REPORT ON
GEOPHYSICAL WORK
PERFORMED ON
SUNDAY LAKE 5-74
SUNDAY LAKE AREA
PORCUPINE MINING DIVISION
SUNDAY LAKE AREA, ONTARIO

FEBRUARY 5, 1976
TIMMINS, ONTARIO

W.F. GRAHAM
NORANDA EXPLORATION CO., LTD.

This report on the electromagnetic and magnetic surveys is submitted under the Special Provision dated October 16, 1967, for credit of 60 assessment work days per claim. The person in charge of the linecutting and geophysical work was Mr. W.F. Graham.
LOCATION

The property, which consists of 4 contiguous unpatented mining claims numbered P-413940-43 inclusive, is situated in the central part of Sunday Lake Area which is about 100 miles ENE of Cochrane, Ontario.

ACCESS

The property is best reached by helicopter. Alternatively, several lakes suitable for fixed wing aircraft lie within 2 miles.

TOPOGRAPHY

The ground is characterized by very flat swamp vegetated by black spruce and muskeg.

LINECUTTING

One Base Line was cut 1300' due East and 1500' due West from a point 150' East and 400' South of the #1 post of claim number P-413942. Traverse lines were cut at right angles to the Base Line at 400' intervals. The Base Line and traverse lines were all chained and picketed at 100 foot intervals. In all, about 4.2 miles of line were cut, chained, and picketed.

MAGNETIC SURVEY

The magnetic survey (field and office) was performed from May 5, 1975 to December 5, 1975. The instrument used was a McPhar Fluxgate M-700. Base readings were taken along the Base Line and all readings were calculated relative to the base readings. Readings were taken at the base control stations at periodic intervals to discern day-to-day and diurnal drift. Any changes noted in the magnetic intensity were then applied as factors and progressive adjustments were made to each reading taken during that specific period of time.
The results of the magnetic survey are shown on the prints accompanying this report. Background magnetics vary between 400 and 500 gammas. One magnetic feature of interest was located, a narrow (100') linear zone of higher magnetics extending from 3+00 South on Line 12+00 East to 1+00 South on Line 12+00 West. The zone is open for extension in both directions and has associated conductivity. A reading of minus 250 gammas occurs at 1+50 North on Line 12+00 West but there is insufficient data to describe any feature associated with it.

**ELECTROMAGNETIC SURVEY**

The electromagnetic survey (field and office) was performed from May 5, 1975 to December 5, 1975.

The instrument used was a McPhar VLEM dual frequency unit capable of operation at 1000 cycles per second, 5000 cycles per second, or both frequencies simultaneously.

The equipment consists of a transmitter and a receiver. The transmitter is composed of a transmitter coil, transmitter console, and motor generator. The receiver is composed of a search coil, amplifier, clinometer, and headphones.

The transmitter coil is energized by an alternating current produced by the motor generator, and resulting in the production of a primary magnetic field. This primary magnetic field links with any conductor in its vicinity, producing an induced current which gives rise to a secondary magnetic field. At a given receiving station, the direction and magnitude of the primary field is altered by the secondary field. The direction of the resultant field is determined by means of the search coil with its attached clinometer. Measurements are made in terms of dip angles and are recorded in degrees. The plotting of the dip angles at both frequencies gives profiles which are useful in estimating the depth of the conductor axis, the dip of the conductor and its relative conductivity.

The range of penetration is normally considered to be approximately one-half the separation distance between the
transmitter and receiver, although other factors such as the conductivity of the overburden must also be taken into consideration.

The result of the survey are shown on the prints accompanying this report. One conductive zone was located which trends East-West from 3+00 South on Line 12+00 East to 3+00 South on Line 12+00 West.

The zone is moderately conductive with poor conductivity which suggests sulfides as the source of conductivity. There is direct magnetic association.

CONCLUSIONS AND RECOMMENDATIONS

One conductive zone with direct magnetic correlation was located. The poor conductivity and the magnetic association suggest sulfides including pyrrhotite as the source of conductivity. The property should be geologically mapped with emphasis on the conductor located.

W.F. Graham
NORANDA EXPLORATION CO., LTD.
Type of Survey(s) Electromagnetic & Magnetic
Township or Area Sunday Lake Area
Claim Holder(s) Noranda Exploration Co., Ltd.,
Box 45, Commerce Court West, Toronto, Ont.
Survey Company Seguin & Hussey
Author of Report W.F. Graham
Address of Author Box 1205, Timmins, Ontario
Covering Dates of Survey May 5, 1975 - Dec. 5, 1975
Total Miles of Line Cut 4.2

SPECIAL PROVISIONS CREDITS REQUESTED
Geophysical
Enter 40 days (includes line cutting) for first survey.
Enter 20 days for each additional survey using same grid.

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
Magnetometer Electromagnetic Radiometric

DATE: Feb. 6/76 SIGNATURE: W.F. Graham
Res. Geol. Qualifications

Previous Surveys
File No. Type Date Claim Holder

TOTAL CLAIMS: 4
GEOPHYSICAL TECHNICAL DATA

**GROUND SURVEYS** If more than one type of survey data for each type of survey

<table>
<thead>
<tr>
<th>Number of Stations</th>
<th>228</th>
<th>Number of Readings</th>
<th>239 (Mag) 396 (EM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station interval</td>
<td>100'</td>
<td>Line spacing</td>
<td>400'</td>
</tr>
<tr>
<td>Profile scale</td>
<td>$1'' = 20^\circ$</td>
<td>Contour interval</td>
<td>200 gammas</td>
</tr>
</tbody>
</table>

**MAGNETIC**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>McPhar Fluxgate M-700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>Scale constant 2 gammas per scale division</td>
</tr>
<tr>
<td>Diurnal correction method</td>
<td>closed loops of less than 1 hour duration and progressive</td>
</tr>
<tr>
<td>Base Station check-in interval (hours)</td>
<td>2 - 4 hours</td>
</tr>
<tr>
<td>Base Station location and value</td>
<td>595 gammas at 0+00 on Line 0+00</td>
</tr>
</tbody>
</table>

**ELECTROMAGNETIC**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>McPhar VLEM SS15</th>
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</thead>
<tbody>
<tr>
<td>Coil configuration</td>
<td>Vertical Loop</td>
</tr>
<tr>
<td>Coil separation</td>
<td>400' to 1500'</td>
</tr>
<tr>
<td>Accuracy</td>
<td>2° per scale division</td>
</tr>
<tr>
<td>Method</td>
<td>X Fixed transmitter</td>
</tr>
<tr>
<td>Frequency</td>
<td>1000 cps. and 5000 cps. (specify V.L.F. station)</td>
</tr>
<tr>
<td>Parameters measured</td>
<td>tilt angles</td>
</tr>
</tbody>
</table>

**GRAVITY**

<table>
<thead>
<tr>
<th>Instrument</th>
<th></th>
<th>Scale constant</th>
<th>Corrections made</th>
</tr>
</thead>
</table>

| Base station value and location |                      |
| Elevation accuracy             |                      |

**INDUCED POLARIZATION RESISTIVITY**

<table>
<thead>
<tr>
<th>Instrument</th>
<th></th>
<th>Method</th>
<th>Time Domain</th>
<th>Frequency Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>On time</td>
<td>Off time</td>
<td>Delay time</td>
<td>Integration time</td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td>Frequency</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Electrode array</td>
<td></td>
<td>Electrode spacing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of electrode</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
South part Again River Area - M.3002

**SUNDAY LAKE**

**DISTRICT OF COCHRANE**

**PORCUPINE MINING DIVISION**

**SCALE: 1-INCH = 40 CHAINS**

**LEGEND**

- PATENTED LAND
- CROWN LAND SALE
- LEASED
- LOCATED LAND
- LICENSING OF OCCUPATION
- MINING RIGHTS ONLY
- SURFACE RIGHTS ONLY
- ROADS
- IMPROVED ROADS
- KINGS HIGHWAYS
- RAILWAYS
- POWER LINES
- MARSH OR MUSKOG
- CANCELLED

**NOTES**

400' Surface Right Reservation around all lakes and rivers.

**NATIONAL TOPOGRAPHIC SERIES 32 L**

**MINISTRY OF NATURAL RESOURCES SURVEYS AND MAPPING BRANCH**

**DATE OF ISSUE:**

**FEB 1, 1976**

**PLAN NO. M.3003**
LOCATION PLAN
SUNDAY LAKE 5-74

PROJECT: V.L.E.M. & Mag Survey
SUNDAY LAKE 5-74

LEGEND

LOCATION: Sunday Lake 5-74
ONTARIO

SURVEYED BY: NORANDA EXPLORATION CO. LTD.
DATE: 12/21/74
OFFICE: TIMMINS, ONT.