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Trend Exploration and Development Limited,
Room 1024,
85 Richmond Street, West,
Toronto, Ontario.

Gentlemen:-

This report describes the results of a magnetometer survey conducted by Geo-Technical Development Co. Limited, on your property located in Shaw Township, Porcupine Mining Division, Ontario. The survey was carried out in January and February, 1963, and the results are depicted on Plan No. 1, accompanying this report.

CONCLUSIONS AND RECOMMENDATIONS

The ground magnetic data depicted a picture which is in part similar and in part quite different from that indicated by aeromagnetic data. There are, however, several interesting indicated structures and anomalous conditions which are favourable for the occurrence of gold and possibly base metals.

It is recommended to cover the south half of the property by about 5 miles of electromagnetic survey to check a known occurrence of sulphides and anomalous conditions encountered by the magnetometer survey.

A geological interpretation and five choice locations for exploration diamond drilling are described in this report and depicted on the accompanying plan.

PROPERTY

The property is comprised of twenty-four (24) contiguous mining claims at the central eastern part of Shaw Township. These claims were staked in April, 1962 and are identified as follows:

51744 to 51747, inclusive)	8-claims, Lot 1, Conc. IV;
51749 to 51752, inclusive)	
51748 and 51764	2-claims, southeast quarter of Lot 2, Conc. IV;
51736, 51737)	6-claims, south 3/4, Lot 1 Conc. V;
51740 to 51743, inclusive)	
51731, 51732)	6-claims, north 3/4, Lot 2, Conc. V.
51734, 51735)	
51738, 51739)	
51730, 51733	2-claims, northeast quarter Lot 3, Conc. V.

The claims covered an area of approximately 960 acres in Shaw Township, Porcupine Mining Division, Ontario.

LOCATION AND ACCESS

The location is about eight miles east-southeast of the town South Porcupine on the Ontario Northland Railway and the Provincial Highway No. 67.

An old power line cuts across the western part of the property, and a north-south section of the Redstone River which flows into Nighthawk Lake, is located within a few hundred feet from the east boundary of the property.

Access can be made by car from South Porcupine via Carman Road and a bush road for about 10 miles to the south part of the property.

HISTORY

According to records in the office of the Resident Geologist of Ontario Department of Mines, Timmins, two old drill holes are located at the northeast corner of Lot 2, Concession V, near the north boundary of the property. These old holes were probably designed to test a possible quartz porphyry-greenstone contact zone and intersected extensive carbonatization.

There is no record of any exploration work carried out on the other 23 claims of the property. One of the reasons for this is the fact that the property area is about 99% covered by overburden. A considerable amount of work was carried out over the outcrop areas located to the west and northwest.

GEOLOGY

Detailed geology of the area is on a 1" to 2,000' map, published by the Ontario Department of Mines, 1939 (Reference 1). The few small outcrops located within the property area are Keewatin andesite, dacite and pillow lavas. An occurrence of breccia was observed at the north part of the property area.

About one claim to the northwest, at Mt. Logano, there is a large acid intrusive classified as Algomian quartz porphyry, similar to those occurring at Simpson Lake and Pear Lake where the well-known gold producers, Hollinger, McIntyre, Dome, Preston East Dome and Paymaster are located.

On a geological map accompanying a paper by W. Roy

Dunbar (1948, Ref. No. 2), the acid rocks at Mt. Logano is noted as acid pyroclastics of the earlier Hoyle Sedimentary series. This grouping, however, is not agreed upon by R.M. Ginn (1961-2, Reference No. 3), who classified the Mt. Logano acid rocks as intrusives. An assumed acid intrusive-greenstone contact runs eastwest along the boundary area of the property. Dr. Hurst is of the opinion that some acid pyroclastics may have been mixed up with the quartz-porphry (personal communication).

To the immediate west of the property, there is a band of iron formation which strikes toward the central part of the property area (Reference No. 1). Ginn showed two bands of iron formation which are parallel to each other in a manner similar to that located at about $1\frac{1}{2}$ miles to the south of the property, at the village of Carman, where a small tonnage of gold was mined (References 3 and 4).

The iron bands are cross-cut by an east-northeasterly fault which runs across the north part of the property area and are separated from the iron bands at Carman by basic volcanics and a band of ultrabasics which runs northwesterly across the southwest part of the property area (Reference No. 3). The band of ultrabasic rock is cut by a northwesterly fault observed at the neighbouring Carman Township (Ref. No. 1). A small creek located on the central part of the property is on strike with and runs in the general direction of this fault, and is inferred as the surface expression of the fault.

Diabase dikes observed by Dr. Hurst in the neighbouring

areas of the property, strike northeasterly, northwesterly and north-south.

MINERAL OCCURRENCE

At about 1,500 feet to the west of the Mt. Logano quartz-porphyry, in old claim 9497 (now part of Claims 48614 and 48624), two pits were sunk on two east-west striking, parallel, pyritized carbonate zones. Grab samples from the excavated material assayed up to \$17.00 gold per ton (Ref. 5). The location is at the vicinity of an occurrence of sulphides indicated on Ginn's map (Reference 3) and about $1\frac{1}{2}$ miles to the northwest of the property.

At about $1\frac{1}{2}$ miles to the south, at the village of Carman, a small tonnage of gold was mined at and near two iron formations cut by porphyry dikes and quartz veins (References 1, 3 and 4). Ginn's map (Ref. 3) shows an occurrence of sulphides within the property area. The exact location, however, is not indicated.

Gold deposits found at the Porcupine area are in general, with the exception of the Pamour, Broulan, Hoyle, and Hallnor, closely associated with quartz porphyry or similar intrusives, and the structural control of these deposits has been duly emphasized (Reference 6).

Although there is no base metal deposits found in the township, the occurrence of sulphides in the volcanics and ultrabasic points to the possibility of having base metals such as copper at Robb Township and nickel at Bartlett-Geikie Townships (References 7 and 8). A

copper showing was discovered in 1961 at the northeast part of the neighbouring Eldorada Township (Reference 9).

AEROMAGNETIC DATA

Aeromagnetic data (Reference 10) showed a strong anomaly across the southwest corner of the property area. A correlation with outcrop geology reveals that the axis of this anomaly is outlined over the northwest extension of a body of ultrabasic rocks (serpentine) observed at about 2,000 feet to the southeast. The broad boundary of the anomalous area is marked by a series of siliceous iron formation, and bent toward southeast at the property area.

A strong magnetic depression is located along part of the northeast boundary of the above-said magnetic anomaly. The location of this depression coincided with a northwesterly fault inferred from geology and topography, and is considered as another indication of the occurrence of that fault.

At the northeast corner of the property, there is another magnetic depression. This magnetic depression is bordered to the southwest by a weak anomaly which has a shape of a large fold with its apex located within but near the east boundary of the property area.

The few outcrops here indicated that there are volcanics located to the south of this indicated fold structure and there is an outcrop of quartz porphyry located along Redstone River immediately to the north-

east of the indicated fold. Unless it is proven otherwise, isomagnetic lines indicate that this quartz-porphyry extends into the northeast corner of the property and is to be located at the concave side of the fold. The magnetic data do not indicate a straight east-westerly acid intrusive-greenstone contact. A warping of the quartz porphyry, such as suggested by the aeromagnetic data, and related flexures formed in the volcanics at the indicated fold, are favourable loci for the deposition of gold.

MAGNETOMETER SURVEY METHOD AND INSTRUMENT

The survey was carried out by using two Sharpe A-2 magnetometers with sensitivities of 24.7 ~~gammas~~ and 22.7 gammas per scale division. Control stations were established along the two base lines at various intervals for the survey. Readings were taken at 100 foot intervals along northeast picket lines.

SURVEY RESULTS AND INTERPRETATION

The survey has encountered a strong anomalous area at the southwest part of the property. The "highs" here are in the order of 3,000 to 4,400 gammas. In correlation with known geology, the area is inferred as indicating serpentized basic to ultrabasic igneous rocks, intruding pillow lava.

There are few outcrops available for the differentiation of pillow lava from the other less basic volcanics. The boundaries between various volcanics could be important

structures or indications of interesting structures for mineralization. However, in most cases, there are not enough magnetic differences between the less basic volcanics for a more definite structural interpretation.

Furthermore, there is no indication of the occurrence of a highly magnetic banded iron formation. Because of the fact that siliceous "iron formation" found in the general area are not necessarily highly magnetic, a weak magnetic zone which runs east-southeasterly across the central part of the property is inferred as the southeast continuation of the silicious iron formation located immediately to the west of the property. The "highs" here are in the order of 1,000 to 1,540 gammas, similar to that outlined over inferred pillow lava with some andesite.

The indicated structure south of this iron formation is complicated. A tentative interpretation such as depicted on the plan accompanying this report showed many faults, cross-faults and folds. A low magnetic area, with readings in the order of 300 to 600 gammas, located in Claims 51747 and 51750 is classified as a formation of chlorite, talc schists and soapstone. This low magnetic area may well be other acid volcanics. A narrow weak magnetic zone located immediately to the southwest and inferred as questionable diabase dike, may well be a narrow band of siliceous iron formation.

The above said uncertainties can be clarified to a considerable degree by a resistivity survey and such a survey may outline areas of strong silicification for the possible occurrence of gold mineralization. However, because of the fact that a known sulphide deposit is located somewhere south of Claim 51747 and the fact that there are anomalies outlined over the altered basic to ultrabasic intrusives, an electromagnetic check survey is apparently more practical. The writer therefore recommends to carry out an electromagnetic survey to check the area south of, and including, the inferred iron formation. An estimated five miles of electromagnetic check survey should be enough to cover all the interesting indications outlined at this south part of the property.

The magnetometer survey encountered no appreciable anomalous condition at the north part of the property. A magnetic zone with "highs" of 900 to 2,000 gammas could be accounted for by a diabase dike (and/or silicious banded lean iron formation). The general structure is apparently northwest. The fold structure indicated by aeromagnetic data at the northeast part of the property could be accounted for by the weak variations in the volcanics. The area identified as questionable undifferentiated volcanics could be a transitional zone between an Algoman acid intrusive and the volcanics. A rather strong flexure is indicated at Claim 51737 and probably

cut by a northwesterly fault. The weak magnetic zone located along this fault is possibly indicating a contact zone of an inferred acid intrusive.

The only east-west indication encountered by the survey is located at the northwest corner of the property. This location is close to the Mt. Logano boss of acidic intrusive and a nose of it is inferred as cutting into the property.

The recommended electromagnetic check survey may come up with some targets for test diamond drilling. However, regardless of the check survey results, a program of exploration diamond drilling is apparently necessary for further evaluation.

Two holes, involving about 850 feet of diamond drilling are recommended to test indications located along the two inferred boundaries of acid intrusive located at the north part of the property.

Three holes are given at the south part of the property. These holes are to test (1), an inferred strong fault or shear; (2), the boundaries between basic and intermediate volcanics at the apex of a fold, and (3), a magnetic indication along the boundary between altered basic and ultrabasic intrusives to strongly folded volcanics. At minus 45° dip, the total core length involved by these three holes is 1,050 feet. The locations of these three holes may be changed according to the E.M. results.

SURVEY DATA

The magnetometer survey was conducted by Geo-Technical Development Co. Limited in January and February, 1963.

Two northwest-southeast base lines were cut across the property for the turn-off of northeast picket lines at 400' intervals to cover all the twenty-four claims. A total of 23 miles of lines were cut and chained for the geophysical survey and a total of 20.73 miles of magnetometer survey with 100 foot station readings was carried out.

The number of 8-hour man-days required to complete the work is as follows:

	<u>8-Hour Man-days</u>	<u>Attributable to Assessment Work</u>
Line cutting and chaining	88 x 4	352
Operating magnetic survey	44 x 4	176
Preparation of report and typing	5 x 4	20
Drafting	<u>10 x 4</u>	<u>40</u>
	<u>147</u>	<u>588</u>

Respectfully submitted,

GEO-TECHNICAL DEVELOPMENT CO. LIMITED,

S.S. Szetu
S.S. SZETU, Ph.D.
Consulting Geologist.

SSS:S

March 6th., 1963.

24 Wellington Street West,
Toronto, Ontario.

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