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REPORT
ON
GEO-MAGNETIC SURVEY ON PROPERTY OF
FUMBERTON MINING & DEVELOPMENT COMPANY LTD.
HEENAN TOWNSHIP, ONTARIO

Prepared by:

Geo-Technical Development Co. Ltd.,
Toronto 1, Ontario.



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May 31st., 1946.

R.C. Fummerton, Esq.,
President,
Fummerton Mining & Development Co. Ltd.,
Room 428,
67 Yonge Street,
Toronto, Ontario.

Dear Sir:- REPORT ON GEO-MAGNETIC SURVEY ON PROPERTY OF
FUMMERTON MINING AND DEVELOPMENT COMPANY LTD.,
HEENAN TOWNSHIP, ONTARIO.

The work described herein, was conducted during the months of March and April, 1946, when the party, including a magnetometer crew and geologist, moved into your property after completion of a survey in Marion Township. The magnetic survey was impeded several days by solar activities producing magnetic storms, however, this delay afforded your line-cutters an opportunity to complete their work. Late in April, after the snow had largely disappeared, the property was re-visited by Mr. E.P. Sheppard, who mapped some additional outcrops exposed by the advent of spring.

SUMMARY

The property of Fummerton Mining & Development Co. Ltd., is located in the Township of Hennan, Bush Lake Area, Province of Ontario, and consists of 16 mining claims, totalling 645.8 acres.

The purpose of the survey was to map the geological outcrops and to outline the iron formation bands in addition to any structure which may be related thereto. Earlier geological mapping, on regional scale, had indicated the presence of the iron formation

and a curious fault pattern in the area, thus it was desired to determine the possible existence of such structure on your property.

Syenite intrusives and drag-folding sometimes associated with gold, were also known to occur, but these were not successfully located because of their relatively small areal extent as compared to that of the survey. ✓

The magnetic survey with the accompanying geological mapping, has given a reasonably good outline of the geology and it can be stated that the claims are underlain by intermediate volcanics and iron formation, both of which, belong to the Keewatin period. These formations have been intruded by numerous dykes, sills and small masses of diorite, quartz porphyry and granite porphyry, and have in addition, been subjected to dynamic metamorphism which has produced several shears and one transverse fault. ?

The iron formation which indicates the regional trend of the formation, strikes in a north-easterly direction, while the schistosity and shearing varies with its relation to small local intrusives. This formation, comprising essentially chert and jaspilite with some magnetite bands, is extremely brittle and will have fractures more readily than the enclosing volcanics. It appears to be truncated by faulting at 24700 E, on the base line with the western continuity offset to the south approximately one-half mile. In and associated with this area, numerous intrusive masses occur, and this condition apparently holds for the iron formation contacts and within the iron formation, which, due to its ?

readily fracturable nature, has permitted the entry of such bodies. It is therefore evident that these areas will warrant intensive prospecting.

The property is for a large part, overlain by shallow drift, and much of this area could be investigated by trenching and stripping which would be less expensive than drilling. It has therefore been recommended that a thorough prospecting program be conducted consisting of trenching, sampling and assaying, followed by further geological mapping, and at a later date, diamond drilling in accordance with the tentative program discussed herein.

It has been reported that gold assays have been obtained from the property, but their values and exact locations are not known to the writer.

The presence of gold however, in conjunction with the indicated fault zone and the numerous intrusive rock types, are sufficient to warrant a considerable and detailed exploration program.

PROPERTY

The property of Fumerton Mining & Development Company Limited, herein described, is located in the Township of Heenan, Rush Lake Area, District of Sudbury, Ontario, and is approximately 125 air miles north of the City of Sudbury from which supplies and labour may be obtained.

The group consists of 16 mining claims of approximately 40 acres each, and numbered below as follows:

S-39906-07-08-09-10-11-12-13-14, S-39372-73-74, S-34559-70-71 and S-34203.

The claims vary in size and shape and are located in the south-

eastern corner of Heenan Township, immediately north of W.S. S. At the time of the survey, claim posts were obscured by heavy snow and only a few were located. One of these, on the north-eastern corner of the group at Claim Lake, is numbered No. 1 Post, S-39906, and is indicated on the accompanying plans.

Accessibility

There are several routes into the property, of which perhaps the most convenient is by plane with Austin Airways Limited from Sudbury to Kesa Lake, which is in Marion Township, about five miles north-east of your group. From here, a short portage leads to the Woman River, thence by canoe to a point about one-half mile north of the confluence of the Woman and Opeesway Rivers. The Woman River in this area flows north in Marion Township about a quarter of a mile east of the township line between Marion and Heenan Townships, and the eastern boundary of your group, lies less than a mile west of the river.

The property may also be reached from Tionaga on the Canadian National Railway, by water via Horwood and Kesa Lakes, or from Ramsey Station on the Canadian Pacific Railway. From Ramsey, a road leads to Jerome Mine on Opeesway Lake, thence by water across the lake and down the river of the same name into the Woman River.

Our party flew in from Sudbury after shipping supplies and equipment to Biscotasing by rail, from which they were flown into the property. Later they used the water route, travelling over the ice for additional supplies, and at the completion of the various surveys, returned to Jerome Mine by canoe.

Topography

The topography of the area can be described as relatively rugged with numerous ridges, many of which are the result of glacial deposition. The main topographical feature of the area, consists of a high iron formation ridge which occurs immediately south of your southern boundary. This hogback, obviously a result of differential weathering and erosion, has a general north-east, south-west trend. Other areas of high ground to the north, with considerably less relief, are characteristically north-south in their trend, and it is probable that these features are primarily the result of glacial deposition, which, from the direction of the striae, is known to have had a north to north-easterly trend.

GENERAL GEOLOGY

Your property is underlain by rocks of the Pre-Cambrian period which are largely characterized by Keewatin lavas of rhyolitic and andesitic composition. These formations have a general north-easterly strike and variable dip. A rather useful "marker horizon" occurs in the iron formation, probably also Keewatin in age, by means of which, the structural conditions in the area may be determined. This formation, striking in a north-easterly direction across the Townships of Keenan, Marion, and into Genoa, has been subjected to dynamic metamorphism which has resulted in faulting with minor folding and erulation of less competent members. Further alteration accompanied by shearing, is obviously closely related to the numerous intrusive rock types so prevalent in the area, and to the granite batholith occurring in the south-eastern corner of Marion Township.

The geological sequence of the rocks in the Bush Lake Area, appears to be as shown below.

Algoman	(Granite, (Quartz, Rhyolite and Granite Porphyries, (Diorites ?
Keewatin	(Iron formation (Andesites, Rhyolites and Agglomerates.

Local Geology: (Plan No. 2)

Your Heenan Township group is, for the most part, underlain by volcanics, ranging from andesite to rhyolite in composition. On the eastern portion a considerable area of iron formation was located which could not be traced westerly beyond line 24+00 N, however, a high ridge of similar formation was found immediately south of your southern boundary.

Both the volcanics and iron formation, have been intruded by numerous dykes, sills, and small masses of granite porphyry, quartz porphyry and diorite, and the frequency of these occurrences as depicted on the accompanying plan, leaves little doubt that many more will be located in the drift covered areas.

Andesites, Rhyolite and Agglomerate: These formations are indicated on Plan No. 2, by the same symbol, but are distinguished one from the other by alphabetical denotation. They consist of separate flows, however, the rhyolites and agglomerates appear to be lenticular in form, within the andesites. The andesites are green in colour, and usually fine grained, while the rhyolites have a typical cherty appearance with conchoidal fracture. Around the intrusives, the andesites become schistose and pec-

asional shears are developed as seen on the base line at 0+00. Here, a fairly intense shear occurs which is associated with a granite porphyry intrusive and in which numerous quartz stringers containing pyrite and chalcopyrite exist. Several trenches in this area were partially filled with ice at the time of examination.

Iron Formation: The zone of iron formation existing along the base line between 23+00 E, and 32+00 E, consists of the typical red jasper and grey cherty laminations which characterize this horizon in the Rush Lake Area. The laminations vary up to 2½" in width and numerous narrow bands of massive magnetite were observed. At, or between lines 24+00 E, and 28+00 E, rock exposures cease, and westerly, outcrops of iron formation were not detected. While no geological evidence of faulting in this area could be obtained due to the drift mantle, the inference that such a condition does exist, is well justified.

At the southern boundary, on line 18+00 E, iron formation is again encountered which is a portion of the large mass extending southwest into W.S.S. While this is probably identical to that described in the north, alteration appears to have been more intense probably due to increased intrusive action.

Intrusives: The above described formations, have been intruded by numerous dykes, sills and irregular masses of granite porphyry, quartz porphyry and diorite. Two small syenite occurrences were also located, in which gold values are reported, and it is very probable that other similar intrusives will be found.

The distribution of the intrusive types is at least significant and perhaps important. While the paucity of outcrops in the north,

renders the following inference inconclusive, it is most obvious that the greatest concentration of intrusive rocks are confined to (1) the iron formation contacts, (2) within the iron formation, and (3) that area immediately west of the assumed fault location.

The obvious conclusion is therefore that the structural conditions and the more easily fractured iron formation, were to a large degree, responsible for the series of events which lead to emplacement of the intrusive rocks. The indication of north-south faulting of the iron formation transverse to the structural trend, could produce fracturing and folding in the incompetent members and conditions in the volcanics which would permit the introduction of intrusive rocks. It is thus possible that similar channels could exist by which mineralization deposition could occur.

MAGNETIC INTERPRETATION

The magnetic contours are shown on Plan No. 1, while only the main control contours are given on Plan No. 2, to avoid confusion with the geological and topographical data depicted thereon.

The "Iso-Dynamic Contours of Vertical Intensities", Plan No. 1, are coloured to portray the intensity distribution throughout the area. In general, the interpretation of these contours can be seen to verify the information yielded by the geological data. The general trend of the linear "highs" has a north-easterly direction and a sudden increase in intensity from a field approaching a normal of -200 to -300 gamma over the volcanics, to + 8000 gamma, with an accompanying strike change, is noted between 24+00 E, and 28+00 E. This obviously marks the westerly termination of the iron formation in this area and a faulted

condition with a north-south trend is certainly indicated. The peculiar winding of the contour lines on line 24+00 E, south of the base line, and on line 23+00 E, is probably related to acid intrusive rocks of much lower susceptibility, probably in the fault or intrusive into the iron formation. Further evidence of a fault may be seen north of the base line where the projected fault strike appears to be indicated by the north-south trending contour lines on line 24+00 E. The conditions here depicted are similar to those encountered by a diabase dyke, and while no diabase outcrops were located, the possibility of this or other allied intrusive rock types in a faulted zone should not be discounted.

The magnitude of the contours east of the indicated fault zone and south of the base line, suggest this area to be predominantly iron formation with numerous intrusives. The presence of agglomerates within the area need not influence this interpretation, since the mode of occurrence permits intercalation of iron bands with volcanics.

In the southern central portion of your group, large negative intensities are encountered as the iron formation ridge is approached. The influence of this field extends as far north as 1000 S. on line 4+00 E, and is most certainly a topographical feature related to the high iron formation ridge on the south since this horizon is known to dip south and therefore cannot be explained as a shallow di-polar effect. The existence of this negative zone may therefore be attributed to a directional change of the magnetic meridian and inclination which consequently decreases the vertical component of the Earth's field. The influence of such magnetic material on a compass may be readily observed and is commonly referred to

as "magnetic attraction".

Numerous "point-poles" or isolated "highs" and "lows" have been located in the area considered to be largely volcanic, for which no satisfactory explanation is readily apparent. Three such occurrences can be seen, on the base line at S+00 W, on line 4+00 W, 600 S, and on line 4+00 E, 300 S. They do not seem to be related to any known intrusives and the diorite like the granite and quartz porphyries appears to have a low susceptibility. It is possible, however, that the "point-poles" are related to increased magnetite content produced by the contact metamorphic influence of the intrusives, or perhaps, to localized concentrations therein. Investigation of two or three such occurrences by trenching, would increase the accuracy of interpretation on others and perhaps assist in the complete elimination of many.

RECOMMENDATIONS

The structural conditions indicated on your property are such as to warrant considerable investigation, however, it is not felt that a prolonged diamond drilling program is advisable at this time. A not inconsiderable number of outcrops are available and the general conditions suggest that many more could be uncovered by a systematic plan of trenching and stripping.

All contacts between the intrusive rocks should be investigated including those between the iron formation and volcanics, in conjunction with systematic sampling and assaying.

A series of five diamond drill-holes involving a total footage of some 3,500 feet, are spotted as a tentative outline, but it may be possible to eliminate several or locate them to better advantage after

completion of the trenching and additional geological mapping.

With reference to the drill-holes, it is recommended that Hole "B" be drilled first to intersect the indicated fault. While the true position of the fault is somewhat uncertain, Hole "A" should be drilled only if the former fails to intersect this structure. The bearings of both holes are intended to give a partial cross-section of the formation in addition to intersecting the indicated fault zone.

Hole "C" might be moved either east or west of its indicated location, depending upon the results encountered in "A" and "B" but is intended to complete the cross-section across the nose of the iron formation and probe the formations in a direction parallel to the fault where transverse movements may result in openings along flow contacts and bedding planes suitable for vein material deposition.

Hole "E" will investigate the contact zone between the volcanics and iron formation but may not reach the actual contact. If overburden conditions are here, such as to make trenching possible, this hole could be located elsewhere.

With reference to Hole "D", should trenching succeed in determining the presence of the material responsible for the "point-pole", it is suggested that this location be moved to line 4+00 E, and that the "point-pole at 300 E. be explored.

In general, it is recommended that stripping or trenching, if shallow overburden conditions are encountered, be done in all areas where "point-poles" occur whether they exist as magnetic "highs" or "lows".

MAGNETIC SURVEY DATA

The survey was conducted with a Wolfson type vertical vario-

meter set at a sensitivity of 51 gamma per scale division, and completely compensated for temperature, thus obviating the necessity of making temperature corrections. A maximum closing error of 18 gamma per circuit, was obtained on one day with an average for other days of 18 gamma. It is therefore reasonable to anticipate an accuracy per point observation in the order of ± 10 gamma for the survey.

Control stations along the base line consist of three wooden pegs driven into the ground, to support the tripod, thus insuring the exact position of set-up each time these controls are used. Their locations are indicated on Plan No. 1.

The following data will be required by the Ontario Department of Mines, if it is desired to employ the work herein described for assessment work purposes.

<u>OPERATION</u>	<u>MAN-DAYS</u>
Line-cutting	Unknown - lines cut by Funnerton Mining & Development Co. Limited.
Magnetic Survey (includes 8 man-days lost through magnetic storms, spent chaining)	38
Geological Survey	15
Transportation of supplies	15
Office and drafting	20
Supervision	<u>6</u>
TOTAL	- <u>92</u> Man-days

A total of 1,037 stations were taken at 50 and 100 foot intervals, according to requirements. This number includes both check runs and control stations, shown as follows:

--13--

Field observations	963
Check observations	61
Control observations	<u>43</u>
TOTAL	- <u>1,067</u>

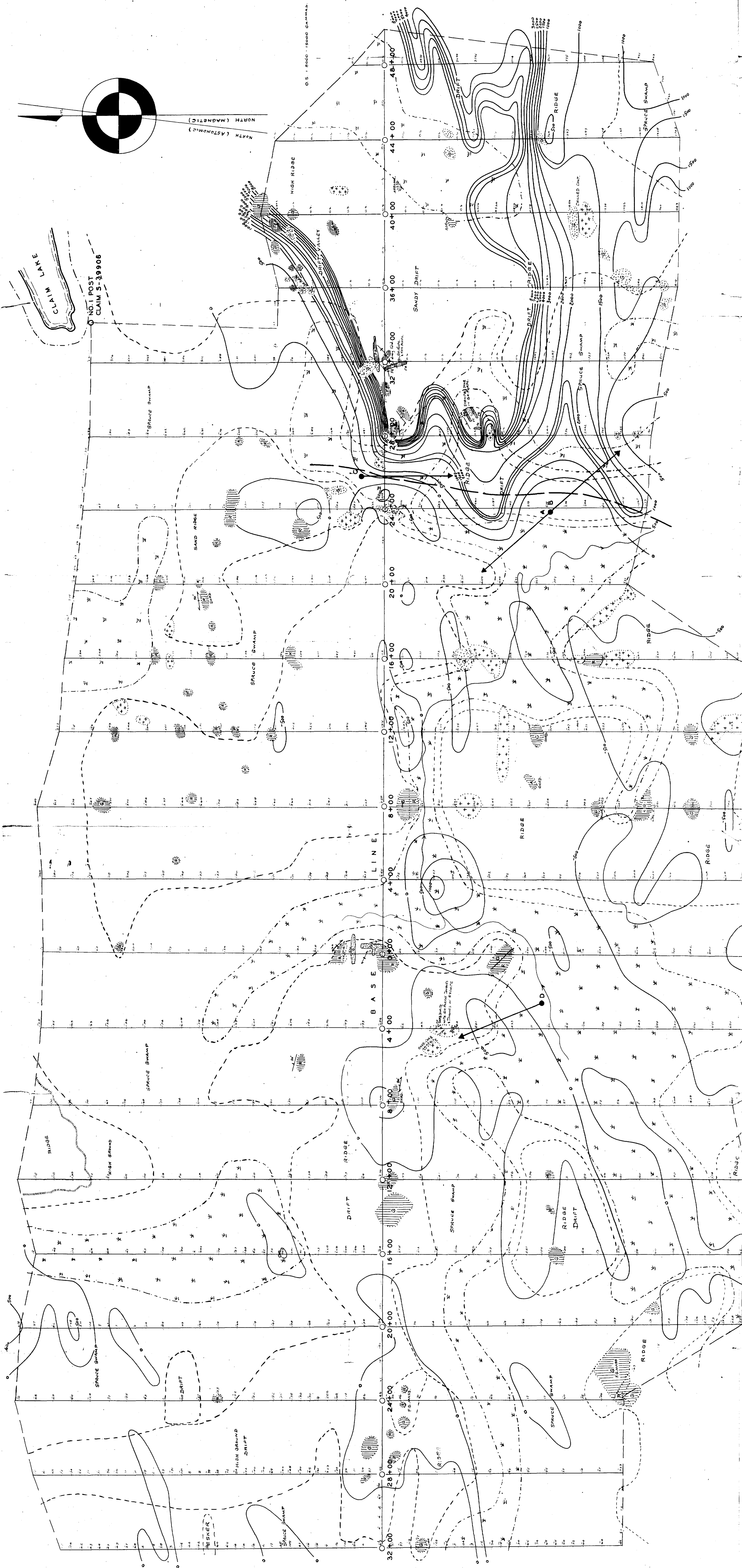
Yours very truly,

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED.

J. T. Randell

J.T. RANDELL - President.

Oct 11/46
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SCALE: 1 IN. = 200 FT.	FUMMERTON MINING & DEVELOPMENT CO. LTD.	MARCH-APR. 1946
	HEENAN TOWNSHIP PROPERTY	# 39
	ISO-DYNAMIC OF CONTOURS	
	VERTICAL INTENSITIES	
	AND GEOLOGY	
	HEENAN TOWNSHIP	
	DISTRICT OF SUDBURY	
	ONTARIO	
	PLAN NO. 1	
	DRAWN BY: A. G. S.	
	J. T. G. 1946/11	
	GEOLOGICAL SURVEY BY:	
	GEO-TECHNICAL DEVELOPMENT COMPANY LTD.	

- LEGEND**
- QUARTZ PORPHYRY
 - GRANITE PORPHYRY
 - DIORITE
 - GREENSTONE
 - ASSURGATE
 - RYHLITE
 - IRON FORMATION
 - MAGNETIC CONTOUR
 - OUTCROP
 - STRIKE OF SHISTOSITY
 - STRIKE & DIP
 - VERTICAL DIP & STRIKE
 - PROPOSED DRILL HOLES
 - OUTLINE OF ALDER SWAMP
 - ALDER SWAMP
 - HIGH GROUND OUTLINE
 - OUTLINE OF HIGH RIDGE
 - ZONE IN WHICH FAULTING OF IRON FORMATION IS INDICATED

GEOLOGY BY: H.P. SHEPHERD.

