SURVEY REPORT ON A HELICOPTER-BORNE Z-AXIS TIPPER ELECTROMAGNETIC (ZTEM) AND AEROMAGNETIC GEOPHYSICAL SURVEY

SELWYN BASIN
YUKON, CANADA

For:

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Survey flown in August, 2008

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EXECUTIVE SUMMARY

Between May 20th to October 4th 2008, Geotech Ltd. carried out a helicopter-borne Z-TEM geophysical survey for Exploration Syndicate, Inc. over the Selwyn Basin area in central Yukon, Canada.

Principal geophysical sensors included a Z-Axis Tipper electromagnetic (ZTEM) system and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 462 line-kilometers were flown.

The survey operations were based in Ross River, Yukon. In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as grid contours of the In-Phase and Quadrature Divergences, in addition to Phase Rotated grid contours and In-Phase and Quadrature profiles of the tippers (Z/X & Z/Y) and the Total Magnetic Intensity grid contours. Real and imaginary parts of the Z/X (X-component) and Z/Y (Y-component) were calculated for five extracted frequencies (30, 45, 90, 180 and 360 Hz). Due to the cross-over nature of the Tipper responses, a derived parameter, the Total Divergence or DT (DIV Z/X, Z/Y)), was calculated at each frequency that directly relates to conductive/resistive properties of the subsurface. A similar parameter, the 90 degrees Phase Rotated (PR) grids were generated, four for each frequency (Z/X direction, Z/Y direction, In Phase and Quadrature), that exhibit maxima over conductors and minima over resistors and therefore assist with the interpretability of the results.

Data quality and calculated results were of good quality. They are reliable and allow for, at this stage, to qualitatively contribute to the understanding of the spatial distribution of conductivity, relating to lithological structure and alteration, within the Selwyn Basin region. Digital data include all electromagnetic and magnetic products, plus ancillary data.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set. No formal interpretation is included in this report; however survey highlights are described using DT, PR and TMI images.

Survey Report on a
Helicopter-borne
Z-Axis, Tipper Electromagnetic (Z-TEM)
Geophysical Survey
Selwyn Basin,Yukon, Canada

1 INTRODUCTION

1.1 General Considerations

These services are the result of the Agreement made between Geotech Ltd. and Exploration Syndicate, Inc. to perform a helicopter-borne geophysical survey within Selwyn Basin, Yukon, Canada. (Figure1). A total of 24675 line-km of geophysical data were acquired during the survey.

The survey area is located on the central interior of the Yukon province, within the Selwyn Basin, approximately 70 km north-east of the Ross River Airport, Yukon (Figure 2).

The geophysical survey consisted of a helicopter Afmag Z-axis Tipper electromagnetic (Z-TEM) system and aeromagnetics using a cesium magnetometer. The ZTEM was used to map geology using resistivity contrasts and magnetometer data were also collected to help map geology using magnetic susceptibility contrasts.

In a Z-TEM survey, a single vertical–dipole air-core receiver coil is flown over the survey area in a grid pattern, similar to regional airborne EM surveys. Two orthogonal, air-core horizontal axis coils are placed close to the survey site to measure the horizontal EM reference fields. Z/X and Z/Y Tippers (Vozoff, 1972) are the derived components.

Figure 1- Survey Location

Following guidelines from previous surveys, and in agreement with the client, tie lines were neither planned nor flown for this survey. However, several areas were selected to have infill lines flown.

The crew was based at Ross River in Yukon for the acquisition phase of the survey. Survey flying was completed on October 04th, 2008. Preliminary data processing was carried out daily during the acquisition phase of the project and final data processing followed immediately after the end of the survey. Final data presentation and data archiving were completed from the Aurora office of Geotech Ltd. in December, 2008.

1.2 Survey Location, topographical relief and cultural effects.

Figure 2 shows the flight lines on a Google Earth base map, and the relative location of the survey area to the location of the airport in Ross River, Yukon.

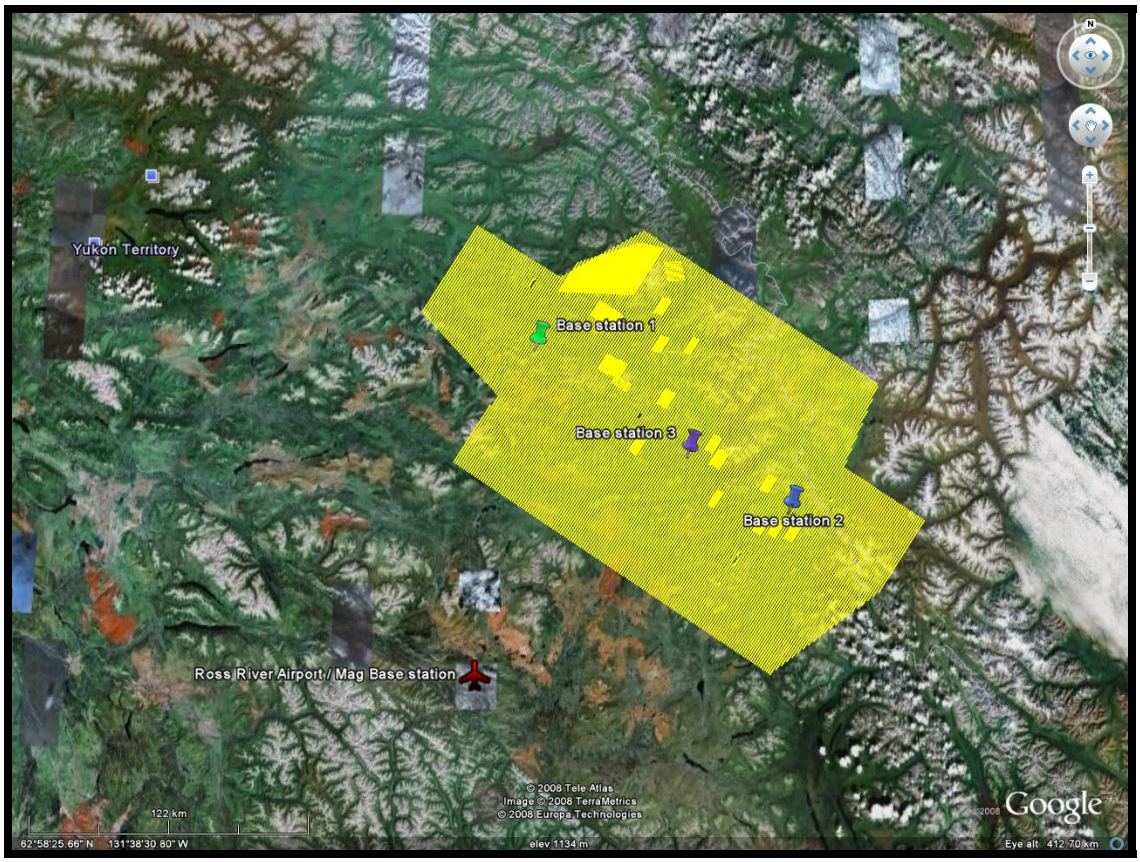

Figure 2: The Ztem survey lines, using Google Earth

The survey lies within the province of Yukon and extends across the Selwyn Basin, which can be characterized as an elongated rift controlled epicratonic sedimentary basin (Goodfellow, 2007). The survey area has an elevation ranging from 0 to 2900 meters above sea level.

Due to the large size of the survey area, at least 3 locations for the AFMAG base stations were required. These were chosen in environments that were relatively quiet area where anomalies were not present. For the Selwyn basin survey, these base station sites were situated within the survey area as illustrated in Figure 2.

2 EQUIPMENT AND AIRCRAFT

2.1 Z-Tem System

Airborne Receiver

Geotech Z-Axis Tipper (Z-TEM)
Coil dimensions: 7.4 metres diameter
Coil orientation: Vertical Dipole
Digitizing rate: 2000Hz

The loop is isolated from most vibrations by a patented suspension system and is encased in a fibreglass shell. It is towed from the helicopter using a 90 metre long cable. The cable is also used to transmit the measured EM signals back to the data acquisition system.

Base Station Receivers

Geotech Z-Axis Base Coils
Coil dimensions: 3.5 metres each side
Coil orientation: Horizontal Dipole
Base Station Location 1: 63°16'51.16 N, 131°56'57.61 W"
Azimuth 1: AzA = N 150° E AzB = N 240° E
Base Station Location 2: 62°38'34.24 N, 129°49'46.07 W"
Azimuth 2: AzA = N 347° E AzB = N 77° E
Base Station Location 3: 62°51'56.06 N, 130°40'13.98 W"
Azimuth 3: AzA = N 130° E AzB = N 220° E

The two base station receiver coils are set up perpendicular to each other and roughly oriented according to the flight line direction. The orientation of both units is not critical as the horizontal field can be further decomposed into the two orientations of the survey flight. The orientation of the base stations were measured using a compass.

Attitude Measurement Sensors

GPS Receivers (4): NovAtel WAAS enabled OEM4-G2-3151W
GPS Receivers Location: One on the helicopter, three on EM coil
Radar Altimeter: Terra TRA 3000/TRI 40
Navigation: GEONAV-3

The attitude of the airborne coil must be monitored in order to remove the cross coupling between the horizontal and vertical EM field. Three GPS receivers are placed on the Z-TEM airborne coil. The data are processed using the GravMov™ software by Waypoint Ltd. This software uses one of the GPS receivers as a moving base station and calculates the relative positions of the other two receivers to yield a very accurate attitude measurement.

2.2 Magnetometers

Airborne and Base Station Magnetometers

A Geometrics split-beam total field magnetic sensor, with a sampling interval of 0.1 seconds and an in-flight sensitivity of 0.02 nT was used. The magnetometer will perform continuously in areas of high magnetic gradient with the ambient range of the sensor approximately 20k-100k nT. Aerodynamic magnetometer noise is specified to be less than 0.5 nT. The magnetometer is deployed in separate magnetometer bird towed 70 metres above mean terrain clearance.

2.3 Data Acquisition Unit and Installation

The power supply and the data acquisition system are mounted on an equipment rack which is installed into the helicopter. Signal and power wires are run through the helicopter to connect on to the tow cable outside. The tow cable supports the Z-TEM and magnetometer birds during flight via a safety shear pin connected to the helicopter hook. The major power and data cables have a quick disconnect safety feature as well. The installation was undertaken by the Geotech Ltd. crew and was certified before surveying.

2.4 Aircraft

The survey aircraft was an Astar 350-B3 helicopter, registration C-GWGK operated by Guardian Helicopters Inc. It has the necessary range and lift capacity to contour the topography with the Z-TEM system installed.

Further information about the Z-TEM system can be found in Appendix A.

3 SURVEY INFORMATION

3.1 Survey Parameters

Survey line direction and spacing were planned after consideration of the general geology. A summary of the survey parameters for all areas is given in Table 1.

Table 1: Survey Parameters

Parameter	Specification
Helicopter Speed	80 km/hr
Extracted frequencies sampling Interval	0.4 samples/second
Magnetometer sampling interval	0.1 sec
Flight-line Interval	1000m
Flight-line Direction	35NE – 215 SW
Control-line Interval	N/A
Control-line Direction	N/A
Helicopter MTC	200 m
EM Sensor MTC	30 m
Magnetometer Sensor MTC	70 m

3.2 Survey Procedures

The polygon files used to generate the navigation files for the survey area were provided by the client.

Prior to the flying each day, the magnetic and EM base stations were powered on, in order to record the variations of both magnetic and EM fields (the latter in 2 perpendicular directions) for post flight corrections.

The receiver coil is equipped with 3 GPS antennae and a global positioning system supplies the positional input to a navigational program which assists in aircraft navigation and flight line control. The receiver antenna for navigation is mounted on the helicopter.

Data were collected, pre-processed, merged, and checked in the field by a trained in-field geophysical data processor. These data were then uploaded to a central server situated in the Geotech Ltd offices in Aurora, on a daily basis Final data processing and presentation were undertaken by qualified geophysical processors also from the office of Geotech Ltd. in Aurora, Ontario.

3.3 Survey Area

The survey block (see Location map, Figure 2) and general flight specifications are as follows:

Table 2: Survey block

Survey block	Line spacing (m)	Line-km	Flight direction	Line number
Selwyn Basin	1000	24675	N 35° E	L2710– L10240

Survey block boundaries co-ordinates are provided in Appendix C.

3.4 Survey Operations

The field crew involved in this project is listed in Appendix B. Flying started on May 20th 2008 and was completed on October 4th 2008. The survey operations schedule can be found in Appendix D.

4 DATA PROCESSING AND QUALITY CONTROL

4.1 In-field Processing and Quality Control

In-Field data processing and quality control are done on a flight by flight basis by a qualified data processor (see Appendix A). Processing steps and check up procedures are designed to assure the best possible final quality of AFMAG survey data. A general overview of those steps is presented in the following paragraphs.

4.2 Grafmov Software

Three GPS sensor (mounted on the airborne receiving loop) measurements were differentially corrected using the Waypoint GrafMov™ software in order to yield attitude corrections to recorded EM data.

4.3 AFMAG processing

The Z-TEM data were processed using proprietary software. Processing steps consist of the following:

a. Airborne EM, mag, radar altimeter and GPS data are first merged with EM base station data into one file.
b. Merged data are viewed and examined for consistency in an incorporated viewer
c. In the next, processing phase, the following entities are taken into account:
   - the Base station coils orientation with respect to the Magnetic North,
   - the Local declination of the magnetic field,
   - Suggested direction of the X coordinate (North or line direction),
   - Sensitivity coefficient that compensates for the difference in geometry between the base station and airborne coils.
   - Rejection filters for the 60 Hz and helicopter generated frequencies.
d. Five frequencies (In phase and Quadrature components) are extracted from the airborne EM coil response and the base station coils (30, 45, 90, 180 and 360 Hz).
e. For lines other than with a 35° N direction, data were re-projected on to the actual X and Y directions.
f. The ratios between the real parts (in phase) of the vertical Z component (airborne) over the horizontal X component (base station), and Z component over horizontal orthogonal Y component, as well as the ratios of their imaginary parts (quadrature), are calculated. These essentially represent the raw field data output from the EM system.
g. Such processed EM data are then merged with the GPS data, magnetic base station data and exported into a Geosoft xyz file.

4.4 Geosoft Software

Next stage of the in-field data processing is done in a Geosoft ™ environment, using the following steps:

a. Import the output xyz file from the AFMAG processing, as well as the base mag data into one database.
b. Split lines according to the recorded line channel,

c. GPS processing, flight path recovery (correcting, filtering, calculating Bird GPS coordinates, line splitting)
d. Radar altimeter processing, yielding the altitude values in metres.
e. Magnetic spike removal, filtering (applied to both airborne and base station data). Calculation of a base station corrected mag.
f. Apply preliminary attitude corrections to EM data (In phase and Quadrature), filter and make preliminary grids of all channels.

4.5 In Field data Quality Control

The In-Field quality control can be separated into several parts:

a. GPS Data are first examined and evaluated during the GrafMov processing.
b. Raw data, AFMAG viewer phase:

   Data can be viewed, examined for consistency, individual channel spectra examined and overall noise estimated in the viewer provided by the AFMAG proprietary software, on the raw flight data and raw base station data separately, on the merged data, and finally on the data that have undergone AFMAG processing.
c. Field Geosoft phase:

   Magnetic data, Radar altimeter data, GPS positioning data are re-examined and processed in this phase. Prior to splitting the lines EM data are examined flight by flight and the effectiveness of applying the attitude correction evaluated. After splitting the lines, a set of grids are generate for each parameter and their consistency evaluated. Data profiles are also re-evaluated on a line to line basis. A power line monitor channel is available in order to identify power line noise.

4.6 Final Data Processing and Quality Control

Final data processing and quality control were undertaken by Geotech Ltd headquarters in Aurora, Ontario by qualified senior data processing personnel.

Final quality control consisted of re-examining all data in order to validate the in-field data processing and to allow for final adjustments to the data.

A base station correction was applied to the magnetic channel. No further processing was done.

Attitude corrections were re-evaluated, and re-applied, on component by component, flight by flight, and frequency by frequency bases. Any remaining line to line system noise was removed by applying a mild additional levelling correction.

Individual Z/X and Z/Y components do not per se exhibit maxima or minima above conductors (i.e., cross-over type anomalies). To present the data from both tipper components, a parameter is calculated termed the DT (Total Divergence) that is analogous to the "Peaker" parameter[1].

Total Divergence DT: $DT = DIV(Z/X, Z/Y)$

$= d(Z/X)/dX + d(Z/Y)/dY$

This DT parameter was introduced by Petr Kuzmin[2] (Geo Equipment Ltd.) and is derived for each of the In Phase and Quadrature components at individual frequencies. These in turn allow for minima over conductors and maxima over resistive zones.

DT grids for each of the extracted frequencies were generated accordingly (see Figures 3-4).

The divergence gives a clear picture of conductor's location and shape but, as a derivative, it does not preserve some of the long wavelength.

As an alternative, a 90 degree phase rotation technique was also applied to each individual component (Z/X and Z/Y) that transforms bipolar (cross over) anomalies into single pole anomalies with a maximum over conductors, while preserving long wavelength information[3] (see Figure 5).

[1] Ref: Pedersen, et al (1994)
[2] Ref: Kuzmin et al. (2005)
[3] Ref: Lo, et al (2005)

5 FINAL PRODUCTS

5.1 Final Database

A final database was generated for the Selwyn Basin, Labrador Ztem survey dataset. A complete list of contents and channels delivered is provided in Appendix F.

5.2 Final Grids and Maps

Final maps were plotted at 1:100,000 scale. This required that the survey be separated into four separate plates (NW, NE, SW, SE) as presented in Appendix E.

The coordinate/projection system is referenced to WGS 84, UTM zone 9 North. All maps show the flight path and topographic data; latitude and longitude are also noted on all maps.

Final grids and profile plans for the EM data were generated for individual real (In-Phase) and imaginary parts (Quadrature) of the Z/X and Z/Y components and the corresponding DTs for each of the five frequencies, (30, 45, 90, 180 and 360 Hz), as well as for corresponding Phase Rotated individual components.

Final maps were chosen, in consultation with the client, to represent all collected data. A detailed list of deliverable maps is included in Appendix F. Additionally, Digital Elevation Model maps were provided.

Sample map of TMI, DEM and DT map images at the 45Hz frequency, as well as images of the In Phase profile maps (Z/X and Z/Y), are included in this report and presented in Appendix E.

5.3 Deliverables

Final deliverables consist of:

1. Digital data (Database, Geosoft grids and maps, report) on a CD or DVD medium (3 copies, see Appendix F for data description file).
2. Three paper copies of maps at corresponding scales.
3. Three paper copies of this report.

5.4 Survey Report

The survey report describes the data acquisition, quality control, processing, discussion and final presentation of the survey results.

It is provided in three paper copies and digitally in PDF format.

5.5 Maps and Grids

Final maps were produced at a scale 1:100,000.

Deliverables include a total of 36 maps and 52 grids listed in Appendix F.

5.6 Digital Data

- Two copies of the data and maps on DVD-ROM were prepared to accompany the report. Each DVD -ROM contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map format.
- Two copies of DVD-ROMs were prepared.

There are two (2) main directories,

Data	contains databases, grids and maps, as described below.
Report	contains a copy of the report and appendices in PDF format.

6 DISCUSSION OF AFMAG RESULTS

6.1 ZTEM AFMAG Survey

DT maps (DT = DIV (Z/X, Z/Y)= d(Z/X)/dX + d(Z/Y)/dY) provide the most diagnostic picture of the underlying EM structures. In these DT images red colour zones (lows) are associated with more conductive regions and blue colour zones (highs) are associated with more resistive rocks. The In-Phase and Quadrature DTs for the 90 Hz frequencies are presented in the figures below.

Figure 3 presents a grid image of the 90Hz DT for the Selwyn Basin. Conductive lineaments (highlighted in red) appear to define major fault-fracture zones that extend across the property in a EW to WNW-ESE direction. Minor NNW-SSE linear trends are also noted. Most notable are rounded ellipsoidal conductive features with resistive (blue colours) cores that appear to be related to intrusive plutons.

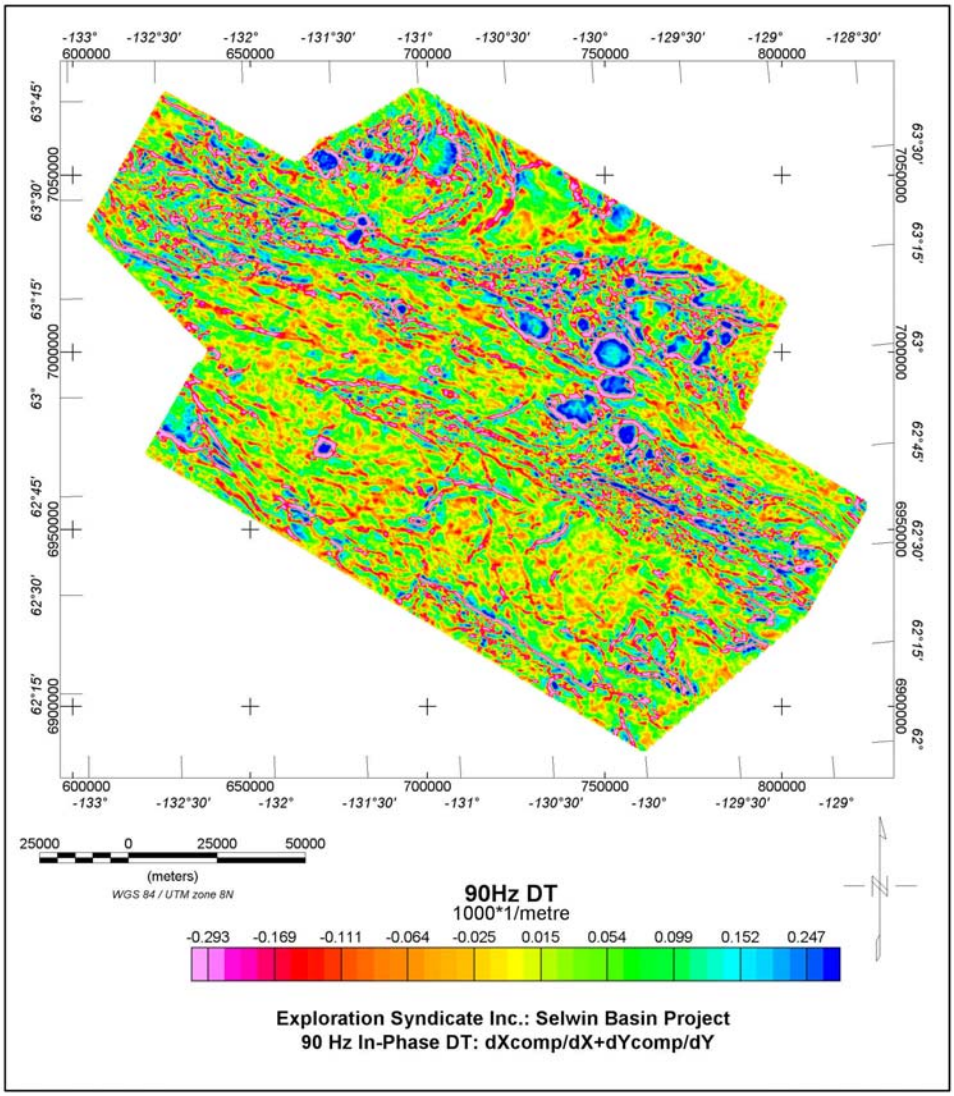

Figure 3 - 90 Hz In-Phase DT

Figure 4 shows the corresponding 90 Hz Quadrature DT component grid. For the most part similar to the In-Phase DT, the Quadrature signal occasionally displays a reversed signal (90° out of phase) to that of the In-Phase illustrating a difference in the conductivity of the rock structure, with the other lineaments.

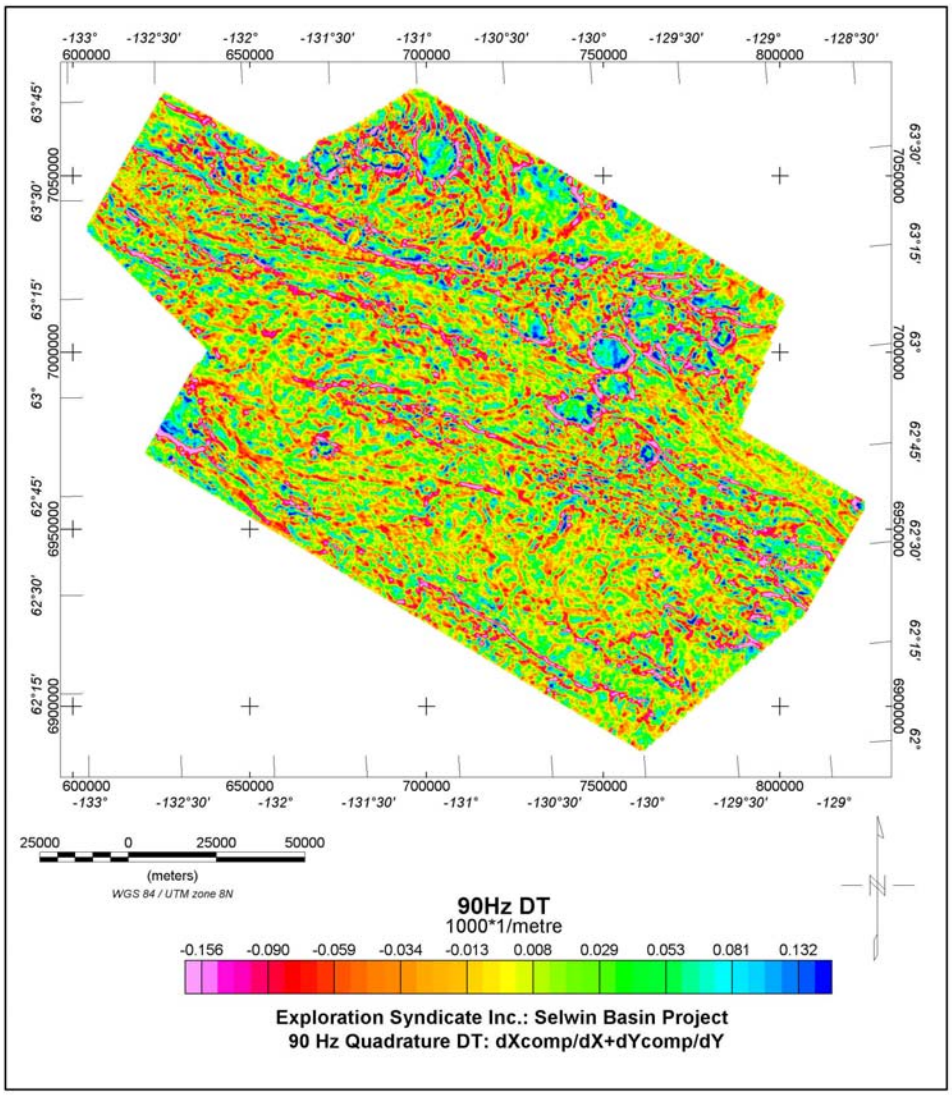

Figure 4 - 90 Hz Quadrature DT

Figure 5 presents the results of the Phase-Rotated grid for 90 Hz In-Phase components. Again the DT and PR grid images are analogous and appear to relate to the conductivity structure in the Selwyn Basin. The PR grid appears to preserve long wavelength information while displaying less noise. The Phase Rotated component is calculated differently than the DT, therefore it independently supports the DT results.

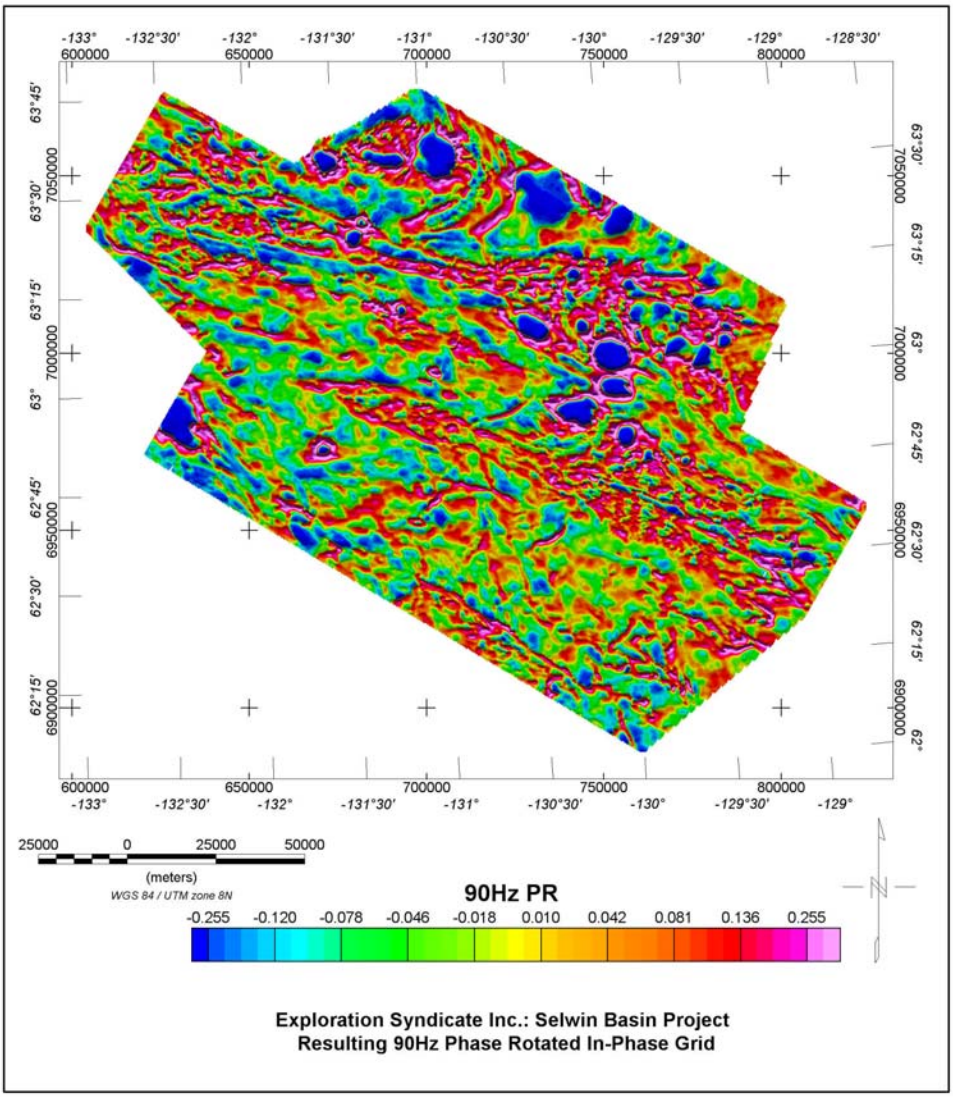

Figure 5- 90 Hz Phase Rotated Grid

6.2 Magnetic Survey

The total magnetic intensity (TMI) map presented in Figure 6 demonstrates the significant variations in magnetic susceptibility in the survey area. Notable correlations are indicated between magnetic susceptibility contrasts and the structures defined in the ZTEM DT and PR results. Although structured analyses using derivatives are successful using magnetic data, it appears that the aeromagnetic images are not likely to provide clearer images of the structure in relation to the ZTEM results.

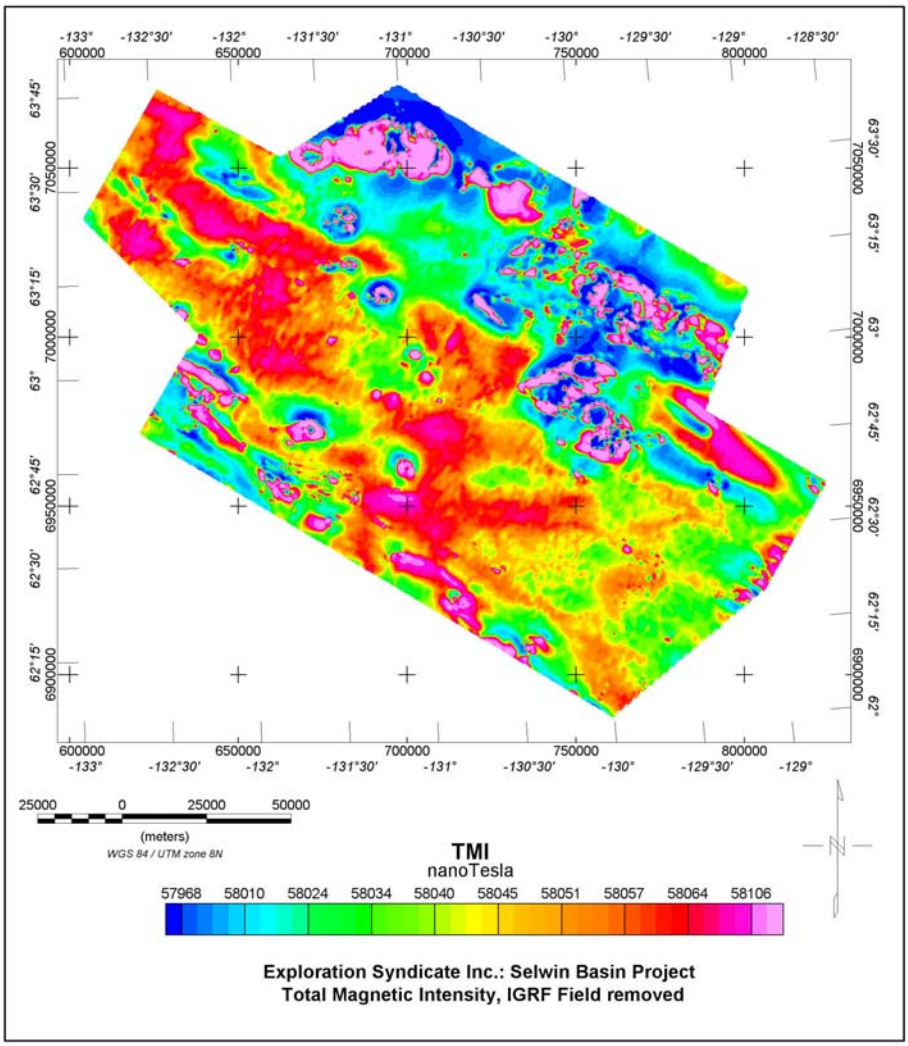

Figure 6 - Total Magnetic Intensity

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

An airborne Z-TEM survey, which measures the anomalous vertical fields from regional geoelectric/geologic structures using the naturally occurring electromagnetic sferic source fields, was successfully conducted, between May to October 2008, over the Selwyn Basin, in central Yukon, Canada.

Both the In-phase and Quadrature components of the airborne Afmag Tipper fields (Z/X and Z/Y) were collected, processed and presented together. DT (Div (Z/Xcomp, Z/Ycomp) grids were generated for In-phase and Quadrature components for all five frequencies measured. Corresponding Phase Rotated grids were also created, which contributed to a presentation of our data with long wavelengths preserved. Changes in structure with depth appear to be inferred based on observed changes in response for different frequencies.

The data collected appear coherent and reliable.

EW to ESE and minor NNW-SSE linear conductive trends have been defined which appear to correlate with known/inferred structural trends. In addition, circular ellipsoidal anomalies appear to correlate with intrusive plutons also defined in the magnetic results. Additional information conveyed by the Quadrature data will likely further contribute to better characterization of variations in the conductivity structures with depth.

7.2 Recommendations

The ZTEM results over the Selwyn Basin appear to clearly define regional conducting lineaments and features. That related to important fault-fracture structures known to control mineralization in the region. The results of the survey should therefore be combined with the known geology for further analysis. Additionally, we recommend that the results be further analyzed using 2D-3D computer modelling and inversion to better define the cross-sectional geology.

Respectfully submitted,

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APPENDIX A: THE Z-TEM SYSTEM

The Z-TEM or Z-Axis Tipper Electromagnetic system is Geotech's latest and most sensitive version of airborne Audio Frequency Magnetic (AFMAG) system which uses the natural or passive fields of the Earth as the source of transmitted energy. These natural fields are planar and due to the manner in which they propagate, are horizontal. Any vertical field is caused by conductivity contrasts in the Earth. Geotech's Z-TEM system measures the vertical EM field in the air along the survey lines and makes use of a base station to measure the horizontal fields. The assumption is that the horizontal fields are relatively homogenous over the survey area and the base station location. The vertical EM field is remotely referenced to the horizontal EM fields. The horizontal fields are measured by a set of orthogonal horizontal dipole base station coils (see Figure 1). The proprietary receiver design using the advantages of modern digital electronics and a patented suspension system delivers exceptionally low-noise levels. The result is unparalleled resolution and depth of investigation in deep electromagnetic measurements.

Figure 7 - the airborne coil shown in the middle of the picture with the base stations in the background. The magnetometer bird is to the right of the airborne coil.

Key features include:

- superior exploration depth – Over 4000 metres from numerical simulation
- Low frequency of 38 Hertz for penetration through conductive cover
- High Spatial Resolution – 8 to 10 metres along the lines
- Excellent resistivity discrimination and detection of weak anomalies due to the nature of the natural EM fields

The system is easily transportable. It can be disassembled for packaging in relatively small units for shipping to surveys around the world.

In the event of damage to the EM bird in-flight or while being transported between survey sites, the unique design allows the easy replacement of any part of the system in the field. The receiver loop can be assembled or disassembled in slightly over one day.

Recent commercial surveys and surveys flown over test areas have produced reliable and promising results.

APPENDIX B: PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

Field:

Project Manager:	Les Moschuk
Data QC/QA:	Mihai Szentesy Nick Venter Richard Yee
Crew chief:	Gavin Boege Konstantin Tolkachk Sam Mcneil
Operator:	Guido Tocci Darren Tuck Igor Kartashov Lee Harper Matt Bernas Roberto Rus

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Expedition Helicopters Ltd.

Pilot:	Geoffrey Furniss Gene Johnson Ed Ashie Lorne Coleman Richard Arnold
Mechanical Engineer:	Helene Lafleche Kyle Groves Mike Friedan Morgan Delong Pete Libby Pete Nelly Will Ward Zack Govis

Office:

Project Advisor:	Petr Kuzmin, Chief engineer, R&D
Data Processing:	Biljana Milicevic Harish Kumar Suraiya Laloo
Report:	Biljana Milicevic Suraiya Laloo
Responsible Geophysicist:	Jean M. Legault, P.Geo., Data Processing Manager

APPENDIX C: SURVEY AREA COORDINATES

SURVEY BLOCK COORDINATES
(NAD83, UTM zone 9 north)

X	Y
329724	7075143.6
364301.6	7051513.8
400884	7069839.2
498612.9	7000194.9
482404.9	6965346.6
516108.7	6941257.1
495147.2	6911378.1
447266.1	6878120
315534.3	6974470.4
335525.6	7002400.8
304825.1	7039133.3
314000	7052500
498800	6916500
499000	6916800
314170	7052750

APPENDIX D: SURVEY OPERATION

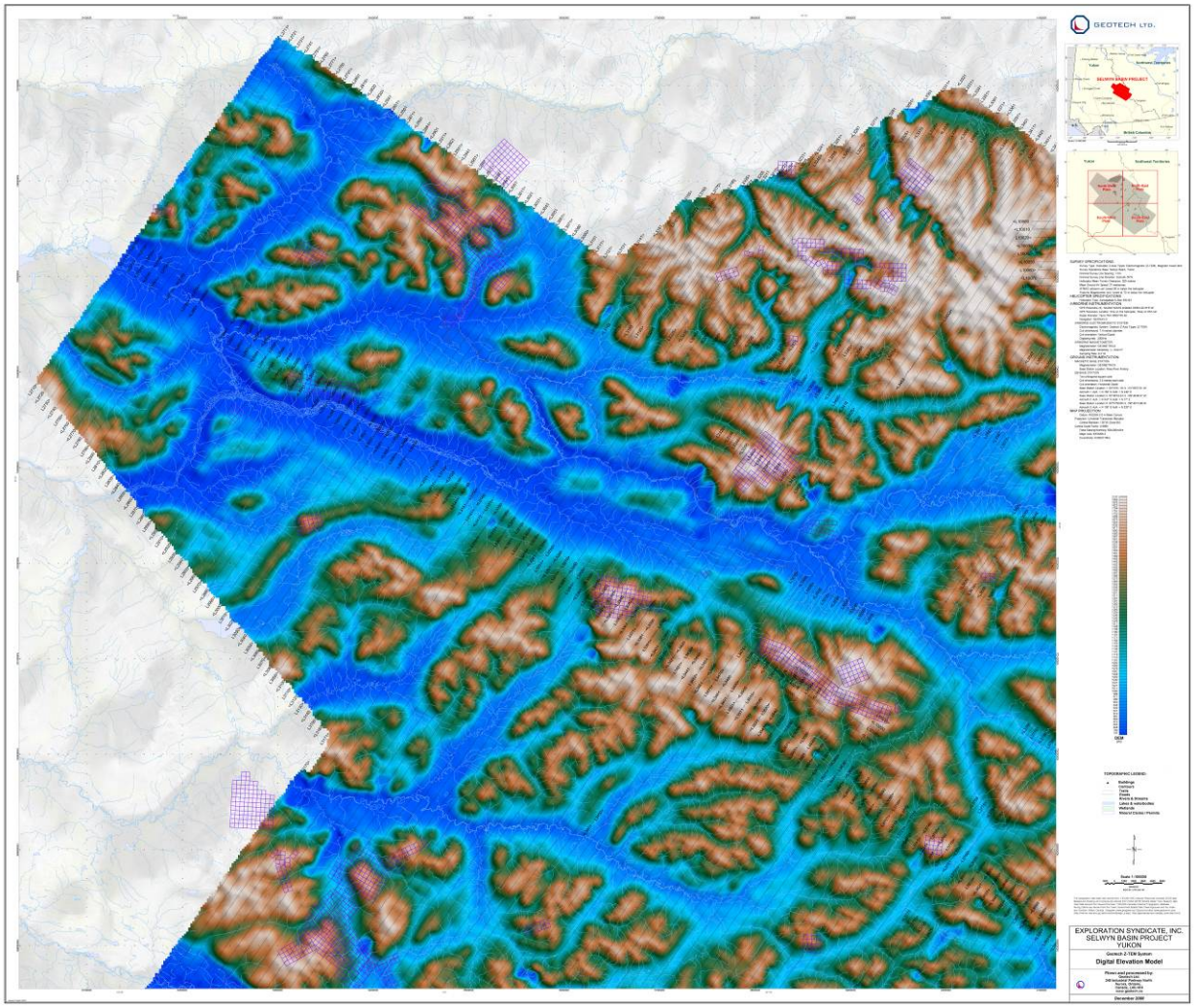
	Afmag -1			Afmag - 2			Crew Location	Comments	Remarks
	Flight #	KM	Block	Flight #	KM	Block			
05-20-2008								Crew arrived Ross River, YK	
05-21-2008								Began system installation	
05-22-2008								Completed installation	
05-23-2008								Readjusted base station	
05-24-2008								Waiting for helicopter	
05-25-2008								Helicopter arrive, crew completed helicopter installation	
05-26-2008								Crew performed test, system OK	
05-27-2008				1	112	Yukon	Ross River, Yukon	Production	
05-28-2008							Ross River, Yukon	No production-rain	
05-29-2008				2	109	Yukon	Ross River, Yukon	Limited production-rain/snow	
05-30-2008							Ross River, Yukon	No production-rain	
05-31-2008				3-5	509		Ross River, Yukon	Production	
06-01-2008				6-8	540	Yukon	Ross River, Yukon	Production	
06-02-2008				9-10	336	Yukon	Ross River, Yukon	Production	
06-03-2008				11-12	255	Yukon	Ross River, Yukon	Production	
06-04-2008							Ross River, Yukon	No production – helicopter problem	
06-05-2008							Ross River, Yukon	No production – helicopter problem	
06-06-2008							Ross River, Yukon	No production – helicopter problem	
06-07-2008							Ross River, Yukon	Parts arrived –helicopter fixed	
06-08-2008							Ross River, Yukon	No production – low ceiling and rain	
06-09-2008							Ross River, Yukon	No production – low ceiling and intermittent rain	
06-10-2008							Ross River, Yukon	No production – low ceiling, crew aborted flight	
06-11-2008				13-14	327	Yukon	Ross River, Yukon	Production	
06-12-2008				15-16	236	Yukon	Ross River, Yukon	Production	
06-13-2008							Ross River, Yukon	No production-low ceiling and rain	
06-14-2008				17-19	524	Yukon	Ross River, Yukon	Production	
06-15-2008							Ross River, Yukon	No production-low ceiling and rain	
06-16-2008				21	124	Yukon	Ross River, Yukon	Production aborted-technical issues.	
06-17-2008				22-25	497	Yukon	Ross River, Yukon	Production	
06-18-2008						Yukon	Ross River, Yukon	No production-low ceiling and rain	
06-19-2008							Ross River, Yukon	No production – low ceiling, rain and strong wind	

06-20-2008							Ross River, Yukon	No production-low ceiling and rain	
06-21-2008				26-29	494	Yukon	Ross River, Yukon	Production	
06-22-2008							Ross River, Yukon	No production-low ceiling and rain	
06-23-2008							Ross River, Yukon	No production-low ceiling and rain	
06-24-2008				30-32	373	Yukon	Ross River, Yukon	Production	
06-25-2008				33-35	373	Yukon	Ross River, Yukon	Production	
06-26-2008				36-39	520	Yukon	Ross River, Yukon	Production	
06-27-2008							Ross River, Yukon	No production-low ceiling and rain	
06-28-2008							Ross River, Yukon	No production-low ceiling and rain	
06-29-2008							Ross River, Yukon	No production-low ceiling	
06-30-2008							Ross River, Yukon	No production-low ceiling	
07-01-2008							Ross River, Yukon	No production-low ceiling and rain	
07-02-2008				40-41	262	Yukon	Ross River, Yukon	Production	
07-03-2008				42-44	392	Yukon	Ross River, Yukon	Production	
07-04-2008							Ross River, Yukon	No production-low ceiling and rain	
07-05-2008							Ross River, Yukon	No production-low ceiling and rain	
07-06-2008							Ross River, Yukon	No production-low ceiling and rain	
07-07-2008							Ross River, Yukon	No production-low ceiling and rain	
07-08-2008				45-48	373	Yukon	Ross River, Yukon	Production	
07-09-2008							Ross River, Yukon	No production-low ceiling and rain	
07-10-2008							Ross River, Yukon	No production-low ceiling, rain and fog	
07-11-2008							Ross River, Yukon	No production-low ceiling and strong winds	
07-12-2008							Ross River, Yukon	No production-low ceiling and strong winds	
07-13-2008							Ross River, Yukon	No production-low ceiling, rain, and strong winds	
07-14-2008				49-51	379	N	Ross River, Yukon	Production	
07-15-2008							Ross River, Yukon	No production-rain and technical issues	
07-16-2008							Ross River, Yukon	No production-technical issues	
07-17-2008							Ross River, Yukon	No production-technical issues	
07-18-2008							Ross River, Yukon	No production-system inspection	
07-19-2008							Ross River, Yukon	Crew grounded due to weather	
07-20-2008							Ross River, Yukon	No production-low ceiling and rain	

07-21-2008							Ross River, Yukon	No production-low ceiling, rain and gusty wind	
07-22-2008							Ross River, Yukon	No production-low ceiling and rain	
07-23-2008							Ross River, Yukon	No production-low ceiling and rain	
07-24-2008				52-53	219	Infill	Ross River, Yukon	Production	
07-25-2008							Ross River, Yukon	No production-low ceiling and rain	
07-26-2008				55	22	Yukon	Ross River, Yukon	Low production-low ceiling and high winds	
07-27-2008						Yukon	Ross River, Yukon	Re-flights	
07-28-2008				57-58	321	Yukon	Ross River, Yukon	Production	
07-29-2008				59-61	244	Yukon	Ross River, Yukon	Production	
07-30-2008				62	131	Yukon	Ross River, Yukon	Production	
07-31-2008							Ross River, Yukon	Assembles new base and arrange fuel cache	
08-01-2008							Ross River, Yukon	No production-low clouds and rain	
08-02-2008				63-65	517	Yukon	Ross River, Yukon	Production	
08-03-2008				66-69	553	Yukon	Ross River, Yukon	Production	
08-04-2008				70-71	258	Yukon	Ross River, Yukon	Production	
08-05-2008							Ross River, Yukon	Re-flights	
08-06-2008				75-77	330	Yukon	Ross River, Yukon	Production	
08-07-2008				78-79	247	Yukon	Ross River, Yukon	Production	
08-08-2008				80	89	Yukon	Ross River, Yukon	Low production-showers and thunderstorm	
08-09-2008				81-82	124	Yukon	Ross River, Yukon	Production	
08-10-2008							Ross River, Yukon	No production-system maintenance	
08-11-2008				83-86	542	Yukon	Ross River, Yukon	Production	
08-12-2008							Ross River, Yukon	No production-low ceiling and rain	
08-13-2008				87-89	306		Ross River, Yukon	Production	
08-14-2008				90-93	424		Ross River, Yukon	Production	
08-15-2008				94-97	442		Ross River, Yukon	Production	
08-16-2008				98-101	465		Ross River, Yukon	Production	
08-17-2008				102	134		Ross River, Yukon	Low production-low ceiling and rain	
08-18-2008							Ross River, Yukon	No production-low ceiling and rain	
08-19-2008				103-106	505		Ross River, Yukon	Production	
08-20-2008				107-108	247	Yukon	Ross River, Yukon	Production	
08-21-2008				109-110	247	Yukon	Ross River, Yukon	Production	
08-22-2008							Ross River, Yukon	Low production-low ceiling and rain	
08-23-2008				111-112	247	Yukon	Ross River, Yukon	Production	
08-24-2008							Ross River, Yukon	Low production-low ceiling and rain	
08-25-2008							Ross River, Yukon	Low production-low ceiling and rain	
08-26-2008							Ross River, Yukon	Low production-low ceiling	

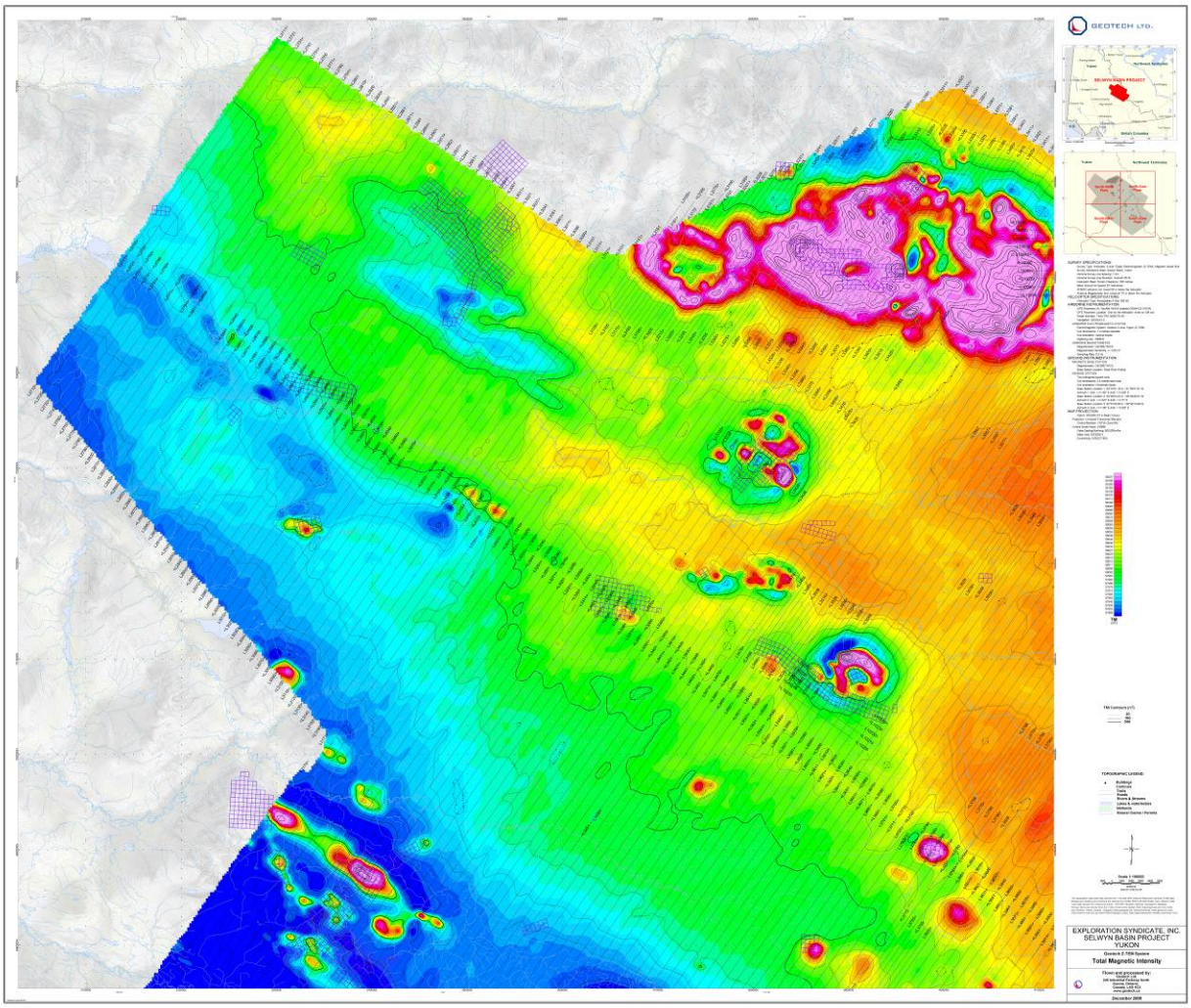
08-27-2008							Ross River, Yukon	Low production-low ceiling	
08-28-2008							Ross River, Yukon	Low production-low ceiling	
08-29-2008							Ross River, Yukon	Low production-low ceiling	
08-30-2008	200-201	535	Yukon	113-116	194	Yukon	Ross River, Yukon	Production	2 systems
08-31-2008	202-205	519	Yukon	117-119	401	Yukon	Ross River, Yukon	Production	2 systems
09-01-2008	206-209	525	Yukon	120-122	400	Yukon	Ross River, Yukon	Production	2 systems
09-02-2008	210-213	512	Yukon	123-126	511	Yukon	Ross River, Yukon	Production	2 systems
09-03-2008	214-217	496	Yukon	127-128	248	Yukon	Ross River, Yukon	Production	2 systems
09-04-2008	217-221	527	Yukon	129-133	655	Yukon	Ross River, Yukon	Production	2 systems
09-05-2008	222-226	658	Yukon	134-137	530	Yukon	Ross River, Yukon	Production	2 systems
09-06-2008							Ross River, Yukon	No production-maintenance and re-flights	
09-07-2008	228-232	621	Yukon	138-140	372	Yukon	Ross River, Yukon	Production	2 systems
09-08-2008							Ross River, Yukon	No production-rain	
09-09-2008							Ross River, Yukon	No production-low ceiling	
09-10-2008							Ross River, Yukon	No production-low ceiling and rain	
09-11-2008							Ross River, Yukon	No production-low ceiling and rain	
09-12-2008	233-234	248		141-144	495	Yukon	Ross River, Yukon	Production	2 systems
09-13-2008	235-236	248		145-146	248	Yukon	Ross River, Yukon	Production	2 systems
09-14-2008							Ross River, Yukon	No production-low ceiling	
09-15-2008				147	146	Yukon	Ross River, Yukon	Production-Afmag#2 No production-Afmag#1-rain	1 system
09-16-2008				148-149	256	Yukon	Ross River, Yukon	Production-Afmag#2 Afmag#1-Reflights	1 system
09-17-2008							Ross River, Yukon	No production-low ceiling and rain	
09-18-2008	238-241	303	Yukon	150-152	248	Yukon/ infills	Ross River, Yukon	Production	2 systems
09-19-2008							Ross River, Yukon	No production-low ceiling and fog	
09-20-2008							Ross River, Yukon	No production-low ceiling and fog	
09-21-2008	242-244		Yukon	153-155	190	Yukon	Ross River, Yukon	Low production-some reflights	2 systems
09-22-2008							Ross River, Yukon	No production-low ceiling	
09-23-2008							Ross River, Yukon	No production-low ceiling	
09-24-2008							Ross River, Yukon	No production-low ceiling	
09-25-2008	245-247	185	Yukon	156-158	132	Yukon	Ross River, Yukon	Low production-fog in the morning and some reflights	2 systems
09-26-2008							Ross River, Yukon	No production-low ceiling and snow squals	
09-27-2008							Ross River, Yukon	No production-low ceiling	
09-28-2008							Ross River, Yukon	No production-low ceiling and snow squals	
09-29-2008							Ross River, Yukon	No production-low ceiling and snow/rain	
09-30-2008							Ross River, Yukon	No production-low ceiling and snow/rain	
10-01-2008	248-249	248	Yukon	159-162	530	Yukon	Ross River, Yukon	Production	2 systems
10-02-2008							Ross River, Yukon	No production-low ceiling	
10-03-2008				163-164	86	Yukon	Ross River, Yukon	Production	1 system
10-04-2008							Ross River, Yukon	Disassemble the system	

APPENDIX E: FINAL MAPS[4]

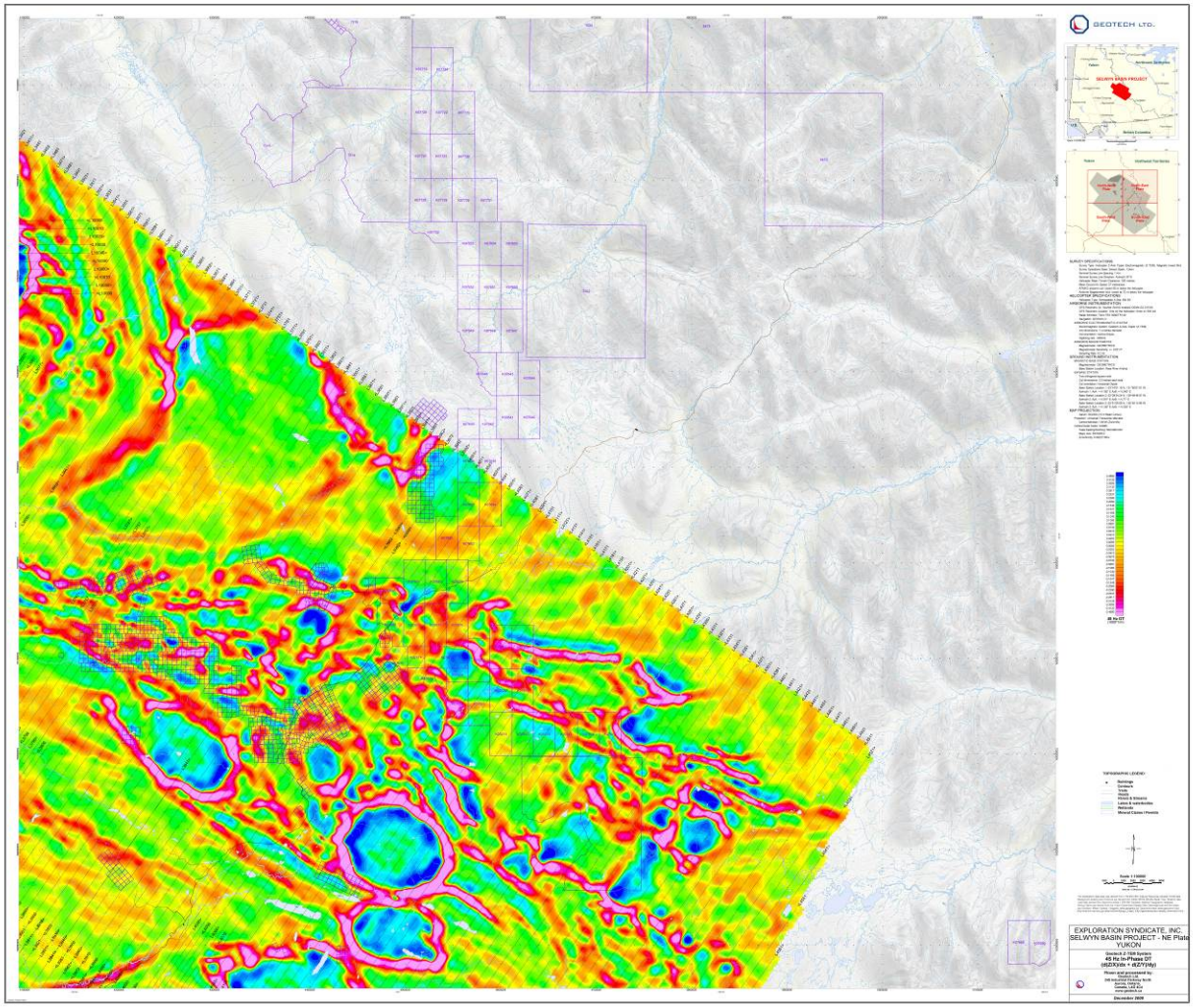


Digital Elevation Map – NW Plate

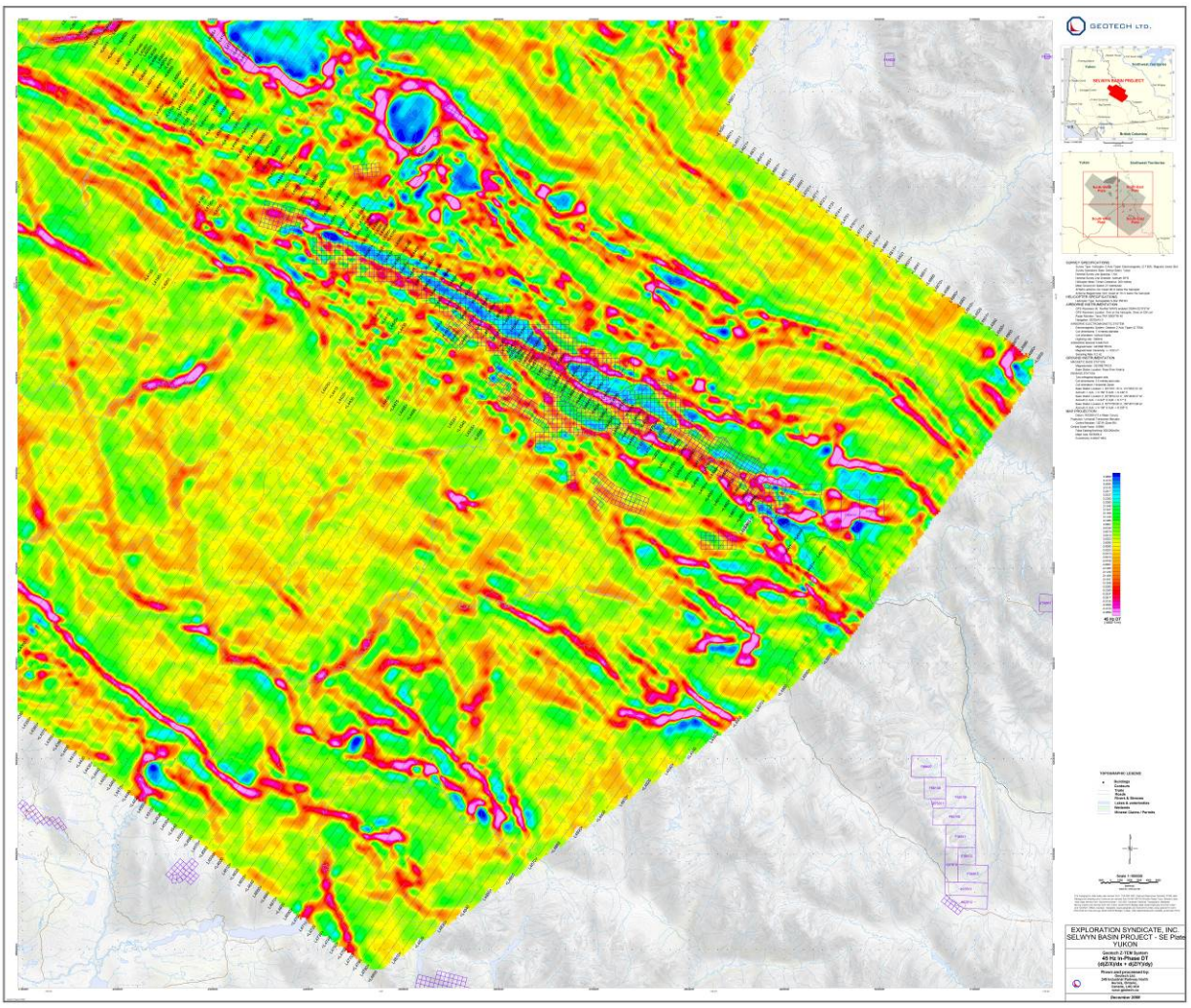
[4] Note: The maps presented represent a selection of the final geophysical maps created in this study. Full size geophysical maps are also available in PDF and Geosoft map format in the final DVD archive.



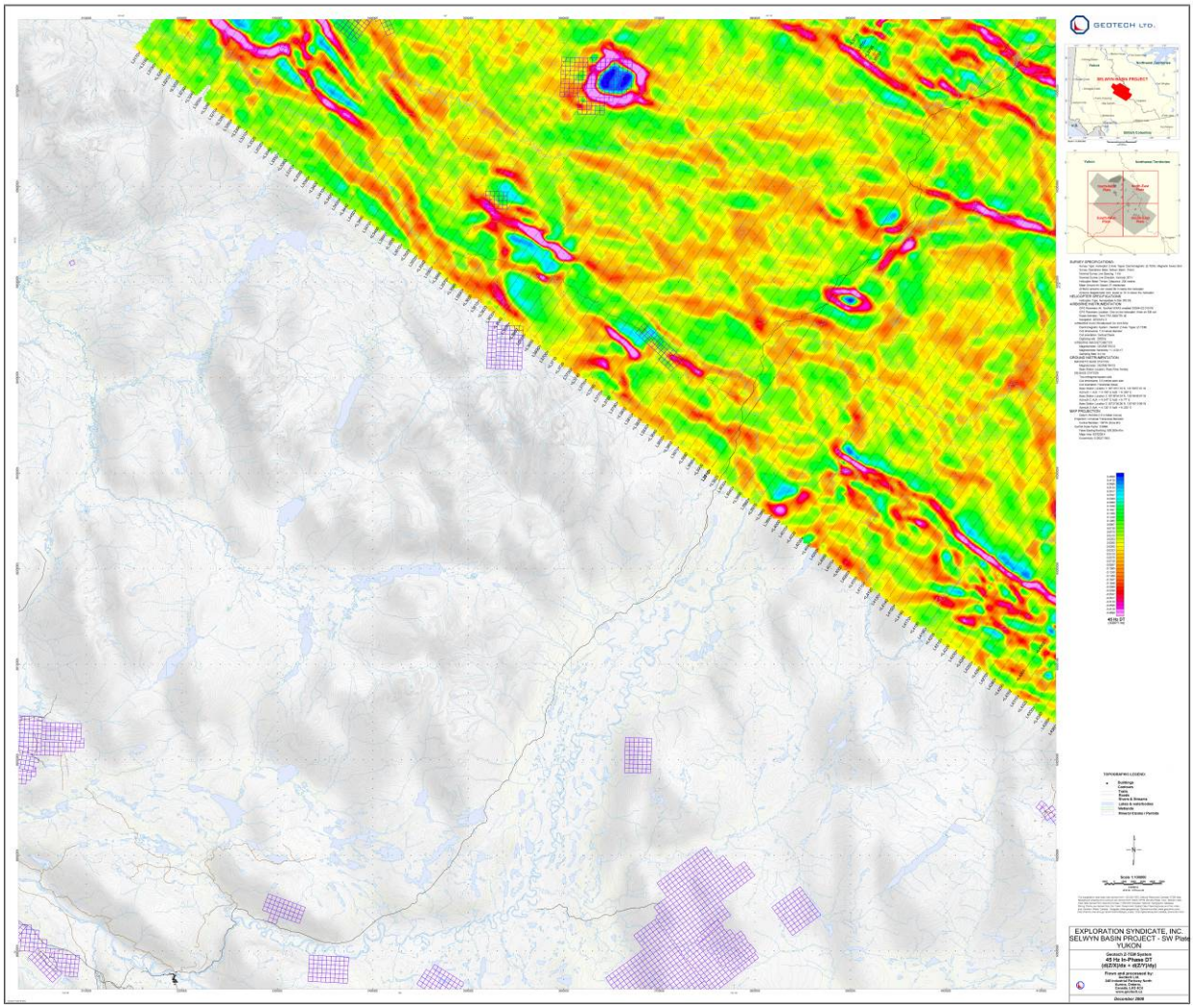
Total Magnetic Intensity – NW plate



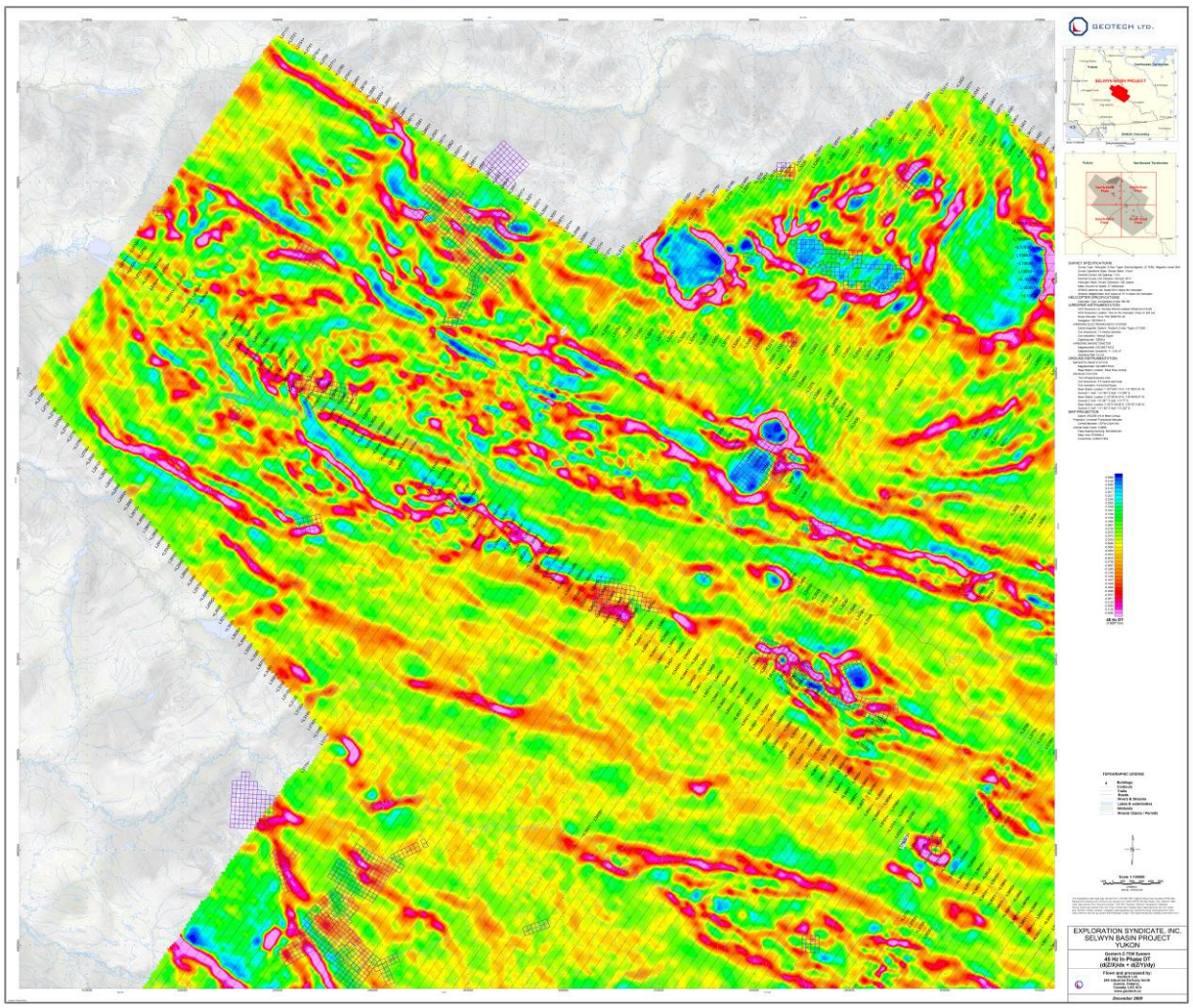
45Hz In-Phase DT – NE Plate



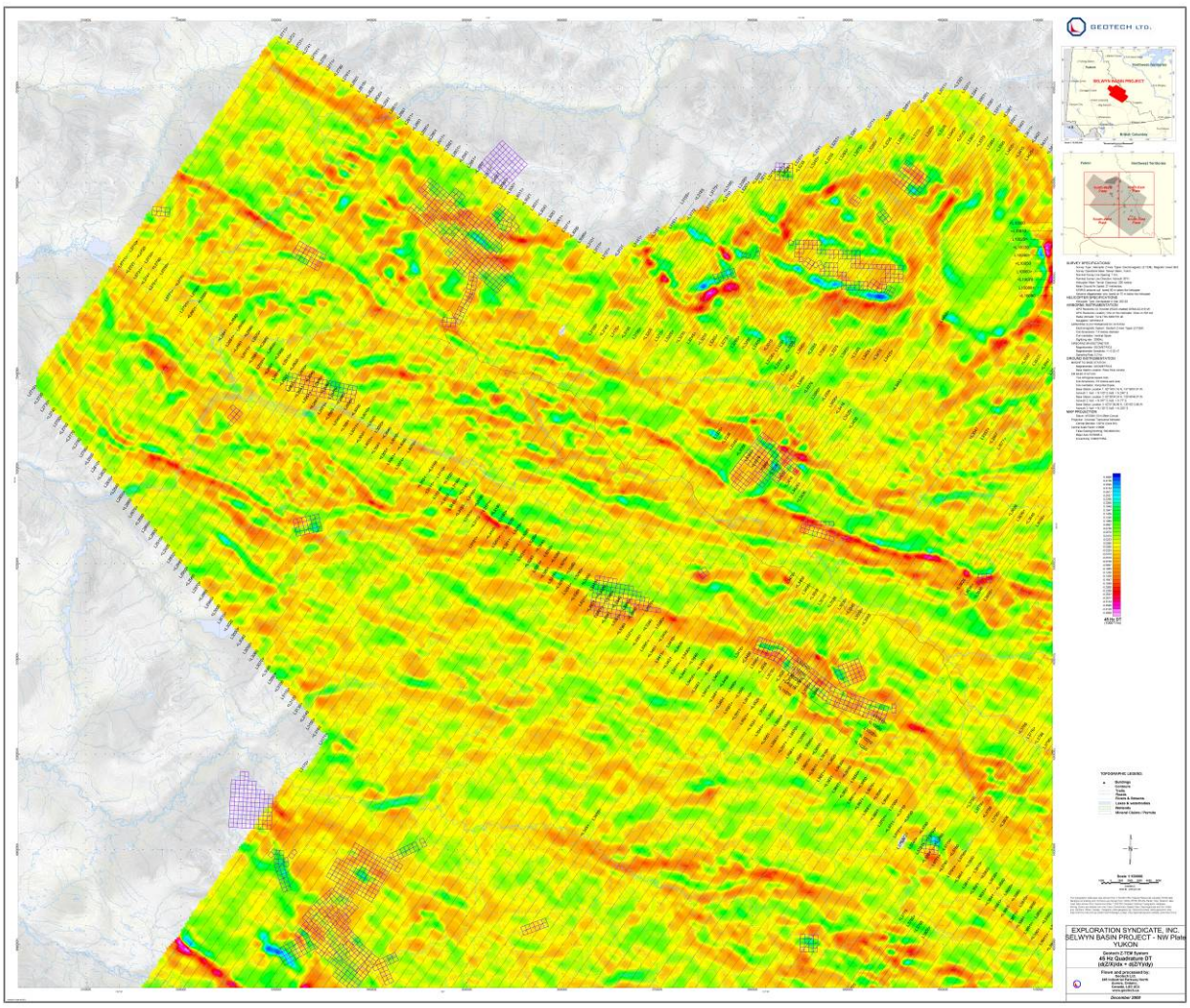
45Hz In-Phase DT – SE Plate



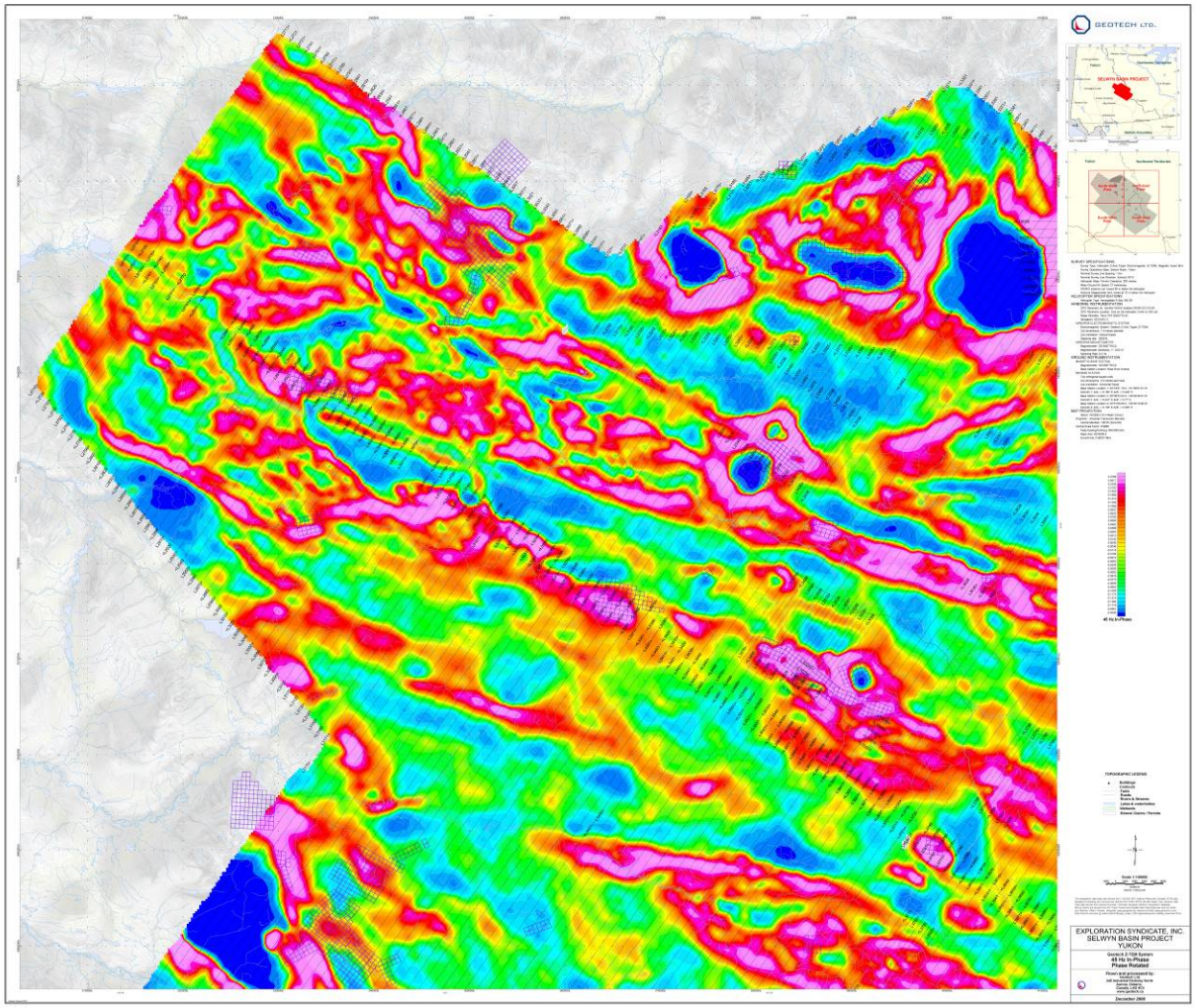
45Hz In-Phase DT – SW Plate



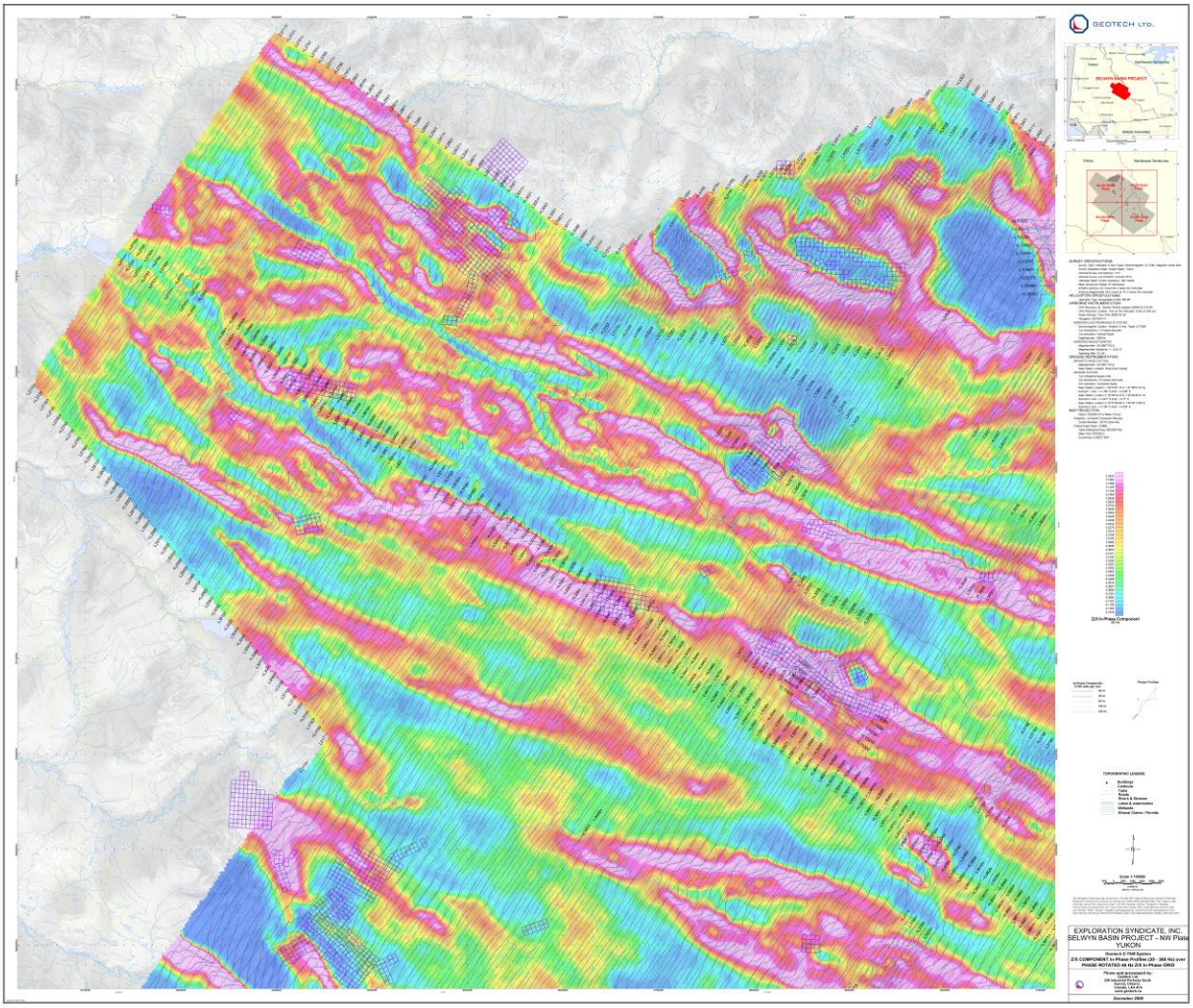
45Hz In-Phase DT – NW Plate



45Hz Quadrature DT – NW Plate

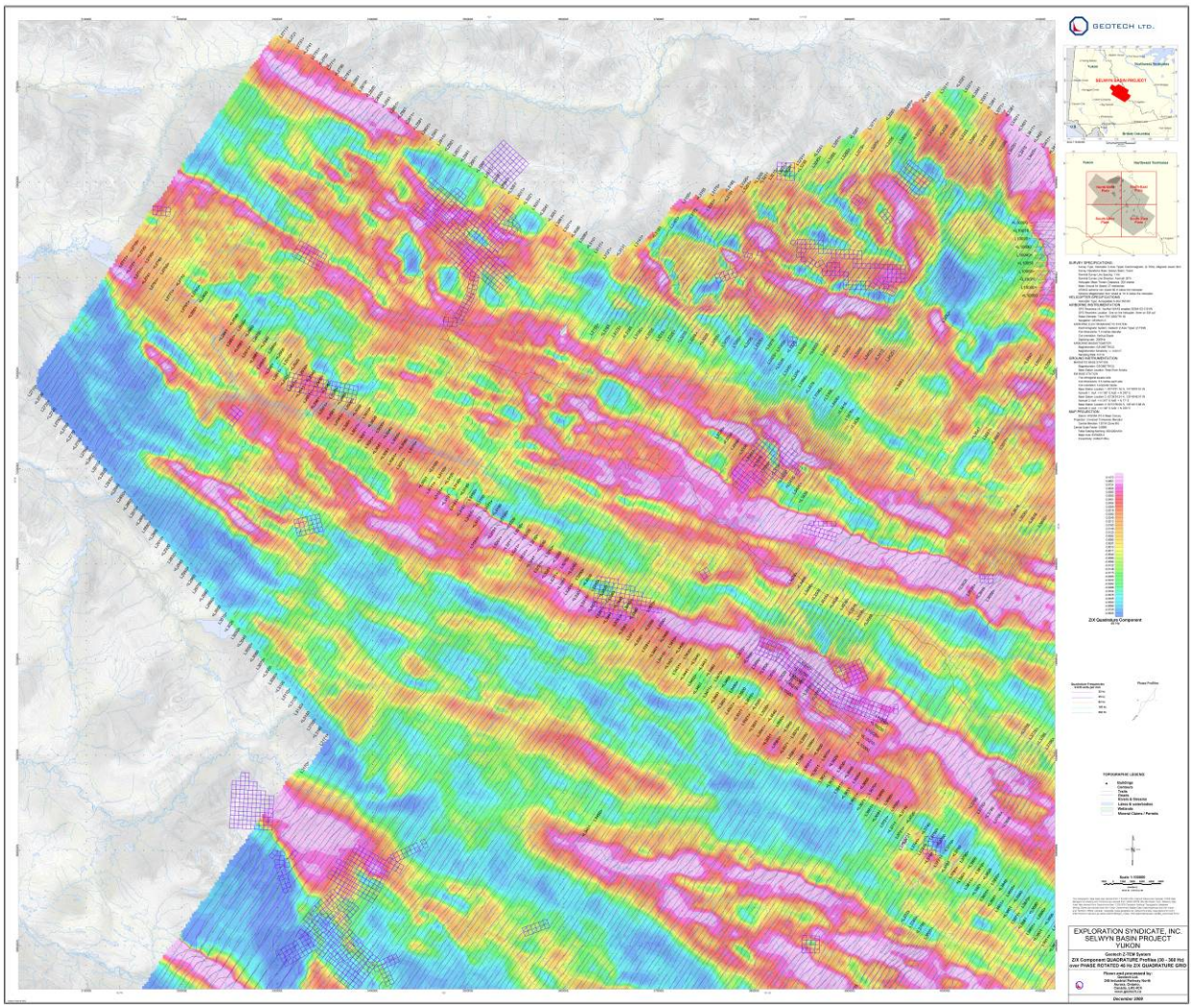


Phase Rotated 45Hz In-Phase – NW Plate



Z/X In-Phase profiles over a 45Hz Phase Rotated

Z/X In-Phase grid – NW Plate



Z/X Quadrature Profiles over a 45Hz Phase Rotated

Z/X Quadrature Grid – NW Plate

APPENDIX F: DATA DESCRITION

Geosoft Databases

The Yukon (Selwyn Basin) Ztem Database contain the following channels:

Column	Description
GPSLat1	Latitude – WGS 84 (Decimal degree)
GPSlon1	Longitude- WGS 84 (Decimal degree)
Rad_m	Helicopter Radar Terrain Clearance (metres)
GPSAlt	Elevation- WGS 84 (On Receiver) (metres)
Inoise	Powerline Monitor
GPSTime	GPS Time (seconds)
DEM	Digital Elevation Model (meters)
Bx	UTM Easting WGS 84 Zone 9 N, MEAN CONUS (On Receiver) (meters)
By	UTM Northing WGS 84 Zone 9 N , MEAN CONUS (On Receiver) (meters)
Ln	Longitude – WGS 84 (On Receiver) (Decimal degree)
Lt	Latitude – WGS 84 (On Receiver) (Decimal degree)
Mag	Total Magnetic Intensity, basemag corrected, microlevelled (nT)
Mag2	Base station mag corrected
MagBS	Base station mag
Magmic1	Final mag microlevelled (nT)
eXC	Lag corrected eX
eYC	Lag corrected eY
xIp_030	Raw extracted In Phase (real) Z/X component ratio for 30 Hz Frequency
xIp_045	Raw extracted In Phase (real) Z/X component ratio for 45 Hz Frequency
xIp_090	Raw extracted In Phase (real) Z/X component ratio for 90 Hz Frequency
xIp_180	Raw extracted In Phase (real) Z/X component ratio for 180 Hz Frequency
xIp_360	Raw extracted In Phase (real) Z/X component for ratio 360 Hz Frequency
xIp_030C	xIp_030 attitude corrected
xIp_045C	xIp_045 attitude corrected
xIp_090C	xIp_090 attitude corrected
xIp_180C	xIp_180 attitude corrected
xIp_360C	xIp_360 attitude corrected
xIp_030Hz	xIp_030 final attitude corrected, levelled, filtered
xIp_045Hz	xIp_045 final attitude corrected, levelled, filtered
xIp_090Hz	xIp_090 final attitude corrected, levelled, filtered
xIp_180Hz	xIp_180 final attitude corrected, levelled, filtered
xIp_360Hz	xIp_360 final attitude corrected, levelled, filtered
xQd_030	Raw extracted Quadrature Z/X component ratio for 30 Hz Frequency
xQd_045	Raw extracted Quadrature Z/X component ratio for 45 Hz Frequency
xQd_090	Raw extracted Quadrature Z/X component ratio for 90 Hz Frequency
xQd_180	Raw extracted Quadrature Z/X component ratio for 180 Hz Frequency
xQd_360	Raw extracted Quadrature Z/X component ratio for 360 Hz Frequency

Column	Description
xQd_030C	Quadrature Z/X for 30 Hz Frequency corrected
xQd_045C	Quadrature Z/X for 45 Hz Frequency corrected
xQd_090C	Quadrature Z/X for 90 Hz Frequency corrected
xQd_180C	Quadrature Z/X for 180 Hz Frequency corrected
xQd_360C	Quadrature Z/X for 360 Hz Frequency corrected
xQd_030Hz	XQd_030 final attitude corrected, filtered levelled channel
xQd_045Hz	XQd_045 final attitude corrected, filtered levelled channel
xQd_090Hz	XQd_090 final attitude corrected, filtered levelled channel
xQd_180Hz	XQd_180 final attitude corrected, filtered levelled channel
xQd_360Hz	XQd_360 final attitude corrected, filtered levelled channel
yIp_030	Raw extracted In Phase (real) Z/Y component ratio for 30 Hz Frequency
yIp_045	Raw extracted In Phase (real) Z/Y component ratio for 45 Hz Frequency
yIp_090	Raw extracted In Phase (real) Z/Y component ratio for 90 Hz Frequency
yIp_180	Raw extracted In Phase (real) Z/Y component ratio for 180 Hz Frequency
yIp_360	Raw extracted In Phase (real) Z/Y component for ratio 360 Hz Frequency
yIp_030C	yIp_030 attitude corrected
yIp_045C	yIp_045 attitude corrected
yIp_090C	yIp_090 attitude corrected
yIp_180C	yIp_180 attitude corrected
yIp_360C	yIp_360 attitude corrected
yIp_030Hz	yIp_030 attitude corrected, levelled, filtered
yIp_045Hz	yIp_045 attitude corrected, levelled, filtered
yIp_090Hz	yIp_090 attitude corrected, levelled, filtered
yIp_180Hz	yIp_180 attitude corrected, levelled, filtered
yIp_360Hz	yIp_360 attitude corrected, levelled, filtered
yQd_030	Raw extracted Quadrature Z/Y component ratio for 30 Hz Frequency
yQd_045	Raw extracted Quadrature Z/Y component ratio for 45 Hz Frequency
yQd_090	Raw extracted Quadrature Z/Y component ratio for 90 Hz Frequency
yQd_180	Raw extracted Quadrature Z/Y component ratio for 180 Hz Frequency
yQd_360	Raw extracted Quadrature Z/Y component ratio for 360 Hz Frequency
yQd_030C	Quadrature Z/Y for 30 Hz Frequency corrected
yQd_045C	Quadrature Z/Y for 45 Hz Frequency corrected
yQd_090C	Quadrature Z/Y for 90 Hz Frequency corrected
yQd_180C	Quadrature Z/Y for 180 Hz Frequency corrected
yQd_360C	Quadrature Z/Y for 360 Hz Frequency corrected
yQd_030Hz	yQd_030 final attitude corrected, filtered levelled channel
yQd_045Hz	yQd_045 final attitude corrected, filtered levelled channel
yQd_090Hz	yQd_090 final attitude corrected, filtered levelled channel
yQd_180Hz	yQd_180 final attitude corrected, filtered levelled channel
yQd_360Hz	yQd_360 final attitude corrected, filtered levelled channel

Geosoft Grids and Maps exports:

The following grids and Geosoft maps have been provided for the Selwyn Basin, Yukon, WGS 84 mean conus (Total of 52 grids, 36 maps)

1. The following sets of grids have been provided:

TMI:	Total Magnetic Intensity
DEM:	Digital Elevation Model
XIP_30Hz.grd	X In-phase components at 30Hz grid
XIP_45Hz.grd	X In-phase components at 45Hz grid
XIP_90Hz.grd	X In-phase components at 90Hz grid
XIP_180Hz.grd	X In-phase components at 180Hz grid
XIP_360Hz.grd	X In-phase components at 360Hz grid
YIP_30Hz.grd	Y In-phase components at 30Hz grid
YIP_45Hz.grd	Y In-phase components at 45Hz grid
YIP_90Hz.grd	Y In-phase components at 90Hz grid
YIP_180Hz.grd	Y In-phase components at 180Hz grid
YIP_360Hz.grd	Y In-phase components at 360Hz grid
XQd_30Hz.grd	X Quadrature components at 30Hz grid
XQd_45Hz.grd	X Quadrature components at 45Hz grid
XQd_90Hz.grd	X Quadrature components at 90Hz grid
XQd_180Hz.grd	X Quadrature components at 180Hz grid
XQd_360Hz.grd	X Quadrature components at 360Hz grid
YQd_30Hz.grd	Y Quadrature components at 30Hz grid
YQd_45Hz.grd	Y Quadrature components at 45Hz grid
YQd_90Hz.grd	Y Quadrature components at 90Hz grid
YQd_180Hz.grd	Y Quadrature components at 180Hz grid
YQd_360Hz.grd	Y Quadrature components at 360Hz grid
XIP_30Hz_PR.grd	Phase rotated component grid at 30Hz
XIP_45Hz_PR.grd	Phase rotated component grid at 45Hz
XIP_90Hz_PR.grd	Phase rotated component grid at 90Hz
XIP_180Hz_PR.grd	Phase rotated component grid at 180Hz
XIP_360Hz_PR.grd	Phase rotated component grid at 360Hz
YIP_30Hz_PR.grd	Phase rotated component grid at 30Hz
YIP_45Hz_PR.grd	Phase rotated component grid at 45Hz
YIP_90Hz_PR.grd	Phase rotated component grid at 90Hz
YIP_180Hz_PR.grd	Phase rotated component grid at 180Hz
YIP_360Hz_PR.grd	Phase rotated component grid at 360Hz
IP_30Hz_PR.grd	Phase rotated grid for the In-phase components at 30Hz
IP_45Hz_PR.grd	Phase rotated grid for the In-phase components at 45Hz
IP_90Hz_PR.grd	Phase rotated grid for the In-phase components at 90Hz
IP_180Hz_PR.grd	Phase rotated grid for the In-phase components at 180Hz
IP_360Hz_PR.grd	Phase rotated grid for the In-phase components at 360Hz
Qd_30Hz_PR.grd	Phase rotated grid for the Quadrature components at 30Hz
Qd_45Hz_PR.grd	Phase rotated grid for the Quadrature components at 45Hz
Qd_90Hz_PR.grd	Phase rotated grid for the Quadrature components at 90Hz
Qd_180Hz_PR.grd	Phase rotated grid for the Quadrature components at 180Hz
Qd_360Hz_PR.grd	Phase rotated grid for the Quadrature components at 360Hz
IP_30Hz_DT	divergence grid calculated from the In-phase components at 30Hz
IP_45Hz_DT	divergence grid calculated from the In-phase components at 45Hz
IP_90Hz_DT	divergence grid calculated from the In-phase components at 90Hz
IP_180Hz_DT	divergence grid calculated from the In-phase components at 180Hz
IP_360Hz_DT	divergence grid calculated from the In-phase components at 360Hz
Qd_30Hz_DT	divergence grid calculated from the Quadrature components at 30Hz
Qd_45Hz_DT	divergence grid calculated from the Quadrature components at 45Hz
Qd_90Hz_DT	divergence grid calculated from the Quadrature components at 90Hz
Qd_180Hz_DT	divergence grid calculated from the Quadrature components at 180Hz
Qd_360Hz_DT	divergence grid calculated from the Quadrature components at 360Hz

2. The following sets of Geosoft Maps have been provided:

```
TMI:                    Total Magnetic Intensity
DEM:                    Digital Elevation Model

45Hz _DT_Ip:            In-Phase DT (d(Z/X)/dX + d(Z/Y)/dY) for 45 Hz

45Hz _DT_Quad:          Quadrature DT (d(Z/X)/dX + d(Z/Y)/dY) for 45 Hz

45Hz_PR_IP:             Phase Rotated In-Phase 45 Hz

Z/X Component In-Phase Profiles over a 45 Hz Z/X Phase Rotated In-Phase Grid
Z/Y Component In-Phase Profiles over a 45 Hz Z/Y Phase Rotated In-Phase Grid
Z/X Component Quadrature Profiles over a 45 Hz Z/X Phase Rotated Quadrature Grid
Z/Y Component Quadrature Profiles over a 45 Hz Z/Y Phase Rotated Quadrature Grid

Block was divided into 4 plates therefore there is a plate for each quadrant for each
corresponding parameter.
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