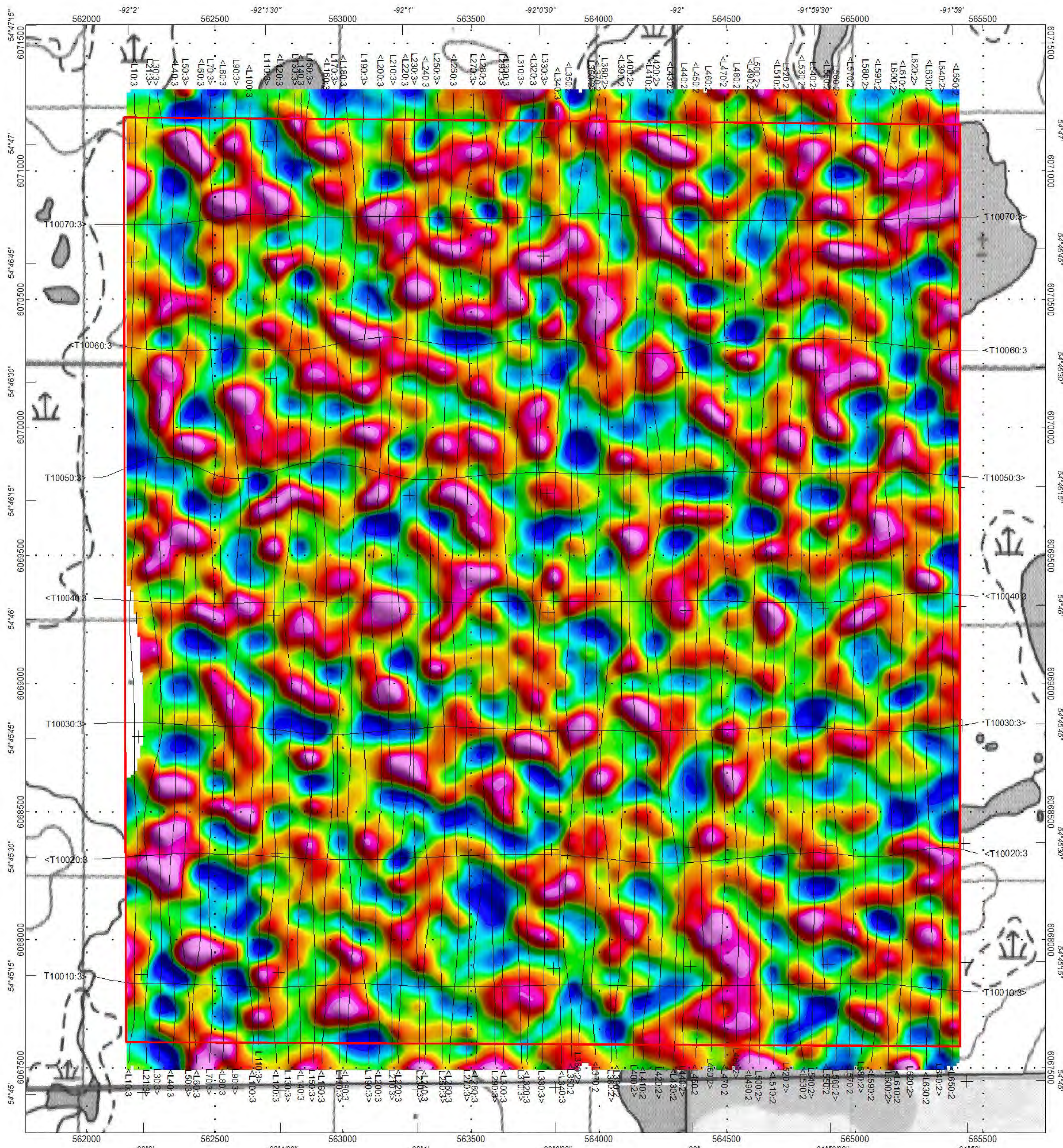
Topographic data: NRCAN.gc.ca, Canmatrix map sheets, 53K/16 and 53J/13

XDS Ortho
mV



Scale 1:10000
 (meters)
 NAD83 / UTM zone 15N

MPH Consulting Limited
Target 192
XDS VLF-EM VCP ORTHOGONAL
Sachigo Lake, ON
 Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.
Terraquest Ltd. REF#: B342-09



Location Map

SURVEY SPECIFICATIONS:
 Survey Flown: August 29th - 30th, 2011
 Survey Type: Helicopter Stinger Mounted Magnetometer, Gamma Ray Spectrometer
 Survey Operations Base: Sachigo Lake, Ontario
 Survey Line Azimuth: 000/180 Degrees
 Control Line Azimuth: 090/270 Degrees
 Survey Line Spacing: 50m
 Control Line Spacing: 500m
 Aircraft Mean Terrain Clearance: 38.5m
 Mean Ground Speed: 46 m/s

AIRCRAFT SPECIFICATIONS:
 Aircraft Type: BELL 206, JET RANGER B3
 Aircraft Registration: C-FSZX
 Aircraft Speed: 165.6 km/hr

AIRBORNE INSTRUMENTATION:
 Data Acquisition: Pico Envirotec AGIS 100
 GPS Differential Receiver: Hemisphere Crescent R120
 GPS Real Time Correction: OmniStar
 Radar Altimeter: Free Flight Systems TRA3500
 Fluxgate Magnetometer: Billingsly TFM100-LM
 VLF-EM: Proprietary Terraquest Passive/Broadband Multiple Axis Coil Geometry System
 Navigation: Pico Envirotec AGIS 100

AIRBORNE MAGNETOMETERS:
 Magnetometers: Scintrex CS-3 Cesium Vapour
 Magnetometer Sensitivity: +/- 0.005nT
 Magnetometer Counter: PicoEnvirotec Inc.
 Installation: Nose Boom (fixed 24ft stinger that is mounted to the skid gear)
 Sampling Rate: 10 Hz

AIRBORNE SPECTROMETER:
 Spectrometer: Pico Envirotec GRS 510
 Downward NaI(Tl) Crystal Array: 16.8 (1024in3)
 Upward NaI(Tl) Crystal Array: 4.2 (512 in3)
 Data Acquisition: AGIS/IRIS 256 channel
 Sampling Rate: 1 Hz

GROUND INSTRUMENTATION:
 Data Acquisition: GEM Systems GSM-19
 Magnetometer: Overhauser Magnetometer
 GPS Receiver: GEM Systems
 Base Station Location: Sachigo Lake Airport, Ontario

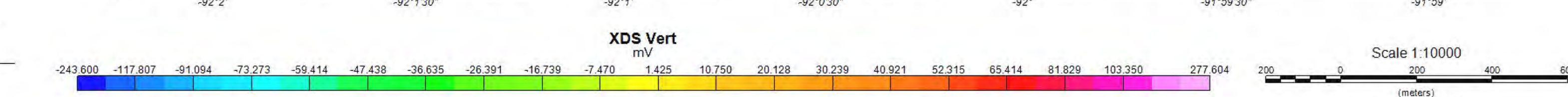
PROCESSING SUMMARY:
MAGNETICS:
 Diurnal Correction
 Tie Line Levelling
 Microlevelling

RADIOMETRICS:
 Standard IAEA Data Reduction Procedures

XDS VLF-EM:
 Normalise
 Median level
 Microlevelling

- Survey line Boundary
 - Claim Boundary
 - 4224916 Claim Number
 - L630:2 > Line Type, Line Number, Line direction
- Minimum Curvature Gridding: Cell Size 12.5m

Topographic data: NRCAN.gc.ca, Canmatrix map sheets: 53K/16 and 53J/13



MPH Consulting Limited

Target 192
XDS VLF-EM HCP VERTICAL
Sachigo Lake, ON

Survey Flown August 29th - 30th 2011
 Data Acquired and Processed by Terraquest Ltd.

Terraquest Ltd. REF#: B342-10