A GEOPHYSICAL REPORT ON
AN INDUCED POLARIZATION SURVEY
K-CU CLAIM GROUP
- for -
WHITE RIVER MINES LTD. (N.P.L.)
AUGUST 7 to 22, 1969
- by -
A. R. DODDS, B. Sc.
J. B. PRENDERGAST, M.A., P. Eng.

This report has been examined by the
Geological Evaluation Unit and is recom-
mended to the Commissioner to be consid-
ered as representation work in the amount of
$1,260

D.R. Craig, R.G.
Chief Geologist
Confirmed as interpretation work under
Section 53, (1) (a), Yukon Mining Act

Commissioner of Yukon Territory
A REPORT ON
AN INDUCED POLARIZATION (I.P.) SURVEY
K-CU CLAIM GROUP

FOR

WHITE RIVER MINES LTD. (N.P.L.)

BY

HUNTEC
A Division of Kenting Exploration Services Limited
CALGARY, ALBERTA
SEPTEMBER, 1969
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>SURVEY SPECIFICATIONS</td>
<td>2</td>
</tr>
<tr>
<td>The Equipment</td>
<td>2</td>
</tr>
<tr>
<td>Electrode Configuration</td>
<td>3</td>
</tr>
<tr>
<td>PRESENTATION AND INTERPRETATION OF RESULTS</td>
<td>4</td>
</tr>
<tr>
<td>Presentation</td>
<td>4</td>
</tr>
<tr>
<td>Interpretation</td>
<td>4</td>
</tr>
<tr>
<td>SUMMARY AND RECOMMENDATIONS</td>
<td>6</td>
</tr>
<tr>
<td>APPENDIX A – Assessment Credit Data</td>
<td>a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCOMPANYING MAPS</th>
<th>LOCATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing No. 1</td>
<td>Apparent Chargeability Contours</td>
</tr>
<tr>
<td>2</td>
<td>Apparent Resistivity Contours</td>
</tr>
<tr>
<td>3</td>
<td>Detail Profile – Line 36W</td>
</tr>
</tbody>
</table>
INTRODUCTION

The Induced Polarization (I.P.) survey described in this report was carried out by Huntac Division, Kenting Exploration Services Limited for White River Mines Limited (N.P.L.) between August 7 and August 22, 1969.

The survey covered part of the K-Cu Claim Group, located west of Burwash Landing in the southwest corner of Yukon Territory. The Property adjoins the Yukon-Alaska border. A list of the claims covered is given in the Appendix to this report.

The field crew was managed by V. Esbensen and supervised from Calgary by A. R. Dodds, both of Huntac.

The survey covered 13.35 miles of lines at 400 foot intervals, measurements being taken every 200 feet along the lines.
The survey was carried out using Induced Polarization pulse-type equipment manufactured in Toronto by Huntex. The following specifications apply:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Current</td>
<td>Direct Current broken at periodic intervals</td>
</tr>
<tr>
<td>Period</td>
<td>1.5 seconds &quot;current on&quot; and 0.5 seconds &quot;current off&quot;. Alternate pulses have reverse polarity.</td>
</tr>
<tr>
<td>Integrating time</td>
<td>400 milliseconds</td>
</tr>
<tr>
<td>Maximum power available</td>
<td>2.5 kw</td>
</tr>
<tr>
<td>Maximum current available</td>
<td>3.0 amps</td>
</tr>
</tbody>
</table>

Measurements taken in the field were:

1. The current flowing through the current electrodes $C_1$ and $C_2$.
2. Primary voltage, $V_p$, between measuring electrodes during "current on" time.
3. Secondary voltage, $V_s$, between measuring electrodes during "current off" time.

The apparent chargeability ($M_a$) in milliseconds is calculated by dividing the secondary voltage by the primary voltage and multiplying by 400, which is the sampling time in milliseconds of the receiver unit. The apparent resistivity is calculated by dividing $V_p$ by
the current and multiplying by the geometrical factor appropriate to the electrode array being used.

**Electrode Configuration**

This survey was carried out using the "three-electrode array" configuration. In this array, the current electrode \( C_1 \) and the two potential electrodes \( P_1 \) and \( P_2 \) are moved in unison along the line to be surveyed. The quantity "\( a \)" or "electrode separation," is the distance between \( C_1 \) and \( P_1 \). In this array, the distance between \( P_1 \) and \( P_2 \) is also kept equal to "\( a \)" which, for this survey, was kept at 200 feet.

Detailing over anomalous areas was done by varying the quantity "\( a \)", thereby providing information for determining the location of the sources more accurately and assessing their importance.
PRESENTATION AND INTERPRETATION OF RESULTS

Presentation

The reconnaissance data are presented as contoured plan maps of apparent chargeability and apparent resistivity at a scale of one inch to 200 feet. (Dwg. Nos. 1009-1 and 1009-2).

Data for lines detailed with more than one electrode separation are presented in profile form at a scale of one inch to 200 feet. (Dwg. No. 1009-3).

Interpretation

The reconnaissance chargeability measurements over this area show a range from 0.9 to 9.1 milliseconds, with basically two background levels of 1.5 and between 5 and 6 milliseconds. Areas giving the lower background level generally also show low resistivities, both features and levels being typical of overburden or barren, porous sediments. Bedrock may be close to surface in areas showing a chargeability of 6 milliseconds, in which case a maximum sulphide content of 1% may be present.

There are a few areas where higher chargeability readings were observed, but in all cases, these are at most 50% above background and very limited in extent. These zones of possible interest are marked on the chargeability contour map.

Zone 1 comprises an erratic series of weakly anomalous chargeability values in an area of generally higher chargeability. The contouring as shown may indicate the trends of the sources, but is only one of several possibilities. Resistivities in the zone are the highest in the survey area, the detailing on Line 36W indicating that the surface layers are
more resistive than those underlying. Two possible local sources of higher chargeability are shown underneath the detail profile, both being within 100 feet of surface. The more northerly source appears to be more conductive than the surrounding rocks, but neither source is expected to contain any great volume of massive mineralization.

The contouring for Zone 2 is very tentative, it being quite probable that the two readings comprising this anomaly are not associated. Moreover, the anomaly is in a region of high resistivities and only one reading is clearly above background. The zone is therefore considered to be of only minor significance.

Zone 3 may be more extensive than shown, possibly linking up with the peaks shown on Lines 12W and 8W, and possibly extending further to the southwest. The readings are again only slightly above background, however, and are probably only of small significance. The zone was not detailed because of shortage of time.

The resistivity low and coincident chargeability low in the east corner of the grid correlates with weak E.M. responses in this area, and all of the features probably result from a conductive near surface layer, such as wet overburden.
SUMMARY AND RECOMMENDATIONS

The I.P. survey over K-Cu Claim Group shows considerable variations in chargeability within the range 0.8 to 9.1 milliseconds, most of which are regional and indicative of changes in overburden thickness or rock-type, rather than concentrations of mineralization. Three possible zones of interest have been picked out, all of which are weak, apparently of limited extent, and possibly disjointed. Zone 1 was detailed, indicating possible drilling targets as follows:

DDH 1 - to intersect 100 feet below station 9 + 50S, Line 36W
DDH 2 - to intersect 100 feet below station 5 + 00S, Line 36W.

The most favourable directions for extending the survey area, on the basis of I.P. results, are to the west for a possible intensification of Zone 1 and to the south to further investigate Zone 3.

Respectfully submitted,

HUNTEC,
A Division of Kenting Exploration Services Limited

Manager, Western Division

A. R. DODDS, B. Sc.
Senior Geophysicist
APPENDIX A

ASSESSMENT CREDIT DATA

Claims Surveyed

The following mineral claims were covered in whole or in part:
K-Cu 3 - 14 inclusive, 27, 29, 31, 33, and 35.

Miles Surveyed

<table>
<thead>
<tr>
<th>Mileage</th>
<th>Line-Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconnaissance</td>
<td>13.35</td>
</tr>
<tr>
<td>Detail</td>
<td>0.70</td>
</tr>
<tr>
<td>TOTAL</td>
<td>14.05</td>
</tr>
</tbody>
</table>

PERSONNEL

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>V. Esbensen</td>
<td>Party Chief</td>
<td>Aug. 7 - 22, 1969</td>
</tr>
<tr>
<td>T. Samilski</td>
<td>Operator</td>
<td>Aug. 7 - 22, 1969</td>
</tr>
<tr>
<td>E. Longland</td>
<td>Helper</td>
<td>Aug. 9 - 21, 1969</td>
</tr>
<tr>
<td>N. Basok</td>
<td>Helper</td>
<td>Aug. 9 - 21, 1969</td>
</tr>
<tr>
<td>B. Payne</td>
<td>Helper</td>
<td>Aug. 9 - 21, 1969</td>
</tr>
<tr>
<td>A. R. Dodds</td>
<td>Sr. Geophysicist</td>
<td>Sept. 26, 29, 30, 1969</td>
</tr>
<tr>
<td>M. Cole</td>
<td>Draftsman</td>
<td>Sept. 22 - 26, 1969</td>
</tr>
<tr>
<td>P. Whiteley</td>
<td>Typist</td>
<td>Sept. 30, 1969</td>
</tr>
<tr>
<td>I.P. Unit</td>
<td></td>
<td>Aug. 7 - 22, 1969</td>
</tr>
</tbody>
</table>
INDUCED POLARIZATION SURVEY

DETAIL PROFILE: LINE-36+00W

LEGEND

- INTERPRETED CAUSATIVE BODY
- RECOMMENDED D.HOLE
- \( a = 50' \)
- \( a = 100' \)
- \( a = 200' \)
- \( a = 300' \)
- \( a = 400' \)

POLE-DIPOLE ARRAY
- \( a = \text{feet} \)

CLIENT: WHITE RIVER MINES LIMITED (N.P.L.)
AREA: K.Cu CLAIMS, BURWASH LANDING, YUKON TERRITORIES

Horizontal Scale: 1 inch = 200 feet
Vertical Scales:
- Chargeability: 1 inch = 2 milliseconds
- Resistivity: 2 inches = 1 logarithmic cycle (ohm-meter)

To accompany report by:
A.R. Dodds, B.Sc., Geophysicist

HUNETEC DIVISION - Calgary, Canada

OWS-No. - IDOS-3