Assessment Report

Helicopter-borne VTEM and Aeromagnetic Geophysical Survey and Lithogeochemical Sampling

Columbia Shear Property

Vancouver Island, British Columbia, Canada

NTS 92F/2, 92C/15 - BCGS 92F008, 92C098

49°02' 13” N Latitude 124°34' 23” W Longitude

UTM 10 385034E, 5432757N

(At Center of Claim Block)

Victoria Mining Division

Mineral Tenures

701043, 739602, 739622, 841870, 841872, 843546, 843559, 845143,

845209, 845221, 845223, 845242, 846577, 848002, 848003, 848004,

848434, 848437, 848438, 848462, 848463, 850730

Owner

Craig Lynes (Rich River Exploration Ltd.)

Operator

Gold Ridge Exploration Inc., 9285-203B St., Langley, B.C

By

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February 22, 2012

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1 Summary

The Columbia Shear property is located on Vancouver Island, British Columbia, Canada, approximately 30 kilometres southeast of the town of Port Alberni and 45 kilometres northwest of the town of Lake Cowichan. The property consists of twenty-two contiguous mineral tenures covering an area of 3240.23 hectares. These tenures are owned by Craig Lynes on behalf of Rich River Exploration Ltd. ("Rich River"). Gold Ridge Exploration Inc. ("Gold Ridge") has optioned the property from Rich River and is the operator.

Access to the Columbia Shear property is via logging roads from either the town of Port Alberni (77 km) or the town of Youbou (34 km). Much of the property has been logged at one time or another over the past 100 years with many stands of second and third growth timber interspersed with more recent clearcuts.

The Columbia Shear property is underlain by the Duck Lake, Nitinat and McLauglin Ridge formations of the Devonian age Sicker Group. These island arc volcanic rocks occur in two southwest directed thrust plates that transect the property. The Sicker rocks are cut by Early to Middle Jurassic granodiorite intrusions of the Island Plutonic Suite. Triassic age submarine basalts of the Karmutsen formation occur in the south west corner of the property, in the footwall of a southwest directed thrust fault that follows the course of Rift Creek.

The Columbia Shear property covers prospective rocks of the Devonian Sicker group. These island arc volcanic rocks are known to host significant volcanogenic massive sulphide deposits elsewhere on Vancouver Island e.g. the Myra Falls mine at Buttle Lake (Walker, 1983). There are 11 different mineral occurrences covered by the Columbia Shear property. The Kitkat, Kitkat 2, Kitkat 3, Kitkat 5 and Raft showings are all classified as volcanogenic. This style of mineralization, which may occur as massive sulphide beds or stockwork veining, is hosted by Devonian age Sicker Group island arc volcanic rocks.

The Kitkat 4, Columbia II, Columbia VI and Hoop showings are classified as epigenetic Cu+/-Ag veins. These quartz bearing veins are probably related to the Jurassic Island Plutonic Suite intrusions. Emplacement of veins typically occurs within shear zones and other zones of weakness.

The Logan Au-Ag showing is classified as a replacement deposit. Mineralization consists of pyrite and chalcopyrite in silicified zones and as fillings in vugs and narrow fractures.

Work done on the Columbia Shear property in 2011 included a helicopter-borne versatile time domain electromagnetic (VTEM) and aeromagnetic geophysical survey and lithogeochemical sampling. The total area covered by the airborne geophysical survey was 34 km^2. Total survey line coverage was 261 line kilometres. Lithogeochemical sampling was done in two areas – one near kilometre 21 on the Rift Creek Main forest service road, the other in the vicinity of the Kitkat 2 showing. A total of 19 samples were collected and analyzed by ICP-MS for 52 elements.

The airborne geophysical survey identified several areas of weak to moderately anomalous conductivity and areas of both high and low magnetic response. In some, but not all cases these anomalies can be attributed to lithologic variations. However, there are several anomalies that may be related to other factors such as metallic mineral concentration or magnetite destructive alteration. Follow-up work is recommended to determine the significance of these anomalies.

Total cost of the work done on the Columbia Shear property in 2011 was $103,357.89.

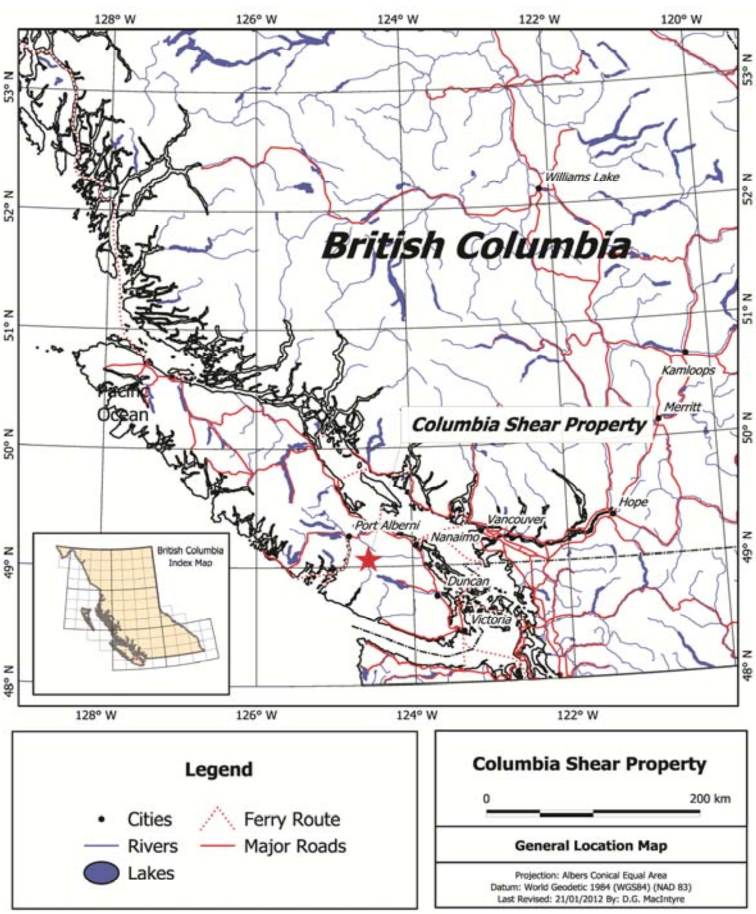


Figure 1. Location map, Columbia Shear Property, southwest British Columbia.

2 Property Description and Location

The Columbia Shear property is located on Vancouver Island, British Columbia, Canada, approximately 30 kilometres southeast of the town of Port Alberni and 45 kilometres northwest of the town of Lake Cowichan (Figure 1). The property is located near the headwaters of the south flowing Nitinat River. The geographical coordinates for the center point of the claim block are: 49°02' 13" N Latitude and 124°34' 23" W Longitude. The corresponding Universal Transverse Mercator (UTM) NAD83, Zone 10 coordinates are 385034E, 5432757N. The property occurs on NTS maps 92F/2 and 92C/15 and BCGS maps 92F008 and 92C098 (Figure 2).

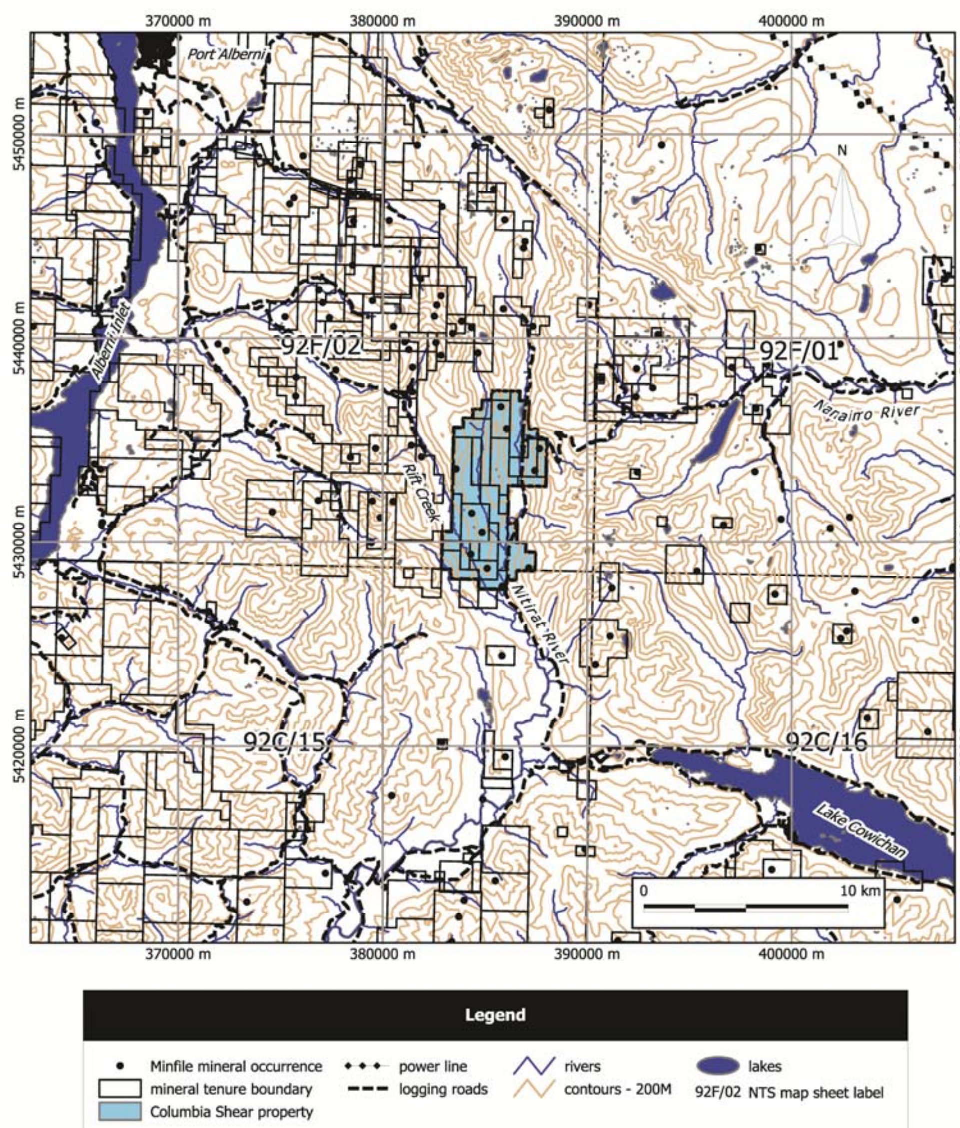


Figure 2. Access and infrastructure map, Columbia Shear property.

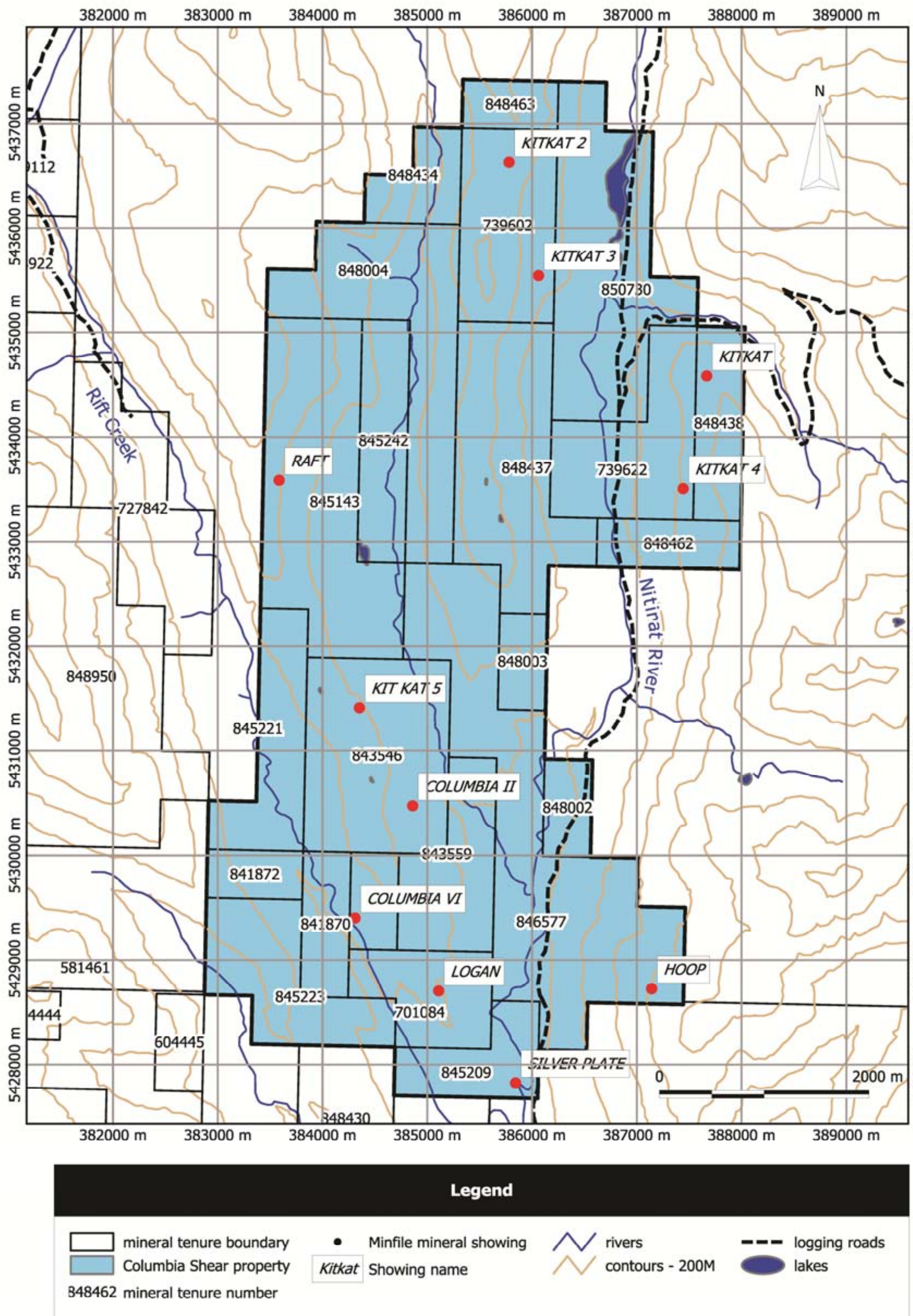


Figure 3. Mineral tenure map, Columbia Shear property.

The Columbia Shear claim group consists of twenty-two (22) contiguous mineral tenures that are located within the Victoria Mining Division (Table 1 & Figure 2). The total area of the tenures within the property boundary shown in Figure 2 is calculated to be 3240.23 hectares. These tenures are held by Craig Lynes on behalf of Rich River Exploration Ltd. At the time of writing the property was under option to Gold Ridge Exploration Inc.

Table 1. List of Mineral Tenures, Columbia Shear Property

Tenure Number	Claim Name	Issue Date	Good To Date	Area (ha)
701043		2010/Jan/18	2017/Jun/30	42.38
739602		2010/Apr/03	2017/Jun/30	169.32
739622		2010/Apr/03	2017/Jun/30	169.38
841870		2010/Dec/27	2017/Jun/30	63.57
841872		2010/Dec/27	2017/Jun/30	42.38
843546	COLUMBIA PLATINUM	2011/Jan/19	2017/Jun/30	254.21
843559	COLUMBIA VI	2011/Jan/19	2017/Jun/30	127.13
845143	COLUMBIA SHEAR	2011/Jan/31	2017/Jun/30	317.62
845209	SILVER SHEAR	2011/Feb/01	2017/Jun/30	84.78
845221	RIFT SHEAR	2011/Feb/01	2017/Jun/30	127.11
845223	LOGAN'S GOLD	2011/Feb/01	2017/Jun/30	148.35
845242	COLUMBIA STAR	2011/Feb/01	2017/Jun/30	105.86
846577	HOOP - SHEAR	2011/Feb/15	2017/Jun/30	444.93
848002	SHEAR 2	2011/Mar/03	2017/Jun/30	42.37
848003	SHEAR 3	2011/Mar/03	2017/Jun/30	42.36
848004	KIT KAT SHEAR	2011/Mar/03	2017/Jun/30	254.03
848434	KITKAT 3	2011/Mar/09	2017/Jun/30	63.49
848437	COPPER SHEAR	2011/Mar/09	2017/Jun/30	254.08
848438	KIT KAT 4	2011/Mar/09	2017/Jun/30	84.69
848462	KITKAT-CU	2011/Mar/09	2017/Jun/30	63.53
848463	KITKAT2	2011/Mar/09	2017/Jun/30	42.32
850730	KITKAT	2011/Apr/04	2017/Jun/30	296.32
Note: data acquired from a Mineral-Titles-on-Line database search, Jan. 21, 2012				3240.23

2.1 Mineral Tenures

Details of the status of tenure ownership for the Columbia Shear property were obtained from the Mineral-Titles-Online (MTO) electronic staking system managed by the Mineral Titles Branch of the Province of British Columbia. This system is based on mineral tenures acquired electronically online using a grid cell selection system. Tenure boundaries are based on lines of latitude and longitude. There is no requirement to mark claim boundaries on the ground as these can be determined with reasonable accuracy using a GPS. The Columbia Shear claims have not been surveyed.

The mineral tenures comprising the Columbia Shear property are shown in Figure 3 and listed in Table 1. The claim map shown in Figure 3 was generated from GIS spatial data downloaded from the Government of BC, Integrated Land Management Branch (ILMB), Land and Resource Data Warehouse (LRDW) (http://archive.ilmb.gov.bc.ca/lrdw/). These spatial layers are generated by the Mineral-Titles-Online (MTO) electronic staking system that is used to locate and record mineral tenures in British Columbia.

Claim details given in Table 1 were obtained using an online mineral tenure search engine available on the MTO web site. All claims listed in the table are in the Victoria Mining Division within NTS map sheet 92F/02 and 92C/15.

2.2 Claim Ownership

Information posted on the MTO website indicates that all of the claims listed in Table 1 are owned 100% by Craig A. Lynes. Mr. Lynes holds these claims on behalf of Rich River Exploration Ltd. ("Rich River")

3 Accessibility, Climate, Local Resources, Infrastructure and Physiography

3.1 Access

Access to the Columbia Shear property is via logging roads from either the town of Port Alberni (77 km) or the town of Lake Cowichan (44 km). From Port Alberni, the Bamfield road is followed to the Museum Main, which follows Museum Creek and Rift Creek to the western side of the property. Branching from Museum Main, the M2 and M2D roads lead eventually onto the central portion of the property, east of Rift Creek. This road can be in very poor condition at times and may be blocked by rockslides.

The property can also be accessed from the town of Lake Cowichan, which is a distance of 90 km by road from Victoria. From Lake Cowichan one follows highway 18 along the north side of Cowichan lake to the town of Youbou, a distance of 10 km. At Youbou the paved highway ends near the eastern limits of the town and the North Shore Forest Service Road (FSR) begins. At kilometre 22 this gravel road connects with the Nitinat Main FSR. This paved FSR heads north along the east side of the Nitinat River valley, entering the southern limit of the property around kilometre 12. Branch roads cross the Nitinat river at 12.5 and 17.5 km (branch road BR20) and provide access to the southwestern and northwestern parts of the property respectively. There are two gates on the Nitinat Main that may be closed - one at 8 km where the road crosses Red Bed Creek and another at 17 km just before branch road BR20. Numerous old, overgrown and washed out logging roads occur in areas of previous logging activity.

3.2 Climate and Vegetation

Vegetation on the Columbia Shear claims includes trees of the Coastal Douglas Fir biogeoclimatic zone which is characterized by Douglas Fir, western red cedar and hemlock. Spruce, amabilis fir and birch are found at elevations less than 900 metres. Alder, willow, poplar and cottonwood are commonly found on old logging roads. Undergrowth is typically a variable mixture of salal, devil's club and salmonberry.

At lower elevations, logging cut blocks of various ages are common with their associated overgrown and decommissioned logging roads. In recent years helicopter logging techniques have been utilized to harvest first growth timber at higher elevations.

The climate of the Nitinat River area is characterized by a mean annual temperature of approximately 6.5º C and annual rainfall amounts ranging from 1500 to 3400 millimetres. Greater rainfall and heavier snowpacks occur at higher elevations while valley bottoms are drier and less prone to heavy snow accumulations during the winter months. The coastal rainforest climate promotes rapid tree growth and revegetation of disturbed areas such as clearcuts and road openings.

3.3 Local Resources

The nearest town is Lake Cowichan which is located 50 kilometres to the south, at the eastern tip of Cowichan Lake. This town is very tourist oriented but also provides support for the logging industry. There are hardware and grocery stores in town which can provide supplies for future exploration work.

The Cowichan Lake and Nitinat River areas are active logging regions with plenty of heavy equipment and operators available for hire. Most of these operators live in Lake Cowichan, Duncan or Port Alberni. Duncan and Port Alberni are major population centres and are within a one to two hour drive of the project and provide all amenities including police, hospitals, groceries, fuel, helicopter services, hardware and other necessary items. Drilling companies are present in these communities, while assay facilities are located in Vancouver, British Columbia.

3.4 Infrastructure

Infrastructure in the area is primarily a well maintained network of logging roads that transect the area of the claims. The nearest powerlines, gas pipelines and rail heads are located at Port Alberni and Youbou respectively.

3.5 Physiography

Topographically, the Columbia Shear property exhibits a moderate relief with an elevation ranging from 140 to 1058 metres above mean sea level over an area of 34 square kilometres. There are numerous rivers and streams running through the survey area which connect various lakes and wetlands. There are some visible signs of culture such as roads and trails throughout the block.

4 History

The Columbia Shear property covers 11 different mineral showings each of which has its own history of exploration. The following section describes this historical work. Information on work done at each of the showings is derived from publically available assessment reports.

4.1 Silver Plate (St. Anthony)

In 1987 Gracey Resources Ltd. collected 55 rock and 558 soil samples from a grid covering the Silver Plate showing (Minfile #092C 148). They also did geological mapping at 1:5000 scale and 38.0 line km of VLF EM and magnetometer survey work on a new cut grid (Cukor and Cukor, 1988). The highest assay result, 1.89 grams per tonne gold and 5.48 grams per tonne silver, was from a rock chip sample (#1904) of a silicified shear containing quartz veins and occasional hematite in gabbro (Cukor and Cukor, 1988).

In 1988 Gracey Resources Ltd. did an additional 4 km VLF and resistivity survey (Cukor, 1988).

4.2 Kitkat

The first recorded work covering the Kitkat showings was done by Gunnex Ltd. between 1963 and 1966. This work involved limited prospecting and silt sampling over a large portion of the E&N Land Grant. There is no mention of showings in the area of the original Kitkat claims.

The original Kitkat 1-7 claims covered 5 different showings – Kitkat, Kitkat 2, Kitkat 3, Kitkat 4 and Kitkat 5 all of which were located as a result of work done in 1984 and 1985. In 1984, JBL Resources contracted MPH Consulting Ltd. to do geological, geochemical, and geophysical work on the Kitkat 1-7 claims. The results of this work are summarized below and described in detail in assessment report 13945 (Neale and Hawkins, 1985).

The work done by MPH on the Kitkat claims in 1985 was divided into two phases. The Phase I program consisted of geological mapping (1:10,000 scale), rock sampling and prospecting covering the entire property. Approximately 120 rock samples were collected and analyzed for Au and by 30-element ICP during Phase I. Phase I work was carried out from May 27 to June 13, 1985.

The Phase I1 program included detailed geological mapping of mineralized zones and outcrops at scales of 1:75, 1:100 and 1:750, and soil sampling and VLF-EM and magnetometer surveys carried out on two grids placed over target areas located during Phase I.

Grid A consisted of a total of 18.1 line km of flagged lines at 100 m line spacing, while Grid B consisted of 10.5 line km of flagged lines at 200 m line spacing. Soil samples were collected at 25 m intervals along lines on Grid A and at 50 m intervals on Grid B. A total of 646 soil samples were collected from Grid A and 207 samples from Grid B. All soil samples were analyzed for Cu, Ag and Zn. VLF-EM and magnetometer readings were taken at 25 m intervals along lines on both grids. A total of about 89 rock samples was collected during Phase II.

Soil geochemistry revealed two strongly anomalous zones as well as various smaller, weaker zones in the northwestern portion of the property (Grid A). Copper values fall into a range from 144 to 1180 ppm, zinc values 92 to 820 ppm. All of these anomalous zones are along the geological trends of north to northwest and coincide with the surface sampling that revealed high copper and gold in rocks. Due to steep slopes, some displacement of geochemical anomalies is also evident. Weakly anomalous zones were determined in the southwestern portion of the property (Grid B).

Geophysical surveys carried out over the soil sampling grids included VLF-EM and magnetometer surveys. These surveys located a number of weak VLF-EM conductors and magnetic anomalies, some of which could be subtle indications of mineralized zones.

Mineralized zones consisting of massive sulphide lenses (pyrite, lesser chalcopyrite, magnetite, minor pyrrhotite) within narrow shear zones cutting Nitinat Formation rocks on Grid A yielded grab sample results of up to 2940 ppb Au, greater than 9999 ppm Cu, 2364 ppm Mo, 1140 ppm Co, 360 ppm Pb , 960 ppm Zn, 3.0 ppm Ag, 530 ppm Ni, 145 ppb Pd and 100 ppb Pt. The massive sulphide lenses occur along zones of shearing and can be accompanied by hydrothermal alteration of the wallrocks. The mineralized zones are semicontinuous over a strike length of at least 2000 m.

Soil sampling on Grid A outlined two main subparallel zones strongly anomalous in Cu and/or Zn 800 m and 750 m long. Soil geochemical values range up to 1180 ppm Cu and up to 820 ppm Zn. The soil anomalies are approximately parallel to the geological trend and appear to reflect underlying mineralized zones. Numerous smaller anomalies are scattered throughout the grid, mainly in the southern and eastern portions. There appears to be generally good correlation between soil anomalies and the numerous surface Au and Cu showings.

Samples collected from pyritic Myra Formation rocks near a small flow(?) on the eastern end of the Kitkat 5 claim returned up to 6702 ppm Cu, 2012 ppm Ni, 4850 ppb Pd, 1650 ppb Pt, 100 ppb Au, and 5.8 ppm Ag. It was felt that this represented a very high priority target that should be followed up by extending Grid B to the west (Neale and Hawkins, 1985).

Mineralized zones consisting of wide, intense shear zones cutting Nitinat Formation rocks on the east side of the Nitinat River and containing quartz-carbonate veins and veinlets yielded grab sample results of up to 3420 ppb Au**.** Copper values of up to 9928 ppm were also obtained from samples from this area, although no samples anomalous in Au were also anomalous in Cu (or other base metals). All Zn results were low. These mineralized skarn zones are short and discontinuous and occur in an area of at least 2500 m by 600 m in size.

In 1985-86 Angle Resources Ltd and Nexus Resource Corporation are reported to have drilled 6 BQ diamond drill holes totalling 595 metres. They also did geological mapping at 1:5,000 scale, soil and rock sampling and IP and magnetometer surveys. The results of this work are unknown. There does not appear to have been a filing for assessment credit for the work that was done and consequently there is no publically available assessment report.

4.3 Raft

The following description of work done in the vicinity of the Raft showing (Minfile #092F 311) is taken from assessment report 14993 (Neale and Hawkins, 1986).

Government geological work in the area includes mapping by C.H. Clapp (1912), J.E. Muller and D.J.T. Carson (1969), J. E. Muller (1977 and 1980), and A. Sutherland Brown (1986). A regional aeromagnetic survey flown by Hunting Survey Corp. Ltd. in 1962 included the area of the Raft Group. The results are not known.

From 1963 to 1966 Gunnex Ltd. carried out a regional mapping program over a large portion of the E & N Land Grant with limited prospecting and silt sampling. They compiled a list of 11 known mineral occurrences in the area and visited many of them. Silt samples taken in the area of the present Raft Group returned some anomalous results, but were not followed up by Gunnex.

In 1983 a program of reconnaissance silt and soil sampling on the Raft Group carried out for Lode Resource Corporation outlined several areas of interest (House and Sawyer, 1984). A subsequent follow-up silt sampling and geological mapping program indicated that the Black Panther/Black Lion shear zone and Au-quartz veins apparently continue to the south, on the west side of the ridge, while Cu and Zn anomalies occurring on the west side of the ridge could be indicative of a volcanogenic massive sulphide deposit (Laanela , 1984) .

A rock sample collected by BP-Selco from a massive sulphide (pyrite) boulder on the Raft claims returned values of 1510 ppb Au, 7.0 ppm Ag, 669 ppm Zn, 544 ppm Cu, 935 ppm Pb, and 235 ppm As.

An engineering report on the Raft property was prepared for Vanwin Resource Corporation by Peter Christopher & Associates Inc. which outlined a recommended work proqram (Christopher , 1985). No fie1d work was carried out.

In July 1985, reconnaissance geological mapping, prospecting and rock sampling was carried out by MPH Consulting Ltd. for Vanwin Resource Corporation on the Raft 1 and 2 claims of the Raft Group (Neale and Hawkins, 1985). This work outlined two types of mineralization occurring in Nitinat Formation (?) mafic volcanics: volcanogenic massive sulphide mineralization exposed over 0.7m by 8m., and a large surrounding zone of disseminated to stringer sulphide mineralization 500m. wide by about 5000m. long. The massive sulphide showing returned values of 1379 ppm Cu and 1.0 ppm Ag from a grab sample, while the stringer zone returned analyses of up to 6185 ppm Cu, 6570 ppm Zn, 4.0 ppm Ag, 80 ppb Au, 2291 ppm Mo, 32.5 ppm Cd, and 328 ppm Cr from various grab samples.

Between November 1985 and February 1986, a grid was established on the Raft 1 and 2 claims, and 989 soil samples were collected for geochemical analysis by MPH Consulting Limited for Vanwin Resource Corporation (Neale, 1986; Neale and Hawkins, 1986). Geological mapping and sampling and a VLF-EM survey were also carried out during this time period.

4.4 Columbia

The following history of the Columbia II and VI showings is from an assessment report prepared by T. Neale, MPH Consulting Ltd. for Payton Ventues Inc. in 1988 (Neale, 1988).

The first recorded exploration of the Columbia ground was in the early 1960's, when Hunting Survey Corp. Ltd. flew a regional aeromagnetic survey, followed by regional mapping with limited prospecting and silt sampling carried out by Gunnex Ltd. over a large portion of the old E&N Land Grant. Gunnex located a number of small, low-order Total Heavy Metal anomalies on the ground now covered by the Columbia Shear claims, mainly along the central ridge (Laanela, 1986).

The showings were originally staked as the Great Northern claim. No work on that claim is recorded. Subsequently the Platinum Group claims were staked in July and September 1986. A program of reconnaissance geological mapping and soil sampling was carried out in October 1986 over the central and eastern parts of the property in an effort to locate Pt-Pd mineralization similar to that located on the Kitkat property, to the north (Laanela, 1986). Mapping located mafic Nitinat Formation volcanics with a small amount of later dioritic intrusions in the northeast corner. Most of the rock sampling was carried out over the "Main Zone", a north-northwest trending, strongly silicified, locally sulphide bearing shear zone up to 50 metres wide which runs along the ridge top across the entire property. None of the samples were anomalous in Au, Ag, Pt or Pd. Several contained elevated Cu contents, assaying up to 1.23% Cu. Two old drill sites and a pit were discovered on the Main Zone. It is not known when this work was performed, or what the results were. The only other significant results came from a rock sample collected from the eastern slope of Rift Creek valley, of rusty, sheared, carbonatized basalt which ran 5.5 ppm Ag and 5055 ppm Cu.

Soil sampling on a 200 m by 50 m grid located anomalous Au values in 2 areas on the east slope of Rift Creek. Anomalous As values extend to the southeast from the western gold anomaly while Cu and Zn anomalies are partially coincident with the Au anomaly. On the eastern end of the property several narrow, elongate Ag anomalies occur.

The 1987 exploration program consisted of reconnaissance geological mapping, prospecting, rock sampling, soil sampling, and test magnetometer and VLF-EM surveys. A total of 74 rock samples and 253 soil samples were collected. Geological mapping was carried out over an area of about 2 square kilometres at a scale of 1:5000. The test geophysical surveys were carried out over 1.65 line km (VLF-EM) and 0.4 line km (magnetometer).

Rock sampling provided the most encouraging results west of Rift Creek. A thin (3-4 cm) massive pyrite vein returned as assay of 16.22 g/t Au. Four other samples from within 200

m. returned elevated to anomalous values of 22 ppb Au to 2.06 g/t Au. Geochemical soil sampling outlined a gold anomaly approximately following Rift Creek. It is 30-120 m. wide by 1200 m. long and open on both ends. Zinc and arsenic anomalies occur near the south end of the gold anomaly.

4.5 Hoop

The following description of the history of the Hoop showing is taken from assessment report 14461 prepared by T. Neal and T.G. Hawkins of MPH consulting for Gator Resources Corp. (Neale and Hawkins, 1985).

A preliminary assessment of the property based on a limited amount of rock sampling and geological mapping was done in 1985. Lithogeochemical analysis of the rock samples returned values of up to 0.8 ppm Ag, 206 ppm Cu and 94 ppm Zn. Whole rock analysis of five of the samples revealed indications of possible alteration typically associated with volcanogenic massive sulphide deposits. An area of the property shown by government mapping as being underlain by West Coast Complex intrusive and metamorphic rocks was found to actually be underlain by andesitic (to dacitic) volcanics cut by dioritic sills and/or dykes.

A major northwest trending heavily carbonatized shear zone up to at least 200 m wide crosses the southwestern corner of the property. Anomalous gold values of up to 120 ppb over 2 m. as well as some anomalous Cu, Ni and Cr results have been returned from the shear zone and quartz veins in and near the shear. It is possible that a high-tonnage, low-grade Au deposit could be present in the shear zone area of the Hoop property.

Indications of possible volcanogenic massive sulphide mineralization on the Hoop include anomalous Cu results (up to 364 ppm Cu) from samples containing pods of massive sulphides and the presence of banded cherty tuff with bands of sulphides up to 3 cm wide.

5 Regional Geology

The following description of the regional geology in the vicinity of the Columbia Shear property is modified from a B.C. Geological Survey report by Massey and Friday (1988).

5.1 Sicker Group

The oldest rocks in the Alberni - Nanaimo Lakes area belong to the Paleozoic Sicker and Buttle Lake groups which contain volcanic and sedimentary units ranging from Middle Devonian to Early Permian age. The Devonian Sicker Group is a thick package of lower greenschist metavolcanic and volcaniclastic rocks that formed in an oceanic island-arc environment .

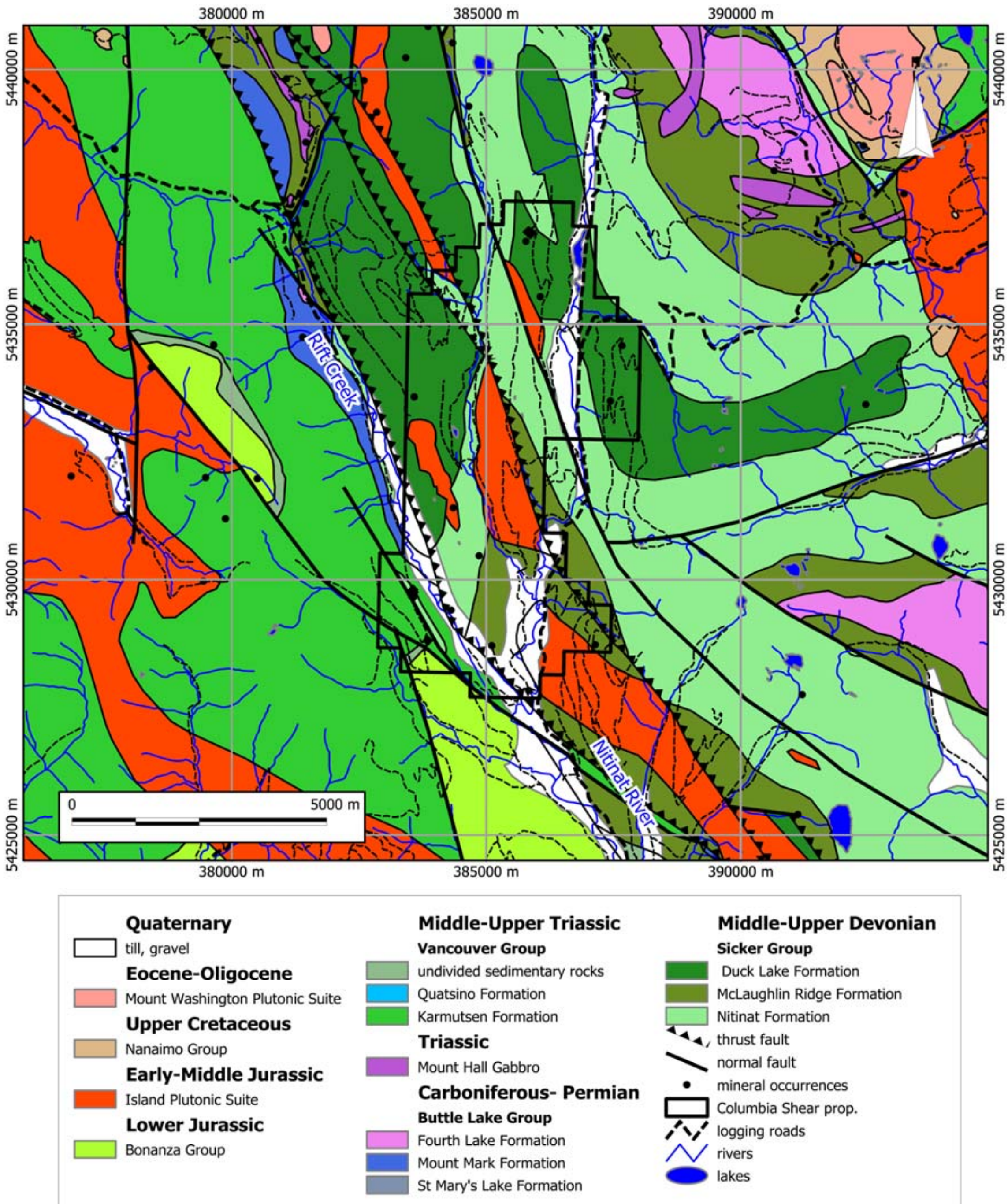


Figure 4. Regional geology (after Massey et al., 2003)

5.1.1 Duck Lake Formation

The lowest unit is the Duck Lake Formation which comprises a suite of grey to maroon and green pillowed basalts and basaltic breccias with chert, jasper and cherty tuff interbeds near the top of the sequence. Well-bedded felsic tuffs and lapilli tuffs are associated with the cherts and jaspers. Massive dacite-rhyolite dikes and sills intrude the pillowed basalts. The pillowed basalts can be divided into two subunits on the basis of geochemistry. The apparently lowermost flows are tholeiitic with an affinity to enriched-type mid-ocean ridge basalts and probably represent the oceanic substrate upon which the Sicker arc developed. The uppermost lavas, and dacite intrusions, are of high-potassium calcalkaline chemistry and mark the initiation of arc construction. These two suites were not recognized nor distinguished in the field.

5.1.2 Nitinat Formation

Overlying the Duck Lake Formation is the Nitinat Formation characterized by pyroxene-feldspar-porphyritic basalts and basaltic andesites. These typically occur as agglomerates, breccias. lapilli tuffs and crystal tuffs that formed as pyroclastic flows, debris flows and lahars. Pyroxene-phyric, amygdaloidal, pillowed and massive flows are also developed.

5.1.3 McLaughlin Ridge Formation

The Nitinat Formation passes upwards transitionally (over a thickness of about 150 metres) into the McLaughlin Ridge Formation, a sequence of volcaniclastic sediments dominated by thickly bedded, massive tuffites and lithic tuffites, interbedded with thinly bedded tuffites and laminated tuffaceous sandstone, siltstone and argillite. The beds tend to form fining-upward cycles from tuffite to argillite, but overall the sequence becomes coarser towards the top with more frequent development of lithic tuffite and coarse pyroclastic horizons. The sequence probably formed as a volcaniclastic apron around a volcanic island and grades eastwards into more proximal volcanic-dominated facies in the Duncan area. The Nitinat and McLaughlin Ridge formations form a coherent suite of sodium-potassium calcalkaline chemistry typical of island arcs.

5.2 Buttle Lake Group

The Buttle Lake Group is made up of a dominantly epiclastic and bioclastic limestone sedimentary sequence ranging from Mississippian to Early Permian in age. This sedimentary package is apparently conformable on the underlying volcanics along the northeastern limb of the Cowichan uplift, for example, in the upper Cameron River valley and St Mary's Lake area, but is unconformable along the southwestern limb and in the Fourth Lake area. The Buttle Lake Group is subdivided into two formations: the Fourth Lake and Mount Mark.

5.2.1 Fourth Lake Formation

The Fourth Lake Formation comprises mostly thin-bedded often cherty sediments. These vary from green and red ribbon cherts, black cherty argillites, green and white cherty tuffs, grey and green siltstones and argillites, to thicker bedded green volcanic sandstones. The upper part of the formation is characterized by thinly bedded, turbiditic sandstone-siltstone-argillite intercalations, with some thicker beds of volcanic sandstone. These pass upwards into argillite-calcarenite interbeds at the top of the sequence.

5.2.2 Mount Mark Formation

The Mount Mark Formation conformably overlies and laterally interfingers with the Fourth Lake Formation. It consists of well-bedded bioclastic calcarenite and calcirudite with minor argillite and chert interbeds. The overlying St Mary's Lake Formation is sporadically preserved beneath the Triassic unconformity. It comprises clastic sediments varying from polymictic conglomerates to volcanic sandstones and argillites.

5.3 Vancouver Group

Rocks of the Upper Triassic Vancouver Group are exposed throughout the map area, flanking the Paleozoic core of the Cowichan uplift. The group is subdivided into a thick lower basaltic volcanic package (Karmutsen Formation) and a thin upper sedimentary package (Quatsino and Parson Bay formations).

5.3.1 Karmutsen Formation

The lower Karmutsen Formation basalts rest unconformably on the underlying Paleozoic rocks. The basalts form pillowed flows, pillow breccias and hyaloclastite breccias interbedded with massive flows and sills. There is a tendency for the massive flows to dominate the sequence towards the top and the pillowed flows the lower parts. The Karmutsen Formation basalts show amydgule infillings and alteration assemblages typical of the prehnite-pumpellyite facies.

5.3.2 Mount Hall gabbro

The mafic bodies of the Mount Hall gabbro, intrusive into the Paleozoic rocks, are coeval and consanguineous with the Karmutsen Formation basalts. The basalts formed from an iron-titanium enriched tholeiitic magma, similar to continental tholeiite or enriched mid-ocean ridge basalt, probably in an oceanic flood-basalt province. Succeeding limestones, argillites and tuffaceous sediments of the Quatsino and Parson Bay formations are poorly developed in the map area.

5.4 Island Plutonic Suite

All of the Paleozoic and Triassic sequences have been intruded by granodioritic stocks of the Early to Middle Jurassic Island Plutonic Suite. These bodies are usually elongate in shape, although the Fourth Lake stock is roughly circular. The intrusions are dominantly equigranular quartz diorite to granodiorite but show considerable lithological variation. The Corrigan pluton in particular is heterogeneous and composite, comprising a mix of diorite, quartz diorite, granodiorite and monzogranite phases with abundant minor intrusive dikes. Most of the large intrusive bodies are rich in inclusions, especially in marginal agmatitic intrusive breccias. Contact metamorphic aureoles are developed around the intrusions causing hornfelsing and skarning in Paleozoic rocks. A variety of dikes and small irregular intrusions that are probably coeval with the Island Plutonic Suite occur throughout the area. Lithologically they include intermediate feldspar porphyry, hornblende feldspar porphyry and minor diabase. The Jurassic intrusions form a metaluminous, medium to high-potassium calcalkaline suite typical of a convergent-margin environment.

5.5 Nanaimo Group

Clastic sediments of the Upper Cretaceous Nanaimo Group lie unconformably on the older rocks. They are most thickly developed in the Alberni Valley, though only exposed around the margins due to Quaternary cover. The lower Benson Formation comprises basal conglomerates and overlying medium to coarse-grained sandstones. These are succeeded by the black argillites and siltstones of the Haslam Formation. Younger formations of the Nanaimo Group are absent.

5.6 Mount Washington Intrusive Suite

Tertiary dacite porphyries of the Mount Washington Intrusive Suite occur throughout the area. Where the magma has penetrated the Nanaimo Group sediments, it has spread out laterally to form thick sills.

5.7 Structures

Southern Vancouver Island has a complex structural history with frequent rejuvenation of previous structures. All Paleozoic rocks are affected by a series of southeast-trending, upright to overturned, southwest-verging folds. Associated schistosity and lineation are absent from most of the area, only occurring to the west of the Mineral Creek fault. Regional-scale warping of Vancouver Island occurred during the Early to Middle Jurassic, facilitating the emplacement of the Island Plutonic Suite intrusions and producing the geanticlinal Cowichan uplift. The present map pattern is dominated by the northwesterly trending contractional faults of the Tertiary Cowichan fold and thrust system.

These are high angle reverse faults that become listric at mid-crustal levels. They generally place older rocks over younger. The deformation probably took place during the crustal shortening accompanying the formation and emplacement of the Pacific Rim and Crescent terranes out-board of Wrangellia. The north-trending Mineral Creek fault and associated northwest-trending faults, such as the Stokes fault, are subvertical with small, apparently sinistral offsets. They may have formed during minor extension accompanying late-stage post-contractional relaxation.

5.8 Mineral Occurrences

The Early to Middle Jurassic arc was characterized by epigenetic mineralization of various types and styles, spatially related to the Island Plutonic Suite intrusions. Copper-molybdenum veins and stockworks occur within intrusions and volcanic country rock. Production has been minor from these deposits but came from the Havilah and WWW mines. Rhodonite forms by contact metamorphism of manganiferous chert. Iron-copper-gold skarns are developed in calcareous tuffs and limestones of the Karmutsen and Quatsino formations, though are rare in Mount Mark lithologies. A stratiform auriferous hematite cap has developed on the top of the skarn on the Villalta property, probably formed by residual weathering during the middle Cretaceous.

Mesothermal gold-bearing quartz-carbonate veins are located along Tertiary structures and have been one of the main exploration targets in the area. Historic production has ensued from the Victoria, Thistle and Black Panther mines. Tertiary epigenetic quartz-arsenic-(antimony) veins are variably developed in dacite porphyry sills and Haslam Formation argillites on the Coal and Grizzly properties.

The Alberni-Nanaimo Lakes area has had a long history of mineral exploration and production, starting with small-scale placer-gold mining on China Creek in 1862. The localization of metal deposits in the area is controlled by the interplay of stratigraphy and spatial association with later intrusions and structures. Three major metallogenic epochs are recognized. Syngenetic mineralization occurred during the building of the Sicker arc. Oxide facies exhalites, such as the 900 zone of the Mineral Creek area, are found in the uppermost Duck Lake Formation. Sulphide facies equivalents are also found, although less commonly. Thin syngenetic manganese oxide beds and sulphidic argillites occur within the radiolarian cherts of the basal Fourth Lake Formation in the upper Shaw Creek area.

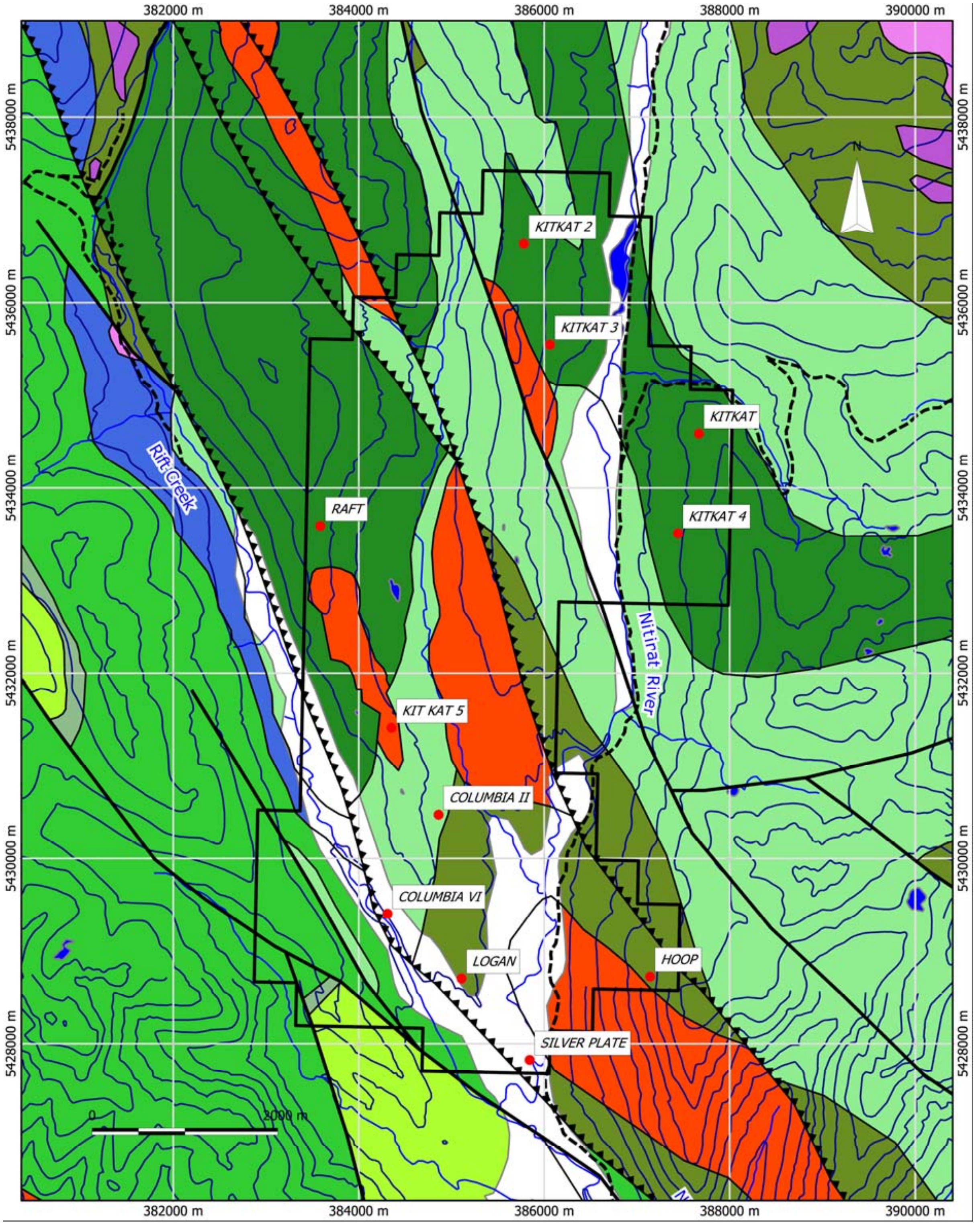


Figure 5. Property geology and mineral occurrences. See Figure 4 for legend.

6 Property Geology and Mineral Occurrences

There are 11 different mineral occurrences covered by the Columbia Shear property (Figure 5, Table 2). The Kitkat, Kitkat 2, Kitkat 3, Kitkat 5 and Raft showings are all classified as volcanogenic. This style of mineralization, which may occur as massive sulphide beds or stockwork veining, is hosted by Sicker Group island arc volcanic rocks. The mineralizing events are generally associated with hydrothermal activity that accompanied the emplacement of mafic sills into a thick succession of submarine to subaerial mafic volcanic rocks and interbedded seafloor sediments. In the Nitinat River area the age of mineralization is believed to be Devonian.

The Kitkat 4, Columbia II, Columbia VI and Hoop showings are classified as epigenetic Cu+/-Ag veins. These quartz bearing veins are probably related to the Jurassic Island Plutonic Suite intrusions. Emplacement of veins typically occurs within shear zones and other zones of weakness.

The Logan Au-Ag showing is classified as a replacement deposit. Mineralization consists of pyrite and chalcopyrite in silicified zones and as fillings in vugs and narrow fractures.

Table 2. Mineral occurrences, Columbia Shear property.

Minfile No.	Name	Status	Northing	Easting	Commodities	Deposit Type	Deposit Class
092C 148	SILVER PLATE	Showing	5427826	385842	AG AU CU	?	Epigenetic
092F 149	KITKAT 3	Showing	5435544	386062	CU AU AG CO	?	Volcanogenic
092F 218	KITKAT 4	Showing	5433508	387442	AU CU	Cu+/-Ag quartz veins	Epigenetic
092F 282	KITKAT	Showing	5434585	387667	CU AU	VMS?	Volcanogenic
092F 284	KITKAT 2	Showing	5436631	385780	AU CU MO CO ZN	VMS?	Volcanogenic
092F 311	RAFT	Showing	5433588	383585	CU ZN AG	VMS?	Volcanogenic
092F 339	COLUMBIA II	Showing	5430472	384861	CU AG AU	Cu+/-Ag quartz veins	Epigenetic
092F 461	KIT KAT 5	Showing	5431410	384352	CU NI PT PD	Magmatic Cu-Ni?	Volcanogenic
092F 463	COLUMBIA VI	Showing	5429403	384310	CU AG AU	Cu+/-Ag quartz veins	Epigenetic
092F 466	HOOP	Showing	5428726	387141	CU AU	Cu+/-Ag quartz veins	Epigenetic
092F 468	LOGAN	Showing	5428706	385109	AU AG	Cu+/-Ag quartz veins	Replacement

The following information is extracted from the Minfile database. The location of showings is shown on Figure 5.

6.1 Silver Plate (Minfile # 092C 148)

The St. Anthony (Silver Plate) showing is located about 25 kilometres southeast of Port Alberni, 50 kilometres west of Duncan. The Silvercross (092C 130) showing occurs just to the south.

The area is underlain by basaltic to rhyolitic tuff, breccia, flows, sills, dykes, and minor argillite and greywacke of the Lower Jurassic Bonanza Group intruded by granitic rocks of the Early to Middle Jurassic Island Plutonic Suite.

Mineralization consists of pyrite, chalcopyrite, bornite, tetrahedrite, magnetite and malachite in a quartz and epidote gangue. Pyrite occurs in the matrix of graphitic quartz veins, in association with shears in chloritized diorite, in massive sulphide stringers (up to 0.2 metres wide), and in gossanous shears in basalt. Magnetite occurs with small stringers of pyrite and chalcopyrite associated with faulting. Sheared quartz veins/stringers contain blebs and disseminations of pyrite partially replaced by variable amounts of bornite and chalcopyrite with occasional wispy stringers of tetrahedrite. These veins occur in intrusive rocks related to fractures and shears along the contact areas. Pyrite and tetrahedrite, in large up to 0.5 metres wide quartz veins, are associated with the sheared contact between chloritized diorite and basalt. A calcsilicate vein, 0.2 to 0.3 metres wide, hosted in basalt, contains disseminated pyrite, chalcopyrite and malachite staining (sample #1909). A large quartz vein about 0.50 metres wide is exposed for 10 metres in the creek bed and contains fine disseminated and massive pyrite, tetrahedrite and chalcopyrite in chloritized diorite (samples 1946-1950).

The highest assay result, 1.89 grams per tonne gold and 5.48 grams per tonne silver, was from a rock chip sample (#1904) of a silicified shear containing quartz veins and occasional hematite in gabbro (Assessment Report 17845; Cukor and Cukor, 1988).

6.2 Kitkat 3 (Minfile #092F 149)

The Kitkat 3 showing is located east of Alberni Inlet on the slopes of Mt. Logan.

The area is underlain mainly by basalt, pillowed basalt, basaltic tuff and agglomerate of the Devonian Duck Lake Formation, Sicker Group. The mafic volcanics contain gabbroic sills probably related to the Early to Middle Jurassic Island Plutonic Suite.

Discontinuous shearing and fracturing tend to parallel large scale regional structures, specifically the fault zone forming the Nitinat River valley. Gossans are associated with the mineralized shears, which occur mainly in coarse-grained, hornblende-rich basalt. Pyrite occurs as a replacement of hornblende. The basalt is typically chloritized and less altered to pyrite, sericite and epidote. Areas of intense shearing contain quartz veins with pods of massive sulphides (mainly pyrite).

A lens of semi-massive pyrite and minor pyrrhotite occur in a gabbroic flow (Showing C). The lens contained low assay values, however, a 20 centimetre sample, 400 metres to the south, assayed 0.17 per cent copper and 0.05 per cent cobalt, and a 20 centimetre sample of massive pyrite in hornblendite, 400 metres to the west, assayed 2.94 grams per tonne gold, 1.4 grams per tone silver and 0.11 per cent cobalt (Assessment Report 13945; Neale and Hawkins, 1985a).

6.3 Kitkat 4 (Minfile #092F 218)

The Kitkat 4 showing is located about 1 kilometre north of the Kitkat 3 showing (092F 149), about 14.5 kilometres east of Alberni Inlet.

The area is underlain mainly by basalt, pillowed basalt, basaltic tuff and agglomerate of the Devonian Duck Lake Formation, Sicker Group. The mafic volcanics contain gabbroic sills.

Mineralization occurs in shear zones within fine to medium- grained, medium to dark green flows. The shears commonly contain 3 to 5 centimetre wide quartz veins and are crosscut by quartz-carbonate veinlets. Saussuritic alteration accompanies intense shearing.

A sample from a 30 metre wide shear (Showing BR35A) contained 3.42 grams per tonne gold. A sample, 850 metres to the south, from an epidotized fracture filling with malachite, azurite and sphalerite, assayed 0.99 per cent copper (Assessment Report 13945). Pyrite is present as disseminations and pods in the sheared flows.

6.4 Kitkat (Minfile #092F 282)

The Kitkat showing is located near the Nitinat River, 20 kilometres east of Alberni Inlet.

The property is underlain by a sequence of basalt, pillowed basalt and pyroclastic rocks of the Devonian Duck Lake Formation. Mineralization consists of massive sulphide lenses containing pyrite, and lesser chalcopyrite, magnetite plus/minus pyrrhotite and anomalous gold values hosted in basaltic rocks. The rocks have been chloritized and epidotized.

6.5 Kitkat 2 (Minfile #092F 284)

The Kitkat 2 showing is located near the Nitinat River, just north of the Raft showing (092F 311) and northwest of the Kitkat showing (092F 282), about 17 kilometres east of Alberni Inlet.

The area is underlain mainly by basalt, pillowed basalt, basaltic tuff and agglomerate of the Devonian Nitinat Formation and lesser pyroclastics the Upper Devonian McLaughlin Ridge Formation (Myra Formation), both of the Paleozoic Sicker Group. The volcanics have been intruded by Early to Middle Jurassic Island Plutonic Suite. The mafic volcanics contain gabbroic sills.

In this area, discontinuous shearing and fracturing tend to parallel large scale regional structures, specifically the fault zone forming the Nitinat River valley. Gossans are associated with the mineralized shears, which occur mainly in coarse-grained, hornblende-rich basalt. Pyrite occurs as a replacement of hornblende. The basalt is typically chloritized, with lesser alteration minerals consisting of pyrite, sericite and epidote. Areas of intense shearing contain quartz veins with pods of massive sulphides (mainly pyrite).

Two zones of massive sulphides, showings A and B, occur in hornblende basalt. Showing A contains massive pyrite and minor pyrrhotite and magnetite, with samples assaying over 1 per cent copper. One hundred metres to the north, Showing B contains patches and disseminations of pyrite in vuggy quartz veins and sheared basaltic rock. A sample assayed 1.7 grams per tonne gold and 0.06 per cent copper and another sample assayed 0.24 per cent molybdenite, 0.1 per cent cobalt and 0.1 per cent zinc (Assessment Report 13945; Neale and Hawkins, 1985a).

6.6 Raft (Minfile #092F 311)

The Raft showing is located about 18 kilometres east of Alberni Inlet and 23 kilometres southeast of Port Alberni.

The area is underlain mainly by basalt, pillowed basalt, basal- tic tuff and agglomerate of the Devonian Duck Lake Formation, Sicker Group. The basaltic rocks are intruded by numerous white feldspar porphyritic sills. As well, small bodies of diorite, quartz diorite and granodiorite of the Early to Middle Jurassic Island Plutonic Suite occur in the area. The volcanics have been folded into a north-northwest trending syncline-anticline pair and are cut by a major similar trending regional shear zone up to 400 metres wide.

A quartz filled shear zone in the basalt contains massive pyrite and minor chalcopyrite. A sample assayed 2.08 per cent copper (Assessment Report 14993; Neale and Hawkins, 1986).

A massive sulphide zone, measuring 0.7 metres wide and 8 metres long, occurs in the basalt, 800 metres north of the mineralized shear zone. It comprises siliceous bands with pyrite and minor chalcopyrite. A grab sample assayed 0.138 per cent copper (Assessment Report 13954). The basalts, which are locally saussuritized, epidotized and chloritized, also contain disseminations and stringers of pyrite. Two outcrop samples assayed 0.15 per cent copper and 0.657 per cent zinc respectively (Assessment Report 13954; Neale and Hawkins, 1985a). These are located 800 metres southeast of the massive sulphide zone. Disseminated pyrite also occurs in dacite sills with associated quartz veins intruding the basalts. A sample assayed 0.43 per cent copper and 5.6 grams per tonne silver (Assessment Report 14993; Neale and Hawkins, 1986). Gold values have been obtained from float samples.

6.7 Columbia II (Minfile #092F 339)

The Columbia II showing is located 27 kilometres southeast of Port Alberni.

The area is underlain by Sicker Group rocks of the Devonian Nitinat Formation and the Upper Devonian McLaughlin Ridge Formation which occur along the western part of the Cowichan uplift.

The dark coloured volcanics consist of massive and pillowed basalt and agglomeratic flow-breccia with minor chert and jasper. Small patches of epidote, and lesser amounts of quartz are common throughout the sequence, as is a pervasive "uralization" alteration, which is distinctive of the Nitinat Formation. This gives the rocks a dark spotted appearance due to the pseudomorphing of diopside by actinolite. These rocks are steeply dipping and become younger to the west. The metamorphic grade is usually low greenschist.

Quartz veins up to 20 centimetres wide with subordinate amounts of epidote and carbonate occur in a silicified shear zone. This shear zone (Main zone) is about 50 metres wide and trends north-northwest through basalts for 2 kilometres. Chalcopyrite and pyrite is found disseminated and in fractures locally within these veins and in sili- cified wallrock. A grab sample containing semi-masive sulphides in altered basalt assayed 0.96 per cent copper, 2.7 grams per tonne silver, 0.062 grams per tonne gold, and 0.01 grams per tonne platinum and palladium (Assessment Report 17769; Neale, 1988).

6.8 Kitkat 5 (Minfile #092F 461)

The Kitkat 5 occurrence is located west of Mount Hooper, 27 kilometres southeast of Port Alberni.

The area is underlain mainly by basalt, pillowed basalt, basaltic tuff and agglomerate of the Devonian Duck Lake Formation (Sicker Group) which has been intruded by Early to Middle Jurassic Island Plutonic Suite.

Disseminated and rare podiform pyrite occur in a sheared medium- grained basaltic tuff or flow. Fracture surfaces are stained with iron oxide with lesser amounts of malachite and azurite staining. A sample from a pod of pyrite in hornblendite assayed 0.14 per cent copper, 0.1 per cent nickel, 1.2 grams per tonne palladium and 0.027 grams per tonne platinum. Another grab sample assayed 1.65 grams per tonne platinum, 4.85 grams per tonne palladium, 2.2 grams per tonne silver, 0.655 per cent copper and 0.2 per cent nickel (Assessment Report 13945; Neale and Hawkins, 1985a).

A third grab sample assayed 1.65 grams per tonne platinum, 4.85 grams per tonne palladium, 2.2 grams per tonne silver, 0.655 per cent copper and 0.2 per cent nickel (Assessment Report 13945; Neale and Hawkins, 1985a).

A sample from gouge material containing malachite and azurite, 250 metres to the north, assayed 0.67 per cent copper (Assessment Report 13945; Neale and Hawkins, 1985a). The showing is likely at the northern extension of the Main showing of the Columbia occurrence (92F 339)

6.9 Columbia VI (Minfile #092F 463)

The Columbia VI showing is located 27 kilometres southeast of Port Alberni. The area is underlain by rocks of the Devonian Nitinat Formation and the Upper Devonian McLaughlin Formation which occur along the western part of a 10 kilometre belt of the Paleozoic Sicker Group, known as the Cowichan uplift.

The volcanics consist of massive and pillowed basalt with minor chert and jasper. Small patches of epidote, and lesser amounts of quartz are common throughout the sequence. These rocks are steeply dipping and become younger to the west. The metamorphic grade is usually lower greenschist facies.

A shear zone contains ankerite and quartz veinlets heavily mineralized with pyrite. A sample from a quartz or pyrite vein containing massive pyrite hosted in silicified basalt assayed 16.22 grams per tonne gold, 3.7 grams per tonne silver and 0.08 per cent copper (Assessment Report 17769; Neale, 1988).

6.10 Hoop (Minfile #092F 466)

The Hoop showing is located just south of Mount Hooper, about 30 kilometres southeast of Port Alberni. The area is underlain by northwest trending Sicker Group rocks, including mafic to inter- mediate flows and pyroclastics of the Devonian Nitinat Formation and cherts and tuffs of the Upper Devonian McLaughlin Ridge Formation (Myra Formation).

A 200 metre wide, northwest trending carbonatized shear zone cuts the volcanics. Associated with the shear are abundant quartz and carbonate veinlets which contain disseminations and pods of pyrite. Anomalous gold values occur in and around the shear zone.

A 2 metre channel sample across a shear in chloritic basalt/schist assayed 0.09 per cent copper and 0.1 gram per tonne gold. A nearby sample of a diorite dyke, cut by quartz stringers with disseminated pyrite, assayed 0.267 per cent copper and 0.072 per cent nickel (Assessment Report 14461; Neale and Hawkins, 1985).

6.11 Logan (Minfile #092F 468)

The Logan showing is located on Rift Creek near its outlet into the Nitinat River. The showing occurs at the southern extent of the Cowichan Thrust which cuts through the Logan claims. Paleozoic Sicker Group rocks comprising of the Devonian Nitinat and/or McLaughlin Ridge formations, are exposed in the hangingwall of the fault. The Sicker Group rocks are intruded by Jurassic Island Plutonic Suite. In the footwall, rocks of the Nitinat Formation are intruded by Triassic diabase sills and overlain in fault contact with pillowed and massive flows of the Upper Triassic Karmutsen Formation, Vancouver Group.

Mineralization occurs primarily on the Logan 2 claim which staddles the northwest striking fault zone. Outcrops in this area show intensive fracturing, shearing and brecciation and silicification, epidotization and pyritization are reported. Mineralization consists of pyrite and chalcopyrite in silicified zones and as fillings in vugs and narrow fractures.

Fourteen chip samples averaged 6.44 grams per tonne gold and 6.34 grams per tonne silver (high of 12.75 grams per tonne gold and 10.97 grams per tonne silver) (Property File - Antony Resources Ltd. Prospectus, May 1988).

7 Work done in 2011

A work program involving airborne geophysics and the collection of 19 rocks samples was completed in 2011. Total cost of this work was $103,357.89. A detailed statement of expenditures is given in Appendix B. A Statement of Work was filed with the Province of British Columbia on November 29, 2012 for a total work value of $103,000 (Event Number 5143167). This assessment report describes the work done in support of this filing.

7.1 Airborne VTEM and Aeromagnetic Survey

The following information is extracted from a report submitted to Gold Ridge by Geotech Ltd., the contractor engaged to fly an airborne geophysical survey over the Columbia Shear property (Fiset et al., 2011).

Geotech Ltd. performed a helicopter-borne geophysical survey over the Columbia Shear Property between August 27th and September 4th, 2011. Robert Coltura represented Gold Ridge Exploration Inc. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM) system with Z component measurements and aeromagnetics using a cesium magnetometer. A total of 261 line-km of geophysical data were acquired during the survey. The crew was based out of Port Alberni located to the northwest of the survey block (Figure 1) for the acquisition phase of the survey. Survey flying started on August 27th, 2011 and was completed on September 4th, 2011.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in September, 2011.

The claim block was flown in an east to west (N 70° E azimuth) direction with traverse line spacing of 150 metres as depicted in Figure 6. Tie lines were flown perpendicular to the traverse lines at a spacing of 1500 metres (N 160° E azimuth).

During the survey the helicopter was maintained at a mean altitude of 156 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 121 metres and a magnetic sensor clearance of 143 metres. The on board operator was responsible for monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features. On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

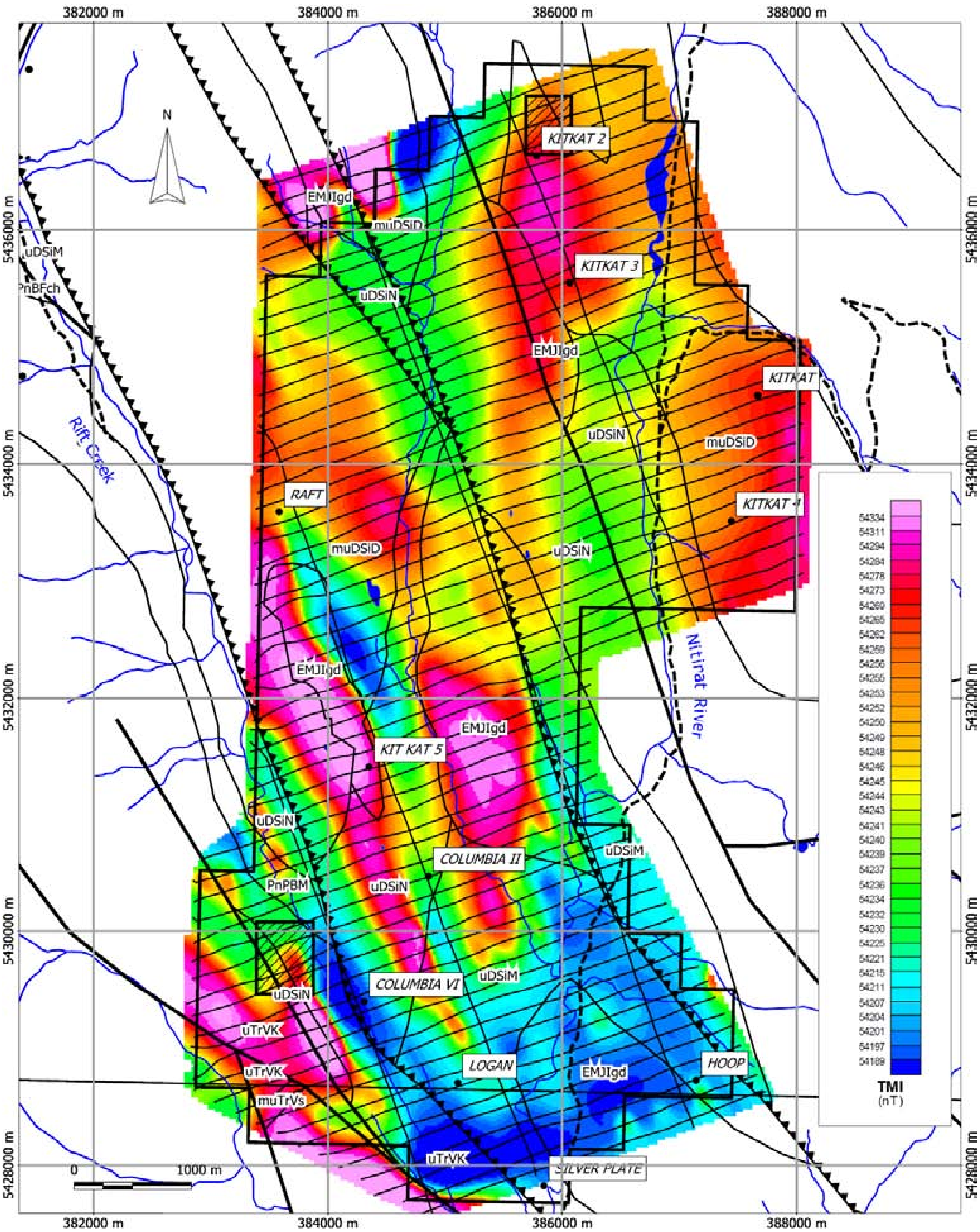


Figure 6. Geology contacts and mineral showings superimposed on Total Magnetic Field (TMI). Hatched squares show area of 2011 lithogeochemical sampling. See Table 3 for geology legend. Map prepared by D.G. MacIntyre

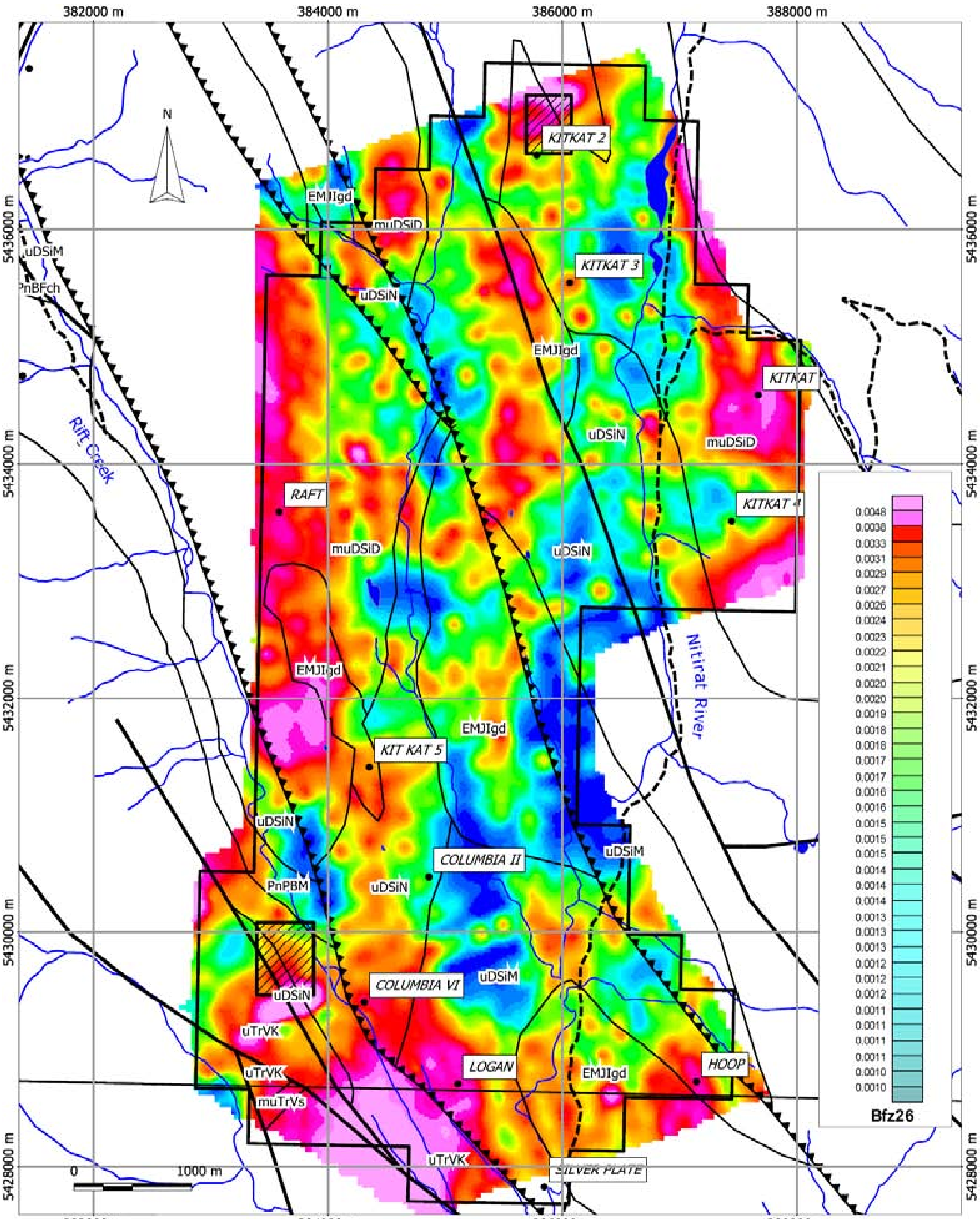


Figure 7. Geology and mineral showings superimposed on VTEM B-field Z Component (Channel 26, Time Gate 0.505). Map prepared by D.G. MacIntyre.

Based on the geophysical results obtained, very low conductive targets are identified in the survey area (Figure 7). EM data exhibits early-mid time response highlighting the southwest part; weak late-time response is observed. Magnetic trend is detected in north-south direction; mostly correlating with topography (Fiset et al., 2011).

A full report on the methodology and survey results is included in Appendix E.

Table 3. Geology Legend for Figures 6 and 7.

Map Code	Age	Unit	Description
EMJIgd	Early Jurassic to Middle Jurassic	Island Plutonic Suite	Granodiorite, quartz diorite, quartz monzonite, diorite, agmatite, feldspar porphyry, minor gabbro and aplite (170 - 185 Ma).
uTrVK	Middle Triassic to Upper Triassic	Vancouver Group - Karmutsen Formation	Basalt pillowed flows, pillow breccia, hyaloclastite tuff and breccia, massive amygdaloidal flows, minor tuffs, interflow sediment and limestone lenses (Carnian).
muTrVs	Middle Triassic to Upper Triassic	Vancouver Group	Undifferentiated Parson Bay and Quatsino formations limestone, marble
uDSiM	Middle Devonian to Upper Devonian	Sicker Group - McLaughlin Ridge Formation	Thickly bedded tuffite and lithic tuffite, breccia, tuff, feldspar and quartz-feldspar crystal tuff, lapilli tuff, rhyolite, dacite, laminated tuff, jasper, chert, hematite-chert iron formation
uDSiN	Middle Devonian to Upper Devonian	Sicker Group - Nitinat Formation	Pyroxene-feldspar phyric agglomerate, breccia, lapilli tuff, massive and pillowed flows, massive tuffite, laminated tuff, jasper and chert
muDSiD	Middle Devonian to Upper Devonian	Sicker Group - Duck Lake Formation	Pillowed and massive basalt flows, monolithic basalt breccia and pillow breccia, chert, jasper and cherty tuff, felsic tuffs, massive dacite and rhyolite, magnetite-hematite-chert iron formation
PnPBM	Mississippian to Lower Permian	Buttle Lake Group - Mount Mark Formation	Massive crinoidal limestone, bedded calcirudite and calcarenite, chert, cherty argillite and siltstone, marble (Upper Pennsylvanian to Lower Permian)

As shown in Figure 6, the aeromagnetic component of the geophysical survey defined a number of elongate areas of elevated magnetism separated by areas of low magnetic response. This pattern in part reflects the topography but may also be attributable to magnetite bearing intrusions in the area, perhaps in some cases ultramafic intrusions. Some of the areas of high magnetic response occur within or adjacent to areas mapped as Jurassic Island Plutonic Suite granodiorite. The obvious exception is the large stock mapped in the southeast corner of the property which has a low magnetic response. Why this is the case is not known at this time. Further investigation is necessary.

Most of the claim block is underlain by mafic volcanics and associated intrusions of the Sicker Group. In theory these rocks should give a strong magnetic response due the presence of magnetite. Areas of low magnetic response might indicate magnetite destructive alteration. One such magnetic low occurs between the Raft and Kitkat 5 showings, along the eastern margin of an area mapped as Island Plutonic Suite granodiorite. This area is mapped as Duck Lake Formation basalts. Elsewhere on the property, areas mapped as Duck Lake Formation seem to have a fairly good correlation with areas of higher magnetic response as would be expected from basaltic rocks. Additional work is required to determine if the aforementioned magnetic low is significant or not.

The VTEM survey results indicate that the highest conductivity is located in the southwest corner of the property (Figure 7). This area is mapped as being underlain by mafic volcanic rocks of the Upper Triassic Karmutsen Formation. Interestingly the area of highest conductivity is an area of relatively low magnetic response. Further work is needed to determine the significance, if any, of these observations.

Other isolated areas of elevated conductivity occur on the property (Figure 7). Additional ground work is necessary to determine if these anomalies are indicative of mineralization in underlying bedrock.

7.2 Lithogeochemistry

J.D. Williams and C. Lynes did prospecting and lithogechemical sampling on the Columbia Shear property between October 10th and October 17th, 2011. A total of 19 lithogeochemical samples were collected from two target areas – Rift Main logging road and the area near the Kitkat 2 showing. The location of these areas is shown in Figures 6 and 7. The Rift Main area was accessible via logging road from Port Alberni. A helicopter was used to access the area of the Kitkat 2 showing.

Table 4 summarizes the results of the lithogeochemical sampling. Sample descriptions are given in Appendix C and analytical certificates in Appendix D. Location of samples is shown in Figures 8 and 9.

Rock samples were sent to Acme Labs for 53 element ultratrace Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) analysis (package 1F30). Rock samples were placed in labelled bags and shipped directly to the Acme laboratory in Vancouver. At the lab each rock sample was crushed to 70% passing 10 mesh followed by pulverizing a 250gm split to 95% passing 150 mesh. A 30gm subsample of each was digested and analysed as described above.

Table 4. Lithogeochemical results for samples collected in 2011.

Sample	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPB	Ni PPM	Co PPM	Mn PPM	As PPM	Au PPB	Hg PPB	Pd PPB	Pt PPB	Fe %	S %
545651	0.58	146.43	5.65	77.5	123	37.6	27.5	309	30.8	17.2	91	18	<2	2.37	0.25
545652	0.42	10.89	0.56	16.6	44	22.5	20.9	261	2.2	14.5	24	13	<2	2.68	0.68
545653	7.88	92.88	1.06	20.4	388	13.6	92.0	396	6.9	**813.8**	69	<10	3	6.67	2.87
545654	0.67	3.39	0.54	15.8	59	29.9	44.7	245	2.8	16.2	23	<10	3	2.90	1.40
545655	0.65	**1088.76**	1.51	13.1	**1079**	49.8	49.7	281	6.1	57.1	30	<10	<2	6.20	4.72
545656	2.36	11.81	1.00	19.5	127	15.8	26.4	309	4.8	25.7	105	<10	<2	4.07	1.19
545657	1.63	13.42	2.69	31.4	49	44.7	20.8	392	1.7	10.9	39	<10	3	5.80	2.88
545658	1.75	14.70	2.40	46.1	50	67.2	34.3	503	0.1	12.8	49	16	4	6.05	3.39
545659	0.86	21.40	13.48	**268.0**	298	59.9	65.4	**1471**	40.4	106.8	170	<10	6	12.77	3.00
545660	2.51	15.12	6.85	**246.8**	228	48.7	116.1	**1538**	45.1	98.3	157	<10	3	14.55	4.27
545661	3.17	10.32	2.67	**296.8**	123	64.1	46.6	**1236**	4.2	21.7	133	11	7	8.62	2.04
545662	1.48	14.17	2.48	31.9	56	54.3	28.9	392	2.6	16.3	40	<10	5	4.59	3.02
545663	0.09	55.26	0.45	33.4	21	161.0	37.7	518	1.1	1.0	9	<10	5	3.09	<0.02
545664	0.23	267.38	1.11	56.5	61	51.7	23.4	640	1.0	2.8	10	13	9	3.46	0.05
545665	1.41	7.42	2.91	52.0	24	49.2	34.8	473	6.5	4.3	12	12	5	4.19	1.73
545666	0.62	22.56	2.81	55.5	30	57.8	44.9	639	4.0	6.5	11	13	9	4.74	1.15
545667	0.19	145.85	1.11	31.5	27	92.0	16.3	581	1.0	0.7	9	<10	6	2.83	0.13
545668	0.25	294.67	1.75	37.3	93	11.5	135.4	949	<0.1	1.9	16	<10	<2	6.83	4.58
545669	0.19	552.03	1.31	38.4	156	18.9	24.9	543	0.4	2.2	7	<10	3	4.12	0.06

Acme runs standards and provides re-samples at varying intervals for each sample shipment analysed. A re-sample consists of analysing a second cut (subsample) from the same sample pulp (or occasionally reject portion), and is reported as a rerun (RE) or reject rerun (RRE) on the analysis certificate. In most cases there has been good reproducibility of results between the original subsamples and re-samples, with the exception of gold at the lower end of the detection range in some stream sediment and soil samples.

Most of the samples collected in 2011 contained only background or slightly anomalous metal concentrations (Table 4). Sample 545655 was the most anomalous returning values of 1088.76 ppm Cu and 1079 ppb Ag. This chip sample was collected from a 20 by 20 cm subcrop in the middle of the Rift Main logging road just before the 21 km marker. The sample is described as a chloritic, intermediate volcanic with patches of orange and medium red-brown stain cut by an irregular 3 cm wide band of coarse, medium and fine-grained pyrite, locally approaching massive. The average pyrite content was approximately 15% by volume. Sample 545653, which was collected from the west bank of the Rift Main logging road, approximately 60 m past sample site 545655 returned the best Au value at 813.8 ppb. This chip sample is described as a light, medium and dark green silicified chloritic volcanic cut by a massive, fine to very fine-grained pyrite veinlet, 1 to 3 cm wide. The average pyrite content in this sample was approximately 5% by volume. Samples 545659. 545660 and

545661 were collected in the area of the Kitkat 2 showing. These samples contained weak to moderately anomalous Zn and Mn concentrations.

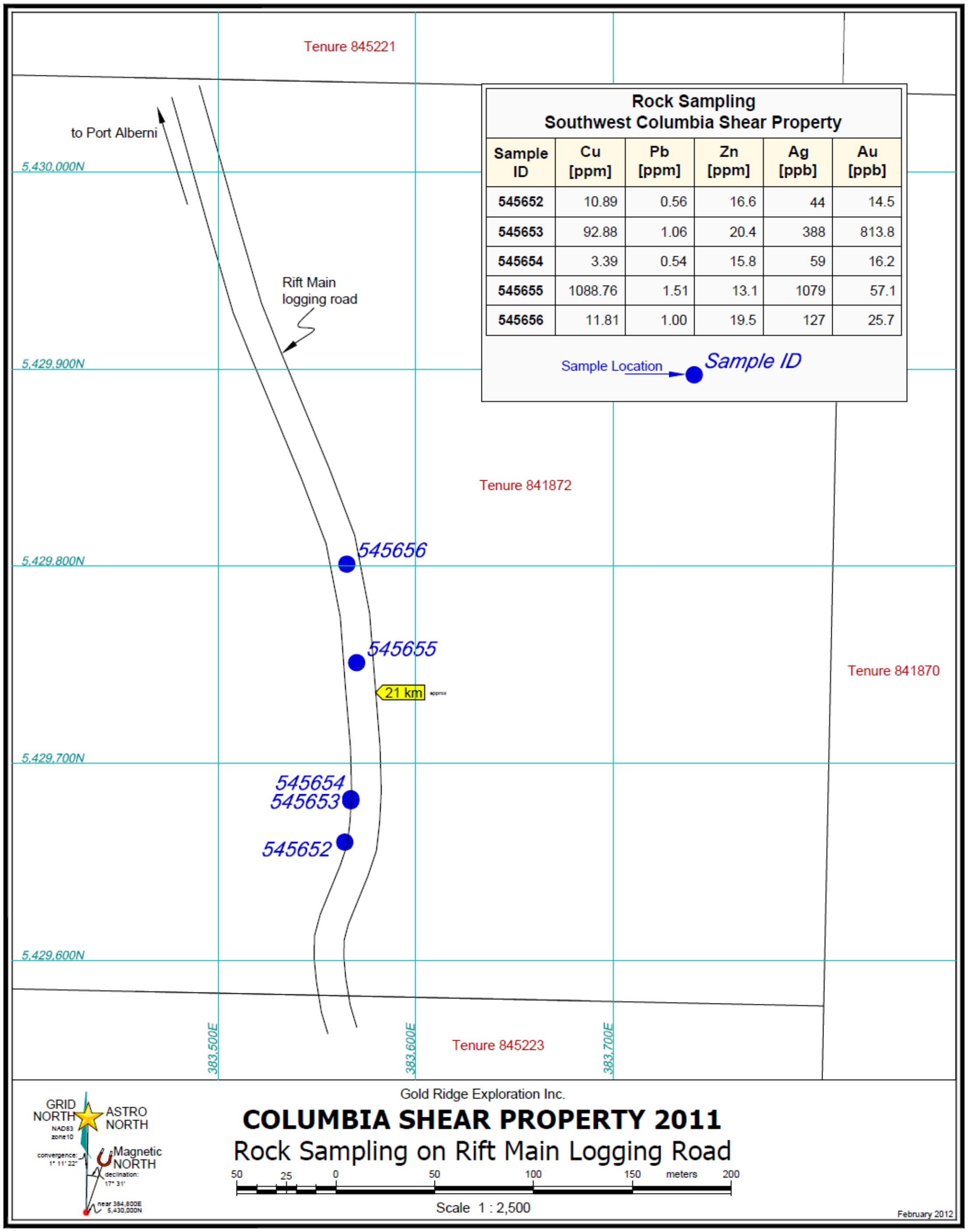
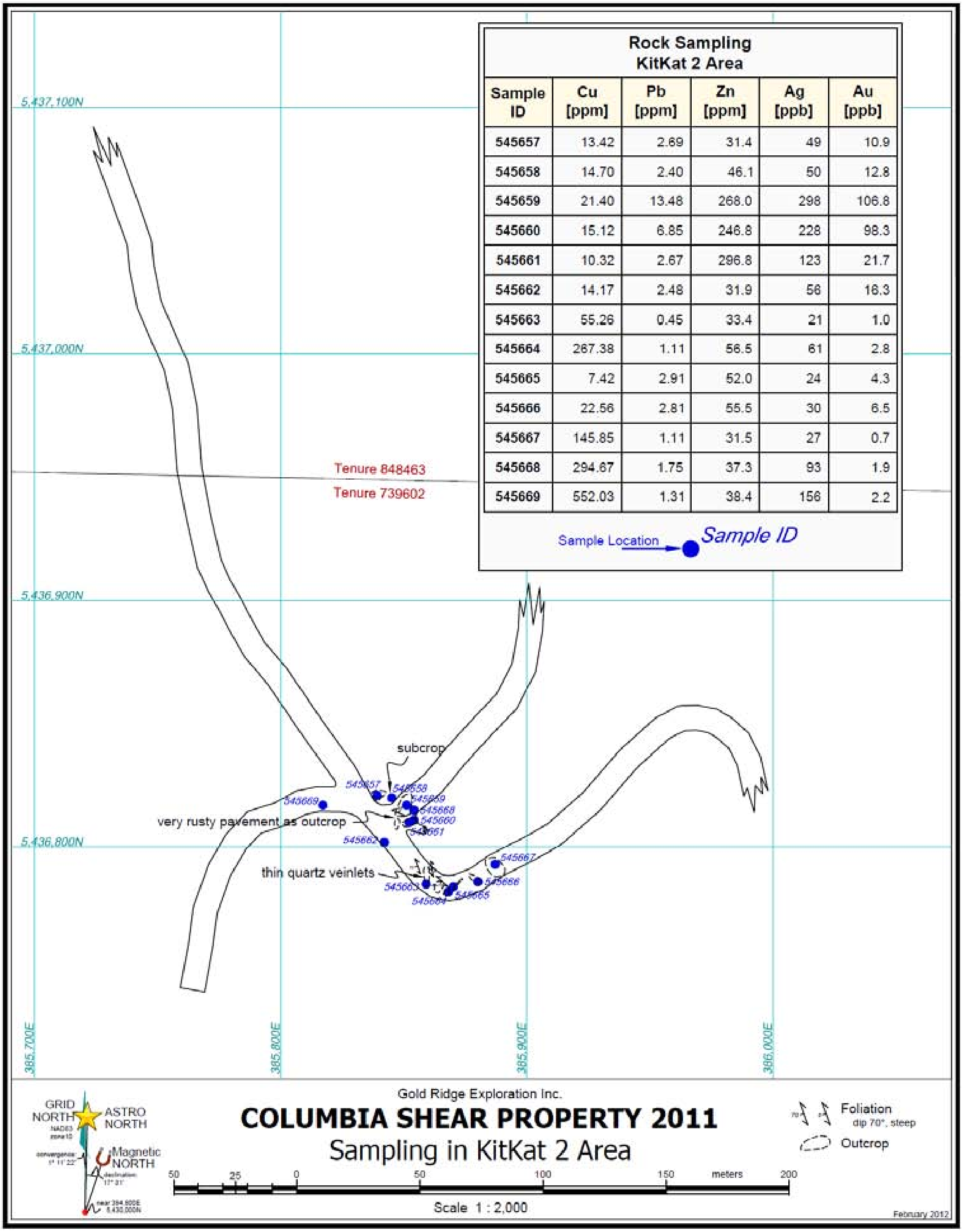


Figure 8. Sample locations, Rift Main logging road. Figure prepared by J.D. Williams.



Sample ID	Cu [ppm]	Pb [ppm]	Zn [ppm]	Ag [ppb]	Au [ppb]
545657	13.42	2.69	31.4	49	10.9
545658	14.70	2.40	46.1	50	12.8
545659	21.40	13.48	268.0	298	106.8
545660	15.12	6.85	246.8	228	98.3
545661	10.32	2.67	296.8	123	21.7
545662	14.17	2.48	31.9	56	16.3
545663	55.26	0.45	33.4	21	1.0
545664	267.38	1.11	56.5	61	2.8
545665	7.42	2.91	52.0	24	4.3
545666	22.56	2.81	55.5	30	6.5
545667	145.85	1.11	31.5	27	0.7
545668	294.67	1.75	37.3	93	1.9
545669	552.03	1.31	38.4	156	2.2

Figure 9. Sample locations, Kitkat 2 area. Figure prepared by J.D. Williams.

8 Conclusions and Recommendations

The Columbia Shear property covers prospective rocks of the Devonian Sicker group. These island arc volcanic rocks are known to host significant volcanogenic massive sulphide deposits elsewhere on Vancouver Island e.g. the Myra Falls mine at Buttle Lake (Walker, 1983). A number of small showings on the property are classified as volcanogenic occurrences. This is a positive indicator that the right environment for the formation of massive sulphide deposits exists on the property. Further work is needed to identify areas where there may be potential for the discovery of this type of economically important deposit on the Columbia Shear property. Some of the subtle conductivity anomalies detected by the airborne VTEM survey should be examined and if warranted a follow-up program involving geologic mapping, prospecting and additional soil, rock and silt sampling should be done in the most prospective areas. In areas with limited or no outcrop, ground geophysics (eletromagnetic, magnetic and induced polarization) could be done to help identify hidden targets.

Other showings on the property are classified as epigenetic veins. These often carry anomalous Au and Ag and appear to be spatially and perhaps genetically related to the Jurassic age Island Intrusions that crop out on the property. These showings often occur in shear zones. The challenge is to find areas where there is sufficient tonnage to develop a mine. Follow up prospecting and sampling focussing on zones of shearing and quartz veining is needed to help identify new, potentially economic targets.

A third deposit type that could prove to be of economic interest are Ni-Cu-PGE showings associated with ultramafic rocks. Although none of the showings are classified as this type of occurrence anomalous PGE values have been reported from some of the showings and these may be of a magmatic origin. Areas with high magnetic response may be underlain by magnetite bearing ultramafic rocks. These areas should be prospected for possible magmatic type Ni-Cu-PGE showings.

The Columbia Shear property covers a relatively large area with a diverse assemblage of mineral showings. To maximize success in locating new, potentially economic deposits, all historical data should be compiled into one GIS database. This will help to identify areas where there has been no or limited exploration work in the past and where there might be potential for new discoveries by doing additional geologic mapping, prospecting, geochemistry and geophysics.

One example of a showing requiring follow-up work is the Kitkat 5. Samples collected from pyritic Myra Formation rocks on the eastern end of the old Kitkat 5 claim returned up to

6702 ppm Cu, 2012 ppm Ni, 4850 ppb Pd, 1650 ppb Pt, 100 ppb Au, and 5.8 ppm Ag. It was felt that this represented a very high priority target that should be followed up by extending Grid B to the west (Neale and Hawkins, 1985). There is no publically available information that would indicate that follow-up work was done on this showing. It is recommended that a grid be established over this showing and that geophysical, geochemical and geological surveys be done on this grid to determine the significance and extent of this mineralization.

9 References

Carson, D. J.T. 1968. Metallogenic Study of Vancouver Island with Emphasis on the Relationships of Mineral Deposits to Plutonic Rocks; Ph.D. Thesis, Carelton University.

Christopher , P.A. 1985. Report on the Raft Property, Nitnat River Area; for Vanwin Resource Corporation , April 3, 1985.

Clapp, C.H. 1912. Southern Vancouver Island; GSC Memoir 13.

Cukor, D, 1989. Geophysical Survey on the St. Anthony Property, B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report, 19286, 33 pages

Cukor, V. and Cukor, D., 1988. Geological, Geochemical and Geophysical Report on the Silver Plate Claim Group, B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report, 17845, 75 pages.

Fiset, N., Marta, O., and Prikhodko, A., 2011. Report on a Helicopter-borne Verstatile Time Domain Electromagnetic (VTEM) and Aeromagnetic Geophysical Survey; private report prepared by Geotech Ltd. for Gold Ridge Exploration Inc., September 2011.

House, G.D. and J.B.P. Sawyer. 1984. Report on Property Exploration Programs in the Mount McQuillan-Mount Spencer Area; for Lode Resource Corporation , May 31, 1984.

Laanela, H. 1984. Summary Report on 1983 Exploration Programs in the Mount McQuillan Area; for Lode Resource Corporation , May 1, 1984.

Massey, N.W.D. and Friday, S.J., 1988. Geology of the Alberni-Nanaimo Lakes Area, Vancouver Island (92F1W, 92F/2E and part of 92F/7), B.C. Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork 1988, Paper 1989-1, pages 61-74

Massey, N.W.D., MacIntyre, D.G. and Desjardins, P.J., 2003. Digital Map of British Columbia: Tile NM10 (Southwest BC), B.C. Ministry of Energy and Mines, Geofile 2003-03.

Muller, J. E. 1977. Geology of Vancouver Island (West Half) ; GSC Open File 463.

Muller, J. E. 1980. The Paleozoic Sicker Group of Vancouver Island, British Columbia; GSC Paper 79-30.

Muller, J. E. and D.J.T. Carson. 1969. Geology, and Mineral Deposits of Alberni Map-Area, British Columbia (92F) ; GSC Paper 68-50.

Neale, T. 1986. Report on Soil Geochemistry, Raft Group; for Vanwin Resource Corporation , February 10, 1986.

Neale, T., 1988. Geological Mapping, Rock Sampling and Soil Sampling, Columbia Property, B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report 17769.

Neale, T. and Hawkins, T.G., 1985. Report on Geological Exploration of the Hoop 1-5 claims, B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report 14461, 82 pages.

Neale, T. and Hawkins, T.G., 1985a. Report on Phase II Geological, Geochemical and Geophysical Exploration of the Kitkat 1-7 Claims (Kitkat property), B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report 13945, 178 pages.

Neale, T. and T.G. Hawkins, 1985b. Report on Phase I Reconnaissance Geological Mapping and Rock Sampling, Raft 1,2 Claims (Raft Group) ; for Vanwin Resource Corporation, October 21, 1985.

Neale, T. and Hawkins, T.G., 1986. Report on Phase II Geological, Geochemical and Geophysical Surveys, Raft Group, B.C. Ministry of Energy, Mines and Petroleum Resources, Assessment Report 14993, 169 pages.

Stevenson, J.S. 1945. Geology and Ore Deposits of the China Creek Area, Vancouver Island , British Columbia; Annual Report of the Minister of Mines of the Province of British Columbia, 1944, pp. A143-A161.

Walker, R.R. 1983. Ore Deposits a t the Myra Falls Minesite; Western Miner, May, 1983, pp. 22-25.

Appendix A. Statement of Qualifications

I, Donald George MacIntyre, Ph.D., P.Eng., do hereby certify that:

1. I am an independent consulting geologist providing services through D.G. MacIntyre and Associates Ltd. a wholly owned company incorporated December 10, 2004 in the Province of British Columbia (registration no. BC0710941). My residence and business address is 4129 San Miguel Close, Victoria, British Columbia, Canada, V8N 6G7.
2. I graduated with a B.Sc. degree in geology from the University of British Columbia in 1971. In addition, I obtained M.Sc. and Ph.D. degrees specializing in Economic Geology from the University of Western Ontario in 1975 and 1977 respectively.
3. I have been registered with the Association of Professional Engineers and Geoscientists of British Columbia since September, 1979, registration number 11970. I am a Fellow of the Geological Association of Canada and a member of the British Columbia Association for Mineral Exploration.
4. I have practiced my profession as a geologist, both within government and the private sector, in British Columbia and parts of the Yukon since 1971. Work has included detailed geological investigations of mineral districts, geological mapping, mineral deposit modeling and building of geoscientific databases. I have directly supervised and conducted geologic mapping and mineral property evaluations, published reports and maps on different mineral districts and deposit models and compiled and analyzed data for mineral potential evaluations.

Dated this 22nd day of February, 2012

D.G. MacIntyre, Ph.D. P.Eng.

Appendix B. Statement of Expenditures

Exploration Work type	Comment	Days	Rate	Subtotal	Totals
Personnel (Name) / Position	**Field Days**	**Days**	**Rate**	**Subtotal***	
J.D. Williams/geologist	October 12-15, 2011	4	$600.00	$2,400.00	
C. Lynes/prospector	October 10-17, 2011	8	$550.00	$4,400.00	
T.Lynes/field assistant	October 10-17, 2011	8	$450.00	$3,600.00	
				$10,400.00	**$10,400.00**
Field Preparation / Office Studies	**Personnel**				
Data compilation, research	C. Lynes	11.3	$550.00	$6,200.00	
Project planning - field work	C. Lynes	4.2	$550.00	$2,300.00	
Flight line layout, compilation	J.D. Williams	2.0	$600.00	$1,200.00	
Report preparation	J.D. Williams	4.0	$600.00	$2,400.00	
Drafting, GIS digital mapping	D.G. MacIntyre	8.0	$650.00	$5,200.00	
Data analysis and reporting	D.G. MacIntyre	12.5	$650.00	$8,125.00	
				$25,425.00	**$25,425.00**
Airborne Exploration Surveys	**Line Kilometres**				
Electromagnetics/Aeromagnetics	260.6 kilometres - Geotech Ltd.			$58,845.87	
				$58,845.87	**$58,845.87**
Ground Exploration Surveys	**Area in Hectares / List Personnel**				
Geological mapping	5 ha/J.D. Williams				
Prospecting	5 ha/C. Lynes				
Geochemical Surveying	**Number of Samples**	**No.**	**Rate**	**Subtotal**	
Rock – Acme Labs.	19 rock samples	19.0	$38.42	$730.02	
				$730.02	**$730.02**
Transportation		**No.**	**Rate**	**Subtotal**	
truck rental		8.00	$150.00	$1,200.00	
vehicle rental		5.00	$100.00	$500.00	
fuel				$573.94	
Helicopter (hours including fuel)		2	$1,184.50	$2,369.00	
Other (Ferry)				$284.10	
				$4,927.04	**$4,927.04**
Accommodation & Food	**Rates per day**				
Hotel + Meals		4.00	$123.60	$494.40	
Hotel + Meals		8.00	$180.00	$1,440.00	
				$1,934.40	**$1,934.40**
Miscellaneous					
Office disbursements, photocopying				$210.56	
Other (Satelite Radio rental)				$240.00	
				$450.56	**$450.56**
Equipment Rentals					
Field Gear (sampling equipment)		8.00	$75.00	$600.00	
Other (Field Supplies)				$45.00	
				$645.00	**$645.00**
TOTAL Expenditures					**$103,357.89**

Note: HST not included in totals

Appendix C. Sample descriptions

Sample ID	UTM North	UTM East	UTM Elev'n	Source	Source Descriptor	Location	Description
545651	5428804	383852	406	grab	subcrop 25 x 25 cm; rubble in pit	Borrow pit west side of Rift Main logging road; southwest corner of Property	Altered basalt?: vein or small domain of quartz-calcite-healed breccia & bleaching in chloritic altered basaltic host; variable but minor pyrite as rare irregular stringer & ~10% limonite freckles.
545652	5429660	383564	336	chip	1.5m	West side of Rift Main logging road ~21.1 km; in southwest of Property	Altered basalt?: pervasive moderate-strongly bleached & silicified, medium-light green, sometimes mottled with up to 8% fine & very fine-grained disseminated pyrite.
545653	5429681	383567	323	chip	1m x 10cm	West wall of Rift Main logging road in southwest of Property	Altered & mineralized volcanic: Massive, fine to very fine-grained pyrite veinlet, 1 to 3 cm wide in light, medium & dark green volcanic; pyrite averages ~5% by volume; hard, somewhat blocky andesitic, silicic & variably silicified chloritic volcanic. Adjacent mafic rocks can be strongly magnetic but sampled material non-magnetic. Orientation of veinlet variable, approximately 140°/20° on average. Thin veinlets & stringers in wall rock emanating from main mineralization. Patches of deep orange & orange-brown oxide on weathered surfaces.
545654	5429682	383567	323	chip	40 x 20 cm	West wall of Rift Main logging road in southwest of Property; 1m north of sample 545653	Pyritic volcanic: very hard, generally light green or light-medium green, silicified, volcanic? Bands and disseminated fine & very fine grained, pale yellow pyrite to 20%, average 5%. Bands up to 1 cm wide, pyrite locally massive & semi-massive. Non-magnetic. Pyritic seams may be oriented 350°/40° (not a good measurement). Patches of deep orange-brown & red-brown oxide on weathered surfaces.
545655	5429751	383570	321	chip	20 x 20 cm; subcrop?	In middle of Rift Main logging road @ ~20.95 km; in southwest of Property	Altered volcanic: chloritic intermediate volcanic with patches of orange & medium red-brown stain. Irregular band ~3 cm wide of coarse, medium & fine-grained pyrite, locally massive; average pyrite ~15% by volume. Possible patch of malachite or copper stain on selvage.
545656	5429801	383565	330	chip	20 x 20 cm	In middle of Rift Main logging road @ ~20.8 km; in southwest of Property	Altered volcanic: blebs of fine & medium-grained pyrite in strong to intensely altered volcanic? host; light grey to nearly white in color. Total pyrite ~2%.
545657	5436821	385839	754	chip	1.5 m	KitKat 2: North side of intersection of logging roads	Andesitic volcaninc?: light green-grey, fine to medium-grained host rock; hard, slightly bleached, weakly silicified, somewhat blocky, intensely dark orange & dark red-brown colored, sometimes resinous oxide coating.

Sample ID	UTM North	UTM East	UTM Elev'n	Source	Source Descriptor	Location	Description
545658	5436820	385845	754	grab	3 x 1 m; selected sample of very rusty blocks in road bank	KitKat 2: North side of intersection of logging roads	Silicified andesite?: hard, blocky, light green, moderately bleached & silicified, containing 5% disseminated very fine-grained & fine-grained pyrite, locally reaching 10% by volume. Host rock oxidized to an intensely dark orange & dark red-brown color.
545659	5436817	385851	755	chip	10 x 4 cm	KitKat 2: Rusty outcrop as pavement in bed of logging road	Pyrite bleb: very rusty, gritty patch, consisting of a lens of rusted medium? grained pyrite. Sample contains ~15% wall rock.
545660	5436811	385854	749	chip	1 x 1 m	KitKat 2:At start of logging road to east from intersection; sample from rough pavement on road	Basalt: medium & dark green-grey basaltic host containing pervasively disseminated very fine & fine-grained pyrite ranging from 5 to 60%, averaging ~10% by volume. Much dark orange & orange-brown oxide on all weathered surfaces.
545661	5436810	385852	753	chip	1 m	KitKat 2:At start of logging road to east of intersection; pavement on road, in line with previous sample	Basalt: similar to previous sample; medium to dark green-grey basaltic host containing disseminated very fine & fine-grained pyrite, at least 5% by volume? Sample material composed of rusty & pitted fragments, composition not clear.
545662	5436802	385842	755	grab	broken from boulder ~25 cm across	KitKat 2:In south part of intersection against west edge of road	Andesite?: medium green, hard, tough, silicic, andesitic in composition, containing 2 to 5% very fine & fine-grained disseminated pyrite. Weathering surface a deep orange & orange-brown oxide.
545663	5436785	385859	753	grab	broken from boulder ~20cm across	On road to south from intersection	Basalt: medium to dark grey basalt, containing irregular to sub-spherical epidote centers (filled poikiliths) accounting for ~35% of rock; no sulfiudes. Sampled for Pt, Pd.
545664	5436782	385868	752	chip	25 cm	KitKat 2:On road, of pavement, south side of road	Basalt: fine to medium & coarse grained basalt with larger hornblende crystals irregularly distributed in pillowed? host; 2 to 3% very fine grained py; non-magnetic. Sampled for Pt, Pd.
545665	5436784	385870	750	chip	20 x 20 cm	KitKat 2:On south side of logging road, 2m east of previous sample.	Andesitic basalt?: intermediate to basic in composition, slightly silicified, containing 2 to 5% very fine & fine-grained pyrite as disseminated grains & as short thin seams or streaks. Sampled for Pt, Pd.
545666	5436786	385880	748	chip	35 x 10 cm	KitKat 2:Pavement on south side of logging road	Intermediate volcanic: partly mottled with small freckles of ferromagnesians containing ~2% disseminated very fine & fine-grained pyrite. Abundant brown & orange oxide stain on all weathered surfaces & pervading most of interior of sampled material. Sampled for Pt, Pd.
545667	5436793	385887	747	grab	10 x 5 m; selected from rubble along bed of logging road	KitKat 2:Along road running NNE-SSW	Hornblendite (& gabbro?): very dark green & black colored material containing medium & coarse-grained hornblende crystals. Trace to very minor sulfides. Sampled for Pt, Pd.
545668	5436815	385854	758	grab	Broken from boulder ~35 cm across	KitKat 2:At intersection of roads	Andesitic basalt tuff: medium to light grey crystal tuff, inetermediate to basic in composition; 1 to 3% fine-grained, disseminated pyrite & small flecks of subhedral chalcopyrite.

Sample ID	UTM North	UTM East	UTM Elev'n	Source	Source Descriptor	Location	Description
545669	5436817	385817	757	grab	Broken from boulder ~20 cm across; possible subcrop	KitKat 2:Middle of stub road, west of intersection	Andesitic basalt?: mafic to intermidiate volcanic, silicic or silicified containing 1 to 2% disseminated pyrite & flecks of chalcopyrite in accessory amounts.

Appendix D. Analytical Certificates

AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada

www.acmelab.com

Client: **Integrex Engineering**
303 - 1225 Cardero Street
Vancouver BC V6G 2H8 Canada

Submitted By: J. David Williams
Receiving Lab: Canada-Vancouver
Received: October 17, 2011
Report Date: November 09, 2011
Page: 1 of 2

CERTIFICATE OF ANALYSIS VAN11005566.1

CLIENT JOB INFORMATION

Project:	Columbia Shear
Shipment ID:	01
P.O. Number	
Number of Samples:	19

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
R200-250	19	Crush, split and pulverize 250 g rock to 200 mesh			VAN
1F06	19	1:1:1 Aqua Regia digestion Ultratrace ICP-MS analysis	30	Completed	VAN

SAMPLE DISPOSAL

STOR-PLP	Store After 90 days Invoice for Storage
STOR-RJT	Store After 90 days Invoice for Storage

Acme does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

ADDITIONAL COMMENTS

Invoice To: Integrex Engineering
303 - 1225 Cardero Street
Vancouver BC V6G 2H8
Canada

CC: Criag Lynes

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716

www.acmelab.com

Client: **Integrex Engineering**
303 - 1225 Cardero Street
Vancouver BC V6G 2H8 Canada

Project: Columbia Shear
Report Date: November 09, 2011

Page: 2 of 2 Part 1

CERTIFICATE OF ANALYSIS VAN11005566.1

	Method	WGHT	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
	Analyte	Wgt	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca
	Unit	kg	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01
545651	Rock	2.09	0.58	146.4	5.65	77.5	123	37.6	27.5	309	2.37	30.8	<0.1	17.2	0.4	52.9	1.56	0.53	0.78	85	2.91
545652	Rock	1.96	0.42	10.89	0.56	16.6	44	22.5	20.9	261	2.68	2.2	0.3	14.5	0.4	11.5	0.02	0.08	0.11	86	0.29
545653	Rock	2.80	7.88	92.88	1.06	20.4	388	13.6	92.0	396	6.67	6.9	0.5	813.8	0.8	38.9	0.05	0.21	0.37	93	0.59
545654	Rock	1.88	0.67	3.39	0.54	15.8	59	29.9	44.7	245	2.90	2.8	0.2	16.2	0.6	39.5	0.02	0.10	0.09	70	0.57
545655	Rock	2.01	0.65	1089	1.51	13.1	1079	49.8	49.7	281	6.20	6.1	0.2	57.1	0.3	8.3	0.51	0.18	0.08	188	2.01
545656	Rock	0.65	2.36	11.81	1.00	19.5	127	15.8	26.4	309	4.07	4.8	0.4	25.7	0.8	20.2	0.02	0.37	0.30	129	0.90
545657	Rock	2.50	1.63	13.42	2.69	31.4	49	44.7	20.8	392	5.80	1.7	0.1	10.9	0.3	12.8	0.07	0.03	0.23	147	1.42
545658	Rock	1.81	1.75	14.70	2.40	46.1	50	67.2	34.3	503	6.05	0.1	<0.1	12.8	0.2	27.2	0.24	0.03	0.19	135	1.41
545659	Rock	0.29	0.86	21.40	13.48	268.0	298	59.9	65.4	1471	12.77	40.4	0.2	106.8	0.4	13.1	0.38	0.06	1.07	149	0.25
545660	Rock	1.95	2.51	15.12	6.85	246.8	228	48.7	116.1	1538	14.55	45.1	0.1	98.3	0.4	11.1	1.66	0.03	1.30	133	0.22
545661	Rock	1.26	3.17	10.32	2.67	296.8	123	64.1	46.6	1236	8.62	4.2	0.1	21.7	0.4	10.2	1.67	<0.02	0.38	146	0.35
545662	Rock	1.98	1.48	14.17	2.48	31.9	56	54.3	28.9	392	4.59	2.6	<0.1	16.3	0.3	18.8	0.08	0.02	0.17	113	1.89
545663	Rock	1.20	0.09	55.26	0.45	33.4	21	161.0	37.7	518	3.09	1.1	<0.1	1.0	0.1	6.0	0.03	<0.02	<0.02	46	0.42
545664	Rock	0.82	0.23	267.4	1.11	56.5	61	51.7	23.4	640	3.46	1.0	<0.1	2.8	0.2	53.6	0.29	0.03	0.03	72	0.79
545665	Rock	1.10	1.41	7.42	2.91	52.0	24	49.2	34.8	473	4.19	6.5	<0.1	4.3	0.4	34.9	0.07	0.03	0.20	93	0.93
545666	Rock	1.14	0.62	22.56	2.81	55.5	30	57.8	44.9	639	4.74	4.0	<0.1	6.5	0.2	18.8	0.15	0.06	0.33	105	0.90
545667	Rock	1.51	0.19	145.8	1.11	31.5	27	92.0	16.3	581	2.83	1.0	0.1	0.7	0.2	8.2	0.05	<0.02	0.03	58	0.82
545668	Rock	0.70	0.25	294.7	1.75	37.3	93	11.5	135.4	949	6.83	<0.1	<0.1	1.9	0.2	55.7	0.06	<0.02	<0.02	79	5.90
545669	Rock	1.09	0.19	552.0	1.31	38.4	156	18.9	24.9	543	4.12	0.4	0.1	2.2	0.2	31.1	0.11	<0.02	<0.02	143	1.87

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Project: Columbia Shear
Report Date: November 09, 2011

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CERTIFICATE OF ANALYSIS VAN11005566.1

	Method	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
	Analyte	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	Cs	Ge
	Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm
	MDL	0.001	0.5	0.5	0.01	0.5	0.001	1	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.02	0.1
545651	Rock	0.053	1.4	45.5	0.64	2.2	0.426	30	1.91	0.007	<0.01	0.1	2.9	<0.02	0.25	91	1.1	0.02	5.7	0.05	0.1
545652	Rock	0.057	2.1	13.5	1.85	19.7	0.110	<1	1.65	0.070	0.13	<0.1	3.9	<0.02	0.68	24	1.0	0.32	4.4	0.33	<0.1
545653	Rock	0.066	1.1	26.2	2.58	9.0	0.162	2	2.60	0.051	0.09	0.3	4.3	<0.02	2.87	69	1.9	1.48	7.8	0.29	<0.1
545654	Rock	0.071	1.9	7.4	1.69	8.2	0.106	1	1.57	0.088	0.07	0.1	2.3	<0.02	1.40	23	1.5	0.39	4.4	0.20	<0.1
545655	Rock	0.040	0.7	27.0	1.53	2.8	0.070	3	2.66	0.007	0.02	<0.1	4.3	<0.02	4.72	30	5.9	0.54	7.6	0.03	<0.1
545656	Rock	0.078	1.9	42.4	2.40	8.6	0.164	3	2.62	0.056	0.05	<0.1	5.8	<0.02	1.19	105	2.0	0.85	6.1	0.22	<0.1
545657	Rock	0.105	0.9	101.0	2.52	10.6	0.203	4	2.89	0.030	0.09	0.2	7.7	<0.02	2.88	39	5.7	0.68	7.0	0.21	<0.1
545658	Rock	0.103	1.0	134.0	3.06	12.7	0.193	3	3.19	0.028	0.08	0.2	7.1	<0.02	3.39	49	11.2	1.51	7.2	0.21	<0.1
545659	Rock	0.072	0.9	173.9	4.15	15.1	0.201	3	4.77	<0.001	0.07	0.1	9.6	<0.02	3.00	170	2.8	1.73	10.8	0.24	0.2
545660	Rock	0.083	1.4	45.8	3.52	22.8	0.148	2	4.40	<0.001	0.14	0.2	6.5	0.03	4.27	157	4.2	1.41	8.9	0.30	<0.1
545661	Rock	0.095	1.3	147.7	3.64	32.4	0.184	3	4.01	0.008	0.26	0.3	9.1	0.03	2.04	133	3.3	0.60	8.0	0.49	<0.1
545662	Rock	0.091	1.0	138.4	2.31	13.5	0.129	3	2.81	0.060	0.08	0.1	5.8	<0.02	3.02	40	4.1	0.93	5.9	0.20	<0.1
545663	Rock	0.040	1.1	109.5	3.41	4.9	0.080	1	2.43	0.002	0.02	<0.1	2.4	<0.02	<0.02	9	0.1	<0.02	4.3	0.43	<0.1
545664	Rock	0.091	1.7	102.5	2.61	10.7	0.152	2	2.45	0.031	0.04	<0.1	4.6	<0.02	0.05	10	0.2	0.06	4.7	0.17	<0.1
545665	Rock	0.120	3.3	53.3	2.40	12.2	0.137	2	2.56	0.074	0.12	0.1	3.3	<0.02	1.73	12	2.1	0.23	5.2	0.29	<0.1
545666	Rock	0.097	1.5	177.1	2.58	19.4	0.129	2	2.97	0.021	0.09	0.2	5.0	<0.02	1.15	11	1.8	0.39	6.2	0.44	<0.1
545667	Rock	0.075	1.2	149.2	2.63	10.0	0.118	4	2.24	0.021	0.09	<0.1	3.3	<0.02	0.13	9	0.3	<0.02	4.2	0.38	<0.1
545668	Rock	0.059	1.5	6.6	0.93	25.0	0.113	2	2.00	0.046	0.26	<0.1	3.4	0.02	4.58	16	3.2	0.13	4.2	0.33	<0.1
545669	Rock	0.108	1.2	17.5	1.71	27.5	0.158	3	2.79	0.067	0.28	0.1	5.2	0.03	0.06	7	0.3	0.02	7.4	0.41	<0.1

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Report Date: November 09, 2011

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CERTIFICATE OF ANALYSIS VAN11005566.1

	Method	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
	Analyte	Hf	Nb	Rb	Sn	Ta	Zr	Y	Ce	In	Re	Be	Li	Pd	Pt
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb
	MDL	0.02	0.02	0.1	0.1	0.05	0.1	0.01	0.1	0.02	1	0.1	0.1	10	2
545651	Rock	0.42	0.21	<0.1	0.4	<0.05	10.1	5.14	4.0	<0.02	<1	0.2	0.9	18	<2
545652	Rock	0.10	0.08	2.8	0.2	<0.05	3.0	4.86	5.9	<0.02	1	<0.1	7.2	13	<2
545653	Rock	0.17	0.08	3.2	0.4	<0.05	4.1	2.28	3.3	<0.02	20	0.1	9.2	<10	3
545654	Rock	0.14	0.08	1.7	0.1	<0.05	2.6	3.55	5.8	<0.02	8	0.1	6.2	<10	3
545655	Rock	0.11	0.05	0.6	0.2	<0.05	2.8	2.68	2.2	0.03	2	0.2	6.3	<10	<2
545656	Rock	0.22	0.11	1.2	0.4	<0.05	5.5	4.92	6.5	<0.02	8	0.2	9.2	<10	<2
545657	Rock	0.11	0.13	2.8	0.2	<0.05	1.9	3.38	2.1	<0.02	5	0.6	8.6	<10	3
545658	Rock	0.10	0.11	2.4	0.2	<0.05	2.1	3.99	2.2	<0.02	12	0.5	10.7	16	4
545659	Rock	0.07	0.07	2.6	0.3	<0.05	1.7	2.15	2.2	<0.02	2	0.3	12.4	<10	6
545660	Rock	0.06	0.08	4.3	0.3	<0.05	0.8	4.15	3.3	<0.02	3	0.2	15.3	<10	3
545661	Rock	0.10	0.06	7.1	0.3	<0.05	1.3	5.01	3.0	<0.02	3	0.3	14.2	11	7
545662	Rock	0.08	0.09	2.1	0.3	<0.05	1.9	3.51	2.5	<0.02	3	0.3	8.2	<10	5
545663	Rock	0.08	0.04	0.8	<0.1	<0.05	2.0	2.56	2.7	<0.02	<1	0.1	6.9	<10	5
545664	Rock	0.13	0.06	1.1	<0.1	<0.05	2.8	2.95	3.6	<0.02	<1	0.3	7.2	13	9
545665	Rock	0.07	0.12	3.2	0.2	<0.05	1.3	4.76	7.5	<0.02	5	0.4	7.4	12	5
545666	Rock	0.10	0.04	2.5	0.2	<0.05	1.7	3.86	3.7	<0.02	2	0.2	10.0	13	9
545667	Rock	0.13	0.06	2.8	0.1	<0.05	3.9	3.13	2.9	<0.02	1	0.1	7.4	<10	6
545668	Rock	0.16	0.13	5.9	0.1	<0.05	2.9	5.13	3.2	0.03	<1	0.2	3.1	<10	<2
545669	Rock	0.15	0.08	8.0	0.2	<0.05	3.3	4.45	2.7	<0.02	<1	0.3	7.3	<10	3

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Project: Columbia Shear
Report Date: November 09, 2011

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QUALITY CONTROL REPORT VAN11005566.1

Analyte		Wgt	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca
Method		WGHT	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
Unit		kg	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%
MDL		0.01	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01
Pulp Duplicates																					
545662	Rock	1.98	1.48	14.17	2.48	31.9	56	54.3	28.9	392	4.59	2.6	<0.1	16.3	0.3	18.8	0.08	0.02	0.17	113	1.89
REP 545662	QC		1.45	13.95	2.46	32.3	51	52.9	27.8	373	4.45	2.4	<0.1	18.7	0.2	18.6	0.08	0.02	0.16	110	1.86
Core Reject Duplicates																					
545657	Rock	2.50	1.63	13.42	2.69	31.4	49	44.7	20.8	392	5.80	1.7	0.1	10.9	0.3	12.8	0.07	0.03	0.23	147	1.42
DUP 545657	QC		1.55	9.79	2.78	30.2	44	43.7	20.5	394	5.67	1.5	0.1	9.2	0.3	14.2	0.06	0.02	0.20	152	1.57
Reference Materials																					
STD DS8	Standard		13.15	106.3	129.9	313.3	1944	37.9	7.6	618	2.47	24.2	2.8	127.9	6.6	61.8	2.33	5.51	6.73	41	0.71
STD DS8	Standard		12.76	105.9	121.7	305.9	1775	37.1	7.1	597	2.43	25.6	2.7	115.2	6.6	60.5	2.24	5.56	6.68	40	0.66
STD DS8 Expected			13.44	110	123	312	1690	38.1	7.5	615	2.46	26	2.8	107	6.89	67.7	2.38	5.7	6.67	41.1	0.7
BLK	Blank		<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01
BLK	Blank		<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01
Prep Wash																					
G1	Prep Blank	<0.01	0.77	3.91	3.64	51.7	28	3.1	4.4	662	2.27	0.8	1.9	6.9	7.1	89.1	0.01	0.05	0.10	40	0.59
G1	Prep Blank	<0.01	0.34	2.76	3.32	49.7	40	2.6	4.4	610	2.05	0.4	1.6	5.3	5.5	64.0	0.01	<0.02	0.25	40	0.59

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QUALITY CONTROL REPORT VAN11005566.1

Analyte		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	Cs	Ge
Method		1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm
MDL		0.001	0.5	0.5	0.01	0.5	0.001	1	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.02	0.1
Pulp Duplicates																					
545662	Rock	0.091	1.0	138.4	2.31	13.5	0.129	3	2.81	0.060	0.08	0.1	5.8	<0.02	3.02	40	4.1	0.93	5.9	0.20	<0.1
REP 545662	QC	0.091	0.9	136.6	2.22	13.2	0.126	3	2.72	0.058	0.08	0.1	5.9	<0.02	2.92	38	4.0	0.93	5.9	0.20	<0.1
Core Reject Duplicates																					
545657	Rock	0.105	0.9	101.0	2.52	10.6	0.203	4	2.89	0.030	0.09	0.2	7.7	<0.02	2.88	39	5.7	0.68	7.0	0.21	<0.1
DUP 545657	QC	0.107	0.9	98.1	2.51	12.8	0.214	3	2.99	0.036	0.10	0.2	8.0	<0.02	2.78	37	5.4	0.66	7.2	0.20	<0.1
Reference Materials																					
STD DS8	Standard	0.083	14.1	123.7	0.61	269.5	0.113	2	0.91	0.088	0.42	2.9	2.0	5.52	0.17	199	5.2	4.97	4.7	2.46	<0.1
STD DS8	Standard	0.077	14.4	116.2	0.61	266.5	0.110	2	0.92	0.086	0.42	2.8	2.1	5.31	0.16	187	5.0	4.92	4.5	2.36	0.1
STD DS8 Expected		0.08	14.6	115	0.6045	279	0.113	2.6	0.93	0.0883	0.41	3	2.3	5.4	0.1679	192	5.23	5	4.7	2.48	0.13
BLK	Blank	<0.001	<0.5	<0.5	<0.01	<0.5	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1	<0.02	<0.1
BLK	Blank	<0.001	<0.5	<0.5	<0.01	<0.5	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1	<0.02	<0.1
Prep Wash																					
G1	Prep Blank	0.089	13.0	13.7	0.56	181.3	0.126	1	1.10	0.112	0.54	<0.1	2.3	0.38	<0.02	<5	<0.1	<0.02	5.6	3.03	0.1
G1	Prep Blank	0.087	11.8	6.8	0.57	179.9	0.126	<1	1.00	0.093	0.52	0.1	2.2	0.37	<0.02	<5	<0.1	<0.02	5.3	3.14	<0.1

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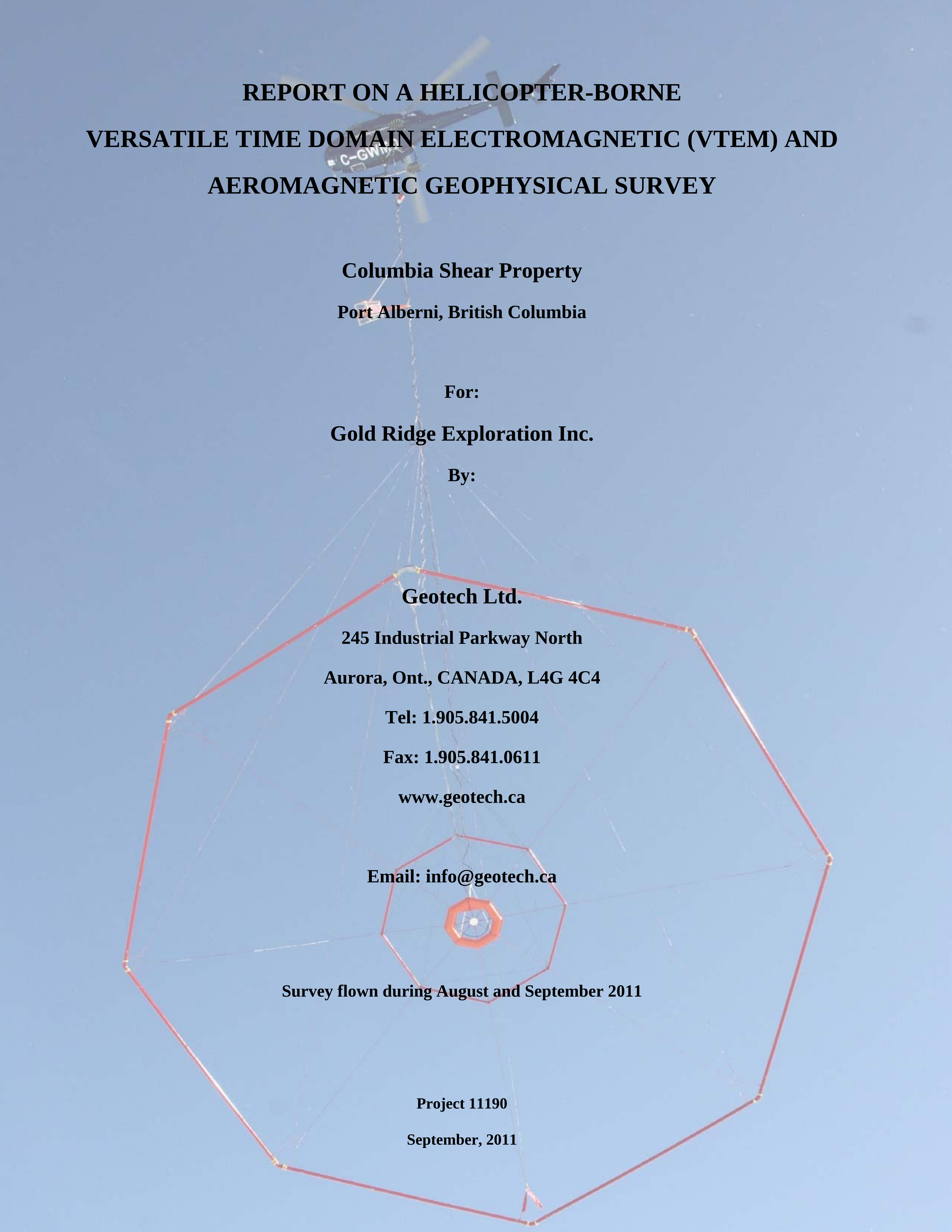
QUALITY CONTROL REPORT VAN11005566.1

	Method	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30	1F30
	Analyte	Hf	Nb	Rb	Sn	Ta	Zr	Y	Ce	In	Re	Be	Li	Pd	Pt
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb
	MDL	0.02	0.02	0.1	0.1	0.05	0.1	0.01	0.1	0.02	1	0.1	0.1	10	2
Pulp Duplicates															
545662	Rock	0.08	0.09	2.1	0.3	<0.05	1.9	3.51	2.5	<0.02	3	0.3	8.2	<10	5
REP 545662	QC	0.08	0.09	2.1	0.3	<0.05	2.0	3.53	2.5	<0.02	4	0.3	7.7	<10	5
Core Reject Duplicates															
545657	Rock	0.11	0.13	2.8	0.2	<0.05	1.9	3.38	2.1	<0.02	5	0.6	8.6	<10	3
DUP 545657	QC	0.09	0.12	3.0	0.2	<0.05	2.2	3.78	2.2	<0.02	6	0.4	8.9	<10	<2
Reference Materials															
STD DS8	Standard	0.09	1.30	36.7	6.7	<0.05	2.1	5.64	27.6	2.22	61	4.9	28.3	107	352
STD DS8	Standard	0.08	1.24	37.3	6.7	<0.05	2.1	5.63	25.3	2.16	50	5.0	20.8	103	341
STD DS8 Expected		0.08	1.65	39	6.7	0.003	2.3	6.1	29.8	2.19	55	5.2	26.34	110	339
BLK	Blank	<0.02	<0.02	<0.1	<0.1	<0.05	<0.1	<0.01	<0.1	<0.02	<1	<0.1	<0.1	<10	<2
BLK	Blank	<0.02	<0.02	<0.1	<0.1	<0.05	<0.1	<0.01	<0.1	<0.02	<1	<0.1	<0.1	<10	<2
Prep Wash															
G1	Prep Blank	0.09	0.45	45.2	0.6	<0.05	1.6	5.67	25.9	<0.02	<1	0.3	36.2	<10	<2
G1	Prep Blank	0.11	0.42	43.4	0.6	<0.05	1.3	5.41	23.8	<0.02	1	0.3	33.0	<10	<2

Appendix E. Geotech Report



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

Columbia Shear Property

Port Alberni, British Columbia

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Survey flown during August and September 2011

Project 11190

September, 2011

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

Columbia Shear Property
Port Alberni, British Columbia

Executive Summary

During August 27th to September 4th, 2011 Geotech Ltd. carried out a helicopter-borne geophysical survey over the Columbia Shear Property located about 25 km southeast of Port Alberni, British Columbia, Canada.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM) system, and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 261 line-kilometres of geophysical data were acquired.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Total Magnetic Intensity
- B-Field Z Component Channel grid
- Calculated Time Constant (TAU)
- Electromagnetic stacked profiles of the B-field Z component
- Electromagnetic stacked profiles of the dB/dt Z component

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

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

1. INTRODUCTION

1.1 General Considerations

Geotech Ltd. performed a helicopter-borne geophysical survey over the Columbia Shear Property located 25km southeast of Port Alberni, British Columbia, Canada (Figure 1 & 2).

Robert Coltura represented Gold Ridge Exploration Inc. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM) system with Z component measurements and aeromagnetics using a cesium magnetometer. A total of 261 line-km of geophysical data were acquired during the survey.

The crew was based out of Port Alberni located to the northwest of the survey block (Figure 2) in British Columbia for the acquisition phase of the survey. Survey flying started on August 27th, 2011 and was completed on September 4th, 2011.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in September, 2011.

Figure 1 - Property Location

1.2 Survey and System Specifications

The Block is located approximately 25 kilometres southeast of Port Alberni (Figure 2).

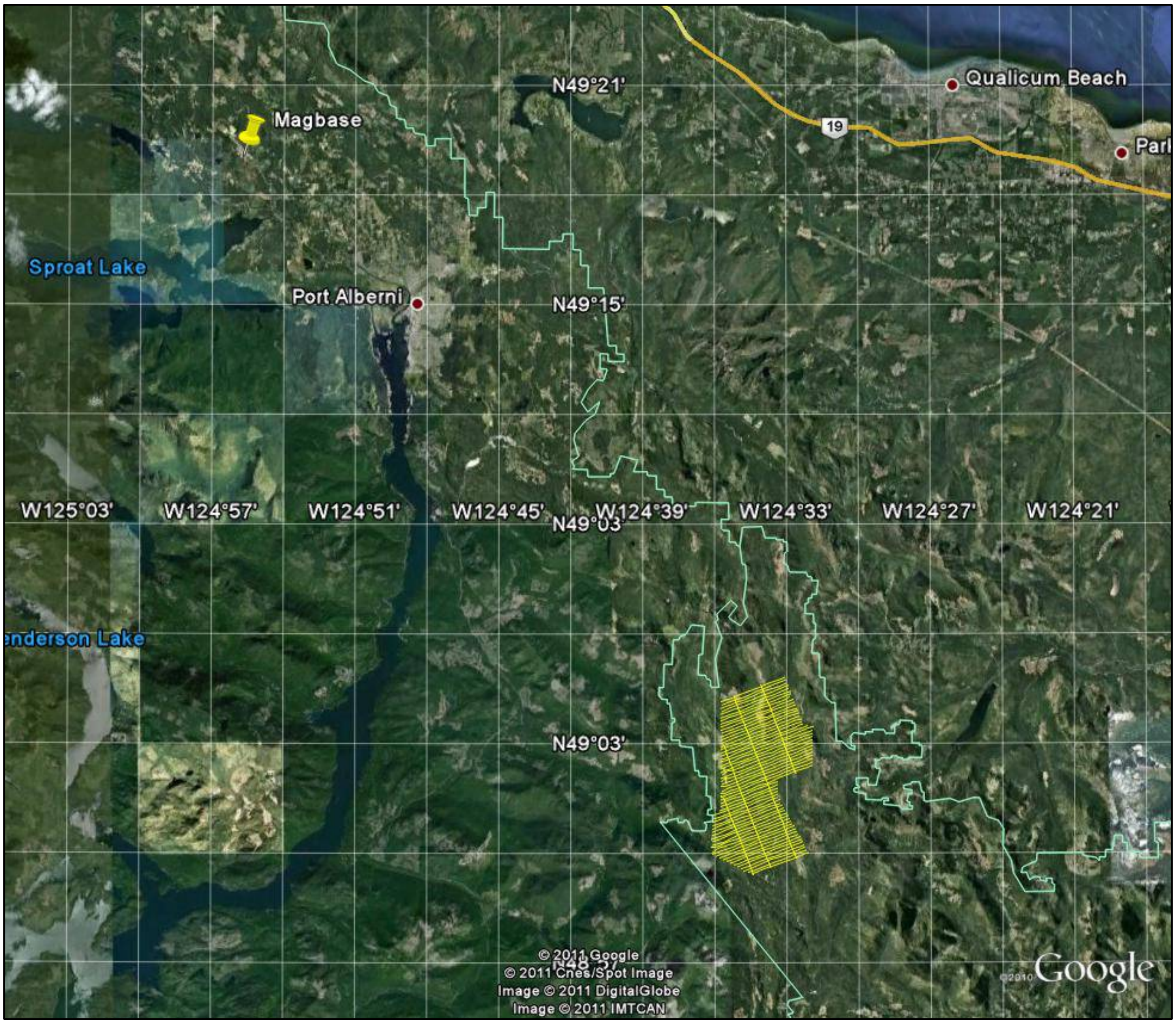


Figure 2 - Survey area location on Google Earth

The block was flown in an east to west (N 70° E azimuth) direction with traverse line spacing of 150 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines at a spacing of 1500 metres (N 160° E azimuth). For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

Topographically, the block exhibits a moderate relief with an elevation ranging from 140 to 1058 metres above mean sea level over an area of 34 square kilometres (Figure 3). There are numerous rivers and streams running through the survey area which connect various lakes and wetlands. There are some visible signs of culture such as roads and trails through out the block.

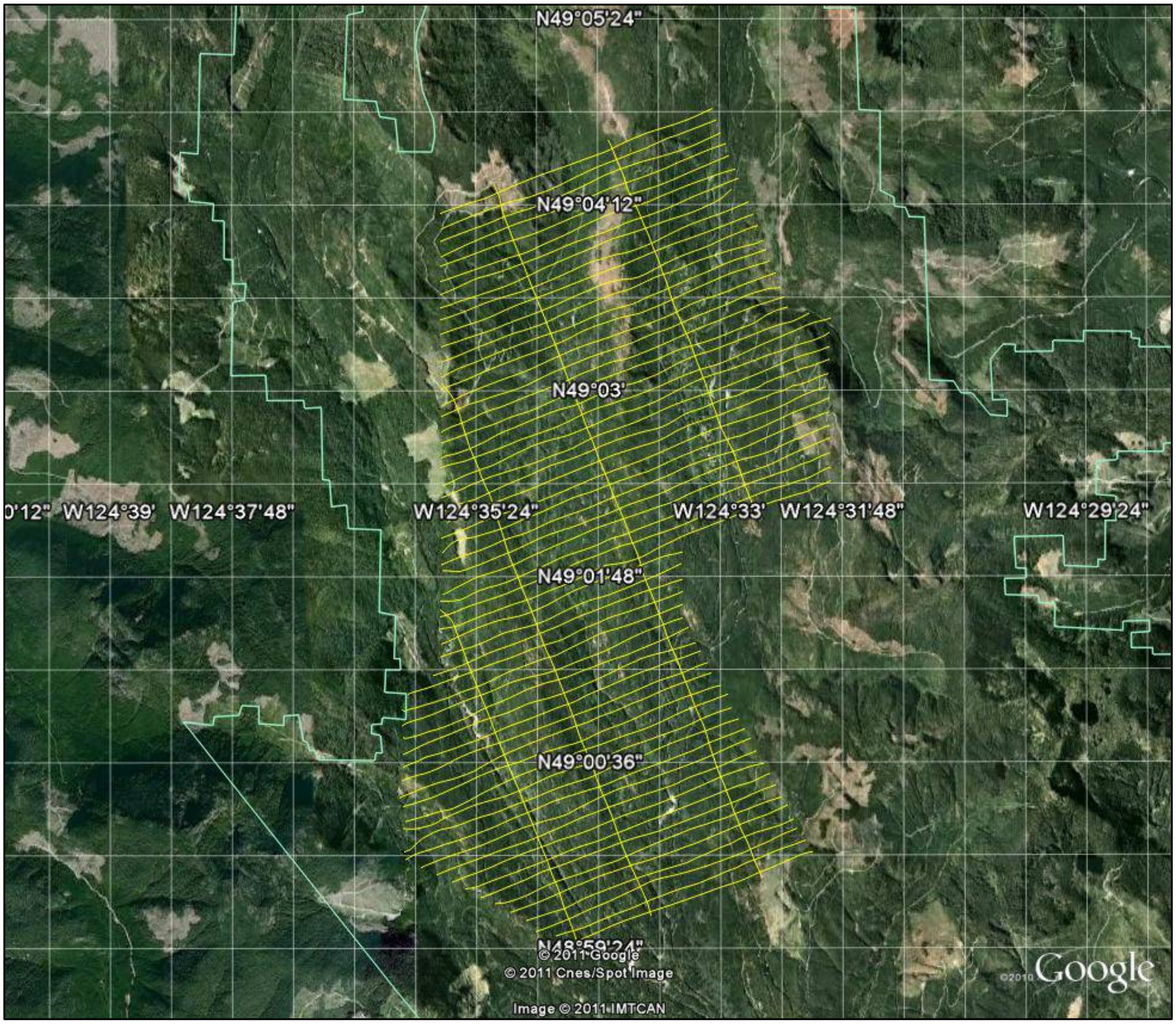


Figure 3 – Flight path over a Google Earth Image

The block is covered by numerous mining claims, which are shown in Appendix A, and are plotted on all maps. The survey area is covered by NTS (National Topographic Survey) of Canada sheet 092F02 & 092C15.

2. DATA ACQUISITION

2.1 Survey Area

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

Table 1 - Survey Specifications

Survey block	Traverse Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Columbia Shear	Traverse: 150	34	236	242.5	N 70° E / N 250° E	L1000-L1580
	Tie: 1500		25	25.1	N 160° E / N 340° E	T1800-T1830
TOTAL		34	261	267.6		

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

2.2 Survey Operations

Survey operations were based out of Port Alberni in British Columbia from August 27th to September 4th, 2011. The following table shows the timing of the flying.

Table 2 - Survey schedule

Date	Flight #	Flown km	Block	Crew location	Comments
8-27-2011				Port Alberni, BC	Crew Arrived
8-28-2011				Port Alberni, BC	System assembly completed
8-29-2011				Port Alberni, BC	Ground testing was completed
8-30-2011				Port Alberni, BC	Helicopter arrived
8-31-2011				Port Alberni, BC	Helicopter installation was completed
9-1-2011				Port Alberni, BC	Ground and air testing limited due to weather
9-2-2011	1	61	Shear	Port Alberni, BC	Ground and air testing completed – 61 km flown
9-3-2011	2,3,4	162	Shear	Port Alberni, BC	Production - 162 km flown
9-4-2011	5	38	Shear	Port Alberni, BC	Remaining kilometers flown – 38 km flown

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

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 156 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM bird terrain clearance of 121 metres and a magnetic sensor clearance of 143 metres.

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

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

2.4 Aircraft and Equipment

2.4.1 Survey Aircraft

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

2.4.2 Electromagnetic System

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

The VTEM Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The EM bird was towed at a mean distance of 35 metres below the aircraft as shown in 4 and 6. The receiver decay recording scheme is shown diagrammatically in Figure 6.

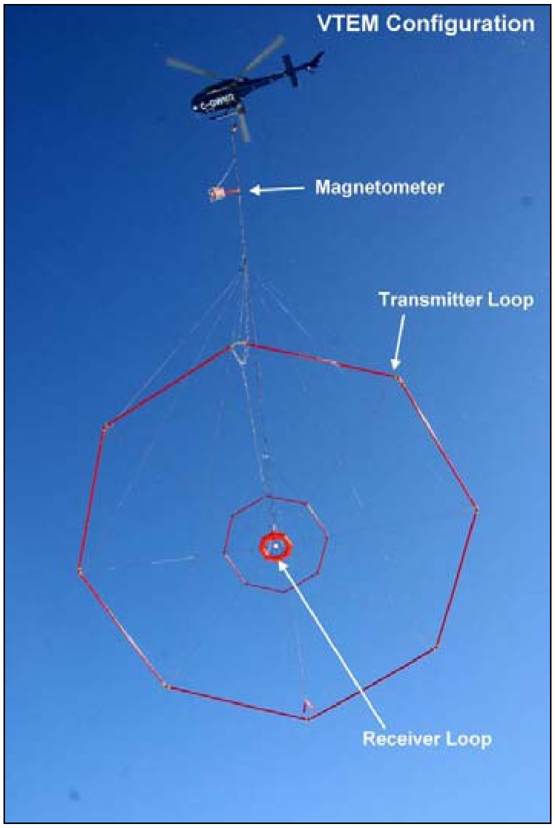


Figure 4 - VTEM Configuration, with magnetometer.

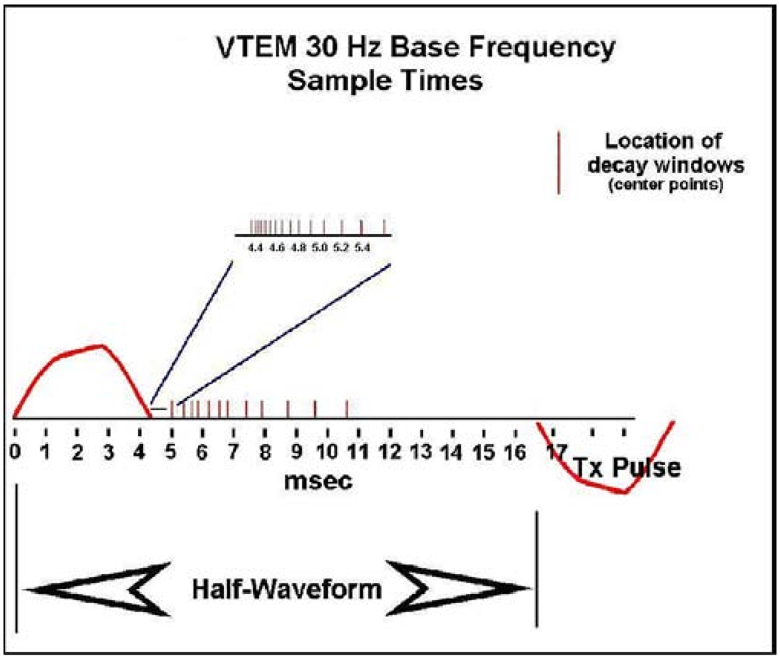


Figure 5 - VTEM Waveform & Sample Times

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

Table 3 - Decay Sampling Scheme

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

VTEM system parameters:

Transmitter Section

- Transmitter coil diameter: 17.6 m
- Number of turns: 4
- Transmitter base frequency: 30 Hz
- Peak current: 240 A
- Pulse width: 3.3 ms
- Duty cycle: 20 %
- Wave form shape: trapezoid
- Peak dipole moment: 233,456 nIA
- Nominal EM Bird terrain clearance: 121 metres above the ground
- Effective coil area: 973 m^2

Receiver Section

Z-Coil

- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m^2

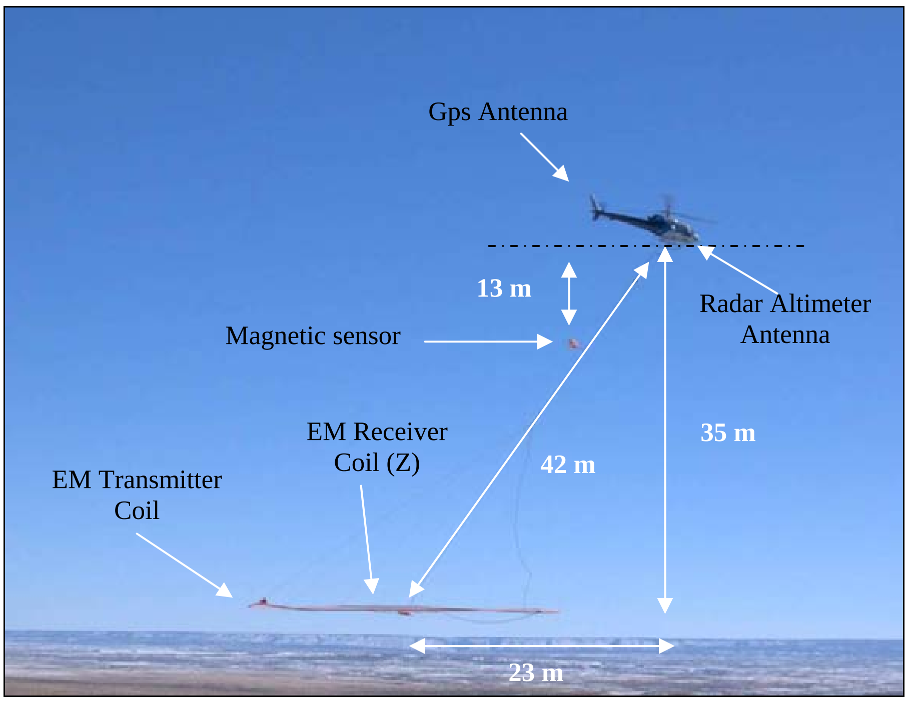


Figure 6 - VTEM System Configuration

2.4.3 Airborne magnetometer

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

2.4.4 Radar Altimeter

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

2.4.5 GPS Navigation System

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

2.4.6 Digital Acquisition System

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

Table 4 - Acquisition Sampling Rates

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

2.5 Base Station

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

The base station magnetometer sensor was installed at the airport (49º 19.0445N, 124º 55.4187 W); away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

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

Field:

Project Manager:	Darren Tuck (Office)
Data QC:	Neil Fiset (Office)
Crew chief:	Ioan Serbu
Operator:	John West-Fiset

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Big Horn Helicopters.

Pilot:	Brook Pennington
Mechanical Engineer:	N/A

Office:

Preliminary Data Processing:	Neil Fiset
Final Data Processing:	Marta Orta
Final Data QC:	Alex Prikhodko
Reporting/Mapping:	Corrie Laver

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operations Officer. The processing and interpretation phase was under the supervision of Alexander Prikhodko, P. Geo, Ph.D. The overall contract management and customer relations were by Paolo Berardelli.

4. DATA PROCESSING AND PRESENTATION

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

4.1 Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the NAD83 Datum, UTM Zone 10 North coordinate system in Oasis Montaj.

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

4.2 Electromagnetic Data

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

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

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z. B-field Z component time channel recorded at 0.505 milliseconds after the termination of the impulse is also presented as a color image. Calculated Time Constant (TAU) with anomaly contours of Calculated Vertical Derivative of TMI is presented in Appendix D and F. Resistivity Depth Image (RDI) is also presented in Appendix D and G.

VTEM receiver coil orientation Z-axis coil is oriented parallel to the transmitter coil axis and is horizontal to the ground. Generalized modeling results of VTEM data, are shown in Appendix E.

Z component data produce double peak type anomalies for "thin" subvertical targets and single peak for "thick" targets.

The limits and change-over of "thin-thick" depends on dimensions of a TEM system the system's height and depth of a target. For example see Appendix E, Fig.E-16.

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

4.3 Magnetic Data

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

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 35 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

5. DELIVERABLES

5.1 Survey Report

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

5.2 Maps

Final maps were produced at scale of 1:10,000 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 10 North. All maps show the mining claims, flight path trace and topographic data; latitude and longitude are also noted on maps.

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

- VTEM dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field late time Z Component Channel 26, Time Gate 0.505 ms colour image.
- Total magnetic intensity (TMI) color image and contours.
- VTEM dB/dt & B-Field Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

5.3 Digital Data

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

- DVD structure.

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

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

Table 5 - Geosoft GDB Data Format

Channel name	Units	Description
X:	metres	UTM Easting NAD83 Zone 10 North
Y:	metres	UTM Northing NAD83 Zone 10 North
Z:	metres	GPS antenna elevation (above Geoid)
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
SFz[14]:	$pV/(A*m^4)$	Z dB/dt 96 microsecond time channel
SFz[15]:	$pV/(A*m^4)$	Z dB/dt 110 microsecond time channel
SFz[16]:	$pV/(A*m^4)$	Z dB/dt 126 microsecond time channel
SFz[17]:	$pV/(A*m^4)$	Z dB/dt 145 microsecond time channel
SFz[18]:	$pV/(A*m^4)$	Z dB/dt 167 microsecond time channel
SFz[19]:	$pV/(A*m^4)$	Z dB/dt 192 microsecond time channel
SFz[20]:	$pV/(A*m^4)$	Z dB/dt 220 microsecond time channel
SFz[21]:	$pV/(A*m^4)$	Z dB/dt 253 microsecond time channel
SFz[22]:	$pV/(A*m^4)$	Z dB/dt 290 microsecond time channel
SFz[23]:	$pV/(A*m^4)$	Z dB/dt 333 microsecond time channel
SFz[24]:	$pV/(A*m^4)$	Z dB/dt 383 microsecond time channel
SFz[25]:	$pV/(A*m^4)$	Z dB/dt 440 microsecond time channel
SFz[26]:	$pV/(A*m^4)$	Z dB/dt 505 microsecond time channel
SFz[27]:	$pV/(A*m^4)$	Z dB/dt 580 microsecond time channel
SFz[28]:	$pV/(A*m^4)$	Z dB/dt 667 microsecond time channel
SFz[29]:	$pV/(A*m^4)$	Z dB/dt 766 microsecond time channel
SFz[30]:	$pV/(A*m^4)$	Z dB/dt 880 microsecond time channel
SFz[31]:	$pV/(A*m^4)$	Z dB/dt 1010 microsecond time channel
SFz[32]:	$pV/(A*m^4)$	Z dB/dt 1161 microsecond time channel
SFz[33]:	$pV/(A*m^4)$	Z dB/dt 1333 microsecond time channel
SFz[34]:	$pV/(A*m^4)$	Z dB/dt 1531 microsecond time channel
SFz[35]:	$pV/(A*m^4)$	Z dB/dt 1760 microsecond time channel
SFz[36]:	$pV/(A*m^4)$	Z dB/dt 2021 microsecond time channel
SFz[37]:	$pV/(A*m^4)$	Z dB/dt 2323 microsecond time channel
SFz[38]:	$pV/(A*m^4)$	Z dB/dt 2667 microsecond time channel
SFz[39]:	$pV/(A*m^4)$	Z dB/dt 3063 microsecond time channel
SFz[40]:	$pV/(A*m^4)$	Z dB/dt 3521 microsecond time channel
SFz[41]:	$pV/(A*m^4)$	Z dB/dt 4042 microsecond time channel
SFz[42]:	$pV/(A*m^4)$	Z dB/dt 4641 microsecond time channel
SFz[43]:	$pV/(A*m^4)$	Z dB/dt 5333 microsecond time channel
SFz[44]:	$pV/(A*m^4)$	Z dB/dt 6125 microsecond time channel
SFz[45]:	$pV/(A*m^4)$	Z dB/dt 7036 microsecond time channel
BFz	$(pV*ms)/(A*m^4)$	Z B-Field data for time channels 14 to 45
PLM:		60 Hz power line monitor
CVG	nT/m	Calculated Magnetic Vertical Gradient
TauSF	milliseconds	Time Constant (Tau) calculated from dB/dt data
TauBF	milliseconds	Time Constant (Tau) calculated from B-Field data
Nchan_BF		Last channel where the Tau algorithm stops calculation, B-Field data

Channel name	Units	Description
Nchan_SF		Last channel where the Tau algorithm stops calculation, dB/dt data

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45.

- Database of the VTEM Waveform "11190_waveform_final.gdb" in Geosoft GDB format, containing the following channels:

Time: Sampling rate interval, 5.2083 microseconds
Rx_Volt: Output voltage of the receiver coil (Volt)
Tx_Current: Output current of the transmitter (Amp)

- Grids in Geosoft GRD format, as follows:

TMI: Total magnetic intensity (nT)
BFz26: B-Field Z Component Channel 26 (Time Gate 0.505 ms)
TAUSFz: dB/dt Calculated Time Constant (TAU)
TAUBFz: B-Field Calculated Time Constant (TAU)
CVG: Calculated Vertical Derivative of TMI (CVG)
DEM: Digital Elevation Model

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 35 metres was used.

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

11190_10K_dBdt: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11190_10K_bfield: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11190_10K_BFz26: B-Field late time Z Component Channel 26, Time Gate 0.505 ms color image.
11190_10K_TMI: Total magnetic intensity (TMI) color image and contours.
11190_10K_TAUSFz: dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

Maps are also presented in PDF format.

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

- A Google Earth file *11190_ColumbiaShear.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

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

The total area coverage is 34 km^2. Total survey line coverage is 261 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles, and contour color images at a scale of 1:10,000. No formal Interpretation has been included.

6.2 Recommendations

Based on the geophysical results obtained, very low conductive targets are identified in the survey area. EM data exhibits early-mid time response highlighting the south-west part; weak late-time response is observed. Magnetic trend is detected in north-south direction; mostly correlating with topography.

Before ground follow up and drill testing, an analysis of the exploration model is recommended. Magnetic field data would be a subject of detail interpretation.

Respectfully submitted[6],

Neil Fiset
Geotech Ltd.

Marta Orta
Geotech Ltd.

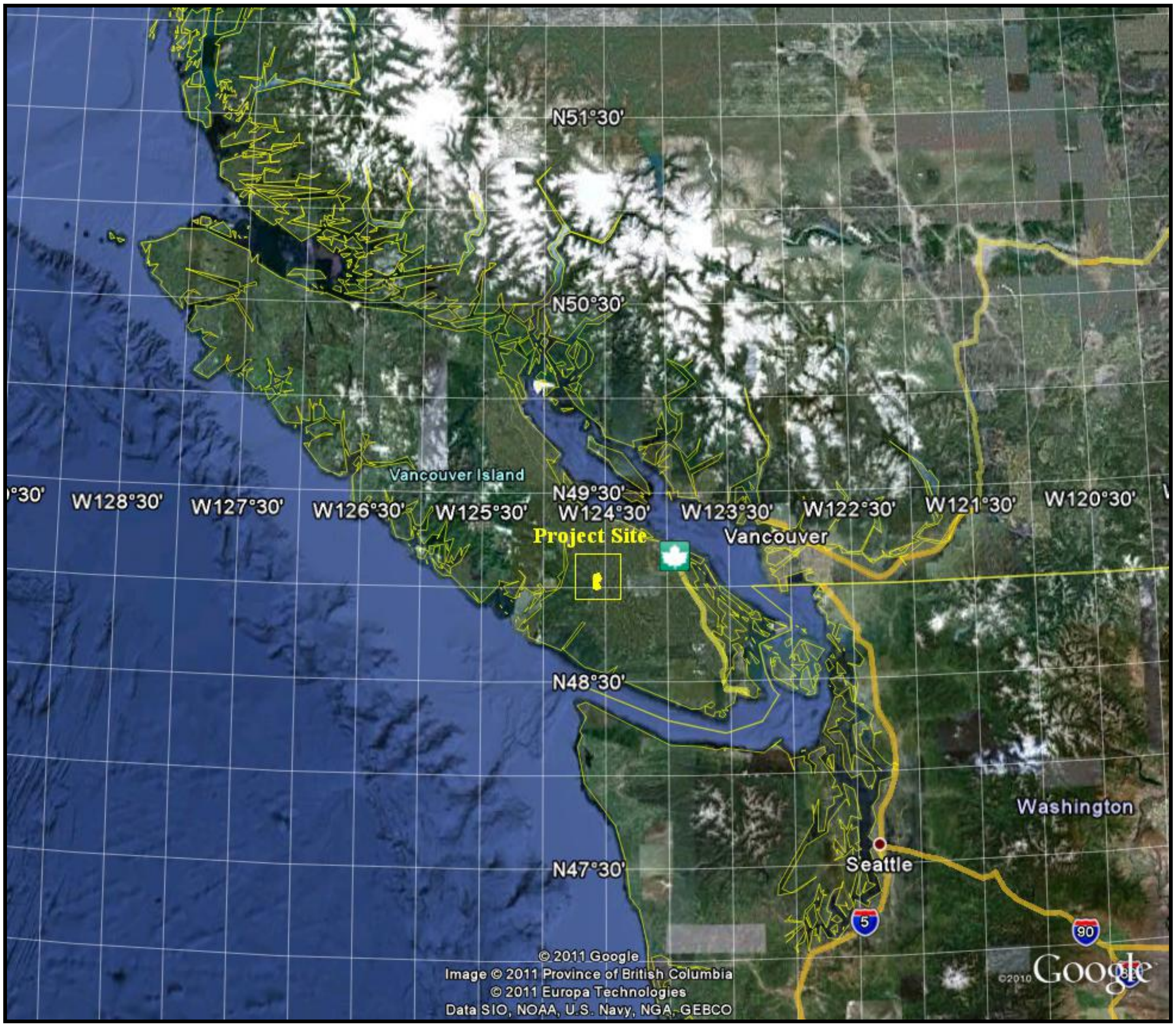
Alexander Prikhodko, P. Geo
Geotech Ltd.

September 2011

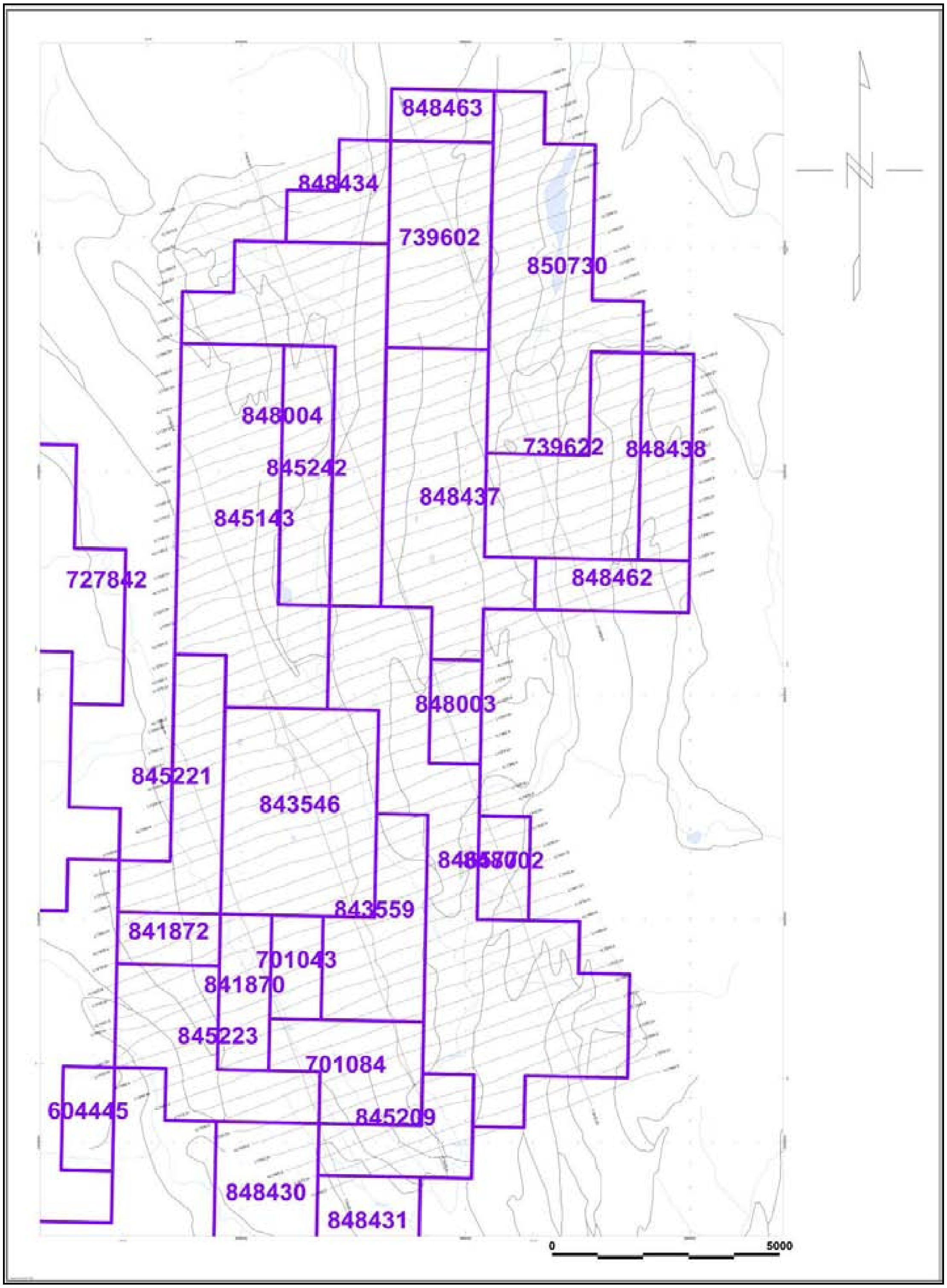
[6]Final data processing of the EM and magnetic data were carried out by Neil Fiset and Marta Orta, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo., PhD, Senior Geophysicist, VTEM Interpretation Supervisor.

APPENDIX A

SURVEY BLOCK LOCATION MAP



Survey Overview of the Block



Mining Claims for the Block

APPENDIX B

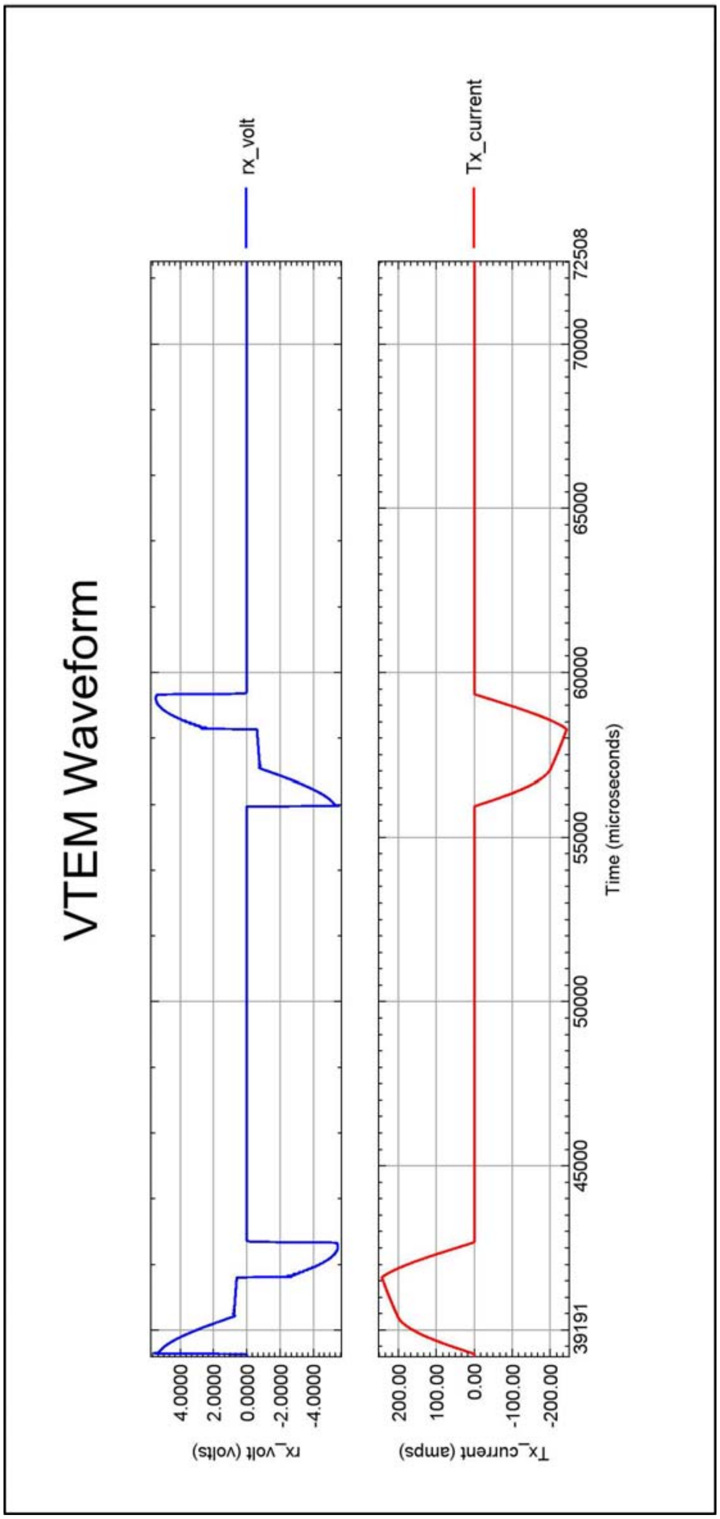
SURVEY BLOCK COORDINATES

(WGS 84, UTM Zone 10 North)

X	Y
386677.8	5437526
387540.1	5435126
388030.6	5434986
387991.7	5433056
386205.7	5432400
386202.5	5432245
386185.6	5431441
386256.9	5431307
387683.8	5428630
384864.8	5427608
382907.4	5428651
382875.2	5428799
382909.2	5430408
382992.6	5430598
383275.5	5430860
383380	5431058
383491.6	5436366

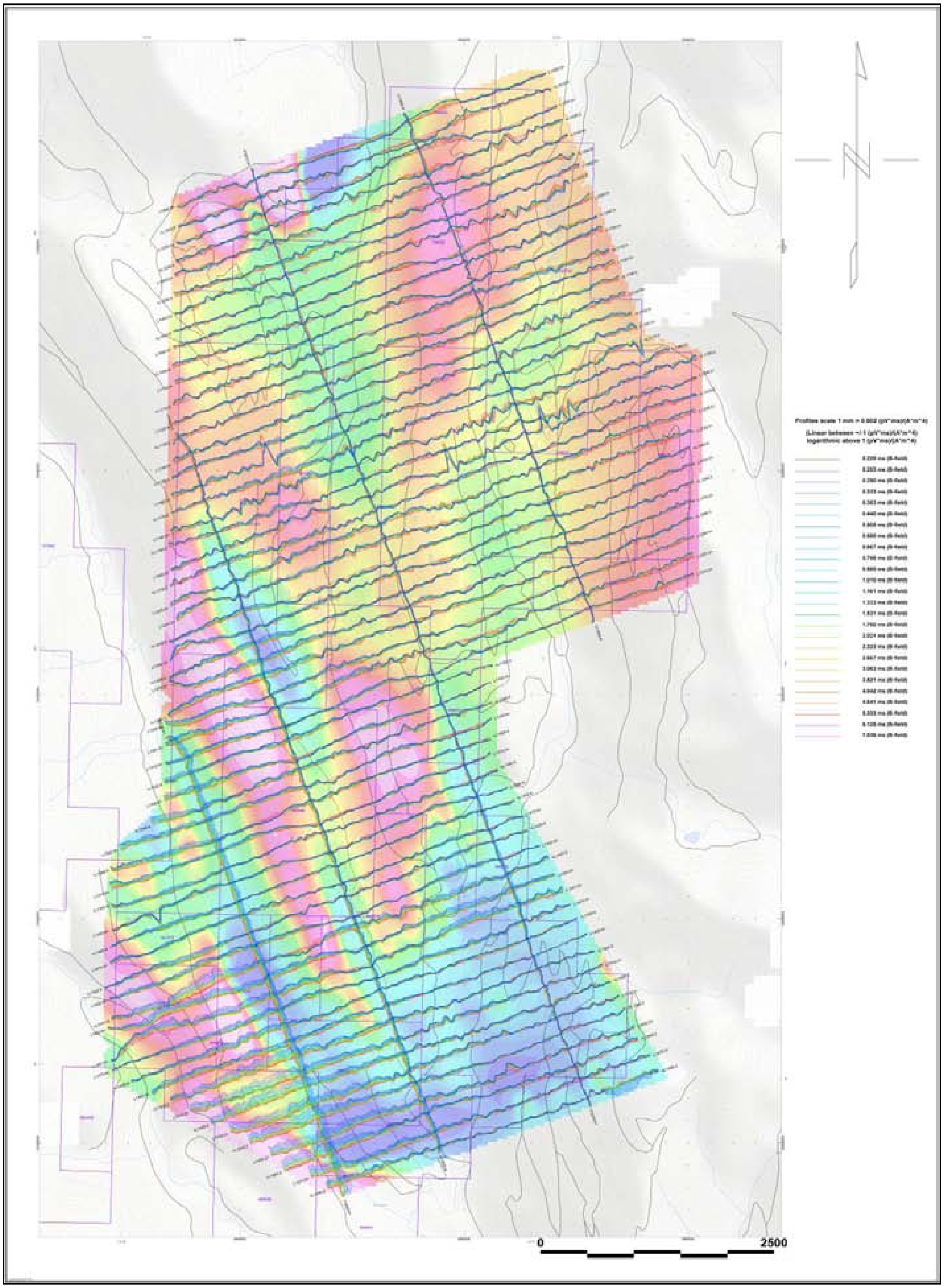
APPENDIX C

VTEM WAVEFORM



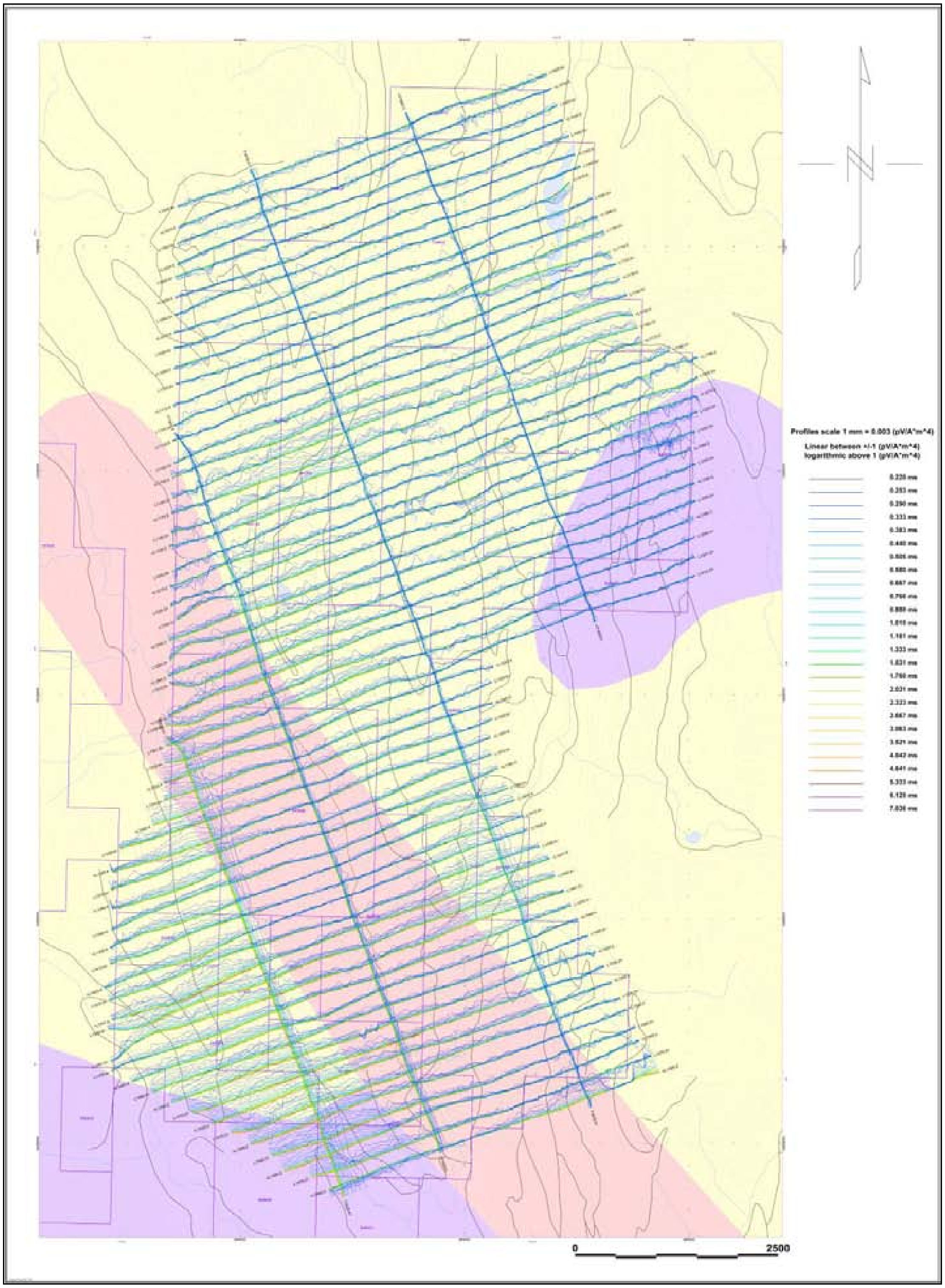
APPENDIX D

GEOPHYSICAL MAPS[1]

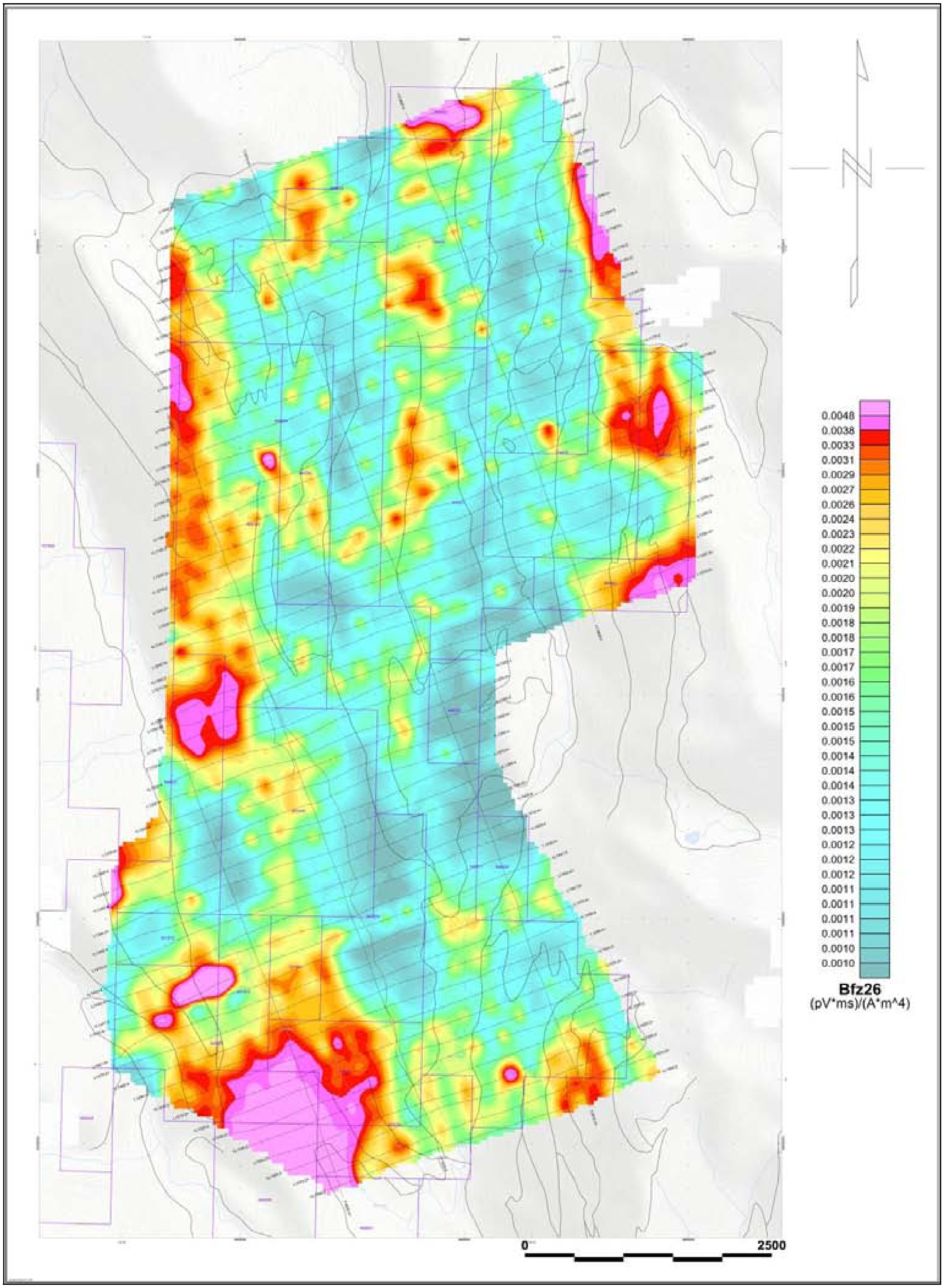


VTEM B-Field Profiles, Time Gates 0.220 to 7.036 ms

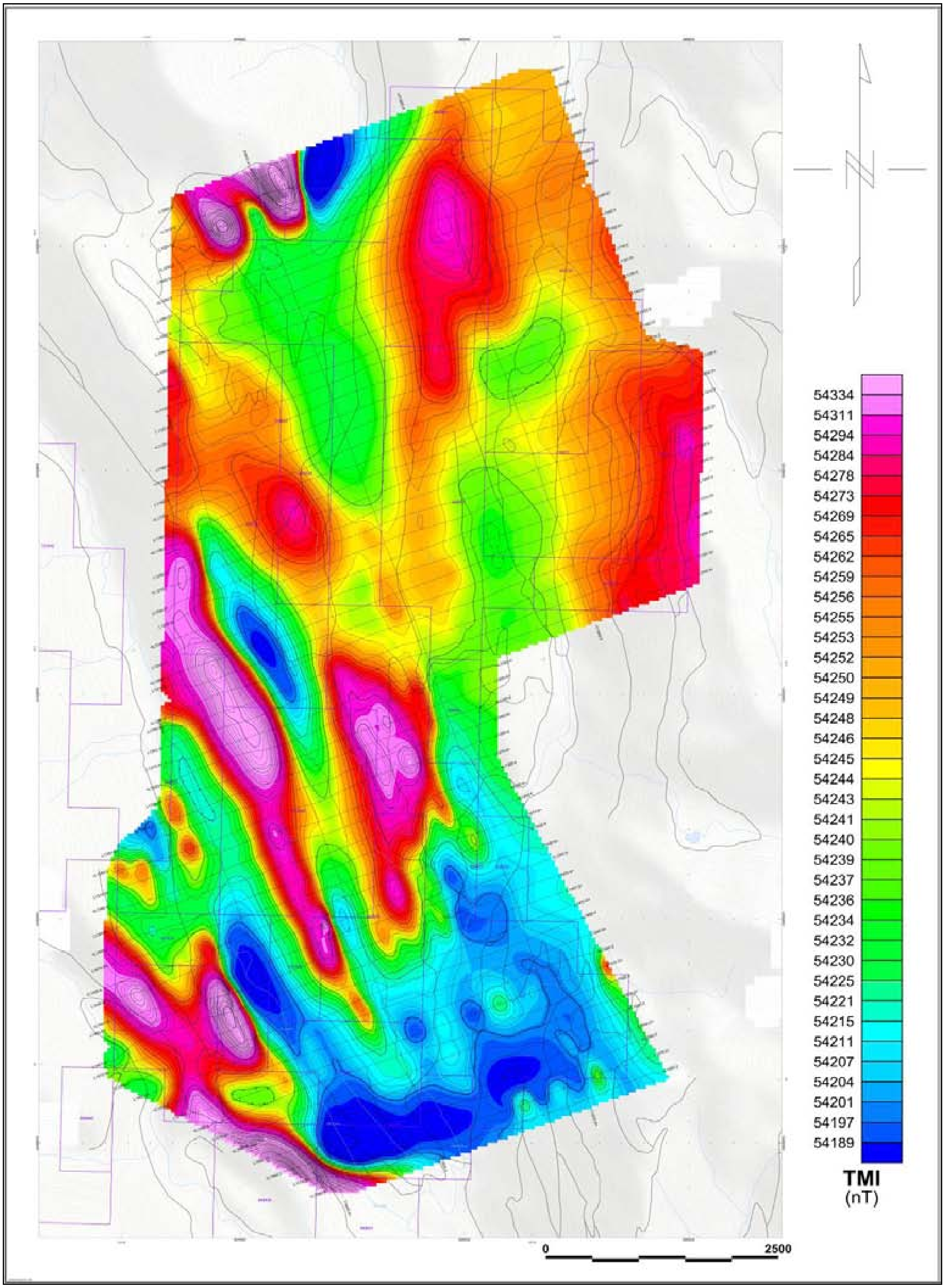
[1] Full size geophysical maps are also available in PDF format on the final DVD



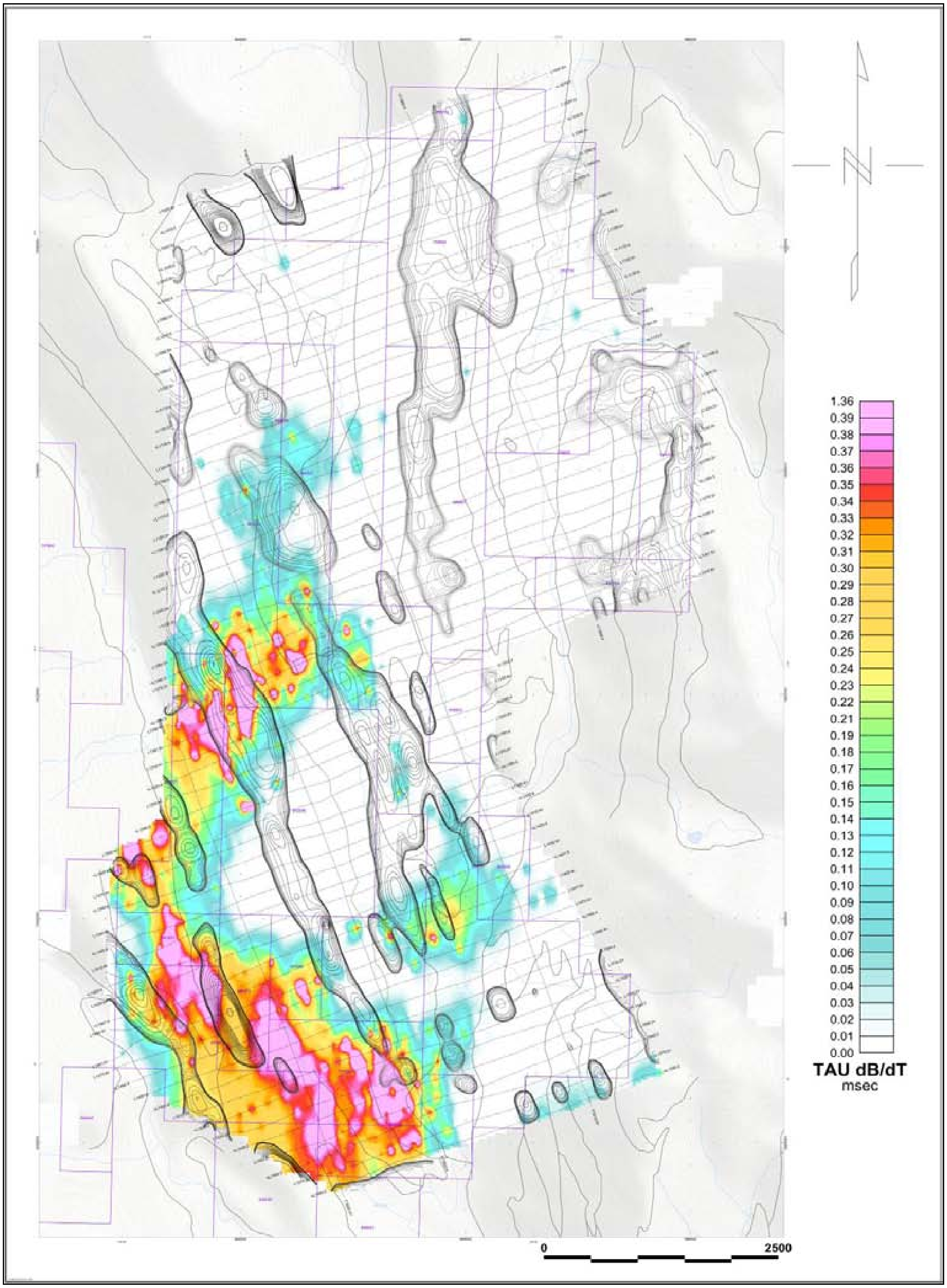
VTEM dB/dt Profiles, Time Gates 0.220 to 7.036 ms



VTEM B-Field Channel 26, Time Gate 0.505 ms

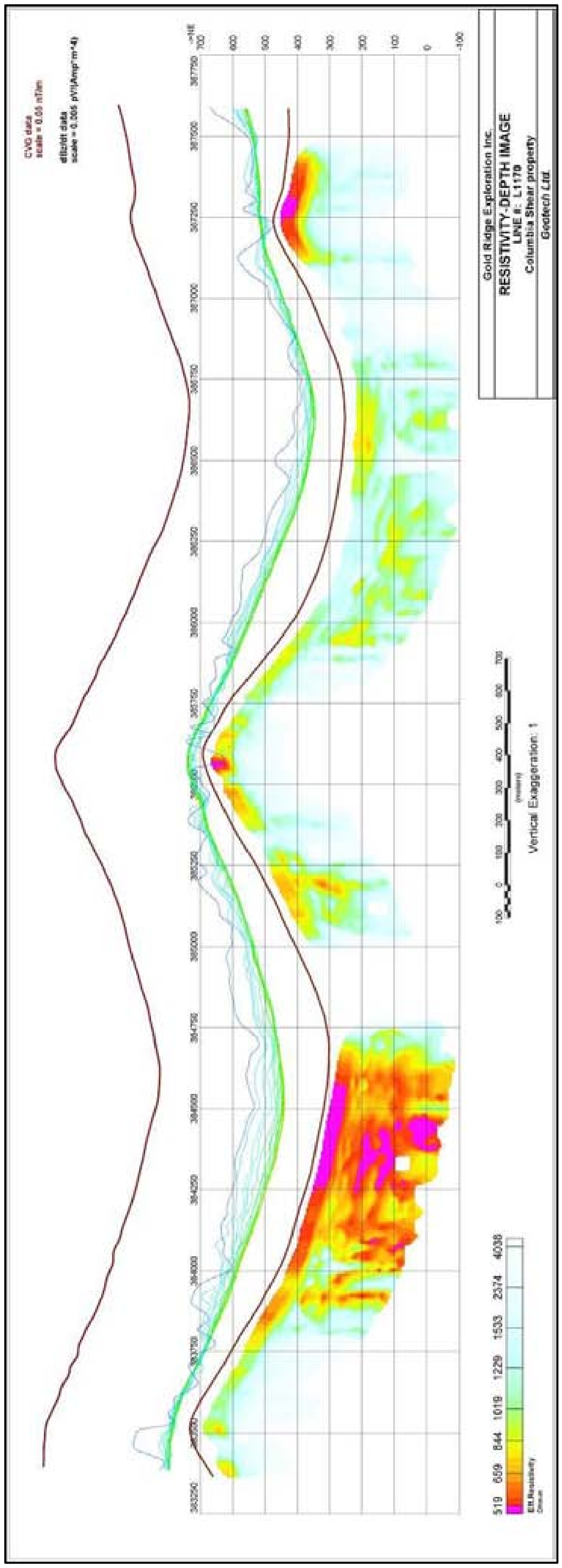


Total Magnetic Intensity (TMI)

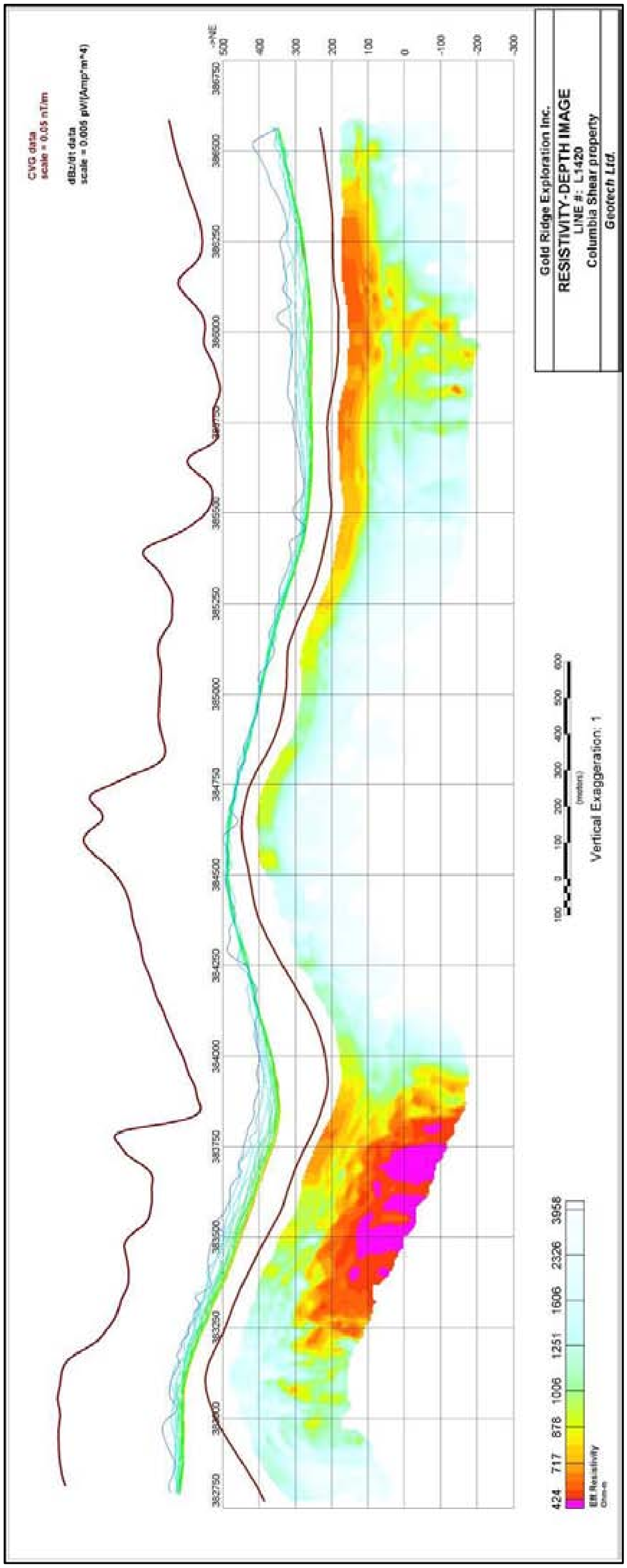


VTEM dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

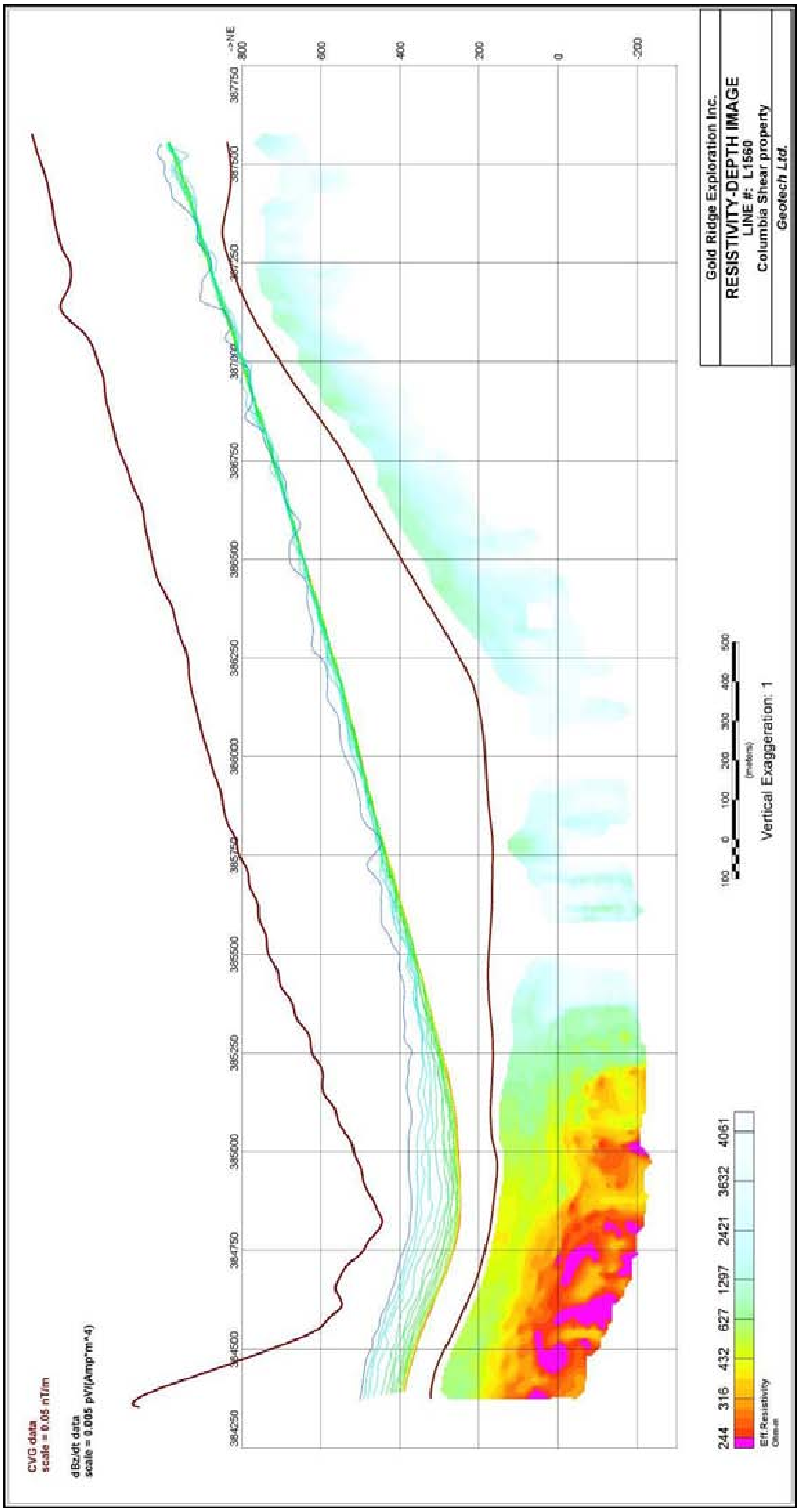
Resistivity Depth Image (RDI) MAPS



Line 1170

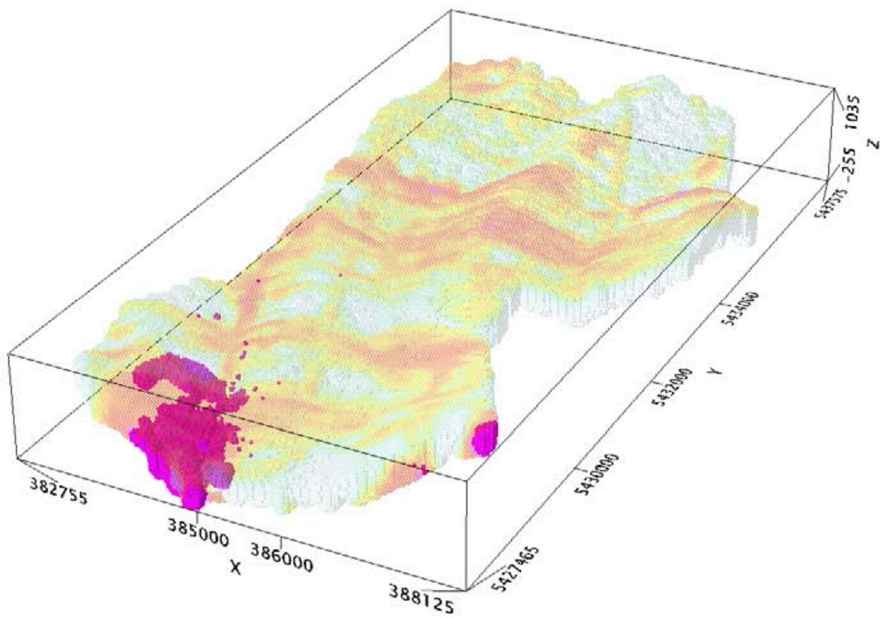

CVG data
scale = 0.05 nT/m
dBz/dt data
scale = 0.005 pV/(Amp*m^4)
Gold Ridge Exploration Inc.
RESISTIVITY-DEPTH IMAGE
LINE #: L1420
Columbia Shear property
Geotech Ltd.
Vertical Exaggeration: 1
424 717 878 1006 1251 1606 2326 3958
EM Resistivity
Ohm-m

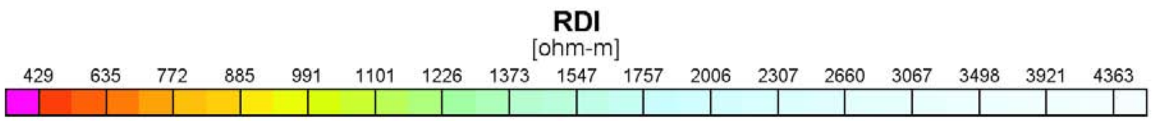
Line 1420


CVG data
scale = 0.05 nT/m
dBz/dt data
scale = 0.005 pV/(Amp*m^4)
Gold Ridge Exploration Inc.
RESISTIVITY-DEPTH IMAGE
LINE #: L1560
Columbia Shear property
Geotech Ltd.
Vertical Exaggeration: 1
(meters)
Eff.Resistivity
244 316 432 627 1297 2421 3632 4061

Line 1560

Columbia Shear property
Resistivity-Depth Image





APPENDIX E

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 17.6 metres diameter transmitter loop that produces a dipole moment up to 236,472 nIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 30 Hz, the duration of each pulse is approximately 3.4 milliseconds followed by an off time where no primary field is present.

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

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

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

General Modeling Concepts

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models C1 to C18). The Maxwell ™ modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space.The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.
When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.
- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.
- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.

- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated (see Figures C17 & C18). Only concentric loop systems can map such wide varieties of target geometries.

Variation of Plate Depth

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

Diagrammatic models for a vertical plate are shown in Figures C-1 & C-2 and C-5 & C-6 at two different depths, all other parameters remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figures C-1 and C-2 show a plate where the top is near surface. Here, amplitudes of the duel peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figures C-5 and C-6 show a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.

Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figures C-3 & C-4 and C-7 and C-8 show a near surface plate dipping 80º at two different depths. Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º. For example, for a plate dipping 45º, the minimum shoulder starts to vanish. In Figures C-9 & C-10 and C-11 & C-12, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

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

Variation of Prism Dip

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

Figures C-13 & C-14 and C-15 & C-16 show the same prism at the same depths with variable dips. Aside from the expected differences asymmetry prism anomalies show a characteristic change from a double-peaked anomaly to single peak signatures.

I. THIN PLATE

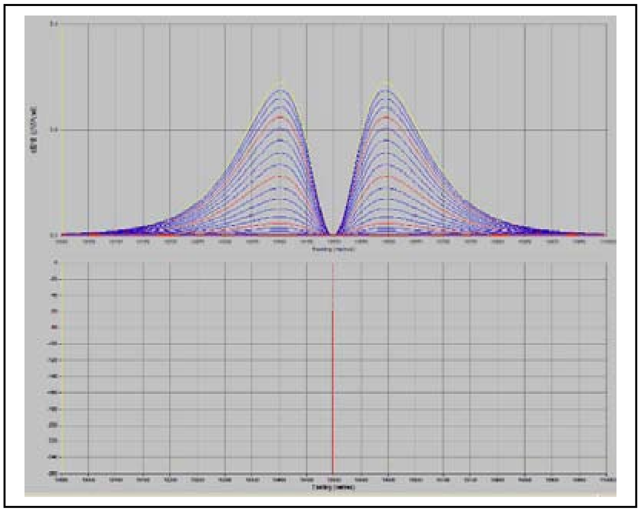


Figure C-1: dB/dt response of a shallow vertical thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

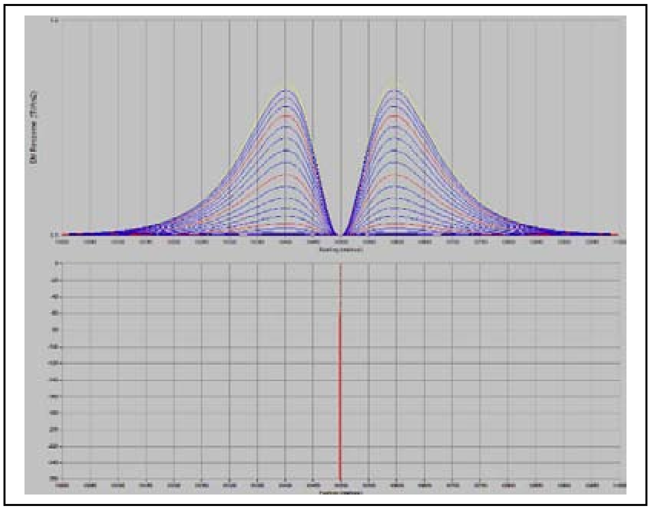


Figure C-2: B-field response of a shallow vertical thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

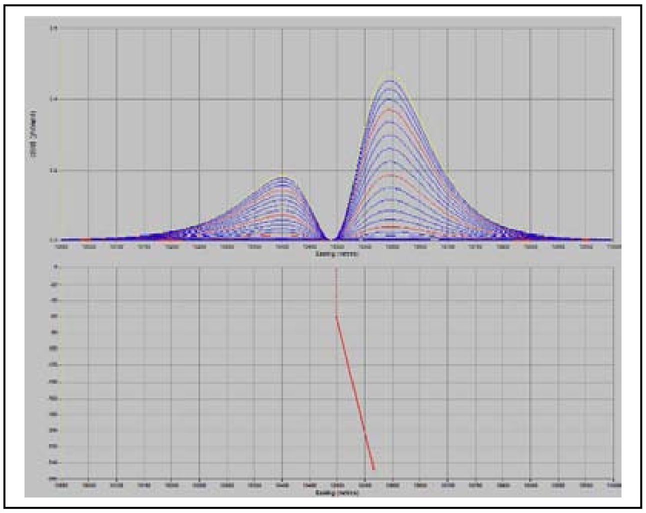


Figure C-3: dB/dt response of a shallow skewed thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

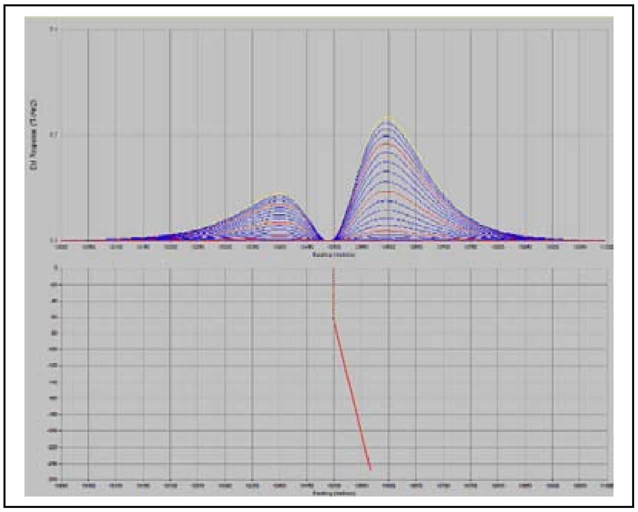
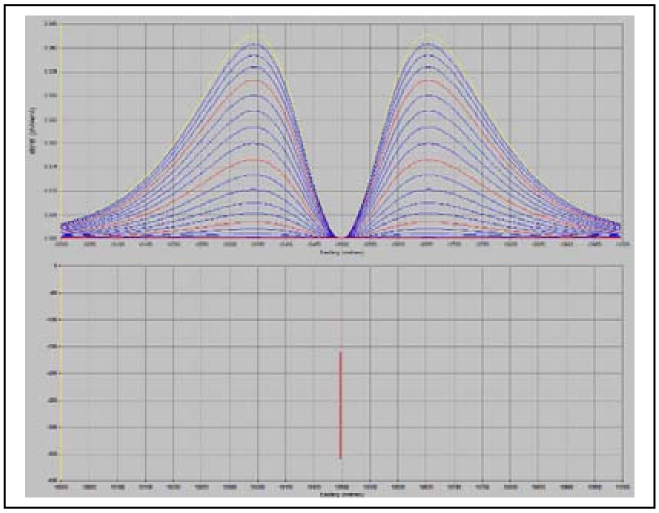


Figure C-4: B-field response of a shallow skewed thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.



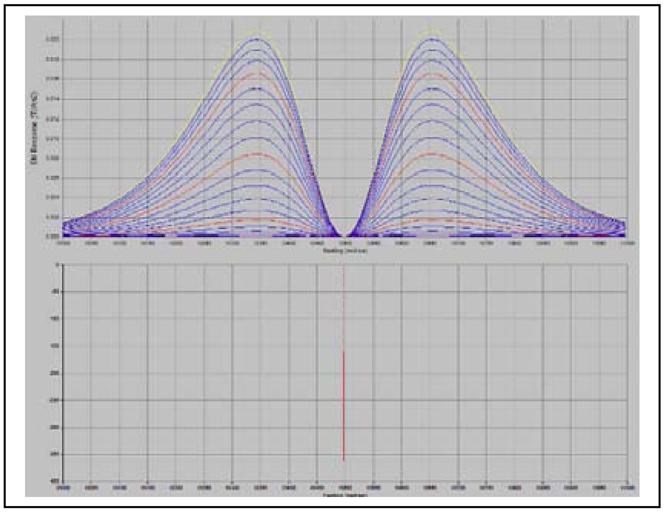
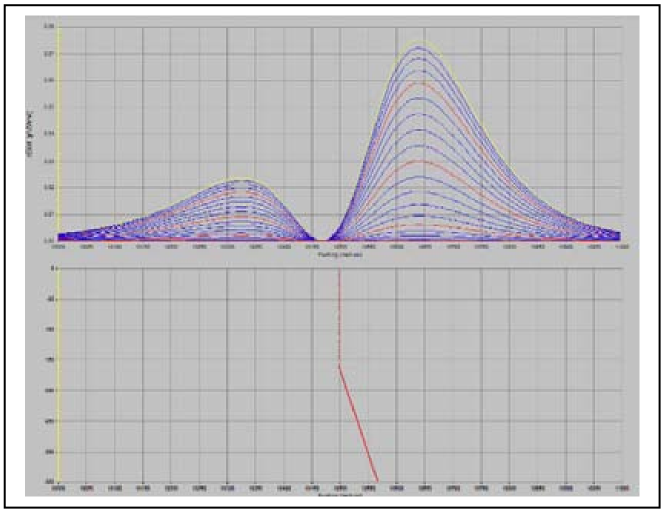


Figure C-5: dB/dt response of a deep vertical thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

Figure C-6: B-Field response of a deep vertical thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.



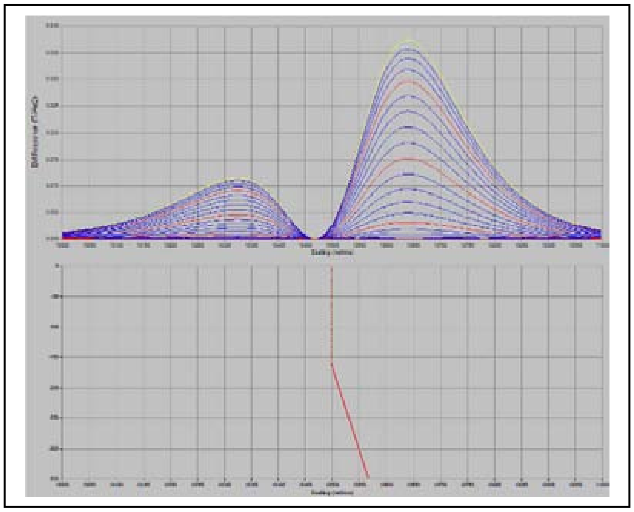


Figure C-7: dB/dt response of a deep skewed thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

Figure C-8: B-field response of a deep skewed thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.

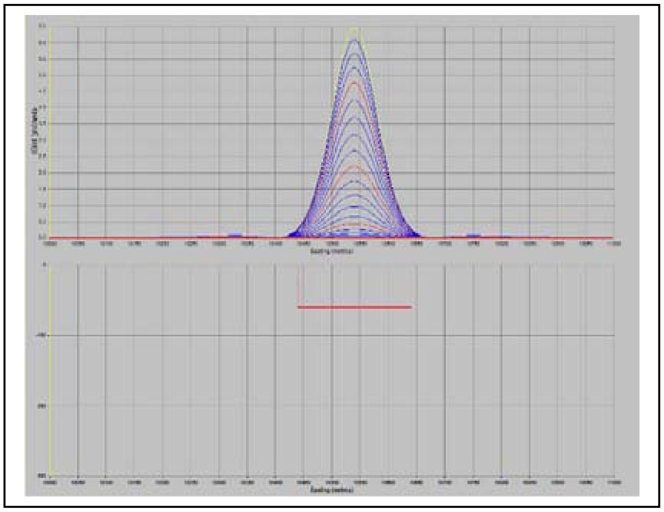


Figure C-9: dB/dt response of a shallow horizontal thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

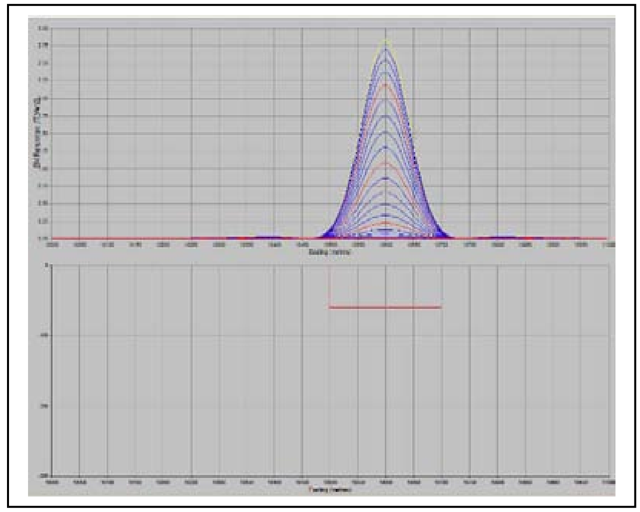


Figure C-10: B-Field response of a shallow horizontal thin plate. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

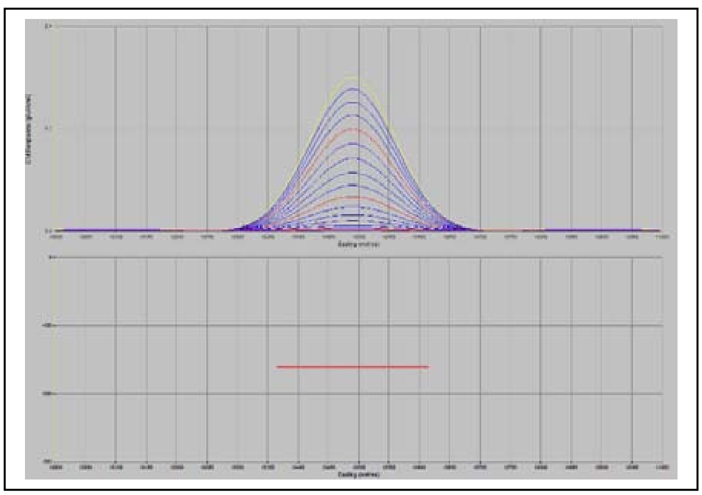


Figure C-11: dB/dt response of a deep horizontal thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

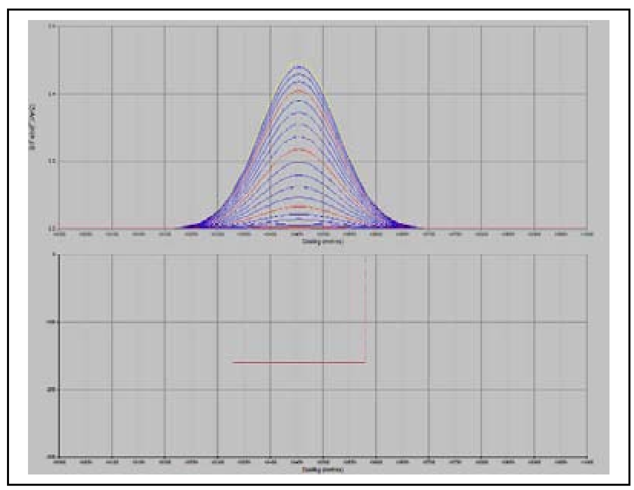


Figure C-12: B-Field response of a deep horizontal thin plate. Depth=200 m, CT=20 S. The EM response is normalized by the dipole moment.

II. THICK PLATE

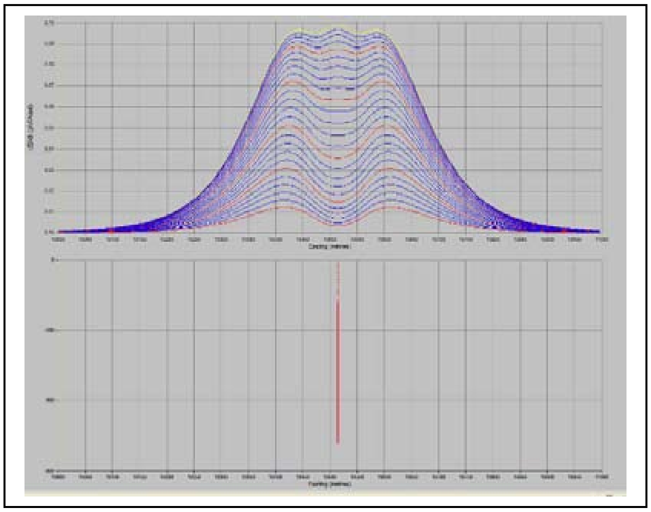


Figure C-13: dB/dt response of a shallow vertical thick plate. Depth=100 m, C=12 S/m, thickness=20 m. The EM response is normalized by the dipole moment and the Rx area.

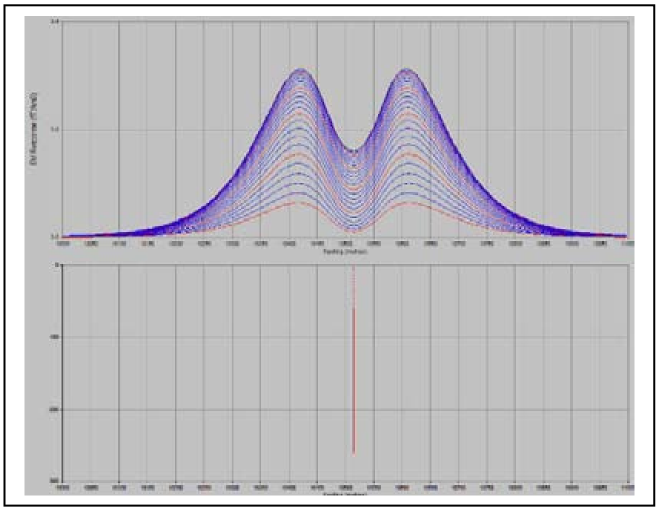


Figure C-14: B-Field response of a shallow vertical thick plate. Depth=100 m, C=12 S/m, thickness= 20 m. The EM response is normalized by the dipole moment.

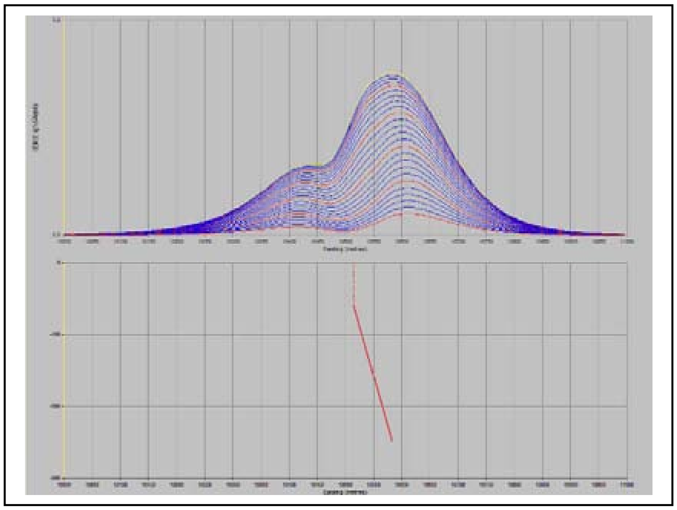


Figure C-15: dB/dt response of a shallow skewed thick plate. Depth=100 m, C=12 S/m, thickness=20 m. The EM response is normalized by the dipole moment and the Rx area.

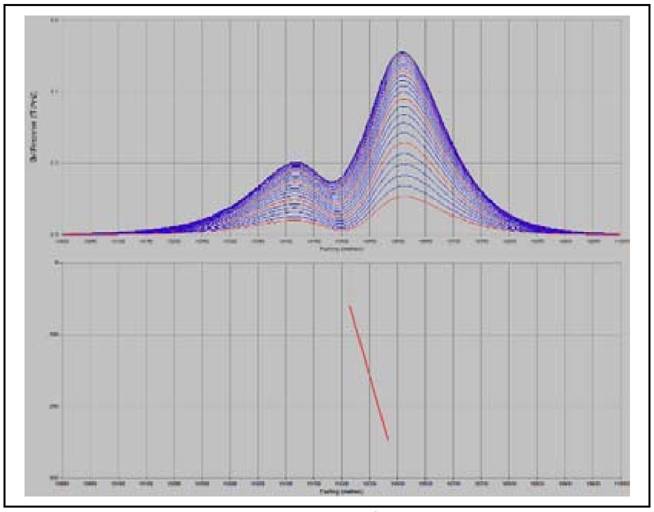


Figure C-16: B-Field response of a shallow skewed thick plate. Depth=100 m, C=12 S/m, thickness=20 m. The EM response is normalized by the dipole moment.

III. MULTIPLE THIN PLATES

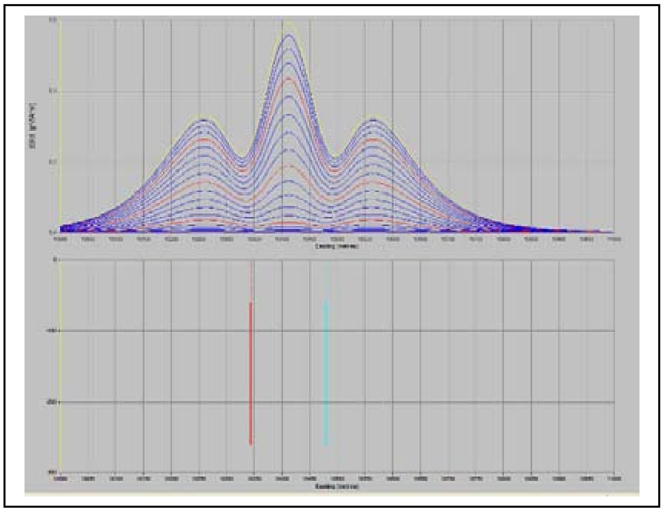


Figure C-17: dB/dt response of two vertical thin plates. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment and the Rx area.

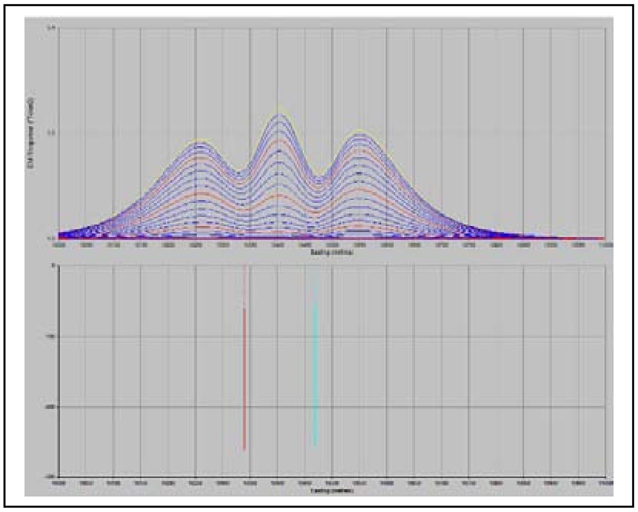


Figure C-18: B-Field response of two vertical thin plates. Depth=100 m, CT=20 S. The EM response is normalized by the dipole moment.

General Interpretation Principals

Magnetics

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

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

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

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

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

Concentric Loop EM Systems

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

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

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

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

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

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

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

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

APPENDIX F

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductances beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

Theory

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage (**e_0**) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \ \alpha \ (1 / \tau) \ e^{-(t / \tau)}$$

Where,
τ = L/R is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and small τ, have high initial amplitude but decay rapidly with time[1] (Fig. F1).

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

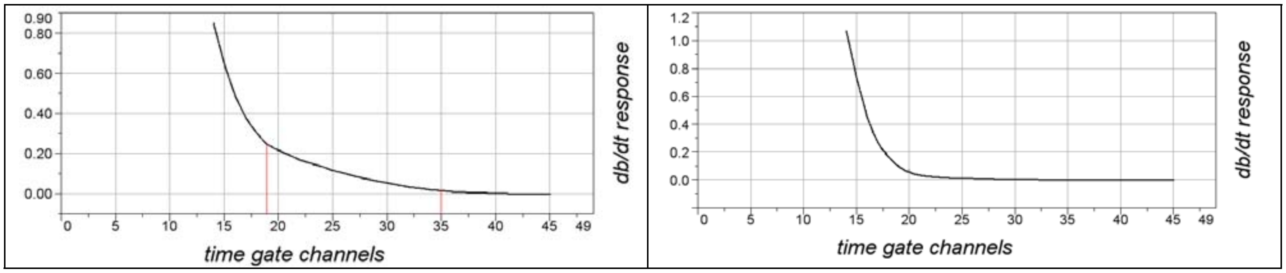


Figure F1 Left – presence of good conductor, right – poor conductor.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the "conductance quality" of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

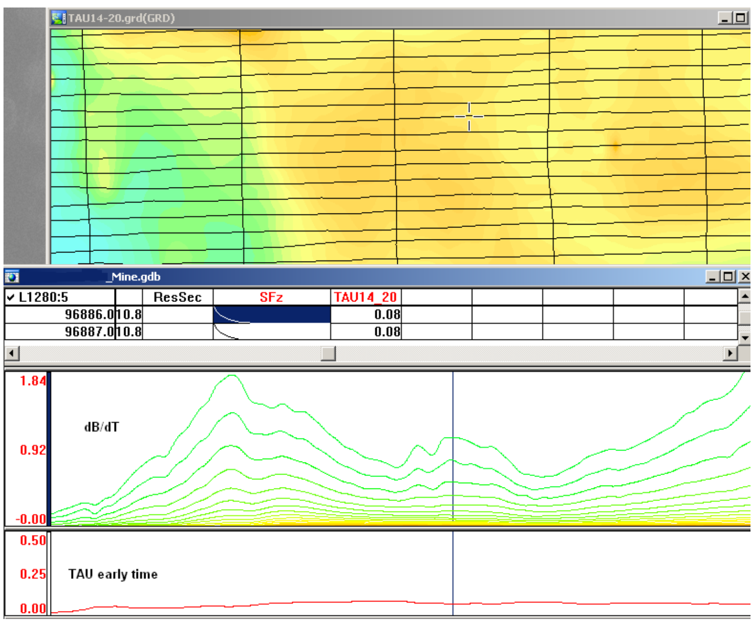


Figure F2 – Map of early time TAU. Area with overburden conductive layer and local sources.

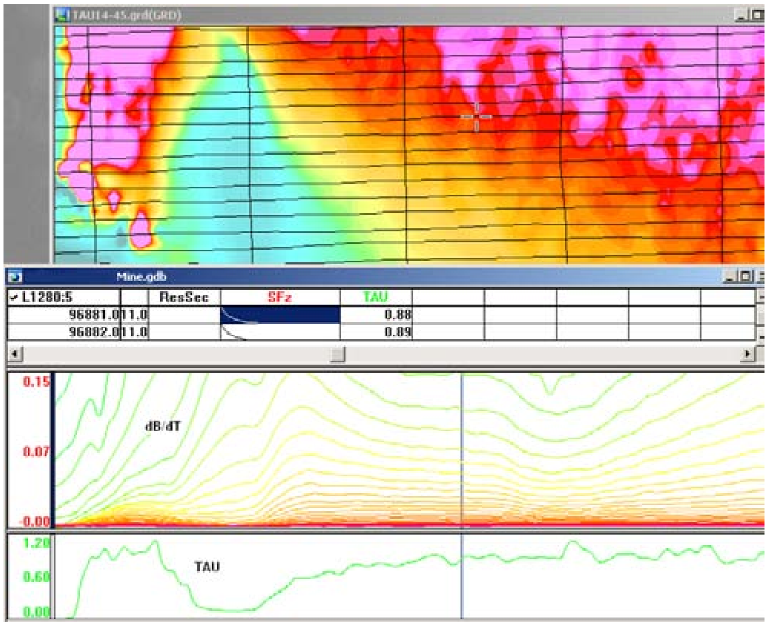


Figure F3 – Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

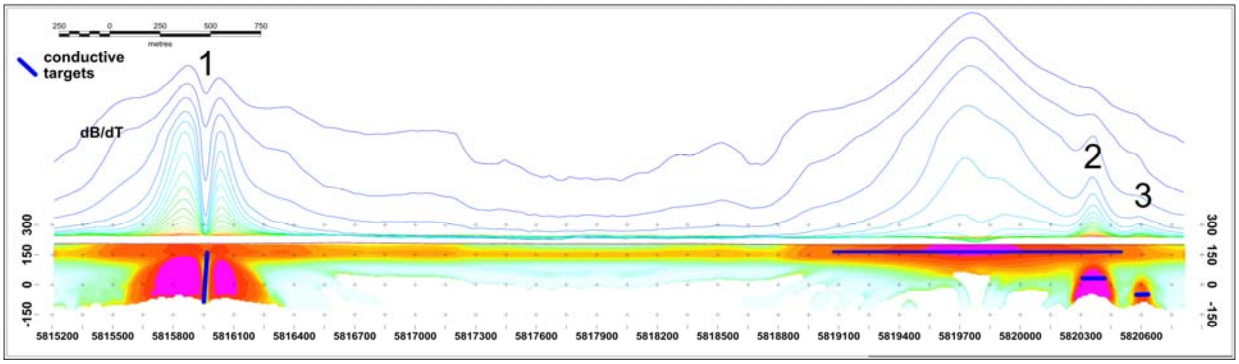


Figure F4 – dB/dt profile and RDI with different depths of targets.

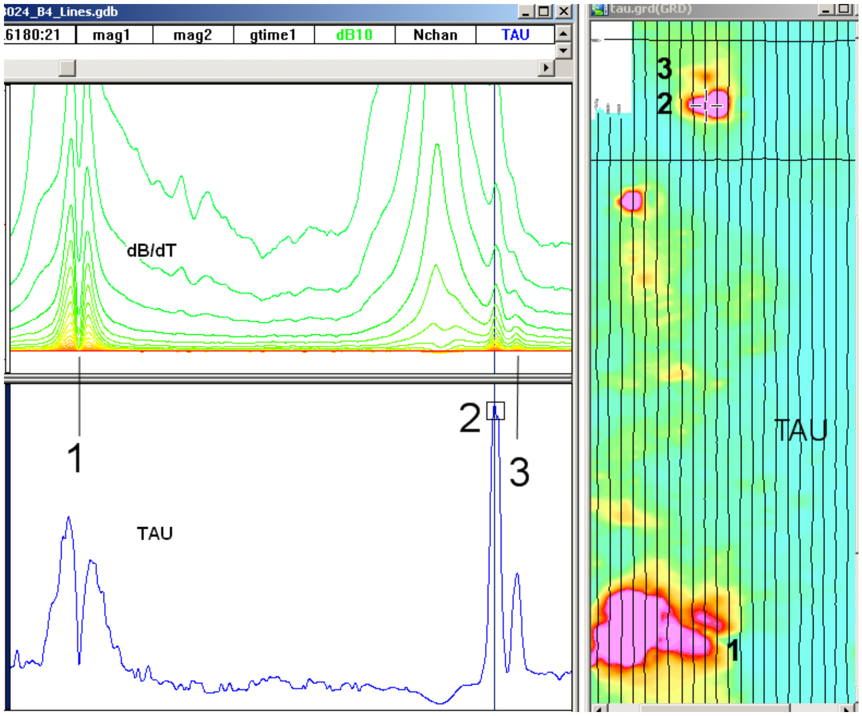


Figure F5 – Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the "sliding Tau" in-house program developed at Geotech[2]. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the "label" property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of "dummy" by default.

[2] by A.Prikhodko

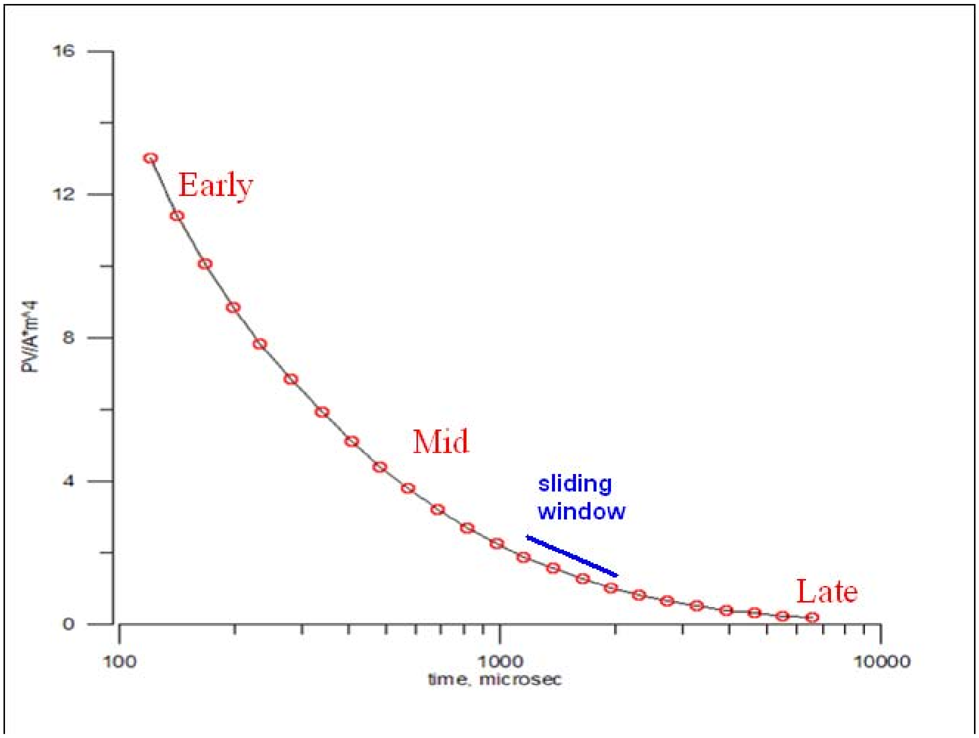


Figure F6 - Typical dB/dt decays of Vtem data

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX G

TEM Resistivity Depth Imaging (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data.
The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system)

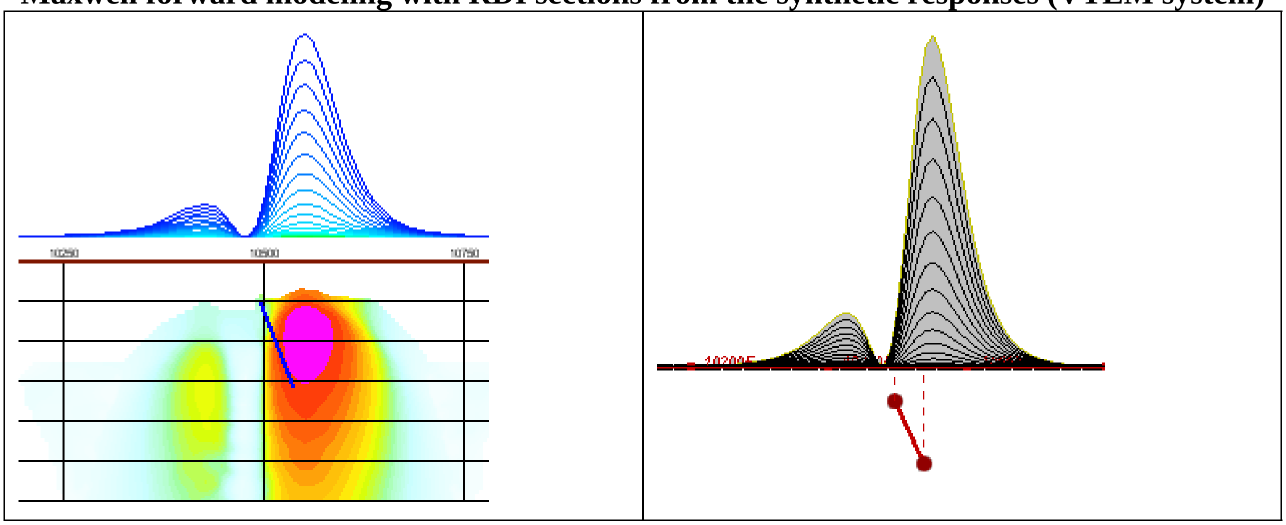


Fig. 1 Maxwell plate model and RDI from the calculated response for conductive “thin” plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

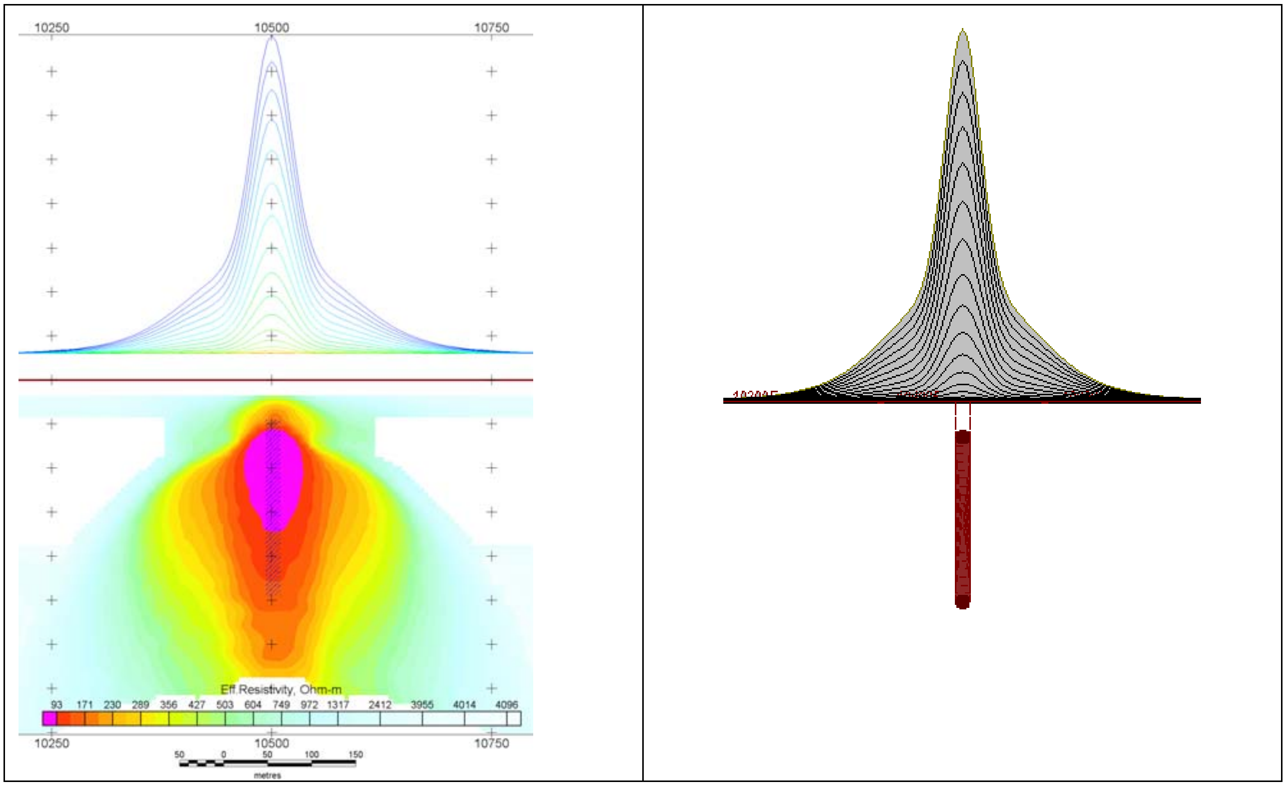


Fig. 2 Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

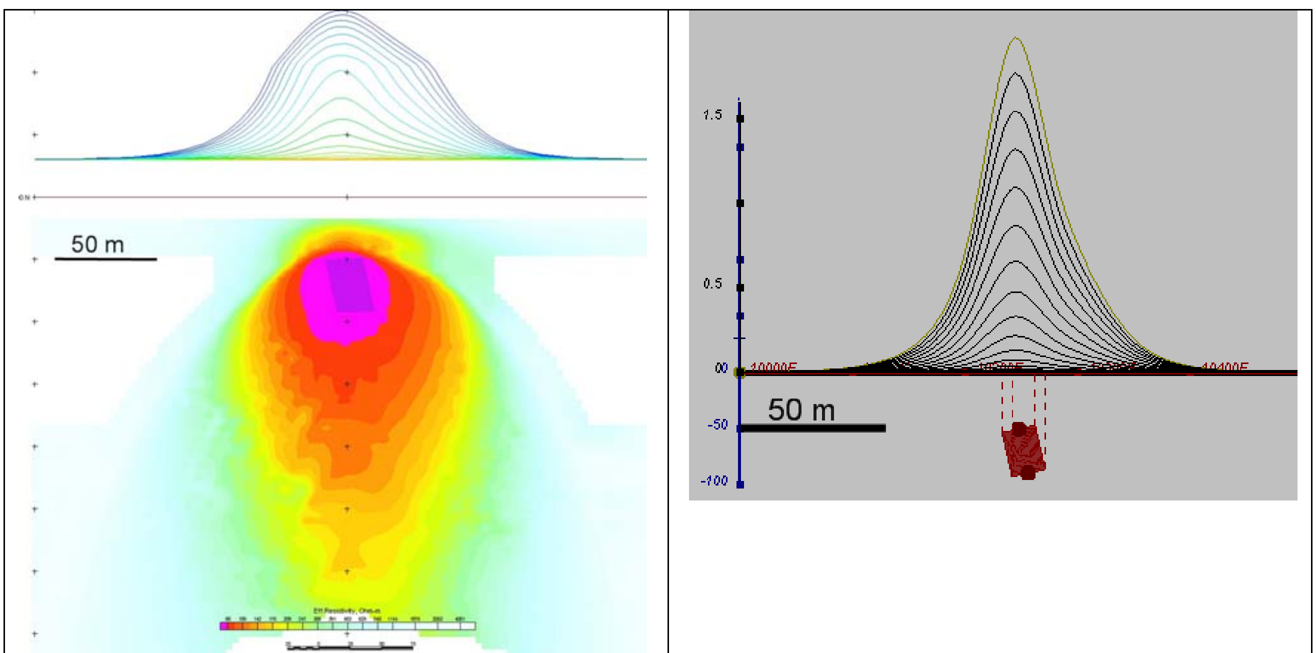


Fig.3 Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

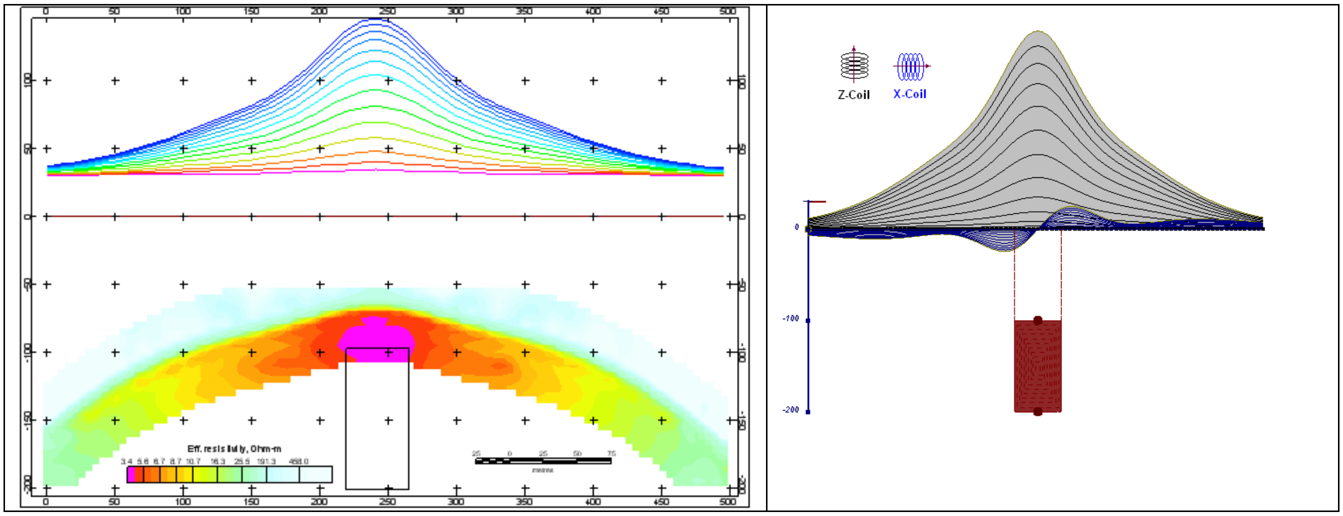


Fig. 4 Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

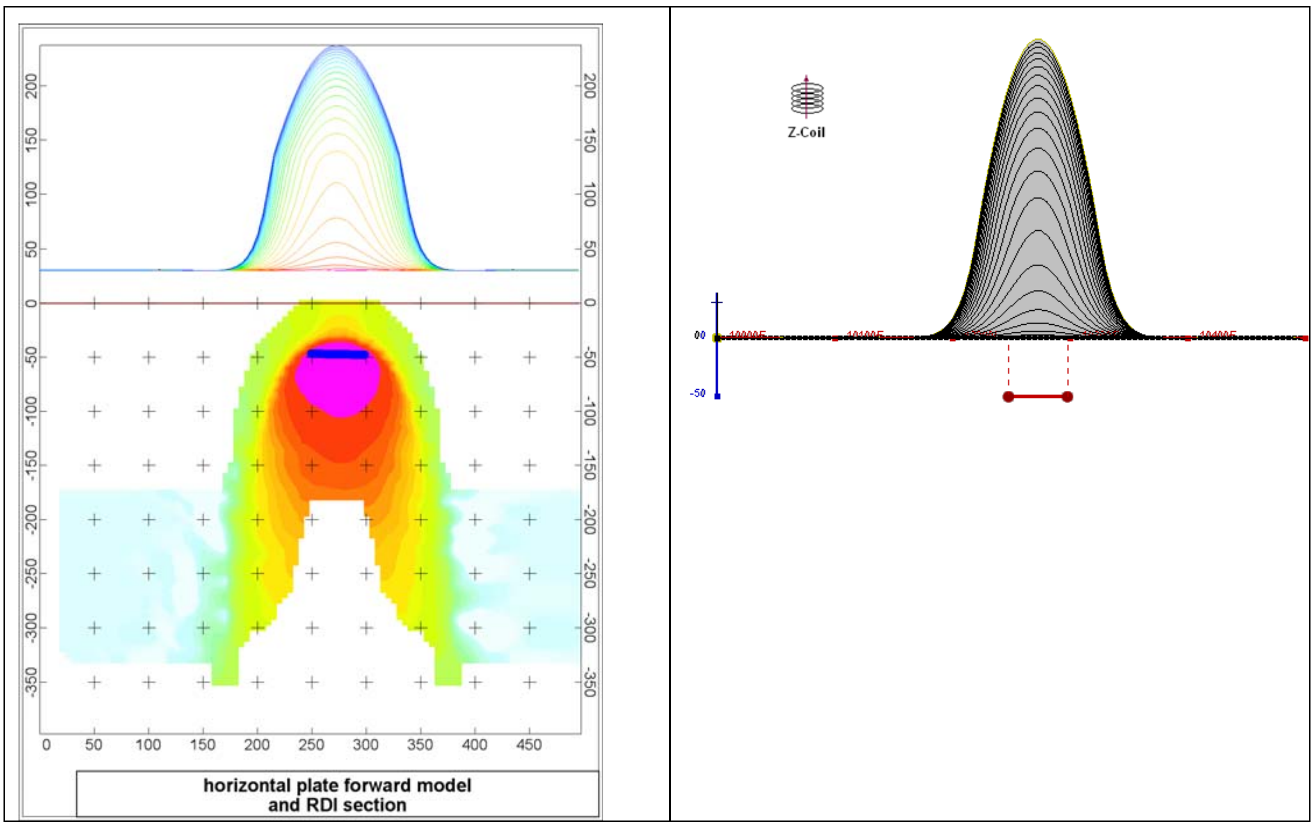


Fig. 5 Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

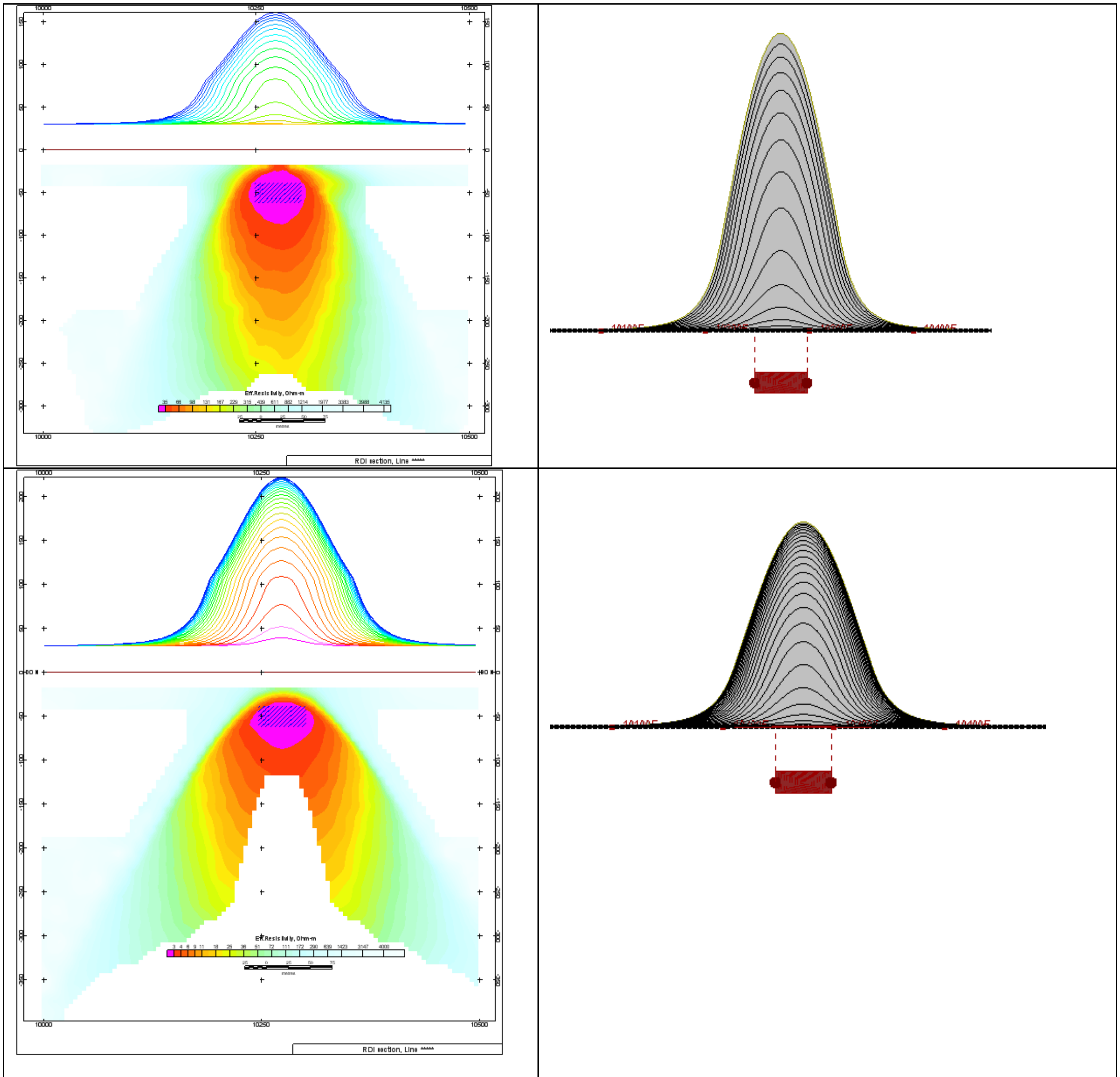


Fig.6 Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

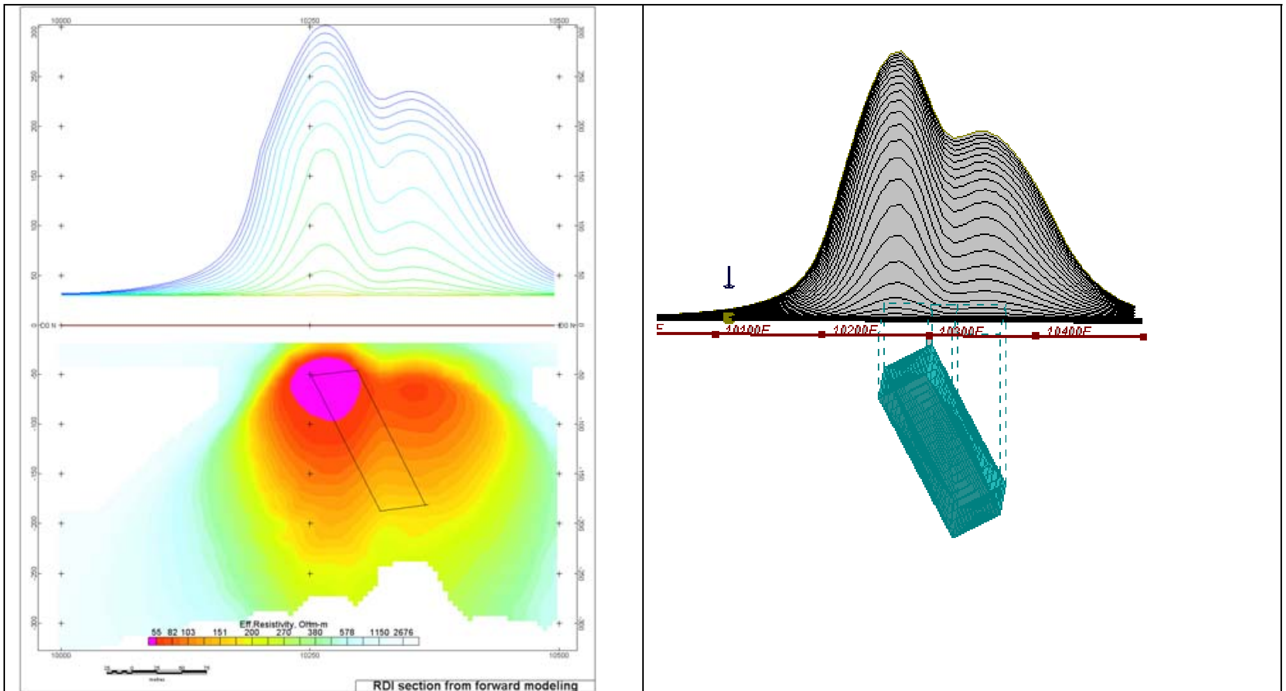


Fig.7 Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extend 150 m, depth to the target 50 m.

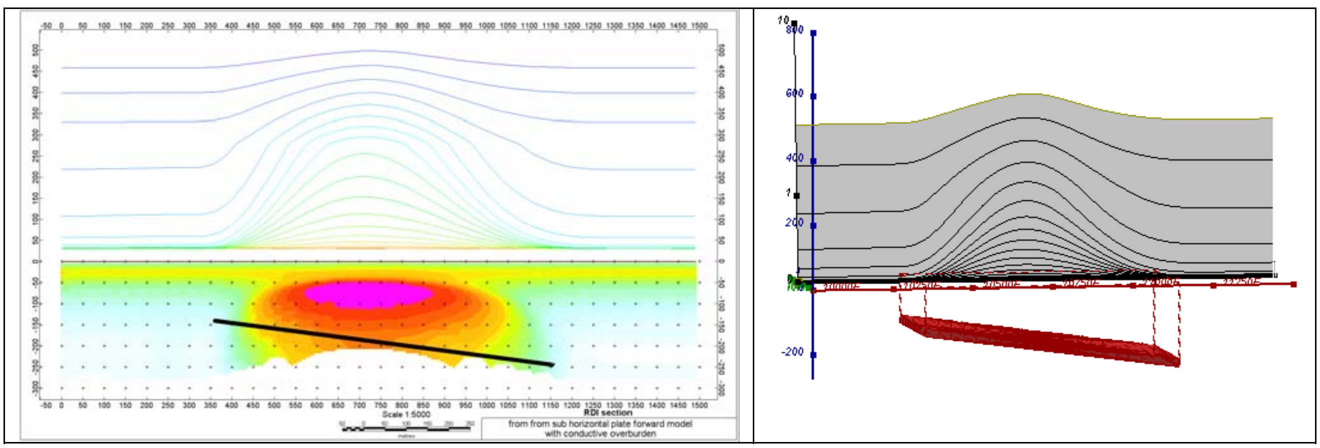


Fig.8 Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

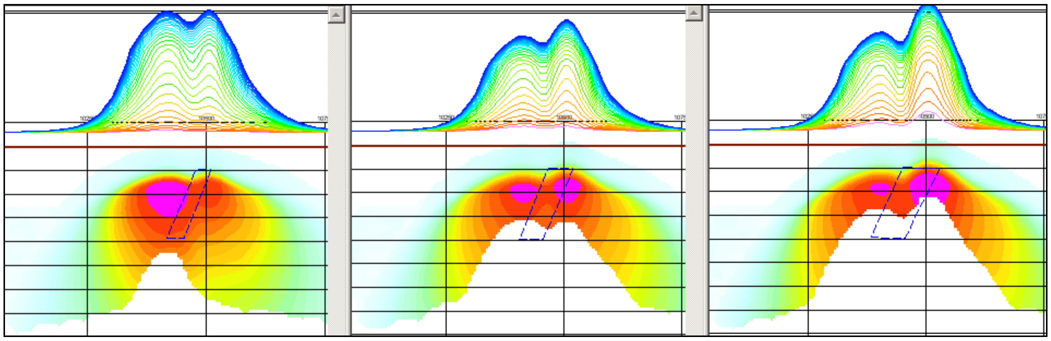


Fig.9 Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

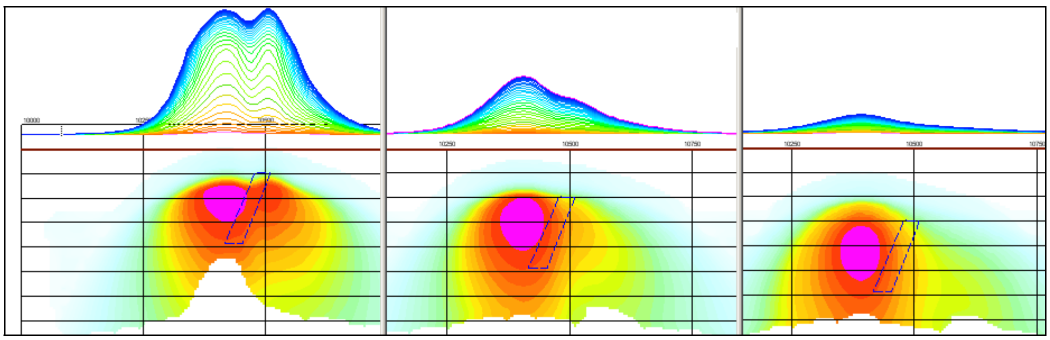


Fig.10 Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m),, conductivity 2.5 S/m.

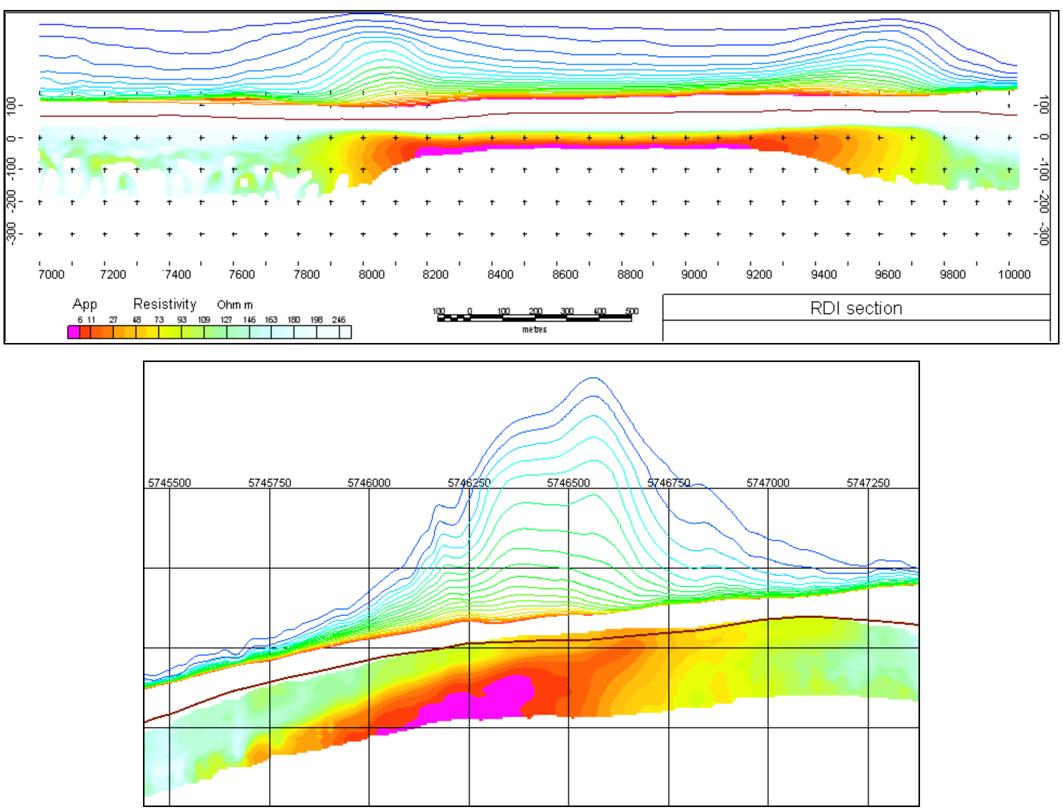
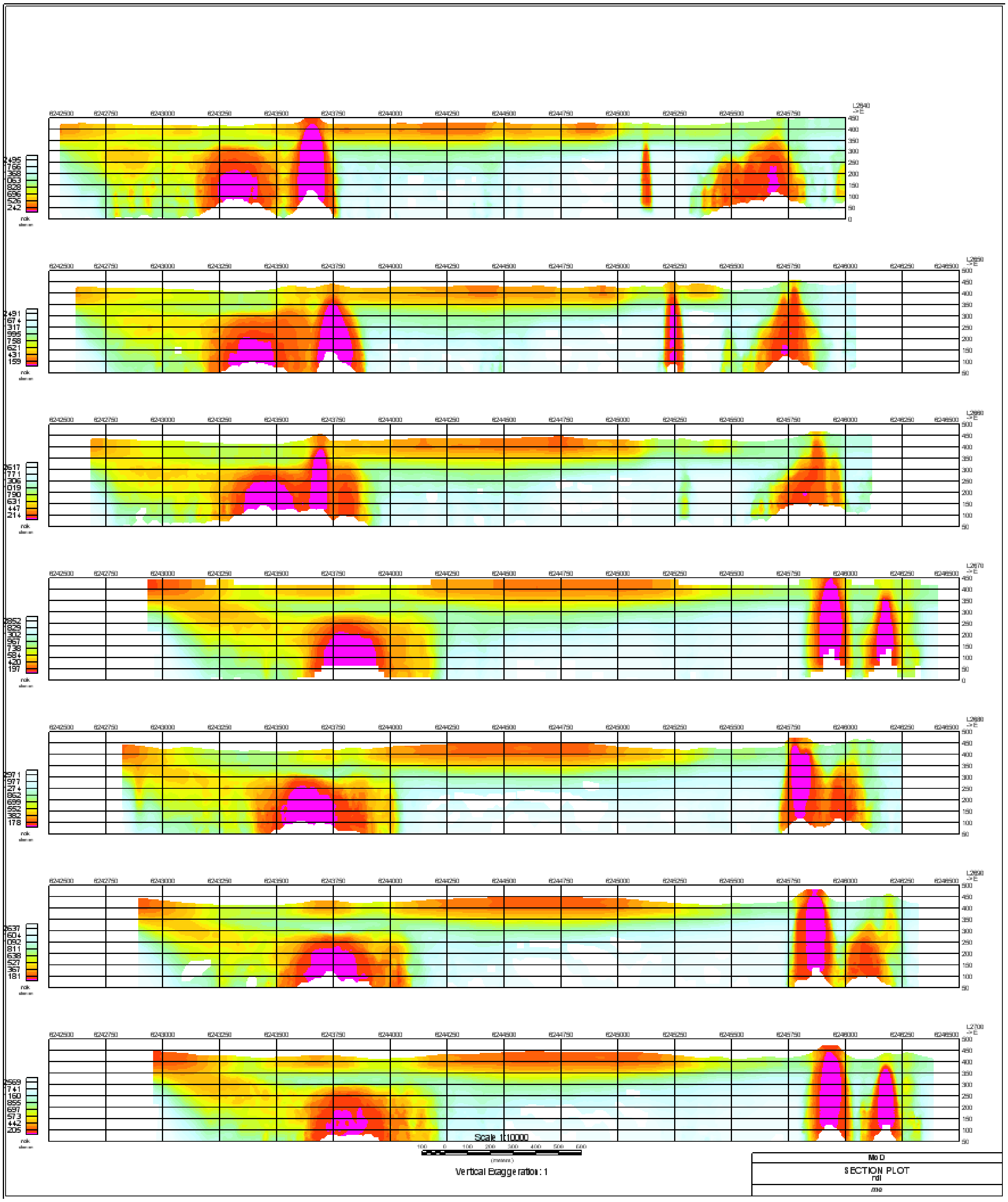


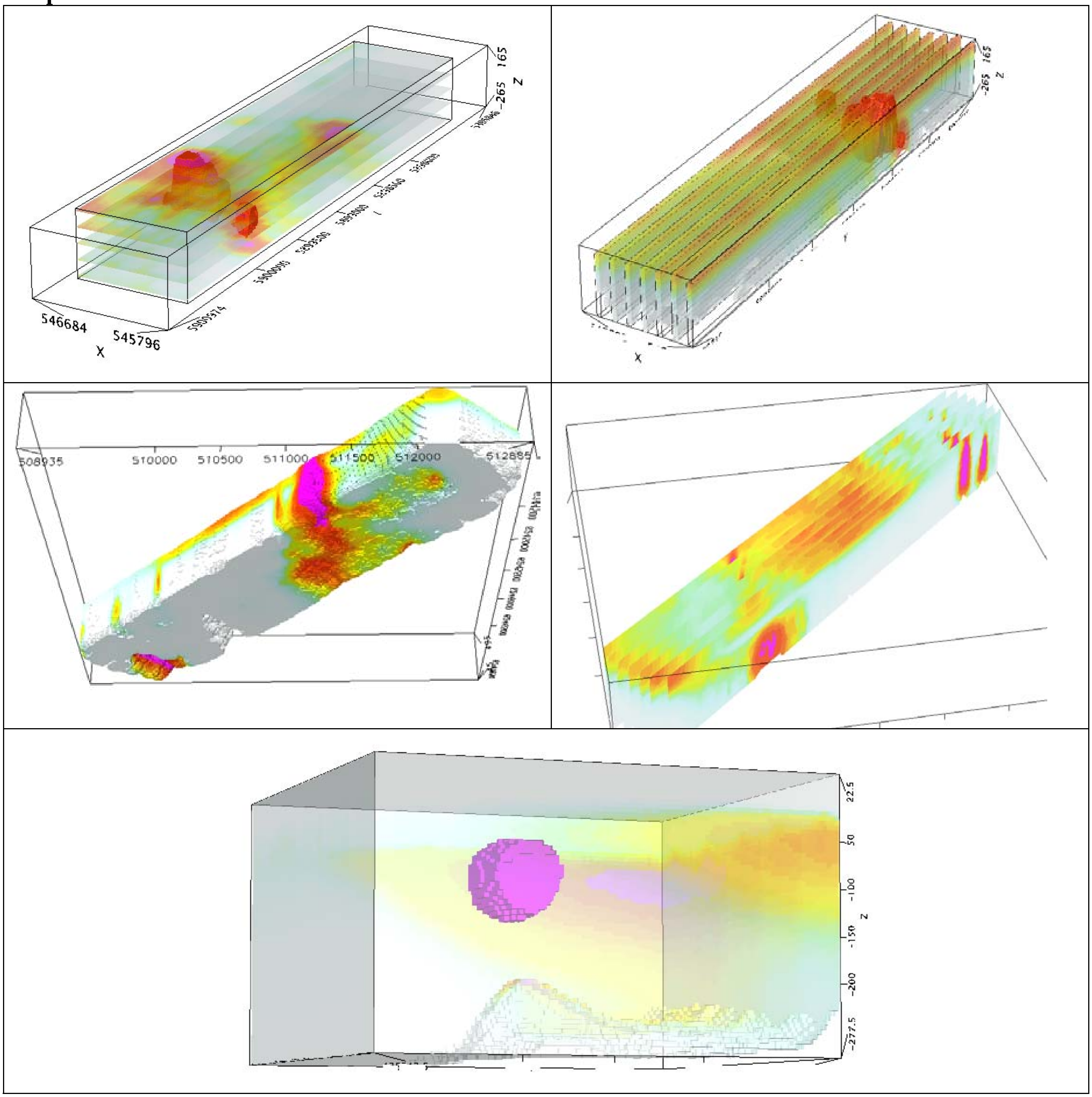
Fig.11 RDI section for the real horizontal and slightly dipping conductive layers

Forms of RDI presentation

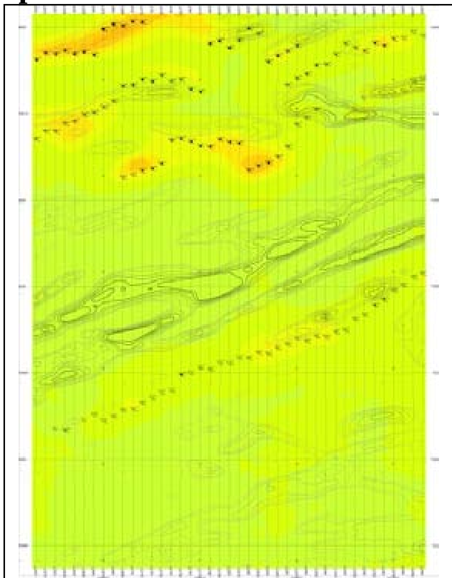
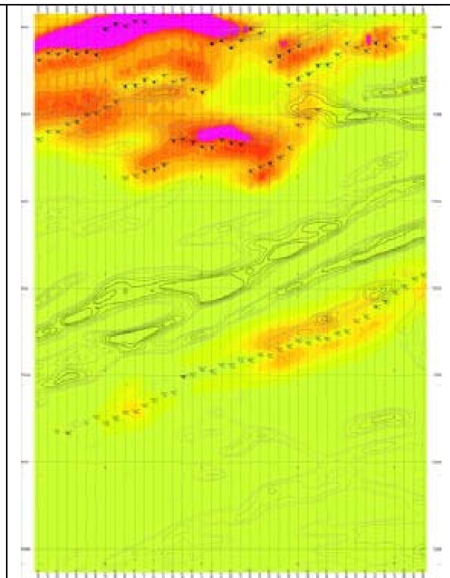
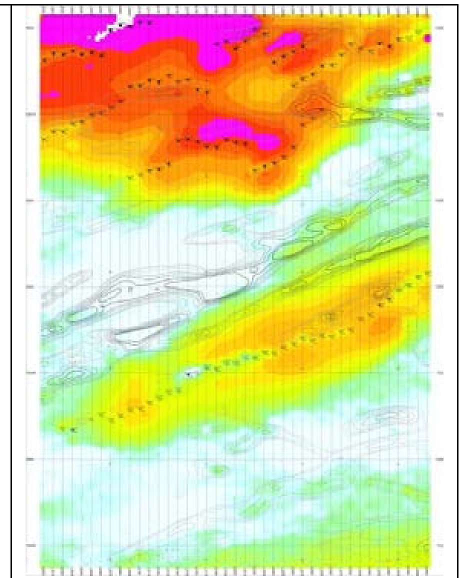
Presentation of series of lines



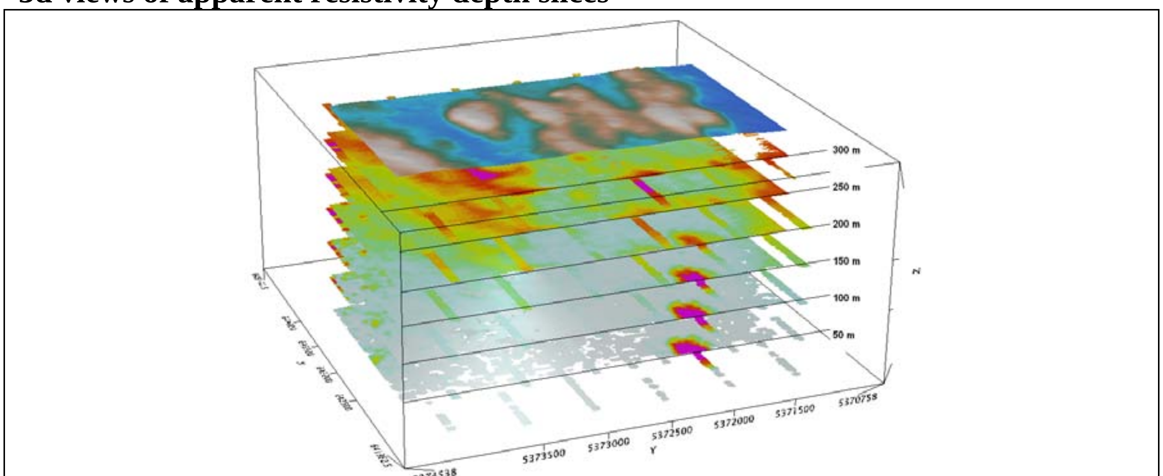
3d presentation of RDIs

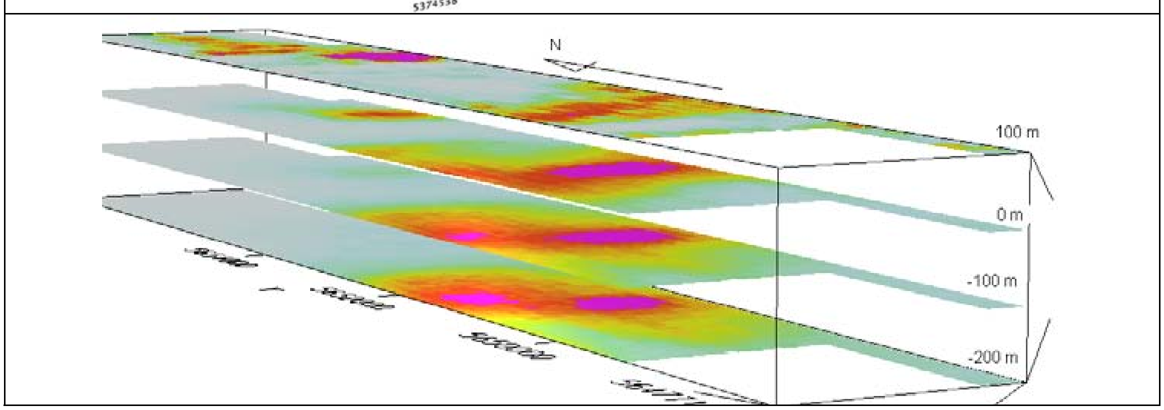


Apparent Resistivity Depth Slices plans

		
0 m (surface)	-100 m	-200 m

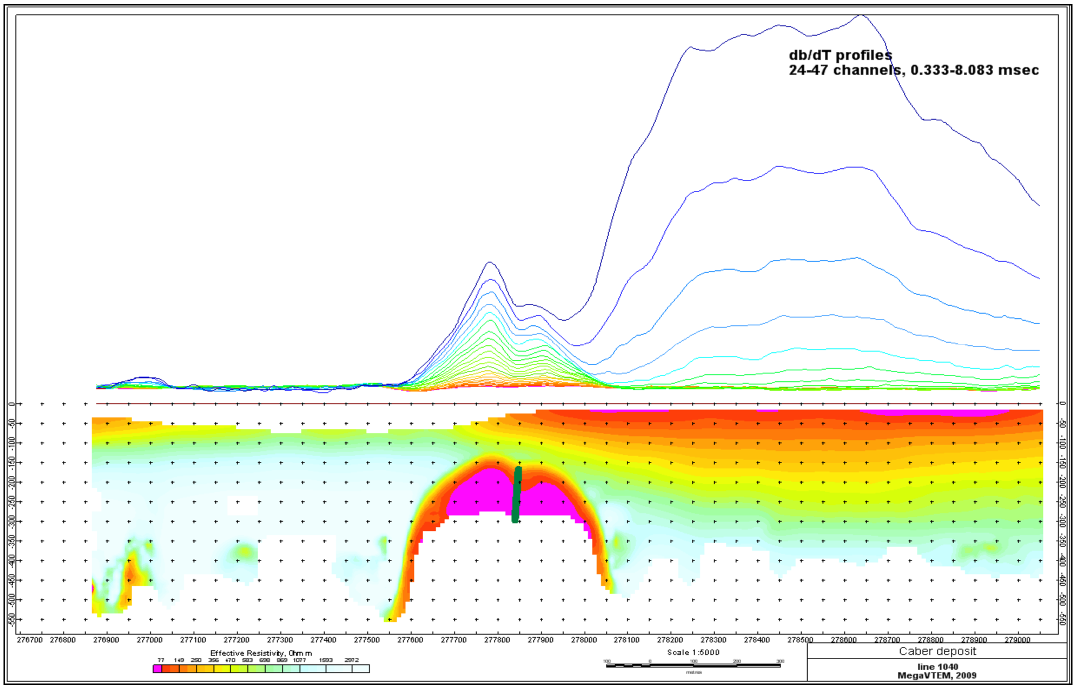
3d views of apparent resistivity depth slices



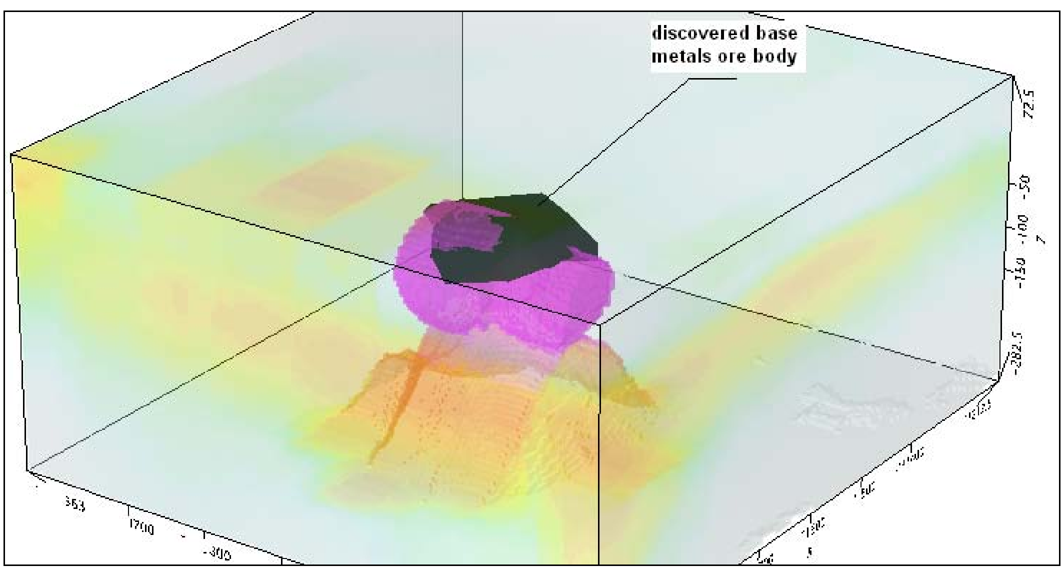


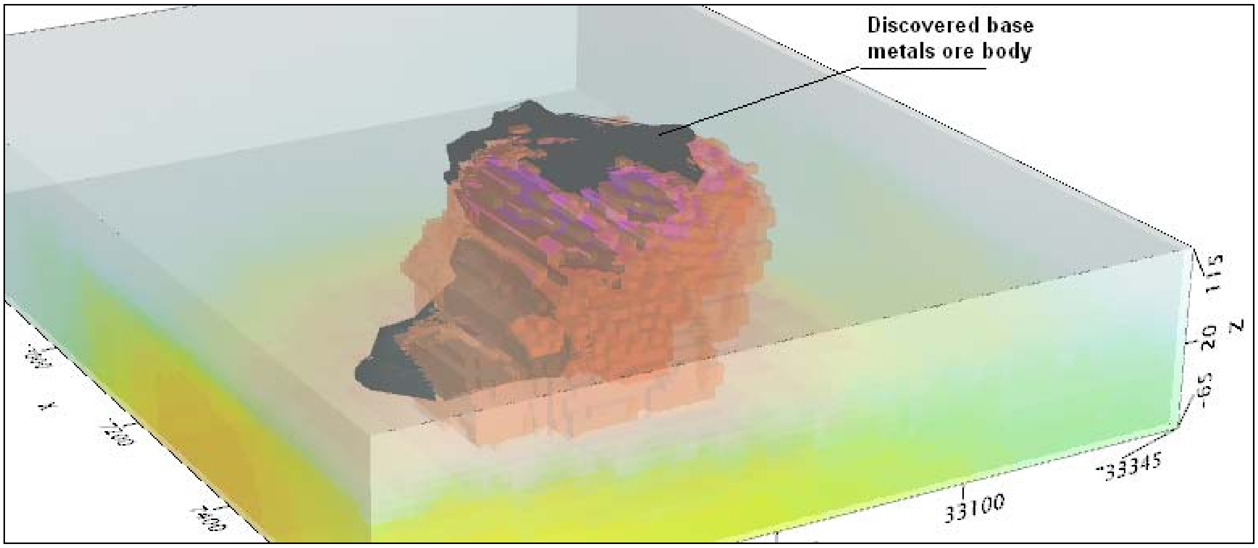
Real base metal targets in comparison with RDIs:

RDI section of the line over Caber deposit (“thin” subvertical plate target and conductive overburden.



3d RDI voxels with base metals ore bodies (Middle East):





Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.
April 2011

AIRBORNE GEOPHYSICAL DATA

DVD-ROM

Survey name:	Columbia Shear Property
Location:	Port Alberni, BC
Job No.:	11190
Client:	Gold Ridge Exploration Inc.
Survey date:	August 27th - September 4th 2011
Survey company name:	Geotech Ltd.
Total line-km:	261
Archive creation date:	Sept 2011
Aircraft type:	Astar 350 B3 helicopter registration C-GABH
Base of operation:	Port Albernia, BC

Airborne Magnetometer

Model:	Geometrics
Type:	Cesium-vapour
Sample Interval:	10 Hz (0.1 seconds); 2-3 metres
Sensitivity:	0.02 nT
Mount:	Towed bird, 13 metres below helicopter
Height above ground:	143 metres

Airborne EM

Model:	Geotech Ltd.
Type:	VTEM
Number of channels:	32 (0.220 - 7.036ms)
Sample Interval:	10 Hz (0.1 seconds); 2-3 metres
Mount:	Towed ring, 42 metres below helicopter
Transmitter Loop diameter:	17.6 m
Transmitter Number of turns:	4
Current:	240 Amp
Peak Dipole moment:	233,456 nIA
Pulse width:	3.3 ms
Receiver Loop diameter:	1.2 m
Receiver number of turns:	100
Receiver effective area:	113.04 m2
Height above ground:	121 metres
Mean terrain clearance:	156 m

X-Coil Section

X Coil diameter:	0.32 m
Number of turns:	245
Effective coil area:	19.69 m2

Navigation type:	NovAtel's CDGPS enable Propak V3-RT20 GPS receiver (on the tail of the helicopter)
Radar altimeter:	Terra TRA3000/TRI-40

Survey block   Traverse Line spacing (m)   Area (Km2)   Planned Line-km
        Actual Line-km Flight direction   Line numbers

Columbia Shear	Traverse: 150		34	236	242.5
	N 70° E / N 250° E	L1000-L1580			
	Tie: 1500			25	25.1
	N 160° E / N 340° E	T1800-T1830			
TOTAL			34	261	267.6

AIRBORNE GEOPHYSICAL DIGITAL ARCHIVES

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

- DVD structure.

There are two (2) main directories;

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

Databases in Geosoft GDB format;

Channel name	Units	Description
X:	metres	NAD83 / UTM Zone 10 North
Y:	metres	NAD83 / UTM Zone 10 North
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Z:	metres	GPS antenna elevation (Geoid)
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
SFz[14]:	pV/(A*m4)	Z dB/dt 96 microsecond time channel
SFz[15]:	pV/(A*m4)	Z dB/dt 110 microsecond time channel
SFz[16]:	pV/(A*m4)	Z dB/dt 126 microsecond time channel
SFz[17]:	pV/(A*m4)	Z dB/dt 145 microsecond time channel
SFz[18]:	pV/(A*m4)	Z dB/dt 167 microsecond time channel
SFz[19]:	pV/(A*m4)	Z dB/dt 192 microsecond time channel
SFz[20]:	pV/(A*m4)	Z dB/dt 220 microsecond time channel
SFz[21]:	pV/(A*m4)	Z dB/dt 253 microsecond time channel
SFz[22]:	pV/(A*m4)	Z dB/dt 290 microsecond time channel
SFz[23]:	pV/(A*m4)	Z dB/dt 333 microsecond time channel
SFz[24]:	pV/(A*m4)	Z dB/dt 383 microsecond time channel
SFz[25]:	pV/(A*m4)	Z dB/dt 440 microsecond time channel
SFz[26]:	pV/(A*m4)	Z dB/dt 505 microsecond time channel
SFz[27]:	pV/(A*m4)	Z dB/dt 580 microsecond time channel
SFz[28]:	pV/(A*m4)	Z dB/dt 667 microsecond time channel
SFz[29]:	pV/(A*m4)	Z dB/dt 766 microsecond time channel

SFz[30]:	pV/(A*m4)	Z dB/dt 880 microsecond time channel
SFz[31]:	pV/(A*m4)	Z dB/dt 1010 microsecond time channel
SFz[32]:	pV/(A*m4)	Z dB/dt 1161 microsecond time channel
SFz[33]:	pV/(A*m4)	Z dB/dt 1333 microsecond time channel
SFz[34]:	pV/(A*m4)	Z dB/dt 1531 microsecond time channel
SFz[35]:	pV/(A*m4)	Z dB/dt 1760 microsecond time channel
SFz[36]:	pV/(A*m4)	Z dB/dt 2021 microsecond time channel
SFz[37]:	pV/(A*m4)	Z dB/dt 2323 microsecond time channel
SFz[38]:	pV/(A*m4)	Z dB/dt 2667 microsecond time channel
SFz[39]:	pV/(A*m4)	Z dB/dt 3063 microsecond time channel
SFz[40]:	pV/(A*m4)	Z dB/dt 3521 microsecond time channel
SFz[41]:	pV/(A*m4)	Z dB/dt 4042 microsecond time channel
SFz[42]:	pV/(A*m4)	Z dB/dt 4641 microsecond time channel
SFz[43]:	pV/(A*m4)	Z dB/dt 5333 microsecond time channel
SFz[44]:	pV/(A*m4)	Z dB/dt 6125 microsecond time channel
SFz[45]:	pV/(A*m4)	Z dB/dt 7036 microsecond time channel
SFx[20]:	pV/(A*m4)	X dB/dt 220 microsecond time channel
SFx[21]:	pV/(A*m4)	X dB/dt 253 microsecond time channel
SFx[22]:	pV/(A*m4)	X dB/dt 290 microsecond time channel
SFx[23]:	pV/(A*m4)	X dB/dt 333 microsecond time channel
SFx[24]:	pV/(A*m4)	X dB/dt 383 microsecond time channel
SFx[25]:	pV/(A*m4)	X dB/dt 440 microsecond time channel
SFx[26]:	pV/(A*m4)	X dB/dt 505 microsecond time channel
SFx[27]:	pV/(A*m4)	X dB/dt 580 microsecond time channel
SFx[28]:	pV/(A*m4)	X dB/dt 667 microsecond time channel
SFx[29]:	pV/(A*m4)	X dB/dt 766 microsecond time channel
SFx[30]:	pV/(A*m4)	X dB/dt 880 microsecond time channel
SFx[31]:	pV/(A*m4)	X dB/dt 1010 microsecond time channel
SFx[32]:	pV/(A*m4)	X dB/dt 1161 microsecond time channel
SFx[33]:	pV/(A*m4)	X dB/dt 1333 microsecond time channel
SFx[34]:	pV/(A*m4)	X dB/dt 1531 microsecond time channel
SFx[35]:	pV/(A*m4)	X dB/dt 1760 microsecond time channel
SFx[36]:	pV/(A*m4)	X dB/dt 2021 microsecond time channel
SFx[37]:	pV/(A*m4)	X dB/dt 2323 microsecond time channel
SFx[38]:	pV/(A*m4)	X dB/dt 2667 microsecond time channel
SFx[39]:	pV/(A*m4)	X dB/dt 3063 microsecond time channel
SFx[40]:	pV/(A*m4)	X dB/dt 3521 microsecond time channel
SFx[41]:	pV/(A*m4)	X dB/dt 4042 microsecond time channel
SFx[42]:	pV/(A*m4)	X dB/dt 4641 microsecond time channel
SFx[43]:	pV/(A*m4)	X dB/dt 5333 microsecond time channel
SFx[44]:	pV/(A*m4)	X dB/dt 6125 microsecond time channel
SFx[45]:	pV/(A*m4)	X dB/dt 7036 microsecond time channel
BFz	(pV*ms)/(A*m4)	Z B-Field data for time channels 14 to 45
BFx	(pV*ms)/(A*m4)	X B-Field data for time channels 20 to 45
SFx_FF	pV/(A*m4)	Fraser filtered X dB/dt for time channels 20 to 45
BFx_FF	(pV*ms)/(A*m4)	Fraser filtered X B-Field for time channels 20 to 45
PLM:		60 Hz power line monitor

Decay Sampling Scheme

VTEM Decay Sampling scheme

Array Index	(Microseconds) Time Gate	Start	End	Width
0	0	-3	3	6

1	5	3	8	5
2	10	8	13	5
3	16	13	18	5
4	21	18	23	5
5	26	23	29	5
6	31	29	34	5
7	36	34	39	5
8	42	39	45	6
9	48	45	51	7
10	55	51	59	8
11	63	59	68	9
12	73	68	78	10
13	83	78	90	12
14	96	90	103	13
15	110	103	118	15
16	126	118	136	18
17	145	136	156	20
18	167	156	179	23
19	192	179	206	27
20	220	206	236	30
21	253	236	271	35
22	290	271	312	40
23	333	312	358	46
24	383	358	411	53
25	440	411	472	61
26	505	472	543	70
27	580	543	623	81
28	667	623	716	93
29	766	716	823	107
30	880	823	945	122
31	1,010	945	1,086	141
32	1,161	1,086	1,247	161
33	1,333	1,247	1,432	185
34	1,531	1,432	1,646	214
35	1,760	1,646	1,891	245
36	2,021	1,891	2,172	281
37	2,323	2,172	2,495	323
38	2,667	2,495	2,865	370
39	3,063	2,865	3,292	427
40	3,521	3,292	3,781	490
41	4,042	3,781	4,341	560
42	4,641	4,341	4,987	646
43	5,333	4,987	5,729	742
44	6,125	5,729	6,581	852
45	7,036	6,581	7,560	979
46	8,083	7,560	8,685	1,125
47	9,286	8,685	9,977	1,292
48	10,667	9,977	11,458	1,482
49	12,250	11,458	13,161	1,703

- Database of the VTEM Waveform “11190_Waveform_Final.gdb” in Geosoft GDB format, containing the following channels:

Time: Sampling rate interval, 5.2082 microseconds

Rx_Volt: Output voltage of the receiver coil (Volt)
Tx_Curr: Output current of the transmitter (Amp)

- Grids in Geosoft GRD format, as follows:

TMI: Total magnetic intensity (nT)
BFz26: B-Field Z Component Channel 26 (Time Gate 0.505 ms)
TAUSFz: dB/dt Calculated Time Constant (TAU)
TAUBFz: B-Field Calculated Time Constant (TAU)
CVG: Calculated Vertical Derivative of TMI (CVG)
DEM: Digital Elevation Model

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information.
A grid cell size of 37.5 metres was used.

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

11190_10K_dBdt: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11190_10K_bfield: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
11190_10K_BFz26: B-Field late time Z Component Channel 26, Time Gate 0.505 ms color image.
11190_10K_TMI: Total magnetic intensity (TMI) color image and contours.
11190_10K_TAUSFz: dB/dt Calculated Time Constant (TAU) with contours of anomaly areas of the Calculated Vertical Derivative of TMI

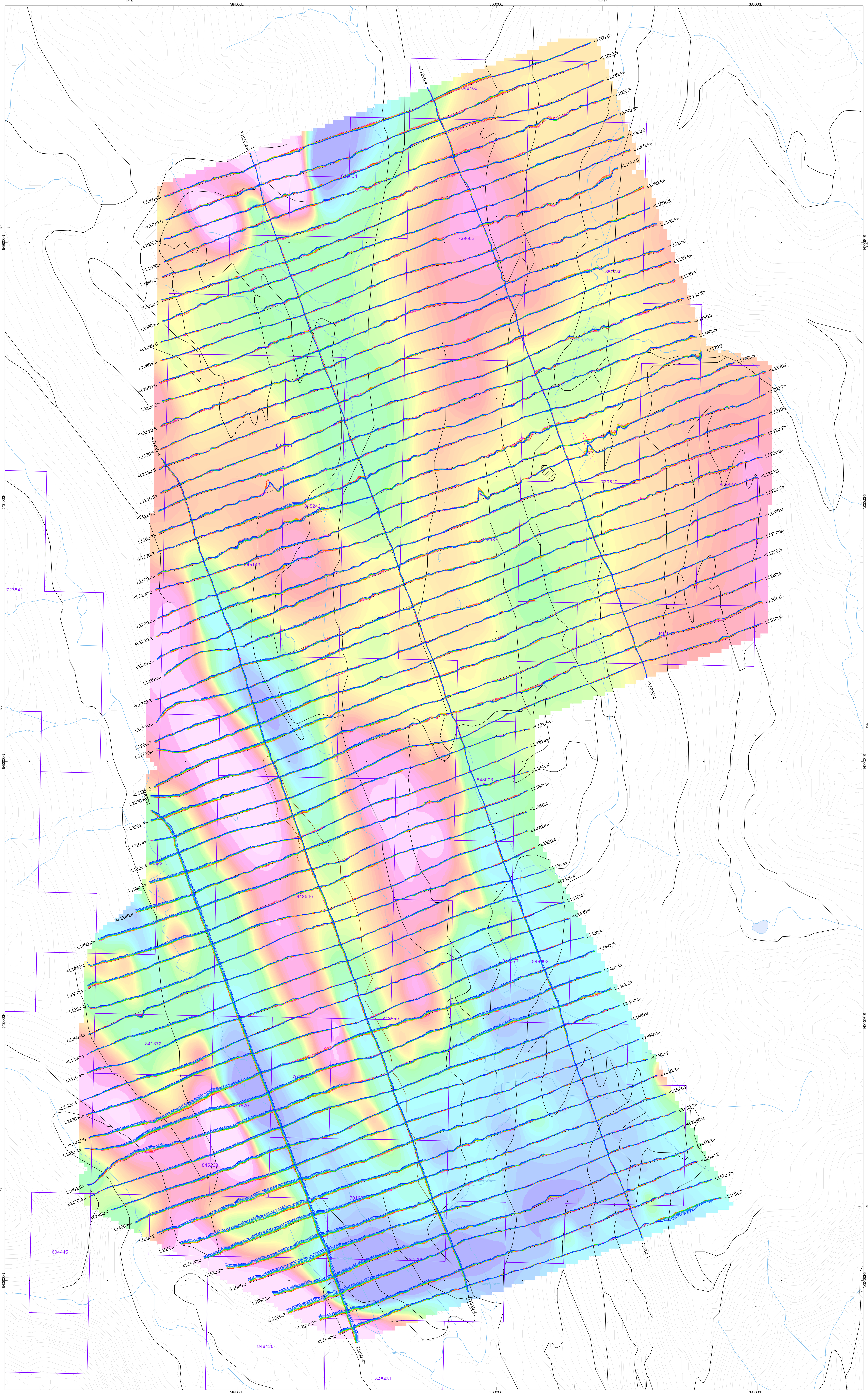
Maps are also presented in PDF format.

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

- A Google Earth file "11190_ColumbiaShear.kml" is included, showing the flight path of each block.
Free versions of Google Earth software from:
HUhttp://earth.google.com/download-earth.html

Flown and processed by:

Geotech Ltd.
245 Industrial Parkway North
Aurora, Ontario, L4G 4C4
Phone: 905.841.5004
Fax: 905.841.0611
www.geotech.ca



GEOTECH LTD.

SURVEY SPECIFICATIONS:

Survey Date: August 27th - September 4th 2011
Survey Base: Port Alberni, British Columbia
Aircraft: Aerospatiale A-Star 350 B3 (C-GABH)
Nominal Survey Line Spacing: 150 Meters
Nominal Survey Line Direction: N 70° E / N 250° E
Nominal Tie Line Spacing: 1500 Meters
Nominal Tie Line Direction: N 160° E / N 340° E
Nominal Terrain Clearance: 156 Meters
EM Loop: Towed at a mean distance of 35 meters below the Helicopter
Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

INSTRUMENTS

Geotech Time Domain Electromagnetic System (VTEM)
Concentric Rx/Tx Geometry
Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
Dipole Moment: 233,456 nIA
Transmitter Wave Form: Trapezoid, Pulse Width 3.3 ms.
Geometrics High Sensitivity Cesium Magnetometer
Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

Datum: NAD 83
Projection: Universal Transverse Mercator
Central Meridian: 123°W (Zone 10N)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m
Major Axis: 6378137.000
Eccentricity: 0.081819191
NTS: 092F02 & 092C15

Profiles scale 1 mm = 0.004 (pV*ms)/(A*m^4)
(Linear between +/-1 (pV*ms)/(A*m^4))
logarithmic above 1 (pV*ms)/(A*m^4)

0.220 ms (B-field)
0.253 ms (B-field)
0.290 ms (B-field)
0.333 ms (B-field)
0.383 ms (B-field)
0.440 ms (B-field)
0.505 ms (B-field)
0.580 ms (B-field)
0.667 ms (B-field)
0.766 ms (B-field)
0.880 ms (B-field)
1.010 ms (B-field)
1.161 ms (B-field)
1.333 ms (B-field)
1.531 ms (B-field)
1.760 ms (B-field)
2.021 ms (B-field)
2.323 ms (B-field)
2.667 ms (B-field)
3.063 ms (B-field)
3.521 ms (B-field)
4.042 ms (B-field)
4.641 ms (B-field)
5.333 ms (B-field)
6.125 ms (B-field)
7.036 ms (B-field)

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54197
54189

TMI
(nT)

TOPOGRAPHIC LEGEND:

Roads
Trails
Streams / Rivers
Contours
Lakes / Ponds
Wetlands
Mining Claims

Scale 1:10000
100 0 100 200 300 400 500
(meters)
NAD83 / UTM zone 10N

The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data
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Geogratis (www.geogratis.ca) Geocommunities (www.geocomm.com)
Claims (http://www.empr.gov.bc.ca)

Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

Geotech VTEM System
VTEM B-Field Z Component Profiles
Time Gates 0.220 - 7.036 ms
Over Total Magnetic Intensity

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

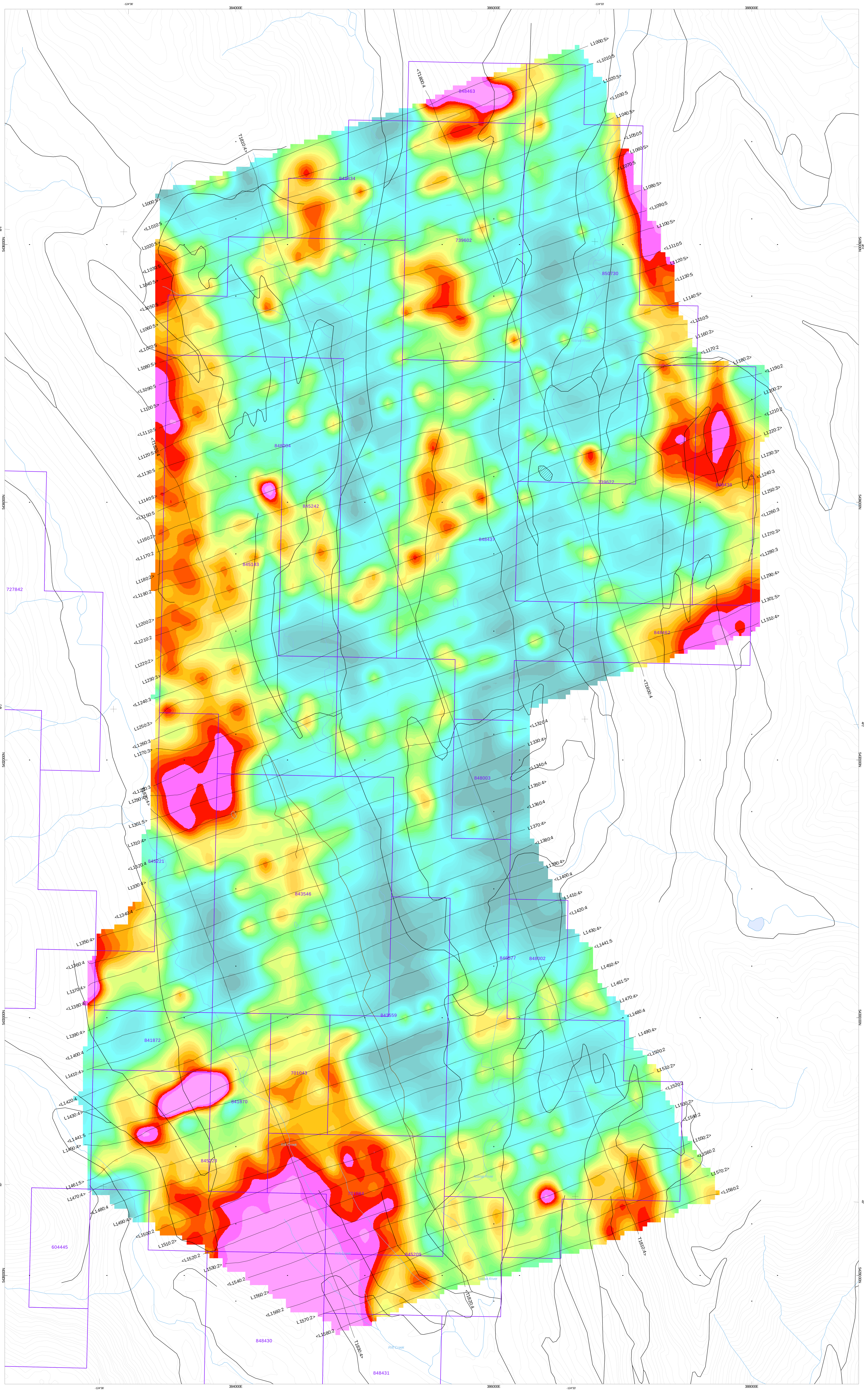
September 2011

GEOTECH LTD.

SURVEY SPECIFICATIONS:
Survey Date: August 27th - September 4th 2011
Survey Base: Port Alberni, British Columbia
Aircraft: Aerospatiale A-Star 350 B3 (C-GABH)
Nominal Survey Line Spacing: 150 Meters
Nominal Survey Line Direction: N 70° E / N 250° E
Nominal Tie Line Spacing: 1500 Meters
Nominal Tie Line Direction: N 160° E / N 340° E
Nominal Terrain Clearance: 156 Meters
EM Loop: Towed at a mean distance of 35 meters below the Helicopter
Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

INSTRUMENTS
Geotech Time Domain Electromagnetic System (VTEM)
Concentric Rx/Tx Geometry
Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
Dipole Moment: 233,456 nIA
Transmitter Wave Form: Trapezoid, Pulse Width 3.3 ms.
Geometrics High Sensitivity Cesium Magnetometer
Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION
Datum: NAD 83
Projection: Universal Transverse Mercator
Central Meridian: 123°W (Zone 10N)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m
Major Axis: 6378137.000
Eccentricity: 0.081819191
NTS: 092F02 & 092C15



Scale 1:10000
100 0 100 200 300 400 500
(meters)
NAD83 / UTM zone 10N

The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data
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Claims (http://www.empr.gov.bc.ca)

Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

Geotech VTEM System
VTEM B-Field Z Component
Channel 26, Time Gate 0.505 ms

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

September 2011

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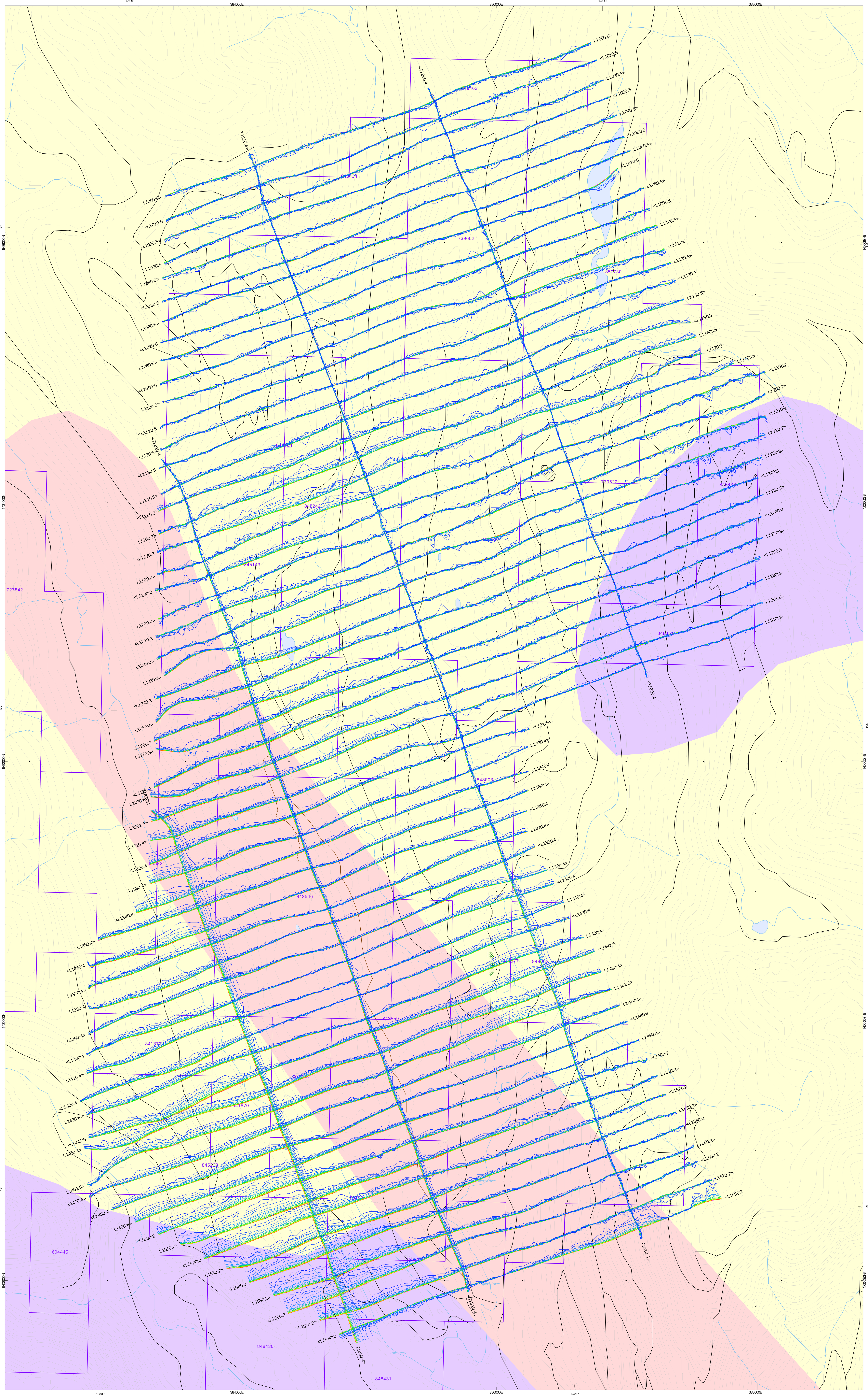

Scale 1:10,000,000

100 0 100 200 (kilometers) NAD83 / UTM zone 10N

SURVEY SPECIFICATIONS:

Survey Date: August 27th - September 4th 2011
Survey Base: Port Alberni, British Columbia
Aircraft: Aerospatiale A-Star 350 B3 (C-GABH)
Nominal Survey Line Spacing: 150 Meters
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INSTRUMENTS

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Concentric Rx/Tx Geometry
Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
Dipole Moment: 233,456 nIA
Transmitter Wave Form: Trapezoid, Pulse Width 3.3 ms.
Geometrics High Sensitivity Cesium Magnetometer
Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

Datum: NAD 83
Projection: Universal Transverse Mercator
Central Meridian: 123°W (Zone 10N)
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m
Major Axis: 6378137.000
Eccentricity: 0.081819191
NTS: 092F02 & 092C15

Profiles scale 1 mm = 0.005 (pV/A*m^4)

Linear between +/-1 (pV/A*m^4)
logarithmic above 1 (pV/A*m^4)

0.220 ms
0.253 ms
0.290 ms
0.333 ms
0.383 ms
0.440 ms
0.505 ms
0.580 ms
0.667 ms
0.766 ms
0.880 ms
1.010 ms
1.161 ms
1.333 ms
1.531 ms
1.760 ms
2.021 ms
2.323 ms
2.667 ms
3.063 ms
3.521 ms
4.042 ms
4.641 ms
5.333 ms
6.125 ms
7.036 ms

GEOLOGY LEGEND:

arc volcanics clastics and platform carbonates; basement of Wrangellia
Plutonic suite
Rift Volcanics and Marine Carbonate

TOPOGRAPHIC LEGEND:

Roads
Trails
Streams / Rivers
Contours
Lakes / Ponds
Wetlands
Mining Claims

Scale 1:10000

100 0 100 200 300 400 500
(meters)
NAD83 / UTM zone 10N

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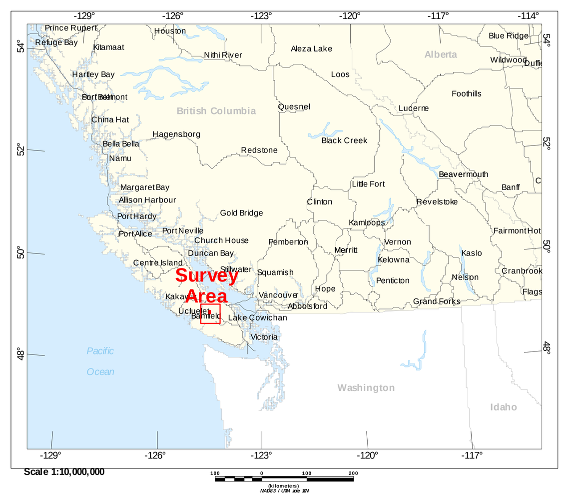
Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

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

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

September 2011

GEOTECH LTD.



SURVEY SPECIFICATIONS:
- Survey Date: August 27th - September 4th 2011
- Survey Base: Port Alberni, British Columbia
- Aircraft: Aerospatiale A-Star 350 B3 (C-GABH)
- Nominal Survey Line Spacing: 150 Meters
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- Nominal Tie Line Spacing: 1500 Meters
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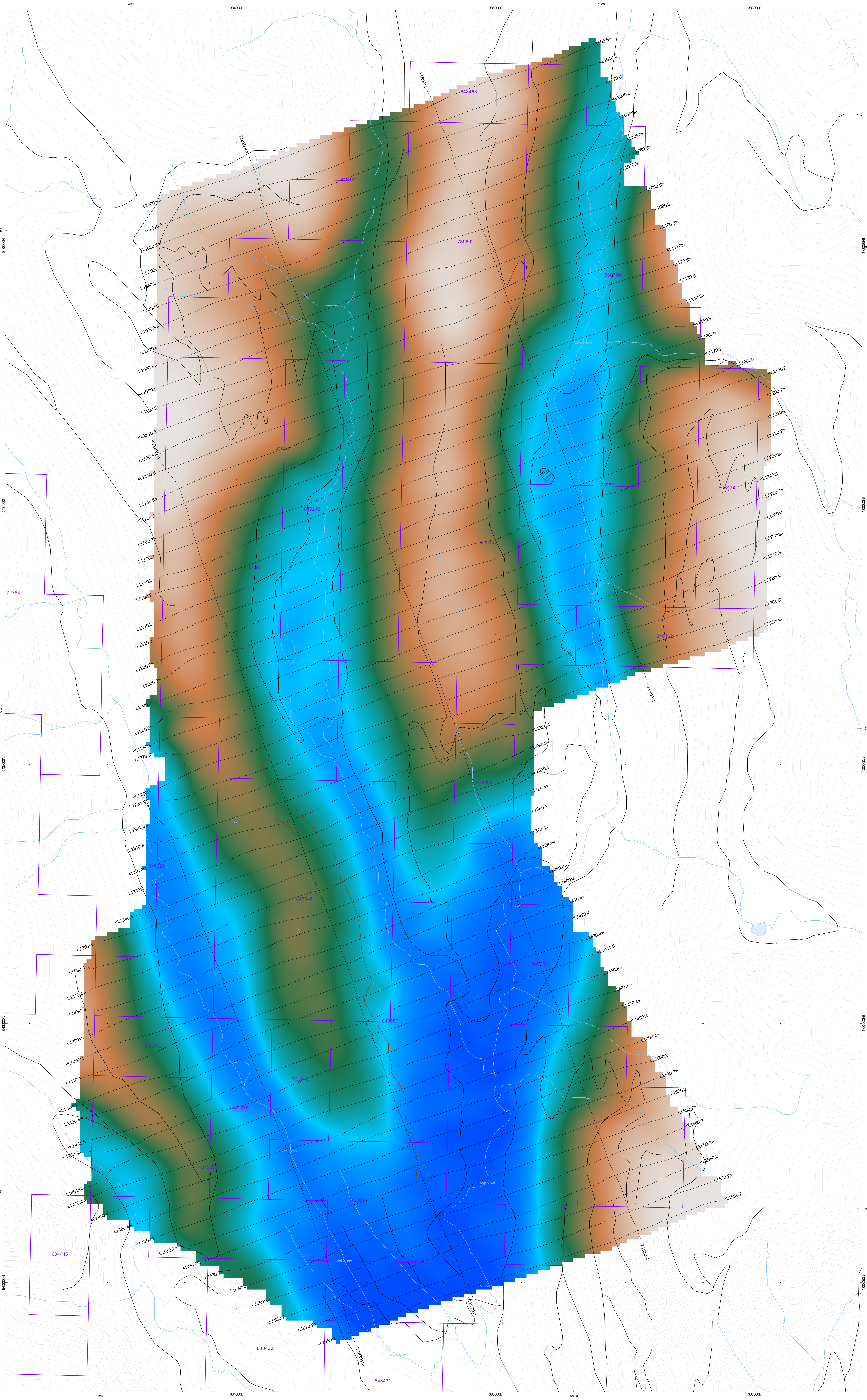
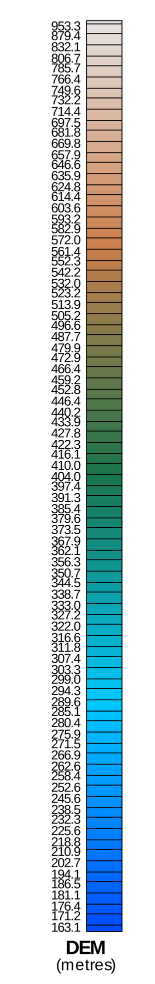
- Nominal Terrain Clearance: 156 Meters
- EM Loop: Towed at a mean distance of 35 meters below the Helicopter
- Magnetic Sensor: Towed at a mean distance of 13 meters below the Helicopter

INSTRUMENTS
- Geotech Time Domain Electromagnetic System (VTEM)
- Concentric Rx/Tx Geometry
- Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
- Dipole Moment: 233,456 nIA
- Transmitter Wave Form: Trapezoid, Pulse Width 3.3 ms.
- Geometrics High Sensitivity Cesium Magnetometer
- Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION
- Datum: NAD 83
- Projection: Universal Transverse Mercator
- Central Meridian: 123°W (Zone 10N)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m
- Major Axis: 6378137.000
- Eccentricity: 0.081819191
- NTS: 092F02 & 092C15





TOPOGRAPHIC LEGEND:
- Roads
- Trails
- Streams / Rivers
- Contours
- Lakes / Ponds
- Wetlands
- Mining Claims

Scale 1:10000

100 0 100 200 300 400 500

(meters)

NAD83 / UTM zone 10N

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Claims (http://www.empr.gov.bc.ca)

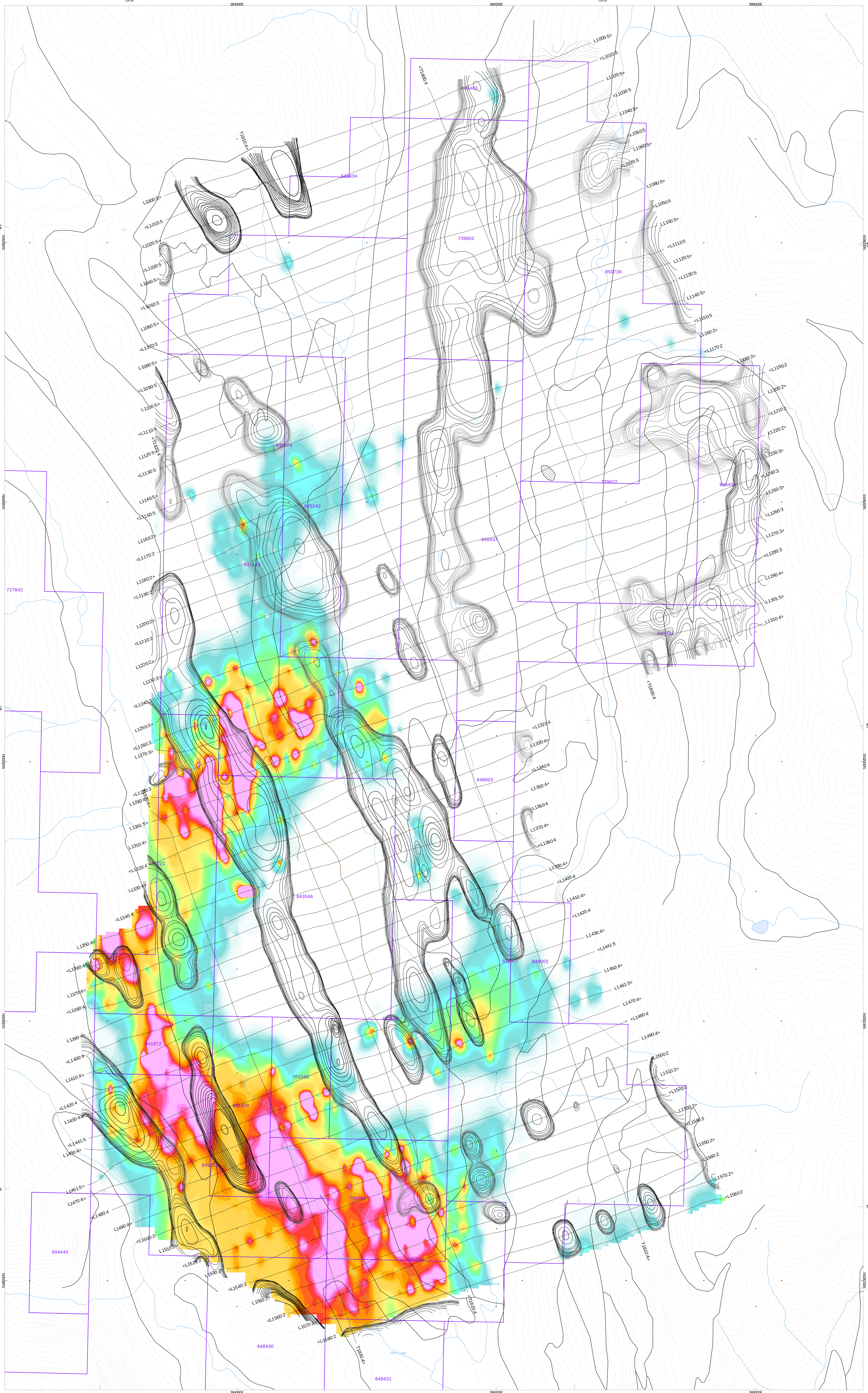
Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

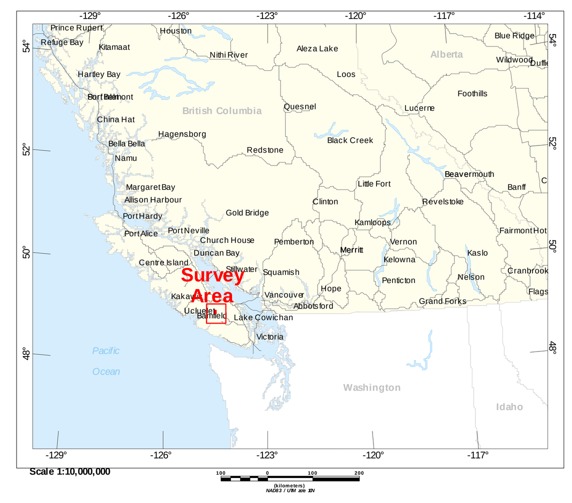
Geotech VTEM System
Digital Elevation Model (DEM)

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

September 2011

GEOTECH LTD.





SURVEY SPECIFICATIONS:
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- Survey Base: Port Alberni, British Columbia
- Aircraft: Aerospatiale A-Star 350 B3 (C-GABH)
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INSTRUMENTS
- Geotech Time Domain Electromagnetic System (VTEM)
- Concentric Rx/Tx Geometry
- Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
- Dipole Moment: 233,456 nIA
- Transmitter Wave Form: Trapezoid, Pulse Width 3.3 ms.
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- Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION
- Datum: NAD 83
- Projection: Universal Transverse Mercator
- Central Meridian: 123°W (Zone 10N)
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- Major Axis: 6378137.000
- Eccentricity: 0.081819191
- NTS: 092F02 & 092C15

TAU dB/dT
msec

TOPOGRAPHIC LEGEND:
- Roads
- Trails
- Streams / Rivers
- Contours
- Lakes / Ponds
- Wetlands
- Mining Claims

Scale 1:10000
(meters)
NAD83 / UTM zone 10N

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Claims (http://www.empr.gov.bc.ca)

Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

Geotech VTEM System
VTEM Time Constant dB/dt (TAU) over CVG contours calculated from TMI

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

September 2011

GEOTECH LTD.

SURVEY SPECIFICATIONS:

Survey Date: August 27th - September 4th 2011
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Transmitter Loop: Diameter 17.6 Meters,Base Frequency 30 Hz
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Geometrics High Sensitivity Cesium Magnetometer
Mag Resolution: 0.02 nT at 10 samples/sec

MAP PROJECTION

Datum: NAD 83
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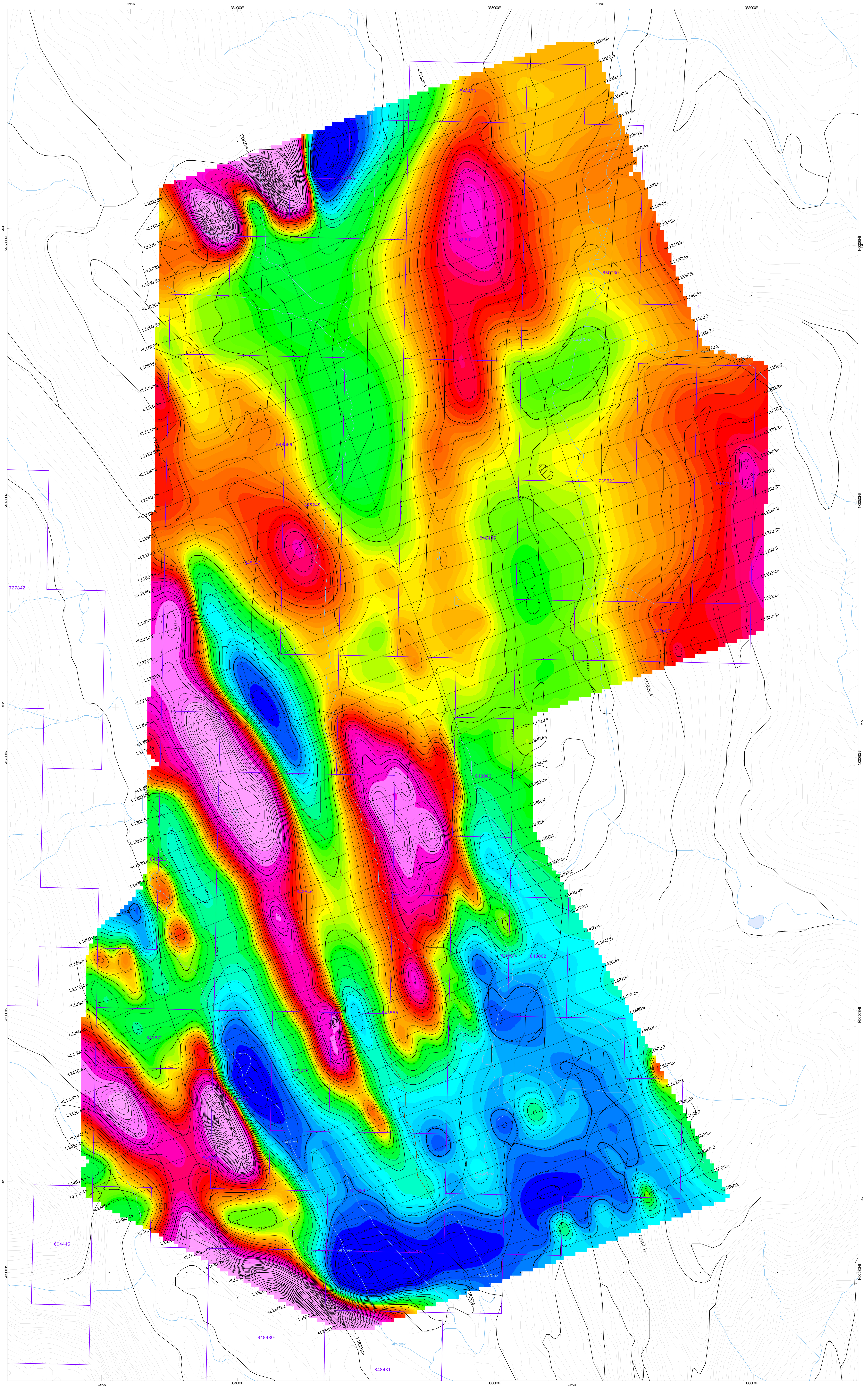
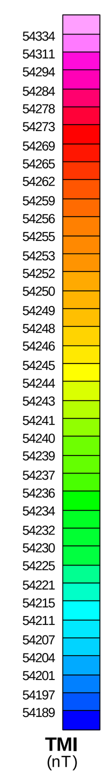
Central Scale Factor: 0.9996
False Easting/Northing: 500,000m/0m
Major Axis: 6378137.000
Eccentricity: 0.081819191
NTS: 092F02 & 092C15





TMI Contour Intervals:

10 nT
50 nT
250 nT

TOPOGRAPHIC LEGEND:

Roads
Trails
Streams / Rivers
Contours
Lakes / Ponds
Wetlands
Mining Claims

Scale 1:10000

(meters)

NAD83 / UTM zone 10N

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Gold Ridge Exploration Inc.
Columbia Shear Project
Port Alberni, British Columbia

Geotech VTEM System
Total Magnetic Intensity (TMI)

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245 Industrial Parkway North,
Aurora, Ontario, Canada L4G 4C4
www.geotech.ca

September 2011