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October 4th., 1946.

Mr. J.J. Byrne.,
President,
Northland Mines (1940) Limited,
Room 32 - 171 Yonge Street,
Toronto, Ontario.

Dear Sir:- REPORT ON GEO-MAGNETIC SURVEY ON PROPERTIES OF NORTHLAND
MINES (1940) LIMITED, HARKER AND GARRISON TOWNSHIPS,
PROVINCE OF ONTARIO

The work described in this report, covers two properties held by Northland Mines (1940) Limited, in the Townships of Harker and Garrison. The surveys were begun on August 29th., and completed September 20th., of the current year, under the direction of Mr. J.C. Reid.

SUMMARY & RECOMMENDATIONS

The results of the geo-magnetic survey show that your two claim groups are situated on and directly east of the Inagar granite intrusive plug. In general, the properties are underlain by greenstone, a small tongue of the granite striking in a north-easterly direction and crossing both groups. It would appear that the southern contact of this granitic tongue is comparatively sharp and has an almost vertical dip while the northern contact appears to dip gently under the volcanics, thus reducing the intensity of the magnetic field in this area.

The strike of the volcanics appears to contrast with the regional east-west trend and here assumes a north-southerly direction. It is pro-

bable that the effects of intrusive action have modified the original strike but it is also possible that the present apparent trend has been superimposed upon the original strike direction. The indicated presence of shearing as shown on the accompanying maps could readily produce an effect which would tend to mask the true strike trend.

The shears, while not definite, are strongly indicated by the parallelism of contours over considerable distances. It may also be expected that such will occur along contacts between flows of differing magnetic properties.

While no drill-holes are shown on the present plans, the properties will certainly warrant extensive exploration in consideration of their location with respect to the Inagar intrusive. The association of gold values with this intrusive has been well demonstrated both to the north and south of its contacts, and your groups situated off the easterly contact should be equally interesting.

For the present, it is recommended that a trenching program in those areas where outcrops occur, be conducted followed by detailed geological mapping and sampling. With this information and that available from the present survey, a comprehensive drilling program could then be carried out. The presence of the indicated shears should also be investigated on the ground, as these could result in important ore structures.

PROPERTIES

The two claim groups covered by this report are contiguous to each other and lie in the Townships of Harker and Garrison, District of Cochrane in the province of Ontario.

Your Garrison Group consists of nine (9) claims, the south-east corner of which is coincident with the 2 Mile Post on the Harker-Garrison Township line, and numbered as follows:

L-46343-44-45-46-47-48-49-50 and 51.

To the east, in the Township of Harker and adjacent to the Garrison claims, a group of twelve (12) claims is also held by your Company, the numbers of which are given below:

L-44176-77-78-79-80-81-82-83-84-85-86 and 87.

The acreage held by these two groups is approximately 390 and 633 acres respectively for the Garrison and Harker claims.

Accessibility

The two properties herein discussed, are located in Harker and Garrison Townships some 35 miles east of the town of Matheson on the Ontario Northland Railway. A poor bush road leads from Matheson to the camps of Consolidated Mining and Smelting Company of Canada Limited, some 30 miles east of Matheson. These camps are located approximately four miles to the north and west of the group under discussion, which can be reached only by bush trails. It is understood that the Government road now under construction, will be completed to the Consolidated camps by the end of this year which will materially reduce present transportation costs.

GEOLOGY AND INTERPRETATION

The results of the survey are shown on the two accompanying Plans entitled, "Iso-Dynamic Contours of Vertical Intensities and Geological Interpretation". These plans are separated into the West and East sections covering the Garrison and Harker groups separately, but as both are con-

tiguous, the descriptions of the two are embodied in this report.

While outcrops are not plentiful in the area, sufficient are available to show that volcanics are quite wide-spread on the properties. Previous work on the properties of Shunshy Gold Mines Ltd., and Dome Exploration (Canada) Limited to the north of your groups, shows that the east contact of the Ingar intrusive has a north-south strike in this area and that the contact also occurs on the western portion of your Garrison Group. The Ingar intrusive is largely granitic in composition, although numerous allied facies may be present. Perhaps the most usual allied intrusive encountered in the Garrison-Harker area is syenite, one outcrop of which occurs on your Eastern Group. The age relationship of this intrusive with respect to the granite is unknown, but it is believed to be a differentiate of the latter and therefore part of the main intrusive magma, although separate dykes and small masses are known to exist in the greenstone areas.

Considering your two groups as a whole, from the stand-point of intensity distribution, it is obvious that the magnetic field is extremely irregular. The only well defined magnetic contacts occur between the granite and the volcanics on the Garrison Group, and between the similar rock types on the south of the Harker Group. While volcanics on the north are indicated by outcrops, their contact with the intrusive is not well defined. It would thus appear in this area, that the mass-depth factor of the volcanics is much less than in some other places. The inference is therefore a relatively wide-spread distribution of granitic rock at shallow depth.

To understand the interpreted structural conditions, it is necessary to visualize the existence of steeply dipping flows of variable composition which, when intruded by the granitic magmas, were attacked, metamorphosed and assimilated differentially. The effect of such action will therefore result in the granitic rocks approaching the present day erosional surface at variable elevations in consequence of which, the overlying volcanics will exhibit diverse depth conditions over the granite.

The magnetic susceptibilities of granite and intermediate lavas of the type here encountered, differ considerably due to the greatly increased magnetite content inherent in the latter. Thus, the intensity of the magnetic field will be materially lessened in areas where granite approached the surface and the resultant effect may approach the field intensities produced by rocks with susceptibilities midway between those under discussion. It is the writer's belief that such conditions occur on the Northland Group. The granite on the west has a well defined north-south contact and on Claim L-46850, it truncates the volcanics swinging around the nose of these formations and striking in a general north-easterly direction completely across the two claim groups.

The width of the intrusive as exposed on bed rock beneath the drift mantle in this direction, will perhaps not exceed 400-500 feet and its south contact with the volcanics will be quite well defined. To the north however, the contact position is certainly doubtful and it is believed that the magmas, prior to consolidation dipped northward, and as explained above, now underly the volcanics at variable depths.

The general strike trend of the sedimentary and lava formations in

Harker and Garrison Townships is east-west, however, on your group these appear to adopt a north-south attitude. Several lines of weakness which may represent faults or shear zones, occur, but as marked displacement is not in evidence, too much assurance cannot be placed on these features. They are suggested entirely on the basis of parallelism of contour trends over unusual distances.

MAGNETIC SURVEY DATA

The survey was conducted with a Wolfson type vertical variometer set at a sensitivity of 25.8 gamma per scale division and having a temperature coefficient of 6 gamma per degree Centigrade. Temperature corrections were made for each station to the nearest one-half degree Centigrade following which, all closures in excess of 20 gamma were discarded and the lines re-run. It is estimated that the error per point determination will not exceed ± 10 gamma.

All readings were tied into the Regional Base Control Station located at Mile 4 on the Township line between Harker and Garrison Townships and established at a value of 612 gammas. Other control points occupied throughout the survey are shown on the Plan.

Line-cutting was done by your Company and a total of 22 miles of lines were run on both groups of claims. A break down of the time distribution employed throughout the survey, which will be required by the Ontario Department of Mines if these results are to be recorded as assessment work, is outlined below:

<u>OPERATION</u>		<u>MAN-DAYS (8 Hours)</u>
Line-cutting	22.0 Miles	
Travelling		8
Magnetic storms and rain		10
Magnetometer Operation		36
Office and drafting		31
Supervision		<u>10</u>
	TOTAL	- <u>95</u>

A total of 1,323 stations were taken on the two groups, which are made up as follows:

Field Observations	1,219
Control Observations	76
Check Observations	<u>28</u>

TOTAL - 1,323

Yours very truly,

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED.

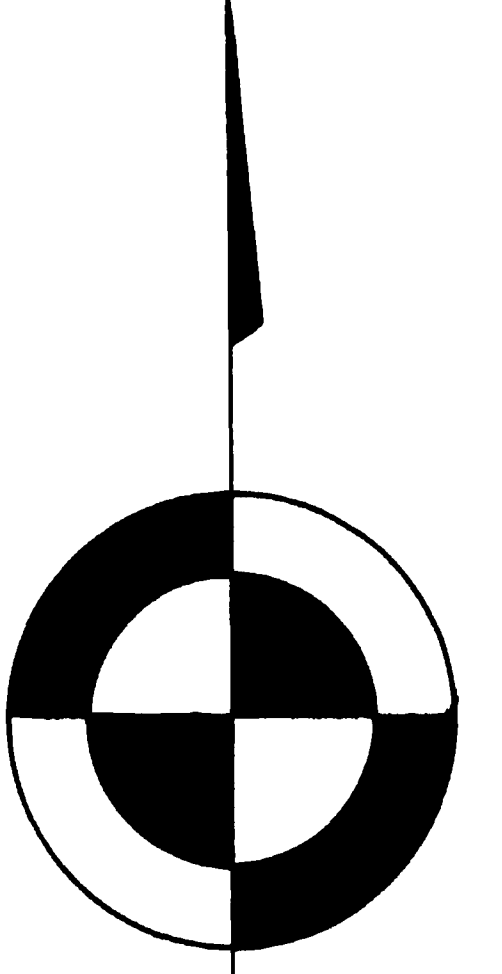
J. T. Randell

J. T. RANDELL - President.

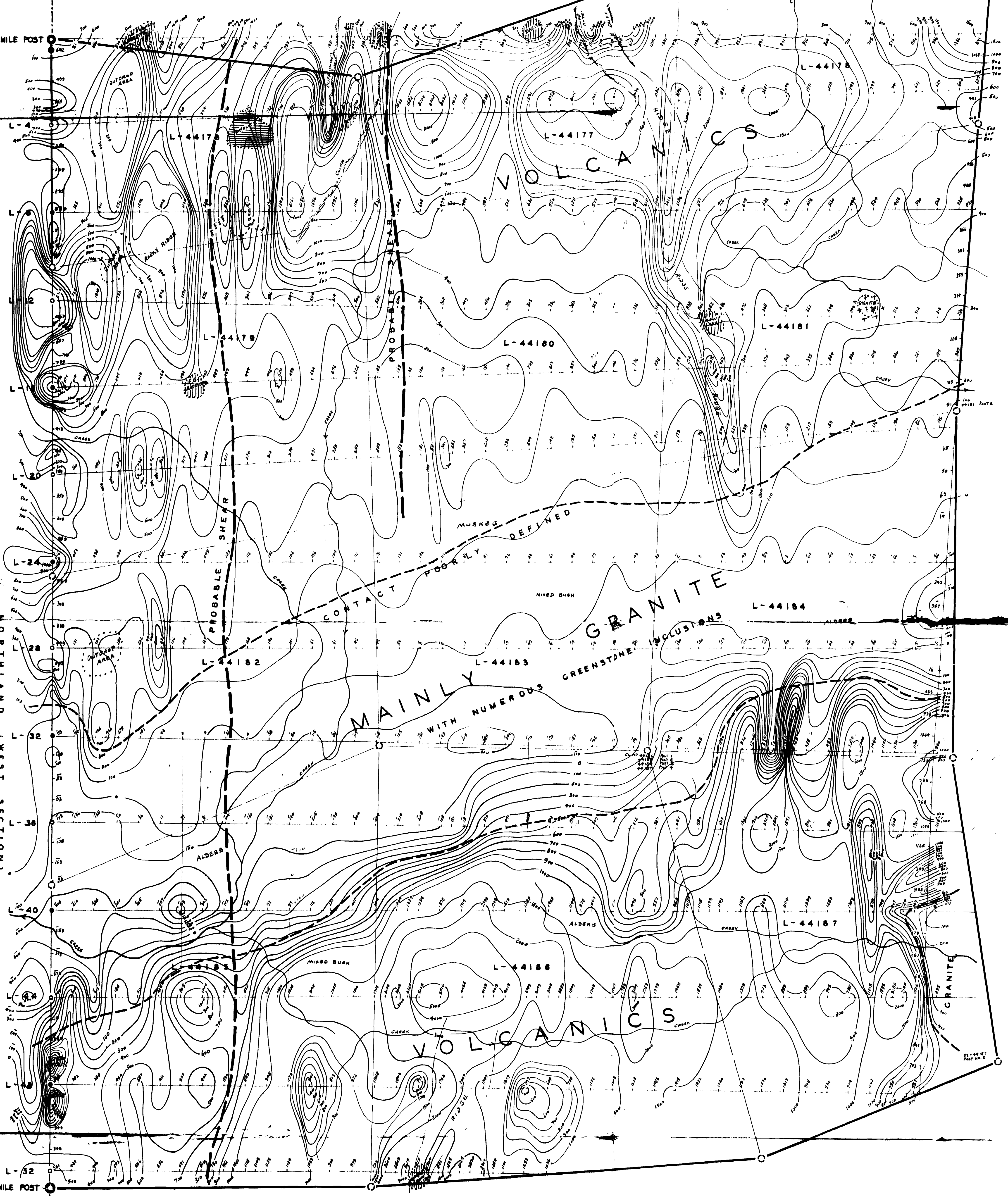
3 MILE POST

NORTHLAND (WEST SECTION)

2 MILE POST



NORTH (ASTRONOMIC)



LEGEND

- 0 - 500 GAMMA
- 0 - 500
- 500 - 1000
- 1000 - 1500
- 1500 - 2000
- 2000 - UP
- LINES SURVEYED, MAGNETIC INTENSITIES OBSERVED.
- MAGNETIC CONTOURS
- CONTROL STATION
- PROBABLE GEOLOGICAL BOUNDARIES INFERRED FROM MAGNETIC CONTOURS.
- PROBABLE SHEAR
- OUTLINE OF HIGH GROUND
- OUTCROP
- TOWNSHIP LINE
- CLAIM BOUNDARY LINE
- ANDESITE, DACITE, PILLOW LAVA
- RHYOLITE
- SYENITE

ALL MAGNETIC READINGS TIED IN TO BASE CONTROL STATION WITH VALUE OF 2922 GAMMA AT 0900 STATION ON THE BASE LINE OF DALE GOLD MINES LTD.

SCALE: 1 IN. = 200 FT.	(EAST SECTION)	SEPTEMBER 1946.
	NORTHLAND MINES (1940) LIMITED	
DRAWN BY: A.C.S. J. F. Bennett	ISO-DYNAMIC CONTOURS OF VERTICAL INTENSITIES AND GEOLOGICAL INTERPRETATION	
	HARKER TOWNSHIP DISTRICT OF COCHRANE ONTARIO	
GEOLOGICAL SURVEY BY:		PLAN NO. 1
GEO-TECHNICAL DEVELOPMENT COMPANY LTD.		

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