GEOPHYSICAL REPORT
NORTHAR MINES LTD.

On A
HORIZONTAL LOOP ELECTROMETERS SURVEY

Leah mineral claims, Ortell Lake, Mayo M. B., Yukon
lat. 64°06'N Long. 133°W N.T.S. 106 C/2,3

AUTHOR: Glen E. White, B.Sc., P.Eng., Geophysicist
DATE OF WORK: August 14-25, 1979   090520
DATE OF REPORT: October 17, 1979

Glen E. White  GEOPHYSICAL CONSULTING & SERVICES LTD.
This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $11,700.00.

J. A. Mays
Resident Geologist or Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. B. Baxter
Superintendent Mining Recorder

Commissioner of Yukon Territory
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Figure 1 - Location and Claims Map
Figure 2 - Horizontal Loop Profiles
INTRODUCTION

This report describes a reconnaissance horizontal loop electromagnetometer survey which was conducted over a number of strong zinc, silver and lead geochemical anomalies. The project was conducted on behalf of Northair Mines Ltd. during the period August 14-25, 1979 by Glen C. White Geophysical Consulting & Services Ltd.

PROPERTY

The property surveyed consists approximately of section 93-112 and 165, 167, 169, 171, 173, 175, 175A, 179 and 181. The only posts noted during the survey were along the claim line between claims section 99 - 106. These claims are held under a joint venture agreement between Sunave Resources (previously Bow River Resources), Hecate Gold Corp., Newhauk Mines Ltd. (previously Highhawk Mines Ltd.), and CPR Resources Ltd. (previously Envoi Resources Ltd.).

LOCATION AND ACCESS

The property is situated between the Nadaleen and Stewart Rivers near Ornell Lake some 160 km east of Mayo Yukon, Mayo M. B. Latitude 66° 06' N, Longitude 133° 14', N.T.S. 106 C/2,3.

The area is accessible by fixed wing from Mayo to Ornell Lake where base camp materials are stored. Helicopter support is then required to establish a camp on the survey area some 10 km to the northwest.

GENERAL GEOLOGY

The general geochemical-geological data for the property is discussed in a report by J.W. MacLeod, P. Eng. dated October 11, 1977. The regional geology is available from the G.S.C. open file 205.
Mr. Macleod reports that the Leah claims were positioned to cover a portion of the hanging wall of a major thrust fault which places a Hydryanian grit unit over Ordovician shales and carbonates. The grit unit contains a dolomite horizon which hosts the known mineral occurrences on the McIntyre Mines ground to the west of the Leah group. Mississippian type lead-zinc mineral zones have been enriched by a second period evidenced by steel galena, minor grey copper, accompanied by significant silver values.

**SURVEY SPECIFICATIONS**

**Survey Grid**

The grid used for this survey consisted of the reconnaissance geochemical grid with lines spaced at 200 m intervals. The lines were in a state of disrepair and were re-plagged and numbered. Approximately 24 km of line was re-plagged and surveyed.

**Electromagnetometer Survey**

The PAX-77M horizontal loop system was used for this survey. The system was used in the PAX mode where the transmitter coil plane and receiver coil plane are horizontal. In-phase and quadrature voltage measurements induced in the receiver relative to like quantities induced in a reference coil. The reference voltage and the receiver voltage are compared in a bridge or ratiometer circuit and the output is calibrated to read in percent of normal field i.e. no conductors present.
DISCUSSION OF RESULTS

Figure 2 outlines the area of anomalous zinc and lead geochemical anomalies with respect to the interpreted horizontal loop conductor trends. The Max-Min horizontal loop survey was completed with a separation of 100 m to try and limit topography and separation problems due to the uncut lines and difficult terrain, particularly in the northwest quadrant of the survey area.

In general, the responses obtained show broad changes due to lithology and conductive surficial material in the valley bottom. A number of strong conductor trends were detected which correlate from line to line. The 100 m separation shows some of these as wide responses which would suggest conductive materials in a conductive lithology such as a graphite-bearing shale or argillite etc. However, a number of the trends do show good correlation to the anomalous geochemical areas such as the response between 571 - 611 on line 562 to 622.

The northwest corner of the survey area between lines 28E and 38E may possibly have two parallel conductors. The general electromagnetic responses indicate an electromagnetic feature extending E-W across the survey area along 571. This feature is likely a major fault or lithologic unit.
CONCLUSION AND RECOMMENDATION

A 15x-15m horizontal loop survey was conducted over a portion of the lease claims, Mayo M. S. on behalf of Northair Mines Ltd. The survey was conducted on a reconnaissance basis due to the uncut wide-spaced lines and difficult terrain. However, a number of interesting electromagnetic responses were obtained which would appear to correlate with known strong geochemical zinc-lead anomalies. Thus it is recommended that these electromagnetic conductor trends be covered by a well-cut survey grid and detailed with either the 15x-15m or vector pulse electromagnetic methods.

Respectfully submitted,
GLEN E. WHITE GEOPHYSICAL CONSULTING & SERVICES LTD.

Glen E. White, B.Sc., P. Eng.
Consulting Geophysicist
## COST BREAKDOWN

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Dates</th>
<th>Wages</th>
<th>Total</th>
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<tbody>
<tr>
<td>C. Booth</td>
<td>Aug. 14-25/79</td>
<td>$150/day</td>
<td>$2400.00</td>
</tr>
<tr>
<td>J. Miller</td>
<td>&quot;&quot;</td>
<td>135/day</td>
<td>2160.00</td>
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<tr>
<td>J. Owens</td>
<td>&quot;&quot;</td>
<td>135/day</td>
<td>2160.00</td>
</tr>
</tbody>
</table>

Note: Dates 15-23 x 1.5 man days, therefore total 48 man days.

- Meals and accommodations and travel expenses: $1440.00
- Instrument lease: $1280.00
- Airfare: $1236.00
- Air freight: $238.00
- Interpretation, drafting and reports: $850.00

**Total**: $11,764.00
STATEMENT OF QUALIFICATIONS

NAME: WHITE, Glen E., P. Eng.

PROFESSION: Geophysicist

EDUCATION: B.Sc. Geophysics - Geology
University of British Columbia

PROFESSIONAL ASSOCIATIONS: Registered Professional Engineer,
Province of British Columbia

Associate member of Society of Exploration Geophysicists.

Past President of B. C. Society of Mining Geophysicists.

EXPERIENCE: Pre-Graduate experience in Geology - Geochemistry - Geophysics with Anaconda American Brass.

Two years Mining Geophysicist with Sulmac Exploration Ltd. and Airborne Geophysics with Spartan Air Surveys Ltd.

One year Mining Geophysicist and Technical Sales Manager in the Pacific north-west for W. P. McGill and Associates.

Two years Mining Geophysicist and supervisor Airborne and Ground Geophysical Divisions with Geo-X Surveys Ltd.

Two years Chief Geophysicist Tri-Con Exploration Surveys Ltd.

Eight years Consulting Geophysicist.

Active experience in all Geologic provinces of Canada.
SPECIFICATIONS:

Frequencies: 222, 444, 999, 1777 and 3555 Hz.

Modes of Operation:
- MAX: Transmitter coil plane and receiver coil plane horizontal (MIN-coupled; Horizontal mode), used with reference cable.
- MIN: Transmitter coil plane horizontal and receiver coil plane vertical (MIN-coupled), used with reference cable.
- V.L.: Transmitter coil plane vertical and receiver coil plane horizontal (Vertical mode), used without reference cable in parallel modes.

Frequency Separation: 25, 50, 100, 150, 200 & 250 MHz (MMI) or 100, 200, 300, 400, 600 and 800 ft. (MMER).

Parameters Read:
- In-Phase and Quadrature components of the secondary field in MAX and MIN modes.
- Tilt-angle of the total field in V.L. mode.

Readout:
- Automatic direct readout on 50 mm (3.5") squarewave meters in MAX and MIN modes. No ruling or compensation necessary.
- Tilt angle and null in 50 mm squarewave meters in V.L. mode.

Basic Ranges:
- In-Phase: ±5%, ±100% by push-button switch.
- Quadrature: ±5%, ±100% by push-button switch.
- Tilt: 175° scale.


Readability:
- In-Phase and Quadrature: ±0.25% to ±0.5%, Tilt: 1%.

Repeatability: ±0.25% to ±1% normally, depending on conditions, frequencies and coil separation used.

Transmitter Output:
- 222 Hz: 2.25 Ams
- 444 Hz: 4.50 Ams
- 999 Hz: 9.09 Ams
- 1777 Hz: 17.77 Ams
- 3555 Hz: 35.55 Ams

Receiver Batteries: 3V trans. radio type batteries (4). Life: approx. 30mls, continuous duty (alkaline, 0.5 Ah), less in cold weather.

Transmitter Batteries: 12V 8Ah Gel-type rechargeable battery. (Charger supplied).

Reference Cable: Light weight 2-conductor Reel cable for minimum friction. Unanodized. All reference cables optional at extra cost. Please specify.

Voice Link: Built-in intercom system for voice communication between receiver and transmitter operators in MAX and MIN modes, via reference cable.

Indicator Lights: Built-in signal and reference warning lights to indicate erroneous readings.

Temperature Range: -40°C to +80°C (-40°F to +140°F).

Receiver Weight: 6 kg (13 lbs.)

Transmitter Weight: 13 kg (29 lbs.)

Shipping Weight: Typically 80 kg (180 lbs.), depending on quantities of reference cable and batteries included. Shipped in two field/shipping cases.

Specifications subject to change without notification.

APEX PARAMETRICS LIMITED
200 STEELCASE P.O. E., MARKHAM, ONT., CANADA L3R 1G2

Phone: (416) 489-4812  Cables: APEXPARA TORONTO  Telex: 08-966775 APEXPARA MKHM

Glen E. White  GEOPHYSICAL CONSULTING & SERVICES LTD.