STEEP ROCK IRON MINES LIMITED

LONG LAKE PROPERTY

FLANDERS AREA

Cl. Map

N.T.S. 52-C-16
Lat. 48°45.5'
Long. 92°07'

Geophysical Report
Magnetic and E.M.

By:
Raymond A. Bernatchez, P. Eng
Geologist

November 19, 1982
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Maps - Magnetic and Electromagnetic (2)
Location and Access

The area surveyed forms part of an east-west metavolcanic belt located along the southern edge of the Wabigoon sub-province. The property is located at latitude 48°45.5' and longitude 92°07' approximately one mile west of Calm Lake from Blind Pig Bay. The claim group consists of claims numbered 560274, 560275, 560277, 560278, 560298, 56300 staked in 1981 and claims 601517 and 601518 staked in 1982.

The property is accessible via the Flanders gravel road 28 miles west of Atikokan from Highway 11. The property is reached by walking westerly on a recent logging road located 2.7 miles north from Highway 11. Some of these logging roads reach the southeastern shore of Long Lake.

A second road leads to the property from a point 2.0 miles along the gravel road from Highway 11. This road travels along a former gravel pit operation and reaches the tip of the southeast end of the lake.

History

The area has been prospected in the past for copper, nickel, zinc, gold and iron metals. Several prospects are located near the property.

R. R. Brown and Associates 1954 carried out some drilling at the southeast end of the property on claim 560298. Some low copper-gold values were reported from the drill hole.

The Mayflower prospect located 3/4 mile south of the property has returned interesting gold values across narrow widths from recent sampling by the O.G.S. during their re-mapping of the area in 1980.

The area was mapped previously by Tanton 1939, G.S.C., Young 1960 and Pumerton-Bumgarner 1980 of the O.D.M. and O.G.S.

Grid Description

An east-west baseline was established along the north boundary of claims 560290, 560278, 601517 and 601518 from 0+00 to 16+00W with picket lines established at 90° to the baseline at every 100 metres. Stations were established along the picket lines and baseline at every 25 metres.

The grid had to be re-established in 1982 on the first six listed claims and a new grid on 601517 and 601518.

A magnetometer survey was carried out over the entire grid in 1982, and an EM survey on claims 601517 and 601518, with a slight overlap on claims 560274 and 560275.
Regional Geology (by Fumerton-Bumgarner, 1980)

The area is underlain by mafic intermediate and felsic metavolcanics varying from massive to pillowed flows, porphyritic flows, tuffs, lapilli tuff, tuff breccia, etc.

Metasediments of various types, conglomerates, arenites, wacke, mudstones and their metamorphic equivalents are well represented. They form parts of two basic series of the Seine River group and the Quetico group.

The area has been intruded by various mafic to felsic intrusives and are considered to be very complex.

Local Geology

The local geology consists mainly of mafic to intermediate metavolcanic, represented by pillowed and massive flows, tuffs, mudstone, and some porphyritic flows and intrusions.

Instrumentation

Magnetic

A geometrics precision proton magnetometer was used for the survey. The total field measurement was used with a resolution of one gamma and all values were corrected for diurnal variation using a closed loop system from line to line and with base station reading. Readings were recorded from every 25 metre station on the picket line. The datum selected for this survey was 60,000 gammas.

Electromagnetic

A Max Min II Horizontal Loop was used for this survey. Both in-phase and out-of-phase readings were taken at the 25 metre stations on the picket lines using two frequencies of 444 Hz and 1777 Hz with a 100 metre coil separation.

Discussion of Results

Magnetic

The survey area is presented in plan form at a scale of 1:2500. The corrected magnetic data is plotted on this map and contoured between 59,750 and 62,675 at 25 metre intervals and 100 metre intervals.

Limited data would seem to indicate a heterogeneous sequence of volcanic rocks of mafic to intermediate composition. The survey also indicates a southeast-northwest local trend.

A strong unexplained magnetic anomaly is located on line 5+00W at the baseline. Some concentration of magnetite was located nearby on line 3+00W on the baseline.
Electromagnetic

The survey area is represented on two plan forms, at 444 Hz and 1777 Hz, at a scale of 1:2500 with the vertical scales set at 1 cm = 10% for the EM profiles.

The conductive horizon located under the lake is assumed to be caused by some sulphide mineralization.

A record conductive horizon was located south of the baseline between line 14W and 15W at 2+75S and 2+25S respectively.

Conclusion and Recommendations

The geophysical survey has detected a sulphide horizon under the lake. A geological and limited geochemical soil sampling may also aid in evaluating the anomalous zone.

The above work should be completed before any drilling is carried out on the property. Should the geology and geochemistry show any favourable values in gold or base metals, the property should be drilled.

A hole should be drilled on line 5+00W at 0+75N to intersect both the magnetic and EM anomaly under the lake.

Raymond A. Bernatchez, P. Eng
Geologist

November 19, 1982
I, Raymond A. Bernatchez, of 126 Willow Road, Atikokan, Ontario, do hereby certify that:

1) I am a Professional Engineer registered in the Province of Ontario.

2) I am an exploration geologist living in Atikokan, Ontario.

3) I graduated from the South Dakota School of Mines in Rapid City, South Dakota in 1972 with a B. Sc. degree in Geological Engineering.

4) I graduated from the Haileybury School of Mines in Haileybury, Ontario, with a Mining Technology diploma (3 year program) in May 1969.

5) I have been permanently employed in my profession since graduation in 1972.

6) I have no interest either directly or indirectly nor do I anticipate receiving such interest in the properties or securities of Steep Rock Iron Mines Ltd.

7) The attached report and its enclosed maps are the product of surveys carried out under my indirect supervision.

8) The surveys were carried out during the period of March to April, 1982.

Atikokan, Ontario

Date: November 24, 1982

Raymond A. Bernatchez, P. Eng.
Geologist
Steep Rock Iron Mines Ltd
Dear Madam:

RE: Geophysical (Electromagnetic and Magnetometer) Survey on mining claims TB 560274 et al in the Area of Hepburn Lake

The Geophysical (Electromagnetic and Magnetometer) Survey assessment work credits as listed with my Notice of Intent dated September 13, 1983 have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours very truly,

E.F. Anderson
Director
Land Management Branch
Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: (416) 965-1380

R. Pichette: mc

Encl.

cc: Steep Rock Iron Mines Ltd
   Toronto, Ontario

cc: Steep Rock Iron Mines
   Atikokan, Ontario Attn: R.A. Bernatchez

cc: Resident Geologist
   Thunder Bay, Ontario
Type of Survey(s) | Ground Magnetometer Geometrics Proton Magnetometer
--- | ---
Claim Holder(s) | Steep Rock Iron Mines Ltd.
Address | Ste 710 - 40 University Avenue, Toronto, Ontario MSJ 2G5
Survey Company | C. D. Huston & Sons Ltd.
Date of Survey (from & to) | 17 Aug 82 - 21 Aug 82
Total Miles of line Cut | 13.8 km

Credits Requested per Each Claim in Columns at right

<table>
<thead>
<tr>
<th>Mining Claim</th>
<th>Expended. Days Cr.</th>
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</thead>
<tbody>
<tr>
<td>MAG</td>
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<tr>
<td>BM</td>
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Man Days

Complete reverse side and enter total(s) here

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<tr>
<th>Mining Claim</th>
<th>Expended. Days Cr.</th>
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<tbody>
<tr>
<td>MAG</td>
<td>601517 40</td>
</tr>
<tr>
<td>BM</td>
<td>601517 20</td>
</tr>
</tbody>
</table>

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures

$ + 15 = 

Total Days Credits

Instructions

For Office Use Only

For Office Use Only

Date: August 31/82

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying

Raymond A. Bernatchez, P. Eng.
Box 1376, Atikokan, Ontario POT 1CO

Date Certified: August 31/82

Branch Deputy:

Ontario Natural Resources (Geophysical, Geological, Geochemical and Expenditures)
The Mining Act

Ground Magnetometer Geometrics Proton Magnetometer

<table>
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<tr>
<th>Claim Holder(s)</th>
<th>Steep Rock Iron Mines Ltd.</th>
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<tr>
<td>Address</td>
<td>Ste 710 - 40 University Avenue, Toronto, Ontario MSJ 2G5</td>
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<tr>
<td>Survey Company</td>
<td>C. D. Huston &amp; Sons Ltd.</td>
</tr>
<tr>
<td>Date of Survey</td>
<td>17-4-82 to 21-4-82</td>
</tr>
<tr>
<td>Total Miles of line Cut</td>
<td>13.8 km</td>
</tr>
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</table>

**CREDITS REQUESTED PER EACH CLAIM IN COLUMNS AT RIGHT**

<table>
<thead>
<tr>
<th>Type of Work Performed</th>
<th>Geophysical</th>
<th>Geologic</th>
<th>Geochemical</th>
<th>Airborne</th>
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<tr>
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<td>- Electromagnetic</td>
<td>- Magnetometer</td>
<td>- Radiometric</td>
<td>- Other</td>
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<td>Days per Claim</td>
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**EXPERDITURES (EXCLUDES POWER STRIPPING)**

**Type of Work Performed**

- Geophysical
- Geological
- Geochemical
- Airborne

**Calculation of Expenditure Days Credits**

<table>
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**For Office Use Only**

<table>
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<th>Total Days Cr.</th>
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<td>200</td>
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</tbody>
</table>

**NAMES AND POSTAL ADDRESSES OF PERSON CERTIFYING**

Raymond A. Bernatchez, P. Eng. 
Box 1376, Atikokan, Ontario POT 1CO

**Date Certified**

August 31, 1982

**Certification**

I hereby certify that I have personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed some during and/or after its completion and the annexed report is true.

Raymond A. Bernatchez, P. Eng. 
Atikokan, Ontario POT 1CO

Date Certified:

August 31, 1982
**Recorded Holder**

STEEP ROCK IRON MINES LIMITED

**Township or Area**

HEPBURN LAKE

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### Type of survey and number of Assessment days credit per claim

<table>
<thead>
<tr>
<th>Survey Type</th>
<th>Days Credit</th>
<th>Mining Claims Assessed</th>
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<tbody>
<tr>
<td>Geophysical</td>
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<tr>
<td>Electromagnetic</td>
<td>5 days</td>
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<td>TB 560274-75</td>
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<td>Induced polarization</td>
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<td>560277-78</td>
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<tr>
<td>Other</td>
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<td>560298, 560300</td>
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</table>

### Geophysical Survey

- Man days [ ]
- Airborne [ ]
- Special provision [x]
- Ground [x]

**Credits have been reduced because of partial coverage of claims.**

**Credits have been reduced because of corrections to work dates and figures of applicant.**

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### Special credits under section 77 (16) for the following mining claims

- TB 560274-75
- 560277-78
- 560298
- 560300

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### No credits have been allowed for the following mining claims

- TB 560277-78
- 560298
- 560300

- [x] not sufficiently covered by the survey
- [ ] Insufficient technical data filed

**For electromagnetic only.**

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77(19) — 60.
Mrs. Audrey Hayes  
Mining Recorder  
Ministry of Natural Resources  
Thunder Bay, Ontario  
P7C 5G6

Dear Madam:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,

E.E. Anderson  
Director  
Land Management Branch

Whitney Block, Room 6450  
Queen's Park  
Toronto, Ontario  
M7A 1W3  
Phone: 416/965-1316

R. Pichette:sc

Enclos:  
cc: Steep Rock Iron Mines Ltd. Toronto, Ontario  
cc: Steep Rock Iron Mines  
Atikokan, Ontario  
Attn: R.A. Bernatchez.

cc: G.H. Ferguson  
Mining & Lands Commissioner  
Toronto, Ontario  
FILE
An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the “Special Provision-Performance and Coverage” method and you are of the opinion that a re-appraisal under the “Man-days” method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.
June 17, 1983

Mr. E. F. Anderson, Director
Land Management Branch
Ministry of Natural Resources
Whitney Block Room 6450
Queen's Park
Toronto, Ontario M7A 1W3

Dear Sir:

Re: Geophysical (EM and Mag) Survey submitted on Mining Claim TB487425 et al Richardson Lake Area file No. 25295 and Mining Claim K560274 et al in Hepburn Lake Area file G-532

We enclose plans in duplicate for the above-mentioned survey with corrections showing key map of property and claim lines on our survey in the Richardson Lake area Map G-553.

Thank you for bringing these deficiencies to our attention.

Yours truly,

Raymond A. Bernatchez, P.Eng
Geologist

RECEIVED
JUN 22 1983
MINING LANDS SECTION
June 3, 1983

Steep Rock Iron Mines Limited
Suite 710
40 University Avenue
Toronto, Ontario
M5J 2G5

Attention: R.A. Bernatchez

Dear Sirs:

RE: Geophysical (Electromagnetic and Magnetometer) Survey submitted on Mining Claims K560274 et al in the Area of Hepburn Lake.

Enclosed are the plans, in duplicate, for the above-mentioned survey. Please show all claim lines and numbers and have the author of the report date and sign each map and return them to this office.

In addition, we require a key map showing the location of the property with respect to Township boundaries, established reference lines and easily identified topographic features. This map should be an inset in the geophysical plans or an insert in the report.

For further information, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

R. Pichette:mc

Encls.

cc: Mining Recorder
Kenora, Ontario
Mining Lands Comments

To: Geophysics

Comments

☐ Approved ☐ Wish to see again with corrections  [ ] Date  [ ] Signature  

To: Geology - Expenditures

Comments

☐ Approved ☐ Wish to see again with corrections  [ ] Date  [ ] Signature  

To: Geochemistry

Comments

☐ Approved ☐ Wish to see again with corrections  [ ] Date  [ ] Signature  

To: Mining Lands Section, Room 6462, Whitney Block.  (Tel: 5-1380)
Mrs. Audrey Hayes
Mining Recorder
Ministry of Natural Resources
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Dear Madam:

We have received reports and maps for a Geophysical (Electromagnetic and Magnetometer) Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims TB 560274 et al in the area of Hepburn Lake.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1H3
Phone: 416/965-1380

cc: Steep Rock Iron Mines Limited
    Toronto, Ontario

cc: Raymond A. Bernatchez, P. Eng.
    Atikokan, Ontario
December 8, 1982

Mr. Arthur Barr
Lands Administration Branch
Whitney Block Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3

Dear Sir:

I am enclosing our reports on geophysical surveys carried out on the following claim groups in the Atikokan area:

a) Marsh Lake Mag and VLF(EM) survey Claims No. 487354 to 487365 and 560301 to 560307 inclusive

b) Long Lake Mag and EM survey Claims No. 560274, 560275, 560277, 560278, 560298, 56300, '601517 and '601518

c) Theron Lake Group Mag and EM survey Claims No. 487404 to 487409 and 487479 to 487486 inclusive

d) Keewatin Lake Group Mag and EM survey Claims No. 487424 to 487439, 487454, 487455, 487459, 487463, 487467

e) Jefferson Lake Group Mag and EM survey Claims No. 487371 to 487373, 487376 to 487378 and 487381 to 487389

f) Bennett Lake Group Mag and EM survey (VLF) Claims No. 487440 to 487445 inclusive.

These reports are submitted as partial fulfilment of assessment work on the above mentioned claims.

Thank you for allowing me the extra time to submit the reports.

Yours truly,

Raymond A. Bernatchez, P. Eng
Geologist

RAB*blk
Encls.(6)
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File no. 2-6-94

\[ 3 \times 20 = 60 \]

\[ 2.25 \]
STEEPROCK IRON MINES
LONG LAKE GRID
GEOMETRICS PROTON MAGNETOMETER SURVEY
DATE - MARCH 1982
WORK BY - C.D.HUSTON & SONS LTD.
SCALE - 1:250
SENSITIVITY 1 gamma.