REPORT ON
GROUND GEOPHYSICAL SURVEYS
HORIZONTAL LOOP E.M. and MAGNETOMETER

SLATE LAKE GRID #1

NTS 52K

RECEIVED
JUL 13 1978
MINING LANDS SECTION
INTRODUCTION

Grid #1 consists of six contiguous claims numbered as follows: KRL 471513 - 471518 inclusive. These claims are located on claim sheet M-2410, Avis Lake Area, District of Kenora, (Patricia Portion), Red Lake Mining Division (NTS 52K1W). 

This ground was staked on behalf of St. Joseph Explorations Limited during the summer of 1977 and were recorded August 15, 1977.

The horizontal loop electromagnetic survey and magnetometer survey were performed by the following personnel:

N.W. Rayner, 37 Martin Rd., Toronto, Ontario.
M. Marren, 27 Augusta Street, Cambridge, Ontario.
A. Sweezey, P.O. Box 733, Kingston, Ontario.
C. Perity, 8771 Tardif Street, LaSalle, Quebec.

Geophysical surveying was carried out on January 26 - January 28, 1978.

LOCATION and ACCESS

Grid #1 is located 305 meters north of Maskooch Lake. Access can be gained to this claim group by chartered air service from Red Lake, Ontario. The trip is approximately 90 km due east of Red Lake.

HISTORY of PREVIOUS WORK

The area was previously mapped by J.D. Bateman in 1938 for the Ontario Department of Mines. The report was titled "Geology and Gold Deposits of the Uchi-Slate Lake Area". In 1975, the area was mapped in some detail by the Ontario Ministry of Natural Resources by Breaks, F.W.; Bond, W.D.; Stone, Denver; Harris, N.; and Desnoyers, D.W. - Operation Kenora-Ear Falls, Papaonga-Wapesi Lakes Sheet, District of Kenora, Ontario Division of Mines, Preliminary Map P1200, Geol. Ser., Scale 1:63,360 (1 inch to 1 mile) Geology 1975.
In the summer of 1977 some reconnaissance mapping was carried out on the claims by St. Joseph Explorations Limited.

GEOPHYSICAL SURVEYS

Approximately 8 km of line was cut. The grid lines were spaced 100 meters apart and were picketed every 30 meters.

The grid was surveyed with a Max-Min II electromagnetic system (see appendix II for specifications). The coil separation was 100 meters and readings were taken every 30 meters along the grid lines. The frequency read was 1777 hz.

A magnetometer survey was also conducted on this grid, using a Barringer GM-122 magnetometer (see appendix III for specifications). Readings were taken every 30 meters along the lines.

A Scintrex MBS-II total field magnetic base station (see appendix IV for specifications) was used to make diurnal corrections on raw magnetometer data. The base station sensor head was set up 50 meters from the base camp on the north shore of Slate Lake. See the location map for the base station location. A reading was taken every minute by the instrument and recorded on a strip chart recorder.

RESULTS and INTERPRETATIONS

Horizontal Loop E.M. Survey

The horizontal loop results are plotted on a scale of 1:5,000 with a profile scale of 1 cm = 20%.

Four electromagnetic conductive zones were located by the H.L.E.M. survey.

The very strong broad anomaly on line 4E 400N would appear to be continuous to the west and possibly to the east as a formational conductor. The strength over a large width suggest it may be related to a graphitic horizon.

The anomaly which starts on line 3E 40N and
continues to line 5E 30S is more typical of a massive sulfide response.

The anomaly that starts at line 6E 40N and continues to line 8E 25N may be a faulted extension of the above conductor. On line 6E at 150N is a one line response which may be part of the anomaly to the south. The shape of the E.M. profile on line 6E indicates 2 conductive sources, one at 6E 150N and the other at 6E 40N.

**CONCLUSIONS and RECOMMENDATIONS**

The results of the H.L. E.M. survey and magnetometer survey indicate several anomalous zones. All conductors and magnetic anomalies should be checked by prospecting, soil sampling and if required diamond drilling.

Respectfully submitted,

N.W. Rayner
REPORT ON
GROUND GEOPHYSICAL SURVEYS
HORIZONTAL LOOP E.M. and MAGNETOMETER

SLATE LAKE GRID #2

NTS 52K

RECEIVED
JUL 15
MINING LANDS Sect.
INTRODUCTION

Grid #2 consists of 25 contiguous claims numbered as follows: KRL 471497 - 471512 inclusive and KRL 471538 to 471546 inclusive. These claims are located on claim sheet M-2410 Avis Lake Area, District of Kenora, (Patricia Portion), Red Lake Mining Division, (NTS 52K15).

This ground was staked on behalf of St. Joseph Explorations Limited during the summer of 1977 and were recorded August 15, 1977.

The horizontal loop electromagnetic survey and magnetometer survey were performed by the following personnel:

A. Sweezey - P.O. Box 733, Kingston, Ontario.
C. Perity - 8771 Tardif Street, LaSalle, Quebec.

Geophysical surveying was carried out on January 15 to January 25, 1978.

LOCATION and ACCESS

Grid #2 is located on the south shore of Maskooch Lake. The northwest corner of the claim group lies 1.82 km south of the east end of Slate Lake (see location map). Access can be gained to this claim group by chartered air service from Red Lake, Ontario. The trip is approximately 90 km due east of Red Lake.

HISTORY of PREVIOUS WORK

The area was previously mapped by J.D. Bateman in 1938 for the Ontario Department of Mines. The report was titled "Geology and Gold Deposits of the Uchi-Slate Lake Area". In 1975, the area was mapped in some detail by The Ontario Ministry of Natural Resources by Breaks, F.W.; Bond, W.D.; Stone, Denver; Harris, N.; and Desnoyers, D.W.; Operation Kenora-Ear Falls, Papaonga-Wapesi Lakes Sheet, District of Kenora, Ontario Division of Mines, Preliminary Map P.1200, Geol. Ser., Scale 1:63,360 (1 inch to 1 mile) Geology 1975.
In the summer of 1977 some reconnaissance mapping was carried out on the claims by St. Joseph Explorations Limited.

**GEOPHYSICAL SURVEYS**

Approximately 38.2 km of line was cut and laid out on the lake of this claim group. The grid lines were spaced 100 meters apart and were picketed every 30 meters.

The grid was surveyed with a Max-Min II electromagnetic system (see appendix II for specifications). The coil separation was 100 meters and readings were taken every 30 meters along the grid lines. The frequency read was 1777 hz.

A magnetometer survey was also conducted on this grid using a Barringer GM-122 Magnetometer (see appendix III for specifications). Readings were taken every 30 meters along the lines.

A Scintrex MBS-II total field magnetic base station (see appendix IV for specifications) was used to make diurnal corrections on raw magnetometer data. The base station sensor head was set up 50 meters from the base camp on the north shore of Slate Lake. See the location map for the base station location. A reading was taken every minute by the instrument and recorded on a strip chart recorder.

**RESULTS and INTERPRETATIONS**

**Horizontal Loop E.M. Survey**

The horizontal loop results are plotted on a scale of 1:5000 with a profile scale of 1 cm = 20%.

Thirteen electromagnetic conductive zones were located by the H.L.E.M. survey. Descriptions of A-M zones are listed below.

Zone A - This anomaly appears to be formational, with a strike length of 3.2 km. The anomaly starts on line 13W 325S and continues to line 6E 75S where it turns approximately 140° and continues to line 6W 225N. This conductive zone appears to outline a fold structure.
I.P./O.P. ratios and conductor wide are variable. The best drill target to test the nature of this conductor is on line 1E 25S.

Zone B - This conductive zone has a strike length of 1 km, and is part of a broad conductive zone which includes zone C to the north. On line 15W, 200S, the conductive ratio is 3:1. This is the strongest part of the anomaly.

Zone C - This zone lies 100 meters north of Zone B. It has a strike length of 1.2 km. Line 11W at 100S may be a suitable drill target for this conductive zone. Both zone B and C appear to be formational anomalies. Zone C is coincident with a topographic lineament which may be a fault zone with associated sulphide and/or magnetite.

Zone D - Conductive zone D is weak with a strike length of 400 meters.

Zone E - Conductive zone E is narrow and weak. It may be an easterly extension of zone C.

Zone F - Conductive zone F appears to be a western extension of zone D. On line 19W at 50S the anomaly is approximately 30 meters wide.

Zone G - Zone G has a strike length of 150 meters. The I.P./O.P. ratio is 2:1 on line 20W at 285S. The shape of the curve suggests a southerly dip.

Zone H - This anomaly is primarily an out-of-phase response which is characteristic of poor electromagnetic conductors.

Zone I - Conductive zone I is an isolated conductor with a short strike length probably less than 100 meters. It has moderate conductivity, with a 1:1 I.P./O.P. ratio. The shape of the profile suggests that this conductor lies at depth.
Zone J - This anomaly is a one line response with a strike length of 100 meters. It has a coincident small magnetic high.
Zone K - Zone K is an in-phase response only, which may be due to poor coil orientation.
Zone L - This conductive zone lies to the south of formational anomaly A on line 6W at 430S.
Zone M - Anomaly M on line 24W 110S is a weak, single line conductor. Disseminated sulphides may be the cause.

Magnetometer Survey

The magnetometer survey is plotted at a scale of 1:5000 and the data contoured at 1000 gamma intervals.

The area of grid 2 has high magnetic relief. A number of magnetic highs were defined. The largest magnetic high flank the south limb of conductive zone A and confirms the existence of a fold structure.

Abundant magnetite as discrete grains were observed in volcanoclastic rock which underlie grid 2.

CONCLUSIONS and RECOMMENDATIONS

The results of the H.L.E.M. survey and magnetometer survey indicate numerous anomalous zones. Zones A, B, and C would appear as formational conductors probably of little economic interest. However, all conductors and magnetic anomalies should be checked by prospecting, soil sampling and if required diamond drilling.

Respectfully submitted,

N.W. Rayner

NWR*MS
**Ministry of Natural Resources**

**GEOPHYSICAL – GEOLOGIC TECHNICAL DATA**

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) | Geophysical
--- | ---
Township or Area | Avis Lake
Claim Holder(s) | St. Joseph Explorations Ltd.
Survey Company | St. Joseph Explorations Ltd.
Author of Report | N.W. Rayner
Address of Author | Suite 505, 90 Eglinton Ave. West, Toronto, Ontario.
Covering Dates of Survey | January 26 - 28, 1978
Total Miles of Line Cut | 8 km (4.9 miles)

**MINING CLAIMS TRAVERSED**

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**SPECIAL PROVISIONS**

**CREDITS REQUESTED**

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<td>Other</td>
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**AIRBORNE CREDITS**

(Special provision credits do not apply to airborne surveys)

Magnetometer | Electromagnetic | Radiometric
--- | --- | ---

**DATE:** July 6, 1978

**SIGNATURE:** N.W. Rayner

Author of Report or Agent

**Res. Geol. Qualifications:** 2.1785

**Previous Surveys**

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**TOTAL CLAIMS:** 6
## GEOPHYSICAL TECHNICAL DATA

### GROUND SURVEYS – If more than one survey, specify data for each type of survey

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### MAGNETIC

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<tr>
<td>Diurnal correction method</td>
<td>continuous recording base station</td>
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<td>Base Station check-in interval (hours)</td>
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| Base Station location and value | north shore Slate Lake Value 61690 gammas |}

### ELECTROMAGNETIC

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<th>Apex Parametrics Max-Min II H.L.E.M.</th>
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<td>Method</td>
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### GRAVITY

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<td>Base station value and location</td>
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<td>Elevation accuracy</td>
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### ELECTRIC POLARIZATION

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<td>– Integration time</td>
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<td>Type of electrode</td>
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Type of Survey(s) Geophysical
Township or Area Avis Lake
Claim Holder(s) St. Joseph Explorations Limited
Suite 505, 90 Eglinton Ave. W., Toronto, Ont.
Survey Company St. Joseph Explorations Limited
Author of Report N. W. Rayner
Address of Author Suite 505, 90 Eglinton Ave. W., Toronto, Ont.
Covering Dates of Survey Jan 15 - Jan 25
Total Miles of Line Cut 38.2 km (23.7 miles)

SPECIAL PROVISIONS
CREDITS REQUESTED

Geophysical
Electromagnetic 40
Magnetometer 20
Radiometric
Other

Geological
Geochemical

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

DATE: __/__/19
SIGNATURE: N. W. Rayner
Author of Report or Agent

Res. Geol. Qualifications 2.1785

 Previous Surveys
File No. Type Date Claim Holder
SEE ATTACHED LIST

MINING CLAIMS TRAVERSED
List numerically

TOTAL CLAIMS 25
GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS — If more than one survey, specify data for each type of survey

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<td>Profile scale</td>
<td>1 cm = 20%</td>
<td>Contour interval</td>
<td>1000 gammas</td>
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Instrument Barringer Research GM-122 Total Field Magnetometer

Accuracy — Scale constant ± 1 gamma

Diurnal correction method continuous recording base station

Base Station check-in interval (hours)

Base Station location and value North shore Slate Lake (see location map)

Value - 61690 gammas

Instrument Apex-Parametrics Max-Min II

Coil configuration Horizontal mode

Coil separation 100 m

Accuracy ± 1%

Method: □ Fixed transmitter □ Shoot back □ In line □ Parallel line

Frequency 1777 hz. (specify V.L.F. station)

Parameters measured in-phase and out-of-phase components of the primary electromagnetic field

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

Method □ Time Domain □ Frequency Domain

Parameters — On time Frequency

— Off time Range

— Delay time

— Integration time

Power

Electrode array

Electrode spacing

Type of electrode
SLATE LAKE GRID #2 CLAIMS

KRL 471497
KRL 471498
KRL 471499
KRL 471500
KRL 471501
KRL 471502
KRL 471503
KRL 471504
KRL 471505
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KRL 471511
KRL 471512
KRL 471538
KRL 471539
KRL 471540
KRL 471541
KRL 471542
KRL 471543
KRL 471544
KRL 471545
KRL 471546
Barringer Research GM122
Magnetometer
Readings at 30 meter intervals
Contour Interval: 1000 gammas (°)
Magnetic Base Station shown on Location Map
Base Station Value: 64,900°
Forced Readings (#)
Operators: A. Sweetey
M. Marren
January, 1978
A.E.M. #19
LEGEND

Max-Min II Horizontal Loop System, Unit 549

Frequency: 1777 Hz
Coil Separation: 100 meters
Readings at 30 meter intervals

Operators: C. Perity
A. Sweezey

January, 1976
LEGEND

ST. JOSEPH EXPLORATIONS LIMITED

Slate Lake Area, N.W. Ontario

Interpretation

January, 1979

Qaim posts, located
unlocated

ST. JOSEPH EXPLORATIONS LIMITED

Slate Lake Area, N.W. Ontario

Interpretation

January, 1979
LEGEND

- Claim posts, seasonal
- Weathered surficial basalt
- Flow direction indicated

Slate Lake Area, N.W. Ontario

BE JOSEPH EXPLORATIONS LIMITED

MAGNETOMETER SURVEY

SCALE: 1:5000
GRID: 2

Legend:

- Claim posts, seasonal
- Weathered surficial basalt
- Flow direction indicated

January, 1979

ADAMS MAP