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REPORT ON GEOMAGNETIC SURVEY

OF

EMERALD MINING SYNDICATE PROPERTY

AFTON & SCHOLLS TOWNSHIPS, TIMAGAMI AREA, ONT.

SUMMARY

A magnetometer survey and preliminary geological mapping were completed for a 25 claim group in Afton and Scholes Townships. The geology of the area is complex consisting of highly altered volcanic and sedimentary series including iron formation. These have been intruded by a large mass of feldspar porphyry. Sediments of the Cobalt series and Nipissing diabase occur as erosional remnants overlying the older rocks in places. A zone of anomalies extending for over a mile in length is outlined in the central part of the group. These are due to "iron formation", and possibly to pyrrhotite in some cases.

A mineralized breccia zone predicted from aeromagnetic results was uncovered in part of the anomaly area, containing low values in copper, lead, zinc and silver across more than 50'. Diamond drilling of this zone is recommended after an electromagnetic survey. Detailed geological mapping should be undertaken in the spring.

INTRODUCTION

The property consists of twenty-five unpatented mining claims in Sudbury and Temiskaming mining divisions, Province of Ontario.

These include the following:

Afton Township, Sudbury Mining Division

Claims TRS 54707, 54708, 54709, 54710, 54711, 54712, 54713.

Scholes Township, Temiskaming Mining Division

Claims TRT 6915, 6916, 6917, 6918, 6919, 6920, 6921, 6928, 6929, 6931, 6932, 6933, 6934, 6935, 6936, 6937, 6938, 6939.

Geophysical survey and geological mapping were carried on during the months of November and December, 1950.

LOCATION AND ACCESS

The property is located in the townships of Afton and Scholes, 8 miles west of Lake Timagami. It extends from Emerald Lake east to the north end of Eagle Rock Lake. The west end of the claim group may be reached by motor road from Sturgeon Falls. A trail leads east from the road to Eagle Rock Lake. Eagle Rock Lake may also be reached by float-equipped aircraft from Timagami.

PREVIOUS WORK

Reconnaissance geological mapping of the area has been done by the Ontario Department of Mines⁽¹⁾. Much of the present property was held by the Consolidated Mining and Smelting Co. of Canada, Limited, who formerly operated the New Golden Rose Mine which lies 1/4 mile west of the claims. A considerable amount of stripping and trenching was done by this company in the western part of Scholes Township. Trenching and test-pitting has also been done in the eastern part of the property near Eagle Rock Lake on

1. Moore, E.S., Geology of the Afton-Scholes Area; Ont. Dept. Mines, Vol. XLV, Part VI, pp. 38-48, 1936.

what was once known as the Taylor-Caswell property.

CHARACTER OF THE REGION

Like so much of the Timagami region, the Emerald Lake area is very rugged. Remnants of the great diabase sill that once covered the whole region form steep cliffs in Afton Township. A high hill which is precipitous in places parallels a zone of highly silicious rocks across most of the central part of the group in Scholes Township. Near the east boundary of the property a prominent scarp appears to be the topographic expression of a fault.

The overburden is fairly shallow over most of the claim group, but good rock exposures are scarce. A heavy forest growth has prevented the shallow soil from being washed away.

GENERAL GEOLOGY

A geological survey of the property was completed in November 1950 to assist in the interpretation of the geophysical results. A number of thin-sections of typical rock-types were examined under the microscope.

Table of Formations:

Quaternary

Pleistocene

Glacial drift

Precambrian

Upper Huronian (?)
Middle Huronian

Pre-Huronian (?)

Nipissing diabase
Cobalt series: Gowganda formation
conglomerate and arkose
Intrusives: Red and grey feldspar
porphyry
Sedimentary series: greywacke,
conglomerate, quartzite, arkose
Volcanic series: chlorite schist,
chloritic amphibolite; chert, "iron
formation."

Volcanic Series(?)

According to Moore² the oldest rocks in the area are greenstones and schists of supposed Keewatin age. A belt of highly metamorphosed schistose rock outcrops in the central portion of the property. No textures were observed in the field to determine the origin of these rocks. In thin section they are seen to consist largely of chlorite, epidote and amphibole. The texture and mineral assemblage suggests a high temperature thermally metamorphosed basic igneous rock.

Contained within the area underlain by schistose greenstones are highly siliceous horizons which may contain enough magnetite in places to be considered as "iron formation". These rocks vary in composition from almost pure silica (chert) to almost pure iron oxide. Hematite is not abundant. A rock composed of silica with a small amount of magnetite and up to 40% of iron-rich amphibole is widespread. This rock is black and has a rather slate-like appearance in hand specimen. Petrographic study suggests that the amphibole may have been derived from metamorphism of magnetite and silica.

Sedimentary Series:

Pre-Cobalt sedimentary rocks were noted at only a few places along the north side of the ridge formed by the "iron formation". These were altered arkoses and impure quartzites. Elsewhere in the Emerald Lake area this series includes conglomerate and minor amounts of limestone. There appears to be no justification in the use of the terms Keewatin and Timiskaming in classifying this series and the assemblage containing the so-called "iron formation". The age of the series is unknown.

2. Moore, E. S. Op.Cit., p. 40.

Pre-Cobalt Intrusive:

A large mass of feldspar porphyry occurs along the southern part of the property. The composition of the mass appears to be intermediate between granite and syenite. In the central portion it is comparatively fresh-looking and pink. Toward its margins it becomes grey and may be intimately mixed with the rocks which it intrudes. Such transition zones are comparatively narrow, however.

Cobalt Series:

Conglomerate, arkose, and greywacke outcrop at a number of places north of Krud Lake and Greenrod Lake.

Nipissing Diabase:

Remnants of the great diabase sill occur at several points on the property. Where the contact was observed the diabase lies directly on Pre-Cobalt rocks.

GEOPHYSICAL SURVEY

Readings of vertical magnetic intensity were taken at 100' intervals on lines spaced 400' apart. Additional readings were taken in the vicinity of the mineralized breccia zone. The instrument used was an Askania vertical magnetometer with a sensitivity of 25.0 gammas per scale division. Magnetic relief over the property was greater than 50,000 gammas.

DISCUSSION OF GEOPHYSICAL RESULTS

Local magnetic variation in western part of the property (Afton Township) is largely masked by the regional effect of the major "Afton anomaly". The highest part of this anomaly occurs several thousand feet west of the claims covered by the present survey. The magnetic effect of the diabase sill in this part of the property appears to be relatively small, except that it modifies and obscures anomalies in the underlying rocks. The anomaly in the

southwest corner of the property on lines 20E and 24E is probably due to "iron formation" in the older formations (See Figure 1).

A zone of magnetic anomalies of irregular width extends east from the Afton-Scholes Township boundary for almost one mile. Values in excess of 30,000 gammas were found in the eastern part of this zone, close to the base line. These extremely high values are due to banded magnetite, hematite, jasper "iron formation". Smaller anomalies are due to magnetite scattered in minor amounts in a banded rock composed mainly of silica and amphibole. Pyrrhotite appears to have been the cause of magnetic highs locally, notably in the vicinity of the mineralized breccia zone east of line 20E.

Magnetic relief over the porphyry and Cobalt sediments is very low.

A strong negative anomaly occurs north of the iron formation between lines 28E and 40E. This occurs along the side and base of a very steep hill and hence does not indicate the dip of the magnetic body to the south.

STRUCTURE

The Afton-Scholes area may be considered as a low dome, on the surface of which erosion has cut windows through a great sill of Nipissing diabase exposing a series of highly altered, steeply dipping sediments and lavas intruded by porphyry and various minor intrusives. In places gently dipping Cobalt sediments underlie the diabase while elsewhere the diabase is in direct contact with older rocks.

The older sedimentary and volcanic series have a steep dip to the north and a general east-west trend. There is a fairly sharp flexure in these formations northeast of Conglomerate Lake. This is possibly due to the

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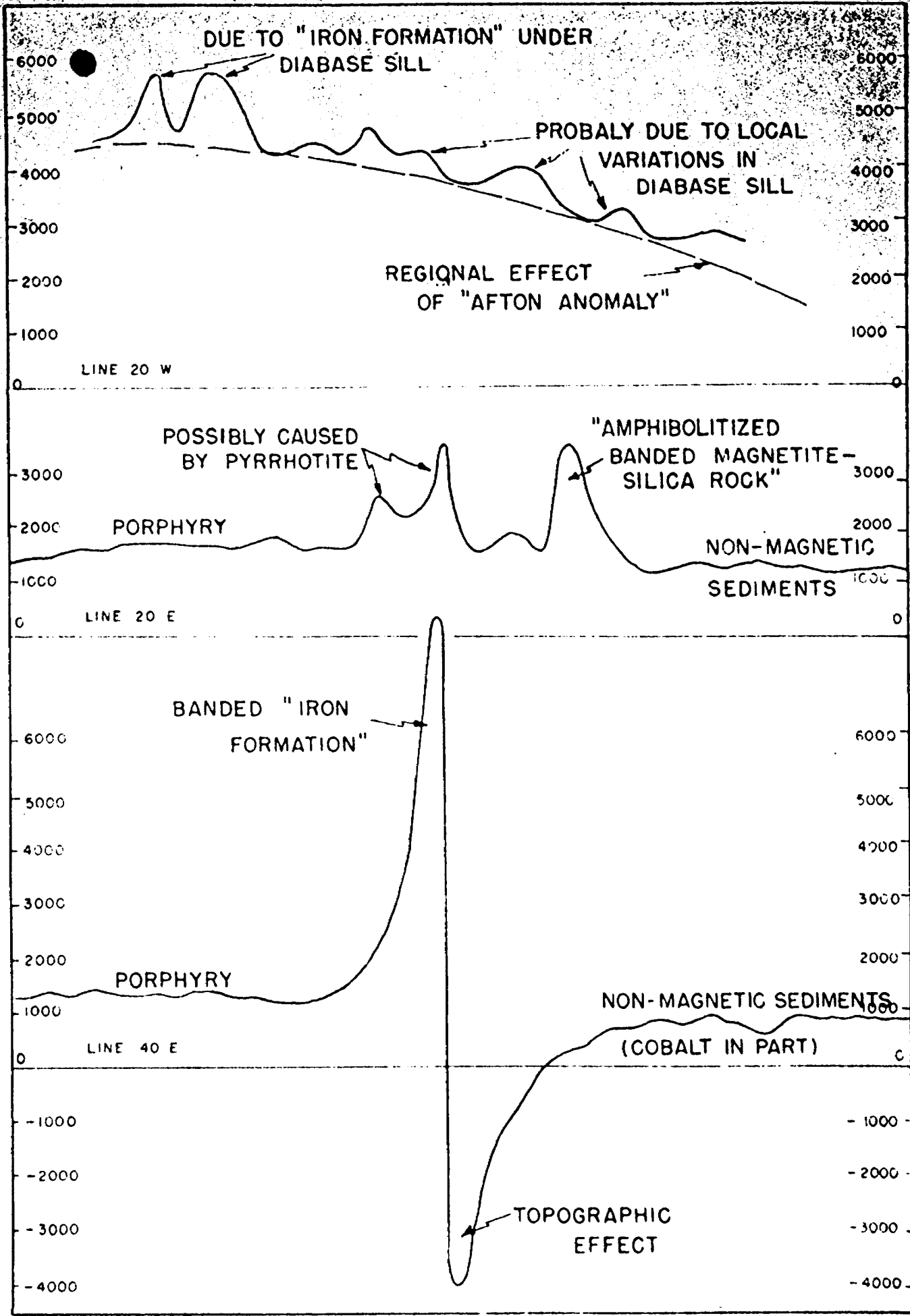


FIG. 1

intrusion of the porphyry mass.

A cross fault occurs near the east end of the property. This is indicated by strong shearing along the west side of Eagle Rock creek, parallel to a pronounced topographic linear. The movement along this fault has not been determined.

A narrow graphitic shear zone has been observed in old trenching at a number of places between the Afton-Scholes Township boundary and the mineralized breccia zone east of line 20E. It occurs close to the contact of the porphyry mass with highly altered schistose greenstones.

ECONOMIC GEOLOGY

Gold Deposits:

The gold deposits in the area are mostly confined to the banded "iron formation" where it is intruded by porphyry. The best example of this is the New Golden Rose Mine, which is situated on a peninsula jutting out into Emerald Lake, about a quarter of a mile west of the west boundary of the property covered by the present report. The ore lenses lie in "iron formation" near its contact with a dike of porphyry.

In the eastern part of the property trenching has been done along the base of the prominent cliff north of Eagle Rock Lake. This work has uncovered a zone of shearing striking about 10° west of north. The zone has been well mineralized with pyrite and contains a number of small quartz veins up to 8" in width. Low gold values are reported.

Base Metal Deposits:

The work done by the Emerald Mining Syndicate has been directed mainly towards the possibility of base metal deposits. Mr. Tom Saville, a prospector of long experience in the area, spent most of the summer of 1950

in examining the claims covered by the present report. He uncovered a mineralized zone over 50' in width, trending 45° true. This showing occurs in the central part of the claims in Scholes Township, approximately 200' east of station 700N on Line 20E. Pyrrhotite, chalcopyrite, galena, and sphalerite occur as a replacement in a highly silicified breccia. The origin of the breccia is unknown, but it may be related to a zone of faulting which has been traced for several hundred feet west of the showing.

A small amount of stripping and shallow trenching was done at one place on the breccia zone, but no samples have been obtained below the oxidized portion. Surface samples across the entire zone showed low assays in lead, zinc, copper and silver.

	Gold	silver	lead	zinc	copper
Sample 1	nil	nil	.03	.16	nil
2	nil	nil	.04	1.28	trace
3	trace	nil	.80	.26	.11
4	nil	nil	.01	.78	nil

Several base metal showings were examined on adjoining properties. Some high grade samples of copper and cobalt were obtained over narrow widths.

CONCLUSIONS

A study of base metal deposits in the district lying midway between Sudbury and Cobalt indicates that this area has interesting possibilities with regard to the following types of deposits:

- 1) Large low grade disseminated copper deposits having some lead, zinc, silver and gold content,
- 2) quartz veins containing lead, zinc, silver and gold.

The known base metal showings in the area contain sufficient amounts of magnetite or pyrrhotite so that an ore body of commercial size would be detected readily by magnetometer survey. Hence the most interesting part of the property is that containing the zone of anomalies extending

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east from the Afton-Scholes Township boundary. The very strong anomalies are probably due to banded "iron formation" and are therefore of no direct economic interest. However, this rock is a favourable host rock for gold in the area. A number of smaller anomalies may be caused by pyrrhotite associated with sulphides of lead, zinc, and copper (See Figure 1).

RECOMMENDATIONS

It is recommended that further detailed work on the property be confined to the belt of anomalies extending east from the Afton-Scholes boundary. This zone has a maximum width of one-quarter of a mile and a length of about a mile. Specific recommendations are as follows:

- (1) Detailed electromagnetic survey.
- (2) Detailed geological mapping.
- (3) Diamond drilling on the mineralized breccia zone as indicated by the detailed geophysical work.

Respectfully submitted,

MINING GEOPHYSICS CORPORATION LIMITED

W. R. Bergey

N. B. Keevil

Toronto,
February 12, 1951

APPENDIX

Property: Emerald Mining Syndicate property situated in Afton and Scholes Townships, Sudbury and Timiskaming Mining Divisions, Province of Ontario, comprising 25 claims, viz:
Afton Township - S 54807 - 54813
Scholes Twp. - TRT 5915 - 5921, 5928, 5929, 5931 - 5939

Land Survey

Type of Instrument Used - Transit

Location of OO 18.727 chains north of 3 mile post on Afton-Scholes Twp. boundary.

Baseline Direction - 80° true
Length - 10,500 feet

Picket Lines Direction - 170° true
Angle to base line - 90°
Spacing - 400'

Miles of line cut - 18.0 chaining and picketing

Man Days	Surveying, Nov. 1 - Dec. 10 (2 men intermittently)	40 days
	Line cutting, Nov. 1 - Dec. 18 (5 men intermittently)	111 days

Names of Surveyors, Assistants & Line Cutters

T. G. Robinson, J.C. Frants, M. Morris, R. L. Hill,
W. R. Bergay, T. Saville, M. Vezina, L. Hurst

Geophysical Survey

Location of Main Base - At OO on baseline

Type of instrument - Askania Vertical Magnetometer, Constant 23.0 gammas/
scale division

Total Number of stations - 906

Man Days	Preliminary prospecting & geological survey - 25 days June 3 - Nov. 20, 3 men intermittently	
	Magnetic Measurements Nov. 10 - Dec. 20, 4 men intermittently	- 38 days
	Interpretation, calculations, thin section examination, Nov. 1 - Feb. 8, 5 men intermittently	- 27 days

151

12
3
224

Man Days (Cont'd.)

Drafting and Typing etc.

12 days

Nov. 13 - Feb. 8, 3 people inter-
mittently

Total

254 man days

Personnel

Operators - T.G. Robinson, S. L. Spafford

Assistants - R. L. Hill, L. Hurst

Geologists and Geophysicists - N. B. Keevil

F. G. Smith, J.C. Frantz, W. R. Bergey

Drafting & Typing - R. L. Hill, R. B. Evis,

M. G. Hooper

W. R. Bergey
W. R. Bergey,

N. B. Keevil

N. B. Keevil

Toronto,
February 9, 1951.

25 claims

$$\begin{array}{r}
 254 \\
 4 \\
 \hline
 1016 \\
 40 \\
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 2511016 \\
 100- \\
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 16
 \end{array}$$

40 days per claim

ABEX MINES LTD.
 SELF POTENTIAL SURVEY
 OF
 PART OF

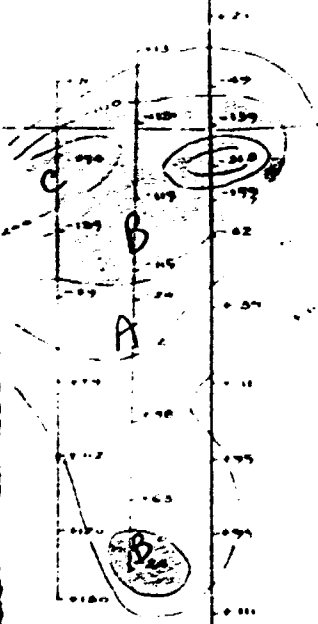
EMERALD PROPERTY
 AFTON & SHOLES TWPS.



BY
 MINING GEOPHYSICS CORP. LTD.

- A [stippled box] 0 - 100 MV
- B [cross-hatched box] 100 - 200 MV
- C [dotted box] > 200 MV

AFTON TWP
 SHOLES TWP



S.54610

TWP.
 TWP.

TRT 6915

TRT 6916

TRT 6918

TRT 6919

TRT 6929

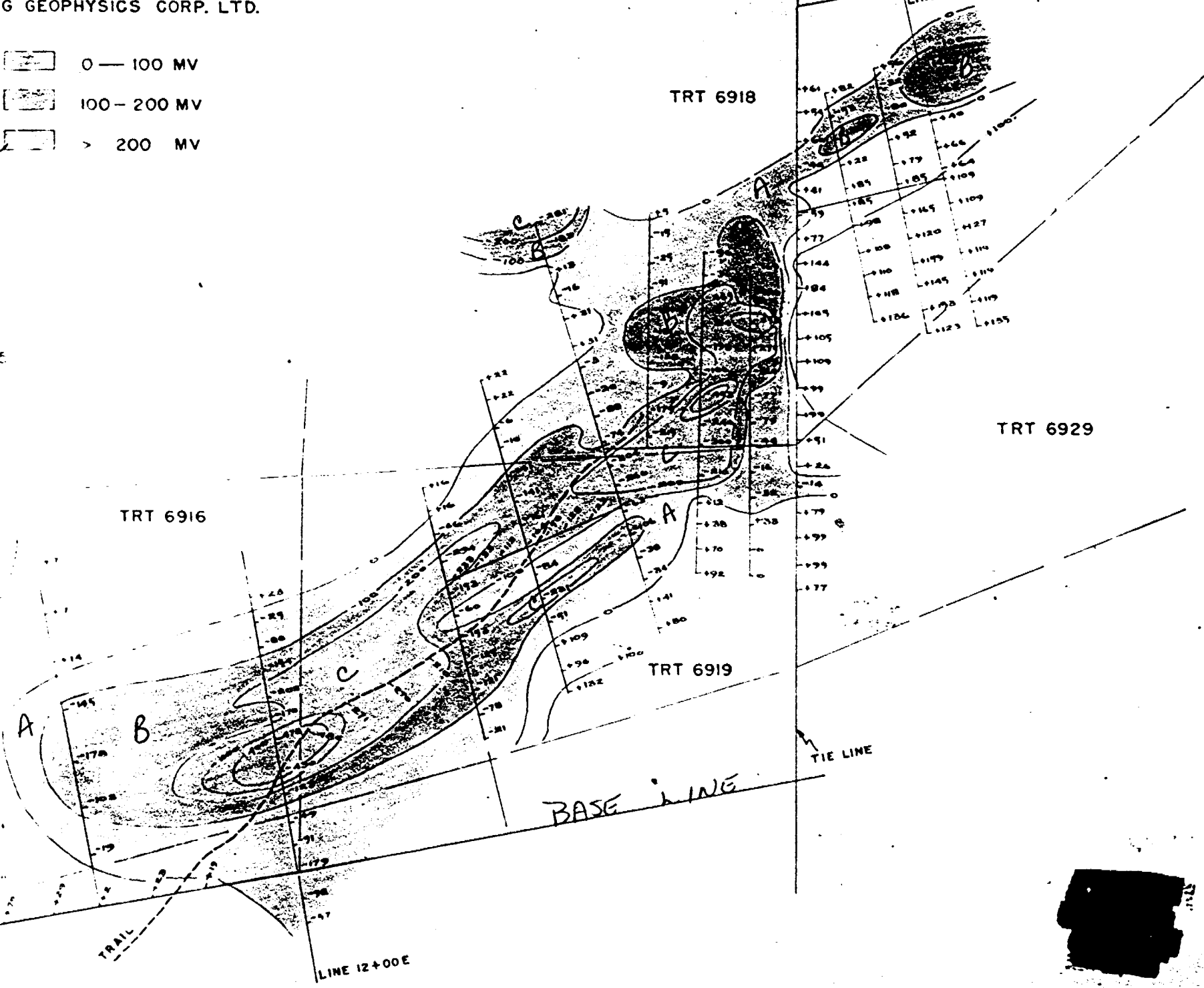
TRT.
 6920

BASE LINE
 LINE 24 E

BASE LINE

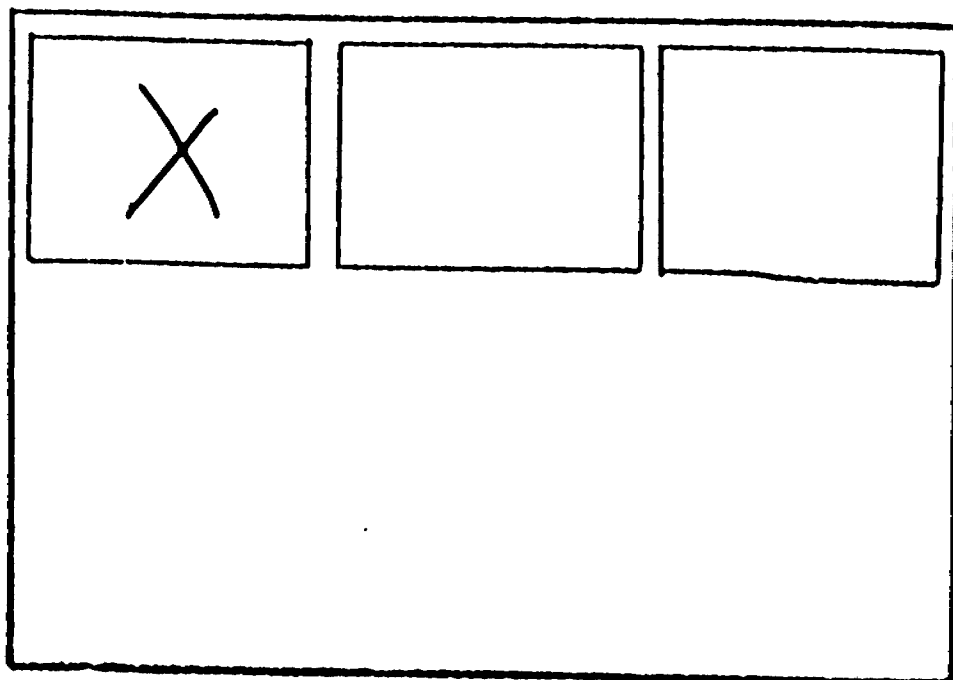
TIE LINE

LINE 12+00E



SEE ACCOMPANYING
MAP(S) IDENTIFIED AS
AFTON-0021-A1 #1

LOCATED IN THE MAP
CHANNEL IN THE FOLLOWING
SEQUENCE (X)



GEOLOGICAL INTERPRETATION
 OF
 GEOMAGNETIC SURVEY
 BY
 MINING GEOPHYSICS CORP.

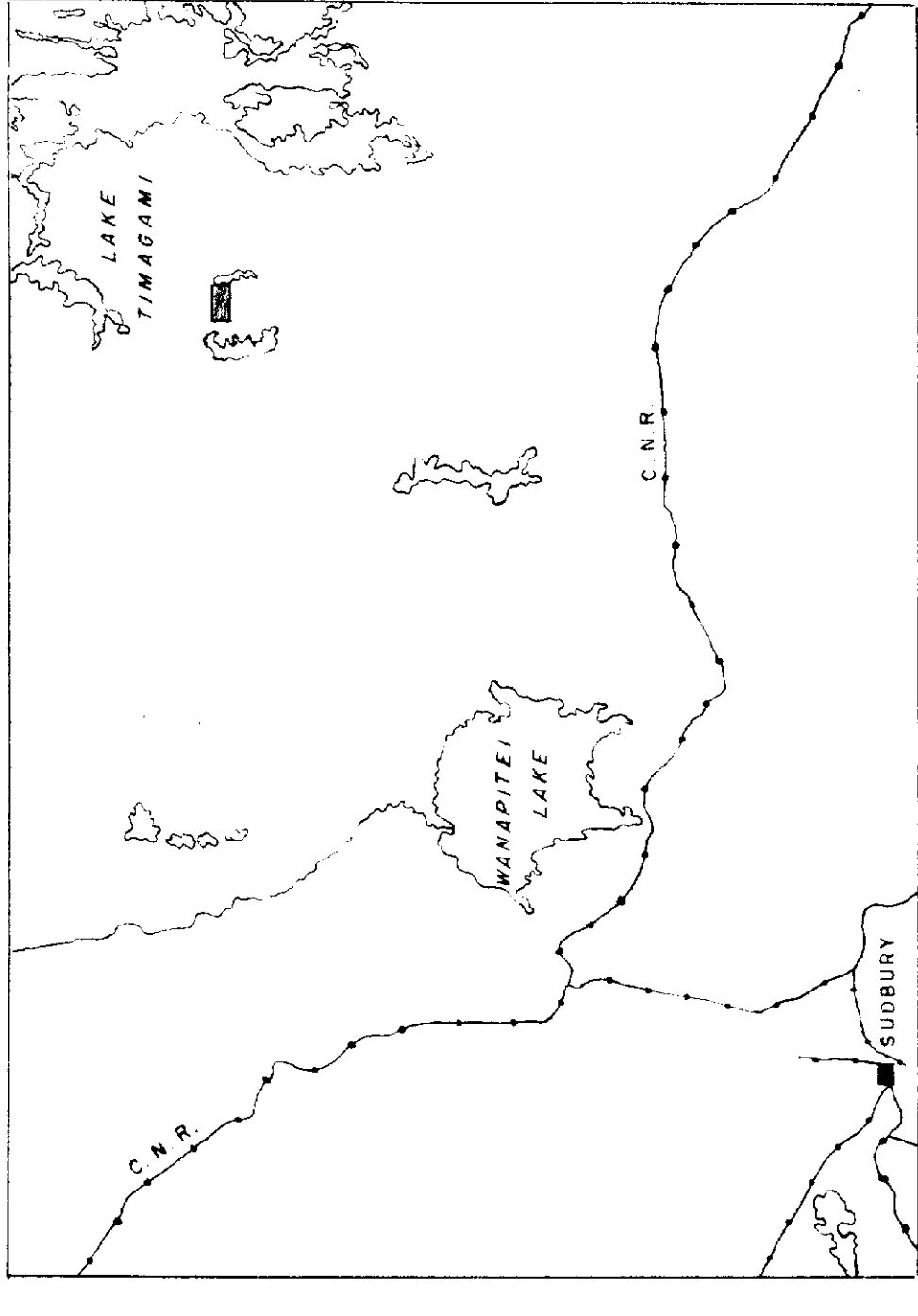
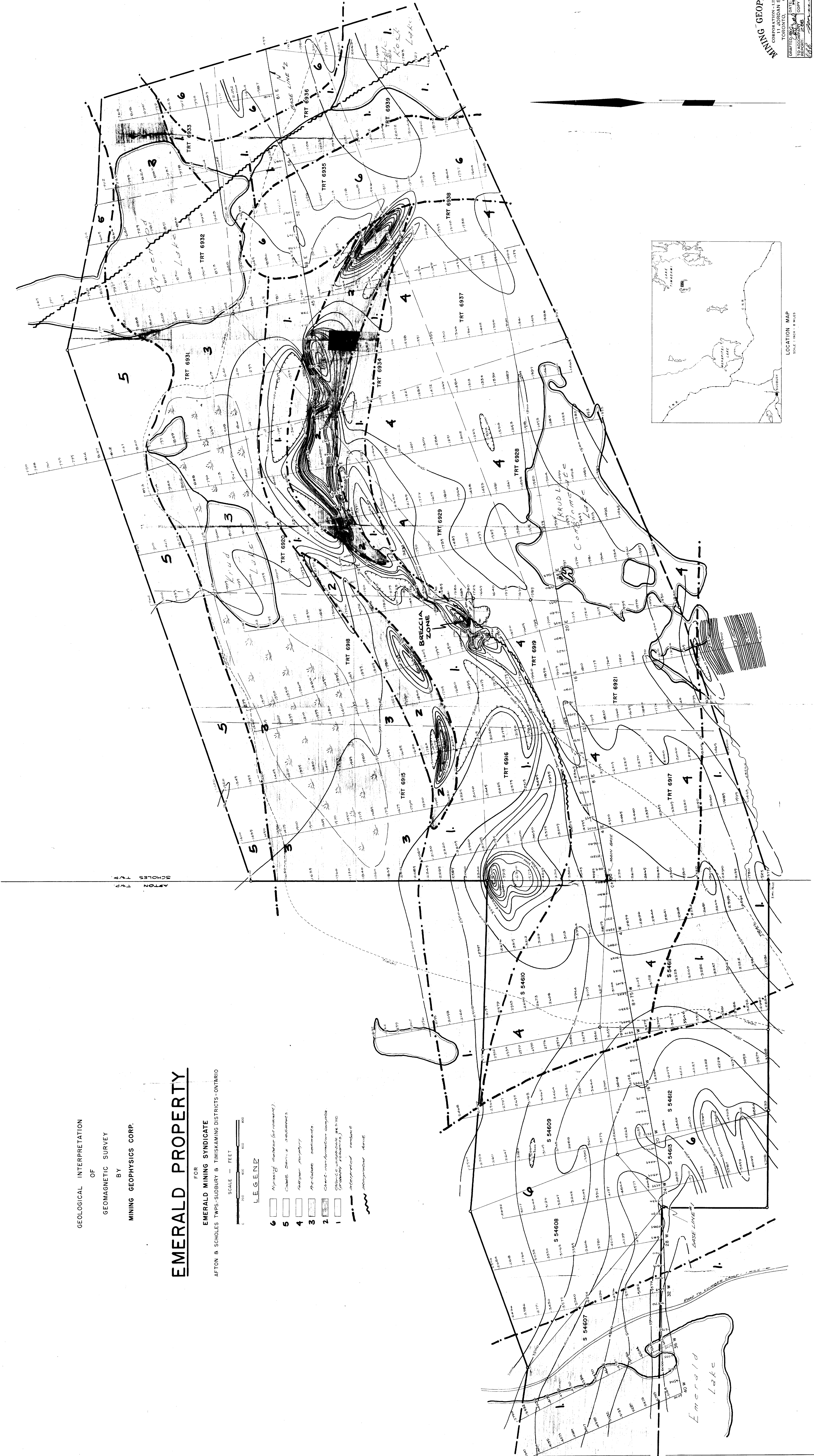
EMERALD PROPERTY

FOR
 EMERALD MINING SYNDICATE
 AFTON & SCHOLES TWP-SUDBURY & TIMISKAMING DISTRICTS-ONTARIO



LEGEND

- 6 Magnetic anomalies (for reference)
- 5 Contour lines & annotations
- 4 Redoxon anomalies
- 3 Non-oxide anomalies
- 2 Chlorine ion anomalies complex
- 1 Other anomalies (see notes)
- Interpretation contour
- Interpretation area



MINING GEOPHYSICS
 CORPORATION - LIMITED
 TORONTO, ONTARIO
 DATE: 12/15/51
 TO: AFTON & SCHOLES TWP
 REPORT: 2-58
 COPY NO. 1

LOCATION MAP
 SCALE 1" = 8 MILES