REPO

on

MAGNETOMETER AND ELECTROMAGNETIC (V.L.F.) SURVEY

on

MATHESON TOWNSHIP PROPERTY

PORCUPINE MINING DIVISION, ONTARIO

CLAIMS

P-791628

P-791629

P-791630

P-791631

March 30, 1985

John R. Boissoneault, B.Sc., P.Eng.
Geologist, Engineer

2nd
2.740

TABLE OF CONTENTS

	Page
Introduction.....	1 & 2
Geological Background.....	2 & 3
Instrumentation and Procedure.....	4 & 5
Electromagnetic Results.....	5 & 6
Magnetic Results.....	6 & 7
Conclusions and Recommendations.....	7 & 8

APPENDIX

Electromagnetic Survey

Magnetometer Survey

INTRODUCTION

During the period of February 2 to February 10, 1985 I carried out a magnetometer and V,L.F. electromagnetic survey on a four claim block in the southeast corner of Matheson Township, in the Porcupine Mining Division of northeastern Ontario. The claims are registered in the name of Gerald Boissoneault, 520 Melrose Avenue, Timmins, Ontario, and are identified as P-791628, -29, -30, and -31.

The survey grid consists of cut out and chained picket lines, 400 feet apart, with stations established every 100 feet, a total of 4 1/4 miles. The location of the grid relative to the property boundaries and claim lines, is shown on both the magnetometer and electromagnetic survey plans, at a scale of 1 inch = 200 feet.

The property covers a low lying, relatively flat area with little relief, the eastern end being somewhat swampy and covered by tag alders. The northern boundary is about 200 feet south of highway 101, which runs east-west, at this point. The overburden is estimated to be moderately deep but is probably less than 100 feet deep in the western half.

The purpose of the electromagnetic survey was to detect subsurface concentrations of metallically conductive mineralization, which might occur beneath the grid covered and within the range of the instrument. Some of the gold bearing deposits, of this part of the Precambrian Shield, occur as

.....page 2

concentrations of auriferous pyrite which are sometimes distinguishable from the enclosing rocks by their electrical conductivity. Another purpose was to locate possible mineralized shear zones or other structures which could be related to the occurrence of gold concentrations; these are usually conductive at the high frequency utilized.

The purpose of the magnetometer survey was to provide additional data for the interpretation of the electromagnetic anomalies detected in the V.L.F. survey. It was also expected that the magnetics would serve in the determination of the lithological and structural features. Since the gold deposits, in the area, occur within zones of extensive carbonatization, and in zones of shearing and schisting, which differ in magnetic susceptibility from the intermediate metavolcanic host rocks, the magnetometer survey could assist in the determination of targets, if a subsurface program was warranted.

GEOLOGICAL BACKGROUND

The southeastern part of Matheson township is underlain by metasedimentary rocks of Archean age. These belong to the "Porcupine Group" (J.Lorsong, 1975), and have a near east-west strike, where they cross the property. At this point, they consist of two formations, with the contact crossing the property just north of the south boundary of

.....page 3

claims P-791628, -29, -30. To the north of the contact is the "DomeFormation", a turbidite sequence of greywackes and siltstones. To the south of the contact is the "Three Nations Lake Formation", which conformably overlies the "Dome Formation" stratigraphically. It is composed mainly of interbedded sandstones and conglomerates; three horizons of pebble conglomerate have been recognized in this formation. Most of the gold ore at the Pamour Mine, about seven miles to the west of the property, is found within a pebble conglomerate at the base of this formation, near the same contact which crosses the property.

The Destor-Porcupine Fault, a major break which crosses the region, passes about 1/4 mile south of the property. Here, Archean mafic metavolcanics, to the south, lie in fault contact with the metasediments previously described. A series of prominent, younger cross faults, trending 320°(N-40°-W), extend to the north and south of the Destor Fault, displacing it in several places. One of these faults is known to cross the central part of the property and two others are interpreted from the magnetic survey.

Most of the gold bearing deposits of the Timmins-Porcupine District are located within zones of extensive carbonatization in areas of schisting and shearing in the intermediate metavolcanics or metasediments. These deposits are usually found near the cross faults referred to in the previous paragraph.

.....page 4

INSTRUMENTATION AND PROCEDURE

A Geonics EM-16 electromagnetic receiving unit was used for the survey, with readings taken every 100 feet along the picket lines, to an accuracy of ±1%. The instrument is a sensitive radio receiver, tuned to the frequency of a V.L.F. radio communications station which is used as a transmitter. It measures vertical field components of secondary fields, set up in conductive bodies by the primary signal. Two coils with perpendicular axes, allow the measurement of the mechanical tilt angles, of both the inphase and quadrature components of the secondary field. The measurements are expressed in degrees. A transmitting station is selected, so that the primary field is approximately at right angles to the strike of the geological structures in the area to be surveyed, and approximately parallel to the grid lines. The V.L.F. radio station in Cutler, Maine, was used for this survey (Frequency 24.0 kilocycles per second). The tilt angles of the inphase and quadrature components of the vertical secondary field measured during the survey, are plotted as profiles on the survey plan, on a scale of 1 inch = 20 %.

A Scintrex M.P.-2, proton precession magnetometer was used for the survey, with readings taken every 100 feet along the picket lines, to an accuracy of ±1 gamma. This instrument measures the value of the earth's total magnetic

.....page 5

field, at the place where the reading is taken. It is extremely accurate, especially for low gradients, and is subject only to diurnal variation and not to other drift factors. The "tie-in" procedure used, was as follows: the survey is conducted in loops, (4N, 8N, 8S, 4S); then the base line stations are read during a short interval, and the readings from the cross lines are adjusted to the base line stations. The largest variation encountered was 30 gammas.

ELECTROMAGNETIC RESULTS

The results of the V.L.F. electromagnetic survey reveal at least two areas of anomalous conductivity on the grid covered. Both of these lie on the western half of the claim block, and both contain two conductor axes.

The most northerly of these lies on claim P-791630, and consist of parallel axes 'C' and 'C_1'. Both of these conductors were detected on line 8E, at 7 + 25 and 9 + 50 respectively. They are also lightly indicated on line 13E, giving them a strike of 300°(N-60°-W), and appear to lie between two north-south faults.

The other anomalous area lies on claim P-791631 and also consists of two parallel axes 'A' and 'B'. Axis 'A' was detected on lines 0, 4E, and 8E between 21 south and 22 south, while axis 'B' was detected on lines 0 and 4E between 18 south and 19 south. The conductors are nearly parallel and have

.....page 6

a strike of 95°(S-85°-E). It is possible that axis 'A' extends up to line 13E.

Other electromagnetic responses were obtained such as those on the southern half of line 16E. These may be faulted extentions of axes C and C_1.

MAGNETIC RESULTS

The magnetic contours on the eastern half of the claim block, reveal an area of low magnetic relief, suggesting relatively thick overburden cover. The magnetic trend is northwestward and the only distinctive feature is a high at 3S on line 32E, with a weak associated low at 4S. This area of low relief terminates at line 20E, where there is an interpreted fault.

West of line 20E, the magnetics show considerably more relief, suggesting thinner overburden cover. Here the trend is roughly east-west and is interrupted at line 13E and between lines 4E and 8E, suggesting the presence of two more faults. These appear to belong to the series discussed under "Geological Background".

The magnetics rise sharply by 30-40 gamma on the southern part of claim P-791631 indicating a contact zone. Immediately to the north is a sharp low of 35 gamma, centered at 20 south on line 8E.

.....page 7

Another interesting magnetic feature is an irregular low between 6 south and 10 south on line 8E, which appears to lie between the two faults previously discussed.

CONCLUSIONS AND RECOMMENDATIONS

Gold occurrences are generally difficult to locate directly by geophysical methods and therefore indirect means must be employed, and attention must be focused on the more subtle geophysical features encountered, when interpreting survey results. This is especially true in areas of deep overburden, although the magnetic relief shows that the overburden depth, on the western part of the property, may not be so great as previously anticipated. I have kept this in mind in reaching the following conclusions.

Conductor axes 'A' and 'B' undoubtedly lie within the "Three Nations Lake Formation", with 'A' along or near the contact between sandstones to the south and conglomerates to the north and could represent a graphitic horizon or a pyritic zone. Conductor 'B' lies along a linear high which could represent another change in lithology and terminates against a fault.

Conductors 'C' and 'C_1' appear to lie within the "Dome Formation" near the southern contact. They are associated with an irregular magnetic low between two faults. This low could be caused by the destruction of magnetic minerals

.....page 8

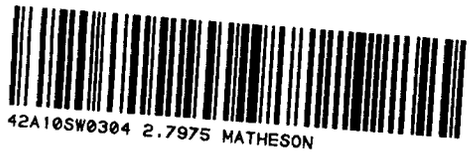
during the process of carbonatization.

Because of the nature of their geophysics and because they lie within a geological horizon which has been highly productive in the past (Pamour Mine), both of these areas warrant further exploration.

Since we are generally dealing with broad zones of interest rather than distinct targets, I suggest that exploration techniques designed to gain subsurface data over large areas, be utilized. Overburden drilling would obtain basal till and bedrock samples at a considerable number of locations at relatively low costs. I therefore recommend that this method be used in the next phase of exploration with vertical holes being put down at intervals in the two areas of primary interest. This drilling would be done between 18 south and 22 south on line 4E, and between 6 south and 10 south on line 8E. Assuming that the depth of overburden is 100 feet, this would require some 20 to 25 holes for a total of 2500 feet, using 50 foot spacings. If gold values are found in the basal till, the pattern would be closed in until favourable bedrock results are obtained. Following this, a diamond drilling program would be considered, if justified by the results of the overburden drilling phase.

Respectfully submitted,

John R. Boissoneault, B.Sc., P.Eng.
Geologist, Engineer



900

Mining Lands Section

File No 2.7975

Control Sheet

TYPE OF SURVEY ✓ GEOPHYSICAL

____ GEOLOGICAL

____ GEOCHEMICAL

____ EXPENDITURE

MINING LANDS COMMENTS:

Gpd · L.D.

J. Hurst

Signature of Assessor

85-04-12

Date

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

#040/85 2.7975

Mining Act

Apr. 3rd 12th

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s): ELECTROMAGNETIC (V.L.F.)	Township or Area: MATHESON
Claim Holder(s): GERALD BOISSONEAULT	Prospector's Licence No.: M 21476
Address: 580 MELROSE AVE (267-3559)	
Survey Company: JOHN BOISSONEAULT (264-3177)	Date of Survey (from & to): 20 / 1 / 85 — 10 / 2 / 85 (Day / Mo. / Yr.)
Total Miles of line Cut: 4 1/2 MILES	
Name and Address of Author (of Geo-Technical report): JOHN BOISSONEAULT	

Credits Requested per Each Claim in Columns at right

		Days per Claim
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)	Geophysical - Electromagnetic	40
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	
Man Days: Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	
Airborne Credits: Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
P	791628	40
	791629	
	791630	
	791631	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

RECEIVED
MAR 15 1985
MINING LANDS SECTION

RECORDED
FEB 11 1985
Receipt No. [illegible]

Total number of mining claims covered by this report of work: 4

Expenditures (excludes power stripping)

Type of Work Performed: V.L.F. ELECTROMAGNETIC

Performed on Claim(s): ALL

Calculation of Expenditure Days Credits
Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

RECEIVED
FEB 15 1985
PROVINCIAL MINING DIVISION

Date: Feb. 11/85 — Recorded Holder or Agent (Signature): [signature]

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
160	Feb 11/85	[signature]
	Date Approved as Recorded: April 16/85	Branch Director: [signature]

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
G. Boissoneault
520 Melrose Blvd. Timmins

Date Certified: Feb. 11/85 — Certified by (Signature): [signature]

1362 (81/91)

REGISTERED

1985 04 09 Report of Work #40/85

Gerald Boissoneault
520 Melrose Avenue
Timmins, Ontario
P4N 5H5

Dear Sir:

RE: Geophysical (Electromagnetic) Survey on
Mining Claims P 791628 to 631 inclusive,
in Matheson Township

We have no record that you provided the full reports and maps to the Minister within the sixty day period provided by Section 77 of the Mining Act.

If the material is not submitted to this office by April 19, 1985, I will have no alternative but to instruct the Mining Recorder to delete the work credits from the claim record sheets.

For further information, please contact Mr. Arthur Barr at (416)965-4888.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

A. Barr:

cc: Mining Recorder
Timmins, Ontario
Encl.

MAGNETOMETER SURVEY

MATHESON TOWNSHIP

ONTARIO

2.7975.

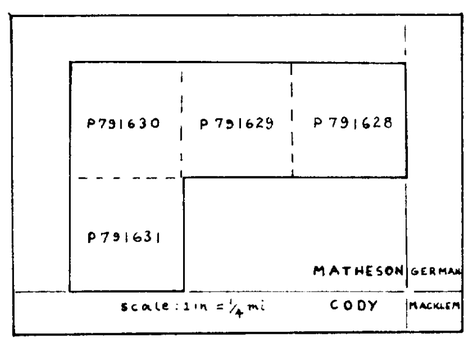
0E 4E 8E 13E 16E 20E 24E 28E 32E 36E

BL 4S 8S 12S 16S 20S 24S

MATHESON
GERMAN

SCALE : 1 in. = 200 ft.

LOCATION



LEGEND

READING 182 • (TOTAL FIELD ABOVE 59,000)

CONTOUR (10 gamma INTERVAL)

CONTOUR (50 gamma INTERVAL)

FAULT (INTERPRETED)

BOUNDARY (CLAIM LINE)

INSTRUMENT : SCINTREX, M.P. 2

TYPE : PROTON PRECESSION

ACCURACY : ± 1 gamma

PROFESSIONAL ENGINEER
ONTARIO

MATHESON

CODY

ELECTROMAGNETIC SURVEY

MATHESON TOWNSHIP
ONTARIO

2.7975

0E 4E 8E 13E 16E 20E 24E 28E 32E 36E

BL
4S
8S
12S
16S
20S
24S

MATHESON
GERMAN

SCALE: 1 in. = 200 ft.

LEGEND

INPHASE
OUTPHASE
INPHASE SLOPE
CONDUCTOR AXIS
CLAIM LINE

E.M. SCALE : 1 in. = 20%

+20% 0 -20%

+8 -6 OUTPHASE
INPHASE
+12 -8

TYPE OF SURVEY : V.L.F.

INSTRUMENT: GEONICS, E.M.-16

TRANSMISSION: CUTLER MAINE (N.A.A.)

FREQUENCY : 24.0 KHz.

READING
STATION

SLOPE PLOT

16S
20S
24S
0E 4E 8E

LOCATION

P791630	P791629	P791628
P791631	MATHESON TWP.	

Scale: 1 in = ¼ mi.

MATHESON | GERMAN
CODY | MACKLEM

MATHESON
CODY

42A10SW0304 2.7975 MATHESON

210