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MINING LANDS SECTION

REPORT
ON
GEOPHYSICAL SURVEYS
ON PROPERTY OF
THUNDERWOOD EXPLORATIONS LTD.
HEARST TOWNSHIP, ONT.

by

PROSPECTING GEOPHYSICS LTD.

Wellowdale, Ont
Montreal, Que.

July 25, 1980..

REPORT
ON
GEOPHYSICAL SURVEYS
ON PROPERTY OF
THUNDERWOOD EXPLORATIONS LTD.
HEARST TOWNSHIP, ONT.

INTRODUCTION

Thunderwood Explorations recently acquired an additional 22 claims for protection along the strike and dip of the Martin-Bird deposit. The Martin-Bird deposit is developed underground and at present, a further exploration program is underway to expand the ore reserves.

In a report by the writer, dated Jan. 21, 1980, the additional 22 claims were described and a recommendation for geophysical surveys on this ground was included in the recommended program. An electromagnetic survey has been completed over the land portion of the 22 claims and this was also extended to cover the vicinity of the Martin-Bird deposit for proper correlation. At the completion of the electromagnetic survey, a decision was made to carry out a magnetic survey over the conductive zones to help in the interpretation.

The following report and accompanying maps describe the results of these surveys.

PROPERTY AND LOCATION

The property consists of the original 25 patented claims and 1 licence of occupation in Hearst township plus the additional 22 claims recently acquired. The property is shown on Map No. 1 and the area covered by the present survey is indicated.

The claims are registered with the Ministry of Natural Resources as follows:

PATENTED CLAIMS (25)

HF 364
HS 900, 901, 1180,
L 28354, 29085, 29086, 39596, 23717, 24849, 24850,
24935, 24957, 24958, 25034, 25072, 25076, 31352,
40852, 40960, 40961, 40847, 40848, 40850, 40851.

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LICENCE OF OCCUPATION (1)

HS 137

ADDITIONAL CLAIMS

L 446636 to L 446641 inclusive
 L 447072 to L 447080 inclusive
 L 522809 to L 522813 inclusive
 L 545057 to L 545058 inclusive.

GEOLOGY

The general geology of the property including the new claims is described in Thomson's report¹ and map 1947-1. From this it can be seen that the area is essentially underlain by Temiskaming sedimentary rocks consisting of greywacke, arkose and some conglomerate.

On the Thunderwood property the sediments are largely fine grained greywacke with an area of conglomerate in the northeast corner of the new claims. The bedding of the sediments varies from north-south to slightly northwest further north in the new claims.

The sedimentary rocks on the property have been extensively intruded by syenite and syenite porphyry. This also applies to the new claims where there are fairly large bodies of syenite porphyry mapped. The syenite generally contains many quartz stringers and usually has about 1% pyrite as fine cubic grains. In the northwest corner of the new claims there is a fairly large syenite porphyry mapped and it is designated as carrying quartz stringers.

The major structural feature is a north-south trending syncline that is sharply dragged to the east. This has caused fracturing in the syenite and sediments in a northeast direction. The sediments in the vicinity of the dragfold are largely altered and bleached and contain numerous quartz-carbonate veinlets and stringers. It is in these altered sediments and the syenite that the gold values are found.

The gold-bearing veins on the former Martin-Bird property have been found within a shear zone that

¹Thomson, J. E. Geology of Hearst and McFadden Townships Ontario Department of Mines, Vol. LV1, Part Vlll, 1947.

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has been traced across the property in a direction N 60°E for a length of some 3,000 feet. Diamond drilling of the gold-bearing shear zone has shown that in addition to the gold-bearing quartz-carbonate veins, gold values are found in altered sediments and syenite. The gold is generally associated with pyrite and there appears to be a direct correlation with the percentage of pyrite. Native gold occurs in quartz stringers and with the pyrite.

SURVEY METHODS AND INSTRUMENT DATA

The geophysical surveys were carried out over pre-cut lines at 400 foot intervals in a direction N 35°W. In one area where there was an indicated airborne electromagnetic anomaly, some detail lines were cut at 200 foot intervals.

The V.L.F. (very low frequency) electromagnetic survey was conducted over new lines cut and chained between the previously cut lines at 800 foot intervals. This completes the survey at 400 foot intervals over the entire property. The equipment used was the Geonics EM-16 system.

The V.L.F. method uses the radiation from powerful military radio transmitters at low frequencies as primary signals as opposed to portable transmitters in the conventional E.M. methods. The transmitter at Cutler, Maine was used in the present survey. The instrument has two receiving coils and the parameters measured are:

- (1) The vertical in-phase component.
- (2) The vertical out-of-phase component (quadrature component).

The interpretation of the results uses the relative measurements of these two parameters and it is possible to outline such poor conductors as sheared contacts, breccia zones, faults, and alteration zones as well as the good sulphide conductors.

Because V.L.F. anomalies are produced by a wide range of geological effects, profiles tend to show a complex "cluttered" pattern and additional assistance is required to distinguish trends. By the use of the Fraser method of filtering tilt angle profiles, the readings are converted into contourable data that are

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plotted on the accompanying Map 1.

The magnetic survey was conducted over the same network of lines using a MF-2 fluxgate magnetometer measuring the variations of the vertical component of the earth's magnetic field. The results are plotted on a separate map No. 2 as gammas after correction for diurnal variation. The axes of the conductive zones have been placed on Map 2 to aid in the interpretation.

RESULTS OF THE GEOPHYSICAL SURVEYS

The results of the electromagnetic survey have been plotted on Map No. 1 while the magnetic results with the conductor axes are shown on Map No. 2.

The electromagnetic survey outlined a number of relatively strong conductive zones, mostly trending in a northeast direction, more or less paralleling the main gold-bearing shear zone. The main conductors are lettered A, B, C etc. for reference purposes.

There is very little indication of the gold-bearing veins between No. 1 and No. 2 shafts but "F" Zone may be related to the shear zone. Initial correlation with the easterly holes T.S. 80-1-2 and 3 drilled by Thunderwood Explorations indicate that the wide altered and mineralized zone encountered could be related to this conductor which is relatively weak. There is also a weak conductor west of No. 2 shaft which should be correlated with the drilling to determine its significance. The magnetic survey shows a fairly definite magnetic anomaly for a minimum length of 2,300 feet in the shaft area which does tend to correlate with "F" Zone. Actually, it is quite possible that an alternative interpretation of the conductivity would show a separate conductor on line 32 W north of the base line with the conductor south of the shaft being more to the south on line 36 W. There would appear to be some faulting in this area and the presence of both magnetic and electromagnetic targets. The most easterly hole TS 80-3 is at approximately line 35 W and thus a cross section on line 32 W would appear warranted.

"A" and "B" Zones form a rather complex situation and would appear to relate to the airborne anomaly. The area is magnetically flat and on the basis of the electromagnetic readings there would appear to be a series of northeast trending conductors associated with a west trending zone. It would seem likely that the west trending zone may represent a fault although there is no evidence

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of this in the magnetic survey. Geologically, there is a wide variation in the strike of the bedding in this area with considerable contortion. This would indicate considerable folding and there is a syenite intrusive mapped just south of the base line. Close geological examination of any outcrops may help in the interpretation as the geological environment appears favorable for a gold deposition.

"C" Zone has another combination of a north-east and east-west trending conductors. This is north of "A" and "B" zones and probably represents a similar environment. Again there is no magnetic expression associated with the conductors.

"D" Zone consists of three northeast trending conductors with the highest conductivity on line 24 W. This zone is in close proximity to the syenite intrusive in the northwest portion of the property. Numerous quartz stringers have been found associated with this intrusive.

"E" Zone is part of a general northeast trending structure that crosses the north portion of the property. Thomson's map shows a northeast trending fault in this area and it is quite possible the conductivity may be associated with the fault. As such it can be regarded as a favorable environment for mineralization.

The magnetic survey showed fairly uniform readings over the area surveyed with the exception of the shaft area and a few isolated highs that may indicate basic dykes or occasional iron formation.

CONCLUSIONS AND RECOMMENDATIONS

The geophysical surveys outlined a number of conductive zones in what appears to be a favorable geological environment. These warrant further investigation and a program consisting of prospecting and geological examination in the vicinity of the conductive zones, followed by diamond drilling is recommended.

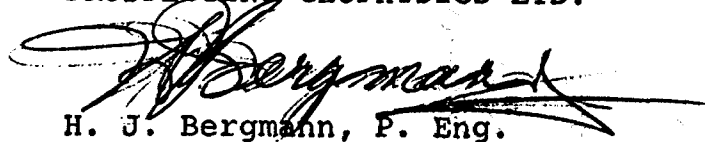
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In order of priority, the following zones are recommended:

1. "F" zone just east of hole TS 80 - 3
2. "A" and "B" zones
3. "C" zone
4. "D" zone.

Respectfully submitted,

PROSPECTING GEOPHYSICS LTD.



H. J. Bergmann, P. Eng.

Montreal, Que.
July 25, 1980.



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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 Electromagnetic & Magnetic
 Township or Area Hearst township
 Claim holder(s) Thunderwood Explorations Ltd.
 Author of Report H. J. Bergmann
 Address 3518 Vendome Ave., Montreal, Que.
 Covering Dates of Survey May 20 - July 25, 1980
 (linecutting to office)
 Total Miles of Line cut 26

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>	Geophysical	DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	--Electromagnetic	<u>40</u>
ENTER 20 days for each additional survey using same grid.	--Magnetometer	<u>20</u>
	--Radiometric	_____
	--Other	_____
	Geological	_____
	Geochemical	_____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
 Magnetometer _____ Electromagnetic _____ Radiometric _____
 (enter days per claim)
 DATE: July 28, 1980 NATURE: [Signature]
 Author of Report

PROJECTS SECTION
 Res. Geol. _____ Qualifications 63-1061
 Previous Surveys L.D.
 Checked by _____ date _____
 GEOLOGICAL BRANCH _____
 Approved by _____ date _____
 GEOLOGICAL BRANCH _____
 Approved by _____ date _____

<u>MINING CLAIMS TRAVERSED</u> <u>List numerically</u>	
L 447078	<u>✓</u>
L 447079	<u>✓</u>
(prefix) (number)	
L 447080	<u>✓</u>
L 447073	<u>✓</u>
L 447074	<u>✓</u>
L 447075	<u>✓</u>
L 447076	<u>✓</u>
L 522809	<u>✓</u>
L 522810	<u>✓</u>
L522811	<u>✓</u>
L 522812	<u>✓</u>
L 522813	<u>✓</u>
L 545059	<u>?</u>
L 545058	<u>✓</u>
L 446639	<u>✓</u>
L 446640	<u>✓</u>
L 446636	<u>Abandoned claims</u>
L 446637	<u>✓</u>
L 446638	<u>✓</u>
L 446641	<u>✓</u>
L 25076	<u>Patented</u>
L 24935	<u>Patented</u>
L 24957	<u>Patented</u>
L 23717	<u>?</u>
L 24958	<u>Patented</u>
L 25034	<u>Patented</u>
L 1180	<u>Patented</u>
L 39596	<u>Patented</u>
L 31352	<u>Patented</u>
TOTAL CLAIMS <u>29</u>	

OFFICE USE ONLY

If space insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Electromagnetic - 1275

Number of Stations 1,275 Number of Readings Magnetometer 1010

Station interval 100'

Line spacing 400' and 200'

Profile scale or Contour intervals Magnetometer - 200 gammas
Electromagnetic 20
(specify for each type of survey)

MAGNETIC

Instrument Scintrex MF - 2 fluxgate

Accuracy - Scale constant ± 5%

Diurnal correction method Base stations

Base station location See Map

ELECTROMAGNETIC

Instrument Geonics EM-16

Coil configuration _____

Coil separation _____

Accuracy ± 1%

Method: Fixed transmitter Shoot back In line Parallel line

Frequency Cutler, Maine
(specify V.L.F. station)

Parameters measured In-phase and quadrature

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION -- RESISTIVITY

Instrument _____

Time domain _____ Frequency domain _____

Frequency _____ Range _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____