# 2006 GEOLOGICAL REPORT

# FOR THE

# VULCAN PROPERTY

Fort Steele Mining Division, Southeastern B.C.
Mapsheets 82F079, 82F089
Latitude 49°47' N, Longitude 116°20'W

Prepared for

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by

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**2006 GEOLOGICAL REPORT FOR THE VULCAN PROPERTY**

## EAGLE PLAINS RESOURCES LTD.

## SUMMARY


The Vulcan property is located in the Purcell Mountains approximately 30 km northwest of the Sullivan Mine at Kimberley, B.C. The property consists of 5 claims and is 100% owned by Eagle Plains Resources with no underlying royalties or encumbrances.

The principle exploration target on the property is a Sullivan-type stratiform sediment-hosted massive sulfide deposit. The Sullivan Mine has produced 144 million tons of ore averaging 6.5% Pb, 5.6% Zn and 2.3 opt Ag to 1988. At the Vulcan the styles of mineralization, host rocks and alteration all show strong similarities to the Sullivan Deposit. The best sulfide mineralization at Vulcan is exposed in a surface showing. Strata controlled pyrrhotite-galena-sphalerite occurs on the "Sullivan Horizon" in a 7.5 m thick zone which includes 1.5 m averaging 1.6% combined Pb-Zn. Grab samples of this zone assay up to 5.5% Pb-Zn and 22 opt Ag.

The Vulcan property and its surrounding geology has been tested by historic drilling on a few separate occasions. The most comprehensive testing occurred in the early 1990's by Ascot Resources. In 1991 a five hole 1,003m total drill program was completed; all holes excepting Vu-91-4 were drilled within the current boundaries of the Vulcan property. In 1992 three holes were drilled to the west of the Jurak 1 in the West Basin area. The West Basin program, totaling 1535m of drilling, explored the Lower-Middle Aldridge contact (LMC) to depths of 300m, roughly 600-800m down-dip of 1991 intersections. Though 1992 drilling indicated the presence of Sullivan-type stratigraphy and alteration in all holes, significant base-metal mineralization was not encountered. The down dip extension of the 1991 holes on the Vulcan Property remains untested.

Work conducted on the Vulcan property in 2005 included reprocessing and reinterpretation of 1995 EM geophysical data and the development and implementation of a GIS database. In 2005, as part of a data compilation on an unrelated project in SE BC, Eagle Plains requested an independent contractor, Condor Geophysics, to verify and reprocess Geoterrex-Dighem (now Fugro Airborne Surveys) EM survey data collected in 1995 by a joint partnership between BC Ministry of Employment and Investment, Energy and Minerals division, BC Geological Survey Branch and the Geological Survey of Canada. During the course of the data verification by Condor, it was found that the GPS height and the barometric altimeter height were both corrupted, rendering the original geophysical maps and related data included in the 1996 public release highly suspect, if not worthless. After considerable effort Condor was able to arrange for the government to supply replacement SRTM (Shuttle Radar Topography Mission) elevation data that has reasonable resolution and based on this new data set were able to produce a new interpretation of the 1995 data. As the 1995 survey also covered the Vulcan claim area Eagle Plains contracted Condor to correct and reinterpret the EM data for the area referred to as the St. Mary Block. Compilation work included scanning, rectifying and digitizing the historic geology maps, creating a drill-hole database, imputing the historic drill logs, and the creation and interpretation of new sections. A geochemistry database was also implemented utilizing historic rock, silt and soil sample data. The geochemistry and drill-hole databases will allow for a more organized approach to the interpretation of the geology of the Vulcan. Base data for the area covered by the Vulcan claim block was also acquired, processed and integrated into the GIS in order to facilitate map creation and improve data visualization.

Based on the results from the 2005 program, further work was recommended for the property to better define the downdip projection of the Lower-Middle Aldridge contact, the stratigraphic horizon that hosts the nearby Sullivan deposit. In 2006, Eagle Plains carried out a helicopter borne time domain geophysical survey on the project. A total of 125.51 line km at 200m spacing was flown on April 29th 2006. Initial results from the survey indicate that the survey imaged the known mineralized structures and has also identified areas for further follow up. The total cost of the 2006 program was $39,178.84


Respectfully submitted:


Charles C. Downie, P.Geo
VP Exploration , Eagle Plains Resources

# TABLE OF CONTENTS

## LIST OF FIGURES



## LIST OF TABLES



## LIST OF APPENDICIES

**GEOLOGICAL REPORT FOR THE VULCAN PROJECT**

**Dewar Creek \ White Creek Area, SE British Columbia**

# PROPERTY DESCRIPTION AND LOCATION (Figure 1,2)

## DESCRIPTION (Figure 2)

The Vulcan property is located in the Dewar Creek \ White Creek area 30 km North West of Kimberley, in southeastern British Columbia. The claims are centered at approximately Latitude 49°48' N, Longitude 116°18'W on NTS map sheet 82F/16.

The property consists of 5 legacy claims located in the Fort Steele Mining division. Total property area is 1550 hectares. The Vulcan claims were acquired to cover four strata-bound lead zinc and copper occurrences, hosted in Aldridge Formation siltite and argillite, as well as to cover the deep down dip extensions of the target horizon along the west side of the property. Refer to Table 1 for a complete list of the tenures and their expiry dates.

There are, to the best knowledge of the writers, no liens or encumbrances on the claims. The title was researched using the Mineral Titles Division on - line database.

***TABLE 1 Claim Data Vulcan Property***

| Project | Tenure Number | Claim Name | YYYY/MM/DD Expiry Date | Mining Division | Hectacres |
|---|---|---|---|---|---|
| Vulcan Jurak | 398960 | VC | 20111116 | 5 Ft. Steele | 450.000 |
| Vulcan Jurak | 406826 | VC | 20111116 | 5 Ft. Steele | 150.000 |
| Vulcan Jurak | 406827 | VC | 20111116 | 5 Ft. Steele | 50.000 |
| Vulcan Jurak | 408454 | VC | 20111116 | 5 Ft. Steele | 450.000 |
| Vulcan Jurak | 408455 | VC | 20111116 | 5 Ft. Steele | 450.000 |
| | | | | TOTAL: | 1550 ha |

## LOCATION (Figure 1)

The Vulcan property is located in the Dewar Creek \ White Creek area 30 km North West of Kimberley, in southeastern British Columbia. The claims are centered at approximately Latitude 49°38' N, Longitude 116°40'W on Map sheets 082F057 and 067.

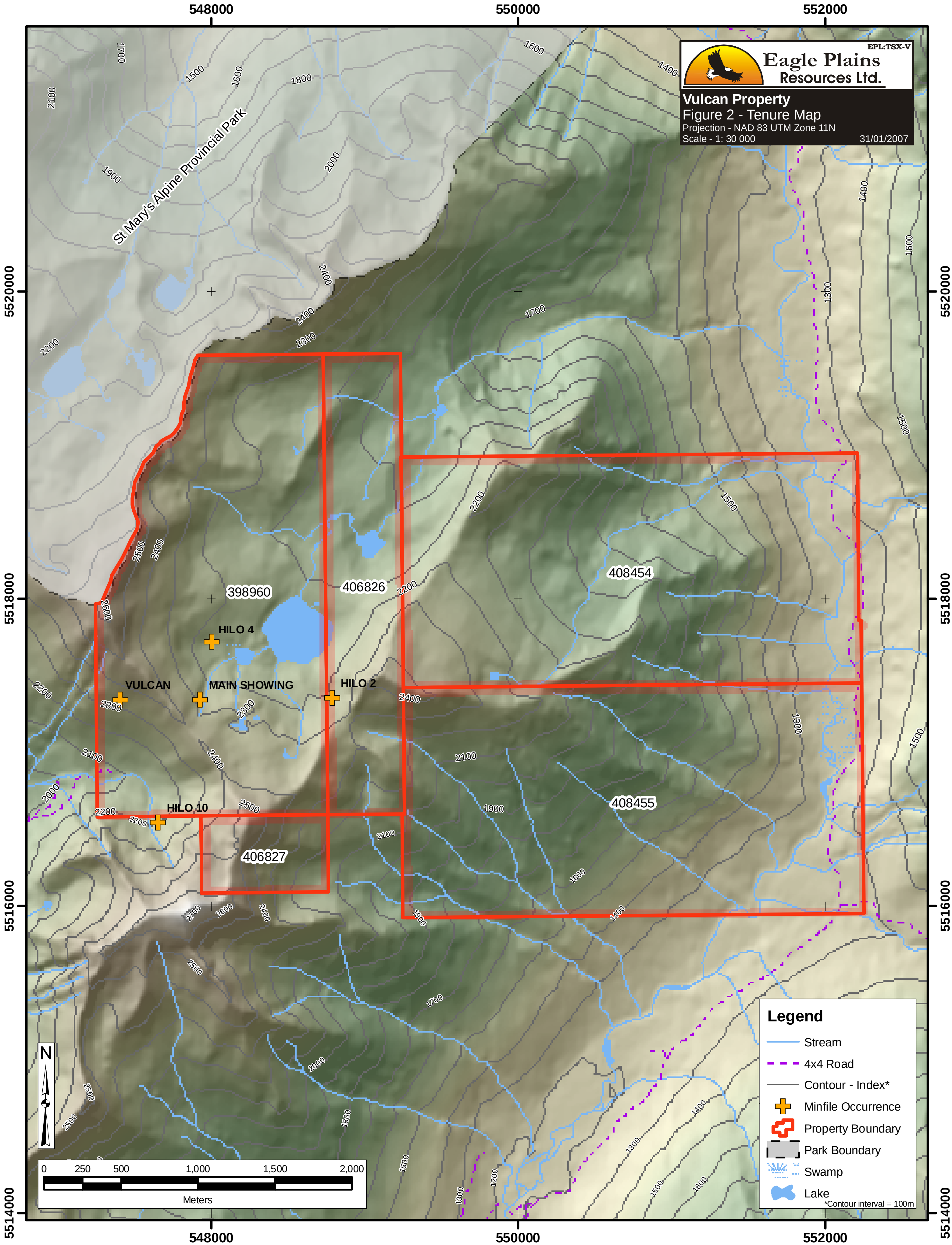
# ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## ACCESS (Figure 1, 2)

The property is accessible by road, by proceeding 50 km west of Kimberley on the St. Mary Lake and River roads, then 8 km north on the Dewar Creek logging road. A 4 x 4 access road was built by Cominco in 1979 to access the West Basin area; the road extends 2.5 km east of the Dewar Creek road 8 km marker and into the Vulcan property. The road has steep (+15%) grades and several tight switchbacks. This road extends to an alpine meadow at 2,025 m elevation, and ends in West Basin, approx. 1.5 km northwest of the peak of Mt. Patrick, on the Jurak 1 claim. Access to Jurak Lake basin is by an old pack trail (2 hours on foot from the end of the road). The eastern half of the property can also be accessed by traveling approximately 15km north on the White Creek logging road.

The West Basin 4X4 road was restored and water barred at the close of the 1992 program, but still provides a popular recreational access route to St. Mary Alpine Park. Alternate access to the alpine portions of the property is by helicopter charter from Cranbrook, B.C. (0.35 hrs one way), or from a helicopter base near the east end of St. Mary Lake (0.2 hrs one way).
Fig.1

Eagle Plains Resources Ltd.
EPL:TSX-V
Vulcan Property
Figure 1 - Property Location
Projection - NAD 83 UTM Zone 11N
Scale - 1: 7 500 000
31/01/2007
140°0'0"W
130°0'0"W
120°0'0"W
60°0'0"N
50°0'0"N
Yukon Territory
Whitehorse
Northwest Territories
Alaska
British Columbia
Alberta
Washington
Idaho
Pacific Ocean
Smithers
Terrace
Prince Rupert
Prince George
Bella Coola
Golden
Calgary
Kamloops
Vulcan
Kelowna
Cranbrook
Vancouver
Hope
Castlegar
Nelson
Creston
Grand Forks
Victoria
N
0
130
260
390
520
Kilometers


Eagle Plains Resources Ltd.
EPL:TSX-V
Vulcan Property
Figure 2 - Tenure Map
Projection - NAD 83 UTM Zone 11N
Scale - 1: 30 000
31/01/2007
St Mary's Alpine Provincial Park
398960
406826
406827
408454
408455
HILO 4
VULCAN
MAIN SHOWING
HILO 2
HILO 10
548000
550000
552000
5520000
5518000
5516000
5514000
N
0
250
500
1,000
1,500
2,000
Meters
Legend
Stream
4x4 Road
Contour - Index*
Minfile Occurrence
Property Boundary
Park Boundary
Swamp
Lake
*Contour interval = 100m

**LOCAL RESOURCES AND INFRASTRUCTURE**

A power line supplying the Sullivan Mine passes approximately 17km south of the property. Rail facilities are located at Marysville, 30km south east of the property, which could be used to ship ore to the Teck-Cominco smelter at Trail, B.C., approximately 130 kilometers west of the Vulcan property. Direct air service is provided from Calgary and Vancouver to the Cranbrook Airport, located approximately 40 kilometers east of the property. There is a well established mining support industry established in the area, to service the SE British Columbia coal mines and, until 2001, the Sullivan Mine.

**PHYSIOGRAPHY**

The claims are located in the Purcell Mountain Range. The western half of the claims covers rugged mountainous areas up to 3,300 m elevation. The eastern part of the claims covers more moderately sloping mountainous terrain and includes parts of the wider, more flat White Creek valley at approximately 1,240m elevation. The tree line is gradual, with sparse tamarack persisting to approximately 2,400 m.

**CLIMATE**

The weather is typical of the Purcell Range, with moderate to dry summers and heavy snowfall in the winters. Most of the property is free from snow from mid May until mid October, and the road infrastructure allows drilling from mid April to mid November.

## HISTORY

The western part of the Vulcan property was originally staked by Cominco in 1957. During 1957-58, Cominco conducted prospecting, detailed mapping, trail building and an experimental magnetometer-electromagnetic survey. Three short packsack drill holes were also completed on the Main Showing, the results of which are not known to the authors.

The Pb-Zn showings were discovered during this period and the mineralization was recognized as being strata-controlled. Widespread tourmaline mineralization was also noted and observed to be strata-controlled. A strong similarity between the Vulcan and the Sullivan Mine was documented by O.E. Owens of Cominco at this time. Lead-zinc-silver mineralization was noted to "occur in the same type of rocks, at the same point in the stratigraphic succession,[Lower-Middle Aldridge Contact LMC] and as the same type of mineralization" as at Sullivan (Owens, 1958). Recommendations for deep drilling were made, with such a program to be deferred until after regional geological studies were completed.

In 1971, Texas Gulf Sulfur re-sampled the showings and did some detailed geological mapping of the Main Showing area. The property was called Hilo at this time. No further work was done by Texas Gulf.

In the 1970's, regional stratigraphic correlation studies by Cominco established that the Vulcan mineralization occurs on the LMC. Regional studies also suggested that the Sullivan type setting defined by the 1958 work was unique, and appeared to be localized in the western part of the current Vulcan claims.

The Vulcan was staked again by Cominco Ltd. in 1976. A 4 x 4 access road was constructed to the property, and a single drill test of the LMC was completed (Vu-79-1, 188 m) from the road. No mineralization or lithogeochemical anomalies were found at the LMC - marked by a distinctive pyrrhotite laminated wacke underlain by fragmental rocks. Minor weak Pb-Zn mineralization was located in the Lower Aldridge Formation in this hole (1.1 m @ 0.35% Pb, 0.30% Zn).

The property was extended to the south in 1982.

In 1983, Cominco conducted rock geochemical sampling of the fragmental unit and LMC sequence throughout the Vulcan 1-3 claims. Several Pb-Zn-As anomalies were delineated by this work.

A surface UTEM and HLEM survey was conducted in 1984 covering the LMC and fragmental unit on the Jurak 1 claim. Eight UTEM lines (1.2 - 1.8 km length) were surveyed from one transmitter loop. Weak UTEM anomalies were interpreted as indicating a "weak extensive (larger than loop dimension) conductor, with depth to top varying from 100 m to 200 m" (Visser, 1984). The conductor was located in the area of the completed Cominco drill hole.

Cominco's work program on the current Vulcan claims was discontinued following this survey. The objective of subsequent Cominco work was to locate and evaluate the LMC on the more accessible ground to the south of the current Vulcan property.

Mapping, contour and grid soil geochemistry and UTEM/HLEM surveys were completed. Patchy soil Pb-Zn anomalies were outlined on the lower slopes of Mt. Patrick along the projection of the LMC. UTEM and HLEM anomalies were located on the inferred LMC extension and over the Lower Aldridge Formation. Five drill holes (Vu-84-1 to 4 and Vu-85-1) were completed by Cominco to test the best geophysical anomalies. All holes were entirely within the Lower Aldridge, and the anomalies were found to be caused by graphite and banded/laminated pyrrhotite (+_chalcopyrite) mineralization. The LMC remains untested in this area, and additional weak geophysical anomalies occur on the possible projection of the LMC.

No further Cominco work programs were carried out in the 1986-90 period.

Ascot resources acquired the option on the Vulcan Claims in 1991. Additional claims were staked in August of that year, and in late September, Ascot carried out a 1003m drill program consisting of five holes drilled over 2.6km of LMC strike length. The objectives of the Ascot program were to use drilling and down hole EM surveys to define the distribution of base metal sulfides and of the sub-basin which forms the sulfide host at shallow to intermediate depths (to roughly 200m), in order that deeper drill tests could be planned.

Ascot conducted a 1,825.8m follow-up drill program in 1992 to provide deep down-dip testing of the Lower/Middle Aldridge Formation contact. Upon completion of this drilling, Ascot directed attention to the White Creek area, located 7km to the south of West Basin. A strataform massive sulphide showing was discovered in the White Creek area earlier in that summer which returned values of .42% Pb, .35% Zn, and 4.2 g/t Ag over 1.0m. A 5.0 line-km UTEM geophysical survey was completed which indicated the presence of two weak to moderate-strength conductors, one which was associated with the mineralized zone. One further drill hole -Vu-92-4 was drilled to test the geophysical conductors at depth. The hole intersected a mineralized zone which they traced back to the surface showing, but mineralization was weaker than at surface.

The Ascot 1992 drill program was the last technical work completed on the Vulcan property prior to acquisition by Eagle Plains. Cominco allowed the claims to lapse in 2002 at which time Eagle Plains Resources staked the Jurak 1. Since 2002, Eagle Plains Resources has expanded its claims to include the Jurak 2, 3 and 4.

Work conducted on the Vulcan property in 2005 included reprocessing and reinterpretation of 1995 EM geophysical data and the development and implementation of a GIS database. In 2005, as part of a data compilation on an unrelated project in SE BC, Eagle Plains requested an independent contractor, Condor Geophysics, to verify and reprocess Geoterrex-Dighem (now Fugro Airborne Surveys) EM survey data collected in 1995 by a joint partnership between BC Ministry of Employment and Investment, Energy and Minerals division, BC Geological Survey Branch and the Geological Survey of Canada. During the course of the data verification by Condor, it was found that the GPS height and the barometric altimeter height were both corrupted, rendering the original geophysical maps and related data included in the 1996 public release highly suspect, if not worthless. After considerable effort Condor was able to arrange for the government to supply replacement SRTM (Shuttle Radar Topography Mission) elevation data that has reasonable resolution and based on this new data set were able to produce a new interpretation of the 1995 data. As the 1995 survey also covered the Vulcan claim area Eagle Plains contracted Condor to correct and reinterpret the EM data for the area referred to as the St. Mary Block. Compilation work included scanning, rectifying and digitizing the historic geology maps, creating a drill-hole database, imputing the historic drill logs, and the creation and interpretation of new sections. A geochemistry database was also implemented utilizing historic rock, silt and soil sample data. The geochemistry and drill-hole databases will allow for a more organized approach to the interpretation of the geology of the Vulcan. Base data for the area covered by the Vulcan claim block was also acquired, processed and integrated into the GIS in order to facilitate map creation and improve data visualization.

## EXPLORATION EXPENDITURES

Based on expenditures documented in exploration reports, expenditures from the 1990's work programs in the area of the Vulcan property by Cominco Limited and Ascot Resources Ltd. totaled $515,352.00. It should be noted that while the majority of this work was done within the current Eagle Plains claim boundaries, some of the work may have occurred on ground not currently held by Eagle Plains.

# GEOLOGICAL SETTING (Figure 3, 4)

## REGIONAL GEOLOGY (Termuende, 1992) (Figure 3)

The Vulcan property and adjacent area is underlain by rocks of the Purcell Supergroup on the western flank of the Purcell Anticlinorium, a broad, north-plunging arch-like structure in Helikian and Hadrynian aged rocks. The anticlinorium is allocthonous, carried eastward and onto the underlying cratonic basement by generally north trending thrusts throughout the Laramide orogeny during late mesozoic and early tertiary time (Price, 1981). The oldest rocks exposed in the area are greenish, rusty weathering thin bedded siltites and quartzites of the + 4000m thick Lower Aldridge Formation, along with the facies-related, dominantly fluvial Fort Steele Formation (the bases of which are unexposed). The Sullivan deposit is located some 20-30m below the upper contact of the Lower Aldridge Formation. Overlying the Lower Aldridge is a continuous section of Middle Aldridge quartz wackes, subwackes and argillites some 3000+ m thick. Within the Middle Aldridge formation, fourteen varved marker horizons can be correlated over hundreds of kilometres. These represent the only accurate stratigraphic control. A number of aerially extensive, locally thick gabbroic sills are present within the Lower and Middle Aldridge Formations. These sills and dykes; the "Moyie Sills", locally were intruded into wet, unconsolidated sediments, and have been dated to 1445 Ma, providing a minimum age for Aldridge sedimentation and formation of the Sullivan deposit. The Middle Aldridge is overlain conformably by the Upper Aldridge, 300 to 400 meters of thin, fissile, rusty weathering siltite/argillite.

Conformably overlying the Aldridge Formation is the Creston Formation, comprising approximately 1800 meters of grey, green and maroon, cross-bedded and ripple marked platformal quartzites and mudstones. The Kitchener-Siyeh Formation, which includes 1200 to 1600 meters of grey-green and buff coloured dolomitic mudstone are shallow water sediments overlying the Creston Formation.

The upper portion of the Purcell Supergroup consists of the Dutch Creek and Mount Nelson Formations. The Dutch Creek formation consists of approximately 1200 meters of dark grey, calcareous dolomitic mudstones. Overlying the Dutch Creek formation is the Mount Nelson formation, 1000 meters of grey-green and maroon mudstone and calcareous mudstones. This unit marks the top of the Purcell Supergroup.

The Purcell Supergroup in the Sullivan area was deposited along a tectonicly active basin margin. Dramatic thickness and facies variations record Purcell-age growth faults and contrast with gradual changes characteristic of most Purcell rocks elsewhere. These faults reflect deep crustal structures that modified incipient Purcell rifting, and led to the development of an intercratonic basin in middle Proterozoic time.

### Structure

The structural geology of the region has broadly warped westerly dipping stratigraphy cut by northerly-trending normal faults. This structure is typical of the west limb of the core of the Purcell Anticlinorium, a large north-plunging feature formed during the development of the Rocky Mountain Thrust and Fold belt. The dominant fault in the area is the Hall Creek thrust fault which runs through the south east corner of the Vulcan. The Hall Creek fault thrusts the Aldridge formation over the younger Creston formation to the east. The sedimentary units of the Purcell Supergroup are bounded to the north by the mid-Cretaceous White Creek Batholith. Near this intrusion, structures are more complicated, folds become tighter and foliation is strong.

## LOCAL GEOLOGY (Figure 4, 5)

The most recent geology was done by McCartney (1991) and also appears in the Geological Report for the Vulcan Property by Tim Termuende (1992).

**West Basin** (see Figure 3, after McCartney, 1991)

The West Basin area is relatively unique in its geologic characteristics, containing features similar to those seen within the Sullivan Mine itself, and associated with adjacent Sullivan-North Star Corridor. These features are summarized below:

a) A stratigraphic sequence which is directly correlative with the Sullivan Deposit. This includes Lower Aldridge rocks in contact with the overlying Middle Aldridge sequence (the Lower-Middle Contact, or LMC), with an intraformational conglomerate and strata-controlled mineralization. This sequence has been mapped on the property over a 3.0km strike length, and in thickness to 250m.

b) Alteration including tourmalinization and albitization are present and in association with the LMC.

c) Stratiform lead-zinc-silver mineralization has been noted in drillholes and on surface, and is stratigraphically located within the "Sullivan -Time" horizon. This showing has returned values of 1.6% combined Pb/Zn over 1.52m within a weakly mineralized section 7.5m thick.

## Rock Types

### Middle and Lower Aldridge Formation Siliciclastics

The Lower Aldridge Formation regionally consists of a rhythmic succession of laminated to thin bedded fine grained wacke (argillite) and quartzitic wacke (argillaceous quartzite). The sequence is characterized by minor amounts of fine grained disseminated pyrrhotite which imparts a characteristic rusty weathering nature to Lower Aldridge outcrops. Beds are typically graded, and local crossbedding occurs. Intervals of massive to thick bedded quartzitic wacke or quartz arenite also occur (e.g. "footwall quartzite" unit at the Sullivan Mine). Massive to poorly bedded lenses of intraformational conglomerate occur locally near the top of the Lower Aldridge Formation and are composed of Aldridge rock types in a wacke matrix.

The Middle Aldridge Formation is predominantly medium to thick bedded light grey weathering quartzitic wacke turbidites consisting of medium grained massive quartz-rich bases overlain by thin wacke-subwacke (argillite) tops. Rip up clasts and flame structures commonly occur in the bases of the quartzite beds and are indicative of a high energy, rapid deposition. Subordinate amounts of Lower Aldridge type lithologies are interbedded within the Middle Aldridge. Gabbro sills of the Moyie Intrusions intrude both Lower and Middle Aldridge, and are locally observed to crosscut stratigraphy.

**Fragmental (Conglomerate).** This unit occurs near the top of the Lower Aldridge Formation. Many textural variations were noted. The most common type contains rounded medium to fine grained biotitic quartzitic wacke fragments and flat light grey subwacke fragments in a massive fine grained wacke matrix. Disseminated pyrrhotite commonly replaces the biotite-rich clasts, which locally become semi-massive pyrrhotite. Fragments comprise between 15 and 35% of the rock, average 2-3 cm and are matrix supported. The matrix usually contains finely disseminated pyrrhotite, and the unit always weathers to a very rusty brown. Wacke and mudstone fragments are generally smaller and more angular than the quartzitic fragments.

Bedding is rare within the fragmental rock type itself, although intervals of normal bedded Lower Aldridge sediment commonly occur within it. Prominent slump folds commonly occur at the base of fragmental intervals. Fragmental rocks locally contain quartz-feldspar-amphibole-biotite-pyrrhotite concretions(?) often with a pale bleached or a dark biotite-rich halo.

It was noted during 1992 work that the size of fragment, sorting, degree of flattening, and imbrication is directly related to the units' position relative to the regional fold straddling the West Basin/Jurak Lake ridge. Along the flanks of the fold, matrix-supported, smaller, well-sorted fragments were flattened to coin-shaped dimensions, while near the Main Showing area (closer to the fold nose area), fragments were clast-supported, larger, poorly imbricated, and only poorly to moderately sorted. Though much of this textural variation may be attributed to fold-related stresses, there is evidence which suggests a proximity to a source area for the fragmental, a possibility supported by the presence of higher grade mineralization within the Main Showing area itself.

Two theories are considered plausible for the formation of the fragmentals. They may be large slump conglomerate units formed during graben-type faulting and tilting at the close of Lower Aldridge time. Alternatively they may be extruded onto the sea floor during dewatering of the Lower Aldridge sequence, perhaps utilizing zones of cross-strata permeability related to sub-basin development. There is evidence that both of these processes have a role in the formation of fragmentals of the Aldridge Formation.

**Conglomeratic Rocks.** These rocks are similar in all respects to the fragmental but contain <10% clasts, usually in a massive wacke matrix. Clast types are similar to those in the fragmental unit and are unsorted. Clasts are matrix supported. Fragments tend to be smaller than in the true fragmental. This rock type grades into massive wacke.

**Massive Wacke.** Massive wackes commonly occur near the top of the Lower Aldridge and are usually interbedded with conglomeratic wacke or fragmental. This rock type is believed to represent a settling out of fine material following fragmental formation and is of a similar composition to the fragmental matrix. Massive wackes are believed to represent more distal settings to the fragmentals, being further removed from the fractures or fault scarps which control fragmental development. They may also accumulate at the top of fragmental sections, as a settling out of suspended clay/silt after conglomerate deposition.

**Pyrrhotite Laminated Wacke/Subwacke.** This unit occurs immediately below the Lower Aldridge-Middle Aldridge contact (LMC) in holes Vu-92-2 and Vu-92-3, also in Vu-91-1 to 5 and in Vu-79-1, and averages approximately 8m in thickness. This lithology is interpreted as an argillaceous sub-basin facies and forms a cap to the fragmental rock units within the sub-basin. The unit is directly correlated with the mineralized sequence at the Sullivan Mine. Similar rock types are often interbedded within the upper 50 m of the fragmental and over the lowermost 20-30 m of the Middle Aldridge.

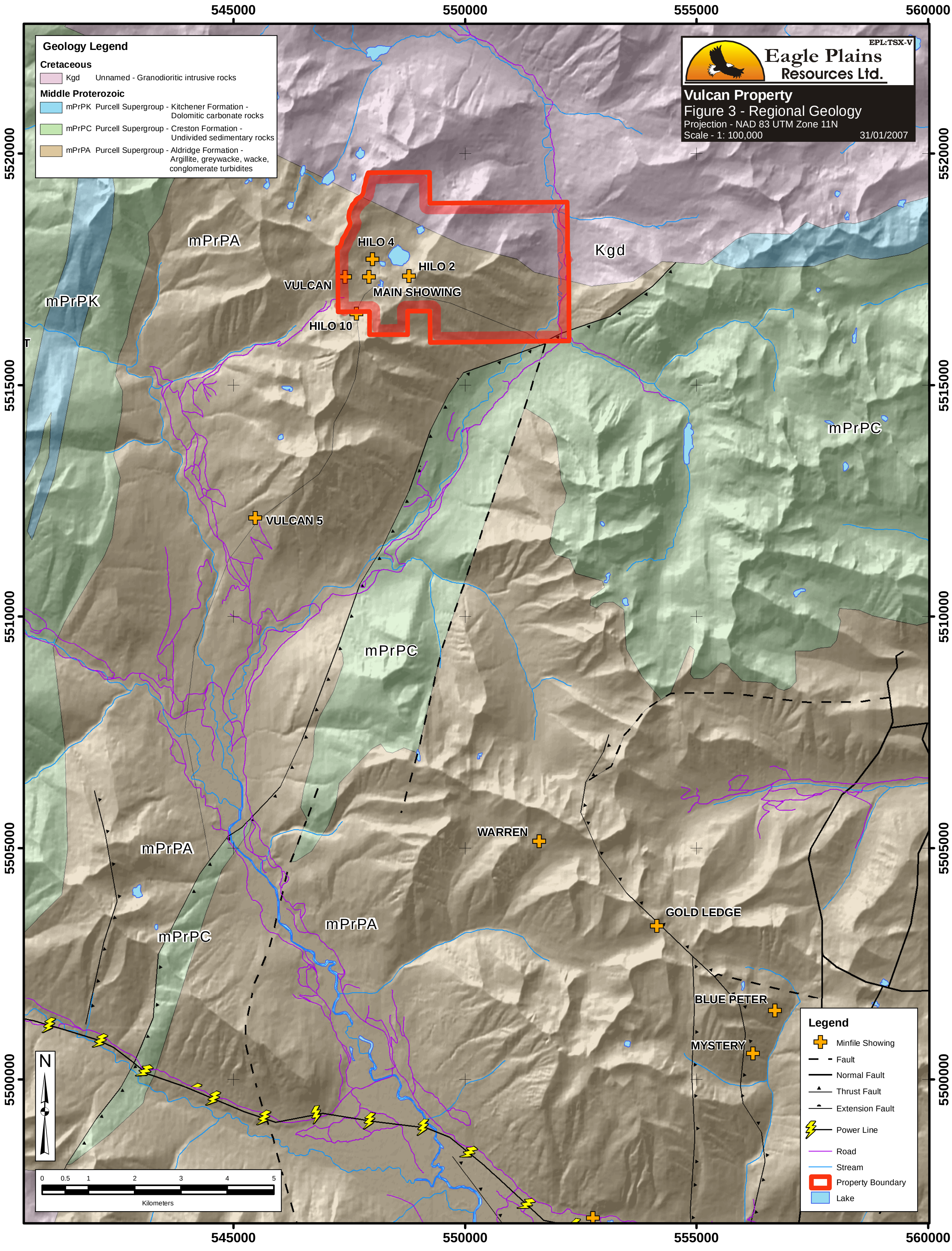
Texturally the rock type is a fine grained wacke to subwacke, similar to the massive wacke units, but it contains distinctive dark biotite-pyrrhotite rich laminations. The laminations are usually 1-2_mm thick and separated by several cm of massive wacke. The pyrrhotite usually occurs as fine grained disseminations within the dark laminations, but is clearly strata-controlled. Traces of chalcopyrite were observed with the pyrrhotite in Vu-92-2 and Vu-92-3. Within hole Vu-92-3, this unit was locally albitized, and appears creamy white in colouration, within which pyrrhotite lamination widths were observed to increase.

**Gabbro.** The gabbro intrusions are generally sill-like and consist of medium to coarse grained amphibole-plagioclase with minor biotite and chlorite. Minor disseminated pyrrhotite is common. In places, the gabbros have sharp chilled margins, locally with albite-chlorite or biotitic alteration selvages in adjacent sediments. Gabbro contacts can also be gradual and replacive, with coarse calc-silicate assemblages replacing adjacent sediments.

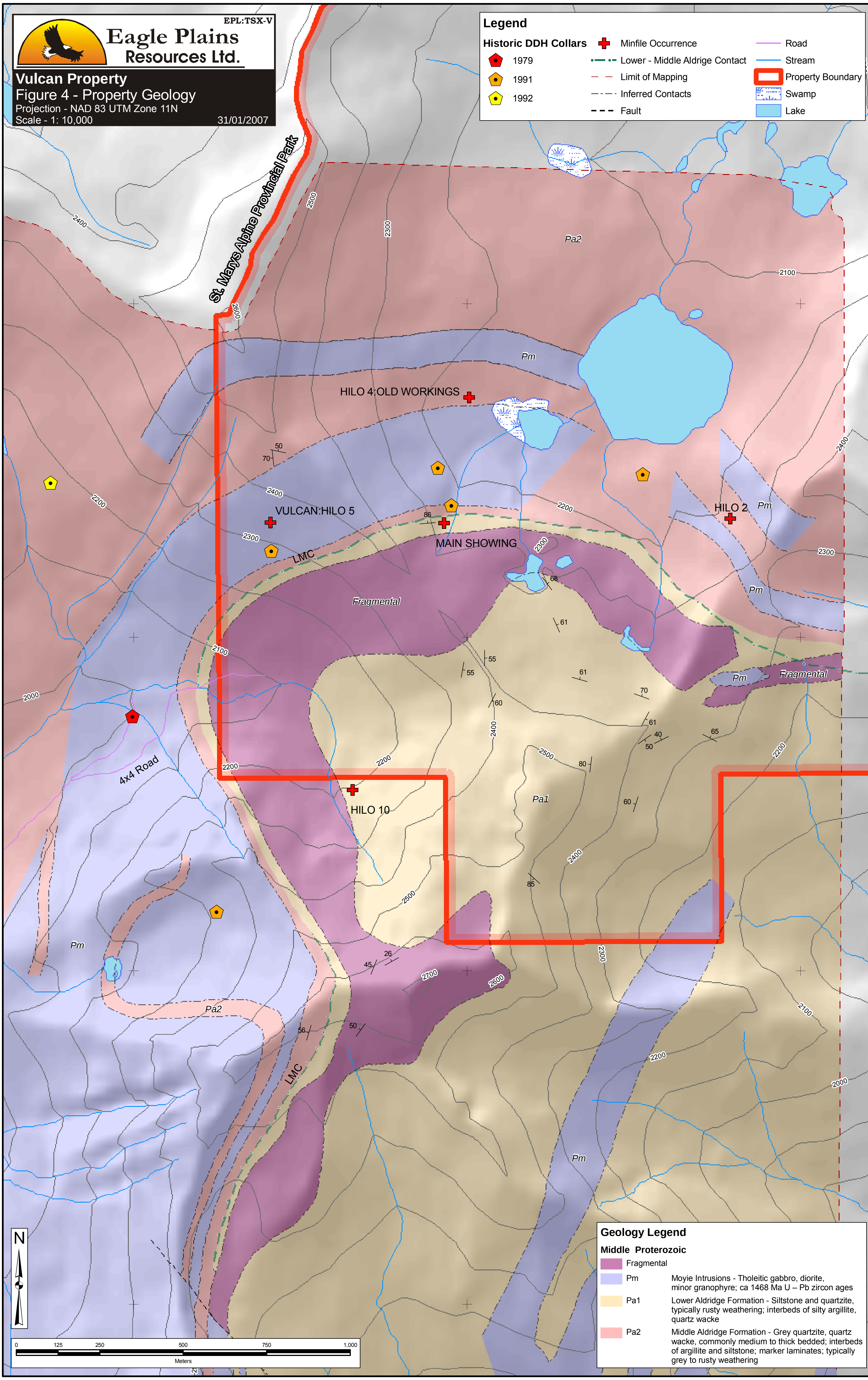
The gabbroic rocks are often locally altered. Chlorite-biotite (+ calcite) alteration is common. Intensive alteration to massive chlorite/biotite was noted in hole Vu-92-2, and may be observed on the northeast-facing slope above the Main Showing. According to G.S.C. geologists, this feature is seen within cores from the Sullivan area, and is known locally as "granophyre". (Termuende, 1992).

**Calc-silicate Unit** No calc-silicate units were recognized in core during the 1992 Cominco drill program, suggesting them to be a localized feature, apparently restricted to the up-dip regions of the LMC horizon. Calc-silicate units occur as conformable lenses adjacent to the mineralized zone in the Main Showing exposure, where they exhibit strong continuous parallel banding features. A continuous stratabound unit of coarse to medium grained calc-silicate rock also occurs in laminated wacke just below the LMC to the west of Mount Patrick (up-dip of Vu-91-4). Here it is 1-3 m thick. Similar coarse calc-silicate was observed crosscutting the fragmental unit southeast of Vu-91-1 but this zone is poorly exposed.

The calc-silicate is a mottled to banded, coarse to medium grained rock with a quartz-pink feldspar-tremolite-chlorite-calcite mineralogy. Garnet, epidote, albite and biotite are common accessories. The mineralogy of this rock type is similar to the mineralogy of alteration observed in the footwall vent system of the Sullivan Mine by workers on the GSC/BCDM Sullivan Project. Termuende (1992) noted that although this rock type was identified at surface, and at shallow depth in Vu-91-1,2,4 and 5, it was not found in the deep drill holes in 1992.



EPL:TSX-V
Eagle Plains Resources Ltd.
Vulcan Property
Figure 3 - Regional Geology
Projection - NAD 83 UTM Zone 11N
Scale - 1: 100,000
31/01/2007
Geology Legend
Cretaceous
Kgd Unnamed - Granodioritic intrusive rocks
Middle Proterozoic
mPrPK Purcell Supergroup - Kitchener Formation - Dolomitic carbonate rocks
mPrPC Purcell Supergroup - Creston Formation - Undivided sedimentary rocks
mPrPA Purcell Supergroup - Aldridge Formation - Argillite, greywacke, wacke, conglomerate turbidites
Legend
Minfile Showing
Fault
Normal Fault
Thrust Fault
Extension Fault
Power Line
Road
Stream
Property Boundary
Lake
545000
550000
555000
560000
5520000
5515000
5510000
5505000
5500000
mPrPA
mPrPK
Kgd
mPrPC
HILO 4
HILO 2
VULCAN
MAIN SHOWING
HILO 10
VULCAN 5
WARREN
GOLD LEDGE
BLUE PETER
MYSTERY
N
0 0.5 1 2 3 4 5
Kilometers


EPL:TSX-V
Eagle Plains Resources Ltd.
Vulcan Property
Figure 4 - Property Geology
Projection - NAD 83 UTM Zone 11N
Scale - 1: 10,000
31/01/2007
Legend
Historic DDH Collars
1979
1991
1992
Minfile Occurrence
Lower - Middle Aldrige Contact
Limit of Mapping
Inferred Contacts
Fault
Road
Stream
Property Boundary
Swamp
Lake
Geology Legend
Middle Proterozoic
Fragmental
Pm Moyie Intrusions - Tholeitic gabbro, diorite, minor granophyre; ca 1468 Ma U – Pb zircon ages
Pa1 Lower Aldridge Formation - Siltstone and quartzite, typically rusty weathering; interbeds of silty argillite, quartz wacke
Pa2 Middle Aldridge Formation - Grey quartzite, quartz wacke, commonly medium to thick bedded; interbeds of argillite and siltstone; marker laminates; typically grey to rusty weathering
St. Marys Alpine Provincial Park
HILO 4:OLD WORKINGS
VULCAN:HILO 5
MAIN SHOWING
HILO 2
HILO 10
LMC
4x4 Road
Pm
Pa1
Pa2
Fragmental
547000
548000
549000
5518000
5517000
5516000
5515000
0 125 250 500 750 1,000
Meters
N

## MINERAL DEPOSIT TYPES

Many different types of mineral deposits occur in SE British Columbia including Sedimentary Exhalative (Sullivan, Wilds Creek) deposits, manteau (Blue Bell ) deposits, high grade silver veins (Slocan Camp) and gold porphyry systems (Keena).

Mineralization at the Vulcan is associated both with millimeter to centimeter-wide veins (stringers) and semiconformable pyrrhotite-laminated wacke. The quartz and or calcite stringers carry minor pyrrhotite, trace chalcopyrite, galena and sphalerite. The stringers do not appear to be associated with any particular rock type or have a preferred orientation. The pyrrhotite-laminated wacke is the most significant form of mineralization on the Vulcan property. The laminations occur as 1-2mm thick strata-controlled Fe-Pb-Zn+/-Ag sulfides hosted by a biotitic, locally albite-altered laminated wacke to subwacke. Both the stringers and the pyrrhotite-laminated wackes are considered to be associated with a Sedimentary Exhalative (SEDEX) style deposit.

Lydon (1996) defined SedEx deposits as: "a sulphide deposit formed in a sedimentary basin by the submarine venting of hydrothermal fluids and whose principal ore minerals are sphalerite and galena." In addition to sphalerite and galena, other minerals that may be present in a SedEx deposit include silver, antimony, arsenic, bismuth, barite, chalcopyrite, pyrrhotite and tourmaline. Mineral concentration and deposit thickness of SedEx deposits tend to grade both in a lateral and vertical fashion from the vent. The zonation creates a lenticular deposit with thicknesses ranging from up to 20m near the vent, tapering to negligible thickness. The age of known SedEx deposits range from the Middle Proterozoic to the present. The nearby Sullivan is dated to the Middle Proterozoic. In terms of a geophysical signature, they often generate large positive gravity anomalies because of Fe oxides; however, it is difficult to gauge the thickness of the actual target. Although SedEx deposits are known to be a major source of zinc and lead, they are relatively rare.

The Vulcan sulphide mineralization exhibits the characteristics of a typical SedEx deposit. The laminated pyrrhotite mineralization and presence of tourmaline relate strongly to a distal hydrothermal situation. The mineralized laminations also occur near the contact of the Lower and Middle Aldridge which was also the case at the Sullivan. Ground based geophysics has been successfully implemented to target the pyrrhotite mineralization.

# ALTERATION AND MINERALIZATION

## ALTERATION

Various alteration types are recognized within the property. Most commonly noted is silicification, which consists of microcrystalline replacement (partial to complete) of silica within detrital units. Coarser grained units common to the Middle Aldridge package (quartzites, quartzitic wackes) seemed most susceptible to this alteration, likely due to their increased permeability at one time.

Albite alteration was identified in both holes Vu-92-2 and Vu-92-3. In Vu-92-2 it was noted within a fine to medium bedded wacke of the Lower Aldridge below the contact with a thick gabbro unit (479.3-485.1m). It is also found within the same unit directly above the fragmental contact (499.1-501.5m), and as irregular, patchy occurrences within gabbroic material. In Vu-92-3, it is far more prevalent, occurring below the LMC; locally within the pyrrhotite-laminated wacke, and as pervasive alteration within the underlying conglomeratic wacke and into the turbiditic fine-laminated wacke below (323.2-360.1m). This entire interval has a light bleached appearance, and is visually very similar to the Concentrator Hill Horizon southeast of the Sullivan deposit, though it is geochemically less enriched.

Tourmalinization was noted in holes Vu-92-1 to Vu-92-3. Tourmalinite was seen often as centimetre-scale veins within all rock-types, and as fine, acicular needles within quartz and/or calcite veinlets. Pervasive tourmalinization, as seen associated with Sullivan-type mineralization within the Sullivan-North Star Corridor, was not recognized in core.

Chlorite/biotite alteration, as discussed above, is seen predominantly within gabbroic material and varies greatly in intensity. Commonly at intrusive contacts, replacement is complete within the both the gabbro and its' host, obliterating relict textures. Biotization is also common within finer bedded and massive intervals, particularly in Lower Aldridge rocks.

Sericite alteration was common in all drillholes, occurring as coatings on fracture surfaces in all rock types.

## MINERALIZATION

Mineralization seen in core at Vulcan consists primarily of fine disseminated pyrrhotite within all rock types. Millimetre to centimetre-wide quartz and/or calcite veins were common to all rock types, and generally carry minor pyrrhotite, locally with trace chalcopyrite, galena and sphalerite.

These stringers were also seen to host fine, acicular tourmalinite needles to .5cm in length. Minor pyrrhotite ± chalcopyrite, pyrite stringers were also noted in all lithologies and in all holes, and appeared to show no preferred orientation.

The most significant form of mineralization to Sullivan-type exploration is the pyrrhotite-laminated wacke. This unit, located directly beneath the Lower-Middle Aldridge contact, was noted in all completed West Basin holes (including 1991 drilling), and consists of strata-controlled Fe-Pb-Zn+/-Ag sulfides hosted by a biotitic, locally albite-altered laminated wacke to subwacke. Pyrrhotite occurs in dark biotite-rich laminations which are usually 1-2 mm thick and are separated by several cm of massive wacke. The pyrrhotite usually occurs as fine grained disseminations within the dark laminations, but is clearly strata-controlled. This interval may be directly correlated with the sequence hosting stratiform mineralization at the Sullivan Mine. This mineral type is exposed at the Main Showing, where pyrrhotite-sphalerite-galena mineralization occurs over 7.5m, with values to 0.35% Pb, 1.25% Zn returned over 1.52m (previous Cominco sampling). McCartney collected several grab samples of this material in 1991, the best of which assayed 5.5% Pb-Zn combined and 22 gpt Ag. Exploration activity elsewhere in the East Kootenay area has indicated that this anomalous horizon is widespread, and typical of the "Sullivan-Time" stratigraphic interval.

## STRUCTURE

The main structural feature of the West Basin area is a broad open anticlinal fold plunging steeply to the northwest. O.E. Owens of Cominco conducted the most recent mapping of the West Basin area and describes the structure as follows (Owens, 1958):

> "The Lower Aldridge rocks have been folded into large north-south trending anticlines and synclines, and they have been refolded into a west plunging anticline by the intrusion of the White Creek batholith. Within these major folds are numerous smaller closed folds. Some of these strike north-south; others as in West Basin strike east-west. The smaller folds appear to pinch out within short distances and their plunge is variable.

The Middle Aldridge rocks are relatively slightly folded except near the granite. They are part of a thick homoclinal series dipping westward.
North-south trending, steeply dipping faults are common in the eastern part of the map area. These are usually related in space to tight folds and are probably genetically related to them.

Sulfide mineralization was not observed to have any spatial relationship to folds or faults."

## 2006 WORK PROGRAM (Figure 5)

The 2006 Eagle Plains Resources exploration program at the Vulcan Project consisted of an AeroTEMII high resolution Time Domain Electro Magnetic geophysical survey. Data collection was done by Aeroquest Limited. A total of 125.51 line km of survey was flown on April 29, 2006 with helicopter support provided by Bighorn Helicopters using an AStar 350B2.
The survey was hampered by poor weather conditions, with three days of standby waiting for visibility to improve.

All survey data was integrated into a GIS data base.

All exploration and reclamation work was carried out in accordance to Ministry of Environment, Ministry of Mines and WCB regulations.

Total 2006 exploration expenditures by Eagle Plains Resources on the Vulcan Project were $37,228.84

## 2006 PROGRAM RESULTS (Figure 6 - 8, Appendix III)

The airborne survey defined a number of geophysical anomalies. The most interesting feature is located in the southwestern part of the property. The contoured Aerotem Z-1 Off-time profile shows a distinct feature that roughly traces the contact between Lower and Middle Aldridge rocks. The anomaly appears to correspond with rocks located stratigraphically below the Lower-Middle Aldridge contact, and may represent a new, untested between the Hilo 10 and Hilo 5 Minfile occurrences.

There is another feature located at UTM 5518000 N along the boundary with the Purcell Wilderness Conservancy. It appears to be a single point anomaly feature spatially associated with the hangingwall of a Moyie Sill.

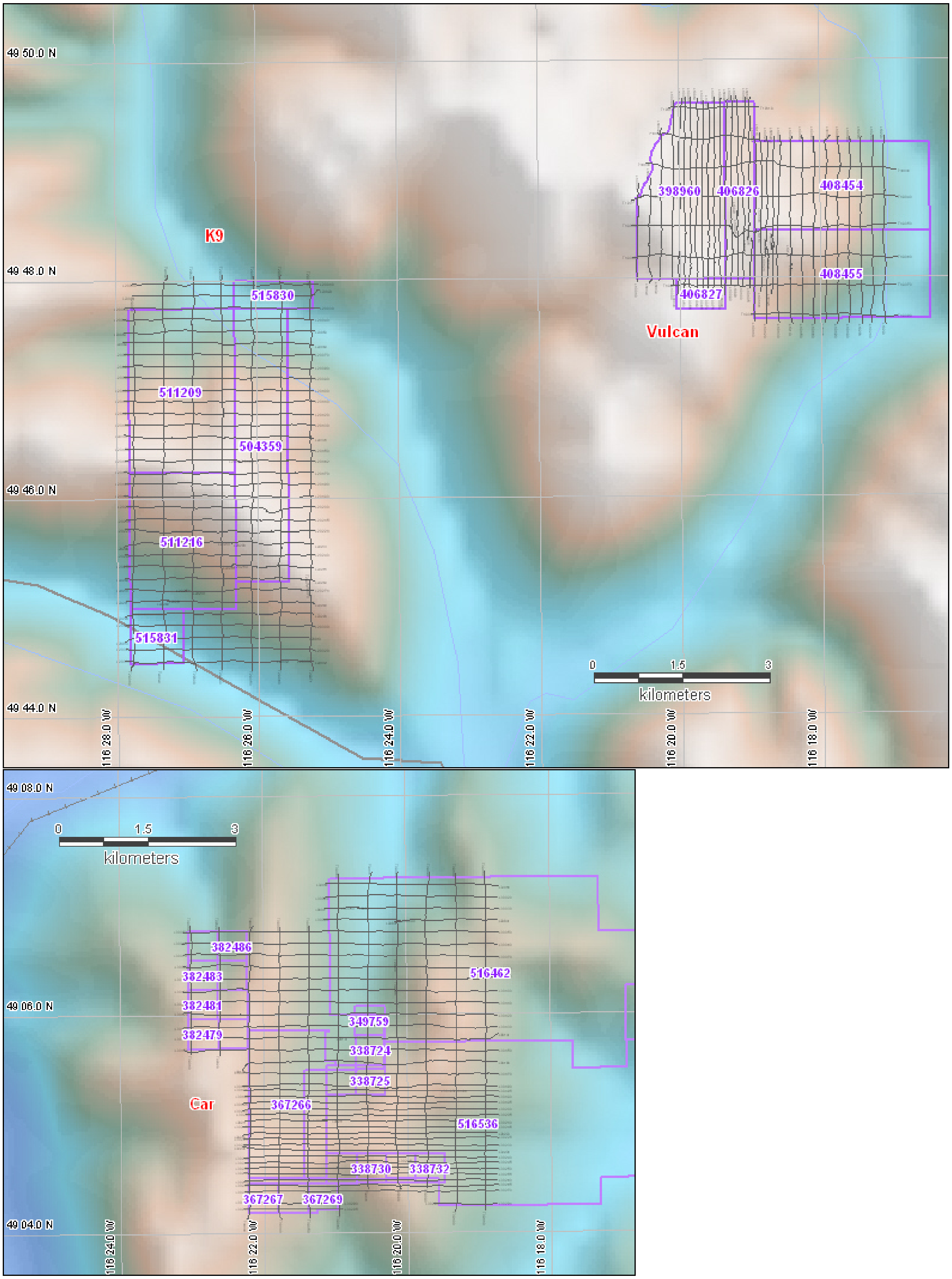
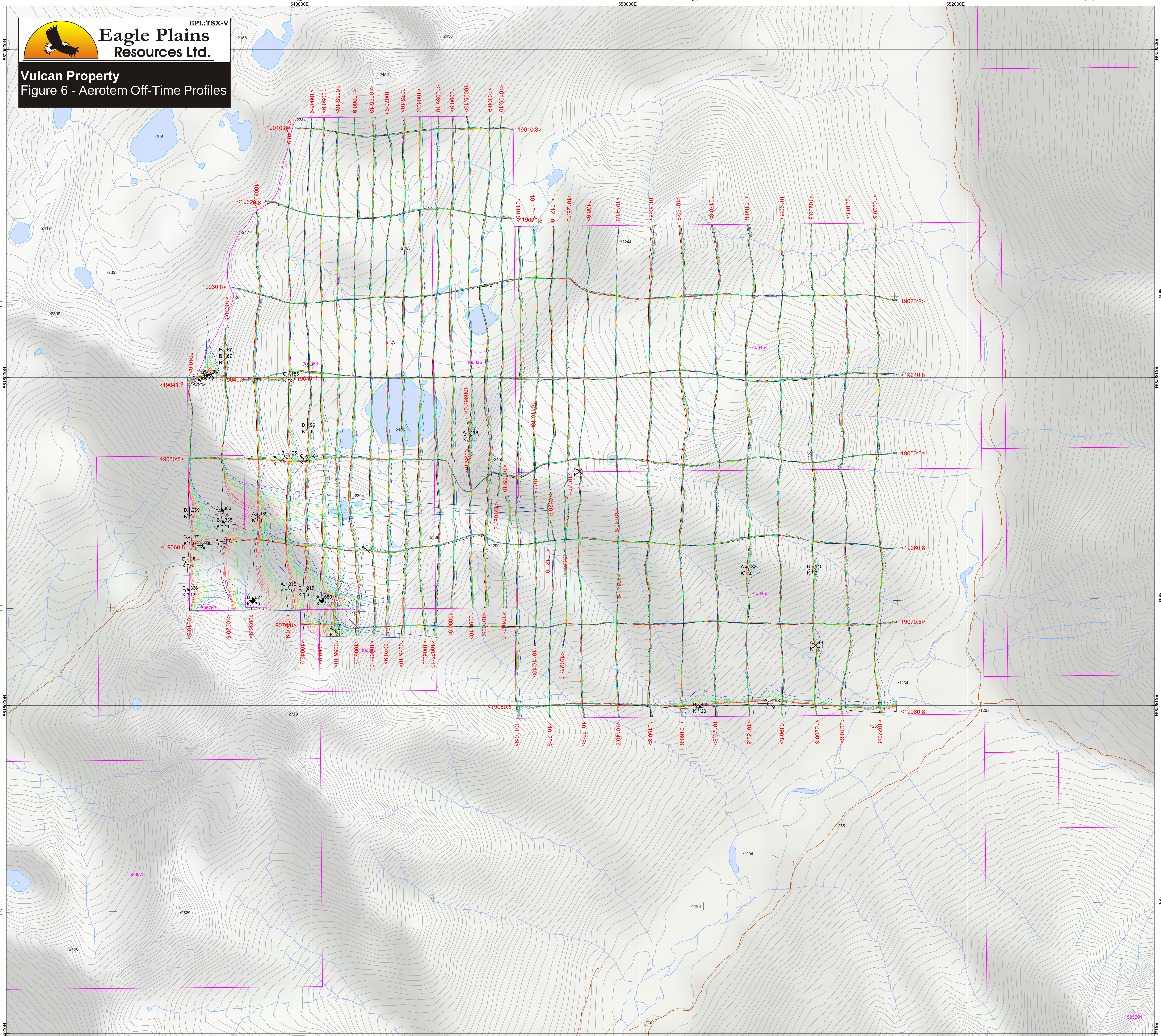



Figure 5. Project Flight Paths and mining claims

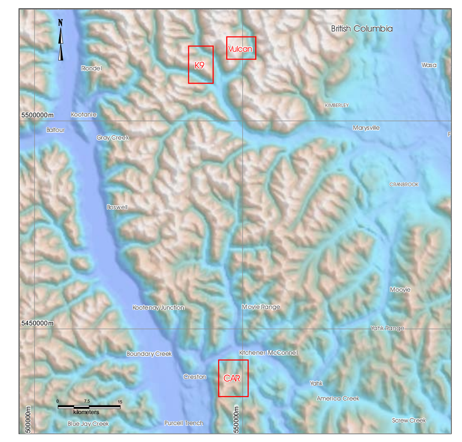



Grid North
NAD83-Zone11

The topographic base data was supplied by the client

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, Vulcan, K-9, and Car Projects', by Aeroquest Limited, June 2006

AeroTEM Profiles

positive excursion to top and right, 1mm=5nT/s

- Z1 Off-Time Channel
- Z2 Off-Time Channel
- Z3 Off-Time Channel
- Z4 Off-Time Channel
- Z5 Off-Time Channel
- Z6 Off-Time Channel
- Z7 Off-Time Channel
- Z8 Off-Time Channel
- Z9 Off-Time Channel
- Z10 Off-Time Channel
- Z11 Off-Time Channel

Off-Time Anomaly Symbols

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

anomaly label A, 125 decay constant (μs)
thicK/thiN source K, 36 off-time conductance (S)

SURVEY SPECIFICATIONS:
- Survey flown: April 29, 2006
- Traverse line spacing: 200 metres
- Traverse line direction: N-S (0°)
- Nominal EM bird height: 30 metres
- Aircraft: Aerospatiale A-Star 350B2 (C-FETQ)

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, tieline 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

scale 1:10,000

200 0 200 400 600
metres
NAD83 / UTM zone 11N

Eagle Plains Resources Ltd.
Cranbrook Area, British Columbia

# AEROTEM OFF-TIME PROFILES

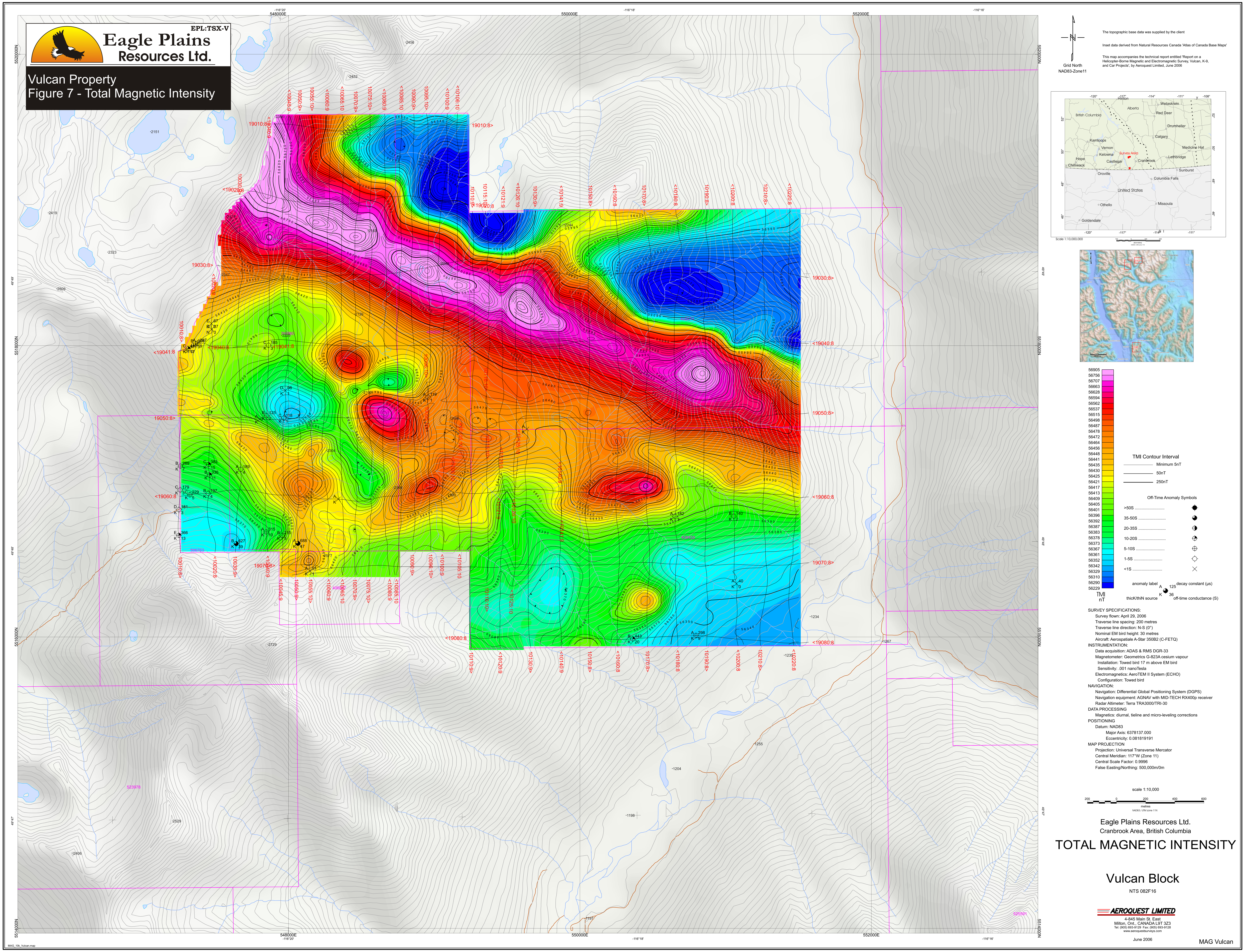
## Vulcan Block

NTS 082F16

AEROQUEST LIMITED
4-845 Main St. East
Milton, Ont., CANADA L9T 3Z3
Tel: (905) 693-9129 Fax: (905) 693-9128
www.aeroquestsurveys.com

June 2006

EM Vulcan



EPL:TSX-V
Eagle Plains Resources Ltd.
Vulcan Property
Figure 7 - Total Magnetic Intensity
Grid North
NAD83-Zone11
The topographic base data was supplied by the client
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, Vulcan, K-9, and Car Projects', by Aeroquest Limited, June 2006
TMI Contour Interval
Minimum 5nT
50nT
250nT
Off-Time Anomaly Symbols
>50S
35-50S
20-35S
10-20S
5-10S
1-5S
<1S
anomaly label
decay constant (µs)
thicK/thiN source
off-time conductance (S)
TMI
nT
SURVEY SPECIFICATIONS:
Survey flown: April 29, 2006
Traverse line spacing: 200 metres
Traverse line direction: N-S (0°)
Nominal EM bird height: 30 metres
Aircraft: Aerospatiale A-Star 350B2 (C-FETQ)
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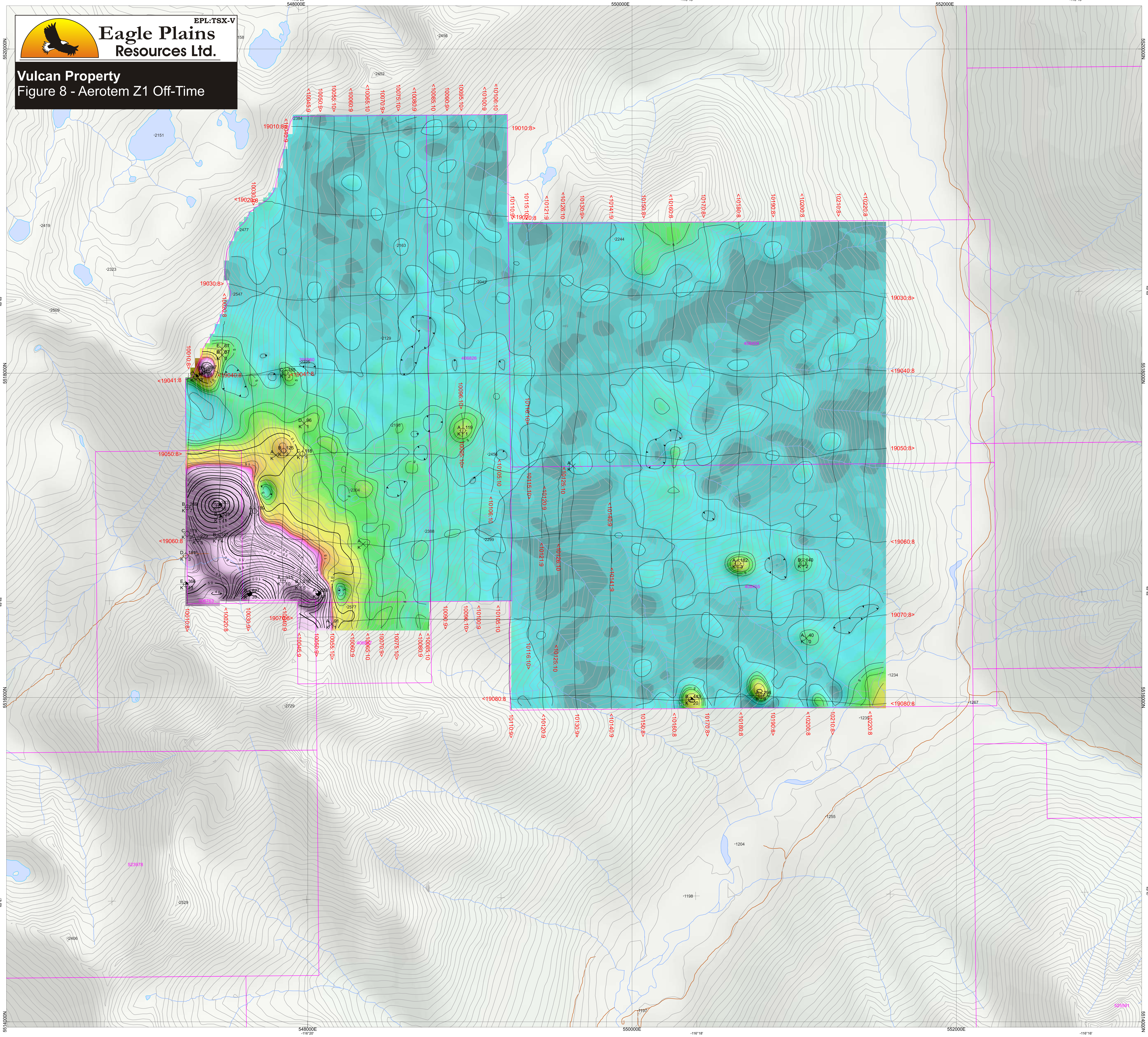
Data acquisition: ADAS & RMS DGR-33
Magnetometer: Geometrics G-823A cesium vapour
Installation: Towed bird 17 m above EM bird
Sensitivity: .001 nanoTesla
Electromagnetics: AeroTEM II System (ECHO)
Configuration: Towed bird
NAVIGATION:
Navigation: Differential Global Positioning System (DGPS)
Navigation equipment: AGNAV with MID-TECH RX400p receiver
Radar Altimeter: Terra TRA3000/TRI-30
DATA PROCESSING
Magnetics: diurnal, tieline 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
scale 1:10,000
metres
NAD83 / UTM zone 11N
Eagle Plains Resources Ltd.
Cranbrook Area, British Columbia
TOTAL MAGNETIC INTENSITY
Vulcan Block
NTS 082F16
AEROQUEST LIMITED
4-845 Main St. East
Milton, Ont., CANADA L9T 3Z3
Tel: (905) 693-9129 Fax: (905) 693-9128
www.aeroquestsurveys.com
June 2006
MAG Vulcan




Grid North
NAD83-Zone11

The topographic base data was supplied by the client

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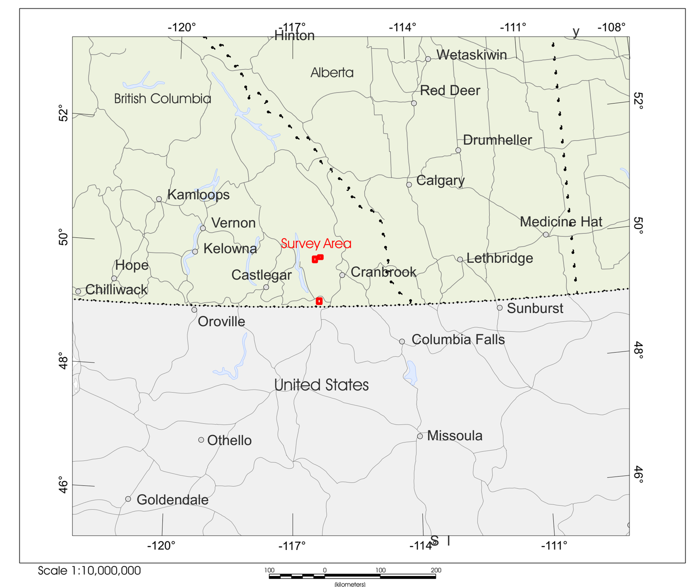


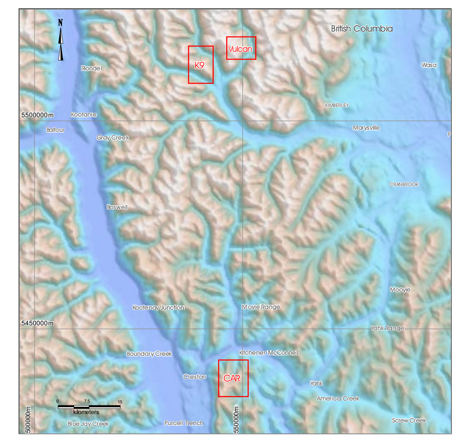

Zoff3 nT/s

ZOFF Contour Interval
2nT/s
10 nT/s
50nT/s

Off-Time Anomaly Symbols
>50S
35-50S
20-35S
10-20S
5-10S
1-5S
<1S

anomaly label A, decay constant (μs) 125, thicK/thiN source K, off-time conductance (S) 36

SURVEY SPECIFICATIONS:
- Survey flown: April 29, 2006
- Traverse line spacing: 200 metres
- Traverse line direction: N-S (0°)
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- Magnetics: diurnal, tieline and micro-leveling corrections

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

scale 1:10,000

metres
NAD83 / UTM zone 11N

Eagle Plains Resources Ltd.
Cranbrook Area, British Columbia

# AEROTEM Z1 OFF-TIME

## Vulcan Block

NTS 082F16

AEROQUEST LIMITED
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Tel: (905) 693-9129 Fax: (905) 693-9128
www.aeroquestsurveys.com

June 2006

ZOFF Vulcan

## OTHER RELEVANT DATA AND INFORMATION

The writer is not aware of any material fact or material change with respect to the subject matter of the technical report which is not reflected in the technical report, the omission of which would make the technical report misleading.

## INTERPRETATION AND CONCLUSIONS

The Vulcan property consists of 1550 hectares located in the Dewar Creek / White Creek area 30 km North West of Kimberley, in southeastern British Columbia. Eagle Plains holds a large land package which includes significant claims in the area, which have not been as thoroughly explored as neighboring claims in the area. The claims are owned 100% by Eagle Plains Resources Ltd, with no underlying royalties or encumbrances. The claims are well located with respect to local infrastructure. The property is road-accessible, and is within reasonable distance from a high-voltage hydro-electric line. Rail facilities are located 30km east of the property.

There is one distinct type of mineralization that occurs on the Vulcan property. Both the mineralized stringer veins and the pyrrhotite-laminated wacke are related to a SEDEX style of deposit. Past drill programs on the western part of the Vulcan property have demonstrated that the style of mineralization, host rocks and alteration types show strong similarities to the Sullivan Deposit. Results from drilling in 1991 and 1992 have led to the conclusion that anomalous base metal mineralization within the favorable stratigraphy is widespread throughout the western regions of the property.

Surface mapping (McCartney, 1991) and diamond drilling on the Vulcan property have indicated an environment that is distal to a vent that was active at Sullivan time. The LMC has been tested both inside and outside the Vulcan's current boundaries; the most encouraging mineralization discovered occurs at the Main Showing on the Jurak 1 claim. At the Main Showing, features present within the nearby intraformational conglomerate, such as larger-sized, poorly sorted clasts, suggest that this exposure may be proximal to a source area. Further drilling is warranted in this area in order to test the deep down-dip extension of this stratigraphy.

Reprocessing and reinterpretation of the corrupted 1995 Geoterrex-Dighem EM survey by Eagle Plains in 2006 showed a moderate EM anomaly coincident with the Lower-Middle Aldridge contact as defined by surface mapping and diamond drilling. This contact is the stratigraphic location of the nearby Sullivan deposit and is considered to be an excellent target for similar style SedEx mineralization elsewhere in the Aldridge basin. The survey also defined a coincident magnetic and radiometric anomaly north of the mapped LMC. This anomaly may represent a downdip extension of the mineralization found on surface at the Main Showing and could reflect a deeper conductor caused by a sulphide body.

The 2006 AeroTEMII high resolution Time Domain Electro Magnetic geophysical survey imaged two separate EM anomalies in the southwest and west central part of the property. The southwestern anomaly appears to be located along the projection of the Lower – Middle Aldridge contact.

The creation of a GIS database for the Vulcan property, has allowed the information accrued at the Vulcan over the past 48 years to be organized in a much more efficient manner. The data collected over this period of time can now be quickly and easily queried and displayed on a much more spatially accurate base. The drill-hole database is advantageous as it facilitates new interpretations of geology by allowing simultaneous comparison of drill holes in section. The drill hole data is also in a standardized format that would allow the data to be used in modeling software such as MineSight. This powerful database will allow for more informed decisions on further testing of the LMC and new targets on the Vulcan property.

***The writers conclude that additional the Vulcan property is a property of merit and further exploration is warranted and recommended.***

## RECOMMENDATIONS

For the 2007 season, the following recommendations are made:

- Surface work for the area to the east of the Main Showing including a geochemical survey and surface mapping should be completed to define new targets
- Two long holes should be drilled further to the north of the Main Zone to intersect the LMC further down dip as this area is the most geochemically enriched area on the property and is believed to be near source
- The 1991 and 1992 holes on the Vulcan property should be located with a differential GPS to get an accurate location for

modeling purposes

- Start drilling in mid-July and establish a camp on the property

A suggested budget for the work is as follows:

| | | | | | | |
|---|---|---|---|---|---|---|
| **2007 EXPLORATION BUDGET** | | | | | | |
| **Eagle Plains Resources** | | | | | | |
| **Vulcan Project** | | | | | | |
| | | | no. of | | no. of | |
| **personnel:** | | | persons | rate | days | |
| geological | Project Manager | | 1 | $550 | 40 | $22,000.00 |
| | Project Geologists | | 2 | $450 | 30 | $27,000.00 |
| | Geological Technicians | | 1 | $350 | 30 | $10,500.00 |
| | Geological Technician with First Aid | | 1 | $450 | 30 | $13,500.00 |
| | | | | | TOTAL PERSONNEL: | $59,500.00 |
| | | | | | | |
| **analytical:** | type X no.of samples X cost | soils(prep) | | 500 | $1.25 | $625.00 |
| | | soils(30 element ICP) | | 500 | $9.00 | $4,500.00 |
| | | silts(prep) | | 0 | $1.25 | $0.00 |
| | | silts(30 element ICP) | | 0 | $9.00 | $0.00 |
| | | rocks(prep) | | 200 | $2.00 | $400.00 |
| | | rocks(30 element ICP) | | 200 | $9.00 | $1,800.00 |
| | | drill core(prep) | | 200 | $2.00 | $400.00 |
| | | drill core(30 element ICP) | | 200 | $9.00 | $1,800.00 |
| | | | | | TOTAL ANALYTICAL: | $9,525.00 |
| | | | | | | |
| **helicopter charter:** hours x rate including fuel | | | | hours | rate | |
| A-Star (personnel / fieldwork / drill moves) | | | | 15 | $1,500.00 | $22,500.00 |
| | | | | | TOTAL HELICOPTER: | $22,500.00 |
| **equipment rental:** | | | | | | |
| trucks | | | | | | $4,000.00 |
| communication including satellite dish, radios, satellite phone | | | | | | $3,000.00 |
| | | | | | | |
| **mobilization of crews to Vulcan including meals, airfare, accommodation:** | | | | | | $2,000.00 |
| | | | | | | |
| **pre-field:** | | | | | | |
| Base Map preparation | | | | | | $5,000.00 |
| | | | | | | |
| **permitting:** | | | | | | $2,000.00 |
| | | | | | | |
| | | | | cost per | total | |
| **diamond drilling:** | 1500 meters all in | | | meter | meters | |
| | | | | $125.00 | 1500 | $187,500.00 |
| | | | no. of | | no. of | |
| **meals/groceries:** | | | persons | rate | days | |
| | | | 10 | $40.00 | 30 | $12,000.00 |
| **shipping:** | | | | | | $4,000.00 |
| **fuel:** | | | | | | $4,000.00 |
| **supplies: office and field supplies** | | | | | | $5,000.00 |
| **filing fees:** | | | | | | $5,000.00 |
| **report writing and reproduction:** | | | | | | $5,000.00 |
| | | | | | Subtotal A: | $330,025.00 |
| | | | | | | |
| | | | | | 10% contingency: | $33,002.50 |
| | | | | | | |
| | | | | | **TOTAL:** | **$363,027.50** |

NOTE: Although care has been taken in the preparation of these estimates, the writer does not guarantee that the above described program can be completed for the estimated costs. Additional quotes and budgeting should be done when financing is in place prior to the start of the program, when quotes can be obtained for supplies and services. Deviations from the suggested program can be made by the field geologist in charge, depending on current conditions such as weather.

respectfully submitted

______________________________________
Charles C. Downie, P.Geo VP Exploration, Eagle Plains Resources

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# APPENDIX I
# CERTIFICATES OF QUALIFICATION

**CERTIFICATE OF CHARLES C. DOWNIE, P.GEO**

I, Charles C. Downie, P. Geo. do hereby certify that:

I am currently employed as VP Exploration Manager Eagle Plains Resources Ltd. with business address: 200-16, 11 Ave.S., Cranbrook, BC V1C 2P5. I am also Exploration Manager for Bootleg Resources Inc., a wholly owned subsidiary of Eagle Plains Resources Inc and having the same business address.

I graduated with a Bachelor of Science Degree from the University of Alberta in 1988.

I have worked as a geologist for a total of 17 years since my graduation from university, and have been involved in the mining and exploration industry since 1980.

I am a member of the Association of Professional Engineers and Geoscientists of the Province of British Columbia (ID 20137). I am entitled to use the seal which is affixed to this report.

I have read the definition of "qualified person" set out in National Instrument 43 – 101 ("NI 43 – 101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43 – 101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43 – 101.

I have authored this technical report titled "2006 GEOLOGICAL REPORT FOR THE VULCAN PROPERTY" and dated February 16th 2007 relating to the 2006 technical program by Eagle Plains Resources.

I have based this report on data collected through research and on observations and results from physical work on the property. Data sources include British Columbia Ministry of Energy and Mines Map Place, British Columbia Ministry of Energy and Mines Microfiche, and direct contact with persons involved with past exploration programs on the Vulcan property.

I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

I am not independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101. I am a director of Eagle Plains Resources Ltd. since 2002 and currently hold 357,600 shares of that company. I further hold options to purchase 1,170,000 shares of the company at between $0.65 and $0.75 per share.

I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated at Cranbrook, British Columbia, Canada this 16th Day of February, 2007

Respectfully submitted

________________________________________

Charles C. Downie, P.Geo.

# APPENDIX II
# STATEMENT OF EXPENDITURES

**STATEMENT OF EXPENDITURES**
**VULCAN PROJECT**
**2006 Geophysical Program – VULCAN Project**

**The following expenses were incurred on the Vulcan project for the purpose of mineral exploration between the dates of February 21 2006 and November 06 2006.**

| | | | |
|---|---|---|---|
| **PERSONNEL** | | | |
| **Bootleg Exploration Inc.** | rate | no. of days | |
| **planning for fieldwork, supervise / carry out fieldwork, base map preparation for Aeroquest** | | | |
| Jesse Campbell, BSc, GIS | 400.00 | 2.0 | $800.00 |
| Brad Robison, GIS, database support | 400.00 | 2.0 | $800.00 |
| Glen Hendrickson,B.Sc. GIS, surveying | 400.00 | 2.0 | $800.00 |
| | TOTAL PERSONNEL: | | $2,400.00 |
| | | | |
| **geophysical surveys:** Aeroquest Limited (data acquisition), Bighorn Helicopters (aircraft charter) | | | $28,588.12 |
| Condor Consulting (review historical geophysics to determine flight paths/applicability) | | | $1,723.50 |
| **TRIM data:** topographic data for geophysical survey | | | $458.23 |
| **fuel:** | | | $58.99 |
| **report writing :** (estimate including maps/reproduction) | | | $4,000.00 |
| | | **TOTAL:** | $37,228.84 |

# APPENDIX III
# AEROQUEST GEOPHYSICAL REPORT

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

**Aeroquest Job # 05083**

**Vulcan, K9 & Car Properties**

South Eastern British Columbia

NTS 082F01,09,16

for

Eagle Plains Resources Ltd.

by

**AEROQUEST LIMITED**

4-845 Main Street East
Milton, Ontario, L9T 3Z3
Tel: (905) 693-9129 Fax: (905) 693-9128
www.aeroquestsurveys.com

July, 2006

# Report on a Helicopter-Borne AeroTEM II Electromagnetic and Magnetic Survey

**Aeroquest Job # 05083**

**Vulcan, K9 & Car Properties**

South Eastern British Columbia
NTS 082F01,09,16

For


Eagle Plains Resources Ltd.
Suite 200, 16 – 11th Ave. S.
Cranbrook, BC V1C 2P1
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Fax: (250) 426-6899
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July, 2006

# 1. TABLE OF CONTENTS



## 1.1. List of Figures

## 1.2. Appendices

Appendix 1: Survey Block Co-ordinates
Appendix 2: Description of Database Fields
Appendix 3: Technical Paper: "Mineral Exploration with the AeroTEM System"
Appendix 4: Instrumentation Specification Sheet
Appendix 5: Anomaly Listing

## 1.3. List of Maps (1:10,000)

- MAG Coloured Total Magnetic Intensity (TMI) with line contours and EM anomalies
- ZOFF AeroTEM Off-Time Z3 colour grid with line contours and EM anomalies
- AeroTEM Off-Time Profiles (Z1-Z11) and EM anomalies

## 2. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Eagle Plains Resources Ltd. (hereafter Eagle Plains) on the K9, Vulcan and Car Properties, Southeastern British Columbia.

The principal geophysical sensor is Aeroquest's exclusive AeroTEM II time domain helicopter electromagnetic 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. Full-waveform streaming EM data is recorded at 38,400 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers. A secondary acquisition system (RMS) records the ancillary data.

The total line kms presented in the maps and data totalled 500, of which 481.4 lies within the survey area and is billable. 433.34 of these kms fell within Eagle Plains mining claims (Figure 2). The survey flying described in this report took place on April 8th (Car), April 20-28th (K9), April 29th (Vulcan), 2006.

## 3. SURVEY AREA

The project area is located in southeastern BC (NTS 082F01,09,16) and is made up of three blocks; Car which lies 60km southwest of Cranbrook and K9 and Vulcan which lie 50km the northwest of Cranbrook (Figure 1). The Car project area lies just 10km north of the US border. The terrain is mountainous with elevation ranges from 2000-7000ft (600-2000m). The area is well serviced with roads and railways, it being a popular tourist destination.

Eagle Plains has 100% ownership of the mining claims in the area and these are outlined in Table 1.

The field crew was based at the Sandman Inn, Cranbrook. The helicopter company was Bighorn Helicopters, based out of Calgary, Alberta.

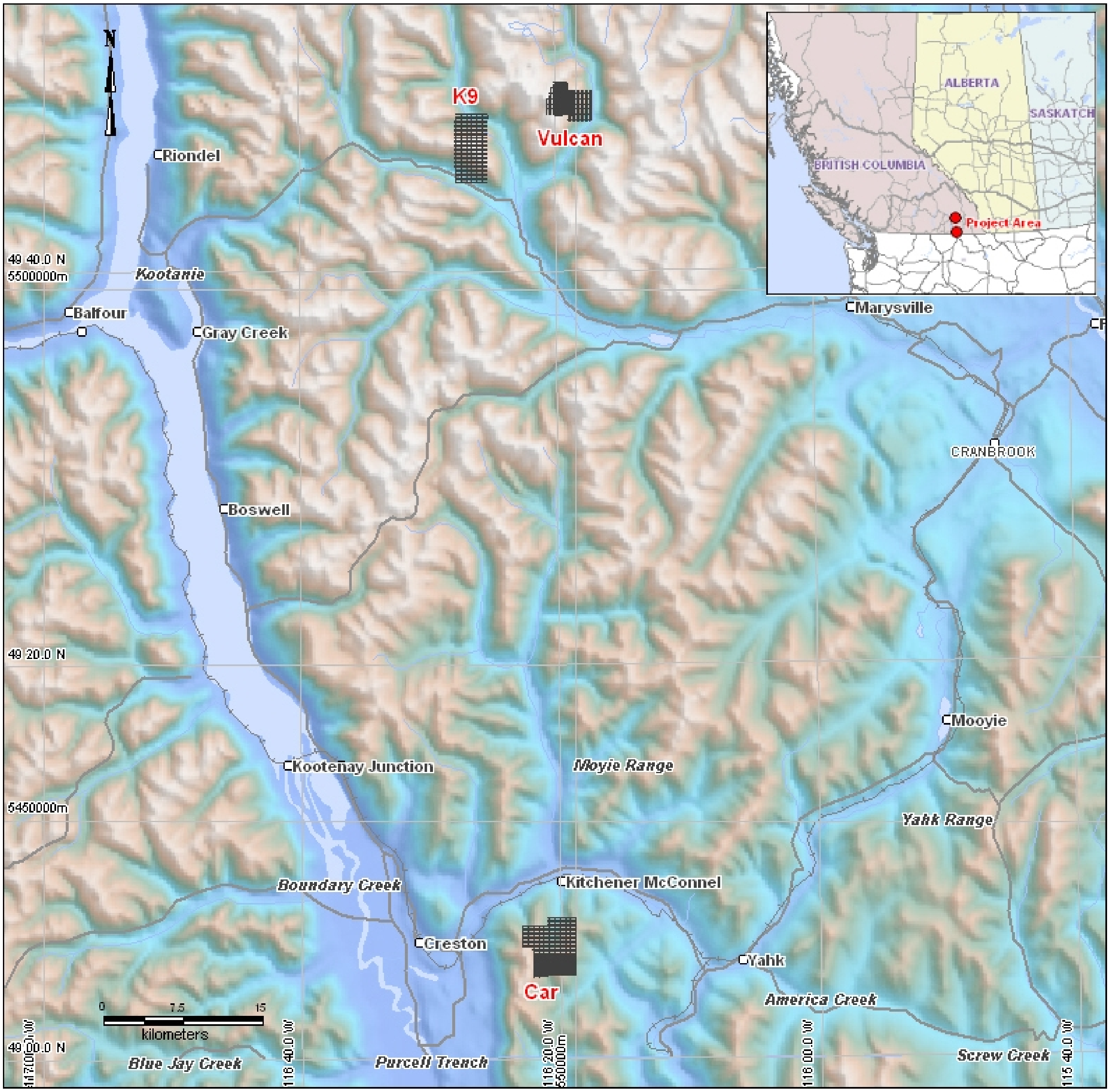



Figure 1. Regional location map of the project area.

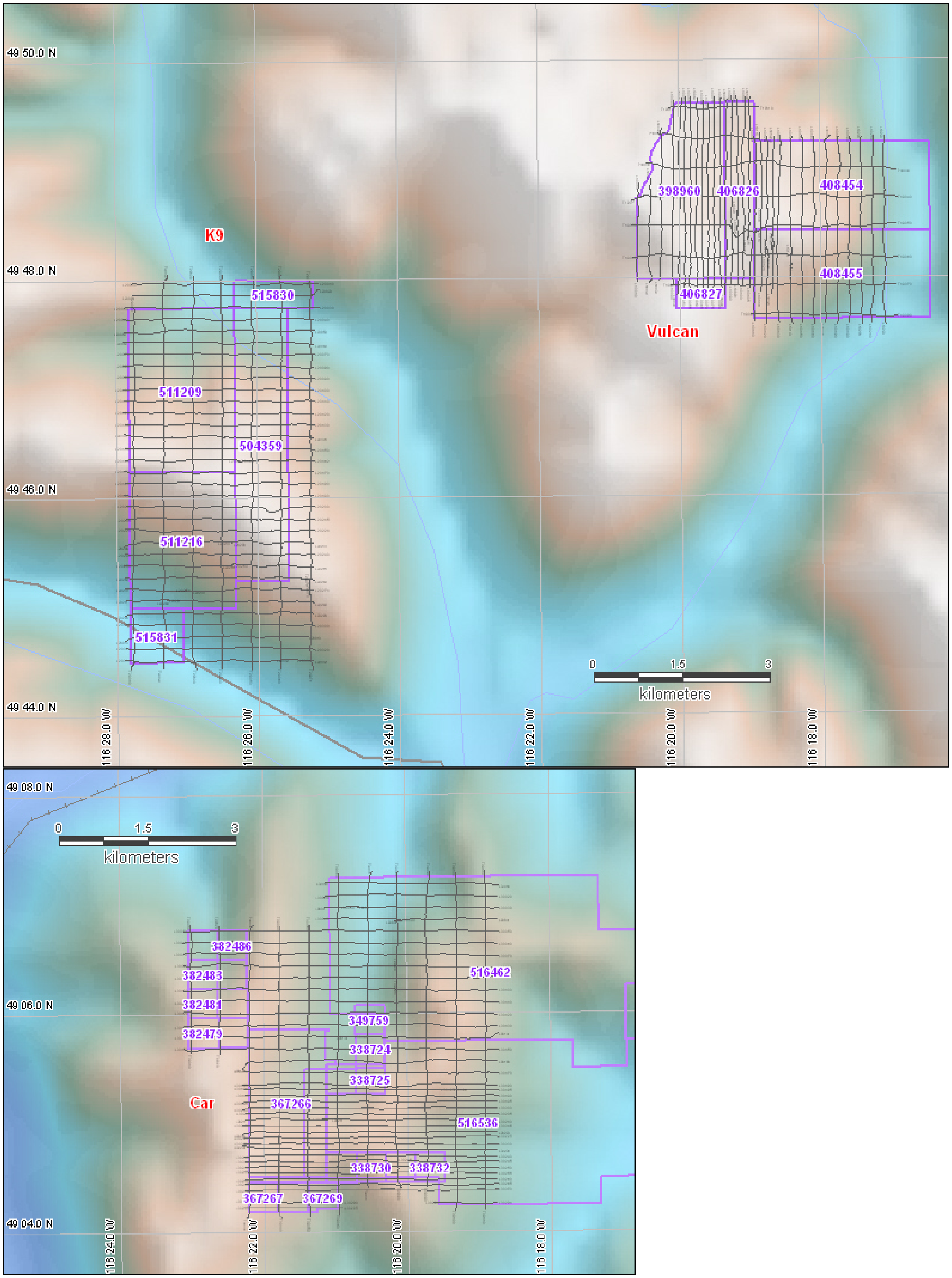



Figure 2. Project Flight Paths and mining claims

| Tenure_Number | Claim_Name | Mining_Division | Area (ha) | Map_Number | Survey Block |
|---|---|---|---|---|---|
| 338732 | CAR 12 | FORT STEELE | 25 | 082F009 | Car |
| 382486 | TCK 8 | NELSON | 25 | 082F019 | Car |
| 382479 | TCK 1 | NELSON | 25 | 082F009 | Car |
| 346358 | CAR 26 | FORT STEELE | 25 | 082F019 | Car |
| 382485 | TCK 7 | NELSON | 25 | 082F019 | Car |
| 346356 | CAR 24 | FORT STEELE | 25 | 082F009 | Car |
| 382480 | TCK 2 | NELSON | 25 | 082F009 | Car |
| 338724 | CAR 4 | NELSON | 25 | 082F009 | Car |
| 382484 | TCK 6 | NELSON | 25 | 082F019 | Car |
| 349759 | CAR 35 | NELSON | 25 | 082F009 | Car |
| 382482 | TCK 4 | NELSON | 25 | 082F009 | Car |
| 367269 | CAR 48 | FORT STEELE | 25 | 082F009 | Car |
| 338729 | CAR 9 | FORT STEELE | 25 | 082F009 | Car |
| 516462 | | | 1395.698 | 082F | Car |
| 367266 | CAR 45 | NELSON | 375 | 082F009 | Car |
| 367267 | CAR 46 | FORT STEELE | 25 | 082F009 | Car |
| 367268 | CAR 47 | FORT STEELE | 25 | 082F009 | Car |
| 338726 | CAR 6 | NELSON | 25 | 082F009 | Car |
| 516536 | | | 1396.375 | 082F | Car |
| 515830 | K9-A | | 62.565 | 082F | K9 |
| 515831 | K9-B | | 83.508 | 082F | K9 |
| 504359 | K9-3 | | 417.292 | 082F | K9 |
| 511209 | | | 500.665 | 082F | K9 |
| 511216 | | | 417.416 | 082F | K9 |
| 408454 | JURAK 3A | FORT STEELE | 450 | 082F089 | Vulcan |
| 398960 | JURAK 1 | FORT STEELE | 450 | 082F079 | Vulcan |
| 406826 | JURAK 2 | FORT STEELE | 150 | 082F079 | Vulcan |
| 408455 | JURAK 4 | FORT STEELE | 450 | 082F089 | Vulcan |
| 406827 | JURAK 3 | FORT STEELE | 50 | 082F079 | Vulcan |

Table 1 Mineral Claim details for survey areas

# 4. LOCAL GEOLOGY & PREVIOUS WORK

(taken from Eagle Plains Resources Ltd. website www.eagleplains.com, July, 2006)

**K9 Property**

The K9 mineral claims were staked in 2003 to cover stratabound poly-metallic mineralization first identified in the early 1900s. The property is owned 100% by Eagle Plains Resources Ltd. and contains no royalties or encumbrances. The claims are on strike with and surround the Great Dane crown grants which contain metal values of up to 62.6 g/t Ag. 2.60% Cu, 9.6% Zn and 14.0% Pb. Work on the property in the late 1990s indicates that this mineralization persists along strike, and is present within the K9 property boundaries. The area's favourable location and topography make it an excellent target for more advanced work, including trenching and diamond drilling.

The K9 property consists of 27 MGS claim units (1640 acres) located within the Fort Steele Mining Division, within NTS map sheet 82F/16W at 49° 30' N/116° 26' W, centred at UTM coordinates 5512617/540088 (see Location Map). It is situated 37 air-km by road from Kimberley , B.C. and is accessed by seasonally-maintained Forest Service roads. A high-voltage hydro electric line is located approximately 10km south of current property boundaries.

The property covers steeply-dipping phyllitic quartzites and dolomitic limestones belonging to the Proterozoic Creston and Kitchener Formations. A number of thick gabbroic sills are present within the claim area and may be related to mineralization. Bedding throughout the property area is vertical or sub-vertical, with beds striking north/south. No significant folding or faulting has been recognised on the property.

Target mineralization on the K9 claims are stratabound massive sulphides within Creston Formation rocks. Such an occurrence exists within three small crown-granted titles (owned by E. Denny) situated within the K9 property boundary. A similar and possibly related showing was discovered through the course of work performed during 1996. This showing, located at elevation 6200 feet, has seen limited historic development, with a 7m-deep shaft sunk into a 2.7m wide pyrrhotite lens. No documentation has been found relating to the shaft.

Soil samples collected within the property area outline a geochemically anomalous interval over 1.5km in length, with vertical continuity of nearly 500m. The significance of this anomaly has yet to be established.

Mineralization was first discovered on what are now the Great Dane crown grants in 1901. Very little documented work is available for the property area, but numerous historical workings have been located on the property. Diamond drilling has never been carried out.

# 5. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarized in the following table:

| Survey Block | Line Spacing (m) | Line direction | Survey Coverage (line-km) | Dates Flown |
|---|---|---|---|---|
| Car | 200 (with 100m infills) | E-W (90º) | 220.58 | April 8th, 2006 |
| K9 | 200 | E-W (90º) | 154.3 | April 20-28th, 2006 |
| Vulcan | 200 (with 100m infills) | N-S (0º) | 125.51 | April 29th, 2006 |

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. 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, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 17 metres above the EM bird and 21 metres below the helicopter (Figure 4). 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 AeroDAS 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 steaming 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 reflown.

# 6. AIRCRAFT AND EQUIPMENT

## 6.1. Aircraft

A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter - registration C-FETQ was used as survey platform (Figure 3). The helicopter was owned and operated by Bighorn Helicopters, Calgary, Alberta. The survey aircraft was flown at a nominal terrain clearance of 220 ft (70 m).


Figure 3. Survey helicopter C-FETQ.

### 6.2. Magnetometer

The Aeroquest airborne survey system employs the Geometrics G-823A cesium vapour magnetometer sensor installed in a two metre towed bird airfoil attached to the main tow line, 17 metres below the helicopter (Figure 4A). The sensitivity of the magnetometer is 0.001 nanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer bird is 51 metres (170 ft.). The magnetic data is recorded at 10Hz by the RMS DGR-33.

### 6.3. Electromagnetic System

The electromagnetic system is an AeroQuest AeroTEM II time domain towed-bird system (Figure 4B). The current AeroTEM transmitter dipole moment is 38.8 kNIA. The AeroTEM bird is towed 38 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 1.10 ms and a base frequency of 150 Hz (Figure 5). 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 system has two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system which records the full waveform.

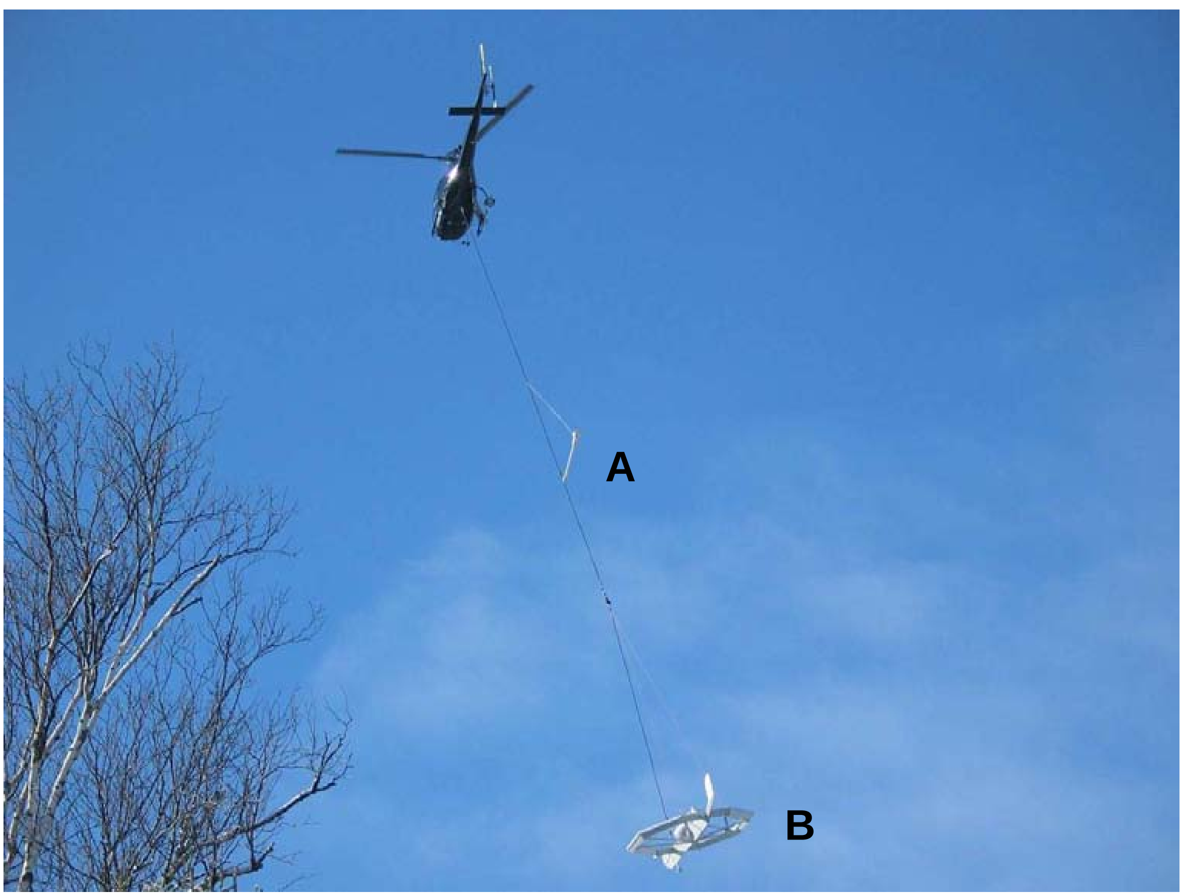



Figure 4. The magnetometer bird (A) and AeroTEM II EM bird (B)

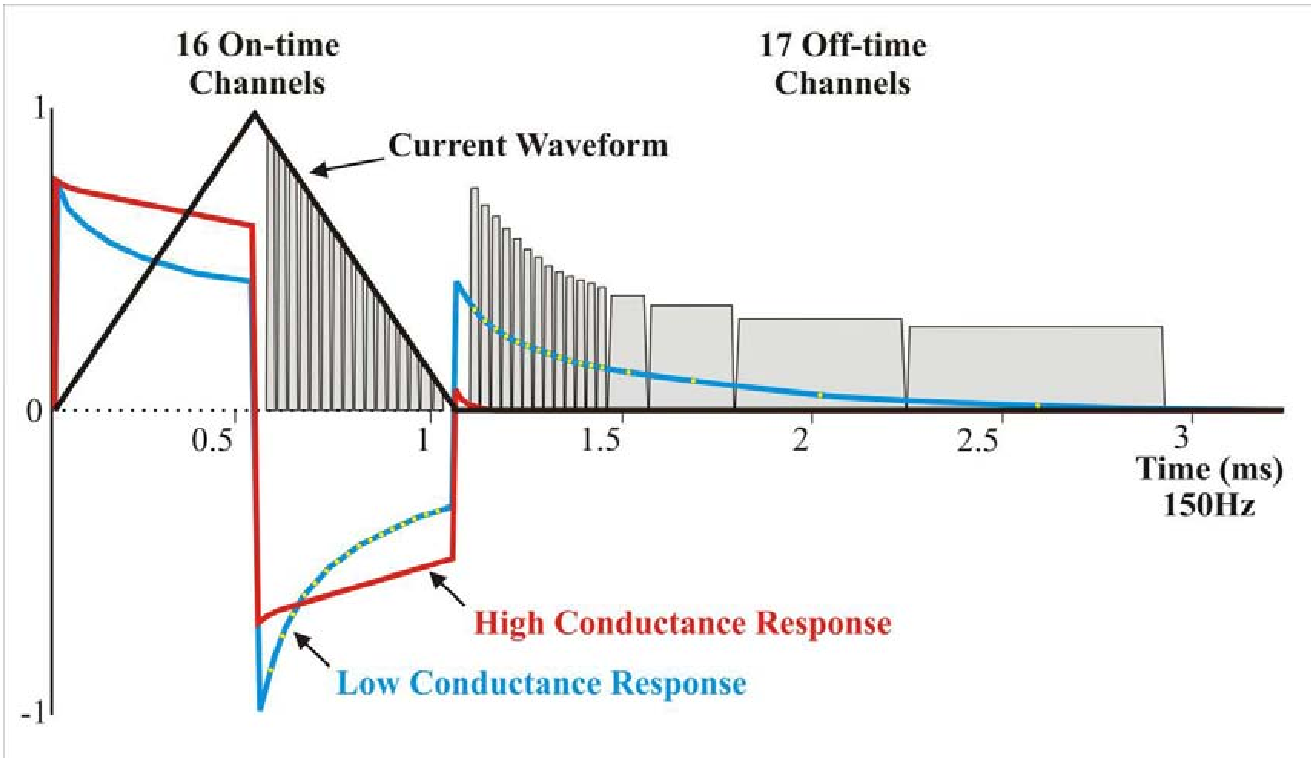



Figure 5. Schematic of Transmitter and Receiver waveforms

### 6.4. AERODAS Acquisition System

The 128 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 6) 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 |


Figure 6. AeroTEM II Instrument Rack. Includes (AeroDAS system and RMS DGR-33 and AeroTEM power supply, data acquisition computer and AG-NAV2 navigation)

### 6.6. Magnetometer Base Station

The base magnetometer was a Geometerics G-858 cesium vapour magnetometer. Data logging and UTC time syncronisation was carried out within an external data logging computer, with an external GPS providing the timing signal. That data logging was configured to measure at 0.1 second intervals (10Hz). 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 digital video camera (Figure 7) 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.

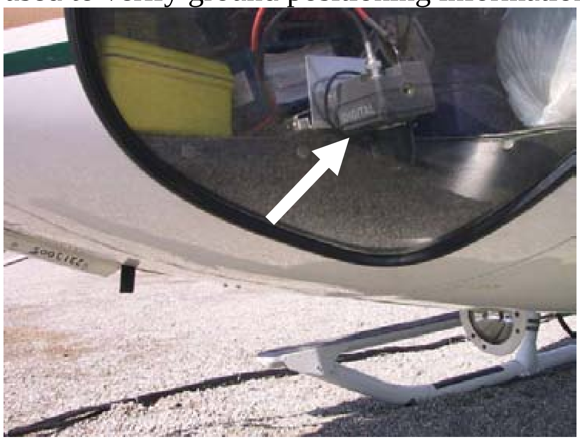


Figure 7. Digital video camera typical mounting location.

### 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 11N 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: Matt Pozza, Nick Venter
- Field Operator: Marcus Watson, Troy Will
- Data Interpretation and Reporting: Matt Pozza, Marion Bishop, Sean Scrivens

The survey pilots Greg Goodison and Clay Wilson were employed directly by the helicopter operator – Big Horn Helicopters, Calgary, Alberta.

## 8. DELIVERABLES

The report includes a set of nine (9) geophysical maps plotted at a scale of 1:10,000. Two data products are presented for each of the three map plates that cover the survey area (Figure 2).

- MAG Coloured Total Magnetic Intensity (TMI) with line contours and EM anomalies
- ZOFF AeroTEM Off-Time Z3 colour grid with line contours and EM anomalies
- EM AeroTEM Off-Time Profiles (Z1-Z11) 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 WGS84 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 on-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 2.5-5 nT. Bold contour lines are separated by 250 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. 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 36-inch wide 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 11N. 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 117ºW)
- 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 to WGS84 (GPS) altitude 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 mergered into 'array format; channels in the final Geosoft database as Zon, Zoff, Xon, and Xoff

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 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 usually because of low signal amplitudes. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. For high conductance sources, the on-time conductance values may be used, since it provides a more accurate measure of high-conductance sources. 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 due to a low amplitude response were classified as a low conductance source. Please refer to the anomaly symbol legend located in the margin of the maps.

### 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 30 metres. The final leveled grid provided the basis for threading the presented contours which have a minimum contour interval of 2.5-5 nT.

## 10. GENERAL COMMENTS

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 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 minerals such as pyrrhotite.

### 10.2. EM Anomalies

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 (Figure 8). 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.

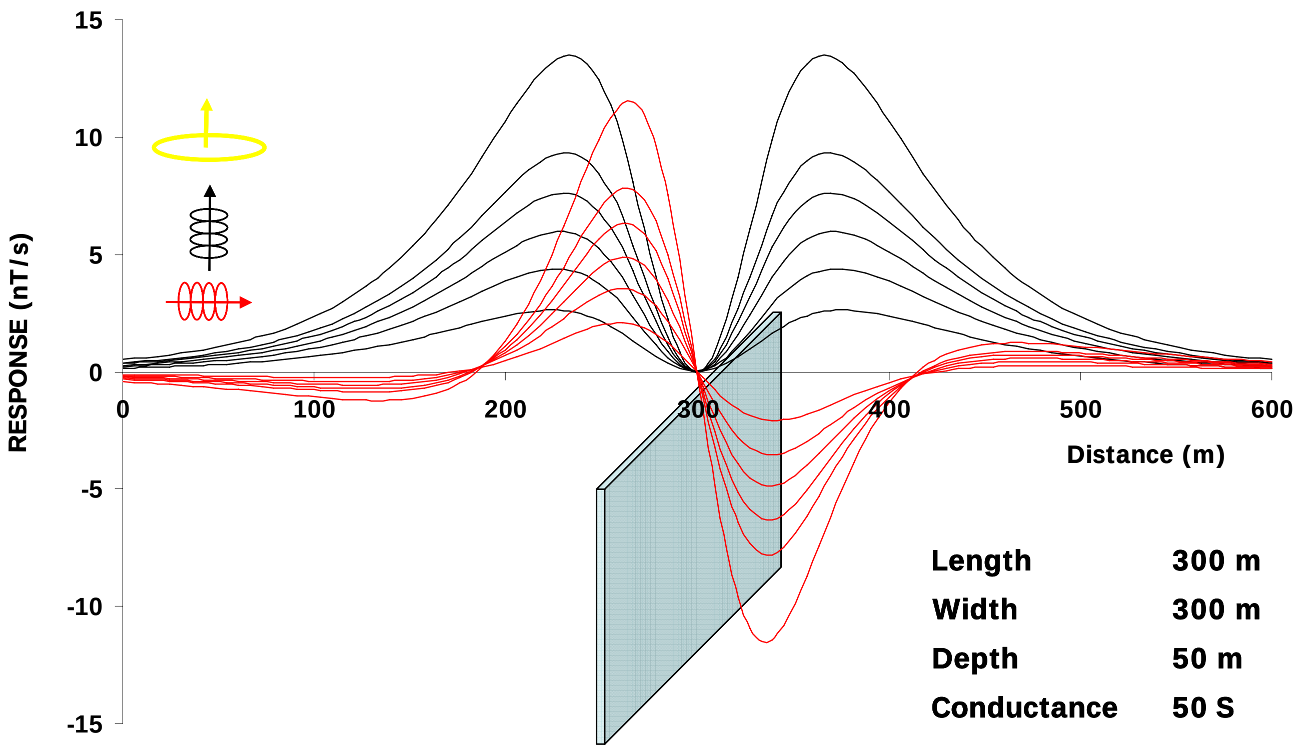



Figure 8. AeroTEM response to a 'thin' vertical conductor.

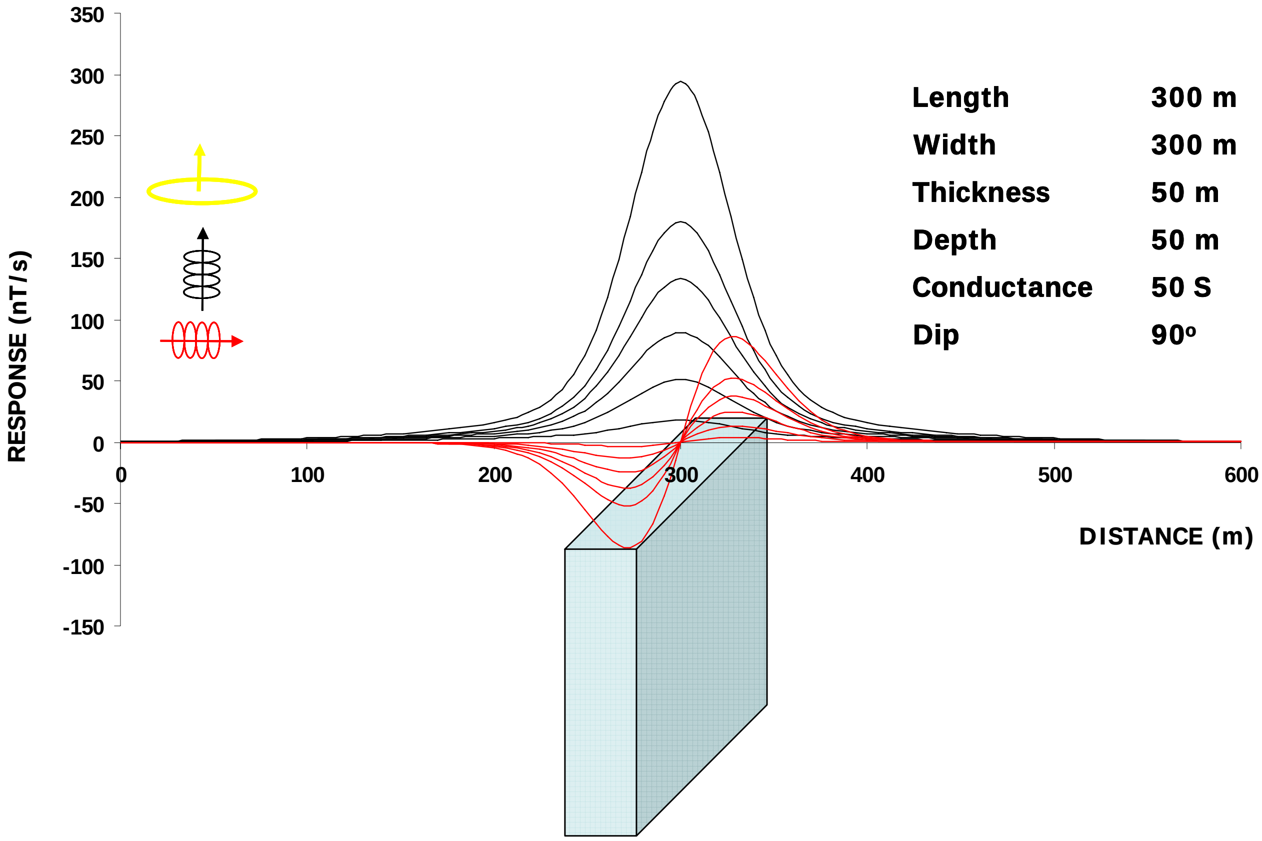



Figure 9. AeroTEM response for a 'thick' vertical conductor.

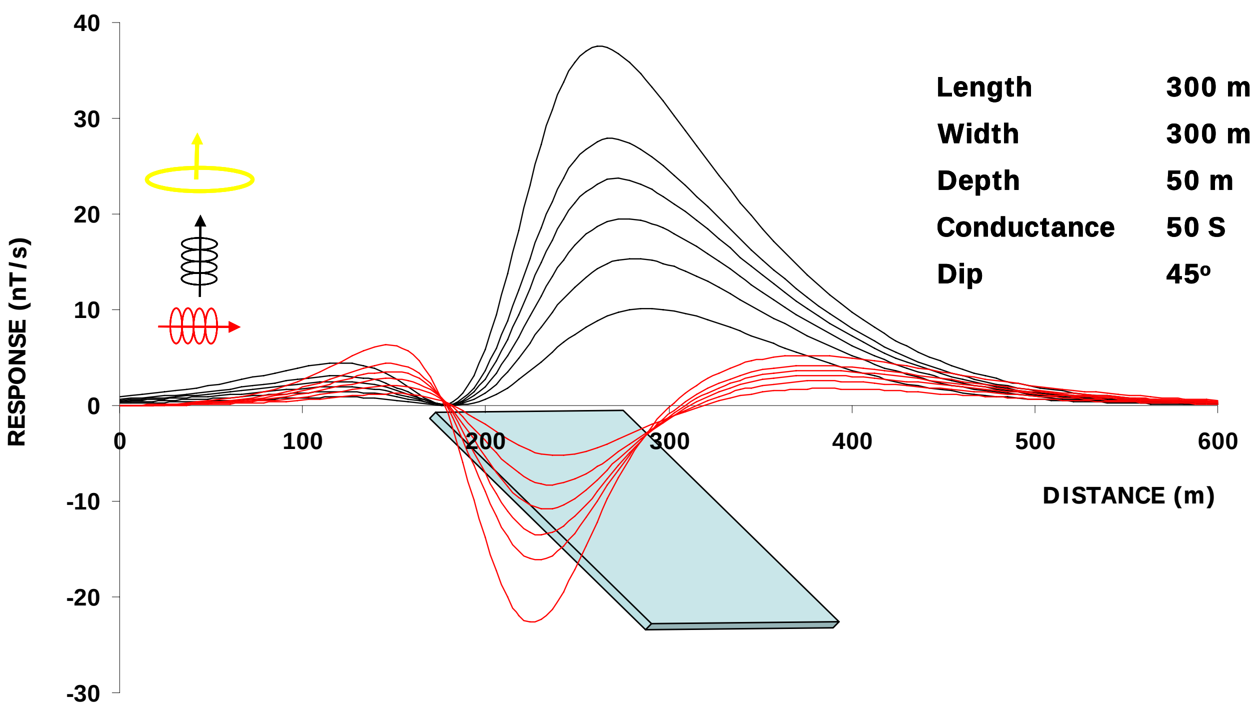



Figure 10. AeroTEM response over a 'thin' dipping conductor.

Respectfully submitted,

Sean Scrivens

Geophysicist
Aeroquest Limited
July, 2006

# APPENDIX 1 – PROJECT CORNER COORDINATES

The Project consists of three an irregularly shaped blocks with boundaries as defined in the following table. Positions are in UTM Zone 11 – NAD83.

Car

| X | Y |
|---|---|
| 544954.7 | 5440186.9 |
| 547358.5 | 5440185.4 |
| 547350.8 | 5441085.3 |
| 550116.0 | 5441110.7 |
| 550117.2 | 5435550.8 |
| 549224.7 | 5435543.0 |
| 549225.9 | 5435927.1 |
| 547495.2 | 5435916.7 |
| 547499.0 | 5435471.7 |
| 547152.3 | 5435468.6 |
| 547152.8 | 5435413.7 |
| 545999.6 | 5435403.8 |
| 545971.2 | 5438180.0 |
| 544971.2 | 5438180.0 |

K9

| X | Y |
|---|---|
| 538743.9 | 5516549.0 |
| 541752.0 | 5516549.0 |
| 541754.9 | 5516086.4 |
| 541661.3 | 5516085.9 |
| 541657.2 | 5510040.5 |
| 538649.1 | 5510040.5 |
| 538606.1 | 5516062.9 |
| 538746.8 | 5516086.4 |

Vulcan

| X | Y |
|---|---|
| 547914.7 | 5519584.1 |
| 549231.2 | 5519596.0 |
| 549237.3 | 5518921.7 |
| 551569.4 | 5518942.9 |
| 551569.5 | 5515943.0 |
| 549249.1 | 5515921.7 |
| 549242.1 | 5516596.0 |
| 548758.4 | 5516591.6 |
| 548759.8 | 5516423.2 |
| 547936.0 | 5516423.5 |
| 547934.3 | 5516584.2 |
| 547258.4 | 5516578.1 |
| 547245.9 | 5517964.7 |
| 547387.8 | 5518208.4 |
| 547526.8 | 5518497.5 |
| 547489.0 | 5518608.0 |
| 547503.1 | 5518758.6 |
| 547563.5 | 5518890.4 |
| 547675.7 | 5519022.0 |
| 547799.3 | 5519142.0 |

# 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". There are 3 databases, one for each of the survey blocks. Their data contents are as follows:

Database (05-083_Car.gdb, 05-083_K9.gdb, 05-083_Vulcan.gdb):

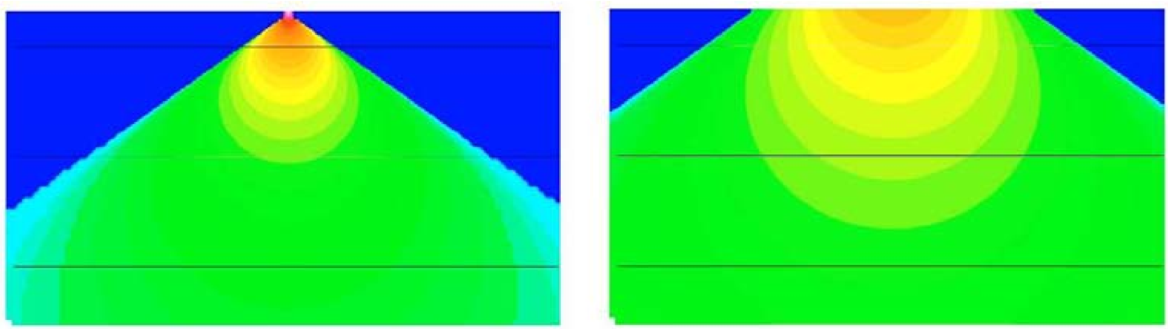
| **Column** | **Units** | **Description** |
|---|---|---|
| emfid | | AERODAS Fiducial |
| utctime | hh:mm:ss.ss | UTC time |
| x | m | UTM Easting (NAD83, zone 11N) |
| y | m | UTM Northing (NAD83, zone 11N) |
| bheight | m | Terrain clearance of EM bird |
| dtm | m | Digital Terrain Model |
| Magonbirdf | nT | Final levelled TMI on EM bird (*K9 and Vulcan Blocks Only*) |
| magf | nT | Final levelled total magnetic intensity |
| basemagf | nT | Base station total magnetic intensity |
| ZOn1-ZOn16 | nT/s | Processed Streaming On-Time Z component Channels 1-16 |
| ZOff0-ZOff16 | nT/s | Processed Streaming Off-Time Z component Channels 0-16 |
| XOn1-XOn16 | nT/s | Processed Streaming On-Time X component Channels 1-16 |
| XOff0-XOff16 | nT/s | Processed Streaming Off-Time X component Channels 0-16 |
| Anom_labels | | Letter label of conductor pick |
| Anom_ID | | Letter label of conductor thickness (N or K) |
| off_tau | s | Off-time decay constant of each individual conductor pick |
| off_con | S | Off-time conductance of each individual conductor pick |
| grade | | Classification from 1-7 based on conductance of conductor pick |
| off_alltau | s | Off-time decay constant of all data points |
| off_allcon | S | Off-time conductance of all data points |

# 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.

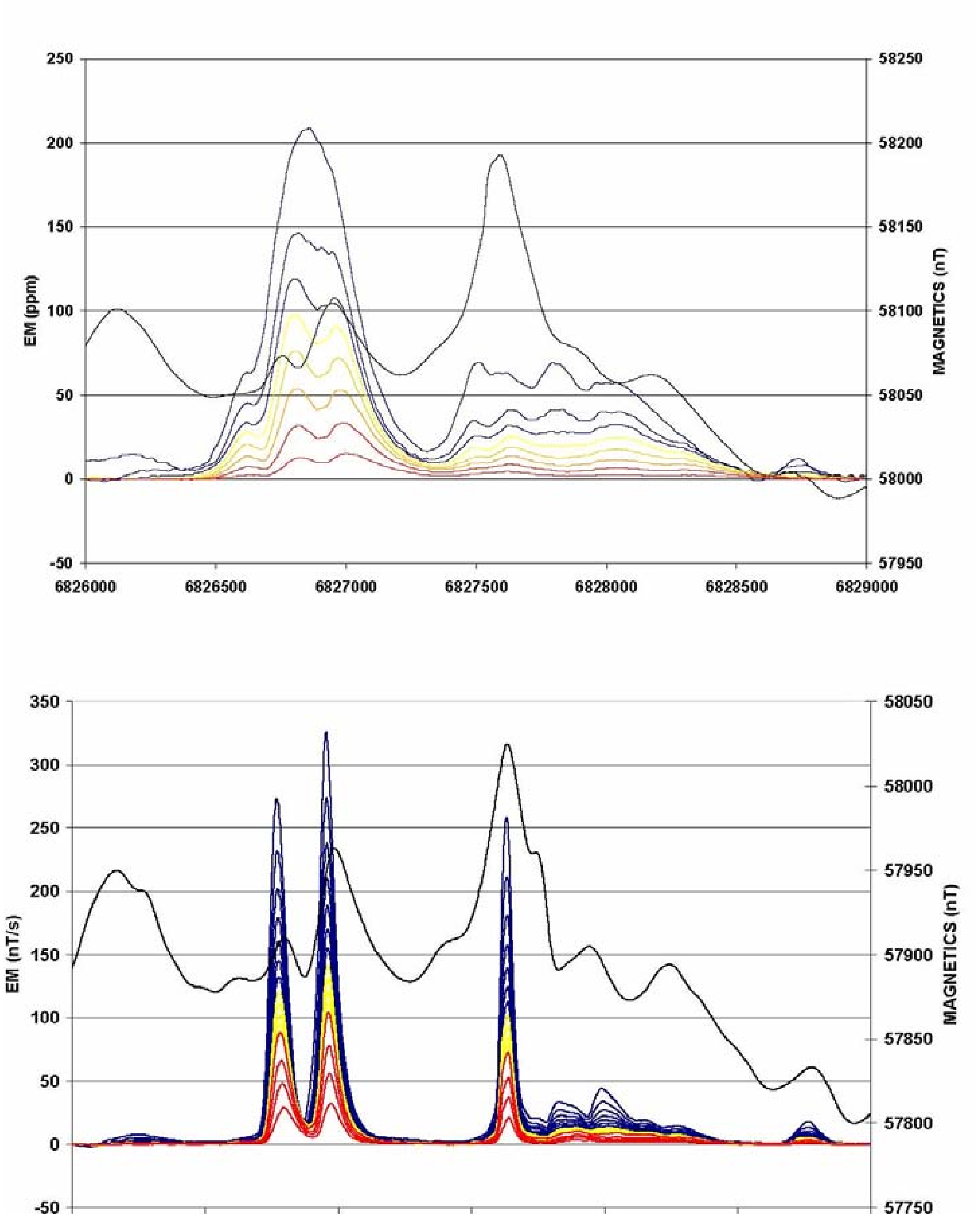



***Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.***

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.

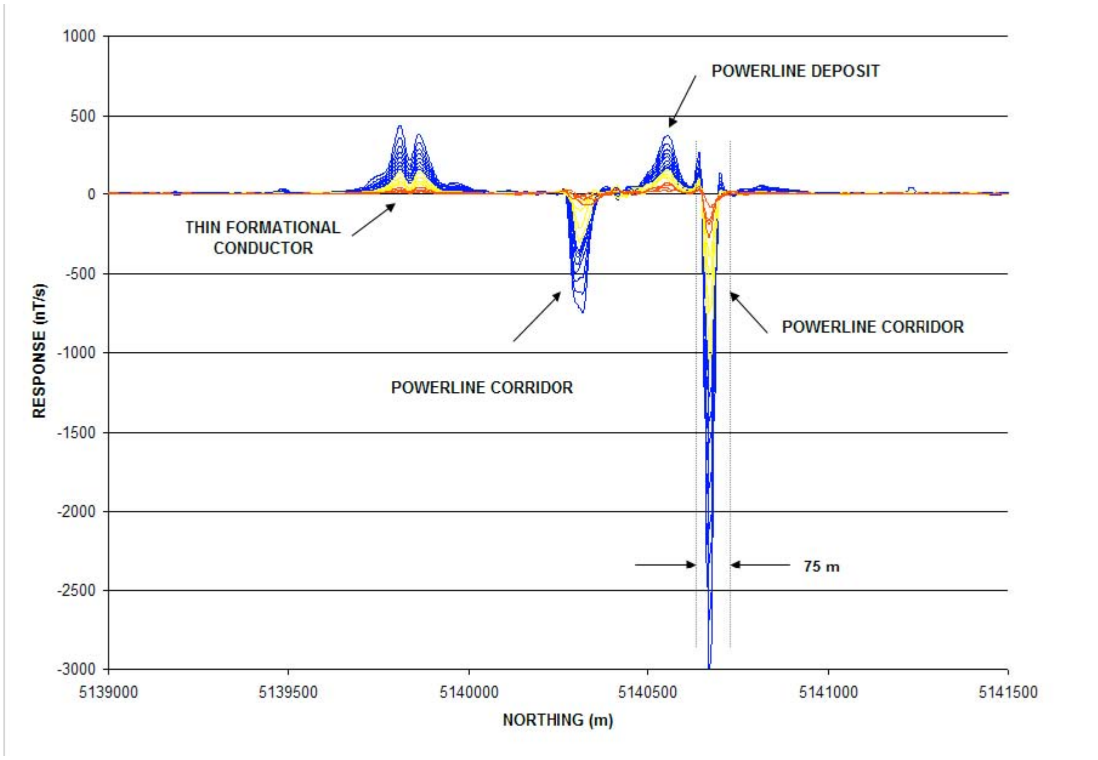



***Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish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

***Advantage 2 – Conductance Discrimination***

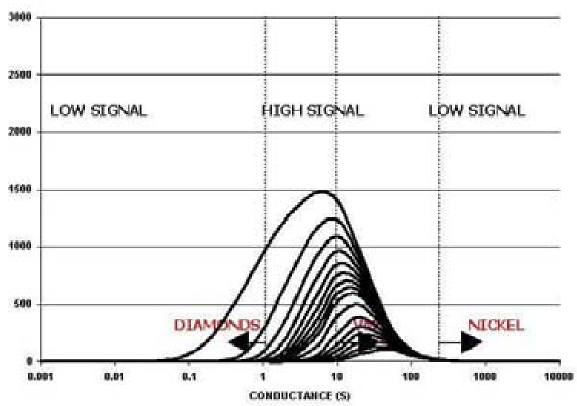
The AeroTEM system features full waveform recording and as such is able to measure the on-time response due to high conductance targets. Due to the processing method (primary field removal), there is attenuation of the response with increasing conductance, but the AeroTEM on-time measurement is still 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.

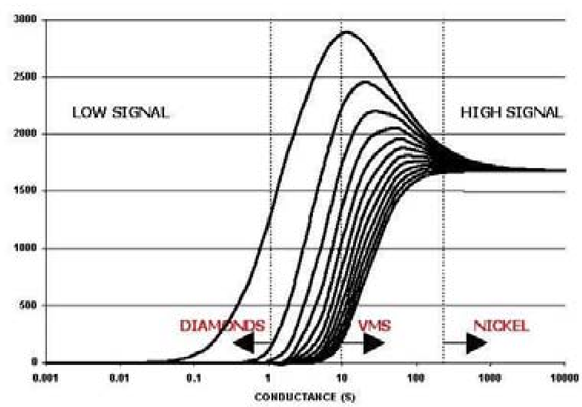
However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with 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:

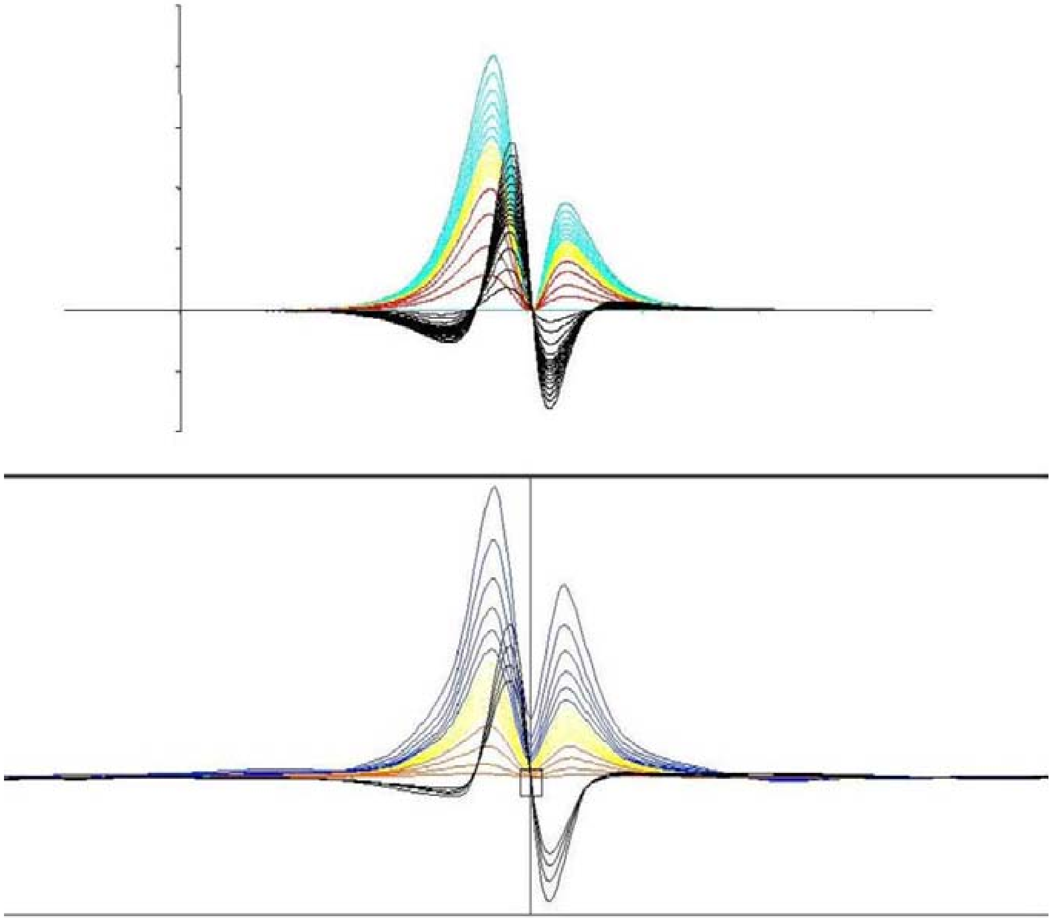


***Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher 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.

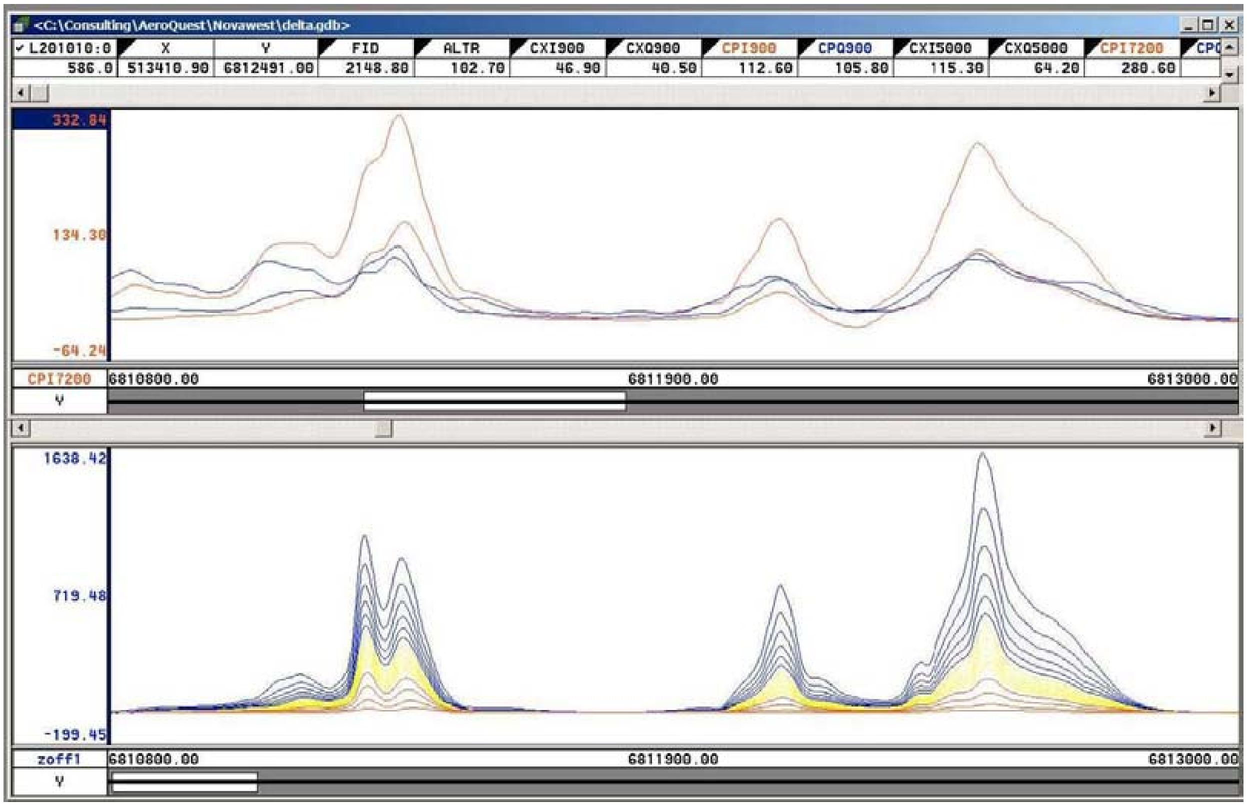



***Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.***

**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) µs
- Tx Off Time - 10,915 (30Hz) or 2,183 (150Hz) µs
- Loop Diameter - 5 m
- Peak Current - 250 A
- Peak Moment - 38,800 NIA
- Typical Z Axis Noise at Survey Speed = 8 ppb peak
- Sling Weight: 270 Kg
- Length of Tow Cable: 40 m
- Bird Survey Height: 30 m or less nominal

### Receiver

- Three Axis Receiver Coils (x, y, 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 126 samples per decay curve at a maximum of 300 curves per second (26.455 µs channel width)
- RMS Channel Widths: 52.9,132.3, 158.7, 158.7, 317.5, 634.9 µs
- 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.

**Tel: +1 905 878-5616. Fax: +1 905 876-0193.**
**Email: sales@aeroquestsurveys.com**

# APPENDIX 5: Anomaly Listing

K9 Block

| Line | Anom Labels | Anom ID | Grade | Off Tau | Off Con | x | y | bird height | dtm | utc time |
|---|---|---|---|---|---|---|---|---|---|---|
| 20010 | A | K | 2 | 201.96 | 4.08 | 541217.0 | 5516517.6 | 21.75 | 1418.69 | 16:01:01.5 |
| 20010 | B | N | 2 | 201.96 | 4.08 | 541257.1 | 5516513.6 | 22.31 | 1430.46 | 16:01:05.6 |
| 20020 | A | N | 2 | 162.75 | 2.65 | 541188.2 | 5516317.0 | 48.98 | 1273.62 | 16:03:12.0 |
| 20020 | B | K | 2 | 162.75 | 2.65 | 541114.8 | 5516330.0 | 45.78 | 1263.78 | 16:03:16.3 |
| 20020 | C | K | 4 | 373.36 | 13.94 | 539865.0 | 5516313.5 | 47.57 | 1278.35 | 16:04:15.4 |
| 20030 | A | K | 2 | 188.84 | 3.57 | 541040.9 | 5516092.2 | 88.93 | 1215.61 | 13:42:04.4 |
| 20030 | B | K | 1 | 80.79 | 0.65 | 538669.8 | 5516100.4 | 48.97 | 1776.36 | 13:45:22.9 |
| 20050 | A | K | 2 | 106.53 | 1.14 | 538675.9 | 5515668.2 | 77.91 | 1485.09 | 13:58:41.4 |
| 20060 | A | K | 3 | 267.94 | 7.18 | 538648.0 | 5515508.5 | 89.62 | 1425.93 | 13:59:58.2 |
| 20070 | A | K | 2 | 122.11 | 1.49 | 538701.3 | 5515302.2 | 88.89 | 1519.40 | 14:08:48.1 |
| 20070 | B | K | 3 | 258.36 | 6.67 | 538551.4 | 5515298.1 | 65.51 | 1503.93 | 14:08:58.1 |
| 20080 | A | K | 2 | 113.88 | 1.30 | 538683.5 | 5515109.7 | 69.15 | 1593.61 | 14:10:18.7 |
| 20090 | A | K | 5 | 450.78 | 20.32 | 538612.8 | 5514918.5 | 75.91 | 1649.60 | 14:21:54.9 |
| 20100 | A | K | 4 | 411.06 | 16.90 | 538768.9 | 5514703.6 | 84.24 | 1756.43 | 14:23:12.4 |
| 20110 | A | K | 2 | 153.34 | 2.35 | 539727.9 | 5514488.8 | 90.86 | 1765.51 | 14:31:45.7 |
| 20110 | B | K | 2 | 102.84 | 1.06 | 539298.8 | 5514497.6 | 59.90 | 1869.87 | 14:32:16.1 |
| 20110 | C | K | 2 | 167.63 | 2.81 | 539142.7 | 5514503.9 | 50.45 | 1957.68 | 14:32:33.7 |
| 20110 | D | K | 5 | 522.50 | 27.30 | 538825.3 | 5514494.7 | 91.30 | 1822.14 | 14:32:59.4 |
| 20120 | A | K | 7 | 1129.33 | 127.54 | 538953.5 | 5514293.9 | 76.21 | 1910.24 | 14:34:35.9 |
| 20120 | B | K | 5 | 494.13 | 24.42 | 539288.8 | 5514300.8 | 111.67 | 1895.56 | 14:35:13.1 |
| 20130 | A | K | 2 | 206.46 | 4.26 | 539798.1 | 5514116.4 | 64.78 | 1908.19 | 14:41:51.2 |
| 20130 | B | N | 2 | 131.32 | 1.72 | 539440.3 | 5514109.5 | 72.35 | 1940.66 | 14:42:13.8 |
| 20130 | C | K | 2 | 131.32 | 1.72 | 539304.8 | 5514098.5 | 63.83 | 1978.64 | 14:42:21.4 |
| 20130 | D | K | 3 | 240.59 | 5.79 | 539076.5 | 5514097.3 | 63.17 | 2049.78 | 14:42:37.2 |
| 20130 | E | K | 6 | 605.97 | 36.72 | 538882.6 | 5514095.9 | 60.64 | 1989.99 | 14:42:51.5 |
| 20130 | F | K | 4 | 390.28 | 15.23 | 538767.6 | 5514098.0 | 69.98 | 1961.23 | 14:42:59.2 |
| 20140 | A | K | 6 | 618.73 | 38.28 | 538859.1 | 5513881.7 | 74.60 | 2104.98 | 14:44:42.0 |
| 20140 | B | K | 2 | 169.49 | 2.87 | 539283.5 | 5513886.8 | 75.84 | 2062.02 | 14:45:26.6 |
| 20140 | C | N | 2 | 169.49 | 2.87 | 539427.4 | 5513881.8 | 101.76 | 2010.16 | 14:45:35.8 |
| 20140 | D | K | 2 | 175.70 | 3.09 | 539693.8 | 5513898.2 | 65.44 | 1992.48 | 14:45:58.3 |
| 20150 | A | N | 1 | 66.72 | 0.45 | 539407.0 | 5513703.3 | 20.05 | 2109.32 | 14:52:53.4 |
| 20150 | C | K | 1 | 84.50 | 0.71 | 538825.4 | 5513689.5 | 41.82 | 2234.26 | 14:53:54.7 |
| 20170 | A | K | 1 | 79.20 | 0.63 | 538769.2 | 5513260.5 | 67.99 | 2021.51 | 22:32:58.0 |
| 20180 | A | K | 2 | 170.31 | 2.90 | 538623.6 | 5513110.0 | 92.04 | 1875.84 | 22:42:35.1 |
| 20190 | A | K | 3 | 286.98 | 8.24 | 538567.1 | 5512896.0 | 53.98 | 1796.91 | 22:43:19.9 |
| 20190 | B | K | 1 | 51.07 | 0.26 | 538963.5 | 5512878.1 | 73.18 | 1909.53 | 22:44:36.6 |
| 20200 | A | K | 2 | 136.69 | 1.87 | 538815.0 | 5512696.5 | 80.96 | 1786.37 | 22:52:56.7 |
| 20215 | A | K | 1 | 97.77 | 0.96 | 538729.5 | 5512502.7 | 123.85 | 1659.03 | 19:42:41.0 |
| 20215 | B | K | 2 | 129.25 | 1.67 | 538607.7 | 5512490.6 | 109.25 | 1599.42 | 19:42:49.3 |
| 20220 | A | K | 2 | 195.31 | 3.81 | 538701.5 | 5512330.0 | 101.78 | 1659.98 | 00:58:48.5 |
| 20220 | B | K | 2 | 156.90 | 2.46 | 538630.8 | 5512333.6 | 84.12 | 1633.40 | 00:58:54.3 |
| 20230 | A | K | 2 | 105.72 | 1.12 | 538622.7 | 5512061.5 | 39.63 | 1623.18 | 00:47:07.7 |
| 20230 | B | K | 1 | 84.18 | 0.71 | 538926.4 | 5512107.3 | 40.82 | 1722.14 | 00:47:42.5 |
| 20240 | A | K | 1 | 92.19 | 0.85 | 538619.9 | 5511894.1 | 90.25 | 1498.68 | 00:46:16.0 |

| Line | Anom Labels | Anom ID | Grade | Off Tau | Off Con | x | y | bird height | dtm | utc time |
|---|---|---|---|---|---|---|---|---|---|---|
| 20281 | A | K | 1 | 52.29 | 0.27 | 538608.8 | 5511107.4 | 75.54 | 1176.83 | 00:18:26.4 |
| 20290 | A | K | 1 | 71.07 | 0.51 | 541742.7 | 5510890.2 | 77.74 | 1813.60 | 00:12:42.2 |
| 20300 | A | K | 2 | 116.08 | 1.35 | 541701.2 | 5510705.7 | 96.26 | 1673.47 | 00:05:01.9 |
| 20310 | A | K | 2 | 164.53 | 2.71 | 541656.6 | 5510499.7 | 24.86 | 1640.11 | 00:03:17.4 |
| 20320 | A | K | 2 | 143.72 | 2.07 | 541576.3 | 5510303.7 | 152.45 | 1470.64 | 23:55:56.9 |
| 20332 | C | K | 2 | 147.91 | 2.19 | 541540.4 | 5510099.6 | 35.58 | 1472.02 | 23:54:40.2 |
| 29010 | A | K | 1 | 50.56 | 0.26 | 538684.5 | 5511747.5 | 34.25 | 1469.04 | 15:48:32.8 |
| 29010 | B | K | 1 | 68.33 | 0.47 | 538696.5 | 5511896.8 | 35.35 | 1556.48 | 15:48:49.3 |
| 29010 | C | K | 1 | 88.06 | 0.78 | 538699.1 | 5512009.4 | 36.21 | 1619.71 | 15:49:02.7 |
| 29010 | D | K | 2 | 115.56 | 1.34 | 538705.7 | 5512276.4 | 73.58 | 1656.74 | 15:49:26.7 |
| 29010 | E | K | 2 | 130.42 | 1.70 | 538707.1 | 5512448.7 | 66.67 | 1675.18 | 15:49:39.6 |
| 29010 | F | K | 2 | 214.66 | 4.61 | 538708.8 | 5512560.2 | 22.46 | 1711.06 | 15:49:50.0 |
| 29010 | G | N | 3 | 283.65 | 8.05 | 538707.9 | 5513281.1 | 22.73 | 1977.91 | 15:50:55.5 |
| 29010 | H | K | 3 | 283.65 | 8.05 | 538708.0 | 5513322.5 | 16.90 | 2005.73 | 15:50:58.8 |
| 29010 | I | K | 4 | 331.95 | 11.02 | 538704.6 | 5514203.5 | 56.17 | 1879.44 | 15:52:48.6 |
| 29010 | J | K | 3 | 237.85 | 5.66 | 538712.7 | 5514802.9 | 81.52 | 1689.09 | 15:53:26.0 |
| 29010 | K | K | 2 | 124.26 | 1.54 | 538683.4 | 5515578.8 | 60.20 | 1446.89 | 15:54:15.4 |
| 29010 | L | K | 2 | 110.97 | 1.23 | 538706.1 | 5516034.4 | 29.24 | 1731.50 | 15:55:13.2 |
| 29020 | A | K | 2 | 114.94 | 1.32 | 539198.5 | 5514256.0 | 53.70 | 1952.10 | 15:41:19.8 |
| 29030 | A | K | 1 | 69.57 | 0.48 | 539689.5 | 5513874.4 | 67.02 | 1986.79 | 15:34:33.8 |
| 29030 | B | K | 2 | 128.21 | 1.64 | 539702.7 | 5514481.9 | 76.74 | 1761.83 | 15:35:04.9 |
| 29071 | A | K | 2 | 168.72 | 2.85 | 541712.4 | 5510533.4 | 50.01 | 1663.13 | 14:48:09.1 |
| 29071 | B | K | 2 | 145.74 | 2.12 | 541716.2 | 5510710.9 | 63.67 | 1702.09 | 14:48:20.4 |

Vulcan Block

| Line | Anom Labels | Anom ID | Grade | Off Tau | Off Con | x | y | bird height | dtm | utc time |
|---|---|---|---|---|---|---|---|---|---|---|
| 10010 | B | K | 3 | 269.06 | 7.24 | 547258.2 | 5517173.5 | 102.20 | 2152.84 | 18:10:36.6 |
| 10010 | C | K | 2 | 178.97 | 3.20 | 547256.7 | 5517009.7 | 97.02 | 2068.70 | 18:10:48.2 |
| 10010 | D | K | 2 | 181.15 | 3.28 | 547248.1 | 5516874.5 | 79.43 | 2047.36 | 18:10:56.9 |
| 10010 | E | K | 4 | 365.80 | 13.38 | 547247.6 | 5516697.7 | 47.39 | 2108.85 | 18:11:09.3 |
| 10020 | B | K | 4 | 335.44 | 11.25 | 547457.6 | 5517112.4 | 16.11 | 2189.27 | 18:13:29.9 |
| 10020 | C | K | 4 | 383.34 | 14.70 | 547450.9 | 5517184.0 | 15.91 | 2234.12 | 18:13:42.0 |
| 10020 | D | N | 1 | 67.12 | 0.45 | 547472.2 | 5518112.1 | 24.18 | 2469.24 | 18:15:38.3 |
| 10020 | E | K | 1 | 67.12 | 0.45 | 547471.6 | 5518151.0 | 10.53 | 2495.60 | 18:15:42.9 |
| 10030 | A | K | 2 | 189.34 | 3.59 | 547672.2 | 5517150.2 | 67.34 | 2285.28 | 17:49:38.3 |
| 10030 | B | K | 6 | 627.37 | 39.36 | 547641.3 | 5516641.0 | 53.42 | 2138.04 | 17:50:09.3 |
| 10040 | A | K | 3 | 314.98 | 9.92 | 547847.3 | 5516721.5 | 120.05 | 2196.05 | 17:44:13.6 |
| 10040 | B | K | 2 | 125.10 | 1.56 | 547851.7 | 5517521.1 | 72.51 | 2232.79 | 17:45:07.4 |
| 10040 | C | K | 2 | 185.08 | 3.43 | 547863.0 | 5518002.8 | 42.64 | 2224.47 | 17:45:29.9 |
| 10045 | B | K | 2 | 214.66 | 4.61 | 547956.3 | 5516697.3 | 87.04 | 2266.89 | 17:56:31.5 |
| 10045 | C | K | 2 | 118.27 | 1.40 | 547967.2 | 5517501.8 | 78.26 | 2164.74 | 17:57:30.7 |
| 10045 | D | K | 1 | 95.75 | 0.92 | 547977.8 | 5517691.3 | 67.02 | 2136.18 | 17:57:39.7 |
| 10050 | A | K | 6 | 688.17 | 47.36 | 548064.8 | 5516642.4 | 32.72 | 2394.82 | 17:43:05.3 |
| 10055 | A | K | 1 | 91.26 | 0.83 | 548147.3 | 5516453.2 | 19.83 | 2508.19 | 19:36:01.5 |
| 10095 | A | K | 2 | 119.06 | 1.42 | 548957.1 | 5517646.8 | 38.13 | 2232.00 | 19:12:44.7 |

| Line | Anom Labels | Anom ID | Grade | Off Tau | Off Con | x | y | bird height | dtm | utc time |
|---|---|---|---|---|---|---|---|---|---|---|
| 10130 | A | K | 1 | * | * | 549635.4 | 5517427.3 | 51.30 | 2301.17 | 17:02:49.6 |
| 10180 | A | K | 2 | 182.37 | 3.33 | 550652.7 | 5516827.6 | 27.48 | 1801.64 | 19:13:13.4 |
| 10200 | A | K | 1 | 40.28 | 0.16 | 551074.3 | 5516365.8 | 57.78 | 1399.71 | 19:01:27.5 |
| 10200 | B | K | 2 | 140.09 | 1.96 | 551055.8 | 5516829.4 | 40.40 | 1633.06 | 19:02:23.0 |
| 19041 | A | K | 3 | 297.46 | 8.85 | 547377.5 | 5518018.3 | 17.00 | 2533.57 | 17:49:30.4 |
| 19041 | B | K | 3 | 306.37 | 9.39 | 547362.8 | 5518013.0 | 23.46 | 2551.88 | 17:49:41.6 |
| 19041 | C | K | 4 | 417.43 | 17.42 | 547310.6 | 5517978.5 | 24.36 | 2588.44 | 17:50:13.4 |
| 19050 | A | K | 1 | * | * | 547803.7 | 5517495.4 | 109.59 | 2264.87 | 17:35:32.6 |
| 19060 | A | K | 1 | * | * | 548341.3 | 5516946.6 | 33.34 | 2323.02 | 17:32:16.2 |
| 19060 | B | K | 2 | 197.19 | 3.89 | 547449.2 | 5516985.6 | 80.99 | 2101.08 | 17:33:27.1 |
| 19060 | C | K | 3 | 228.76 | 5.23 | 547323.4 | 5516976.2 | 69.64 | 2081.67 | 17:33:34.4 |
| 19080 | A | K | 3 | 297.57 | 8.86 | 550796.3 | 5516011.1 | 57.71 | 1350.08 | 17:15:19.2 |
| 19080 | B | K | 4 | 443.19 | 19.64 | 550362.1 | 5515986.9 | 63.38 | 1479.71 | 17:15:47.8 |

Car Block

| Line | Anom Labels | Anom ID | Grade | Off Tau | Off Con | x | y | bird height | dtm | utc time |
|---|---|---|---|---|---|---|---|---|---|---|
| 30070 | B | K | 1 | 32.98 | 0.11 | 549912.2 | 5439771.2 | 60.35 | 1724.59 | 18:10:47.1 |
| 30080 | A | K | 1 | 51.59 | 0.27 | 549919.7 | 5439570.6 | 53.79 | 1710.37 | 18:09:24.5 |
| 30100 | A | K | 2 | 141.72 | 2.01 | 549496.5 | 5439172.1 | 101.11 | 1817.24 | 17:56:44.4 |
| 30120 | A | K | 1 | * | * | 545102.1 | 5438789.2 | 49.64 | 1825.19 | 17:39:58.0 |
| 30180 | A | K | 1 | * | * | 548704.5 | 5437558.5 | 56.63 | 1841.52 | 19:46:37.7 |
| 30186 | A | K | 1 | * | * | 548689.8 | 5437488.0 | 44.82 | 1848.19 | 16:48:12.8 |
| 30190 | A | K | 1 | 49.37 | 0.24 | 548663.4 | 5437384.7 | 59.25 | 1820.43 | 19:40:41.2 |
| 30195 | A | K | 1 | 65.75 | 0.43 | 548464.8 | 5437278.6 | 53.84 | 1863.77 | 16:55:57.5 |
| 30195 | B | K | 1 | 68.35 | 0.47 | 548747.6 | 5437279.2 | 47.34 | 1796.45 | 16:56:12.2 |
| 30200 | A | K | 1 | 59.13 | 0.35 | 548724.7 | 5437180.6 | 49.40 | 1793.00 | 19:37:49.4 |
| 30205 | A | K | 2 | 116.97 | 1.37 | 548722.2 | 5437070.3 | 53.59 | 1779.59 | 16:59:03.0 |
| 30210 | A | K | 1 | 96.41 | 0.93 | 548945.9 | 5437004.4 | 42.06 | 1723.32 | 19:31:28.2 |
| 30210 | B | K | 1 | 77.11 | 0.59 | 548757.7 | 5436990.7 | 43.76 | 1749.50 | 19:31:37.2 |
| 30215 | A | K | 2 | 122.72 | 1.51 | 548544.2 | 5436868.2 | 61.60 | 1759.40 | 17:04:34.3 |
| 30215 | B | K | 2 | 197.37 | 3.90 | 548760.3 | 5436869.0 | 57.77 | 1725.98 | 17:04:42.0 |
| 30215 | C | K | 2 | 128.63 | 1.66 | 548969.1 | 5436871.0 | 55.82 | 1692.27 | 17:04:49.6 |
| 30220 | A | K | 1 | 67.43 | 0.46 | 549031.0 | 5436776.1 | 58.49 | 1667.32 | 19:29:03.9 |
| 30225 | A | K | 1 | 55.25 | 0.30 | 549395.0 | 5436689.1 | 58.20 | 1595.76 | 17:06:55.5 |
| 30235 | A | K | 2 | 118.56 | 1.41 | 550009.0 | 5436479.7 | 85.12 | 1447.70 | 17:14:17.2 |
| 39010 | A | K | 1 | * | * | 545006.9 | 5438884.0 | 53.14 | 1795.96 | 18:32:40.4 |
| 39080 | A | K | 1 | 52.45 | 0.28 | 548502.9 | 5437238.6 | 45.01 | 1863.85 | 20:07:01.5 |
| 39090 | A | K | 1 | 54.27 | 0.29 | 548988.5 | 5436911.5 | 69.55 | 1687.53 | 20:04:23.7 |
| 39100 | A | K | 2 | 115.99 | 1.35 | 549488.7 | 5436691.3 | 66.94 | 1575.15 | 19:56:13.1 |
| 39110 | A | K | 1 | 76.22 | 0.58 | 549999.6 | 5439314.0 | 47.89 | 1681.57 | 19:51:56.1 |
| 39110 | B | K | 1 | 79.27 | 0.63 | 549992.3 | 5436401.0 | 67.75 | 1467.35 | 19:53:52.7 |