



52K15NW0034 63.2573 FREDART LAKE

010

MAGNETOMETER SURVEY
ON
ROXMARK MINES LIMITED.
GERRY LAKE GROUP,
RED LAKE MINING DIVISION, ONTARIO.

Introduction

A ground magnetometer survey was carried out over a group of claims for Roxmark Mines Limited (N.P.L.) located in the District of Kenora in the Red Lake Mining Division, Ontario.

The survey was conducted by Roxmark Mines Limited during the period of June 16 - July 23, 1969.

The field work was carried out by Jean Marie Dallaire and George Pennican under the supervision of Emanuel Amendolagine, P.Eng.

Results of the survey are shown on the plan accompanying the report.

Summary and Recommendations

A magnetometer survey was carried out over a group of claims for Roxmark Mines Limited (N.P.L.). The survey indicated a low intensity magnetic zone trending approximately N 70°E. Interpretation of the magnetics indicate the general geological trend of area with numerous cross structures striking approximately N 70°W. The economic minerals of Cu, Zn, Ag in this area generally have some affinity to magnetics.

It is recommended that this magnetic anomalous zone be tested with an induced polarization survey. Results obtained from this survey would determine any future drill program to be instigated. The induced polarization survey should extend some 15 line miles and would require an expenditure of some \$7,500.

Property, Location and Access.

The group of claims discussed in this report are shown on the accompanying map and are also listed as follows :

KRL 61795 to KRL 61806	12 claims
KRL 62928 to KRL 62935	8 claims
KRL 63374 to KRL 63383	<u>10 claims</u>
Total	<u>30 claims</u>

The property is located some 40 miles east of the town of Red Lake, Ontario.

Access to the claims is by ski or float plane from Red Lake, Ontario to Gerry Lake or by land some 30 miles north on the Ear Falls - Uchi Lake road. This road is in the process of being improved into an all weather road. The road is scheduled to be completed in the early fall of the year.

General Geology

The general geology of the property area consists of strongly folded northeasterly trending complex of metamorphosed Archean meta volcanics and sediments intruded locally by younger granites. Sulphide mineralization of Cu, Zn, Ag, Mo and Au are known to occur within the volcanic sedimentary assemblage. Ref. Bateman, J.D. 1939,

Goodwin, A.M. 1964

Fenwick, K.G. 1965 and 1966

Method of Survey.

A magnetometer survey was carried out over the group of claims based on a grid system of 400 foot lines and 100 foot stations. The baseline of the grid was established in a northeast direction with the traverse lines being turned off at right angles to this line. A total of approximately 18 miles were cut and chained.

The survey was conducted using a McPhar Fluxgate magnetometer. Sensitivity of the instrument was 20 g γ mmas per division on the 1000 g γ mma scale. A total of approximately 18 miles were surveyed by this method. The results obtained were plotted on a map at a scale of 400 feet to the inch. The map accompanies this report.

Discussion of Results

The magnetometer survey indicates a magnetic zone trending through the property with an approximate N 70°E strike. The magnetic intensity within the anomalous area is fairly uniform with the main peak areas traversing the south shore of Gerry Lake along the baseline from L134+00W to L-114+00W and L-70+00W to L-86+00W. Numerous cross structures are indicated trending approximately N-70°W, crossing the baseline at L-90+00W, L-126+00W and L-142+00W. Readings obtained from the magnetometer survey performed during the winter on the ice returned high magnetic readings north of the baseline across the eastern end of Gerry Lake between L-98+00W and L-122+00W on strike with the anomalous zone indicated by the land magnetometer survey.

Conclusions and Recommendations.

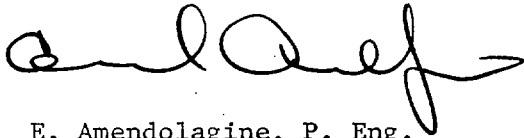
The magnetic anomalous area striking across the property is

typical to the magnetic concentrations in the volcanics and sediments in this area. The association of the magnetics with the Cu, Zn, Ag mineralization found on the adjoining properties known as the Rexdale Mines Limited and Copper Lode Mines Limited properties indicates that this magnetic anomalous zone should be further tested for economic minerals. This anomalous zone should be tested after freeze-up by an induced polarization survey. This would require some 15 line miles of induced polarization survey.

Estimate of Expenditures.

As the lines are already cut on the property and only location pickets would be required on the lake (ice) portion of the property, it is estimated that the expenditures of some \$7,500 would be required to complete some 15 miles of induced polarization survey. The results obtained from the induced polarization survey would determine the extent of diamond drilling required to further test the area for economic minerals.

Respectfully submitted,



E. Amendolagine, P. Eng.

Aug 29, 1969

1. Bateman, J.D. - 1939
Geology and gold deposits of the Uchi-Slate
Lakes area O.D.M. Ann. Report. Vol. XLVIII,
pt. 8 pp. 1-34.
2. Goodwin, A.M. 1964
Preliminary report on Volcanism and mineralization
in the Birch-Uchi Lakes area, district of Kenora.
O.D.M. P.R. 1964-1.
3. Fenwick, K.G. 1965.
Balanger Township, O.D.M.
Preliminary map p.350
4. Fenwick, K.G. - 1966
Snakeweed Lake area, O.D.M.
Preliminary Map p.349

A P P E N D I X

List of Personnel employed on Magnetometer survey.

		<u>Dates</u>
E. Amendolagine, P.Eng.	Senior	June 14, 15, 16 July 1, 23, Aug. 28, 29.
J. M. Dellaire	Mag. Operator	June 25 - July 23.
G. Pennican	Mag Operator Assistant	June 25 - July 23
J. M. Dellaire	Line cutting	June 16 - 24.
G. Pennican	Line cutting	June 16 - 24
M. Younan	Draftsman	Aug 28, 29 Sept. 2, 3.
J. McIntyre.	Typist	Aug 27, 28, 29.



REPORT ON THE
COMBINED AIRBORNE MAGNETIC
AND
ELECTROMAGNETIC SURVEY
FREDHART LAKE AREA, ONTARIO
FOR
COPPER LODE MINES LIMITED

1. INTRODUCTION

At the request of Copper Lode Mines Limited a combined airborne Electromagnetic and Magnetic survey has been carried out over the Company's holdings in the Fredhart Lake Area, Red Lake Mining Division, Ontario. The survey area consists of a block of 212 claims and the surrounding ground which has similar geology. A detailed list of the claim numbers is given in Appendix I; the individual claims have also been shown on the attached figure.

The purpose of the survey was to map any magnetic or electromagnetic anomalies that might be indicative of the base metal sulphides which have been outlined on the claim group itself. Several interesting anomalous zones have been indicated by the airborne survey and a program of detailed ground follow-up work is recommended to pinpoint their location and assess their importance.

2. GEOLOGY & PREVIOUS WORK

A detailed geologic map of the claim group and surrounding area

has been provided by the Company. Copper mineralization is reported to occur in a series of metavolcanic rocks on the northwest portion of the property and may be associated with bands of magnetite rich rock. Important copper, zinc and silver values are associated with pyrite - pyrrhotite mineralization on the southeast portion of the claims.

Previous work on the claim group includes ground surveys with electromagnetics, magnetics and induced polarization. The results of this work have also been made available for correlation with the airborne data.

Reconnaissance magnetic coverage of the area is provided by GSC Maps 871G and 872G.

3. SURVEY DETAILS

The flight lines were oriented N 25° W and spaced at 1/8 mile intervals over the survey area. A total of 319.7 line miles were covered by the survey of which 101.9 line miles lie within the boundary of the 212 claim group.

The F-400 electromagnetic and magnetic system is described in detail in the notes attached to this report. Assessment details including dates and personnel have been appended.

The field surveying was carried out between September 13th, and 19th, 1968.

4. PRESENTATION OF RESULTS

The results of the electromagnetic survey are shown on the accompanying map AE 6822 at a scale of 1 inch equals 1320 feet. A

corresponding map AM6821 is a contoured presentation of the magnetic data.

The attached Figure 1 shows the boundaries of the individual claims and their numbers. It is at a scale of one inch equals 2640 feet.

5. DISCUSSION OF RESULTS

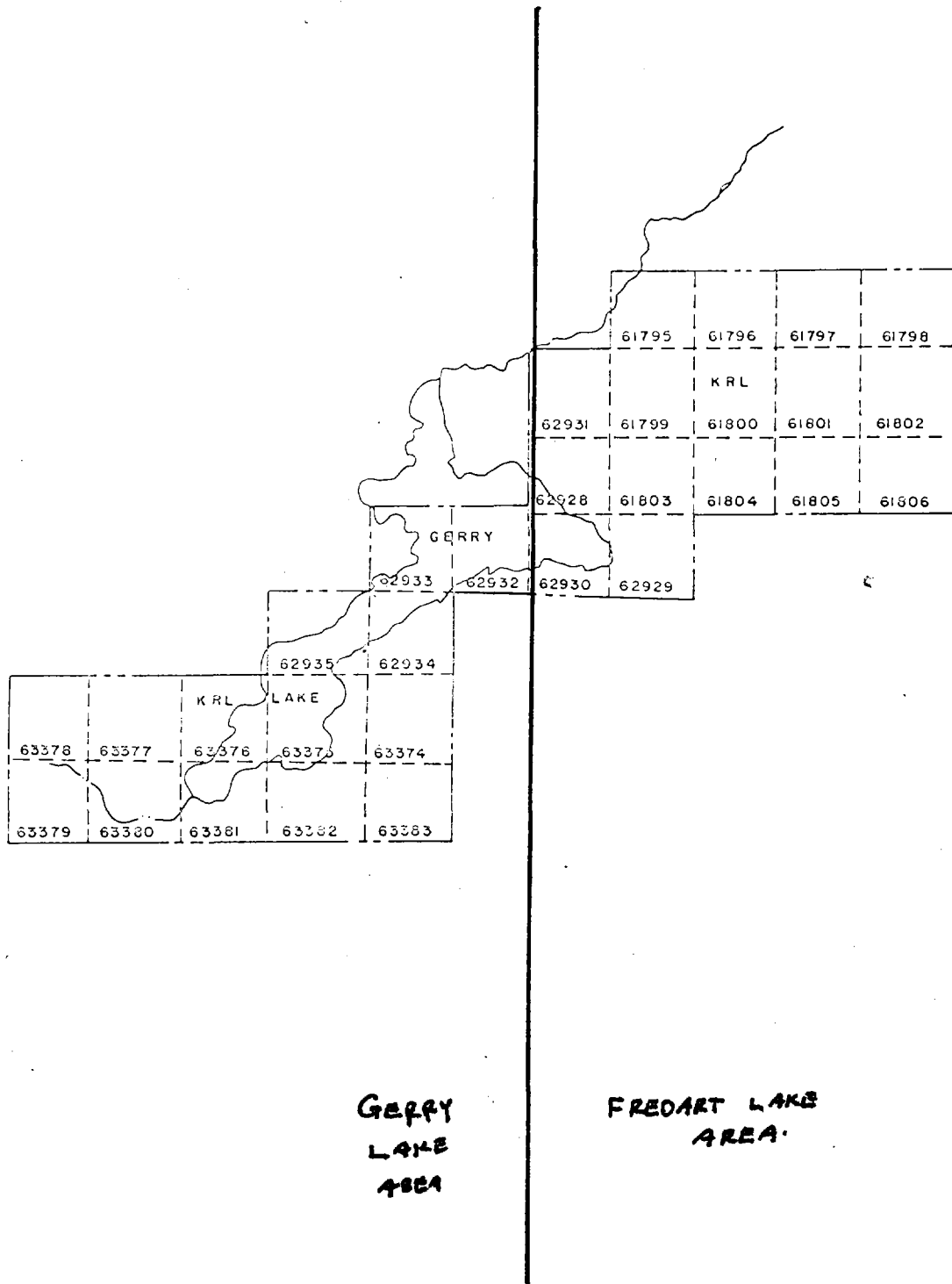
Numerous well-formed EM anomalies have been outlined in the survey area. Many of these show good line-to-line correlation and have been grouped into zones which are indicated on the plan map and are numbered for ease of discussion. Particularly interesting anomalies within a zone have been designated by a small star located to the northeast of the anomaly peak.

In addition to the groups of anomalies, there are individual responses that also warrant special consideration. These have also been shown as numbered zones.

There is some evidence of background conductivity over some lakes and swamps. This is usually characterized by a broad smooth response displaying low apparent conductivity (i. e. low ratio) and is quite readily recognized. It is important to note, that not all of the lakes are conductive, nor are all parts of any one lake conductive. Evidently the lakes and lake shores are partly controlled by structure.

Zones 1 to 11 inclusive

The dominant feature on the magnetic map is the series of strong highs that trends N-E across the northern portion of the survey area and appears to outline the metavolcanic rocks. Eleven electromagnetic



**GERRY
LAKE
AREA**

**FREDART LAKE
AREA**

ROXMARK MINES LTD.

GERRY LAKE AREA
KENORA RED LAKE M. D.

SCALE 1:2640

zones, numbered 1 to 11 inclusive suggest a set of excitation or eddy current
conductive bands that are closely associated with this magnetic feature.
A detailed discussion of these zones is included below.

Zone 1

This zone consists of two small amplitude responses that
lie to the west of the strong magnetic feature. The well-defined response
on Line 8 appears to coincide with a magnetic high of less than 50 gammas
and is worthy of detailed investigation.

Zone 2

Zone 2 has been interpreted to extend from Line 12 to Line 17.
The best responses occur on Lines 14 and 17 as indicated by the stars.
The response on Line 17 is particularly noteworthy due to its close cor-
relation with the peak of a magnetic high of about 500 gammas. Zone 2
appears to lie in a small lake and consequently detailing would be more
convenient during the winter months.

Zone 3

Good amplitudes and high ratios are characteristic of the
responses on this zone. The EM anomaly on Line 21 correlates with a
magnetic peak of more than 1700 gammas and is considered a primary
target for ground follow-up work.

Zone 4

The strongest EM response, on Line 24, correlates with a

magnetic high of more than 800 gammas. This anomaly lies in the vicinity of a pyrite - pyrrhotite showing and several short drill holes. Zone 4 is definitely a first priority anomaly and the results of previous ground surveys in this vicinity should be reviewed.

Zone 5

Zone 5 appears to represent a single zone of good conductivity that extends across four lines. It correlates quite well with available ground EM data.

Zones 6 & 7

These are two of the strongest and best defined EM zones encountered in the airborne survey. They display high conductivity and are closely associated with strong magnetic highs. The indicated offset or an echelon structure near Line 36 is supported by the detailed ground EM survey. Drilling is presently being carried out in their vicinity.

Zone 8

Zone 8 may represent several an echelon conductors or a series of offsets in a single conductor. It has weak magnetic expression, but displays high conductivity and indicates that the conductive zone extends as far as the west shore of Fredhart Lake.

Zone 9

The EM anomalies that constitute this zone are quite weak and the indicated conductivity is low. Nevertheless, they appear to be closely associated with high magnetic relief similar to that found over known

mineralization to the west. Zone 9 appears to lie in the east arm of Fredhart Lake. Its importance is enhanced by a reported chalcopyrite-pyrite showing on the south shore of this arm.

Zone 9 is definitely considered a first priority target and merits detailed evaluation.

Zone 10

Most of the EM responses on Zone 10 are quite weak and their correlation is somewhat tenuous. However, the starred anomaly on Line 56 is strong, well-defined, displays good conductivity and is located on the south flank of a 2000 gamma magnetic high. The initial ground detailing of this zone should be carried out near Line 56.

The importance of this conductor is increased by the proximity of a chalcopyrite-molybdenite-pyrite showing on the creek northeast of Fredhart Lake. Zone 10 is a primary target for ground follow-up work.

Zone 11

This zone has been formed from three moderate amplitude responses that display high conductivity. It lies entirely within volcanics and merits detailed examination.

Zone 12

A small, apparently isolated response occurs near the north boundary of the survey on Line 6. Although its indicated conductivity is not high it has an interesting shape and should be regarded as a secondary target.

Zone 13

Zone 13 is a short conductor lying parallel to, and south of, Zone 3. It lies on the south flank of the strong magnetic zone and is worthy of detailing if time permits.

Zone 14

A single line anomaly lies just north of the claim boundary on Line 24 in an area mapped as granite. It is an interesting response and warrants a second priority classification.

Zone 15

The response on Line 24 is one of the best recorded in the survey. There is no obvious magnetic correlation and the indicated conductivity is moderate. Nevertheless, Zone 15 is considered as a prime target for detailed ground surveying.

Zone 16 & 17

These two conductors display similar conductivities and may be closely related. Zone 16 correlates with a small magnetic high and is considered to be the more interesting. Detailed ground investigations should be carried out on the starred responses on Lines 8 and 12.

Zone 18

Zone 18 consists of two well formed anomalies that display moderate conductivity. Part of these responses could be caused by conductive lake bottom sediments or overburden. However, Zone 18 should

be included in the initial follow-up work on the southwest portion of the survey area.

Zones 19, 20 & 21

These three short zones all display good shape, moderate amplitude and moderate conductivity. They all should be regarded as primary targets.

Zone 22

Zone 22 has been formed from interesting anomalies on the south end of four lines. Unfortunately, the two best anomalies on Lines 15 and 16 were recorded after the camera was turned off and their position is uncertain. Detailing should be carried out on the south end of Line 15 to assess the importance of these indications.

Zones 23, 24, 25, 26, 27, 28 & 29

Seven single line responses that appear to represent isolated conductors. Zone 23 and 24 have some magnetic correlation and are more highly regarded. Although they cannot be considered as prime targets, reconnaissance ground checks are suggested for these zones to assess their importance.

Zone 30

Zone 30 consists of a series of well formed EM anomalies that lies in the south part of Fredhart Lake. It appears to represent a through-going conductor that is parallel to the trend of the strong magnetics to the north. Despite the indicated low conductivity, Zone 30 merits a first

priority classification and could be detailed easily from the ice during the winter.

Zone 31

This zone is not as definite as Zone 30 but it has a similar strike and also occurs over water. It displays variable conductivity and may represent several conductive bands. Zone 31 also warrants a first priority classification.

The EM anomalies over the small lake to the west of Zone 30 display poor conductivity and appear to be due to conductive lake bottom sediments. Similar anomalies occur on the lake near the south end of Lines 41, 42, 43 and 44.

Zones 32 & 33

Two, apparently isolated responses occur on either side of small lake near the south end of Lines 54 and 56. Zone 32 correlates closely with a drilled sulphide zone that contains copper, zinc and silver values. Although lake bottom sediments may be partly responsible for Zone 33, it is considered worthy of detailed examination.

Zones 34, 35 & 36

Three isolated responses occur along a creek that follows a narrow band of schists. Zone 36 is particularly interesting because of its magnetic correlation but all three warrant further work.

McPHAR AIRBORNE
GENERAL NOTES ON
ELECTROMAGNETIC & MAGNETIC SYSTEMS

A. EQUIPMENT

The electromagnetic and magnetic units are the primary instruments used in the McPhar combined survey system which is designed for use in a Dehaviland DHC-2 Beaver aircraft. Ancillary equipment consists of a radio altimeter, a frame camera, an intervalometer-fiducial numbering system and a light beam recorder.

I) F-400 Electromagnetic Unit

The F-400 is a sequential dual frequency unit (340 and 1070 Hz) that measures the quadrature response of a conductor. In the absence of a conductor the quadrature response is zero. Two iron cored coils mounted beneath the wings of the aircraft are used to create the primary field which is essentially a forward pointing dipole. A 450 foot cable is used to tow a receiver bird and gives a transmitter-receiver separation of approximately 400 feet. The dipole of the receiver system is vertical and flown in the proper position to be maximum coupled to the primary field. Thus the coil configuration can be designated as an X-Z skew system which is flown In-Line. Sequential dual-frequency EM operation is employed together with time sharing for a proton magnetometer. The cycle consists of one third second at each frequency and one third magnetic readout. The quadrature response at each frequency is recorded on two channels of the recorder.

II) Proton Magnetometer

A varian V-4937, airborne proton free precession magnetometer is used to record the variations in the earth's magnetic field. The sensing head of this unit is conveniently mounted inside the port wing tip. This instrument has a sensitivity of 1 gamma when pulsed at 1 second intervals or 2 gamma when more frequent readings are required. The proton magnetometer has the advantage of reading the absolute value of the earth's magnetic field and is almost completely free of drift or variations due to temperature or environmental changes. The magnetic data is recorded on the same trace as the electromagnetic response for ease of correlation.

III) Ancillary Equipment

A Bonzer doppler radio altimeter provides a continuous ground clearance profile. Flight path coverage is obtained by a frame camera driven by the intervalometer-fiducial unit which synchronizes the individual frames with the time events on the recorder. At the standard flying height of 450 feet the camera is programmed to provide 20% overlap on each

frame, which results in a continuous record of the flight path. At greater heights, there is proportionally more overlap.

B. CENTURY 444 RECORD

A light-beam recorder employing a photo-sensitive paper is used to record the data. High-sensitivity galvanometers give almost instantaneous response to the incoming signals and the recorder time lag is essentially zero.

With the actual flight record oriented so that the fiducial numbers increase from left to right, the 3.5 inch trace width has been divided into 100 units with zero at the bottom and 100 at the top. Fifty horizontal grid lines are used to mark 2 unit intervals. The ten unit intervals are indicated by the thicker grid lines. Except where noted on individual records the traces are identified as follows:

I) 340 & 1070 Hz Quadrature EM Response

These two primary information traces are centred at 20 and 40 units respectively. Upward excursions represent positive quadrature response, which is normally indicative of the presence of conductors. Negative deflections usually have no interpretational significance. On each of these traces a "full-scale" deflection covers approximately 25 units and anomalies normally give rise to simultaneous response on both traces.

The equipment may be flown at sensitivity ranges of X1, X2, X4 or X8, as indicated by the local geology and topography. Normally a X4 setting is employed and a deflection of 1 unit represents approximately 400 parts per million in terms of the primary field strength at the receiver. Anomalies of 1000 ppm are easily recognized. Scale settings are recorded by the operator on the Flight Report. Changes in scale setting vary the ratio of units to ppm directly and the record is essentially linear over the "full-scale" range. On occasion, strong responses will be recorded as "Off-Scale".

The ratio of the amplitude of the response at the two frequencies is characteristic of the "apparent conductivity" (i. e. size, conductivity - product) of the disturbing body: poor conductors display LO/HI ratios of 1.0 or less while good to excellent conductors have ratios greater than 1.0.

II) Magnetometer

Positive magnetic anomalies (i. e. increase in magnetic field strength) are indicated by upward excursions. The magnetic field is sampled

at intervals of approximately 1 second. The observed value of the total magnetic field is then written out on two scales: the 2000 gamma scale for 250 milliseconds followed by the 200 gamma scale for 750 milliseconds.

The absolute value of the magnetic field is a five digit number: the first three of these are set on the zero line and recorded by the operator at the beginning of each flight. The 2000 gamma scale (coarse scale) is recorded in ten steps of 200 gammas (adjusted to the 10 unit lines) covering the entire 100 units: strong anomalies can be easily traced by the short bars that occur on the record. Full scale deflection (i. e. 0 to 100 units) is adjusted to 200 gammas for the fine scale which is recorded as a longer bar. Thus the absolute value of the magnetic field may be read from the trace to an accuracy of 2 gammas.

III) Fiducials

Fiducials are shown in one of two ways and coincide with the shutter opening of the frame camera. Usually the fiducials appear as vertical lines on the trace. Occasionally these are supplemented by an interrupted galvanometer centred near 90 units, these interruptions correspond with the vertical fiducial lines.

IV) Altimeter

The altimeter is adjusted so that 80 units equals 500 feet of ground clearance. The response is non-linear and 74 units correspond to 400 feet, 85 units to 600 feet and 90 units to 700 feet.

C. SURVEY PROCEDURE & COMPILATION

Uncontrolled airphoto mosaics usually serve as the base maps for flying the survey and for compilation of the geophysical data. A common scale is 1/4 mile (i. e. 1320 feet) per inch.

Flight lines are oriented perpendicular to the direction of the expected strike of the target, except in special cases where detail is required in the orthogonal direction.

Copies of the photo mosaic are given to the flight crew with intended flight lines indicated and numbered. Navigation along these lines is done visually from the physical features of the area. The aircraft is flown with a terrain clearance of 450 feet or, in rough terrain, at the lowest altitude that is judged feasible for safe operations.

Flight path is recovered from the film as compared to the photo mosaic. Identifiable points are marked on the mosaic and designated by the fiducial numbers which synchronize the camera and the recorder.

D. DATA PRESENTATION

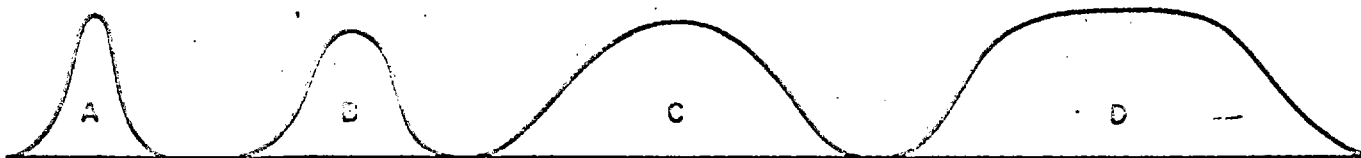
1) F-400 Dual Frequency EM Results

Electromagnetic anomalies result from areas on, or in, the ground which are electrical conductors. Geological sources of conductivity include sulphide mineralization, graphitic formations and fault or shear zones which often contain electrolytes. Other sources of conductivity include poorly conductive surficial materials such as saline waters, swamps and wet clays. The surficial anomalies sometimes extend over large areas and may obscure responses from underlying mineralized zones.

The presentation used on the plan maps has been developed to show the three primary characteristics of each individual response. This is accomplished by the numerals and letters adjacent to each anomaly symbol. For most purposes these characteristics are sufficient to describe the anomaly but for detailed interpretation it is best to study the actual flight trace.

a) Shape

The letters A, B, C and D are used to indicate the recorded shape of the EM response which approximates one of the following curve types. Often, to simplify presentation, the shape is indicated by symbols as shown in the legend of the plan map.



b) Amplitude

The amplitude of the peak response at 340 Hz is shown in units. In cases where there is no definite peak, the amplitude will be the highest value obtained over the anomaly. Except where noted in the legend, the equipment is operated at a gain setting of X4 which results in a scale of approximately 1 unit equals 200 ppm of the primary field strength.

c) Apparent Conductivity Ratio

The ratio of the response at 340 Hz compared to the response at 1070 Hz is shown as the third parameter. Generally ratios less than 1.0 indicate poor conductivity while those greater than 1.0 indicate good to excellent conductivity. However, it should be noted that this ratio is a measure of the Apparent Conductivity and varies with the product of the size and conductivity, where the size is usually a squared function.

d) Evaluation

The response obtained from a conductive body is influenced by a variety of factors which include conductivity, permeability, size, depth, attitude of the body. In addition to the frequencies used geometry and the angle of attack are also important variables. Consequently, the amplitude and shape of the response cannot be regarded as absolute interpretational gradings or classifications. However, they do have interpretational value as illustrated in the following examples.

i) A vertical sheet of highly conductive material (such as a vein of massive sulphides), striking perpendicular to the flight line, would give rise to a strong, sharp response with a high conductivity ratio. A typical characteristic would be:- A, 15, 1.8.

ii) As the angle of attack decreased, the shape of the response from a vertical sheet would change from A to B to C; the magnitude of response could increase while the ratio may decrease (e.g. C, 20, 1.2)

iii) An extensive flat horizontal sheet will show a response similar to C or D. The Amplitude and Apparent Conductivity will be a function of the size - conductivity product and can vary over a wide range. A typical response from poorly conductive overburden would be:- D, 20, 0.4.

Because of the large number of parameters that influence EM response, the anomalies obtained from airborne surveys should be evaluated in the light of all geological, geophysical and physiographical data before embarking on field investigations and follow-up work.

II) Magnetic Results

Usually the magnetic results are shown in contour form. These contours represent lines of equal intensity of the earth's magnetic field and are termed isomagnetic lines. When a proton magnetometer is used these represent the total intensity of the earth's field. In the case of a fluxgate or other type they are relative values only.

Where magnetics are flown only as a secondary method, the location of the magnetic peak relative to the EM anomaly and its amplitude are shown on the plan maps as indicated on the legend.

APPENDIX II

Roxmark Mines Ltd.
Gerry Lake Area.

30 Claims

KRL - 61795 to 61806 (inclusive)

KRL - 62928 to 62935 (inclusive)

KRL - 63374 to 63383 (inclusive)

COPPER



52K15NW0034 63.2573 FREDART LAKE

030

DRILL HOLE LOG

Hole No. F-1

Property Fredart Lake

Bearing North 26°W

Length 353.0

Altitude 40 + 00E

Dip 50° North

Started March 3, 1969

Departure 3650

Finished March 6, 1969

Logged by S.E. Malouf

0 Casing
125.0
.125.0 Trachyte - Grey fine grained massive blocky - low silica
low chlorite low sericite - could be Andesite or fine grained
diorite.
268.0
268.0 Shear zone - high sericite medium chlorite - low silica
foliation at 65°CN - note chlorite is coarse grained probably
after amphibole - suggests host rock is diorite
280.0
280.0 Diorite or trachyte probably diorite even textured fine
grained massive - quartz carbonate veinlets 3%.
328.0
328.0 Shear zone - high chlorite medium-high ^{sericite} sericite - low
carbonate almost talcose foliation generally at 45°CN
but variable to 60°CN. *ic*
353.0 finis

COPPER LODE MINES

DRILLING HOLE LOG

Hole No. F-2

Line 40 + 50 E

33 + 00 South B. L. Dip. 50° South on line

Strike S. 27°E

Dip tests: @120' 50°
@330' 47.5°

Started

Completed

Length 330.0

Logged by R. Larson

0.0 Casing
120.0

120.0 Altered diorite or andesite, medium green, fine grained aphanitic, highly fractured, numerous quartz carbonate fractures and fissures 10% high chlorite, siliceous, 2% brown biotite
140.0 Alt. zone medium green, high chlorite, medium sericite - quite soft in places, 5% brown biotite. Q
145.3 L.C.
149.3 Alt. zone as above
152.0

152.0 Sheared zone, high chlorite, 5% biotite, high sheared 45°CN 2% quartz carbonate
175.5 L.C.
176.4

176.4 Massive, altered diorite or andesite as at 120.0 S/
fractured
180.0 L.C.
182.4

182.4 Sheared zone as at 152.0, high chlorite, 2% quartz carbonate
183.8 L.C.
186.0

186.0 Massive alt. diorite or and as at 120.0
187.9 L.C.
189.0 As above
190.0 L.C.
191.5 As above
192.7 L.C.
196.0 As above
196.5 L.C.
198.1 As above
198.7 L.C.
199.4

199.4 Sheared zone, high chlorite, very soft, low sheared 50°CN 5% 1/8" quartz eyes.
206.0 L.C.
206.6 Sheared zone as above, 10 - 15% white quartz eyes and fragments
213.7 L.C.
214.0 Sheared zone as above, medium sheared 60°CN
220.1

220.1 Alt. zone dark green to grey, hard, massive, appears aphanitic, high chlorite, fractured - close to CN.
229.1

229.1 Sheared zone at 60°CN, high chlorite, 10% black biotite, no quartz eyes, low sericite, 2% quartz carbonate
233.8 L.C.
235.0 Sheared zone as above faulted
244.5 L.C.
245.0 Sheared zone as above. 50 - 60°CN
246.0 L.C.
248.5 Sheared zone
250.0 L.C.
250.5 Sheared zone

Zone 37

A north-south trending conductive zone has been interpreted across five flight lines to the east of Fredhart Lake. The shape factor of the individual responses is not high but this could be due to the poor coupling caused by the unusual strike. Zone 37 is not a prime target but the indicated conductivity is high and it appears to merit further work in the vicinity of the best response on Line 55.

Zone 38

This zone displays high ratios but the amplitudes are low to moderate. It lies on the north flank of a broad magnetic high in an area mapped as greenstone and is parallel to the main trend of the magnetic. Zone 38 is regarded as a secondary target.

Zones 39, 40 & 41

These three isolated responses have been selected as the best of a large group of anomalies on the east end of the survey area. If the results of checking Zones 11 and 38 are encouraging, they would warrant a first priority classification.

6. SUMMARY AND RECOMMENDATIONS

Forty conductive zones have been interpreted from the electromagnetic results and an extensive program of follow-up work is indicated to assess their importance.

Zones 1 to 11 are closely associated with a series of strong magnetic highs. Important copper values are reported in the drilling

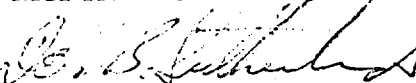
presently being carried out in the vicinity of Zones 6 and 7. Because of the apparent association of the magnetic and electromagnetic anomalies, Zones 1 to 11 are considered to be of primary importance. Many of these have been evaluated by detailed ground surveys while others lie on unstaked areas.

Of the remaining zones the following are regarded as prime targets for detailed ground EM and magnetic surveys:- Zone 15 to 22 inclusive and Zone 30 to 36 inclusive. Preference should be given to the anomalies that lie on unstaked ground. Any of the zones that occur over water should be considered for detailed evaluation in the coming winter field season.

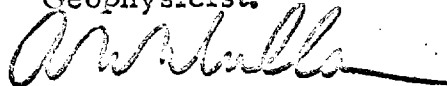
The remaining numbered zones have been assigned a second priority classification. However, many of these are single line or isolated responses which can be more difficult to recover on the ground but are often economically more rewarding than the long throughgoing conductors.

There are numerous other responses which have not been included in the above zones. These will require continuing reassessment as the results of the ground work becomes available for study.

McPHAR GEOPHYSICS LIMITED



D. B. Sutherland,
Geophysicist.



A. W. Mullan,
Geologist.

Dated: November 19, 1968

ASSESSMENT DETAILS

PROPERTY: Roxmark MINING DIVISION: Red Lake
SPONSOR: Copper Lode Mines PROVINCE: Ontario
 Limited
LOCATION: Gerry Lake Area DATE STARTED: Sept. 13, 1968
TYPE OF SURVEY: Combined DATE FINISHED: Sept. 19, 1968
 Airborne Magnetic and
 Electromagnetic
MEAN FLIGHT LINE DIRECTION: N-S MILES OF LINE FLOWN: 319.7
MEAN FLIGHT LINE SPACING: 1/8 mile MILES OF LINE INSIDE AREA: 14.5
MEAN TERRAIN CLEARANCE: 500 feet NUMBER OF MINING CLAIMS: 30
AIRCRAFT: Beaver CF - HOE

CONSULTANTS:

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A. W. Mullan, 11 Park Glen Drive, Don Mills, Ontario.

TECHNICIANS:

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DRAUGHTSMEN:

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K. Moore, Apt. 106, 80 Forest Manor Road, Willowdale, Ontario.
R. Luxford, 922 Carlaw Avenue, Toronto, Ontario.

McPHAR GEOPHYSICS LIMITED

Dated: November 19, 1968

251.9 L.C.
254.4 Sheared zone
255.0 L.C.
258.0 Sheared zone
262.1 L.C.
263.6 Sheared zone sheared 45°CN , 5% quartz carbonate
271.5 Sheared zone sheared 45°CN with 10% light brown
biotite, 2% quartz carbonate
291.5
291.5 Fine grained massive diorite, very fine grained
light green
333.0 End of Hole.

per lode
M. Garvey
1" = 200'
1" = 200'
(Large Vertical loop)

#2
5332

#1
60154

KRL 60154



E-2
50°N

E-1
50°N

35400

Tie line

E-3
50°N









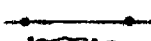







GERRY LAKE CLAIM MAP


DISTRICT OF KENORA
(PATRICIA PORTION)
RED LAKE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

- PATENTED LAND 
- CROWN LAND SALE 
- LEASES 
- LOCATED LAND 
- LICENSE OF OCCUPATION 
- MINING RIGHTS ONLY 
- SURFACE RIGHTS ONLY 
- ROADS 
- IMPROVED ROADS 
- KING'S HIGHWAYS 
- RAILWAYS 
- POWER LINES 
- MARSH OR MUSKOG 
- MINES 

NOTES

100' R/W to Dept. of Highways & HEPC. trans. line - Files: 119040 & 102046 shown thus: 

400' Reserve around all lakes & rivers to Dept. of Lands & Forests.

DATE OF ISSUE

APR 1 1989
ONTARIO DEPT. OF MINES

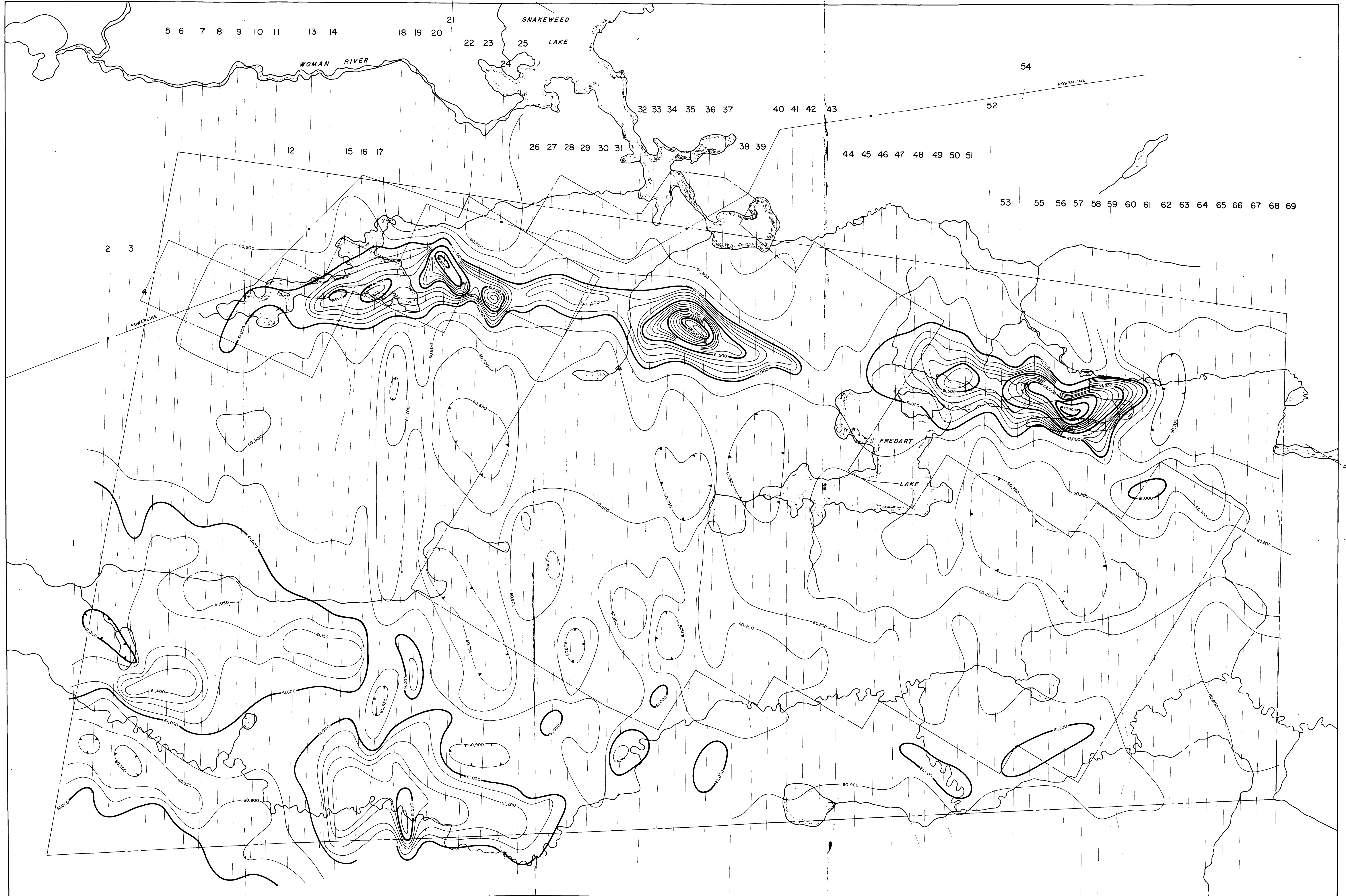
PLAN NO. **M-2438**

DEPARTMENT OF MINES
- ONTARIO -

SOUTH OF OTTER LAKE AREA M - 1772



McPHAR GEOPHYSICS LIMITED
AIRBORNE MAGNETOMETER SURVEY



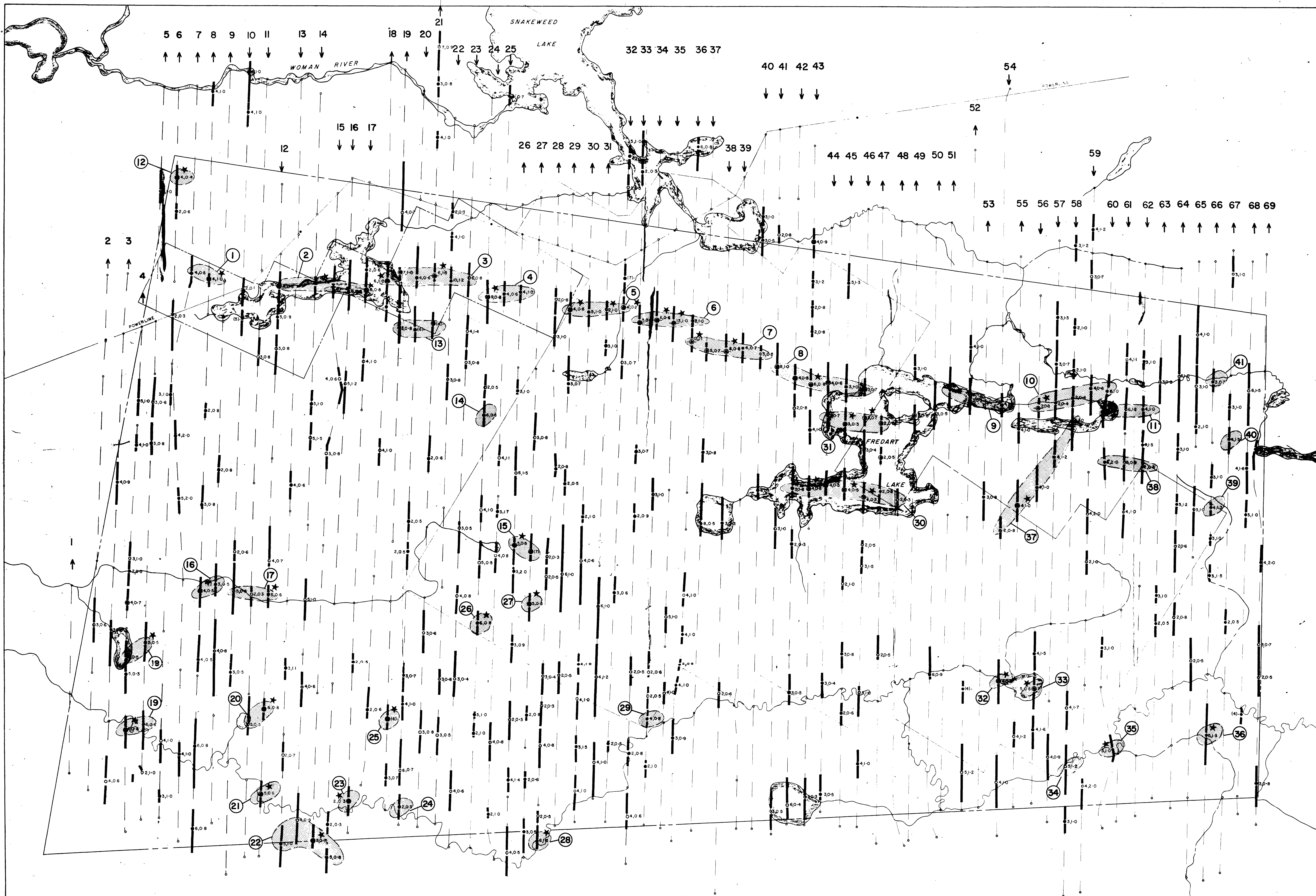
LEGEND
 CONTOUR INTERVAL ----- 100 GAMMA
 MEAN FLIGHT LINE SPACING ----- 660 FEET
 MEAN TERRAIN CLEARANCE ----- 500 FEET
 500 GAMMA CONTOUR -----
 100 GAMMA CONTOUR -----
 MAGNETIC LOW -----
 CLAIM BOUNDARY -----
 SURVEY BOUNDARY -----

COPPER LODE MINES LIMITED
 BELANGER TWP., RED LAKE AREA ONT.

SCALE
 1000 0 1000 2000 3000 4000 5000
 FEET FEET
 1 INCH TO 1320 FEET

APPROVED: *[Signature]*
 DATE: 15/11/68

McPHAR GEOPHYSICS LIMITED
AIRBORNE ELECTROMAGNETIC SURVEY



LEGEND

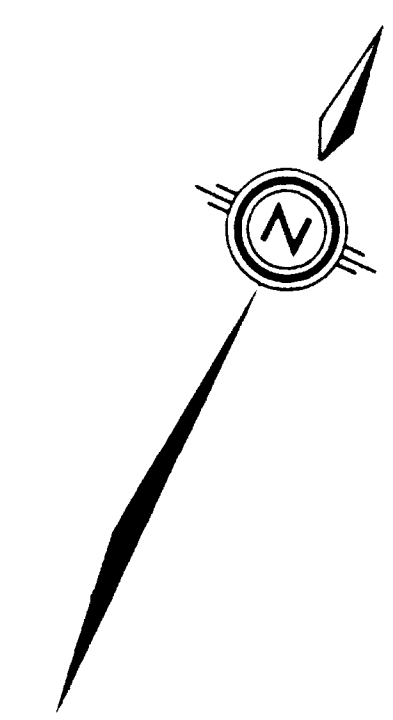
A —●—	340 Hz. AMPLITUDE
B —○—	ANOMALY SHAPE
C —○—	RATIO 340 1070 Hz.
D —○—	

SYMBOLS SHOW LENGTH, SHAPE AND PEAK OF ANOMALY

COPPER LODGE MINES LIMITED
BELANGER TWP., RED LAKE AREA ONT.

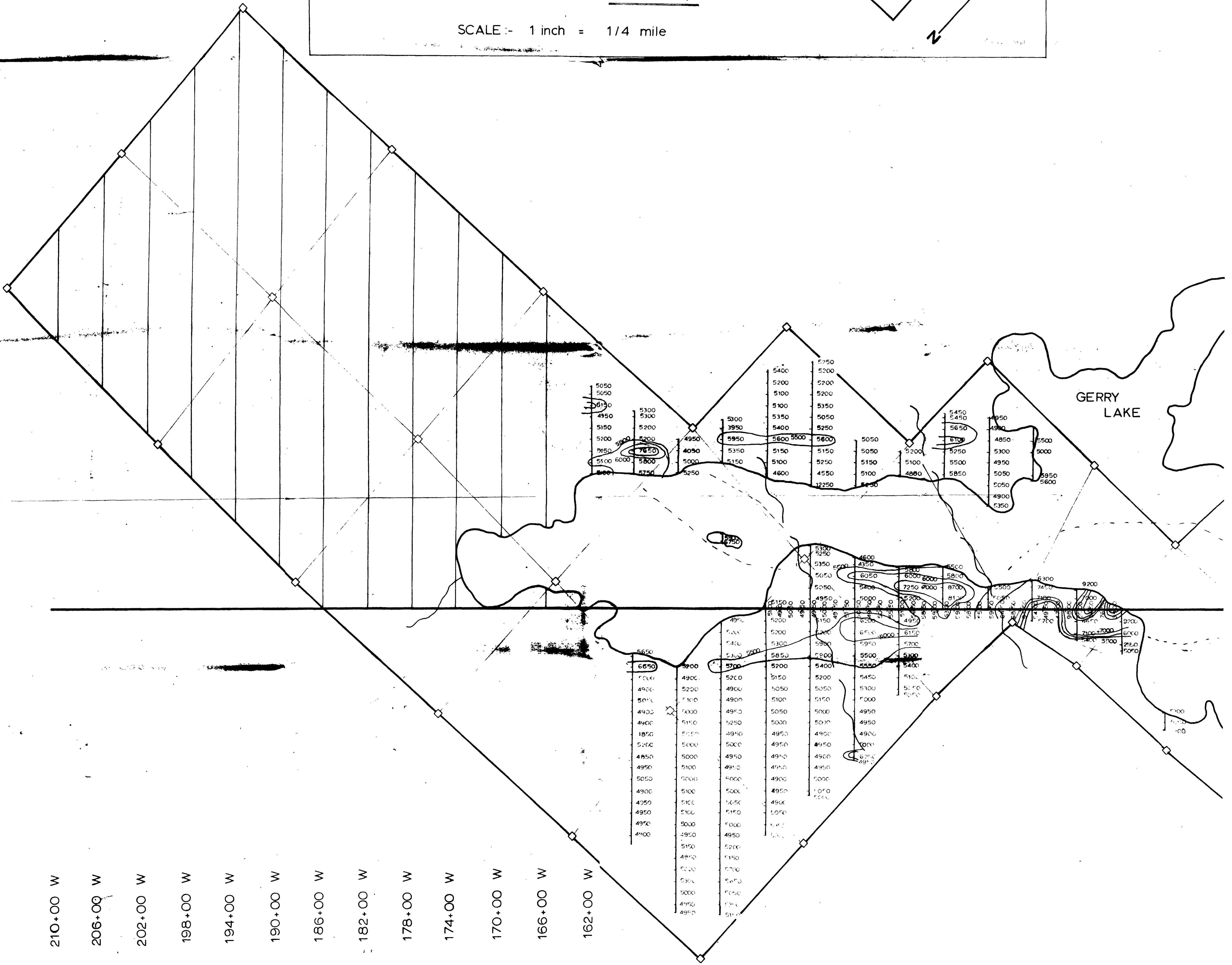
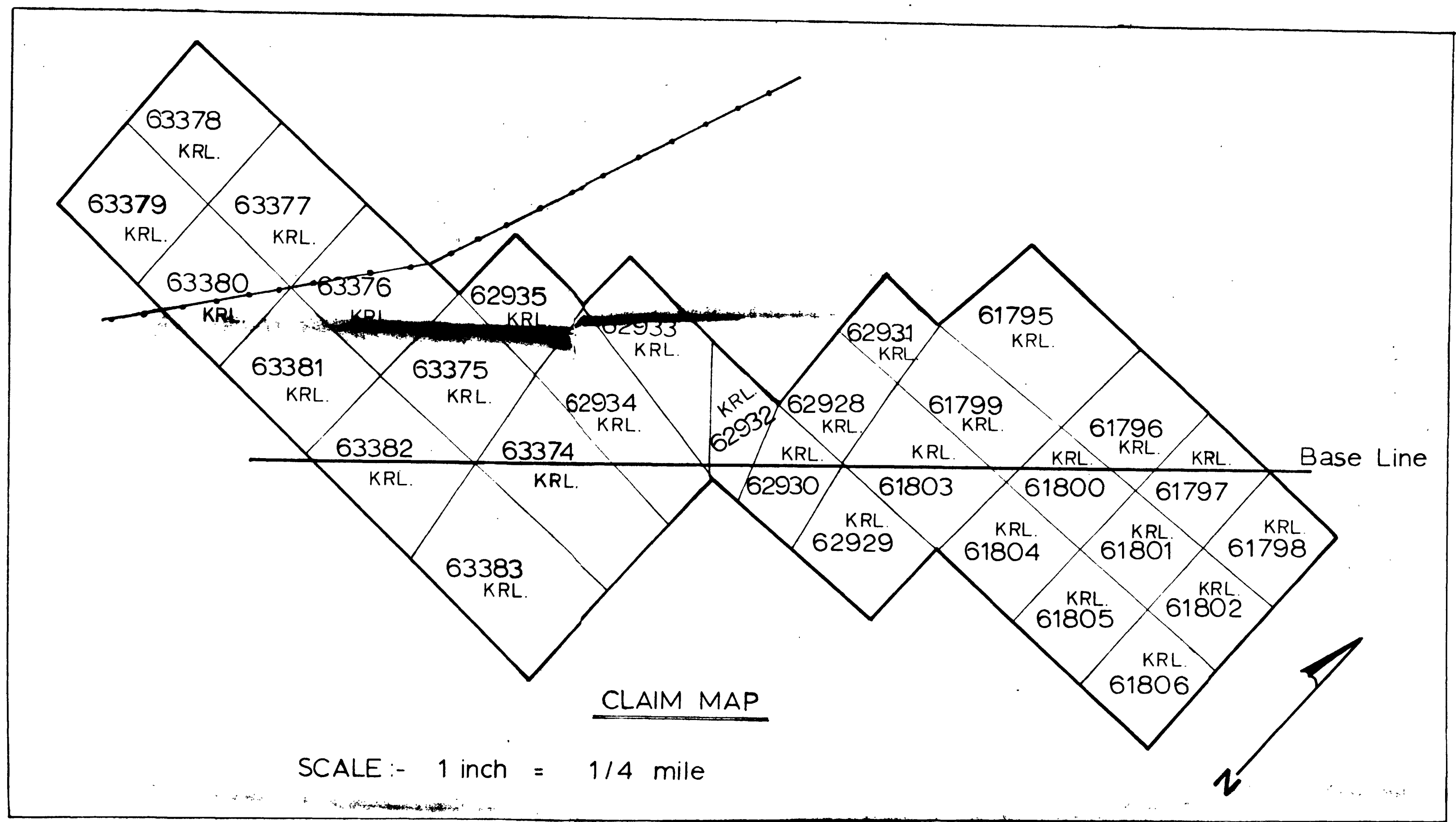
CLAIM BOUNDARY - - - - -
 SURVEY BOUNDARY - - - - -

SCALE
 1000 0 1000 2000 3000 4000 5000
 FEET
 1 INCH TO 1320 FEET



APPROVED: *[Signature]*
 DATE: 15/11/68





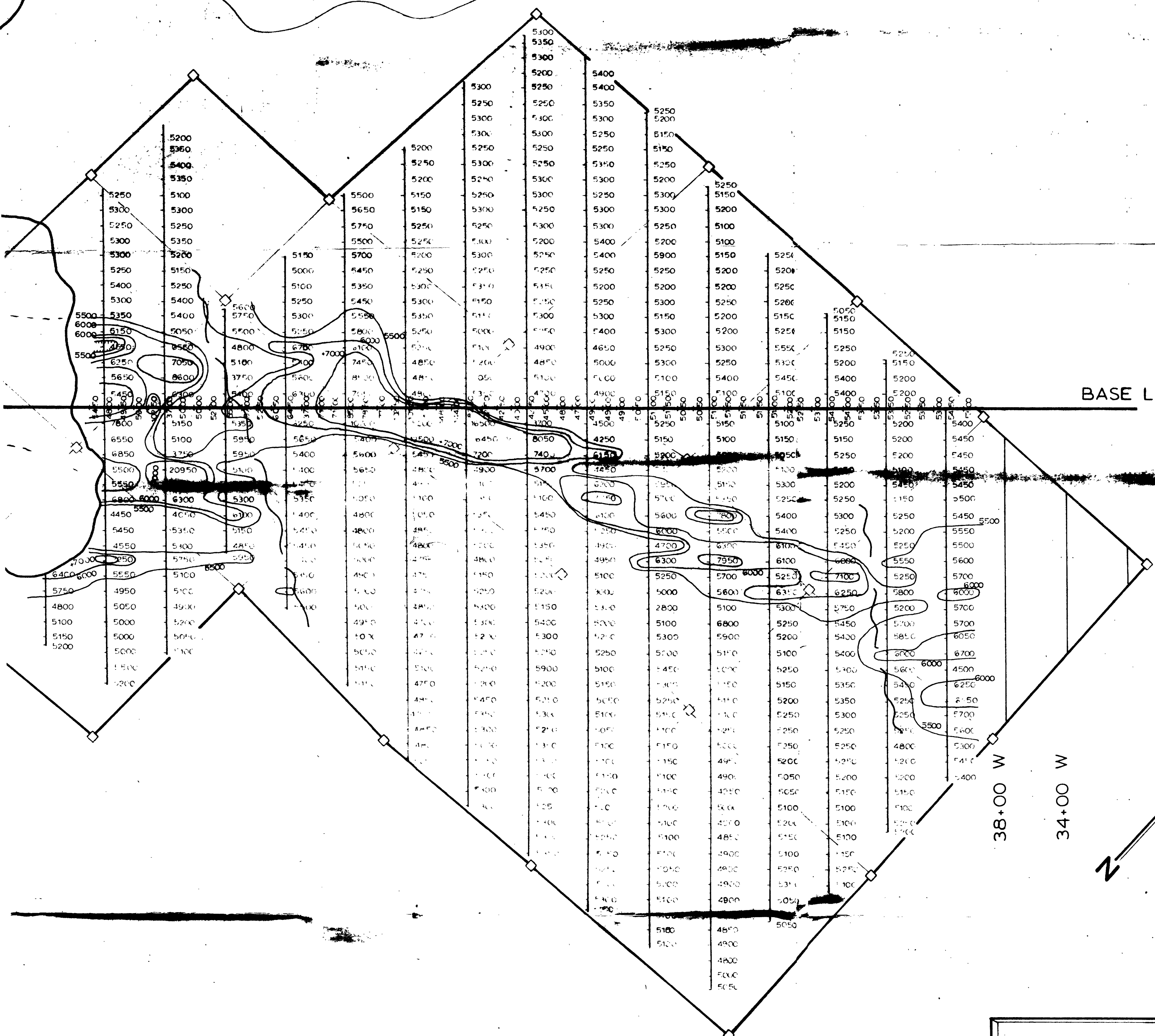
210+00 W
 206+00 W
 202+00 W
 198+00 W
 194+00 W
 190+00 W
 186+00 W
 182+00 W
 178+00 W
 174+00 W
 170+00 W
 166+00 W
 162+00 W

158+00 W
 154+00 W
 150+00 W
 146+00 W
 142+00 W
 138+00 W
 134+00 W
 130+00 W
 126+00 W
 122+00 W
 118+00 W
 114+00 W
 110+00 W
 106+00 W

LEGEND

- 7000 Reading in Gamma.
- Spacing 100 feet.
- Indicated Fault.
- Contour Line + 5500
- + 6000
- over 7000





102+00 W
 98+00 W
 94+00 W
 90+00 W
 86+00 W
 82+00 W
 78+00 W
 74+00 W
 70+00 W
 66+00 W
 62+00 W
 58+00 W
 54+00 W
 50+00 W
 46+00 W
 42+00 W

ROXMARK MINES LIMITED	
GERRY LAKE AREA	
MAGNETOMETR SURVEY	
SCALE -	1 inch = 400 feet.
DATE -	AUGUST, 1969.
DRAWN BY:-	M. YOUNAN.

See la log