

# Assessment Report

*on the*

## 2005 Helicopter-Borne AeroTEM II Electromagnetic and Magnetic Survey

**Boundary Falls Property**

**BOUNDARY DISTRICT**

NTS 82E/2

Lat: 49° 03' 05'' N      Long: 118° 41' 40'' W  
*(at approximate centre of property)*

Greenwood Mining Division  
British Columbia, Canada

Prepared for:

**730821 B.C. Ltd.**

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March 29, 2006

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## **1.0 SUMMARY**

The Boundary Falls property is located about 5 kilometers southwest of Greenwood in southern British Columbia. The property is comprised of 4 Mineral Titles map cell claims and 3 Mineral Leases, totaling approximately 2000 hectares. *730821 B.C. Ltd.* has a first right of refusal on the property, for a period of 30 days after receiving this report, in exchange for funding an airborne geophysical survey on the property during December 2005, and for filing assessment work on the claims. The report was prepared at the request of *730821 B.C. Ltd.* and summarizes the results of an airborne geophysical survey completed on the property during December 2005.

The Boundary Falls property is an exploration stage prospect, situated within the highly mineralized Boundary District. Seven zones mineralization are known on the property. Many of the known showings are structurally controlled Au-Ag (+/- Pb, Zn) bearing quartz veins that are related to major fault zones. The geological setting in the central part of the property has similarities to the Lamefoot/Belcher district of Washington however, and the possibility that the auriferous veins at the Boundary Falls showing are part of a footwall zone to a volcanogenic massive sulfide/oxide horizon (such as occurs in the Lamefoot/Belcher district) has been suggested. Large slabs of massive barite in the roadcut north of Boundary Falls support the idea of a volcanogenic horizon on the property.

The majority of previous exploration on the property has been directed at the vein targets, with the bulk of this work completed at the Skomac showing. The Skomac veins are narrow, discontinuous veins that, due to their limited size and modest grade, are not a high-priority for further exploration. Other known veins are similarly relatively small, and although some have returned grades to in excess of 1 oz/t Au from surface samples, these veins are a lower priority for further exploration than the volcanogenic or skarn-type targets on the property.

A helicopter-borne AeroTEM II (time-domain EM) and magnetometer survey was flown over the property during 2005. Aeromagnetics was useful in defining the major fault zones on the property. The older, Jurassic thrust faults have a pronounced (arcuate) magnetic high signature (due to the presence of serpentinite) while the younger Eocene faults tend to correspond to linear mag low features. Areas of Eocene volcanics and intrusives were also well defined by the aeromagnetics, due to their high magnetic signature. The AeroTEM II survey identified a large number of conductors that require ground follow-up to assess their significance. Sediments in the Knob Hill Complex or the Attwood Formation can be conductive and some of the conductive responses are related to these sediments and rather than to sulfide mineralization. Prospecting, geological mapping and rock sampling is recommended in the vicinity of each of the conductors, to assess the significance of the conductive responses and to prioritize them for follow-up drill testing.

Based on the known geology and mineralization, two of the conductors are of particular interest at present. One of these anomalies occurs in the vicinity of the Glory Hole (Boundary Falls) showing, and coincides with a postulated fold hinge and with a postulated volcanogenic massive sulfide/oxide horizon (the Lamefoot horizon). Another target of interest is a strong north-trending conductor and coincident mag-high feature in the vicinity of the Croesus and Johannesburg showings.

A two-phase work program is recommended for the Boundary Falls property, with a total budget of \$280,000. Phase 1 (\$160,000) consists of ground work, including geological mapping and prospecting in the vicinity of the AeroTEM conductors and in other areas of interest defined by previous work programs on the property. Drilling and possibly excavator trenching should then be done to test these targets. Phase 2 (\$120,000) consists of additional diamond drilling, and is contingent on the results of Phase 1.

## 2.0 INTRODUCTION AND TERMS OF REFERENCE

The author was retained by 730821 B.C. Ltd. to complete the following report describing a 2005 helicopter-borne AeroTEM II (time-domain EM) and magnetometer survey on the Boundary Falls property.

### 2.1 Property Description and Location

The Boundary Falls property is centred about 5 kilometers southwest of Greenwood, B.C. on NTS map sheet 082E/02, as shown in Figure 1. The claims are centred at latitude 49° 03' 05"N and longitude 118° 41' 40" W, and cover an area of approximately 2000 hectares.

The property consists of 4 Mineral Titles On-line (MTO) map cell claims and 3 Mineral Leases, located on Mineral Tenure map sheet 082E.007 in the Greenwood Mining District. The claims and leases are shown in Figure 2. Claim data is summarised below in Table 1. Dates shown are after filing the work which is described in this report. Information regarding Mineral Leases form part of the property is contained in Table 2. The Mineral Leases are 30 year leases with annual payments necessary on or before the anniversary dates listed in Table 2. The leases come up for renewal in 2023.

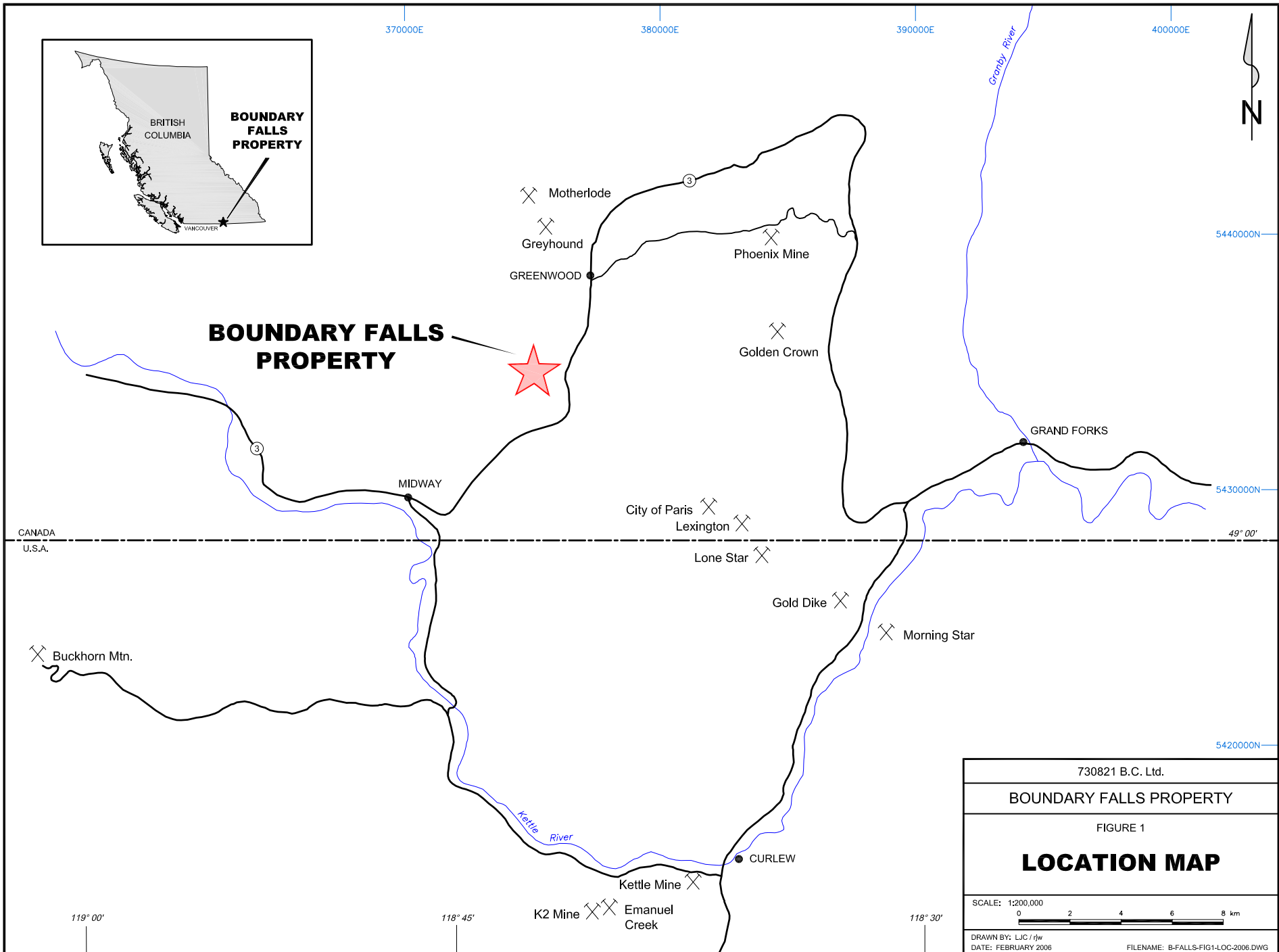
Tenure #	Area (Ha)	Owner	Expiry Date
513772	656.138	D. Rippon	May 11, 2009
513773	656.427	D. Rippon	May 11, 2009
513774	444.689	D. Rippon	May 11, 2009
516278	254.003	K. Schindler	April 30, 2015

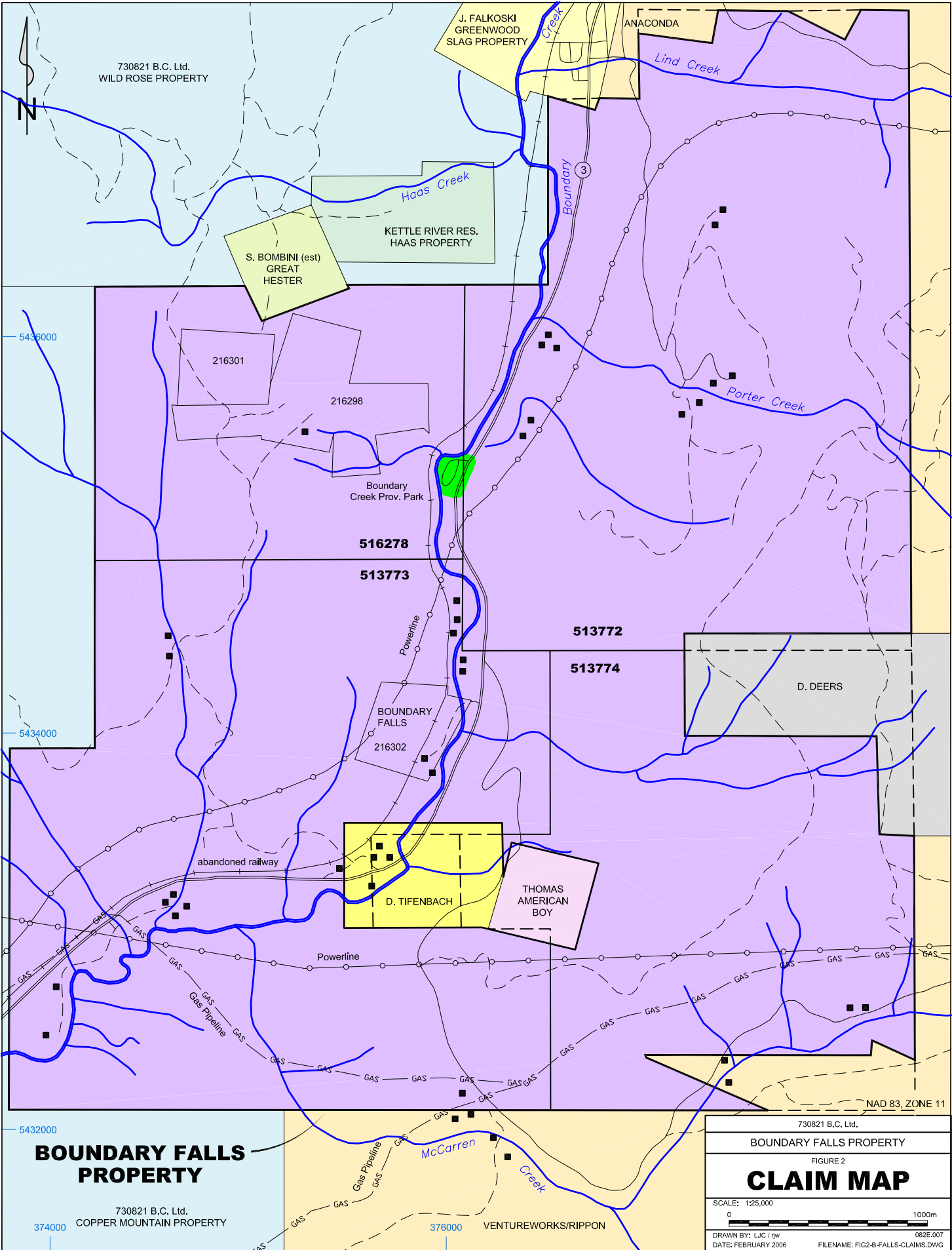
Table 1: Claim Information

Mineral Leases	Tenure Number	Anniversary Date
<b>ML 423</b> Nonsuch L389 Republic L426 Hidden Treasure L1019 Cosmopolitan L 1680	216298	Aug 8, 2006
<b>ML 430</b> Last Chance L644	216301	Nov 15, 2006
<b>ML 431</b> Don't Know L 2374	216302	Nov 17, 2006

Table 2: Mineral Lease Information

The claims comprising the Boundary Falls property are registered to Donald Rippon or to Karl Schindler, as shown in Table 1, while all of the Mineral Leases are registered to Karl Schindler. Ownership of the claims and leases has been assigned, by agreement, to VentureWorks Inc., a company owned 50% by Mr. Schindler and 50% by Mr. Donald Rippon. 730821 B.C. Ltd., a company incorporated in B.C. with its registered office at 34a-2755 Lougheed Highway, Suite 522, Port Coquitlam, B.C. V3B 5Y9, has a first right of refusal on the Boundary Falls property under an August 4, 2005 agreement with VentureWorks Inc., pertaining to the adjoining Wild Rose property. Under the terms of the agreement, 730821 B.C. Ltd. has a





730821 B.C. Ltd.  
WILD ROSE PROPERTY

J. FALKOSKI  
GREENWOOD  
SLAG PROPERTY

ANACONDA

Haas Creek

Lind Creek

S. BOMBINI (est)  
GREAT  
HESTER

KETTLE RIVER RES.  
HAAS PROPERTY

216301

216298

Porter Creek

Boundary  
Creek Prov. Park

516278

513773

513772

513774

D. DEERS

BOUNDARY  
FALLS

216302

abandoned railway

D. TIFENBACH

THOMAS  
AMERICAN  
BOY

Powerline

NAD 83, ZONE 11

**BOUNDARY FALLS  
PROPERTY**

730821 B.C. Ltd.  
COPPER MOUNTAIN PROPERTY

730821 B.C. Ltd.

BOUNDARY FALLS PROPERTY

FIGURE 2

**CLAIM MAP**

SCALE: 1:25,000



DRAWN BY: LJC/jlw

DATE: FEBRUARY 2006

082E.007

FILENAME: FIG2-B-FALLS-CLAIMS.DWG

376000

VENTUREWORKS/RIPPON

McCarran  
Creek

5436000

5434000

5432000

374000

N

first right of refusal on the Boundary Falls property for a period of 30 days after receiving the technical report that covers the property, in return for funding the December 2005 exploration program and the associated report, and for paying fees associated with filing assessment work on the claims. A 100 ton per day flotation mill, the Bow Mines (Robert's) mill, is situated in the northern part of the Boundary Falls property. The mill is owned by VentureWorks Inc. but is not part of the agreement on the property. 730821 B.C. Ltd. has no interest in the mill buildings, equipment or tailings area as a result of their agreement with VentureWorks Inc.

A large part of the Boundary Falls property is underlain by land with privately held surface rights, as shown in Figure 3, and there are numerous rural residences particularly along Highway 3. Private surface rights held by a third party do not infringe on the mineral rights of the claim holder, nor can access to these areas be denied. Some compensation may be required to be paid to various land owners, however, for any disturbance (i.e. drill or trench sites, access roads) done to the surface of privately owned land.

The historic Boundary Falls smelter site, just north of Highway 3 near the bridge over Boundary Creek, is situated in part within the Boundary Falls property and partly within a small block of claims (held by D. Tiffenbach) which are encompassed by the Boundary Falls property. The smelter site occurs on land with privately owned surface rights. The Boundary Falls property also covers a very small Provincial Park along Highway 3 (Boundary Creek Provincial Park), as well as the abandoned CPR railgrade (now part of the Trans Canada Trail). A small golf course, the Porter Creek golf course, is situated in the eastern part of the property.

## **2.2 Access, Climate, Local Resources, Infrastructure and Physiography**

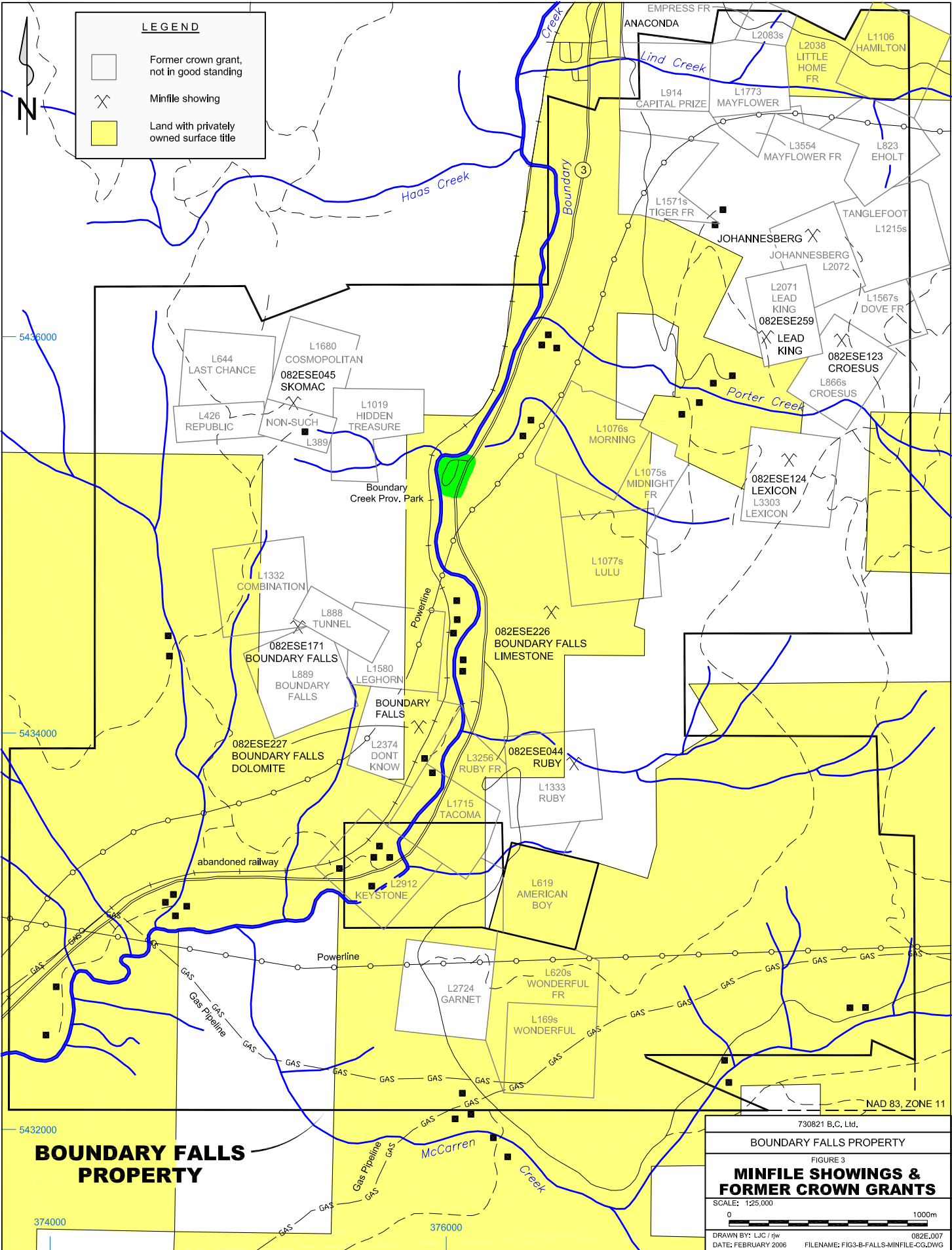
Access to the Boundary Falls property and local infrastructure are both excellent. The property is bisected by Highway 3 and is centred about 5 kilometers south-southwest of the community of Greenwood and 8 kilometers northeast of Midway. Two high-voltage power lines cross the property, as shown on Figure 2. The B.C. Southern Crossing gas pipeline also crosses the southern part of the claim block.

There is good road access to the claims from Highway 3. The western part of the property, including the Skomac mine and Bow Mines mill, are reached by following Boltz road north from the highway, at Boundary Falls. The eastern part of the property is accessible via McCarren Creek road, which heads east from Highway 3 at Boundary Falls or via secondary roads from the Lind Creek road.

Limited services, including room, board and fuel, are available in the nearby communities of Greenwood or Midway. Grand Forks, located 40 kilometers east along Highway 3 from Greenwood, has a population of about 8,000 in the city and immediate surrounding area and is a more major supply centre. Most services needed for exploration are available in Grand Forks. The closest full-service airports are located in Kelowna, Penticton or Castlegar. Power is available at the Bow Mines (Robert's) mill site, in the northern part of the property. Power also services numerous rural residences in the vicinity of the property.

The northwestern portion of the Boundary Falls property is situated on a sparsely treed, moderately steep, east-facing slope overlooking Boundary Creek. The mill site and main Skomac mine workings are located just south of the base of a prominent gabbro cliff with over 300 meters of vertical relief. To the south of the mine area, the topography is subdued, with undulating grassy hills sloping south and east into the Boundary Creek valley. The eastern part of the property covers the lower west facing slope of Mount Attwood, and the lower portions of the Lind Creek, Porter Creek and McCarren Creek valleys.

Boundary Creek parallels Highway 3 through the central part of the property. Elevations range from about 700 meters in the Boundary Creek valley in the southeast portion of the property, to about 1100 meters at



**LEGEND**

- Former crown grant, not in good standing
- X Minfile showing
- Land with privately owned surface title

730821 B.C. Ltd.

**BOUNDARY FALLS PROPERTY**

FIGURE 3

**MINFILE SHOWINGS & FORMER CROWN GRANTS**

SCALE: 1:25,000

0 1000m

DRAWN BY: LJC/jfw 082E.007

DATE: FEBRUARY 2006 FILENAME: FIG3-B-FALLS-MINFILE-CG.DWG

**BOUNDARY FALLS PROPERTY**

374000

376000

NAD 83, ZONE 11



the top of the cliffs north of the Skomac mine workings. Rock exposure is good in the vicinity of the Skomac mine, however much of the remaining part of the property has minimal outcrop, and locally thick glacial till cover.

The climate is moderately dry, with hot summers and little rainfall. Snowfall is typically in the order of 1 meter and the property is generally snow free from mid March to early December. Water for drilling is available from Boundary Creek or seasonally from old mine workings at the Skomac showing, or several small springs west and southwest of the mine area.

### **2.3 History of Exploration, Boundary Falls Property**

Former crown grants that fall completely or partially within the current Boundary Falls property are shown on Figure 3. On several of these claims, there is no documentation of any historic work completed, however regulations governing the issuing of crown grants required that development work be completed on each of these claims. Recommendations are made in Section 5 of this report to thoroughly prospect the property to locate any old workings on the former crown grants and to assess any mineralization that may be present, particularly in light of new metallogenic models that are successfully being applied elsewhere in the district.

Prior to 2005, various portions of the Boundary Falls property were held under separate ownership and were explored separately. The majority of the previous work on the property was directed at a gold-silver quartz vein system situated on the former Republic, Non-Such and Last Chance crown grants in the northern portion of the property (the Skomac showing). The Skomac vein system has been explored and developed by 7 adits over a vertical distance of about 150 meters and for a strike length of about 400 meters. A lesser amount of work has been done at the Boundary Falls showing, south of the Skomac veins, and Croesus showing in the northeastern part of the property. Work on other parts of the property has been limited.

The early work history of the property is taken from the Minister of Mines Annual Reports for the Province of British Columbia. References for more recent work are listed. Historical information is documented in the units it was recorded in. For the most part, early historical data is given in Imperial units, while more recent information is given in metric units.

1894: The Skomac veins were discovered in 1894. Mineralization was also discovered on the Boundary Falls, Tunnel, Lead King and Johannesburg claims the same year. Crown grants over these showings were issued over the next few years. A 9 foot vein of silver bearing rock with 40% lead was reported on the Lead King, which was exposed for 1000 feet.

1896: The Ruby showing was discovered, and two tunnels were later driven to test the mineralization.

1897: Mention is made in the Minister of Mines Annual Report (1897) that at the Boundary Falls showing (No. 1 vein?), a 40 foot deep shaft was being sunk and that *“Several years before, the rotten surface ore was treated in a 2-stamp mill set up at the Falls, but the ore becoming base, this mill was then useless.”*

1900: By 1900, claims covering the Skomac veins had been acquired by Republic Gold Mines Ltd. and the No. 1, No. 2 and No 3 adits were developed.

1901: 85 tons was shipped from the Ruby showing, at an unknown grade.

1903-4: 39 tons of ore was produced from the Skomac workings.

1904: 336 tons was shipped from the Lead King to the BC Copper Company smelter in Anaconda.

The grade of this ore is unknown.

1905-37: Intermittent work is reported at the Skomac showing, including development of the No. 4 adit, on the Upper vein. Paxton (1987) notes production of 890 tons at an average grade 100 oz/t Ag during this period, although he does not give the source of this information. A total of only 739 tons production is reported in the Minister of Mines Reports, and no grade is given.

1941: The Ruby workings were rehabilitated.

1950: W.E. McArthur shipped 8 tons of lead ore to Trail from the Lead King claims, at an average grade of 2.75 oz/t Ag, 7.1% Pb and 7.8% Zn.

1956: A total of 31 tons were shipped from the Ruby showing, at an average grade of 0.6 oz/t Ag and 3.0% Cu.

1961-65: The present Mineral Leases were granted. Skomac Mines Ltd. operated the property until 1965, developing the No. 5 adit and drilling the 5-1 cross-cut. During this period, a further 609 tons of ore was shipped to the Trail smelter and returned an average grade of 0.04 oz/t Au, 5.41 oz/t Ag, 2.1% Pb and 1% Zn. From 1965 - 1969 there was additional small production under lease arrangements.

1968: Ortega Minerals completed a soil sampling program in the Croesus - Johannesburg area, with samples collected at 200 foot intervals on 400 foot spaced lines, and analysed for copper only. A number of areas of + 100 ppm Cu were detected (Hemsworth, 1968).

1969: Ortega Minerals completed IP and magnetometer surveys over in the Croesus - Johannesburg area. Eight anomalies were identified and a zone encompassing 5 of these anomalies was defined, approximately 1.5 kilometer in length, striking northwest and open in both directions along strike (Baird, 1969).

1973: Robert's Mines acquired the Skomac Mineral Leases in 1973 and staked the surrounding ground as the May Mac claim. Amigo Silver Mines Ltd acquired the area to the south, covering the Boundary Falls showing.

1974-75: The No. 6 adit at the Skomac showing was developed in 1974, and stoping above the 6 Level (the A and AA zones, Upper Skomac vein) resulted in 478 tons of production averaging 0.14 oz/t Au and 20.3 oz/t Ag.

1975: A 45 meter long cross-cut was driven to intersect the No. 1 Vein (Boundary Falls), but stopped short of hitting the vein. Small EM and SP surveys were also completed. Five diamond drill holes were drilled to test the Glory Hole vein and several of the geophysical anomalies (Tully, 1978).

1976: A further 604 tons was produced from the B and C zones (Upper Skomac vein). The No. 7 adit was started 200 feet below the 6 Level.

1977: Three diamond drill holes were drilled to test for parallel vein structures at the Skomac showing, which resulted in the discovery of two barren veins. Surface work included a grid to the south of the mine workings, with soil samples collected and analysed for lead and silver. Several anomalies were identified. B.N. Church of the B.C. Geological Survey Branch, completed geological mapping in the Skomac area (Church, 1982).

1978: A pulse EM survey was completed in the vicinity of the Skomac and Boundary Falls showings and revealed a long, north trending conductor. The conductor was partially tested by drilling, with inconclusive results. An Accelerated Mineral Development Grant for \$50,000 was obtained in 1978, and a major development program was initiated on the Skomac veins. Underground development included driving the 6-1 and 6-2 cross-cuts, and drilling 3 underground drill holes to test the downward extension of the AA zone (Upper Skomac vein) (Paxton 1987).

The cross-cut on the No. 1 vein (Boundary Falls) was extended for 18 meters to intersect the vein. Samples of the vein returned up to 0.42 oz/t Au and up to 4 oz/t Ag. A single drill hole was drilled, which intersected 5 feet averaging 0.23 oz/t Au and 17 oz/t Ag. Rock samples from the Glory Hole zone (Boundary Falls property) returned values to 0.41 oz/t Au and 0.93 oz/t Ag (Tully, 1978).

1980-2: On the Skomac Upper vein, a raise was driven from the 7 Level to the 6 Level, below the AA zone, and a sublevel was driven on the vein. A 100 ton per day flotation mill was constructed at the Skomac showing (the Bow Mines/Robert's mill). Prior to this point, all ore produced was direct shipping ore (Paxton, 1987).

1983: Mining continued from the Upper Skomac vein, primarily from the AA zone. About 1901 tons was mined and milled on site, returning an average grade of 0.02 oz/t Au and 3.4 oz/t Ag (Paxton, 1987). Mr. Schindler reports that assay sheets from this time indicate an average grade of 0.1 oz/t Au and 6 oz/t Ag, although this has not been confirmed by the author (K. Schindler, personal communication). Total production from the Skomac veins property from discovery to date is approximately 4,800 tons. Incomplete information is available regarding the average grade for this total. For about 4000 tons of the total produced, the grade averaged 0.15 oz/t Au, 6.95 oz/t Ag, 1.6% Pb and 1% Zn. There is no production documented since 1983.

1984: A summary report was prepared for Silver Hoard Resources Inc. for the Skomac area (then called the Robert Mines property), but no work was carried out (Paxton, 1984).

1985: Empire Gold Resources entered into an agreement to explore the Robert Mines property (Skomac veins) in return for a 42% NPI in the mine and mill, and had a technical report on the property prepared (Paxton, 1986). The agreement with Empire Gold Resources has since terminated, with no retained interest in the claims or in the mill.

1987: Empire Gold carried out significant work on the Robert Mine property (Skomac veins) during 1987, as described by Paxton (1987). This work included driving the 6-3 cross-cut and drilling below the 6-2 and 6-3 cross-cuts to test the downward extension of the Skomac Upper vein. Fifteen underground holes, totalling 450 meters, were drilled and showed that the vein dipped more shallowly than previously believed.

Underground mapping and sampling of the Skomac Lower vein in the No. 1 and No. 2 adits was also completed. A narrow section of the mineralized argillite footwall of the vein in the No. 2 adit returned 2.4 oz/t Au and 4.93 oz/t Ag. A small amount of trenching was done near the No. 2 adit.

Surface work was also completed in the vicinity of the Skomac veins during 1987, including geological mapping and soil sampling (for gold and silver). Soil samples were collected at 50 meter intervals on 100 meter spaced lines. A gold anomaly was discovered some 400 meters southeast of the No. 1, 2 and 3 adits, with values to 230 ppb Au.

There has been very limited work at the Skomac showing since 1987, although the mill has run, on a very intermittent basis, as a custom milling operation.

1991: A small prospecting and rock sampling program was done at the Ruby showing in 1991 (Haynes, 1991).

1992: A small prospecting and rock sampling program was carried out over the Falls claims (Ruby-Lexicon area of the current Boundary Falls property). Limited rock sampling returned values to 27.6% Cu, with elevated Zn, Ag, Au and Co from quartz/sulfide float boulders in the vicinity of the Ruby showing. Grab samples from sulfidic limestone in outcrop in the same general area assayed up to 14.4% Cu (Hayes, 1993).

1994: A report was prepared on the Skomac showing (formerly the Robert Mines property but then known as the Bow Mines property), for 593749 Alberta Limited. Recommendations were made to extend the No. 7 level drift on the Upper Skomac vein to test for unexplored vein at this level (Paxton, 1994). This work has not been completed.

1995: A single diamond drill hole, totalling 91.4 meters, was drilled at the Skomac showing for Bow Mines Ltd. The hole collared approximately 200 meters west of the No. 7 adit portal, and was drilled vertically to test the contact between the underlying serpentinite and overlying argillite. There were no significant veins intersected in the drilling (Ash, 1995).

1996: Kettle River Resources optioned the Croesus-Johannesberg property (in the northeastern part of the current Boundary Falls property) from Samuel Bombini and completed a program of rock sampling and geological mapping (Caron, 1996).

1997: Echo Bay Minerals optioned the Croesus-Johannesberg property from Kettle River Resources and drilled 6 diamond drill holes to test the Croesus showing. Precious metal grades were low and drilling suggested that the mineralization was associated with intrusive-related silicification, rather than syngenetic volcanogenic massive sulfide/oxide mineralization (Rasmussen, 1997).

2000: During 2000, InvestNet Inc. acquired the Bow Mines property, which covered both the Skomac and Boundary Falls showings (i.e. both the former Robert Mine and Amigo Silver properties), and had a technical report on the property prepared (Caron, 2000).

2002: A small prospecting program was completed on the Bow Mines property by InvestNet Inc., primarily to assess known targets at the Boundary Falls showing. A number of high-grade gold samples were returned from the No. 1 vein and Glory Hole showings at the Boundary Falls showing, as well as from the Lower Skomac vein (Caron, 2002). Also during 2002, the property was examined by Echo Bay Minerals Co., who recognized similarities to the Lamfoot district in northern Washington (Rasmussen, 2002).

2005: In January, 2005 a new map-based Mineral Titles system was implemented in British Columbia and the legacy claims held by Mr. Schindler and Mr. Rippon covering parts of the current Boundary Falls property were converted to this new system. New claims were acquired and added to the property, to form the present Boundary Falls property. The adjoining Wild Rose property was optioned by *730821 B.C. Ltd.* in August 2005, with an agreement that, in return for funding the December 2005 exploration program and the associated report, and for paying fees associated with filing assessment work on the Boundary Falls

claims, the company would have a first right of refusal on the Boundary Falls property for a period of 30 days after receiving the technical report that covers the property. In December, 2005, 730821 B.C. Ltd. commissioned an airborne time-domain EM geophysical survey over all of their Greenwood area land holdings, including the Boundary Falls property.

#### **2.4 Summary of 2005 Work Program**

A helicopter-borne time-domain EM (AeroTEM II) and magnetometer survey over the Boundary Falls property during the period December 11-17, 2005. The survey was flown by Aeroquest Limited, as part of a larger (610.1 line-kilometer) survey that covered the adjoining Wild Rose property to the north, as well as the Copper Mountain property to the west and northwest. A total of approximately 120 line-kilometers were flown over the Boundary Falls property, with lines oriented at 072°-252°. The survey was flown with 100 meter spaced lines. Control (tie) lines were flown perpendicular to the survey lines, at 1 kilometre intervals. The program was managed by Donald Rippon, with geological support and interpretation by Linda Caron.

### **3.0 GEOLOGY**

#### **3.1 Regional Geology, Structure and Metallogeny**

The Boundary Falls property is situated within the Boundary District of southern British Columbia and northern Washington State. This district is a highly mineralized area straddling the Canada-USA border and includes the Republic, Belcher, Rossland and Greenwood Mining Camps. It has total gold production exceeding 7.5 million ounces, the majority of which has been from the Republic and Rossland areas (Schroeter et al, 1989; Höy and Dunne, 2001; Lasmanis, 1996). At Republic, about 2.5 million ounces of gold, at an average grade of more than 17 g/t Au, has been produced from epithermal veins (Lasmanis, 1996). In the Rossland Camp, 2.8 million ounces of gold at an average grade of 16 g/t Au was mined from massive pyrrhotite-pyrite-chalcopyrite veins (Höy and Dunne, 2001). Recent exploration in the Boundary District resulted in the discovery of a number of new deposits, from which more than 1 million ounces of gold has been produced to date. At present, there are no active metal mines in the district, although several deposits have been delineated but remain undeveloped.

Portions of the Boundary District have been mapped on a regional basis by numerous people, including Höy and Dunne (1997), Fyles (1984, 1990), Massey (2006), Monger (1967), Little (1957, 1961, 1983), Höy and Jackaman (2005), Church (1986), Parker and Calkins (1964), Muessig (1967) and Cheney and Rasmussen (1996). While different formational names have been used within different parts of the district, the geological setting is similar.

The Boundary District is situated within Quesnellia, a terrane which accreted to North America during the mid-Jurassic. Proterozoic to Paleozoic North American basement rocks are exposed in the Kettle and Okanogan metamorphic core complexes. These core complexes were uplifted during the Eocene, and are separated from the younger overlying rocks by low-angle normal (detachment) faults. The distribution of these younger rocks is largely controlled by a series of faults, including both Jurassic thrust faults (related to the accretionary event), and Tertiary extensional and detachment faults.

The oldest of the accreted rocks in the district are late Paleozoic volcanics and sediments. In the southern and central parts of the district, these rocks are separated into the Knob Hill Complex and overlying Attwood Formation. Rocks of the Knob Hill Complex are of dominantly volcanic affinity, and consist mainly of chert, greenstone and related intrusives, and serpentinite. The serpentinite bodies of the Knob Hill Complex represent part of a disrupted ophiolite suite which have since been structurally emplaced along Jurassic thrust faults. Commonly, these serpentinite bodies have undergone Fe-carbonate alteration to listwanite, as a result of the thrusting event. Serpentinite is also commonly remobilised along later structures. Unconformably overlying the Knob Hill rocks are sediments and volcanics (largely argillite, siltstone, limestone and andesite) of the late Paleozoic Attwood Formation.

The Paleozoic rocks are unconformably overlain by the Triassic Brooklyn Formation, represented largely by limestone, clastic sediments and pyroclastics. Both the skarn deposits and the gold-bearing volcanogenic magnetite-sulfide deposits in the district are hosted within the Triassic rocks. Volcanic rocks overlie the limestone and clastic sediments of the Brooklyn Formation and may be part of the Brooklyn Formation, or may belong to the younger (Jurassic) Rossland Group. In the western part of the district, the Permo-Triassic rocks are undifferentiated at present, and are collectively referred to as the Anarchist Group.

At least four separate intrusive events are known regionally to cut the above sequence, including the Jurassic-aged alkalic intrusives (i.e. Lexington porphyry, Rossland monzonite, Sappho alkalic complex), Triassic microdiorite related to the Brooklyn greenstones, Cretaceous-Jurassic Nelson intrusives, and Eocene Coryell (and Scatter Creek) dykes and stocks.

In the Greenwood area, Fyles (1990) has shown that the pre-Tertiary rocks form a series of thrust slices, which lie above a basement high-grade metamorphic complex. A total of at least five thrust slices are recognized, all dipping gently to the north, and marked in many places by bodies of serpentine. There is a strong spatial association between Jurassic thrust faults and gold mineralization in the area.

Eocene sediments and volcanics unconformably overlie the older rocks. The oldest of the Tertiary rocks are conglomerate and arkosic and tuffaceous sediments of the Eocene Kettle River Formation. These sediments are overlain by andesitic to trachytic lavas of the Eocene Marron Formation, and locally by rhyolite flows and tuffs (such as in the Franklin Camp). The Marron volcanics are in turn unconformably overlain by lahars and volcanics of the Oligocene Klondike Mountain Formation. In the Greenwood area, three Tertiary fault sets are recognized, an early, gently east-dipping set, a second set of low angle west-dipping, listric normal (detachment-type) faults, and a late, steeply dipping, north to northeast trending set of right or left lateral or west side down normal faults (Fyles, 1990). Epithermal gold mineralization, related to Eocene structural activity, has been an important source of gold in the Boundary District.

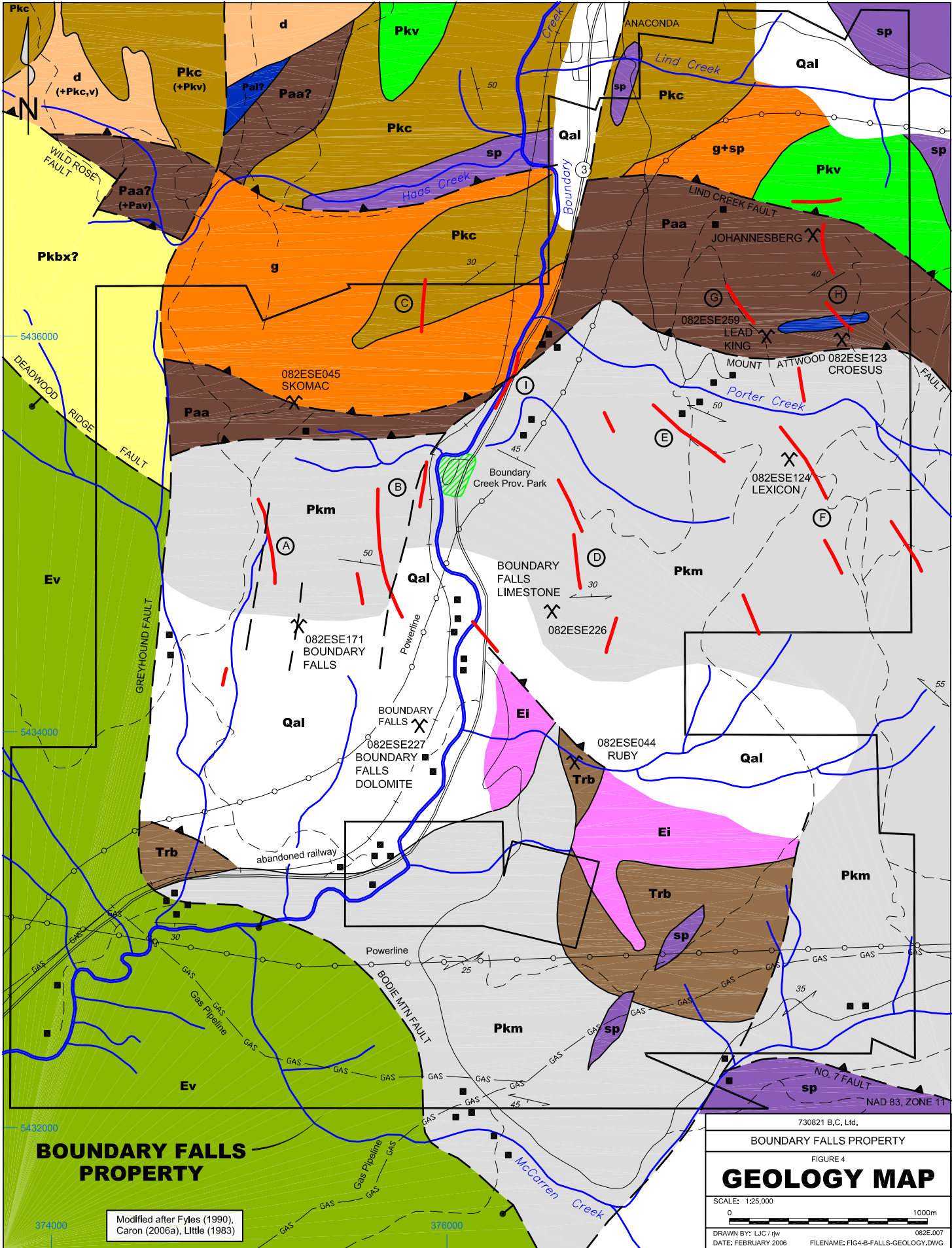
The Tertiary rocks are preserved in the upper plates of low-angle listric normal (detachment-type) faults related to the uplifted metamorphic core complexes, in a series of local, fault-bounded grabens (i.e. Republic graben, Toroda graben) (Cheney and Rasmussen, 1996; Fyles, 1990). In the Greenwood area, a series of these low angle faults occur (from east to west, the Granby River, Thimble Mountain, Snowshoe, Bodie Mountain, Deadwood Ridge, Windfall Creek, and Copper Camp faults). These faults have taken a section of the Brooklyn stratigraphy and sliced it into a series of discrete blocks, each separated by a low angle fault. For example, the Phoenix section is rooted by the Snowshoe fault with about 1 kilometer of offset to the west on the Snowshoe fault. Overlying these rocks were rocks now exposed about 6 kilometers to the west in the Deadwood Camp in a complex zone of faulting. The Deadwood segment was in turn overlain by rocks now situated to the west above the Copper Camp fault. The low angle Tertiary faults have displaced pre-Tertiary mineralization (i.e. the Deadwood camp represents the top of the Phoenix deposit), however current thinking attributes at least some of the gold in the deposits to the low angle Tertiary faults that underlie them.

730821 B.C. Ltd. has acquired the Boundary Falls property primarily as a gold exploration property. Most of the historical production and previous exploration in the Boundary District has been directed at gold or copper-gold mineralization. The important deposits can be broadly classified into six deposit types, including skarn deposits, epithermal and mesothermal veins, Jurassic alkalic intrusives related mineralization, gold mineralization associated with serpentinite, and gold-bearing volcanogenic massive sulfide/oxide mineralization. A more detailed discussion of regional styles of mineralization is contained within a NI 43-101 compliant technical report prepared by the author on the property (Caron, 2006).

### **3.2 Property Geology and Mineralization**

The general geology of the Boundary Falls property is shown in Figure 4. Figure 4 is based primarily on regional mapping by Fyles (1990) and Little (1983). Zones of known mineralization on the property are shown on Figure 4. Percentage of outcrop is quite variable across the property. In some areas, there is extremely good rock exposure, while in other areas a thick layer of glacial till is present and there is little to no outcrop.

The property is situated within a structurally complex area, with several major Jurassic aged thrust faults, and with numerous north, northeast or northwest trending Tertiary faults. As is common in the Greenwood area, serpentinite occurs along many of the fault zones, and particularly along the Jurassic aged thrust faults.



**BOUNDARY FALLS PROPERTY**

Modified after Fyles (1990), Caron (2006a), Little (1983)

730821 B.C. Ltd.	
BOUNDARY FALLS PROPERTY	
FIGURE 4	
<b>GEOLOGY MAP</b>	
SCALE: 1:25,000	
0 1000m	
DRAWN BY: LJC/jhw	082E.007
DATE: FEBRUARY 2006	FILENAME: FIG4-B-FALLS-GEOLOGY.DWG



## LEGEND TO ACCOMPANY FIGURE 4

Qal Quaternary Alluvium

### EOCENE

Ei Coryell Intrusions  
Syenite, diabase and feldspar-hornblende porphyritic dykes and biotite microdiorite stocks.

Ev Marron Formation  
Andesite and trachyte flows.

### CRETACEOUS and/or JURASSIC

gd,d Nelson Plutonic Complex  
Granodiorite and diorite dyke and stocks.

### TRIASSIC BROOKLYN FORMATION

Trb Undifferentiated Brooklyn Formation. Limestone, sediments, and volcanics.

### PERMIAN ATTWOOD FORMATION

Paa Attwood Sediments  
Black siltstone and phyllite, cherty siltstone, minor sandstone, conglomerate and greenstone.

Pal Attwood Limestone  
Massive grey and white limestone, locally well bedded.

### PERMIAN KNOB HILL COMPLEX

Pkc Knob Hill Chert  
Chert plus minor argillite, siliceous greenstone

Pkv Knob Hill Greenstone

Pkbx Knob Hill Chert Breccia and Conglomerate

Pkm Knob Hill Metamorphic Rocks. Chlorite ( $\pm$  biotite) schist, meta-intrusive, quartzite, amphibolite.

g Greenwood Gabbro  
Coarse to fine-grained gabbro laced with feldspathic veinlets (formerly referred to as "Old Diorite").

sp Serpentine and Listwanite  
Dark green to black, strongly magnetic, massive to strongly foliated serpentine.

### FAULT

— — — Steep Dip

— — — Low Angle

— — — Thrust Fault

← — — — Strike / Dip of Foliation

— — — Strike / Dip of Bedding

— — — (A) AeroTEM Conductor

× Minfile Showing

In the northeastern part of the Boundary Falls property, the Lind Creek thrust fault places Knob Hill Complex chert, greenstone and gabbro unconformably above sediments of the Mount Attwood Formation. The Croesus, Johannesburg and Lead King showings occur within these Attwood Formation metasediments in the footwall of the Lind Creek fault. The Mount Attwood thrust fault cuts the Attwood metasediments off to the south, placing them unconformably above Knob Hill Complex metamorphic rocks. The metamorphic rocks consist primarily of amphibolite, quartzite, chlorite +/- biotite schist and meta-intrusive. Bedding is commonly west-northwest trending and moderately north dipping, although locally these rocks are strongly folded.

West of Boundary Creek, a large gabbro intrusive forms the footwall of the Lind Creek fault. The gabbro is part of the Paleozoic Knob Hill Complex, and is known locally as the "Greenwood Gabbro" (formerly the Old Diorite (Massey, 2006; Church, 1982, 1986)). The intrusion is typically medium to coarse grained, mottled green-grey in colour, with numerous criss-crossing felsic veinlets.

In the vicinity of the Skomac showing, two splays of an east-west trending, moderate north dipping thrust fault occur. Both faults are currently interpreted as part of the Mount Attwood fault system. The Skomac veins are situated in a fault bounded block of (primarily) metasedimentary rocks situated between these fault splays. The metasediments which host the Skomac veins were named by Church (1982) as the Skomac Formation, but are now considered to be part of the Paleozoic Attwood Formation. Thinly bedded carbonaceous argillite is common, locally interbedded with cherty sandstone and chert pebble conglomerate. Bedding is typically northwest trending and moderate north dipping,

Two areas of Triassic Brooklyn Formation rocks are known on the property, one in the southeast part of the property near the Ruby showing, and the second in the southwest part of the property, just north of Highway 3. More detailed mapping in the vicinity of the Boundary Falls showing also suggests that rocks in this area may belong to the Brooklyn Formation. This re-interpretation is significant because of the syngenetic, volcanogenic style mineralization that occurs within these rocks, elsewhere in the district.

A series of Cretaceous granodiorite dykes and Tertiary microdiorite and syenite dykes and plugs cut the older rocks. A prominent knoll between the Glory Hole and No. 1 vein at the Boundary Falls showing is one such Tertiary microdiorite plug. Other large Tertiary intrusives occur in the vicinity of the Ruby showing. Tertiary microdiorite and syenite dykes are common throughout the property. These dykes cut the Upper Skomac vein, and are also known to occur in workings at the Boundary Falls showing.

In the western part of the Boundary Falls property, a series of prominent Tertiary faults truncate the Jurassic thrust faults and the older rocks. The Tertiary faults include the generally north trending Greyhound, Bodie Mountain and Deadwood Ridge faults which form the eastern boundary of the Toroda graben. Eocene volcanics occur west of graben boundary.

Seven zones mineralization are known on the Boundary Falls property, as described below and shown in Figure 4. Most of the previous exploration and development on the property has been at the Skomac showing. In addition to these seven areas of known mineralization, there are two known industrial mineral occurrences on the property, the Boundary Falls dolomite occurrence (Minfile 082ESE227) and the Boundary Falls limestone occurrence (082ESE226).

Many of the known showings on the property are structurally controlled Au-Ag (+/- Pb, Zn) bearing quartz veins related to major fault zones. The possibility that the veins at the Boundary Falls showing are part of a footwall zone to a volcanogenic massive sulfide/oxide horizon has also been suggested. Mineralization at the Croesus and Johannesburg showings may be the result of intrusive-related silicification, or it may be

volcanogenic in origin. At the Ruby showing, both skarn and volcanogenic models can be applied. Large slabs of massive barite in the roadcut north of Boundary Falls support the idea of a volcanogenic horizon within the Brooklyn Formation in the southern part of the Boundary Falls property.

**Skomac Zone** Minfile 082ESE045

The majority of work on the Boundary Falls property has been directed at the Upper and Lower Skomac veins, two parallel, northwest trending vein systems. A number of smaller branching veins are also known, as described below. More detailed descriptions of the Skomac veins, including maps and sections, are provided by Paxton (1984, 1986, 1987 and 1994) and by Church (1982).

The Skomac veins are hosted within metasediments (dominantly thinly bedded carbonaceous argillite) in a block bounded by two splays of the Mount Attwood fault. The Upper Skomac vein is situated about 50 meters below the upper contact of the fault block, while the Lower Skomac vein is somewhat closer, perhaps only 20 meters below the upper bounding fault. The veins are emplaced along shear zones on close spaced en-echelon fractures, striking about 310-320°, and dipping from 40-60° to the northeast. The shear zones average 3 to 4 meters in width, within which white quartz veins occur. Individual veins vary from 0.5 to 3 meters in width, averaging about 0.9 meters wide. Vein contacts are generally slickensided, and slip planes within the vein and parallel to the vein walls are also common. Also common are tension fractures in the vein walls, at high angles to the vein. These tension fractures may be the locus for large masses of barren white quartz. Mineralization in the veins consists of wisps and lenses of pyrite and galena, with associated gold and silver mineralization. Lesser sphalerite, chalcopyrite, tetrahedrite and native silver also occur. Argentite and polybasite have also been identified.

The majority of the exploration and production on the Boundary Falls property has been from the Upper Skomac vein. The Main workings (4, 5, 6 and 7 Levels) are developed on this vein, and the vein has been explored underground over a strike length of about 220 meters. Detailed geological plans and sections are included in Paxton (1987), which show the Upper vein in detail. Four known ore shoots occur within the explored strike length. These ore shoots range from 15-35 meters in strike and consists of thickened mineralized quartz lenses, which may reach widths of 6 meters. Church (1982) indicates that the shoots appear to be aligned on gash structures at almost right angles to the main shear direction, striking about 015° and plunging about 40° to the north. The shoots are separated by a combination of pinching, small fault offsets and by crosscutting (post-ore) dykes.

Drilling in 1987 from the 6-2 and 6-3 cross-cuts showed the presence of a mineralized quartz vein below the 6 Level. Results include 0.343 oz/t Au and 3.56 oz/t Ag over 1.9 feet from hole U-87-12. The mineralized vein appears to lie about 30 meters north of the 7 Level drift. Paxton (1994) suggests:

*“It would appear that the drift got off the main vein and that there may be up to 500 feet of unexplored vein in the 7 Level. If this is the case, there is in the author’s opinion a fair chance of an orebody similar in size and grade to the A or AA zones above the 6 Level, being discovered.”*

The Lower Skomac vein is situated to the southeast of the Upper vein. There is limited information available regarding the Lower vein, and no modern exploration or development. Mapping and sampling in the No. 1 and No. 2 adits during 1987 showed that vein was narrow and discontinuous. Samples collected from vein material were consistently low in both gold and silver grade. One sample of mineralized argillite footwall to the vein collected from the No. 2 adit returned 2.4 oz/t Au and 4.93 oz/t Ag over 0.5 feet. (Paxton, 1987).

**Boundary Falls Zone** Minfile 082ESE171

The Boundary Falls showing is located in an open grassy area, approximately 1.2 kilometers south of the Skomac veins. Very little exploration has been done in this area. Numerous quartz veins occur, the best

known of which are the No. 1 and Glory Hole veins. Most of the veins have been tested by small old workings, but none have had any significant exploration or development work. The veins have variable, but generally low, sulfide contents. Sulfides are dominantly pyrite, with lesser galena and sphalerite. All of the veins are steep to vertically dipping, but they exhibit a wide range of strikes. Several of the veins are hosted within a plug of Tertiary diorite while the remainder are in the older metasediments and amphibolite. Fyles (1990) interprets the underlying rocks to be part of the Knob Hill Complex, in the footwall of the Mount Attwood fault (see Figure 4). More detailed mapping suggests that, at least locally, the host rocks are felsic tuff and limestone of the Brooklyn Formation (Caron, 2002; Rasmussen, 2002), a significant difference because of geological similarities to the Lamefoot deposit in Washington. Rasmussen (2002) states that:

*“... gold-rich quartz sulfide veins occur ... in a wishbone-like pattern of limestone outcrops that may represent a north-plunging anticline. Mineralization appears in the hinge area near a Tertiary stock and also near the lower contact of the limestone, where the interior of the anticline consists of fine-grained felsic tuff. This upward sequence, felsic tuff, mineralization and limestone of the Brooklyn Fm. in folded configuration, provides a setting similar to that of the Lamefoot group of gold deposits east of Curlew Lake, WA.*

*...Gold-bearing quartz sulfide veins in the Lamefoot district, WA, only occur in proximity to a sea floor accumulation of massive oxide and sulfide mineralization. By analogy, the Vein #1 (No. 1 and Glory Hole) occurrences on the Bow Mines Property are indicative of a similar horizon, either buried down-dip or removed by erosion from the hinge area.”*

An AeroTEM II EM conductor was defined by the 2005 airborne geophysical survey, in the hinge area postulated by Rasmussen (2002) and is a high priority for follow-up.

The Glory Hole vein is located just east of a large area of open fields, and on the west side of the prominent Tertiary diorite knoll. An open cut/stope and several shallow pits test a series of narrow (10-30 centimeter) irregular sulfidic quartz veins, near the contact of limestone with a mixed sequence of argillite and quartzite. The veins contain variable sulfides, dominantly pyrite (which is locally semi-massive) with lesser sphalerite and galena, and occur within a 2 meter wide, north-trending fault zone. The fault zone has a variable steep east or steep west dip, and is exposed over a strike length of about 60 meters. The fault continues to the north, where it forms a prominent poplar filled gully which is marked by a strong (untested) EM response from the 1978 Pulse EM survey and from the 2005 Aeroquest survey. To the south the zone trends into an area of glacial cover with no rock exposure and is similarly untested.

There is very little information about previous work at the site. Two short (~ 50 meter) drill holes are reported to have tested the zone in 1978, without encouragement. Rock sampling from the zone in the same year is reported to have returned values to 0.41 oz/t Au and 0.93 oz/t Ag over 4 feet (Tully, 1978). Eight rock samples were collected from the Glory Hole zone during 2002. A select grab of semi-massive pyrite (with lesser galena and sphalerite) in quartz from the dump of the open cut returned 69 g/t Au, along with 2335 ppm Pb, 8341 ppm Zn, 100.6 g/t Ag, and anomalous Mo, Co, As, Cd, Bi, Hg. The remaining rock samples collected from the zone returned lower, but anomalous, gold values, to a maximum of 16.7 g/t Au (Caron, 2002; Rasmussen, 2002).

The No. 1 vein is located about 350 meters southeast of the Glory Hole vein and on the east side of the prominent Tertiary diorite knoll. Where exposed, the vein is 0.5-1 meters wide and trends approximately 035°/75° W. A 12-meter deep shaft and a series of old pits expose the vein over a strike length of about 35 meters. Early historical records report that rotten surface ore with high gold assays from this vein was treated in a 2 stamp mill as early as 1894, but that once the ore became “base” the stamp mill was ineffective in recovering the gold.

From 1975-1978, a 63 meter long cross-cut was driven to intersect the No. 1 vein at a vertical depth of about

25 meters below surface. A surface sample over a 2 foot width is reported to have returned 0.114 oz/t Au, while sampling of the vein underground returned values to 0.42 oz/t Au over narrow widths. A single drill hole (circa ~ 1978) is documented from this vein, which intersected a 5' interval averaging 0.23 oz/t Au and 17 oz/t Ag (Tully, 1978).

During 2002, nineteen samples were collected from the No. 1 and other nearby veins, and from altered host rock. A sample of massive brittle white quartz with 20% pyrite from the No. 1 vein, returned 42 g/t Au. Other samples from the No. 1 vein returned lower, but significant gold values, to 15.3 g/t Au. Anomalous gold (to 1.9 g/t Au) occurred in a quartz vein some 300 meters to the northeast of the No. 1 vein (Caron, 2002; Rasmussen, 2002).

**Ruby Zone**      Minfile 082ESE044

The Ruby showing is located on the former Ruby crown grant (L. 1333), east of Highway 3 and north of the McCarren Creek road. A skarn zone occurs near the contact of Brooklyn limestone and sharpstone conglomerate, with Eocene microdiorite. Massive pyrite skarn occurs on the dump of one of the old adits, and pyrite and chalcopryrite occurs as fracture fillings in argillite about 100 meters to the southwest (Haynes, 1991).

The Ruby showing was discovered in 1896, and two tunnels were later driven to test the mineralization. The upper adit is 50 meters long, while the lower adit, some 46 meters below the first, is 18 meters in length. The Minister of Mines Report for 1901 reports that 85 tons was shipped from the Ruby showing in 1901, but the grade is not listed. Galloway (1932) reports that "stringers of spectacular gold quartz were found", although none of the more recent reports on the showing confirm this. Minor work was apparently done in 1941, and then in 1956, a total of 30 tons were shipped at an average grade of 0.6 oz/t Ag and 3.1% Cu.

Very little recent work has been done at the Ruby showing. Limited rock sampling in 1992 returned values to 27.6% Cu, with elevated Zn (to 2605 ppm), Ag (to 227.8 ppm), Au (to 1060 ppb) and Co (to 396 ppm) from quartz/sulfide float boulders. Grab samples from sulfidic limestone in outcrop assayed up to 14.4% Cu (Hayes, 1993). Although the Ruby showing has been interpreted as a skarn showing, it occurs at the same stratigraphic position within the Brooklyn Formation as the Lamfoot VMS/O horizon, and the possibility of syngenetic mineralization should be considered, particularly since this model has been suggested at the Boundary Falls showing nearby.

**Croesus Zone**      Minfile 082ESE123

Massive finely laminated pyrrhotite with pyrite and minor chalcopryrite is exposed in old workings at the Croesus showing, on the former Croesus crown grant (L. 866). The showing is located north of Porter Creek and approximately 1.5 kilometers east of Highway 3, and is hosted in Attwood Formation sediments in the hangingwall of the Mount Attwood fault.

The main Croesus workings consist of a deep open cut/caved adit and a large stripped area that expose a sulfide 'horizon' over a length of about 100 meters. The sulfide zone ranges up to 2 meters in thickness where seen on surface, and up to 3 meters in thickness where intersected by drilling. Locally, clear glassy quartz eyes, to 4 millimeters in diameter, occur within the sulfides, and fragmental textures are locally well developed. The mineralized zone has a strike of approximately 120° and typically a steep north dip (although locally it is folded and deformed). Mineralization occurs within limestone/marble and skarn, and in places, at the contact between the limestone or skarn to the south, and granodiorite or quartz diorite on the north. Bedding in the sediments in the footwall of the sulfide zone is approximately 120°/40° N.

A large granodiorite intrusive cuts the Attwood rocks in the vicinity of the Croesus and Johannesburg showings (described below). The intrusive can be strongly bleached and altered, with stockworking pyrite-pyrrhotite veinlets. Minor quartz veins are associated with the intrusive. These veins locally cross-cut the sulfide horizon. Shear hosted sulfide mineralization also occurs within the intrusive (Caron, 1996).

Chip samples collected from the Croesus showing during 1996 were elevated in copper (to a maximum of 0.8% Cu over 0.5 meters) and in silver (to 13.7 ppm Ag). Gold values were generally low, to a maximum of 72 ppb Au in a sample of altered intrusive (Caron, 1996).

In 1997, Echo Bay Minerals (who held the property under option from Kettle River Resources Ltd.) drilled six diamond drill holes at the Croesus showing. Drilling suggested that the mineralization was associated with intrusive-related silicification, rather than a syngenetic horizon. Drill core samples were analysed for gold and silver only. Hole CR97-2 did intersect almost 3 meters of massive pyrrhotite-pyrite-chalcopyrite within a marble unit, but results were disappointing (to a maximum of 0.006 oz/t Au and 0.08 oz/t Ag). Further drilling failed to intersect the horizon again and the sulfides were interpreted as being an isolated pod. Hole CR97-4 intersected 4.9 meters of hornfelsed siltite with thin quartz-pyrite-chalcopyrite veinlets, which returned an average grade of 0.03 oz/t Au and 0.07 oz/t Ag (Rasmussen, 1997).

#### **Johannesberg Zone**

The Johannesburg workings are located approximately 600 meters northwest of the Croesus showing, on the former Johannesburg crown grant (L. 2072). The showing is hosted within Attwood Formation sediments, within a fault-bounded block between the Lind Creek and Mount Attwood faults. Numerous old pits and open cuts explore a zone of finely lamellar and locally massive pyrite and pyrrhotite in hornfels and in argillite, over an area of about 200 meters by 80 meters. Vitreous quartz eyes are locally present in the sulfides (Caron, 1996).

Sampling during 1996 returned elevated arsenic (to 244 ppm As) and copper (to 1803 ppm Cu) from pyrite-pyrrhotite bearing hornfels. Banded pyrite-pyrrhotite in argillite returned slightly elevated gold (to 145 ppb Au).

A north-northwest trending EM conductor was identified by the 2005 airborne geophysical survey, between the Croesus and Johannesburg showings, which is a high priority for follow-up.

#### **Lead King Zone**      Minfile 082ESE259

The Lead King zone is located about 400 meters northwest of the Croesus showing. A series of old workings test a 3 meter wide vein over a strike length of about 300 meters on the former Lead King crown grant (L. 2071). The workings are located approximately 1 kilometer east of Highway 3 and several hundred meters north of Porter Creek.

The Lead King vein is hosted within Attwood Formation limestone, greenstone and argillite, in the immediate hangingwall of the Mount Attwood fault. In 1904, a total of 336 ton was shipped from the Lead King to the BC Copper Company smelter in Anaconda but the grade of this ore is unknown. In 1950, an additional 8 tons of high grade silver-lead-zinc ore was shipped to the Trail smelter, and returned an average grade of 2.75 oz/t Ag, 7.1% Pb and 7.8% Zn. There is no record of any recent work at the Lead King showing.

**Lexicon Zone**                      Minfile 082ESE124

The former Lexicon crown grant (L. 3303) is situated southwest of the Croesus, and south of Porter Creek in the footwall of the Mount Attwood fault. Very little conclusive can be said about this showing, as it has not been visited by the author and is not described in any of the historic reports, with the exception of Hemsworth (1968). Hemsworth's description is suspect. He appears to be describing the Johannesburg showing, rather than the Lexicon (as he describes the Croesus as being south of the 'Lexicon'). The Minfile position for the Lexicon showing coincides with an EM conductor identified during the 2005 airborne geophysical survey. Ground follow-up to located the Lexicon showing and to assess the significance of the EM conductor is recommended.

Although the Boundary Falls property is of primary interest to 730821 B.C. Ltd. as a gold (+/- silver, copper) exploration property, a brief description of two known industrial mineral occurrences on the property is included below.

**Boundary Falls Dolomite**                      Minfile 082ESE227

A small quarry has been dug on a lens of cream to pale blue coloured fine-grained dolomite, just west of the abandoned CPR railgrade and about 600 meters north of the point where Highway 3 crosses Boundary Creek. The dolomite lens measures about 52 meters x 18 meters, and is hosted within Knob Hill Complex metamorphic rocks. A small quantity of dolomite was apparently produced from the quarry and burnt in a small pot kiln nearby (McCammon, 1960).

**Boundary Falls Limestone**                      Minfile 082ESE226

A lens of bluish-grey, medium grained limestone occurs on the east side of Highway 3 near Boundary Falls, approximately 1.5 kilometers northeast of the point where Highway 3 crosses Boundary Creek. The limestone trends approximately 300°/60°N, measures 100 x 40 meters in size, and hosted within Knob Hill Complex metamorphic rocks. A small quarry and pot kiln were noted by McCammon (1960) at the base of the limestone exposure, on the southwest side.

#### **4.0 GEOPHYSICS**

In December, 2005 730821 B.C. Ltd. commissioned an airborne time-domain EM and magnetometer survey over the northern portion of the Boundary Falls property. The survey was flown by Aeroquest Limited from December 11-17, 2005, as part of a larger (610.1 line-kilometer) survey which covered the adjoining Wild Rose property to the north, as well as the Copper Mountain property to the west-northwest. A total of approximately 120 line-kilometers were flown over the Boundary Falls property, with lines oriented at 072°-252° and flown on a 100 meter spacing. Control (tie) lines were flown perpendicular to the survey lines, at 1 kilometer intervals.

Technical details of the survey are contained in a separate report prepared by Aeroquest, which is has been included as Appendix 2. Results are shown on Figures 5-8 and a listing of AeroTEM II conductors is included as Appendix 3, which gives UTM coordinates, as well as other information, about the specific targets and will be useful in carrying out follow-up programs to test the areas of interest.

The major fault zones on the property (Lind Creek, Mount Attwood, Greyhound and Deadwood Ridge faults) are well defined by the magnetic response, particularly on the tilt derivative of the total magnetic intensity (see Figure 6). The older, Jurassic thrust faults have a pronounced (arcuate) magnetic high signature (due to the presence of serpentinite) while the younger Eocene faults tend to correspond to linear mag low features. In the southern part of the survey, the Greyhound fault corresponds to a very well defined north-trending magnetic low. The mag-low feature splays to the northwest, along the trace of the Deadwood Ridge fault (the eastern boundary of the Toroda graben). North of this splay, the Greyhound fault appears to get caught up in the earlier Mount Attwood fault. A north trending mag low, roughly parallel to the Greyhound fault, occurs some 1300 meters east of the Greyhound fault and corresponds to the position of an unnamed north trending fault, essentially parallel to Boundary Creek and 200-400 meters west of it. Areas of Eocene volcanics and intrusives have magnetic high signatures and are similarly well defined by the aeromagnetics.

Many conductors were identified on the property, as shown on Figure 6. The more significant of these anomalies have been labelled as Anomalies A to I, as shown on Figure 6 and on the property geology map (Figure 4). Ground follow-up to locate and assess these anomalies, based on the geology and any nearby mineralization, is strongly recommended as part of the proposed Phase 1 program (see Section 5). Detailed geological mapping and prospecting should be done in each of these areas, prior to any drill testing.

Anomaly A is a 400 meter long, north-northwest trending, moderately-strong conductor that corresponds to an interpreted fault zone north of the Glory Hole (Boundary Falls) showing. The conductor occurs on the western flank of an irregular magnetic high. The mag high likely corresponds to the Tertiary diorite plug seen on surface. A short conductor is situated approximately 500 meters southwest of the southern end of Anomaly A in an area of heavy drift cover, which may represent an offset portion of the same conductor. At the north end of Anomaly A, an east-northeast trending mag-low zone crosscuts the north-south conductive feature. A thin, moderately conductive zone is coincident with the east-northeast trending mag-low, and parallels bedding in this area. This east-northeast trending conductor coincides with the fold hinge postulated by Rasmussen (2002) and with the prospective VMS/O (Lamefoot) horizon. This area is a high priority for follow-up.

Anomaly B consists of three discrete apparent north-trending conductors associated with a pronounced north-trending mag low feature, roughly parallel to and several hundred meters west of Boundary Creek. The conductors appear to represent a thick, highly conductive east-dipping sedimentary unit, rather than a discrete sulfide source.



Anomaly C is situated in the north-central part of the property, and straddles the boundary with the adjoining Wild Rose property to the north (currently under option to 730821 B.C. Ltd.). The western anomaly has a strike length of about 200 meters, and coincides with a pronounced north trending mag low (which is suggestive of a previously unrecognized north-trending fault zone). The eastern anomaly is of similar length and similarly associated with a zone of low magnetic response (although less pronounced in this case). The western conductor suggests a variably thin to thick, west dipping source, while the eastern conductor is suggestive of a thick source, possibly a conductive sedimentary package, and has similar west dip. The conductors are situated in the footwall of the Lind Creek fault and appear to be truncated by the fault. Regional mapping indicates that this area is underlain by Knob Hill chert, near the contact with a large body of Greenwood Gabbro. Regional bedding is northeast with a moderate to shallow northwest dip. There is no previous exploration known in the immediate vicinity, although several old workings are known to the north, which explore quartz veins on Kettle River Resources' Haas Creek property.

Anomaly D, west of Boundary Creek, is comprised of three discrete, generally north-trending segments, that occur along the eastern flank of a mag-high anomaly, over a distance of about 900 meters. The anomaly is situated within a large unit of Knob Hill Complex metamorphic rocks, and cross-cuts the regional bedding. In general, the conductive response is suggestive of thick, west(?) dipping, weak to moderately conductive source. On Line 21150, the response suggests a thin, weakly conductive, shallow east-northeast dipping source. A short northwest trending conductor, situated about 600 meters west of the southern part of Anomaly D, coincides with the trace of a thrust fault, as shown on Figure 4.

Anomaly E is a 400 meter long, northwest trending, moderate to strong conductor situated south of Porter Creek. It occurs in the footwall of the Mount Attwood fault, in an area regionally mapped as being underlain by Knob Hill Complex metamorphic rocks. Anomaly E is coincident with a northwest trending mag-low anomaly. The response is suggestive of a relatively thick source, with a moderate northeast dip, parallel to regional bedding in the area.

A number of northwest trending conductors were identified in the east-central part of the property, and are collectively referred to as Anomaly F. This area is again underlain by Knob Hill Complex metamorphic rocks. The Lexicon showing is believed to occur along the most northern segment of Anomaly F, although it has not been located in the field. For the most part, the anomalies are relatively broad responses that are interpreted to be derived from thick, weakly conductive, east-dipping sources. The southeastern most segment is, however, a thin, moderately conductive feature which is semi-coincident with a magnetic high. It has an interpreted east dip, and likely comes to surface. Prospecting and geological mapping should be done to assess the significance of this target.

Anomalies G and H occur in the Attwood Formation sediments in the hangingwall of the Mount Attwood fault, in the vicinity of the Croesus, Johannesburg and Lead King showings. Anomaly G is interpreted to represent a thick, weakly conductive, northwest-trending, northeast dipping conductor and may be caused by conductive sediments in the area. Anomaly H is more interesting. It is a 300 meter long north-trending, moderately strong conductor with an associated mag-high. The lack of migration suggests that the source is not a conductive sediment and makes this a high priority target for follow-up. A short east-west trending conductor at the north end of Anomaly H, is suggestive of a thick, north dipping source and likely corresponds to a conductive portion of the Lind Creek fault.

Anomaly I is a short, northeast trending, thin, weakly conductive feature that underlies Highway 3 and parallels Boundary Creek. Because of the proximity to the old railway and to the highway and powerline,

there is a strong likelihood that this anomaly is a result of cultural sources. That said, the anomaly does coincide with the offset portion of the Mount Attwood fault, along an interpreted fault zone that follows Boundary Creek and shouldn't be completely dismissed.

A number of other smaller and weaker conductors were discovered during the AeroTEM II survey which are not specifically mentioned above, but which may be significant. A re-interpretation of the EM data is recommended, after the Phase 1 ground follow-up program described in Section 5 of this report has been completed. Information gained during the Phase 1 program will allow the significance of these weaker conductors to be better understood.

**5.0 RECOMMENDATIONS**

A two phase work program is recommended for the Boundary Falls property, with a total budget of \$280,000. Phase 1 (\$160,000) consists of further ground work, including geological mapping and prospecting in the vicinity of the AeroTEM II conductors, and in other areas of interest defined by previous work programs on the property. Drilling and possibly excavator trenching should then be done to test these targets. Phase 2 (\$120,000) consists of additional diamond drilling, and is contingent on the results of the Phase 1 program.

**Phase 1 (\$160,000)**

In light of new metallogenic models being successfully applied in the Boundary District, detailed prospecting, geological mapping and sampling is recommended to re-assess all of the known showings on the property and to locate any other areas of mineralization that may be present on former crown grants within the property boundaries. Prospecting and detailed geological mapping is also recommended in the vicinity of the AeroTEM II conductors identified by the 2005 airborne survey, to assess these targets and prioritize them for trench or drill testing.

A program of diamond drilling is then recommended to test the high-priority AeroTEM conductors. Specific drill hole locations will be identified during the Phase 1 program. A total of approximately 1,000 meters of drilling is proposed. Depending on the results of prospecting and mapping, excavator trenching may also be advisable to follow-up zones of interest. Phase 1 is expected to take 2 to 3 months to complete, depending on permitting and on staffing and equipment availability.

**Phase 1 Budget:**

Prospecting, geological mapping, rock sampling	\$ 40,000
Drilling 1,000 m NQ, including logging, sampling & analytical costs	\$ 100,000
Reporting	\$ 10,000
Project Management	<u>\$ 10,000</u>
<b>TOTAL PHASE 1:</b>	<b>\$160,000</b>

**Phase 2 (\$120,000)**

The Phase 2 program consists of additional diamond drilling, to further test targets identified during Phase 1. A total of approximately 1,000 meters of drilling is proposed for Phase 2. This program is contingent on the results of Phase 1.

**Phase 2 Budget:**

Drilling 1,000 m NQ, including logging, sampling & analytical costs	\$100,000
Reporting	\$ 10,000
Project Management	<u>\$ 10,000</u>
<b>TOTAL PHASE 2:</b>	<b>\$120,000</b>

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**7.0 STATEMENT OF QUALIFICATIONS & SIGNATURE PAGE**

I, Linda J. Caron, certify that:

1. I am an independent consulting geologist residing at 717 75<sup>th</sup> Ave (Box 2493), Grand Forks, B.C., V0H 1H0
2. I obtained a B.A.Sc. in Geological Engineering (Honours) in the Mineral Exploration Option, from the University of British Columbia (1985) and graduated with an M.Sc. in Geology and Geophysics from the University of Calgary (1988).
3. I have practised my profession since 1987 and have worked in the mineral exploration industry since 1980. Since 1989, I have done extensive geological work in Southern B.C. and particularly in the Greenwood - Grand Forks area, both as an employee of various exploration companies and as an independent consultant.
4. I am a member in good standing with the Association of Professional Engineers and Geoscientists of B.C. with professional engineer status.
5. I have no direct or indirect interest in the property described herein, or in the securities of 730821 B.C. Ltd. or of Genesis Gold Corp. nor do I expect to receive any. I am a Qualified Person and independent of both 730821 B.C. Ltd. and Genesis Gold Corp., as defined by National Instrument 43-101.

Dated at Grand Forks, B.C., this 29<sup>th</sup> day of March, 2006.

---

Linda Caron, M.Sc., P. Eng.



**APPENDIX 1**

**Cost Statement**



## COST STATEMENT

### Labour

Linda Caron, Geologist	5 days @ \$535/day	\$ 2,675.00
------------------------	--------------------	-------------

Survey layout, data analysis, report preparation

Donald Rippon, Project Manager		<del>\$ 1,500.00</del>
		\$ 4,175.00

### Geophysics

Aeroquest Limited, Milton, Ontario		\$15,049.80
------------------------------------	--	-------------

120 line kilometers helicopter-borne magnetic and AeroTEM II,  
including maps and reporting

### Expenses

Helicopter fuel		\$ 700.00
Helicopter pad rental		120.00
Travel expenses - Project Manager		1,000.00
Meals and Accommodation		796.00
Vehicle rental		200.00
Report costs - drafting, copying, binding, plotting		<u>325.00</u>
		\$ 3,141.00

<b>TOTAL:</b>		<b>\$22,365.80</b>
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**APPENDIX 2**

**Report on a Helicopter-Borne AeroTEM Electromagnetic & Magnetometer Survey  
by Aeroquest Limited**

**Report on a Helicopter-Borne  
AeroTEM II Electromagnetic  
& Magnetometer Survey**



**Aeroquest Job # 05051  
Wild Rose Project  
Copper Camp Project**  
Greenwood Area, British Columbia  
53C/07

for

**730821 B.C. Ltd.**

Suite 522 – 34a  
2755 Lougheed Highway  
Port Coquitlam, B.C.  
Canada V3B 5Y9

by

** AEROQUEST LIMITED**

4-845 Main Street East  
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[www.aeroquestsurveys.com](http://www.aeroquestsurveys.com)  
January, 2006

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## **2. INTRODUCTION**

This report describes a helicopter-borne geophysical survey carried out on behalf of 730821 B.C. Ltd. on the Copper Camp and Wild Rose Project areas, Greenwood area, southern British Columbia.

The principal geophysical sensor is Aeroquest's exclusive AeroTEM II helicopter time domain electromagnetic (HTEM) system which is employed in conjunction with a high-sensitivity cesium vapour magnetometer. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer.

The total coverage over the two survey blocks is 610.1 line-km. The coverage on the Wild Rose survey is 306.4 line-km and the Copper Camp survey is 303.7 line-km. The survey flying described in this report took place between December 11 and December 17, 2005.

The survey was successful in mapping the conductive and magnetic properties of the survey areas and in identifying prospective targets for follow-up.

## **3. SURVEY AREA**

The project areas are situated in southern British Columbia, approximately 75 km southeast of Penticton and 75 km west of Trail not far north of the U.S. border ( Figure 1). The field crew was based in Greenwood for the duration of the survey. The properties are both accessible by all-weather roads.

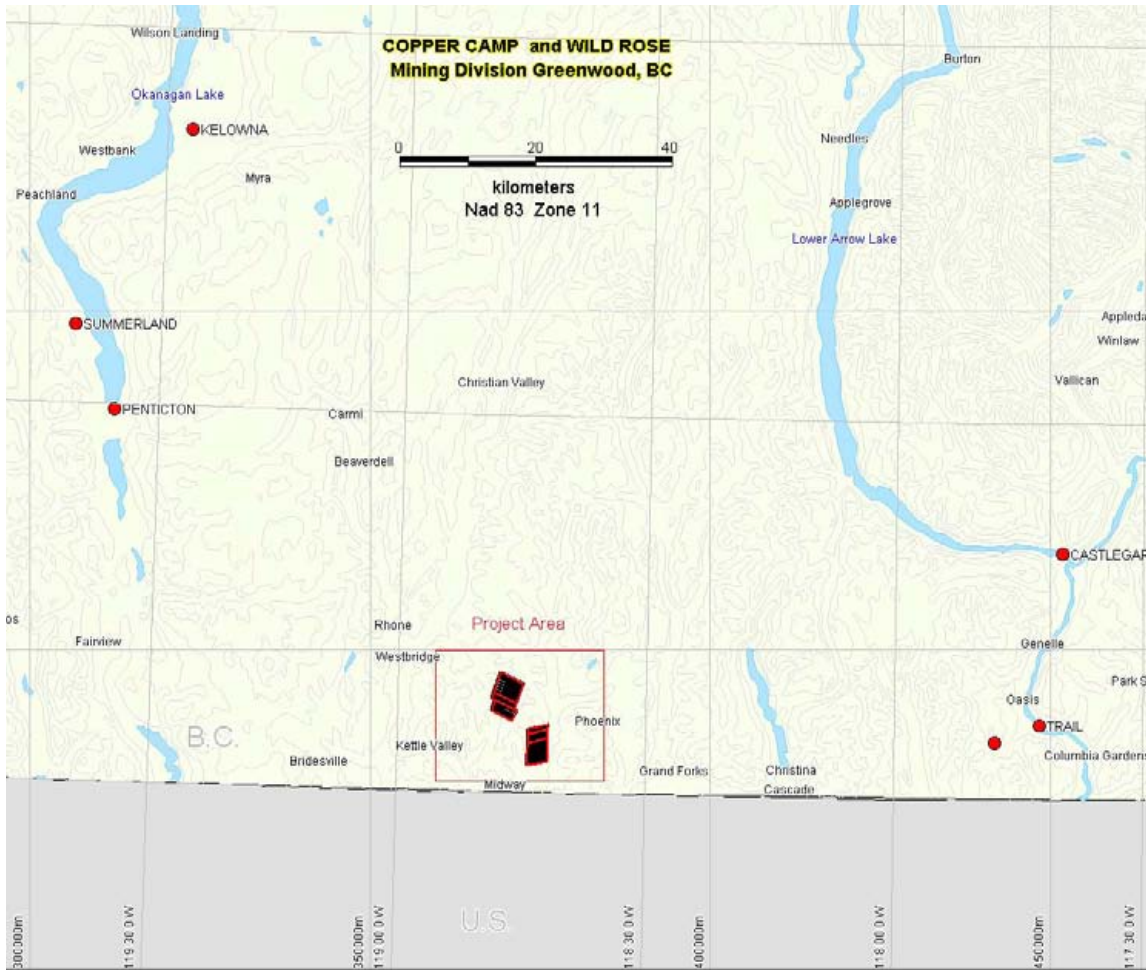


Figure 1. Regional location map of the project area.

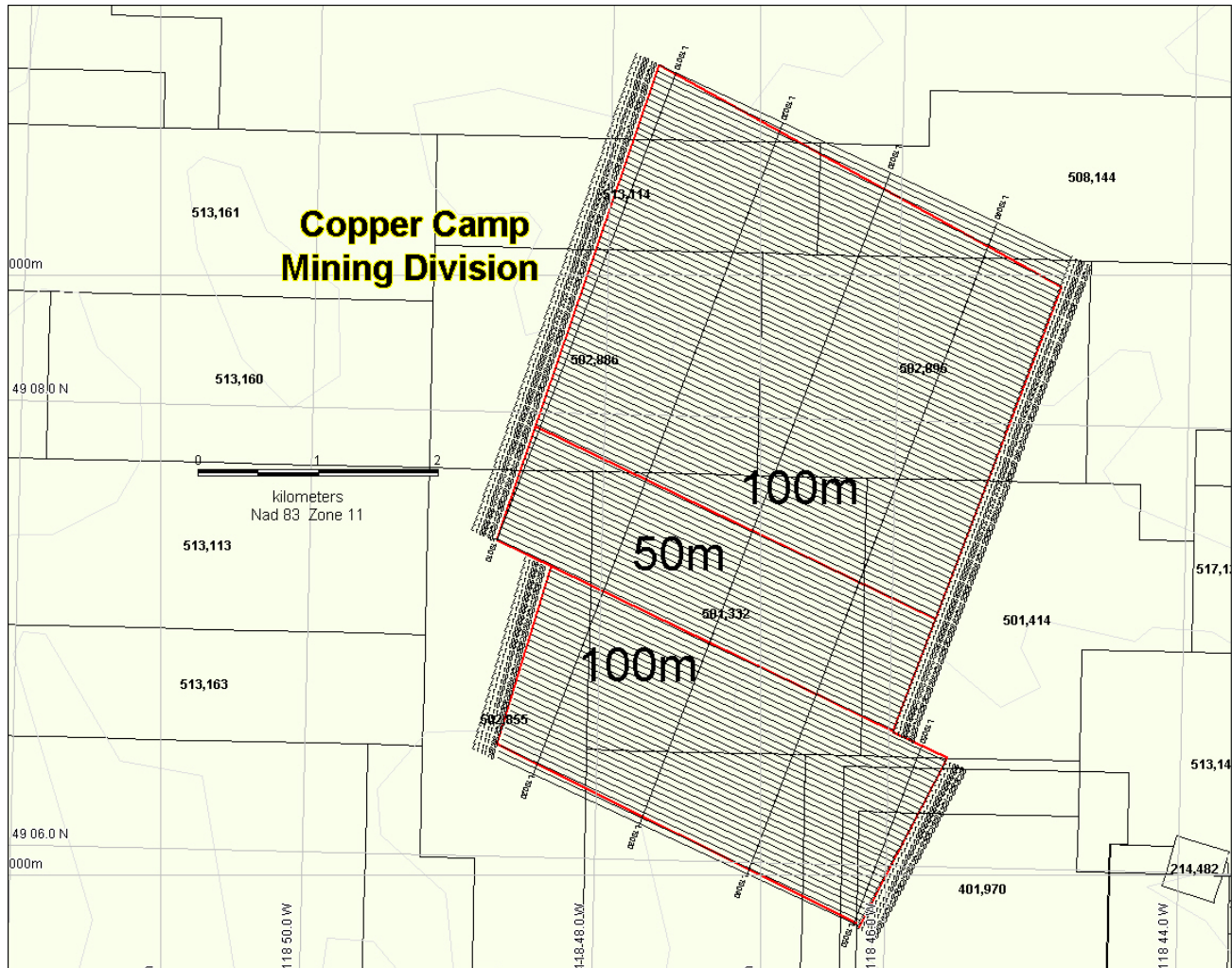


Figure 2. Copper Camp Project Flight Path and Mining Claims.



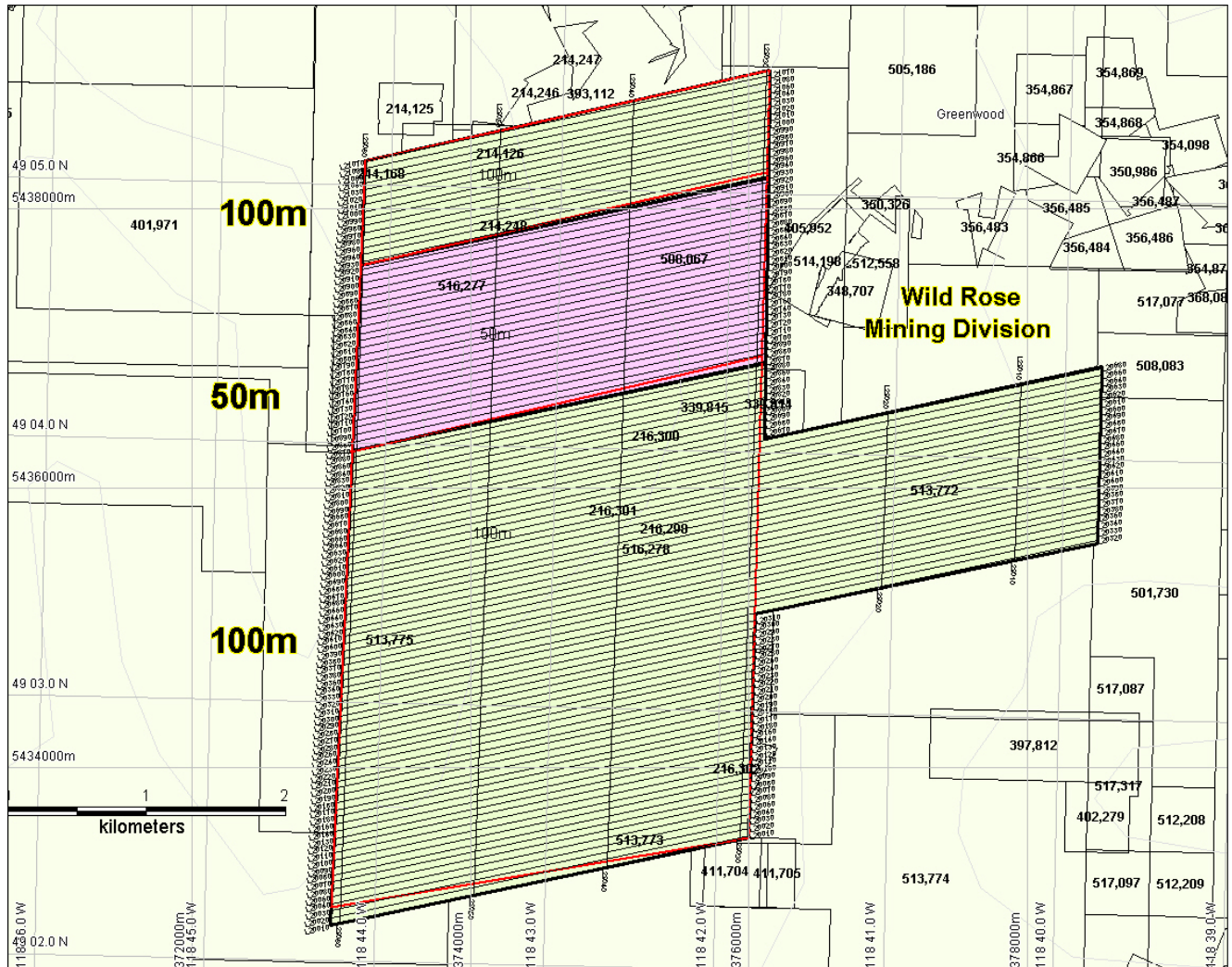


Figure 3. Wildrose Project Flight Path and Mining Claims.

## 4. LOCAL GEOLOGY & PREVIOUS WORK

### 4.1. Property

The Wild Rose property is centred approximately 3 km southwest of Greenwood, B.C. and is accessible by road. The Copper Camp property is centred approximately 9 km northwest of Greenwood. Access to the properties is good by all-weather road.

### 4.2. Ownership

The Wild Rose property is comprised of 2 Mineral Titles map cell claims totaling 783 hectares, that were acquired by 730821 B.C. Ltd in 2005 under option from VentureWorks Inc. The Copper Camp property is also owned by 730821 B.C. Ltd.

### 4.3. Geology

The properties are situated in the Boundary District of southern B.C. and northern Washington State. The area has a long history of exploration supported by numerous deposits and mines.

The area sits within the Quesnellia terrane, which accreted onto North America in the mid-Jurassic. The oldest rocks of this terrane are late Paleozoic volcanics and sediments. Common lithologies of this terrane are chert, greenstone and related intrusives, serpentinite, argillite, siltstone, limestone and andesite. Unconformably overlying these older units are rocks of the Triassic Brooklyn Formation. Common lithologies are limestone, clastic sediments and pyroclastics.

Both the skarn deposits and the gold-bearing volcanogenic magnetite-sulphide deposits in this area are hosted within the Triassic rocks.

Four known intrusive events have cut the sequence – Jurassic alkalic intrusions, Triassic microdiorite, Cretaceous-Jurassic intrusives, and Eocene dykes and stocks.

In the Greenwood area, the pre-Tertiary rocks form a series of thrust slices which dip gently to the north and which often have associated serpentinite. There is a strong spatial association between these thrust faults and gold mineralization in this area. In addition, three Tertiary fault sets are recognized – an early shallow easterly dipping set, a shallow westerly dipping set, and a late steep dipping north to northeast trending set. Epithermal gold mineralization related to Eocene structural activity is important in the area.

## 5. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarized in the following table:

Survey Block	Line Spacing (m)	Line direction	Total Coverage (line-km)	Dates Flown
Wild Rose	50/100	72°	306.4	December 11 to 17, 2005
Copper Camp	50/100	115°	303.7	December 11 to 17, 2005

The survey coverage was calculated by adding up the along-line distance of the survey lines and control (tie) lines as presented in the final Geosoft database. The survey was flown with a line spacing of 100 m with infill coverage at 50 m over portions of the survey areas. The control (tie) lines were flown perpendicular to the survey lines with a spacing of 1 km. The nominal EM bird terrain clearance is 30m (98 ft), but can be higher in more rugged terrain. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 17 metres above the EM bird and 19 metres below the helicopter.

The nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 38,400 samples per second and is processed to generate final data at 10 samples per second.

The 10 samples per second translates to a geophysical reading about every 1.5 to 2.5 metres along the flight path.

### **5.1. Navigation**

Navigation is carried out using a GPS receiver, an AGNAV2 system for navigation control, and an RMS DGR-33 data acquisition system which records the GPS coordinates. The x-y-z position of the aircraft, as reported by the GPS, is recorded at 0.2 second intervals. The system has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

### **5.2. System Drift**

Unlike frequency domain electromagnetic systems, the AeroTEM© II system has negligible drift due to thermal expansion. The operator is responsible for ensuring the instrument is properly warmed up prior to departure and that the instruments are operated properly throughout the flight. The operator maintains a detailed flight log during the survey noting the times of the flight and any unusual geophysical or topographic features. Each flight included at least two high elevation 'background' checks. During the high elevation checks, an internal 5 second wide calibration pulse in all EM channels was generated in order to ensure that the gain of the system remained constant and within specifications.

### **5.3. Field QA/QC Procedures**

On return of the pilot and operator to the base, usually after each flight, the ProtoDAS streaming EM data and the RMS data are carried on removable hard drives and FlashCards, respectively and transferred to the data processing work station. At the end of each day, the base station magnetometer data on FlashCard is retrieved from the base station unit.

Data verification and quality control includes a comparison of the acquired GPS data with the flight plan; verification and conversion of the RMS data to an ASCII format XYZ data file; verification of the base station magnetometer data and conversion to ASCII format XYZ data; and loading, processing and conversion of the streaming EM data from the removable hard drive. All data is then merged to an ASCII XYZ format file which is then imported to an Oasis database for further QA/QC and for the production of preliminary EM, magnetic contour, and flight path maps.

Survey lines which show excessive deviation from the intended flight path are re-flown. Any line or portion of a line on which the data quality did not meet the contract specification was noted and re-flown.

## **6. AIRCRAFT AND EQUIPMENT**

### **6.1. Aircraft**

A Eurocopter (Aerospatiale) AS350-B2 "A-Star" helicopter - registration C-GPTY was used as the survey platform. The helicopter was owned and operated by Hi-Wood Helicopters Limited based in Okotoks, Alberta. The survey aircraft was flown at a nominal terrain clearance of 220 ft (70 m).



Figure 4. Survey helicopter C-GPTY.

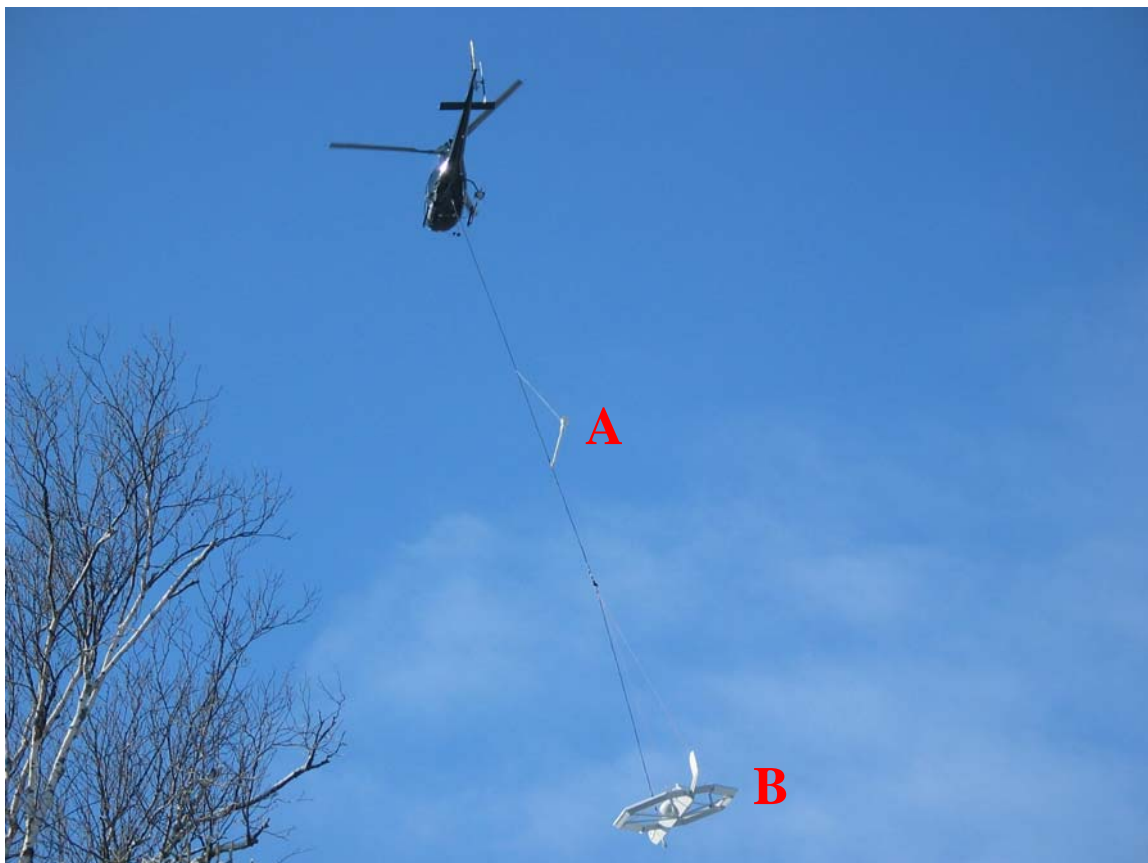


Figure 5. The magnetometer bird (A) and AeroTEM II EM bird (B)

## 6.2. Magnetometer

The Aeroquest airborne survey system employs the Geometrics G-823A cesium vapour magnetometer sensor. The sensor is positioned within a two metre towed bird airfoil attached to the main tow line, 17 metres above the EM bird. The sensitivity of the magnetometer is 0.001 nanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer sensor is 47 m. The magnetic data are sampled at 10Hz by the RMS DGR-33.

## 6.3. Electromagnetic System

The electromagnetic system is an Aeroquest AeroTEM II time domain towed-bird system. The current AeroTEM II transmitter dipole moment is 38.8 kNIA. The AeroTEM II bird is towed 36 m (125 ft) below the helicopter. More technical details of the system may be found in Appendix 4.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1.1 ms and a base frequency of 150 Hz. The current alternates polarity every on-time pulse. During every Tx on-off cycle (300 per second), 128 contiguous channels of raw x and z component (and a transmitter current monitor, itx) of the received waveform are measured. Each channel width is 26.04 microseconds starting at the beginning of the transmitter pulse. This 128 channel data is referred to as the raw streaming data. The AeroTEM II system has two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system which records the raw streaming data.



Figure 6. AeroTEM II Instrument Rack

## 6.4. AERODAS Acquisition System

The 128 channels of raw streaming data are recorded by the AeroDAS acquisition system onto a removable hard drive. The streaming data are processed post-survey to yield 33 stacked and binned on-time and off-time channels at a 10 Hz sample rate. The timing of the final processed EM channels is described in the following table:

Channel:	Start Gate	End Gate	Start (us)	Stop (us)	Mid (us)	Width (us)
1 ON	25	25	651.0	677.0	664.0	26.0
2 ON	26	26	677.0	703.1	690.1	26.0
3 ON	27	27	703.1	729.1	716.1	26.0
4 ON	28	28	729.1	755.2	742.1	26.0
5 ON	29	29	755.2	781.2	768.2	26.0
6 ON	30	30	781.2	807.2	794.2	26.0
7 ON	31	31	807.2	833.3	820.3	26.0
8 ON	32	32	833.3	859.3	846.3	26.0
9 ON	33	33	859.3	885.4	872.3	26.0
10 ON	34	34	885.4	911.4	898.4	26.0
11 ON	35	35	911.4	937.4	924.4	26.0
12 ON	36	36	937.4	963.5	950.5	26.0
13 ON	37	37	963.5	989.5	976.5	26.0
14 ON	38	38	989.5	1015.6	1002.5	26.0
15 ON	39	39	1015.6	1041.6	1028.6	26.0
16 ON	40	40	1041.6	1067.6	1054.6	26.0
0 OFF	44	44	1145.8	1171.8	1158.8	26.0
1 OFF	45	45	1171.8	1197.8	1184.8	26.0
2 OFF	46	46	1197.8	1223.9	1210.9	26.0
3 OFF	47	47	1223.9	1249.9	1236.9	26.0
4 OFF	48	48	1249.9	1276.0	1262.9	26.0
5 OFF	49	49	1276.0	1302.0	1289.0	26.0
6 OFF	50	50	1302.0	1328.0	1315.0	26.0
7 OFF	51	51	1328.0	1354.1	1341.1	26.0
8 OFF	52	52	1354.1	1380.1	1367.1	26.0
9 OFF	53	53	1380.1	1406.2	1393.1	26.0
10 OFF	54	54	1406.2	1432.2	1419.2	26.0
11 OFF	55	55	1432.2	1458.2	1445.2	26.0
12 OFF	56	56	1458.2	1484.3	1471.3	26.0
13 OFF	57	60	1484.3	1588.4	1536.4	104.2
14 OFF	61	68	1588.4	1796.8	1692.6	208.3
15 OFF	69	84	1796.8	2213.4	2005.1	416.6
16 OFF	85	110	2213.4	2890.4	2551.9	677.0

### 6.5. RMS DGR-33 Acquisition System

In addition to the magnetics, altimeter and position data, six channels of real time processed off-time EM decay in the Z direction and one in the X direction are recorded by the RMS DGR-33 acquisition system at 10 samples per second and plotted real-time on the analogue chart recorder. These channels are derived by a binning, stacking and filtering procedure on the raw streaming data. The primary use of the RMS EM data (Z1 to Z6, X1) is to provide for real-time QA/QC on board the aircraft.

The channel window timing of the RMS DGR-33 6 channel system is described in the table below.

RMS Channel	Start time (microsec)	End time (microsec)	Width (microsec)	Streaming Channels
Z1, X1	1269.8	1322.8	52.9	48-50
Z2	1322.8	1455.0	132.2	50-54
Z3	1428.6	1587.3	158.7	54-59
Z4	1587.3	1746.0	158.7	60-65
Z5	1746.0	2063.5	317.5	66-77
Z6	2063.5	2698.4	634.9	78-101

### 6.6. Magnetometer Base Station

The base magnetometer was a GEM Systems GSM-19 overhauser magnetometer with a built in GPS receiver and external GPS antenna. Data logging and UTC time synchronisation was carried out within the magnetometer, with the GPS providing the timing signal. That data logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.001 nT. The sensor was placed on a tripod in an area free of cultural noise sources. A continuously updated display of the base station values was available for viewing and regularly monitored to ensure acceptable data quality and diurnal levels.

### 6.7. Radar Altimeter

A Terra TRA 3500/TRI-30 radar altimeter is used to record terrain clearance. The antenna was mounted on the outside of the helicopter beneath the cockpit. The recorded data represents the height of the antenna, i.e. helicopter, above the ground. The Terra altimeter has an altitude accuracy of +/- 1.5 metres.

### 6.8. Video Tracking and Recording System

A high resolution colour VHS/8mm video camera is used to record the helicopter ground flight path along the survey lines. The video is digitally annotated with GPS position and time and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.

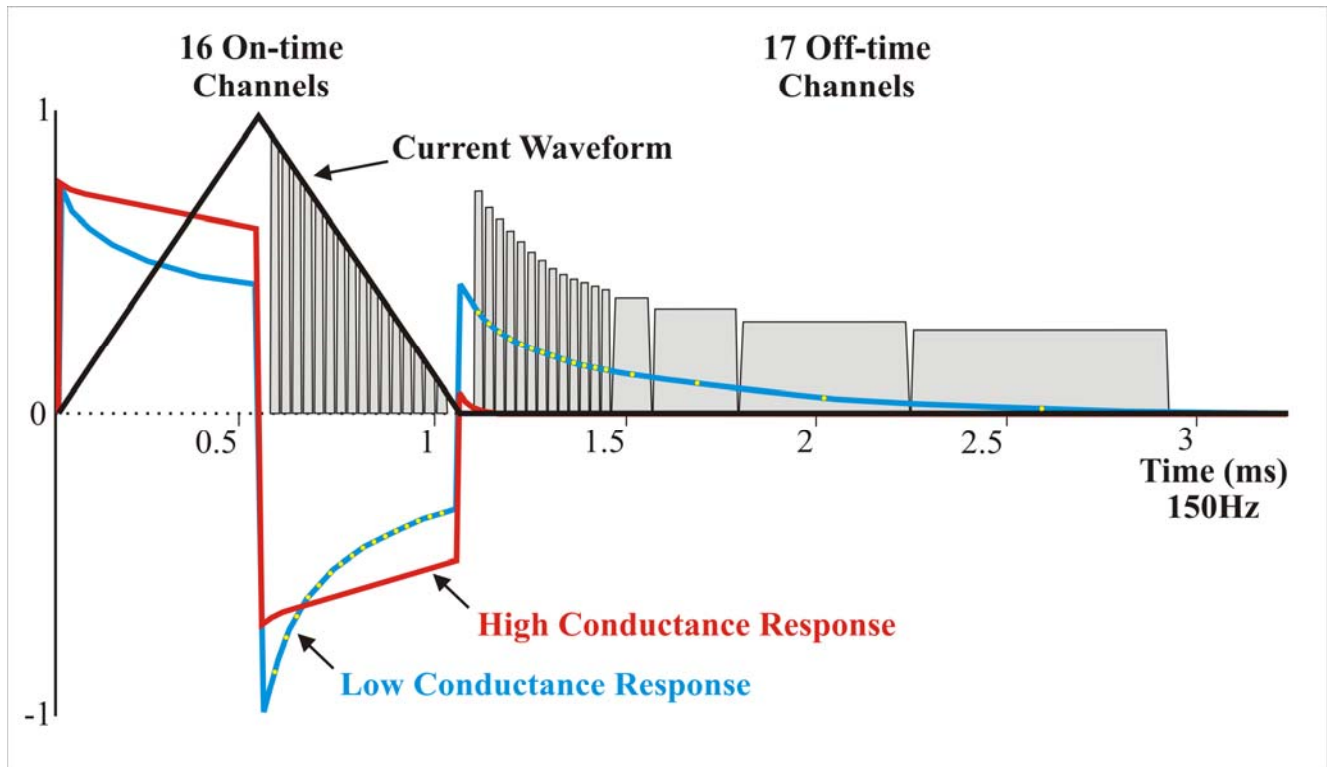


Figure 7. Schematic of Transmitter and Receiver waveforms

### 6.9. GPS Navigation System

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on the east and west coasts, collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 18N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 second intervals.



## 6.10. Digital Acquisition System

The AeroTEM© received waveform sampled during on and off-time at 128 channels per decay, 300 times per second, was logged by the proprietary AeroDAS data acquisition system. The channel sampling commences at the start of the Tx cycle and the width of each channel is 26.04 microseconds. The streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

The RMS Instruments DGR33A data acquisition system was used to collect and record the analogue data stream, i.e. the positional and secondary geophysical data, including processed 6 channel EM, magnetics, radar altimeter, GPS position, and time. The data was recorded on 128Mb capacity FlashCard. The RMS output was also directed to a thermal chart recorder.

## 7. PERSONNEL

The following AeroQuest personnel were involved in the project:

- Manager of Operations: Bert Simon
- Field Data Processors: Nick Venter
- Field Operators: Markus Watson
- Data Interpretation and Reporting: Jonathan Rudd, Marion Bishop

The survey pilots Paul Kendall and R. Fashano were employed directly by the helicopter operator – HiWood Helicopters.

## 8. DELIVERABLES

The report includes a set of four geophysical maps for each of the two survey areas plotted at a scale of 1:10,000.

- Total Magnetic Intensity (TMI) with line contours and EM anomalies
- Tilt Derivative of TMI with line contours and EM anomalies
- AeroTEM Off-Time Profiles (Z1-Z16) with EM anomalies
- Off-time Channel Z1 with line contours and EM anomalies

The coordinate/projection system for the maps is NAD83 Universal Transverse Mercator Zone 11 (for Canada; Central America; Mexico; USA (ex Hawaii Aleutian Islands)). For reference, the latitude and longitude in NAD83 are also noted on the maps. All the maps show flight path trace, skeletal topography, and conductor picks represented by an anomaly symbol classified according to calculated off-time conductance. The anomaly symbol is accompanied by postings denoting the calculated on-time conductance, a thick or thin classification and an anomaly identifier label. The anomaly symbol legend is given in the margin of the maps. The magnetic field data is presented as superimposed line contours with a minimum contour interval of 25 nT. Bold contour lines are separated by 500 nT.

The geophysical profile data is archived digitally in a Geosoft GDB binary format database. The database contains the processed streaming data, the RMS data, the base station data, and all processed channels. A description of the contents of the individual channels in the database can be found in Appendix 3. A copy of this digital data is archived at the Aeroquest head office in Milton.

## **9. DATA PROCESSING AND PRESENTATION**

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software, and Geosoft Oasis montaj software. Maps were generated using Hewlett Packard ink-jet plotters.

### **9.1. Base Map**

The geophysical maps accompanying this report are based on positioning in the datum of NAD83. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 15. A summary of the map datum and projection specifications are as follows:

- Ellipse: GRS 1980
- Ellipse major axis: 6378137m eccentricity: 0.081819191
- Datum: North American 1983 - Canada Mean
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 11 (Central Meridian 117°W)
- Central Scale Factor: 0.9996
- False Easting, Northing: 500,000m, 0m

### **9.2. Flight Path & Terrain Clearance**

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter. The raw Digital Terrain Model (DTM) was derived by taking the GPS survey elevation and subtracting the radar altimeter terrain clearance values. The calculated topography elevation values are relative and are not tied in to surveyed geodetic heights.

Each flight included at least two high elevation 'background' checks. During the high elevation checks, an internal 5 second wide calibration pulse in all EM channels was generated in order to ensure that the gain of the system remained constant and within specifications.

### **9.3. Electromagnetic Data**

The raw streaming data, sampled at a rate of 38,400 Hz (128 channels, 300 times per second) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Limited. Processing involves the compensation of the X and Z component data for the primary field waveform.

Coefficients for this compensation for the system transient are determined and applied to the stream data. The stream data are then pre-filtered, stacked, binned to the 33 on and off-time channels and checked for the effectiveness of the compensation and stacking processes. The stacked data is then filtered, leveled and split up into the individual line segments. Further base level adjustments may be carried out at this stage.

The final field processing step was to merge the processed EM data with the other data sets into a Geosoft GDB file. The EM fiducial is used to synchronize the two datasets. The processed channels are labeled in the "streaming" database as Zon1 to Zon16, Zoff0 to Zoff16, Xon1 to Xon16, and Xoff0 to Xoff16.

The filtering of the stacked data is designed to remove or minimize high frequency noise that can not be sourced from the geology. Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the on-time Z channel responses correlated with X channel responses. The auto-picked anomalies were reviewed and edited by a geophysicist on a line by line basis to discriminate between thin and thick conductor types. Anomaly picks locations were migrated and removed as required. This process ensures the optimal representation of the conductor centres on the maps.

At each conductor pick, estimates of the on-time and off-time conductance have been generated based on a horizontal plate source model for those data points along the line where the response amplitude is sufficient to yield an acceptable estimate. Some of the EM anomaly picks do not display a tau value; this is due to the inability to properly define the decay of the conductor where the amplitude of the signal response is low. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. Each symbol is also given an identification letter label, unique to each flight line. Conductor picks that did not yield an acceptable estimate of off-time conductance were classified as a low conductance source.

#### **9.4. Magnetic Data**

Prior to any leveling the magnetic data was subjected to a lag correction of -0.1 seconds and a spike removal filter. The filtered aeromagnetic data were then corrected for diurnal variations using the magnetic base station and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied. The corrected profile data were interpolated on to a grid using a random grid technique with a grid cell size of 18 metres. The final leveled grid provided the basis for threading the presented contours which have a minimum contour interval of 25 nT.

In order to map shallow basement response a 'tilt' derivative product was calculated from the total magnetic intensity (TMI) grid. The Tilt Derivative (TDR) of the TMI enhances small wavelength magnetic features which define shallow basement structures as well as potential mineral exploration targets. The TILT derivative can be thought of as a combination of the first vertical derivative and the total horizontal derivative of the total magnetic intensity.

Mathematically, the TDR is defined as:

$$\text{TDR} = \arctan (\text{VDR}/\text{THDR})$$

where VDR and THDR are first vertical and total horizontal derivatives, respectively, of the total magnetic intensity T.

$$\begin{aligned} \text{VDR} &= dT/dz \\ \text{THDR} &= \text{sqrt} \left( (dT/dx)^2 + (dT/dy)^2 \right) \end{aligned}$$

The calculated TDR grid is presented a colour image. Line contours are also overlain which have a minimum contour interval of 0.2 radians.

## 10. RESULTS and INTERPRETATION

The survey was successful in mapping the magnetic and conductive properties of the geology throughout the survey area. Below is a brief interpretation of the results. For a more detailed interpretation please contact Aeroquest Limited.

### 10.1. Magnetic Response

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. This data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration. The sources for anomalous magnetic responses are generally thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic

With a couple of minor exceptions, the magnetic data appear to be reflecting primarily induced magnetization with little evidence of remanent magnetization. In intrusive environments, remanent magnetization is more commonly seen in areas where there has been rapid quenching, so an apparent lack of remanent magnetization in the survey areas suggests slower cooling of any magmas.

The higher frequency (and gain-controlled) magnetic response visible in the 'tilt derivative' map identifies the more subtle linear magnetic highs and offsets which may be important to an understanding of the structural history of the areas. The tilt derivative map also better defines the width and magnetic features throughout the survey areas.  
minerals such as pyrrhotite.

#### *Wild Rose Property*

The magnetic data ranges from lows of approximately 55,500 nT to highs of over 56,900 nT with an average background of 56,000 nT. The magnetic pattern is dominated by a broad arcuate high which extends across the central portion of the survey area. There is no dominant trend, which is consistent with the complex geologic history of the area. When interpreting the magnetic response, it is important to consider that magnetic can be generated through several metamorphic or epithermal processes, so may not simply be reflecting lithologic variations in the survey area.

#### *Copper Camp Property*

The magnetic data ranges from a low of approximately 55,460 nT to over 57,000 nT with an average background of 55,950 nT. The property has a dominant north northeast trend, enforced by several

linear highs. However, the area can, in general, be described as having a complex pattern. Several linear trends defined by truncation or offset of magnetic sources appear to define structural features.

## 10.2. EM Anomalies – General Comments

The EM anomalies on the maps are classified by conductance (as described earlier in the report) and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the x-component response. For a vertically orientated thick source (say, greater than 10m), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response (Figure 9). Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source (Figure 10). In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the ‘thin’ pick will be located over the edge of the source, whereas the ‘thick’ pick will fall over the downdip ‘heart’ of the anomaly.

All cases should be considered when analyzing the interpreted picks and prioritizing for follow-up. Specific anomalous responses which remain as high priority should be subjected to numerical modeling prior to drill testing to determine the dip, depth and probable geometry of the source.

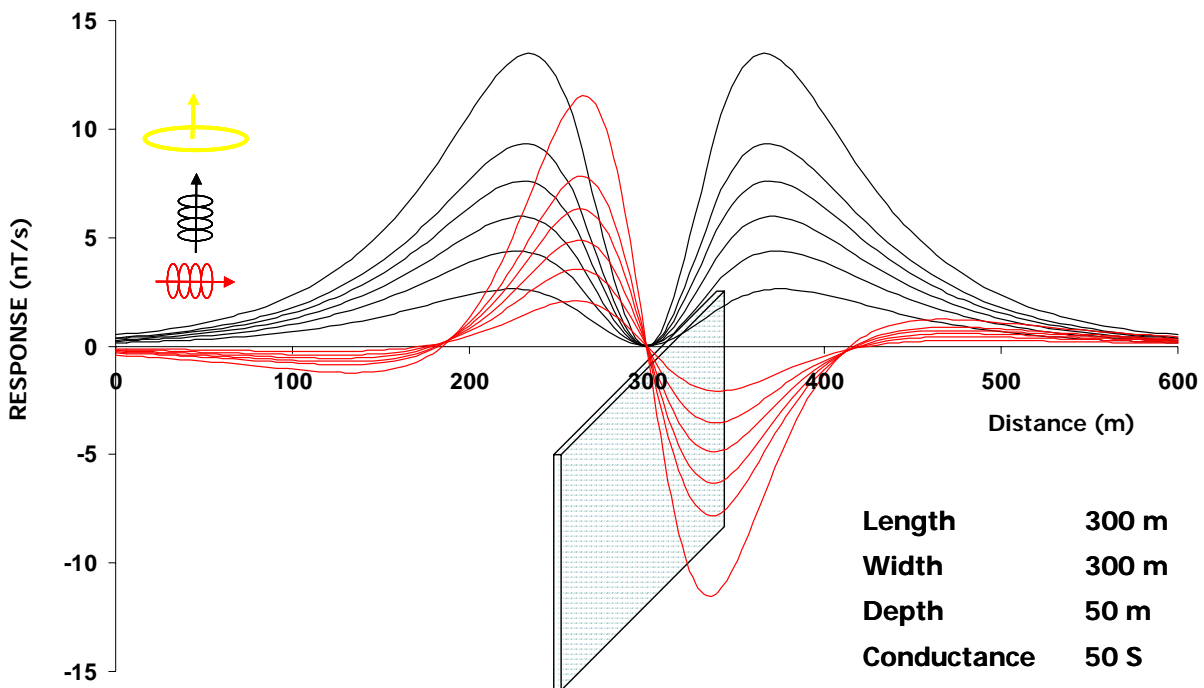


Figure 8. AeroTEM response to a ‘thin’ vertical conductor.

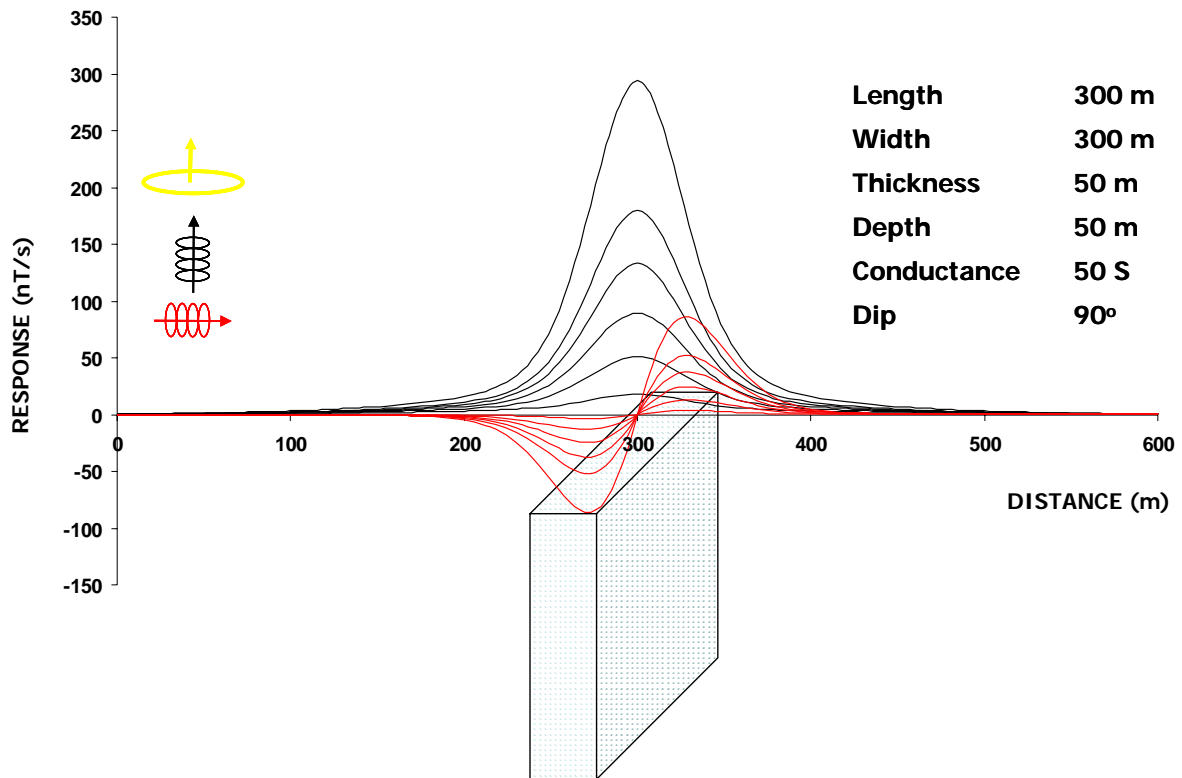


Figure 9. AeroTEM response for a 'thick' vertical conductor.

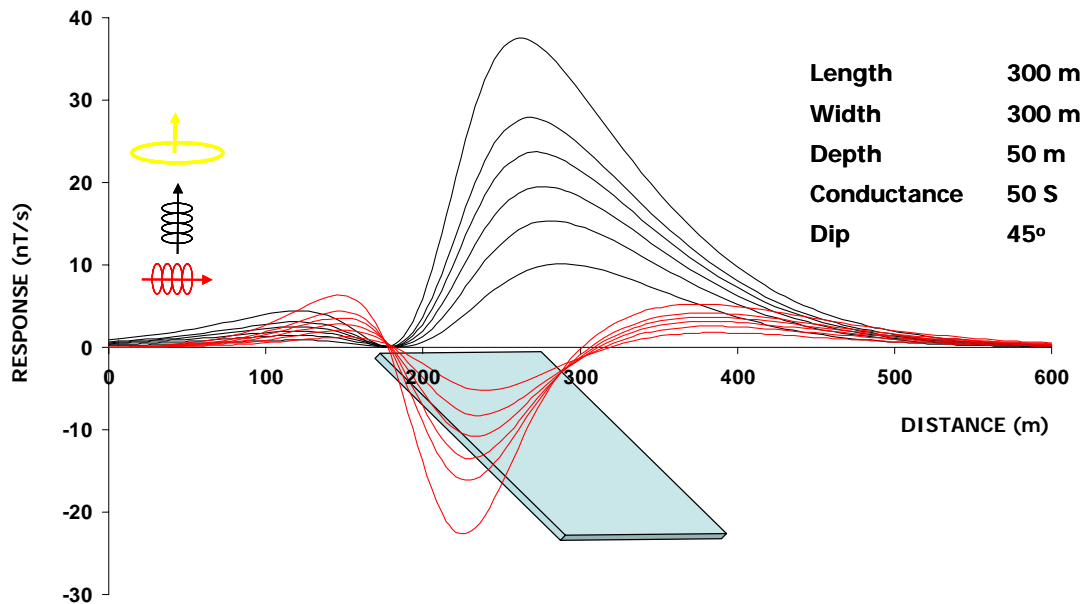


Figure 10. AeroTEM response over a 'thick' dipping conductor.

### 10.3. EM Anomalies -Interpretation

There are several anomalous responses in both survey areas which have been confirmed to have cultural sources. Most of these are caused by power transmission lines and are readily identified from the power line monitor (60Hz) in the data sets. In the vicinity of these sources, the noise levels in the data are increased and do, to a certain extent, degrade the interpretability of the survey. However, where valid bedrock responses exist, even in close proximity to the cultural sources, they can be interpreted with good confidence.

Both survey areas have areas of elevated EM response which can be attributed to a more conductive geology but on a broad scale. In these areas, no EM anomalies have been indicated. The EM anomaly symbols are reserved for more discrete (spatially confined) sources which are more typical of economic mineralization. Refer to the Channel Zoff1 maps to identify the broader areas of higher conductivity.

#### *Wild Rose Survey*

There are several strong conductive trends in the south central and eastern portion of the survey area. These responses are typical of thick sequences of conductive sediments and, as such, may not be considered as high priority for follow-up. The more discrete zones such as at the central and eastern portions of lines 10260, 10270 and 10280 may be considered as higher priority because they are less likely to be sourced as sediments. There are several isolated conductive sources in the south eastern portion of the survey.

#### *Copper Camp Survey*

The Copper Camp project area yielded fewer discrete conductive sources than the Wild Rose survey. Most of the sources are broad, and are identified readily on the Zoff 1 map. Where these broad anomalies produce a 'sharper', more discrete response, an anomaly symbol has been placed. One interesting discrete source feature occurs near the southern margin of the survey where a weakly conductive source extends from anomaly 10570A to 10580A. The source appears to be a thin source with a shallow easterly dip.

All of the EM anomalies should be reviewed in conjunction with any available geological or geochemical information. Prioritization should be based on all available information. The highest priority EM targets should then be subjected to quantitative modeling prior to any drill testing to determine the optimal collar location, azimuth and dip for testing of the source.

Respectfully submitted,



Jonathan Rudd, P.Eng.  
Manager of Processing and Interpretation  
Aeroquest Limited  
January, 2006

## APPENDIX 1 – PROJECT CORNER COORDINATES

The two project areas are rectangular in shape as defined in the following: All coordinates are given in UTM Zone 11 – NAD83.

### **Copper Camp**

#### *Survey Boundary*

369159.4 5446764.6  
372596.7 5445174.4  
371114.8 5441238.4  
371575.2 5441019.6  
370789.8 5439574.7  
367801.0 5440974.4  
368248.6 5442582.9  
367802.0 5442798.0

### **Wild Rose**

#### *Survey Boundary*

373250.0 5438350.0  
376150.0 5439000.0  
376112.9 5436369.3  
378531.8 5436876.2  
378498.8 5435606.8  
376045.8 5435095.8  
376000.0 5433500.0  
372998.1 5432870.2



## APPENDIX 2 - Description of Database Fields

The GDB file is a Geosoft binary database. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

Databases - CopperCamp\_AeroTEM\_05051\_final.gdb  
 - WildRose\_AeroTEM\_05051\_final.gdb:

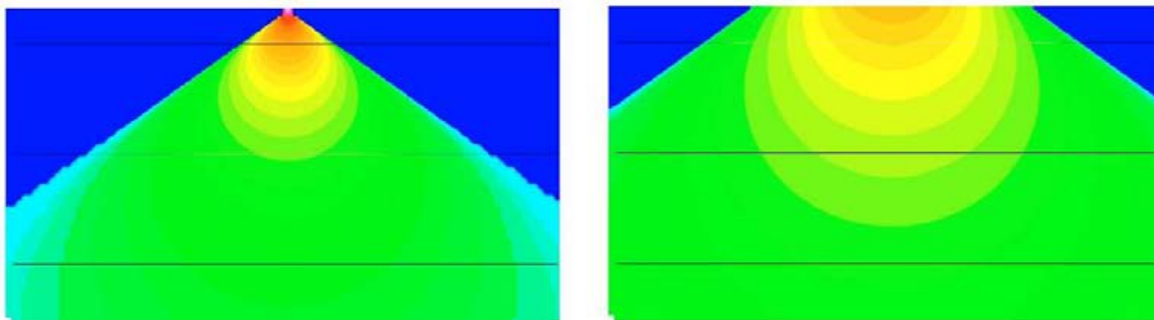
Column	Units	Description
emfid		AERODAS Fiducial
utctime	hh:mm:ss.ss	UTC time
x	m	UTM Easting (NAD83, zone 15N)
y	m	UTM Northing (NAD83, zone 15N)
bheight	m	Terrain clearance of EM bird
dtmf	m	Digital Terrain Model
magf	nT	Total magnetic intensity
basemagf	nT	Base station total magnetic intensity
ZOn	nT/s	Processed Streaming On-Time Z component Channels 1-16
ZOff	nT/s	Processed Streaming Off-Time Z component Channels 0-16
XOn	nT/s	Processed Streaming On-Time X component Channels 1-16
XOff	nT/s	Processed Streaming Off-Time X component Channels 0-16
pwrline		Powerline monitor (60 Hz)
Anom_labels		Letter label of conductor pick
Anom_type		Letter label of conductor thickness (N or K)
Tau	$\mu$ s	Off-time decay constant
Cond	S	Off-time Conductance based on 100m by 100m plate
grade		Classification from 1-7 based on conductance of conductor pick

## APPENDIX 3: AEROTEM DESIGN CONSIDERATIONS

Helicopter-borne EM systems offer an advantage that cannot be matched from a fixed-wing platform. The ability to fly at slower speed and collect data with high spatial resolution, and with great accuracy, means the helicopter EM systems provide more detail than any other EM configuration, airborne or ground-based. Spatial resolution is especially important in areas of complex geology and in the search for discrete conductors. With the advent of helicopter-borne high-moment time domain EM systems the fixed wing platforms are losing their *only* advantage – depth penetration.

### **Advantage 1 – Spatial Resolution**

The AeroTEM system is specifically designed to have a small footprint. This is accomplished through the use of concentric transmitter-receiver coils and a relatively small diameter transmitter coil (5 m). The result is a highly focused exploration footprint, which allows for more accurate “mapping” of discrete conductors. Consider the transmitter primary field images shown in Figure 1, for AeroTEM versus a fixed-wing transmitter.

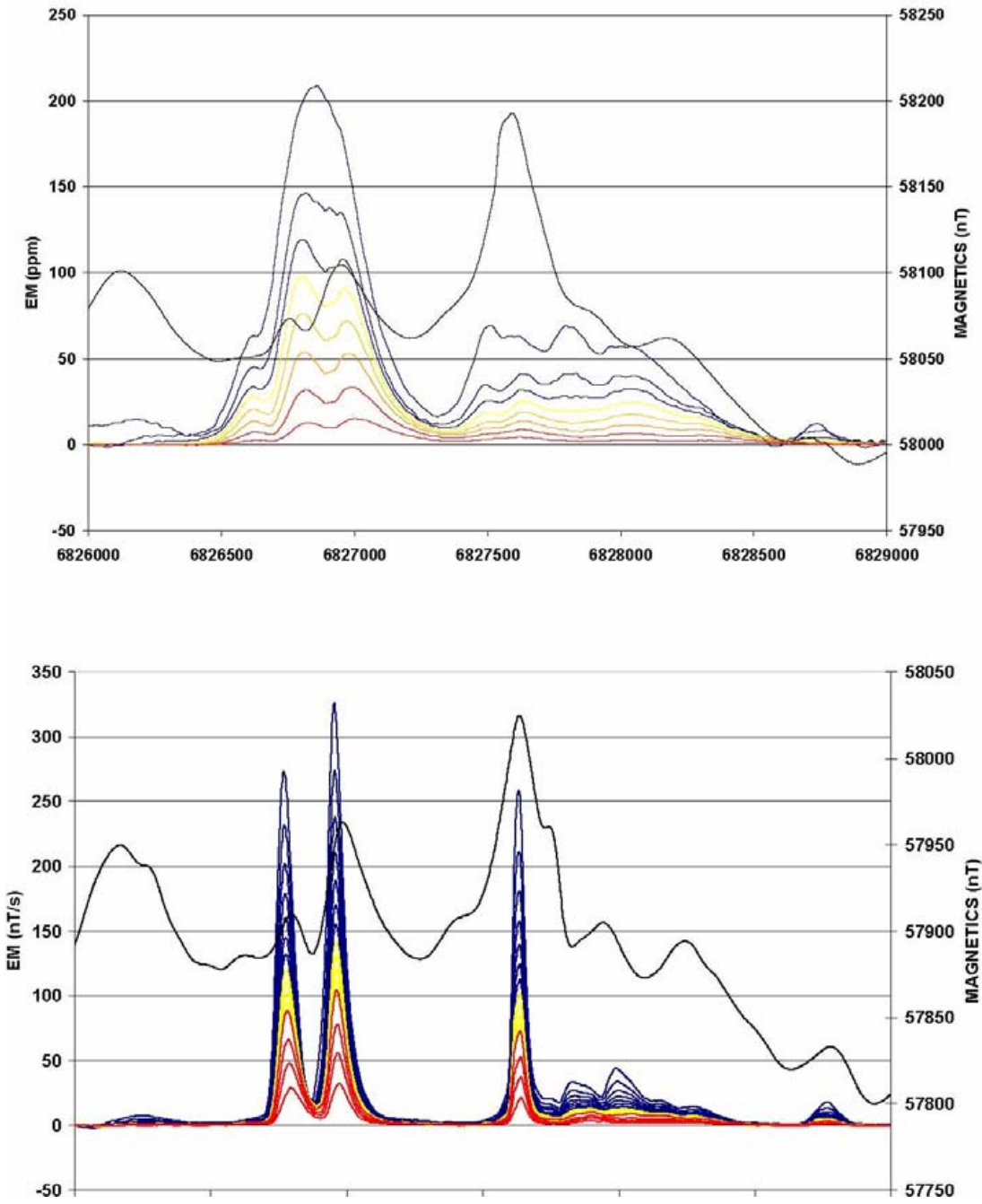


The footprint of AeroTEM at the earth's surface is roughly 50m on either side of transmitter

The footprint of a fixed-wing system is roughly 150 m on either side of the transmitter

**Figure 1. A comparison of the footprint between AeroTEM and a fixed-wing system, highlights the greater resolution that is achievable with a transmitter located closer to the earth's surface. The AeroTEM footprint is one third that of a fixed-wing system and is symmetric, while the fixed-wing system has even lower spatial resolution along the flight line because of the separated transmitter and receiver configuration.**

At first glance one may want to believe that a transmitter footprint that is distributed more evenly over a larger area is of benefit in mineral exploration. In fact, the opposite is true; by energizing a larger surface area, the ability to energize and detect discrete conductors is reduced. Consider, for example, a comparison between AeroTEM and a fixed-wing system over the Mesamax Deposit (1,450,000 tonnes of 2.1% Ni, 2.7% Cu, 5.2 g/t Pt/Pd). In a test survey over three flight lines spaced 100 m apart, AeroTEM detected the Deposit on all three flight lines. The fixed-wing system detected the Deposit only on two flight lines. In exploration programs that seek to expand the flight line spacing in an effort to reduce the cost of the airborne survey, discrete conductors such as the Mesamax Deposit can go undetected. The argument often put forward in favor of using fixed-wing systems is that because of their larger footprint, the flight line spacing can indeed be widened. Many fixed-wing surveys are flown at 200 m or 400 m. Much of the survey work performed by Aeroquest has been to survey in areas that were previously flown at these wider line spacings. One of the reasons for AeroTEM's impressive discovery record has been the strategy of flying closely spaced lines and finding all the discrete near-surface conductors. These higher resolution surveys are being flown within existing mining camps, areas that improve the chances of discovery.



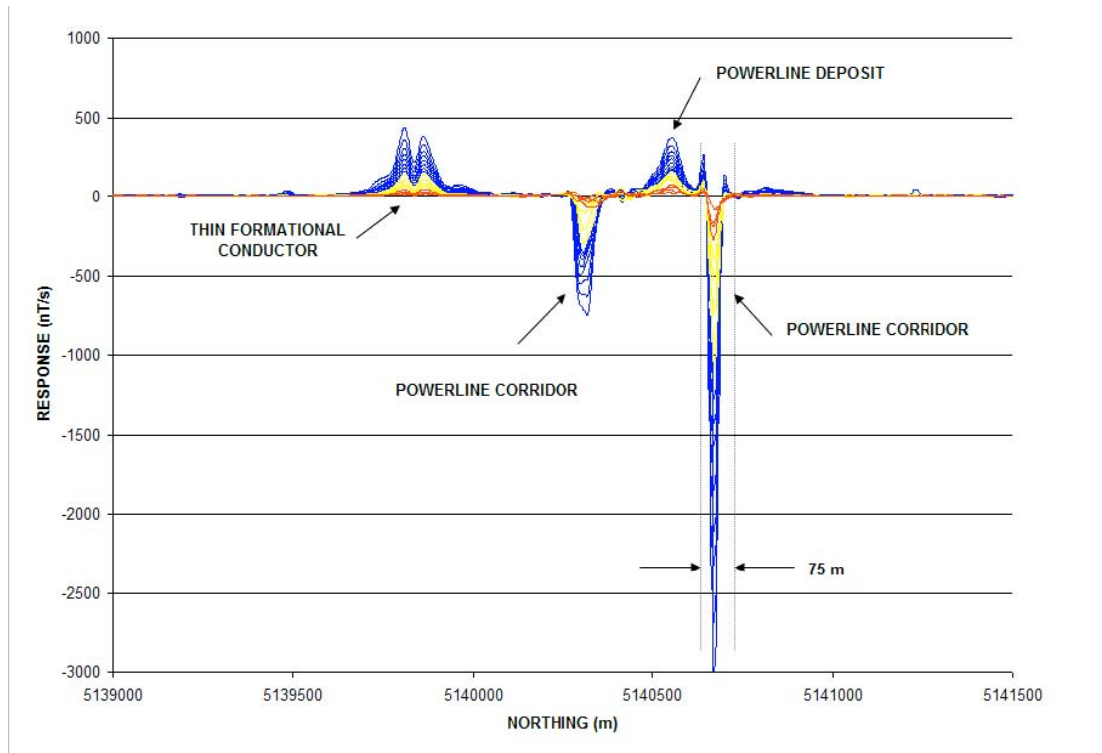
**Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.**

The small footprint of AeroTEM combined with the high signal to noise ratio (S/N) makes the system more suitable to surveying in areas where local infrastructure produces electromagnetic noise, such as power lines and railways. In 2002

Aeroquest flew four exploration properties in the Sudbury Basin that were under option by FNX Mining Company Inc. from Inco Limited. One such property, the Victoria Property, contained three major power line corridors.

The resulting AeroTEM survey identified all the known zones of Ni-Cu-PGE mineralization, and detected a response between two of the major power line corridors but in an area of favorable geology. Three boreholes were drilled to test the anomaly, and all three intersected sulphide. The third borehole encountered 1.3% Ni, 6.7% Cu, and 13.3 g/t TPMs over 42.3 ft. The mineralization was subsequently named the Powerline Deposit.

The success of AeroTEM in Sudbury highlights the advantage of having a system with a small footprint, but also one with a high S/N. This latter advantage is achieved through a combination of a high-moment (high signal) transmitter and a rigid geometry (low noise). Figure 3 shows the Powerline Deposit response and the response from the power line corridor at full scale. The width of power line response is less than 75 m.



**Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish this response from that of two closely spaced conductors is by interpreting the X-axis coil response.**

**Advantage 2 – Conductance Discrimination**

The AeroTEM system features full waveform recording and as such is able to measure the on-time response due to high conductance targets. Due to the processing method (primary field removal), there is attenuation of the response with increasing conductance, but the AeroTEM on-time measurement is still superior to systems that rely on lower base frequencies to detect high conductance targets, but do not measure in the on-time.

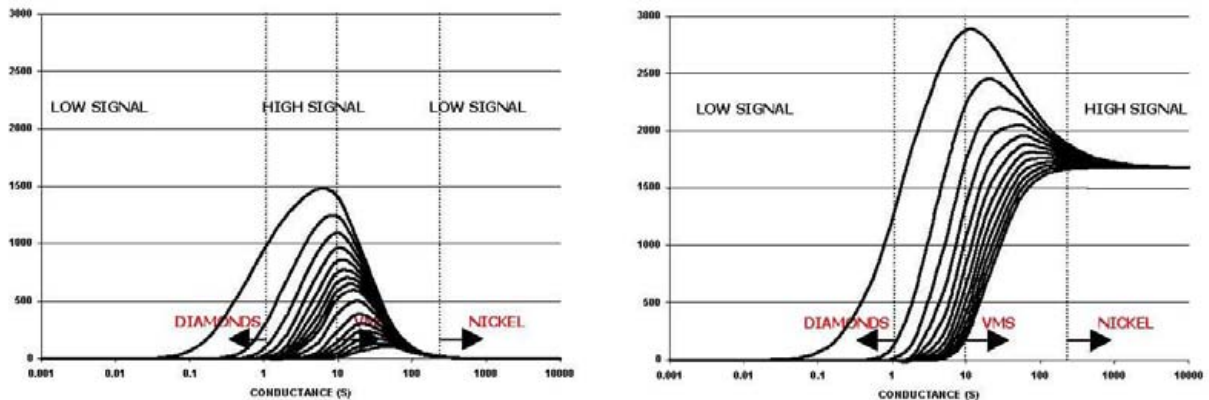
The peak response of a conductive target to an EM system is a function of the target conductance and the EM system base frequency. For time domain EM systems that measure only in the off-time, there is a drop in the peak response of a target as the base frequency is lowered for all conductance values below the peak system response. For example, the AeroTEM peak response occurs for a 10 S conductor in the early off-time and 100 S in the late off-time for a 150 Hz base frequency. Because base frequency and conductance form a linear relationship when considering the peak response of any EM system, a drop in base frequency of 50% will double the conductance at which an EM system shows its peak response. If

the base frequency were lowered from 150 Hz to 30 Hz there would be a fivefold increase in conductance at which the peak response of an EM occurred.

However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with low base frequencies are not suitable for general exploration unless the target conductance is more than 100 S, or the target is covered by conductive overburden.

Despite the excellent progress that has been made in modeling software over the past two decades, there has been little work done on determining the optimum form of an EM system for mineral exploration. For example, the optimum configuration in terms of geometry, base frequency and so remain unknown. Many geophysicists would argue that there is no single ideal configuration, and that each system has its advantages and disadvantages. We disagree.

When it comes to detecting and discriminating high-conductance targets, it is necessary to measure the pure inphase response of the target conductor. This measurement requires that the measured primary field from the transmitter be subtracted from the total measured response such that the secondary field from the target conductor can be determined. Because this secondary field is in-phase with the transmitter primary field, it must be made while the transmitter is turned on and the transmitter current is changing. The transmitted primary field is several orders of magnitude larger than the secondary field. AeroTEM uses a bucking coil to reduce the primary field at the receiver coils. The only practical way of removing the primary field is to maintain a rigid geometry between the transmitter, bucking and receiver coils. This is the main design consideration of the AeroTEM airframe and it is the only time domain airborne system to have this configuration.



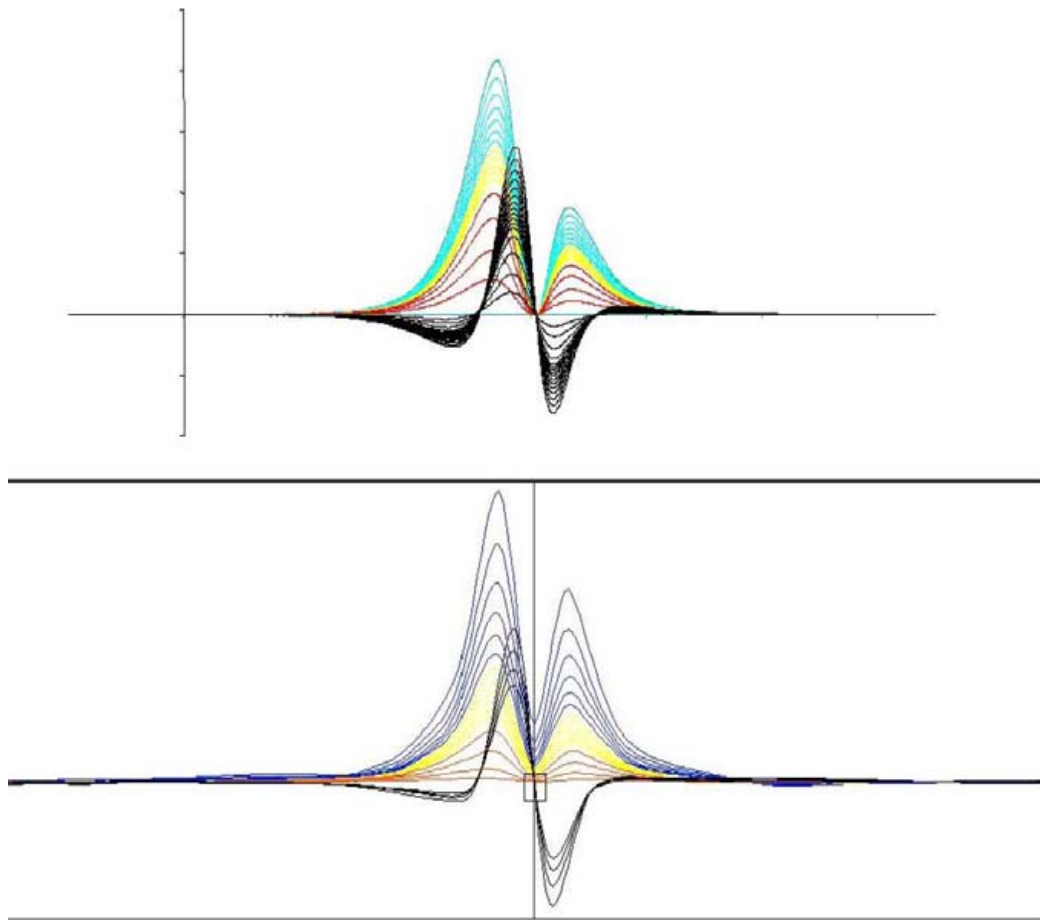
The off-time AeroTEM response for the 16 channel configuration.

The on-time response assuming 100% removal of the measured primary field.

**Figure 4. The off-time and on-time response nomogram of AeroTEM for a base frequency of 150 Hz. The on-time response is much stronger for higher conductance targets and this is why on-time measurements are more important than lower frequencies when considering high conductance targets in a resistive environment.**

### Advantage 3 – Multiple Receiver Coils

AeroTEM employs two receiver coil orientations. The Z-axis coil is oriented parallel to the transmitter coil and both are horizontal to the ground. This is known as a maximum coupled configuration and is optimal for detection. The X-axis coil is oriented at right angles to the transmitter coil and is oriented along the line-of-flight. This is known as a minimum coupled configuration, and provides information on conductor orientation and thickness. These two coil configurations combined provide important information on the position, orientation, depth, and thickness of a conductor that cannot be matched by the traditional geometries of the HEM or fixed-wing systems. The responses are free from a system geometric effect and can be easily compared to model type curves in most cases. In other words, AeroTEM data is very easy to interpret. Consider, for example, the following modeled profile:



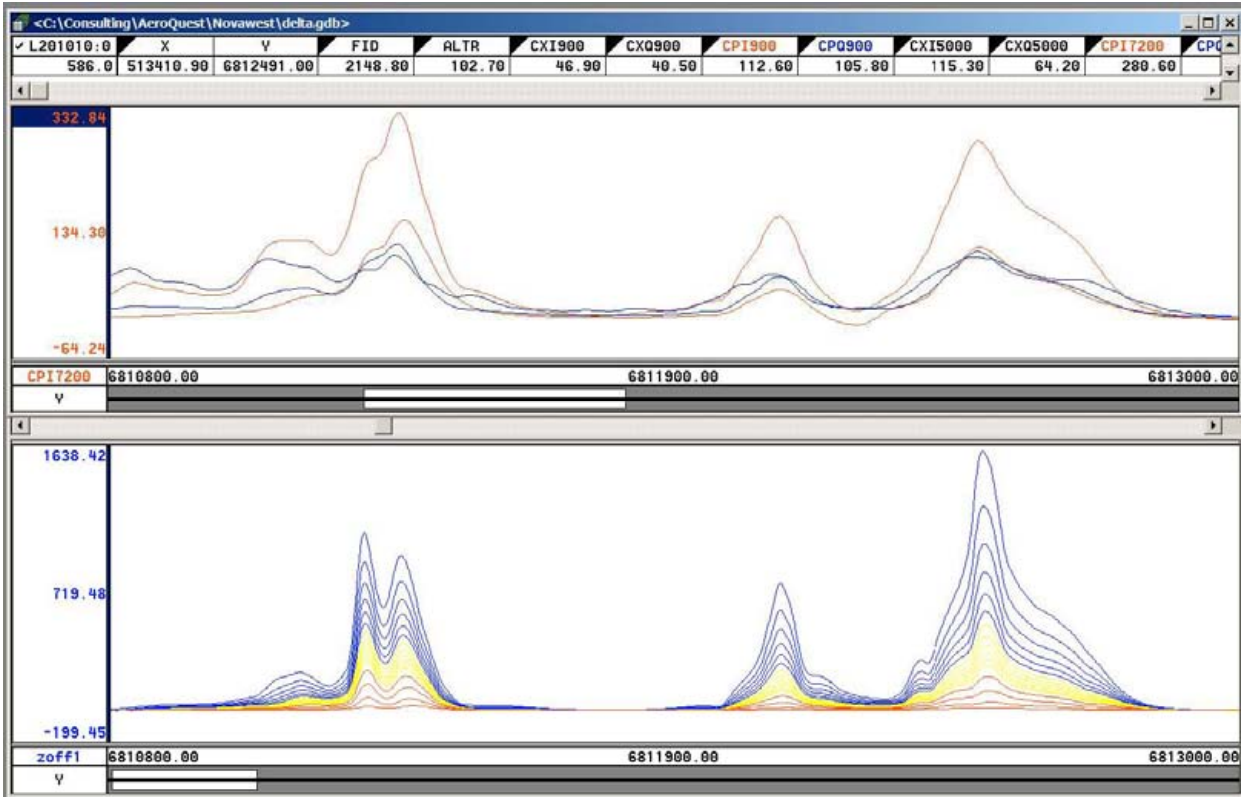
**Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude Z-axis peak. Using the X-axis cross-over is the only way of differentiating the Z-axis response from being two closely spaced conductors.**

### **HEM versus AeroTEM**

Traditional helicopter EM systems operate in the frequency domain and benefit from the fact that they use narrowband as opposed to wide-band transmitters. Thus all of the energy from the transmitter is concentrated in a few discrete frequencies. This allows the systems to achieve excellent depth penetration (up to 100 m) from a transmitter of modest power. The Aeroquest Impulse system is one implementation of this technology.

The AeroTEM system uses a wide-band transmitter and delivers more power over a wide frequency range. This frequency range is then captured into 16 time channels, the early channels containing the high frequency information and the late time channels containing the low frequency information down to the system base frequency. Because frequency domain HEM systems employ two coil configurations (coplanar and coaxial) there are only a maximum of three comparable frequencies per configuration, compared to 16 AeroTEM off-time and 12 AeroTEM on-time channels.

Figure 6 shows a comparison between the Dighem HEM system (900 Hz and 7200 Hz coplanar) and AeroTEM (Zaxis) from surveys flown in Raglan, in search of highly conductive Ni-Cu-PGM sulphide. In general, the AeroTEM peaks are sharper and better defined, in part due to the greater S/N ratio of the AeroTEM system over HEM, and also due to the modestly filtered AeroTEM data compared to HEM. The base levels are also better defined in the AeroTEM data. AeroTEM filtering is limited to spike removal and a 5-point smoothing filter. Clients are also given copies of the raw, unfiltered data.



**Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.**

Aeroquest Limited is grateful to the following companies for permission to publish some of the data from their respective surveys: Wolfden Resources, FNX Mining Company Inc, Canadian Royalties, Nova West Resources, Aurogin Resources, Spectrem Air. Permission does not imply an endorsement of the AeroTEM system by these companies.

## APPENDIX 4: AeroTEM Instrumentation Specification Sheet

# AEROTEM Helicopter Electromagnetic System

### System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 30 or 150 Hz
- Tx On Time - 5,750 (30Hz) or 1,150 (150Hz)  $\mu$ s
- Tx Off Time - 10,915 (30Hz) or 2,183 (150Hz)  $\mu$ s
- Loop Diameter - 5 m
- Peak Current - 250 A
- Peak Moment - 38,800 NIA
- Typical Z Axis Noise at Survey Speed = 10 nT peak
- Sling Weight: 270 Kg
- Length of Tow Cable: 40 m
- Bird Survey Height: 30 m or less nominal

### Receiver

- Two Axis Receiver Coils (x, z) positioned at centre of transmitter loop
- Selectable Time Delay to start of first channel 21.3 , 42.7, or 64.0 ms

### Display & Acquisition

- PROTODAS Digital recording at 128 samples per decay curve at a maximum of 300 curves per second (26.05  $\mu$ s channel width)
- RMS Channel Widths: 52.9, 132.3, 158.7, 158.7, 317.5, 634.9  $\mu$ s
- Recording & Display Rate = 10 readings per second.
- On-board display - six channels Z-component and 1 X-component

### System Considerations

Comparing a fixed-wing time domain transmitter with a typical moment of 500,000 NIA flying at an altitude of 120 m with a Helicopter TDEM at 30 m, notwithstanding the substantial moment loss in the airframe of the fixed wing, the same penetration by the lower flying helicopter system would only require a sixty-fourth of the moment. Clearly the AeroTEM system with nearly 40,000 NIA has more than sufficient moment. The airframe of the fixed wing presents a response to the towed bird, which requires dynamic compensation. This problem is non-existent for AeroTEM since transmitter and receiver positions are fixed. The AeroTEM system is completely portable, and can be assembled at the survey site within half a day.

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**APPENDIX 3**

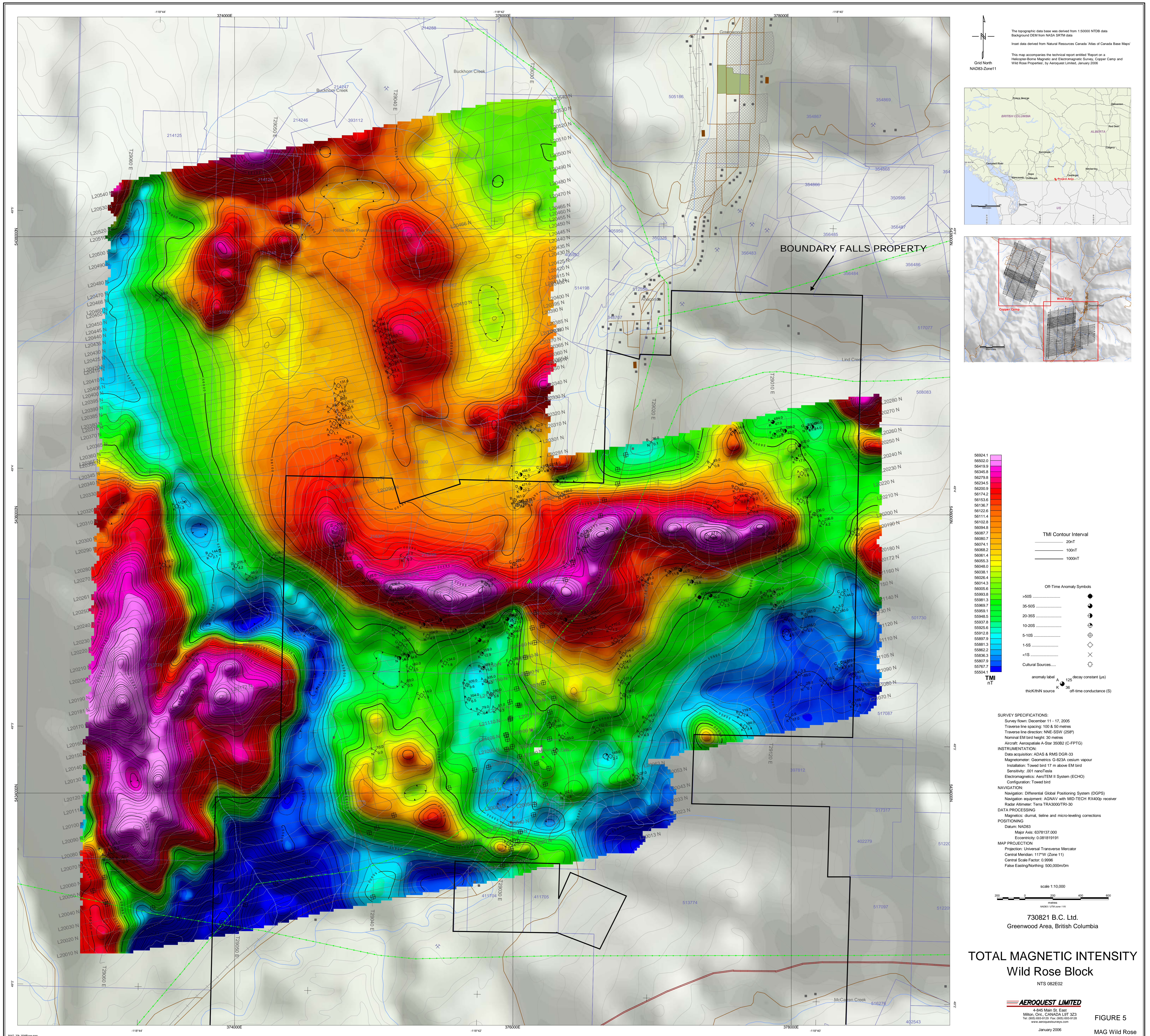
**Listing of AeroTEM II Conductors**

### Boundary Falls Anomaly Listing

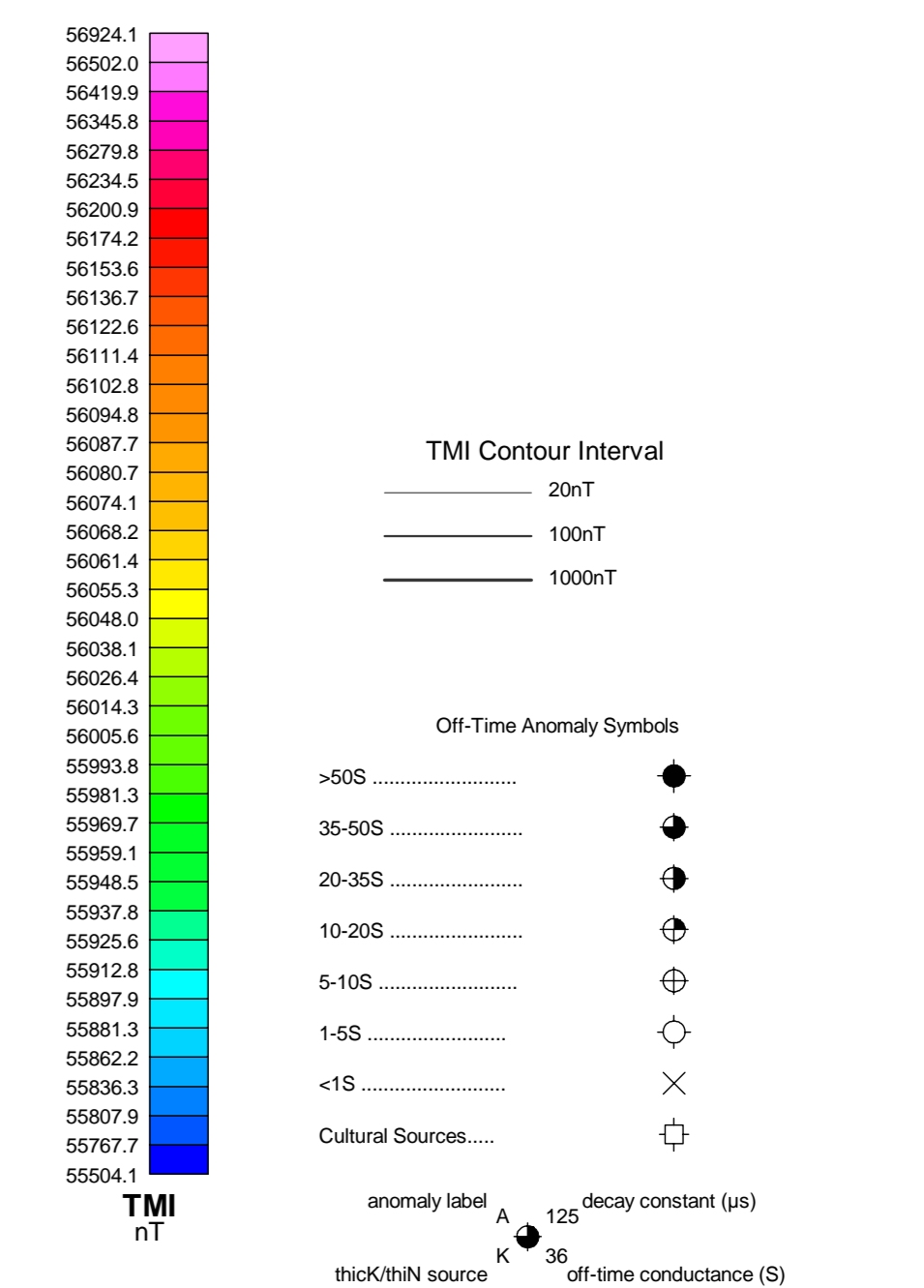
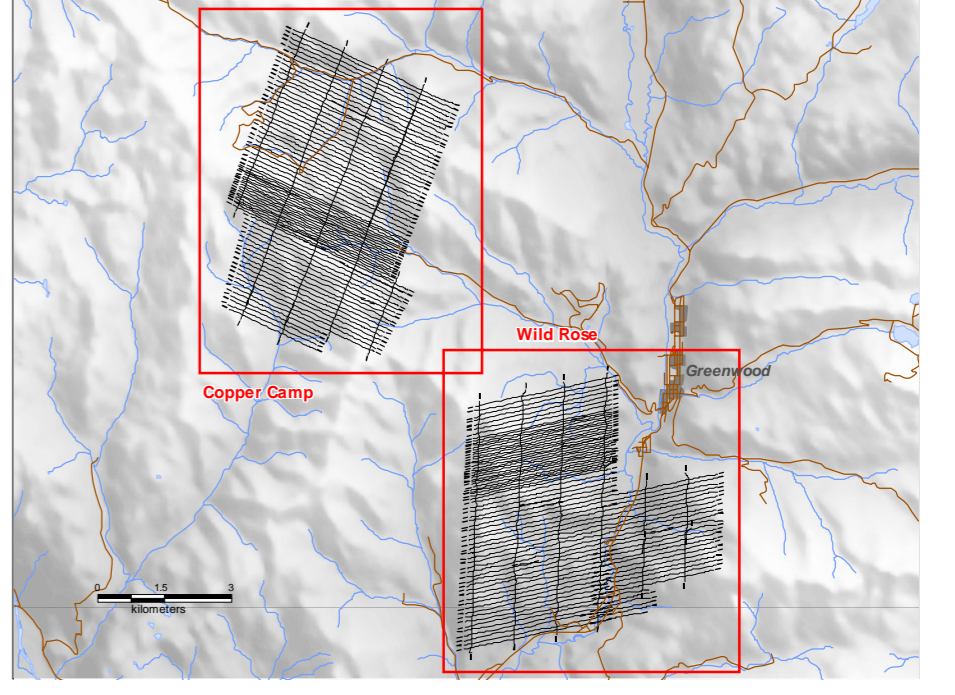
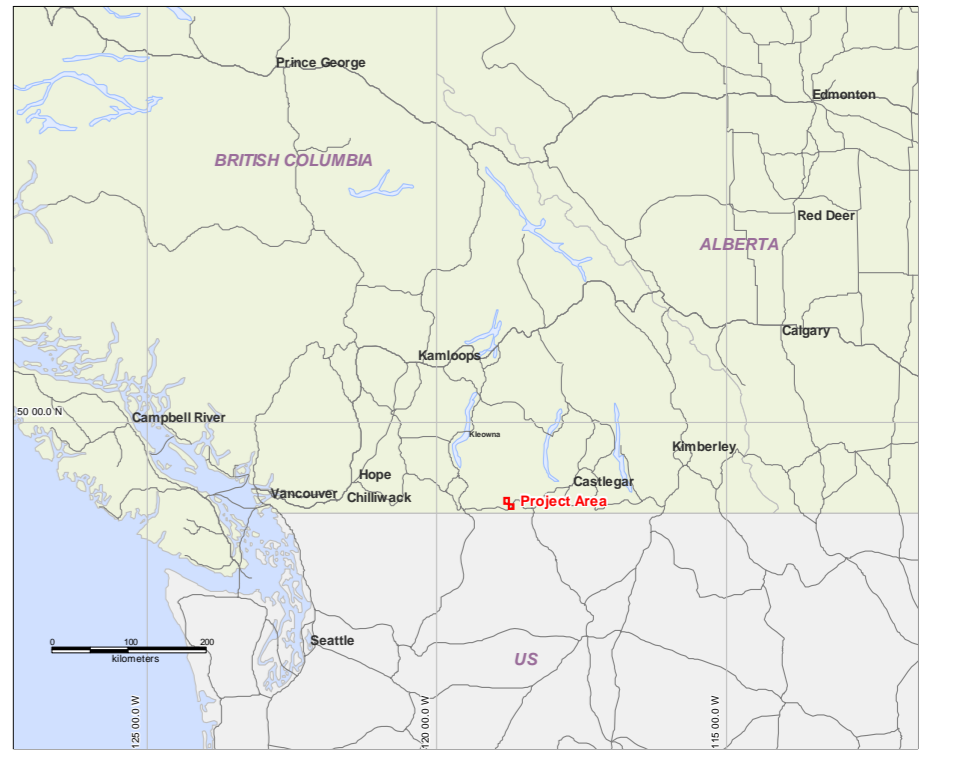
Easting	Northing	Labels	Grade	Type	cond	tau	dtm	bheight	emfid	Line	utctime
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376369	5433984	A	1	N	0.85	92	741.7	37.92	2691890	20053	21.038889
376889	5434115	B	2	K	1.63	127	938.2	40.6	2708300	20053	21.054083
373181	5433522	A	1	K	0.27	52	934.6	45.09	1826056	20070	23.874222
373118	5433616	A	1	K	0.17	42	954.5	41.02	1842076	20080	23.889056
375886	5434606	A	1	K	0.26	51	804.6	49.23	2133346	20120	0.1601389
375770	5434591	B	1	K	0.62	79	836.5	54.48	2136106	20120	0.1626944
375685	5434675	A	3	K	6.45	354	868	53.33	2227336	20130	0.2471667
375846	5434709	B	3	K	5.77	240	804.8	72.41	2229856	20130	0.2495
375804	5434806	A	3	K	9.3	305	801.8	56.14	2783300	20140	21.123528
375672	5434778	B	3	K	9.6	309	851.6	56.2	2786720	20140	21.126694
375344	5434702	C	2	K	1.3	114	915.1	42.63	2793020	20140	21.132528
375228	5434786	A	1	K	0.48	69	892.8	38.49	2931170	20150	21.260444
375785	5434898	B	4	K	15	389	805.2	47.82	2943380	20150	21.27175
375777	5435002	A	4	K	12.9	359	806.1	47.85	2968400	20160	21.294917
375513	5434935	B	2	K	1.8	134	885	43.78	2974430	20160	21.3005
375267	5434900	C	2	K	2.55	160	896.9	59.72	2978720	20160	21.304472
375185	5434971	A	5	N	34.8	590	886.5	51.36	3201290	20172	21.514639
375245	5434987	A	5	K	34.8	590	891.9	48.17	3202370	20172	21.515639
375761	5435100	B	6	K	36.88	607	804.9	60.1	3213050	20172	21.525528
376377	5435247	C	5	K	25.6	507	770.7	57.06	3224510	20172	21.536139
376549	5435273	D	1	K	0.59	303	785.6	51.27	3227600	20172	21.539
377341	5435408	E	7	K	72	851	971.7	54.99	3243320	20172	21.553556
377420	5435421	F	6	K	36.2	601	995.7	46.67	3244640	20172	21.554778
377918	5435677	A	3	N	7.1	266	1097.1	54.59	3284780	20180	21.591944
377286	5435520	A	5	K	29.8	545	945.2	49.01	3333530	20181	21.637083
376016	5435269	B	1	K	0.1	10	734.8	40.89	3351200	20181	21.653444
375960	5435251	C	6	K	49	707	771.6	31.1	3352280	20181	21.654444
375789	5435199	D	6	K	41	641	792.5	52.36	3356120	20181	21.658
375583	5435169	E	4	K	16.8	410	852.3	39.25	3359480	20181	21.661111
375388	5435127	F	2	N	4.2	204	904.7	42.83	3362720	20181	21.664111
375192	5435073	G	2	N	1.7	132	898.7	76.46	3365420	20181	21.666611
375163	5435159	A	2	N	3.4	185	904.2	50.88	3453200	20190	21.747889
375358	5435213	B	5	K	21.8	467	893.6	50.57	3456770	20190	21.751194
375478	5435245	C	5	K	32	568	866.8	44.29	3459080	20190	21.753333
376925	5435542	D	2	N	3.9	196	833.1	39.52	3480170	20190	21.772861
377126	5435587	E	4	K	11.3	336	906.5	48.22	3485420	20190	21.777722
377204	5435603	F	6	K	46	682	922	45.94	3486770	20190	21.778972
377907	5435747	G	2	K	2.2	148	1099.3	45.69	3498380	20190	21.789722
378441	5435870	H	2	K	4.3	208	1223.9	44.42	3506360	20190	21.797111
378230	5435944	A	2	K	4.2	206	1189	61.95	3559280	20200	21.846111
377828	5435848	B	1	K	0.4	62	1070.7	68.79	3564530	20200	21.850972
375201	5435303	C	2	N	2.4	155	913.3	60	3600320	20200	21.884111
374522	5435155	D	2	K	4.2	204	946.9	61.54	3608390	20200	21.891583
373682	5434971	E	1	K	0.36	40	1080	58.96	3622310	20200	21.904472
375153	5435376	A	2	N	3.6	190	911.2	50.13	3689240	20210	21.966444
375234	5435383	A	2	K	3.6	190	895.9	52.31	3690380	20210	21.9675
375806	5435505	B	3	K	5.7	239	806	40.78	3698300	20210	21.974833
376394	5435646	C	1	N	0.23	48	718.2	45.55	3706820	20210	21.982722
377418	5435843	D	1	N	0.45	67	953.1	45.02	3725030	20210	21.999583
377962	5435960	E	1	N	0.1	20	1112.8	55.89	3733940	20210	22.007833

378167	5436005	F	3	K	5.6	236	1167.1	54.09	3736850	20210	22.010528
378071	5436101	A	2	K	2	150	1153.6	50.91	3761870	20220	22.033694
377712	5436033	B	1	K	0.8	91	1047.2	63.63	3766100	20220	22.037611
376490	5435744	C	1	N	0.4	50	721.4	66.42	3781550	20220	22.051917
375117	5435476	D	3	N	11	336	929	38.28	3802700	20220	22.0715
374948	5435534	A	2	N	1.65	128	962.1	36.05	290160	20230	22.698861
376495	5435855	B	3	N	5.7	238	720.8	58.22	315750	20230	22.722556
377427	5436067	C	1	N	0.57	76	969.1	49.92	332580	20230	22.738139
377621	5436110	D	1	K	0.2	44	1020.8	45.64	335820	20230	22.741139
377709	5436126	D	1	N	0.2	44	1049.5	45.26	337320	20230	22.742528
378076	5436297	A	2	K	1.6	127	1128.7	54.69	369330	20240	22.772167
377606	5436193	B	2	K	2.7	166	1009.5	64.33	376500	20240	22.778806
375224	5435694	C	1	N	0.22	47	995.8	55.11	412890	20240	22.8125
374108	5435560	A	1	K	0.97	98	1096.9	38.33	468480	20250	22.863972
374787	5435700	B	2	K	2.7	165	985.8	71.88	477870	20250	22.872667
378036	5436402	A	4	K	17.8	421	1101.3	43.78	531240	20250	22.922083
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376054	5436290	D	5	K	21.9	468	860.6	50.17	799740	20280	23.172167
373584	5436062	A	2	K	1.25	112	1237.2	72.71	1012440	20310	23.372056
376701	5434264	A	2	K	2.2	149	858.8	37.95	366600	21070	18.856667
377667	5434477	B	2	K	3.4	184	1204.5	65.84	408030	21070	18.896778
377993	5434542	C	1	K	67	0.45	1255	62.49	414780	21070	18.903028
378449	5434644	D	2	K	2.75	166	1374.8	71.18	427950	21070	18.915222
378492	5434753	A	2	N	3.1	175	1376.9	55.63	445470	21080	18.931444
377639	5434570	B	2	K	1.4	119	1185.4	73.3	461700	21080	18.946472
376357	5434403	A	2	K	103	1.1	765.5	35.98	532350	21090	19.011889
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376963	5434532	B	1	K	0.7	84	979.5	56.22	555060	21090	19.032917
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378240	5434797	C	2	K	4.45	210	1305.9	53.46	588600	21090	19.063972
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378060	5434856	B	2	K	189	3.6	1236.3	47.57	154578	21105	21.1615
378345	5434915	C	2	N	4.8	219	1309.6	48.45	160818	21105	21.167278
378389	5434926	C	2	K	4.8	219	1312.1	49.76	161688	21105	21.168083

376801	5434704	A	3	K	5.7	239	920.6	54.22	205106	21110	19.558639
376785	5434797	A	3	K	5.35	231	908.2	72.01	281756	21120	19.629611
376779	5434916	A	2	K	4.6	214	883.2	74.82	327356	21130	19.671833
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378103	5435180	C	2	K	4.6	215	1187.9	52.86	350366	21130	19.693139
378330	5435322	A	2	K	180	3	1170.9	59.86	374306	21140	19.715306
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377962	5435254	C	3	K	6.9	262	1154.9	56.1	382616	21140	19.723
376796	5434997	D	2	K	4.6	214	874.8	58.72	401726	21140	19.740694
376738	5435101	A	2	N	2.2	150	842.5	65.06	441176	21150	19.777222
377884	5435347	B	4	K	10.3	321	1118.9	64.26	460796	21150	19.795389
378368	5435433	C	2	K	144	2.1	1158.4	71.42	467276	21150	19.801389
377876	5435440	A	4	K	13.1	362	1093	59.03	492206	21160	19.824472
377810	5435429	B	3	K	9.3	305	1077	62.68	493196	21160	19.825389
377503	5435361	C	2	K	2.3	151	1015.1	61.17	497816	21160	19.829667
376699	5435187	C	2	K	1.2	110	825.8	59.95	509066	21160	19.840083
376522	5435157	D	2	K	1.02	101	810.5	68.19	511376	21160	19.842222
377955	5436604	A	5	K	33	580	1065	51.36	1190746	29010	17.584833
377932	5435763	B	1	K	0.68	83	1104.1	77.56	1203256	29010	17.596417
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376993	5436524	B	1	N	0.13	36	778.7	52.86	1287496	29020	17.674417
376047	5436634	A	2	K	3.6	190	948.3	33.92	1380526	29030	17.760556
376013	5436106	B	3	K	13	361	890.2	61.54	1390156	29030	17.769472
376010	5435647	C	3	N	5.2	228	792.7	59.55	1398436	29030	17.777139
375989	5435200	D	4	K	10.3	321	747	39.95	1407166	29030	17.785222
375988	5435138	E	4	N	7.2	268	744.3	37.62	1408066	29030	17.786056
375986	5434940	F	2	K	1.6	126	727.8	54.69	1410976	29030	17.78875
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376925	5434430	A	2	K	4.3	206	963.5	61.79	579296	29110	19.905111



The topographic data base was derived from 1:50,000 NTDB data  
 Background DEM from NASA SRTM data  
 Inset data derived from Natural Resources Canada Atlas of Canada Base Maps  
 This map accompanies the technical report entitled Report on a  
 Helicopter Borne Magnetic and Electromagnetic Survey, Copper Camp and  
 Wild Rose Properties, by Aeroquest Limited, January 2006



**SURVEY SPECIFICATIONS:**  
 Survey from: December 11 - 17, 2005  
 Traverse line spacing: 100 & 50 metres  
 Traverse line direction: NNE-SSW (259°)  
 Nominal EM bird height: 30 metres  
 Aircraft: Aerospaciale A-Star 350B2 (C-FPTG)

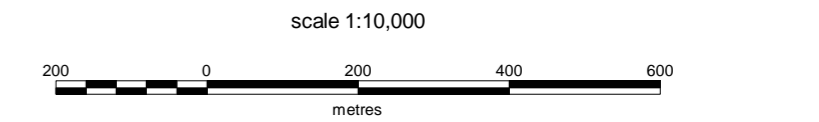
**INSTRUMENTATION:**  
 Data acquisition: ADS & RMS DGR-33  
 Magnetometer: Geometrics G-823A cesium vapour  
 Installation: Towed bird 17 m above EM bird  
 Sensitivity: .001 nanoTesla  
 Electromagnetics: AeroTEM II System (ECHO)  
 Configuration: Towed bird

**NAVIGATION:**  
 Navigation: Differential Global Positioning System (DGPS)  
 Navigation equipment: AGNAV with MID-TECH RX40p receiver  
 Radar Altimeter: Terra TRA3000/TRI-30

**DATA PROCESSING:**  
 Magnetics: diurnal, sideline and micro-leveling corrections

**POSITIONING:**  
 Datum: NAD83  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191

**MAP PROJECTION:**  
 Projection: Universal Transverse Mercator  
 Central Meridian: 117°W (Zone 11)  
 Central Scale Factor: 0.9996  
 False Easting/Northing: 500,000m/0m



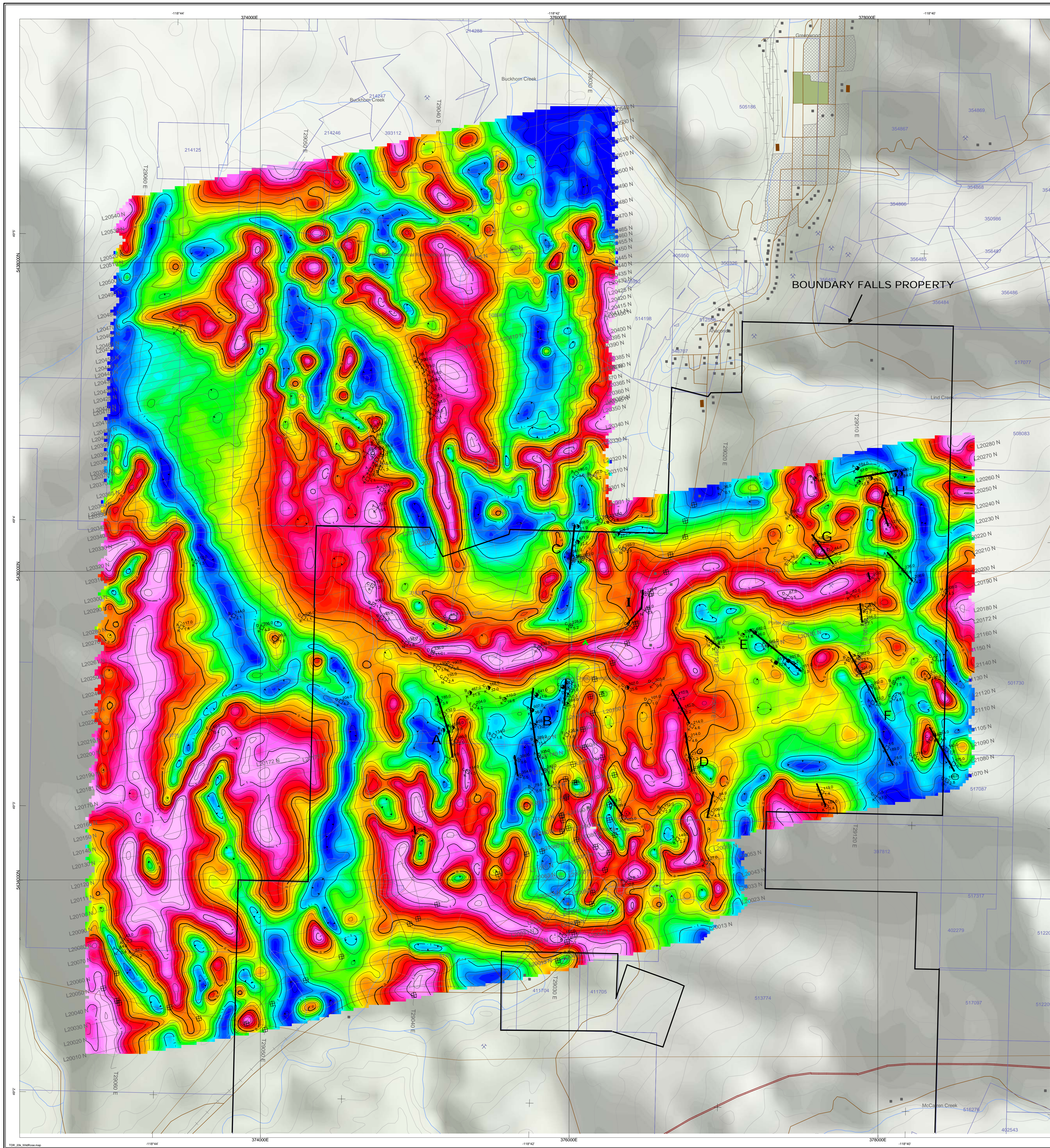
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 Greenwood Area, British Columbia

**TOTAL MAGNETIC INTENSITY**  
**Wild Rose Block**  
 NTS 082E02

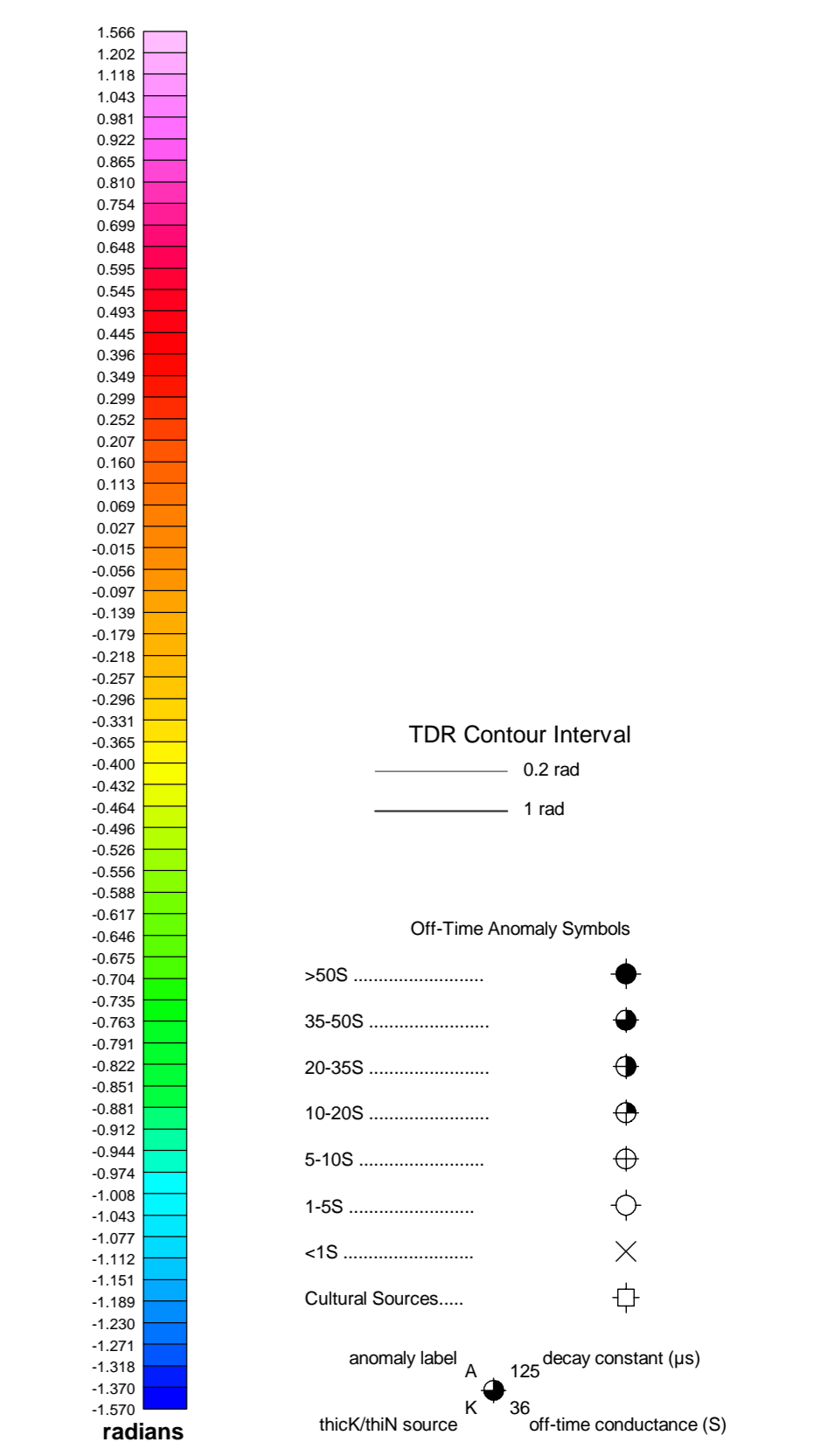
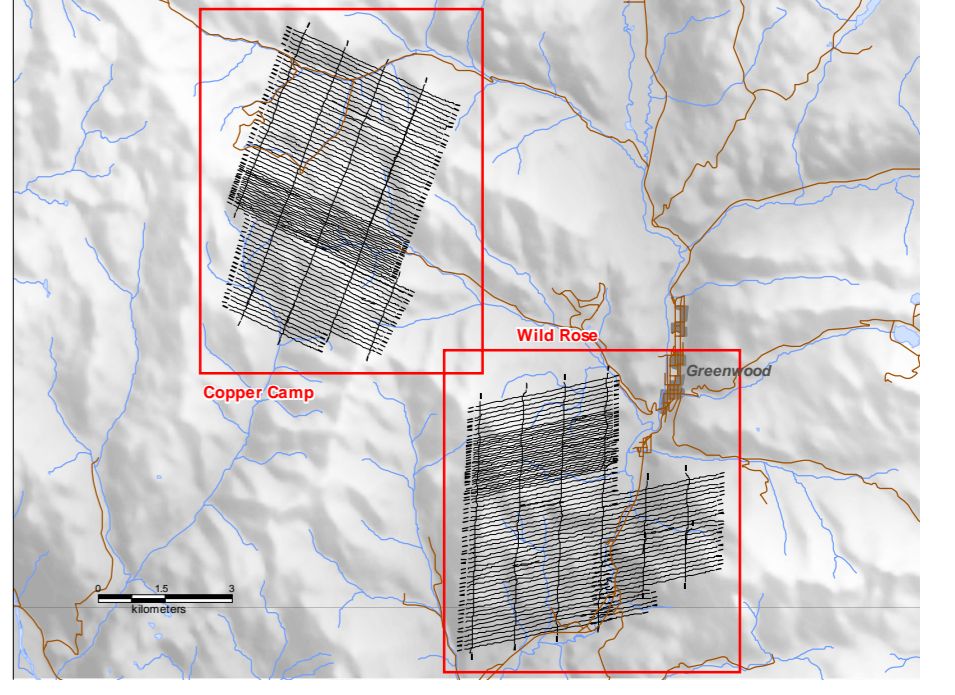
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 Milton, Ont., CANADA L9T 3Z3  
 Tel: (905) 883-1228 Fax: (905) 883-9128  
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January 2006

FIGURE 5  
 MAG Wild Rose



The topographic data base was derived from 1:50,000 NTDB data  
 Background DEM from NASA SRTM data  
 Inset data derived from Natural Resources Canada Atlas of Canada Base Maps  
 This map accompanies the technical report entitled Report on a  
 Helicopter Borne Magnetic and Electromagnetic Survey, Copper Camp and  
 Wild Rose Property, by Aeroquest Limited, January 2006



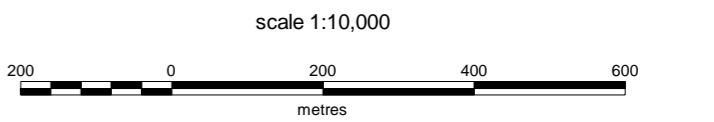
**SURVEY SPECIFICATIONS:**  
 Survey flown: December 11 - 17, 2005  
 Traverse line spacing: 100 & 50 metres  
 Traverse line direction: NNE-S50W (259°)  
 Nominal EM bird height: 30 metres  
 Aircraft: Aerospaciale A-Star 350B2 (C-FPTG)

**INSTRUMENTATION:**  
 Data acquisition: ADAS & RMS DGR-33  
 Magnetometer: Geometrics G-823A cesium vapour  
 Installation: Towed bird 17 m above EM bird  
 Sensitivity: .001 nanoTesla  
 Electromagnetics: AeroTEM II System (ECHO)  
 Configuration: Towed bird

**NAVIGATION:**  
 Navigation: Differential Global Positioning System (DGPS)  
 Navigation equipment: AGNAV with MID-TECH RX400p receiver  
 Radar Altimeter: Terra TRA3000/TRI-30

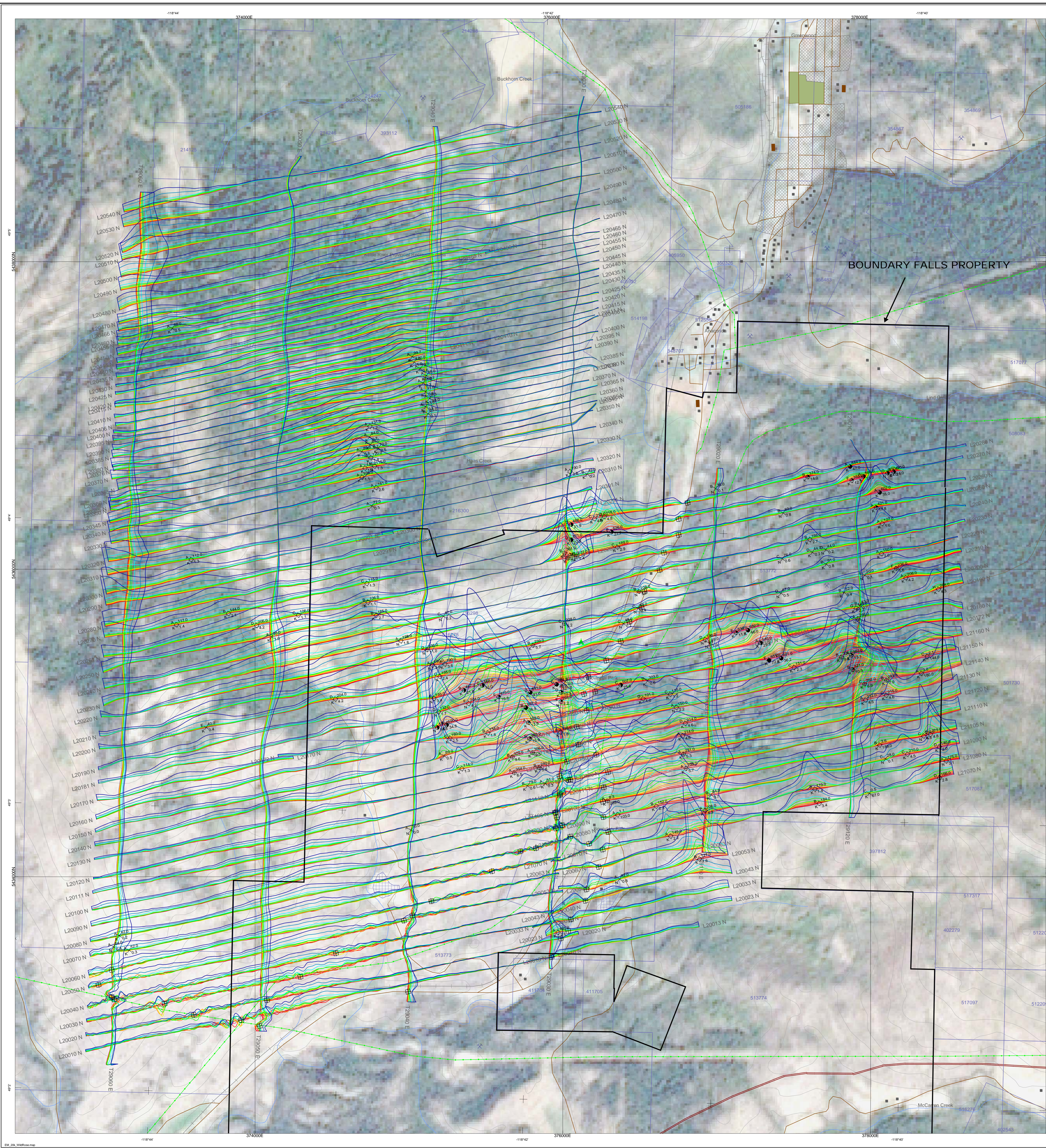
**DATA PROCESSING:**  
 Magnetics: diurnal, sidereal and micro-leveling corrections

**POSITIONING:**  
 Datum: NAD83  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191  
 MAP PROJECTION:  
 Projection: Universal Transverse Mercator  
 Central Meridian: 117°W (Zone 11)  
 Central Scale Factor: 0.9998  
 False Easting/ Northing: 500,000m/0m



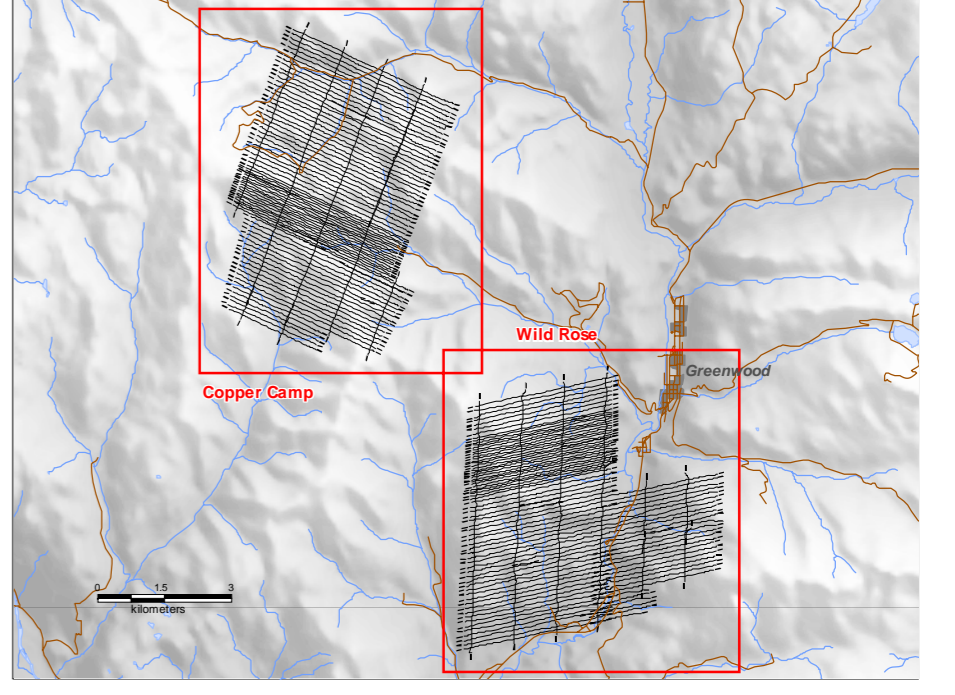
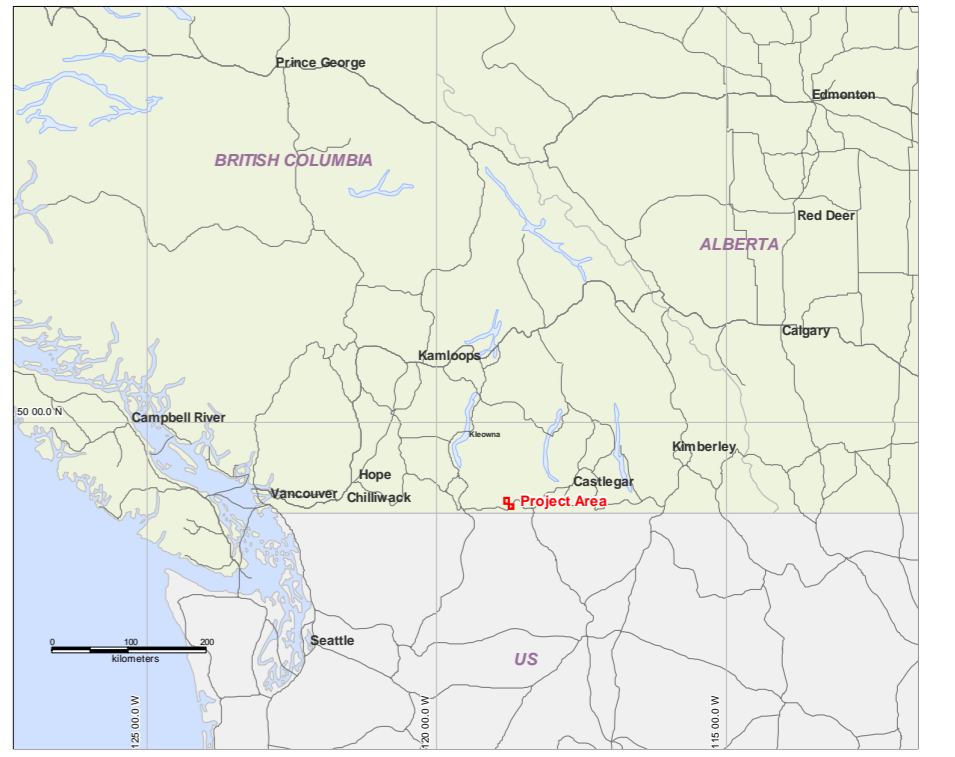
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**TILT OF TMI**  
**Wild Rose Block**  
 NTS 082E02

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The topographic data base was derived from 1:50000 NTDB data  
 Background DEM from NASA SRTM data  
 Inset data derived from Natural Resources Canada 'Atlas of Canada Base Maps'  
 This map accompanies the technical report entitled 'Report on a Helicopter Borne Magnetic and Electromagnetic Survey, Copper Camp and Wild Rose Properties', by Aeroquest Limited, January 2006

Grid North  
 NAD83-Zone11



- Aerotem Profiles**  
 positive excursion to top and right, 1mm=15nT/s
- 21 Off-Time Channel
  - 22 Off-Time Channel
  - 24 Off-Time Channel
  - 26 Off-Time Channel
  - 28 Off-Time Channel
  - 210 Off-Time Channel
  - 212 Off-Time Channel
  - 213 Off-Time Channel
  - 214 Off-Time Channel
  - 215 Off-Time Channel
  - 216 Off-Time Channel

- Off-Time Anomaly Symbols**
- >50S
  - 35-50S
  - 20-35S
  - 10-20S
  - 5-10S
  - 1-5S
  - <1S
  - Cultural Sources
- anomaly label  $K$  125 decay constant ( $\mu$ s)  
 thick/h source  $K$  36 off-time conductance (S)

**SURVEY SPECIFICATIONS:**  
 Survey from: December 11 - 17, 2005  
 Traverse line spacing: 100 & 50 metres  
 Traverse line direction: NNE-SSW (259°)  
 Nominal EM bird height: 30 metres  
 Aircraft: Aerospatiale A-Star 350B2 (C-FPPT)

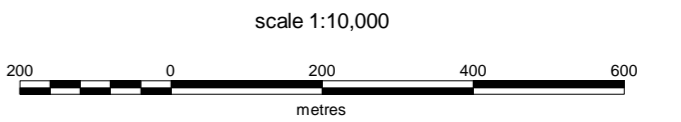
**INSTRUMENTATION:**  
 Data acquisition: ADS & RMS DGR-33  
 Magnetometer: Geometrics G-823A cesium vapour  
 Installation: Towed bird 17 m above EM bird  
 Sensitivity: .001 nanoTesla  
 Electromagnetics: Aerotem II System (ECHO)  
 Configuration: Towed bird

**NAVIGATION:**  
 Navigation: Differential Global Positioning System (DGPS)  
 Navigation equipment: AGNAV with MID-TECH RX400p receiver  
 Radar Altimeter: Terra TRA3000/TRI-30

**DATA PROCESSING:**  
 Magnetics: diurnal, sidereal and micro-leveling corrections

**POSITIONING:**  
 Datum: NAD83  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191

**MAP PROJECTION:**  
 Projection: Universal Transverse Mercator  
 Central Meridian: 117°W (Zone 11)  
 Central Scale Factor: 0.9996  
 False Easting Northing: 500,000m/0m

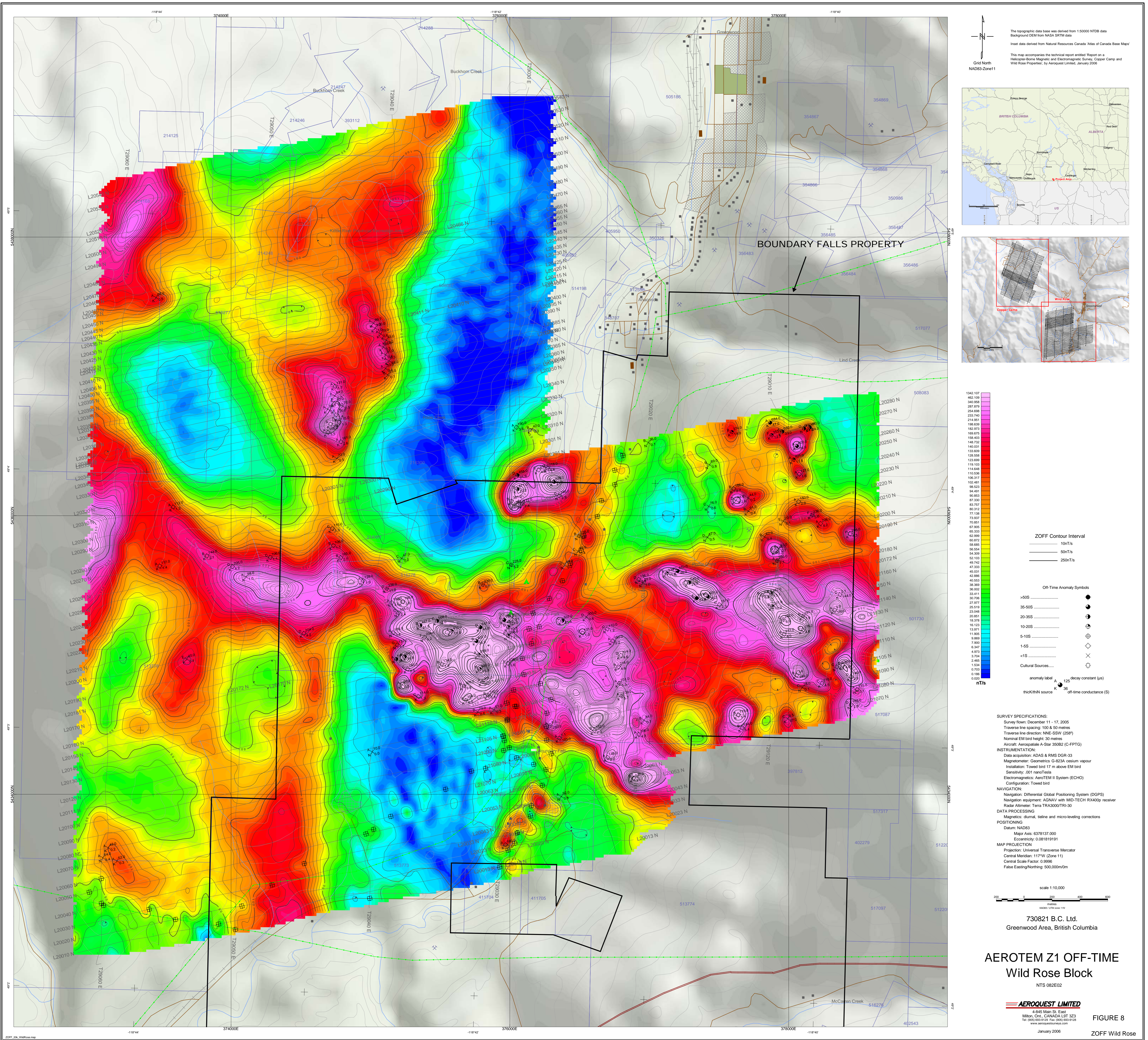


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**AEROTEM OFF-TIME  
 PROFILES**  
 Wild Rose Block  
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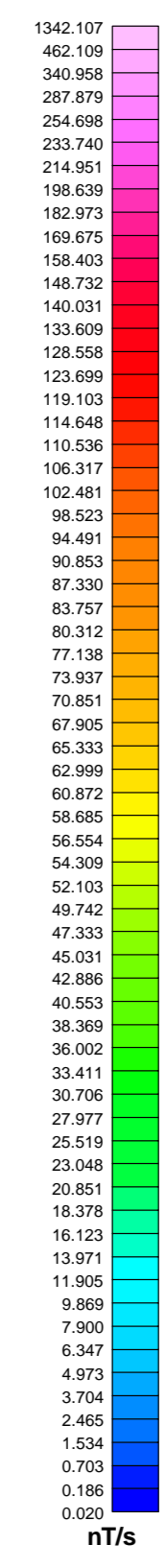
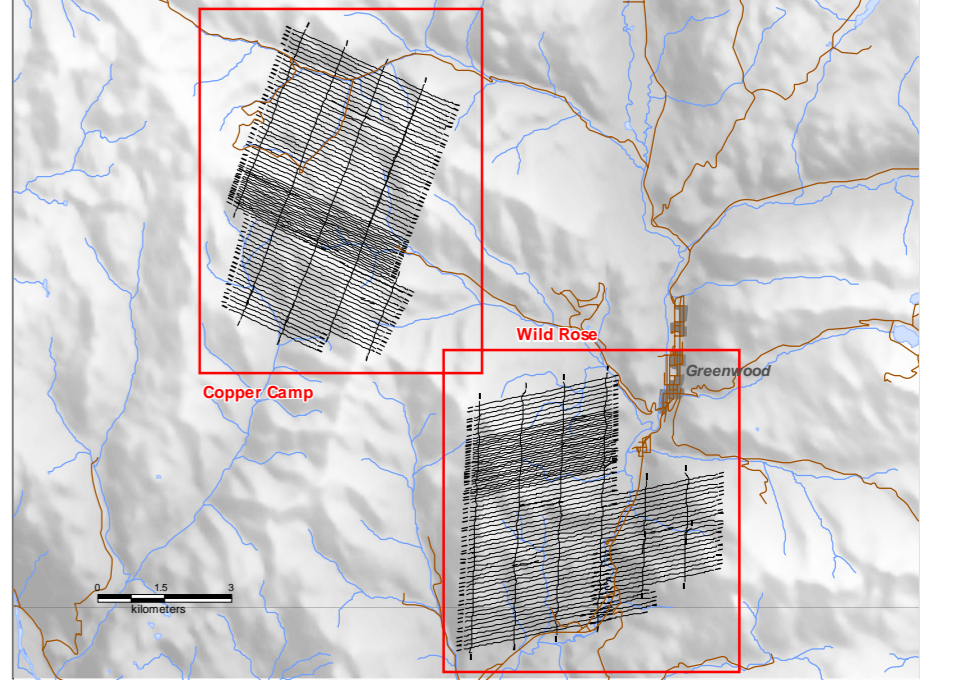
FIGURE 7  
 EM Wild Rose



The topographic data base was derived from 1:50,000 NTDB data  
 Background DEM from NASA SRTM data  
 Inset data derived from Natural Resources Canada Atlas of Canada Base Maps

This map accompanies the technical report entitled Report on a Helicopter-Borne Magnetic and Electromagnetic Survey, Copper Camp and Wild Rose Properties, by Aeroquest Limited, January 2006

Grid North  
 NAD83-Zone11



ZOFF Contour Interval

- 10nT/s
- 50nT/s
- 250nT/s

Off-Time Anomaly Symbols

- >50S
- 35-50S
- 20-35S
- 10-20S
- 5-10S
- 1-5S
- <1S

Cultural Sources

- anomaly label
- decay constant (μs)
- thickN source
- off-time conductance (S)

**SURVEY SPECIFICATIONS:**  
 Survey flown: December 11 - 17, 2005  
 Traverse line spacing: 100 & 50 metres  
 Traverse line direction: NNE-S5W (289°)  
 Nominal EM bird height: 30 metres  
 Aircraft: Aerospatiale A-Star 350B2 (C-FPTG)

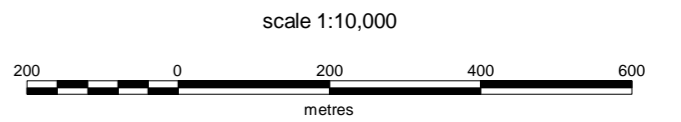
**INSTRUMENTATION:**  
 Data acquisition: ADAS & RMS DGR-33  
 Magnetometer: Geometrics G-823A cesium vapour  
 Installation: Towed bird 17 m above EM bird  
 Sensitivity: .001 nanoTesla  
 Electromagnetics: AeroTEM II System (ECHO)  
 Configuration: Towed bird

**NAVIGATION:**  
 Navigation: Differential Global Positioning System (DGPS)  
 Navigation equipment: AGNAV with MID-TECH RX400p receiver  
 Radar Altimeter: Terra TRA3000/TRI-30

**DATA PROCESSING:**  
 Magnetics: diurnal, sideline and micro-leveling corrections

**POSITIONING:**  
 Datum: NAD83  
 Major Axis: 6378137.000  
 Eccentricity: 0.081819191

**MAP PROJECTION:**  
 Projection: Universal Transverse Mercator  
 Central Meridian: 117°W (Zone 11)  
 Central Scale Factor: 0.99995  
 False Easting/Northing: 500,000m/0m



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**AEROTEM Z1 OFF-TIME**  
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