# BC Geological Survey Assessment Report 31770 

## ALGORITHM MEDIA INC.

# A REPORT ON <br> TRANSIENT ELECTROMAGNETIC AND TOTAL FIELD MAGNETOMETER SURVEYS OF THE EASY JOE AND EASY JOE 2 MINERAL CLAIMS 

LILLOOET RIVER AREA, NEW WESTMINSTER MINING DIVISION BRITISH COLUMBIA

NTS: 092G16
Centred at: 540900E; 5532200N
Claim Owner of record: D. A. Heyman
Operator: Algorithm Media inc.
Geological Consultants: Sadlier-Brown Consulting Ltd.
Geophysical Consultant/Contractor: Frontier Geosciences Inc.
Report Prepared by: T.L. Sadlier-Brown, P.Geo.

January $29^{\text {th }} 2010$

## A REPORT ON

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LILLOOET RIVER AREA, NEW WESTMINSTER MINING DIVISION BRITISH COLUMBIA, (NTS 092G16)

By T.L. Sadlier-Brown, P.Geo.
January $29^{\text {th }} 2010$

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## SUMMARY

The Easy Joe and Easy Joe 2 Mineral tenures are situated in the Coast Range of southwest British Columbia, a region characterized, for the most part, by Mesozoic volcanic, sedimentary and plutonic rocks. The claims comprise 311.9 ha, more-or-less, and are in good standing to January 31st 2018. They cover an area underlain principally by volcanic rocks comprising the Brokenback Hill Formation, a lower Cretaceous geological terrain known to host several partially-explored precious metal occurrences. Prospecting and geological and geochemical surveys carried out during the late 1980s identified several mineralized structures in the area now covered by the Easy Joe and Easy Joe 2 claims including, in particular, a silver/base metal-bearing breccia and an auriferous shear zone. The latter, which is referred to here as the "Main" Showing, is the primary focus of this report. It was identified by geochemical prospecting and partially explored by a limited amount of follow-up trenching and drilling and consists of a zone of sheared volcanic rocks striking at $140^{\circ}$, dipping at from 70 to $75^{\circ}$ east. Where observed on the surface it is on the order of three metres wide but no reliable data on its strike length is available. The spatially-associated geochemical anomaly, however, is over 250 metres long and may actually indicate the presence of two parallel zones.

Native gold can be panned from both the weathered sheared rock as well as adjacent soils. Surface samples from the zone have produced assay results varying from 0.84 g/tonne over 3 metres to 13.63 g/tonne from a grab sample of weathered and oxidized rock. Five diamond drill holes were drilled in the area in 1989 and, while they all intersected the structures, core recoveries were poor and assay results from the intercepts varied from negligible to $5.39 \mathrm{~g} /$ tonne over a 0.5 metre indicated width. Owing to the lost core, neither the assay values nor the intercept widths are considered dependable. The available exploration data, however, is considered consistent with the presence of a gold-bearing shear zone potentially of sufficient size and tenor to be economically attractive.

The geophysical program under discussion here included transient electromagnetic (TEM) and total field magnetometer surveys carried out as partial fulfillment of a set of recommendations contained in a report prepared for Algorithm Media Inc. (Algorithm) in 2006 (Sadlier-Brown 2006). The survey's objective was to assess the sub-surface conductivity and magnetic responses in the area in order to provide data on the magnitude and configuration of the mineralized structure.

The field work was performed by Frontier Geosciences Inc. of North Vancouver, B.C. from October $20^{\text {th }}$ to 25th 2009 and is described in a report by Jennifer Porter and Cliff Candy dated October 2009. The report provides a magnetometer map, two sets of TEM maps and both magnetic and TEM profiles for each of the survey lines and is attached herewith as Appendix B. Interpretation of the geophysical data has identified three conductive zones and a magnetic feature indicative of lithological variations and/or structures such as faults and geological contacts. The conductive and magnetic linear feature strikes at about $140^{\circ}$ across the west-central part of the grid. It appears to coincide with the exposure of the Main Zone structure and is considered to be its geophysical expression. A geological follow-up of this and other features identified by the survey is strongly recommended in order to confirm the relationships between the geophysical and geological data and to rationalize the historical geochemical data with them.


Figure 1: Easy Joe Claim Location Map; Pemberton-Lillooet Lake area, southwest B.C.

## 1.0: INTRODUCTION

### 1.1 Terms of Reference

This report is submitted on behalf of the management of Algorithm Media Inc. (Algorithm) and David A. Heyman. It is intended as an account of a geophysical survey of part of the Easy Joe and Easy Joe 2 Claim Group to accompany a Statement of Work filed with the Ministry of Energy Mines and Petroleum Resources on January $22^{\text {nd }} 2010$ as event number 4463792.

The field work under discussion was performed by Discovery Consultants Ltd., Timberline Resources Ltd. and Frontier Geosciences Inc. Line cutting and survey grid establishment was done by Discovery and Timberline personnel between September $15^{\text {th }}$ and October $19^{\text {th }}$ 2009. The geophysical surveys were carried out from October $19^{\text {th }}$ and $25^{\text {th }} 2009$ by a three person crew provided by Frontier.

### 1.2 Property Description

The property comprises the Easy Joe and Easy Joe 2 Claims which are contiguous tenures acquired to cover a known gold occurrence and related geochemical anomaly. They area recorded in the New Westminster Mining Division, B.C. in the name of Mr. David A. Heyman of Langley, B.C. and held by Algorithm under terms of an option agreement with Mr. Heyman. The claims are assigned Tenure Numbers 523852 and 523853 and respectively comprise 207.946 and 103.955 ha more-or-less. The date of record for both claims is December $13^{\text {th }} 2005$ and they are in good standing to January 31st ${ }^{t}$ 2018. The claims were staked using the Mineral Titles On Line Tenuring System and, as such, have not been legally surveyed

### 1.3 Location and Access

The claims are located about 4 km northwest of the village of Skookumchuck, 32 km northwest of Harrison Lake and 74 km by road southeast of Pemberton. They are centred approximately at UTM coordinates 541000E, 5532000N and depicted in Figure 2 which is part of NTS Map 092G16..

Vehicle access from the Vancouver area is north via Highway 99 to Pemberton then southeast along the Lillooet River road (west side) to the Chief Paul Main, a logging road leading westerly from the West Side road south of the property near the Snowcap Creek Bridge. At an elevation of about 1100 metres ASL a deactivated road leads from this road northwest for about 1 km to the southern part of the survey grid and the general vicinity of the prospect.

### 1.4 Physiographic Setting and Local Infrastructure

The Easy Joe and Easy Joe 2 Claims lie on an east-facing lower slope west of the Lillooet River in an area of rugged topography between elevations of 200 and 600 metres above sea level. Bedrock exposures are common: soil cover generally consists of poorly developed regolith occurring mainly on lower more gentle slopes and in the valleys. The area is traversed by several streams and is forested with a mix of old and second growth coniferous forest and minor deciduous groves near watercourses.

Logging is the principal industrial activity in the region. Local infrastructure consists mainly of logging roads and bridges, three small First Nations communities and one partially deactivated logging camp. The nearest supply and service centre is the village of Pemberton which is located 74 km northwest of the property.

The climate in the area of interest is temperate: the maximum daily summer temperatures occur in July and reach to about $26^{\circ} \mathrm{C}$; minimum daily winter temperatures are about $-5^{\circ} \mathrm{C}$ in January. Annual precipitation is about 350 mm including 300 mm
of rain per year and about 50 cm of snow which falls mainly from November to February. The area can be accessed year round although winter access may be temporarily disrupted by snow. Snow removal equipment, however, is locally available as the native villages and logging camps in the vicinity require regular road service. Surface survey work is generally restricted to the summer months but, subject to access, drilling is possible throughout the year.


Figure 2: Claim Map showing the Easy Joe and Easy Joe 2 Claims (Numbers 523852 and 523853) and adjoining properties (scale 1:50,000). Part of NTS Map 92G16w.

## 1.5: History

The region was first prospected during the late 1800s at which time gold discoveries were made at Fire Mountain about 12 km southeast of the Easy Joe claim group and at the Mayflower Mine which lies on an adjoining claim about 250 metres north of the northern boundary of the Easy Joe 2 Claim. An uncertain but limited amount of mining and milling was carried out in both of these areas during the early 1900s.

Workings at the Mayflower Mine consist of a 45 meter adit (Way 1981) in felsic volcanic rocks, quartz and mineralized rhyolite breccia. Reported grades are on the order of $\$ 5 /$ ton (Cairnes 1927). Assuming a gold price of $\$ 20$ per ounce this would equate to a grade of about 0.25 ounces per ton. A 2 -stamp mill was constructed and operated for a time by Mayflower Mining and Milling Co. A small but unknown tonnage of gold-bearing quartz was mined and processed but the venture was terminated after a few years. In 1929 the prospect was re-staked as the Dandy Claim but little if any work was done at that time. The claim subsequently lapsed and the property appears to have lain idle until the 1970s when it was again re-staked as the Moneymaker Claim by Mr. G. Nagy, a local prospector. Optionees carried out some exploration work but, upon expiration of the option, the claims were again allowed to revert to the Crown. In 1982 the Easy and Jo claims were staked in the area by Hillside Energy Corp. and Lacana Gold Corp. respectively.

Both companies carried out independent exploration programs and initially identified sporadic anomalous gold and silver values in soil samples but did not develop any strong exploration targets. In 1984, however, a more extensive soil survey carried out by Hillside Energy identified a strong lead silver soil anomaly in an area now lying within the Easy Joe Claim. Hillside Energy and Lacana subsequently formed a joint venture to carry out additional work. This included IP and VLF EM surveys which identified a conductive feature coincident with the soil geochemical anomalies.

Geological mapping a hand trenching within the anomalous zone resulted in discovery of a sulphide-bearing breccia carrying values in silver, lead and zinc. The breccia zone was tested by two diamond drill holes in the fall of 1984 but only sub-economic silver, lead and zinc and negligible gold values were encountered. Work was suspended until the property was optioned by Symes Resources Ltd. in 1988. Symes drilled two more holes in the silver anomaly area but with results comparable to those obtained in 1984 and, in 1988 Symes transferred its option to Kali Venture Corporation. In that year, on the basis of encouraging results from a soil survey on an adjacent claim which partly overlapped the Easy claim, Kali conducted further geological work, installed a new survey grid and carried out additional geochemical sampling work.

The 1988 soil survey was carried out by Golden Triangle Engineering Ltd. (Peters et. al. 1988). It resulted in identification of a strong gold soil anomaly just east of the silver anomaly on what is now the Easy Joe Claim. Additional prospecting and geochemical sampling delineated the general area of the source of the gold and a diamond drilling program accompanied by limited bulldozer trenching was initiated by Kali.

Five drillholes were collared at and near the upslope limit of the geochemical anomaly. Several intersections of sheared mineralized volcanic rocks were encountered and a weathered sulphide-bearing shear zone, now referred to as the "Main Showing", was exposed by bulldozer trenching. Gold values were found to be present in sheared rocks
both on the surface and in drill core but the assay results were not consistent with the corporate objectives of the owners at the time and the exploration work was terminated. Subsequent corporate restructuring and resulting ownership changes engendered financing issues and no additional work is known to have been carried out. Late in 2005 the claims covering the prospect lapsed and in December of that year the current tenures were acquired by Mr. Heyman who optioned the property to Algorithm, the current operator and administrator of the geophysical survey.

## 2.0: GEOLOGICAL SETTING

## 2.1: Regional Geology

The Easy Joe property lies within the southeast margin of the British Columbia Coast Belt, a geological terrain characterized by Mesozoic volcanic and sedimentary rocks with a complex history of deformation, metamorphism and igneous activity. The layered rocks in the project area comprise the Gambier Assemblage, a Cretaceous sequence that includes the predominantly sedimentary Peninsula Formation (KP) and the overlying and predominantly volcanic Brokenback Hill Formation (KBH) as shown in Figure 3. These rocks correlate with a similar succession west of Harrison Lake which has been described as the Harrison Lake Formation and Fire Lake Sequence (Journeay 1990).

The sedimentary and volcanic rocks have been subjected to intense folding and faulting along a northwest axis and are intruded both to the west and northeast by dioritic and granitic plutonic rocks. As a result, they essentially comprise a roof pendant within the Coast Plutonic Complex which is represented in this area by the intermediate plutonic rocks of the Pemberton Diorite Complex to the west and a Tertiary plutonic terrain to the northeast.

The earliest tectonic activity consists of the folding along a northwest axis, southwestdirected thrust faulting possibly related to it and northwest-striking transcurrent faulting. The region has also been dissected by a much younger system of northeast-striking dextral and oblique faults downdropped to the northwest. These faults are considered to be Tertiary in age but may be younger. They tend to offset the more northerly Gambier strata and the structures within them to the northeast and also appear to provide the permeability for a number of hotsprings in the region. More detailed descriptions of the regional geology have been published by Lynch (1990) and Journeay (1990).

## 2.2: Property Geology

The claim area is underlain mainly by the rocks of the lower Cretaceous Peninsula and Brokenback Hill Formations. The Peninsula Formation consists predominantly of clastic sedimentary rocks and occupies a small area in the southeast corner of the property. The Brokenback Hill Formation is a subaqueous volcanic succession of intermediate composition including dacitic and andesitic flows and tuffs with minor amounts of rhyolite and basalt. These rocks underlie most of the claim area and are variably altered to chlorite and steatite schists, folded, brecciated and traversed by numerous quartz, quartz calcite and narrow sulphide veins and breccia fillings. They are also locally intruded by narrow porphyritic diorite dykes and detailed mapping by Way (1981) depicts a moderately extensive feldspar porphyry pluton in the area north of Chief Paul Creek and
the Mayflower prospect. Table 1 summarizes the inferred stratigraphic succession in the claim area.

Table 1: Stratigraphic Succession

| Age | Thickness Interval <br> (metres) | Lithological Description |
| :---: | :---: | :--- |
| Cretaceous or Younger |  | Quartz diorite / Feldspar porphyry |
| Lower Cretaceous |  | Brokenback Hill Formation: |
|  | $>100$ | Latite/andesite lapilli tuff |
|  | $50-70$ | Dacite tuff, Dacite, quartz feldspar lapilli tuff |
|  | $40-60$ | Argillite, minor argillite tuff |
|  | 20 (approx) | Andesite Felsic or dacitic tuff |

## 2.3: Mineral Occurrences

Three deposit types have been identified in the claim area: 1) a polymetallic sulphidebearing heterolithic cataclastic breccia in Brokenback Hill Formation volcanic rocks; 2) auriferous quartz veins and breccias and 3) mineralized shear zones containing base metal sulphides and native gold. Of these, the mineralized shear zones appear to be the most attractive target for resumed exploration and are the principal focus of this report.

Mineral occurrences identified to date on and near the claims include: 1) the Mayflower prospect which was discovered using conventional prospecting methods in the late 1800s; 2) a silver-base metal sulphide occurrence in a breccia zone in the south central part of the claim group discovered by geochemical prospecting in 1984 and; 3) a gold-silver-base metal occurrence in sheared volcanic and sedimentary rocks, the Main Showing, in the east central part of the property. This was discovered geochemical prospecting in 1988.

## The Mayflower Prospect

The Mayflower Prospect is described by Cairnes (1927) and Way (1981). It lies just north of the northern boundary of the Easy Joe 2 claim and, according to Cairnes, consists of "a small ledge of rich gold quartz ore which was quickly worked out". The occurrence is associated with a breccia zone or pipe in felsic schist. Minor amounts of galena and sphalerite are also reported to occur in the zone and a distinct Pb soil anomaly about 80 metres in diameter is associated with it. The prospect is described in more detail in Sadlier-Brown (2006).

## The "Easy" Breccia Zone

A sulphide-bearing breccia underlies and area in the western part of the Easy Joe (523852) claim and may extend northwest to the Easy Joe 2 claim. It occurs within the lower part of the Brokenback Hill sequence above the contact with the underlying Peninsula Formation. Although its origin is not clear, it is considered to be either a volcanogenic feature or a product of post-depositional tectonism. The latter is the more likely as the zone appears to lie between the limbs of a synclinal structure suggesting that it is related to folding.


Figure 3: Geological Map of the Easy Joe Claim Area (yellow) showing known gold, silver and base metal prospects. (part of NTS Map 92G16; Geology from Lynch, 1990: in GSC O.F. 2203, Glacier Lake).

## LEGEND:

## CRETACEOUS TO JURASSIC

Dip - Diorite \& migmatite of the Pemberton Diorite Complex
EARLY CRETACEOUS
Brokenback Hill Formation:
KBHI - Lapilli tuff; KBHg - volcaniclastic sandstone, greywacke, slate, phyllite; KBHv - andesite,
breccia, volcanic conglomerate; KBHt - slate, phyllite, felsic crystal tuff.
Peninsula Formation:
KPa - arkose, slate; Kpc - conglomerate, chert, quartzite

The sulphide minerals occur as narrow veins and fillings between the mainly coarse breccia fragments and include epigenetic pyrite, pyrrhotite, sphalerite and argentiferous galena. Analytical results from past diamond drilling (Sadlier-Brown 1988) indicate that silver, lead and zinc are the principal potentially economic commodities detected but, although mineralization is widespread, the tenor was considered to be too low to be of commercial interest. The best values in DDH 3-88 occur in the 60 foot ( 18.3 m ) interval from 92' to 152' (28m-46.3m) which averaged Pb: $0.23 \%$; $\mathrm{Zn} ; 0.52 \%$ and $\mathrm{Ag}: 0.32$ oz/ton. In DDH 4-88 the 70 foot ( 21 m ) interval between 198' and 268' (60-82 m) returned average values of $\mathrm{Pb}: 0.25 \%$, $\mathrm{Zn}: 0.28 \%$ and $\mathrm{Ag}: 0.81 \mathrm{oz} /$ ton. No additional work was recommended or performed in this area.

## The Main Showing

About 200 metres north of the breccia occurrence at UTM coordinates of 540863E and 5532278 N is a shear zone cutting a sequence of Brokenback Hill Formation dacitic and andesitic flows and tuffs and minor intercalated argillite. The shear strikes at $140^{\circ}$, dips easterly at between 70 and $80^{\circ}$ and, where exposed in a bulldozer trench, is about 3 metres wide. It is mineralized with disseminated and massive pyrite accompanied by minor amounts of galena, sphalerite and chalcopyrite. The zone is locally weakly silicified and its surface exposure is intensely weathered and characterized by abundant limonite, goethite and a black, earthy manganese oxide.

Fine angular free gold can be panned from the exposure area (Sadlier-Brown, 1990) which lies within the strong gold-soil geochemical anomaly that was discovered by the 1988 geochemical survey described by Peters et. al. and appears to be its source. The anomaly extends over an apparent strike length in excess of 250 meters and, depending upon how the data is interpreted and contoured, may indicate a second parallel structure about 70 to 100 metres to the northeast of the Main Showing area.

The geophysical survey under discussion was carried out over the Main Showing area in order to identify and delineate the inferred source structure or structures.

### 3.0 GEOPHYSICAL SURVEY

From October $20^{\text {th }}$ to $25^{\text {th }} 2009$ a two-component geophysical program was done over a grid comprising 3.85 km of cut and chained survey lines covering a 37ha area lying within the northern part of the Easy Joe Claim (Tenure 523852) as shown in Figure 2. The survey grid was established during September and October 2009 by a line cutting crew provided by Discovery Consultants Ltd. of Vernon, B.C. Survey lines are aligned east-west and identified by the last four digits of the UTM (NAD 83) northing north of 543200 N . Stations are picketed and identified by the last four digits of the UTM easting east of 540600E.

The geophysical program included transient electromagnetic (TEM) and total field magnetometer surveys carried out as partial fulfillment of a set of recommendations contained in a report prepared for Algorithm Media Inc. (Algorithm) in 2006 (SadlierBrown 2006). The objective of the survey was to assess the sub-surface conductivity and magnetic responses in the vicinity of the mineralized structures and geochemical anomaly in order to provide data on the magnitude and configuration of the probable source.

The surveys were carried out by Frontier Geosciences Inc. of North Vancouver, B.C. from October $20^{\text {th }}$ to 25th 2009 and the results are compiled in a report by Frontier (Porter, J. and Candy, C; 2009) which is included in its entirety as Appendix B to this report. The report provides a comprehensive discussion and integration of the survey data, a magnetometer map, two sets of TEM maps, magnetic and TEM profiles for each of the survey lines and data on post-survey data processing.

The survey identified three conductive zones and several magnetic features indicative of lithological variations and/or structures such as faults and geological contacts. The most prominent electromagnetic anomaly was detected near the eastern ends of lines 2100 N and 2200 N and centred at Stn. $11+50 \mathrm{E}$. A second conductor was identified at Stn. $9+75 \mathrm{E}$ on Line 2400 N and can be traced south to Stn. 2100N; 9+25E. Figures 3 and 4 of the Frontier report depict the locations and alignments of the conductive features.

### 4.0 INTERPRETATION, CONCLUSIONS AND RECOMMENDATIONS

The magnetometer data suggest a magnetic trend generally cutting diagonally across the grid from southeast to northwest with the more elevated magnetic intensities in the southwest sector. The Main showing structure parallels this trend and that of TEM alignment 2 as shown in figures 3, 4 and 19 of the Frontier Geosciences report provided in Appendix B. The magnetic data is consistent with a magnetic feature extending from the general vicinity of the Main Showing for over 350 metres northeast to Line 2500 N ; Stn. 6+00E as is an interpretation of the TEM Z component data for Gate 15 as depicted in Figure 3.

The TEM and magnetometer results indicate an elongate coincident conductive and magnetically anomalous feature extending northwest-southeast across the west central part of the survey grid (approximately between STN. 2300N; 850E and 2500N; 600E). At its southeast end it roughly coincides with the mineralized shear zone which may be related to a strong gold soil geochemical anomaly in the Main Showing area as described in Section 2. A geological follow-up is now required in order to establish the relationship, if any, between the geophysical data and the mineral occurrence and geochemical anomalies. This was precluded by snow conditions at the time of the completion of the geophysical work but is now strongly recommended.

### 5.0 REFERENCES

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## APPENDIX A

## ITEMIZED COST STATEMENT

## Re: Easy Joe Claim Group

| Consulting Fees; T. Sadlier-Brown P.Geo. <br> Re: Permitting, preliminary site investigation, procurement, planning, supervision and data interpretation August $14^{\text {th }}$ through December 22 Sub-total Fees: 69.5 hrs @ $\$ 110 / \mathrm{hr}$ | 7,645.00 |  |
| :---: | :---: | :---: |
| $4 \times 4$ vehicle \& fuel (Vancouver-Lillooet River Area/Return) | 110.00 |  |
| Gasoline | 115.70 |  |
| Meals \& Accommodation; field | 140.64 |  |
| GST | 408.82 |  |
| Sub-total: Consultant Fees \& Expenses | 8,420.16 | 8,420.16 |
| Survey grid line cutting: Discovery Consultants Ltd. |  |  |
|  |  |  |
| Labour: 2 person crew $\times 17.5$ days Sept $15-$ Oct $19 / 09$ Rate: $\$ 450 /$ diem $\$ 50 / \mathrm{hr}$ Sub-total: labour | $\begin{array}{r} 7,875.00 \\ 5,324.75 \\ 13,199.75 \end{array}$ |  |
| Equipment Rentals, Communications \& Office Expenses | 885.60 |  |
| Meals \& Accommodation (17.5 days; Sept 15-Oct 19/09) | 2,435.40 |  |
| Travel Expenses : (4x4 vehicles + fuel; 17.5 days; Sept 15-Oct 19/09) | 3,160.77 |  |
| Administration \& Management | 1,141.53 |  |
| GST | $\underline{1,013.85}$ |  |
| Sub-total: Line Cutting | 21,836.9 | 21,836.9 |
| EM and Magnetometer Surveys: Frontier Geosciences* |  |  |
| Labour, meals \& accom.:(3 person crew x 5 field days: Oct 20-25/09) | 15,900.00 |  |
| Instrumentation | 450.00 |  |
| Mobilization/demobilization | 4,440.00 |  |
| Data Reduction \& Processing | 2,250.00 |  |
| GST | 1,152.00 |  |
| Sub-total: Geophysical Survey | 24,192.00 | 24,192.00 |
|  |  |  |
| Total Expenditure |  | 54,449.06 |

* All-in contract price


## APPENDIX B

REPORT ON TRANSIENT ELECTROMAGNETIC AND TOTAL FIELD MAGNETOMETER SURVEYS; EASY JOE PROJECT, PEMBERTON AREA B.C.

## SADLIER-BROWN CONSULTING LTD.

## REPORT ON

TRANSIENT ELECTROMAGNETIC AND

# TOTAL FIELD MAGNETOMETER SURVEYS 

## EASY JOE PROJECT

## PEMBERTON AREA, B.C.

by<br>Jennifer Porter, B.Sc.<br>Cliff Candy, P.Geo.

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## 1. INTRODUCTION

In the period October 20 to October 25, 2009, Frontier Geosciences Inc. carried out Transient Electromagnetic (TEM) profiling and Total Field Magnetometer surveying for Sadlier-Brown Consulting Ltd. at the Easy Joe Claim site. The survey area is located approximately 50 km southeast of Pemberton, B.C., and west of the Lillooet River and Skookumchuk Indian Reserve. A Survey Location Plan of the area is shown at 1:300,000 scale in Figure 1.

The purpose of the TEM survey was to profile the conductivity of the site in order to provide subsurface geoelectric information and trace surface mineralisation at depth. A transmitter loop 2500 m by 250 m was employed, with a survey station interval of 25 metres. In total, seven TEM profiling traverses were completed totalling approximately 3200 m of surveying.

The purpose of the magnetics survey was to acquire detailed information on magnetic anomalies in the area. In total, nine traverses including the TEM lines, were covered in the magnetometer survey. A Site Plan of the Easy Joe survey area showing the location of the transmitter loop and the receiver traverses is presented at 1:3,500 scale in Figure 2 of the Appendix.


| SADLIER-BROWN CONSULTING LTD. <br> EASY JOE PROJECT |  |  |
| :---: | :---: | :---: |
| GEOPHYSICAL SURVEY |  |  |
| SURVEY LOCATION PLAN |  |  |
| FRONTIER GEOSCIENCES INC. |  |  |
| DATE: OCT. 2009 | SCALE 1:300,000 | FIG. 1 |

## 2. THE TRANSIENT ELECTROMAGNETIC SURVEY

### 2.1 Equipment

The surface TEM survey utilized the Geonics Ltd., Protem TEM-37 transmitter and TEM-57 receiver system, together with a single component coil. Although the surface receiver coil is only capable of detecting one component of the electromagnetic field at a time, it is possible to collect data for multiple components by manipulating the orientation of the coil. Additional equipment included a generator and several kilometres of insulated copper wire to create the primary electromagnetic field.

### 2.2 Field Procedure

The field procedure entails setting out a rectangular transmitter loop, approximately 2500 m by 250 m , on the ground surface. Advantage was taken of existing roads and cut paths to lay the transmitter loop approximately parallel with the anticipated strike of the host rock. Transects were surveyed perpendicular to the long axis of the loop and bedrock strike. In operation, the transmitter loop is energized with an electrical current which is rapidly terminated. The rapid reduction of the primary magnetic field causes eddy currents to flow into any nearby conductors, generating secondary magnetic fields that produce a characteristic decay determined by the conductivity, size, and shape of conductors.

Transects were made to the west of the survey loop in order to define the conductance, size and character of any identifiable conductors. This was accomplished by acquiring data at 25 metre sampling stations on predefined transects. At each station, the surface receiver coil was placed on the ground and levelled to ensure that a constant electromagnetic field direction was acquired. For each station, a 30 second sample of the induced secondary magnetic field was obtained for the vertical component ( $Z$ ) of the secondary electromagnetic field. The decaying secondary electromagnetic field was sampled over 20, logarithmically-spaced channel windows, sampled as early as 0.117 ms to as late as 27.92 ms after the turn-off time of the transmitter. A similar procedure was followed to obtain information on the horizontal ( X ) component of the secondary EM field at each station. The X component of the secondary magnetic field is parallel to the survey lines and perpendicular to the geologic strike of the area. Transects were made every 100 metres in order to provide an optimum balance between data resolution and coverage area. Time synchronization between the transmitter and receiver was obtained using crystal time bases on the transmitter and receiver. Results for all station measurements were digitally stored in the Protem receiver until they could be downloaded and processed for interpretation.

### 2.3 Data Processing

The vertical and horizontal ( Z and X ) component profiles were created for each surveyed line (Figures 5 through 18 of the Appendix). The profiles for each transect were all scaled in accordance with the greatest range of response amplitudes within each survey loop.

Additionally, a colour contour map of the secondary magnetic field response for the survey area was produced in plan view by compiling the results from all the data stations for the Z and X components (Figures 3 and 4). The contour maps display data from gates 2, 5, 10 and 15. The colour contours for each gate were customized in order to show response contrasts within the survey area. This was accomplished by establishing the minimum and maximum secondary magnetic field response for each area and then scaling the colour bars in order to best illustrate the range of data. Displaying contour maps of progressive time gates facilitates the qualitative sense of what changes are occurring to conductors throughout the EM measurement time.

### 2.4 Data Interpretation

Generally, the profiles of the response offer quantitative information about the character of a conductor; specifically its depth, dip, and conductance. The colour contour plots provide a quick, qualitative sense of the location and intensity of the conductor as well as a good measure of its strike length and width. The sounding plots give a qualitative sense of the relative strength of the various conductors and can also be used to make quantitative calculations to determine the time-constant and conductance of each conductor.

To make determinations about the depth and dip of a conductor, Z component profiles were analyzed using a variety of methods. The depth was determined by one of two methods. The first depth determination method was to measure the width of the up-dip lobe of the response where the amplitude is two-thirds of the maximum amplitude of the response. The alternate method was to measure the width between the positive and negative response peaks, which is representative of the depth.

## 3. TOTAL FIELD MAGNETOMETER SURVEY

### 3.1 Instrumentation and Field Procedure

The magnetometer survey was carried out using GEM Systems, GSM-19, portable, high sensitivity, Overhauser-effect magnetometers. The unit is a standard for measurement of the earth's magnetic field, having 0.01 nT (nanoTesla) resolution and 0.2 nT absolute accuracy over its full temperature range. In operation, a strong RF current is passed through the sensor head mounted on an aluminum staff. This creates a polarization of the proton-rich fluid in the sensor followed by a process of "deflection" whereby a short pulse deflects the proton magnetization (secondary magnetic field) into the plane of precession (earth's magnetic field). A slight pause in the process allows the electrical transients to die off, leaving a slowly decaying proton precession signal above the noise level. The proton precession frequency is then measured and converted into magnetic field units. Essentially, the data collected is a measurement of the earth's magnetic field plus any effect on the secondary magnetic field by ferrous objects and/or high concentrations of ferromagnetic minerals.

To allow for correction of diurnal variations in the magnetic field, another GEM Systems, GSM-19, Overhauser-effect magnetometer was set up in an area with a relatively uniform magnetic field. Daily field procedure consisted of synchronization of the clocks in the field unit and the base unit at the start of the survey. Once the base station instrument was running, the mobile unit collected the measurements at a designated location near the base station before surveying the grid. At the end of each day, final measurements were taken at the base station.

The field and base station data was transferred via the RS232C interface to a computer for diurnal correction and subsequent data processing. No magnetic storm activity was noted, and the diurnal variations of the total magnetic field were relatively small.

### 3.2 Data Processing

Data processing was initiated in the field, with further reduction implemented at the office in order to produce a corrected total magnetic field colour contour map for the grid. GPS waypoint data which affix UTM coordinates to field stations at 25 metre intervals, was provided by Discovery Consultants. This data was then processed to interpolate UTM coordinates to each magnetometer reading with 12.5 metres spacing.

Data reduction procedures undertaken in the office included editing repeat field measurements, and correlating location data with the diurnally-corrected magnetic data. The data was then gridded and contoured using Surfer software to produce the total magnetic field contour map displayed in Figure 19 of the Appendix.

## 4. TRANSIENT ELECTROMAGNETIC RESULTS

### 4.1 General

The results from the surface TEM survey are shown in Figures 3 through 18 of the Appendix. Contour plots of gates $2,5,10$ and 15 and profiles including all gates were created for each line. There is a range of responses from conductors identified in the survey area made apparent by the TEM plots. This range is considered in the interpretation of the strength of conductors illustrated by the contour plots in the survey area.

The time-constant or conductance in siemens were not calculated for individual conductors, however response strength with respect to the other conductors is included in the discussion.

### 4.2 Discussion

Several conductors were identified in the survey area, the most prominent of which are at the eastern extents of Lines 2100 and 2200. The conductive features are evident in the early and late gates of the decay, indicating significant depth extent of the causative bodies. The conductors are centred over Station 1150 of Line 2100 and may be two main bodies as evidenced by the double peaks shown in Figures 7 and 8. The depths to these anomalies is interpreted to be approximately 40 m .

Another conductive feature evident through all gates of decay is at Station 975 of Line 2400. This conductor is coincident with a showing of argillite with pyrite and chalcopyrite mapped at surface at Station 950. This conductor also gives a response at depth and may be traced to the south along Line 2300 Station 975, Line 2200 between Stations 900 and 975 and Line 2100 Station 925. This conductor is also interpreted to be approximately 40 m deep. Due to the presence of multiple conductors in the area, dip, though apparently quite steep, is difficult to determine.

The surface contour plans (Figures 3 and 4) have been marked with approximate strikes of these conductive anomalies. These locations were determined to be at the inflection point of the X component, at a Z component anomaly high. The alignment of conductive features suggests sub north-south trending anomalies exist across the survey area. This is coincident with the general strike of the geology in the area.

Another possible alignment of conductive bodies is a northwest-southeast trend. A red dashed line indicates a possible trend extending from Line 2100 Station 975 to Line 2400 Station 775. This trend is a possible alternative to the north-south alignment of conductors as it is similar in strike to the magnetic anomaly as shown in Figure 19. Alternatively, the anomalous conductivity highs identified in the surveying may be tracing a different fabric in the geology, such as a fault.

## 5. TOTAL FIELD MAGNETOMETER RESULTS

### 5.1 General

The locations of the surveyed magnetometer lines are shown on Figure 2. The total magnetic field response is presented in colour contour format at a scale of 1:3,000 in Figure 19 of the Appendix. Eight traverses running west to east at lengths varying from 600 to 1200 metres are identified on the total field magnetic map. The 700 m north-south baseline was also surveyed. The total survey coverage was approximately 4.7 kilometres.

### 5.2 Discussion

The magnetic data shows a marked regional difference between northeastern and southwestern areas of the grid, with magnetic responses of up to approximately 56600 nT in the southwestern area. Measurements in the northern sector of the survey area return a lower magnetic response to approximately 55700 nT .

In general, the magnetic anomalies of the grid form a general northwest-southeast trend which differs from the general north-south topographic alignment in the survey area. The magnetic highs to the southwest correspond generally to topographic highs. Magnetic highs are generally constrained south of Line 2500. The change in magnetic response over this line may be representative of a structural or compositional feature in the geology, such as a fault or lithological contact. The boundary between the magnetic low responses in the northeast and highs in the southwest has been demarcated on Figure 19 as well as on the TEM contour plots (Figures 3 and 4) for comparison.

## 6. LIMITATIONS

Transient electromagnetic (EM) surveys are successful providing adequate contrasts exist in the subsurface in electrical conductivity between distinct geological materials. Also affecting conductivity are the degree of saturation of materials and the porosity, the concentration of dissolved electrolytes, the temperature and the amount and composition of colloids. Conductors identified in TEM surveying are diverse and depending on geological settings, may include mineralisation, graphite, argillite, shear or fault zones, clay beds, saturated materials, clay shale, clay till, mineralized leachate and zones of salt water intrusion.

Transient EM and other electromagnetic techniques have limitations for detecting thin resistive strata. Transient EM methods excel at mapping conductive targets. In deep surveys, large transmitter moments are required to produce sufficiently large signals at depth. Penetration depths may be affected by the presence of highly conductive surficial materials that may partially mask deeper geological layering. Man-made structures such as pipes, fences and power lines can have a significant influence on transient electromagnetic measurements.

The total field magnetic information is based on measurements obtained by generally accepted methods and procedures and our interpretation of the geophysical data. Individual values may in some instances be erroneous due to noise occurring simultaneously with the measurements. As well, uncertainties resulting from the variability of metallic target characteristics, and the interpretation of the magnetics data place limits on the accuracy of the magnetics method.

The results are interpretive in nature and are considered to be a reasonably accurate representation of existing subsurface conditions within the limitations of the transient electromagnetic and magnetics survey methods.

## For: Frontier Geosciences Inc.

Jennifer Porter, B. Sc.

Cliff Candy, P.Geo.

## 7. TEM TECHNICAL NOTES



| Display Quantity |  | Table of time rate of decay of magnetic flux ( $\mathrm{dB} / \mathrm{dt}$ ) |
| :---: | :---: | :---: |
|  | (2) | Curve of rate of decay of magnetic flux ( $\mathrm{dB} / \mathrm{dt}$ ) |
|  | (3) | Table of apparent resistivity ( $\rho_{\mathrm{a}}$ ) |
|  | (4) | Curve of apparent resistivity ( $\rho_{\mathrm{a}}$ ) |
|  | (5) | Profile of dB/dt |
|  | (6) | Real time noise monitor |
|  | (7) | Calibration curve |
|  | (8) | Data acquisition statistics (real time) |
| Storage |  | state memory with capacity for over 3000 data sets al: 26000 data sets |
| Display |  | x 40 characters (240 x 64 dot) graphic LCD |
| Data Transfer |  | rd RS-232 communication port |
| Processor |  | 68HC000 8 MHz CPU |
| Receiver Battery |  | lts rechargeable battery for 8 hours continuous on. 6 hours in XTAL mode |
| Receiver Size |  | $8 \times 27 \mathrm{~cm}$ |
| Receiver Weight |  | (include battery) |
| Operating Temperature | -40 | to $+50^{\circ} \mathrm{C}$ |

Note: The PROTEM Digital Receiver can be used with all five Geonics transmitters TEM47, TEM57, TEM37, TEM57-MK2, TEM67




















## APPENDIX C

## AUTHOR'S CERTIFICATE AND STATEMENT OF QUALIFICATIONS

This certificate applies to a report entitled "A Report on Transient Electromagnetic and Total Field Magnetometer Surveys on the Easy Joe and Easy Joe 2 Mineral Claims, Lillooet River Area, New Westminster Mining Division, British Columbia" dated January $29^{\text {th }} 2010$.

I, Timothy L. Sadlier-Brown, of Suite 306, 126 East $12^{\text {th }}$ Street, North Vancouver, B.C., am a Professional Geoscientist and exploration geologist.

Since 1972, have been a partner in the firm of Sadlier-Brown Consulting Ltd. (formerly Nevin Sadlier-Brown Goodbrand Ltd.), Consulting Geologists, of Suite 500, 455 Granville Street, Vancouver, B.C

I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and a Fellow of the Geological Association of Canada;

I was educated at Carleton University, Ottawa, Ontario; Faculty of Geological Sciences, B.Sc. requirement in Geology; 1964, and have practiced my profession continuously since that time.

I have been employed in the mineral exploration industry in positions of responsibility since 1965 and have extensive experience in metallic and industrial mineral exploration throughout Canada, the western U.S., Mexico and in Central and South America.

This report is based on geophysical surveys carried out over parts of the Easy Joe Claim group by Frontier Geosciences personnel under supervision of the writer during October 2009.

I hold no interest, direct or indirect, in the property described herein and am independent of Algorithm Media Inc.

Dated at Vancouver, British Columbia, this 29th day of January 2010


Timothy L Sadlier-Brown, P. Geo

