

**BC Geological Survey  
Assessment Report  
32265**

**Assessment Report On  
Exploration Program On:**

**Stamp 1 Mineral Claim # 520352  
Stamp 2 Mineral Claim # 520353  
Stamp 3 Mineral Claim # 520354**

**Statement of exploration# 4841213**

**Located  
25 kilometres Northeast of  
Stewart British Columbia in  
Skeena Mining Division**

**NTS 104A/04  
Latitude 56 1' 47"  
Longitude 129 38' 2"**

**On Behalf of  
Decade Resources Ltd  
Stewart, BC**

**by**

**Edward Kruchkowski, B.Sc., P. Geo.**

**20 April 2011**

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## **SUMMARY**

The Stamp claim project optioned by Decade Resources Ltd from Teuton Resources Corp. is located in the upper part of the Nelson valley approximately 21 kilometres northeast of Stewart in the Skeena Mining Division, BC. Approximately 60 % of the claim area is covered by the Nelson Glacier and or Cambia Icefield. The property covers an area of altered, Lower Jurassic-age, Hazelton pyroclastic volcanic rocks that are overlain by Middle Jurassic Salmon River Formation sediments.

The Stamp property contains approximately 903.88 hectares in 3 separate claims.

There are no known ore bodies on the property.

During the period July 1 to September 30, 2010, an exploration program consisting of a helicopter borne versatile time domain electromagnetic (VTEM-M) and aeromagnetic geophysical survey was completed on the property.

During this period a total of 142 line kilometers was completed in the helicopter borne versatile time domain electromagnetic (VTEM-M) and aeromagnetic geophysical survey. Lines spaced 100 meters apart were flown over the entire claim area. Based on the geophysical results obtained, a number of EM and magnetic trends of interest were identified across the property.

It is recommended that in the next exploration phase consist of prospecting and geochemical sampling.

Estimated cost of the program is \$70,000.00.

## **INTRODUCTION**

Decade Resources Ltd optioned the Stamp claims from Teuton Resources Corp. This report is being prepared in order to summarize the 2010 exploration results on the property.

### **Location and Access**

The claims in the property, which are contiguous, are located approximately 21 km northeast of Stewart, BC. The claims are located along the Nelson Valley and part of the Cambria Icefield. The claim area is centered on 56 degrees 1 minute latitude and 129 degrees 38 minutes longitude on NTS sheet 104 A/4. Claims location is shown on Figure 1.

Access to the area of the claims is via helicopter based in Stewart.

### **Physiography and Topography**

The area of the claims encompasses steep mountain slopes typical of the Coastal Range region of British Columbia. Elevations vary from about 1500 meters along Nelson Glacier to almost 2390 metres along the mountain peaks. Topography is rugged with the Nelson Glacier transecting the claim area which also encompasses part of the Cambria Icefield.

Due to the high elevations, no vegetation except for the odd patch of grass exist on the claims.

## **PROPERTY OWNERSHIP**

The property consists of approximately 903.88 hectares in 3 separate claims. Relevant claim information is summarized below:

### **List of Property Claims**

<b>Claim Name</b>	<b>Tenure Number</b>	<b>Good to Date</b>	<b>Area</b>
STAMP 1	520352	2016/Sept/25	433.88
STAMP 2	520353	2016/Sept/25	433.88
STAMP 3	520354	2016/Sept/25	36.17

The company is optioning the property from Teuton Resources Corp. To earn an undivided 50% interest in the property Decade has to pay a total of \$110,000 and to incur exploration expenditures on the property aggregating \$1,500,000 over a 4 year period.

Decade will pay the cash consideration to Teuton as follows:

- a) \$20,000 within 5 business days of signing of this letter agreement; and

- b) a further \$25,000 on or before March 16, 2011; and
- c) a further \$30,000 on or before March 16, 2012, and
- d) a further \$35,000 on or before March 16, 2013..

Decade will incur the \$1,500,000 in exploration expenditures on the property as follows:

- a) \$200,000 before March 16, 2011; and
- a) \$500,000 in aggregate before March 16, 2012; and
- b) \$900,000 in aggregate before March 16, 2013; and
- c) \$1,500,000 in aggregate before March 16, 2014.

Subject to Decade duly exercising the first option, Teuton has granted to Decade the sole and exclusive right to earn an additional 20% interest (70% interest in total) in the property (the “Second Option”) by performing and paying for such additional exploration work, engineering studies and reports as may be necessary in order to deliver to Teuton a Feasibility Study (“Feasibility Expenditures”). Decade or its designate shall be operator of the property during the term of the first Option and the second Option.

Claims location is shown in Figure 2 copied from MINFILE database. All the claims are situated in the Skeena Mining Division in the Province of British Columbia.

## **PREVIOUS WORK**

Exploration began in the Stewart region about 1898 after the discovery of mineralized float by a party of placer miners. Sites which could be easily reached from Stewart were the first to be explored among which was the lower Marmot River area. This early phase of exploration culminated in 1910 when both Stewart and the neighboring town of Hyder, Alaska boasted a population of around 10,000 people. Another boom period began in the early 1920’s after the discovery of the very rich Premier gold-silver-lead-zinc mine in the Salmon River area, northwest of Stewart.

From 1940 to 1979 there was little activity in the region due to lackluster precious metal prices. However when silver and gold prices skyrocketed in the early 1980’s, many of the old properties were re-examined by both small and large exploration companies. Success by a number of exploration companies, particularly in the Unuk River has led to continued exploration in the general area.

No exploration activity on the property area has been recorded. However, it is likely the area was explored as part of larger regional exploration programs in the claim area. The claims were probably explored by Lac Minerals in the mid 1990’s after discovery of the Red Mountain gold discovery.

The claims are just west of the Del Norte property which has been actively explored by Teuton Resources and its joint venture partners. In the fall of 2002, Teuton Resources discovered high-grade gold-silver mineralization on the Del Norte Claim group, 10 kilometers south of the northern block of claims and 8 kilometers northeast of the second

southern group of claims, comprising the Surprise property. Prior to the onset of winter, Teuton completed trenching and three drill holes. The results of the 2002 trenching include 10 meters of 0.179 opt Au and 8.4 opt Ag. The best drill hole - 2002-3 assayed 0.223 opt Au and 8.09 opt Ag over a drill length of 23.4 meters. Work on the LG vein in 2003 by Teuton indicates several promising mineralized areas have been defined by exploration on the Del Norte property. The most significant occurs along a 2200-meter long trend connecting the Kosciuszko Zone, the LG Vein and the LG Vein Extension. Similar mineralogy and stratigraphic location indicates that all of three of these are related structures, although talus and ice obscure continuity in places. Gold and silver bearing vein mineralization has now been found over a vertical range of 300 meters, from the upper reaches of the Kosciuszko zone to the bottom of Hole DN03-7 (1.49 m of 39.26 opt Ag and 0.337 opt Au) in the LG Vein area. The LG Vein mineralization apparently lies along a contact between mudstones at the base of the Salmon River Formation and felsic pyroclastics believed to be of the Mt. Dilworth Formation.

During the period 2006 to 2010, exploration programs have been conducted on the BA 1-10 claims just north of the Stamp claims. Extensive drill programs have concentrated on the BA mineralized zone. This zone represents the upper portion of a Kuroko-type volcanogenic massive sulphide (VMS) system composed of an exhalite horizon with related zinc-lead-silver mineralization. This mineralization consisting of finely bedded sphalerite and pyrite with minor galena and chalcopyrite occurs below the main exhalite (red jasper/green to grey chert) horizon and is located within mudstones, mudstone breccias and dacite breccias. Mineralized rocks are at least 40 meters to 50 meters wide and mineralization in the area of drilling can be traced for over 1 kilometer of strike length and is open along strike and to depth.

The southern claims are near the Willoughby prospect, which is located on a steep nunatak south of Meziadin Lake and 26 kilometers east of Stewart between the north and central forks of the Willoughby Glacier. A mineralized zone carrying low-grade gold and silver values was investigated in this area in 1941 and the Wilby group of claims was explored in 1945.

To date 11 mineralized occurrences have been located on the Willoughby property. Mineralization consisting of pyrite, pyrrhotite along with lesser sphalerite, galena and rare visible gold occurs in veins, stockwork and fracture fillings. In addition, pyrite and pyrrhotite occur as semi massive to massive occurrences in lenses and pods. Several of the zones appear to be intrusion related. The best drill intersection averages 40.1 grams per tonne gold and 109.6 grams per tonne silver over 11.7 meters in one of the zones.

### **Personnel and Operations**

Geotech Ltd from Aurora, Ontario performed the VTEM survey. Crews stayed in Stewart, BC while performing the survey.

### **GEOLOGICAL SURVEYS**

## **Regional Geology**

The Stamp claim property lies in the Stewart area, east of the Coast Crystalline Complex and within the western boundary of the Bowser Basin. Rocks in the area belong to the Mesozoic Stuhini Group, Hazelton Group and Bowser Lake Group that have been intruded by plugs of both Cenozoic and Mesozoic age.

According to C.F. Greig, in G.S.C. Open File 2931, portions of the general Stewart area are underlain by Triassic age Stuhini Group. The Stuhini Group rocks are either underlying or in fault contact with the Hazelton Group. These Triassic age rocks consist of dark gray, laminated to thickly bedded silty mudstone, and fine to medium grained and locally coarse-grained sandstone. Local heterolithic pebble to cobble conglomerate, massive tuffaceous mudstone and thick-bedded sedimentary breccia and conglomerate also form part of the Stuhini Group.

At the base of the Hazelton Group is the lower Lower Jurassic Marine (submergent) and non-marine (emergent) volcanoclastic Unuk River Formation. This is overlain at steep discordant angles by a second, lithologically similar, middle Lower Jurassic volcanic cycle (Betty Creek Formation), in turn overlain by an upper Lower Jurassic tuff horizon (Mt. Dilworth Formation). Middle Jurassic non-marine sediments with minor volcanics of the Salmon River Formation unconformably overlie the above sequence.

The lower Lower Jurassic Unuk River Formation forms a north-northwesterly trending belt extending from Alice Arm to the Iskut River. It consists of green, red and purple volcanic breccia, volcanic conglomerate, sandstone and siltstone with minor crystal and lithic tuff, limestone, chert and coal. Also included in the sequence are pillow lavas and volcanic flows.

In the property area, the Unuk River Formation is unconformably overlain by middle Lower Jurassic rocks from the Betty Creek Formation. The Betty Creek Formation is another cycle of trough filling sub-marine pillow lavas, broken pillow breccias, andesitic and basaltic flows, green, red, purple and black volcanic breccia, with self erosional conglomerate, sandstone and siltstone and minor crystal and lithic tuffs, chert, limestone and lava.

The upper Lower Jurassic Mt. Dilworth Formation consists of a thin sequence varying from black carbonaceous tuffs to siliceous massive tuffs and felsic ash flows. Minor sediments and limestone are present in the sequence. Locally pyritic varieties form strong gossans.

The Middle Jurassic Salmon River Formation is a late to post volcanic episode of banded, predominantly dark colored siltstone, greywacke, sandstone, intercalated calcarenite rocks, minor limestone, argillite, conglomerate, littoral deposits, volcanic sediments and minor flows.

Overlying the above sequences are the Upper Jurassic Bowser Lake Group rocks. These rocks mark the western edge of the Bowser Basin and are also located as remnants on mountaintops in the Stewart area. These rocks consist of dark gray to black clastic rocks including silty mudstone and thick beds of massive, dark green to dark gray, fine to medium grained arkosic litharenite.

According to E.W. Grove, the majority of the rocks from the Hazelton Group were derived from the erosion of andesitic volcanoes subsequently deposited as overlapping lenticular beds varying laterally in grain size from breccia to siltstone.

D. Alldrick's work to the north of Stewart has shown several volcanic centers in the surveyed area. Lower Jurassic volcanic centers in the Unuk River Formation are located in the Big Missouri Premier area and in the Brucejack Lake area. Volcanic centers within the Lower Jurassic Betty Creek Formation are in the Mitchell Glacier and Knipple Glacier areas.

There are various intrusives in the area. The granodiorites of the Coast Plutonic Complex largely engulf the Mesozoic volcanic terrain to the west. East of these (in the property area), smaller intrusive plugs range in composition from quartz monzonite to granite to highly felsic. Some are likely related to the late phase offshoots of the Coast plutonism, other is synvolcanic and tertiary. Double plunging, northwesterly - trending synclinal folds of the Salmon River and underlying Betty Creek Formations dominate the structural setting of the area. These folds are locally disrupted by small east-over thrusts on strikes parallel to the major fold axis, cross-axis steep wrench faults which locally turn beds, selective tectonization of tuff units and major northwest faults which turn beds.

Figure 3 shows the regional geology (after Greig) relative to the claim boundaries.

### **Local Geology**

In the project area, the stratigraphic sequence includes andesite/andesite breccia of the Betty Creek Formation conformably overlain by felsic rocks of the Mt Dilworth Formation overlain unconformably by sediments of the Salmon River Formation. The andesites are green, medium grained with 30 % feldspar phenocrysts. The andesite breccias are composed of 30-40 % andesite clasts in a fine grained andesite matrix. Clasts are angular and are generally 1 cm to 1 m in size. The felsic rocks consist of silicified dacite that locally contains coarse pyrite.

The sediments are black, thinly bedded mudstones, with local thin pyrite beds up to 1-2 mm.

### **Deposit Types**

The target is a volcanogenic massive sulphide (VMS) horizon located in the upper parts of Nelson Glacier within the same stratigraphic horizon as that which hosts the Eskay Creek deposit. It appears that the zone which represents a portion of a Kuroko-type VMS



system composed of an exhalite horizon with related zinc-lead-silver mineralization is present on the BA claims to the north.

## **GEOPHYSICAL SURVEYS**

During July 8, 2010, a total of 141.6 line kilometers was completed in a helicopter borne versatile time domain electromagnetic (VTEM-M) and aeromagnetic geophysical survey. Lines spaced 100 meters apart were flown over an area of 14 square kilometers. Results of the survey are shown in Appendix I

## **INTERPRETATION AND CONCLUSIONS**

1. The Stamp mineral claims optioned by Decade Resources are located approximately 21 kilometers northeast of Stewart, British Columbia.
2. The property covers an area of altered, Lower Jurassic-age, Hazelton pyroclastic volcanic rocks that are overlain by Middle Jurassic Salmon River Formation sediments.
3. The Stamp property contains approximately 903.88 hectares in 3 separate claims.
4. There are no known ore bodies on the property.
5. The BA mineralized zone is located just north of the Stamp Claims. It appears that the mineralized zone may trend on to the claims.
6. This zone represents the upper portion of a Kuroko-type volcanogenic massive sulphide (VMS) system composed of an exhalite horizon with related zinc-lead-silver mineralization. This mineralization consisting of finely bedded sphalerite and pyrite with minor galena and chalcopyrite occurs below the main exhalite (red jasper/green to grey chert) horizon and is located within mudstones, mudstone breccias and dacite breccias.
7. Mineralized rocks have been reported approximately 1 kilometre north of the Stamp claim boundary.
8. An airborne magnetic and EM survey indicates that geological trends continue from the BA claims on to the Stamp claims.
9. It is recommended that in the next exploration season geochemical sampling and prospecting be conducted on the Stamp claims. The work should focus on the northern portions of the Nelson valley.

10. Estimated cost of the program is \$70,000.00.

### **RECOMMENDATIONS AND BUDGET**

It is recommended that in the next exploration phase consist of rock geochemical sampling.

#### **Estimated Cost of the Program**

Geochemical survey, 200 samples @ \$25/sample	\$5,000.00
2 Geologists, 10 days @ \$500.00/ day	\$10,000.00
2 Field assistants, 10 days @ \$300.00/day	\$6,000.00
Accommodation and food (in Stewart)	\$4,000.00
Vehicle rental	\$1,000.00
Report	\$3,000.00
Drafting	\$2,000.00
Helicopter 20 hours @ \$1500.00/hour	\$30,000.00
Contingency	\$9,000.00
<b>Total</b>	<b>\$70,000.00</b>

## REFERENCES

1. ALLDRICK, D.J. (1984); "Geological Setting of the Precious Metals Deposits in the Stewart Area", Paper 84-1, Geological Fieldwork 1983, B.C.M.E.M.P.R.
2. ALLDRICK, D.J. (1985); "Stratigraphy and Petrology of the Stewart Mining Camp (104B/1E)", p. 316, Paper 85-1, Geological Fieldwork 1984, B.C.M.E.M.P.R.
3. GREIG, C.J., ET AL (1994); "Geology of the Cambria Icefield: Regional Setting for Red Mountain Gold Deposit, Northwestern British Columbia", p. 45, Current Research 1994-A, Cordillera and Pacific Margin, Geological Survey of Canada.
5. GROVE, E.W. (1971); Bulletin 58, Geology and Mineral Deposits of the Stewart Area. B.C.M.E.M.P.R.
6. GROVE, E.W. (1982); "Unuk River, Salmon River, Anyox Map Areas. Ministry of Energy, Mines and Petroleum Resources, B.C.
7. GROVE, E.W. (1987); Geology and Mineral Deposits of the Unuk, River-Salmon, River-Anyox, Bulletin 63, B.C.M.E.M.P.R.
8. Kruchkowski,E.R., (2006) Drill Report on BA Property.
9. MINFILE
10. Teuton Press Releases

## **CERTIFICATE of AUTHORS' QUALIFICATIONS**

I, Edward R. Kruchkowski, geologist, residing at 23 Temple Bay, N.E., in the City of Calgary, in the Province of Alberta, hereby certify that:

1. I received a Bachelor of Science degree in Geology from the University of Alberta in 1972.
2. I have been practicing my profession continuously since graduation.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia.
5. I am a consulting geologist working on behalf of Decade Resources Ltd.
6. This report is based on a review of reports, documents, maps and other technical data on the property area.
7. I am familiar with these types of deposits having conducted exploration programs on these types of occurrences in the Stewart region.

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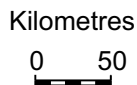
Date:

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E.R. Kruchkowski, B.Sc.

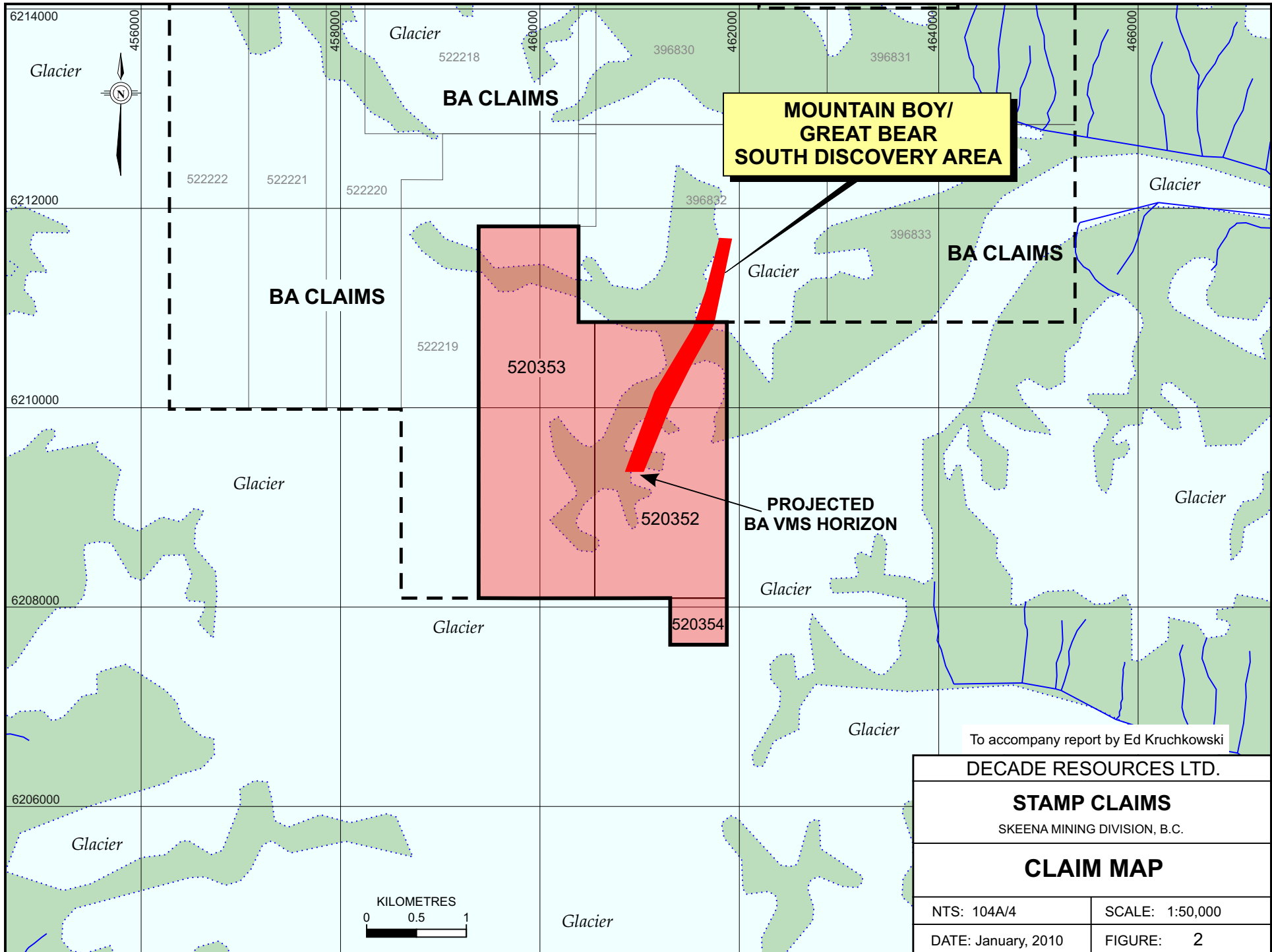
## STATEMENT OF EXPLORATION COSTS

E Kruchkowski	\$3,000.00
5 days @ \$600.00/day including job set-up, on site supervision and over all project co-ordination, assessment report.	
Hotel Expenses – motel in Stewart 4 days @ \$100/day	\$400.00
Meal Expenses – restaurants in Stewart 4 days @ \$100/day	\$400.00
Truck rental for 4 days @ \$100.00/day	\$400.00
Drafting as per invoice	\$190.40
Airborne survey as per invoices	\$32,716.59
<b>Total</b>	<b><u>\$37,106.99</u></b>



To accompany report by E. Kruchkowski

<b>DECADE RESOURCES LTD.</b>	
<b>STAMP CLAIMS</b> SKEENA MINING DIVISION, B.C.	
<b>LOCATION MAP</b>	
NTS: 104A/4	SCALE: As Shown
DATE: April, 2011	FIGURE: 1



To accompany report by Ed Kruchkowski

DECADE RESOURCES LTD.

**STAMP CLAIMS**

SKEENA MINING DIVISION, B.C.

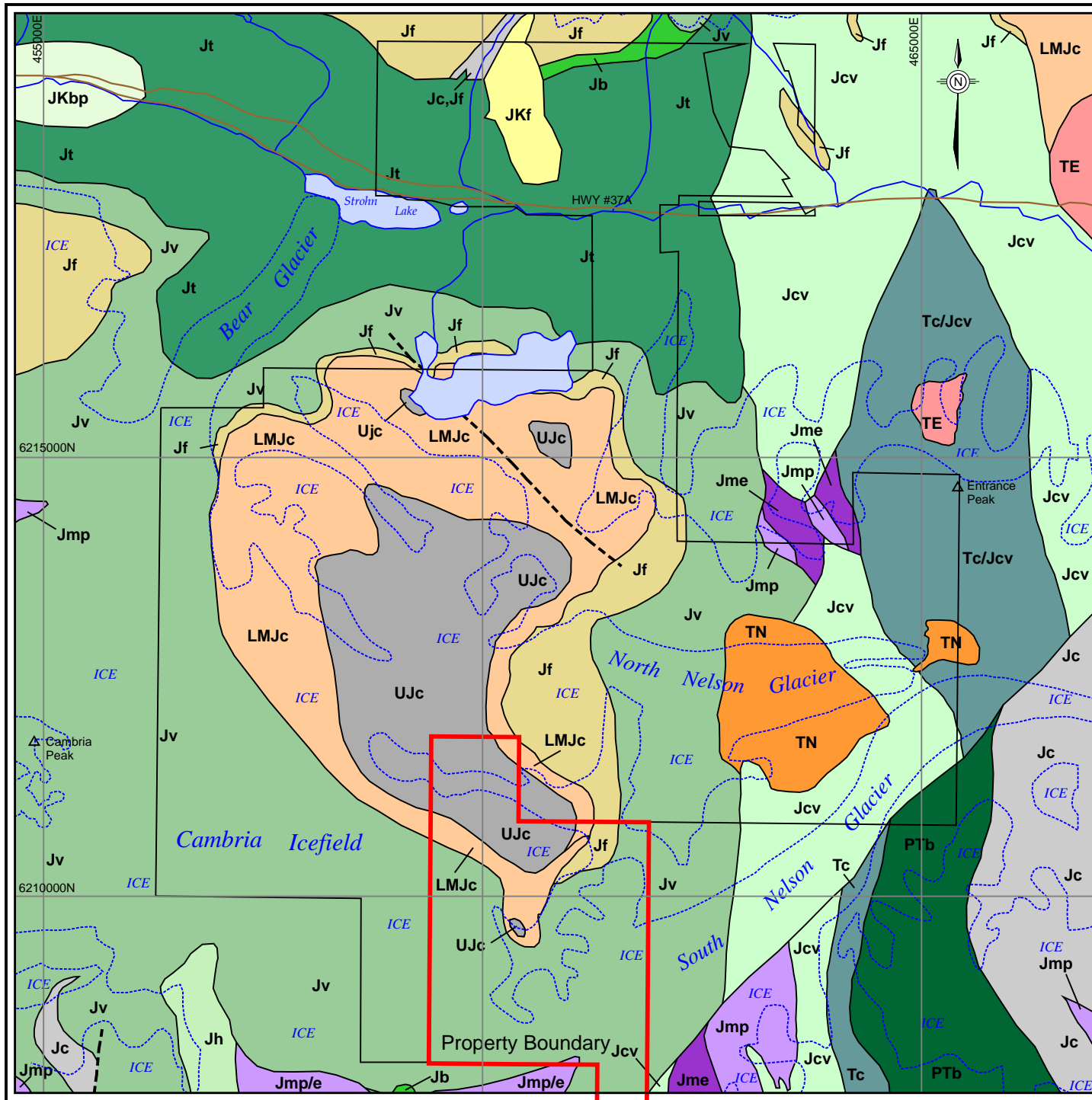
**CLAIM MAP**

NTS: 104A/4

SCALE: 1:50,000

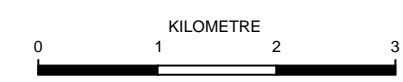
DATE: January, 2010

FIGURE: 2



**LEGEND**

- TERTIARY**
- TN** Potassium feldspar megacrystic biotite +/- hornblende (?) monzogranite and granodiorite
  - TE** Feldspar porphyry
- JURASSIC-CRETACEOUS**
- JKf** Felsic intrusions
  - JKbp** Bear Pass pluton
- JURASSIC**
- BOWSER LAKE GROUP**
- UJc** Dark gray to black silty mudstone and arkosic litharenite
- HAZELTON GROUP**
- SALMON RIVER FORMATION**
- LMJc** Thin bedded to laminated mudstone, siltstone tuffaceous chert, chert and cherty argillite
  - Jf** Pale gray to white felsic pyroclastic rocks and flows
  - Jb** Dark green pyroxene-phyric basaltic volcanic and volcanoclastic rocks
  - Jmp** Maroon mafic to intermediate volcanic rocks
  - Jme** Maroon epiclastic rocks
  - Jc** Undivided dark gray to black epiclastic rocks
  - Jcv** Undivided epiclastic and subordinate volcanic rocks
  - Jv** Undivided, mainly pyroclastic fragmental rocks
  - Jt** Dark greenish-gray andesite/dacite lapilli an ash tuff
- TRIASSIC**
- Tc** Dark gray silty mudstone, siltstone and sandstone
  - Ptb** Dark green feldspar-phyric trachybasalt
- Geological contacts: defined, inferred
- Faults
- Glacier
- Creek and Lake



To accompany report by E. Kruchkowski

**DECADE RESOURCES LTD.**

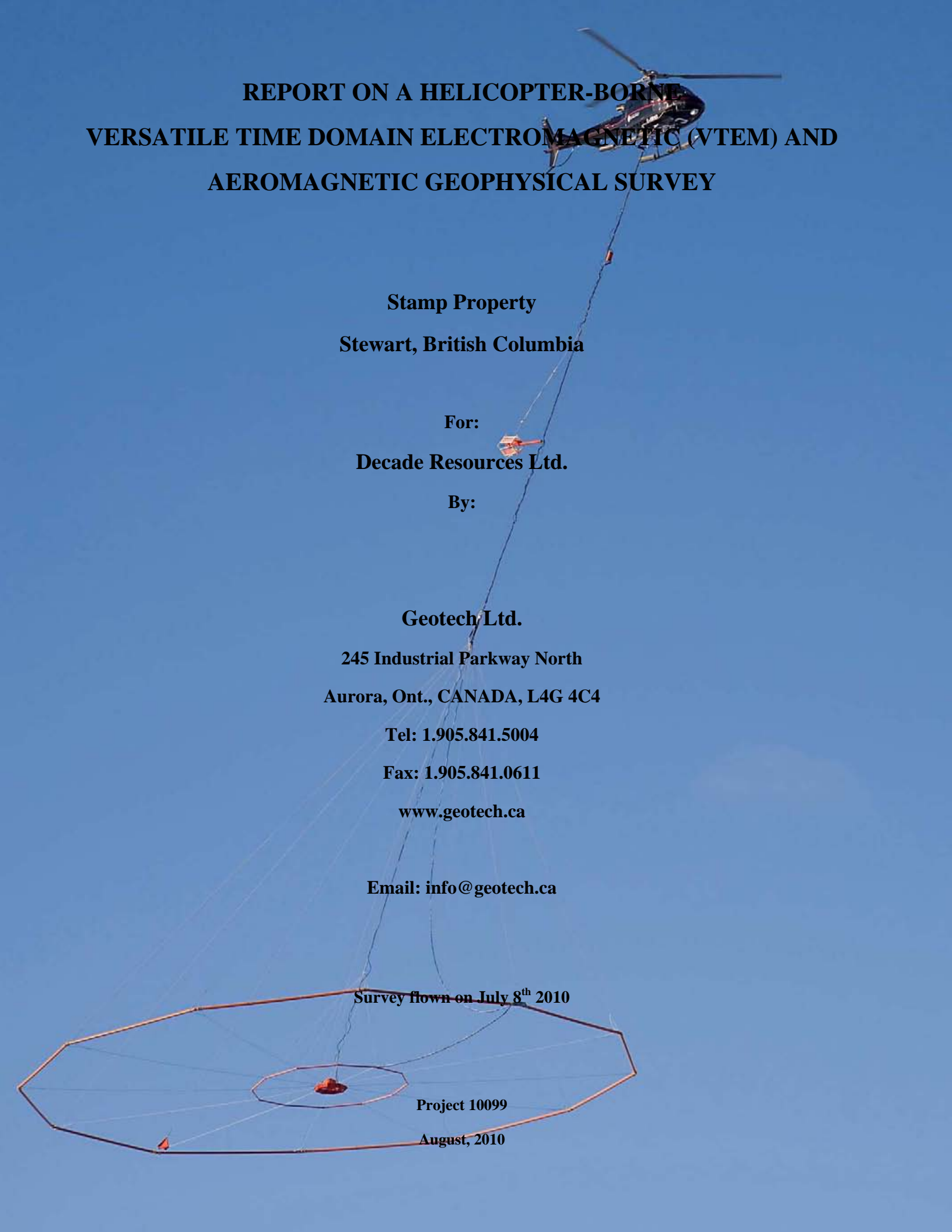
**STAMP PROJECT**  
SKEENA MINING DIVISION, B.C.

**REGIONAL GEOLOGY MAP**

NTS: 104A/4	SCALE: As shown
DATE: April, 2011	FIGURE: 3



**Appendix I**  
Report on a Helicopter Borne Versatile Time Domain Electromagnetic (VTEM-M) and  
Aeromagnetic Geophysical Survey



**REPORT ON A HELICOPTER-BORNE  
VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) AND  
AEROMAGNETIC GEOPHYSICAL SURVEY**

**Stamp Property  
Stewart, British Columbia**

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Decade Resources Ltd.**

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**Survey flown on July 8<sup>th</sup> 2010**

**Project 10099**

**August, 2010**

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# REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) and AEROMAGNETIC SURVEY

Stamp Property  
Stewart, British Columbia

## Executive Summary

On July 8<sup>th</sup> 2010, Geotech Ltd. carried out a helicopter-borne geophysical survey over the Stamp Property situated 21 km North East of Stewart, BC, Canada.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM) system, and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 141.6 line-kilometres were planned to be flown.

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

The processed survey results are presented as electromagnetic stacked profiles of the B-field Z Component and dB/dt Z and X Components, and as colour grids of a B-Field Z Component Channel, and Total Magnetic Intensity (TMI).

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set. No formal Interpretation has been included.

# 1. INTRODUCTION

## 1.1 General Considerations

Geotech Ltd. performed a helicopter-borne geophysical survey over the Stamp Property located in Stewart, British Columbia (Figure 1 & 2).

Ed Kruchkowski represented Decade Resources during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM) system with Z and X component measurements and aeromagnetics using a cesium magnetometer. A total of 147.3 line-km of geophysical data were acquired during the survey. The survey area is shown in Figure 2 and Figure 3.

The crew was based out of the Ripley Creek Inn, Stewart, BC for the acquisition phase of the survey. Survey flying started and completed on July 8<sup>th</sup> 2010.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in August, 2010.

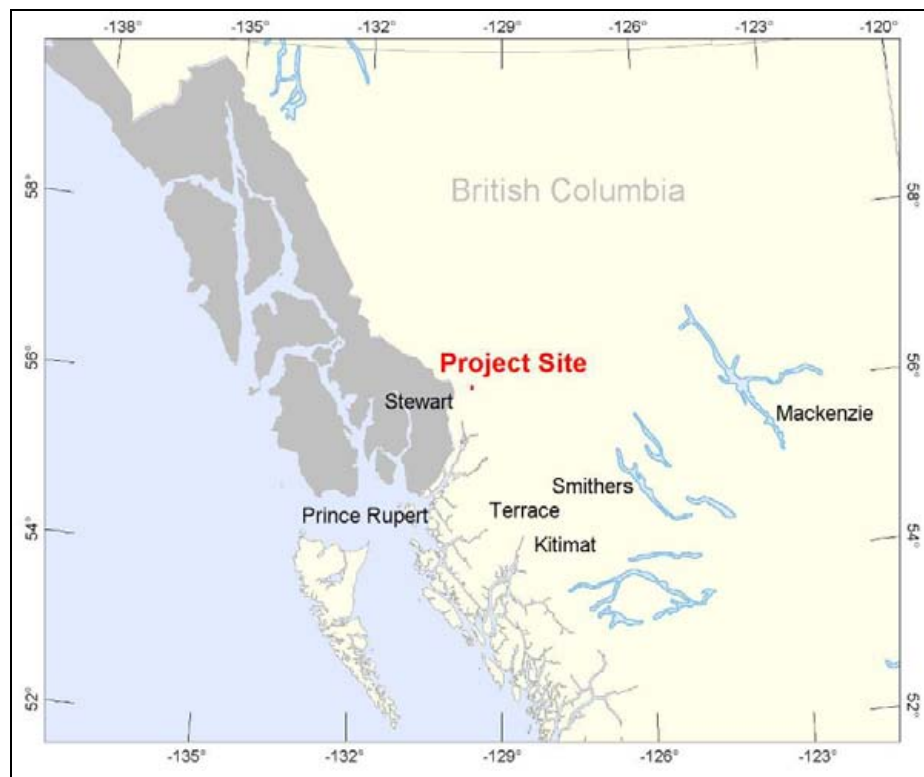
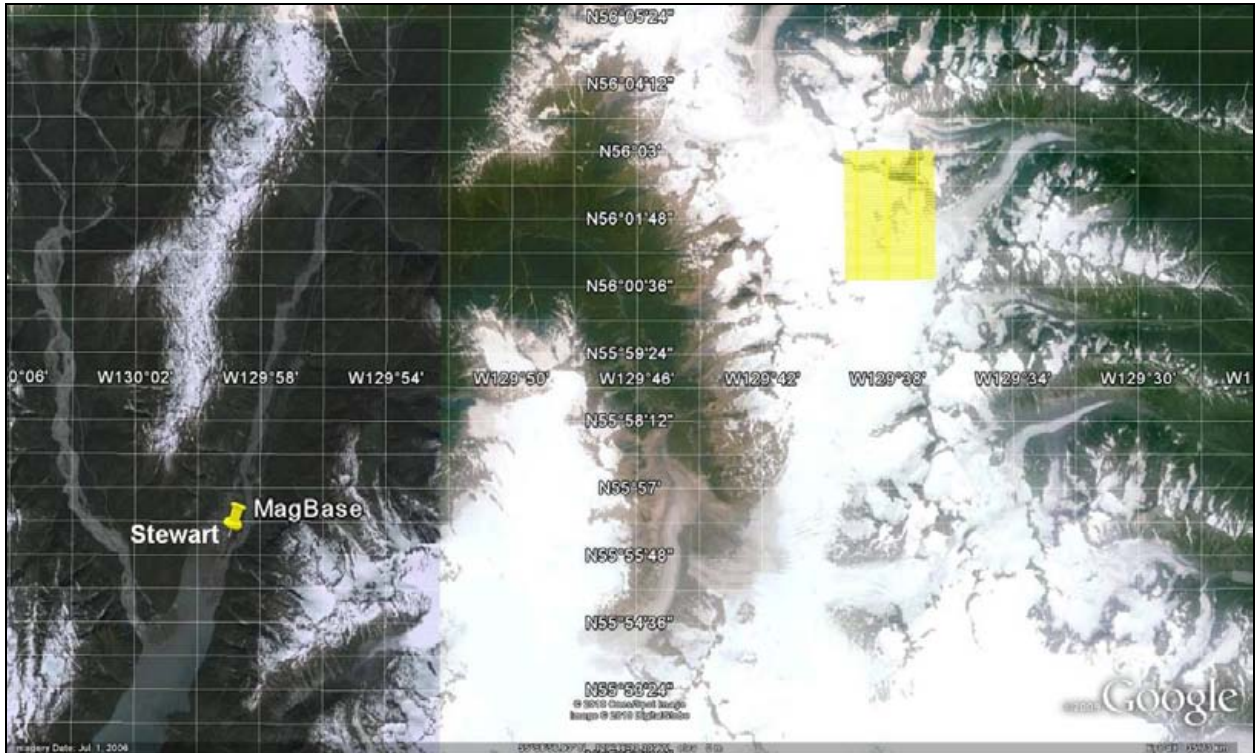


Figure 1 - Property Location

## 1.2 Survey and System Specifications

The survey block is located approximately 21 kilometres North East of the Stewart, BC which was where the Magnetic Base Station was located (Figure 2 & 3).

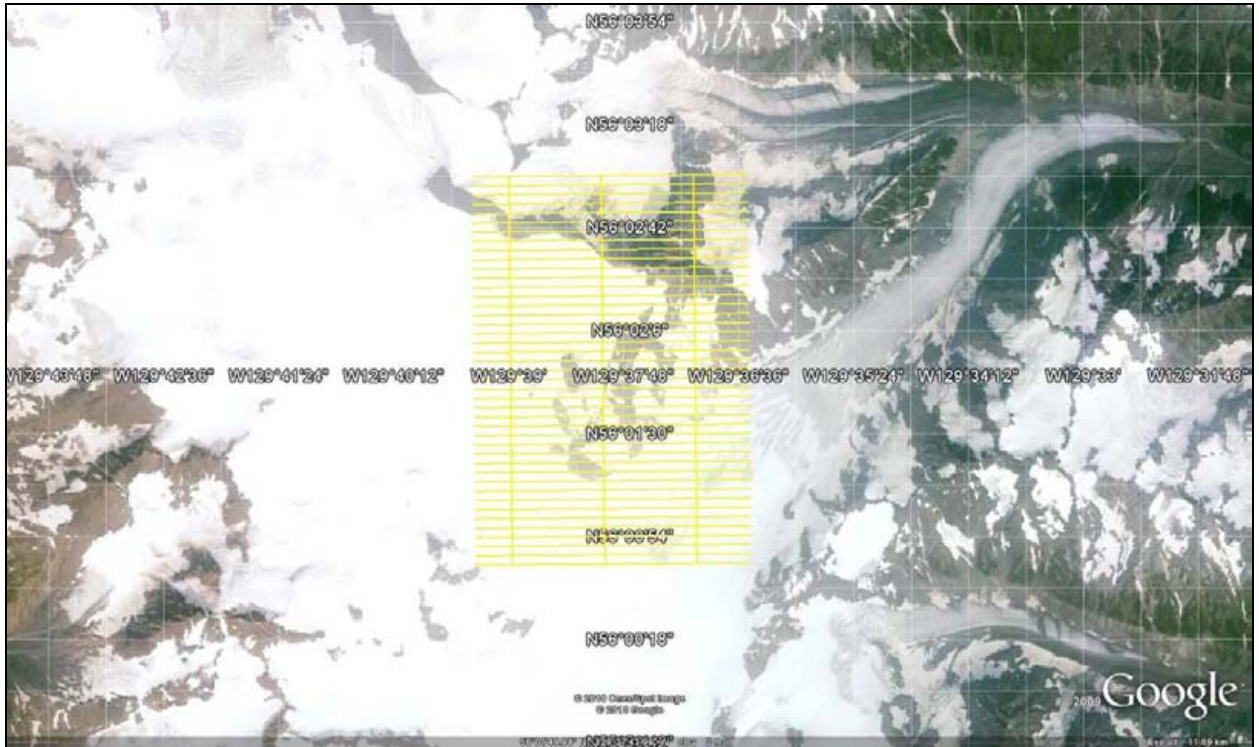


**Figure 2** – The block, showing the magnetic base station location on Google Earth

The block was flown in a West to East (N 90° E / N 270° E) direction with traverse line spacing of 100 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 (N 0° E / N 180° E). For more detailed information on the flight spacing and direction see Table 1.

### 1.3 Topographic Relief and Cultural Features

Topographically, the block exhibits a high relief with an elevation ranging from 1464 to 2443 metres above sea level over an area of 14 square kilometres (Figure 3). There are numerous rivers surrounding the survey area. There are no visible sign of culture as the block is located on a permanatly glaciated surface; the closest populated area is Stewart BC located 21 kilometers South West of the Block.



**Figure 3** – Flight path over a Google Earth Image.

The blocks are covered by numerous mining claims, which are shown in Appendix A, and are plotted on all maps. The survey area is covered by NTS (National Topographic Survey) of Canada sheet 104A04.

## 2. DATA ACQUISITION

### 2.1 Survey Area

The survey block (see Figure 3 and Appendix A) and general flight specifications are as follows:

**Table 1** - Survey Specifications

Survey block	Traverse Line spacing (m)	Area (Km <sup>2</sup> )	Planned <sup>1</sup> Line-km	Actual Line-km	Flight direction	Line numbers
Stamp Property	Traverse: 100	14	129	134.1	N 90° E / N 270° E	L1000 – L1420
	Tie: 1000		12.6	13.2	N 0° E / N 180° E	T1500 – T1520
<b>TOTAL</b>		14	141.6	147.3		

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

### 2.2 Survey Operations

Survey operations were based out of the Ripley Creek Inn, Stewart, BC for July 8<sup>th</sup>, 2010. The following table shows the timing of the flying.

**Table 2** - Survey schedule

Date	Flight #	Block	Crew location	Comments
04-Jul-2010	1,2	Stamp Property	Stewart, BC	Production – Job Complete

<sup>1</sup> Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned line-km, as indicated in the survey NAV files.



## 2.3 Flight Specifications

During the survey of the block the helicopter was maintained at a mean altitude of 281 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 246 metres and a magnetic sensor clearance of 268 metres.

An operator on board was monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

## 2.4 Aircraft and Equipment

### 2.4.1 Survey Aircraft

The survey was flown using a Eurocopter Aerospatiale (Astar) 350 B3 helicopter, registration C-GABH. The helicopter is owned by Geotech Ltd. and operated by Geotech Aviation Ltd. out of North Bay, Ontario. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd crew.

### 2.4.2 Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The configuration is as indicated in Figure 4 below.

The VTEM Receiver and transmitter coils are concentric-coplanar and Z-direction oriented. The receiver system for the project also included a coincident-coaxial X-direction sensor to measure the in-line dB/dt and calculate B-Field responses. All loops were towed at a mean distance of 35 metres below the aircraft as shown in Figure 4 and Figure 6. The receiver decay recording scheme is shown diagrammatically in Figure 5.

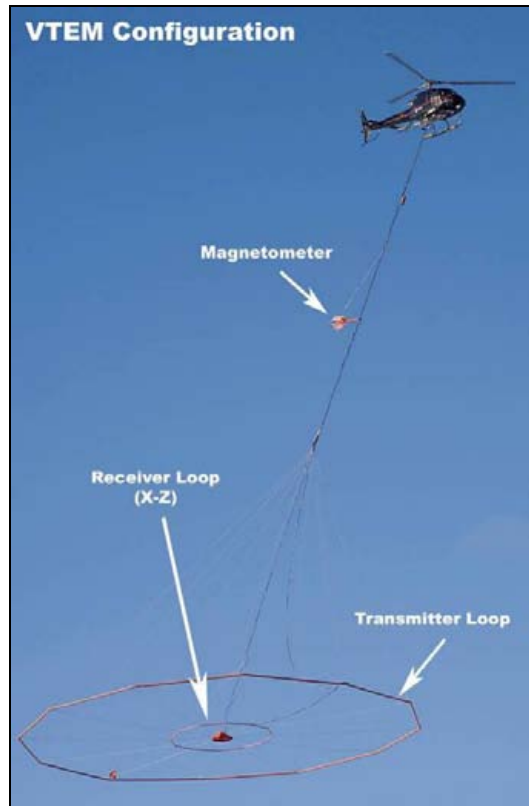


Figure 4 - VTEM Configuration, with magnetometer.

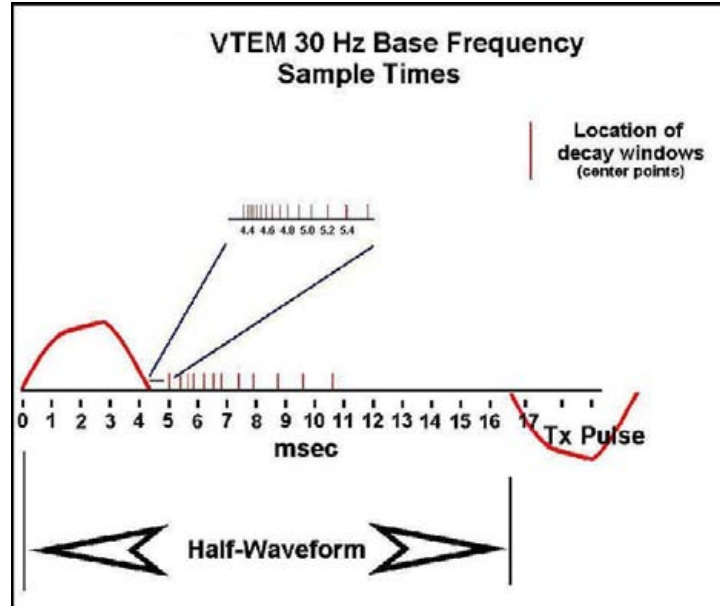


Figure 5 - VTEM Waveform & Sample Times

The VTEM decay sampling scheme is shown in Table 3 below. Thirty-two time measurement gates were used for the final data processing in the range from 96 to 7036  $\mu$  sec, as shown in 3.

**Table 3 - Decay Sampling Scheme**

<b>VTEM Decay Sampling Scheme</b>				
<b>Index</b>	<b>Middle</b>	<b>Start</b>	<b>End</b>	<b>Window</b>
<b>Microseconds</b>				
14	96	90	103	13
15	110	103	118	15
16	126	118	136	18
17	145	136	156	20
18	167	156	179	23
19	192	179	206	27
20	220	206	236	30
21	253	236	271	35
22	290	271	312	40
23	333	312	358	46
24	383	358	411	53
25	440	411	472	61
26	505	472	543	70
27	580	543	623	81
28	667	623	716	93
29	766	716	823	107
30	880	823	945	122
31	1,010	945	1,086	141
32	1,161	1,086	1,247	161
33	1,333	1,247	1,432	185
34	1,531	1,432	1,646	214
35	1,760	1,646	1,891	245
36	2,021	1,891	2,172	281
37	2,323	2,172	2,495	323
38	2,667	2,495	2,865	370
39	3,063	2,865	3,292	427
40	3,521	3,292	3,781	490
41	4,042	3,781	4,341	560
42	4,641	4,341	4,987	646
43	5,333	4,987	5,729	742
44	6,125	5,729	6,581	852
45	7,036	6,581	7,560	979

VTEM system parameters:

Transmitter Section

- Transmitter coil diameter: 25.5 m
- Number of turns: 4
- Transmitter base frequency: 30 Hz
- Peak current: 314.7 A
- Pulse width: 3.68 ms
- Duty cycle: 22 %
- Wave form shape: trapezoid
- Peak dipole moment: 639,234 nIA
- Nominal EM Bird terrain clearance: 246 metres
- Effective coil area: 508 m<sup>2</sup>

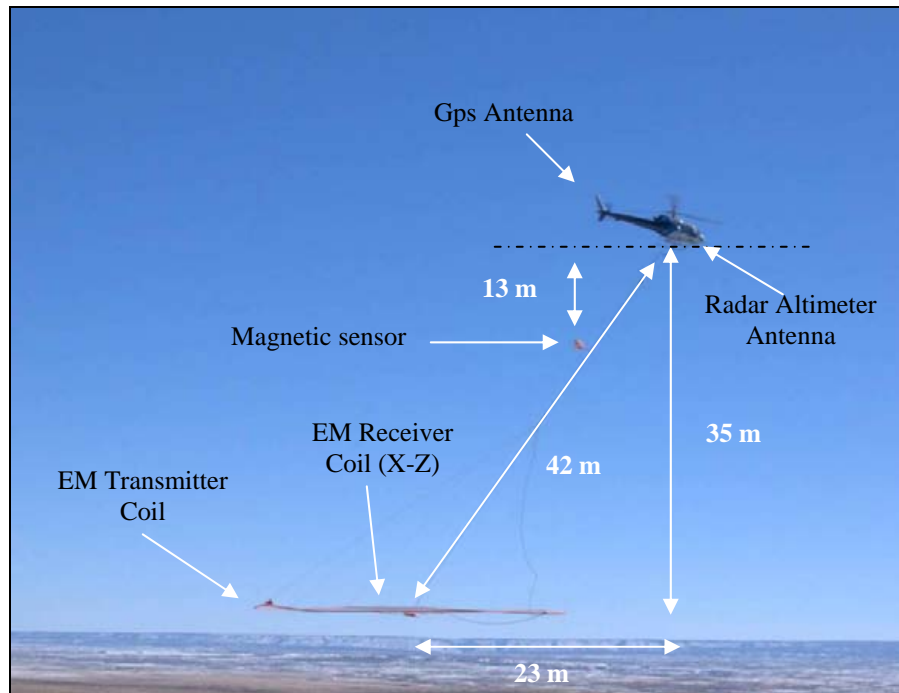
Receiver Section

X-Coil

- X Coil diameter: 0.32 m
- Number of turns: 245
- Effective coil area: 19.69 m<sup>2</sup>

Z-Coil

- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m<sup>2</sup>



**Figure 6 - VTEM System Configuration**

### 2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped caesium vapour magnetic field sensor mounted 13 metres below the helicopter, as shown in Figure 6. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds.

### 2.4.4 Radar Altimeter

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit (Figure 6).

### 2.4.5 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's CDGPS (Canada-Wide Differential Global Positioning System Correction Service) enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an NovAtel GPS antenna mounted on the helicopter tail (Figure 6). As many as 11 GPS and two CDGPS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with CDGPS active, it is 1.0 m. The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.

### 2.4.6 Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4.

**Table 4 - Acquisition Sampling Rates**

DATA TYPE	SAMPLING
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec

## 2.5 Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed at the Stewart Airport (055° 56.1021' N, 129° 59.0178' W); away from electric transmission lines and moving ferrous objects such as motor vehicles (Figure 2). The base station data were backed-up to the data processing computer at the end of each survey day.

### 3. PERSONNEL

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

Field:

Project Manager:	Darren Tuck (office)
Data QA/QC:	Neil Fiset (office)
Crew chief:	Alex Smirnov

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Geotech Aviation.

Pilot:	Guy Poirier
Mechanical Engineer:	Darren Paterson

Office:

Preliminary Data Processing:	Neil Fiset
Final Data Processing:	Neil Fiset/Greg Roman
Final Data QA/QC:	Marta Orta
Reporting/Mapping:	Corrie Laver

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Surveys Manager. Processing phase was carried out under the supervision of Harish Kumar, Assistant Manager of Data Processing. The interpretation phase was under the supervision of Jean Legault, P. Geo. The customer relations were looked after by Paolo Berardelli.

## **4. DATA PROCESSING AND PRESENTATION**

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

### **4.1 Flight Path**

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the NAD83 Datum, UTM Zone 9 North coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

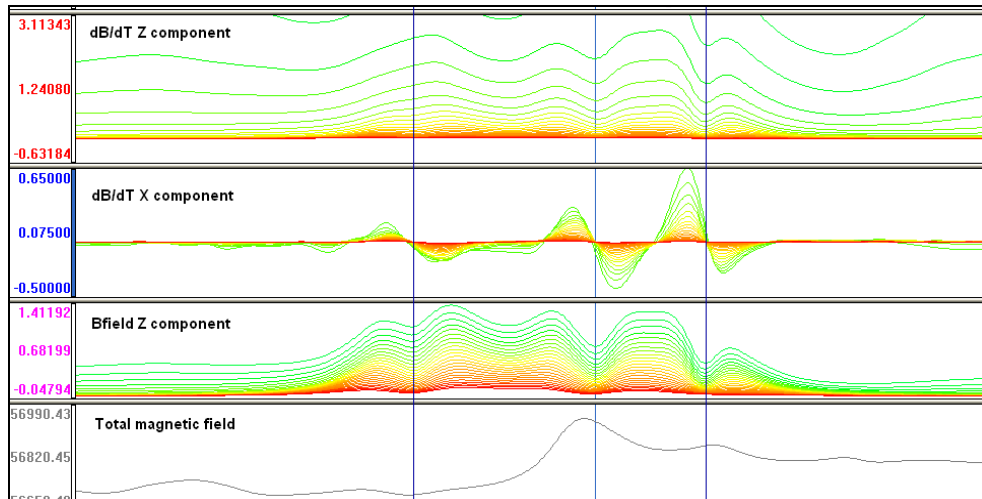
### **4.2 Electromagnetic Data**

A three stage digital filtering process was used to reject major spheric events and to reduce system noise. Local spheric activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major spheric events.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z and X components. B-field Z component time channel recorded at 0.667 milliseconds after the termination of the impulse is also presented as contour color image.





**Figure 7 - VTEM Z and X Component data.**

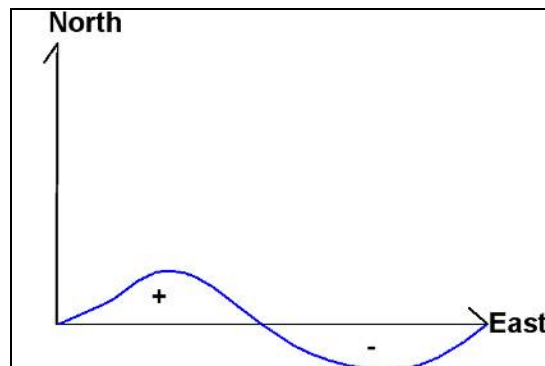
Generalized modeling results of VTEM data, are shown in Appendix E.

Graphical representations of the VTEM transmitter input current and the output voltage of the receiver coil are shown in Appendix C.

#### 4.2.1 VTEM X Component Polarity

VTEM X component data do not exhibit maxima or minima above conductors; in fact they produce cross-over type anomalies (Figure 7). The crossover polarity sign convention for VTEM X component polarity is according to the right hand rule for multi-component transient electromagnetic methods.

For the East to West lines of the block the sign convention for the X in-line component crossover is positive-negative pointing W to E for vertical conductor's perpendicular to the profile (Figure 8). Similarly, for the N to S tie lines, the X Component polarity is positive to negative pointing North to South. For plan plotting of profiles the X component data for alternating/opposite flight directions have been reversed (multiplied by negative one) in the final database (SFx\_Rev and BFX\_Rev channels) to account for this polarity convention.



**Figure 8 - VTEM X Component Polarity Convention for the block**

### 4.3 Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along traverse lines. A micro-levelling procedure was applied to remove persistent low-amplitude components of flight-line noise remaining in the data.

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 25 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

## 5. DELIVERABLES

### 5.1 Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

### 5.2 Maps

Final maps were produced at scale of 1:10,000 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD 83 Datum, UTM Zone 9 North. All maps show the mining claims, flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and a color magnetic TMI contour map. The following maps are presented on paper;

- VTEM dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM dB/dt profiles X Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-field late time Z Component Channel 28, Time Gate 0.667 ms color image.
- VTEM B-Field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- Total magnetic intensity (TMI) color image and contours.

### 5.3 Digital Data

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

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

Databases in Geosoft GDB format, containing the channels listed in Table 5.

**Table 5 - Geosoft GDB Data Format**

Channel name	Units	Description
X:	metres	UTM Easting NAD83 Zone 9 North
Y:	metres	UTM Northing NAD83 Zone 9 North
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Z:	metres	GPS antenna elevation (above Geoid)
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
SFz[14]:	$\rho V/(A \cdot m^4)$	Z dB/dt 96 microsecond time channel
SFz[15]:	$\rho V/(A \cdot m^4)$	Z dB/dt 110 microsecond time channel
SFz[16]:	$\rho V/(A \cdot m^4)$	Z dB/dt 126 microsecond time channel
SFz[17]:	$\rho V/(A \cdot m^4)$	Z dB/dt 145 microsecond time channel
SFz[18]:	$\rho V/(A \cdot m^4)$	Z dB/dt 167 microsecond time channel
SFz[19]:	$\rho V/(A \cdot m^4)$	Z dB/dt 192 microsecond time channel
SFz[20]:	$\rho V/(A \cdot m^4)$	Z dB/dt 220 microsecond time channel
SFz[21]:	$\rho V/(A \cdot m^4)$	Z dB/dt 253 microsecond time channel
SFz[22]:	$\rho V/(A \cdot m^4)$	Z dB/dt 290 microsecond time channel
SFz[23]:	$\rho V/(A \cdot m^4)$	Z dB/dt 333 microsecond time channel
SFz[24]:	$\rho V/(A \cdot m^4)$	Z dB/dt 383 microsecond time channel
SFz[25]:	$\rho V/(A \cdot m^4)$	Z dB/dt 440 microsecond time channel
SFz[26]:	$\rho V/(A \cdot m^4)$	Z dB/dt 505 microsecond time channel
SFz[27]:	$\rho V/(A \cdot m^4)$	Z dB/dt 580 microsecond time channel
SFz[28]:	$\rho V/(A \cdot m^4)$	Z dB/dt 667 microsecond time channel
SFz[29]:	$\rho V/(A \cdot m^4)$	Z dB/dt 766 microsecond time channel
SFz[30]:	$\rho V/(A \cdot m^4)$	Z dB/dt 880 microsecond time channel
SFz[31]:	$\rho V/(A \cdot m^4)$	Z dB/dt 1010 microsecond time channel
SFz[32]:	$\rho V/(A \cdot m^4)$	Z dB/dt 1161 microsecond time channel
SFz[33]:	$\rho V/(A \cdot m^4)$	Z dB/dt 1333 microsecond time channel
SFz[34]:	$\rho V/(A \cdot m^4)$	Z dB/dt 1531 microsecond time channel
SFz[35]:	$\rho V/(A \cdot m^4)$	Z dB/dt 1760 microsecond time channel
SFz[36]:	$\rho V/(A \cdot m^4)$	Z dB/dt 2021 microsecond time channel
SFz[37]:	$\rho V/(A \cdot m^4)$	Z dB/dt 2323 microsecond time channel
SFz[38]:	$\rho V/(A \cdot m^4)$	Z dB/dt 2667 microsecond time channel
SFz[39]:	$\rho V/(A \cdot m^4)$	Z dB/dt 3063 microsecond time channel
SFz[40]:	$\rho V/(A \cdot m^4)$	Z dB/dt 3521 microsecond time channel
SFz[41]:	$\rho V/(A \cdot m^4)$	Z dB/dt 4042 microsecond time channel
SFz[42]:	$\rho V/(A \cdot m^4)$	Z dB/dt 4641 microsecond time channel
SFz[43]:	$\rho V/(A \cdot m^4)$	Z dB/dt 5333 microsecond time channel
SFz[44]:	$\rho V/(A \cdot m^4)$	Z dB/dt 6125 microsecond time channel
SFz[45]:	$\rho V/(A \cdot m^4)$	Z dB/dt 7036 microsecond time channel
SFx[20]:	$\rho V/(A \cdot m^4)$	X dB/dt 220 microsecond time channel
SFx[21]:	$\rho V/(A \cdot m^4)$	X dB/dt 253 microsecond time channel
SFx[22]:	$\rho V/(A \cdot m^4)$	X dB/dt 290 microsecond time channel
SFx[23]:	$\rho V/(A \cdot m^4)$	X dB/dt 333 microsecond time channel
SFx[24]:	$\rho V/(A \cdot m^4)$	X dB/dt 383 microsecond time channel

Channel name	Units	Description
SFx[25]:	pV/(A*m <sup>4</sup> )	X dB/dt 440 microsecond time channel
SFx[26]:	pV/(A*m <sup>4</sup> )	X dB/dt 505 microsecond time channel
SFx[27]:	pV/(A*m <sup>4</sup> )	X dB/dt 580 microsecond time channel
SFx[28]:	pV/(A*m <sup>4</sup> )	X dB/dt 667 microsecond time channel
SFx[29]:	pV/(A*m <sup>4</sup> )	X dB/dt 766 microsecond time channel
SFx[30]:	pV/(A*m <sup>4</sup> )	X dB/dt 880 microsecond time channel
SFx[31]:	pV/(A*m <sup>4</sup> )	X dB/dt 1010 microsecond time channel
SFx[32]:	pV/(A*m <sup>4</sup> )	X dB/dt 1161 microsecond time channel
SFx[33]:	pV/(A*m <sup>4</sup> )	X dB/dt 1333 microsecond time channel
SFx[34]:	pV/(A*m <sup>4</sup> )	X dB/dt 1531 microsecond time channel
SFx[35]:	pV/(A*m <sup>4</sup> )	X dB/dt 1760 microsecond time channel
SFx[36]:	pV/(A*m <sup>4</sup> )	X dB/dt 2021 microsecond time channel
SFx[37]:	pV/(A*m <sup>4</sup> )	X dB/dt 2323 microsecond time channel
SFx[38]:	pV/(A*m <sup>4</sup> )	X dB/dt 2667 microsecond time channel
SFx[39]:	pV/(A*m <sup>4</sup> )	X dB/dt 3063 microsecond time channel
SFx[40]:	pV/(A*m <sup>4</sup> )	X dB/dt 3521 microsecond time channel
SFx[41]:	pV/(A*m <sup>4</sup> )	X dB/dt 4042 microsecond time channel
SFx[42]:	pV/(A*m <sup>4</sup> )	X dB/dt 4641 microsecond time channel
SFx[43]:	pV/(A*m <sup>4</sup> )	X dB/dt 5333 microsecond time channel
SFx[44]:	pV/(A*m <sup>4</sup> )	X dB/dt 6125 microsecond time channel
SFx[45]:	pV/(A*m <sup>4</sup> )	X dB/dt 7036 microsecond time channel
BFz	(pV*ms)/(A*m <sup>4</sup> )	Z B-Field data for time channels 14 to 45
BFx	(pV*ms)/(A*m <sup>4</sup> )	X B-Field data for time channels 20 to 45
SFx_Rev	pV/(A*m <sup>4</sup> )	X dB/dt reversed data for time channels 20 to 45
BFx_Rev	(pV*ms)/(A*m <sup>4</sup> )	X B-Field reversed data for time channels 20 to 45
PLM:		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45, and X component data from 20 – 45, as described above.

- Database of the VTEM Waveform “10099\_waveform\_final.gdb” in Geosoft GDB format, containing the following channels:

Time: Sampling rate interval, 5.2083 microseconds  
Rx\_Volt: Output voltage of the receiver coil (Volt)  
Tx\_Current: Output current of the transmitter (Amp)

- Grids in Geosoft GRD format, as follows:

BFz28: B-Field Z Component Channel 28 (Time Gate 0.667 ms)  
MAG: Total magnetic intensity (nT)

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 25 metres was used.

- Maps at 1:10,000 in Geosoft MAP format, as follows:

10099_10k_dBdtz:	dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
10099_10k_dBdtx:	dB/dt profiles X Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
10099_10k_bfield:	B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
10099_10k_BFz28:	B-field late time Z Component Channel 28, Time Gate 0.667 ms color image.
10099_10k_TMI:	Total magnetic intensity (TMI) color image and contours.

Maps are also presented in PDF format.

1:50,000 topographic vectors were taken from the NRCAN Geogratis database at; <http://geogratis.gc.ca/geogratis/en/index.html>.

- A Google Earth file *10099\_Decade.kml* showing the flight path of the block is included. Free versions of Google Earth software from: <http://earth.google.com/download-earth.html>

## 6. CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

A helicopter-borne versatile time domain electromagnetic (VTEM) geophysical survey has been completed over the Stamp Property, near Stewart, British Columbia.

The total area coverage is 14 km<sup>2</sup>. Total survey line coverage is 147.3 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles, and contour color images at a scale of 1:10,000. No formal Interpretation has been included.

### 6.2 Recommendations

Based on the geophysical results obtained, a number of interesting EM anomalies that were identified across the property. The magnetic results may also contain worthwhile information in support of exploration targets of interest. We therefore recommend a detailed interpretation of the available geophysical data, in conjunction with the geology. It should include 2D - 3D inversion modeling analyses and magnetic derivative analysis prior to ground follow up and drill testing.

Respectfully submitted<sup>6</sup>,



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Neil Fiset  
**Geotech Ltd.**

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Jean Legault, P. Geo, P. Eng  
**Geotech Ltd.**

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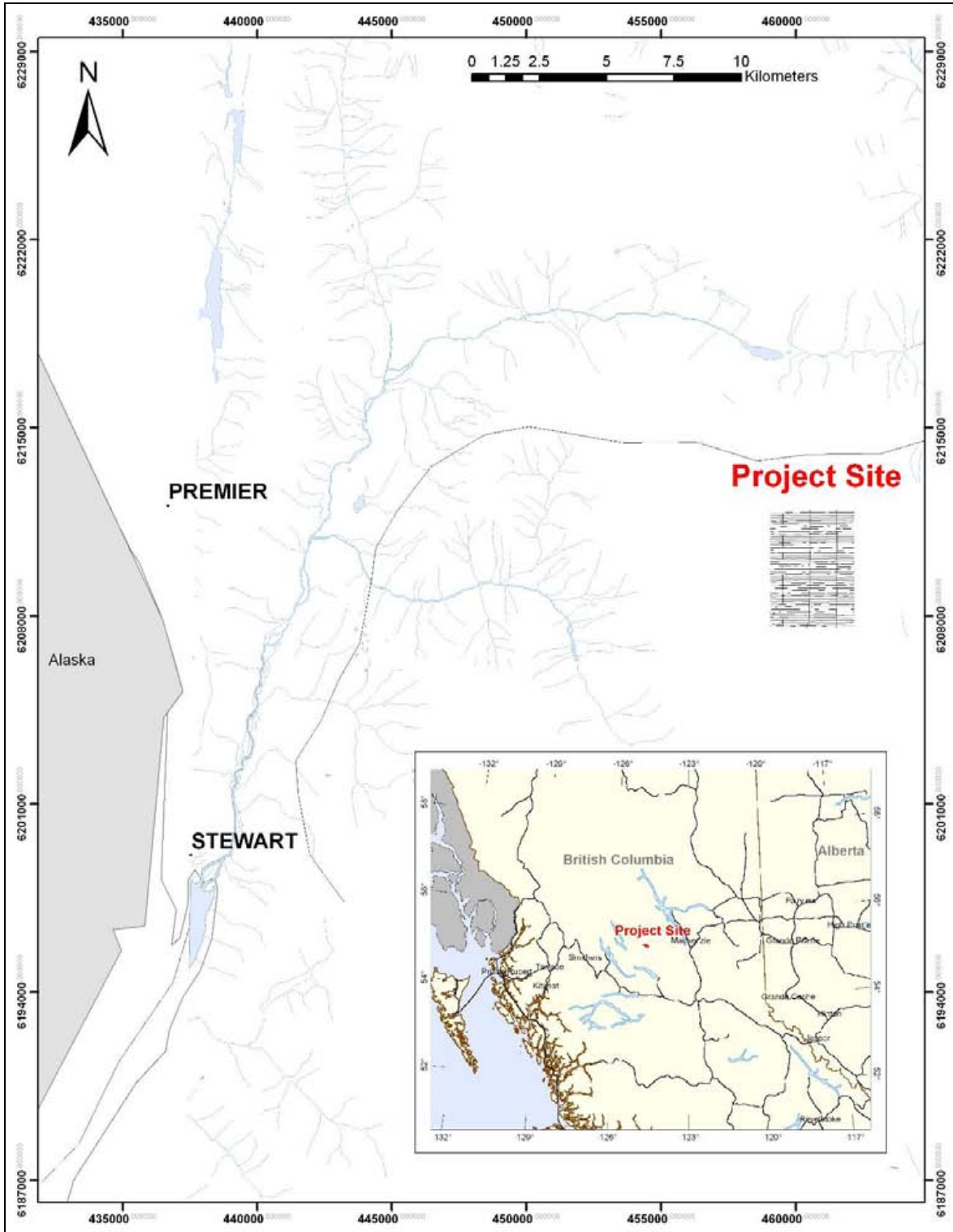
Harish Kumar  
**Geotech Ltd.**

September 2010

<sup>6</sup>Final data processing of the EM and magnetic data were carried out by Neil Fiset, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Harish Kumar, Assistant Manager of Data Processing and Jean Legault, P. Geo, P. Eng, Chief Geophysicist (Interpretation)

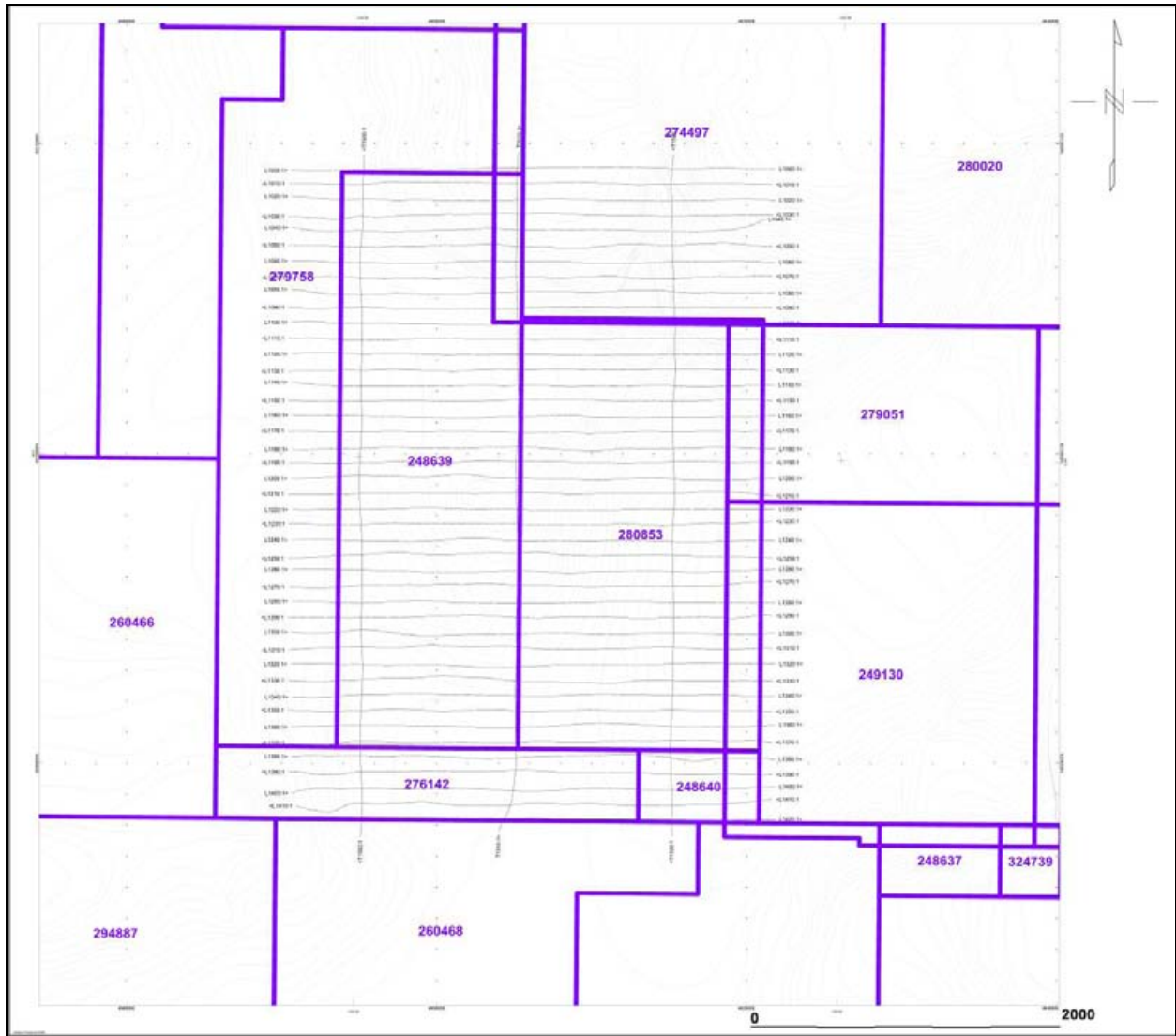
# APPENDIX A

## SURVEY BLOCK LOCATION MAP



Survey Overview of the Block





**Mining Claims for the Block**

## APPENDIX B

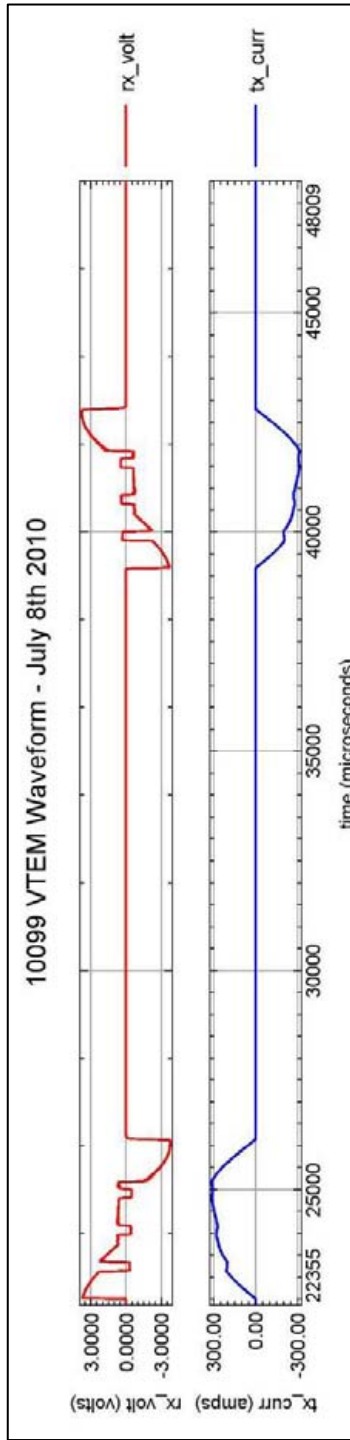
### SURVEY BLOCK COORDINATES

(WGS 84, UTM Zone 9 North)

X	Y
459371	6208038
461303.7	6208038
461303.7	6207629
461858.4	6207630
461858.4	6210938
460373.1	6210938
460373.1	6211838
459371	6211838

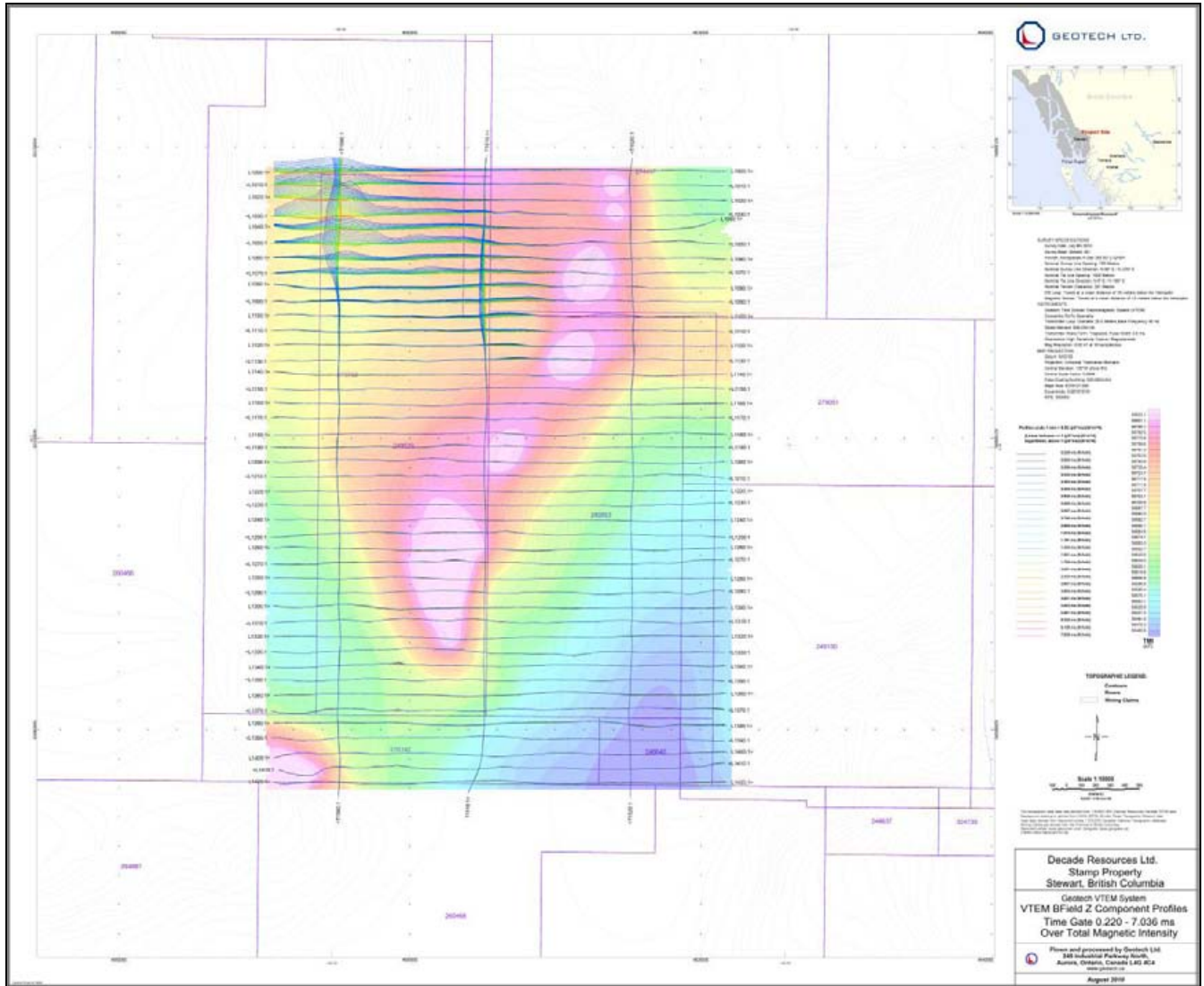
# APPENDIX C

## VTEM WAVEFORM



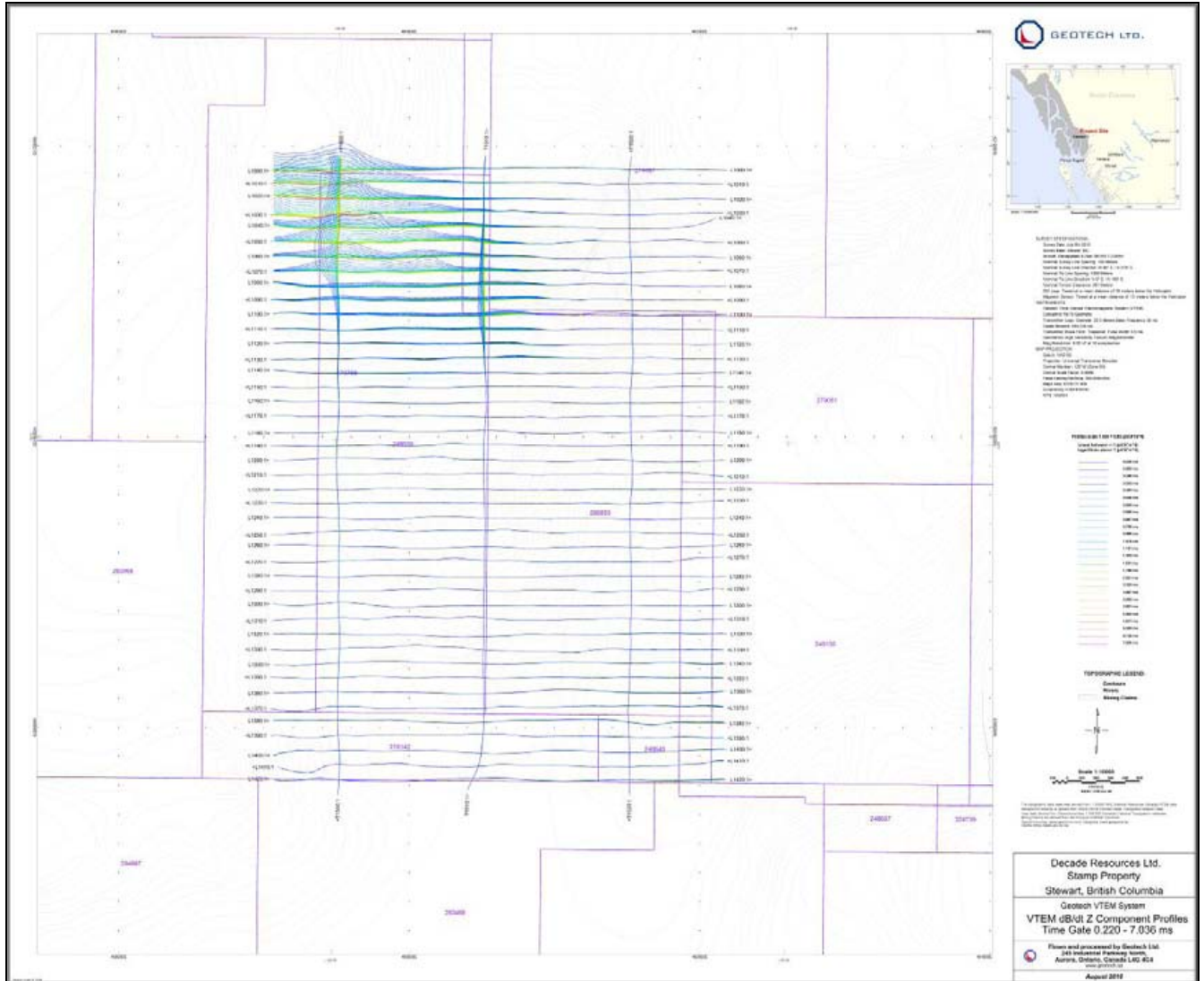
# APPENDIX D

## GEOPHYSICAL MAPS<sup>1</sup>

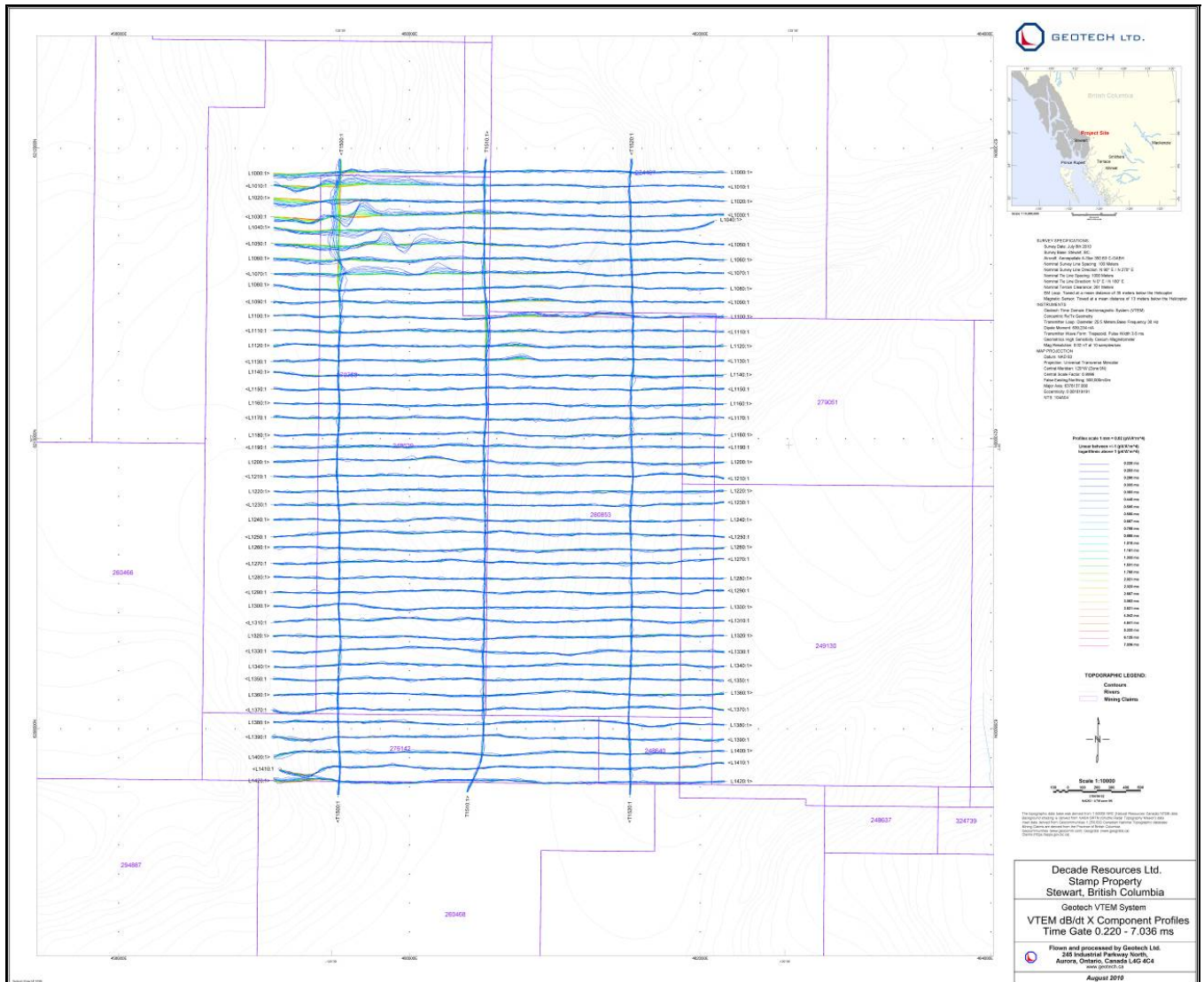


**VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms**

<sup>1</sup> Full size geophysical maps are also available in PDF format on the final DVD

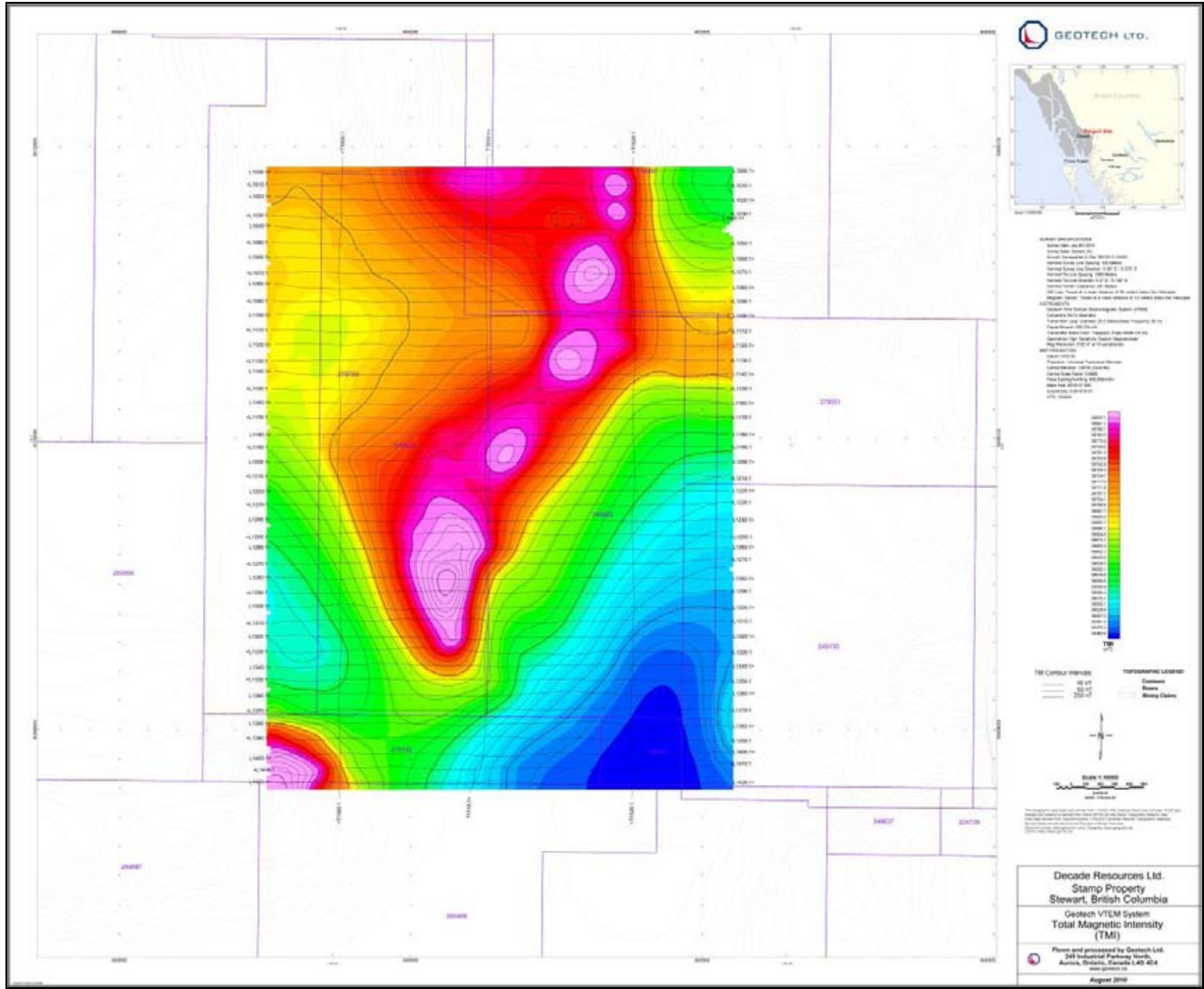


VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



VTEM dB/dt X Component Profiles, Time Gates 0.220 to 7.036 ms





**Total Magnetic Intensity (TMI)**



## APPENDIX E

### GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

#### Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 25.5 metres diameter transmitter loop that produces a dipole moment up to 639,234 nIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 30 Hz, the duration of each pulse is approximately 3.68 milliseconds followed by an off time where no primary field is present.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

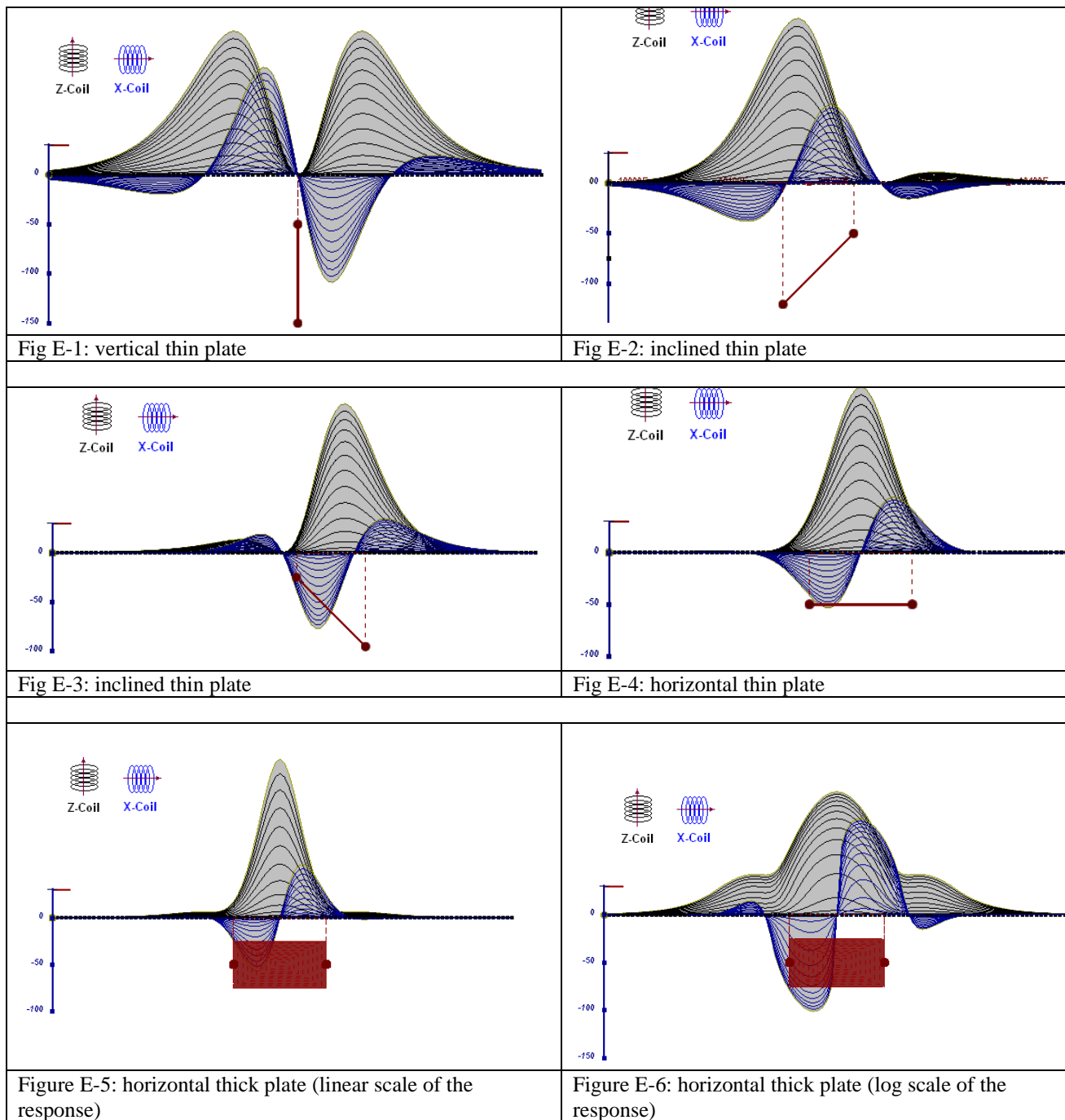
Measurements are made during the off-time, when only the secondary field (representing the conductive targets encountered in the ground) is present.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

A set of models has been produced for the Geotech VTEM® system dB/dT Z and X components (see models E1 to E15). The Maxwell™ modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90° to about 30°. The method is not sensitive enough where dips are less than about 30°.



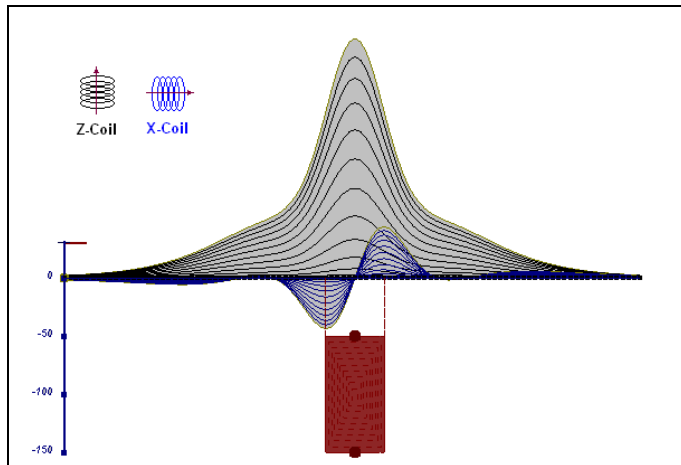


Figure E-7: vertical thick plate (linear scale of the response). 50 m depth

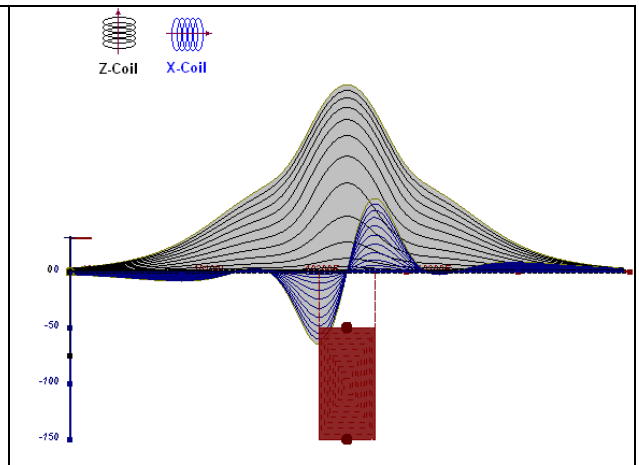


Figure E-8: vertical thick plate (log scale of the response). 50 m depth

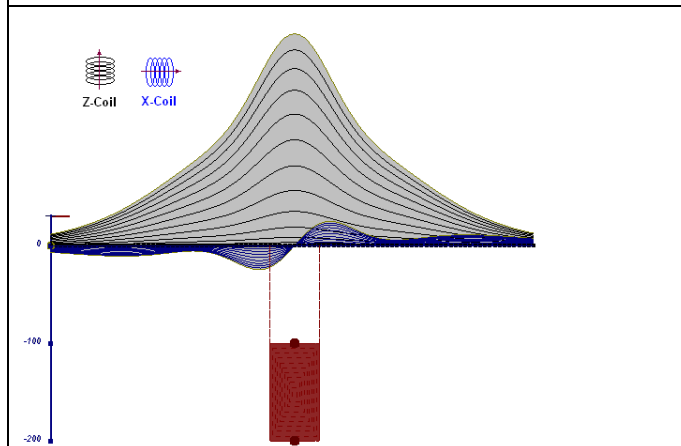


Fig E-9: vertical thick plate (linear scale of the response). 100 m depth

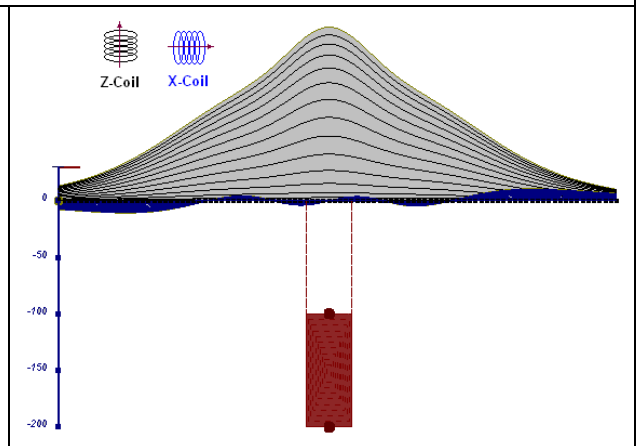


Fig E-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

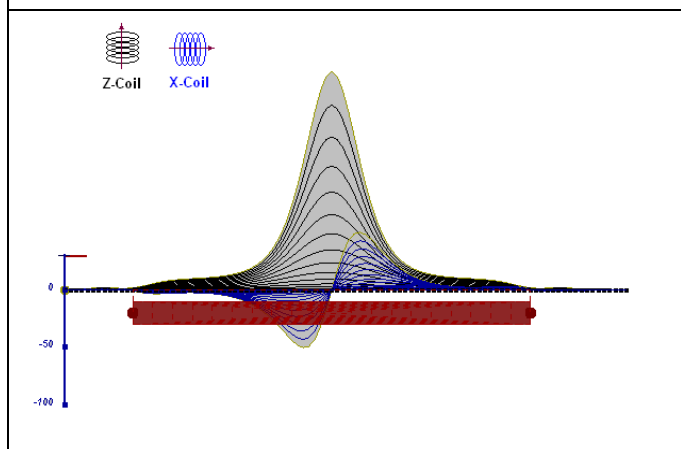


Figure E-10: horizontal thick plate (linear scale of the response)

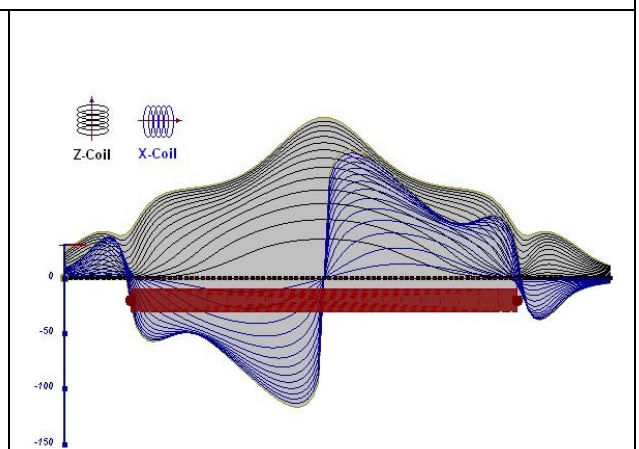


Figure E-11: horizontal thick plate (log scale of the response)

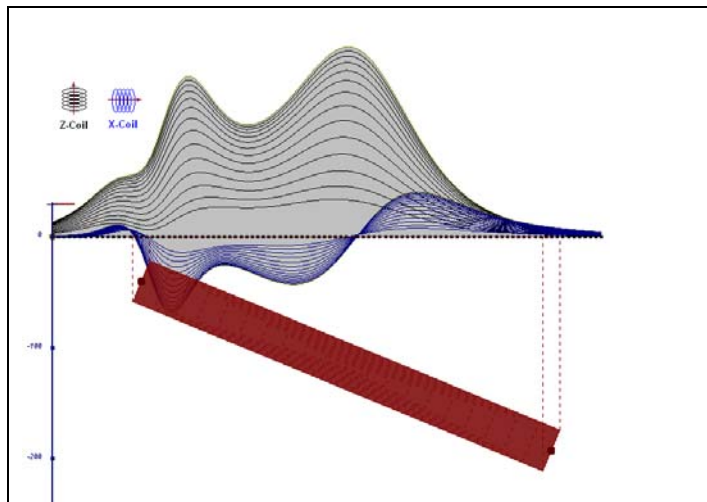


Fig E-12: inclined long thick plate

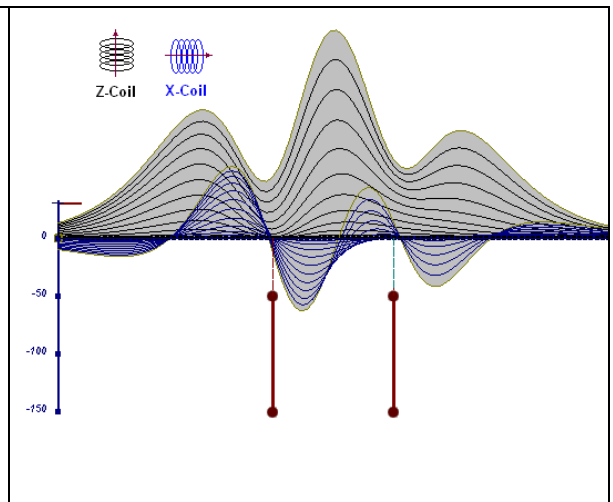


Fig E-13: two vertical thin plates

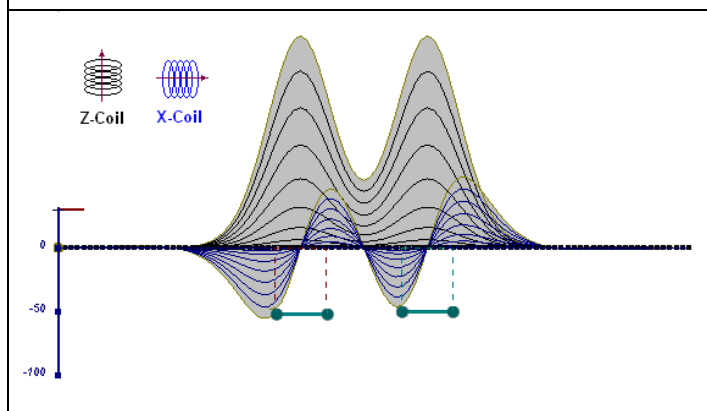


Fig E-14: two horizontal thin plates

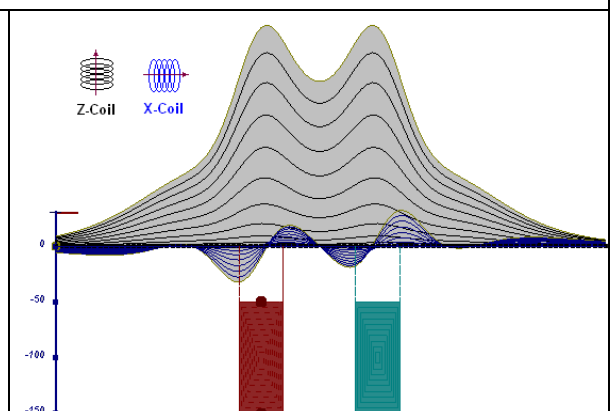


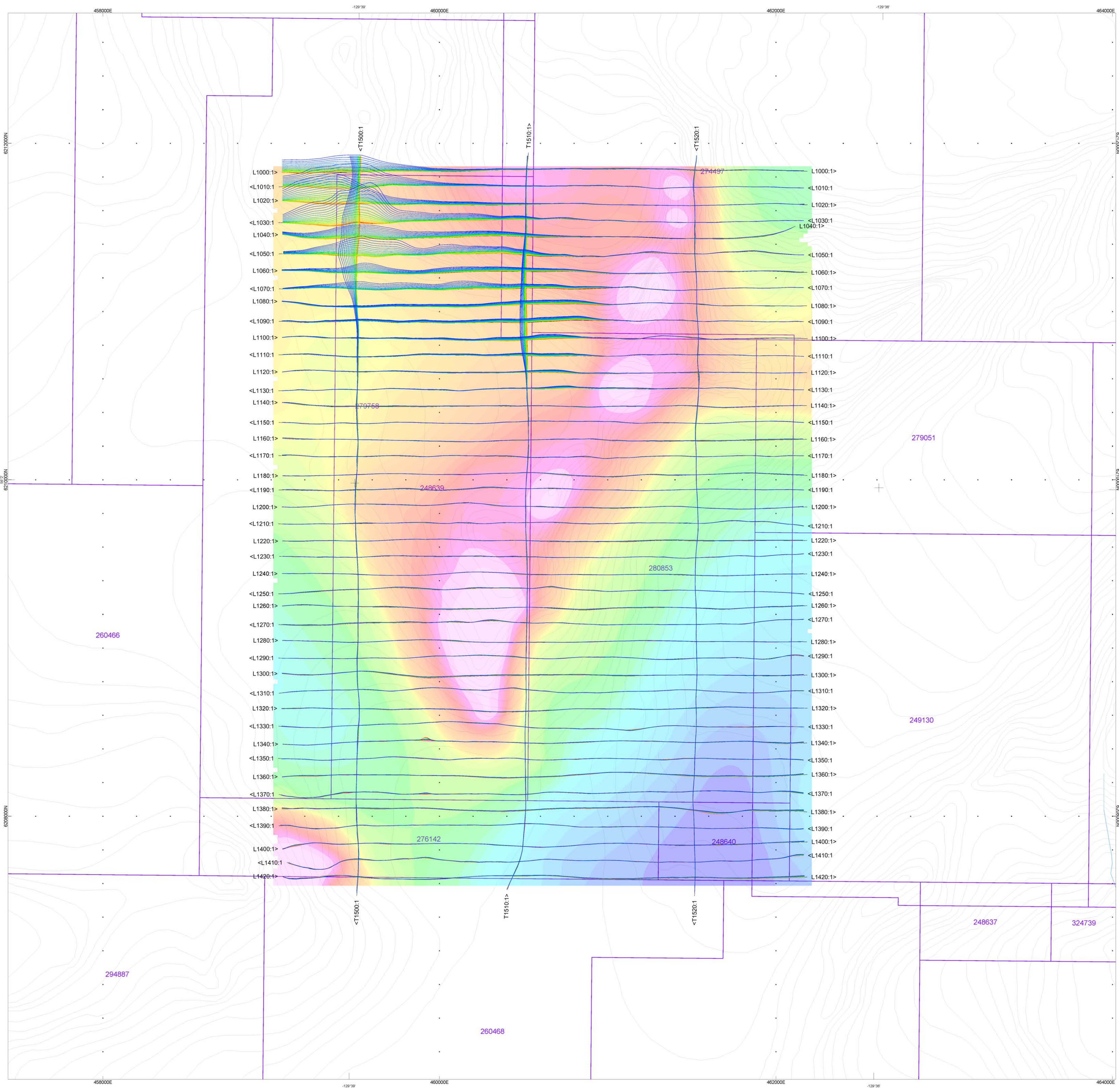
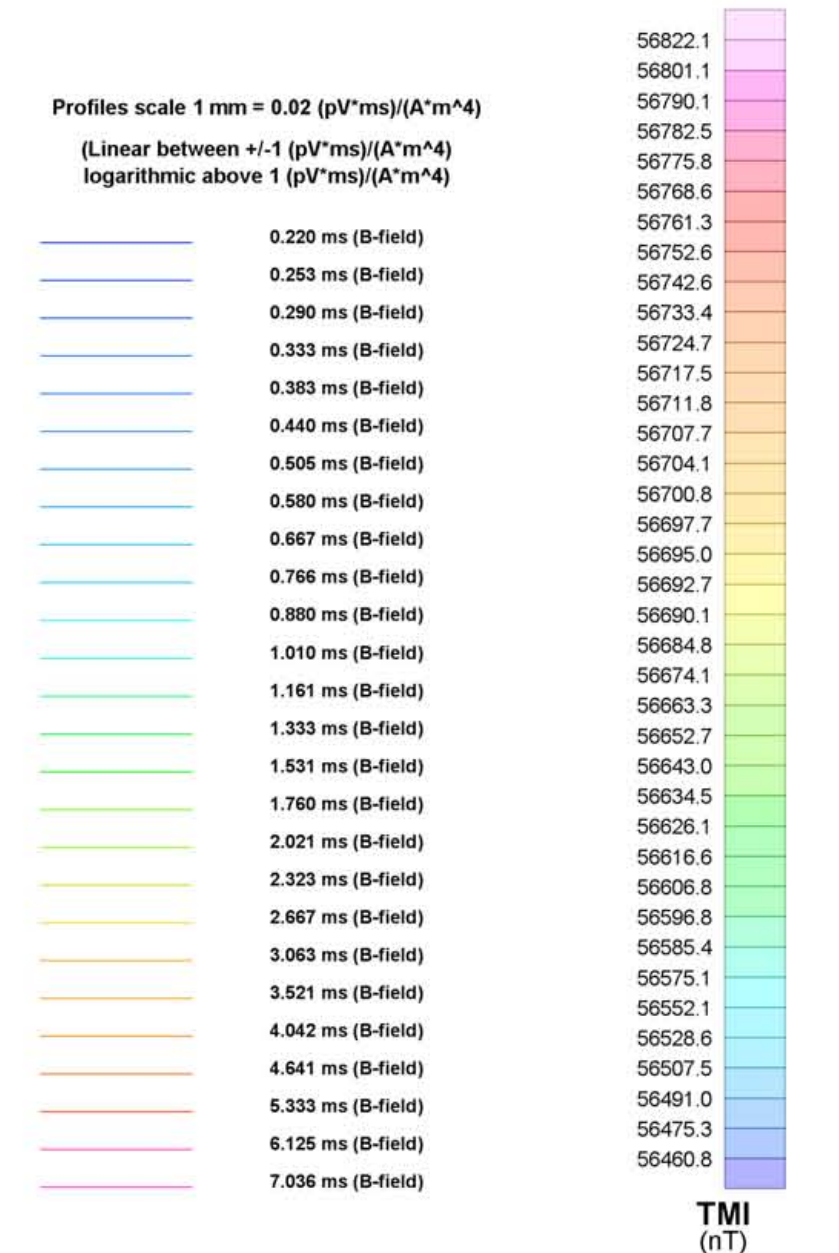
Fig E-15: two vertical thick plates



**SURVEY SPECIFICATIONS:**  
 Survey Date: July 8th 2010  
 Survey Base: Stewart, BC  
 Aircraft: Aerospatiale A-Star 350 B3 C-GABH  
 Nominal Survey Line Spacing: 100 Meters  
 Nominal Survey Line Direction: N 90° E / N 270° E  
 Nominal Tie Line Spacing: 1000 Meters  
 Nominal Tie Line Direction: N 0° E / N 180° E  
 Nominal Terrain Clearance: 281 Meters  
 EM Loop: Towed at a mean distance of 35 meters below the Helicopter  
 Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

**INSTRUMENTS**  
 Geotech Time Domain Electromagnetic System (VTEM)  
 Concentric Rx/Tx Geometry  
 Transmitter Loop: Diameter 25.5 Meters, Base Frequency 30 Hz  
 Dipole Moment: 639,234 nA  
 Transmitter Wave Form: Trapezoid, Pulse Width 3.6 ms.  
 Geometrics High Sensitivity Cesium Magnetometer  
 Mag Resolution: 0.02 nT at 10 samples/sec

**MAP PROJECTION:**  
 Datum: NAD 83  
 Projection: Universal Transverse Mercator  
 Central Meridian: 129°W (Zone 9N)  
 Central Scale Factor: 0.9996  
 False Easting/Northing: 500,000m/0m  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191  
 NTS: 104604



The topographic data base was derived from 1:50000 NRC (Natural Resources Canada) NTDB data  
 Background shading is derived from NASA SRTM (Shuttle Radar Topography Mission) data  
 Inset data derived from Geocommunities 1:250,000 Canadian National Topographic database  
 Mining Claims are derived from the Province of British Columbia  
 Geocommunities (www.geocomm.com) Geotitles (www.geotitles.ca)  
 Claims (https://apps.gov.bc.ca)

**Decade Resources Ltd.**  
 Stamp Property  
 Stewart, British Columbia

Geotech VTEM System  
 VTEM BField Z Component Profiles  
 Time Gate 0.220 - 7.036 ms  
 Over Total Magnetic Intensity

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 Aurora, Ontario, Canada L4G 4C4  
 www.geotech.ca

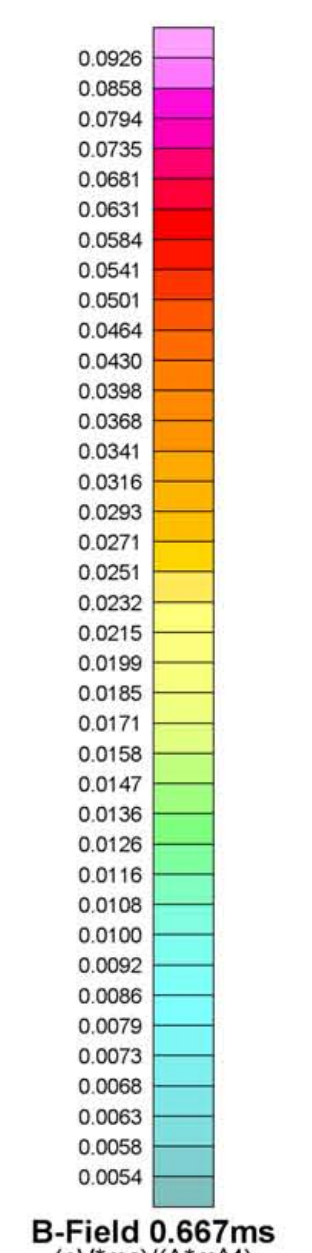
August 2010



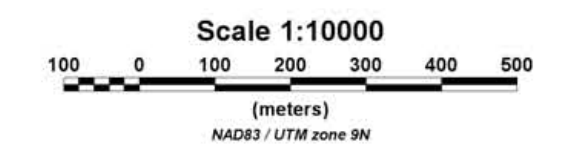
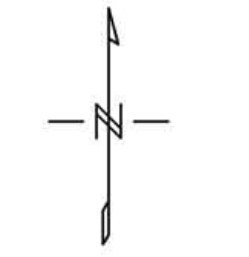
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 Aircraft: Aerospatiale A-Star 350 B3 C-GABH  
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 Nominal Survey Line Direction: N 90° E / N 270° E  
 Nominal Tie Line Spacing: 1000 Meters  
 Nominal Tie Line Direction: N 0° E / N 180° E  
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 Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

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 Geometrics High Sensitivity Cesium Magnetometer  
 Mag Resolution: 0.02 nT at 10 samples/sec

**MAP PROJECTION:**  
 Datum: NAD 83  
 Projection: Universal Transverse Mercator  
 Central Meridian: 129°W (Zone 9N)  
 Central Scale Factor: 0.9996  
 False Easting/Northing: 500,000m/0m  
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 Eccentricity: 0.081818191  
 NTS: 104A04



**TOPOGRAPHIC LEGEND:**  
 Contours  
 Rivers  
 Mining Claims



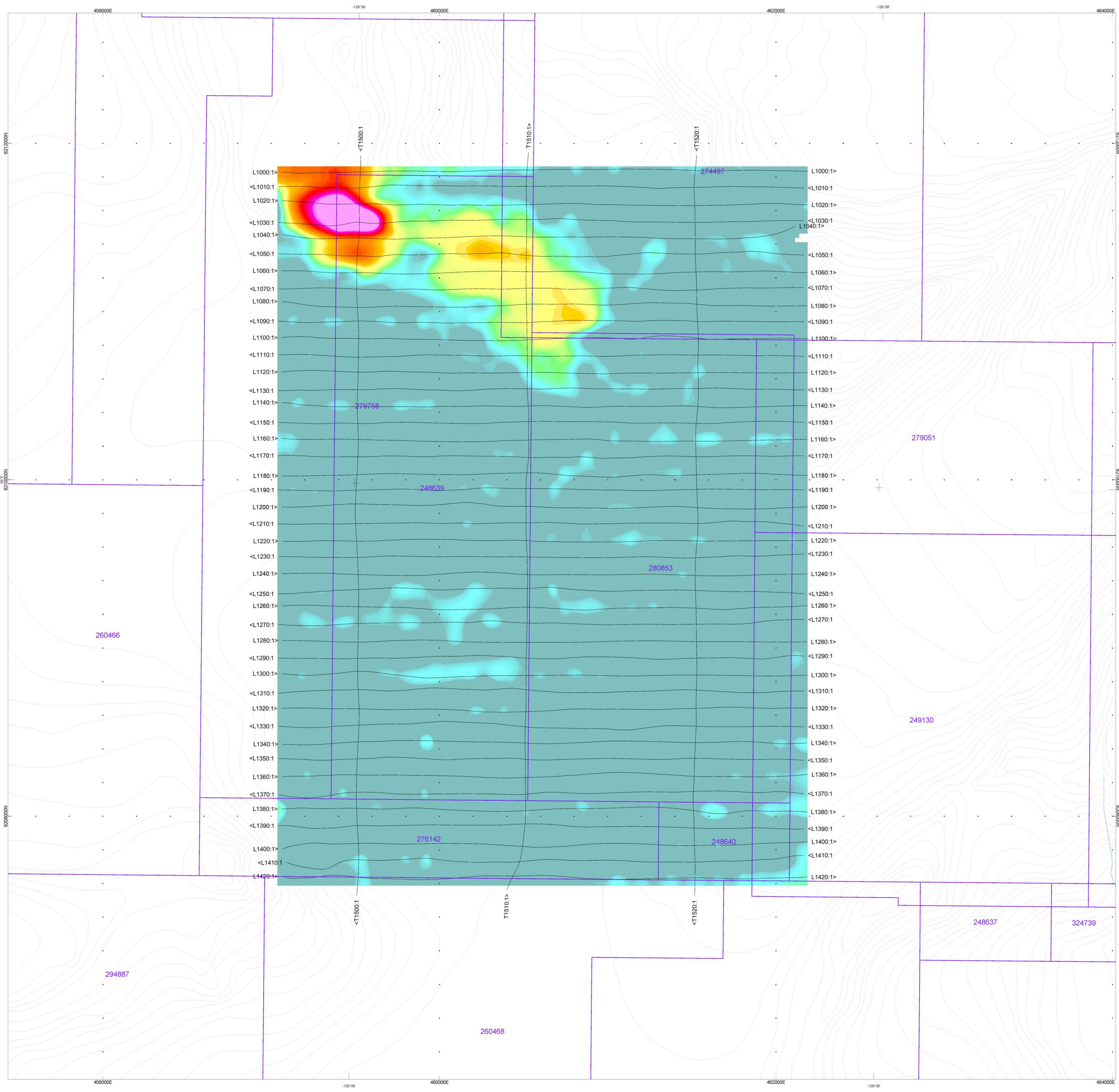
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 Claims (http://apps.gov.bc.ca)

**Decade Resources Ltd.**  
 Stamp Property  
 Stewart, British Columbia

Geotech VTEM System  
 VTEM B-Field Z Component  
 Channel 28, Time Gate 0.667 ms

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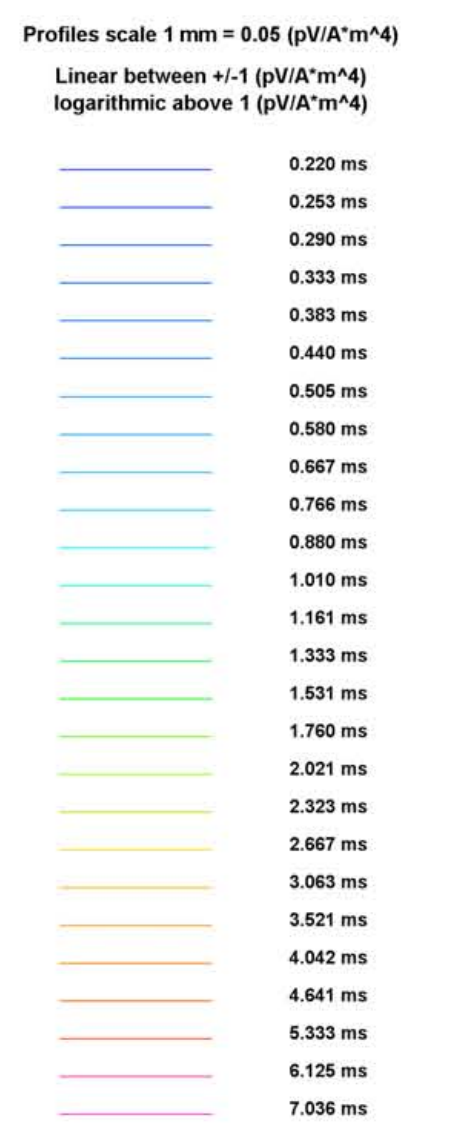




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 Aircraft: Aerospatiale A-Star 350 B3 C-GABH  
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 Nominal Tie Line Direction: N 0° E / N 130° E  
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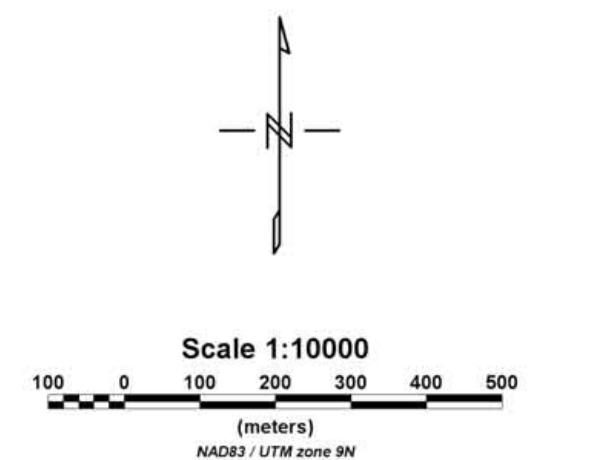
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 Geometrics High Sensitivity Cesium Magnetometer  
 Mag Resolution: 0.02 nT at 10 samples/sec

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 Eccentricity: 0.081819191  
 NTS: 104A04



**TOPOGRAPHIC LEGEND:**

- Contours
- Rivers
- Mining Claims



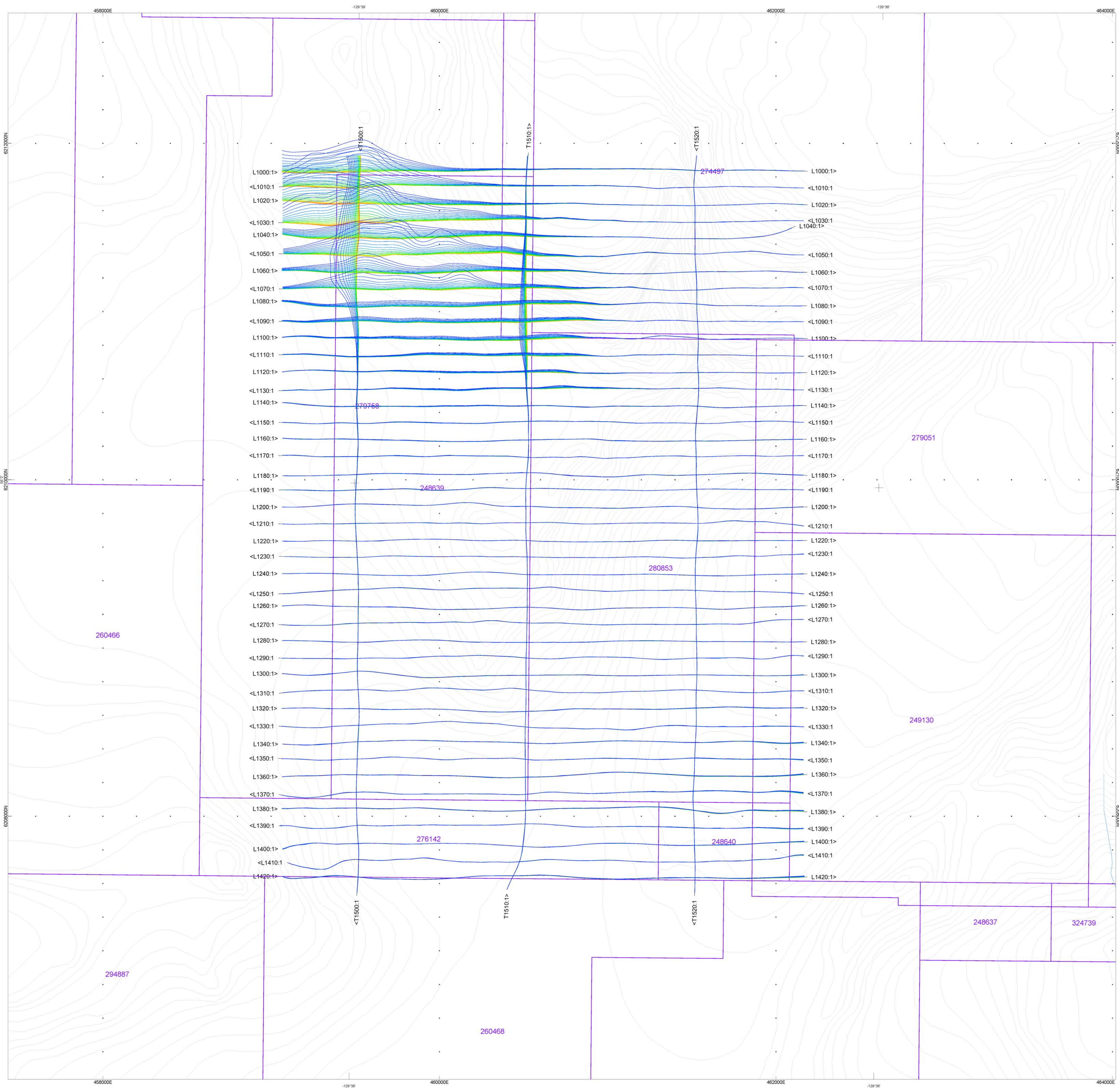
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 Stamp Property  
 Stewart, British Columbia

Geotech VTEM System  
 VTEM dB/dt Z Component Profiles  
 Time Gate 0.220 - 7.036 ms

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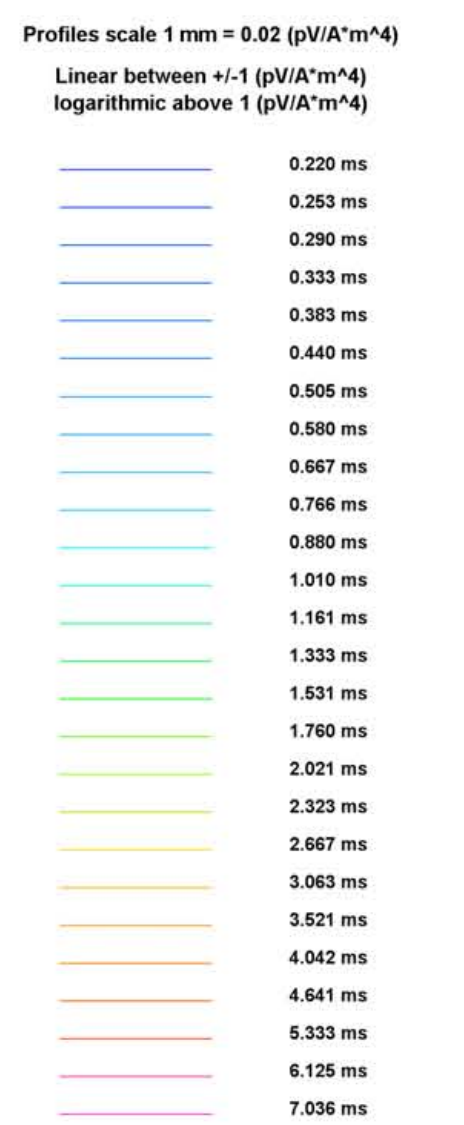




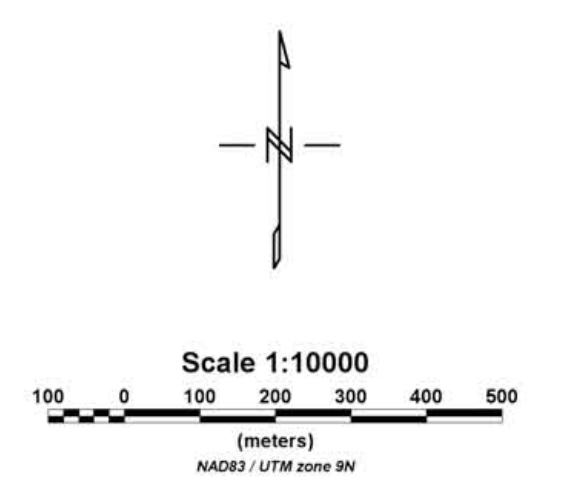
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 NTS: 104A04



**TOPOGRAPHIC LEGEND:**  
 Contours  
 Rivers  
 Mining Claims



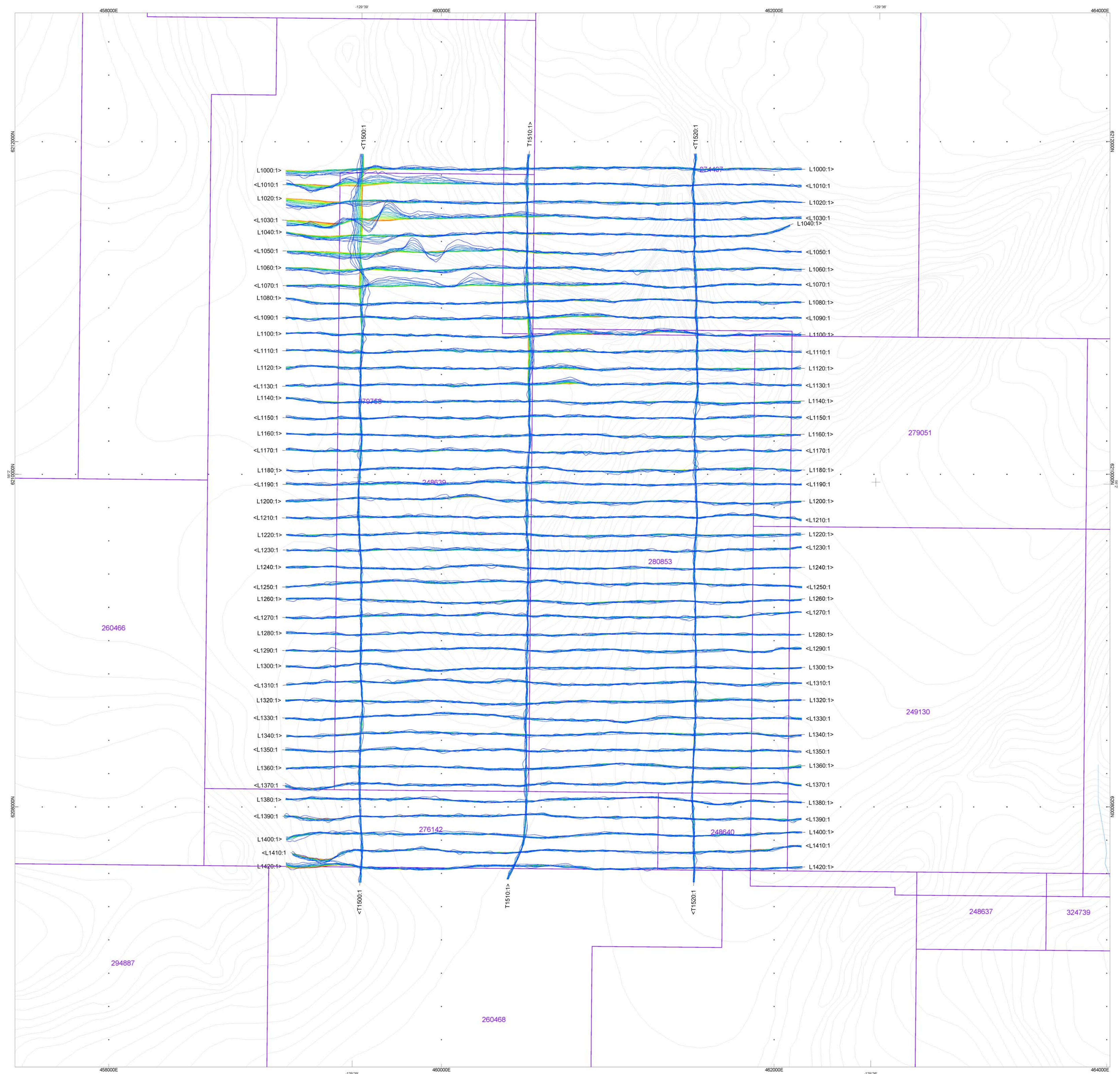
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**Decade Resources Ltd.**  
 Stamp Property  
 Stewart, British Columbia

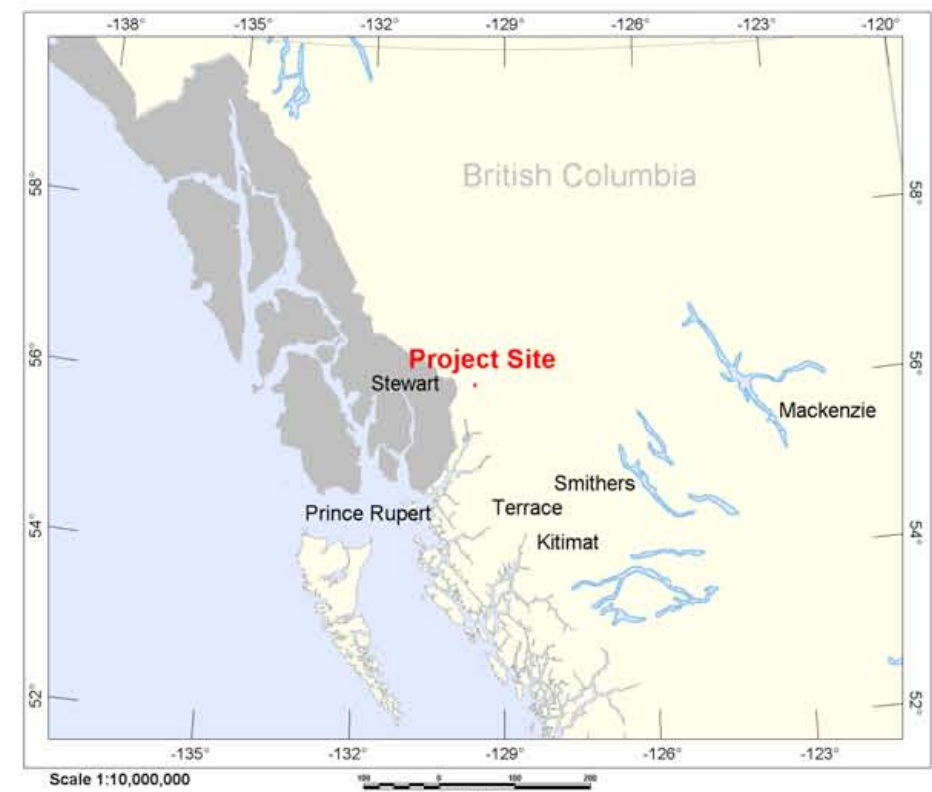
Geotech VTEM System  
 VTEM dB/dt X Component Profiles  
 Time Gate 0.220 - 7.036 ms

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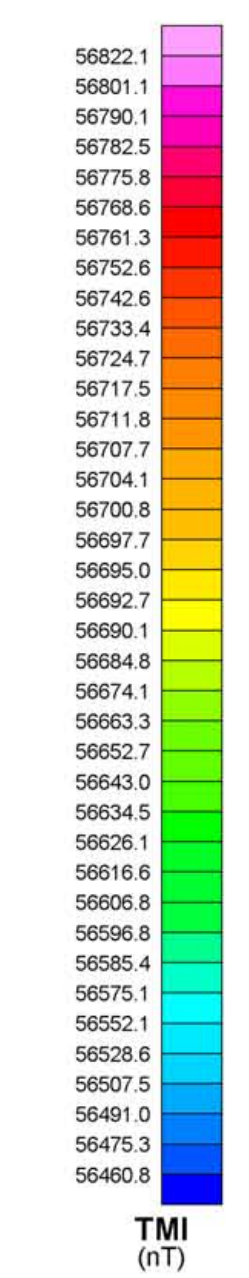




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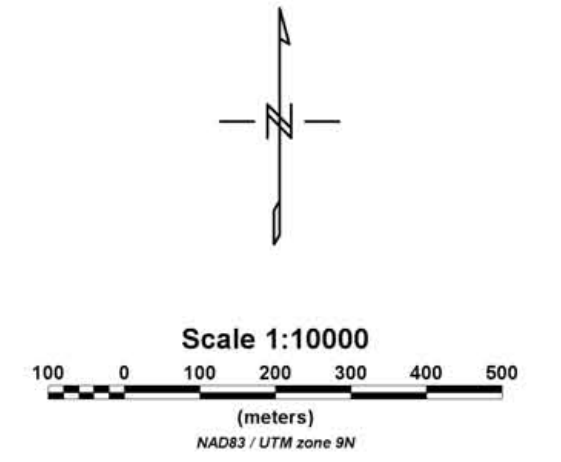
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 Geometrics High Sensitivity Cesium Magnetometer  
 Mag Resolution: 0.02 nT at 10 samples/sec

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 Major Axis: 6378137.000  
 Eccentricity: 0.081819191  
 NTS: 104A04



**TMI Contour Intervals:**  
 10 nT  
 50 nT  
 250 nT

**TOPOGRAPHIC LEGEND:**  
 Contours  
 Rivers  
 Mining Claims



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 Inset data derived from Geocommunities 1:250,000 Canadian National Topographic database  
 Mining Claims are derived from the Province of British Columbia  
 Geocommunities ([www.geocomm.com](http://www.geocomm.com)) Geographics ([www.geographics.ca](http://www.geographics.ca))  
 Claims (<http://apps.gov.bc.ca>)

**Decade Resources Ltd.**  
 Stamp Property  
 Stewart, British Columbia

**Geotech VTEM System**  
 Total Magnetic Intensity  
 (TMI)

Flown and processed by Geotech Ltd.  
 245 Industrial Parkway North,  
 Aurora, Ontario, Canada L4G 4C4  
[www.geotech.ca](http://www.geotech.ca)

August 2010

