SUMMARY

This report presents the results of the detailed geophysical survey work completed over the Little Billy, Basic Eleven and Lake North grids, Shima Resources claims, Texada Island, B.C., Canada. Six drill holes are recommended to test coincident geophysical anomalies which could indicate the presence of massive copper-magnetite mineralization within skarns.

Respectfully submitted,

Charles A. Ager, PhD, PEng.
Geophysicist

July 9, 1979
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7c PFE MAP
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11 IP DETAIL
LOCATION, DATE OF WORK, CREW

**Location:** Shima Resources Ltd Claims Groups
Texada Island, B.C. (Vananda area)
Nanaimo Mining Division
NTS 92F/10E, 1SE
49°43.5' N Latitude by 124°3' W Longitude

**Date of Work:**
Field Work; April 18 - May 15, 1979
Office Work; May 16 - July 9, 1979

**Crew:**
M.G. Berretta, MSc, geophysicist
C.A. Ager, PhD, PEng, geophysicist
G.J. Penner, geophysical operator
S. Beale, geophysical operator
D. Berryman, geophysical operator
D. Ethier, field assistant
INTRODUCTION

At the request of Shima Resources Ltd. detailed I.P., magnetics, VLF and gravity survey work was completed over three separate grids of the company's claim groups, Texada Island, B.C. (Figure 1,2). The intent of the work was to follow up previously detected gravity anomalies discovered during a reconnaissance gravity survey during 1977 (Ager, 1978). Copper-magnetite mineralization is known to be directly, related to skarn zones (gravity highs) at or near the contact of diorites which have intruded the older limestones. Detailed geophysical mapping was done to pinpoint drill targets.

The Shima Resources Ltd. claims groups are located on the northern end of Texada Island, B.C. which is some 80 miles northwest of Vancouver, B.C., Canada. The areas surveyed are shown on Figure 2 and are referred to as the Little Billy, Basic Eleven and Lake North grids.

The claims are in an area of moderate topographic relief (0-250 meters) with small cliffs, gullies and swamps throughout the region. The area is well forested with thick stands of timber. Second growth and swamps make the survey area difficult to penetrate at times. However, a good network of secondary roads provides easy access to the area surveyed.
INSTRUMENTATION & SURVEY PROCEDURE

Gravity observations were made using a LaCoste & Romberg Model G gravity meter (serial #G199) with reading accuracy of ± 0.01 mgals. Drift, latitude, Free Air, Bouguer slab and terrain effects were accounted for in the complete Bouguer gravity maps, Figures 4a, 4b and 4c. Bouguer density was 2.76 g/cc which corresponds to an elevation factor of 0.19296 mgal/m. Terrain radius was 400 meters.

Station elevations were determined using standard levelling procedures and an electronic level developed by Ager & Associates Ltd. Relative elevations are accurate to ± 0.03 meters or better. Absolute elevations were determined by tying in to previously known elevation points within each survey grid.

Magnetic readings were taken with a Scintrex MFl fluxgate magnetometer with reading accuracy of ± 10 gammas. Instrument and diurnal drift were accounted for by tying into base stations within 3 hour intervals.

VLF EM survey work was done using a Sabre Mark 27 receiver using Seattle as transmitting station. Parameters measured were horizontal field strength and tilt angle.

Induced polarization equipment consisted of a Sabre Mark 2, 450 watt, frequency domain system. A dipole-dipole array was employed with \( a=50m \) \( n=1 \), and a frequency span of 0.3 to 10 hertz. The effective depth of exploration was about 25 meters, except on detail lines where the depth was about 75 meters.

The survey grid was established using flagging, topo chain and compass, with stations every 25-50m. along east-west lines.
spaced 50m. apart as shown on the grid maps.

The geophysical results were plotted in the field and extensions to the grids were made where required. The final maps were calculated in Vancouver using drafting and computer facilities and are given on Figures 3a,b,c thru 10a,b,c, and 11.
RESULTS & INTERPRETATION

A. Little Billy Grid

At the north end of the grid, a weak IP anomaly outlines the general area of the Little Billy Mine (Figures 5a, 7a, 10a). Within this zone there is a coincident gravity high residual of small amplitude. These anomalies are considered to be caused by weak sulphide mineralization (such as pyrite) within and/or near diorites and/or limestones. The anomalies are interpreted to be related to non-economic mineralization which is associated with the mined out deposits of the Little Billy Mine.

In the south central area of the grid, two significant IP anomalies occur (Figure 7a). The IP feature at L250S+200E has amplitude of 12% pfe. It relates to medium resistivities (Figure 8a) of 500 to 1000 ohm-meters. Detail IP, Figure 11, indicates a westerly dip to the source with depth extent in excess of 75 meters. This IP high is coincident with a magnetic high residual of about 1000 gammas. The cause of this feature is thought to be sulphide mineralization such as pyrite, chalcopyrite, etc. and with associated magnetite.

The IP anomaly centered at 25W on lines 200S and 250S is open to the south. Efforts to close the feature were hampered by local culture (houses etc.). A weak amplitude of 8% pfe appears to increase with depth to 12% (figure 11). It also appears to widen with depth, and to have a westerly dip. Resistivities here (Figure 8a) indicate a corresponding low of 500 ohm-meters at depth. The small magnetic high
feature, about 500 gammas, (Figure 6a) occurs on the eastern flank of the anomaly. Its importance is uncertain due to scattered cultural effects in the area. The IP closure at L100S+100E is either associated with the above IP anomaly or else it is a cultural effect (buried pipe ?). These anomalies appear to represent minor sulphide mineralization. Their economic merit is uncertain at this time and should be re-evaluated pending the results of the proposed drilling.

The gravity high residual of amplitude 0.50 mgals (Figure 5a) is situated over the limestones, just south of the diorite-limestone contact. Its center is L50S+200E. It is also the southern edge of a linear magnetic high residual anomaly of about 700 gammas (Figure 6a). The association of the magnetic high (magnetite in diorites ?) with the gravity high (skarn ?) makes this a good drill target. The IP could provide a 'halo' effect here.

The VLF EM, Figure 9a, over the Little Billy Grid is non-diagnostic due to severe cultural interference (power lines, metal buildings, pipes, etc.).

B. Basic Eleven Grid

The most striking feature of the geophysical work is a strong amplitude VLF EM conductor striking NW through the grid (Figures 9b and 10b). This EM anomaly corresponds to a resistivity low and is indicative of a northeast fault type structure within competent limestones to the east.
and marbelized limestones to the west.

The magnetics (Figure 6b) indicate a 600 gamma residual anomaly centered at L150N+25W. The magnetic feature is slightly elongated northwesterly and appears to be semi-continuous to the southeast. A gravity high residual of small amplitude (0.30 mgals) is elongated southwest - northeasterly on the northern flank of the magnetic high, (Figure 5b). It is centered at L200N+100W.

It should be noted that the proximity of the EM, Magnetics and gravity suggest the possibility of a genetically related source, such as magnetite in skarns within or under the marbelized limestones. As shown on Figure 10b, a northeast-southwest cross fault is also interpreted to pass through the center of the magnetic-EM feature.

At the south edge of the grid, partially defined IP, magnetic and gravity anomalies are evident. Further work to the south is needed in order to properly interpret these features.

C. Lake North Grid

The pfe map (Figure 7c) indicates two main anomalous zones. The first is centered on L00 at 200E with amplitude 8% pfe. Detail IP, Figure 11, suggests a confined shallow source at about 50 meters depth. It is associated with a resistivity low of 300 ohm-meters.

The second IP anomaly is a northerly elongated zone
about 100 m long and 50 m wide centered at L50S+25N. Its peak amplitude of 8% pfe increases with depth and dips to the west. It corresponds to a zone of low resistivity, 300-1000 ohm-meters. This IP anomaly appears connected to the south where a 10% pfe response flanks an old mining pit. Visual inspection of the pit indicated the presence of massive magnetite, chalcopyrite and pyrite within highly fractured rock. It is thus likely that the IP anomalies could be caused by similar metallic mineralization.

The IP features occur within a magnetic gradient which parallels a marbelized zone and is taken to be the general trend of the geology. Inspection of Figure 4c, the residual gravity map, shows a generally continuous gravity high anomaly which overlies and parallels the magnetic trend. This indicates that the gravity is probably caused by a heavier rock unit within or underlying the limestones. The local highs within the broader feature could map skarn zones centered at L450N+175W and 25S+250E.

A weak VLF EM conductor is shown on Figure 10c to strike northerly from L150S to L100N at about 25E. The VLF profiles are given on Figure 9c. Generally speaking, the VLF is non-diagnostic except for the coincidence with IP pfe at L50S+25E.
RECOMMENDATIONS & CONCLUSIONS

Based on the geophysical results presented in this report, the following six vertical drill holes are recommended in order to test the economic significance of the anomalies.

<table>
<thead>
<tr>
<th>HOLE NO.</th>
<th>GRID</th>
<th>HOLE CO-ORD</th>
<th>DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDH 1</td>
<td>LITTLE BILLY</td>
<td>L250S+175E</td>
<td>125M</td>
</tr>
<tr>
<td>DDH 2</td>
<td>LITTLE BILLY</td>
<td>L50S+200E</td>
<td>125M</td>
</tr>
<tr>
<td>DDH 3</td>
<td>BASIC ELEVEN</td>
<td>L150N+25W</td>
<td>125M</td>
</tr>
<tr>
<td>DDH 4</td>
<td>BASIC ELEVEN</td>
<td>L200N+100W</td>
<td>125M</td>
</tr>
<tr>
<td>DDH 5</td>
<td>LAKE NORTH</td>
<td>L00+67W</td>
<td>125M</td>
</tr>
<tr>
<td>DDH 6</td>
<td>LAKE NORTH</td>
<td>L00+175W</td>
<td>125M</td>
</tr>
</tbody>
</table>

Pending the results of these drill holes, further interpretation of the geophysical data may be required.

Respectfully submitted

Charles A. Ager PhD, PEng.
Geophysicist

July 9, 1979

Mauro G. Berretta, MSc
Geophysicist
REFERENCES

CERTIFICATES OF QUALIFICATION

I, Charles A. Ager, do hereby certify that:

1. I am a practising geophysicist with offices and residence at 15423 34th Avenue, Surrey, B.C., Canada.

2. I have received the following university degrees:
   (a) 1968 B.A. (Honours Math/Physics)
       California State University, Sacramento, Calif.
   (b) 1972 M.Sc. (Applied Geophysics)
       University of B.C., Vancouver, B.C., Canada
   (c) 1975 Ph.D. (Applied Geophysics)
       University of B.C., Vancouver, B.C., Canada

3. I am a member in good standing of the following professional organizations:
   (a) B.C. Geophysical Society
   (b) Society of Exploration Geophysicists
   (c) Association of Professional Engineers of the Province of British Columbia

4. Since 1968 I have been engaged in exploration and mining geophysics over numerous projects in western North America and eastern Canada.

5. The geophysical field work and the interpretation of the results in this report were done under my direct supervision.

Charles A. Ager, PhD, PEng
Geophysicist
I, Mauro B. Berretta, do hereby certify that I have the following qualifications.

ACADEMIC

1964 - B.Sc. (Physics) - University of Windsor
1965 - M.Sc. (Physics) - University of Windsor
1967 - 69 - PH.D. Studies (Geophysics) - U.B.C.

PROFESSIONAL AND RELATED EXPERIENCE

1963 - 64 - oceanography and marine geophysics research
with Great Lakes Institute, University of Toronto.

1968 - 69 - lecturer in exploration geophysics (GP400, GP402)
with Dept. of Geophysics, U.B.C.

1970 - 77 - instructor in mining and petroleum geophysics
with British Columbia Institute of Technology

1968 - present - geophysical exploration as an employee,
consultant, joint-venture partner with numerous mining and oil companies in B.C., Yukon, and U.S.A. - experience in all phases of geophysics, (i.p., mag, e.m., seismic, gravity), with special concentration on i.p. and e.m. methods (in excess of 1000 survey miles)

1974 - 75 - President, British Columbia Geophysical Society

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INSTRUMENT: SAIRE MARK 27
TRANSMITTER: SEATTLE

SHIMA RESOURCES LTD.
—BASIC ELEVEN AREA—
NANAIMO MINING DIVISION—BRITISH COLUMBIA

VLF-EM PROFILES

C.A. AGER & ASSOC
SURREY B.C. CANADA
DATED MAY, 1979
PROJECT: SHIMA
TO ACCOMPANY REPORT TITLED:
GRAVITY, IP, MAGNETIC & EM SURVEY
BASIC ELEVEN AREA
BY: C.A. AGER PHD, P.Eng
B.H.G. BERTOLA MSc
DATES: MAY, 1979, PROJECT: SHIMA

ELEVATION MAP
CONTOUR INTERVAL: 10 FEET (3 METERS)

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NANAIMO MINING DIVISION—BRITISH COLUMBIA

C.A. AGER & ASSOC
SURRY B.C. CANADA

DRAWN BY: T.M
CHECKED BY: T.M
DATE: MAY, 1979
FIG NO: 3b