



42C16NE8423 2.1455 HAWKINS

010

PROJECTS UNIT

REPORT ON
GROUND MAGNETOMETER SURVEY
HAWKINS TOWNSHIP
DISTRICT OF ALGOMA, ONTARIO
FOR
MAGI GOLD MINES LIMITED

BY
BARRINGER RESEARCH LIMITED
304 CARLINGVIEW DRIVE
METROPOLITAN TORONTO
REXDALE, ONTARIO
APRIL 1974

1. INTRODUCTION

1.1 GENERAL

During the time from January 21, 1974 to February 19, 1974, both dates inclusive, a ground magnetometer survey was carried out by Barringer Research Limited on behalf of Magi Gold Mines Limited on a group of 12 claims, located in Hawkins Township, District of Algoma, Ontario. The ground magnetometer survey was the second phase of a geophysical survey programme; an induced polarization survey was carried out in February and March, 1973. The report will discuss the results of the magnetic survey and will make references to the earlier IP survey.

1.2 PROPERTY

The property consists of 12 claims, located northwest of Dubroy Lake, in Hawkins Township, District of Algoma, Ontario. The claims are numbered SSM 329323 to 329326 and SSM 329331 to 329338, all numbers inclusive, and are in the Sault Ste. Marie Mining Division.

↑
2.1306

1.3 LOCATION AND ACCESS

The property is approximately 10 miles southeast of Oba, on the Canadian National Railway main line, at its intersection with the Algoma Central Railway. Access is by three miles of bush trail from Langdon Station on the ACR line about seven miles south of Oba. There are also some logging roads near the property which may provide more convenient access in summer time.

Reference: Topographic Map: NTS 42C/16.

The location of the property is given on the Locality Plan (Dwg. No. 5-338-1).

1.4 PREVIOUS WORK

The gold bearing veins on the property have been subject to investigation by several workers and companies up to 1945. Some of the early work is described in the Ontario Department of Mines Annual Report, Vol. 38, Part 6, 1929. Hollinger Gold Mines optioned the property in 1935 and did extensive drilling but primarily on a part of the zone west of the present group of claims. The so-called Taylor showing, on Claim SS 329331, was explored by Mitnor Gold Mines Limited between 1939 and 1945. Magi Gold Mines Limited conducted an induced polarization survey over the present claims in 1973. The findings of the IP survey were reported earlier.

1.5 GEOPHYSICAL WORK

The ground magnetic survey was planned to be carried out in conjunction with the earlier IP survey, however it could not be carried out that time due to magnetic storms coupled with spring break-up conditions.

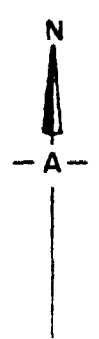
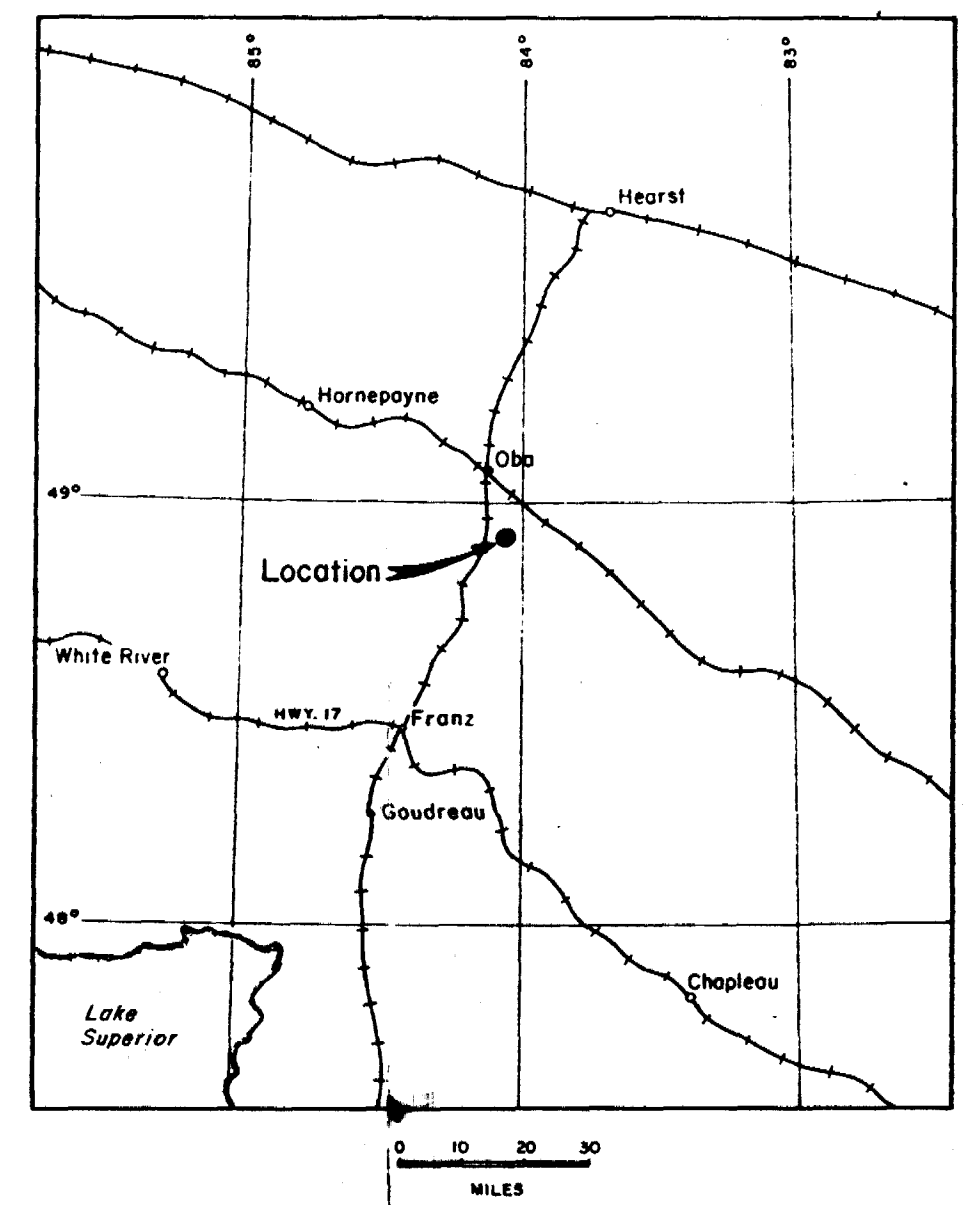
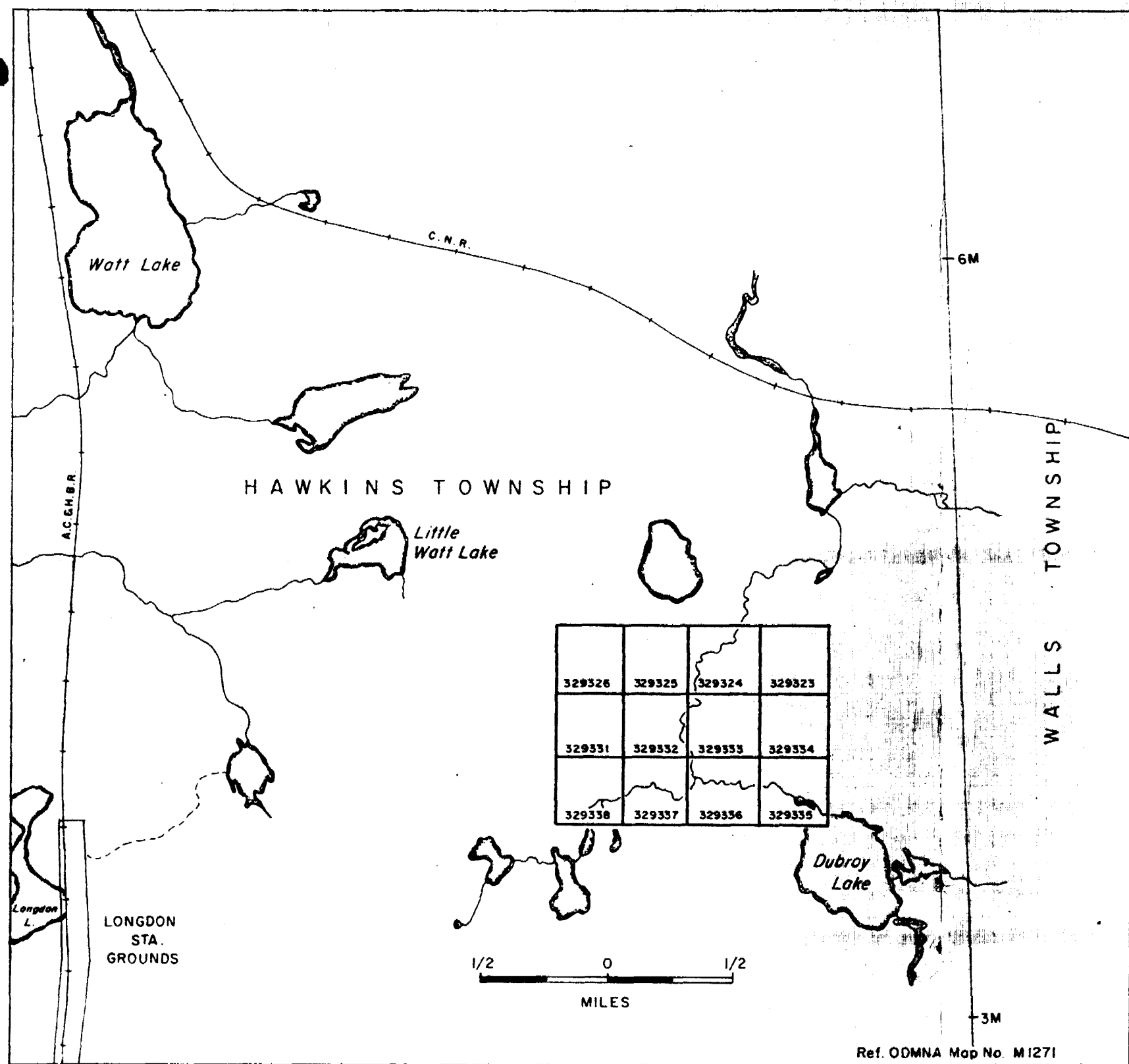
The purpose of the magnetic survey work was to aid the geologic understanding of the area and to help in the interpretation of the IP survey. The magnetic survey includes 1277 readings (including 214 detail station readings) covering 19.6 line miles.

1.6 SURVEY CONTROL

The grid was recut under separate contract by Angus MacDonnell of North Bay, Ontario. The base line has a bearing of 90° T and the survey lines are perpendicular to the base line. The nominal survey line interval is 200 feet. The lines were cut, chained and picketed at 100 foot interval. Altogether 19.6 line miles were cut including the base line. The old and the new grids are tied together along the old base line, and the tie is shown on the maps.

1.7 PERSONNEL

The ground magnetometer survey was carried out by J. Martin and A. MacDonnell, geophysical operators, under the direction of Frank L. Jagodits, P. Eng., Chief Geophysicist.



MAGI GOLD MINES LTD.	
HAWKINS TOWNSHIP, ONTARIO	
LOCALITY PLAN	
APRIL 1973	DWG.5-338-1

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada.

2. SURVEY PROCEDURES

The magnetometer survey was carried out along the survey lines; the vertical component of the earth's magnetic field were obtained at the stations 100 feet apart. Intermediate readings were taken in areas of steep magnetic gradients. The survey was carried out in loops commencing at a base station and terminating at a base station within two hours of commencing the loop. The diurnal variations of the magnetic field were determined from the loops and each reading was corrected for the diurnal variations.

3. DESCRIPTION OF INSTRUMENTATION

The survey was carried out using a MF-1 vertical field fluxgate magnetometer manufactured by Scintrex Limited of Toronto. It measures the vertical component of the earth's magnetic field in five ranges (either plus or minus) 1000, 3000, 10,000, 30,000, 100,000 gammas full scale deflection respectively. The readability is 5 gammas on the 1000 gamma range. The accuracy of the instrument is quoted by the manufacturer to be $\pm 0.5\%$ of full scale for ranges between 1000 and 10,000 gammas and $\pm 1\%$ of full scale for ranges between 30,000 and 100,000 gammas. The temperature stability of the meter is less than one gamma per 1° F. The instrument includes bucking adjustment to remove the main vertical field in any given area (latitude adjustment).

4. DATA REDUCTION AND PRESENTATION OF THE RESULTS

The results are presented in the form of contours of equal intensity of the vertical component of the earth's magnetic field. The basic contour interval is 25 gammas, with suitably larger intervals in areas of steep magnetic gradients. The value of the vertical magnetic field is indicated beside each station; the contouring assumes linear changes between stations and survey lines.

The scale of the map is 1 inch = 200 feet (Dwg. No. 5-338-8).

The interpretation of the data is presented on the Interpretation Map (Dwg. No. 5-338-9); the magnetic contour map serves as the base for the presentation.

5. KNOWN GEOLOGY

The property is situated on a narrow band of greenstone or schist complex within which occur narrow veins of quartz with native gold. In addition to the gold the veins also carry chalcopryrite and galena, and pyrite.

The veins strike N 80°E and dip 80° N. Three such veins have been described within the present claim group, but several are known in the adjacent areas along the same zone of schist complex.

The veins on Claim SSM 329331 were the first discovered in the area. The discovery was made by G. Taylor, after whom they are named, in 1923.

Although the area is extensively covered by glacial deposits, a number of outcrops are to be found on the small hills and along the creeks in the area.

The geology is described in the Ontario Department of Mines Annual Report, Vol. 38, Part 6, 1929, by J.E.Maynard.

6. INTERPRETATION

6.1 GENERAL

The use of the magnetic characteristics of rocks to aid the "mapping" of subsurface geology is well established. To obtain a geological interpretation of the magnetic contour map, studies of magnetic features such as gradients, distribution and frequency of anomalies, amplitudes of anomalies, strike, etc., were made. Areas of different magnetic characteristics were outlined as magnetic units. Altogether, six magnetic units were outlined on the basis of changes in the various characteristic patterns of the magnetic anomalies.

These characteristics are as follows:

- (a) magnetic base levels
- (b) intensity, shape, strike, frequency and distribution of anomalies within the unit
- (c) relationship to surrounding units

The magnetic contours have also been studied for expressions of faulting and shear zones are interpreted from magnetic gradients and from abrupt terminations and displacements of magnetic trends.

6.2 DETAILED INTERPRETATION

6.2.1 General Comments

As indicated above the study of the magnetic contour map resulted in the delineation of six magnetic units. These units may represent separate geologic formations. However, it is believed that in some cases two or more magnetic units describe the same geologic formation; the units represent variations in the magnetite content of the rocks.

There are two major groups of units. The first group include Magnetic Units 1, 1?, 5 and 6, the second group include Magnetic Units 2, 3 and 4.

These two units can easily be equated to the two major geologic formations occurring in the area. The first being the older batholithic intrusives and other acid intrusives, the second being the schist complex. These will be discussed further in the detailed discussion of the units.

A number of faults and a shear zone was interpreted from previous induced polarization survey. The magnetic data on the whole confirmed that interpretation, although differences occur. The shear zone indicated by the IP survey is not clearly indicated in its entire length, however a number of northeast striking faults, falling within the interpreted shear zone, are interpreted from the magnetics in the central map area. East - west striking faults were also interpreted from the magnetics.

6.2.2 Discussion of the Magnetic Units

(i) Magnetic Unit 1

The unit occurs in the south of the map area as well as in the north central map area. An area in the northwest is designated Magnetic Unit 1?, which has the general characteristics of Unit 1 but its interpretation is uncertain.

The geologic map of the Oba Area (Map No. 38c, Department of Mines of the Province of Ontario, by J. E. Maynard, 1929) indicates a contact between the batholithic complex on the south and the schist complex on the north.

This batholithic complex is described by the southern Magnetic Unit 1.

The north central Magnetic Unit 1 occurs in an area where the geologic map indicates a schist complex. On magnetic evidence it is interpreted that this area is underlain by acidic rocks (granite).

In the case of the eastern part of the unit (Unit 1?) the interpretation is uncertain, but the magnetic evidence support that it is underlain by acid to intermediate rocks, probably intrusive.

(ii) Magnetic Unit 2

The unit occupies the northwestern corner of the map area. It is characterised by mainly east-west striking, relatively narrow anomalies of quite large amplitude. The width of the anomalies appears to increase towards the north. The magnetic character suggest that the unit is underlain by a schist complex ("pillow lava, biotite, hornblende and chlorite schists, amphibolite").

The trenches which have been dug on the old gold veins, with the exception of one, fall within this unit. The correlation between magnetics and location of the trenches is not uniform. Out of the eight indicated locations, four trenches are located in areas of steep magnetic gradients, which may indicate contacts between different phases of the schist complex. The other four trenches are located in areas of gentle magnetic gradients or in areas of low magnetics; a dyke-like feature, marked 2? is interpreted to strike east-west and crossed by a series of northeast striking faults. Its geologic interpretation is uncertain but it is more than likely that it is underlain by rocks belonging to the schist complex.

(iii) Magnetic Unit 3

The unit occurs in the northeast of the map area, and it separates Units 1 and 1?. It is characterised by anomalies of larger amplitude than in Unit 1. The anomalies are often nearly circular and/or limited in strike length. It is believed that the underlying rocks are of the schist complex but of a different phase from the rocks occurring in Unit 2. It may also include north-south and east-west striking dykes (at the limit between Units 1 and 3 in the northwest of Unit 3 and at the southern limit of Unit 3).

(iv) Magnetic Unit 4

The unit is located in the southeastern map area and it is not that much different in character from Unit 3. It may well be a southern continuation of that unit (Unit 3). Probable underlying rocks: diabase dykes (?), and/or schist complex.

(v) Magnetic Units 5 and 6

The units are rather similar, although there are more local variations that occur in Unit 5 than in Unit 6. Rocks of acidic to intermediate composition may underlie the area. However, the possibility that these may be part of the schist complex cannot be ruled out.

6.2.3 Correlation with the IP Results

The previous report discussing the IP data described two main features. One is located in Claims SSM 329326 and SSM 329331; the other is located in the northeast of the map area.

The first IP anomalous area falls within Magnetic Unit 2, which is believed to represent the schist complex. Closer inspection of the correlation between the southern part of the IP zone and magnetics reveals that the IP high on the old base line at the old Line 5+50E correlates with a relatively intense, but narrow magnetic anomaly; this correlation persists at the peak on old Line 9+86E, but the magnetic anomaly is different from the one discussed earlier. There is an apparent partial correlation between magnetics and IP in the southern zone, however, it is believed that magnetite is not the major contributor to the total IP anomaly but it may cause individual high readings as indicated by direct correlation between the magnetics and IP.

In the case of the northern, probably more significant zone, the IP high correlates with an area of relatively low magnetic relief within the complex Magnetic Unit 2.

The most intense anomaly occurs on the old Line 14+40E at Station 6+00N. "Although it is present at only one station, the detail work shows it to be repeatable at various electrode spacings, thus persisting to depth". The detail pseudo-sections show a high chargeability mostly increasing with depth. The IP anomaly occurs in an area of low magnetics, with the exception of just south of Station 6+00N on old Line 16+55E where a short strike length but intense, narrow magnetic anomaly occurs.

The easterly IP anomaly on old Line 52+72F occurs in Magnetic Unit 1?, peaking near a change in magnetic character within Unit 1?. Magnetic evidence suggests that the area is underlain by rocks of acid to intermediate composition, more than likely intrusive.

7. CONCLUSIONS AND RECOMMENDATIONS

The induced polarization survey outlined a large chargeability anomaly in the northwest corner of the claim group. The IP anomaly is located within Magnetic Unit 2, which is believed to represent the schist complex.

The other anomaly on the east, which is open to the east, is located within Magnetic Unit 1?. The magnetic unit is quite different in character from Unit 2 and is believed to be underlain by rock of acid to intermediate composition, probably intrusive in origin.

The magnetic survey revealed a more complex geology than was anticipated from the known geology. The southern contact between the older batholithic intrusives and the schist complex is quite clearly defined on the magnetic contour map. Additional areas which may also be underlain by acidic intrusives were outlined by the magnetics.

In the earlier report recommendations were made to stake additional claims to protect the anomalies. The magnetic evidence suggests that the Magnetic Units 2 and 1?, containing the two IP anomalies, are open to the west and east respectively, and it is felt that the previous recommendations are further substantiated by the magnetic evidence. In view of the fact that geological mapping of the claim block could not be carried out, it is recommended that only a partial testing of the anomalies by drilling should be carried out. Depending on the findings of the initial drilling and the geological mapping, a further drilling programme can be laid out.

In order to test the IP anomalies, the following drill holes are recommended. The location of the drill holes are referred to the new grid which was cut for the magnetic survey.

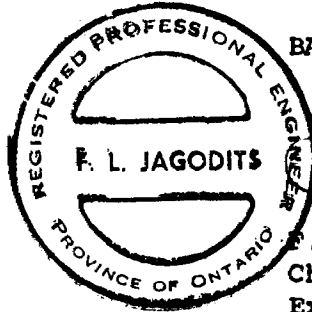
Drill Hole 1: Collar: Station 4+25N, Line 11E, Azimuth: grid north
Dip -45° , Depth 300 feet

Drill Hole 2: Collar: Station 8+50N, Line 2E, Azimuth: grid south,
Dip -60° , Depth 300 feet

Drill Hole 3: Collar: Station 0+50N, Line 6+50E, Azimuth: grid north,
Dip -60° , Depth 300 feet

Respectfully submitted

BARRINGER RESEARCH LIMITED



F. L. Jagodits
F. L. Jagodits, P. Eng.,
Chief Geophysicist,
Exploration Division.



GEOPHYSICAL - GEOLO
TECHNICAL DATA STATEMENT

900

RECEIVED

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.

APR 9 - 1974

PROJECTS UNIT

Type of Survey Magnetometer
Township or Area Hawkins Township
Claim holder(s) Magi Gold Mines Limited
Author of Report F. L. Jagodits
Address 304 Carlingview Drive, Rexdale, Ontario
Covering Dates of Survey January 21 to February 19, 1974
(linecutting to office)
Total Miles of Line cut 19.6

MINING CLAIMS TRAVERSED
List numerically

- | SSM 329323 | (prefix) | (number) |
|------------|----------|----------|
| SSM 329324 | | |
| SSM 329325 | | |
| SSM 329326 | | |
| SSM 329331 | | |
| SSM 329332 | | |
| SSM 329333 | | |
| SSM 329334 | | |
| SSM 329335 | | |
| SSM 329336 | | |
| SSM 329337 | | |
| SSM 329338 | | |

SPECIAL PROVISIONS CREDITS REQUESTED	DAYS per claim
Geophysical	
- Electromagnetic	
- Magnetometer	40
- Radiometric	
- Other	
Geological	
Geochemical	

ENTER 40 days (includes line cutting) for first survey.
ENTER 20 days for each additional survey using same grid.

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

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: April 8, 1974 SIGNATURE: [Signature]
Author of Report

PROJECTS SECTION
Res. Geol. _____ Qualifications 2.55
Previous Surveys 63.3016 Not filed for assessment credits.
Checked by 2.1306 (LP) No credits for linecutting were given on that file.
GEOLOGICAL BRANCH _____
Approved by LD _____ date _____
GEOLOGICAL BRANCH _____
Approved by _____ date _____

TOTAL CLAIMS 12

OFFICE USE ONLY

If space insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 1063 Number of Readings 1277
Station interval 100 foot
Line spacing 200 foot
Profile scale or Contour intervals 25 gammas
(specify for each type of survey)

MAGNETIC

Instrument Scintrex MF-1 Fluxgate Magnetometer
Accuracy - Scale constant ± 0.5%
Diurnal correction method base station looping
Base station location Camp (located Line 6E at 16+00S)

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 _____

HAWKINS

DISTRICT OF ALGOMA

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

- PATENTED LAND Ⓟ
- CROWN LAND SALE C.S.
- LEASES Ⓛ
- LOCATED LAND Loc.
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS —
- IMPROVED ROADS —
- KING'S HIGHWAYS —
- RAILWAYS —
- POWER LINES —
- MARSH OR MUSKES —
- MINES Ⓜ
- CANCELLED C.

NOTES

400' surface rights reservation around all lakes and rivers.

Areas withdrawn from staking under Section 43 of the Mining Act. (S.R.O. - 1970)

File	Date	Disposition
Ⓣ 164585 vol. 2	4/10/72	S.R.O.

- MINING LANDS -
 DATE OF ISSUE
APR - 9 1974
 MINISTRY
 OF NATURAL RESOURCES

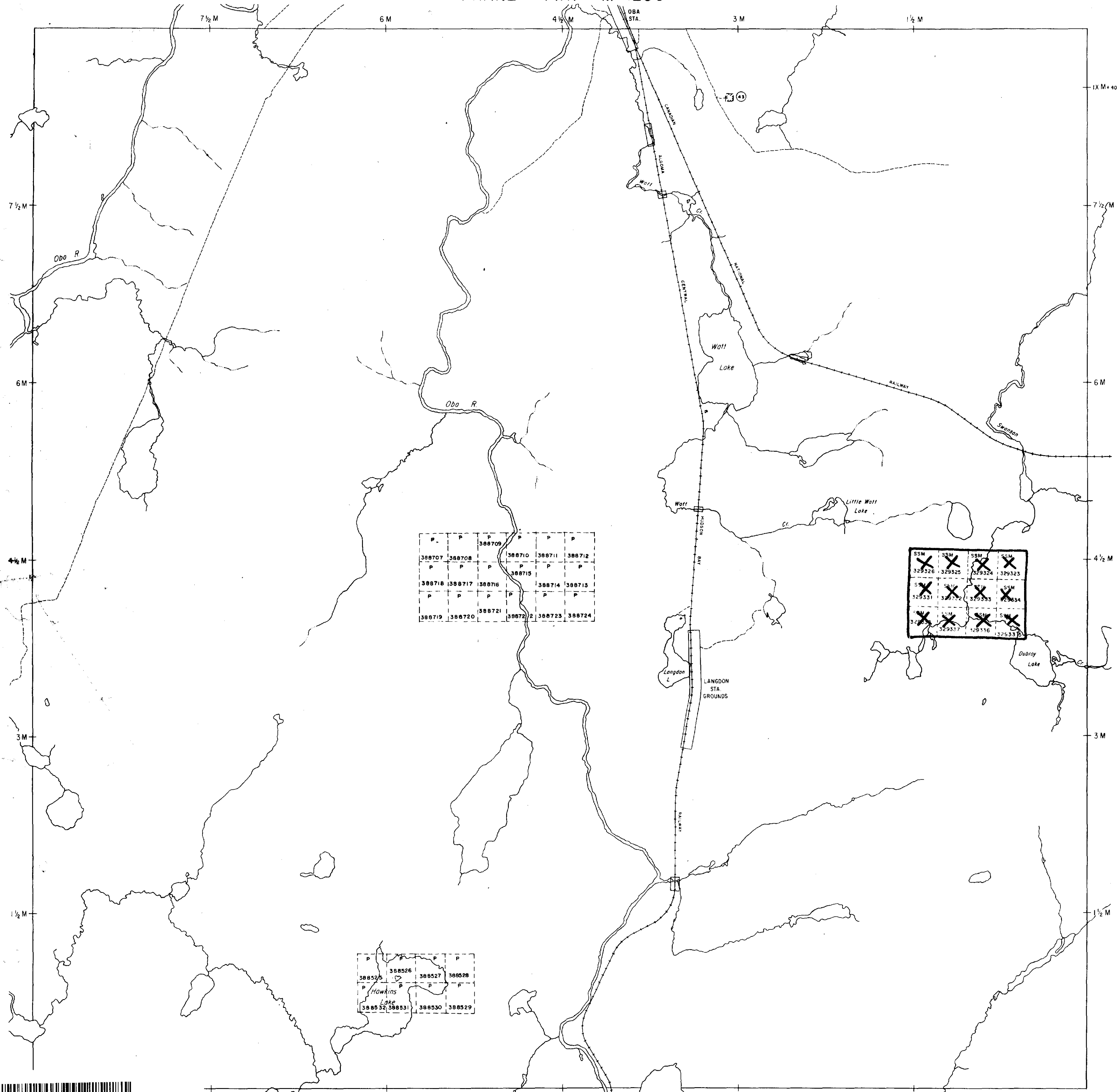
File - 2.1455

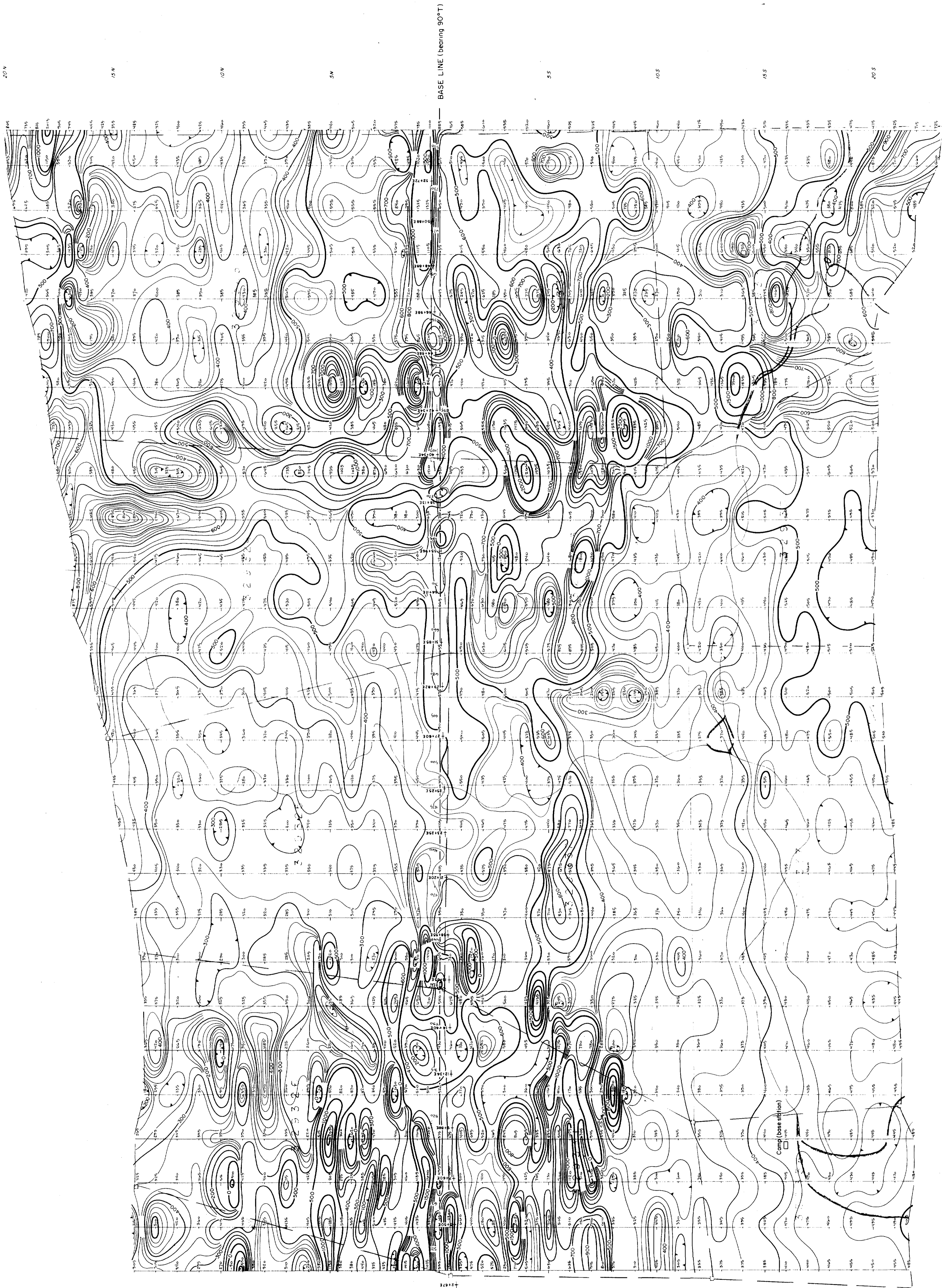
PLAN NO. **M-1271**

MINISTRY OF NATURAL RESOURCES
 SURVEYS AND MAPPING BRANCH

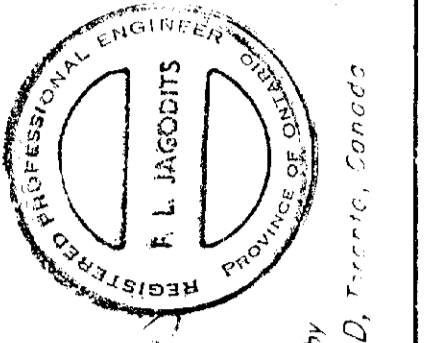
DERRY TWP. M-1243

WALLS TWP. M-1366





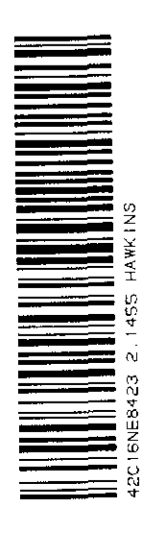
LEGEND.
 Contour interval 25 gammas
 500 gamma contour
 100 gamma contour
 25 gamma contour
 Depression
 Camp (base station)
 Clean pits, located/unlocated □ ○



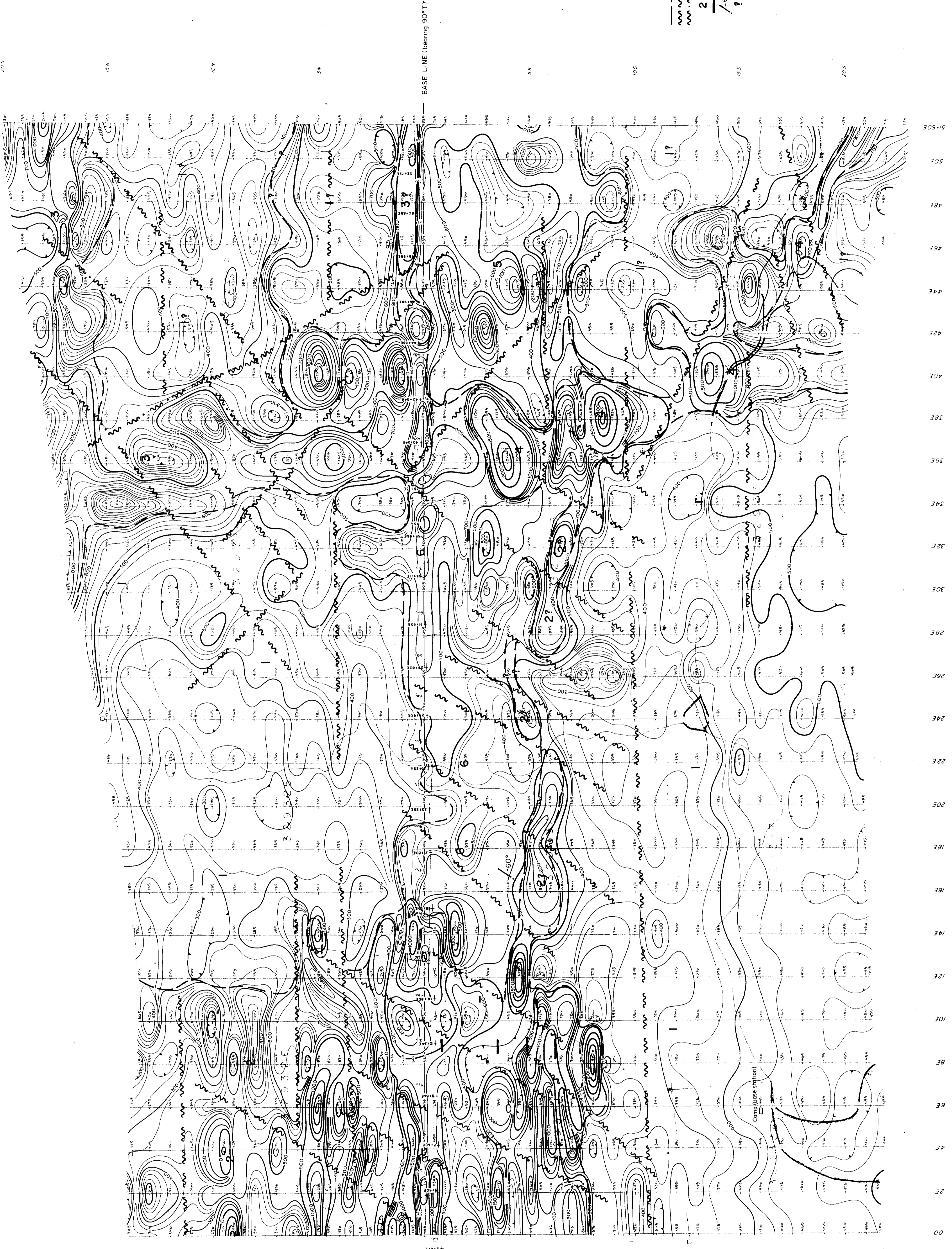
Prepared by
 S. L. JACOBS
 MAGNETIC RESEARCH LTD., Toronto, Canada

MAGI GOLD MINES LTD.
 HAWKINS TOWNSHIP, ONTARIO
**VERTICAL FIELD
 MAGNETICS**
 MARCH 1974 SCALE - 1" = 200' DWG. 5-338-8

2.1455-



210



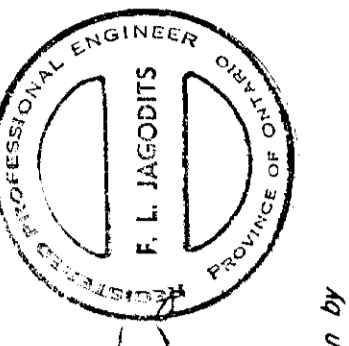
INTERPRETATION LEGEND

~~~~~ Approximate limit of magnetic unit  
 ~~~~~ Approximate locations of fault and/or shear zone  
 ~~~~~ Approximate limit of magnetic unit coinciding with  
 ~~~~~ Approximate limit of magnetic unit  
 2 Magnetic unit number
 / 60° Location of old trenching
 ? Location of old drill hole
 Interpretation uncertain

LEGEND

~~~~~ Contour interval 25 gamma  
 ~~~~~ 500 gamma contour  
 ~~~~~ 100 gamma contour  
 ~~~~~ 25 gamma contour  
 ~~~~~ Depression  
 □ □ Claim posts, located/unlocated

2.1455



MAGI GOLD MINES LTD.  
HAWKINS TOWNSHIP, ONTARIO

**MAGNETIC INTERPRETATION**

MARCH 1974 SCALE - 1" = 200' DWS 5-338-9

Work undertaken by  
**BARRINGER RESEARCH LTD., Toronto, Canada**



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