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**ASSESSMENT REPORT**

describing

**GEOPHYSICAL SURVEYS**

at the

**TRACK PROPERTY**

Track 7-14 YC13049-YC13056

NTS 116C/8

Latitude 64°23'N; Longitude 140°12'W

in the

Dawson Mining District  
Yukon Territory

prepared by

Archer, Cathro & Associates (1981) Limited

for

**EUREKA JOINT VENTURE**

Strategic Metals Ltd. - 50%  
StrataGold Corporation - 50%

by

W.A. Eaton, B.Sc. Geology  
December 2007

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## **INTRODUCTION**

The Track property consists of eight mineral claims held by Eureka Joint Venture, which is currently owned 50% by Strategic Metals Ltd. and 50% by StrataGold Corporation. Strategic Metals funded the 2007 exploration program and has the right to earn up to a 100% interest in the property subject to certain back-in rights of StrataGold. The claims were staked as part of a larger property in spring 1999 to cover a tungsten skarn showing with lode gold potential. The prospect is located in the central part of the Tintina Gold Belt, a loosely defined 2100 km long zone of gold and silver deposits extending across Alaska and Yukon.

Work in 2007 consisted of property-wide, helicopter-borne versatile time domain electromagnetic (VTEM) and magnetic surveys. The program was managed by Archer, Cathro & Associates (1981) Limited and was supervised by the author. Appendix I contains the author's Statement of Qualifications.

## **HISTORY**

The area was first staked as part of a much larger claim block in 1979 by Noranda Exploration Company Limited, which conducted several exploration programs between 1979 and 1983. The first program consisted of reconnaissance-scale prospecting plus geological mapping, linecutting, grid soil sampling and magnetometer surveys on two small grids. This program outlined two strong tungsten-in-soil anomalies (Poinjar and SDJ Showings) associated with skarn and hornfels alteration developed along a contact between metasedimentary rocks and a younger granitic stock. Skarn float from the Poinjar Showing reportedly returned up to 4.5% tungsten oxide (Macdonald, 1980a).

In 1980 Noranda conducted widely spaced grid soil sampling and pan sampling, which outlined intermittent copper, lead, zinc and molybdenum anomalies at various locales along the intrusive-metasedimentary contact and within the stock. Ground magnetometer and VLF surveys were conducted at the Poinjar Showing, and the resulting anomalies were tested by 456 m of diamond drilling in four holes. The drilling intersected significant skarn and hornfels zones, the best intercepts from which graded 0.54% tungsten oxide over 0.76 m and 0.55 g/t gold over 0.61 m (Macdonald, 1980b). Helicopter-borne magnetic and VLF-EM surveys were flown in October 1980.

Additional linecutting, detail mapping, prospecting, grid soil sampling and ground geophysical surveys were carried out in 1981. This work was followed in 1982 with bulldozer trenching and diamond drilling (719 m in seven holes) to further test the skarn mineralization at the Poinjar Showing, immediately along strike from the previous drilling. Drill intercepts reportedly averaged up to 0.34% tungsten oxide across 12.8 m, including an interval which yielded 1.14% across 1.83 m (Rogers, 1982). The 1983 program consisted of linecutting and hand trenching, plus a detailed ground magnetic survey that generated several small, high-amplitude magnetic anomalies in the vicinity of the Poinjar Showing.

In 1993 NDU Resources Ltd. conducted one day of prospecting at the SDJ and Poinjar Showings. A specimen of limonite boxwork taken near the Poinjar Showing returned 2.7 g/t

gold, 1530 ppm bismuth and 1100 ppm tungsten. Two claims were staked but no further work was done.

Eureka Joint Venture staked 68 claims in early 1999 and explored later that year with prospecting and extensive silt sampling in creeks draining the property and elsewhere on the periphery of the granitic stock. Prospecting at the Poinjar Showing discovered quartz matrix supported limonite that yielded 3.59 g/t gold, 1.6 g/t silver, 1655 ppm bismuth, 56 ppm molybdenum and 810 ppm tungsten. A follow-up program of prospecting, mapping and soil sampling was done in 2000. The property was subsequently reduced to eight claims covering the Poinjar Showing. In 2003 some soil samples, which were collected in 2000 but not analyzed, were finally submitted to the geochemical laboratory. These samples provided a higher density of geochemical data in the vicinity of the Poinjar Showing. When combined with earlier results, they outline a 150 by 100 m cluster of coincident high values for gold, bismuth and tungsten (Wengzynowski 2003).

### **PROPERTY LOCATION, CLAIM DATA AND ACCESS**

The property is located in west-central Yukon, 7 km north of the Yukon River, at latitude 64°23'N and longitude 140°12'W on NTS map sheet 116C/8 (Figure 1). It consists of eight contiguous mineral claims registered with the Dawson Mining Recorder in the name of Archer Cathro, which holds them in trust for Eureka Joint Venture. Claim registration data are listed below while the location of individual claims are shown on Figure 2.

<u>Claim Name</u>	<u>Grant Number</u>	<u>Expiry Date*</u>
Track 7-14	YC13049-YC13056	February 15, 2009

\* Expiry date does not include assessment credit for work done in 2007, which has not yet been filed.

Access to the claims is normally by helicopter from year-round bases in Dawson City, 40 km southeast of the property. In 2007 the geophysical surveys were flown by an Astar B3 helicopter working from a temporary base at the Dawson City airport, with intraday refueling at the nearest road accessible location (Cassiar Dome), 14 km northwest of the property. Cassiar Dome lies 66 km from Dawson City and is reached by the Top of the World Highway and Clinton Creek Road.

A winter access trail is shown on the Yukon Tote Trail map leaving the Klondike Highway near Bear Creek east of Dawson City and paralleling the north side of the Yukon River to within about 6 km of the property. The condition of this route is unknown. A bulldozer trail also extends from the Yukon River onto the property. The bulldozer that built this trail was positioned from Dawson City by barge.

### **GEOMORPHOLOGY**

Elevations in the vicinity of the property range from about 650 to 900 m above sea level. The area escaped Pleistocene glaciation and as a result the landscapes are mature with dendritic

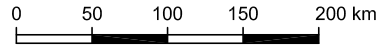
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STRATAGOLD COPORATION

FIGURE 1

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LOCATION  
TRACK PROPERTY

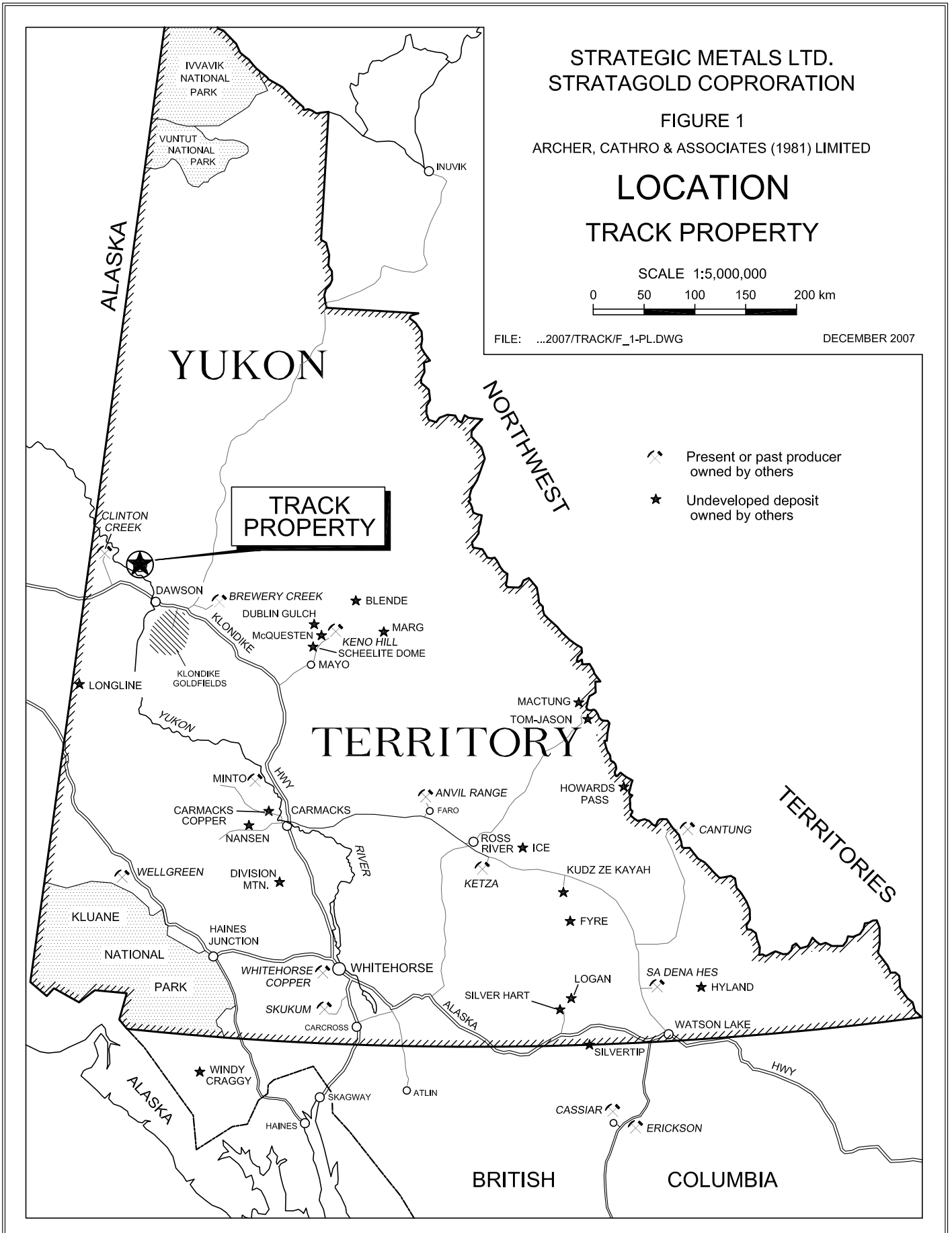
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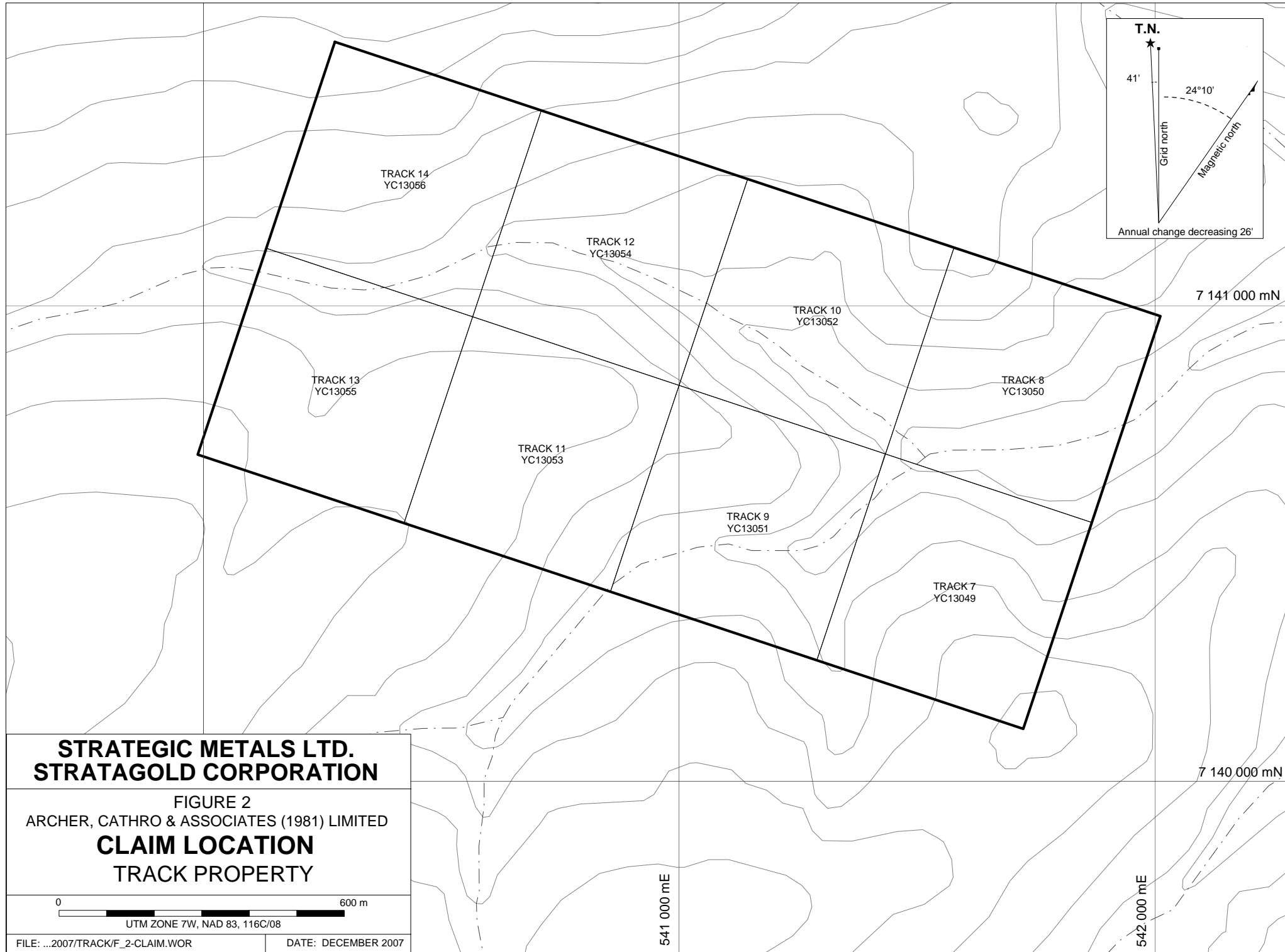


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DECEMBER 2007

-  Present or past producer owned by others
-  Undeveloped deposit owned by others





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FIGURE 2  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**CLAIM LOCATION**  
TRACK PROPERTY

0 600 m

UTM ZONE 7W, NAD 83, 116C/08

drainages forming radial fans off the flanks of upland domes. Creeks draining the area are tributaries of the Yukon River.

North facing slopes are blanketed by moss and labrador tea covering 5 to 100 cm of organic matter and silty soil. Permafrost is prevalent where the organic layer exceeds 50 cm thickness. Southern slopes generally exhibit silty soil with little to no organic material or permafrost.

Vegetation is characterized by mature poplar stands along creek valleys, giving way to stunted black spruce and willow then thick growths of buckbrush, willow and juniper atop the domes.

## **REGIONAL GEOLOGY**

Geology in the Dawson district is dominated by the Tintina Fault, a major transcurrent structure with about 450 km of dextral offset since Mid-Cretaceous times (Tempelman-Kluit, et al, 1976). Rocks on the north side of the fault are part of ancestral North America while those to the south are pericratonic rocks of the Yukon-Tanana Terrane (YTT). Prior to displacement the Yukon-Tanana rocks adjoined similar units of the Finlayson District in southeastern Yukon. Pre-Cretaceous units are cut by a series of regional-scale thrust faults and are intruded by Mid to Late Cretaceous granitic plutons. The intrusions postdate the thrusts but predate movement along the Tintina Fault. Figure 3 illustrates the distribution of lithologies as interpreted through a variety of sources dating from 1935 to present.

The Track property lies on the south side of the Tintina Fault where outcrop exposure is poor, making stratigraphic and structural correlations difficult. Most early mapping was done at reconnaissance scale without the aid of geochronology or plate tectonic theories (Bostock, 1942; Green and Roddick, 1972; Tempelman-Kluit, 1974). Recent, more detailed work by Mortensen (1990) has subdivided metamorphic rocks in the Track area into three stratigraphic packages (Assemblages 1, 2 and 3) and two plutonic units (Mt. Burnham Augen Orthogneiss and Sulphur Creek Orthogneiss) all of which are Paleozoic age. The stratigraphic assemblages have undergone four phases of deformation.

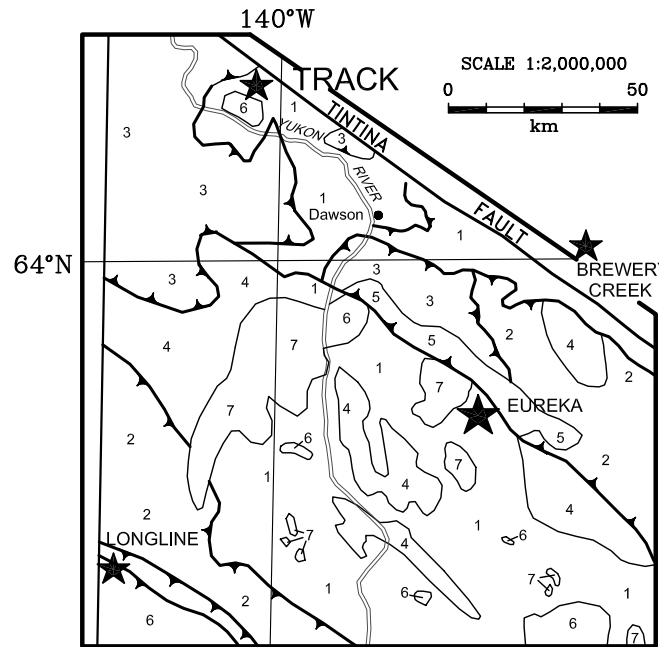
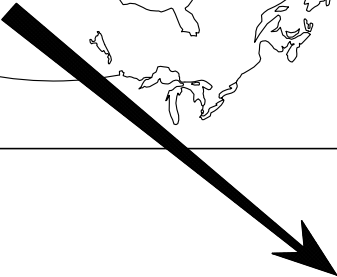
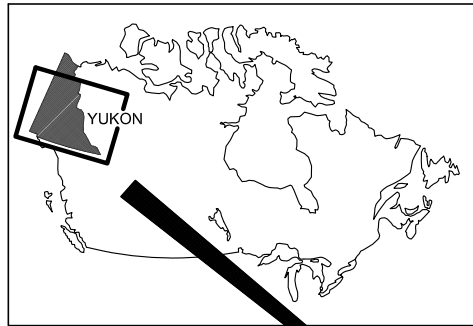
### **Stratigraphic Units**

**Assemblage 1** consists of variably deformed and sheared phyllite and quartzite. These rocks are generally medium to dark grey and sometimes contain thinly interbedded carbonaceous siltstone, fine sandstone and rare marble. Although not dated, these rocks are believed to be Early Paleozoic in age.





**Assemblage 2** is largely comprised of Devonian-Mississippian quartzite, chloritic schist and amphibolite. Quartzite is generally pale coloured and contains variable quantities of mica and feldspar. Discontinuous lenses of marble and calcareous quartz-muscovite-biotite schist are noted in some areas.

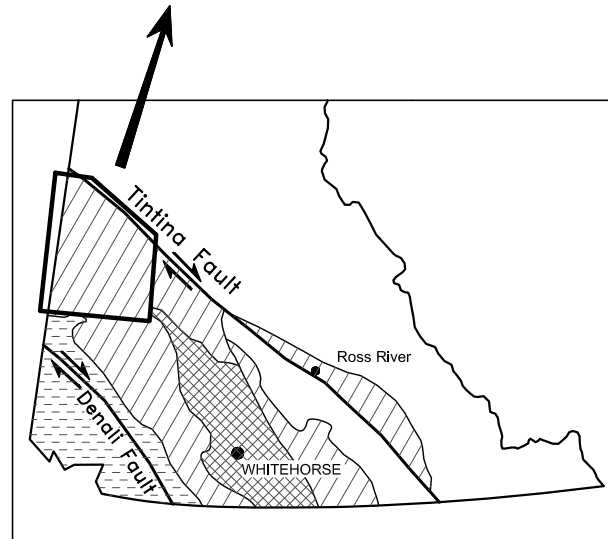
**Assemblage 3** consists of mafic to intermediate schist plus quartzite and lesser felsic schist. Accessory minerals observed within schist units include quartz and feldspar augen, actinolite and





- 7 Late Cretaceous volcanic and sedimentary rocks
- 6 Mid or Late Cretaceous plutonic rocks
- Yukon-Tanana Terrane Metaplutonic rocks
- 5 Permian Orthogneiss
- 4 Devono-Mississippian Augen Orthogneiss
- Yukon-Tanana Terrane Paleozoic Metasediments and Metavolcanics
- 3 Assemblage 3
- 2 Assemblage 2
- 1 Assemblage 1

-  Coastal and Insular Belts
-  Intermontane Belt
-  Yukon-Tanana Terrane and Slide Mountain Terrane
-  Ancestral North America including Cassiar Terrane



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FIGURE 3  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## REGIONAL GEOLOGY

### TRACK PROPERTY

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chlorite. Muscovite is often observed along foliation planes within the quartzite unit. These rocks have returned Permian age dates.

### **Metaplutonic Rocks**

**Mt. Burnham Augen Orthogneiss** is granitic in composition and consists mainly of subhedral to strongly flattened and broken potassium feldspar. The matrix is comprised of sucrosic quartz, biotite, muscovite and feldspar. This unit is assigned a Devono-Mississippian age.

**Sulphur Creek Orthogneiss** is a pink weathering unit that has only been recognized in the vicinity of Sulphur Creek. It has a quartz monzonite composition and has been dated as Permian.

### **Mid to Late Cretaceous Igneous Units**

Mid-Cretaceous stocks and related dykes are comprised of quartz, feldspar, muscovite, biotite and sometimes hornblende. Diabase and olivine gabbro lenses and plugs are also documented but are rare. The Mt. Carmacks Pluton, which is partially covered by the Track property, is one of the largest intrusions in the district. Intrusions with similar age and composition are associated with tungsten mineralization in the Finlayson District.

Volcanic flows and feeder dykes are predominantly andesitic in composition and are mapped as overlying Assemblage 1, Mt. Burnham Augen Orthogneiss and the continental sedimentary rocks about 40 km south of the property. The relationship between the Mid-Cretaceous stocks and the volcanic flows is not known.

### **Structure**

The Tintina Fault lies 5 km northeast of the property. Secondary, high angle faults related to this major transcurrent structure are common in the Track area and are often marked by linear stream beds. Most of the secondary faults trend northeasterly but the direction and magnitude of their displacement is unknown. They are likely extensional structures related to the strike-slip movement on the Tintina Fault.

Four phases of deformation are observed in layered rocks of the YTT within the Dawson district. The deformation is thought to have occurred from Mid-Permian to Cretaceous during and following accretion of YTT to North America. Phase I involved Mid-Permian regional scale metamorphism which resulted in penetrative foliation approximately parallel to original bedding. This fabric trends roughly northwest and dips gently to the northeast. Small scale isoclinal folds were also developed at this time. The Phase II event occurred between Mid-Permian and Late Triassic and formed close spaced crenulation cleavage. At least three different sub-phases of crenulation cleavage are observed. The latest may be associated with the development of thrust faults which are constrained to the period between Late Triassic and Early Jurassic. The onset of this faulting is also coincident with the emplacement of serpentinite bodies along the faults and small scale isoclinal folding, link banding and warping. The final phase of deformation is coeval with the emplacement of Cretaceous intrusive bodies which resulted in broad low amplitude folding that masks and overprints the Phase I foliation.

## **PROPERTY GEOLOGY**

No detailed mapping has been performed on the Track property by Eureka Joint Venture. Thus, the geology map presented on Figure 4 is largely based on previous detail mapping by Noranda (Grapes, 1981).

Seven rock types are documented on the property as described below. The first five rock types are stratigraphic units belonging to Assemblage 1 while the others are intrusive units.

### **Stratigraphic Units**

**Biotite-muscovite-chlorite-quartz schist** is brown to pale green-grey and thinly foliated. Differential weathering is common due to varying quartz content and specimens are non- to moderately calcareous.

**Graphite schist** is dark grey to black, friable and recessive weathering. Some outcrops contain foliaform metamorphic quartz and calcite veins.

**Marble** is grey, massive to moderately foliated, coarsely crystalline and buff weathering. It occurs as narrow bands up to 3 m thick within the schist units described above.

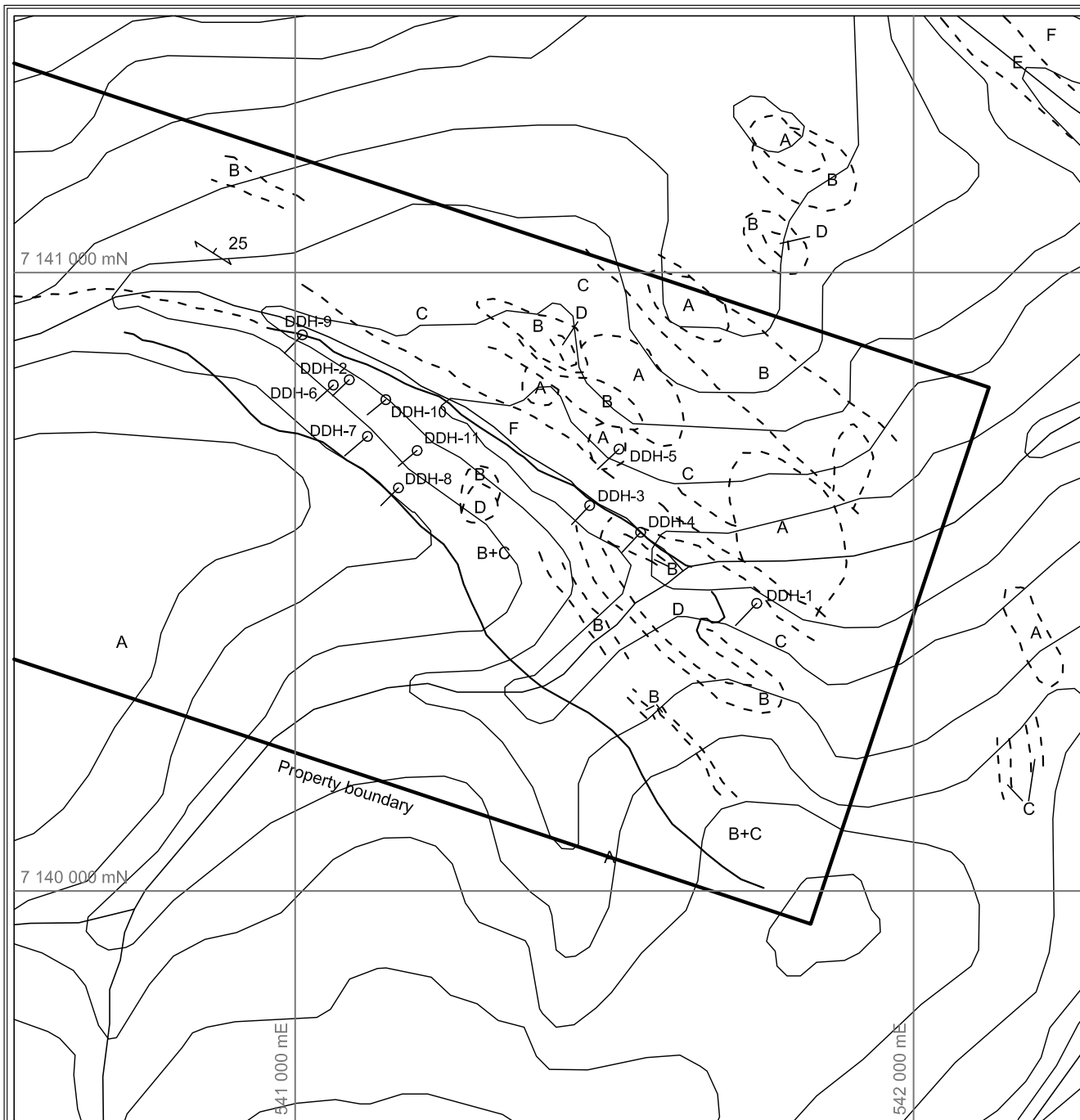
**Hornfels** is rusty weathering and generally strongly fractured. Quartz eyes have been noted by previous mappers and are developed parallel to foliation. These rocks are developed in close proximity to the stock and are interbanded with schists, marble and skarn.

**Skarn** can be subdivided into three types: banded skarn, diopside skarn and garnet-diopside skarn. Designation of the three types is mostly subjective and it should be noted that most contacts are gradational. These rocks are rusty weathering and dark green or brown on fresh surfaces. Sulphide blebs and disseminations are common in this unit.

### **Igneous Units**

**Granodiorite** forms a 7 km diameter stock (Mt. Carmacks Pluton), the northern edge of which parallels the southwestern claim boundary. It is tan to grey, coarsely crystalline and weakly to moderately foliated. The foliation is likely concentric and is related to emplacement of the intrusion. The main body consists of coarse grained quartz, biotite, feldspar and hornblende. The margin of the intrusion is finer grained and exhibits a higher degree of foliation and alteration which includes epidote, talc and clay minerals on the selvages of veinlets. Uranium-lead modelling from zircon analyses returned an age of 112 Ma (Mortensen, et al, 2000).

**Diorite and rhyolite** occur in porphyry dykes and sills that cut both the granodiorite and stratigraphic units. These bodies may be a late magmatic phase of the intrusion or sub-volcanic feeders to Late Cretaceous or Tertiary volcanic flows.

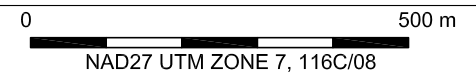


- A Granodiorite
- B Skarn
- C Hornfels
- D Marble
- E Graphite schist
- F Biotite-muscovite-chlorite-quartz schist

- Contact (known and inferred)
- Foliation orientation
- Noranda drill hole

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FIGURE 4  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**PROPERTY GEOLOGY**  
TRACK PROPERTY



## **PROPERTY GEOCHEMISTRY AND MINERALIZATION**

Two hundred and seventeen soil samples were collected in 2000 by Eureka Joint Venture from a 1200 by 800 m grid established in the central part of the Poinjar Showing. One hundred and forty-nine of these samples were analyzed in 2000 and the remainder were done in 2003. The baseline is heavily flagged and oriented along an old overgrown cut line established at 120° by previous operators. Stations are marked at 50 m intervals with 1 m lath bearing aluminum tags inscribed with grid coordinates. Soil sample lines are oriented perpendicular to the baseline and samples were taken at 50 m intervals on lines spaced 50 m apart. Sample sites are indicated by 0.5 m lath bearing aluminum tags inscribed with grid coordinates and sample numbers.

### **Geochemistry**

All of the samples were sent to ALS Chemex Labs Ltd. of North Vancouver where they were dried and sieved to -80 mesh, dissolved in nitric-aqua regia leach and geochemically analyzed for 34 elements using the Induced Coupled Plasma (ICP) technique. Samples were also analyzed for gold using fire assay and atomic absorption finish. The 2003 procedures also included specific tungsten analyses, which involved a complete multi-acid digestion coupled with Atomic Absorption Spectroscopy (AAS). Sample locations are shown on Figure 5 while results for gold, bismuth and tungsten are illustrated on Figures 6 through 8, respectively.

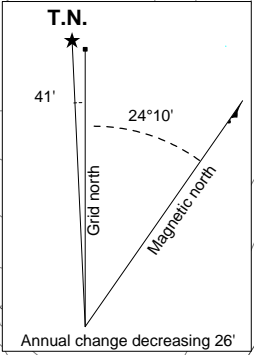
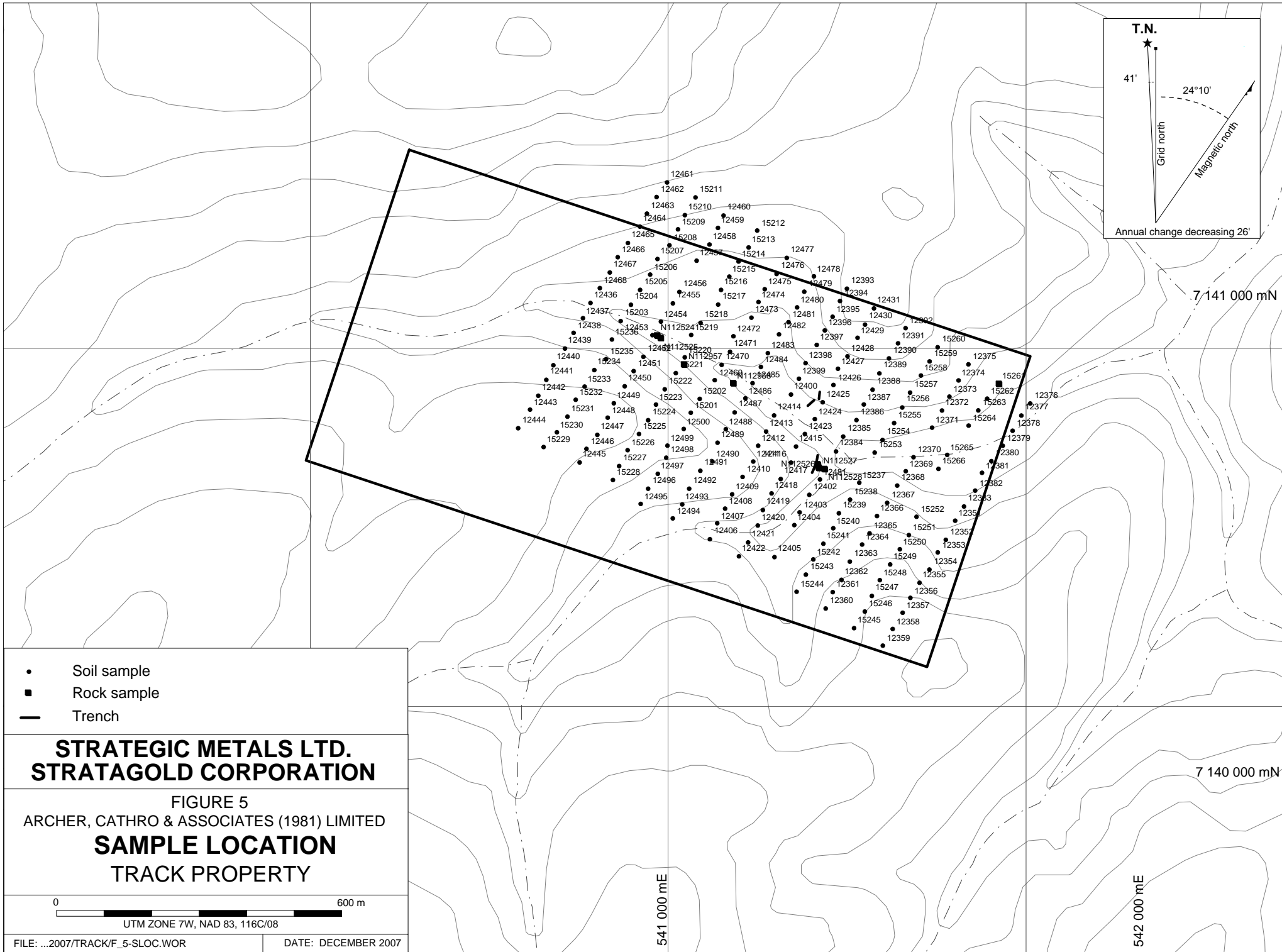
Gold, bismuth and tungsten values are well correlated with the highest values clustered together in a 150 by 100 m area in the vicinity of an old cat trench and diamond drill holes DDH-3 and -4. This cluster is located near the eastern end of a 650 by 150 m west-northwest trending band of weakly to moderately anomalous values underlain by skarn and hornfels developed along the intrusive-metasediment contact. Peak values are 55 ppb gold, 130 ppm bismuth and, 120 ppm tungsten. The plotted tungsten values were obtained by standard ICP processes which often results in incomplete digestion of scheelite. Comparison of ICP to total digestion AAS tungsten results obtained in 2003 showed very similar values, suggesting that incomplete digestion may not be a problem on soils from this property.

### **Mineralization**

Three types of mineralization have been recognized at the Poinjar Showing: sulphide bearing quartz vein float, limonite boxwork and sulphide bearing skarn material.

Quartz vein float is the most abundant type of mineralization seen on the property. Specimens range from 1 to 20 cm in width. Colour varies from clear and transparent to white and opaque, while textures are aphanitic to sucrosic. Many specimens are highly strained and exhibit a dominant fracture direction parallel to the length of the vein. Small orange and black pits are commonly scattered throughout the quartz. The orange pits are probably weathered sulphide or carbonate while the black is likely manganese. Specimens returned only slightly above background gold values.

Areas where limonite boxwork was discovered in two bulldozer trenches on either side of Poinjar Creek in 1999 were re-examined in 2000. Additional samples were collected from the



7 141 000 mN

7 140 000 mN

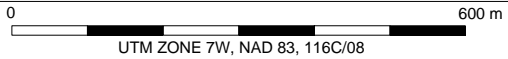
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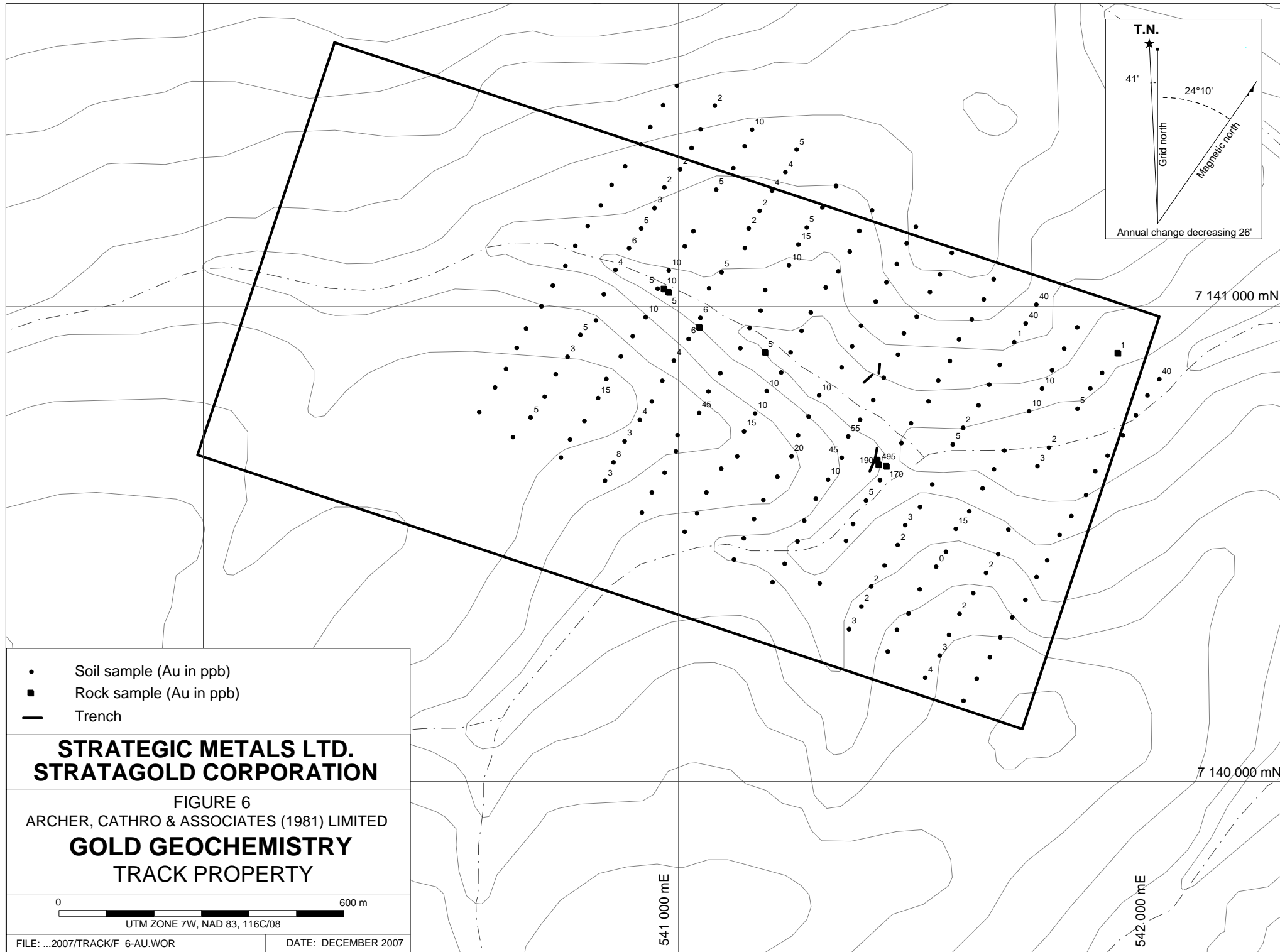
542 000 mE

- Soil sample
- Rock sample
- Trench

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FIGURE 5  
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**SAMPLE LOCATION**  
TRACK PROPERTY





- Soil sample (Au in ppb)
- Rock sample (Au in ppb)
- Trench

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FIGURE 6  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**GOLD GEOCHEMISTRY**  
TRACK PROPERTY

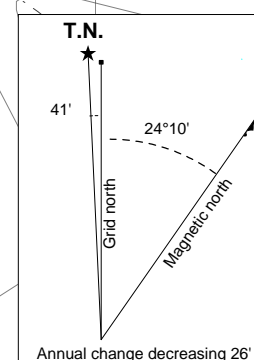
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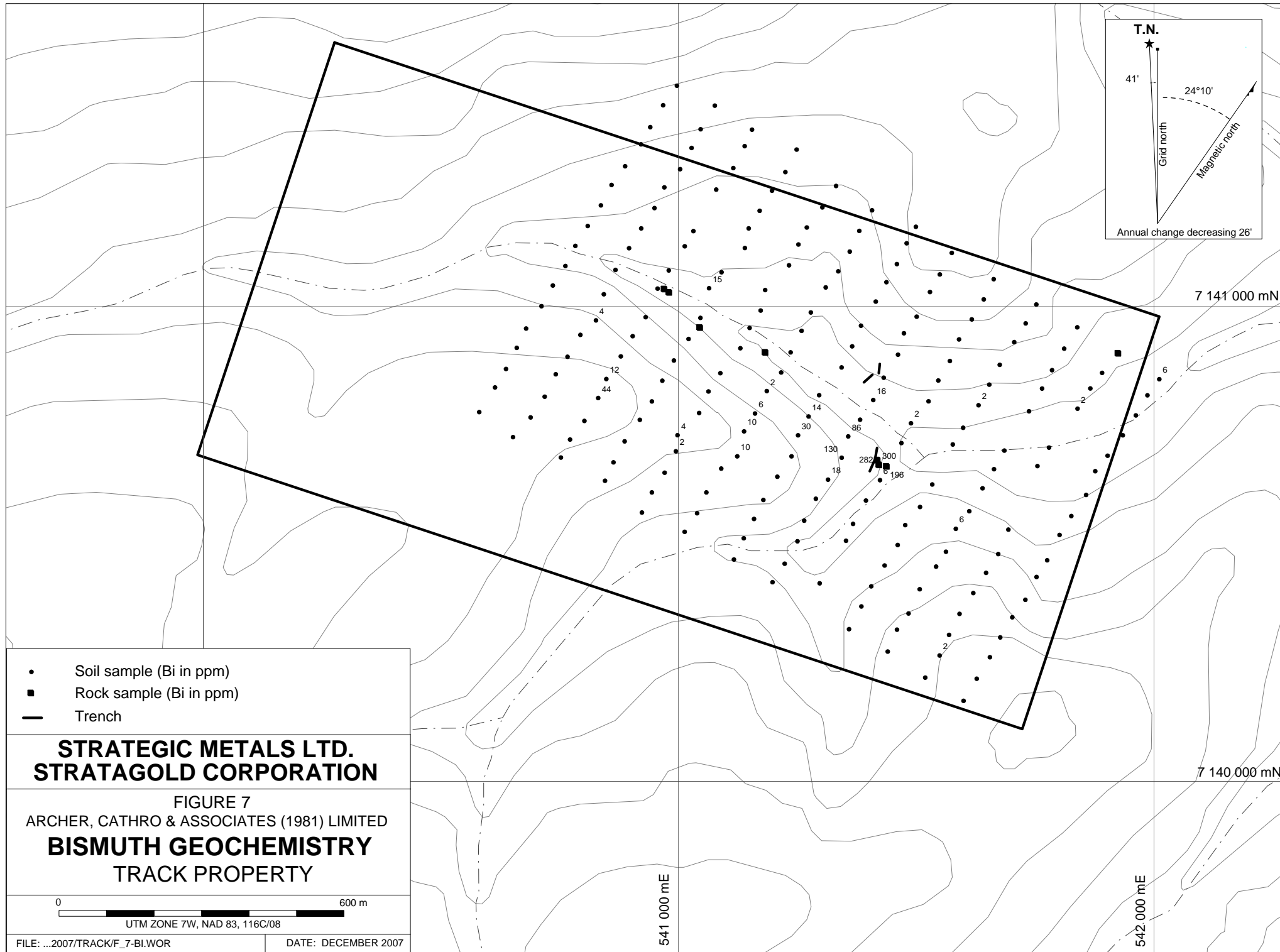
541 000 mE

542 000 mE

7 141 000 mN

7 140 000 mN





- Soil sample (Bi in ppm)
- Rock sample (Bi in ppm)
- Trench

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FIGURE 7  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**BISMUTH GEOCHEMISTRY**  
TRACK PROPERTY

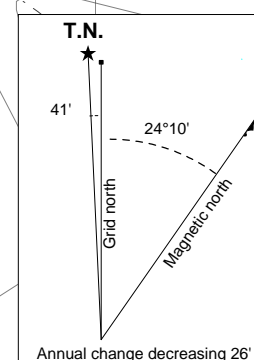
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UTM ZONE 7W, NAD 83, 116C/08

541 000 mE

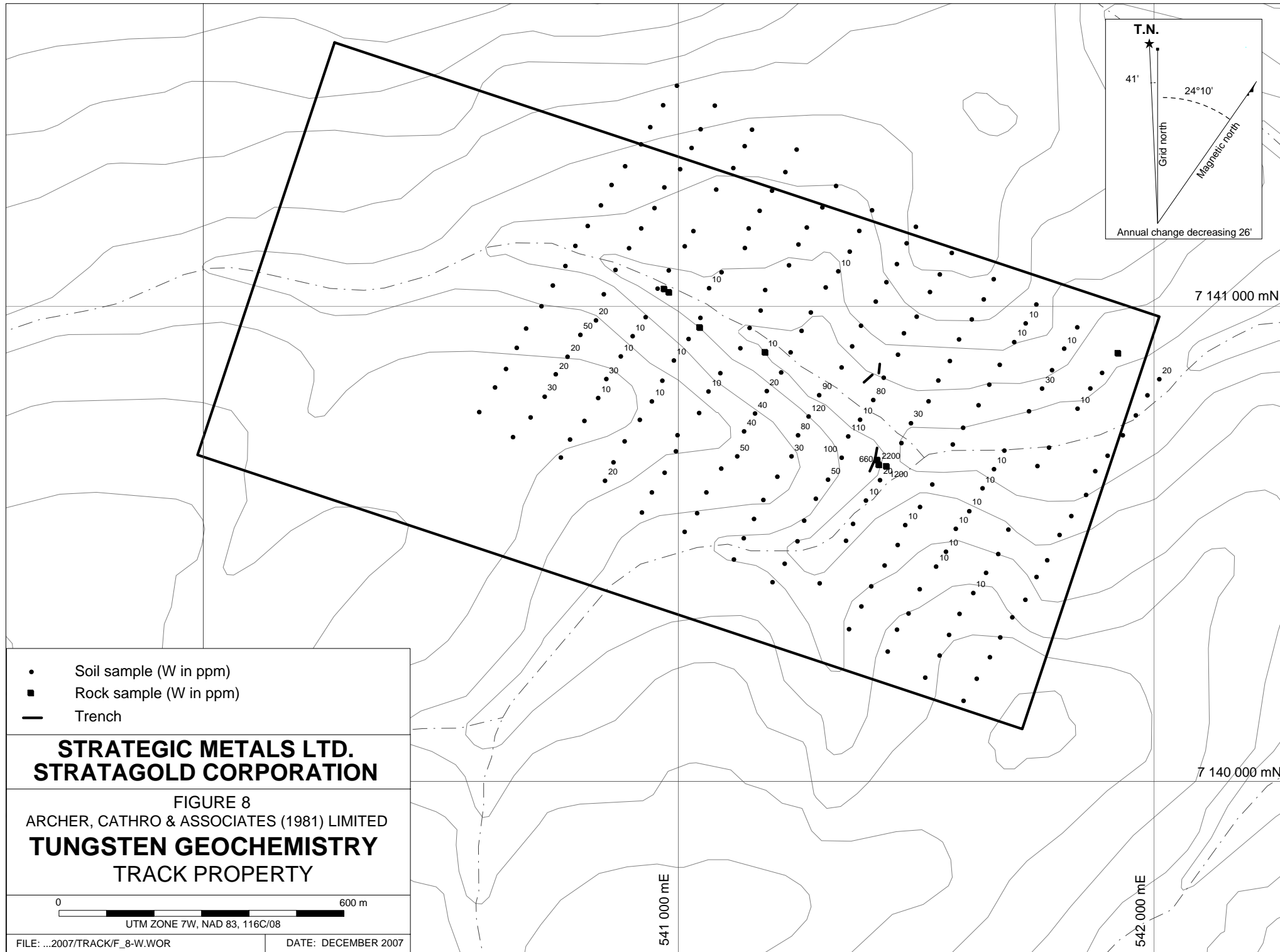
542 000 mE

7 141 000 mN

7 140 000 mN







- Soil sample (W in ppm)
- Rock sample (W in ppm)
- Trench

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FIGURE 8  
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**TUNGSTEN GEOCHEMISTRY**  
TRACK PROPERTY

0 600 m

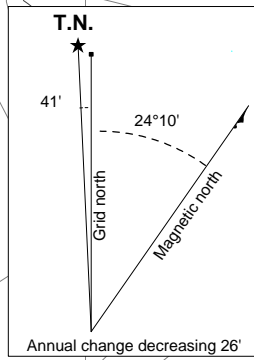
UTM ZONE 7W, NAD 83, 116C/08

7 141 000 mN

7 140 000 mN

541 000 mE

542 000 mE



south side of the creek where yellow-brown manganese stained limonite had returned 3.59 g/t gold, 1.6 g/t silver, 1655 ppm bismuth, 56 ppm molybdenum and 810 ppm tungsten. The best limonite rich sample collected in 2000 yielded 495 ppb gold, 300 ppm bismuth, 90 ppm molybdenum and 2220 ppm tungsten.

Skarn mineralization is rusty weathering and dark green to brown on fresh surfaces. The most common sulphides present in order of decreasing abundance are pyrrhotite, pyrite, sphalerite and chalcopyrite. All sulphides occur as disseminations and irregular blebs. The matrix consists dominantly of diopside, garnet and actinolite. Some specimens also contain a stockwork of milky quartz veinlets.

Core from four of the Noranda drill holes left on the property (DDH-8 to DDH-11) was thoroughly examined in 2000. Previously split pyrite and pyrrhotite bearing skarn intervals were quartered and reanalyzed. The best interval returned 40 ppb gold, 32 ppm bismuth, 190 ppm molybdenum and 4820 ppm tungsten. Quartz vein stockwork with disseminated pyrite, minor chalcopyrite and narrow chlorite-epidote alteration selvages were observed in sections of the granodiorite near the bottom of the holes. Samples of this material yielded low gold values.

Two hand trenches were excavated in 2000 on the north side of Poinjar Creek. TR-01 was located near drill collar DDH-05 and encountered a strongly weathered foliaform skarn horizon (2.3 m thick) with remnant garnet and boxwork limonite. Two continuous chip samples returned a weighted average 0.41 g/t gold, 459 ppm bismuth and 3170 ppm tungsten.

TR-02 is located in an old bulldozer trench, 30 m upslope from TR-01. It encountered weakly skarnified metasediments and rusty weathering andesite dyke or sill material. Chip samples returned only weakly elevated values for tungsten.

### **2007 GEOPHYSICAL SURVEYS**

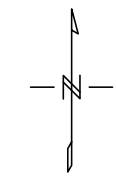
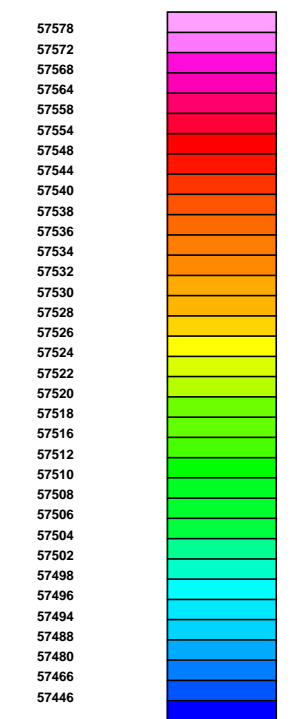
Between August 28 and 30, 2007, Geotech Ltd. conducted helicopter-borne VTEM and magnetic surveys over the property. The surveys were flown from a temporary base at the Dawson City airport using an Astar B3 helicopter operated by TRK Helicopters. Appendix II contains Geotech's report describing methodology and equipment used during the surveys.

Figure 9 shows total field magnetics while Figures 10 and 11 illustrate dB/dt and B-Field electromagnetic profiles for time gates 0.234-6.578 ms, respectively. The magnetic survey outlined an area of low susceptibility directly over the Poinjar Showing. This anomaly trends southerly from DDH-3 and DDH-4 into an area of marble and skarn that has not yet been tested by diamond drilling. A similar area of low susceptibility lies about 1000 m to the west. Although surface mapping suggests that this second anomaly is underlain by granodiorite, the mapping may be unreliable because of limited bedrock exposure and extensive solifluction.

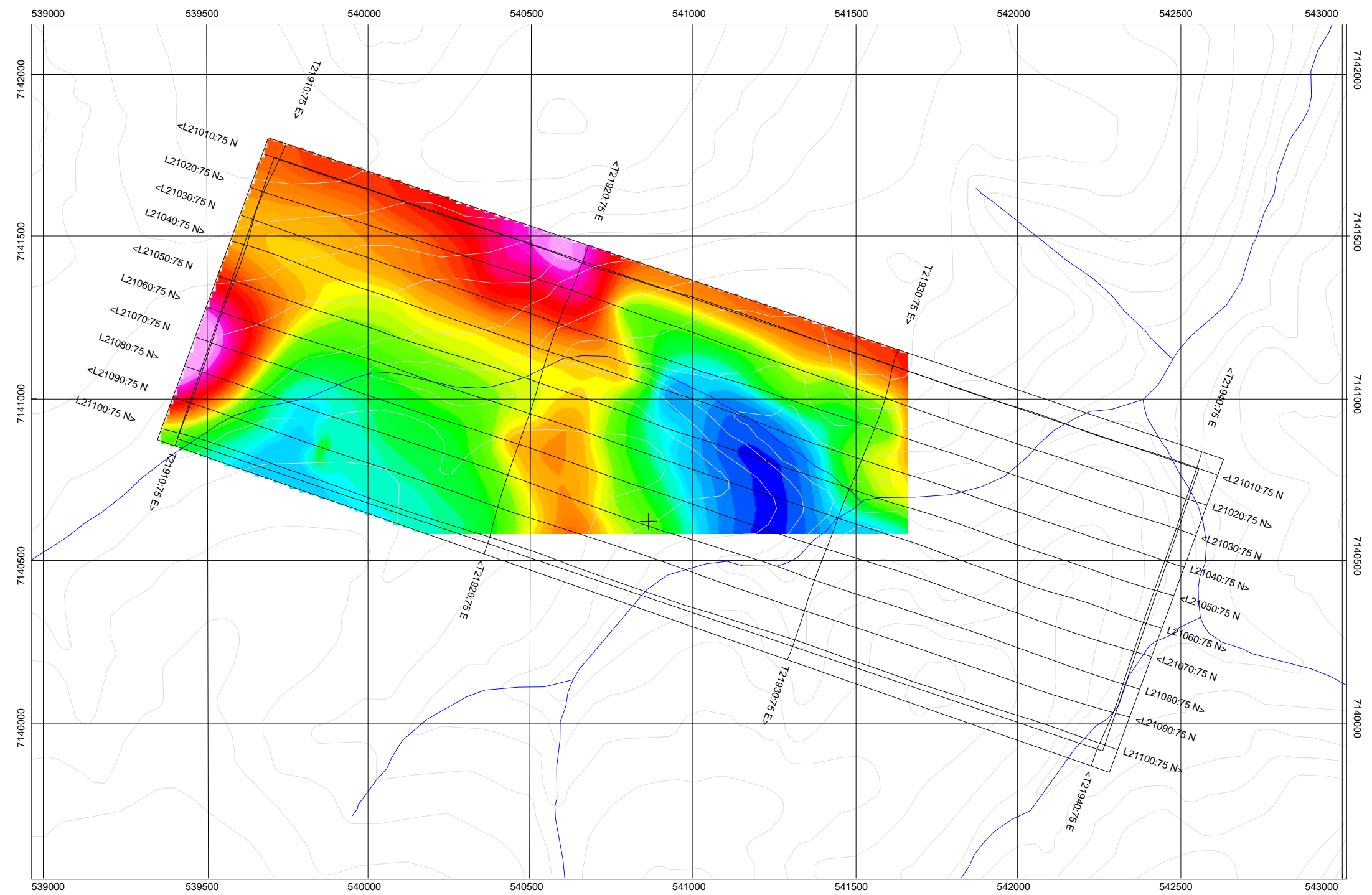
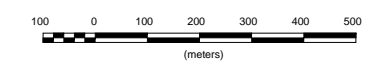
Magnetic highs further north from the contact are likely caused by pyrrhotite related to hornfels alteration. The presence of disseminated pyrrhotite may also account for broad, low amplitude electromagnetic anomalies in that area.

**Survey Specifications:**  
 Dates Flown: August 30, 2007  
 Survey Base: Dawson City, YT  
 Aircraft: Astar B3 helicopter, Registration C-GTFX  
 Nominal Flight Line Spacing: 100 metres  
 Nominal Flight Line Directions: N109°E/N289°W  
 Nominal Tie Line Spacing: 1000 metres  
 Nominal Tie Line Directions: N19°E/N199°W  
 Nominal helicopter terrain clearance 85 metres  
 EM Loop is 35 metres under helicopter  
 Magnetic sensor is 15 metres under helicopter

**Instruments:**  
 Geotech Time Domain Electromagnetic System (VTEM)  
 with concentric Rx/Tx geometry  
 Transmitter Loop Diameter 26 m, Base Frequency 30 Hz  
 Dipole Moment approx. 400,00 N/A  
 Transmitter Wave Form: Trapezoid, Pulse Width 7.22 ms  
 Geometrics Optically-pumped  
 High Sensitivity Caesium Magnetometer  
 Magnetometer Resolution 0.02 nT at 10 samples/sec



**Legend:**  
 Roads  
 Lakes, Rivers  
 Swamps  
 Topographic contours

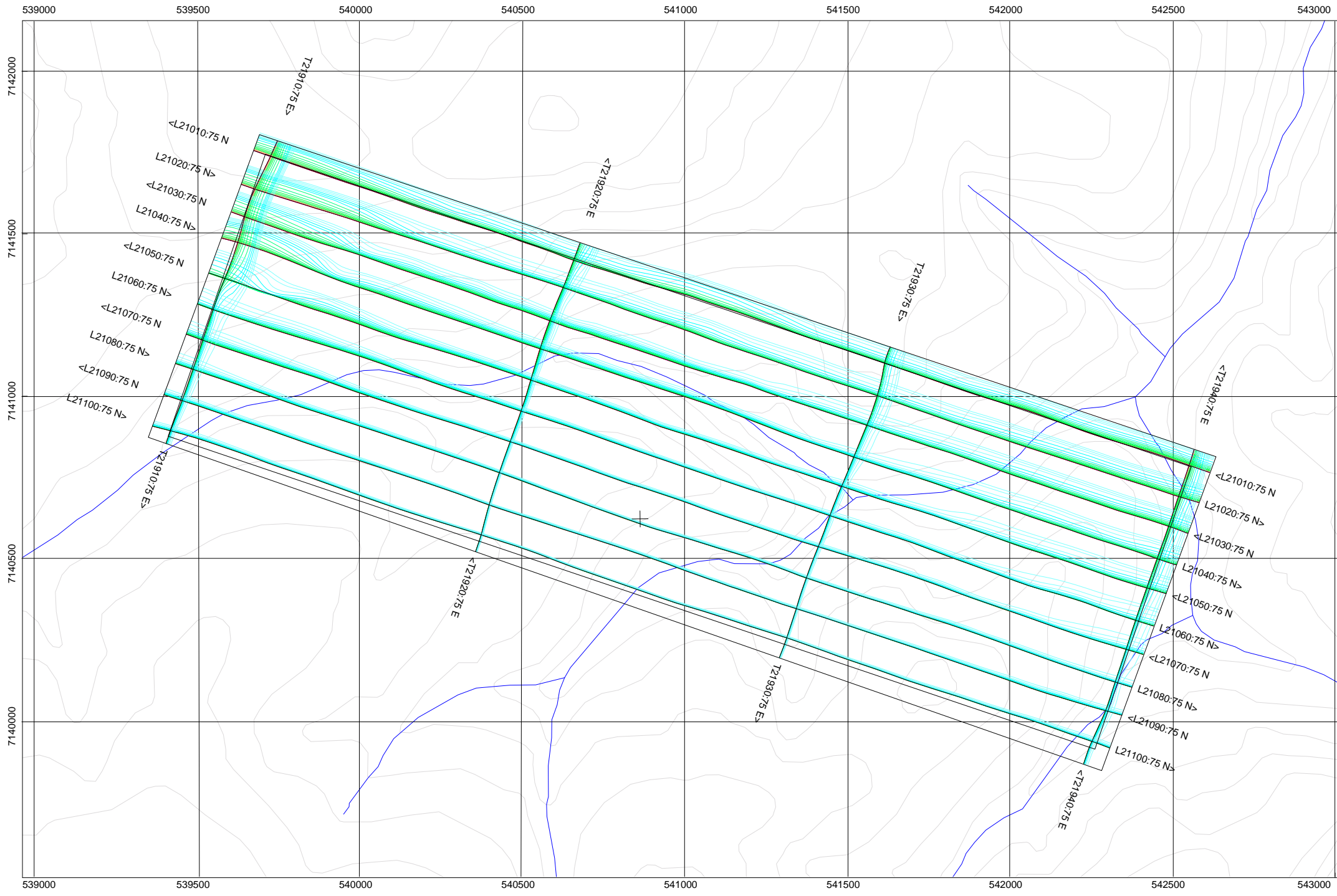


**EUREKA JOINT VENTURE**

**FIGURE 9**  
**ARCHER, CATHRO & ASSOCIATES (1981) LIMITED**  
**TOTAL MAGNETIC FIELD MAP**  
**TRACK PROPERTY**

Flown and processed by Geotech Ltd.  
 245 Industrial Parkway North  
 Aurora, Ontario, Canada L4G 4C4  
 www.geotechairborne.com

December 2007



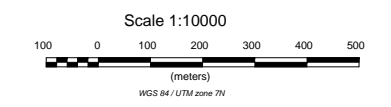
**Survey Specifications:**  
 Dates Flown: August 30, 2007  
 Survey Base: Dawson City, YT  
 Aircraft: Astar B3 helicopter, Registration C-GTFX  
 Nominal Flight Line Spacing: 100 metres  
 Nominal Flight Line Directions: N109°E/N289°W  
 Nominal Tie Line Spacing: 1000 metres  
 Nominal Tie Line Directions: N19°E/N199°W  
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 Transmitter Wave Form: Trapezoid, Pulse Width 7.22 ms  
 Geometrics Optically-pumped  
 High Sensitivity Cesium Magnetometer  
 Magnetometer Resolution 0.02 nT at 10 samples/sec

**Profiles scale 1 mm = 0.05 pV/A/m<sup>4</sup>**  
**(Linear between +/-0.2 pV/A/m<sup>4</sup>**  
**logarithmic above 0.2 pV/A/m<sup>4</sup>)**

- |          |
|----------|
| 0.234 ms |
| 0.281 ms |
| 0.339 ms |
| 0.406 ms |
| 0.484 ms |
| 0.573 ms |
| 0.682 ms |
| 0.818 ms |
| 0.974 ms |
| 1.151 ms |
| 1.370 ms |
| 1.641 ms |
| 1.953 ms |
| 2.307 ms |
| 2.745 ms |
| 3.286 ms |
| 3.911 ms |
| 4.620 ms |
| 5.495 ms |
| 6.578 ms |
| 7.828 ms |

- Legend:**
- Roads
  - Lakes, Rivers
  - Swamps
  - Topographic contours

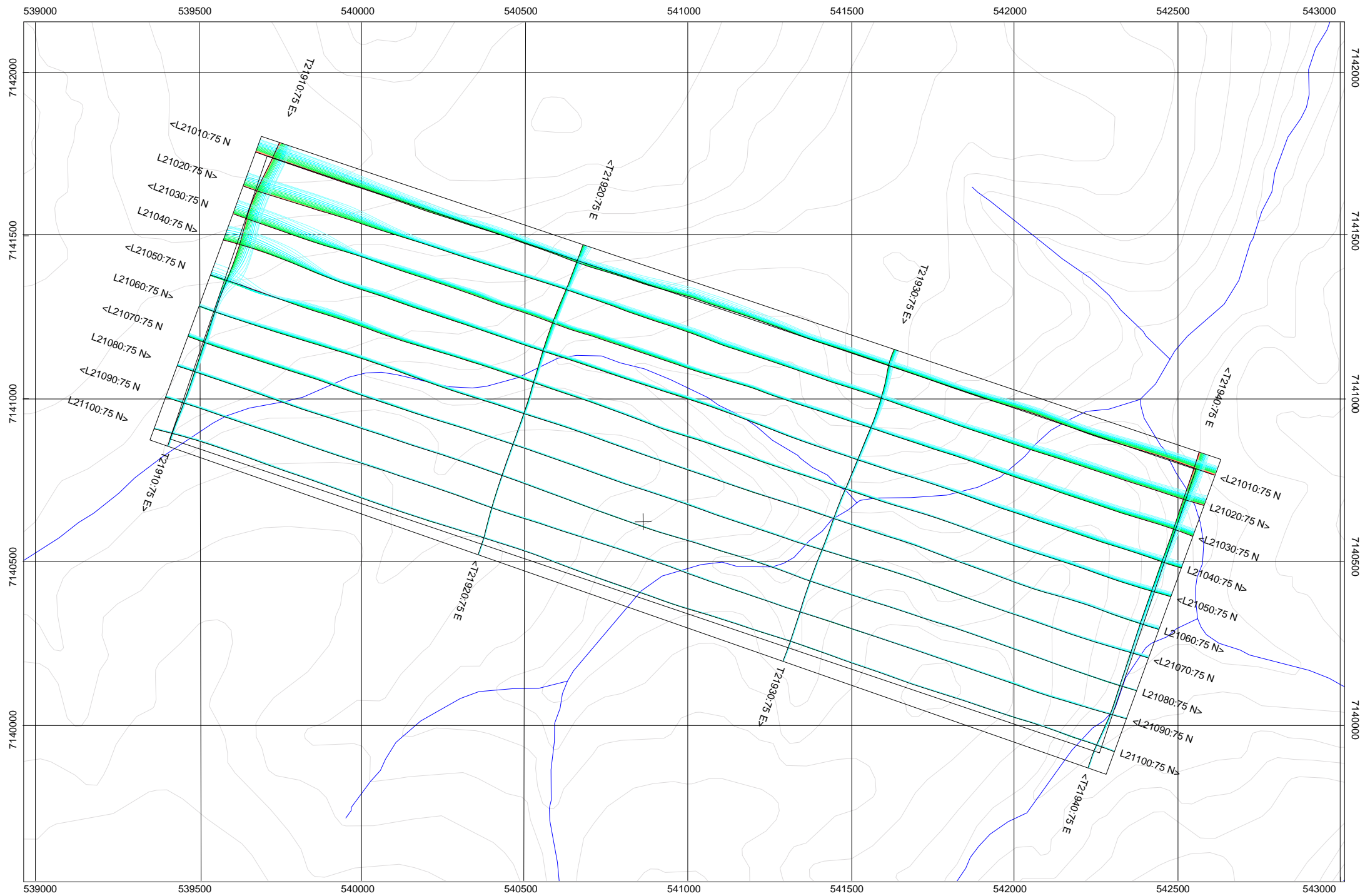


**EUREKA JOINT VENTURE**

**FIGURE 10**  
**ARCHER, CATHRO & ASSOCIATES (1981) LIMITED**  
**dB/dt PROFILES**  
**TIME GATES 0.234 - 6.578 ms**  
**TRACK PROPERTY**

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 Aurora, Ontario, Canada L4G 4C4  
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December 2007



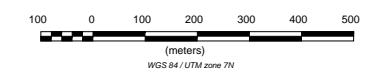
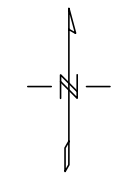
**Survey Specifications:**  
 Dates Flown: August 30, 2007  
 Survey Base: Dawson City, YT  
 Aircraft: Astar B3 helicopter, Registration C-GTFX  
 Nominal Flight Line Spacing: 100 metres  
 Nominal Flight Line Directions: N109°E/N289°W  
 Nominal Tie Line Spacing: 1000 metres  
 Nominal Tie Line Directions: N19°E/N199°W  
 Nominal helicopter terrain clearance 85 metres  
 EM Loop is 35 metres under helicopter  
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 with concentric Rx/Tx geometry  
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 Geometrics Optically-pumped,  
 High Sensitivity Cesium Magnetometer  
 Magnetometer Resolution 0.02 nT at 10 samples/sec

**Profiles scale 1 mm = 0.05 (pV\*ms)/A/m<sup>4</sup>**  
**(Linear between +/-0.2 (pV\*ms)/A/m<sup>4</sup>**  
**logarithmic above 0.2 (pV\*ms)/A/m<sup>4</sup>)**

0.234 ms (B-field)
0.281 ms (B-field)
0.339 ms (B-field)
0.406 ms (B-field)
0.484 ms (B-field)
0.573 ms (B-field)
0.682 ms (B-field)
0.818 ms (B-field)
0.974 ms (B-field)
1.151 ms (B-field)
1.370 ms (B-field)
1.641 ms (B-field)
1.953 ms (B-field)
2.307 ms (B-field)
2.745 ms (B-field)
3.286 ms (B-field)
3.911 ms (B-field)
4.620 ms (B-field)
5.495 ms (B-field)
6.578 ms (B-field)
7.828 ms (B-field)

**Legend:**  
 Roads  
 Lakes, Rivers  
 Swamps  
 Topographic contours



**EUREKA JOINT VENTURE**

**FIGURE 11**  
**ARCHER, CATHRO & ASSOCIATES (1981) LIMITED**  
**B-PROFILES**  
**TIME GATES 0.234 - 6.578 ms**  
**TRACK PROPERTY**

Flown and processed by Geotech Ltd.  
 245 Industrial Parkway North  
 Aurora, Ontario, Canada L4G 4C4  
 www.geotechairborne.com

December 2007

## **CONCLUSIONS AND RECOMMENDATIONS**

The Track property covers part of a thermal aureole surrounding a Mid-Cretaceous intrusion cutting Yukon-Tanana Terrane metasediments. This is a setting that hosts gold- and tungsten-bearing skarn deposits elsewhere in the Tintina Gold Belt.

Exploration at the Track property has identified tungsten bearing skarn horizons but grid soil sampling and diamond drilling has produced only marginally interesting gold values. Work on gold prospects elsewhere in the Tintina Gold Belt has shown that although tungsten is a good gold indicator, the gold deposits are often spatially distinct from the tungsten mineralization. Bismuth and gold are often closely associated.

The total field magnetic survey conducted in 2007 showed that the best mineralized portion of the Poinjar Showing is marked by low magnetic susceptibility. This magnetic anomaly is approximately 1000 m long and continues to the south out of the survey area. Most of the anomalous area is thought to be underlain by marble and skarn, which have not been drill tested. The VTEM survey did not identify any anomalies in the area of interest.

Although no potentially economic zones of mineralization have yet been discovered on the Track property, the geological setting remains prospective. Reconnaissance style drilling should be done to test the magnetic low that extends south from DDH-3 and DDH-4. If the airborne geophysical equipment is in the area again, the surveys should be expanded to the south to establish the full extent of the anomaly.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

W.D. Eaton, B.Sc. Geology

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2003            Report describing Geochemical Analysis at the Track Property; assessment  
report for Eureka Joint Venture, p10.



**APPENDIX I**  
**STATEMENT OF QUALIFICATIONS**

## **STATEMENT OF QUALIFICATIONS**

I, W. Douglas Eaton, geologist, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia and residential address in North Vancouver, British Columbia, hereby certify that:

1. I graduated from the University of British Columbia in 1980 with a B.Sc. majoring in Geological Sciences.
2. From 1971 to present, I have been actively engaged in mineral exploration in British Columbia and Yukon Territory and on June 1, 1981, became a partner in Archer, Cathro & Associates (1981) Limited.
3. I have personally participated in or supervised the field work reported herein and have interpreted all data resulting from this work.

W. Douglas Eaton, B.Sc. Geology

oARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
1016 – 510 West Hastings Street  
Vancouver, B.C. V6B 1L8

Telephone: 604-688-2568


Fax: 604-688-2578

AFFIDAVIT



I, Joan Mariacher, of Vancouver, B.C. make oath and say:

That to the best of my knowledge the attached Statement of Expenditures for exploration work on Track 7-14 mineral claims on Claim Sheet 116C/8 is accurate.

  
Joan Mariacher

Sworn before me at Vancouver, B.C.

this 4th day of December, 2007.



Notary Public, Yukon Territory

Statement of Expenditures  
Track 7-14 Mineral Claims  
November 27, 2007

Contract VTEM Survey

Geotech Ltd.

\$8,769.87





# Geotech Ltd.

30 Industrial Parkway South, Aurora ON L4G 3W2

**BILL TO:**  
 Archer, Cathro & Associates (1981) Limite  
 1016-510 West Hastings Street  
 Vancouver, BC  
 Canada V6B 1L8



DATE:	INVOICE:
10/12/2007	991107

TRACK - \$8273.46 + \$496.41  
 = \$8769.87

TERMS:	Project
Due on receipt	7067

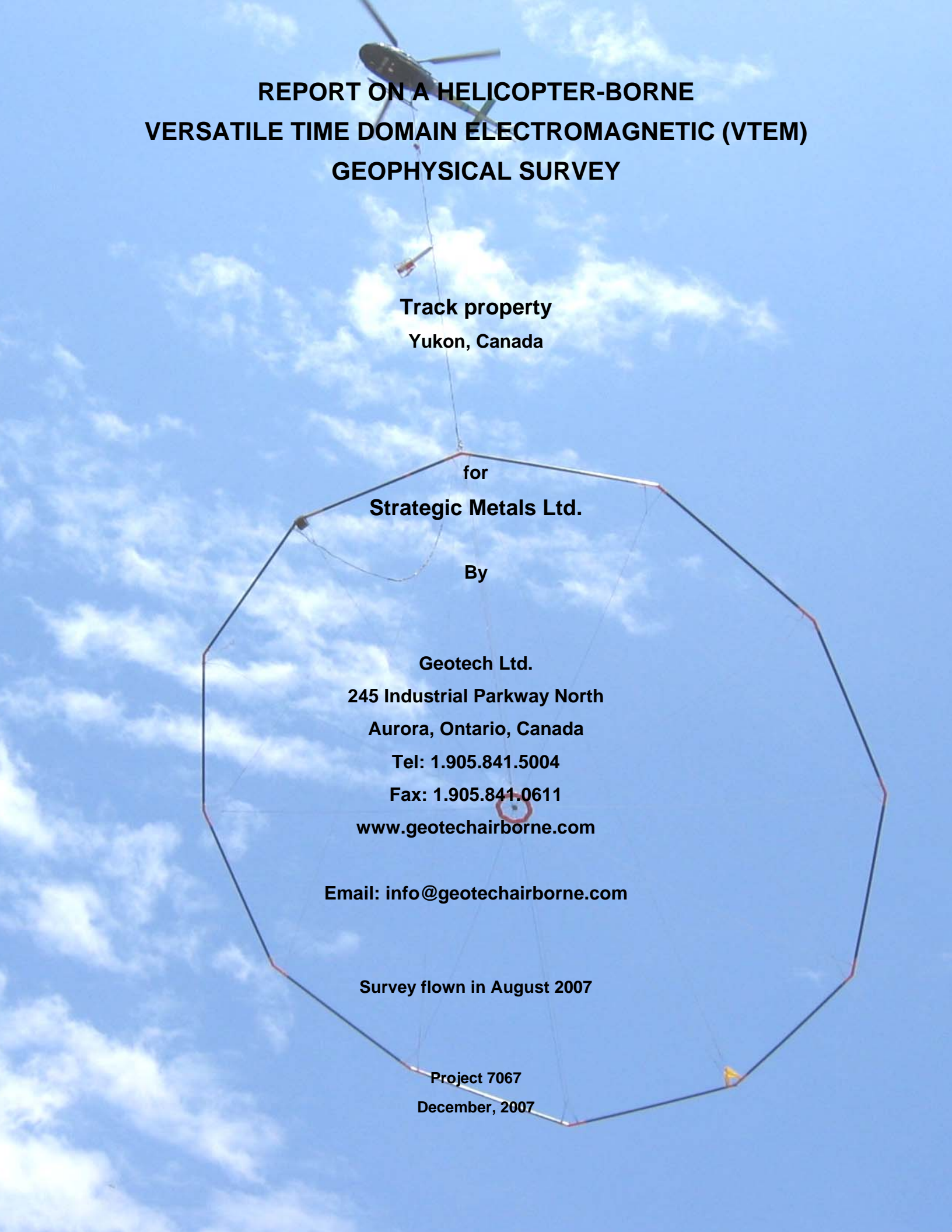
Description	Amount
Helicopter-borne time domain electromagnetic geophysical survey with VTEM system Intern Billing - 90% of the estimated total charge plus any additional charges, including but not limited to additional line km, standby days, plus GST is payable completion of flying:	665,651.00
Contract (Yukon and northern BC.)	
Estimated 5690 line km @ \$70.00	\$398,300.00
29 blocks @ \$2,000.00 per block	\$58,000.00
6.5 days @ \$6,000.00 per day	\$390,000.00
Helicopter time charges for 227.3 hours @ \$1,800.00 per hour	\$409,140.00
Helicopter mob/demob	\$10,000.00
Crew and equipment mob/demob	\$7,000.00
Minimum survey charge	\$1,272,440.00
90% of \$1,278,440.00	\$1,145,196.00
Less Previous Billing	
Invoice 991034	(\$289,040.00)
Invoice 991078	(\$190,505.00)
Total Billable Amount	\$665,651.00
Business Number: 110859469	
<i>Randevia (QB) 1707.94</i> <i>Roady - 18204.54</i> <i>Tot - (26258.33)</i> <i>Top - 64498.40</i> <i>Top - 35089.32</i> <i>Tram - 8273.46</i> <i>Unit - 9441.72</i> <i>Mt Hinton - 204342.42</i> <i>Nimo (Rich) - 58082.57</i> <i>Nimo (NICH) - (55523.83)</i> <i>Obvious - 20240.71</i> <i>Plata - 61361.67</i> <i>Ran - 12552.70</i> <i>unallocated - 1800.00</i>	<i>ade - 15740.54</i> <i>Burnwash - 12218.54</i> <i>Cabin - 3395.98</i> <i>Dersen - 21969.52</i> <i>Ek - (10408.48)</i> <i>Fairweather - 26560.49</i> <i>Gram - 54432.85</i> <i>(Mt Hinton)</i> <i>Hart - 32515.80</i> <i>Hilden - 8081.37</i> <i>Hughson - 64498.40</i> <i>Hopeful - 42331.13</i> <i>Hopper - 18930.28</i> <i>Jay - 33868.92</i> <i>Jak - 2308.40</i> <i>M.M. - 28500.60</i> <i>Moz - 42190.87</i>
Subtotal:	Can\$665,651.00
GST	Can\$39,939.06
<b>TOTAL</b>	Can\$705,590.06

Please Remit By Bank Transfer To:  
 TD CANADA TRUST  
 16655 YONGE ST., UNIT 1  
 EWMARKET, ONTARIO L3X 1V6  
 TRANSIT # 3102  
 ACCOUNT #5217874

*856156*

**APPENDIX II**

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



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

**Track property  
Yukon, Canada**

**for  
Strategic Metals Ltd.**

**By**

**Geotech Ltd.  
245 Industrial Parkway North  
Aurora, Ontario, Canada  
Tel: 1.905.841.5004  
Fax: 1.905.841.0611  
[www.geotechairborne.com](http://www.geotechairborne.com)**

**Email: [info@geotechairborne.com](mailto:info@geotechairborne.com)**

**Survey flown in August 2007**

**Project 7067  
December, 2007**

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# REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC SURVEY

Track property, Yukon, Canada

## **Executive Summary**

This report describes the Helicopter-borne geophysical survey carried out on behalf of Strategic Metals Ltd. by Geotech Ltd. over one block in Yukon, 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 33.75 line-km were flown.

In-field data processing involved quality control and compilation of data collected during the acquisition stage, using the in-field processing centre established in Dawson City, Yukon. Preliminary and final data processing, including generation of final digital data products were done at the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as electromagnetic stacked profiles and total magnetic intensity grid.

Digital data includes all electromagnetic and magnetic products plus positional, altitude and raw data.

# 1. INTRODUCTION

## 1.1 *General Considerations*

These services are the result of the Agreement made between Geotech Ltd. and Archer Cathro & Associates to perform a helicopter-borne geophysical survey over one block located in Yukon, Canada.

33.75 line-km of geophysical data were acquired during the survey.

Bill Wengzynowski, acted on behalf of Strategic Metals Ltd. during data acquisition and data processing phases of this project.

The survey block is as shown in Appendix A.

The crew was based in Dawson City, Yukon for the acquisition phase of the survey, as shown in Section 2 of this report.

The helicopter was based at the Dawson City airport for the duration of the survey. Survey flying was completed on August 30<sup>th</sup>, 2007. Preliminary data processing was carried out daily during the acquisition phase of the project. Final data presentation and data archiving was completed in the Aurora office of Geotech Ltd. in December, 2007.

## 1.2. *Survey and System Specifications*

The survey block was flown at nominal traverse line spacing of 100 metres, at N109°E / N289°W direction. Tie lines were flown perpendicular to traverse lines.

Where possible, the helicopter maintained a mean terrain clearance of 85 metres, which translated into an average height of 50 metres above ground for the bird-mounted VTEM system and 70 metres for the magnetic sensor.

The survey was flown using an Astar B3 helicopter, registration C-GTFX. The helicopter was operated by TRK helicopters. Details of the survey specifications may be found in Section 2 of this report.



### **1.3. Data Processing and Final Products**

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

A database, grids and maps of final products were presented to Strategic Metals Ltd.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

### **1.4. Topographic Relief and cultural features**

The survey block is located in Yukon, approximately 50 kilometers north west of the town of Dawson City.

Topographically, the survey area exhibits a hilly terrain, with elevation range from 650 metres to 970 metres above sea level.

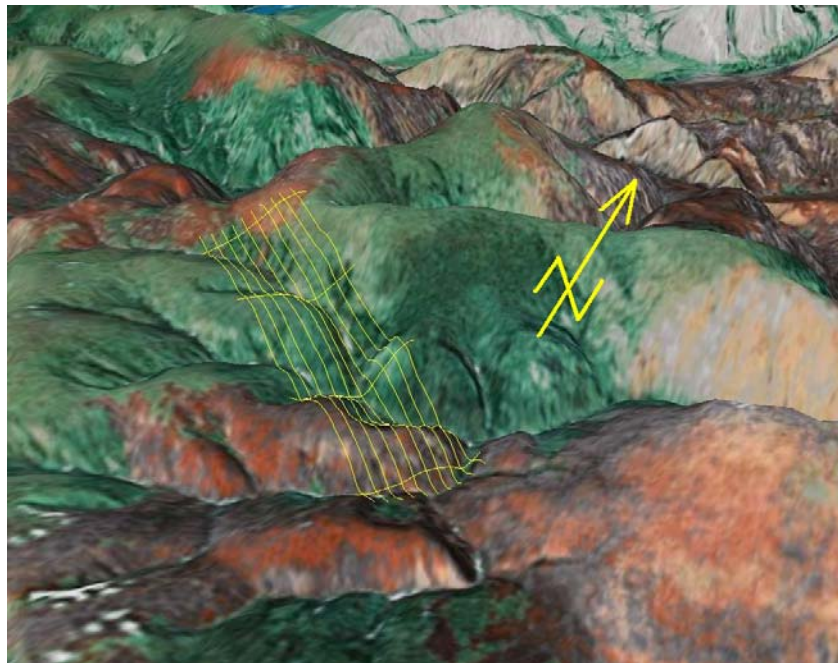


Figure 1 – Projection of flight path on topography.

## 2. DATA ACQUISITION

### 2.1. Survey Area

The survey block (see location map, Appendix A) and general flight specifications are as follows:

Survey block	Line spacing (m)	Area (Km <sup>2</sup> )	Line-km	Flight direction	Line number
TRACK	100	2.76	30.08	N109°E / N289°W	L21010 - L21100
	1000		3.67	N19°E / N199°W	T21910 - T21940

Table 1 - Survey block

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

### 2.2. Survey Operations

Survey operations were based in Dawson City, Yukon for the acquisition phase of the survey.

The following table shows the timing of the flying.

Date	Flight #	Flown KM	Block	Crew Location	Comments
30-Aug 07	75	33.75	TRACK	Dawson City, Yukon	Other blocks flown same day

Table 2 - Survey schedule

### **2.3. Flight Specifications**

The nominal EM sensor terrain clearance was 50 m (EM bird height above ground, i.e. helicopter is maintained 85 m above ground) due to rough terrain and helicopter crew safety. Nominal survey speed was 80 km/hour. The data recording rates of the data acquisition was 0.1 second for electromagnetics and magnetometer, 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 metres along flight track. Navigation was assisted by a GPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

The operator was responsible for monitoring of 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 the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer.



## 2.4. Aircraft and Equipment

### 2.4.1. Survey Aircraft

An Astar B3 helicopter, registration C-GTFX - owned and operated by TRK Helicopters Ltd. - was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd.

### 2.4.2. Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The configuration is as indicated in Figure 1 below.

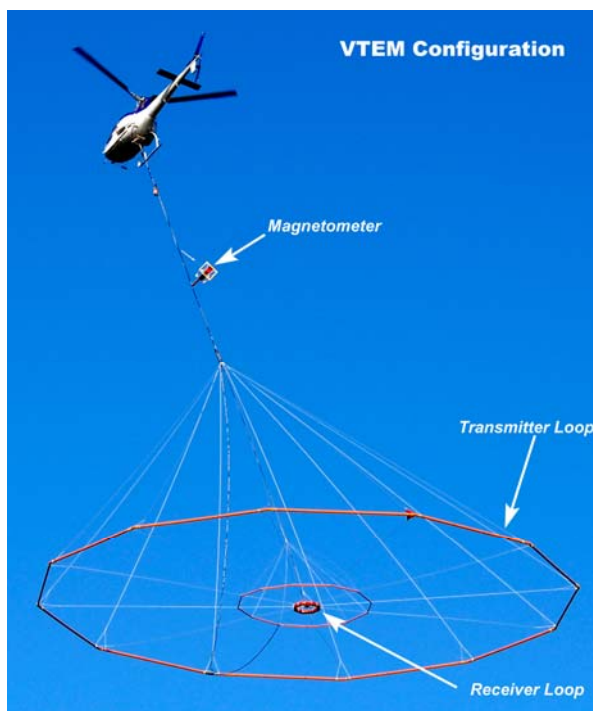


Figure 1 – VTEM configuration

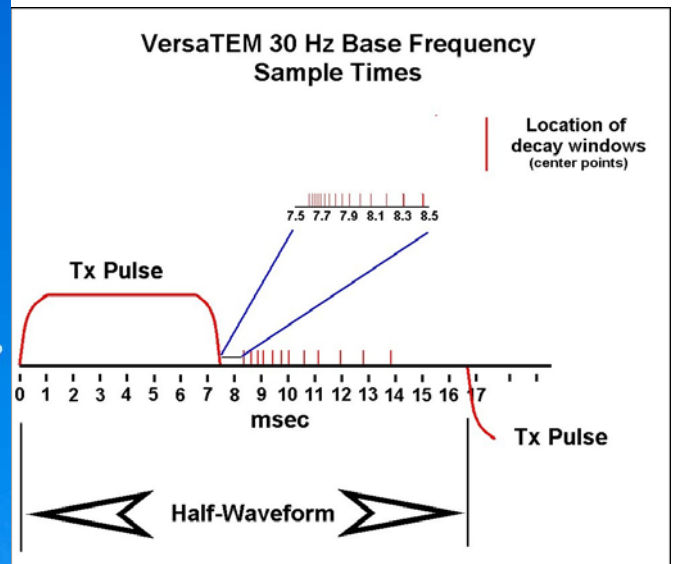


Figure 2 – Sample times

Receiver and transmitter coils are concentric and Z-direction oriented.  
 The receiver decay recording scheme is shown diagrammatically in Figure 2.

Twenty-four measurement gates were used in the range from 120  $\mu$ s to 6578  $\mu$ s, as shown in Table 3.

<b>VTEM Decay Sampling scheme</b>				
<b>Array Index</b>	<b>( Microseconds )</b>			
	<b>Time Gate</b>	<b>Start</b>	<b>End</b>	<b>Width</b>
10	120	110	131	21
11	141	131	154	24
12	167	154	183	29
13	198	183	216	34
14	234	216	258	42
15	281	258	310	53
16	339	310	373	63
17	406	373	445	73
18	484	445	529	84
19	573	529	628	99
20	682	628	750	123
21	818	750	896	146
22	974	896	1063	167
23	1151	1063	1261	198
24	1370	1261	1506	245
25	1641	1506	1797	292
26	1953	1797	2130	333
27	2307	2130	2526	396
28	2745	2526	3016	490
29	3286	3016	3599	583
30	3911	3599	4266	667
31	4620	4266	5058	792
32	5495	5058	6037	979
33	6578	6037	7203	1167

Table 3 - VTEM decay sampling scheme

Transmitter coil diameter was 26 metres, the number of turns was 4.  
Transmitter pulse repetition rate was 30 Hz.  
Peak current was 192 Amp.  
Pulse width was 7.2 ms  
Duty cycle was 43%.  
Peak dipole moment was 407,600 NIA.

Receiver coil diameter was 1.2 metre, the number of turns was 100.  
Receiver effective area was 113.1 m<sup>2</sup>  
Wave form – trapezoid.  
Recording sampling rate was 10 samples per second.

The EM bird was towed 42 m below the helicopter.

### **2.4.3. Airborne magnetometer**

The magnetic sensor utilized for the survey was a Geometrics optically pumped cesium vapour magnetic field sensor, mounted in a separated bird, towed 15 metres below the helicopter, as shown on figure 1. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds. The magnetometer sends the measured magnetic field strength as nanoTeslas to the data acquisition system via the RS-232 port.

### **2.4.4. Ancillary Systems**

#### **2.4.4.1. 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.

#### **2.4.4.2. GPS Navigation System**

The navigation system used was a Geotech PC based navigation system utilizing a NovAtel's WAAS 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.

The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.



#### 2.4.4.3. 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.

DATA TYPE	SAMPLING
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
RadarAltimeter	0.2 sec

Table 4 - Sampling Rates

#### 2.4.5. Base Station

A combine magnetometer/GPS base station was utilized on this project. A Geometrics Cesium 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 100 metres from the airport in Dawson City, away from electric transmission lines and moving ferrous objects such as motor vehicles.

The magnetometer base station's data was 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: Harish Kumar

Crew chief / QC Geophysicist: Sean Hayes

Operator: Keith Lavelly

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

Pilot: Roy Stevenson

Engineer: Darren Shipman

#### Office

Data Processing / Reporting: George Lev

Data Technician: Maria Jagodkin

Data acquisition and processing phases were carried out under the supervision of Andrei Bagrianski, Surveys Manager. Overall management of the project was undertaken by Edward Morrison, President, Geotech Ltd.

## 4. DATA PROCESSING AND PRESENTATION

### 4.1. *Flight Path*

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM 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 eastings (x) and UTM northings (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 filter used was a 16 point non-linear filter.

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 20 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 both B-field and dB/dt response.

Generalized modeling results of the VTEM system, written by Geophysicist Roger Barlow, are shown in Appendix C.

Graphical representation of the VTEM output voltage of the receiver coil and the transmitter current is shown in Appendix D.

### **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.

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

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 0.1 cm at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

The survey area shows an average magnetic activity. Maximum values of 57580 nT are observed along the NE boundary of the block. Average of 57524 nT is detected in the survey area.



## 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 a scale of 1:10,000. The coordinate/projection system used was the WGS84, UTM zone 7N. All maps show the flight path trace and topographic data. Latitude and longitude are also noted on maps.

The following maps are presented on paper,

- dB/dt profiles, Time Gates 0.234 – 6.578 ms in linear - logarithmic scale
- B-field profiles, Time Gates 0.234 – 6.578 ms in linear - logarithmic scale
- Total Magnetic intensity contours and colour image

### 5.3. *Digital Data*

Two copies of DVDs were prepared.

There are two (2) main directories,

**Data** contains a database, grids and maps, as described below.

**Report** contains a copy of the report and appendices in PDF format.

a kmz file containing flightpath of the TRACK property.

A free version of Google Earth software can be downloaded from,  
<http://earth.google.com/download-earth.html>

- Database in Geosoft GDB format, containing the following channels:  
7067track\_final
  - X: X positional data (metres – WGS84, utm zone 7 north)
  - Y: Y positional data (metres – WGS84, utm zone 7 north)
  - Z: GPS antenna elevation (metres - ASL)
  - Radar: Helicopter terrain clearance from radar altimeter (metres - AGL)
  - Radarb: EM Loop terrain clearance from radar altimeter (metres - AGL)
  - DEM: Digital elevation model (metres)
  - Gtime1: GPS time (seconds of the day)
  - Mag1: Raw Total Magnetic field data (nT)
  - Basemag: Magnetic diurnal variation data (nT)
  - Mag2: Total Magnetic field diurnal variation corrected data (nT)
  - Mag3: Leveled Total Magnetic field data (nT)
  - SF[10]: dB/dt 120 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[11]: dB/dt 141 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[12]: dB/dt 167 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[13]: dB/dt 198 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[14]: dB/dt 234 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[15]: dB/dt 281 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[16]: dB/dt 339 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[17]: dB/dt 406 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[18]: dB/dt 484 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[19]: dB/dt 573 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[20]: dB/dt 682 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[21]: dB/dt 818 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[22]: dB/dt 974 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[23]: dB/dt 1151 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[24]: dB/dt 1370 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[25]: dB/dt 1641 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[26]: dB/dt 1953 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[27]: dB/dt 2307 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[28]: dB/dt 2745 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[29]: dB/dt 3286 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[30]: dB/dt 3911 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[31]: dB/dt 4620 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[32]: dB/dt 5495 microsecond time channel ( $\text{pV/A/m}^4$ )
  - SF[33]: dB/dt 6578 microsecond time channel ( $\text{pV/A/m}^4$ )
  - BF[10]: B-field 120 microsecond time channel ( $\text{pV*ms)/(A*m}^4$ )
  - BF[11]: B-field 141 microsecond time channel ( $\text{pV*ms)/(A*m}^4$ )
  - BF[12]: B-field 167 microsecond time channel ( $\text{pV*ms)/(A*m}^4$ )
  - BF[13]: B-field 198 microsecond time channel

(pV\*ms)/(A\*m<sup>4</sup>)

BF[14]: B-field 234 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[15]: B-field 281 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[16]: B-field 339 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[17]: B-field 406 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[18]: B-field 484 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[19]: B-field 573 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[20]: B-field 682 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[21]: B-field 818 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[22]: B-field 974 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[23]: B-field 1151 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[24]: B-field 1370 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[25]: B-field 1641 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[26]: B-field 1953 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[27]: B-field 2307 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[28]: B-field 2745 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[29]: B-field 3286 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[30]: B-field 3911 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[31]: B-field 4620 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[32]: B-field 5495 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
BF[33]: B-field 6578 microsecond time channel (pV\*ms)/(A\*m<sup>4</sup>)  
PLM: Power line monitor

Electromagnetic B-field and dB/dt data is found in array channel format between indexes 10 – 33, as described above.

- Database 7067track\_wform.gdb in Geosoft GDB format, containing the following channels:

Time:            Sampling rate interval, 10.416 microseconds  
 Volt:            output voltage of the receiver coil (volt)

- Grids in Geosoft GRD format, as follow,

Track\_magfin:    Total magnetic intensity (nT)  
 Track\_DEM:      Digital elevation model (m)

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information.

Grid cell size of 10 meters was used.

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

Track\_Magfin:    Total magnetic intensity contours and colour image  
 Track\_dBdt:      VTEM dB/dt profiles, Time Gates 0.234 – 6.578 ms  
                           in linear - logarithmic scale  
 Track\_EMLP:     VTEM B-field profiles, Time Gates 0.234 – 6.578 ms  
                           in linear - logarithmic scale

- A *readme.txt* file describing the content of digital data, as described above.



## 6. CONCLUSIONS

A helicopter-borne versatile time domain electromagnetic (VTEM) geophysical survey has been completed over the Track property, located in Yukon, Canada.

The total area coverage is 2.76 km<sup>2</sup>. Total survey line coverage is 33.75 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles and contour colour images at a scale of 1:10,000.

Final data processing at the office of Geotech Ltd. in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Surveys Manager.

A number of EM anomaly groupings were identified. Ground follow-up of those anomalies should be carried out if favourably supported by other geoscientific data.

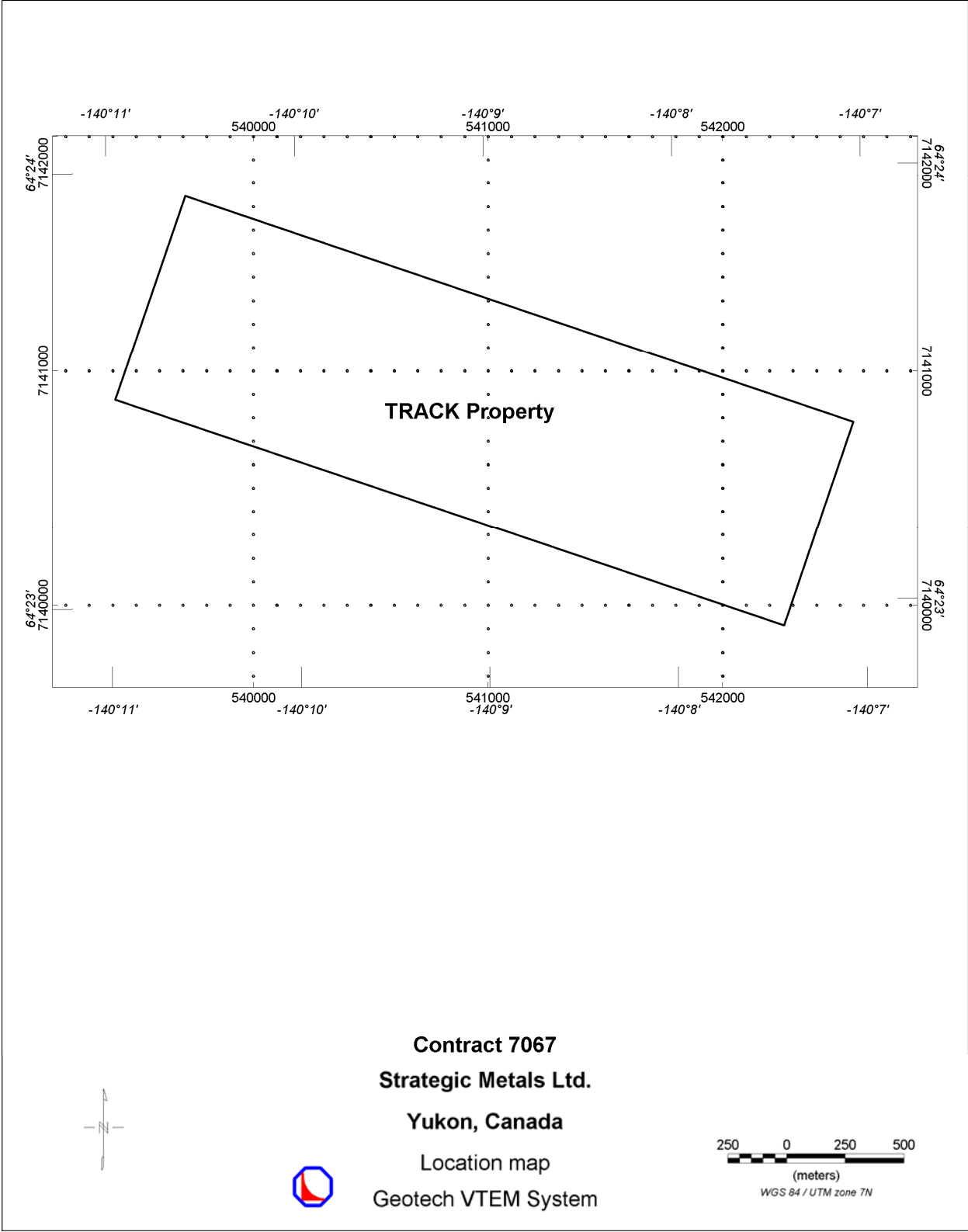
Respectfully submitted,

George Lev  
**Geotech Ltd.**  
December, 2007



**APPENDIX A**  
**SURVEY BLOCK LOCATION MAP**





## APPENDIX B

### SURVEY BLOCK COORDINATES (WGS 84, UTM zone 7 north)

#### Track property

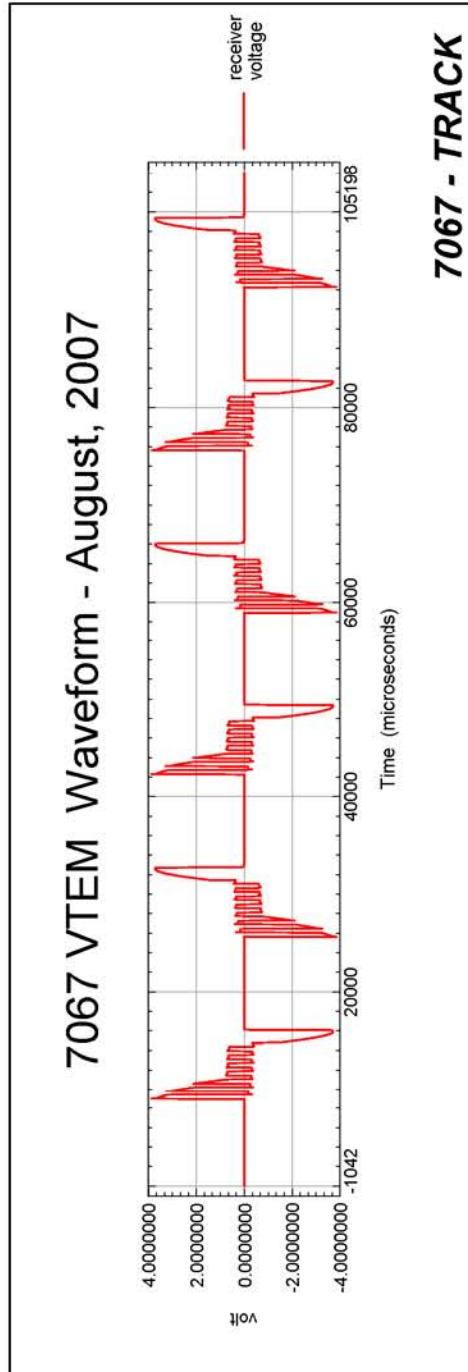
TRACK	
Easting x	Northing y
542557	7140783
542261	7139914
539410	7140877
539709	7141745

## APPENDIX C

### MODELING VTEM DATA

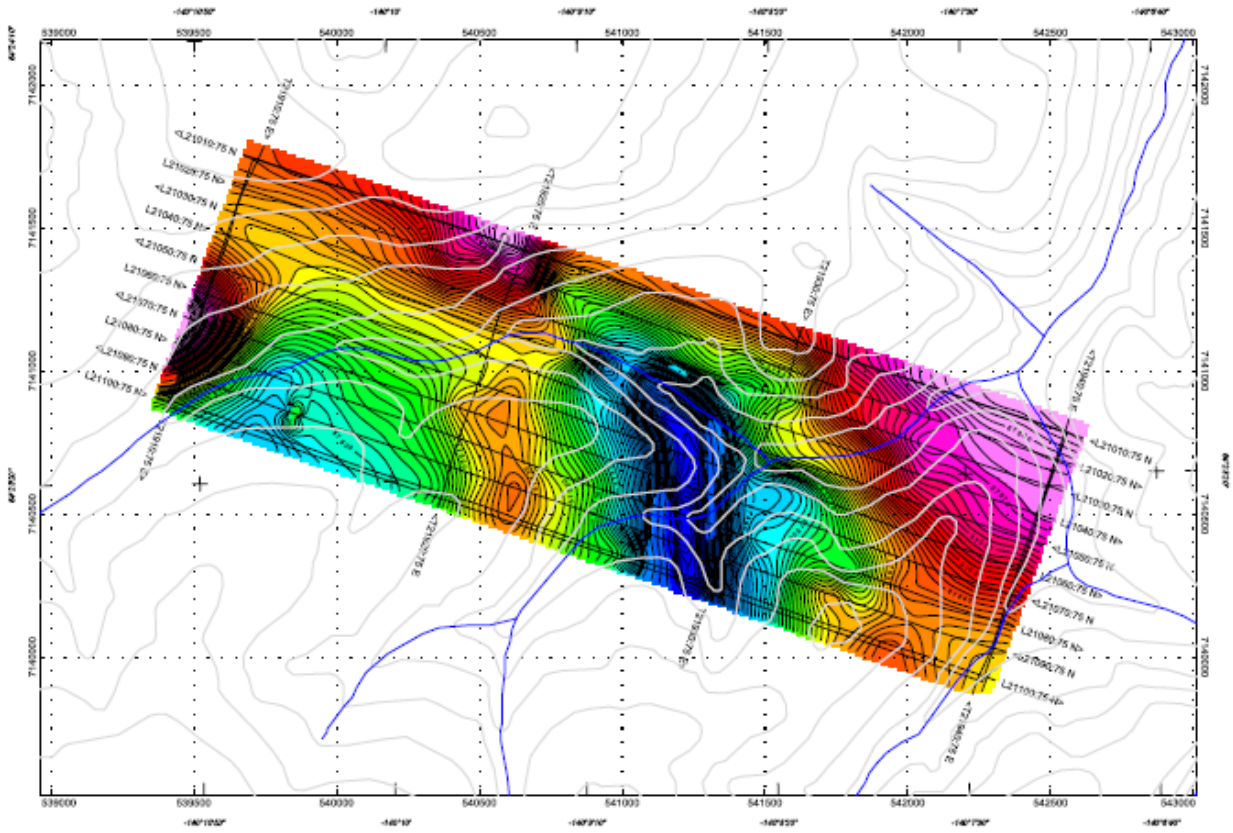
# APPENDIX D

## VTEM WAVEFORM



# APPENDIX E

## GEOPHYSICAL MAPS



TRACK PROPERTY

STRATEGIC METALS LTD.

# MODELING VTEM DATA

## Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 26.1 meters diameter transmitter loop that produces a dipole moment up to 625,000 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 7.5 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.

Late in 2006, Geotech Ltd. incorporated a B-Field measurement in the VTEM system. The B-Field measurements have the advantage of containing more spectral energy at low spectral frequencies than the dB/dt measurements; hence, greater amplitudes and accuracies when encountering targets with higher conductances (> 500 Siemens). The converse is true at higher spectral frequencies where dB/dt measurements are best applied. The B-field is most widely used in nickel exploration where a small percentage of targets are extremely conductive (> 2500 Siemens) and less resolvable or invisible (below the noise threshold) using dB/dt measurements.

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.

## Variation of Plate Depth

Geometries represented by plates of different strike length, depth extent, dip, plunge and depth below surface can be varied with characteristic parameters like conductance of the target, conductance of the host and conductivity/thickness and thickness of the overburden layer.

Diagrammatic models for a vertical plate are shown in figures A and G at two different depths, all other parameters remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figure A shows a plate where the top is near surface. Here, amplitudes of the dual peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figure G shows a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.



## Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figure B shows a near surface plate dipping  $80^\circ$ . Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

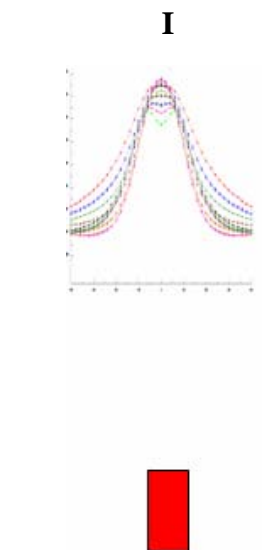
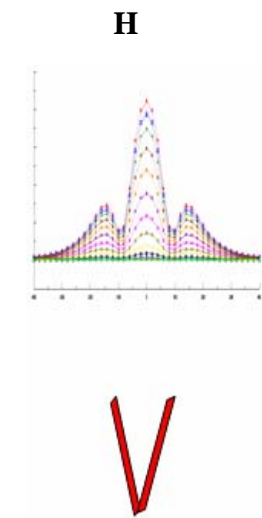
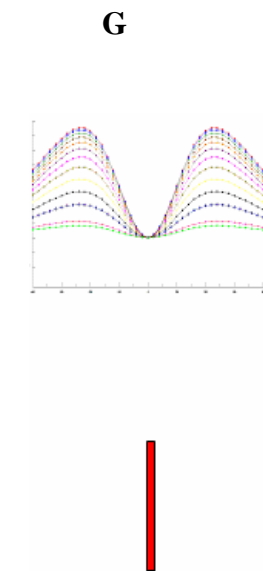
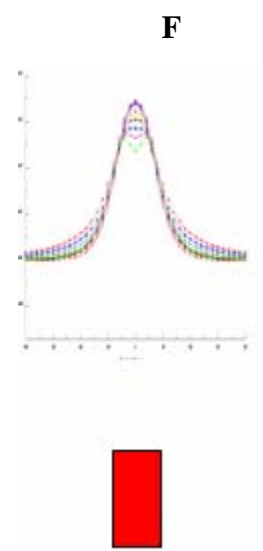
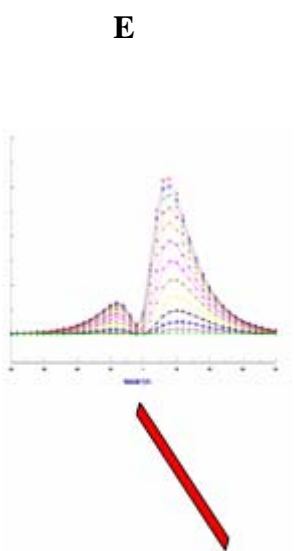
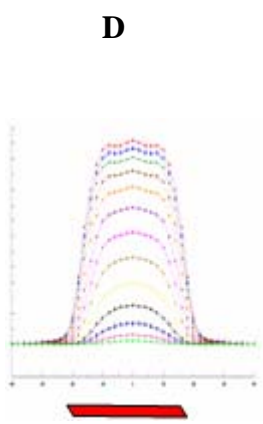
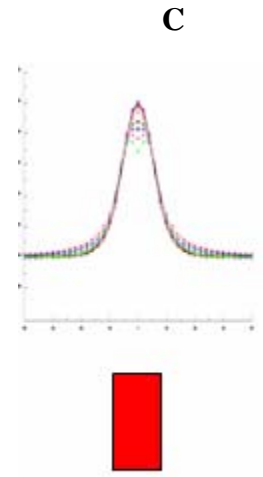
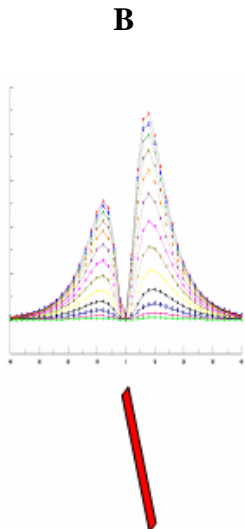
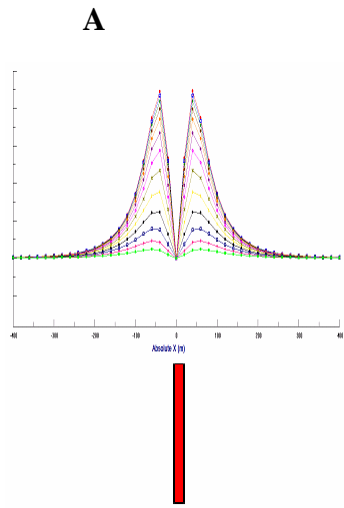
As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near  $90^\circ$  to about  $30^\circ$ . The method is not sensitive enough where dips are less than about  $30^\circ$ . Figure E shows a plate dipping  $45^\circ$  and, at this angle, the minimum shoulder starts to vanish. In Figure D, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

Figure H shows a special case where two plates are positioned to represent a synclinal structure. Note that the main characteristic to remember is the centre amplitudes are higher (approximately double) compared to the high shoulder of a single plate. This model is very representative of tightly folded formations where the conductors were once flat lying.

## Variation of Prism Depth

Finally, with prism models, another algorithm is required to represent current on the plate. A plate model is considered to be infinitely thin with respect to thickness and incapable of representing the current in the thickness dimension. A prism model is constructed to deal with this problem, thereby, representing the thickness of the body more accurately.

Figures C, F and I show the same prism at increasing depths. Aside from an expected decrease in amplitude, the side lobes of the anomaly show a widening with deeper prism depths of the bell shaped early time channels.



## General Modeling Concepts

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models A to I above). 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.

When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.
- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.
- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.
- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated (see model H). Only concentric loop systems can map this type of target.

The modelling program used to generate the responses was prepared by PetRos Eikon Inc. and is one of a very few that can model a wide range of targets in a conductive half space.

## General Interpretation Principals

### Magnetics

The total magnetic intensity responses reflect major changes in the magnetite and/or other magnetic minerals content in the underlying rocks and unconsolidated overburden. Precambrian rocks have often been subjected to intense heat and pressure during structural and metamorphic events in their history. Original signatures imprinted on these rocks at the time of formation have, in most cases, been modified, resulting in low magnetic susceptibility values.

The amplitude of magnetic anomalies, relative to the regional background, helps to assist in identifying specific magnetic and non-magnetic rock units (and conductors) related to, for example, mafic flows, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.

In addition to simple amplitude variations, the shape of the response expressed in the wave length and the symmetry or asymmetry, is used to estimate the depth, geometric parameters and magnetization of the anomaly. For example, long narrow magnetic linears usually reflect mafic flows or intrusive dyke features. Large areas with complex magnetic patterns may be produced by intrusive bodies with significant magnetization, flat lying magnetic sills or sedimentary iron formation. Local isolated circular magnetic patterns often represent plug-like igneous intrusives such as kimberlites, pegmatites or volcanic vent areas.

Because the total magnetic intensity (TMI) responses may represent two or more closely spaced bodies within a response, the second derivative of the TMI response may be helpful for distinguishing these complexities. The second derivative is most useful in mapping near surface linears and other subtle magnetic structures that are partially masked by nearby higher amplitude magnetic features. The broad zones of higher magnetic amplitude, however, are severely attenuated in the vertical derivative results. These higher amplitude zones reflect rock units having strong magnetic susceptibility signatures. For this reason, both the TMI and the second derivative maps should be evaluated together.

Theoretically, the second derivative, zero contour or colour delineates the contacts or limits of large sources with near vertical dip and shallow depth to the top. The vertical gradient map also aids in determining contact zones between rocks with a susceptibility contrast, however, different, more complicated rules of thumb apply.

### **Concentric Loop EM Systems**

Concentric systems with horizontal transmitter and receiver antennae produce much larger responses for flat lying conductors as contrasted with vertical plate-like conductors. The amount of current developing on the flat upper surface of targets having a substantial area in this dimension, are the direct result of the effective coupling angle, between the primary magnetic field and the flat surface area. One therefore, must not compare the amplitude/conductance of responses generated from flat lying bodies with those derived from near vertical plates; their ratios will be quite different for similar conductances.

Determining dip angle is very accurate for plates with dip angles greater than 30°. For angles less than 30° to 0°, the sensitivity is low and dips can not be distinguished accurately in the presence of normal survey noise levels.

A plate like body that has near vertical position will display a two shoulder, classic **M** shaped response with a distinctive separation distance between peaks for a given depth to top.

It is sometimes difficult to distinguish between responses associated with the edge effects of flat lying conductors and poorly conductive bedrock conductors. Poorly conductive bedrock conductors having low dip angles will also exhibit responses that may be interpreted as surficial overburden conductors. In some situations, the conductive response has line to line continuity and some magnetic correlation providing possible evidence that the response is related to an actual bedrock source.

The EM interpretation process used, places considerable emphasis on determining an understanding of the general conductive patterns in the area of interest. Each area has different characteristics and these can effectively guide the detailed process used.

The first stage is to determine which time gates are most descriptive of the overall conductance patterns. Maps of the time gates that represent the range of responses can be very informative.

Next, stacking the relevant channels as profiles on the flight path together with the second vertical derivative of the TMI is very helpful in revealing correlations between the EM and Magnetics.

Next, key lines can be profiled as single lines to emphasize specific characteristics of a conductor or the relationship of one conductor to another on the same line. Resistivity Depth sections can be constructed to show the relationship of conductive overburden or conductive bedrock with the conductive anomaly.