REPORT ON A MAGNETOMETER SURVEY
ON THE COLBORNE - STEPHENSON PROPERTY
OF
SEARS, BARRY AND ASSOCIATES LTD.

June, 1991          Joan M. Barry
SUMMARY

A Ground Magnetometer was completed over ten (10) claims of a thirty six (36) claim property in Rennie Township, Sault Ste. Marie Mining Division.

The survey has successfully demonstrated the possibility of east-west trending features within the property. These east-west trends may represent favourable structures which crosscut the dominantly northwest trending lithologies. Similar trending structures are thought to control the gold bearing zones on the Renabie Mine property, two kilometres east of the claim group.

A large magnetic "high" anomaly was detected in the southwest corner of the claim group. This feature may represent the intersection of an iron formation with a diabase dyke system.

Detailed geological mapping combined with prospecting, rock sampling and orientation B-Horizon soil sampling is recommended.

Respectfully submitted,

Joan M. Barry, B.Sc.
Geologist

Wawa, Ontario
June, 1991
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INTRODUCTION

The Colborne - Stephenson property of Sears, Barry and Associates Ltd. is located approximately three (3) kilometers west of the Renabie Gold Mine, near Missanaibi Ontario. The Renabie Mine has produced in excess of 1 Million ounces of gold since its opening in 1947. The Colborne - Stephenson property is underlain by mafic to felsic volcanic rocks and associated mafic to felsic intrusive rocks.

The magnetometer survey which is the subject of this report was carried out for the purpose of detecting and defining possible east-west trending features that might represent structural or alteration zones. This type of zone is a favourable location for gold mineralization in the Renabie area.

The work was carried out by personnel of Sears, Barry and Associates, Ltd. from March 15th to April 5th, 1991.

PROPERTY, LOCATION AND ACCESS

The Colborne - Stephenson Property is located in Rennie Township, 13 kilometers northeast of Missanaibi, in northern Ontario, Canada (Fig 1). At the time of the survey, it consisted of thirty-six (36) contiguous Mining Claims. Twenty-six of these were allowed to lapse on their anniversary dates. Twenty-six of these were allowed to lapse on their anniversary dates. The remaining ten (10) claims are shown in Figure 2, where they are numbered as follows:

SSM 1135139  SSM 1135146
SSM 1135140  SSM 1135147
SSM 1135141  SSM 1135148
SSM 1135142  SSM 1135149
SSM 1135143  SSM 1135150

The Renabie Mine road passes approximately 400 metres south of the ten claim group. Several old bush roads provide limited access to Colborne and Stephenson Lakes, portions of which underlie the property.

PREVIOUS WORK

Other than airborne Geophysical Surveys, there has been no known exploration activity on the ten claim group. The most recent airborne geophysical data is that flown for the Ontario Geological Survey in 1988.
Fig. 1: Regional Location Map of Ontario.
Fig 2 Claim Location Map - Colborne-Stephenson Property, Part of Rennie Township. Scale 1" = ½ mile
REGIONAL AND PROPERTY GEOLOGY

The Colborne - Stephenson Claims are located in the eastern end of the Michipicoten Greenstone Belt, a subdivision of the Superior Province of the Precambrian Canadian Shield. The Michipicoten Greenstone Belt is composed of a series of Keewatin, submarine mafic to felsic metavolcanics and metasediments with numerous bands of iron formation. These rocks are locally cut by felsic and mafic intrusions of various shapes and sizes. A network of diabase dykes transect all of these units.

The claim group is underlain by a northwest trending folded sequence of mafic to felsic volcanic rocks cut by local dykes and sills (Riley, 1971). The Renabie Gold Mine is located approximately two kilometres east of the property. Renabie is the only producing mine in this end of the Michipicoten Belt, and the largest producer in the area (> 1 million ounces). The Renabie deposit is hosted by quartz veins localized within an east-west shear zone in granitic rocks. Recent studies (Heather, 1989, 1990) suggest that these east-west structures extend westward well beyond the Renabie area.

WORK PROGRAM

An east-west baseline was cut through the southern end of the property. North-south crosslines were established by hip-chain and flagging at 100 metre intervals with stations every 25 metres. Magnetic data was recorded at 12.5 metre intervals along the cross-lines.

The ground magnetometer survey was completed using a Geometrics G-816 Portable Proton Magnetometer. This instrument measures the total intensity of the earth’s magnetic field in gammas. A Geometrics G-856A recording Base Station magnetometer was used during the survey to monitor the diurnal variations of the magnetic field. This data was then utilized for correcting the field data.

The diurnally corrected data was reduced to 58,000 gamma base. The resulting data was then plotted at a scale of 1:2500 and contoured (Map 1).

DISCUSSION

The regional geological map covering the Colborne-Stephenson claim group indicates that all local lithologies have northwest trends. The mafic to felsic volcanics typically strike at 130° to 140°, with the younger diabase dykes cutting these at 155° to 170°. Because of the north-south orientation of our grid, it is difficult to see these trends in the contoured magnetometer
data, without flagrant violation of contouring principals. These trends are assumed to be reflected by "bulls-eye" type, single line features.

Several strong features having more east-west trends are rather obvious in the data. One of these is a modest sized extremely "high" triangular shaped feature extending from 100 N on Line 900 W to 37.5 N, Line 600 W, with its apex at 200 N, Line 700 W. The northwest trending component of this anomaly is likely caused by a strongly magnetic diabase dyke that is exposed in this area. However, the east-west component is unexplained. One possibility is that a narrow east-west gabbro shown on the regional geological map may be more extensive than shown. Another possibility is that oxide "iron formation" is distorted in this area by the crosscutting diabase dyke.

The second and possibly more significant feature is a series of magnetic "highs" that extend across the northern part of the claim group. The centre of this trend is 500 to 600 gammas above background. It is best developed from 700 N, Line 1100 W to 750 N, Line 700 W. Several apparent offsets occur, but the trend continues to the western edge of Stephenson Lake in the eastern end of the claim group. This feature is thought to represent structural repetition of a weakly magnetic volcanic unit. The 080° to 090° trends of the axis of this feature is consistent with observed crosscutting structural features in the area.

CONCLUSIONS AND RECOMMENDATIONS

The magnetometer survey carried out over the 10 claims of the Colborne - Stephenson property appears to support the possibility of east-west trending structural features within the dominantly northwest trending volcanic stratigraphy. Since the gold bearing quartz vein system at the Renable Mine (two kilometres east) appears to be associated with similar east-west trending structures, there is a good potential for similar mineralized zones on this claim group.

A follow-up program consisting of detailed geological mapping, prospecting and rock sampling should be completed on the property. An orientation soil survey may help to define mineralized zones in areas of no outcrop.

Respectfully submitted,

Joan M. Barry
Geologist

Wawa, Ontario
June, 1991
REFERENCES

Burwash, E.M.
1935 Geology of the Lochalsh - Missanaibi Area; Ontario Department of Mines, Vol 44, Pt 8, p27-38, (published 1937), Accompanied by map 44c, scale 1" to 1 1/2 miles.

Heather, K.B.

Ontario Geological Survey

Riley, R.A.
1971 Geology of Glasgow, Meath and Rennie Townships, District of Algoma and Sudbury; Ontario Department of Mines Geological Report 90.

Assessment Files of the Ontario Geological Survey
MODEL G 816
PORTABLE PROTON MAGNETOMETER
2. Cycle the magnetometer a few times by depressing the READ
button—releasing—and waiting for a reading each cycle.

3. Observe measurement readings. Each reading should repeat
 to ±1 gamma. (A slow shift may occur over several minutes
due to a diurnal change in the earth's field.)

4. Place the suspected article at the distance from the sensor
expected during actual survey operation.

5. Cycle magnetometer several times and note the readings.

6. Remove the article and repeat steps 2 and 3 to check for diurnal
shifts in the earth's field. If a diurnal shift is present, repeat
entire test.

7. If the readings obtained in step 5 differ by more than ±1 gamma
(one count) from those obtained in steps 3 and 6, then the
article is magnetic.

IF THE ARTICLE IS HIGHLY MAGNETIC, OR IF THE SENSOR IS
INSIDE OR NEAR A BUILDING OR VEHICLE, THE PHONON
PRECESSION SIGNAL WILL BE LOST, GIVING COMPLETELY
ERATIC READINGS AND LOSS OF ONE COUNT REPEATABILITY.

The magnetometer should not be operated in areas that are known
sources of radio frequency energy, power line noise (transformers),
in buildings or near highly magnetic objects. The sensor should
always be placed on the staff above the ground, or in the "backpack".
The sensor will NOT operate properly when placed directly on the
ground.

1.9 SPECIFICATIONS

Sensitivity: ±1 gamma throughout range
Range: 20,000 to 90,000 gammas (worldwide)
Tuning: Multi-position switch with signal amplitude indicator light on display
Gradient Tolerance: Exceeds 600 gammas/ft
Sampling Rate: Manual pushbutton, one reading each 0 seconds.
**Type of Survey(s)**

- Geophysical (magnetometer)
- Electromagnetic
- Magnetometer
- Other
- Geological
- Geochemical

**Recorded Holder(s)**

- Jason Gordos 214197

**Address**

- Box 2055, Wawa, Ontario, P0S 1E0

**Prospector’s Licence No.**

- 705556 - 4244

**Survey Company**

- Sears Barry & Associates Ltd

**Name and Address of Author (of Geo-Technical Report)**

- Ken M. Barry

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

### Special Provisions

For first survey:
- Enter 40 days. (This includes line cutting)
- Enter 20 days (for each)

For each additional survey:
- Using the same grid:
  - Enter 20 days (for each)

### Man Days

- Complete reverse side and enter total(s) here

### Airborne Credits

- Electromagnetic
- Magnetometer
- Other

**Total miles flown over claim(s).**

**Date**

- April 11/91

**Certification Verifying Report of Work**

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

**Name and Address of Person Certifying**

- Signature: Ken M. Barry
  - Telephone No.: 705556 2018
  - Date: April 11/91

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

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**Total number of mining claims covered by this report of work.**

- 10

---

**Certification Verifying Report of Work**

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

**Name and Address of Person Certifying**

- Signature: Ken M. Barry
  - Telephone No.: 705556 2018
  - Date: April 11/91

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**For Office Use Only**

**Total Days**

- Apr. 23/91

**Date Recorded**

- Apr. 23/91

**Mining Recorder**

- Signature: Smm Gadd

**Date Approved as Recorded**

- June 28/91

**Received Stamp**

- Sault Ste. Marie Mining Division
  - April 23, 1991
Ministry of Northern Development and Mines

Geophysical-Geological-Geochemical Technical Data Statement

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 (mag)
Township or Area: Rennie Twp
Claim Holder(s): J. Gerdes

Survey Company: Sears Barry & Associates Ltd
Author of Report: Joan M. Barry
Address of Author: Box 2058, Wawa, Ont. P0C 1B0
Covering Dates of Survey: March 15 – June 20/91 (linecutting to office)
Total Miles of Line Cut: 119 km

SPECIAL PROVISIONS CREDITS REQUESTED

Geophysical
- Electromagnetic
- Magnetometer
- Radiometric
- Other

Geophysical
- Geological
- Geochemical

DAYS per claim

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

(enter days per claim)

DATE: June 20/91 SIGNATURE: 

Author of Report or Agent

Res. Geol. Qualifications: 2.5905

Previous Surveys

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TOTAL CLAIMS: 10

DATE: 2.14.197
**GEOPHYSICAL TECHNICAL DATA**

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

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<th>Station interval</th>
<th>Profile scale</th>
<th>Profile scale</th>
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Profile scale:
- 500, 750, 1000, 1500, 2000, 2500

Contour interval:
- 500, 750, 1000, 1500, 2000, 2500

**Instrument**: Geometrics G-816

**Accuracy**: Scale constant

**Diurnal correction method**: Geometrics G-856A

**Base Station check-in interval (hours)**: 60 seconds

**Base Station location and value**: 475W, 150S, (58 900 ft)

**MAGNETIC**

**Instrument**:

**Coil configuration**

**Coil separation**

**Accuracy**

**Method**: 
- Fixed transmitter
- Shoot back
- In line
- Parallel line

**Frequency**

**Parameters measured**

**ELECTROMAGNETIC**

**Instrument**

**Scale constant**

**Corrections made**

**Base station value and location**

**Elevation accuracy**

**GRAVITY**

**Instrument**

**Method**: Time Domain

**Parameters**
- On time
- Off time
- Delay time
- Integration time

**Frequency**

**Range**

**INDUCED POLARIZATION**

**Instrument**

**Method**: Time Domain

**Parameters**
- On time
- Off time
- Delay time
- Integration time

**Frequency**

**Range**

**Power**

**Electrode array**

**Electrode spacing**

**Type of electrode**

**RESISTIVITY**

**Instrument**

**Method**: Time Domain

**Parameters**
- On time
- Off time
- Delay time
- Integration time

**Frequency**

**Range**

**Power**

**Electrode array**

**Electrode spacing**

**Type of electrode**
SELF POTENTIAL
Instrument________________________________________ Range __________________________________________
Survey Method —————————————————————————————————————————————
Corrections made ________________________________________________________________

RADIOMETRIC
Instrument———
Values measured ________________________________________________________________
Energy windows (levels) ——-——-—^^—-——————......——^^-— —.... —^ —^ —.... —
Height of instrument________________________________Background Count ______________
Size of detector—————^——————^^—-^————————^—-—..—.^^—
Overburden —————————— (type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)
Type of survey________________________ Instrument ______________________________________
Accuracy__________________________ Parameters measured _________________________________
Additional information (for understanding results) ________________________________

AIRBORNE SURVEYS
Type of survey(s)________________________
Instrument(s) —————— (specify for each type of survey)
Accuracy__________________________ (specify for each type of survey)
Aircraft used________________________
Sensor altitude________________________
Navigation and flight path recovery method ______________________________
Aircraft altitude________________________ Line Spacing _____________________________
Miles flown over total area________________________ Over claims only __________________
GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken.

Total Number of Samples

Type of Sample (Nature of Material)

Average Sample Weight

Method of Collection

Soil Horizon Sampled

Horizon Development

Sample Depth

Terrain

Drainage Development

Estimated Range of Overburden Thickness

Analytical Methods

Values expressed in: per cent □
p. p. m. □
p. p. b. □

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others

Field Analysis (tests)

Extraction Method

Analytical Method

Reagents Used

Field Laboratory Analysis

No. (tests)

Extraction Method

Analytical Method

Reagents Used

Commercial Laboratory (tests)

Name of Laboratory

Extraction Method

Analytical Method

Reagents Used

Sample Preparation

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis

General

General
MINING LANDS SECTION
159 Cedar St.
Sudbury, Ont.

214197

Re: Assessment Report - Claims
SSM 1135/39 et al., Rennie Twp.,
Ontario.

Dear Sirs:

Enclosed please find 2 copies of an assessment
report pertaining to the above claims.

Regard,

Seymour Sears

RECEIVED
21/11
JUN 24 1991
MINING LANDS SECTION
Instruments:
Geometrics G-816 Portable Proton Magnetometer
Geometrics G-856A Recording Base Station Magnetometer

 Operators: Sears / Novak

Data Reduced by 58,000 gammas

Contour Intervals: 500, 750, 1000, 1500, 2000, 3000 gammas

Base Station: 58,000 gammas

Scale: 1:250,000

SEARS, BARRY AND ASSOCIATES LTD

COLEBROOK STEPHenson PROPERTY

BASE LINE (N)

BASE LINE (E)