2.50730 .

GEOPHYSICAL ASSESSMENT REPORT

on an

Fixed-Wing Airborne Magnetic Gradiometer Survey

over the

Chester Gold, Benneweis and Yeo Township Projects Gogama, Ontario

For

Trelawney Mining and Exploration Inc.

Bob Lo, M.Sc., M.B.A., P.Eng,
Consulting Geophysicist,
Markham, Ontario L3T 4E1

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SUMMARY

A high resolution magnetic gradient and VLF airborne survey was conducted over Trelawney Exploration's claims in the Benneweis, Chester and Yeo Townships in July of 2010. A total of 5,473 line kilometers of fixed-wing aeromagnetic and magnetic gradiometer survey was flown in one single block over the three blocks of claims. A VLF EM system was also part of the airborne instrument package.

The airborne survey detected numerous dykes and other magnetic bodies. It was interpreted for geology and structure by Hadyn Butler, P.Geo. of Sudbury, ON.

The airborne geophysical data is of use in helping map the geology and structure of the project and surrounding area.

**Report
on an
Fixed-Wing Airborne
Magnetic Gradiometer Survey
over the
Chester Gold, Benneweis, and Yeo Projects
Gogama, Ontario
for
Trelawney Mining and Exploration Inc.**

1.0 INTRODUCTION

A property-wide high resolution airborne magnetic gradiometer survey was flown in 2010 to help map the geology and structures on the Chester Gold Project and of the claims in the Benneweis and Yeo Townships. The survey was conducted by Aeroquest Limited of Mississauga, Ontario using their Paxon turbine "crop duster" fixed-wing system. A magnetic gradiometer was specified as it gave the best resolution for the same line kilometer total. The Aeroquest system was chosen as it was also capable of safely surveying at lower terrain clearances. In addition, the system was equipped with a VLF system. The VLF data was acquired to help detect low conductivity features such as water filled faults or clay filled shear zones.

The total survey coverage over the Chester Gold Project claims was 1610 line kms using a survey line spacing of 50 metres and tie-line spacing of 500 metres.

2.0 LOCATION, ACCESS, AND TOPOGRAPHY

The Chester Project area occupies an 8 by 4 km portion of Chester Township with two claims in Yeo Township in Ontario, Canada. The Benneweis Township Project is located in Benneweis, St. Louis and Neville Townships with parts of the easternmost claims in Groves and Champagne Township. The Yeo Township Project is located entirely in Yeo Township.

Ground access to the properties from Highway 144 is by 12 km of bush road beyond the west side of Mesomikenda Lake. Local drill and bush roads connect all the prospects of this project.

The airborne survey was based out of Timmins a short ferry distance away by aircraft. The Timmins airport is a full service airport with fuel and maintenance facilities.

The topography is gently rolling, with high points seldom exceeding 50 m above local lake levels. Elevations on the property are generally between 380 m and 400 m above sea level. The higher ground usually has a veneer of glacial till or soil over bedrock. Low ground is covered by deep glacial till and frequent small lakes and/or swamps. Most of the area has been logged in the last 30 years so that vegetation is generally small, second growth poplar, birch, spruce and pine. Poplar birch and white pine are common on the higher ground and spruce in the lower, wetter areas.

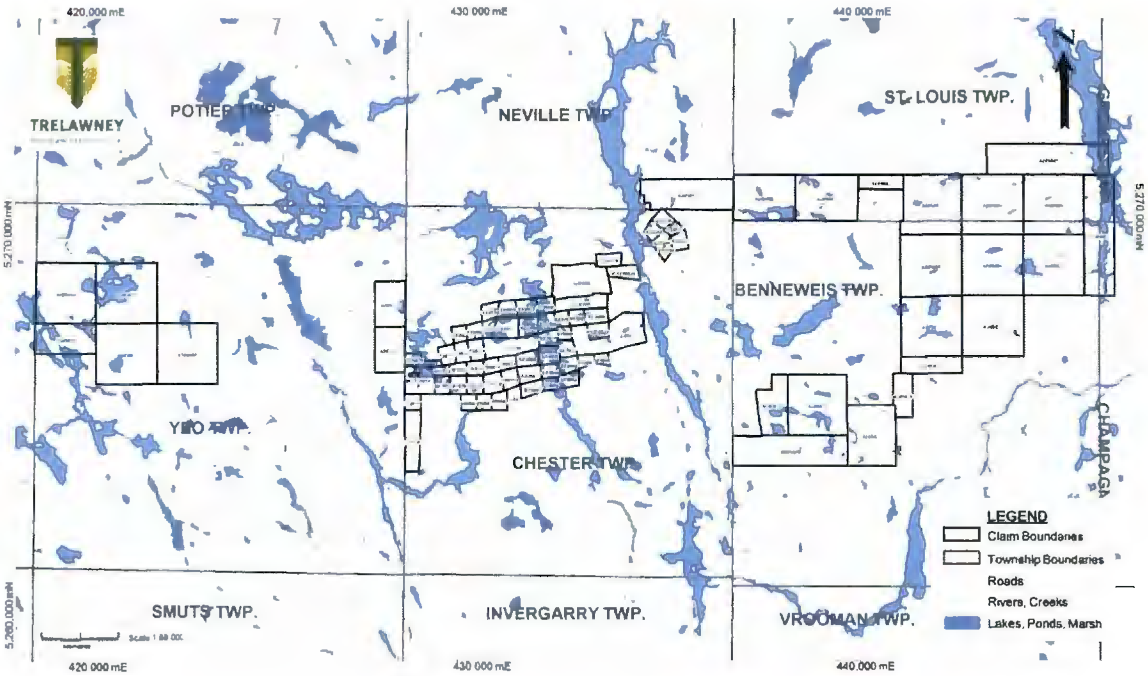


Figure 1 – Location of the Trelawney Claims

3.0 CLAIMS AND COVERAGE

All claims in the Chester Gold Project, Benneweis Township Project and Yeo Township Project as shown in Figure 1 were covered by the airborne survey. They are listed in Appendix 1. Figure 2 shows the flight path and outline of the claim blocks. A 1:50,000 scale map of Figure 1 is included in the Appendices.

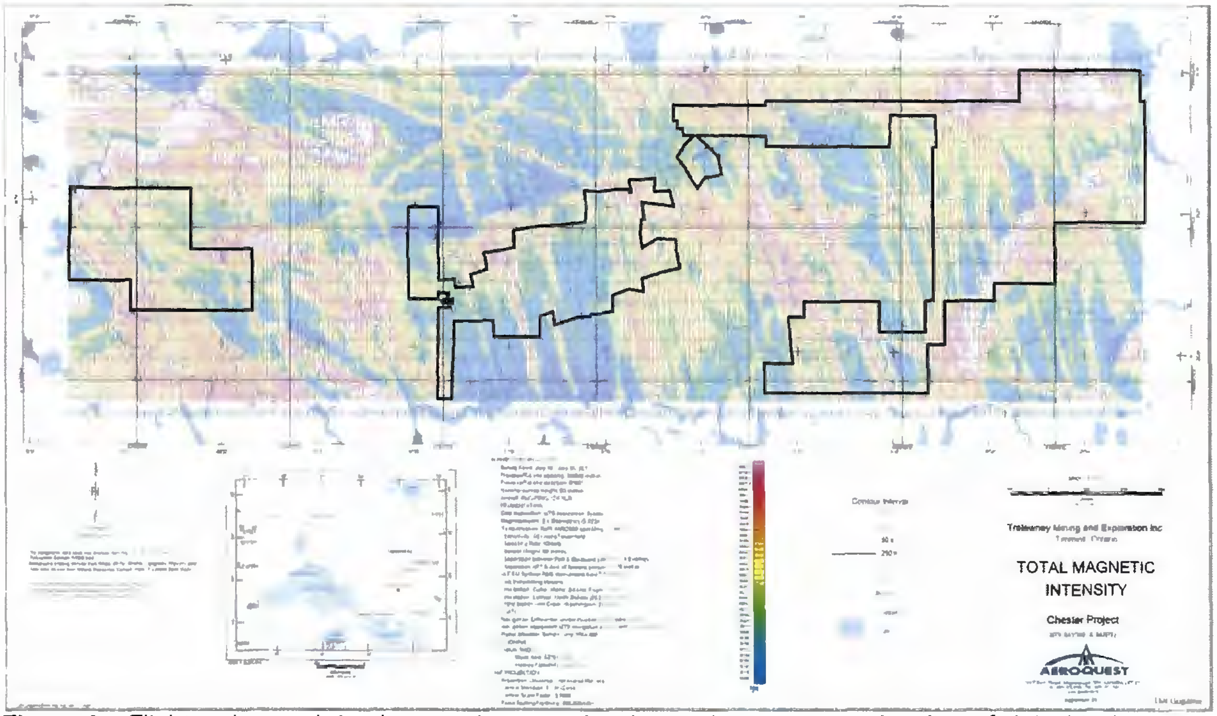


Figure 2 – Flight path on subdued magnetics map showing work coverage and outline of claim blocks.

4.0 PREVIOUS WORK

Prospecting and exploration activity in the vicinity of the Trelawney properties began about 1900 and has continued sporadically to the present time. The first discovery of note was the Lawrence copper prospect on the east shore of Mesomikenda Lake in 1910. Particular interest in the area was sparked in 1930 when Alfred Gosselin found a spectacular showing of native gold on the east shore of Three Duck Lakes. Activity was fairly intense through to the early 1940s, with a significant amount of prospecting and trenching plus the sinking of a few, shallow shafts and some resultant, very minor production. Through to the late 1960s, there was little or no work performed. From the early 1970s to about 1990, there was a great deal of surface work performed along with some limited underground investigations. Since that time, fragmented property ownership has precluded any major programs. With the consolidation of control of a group of properties by Trelawney in 2006, a reappraisal of the potential of several interesting gold prospects has become possible.

Previous airborne geophysics consists of a 1980-81 vintage Input survey (Swayze Block) commissioned by the Ontario Geological Survey. The survey data was reprocessed and released as GSD 1015-revised in 2003. The survey was flown at 200 metre line spacing. No electromagnetic anomalies of any significance were located over the property and none were expected from the known geology and mineralization of the project area.

5.0 GEOLOGY

The project sits at the southeastern tip of the Swayze Archean Greenstone Belt. It has also been interpreted to be a southwestern extension of the Abitibi Greenstone Belt to the northwest. There is a Proterozoic cover of sediments which may be masking a possible link to this belt. Trelawney's Chester Project is close to a major regional fault located just to the north of the project which appears to be a southwestern extension of the Cadillac-Larder Lake Fault Zone which runs through the Kirkland Lake area. The Destor Porcupine Fault Zone is asimilar fault zone which runs through the gold deposits of the Timmins area. These large regional faults ae in close proximity to some of Canada's most productive gold camps with more than 68 Million ounces in the Timmins Camp and 42 million ounces in the Kirkland Lake district.

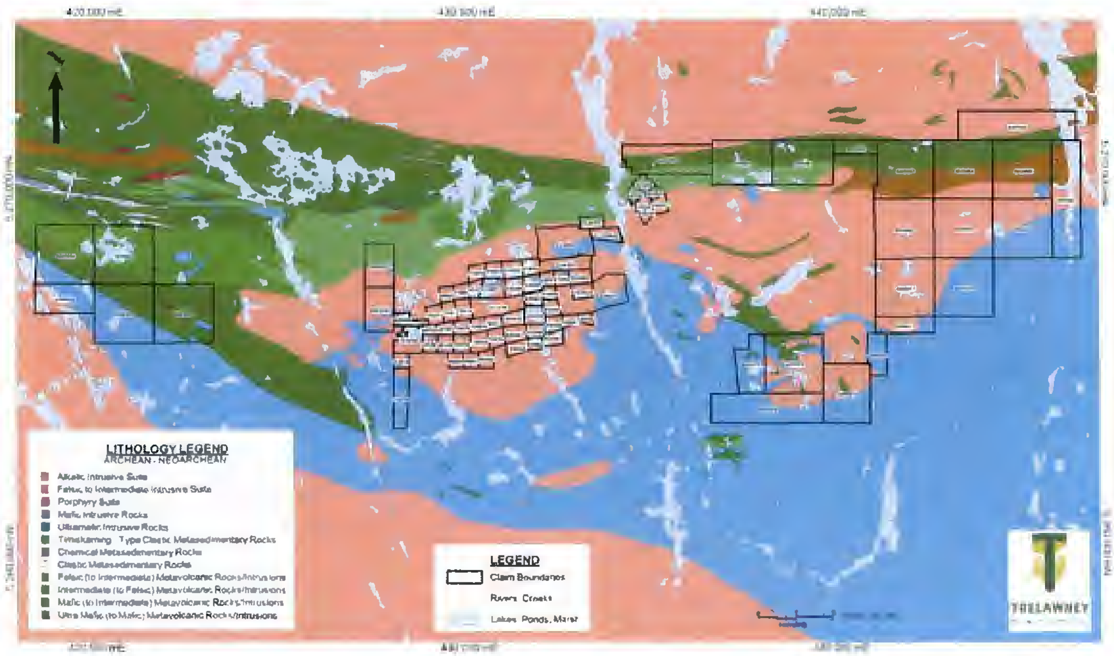


Figure 3 – Project Geology – from Ayer et. al. 2002.

The project area hosts at least 12 known gold mineralized structures. Trelawney's initial focus was on three of these structures, namely the Chester 1, 2 and 3 Deposits. The Chester 1, 2 and 3 Deposits were historically known as the Murgold Chesbar, Young-Shannon and Jack Rabbit, respectively. Each hosts historical (non-NI43-101) gold resources that have not been placed in production.

In March of 2010, Trelawney announced the discovery of a new zone of gold mineralization. The drilling program identified two wide, sub-parallel zones of gold mineralization, these zones exhibit an apparent moderate dip to the north. Host breccia zones and adjacent wall rock contain disseminated sulfides which generally correlate to the gold values. The zones are bleached with the prevalent alteration being feldspathic (albite and/or K-feldspar to be confirmed) and chlorite with limited carbonate present in the breccia. Deformation is limited to brecciation with an apparent lack of foliation.

Mineralization in an upper breccia zone is in the form of disseminated pyrite and chalcopyrite as first reported in the original hole and contains copper values up to 0.17%. The lower breccia zone exhibits a similar style of mineralization but with less chalcopyrite. Within both zones gold values generally range up to 2.0 g/t gold with the occasional high grade intervals reported here. Visible gold is commonly observed in these high grade intervals.

6.0 2010 AIRBORNE GEOPHYSICAL PROGRAMME

The magnetometer and magnetic gradiometer survey data was used to help map the geology. Different geological units have varying amount of magnetic minerals. The ground magnetometer survey is used to map the locations of these magnetic units to aid in the understanding of the geology.

Gold mineralization may be structurally controlled as well. The aeromagnetic data can be interpreted for lineaments which may be due to faulting or shear zones.

The VLF data was collected to detect low conductance features which may be due to water filled faults or clay filled shear zones for example.

Aeroquest's logistics report details the data acquisition, equipment, processing and products. It is included in Appendix 6.

Total survey coverage is 5,473 line kilometers. Parts of the survey lines extent past the claim blocks to the north and south. As well, a portion of the survey covered the gap between the Yeo Township Project and the Chester Gold Project. To obtain the best data available, it was decided to fly the survey in one contiguous rectangular block to allow for better tie-line leveling of the aeromagnetic data. This is the reason the airborne survey block has dimensions just larger than the maximum and minimum eastings and northings of the claim blocks. As well, the airborne contractor typically asks for a minimum survey line length which is just slightly less than the north – south dimensions of the survey block. The increased coverage in one single block also produces better processed products like gradient enhanced TMI, and Calculated Vertical Gradients due to fewer edge effects in the Fourier Transforms and by having the claim blocks located away from the edge of the survey. The beginning and ends of the flight lines are typically the worst flown due to the aircraft not being level and on the flight path at the ends of the line. Line 15360 for example, shows a bad end of line flight path. These effects are minimized over the claim blocks by adding coverage at the beginning and end of the flight lines.

6.1 THE PHYSICAL SURVEY

The survey started in July of 201. The survey consisted of one single block. Line spacing was 50 metres and tie-line spacing was 500 metres. The aircraft flew at a nominal terrain clearance of 50 metres.

Data was processed on-site in Timmins to the level where the georeferenced magnetic data can be viewed and gridded with Geosoft Montaj. This data was monitored and quality controlled by this author on a daily basis. At the end of the data acquisition, the crew stayed until the quality control was completed prior to demobilizing.

Note that the line path map shows the coverage extending past the survey block to the north and south. This is due to the minimum line length requirement of the survey.

6.2 PERSONNEL

The following Aeroquest personnel were involved in the project:

Senior Project Manager: Troy Will
Field Data Processor: Rafal Starmach
Office Data Processor: Chris Kahue
Mapping and Reporting: Asif Mirza

The following Kiwi Air personnel were involved in the project:

Survey Pilots: Chris Herby and Geoff Banks

Hadyn Butler, P.Geo., an independent consultant was contracted for the interpretation of the survey data.

This author, Bob Lo, was retained by Trelawney to plan, supervise and report on the airborne survey.

6.3 INSTRUMENTATION, AND SURVEY PARAMETERS

The airborne survey was flown with a PAC 750XL single engine fixed-wing survey aircraft specially modified for airborne geophysical survey. It is outfitted with wing-tip pods and a tail stinger used to mount the airborne magnetometers away from the body of the aircraft which may contain magnetic parts and material.

Three Geometrics G822A Ceasium Vapour total field magnetometers were mounted on the aircraft. They were sampled at 10 Hz. Aeromagnetic compensation was performed with an RMS Adaptive Aeromagnetic Real Time Compensator (AARC 500) using a three component fluxgate sensor to provide the attitude of the aircraft. Data acquisition was performed with an UTS proprietary high speed digital data acquisition system.

A RMS Herz Totem-2A VLF receiver was also mounted on the tail stinger.

Ancillary equipment included GPS receivers and a navigation system to guide the pilot along the preprogrammed flight path. Ancillary equipment also included radar altimeters and base station magnetometers.

The logistics report by Aeroquest included in the Appendices provided more detail on the instrumentation and survey parameters.

6.4 DATA PRESENTATION

Magnetometer data

The magnetic data is presented in the form of contoured grids. The effects of the temporal variations in the Earth (sometimes called the diurnal) is removed via the use tie-line leveling algorithms. A magnetic base was used to monitor the non-linearity and rate of change of the Earth's magnetic field.

The magnetic gradient data was incorporated into the total magnetic field grids via a horizontal gradient enhanced (HGE) gridding algorithm.

More details can be found in Aeroquest's logistics report in the Appendices.

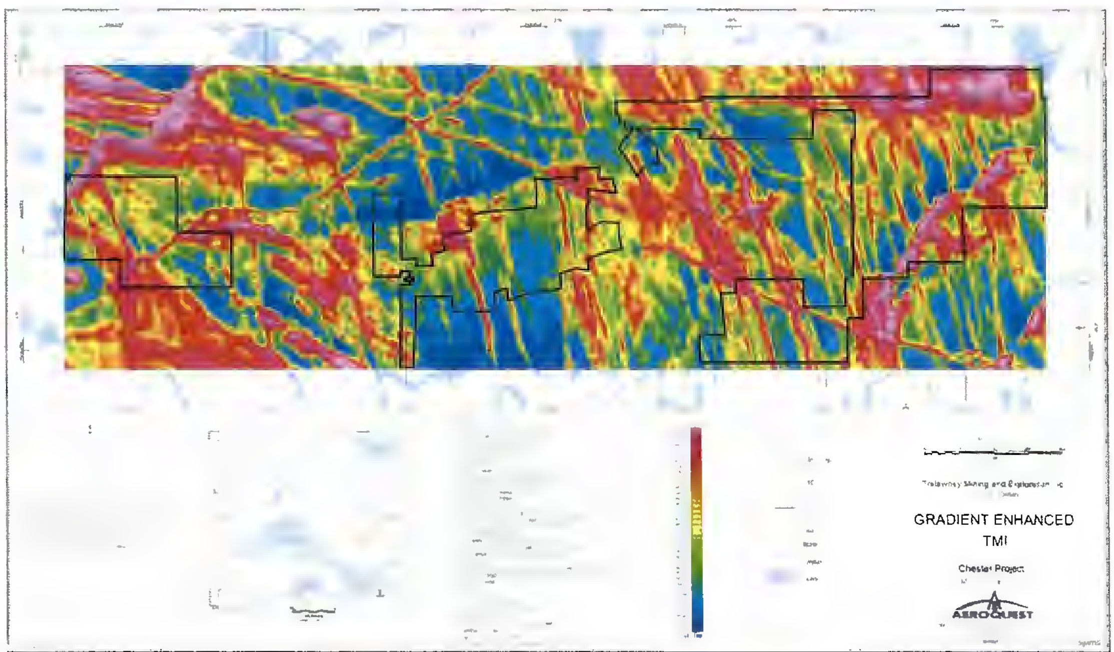


Figure 4 – gradient enhanced aeromagnetic data from the Aeroquest survey.

Very Low Frequency EM data

Very Low Frequency Electromagnetic (VLF) data was collected, processed and presented during the survey. VLF uses the communications signals transmitted by the military to communicate with submarines. It operates at a high geophysical frequency (the very low refers to radio frequencies) and consequently is overwhelmed by the low conductance responses. This attribute is not desirable in base metals exploration, but for gold exploration, the low conductance responses may be due to water filled fault or clay filled shears which may control the gold mineralization.

Figure 5 shows the contours of the VLF total field where a positive is centered over a steeply dipping conductor.

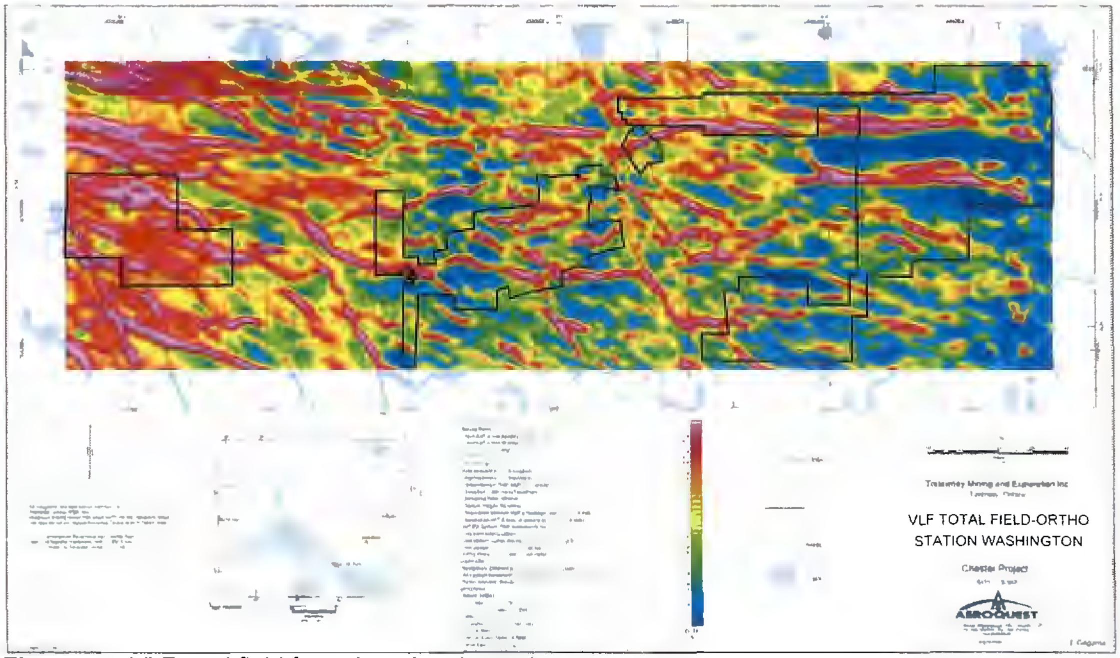


Figure 5 – VLF total field from the otho channel.

Aeroquest's logistics report is included in the appendices for further details.

6.5 GEOPHYSICAL INTERPRETATION

Hadyn Butler, P.Geo., an independent consultant was contracted to analyze the aeromagnetic and VLF data. His interpretation of the lineaments anddykes is presented in Figure 6 and as a map in the appendices.

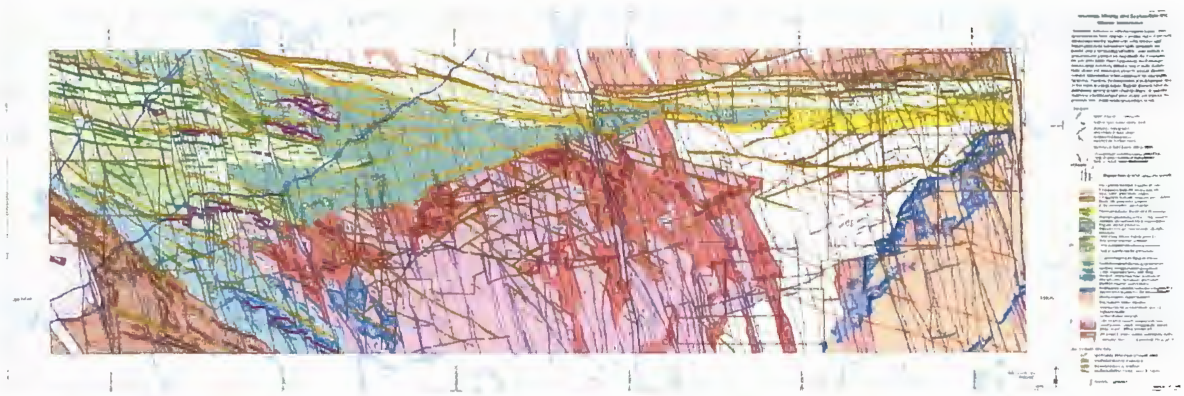


Figure 6 – Interpretation Map of the airborne geophysics.

7.0 SUMMARY AND RECOMMENDATIONS

The aeromagnetic and VLF survey generated a property wide, high resolution geophysical dataset which is used to help the geology and structures of the property.

The aeromagnetic and VLF interpretation should be correlated with known geology to determine if new targets can be obtained. As well, for drill hole planning, the locations of the mapped dykes should be used to steer the drilling away from those areas.

Bob Lo
February 2, 2012

SELECTED REFERENCES

Ayer,J.A.; Trowell, N.F.; Valade,L.; Nevills, M and Madon, Z.; 2002., Geological Compilation of the Swayze Area, Abitibi Greenstone Belt. Ontario Geological Survey, Miscellaneous Release Data 93

Grant, F.S., and West, G.F., **Interpretation theory in applied geophysics**, McGraw-Hill Inc., Toronto, 1965.

Ontario Geological Survey, 2003, Swayze Area, Ontario airborne magnetic and electromagnetic surveys, processed data and derived products, Archean and Proterozoic "greenstone" belts" Geophysical Data Set 1015-Revised , Ontario Geological Survey, Sudbury.

STATEMENT OF QUALIFICATIONS

I, Bob B.H. Lo, am a Consulting Geophysicist residing at 11 Woolsthorpe Crescent, Markham, Ontario, Canada, L3T 4E1.

I graduated from the University of Toronto with a Bachelor of Applied Science degree in the Geophysics option of Engineering Science in 1981 and obtained a Masters of Science degree in Physics, also from the University of Toronto in 1985. In 1992, I obtained a Masters of Business Administration degree from Laurentian University in Sudbury, Ontario.

I am a member in good standing of the Professional Engineers of Ontario and hold a Certificate of Authorization from the PEO.

I am a member in the Society of Exploration Geophysicists—SEG (Tulsa), a member of the Canadian Exploration Geophysical Society—KEGS (Toronto), and a member of the Prospectors and Developers Association of Canada—PDAC (Toronto).

Since 1981, I have been involved in the use of geophysics for mineral exploration, geothermal site detection, and various engineering and environmental applications. I have either planned, supervised, conducted, interpreted, and reported on geophysical surveys from Canada, the United States of America, South America, South East Asia, Europe and Africa.

The statements contained in this report and the conclusions reached are based upon evaluation and review of maps and information supplied by Trelawney Exploration Inc.

I have not visited the property nor I do I hold any financial interest in the property.

Signed,

Bob Lo, M.Sc., MBA., P.Eng.

Markham, Ontario

February 2, 2012

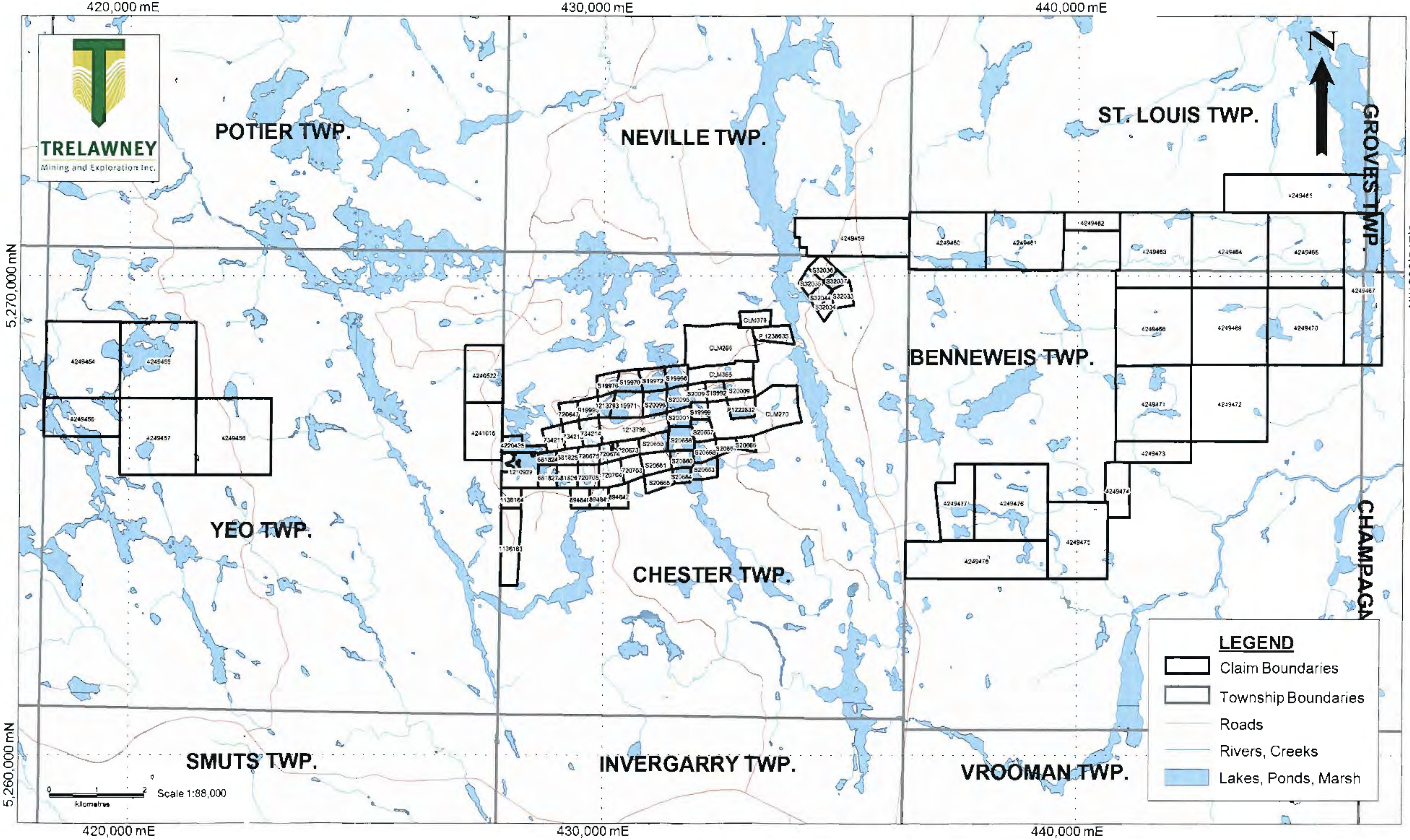
APPENDIX 1 – LIST OF CLAIMS COVERED BY AIRBORNE SURVEY

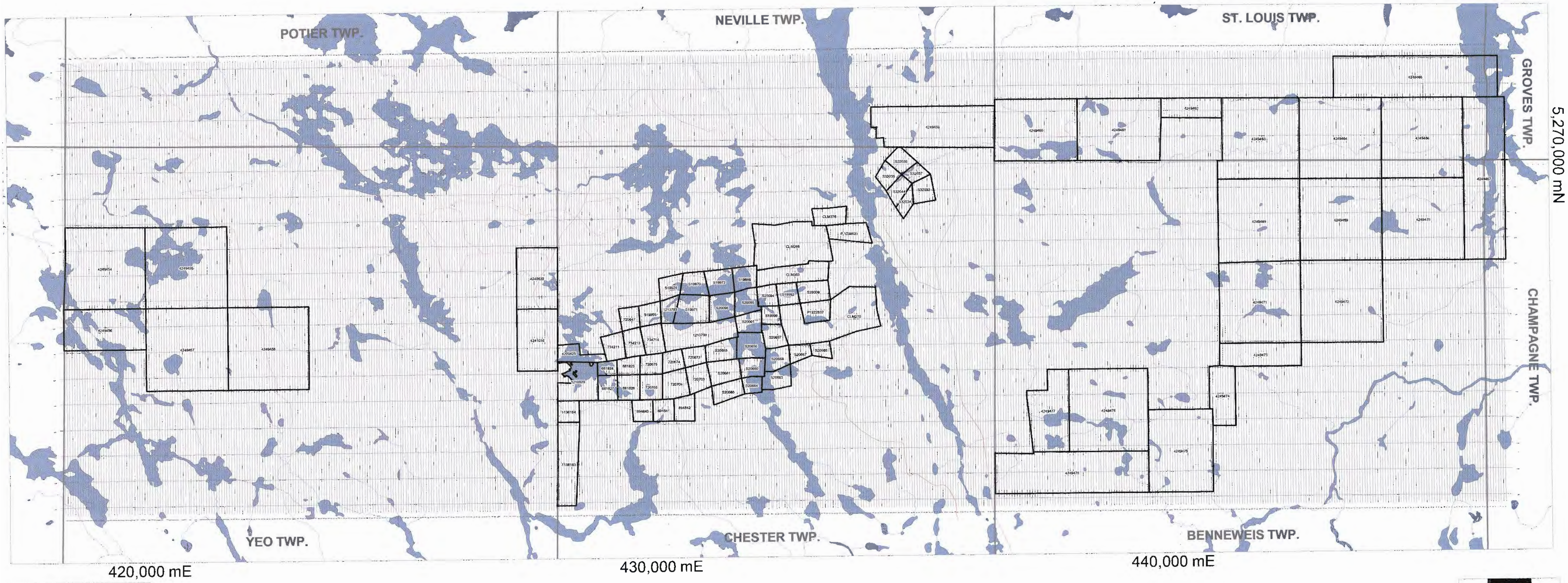
Claim Number	Township	Area (Ha)
4249454	YEO	250.393
4249455	YEO	253.04
4249456	YEO	127.736
4249457	YEO	255.546
4249458	YEO	252.071
4249459	NEVILLE	185.227
4249460	ST LOUIS	193.349
4249461	ST LOUIS	196.167
4249462	ST LOUIS	45.3488
4249463	ST LOUIS	239.732
4249464	ST LOUIS	250.786
4249465	GROVES	254.6
4249466	ST LOUIS	249.137
4249467	GROVES	254.944
4249468	BENNEWEIS	257.731
4249469	BENNEWEIS	255.447
4249470	BENNEWEIS	256.158
4249471	BENNEWEIS	249.878
4249472	BENNEWEIS	256.109
4249473	BENNEWEIS	70.5001
4249474	BENNEWEIS	56.2344
4249475	BENNEWEIS	201.353
4249476	BENNEWEIS	247.212
4249477	BENNEWEIS	108.817
4249478	BENNEWEIS	238.354
681824	CHESTER	10.3046
681825	CHESTER	14.9776
681826	CHESTER	21.3277
681827	CHESTER	18.5219
720647	CHESTER	15.8557
720673	CHESTER	15.4422
720674	CHESTER	15.9291
720675	CHESTER	16.9824
720703	CHESTER	21.8409
720704	CHESTER	26.1846
720705	CHESTER	21.7746
734211	CHES/ARAM	20.5326
734213	CHES/ARAM	19.9782
734214	CHES/ARAM	22.8892

Claim Number	Township	Area (Ha)
894840	CHESTER	16.6931
894841	CHESTER	17.4539
894842	CHESTER	19.4325
1136163	CHESTER	63.6728
1136164	CHESTER	17.5224
1210929	CHESTER	48.944
1213793	CHESTER	14.7861
1213796	CHESTER	65.4417
4220425	CHESTER	22.2853
4240522	YEO	95.841
4241016	YEO	94.7768
CLM266	CHESTER	119.667
CLM270	CHESTER	129.757
P1222832	CHESTER	21.5612
S19966	CHESTER	13.0039
S19970	CHESTER	11.7932
S19971	CHESTER	34.8876
S19972	CHESTER	15.7553
S19976	CHESTER	18.329
S19995	CHESTER	17.4167
S19999	CHESTER	12.9598
S20001	CHESTER	18.4047
S20094	CHESTER	15.4201
S20095	CHESTER	21.5113
S20096	CHESTER	24.737
S20655	CHESTER	23.2119
S20656	CHESTER	26.4365
S20657	CHESTER	19.3935
S20660	CHESTER	17.3374
S20661	CHESTER	26.2479
S20663	CHESTER	20.5092
S20664	CHESTER	11.4021
S20665	CHESTER	20.8467
S20666	CHESTER	10.9069
S20667	CHESTER	12.7429
S20668	CHESTER	20.0469
S32033	CHESTER	18.5649
S32034	CHESTER	11.0589
S32035	CHESTER	15.1243
S32036	CHESTER	17.3525
S32037	CHESTER	11.498
S32044	CHESTER	15.156
S8995	CHESTER	22.8843

Claim Number	Township	Area (Ha)
S8996	CHESTER	18.2112
S8997	CHESTER	15.6663

APPENDIX 2 – FLIGHT PATH AND CLAIMS


420,000 mE
430,000 mE
440,000 mE
5,270,000 mN
5,260,000 mN
TRELAWNEY
Mining and Exploration Inc.
POTIER TWP.
NEVILLE TWP.
ST. LOUIS TWP.
GROVES TWP.
BENNEWEIS TWP.
YEO TWP.
CHESTER TWP.
CHAMPAGA
SMUTS TWP.
INVERGARRY TWP.
VROOMAN TWP.
Scale 1:88,000
Kilometres
LEGEND
Claim Boundaries
Township Boundaries
Roads
Rivers, Creeks
Lakes, Ponds, Marsh



Flight Paths and Claims

LEGEND

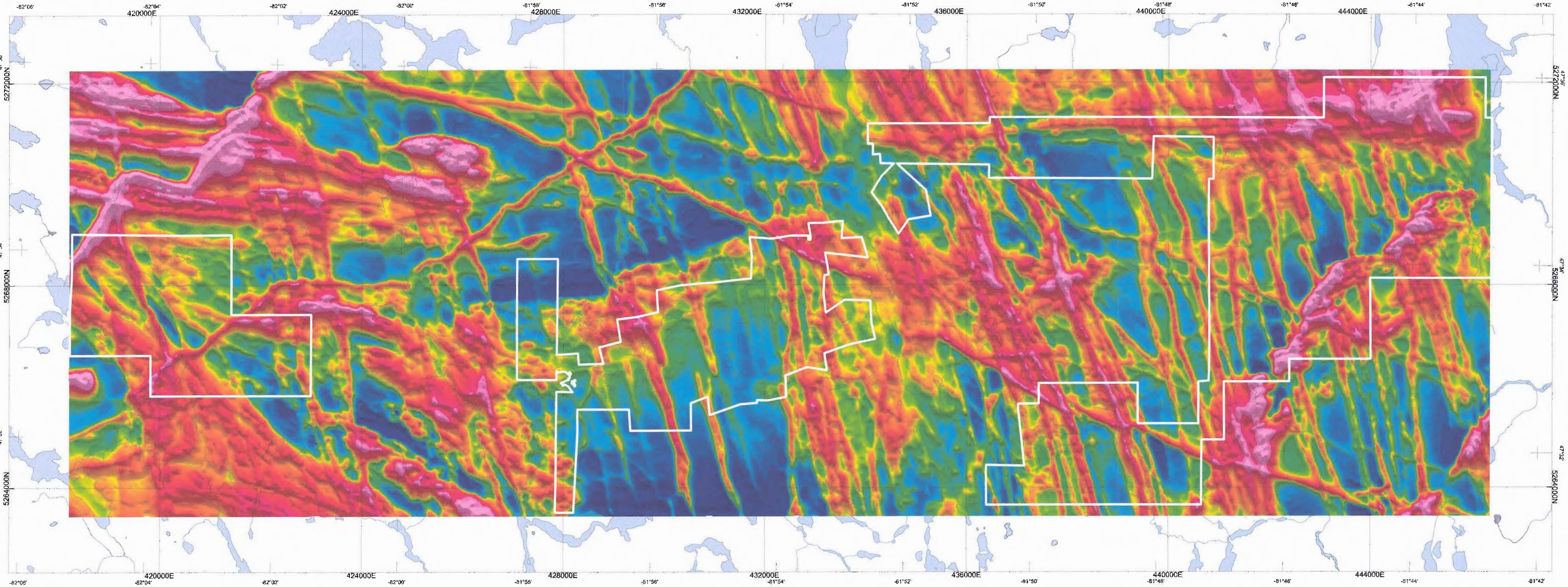
- Claim Boundaries
- Township Boundaries
- Roads
- Rivers, Creeks
- Lakes, Ponds, Marsh
- Flight Paths

0 1 2
kilometres

Scale 1:50,000

TRELAWNEY
Mining and Exploration Inc.

APPENDIX 3 – GRADIENT ENHANCED TOTAL MAGNETIC FIELD MAP



Grid North
NAD83-Zone17

The topographic data base was sourced from the 1:50.000 NRC (Natural Resources Canada) NTDB data
Background shading derived from NASA SRTM (Shuttle Topography Mission) data
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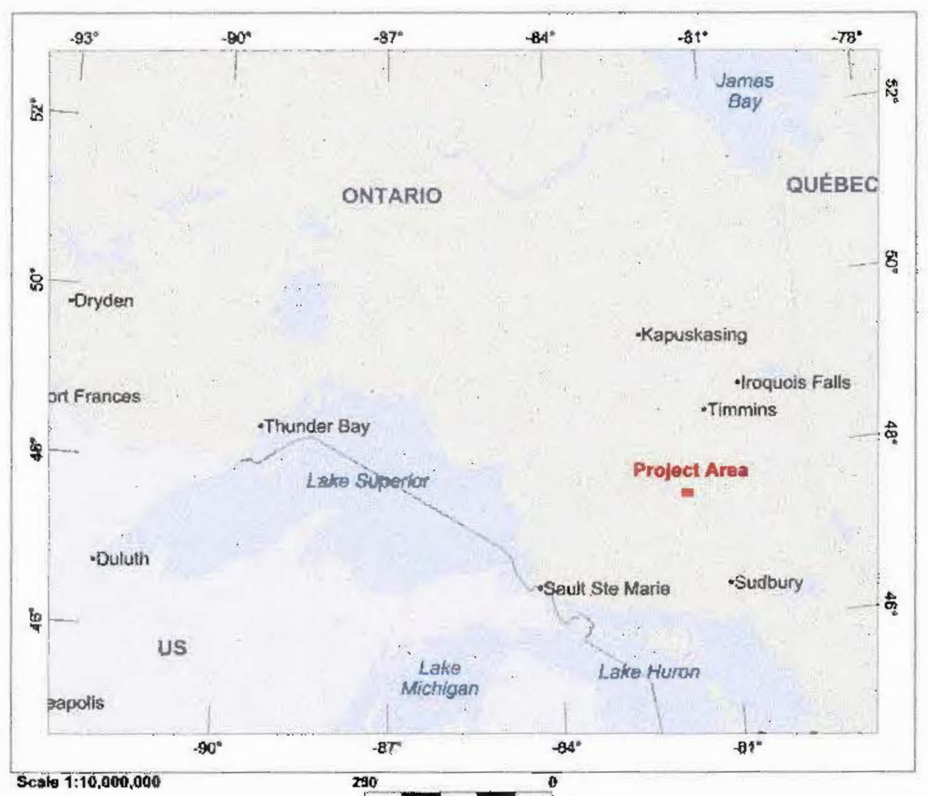


Scale 1:10,000,000

SURVEY SPECIFICATIONS:
- Survey flown: July 16 - July 30, 2010
- Traverse/Tie line spacing: 50/500 metres
- Traverse/Tie line direction: 0°/90°
- Nominal survey height: 50 metres
- Aircraft: PAC-750XL (ZK-XLB)

INSTRUMENTATION:
- Data acquisition: UTS Acquisition System
- Magnetometers: 3 x Geometrics G-822A
- Compensation: RMS AARC500 operating in real time
  - Sensitivity: .001 nanoTesla/Hertz
  - Sampling Rate: 10Hertz
  - Sensor Height: 50 metres
  - Separation between Port & Starboard sensors: 14.9 metres
  - Separation AFT & Axis of forward sensor: 10.78 metres
- VLF EM System: RMS Instruments herz TOTEM-2A
- Two transmitting stations:
- Line station: Cutler, Maine (24 kHz, Flight 1, 2 & 8)
- Line station: LaMour, North Dakota (25.2 kHz, Flight 11-14)
- Ortho station: Jim Creek, Washington (24.8 kHz)

NAVIGATION:
- Navigation: Differential Global Positioning System (DGPS)
- Navigation equipment: UTS navigation system with Novatel 3951R
- Radar Altimeter: Bendix King, KRA-405

POSITIONING
- Datum: NAD83
  - Major Axis: 6378137.000
  - Inverse Flattening: 298.25722

MAP PROJECTION
- Projection: Universal Transverse Mercator
- Central Meridian: 81°W (Zone 17)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m

GE-TMI
nT

Contour Interval
- 5 nT
- 10 nT
- 50 nT
- 250 nT

Trail
Roads
Wetland
Lake

scale 1:50,000
(meters)
NAD83 / UTM zone 17N

Trelawney Mining and Exploration Inc.
Timmins, Ontario

GRADIENT ENHANCED TMI

Chester Project

NTS 041O09 & 042P12

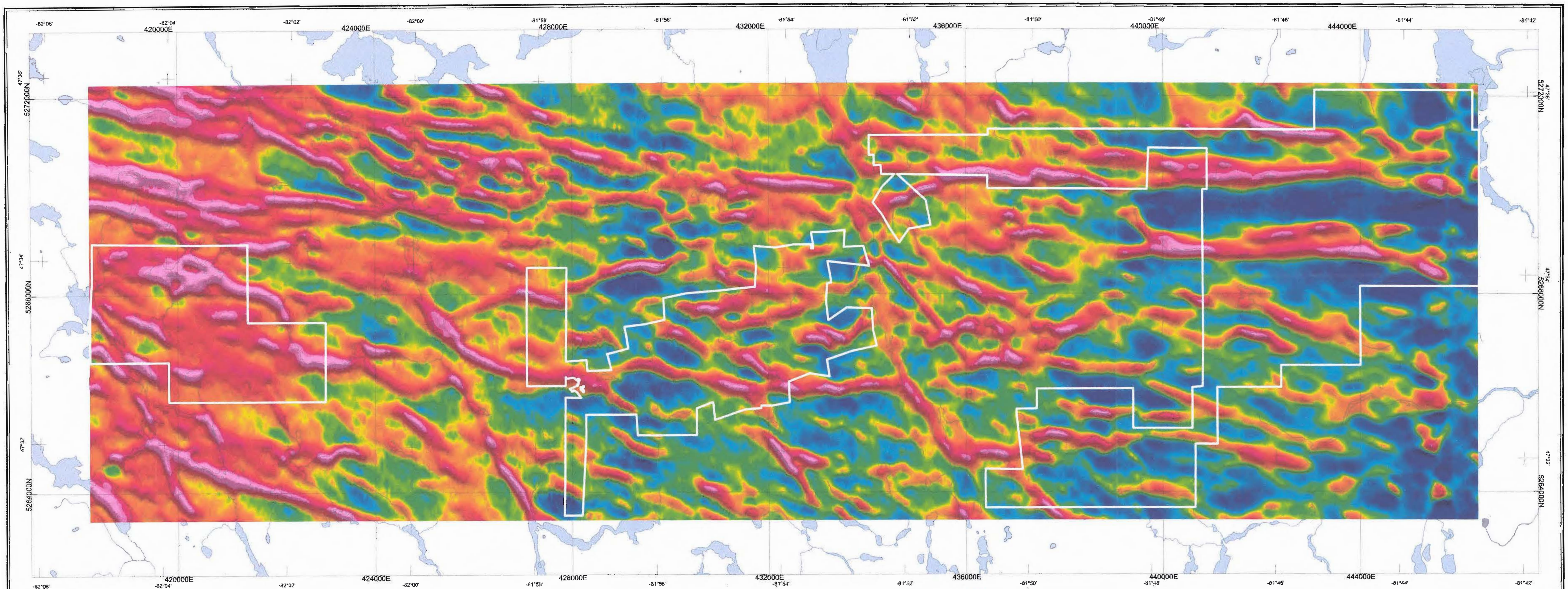
AEROQUEST
7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
Tel: (905) 672-9129 Fax: (905) 672-7083
www.aeroquest.ca

September 2010

GE-TMI Gogama

GE-TMI_50k_Gogama Block.map, AQL Job no. 10049

APPENDIX 4 – VLF MAP



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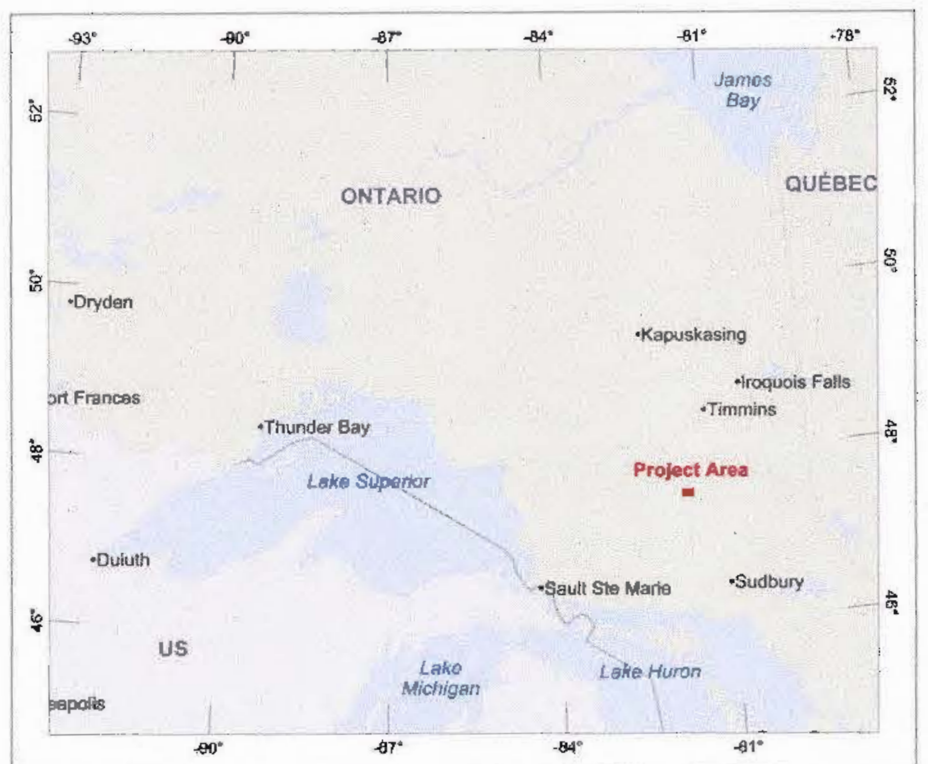

Scale 1:10,000,000
250 0
(kilometers)
NAD83 / UTM zone 17N

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  - Inverse Flattening: 298.25722

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- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m

47.22
41.72
38.06
35.30
33.07
31.25
29.69
28.36
27.12
25.99
24.94
23.97
23.06
22.22
21.37
20.62
19.90
19.17
18.48
17.83
17.15
16.50
15.87
15.26
14.65
14.02
13.37
12.72
12.06
11.37
10.59
9.75
8.87
7.84
6.68
5.25
3.48
1.09

O_TF
%

Contour Interval
1
2
10
50

Trail
Roads
Wetland
Lake

scale 1:50,000
1000 0 1000 2000 3000
(meters)
NAD83 / UTM zone 17N

Trelawney Mining and Exploration Inc.
Timmins, Ontario

VLF TOTAL FIELD-ORTHO STATION WASHINGTON

Chester Project

NTS 041O09 & 042P12

AEROQUEST
7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
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www.aeroquest.ca

September 2010

O_TF Gogama

O_TF_50k_Gogama Block.map, AQL Job no. 10049

APPENDIX 5 – INTERPRETATION MAP

Trelawney Mining and Exploration Inc.

Magnetic Interpretation

Interpretation based on an airborne magnetic survey: Units comprise narrow linear magnetic anomalies due to Proterozoic diabase dyke swarms, layered units in the Archean-aged Swayze greenstone belt (western Abitibi extension), and broader units in surrounding batholiths. Large sections of greenstone and granitoid are magnetically flat. Fortunately, in this part of the Abitibi-Wawa Subprovince, the Proterozoic diabase dykes commonly deflect or stop at earlier Archean faults, shears and deformation zones (in general) allowing a probable determination of their presence in the magnetically flat terrane. Therefore, the interpretation of fault locations relies on this notion to a large degree. Magnetic domains within the greenstones commonly have a lozenge-shape - an apparent reaction to a far-field sinistral shear couple, and shears in the granitoids form a brittle simple shear pattern as well.

Proterozoic

- a — Abitibi Dyke Swarm (strikes NE)
- s — Sudbury Dyke Swarm (strikes WNW)
- ne — Northeast-striking dykes (may be late Archean swarm)
- nw — Northwest-striking dykes (may be Late Archean swarm)
- m — Matachewan Dyke Swarm (strikes NNW)
- O / o — Onaping Faults and Matachewan brittle fractures. Large [O] means prominent displacement. Small [o] means lesser displacement

Archean

strong, medium, weak, very weak ← Magnetic Anomaly (relative magnetic strength)

- K1 — Kenogamissi Batholith (magnetically flat)
- K2 — Kenogamissi Batholith (weakly magnetic) (may contain greenstone screens)
- K3 — Kenogamissi Batholith (magnetic gneiss boundary facies with greenstone screens)
- granitoid boundary (approximate)
- Cg — Timiskaming Series (based on OGS mapping)
- N1 — Northern greenstones with possible chemical sediment units (as long linear mag anomalies)
- N2 — Magnetically flat greenstones
- L1 — Magnetic lozenges (may be mafic-ultramafic intrusions)
- W1 — Central magnetically layered greenstones (may contain chemical sediments)
- W2 — Central magnetically layered greenstones
- W3 — Central magnetically flat greenstones
- S1 — Southern magnetically flat greenstones
- S2 — Southern magnetically layered greenstones
- S3 — Southern strongly sheared greenstones (some amphibolite facies units likely)
- S4 — Southern amphibolite facies greenstones with intrusions of uncertain association
- granitoid boundary (approximate)
- X1 — Southeastern Layered Series (have the look of a layered Archean gabbro in the Algoma Batholith)
- X2 — Weakly magnetic Algoma Batholith
- X3 — Non-magnetic Algoma Batholith
- Y1 — Magnetically flat granitoid (likely gneissic) Algoma Batholith
- contact location uncertain
- B1 — Late Intrusion Complex (magnetically weak)
- B2 — Late Intrusion Complex (magnetically layered gneiss in part - diffuse boundaries)
- Sw — SW magnetic gneiss complex (amphibolite facies)
- J1 — Southwest late Archean magnetically flat granitoid

Late Archean Structure

- f — Late Archean Brittle Fault of notable extent
- s — Interpreted Shear in Greenstone
- s — Interpreted Shear in Granitoid
- b — Interpreted Brittle-Fracture-Shear in Granitoid
- Property boundaries

March 05, 2011 HRB

APPENDIX 6 – AEROQUEST LIMITED LOGISTICS REPORT

Report on a Fixed Wing Airborne Magnetic Gradiometer and VLF-EM Survey

Aeroquest Job # 10-049

Gogama Area, Chester Project

Timmins, Ontario, Canada

For

Trelawney Mining and Exploration Inc.

130 Adelaide St. West, Suite 2700,
Toronto, ON, Canada M5H 3P5

By

AEROQUEST

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Report date: September 2010

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1. GENERAL SURVEY INFORMATION

Aeroquest Surveys conducted a low level airborne geophysical survey for the following company:

Trelawney Mining and Exploration Inc.
130 Adelaide St. West, Suite 2700,
Toronto, ON, Canada M5H 3P5

The total survey coverage is 5473 km, of which 5357 line-km fell within the defined project areas. The project consists of one block named Chester. Acquisition for the survey commenced on the July 16th and completed on July 30th, 2010. The base location used for operating the aircraft and performing in-field quality control was Timmins, Ontario. This report describes the survey logistics, description & specification of system used and the data processing.

2. SURVEY SPECIFICATIONS

The survey consists of one block, and is located approximately 105 km south east of Timmins, Ontario, Canada. (Figure: 1)

The survey was flown using the WGS84 coordinate system (a Universal Transverse Mercator projection) derived from the World Geodetic System and was contained within zone 17N. Details of the datum and projection system are provided in Appendix B of this report.

Survey area coordinates:

X	Y
418216.6	5272138.0
446403.0	5272138.0
446403.0	5263533.3
418216.6	5263533.3

Figure 1. Survey block

The survey data acquisition specifications for the area flown are specified as follows:

Area Name	Line Spacing (m)	Line Direction	Tie Line Spacing (m)	Tie Line Direction	Sensor Height (m)	Survey Coverage (line-km)
Chester	50	0º/180º	500	90º/270º	50	5473

The sensor height may be varied where topographic relief or issues of safety to aircraft and equipment do not allow this altitude to be maintained.

3. AIRCRAFT AND SURVEY EQUIPMENT

The UTS navigation flight control computer, data acquisition system, magnetic sensors and VLF-EM system were installed into a specialized geophysical survey aircraft. The magnetometers in this aircraft are located in a rigid tail stinger and rigid mounted wingtip pods in order to acquire a measured horizontal magnetic gradient. The VLF-EM system was installed on fuselage pod of the aircraft.

The list of geophysical and navigation equipments used for the survey are as follows:

General Survey Equipment

- PAC 750XL, single engine fixed wing survey aircraft.
- UTS proprietary flight planning and survey navigation system.
- UTS proprietary high speed digital data acquisition system.
- Novatel 3951R, 12 channel precision navigation GPS.
- OMNILITE 132 real time differential GPS system.
- UTS LCD pilot navigation display and external track guidance display.
- UTS post mission data verification and processing system.
- Bendix King KRA-405 radar altimeter.

Magnetic and VLF-EM Data Acquisition Equipment

- UTS tail stinger and wingtip magnetometer installations.
- Three Geometrics G822A Cesium Vapour total field magnetometers.
- Fluxgate three component vector magnetometers.
- RMS Adaptive Aeromagnetic Real Time Compensator (AARC 500).
- Diurnal monitoring magnetometer (Geometrics 856).
- VLF-EM system: RMS Instruments Herz TOTEM-2A.

3.1 Survey Aircraft

The aircraft used for this survey was a PAC 750XL series fixed wing survey aircraft operated by UTS Geophysics, registration ZK-XLB. The specifications are as follows:

Power Plant

- Engine Type — Pratt and Whitney PT-6-34AG
- Shaft Horse Power — 750 eshp
- Fuel Type — JET-A1

Performance

- Cruise speed — 155 kn
- Survey speed — 140 kn

- Stall speed 50 kn
- Range 2550 km
- Endurance (no reserves) 10.5 hours
- Fuel tank capacity 1800 litres

3.2 Data Positioning and Flight Navigation

Survey data positioning and flight line navigation was derived using real-time differential GPS (Global Positioning System).

Navigation was assisted by the UTS-designed and built electronic pilot navigation system which provides computer-controlled digital navigation instrumentation mounted in the cockpit as well as an externally mounted track guidance system.

GPS-derived positions were used to provide both aircraft navigation and survey data location information. The GPS receiver was located on the roof of the fuselage, collinear with the wingtip sensors and in line with the tail sensor.

The GPS systems used for the survey were:

- Aircraft GPS Model OEM V-3
- Sample rate 0.5 seconds (2 Hz)
- GPS satellite tracking channels 12 parallel
- Typical differentially corrected accuracy 1-2 metres (horizontal)
  3-5 metres (vertical)

3.3 Data Acquisition System and Digital Recording

All geophysical sensor and positional information measured during the survey was recorded using a Aeroquest-developed, high speed, and precision data acquisition system.

Instrument synchronisation times were measured with errors removed in real-time by the data acquisition system.

3.4 Altitude Readings

Terrain clearance data were measured using a King radar altimeter installed in the aircraft. The height of each survey data point was measured by the radar altimeter and stored by the UTS data acquisition system.

- Radar altimeter models Bendix/King KRA-405
- Accuracy 0.3 metres
- Resolution 0.1 metres
- Range 0 - 500 metres
- Sample rate 0.1 Seconds (10Hz)

The digital terrain model is calculated by subtracting the terrain clearance (radar altimeter) from the GPS height (interpolated to 0.1 Hz), and as such the accuracy is constrained by the differentially-corrected GPS position.

3.5 Stinger Mounted Magnetometer System

The installation platform used for the acquisition of magnetic data consisted of a tail mounted stinger and wingtip pods on each wing. The proprietary stinger and wingtip system was constructed of carbon fibre and designed for maximum rigidity and stability.

The tail stinger and wingtip pods each house an identical total field magnetometer. The tail stinger also contains the three-component vector magnetometer.

3.6 Total Field Magnetometer

Total field magnetic data readings for the survey were made using Geometrics G822A Cesium Magnetometers. These precision sensors have the following specifications:

- Model Geometrics G822A
- Sample rate 0.1 seconds (10Hz)
- Resolution 0.001nT
- Operating Range 15,000nT to 100,000nT
- Temperature Range -20°C to +50°C

3.7 Three Component Vector Magnetometer

Three component vector magnetic data readings for the survey were made using a Develco Fluxgate

Magnetometers. This precision sensor has the following specifications:

- Model — Develco Fluxgate Magnetometer
- Sample Rate — 0.1 seconds (10Hz)
- Resolution — 0.1nT
- Operating Range — -100,000nT to 100,000nT

3.8 Aircraft Magnetic Compensation

At the start of the survey, the system was calibrated to reduce magnetic heading error. The heading and manoeuvre effects of the aircraft on the magnetic data were removed using an RMS Adaptive Aeromagnetic Real Time Compensator (AARC500).

Calibration of the aircraft heading effects were measured by flying a series of pitch, roll and yaw manoeuvres at high altitude while monitoring changes in the three axis magnetometer and the effect on total field readings. A 26-term model of the aircraft magnetic noise covering permanent, induced and eddy current fields was calculated from these results. These coefficients were then applied to the data collected during the survey in real-time. UTS static compensation techniques were also employed to reduce the initial magnetic effects of the aircraft upon the survey data.

The Figure of Merit, acquisition system tests and aircraft system calibrations are included at the end of this report.

3.9 Diurnal Monitoring Magnetometer

A base station magnetometer was located in a low gradient area beyond the region of influence of any man made interference to monitor diurnal variations during the survey.

The specifications for the magnetometer used are as follows:

- Model — Geometrics 856
- Resolution — 0.1 nT
- Sample interval — 5 seconds
- Operating range — 20,000nT to 90,000nT
- Temperature — -20°C to +50°C

3.10 VLF EM System

The VLF EM system employed was an RMS Instruments Herz TOTEM-2A, configured to simultaneously measure two transmitting stations. The stations selected were chosen such that their wave propagation direction was as close to orthogonal as possible. The transmitter with a wave propagation direction roughly parallel to the survey line direction was chosen such that the magnetic field component would intersect perpendicular to anticipated geological features.

The TOTEM-2A has a sensitivity range from 130 μV m to 100 mV m at 20 kHz, 3 dB down at 14 kHz and 24 kHz.

*Specifications provided by the manufacturer.

Total field and quadrature components were recorded for each of the Line and Ortho stations as follows:

- Line – Cutler, Maine (24.0 kHz, Flight 1,2 & 8)
- Line – LaMour, North Dakota (25.2 kHz, Flight 11-14)
- Ortho – Jim Creek, Washington (24.8 kHz)

4. DATA PROCESSING PROCEDURES

4.1 Data Pre-processing

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software and Geosoft Oasis Montaj software. Maps were generated using 36-inch wide Hewlett Packard thermal inkjet plotters.

4.2 Magnetic Data Processing

The diurnal base station data was checked for spikes and steps, and suitably filtered prior to the removal of diurnal variations from the aircraft magnetic data. The filtered diurnal measurements were subtracted from the diurnal base field and the residual corrections applied to the survey data by synchronizing the diurnal data time and the aircraft survey time.

The X and Y positioning of the data was then checked for spikes before applying the IGRF correction. Any spikes in the position data were manually edited. The IGRF correction was calculated at each data point (taking into account the elevation above sea level). This regional magnetic gradient was subtracted from the survey data points.

Tie line levelling was applied to the data by least squares minimization, using a first order polynomial fit between the magnetic values at the intersections of traverse and tie lines. These data were then microleveled using a directional spatial filtering technique to remove any small systematic errors.

Located and gridded data were generated from the final processed magnetic data.

4.3 Measured Magnetic Gradients

The two magnetic gradients were calculated by differencing the three measured total field readings and adjusting for the sensor separations as described in Section 10.2. The gradient data are corrected for flight line direction.

The longitudinal and transverse gradient data were then interpolated into gridded data and are presented both as maps and are included in the archive.

4.4 Horizontal Gradient Enhanced (HGE) TMI Gridded Data

The magnetic data from the tail sensor was gridded incorporating the transverse magnetic gradient data. This technique will improve the line-to-line continuity of magnetic features, in particular features that strike sub-parallel to the line direction. As well, this process will enhance the appearance of small off–line magnetic units. These refinements should also increase the interpretability of any additional grid filtering products such as vertical or tilt derivatives and analytic signal magnetic products.

4.5 Digital Terrain Model Data Processing

The radar altimeter data were subtracted from the GPS altimeter data to calculate the digital terrain model.

The digital terrain data thus derived was examined and selectively microlevelled to produce a grid without line-dependent artefacts.

4.6 VLF EM Data

The incoming VLF data is in four components: total field and quadrature for both line-direction and orthogonal transmitting stations.The recording lag of the VLF system with respect to the magnetic data was removed. Both of the quadrature components were then convolved using a positive Fraser filter with a width of 5 fiducials, then convolved with a Gaussian function to reduce signal noise. The total field data was corrected for variations in signal strength from the transmitting stations, and subsequently micro-levelled using a directional spatial filtering technique. These data were interpolated onto a grids.

5. DELIVERABLES

5.1 Hardcopy Deliverables

The report includes maps at a scale of 1:50,000. The survey area is covered by one map sheet and three geophysical data products are delivered as listed below:

- GETMI – Gradient Enhanced Total Magnetic Field with contours
- O_TF – VLF Total Field Ortho Station with contours
- DTM – Digital terrain model with contours

The coordinate/projection system for the maps is NAD83 – UTM Zone 17N. For reference, the latitude and longitude in WGS84 are also noted on the maps.

5.2 Digital Deliverables

Final Database of Survey Data (.GDB)

The geophysical profile data are archived digitally in a Geosoft GDB database. A description of the contents of the individual channels in the database can be found in Appendix A. A copy of the digital data is archived at the Aeroquest head office in Mississauga.

Geosoft Grid Files (.GRD)

Levelled grid products used to create the geophysical map images. These include Total Magnetic Intensity, Gradient Enhanced TMI, Measured Transverse Gradient, Measured Longitudinal Gradient, First Vertical Derivative of TMI, Tilt Derivative of TMI, VLF Ortho Quad Station, VLF Total Field Ortho Station and the Digital Terrain Model.

Digital Versions of Final Maps (.MAP and .PDF)

The final hardcopy maps are provided digitally in Packed Geosoft MAP format and in Adobe PDF format.

Google Earth (.kmz)

Google Earth format grids, contours, flight path.

Digital Copy of this Document (.PDF)

Adobe PDF format of this document.

6. PROJECT MANAGEMENT

The following Aeroquest personnel were involved in the project:

- Senior Project Manager: Troy Will
- Field Data Processor: Rafal Starmach
- Office Data Processor: Chris Kahue
- Mapping and Reporting: Asif Mirza

The following Kiwi Air personnel were involved in the project:

- Survey Pilots: Chris Herby and Geoff Banks

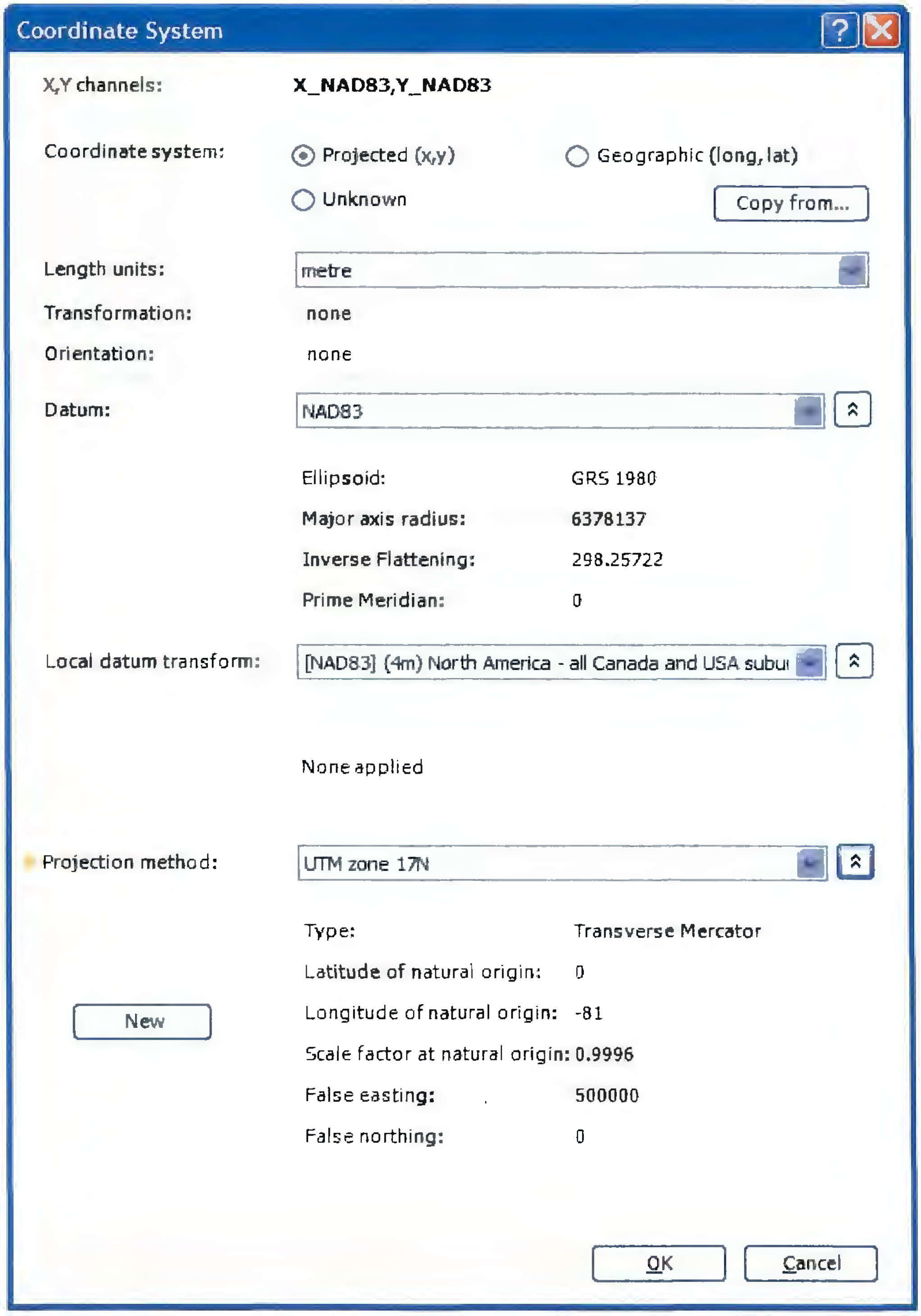
7. APPENDIX A – DESCRIPTION OF DATABASES FIELDS

The GDB files are Geosoft binary database files. The fields are described below:

FIELD	DESCRIPTION
Line	Line Number
Flight	Flight Number
Date	Date of Survey
Fid	fiducial
Latitude	Latitude WGS84 (decimal degrees)
Longitude	Longitude WGS84 (decimal degrees)
X_NAD83	UTM Easting (m), NAD83 UTM Zone 17N
Y_NAD83	UTM Northing (m), NAD83 UTM Zone 17N
Basemag	Base Station Magnetic Data (nT)
Rad_Alt	Radar altitude (m)
GPS_Height	GPS elevation (m.a.s.l.)
DTM	Levelled digital terrain model (m.a.s.l.)
Port_CMP	Compensated Total Field – Left Wingtip Sensor (nT)
Starboard_CMP	Compensated Total Field – Right Wingtip Sensor (nT)
Tail_CMP	Compensated Total Field – Tail Sensor (nT)
TMI_Tail	Diurnal Corrected & Levelled Total Magnetic Intensity (nT)
IGRF	IGRF Correction Applied (nT)
Inc	Magnetic Inclination (degrees)
Dec	Magnetic Declination (degrees)
TMI_Tail_IGRF	IGRF Corrected Total Magnetic Intensity (nT)
Lateral_gradient	Measured Lateral Gradient (nT/m)
Longitudinal_gradgrdient	Measured Longitudinal Gradient (nT/m)
VLF_Ortho_TOTAL	VLF Total Field from station orthogonal to line direction
VLF_Ortho_QUAD	VLF Quadrature from station orthogonal to line direction

8. APPENDIX B - COORDINATE SYSTEM DETAILS

Locations for the survey data are provided in both geographical latitude and longitude and Universal Transverse Mercator metric projection coordinate systems.



9. APPENDIX C – PROCESSING PARAMETERS

9.1 Magnetic Processing Parameters

Mt. Logano Block

IGRF Model Year:	2005
Inclination:	73.4°
Declination:	-9.9°
IGRF Total Field:	56376 nT
Diurnal Base Level:	56458.0 nT

10. APPENDIX D – FIGURE OF MERIT AND GRADIOMETER CONFIGURATION DIAGRAM

10.1 Figure of Merit

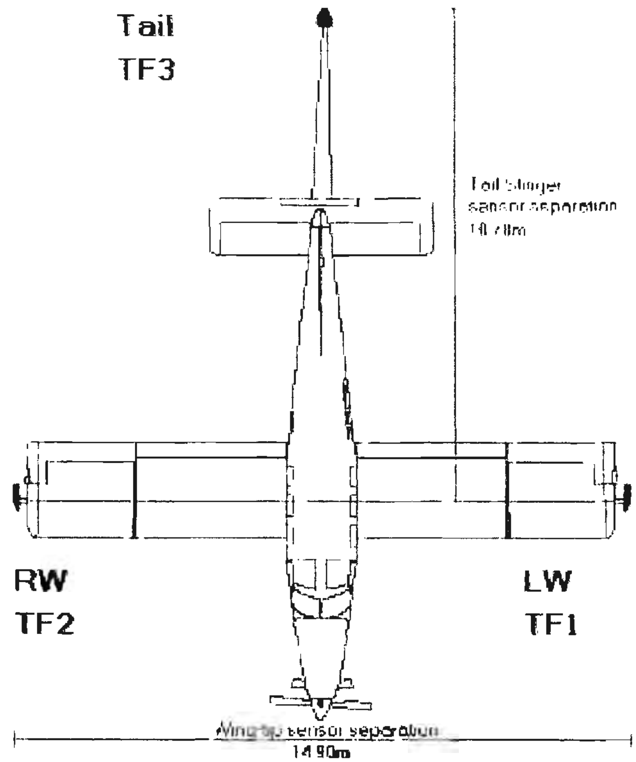
MAG1		
180°	Pitch	0.194
	Roll	0.162
	Yaw	0.085
	SUB	**0.441**
270°	Pitch	0.261
	Roll	0.238
	Yaw	0.110
	SUB	**0.609**
0°	Pitch	0.120
	Roll	0.102
	Yaw	0.095
	SUB	**0.317**
90°	Pitch	0.107
	Roll	0.183
	Yaw	0.172
	SUB	**0.462**
	FOM	***1.829***

MAG2		
180°	Pitch	0.102
	Roll	0.106
	Yaw	0.082
	SUB	**0.290**
270°	Pitch	0.104
	Roll	0.142
	Yaw	0.076
	SUB	**0.322**
0°	Pitch	0.132
	Roll	0.128
	Yaw	0.121
	SUB	**0.381**
90°	Pitch	0.228
	Roll	0.185
	Yaw	0.198
	SUB	**0.611**
	FOM	***1.604***

MAG3		
180°	Pitch	0.119
	Roll	0.064
	Yaw	0.053
	SUB	**0.236**
270°	Pitch	0.165
	Roll	0.054
	Yaw	0.076
	SUB	**0.295**
0°	Pitch	0.110
	Roll	0.084
	Yaw	0.061
	SUB	**0.255**
90°	Pitch	0.126
	Roll	0.060
	Yaw	0.079
	SUB	**0.265**
	FOM	***1.051***

10.2 Gradiometer Configuration Diagram

PAC750-XL Gradiometer Configuration



For further information concerning the survey flown, please contact the following office:

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Fax: 1 905 672 7083