



52N04NW0049 63.1168 MCDONOUGH

010

McPHAR GEOPHYSICS LIMITED

GENERAL NOTES ON THE McPHAR ELECTROMAGNETIC METHOD

Electromagnetic measurements are made in terms of "dip angles" and are recorded in degrees. The dip angles measure the amount of distortion of the primary (applied) electromagnetic field caused by secondary fields associated with currents induced in sub-surface electrical conductors. These angles are plotted in degrees on the accompanying maps either beneath or to the right of the station from which each observation was taken. Where a minus sign precedes a number, the angle of dip is to the west or south; the absence of a sign preceding a number indicates an easterly or northerly dip angle.

Transmitting coil locations are termed "setups"; each one being marked on the maps with a triangle and bearing a code number. Several lines are traversed with the receiving coil when the transmitting coil is at any one location; the readings on these lines are related to the corresponding setup by the code at the end of each series of readings.

"Conductor-axes" are marked on the maps according to the legend. They are, in general, vertical projections to the surface of the upper extremities of electrically-conductive bodies.

Electromagnetic anomalies can result from sulphide mineralization, graphitic schists, carbonaceous sediments and, on occasion, fault zones. Apropos of this it is to be noted that disseminated sulphide mineralization consisting entirely of discrete particles is not a conductor at the normal frequencies used for practical geophysical exploration. Consequently,

exploration of a property subsequent to an electromagnetic survey should be based not only on the indicated electromagnetic anomalies, but should take into account all the geologic and physiographic data that can be obtained.



REPORT ON THE
ELECTROMAGNETIC AND
MAGNETOMETER SURVEYS
FOR
LUXOR RED LAKE MINES LIMITED
RED LAKE DISTRICT, ONTARIO

1. INTRODUCTION

At the request of Mr. J. H. Shepherd, we have carried out detailed electromagnetic and magnetometer surveys on the property of Luxor Red Lake Mines Limited, located in the Red Lake District of Northwestern Ontario. The property consists of 33 claims in the Slate Bay Sector of Red Lake in the southwestern part of McDonough Township.

The investigation was carried out in an attempt to locate sub-surface electrical conductors which might be indicative of economic massive sulphide deposits, similar to the copper bearing deposit recently located on the property of Cochenour Willans Gold Mines, located immediately to the north of the Luxor ground. The field work was carried out from the latter part of January to the early part of March, 1962, employing a long range vertical loop EM system and an Askania Schmidt Type Magnetometer.

Several interesting conductors were outlined by the survey, some of them coincident with magnetic anomalies. A program of

exploratory diamond drilling is recommended to determine the cause of these anomalies.

2. PRESENTATION OF RESULTS

The geophysical results are shown on the accompanying maps at a scale of 1" = 200'. The regular EM survey results from the main grid are shown on Dwg. E4697 and the results of the detail set-ups on Dwg. E4698. The conductor axes from both the regular EM and detailed EM surveys have been plotted on Dwg. E4697, using different symbols as shown on the legend. Results of the magnetometer survey are shown on Dwg. M4699, using a 500 gamma contour interval.

While the present survey was underway, seven additional claims were staked to the east of the main group. A limited amount of EM and Magnetometer surveying was carried out on this new block of claims and the geophysical results are shown on Maps E3343 and M3344.

Also included with the report is Location Map Misc. 2878, at a scale of 1" = 1000', showing the location of the geophysical grid and the main geological units.

3. GENERAL GEOLOGY

The general geology of the area is shown on Ontario Department of Mines Map #36D, at a scale of 1 mile to the inch, and on Maps 49A and B at 1/2 mile to the inch. Evidently outcrops are scarce on the Luxor property so that the geology is imperfectly known. However, the waters of Slate Bay are evidently underlain by a series of Keewatin

volcanics and the peninsula to the east of Slate Bay by Temiskaming siliceous sediments, with the contact between these two groups roughly paralleling the shore of Slate Bay. The regional strike is northeasterly with the dips being steep to the southeast.

A considerable amount of exploration was carried out several years ago in a search for gold veins and several holes were drilled, primarily in the north-central part of the property. There are several known sulphide occurrences but, at least at the surface, they contain only minor amounts of economic minerals.

Recently Cochenour Willans discovered an interesting copper occurrence immediately to the north of the Luxor Group and last summer a copper occurrence was found on the shore of Slate Bay on the Luxor property. The present investigation was carried out in an attempt to locate other deposits similar to the one on the Cochenour ground and several interesting anomalies have been outlined. The precise locations of the old drill holes with respect to the new grid are not known by us, but they do not appear to have checked any of these anomalies. However, it is recommended that an attempt be made to relocate these holes after break-up and to tie them in to the present grid.

4. DISCUSSION OF RESULTS: MAIN GRID

To carry out the present investigation, a new grid was established with the base line running northeast along the east side of Slate Bay and a series of picket lines at 200' intervals running north-west - southeast and stations at 100' intervals. The electromagnetic

survey indicated the presence of several closely spaced conductors and it was necessary to make several detailed set-ups in order to resolve the effects of the various anomalies. To avoid confusion, the results of the detailed EM survey are shown on a separate map, but all of the conductors from this work are shown on the main Map #E4697. The EM anomalies have been labelled alphabetically and are discussed in order below.

Zone A

In the extreme northeast part of the property there is a zone of good conductivity striking in a northeasterly direction and apparently dipping steeply to the southeast. The conductor continues north of the property boundary. It does not appear to extend south of Line 14S and may end about 8S; the weak response on Lines 10S to 14S may simply represent an off-the-end effect. The source appears to be very deep, probably 200 feet or more. The anomaly was checked by detail set-up #D-4, which confirmed the presence of the sub-surface conductor and indicated that the zone may actually end near Line 6S.

The conductor is coincident with a strong, deep-seated magnetic anomaly with about 4500 gammas relief on Lines 6N and 4N. The magnetic high becomes weaker to the south, suggesting either a south plunge or increasing depth to bedrock in this direction. The main part of this anomaly terminates at about Line 6S, but there is a weak extension to Line 12S.

Zone A is believed to be on strike with the Cochenour Willans copper deposit and a drill test is recommended to determine its cause. The closest point on shore is 500 feet away, hence it would require an 800 foot hole at an angle of 45° to reach the conductor if it is vertical. If it is decided to drill a hole from the shore, the following location is suggested: Line 0 or Line 2N, station 0+00; drilling in a westerly direction along the picket line at 40-45°.

Zone B

Zone B is a complex conductor striking in a northeasterly direction across the south central part of the grid. Because of changes in its character, it has been divided into three sections shown on the plan map as Zones B-1, B-2, and B-3.

Zone B-1 is located under Slate Bay and extends from about Line 46S to Line 54S. It is much deeper and exhibits poorer conductivity than either Zones B-2 or B-3. It has no magnetic coincidence and a drill test is not recommended at this time, but if interesting results are obtained elsewhere on the property, then a drill test should be considered.

Zone B-2 appears to be an extension of B-1, but displays much stronger conductivity and is very shallow; i. e. less than 50 feet. It strikes in a northeasterly direction from Line 44S to Line 32S and appears to dip to the southeast. The conductor coincides with a strong magnetic anomaly of over 10,000 gammas relief. This magnetic high is part of a discontinuous zone extending northeast across the property. It is not certain if the EM and magnetometer anomalies are due to the

same source, but the close coincidence of Zone B-2 with the magnetic high suggests that they are. The magnetic high appears to be too strong to be due to pyrrhotite and is more suggestive of magnetic iron formation. On the other hand, the EM anomaly displays stronger conductivity than is usual for magnetite. A drill hole is recommended to test both the EM and magnetometer anomalies as follows: Line 38+00S, station 7+50E; drilling north (i. e. grid NW) at 45° for a length of 250-300 feet. On the Luxor property map, there is an old drill hole shown near this conductor, but since its precise location is not known, we cannot be sure whether or not it actually tested the conductor. We believe that it did not but recommend that its exact location be determined after break-up.

The regular survey suggested the presence of a conductor between Lines 26S and 28S, indicating either an abrupt change in the strike of Zone B or another conductor. Subsequent detail work confirmed the presence of a conductor which is shown on the plan map as Zone B-3; it is still not clear whether this is a separate feature or an extension of Zone B, but the data indicate the latter is more likely. Zone B-3 displays only fair conductivity and appears to dip to the northeast. It is deeper than Zone B-2, but not as deep as Zone B-1 and it continues beyond the survey area to the southeast; it shows no significant magnetic relief. A drill test is suggested, particularly if encouraging results are obtained elsewhere on the property at the following location: Line 26S, station 24E, drilling SW along Line 24E

for a distance of about 300-350 feet.

Zone C

There is a short zone of moderate conductivity striking in a north-south direction from 16+50E, Line 14S to 22+00E, Line 20S. The conductor crosses the main magnetic anomaly on Line 16S, rather than coinciding with it. It is suggested that a decision on drilling be postponed until the results of the other holes become available.

Zone D

This conductor is located in the north part of the grid, extending from 4E, Line 2S to 1W, Line 8S and was indicated only by the detailed set-ups. It strikes east-west, has only fair conductivity, and there is no associated magnetic anomaly. Since this conductor is believed to be in the vicinity of the old sulphide showings, it is recommended that the area be checked in detail after break-up and if the conductor is not associated with previous known sulphide zones, then a drill test should be carried out.

Zone E

Zone E is located a few hundred feet southeast of Zone D and displays poor to fair conductivity. Its presence was indicated only by small flexures in the dip angle profiles on the regular survey, but it was confirmed by detail set-ups D-8 and D-9. The conductor crosses a strong narrow magnetic high, rather than coinciding with it. As with Zone D it should be investigated after break-up to ascertain whether

or not it is associated with previously known sulphide deposits.

Zone F

This zone is in the north central part of the grid, parallel to Zone D and about 800 feet to the southwest. It extends from about 1W, Line 22S to 4E, Line 14S, with a possible weak extension north-eastward to Line 8S. The zone displays poor conductivity; it did not show up well on the regular survey, but was confirmed by detail set-ups D-2 and D-5.

The conductor coincides with a strong narrow magnetic anomaly of over 10,000 gammas relief. This anomaly seems to be too strong to be due to pyrrhotite and is more suggestive of a band of magnetite. The relatively poor conductivity of the EM anomaly confirms this view and hence drilling does not appear to be warranted at this time.

Zone G

Zone G extends along the baseline from Line 6S to Line 26S. It was picked up by detailed set-ups D-2 and D-3, but was not confirmed by detailed set-ups D-4 or D-5. The results are suggestive of a zone of poor conductivity, possibly lake bottom or a poorly conducting narrow shear. There is no associated magnetic relief and drilling does not appear to be warranted.

Zone H

Zone H is located in the central part of the grid on strike with Zones B-1 and B-2, extending from about 10+50E, Line 32S to

16-501E, line 18S. Its presence was originally indicated only by flexures in the dip angle profiles but was confirmed by detailed set-up D-6. The source looks deeper than Zone B-2 and shows poorer conductivity.

The conductor coincides with the south side of the main magnetic anomaly which runs across the property. It does not appear to merit a drill test at this time, but should be drilled if interesting results are obtained from any of the other zones.

Other Anomalies

A few isolated conductor axes and weak indications were picked up by the EM survey, but they do not correlate into definite zones and are not considered to be of interest at this time.

Magnetometer Survey

The magnetometer survey outlined three major anomalies which have been discussed in the preceding section (see Zones B-2, F, and H). The only other anomaly of interest occurs at the lakeshore on lines 8S to 14S, but is not associated with an EM anomaly and hence is not considered to be of interest at this time.

5. DISCUSSION OF RESULTS: EAST GRID

Ontario Department of Mines preliminary map #124 (McDonough Township, south half) shows three strong magnetic anomalies in the north arm of Red Lake, about 1-1/2 miles east of Slate Bay. These anomalies are located at or near the nose of a fold in the volcanic-sediment contact, which is considered to be a favourable locus for ore

deposition, and hence are of considerable interest.

Several claims in this vicinity came open while the survey of the main grid was in progress. Our field crew subsequently staked seven claims on behalf of the Company to cover this open ground and then carried out a reconnaissance EM and magnetometer survey. Traverses were run by pace-and-compass as there was no surveyed grid.

The EM results show a zone of good conductivity, designated Zone 1, striking east-west. The east end of the conductor is located between lines C and B; the weaker effects on lines B and A represent either off-the-end effects or possibly a continuation of the zone, but with much poorer conductivity. The location of the west end is less certain, but the decrease in the magnitude of the response on line B suggests that the conductor does not extend this far west. Hence the inferred length is about 1600 feet. On lines CD and D there are either two parallel conductors or a single wide zone.

The EM anomaly coincides with a magnetic anomaly, having 2000 gammas relief, on lines C, CD and D. The west end of this feature has not been located but from the contour pattern its length is about 1400 feet, corresponding very well with the inferred length of the conductor.

These results are definitely of interest and drilling is recommended. Although the direction of the dip of the zone is uncertain, it appears to be steep and hence it is suggested that the drill be set up

near the north side of the small island on Line CD, drilling south at 45° for 350 feet to test the main conductor. The hole should be extended to 550 feet to test the second zone (or south edge if this is a single wide zone) or else a parallel hole should be drilled from the south edge of the island.

Two other magnetic anomalies and a second weak conductor were indicated by the reconnaissance survey, but additional work is required to assess their importance.

6. SUMMARY AND RECOMMENDATIONS

The geophysical surveys have indicated the presence of several anomalies on the Luxor ground. Some of these are of considerable interest since they display good conductivity and have associated magnetic anomalies. A drilling program is recommended to determine the cause of these anomalies and is now underway.

The EM zones can be divided into three groups as follows:

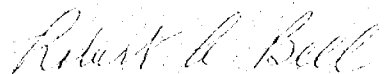
1) zones of good conductivity with associated magnetic anomalies (Zones A, B-2, and I); 2) zones of good conductivity with no magnetic expression and zones of poor to fair conductivity with magnetic expression (Zones B-1, B-3, C, and II); and 3) zones of poor to fair conductivity with no associated magnetic anomalies (Zones D, E, F, and G). Drilling is recommended for Group 1; Group 2 should probably also be drilled, especially if encouraging results are obtained from Group 1. Group 3 should probably not be drilled unless encouraging results are obtained from the other zones, or unless it is decided to exhaust all of

the possibilities on the property. In this case consideration should be given to checking the conductors with the Induced Polarization method to determine if there is a metallic source for these zones.

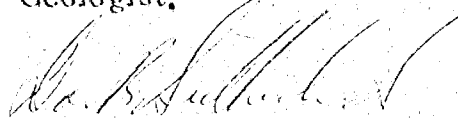
It is further recommended that detailed geologic mapping be carried out after break-up to determine if any of these anomalies are related to previously known sulphide deposits and to re-locate the old drill holes with reference to the new grid. Consideration should also be given to extending the EM and magnetometer surveys to cover the rest of the original claim group and the seven new claims to the east.

Locations for the initial drill holes are given on the following page. On completion of these holes the data should be restudied with a view to selecting additional drill sites.

McPIAR GEOPHYSICS LIMITED



Robert A. Bell,
Geologist.



D. B. Sutherland,
Geophysicist.

Dated: March 29, 1962.

Suggested Drilling Locations

Zone	Hole Location	Bearing (True)	Angle	Length
A	Line 2N; 0-100	NW	40°	700-800 feet
B-2	1.38S, 7-150E	N	45°	300 feet
B-3	1.26S, 24E	SW	45°	350 feet
1	1."CD", N edge of island	S	45°	550 feet

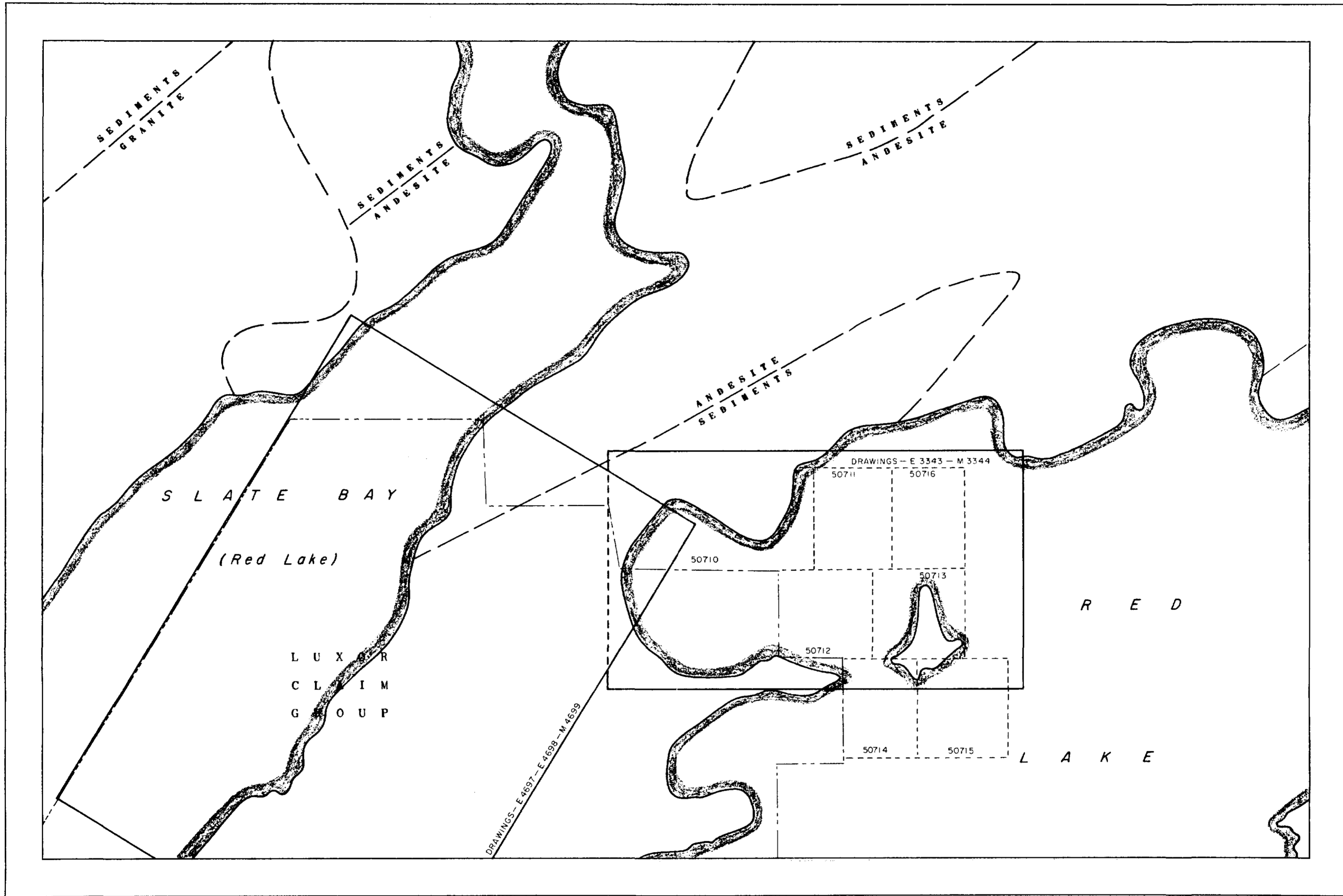
McPIAR GEOPHYSICS LIMITED

Robert A. Bell

Robert A. Bell,
Geologist.

McPHAR GEOPHYSICS LIMITED

LOCATION MAP

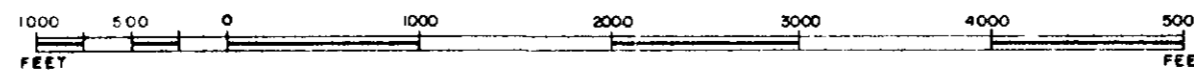


LUXOR RED LAKE MINES LIMITED

McDONOUGH TWP — SLATE BAY, RED LAKE, ONTARIO.

RED LAKE MINING DIVISION

SCALE



One Inch = One Thousand Feet

———— BOUNDARY OF LUXOR CLAIM GROUP
 - - - - - NEW CLAIMS STAKED MARCH 1962

DRAWN: F.R.P.
DATE: MARCH 1962

APPROVED:

R.L.B.

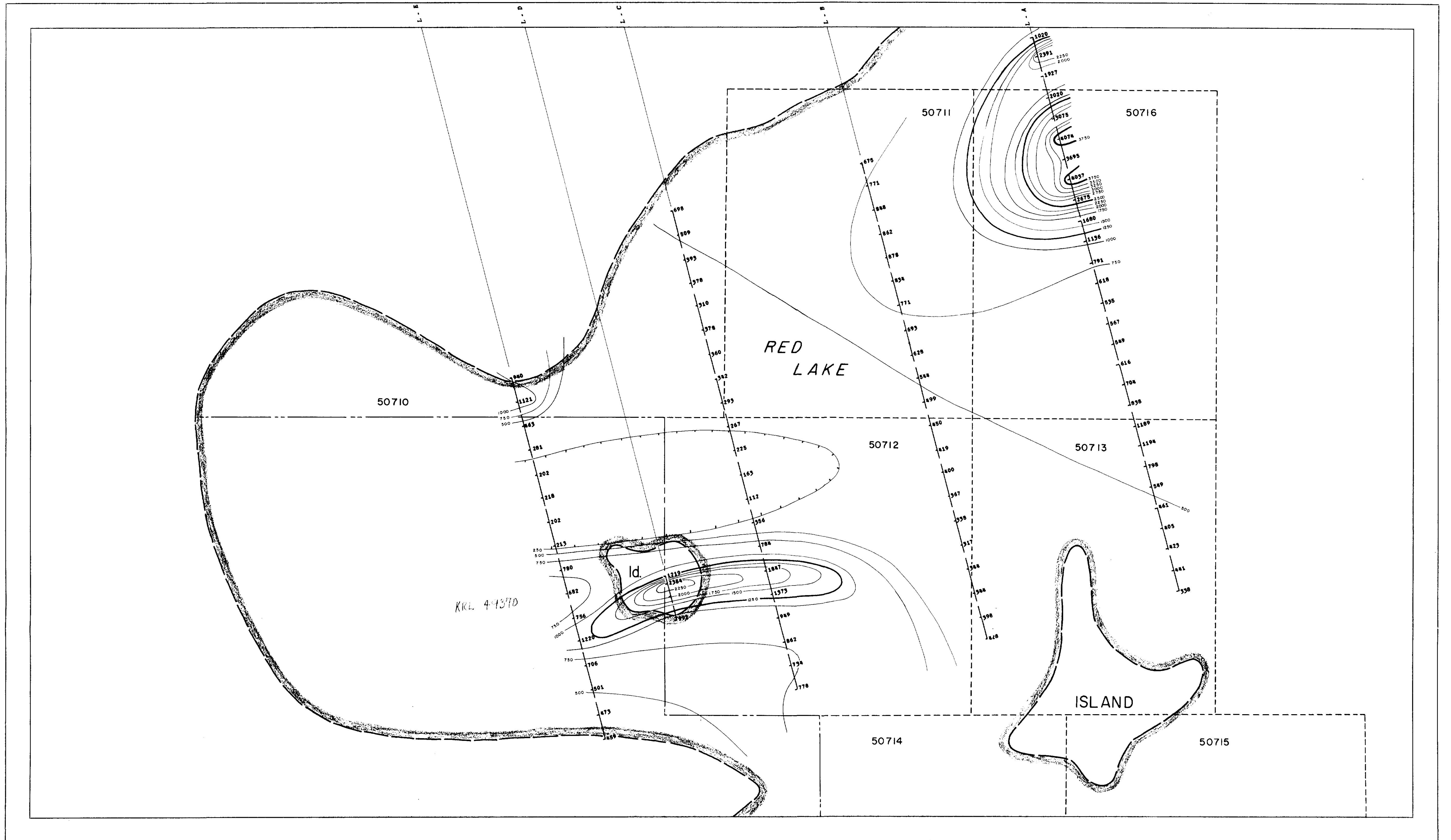
DATE:

MAR 27/62



McPHAR GEOPHYSICS LIMITED

MAGNETOMETER SURVEY

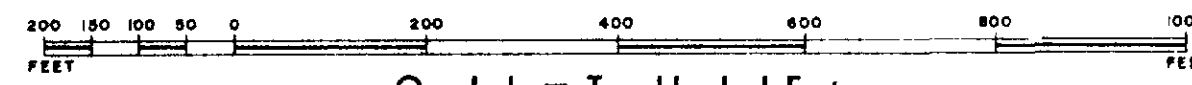


LUXOR RED LAKE MINES LIMITED

McDONOUGH TWP—EAST GROUP, RED LAKE, ONTARIO.

RED LAKE MINING DIVISION

SCALE



One Inch = Two Hundred Feet

NOTE:

- MAGNETOMETER - ASKANIA
- SCALE CONSTANT 22.5 γ
- OPERATOR - ED MacDONALD
- CONTOUR INTERVAL - 250 γ
- 1250 γ INTERVAL
- 250 γ INTERVAL
- BOUNDARY OF LUXOR CLAIM GROUP
- NEW CLAIMS STAKED MARCH 1962

DRAWN F.R.P.
DATE MARCH 1962
APPROVED:

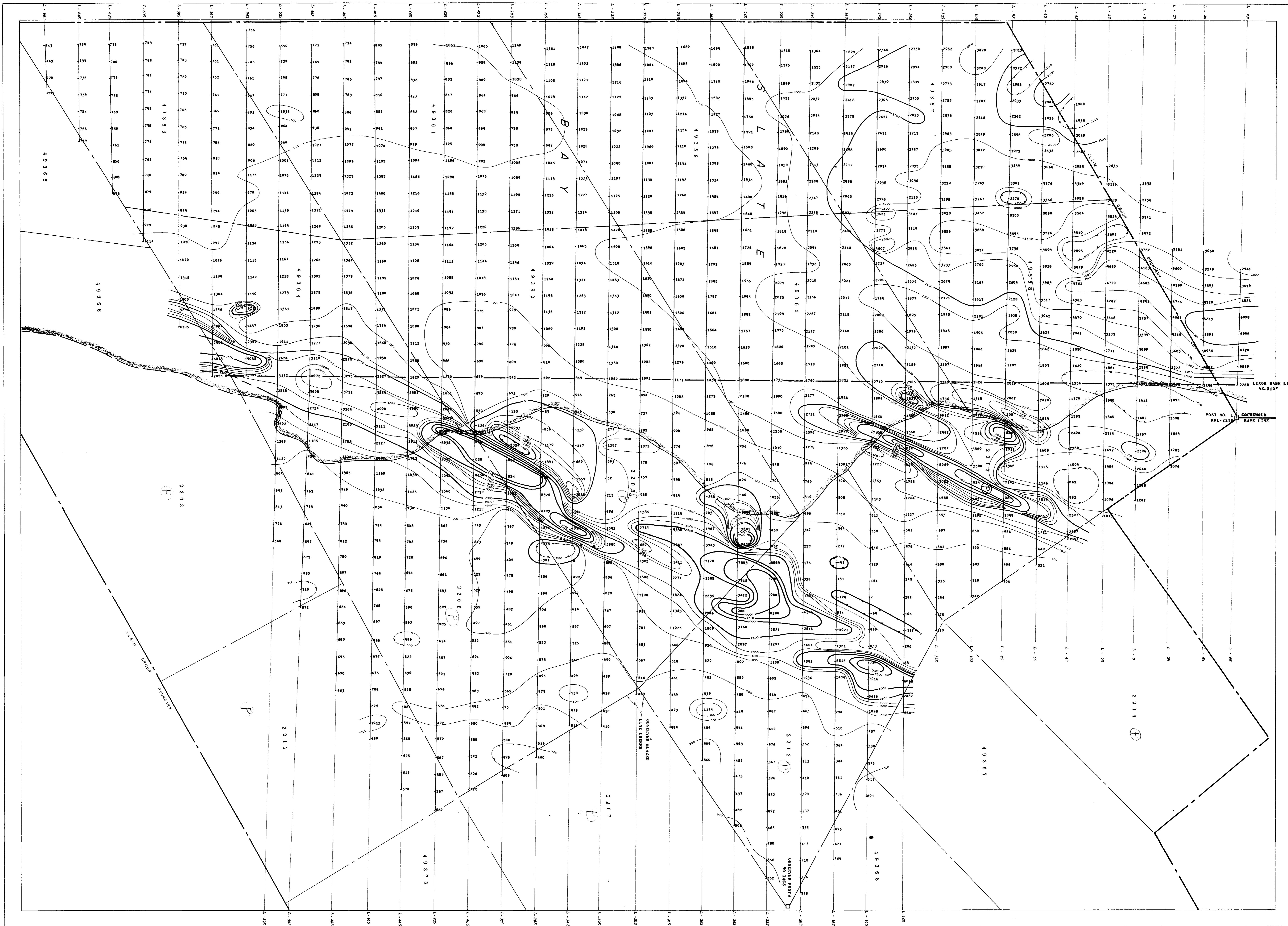
R.L.B.

DATE: *Mar 27/62.*



McPHAR GEOPHYSICS LIMITED

MAGNETOMETER SURVEY

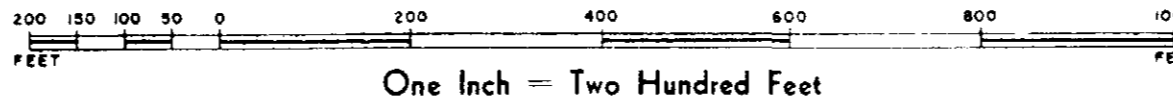


LUXOR RED LAKE MINES LIMITED

McDONOUGH TWP—SLATE BAY, RED LAKE, ONTARIO.

RED LAKE MINING DIVISION

SCALE



NOTE

- MAGNETOMETER - ASKANIA
- SCALE CONSTANT - 22.5 γ
- OPERATOR - ED MACDONALD
- CONTOUR INTERVAL - 500 γ
- 2500 γ INTERVAL
- 500 γ INTERVAL
- CLAIM BOUNDARIES APPROXIMATE

DRAWN F.R.P.

DATE MARCH 1962

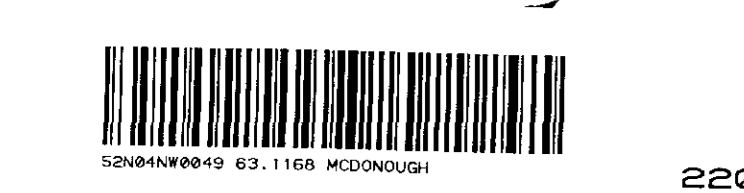
APPROVED

R.L.B.

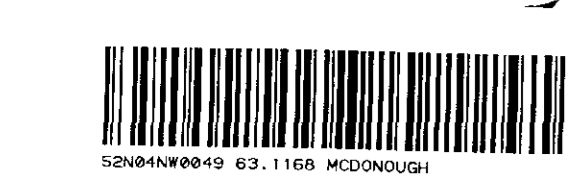
DATE

Mar 27/62

DWG. M 4699

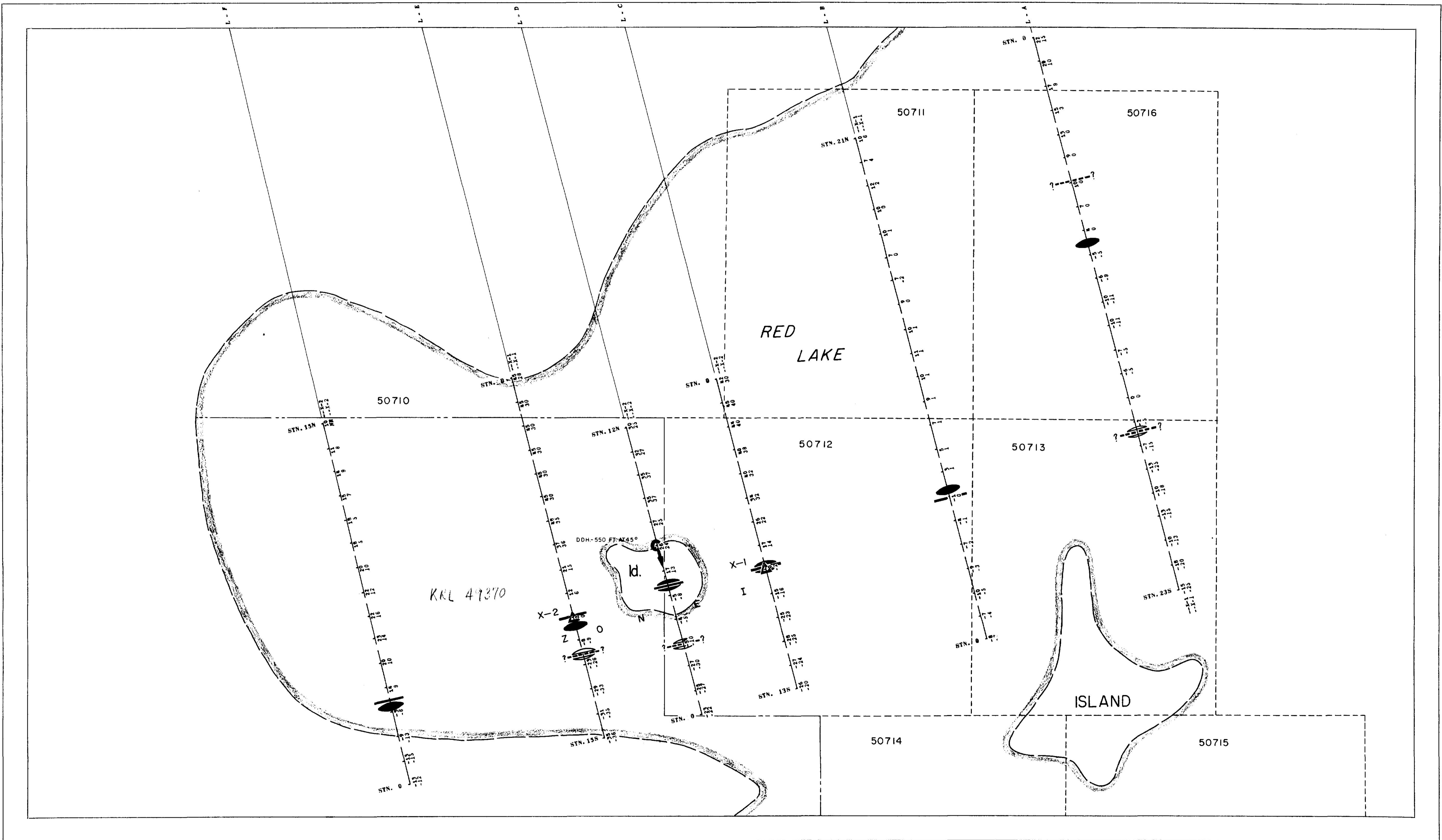


GRID NORTH



DWG. E-3343

McPHAR GEOPHYSICS LIMITED
ELECTROMAGNETIC SURVEY



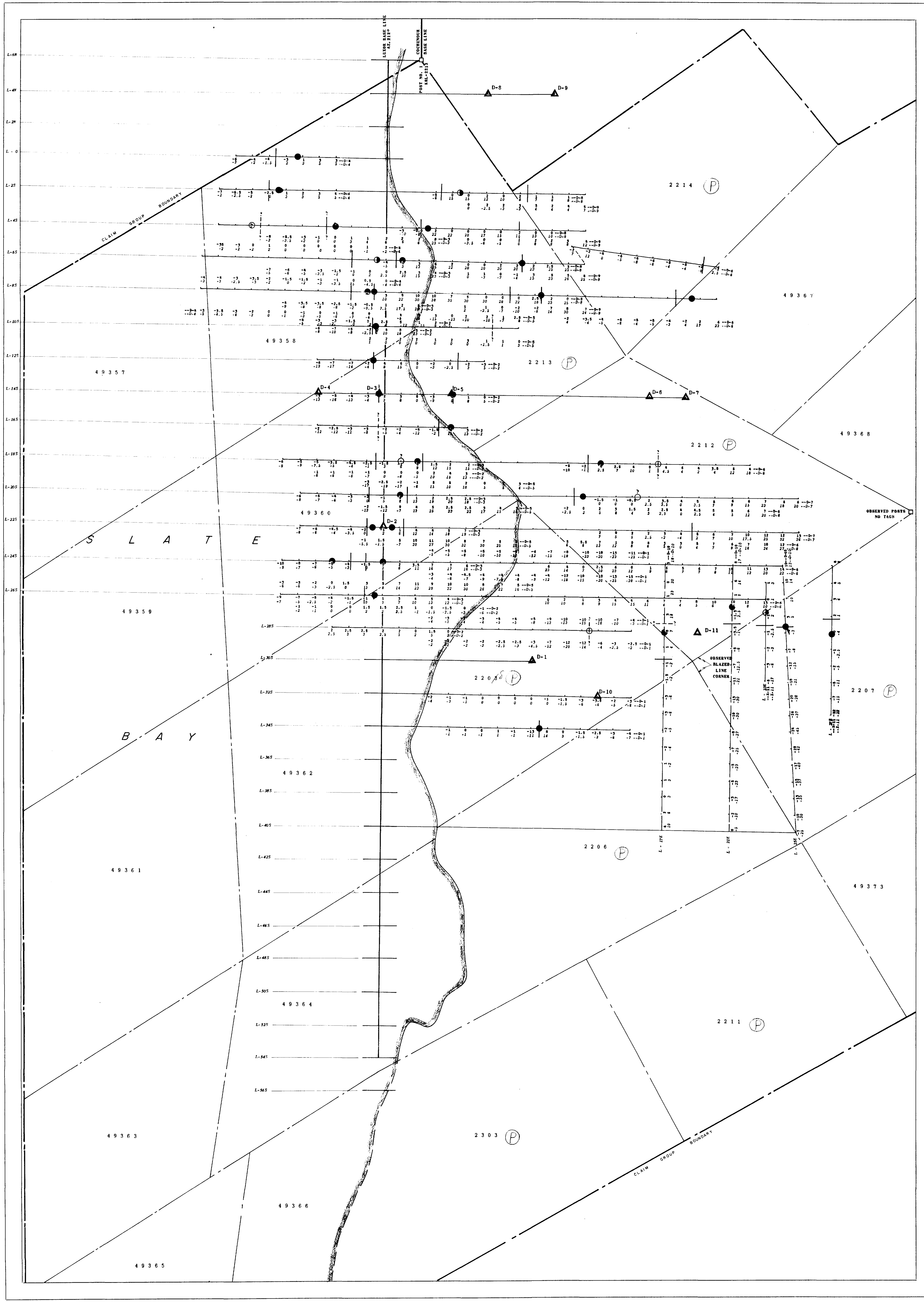
LEGEND
▲ TRANSMITTER LOCATION
RECEIVER TRAVERSE AND READINGS 1000 C.P.S.
0 -0.5 RECEIVER TRAVERSE AND READINGS 5000 C.P.S.
NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS

LUXOR RED LAKE MINES LIMITED
McDONOUGH TWP-EAST GROUP, RED LAKE, ONTARIO.
RED LAKE MINING DIVISION
SCALE
0 100 200 300 400 500 600 700 800 900 1000
FEET
One Inch = Two Hundred Feet

SYMBOLS
1000C.P.S. 5000C.P.S.
● CONDUCTOR AXIS ESTABLISHED
○ ? POSITION OF CONDUCTOR AXIS UNCERTAIN.
○ ? EXISTENCE OF CONDUCTOR AXIS UNCERTAIN
○ ? SUGGESTED TEST DRILL HOLE

DRAWN: F. R. P.
DATE: MARCH 1962
APPROVED: *A.B.*
DATE: *Mar. 27/62*





LEGEND

- ▲ TRANSMITTER LOCATION
- RECEIVER TRANSFER AND 0 - 2.5 READING RANGE AND 0 - 5.0 READING RANGE
- 10000 CFS READING
- 5000 CFS READING
- 2500 CFS READING
- 1000 CFS READING
- 500 CFS READING
- 250 CFS READING
- 100 CFS READING
- 50 CFS READING
- 25 CFS READING
- 10 CFS READING
- 5 CFS READING
- 2.5 CFS READING
- 1 CFS READING
- 0.5 CFS READING
- 0.25 CFS READING
- 0.1 CFS READING
- 0.05 CFS READING
- 0.025 CFS READING
- 0.01 CFS READING
- 0.005 CFS READING
- 0.0025 CFS READING
- 0.001 CFS READING
- 0.0005 CFS READING
- 0.00025 CFS READING
- 0.0001 CFS READING
- 0.00005 CFS READING
- 0.000025 CFS READING
- 0.00001 CFS READING
- 0.000005 CFS READING
- 0.0000025 CFS READING
- 0.000001 CFS READING
- 0.0000005 CFS READING
- 0.00000025 CFS READING
- 0.0000001 CFS READING
- 0.00000005 CFS READING
- 0.000000025 CFS READING
- 0.00000001 CFS READING
- 0.000000005 CFS READING
- 0.0000000025 CFS READING
- 0.000000001 CFS READING
- 0.0000000005 CFS READING
- 0.00000000025 CFS READING
- 0.0000000001 CFS READING
- 0.00000000005 CFS READING
- 0.000000000025 CFS READING
- 0.00000000001 CFS READING

SYMBOLS

- CONDUCTOR AXIS ESTABLISHED
- CONDUCTOR AXIS UNSTABLE
- EXISTENCE OF CONDUCTOR AXIS UNSTABLE
- UNSTABLE CONDUCTOR AXIS
- CLAIM BOUNDARY APPROXIMATE

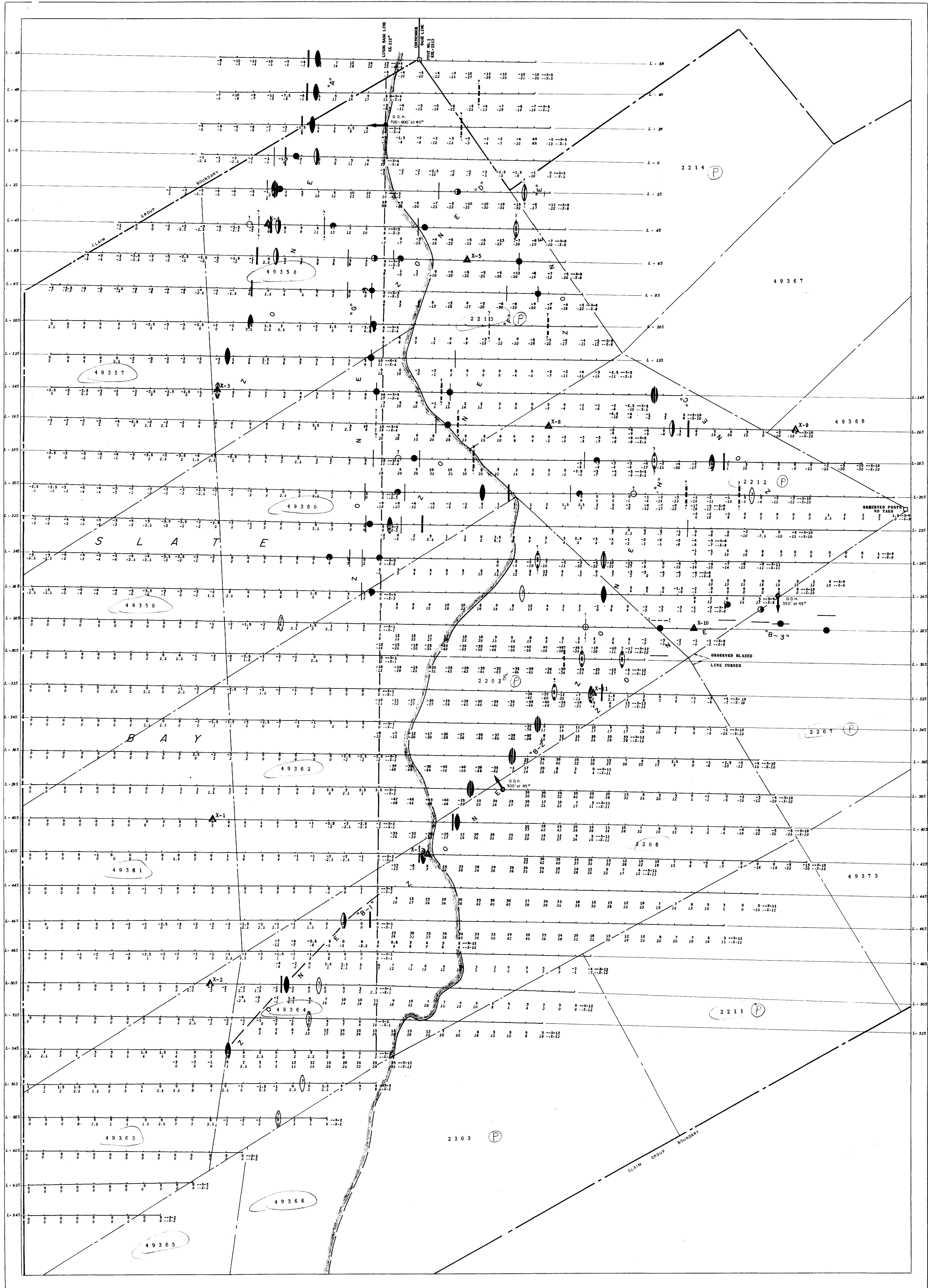
SCALE
One inch = Two Hundred Feet

LUXOR RED LAKE MINES LIMITED
McDONOUGH TWP - SLATE BAY, RED LAKE, ONTARIO.
RED LAKE MINING DIVISION

DATE: MARCH 1962
APPROVED: [Signature]
DATE: [Signature]

DWG. E 4698

MCPHAR GEOPHYSICS LIMITED
ELECTROMAGNETIC SURVEY



DRAWN F.R.P.
 DATE MARCH 1982
 APPROVED
 RLB
 DATE
 May 27/82

LEGEND
 ▲ TRANSMITTER LOCATION
 ○ RECEIVER LOCATION
 ○ OBSERVED BLAZED LINE CORNER
 ○ OBSERVED POINTS NO TAGS
 ○ OBSERVED POINTS WITH TAGS
 ○ OBSERVED POINTS WITH TAGS AND SUGGESTED TEST DRILL HOLE
 ○ OBSERVED POINTS WITH TAGS AND CLAIM BOUNDARIES APPROPRIATE

SYMBOLS
 ○ CONDUCTOR AXIS ESTABLISHED
 ○ POSITION OF CONDUCTOR AXIS
 ○ UNCERTAIN
 ○ UNUSUAL
 ○ SUGGESTED TEST DRILL HOLE
 ○ CLAIM BOUNDARIES APPROPRIATE

DETAIL
 ○ 1000C.P.S.
 ○ 5000C.P.S.
 ○ 1000C.P.S.
 ○ 5000C.P.S.

SCALE
 One Inch = Two Hundred Feet

LUXOR RED LAKE MINES LIMITED
 McDONOUGH TWP - SLATE BAY, RED LAKE, ONTARIO.
 RED LAKE MINING DIVISION