



52G15NW0133 52G15NW0062A1 SIXMILE LAKE

010

2.1315

REPORT OF  
REPORT OF  
A  
MAGNETOMETER SURVEY  
ON  
CLAIMS 32512-13  
SANTA MARIA MINES, LIMITED  
6 MILE-STURGEON LAKES AREA  
DISTRICT OF KENORA  
ONTARIO

INTRODUCTION  
INTRODUCTION

During the period 12th - 31st July, 1973, lines at 400' centres were cut and a magnetometer survey completed. The claims adjoin Amalgamated Beau Felle Mines Limited on the north and east. Rio Tinto Canadian Exploration optioned the property and cut a grid system of lines in 1968-9. This system of lines was extended across the Santa Maria claims. Two holes of 100 foot depth were drilled as indicated. The best source of geological information is Preliminary Map P.761, Ontario Ministry of Natural Resources, the Quest Lake sheet and Geological Report 24, Metionga Lake Area, Sturgeon Lake Area.

In late 1971 a large gossan area was discovered on the claims and the drilling and geophysical surveys were the result of this discovery.

LOCATION

The claims are located approximately midway between 6 Mile Lake and Sturgeon Narrows. On the north shore of Sturgeon Narrows, 3 miles northeast of Seaton Island, a tractor road running north to the Amalgamated Beau Felle property passes 1,000 feet east of the property and provides good access to the claims.

FIELD PROCEDURE

Base stations were established along the north boundary every 400 feet and the readings were adjusted to the Amalgamated Beau Belle survey. Utilizing the north-south lines the property was traversed in a series of loops from the north boundary. 115 readings were taken.

FORM NO. 11 - 11-6-69 REVISED 1-7-70

Santa Maria, 325812-13  
Magnetometer

Aug. 73

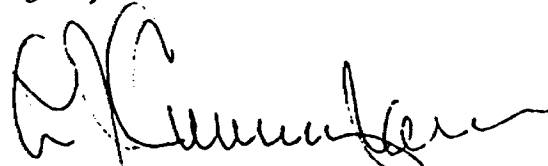
INTERPRETATION

The readings are flat except over the known magnetite rich metagabbro near the north boundary on lines 52 and 56W. A similar high on line 72W is thought to represent another metagabbro intrusive. Over the remainder of the property the flat readings do not suggest any significant change in rock types nor do they suggest the presence of any magnetic sulphides.

The known sulphide mineralization at 57W, 18 plus 50S did not respond to the survey.

An I.P. survey and further drilling near the showing is recommended.

Signed,



L. J. Cunningham, B.Sc., P.Eng.,  
Mining Engineer

Dated at  
Kirkland Lake, Ontario  
18th August, 1973

FORM NO. 11-71-1 P REPORT PART 1



52G15NW0133 52G15NW0062A1 SIXMILE LAKE

020

RECEIVED

OCT 3 - 1973

PROJECTS  
SECTION

GEOLOGY REPORT

ON

CLAIMS 325812 - 325813

SANTA MARIA MINES, LIMITED

6 MILE LAKE AREA

STURGEON LAKE AREA

DISTRICT OF KENORA

by L. J. Cunningham, B.Sc., P-Eng-  
Mining Engineer  
dated at Kirkland Lake, Ontario  
18th August, 1973

GEOLOGY REPORT  
ON  
CLAIMS 325812 - 325813  
SANTA MARIA MINES, LIMITED  
6 MILE LAKE AREA  
STURGEON LAKE AREA  
DISTRICT OF KENORA

INTRODUCTION

During the period 12th - 31st July, 1971, lines at 400' centres were cut and a geological survey completed. The claims adjoin Amalgamated Beau Belle Mines Limited on the north and east. Rio Tinto Canadian Exploration optioned the property and cut a grid system of lines in 1968-9. This system of lines was extended across the Santa Maria claims. Two holes of 100 foot depth were drilled as indicated. The best source of geological information is Preliminary Map P.761, Ontario Ministry of Natural Resources, the Quest Lake sheet and Geological Report 24, Metionga Lake Area, Sturgeon Lake Area.

In late 1971 a large gossan area was discovered on the claims and the drilling and mapping were the result of this discovery.

LOCATION

The claims are located approximately midway between 6 Mile Lake and Sturgeon Narrows. On the north shore of Sturgeon Narrows, 3 miles northeast of Seaton Island, a tractor road running north to the Amalgamated Beau Belle property passes 1,000 feet east of the property and provides good access to the claims.

GENERAL GEOLOGY From marginal notes, Preliminary Map P.761

"The map-area is underlain by Early Precambrian Keewatin-type meta-volcanics and Timiskaming-type metasediments. The bedrock is extensively overlain by glacial deposits and by recent swamp accumulations. The northwestern part of the area is underlain by a series of mafic to intermediate metavolcanics, and felsic, predominantly pyroclastic, metavolcanics, both of which have been extensively intruded by metagabbro-metadiorite bodies.

GEOLOGY

The claims are of low relief with much swamp cut by low northeasterly striking ridges which show limited bedrock exposure. There is a heavy growth of moss and vegetation over all the elevated areas and the abundant windfalls fortunately provide most of the bedrock exposures under the upturned roots.

The claims are largely underlain by felsic tuff and lapillistone. These rocks are white to creamy coloured due to sericite, strike northeasterly and are generally sheared. Carbonate is common (and abundant in some locations, particularly around the pyrite showing.)

White quartz grains, generally less than 1 centimetre in diameter, comprise much of the felsic rocks which are quite uniform in colour and texture. Larger quartz fragments to 2.5 centimetres are not uncommon but only in a few locations did they constitute the bulk of the rock. In two locations the fragments were larger than 2.5 cm. and sufficiently numerous to term the rock an agglomerate. Recognizable thin bedded, fine grained sericitic tuffs, white to cream in colour, were observed only in the drill core. They contain occasional white fragments and an occasional dark coloured bed. It is the writer's opinion that most of the heavily sheared rocks exposed on surface are probably thin bedded tuffs. The drill core show a variation of rocks from fine grained, thinly bedded tuff to gritty tuff beds to lapillistone consisting of close packed quartz fragments to 2.5 centimetres in size in a quartzitic sericitic matrix. In the vicinity of the sulphide showing rapid facies changes are apparent with the all quartz lapillstone grading into a mixture of quartz and dark fragments in about equal percentages. Some of the fragments are rounded and the writer suspects some conglomerate within the pyroclastics. Similar rocks are noted on Preliminary Map P.761 at Sturgeon Narrows. Carbonate alteration is common throughout the felsic rocks but appears as distinct clots, pods, stringers and veinlets in the vicinity of the showing at a location about 100 ft. east of the showing at the edge of the swamp on the south side of the outcrop, This type of carbonate alteration is

characteristic of the hanging wall of the Mattabi orebody. According to Geological Report No. 24 on the Sturgeon Lake Area, this type of carbonate mineralization also occurs in shears and schist zones where the carbonate was recrystallized and concentrated by migration in veins, pods, etc. The writer has inferred a possible fault or shear zone striking northeast to the south of the sulphide zone.

The mafic metavolcanics are fine grained volcanic flows, dark green in colour and somewhat sheared. One outcrop near L 60 W suggests possible banding or bedding.

One outcrop of metagabbro occurs on the north boundary - the rock is black, fine grained, massive, weathering into large blocks.

DESCRIPTION OF THE SULPHIDE SHOWING

A gossan area 100 feet long and about 40 feet in width was discovered in a low outcrop in a swamp in 1969. Intense weathering prevented adequate sampling so drilling was carried out in July, 1973. Summary logs are as follows:

|            |          |                                   |               |
|------------|----------|-----------------------------------|---------------|
| HOLE NO. 1 | 0 - 19   | Felsic Lapillistone - mineralized | 25-50% pyrite |
|            | 19 - 23  | Felsic Lapillistone               |               |
|            | 23 - 31  | Felsic Tuff                       |               |
|            | 31 - 48  | Felsic Lapillistone - mineralized | 25-50% pyrite |
|            | 48 - 101 | Felsic Tuff                       |               |
| HOLE NO. 2 | 0 - 30   | Felsic Lapillistone - mineralized | 5-30% pyrite  |
|            | 30 - 55  | Felsic Tuff                       |               |
|            | 55 - 101 | Felsic Lapillistone               |               |

The drilling showed a mineralized felsic lapillistone - white to creamy in colour, consisting of acid fragments to 2.5 cm. in diameter with fine dense pyrite in the matrix and sometimes in the fragments - commonly in a wormy dendritic form suggesting a chemical precipitate. Mineralization varied from 10% to 50% of the core and was accompanied by quartz-carbonate stringers. The lapillistone was bounded on each side by thin bedded felsic tuffs, white to creamy coloured, sericitized with an occasional dark bed and an occasional dark fragment - a few fragments consisting of over 50% fine pyrite mineralization also were cut suggesting the violent expulsion of earlier sulphide deposits.

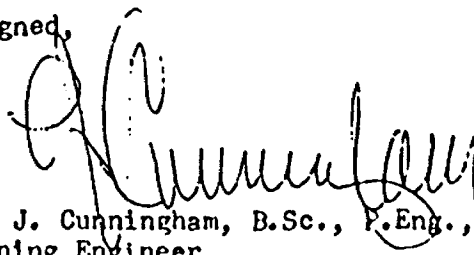
The sulphide mineralization, the carbonatization and the quartz-carbonate veins suggest the existence of a stratigraphic horizon, probably related, to a broad scale change in volcanic activity, along which hot springs were actively depositing chemical sediments and iron sulphides concomitantly with local accumulation of pyroclastics.

Sharpe, J.I., in Q.D.M. Report #137 on the Mattagami Quebec Area, points out that the strata-bound masses of zinc and copper have a pronounced deposition to lie along such favourable contacts and that the "extrapolated" segments of this contact are possibly general environments of new deposits. This is apparently true for the economic sulphide deposits of the Sturgeon Lake Area.

Considering the importance of such contacts, further work on the Santa Maria ground is justified. The fact that Mattagami Mines Limited cut a pyrite-graphite zone in 2 drill holes located 7,000 feet to the northeast in the same band of felsic rocks suggests the possible existence of an extensive horizon which may be favourable for copper-zinc sulphide deposits.

An I.P. survey and additional drilling is recommended to test the northeasterly and southwesterly extensions (of the mineralized zone) which are not exposed.

Signed,



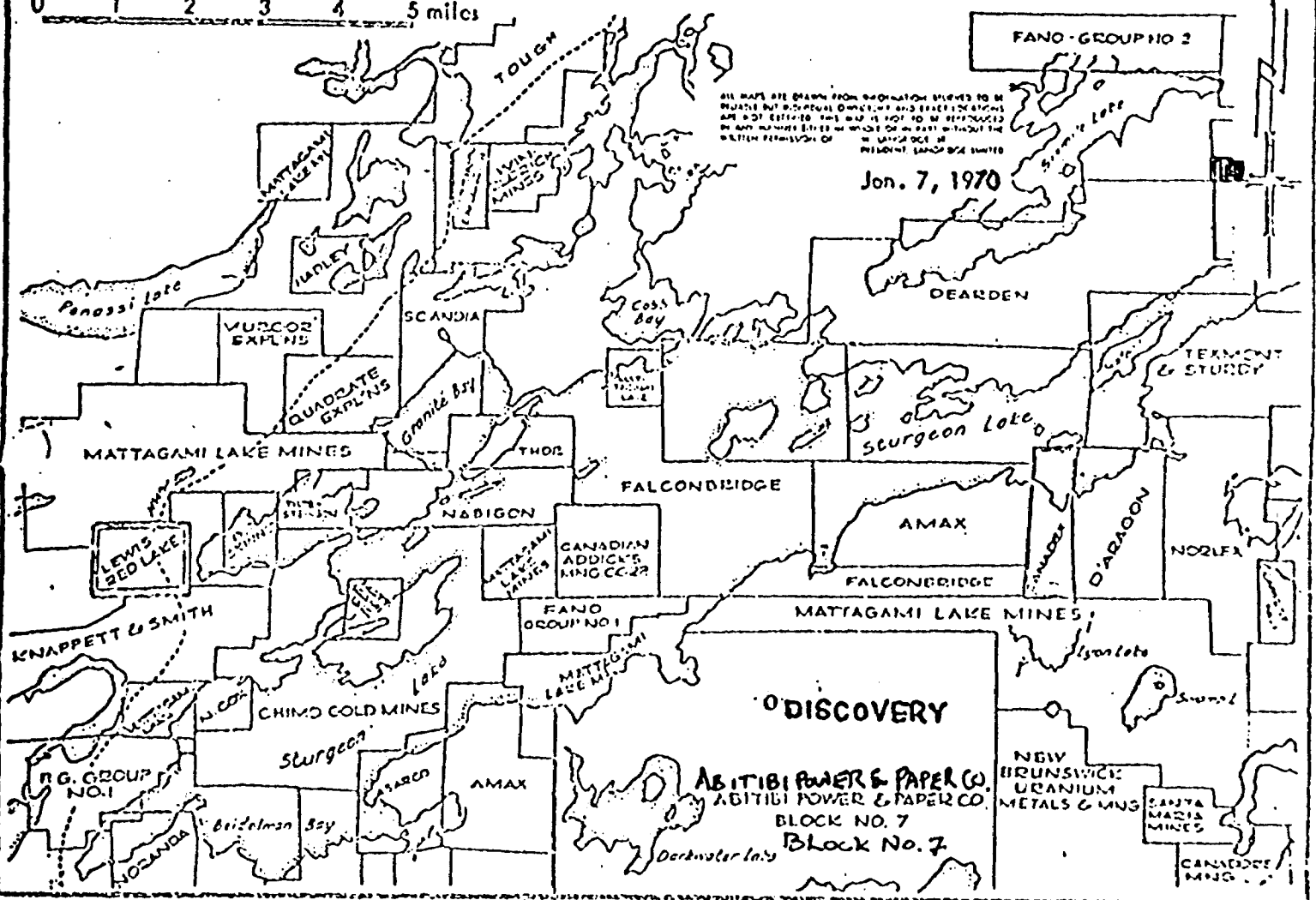
L. J. Cunningham, B.Sc., P.Eng.,  
Mining Engineer

Dated at  
Kirkland Lake, Ontario  
18th August, 1973

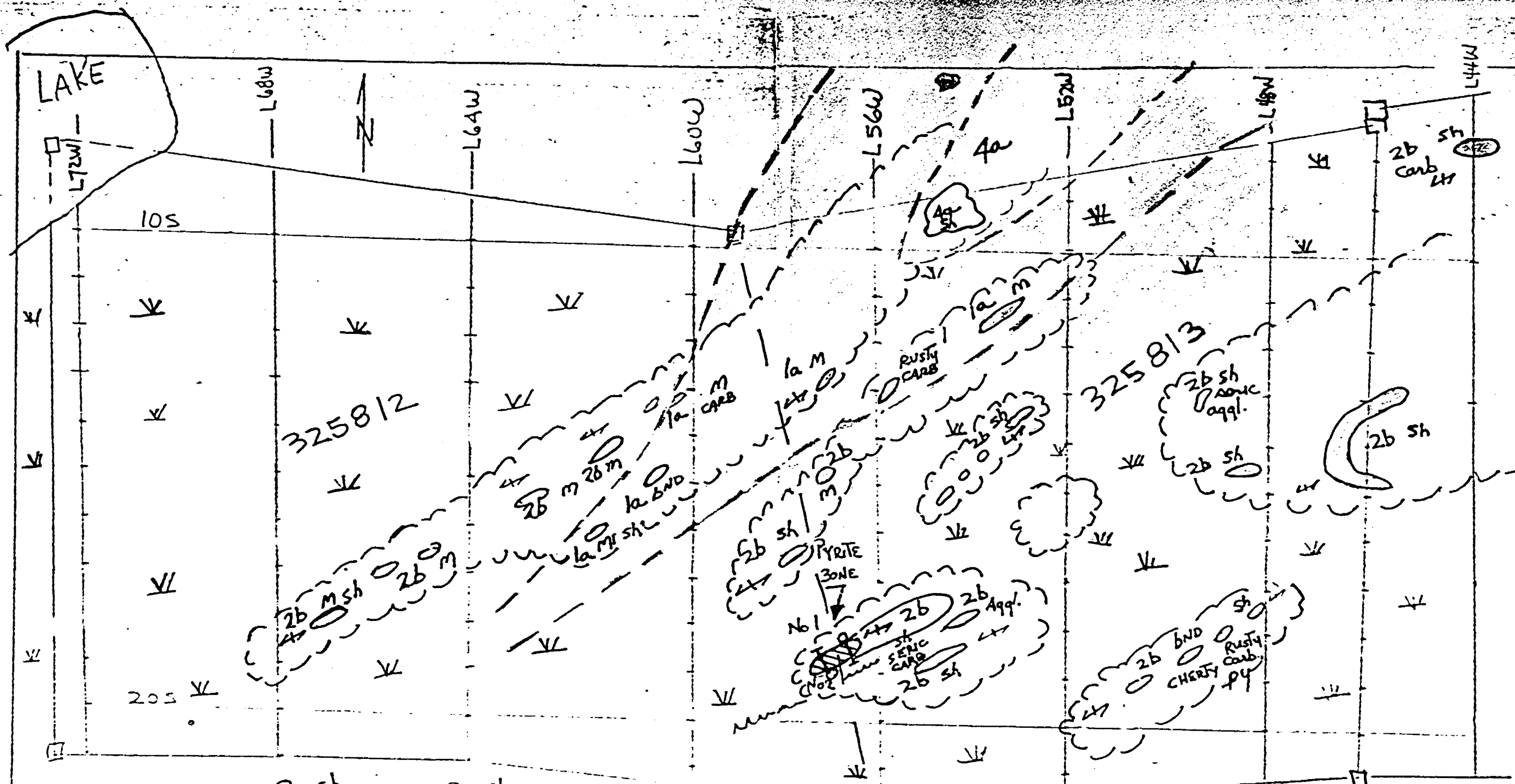
# LOCATION of

# in the STURGEON LAKE DISCOVERY AREA, ONTARIO

0 1 2 3 4 5 miles







4A  
2B  
1A

LEGEND

- |  |    |   |
|--|----|---|
|  | 4a | Mafic Intrusive Rocks - Metagabbro              |
|  | 2b | Felsic Tuff to Lapillistone - minor Agglomerate |
|  | 1a | Mafic-Volcanic Flow - fine grained              |

- SYMBOLS
- |  |                     |
|--|---------------------|
|  | MASSIVE             |
|  | BANDED              |
|  | SHEARED             |
|  | CARBONATED          |
|  | SERICITE            |
|  | AGGLOMERATE         |
|  | SHEARING - VERTICAL |
|  | SWAMP               |
|  | LOW RIDGE           |
|  | OUTCROP             |
|  | FAULT               |
|  | DRILL HOLE          |

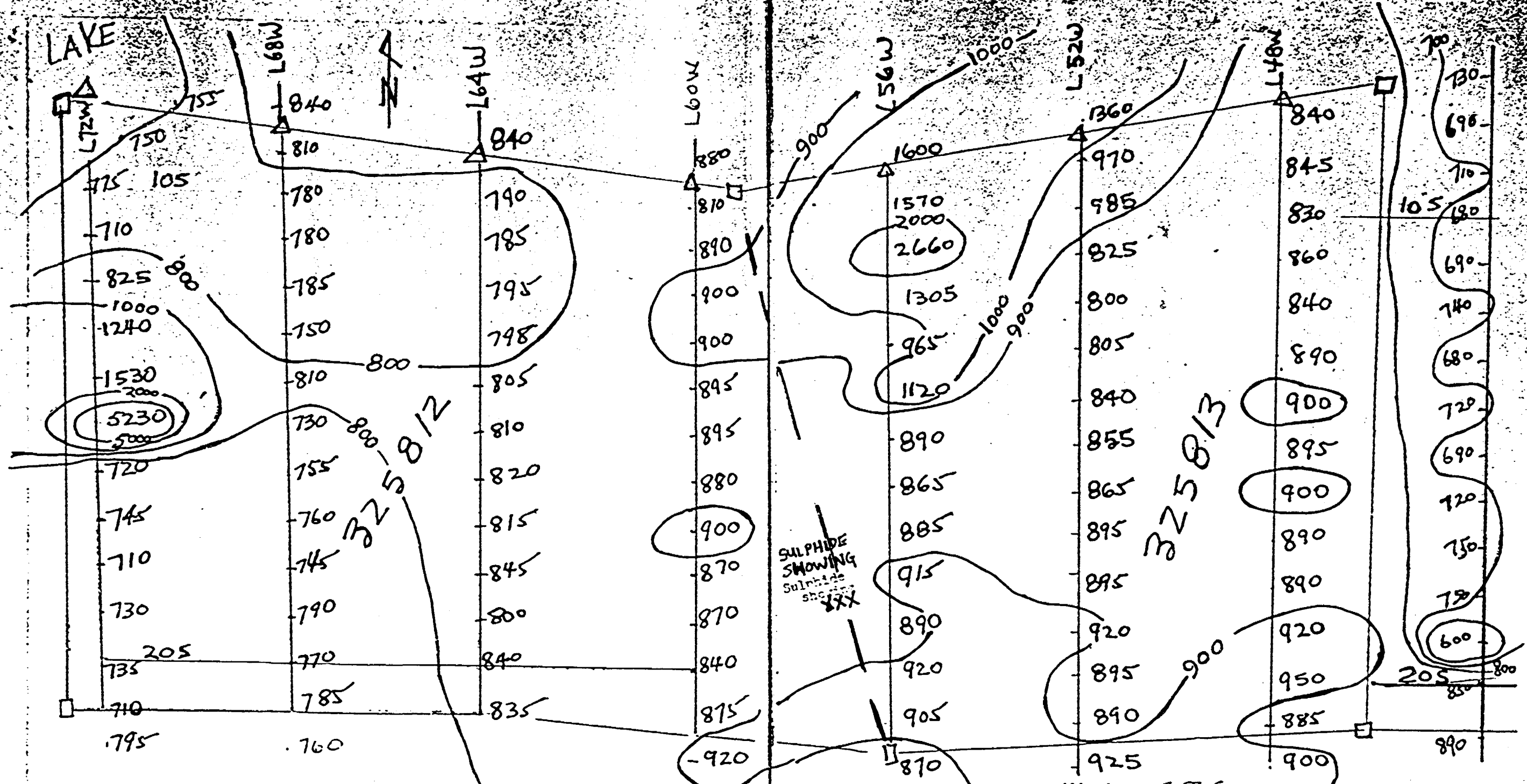
200 FEET

GEOLOGY  
GEOLOGY  
CLAIMS 325812-13  
6 MILE-STURGEON LAKE AREA  
ONTARIO

Scale 1" equals 200 ft.  
L. J. Cunningham, B.Sc., P.Eng., Aug. 73

SANTA MARIA MINES LIMITED

*L. J. Cunningham*



All readings in gammas  
 Contour interval - 100 gammas  
 Readings are adjusted to the Amalgamated Beau Pelle Survey  
 ▲ Base station

MAGNETOMETER SURVEY  
 MAGNETOMETER SURVEY  
 CLAIMS 25812-1,  
 SANTA MARIA MINES, LIMITED  
 6 MILE-STURGEON LAKES AREA  
 ONTARIO

200 FEET Scale 1" equals 200 feet

L. J. Cunningham, B.Sc., P.Eng., Aug. 73

*[Handwritten signature]*

**GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL  
TECHNICAL DATA STATEMENT**

**TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT  
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT  
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.**

Type of Survey Magnetometer  
Township or Area 6 Mile Lake Area, Patricia Mining Division  
Claim holder(s) J.P. Ducharme,  
\$\$.#14, Dog L. Rd., Thunder Bay, Ont.  
Author of Report L. J. Cunningham, B.Sc., P.Eng.,  
Address 1 McPhee Ave., Kirkland Lake, Ontario  
Covering Dates of Survey 15th July - 31 August, 1973  
(linecutting to office)  
Total Miles of Line cut 2.1 miles

**MINING CLAIMS TRAVERSED**  
List numerically

~~P.P.~~ 325812  
(number)  
~~P.P.~~ 325813  
(number)

| <u>SPECIAL PROVISIONS<br/>CREDITS REQUESTED</u>           | <u>DAYS<br/>per claim</u> |
|---|---------------------------|
| ENTER 40 days (includes line cutting) for first survey.   | Geophysical               |
|   | -Electromagnetic          |
|   | -Magnetometer <u>20</u>   |
|   | -Radiometric              |
|   | -Other                    |
| ENTER 20 days for each additional survey using same grid. | Geological                |
|   | Geochemical               |

**AIRBORNE CREDITS** (Special provision credits do not apply to airborne surveys)  
Magnetometer \_\_\_\_\_ Electromagnetic \_\_\_\_\_ Radiometric \_\_\_\_\_  
(enter days per claim)  
DATE: 31 August, 1973 SIGNATURE: [Signature]  
Author of Report or Agent

**PROJECTS SECTION**  
Res. Geol. \_\_\_\_\_ Qualifications 63.1603  
Previous Surveys 2.208 (Airborne) 2.1122 (EM)  
L.D.  
Checked by \_\_\_\_\_ date \_\_\_\_\_

**GEOLOGICAL BRANCH** \_\_\_\_\_  
Approved by \_\_\_\_\_ date \_\_\_\_\_  
**GEOLOGICAL BRANCH** \_\_\_\_\_  
Approved by \_\_\_\_\_ date \_\_\_\_\_



If space insufficient, attach list

**TOTAL CLAIMS** 2

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

### GEOPHYSICAL TECHNICAL DATA

#### GROUND SURVEYS

Number of Stations 115 Number of Readings 115  
Station interval 100 feet  
Line spacing 400 feet  
Profile scale or Contour intervals 100 gammas  
(specify for each type of survey)

#### MAGNETIC

Instrument McPhar M 700  
Accuracy - Scale constant + 5 gammas  
Diurnal correction method From base stations located every 400 feet on the north boundary, the  
Base station location property was traversed in a series of loops to the south. Each loop  
was corrected.

#### ELECTROMAGNETIC

Instrument \_\_\_\_\_  
Coil configuration \_\_\_\_\_  
Coil separation \_\_\_\_\_  
Accuracy \_\_\_\_\_  
Method:  Fixed transmitter  Shoot back  In line  Parallel line  
Frequency \_\_\_\_\_  
(specify V.L.F. station)

Parameters measured \_\_\_\_\_

#### GRAVITY

Instrument \_\_\_\_\_  
Scale constant \_\_\_\_\_  
Corrections made \_\_\_\_\_  
Base station value and location \_\_\_\_\_

Elevation accuracy \_\_\_\_\_

#### INDUCED POLARIZATION - RESISTIVITY

Instrument \_\_\_\_\_  
Time domain \_\_\_\_\_ Frequency domain \_\_\_\_\_  
Frequency \_\_\_\_\_ Range \_\_\_\_\_  
Power \_\_\_\_\_  
Electrode array \_\_\_\_\_  
Electrode spacing \_\_\_\_\_  
Type of electrode \_\_\_\_\_

GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL  
TECHNICAL DATA STATEMENT

RECEIVED

OCT 3 - 1973

PROJECTS  
SECTION

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT  
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT  
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey Geological

Township or Area 6 Mile Lake Area, Patricia Mining Division

Claim holder(s) J. P. DUCHARME  
R.R. #14 Dog L Road Thunder Bay

Author of Report L. J. Cunningham

Address 1 McPhee Ave., Kirkland Lake, Ontario

Covering Dates of Survey 15th July - 31 August, 1973  
(linecutting to office)

Total Miles of Line cut 2.1

MINING CLAIMS TRAVERSED  
List numerically

Pa. 325812  
Pa. (number)  
Pa. 325813

SPECIAL PROVISIONS  
CREDITS REQUESTED

DAYS  
per claim

ENTER 40 days (includes  
line cutting) for first  
survey.

ENTER 20 days for each  
additional survey using  
same grid.

- Geophysical
  - Electromagnetic \_\_\_\_\_
  - Magnetometer \_\_\_\_\_
  - Radiometric \_\_\_\_\_
  - Other \_\_\_\_\_
- Geological 40
- Geochemical \_\_\_\_\_

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer \_\_\_\_\_ Electromagnetic \_\_\_\_\_ Radiometric \_\_\_\_\_  
(enter days per claim)

DATE: 31st August, 1973 SIGNATURE: [Signature]  
1973 Author of Report or Agent

PROJECTS SECTION

Res. Geol. \_\_\_\_\_ Qualifications 63.1603

Previous Surveys \_\_\_\_\_

Checked by \_\_\_\_\_ date \_\_\_\_\_

GEOLOGICAL BRANCH \_\_\_\_\_

Approved by \_\_\_\_\_ date \_\_\_\_\_

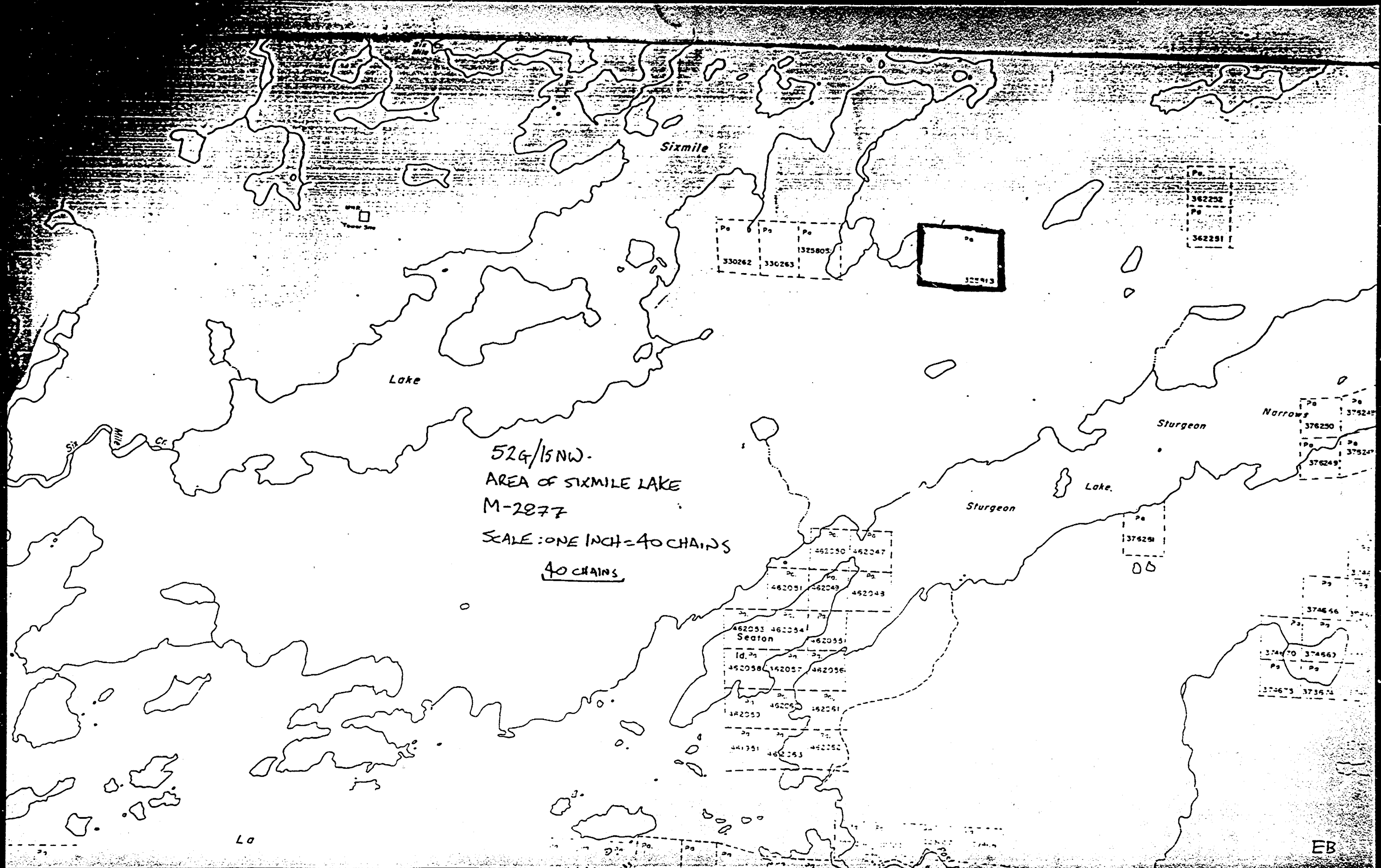
GEOLOGICAL BRANCH \_\_\_\_\_

Approved by \_\_\_\_\_ date \_\_\_\_\_

TOTAL CLAIMS 2

OFFICE USE ONLY

If space insufficient, attach slip





Ontario

Ministry of  
Natural  
Resources

W 1617, Parliament Buildings  
Toronto, Ontario M7A 1X1  
Telephone: 965-6918

February 6, 1974

Our file number 2.1315

Your file number

Mr. J. R. Oatway  
Regional Director  
Ministry of Natural Resources  
808 Robertson Street  
Kenora, Ontario

Attn: Mr. W. A. Buchan

Dear Sir:

Re: Mining Claims Pa. 325812 et al,  
Sixmile Lake, File 2.1315

The Geophysical (Magnetometer) and Geological assessment work credits as shown on the attached statement have been approved as of the date above.

The mining recorder should inform the recorded holder of these mining claims and so indicate on his records.

Yours very truly,

for J. R. McGinn  
Director  
Lands Administration Branch

OJ/mw

encl.

cc: Mr. J. Paul Ducharme  
cc: Mr. Leonard Cunningham  
cc: Resident Geologist's Office ✓  
Sioux Lookout, Ontario



TECHNICAL ASSESSMENT WORK CREDITS

Recorder Holder ..... Mr. J. Paul Ducharme .....

Township or Area ..... Sixmile Lake .....

Type of Survey and number of Assessment Days Credits per claim

Mining Claims

GEOPHYSICAL

Electromagnetic .....days

Magnetometer .....20.....days

Radiometric .....days

Induced Polarization .....days

GEOLOGICAL .....40.....days

GEOCHEMICAL .....days

Man days

Airborne

Special Provision

Ground

Pa. 325812 - 13

NOTICE OF INTENT TO BE ISSUED

Credits have been reduced because of partial coverage of claims.

Credits have been reduced because of corrections to work dates and figures of applicant.

NO CREDITS have been allowed for the following mining claims as they were not sufficiently covered by the survey:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40;