2009 Helicopter-Borne
AeroTEM System Electromagnetic
& Magnetic Survey
South of Princeton

Similkameen Mining District

NTS 092H07, H08, H09
49° 18' 49" N, 120° 34' 15" W

For

Canadian International Minerals Inc.
Suite #950 - 789 West Pender
Vancouver, B.C.
Canada V6C 1H2

Thomas Hasek, P.Eng.
T. Hasek Associates Ltd.
4758 Victory Street
Burnaby, BC V5J 1S2
Tel: 604-432-6007
Email: thasek@shaw.ca
# Table of Contents

Introduction................................................................................................................................................3
Location, Access, Physiography................................................................................................................ 3
Property......................................................................................................................................................3
Survey Area................................................................................................................................................4
Geology......................................................................................................................................................6
Work Performed.........................................................................................................................................6
Recommendations......................................................................................................................................6
Statement of Qualifications........................................................................................................................7
Appendix A - Statement of Costs...............................................................................................................8
Appendix B - Aeroquest Geophysical Report............................................................................................9

Figure 1 - Location Map............................................................................................................................ 4
Figure 2 - Claim Map with Airborne Survey Area.....................................................................................5
**Introduction**

The Copper Mountain Property of Canadian International Minerals Inc. was covered by a helicopter borne geophysical survey flown over the period June 2nd – 5th, 2009. The survey was performed by Aeroquest Surveys utilizing the AeroTEM III (Mike) time domain helicopter electromagnetic system, which was 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 wave form streaming EM data was 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.

**Location, Access, Physiography**

The subject property is approximately 17 km south southwest of Princeton, 2 km west of the Similkameen River and straddles Highway 3. At the southern extremity of the Thompson Plateau, it is part of the transitional belt between the interior plateau to the north and the Cascade Mountains to the south. Numerous gravel and dirt roads both from earlier logging and later mineral exploration traverse all but the steepest slopes. Gently to steeply sloping terrain near the top of forest uplands are incised by the Similkameen drainage. Local relief is in the order of 600 metres, with the extremes being the Similkameen River at 800m elevation and terrain rising above 1400m to the east and west. Predominant maturing pine forest cover over well drained sandy overburden provides a park like setting, with no heavy undergrowth. Minor swamps occupy some of the flatter areas, with heavy overburden cover providing little or no bedrock exposure.

**Property**

The property comprises 16 claims covering an area of 1221.14 hectares as detailed in the table below.

<table>
<thead>
<tr>
<th>Tenure Number</th>
<th>Claim Name</th>
<th>Area (ha)</th>
<th>Expiry</th>
</tr>
</thead>
<tbody>
<tr>
<td>531889</td>
<td>INGERSOL 1</td>
<td>21.06</td>
<td>2010/may/27</td>
</tr>
<tr>
<td>531892</td>
<td>INGERSOL 2</td>
<td>505.11</td>
<td>2010/may/27</td>
</tr>
<tr>
<td>533907</td>
<td>DEEP GULCH</td>
<td>84.24</td>
<td>2010/may/27</td>
</tr>
<tr>
<td>545048</td>
<td>DEEPGULCH2</td>
<td>126.35</td>
<td>2010/may/27</td>
</tr>
<tr>
<td>558472</td>
<td>LYN</td>
<td>42.12</td>
<td>2011/may/10</td>
</tr>
<tr>
<td>568080</td>
<td>LYN</td>
<td>42.11</td>
<td>2011/oct/16</td>
</tr>
<tr>
<td>602065</td>
<td>CU1</td>
<td>63.19</td>
<td>2010/apr/03</td>
</tr>
<tr>
<td>602067</td>
<td>CU2</td>
<td>42.13</td>
<td>2010/apr/03</td>
</tr>
<tr>
<td>602068</td>
<td>CU3</td>
<td>21.06</td>
<td>2010/apr/03</td>
</tr>
<tr>
<td>602070</td>
<td>CU4</td>
<td>21.06</td>
<td>2010/apr/03</td>
</tr>
<tr>
<td>602603</td>
<td>HILLTOP 1</td>
<td>63.19</td>
<td>2010/apr/14</td>
</tr>
<tr>
<td>602604</td>
<td>HILLTOP NORTH</td>
<td>105.29</td>
<td>2010/apr/14</td>
</tr>
<tr>
<td>602620</td>
<td>NORTH FRIDAY CREEK</td>
<td>21.06</td>
<td>2010/apr/14</td>
</tr>
<tr>
<td>603043</td>
<td>FRIDAY</td>
<td>21.06</td>
<td>2010/apr/20</td>
</tr>
<tr>
<td>603567</td>
<td>FRIDAY FRACTION</td>
<td>21.06</td>
<td>2010/apr/29</td>
</tr>
<tr>
<td>604583</td>
<td>LYN 2</td>
<td>21.06</td>
<td>2010/may/16</td>
</tr>
<tr>
<td><strong>Total Area</strong></td>
<td></td>
<td><strong>1221.14</strong></td>
<td></td>
</tr>
</tbody>
</table>
Survey Area
The surveyed area comprised approximately 19 km² centred on the above claims. The base of survey operations was at Princeton airport.
Geology

Lying within the Quesnellia terrane of the intermontaine belt in the Canadian Cordillera, the property is primarily underlain by late Triassic volcanics and sediments of the Nicola group which are intruded by the calc-alkalic Copper Mountain plutonic suite. The Nicola volcanics are variably andesitic to basaltic pyroclastics and flows; principally agglomerates, tuffs and tuff breccias, with minor flows and pillow lavas, interspersed with a sedimentary succession of siltstones, argillites, conglomerates and some limestone. In the southern part of the claims this sequence is unconformably overlain by Eocene sediments and volcanics of the Princeton Group.

Pleistocene glacial till greater than 5 m in thickness covers the region, so that bedrock exposure is limited to steep slopes and cliffs of the youngest and most deeply incised drainages, including the Similkameen River. Thus most of the geological mapping is limited to conjecture as projections and extensions interpreted from the limited bedrock exposure and diamond drilling in the vicinity. Fairly extensive bulldozer trenching in the area has succeeded in exposing a variety of glacial features and erratic boulders, but has contributed little to the understanding of bedrock geology. It has however served to confirm the limitations of soil and silt geochemical prospecting on the property and its surroundings.

Low concentrations of fine disseminated Pyrite was noted in some of the andesitic volcanics, which were relatively fresh, brittle and unaltered. Some minor malachite stain was sampled, with the expected slightly elevated copper in the analytic results.

Near the eastern margin of the property, the north south projected Boundary Fault, which has no expression on the property, would appear to displace possible extension of the nearby mine mineralizing and alteration environment downward, further complicating interpretation of subsurface lithologies.

A further discussion of geology in relation to the airborne survey is included in Appendix B

Work Performed

A Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Geophysical Survey was carried out over the period June 2 – 5, 2009, by Aeroquest Surveys of Mississauga, Ontario. The extent and a detailed description of the work is incorporated in the attached report as Appendix B.

Recommendations

Detailed recommendations are incorporated in the attached geophysical report submitted as Appendix B, with the next stage of exploration of the property being a 3D Induced Polarization survey of specific targets outlined by the airborne survey. A Titan 24 deep earth imaging survey for the target areas is planned at a cost in the order of $220,000 to test the targets outlined by the airborne survey.
Statement of Qualifications

1. I, Thomas Hasek, am a geological engineer and a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia.
2. I have practiced my profession for the past 47 years.
3. I have firsthand knowledge of the subject property by way of several visits, prospecting traverses, and study of the extensive literature available for the region and adjacent properties.
4. I was present at the subject property during the course of the airborne survey that is the subject of this report.

Respectfully submitted

Thomas Hasek, P.Eng.
(B.C. Reg. No. 6949)

March 16, 2010
## Appendix A

**Aeroquest Surveys**  
**Airborne Geophysical Survey and Associated Costs**  
**June 2 – 5, 2009**

### Statement of Cost

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1 - 2, 2009</td>
<td>M. Schuss - 2 days fieldwork @ $300 / day</td>
<td>$600.00</td>
</tr>
<tr>
<td>June 1 - 2, 2009</td>
<td>T, Hasek - 2 days fieldwork @ $800 / day</td>
<td>$1,600.00</td>
</tr>
<tr>
<td>June 1 - 2, 2009</td>
<td>4x4 Vehicle travel to site &amp; return 720 km @ $0.52</td>
<td>$374.00</td>
</tr>
<tr>
<td>June 2, 2009</td>
<td>Vehicle Fuel</td>
<td>$115.00</td>
</tr>
<tr>
<td>June 2, 2009</td>
<td>Motel</td>
<td>$120.00</td>
</tr>
<tr>
<td>June 1 - 2, 2009</td>
<td>Meals</td>
<td>$160.00</td>
</tr>
<tr>
<td>September 22, 2009</td>
<td>Aeroquest billing – total</td>
<td>$71,500.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$74,469.00</strong></td>
</tr>
</tbody>
</table>
Appendix B

Interpretation of a Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Survey

Aeroquest Job # 09016i

Blocks A and B
Princeton, B.C., Canada
NTS 092H07, H08, H09

For

Canadian International Minerals Inc.

by7687 Bath Road,
Mississauga, ON, L4T 3T1
Tel: (905) 672-9129
Fax: (905) 672-7083
www.aeroquest.ca

Report date: August 2009
Interpretation of a Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Survey

Aeroquest Job # 09016i

Blocks A and B
Princeton, B.C., Canada
NTS 092H07, H08, H09

For
Canadian International Minerals Inc.
1710 West Georgia Street
Vancouver, BC, Canada

by

Report date: August 2009
TABLE OF CONTENTS

1. INTRODUCTION................................................................................................................... iv
2. GEOLOGIC SETTING........................................................................................................... v
   2.1. Copper Mountain Deposit.............................................................................................. vii
   2.2. Ingerbelle Deposit.......................................................................................................... viii
3. Alkalic Cu- Au Porphyry Systems....................................................................................... x
   3.1. Geologic Setting............................................................................................................. x
   3.2. Geophysical Response................................................................................................... x
   3.3. Target Selection Criteria.............................................................................................. xiii
4. INTERPRETATION OF GEOPHYSICAL DATA................................................................. xiii
   4.1. Magnetic Data.............................................................................................................. xiii
      4.1.1. Interpretive Data Processing................................................................................... xiii
      4.1.2. Description of Magnetic Data in a Geologic Context.............................................. xiv
      4.1.3. Selection of Magnetic Targets.............................................................................. xvi
   4.2. Electromagnetic Data.................................................................................................. 20
      4.2.1. Interpretive Data Processing................................................................................... 20
      4.2.2. Description of Electromagnetic Data in a Geologic Context................................. 20
      4.2.3. Selection of Electromagnetic Targets.................................................................... 21
      4.2.4. Maxwell Modelling of High Priority EM Targets.................................................... 26
5. CONCLUSIONS AND RECOMMENDATIONS................................................................... 28
6. DELIVERABLES................................................................................................................. 31
7. REFERENCES...................................................................................................................... 32

LIST OF TABLES

Table 1: Summary of geological and geophysical characteristics of the alkalic porphyry-style targets selected from the airborne magnetic data. Priority is assigned on a 1 (high priority) to 3 (low priority) scale based on the geologic setting and geophysical response....19
Table 2: Summary of geological and geophysical characteristics of the alkalic porphyry-style targets selected from the AeroTEM data. Priority is assigned on a 1 (high priority) to 3 (low priority) scale based on the geologic setting and geophysical response. EM target 6 is roughly the same as Mag target 3............................................................................................ 25
Table 3: Summary of the Maxwell plate modelling parameters used in modelling of the EM targets on the CIM Copper Mountain survey...........................................................................26
Table 4: Summary of geological and geophysical characteristics of the alkalic porphyry-style magnetic and electromagnetic targets selected from the AeroTEM data. Priority is assigned on a 1 (high priority) to 5 (low priority) scale.......................................................... 30
Table 5: Description of the various deliverables in Geotiff formats except where specified otherwise. Files labelled _colourbar are images of the colour bar for the according products provided.................................................................31

LIST OF FIGURES

Figure 1: Project Area in British Columbia, Canada. Only the southern two blocks were involved in this interpretation; the northern survey area is not discussed......................... iv
Figure 2: Block A and Block B with flight path, overlain on shaded topography............... v
Figure 3: Regional geology of the survey area (Preto et al., 2004). The pink and blue boxes highlight the Ingerbelle and Copper Mountain mine areas shown in detail in Figure 4 and Figure 5.

Figure 4: Copper Mountain mine. A) Air photo and B) geologic map of the open pits (outlined in yellow) with the porphyry “mine dykes” in pink; Lost Horse latite, microdiorite and microsyenite porphyry dykes in red; and grey andesite feldspar porphyry dykes in dark blue (Preto et al., 2004). Geologic legend as per Figure 3. The blue rectangle in each image outlines the same area, for reference.

Figure 5: The Ingerbelle mine. A) Air photo and B) geologic map of the open pit (outlined in yellow) with Lost Horse latite, microdiorite and microsyenite porphyry dykes in red and Copper Mountain microdiorite and latite porphyry dykes in salmon pink (Preto et al., 2004). Geologic legend of Figure 3 applies to this figure. The pink rectangles indicate the same area on both images.

Figure 6: Idealized alteration zonation of a typical copper porphyry deposit and the expected magnetic response for magnetic (red) and non-magnetic porphyry intrusions black. Image courtesy of Ford et al. (2008).

Figure 7: Geophysical response of the Bell porphyry deposit, B.C., specifically total magnetic intensity (A) and the decay constant Tau (B). The Bell deposit has a discrete high magnetic signature and a strong conductive response due to the sulphide mineralization.

Figure 8: Example of geophysical responses of the Mount Milligan alkalic porphyry deposit in B.C. A) Total magnetic field with geologic contacts overlain in black; B) Potassium response with bedrock geology contacts overlain; and C) Potassium response with surficial geology. Mount Milligan deposits are outlined by heavy white circles. Radiometric responses of the Casino deposit as potassium (D) and potassium ratio with thorium (E) and profile data over the deposit (F). The potassium to thorium ratio emphasizes the response of the deposit and eliminates the false positive associated with felsic volcanic rocks. Image courtesy of Shives et al. (2000).

Figure 9: Reduced to pole regional residual magnetic intensity overlain on local geology (Preto et al., 2004). Geologic legend from Figure 3 applies.

Figure 10: Magnetic response of the survey area and known deposits (black cross-hatched polygons). Regional reduced-to-pole residual magnetic intensity (RMI_RTP, full map area) and reduced to pole AeroTEM (RTP, detailed central image) detailed magnetic data overlain with structural interpretation (dashed black lines). Regional data was collected at along 200 m spaced lines. Detailed data was collected on 100 m lines.

Figure 11: Location of discrete magnetic lows (black circles) on RTP magnetic data from the Aeroquest survey overlain on the regional geology (Preto et al., 2004).

Figure 12: Location of magnetic targets. A) First vertical derivative of the reduced-to-pole residual magnetic field (colour) with contours (thin dashed lines) at 0.2 nT/s intervals overlain on the regional geology (Preto et al., 2004). B) Regional RTP data overlain with detailed RTP magnetic data with grey contoured lines of the first vertical derivative of the RTP regional and detailed data. Heavy dashed lines indicate the interpreted structure and the cross hatched polygons indicate the open pit mines. Areas of interest are outlined in white and numbering applies to text and figures below.

Figure 13: Magnetic target 1 (black polygon) identified based on the magnetic signature, with (A) the regional geology after Preto et al. (2004) and (B) the RTP magnetic data with
contours of the RTP_1VD data at 0.2 nT intervals and interpreted structure (dashed line).

Figure 14: Magnetic target 2 identified based on the magnetic signature, with the regional geology after Preto et al. (2004) (A) and the RTP magnetic data (B) with contours of the RTP_1VD data at 0.2nT intervals and interpreted structure (dashed line).

Figure 15: Magnetic target 3 identified based on the magnetic signature, with the regional geology after Preto et al. (2004) (A) and the RTP magnetic data (B) with contours of the RTP_1VD data at 0.2nT intervals and interpreted structure (dashed line).

Figure 16: AeroTEM responses on the survey area. Detailed geology (Preto et al., 2004) overlain with A) Second time gate of the off-time z-component AeroTEM data; B) Tenth time gate of the off-time z-component AeroTEM data; C) Fifteenth time gate of the off-time z-component AeroTEM data; and D) Conductance calculated from all off-time z-component AeroTEM data. Geologic legend as per Figure 3. The black box outlines the area of EM targets 4 and 5 discussed below.

Figure 17: Conductor axes (white dotted lines) outlined relative to A) RTP detailed and regional magnetic data and B) second gate of the off-time z-component data overlain with AeroTEM conductors (black symbols), interpreted structure (black dashed lines) and mine area (black polygons).

Figure 18: EM target 1. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols), interpreted structure (dashed black line), and the Ingerbelle open pit mine (crosshatched black polygon). The heavy black box indicates the approximate area of the target.

Figure 19: EM target 2. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line). The heavy black box indicates the approximate area of the target.

Figure 20: EM target 3. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line). The heavy black box indicates the approximate area of the target.

Figure 21: EM target 4 (northwest) and target 5 (southeast). A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line).

Figure 22: EM target 6. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line).

Figure 23: Thick plate model created in the Maxwell program for EM target 1, as viewed from the top and the east looking west. The data used to create the model shown offset from the actual line location (thick black line). Red profiles show the modelled data.

Figure 24: Thick plate model created in the Maxwell program for EM target 2, as viewed from the top and the east looking west. The data used to create the model shown offset from the actual line location (thick black line).

Figure 25: Thick plate model created in the Maxwell program for EM target 3, as viewed from the top and the east looking west. The data used to create the model shown offset from the actual line location (thick black line).
INTRODUCTION

This report describes the interpretation of a helicopter-borne geophysical survey carried out on behalf of Canadian International Minerals Inc. (CIM) for Blocks A and B near Princeton, B.C (Figure 1). The survey took place from June 2\textsuperscript{nd} – 5\textsuperscript{th}, 2009.

This survey employed Aeroquest's exclusive AeroTEM III (Mike) time domain helicopter electromagnetic (EM) system in conjunction with a high-sensitivity caesium vapour magnetometer. Detailed EM and magnetic data were collected along 100 m lines with a sampling density along line of 1.5 to 2.5 metres (Figure 2). Block A lines were oriented at 340° and block B lines were oriented north-south. Nominal EM bird terrain clearance is 60 metres, but can be higher in rugged terrain due to safety considerations and the aircraft capabilities. The magnetometer sensor is mounted in a smaller bird connected to the tow rope above the EM bird and has a nominal terrain clearance of 100 metres. This resulted in high-resolution electromagnetic and magnetic data useful for making detailed geologic interpretations and delineating EM targets.
This report describes interpretation of the airborne data for copper-gold alkalic porphyry-style targets. Specifically, the data are interpreted with respect to the distribution of geologic units of interest and key structures. Potential alkalic porphyry targets are identified based on their geologic settings and geophysical responses. Top priority conductive targets are modelled in 3D using the Maxwell plate modelling program. Lastly, two small areas of high priority are identified for follow-up with a Titan-24 induced polarization survey as requested by the client.

**GEOLOGIC SETTING**

The regional geologic setting of the survey area is characterized by north-striking high-angle faults that formed during a long-lived rift system extending more than 160 km to the north. This system was a long and narrow marine basin in which the Nicola Group rocks were deposited in the Triassic and which hosted basins of continental volcanism and sedimentation in the Early Tertiary. High-energy, proximal volcanic rocks are characteristic, along with a number of coeval, co-magmatic, high-level plutons with several associated copper deposits. Two such copper deposits near the survey area are the Copper Mountain and Ingerbelle deposits (Figure 3, Figure 4 and Figure 5).
Figure 3: Regional geology of the survey area (Preto et al., 2004). The pink and blue boxes highlight the Ingerbelle and Copper Mountain mine areas shown in detail in Figure 4 and Figure 5.
COPPER MOUNTAIN DEPOSIT

Deposits of the Copper Mountain mine occur in a northwest-trending belt of Upper Triassic Nicola Group rocks bounded at the south by the Copper Mountain stock, at the west by the major Boundary normal fault and at the north by the Lost Horse complex of dioritic to syenitic porphries and breccias (Desautels, 2008; Figure 4). In the vicinity of the mine, the Nicola rocks are andesitic to basaltic volcanic rocks, predominantly coarse agglomerate, tuff breccia and tuff with lesser massive flow units and lenses of volcanic siltstone. There is a close relationship between copper mineralization and Nicola magmatism. Proximal to Copper Mountain, Nicola Group rocks show secondary mineral assemblages characteristic of greenschist facies or albite-epidote hornfels. Further west towards the Ingerbelle mine, alteration involves widespread biotite development, followed by albite-epidote and local feldspar and/or scapolite metasomatism associated with intense veining.

The Nicola Group rocks west of the Boundary fault comprise intercalated volcanic and sedimentary rocks, including massive and fragmental andesite, tuff, and well-bedded calcareous shale, siltstone and sandstone. The Copper Mountain stock is concentrically differentiated with diorite at the outer margins grading through monzonite to syenite and perthosite pegmatite at the core. Brittle deformation, including fault and locally intense fracturing, is characteristic around the Copper Mountain Stock. Broad, north-trending folds and high-angle faults have been observed. Copper Mountain is dominated by easterly and northwesterly faults. Alteration is related to intrusive bodies and controlled by the distribution of faults and fractures. The Lost Horse complex consists of porphyry dykes and breccias ranging in composition from diorite to syenite with widespread but variable albitization, saussuritization and pink feldspar alteration.

Ore of Pit 1 is concentrated around the northwest-trending Main fault in massive and fragmental volcanic rocks and comprises fine disseminations of chalcopyrite and pyrite with bornite and chalcopyrite as thin fracture coatings at the west end of the orebody (Figure 4). Mineralization of Pit 2 occurs along an indistinct and irregular contact of the volcanic rocks with the Lost Horse intrusive rocks. The orebody is fault-bounded and comprises irregularly distributed chalcopyrite and pyrite. Pit 3 ore is hosted entirely by mainly fine-grained bedded tuffs of the Nicola Group at the northwest-striking intrusive contact.

Although detailed magnetic and electromagnetic data over the Copper Mountain deposit are not available, we can discuss the expected geophysical response based on the geologic characteristics. In porphyry environments, magnetic porphyry intrusions are the predominant features in the area. The Copper Mountain mine is located on the flank of a large magnetic high associated with the Copper Mountain stock. A small discrete magnetic high may coincide with the mine location, potentially indicating magnetite-rich potassic alteration. Disseminated sulphide ore would produce an induced polarization anomaly and potentially a weak conductive anomaly. Graphite-filled faults could also produce false positive conductive anomalies. Magnetic data can be used to interpret large-scale structures and lithological boundaries. Radiometric data can be used to define porphyry-style alteration zones; potassium data are particularly useful for defining zones of potassic alteration.
INGERBELLE DEPOSIT

The Ingerbelle orebody is an L-shaped skarn deposit transitional to porphyry, straddling the east-striking Gully fault (Owsiacki, 1997). Specifically, it can be divided into three zones, the southern two zones are south of the Gully fault and the northern zone is north of the fault (Figure 5). The southwestern zone is a steeply north-plunging pipe-like body. The southeast zone dips steeply south. The north zone may be the down-faulted extension of the southeast zone. Host rocks are predominantly altered tuffs and fragmental andesite. Irregularly distributed copper mineralization consists of finely disseminated or discontinuous fracture-filling chalcopyrite and pyrite in concentrations of 2-5%. Alteration consists of pervasive biotite followed by albite, epidote, and chlorite with subsequent pink feldspar and scapolite along fractures. Sulphide mineralization is typically associated with albite-epidote hornfels.

The potential geophysical response of the Ingerbelle deposit would be similar to that of the Copper Mountain deposit. Disseminated sulphide ore would produce an induced polarization anomaly and potentially a weak to moderate conductive anomaly in airborne EM data. Graphite-filled faults, such as the Gully Fault, could also produce continuous false positive conductive anomalies. Magnetic data can be used to assist with geologic mapping, such as defining favourable units like epidote-albite hornfels. Late feldspar alteration could be
detected by radiometric methods.

Figure 5: The Ingerbelle mine. A) Air photo and B) geologic map of the open pit (outlined in yellow) with Lost Horse latite, microdiorite and microsyenite porphyry dykes in red and Copper Mountain microdiorite and latite porphyry dykes in salmon pink (Preto et al., 2004). Geologic legend of Figure 3 applies to this figure.
Alkalic Cu-Au Porphyry Systems

**Geologic Setting**

Alkalic copper-gold porphyries, such as Copper Mountain and Ingerbelle, occur in orogenic belts at convergent plate boundaries with chemically distinct magmatism producing alkalic intrusions varying in composition from gabbro, diorite and monzonite to nepheline syenite intrusions (Panteleyev, 1995). Alkalic intrusions occur at high levels in magmatic oceanic volcanic island arcs, commonly with alkalic basic flows to intermediate and felsic pyroclastic rocks. Magmas are introduced along the axis of arcs or in cross-arc structures coincident with deep-seated faults.

Ore typically occurs at igneous contacts, breccias, cupolas, and bifurcating stocks, dike and volcanic vents. It occurs as sulphide mineral and magnetite stockworks and veinlets, minor disseminations and replacement in extensive hydrothermally altered rocks, locally coincident with hydrothermal or intrusion breccias. Main sulphide minerals include chalcopyrite, pyrite, magnetite, bornite, and chalcocite with gangue minerals of biotite, K-feldspar and sericite (Ford et al., 2008). Alteration comprises a core potassic zone of K-feldspar, biotite, anhydrite, and ore minerals. This is flanked by biotite alteration grading outwards to the marginal propylitic zone. Phyllic sericite-pyrite and less commonly sericite-clay-carbonate-pyrite alteration can overprint older alteration assemblages.

**Geophysical Response**

Many geophysical methods are useful for alkalic porphyry exploration. Aeromagnetic methods can help to delineate magnetic lithologies and identify ore zones due to the association of high gold concentrations with magnetite or pyrrhotite-rich rocks (Panteleyev, 1995; Sinclair, 2007; Figure 6; Figure 7; and Figure 8). Induced polarization methods are also very effective at identifying zones of low concentration disseminated sulphide minerals.

Alteration zoning can be delineated by a variety of methods. Distal phyllic alteration zones commonly show as magnetic lows due to the destruction of magnetite (Sinclair, 2007; Figure 6). Conversely, core potassic alteration can be magnetite constructive, resulting in discrete magnetic anomalies associated with the core zone of mineralization (Figure 6 and Figure 7). Pyritic haloes around cupriferous rocks can generate more extensive conductivity anomalies best mapped by induced polarization surveys but potentially also detectable with airborne electromagnetic techniques (Figure 7). Intensely hydrothermally altered rocks commonly occur as resistive zones. Gamma ray spectrometry can be very useful for defining potassic alteration zones (Figure 8; Shives et al., 2000).
Figure 6: Idealized alteration zonation of a typical copper porphyry deposit and the expected magnetic response for magnetic (red) and non-magnetic porphyry intrusions black. Image courtesy of Ford et al. (2008).

Figure 7: Geophysical response of the Bell porphyry deposit, B.C., specifically total magnetic intensity (A) and the decay constant Tau (B). The Bell deposit has a discrete high magnetic signature and a strong conductive response due to the sulphide mineralization.
Figure 8: Example of geophysical responses of the Mount Milligan alkalic porphyry deposit in B.C. A) Total magnetic field with geologic contacts overlain in black; B) Potassium response with bedrock geology contacts overlain; and C) Potassium response with surficial geology. Mount Milligan deposits are outlined by heavy white circles. Radiometric responses of the Casino deposit as potassium (D) and potassium ratio with thorium (E) and profile data over the deposit (F). The potassium to thorium ratio emphasizes the response of the deposit and eliminates the false positive associated with felsic volcanic rocks. Image courtesy of Shives et al. (2000).
TARGET SELECTION CRITERIA

Based on the geologic characteristics of the Ingerbelle and Copper Mountain deposits and the features typical of alkalic porphyry deposits, the following target selection criteria will be used in this interpretation:

- Close proximity to margin of Copper Mountain Stock;
- Hosted by Nicola volcanic rocks;
- Likely east of Boundary fault;
- Potentially located on northwest-trending faults;
- On margin of strong magnetic highs associated with Copper Mountain Stock;
- May be weakly conductive due to low concentrations of sulphide minerals, especially in the peripheral pyrite-rich zones, with a resistive core zone; and
- May be associated with a potassium anomaly when normalized to thorium, although radiometric data is not available for this area.

INTERPRETATION OF GEOPHYSICAL DATA

The original survey report describes the processing of the geophysical data. Further processing and gridding algorithms were applied to produce various layers of magnetic and electromagnetic images to assist with interpretation. Regional magnetic data were downloaded to provide insight into larger scale features (Geological Survey of Canada, 2007). Unfortunately, radiometric data were unavailable for this area. Magnetic and EM data were used to map magnetic lithologies and define structural breaks. Subsequently, target areas were defined based on magnetic and electromagnetic characteristics that correspond to the expected geophysical response of alkalic porphyry deposits.

MAGNETIC DATA

Interpretive Data Processing

Various magnetic images were produced to assist with geologic interpretation as follows:

- Reduced-to-pole (RTP): transforms the data to correct for the inclination of the magnetic field, such that the calculated data appear to be collected over the North Pole where the field is vertical. This helps to center anomalies over their causative sources.
- Analytic signal (AS): an effective “energy envelope” that highlights areas of strong magnetic response, independent of the direction of magnetization.
- First vertical derivative (1VD): highlights regions with high magnetic gradients such as structures, contacts and discrete magnetic bodies.
- Tilt derivative (TDR): enhances small wavelength magnetic features which define shallow basement structures at the expense of deeper-seated sources. The tilt derivative also has the added advantage of gain controlling the
dynamic range of the data, allowing subtle magnetic trends to be identified.

The 1VD and TDR were calculated from the RTP grid. All of these magnetic products are very useful for mapping regional fabrics and structures, as well as highlighting discrete magnetic anomalies potentially associated with alkalic porphyry alteration and mineralization.

Publicly available regional residual magnetic data collected along 200 m spaced survey lines were downloaded for the interpretation. The first vertical derivative and tilt derivative were calculated from the reduced-to-pole residual magnetic data. Inclination and declination parameters determined for the area of the detailed survey were used for reduction-to-pole for both the regional and the detailed magnetic data.

Description of Magnetic Data in a Geologic Context

Magnetic data predominantly respond to the magnetite content of rocks. Concentrations of pyrrhotite can also generate magnetic responses. Therefore, detailed and regional aeromagnetic data can yield information about the geologic units and structures in the survey area and proximal surrounding area that may not be apparent at surface. The survey area is dominated by an irregularly-shaped strong magnetic anomaly associated with diorite and monzonite phases of the Copper Mountain stock (Figure 9 and Figure 10). The pegmatite and syenite core of the Copper Mountain intrusion occurs as a discrete magnetic low. The Lost Horse porphyritic augite and biotite-augite microdiorite and Copper Mountain diorite of the Smelter Lake and Voigt Stocks also have strong magnetic responses. This area is bounded to the west by the Boundary Fault, which is apparent in the aeromagnetic data as a break in the magnetic response. Magnetic lithologies and structures, including the Boundary fault, were interpreted based on their magnetic signatures and are included in the deliverables.

Discrete magnetic lows are commonly clustered around the contact of the Nicola sedimentary rocks and the Allenby formation andesite and basalt flows but commonly do not coincide with any mapped geologic features (Figure 11). However, the northernmost magnetic low coincides with a discrete zone mapped as andesite and mafic dikes. The magnetic signature of each magnetic low suggests a mafic or ultramafic dyke or plug that is reversely magnetized due to remanence. Conversely, these zones could represent zones of magnetite destruction due to localized alteration of the andesite and basalt volcaniclastic rocks, perhaps due to upwelling of hydrothermal fluids along narrow structures.

The Ingerbelle and Copper Mountain mines occur along the northern margin of a strong magnetic anomaly caused by diorite and monzonite phases of the Copper Mountain stock (Figure 10). These zones of mineralization lack discrete magnetic responses. The large Ingerbelle open pit may coincide with a weak magnetic break in the strong magnetic response, potentially suggesting destruction of magnetite due to alteration. Consequently, target areas for other alkalic porphyry deposits could lie on the margin of the large magnetic high related to the Copper Mountain diorite.
Figure 9: Reduced to pole regional residual magnetic intensity overlain on local geology (Preto et al., 2004). Geologic legend from Figure 3 applies.

Figure 10: Magnetic response of the survey area and known deposits (black cross-hatched polygons). Regional reduced-to-pole residual magnetic intensity (RMI_RTP, Aeroquest International – Interpretation of a Helicopter-Borne AeroTEM System
Electromagnetic & Magnetic Survey
full map area) and reduced to pole AeroTEM (RTP, detailed central image) detailed magnetic data overlain with structural interpretation (dashed black lines). Regional data was collected at along 200 m spaced lines. Detailed data was collected on 100 m lines.

Figure 11: Location of discrete magnetic lows (black circles) on RTP magnetic data from the Aeroquest survey overlain on the regional geology (Preto et al., 2004).

Selection of Magnetic Targets
Areas of interest with magnetic responses similar to Ingerbelle and Copper Mountain that coincide with the CIM claims are located around the southern margin of the Copper Mountain intrusive stocks, at the contact with volcanic and volcaniclastic rocks of the Nicola Group Wolf Creek Formation (Figure 12). Three high priority target zones coincide with high magnetic gradients on the southern margins of the Copper Mountain Stock magnetic high. These zones are predominantly hosted by volcanic rocks that are favourable for alkalic
porphyry deposits in this area. Also, there are several northwest- or northeast- trending structures that may have facilitated the flow of hydrothermal fluids.

Figure 12: Location of magnetic targets. A) First vertical derivative of the reduced-to-pole residual magnetic field (colour) with contours (thin dashed lines) at 0.2 nT/s intervals overlain on the regional geology (Preto et al., 2004). B) Regional RTP data overlain with detailed RTP magnetic data with grey contoured lines of the first vertical derivative of the RTP regional and detailed data. Heavy dashed lines indicate the interpreted structure and the cross hatched polygons indicate the open pit mines. Areas of interest are outlined in white and numbering applies to text and figures below.

Target 1 coincides with a sliver of undifferentiated volcanic and volcaniclastic rocks, with the Boundary Fault to the west and Copper Mountain Stock to the east (Figure 13A). A moderately strong magnetic response is associated with volcanic rocks of the Nicola Group and diorite of the Copper Mountain Intrusions (Figure 13B). The area has favourable host rocks, proximal structures and is located on the margin of a magnetic high and therefore is of interest for porphyry mineralization.
Figure 13: Magnetic target 1 (black polygon) identified based on the magnetic signature, with (A) the regional geology after Preto et al. (2004) and (B) the RTP magnetic data with contours of the RTP_1VD data at 0.2 nT intervals and interpreted structure (dashed line).

The second target identified based on its magnetic response is hosted mostly by undifferentiated volcanic rocks in contact with Copper Mountain diorite, with microdiorite and latite porphyry dykes in the near vicinity (Figure 14). The target is located on the margin of a strong magnetic response associated with the Copper Mountain Stock, similar to the Ingerbelle and Copper Mountain mines. Furthermore, the major Boundary Fault is located directly to the west and there are northeast-trending conductive structures to the north.

Figure 14: Magnetic target 2 identified based on the magnetic signature, with the regional geology after Preto et al. (2004) (A) and the RTP magnetic data (B) with contours of the RTP_1VD data at 0.2nT intervals and interpreted structure (dashed line).

Target 3 appears to be predominantly hosted by Copper Mountain diorite, directly north of the contact with Nicola Group undifferentiated volcanic rocks in which microdiorite and latite porphyry dykes have been mapped (Figure 15). It has a similar magnetic response to that of the Ingerbelle and Copper Mountain mines, in that it is on the margin of a magnetic high. Several NNE- and ENE-trending structures are in the area. Furthermore, it is ringed to the east and north by weak conductors identified in the AeroTEM data.
Figure 15: Magnetic target 3 identified based on the magnetic signature, with the regional geology after Preto et al. (2004) (A) and the RTP magnetic data (B) with contours of the RTP_1VD data at 0.2nT intervals and interpreted structure (dashed line).
### Table 1: Summary of geological and geophysical characteristics of the alkalic porphyry-style targets selected from the airborne magnetic data. Priority is assigned on a 1 (high priority) to 3 (low priority) scale based on the geologic setting and geophysical response.

<table>
<thead>
<tr>
<th>Mag</th>
<th>Target</th>
<th>Host rocks</th>
<th>Structural Setting</th>
<th>Magnetic Response</th>
<th>EM Response</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag1</td>
<td>Undifferentiated volcanic and volcaniclastic rocks</td>
<td>Boundary Fault to west, contact with Copper Mountain Stock to east</td>
<td>650 nT</td>
<td>Mod dip to SW</td>
<td>175m</td>
<td>Elongate to NW, 1250 x 220m</td>
</tr>
<tr>
<td>Mag2</td>
<td>Undifferentiated volcanic rocks with microdiorite and latite porphyry dykes</td>
<td>Contact with Copper Mountain diorite to north. Major Boundary Fault directly west. NE-trending conductive structure to NW</td>
<td>2980 nT</td>
<td>Vertical</td>
<td>200 m</td>
<td>Arc shaped magnetic high mapping contact of volcanic rock and diorite</td>
</tr>
<tr>
<td>Mag3</td>
<td>Copper Mountain diorite</td>
<td>Contact with Nicola Group undifferentiated volcanic rocks to south, which hosts microdiorite and latite porphyry dykes. NNE- and ENE-trending structures mapped from mag.</td>
<td></td>
<td></td>
<td>On side of deep sourced magnetic high.</td>
<td></td>
</tr>
</tbody>
</table>

### Electromagnetic Data

**Interpretive Data Processing**

EM data are commonly displayed as grids of the z-component at early, mid and late off-times of the measured decay to assist with interpretation. Off-time data can also be used to calculate conductance and the decay constant (tau). Regional EM data was not publicly available for the area, so the detailed AeroTEM data are solely interpreted in this report.

**Description of Electromagnetic Data in a Geologic Context**

EM responses of the varicoloured andesite and basalt flows, breccia and tuffs of the Allenby Formation of the Princeton Group (orange unit at southwest of Figure 16) dominate the survey area. Calcareous siltstone and sandstone directly west of the Boundary fault also has a conductive response (light blue unit of Figure 16), though weaker than that of the andesite and basalt flows. By comparison, this same calcareous siltstone and sandstone unit further northeast has a resistive response. Volcanic siltstone and sandstone of the Nicola group (brown unit at the south of Figure 16) are also slightly conductive. In summary, the majority of
Conductive responses are associated with sedimentary rocks.
Selection of Electromagnetic Targets

There are several moderately conductive, somewhat extensive, discrete conductors on the property that are potential targets (Table 2). However, alkalic porphyry targets are not typically associated with such conductive and extensive conductors and these targets may in fact be due to other bedrock features such as faults. Regardless, there are good EM conductors that warrant further work. EM target 1 is an east-trending thick vertical conductor 500 m long (Figure 17 and Figure 18). It appears to be located near the intersection of the northeast-trending Boundary fault with an east-trending structure. It coincides with slices of undifferentiated Nicola volcanic rocks that may have been remobilized by the Boundary Fault. The EM response is weak to moderate. The EM_1 conductor coincides with the northern margin of a strong magnetic high associated with the Copper Mountain intrusion, similar to that of the Ingerbelle and Copper Mountain mines.

Figure 17: Conductor axes (white dotted lines) outlined relative to A) RTP detailed and regional magnetic data and B) ZOff 2
second gate of the off-time z-component data overlain with AeroTEM conductors (black symbols), interpreted structure (black dashed lines) and mine area (black polygons).

Figure 18: EM target 1. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols), interpreted structure (dashed black line), and the Ingerbelle open pit mine (crosshatched black polygon). The heavy black box indicates the approximate area of the target.

EM target 2 is a 300 m long thick vertical conductor that coincides with a discrete and strong magnetic low. It is located between two north-trending structures, the one to the east being the Boundary Fault and the one to the west is the contact between Nicola Group calcareous siltstone and sandstone (light blue of Figure 19) and Princeton Group varicoloured andesite and basalt flows (pale beige of Figure 19). The conductive trend looks to be hosted by the calcareous siltstone and sandstone unit, which is not favourable for hosting alkalic porphyry deposits but may be a thin cover on the favourable volcanic rocks.

Figure 19: EM target 2. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line). The heavy
**EM target 3** is a northwest-trending thick vertical conductor potentially parallel to key faults in the Ingerbelle and Copper Mountain deposits (Figure 20). It coincides with but is not parallel to the margin of a magnetic high associated with Copper Mountain diorite. It is hosted in part by calcareous siltstone and sandstone and partially hosted by undifferentiated volcanic rocks.

![Figure 20: EM target 3. A) Regional geology (Preto et al., 2004), B) RTP detailed and regional data, and C) second off-time z-component channel overlain with the EM conductors (circular symbols) and interpreted structure (dashed black line). The heavy black box indicates the approximate area of the target.](image)

A conductive anomaly apparent in the early off-time z-component data associated with the southern margin of the pegmatite syenite and monzonite of the Copper Mountain Intrusion consists of northeast-trending EM targets 4 and 5 (Figure 16A and Figure 17). These two parallel features are defined as thick, vertical, weak conductors at least 500 m long that are potentially related to fluvial sediments at surface or perhaps sulphide mineralization in zones parallel to major northeast-trending structures (Figure 21). The northwesternmost trend looks to be offset in a sinistral sense by the interpreted fault. The conductors cross-cut a magnetic high sourced by Copper Mountain diorite and volcanic rocks of the Nicola Group and are partially coincident with the strong magnetic low of the Copper Mountain syenite.
Target 6 is a northwest- to northeast-trending thick vertical conductor with very low conductivity (Figure 22). The conductive trend is mostly hosted by Copper Mountain diorite that has a strong magnetic response. The conductive trend is not parallel to the margin of the diorite or any of the interpreted structures. It may coincide with discrete magnetic lows.
Table 2: Summary of geological and geophysical characteristics of the alkalic porphyry-style targets selected from the AeroTEM data. Priority is assigned on a 1 (high priority) to 3 (low priority) scale based on the geologic setting and geophysical response. EM target 6 is roughly the same as Mag target 3.

<table>
<thead>
<tr>
<th>EM Target</th>
<th>Host Rocks</th>
<th>Structural Setting</th>
<th>Magnetic Response</th>
<th>EM Response</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1</td>
<td>Slices of Nicola undifferentiated volcanic rocks</td>
<td>Near intersection of NE-trending Boundary fault with an E-trending structure</td>
<td>On margin of magnetic high of Copper Mountain Intrusion</td>
<td>5 – 15 S</td>
<td>Thick vertical conductor, potentially with middle zone of thin conductor dipping south</td>
</tr>
<tr>
<td>EM2</td>
<td>Calcareous siltstone and sandstone unit</td>
<td>Near two N-trending structures, Boundary Fault to east and contact between Nicola Group calcareous siltstone and sandstone and Princeton Group varicoloured andesite and basalt flows to west</td>
<td>-350 nT</td>
<td>300 m diameter discrete magnetic low on margin of magnetic high associated with gabbro and diorite of Copper Mountain</td>
<td>10 – 30 S</td>
</tr>
<tr>
<td>EM3</td>
<td>Partially hosted by calcareous siltstone/ sandstone and undifferentiated volcanic rocks</td>
<td>N-trending faults to west and east but not parallel to conductive trend</td>
<td>Coincides with but not parallel to margin of magnetic high of Copper Mountain diorite</td>
<td>5 – 15 S</td>
<td>Thick vertical conductor</td>
</tr>
<tr>
<td>EM4</td>
<td>Crosscuts southern margin of pegmatite syenite and monzonite of Copper Mountain Intrusion</td>
<td>Crosscuts rock type contacts, Potentially offset sinistrally by interpreted fault near contact between Copper Mtn syenite and monzonite.</td>
<td>Crosscuts magnetic high of Copper Mtn diorite and magnetic low of the Copper Mountain syenite</td>
<td>5 – 20 S</td>
<td>Thick vertical conductor</td>
</tr>
<tr>
<td>EM5</td>
<td>Crosscuts southern margin of pegmatite syenite and monzonite of Copper Mountain Intrusion</td>
<td>Crosscuts rock type contacts, parallel to interpreted fault to south</td>
<td>Crosscuts magnetic high of Copper Mtn diorite and magnetic low of the Copper Mountain syenite</td>
<td>5-20 S</td>
<td>Thick vertical conductor</td>
</tr>
<tr>
<td>EM6</td>
<td>Copper Mountain diorite</td>
<td>Near contact with Nicola Group undifferentiated volcanic rocks to south, which hosts microdiorite and latite porphyry dykes. NNE- and ENE-trending structures mapped from mag.</td>
<td>On side of deep sourced magnetic high. May be partially coincident with subtle linear mag low.</td>
<td>&lt;1 S</td>
<td>Thick vertical conductor</td>
</tr>
</tbody>
</table>

Maxwell Modelling of High Priority EM Targets
Based on conductivity, host rocks, magnetic signature and structure, EM targets 1, 2, 3, and 6 are considered high priority targets for alkalic porphyry exploration. In order to better understand the geometry of these conductive zones, we have completed numerical
modelling using the Maxwell program. Parameters used in the modelling of each target are summarized in Table 3.

Although strike length was estimated from the continuity of the anomalous response from line-to-line, it must be noted that the models are only accurate in the vicinity of the lines modelled. As geology is highly variable, it is possible that the conductor properties can change dramatically along line. Also, depth extent of thick plates is difficult to determine as airborne EM systems are much more sensitive to the upper portion of the conductor. So the depth extent of a thick conductor should be considered with caution.

**Table 3: Summary of the Maxwell plate modelling parameters used in modelling of the EM targets on the CIM Copper Mountain survey.**

<table>
<thead>
<tr>
<th>Target</th>
<th>Line modelled</th>
<th>Thin/Thick Plate</th>
<th>ZOff Channel</th>
<th>Depth to Top</th>
<th>Dip</th>
<th>Strike Direction (azimuth)</th>
<th>Strike Length</th>
<th>Down Dip Length</th>
<th>Thickness – Thickness Conductivity (S-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1</td>
<td>10030</td>
<td>Thick</td>
<td>8-10</td>
<td>150 m</td>
<td>65° S</td>
<td>350°</td>
<td>500 m</td>
<td>50 m</td>
<td>300 m 0.2</td>
</tr>
<tr>
<td>EM2</td>
<td>10120</td>
<td>Thick, flat top</td>
<td>8-9</td>
<td>5 m</td>
<td>90°</td>
<td>313°</td>
<td>300 m</td>
<td>70 m</td>
<td>30 m 0.5</td>
</tr>
<tr>
<td>EM3</td>
<td>10150</td>
<td>Thick</td>
<td>8-10</td>
<td>30 m</td>
<td>90°</td>
<td>220°</td>
<td>600 m</td>
<td>50 m</td>
<td>50 m 0.9</td>
</tr>
<tr>
<td>EM6</td>
<td>20090</td>
<td>Thin</td>
<td>5-6</td>
<td>10 m</td>
<td>87° N</td>
<td>33°</td>
<td>1100 m</td>
<td>800 m</td>
<td>1.3</td>
</tr>
</tbody>
</table>

The resulting models are typically thick conductors dipping steeply northwards to vertical with varying strikes (Figures Figure 23 to Figure 26). Models for EM target 1 and EM target 6 are sheet-like and therefore they resemble conductive faults or dykes. Conversely, models for EM targets 2 and 3 are more rectangular and may represent mineralized dykes or breccia pipes.
Figure 23: Thick plate model created in the Maxwell program for EM target 1, as viewed from the top and the east looking west. The data used to create the model shown offset from the actual line location (thick black line). Red profiles show the modelled data.

Figure 24: Thick plate model created in the Maxwell program for EM target 2, as viewed from the top and the east looking west. The
Figure 25: Thick plate model created in the Maxwell program for EM target 3, as viewed from the top and the east looking west. The data used to create the model shown offset from the actual line location (thick black line).
CONCLUSIONS AND RECOMMENDATIONS

Review of regional geological and geophysical data facilitated mapping of structures and magnetic lithologies and identification of high-priority alkalic porphyry targets with anomalous geophysical signatures. Although porphyry deposits typically lack strong EM anomalies due to the disseminated nature of the sulphide mineralization, several moderately continuous, moderate conductance anomalies have been selected. Consequently, there is potential that these EM anomalies are related to graphite-filled faults or other bedrock conductors. High-priority targets were modelled numerically using the Maxwell plate modelling software. Based on these interpretations, recommendations for future action are made for each target. Because historic geological, geochemical and drilling results have significant bearing on the process of prioritizing targets for further exploration, we suggest that the recommendations given here be reviewed in light of past geological, geochemical and drilling information before finalizing the target priority and planning follow-up work.

In general, it is recommended that each target be field checked for outcrop or causes of the geophysical anomaly. Detailed geologic mapping in areas with outcrop could help to identify alkalic porphyry-style alteration. Depending on the amount of outcrop or
thickness of cover, geochemical sampling could be considered to ascertain the potential for copper-gold mineralization.

In particular, EM targets 1 and 2 and Magnetic target 2 are the highest priority (Table 4). EM1 and Mag2 both coincide with favourable Nicola volcanic rocks in contact with diorite of the Copper Mountain Intrusion. They have similar magnetic signatures to that of the Ingerbelle and Copper Mountain mines. EM2 has a discrete relatively strong EM response that coincides with a magnetic low but lacks favourable host rocks. Unless contradictory information is gathered during the field check or geochemical sampling to indicate otherwise, all three high priority targets warrant further work. Specifically, IP surveys could be very effective at delineating zones of disseminated mineralization with low sulphide mineral contents typical of alkalic porphyry systems. The proximity of EM1 to current mine operations makes it highest priority for a 3D IP survey.
<table>
<thead>
<tr>
<th>EM Target</th>
<th>Host Rocks</th>
<th>Structural Setting</th>
<th>Magnetic Response</th>
<th>EM Response</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1</td>
<td>Slices of Nicola undifferentiated volcanic rocks</td>
<td>Near intersection of NE-trending Boundary fault with an E-trending structure</td>
<td>On margin of magnetic high of Copper Mountain Intrusion</td>
<td>Thick vertical conductor, potentially with middle zone of thin conductor dipping south</td>
<td>1</td>
</tr>
<tr>
<td>Mag2</td>
<td>Undifferentiated volcanic rocks with microdiorite and latite porphyry dykes</td>
<td>Contact with Copper Mountain diorite to north. Major Boundary Fault directly west. NE-trending conductive structure to NW</td>
<td>Arc shaped magnetic high mapping contact of volcanic rock and diorite</td>
<td>East-trending, 500 m long</td>
<td>1</td>
</tr>
<tr>
<td>EM2</td>
<td>Calcareous siltstone and sandstone unit</td>
<td>Near two N-trending structures, Boundary Fault to east and contact between Nicola Group calcareous siltstone and sandstone and Princeton Group varicoloured andesite and basalt flows to west</td>
<td>300 m diameter discrete magnetic low on margin of magnetic high associated with gabbro and diorite of Copper Mountain</td>
<td>10 – 30 S</td>
<td>2</td>
</tr>
<tr>
<td>Mag3</td>
<td>Copper Mountain diorite</td>
<td>Contact with Nicola Group undifferentiated volcanic rocks to south, which hosts microdiorite and latite porphyry dykes. NNE- and ENE-trending structures mapped from mag.</td>
<td>On side of deep sourced magnetic high. &lt; 1 S</td>
<td>Thick vertical conductor</td>
<td>3</td>
</tr>
<tr>
<td>EM6</td>
<td>Copper Mountain diorite</td>
<td>Near contact with Nicola Group undifferentiated volcanic rocks to south, which hosts microdiorite and latite porphyry dykes. NNE- and ENE-trending structures mapped from mag.</td>
<td>On side of deep sourced magnetic high. May be partially coincident with subtle linear mag low. &lt;1 S</td>
<td>Thick vertical conductor</td>
<td>3</td>
</tr>
<tr>
<td>EM3</td>
<td>Partially hosted by calcareous siltstone/ sandstone and undifferentiated volcanic rocks</td>
<td>N-trending faults to west and east but not parallel to conductive trend</td>
<td>Coincides with but not parallel to margin of magnetic high of Copper Mountain diorite</td>
<td>NW-trending, potentially parallel to key faults in Copper Mt and Ingerbelle area</td>
<td>4</td>
</tr>
<tr>
<td>Mag1</td>
<td>Undifferentiated volcanic and volcanioclastic rocks</td>
<td>Boundary Fault to west, contact with Copper Mountain Stock to east</td>
<td>Elongate to NW, 1250 x 220m</td>
<td>NW trending conductors on flank of NW-trending resistive zone</td>
<td>5</td>
</tr>
<tr>
<td>EM4</td>
<td>Crosscuts southern margin of pegmatite syenite and monzonite of Copper Mountain Intrusion</td>
<td>Crosscuts rock type contacts. Potentially offset sinistrally by interpreted fault near contact between Copper Mtn syenite and monzonite.</td>
<td>Crosscuts magnetic high of Copper Mtn diorite and magnetic low of the Copper Mountain syenite</td>
<td>NW trend greater than 1100 m (SW segment 500 m)</td>
<td>5</td>
</tr>
<tr>
<td>EM5</td>
<td>Crosscuts southern margin of pegmatite syenite and monzonite of Copper Mountain Intrusion</td>
<td>Crosscuts rock type contacts, parallel to interpreted fault to south</td>
<td>Crosscuts magnetic high of Copper Mtn diorite and magnetic low of the Copper Mountain syenite</td>
<td>Thick vertical conductor. Broad response, maybe related to surficial deposits. Southern segment 750 m long and north segment 350 m trending to NE</td>
<td>5</td>
</tr>
</tbody>
</table>
DELIVERABLES

Along with this report, files were generated for the various magnetic, electromagnetic and interpretation layers. These products are described in Table 5.

Table 5: Description of the various deliverables in Geotiff formats except where specified otherwise. Files labelled _colourbar are images of the colour bar for the according products provided.

<table>
<thead>
<tr>
<th>Data Type</th>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic</td>
<td>RTP</td>
<td>Reduced-to-pole magnetics calculated from the total magnetic intensity data</td>
</tr>
<tr>
<td></td>
<td>RTP_1VD</td>
<td>First vertical derivative of the reduced-to-pole magnetics</td>
</tr>
<tr>
<td></td>
<td>RTP_TDR</td>
<td>Second vertical derivative of the reduced-to-pole magnetics</td>
</tr>
<tr>
<td></td>
<td>AS</td>
<td>Analytic signal of the total magnetic intensity data</td>
</tr>
<tr>
<td></td>
<td>Canada200_RMI_RTP</td>
<td>Reduced-to-pole regional residual magnetic intensity (RMI) data for Canada with 200m line spacing</td>
</tr>
<tr>
<td></td>
<td>Canada200_RMI_RTP_1VD</td>
<td>First vertical derivative of the reduced-to-pole regional residual magnetic intensity (RMI) data for Canada with 200m line spacing</td>
</tr>
<tr>
<td></td>
<td>Canada200_RMI_RTP_TDR</td>
<td>Tilt derivative of the reduced-to-pole regional residual magnetic intensity (RMI) data for Canada with 200m line spacing</td>
</tr>
<tr>
<td></td>
<td>RTP_1VD_contours_02nT.shp</td>
<td>Contours of the RTP_1VD at 0.2 nT intervals, with labels at 1 nT intervals</td>
</tr>
<tr>
<td>EM</td>
<td>ZOff2</td>
<td>Z-component AeroTEM III data for the third off-time gate [nT/s]</td>
</tr>
<tr>
<td></td>
<td>ZOff10</td>
<td>Z-component AeroTEM III data for the eleventh off-time gate [nT/s]</td>
</tr>
<tr>
<td></td>
<td>Off_Con</td>
<td>Off-time conductance calculated from the AeroTEM III data [S]</td>
</tr>
<tr>
<td></td>
<td>Tau</td>
<td>Off-time decay constant calculated from the AeroTEM III data [µs]</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Interpretation_Magnetic_ Lithologies</td>
<td>Polygons outlining magnetic lithologies identified from the various magnetic layers</td>
</tr>
<tr>
<td></td>
<td>Interpretation_Structures</td>
<td>Lines delineating structures (faults, shear zones) identified from the various magnetic layers</td>
</tr>
<tr>
<td>Magnetic_Targets</td>
<td>Targets that have magnetic responses but lack EM anomalies</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Conductive Targets</td>
<td>Targets with EM responses</td>
<td></td>
</tr>
<tr>
<td>Conductive_Target_Axes</td>
<td>Axes (mapping the center or upper contacts of dipping plates) from line to line for targets with EM responses</td>
<td></td>
</tr>
<tr>
<td>Prioritized_Targets</td>
<td>Magnetic and EM targets coloured by priority (red for high, green for medium, blue for low, grey for targets outside of claims)</td>
<td></td>
</tr>
<tr>
<td>MagLows</td>
<td>Outlines of discrete magnetic lows in the airborne survey area</td>
<td></td>
</tr>
</tbody>
</table>

## REFERENCES


