REPORT ON

GROUND MAGNETOMETER AND

ELECTROMAGNETIC SURVEY

THUNDER BAY DISTRICT, ONTARIO

for

AMERANIUM MINES LIMITED

by

HUNTING SURVEY CORPORATION LIMITED

TORONTO, ONTARIO

FEBRUARY, 1964.

INTRODUCTION

A ground magnetometer and electromagnetic survey was conducted over a group of claims held by Ameranium Mines Limited, and located some three miles west of Seeley Lake in the Thunder Bay District of Ontario.

The survey was carried out by Hunting Survey Corporation Limited, during the period December 17th to December 21st, 1963 and from January 3rd to January 23rd, 1964. Results of the survey are shown on the maps accompanying this report.

The property of Ameranium Mines Limited, discussed in this report, comprises a group of twenty claims. The claims surveyed are as follows:

TB 106517

TB 106520 to TB 106529 inclusive

TB 106280 to TB 106588 inclusive

The group of claims is located approximately ten miles northwest of Marathon, Ontario. It is possible to drive west from Marathon along Hwy. 17, the Trans-Canada Highway, to within two miles of the property. This final two miles is a well-marked trail through the bush.

A pre-existing north-south township line was used as a base line; the traverse lines were turned off at 400-foot intervals at right angles to the base line. The traverse lines were cut, chained and picketed at 100-foot intervals.

Readings for both the magnetometer and electromagnetic survey were made at station intervals of 100 feet.

GEOLOGY

Little detailed geological information is available on the area surveyed. However, the regional geological environment can be seen from the Ontario Department of Mines Preliminary Map No. P. 114 of the Port Coldwell area.

The area is located fairly centrally in the Port Coldwell alkaline complex. This complex is a late Precambrian intrusive into granites, metavolcanics and metasediments. In the intrusive itself a few blocks of the original country rock still remain. These blocks are mainly metavolcanics. More basic rocks, particularly gabbros are present within the complex.

The area over which the survey was carried out has a central section of gabbros, with hornblende syenites in the west and quartz syenites in the east.

INTERPRETATION

In its broadest sense the magnetic data reflects the known geology of the area. The central section of rapidly varying magnetic relief approximates to the rocks of gabbroic composition. The remainder of the area shows considerably less magnetic relief. This area approximates to the syenite rocks.

Magnetically there is no significant difference between the hornblende syenites in the west of the area and the quartz syenites in the east of the area.

Within the gabbros themselves are a number of anomalous trends. Among other probable solutions the magnetic body or bodies causing these anomalous trends can either be diabase dyke-like structures or local segregations of magnetite rich material formed by magnetic differentiation at the time of intrusion. Where these bodies extend for considerable distances along strike, they are probably dykes. Calculations carried out indicate that such bodies range in depth fromapproximately 30 to 50 feet. The calculated average susceptibility of these bodies is approximately 0.025 c.g.s. units. If no remanent magnetism is assumed, this would indicate the presence of about 10% magnetite by volume.

A number of faults trending generally east-west have been interpreted on the basis of disruptions and deflections of the magnetic trends.

Since the E.M. equipment measures both the in-phase and out-of-phase components of the secondary field it is possible to obtain a great many characteristics of the conductor. Readings taken over a conductive body show the same general curve for both the in-phase and out-of-phase

components. The ratio between the two readings is a measure of the relative conductivity of the anomalous zone. A ratio of the in-phase response to the out-of-phase response of approximately 3 to 1 is indicative of a good conductor. If this ratio is less than 1 it is indicative of a weak conductor. Experience has shown that the latter may be indicative of disseminated sulphides.

Both components of the secondary field give negative anomalies over a conductive body, whereas over magnetite positive anomalies usually occur.

The results of the electromagnetic survey conducted over the group of claims are depicted on the map accompanying this report. There is a marked absence of any anomalies which could be caused by the presence of good or even fair conductors. A few weak trends, of no economic significance, can however be seen.

On first examination it is clear that certain irregularities in the E.M. curves do exist. These could be caused by noise or the influence of the overburden. More probable causes are:

(a) Topographic Effects

(b) Coil Misorientation Effects

Such effect cannot be confused with real anomalies for the following reasons.

When working over uneven topography the cable tends to be shortened, thus bringing the coils closer together. This increases the effect of the primary field on the receiving coil and produces an apparent positive anomaly

on the in-phase response. However, there is no appreciable change in the out-of-phase response.

If the coils are misoriented, that is if one coil is tilted out of the plane in which both coils should lie, an apparent negative anomaly on the in-phase response will result. Again there is no appreciable change in the out-of-phase response.

Although great care was taken to eliminate and correct for such effects, evidence of these still remain.

Correlation of data from both types of survey does not reveal any facts of economic significance. The E.M. survey would not show any response to a disseminated sulphide body.

INSTRUMENT DATA

For the electromagnetic survey a Ronka Mark IV single frequency horizontal loop instrument was used. This unit consists of two horizontal coils separated by 200 feet of cable, measuring the in-phase and out-of-phase components of the secondary electromagnetic field in percentages of the primary field. The instrument operates at the frequency of 876 cycles per second. Depth of penetration is in the order of 150 to 200 feet.

For the magnetic survey a Sharpe MF-1 fluxgate magnetometer was used, measuring variations in the vertical component of the earth's magnetic field to an accuracy of ± 5 gamma. Corrections for diurnal variations were made by taking base station readings every two hours or less.

SUMMARY AND RECOMMENDATIONS

A magnetometer survey and a Ronka Horizontal Loop E.M. survey were carried out over a group of claims owned by Ameranium Mines Limited near Marathon, Ontario. No anomalies of any major significance were identified.

The magnetometer survey showed that through the central section of the property there is a band of gabbroic rock types having rapidly varying magnetic relief. Possible dyke-like structures and a number of faults were also indicated.

The E.M. survey indicated no anomalies of economic significance. The variations are probably due to noise; influence of overburden or more probably topographic effects as the country is very rugged. However, the horizontal loop method would not indicate the presence of disseminated sulphides in the order of 5% by volume.

Should further geological work reveal factors of possible economic significance, further work should be considered using different techniques.

HUNTING SURVEY CORPORATION LIMITED,

E. B. Nicholls,
Project Geophysicist.

Toronto, Ontario,
February, 1964.

SURVEY DATA

Readings were taken at 100-foot intervals on each type of survey.

For the magnetometer survey a total of 17.4 miles of line was surveyed requiring 920 station readings.

For the E.M. survey a total of 17.4 miles of line was surveyed requiring 920 station readings. The survey covered a total of approximately 800 acres.

The total number of 8-hour man-days required to complete the above-mentioned survey are as follows:

	8-Hour Man-Days	Attributable to Assessment Work
Operating Magnetometer Survey	24 x 4	96
Operating E.M. Survey	32 x 4	128
Report Writing	5 x 4	20
Drafting	8 x 4	32
Office Typing & Supervision	5 x 4	20
	~~71~~ x 4	284

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HUNTING SURVEY CORPORATION LIMITED,

E. B. Nicholls,
Project Geophysicist.

Toronto, Ontario,
February, 1964.

REPORT ON GROUP OF CLAIMS SEELEY LAKE AREA, DISTRICT OF THUNDER BAY, HELD BY AMERANIUM MINES LIMITED

LOCATION & ACCESS

A group of thirty contiguous claims is held by Ameranium Mines Limited, 405 - 67 Yonge Street, Toronto 1, Ontario, along the west boundary of Seeley Lake Area, District of Thunder Bay, Port Arthur Mining Division and centering about mileage 4. The claims numbers are 106573 to 106588 inclusive, 16 claims, and 106517 to 106530 inclusive, 14 claims for a total of thirty claims.

The group lies about 1-1/4 miles north of Highway 17 some fourteen miles west of the town of Marathon. A foot trail leads from Highway 17 to Geordie Lake at the north end of the claims and passes through the claims.

TOPOGRAPHY

The western portion of the claims is of moderate relief with frequent broad marshy areas along the creek flowing into Geordie Lake. To the west, the relief is high and often abrupt.

The claims generally are well wooded with spruce, pine, poplar and birch.

WORK DONE

A contract for line cutting was let to Eric Blackwood of South Porcupine, Ontario. A base line was cleared along the township line on the west boundary of the claims. This was chained and picketed at 200 foot intervals. Cross lines at 400 foot intervals were cut extending from the west boundary a distance of 6600 feet. These were horizontally chained and picketed at 100 foot intervals. The total of lines cut, chained and picketed was 18-1/2 miles.

A contract for geophysical surveys was let to Hunting Survey Corporation Limited of Toronto, Ontario and ground Magnetic and Electro-magnetic surveys were carried out. Reports and plans of these surveys were prepared by E. B. Nichols.

Geological mapping was completed in the southern portion of the claim group by the writer. This work was considerably

hampered by the depth of snow and undoubtedly much outcrop exists unmapped. It is believed the principal rock changes have been located quite accurately.

GEOLOGY

The rocks underlying the property are early precambrian instrusives.

Table of Formation

Hornblende Gabbro
intrusive contact

Hornblende Syenite

The principal rock is hornblende syenite. About fifteen hundred feet north from the south boundary and in the west central portion of the claim group is a hornblende gabbro massif. This displays a width of about 1500 feet and appears to extend beyond the north boundary of the group. The Ontario Department of Mines Preliminary map P 114 indicates the area to the east of the gabbro massif to be underlain by red quartz syenite. In the area mapped hornblende syenite occurred on both sides of the gabbro massive. The east rim of the gabbro displays a chilled margin and appears to be intruded into the undifferentiated hornblende syenite.

On line 26 + 60, about 4000 feet east from the base line, a fine grained phase of the gabbro showed very fine chalcopyrite, a grab sample of this assayed 0.12 cu. Adjacent to this, the gabbro is coarse grained and possibly brecciated. It contains chalcocite and ilmenite. A spectrographic analysis of a grab from this indicated 1% copper and 1% titanium.

COMMENTS ON GEOPHYSICS

The geophysical report by E. B. Nichols states "No 6 anomalies of major significance were identified." On line 26+60, locationally coincidental with the exposures of copper, is an electromagnetic in phase cross over. Similar cross overs occur on the two adjacent lines to the north, 30+60 and 34+60 and again on lines 50+60, 54+60 and 58+60. These occur on a plane of projection of North four degrees east. On the two lines to the south of 26+60 and on line 38+60 no readings were obtained along this projected plane. Out of phase variations on these six lines are negligible. Nichols also states "However, the horizontal loop method would not indicate the presence of disseminated sulphides in the order of 5% by volume".

With the identification of chalcocite, which contains 79.8% cu., in this area, significant copper mineralization could have remained unidentified by the geophysical method employed.

CONCLUSIONS

The area of copper mineralization on line 26+60 at about 4000 feet east and the projections on a line of about N.4° E., warrants detailed examination of outcrops. If warranted, some pack sack diamond drilling then should be considered.

R. F. Vallance

Toronto, Ontario
May, 1964.

R. F. Vallance.

106573

106574

106575

106576

106577

106584

106583

106582

106581

106580

4 mile

BASE LINE

CUT TOWNSHIP LINE

106517

106588

106585

106586

106587

106524

106523

106522

106521

106520

106525

106526

106527

106528

106529

Symbols

Property Boundary

Approximate claim Boundary

Corner Post Observed

Cut Picket Line

Assumed Rock contact

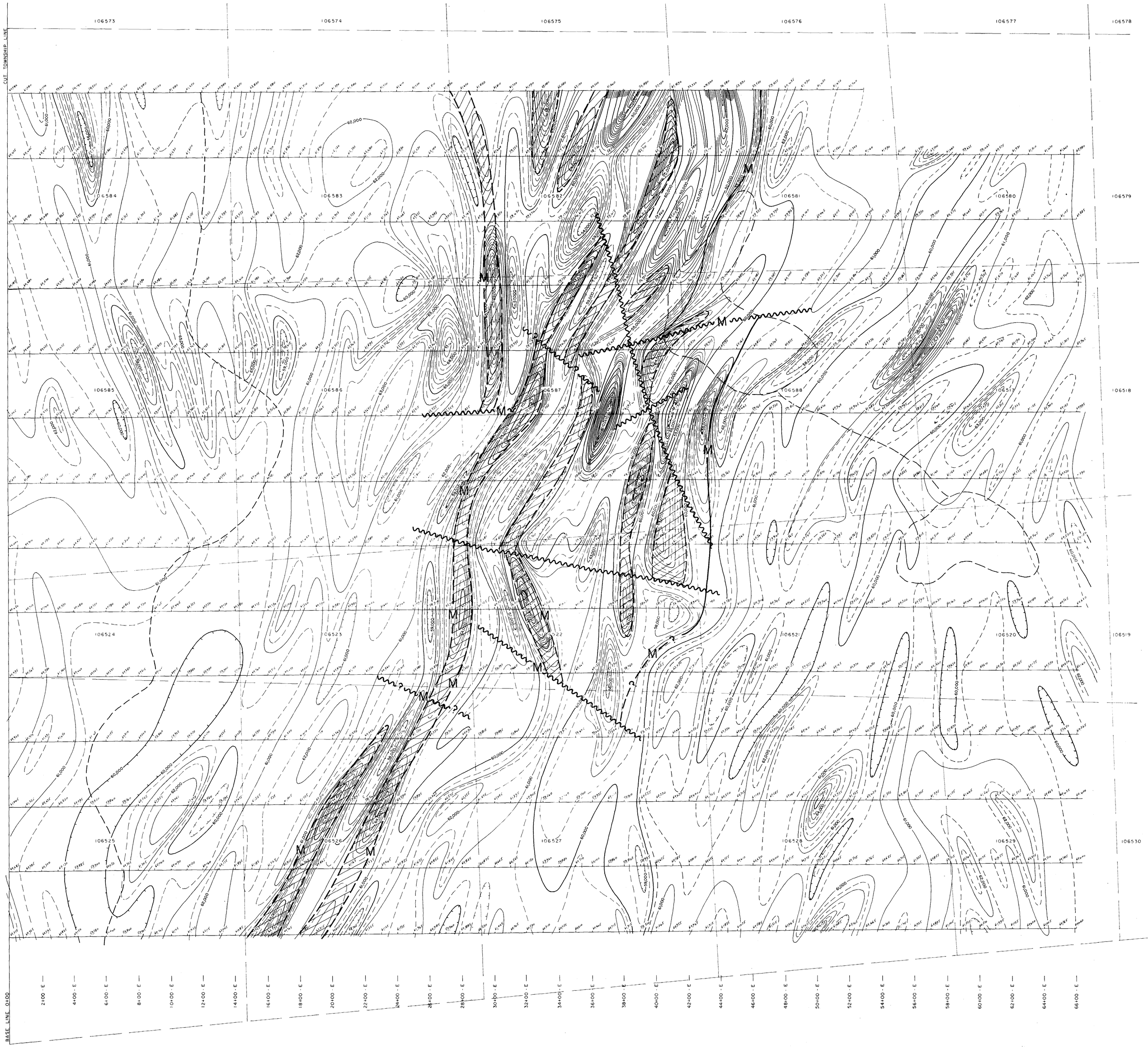
Rock outcrop

Trees coniferous deciduous & swamp

Legend

1. Hornblende Syenite
2. Hornblende Gabbro

R. T. Valle...



N

LEGEND

- M —— Interpreted Magnetic Contacts
- M -- Interpreted Magnetic Contacts
- Possible Diabase Dyke
- Interpreted Fault
- 60,000 — 5000 gamma contour
- 61,000 — 1000 gamma contour
- 61,500 — 500 gamma contour

AMERANIUM MINES LIMITED

SEELEY LAKE CLAIMS

MARATHON, ONTARIO

GROUND MAGNETOMETER SURVEY

INTERPRETATION

CONTOUR INTERVAL — 500 gamma

SCALE: 1 inch = 200 feet

E.B. Nicholls — Geophysicist

HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

FEBRUARY, 1964

106573 106574 106575 106576 106577 106578

L. 58+60·N CLIFF

L. 54+60·N CLIFF CLIFF

106584 106583 106582 106581 106580 106579

L. 50+60·N CLIFF CLIFF

L. 46+60·N CLIFF CLIFF CLIFF

L. 42+60·N CLIFF CLIFF

106585 106586 106587 106588 106517 106518

L. 38+60·N CLIFF

L. 34+60·N CLIFF CLIFF CLIFF

L. 30+60·N CLIFF

L. 26+60·N

106524 106523 106522 106521 106520 106519

L. 22+60·N CLIFF

L. 18+60·N CLIFF CLIFF

L. 14+60·N CLIFF

106525 106526 106527 106528 106529 106530

L. 10+60·N CLIFF CLIFF

L. 6+60·N CLIFF CLIFF

BASE LINE 0+00

2+00 E — 4+00 E — 6+00 E — 8+00 E — 10+00 E — 12+00 E — 14+00 E — 16+00 E — 18+00 E — 20+00 E — 22+00 E — 24+00 E — 26+00 E — 28+00 E — 30+00 E — 32+00 E — 34+00 E — 36+00 E — 38+00 E — 40+00 E — 42+00 E — 44+00 E — 46+00 E — 48+00 E — 50+00 E — 52+00 E — 54+00 E — 56+00 E — 58+00 E — 60+00 E — 62+00 E — 64+00 E — 66+00 E

N

LEGEND

in-phase

out-of-phase

AMERANIUM MINES LIMITED

SEELEY LAKE CLAIMS

MARATHON, ONTARIO

ELECTROMAGNETIC SURVEY

SCALES: 1 inch = 200 feet
1 inch = 20% of primary field

E.B. Nicholls

E. B. Nicholls — Geophysicist

HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

FEBRUARY, 1964

106575 106576 106577 106578

LINE

58+60

54+60

106582 106581 106580 106579

50+60

46+60

42+60

38+60

106517 106518

34+60

106588

106587

30+60

26+60

106520 106519

106522 106521

22+60

18+60

14+60

10+60

106530

106529

6+60

106527 106528

LOCATIONAL PLAN

AMERANIUM

C.P.R.

LAKE SUPERIOR

Scale 1" = 20 miles

Symbols

Property Boundary

Approximate Claim Boundary

Corner Post Observed

Cut Picket Line

Assumed Rock Contact

Rock Outcrop

Trees coniferous

Legend

1. Hornblende Syenite

2. Hornblende Gabbro

3.

R. F. Vallee

F. [illegible]

File 63.1275

AMERANIUM MINES LIMITED
SEELEY LAKE CLAIMS
GEOLOGY

1 inch = 200 feet

December 1963