Assessment Report on the

MIKAYLA Property

BC Geological Survey Assessment Report 33993

Airborne Geophysics

Similkameen and Osoyoos Mining Divisions, British Columbia NTS: 82E/12, 82E/13, 92H/9, 92H/16 Latitude 49° 43' 59" N, Longitude 119° 57' 25" W UTM Zone 11: 286895 E, 5513170 N (NAD 83)

> for Green Swan Capital Corp. 855 Brant Street Burlington, ON L7R 2J6

> > Submitted by:

Richard T. Walker

May 31, 2013

SUMMARY

The MIKAYLA property is located west of Okanagan Lake in south-central British Columbia (Fig. 1 and 2), approximately 13.4 kilometres west-southwest of the community of Peachland, BC. The property consists of 4 mineral tenures acquired through Mineral Tenure Online (MTO) (Fig. 3), comprising a total of 1,143.77 ha (2,826 acres), straddling the Similkameen and Osoyoos Mining Divisions. The centre of the claim group lies at approximate coordinates 49° 43' 59" N, Longitude 119° 57' 25" W (286895 E, 5513170 N; NAD 83, UTM Zone 11) on NTS mapsheets 82E/12, 82E/13, 92H/9 and 92H/16.

The can be accessed from Peachland via the Brenda Mine Road for a total distance of approximately 36 km. Alternatively, the Property can also be accessed from south, using the Princeton Highway west from Summerland along the Trout Creek to the Munro Lake Road.

The Property is located at the height of land between the Nicola Valley and Okanagan Lake drainage systems, approximately 20 km south of the Okanagan Connector between Peachland and Merrit. As such, the Property is subject to relatively heavy snowfall. Snow generally remains on the ground into mid-May, particularly on north facing slopes and valleys, however, the roads are generally clear and well drained, allowing access to most of the property.

The Property overlies granodiorite correlated to the Okanagan Composite Batholith. The batholith is crudely zoned and consists of at least seven plutonic units that intrude the Upper Triassic Nicola Group, overlain by Tertiary volcanics. The Pennask Batholith (in the north) and the Similkameen Intrusions (in the south) are interpreted to comprise the margins of the batholith., cored by the Osprey Lake Pluton.

The Eocene Coryell Suite consists of a widespread set of distinctive high-level plutons between Okanagan Lake and the Columbia River. The Coryell Suite consists of batholiths and stocks of pink and buff, variably textured, commonly porphyritic syenite and lesser granite, shonkinite, diorite, and monzonite.

Previous work has been completed on the Property, predominantly for Cu-Mo porphyrytype mineralization similar to the Brenda molybdenum-copper mine (MINFILE Occurrence # 092HNE047), located approximately 17 km north. "The Brenda mine began production in early 1970 with measured geological (proven) reserves of 160,556,700 tonnes grading 0.183 per cent copper and 0.049 per cent molybdenum at a cutoff of 0.3 per cent copper equivalent $[eCu = \% Cu + (3.45 \times \% Mo)]$. The mine officially closed June 8, 1990".

The most extensive work was completed by Almaden Resources Ltd. between 1986 and 2008 on their ROSE property. Their work culminated in identification of a large I.P. anomaly having an overall length of at least 4,000 m and up to 800 m in width. Chargeability values of up to 24 msec was interpreted to suggest the presence of a large disseminated sulphide system.

Diamond drilling, comprising a total of 3,822 m in 12 holes, was completed between 1996 and 1997 as a preliminary test of the IP anomaly. The best mineralization was intersected in hole M-96-3, where the entire 231.9 m of core averaged 0.047 % copper, 0.020% Mo and 5.54 g/t silver. The program partially defined a large, low-grade porphyry silver-copper-molybdenum system that extends in an east-west direction over a distance of at least 2.5 km.

A subsequent stream sediment sampling program "... was successful in identifying a central area of the property (characterized by) elevated copper, silver and molybdenum in sediment. The elevated sediment samples are from drainages that are distributed over a roughly 4 by 2 kilometer area."

Green Swan Capital Corp.'s 2012 program was comprised of an Aeroquest AeroTEM IV (Lima) time domain, helicopter-supported geophysical survey, flown over the Property between November 20 and 22, 2012. The survey comprised both electromagnetic and magnetic surveys. The survey totaled 222.7 line-km, flown at 100 metre line spacing, with flight lines oriented at 0°/180° and tie-lines at 90°/270° and a minimum terrain clearance of 30 metres.

TABLE OF CONTENTS

Summary	2
Table of Contents	4
List of Figures	5
List of Appendices	5
Introduction	6
Location and Access	10
Physiography and Climate	10
Claim Status	11
Work History	13
Regional Geology	16
Property Geology	19
Mineral Occurrences	22
Local Geology	27
2012 Program	29
Discussion	30
Conclusions	39
Recommendations	40
Proposed Program	41
References	42

LIST OF FIGURES

Figure 1 - Regional Location Map	
Figure 2 - Property Location Map	9
Figure 3 - Claim Map (Scale 1: 40,000)	
Figure 4 – Regional Geology Map	
Figure 5 – Property Geology Map	
Figure 6 – Powerline Map	
Figure 7 – Total Magnetic Intensity (TMI) Map	
Figure 8 - Electromagnetics (ZOFF) Map	
Figure 9 – Induced Potential (IP) Map	

APPENDICES

Appendix A -	Statement	of Qualification	IS
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- Appendix B Aeroquest Ltd Survey Report
- Appendix C Statement of Expenditures
- Appendix D Program Related Documents

INTRODUCTION

The MIKAYLA property is located west of Okanagan Lake in south-central British Columbia (Fig. 1 and 2), approximately 13.4 kilometres west-southwest of the community of Peachland, BC. The property consists of 4 mineral tenures acquired through Mineral Tenure Online (MTO) (Fig. 3), comprising a total of 1,143.77 ha (2,826 acres), straddling the Similkameen and Osoyoos Mining Divisions. The centre of the claim group lies at approximate coordinates 49° 43' 59" N, Longitude 119° 57' 25" W (286895 E, 5513170 N; NAD 83, UTM Zone 11) on NTS mapsheets 82E/12, 82E/13, 92H/9 and 92H/16.

The can be accessed from Peachland via the Brenda Mine Road for a total distance of approximately 36 km. Alternatively, the Property can also be accessed from south, using the Princeton Highway west from Summerland along the Trout Creek to the Munro Lake Road.

The Property is located at the height of land between the Nicola Valley and Okanagan Lake drainage systems, approximately 20 km south of the Okanagan Connector between Peachland and Merrit (Fig. 2). As such, the Property is subject to relatively heavy snowfall. Snow generally remains on the ground into mid-May, particularly on north facing slopes and valleys, however, the roads are generally clear and well drained, allowing access to most of the property.

The Property overlies granodiorite correlated to the Okanagan Composite Batholith. The batholith is crudely zoned and consists of at least seven plutonic units that intrude the Upper Triassic Nicola Group, overlain by Tertiary volcanics. The Pennask Batholith (in the north) and the Similkameen Intrusions (in the south) are interpreted to comprise the margins of the batholith., cored by the Osprey Lake Pluton.

The Eocene Coryell Suite consists of a widespread set of distinctive high-level plutons between Okanagan Lake and the Columbia River. The Coryell Suite consists of batholiths and stocks of pink and buff, variably textured, commonly porphyritic syenite and lesser granite, shonkinite, diorite, and monzonite.

Previous work has been completed on the Property, predominantly for Cu-Mo porphyrytype mineralization similar to the Brenda molybdenum-copper mine (MINFILE Occurrence # 092HNE047), located approximately 17 km north. "The Brenda mine began production in early 1970 with measured geological (proven) reserves of 160,556,700 tonnes grading 0.183 per cent copper and 0.049 per cent molybdenum at a cutoff of 0.3 per cent copper equivalent $[eCu = \% Cu + (3.45 \times \% Mo)]$. The mine officially closed June 8, 1990".

The most extensive work was completed by Almaden Resources Ltd. between 1986 and 2008 on their ROSE property. Their work culminated in identification of a large I.P. anomaly having an overall length of at least 4,000 m and up to 800 m in width. Chargeability values of up to 24 msec was interpreted to suggest the presence of a large disseminated sulphide system.

Diamond drilling, comprising a total of 3,822 m in 12 holes, was completed between 1996 and 1997 as a preliminary test of the IP anomaly. The best mineralization was intersected in hole M-96-3, where the entire 231.9 m of core averaged 0.047 % copper, 0.020% Mo and 5.54 g/t silver. The program partially defined a large, low-grade porphyry silver-copper-molybdenum system that extends in an east-west direction over a distance of at least 2.5 km.

A subsequent stream sediment sampling program "... was successful in identifying a central area of the property (characterized by) elevated copper, silver and molybdenum in sediment. The elevated sediment samples are from drainages that are distributed over a roughly 4 by 2 kilometer area."

Green Swan Capital Corp.'s 2012 program was comprised of an Aeroquest AeroTEM IV (Lima) time domain, helicopter-supported geophysical survey, flown over the Property between November 20 and 22, 2012. The survey comprised both electromagnetic and magnetic surveys. The survey totaled 222.7 line-km, flown at 100 metre line spacing, with flight lines oriented at 0°/180° and tie-lines at 90°/270° and a minimum terrain clearance of 30 metres.





LOCATION AND ACCESS

The Property can be accessed from Peachland along the Brenda Mine Road for approximately 11 km to Headwaters Road. Follow Headwaters Road west for approximately 8.5 km to Kathleen Main Road, then approximately 7.5 km along Kathleen Main Road to Deer Creek Road. The property is located approximately 16 km along Deer Creek Road. Total distance from Peachland is approximately 36 km.

The Property can also be accessed from south, via the Princeton Highway west from Summerland. Proceed west along the Trout Creek Valley for approximately 27 km to the Munro Lake Road (approximately 300 m west of a bridge over Trout Creek). Follow Munro Lake Road north along O'Hagen Creek for approximately 10.9 km. Just past Km 33 marker, near the power line, the main haul road can be accessed by turning right onto an access road for 4 km to the Property.

PHYSIOGRAPHY AND CLIMATE

Elevations on the property vary from approximately 1080 m (5577 ft) in the western portion of the property along Isintok Creek to 1720 m (6365 ft). The property is located at the height of land between the Nicola Valley and Okanagan Lake drainage systems (Fig. 2). The property is located approximately 20 km south of the Okanagan Connector between Peachland and Merrit and receives similar snow fall. As such, the Property is subject to relatively heavy snowfall. Snow generally remains on the ground into mid-May, particularly on north facing slopes and valleys, however, the roads are generally clear and well drained, allowing access to most of the property.

Therefore, the property is available for geological exploration from May to late October. However, the possibility of early, heavy snowfall can be expected as early as mid-October. Vegetation in the area consists predominantly of coniferous trees with minor to moderate undergrowth comprised largely of small deciduous shrubs.

CLAIM STATUS

The MIKAYLA property consists of 4 mineral tenures acquired through Mineral Tenure Online (MTO) (Fig. 3). All claim information was verified using the BC Government's Mineral Titles On-Line website and is current as of this writing. The property encompasses a total area of approximately 1,143.77 ha (2,826 acres).

Tenure	Tenure	Issue	Anniversary	Size
Number	Name	Date	Date*	(ha)
848569	Mikayla	March 10, 2011	June 17, 2019	518.96
941100		January 16, 2012	June 16, 2019	20.88
941104		January 16, 2012	June 16, 2019	395.10
980311		April 16, 2012	June 10, 2019	208.83
			Total	1,143.77

Significant claim data are summarized below:

* Subject to acceptance of the 2013 Assessment Report.



WORK HISTORY

The first documented exploration work in the area covered by the Mikayla Property was in 1966, following discovery of the Brenda molybdenum-copper mine (MINFILE Occurrence # 092HNE047), located approximately 17 km north. "The Brenda mine began production in early 1970 with measured geological (proven) reserves of 160,556,700 tonnes grading 0.183 per cent copper and 0.049 per cent molybdenum at a cutoff of 0.3 per cent copper equivalent [eCu = % Cu + (3.45 x % Mo)]. The mine officially closed June 8, 1990" (MINFILE # 092HNE047).

The following has been modified slightly from Poliquin and Ullrich (2008).

"... Low grade copper-molybdenum mineralization was first discovered by Lakeland Base Metals Ltd. in 1966. An initial program of soil sampling, trenching and 2000 feet of percussion drilling by BrenMac Mines Ltd., Brenda Mines Ltd., and Lakeland Base Metals was completed in 1966. During 1966 and 1967, exploration was carried out by Koporok Mines Ltd. on the Cache showing located on the eastern portion of the claim group and on several other quartz veins with pyrite, tetrahedrite and galena.

In 1973, the area underlain by the claims was restaked by Canadian Occidental Petroleum Ltd. based on results of a regional stream sediment survey and in 1974 they carried out geochemical, geological and magnetic surveys. Several copper-molybdenum anomalies were identified and 3 targets tested by diamond drill holes.

In 1976 a regional geochemical program funded by the Federal and Provincial Governments identified anomalous silver values in streams draining the plateau area northwest of Munro Lake. Based on this new information, Canadian Occidental reanalyzed all soil samples and drill core for silver and found excellent correlation between silver anomalies and previously identified copper-molybdenum-zinc anomalies. The highest values obtained were 2.73 oz Ag/ton and 0.003 oz Au/ton over 2.3 feet from 124 to 136.3 feet in drill hole MUN 74-3.

In 1977 a large co-incident Cu-Mo-Zn-Ag anomaly was tested by a 562 ft. diamond drill hole (MUN 77-1) and in 1981 a total of 1300 feet of trenching was carried out to test a large silver-base metal anomaly.

In 1983 the claims lapsed and the area was re-staked by Almaden Resources Corp. Between 1985 and 1987 Almaden conducted VLF-EM surveys followed by 15 line km of I.P. over the central and northeastern parts of the property. The area of co-incident VLF and Ag-Cu-Zn-Mo soil anomalies was then tested with a program of overburden drilling. In Sept. and Oct. 1987, a program of reverse circulation drilling was carried out to test geochemical and geophysical targets to the north of Munro Lake. This program was continued in 1988 to test a NE trending structure. The drilling outlined a series of NE trending co-incident gold, silver and zinc anomalies in basal till.

In 1994 and 1995, an induced polarization survey was conducted over the claim area by Delta Geoscience Ltd. A large I. P. anomaly with a magnitude of 15 to 20 msec above background was delineated on the northwestern part of the survey grid. The anomaly extended in an east-west direction over a distance of 2,200 m with an average width of about 500 m and was open to the west. The anomaly was interpreted to represent a large pyritic alteration zone reflecting the top of a large mineralized porphyry system.

In order to further delineate this anomaly, the grid was extended westward for a further 1800 meters and further I.P. work completed in August 1996. This work showed that the large I.P. anomaly continued to the west with an overall length of at least 4,000 m and is up to 800 m in width. Chargeability values of up to 24 msec suggest the presence of a large disseminated sulphide system.

A diamond drilling program, totaling 1,780 m in seven holes, was carried out during July and August, 1996. The objective of the drill program was to test several induced polarization and chargeability targets. All seven diamond drill holes intersected a weakly mineralized silver-molybdenum-copper porphyry system. The best mineralization was intersected in hole M-96-3, where the entire 231.9 m of core averaged 0.047 % copper, 0.020% Mo and 5.54 g/t silver.

A diamond drilling program totaling 2,042 m in five holes was carried out during September and October, 1997 to test the western portion of the chargeability anomaly. Copper-molybdenum-silver mineralization was intersected in the two eastern-most holes, but the values were not of economic interest. The 1996 and 1997 drilling programs partially defined a large, low-grade porphyry silver-copper-molybdenum system that extends in an east-west direction over a distance of at least 2.5 km.

... (A) geochemical sampling ... in 2008 consisted of stream sediment sampling throughout the property, as well as adjacent watersheds. One hundred and thirty sediment samples were collected and submitted to ALS Chemex Labs for aqua regia digestion followed by multi-element ICPMS analysis and digestion super trace gold analysis on a 50g nominal sample weight. Samples exceeding 0.1 ppm Au were also analyzed using the ore-grade gold ICPMS analysis

The 2008 geochemical stream sediment sampling program was successful in identifying a central area of the property (characterized by) elevated copper, silver and molybdenum in sediment. The elevated sediment samples are from drainages that are distributed over a roughly 4 by 2 kilometer area."

REGIONAL GEOLOGY

The Okanagan Composite Batholith is the largest plutonic complex of general Jurassic age in British Columbia, and includes the Similkameen, Pennask, and Okanagan Batholith (Woodsworth et al, 1991). "The Batholith, crudely zoned, both spatially and temporally, consists of at least seven plutonic units that intrude the Upper Triassic Nicola Group and are overlain by Tertiary volcanics (Fig. 4 and 5). The margin consists of older granodiorite to quartz diorite called the Pennask Batholith in the north and the Similkameen Intrusions to the south. These rocks are characteristically equigranular and contain more hornblende than biotite. ... The core of the batholithic complex, here called the Osprey Lake Pluton, consist of characteristically pink granodiorite to granite that intrudes the typically greenish to grey Similkameen and Pennask intrusions. Abundant K-feldspar megacrysts are characteristic of the Osprey Lake Pluton. Biotite generally predominates over hornblende.

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The Coryell Suite consists of distinctive high-level, Eocene plutons widespread between Okanagan Lake and the Columbia River. The Coryell Suite consists of batholiths and stocks of pink and buff, variably textured, commonly porphyritic syenite and lesser granite, shonkinite, diorite, and monzonite. Biotite and hornblende are the main mafic minerals, but pyroxene is present locally. Chemically the rocks are strongly alkaline and have anomalously high concentrations of U and Th." (Woodsworth et al 1991).





PROPERTY GEOLOGY

The following has been taken from Poliquin and Ullrich (2008) and references therein.

"The dominant rock type on the property is a medium-grained, relatively massive granodiorite. Locally, the granodiorite has a porphyritic texture due to the presence of very coarse-grained potash feldspar crystals which are inconspicuous except when the cleavage faces of the large crystals reflect sunlight. The granodiorite is cut by quartz feldspar porphyry dikes that trend east-northeast. Locally narrow aplite veins and dikes cut the granodiorite. Quaternary Glaciofluvial and glacial deposits are irregularly distributed however large portions of the property are covered with thick overburden.

Alteration

The country rock granodiorite is pervasively altered and unaltered rock was not observed on the Munro Lake property. Igneous textures are preserved in the granodiorites and quartz-feldspar porphyry dikes. The country rock granodiorite is composed of igneous quartz (20-25 %), K-feldspar, plagioclase and biotite. The granodiorite country rocks are commonly sheared and intense texturally destructive alteration is structurally controlled. Hydrothermal minerals are dominantly veinlet controlled in their distribution, however both pervasive and selectively pervasive alteration were observed.

Mineralogy

Quartz - The host rock granodiorites are composed of approximately 25% igneous quartz. Hydrothermal quartz dominantly occurs in veins and veinlets. Three episodes of quartz veining have been recognized. Early quartz-K-feldspar-molybdenite veins are crosscut by quartz dominant-minor K-feldspar-pyrite-chalcopyrite +/- sphalerite veins. Both these vein types are crosscut by late milky quartz-pyrite veins. Petrographic studies indicate that quartz occurs as large anhedral grains with undulatory extinction.

K-feldspar - Igneous K-feldspar occurs in amounts up to 10% in the granodiorite. Hydrothermal K feldspar occurs as an open space mineral in

quartz veins and as a veinlet controlled replacement mineral. Early salmon-coloured K-feldspar-quartz-molybdenum veins are cross cut by quartz dominant-minor K-feldspar veins with chalcopyrite-pyrite and minor sphalerite. K-feldspar replaces the groundmass and plagioclase adjacent to quartz-K-feldspar veins.

Biotite - Biotite occurs as a replacement mineral. Biotite pervasively selectively replaces hornblende in mafic volcanics and replaces igneous biotite adjacent to quartz-K-feldspar-molybdenite veins. Biotite is associated with replacement K-feldspar and anhydrite.

Anhydrite - Anhydrite was identified petrographically ... and occurs in association with hydrothermal muscovite, biotite, quartz and K-feldspar in the selvages to quartz-K-feldspar veins and in the veins themselves. Chalcopyrite and pyrite also occur associated with anhydrite.

K-mica - Two phases of K-mica alteration were identified petrographically. Early muscovite is associated with K-feldspar-biotite and anhydrite while late "sericite" is associated with chlorite. Early muscovite is described as K-feldspar stable potassic alteration along the selvages of quartz-K-feldspar veins in veinlets and replacing plagioclase phenocrysts, generally associated with biotite and anhydrite. Late sericite replaces K feldspar and plagioclase in association with chlorite and overprints the early muscovite-biotite-K-feldspar alteration.

Calcite - Calcite was identified in hand specimen using HCL and petrographically. Calcite is distributed throughout the area investigated with diamond drilling. Calcite replaces plagioclase, occurs as fine grained masses in the groundmass and forms veinlets. Calcite is associated with sericite and chlorite.

Pyrite - Pyrite is the most common sulfide and occurs in amounts up to 5 volume % in veins and disseminated in the wall rocks adjacent to veins.

Pyrite occurs in association with chalcopyrite, sphalerite and more rarely molybdenite.

Chalcopyrite - Chalcopyrite occurs in quartz veins and disseminated in the wallrock adjacent to quartz veins in association with K-mica, anhydrite, pyrite and sphalerite.

Molybdenite - Molybdenite occurs exclusively in quartz-K-feldspar veins as bands and "smears" commonly along the selvages of the veins.

Alteration Assemblages

Two distinct alteration assemblages were identified from logging diamond drill core and limited petrography. As assemblage of K-feldspar-biotite-muscovite-anhydrite-molybdenite (type I) is associated with quartz-K-feldspar-molybdenite veining and occurs dominantly in the selvages of these veins. Subsequent, overprinting sericite +/- chlorite (type II) alteration is pervasive and is controlled to a lesser extent by veining. Quartz-minor K-feldspar-chalcopyrite +/- sphalerite veining are associated with sericite-chlorite alteration.

The distribution of type I alteration is controlled by the density of quartz-K-feldspar-molybdenite veining. From the limited diamond drill data the most intense quartz-K-feldspar-molybdenite veining (>2 veins/metre) correlates well with the high chargeability anomaly. Type I alteration occurs along the entire studied length of the chargeability high and gives way to pervasive, overprinting type II alteration, to the north and south, away from the chargeability high. This initial work indicates that the linear chargeability anomaly roughly outlines the extent of type I alteration and suggests that structural control may be important. Concentric zoning common in some porphyry copper deposits is not observed, however spatial zoning of alteration assemblages does occur along the flanks of the linear chargeability anomaly as type I alteration is superseded by type II alteration away from the anomaly.

MINERAL OCCURRENCES

The following have been taken from the respective MINFILE reports.

ROSE-MUNRO LAKE (MINFILE Occurrence 082ENW021)

The JASS showing is located 500 metres south of Eneas Lakes Provincial Park and approximately 24 kilometres northwest of Summerland. The showing is hosted by a light-grey, weakly saussuritized porphyritic granodiorite of the Middle Jurassic Osprey Lake Intrusions. It is intruded by Tertiary dikes of quartz latite porphyry and quartz monzonite. Fracturing and cross-fracturing is common; one conspicuous fracture set has a strike between northeast and east with a steep southerly dip, and cross-fractures have various attitudes. Quartz and orthoclase form partly drusy veinlets up to 0.5 centimetre thick. Low grade alteration is pervasive with local narrow envelopes of sericitized country rock enclosing mineralized fractures and quartz veins. Pyrite, molybdenite and chalcopyrite, all partly oxidized, are disseminated in and close to the veinlets. The molybdenite is fine-grained, more abundant than chalcopyrite, and is primarily found in a later high-angle set of veins, which are almost always quartz-pyrite bearing.

In 1966, Lakeland Base Metals Ltd. discovered the JASS showing after following-up anomalous stream geochemistry. Soil geochemical surveys, trenching and approximately 600 metres of percussion drilling were carried out in 1966 as a result of options by Brenmac Mines Ltd. and Brenda Mines Ltd. The results of the drilling are unknown, but the options on the property were dropped. In 1967, Lakeland attempted to extend geochemical anomalies by additional soil sampling but were unsuccessful.

Canadian Occidental Petroleum Ltd. staked the property in 1973, and in 1974 they carried out an extensive program of rock, soil and stream geochemistry, magnetometer surveys, and diamond drilling of 3 holes for a total depth of 275 metres. Several copper-molybdenum- zinc anomalies were outlined by the surface work and 3 were drilled. The results of the drilling were not recorded. In 1976, a Regional Geochemical Survey release identified highly anomalous silver values in streams draining the Munro Lake Plateau. As a consequence, in 1977 Canadian Occidental shifted their focus to the silver potential of the property, re-analysed their soil and drill core samples for silver and drilled a 171 metre BQ diamond-drill hole. The best intersection, between 99.0 and 100.6 metres, assayed 0.396 per cent zinc and 10 grams per tonne silver (Assessment Report 6558). In 1981, Canadian Occidental trenched the area north of the 1977 drillhole. The northernmost of the two trenches exposed a highly altered, rubbly, friable granodiorite with anomalous mineralization. A 108.2-metre section averaged 3.06 grams per tonne silver, 0.15 per cent zinc, 0.05 per cent copper, 0.003 per cent molybdenum and 0.008 per cent lead (Assessment Report 10445). This was considered sub-economic and no further work was recommended.

In 1986 Almaden Resources Corp. staked the JASS showing and proceeded to carry out a VLF-EM survey. The survey successfully identified two conductors of significant strike length, as well as multiple "one-line" anomalies. This was followed in 1987 by 23 overburden drillholes; the concentrates from 15 of these were anomalous in silver and zinc. In 1988, 34 overburden holes totaling 296 metres were drilled. Analysis by heavy mineral concentration identified three subparallel east-northeast trending gold-silver-zinc anomalous zones in the basal till layer. In 1990, Almaden carried out a geophysical program consisting of line-cutting and magnetometer, VLF-EM and scintillometer surveys. The program outlined a number of east-northeast trending anomalous areas believed to be associated with a lineament which is known to host quartz veins containing gold and silver values.

In 1994, Almaden contracted Delta Geoscience Ltd. to carry out induced polarization and resistivity surveys of the property. The results suggested that a large pyritic alteration system had been identified, measuring approximately 900 metres by 1600 metres long in an east-west direction. Sulphide mineralization within the main IP anomaly appears to be strongly controlled by intersecting northeast and east-west structures (George Cross Newsletter No. 220, 1994).

DECANO (MINFILE Occurrence 092HNE027)

The Decano molybdenum showing is exposed in several roadcuts on both sides of Camp Creek, about 500 metres southwest of the mouth of Chapman Creek and 6.4 kilometres northeast of the east end of Thirsk Lake.

The area along Camp Creek, in the vicinity of Chapman Creek, is underlain by medium to coarse-grained. light grey granodiorite of the Early Jurassic Pennask batholith. Pink orthoclase porphyritic granite of the Middle Jurassic Osprey Lake batholith outcrops about 800 metres south of the showing.

The granodiorite is cut by several dikes of altered feldspar porphyritic quartz monzonite, that may have been emplaced along previously existing faults striking west-northwest. The largest dike strikes 125 degrees and is 750 metres long and up to 1690 metres wide. The dikes have been strongly altered and reduced to a fractured and vuggy mixture of quartz (primary) and sericite (secondary) accompanied by variable amounts of pyrite. Quartz also forms veins and stringers. Kaolinized feldspar phenocrysts are visible in less-altered dikes. The granodiorite wallrock exhibits some alteration along fractures, where sericite and pyrite are developed in thin envelopes along such fractures.

The dikes are mineralized with molybdenite and ferrimolybdite, as fine-grained disseminations in the quartz-sericite matrix, and to a lesser extent in fractures, quartz veins and vugs. Traces of chalcopyrite occur in the granodiorite in the vicinity of the dikes. A grab sample assayed 0.48 per cent MoS2, and cuttings from percussion drilling assayed 0.025 to 0.051 per cent MoS2 (Assessment Report 7788, page 3). Three rock samples of siliceous material from altered and sheared dike rock analysed less than 0.005 gram per tonne gold, up to 1 gram per tonne silver, 0.002 to 0.006 per cent copper and 0.003 to 0.009 per cent molybdenum (Assessment Report 21951, page 3).

CACHE (MINFILE Occurrence 082ENW012)

The area is underlain by a dark, biotite-granodiorite of the Middle Jurassic Osprey Lake Intrusions. Descriptions of the site suggest that a number of exposures, trenches and adits exist in this general area and they are collectively grouped under the CACHE showing.

Mineralization appears to be structurally controlled, usually associated with steeply-dipping northeasterly faults. Where mineralized, the granodiorite is altered to a greenish colour due to sericitization. At an upper exposure, northeasterly fractures dip northward in silicified granodiorite that is mineralized with tetrahedrite, pyrite, and chalcocite, the latter probably of secondary origin. Mineralization, which is locally strong, apparently persists for 6 metres northward to a fault which strikes north 80 degrees east and dips steeply to the north. A lower exposure, at 1340 metres elevation, consists of chalcopyrite, pyrite, and specular hematite as disseminations, seams and small masses. These occur mainly in the hangingwall of a fault which strikes north 46 degrees east and dips at 70 degrees northeastward. Sulphide mineralization is usually restricted to within a few feet of the fault. Minor quartz veining is also present.

The earliest evidence of work on the property are two short adits, attributed to prospectors in the 1920s. Small shipments of wire silver were reportedly made at that time. In 1966-67, Koporok Mines Ltd. carried out a program of line-cutting, road-building, claim-surveying, induced polarization surveying, trenching and blasting. In 1969, they had an aerial magnetometer survey flown over the claim area; several magnetic linears and disturbances were identified.

SWAN (MINFILE Occurrence 082ENW066)

The SWAN showing is located approximately 20 kilometres north-west of Summerland and 2.4 kilometres west of Darke Lake Provincial Park.

In the mid-1970s, some stripping and sampling was carried out on the showing by Mr. Plank, a local resident. In the late 1970s the property was held by Okanagan Silica Ltd. There are no records of any subsequent property work, bulk sampling or production.

The showing is underlain by the Middle Jurassic Osprey Lake Intrusions; it consists of a quartz-pegmatite body, hosted by an altered, coarse-grained, intergranular quartz monzonite. The pegmatite is exposed in scattered outcrops, road cuts and trenches on a steep northeast-facing slope. The area exposed is approximately 60 by 120 metres with a vertical extent of about 75 metres. The pegmatite is composed of 25 per cent massive quartz, 10 per cent muscovite, 10 per cent feldspar, and the remaining 55 per cent is an intergrowth of quartz and feldspar with small amounts of muscovite.

A chip sample of quartz collected by the Geological Survey Branch analysed 99.54 per cent silica (Open File 1987-15). Muscovite occurs as pockets and seams of fine to coarse-grained pearly white subhedral to euhedral radiating clusters and books. Coarse-grained flakes of muscovite, to 1 centimetre in size, are commonly found with coarse-grained intergrowths of quartz and feldspar. Feldspar is present as orthoclase and albite. Masses of the host intrusive rock are sometimes present within the quartzose mass, peripherally accompanied by malachite and limonite staining.

LOCAL GEOLOGY

The following has been taken from King, 1997.

"In the immediate area of the 1996 drilling and the current drilling, a medium to coarse-grained, relatively massive granodiorite is the dominant rock type. Locally, the granodiorite has a porphyritic texture due to the presence of very coarse-grained potash feldspar crystals which are inconspicuous except when the cleavage faces of the large crystals reflect sunlight.

The granodiorite is cut by quartz feldspar porphyry dikes that trend eastnortheast. ... Quartz-feldspar porphyry dikes have also been intersected in holes M-96-2 and M-96-7 and in the current drilling, a quartz-feldspar porphyry dike was intersected in hole M-97-5. A swarm of eleven andesite porphyry dikes was intersected in M-97-2. Narrow aplite veins and dikes cut the granodiorite in a number of drill holes.

Alteration

Zones within the granodiorite have been subjected to weak, pervasive potassic alteration. Igneous textures are generally preserved in the granodiorite and in quartz-feldspar porphyry dikes. The country rock granodiorite is composed of igneous quartz (20-25%), K-feldspar, plagioclase and biotite. The granodiorite is commonly sheared and alteration is structurally controlled.

Hydrothermal minerals are dominantly veinlet controlled in their distribution, however both pervasive and selective alteration was observed.

Two alteration assemblages were identified. Sericite-chlorite alteration is associated with early stage quartz + pyrite +/- chalcopyrite +/- sphalerite +/- hematite veining. Sericite and chlorite-rich selvages form along the veins replacing granodioritic textures over widths of up to 5 cm from vein margins.

Where sections of core are highly sheared and fractured, original granitic textures have been replaced by primarily sericite, chlorite and quartz.

Potassic alteration consisting of K-feldspar, biotite, muscovite and anhydrite is associated with late stage quartz + K-spar +/- molybdenite +/- hematite veining and occurs dominantly in the selvages of these veins. Potassic alteration associated with veining was only noted in holes M-97-1 and M-97-2, the two eastern-most holes drilled during the 1997 program.

Mineralogy

The host rock granodiorite intersected in the drilling is composed of approximately 25% igneous quartz with up to 5% hydrothermal quartz occurring in veins and veinlets. At least three episodes of quartz veining have been recognized. Early stage quartz-pyrite +/- chalcopyrite veins are dominant and are characterized by pronounced sericite-chlorite selvages up to 5 cm wide. This veining is cut by late stage quartz +/- K-spar + pyrite +/- molybdenite +/- hematite veinlets. Both vein sets are crosscut by a third set of late, sparse, quartz + pyrite +/- molybdenite veinlets present in holes M-97-1 and M-97-2.

This description of cutting relationships is in contrast to that observed in the 1996 core from drilling further to the east where quartz + K feldspar + molybdenite veins were interpreted as early stage and cut by quartz + pyrite +/- chalcopyrite +/- sphalerite veining with characteristic chlorite-sericite selvages.

Mineralization

Two types of mineralization have been recognized on the property. Weak, porphyry-type pyrite-chalcopyrite-molybdenite mineralization is exposed in several trenches in the north-central part of the property where overburden cover is thinnest. The exposed mineralization is located on the south margin of a large I.P. chargeability anomaly, the target of the 1996 and 1997 drill programs.

A second type of mineralization occurs as quartz veining in silicified shear zones. Sampling of a showing on the former Rose 2 claim in 1988 returned values of 0.132 oz/ton gold and 23.77 oz/ton silver over the 0.15 cm width of the vein."

2012 PROGRAM

An Aeroquest AeroTEM IV (Lima) time domain, helicopter-supported geophysical survey was flown over the MIKAYLA Property between November 20 and 22, 2012. The survey comprised both electromagnetic and magnetic surveys. "Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer. Full-waveform streaming EM data is recorded at 36,000 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers" (Aeroquest 2013).

The survey totaled 222.7 line-km, flown at 100 metre line spacing, with flight lines oriented at $0^{\circ}/180^{\circ}$ and tie-lines at $90^{\circ}/270^{\circ}$.

"The nominal EM bird terrain clearance is 30 metres, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 33 metres above the EM bird and 17 metres below the helicopter (Figure 3). Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 36,000 samples per second and is processed to generate final data at 10 samples per second. The 10 samples per second translate to a geophysical reading about every 1.5 to 2.5 metres along the flight path" (Aeroquest 2013).

DISCUSSION

Note: Clean copies of the Aeroquest Total Magnetic Intensity (TMI) and electromagnetic (ZOFF) maps are available in Appendix B.

Total Magnetic Intensity (TMI)

There is only a difference of 360 nT between the minimum and maximum values on the Total Magnetic Intensity (TMI) plot so there is not a great deal of magnetic variation evident on the property. In addition, there is a powerline, present on the west side of the Property, however, it does not appear to have produced any significant artifacts in the data.

"The electromagnetic response transecting the Western third of the property is a valid earth response not associated with 60 Hz powerline interference.

Please see the attached Powerline Map (Fig. 6), which illustrates that the powerline effects, in this case, were minimal for this particular survey area. The dominant earth response shows conductance values of 15-25S which above geological background (2-8S). Furthermore the dominant conductors on the survey area illustrate a positive correlation with magnetic highs and only several hundred meters from a local road" (D. Hitz, Aeroquest, pers. Comm. 2013).

The resulting TMI data (Fig. 7) is interpreted to document a subtle contact, extending almost east-west through the northern portion of the property, spatially associated with the mapped contact (see Fig. 4). In general, lower magnetic responses are documented south of this contact, while higher magnetic values are documented predominantly in the northwest portion of the Property and along the northern margin of the Property.

The presence of lobes of moderate to high intensity magnetic response, projecting south and southwest from this contact, are tentatively interpreted to indicate the contact dips moderately and irregularly to the south-southeast. As a result, the slightly higher magnetic response characterizing the Late Triassic to Early Jurassic granodiorite to the north gradually decreases to the south-south-west as it plunges progressively under the Middle Jurassic granite.

In addition, the data appears to document a number of generally linear anomalies having relatively sharp margins, tentatively interpreted to indicate faults. There appear to be two generations of faults, one trending west-northwest (Faults A and F) and a second to the northeast.

The fault set trending northeast, comprising proposed Faults B-E and G-I, is relatively well defined, both in terms of geophysics and surface topography. For example, Fault B is tentatively defined on the basis of a magnetic low evident on the TMI data, as well as the relatively straight southeast shore of Tsuh Lake and the creek flowing out to the southwest. The northeast trending faults appear to be truncated by the west-northwest-east-southeast trending faults (Faults A and F) which may be associated with and/or define the subtle geological contact.

It is interesting to note that the DECANO (MINFILE Occurrence 092HNE027) is described as having associated dikes with a strike of 125° (potentially correlative to the northwest trending fault set), while mineralization associated with the CACHE (MINFILE Occurrence 082ENW012) is described as persisting "...6 metres northward to a fault which strikes north 80 degrees east and dips steeply to the north. A lower exposure, at 1340 metres elevation, consists of chalcopyrite, pyrite, and specular hematite as disseminations, seams and small masses. These occur mainly in the hangingwall of a fault which strikes north 46 degrees east and dips at 70 degrees northeastward". Similarly, the ROSE-MUNRO LAKE (MINFILE Occurrence 082ENW021) has a "... conspicuous fracture set (with) a strike between northeast and east with a steep southerly dip". The proposed faults indicated on the TMI plot (Fig. 7) show a similar range in trend.

Finally, "Analysis by heavy mineral concentration (of base of till samples) identified three sub-parallel east-northeast trending gold-silver-zinc anomalous zones in the basal till layer" (King 1997). Taken together, these date and observations are interpreted to suggest that northeast oriented structures comprise the target for subsequent, and further, exploration.







respect to the Aeroquest ZOFF data. Figure 8 - Proposed faults as interpreted from the Total Magnetic Intensity (TMI) data plotted with

Electromagnetics (ZOFF)

The ZOFF data (Fig. 8) document a prominent anomaly oriented at a high angle to Fault A, proposed from TMI data (above). Furthermore, the anomaly is highly oblique to the trend of the powerline and is, therefore, interpreted to be a real bedrock anomaly and not an artifact, also supported by the "K" (thicK) interpretation by Aeroquest. Although the anomaly is broadly coincident and spatially overlaps the southwest flowing portion of Tsuh Creek, immediately southwest of Tsuh Lake, it is not interpreted to document conductive sediments along the watercourse. The reasons for this interpretation are that the anomaly extends southwest well beyond a dramatic change in direction for the watercourse at the approximate centre of the anomaly, spatial association with a proposed fault along the Tsuh Creek valley and multiple "K" designations for the broad, prominent EM anomaly extending over multiple flight lines.

This well developed anomaly is oriented at a high angle to both the proposed faults and the IP anomaly (see below). It is associated with lower magnetic values, tentatively interpreted to suggest destruction (i.e. alteration) of the magnetic minerals (pyrrhotite and/or magnetite) present due to water infiltrating down the proposed fault zone.

It is interesting to note the location of drillhole M97-2, at the northern end of this electromagnetic anomaly "... drilled due south at -55° (and) encountered a coarse-grained, potassic and sericitic altered biotite granodiorite containing a number of highly altered sections. Within the more highly altered sections, original granitic textures have been replaced by chlorite, sericite and quartz. ...

There are two main vein systems (recognized);

- a) An early stage, prominent pyrite + quartz + chlorite +s ericite vein set with vein density of up to 7 veinlets per meter. This vein set is characterized by distinctive chlorite-sericite vein selvages. Strong quartz + pyrite veining with individual veinlets up to 2 cm wide occurs from 324 m to 326.3 m and from 325 m to 425 m. Overall pyrite content within these sections is estimated to range from 3% to 5%.
- b) A late stage quartz + pyrite +/- molybdenite +/- hematite veining from 0.2 cm to 1 cm wide. Minor molybdenite was noted in at least 20 veins from 95.4 m to 116.7 m. A third, less abundant, late stage quartz + pyrite + Kspar + hematite +/- molybdenite


vein set is commonly oriented at 20 to 30 to the core axis. Minor molybdenite was noted in veinlets from 124 m to 158.3 m and from 297 m to 338 m. Pyrite content throughout the hole is estimated to average 2%" (King 1997).

Several, additional smaller clusters of anomalies are also evident and are worthy of followup subsequent to compilation of existing surface data (soil geochemistry, mapping) and limited sub-surface data (i.e. overburden and diamond drilling).

Induced Potential (IP) SURVEY

Ground Induced Potential (IP) geophysical survey data reported by Almaden (King 1997) has been geo-referenced and plotted for reference with the Aeroquest airborne data (Fig. 9). The data show a well developed IP anomaly, oriented west-northwest - east-southeast and broadly bounded by proposed faults ""and "F" and spatially associated with the interpreted geological contact. However, in detail, the correlation of the IP anomaly with the proposed northeast-southwest faults is poor.

However, the strong association of both the TMI and IP data and a possible truncation by Fault "E" (and, possibly Fault "D") is compelling. If correct, it is interpreted to suggest the IP anomaly may have been offset by the northeast trending fault set, resulting in a stepped configuration in the sub-surface. In addition, the IP data also appears to document some north-south flaring (i.e. along 288000 E and 289000 E), as well as offset (i.e. at 284500 E and 287000 E), suggesting the possibility of a third set of controlling structures oriented north-south.

The offsets in the IP data (described above) are spatially coincident with similar north-south oriented transitions evident in the TMI data at the same locations. The anomalies may indicate a deflection due to a fault offset. The fact that the deflections are evident on two different generations of data acquired independently and using different geophysical methods suggest: 1) that they are real anomalies (deflections) and 2) that the data can be interpreted together (thereby potentially providing more information).

The drill holes completed by Almaden Resources Ltd between 1996 and 1997 were drilled toward azimuth 000° or 180°, with the exception of the vertical hole M96-4 (see below).

Hole #	Grid N	Grid E	Azimuth	Dip	Length
M-96-1	9700	-3172	180	-70	251.5
M-96-2	9700	-3294	180	-60	284.4
M-96-3	9600	-3538	180	-70	250.2
M-96-4	9490	-2562	0	-90	243.8
M-96-5	9600	-2440	180	-70	251.5
M-96-6	8640	-2196	180	-70	259.1
M-96-7	8935	-3090	180	-60	239.3
M-97-1	10,050	-400	180	-55	376.7
M-97-2	10,250	-700	180	-55	425.2
M-97-3	10,770	-2,650	180	-60	432.8
M-97-4	9900	-2,090	0	-55	390.7
M-97-5	9,900	-1,400	0	-55	416.7

Collar information for the 1996 – 1997 Almaden Resources Ltd. drill holes.

As such, given that the northeast oriented structures may be the optimum exploration target, the holes may have been poorly oriented with respect to structural elements controlling mineralization, effectively diluting the mineralization documenting in the holes. In support of this proposal, it is noted that core angle intercepts documented in the core logs vary from 10° to 70°, and (qualitatively) average approximately 45°.

In addition, some of the mineralization may have been diminished due to oxidation associated with faults.

"Low grade alteration is pervasive with local narrow envelopes of sericitized country rock enclosing mineralized fractures and quartz veins. Pyrite, molybdenite and chalcopyrite, *all partly oxidized*, (Note: emphasis by author) are disseminated in and close to the veinlets. The molybdenite is fine-grained, more abundant than chalcopyrite, and is primarily found in a later high-angle set of veins, which are almost always quartz-pyrite bearing" (King 1997).

CONCLUSIONS

The data arising from the 2012 Aeroquest airborne geophysical survey appear to agree relatively well with the earlier Induced Potential (IP) data released by Almaden Resources Ltd. The data, taken together with MINFILE and base of till heavy mineral concentrates (King 1997), are interpreted to indicate northeast trending structures controlling mineralization. If correct, the diamond drill holes completed by Almaden Resources Ltd. in 1996 and 1997 may have been poorly oriented with respect to these structures. In addition, only one of the holes completed by Almaden Resources Ltd. (M97-2) is located so as to provide information pertaining to the large electromagnetic anomaly delineated in the Aeroquest survey.

Finally, preliminary interpretation of the Aeroquest data is interpreted to indicate the geological (intrusive) contact between the Late Triassic to Jurassic granodiorite and the Jurassic granite (and the spatially associated IP anomaly) may be faulted by both north-south and northeast-southwest oriented faults. Geochemical analysis of base of till heavy mineral concentrates was interpreted to have "... identified three sub-parallel east-northeast trending gold-silver-zinc anomalous zones in the basal till layer" (King 1997).

Further work is strongly recommended on the Mikayla Property.

RECOMMENDATIONS

- 1. Compile the available information for the Mikayla Property, and immediately adjacent area, including, but not limited to:
 - a. Surface soil, stream and rock sample analytical data,
 - b. Ascertain location of trenches and associated analytical results,
 - c. Collar location and analytical results from overburden drilling,
 - d. Surface geophysical results, in particular the 1996-1997 Induced Potential (IP) survey results in digital form, with accompanying sections, and
 - e. Diamond drill collar locations in UTM (NAD83, Zone 11 datum), with analytical results.
- 2. Acquire satellite imagery and/or air photos for the Property.
- 3. Undertake a ground-based Self Potential (SP) survey, particularly in the area above the electromagnetic anomaly delineated by Aeroquest. Based on initial results, the survey area should be expanded outward, generally east-west along the extent of the IP anomaly in an attempt to delineate optimal locations to test potentially mineralized north-east and/or north-south trending structures.
- 4. Based on the results of the compilation in (1), additional soil sampling is recommended, however, the thickness of the glacio-fluvial overburden will be a limited factor in the success of this initiative.
- 5. Follow-up stream geochemical anomalies from the 2008 Almaden Resources program.
- 6. Diamond drilling to undertake sub-surface testing of results from the above initiatives.

PROPOSED PROGRAM

Pre-Field

Compilation of previous work				7	Man-days	\$700.00		\$4,900.00
Acquisition o	f additional tenu	ures					_	\$400.00
							Sub-	* = = = = = = = =
							Total _	\$5,300.00
<u>Field Progra</u>	<u>m</u>			_		_		
	Phase I			<u>Days</u>	<u>Units</u>	<u>Rate</u>		
Geologist	Pr	ospectin	g / Mapping	14	Man-days	\$700.00		\$9,800.00
Samples	IC	CP Analy	sis	100	Samples	\$25.00		\$2,500.00
Shipping - Gr	eyhound							\$100.00
2, 2 person so	oil crews			14	Man-days	\$250.00		\$3,500.00
Field Supplies	8			28	Man-days	\$20.00		\$560.00
Samples	IC	CP Analy	sis	534	Samples	\$25.00		\$13,350.00
Shipping - Gr	eyhound							\$500.00
Accommodat	ions / Meals							
			Pros./					
	Geologist / As	sistant	Mapping	28	Man-days	\$100.00		\$2,800.00
	Geologist / As	sistant	Trenching	10	Man-days	\$100.00		\$1,000.00
	Soil Crews			28	Man-days	\$100.00		\$2,800.00
4 WD Truck	+ Mileage + Fue	el						
	Geologist / As	sistant	Prospecting					\$1,500.00
	Geologist		Trenching					\$500.00
	Soil Crews							\$3,000.00
	Geophysical C	Crew						\$6,000.00
						Phase I S	ub-Total	\$47,910.00
Report				5	Man-days	\$700	00	\$3.500.00
noport				Ũ	iviun uujs	\$700		\$ 0 ,00000
						Program	Sub-Total	\$56,710.00
						Continge 10%	ncy at	\$5,671.00
							-	
							Total	\$62,381.00

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APPENDIX A

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Richard T. Walker, of 2601 - 42 Avenue South, Cranbrook, B.C., hereby certify that:

- I am a graduate of the University of Calgary of Calgary, Alberta, having obtained a Bachelors of Science in 1986,
- 2) I obtained a Masters of Geology at the University of Calgary of Calgary, Alberta in 1989;
- I am a member in good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia;
- I am the Vice President Exploration for Green Swan Capital Corp., with offices at 855 Brant Street, Burlington, ON;
- 5) I am the author of this report which is based on work undertaken on the MIKAYLA property between November 20th and 22nd, 2012;
- 6) I hereby grant my permission to Green Swan Capital Corp. to use this report, or any portion of it, for any legal purposes normal to the business of the firm, provided the excerpts used do not materially deviate from the intent of this report as set out in the whole.

Dated at Cranbrook, British Columbia this 31st day of May, 2013.

Richard T. Walker, P.Geo

APPENDIX B

AEROQUEST GEOPHYSICAL

SURVEY REPORT

Report on an AeroTEM Helicopter-Borne Electromagnetic & Magnetic Survey



Aeroquest Job # AQ120214

Mikayla Property Summerland, British Columbia

For

Green Swan Capital Corp.

by



245 Industrial Parkway North Aurora, ON L4G 4C4 www.aeroquestairborne.com

Report date: January, 2013

Report on an AeroTEM Helicopter-Borne Electromagnetic & Magnetic Survey

Aeroquest Job # AQ120214

Mikayla Property Summerland, British Columbia

For

Green Swan Capital Corp.

Address : 855 Brant Street Burlington, ON, L7R 2J6

By



Aeroquest Airborne

245 Industrial Parkway North Aurora, ON L4G 4C4 www.aeroquestairborne.com

Report date January, 2013



TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF FIGURES	2
LIST OF MAPS (1:10,000)	2
1. INTRODUCTION	3
2. SURVEY AREA	3
3. SURVEY SPECIFICATIONS AND PROCEDURES	4
3.1. Navigation	4 4 4
4. AIRCRAFT AND EQUIPMENT	5
 4.1. Aircraft	5 6 7 8 8 9 9
	~
5. PERSONNEL	9
5. PERSONNEL6. DELIVERABLES	9 10
 5. PERSONNEL 6. DELIVERABLES 6.1. Hardcopy Deliverables 6.2. Digital Deliverables 6.2.1. Final Database of Survey Data (.GDB) 6.2.2. Geosoft Grid files (.GRD) 6.2.3. Digital Versions of Final Maps (.MAP, .PDF) 6.2.4. Google Earth Files (.kmz) 6.2.5. Free Viewing Software (.EXE) 6.2.6. Digital Copy of this Document (.PDF) 	9 10 10 10 10 10 10 11 11 11
 5. PERSONNEL 6. DELIVERABLES 6.1. Hardcopy Deliverables 6.2. Digital Deliverables 6.2.1. Final Database of Survey Data (.GDB) 6.2.2. Geosoft Grid files (.GRD) 6.2.3. Digital Versions of Final Maps (.MAP, .PDF) 6.2.4. Google Earth Files (.kmz) 6.2.5. Free Viewing Software (.EXE) 6.2.6. Digital Copy of this Document (.PDF) 7. DATA PROCESSING AND PRESENTATION 	9 10 10 10 10 10 10 11 11 11
 5. PERSONNEL	9 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 11 11 11 11 11 12
 5. PERSONNEL 6. DELIVERABLES 6.1. Hardcopy Deliverables 6.2. Digital Deliverables 6.2.1. Final Database of Survey Data (.GDB) 6.2.2. Geosoft Grid files (.GRD) 6.2.3. Digital Versions of Final Maps (.MAP, .PDF) 6.2.4. Google Earth Files (.kmz) 6.2.5. Free Viewing Software (.EXE) 6.2.6. Digital Copy of this Document (.PDF) 7. DATA PROCESSING AND PRESENTATION 7.1. Base Map. 7.2. Flight Path & Terrain Clearance 7.3. Electromagnetic Data 8. GENERAL Comments 	9 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 11 11 11 11 11 11 11 12 13
 5. PERSONNEL. 6. DELIVERABLES	9 10 11 11 11 11 11 11 12 13 13 13
 5. PERSONNEL. 6. DELIVERABLES. 6.1. Hardcopy Deliverables. 6.2. Digital Deliverables. 6.2. Digital Deliverables. 6.2.1. Final Database of Survey Data (.GDB). 6.2.2. Geosoft Grid files (.GRD). 6.2.3. Digital Versions of Final Maps (.MAP, .PDF). 6.2.4. Google Earth Files (.kmz). 6.2.5. Free Viewing Software (.EXE). 6.2.6. Digital Copy of this Document (.PDF). 7. DATA PROCESSING AND PRESENTATION 7.1. Base Map. 7.2. Flight Path & Terrain Clearance 7.3. Electromagnetic Data 7.4. Magnetic Data 8. GENERAL Comments 8.1. Magnetic Response 8.2. EM Anomalies APPENDIX 1: Survey Boundaries. 	9 10 11 11 11 11 11 11 12 13 13 15
 5. PERSONNEL 6. DELIVERABLES 6.1. Hardcopy Deliverables 6.2. Digital Deliverables 6.2. Digital Deliverables 6.2.1. Final Database of Survey Data (.GDB) 6.2.2. Geosoft Grid files (.GRD) 6.2.3. Digital Versions of Final Maps (.MAP, .PDF) 6.2.4. Google Earth Files (.kmz) 6.2.5. Free Viewing Software (.EXE) 6.2.6. Digital Copy of this Document (.PDF) 7. DATA PROCESSING AND PRESENTATION 7.1. Base Map. 7.2. Flight Path & Terrain Clearance 7.3. Electromagnetic Data 8. GENERAL Comments 8.1. Magnetic Response 8.2. EM Anomalies APPENDIX 1: Survey Boundaries. APPENDIX 2: Description of Database Fields 	9 10 11 11 11 11 11 11 11 11 12 13 13 13 15 16



APPENDIX 4: AeroTEM Design Considerations	19
APPENDIX 5: AeroTEM Instrumentation Specification Sheet	25
APPENDIX 6: FINAL DELIVERABLES	26

LIST OF FIGURES

Figure 1: AeroTEM IV survey area	
Figure 2: Helicopter type used during the survey	5
Figure 3: The magnetometer bird (A) and AeroTEM IV EM bird (B).	6
Figure 4: Schematic of Transmitter and Receiver waveforms.	7
Figure 5: AeroTEM IV Instrument Rack.	7
Figure 6: Digital video camera typical mounting location.	9
Figure 7: AeroTEM response to a 'thin' vertical conductor.	
Figure 8: AeroTEM response for a 'thick' vertical conductor.	14
Figure 9: AeroTEM response over a 'thin' dipping conductor.	14

LIST OF MAPS (1:10,000)

- TMI Total Magnetic Intensity colour grid with contours and EM anomaly symbols.
- EM Profiles Profiles of 0-10 Z-axis EM channels with Flight Path and EM anomaly symbols.
- Z1-OFF Early Time EM Channel grid with contours and EM anomaly symbols



1. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Green Swan Capital Corp., for the Mikayla Property near Summerland, British Columbia.

The principal geophysical sensor is Aeroquest's exclusive AeroTEM IV (Lima) time domain helicopter electromagnetic system which is employed in conjunction with a high-sensitivity caesium vapour magnetometer. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer. Full-waveform streaming EM data is recorded at 36,000 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers.

The total survey coverage is 222.7 line-km (Appendix 1). The survey was made up of one block Mikayla Property, flown at 100 metre line spacing and at 0°/180° (90°/270°) flight direction (Figure 1). The survey flying described in this report took place from November 20th to November 22nd 2012. This report describes the survey logistics, the data processing, presentation, and provides the specifications of the survey.

2. SURVEY AREA

The Project area (Figure 1) consisted of one block, Mikayla Property. Mikayla Property is located approximately 22 km northwest of Summerland, British Columbia. The base of survey operations was out of Summerland, British Columbia.



Figure 1: AeroTEM IV survey area.



3. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Project Name	Line/Tie Spacing (metres)	Line Direction	Survey Coverage (line-km)	Date flown	
Mikayla Property	100/1000	0°/180°	222.7	November $20^{th} - 21^{st} 2012$	

Table 1: Survey specifications summary

The survey coverage was calculated by summing the along-line horizontal distance of the survey lines as presented in the final Geosoft database. The survey was flown with a line spacing of 100 metres.

The nominal EM bird terrain clearance is 30 metres, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 33 metres above the EM bird and 17 metres below the helicopter (Figure 3). Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 36,000 samples per second and is processed to generate final data at 10 samples per second. The 10 samples per second translate to a geophysical reading about every 1.5 to 2.5 metres along the flight path.

3.1. NAVIGATION

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

3.2. System Drift

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

3.3. FIELD QA/QC PROCEDURES

On return of the pilot and operator to the base, usually after each flight, the AeroDAS streaming EM data and the ADAS data are carried on removable hard drives and Flashcards, respectively and transferred to the data processing work station. At the end of



each day, the base station magnetometer data on Flashcard is retrieved from the base station unit.

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

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

4. AIRCRAFT AND EQUIPMENT

4.1. AIRCRAFT

An AS350 B3 helicopter - registration TEQ was used as survey platform. The helicopter was owned and operated by Geotech Aviation. Installation of the geophysical and ancillary equipment was carried out by Aeroquest Airborne personnel in conjunction with a licensed aircraft engineer. The survey aircraft was flown at a nominal terrain clearance of 362 ft (110 metres).



Figure 2: Helicopter type used during the survey.



4.2. MAGNETOMETER

The AeroTEM IV airborne survey system employs the Geometrics G-823A caesium vapour magnetometer sensor installed in a two metre towed bird airfoil attached to the main tow line, 17 metres below the helicopter (Figure 3). The sensitivity of the magnetometer is 0.002 NanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer bird is 93 metres (307 ft.). The magnetic data is recorded at 10 Hz by the ADAS.

4.3. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM IV time domain towed-bird system. The AeroTEM IV transmitter dipole moment at the 90 Hz is 234 kNIA. The AeroTEM bird is towed 50 metres (165 ft) below the helicopter. More technical details of the system may be found in Appendix 5.

The wave-form is triangular with a symmetric transmitter on-time pulse of 2.07 ms and a base frequency of 90 Hz (Figure 4). The current alternates polarity every on-time pulse. During every Tx on-off cycle (180 per second), 200 contiguous channels of raw X and Z component (and a transmitter current monitor, itx) of the received waveform are measured. Each channel width is 27.78 microseconds starting at the beginning of the transmitter pulse. This 200 channel data is referred to as the raw streaming data. The AeroTEM system has one separate EM data recording stream, the newly designed AeroDAS system which records the full waveform (Figure 5).



Figure 3: The magnetometer bird (A) and AeroTEM IV EM bird (B).





Figure 4: Schematic of Transmitter and Receiver waveforms.

4.4. AERODAS ACQUISITION SYSTEM

The 240 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 5) onto a removable hard drive. In addition the magnetic, altimeter and position data are also recorded in it, six channels of real time processed off-time EM decay in the Z direction and one in the X direction can be viewed on a color monitor on board, these channels are derived by a binning, stacking and filtering procedure on the raw streaming data.

The primary use of the displayed EM data (Z1 to Z6, X1), magnetic and altimeter is to provide for real-time QA/QC on board.



Figure 5: AeroTEM IV Instrument Rack.

The streaming data are processed post-survey to yield 33 stacked and binned on-time and offtime channels at a 10 Hz sample rate. The timing of the final processed EM channels is described in the following table:



Average Average Average Average	TxOn -4. TxSwitch 100 TxOff 194 TxPeak 399	4048 us 7.1996 us 4.4495 us .4285 A		
[Channel Channel On1 On2 On3 On4 On5 On6 On7 On8 On9 On10 On11 On12 On13 On14 On15	Data] Sample Range 4 - 4 5 - 5 6 - 6 7 - 7 8 - 8 9 - 9 10 - 10 11 - 11 12 - 12 13 - 13 14 - 14 15 - 15 16 - 16 17 - 17 18 - 18	Time Width (u 27 27 27 27 27 27 27 27 27 27 27 27 27	s) Time Center (us) .8 97.2 .8 125.0 .8 152.8 .8 180.6 .8 208.3 .8 236.1 .8 263.9 .8 291.7 .8 347.2 .8 347.2 .8 347.2 .8 402.8 .8 430.6 .8 458.3 .8 486.1	Time After TxOn (us) 101.6 129.4 157.2 185.0 212.7 240.5 268.3 296.1 323.8 351.6 379.4 407.2 435.0 462.7 490.5 510.2
Channel	Sample Range 74 - 74 75 - 75 76 - 76 77 - 77 78 - 78 80 - 82 83 - 85 86 - 88 89 - 91 92 - 96 97 - 101 102 - 107 108 - 117 118 - 131 132 - 153	Time Width (u. 27 27 27 27 27 27 27 27 83 83 83 83 83 83 83 83 83 83 83 83 83	s) Time Center (us) .8 2041.7 .8 2069.4 .8 2057.2 .8 2152.8 .8 2180.6 .3 2236.1 .3 2319.4 .3 2402.8 .9 2597.2 .9 2736.1 .7 2888.9 .8 3111.1 .9 3444.4 .1 3944.4	Time After TxOff (us) 97.2 125.0 152.8 180.6 208.3 236.1 291.7 375.0 458.3 541.7 652.8 791.7 944.4 1166.7 1500.0 2000.0

4.5. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-859 caesium vapour magnetometer system with integrated GPS. Data logging and UTC time synchronisation was carried out within the magnetometer, with the GPS providing the timing signal. The data logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.001 nT. The sensor was placed on a tripod in an area of low magnetic gradient and free of cultural noise sources. A continuously updated display of the base station values was available for viewing and regularly monitored to ensure acceptable data quality and diurnal variation.

4.6. RADAR ALTIMETER

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

4.7. VIDEO TRACKING AND RECORDING SYSTEM

A high resolution digital colour 8 mm video camera is used to record the helicopter ground flight path along the survey lines. The video is digitally annotated with GPS



position and time and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.



Figure 6: Digital video camera typical mounting location.

4.8. GPS NAVIGATION SYSTEM

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

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 11N projection. The real-time differentially corrected GPS positional data was recorded by the AeroDAS system in geodetic coordinates (latitude and longitude using WGS84) at 0.1 s intervals.

4.9. DIGITAL ACQUISITION SYSTEM

The AeroTEM received waveform sampled during on and off-time at 200 channels per decay, 180 times per second, was logged by the proprietary AeroDAS data acquisition system. The streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

5. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Operations Project Manager: Scott Trew
- Field Data Processor: Thomas Wade



- Field Operator: Steve Sartor
- Data Interpretation and Reporting: Thomas Wade and Liz Mathew

The survey pilot Walter Zec and Chris Ward were employed directly by the helicopter operator – Geotech Aviation.

6. DELIVERABLES

6.1. HARDCOPY DELIVERABLES

The report includes a set of one 1:10,000 maps and the following three geophysical data products are delivered:

- TMI Total Magnetic Intensity colour grid with contours and EM anomaly symbols.
- EM Profiles– Profiles of 0-10 Z-axis EM channels with Flight Path and EM anomaly symbols.
- ZOFF1 –Early Time EM Channel grid with contours and EM anomaly symbols

The coordinate/projection system for the maps is NAD83 – UTM Zone 11N. For reference, the latitude and longitude in WGS84 are also noted on the maps.

All the maps show flight path trace, skeletal topography, and conductor picks represented by an anomaly symbol classified according to calculated off-time conductance. The anomaly symbol is accompanied by postings denoting the calculated off-time conductance, a thick or thin classification and an anomaly identifier label. The anomaly symbol legend and survey specifications are displayed on the left margin of the maps.

6.2. DIGITAL DELIVERABLES

6.2.1. Final Database of Survey Data (.GDB)

The geophysical profile data is archived digitally in a Geosoft GDB binary format database. A description of the contents of the individual channels in the database can be found in Appendix 2. A copy of this digital data is archived at the Aeroquest head office in Aurora.

6.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. All grids have 20 m cell size.

- DTM Digital Terrain Model grid
- TMI Total Magnetic Intensity grid
- Z1-OFF Early Time EM Channel grid

6.2.3. Digital Versions of Final Maps (.MAP, .PDF)

Map files in Geosoft .map and Adobe PDF format.



6.2.4. Google Earth Files (.kmz)

Flight navigation lines, EM Anomalies and geophysical grids in Google earth kmz format. Double click to view in Google Earth.

6.2.5. Free Viewing Software (.EXE)

Geosoft Oasis Montaj Viewing Software Adobe Acrobat Reader Google Earth Viewer

6.2.6. Digital Copy of this Document (.PDF)

Adobe PDF format of this document.

7. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software and Geosoft Oasis Montaj software. Maps were generated using 36-inch wide Hewlett Packard ink-jet plotters.

7.1. BASE MAP

The geophysical maps accompanying this report are based on positioning in the NAD83 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 11 North. A summary of the map datum and projection specifications is given following:

Ellipse: NAD83 Ellipse major axis: 6378137m Eccentricity: 0.081819191 Datum: WGS84 Datum Shifts (x, y, z): 0, 0, 0 metres Map Projection: Universal Transverse Mercator Zone 11N (Central Meridian117°W) Central Scale Factor: 0.9996 False Easting, Northing: 500,000m, 10,000,000 m

The background vector topography was sourced from Natural Resources Canada (NRC) NTDB data 1:50000 scale and the background shading was derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metre resolution DEM data.

For reference, the latitude and longitude in WGS84 are also noted on the maps.

7.2. FLIGHT PATH & TERRAIN CLEARANCE

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (10 Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM coordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter. The raw Digital Terrain Model (DTM) was derived by taking the GPS survey elevation and subtracting the radar



altimeter terrain clearance values. The calculated topography elevation values are relative and are not tied in to surveyed geodetic heights.

Each flight included at least two high elevation 'background' checks. These high elevation checks are to ensure that the gain of the system remained constant and within specifications.

7.3. ELECTROMAGNETIC DATA

The raw streaming data, sampled at a rate of 36,000 Hz (240 channels, 180 times per second) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Limited. Processing involves the compensation of the X and Z component data for the primary field waveform. Coefficients for this compensation for the system transient are determined and applied to the stream data. The stream data are then pre-filtered, stacked, binned to the 33 on and off-time channels and checked for the effectiveness of the compensation and stacking processes. The stacked data is then filtered, levelled and split up into the individual line segments. Further base level adjustments may be carried out at this stage. The filtering of the stacked data is designed to remove or minimize high frequency noise that cannot be sourced from the geology.

The final field processing step was to merge the processed EM data with the other data sets into a Geosoft GDB file. The TS "time stamp" and EM Fiducial are used to synchronize the two datasets. The processed channels are merged into 'array format; channels in the final Geosoft database as Zon, Zoff, Xon, and Xoff.

Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the off-time Z channel responses correlated with X channel responses. The auto-picked anomalies were reviewed and edited by a geophysicist on a line by line basis to discriminate between thin and thick conductor types. Anomaly picks locations were migrated and removed as required. This process ensures the optimal representation of the conductor centres on the maps.

At each conductor pick, estimates of the off-time conductance have been generated based on a horizontal plate source model for those data points along the line where the response amplitude is sufficient to yield an acceptable estimate. Some of the EM anomaly picks do not display a Tau value; this is due to the inability to properly define the decay of the conductor usually because of low signal amplitudes. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. For high conductance sources, the on-time conductance values may be used, since it provides a more accurate measure of high-conductance sources. Each symbol is also given an identification letter label, unique to each flight line. Conductor picks that did not yield an acceptable estimate of off-time conductance due to a low amplitude response were classified as a low conductance source. Please refer to the anomaly symbol legend located in the margin of the maps.

7.4. MAGNETIC DATA

Prior to any levelling the magnetic data was subjected to a lag correction of -0.1 seconds and a spike removal filter. The filtered aeromagnetic data were then corrected for diurnal variations using the magnetic base station and the intersections of the tie lines. Corrections for the regional reference field (IGRF) have been applied. The corrected profile data were interpolated on to a grid using a bi-directional grid technique with a grid cell size of 20 metres. The final levelled grid provided the basis for threading the presented contours which have a minimum contour interval of 10 nT.



8. GENERAL COMMENTS

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

8.1. MAGNETIC RESPONSE

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

8.2. EM ANOMALIES

The EM anomalies on the maps are classified by conductance (as described earlier in the report) and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the x-component response (Figure 7). For a vertically orientated thick source (say, greater than 10 metres), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response (Figure 8). Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source (Figure 9). In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the 'thin' pick will be located over the edge of the source, whereas the 'thick' pick will fall over the down dip 'heart' of the anomaly.



Figure 7: AeroTEM response to a 'thin' vertical conductor.





Figure 8: AeroTEM response for a 'thick' vertical conductor.



Figure 9: AeroTEM response over a 'thin' dipping conductor.



APPENDIX 1: SURVEY BOUNDARIES

The following table presents the block boundaries. All geophysical data presented in this report have been windowed to 100 m outside of these boundaries. X and Y positions are in metres: WGS84 UTM Zone 11N.

X	Y
284616	5515491
284616	5515322
285242	5515121
285926	5514687
286898	5514599
286947	5514557
286929	5514094
290081	5513971
290073	5510980
286946	5511028
286946	5511559
286898	5511599
285926	5511687
285242	5512121
284604	5512331
284616	5512491
283820	5512491
283820	5515491

Mikayla Property



APPENDIX 2: DESCRIPTION OF DATABASE FIELDS

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

COLUMN	UNITS	DESCRIPTOR
Х	m	UTM Easting (NAD83, Zone 11N)
Y	m	UTM Northing (NAD83, Zone 11N)
Line		Line number
flight		Flight #
emfid		AERODAS Fiducial
utctime	hh:mm:ss.ss	UTC time
bheight	m	Terrain clearance of EM bird
dtm	m	Digital Terrain Model
Galt	m	GPS elevation of magnetometer bird
Ralt	m	Helicopter radar altimeter (height above terrain)
basemag	nT	Base station total magnetic intensity
Mag	nT	Final levelled total magnetic intensity from upper magnetometer sensor (installed on the tail of the EM bird).
Zoff	nT/s	EM Off-Time Z component Channels 0-16
Xoff	nT/s	EM Off-Time X component Channels 0-16
Zon	nT/s	EM On-Time Z component Channels 1-16
Xon	nT/s	EM On-Time X component Channels 1-16
TranOff	s	Transmitter turn off time
TranOn	s	Transmitter turn on time
TranPeak	A	Transmitter peak current
TranSwitch	S	Transmitter peak current time
Off_AllCon	S	Off-time conductance
Off_AllTau	μs	Off-time decay constant
Off_Con	S	Off-time conductance at conductor pick
Off_Tau	μs	Off-time decay constant at conductor pick
Anom_Labels		Letter label of conductor pick (Unique per flight line)
Anom_ID		EM Anomaly response style (K= thicK, N = thiN)
pwrline		Power line monitor data channel
Off_Pick		Anomaly picking channel



APPENDIX 3: AEROTEM ANOMALY LISTING

Mikayla Property

x	У	line	flight	bheight	Off_Con	Off_Tau	Anom_ Labels	Anom_ ID
284951	5513332	10130	1	50.32	7.69	97.97	А	К
285058	5512563	10140	1	66.72	7.18	91.47	А	К
285048	5512862	10140	1	54.55	9.15	116.54	В	К
285038	5513394	10140	1	60.53	9.64	122.77	С	К
285149	5512900	10150	1	49.85	8.27	105.26	А	К
285152	5512608	10150	1	67.04	9.40	119.70	В	К
285148	5512293	10150	1	62.04	10.54	134.23	С	К
285242	5512500	10160	1	54.72	11.22	142.87	А	К
285251	5512842	10160	1	55.41	8.01	101.99	В	К
285241	5513158	10160	1	51.02	9.81	124.86	С	К
285361	5513537	10160	1	46.97	12.04	153.31	А	К
285351	5513054	10160	1	59.93	21.96	279.67	В	К
285353	5512706	10160	1	60.36	10.36	131.86	С	К
285456	5512459	10180	1	50.40	43.65	555.71	А	К
285458	5512836	10180	1	54.55	38.65	492.13	В	К
285445	5513082	10180	1	54.85	23.77	302.65	С	К
285441	5513888	10180	1	60.20	28.24	359.58	D	К
285556	5513940	10190	1	51.51	15.80	201.20	А	К
285554	5513431	10190	1	47.68	10.19	129.75	В	К
285549	5513104	10190	1	48.09	25.19	320.73	С	К
285542	5512721	10190	1	63.38	8.86	112.84	D	К
285660	5512753	10200	1	66.50	7.97	101.44	А	К
285664	5513131	10200	1	51.19	6.62	84.30	В	К
285654	5513493	10200	1	53.97	9.75	124.08	С	К
285751	5513996	10210	1	59.36	10.28	130.83	А	К
285752	5513475	10210	1	54.98	7.21	91.79	В	К
285754	5513059	10210	1	64.82	8.39	106.86	С	К
285861	5512987	10220	1	64.42	8.35	106.30	А	К
285853	5513250	10220	1	48.72	7.64	97.32	В	К
285842	5513581	10220	1	69.18	7.50	95.48	С	К
285844	5513893	10220	1	64.36	9.02	114.84	D	К
285950	5514270	10230	1	57.33	7.25	92.34	А	К
285947	5513725	10230	1	53.74	6.29	80.05	В	К
285939	5512945	10230	1	59.86	16.70	212.68	С	К



x	У	line	flight	bheight	Off_Con	Off_Tau	Anom_ Labels	Anom_ ID
286051	5513120	10240	1	62.83	8.09	103.03	А	К
286055	5513758	10240	1	57.89	18.74	238.67	В	К
286152	5513794	10250	1	63.71	19.93	253.73	А	К
286148	5513503	10250	1	52.90	20.74	264.03	В	К
286154	5513275	10250	1	63.50	12.83	163.34	С	К
286252	5513274	10260	1	72.31	9.10	115.83	А	К
286252	5513818	10260	1	66.67	7.99	101.67	В	К
286343	5513857	10270	1	71.71	9.75	124.13	А	К
286351	5513442	10270	1	59.92	18.75	238.69	В	К
286353	5513229	10270	1	70.61	8.35	106.32	С	К
286457	5513195	10280	1	61.33	7.39	94.04	А	К
286447	5514044	10280	1	90.78	7.91	100.71	В	К
286554	5514000	10290	1	76.13	8.77	111.61	А	К
286549	5513020	10290	1	78.01	7.56	96.22	В	К
286649	5513250	10300	1	70.21	10.56	134.41	А	К
286650	5514186	10300	1	64.42	7.19	91.57	В	К
286757	5514233	10310	1	63.12	8.96	114.12	А	К
286742	5512867	10310	1	56.63	8.58	109.27	В	К
286850	5514281	10320	1	72.31	5.99	76.25	А	К
287055	5512054	10340	1	60.67	7.37	93.86	А	К
287150	5512155	10350	1	61.03	6.33	80.60	А	К
287245	5512174	10360	1	70.36	6.67	84.96	А	К
287357	5512142	10370	1	51.87	5.83	74.22	А	К
287547	5511271	10390	1	54.86	6.70	85.25	Α	К
287653	5511307	10400	2	51.32	4.50	57.34	А	К
289355	5512951	10570	2	63.89	8.99	114.44	А	К
289446	5512885	10580	2	71.57	6.63	84.42	А	К
289565	5512995	10590	2	64.76	5.89	75.00	Α	К
289648	5512923	10600	2	69.84	9.13	116.30	А	К
289755	5513050	10610	2	49.34	8.02	102.09	А	К
289849	5512997	10620	2	75.50	10.52	133.94	А	К
289849	5512661	10620	2	62.34	8.47	107.88	В	К
289956	5512923	10630	2	61.62	4.60	58.62	А	К
290050	5512848	10630	2	66.30	4.15	52.87	А	К



APPENDIX 4: AEROTEM DESIGN CONSIDERATIONS

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

Advantage 1 – Spatial Resolution

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







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

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

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





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

The small footprint of AeroTEM combined with the high signal to noise ratio (S/N) makes the system more suitable to surveying in areas where local infrastructure produces electromagnetic noise, such as power lines and railways. In 2002 Aeroquest flew four exploration properties in the Sudbury Basin that were under option by FNX Mining Company Inc. from Inco Limited. One such property, the Victoria Property, contained three major



Job # AQ120214

power line corridors.

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

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



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

Advantage 2 – Conductance Discrimination

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

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



Hz to 30 Hz there would be a fivefold increase in conductance at which the peak response of an EM occurred.

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

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

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



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



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

Advantage 3 – Multiple Receiver Coils

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





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

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

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

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



are also given copies of the raw, unfiltered data.



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

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



APPENDIX 5: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 90 Hz
- Tx On Time 1,944 (90 Hz) μs
- Tx Off Time 5,222 (90 Hz) µs
- Loop Diameter 12 m
- Peak Current 400 A
- Peak Moment 234,676 NIA
- Sling Weight: 1000 lb
- Length of Tow Cable: 50 m
- Bird Survey Height: 60 m nominal

Receiver

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

Display & Acquisition

- ADAS Channel Widths: 52.9,132.3, 158.7, 158.7, 317.5, 634.9 µs
- Recording & Display Rate = 10 readings per second.
- On-board display six channels Z-component and 1 X-component

System Considerations

Comparing a fixed-wing time domain transmitter with a typical moment of 500,000 NIA flying at an altitude of 120 m with a Helicopter TDEM at 30 m, notwithstanding the substantial moment loss in the airframe of the fixed wing, the same penetration by the lower flying helicopter system would only require a sixty-fourth of the moment. Clearly the AeroTEM system with nearly 234,676 NIA has more than sufficient moment. The airframe of the fixed wing presents a response to the towed bird, which requires dynamic compensation. This problem is non-existent for AeroTEM since transmitter and receiver positions are fixed. The AeroTEM system is completely portable, and can be assembled at the survey site within half a day.


APPENDIX 6: FINAL DELIVERABLES



TMI – Mikayla Property – Total Magnetic Intensity colour grid with contours and EM anomaly symbols





EM Profiles – Mikayla Property – Profiles of 0-10 Z-axis EM channels with Flight Path and EM anomaly symbols





ZOFF1 – Mikayla Property – Early Time EM Channel grid with contours and EM anomaly symbols

APPENDIX C

STATEMENT OF EXPENDITURES

STATEMENT OF EXPENDITURES

The following expenses were incurred on the MIKAYLA Property between November 20th and 22nd, 2012.

Aeroquest Airborne Survey

<u>\$74,287.48</u>

Total <u>\$74,287.48</u>



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