MAR 20140015: MAURICE CREEK

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DECLAN RESOURCES INC.

ASSESSMENT REPORT:
2014 EXPLORATION OF THE MAURICE CREEK PROPERTY,
NORTHEAST ALBERTA

PART B

Metallic and Industrial Mineral Permits:
93009100639, 9309100640, 9309100641

Geographic Coordinates:
59°23' N to 59°31' N
110°0' W to 110°21' W

NTS Sheets: 74M08/09

OWNER: 877384 ALBERTA LTD.
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DATE: DECEMBER 17TH, 2014

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PART C

1. SUMMARY

The Maurice Creek Property consists of three contiguous Metallic and Industrial Mineral (MAIM) permits, 9309100639, 9309100640 and 9309100641, with a total area of 27,648 ha. Declan Resources Inc. acquired the Maurice Creek Property in April, 2014 and operates the property for 877384 Alberta Ltd.

The Property is located just north of Lake Athabasca and lies adjacent to the Alberta-Saskatchewan border. The nearest community is Uranium City, SK, which located approximately 88 km to the east. The Maurice Creek Property is located on the western margin of the Athabasca Basin, which is known for high grade uranium deposits. The objective of the work described within this assessment report was to locate geophysical anomalies associated with basement-hosted, unconformity type uranium deposits on the Maurice Creek Property.

From October 25th through October 30th, 2014, Dahrouge Geological Consulting Ltd. contracted Terraquest Ltd., on behalf of Declan Resources Inc., to conduct an airborne, high sensitivity Horizontal Magnetic Gradient and Radiometric survey. The purpose of the geophysical survey was to detect surface radiometric anomalies and map the magnetic character of the property as a tool for interpreting rock types and structures at depth, which could be associated with basement-hosted, unconformity type uranium deposits. In total, 1326.5 line-km were flown over the Maurice Creek Property and the neighboring Maurice Bay Property in Saskatchewan. Terraquest provided a detailed logistical report and associated figures following the survey.

2 INTRODUCTION

In October 2014, Terraquest Ltd. of Markham, ON, was contracted to fly an airborne, high sensitivity Horizontal Magnetic Gradient and Radiometric survey over the Maurice Creek Property. The objective of this survey was to identify electromagnetic and magnetic anomalies commonly associated with unconformity style uranium deposits. A total of 1326.5 line-km were flown over the Maurice Creek neighboring Maurice Bay Properties.

The survey was conducted with a Piper Navajo PA 31-325 CR aircraft which is owned and operated by Terraquest Ltd. and has been retrofitted with long-range fuel cells and a sensor array to conduct the airborne geophysical surveys. The survey was flown in a "tight drape mode" with the survey elevation averaging 81 m above the ground and mean aircraft speed at 277 km/hr. Lines were flown at 150 m intervals with 1,030 m tie line intervals and data sample points at 80 m (for 1 Hz radiometric data) and 8 m (for 10 Hz radiometric data). The magnetic base station for the survey was located in Uranium City, SK.

Figure 1. Location of the Maurice Creek Property

3. GEOGRAPHIC SETTING AND ACCESS

3.1 Location and Access

The Maurice Creek Property is located within the National Topographic System Map Sheets 74M08 and 74M09. The permit area is bound by geographical coordinates 59°23' N to 59°31' N and 110°0' W to 110°21' W

The Terraquest survey crew based operations out of Uranium City, SK, located 88 km east of the property. Fort Chipewyan, AB is approximately 100 km southwest and Fort McMurray is located approximately 310 km to the southwest of the property. Airstrips are available in both Fort Chipewyan and Uranium City.

3.2 Infrastructure

Accommodations, food, fuel and other necessary services are available in Fort Chipewyan, AB, which has a population 1,008 (2012 Municipal Census) and Uranium City, SK, which has a population of 201 (Wikipedia). Uranium City has a certified airport which offers regular flights to Stony Rapids on Pronto Airways. The survey crew stayed at the Classen Lodge in Uranium City, which provided internet access.

Fort McMurray is the nearest major center with a population of 61, 000 and has most major services available, including a commercial airport with regular flights from Edmonton, Calgary, Saskatoon, Toronto, and Vancouver.

3.3 Topography, Vegetation and Climate

The topography is generally flat with the elevation ranging from approximately 240 to 340 m. The area consists of sandy dunes and plateaus as well as swampy low lying wetland areas. There are many lakes on the Maurice Creek Property, the largest being Roderick Lake and Lake Athabasca is located 6 km to the southeast.

Vegetation commonly consists of boreal forest cover, including white spruce, aspen and jack pine. In lower areas, along the river valleys and muskegs, vegetation includes a mix of deciduous and coniferous trees including: black spruce, willow, and birch, with an abundance of sphagnum moss.

In the Fort Chipewyan area, annual snowfall is 117 cm and the annual rainfall is 250 cm. River breakup generally occurs in the third week of April. Summer temperatures average 17°C and winter temperatures drop to an average of -19°C with extremes as low as -58°C and rare highs of up to 34°C.

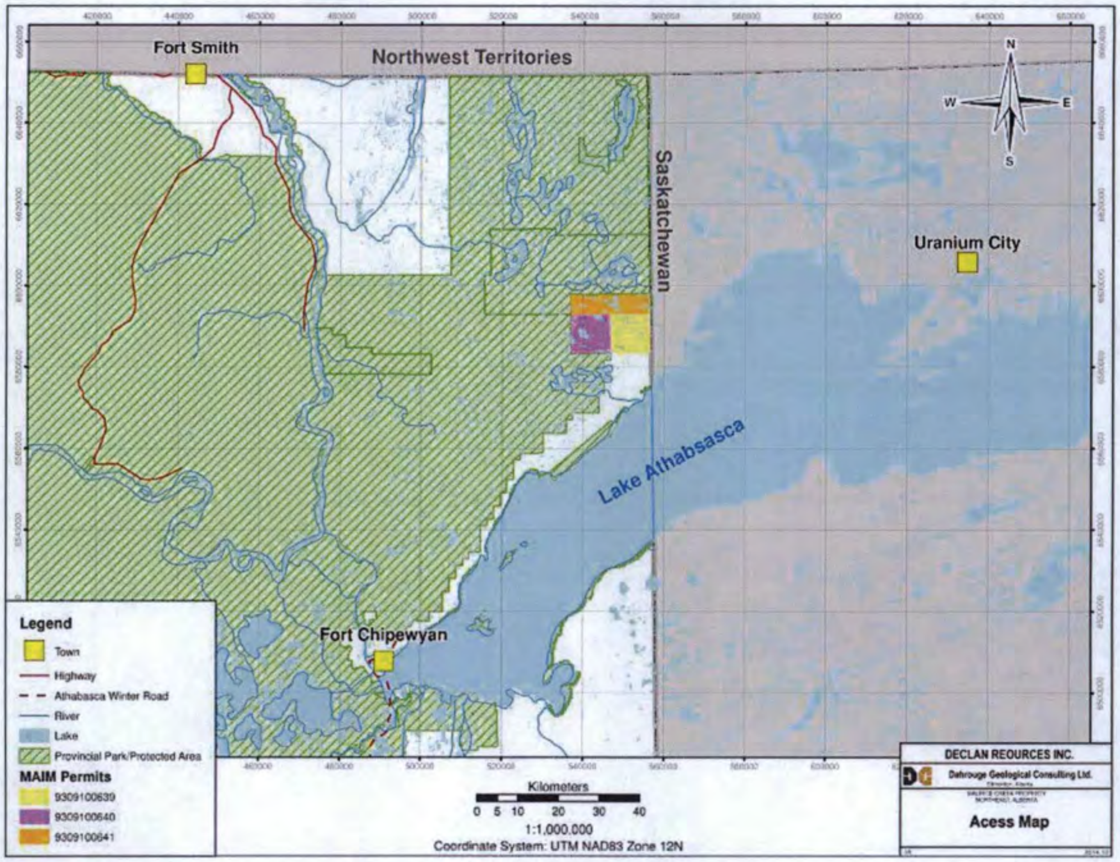

Figure 2. Access to the Maurice Creek Property

4. PROPERTY, EXPLORATION AND EXPENDITURES

4.1 Property Summary

Declan Resources Inc. acquired 100% interest MAIM Permits 9309100639-9309100641 in April, 2014 from 877384 Alberta Ltd., who originally staked the claims on October 21, 2009. The property has a total area of 27,648 ha and is located along the Alberta-Saskatchewan border, just north of Lake Athabasca. Due to the development of the Lower Athabasca Regional Plan, an extension was granted for the Maurice Creek Property and the claims are still in the first assessment period. The Maurice Creek Property was not affected by the creation of new park area.

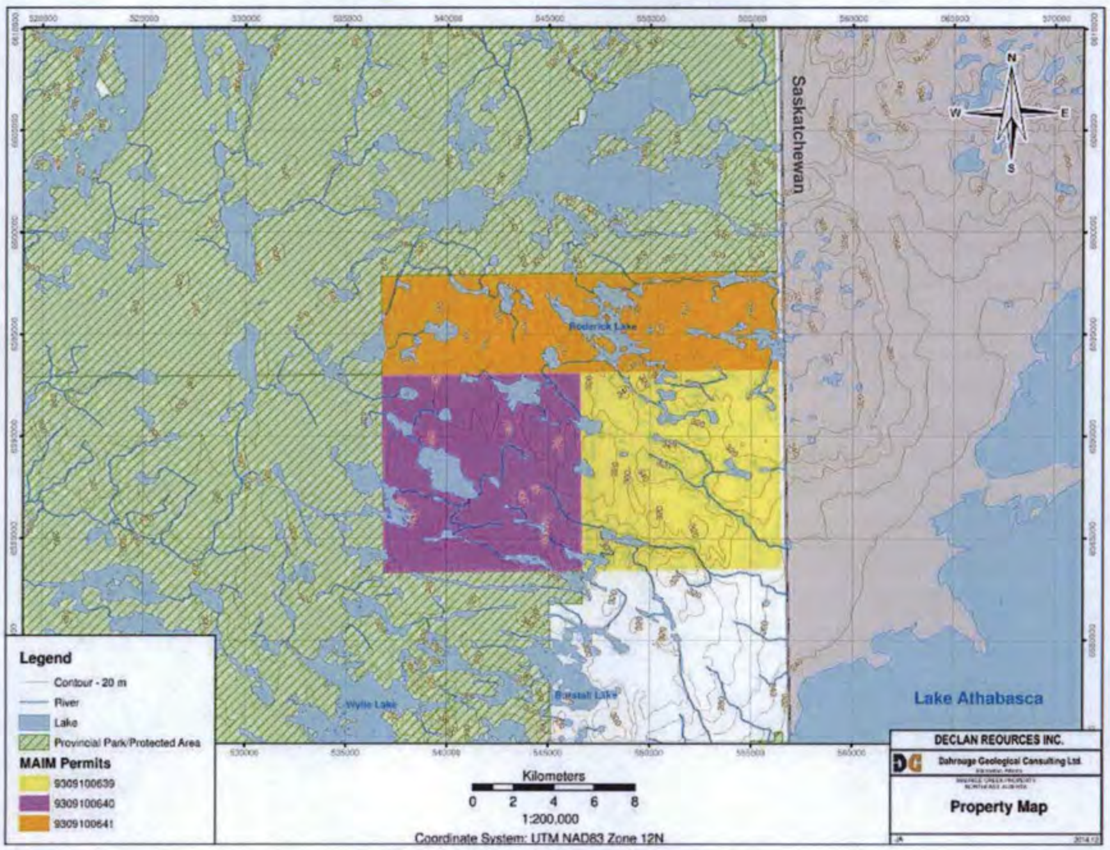

Figure 3. Maurice Creek Property

4.2 2014 Exploration Summary

From October 25th through October 30th, 2014, Dahrouge Geological Consulting Ltd. contracted Terraquest Ltd., on behalf of Declan Resources Inc., to conduct an airborne High Resolution Aeromagnetic and Gamma Ray Survey. The purpose of the geophysical survey was to detect surface radiometric anomalies and map the magnetic character of the property as a tool for interpreting rock types and structures at depth, which could be associated with basement-hosted, unconformity type uranium deposits. In total, 1326.5 line-km were flown over the Maurice Creek Property and the neighboring Maurice Bay Property in Saskatchewan. 1,227.6 line-km of the survey was flown on the Maurice Creek Property of Alberta.

Terraquest mobilized to Uranium City, on October 25th. The following day, they set up the magnetic base station for the survey, but the weather conditions were not suitable for flying. Despite persisting poor weather conditions, they were able to perform most of the required calibrations, on October 27th, but were again unable to fly again on the 28th. Three survey flights were completed over two days (October 29-30) and no reflights were required. Surface conditions during the survey were classified as slightly frozen with no significant snow accumulation. The survey crew demobilized at the end of the day on October 30th.

The survey was flown in a "tight drape mode" with the survey elevation averaging 81 m above the ground and mean aircraft speed at 277 km/hr. Lines were flown at 150 m intervals with 1,030 m tie line intervals with data sample points at 80 m (for 1 Hz radiometric data) and 8 m (for 10 Hz radiometric data). Following the survey, Terraquest provided a detailed logistical report (Appendix 2) with accompanying figures from the airborne High Resolution Aeromagnetic, Gamma Ray, and VLF-EM Surveys. No formal interpretation was requested from Terraquest.

4.3 Exploration Expenditures

Expenditures for the 2014 exploration totaled $78,482.80, which does not fulfill the $138,240.00 required expenditures for the current assessment period. The entirety of MAIM permit 9309100639 will be retained and a portion of MAIM permits 9309100640 and 9309100641 will be released. The allocation of expenditures and the areas to be retained are described below and a detailed cost summary for the 2014 exploration can be found in Appendix 1. The excess expenditures of $82.80 will be applied to permit 9309100639 for the next assessment period.

Table 1. Land Description and Allocation of Expenditures for the Maurice Creek Property

Land Description	Size (ha)	Assessment Period	Expiry Date	Required Expenditures	Previous Credit	Assigned Expenditures
4-120-1	9,216	1	10/21/13	$46,080	$0	$46,080
4-120-2	9,216	1	10/21/13	$46,080	$0	$7,680
4-121-1: 1-18 **4-121-2: 1-18**	9,216	1	10/21/13	$46,080	$0	$24,640
Total:	27,648		**Total:**	$138,240	$0	$78,400

Table 2. Land to Retain

MAIM Permit	Land Description (Original)	Size (ha)	Land to Release	Size (ha)	Land to Retain	Size (ha)
9309100639	**4-120-1**	9,216	**0**	0	**4-120-1**	9,216
9309100640	**4-121-2**	9,216	**4-120-2:** 2-11, 14-23, 26-35	7,680	**4-120-2:** 1, 12-13, 24-25, 36	1,536
9309100641	**4-121-1: 1-18** **4-121-2: 1-18**	9,216	**4-121-1:** 18 N,SW **4-121-2: 2-11, 13-18**	4,288	**4-121-1:** 1-17, 18 SE **4-121-2:** 1, 12	4,928
	Total:	27,648	Total:	11,968	Total:	15,680

5. GEOLOGY

5.1 Regional Geology and Mineralization

The Maurice Creek Property is located near the western margin of the Athabasca Basin, which is home to some of the world's highest grade uranium deposits. The Athabasca Basin is comprised

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of the Athabasca Group, which consists of four quartzose, unconformity bound fluvial sequences deposited between 1760 Ma and 1500 Ma (Ramaekers et al, 2007). Below the unconformity exists a variably preserved layer of paleo-weathered, hematitic, clay altered regolith, which grades into a chloritic altered zone, then transitions into fresh basement rock. The basement rocks dominantly consist of metamorphosed Archean to Paleoproterozoic granitoids and supracrustal gneisses, including graphitic metapelites which commonly host reactivated shear zones and numerous uranium deposits (Jefferson et al, 2007).

The uranium deposits associated with the Athabasca Basin are generally located in close proximity to the unconformities between the quartz rich sandstone conglomerates and highly metamorphosed basement rock. They occur in numerous shapes, sizes and deposit types, ranging from basement hosted veins to lenses straddling or just above the unconformity (Jefferson et al, 2007). Figure 4 displays the regional geology of the Athabasca Basin in addition to past producing/active mines, advanced stage and recently discovered uranium deposits.

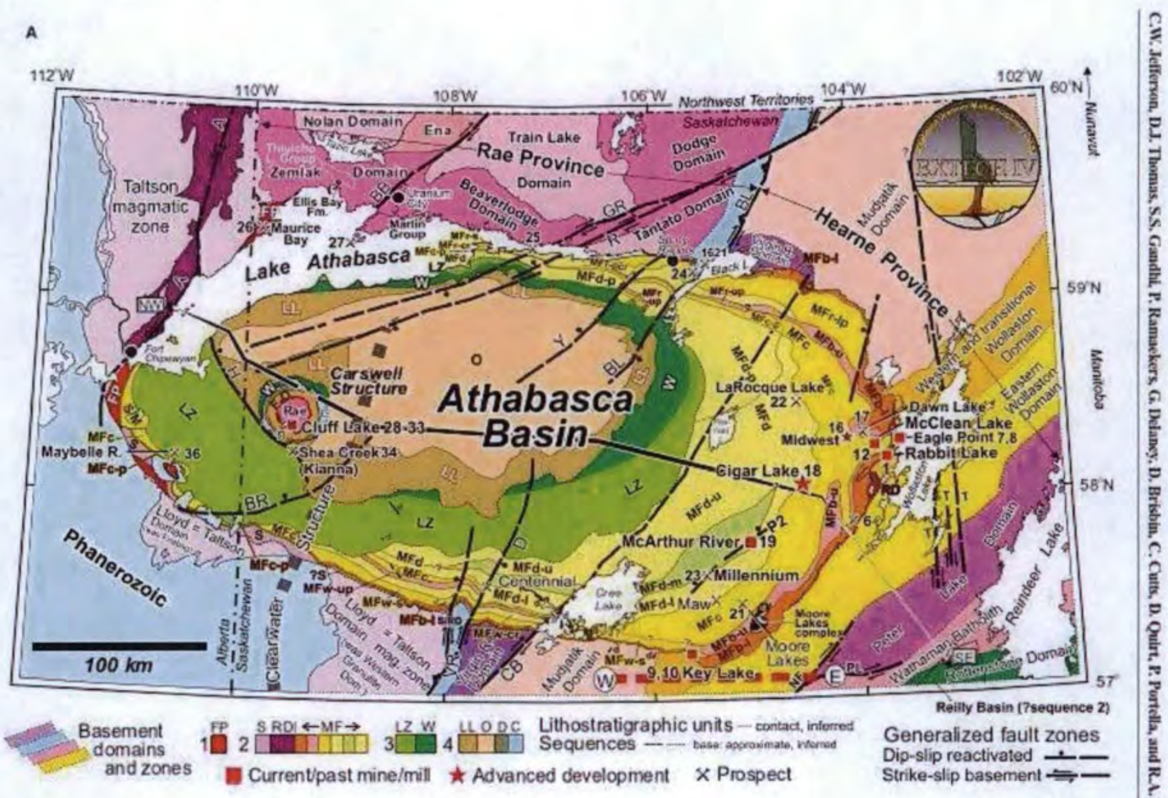

Figure 4. Regional Geologic Map of the Athabasca Basin (from Jefferson et al, 2007)

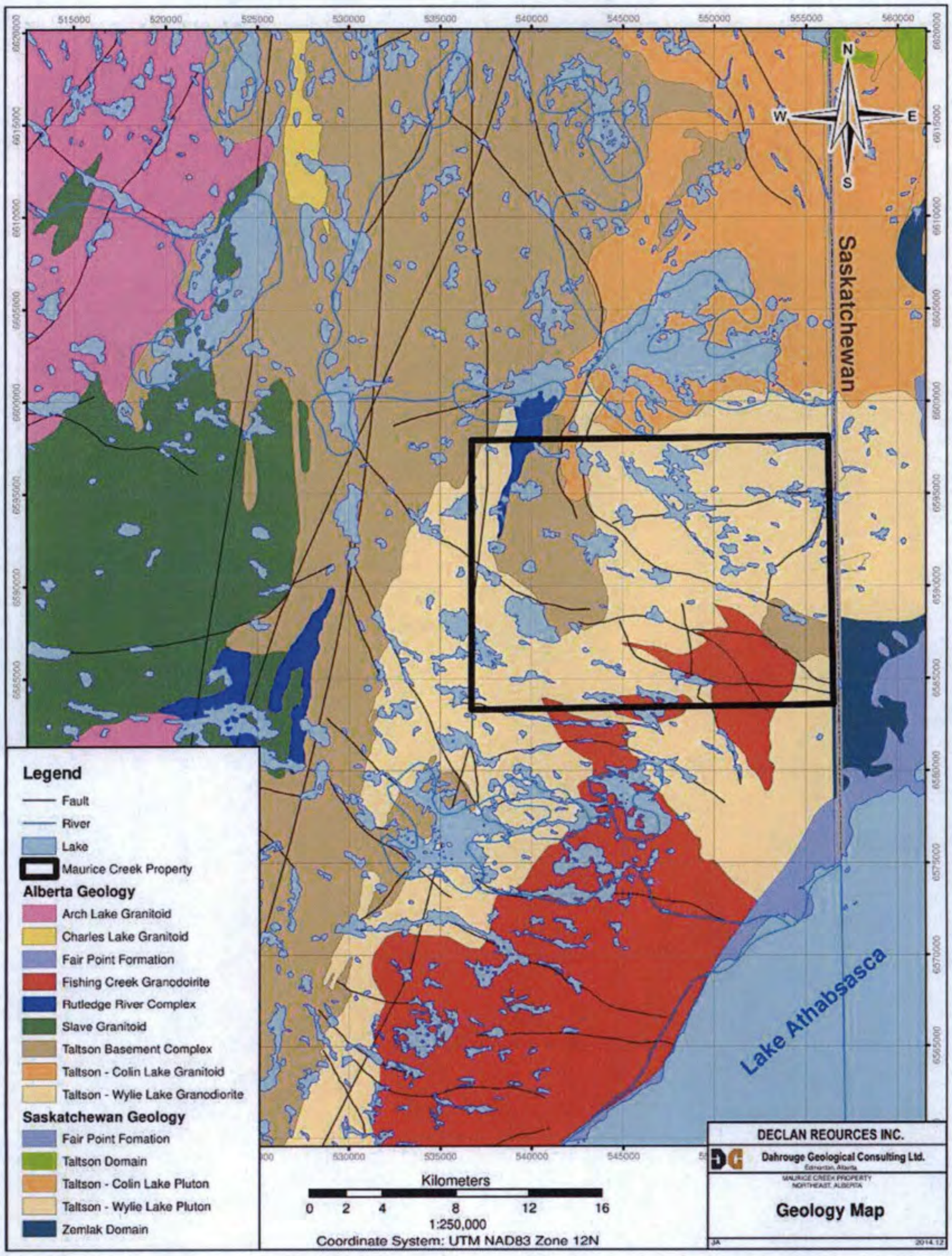

Figure 5. Geology of the Maurice Creek Property

5.2 Property Geology and Mineralization

The Maurice Creek Property is located near the western margin of the Athabasca Basin (Fair Point Formation, Saskatchewan). The Property overlies the Taltson Basement Complex which is a suite of banded to massive gneisses. Lithologies include hornblende-biotite granodiorite and granite gneiss, quartz diorite gneiss, amphibolite, para-gneiss and mylonitic gneiss (Lexicon). The dominant member of the Taltson member is the Wylie Lake granodiorite complex, which comprises most of the property. The Wylie Lake granitoid is a medium-grained, equigranular, granodiorite to tonalite with plagioclase to potassic-feldspar strained to recrystallized quartz, brown biotite, clinopyroxene, epidote and chlorite (AGS website). The western edge of the Wylie Lake granitoid complex is terminated by a major regional fault, known as the Allan Fault (Godfrey. 1980).

The Fishing Creek granitoid occurs in the southeast corner of the property (Figure 5). It is a medium to coarse-grained, massive, granodiorite to tonalite with variable mafic content. Mineralogy for the Fishing Creek granitoid includes: plagioclase to potassic-feldspar, strained quartz, brown biotite, clinopyroxene, myrmekite, epidote and chlorite (AGS website).

Regional mapping in the Maurice Creek Property area by Godfrey, 1980 identified several basement metasedimendary units on the property and they are mapped on Figure 6. Metasedimentary rocks in the are generally considered to be good geological basement rock types in relation to unconformity-style uranium mineralization, as they are occasionally graphitic and are often the focus of structural displacement adjacent to more competent granitic basement units.

To the south, the complex is unconformably overlain by the sedimentary rocks of the Athabasca Formation. Occurrence of the Athabasca Formation has been confirmed 500 m east of the property, as shown on a detailed compilation map by Cameco in 2005 (Jiricka et al. 2006). The formation is generally preserved in lower elevations.

The Fair Point Formation outcrops along the shore of Lake Athabasca (Figure 5 & 6). It is the basal unit of the Athabasca Group and consists of conglomeratic, quartzose sandstone in a clay matrix (Lexicon). Pebbles up to 10 cm (4 in) in diameter can be found along bedding and planar, trough/hummocky and low angle cross-bedding are common throughout the unit (Lexicon).

Faults are mapped in a regional compilation of Pana, 2010 in a southeast-northwest direction and structural trends vary throughout the property (Figure 6).

The digital drill hole compilation of Alberta (Kupsch and Olson, 2005) identifies 10 drill holes from 1981 drilled by Norcen Energy at the eastern edge of the Property (Figure 6). 5 of these holes, along the border with Saskatchewan intersected varying amounts of Athabasca Formation. The holes are apparently located at the Mineral Core Research Facility, but the assessment report was not filed, so no details are available at this time.

Table 3. Summary of Drill holes Intersecting Athabasca Sst.

Hole ID	OVB Depth (m)	ATHABASCA Thickness (m)	BASEMENT Depth (m)	Depth into Basement (m)	EOH (m)
81-bl-05	13	4.5	17.5	9.5	27
81-bl-06	20.6	6.1	26.7	8.3	35
81-bl-07	15.4	0.3	15.7	4.3	20
81-bl-08	15.7	16.8	32.5	5.5	38
81-bl-09	15.7	22.3	38	4.5	42.5

The Godfrey, 1986 map of the "Mineral Showing of the PreCambrian Shield in Northeastern Alberta" shows several sites with anomalous radioactivity around Roderick Lake, which is contained within MAIM Permit 9309100641 of the Maurice Creek Property (Figure 6). These showings were discovered by radioactivity readings from a Geiger counter or Scintillometer and visual observation of oxidized uranium staining. Radioactivity of the mapped anomalies was generally twice the background reading.

Historic Assessment report (Allan, 1978) reports the results of an exploration program with several radioactive prospecting samples returning results of up to 0.66% U3O8 within a small portion of the eastern end of the current Maurice Creek Property (Figure 6). Table 4 summarizes the most notable results on the property. The samples are described in the report as being from pegmatite intrusions. Pegmatite rocks are generally not directly associated with unconformity-style uranium mineralization, but they highlight the generally uraniferous potential of the region.

Table 4. Summary of Results from Allan, 1978

Sample	U_3O_8 (%)
R-130	0.220
R-131	0.066
R-136	0.660
R-137	0.205

The regional-scale Geological Survey of Canada lake sediment compilation covers the property. Within the Precambrian shield area of Alberta and surrounding areas of Saskatchewan and Northwest Territories there are 926 lake sediment samples. The samples in the Maurice Creek area are mapped on Figure 6 (Friske, 1994A; Friske, 1994B). The Property contains some of the highest samples within the region. Of the 926 samples selected from the compilation, the average uranium value (ppm) is 12.4, and the highest is 153. The highest value in the Maurice Creek area is 150 ppm, just north of the Property. And the highest value on the Property is 117 ppm. A series of anomalous lake sediments on either direction of the structural trend, from Roderick Lake to Maurice Creek is noted in the area of the 117 ppm U value.

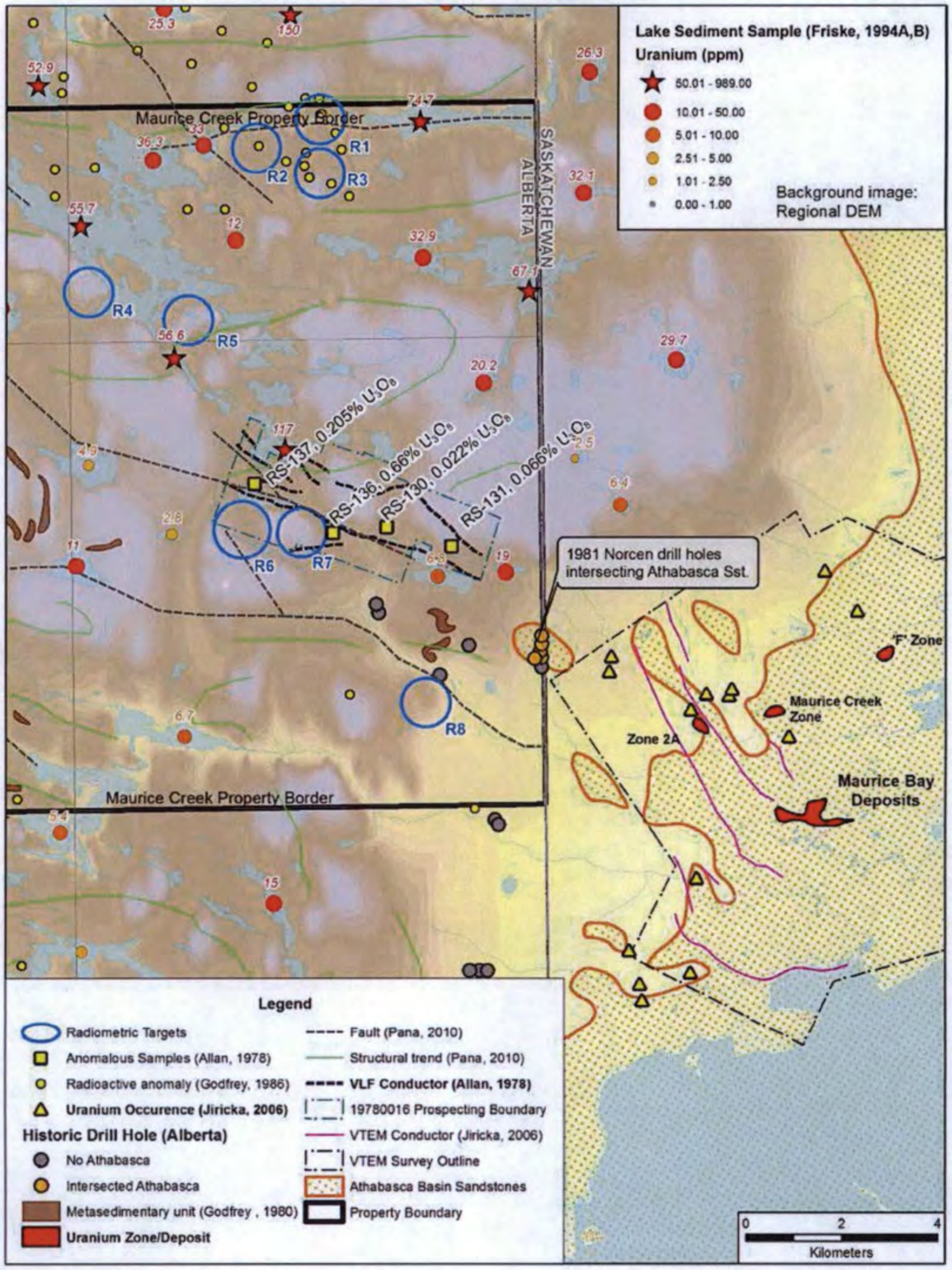

Figure 6. Historic Geology and Work Compilation

6. RESULTS

The full survey details are included in Appendix 2.

Generally, the magnetic results of the survey can be useful to map geological units and to infer structures. Figure 7 displays the ***Reconstructed Total Field*** Magnetics. In other areas of the Athabasca Basin, the magnetic high areas often correlate with "granitic" rocks, whereas the magnetic lows generally correlate with the "metasedimentary" rocks. This appears to be the case on the Maurice Creek Property where the trend of metasedimentary rocks mapped by Godfrey, 1980 correspond to the general magnetic low along that trend. Another marked magnetic low at the northern half of the property does not correspond with any previously mapped metasedimentary units. The faults of Pana, 2010 are generally present as magnetic contacts, however many more can be inferred. A detailed structural interpretation of the results, using the 3-asis magnetic gradient data should be conducted.

Airborne radiometric results can be useful to map bedrock units, where outcrop exposure is good. It can also be used to focus ground mapping and prospecting efforts by looking at only the uranium channel, and filtering the higher results. Using this method required some interpretation, as point anomalies are generally preferred over large regional highs. Keeping this in mind, even point highs within large regionally high areas can be of interest. The results of the survey reveal 8 target areas using the basic filtering method using only values greater than 2.8 ppm eU (Figure 8).

Targets R1 to R3, at the northern end of the survey are considered to be of moderate priority. They are within a region that is generally high, and an area with generally elevated regional uranium in lake sediments. This suggests that the region is underlain by a granitic body with generally high uranium content, and may not be prospective for unconformity-style uranium mineralization. The spot highs, especially R3, should be ground-checked in any case in order to gain a better understanding of the property. Several "radioactive anomalies" are mapped by Godfrey, 1986 and would explain the generally high uranium values of the survey.

Targets R4 and R5 are at the southern end of the generally high area and should be ground-checked due to their location along the Roderick Lake-Maurice creek trend of uraniferous lake sediment samples.

Targets R6 and R7 are considered to be high priority targets as they are near the previously mapped metasedimentary basement rocks, and are near the historic samples from Allan, 1978 and faults of Pana, 2010. They are also located along the magnetic contact of Figure 7.

Target R8 is an isolated spot-high near the metasedimentary basement rocks, and near one of the faults of Pana, 2010.

Table 5. Summary of Radiometric Targets

Target ID	Description	Priority
R1, R2, R3	In the region of the historically defined radioactive bedrock anomalies (Godfrey, 1986) and the area of the high lake sediment samples.	Moderate
R4, R5	At the edge of the generally elevated uranium region of the northern half of the survey	Low
R6,R7	Located along the magnetic contact, and fault of Pana, 2010. Near the pegmatite samples of Allan, 1978.	High
R8	Near the metasedimentary units of Godfrey, 1980 and fault of Pana, 2010.	High

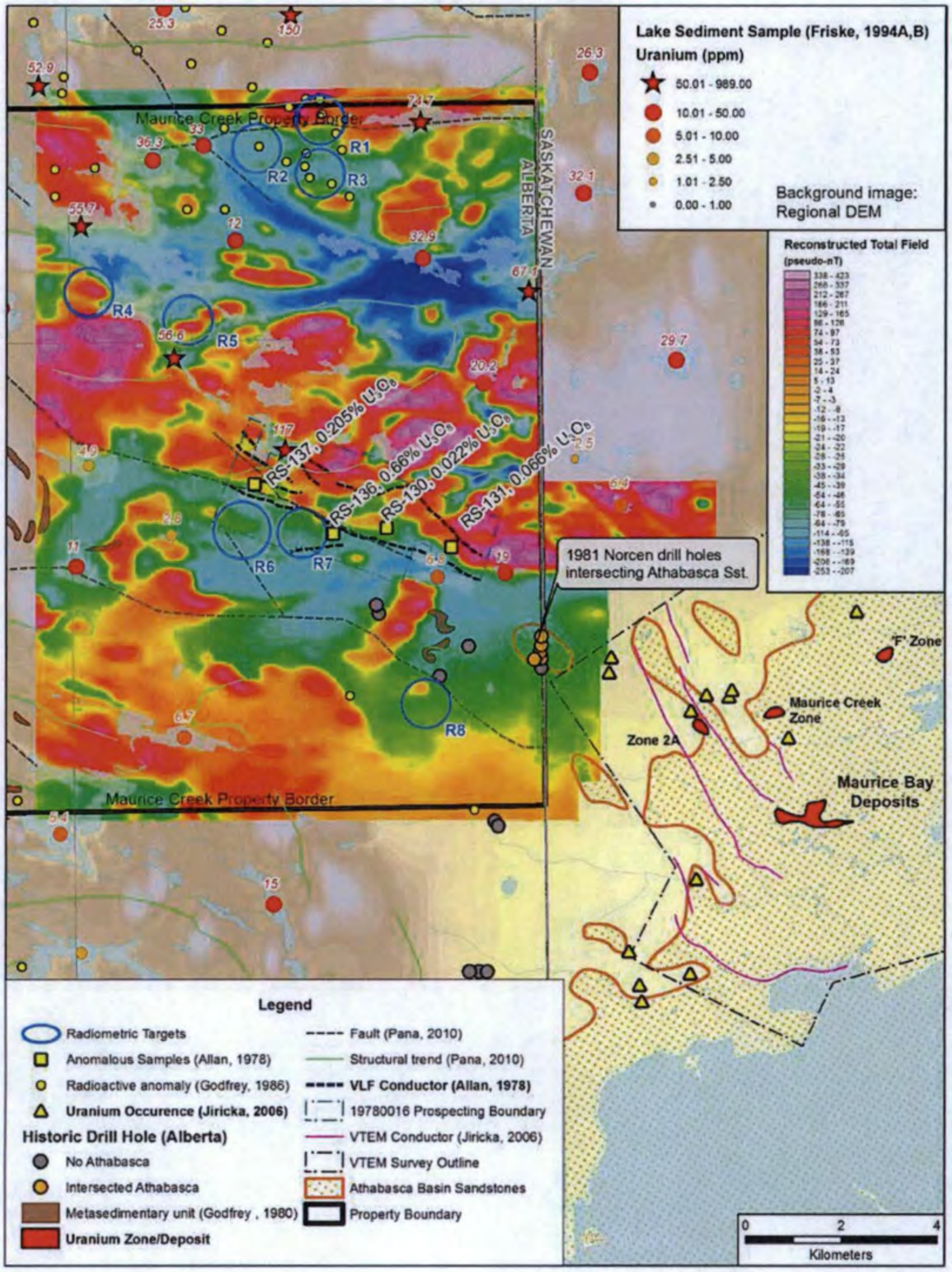

Figure 7. Reconstructed Total Field Magnetics (RTF) of the Airborne Survey

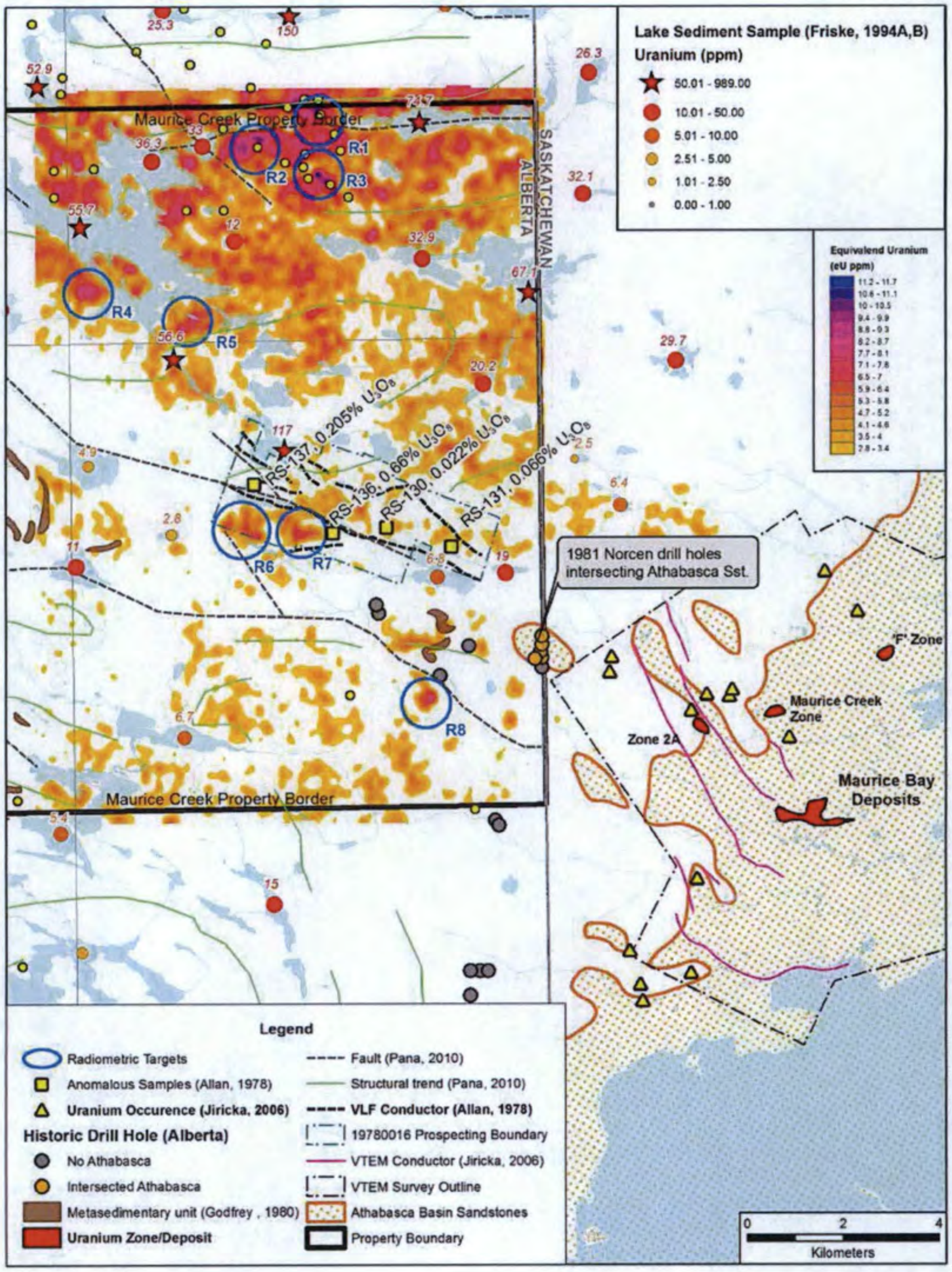

Figure 8. Filtered Equivalent Uranium

7. CONCLUSIONS AND RECOMMENDATIONS

The 2014 airborne magnetic and has successfully assisted the geological understanding of the Property and provides targets for additional ground work. The Radiometric targets, in order of priority should be ground checked with a prospecting campaign. And the results of the airborne survey should be interpreted in detail in order to gain a better understanding of the structural setting, and bedrock mapping.

It is also recommended that the company survey the property with an airborne electromagnetic (EM) survey in order to map graphitic basement rocks. These rocks are often recessive to glacial erosion, and if present, are likely below overburden cover. The EM trends will likely be the focus of unconformity-style uranium mineralization, and the recently completed radiometric survey will hopefully identify uraniferous bedrock or boulder clusters.

8. REFERENCES

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9. STATEMENT OF QUALIFICATIONS

I, Neil McCallum, [redacted] do hereby certify that:

- I am a geologist of Dahrouge Geological Consulting Ltd., Suite 18, 10509 - 81 Ave., Edmonton, Alberta, T6E 1X7.
- I am a 2006 graduate of the University of Alberta, Edmonton, Alberta with a B.Sc. in Geology.
- I have practiced my profession as a geologist continuously since 2006.
- I am a registered Professional Geologist with the Association of Professional Geoscientists of Ontario (APGO), member 2470.
- I hereby consent to the copying or reproduction of this Assessment Report following the one-year confidentiality period.
- I am the author of the report entitled "2014 Exploration of the Maurice Creek Property in Northeastern Alberta" and accept responsibility for the veracity of technical data and results.

Dated this 17th day of December, 2014.

PROFESSIONAL GEOSCIENTIST
NEIL G. McCALLUM
PRACTISING MEMBER
2470
ONTARIO

Neil McCallum, B.Sc., P.Geo.
APGO 2470

DAHROUGE GEOLOGICAL CONSULTING LTD.

Appendix 1: Cost Summary for the 2014 Exploration Of the Maurice Creek Property

a)	Personnel	$	4,175.00
b)	Food and Accommodation		-
c)	Transportation		-
d)	Instrument and Software Rental(s)	$	560.00
e)	Geophysical	$	66,613.00
f)	Analyses		-
h)	Other		-
	Total	$	71,348.00
	Administration (10%)	$	7,134.80
	Total + Administration	**$**	**78,482.80**

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Appendix 2: Terraquest Ltd. Operations Report

Operations Report

MAURICE CREEK Project
NE Alberta

Airborne Horizontal Magnetic Gradient and Radiometric, Survey

December 04, 2014

Report #: B-429

Requested By:
Jody Dahrouge
Dahrouge Geological Consulting Ltd.

Prepared by:
Charles Barrie, Managing Partner
Terraquest Ltd.

Table of Contents

1. Introduction

1.1. Executive Summary

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

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Suite 302, 1620 West 8th Avenue
Vancouver, BC
V6J 1V4

Attention: Leah Martin, Corporate Secretary
tel: 604-639-4450 Email:lmartin@declanresources.com
Wayne Tisdale, Director

The survey was performed by:

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

Tel: 905-477-2800 ext. 22 Email: hb@terraquest.ca.

The purpose of the survey of this type is to collect geophysical data for the exploration of mineral resources. Magnetic and Radiometric responses can be used to guide mineral exploration by using the contoured patterns of the geophysical data to make interpretations regarding the surface and subsurface geology and structure. The data are carefully processed and contoured to produce grid files and maps that show distinctive patterns of the geophysical parameters.

To obtain this data, the area was systematically traversed by an aircraft 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 is located west of Lake Athabasca in northeastern Alberta, Canada, approximately 680 kilometres northeast of Edmonton; the survey block includes Belyea, Peters, Roderick and De Manville Lakes.

The survey is generally rectangular in shape with a small extension to the southeast which crosses into the province of Saskatchewan; there are a total of 12 corners. The maximum east-west dimension is 14 kilometres and the maximum north-south dimension is 15 kilometres. The centre of the area is approximately 59 degrees 27 minutes north and 110 degrees 05 minutes west.


Lake Athabasca
Image Landsat
© 2014 Google
Google earth

2. SURVEY PARAMETERS

2.1. LINES AND DATA

Parameter	Maurice Creek
Aircraft Speed	mean 77 m/sec 277 km/hr
Magnetic Sampling Interval	8 m (10Hz)
Radiometric Sample Interval	80m (1Hz)
Flight-line Interval	150 m
Flight-line Direction	000/180 degrees
Control-line Interval	1030 m
Control-line Direction	090/270 degrees
Mean Terrain Clearance	81 m

2.2. SURVEY KILOMETRAGE

Number of Lines	Maurice Creek
95 Survey Lines	1,149.6 km
15 Control Lines	177.0 km
76 Total Lines	1,326.6 km

2.3. NAVIGATION

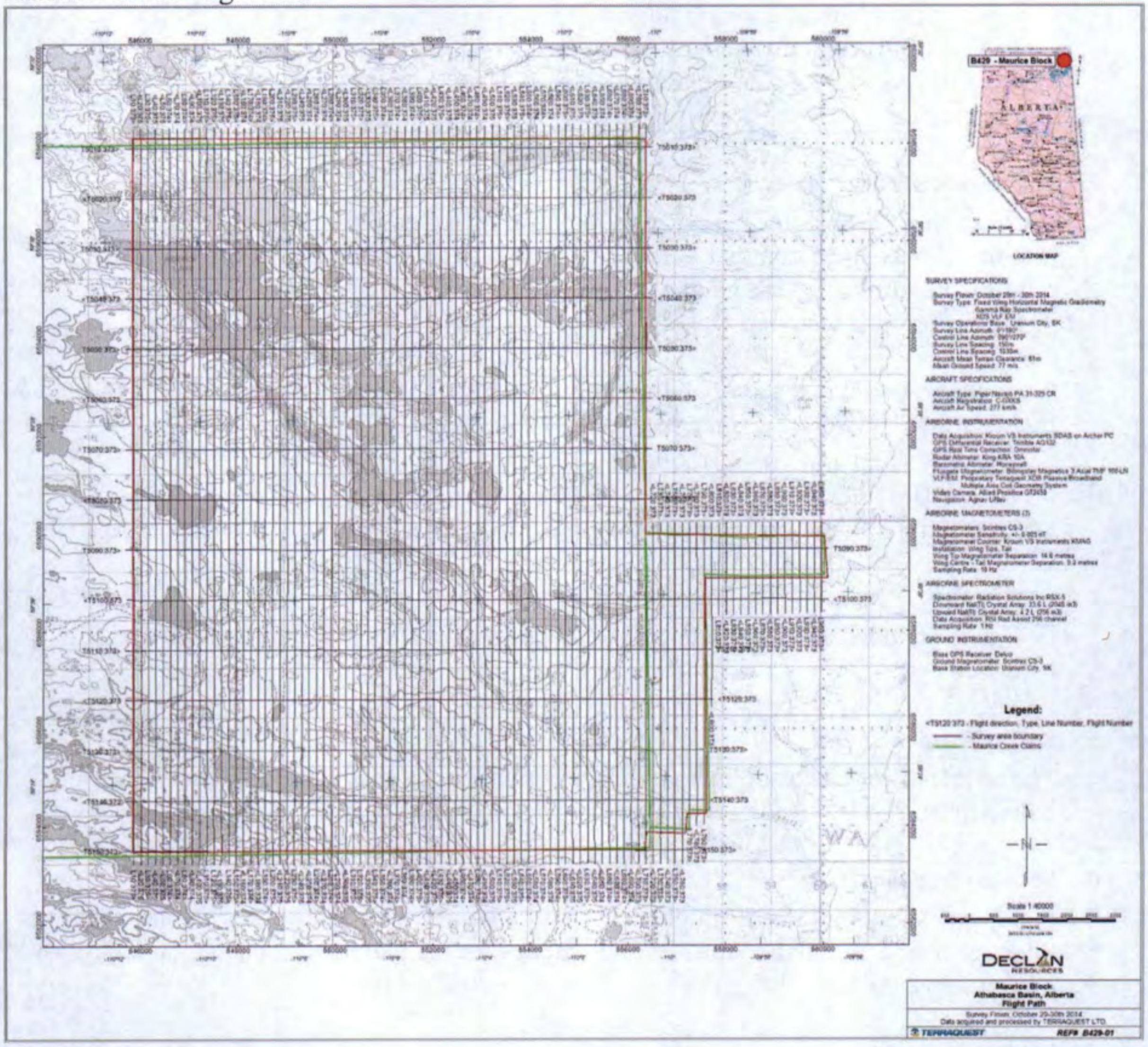
The following file is the navigation parameter file (*.nme) for the survey lines, in WGS84 projection zone 12N, and includes line spacing, line direction, master line and other navigational parameters.

The satellite navigation system was used to ferry to the survey site 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. The flight path guidance accuracy is variable depending upon the number and condition (health) of the satellites employed; the accuracy was for the most part better than 10 metres. Real-time GPS correction using the Trimble receiver and 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.

```
0 B429
1 U 249
        545862.9803888394        6583461.531616158
        545854.9201291369        6598110.621591982
        556413.0147073474        6598163.221391068
        556422.4256923382        6589986.895467007
        560025.3340526844        6589986.895467007
        559991.3443511718        6588525.33830196
        557612.0652452826        6588514.008401456
        557634.7250462911        6584197.316309344
        557294.8280311641        6584197.316309344
        557306.1579316683        6583800.769791695
        556422.4256923382        6583800.769791695
        556403.6763406476        6583475.466842718
        545862.9803888394        6583461.531616158
3       545783    6583227  WP1 WAYPOINT 1
3       545783    6583227  COR1 WAYPOINT 2
4       95           NUMBER OF LINES
5       150.0        SPACING, m
8       75           MAX CROSS TRACK, m
9       0 0 0        DELTA X/Y/Z
10      1            LOG FPR EVERY 1 SECS
11      0.9996000000    0.0    0.0 K0, X/Y SHIFT
14      0            LINES EXTENDED BEYOND AREA
16      10           FIRST LINE NUMBER
17      545867.0  6583262.0  0.0 MASTER POINT, HEADING
18      545655.0  6597922.0  90.0 TIE LINE MASTER POINT, HEADING
19      1030.0      0     TIE LINE SPACING, LINE EXTENSION, m
20      WGS-84      6378137.0  298.257223563 22     ELLIPSOID
21      0            NO EQUATORIAL CROSSING, N HEMISPHERE
30      20   9600  N  1  8  RS-232 PORT 2 INCOMING FORMAT
31      20   9600  N  1  8  RS-232 PORT OUTGOING FORMAT
38      0            METRIC SYSTEM
41      0.00         SYSTEM LAG, Secs.
80      0.00         PLANNED ALTITUDE, m
83      0            GPS ALTITUDE FOR VERTICAL BAR
84      0.00      0.00     ALTITUDE COEFFICIENT, OFFSET
85      100          MAX VERTICAL BAR SCALE
102     UTM          UTM X/Y SCALE
```

2.4. FLIGHT PATH

Maurice Creek Flight Path



2.5. TOLERANCES - REFLIGHT

1. **Traverse Line Interval**

   Contract specifications mandate that re-flights would take place if the flight line separation of the final differentially corrected flight path exceeds 1.2 times or not be less than 0.8 times intended line separation over a distance greater than 3 times the traverse line separation.

2. **Terrain Clearance:**

   Contract specifies that the Maurice Creek survey shall be flown with a tight drape fashion with as low a nominal terrain clearance as safety permits (~ 70 metres best efforts) to optimize the magnetic data. The safe height was determined at approximately 80 metres terrain clearance.

   Re-flights were done if the final differentially corrected altitude deviated from the agreed flight surface by +/-15m over a distance of 2 kilometres.

3. **Diurnal Variation:**

   Diurnal activity in the survey was limited to 3 nT deviations from 1-minute chord.

4. **GPS Data:**

   GPS data included at least 4 satellites 15 degrees over horizon for navigation and flight path recovery.

5. **Radio Transmission:**

   The aircraft pilot makes no radio transmission that interferes with magnetic response unless mandated by airport and air traffic safety considerations.

6. **Sample Density:**

   A reflight is required if the sample density along one or more of the survey lines exceeds 8 metres over a cumulative total of 1000 metres for the magnetic data, and 80 metres over a cumulative total of 1000 metres for the radiometric data.

7. **Magnetic Noise:**

   The contract mandates that the fourth difference noise envelope for the tail sensor data does not exceed +/- 0.10 nT.

8. **Measurement Gaps:**

   There were no significant gaps in any of the digital data including GPS, radiometric and magnetic data.

3. AIRBORNE GEOPHYSICAL EQUIPMENT

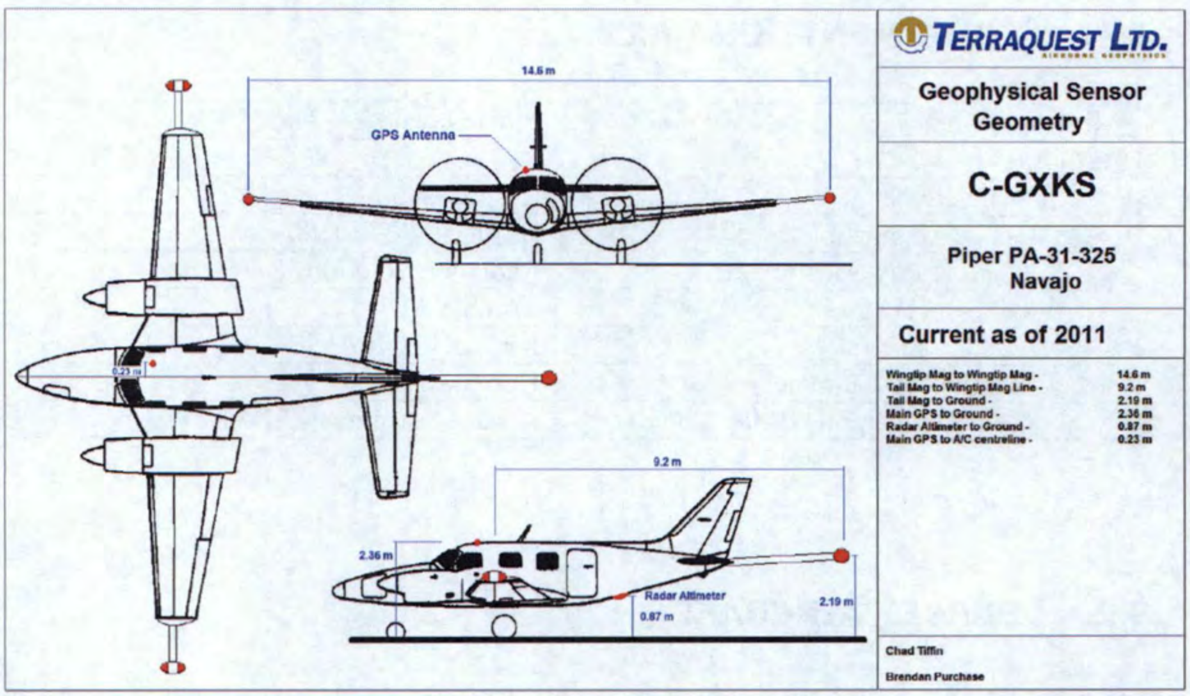
The primary airborne geophysical equipment includes three high sensitivity cesium vapour magnetometers and a gamma ray spectrometer. Ancillary support equipment includes a tri-axial fluxgate magnetometer, data acquisition system, radar altimeter, barometric altimeter, GPS receiver with a real-time correction 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

Aircraft	Piper Navajo PA 31-325 CR
Equipment:	
Magnetometers	CS-3 Cesium Vapour
3-axis Magnetometer	Billingsley TFM100-LN
Gamma Ray Spectrometer	Radiation Solutions RS-500
GPS Receiver	Trimble AG 132
Radar Altimeter	King KRA 10A
Barometric Altimeter	Honeywell
Data Acquisition & Mag Counter	Kroum Instruments SDAS system

3.2. SURVEY AIRCRAFT

The Survey Aircraft for this project was a Navajo PA31-325 CR, owned and operated by Terraquest Ltd. The aircraft has been specifically modified with long-range fuel cells and an array of sensors to carry out airborne geophysical surveys.


14.6 m
GPS Antenna
0.23 m
9.2 m
2.36 m
Radar Altimeter
0.87 m
2.19 m
TERRAQUEST LTD.
Geophysical Sensor Geometry
C-GXKS
Piper PA-31-325 Navajo
Current as of 2011
Wingtip Mag to Wingtip Mag - 14.6 m
Tail Mag to Wingtip Mag Line - 9.2 m
Tail Mag to Ground - 2.19 m
Main GPS to Ground - 2.36 m
Radar Altimeter to Ground - 0.87 m
Main GPS to A/C centreline - 0.23 m
Chad Tiffin
Brendan Purchase

3.3. SURVEY EQUIPMENT AND SPECIFICATIONS:

1. High Sensitivity Magnetometer:

One high-resolution cesium vapour magnetometer is mounted in the tail stinger and two are located in wing tip pods. A fluxgate tri-axial magnetometer is mounted in front of the tail stinger to monitor aircraft manoeuvre and magnetic interference; this data is used post-flight to compensate the high sensitivity data 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 (Tail Mag)

2. Tri-Axial Fluxgate Magnetic Sensor

Tri-Axial Fluxgate Magnetic Sensor	(for compensation, mounted in mid-section of tail stinger)
Model	W/FM100G2-1F
Manufacturer	Billingsley Magnetics
Description	Low noise miniature triaxial fluxgate magnetometer
Axial Alignment	> Orthogonality > +/- 1 degree
Accuracy	< +/- 0.75% of full scale (0.5% typical)
Field Measurement	+/- 100,000 nanotesla
Linearity	< +/- 0.015% of full scale
Sensitivity	100 microvolt/nanotesla
Noise	< 12 picotesla RMS/–Hz @ 1 Hz

3. Radar Altimeter

Altimeter	Radar
Model	KRA-10A
Manufacturer	King
Serial Number	071-1114-00
Accuracy	5% up to 2,500 feet
Calibrate Accuracy	1%
Output	Analog for pilot, converted to digital for data acquisition

4. Barometric Sensor

Sensors	Pressure (mB)
Model	PPT0020AWN2VA-C
Manufacturer	Honeywell
Source	coupled to aircraft barometric (pitot static) system
Output	Serial output to DAARC 500 channels 3 & 4 respectively

5. Magnetometer Counter

Magnetometer Processor	(Stand Alone Unit)
Model	KMAG
Manufacturer	KROUM VS Instruments Ltd.
Input Range	3 ms – 10,000 ms
Input	Four decouplers, four counters, GPS, pps signal
Sampling	10ms to 1,000ms
Bandwidth	No filtering
Resolution	0.005 nT
Ports	Two RS232 ports, one to GPS receiver, one to DAS instrument time, GPS, and up to 4 magnetic fields in pT
Output	Instrument time, GPS, and up to 4 magnetic fields in pT

6. Radiometric System (2 pack)

Type	Gamma Ray Spectrometer
Model	RS 500
Manufacturer	Radiation Solutions Inc.
Crystal Manufacturer	Saint-Gobain
Downwards Volume	2050 in^3 (33.6 litres) Downward (8 crystals)
Upwards Volume	256 in^3 (4.2 litres) Upward (1 crystal)
Software	Real Time Data Collection
Energy Detection Range	50KeV to 3 MeV
Count Rate	Up to 1000,000 pps communication
RSI Native Spectra	1024 Channels
Output Spectra	512 Channels Up and Down
Sampling Rate	1 Hz, no dead time
Automatic Gain Stabilization	Thorium
Energy Resolution	< 8.5%

7. Analog Processor System

Model	KANA8 (stand-alone unit)
Manufacturer	KROUM VS Instruments Ltd
Analog Processor Set-up	Two KANA8's (total 16 differential analog channels) 24 bit capability, sample at 10Hz

8. Data Acquisition System

Data Acquisition System	Records digital data from all sensors (including GPS, MAG, Spectrometer and altimeter)
Model	Handheld PC
Manufacturer	Archer
I/O Slots	Built in SDIO slot
Software	Kroum VS Instruments Ltd: SDAS ver 3
Display	3.5" transflective
Graphic Display	Scrolling analog chart with 4 windows operator selectable.

9. Navigation System

Navigation & Guidance	Stand-alone module
Model	LiNav P151
Manufacturer	AgNav Inc.
Main Display	LCD Moving map display
Pilot Display	2 line shows left/right, dist. to end of line/survey
Line	Generates and follows survey lines
Input	GPS with corrections; up to 10 Hz
Media	USB memory stick

10. GPS Differential Receiver

GPS Differential Receiver	
Model	AG 132
Manufacturer	Trimble
Antenna	L1/L2
Channels	12
Position Update	0.2 second for navigation
Correction Service	Real time correction service subscription – Omnistar
Sample Rate	1 second
Accuracy	~ 3 meters

4. Base Station Equipment

4.1. BASE STATION MAGNETOMETER

High sensitivity magnetic base station data was provided by a split beam cesium vapour magnetometer logging onto a computer and with time synchronization from a GPS base station receiver.

The magnetometer was similar to the type used in the aircraft, a cesium magnetometer manufactured by Scintrex. The magnetometer processor was a KMAG manufactured by Kroum VS Instruments and the data logger was a PDA by Archer. The counter was powered by a 10VAC 50/60 Hz to 30VDC 3.0 amp power supply with an internal 12VDC fan. The logging software SDAS-1 was written by Kroum VS Instrument Ltd. specifically for handheld pc hardware. It supports real time graphics with selectable windows (uses two user selectable scales, coarse and fine). Time recorded was taken from the base GPS receiver. Magnetic data was logged at 1Hz. Data collection was by RS232 recording ASCII string and stored on flash card.

Ground Magnetometer	Cesium Vapour
Model	CS – L
Manufacturer	Scintrex
Sensitivity	0.005 nT
Noise Envelope	0.05 nT
Sampling Interval	1 second

During the survey period the on-site geophysicist also monitored the Regional Geomagnetic Forecasts for Western North America provided by both NOAA and GSC websites.

4.2. BASE STATION GPS RECEIVER

The GPS base receiver was used to provide a GPS time stamp to the base station magnetic data.

Model	ProPak-V3 - L_1L_2
Manufacturer	Novatel
Channels	12
Sample Rate	1 second
Accuracy	~1.8 meters

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 (± 5°), rolls (± 10°) and yaws (± 5°). 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 for Maurice Creek survey was done at Uranium City SK on October 27, 2014 with a result for the left, right and tail sensors were respectively 1.68 nT, 1.76 nT and 1.17 nT. Refer to ***9.3 Appendix III – Figure of Merit*** for details.

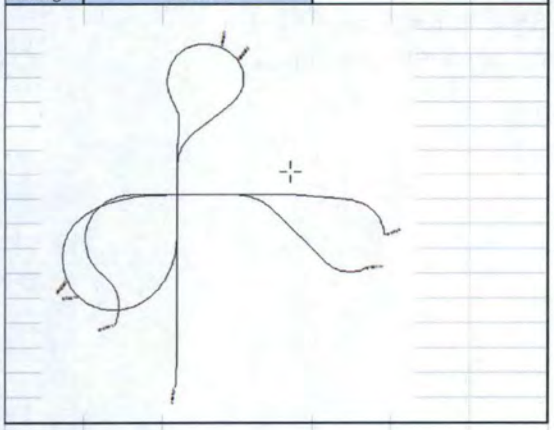
5.2. MAGNETIC LAG

Evaluation of the magnetic lag factor was accomplished by flying over a clearly identifiable discrete anomaly flown in opposing directions. The measured lag was 0.2 seconds for the tail sensor.

5.3. MAGNETIC HEADING TEST

A magnetic heading test was flown on site at survey altitude at Uranium City, SK on October 29, 2014 as follows:

Aircraft Heading Test XKS 373, October 29th,2014 Uranium City, SK		
Heading	Diurnal Corrected Total Field (nT)	Difference From Average
North	58537.39	1.09 nT
East	58538.62	-0.14 nT
West	58538.20	0.28 nT
South	58539.69	-1.21 nT
Average:	58538.48	



5.4. RADAR ALTIMETER CALIBRATION

A radar altimeter calibration was performed by flying in increments of 100 feet up to an altitude of 800 feet over the runway at Uranium City on October 27, 2014. Least Squares Regression analysis on the resulting data generated the slope/intercept factors required to convert the raw radar altimeter data feed calibrated terrain clearance. The slope was 1655.164808 with an intercept of 0.4889. Refer to ***9.4 Appendix IV – Radar Calibration*** for a presentation of the results and analysis.

5.5. RADIOMETRIC SENSITIVITY FACTORS

The radiometric system sensitivity was determined on November 15, 2014 from measurements acquired over the Breckenridge calibration test site, near Ottawa, Canada. The concurrent ground survey was performed by Terraquest Ltd. personnel using a calibrated ground spectrometer. The Geological Survey of Canada provided calculated ground results. Refer to ***9.9 Appendix IX – Sensitivity Factors*** for details.

5.6. RADIOMETRIC ALTITUDE ATTENUATION

The altitude attenuation factors were calculated using data acquired at Breckenridge calibration site near Ottawa on November 15, 2014. Refer to ***9.8 Appendix VIII – Altitude Attenuation*** for details.

5.7. RADIOMETRIC COMPTON COEFFICIENTS

The Compton coefficients were determined by analyzing data acquired over standard radiometric calibration pads by the equipment manufacturer (Radiation Solutions) located in Mississauga, Ontario, Canada. These measurements were performed on August 21, 2014. Refer to ***9.7 Appendix VII – Compton Coefficients*** for details.

5.8. RADIOMETRIC COSMIC CALIBRATION

The cosmic calibration was done at Uranium City, SK on October 27, 2014. Refer to ***9.6 Appendix VI – Cosmic Calibration*** for details.

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:	Survey Pilots	Chad Tiffin
	Operators	Tyler Diplock
	Geophysicist	Carolyn Boone
Office:	Geophysicist	Carolyn Boone and Allen Duffy (radiometric)
	Project Manager	Charles Barrie

6.2. FLIGHT REPORTING

The contract was signed on October 16, 2014. On October 25, 2014 the aircraft and crew mobilized to Uranium City, SK and the following day the base station was setup but the weather was not suitable for flying. Despite low ceilings for the major part of the next day, most of the calibrations were performed late in the day on October 27^{th}.

The Maurice Creek survey was flown successfully in 3 flights, XKS373-375 over 2 days from October 29 to 30^{th} plus 1 weather day (October 28^{th}). No reflights were required. There were no aircraft maintenance days or geophysical equipment days. The crew was released to demobilize on the evening of October 30, 2014. The ground was slightly frozen at the surface and there was no significant accumulation of snow.

The pilot maintained personal and aircraft log books. The operator recorded all calibration and flight activity on a flight log which was sent to the survey geophysicist along with airborne and base station data. The geophysicist entered all daily activity into an Excel spread sheet. From this spreadsheet daily, weekly and summary reports were automatically generated. The Summary Report lists productions statistics for all flights each day and is shown in Appendix 9.2. The geophysicist performed quality control on the raw survey data and forwarded the raw data to the client via the ftp site after each flight.

All survey personnel adopted and worked under the Terraquest Ltd. Health, Safety and Environmental Protection Manual (which include the Site Specific Safety Plan and the Emergency Response Plan), aviation Safety Management System (SMS), and guidelines from the IAGSA safety and security standards. All aircraft maintenance items were supervised by and signed out by an Approved Mechanical Engineer (AME) under Canadian Aviation Regulations (CARs) with signing authority through Leggat Aviation.

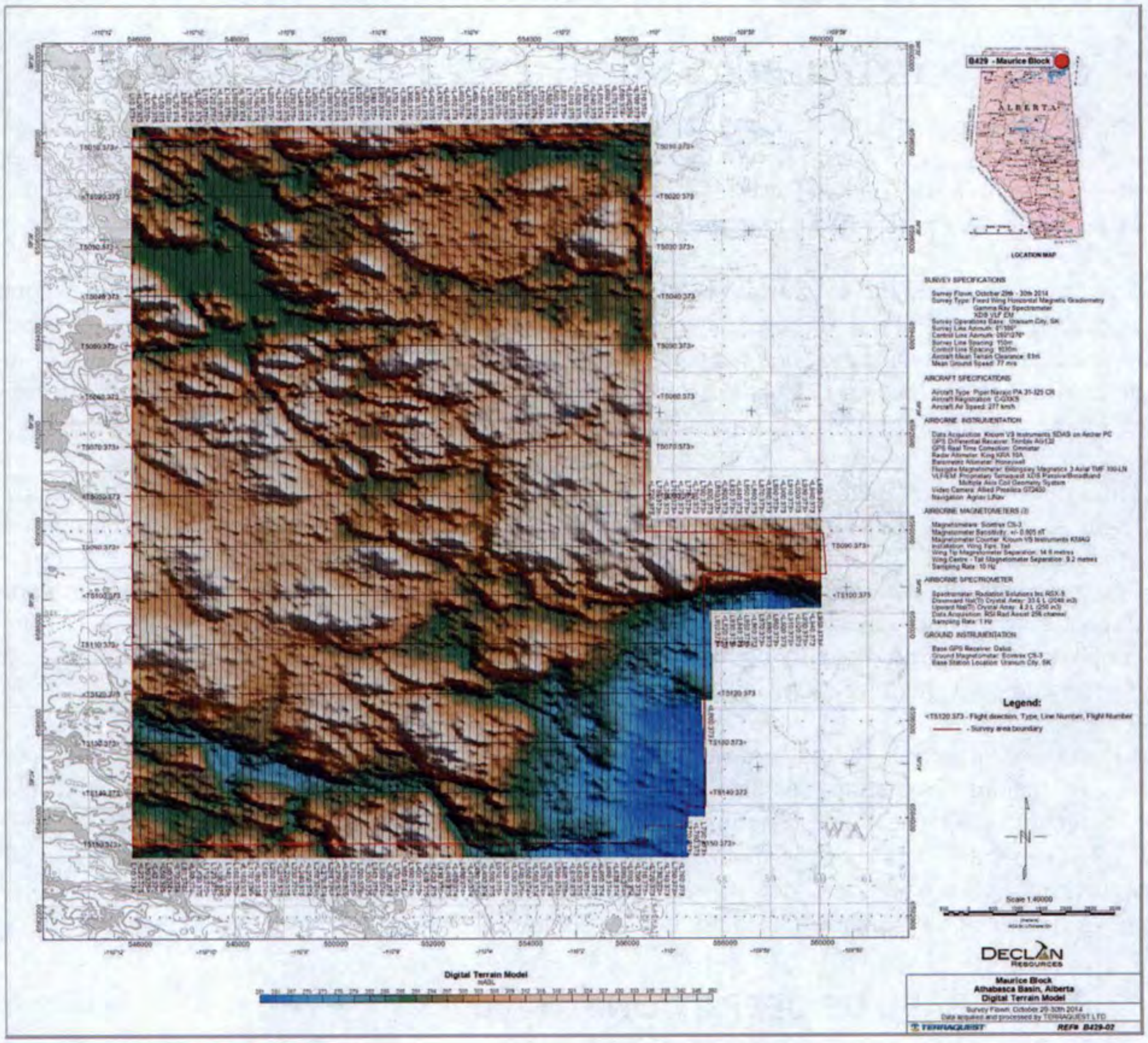
6.3. BASE OF OPERATIONS

The base of operations including the diurnal base station was at Uranium City, SK. The crew stayed at Classen Lodge. Internet access was adequate.

7. Data Processing

7.1. DATA QUALITY CONTROL

The field data were examined during the survey to inspect for quality control and tolerances on all channels. All data were checked for continuity and integrity. Note that GPS correction was done in real-time during the survey using Omnistar subscription services. The magnetic data were post-flight compensated using the fluxgate data. The Digital Terrain Model (see figure Section 2.4) was calculated from the GPSz component and the radar altimeter values.



7.2. FINAL MAGNETIC DATA PROCESSING

1. Lag Correction of Total Magnetic Field

The Evaluation of the magnetic lag factor was accomplished by acquiring survey data flown in opposite directions over a cultural anomaly. The measured factor was 0.2 fiducials for the tail Magnetic sensor.

2. Diurnal Data and diurnal correction of Total Magnetic Field

Magnetic data from the Diurnal Base Station were scrutinized for spurious readings (data spikes) and any obvious cultural interference. Any such features were manually removed and the data re-interpolated (Akima spline) to maintain a continuous record.

3. Heading correction of Total Magnetic Field

The magnetic heading effect was determined by flying a cloverleaf pattern at survey elevation, and oriented in the same directions as the survey lines and control lines. The data were subsequently used to correct measured airborne magnetic readings.

4. Total Magnetic Field Tie-Traverse Line Intersection Leveling

The diurnal and lag corrected data were further refined using tie- line levelling. Using the Geosoft Oasis implementation of this procedure, an initial table of tie-traverse line intersection differences is compiled (together with supporting ancillary parameters such as local gradient, etc.) and intersection data is loaded into the processing databases. In a series of iterative levelling passes, outlier intersection values are either disabled or modified to refine and finalize the overall result.

5. Total Magnetic Field Micro-levelling

Minor levelling imperfections may still exist in the intersection levelled data, most likely due to incomplete removal of diurnal influences in sections of lines between intersection points. These errors are removed by application of mild micro-levelling procedure whereby highly directional filtering identifies and removes residual noise correlated with the traverse direction. The resulting corrections are limited to the maximum amplitude of 6 nT to avoid "damaging" valid, geologic responses.

6. Calculated Vertical Derivative

The first Vertical Derivative was calculated using a 2D FFT operator on the Total Magnetic Intensity grid. Unwanted, high frequency " ringing" in the resulting 1VD grid was minimized by concurrent application of an 8^{th} order Butterworth low pass filter keyed to slight larger than the line spacing (160 m).

7. Measured Horizontal Gradients

The transverse or lateral magnetic gradient (HX) was calculated by subtracting the left wing sensor reading from the right wing sensor reading and dividing the resulting value by the tip-to-tip separation (14.6 metres), yielding the measurement expressed as nT/m. The longitudinal gradient (HY) was similarly calculated by subtracting the tail sensor measurement from the average of the wing tip-values normalized by the wing-centre to tail sensor separation of 9.2 metres. Both gradients were "DC shifted" by subtracting the median value on a line-by-line basis and converted from aircraft-centric to survey grid orientation by selectively inverting (multiplying by -1) in the south directions.

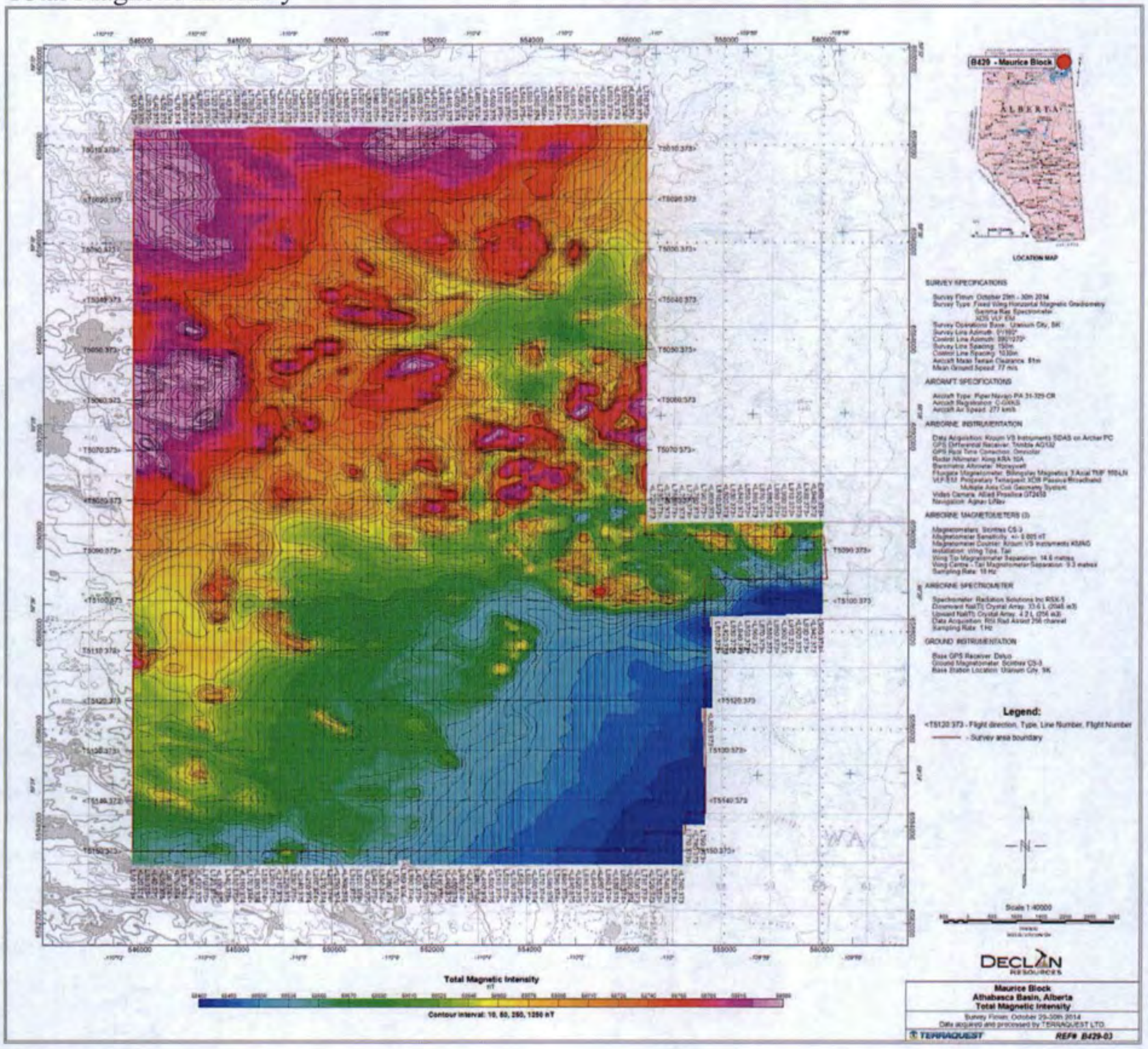
8. Reconstructed Total Magnetic Field (RTF)

Data grids of the measured horizontal gradients (HX, HY) were used to generate the Reconstructed Total Magnetic Field using the 2D FFT process described by J. B. Nelson (reference: Nelson, J.B., 1994, Leveling total-field aeromagnetic data with measured horizontal gradients: Geophysics, 59, 1166-1170). This product (RTF) has the advantage of being un-affected by magnetic diurnal activity, though longer magnetic spatial wavelengths are not represented due to measurement resolution limitations in the magnetometers. The resulting data units (expressed as pseudo nano-Tesla) are not true nT: approximate conversion to true nT may be accomplished by application of scaling factor if required. Using the calculated Reconstructed Total Field data grid, a "RTF" Geosoft database channel is created by performing a grid look-up ("grid sample") for each data point in the production database. Only grids were produced for the Total Reconstructed Field.

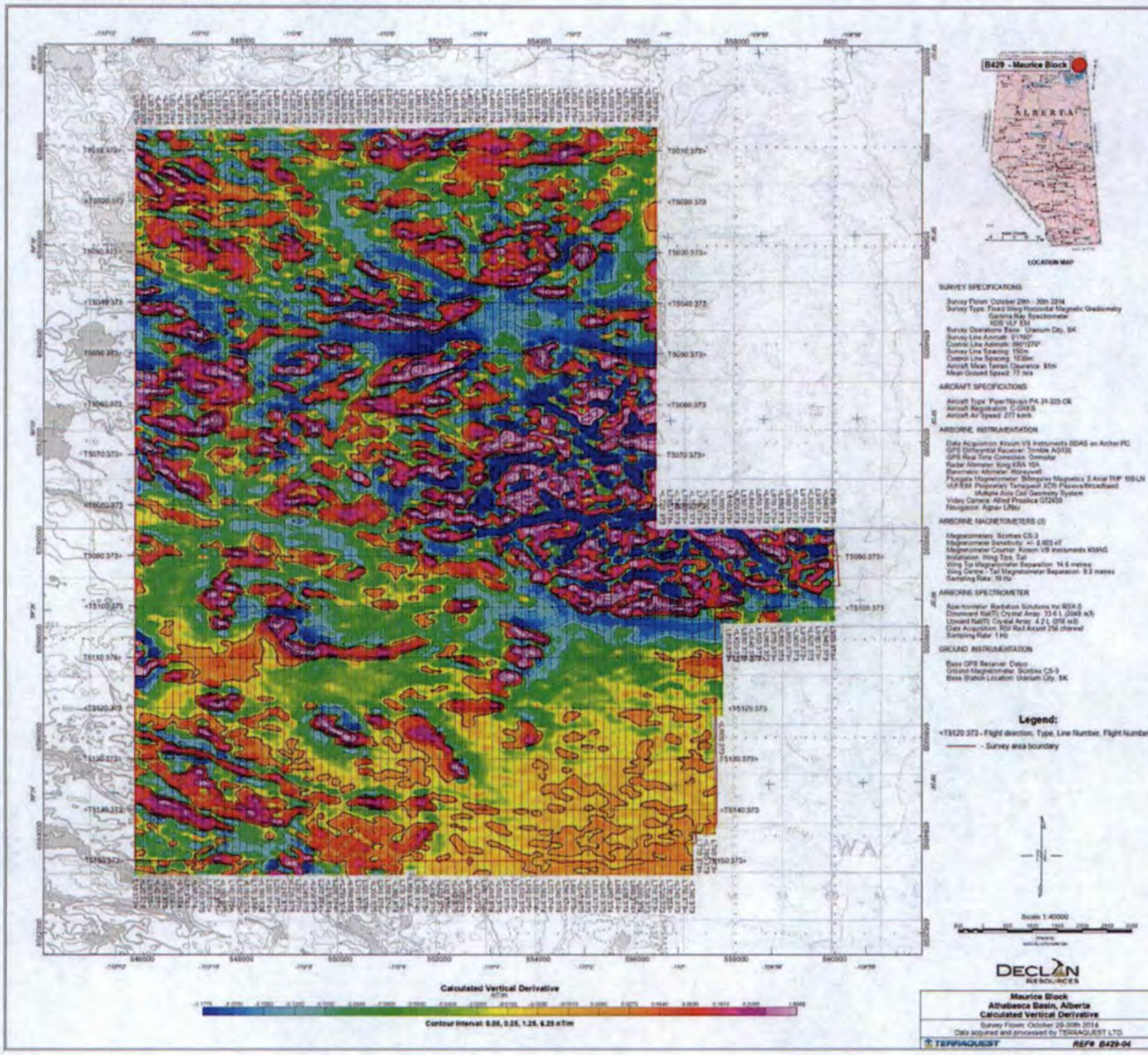
9. Data Grids

Magnetic data grids were created using Bidirectional data interpolations at a cell size of 25 metres (the Radiometric grids were at a cell size of 50 metres).

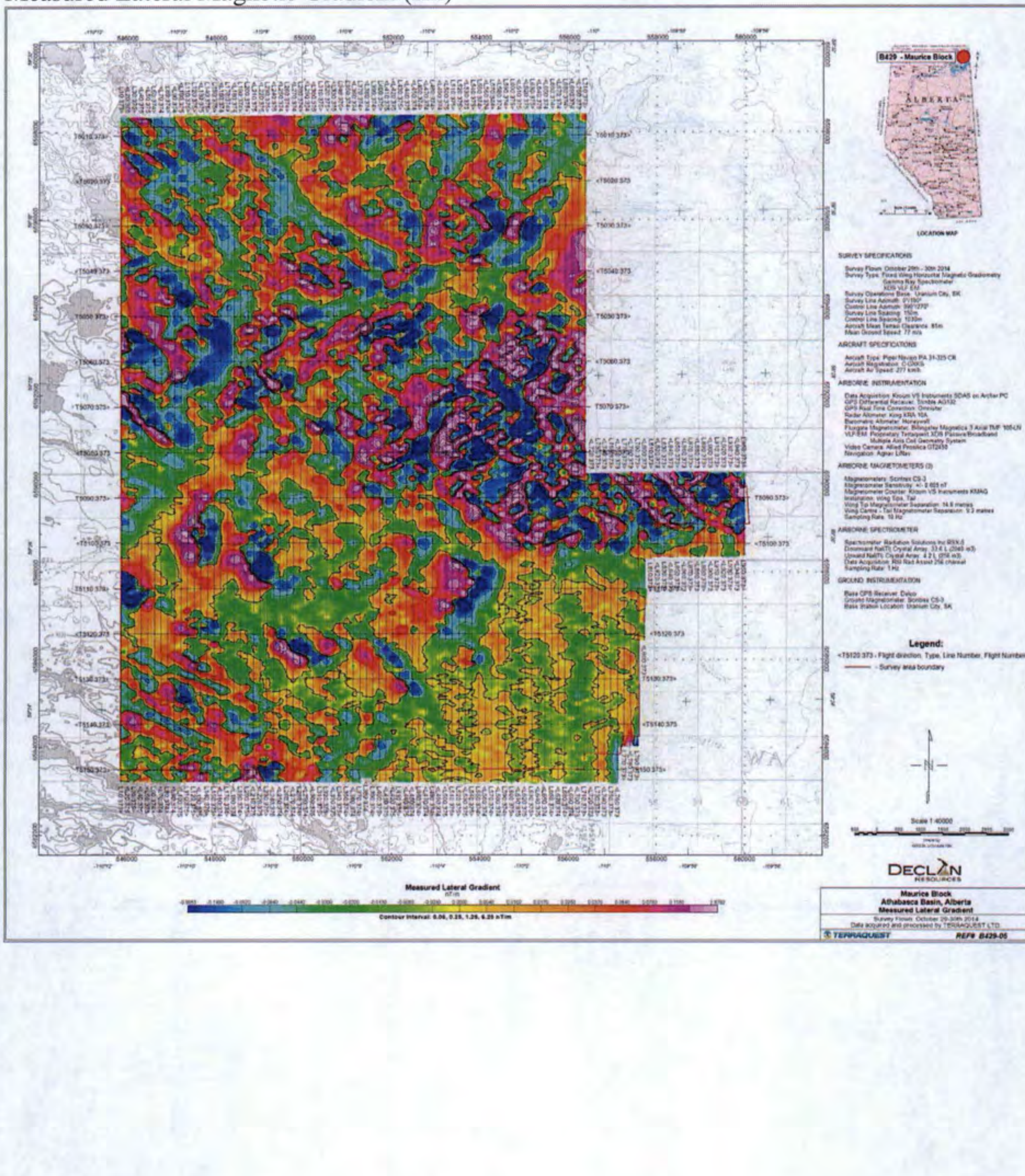
Total Magnetic Intensity



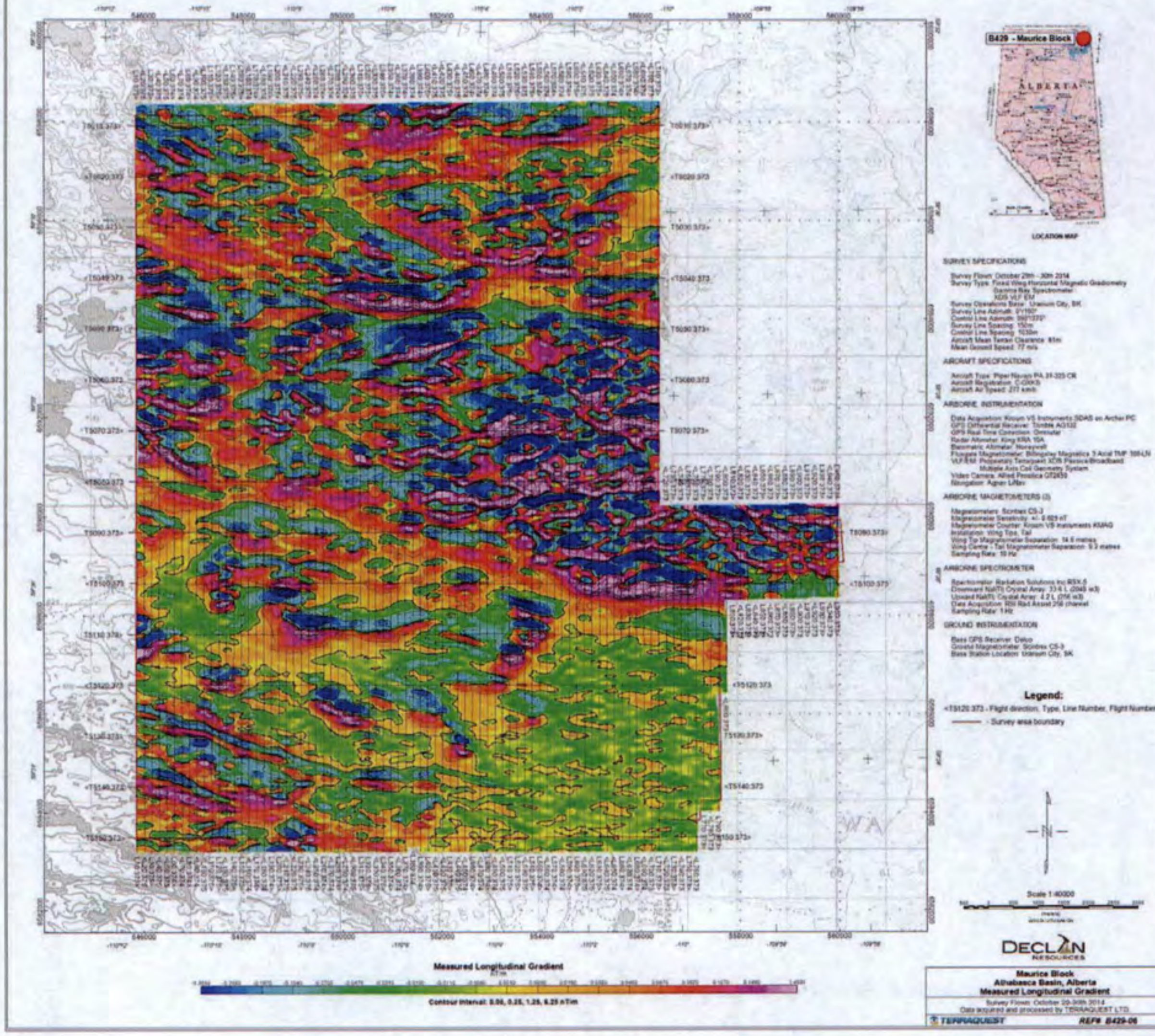
Calculated Vertical Derivative of the TMI



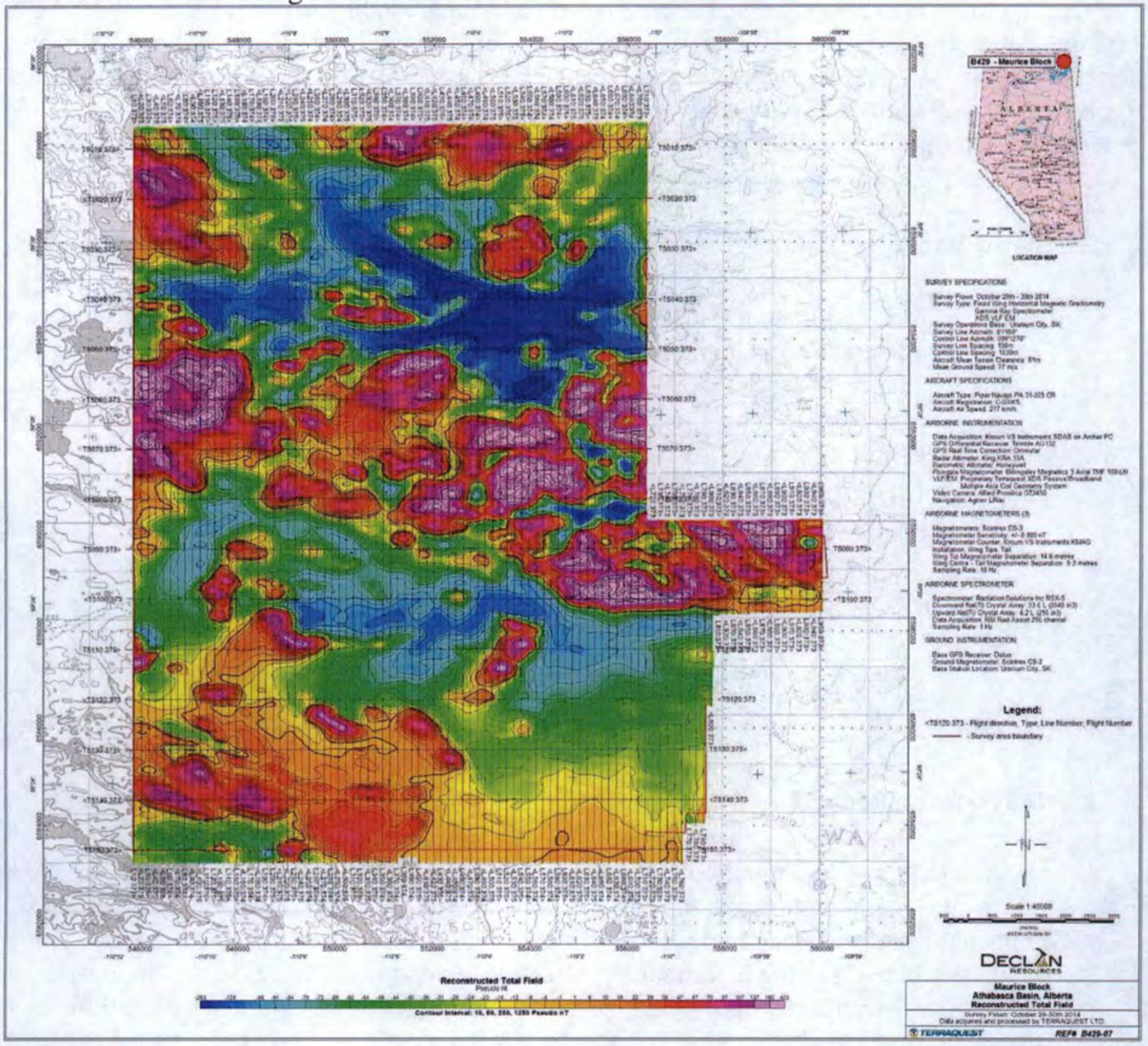
Measured Lateral Magnetic Gradient (Hx)



Measured Longitudinal Magnetic Gradient (Hy)



Reconstructed Total Magnetic Field



7.3. 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). A detailed description of the various correction steps may be found in ***9.5 Appendix V – Detailed Radiometric Processing Notes***; however, the following is a brief, generalized description of the data reduction process:

1. Energy Windows

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:

Window("ROI")	Energy Range (keV)		Channel Range	
Total Count	410	2810	034	234
Potassium	1370	1570	114	131
Uranium	1660	1860	138	155
Thorium	2410	2810	201	234
Cosmic	3000	∞	255	
(Overall channel number range is indexed 0 - 255)				

2. NASVD Noise Reduction

An effective way of ameliorating any effects of decreased signal-to-noise ratio is to reduce the natural Poisson noise component by application of modern principal component analysis techniques - NASVD (or "Noise Adjustment by Singular Value Decomposition" *) being a particularly effective technique. In this process, the measured 256 channel gamma ray spectra are analyzed en masse, producing a set of 256 distinct "principal components" which can be recombined to produce very accurate representations of the original spectral measurements. Given consistent recording of the gamma-ray spectra, the actual "signal" part is concentrated in the first few principal components with the remaining higher order components largely concerned with noise. By reconstructing the original spectra using only these initial components (for example, in this project components 0 - 4 were used in the spectral reconstruction), statistical measurement noise is largely suppressed. ROIs (Total Count, Potassium, Uranium and Thorium) are then extracted from the noise reduced spectra.

Recognizing that the NASVD enhance data reduction process uses modeled - as opposed to measured - spectra as its starting point, radiometric data were delivered as two separate data streams: one traditionally processed (non-enhanced) and the other NASVD enhanced. Noise levels are clearly reduced in the NASVD enhanced data.

* *Hovgaard,J.;Grasty,R.L. : Reducing Statistical Noise in Airborne Gamma Ray Data Through Spectral Component Analysis – presented at Exploration97, Toronto, Canada 1997(Paper 98 - Radiometric Methods and Remote Sensing)*

3. Aircraft and Cosmic Background Correction

The Cosmic and fixed aircraft components of the overall background level of radiation may be calculated using coefficients determined during a specific calibration procedure (see ***9.6 Appendix VI – Cosmic Calibration***). In this correction step, the assumed linear relationship between count rates measured in the high energy Cosmic window (> 3.0 MeV) and the Cosmic and Aircraft (fixed) contributions to the individual backgrounds in the four terrestrial windows (Total Count, Potassium, Uranium and Thorium) is exploited. Remaining background levels in the resulting corrected count rates will only be influenced by the variable, atmospheric Radon component.

4. Atmospheric Background Correction

A background component, primarily due airborne Radon daughter products, can remain in each of the radioelement windows. The level of background radiation is expected to vary temporally and geographically since the distribution of airborne sources depends on a host of factors such as atmospheric conditions, local ground conditions, etc.

Residual background levels of radiation were determined from data acquired on daily background test lines (flown at 1800 feet where geologic signal contributions are negligible). The data was corrected for Cosmic and Aircraft sources to estimate the remaining atmospheric radiation component.

5. Compton Stripping

Following background correction, the measured levels in the three terrestrial spectral windows – Potassium, Uranium and Thorium - are corrected for the natural process of Compton Scattering, by which energy deriving from higher energy sources are down-scattered into lower energy classifications. This procedure, described in greater detail in ***9.5 Appendix V – Detailed Radiometric Processing Notes***, results in count rates classified as purely Potassium, Uranium and Thorium without influence from the higher energy sources of radiation (this correction step primarily affects the two lower energy spectral windows: Uranium and Potassium).

6. Altitude Attenuation Correction

Effects due to varying terrain clearance are compensated for in this correction step. By applying experimentally determined Altitude Attenuation coefficients keyed to terrain clearance corrected to Standard Temperature and Pressure, measured count rates are adjusted to a constant terrain clearance (normally the survey's programmed clearance of 80 metres). Refer to ***9.8 Appendix VIII – Altitude Attenuation*** for details on the determination of the exponential altitude attenuation coefficients.

7. Conversion to Ground Units

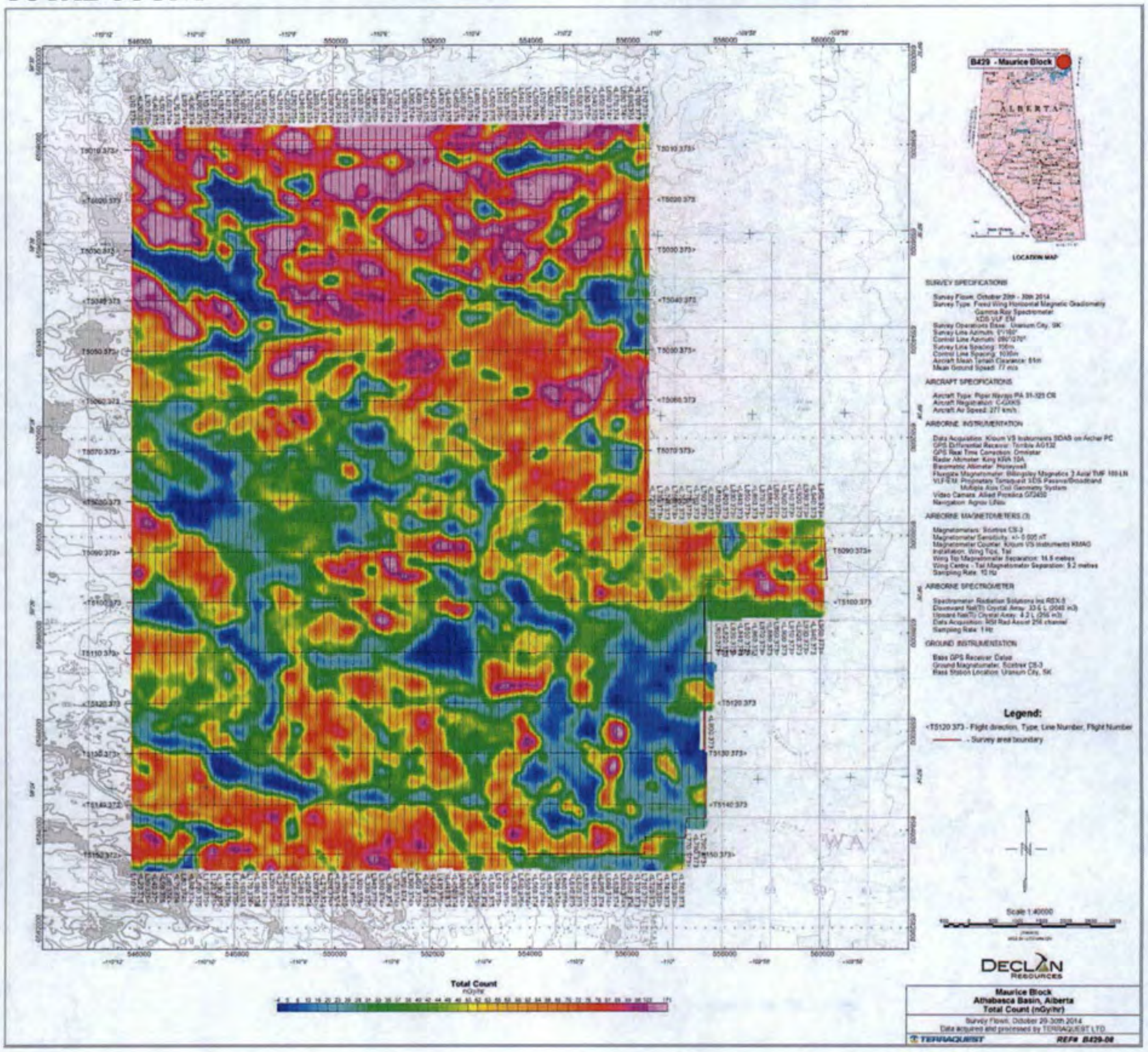
As a final step, the count rates in the integral channel window (Total Count) and the three spectral channel windows (Potassium, Uranium and Thorium) are converted to equivalent ground concentration units through application of sensitivity factors developed during a calibration flight over an approved radiometric test range. The system was calibrated at the Geologic Survey of Canada's calibration facility located outside Ottawa, Ontario, Canada. See ***9.9 Appendix IX – Sensitivity Factors***. Conversion of measured count rates to ground units has the advantage of presenting the measured levels of radiation using a standardized physical reference framework as well as to facilitate integration of the data with other radiometric data sets. A tabular summary of presentation units follows:

Window ("ROI")	Description	Unit
Total Count	Dosage Rate	nGy/hr
Potassium	Concentration	%K
Uranium	Equivalent Concentration	ppm eU
Thorium	Equivalent Concentration	ppm eTH

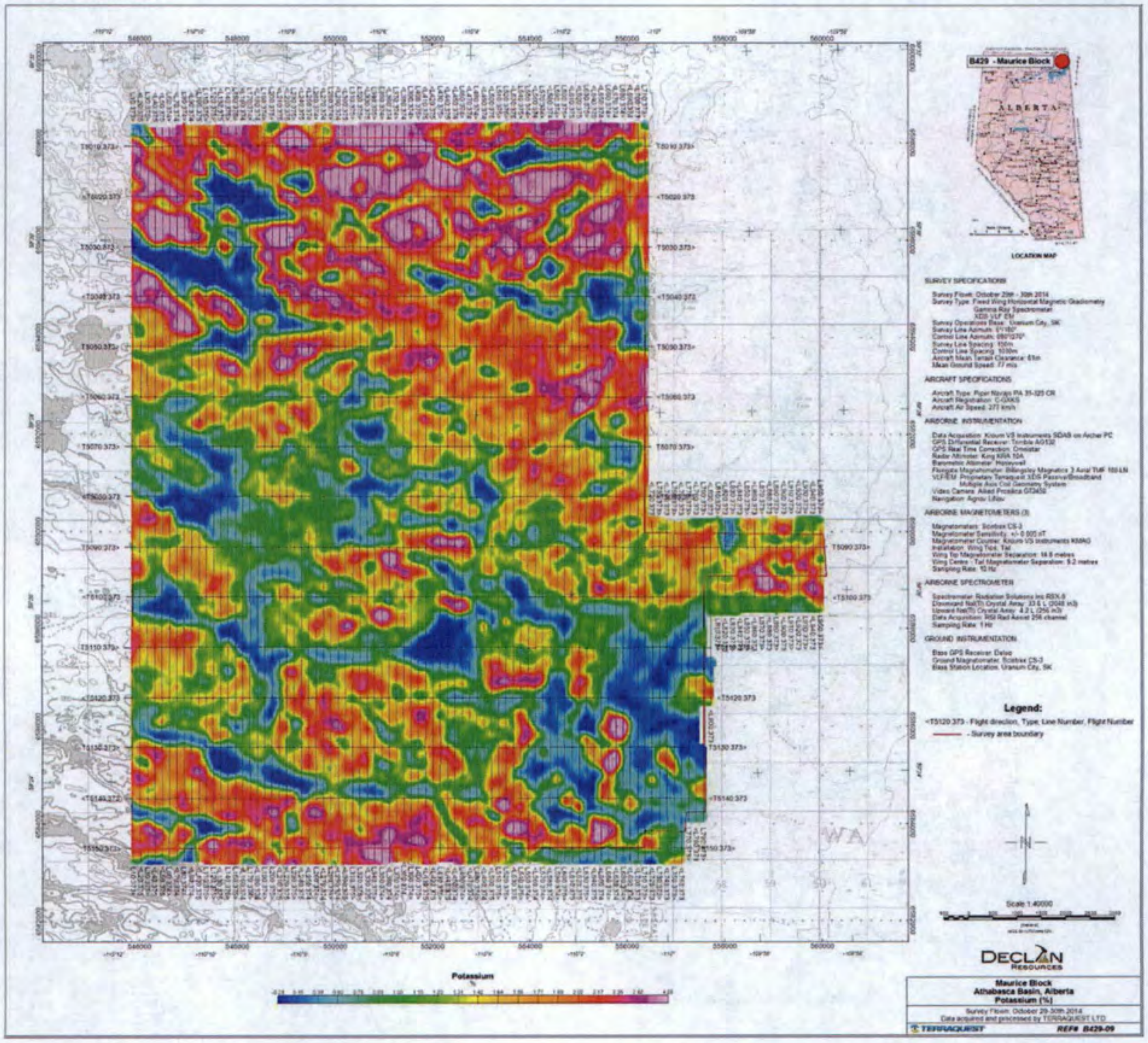
8. Gridding

Final data grids were constructed using a symmetrical grid cell definition of 50 x 50 metres. The grid was generated using Minimum Curvature interpolation. Coordinate projection for the grids was WGS84 UTM Zone 12N.

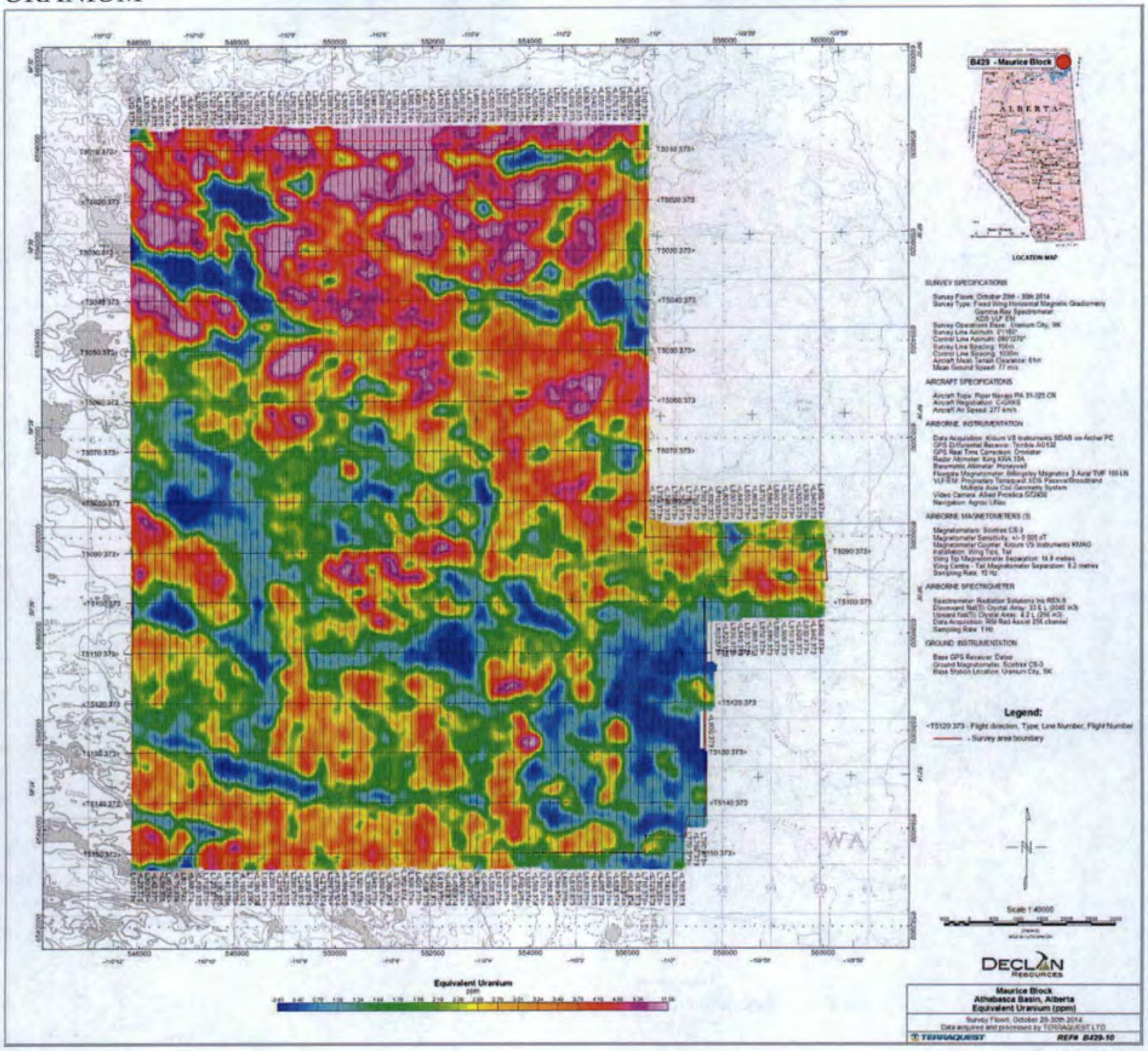
TOTAL COUNT


Legend:
<T5120 373 - Flight direction, Type, Line Number, Flight Number
- Survey area boundary
Scale 1:40000
Total Count
DECLAN RESOURCES
Maurice Block
Athabasca Basin, Alberta
Total Count (nGy/hr)
Survey Flown, October 29-30th 2014
Data acquired and processed by TERRAQUEST LTD
TERRAQUEST
REF# B429-08

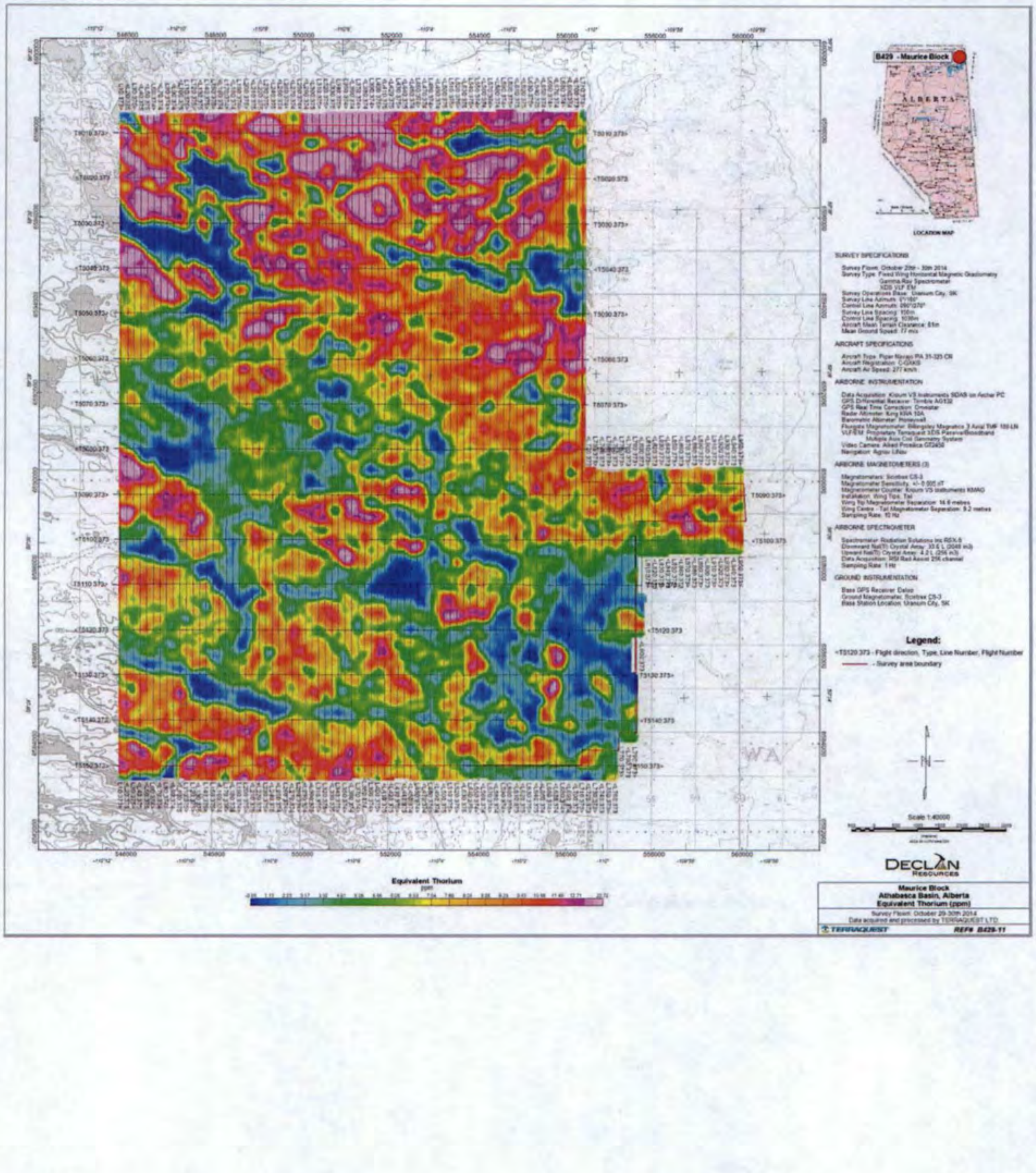
POTASSIUM


Legend:
<T5120 373 - Flight direction, Type, Line Number, Flight Number
- Survey area boundary
Scale 1:40000
DECLAN RESOURCES
Maurice Block
Athabasca Basin, Alberta
Potassium (%)
Survey Flown: October 29-30th 2014
Data acquired and processed by TERRAQUEST LTD
TERRAQUEST
REF# B429-09
Potassium

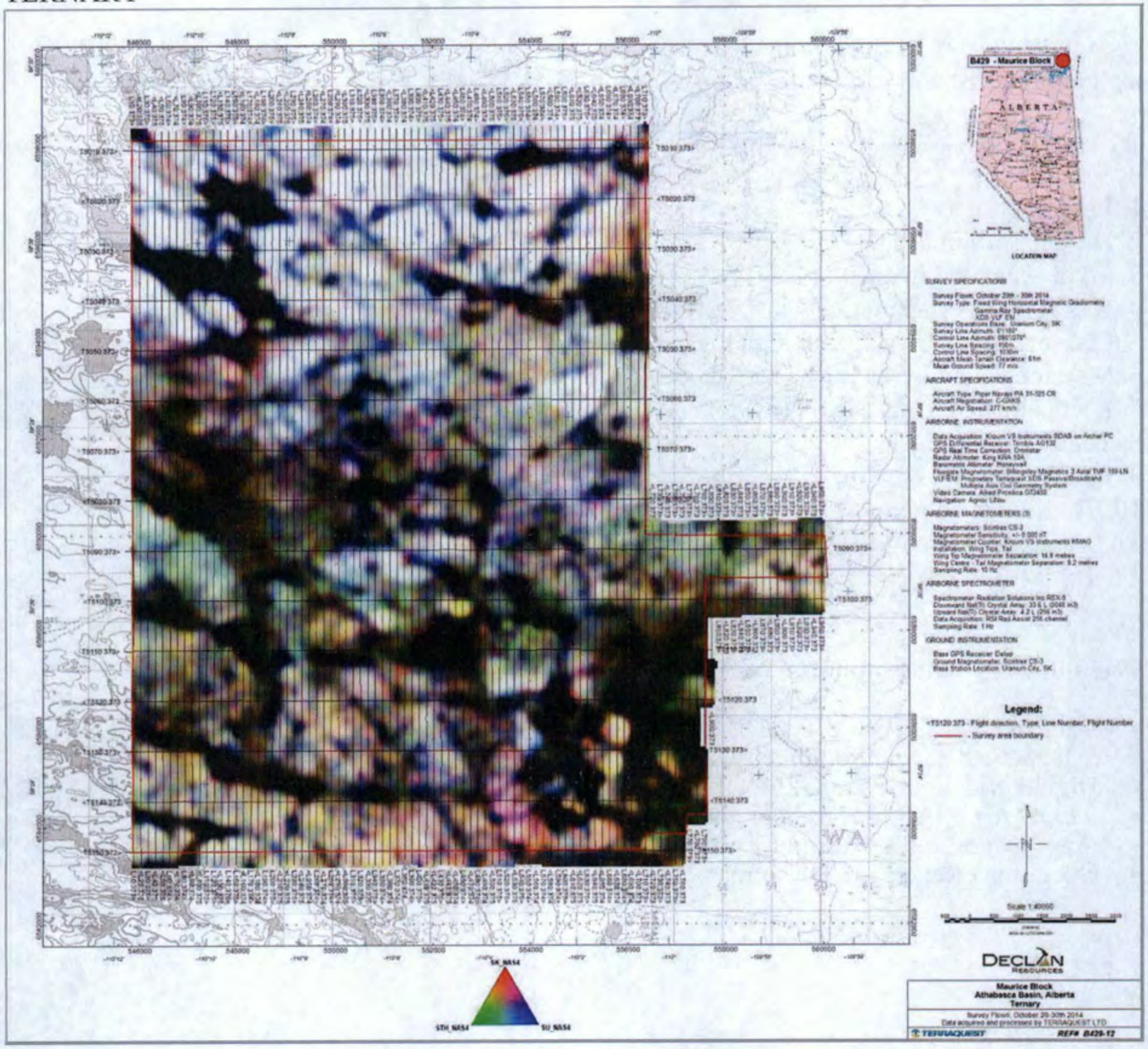
URANIUM


Legend:
<T5120 373 - Flight direction, Type, Line Number, Flight Number
- Survey area boundary
Scale 1:40000
Maurice Block
Athabasca Basin, Alberta
Equivalent Uranium (ppm)
Survey Flown: October 29-30th 2014
Data acquired and processed by TERRAQUEST LTD
TERRAQUEST
REF# B429-10
Equivalent Uranium

THORIUM


B429 - Maurice Block
ALBERTA
LOCATION MAP
Legend:
Equivalent Thorium
DECLAN RESOURCES
Maurice Block
Athabasca Basin, Alberta
Equivalent Thorium (ppm)

TERNARY


B429 - Maurice Block
ALBERTA
LOCATION MAP
SURVEY SPECIFICATIONS
AIRCRAFT SPECIFICATIONS
AIRBORNE INSTRUMENTATION
AIRBORNE MAGNETOMETERS (3)
AIRBORNE SPECTROMETER
GROUND INSTRUMENTATION
Legend:
<T5120 373 - Flight direction, Type, Line Number, Flight Number
- Survey area boundary
N
Scale 1:40000
DECLAN RESOURCES
Maurice Block
Athabasca Basin, Alberta
Ternary
TERRAQUEST
REF# B429-12

7.4. LIST OF FINAL PRODUCTS

A complete list of all final products is listed in the ReadMe file Appendix 9.10. All products including this Report are contained on an Archive DVD in the back pocket of the Report.

Two colour paper copies of the following maps were produced for the survey:

1. Flight Path
2. Digital Terrain Model (m)
3. Total Magnetic Intensity (TMI) (nT)
4. Calculated Vertical Gradient of TMI (nT/m)
5. Measured Lateral Magnetic Gradient (nT/m)
6. Measured Longitudinal Magnetic Gradient (nT/m)
7. Reconstructed Total Magnetic Field (RTF) (pseudo-nT)
8. Total Count (nGy/hr)
9. Potassium (%)
10. Thorium (eTh ppm)
11 Uranium (eU ppm)
12. Ternary

The following digital products were produced on DVD:

- Databases in GEOSOFT GDB (compatible with 4.1 or higher) and ASCII XYZ formats (Magnetic data and Radiometric data are in separate databases)
- Digital grid archives in GEOSOFT GRD format
- GEOSOFT MAP files used to generate the above listed final maps
- Map Images in high resolution JPEG format
- Operations Report in PDF format

8. SUMMARY

An airborne high sensitivity, Horizontal Magnetic Gradient and Radiometric survey was performed over the MAURICE CREEK Project in northeast Alberta. It was flown with a tight drape mode with an average elevation of 81 metres above the ground with 150 metre line intervals, 1,030 metre tie line intervals and with data sample points along the flight lines of approximately 80 metres for 1Hz data (radiometric) and 8 metres for the 10Hz data (magnetic and GPS data). The base of operations including magnetic base station was at Uranium City, SK.

The data were subjected to final processing to produce the following grids and maps (2 paper copies, scale 1:40,000):

a) **Magnetics**: total magnetic intensity (TMI)
b) **Gradient Magnetics:** calculated first vertical derivative of TMI; measured lateral and longitudinal gradients; Reconstructed Total Magnetic Field
c) **Radiometric**: Total Count, Potassium, Uranium, Thorium and Ternary Plot

This report and all digital products including a ReadMe file have been archived on a DVD. The databases are in ASCII (XYZ) and Geosoft (GDB) formats (including raw data), and the grid and map files are also in Geosoft format (.grd, .map). High resolution jpeg images of the maps are also included.

Respectfully Submitted,

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

PROFESSIONAL GEOSCIENTIST
CHARLES Q. BARRIE
PRACTISING MEMBER
1874
ONTARIO

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 a P.Geo. with the Association of Professional Geoscientists of Ontario (APGO) 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, Ontario, Canada

Signed

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

9.2. APPENDIX II – FIELD REPORT SUMMARY

TERRAQUEST SURVEYS : Field Operations Summary																							
CONTRACT REF :B429		Declan Resources									PROJECT :		Maurice Block Project			BASE:	Urainium City, SK						
REPORT REFERENCE	REPORT NUMBER	DATE	FLIGHT NUMBER (S)				LINE KILOMETRES			PERCENT COMPLETE	FLIGHT HOURS		SURVEY HOURS		ACCUMULATED DAYS								
							Day	Total	Refit		Day	Total	Day	Total	TOTAL	SURVEY	WX	MAINT	EQP	SETUP	MOB	HIATUS	
REP001	REP001	25-Oct-14													1					1.0			
REP002	REP002	26-Oct-14													2					2.0			
REP003	REP003	27-Oct-14	XKS372								2:03	2:03			3					3.0			
REP004	REP004	28-Oct-14										2:03			4		1.0			3.0			
REP005	REP005	29-Oct-14	XKS373	XKS374			768.8	768.8		57.96%	6:01	8:04	4:34	4:34	5	1.0	1.0			3.0			
REP006	REP006	30-Oct-14	XKS375				557.7	1326.5		100.00%	3:19	11:24	2:33	7:07	6	2.0	1.0			3.0			

Line Listing

TERRAQUEST LTD. SURVEY AND CALIBRATION FLIGHTS			**October 29, 2014**		**C-GXKS373**	
Job Reference:	B429	**Base of Operations:**	Uranium City, SK		**Aircraft:**	C-GXKS
Flight Crew:	Name		Company			
Captain:	Chad Tiffin		Terraquest Ltd.			
First Officer:						
Operator:	Tyler Diplock		Terraquest Ltd.			
Pre-Flight						
Date:	29-Oct-14		**Flight Number:**		373	
Weather Remarks:						
	Winds:	**Turbulence:**	**Temperature:**	-3C	**Altimeter:**	30.11"Hg
Equipment Checks:	**Line:**		**Check Serial Inputs:**			
	Ortho:		**DGPS:**			
	Vert:		**Detectors Stable:**			
In-Flight						
Time Up:	16:29:00		**Production Start:**	16:53:17	**Flight Time:**	02:58:42
Time Down:	19:27:42		**Production End:**	19:09:00	**Prod. Time:**	02:15:43
Survey Mode?	Yes		**Data File Name:**			

Line Number	GPS Start Time	GPS End Time	Remarks
			Heater on 16:33:10
			nav radio has been off until now
			nav radio on 16:38:30
			nav radio off 16:43:33
10	16:53:17	16:56:18	-1C
Heading Test			
N	16:58:36	16:58:44	
S	17:00:37	17:00:44	
E	17:02:37	17:02:49	
W	17:05:02	17:05:16	
Tie Lines			
5150	17:08:11	17:10:38	-1C
5140	17:11:49	17:14:21	-1C
5130	17:15:44	17:18:17	0C
5120	17:19:22	17:21:55	0C
5110	17:23:17	17:25:49	0C
5100	17:27:37	17:30:39	0C
5090	17:32:34	17:35:37	0C
5080	17:37:05	17:39:21	0C
5070	17:40:30	17:42:49	0C
5060	17:44:37	17:46:54	0C
5050	17:48:15	17:50:34	0C
5040	17:51:57	17:54:14	0C
5030	17:55:37	17:57:56	0C
5020	17:59:22	18:01:37	0C
5010	18:03:19	18:05:37	0C
Traverse Lines			
950	18:07:39	18:08:00	0C
940	18:09:26	18:09:50	0C
930	18:11:07	18:11:28	0C
920	18:12:51	18:13:16	0C
910	18:14:35	18:14:56	0C
900	18:16:13	18:16:38	0C
890	18:17:59	18:18:20	0C
880	18:19:47	18:20:12	0C
870	18:21:31	18:21:53	0C
860	18:23:21	18:23:46	0C
850	18:25:09	18:25:31	0C
840	18:27:06	18:27:31	0C
830	18:28:52	18:29:15	0C
820	18:30:38	18:31:02	0C
810	18:32:26	18:32:49	0C
800	18:34:33	18:35:12	0C Questionable start time. Confusing
790	18:36:42	18:37:27	0C
780	18:39:30	18:40:52	0C
770	18:42:14	18:43:26	0C
760	18:45:04	18:46:37	0C
750	18:48:06	18:49:28	0C
740	18:50:55	18:52:27	1C
730	18:53:46	18:55:08	0C
720	18:56:43	18:58:16	0C
710	19:01:19	19:04:16	0C
700	19:05:41	19:09:00	0C
Background	19:15:20	19:17:20	-2C at 1100'AGL over water

9.3. APPENDIX III – FIGURE OF MERIT

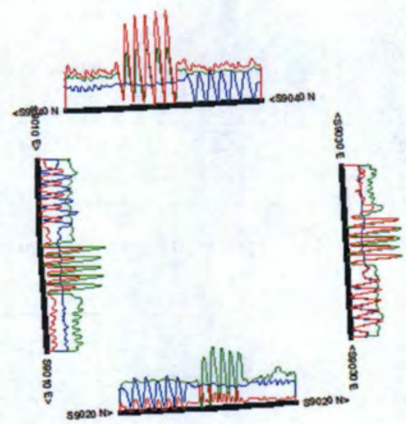
TERRAQUEST LTD.

Magnetic Figure of Merit Analysis

Job Ref:	B429	Date:	27-Oct-14	Aircraft:	C-GXKS
Location :	Uranium City, SK				

SET 1 (S9010-S9040)

Flight Path + Manoevers



FOM Index : Tail Magnetometer

LINE	DIR	TRAV FLG	PITCH		ROLL		YAW			P	R	Y	Σ
			MAX	MIN	MAX	MIN	MAX	MIN					
9030	N	⚐	0.0480	-0.0579	0.0186	-0.0568	0.0271	-0.0566		0.1060	0.0754	0.0837	0.2650
9020	E		0.0489	-0.0297	0.0571	-0.0074	0.0578	-0.0822		0.0787	0.0645	0.1400	0.2832
9010	S	⚐	0.0405	-0.0395	0.0661	-0.0042	0.0304	-0.0571		0.0801	0.0702	0.0875	0.2378
9040	W		0.0775	-0.0514	0.0408	-0.0707	0.0687	-0.0779		0.1289	0.1115	0.1466	0.3871
									Σ	0.3936	0.3216	0.4578	1.1731
									Full FOM Index :	**1.1731**			
									Eq. Traverse FOM Index (Σ Trav x 2) :	**1.0056**			

FOM Index : Right Magnetometer

LINE	DIR	TRAV FLG	PITCH		ROLL		YAW			P	R	Y	Σ
			MAX	MIN	MAX	MIN	MAX	MIN					
9030	N	⚐	0.0849	-0.1070	0.0545	-0.0515	0.1780	-0.0581		0.1919	0.1061	0.2361	0.5340
9020	E		0.0662	-0.0342	0.0271	-0.0538	0.1203	-0.0431		0.1004	0.0809	0.1634	0.3447
9010	S	⚐	0.0575	-0.0480	0.0684	-0.0615	0.1396	-0.0355		0.1055	0.1299	0.1751	0.4104
9040	W		0.0951	-0.0397	0.0426	-0.0640	0.1444	-0.0857		0.1349	0.1066	0.2302	0.4716
									Σ	0.5326	0.4234	0.8047	1.7607
									Full FOM Index :	**1.7607**			
									Eq. Traverse FOM Index (Σ Trav x 2) :	**1.8888**			

FOM Index : Left Magnetometer

LINE	DIR	TRAV FLG	PITCH		ROLL		YAW			P	R	Y	Σ
			MAX	MIN	MAX	MIN	MAX	MIN					
9030	N	⚐	0.1081	-0.1016	0.0134	-0.0776	0.0943	-0.0472		0.2097	0.0910	0.1414	0.4422
9020	E		0.0747	-0.0407	0.0855	-0.0270	0.1038	-0.0831		0.1155	0.1125	0.1869	0.4149
9010	S	⚐	0.0665	-0.0330	0.0603	-0.0243	0.0750	-0.1063		0.0996	0.0846	0.1813	0.3655
9040	W		0.1077	-0.0240	0.0541	-0.0609	0.0522	-0.1607		0.1317	0.1150	0.2129	0.4596
									Σ	0.5565	0.4031	0.7226	1.6822
									Full FOM Index :	**1.6822**			
									Eq. Traverse FOM Index (Σ Trav x 2) :	**1.6154**			

9.4. APPENDIX IV – RADAR ALTIMETER CALIBRATION

B429: RADAR CALIBRATION DATA SUMMARY *Calibration performed 28 October [FLT XKS372, Uranium City)]*					
				INTERCEPT	0.4889
				SLOPE	1655.164808
LINE	**RAW RADAR**	**GPS ALT**	**CORRECTED GPS ALT**	**CALIBRATED RADAR**	**ERROR ***
Hold		307.0	0.0		
S101:372	0.0167	336.1	29.1	28.1	-1.0
S201:372	0.0360	370.3	63.3	60.1	-3.2
S301:372	0.0555	399.5	92.5	92.4	-0.1
S401:372	0.0776	436.7	129.7	128.9	-0.8
S501:372	0.1300	519.5	212.5	215.7	3.2
S601:372	0.1413	540.2	233.2	234.4	1.2
S801:372	0.1726	589.6	282.6	286.2	3.6
S2001:372	0.3566	900.5	593.5	590.7	-2.8

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

Imperial Units		
LINE	GPS_ALT	CAL_RAD
S101:372	95.5	92.3
S201:372	207.7	197.1
S301:372	303.5	303.0
S401:372	425.5	423.0
S601:372	765.1	768.9
S801:372	927.2	938.9
S2001:372	1947.2	1938.1

9.5. APPENDIX V – DETAILED RADIOMETRIC PROCESSING

As noted in "Section 7.3.2 - NASVD Noise Reduction", enhanced noise reduction techniques were used in the data reduction process in an effort to improve the overall resolution. For the reasons stated in section 7.3.2, radiometric data was split into two streams ("Raw" and "Enhanced") and subjected to the following corrections procedures. Both data streams are delivered in the final data set.

Radiometric data, recorded in its raw state as a 256 channel spectrum (array indices specified as 0:255), are initially integrated into five elemental energy windows as defined below:

Window	**Energy Range**	**Channel Range**
Total Count	410 - 2810 keV	034 - 234
Potassium	1370 - 1570 keV	114 - 131
Uranium	1660 - 1860 keV	138 - 155

Thorium	2410 - 2810 keV	201 - 234
Cosmic	3000 - ∞ keV	255

1. 'Live Time' correction

The RSI RSX spectrometer does not suffer from conventional "dead time" and thus no specific correction is required, i.e.:

$$\mathbf{N^1_n = N^0_n}$$

$\mathbf{N^1_n}$ = live time corrected count rate for channel "n"
$\mathbf{N^0_n}$ = raw count rate for channel "n"

2. Cosmic Background correction

Primarily caused by photons generated by cosmic ray interactions with nuclei present in the air, aircraft and detector system, an altitude dependent cosmic component is found in each of the four radioelement windows (TC, K, U and Th). A linear relationship exists between radiation detected in the high energy 'Cosmic' window (>3.0 MeV) and the cosmic component detected in the lower energy windows, i.e.

$$\mathbf{N_n = a_n{*}COS + b_n}$$

where :

N_n : counts due to Cosmic interaction in channel 'n' (where 'n' is any of TC, K, U or Th)

COS : counts detected in the high energy Cosmic window (>3.0 MeV)

a_n,b_n : linear Cosmic coefficients

The Cosmic coefficients are experimentally determined in a special calibration procedure. Counts are corrected for cosmic radiation by simple application of the above relationship, i.e.

$$\mathbf{N^2_{TC} = N^1_{TC} - (a_{TC}{*}COS + b_{TC})}$$
$$\mathbf{N^2_{K} = N^1_{K} - (a_{K}{*}COS + b_{K})}$$
$$\mathbf{N^2_{U} = N^1_{U} - (a_{U}{*}COS + b_{U})}$$
$$\mathbf{N^2_{Th} = N^1_{Th} - (a_{Th}{*}COS + b_{Th})}$$

As a by-product of this operation, background levels of radiation associated with the aircraft are automatically removed since these levels are represented by the $b_{TC,K,U,Th}$ coefficients.

3. Atmospheric Background correction

A background component, primarily due airborne Radon daughter products, can remain in each of the radioelement windows. The level of background radiation is expected to vary temporally and geographically since the distribution of airborne sources depends on a host of factors such as atmospheric conditions, local ground conditions, etc.

Residual background levels of radiation were determined from data acquired on daily background test lines (flown at 1800 feet where geologic signal contributions are negligible). The data was corrected for Cosmic and Aircraft sources to estimate the remaining atmospheric radiation component.

4. Compton Scatter correction

A gamma ray photon of a particular energy may collide with an electron, impart some of its energy to that electron, and be scattered as a lower energy photon. This phenomena - known as Compton Scattering - will cause some incident photons to be wrongly classified as lower energy events. The practical result of this phenomenon is that, for example, a fraction of incoming Thorium radiation will appear in the Uranium and Potassium energy windows, and a fraction of incoming Uranium radiation will appear in the Potassium window. A very small amount of Uranium radiation may also be 'back-scattered' to the Thorium window. Effectively a channel interaction, this is corrected for by the application of Compton Stripping ratios. Corrected Potassium, Uranium and Thorium count-rates are calculated by application of the following relations:

$$\mathbf{N^4_{Th} = (N^3_{Th} - a*N^3_U) / (1 - a*\alpha)}$$
$$\mathbf{N^4_U = (N^3_U - \alpha*N^3_{Th}) / (1 - a*\alpha)}$$
$$\mathbf{N^4_K = (N^3_K - \beta*N^4_{Th} - \gamma*N^4_U)}$$
$$\mathbf{N^4_{TC} = N^3_{TC}}$$

where :

N^4_n : Compton corrected count-rate for channel 'n' ('n' is TC, K, U or Th - as indicated)
N^3_n : background corrected count-rate for channel 'n' ('n' is TC, K, U or Th - as indicated)

α : Th → U stripping ratio
β : Th → K stripping ratio
γ : U → K stripping ratio
a : U → Th stripping ratio ("back-scatter")

Values for each of the four Compton stripping ratios are determined by formal calibration on standardized radiometric calibration pads. Prior to use in the above relation, the α,β and γ coefficients (originally determined at ground level) are adjusted for aircraft terrain clearance by applying the following corrections:

$$\gamma = \gamma + 0.00049*h_{STP}$$
$$\beta = \beta + 0.00065*h_{STP}$$
$$\gamma = \gamma + 0.00069*h_{STP}$$

Where h_{STP} is the aircraft terrain clearance corrected to standard temperature and pressure (see step 5 following).

5. Altitude Attenuation correction

Within the terrain clearances normally encountered in airborne radiometric surveys, ground originating radiation is assumed to attenuate exponentially with distance from source, i.e.

$$\mathbf{N_h = N_0 e^{-\mu h}}$$

where :

N_h : count-rate at **height = h**
N_0 : count-rate at **height = 0**
μ : altitude attenuation coefficient

The attenuation coefficients, which are specific to each of the four radioelement windows, are evaluated using data from a special calibration exercise (see ***9.8 Appendix VIII: Altitude Attenuation Coefficients***).

Variation due to terrain clearance is removed from the data by applying the simple relationship noted above in the following manner:

$$\mathbf{N^5_n = N^4_n * e^{-\mu n(hs - hstp)}}$$

where :

N^5_n : height corrected count-rate for channel 'n' ('n' is any of TC, K, U or Th)
N^4_n : Compton corrected count-rate for channel 'n' (note that Compton corrections do not apply to Total Count so that N^4_1 is, in fact, the un-modified N^3_1)
μ_n : altitude attenuation coefficient for channel 'n'
h_s : nominal survey terrain clearance
h_{stp} : actual terrain clearance corrected to STP

Indicated terrain clearance is first corrected to standard temperature (flight logs) and calculated pressure (Pressure=101325*(1-0.00002255778AH)$^{5.25588}$ by applying the following steps:

$h_{stp} = (h*273.15*P)/[(T+273.15)*P_{sl}]$

where:

h_{stp} = corrected terrain clearance
h = measured terrain clearance
P = measured atmospheric pressure, in mB
T = temperature, in degrees Celsius
P_{sl} = sea-level pressure (=1013.25 mB)

When interpreting height corrected data, care should be taken where terrain clearances significantly exceed the nominal (or programmed) survey clearance since count-rates tend to be artificially boosted due to the exponential nature of the correction algorithm.

6. Sensitivity Factors

Corrected ROI (TC, K, U, Th) channel data in counts per second were converted to concentration units (respectively nGy/h, %K, ppm eU, ppm eTh) by application of sensitivity factors determined during a calibration flight over the Breckenridge Calibration Range located near Ottawa Canada (see ***9.9 Appendix IX – Sensitivity Factors***)

9.6. APPENDIX VI – COSMIC CALIBRATION

TERRAQUEST LTD

COSMIC ALTITUDE DEPENDENCE

B429 / XKS : COSMIC CALIBRATION
performed at Uranium City, SK [XKS372]

LINE	GPS ALT metres	TC cps	K cps	U cps	TH cps		COSMIC cps
S1000:372	703.4	376.8	31.3	13.5	12.4		173.2
S2000:372	883.5	292.9	25.2	11.7	11.0		188.4
S3000:372	1190.5	301.1	25.0	12.0	11.4		212.4
S4000:372	1476.2	322.2	25.7	13.1	13.6		241.8
S5000:372	1763.4	361.9	27.4	15.6	15.6		277.9
S6000:372	2054.9	422.3	31.0	17.9	18.5		315.0
S7000:372	2354.8	477.8	33.9	20.2	21.5		370.5
S8000:372	2638.6	540.1	38.0	23.4	25.9		423.3
S9000:372	2951.6	622.2	43.4	26.5	30.7		500.9
S9050:372	3109.3	686.8	46.7	29.6	33.9		538.0

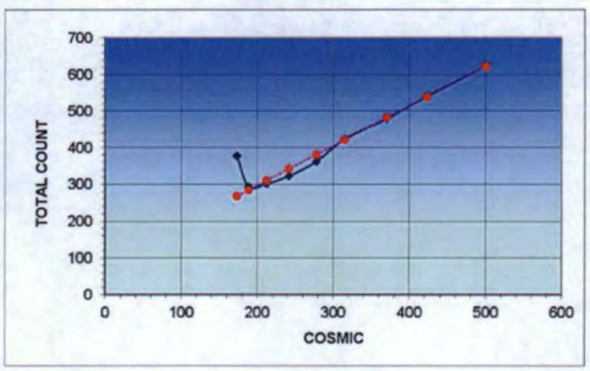
COSMIC COEFFICIENTS

$COS\_COMPONENT_n = a_n COSMIC + b_n$

	Slope (a_n)	Intercept (b_n)
Total Count	1.0839	79.4226
Potassium	0.0678	9.2854
Uranium	0.0473	2.9816
Thorium	0.0670	-2.8289

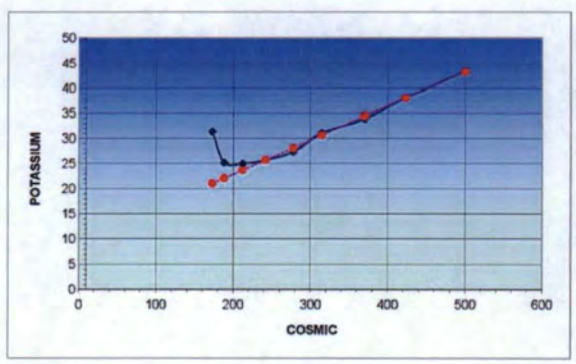
TOTAL COUNT COSMIC DEPENDENCE

COSMIC	TC	TC FIT
173.2	376.8	267.1
188.4	292.9	283.7
212.4	301.1	309.6
241.8	322.2	341.5
277.9	361.9	380.6
315.0	422.3	420.8
370.5	477.8	481.0
423.3	540.1	538.3
500.9	622.2	622.3



POTASSIUM COSMIC DEPENDENCE

COSMIC	K	K FIT
173.2	31.3	21.0
188.4	25.2	22.1
212.4	25.0	23.7
241.8	25.7	25.7
277.9	27.4	28.1
315.0	31.0	30.6
370.5	33.9	34.4
423.3	38.0	38.0
500.9	43.4	43.3



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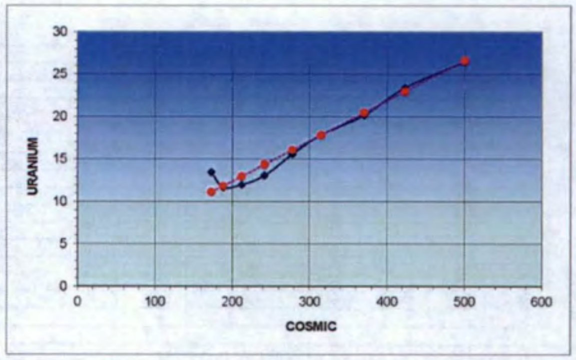
TERRAQUEST LTD COSMIC ALTITUDE DEPENDENCE

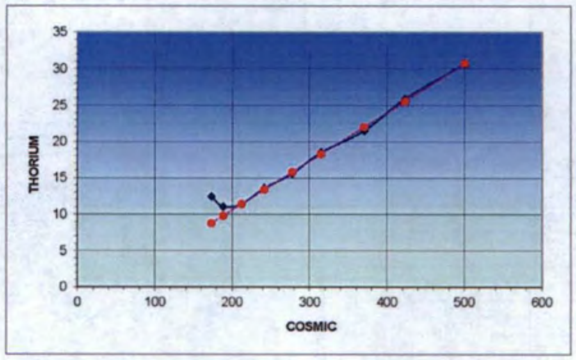
URANIUM COSMIC DEPENDENCE

COSMIC	U	U FIT
173.2	13.5	11.2
188.4	11.7	11.9
212.4	12.0	13.0
241.8	13.1	14.4
277.9	15.6	16.1
315.0	17.9	17.9
370.5	20.2	20.5
423.3	23.4	23.0
500.9	26.5	26.7



THORIUM COSMIC DEPENDENCE

COSMIC	TH	TH FIT
173.2	12.4	8.8
188.4	11.0	9.8
212.4	11.4	11.4
241.8	13.6	13.4
277.9	15.6	15.8
315.0	18.5	18.3
370.5	21.5	22.0
423.3	25.9	25.6
500.9	30.7	30.7



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9.7. APPENDIX VII – COMPTON COEFFICIENTS

RADIATION SOLUTIONS INC

CALIBRATION SHEET

Instrument: **RSX- 5**

Customer: Terraquest
Contact:
Console : N/A
Detector 1: 5587
Detector 2: N/A

Date: August 21, 2014
Tech.: Jim C
Job Order: RMA# 10511
Customer PO PO#

Channels: 1024 **ADC Offset:** N/A

	A1	A2	A3	A4	A5
High Voltages	672	714	648	658	657

Stripping Constant	"this system"	"normal"
Alpha	**0.279**	0.250
Beta	**0.427**	0.400
Gamma	**0.768**	0.810
a	**0.051**	0.060
b	**0.001**	0.000
g	**0.001**	0.003

ROI#	Channel	IAEA Specification [keV]	Label
1	137-937	410-2810	Total Count
2	457-523	1370-1570	Potassium K
3	553-620	1660-1860	Uranium U
4	803-937	2410-2810	Thorium Th
5			
6			
7			
8	553-620	1660-1860	Uranium Upper U

Det#	Peak Cs	Cs FWHM		Peak Th	Th FWHM
A1	219.35	7.72		871.80	4.35
A2	219.50	8.12		872.63	4.69
A3	219.37	8.12		872.53	4.84
A4	219.41	8.01		872.14	4.83
Sum Dn	**219.40**	**7.99**		**872.29**	**4.70**
Sum Up	**218.79**	**8.51**		**872.28**	**5.06**

386 Watline Avenue Mississauga ♦ Ontario Canada L4Z 1X2 ♦ Tel (905) 890 1111 ♦ Fax (905) 890 1964 ♦ e-mail sales@radiationsolutions.ca

RADIATION SOLUTIONS INC

CALIBRATION SHEET

Instrument: **RSX- 4**

Customer:	Terraquest	Date:	July 28, 2014
Contact:	Charles Barrie	Tech.:	Jim C
Console :	N/A	Job Order:	RMA# 10494
Detector 1:	5423	Customer PO	PO#
Detector 2:	N/A		

Channels: 1024 **ADC Offset:** N/A

	A1	A2	A3	A4	A5
High Voltages	636	627	626	659	n/a

Stripping Constant	"this system"	"normal"
Alpha	**0.280**	0.250
Beta	**0.405**	0.400
Gamma	**0.763**	0.810
a	**0.048**	0.060
b	**0.001**	0.000
g	**0.003**	0.003

ROI#	Channel	IAEA Specification [keV]	Label
1	137-937	410-2810	Total Count
2	457-523	1370-1570	Potassium K
3	553-620	1660-1860	Uranium U
4	803-937	2410-2810	Thorium Th
5			
6			
7			
8	553-620	1660-1860	Uranium Upper U

Det#	Peak Cs	Cs FWHM		Peak Th	Th FWHM
A1	220.76	7.17		872.12	4.23
A2	220.82	7.04		872.76	4.35
A3	219.27	7.90		873.03	4.91
A4	220.38	6.81		871.92	3.74
Sum Dn	**220.38**	**7.21**		**872.41**	**4.28**
Sum Up					

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9.8. APPENDIX VIII– ALTITUDE ATTENUATION

The following presents the calculation of the four sets of altitude attenuation correction coefficients (Total Count, Potassium, Uranium and Thorium) using data acquired at Breckenridge ON on November 15, 2014

TERRAQUEST C-GXKS / RSI

RADIOMETRIC ALTITUDE ATTENUATION CALIBRATION

Double Pack Install (RSI_5423,5587) - Breckenridge - 15 November 2014

LINE	Average Clearance, STP Corrected (metres)	TC (cor. CPS)	K (cor. CPS)	U (cor. CPS)	TH (cor. CPS)
S1200:0	53.4	1346.0	131.0	13.6	32.6
S1300:0	90.3	990.6	86.3	9.8	25.4
S1400:0	109.3	858.7	72.1	9.3	20.8
S1500:0	174.1	463.7	34.9	4.7	12.7
S1600:0	202.9	305.3	18.7	3.4	8.0
S1700:0	238.2	309.0	20.0	2.7	7.8
S1800:0	256.5	314.5	21.3	3.2	8.7

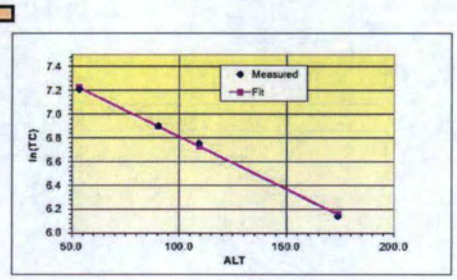
ALTITUDE ATTENUATION COEFFICIENTS

Calculated by LSQ fit to : $\ln(N) = ALT^{*}\mu + \ln(N_0)$ relation

TC	μ_{TC} =	-0.008854	$\ln(N_0)_{TC}$ =	7.6946
K	μ_K =	-0.010924	$\ln(N_0)_K$ =	5.4569
U	μ_U =	-0.008758	$\ln(N_0)_U$ =	3.1024
Th	μ_{Th} =	-0.007896	$\ln(N_0)_{Th}$ =	3.9168

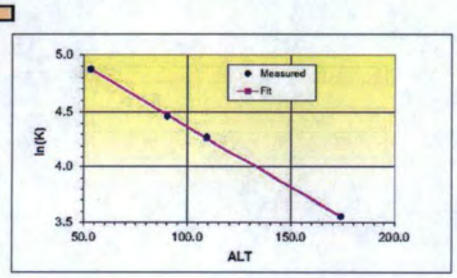
ALTITUDE DEPENDENCE: TOTAL COUNT

ALT	ln(N)	FIT
53.4	7.2049	7.2221
90.3	6.8963	6.8965
109.3	6.7554	6.7270
174.1	6.1392	6.1533



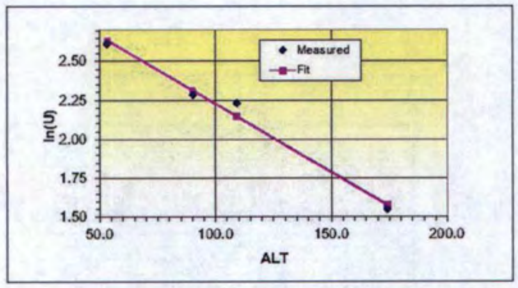
ALTITUDE DEPENDENCE: POTASSIUM

ALT	ln(N)	FIT
53.4	4.8752	4.8740
90.3	4.4578	4.4710
109.3	4.2781	4.2631
174.1	3.5525	3.5664



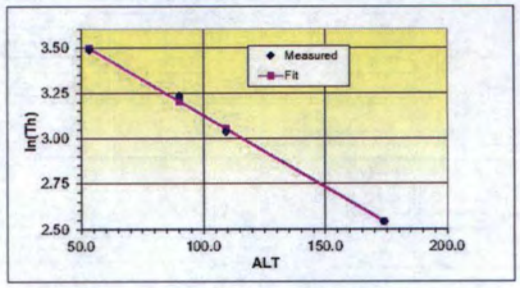
ALTITUDE DEPENDENCE: URANIUM

ALT	ln(N)	FIT
53.4	2.6101	2.6350
90.3	2.2824	2.3119
109.3	2.2300	2.1452
174.1	1.5476	1.5778



ALTITUDE DEPENDENCE: THORIUM

ALT	ln(N)	FIT
53.4	3.4843	3.4964
90.3	3.2347	3.2041
109.3	3.0350	3.0538
174.1	2.5416	2.5422



9.9. APPENDIX IX – SENSITIVITY FACTORS

Note: Exponential Fit Parameters list the results of applying exponential regression analysis to the experimental data and allow the calculation of system sensitivities at any given altitude: "m" and "b" factors are applied using the general exponential relation $y = b * m^x$. *For example*, given m = 0.9934 and b = 73.5360, the Total Count sensitivity at clearance 80 metres is calculated as $S_{80m} = 73.5360 * 0.9934^{80}$

The Breckenridge calibration was flown on November 15, 2014.

Measured Ground Values:	
Exp (TC) : nGy/hr	56.5000
%K	1.8900
ppm U	1.9500
ppm Th	7.3000

C-GCFZ Double Pack (RSI-5423, 5587) - Breckenridge 15-N
Job Ref : B429 (Ground Survey by Tyler Diplock, RSI Calibrated Portable G
**** Radar Altimeter values adjusted to STP
TC,K,U,Th have been stripped with height adjusted values

Line	Clearance (metres)	TC (cps)	K (cps)	U (cps)	Th (cps)	STC (cps/unit)	SK (cps/unit)	SU (cps/unit)	STH (cps/unit)
S1200:0	53.4	1346.0	131.0	13.6	32.6	23.82	69.31	6.97	4.47
S1300:0	90.3	990.6	86.3	9.8	25.4	17.53	45.66	5.03	3.48
S1400:0	109.3	858.7	72.1	9.3	20.8	15.20	38.15	4.77	2.85
S1500:0	174.1	463.7	34.9	4.7	12.7	8.21	18.47	2.41	1.74

		"m"	"b"
Exponential Fit Parameters:	TC	0.9912	38.8756
	K	0.9891	124.0110
	U	0.9913	11.4108
	TH	0.9921	6.8822

Calculated Sensitivities	
CLEARANCE:	80
TC	19.15
K	51.75
U	5.66
TH	3.66

9.10. APPENDIX X – README FILE

Terraquest Ltd.
B429 Maurice Creek, Declan Resources
Fixed Wing Horizontal Magnetic Gradiometry and Radiometric Survey

DATA ARCHIVE FOR **B429 Maurice Creek**
CONTENTS

1.1 /DATABASE
B429ARC_Alberta_MAG.gdb
B429ARC_Alberta_MAG.xyz
B429ARC_Alberta_SPEC.gdb

1.2 /GRIDS

B429_Digitalterrainmodel.grd	Digital Terrain Model (m Above Sea Level)
B429_TotalMagneticIntensity.grd	Total Magnetic Intensity (nT)
B429_CalculatedVerticalDerivative.grd	Calculated 1st vertical derivative of TMI (nT/m)
B429_MeasuredLongitudinalGradient.grd	Measured Longitudinal Horizontal Gradient (nT/m)
B429_MeausredLateralGradient.grd	Measured Lateral Horizontal Gradient (nT/m)
B429_ReconstructedTotalField.grd	Reconstructed Total Field (created from gradients using Nelson Method) (pseudonT)
STC.grd	Corrected Total Count, nGy/h
SK.grd	Corrected Potassium, %K
SU.grd	Corrected Uranium, ppm eU
STH.grd	Corrected Thorium, ppm eTh
STC_NAS4.grd	Corrected Total Count, nGy/h, NASVD enhanced
SK_NAS4.grd	Corrected Potassium, %K, NASVD enhanced
SU_NAS4.grd	Corrected Uranium, ppm eU, NASVD enhanced
STH_NAS4.grd	Corrected Thorium, ppm eTh, NASVD enhanced

1.3 /MAPS

B429-FlightPath-01.map	Flight Path
B429-DigitalTerrainModel-02.map	Digital Terrain Model (m Above Sea Level)
B429-TotalMagneticIntensity-03.map	Total Magnetic Intensity (nT)
B429-CalculatedVerticalDerivative-04.map	Calculated 1st vertical derivative of TMI (nT/m)
B429-MeasuredLongitudinalGradient-06.map	Measured Longitudinal Horizontal Gradient (nT/m)
B429-MeausredLateralGradient-05.map	Measured Lateral Horizontal Gradient (nT/m)
B429-ReconstructedTotalField-07.map	Reconstructed Total Field (created from gradients using Nelson method) (pseudonT)
B429-TotalCount-08.map	Corrected Total Count (nGy/h), NASVD enhanced
B429-Potassium-09.map	Corrected Potassium (%K), NASVD enhanced
B429-Uranium-10.map	Corrected Total Count (ppm eU), NASVD enhanced
B429-Thorium-11.map	Corrected Total Count (ppm eTh), NASVD enhanced
B429-Ternary-12.map	Ternary Image (RGB colour model - RED:K, GREEN:TH, BLUE:U), NASVD enhanced

1.4 /JPEGS

B429-FlightPath-01.jpg	Flight Path
B429-DigitalTerrainModel-02.jpg	Digital Terrain Model (m Above Sea Level)
B429-TotalMagneticIntensity-03.jpg	Total Magnetic Intensity (nT)
B429-CalculatedVerticalDerivative-04.jpg	Calculated 1st vertical derivative of TMI (nT/m)
B429-MeasuredLongitudinalGradient-06.jpg	Measured Longitudinal Horizontal Gradient (nT/m)

B429-MeausredLateralGradient-05.jpg	Measured Lateral Horizontal Gradient (nT/m)
B429-ReconstructedTotalField-07.jpg	Reconstructed Total Field (created from gradients using Nelson method) (pseudonT)
B429-TotalCount-08.jpg	Corrected Total Count (nGy/h), NASVD enhanced
B429-Potassium-09.jpg	Corrected Potassium (%K), NASVD enhanced
B429-Uranium-10.jpg	Corrected Total Count (ppm eU), NASVD enhanced
B429-Thorium-11.jpg	Corrected Total Count (ppm eTh), NASVD enhanced
B429-Ternary-12.jpg	Ternary Image (RGB colour model - RED:K, GREEN:TH, BLUE:U), NASVD enhanced

B429 Maurice Creek: B429ARC_Alberta_MAG channel list
10Hz gdb

Note- Traverse lines in the databases are denoted with an L, Tie lines with a T**
The Magnetics data files for B429 Maurice Creek survey contain the following channels:

PARAMETER	UNIT	DESCRIPTION
LINE	number	Line number
FLIGHT	number	Flight number
DATE	date	Date in YYYY/MM/DD format
X_WIN	metres	Easting (WGS84, UTM Zone 12 N windowed)
Y_WIN	metres	Northing (WGS84,UTM Zone 12 N windowed)
LAT	degrees	Latitude WGS84 (decimal degrees)
TIME	seconds	UTC Time (seconds after midnight)
hhmmss	hhmmss	UTC Time (Hours Minutes and Seconds)
ALT	metres	GPS Altitude (metres Above Sea Level)
RADAR_M	metres	Radar Altitude (metres Above Ground Level)
DTM_final	metres	Digital Terrain Model (metres Above Sea Level)
Drape	metres	Computer programed drape (metres Above Sea Level
VMX	nT	Fluxgate X component
VMY	nT	Fluxgate Y component
VMZ	nT	Fluxgate Z component
TF1RAW	nT	Raw Magnetic Intensity (left sensor)
TF2RAW	nT	Raw Magnetic Intensity (right sensor)
TF3RAW	nT	Raw Magnetic Intensity (tail sensor)
TF1CMP	nT	Compensated Magnetic Intensity (left sensor)
TF2CMP	nT	Compensated Magnetic Intensity (right sensor)
TF3CMP	nT	Compensated Magnetic Intensity (tail sensor)
Diurnal	nT	Diurnal Magnetic Intensity (raw)
TF3CD_lvl	nT	Total Magnetic Intensity (diurnal, lagged, and heading corrected tie- line leveled)
TF3CD_ML	nT	Total Magnetic Intensity (diurnal, lagged, and heading corrected, tie-line leveled, and micro-levelled, final processed TMI)
HX_FINAL	nT/m	Measured Lateral horizontal gradient
HY_FINAL	nT/m	Measured Longitudinal horizontal gradient
RTF	pseudo nT	Reconstructed Total Field "sampled grid"

B429 Maurice Creek: B429ARC_Alberta_SPEC channel list
1Hz gdb

Note- Traverse lines in the databases are denoted with an L, Tie lines with a T**
The Radiometric data files for B429 Maurice Creek survey contain the following channels:

PARAMETER	UNIT	DESCRIPTION
LINE	number	Line number
FLIGHT	number	Flight number
DATE	date	Date in YYYY/MM/DD format
X	metres	Easting (WGS84, UTM Zone 12 N)
Y	metres	Northing (WGS84, UTM Zone 12 N)
X_WIN	metres	Easting (WGS84, UTM Zone 12 N windowed)
Y_WIN	metres	Northing (WGS84,UTM Zone 12 N windowed)
LON	degrees	Longitude WGS84 (decimal degrees)
LAT	degrees	Latitude WGS84 (decimal degrees)
TIME	seconds	UTC Time (seconds after midnight)
hhmmss	hhmmss	UTC Time (Hours Minutes and Seconds)
ALT	metres	GPS Altitude (metres Above Sea Level)
RADAR_M	metres	Radar Altitude (metres Above Ground Level)
TEMP	deg	Celsius Temperature
PRESS	mBar	Atmospheric pressure (calculated)
RADSTP	metres	metres radar altitude corrected to standard temp- pressure (metres Above Ground Level)
SPC_DOWN	cps	256 channel downward gamma ray spectrum
SPC_UP	cps	256 channel upward gamma ray spectrum
SPC_DOWN_NAS4	cps	256 channel downward gamma ray spectrum (NASVD enhanced)
RAWTC	cps	Raw Total Count ROI
RAWK	cps	Raw Potassium ROI
RAWU	cps	Raw Uranium ROI
RAWTH	cps	Raw Thorium ROI
RAWCOS	cps	Raw Cosmic ROI
RAWUUP	cps	Raw Upward Uranium ROI
RAWTC_NAS4	cps	Raw Total Count ROI (NASVD enhanced)
RAWK_NAS4	cps	Raw Potassium ROI (NASVD enhanced)
RAWU_NAS4	cps	Raw Uranium ROI (NASVD enhanced)
RAWTH_NAS4	cps	Raw Thorium ROI(NASVD enhanced)
CTC	cps	Corrected Total Count ROI
CK	cps	Corrected Potassium ROI
CU	cps	Corrected Uranium ROI
CTH	cps	Corrected Thorium ROI
STC	nGy/h	Corrected Total Count ROI (calibrated units)
SK	%K	Corrected Potassium ROI (calibrated units)
SU	ppm eU	Corrected Uranium ROI (calibrated units)
STH	ppm eTh	Corrected Thorium ROI (calibrated units)
CTC_NAS4	cps	Corrected Total Count ROI, NASVD enhanced
CK_NAS4	cps	Corrected Potassium ROI, NASVD enhanced
CU_NAS4	cps	Corrected Uranium ROI, NASVD enhanced
CTH_NAS4	cps	Corrected Thorium ROI, NASVD enhanced
STC_NAS4	nGy/h	Corrected Total Count ROI (calibrated units), NASVD enhanced
SK_NAS4	%K	Corrected Potassium ROI (calibrated units), NASVD enhanced
SU_NAS4	ppm eU	Corrected Uranium ROI (calibrated units), NASVD enhanced
STH_NAS4	ppm eTh	Corrected Thorium ROI (calibrated units), NASVD enhanced