STEEP ROCK IRON MINES LIMITED

KEEWATIN LAKE PROPERTY

EAST HALF

Claim Map No. G-553

N.T.S.  52-G-3
Lat.  49°02'
Long.  91°09'

Geophysical Report
Mag and E.M.

By:

Raymond A. Bernatchez, P.Eng
Geologist

November 19, 1982
Location and Access

History

Grid Description

Regional Geology

Instrumentation
  - Magnetic
  - Electromagnetic

Discussion of Results
  - Magnetic
  - Electromagnetic

Conclusion and Recommendations

Certification

Maps - Magnetic and E.M. (2)
Location and Access

The area surveyed is part of the greenstone belt located northwest of Richardson Lake and southeast of Keewatin Lake, located at latitude 49°02' and longitude 91°09'. The claim group is shown on Claim Map G-553.

The claim group is accessible by bush road from Sapawe to Richardson Lake. Richardson Lake is reached by a short trail from the road at the southwest end of Richardson Lake. The property is reached by boating across Richardson Lake to the northwest shore of the lake. A short walk from the shore line is required before reaching the southwest corner of Claim 487439 at the #2 post.

History

The area immediately near the property attracted some mining companies to explore the area for its copper-nickel potential to the east and its iron ore and gold potential to the north. Most of this work was carried out by Noranda, Falconbridge, J. A. Mathieu and Inco.

In 1951-52, Ralph S. Woolverton supervised geological mapping for the Ontario Department of Mines. A report was released in 1960, "Geology of the Lumby Lake Area" as Volume LXIX, Part S, 1960. This author used Woolverton's general rock classification in this report to describe the regional geology of the area.

No major mineral deposits have been developed to the production stage in this area yet. Recent staking in the area since 1979 has been done by Shell Resources, Tech Corp, Esso Resources and Mining North of Atikokan.

Mining North has made some new base metal and gold discoveries to the west near Morris Lake, Twobay Lake and Core Lake. The extent of the discovery is not known to the author, but appears significant enough to warrant drilling.

Grid Description

The grid on this claim group forms a continued extension of the grid cut in 1981 to the east. The base line was established along the centre of the claim group from line 13+00E to 24+00E and extends from 4+75N to 8+00S. The grid is metric.

A baseline was established 800 metres north of the south boundary and picket lines were established at every 100 metres along. Stations were established at every 25 metres along the baseline and picket lines.
Regional Geology (by R. S. Woolverton, 1960)

The oldest rock formations in the region are the Keewatin series which consist of altered basic and intermediate volcanics, tuffs agglomerates, flow breccia, interbedded quartzite and argillite, massive and pillow flows iron formations, crystalline limestone, graphilic argillite, argillaceous greywacke and conglomerates and ultramafic serpentinite and peridotite.

The Laurentian intrusive consists of quartz porphyry (which may in part be Keewatin extrusive), quartz porphyry-diorite complex, and altered granite and granite gneiss, mainly sodic.

The Algoman intrusives are represented by metadiorite (may be pre-Algoman), granite, granite gneiss, syenite and minor basic border phases.

Instrumentation

Magnetic

A geometrics proton precision magnetometer was used for this survey. The total field measurement was used with a resolution of one gamma and all values were corrected for diurnal variations using a closed loop system from picket line to picket line and morning and evening reading at the base station. Readings were recorded from every 25 metre station on the picket lines. 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 station intervals along 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 59,175 and 61,313 at every 25 gammas and 100 gammas.

The limited data would seem to indicate a heterogeneous sequence of volcanic and intrusive rocks of mafic to intermediate composition. The survey also indicates an east-west regional trend with some slight variations.

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.
No immediate explanation is known at this time for the cause of the conductors listed below:

1) between line 13E to 18E at approximately 2+50S
2) between line 13E and 16E at approximately 5+50S
3) between line 17E and 20E at approximately 6+25 to 6+50
4) weak anomaly on line 22E at 3+00N

**Conclusion and Recommendations**

Geological mapping is required to aid in the interpretation of the EM and magnetic anomalies. Possible limited geochemical sampling may also aid in the evaluation.

It is recommended that the above program be done before any drilling is carried out on this claim group.

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Raymond A. Bernatchez, P.Eng
Raymond A. Bernatchez, P. Eng
Geologist

November 19, 1982.
CERTIFICATION

1) 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


Atikokan, Ontario

Date: November 24, 1982

Steep Rock Iron Mines Ltd
Mrs. Audrey Hayes  
Mining Recorder  
Ministry of Natural Resources  
P.O. Box 5000  
Thunder Bay, Ontario  
P7C 5G6

Dear Madam:

RE: Geophysical (Electromagnetic & Magnetometer) Survey on Mining Claims TB 487425 et al in the Richardson Lake Area.

The Geophysical (Electromagnetic & Magnetometer) Survey assessment work credits as listed with my Notice of Intent dated September 26, 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

cc: Steep Rock Resources Inc  
40 University Avenue  
Suite 710  
Toronto, Ontario  
M5J 2G5  

cc: Resident Geologist  
Thunder Bay, Ontario
# Technical Assessment

**Work Credits**

**AMENDED**

**Date**

1983 10 24

**Mining Recorder’s Report of Work No.**

304

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**Recorded Holder**

STEEP ROCK IRON MINES LTD

**Township or Area**

RICHARDSON LAKE AREA

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

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Assessment Days Credit per Claim</th>
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<tbody>
<tr>
<td>Geophysical</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

## Mining Claims Assessed

- TB 487429 to 431 inclusive
- TB 487433
- TB 487434-35
- TB 487437 to 39 inclusive

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**Section 77 (19) See “Mining Claims Assessed” column**

- Geological
- Geochemical

**Special provision**

- Credits have been reduced because of partial coverage of claims.
- Credits have been reduced because of corrections to work dates and figures of applicant.

---

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

10 DAYS ELECTROMAGNETIC AND 20 DAYS MAGNETOMETER

TB 487425 to 27 inclusive

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No credits have been allowed for the following mining claims

- not sufficiently covered by the survey
- insufficient technical data filed

---

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.
## Ministry of Natural Resources (Geophysical, Geological, Geochemical and Expenditures)

### Ground Magnetometer and E.M. - Max Min II

#### Claim Holder(s)
- Steep Rock Iron Mines Limited

#### Address
- Ste 710, 40 University Avenue, Toronto, Ontario M5J 2G5

#### Survey Company
- Huston & Sons Ltd, Winnipeg, Man

#### Date of Survey (from & to)
- 25 Mar 82 to 1 May 82

#### Total Miles of line Cut
- 15.73 km (9.83 mi)

### Credits Requested per Each Claim in Columns at right

#### Special Provisions
- For first survey:
  - Enter 40 days. (This includes line cutting)
- For each additional survey:
  - Using the same grid:
  - Enter 20 days (for each)

#### Man Days
- Complete reverse side and enter total(s) here

#### Expenditures (excludes power stripping)

#### Type of Work Performed on Claim(s)

### Calculation of Expenditure Days Credits

#### Total Expenditures
- $15

#### Total Days Credits
- 12

### Certification

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.

**Raymond A. Bernatchez, P. Eng.**

**Box 1376, Atikokan, Ont.**

**P.O.T. 100**

**Date Certified**
- August 30/82

**Certified by**
- (Signature)

#### Mining Claims Traversed (List in numerical sequence)

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<th>Mining Claim</th>
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<td>MAP104</td>
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</tr>
<tr>
<td>MAP104</td>
<td>20</td>
</tr>
</tbody>
</table>

### For Office Use Only

**Total Days CR**
- 487425

**Date Recorded**
- Sept 27/82

**Mining Recorder**
- D. J. Hayes

**Date Approved as Recorded**
- Oct 15/82
Dear Madam:

RE: Geophysical (Electromagnetic and Magnetometer) Survey on mining claims TB 487425 et al in the Richardson Lake Area

The Geophysical (Electromagnetic) Survey assessment work credits as listed with my Notice of Intent dated September 26, 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

cc: Steep Rock Resources Inc
40 University Avenue
Suite 710
Toronto, Ontario
M5J 2G5

cc: Resident Geologist
Thunder Bay, Ontario
Dear Madam:

RE: Geophysical (Electromagnetic and Magnetometer) Survey submitted on Mining Claims TB 487425 et al in the Richardson Lake Area

The Geophysical (Electromagnetic) Survey assessment work credits as allowed in the Notice of Intent dated September 6, 1983, were in error and have been amended as per the enclosed revised Notice of Intent. I apologize for any inconvenience this error may have caused.

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

Encl.

cc: Steep Rock Resources Inc
40 University Avenue
Suite 710
Toronto, Ontario
M5J 2G5

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario
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<tr>
<td>Special provision</td>
<td>Ground</td>
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- Credits have been reduced because of partial coverage of claims.
- Credits have been reduced because of corrections to work dates and figures of applicant.

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

**10 DAYS ELECTROMAGNETIC AND 20 DAYS MAGNETOMETER**

TB 487425 to 27 inclusive

No credits have been allowed for the following mining claims

- not sufficiently covered by the survey
- Insufficient technical data filed

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.
1983 09 06

Mrs. Audrey Hayes
Mining Recorder
Ministry of Natural Resources
P.O. Box 5000
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.F. Anderson
Director
Land Management Branch
Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

R. Pichette:mc

Encls:

cc: Steep Rock Resources Inc
     40 University Avenue,
     Suite 710
     Toronto, Ontario
     M5J 2G5

cc: Mr. G.H. Ferguson
    Mining & Lands Commissioner
    Toronto, Ontario
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.
Ministry of Natural Resources

Technical Assessment Work Credits

Recorded Holder: STEEP ROCK IRON MINES LTD
Township or Area: RICHARDSON LAKE AREA

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Man days [x] 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.

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

10 DAYS ELECTROMAGNETIC AND 20 DAYS MAGNETOMETER

TB 487425 to 27 inclusive

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ Insufficient technical data filed

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:
828 (83/6)
August 25, 1983

Mr. E.F. Anderson, Director,
Land Management Branch,
Whitney Block, Room 6450,
Queens Park,
Toronto, Ontario M7A 1W3

Dear Sir:

Re: Geophysical Survey on Mining Claim
TB 487425 et al in area of Richardson Lake File No. 2.5295

We are sending you a second set of maps on the above mentioned property.

Yours truly,

[Signature]

Raymond A. Bernatchez, P. Eng.
Geologist

RAB:cel
Encl. 3
July 22, 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 TB 487425 et al in the Area of Richardson Lake

Enclosed is a copy of my letter dated June 3, 1983. We have only received one set of the maps sent to you. Please check your files and return the duplicate set to this office.

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

Encl.

cc: Mining Recorder
    Thunder Bay, Ontario
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 TB487425 et al in the
Area of Richardson Lake

Enclosed are the plans, in duplicate for the above-mentioned
survey. Please show all claim lines and numbers and return
them to this office.

Also, please provide a key map showing location of property
with respect to Township boundaries, established reference
lines and easily identified topographic features. This map
should be a inset in a corner of the plans or inserted 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.
### Mining Lands Comments

- No section number on map?
- ?

---

**To: Geophysics**

**Comments**

- [ ] Approved  
- [ ] Wish to see again with corrections  
- Date: Feb 28/83  
- Signature: [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)
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 487425 et al in the Area of Richardson 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 1W3
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, 487455, 487459, 487463, 487467
e) Jefferson Lake Group Mag and EM survey Claims No. 487371 to 487375, 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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BASELINE E-W

STEEPROCK IRON MINES
KEEWATIN LAKE GRID
GEOMETRICS PROTON MAGNETOMETER SURVEY
DATE - MARCH 1982
WORK BY: C.D. HUSTCUTT & SONS LTD.
SCALE - 1:250

SENSITIVITY ± 1 gamma

50G03SE0012 2.5295 RICHARDSON
STEEPROCK IRON MINES
KEEWATIN LAKE GRID
MAX-MIN HOR.LOOP SURVEY
WORK BY - C.D. HUSTON & SONS LTD.
DATE - MARCH 1982
SCALE - 1:250