REPORT ON GROUND FOLLOWUP SURVEY

ON THE

MUSKRAT DAM PROJECT

DISTRICT OF KENORA (PATRICIA PORTION), ONTARIO

FOR

SEREM LIMITED

BY

GEOTERREX LIMITED
No. 85-106

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OTTAWA, Canada,
NOVEMBER, 1970.

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I. INTRODUCTION

In the period from June 5 to October 10, 1970, Geoterrex Limited of 1312 Bank Street, Ottawa 1, Ontario, completed ground followup surveys over claim groups held by Serem Limited, Suite 770, 2100 Drummond Street, Montreal, Quebec. The claim groups involved in the followup project are located on the geological formations known as the Muskrat Dam Lake Belt which is located along the Severn River southwest of Muskrat Dam Lake. This lake is situated about 200 miles NNE of the town of Red Lake in northwestern Ontario. Access to the area was by aircraft from Red Lake.

The ground followup survey completed by Geoterrex Limited involved line cutting followed by vertical and horizontal loop electromagnetic and magnetic surveys. The field project was supervised on site by R. Keith, B.Sc., who is a Geoterrex staff geophysicist; the entire project was completed under the direction of P. Norgaard. Their qualifications are described in the attached Curricula Vitae.

The purpose of the survey was to locate and evaluate geophysically, on the ground, certain electromagnetic anomalies obtained during a systematic reconnaissance coverage of the area, using the airborne INPUT electromagnetic system. The anomalies to be located and evaluated were located within claim blocks, most of which were staked prior to the commencement of the ground followup survey. A total of 132 claims, each of an area of approximately 40 acres was covered during the followup programme.

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The project was completed from a centrally located base camp. Access to the various claim groups, which were quite scattered, was achieved by the use of boats when possible or by helicopter. A Dominion Helicopter GB-2 was attached to the base camp for most of the project.

II. PERSONNEL

The following is a list of the Geoterrex personnel necessary to the completion of the survey as well as the number of eight-hour man days spent by each person on the project during the field operation, and in the office, for the completion of the compilation and the geophysical report.

II.1 Field Operation

	No. of 8-Hour Man Days
Robert Keith, Geophysicist, 324 Cambridge St., Ottawa, Ontario.	70
Peer Norgaard, Geophysicist, 749B Springland Drive, OTTAWA, Ontario.	5
Wolf Tschaikowsky, Geophysicist, 790 Springland Drive, Ottawa, Ontario.	10
Frank Dalidowicz, Geophysicist, 740 Springland Drive, Ottawa, Ontario.	18
Pierre Filteau, Surveyor, 1312 Bank Street, Ottawa, Ontario.	63

	No. of 8-Hour Man Days
Gary Peacock, Operator, c/o 1312 Bank Street, OTTAWA, Ontario.	44
Anthony Kerr, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	15
Gary Cole, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	44
Ken Keith, Operator, 617 Churchill Ave., Ottawa, Ontario.	50
Andrew Scott, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	59
Cletus Newell, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	55
Gerard Couture, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	32
Robert Giret, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	25
Ted Sullivan, Operator, c/o 1312 Bank Street, Ottawa, Ontario.	32
A. Jacob, Operator, R.R. #4, Amos, Quebec.	117

	No. of 8-Hour Man Days
Delphis Frenette, Cook, 1179 St. Peter Ave., Bathurst, N.B.	117
Charlie McDougall, Line Cutter, R.R. #4 Amos, Quebec.	112
George Mowatt, Line Cutter, R.R. #4, Amos, Quebec.	112
John Jacob, Line Cutter, R.R. #4, Amos, Quebec.	68
Joe McDougall, Line Cutter, R.R. #4, Amos, Quebec.	68
Batiste Oghinany, Line Cutter, R.R. #4, Amos, Quebec.	63
Roland Kistabish, Line Cutter, R.R. #4, Amos, Quebec.	68
Andrew Kistabish, Line Cutter, R.R. #4, Amos, Quebec.	55
John Mapatchee, R.R. #4, Amos, Quebec.	26
Henri Ruperthouse, R.R. #4, Amos, Quebec.	28
TOTAL	1,358

Summary:

June 5 - October 10, 1970 - Field Work

Total Man Days on Geophysics and Surveying	639
Total Man Days, Line Cutting	602
Total Man Days, Cook	117
Total Field Time:	1,358

Office:

Compilation, interpretation and reporting - October 2 - November 20, 1970.

	No. of 8-Hour Man Days
Robert Keith, Geophysicist, 324 Cambridge St., Ottawa, Ontario.	12
P. Norgaard, Geophysicist, 749B Springland Drive, Ottawa, Ontario.	5
W. Tschaikowsky, Geophysicist, 790 Springland Drive, Ottawa, Ontario.	13
G. MacQueen, Geophysicist, 840 Springland Drive, Ottawa, Ontario.	5
G. Couture, Compiler, c/o 1312 Bank Street, Ottawa, Ontario.	10
Total Office Time:	45

III. CLAIMS COVERED

The following is a list of the claims covered in the various claim blocks.

NAME OF CLAIM BLOCK	NO. OF CLAIMS	CLAIM NUMBERS
XII	4	KRL 237559-237562
XXII	4	KRL 264270-264273
XXIII	7	KRL 264263-264269
XXV	8	KRL 237510-237515 KRL 281192 KRL 280813
XXVI	5	KRL 264202-264207
XXVII	6	KRL 264161-264166
XXIX	15	KRL 237450-237461 KRL 237550-237552
XXX	15	KRL 237535-237549
XXXI	4	KRL 264204 KRL 264208-264210
XXXII	4	KRL 264215-264218
XXXIV	8	KRL 264282-264287 KRL 281194-281195
XXXV	6	KRL 264247-264252
XXXVI	6	KRL 264237-264242
XXXIX	4	KRL 237440-237443
XL	9	KRL 237499-237506 KRL 280808
XLIII	4	KRL 264167-264170
XLVI	4	KRL 264219-264222
XLVII	9	KRL 264257-264258 KRL 237517-237524
XLVIII	6	KRL 264288-264293
L	4	KRL 264253-264256
LII	4	KRL 264243-264246
LV	4	KRL 264211-264214
LX	4	KRL 237479-237482
LXI	6	KRL 237474-237477 KRL 271817-171818

IV. GEOPHYSICAL INSTRUMENTS

Electromagnetic Surveys:

The reconnaissance E.M. survey was conducted primarily using the Scintrex manufactured SE-300 vertical loop, tilt angle unit. This instrument operates at two frequencies 400 Hz and 1600 Hz and can be used at these two frequencies at a separation of 600 feet or less. When a greater penetration was needed, the McPhar SS15 was utilized. This instrument has the two frequencies of 1000 and 5000 Hz and can be used at a separation of 2000 feet.

In order to aid in interpreting the conductors found using the vertical loop system, detail work was completed using the horizontal loop system. The instrument that was used was the Huntec made Ronka MkIV which has a single frequency of 876 Hz. In this instrument, the in-Phase and Out-of-Phase components are read directly as a percentage of the transmitted field. There is a choice of two cable lengths, namely 200 and 300 feet, the choice of cable length depending on the depth of penetration required in the particular situation.

The specifications of these instruments are given in the Appendix to this report.

Magnetic Survey

For the ground magnetic coverage of the survey areas, MF-1, MF-2 and M-700, fluxgate magnetometers were used. The MF-1 and MF-2 are manufactured by Scintrex Limited while the M-700 is made by McPhar. The specifications of these instruments which measure the vertical component of the magnetic field, are described in the Appendix.

V. LINE CUTTING

In the course of covering the claims described in Section III of this report, a total of 86,000 feet of base line was established. Picket lines positioned at right angles to the various base lines were spaced at 400 foot intervals; a total of 506,800 feet of picket lines was cut. All lines were chained and picketed with stations at 100 foot intervals. The total number of established stations is approximately 5,300.

The desired locations and directions of all base lines were specified in advance by Serem Limited; the actual line cutting was directed by a qualified surveyor who positioned the base lines in the field by the use of a transit and referring to well established topographical points. Most picket lines were established at right angles to the base lines by the surveyor using the transit.

VI. GEOPHYSICAL SURVEYS

Electromagnetic Survey

The Tilt Angle or Vertical Loop Method - In tilt angle or vertical loop E.M. systems an alternating magnetic field is established and the direction of the total magnetic field due to the transmitter and to eddy currents induced in the ground is measured. For the survey techniques employed during the survey, the transmitting coil is held stationary in a vertical position during a measurement and the receiver coil is used as a "null" measuring device, i.e. rotated around a horizontal axis until it is in a position of minimum induction. At this point, the plane of the receiver coil contains the total field vector, or, when secondary field are present the major axis of the polarization ellipse. The vertical transmitter-horizontal receiver coil configuration is the coil arrangement which is most recommended for reconnaissance and detail surveys, particularly in the Precambrian shield or elsewhere where the geologic conductors are expected to dip at angles of greater than about 30 degrees. This configuration gives a minimum response from truly flat-lying conductors such as overburden; it is also unaffected by elevation differences between the coil provided that the transmitter coil is properly oriented.

The two survey techniques that were used for the vertical loop surveys were the "Broadside" or "Parallel Line" technique, and the "Fixed Transmitter" technique.

The "Broadside" or "Parallel Line" Technique - In this method the traverse lines are inclined at approximately right angles to the expected strike although the direction is not too critical. The two coils move progressively along two parallel lines with both coils being at the same "latitude" relative to the grid. At each 100 foot station, a reading is taken using the high frequency signal and, if an anomalous tilt is observed the observations is generally repeated using the lower frequency. High frequency tilt angles are generally always as large as the low frequency angles so that no conductor will be missed by employing this technique.

The "Fixed Transmitter" Technique - In applying this method the relative position of the transmitter and receiver is exactly the same as that in the parallel-line method; i.e. the transmitter is a vertical loop which is so oriented that the receiver position lies in its plane. The plan of operations is rather different, however. The transmitter is kept at one position and the receiver is moved along the picket line near-by, making dip-angle measurements at regular intervals. The plane of the transmitter must be rotated with each observation so that it always contains the receiver position.

Interpretation of "Tilt Angle" Data - The technique employed when measuring the direction of the total field or its components by means of a null configuration, combines major advantages in operational efficiency with limited interpretation capabilities. The latter partly results from the insufficiency of null configurations to measure in elliptically polarized fields. The plane of the receiving coil, when it is in a position of minimum induction, contains the total field vector, or, when phase shifted secondary fields are present, the major axis of the polarization ellipse. With increased ellipticity the null position widens and the measurements begin to lose definition.

In spite of the limited interpretation capabilities of the vertical loop technique, it is an extremely popular and preferred method for ground followup of conductive zones located by airborne EM reconnaissance surveys.

In proper application of tilt-angle methods, the emphasis should be on an operational efficiency, particularly in following up airborne surveys, where the main problem is to determine the location of conductors whose relative significance has already been assessed in the interpretation of the airborne data. The results of VEM surveys are usually presented as profiles showing the angular deviation from the free-air null position in the plane of measurement. The horizontal location of the conductive axis is indicated by the crossover point for single steeply dipping conductors. Depth of burial, conductivity, size and geometry are reflected in the curve shapes and amplitudes; the use of two well separated frequencies aids in distinguishing the various parameters.

Although the qualitative interpretation of VEM data is difficult, experience shows that in normal Precambrian Shield conditions adequate information can be derived from VEM data for the positioning of drill holes, as well as the evaluation of the reltive conductivity of a particular conductivity of a particular conductive zone; the relationshipp between the anomalous tilt angles obtained at 400 Hz and 1600 Hz using the SE-300 system on a particular conductor, indicates whether a conductor is of high or low conductivity. For a body of specific size and shape the ratio of the 400 Hz tilt angle to the 1600 Hz tilt angle will vary with the conductivity. For low conductivity, the 1600 Hz will give a much larger response than will the 400 Hz; for high conductivity, the ratio will become very nearly unity. Large bodies give rise to ratios nearer unity than do small bodies but the spacial distribution of the conductor will help to separate the size effect from the conductivity effect.

Generally speaking, the average base metal sulphide body is of sufficient size and conductivity to give ratios near unity, but strong graphitic zones may likewise give rise to high ratios. Overburden effects, serpentines, shear zones, weaker metallic sulphide and graphite distributions may all give rise to smaller ratios. It is not possible to resolve the various possible conductive sources on the basis of the E.M. measurement alone.

Horizontal Loop Method - In the horizontal loop prospecting system two light coils, one receiving and one transmitting are kept horizontal and a fixed distance apart. The receiver measures both in in-phase and quadrature components of the secondary or anomolous field as a percentage of the primary field intensity. Measurements of this type can only be made if there is a mechanical link between the receiver and the transmitter which is used for the dual purpose of maintaining an accurate separation between the coils and of obtaining a reference signal from the transmitter for the phase measurement. The results are presented as profiles showing the variation of real (in-phase) and imaginary (out-of-phase or quadrature) components of the secondary field plotted at the mid point between the coils. The system is symmetrical and the positions of transmitter and receiver are interchangeable.

In the surveying technique used with the horizontal loop the transmitter and receiver travel progressively along a traverse perpendicular to the anticipated strike of the conductive zone. A constant separation is maintained by keeping the connecting cable taut. Readings are taken every 100 feet. This reading interval is reduced to 50 feet wherever anomalous readings are encountered.

The maximum coupled coil configuration used in the horizontal loop system gives results which are the easiest to interpret of all the electromagnetic systems. The horizontal loop profile over a single vertical conductor shows a negative trough of which the shoulders exhibit small positive values. One distinct advantage of the horizontal loop data is that it gives a direct indication of the width of a body. Thus quantitative determinations of the conductivity, expressed in mhos, and the width are possible as opposed to the conductivity width product (mho/meters) obtained from vertical loop data. Accurate determinations of depth and dip are also possible. These factors make the horizontal loop method a valuable accessory to the fast and efficient vertical loop "Broadside" method.

Magnetic Survey - The purpose of the ground magnetic survey was to study the relationship of magnetic activity to the conductive zones mapped using the electromagnetic technique. E.M. anomalies surveyed from the air which appear to have direct airborne magnetic correlation are often shown to have associated magnetic activity rather than direct correlation once the ground surveys have been completed.

All readings on a particular grid are "tied" to a common base for that grid and during the survey of a grid the maximum length in time of a survey loop would be about one hour, in order to have good diurnal control.

Observations were made at 100 foot intervals on a reconnaissance basis but the reading interval was generally reduced to 50 feet in areas of magnetic activity noted in the vicinity of conductive zones.

VII. PRESENTATION OF DATA

The electromagnetic and magnetic data is presented in profile form on plates related to the narrow claim groups. For each claim group the profile presentation includes a location plan at a scale of 1 inch = ½ mile and a separate sketch of the claim block at a scale of 1 inch = ¼ mile, showing the actual claim layout for the group.

The location of the various claim groups, with respect to the Severn River and Muskrat Dam Lake, is shown on the area location map included in the Appendix to this report.

For the profile presentation, the horizontal scale used is 1 inch = 200 feet. The tilt angle obtained from the vertical loop E.M. survey are plotted at a scale of 1 inch = 10 degrees or 1 inch = 20 degrees and the horizontal loop data is plotted at either 1 inch = 10% or 1 inch = 20%, as required for a clear presentation. The magnetic data is plotted at suitable scales as indicated on the individual plates.

For ease of correlation on interpretation of the electromagnetic and the magnetic profiles are generally superimposed. Detailed magnetic data is also aprovided on a separate plan map for each claim block.

VIII. DISCUSSION OF RESULTS

The results of the ground followup survey will be discussed for each claim group in turn below.

Claim Block XII

Claim Block XII is located in the centre of a large area indicated to be underlain by felsic metavolcanics and which is crossed by the axis of the Sandhill Crane anticline, trending east-west across the claim block.

The INPUT survey intersected a very good conductor, also striking east-west, which extends beyond the property boundaries. This conductor is located just south of the centre of the block. The middle airborne intersection is sharp with the intersections to the east and west being slightly broader and having channel ratios indicating even better conductivity-width values. A magnetic high south of the main conductor is indicated by the INPUT records. The aeromagnetic map shows that the rest of the area is magnetically quiet.

The ground survey was performed on lines running perpendicular to an east-west base line positioned in the centre of the claim block. The ground survey located the main INPUT conductor just south of the base line with a strike of N85°E. In the centre of the property this is one single conductor. On the east end, another conductor parallels it 200 feet to the north. On the west end, a conductor parallels the main conductor 200 feet to the south. The dual conductor would account for the increase in apparent conductivity-width of the INPUT intersections at the east and west ends of the property and would also account for the increased broadness of these INPUT anomalies. The conductivity-width determined in the central portion of the conductor from the horizontal loop data is 95 mhos. This very good conductivity persists towards the east but decreases somewhat towards the west. On the westernmost line the conductivity-width for the respective conductors is 24 mhos for the northern conductor and 35 mhos for the southern one, conductivity-widths which are still quite high. The dip in the centre section is steeply to the south, and at the west end the conductors appear vertical; in the east it is impossible to determine dip due to the interference of the two conductors and the "off strike" effect.

The INPUT survey also intersected a one line anomaly on the northwest boundary of the property. This was located by the ground survey at the north end of the westernmost line, terminating about 400 feet to the east; this conductor could thus extend towards the west off the property. A conductivity-width of 19 mhos is indicated by the horizontal loop data. The quadrature background level becomes slightly negative in the vicinity of this conductor suggesting a more conductive overburden or perhaps a thickening of the overburden.

Other indicated possible conductors are probably due to topographical or surficial effects as indicated by some of the detailed work.

The survey area is magnetically quiet for the most part. A magnetic anomaly is however located at the south end of most lines as would be expected from the INPUT records. The strike is the same as that of the EM conductors. There is no magnetic expression correlating with the main conductor on any line, but there is a very broad magnetic "high" of 140 gammas coinciding with the isolated conductor at the northwest corner of the property. The magnetic high yields a depth to source of 120 feet which compares with a depth of 90 feet calculated from the electromagnetic survey data. The possibility of conductive overburden here, which was previously noted, could account for this discrepancy.

The overall depth of cover in the survey area is in the order of 70 feet, except, as just noted, in the northwest corner of the property where the depth appears greater. Depth determinations were made from both the horizontal loop and vertical loop data and from two of the southern magnetic anomalies. Depths to source of 60 to 80 feet were obtained.

For purposes of testing the various conductors by drilling, some drill hole locations are suggested below:

a) Line 12W

If it is desired to test the main conductor by drilling, the suggested line is 12W where the horizontal loop data indicates a width of 50 feet and a very good conductivity-width of 95 mhos. The conductivity is thus about 60 mhos/meters. The conductor is located at 1+50S and is at a depth of 70 feet as indicated by both horizontal loop and vertical loop profiles. The conductor dips steeply to the south.

A suggested drill hole location for testing the E.M. conductor is as follows: Collar at 3+00S on Line 12W and drill north along the line at an inclination of 45° for a distance of about 250 feet.

b) Line 24W

The south dual conductors on Line 24W is very well defined so that a drill hole location is suggested in case it is desired to check this conductor. The axis is located at 3+50S. The horizontal loop profile indicates a depth of cover of 60 feet and a conductivity-width of 35 mhos. The conductor appears to be vertical.

A suggested drill hole location is as follows: Collar at 4+75S on Line 24W and drill north along the line at an inclination of 45° for a distance of about 225 feet.

c) Line 24W

A drill hole is suggested for the isolated E.M. anomaly at the north end of Line 24W. The axis is located at 7+00N. Collar at 5+50N on Line 24W and drill north along the line at an inclination of 45° for a distance of about 270 feet.

Claim Block XXII

The eastern two thirds of this claim block is indicated to fall within a north-south trending belt of metasediments. The western section of the property is shown as being underlain by mafic metavolcanics. An anticlinal axis is indicated to pass through the central part of the claim block, cutting across the geological contact.

The INPUT survey shows one excellent conductor striking across the western part of the claim block in a S.W. direction and being just slightly south of the eastern claim. It appears that the anomalies on flight line 14S may be plotted too far north of their actual location since the anomalies on adjacent lines fall in line but the Line 14S intersection does not.

The ground survey base line strikes N113°E intersecting the northwest corner of the claim block.

The E.M. survey over these grid lines mapped one conductive zone having a strike direction of approximately N105°E and a strike length of at least 1800 feet. This conductor appears to extend outside the boundary of the claim block both towards the east and the west.

The conductivity of this zone is very good as shown by low to high frequency ratios of 0.8 to 0.9. The horizontal loop data indicates the zone to have a conductivity width of about 120 to 140 mhos. The width of this zone appears to vary from 15 feet on Line 20W to 40 feet on Line 24W giving the zone a conductivity of 12 to 24 mhos/meter.

This conductor is coincident with a magnetic anomaly having a magnitude ranging from 200 gammas on Line 16W to a dipole magnetic feature of about 1200 gammas on Line 24W. The depth to the top of the conductor has been calculated to bee in the order of 60 feet. This corresponds very well with calculation made from the magnetic data which implies that the magnetic material is approximately 60 feet below the surface. The dip in this region appears to be vertical or possibly very steeply towards the south.

To check the source of both the E.M. and the magnetic anomalies the following drill hole is suggested: Collar at 8+60S on Line 24W and drill north along the line at an inclination of 45^{0} for at least 230 feet.

Claim Block XXIII

This claim block is located in an area underlain by felsic metavolcanics just to the east of the Severn River fault and south of the east-west trending axis of the Sandhill Crane anticline.

The airborne survey on this claim block has indicated at least four separate conductive zones. One being located near the plotted position of the base line, two north of this position and one south of it. One of the zones north of the base line appears to have direct magnetic correlation.

Because of the flooded swampy terrain on which this claim block was situated, the completion of the geophysical surveys in this area was impossible during the summer program. Most of the lines north of the base line however were surveyed with either the vertical loop or the horizontal loop E.M. units. Results here indicated several conductive zones, one being located at the base line on Line 20E and at least two others located north of this base line. The southern zone has only been noted on one line as the survey coverage did not extend far enough south. It has a conductivity width factor of approximately 95 mhos and appears to be about 10 feet wide giving it a conductivity of approximately 30 mhos/meter. The depth to the top of the source of this response is in the order of 50 feet, and the dip is vertical.

North of the base line, the conductor giving the best response is located at about 11+00N and has a strike direction of about N115^{o}E and a length of at least 2000 feet. This zone appears to have excellent conductivity as indicated by low to high frequency ratios of 0.9 to 1.0 and a calculated conductivity-width factor of roughly 60 mhos. The zone is very narrow, having a width in the order of one meter. The depth to the top of the zone is in the order of 60 to 80 feet.

The magnetic survey was not started for this claim block but should be completed during a winter program.

No drill hole locations will be suggested at this stage for these conductors because of the limited data available. Normal survey coverage should be completed during a winter program.

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Claim Block XXV

This claim group is located very close to the east-west trending Fox Bay syncline which occurs in an area of metasedimentary rocks.

The airborne survey has indicated two zones of conductivity, one being fairly long and very narrow and having extremely good conductivity, while the other zone located to the north is very short and gives a poor conductivity, weak INPUT response.

The ground survey has mapped one very long curving conductor having a strike length of about 3,800 feet and a strike direction of between N90°E and N100°E. The conductivity of this zone is very good for the entire strike length as indicated by low to high frequency ratios varying from 0.8 to 1.0.

For Line 32W horizontal loop data is available; the results indicate the zone to have a conductivity-width factor of approximately 140 mhos and a width in the order of 30 feet.

Fairly shallow overburden depths are indicated; calculations made from the E.M. responses yield a depth to the top of the conductor of approximately 20 to 40 feet. The dip is near vertical or possibly a very steep northerly one.

The conductor is apparently related to a magnetic body as indicated by a coincident dipole magnetic feature which might be related to remanent magnetism of the source material. Readings varying from +2000 gammas to -3000 gammas have been noted along the axis of this zone. Another large and much broader magnetic feature was noted along the southern ends of the grid line. However, no significant E.M. conductors are apparent within this magnetic feature, although some localized E.M. responses do exist probably caused by surficial conductivity.

Suggested drill hole locations for testing the conductor are as follows:

1) Collar at 4+10N on Line 32W and drill south along the line at an inclination of 45° for a distance of at least 180 feet.

2) Collar at 2+00N on Line 20W and drill south along the line at an inclination of 45° for a distance of at least 180 feet.

There is no evidence of the second shorter conductor which was located on the airborne survey. This airborne anomaly was noted to be about 500 feet north of the longer conductor well within the present survey coverage. This airborne conductor is very weak and there is a possibility that the source is located at a depth too great to be noted by a 400 foot coil separation.

Claim Block XXVI

This claim group is located very near the contact of the metasediments with metagabbro and metadiorite, south of the Fox Bay syncline.

The airborne survey has indicated numerous anomalies extending approximately from the plotted position of the base line to the northern boundary of the claims. The complexity of these responses suggest several probably parallel conductors located in an area having some magnetic activity. South of this band of conductors, there appears to be still another conductive zone, however, this zone is very short, appearing less than 1000 feet in length. A single conductor axis is indicated.

The ground surveys have shown that the claim block is situated slightly south of desired positions. The base line is located on the short southerly conductor while the conductive band towards the north is located at the northern ends of the lines.

This northern zone is composed of at least two parallel conductors. Their conductivities are very good as indicated by low to high frequency ratios ranging from 0.8 to 1.0. The horizontal loop data shows a conductivity-width factor between 100 and 250 mhos for the two zones on Lines 12W and 16W and a lower conductivity-width of 20-35 mhos on Lines 20W to 24W. All zones have direct magnetic correlation with amplitudes of the peaks varying from 200 gammas to 8000 gammas.

The depth of cover along these zones has been calculated to be 30 to 60 feet. The dip appears to be vertical.

The best E.M. responses from the south conductor was noted on Lines 12W and 16W. On Line 12W, the low to high frequency response ratio of the 'crossover' located at 13+30N is about 0.9 and the calculated conductivity-width factor is approximately 200 mhos. The apparent width of the zone of conductivity is in the order of 40 feet and the depth to the top of the source is about 40 feet.

A 2000 gamma magnetic anomaly is coincident with the conductor axis at this location. A drill hole to test the anomaly here should be located as follows: Collar at 14+20N on Line 12W and drill south along the line at an inclination of 45° for a distance of about 200 feet.

On Line 16W, the low to high frequency response ratio of the 'crossover' located at 13+30N is approximately 0.8 and the calculated conductivity width factor is in the order of 190 mhos. The zone appears much narrower on this line than on Line 12W and the depth to the top of the source is 40 to 50 feet. The zone here has a 400 gamma directly correlating magnetic anomaly. A drill hole to test the conductor here should be located as follows: Collar at 14+20N on Line 16W and drill south along the line at an inclination of 45° for a distance of about 200 feet.

The zone located 300 feet further to the north has the best peak to peak response on Line 16W at about 15+80N where the conductivity-width factor has been calculated to be about 240 mhos. The conductive zone appears to have a width of about 40 feet and to be at a depth of roughly 40 feet. To check this target the following drill hole location is suggested: Collar at 16+70N on Line 16W and drill south along the line at an inclination of 45° for a distance of approximately 200 feet.

The short south zone located at the base line has a much poorer conductivity than the conductors to the north with low to high frequency response ratios of no greater than 0.7. Although E.M. responses have been noted on two lines, namely Line 24W and Line 28W, this zone may not extend as far to the east as Line 24W since no horizontal loop response was noted here. The conductor does have a coincident magnetic features the shape of which could indicate a source having remanent magnetism. The depth to the top of the source appears to be in the order of 70 feet. A drill hole to test the anomaly here should be located as follows: Collar at 1+90N on Line 28W and drill south along the line at an inclination of 45° for a length of at least 240 feet.

Other minor conductor axes are much weaker and have a poorer definition. Some cannot be fully mapped because of the cut off of the survey coverage at the northern end of the grid. For better definition of the zones located near the north boundary of the claim group, additional E.M. coverage toward the north would be required.

Claim Block XXVII

This claim block is situated in an area underlain by metasediments, metagabbro, metadiorite and mafic metavolcanics.

The airborne INPUT survey shows one long conductive zone extending from one end of the claim block to the other. Some magnetic activity is noted along the strike of this conductor zone.

The ground E.M. results reveal a conductive zone of at least 4000 feet in length extending from one end of the claim block to the other. On the eastern two lines only one axis is evident, however, further towards the west, two conductors are noted each having its best response centered on Line 20E. Towards the east on Lines 12E and 8E the responses from both conductors are very weak, with the shorter south conductor probably terminating here. On Line 0, the longer main conductor is again well defined.

The conductivity of the main zone is extremely high as indicated by low to high frequency response ratios of 0.9 to 1.0. The conductivity width factor for this zone as calculated from the horizontal loop results obtained on Lines 20E and 16E is in the range of 100 to 140 mhos. The width of this zone at 4+20N on Line 20E and 3+80N on Line 16E appears to be in the order of 30 feet. Some magnetic activity is noted to be very nearly coincident with this E.M. conductor except on Line 28E where there does not appear to be any magnetic anomaly. It would thus seem unlikely that the source of the E.M. response is magnetic.

The shorter zone located about 300 feet further south is much weaker and has a poorer apparent conductivity as indicated by the conductivity-width factor of roughly 20 mhos. This zone is also related to a magnetic feature although it does not appear to be directly correlating.

The depth to the top of the conducting body appears to be in the order of 40 to 60 feet. The dip is very nearly vertical or possibly very steeply towards the south.

The following drill holes are suggested for testing the source of the E.M. anomalies.

1) Collar at 3+20N on Line 20E and drill north along the line at an inclination of 45° for at least 210 feet.

2) Collar at 0+40S on Line 20E and drill north along the line at an inclination of 45° for at least 210 feet.

Claim Block XXIX

This claim group is situated very near the contact between the metavolcanics to the south and the metagabbro and metadiorite which form the Fox Bay Sill.

The ground surveys on this very narrow group of claims has indicated one long conductor extending from Line 12W to Line 44W and probably beyond this westernmost line for a strike length of at least 3200 feet. Another weaker and much shorter conductor about 200 feet to the south is evident from the E.M. responses obtained on Lines 32W and 36W.

The conductivity of the long zone is extremely high as indicated by low to high frequency ratio responses of about 1.0. The conductivity seems to become much poorer towards the east where the ratio is about 0.4 on Line 12W. Conductivity-width factors of 260 to 280 mhos have been calculated for this conductor on Lines 32W, 36W and 40W. The zone appears to be fairly narrow, probably less than 10 feet thick. Some magnetic activity appears to be related to the conductor although a direct correlation is not fully evident. On some lines, the axis has a coincident magnetic peak of up to 2000 gammas (i.e. Lines 24W and 28W). Some lines have the magnetic peak slightly displaced from the apparent position of the conductor while on other lines, there is only a very small broad magnetic feature, of 100 to 200 gammas (i.e. Lines 12W, 20W, 32W, 44W).

The short conductor located on Lines 32W and 36W about 200 feet south of the longer zone also has a very good conductivity-width factor of 160 mhos. This zone has a coincident magnetic anomaly of about 3000 gammas.

The apparent depth to the top of these conductors is in the order of 30 feet. The dip is apparently a vertical one.

To check the source of these two conductors, the following drill holes are suggested:

1) Collar at 3+50S on Line 32W and drill south along the line at an inclination of 45° for a length of at least 200 feet.

2) Collar at 6+00S on Line 32W and drill south along the line at an inclination of 45° for a length of about 200 feet.

This claim block was not surveyed completely due to some of the claims being flooded so that more work is required.

Claim Block XXX

This claim block is underlain by metagabbro and metadiorite which form the Fox Bay Sill.

The airborne survey has indicated one long east-west striking conductive zone extending from one end of the claim block to the other. This zone appears to have extremely good conductivity and on some of the flight lines, the INPUT anomaly has a coincident magnetic feature.

Using the Broadside configuration vertical loop method with a coil separation of 400 feet, only weak responses were noted, possibly indicating sources to be too deep for a positive detection using this relatively short coil separation. A fixed transmitter configuration with an 800 foot coil separation and frequencies of 5000 Hz and 1000 Hz was then utilized in an attempt to define the conductor axes.

With this method, two axes were mapped. The main zone curves across all the surveyed lines, i.e. from Line 8W to Line 32W, and is located on the north side of the base line. The conductivity appears to be very good with low to high frequency response ratios of very nearly 1.0. The axis of this zone is parallel to and located 100 to 200 feet north of a 300 to 500 gamma magnetic anomaly which occurs on the northern flank of an 8000 gamma magnetic zone. The other conductor axis was only traced on Line 8W to Line 16W. This zone also has very good conductivity and is located 100 feet north of the large magnetic anomaly (8000 gammas). It is possible that another zone may exist further north. However, there is insufficient geophysical coverage for tracing this zone.

The dip in this region as indicated by the magnetic pattern, appears to be toward the north. The depth to both the top of the conductive body and the magnetic material is in the order of 120 to 150 feet.

To test the source of the two conductors, the following drill holes are suggested:

1) Collar at 4+90N on Line 16W and drill south along the line at an inclination of 45° for at least 350 feet. It may be necessary to extend this drill hole to intersect the magnetic material.

2) Collar at 0+30S on Line 16W and drill south along the line at an inclination of 45° for at least 350 feet.

Claim Block XXXI

No geological information was available for the area in which this claim block is situated.

The airborne survey has indicated three possibly parallel zones with fairly good conductivity in an area of relatively low magnetic activity.

The ground surveys mapped three parallel conductors. The zone giving the best E.M. response is located 400 to 600 feet north of the base line. OneLine 24E its conductivity appears very good with low to high frequency response ratio of about 1.0 and a calculated conductivity-width of roughly 100 mhos. The conductivity appears to decrease towards the northwest; on Line 12E the conductivity-width is in the order of 20 mhos. There is magnetic activity associated with this conductor.

The conductor giving the next best response is located 200 to 300 feet south of the base line. This zone does not appear to extend beyond Line 20E towards the southeast. However, it is still open towards the northwest. Its conductivity is fairly good with a low to high frequency response ratio of 0.6 to 0.7 and a conductivity-width factor of 70 mhos as calculated from the horizontal loop results on Line 12E. This zone appears very wide here, possibly as much as 3[illegible] feet thick. On Lines 4E, 8E and 12E, the conductor axis is located 200 feet northeast of a 100 to 500 gamma magnetic anomaly.

The third zone is situated 200 feet south of the base line. The conductivity here is poor to fair as indicated by low to high frequency response ratios of 0.4 to 0.6 and a calculated conductivity-width of 10 mhos on Line 12E. However, this zone is directly coincident with a magnetic anomaly having a magnitude of 100 gammas on Line 20E, 200 gammas on Line 16E and Line 12E and up to 1000 gammas on Line 8E.

The depths to the top of the conductive sources appear to vary throughout the grid. Northeast of the base line where the best conductor is located, the calculated depth is approximately 50 feet. The conductor just south of the base line also appears to be at a depth of 50 feet on Line 12E. However, the depth seems to increase towards the southeast as the third conductor is at a depth of about 80 feet on Line 12E and probably even deeper towards the southeast. The apparent dip in this region is near vertical or possibly a steep northeasterly one.

Suggested drill hole locations for testing the three E.M. anomaly sources are as follows:

1) Collar at 5+40N on Line 24E and drill south along the line at an inclination of 45° for a length of 210 feet.

2) Collar at 1+30S on Line 12E and drill south along the line at an inclination of 45° for a length of 210 feet.

3) Collar at 7+50S on Line 12E and drill south along the line at an inclination of 45° for a length of about 250 feet.

Claim Block XXXII

There was no geological map available for the region in which this claim block is located.

The INPUT survey has indicated the possibility of three parallel conductive zones having fairly good conductivities in an area of little magnetic activity. It is possible that the conductors may be quite deeply buried in this region, judging by the INPUT responses.

The ground E.M. results have confirmed the presence of as many as three parallel conductors having a strike direction of approximately north-south.

The zone giving the best response straddles the base line between Lines 8W and 20W. This zone has fairly good conductivity with low to high frequency response ratios of 0.7 to 1.0 and a conductivity-width of about 50 mhos as calculated for the conductor at 2+80N on Line 20W and at 1+20N on Line 16W. The other two conductors, located about 200 feet on either side of this main zone appear to give slightly weaker responses than the centre one. However, the conductivities are still fairly high with low to high frequency response ratios of 0.7 to 1.0. It would appear then that these two conductors are at a slightly greater depth than the main zone. The apparent depth to the top of the source of the centre zone is in the order of 120 to 130 feet. The other two zones appear to be at a depth of 140 to 150 feet. The dip seems to be towards the southwest.

Some magnetic activity was noted in this area, although it does not appear to be related to any of the conductive zones.

To test the sources of the E.M. responses the following drill holes are suggested:

1) Collar at 10+40N on Line 20W and drill north along the line at an inclination of 45° for at least 350 feet.

2) Collar at 1+00N on Line 20W and drill north along the line at an inclination of 45° for at least 330 feet.

3) Collar at 8+10S on Line 12W and drill north along the line at an inclincation of 45° for at least 350 feet.

Claim Block XXXIV

This claim block is underlain by metagabbro and metadiorites which form the Fox Bay Sill.

The INPUT survey has indicated two major zones of conductivity within this claim block. One is located along the base line and appears to have extremely high conductivity. The other zone is situated in the northern half of the claim block with the best conductivity occurring in the northeastern corner. Neither of the zones appear to have any associated magnetic activity on the airborne data.

The ground E.M. surveys have mapped two single conductors. The north conductor has a slightly curving axis with a strike direction of roughly N100°E. This zone extends from Line 12W to Line 12E and is still open towards the east. Its conductivity is fairly good with low to high frequency response ratios of 0.7 to 0.9 on the easternmost lines and 0.5 to 0.6 on Lines 0, 4W and 8W. Contrary to the airborne results, the axis is coincident with a magnetic anomaly having varying amplitudes of 300 to 1200 gammas. The depth to the top of the source is in the order of 80 - 100 feet. The dip appears to be a steep southerly one.

The following drill hole is suggested for testing the source of the E.M. and Mag responses: Collar at 7+00N on Line 8E and drill north along the line at an inclination of 45° for a length of about 270 feet.

The second zone located near the base line appears to be situated in an area of complex geological structure as the direction of the conductor changes very drastically along strike. From a strike direction of about N80°E at the western end of the grid, the conductor curves towards the southeast until the direction is about N150°E at Line 0. A "detailed" grid was cut and surveyed at this southeastern end with traverses perpendicular to this changed strike direction. The conductivity of this zone is very good along the entire strike length, with low to high frequency response ratios of 0.7 to 1.0. The conductivity-width factor varies along the strike, probably indicating changes in the width of the conducting body which can be noted on the horizontal loop profiles. The conductivity-width factors that have been calculated for this conductor are: Line 28W - 80 mhos, Line 24W - 130 mhos, Line 20W - 40 mhos and on the detail grid, Line 8N - 200 mhos, Line 4N - 90 mhos and Line 0 - 200 mhos.

In general, there appears to be an increase in conductivity on Lines 0 and 8W at the point where the strike change is the greatest.

The conductor axis coincides with a magnetic peak on all the surveyed lines; amplitudes varying from 100 to 1500 gammas are noted. This conductor axis with the coincident magnetic response appears to be located at a contact between an area of relatively quiet magnetic background activity to the north and east and a zone of magnetic disturbances extending approximately 1000 feet towards the southwest.

The apparent depth to the top of the conducting material is approximately 60 to 80 feet. The dip appears to be a steep southwesterly one.

The following drill holes are suggested for testing the source of this E.M. Mag anomaly:

1) Collar at 1+30N on Line 24W and drill north along the line at an inclination of 45° for a distance of 250 feet.

2) Collar at 0+50E on Line 8N of the detail grid and drill northeast along the line at an inclination of 45° for a distance of 250 feet.

Claim Block XXXV

This claim block is located on the Fox Bay Sill which is composed of metagabbro and metadiorite.

The airborne survey mapped one long east-west striking conductive zone extending from one end of the claim block to the other. The conductivity appears to be fairly good; there does not seem to be any magnetic activity associated with the conductor.

The ground E.M. results confirm the presence of one single long conductor having a strike direction of about N110°E and extending from Line 8E to at least Line 40E. Its conductivity is fair with low to high frequency response ratios of 0.5 to 0.8 and a calculated conductivity-width factor of about 10 mhos on Line 8E at about 4+40N. There appears to be a very small magnetic anomaly correlating directly with the conductor throughout the survey area. On Line 8E an anomaly peak of 500 gammas was noted while on the other lines a 50 to 100 gamma anomaly is evident.

The apparent depth to the top of the conductor is in the order of 60 to 80 feet on Line 8E, however, the thickness of cover seems to increase towards the east where depths of about 100 feet have been calculated. The dip appears to be near vertical or possibly very steeply towards the south.

To test the source of the E.M. responses, the following drill holes are suggested:

1) Collar at 4+20N on Line 8E and drill north along the line at an inclination of 45° for at least 250 feet.

2) Collar at 1+50N on Line 32E and drill north along the line at an inclination of 45° for at least 280 feet.

Another major conductive zone was located at the west end of the grid near the base line. However, the detail grid from claim block XXXIV has covered the full extent of this zone and its characteristics have been discussed.

There also appears to be a possibility that other conductors are present within this area at a slightly greater depth than the main zone. Some very weak responses were noted throughout the grid. To check this possibility, an E.M. survey using a slightly greater coil separation--say 600-800 feet is recommended.

Claim Block XXXVI

This claim group is located to the west of Fox Bay. The Ontario Department of Mines geological maps indicate that the area is underlain by metagabbro and metadiorite with metasediments lying to the north. The airborne INPUT records indicate a conductive zone with good conductivity and an associated magnetic anomaly offset to the south. The airborne records indicate broad zones of conductivity which might possibly represent multiple conductors.

The survey grid was cut with a base line azimuth of 70°. The broadside results obtained using a 400 foot coil separation were not definitive but do indicate the presence of conductive zones of fairly good conductivity. Three survey lines were surveyed with a 600 foot coil separation and a frequency of 1600 Hz. This data more clearly defines one central conductor striking approximately N90°E but the data is still lacking in definition. A depth in the order of 170 feet is indicated.

The claim block was then surveyed with the fixed transmitter configuration and frequencies of 1000 Hz and 5000 Hz. Surveying was with a 600 foot separation, and for one line, an 800 foot separation. This data clearly defines the conductive zone indicated previously. The low to high frequency ratio indicates good conductivity and the shape of the profiles, especially reverse crossovers to the south, clearly indicate a south dip. The possibility that these reverse crossovers could be due to another conductor at the south edge of the property was ruled out by using fixed transmitter setups in this region. The profiles obtained indicated only the previously found conductive axis. Depths of 160 to 190 feet are indicated.

Other conductive axes are indicated by the fixed transmitter profiles, at the southeast corner of the property and to the north of the main conductor. However, their conductivities are much poorer and thus have a lower priority of importance.

The magnetic profiles are relatively smooth, but show a slight and gradual rise of roughly 300 gammas towards the southern ends of the lines.

To test the main conductor, the following drill hole is suggested: The conductor axis crosses Line 16E at 0+80N and is at a depth of approximately 170 feet. Collar at 1+40S and drill north along the line at an inclination of 45° for a distance of about 400 feet.

Claim Block XXXIX

This claim block is located south of Fox Bay. The area is underlain by felsic and mafic metavolcanics. The airborne survey indicates two good conductors about 1,000 feet apart in the centre of the claim block. There is also an indication of a conductive zone along the west boundary of the claim.

The ground survey was conducted on a grid having a base line azimuth of 97°. The main conductor lies to the north of the base line and strikes almost east-west. This conductor extending from Line 4W to Line 28W, has the largest peak-to-peak response on Lines 16W and 12W where the low to high frequency response ratios are roughly 1.0. Depth calculations for both of these lines indicate a distance to the top of the source in the order of 80 feet and the profiles suggest vertical or steep southerly dips. The horizontal loop data gives a depth of 80 feet and a conductivity-width of 30 mhos for the conductor on Line 12W. The horizontal loop results on Line 16W show the conductor as very narrow and at a depth of only 35 feet.

Another shorter conductor occurs south of the base line on Lines 12W and 8W. This conductor has a good ratio of low to high frequency. Both the horizontal and vertical loop methods indicate depths of approximately 80 feet as well as a shallow dip towards the south. From the horizontal loop profiles, the width of the conductive zone has been calculated to be about 100 feet.

There are two other conductive features located within this block. One lies about 400 feet to the north of the main conductor and the other is located just inside the south boundary of the claim group. The conductivity of both of these zones is variable along the length with low to high frequency ratios varying from 0.4 to 1.0. However, the responses from these zones are very weak and thus appear to merit a lower priority rating.

Both the main conductor and the shorter conductor just south of the base line have very closely associated magnetic anomalies.

Line 12W is suggested as a good location to test the main conductor and also the shorter secondary conductor. The main conductor crosses Line 12W at 5+80N at a depth of about 80 feet. The width of the conductor is approximately sixty feet. The following drill hole is suggested: Collar at 4+50N on Line 12W and drill at an inclincation of 45° north along the line for about 260 feet.

The axis of the secondary conductor crosses Line 12W at 1+20S at a depth of about 70 feet. Horizontal loop data infers width of 70 feet. The following drill hole is suggested: Collar at 2+40S and drill north along the line at an inclination of 45° for a distance of 250 feet.

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Claim Block XL

Claim group XL is located about three-quarters of a mile north of Nekence Lake in an area that is underlain by mafic metavolcanics. Within the claim group there are two six-channel anomalies, these being located on the same flight line in the western part of the claim block. The strike extent of these conductors as indicated by the airborne results is thus, very limited.

The ground survey grid base line has a direction of N74°E. The results of the ground survey show three definite conductors, one of which is intersected on one line only. The two other conductors intersect two survey lines.

The northernmost axis intersected Line 44W at 17+40N and Line 48W at 17+00N. The calculated depth to the top of the conductor is in the order of 50 feet, and the low to high frequency ratio of .6 on Line 44W indicates this zone to have a fair conductivity.

The second two-line conductor was located at 13+80N on Line 36W and at 12+20N on Line 40W. The conductivity of this zone is fairly good with low to high frequency response ratios of .06 to .08. The apparent depth to the source is 50 - 60 feet.

To test the second two-line conductor, a drill hole is suggested on Line 40 W. The following location is suggested: Collar at 11+10N and drill north along the line at an inclination of 45° for a distance of 240 feet.

To test the conductor on Line 20W the following drill hole is suggested: Collar at 3+70S on Line 20W and drill north along the line at an inclination of 45° for a distance of 200 feet.

Claim Block XLIII

This claim group consists of four claims lying approximately one mile south of Fox Bay and three-quarters of a mile east of Fox River. The Ontario Department of Mines regional geology map indicates that the area is underlain by felsic metavolcanics with a possible contact between felsic and mafic metavolcanics a short distance to the south. The airborne results are mostly poor with only one six channel anomaly, one five channel anomaly and several three and four channel anomalies. The only multiple-line conductive zone on the airborne results would seem to correspond to an area of deep swamp through which the ground survey was not carried out.

The ground survey was carried out on a grid having a base line direction of N127°E. The only E.M. anomaly of any significance found by the ground survey was located at about 7+00N on Line 20E; it has a direct magnetic association of several thousand gammas. The depth computed was of the order of 60 or 70 feet while the conductivity-width product was calculated to be about 15 mhos.

There is one other suggestion of a zone at 5+50S on Line 16E, but the conductivity-width product indicates a very poor conductor.

The results of the magnetics survey indicate a complex structure. The magnetic features have short strike lengths and seem to have dips in a southerly direction.

The only suggested drill holes would be to test the zone on Line 20E. The results suggest two closely spaced conductors at 5+00N and 6+90N with the one at 5+00N being of poor quality. The depth to the top of the better conductor was calculated as seventy feet and the following drill hole is recommended to test its source: Collar at 5+70N and drill north along the line at an inclination of 45° for a distance of 240 feet.

To test the poorer conductor, collar at 3+60N and drill north along the line at an inclination of 45° for a distance of 240 feet.

Claim Block XLVI

This claim block consists of four claims lying along the northeast edge of Sandhill Crane Island. The geological report indicates that the area is underlain by metagabbro and metadiorite with a possible contact between this unit and metavolcanics to the north. About one-half mile to the north of the group is a synclinal axis.

The airborne results indicate several broad conductive zones having good conductivity. Two of the conductor intersections show small directly correlating magnetic anomalies.

The ground survey was carried out on a grid having a base line direction of N55°E. The vertical loop E.M. results using the broadside configuration show multiple conductive zones. Interpretation of these results indicates many parallel conductors which could, with the aid of fixed transmitter and horizontal loop results, be traced for several hundreds of feet along their strike length.

The best defined of these zones was the one extending from Line 8W to Line 24W in the southeast corner of the grid. The best conductivities were on Lines 12W and 16W where the low to high frequency ratios exceeded .9 and the conductivity-width product was about 60 mhos. The zone was narrow where it intersected Line 16W, but on Line 12W the indicated width was roughly 50 feet. Calculations on both horizontal and vertical loop data for Line 12W indicated depths of the order of 120 feet.

A second conductor having its axis parallel to the base line on Lines 16W, 20W and 24W has approximately the same depth to the top of the source material as the first conductor. However, the conductivity of this zone appears slightly weaker with low to high frequency ratios of about 0.7.

Several other parallel zones were noted towards the northeast. Their conductivities are all fairly good with low to high frequency ratios in the order of 0.7.

The presence of many conductive zones has been inferred on the plot of the geophysical results. The complexity here has made dip determinations difficult but from the results and because of the presence of a synclinal axis to the north, steep north dips are thought most likely.

The magnetic profiles all show a gradual climb from both ends of the survey lines towards the centre. The amplitude of this anomaly is approximately 200 gammas. This might well represent a lithologic change. However, the conductive axes do not appear to have any direct magnetic association.

To test the first conductor described, a drill hole is suggested on Line 12W where the conductor intersects the line at 8+00S and is located at a depth of about 110 feet. The hole should be collared at 6+40S and drilled south along the line at an inclination of 45° for a distance of 300 feet.

The axis of the second conductor crosses Line 20W at 0+40S and the depth to the top is about 100 feet. The following drill hole is suggested: Collar at 1+10N and drill south along the line at an inclination of 45° for a distance of 280 feet.

Claim Block XLVII

This claim group is located on the northwest side of Sandhill Crane Island. The geological map of the district indicates that the area is underlain by metasediments along the river and by metagabbro and metadiorite a short distance from the river. Sulphides were found along the shore of the island, in the northwest portion of the property. The airborne survey results indicate several parallel conductive zones showing good conductivity on the airborne record tapes. The best conductivity occurs on the east side of the claim block.

The ground geophysics was first carried out on a grid having a base line azimuth of 32° but when this proved unsuitable, the base line was reoriented according to the strike inferred from the initial data and new cross lines were cut. The azimuth of this second base line was 59°. The work which was done on this second grid indicated multiple conductive zones. The ratios of low to high frequency were fair to excellent with most values in the range .6 to 1.0. In many cases, the results show interference between the closely spaced conductive zones and position of the axes are difficult to locate. Depth and dip calculations are also very difficult to determine.

At the northern end of the claim block, the ground results showed two zones which may be qualitatively assessed. The low to high frequency ratios are very good, exceeding .9 in all cases but one. The results show two conductive zones trending approximately parallel to the new base line and about 400 feet apart. The longer and more northerly of these two conductors extends over a strike length of approximately 1200 feet from 8+75N on Line 0 to 10+00N on Line 12W. Within this length, the conductor is well defined and the high to low frequency ratios are very good. A depth calculation completed on the conductor where it crosses Line 8W yields a value of 100 feet while another calculation for the point where it crosses Line 4W gives a depth of 90 feet. Because of the proximity to the other conductive zone, a dip determination is difficult but on examination of the overall profiles of magnetics and E.M. results, would suggest a steep northerly dip.

The second and shorter conductor has a strike length of approximately 800 feet from 3+80N on Line 0 to about 5+30N on Line 8W. As with the longer conductor, this zone has very good ratios of high to low frequency indicating a good conductivity. A depth calculation of 6+20N on Line 4W indicates a depth of about 90 feet.

The magnetic features in the area of the conductors are all broad and the magnetic gradient is low. It is not possible to correlate the magnetics with any one conductor.

To test the longer conductor, a drill hole is recommended on Line 4W. The calculations have indicated that the conductor axis crosses Line 4W at 9+60N and at a depth of 90 feet. The following drill hole location is recommended: Collar at 11+00N and drill south along the line at an inclination of 45° for a distance of 270 feet.

To test the shorter conductor, a drill hole is recommended on Line 4W. The calculations have indicated that the axis of the conductor crosses Line 4W at 6+20N with a depth to the top of 80 feet. The following drill hole is suggested: Collar at 7+50N and drill south along the line at an inclination of 45° for a distance of 250 feet.

The conductive zones strike into the lake where sulphides were noted along the shore. The survey lines should thus be extended over the submerged sections of the property. As well, the conductive zones in the western portion of the surveyed area are not very well defined and should be resolved using some fixed transmitter setups.

Claim Block XLVIII

This group of six claims is located about one mile northwest of the south tip of Sandhill Crane Island. According to the Ontario Department of Mines geological map, the block lies about one half mile north of the Sandhill Crane Anticline in an area where a band of mafic metavolcanics comes in contact with metagabbro and metadiorite to the north and felsic metavolcanics to the south. The airborne survey results show one conductive zone striking approximately east-west through the centre of the claim block. The conductivity of the zone varies from good at the eastern end, to very good at the western end. The western end also has indications of possible magnetic correlation. There is also one flight line intersection in the northeast corner of the claim block but the conductivity of this intersection is only fair.

The ground geophysical survey was carried out on a grid having a base line azimuth of 81°. Three conductive zones are present and for ease of discussion, they have been designated as "main", "south", and "north", zones.

The main conductor is roughly parallel to the base line and lies very close to it for most of its strike length. On the western end, there is direct magnetic correlation of approximately 200 gammas. The low to high frequency ratios are all about .8 indicating fairly good conductivity. Calculations based on the vertical loop E.M. results indicate depths to the top that vary from 80 feet on Line 20E to 120 feet on Line 8E. The horizontal loop data pertaining to this conductor indicate a conductivity-width product of about 160 mhos. A conductor width of about 30 feet and a depth of 130 feet for the zone on Line 12E. The data for Line 4E indicate greater width, but also greater depth of burial and poorer conductivity. This is most likely the conductor that corresponds to the main airborne E.M. anomaly.

The south conductor lies about 500 feet to the south of the main conductor and is approximately parallel to it. The strike length of this conductor is about 1200 feet, extending from Line 12E to Line 0. The low to high frequency ratios vary from 0.7 on Line 4E to 1.0 on Line 8E. Depth indicated from the vertical loop data for Line 4E is about 130 feet while the horizontal loop data for the same line yields a depth of 150 feet. The width indicated on Line 4E is about 30 feet and the conductivity-width product is about 90 mhos indicating very good conductivity. Both this conductor and the main one quite likely extend beyond the west boundary of the claim block.

The north conductor is inferred only. It extends for a distance of about 800 feet just inside the northeast boundary of the claim block. The ratios of low to high frequency are very poor and indicate fairly low conductivity as would be expected from the airborne data.

A depth calculation on the magnetic feature located near 2+00N on Line 16E indicated a depth of about 100 feet. This checks well with the depth calculated from the E.M. data. The dips inferred from the magnetic data are steeply towards the north.

The following drill hole is suggested: Collar at 0+10S on Line 12E and drill south along the line at an inclination of 45° for a distance of 250 feet.

To test the south conductor, the following drill hole is suggested: Collar at 2+40S on Line 4E and drill south along the line at an inclination of 45° for a distance of 270 feet.

Claim Block L

This group of four claims lies approximately one half mile northwest of Sandhill Crane Island in an area that is underlain by felsic metavolcanics. The block is just north of the Sandhill Crane Anticline. The airborne results show two zones of conductivity, one very short zone having good conductivity at the southeast corner and another zone having poor conductivity located along the southern boundary of the claim block. It must be noted here that the position of the claim block is slightly to the northwest of the proposed location.

The ground geophysical survey was carried out on a grid having a base line azimuth of 71°. The results indicate the presence of only two short zones of conductivity. One of these lies near the southwest boundary of the claim block on Lines 24W and 20W. The conductivity of this zone is fair, but the results do not allow a definite positioning of the conductor nor do they allow any depth calculations. This zone is probably the expression of the airborne anomaly located along the south boundary.

The second of the two conductors is situated in the southeast corner, crossing Lines 8W and 4W about 500 feet south of the base line. The conductivity is poor with the low to high frequency ratio on Line 4W being 0.4. The depth calculated from these results on this line is of the order of 90 feet.

The magnetic profiles are relatively featureless. It appears that this block of claims has been positioned to the west of the desired location. The ground survey location map shows an offset of almost one half mile to the west of the desired location and a comparison of the ground results with the airborne records tend to indicate that the offset may exceed even that amount with the result that the one six-channel airborne anomaly lies just outside the east boundary of the claim block. More claims should be added towards the east if possible and the ground survey coverage extended.

Claim Block LII

This claim block consists of four claims lying approximately one-half mile southwest of Sandhill Crane Island. The geological map of the area indicates that the group is underlain by metagabbro and metadiorite with mafic metavolcanics to the north and metavolcanic breccia to the south. The Sandhill Crane Anticline lies approximately three quarters of a mile to the north. The airborne survey results indicate several anomalous zones having good conductivity with one of the zones in the southern half of the group extending from the west boundary out under the small lake on the east boundary.

The base line of the grid was cut at an azimuth of 90°. Three zones of conductivity were indicate by the E.M. results.

The southern zone is the longest, extending from the west boundary across the claim group and out under the lake on the east side of the claim block. The best conductivity is noted on the western half of the conductor where the ratio of low to high frequency response is .8 on Line 16W and 1.0 on Line 20W. The depth computed from the results on Line 20W is approximately 130 feet. The conductor axis crosses Line 20W at 6+00S.

The centre conductor crosses Line 12W at 2+50S and Line 8W at 3+00S and it is very likely that also extends out under the lake on the east side of the claim group. On both lines, the low to high frequency response ratios are about .8

which indicates good conductivity. Depth calculations completed for both lines indicate depths of the order of 1[illegible]0 feet.

The north conductor is inferred on two lines only, those being Lines 8W and 4W. This conductor runs parallel to the base line 500 feet to the north. It produces almost only uni-directional tilt-angles and a low peak-to-peak response. The ratios of low to high frequency response are excellent, both exceeding 1.0. These results would tend to indicate a very deep, shallow, southerly dipping bedrock source. More work, possibly in the form of fixed transmitter detailing, is recommended for a better definition of this conductor axis.

The magnetic profiles are featureless.

To test the south conductor, a drill hole is suggested on Line 20W. The conductor axis crosses this line at 6+00S and at a calculated depth of 130 feet. Collar at 7+80S and drill north along the line at an inclination of 45° for a distance of 320 feet.

To test the centre conductor, a drill hole is suggested on Line 8W. The conductor axis crosses this line at 3+00S at a calculated depth of 100 feet. Collar the hole at 4+50S and drill north along the line at an inclination of 45° for a distance of 280 feet.

Claim Block LV

This group of four claims lies approximately one mile south of Kippen Lake and several hundred feet east of the Windigo River. The Ontario Department of Mines geological map indicates granitic rocks to the east of this block. Passing through the block is a fault zone which is part of the Windigo River Fault System. The airborne survey indicates several very good conductors lying on a line extending from the southwest corner of the claim block to the centre of the north boundary.

The ground survey was initially carried out on a grid having a base line azimuth of 18°. The results of this survey indicated one good conductor which was striking at about 60° to the survey lines and another short conductive zone having very poor conductivity located about 300 feet to the east of the main zone.

To obtain better definition of the one good conductor, a second detail grid was cut with a base line azimuth of 166° and short cross lines. Vertical loop E.M. equipment was used to survey these lines at first and then two lines were selected and horizontal loop E.M. equipment was employed to give additional information. From the vertical loop E.M. data it was noted that the ratio of low to high frequency was poor on Line 0 but the ratios for the other lines were of the order of .7 or better indicating good to very good conductivity. The apparent depth to the top of the conductive material as calculated from the data from Lines 4S and 8S is in the order of 40-60 feet.

Horizontal loop E.M. equipment was used on Lines 4S and 8S of the detail grid. This data indicated conductor widths of about 60 to 70 feet. The best conductivity-width product was calculated to be about 70 mhos on Line 8S. The depth indicated for Line 8S is roughly 40 feet and the dip appears to be near vertical.

A magnetic feature was noted to be very closely related to the conductor axis. This axis occurs 50 to 100 feet west of the magnetic peak. However, it must be noted that the vertical loop "crossover" does not coincide with the centre of the conductor axis as indicated by the horizontal loop data. It appears that the "crossover" in this case indicates one edge of a very broad conductive zone, i.e. the western edge. Taking this fact into consideration, it would then appear that this conductor has a coincident magnetic response and thus is probably related to some magnetic material.

To test the source material giving the E.M. and magnetic responses, the following drill hole is suggested: Collar at 1+10W on Line 8S of the detail grid and drill east along the line at an inclination of 45° for a distance of 200 feet.

Claim Block LX

This group of four claims is located about two miles north of Kippen Lake in an area of mafic metavolcanics. The airborne survey results indicate a short strike length conductive zone here.

The ground survey was carried out on a grid having a base line azimuth of 127°. Only one definite conductor was located on the grid and with the aid of fixed transmitter results, this anomaly was traced over a strike length of about 800 feet. On the three lines which intersected the conductor the low to high frequency ratios were all greater than .8 which indicates good conductivity. The depth calculated for the intersections on Line 12S was 80 feet. Horizontal loop E.M. equipment was also used on Line 12S and indicated a conductivity-width product of approximately 70 mhos and a possible width of the order of forty feet.

The magnetic survey mapped only one feature which parallels the conductor and lies about 600 feet east of it. The amplitude of the anomaly varies from about 1000 gammas on the southeast end to about 1,500 gammas on the northwest end of the anomaly. Depth calculations on two different profiles yielded depths to source of the order of 100 feet. This agrees well with results obtained from the E.M. survey.

To test the main conductor, a drill hole is suggested on Line 12S. This line intersects the conductor axis at 1+70W and the depth indicated is 90 feet. The dip would appear to be vertical, or possibly a very steep southwesterly one.

Collar the hole at 3+00W and drill northeast along the line at an inclination of 45° for a distance of 250 feet.

The horizontal loop survey has indicated yet another possible conductive zone on Line 12S between stations 0+00 and 5+00E. There is a possibility that this zone is oblique to Line 12S. The vertical loop results would also lead to this conclusion. The conductivity would appear to be very good as indicated by the lack of out-of-phase response.

A detailed grid consisting of two or three lines spaced at 400 foot intervals positioned with the traverses at right angles to Line 12S that is, parallel to the present base line, should resolve such a conductor.

Claim Block LXI

This group of claims is located about one mile north-west of Kippen Lake in an area that is underlain by mafic metavolcanics. The Muskrat Dam Lake Sill lies just to the north of the claim block. The airborne survey indicates at least two, closely spaced, highly conductive zones striking northeast-southwest through the claim block.

The ground survey was carried out on a grid having a base line azimuth of 64°. The data revealed several parallel zones of conductivity lying in the northwest corner of the claim block and all trending at an angle of roughly 80° to the traverse.

The south zone extends from Line 36E to at least Line 16E. Good to excellent conductivities have been indicated by low to high frequency response ratios of 0.7 to 1.0. The conductivity width product has been calculated to be about 70 mhos on Line 20E. The apparent depth is in the order of 110 feet and the dip appears to be a steep southerly one.

The central conductor would appear to be the best defined and also the longest. It extends from 10+30N on Line 28E to 8+20N on Line 12E but depth calculations and conductivity ratios may be calculated only on the three central lines. In all of these cases, the conductivity is fairly good with low to high frequency response ratios in the order of 0.7. The conductivity-width has been calculated on Line 20E to be in the order of 35 mhos. The dip appears to be a steep southerly one and the depth is in the order of 100 feet.

The north conductor parallels the central zone and lies about 300 feet north of it. The conductivity appears to be fairly good with low to high frequency response ratios of roughly 0.8. The conductivity width is in the order of 90 mhos. The depth calculated from the results on Line 20E is in the order of 100 feet.

The magnetic profiles are relatively featureless in the area where the E.M. conductors are located. However, on Line 20E the southern conductor is coincident with an 800 gamma magnetic peak but this magnetic anomaly is very localized having no expression on any of the adjacent lines. It would thus appear likely that the E.M. conductor consists of a non-magnetic material.

Drill Hole Suggestions:

To test the north conductor: The conductor axis crosses Line 20E at 12+40N at a calculated depth of 100 feet. Collar the hole at 10+90N and drill north along the line at an inclination of 45° for a distance of 280 feet.

To test the central conductor: The conductor axis crosses Line 20E at 9+30N at a calculated depth of 100 feet. Collar the hole at 7+90N and drill north along the line at an inclination of 45° for a distance of 270 feet.

To test the south conductor: The axis of the conductor crosses Line 20E at 2+20N at a calculated depth of 110 feet. Collar the hole at 0+60N and drill north along the line at an inclination of 45° for a distance of 300 feet.

IX. CONCLUDING REMARKS

In concluding the discussion of the results of the ground followup survey, it might be well to emphasize that the treatment of the various conductor systems has been strictly on the basis of the geophysical results. No priorities have been established and no recommendations for drilling are given although drill hole locations are suggested for nearly all conductors in the event that some of them might be checked by drilling subject to the application of various other parameters and considerations which might relate to this particular exploration programme.

Respectfully submitted,

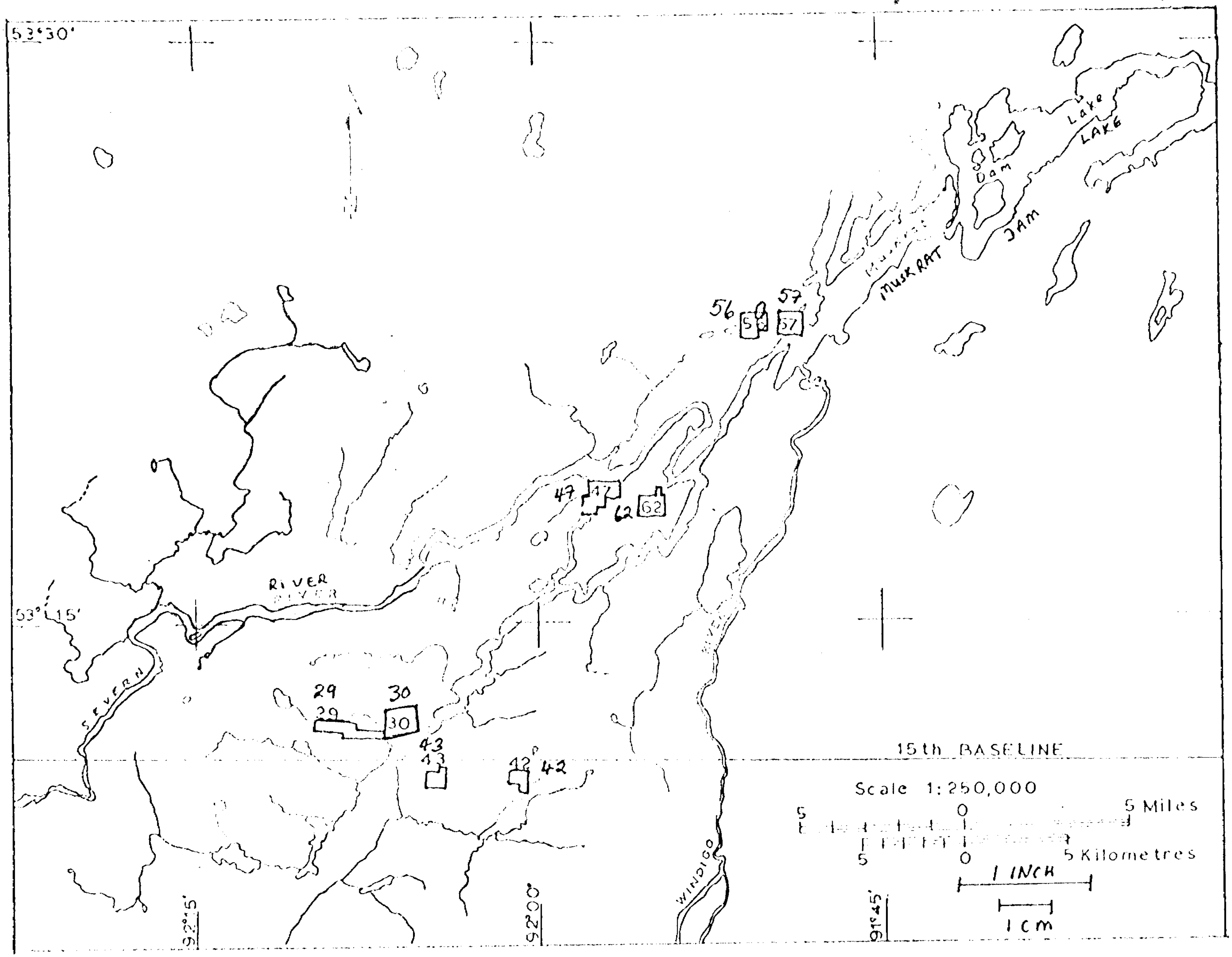
P. Norgaard, P.Eng.,
Senior Geophysicist.

R. Keith, B.Sc.,
Field Geophysicist.

W. Tschaikowsky, B.Sc.,
Geophysicist.

G. MacQueen, B.Sc.,
Geophysicist.

LOCATION MAP



E.M. UNIT SPECIFICATION SHEET

SE-300 DUAL FREQUENCY ELECTROMAGNETIC TRANSCEIVER

The SE-300 Electromagnetic Unit consists of two identical transceiver units. Dual frequency excitation provides diagnostic information to distinguish between subsurface conductors and aids in resolving overburden from bedrock conduction effects. A unique receiver circuitry extends the useful separation of the transceivers to 1200 ft., providing greatly increased effective depth penetration.

S P E C I F I C A T I O N S

FREQUENCY RANGE:	400 cps and 1600 cps (other frequencies optional).
FREQUENCY TRACKING:	Better than +2% over extended periods at normal ambient temperatures.
FREQUENCY TRACKING:	Receiver versus transmitter: Better than 1% over temperatures from -40°F to 104°F.
TRANSMITTER OUTPUT:	Approx. 150 N1 at 1600 cpa and approx. 180 N1 at 400 cps. Higher outputs optional.
SEPARATION:	Up to 1200 feet using 1600 cps. deflection is ±5°. 600 feet using 400 cps deflection is ±5°.
RECEIVER SENSITIVITY:	50 Millimicrovolts.

SE-300 Dual Frequency Electromagnetic Transceiver Cont'd.

BATTERY:	2 x No. 731 Eveready lantern batteries or NEDA 918.
BATTERY LIFE:	Approximately 10 days.
WEIGHT:	Coil - 8½ lbs., 3.85 Kg. Receiver - 2 lbs., .90 Kg. Transmitter - 20½ lbs., 9.3 Kg.

V.H.E.M. UNIT SPECIFICATIONS

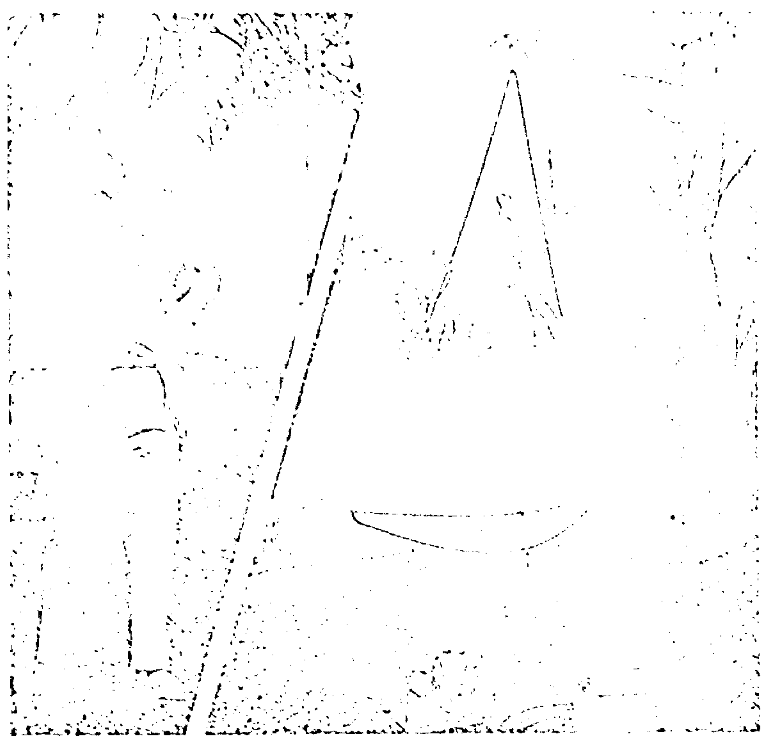
Operating Frequencies:	600 and 2400 cycles per second
Operating Range:	
Vertical Loop -	Null width of approximately $\pm 10^{\circ}$ at a transmitter-receiver separation of 500 feet.
Horizontal Loop -	Transmitter - receiver separations of 100, 200 or 300 feet.
Transmitter Power Supply:	Special High Energy, Lightweight battery pack--Supply Voltage: 48 volts--Supply Current 250 milliamperes.
Approximate Battery Life:	15 hours of transmission time.

Note: The above battery supply may be replaced by any d.c. power source of 48 volts and ¼ ampere rating.

Receiver Supply:	2 type E146 Eveready battery Approximate battery life: 250 operating hours.
Operating Temperature Range:	35°F to 120°F.
Weights:	
Transmitter -	9 lbs.
Receiver -	8½ lbs.

ELECTROMAGNETIC SYSTEMS

MODEL SS15 LARGE LOOP E.M. UNIT



- Long range: 2000 ft.
- Simultaneous Dual Frequency.
- Vertical loop, dip-angle measurement.
- For detail surveying.

The Model SS15 provides long range operation with a minimum of weight. For transporting, the equipment folds down to readily portable units.

The transmitter can be operated at either 1000 or 5000 cycles per second. It can also be operated to provide alternating bursts of 1000 and 5000 cycle current. This mode of operation permits measurements at both frequencies simultaneously. The dual frequency operation provides good estimation of anomaly conductivity from the dip-angle measurement.

The vertical transmitter loop system provides maximum discrimination against conducting overburden so that maximum exploration depth, roughly half the distance between receiver and transmitter, can be achieved.

The receiver contains a tuned pick-up coil assembly, a transistorized amplifier with earphone output and a built-in clinometer for easy dip-angle measurement.

Operating Range	2000 feet
Operating Frequency	1000/5000 c.p.s.
Transmitter power supply	300 watt engine generator

WEIGHTS

Packboard mounted engine generator	52 lbs.
Transmitter coil and packboard	25 lbs.
Coil mast and spreader bar	18 lbs.
Receiver	5.5 lbs.

MARK IV HORIZONTAL LOOP E.M. UNIT

Description

The Mark IV unit is a single frequency, standard prospecting unit using the same basic receiver, coils and fittings as the Marks 1 and III. The result is a highly reliable, simple to operate, low-cost, rugged field instrument, suitable for a wide range of exploration problems. Coils can be separated 100, 200 and 300 feet apart, permitting exploration to depths greater than 100 feet

Specifications

Frequency	876 Cycles
Power Output	4 Watts
Readout	Aural null through headphones with direct dial reading of in and out of phase values.
Battery Requirements	8 - RM42R Mercury cells (1.35 V).
Operational Weight	40 lbs. approximately.
Shipping Weight	97 lbs.
Battery Life	RM42R - 2 weeks 781 - 3 months

MAGNETOMETER SPECIFICATION SHEET

SPECIFICATIONS OF FLUXGATE MAGNETOMETER MODEL MF-1

RANGES:	Plus or minus - 1,000 gammas f.sc. 3,000 " 10,000 " 30,000 " 100,000 " Sensitivity - 20 gammas/div. 50 " 200 " 500 " 2,000 "
METER:	Taut-band suspension 1000 gammas scale 1-7/8" long- 50 div. 3000 gammas scale 1-11/16" long-60 div.
ACCURACY:	1000 to 10,000 gamma ranges ±0.5% of full scale. 30,000 and 100,000 gamma ranges ±1% of full scale.
OPERATING TEMPERATURE:	-40°C to +40°C -40°F to +100°F
TEMPERATURE STABILITY:	Less than 2 gammas per °C (1 gamma/°F)
NOISE LEVEL:	Total 1 gamma P-P
LONG TERM STABILITY:	±1 gamma for 24 hours at constant temperature.
BUCKING ADJUSTMENTS: (Latitude)	10,000 to 75,000 gammas by 9 steps of approximately 8,000 gammas and fine control by 10 turn potentiometer. Convertible for southern hemisphere or ±30,000 gammas equatorial.

Specifications of Fluxgate Magnetometer Model MF-1 Cont'd.

RECORDING OUTPUT:	1.7 ma per oersted for 1000 to 100,000 gamma ranges with maximum termination of 15,000 ohms.
RESPONSE:	DC to 5 cps (3 db down)
CONNECTOR:	Amphenol 91-MC3F1
BATTERIES:	12 x 1.5V flashlight batteries "C" cell type (AC power supply available)
CONSUMPTION:	50 milliamperes
DIMENSIONS:	Instrument - 6½" x 3½" x 12½" 165 x 90 x 320 mm
	Battery pack - 4" x 2" x 7" 100 x 50 x 180 mm
	Shipping Container - 10" dia x 16" 254 mm dia. x 410 mm
WEIGHTS:	Instrument - 5 lbs. 12 oz 2.6 kg Battery Pack - 2 lbs.4 oz 1.0 kg Shipping - 13 lbs. 6.0 kg

	RANGES	SENSITIVITY
Standard:	Plus or minus	
	1,000 gammas f.sc.	20 gammas/div.
	3,000 gammas f.sc.	50 gammas/div.
	10,000 gammas f.sc.	200 gammas/div.
	30,000 gammas f.sc.	500 gammas/div.
	100,000 gammas f.sc.	2000 gammas/div.
Optional:	100 gammas f.sc.	2 gammas/div.
	300 gammas f.sc.	5 gammas/div.

Meter: Taut-band suspension
100 gamma scale 2.1" long — 50 div.
300 gamma scale 1.9" long — 60 div.

Accuracy: 1000 to 10,000 gamma ranges ±0.5% of full scale.

Operating Temperature: − 40°C to + 40°C
− 40°F to + 100°F

Temperature Coefficient: Less than 1 gamma per °C (½ gamma/°F)

Noise Level: Less than 1 gamma P-P

Bucking Adjustments: (Latitude) − 20,000 to + 80,000 gammas
9 steps of 10,000 gammas plus fine control of 0 - 10,000 gammas by ten turn potentiometer. Reversible for southern hemisphere.

Recording Output: Optional.

Electrical Response: D.C. to 0.3 cps (3db down) on 1000 gamma range with meter in circuit. D.C. to 20 cps with meter network shorted for recording purposes.

Connector: Cannon KO2-16-10SN
for plug Cannon KO3-16-10-PN and cover KO6-16-[illegible].

Batteries: Internal 3 x 6V-1 amp/hr. Sealed Lead Acid rechargeable Centralab GC 6101; recharge time 8 Hrs.

Consumption: 60 milliamperes — GC6101 batteries are rated for 16 hours continuous use.

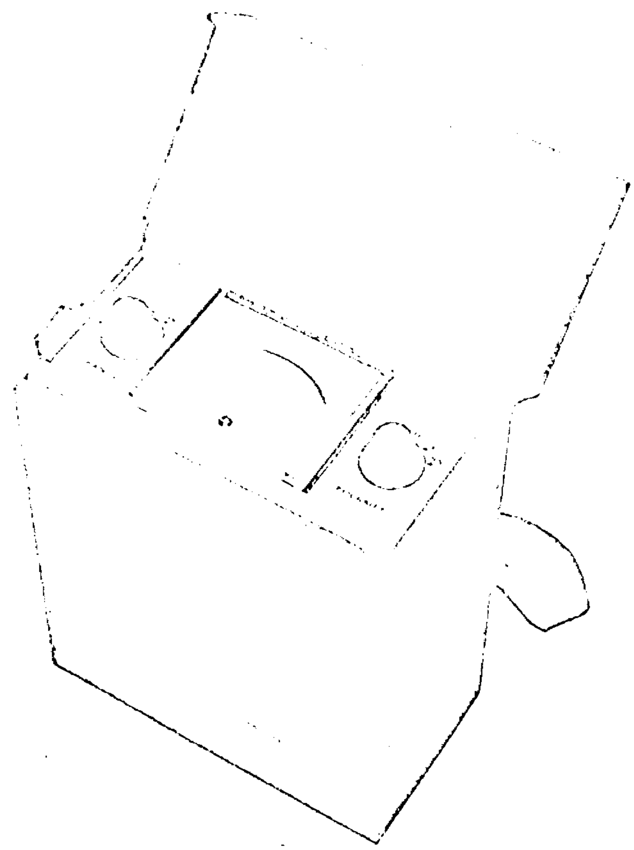
Dimensions: 6¼"x 2¾"x 10" Instrument.
161 mm x 71 mm x 254 mm

Weights: 5 lb. 8 oz. — 2.5 kg.

Battery Charger: 6"x 2½"x 2½"
155 mm x 64 mm x 64 mm
110V - 220V 50/60 Hz supply or 28 - 42V D.C. supply
Automatic charge rate and cutoff preset for Centralab GC6101 batteries.

MAGNETIC SYSTEMS

M700 FLUX GATE MAGNETOMETER



- Vertical field measurement.
- Self Levelling.
- Direct read out in gammas.
- 5 scale ranges, 1000 to 100,000 gammas.
- Sensitivity: 20 gammas per scale division on 1000 gamma range.
- Readability: 5 gammas maximum.
- Temperature drift: less than 50 gammas from - 35 to + 55° Centigrade.

The M700 magnetometer is very simple to operate. The reading on the meter is set to zero at a chosen base station. This can be done to an accuracy of 5 gammas using the latitude adjust control. As successive stations are occupied, the instrument is held roughly level, and the increase or decrease of the earth's magnetic field is read directly from the meter.

The instrument is field engineered with built-in ruggedness and reliability. Two main operating controls are mounted on the front panel. The latitude adjustment control and accessory socket are concealed behind a sliding side panel. The instrument comes complete with leather carrying case, internally mounted batteries, set of spare batteries, instruction manual and foam fitted transit case.

Although basically designed as a hand held field magnetometer, an accessory socket greatly extends the versatility of the instrument, by accommodating external sensing heads for horizontal field measurements, airborne measurements, drill hole measurements, etc. External batteries may also be used in place of the normal internally mounted batteries. All accessories are available from McPhar.

WEIGHT

6½ lbs. less batteries and carrying case.

REFERENCES

1. Ontario Department of Mines Geological Report 74, Muskrat Dam Lake Area by L.D. Ayres.

2. Geological Survey of Canada, Economic Geology Report No. 26 "Mining and Groundwater Geophysics" - 1967 (Base Metals).

3. "Interpretation Theory in Applied Geophysics" Chapters 15 and 18, Grant, F.S. and West, G.F.

4. SEG, "Mining Geophysics", Volume I, Chapter III.

5. SEG, "Mining Geophysics", Volume II, Chapter II Parts A and C, Ward, S.H.

6. Interpretation Manual of V.E.M. Data, Geoterrex.

7. Instruction Manual for SE-300 V.E.M. Unit, Scintrex.

RESUME

NAME: NORGAARD, Peer.

POSITION: Senior Geophysicist,
Manager of Ground Geophysical Surveys.

NATIONALITY: Canadian

DATE OF BIRTH: August 8, 1935

EDUCATION: University of Toronto, 1955-1959.
B.A.Sc. Engineering Physics, Geophysics Option.

LANGUAGES: Spoken Fluently - English, Danish

Working Knowledge - French, Spanish, German, Norwegian.

SOCIETY MEMBERSHIPS:

Society of Exploration Geophysicists
Canadian Exploration Geophysical Society
Association of Professional Engineers of Ontario
Association of Professional Engineers of British Columbia
Canadian Institute of Mining and Metallurgy

EXPERIENCE:

1956 (Summer) — Operated a "plane table" on a geological mapping project near Keno Hill, Yukon Territory for United Keno. The job involved the preparation of base maps and plotting of geological data as well as handling the topographical control.

1957-1958 (Summers) — Geophysical trainee with British American Oil Company on a "track" seismic crew operating in the bush near Hinton, Alberta and in the North West Territories. As a trainee worked on all phases of the bush operation, i.e., recording crew, drill crew, survey crew, and as a shooter and eventually as a data compiler.

1959-1962 — Employed as a field geophysicist and survey party chief by Rio Tinto Canadian Exploration

1959-1962 Cont'd.	in northwestern Quebec, Northern Ontario, New Brunswick, Gaspe Area and Central British Columbia. Supervised ground followup surveys employing vertical loop E.M. techniques combined with magnetic and gravity surveys. Was party chief and meter operator on a large scale gravity survey in central Gaspe, responsible for the complete operation. During 1960 became involved in Induced Polarization studies employing D.C. pulse type instrumentation which became main undertaking till termination of employment.
1962-1966	Commenced work in the geophysical contracting industry as an employee of Canadian Aero Mineral Surveys. Initially, position was that of field geophysicist conducting Induced Polarization surveys on foreign projects such as Ireland, during 1962, Nicaragua, early 1963, Atacam Desert in Chile during 1963-1964, Northeastern Australia during late 1964, and early 1965. Appointed supervisor of all Canadian ground geophysical operations in 1965. This position involved sales of services, interpretation and reporting, hiring and training of personnel and handling of all planning and logistics for ground geophysical crews. Most of the "ground" contract work carried out by Canadian Aero Mineral Surveys during this time consisted of Induced Polarization surveys.
1966	Was involved in the formation of Geoterrex Limited in the position of Manager of Ground Geophysical Operations, being completely responsible for the "ground" department which offers services in seismic, induced polarization, integrated ground followup, resistivity, gravity and magnetics on a world-wide basis.

CURRICULUM VITAE

NAME:	KEITH, Robert J.
POSITION:	Geophysicist
NATIONALITY:	Canadian
DATE OF BIRTH:	December 7, 1944
EDUCATION:	Carleton University 1964-1968, B.Sc. Physics and Geology. (Geophysics Option)
LANGUAGES:	Spoken Fluently - English Working Knowledge - French.

EXPERIENCE:

1965-66-67: (Summers)	Geological Assistant and Geologist with the Geological Survey of Canada doing mapping.
1968: May-November	Geophysical Operator and Party Chief with Anaconda American Brass, Eastern Exploration Division, conducting and supervising electromagnetic and magnetic surveys related to ground followup programmes in New Brunswick.
1968: November	Employed by Geoterrex Limited as a field geophysicist, conducting and supervising various types of ground surveys including I.P., gravity, electromagnetic surveys of various types, and ground magnetic surveys as well as integrated ground followup programmes. Responsibilities have also included training of personnel, interpretation and report writing. Office work, in addition, has involved the interpretation of airborne electromagnetic surveys completed, using INPUT and in-phase/out-of-phase equipment.

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APPENDIX

I. INTRODUCTION

During the Summer of 1970 and the Winter of 1971, Geoterrex Limited of 1312 Bank Street, Ottawa, Ontario, completed ground followup surveys over claim groups held by Serem Limitée, Suite 770, 2100 Drummond Street, Montreal, Quebec. The claim groups involved in the followup project are located in the Muskrat Dam Lake greenstone belt which is located northeast of Sandy Lake in northwestern Ontario. Muskrat Dam Lake is situated in the center of this greenstone belt and is about 200 miles NNE of the town of Red Lake. Access to the area was by aircraft from Red Lake.

The purpose of the survey was to locate and evaluate geophysically, on the ground, certain electromagnetic anomalies which had been obtained during a systematic reconnaissance coverage of the area, using the airborne INPUT electromagnetic system. The anomalies to be located and evaluated were located within claim blocks, most of which were staked prior to the commencement of the ground followup survey.

This report deals with only a part of the overall ground followup project. A total of 72 claims, each of an area of approximately 40 acres, are discussed herein. Surveying on all but two of these claims was completed by February 26, 1971. Two claims on Claim Group XLVII were not staked till late February and these were surveyed on March 12. Of the eight claim groups, four had been partly surveyed during the summer of 1970 between June 5 and October 10. Additional surveying on these plus the complete surveying of the other four claim blocks was conducted from January 11 to February 26 and on March 12 as mentioned above.

The ground followup survey completed by Geoterrex Limited involved line cutting followed by vertical loop and horizontal loop electromagnetic surveys and magnetic surveys. The field project was supervised on site by R. Keith, B.Sc., who is a Geoterrex staff geophysicist. The entire project was completed under the direction of P. Norgaard. Their qualifications are described in the attached Curricula Vitae.

The summer phase of the project was completed by operating from a centrally located base camp. This base camp was moved once during the course of the season. Access to the various claim groups, which were quite scattered, was achieved by the use of boats when possible or by helicopter. A Dominion Helicopter G-2 was attached to the base camp for most of the project.

For the winter phase of the project, one base camp was established plus two fly camps. Access to the claim groups was by snowmobile where possible. Various fixed-wing planes stayed at the base camp from time to time for a few days at a time, providing support for the camps and access to some of the grids.

III. CLAIMS COVERED

The following is a list of the claims included in the various claim blocks which were surveyed for this part of the total project.

CLAIM BLOCK NUMBER	NO. OF CLAIMS	CLAIM NUMBERS
XXIX	8	KRL 237450 - 237454 KRL 237550 - 237552
XXX	15	KRL 237535 - 237549
XLII	5	KRL 264171 - 264173 KRL 237528 - 237529
XLIII	6	KRL 237488 - 237489 KRL 264167 - 264170
XLVII	13	KRL 300602 - 300603 KRL 237517 - 237524 KRL 264257 - 264258 KRL 280807
LVI	8	KRL 237465 - 237472
LVII	9	KRL 237553 - 237558 KRL 237462 - 237464
LXII	7	KRL 300126 KRL 237563 - 237565 KRL 237525 - 237527

TOTAL NO. OF CLAIMS: 71

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IV. STATISTICS

The total number of stations established for each type of survey is listed below for each claim block.

CLAIM BLOCK	BROADSIDE	FIXED TRANSMITTER	HORIZONTAL LOOP	MAGNETIC
29	414		154	414
30	627	190	676	1457
42	234	46	138	204
43	206	75	185	489
47	808	364	241	1151
56	190	69	55	680
57	280		181	966
62	210	119	95	414
TOTAL:	2969	863	1725	5775

TOTAL FOR ALL TYPES OF SURVEY: 11,332

The total lengths of survey line cut on each claim block is listed below:

CLAIM BLOCK	TOTAL BASE LINE LENGTHS	TOTAL LENGTHS OF PICKET LINES
29	10,600 ft.	36,400 ft.
30	12,200 "	82,000 "
42	3,600 "	23,400 "
43	5,200 "	30,900 "
47	12,400 "	80,100 "

CLAIM BLOCK	TOTAL BASE LINE LENGTHS	TOTAL LENGTHS OF PICKET LINES
56	5,000 ft.	38,000 ft.
57	5,100 "	56,600 "
62	4,000 "	40,400 "
TOTAL:	58,100 ft.	387,800 ft.

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V. GEOPHYSICAL INSTRUMENTS

V.1 Vertical Loop Electromagnetic Survey:

Most vertical loop surveying was done using SE-300 vertical loop units manufactured by Scintrex Limited. The tilt angle at two frequencies, 400 Hz and 1600 Hz, can be measured at separations up to 600 feet. Under ideal conditions, a slightly greater separation may be used. This instrument is portable so that it may be used for both broadside and fixed transmitter configurations.

McPhar VHEM vertical and horizontal loop units were used for some vertical loop surveying. This instrument operates at frequencies of 600 Hz and 2400 Hz but the maximum separation is only 400 feet. The units are lighter and more portable than the SE 300's so that they were used on grids where the units had to be carried some distance and where a 400 foot line separation was sufficient.

A McPhar SS15 vertical loop unit was used where a greater penetration was required. The frequencies used are 1000 Hz and 5000 Hz and the separation can be as large as 2000 feet. The transmitting coil is mounted on a mast and powered by a motor-generator. This unit is thus only used in a fixed transmitter configuration.

The specifications of these instruments are given in the Appendix to this report.

V.2 Horizontal Loop Electromagnetic Survey:

For the Summer operation, Ronka MK IV horizontal loop units were used to gain additional information about the conductors intersected by vertical loop surveying. The operating frequency is 876 Hz and the cable lengths available are 100, 200, and 300 feet. The choice of cable length used depends on the depth to source indicated by vertical loop surveying. The longer the cable used, the greater the depth of penetration of the system.

For the Winter operation, McPhar VHEM vertical and horizontal loop units were used for horizontal loop surveying. Frequencies of 600 Hz and 2400 Hz are available. The lower frequency is used over very conductive bodies and the higher frequency over all others. This procedure yields the most accurate determinations of conductivity-width and depth. The same choice of cable lengths are available as with the Ronka MK IV.

The specifications of these instruments are given in the Appendix to this report.

V.3 Magnetic Survey:

Measurements of changes in the vertical component of magnetic intensity over the survey areas were made with MF-1, MF-2, and M-700 fluxgate magnetometers. The MF-1 and MF-2 magnetometers are manufactured by Scintrex Limited. The M700 magnetometer is made by McPhar. The specifications of these instruments are given in the Appendix to this report.

VI. LINE CUTTING

Picket line grids were cut on the various claim blocks to be surveyed by the geophysical instruments. The desired locations and directions of the base lines were specified in advance by Serem Limitée. The picket lines were positioned at right angles to the various base lines. During the Summer 1970 operation, these picket lines were spaced 400 feet apart. Because of the weak responses obtained on some of these grids due to a fairly large depth to source, the lines were spaced 300 feet apart on some of the grids cut during the Winter 1971 operation. The transmitter and receiver were then set two lines apart on these grids, giving a 600 foot separation. All lines were chained and picketed with stations at 100 foot intervals. The total length of base line established is 58,100 feet. A total of 387,800 feet of picket line was cut.

During the Summer 1970 operation, the line cutting was directed by a qualified surveyor who positioned the base lines in the field by the use of a transit. Lines were turned off the baselines by using a "right-angle-board". During the Winter 1971 operation, line cutting was supervised by the field geophysicist in charge of the total operation. The base lines for this phase of the operation were positioned by the more experienced of the field men doing the line cutting.

VII. GEOPHYSICAL SURVEYS

VII.1 The Tilt Angle or Vertical Loop Electromagnetic Method:

VII.1.1 General Description:

In tilt angle or vertical loop EM systems an alternating magnetic field is established and the direction of the total magnetic field due to the transmitter and to eddy currents induced in the ground is measured. For the survey configurations employed during this survey, the transmitting coil is held stationary in a vertical position, oriented so that its plane passes through the receiver coil. The receiver coil is used as a "null" measuring device, i.e. rotated around the horizontal axis joining the two until it is in a position of minimum induction. At this point, the plane of the receiver coil contains the total field vector, or, when secondary fields are present, the major axis of the polarization ellipse. The vertical transmitter-horizontal receiver coil configuration is the coil arrangement which is most recommended for reconnaissance and detail surveys, particularly in the Precambrian shield or elsewhere where the geologic conductors are expected to dip at angles of greater than about 30 degrees. This configuration gives a minimum response from truly flat-lying conductors such as overburden; it is also unaffected by elevation differences between the coil provided that the transmitter coil is properly oriented.

The two survey configurations that were used for the vertical loop surveys were the "Broadside" or "Parallel Line" configuration and the "Fixed Transmitter" configuration.

VII.1.2 The "Broadside" or "Parallel Line" Configuration:

In this method the traverse lines are inclined at approximately right angles to the expected strike although the direction is not too critical. The two coils move progressively along two parallel lines with both coils being at the same "latitude" relative to the grid. At each 100 foot station, two readings are taken, one using the high frequency signal, and one using the low frequency signal.

VII.1.3 The "Fixed Transmitter" Configuration:

After a conductor has been located using a broadside configuration, this conductor may be better resolved by using the fixed transmitter configuration especially where multiple conductors or poor conductors are involved. The transmitting coil remains fixed over the indicated position of the conductor and the receiving coil is moved along an adjacent line. For each 1000 foot station along the receiving line, the transmitting coil is vertical with its plane pointing towards the receiving coil and the receiving coil is tilted about the axis joining the two coils. The plane of the transmitting coil is thus rotated with each observation so that it always contains the receiver position.

VII.1.4 Interpretation of "Tilt Angle" Data - The technique employed when measuring the direction of the total field or its components by means of a null configuration, combines major advantages in operational efficiency with limited interpretation capabilities. The latter partly results from the insufficiency of null configurations to measure in elliptically polarized fields. The plane of the receiving coil, when it is in a position of minimum induction, contains the total field vector, or, when phase shifted secondary fields are present, the major axis of the polarization ellipse. With increased ellipticity the null position widens and the measurements begin to lose definition.

In spite of the limited interpretation capabilities of the vertical loop technique, it is an extremely popular and preferred method for ground followup of conductive zones located by airborne EM reconnaissance surveys.

In proper application of tilt-angle methods, the emphasis should be on an operational efficiency, particularly in following up airborne surveys, where the main problem is to determine the location of conductors whose relative significance has already been assessed in the interpretation of the airborne data. The results of VEM surveys are usually presented as profiles showing the angular deviation from the free-air null position in the plane of measurement. The horizontal location of the conductive axis is indicated by the crossover point for single steeply dipping conductors. Depth of burial, conductivity, size and geometry are reflected in the curve shapes and amplitudes; the use of two well separated frequencies aids in distinguishing the various parameters.

Although the qualitative interpretation of VEM data is difficult, experience shows that in normal Precambrian Shield conditions adequate information can be derived from VEM data for the positioning of drill holes, as well as the evaluation of the relative conductivity of a particular conductive zone. The relationship between anomalous tilt angles obtained at 400 Hz and 1600Hz using the SE-300 system on a particular conductor, indicates whether a conductor is of high or low conductivity. For a body of specific size and shape the ratio of the 400 Hz tilt angle to the 1600 Hz tilt angle will vary with the conductivity. For low conductivity, the 1600 Hz will give a much larger response than will the 400 Hz; for high conductivity, the ratio will become very nearly unity. Large bodies give rise to ratios nearer unity than do small bodies but the spacial distribution of the conductor will help to separate the size effect from the conductivity effect.

Generally speaking, the average base metal sulphide body is of sufficient size and conductivity to give ratios near unity, but strong graphitic zones may likewise give rise to high ratios. Overburden effects, serpentines, shear zones, weaker metallic sulphide and graphite distributions may all give rise to small ratios. It is not possible to resolve the various possible conductive sources on the basis of the EM measurement alone.

VII.2 The Horizontal Loop Method:

VII.2.1 General Description:

In the horizontal loop prospecting system two light-weight coils, one receiving and one transmitting, are kept horizontal and a fixed distance apart. The receiver measures both in-phase and quadrature components of the secondary or anomalous field as a percentage of the primary field intensity. Measurements of this type can only be made if there is a mechanical link between the receiver and the transmitter which is used for the dual purpose of maintaining an accurate separation between the coils and of obtaining a reference signal from the transmitter for the phase measurement. The results are presented as profiles showing the variation of real (in-phase) and imaginary (out-of-phase or quadrature) components of the secondary field plotted at the mid point between the coils. The system is symmetrical and the positions of transmitter and receiver are interchangeable.

In the surveying technique used with the horizontal loop the transmitter and receiver travel progressively along a traverse perpendicular to the anticipated strike of the conductive zone. A constant separation is maintained by keeping the connecting cable taut. Readings are taken every 100 feet. This reading interval is reduced to 50 feet wherever anomalous readings are encountered.

VII.2.2 Interpretation of Horizontal Loop Data:

The maximum coupled coil configuration used in the horizontal loop system gives results which are the easiest to interpret of all the electromagnetic systems. The horizontal loop profile over a single vertical conductor shows a negative trough of which the shoulders exhibit small positive values. One distinct advantage of the horizontal loop data is that it gives a direct indication of the width of a body.

Thus, quantitative determinations of the conductivity, expressed in mhos/meter, and the width are possible as opposed to the conductivity-width product (mhos) obtained from vertical loop data. Accurate determinations of depth and dip are also possible. These factors make the horizontal loop method a valuable accessory to the fast and efficient vertical loop "Broadside" method.

VII.3 Magnetic Survey:

The purpose of the ground magnetic survey was to study the relationship of magnetic activity to the conductive zones mapped using the electromagnetic technique. EM anomalies surveyed from the air which appear to have direct airborne magnetic correlation are often shown to have associated magnetic activity rather than direct correlation once the ground surveys have been completed. In many cases, the pattern of magnetic intensity mapped will indicate the boundaries of the different geological units present.

All readings on a particular grid are "tied" to a common base for that grid and during the survey of a grid the maximum length in time of a survey loop would be about one hour, in order to have good diurnal control.

Observations were made at 100 foot intervals on a reconnaissance basis but the reading interval was generally reduced to 50 feet in areas of magnetic activity.

VIII. PRESENTATION OF DATA

The electromagnetic and magnetic data is presented in profile form on separate maps for each claim block which include a location plan at a scale of 1 inch = ½ mile and a separate sketch of the claim block at a scale of 1 inch = ½ mile, showing the actual claim layout for the group.

The location of various claim blocks, with respect to the Severn River and Muskrat Dam Lake, is shown on the area location map included in the Appendix to this report.

For the profile presentation, the horizontal scale used is 1 inch = 200 feet. The tilt angles obtained from the vertical loop EM survey are plotted at a scale of 1 inch = 10 degrees or 1 inch = 20 degrees and the horizontal loop data is plotted at either 1 inch = 10% or 1 inch = 20%, as required for a clear presentation. The magnetic data is plotted at suitable scales as indicated on the individual map.

For ease of correlation and interpretation, the electromagnetic and the magnetic profiles are generally superimposed. The actual magnetic values are also provided, being presented on a separate plan map for each claim block.

In addition to the geophysical data, the profile plans show the location of any claim posts noted within the grid in the course of completing the geophysical surveys. At least one post per grid was located.

The following is a list of the claim blocks with their corresponding data maps.

CLAIM BLOCK NUMBER	MAPS
29	EM and Magnetic Profiles, 1970 grid. EM and Magnetic Profiles, West grid. EM and Magnetic Profiles, East grid. Magnetic Readings, 1970 grid. Magnetic Readings, East and West grids.
30	EM Profiles (Broadside Configuration) 1970 Old grid. EM Profiles (Fixed Transmitter Configuration 800 feet separation) 1970 Old grid. EM Profiles, 1971 Old grid. EM Profiles, 1971 East grid. EM Profiles, 1971 West grid. Magnetic Contours, 1970 Old grid. Magnetic Contours, 1971 East and West grids.
42	EM and Magnetic Profiles Magnetic Readings
43	EM and Magnetic Profiles, 1970 grid. EM and Magnetic Profiles, 1971 grid Magnetic Readings, 1970 grid Magnetic Readings, 1971 grid.
47	EM and Magnetic Profiles, 1970 Old grid. EM and Magnetic Profiles, (Broadside Configuration), 1971 grid. EM Profiles (Detail) 1971 grid. Magnetic Readings, 1970 Old grid. Magnetic Readings, 1971 grid.
56	EM and Magnetic Profiles Magnetic Readings

CLAIM BLOCK NUMBER	MAPS
57	EM and Magnetic Profiles EM Profiles (Horizontal Loop Method) Magnetic Readings
62	EM and Magnetic Profiles Magnetic Readings.

IX. DISCUSSION OF RESULTS

The results of the ground followup surveys are discussed below for each claim block. Geological information for the discussion is obtained from maps in the Ontario Department of Mines, Geological Report 74--"Geology of the Muskrat Dam Lake Area". As well, Federal Government aeromagnetic maps at a 1,000 foot mean terrain clearance were consulted along with the more detailed aeromagnetic maps of Canadian Onyx Mines which were flown at a mean terrain clearance of 450 feet.

IX.1 Claim Block XXIX:

Claim group XXIX is located in a complex geological setting. The northern claims are indicated by the government geology map to be mainly underlain by metagabbro and metadiorite, forming the Fox Bay sill. Metavolcanic bands of felsic composition and of intermediate composition interfinger with the mafic rocks in the southern and the western section of the claim block. Granitic rocks are located to the south of the metavolcanics. The strike is shown as approximately east-west at the east end of the claim block and N105°E for the rest of the property. The dips shown in this area are either vertical or steeply to the south. On Canadian Onyx Mines' magnetic contour map (mean terrain clearance 450 feet) this property falls on the smooth gradient between an absolute magnetic high of 62,500 gammas to the north, over the metagabbro and metadiorite, and an absolute magnetic low of 60,720 gammas to the south, over the edge of the granite. The magnetic strike is east-west to the east of the claim block, changing to WNW over the claim block.

In the center of the block, the INPUT survey intersected a good conductor striking approximately east-west. The conductivity is good over a length of 3,000 feet and the conductor appears to continue for another 2,000 feet west as a poor conductor. In the southeast part of the claim block, another conductor of medium to poor conductivity was intersected over a strike length of about 1500 feet. The apparent strike is ESE which is discordant with both the magnetic trends and the mapped geology.

Due to flooding, only the central portion of this claim block was surveyed in the Summer of 1970. In early Winter 1971, the balance of the area was covered. The original grid was extended to the west by six additional lines and lines were also positioned from a new baseline, striking N106°E, in order to survey the three claims in the SE corner.

One long conductor, of very high conductivity, parallels the west baseline for a strike length of more than 3600 feet, being intersected about 450 feet south of the baseline. This zone possibly extends another 2,000 feet west on the extended lines, however the conductivity here is very low so that this could be an entirely different zone. Another poor conductor was intersected on these west lines about 500 feet to 600 feet further south. A short, very conductive body was intersected on Lines 32W and 36W, about 250 feet south of the main body. The strike length of this conductor is thus not more than about 600 feet. On the east grid, one conductor striking approximately east-west was intersected about 250 feet north of the south claim boundary. The conductor extends for the full length of the grid, giving it a strike length in excess of 4,400 feet.

The area is magnetically quiet except in the vicinity of the main conductors. In some cases there is coincident EM and magnetics with sharp peaks of more than 2,000 gammas. Adjacent lines however have broad, low amplitude anomalies or no activity at all over the conductors.

The conductivity indicated for the long conductor which parallels the west base line is very high. The conductivity-width determined from the horizontal loop data obtained on Line 32W is 270 mhos but in general, the conductivity-width is between 100 and 200 mhos. The value for Line 28W is reduced to about 50 mhos but the conductivity-width is large again east of here on Lines 24W and 20W.

At the ends of the conductor, on Lines 16W and 12W and on Line 48W, the apparent conductivity-width is reduced to about 20 mhos. The indicated depth to source is about 25 feet on most lines but there is a local increase to about 60 feet on Line 48W. The dip appears to be near vertical. No appreciable width is indicated. There is coincident magnetics on a few lines, noticeably on Line 24W with a 2000 gamma peak. Other magnetic peaks are small or offset from the conductor axis. On Line 32W where the best conductivity is indicated, there is no magnetic response over the conductor.

The EM responses on the lines west of the above zone indicate a possible extension to the west edge of the property with the conductivity-widths here being less than 10 mhos. Depth determinations are questionable but indicated depths are larger than for the main body. The magnetic profiles are quiet on these lines.

The short conductor noted on Lines 32W and 36W yields a conductivity-width determination of 160 mhos on Line 32W; the much lower value of 12 mhos indicated for Line 36W may be due to this being very near the end of the conductor. A

3000 gamma coincident magnetic anomaly is located on both lines. No appreciable width is indicated. The dip appears to be near vertical and the depth to source determined from the horizontal loop is about 20 feet.

On the extended west lines a second poor conductor is indicated about 500 to 600 feet south of the previously mentioned one. The conductivity-width indicated on Line 48W is 8 mhos with a depth to source of about 15 feet. The conductivity west of this appears to be less. This conductor was intersected by the INPUT as well, which showed that it continues to the east, being located just south of the claim group. On a few of these lines, high north tilts indicate that the conductor falls just beyond the south end of the lines.

The single conductor on the east grid has a strike direction which is at 20° to that of the base line. The conductivity-width is about 10 mhos for most of the conductor but increases to about 30 mhos on Line 36E. A depth of about 50 feet is indicated for Line 12E which would appear representative of the western part of this grid but the depth becomes shallower towards the east, where a depth of about 20 feet is indicated on Line 36E. A width of 25 feet is apparent on Line 36E but no appreciable width is indicated on Line 12E. The dip appears to be steeply to the south. On all lines coincident magnetic peaks are noted which for the east part of the grid are of about 500 gammas amplitude and sharp. For the west part of the grid, the magnetic peaks are about 100 gammas and broad. The magnetics thus confirm the difference in depth of cover for the two halves of the grid.

In order to test the various conductive zones mapped during this survey, drill hole locations are suggested below. Each drill hole is chosen so as to intersect the conductor about 50 feet below the calculated position of the top of the conductor on the line which has yielded the best defined and most interesting geophysical results.

To test the long conductor located 450 feet south of the west base line, drill on Line 32W. The conductor here is at 4+30S and at a depth of 25 feet. Collar on Line 32W at 5+20S and drill north along the line at an inclination of 45° for a length of at least 200 feet.

A drill hole to intersect the short conductor located 250 feet south of the above conductor should be collared on Line 32W as well. The conductor axis here is situated at 6+80S at a depth of 15 feet. Collar on Line 32W at 7+60S and drill north along the line at an inclination of 45° for a length of at least 200 feet.

A drill hole to intersect the conductor on the east grid should be collared on Line 36E. The limits of the conductor here are located at 1+60N and 1+85N and the source is at a depth of 20 feet. Collar on Line 36E at 0+80N and drill north along the line at an inclination of 45° for a length of at least 200 feet.

IX.2 Claim Block XXX:

This claim block is shown as being underlain by metamorphosed gabbro and diorite which form the Fox Bay Sill. The INPUT survey intersected a long conductive zone which crosses the claim block in an east-west direction, in about the center of the Fox Bay Sill. At the west end of the claim block, the conductor appears to bend to the northwest. A large conductivity-thickness product is indicated and the conductor appears coincident with a 3,000 gamma magnetic high in the center of the claim block. Other conductor responses were detected in the east end, in the area covered by Fox Bay.

The land portion of the claim block was surveyed using ground EM and magnetics during the Summer of 1970. The broadside EM survey using a 400 foot coil separation gave only weak responses, and some fixed transmitter coverage based on the broadside data failed to give consistent "crossovers". Considering that these results could suggest that the conductive source might be too deep for definitive detection, vertical loop fixed transmitter surveying was undertaken with a transmitter-receiver separation increased to 800 feet. Using the McPhar SS15 unit for this coverage, large tilt angles and broad crossovers were recorded which appeared to indicate two highly conductive bodies separated by about 500 feet. The magnetic data obtained on this grid was contoured and shows a zone of high magnetic intensity which rises to about a 6,000 gamma amplitude near the center of the grid. The trend is approximately east-west in the east and curving to the northwest at the west end.

Following the completion of the summer field season, the data was reviewed and two new base lines were chosen so as to better define the conductors present. The new grid lines have been designated as the "East Grid" and the "West Grid". During the early Winter of 1971, these grids were cut and surveyed. The East Grid baseline strikes N66°E and the lines have been extended to cover the water-covered portion of the claim block. The West Grid baseline strikes N134°E. Lines were positioned at 300 foot intervals in order to have the option of using a 600 foot coil separation for the basic broadside EM coverage and still have the station density required for assessment purposes.

Broadside surveying on the new grids yielded tilts larger than recorded previously but for the most part these were unidirectional.

A few days were then spent trying to obtain fixed transmitter data to explain the broadside results. On the East Grid a conductor at about 15S at the east end was mapped by the fixed transmitter EM surveying. Fairly consistent crossovers at about the baseline at the east end indicate another conductor. Elsewhere, inconsistent data was obtained which was later shown to be caused by a very wide body as described below. All the fixed transmitter data that was obtained on the West Grid is plotted. Most of it is typical of the inconsistent data obtained elsewhere over the wide conductive source. The magnetic intensity values recorded on the two new grids were contoured on separate plan maps.

Line 16W of the Old Grid was surveyed with the horizontal loop instruments and positive in-phase readings and negative quadrature readings were obtained over a length of more than 1,000 feet, suggesting that the source is a very wide conductive body. This correlates with a magnetic zone have a magnetic intensity of 2,000 to 3,000 gammas amplitude on the north flank of the main magnetic high suggesting that the positive in-phase readings may be partially affected by the magnetic permeability of the conductive body. After having obtained these results on Line 16W of the Old Grid and interpreted them in terms of a very wide source, much of the Old Grid and the West Grid and some of the East Grid were then resurveyed with the horizontal loop system using a 300 foot coil separation and reading two frequencies.

Horizontal loop surveying has outlined a very wide conductive body which is located on the north side of the main magnetic high. The conductive body is coincident with a magnetic zone 2,000 to 3,000 gammas in amplitude which parallels the main magnetic axis. Both the magnetic strike and the conductor strike curve to the northwest at the west end of the claim block and both zones continue in an easterly direction to the east end of the claim block. The amplitude of the conductor response is largest from Line 8W on the Old Grid to Line 12S on the West Grid, a length of about 2400 feet. This also coincides with the length over which the magnetic intensity is largest and where both trends show a marked curvature. The width over which the conductor is positively defined is about 700 feet, which narrows to 400 feet at the ends. The conductor continues beyond this to the east but the response is less clearly defined. The main magnetic anomaly yields a depth to source determination of about 130 feet which is consistent with the response from the EM. If this depth is assumed to be the same for th conductor, then a conductivity-thickness product of about 5 to 10 mhos would be indicated by the horizontal loop data. The fixed transmitter "crossovers" obtained using a coil separation of 800 feet, occur at the indicated edges of this body as would be expected. The overall magnetic response on the claim block suggests an apparent steep dip to the north.

Three other conductors were noted within the claim block, with narrow widths by comparison to the main body. A conductor at about 15S on Lines 0 and 6W of the East Grid has a frequency response ratio of about 1.0 indicating a large conductivity-width product. The depth to source is about 160 feet which would account for the lack of a definite response by the horizontal loop survey. This conductor is coincident with a broad magnetic high of about 1,000 gammas and is located at about the south edge of the wide conductive zone.

Another conductor of only moderate conductivity is also located at the east end, situated on the north side of the wide conductive zone. The depth to source is about 120 to 150 feet.

A very poor conductor was intersected on the Old Grid near the south end of Lines 0 and 4W. This conductor is best defined by the horizontal loop data which shows only a quadrature anomaly at the two frequencies and an apparent width of 60 feet. The conductivity is so low that no definite depth to source determination can be made; however, the source appears to be at a shallow depth.

A suggested drill hole to test the main, wide conductor should be located on Line 24W of the Old Grid. This line is located in the center of the curved trend noted from both the magnetic and the conductive responses. The positive in-phase readings are largest in this vicinity and the horizontal loop profile is well defined on this line between about 3+60S and 8+00N. Collar on Line 24W of the Old Grid at 4+30N and drill south along the line at an inclination of 45° for a length of at least 280 feet. This hole should intersect the top of the conductor at 3+00N which corresponds to about the center of the horizontal loop response.

If it is desired to test the conductor noted at the east end of the East Grid at about 15S, a drill hole should be located on Line 6W. The conductor is indicated here to be at 14+40S and at a depth of about 180 feet. Collar on Line 0 at 12+60S and drill south along the line at an inclination of 45° for a length of at least 320 feet. This hole should intersect the conductor at about 50 feet below its indicated top.

IX.3 Claim Block XLII:

This area is shown as being underlain by mafic meta-volcanics. The published magnetic contour map of Canadian Onyx Mines shows the claim group to be crossed by a broad magnetic high of about 1300 gammas (mean terrain clearance 450 feet) trending east-west and bending to the north at the east and west ends. The INPUT survey has intersected a complex pattern of conductors with strike directions from ENE to ESE. Some of these anomalies are broad, suggesting multiple conductors.

Ground surveying has defined more than 10 separate conductors located within this claim block. The strike lengths vary from about 500 feet for a few of the conductors to more than 2000 feet for the longest. Most strike directions are within 15° of being east-west. Some of the conductors curve along strike. In some cases, adjacent conductors are parallel but for others, a conductor a few hundred feet away can have a strike direction up to 30° different. Depths are generally shallow, in the order of 20 feet or less. The largest depth to source indications are about 40 feet. The dip varies between being vertical to steeply to the north.

The area is magnetically very active with numerous anomalies in the 4,000 to 5,000 gamma range. Many peaks line up in the same general direction as the EM conductors, but there are also many isolated peaks. In general, there doesn't appear to be direct magnetic correlation with the conductors. Apparent correlation in a few cases may merely be by chance.

The longest conductor is located about 700 feet south of the north claim boundary. It strikes roughly east-west over a length of more than 2,000 feet, extending to the east and west edges of the claim group. A width of 60 feet is indicated on Line 4E and 8E by the fixed transmitter data. The horizontal loop data indicates about the same width on Line 4E but indicates a 100 foot width on Line 8E. The dip on these two lines is steeply to the north. The conductivity-width on Line 8E and Line 12E is about 30 mhos. This decreases to 10 to 20 mhos to the west and to less than 10 mhos to the east. On most lines, depths of 10 to 20 feet are indicated, but the conductor appears deeper where it crosses Line 16E and Line 20E. Another conductor parallels this one, 150 feet to the north on Line 4E and possibly on Line 0. The conductivity-width is about 20 mhos on Line 4E and the depth is about 10 feet. A third conductor is located about 200 feet to the south of the main conductor on Lines 8E and 12E. The strike here is about N110°E. A depth to source of about 40 feet is indicated. The conductivity-width is about 10 mhos. Another conductor was intersected on Line 12E at 17+50N from where it trends WNW and crosses the north claim boundary. This appears to have very good conductivity and some width on Line 8E where the conductor is located right on the claim boundary.

A very good conductor was intersected on Lines 16E and 20E at about the baseline with a strike of N105°E, and a conductor intersection on Line 28E at about the baseline may be an extension of this zone. A conductivity-width of between 50 and 100 mhos is indicated on Lines 16E and 20E. The conductive source would appear to have no appreciable width and to be very near surface. The dip is near vertical. On Line 20E there is a sharp 7000 gamma magnetic peak coincident with this conductor.

About 300 feet north of the above conductor on Line 16E, there is another ma n conductor, striking N75°E, being intersected on Line 12E through Line 24E, and apparently extending beyond the east claim boundary. The strike length is thus greater than 1500 feet. Because this conductor is off-strike with respect to the original baseline, a new baseline was cut at an angle of 30° to the original, and three new survey lines were positioned over part of the conductor. This detail grid was surveyed using vertical loop broadside and horizontal loop methods. The conductor has a conductivity-width of about 25 mhos and the indicated depth to source on Line 0 at the east claim boundary is 35 feet. The conductor gets shallower towards the west; on Line 8W the depth to source is apparently less than 10 feet. The dip is generally near vertical, however, on Line 8W there is a suggestion of a steep northerly dip. A width of 30 feet is indicated on Line 8W. On the other lines, the conductor appears to be narrow. Another conductor, 30 feet wide and with a conductivity-width of about 25 mhos was intersected on Line 0 of the detail grid about 300 feet south of the baseline conductor. A depth of about 10 feet is indicated with the dip being again near vertical.

In the area of the "main baseline" conductor and the "detail baseline" conductor, there is actually a total of 5 conductors present. Besides the three already mentioned, another one was intersected between the two baselines and a fifth conductor is about 200 to 300 feet south of the main baseline conductor. These 5 conductors are all within a zone about 1,000 feet wide and extending for about 1500 feet, up to the east claim boundary.

A two-line conductor was also intersected on Line 24E and Line 28E at about 8+00S. The strike direction is N120°E. The response on Line 28E may be an end effect so that the total length could be less than 400 feet. For Line 24E, the transmitter was located off the conductor so that conductivity-width and depth determinations can not be made reliably. The conductivity width appears to be only moderate however. The depth is probably 50 feet or less. The dip can not be determined because of the axis being off-strike with respect to the baseline direction.

To test the main conductors located on this property, various drill hole positions are suggested below. Each drill hole is chosen so as to intersect the conductor about 50 feet below the calculated position of the top of the source.

A drill hole to intersect the long conductor located 700 feet south of the north claim boundary, should be located on Line 8E. The conductor here extends from 11+00N to 12+00N and is at a depth of about 10 feet. Collar on Line 8E at 12+25N and drill south along the line at an inclination of 45° for a length of at least 200 feet.

A drill hole to intersect the very good conductor located near the main baseline, should be collared on Line 16E. The conductor here is located at about 0+30S and is very near surface. Collar on Line 16E at 0+30N and drill south along the line at an inclination of 45° for a length of at least 180 feet.

To intersect the main detail grid conductor, a drill hole should be located on Line 8W of the detail grid. The conductor here extends from 0+70S to 1+00S and is at a depth of less than 10 feet. Collar on Line 8W at 0+25S and drill south along the line at an inclination of 45° for a length of at least 180 feet.

IX.4 Claim Block XLIII:

Ground surveying performed on this grid in the Summer of 1970 was restricted in places due to deep swamps which made parts of some lines impossible to survey. As well, the strike direction indicated by the magnetics was about 25° off-strike from the baseline used. A new baseline was turned off from old Line 28E at 0+00. The new baseline strike direction is about N105°E. The area was resurveyed on this second grid in early Winter 1971; also, the grid was extended to cover two additional claims to the east.

The Ontario Department o. Mines regional geology map indicates the claim block to be crossed diagonally by a contact with felsic metavolcanics to the northeast and mafic metavolcanics to the southwest. One multiple-line conductive zone was intersected by the INPUT survey, trending approximately east-west across the center of the claim block. A one line conductor was intersected about 600 feet further north, also in about the center of the claim block.

The one long conductive zone was outlined by ground surveying and found to be located at the baseline of the second grid. The conductor was traced for a definite strike length of 800 feet, and possibly extends another 400 feet towards the east and also possibly further towards the west. This conductor was intersected during the summer survey on the original grid, Line 16E at 5+50S. A conductivity-width of 2 mhos or less is indicated. The computed depth to source is about 50 feet but this is somewhat questionable; the dip is near vertical.

Two short conductors were intersected on Line 4W at about 8+00N and at 9+70N. A "broadside" EM crossover was also obtained on Line 0 but the horizontal loop traverse on this line yielded only a positive anomaly. This suggests that the conductor comes close to being intersected by Line 0 but is not quite long enough to intersect this line. The total strike length is thus about 400 feet. The conductivity-width is about 10 mhos and the width of the conductor at 8N is about 120 feet. No width can be determined for the conductor at 9+70N. A 4000 gamma magnetic high is coincident with the wide conductor, being situated at the south edge of a 400 foot wide zone of high magnetic intensity which has an amplitude of about 1000 gammas for the rest of the zone. The conductor at 9+70N does not coincide with a magnetic peak but is located within this magnetic zone. A depth to source of about 30 feet was calculated for these conductors. The conductors were intersected during the 1970 survey, on Line 20E (of the original grid). The data obtained by that survey, which was completed using Ronka MK IV HEM units, gave a depth to source of about 60 feet. A dip indication is not clear but it would probably be near vertical.

The magnetic survey clearly defines two areas which would probably correlate with the different lithologic units indicated on the government geological map. On the two eastern lines and the north part of the other lines, the magnetic response is fairly featureless except over the two short conductors on Line 4W. This region would correlate with the felsic metavolcanics. On the south part of the west lines, the magnetic intensity is high or very active. This section would correlate with the mafic metavolcanics.

A drill hole to test the short, wide conductor, should be located on Line 4W where the conductor is located between 7+30N and 8+50N at a depth of 30 to 60 feet. Collar on Line 4W at 6+90N and drill, north along the line at an inclination of 45° for a length of at least 300 feet.

If it is desired to drill the other short conductor on Line 4W, a drill hole should be collared at 8+70N. The conductor here is located at 9+70N and at a depth of 30 to 60 feet. Drill north along the line at an inclination of 45° for a length of at least 200 feet.

IX.5 Claim Block XLVII:

Claim Group XLVII is situated on the northwest corner of Sandhill Crane Island and is about one third water covered. The area is shown on the government geology map to be crossed by a geological contact, with metamorphosed gabbro and diorite to the southeast and metasediments to the northwest. The Windigo River fault cuts across the east end of the claim block. The indicated dip is generally steeply to the south. Sulphides have been found along the shore, in the area mapped as metasediments.

This area was covered twice, with the INPUT system using two different flight directions. Several different conductive zones were intersected although the correlation of some anomalies is not readily apparent. A number of the airborne anomalies indicate very good conductivity.

The ground geophysics was first carried out on a grid having a baseline azimuth of 32° but when this proved unsuitable, the baseline was reoriented according to the strike inferred from the initial data and new crosslines were cut. The azimuth of this second baseline is 59°. Surveying was carried out on this detailed grid during the 1970 summer field season, with surveying being restricted to the section of the claim block on land. A number of conductive zones were intersected, with strike directions roughly parallel to the new baseline. The horizontal loop EM system with a 200 foot coil separation did not detect these conductors however.

During the early Winter of 1971, the lines of the second grid were extended onto the ice in order to complete the coverage of the claim block. All of the grid was surveyed at this time including the part which had been surveyed during the previous summer. The previous readings were repeated because this didn't entail much additional work and the earlier profiles appeared to be more noisy than normal. Because of the numerous closely spaced and deep conductors, a large number of fixed transmitter setups were required in order to properly resolve the various zones. Horizontal loop, this time completed using a 300 foot coil separation, did detect the conductors.

The claim block was extended to the east by two claims in order to contain the conductors intersected at this end. Surveying on these two claims was done in mid March.

In the eastern part of the claim block, three conductors are located within a width of 6 to 8 hundred feet. The northern one is about 1600 feet long, has moderate conductivity and is narrow. The middle one extends for about 2400 feet, having moderate conductivity for the eastern part but very good conductivity at the west end. The west end of this conductor is fairly wide. The southern conductor has been intersected between Line 16E and Line 12W for a strike length of at least 2800 feet but it possibly extends further west, perhaps joining up with one of the conductors at the west end of the claim block. The conductivity is quite good and the conductor is fairly wide.

In the northwest corner of the claim block a short conductor was intersected just north of the shore line on Lines 16W and 12W. The probable strike length is about 800 feet. This may be a wide body or perhaps two closely spaced conductors. The conductivity is moderate to good.

In the west part of the claim block, the broadside data gives indications of a number of conductors. Fixed transmitter setups in this area allow the correlation of some of these apparent conductors but not others. One long conductor is located at about 9N and parallels the baseline. It extends from the west boundary to about Line 28W and possibly further, for a strike length of about 2,000 feet. The conductivity is good. Some width is indicated on one line. Another conductor is located about 1000 feet to the south. The strike length has only been verified over a length of 800 feet where a good conductivity is indicated but no appreciable width is apparent. Between these two conductors, the fixed transmitter setups failed to give consistent crossovers. The horizontal loop in this area gave positive in-phase readings. A possible horizontal body here might account for these results.

The indicated depth to source for the EM conductors is between about 60 and 120 feet. Only one conductor is indicated to be shallower. Where the angle of dip can be determined, it is generally near vertical or steeply to the south. A few profiles indicate a north dip but these indications are assumed to be unreliable.

The magnetic intensity profiles over most of the detail grid are fairly quiet, possibly reflecting the meta-sediment rocks. The conductors all fall within this area and generally have no magnetic expression. The conductor in the northwest corner of the claim block, just north of the shore line does, however, fall within a 500 foot wide band of fairly active magnetic response. At the extreme west edge of the property, a zone of very high magnetic intensity is located along strike with the above band although, in between, the magnetic profiles are quiet.

Starting from between the detail grid baseline and the original baseline, and extending south, the survey lines have intersected a number of magnetic anomalies, which rise to about 500 gammas. This zone possibly denotes the metamorphosed gabbro and diorite.

Each of the main conductors is described quantitatively below with a drill hole suggested to test the conductor at the location indicated to be most interesting geophysically. Drill holes are calculated so as to intersect the conductors approximately 50 feet below the indicated position of the top of the conductor.

The northern conductor of the three intersected in the eastern part of the claim block has a conductivity-width of about 15 mhos. The depth to source is 60 to 100 feet. No appreciable width is indicated. To drill this conductor, collar on Line 0 where the conductor has perhaps a better conductivity. The horizontal loop profile on this line is somewhat distorted because of the adjacent conductor. The conductor is located at 12+50N at an approximate depth of 80 feet. Collar on Line 0 at 10+90N and drill north along the line at an inclination of 45° for a distance of at least 320 feet.

The middle of the three conductors intersected in the eastern part of the claim block has a conductivity-width of about 15 mhos in its center section. The conductivity on the three western lines is very high as indicated by frequency response ratios of 1.0. The horizontal loop on Line 12W gave positive quadrature readings which might be due to conductive overburden over a very good conductor, however, as a result, no conductivity-width value can be assigned. On Line 12W a width of about 130 feet is indicated. The depth to source is about 110 feet on the western lines and about 60 feet for the east lines. To drill this conductor, collar on Line 12W where the body is indicated to be wide. On Line 12W, the conductor is located between 9+20N and 10+50N and at a depth of about 110 feet. Collar on Line 12W at 8+00N and drill north along the line at an inclination of 45° for a distance of at least 320 feet.

The southern of the three conductors at the east end of the claim block is considered a good drilling target because of the good conductivity and the width of the body. The width is about 80 feet except at the ends where widths of about 30 feet are indicated. A conductivity-width of 30 mhos is indicated on lines 0 and 8E. The other three horizontal loop profiles indicate values of greater than 50 mhos. The depth to source is about 60 feet. A suggested drill hole location is on Line 12E where there is both an apparent width of about 90 feet and a large conductivity-width of 60 mhos. On Line 12E the conductor is located between 7+10N and 8+00N at a depth of about 60 feet. Collar on Line 12E at 6+20N and drill north along the line at an inclination of 45° for a length of at least 300 feet.

The conductor just north of the shore line, in the north-west corner of the claim block, has a conductivity-width of about 20 mhos. Two conductors about 50 feet apart is considered the most likely explanation for the width of the horizontal loop anomaly. The depth to source is about 40 feet. This conductor pair is located within, and near the north side of, a 500 foot wide band of fairly active magnetic intensity. As well there is direct correlation with a 300 to 500 gamma magnetic peak within this band. There are also indications of a possible conductor axis located at the south side of this magnetic band, on Lines 16W and 20W. To test this conductor, or conductor pair, drill on Line 12W where the conductors are indicated to be at 19+00N and at 19+45N and at a depth of about 40 feet. Collar on Line 12W at 18+10N and drill north along the line at an inclination of 45° for a length of at least 280 feet.

The conductor intersected at about 9N on the west lines appears to be uniform along strike. The conductivity-width is about 25 mhos. The depth to source is 70 to 80 feet. A possible width of 40 feet is indicated by the horizontal loop on Line 36W where, as well, another conductor appears to be located adjacent to it on the south side. The position indicated for the conductor on this line is different for the fixed transmitter and the horizontal loop which is perhaps due to the possible horizontal body to the south. Because of the ambiguity of the position on Line 36W, a suggested drill hole is given for Line 40W which, however, does not have any appreciable width indicated. The conductor on Line 40W is located at 8+80N at a depth of about 80 feet. Collar on Line 40W at 7+50N and drill north along the line at an inclination of 45° for a length of at least 280 feet.

The conductor located near the baseline at the west end of the grid has a conductivity-width of about 25 mhos and is at a depth of about 100 feet. If it is desired to test this conductor by drilling, a hole should be collared on Line 40W where the conductor is located at about 1+50S. The horizontal loop indicates a depth of 90 feet on this line. Collar on Line 40W at 2+90S and drill north along the line at an inclination of 45° for a length of at least 280 feet.

If a horizontal body is located between the two western conductors a depth of about 120 feet would be indicated for it. The conductivity would appear to be moderate to good. If it is desired to test this possible conductor by drilling, a hole should be collared on Line 40W at about 0+30N and drilled north along the line at an inclination of 45°. This hole should pass through the center of the conductor at about 50 feet below its top. The hole should extend for at least 320 feet.

IX.6 Claim Block LVI:

The government geological map indicates that this claim group is underlain by a belt of metasediments striking NE-SW. The contact with the granitic rocks is shown as falling within the northwest corner of the claim group where the rocks form a migmatite of alternating granitic sills and metasedimentary layers.

The INPUT survey intersected one conductor, with a strike length of half a mile, of very good conductivity plus a short conductor a few hundred feet to the north, intersected on one line only. The plotted position of the anomalies have a zig-zag relationship to each other, along strike, suggesting that the "lag" used is excessive. By changing this "lag" it is seen that the conductor is coincident with a magnetic high on all lines. Otherwise, the magnetic high would alternately fall on either the north or the south side of the conductor.

The ground survey also intersected this long conductor. The strike length is greater than 3600 feet, extending right up to the boundaries of the claim group. The conductor curves across the grid, striking approximately NE-SW. Another conductor is situated 350 feet to the north on Line 24E. The strike length of this conductor is about 600 feet.

The conductivity-thickness product varies along strike but is generally about 20 mhos for the main conductor. For the short conductor on Line 24E the value indicated is 6 mhos, which is more doubtful because of the short strike length. Depth to source determinations from the broadside, fixed transmitter and horizontal loop data yield values from 35 feet to 70 feet with the exception of Line 18E. The depth to source on Line 18E is 10 feet or less. The dip appears to be near vertical.

Most of the survey area is magnetically quiet. Some local sections are fairly active however. One band of magnetic activity three to four hundred feet wide follows the main conductor. The main conductor is located just inside the south edge of this band. The short conductor is located on the north edge of the band.

To check the main conductor, it is suggested that it be drilled on Line 18E. The conductor here is twenty feet wide, centered at 0+70N. The conductivity-thickness indicated by the 200 foot separation horizontal loop is 23 mhos. This is of the same order as the value indicated by the fixed transmitter, the broadside, and the 300 foot horizontal loop. The depth to source appears to be 10 feet or less. A vertical dip is inferred. The government geology map indicates that dips in this area are either vertical or very steep to the southeast.

A suggested drill hole to test this conductor is as follows: Collar on Line 18E at 0+00 and drill north along the line at an inclination of 45° for a length of at least 190 feet. This hole should intersect the conductor about 50 feet below the calculated position of the top of the conductor.

IX.7 Claim Block LVII:

A 1500 foot wide band mapped as metamorphosed gabbro and diorite cuts diagonally across the center of this claim group in a NE-SW direction. The area on either side of the band is underlain by mafic metavolcanics. An outcrop of metamorphosed iron formation has been mapped on the shore line, just east of the property. Dips measured in the area are vertical or very steep towards either the NW or the SE.

The INPUT survey intersected one long conductor of excellent conductivity, striking ENE and located within the area mapped as the band of gabbro and diorite. Another parallel conductor located about one thousand feet to the northwest was intersected in the western part of the claim group. The conductivity is good on one line but only moderate on the others. In the southeast corner of the claim block, a zone of high conductivity was intersected; the INPUT anomalies are broad over this body, suggesting some depth of cover.

The baseline for the grid starts in the northeast corner of the claim block and strikes N117°W. It would thus fall within the gabbro and diorite band. At least four different conductors roughly paralleling the baseline were intersected with a 1200 foot width centered on the baseline. One long conductor located at 3S at the east end of the grid and at about 5S at the west end, extends for the full length of the grid.

In the northeast corner of the claim block, two short conductors were intersected within 400 feet of this long conductor towards the north. Another conductor was intersected about 1000 feet north of the long conductor but responses obtained over this conductor are only of good quality over a strike length of 1800 feet in the middle of the grid. In the southeast corner of the claim block a conductor was intersected on two lines only, where it cuts across the corner, striking N50°E. Further west, along the shore, still another conductor was noted. The apparent dips over the whole area appear to be near vertical.

The ground magnetic pattern mapped on this grid defines the different lithologic units present very well. The central band of metamorphosed gabbro and diorite is indicated by a zone of moderate magnetic activity about 1000 feet wide. Many magnetic peaks coincide with the axes of the conductors whereas others do not. On either side of this zone the magnetic activity is quiet which would indicate the mafic metavolcanics. The southern part of the grid is crossed by a broad band of high magnetic intensity which rises to 10,000 gammas in places. This band is about one thousand feet wide and strikes N50°E. The government geological map indicates that iron formation is located along the shore just east of here which would probably be the source of the high magnetic intensity. The conductor intersected in the southeast corner is located along the south boundary of this band of high magnetic response. The conductor situated further west along the shore, is located just north of this magnetic band.

The long conductor noted just south of the base line was traced over a strike length of 4200 feet. This conductor would appear to be located at the south edge of the band of gabbro and diorite. The conductivity is very good on Line 24W and Line 36W where conductivity-widths of 45 mhos and 35 mhos are indicated respectively. East and west of these lines, values of 10 mhos or less are indicated. The depth to source is about 20 feet. No appreciable width is suggested except on Line 24W where the apparent width is about 70 feet. Magnetic correlation occurs only on two lines and thus may merely be coincidental.

In the northeast corner of the claim block, the above long conductor plus two others are all located within about 400 feet. The long conductor is the furthest south. The middle conductor was intersected on two lines only, for a strike length of 600 feet, but it probably extends beyond the claim boundary towards the east. The conductivity-width is 50 mhos or more and the apparent depth to source on these two lines is 10 to 15 feet. A width of 20 feet is indicated on Line 12W and a possible width of 50 feet on Line 12W. The conductor coincides with a magnetic anomaly of about 2000 gammas on these lines but this magnetic axis continues to line 18W, beyond the end of the conductor.

The conductivity of the northernmost of the three conductors in the northeast corner is poor with conductivity-widths of less than 5 mhos being indicated. The depth to source is again about 20 feet. No appreciable width is indicated.

A magnetic anomaly coincides with the conductor on the three lines where the conductor was intersected but is not present on Line 15W, one of the intermediate lines.

The conductor intersected at about 6N is located at the north edge of what would be the band of metamorphosed gabbro and diorite. The conductivity-width indicated on Line 30W is about 20 mhos but the value indicated on the other lines is less than 5 mhos. The depth to source is about 20 feet; no appreciable width is indicated on the lines traversed with the horizontal loop system. A magnetic anomaly which on Line 30W is of about 9000 gammas, is coincident with the conductor axis on all lines. The magnetic axis extends from Line 18W to possibly Line 39W. Beyond these lines the EM responses are not well defined and are probably end effects. On Lines 36W and 42W another conductor is located between the above conductor and the baseline but the conductivity indicated here is very poor.

The conductor which cuts across the southeast corner of the claim block has a very good conductivity-width, indicated to be about 45 mhos on Line 24W. The depth to source is about 90 feet; there is no appreciable width. North tilts at the south end of Line 30W probably indicate that the conductor extends as far as this line, for a strike length of 1200 feet with a further extension probable beyond the claim boundaries. No magnetic anomaly coincides with the conductor.

The conductor located further west along the shore line has a possible strike length of as much as 1800 feet but the EM responses on some lines are poor. A very low conuuctivity-width of 1.5 mhos was determined from the horizontal loop data on Line 36W where a depth of about 20 feet is apparent.

In order to test the various conductive zones mapped during this survey, drill hole locations are suggested below. Each drill hole is positioned to intersect the conductor about 50 feet below the claculated position of its top on the line which has yielded the most interesting geophysical results.

The long conductor indicated to be at the south edge of the band of gabbro and diorite is best drilled on Line 24W where the greatest width and largest conductivity-width were determined. The conductor here is between 4+10S and 4+80S and at a depth of 10 feet. Collar on Line 24W at 5+10S and drill north along the line at an inclination of 45° for a length of at least 180 feet.

To test the middle of the three conductors in the north-east corner of the claim block, collar on Line 6W. The conductor here is between 1+40S and 1+90S, although this apparent width is somewhat questionable. The calculated depth is 15 feet. Collar on Line 6W at 2+25S and drill north along the line at an inclination of 45° for a length of at least 180 feet.

The best place to drill the conductor which apparently is located along the north edge of the gabbro and diorite band, is on Line 30W, where the conductivity is greatest. The conductor here is located at 4+60N at a depth of about 20 feet.

Collar on Line 30W at 3+90N and drill north along the line at an inclination of 45° for a length of at least 190 feet.

To test the conductor in the southeast corner of the claim block, drill on Line 24W. The conductor axis is at 28+00S and at a depth of about 90 feet. Collar on Line 24W at 26+50S and drill south along the line at an inclination of 45° for a length of at least 280 feet.

IX.8 Claim Block LXII:

The geology map of the area shows this claim group to be located on the southeast flank of a syncline. The northwest part of the property is mapped as mafic metavolcanics and the southeast part is shown as metamorphosed gabbro and diorite. The INPUT survey intersected a number of different conductors within the claim group. One long conductor of good conductivity extends for the length of the claim group in a northeast direction. A weaker conductor was intersected on three lines, north of the main conductor in the western portion of the grid. In the northernmost claim, a short, good conductivity body was intersected. And lastly, a good conductor was intersected in the southeast corner of the claim group.

This claim group adjoins claim group XLVI, located to the southwest. The baseline of grid XLVI was extended to the southwest and grid lines cut to cover claim group LXII. Ground EM surveying appears to have delineated the same conductors detected from the air. The long conductor was intersected at about the baseline and extends from one corner of the claim group to the other, for a strike length of about 3700 feet. The response on the westernmost line may, however, be an end effect. A conductor was intersected about 1300 feet north of this conductor and another about 1300 feet to the south. The conductor in the north claim was intersected on Line 28W at 10N. The horizontal loop profiles indicate that the conductors generally have significant widths. Depth to source indications are about 120 feet. The suggested dip is to the north.

The ground magnetic survey is only moderately active to quiet and there does not appear to be correlation with the conductors except possibly for the conductor in the southeast corner. The only pattern that can be discerned is possibly a rise of about 100 gammas in the magnetic intensity for the northwestern half of the property, which may indicate the mafic metavolcanics.

The long conductor has an indicated width of almost 200 feet on Line 46W and 80 feet on Line 40W. This conductor may join up with a possible 300 foot wide body on Line 28W. The width of the conductor makes conductivity-width and depth determinations very questionable. The conductivity-width would appear however, to be less than 15 mhos. The depth would be about 120 feet and possibly as much as 150 feet. Another, weak conductor is located about 300 feet further south on a few lines.

The conductor in the north claim was only intersected on two lines but the body may extend further east where a possible conductor is indicated on grid XLVI. Only part of the horizontal loop anomaly on Line 28W was recorded so that the width of the conductor can not be determined. The width is at least 60 feet but may be more. A depth of 50 to 60 feet is indicated. The conductivity-width is about 5 mhos.

The conductor in the southeast corner was well defined by both horizontal and vertical loop surveys, only on Line 46W. The vertical loop responses on the adjacent lines may be end effects. A conductivity-width of about 10 mhos and a depth of about 90 feet is indicated. This conductor may be related to a broad magnetic anomaly of 100 gammas on Line 46W between 14+50S and 19+00S.

The conductor in the northwest corner was intersected on only two lines where weak responses were recorded. The length of the conductor would be about 600 feet. The conductivity is poor. The depth is taken to be that generally indicated i.e., about 120 feet.

Drill hole locations are suggested below for the three main conductors. To test the main long conductor, a drill hole should be collared on Line 46W where the conductor is almost 200 feet wide. The conductor here is located between about 2+30S and 4+20S and is taken to be at a depth of about 120 feet. Collar on Line 46W at 0+50S and drill south along the line at an inclination of 45° for a distance of about 500 feet. This hole should intersect the conductive body near its top, north edge and would be about 80 feet below the top at the center of the body.

The northern conductor should be drilled on Line 28W where it is between about 10+50N and 11+10N and at a depth of 50 to 60 feet. Collar on Line 28W at 11+90N and drill south along the line at an inclination of 45° for a distance of about 250 feet. This hole should pass through the indicated center of the body at about 50 feet below its top.

If it is desired to test the conductor in the southeast corner of the claim block, a drill hole should be located on

Line 46W. The conductor here is located at 15+10S and at a depth of about 90 feet. Collar on Line 46W at 13+70S and drill south along the line at an inclination of 45° for a distance of about 260 feet.

X. CONCLUDING REMARKS

In concluding the discussion of the results of the ground followup survey, it might be well to emphasize that the treatment of the various conductor systems has been strictly on the basis of the geophysical results. No prioriti.s have been established and no recommendations for drilling are given although drill hole locations are suggested for nearly all conductors in the event that some of them might be checked by drilling subject to the application of various other parameters and considerations which might relate to this particular exploration program.

Respectfully submitted,

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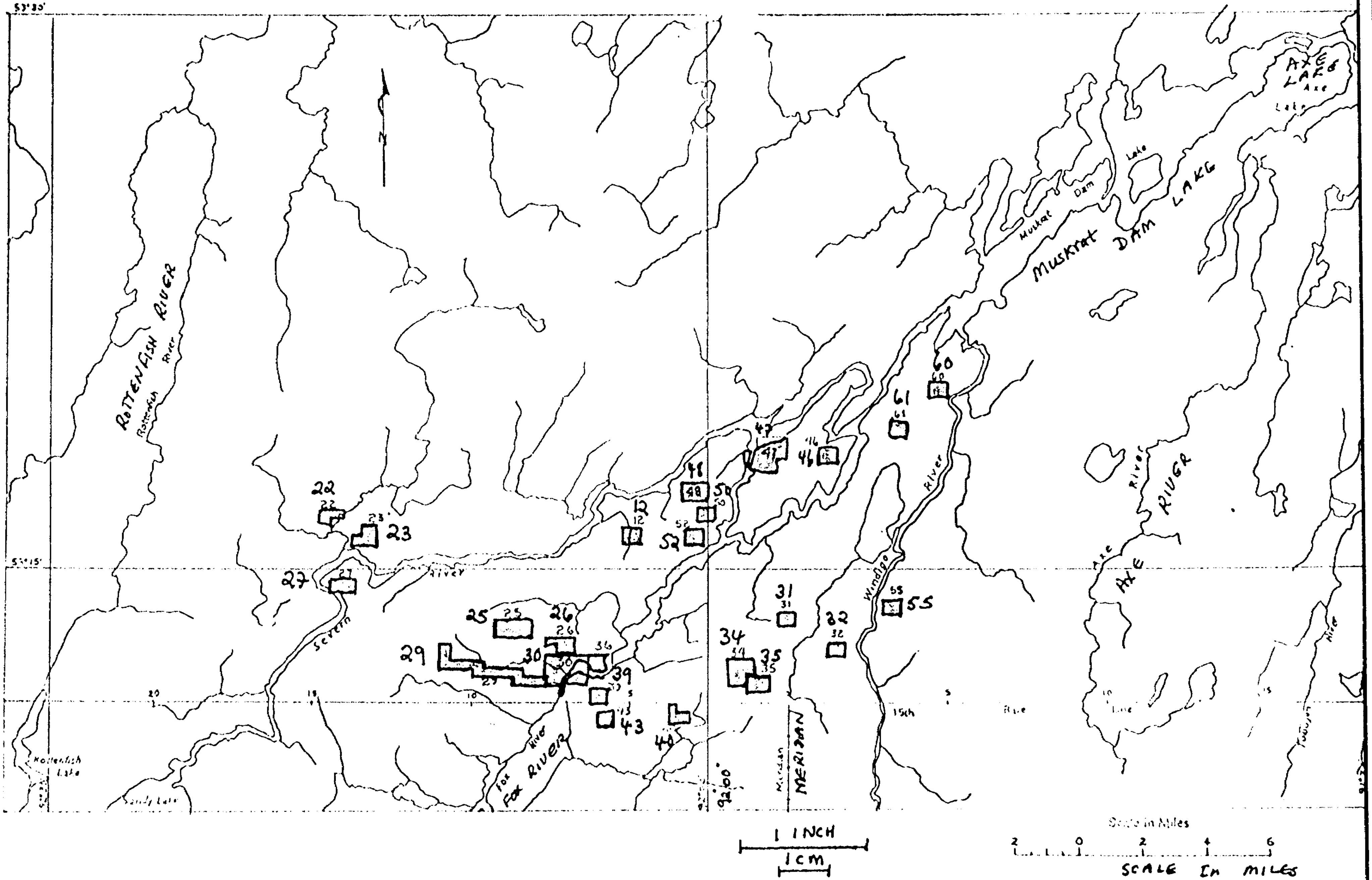
Geophysicist.



53°35'
53°15'
ROTTENFISH RIVER
Rottenfish River
MUSKRAT DAM LAKE
Muskrat Dam Lake
AXE LAKE
Axe Lake
AXE RIVER
Axe River
Windigo River
Severn River
FOX RIVER
Fox River
MERIDIAN
Meridian
92°00'
Rottenfish Lake
Sandy Lake
22
23
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50
52
47
46
61
60
31
32
34
35
55
1 INCH
1 cm
Scale in Miles
2 0 2 4 6
SCALE IN MILES

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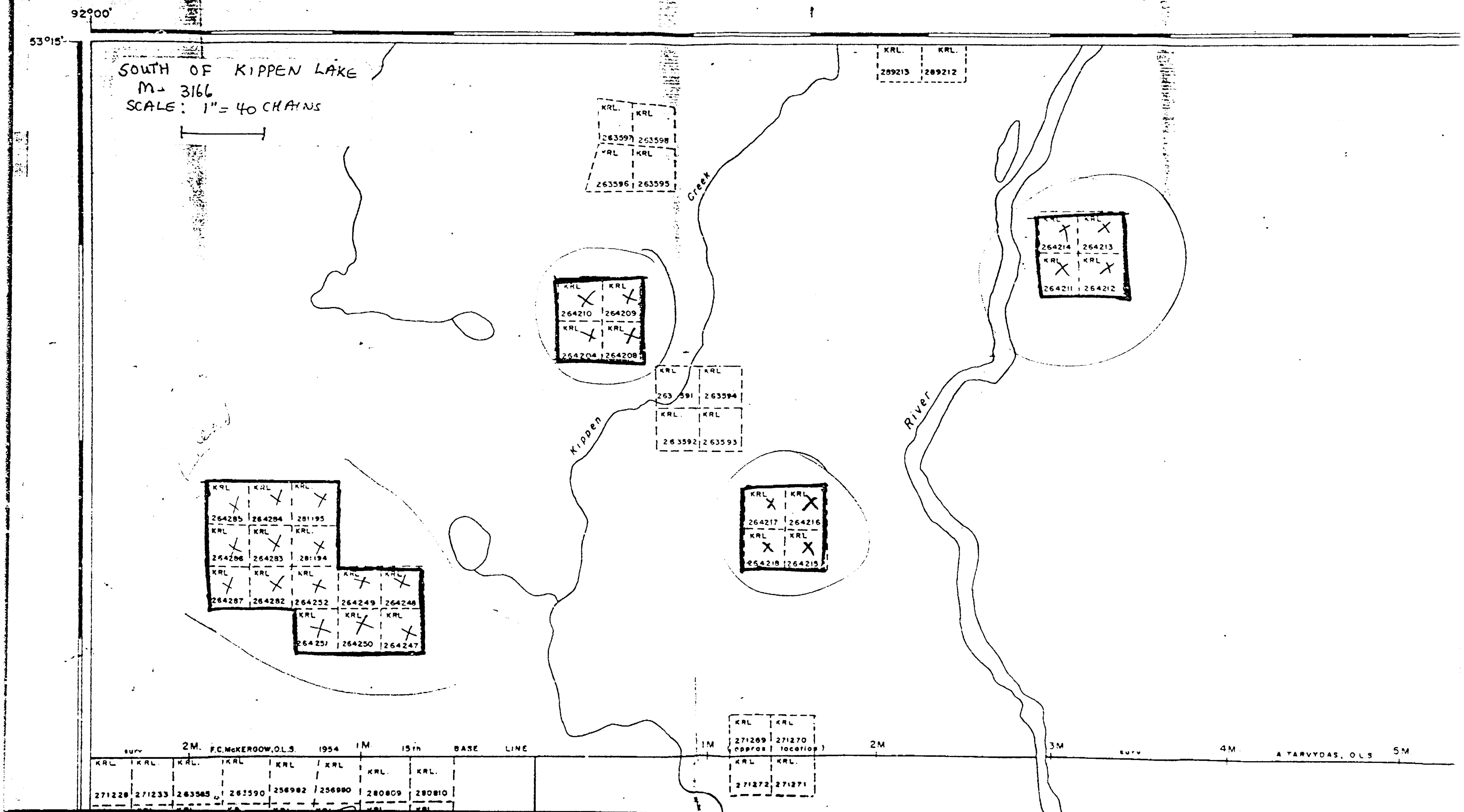
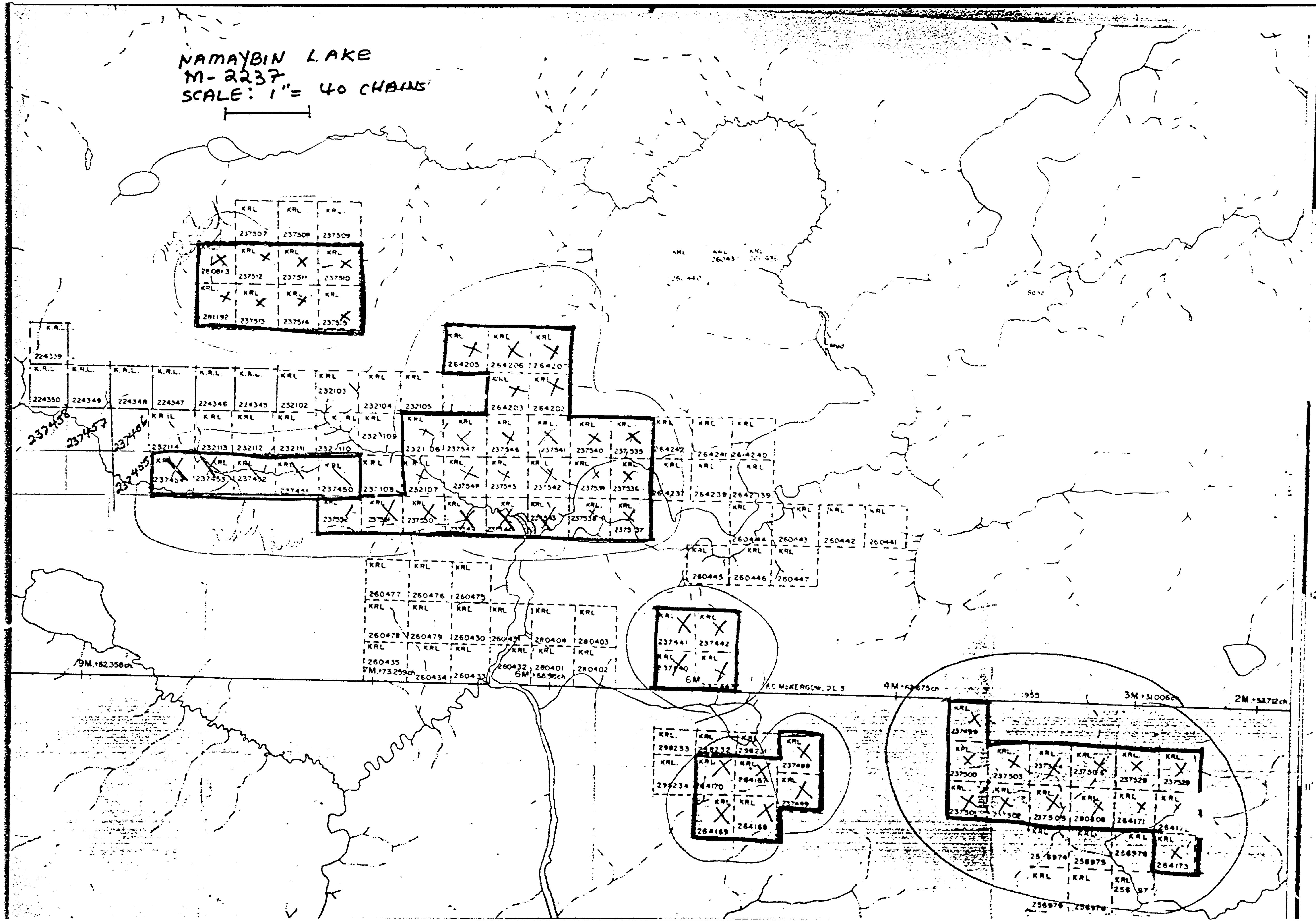
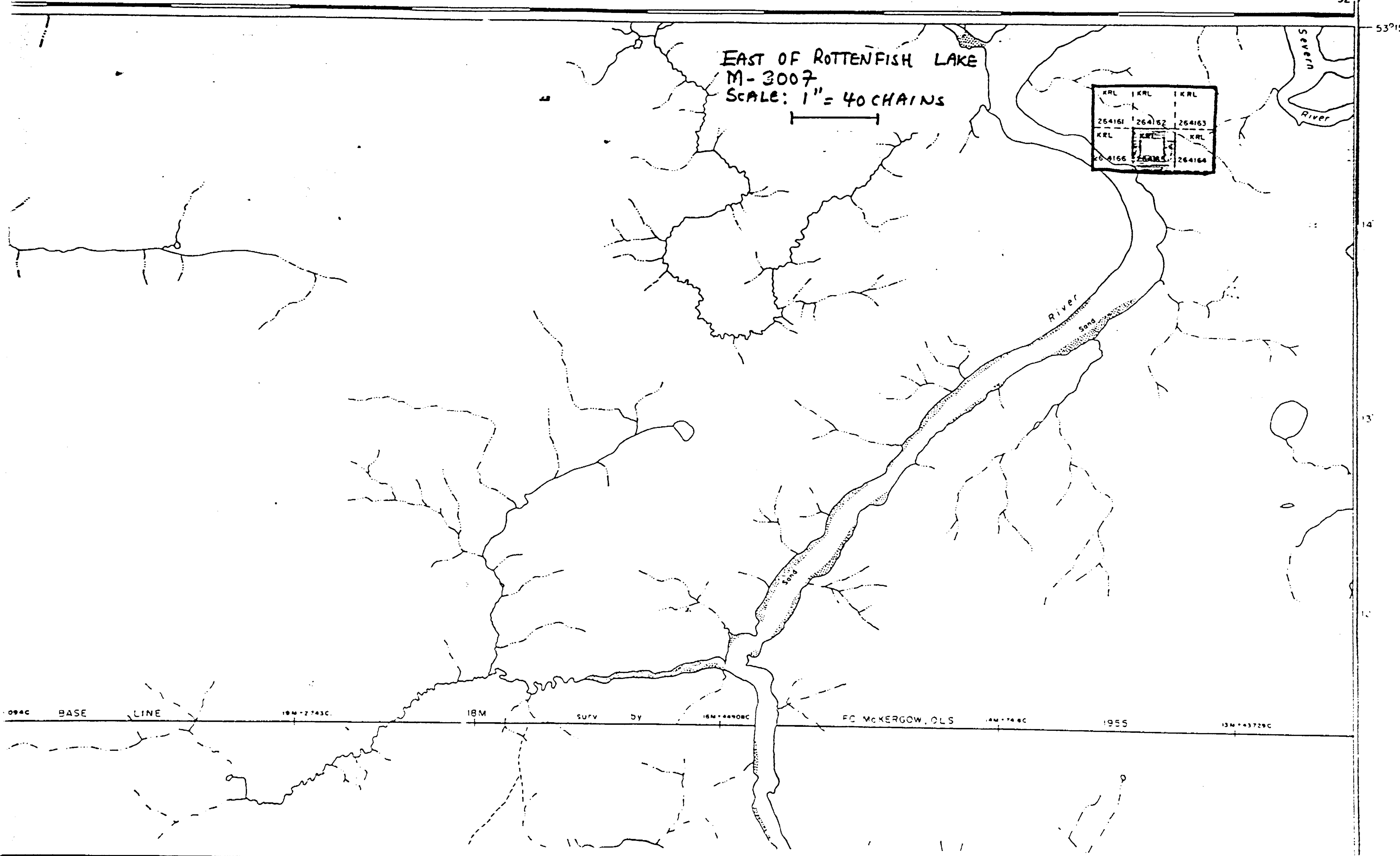
KIPPEN LAKE - M.2902

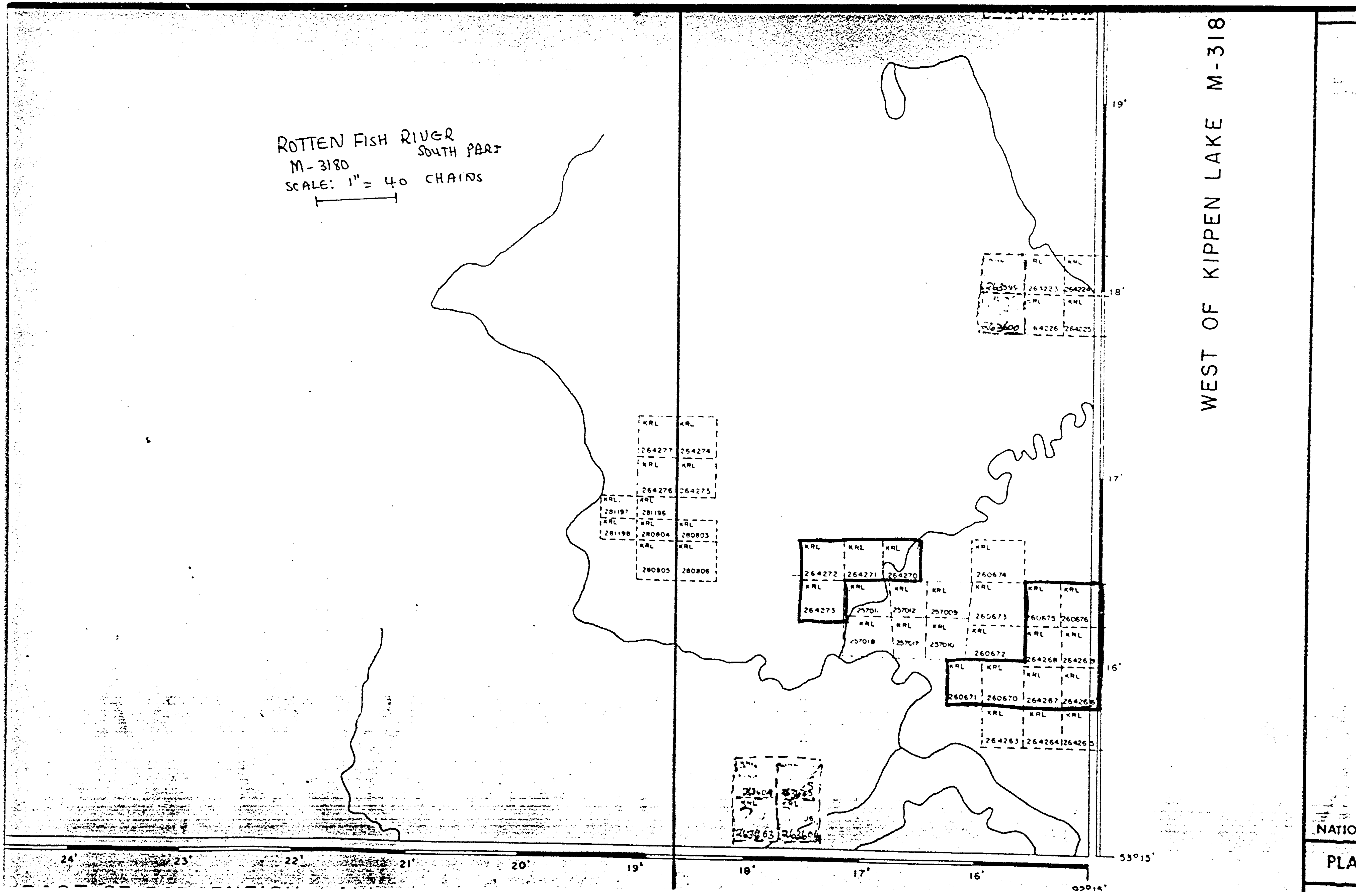




SOUTH OF KIPPEN LAKE - M.3166

ROTTENFISH RIVER—SOUTH PART M-3180




ROTTEN FISH RIVER
SOUTH PART
M-3180
SCALE: 1" = 40 CHAINS
WEST OF KIPPEN LAKE M-318
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KRL 280804
KRL 280803
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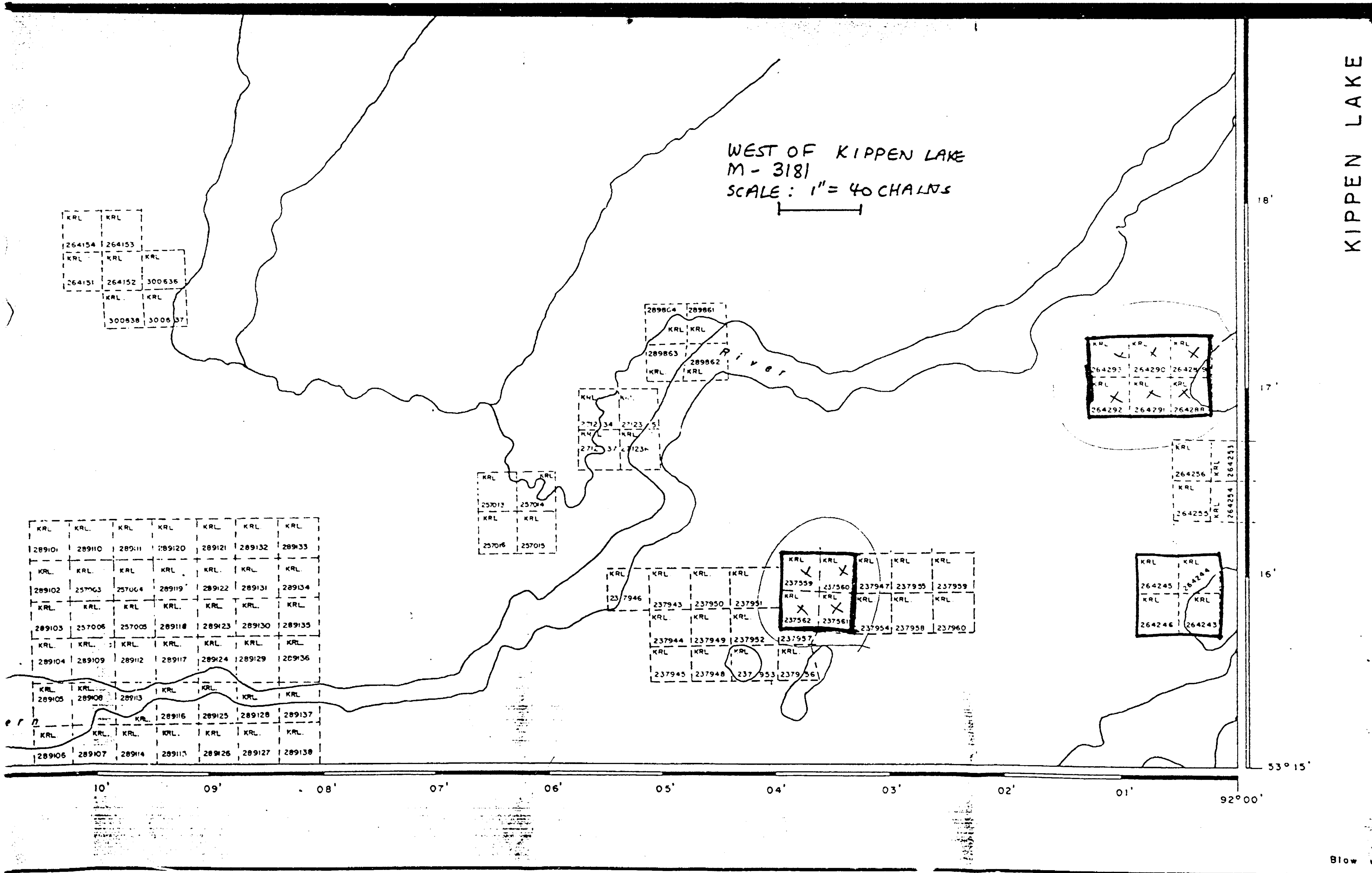
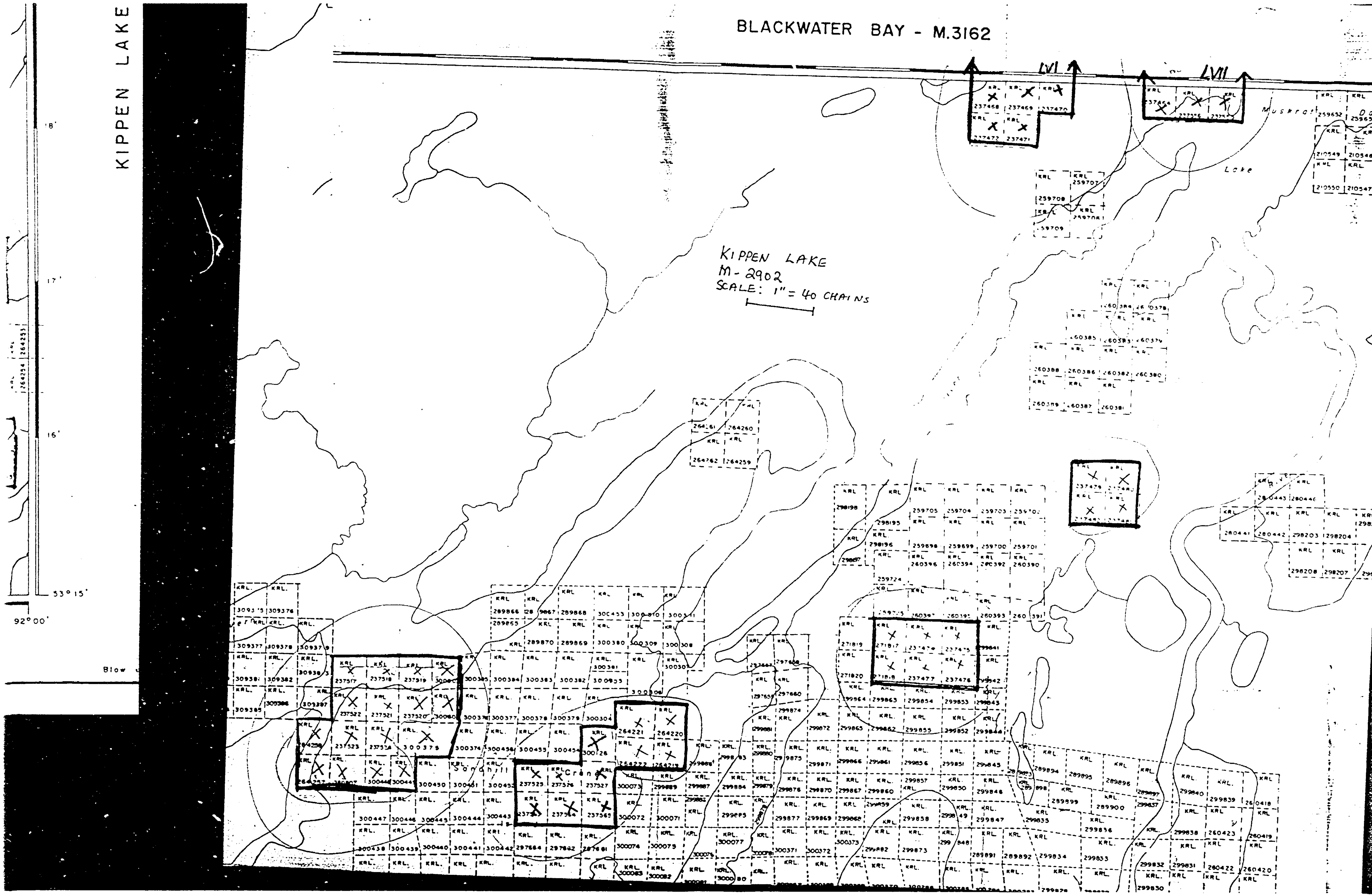
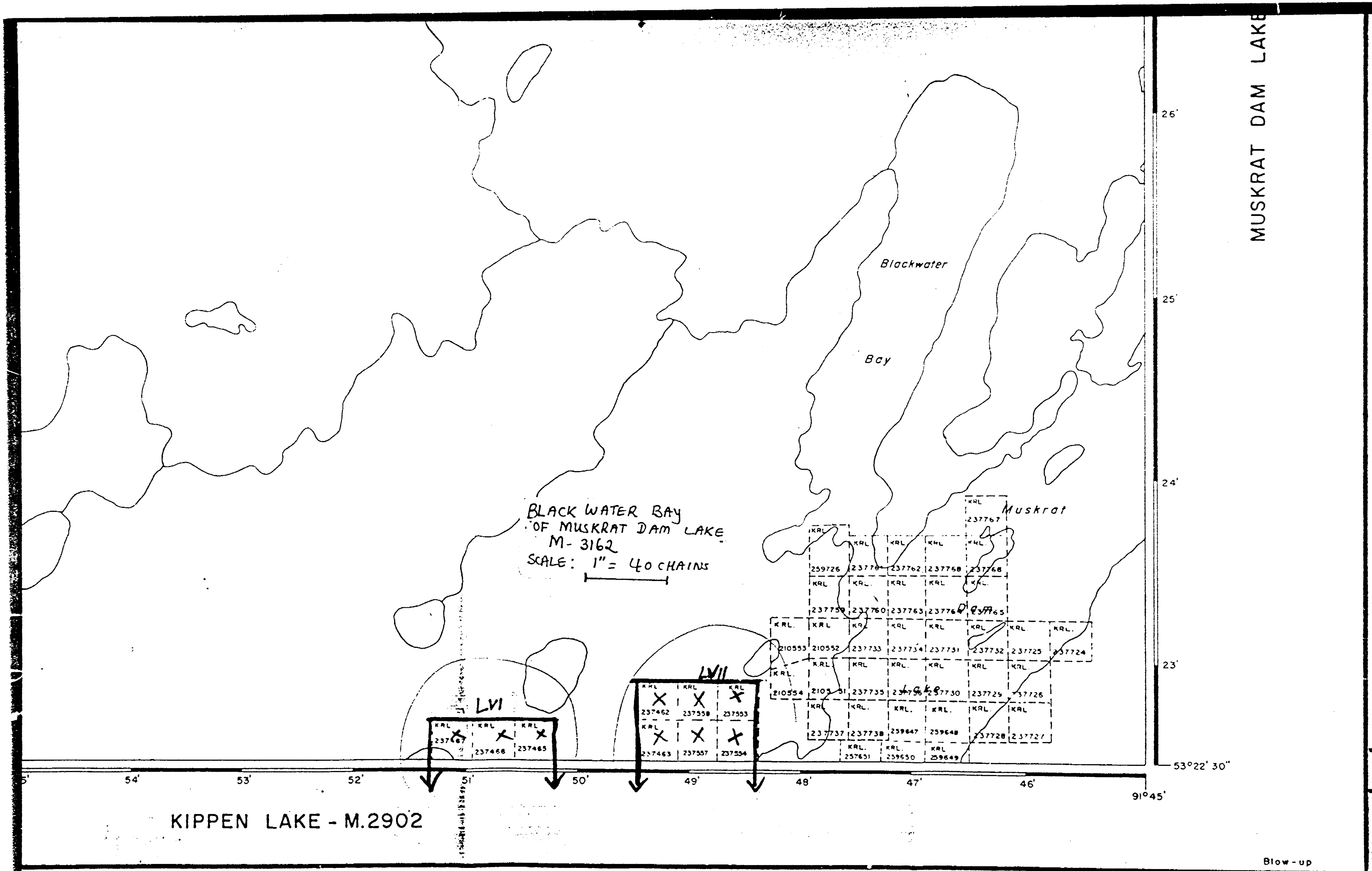

WEST OF KIPPEN LAKE
M - 3181
SCALE : 1" = 40 CHAINS
KIPPEN LAKE
River
KRL
264154
264153
264151
264152
300636
300638
300637
289864
289861
289863
289862
257013
257014
257016
257015
264293
264290
264289
264292
264291
264288
264256
264253
264255
264254
264245
264244
264246
264243
237559
237560
237562
237561
237946
237943
237950
237951
237944
237949
237952
237957
237945
237948
237953
237956
237947
237955
237959
237954
237958
237960
289101
289110
289111
289120
289121
289132
289133
289102
257063
257064
289119
289122
289131
289134
289103
257006
257005
289118
289123
289130
289135
289104
289109
289112
289117
289124
289129
289136
289105
289108
289113
289116
289125
289128
289137
289106
289107
289114
289115
289126
289127
289138
18'
17'
16'
53° 15'
10'
09'
08'
07'
06'
05'
04'
03'
02'
01'
92° 00'
Blow



BLACKWATER BAY - M.3162
KIPPEN LAKE
KIPPEN LAKE
M-2902
SCALE: 1" = 40 CHAINS
LVI
LVII
Muskrat Dam
Lake
18'
17'
16'
53° 15'
92° 00'
Sandhill
Crane



MUSKRAT DAM LAKE
Blackwater
Bay
Muskrat
Dam
Lake
BLACK WATER BAY
OF MUSKRAT DAM LAKE
M-3162
SCALE: 1" = 40 CHAINS
LVI
LVII
KRL
26'
25'
24'
23'
53°22' 30"
54'
53'
52'
51'
50'
49'
48'
47'
46'
91°45'
KIPPEN LAKE - M.2902
Blow-up

PERFORMANCE & COVERAGE CREDITS

ASSESSMENT WORK DETAILS

Township or Area: Muskrat Dam Lake area

Type of Survey: Geophysical Survey Mag
A separate form is required for each type of survey

Chief Line Cutter or Contractor: Charlie McDougall (Name)
RR # 4 Amos, Quebec (Address)

Party Chief: R. Keith (Name)
324 Cambridge St., Ottawa, Ont. (Address)

Consultant: P. Norgaard (Name)
749 B. Springland Dr., Ottawa, Ont. (Address)

COVERING DATES

Line Cutting: June 5th/October 10th 1970
January 11th/March 10th 1971

Field: same
(Instrument work, geological mapping, sampling etc.)

Office: October 2nd/November 20th, 1970
~~February 20th/March 10th, 1971~~

INSTRUMENT DATA

Make, Model and Type: See attached sheets

Scale Constant or Sensitivity: ______
Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count: ______

Number of Stations Within Claim Group # 8795

Number of Readings Within Claim Group # 8795

Number of Miles of Line cut Within Claim Group: 148

Number of Samples Collected Within Claim Group: ______

CREDITS REQUESTED

	20 DAYS per claim	40 DAYS per claim Includes (Line cutting)
Geological Survey	☐	☐
Geophysical Survey	☒	☐
Geochemical Survey	☐	☐

Show Check ✓

DATE: May 11, 1971

SIGNED: E. NOTZLI
Chief Geologist SEREM LTD

Performance and coverage credits do not apply to airborne surveys

MINING CLAIMS TRAVERSED
List numerically

See attached List

TOTAL: 145

Send in duplicate to:
FRED W. MATTHEWS
SUPERVISOR-PROJECTS SECTION
DEPARTMENT OF MINES & NORTHERN AFFAIRS
WHITNEY BLOCK
QUEEN'S PARK
TORONTO, ONTARIO

GEOPHYSICAL SURVEYS

SEREM Ltd

Muskrat Dam Lake area

THE CLAIMS IN NUMERICAL ORDER ARE AS FOLLOWS :

KRL 237440 - 43 incl.
450 - 54 "
462 - 72 "
474 - 77 "
479 - 82 "
488 - 89 "
499 - 506 "
510 - 515 "
517 - 529 "
535 - 565 "
264167 - 73 "
202 - 22 "
247 - 52 "
257 - 58 "
282 - 93 "
280807 - 808
813
281192
194 - 195
300126
602 - 603

TOTAL : 145 cl.

PERFORMANCE & COVERAGE CREDITS

ASSESSMENT WORK DETAILS

Township or Area: Muskrat Dam Lake area

Type of Survey: Geophysical Survey EM
A separate form is required for each type of survey

Chief Line Cutter or Contractor: Charlie McDougall (Name)
RR # 4 Amos, P.Q. (Address)

Party Chief: R. Keith, B.Sc. (Name)
324 Cambridge St., Ottawa, Ont. (Address)

Consultant: P. Norgaard (Name)
749B Springland Dr., Ottawa, Ont. (Address)

COVERING DATES

Line Cutting: June 5th/October 10th, 1970
January 11th/March 10th, 1971

Field: - dito -
Instrument work, geological mapping, sampling etc.

Office: October 2nd/November 20th, 1970
February 20th/March 10th, 1971

INSTRUMENT DATA

Make, Model and Type: See attached sheets

Scale Constant or Sensitivity:
Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count:

Number of Stations Within Claim Group # ~~8795~~

Number of Readings Within Claim Group # 16760

Number of Miles of Line cut Within Claim Group # 148

Number of Samples Collected Within Claim Group -

CREDITS REQUESTED

	20 DAYS per claim	40 DAYS per claim (Includes Line cutting)
Geological Survey	☐	☐
Geophysical Survey	☐	☒
Geochemical Survey	☐	☐

Show Check ✓

DATE: May 11th, 1971

SIGNED: E. NOTZLI, Chief Geologist, SEREM LTD

MINING CLAIMS TRAVERSED
List numerically

See attached List

TOTAL 145

Send in duplicate to:
FRED W. MATTHEWS
SUPERVISOR-PROJECTS SECTION
DEPARTMENT OF MINES & NORTHERN AFFAIRS
WHITNEY BLOCK
QUEEN'S PARK
TORONTO, ONTARIO

Performance and coverage credits do not apply to airborne surveys

GEOPHYSICAL SURVEYS

SEREM Ltd

Muskrat Dam Lake area

THE CLAIMS IN NUMERICAL ORDER ARE AS FOLLOWS :

KRL 237440 - 43 incl.
450 - 54 "
462 - 72 "
474 - 77 "
479 - 82 "
488 - 89 "
499 - 506 "
510 - 515 "
517 - 529 "
535 - 565 "
264167 - 73 "
202 - 22 "
247 - 52 "
257 - 58 "
282 - 93 "
280807 - 808
813
281192
194 - 195
300126
602 - 603

TOTAL : 145 cl.

FOR ADDITIONAL

INFORMATION

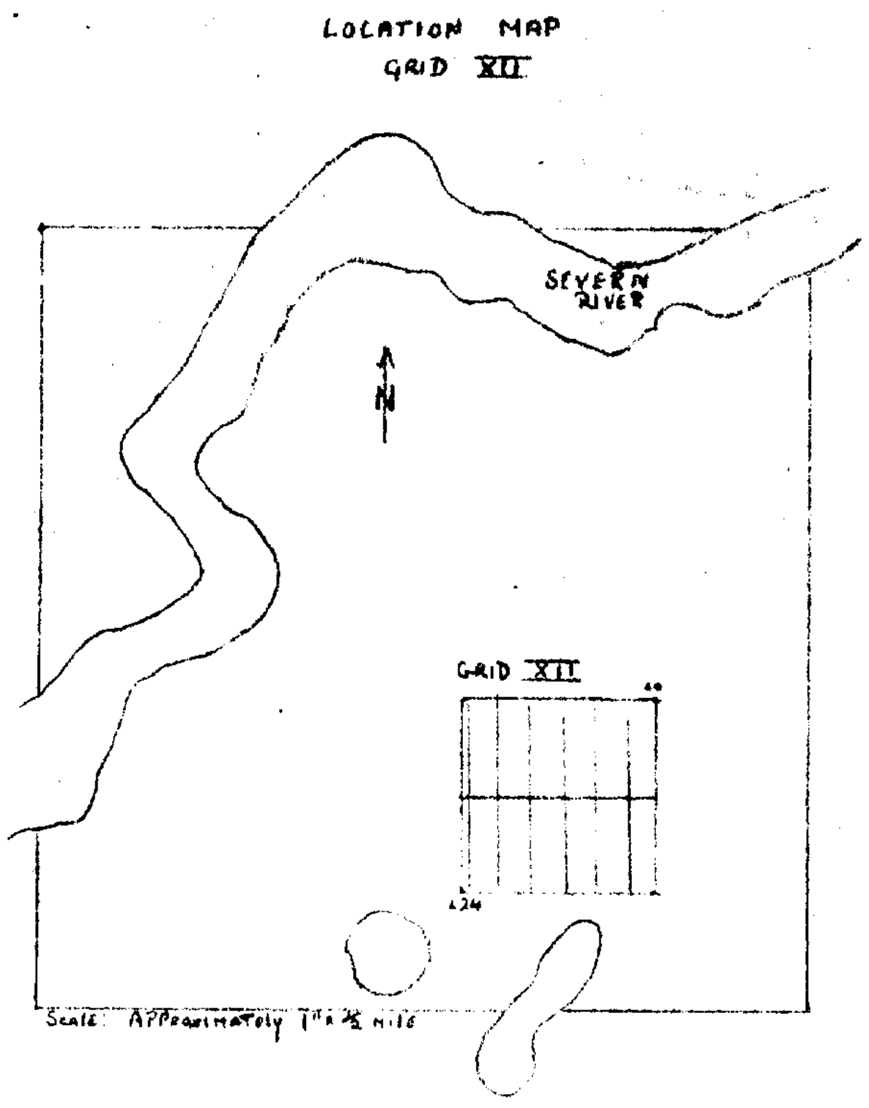
SEE MAPS:

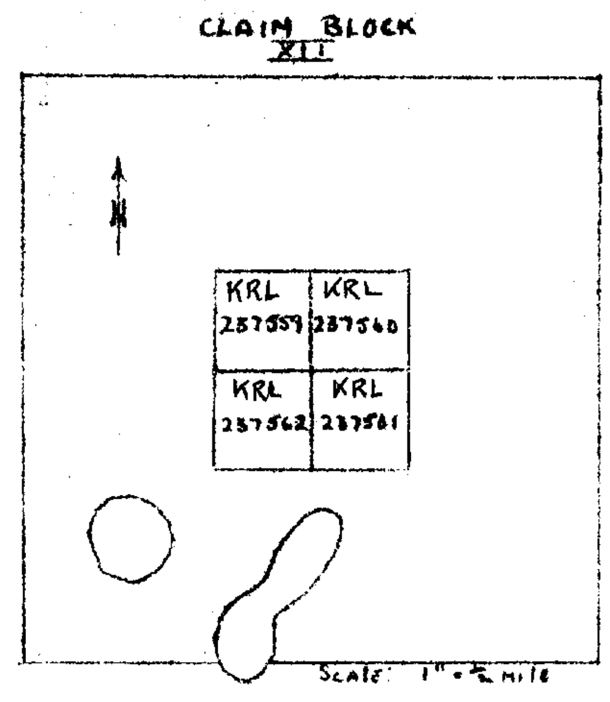
53G/04NW-0015 #1-59

GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XII	SECTION:
SURVEY: MAGNETIC	
SCALES: 1" = 200 FEET VERTICAL MAGNETIC FIELD READINGS IN GAMMAS	LEGEND:
WORK BY:	PLOT BY: C.K. DATE: SEPT 1970

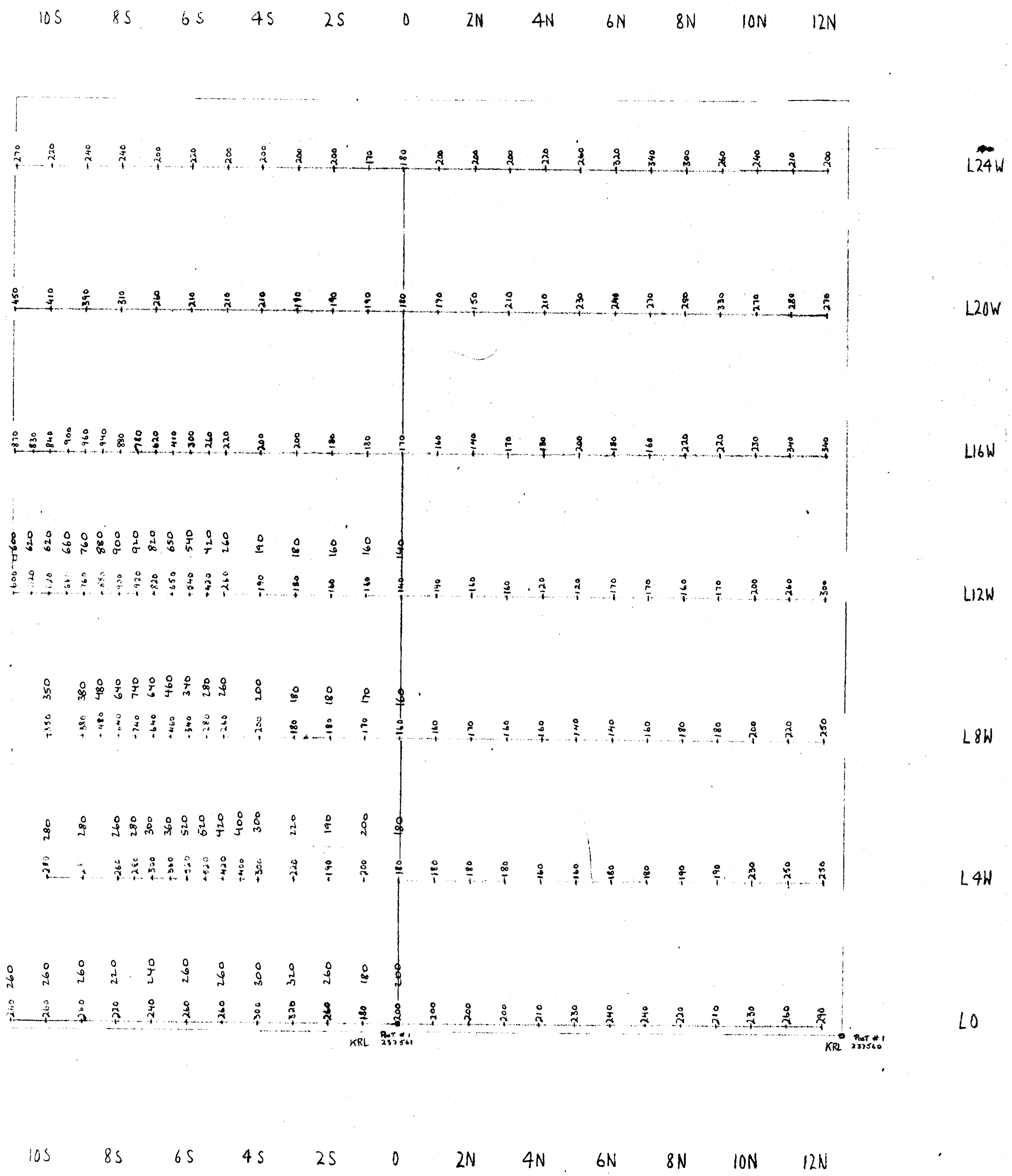
INSTRUMENT: MF-2 FLUXGATE MAGNETOMETER

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO





Block # 12



53G/04 NW - 0015 # 1

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

200

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XII	**SECTION:**
SURVEY: MAGNETIC AND ELECTROMAGNETIC	
SCALES: 1" = 200'; 1" = 500γ; 1" = 10°; 1" = 10%	**LEGEND:** Vertical Loop Dip Angle; Horizontal Loop Field Components: In Phase, Quadrature; Magnetic Field Intensity
WORK BY: G.C. A.S. G.C. R.G.	**PLOT BY:** R.G. G.C. A.S.
DATE: SEPTEMBER 1970	

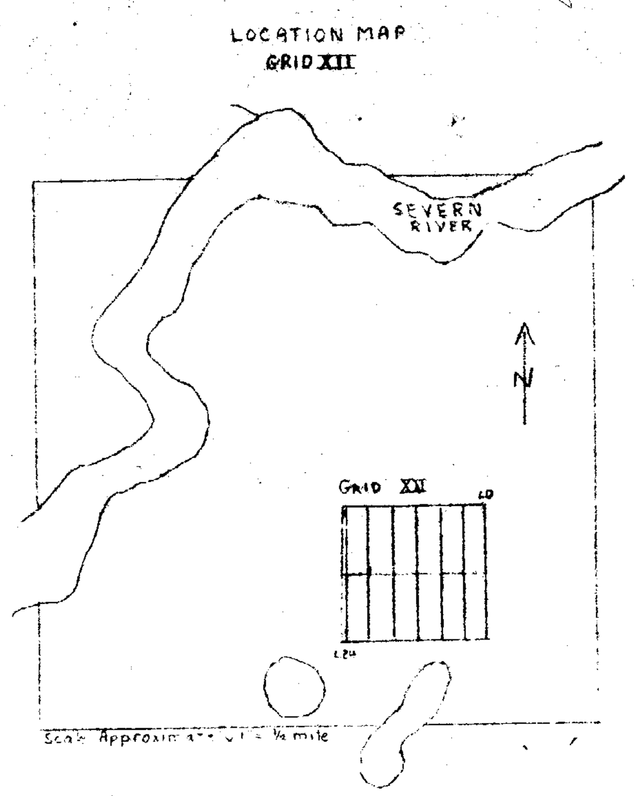
INSTRUMENTS: S.E-300 Vertical Loop Electromagnetic Units
MF-2 Fluxgate Magnetometer
RONKA Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

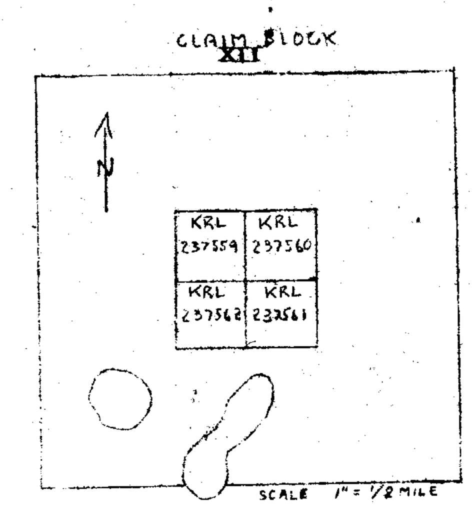
VERTICAL LOOP DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

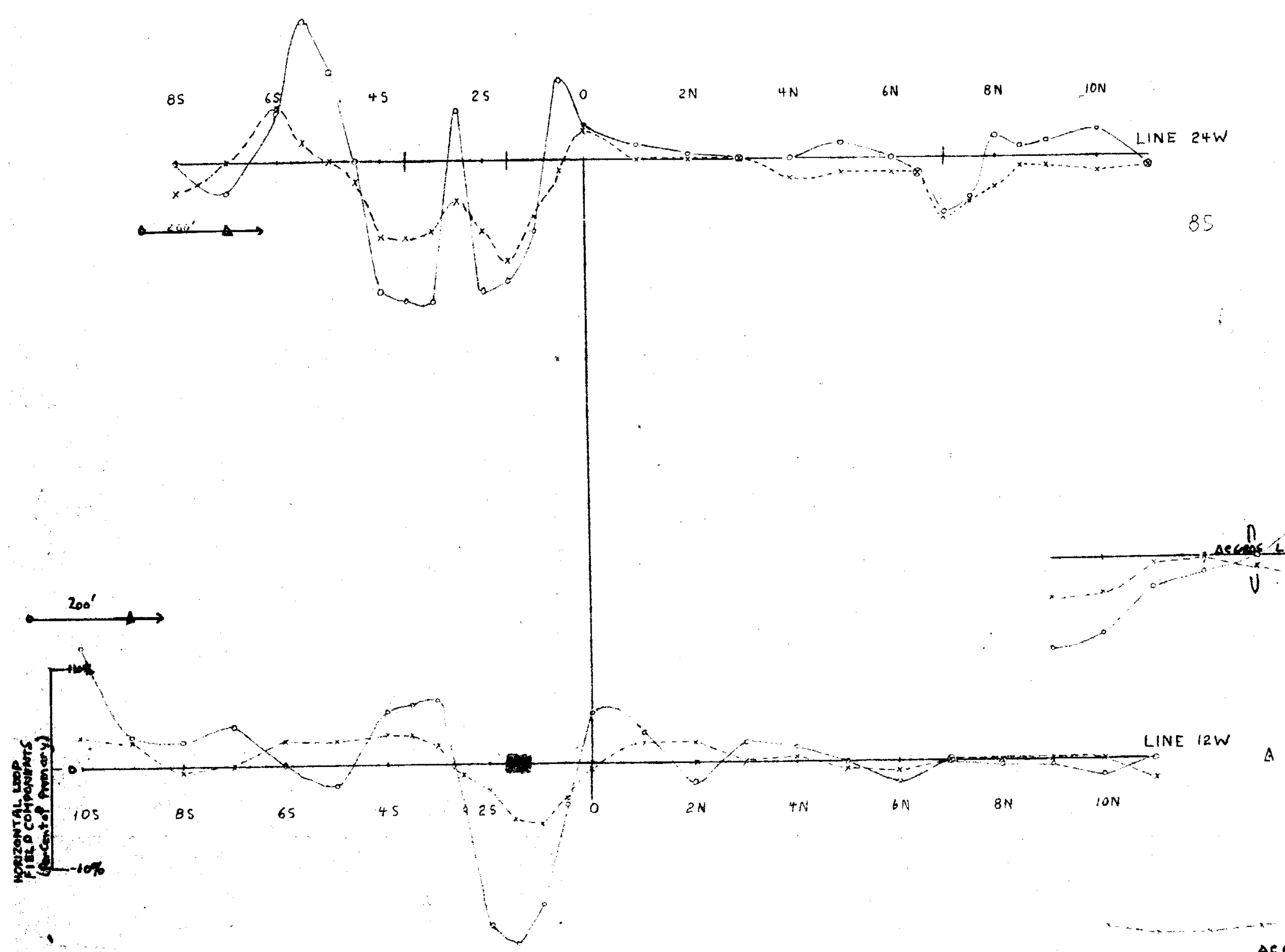
REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO



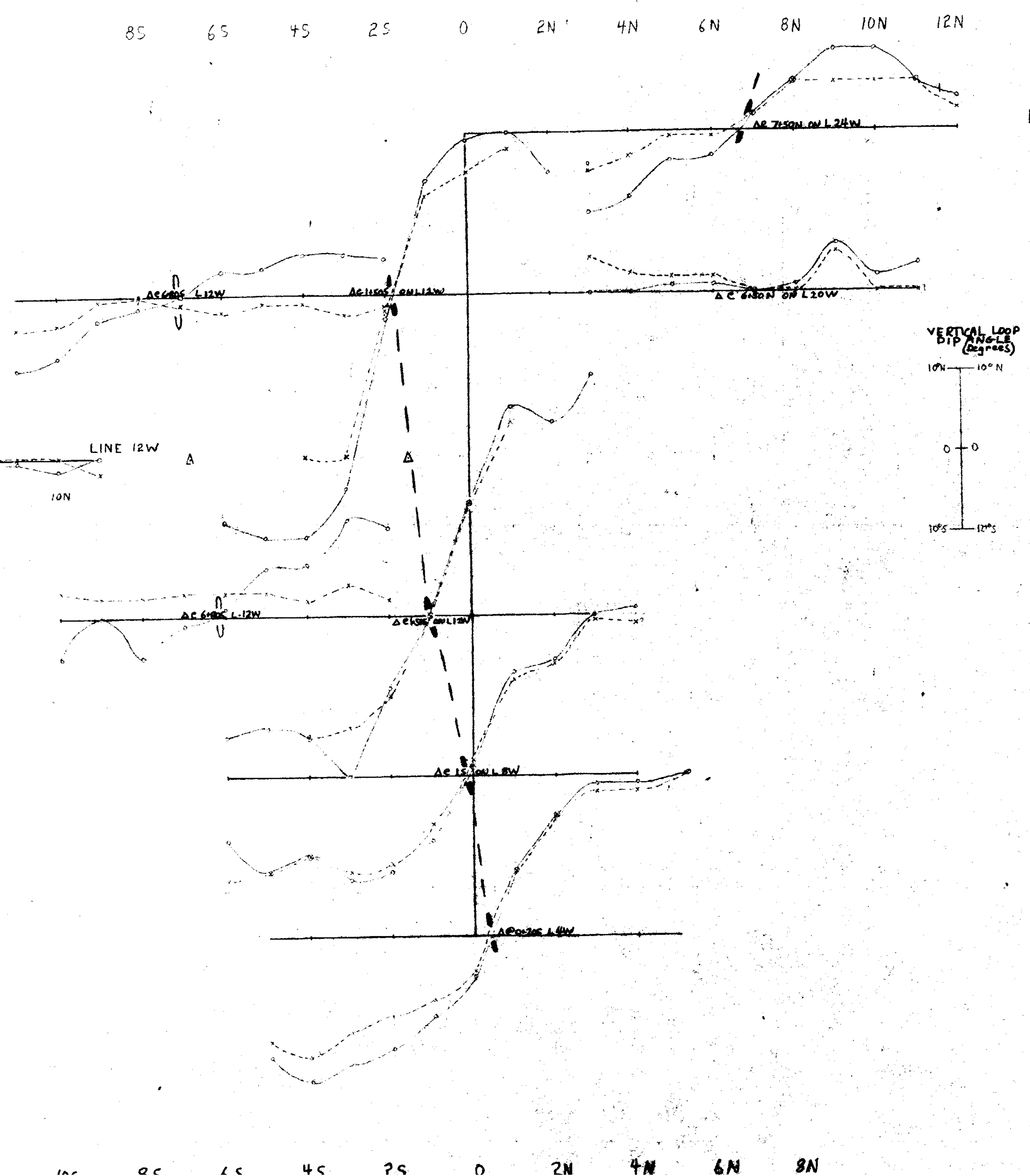


Block # 12

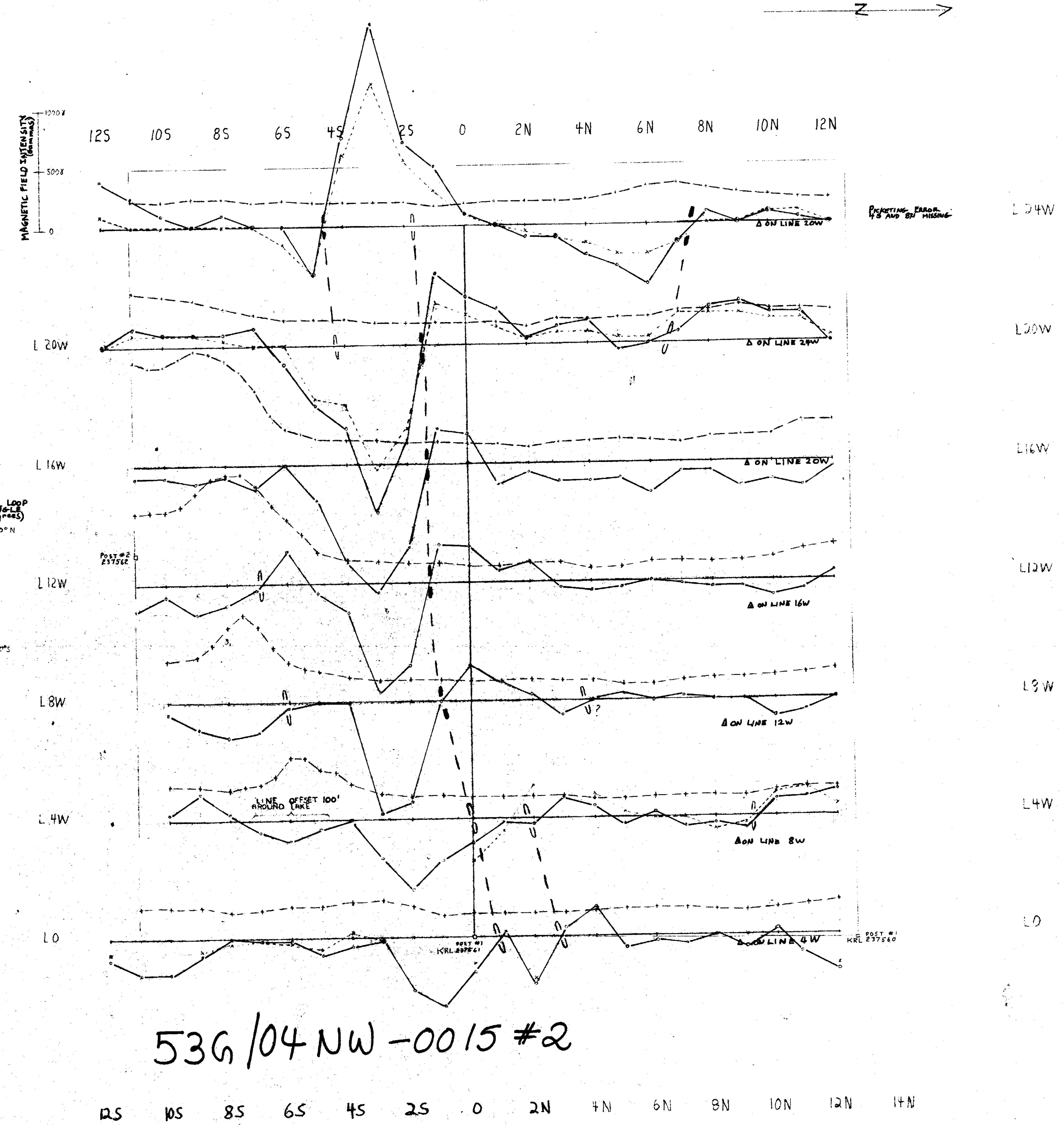
HORIZONTAL LOOP ELECTROMAGNETIC METHOD



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION



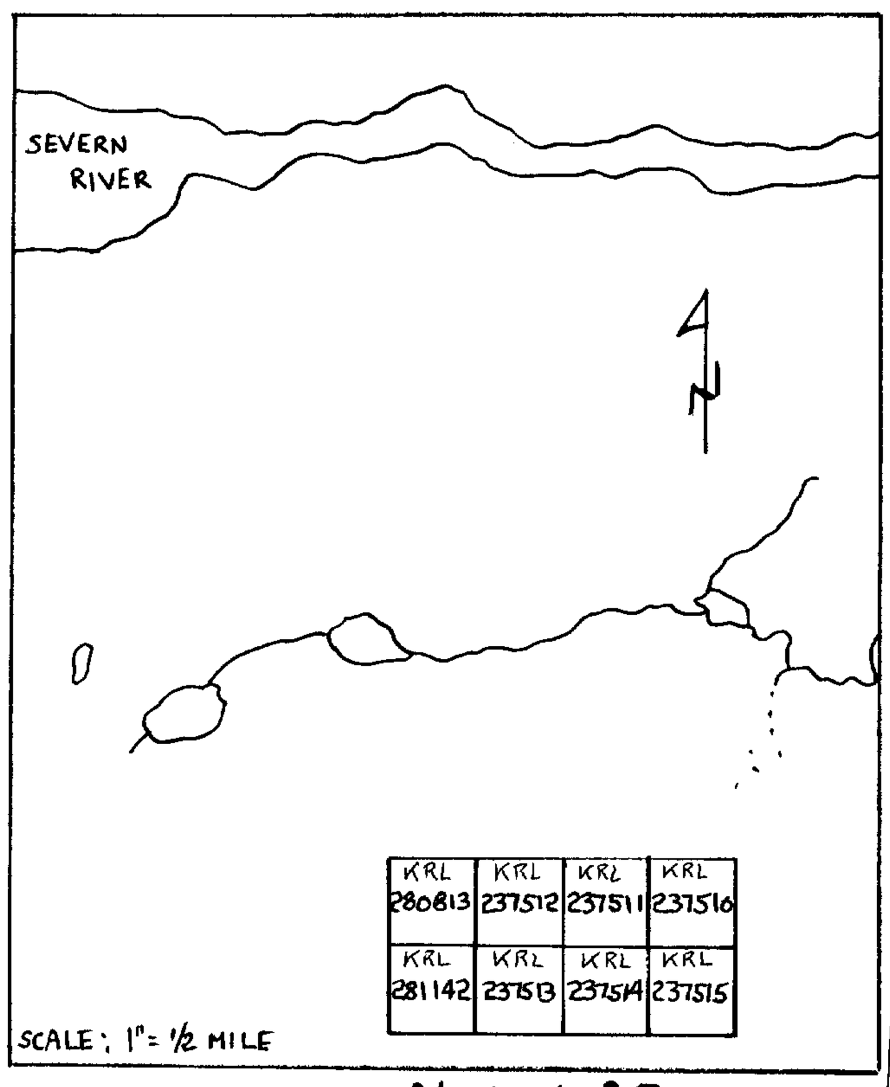
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53G/04NW-0015 #2

210

CLAIM GROUP XXV



Block # 25

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

B

GEOTERREX LIMITED

PROJECT: SEREM LTÉE - MUSKRAT DAM LAKE AREA

XXV

SURVEY: MAGNETIC

1" = 200'

G.C. SEPTEMBER 1970

53G/04NW-0015 #3

GEOTERREX LIMITED

PROJECT:	SEREN LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR	XXV
SURVEY:	ELECTROMAGNETIC AND MAGNETIC
SCALES: 1" = 200' ; 1" = 10° ; 1" = 20% ; 1" = 1000 γ	LEGEND: VERTICAL LOOP DIP ANGLE 1600 Hz o—o, 400 Hz x---x; HORIZONTAL LOOP FIELD COMPONENTS IN PHASE o—o, QUADRATURE x---x; MAGNETIC FIELD INTENSITY +—+
WORK BY: GC AS. CN. RG.	PLOT BY: R.G. BK. — DATE: SEPTEMBER 1976

A

INSTRUMENTS:

SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MF2 FLUXGATE MAGNETOMETER
RONKA MARK IV (876 Hz) HORIZONTAL LOOP ELECTROMAGNETIC UNITS

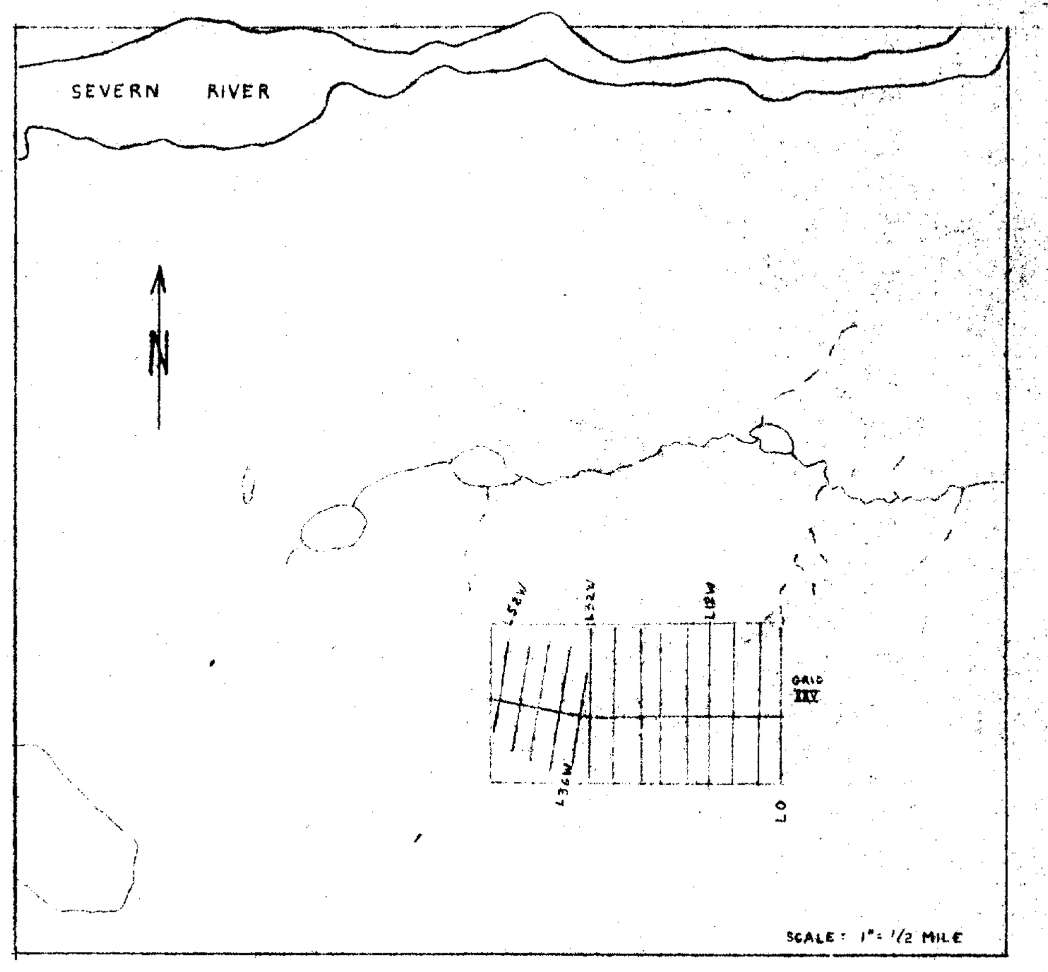
VERTICAL LOOP CONDUCTORS

DEFINITE

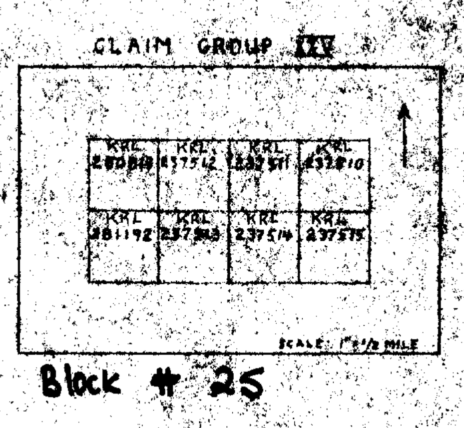
POSSIBLE

HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

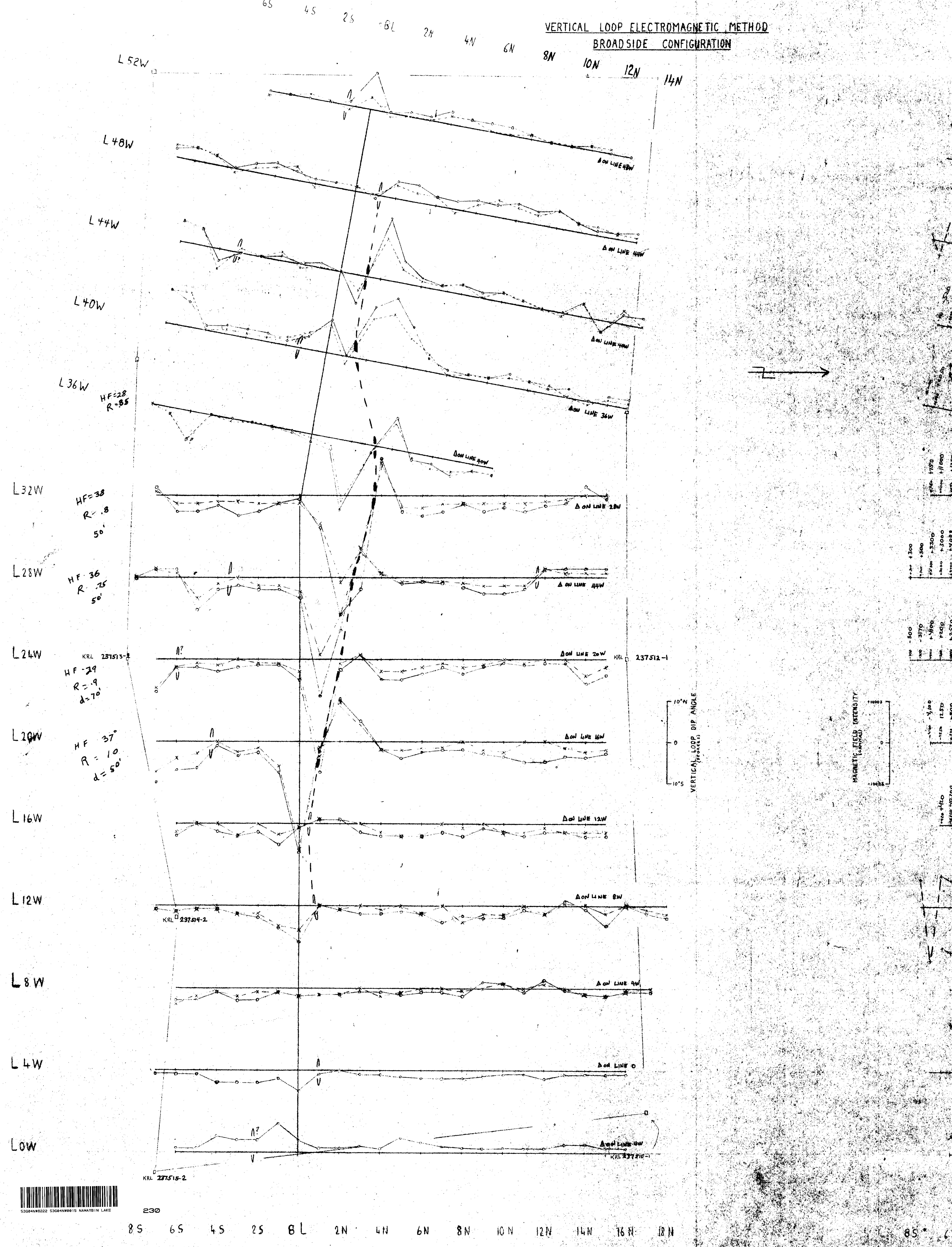
REGISTERED PROFESSIONAL ENGINEER — P. NORGAARD — PROVINCE OF ONTARIO



LOCATION MAP GRID XXV

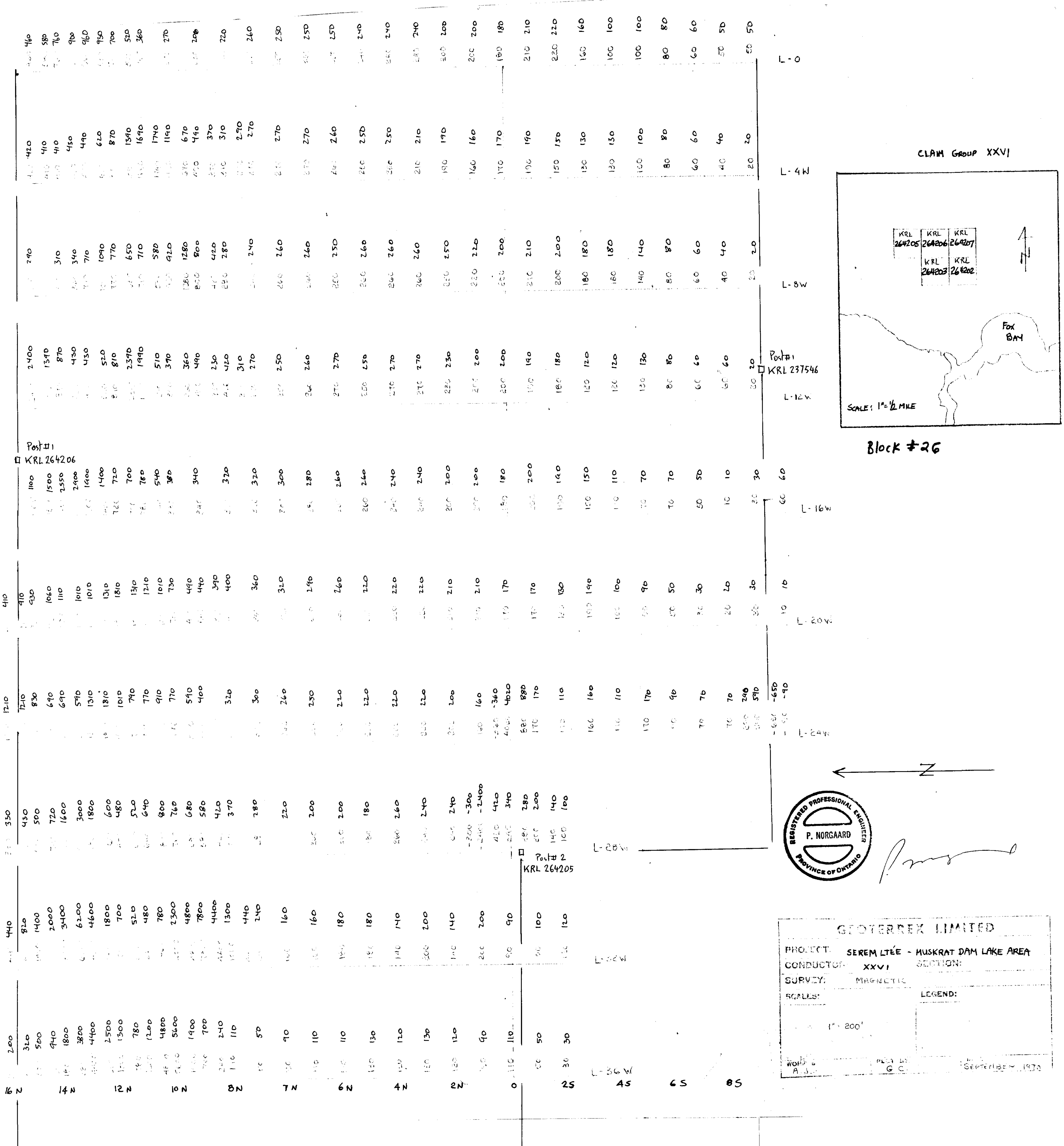


VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53O04NW8222 53O04NW0015 NAMAYBIN LAKE

230



240

53G/04NW-0015 #5

GEOTERREX LIMITED

PROJECT:	SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: XXVI	SECTION:
SURVEY: ELECTROMAGNETIC & MAGNETIC	

SCALES:	LEGEND:
1 = 300'	Vertical Loop Dip Angle: 1600 Hz o——o; 400 Hz x- - -x
1" = 10°	Horizontal Loop Field Components: In Phase o——o; Quadrature x- - -x
1 = 1000 γ	Magnetic Field Intensity +— —+
= 20%	

WORK BY:	PLOT BY: BK	DATE: SEPT. 1970

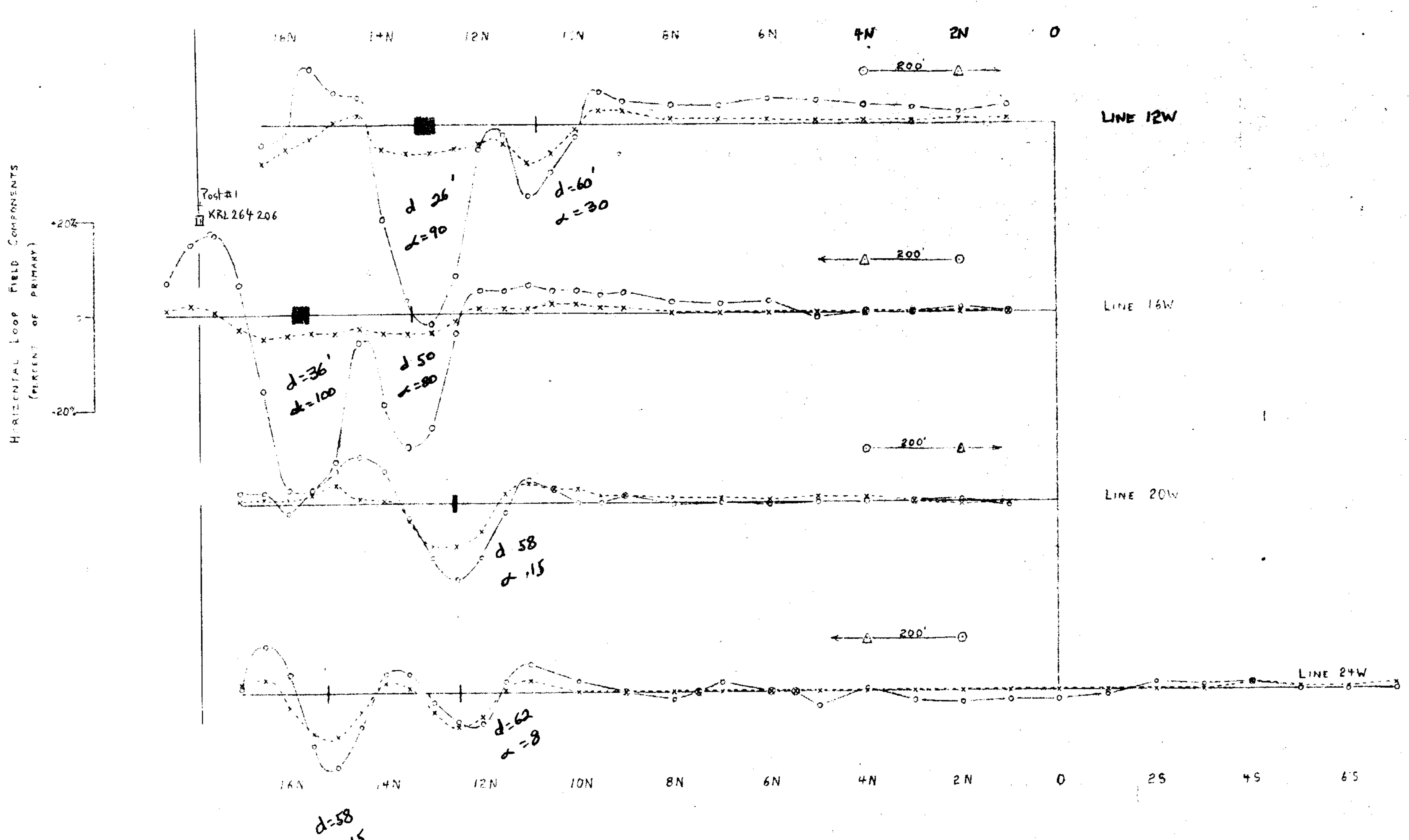
INSTRUMENTS:
- SE-300 VERTICAL LOOP ELECTROMATIC UNITS
- MF-2 FLUXGATE MAGNETOMETER
- RONKA MK IV HORIZONTAL LOOP ELECTROMAGNETIC UNITS (876 Hz)

VERTICAL LOOP CONDUCTORS
- DEFINITE
- POSSIBLE

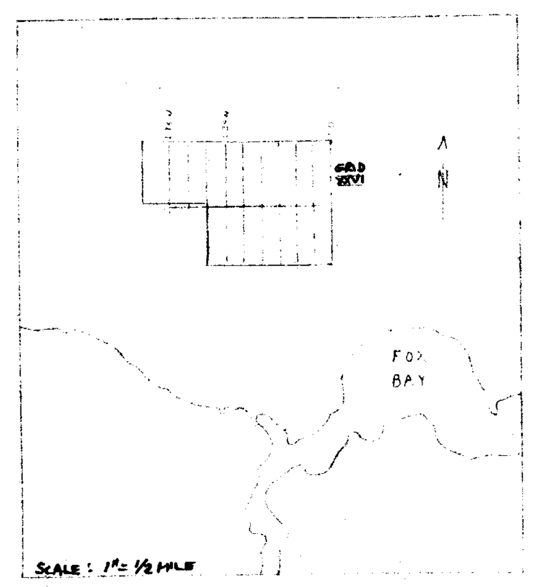
HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

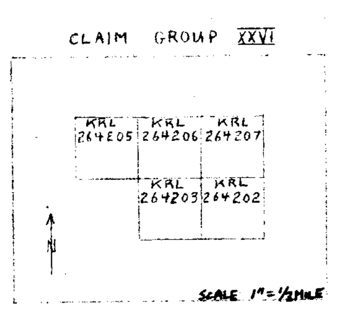
HORIZONTAL LOOP ELECTROMAGNETIC METHOD



LOCATION MAP

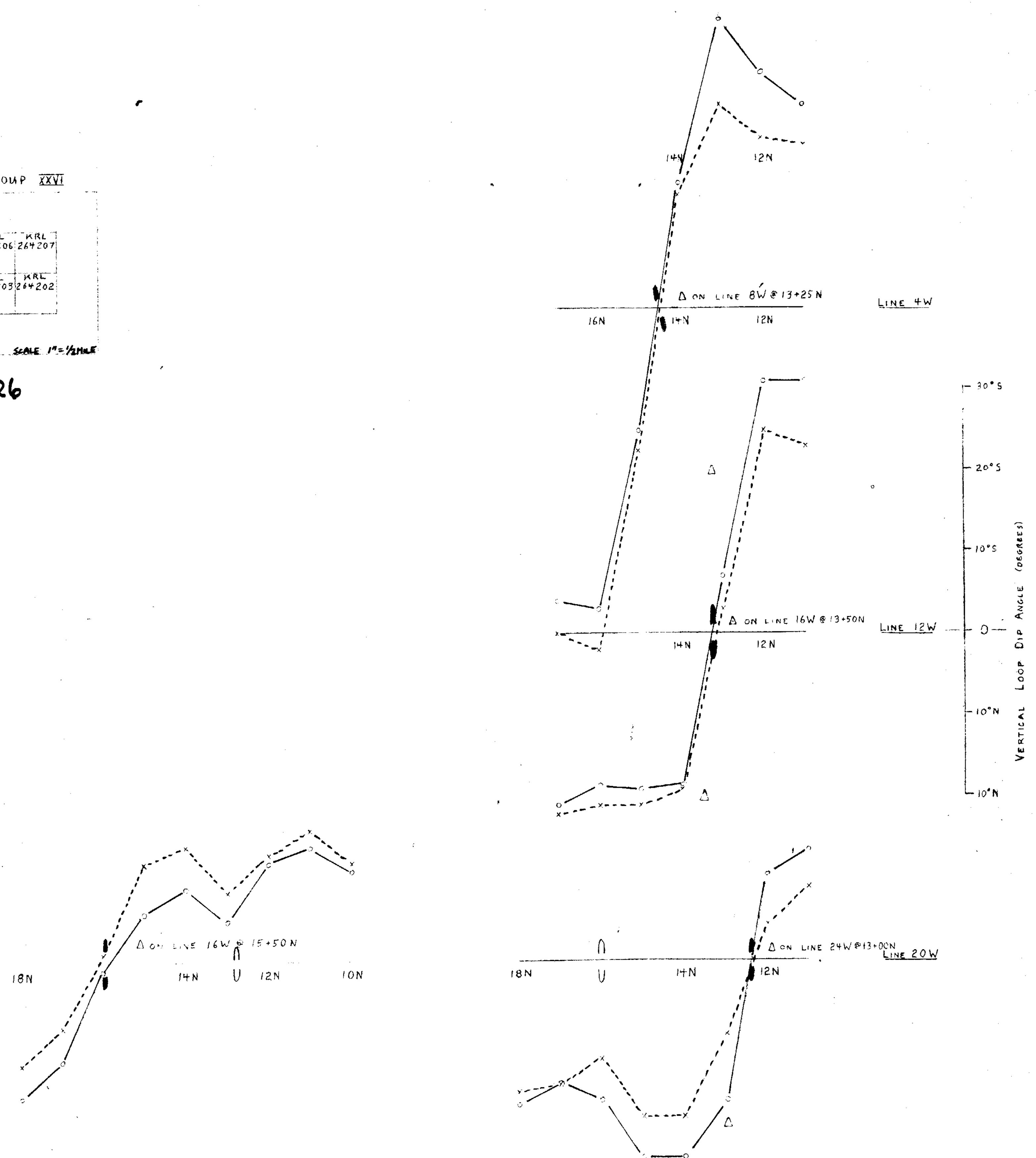


CLAIM GROUP XXVI

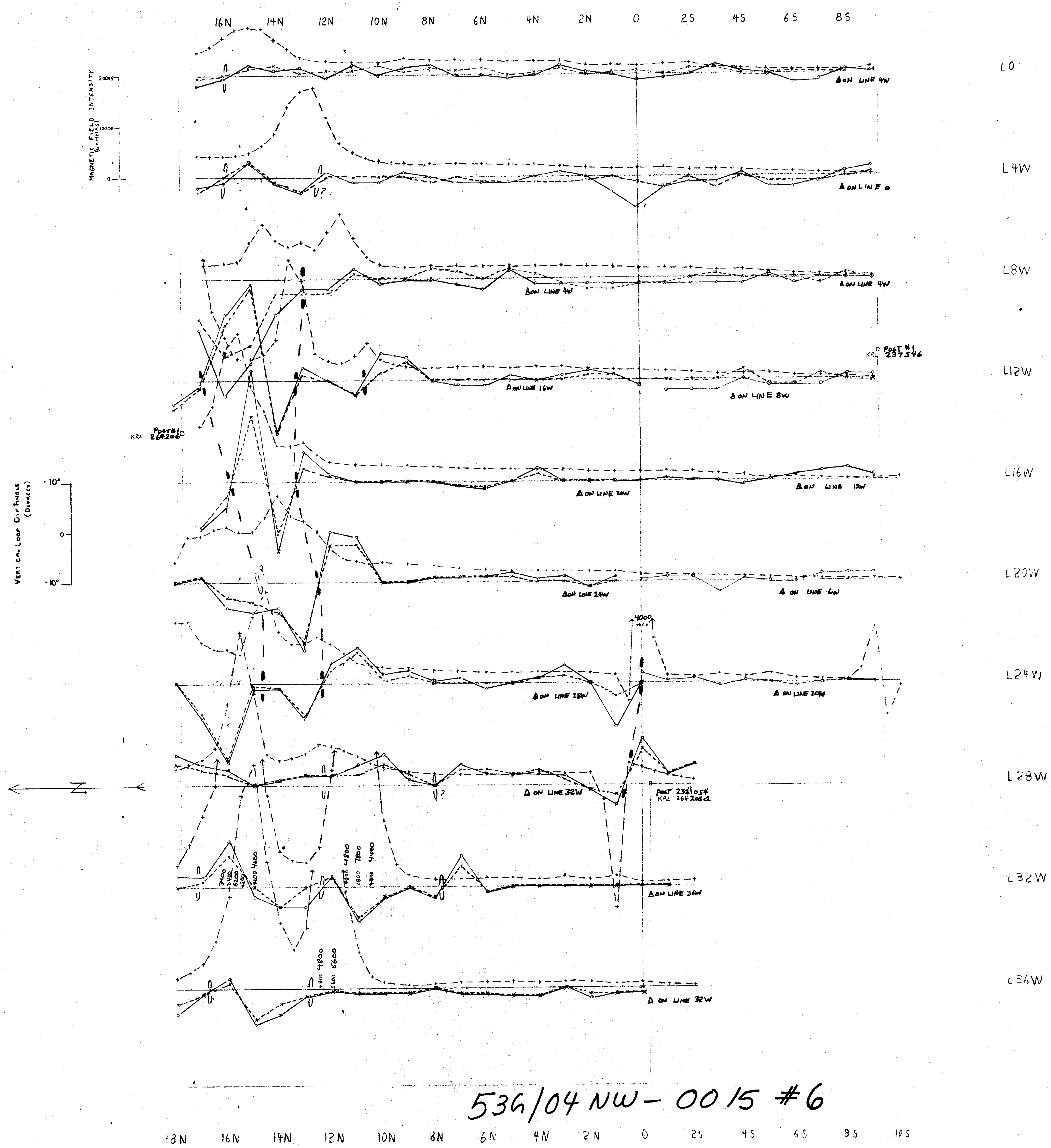


Block # 26

VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION

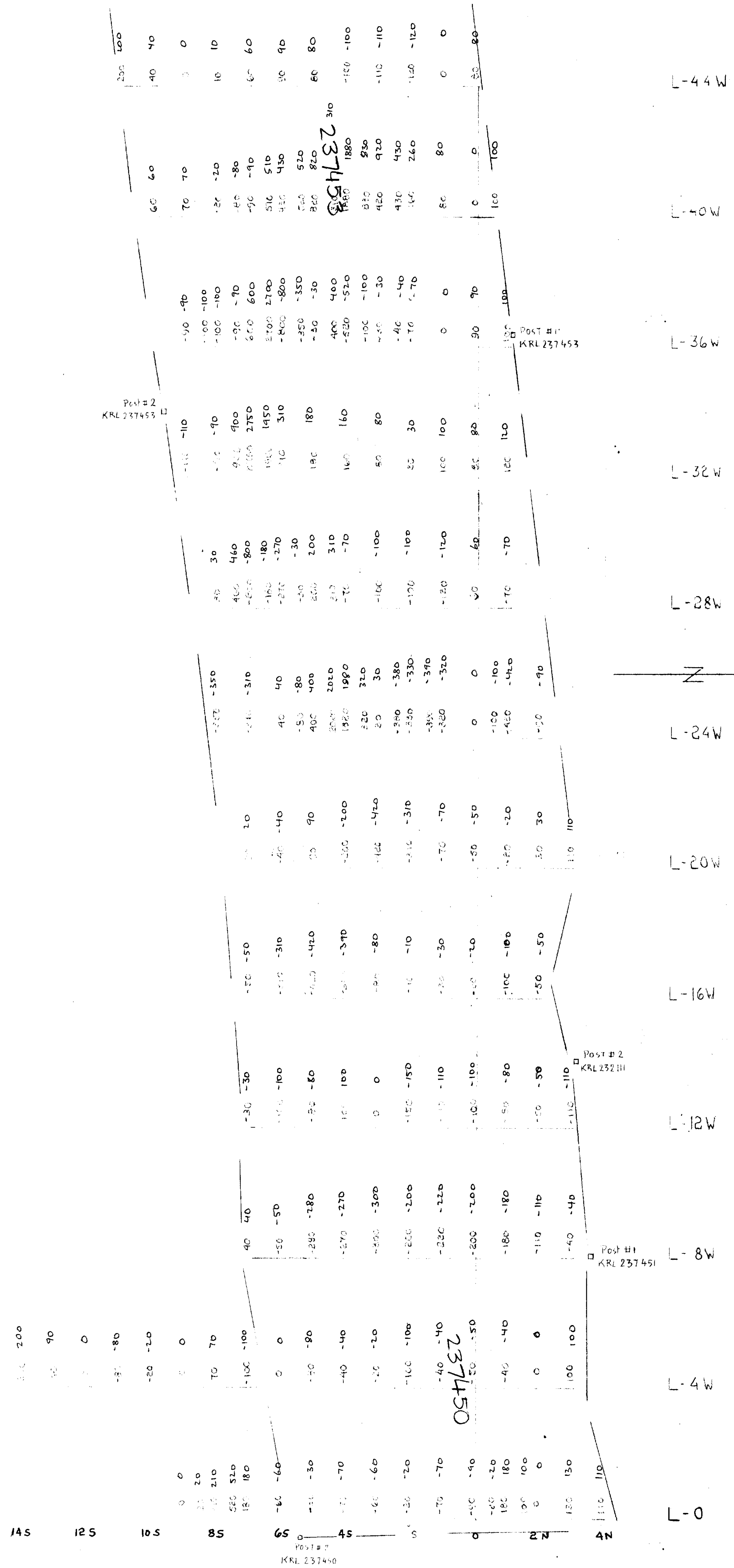


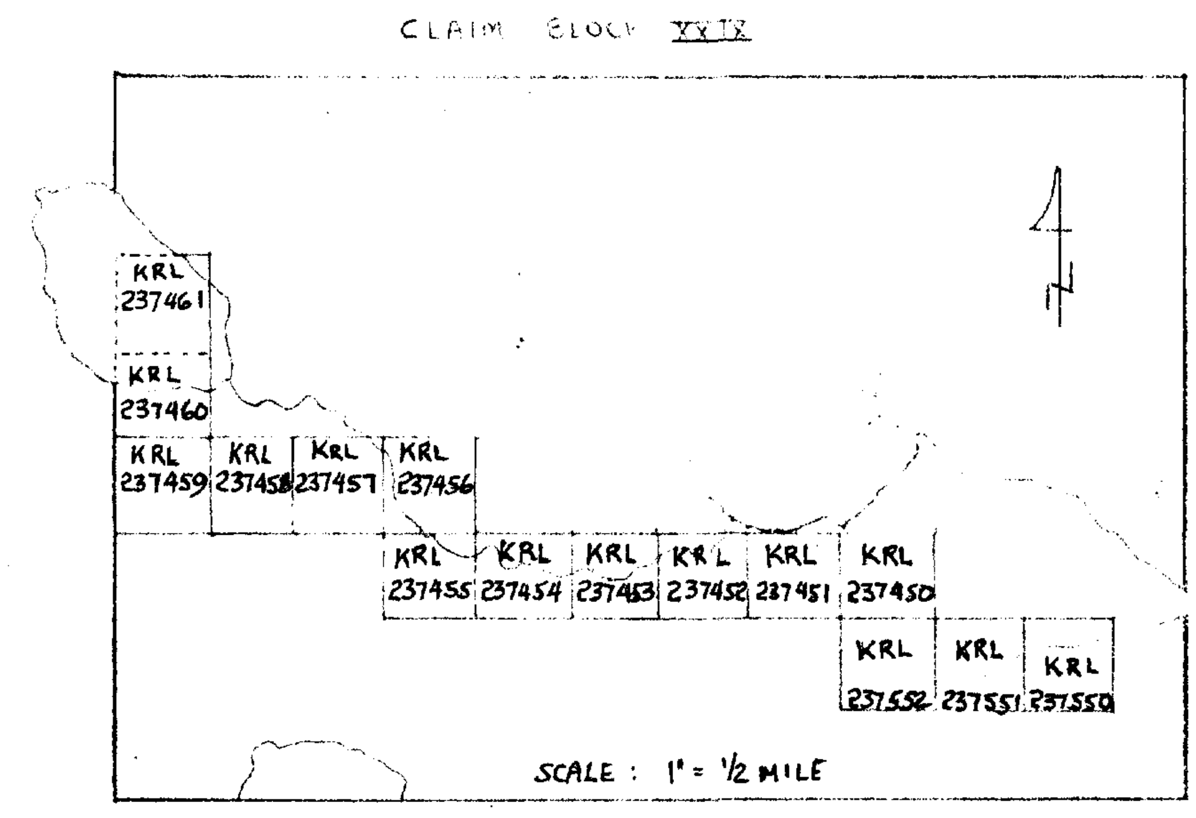
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



536/04 NW - 0015 #6

250





Block # 29

P. HOUGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

GEOTERREX LIMITED	
PROJECT: SEREM LTÉE - MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXIX	SECTION:
SURVEY: MAGNETIC	
SCALES: 1" = 200'	LEGEND:
WORK BY: G. ... PLOT BY: ...	DATE: SEPTEMBER 1970

53G04NW0222 53G04NW0015 NAMAYBIN LAKE 260

53G/04NW-0015 #7

GEOTERREX LIMITED	
PROJECT: SEREM LTEE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXIX	SECTION:
SURVEY: MAGNETIC AND ELECTROMAGNETIC	
SCALES: 1" = 200' ; 1" = 1000 γ ; 1" = 20°	LEGEND: VERTICAL LOOP DIP ANGLE 1600 Hz, 400 Hz; HORIZONTAL LOOP FIELD COMPONENTS IN Phase, QUADRATURE; MAGNETIC FIELD INTENSITY
WORK BY: G.C. R.G. A.S. G.C. / PLOT BY: A.S. B.K.	DATE: SEPTEMBER 1970

INSTRUMENTS: S.E. 300 Vertical Loop Electromagnetic Units
M.F. 2 Fluxgate Magnetometer
RONKA Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

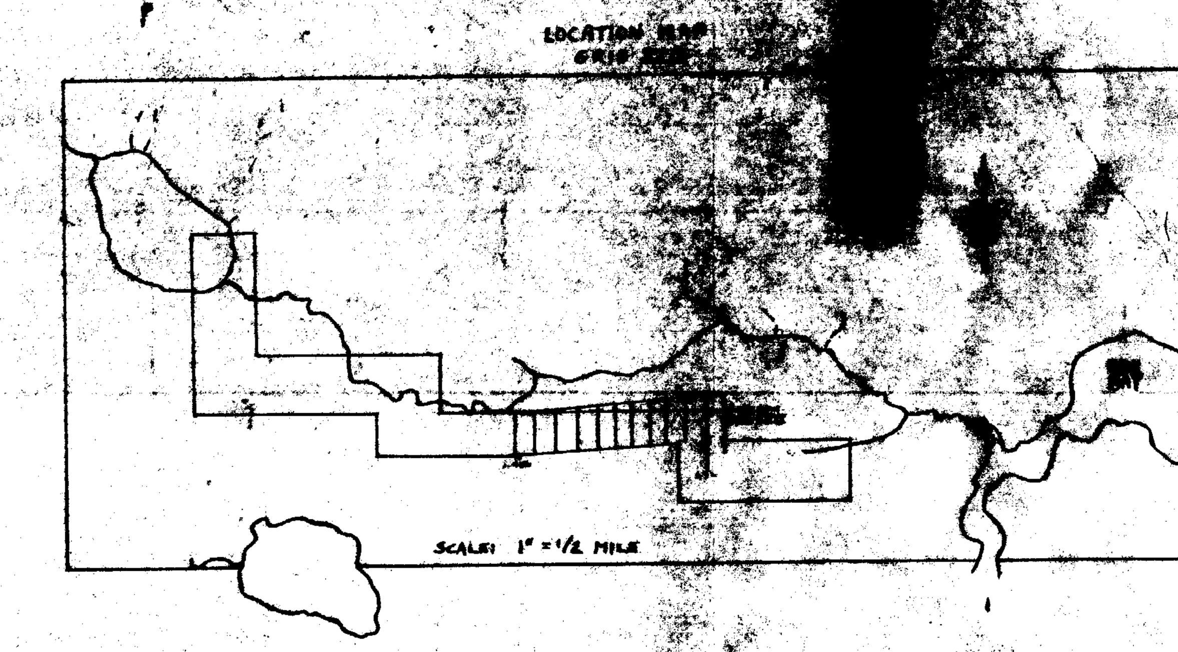
VERTICAL LOOP CONDUCTORS

DEFINITE

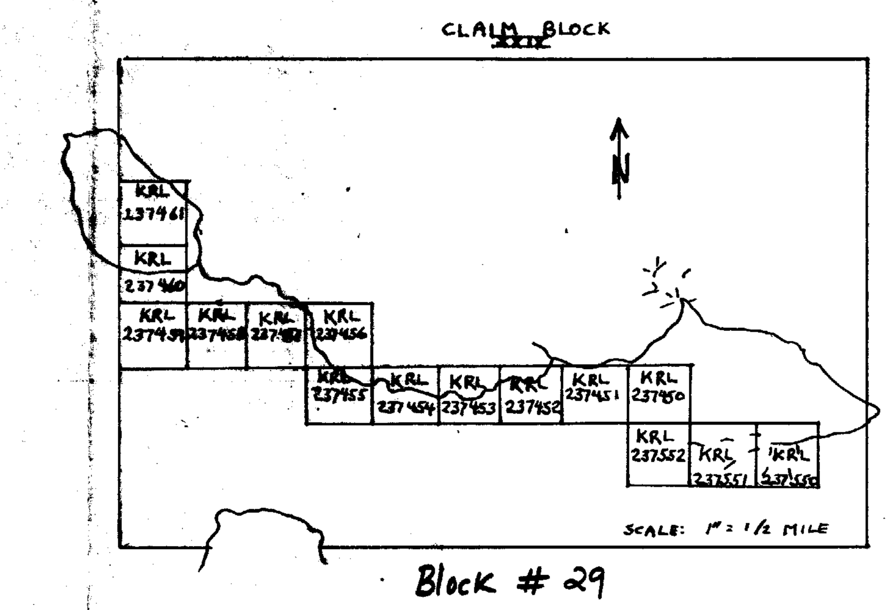
POSSIBLE

HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

LOCATION MAP

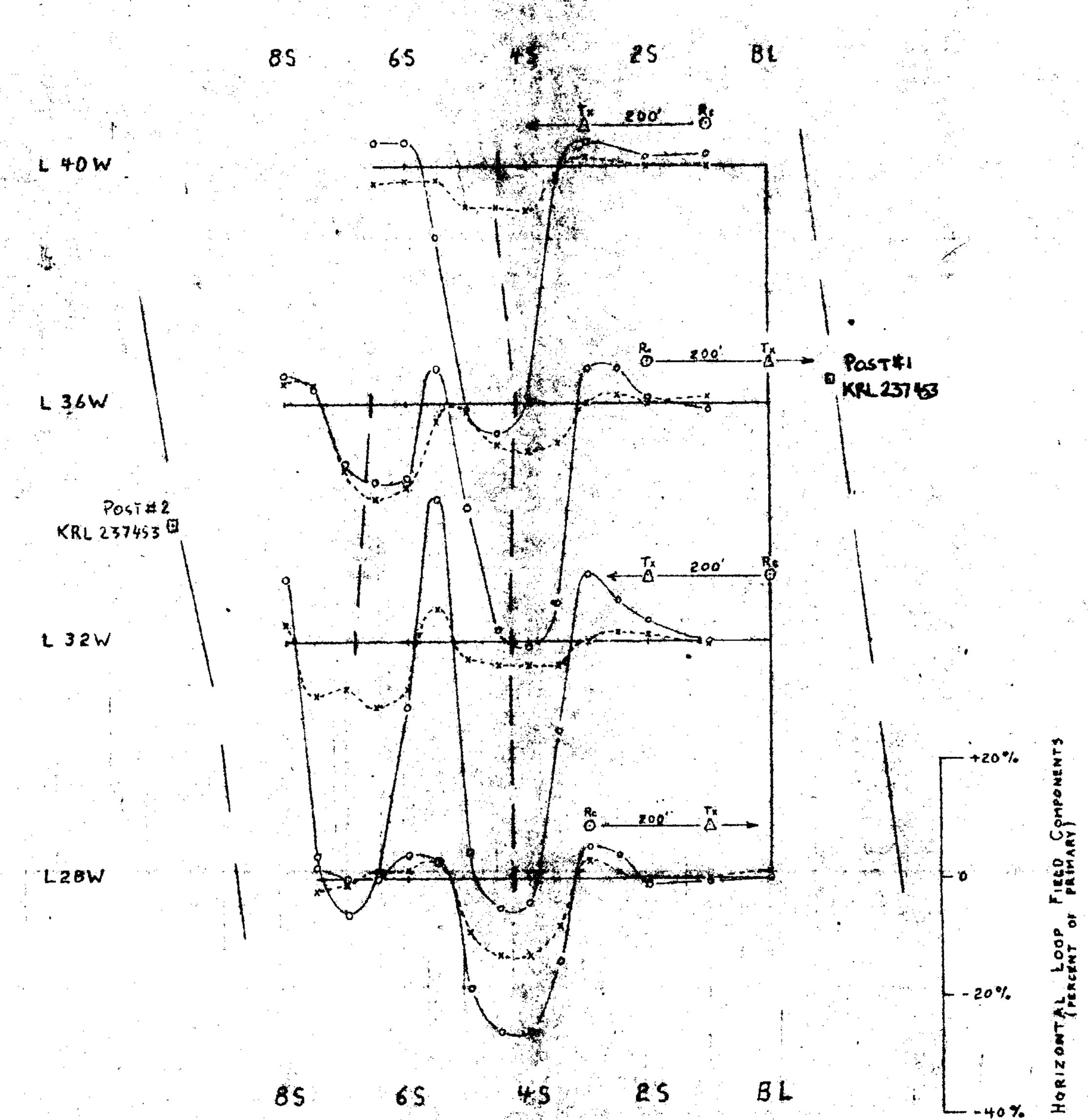


CLAIM BLOCK

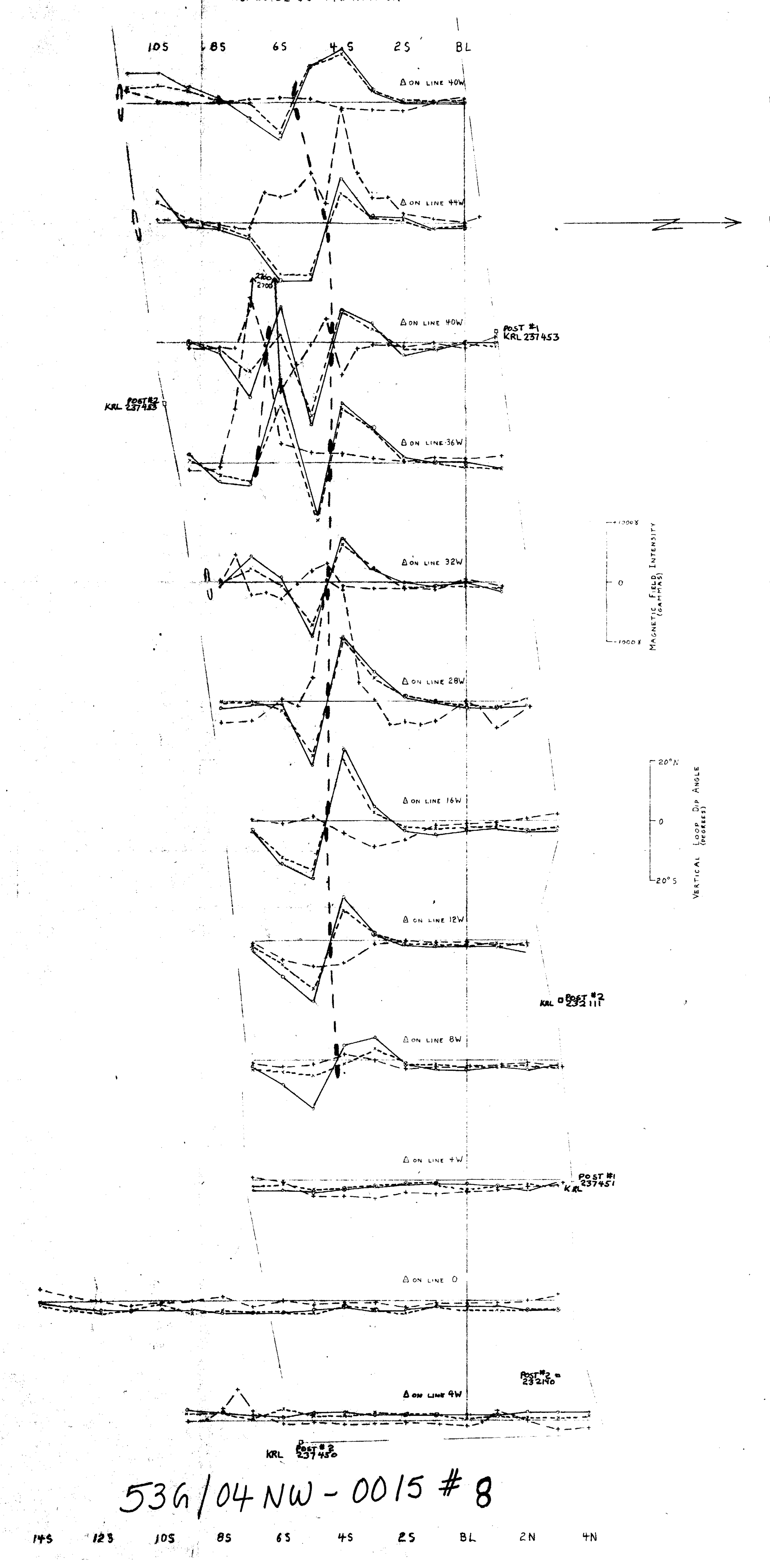


Block # 29

HORIZONTAL LOOP ELECTROMAGNETIC METHOD



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53G/04NW-0015 #8

270

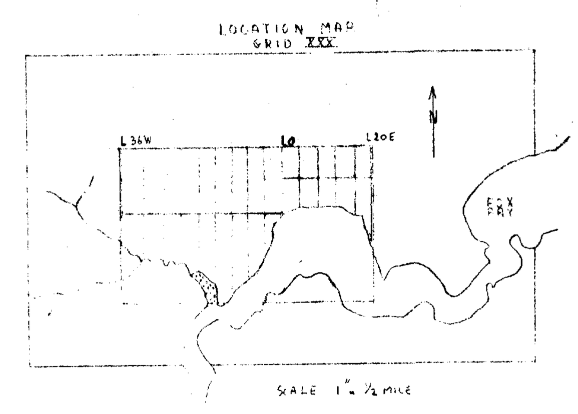
GEOTERREX LIMITED	
PROJECT: SEREM LTEE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXX	SECTION:
SURVEY: MAGNETIC	
SCALES: 1" = 200'	LEGEND: Contour Interval : 500 γ
WORK BY: F.D A.S G.C	PLOT BY: A.S R.G.
DATE: AUGUST 1970	

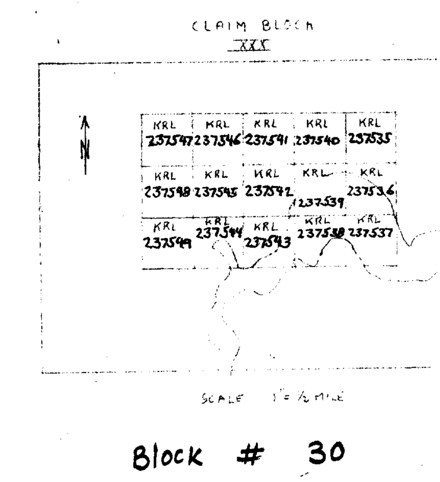
REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

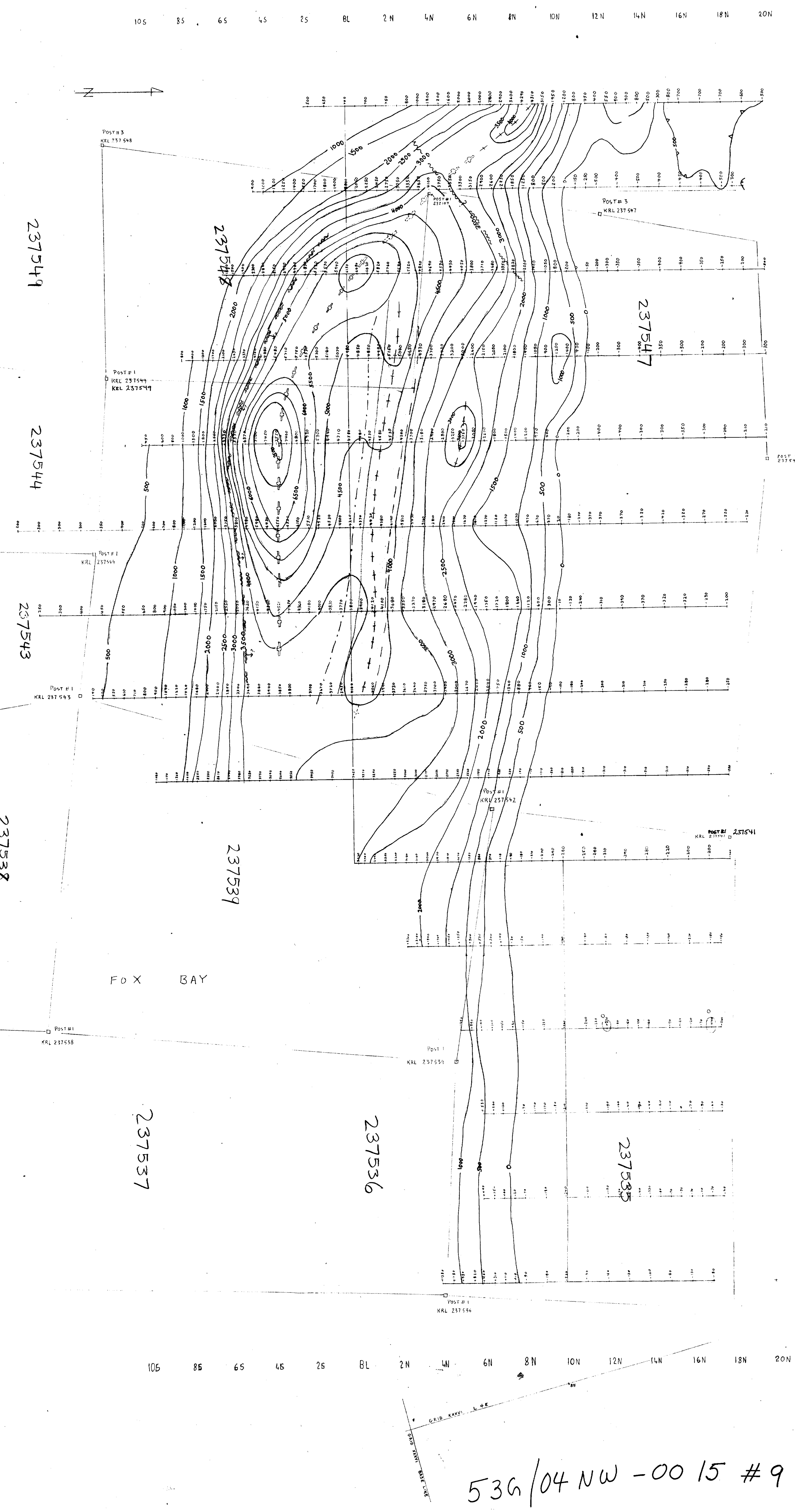
INSTRUMENT MF-2 Fluxgate Magnetometer
M700 Fluxgate Magnetometer

PROBABLE CONTACT OR GEOLOGICAL BOUNDARY
POSSIBLE FAULT
MAJOR MAGNETIC HIGH
MINOR MAGNETIC HIGH
MINOR MAGNETIC LOW
APPROXIMATE WIDTH OF ANOMALY CAUSING BODY

53G/04NW-0015 #9







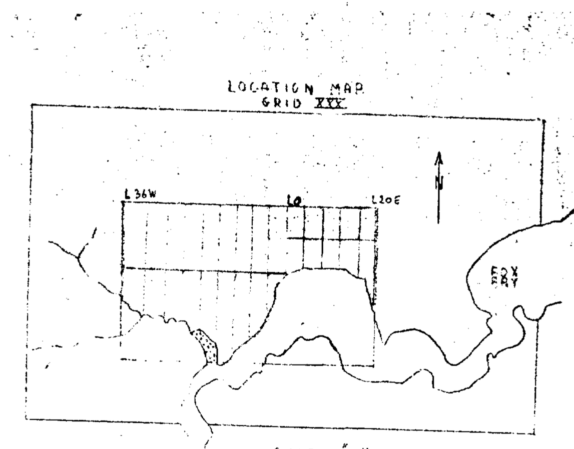
53G/04NW-0015 #9

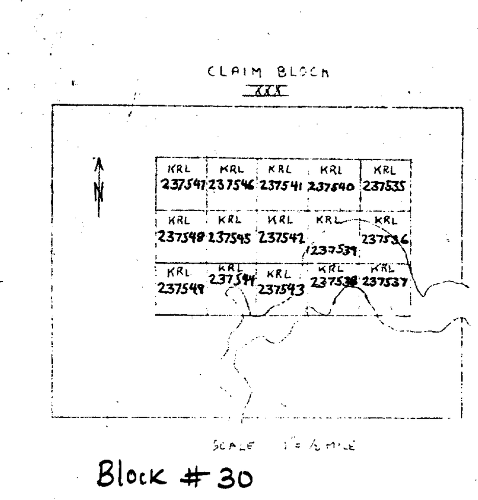
GEOTERREX LIMITED	
PROJECT: SEREM LTEE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXX	SECTION:
SURVEY: MAGNETIC	
SCALES: 1" = 200'	LEGEND: Contour Interval : 500 γ
WORK BY: F.D A.S G.C	PLOT BY: A.S R.G.
DATE: AUGUST 1970	

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

INSTRUMENT MF-2 Fluxgate Magnetometer
M700 Fluxgate Magnetometer

PROBABLE CONTACT OR GEOLOGICAL BOUNDARY
POSSIBLE FAULT
MAJOR MAGNETIC HIGH
MINOR MAGNETIC HIGH
MINOR MAGNETIC LOW
APPROXIMATE WIDTH OF ANOMALY CAUSING BODY





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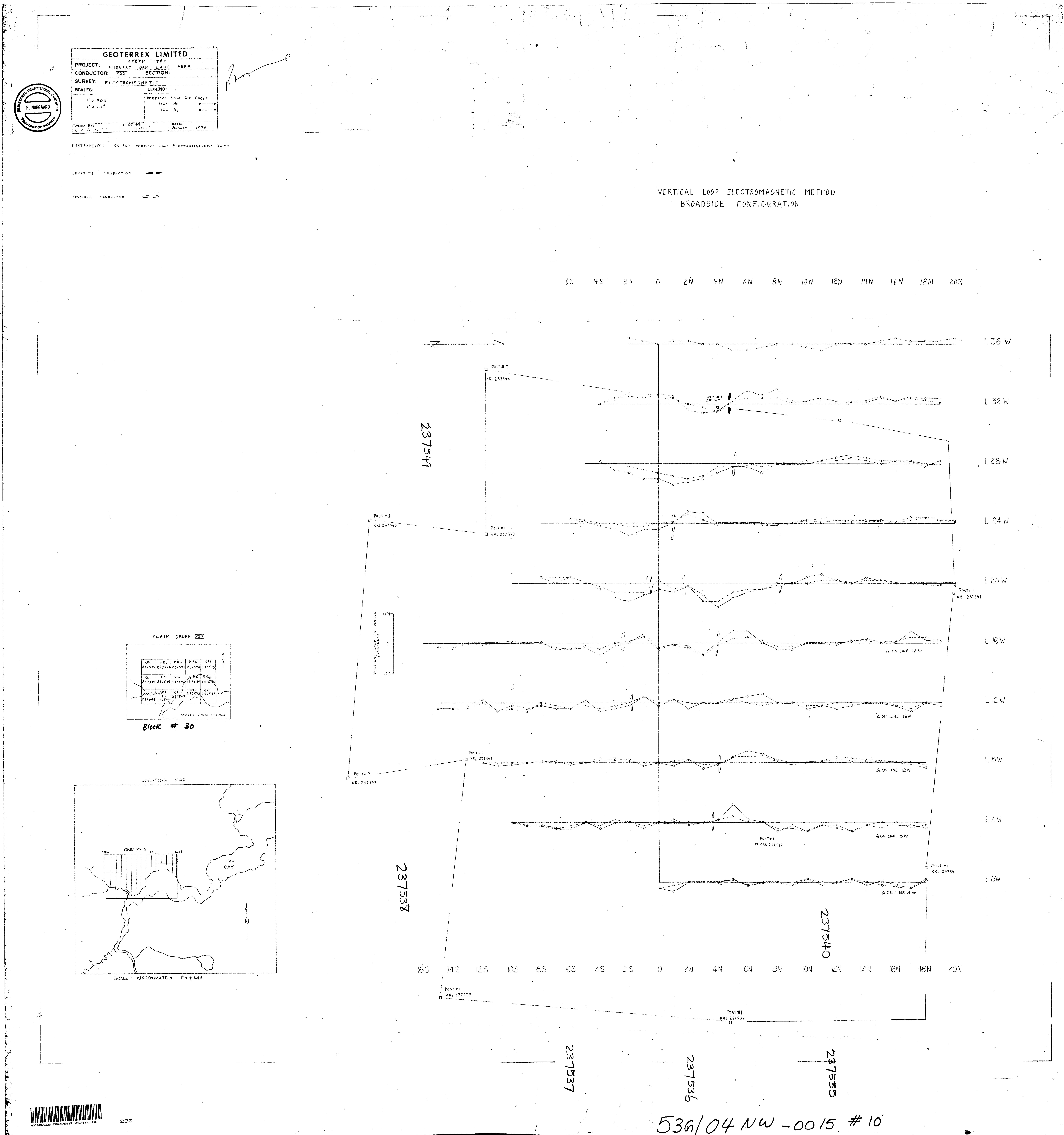

GEOTERREX LIMITED
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: XXX SECTION:
SURVEY: ELECTROMAGNETIC
SCALES: 1" = 200' 1" = 10°
LEGEND: VERTICAL LOOP DIP ANGLE 1600 Hz o——o 400 Hz x----x
WORK BY:
PLOT BY:
DATE: AUGUST 1970
P. NORGAARD
INSTRUMENT: SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
DEFINITE CONDUCTOR
POSSIBLE CONDUCTOR
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION
6S 4S 2S 0 2N 4N 6N 8N 10N 12N 14N 16N 18N 20N
L 36 W
L 32 W
L 28 W
L 24 W
L 20 W
L 16 W
L 12 W
L 8 W
L 4 W
L 0 W
VERTICAL LOOP DIP ANGLE (DEGREES)
POST # 3 KRL 237548
POST # 2 KRL 237545
POST #1 KRL 237549
POST #1 KRL 237547
POST #1 KRL 237543
POST #1 KRL 237542
POST #1 KRL 237541
POST #1 KRL 237538
POST #1 KRL 237539
ON LINE 12 W
ON LINE 16W
ON LINE 12 W
ON LINE 8W
ON LINE 4 W
237549
237538
237540
237537
237536
237535
16S 14S 12S 10S 8S 6S 4S 2S 0 2N 4N 6N 8N 10N 12N 14N 16N 18N 20N
CLAIM GROUP XXX
KRL 237547 KRL 237546 KRL 237541 KRL 237540 KRL 237535
KRL 237548 KRL 237545 KRL 237542 KRL 237539 KRL 237536
KRL 237549 KRL 237544 KRL 237543 KRL 237538 KRL 237537
Block # 30
LOCATION MAP
GRID XXX
FOX BAY
SCALE: APPROXIMATELY 1" = ½ MILE
53G/04NW-0015 #10
290

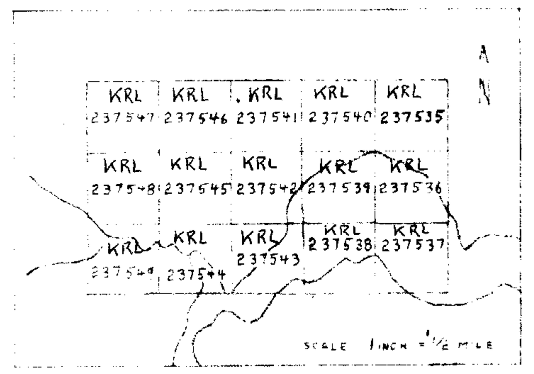
GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXX	SECTION:
SURVEY: VERTICAL LOOP ELECTROMAGNETIC	
SCALES: 1" = 200' 1" = 10°	LEGEND: VERTICAL LOOP DIP ANGLE HIGH FREQUENCY LOW FREQUENCY
WORK BY: C.N. A.I. PLOT BY: B.K.	DATE: SEPTEMBER 1970

INSTRUMENTS: McPHAR SS15 VERTICAL LOOP ELECTROMAGNETIC UNITS
SCINTREX SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS

P. Norgaard

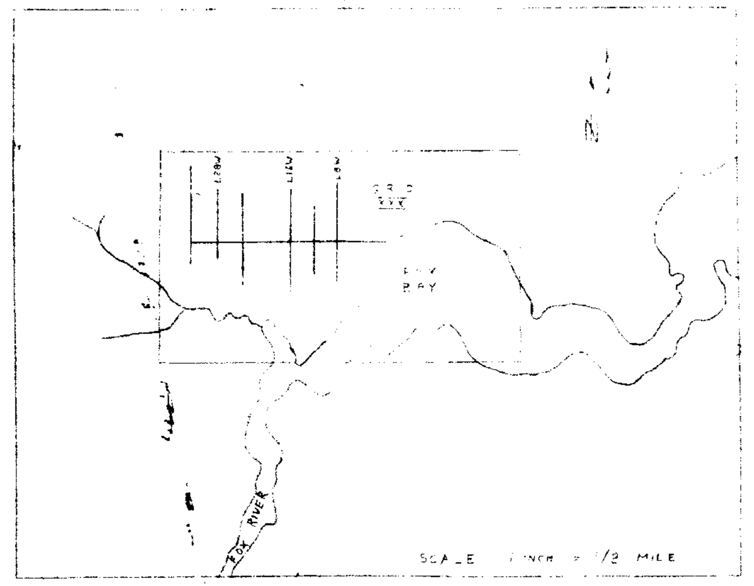
REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

CLAIM GROUP XXX

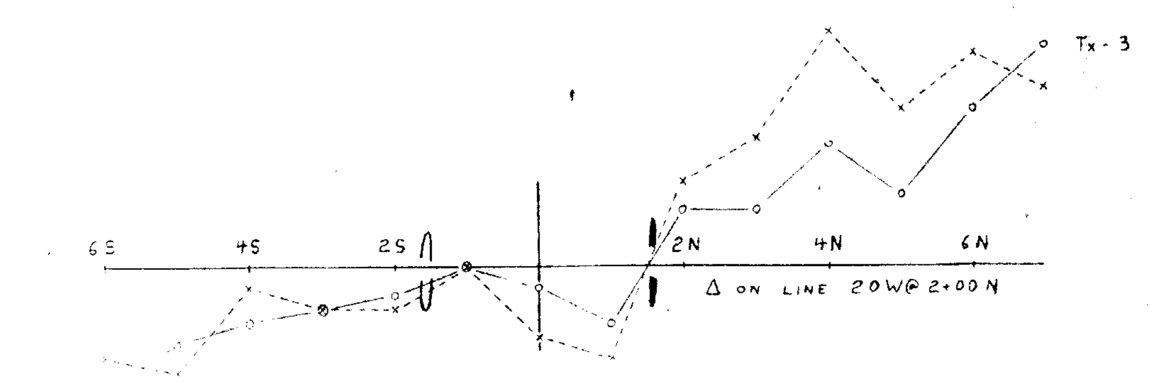


Block # 30

LOCATION MAP

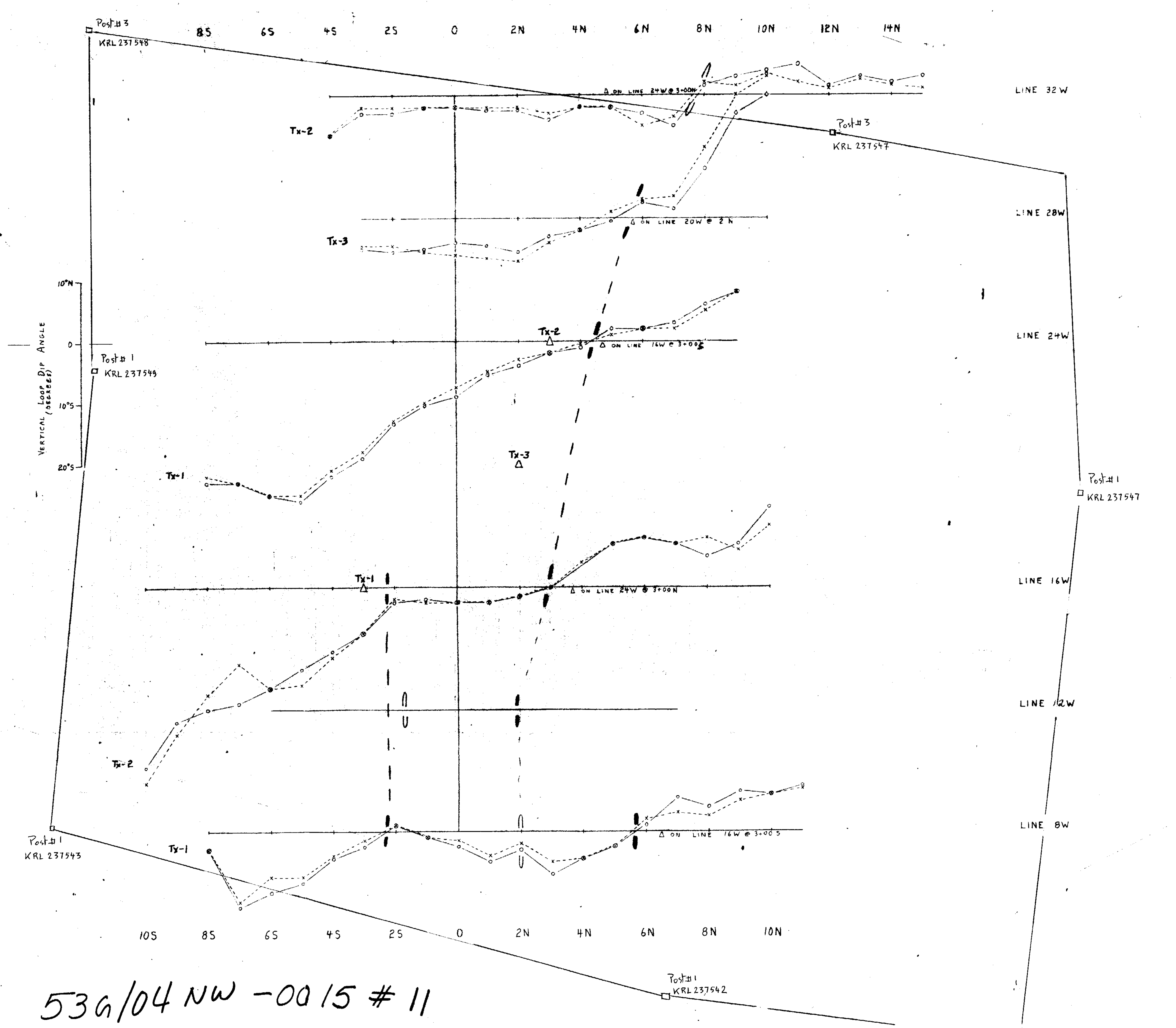


INSTRUMENT: SCINTREX SE 300 FREQUENCIES: 1600 Hz & 400 Hz



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION
800 FEET SEPARATION

INSTRUMENT: McPHAR SS15 FREQUENCIES: 5000 Hz & 1000 Hz

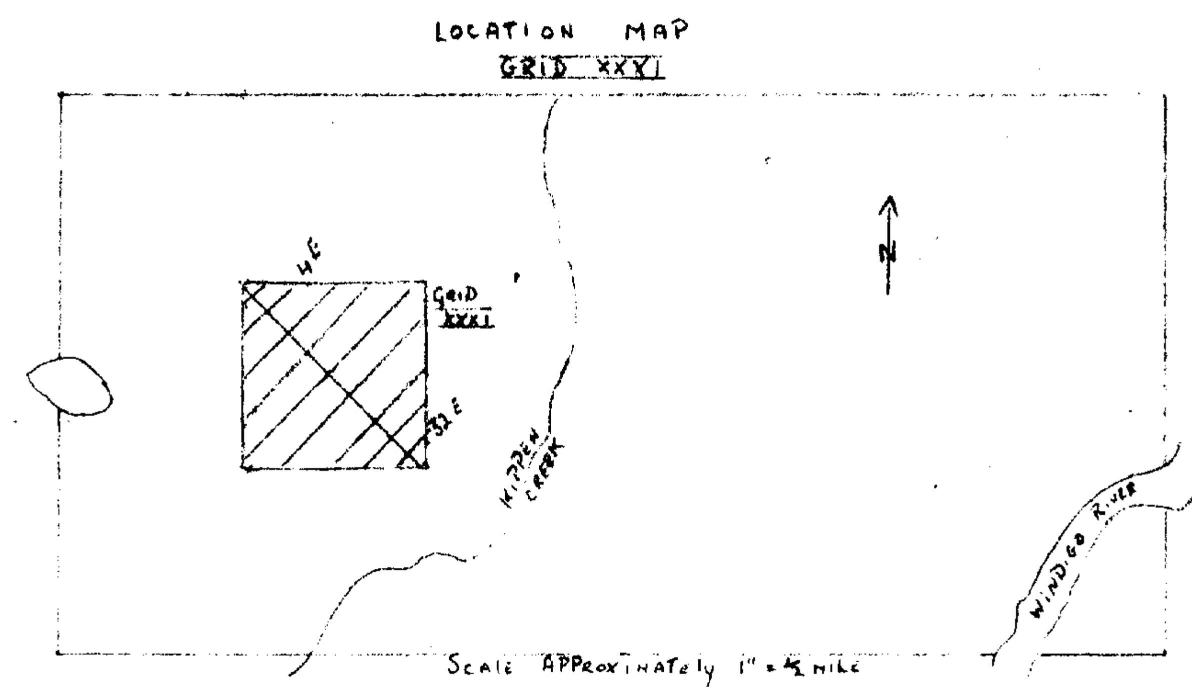


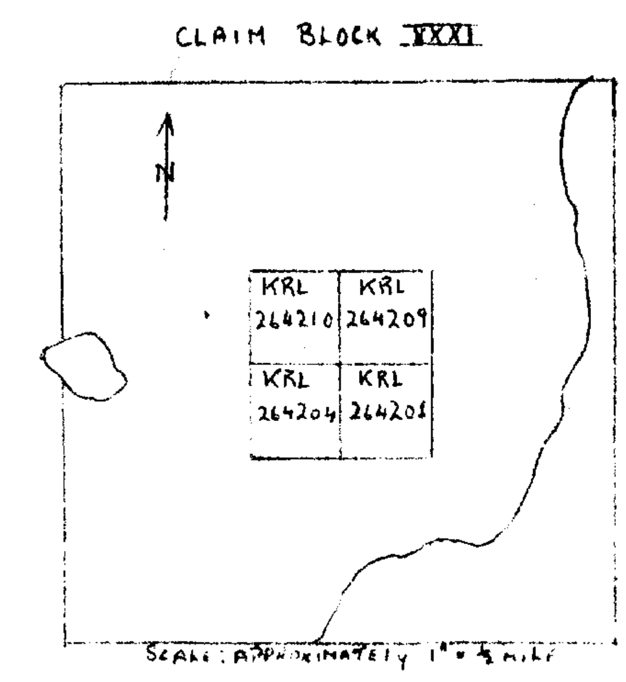
53G/04 NW -0015 # 11

300

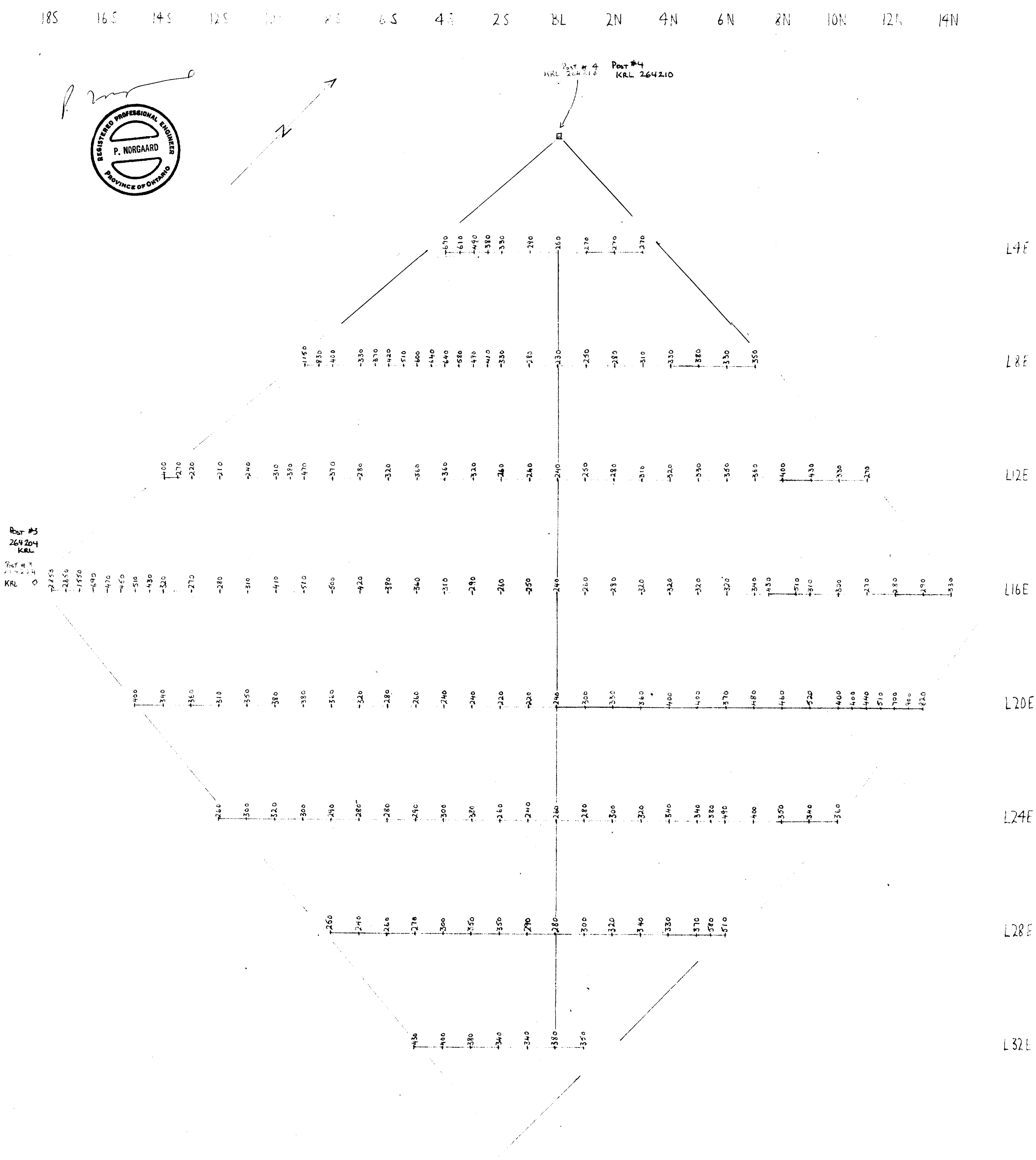
GEOTERREX LIMITED	
PROJECT:	SERLM LTÉE MUSTRAT DAM LAKE AREA
CONDUCTOR: XXXI	SECTION:
SURVEY:	MAGNETIC
SCALES: 1" = 200 FEET; VERTICAL MAGNETIC FIELD READINGS IN GAMMAS	LEGEND:
WORK BY:	PLOT BY C K DATE: SEPT 1970

INSTRUMENT: MF-2 FLUXGATE MAGNETOMETER





Block # 31



53G/04NW-0015 #12

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

310

18S 16S 14S 12S 10S 8S 6S 4S 2S BL 2N 4N 6N 8N 10N 12N 14N

GEOTERREX LIMITED	
PROJECT: MUSKRAT DAM LAKE AREA (SEREM LTEE)	
CONDUCTOR: XXXI	SECTION:
SURVEY: MAGNETIC AND ELECTRO MAGNETIC	
SCALES: 1" = 200'; 1" = 500 γ; 1" = 10°; 1" = 10%	LEGEND: Vertical Loop Dip Angle 1800 Hz o——o; 400 Hz x– – –x; Magnetic Field Intensity +— —+; HORIZONTAL LOOP FIELD COMPONENTS IN PHASE O—O; QUADRATURE x– – –x
WORK BY: R.G. A.S. G.C.	PLOT BY: G.C. R.G. — DATE: AUGUST 1970

INSTRUMENTS: SE-300 Vertical Loop Electromagnetic Units
MF-2 Fluxgate Magnetometers
RONKA MARK IV HORIZONTAL LOOP ELECTROMAGNETIC UNITS (876 Hz)

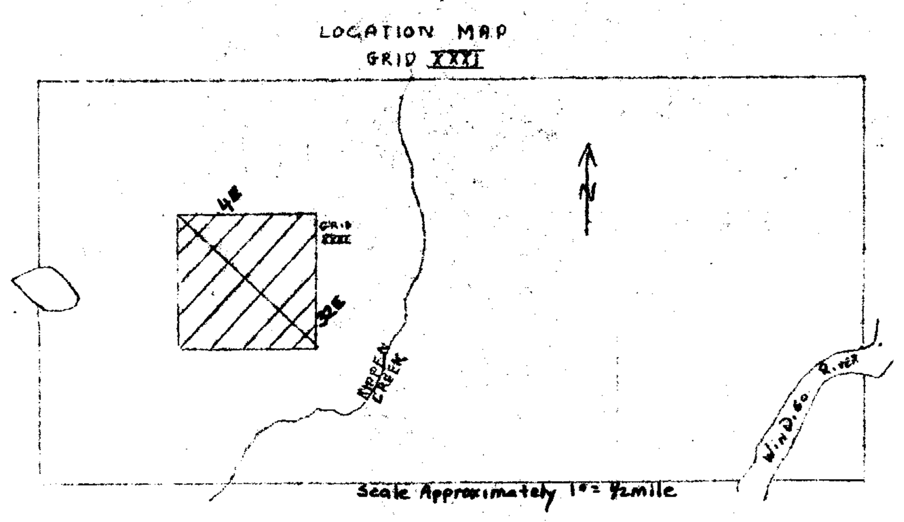
DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

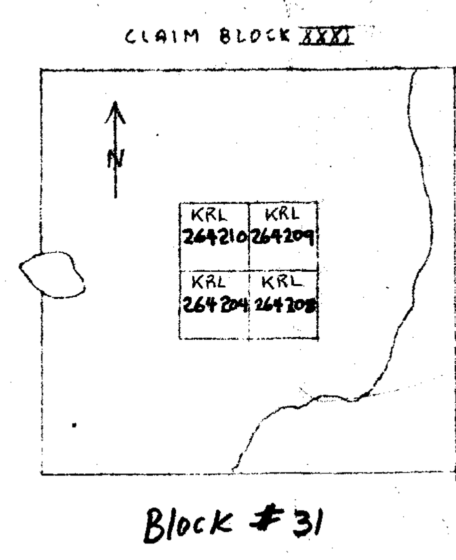
HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

LOCATION MAP
GRID XXXI

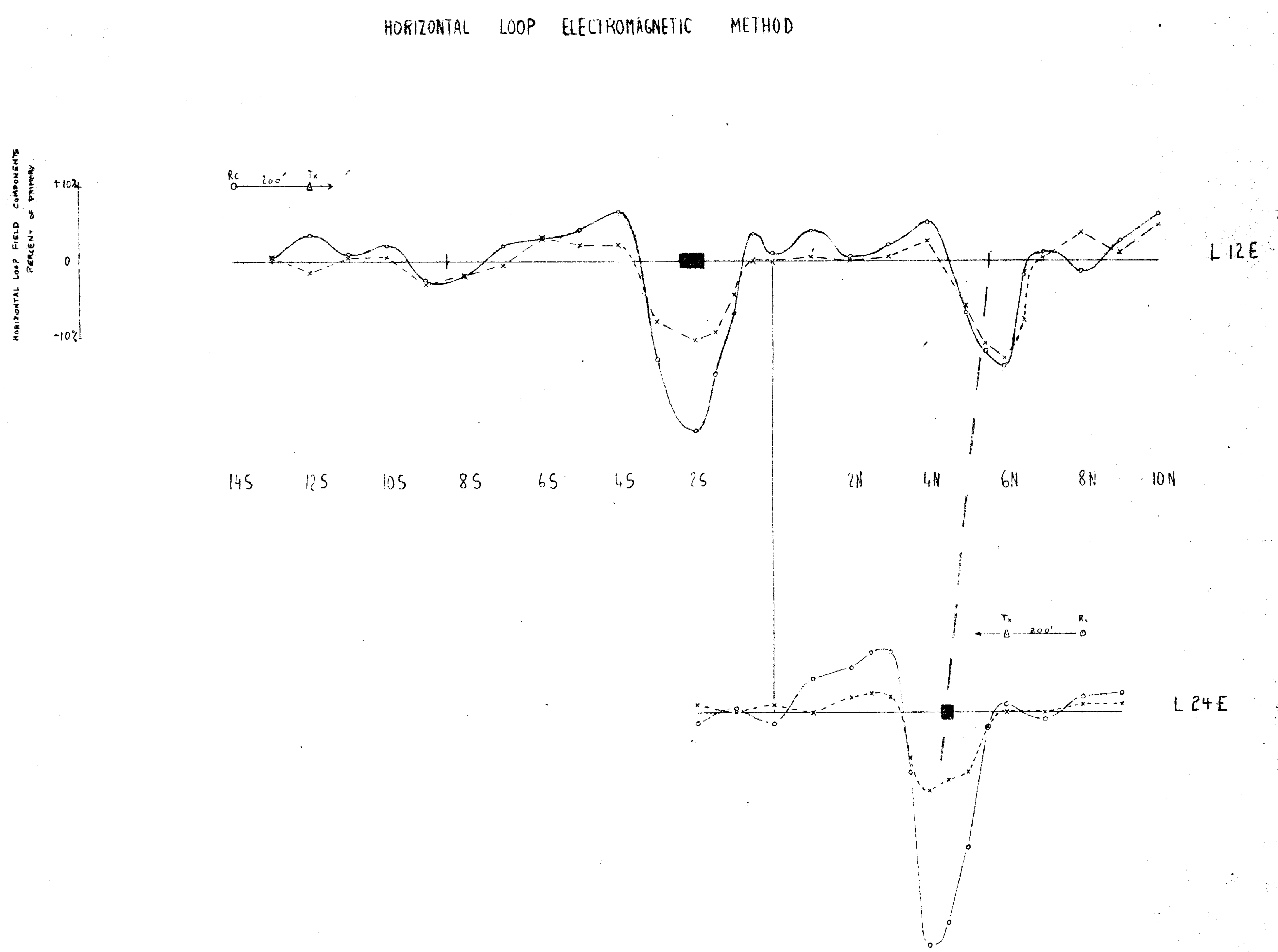


CLAIM BLOCK XXXI

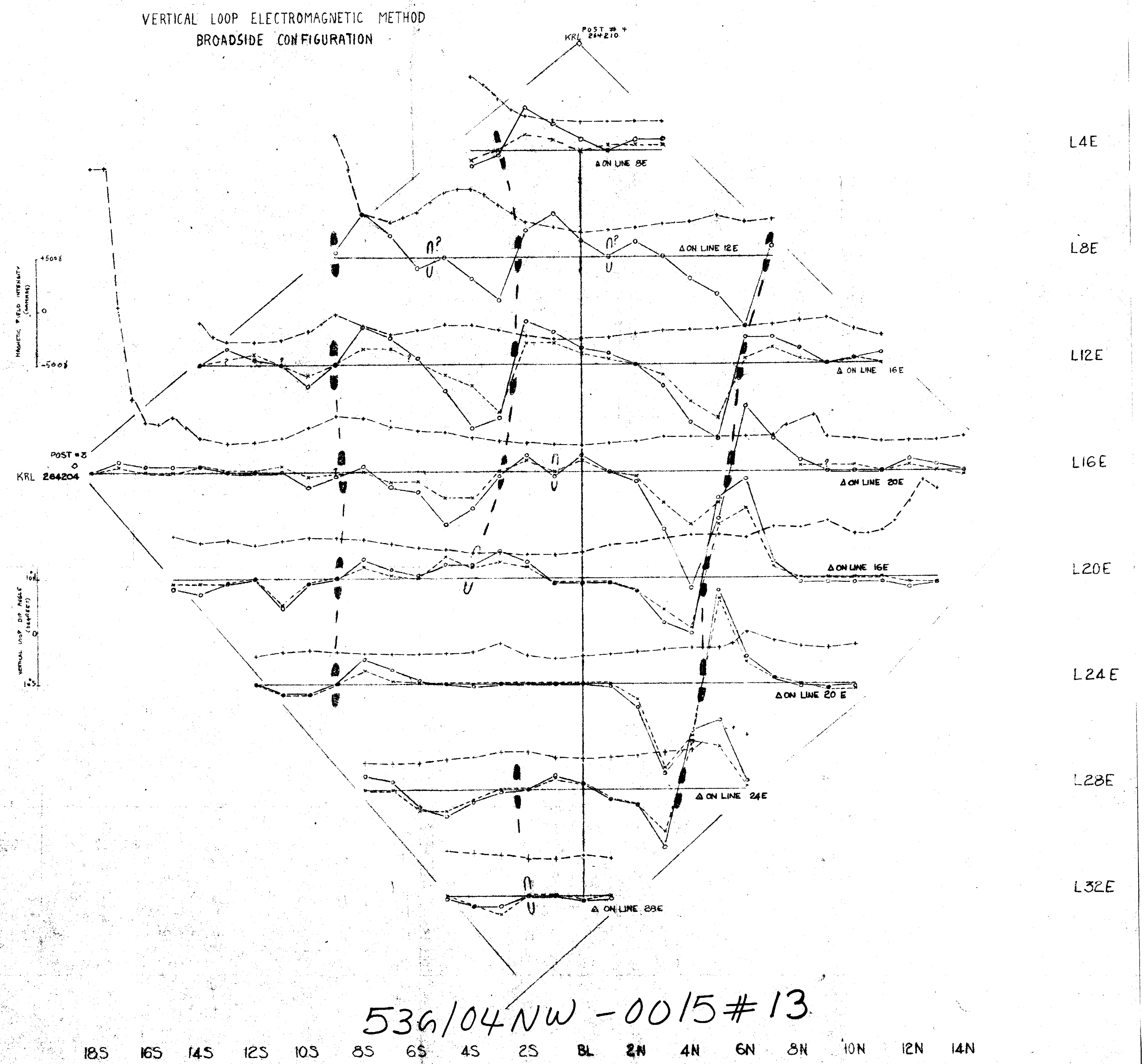


Block # 31

HORIZONTAL LOOP ELECTROMAGNETIC METHOD

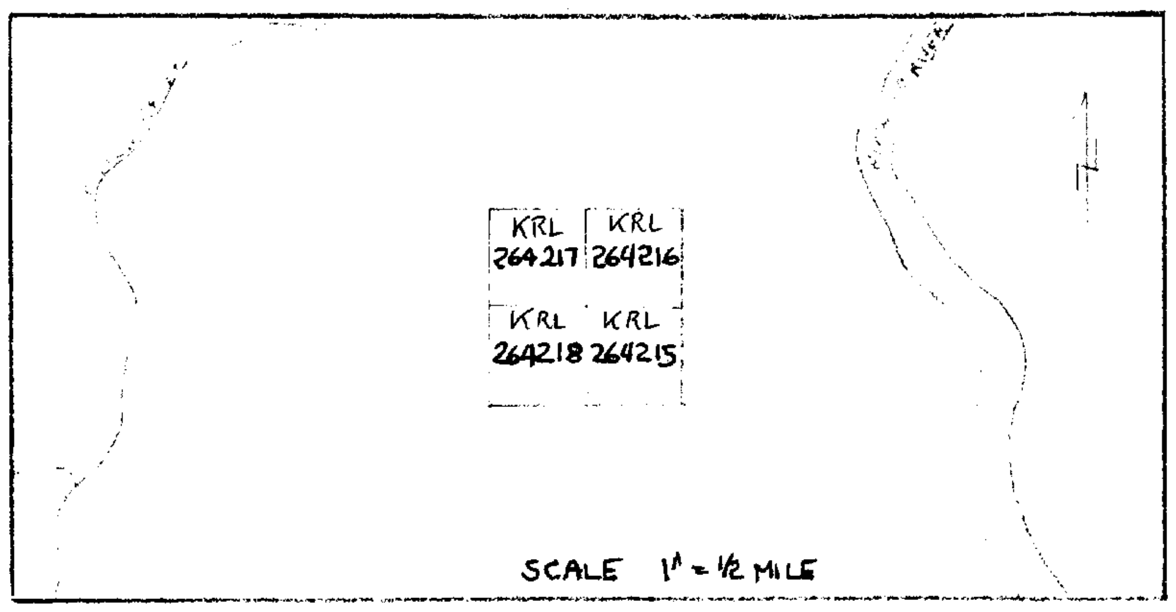


VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION

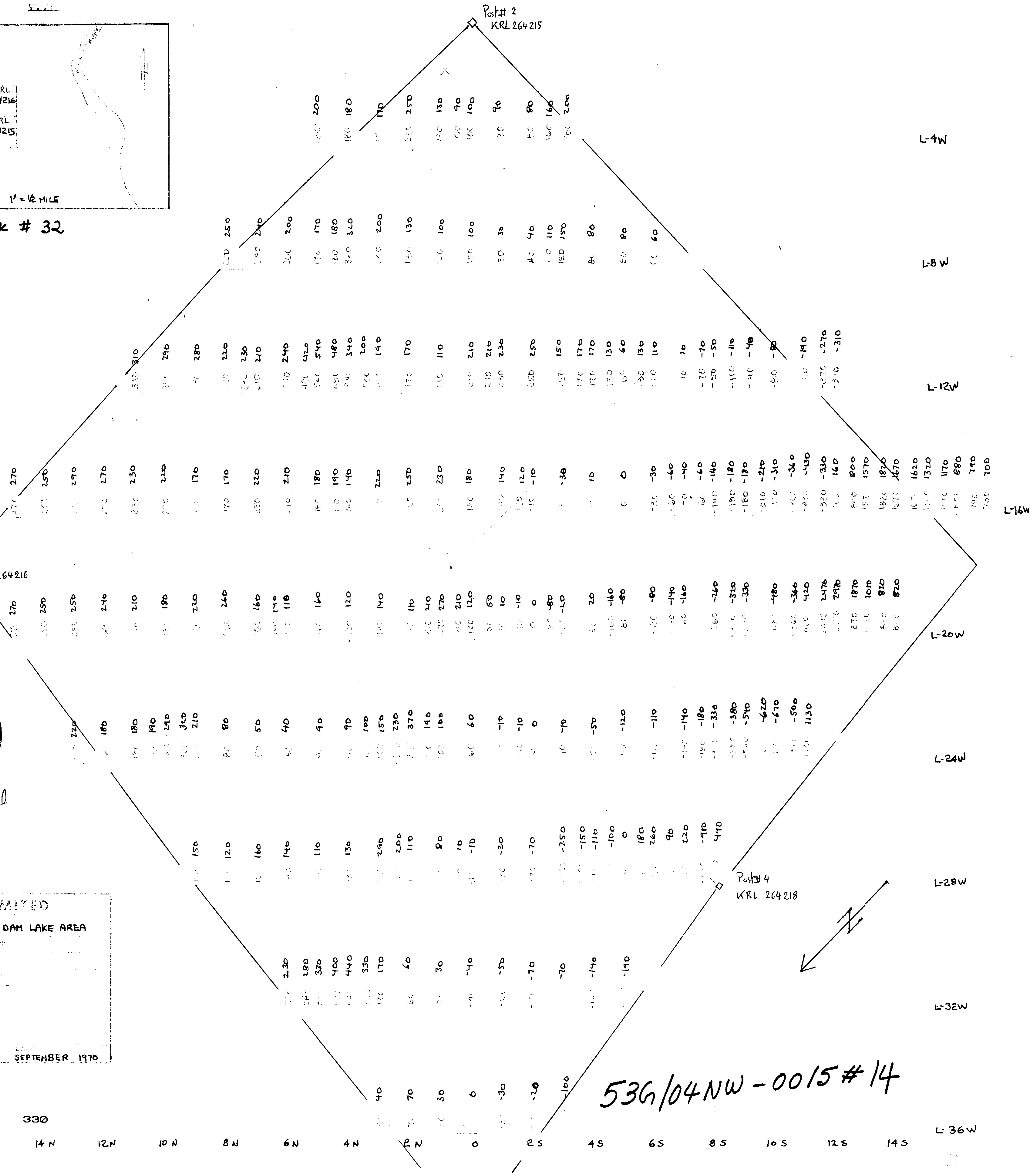


536/04NW-0015#13

320



Block # 32



REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

GEOTERREX LIMITED

SEREM LTÉE - MUSKRAT DAM LAKE AREA

XXXII

MAGNETIC

1" = 200'

SEPTEMBER 1970

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

330

53G/04NW-0015 #14

GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XXXII	SECTION:
SURVEY: ELECTROMAGNETIC AND MAGNETIC	
SCALES: 1" = 200' 1" = 10° 1" = 20% 1" = 1000γ	LEGEND: Vertical Loop Dip Angle 1600 Hz o——o 400 Hz x----x Horizontal Loop Field Components In Phase o——o Quadrature x----x Magnetic Field Intensity +——+
WORK BY: A.J. C.N. G.C. R.G.	PLOT BY: G.C. B.K. DATE: SEPTEMBER 1970

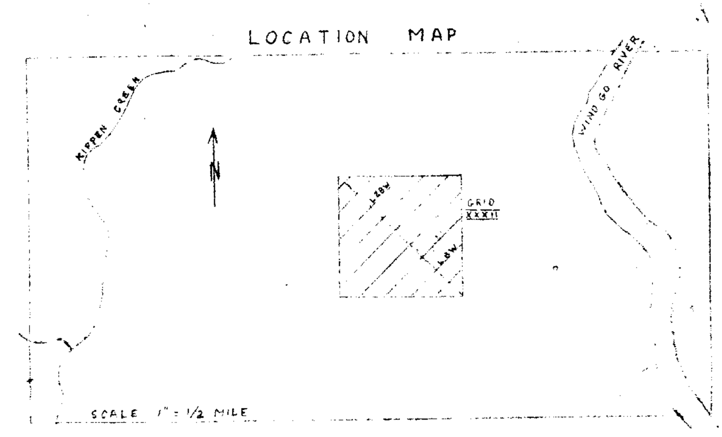
INSTRUMENTS: SE 300 Vertical Loop Electromagnetic Units
Ronka Mark IV Horizontal Loop Electromagnetic Units (876 Hz)
MF-2 Fluxgate Magnetometer

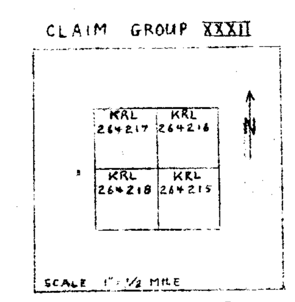
Vertical Loop Definite Conductor

Possible Conductor

Horizontal Loop Definite Conductor (Conductor width shown to scale)

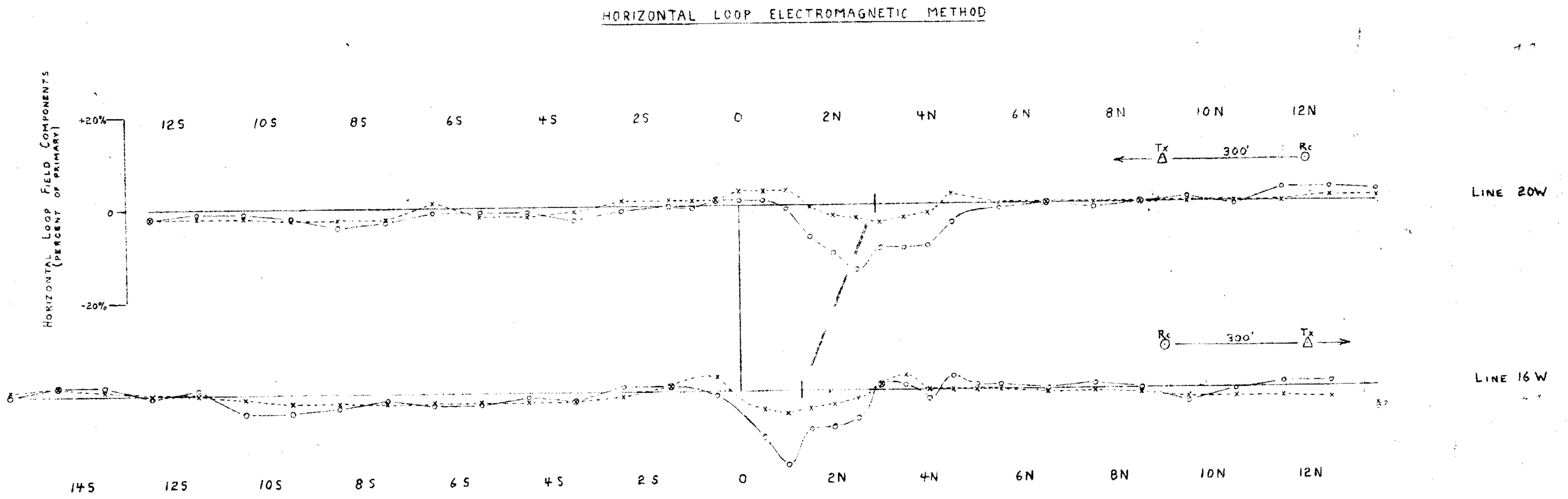
P. NORGAARD



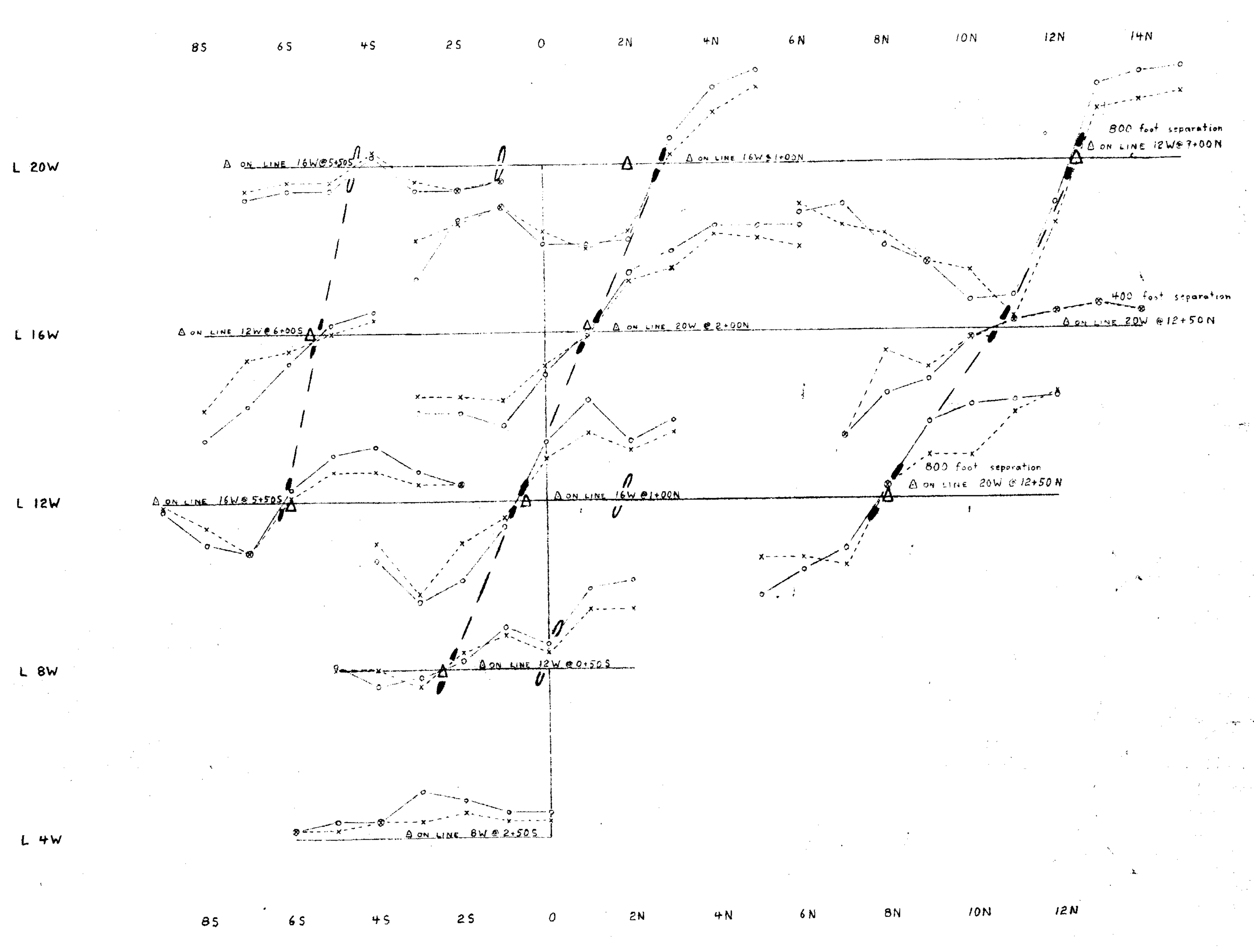


Block # 32

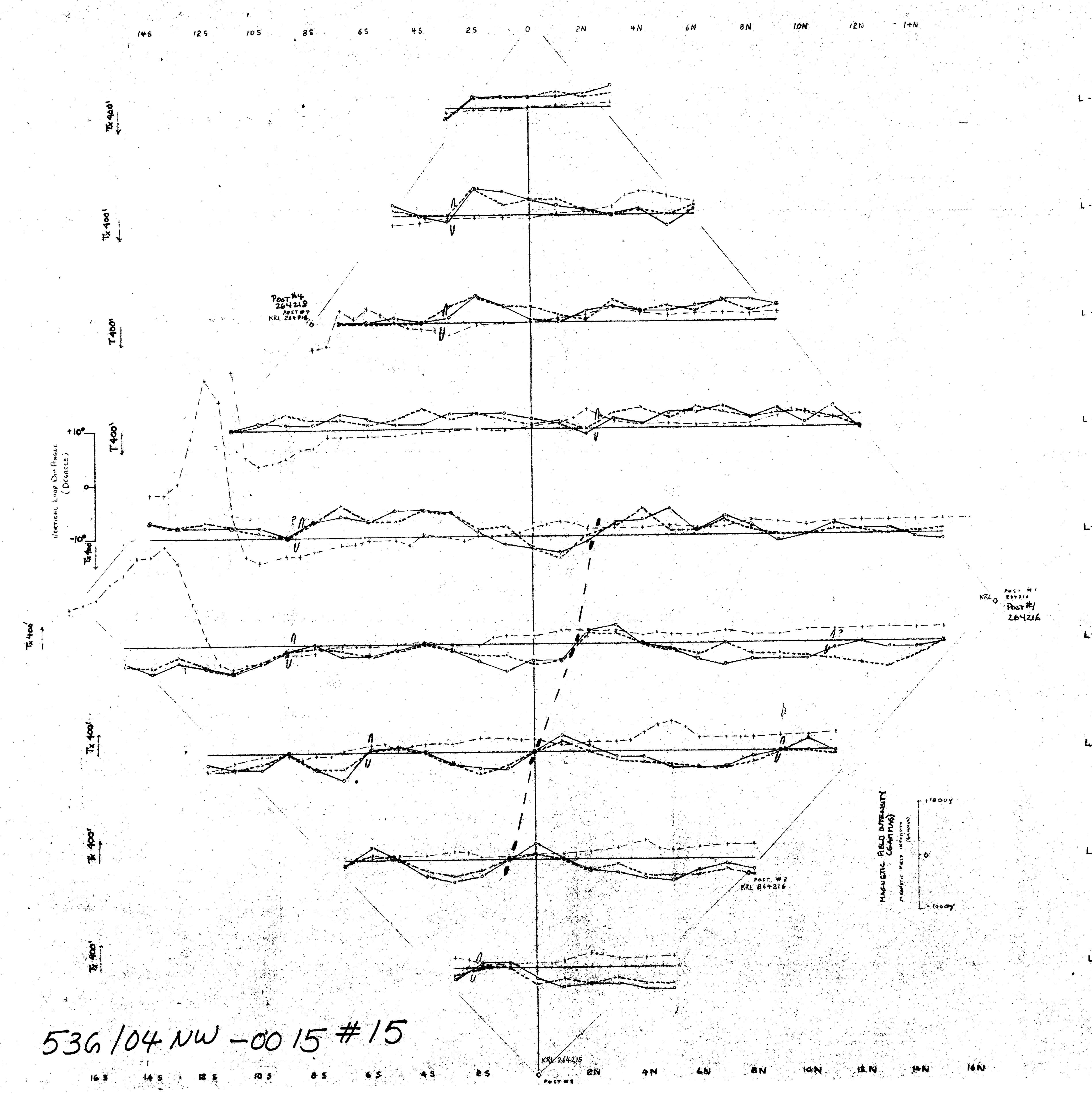
HORIZONTAL LOOP ELECTROMAGNETIC METHOD



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



536/104NW-0015 #15

340

GEOTERREX LIMITED

PROJECT: SEREM LTÉE. MUSKRAT DAM LAKE AREA.

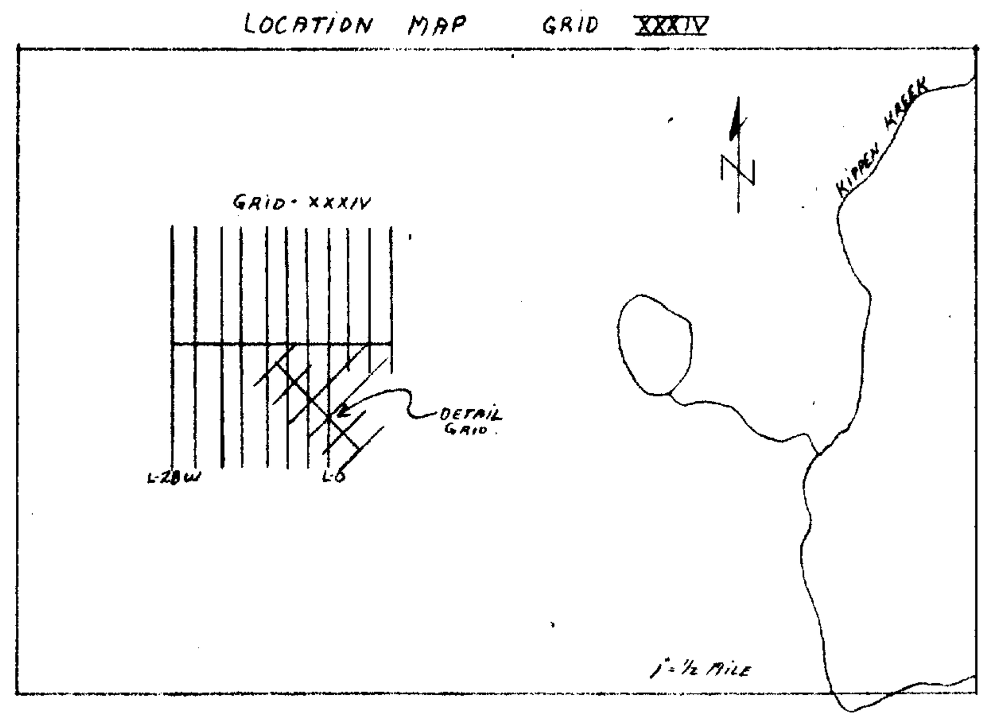
CONDUCTOR: XXXIV SECTION:

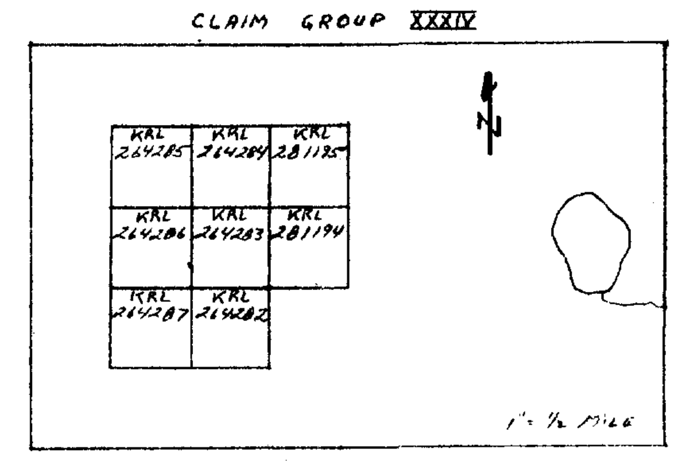
SURVEY: MAGNETIC

SCALES: 1" = 200' 1" = 500 γ

LEGEND:

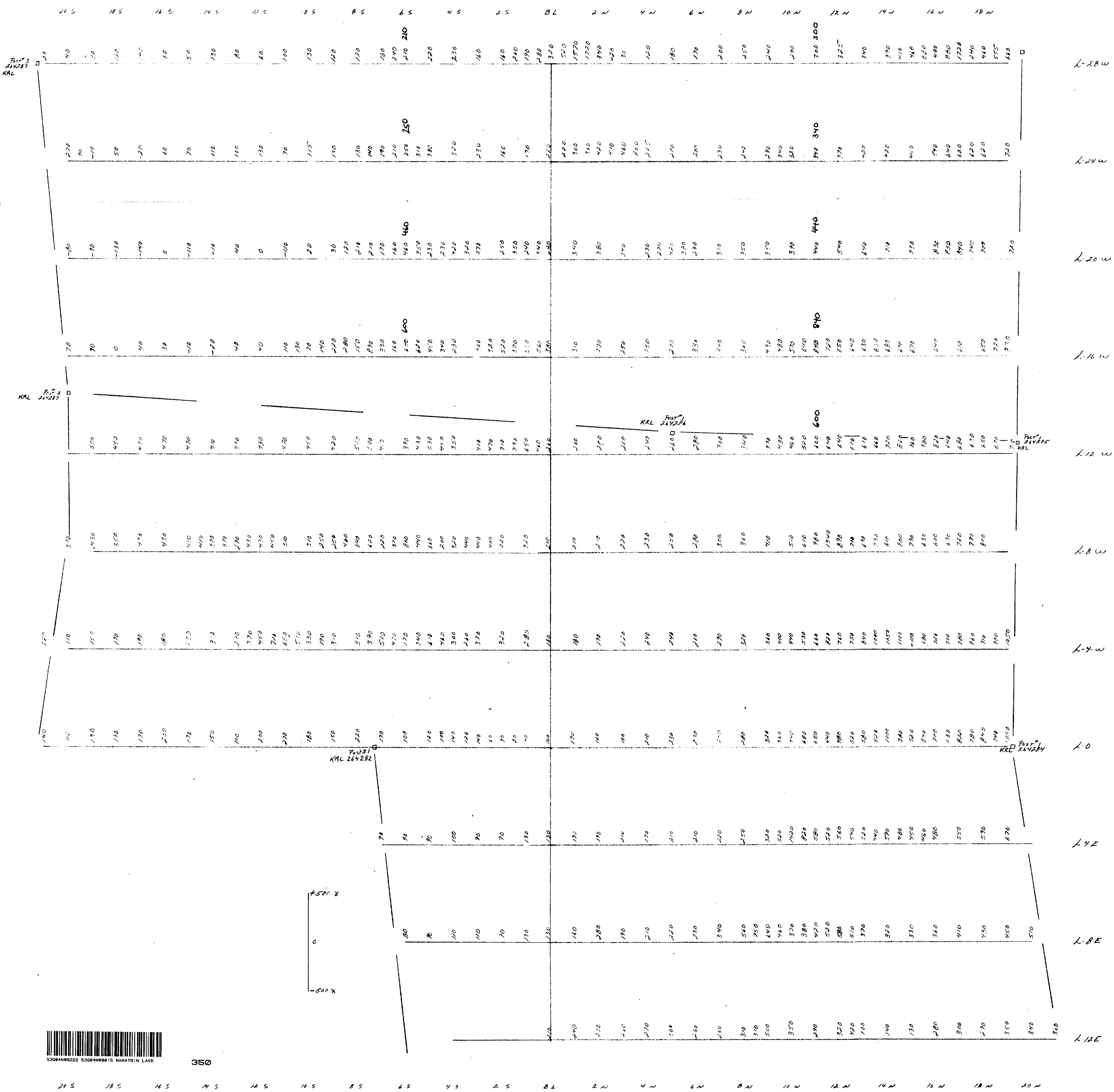
WORK BY: CH-HK-KA-DS-GC-GP-AJ. PLOT BY: PM DATE: SEPT.-70





Block # 16

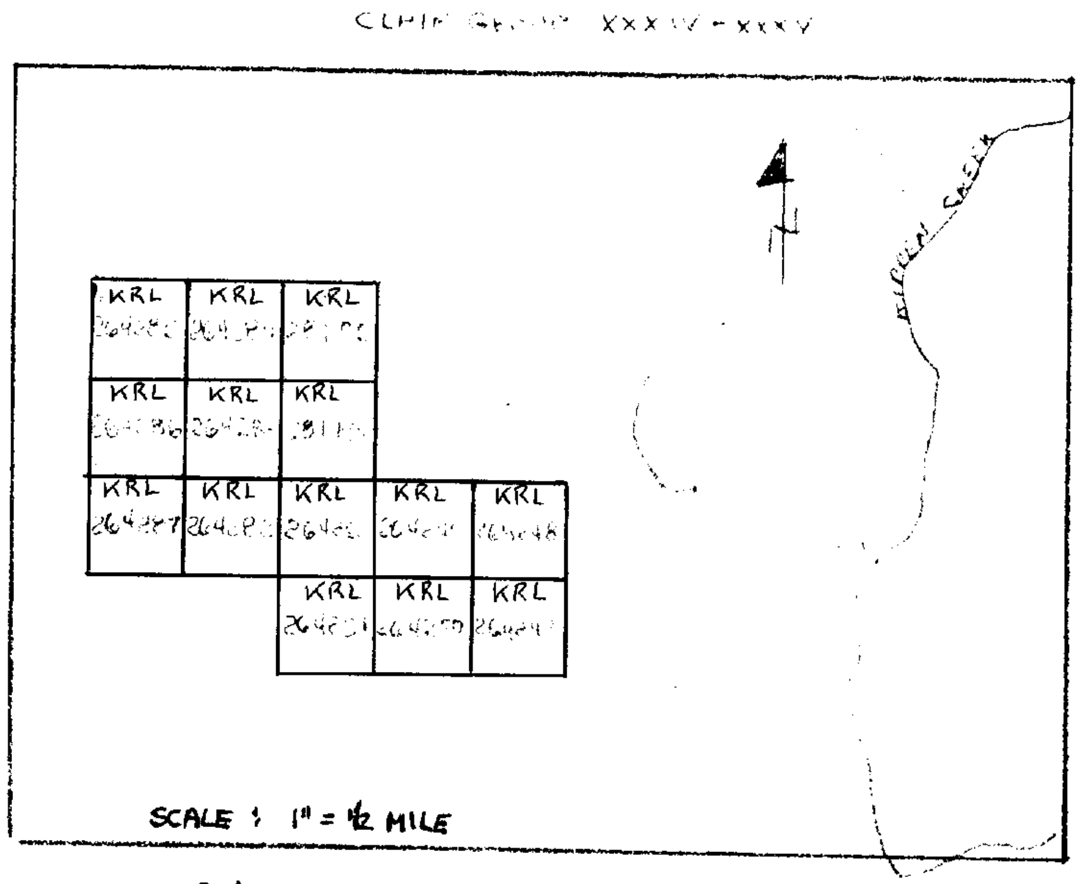
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO



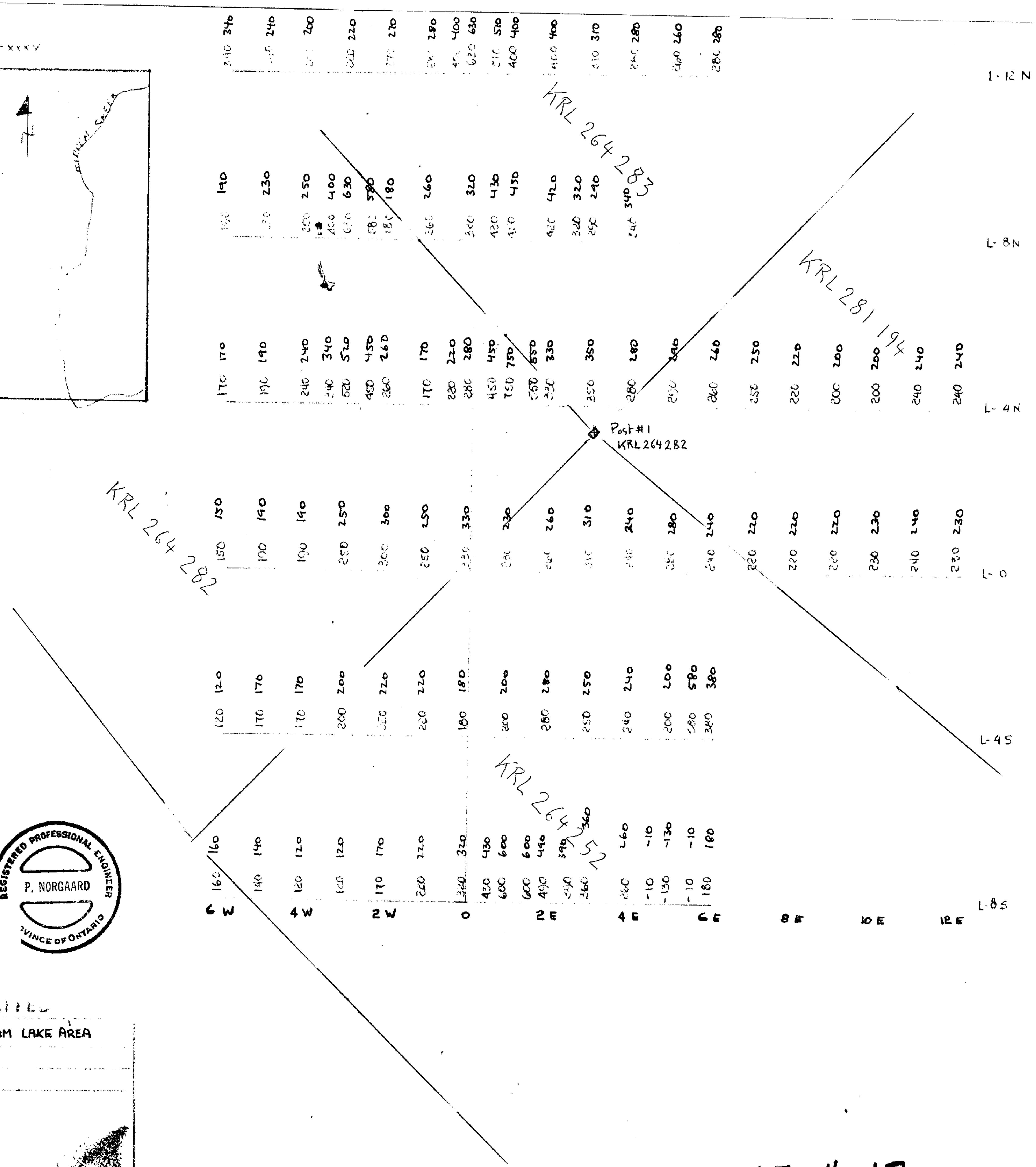
53G04NW0222 53G04NW0015 NAMAYBIN LAKE

350

53G/04NW-0015 # 16



Block # 34-35



REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

360

GEOTERREX LIMITED

PROJECT: SEREM LTÉE - MUSKRAT DAM LAKE AREA

CONDUCTOR: XXXIV-XXXV DETAIL SECTION

SURVEY: MAGNETIC

SCALES: 1" = 200'

LEGEND:

WORK BY: T.S. [illegible] G.C. DATE: SEPTEMBER 1970

53G/04 NW -0015 # 17

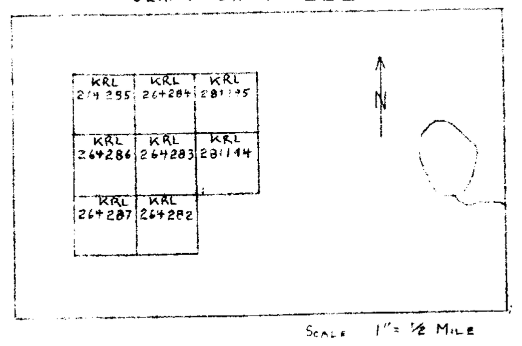
GEOTERREX LIMITED		
PROJECT: SEREM LTEE MUSKRAT DAM LAKE AREA		
CONDUCTOR: XXXIV	SECTION:	
SURVEY: ELECTROMAGNETIC AND MAGNETIC		
SCALES: 1" = 200' / 1" = 10° / 1" = 500γ / 1" = 20%	LEGEND: VERTICAL LOOP DIP ANGLE 1600 Hz o---o, 400 Hz x---x; HORIZONTAL LOOP FIELD COMPONENTS IN PHASE o---o, QUADRATURE x---x; MAGNETIC FIELD INTENSITY +—+	
WORK BY: C.N. K.K. A.S. G.C. G.P. A.J.	PLOT BY: A.S. B.K.	DATE: SEPTEMBER 1970

INSTRUMENTS : SE-300 Vertical Loop Electromagnetic Unit
: MF-2 Fluxgate Magnetometer
: RONKA Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

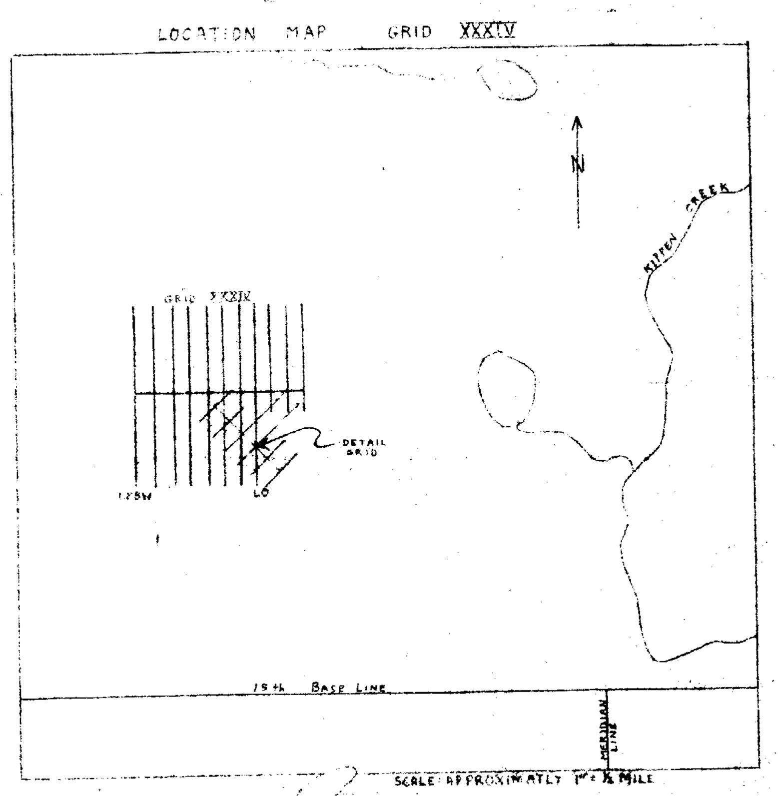
VERTICAL LOOP
DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

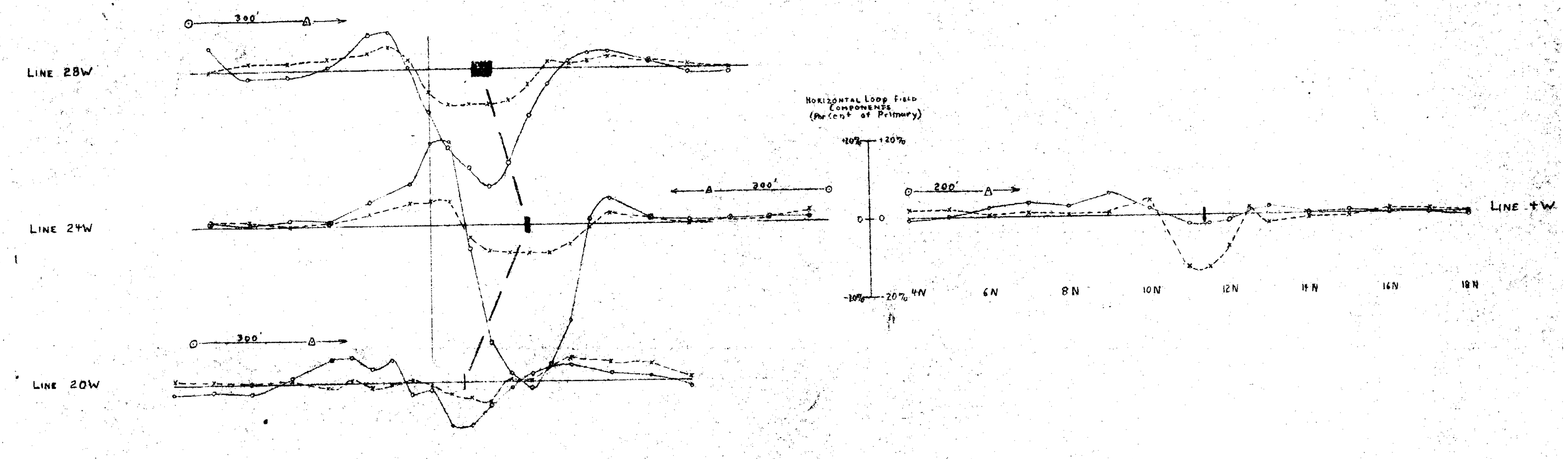


Block # 34

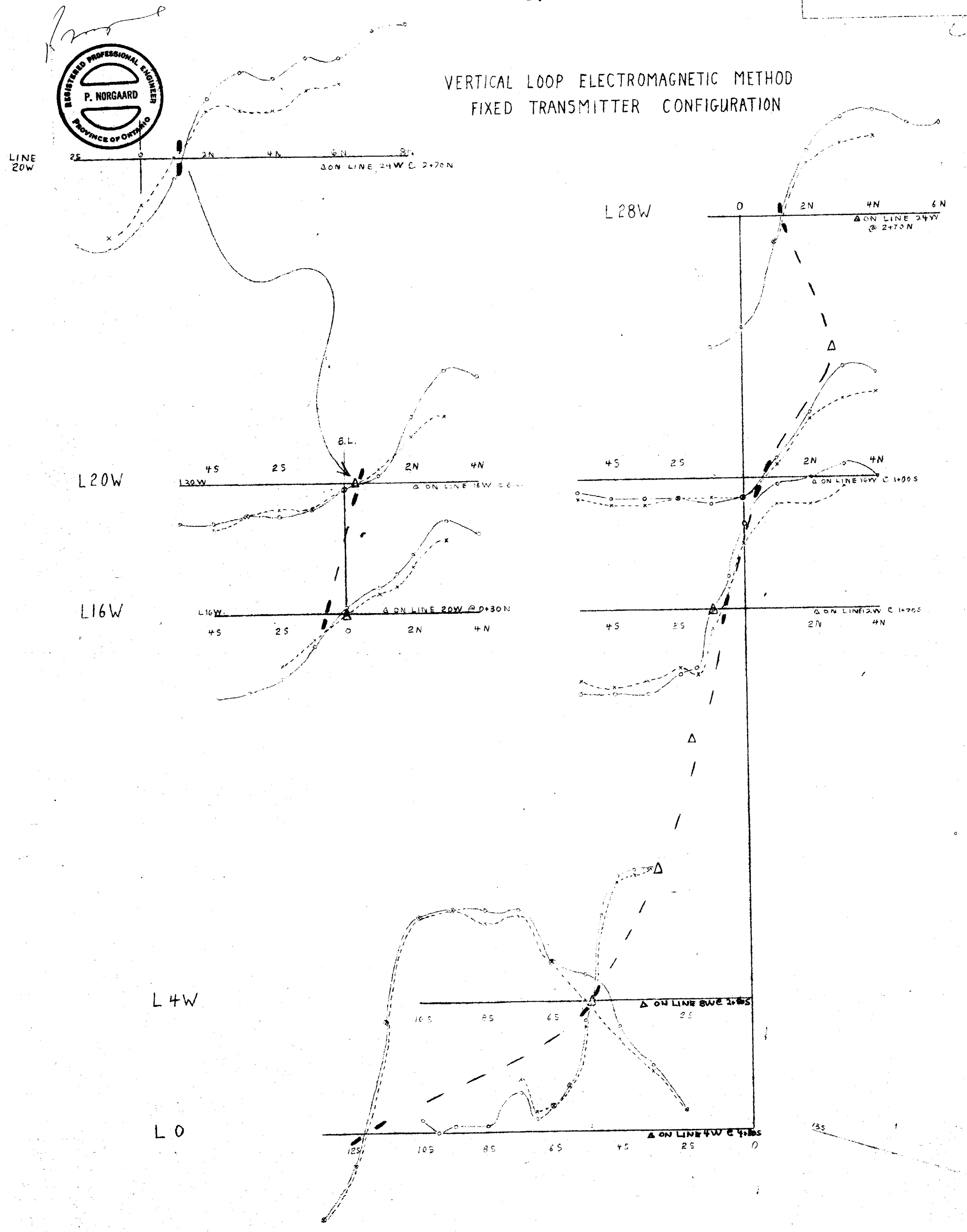


P. NORGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

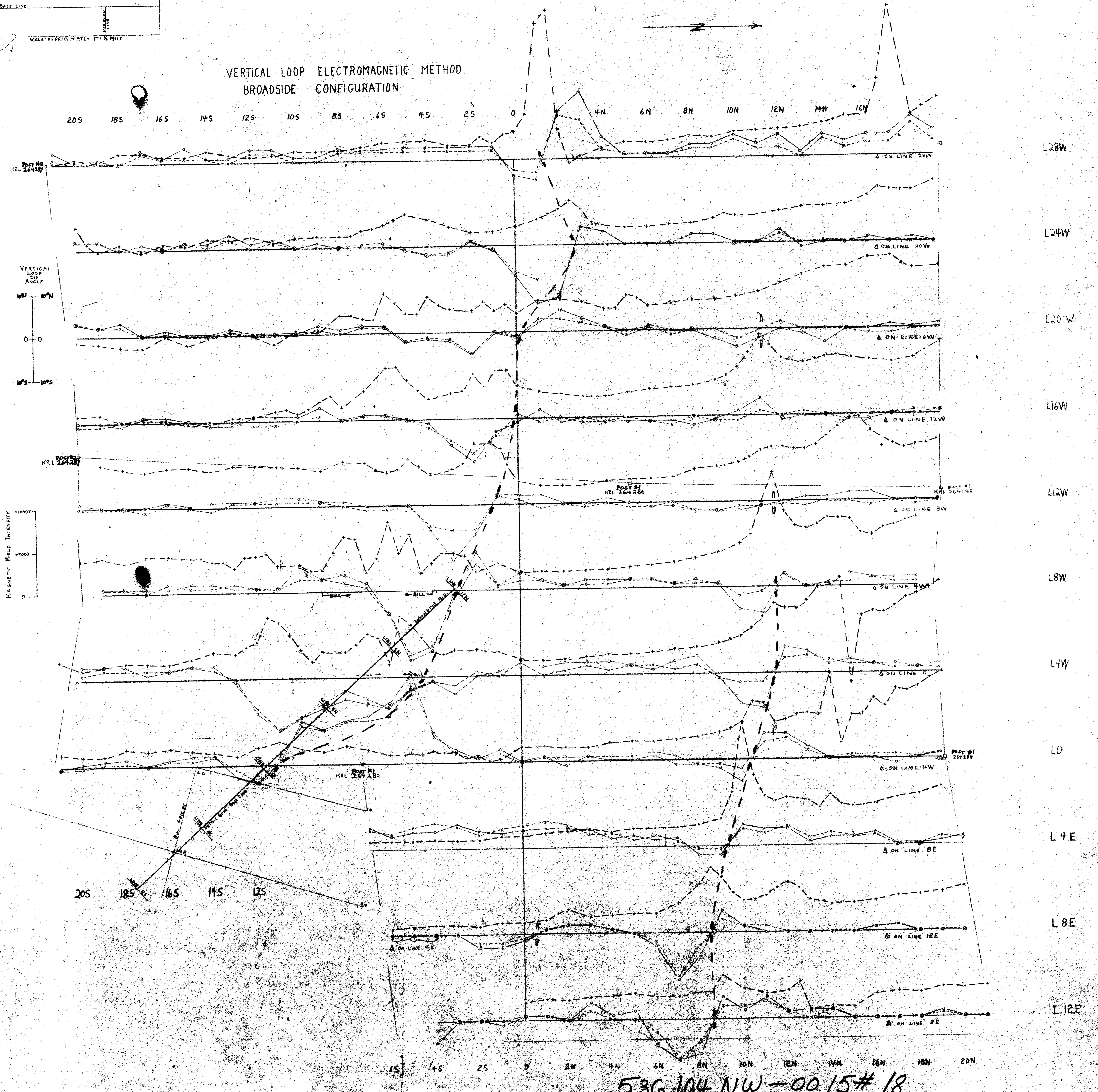
HORIZONTAL LOOP ELECTROMAGNETIC METHOD



VERTICAL LOOP ELECTROMAGNETIC METHOD FIXED TRANSMITTER CONFIGURATION



VERTICAL LOOP ELECTROMAGNETIC METHOD BROADSIDE CONFIGURATION



53G104NW-0015 #18

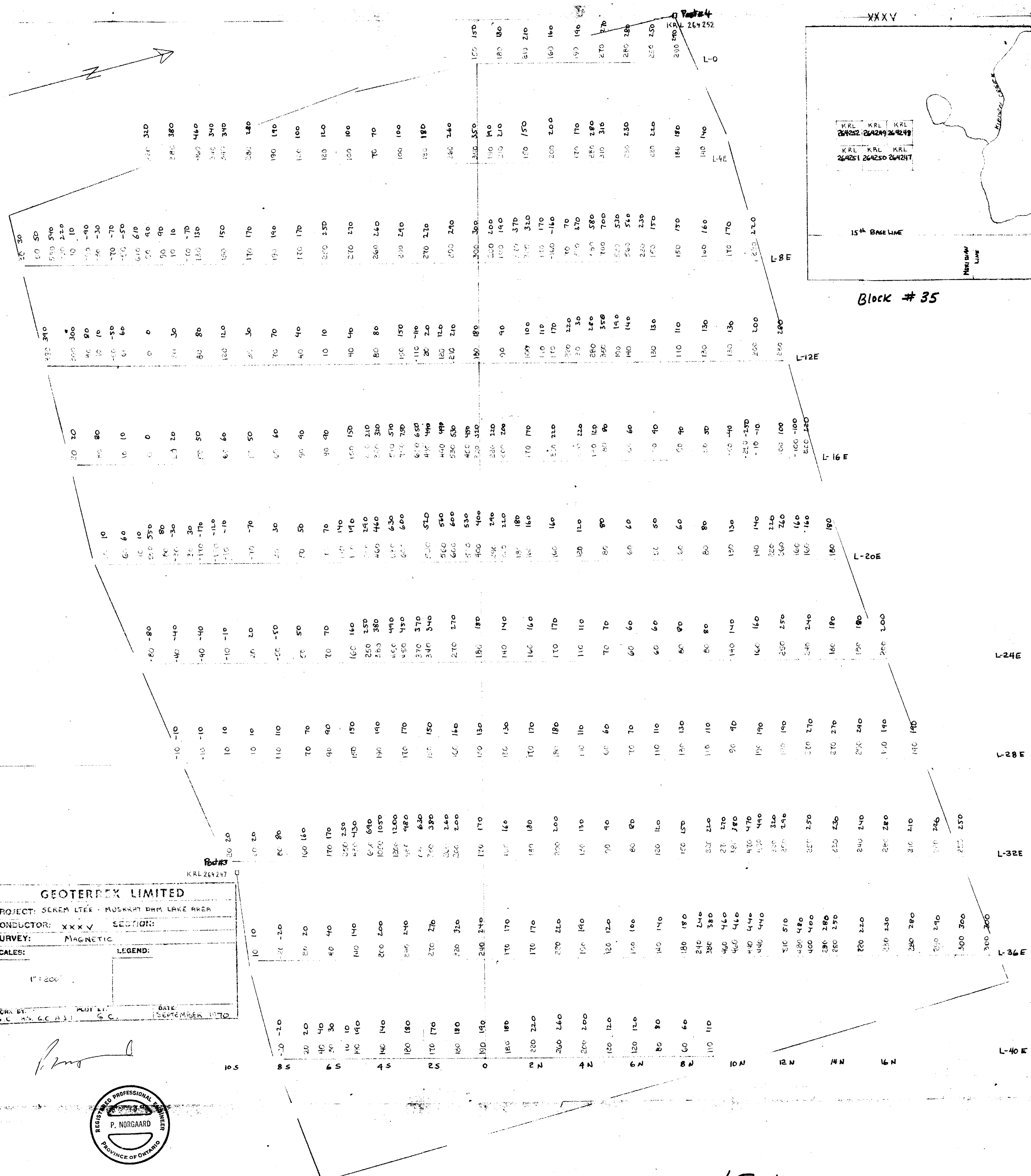
370

GEOTERREX LIMITED		
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA		
CONDUCTOR: 34-35 DETAIL	SECTION:	
SURVEY: MAGNETIC AND ELECTROMAGNETIC		
SCALES: 1" = 20° 1" = 20% 1" = 500 γ 1" = 200'	LEGEND: VERTICAL LOOP DIP ANGLE; HORIZONTAL LOOP FIELD COMPONENTS QUADRATURE; MAGNETIC FIELD INTENSITY	
WORK BY: A.S. G.C. C.N. R.G.	PLOT BY: R.G. A.S.	DATE: SEPTEMBER 1970

INSTRUMENTS: SE-300 Vertical Loop Electromagnetic Units
: M700 Fluxgate Magnetometer
: RONKA Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

VERTICAL LOOP DEFINITE CONDUCTOR

HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)



GEOTERREX LIMITED

PROJECT: SEREM LTEE - MUSKRAT DAM LAKE AREA

CONDUCTOR: XXXV SECTION:

SURVEY: MAGNETIC

SCALES: 1" = 200'

LEGEND:

WORK BY: G.C. A.S. G.C. A.S. PLOT BY: G.C. DATE: SEPTEMBER 1970

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

53G/04NW-0015 #20

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

390

GEOTERREX LIMITED		
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA		
CONDUCTOR: XXXV	SECTION:	
SURVEY: MAGNETIC AND ELECTROMAGNETIC		
SCALES: 1" = 10°; 1" = 500 γ; 1" = 10 %; 1" = 200'	LEGEND: Vertical Loop Dip Angle 1600 Hz, 400 Hz; Horizontal Loop Dip Angle In Phase, Quadrature; Magnetic Field Intensity	
WORK BY: G.C. A.S. G.C. A.J.	PLOT BY: A.S. K.K.	DATE: SEPTEMBER 1970

INSTRUMENTS: SE-300 Vertical Loop Electromagnetic Units
: M 700 Fluxgate Magnetometer
: RONKA Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

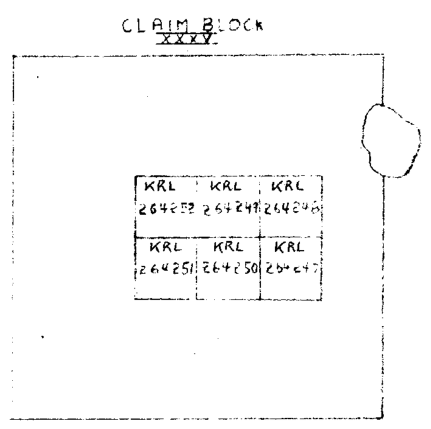
VERTICAL LOOP CONDUCTORS

DEFINITE

POSSIBLE

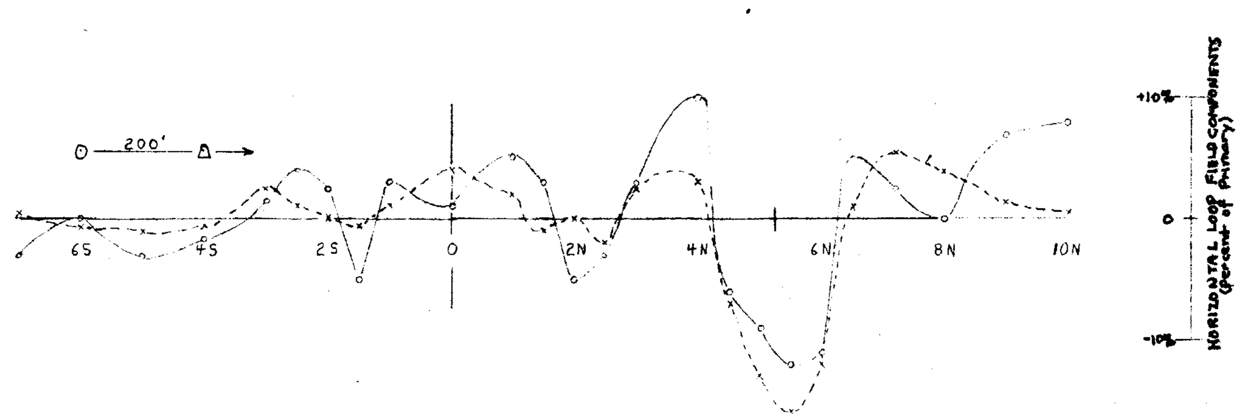
HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

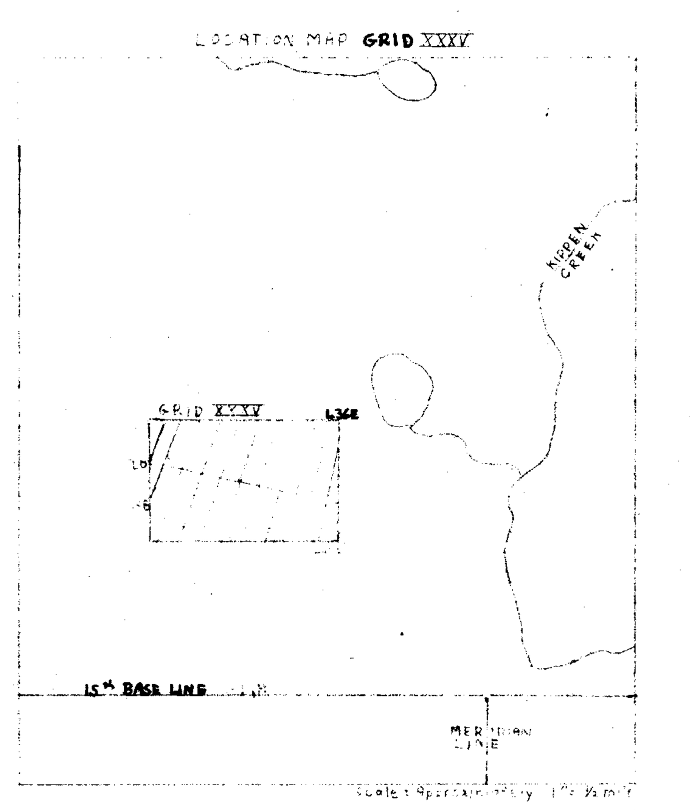
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO



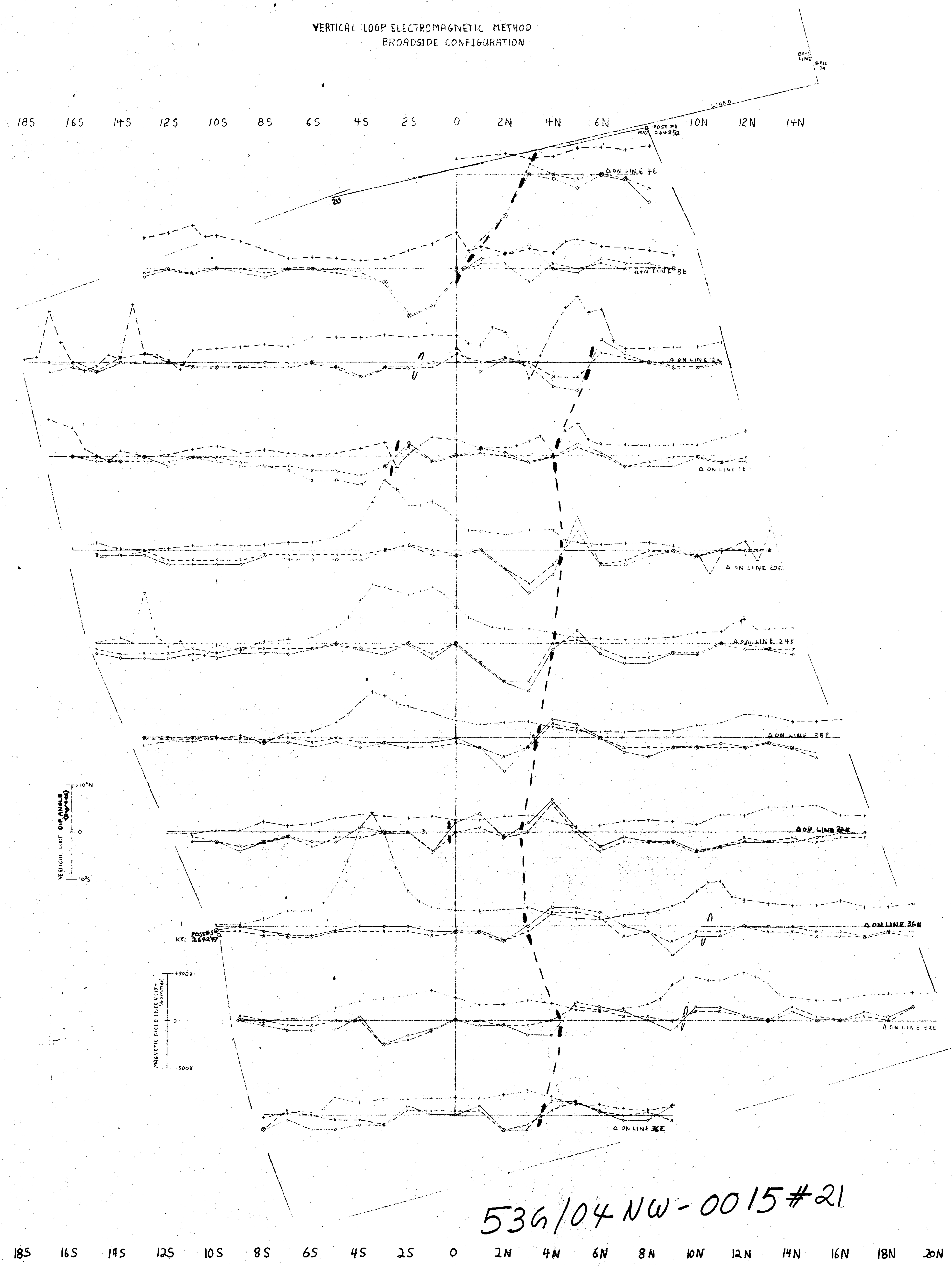
Block # 35

HORIZONTAL LOOP ELECTROMAGNETIC METHOD





VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53G/04NW-0015 #21

400

D

GEOTERREX LIMITED

PROJECT: SCREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: XXXIX SECTION:

SURVEY: MAGNETIC

SCALES: 1" = 200 FEET; VERTICAL MAGNETIC FIELD READINGS IN GAMMAS

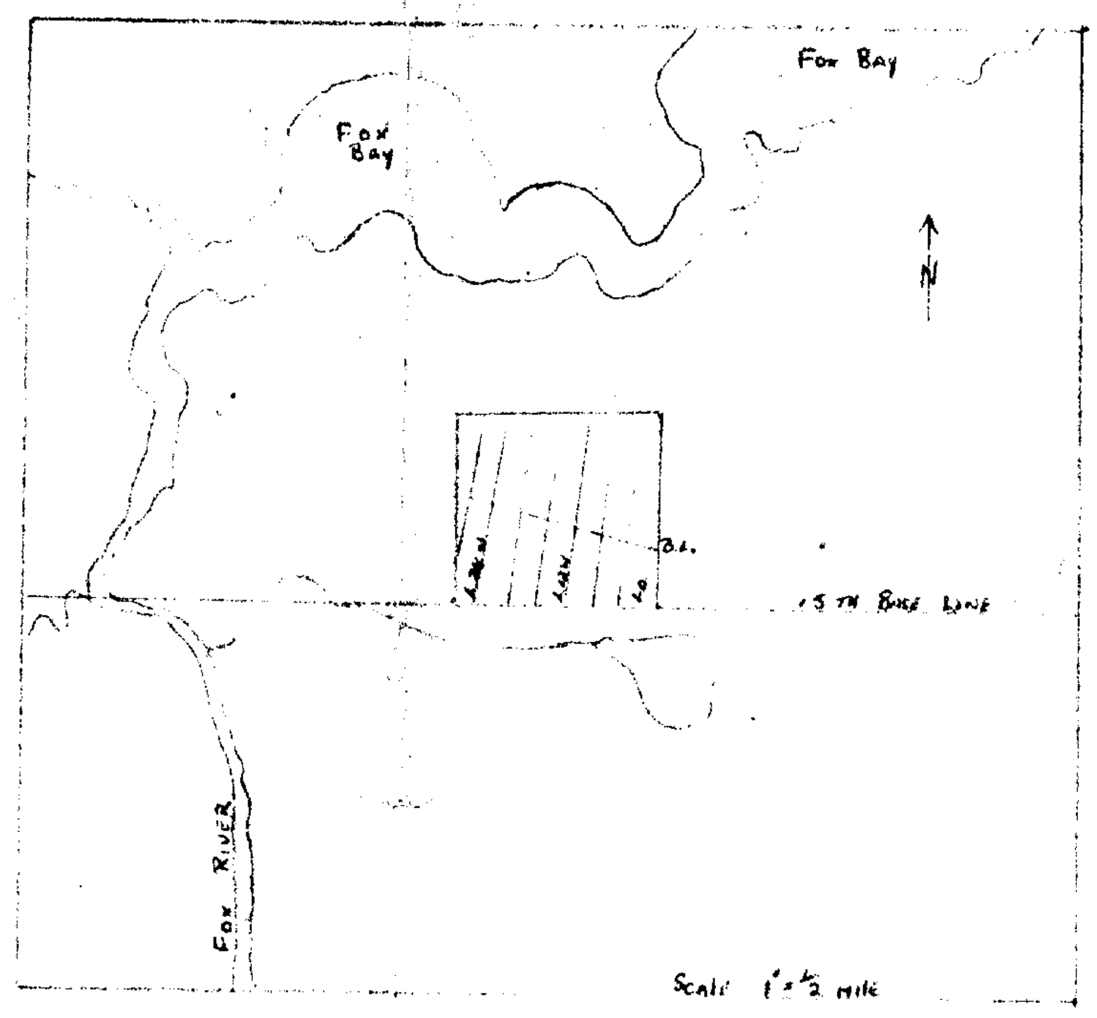
LEGEND:

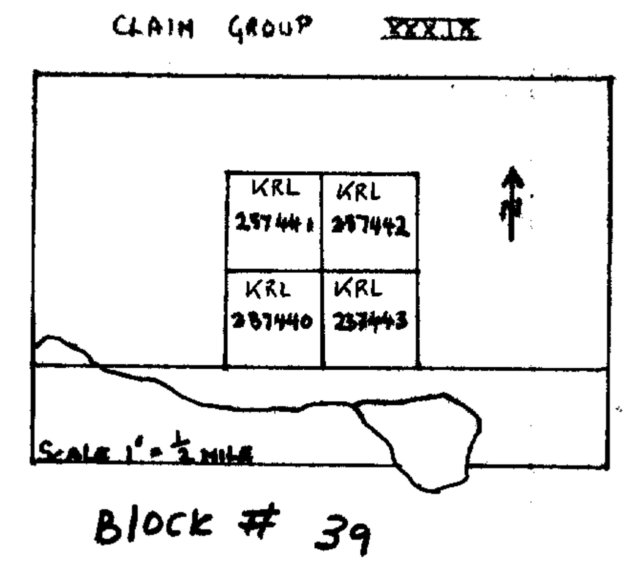
WORK BY: PLOT BY: C K DATE: SEPT 1970

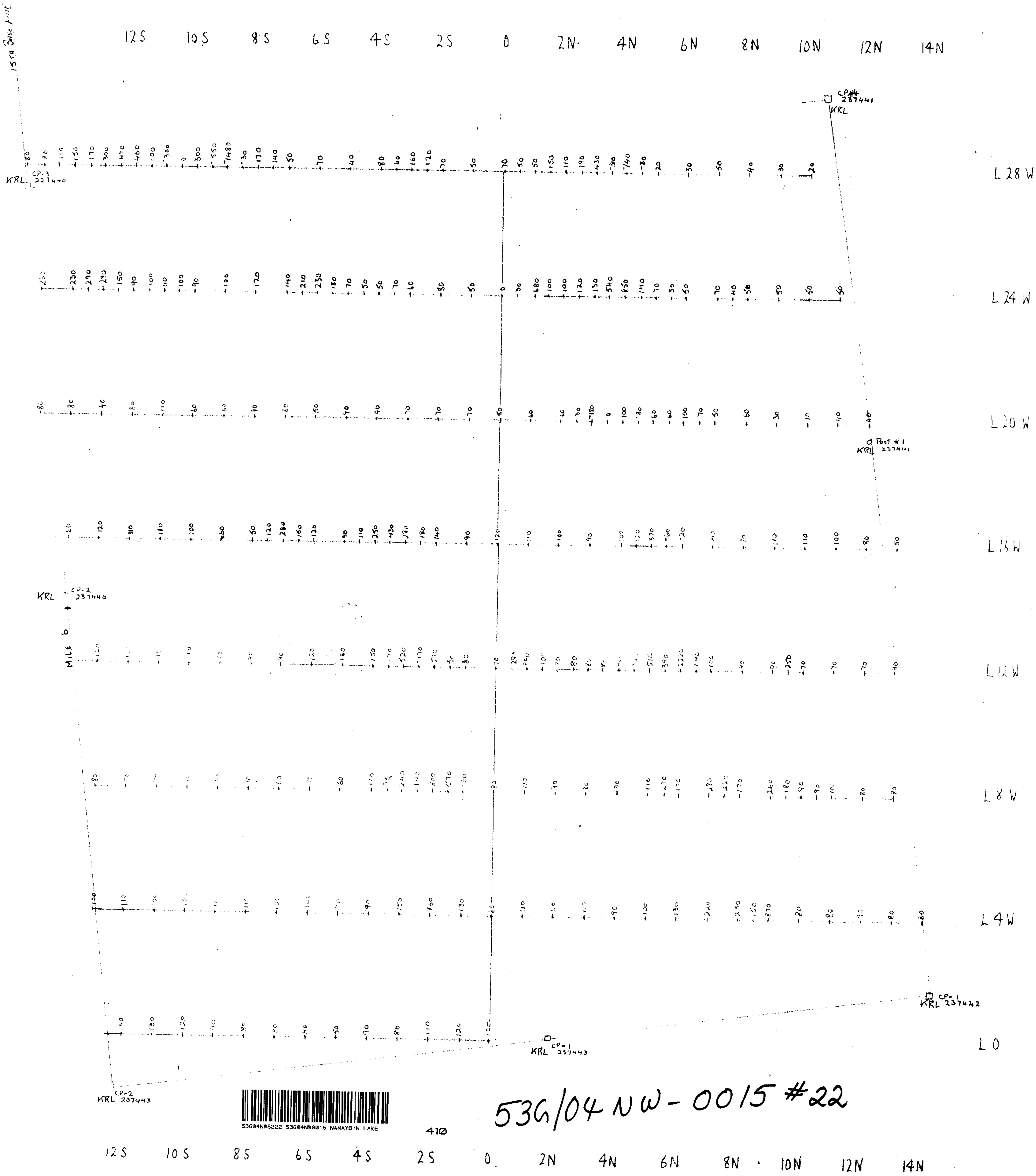
INSTRUMENT: MF-2 FLUXGATE MAGNETOMETER

P. Norgaard

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO







53G04NW8222 53G04NW0015 NAMAYBIN LAKE

410

53G/04NW-0015 #22

GEOTERREX LIMITED

PROJECT: SEREM LTÉE
MUSKRAT DAM LAKE AREA

CONDUCTOR: XXXIX **SECTION:**

SURVEY: ELECTROMAGNETIC AND MAGNETIC

SCALES:
1" = 200'
1" = 10°
1" = 500 X

LEGEND:
VERTICAL LOOP DIP ANGLE
1600 Hz
400 Hz
HORIZONTAL LOOP FIELD COMPONENTS
IN PHASE
QUADRATURE
MAGNETIC FIELD INTENSITY

WORK BY: G.P., G.N., T.S. **PLOT BY:** B.K., C.N. **DATE** SEPT.

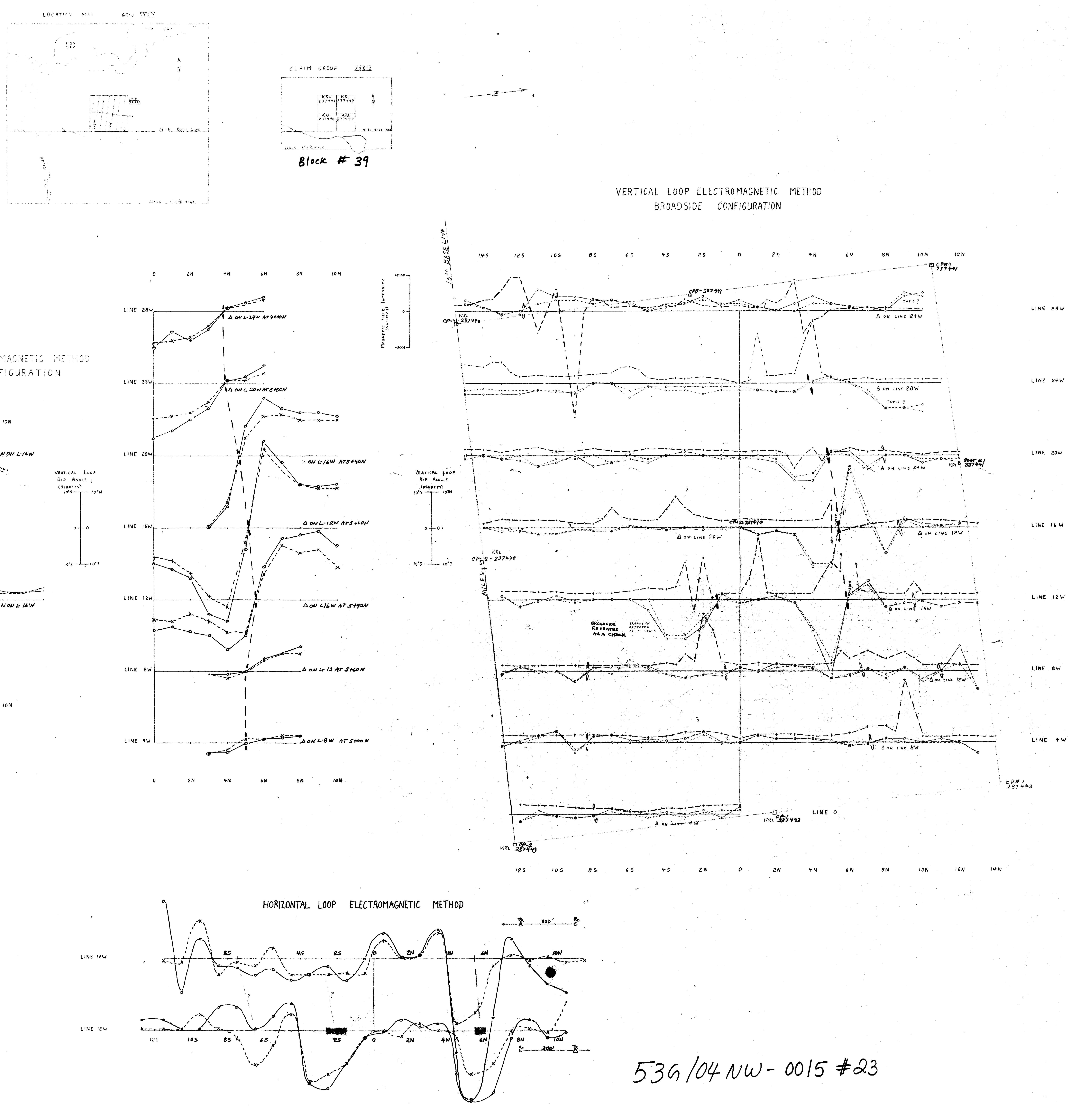
INSTRUMENTS: SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
RONKA MARK IV HORIZONTAL LOOP ELECTROMAGNETIC UNITS (876 Hz)
MF-2 FLUXGATE MAGNETOMETER

VERTICAL LOOP DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

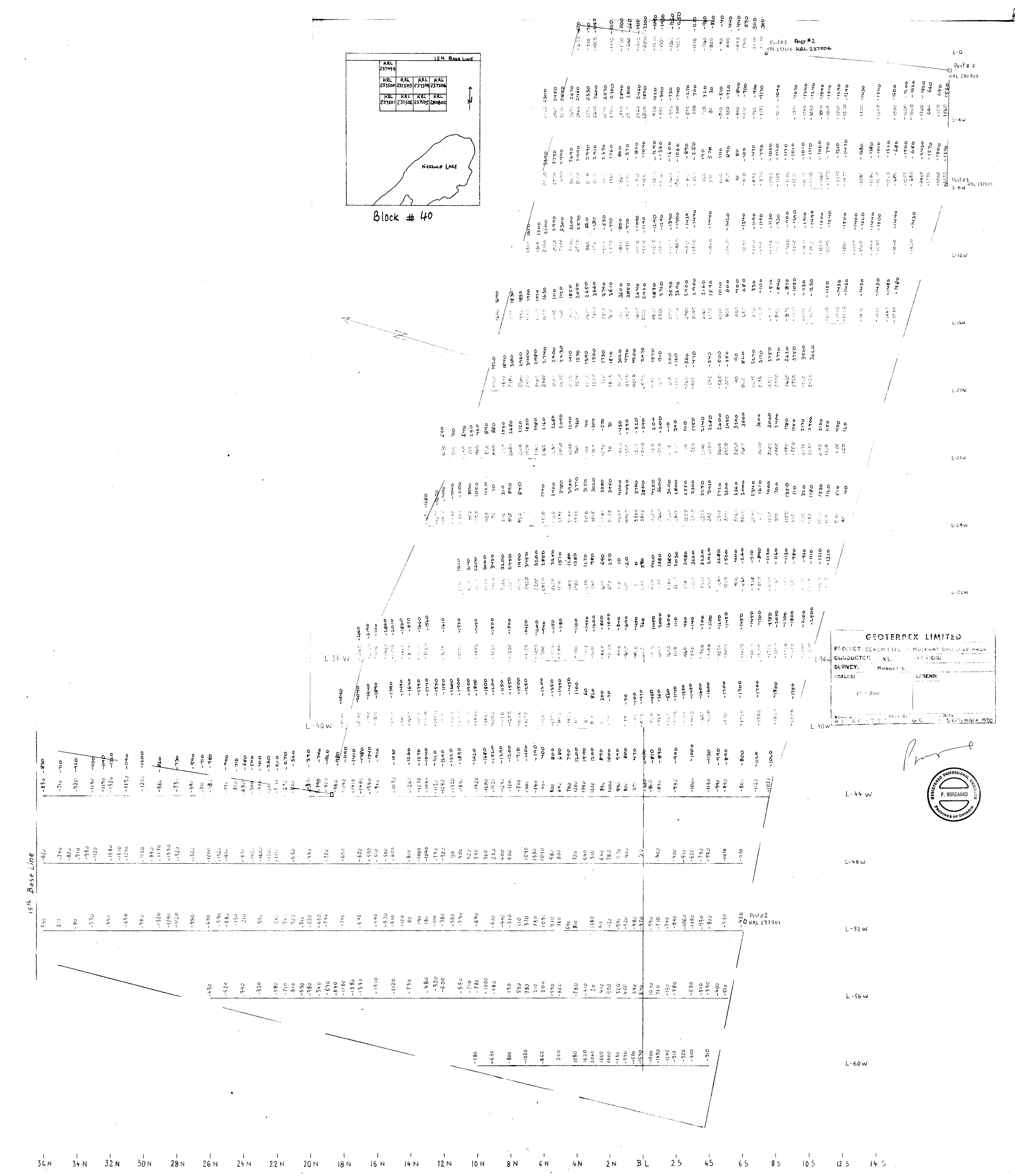
HORIZONTAL LOOP CONDUCTOR

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO



53G/04NW-0015 #23

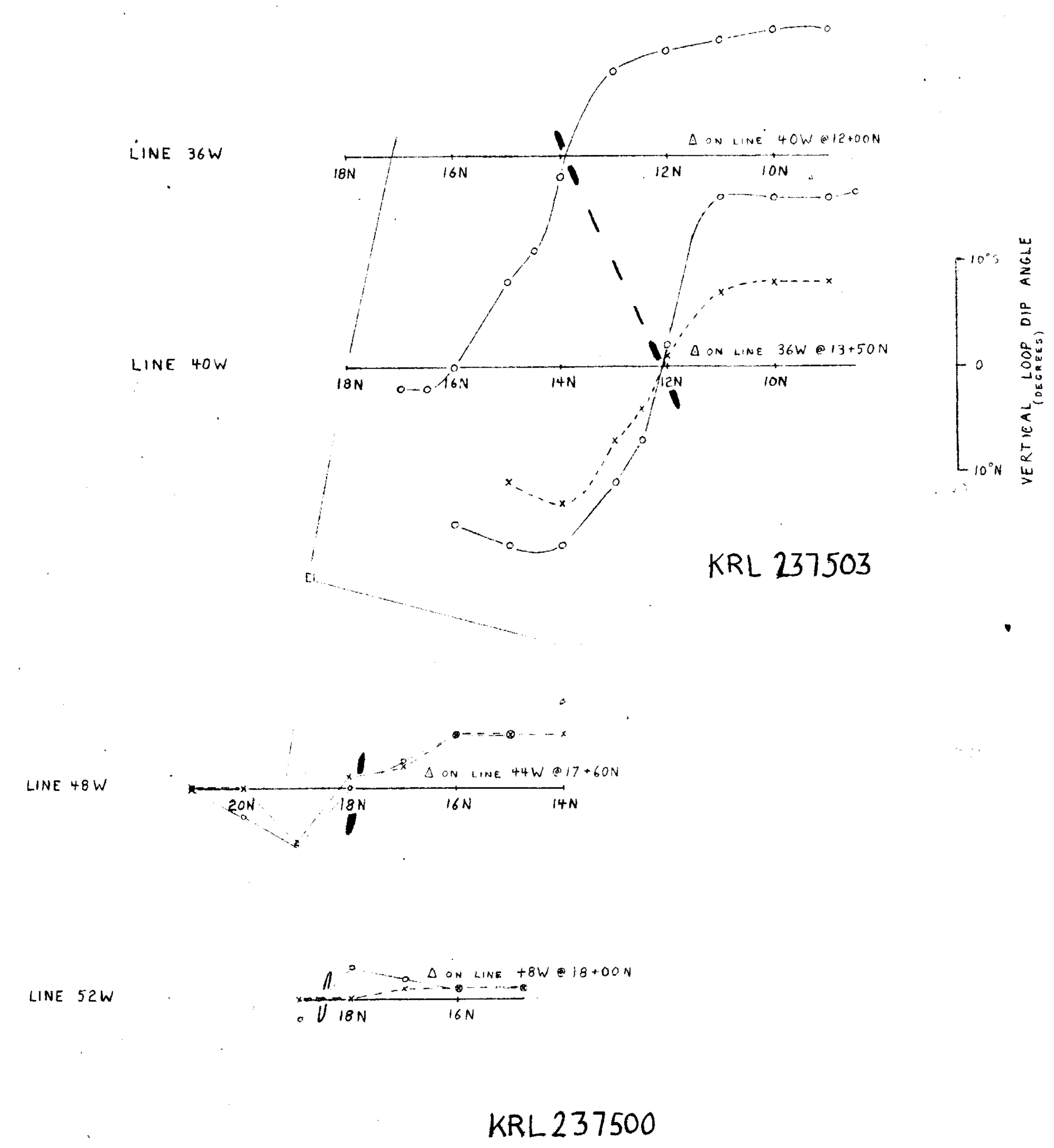
420

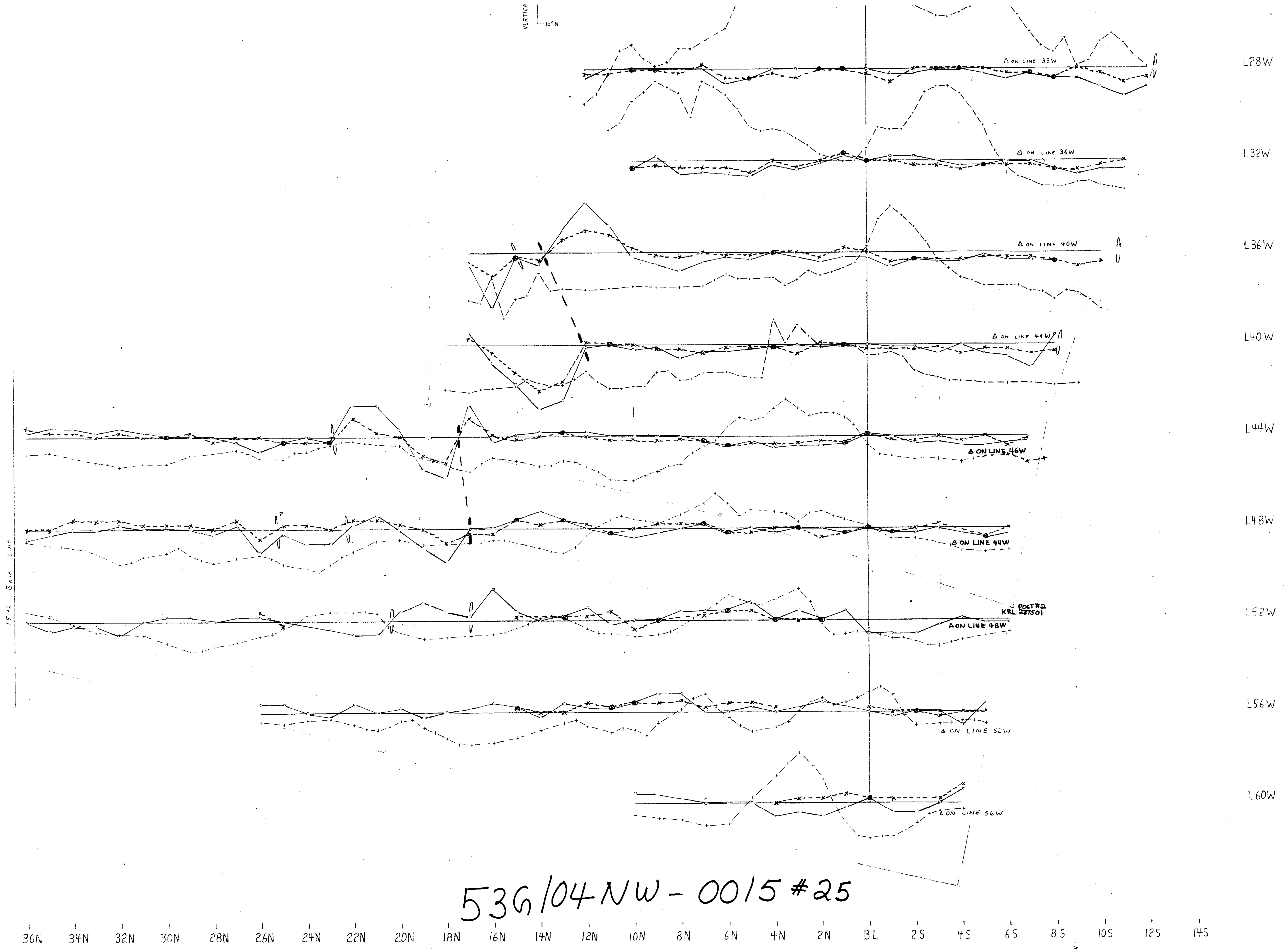


430

53G/04NW-0015 #24

VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION

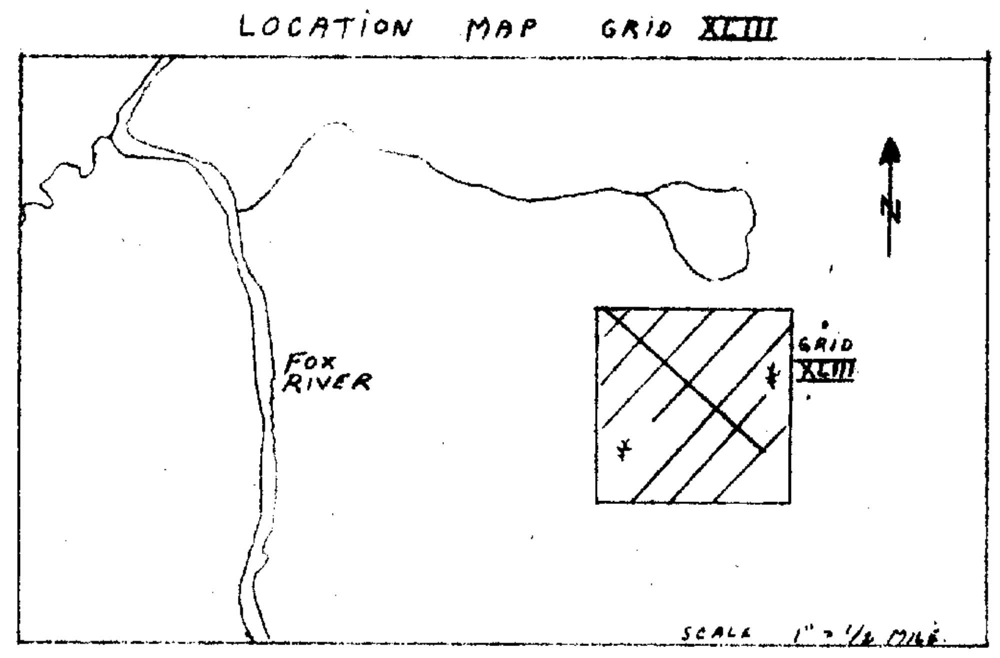


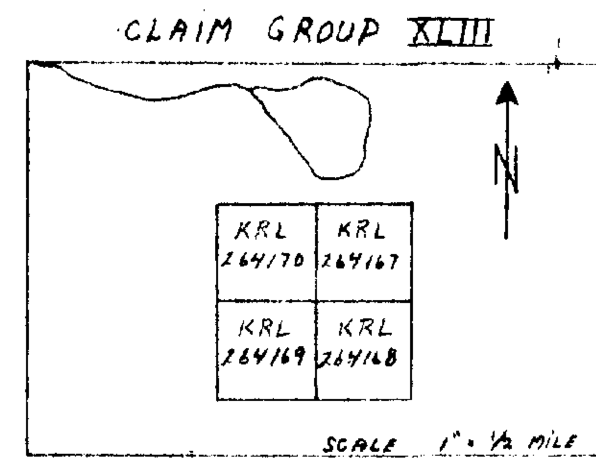


440

GEOTERREX LIMITED

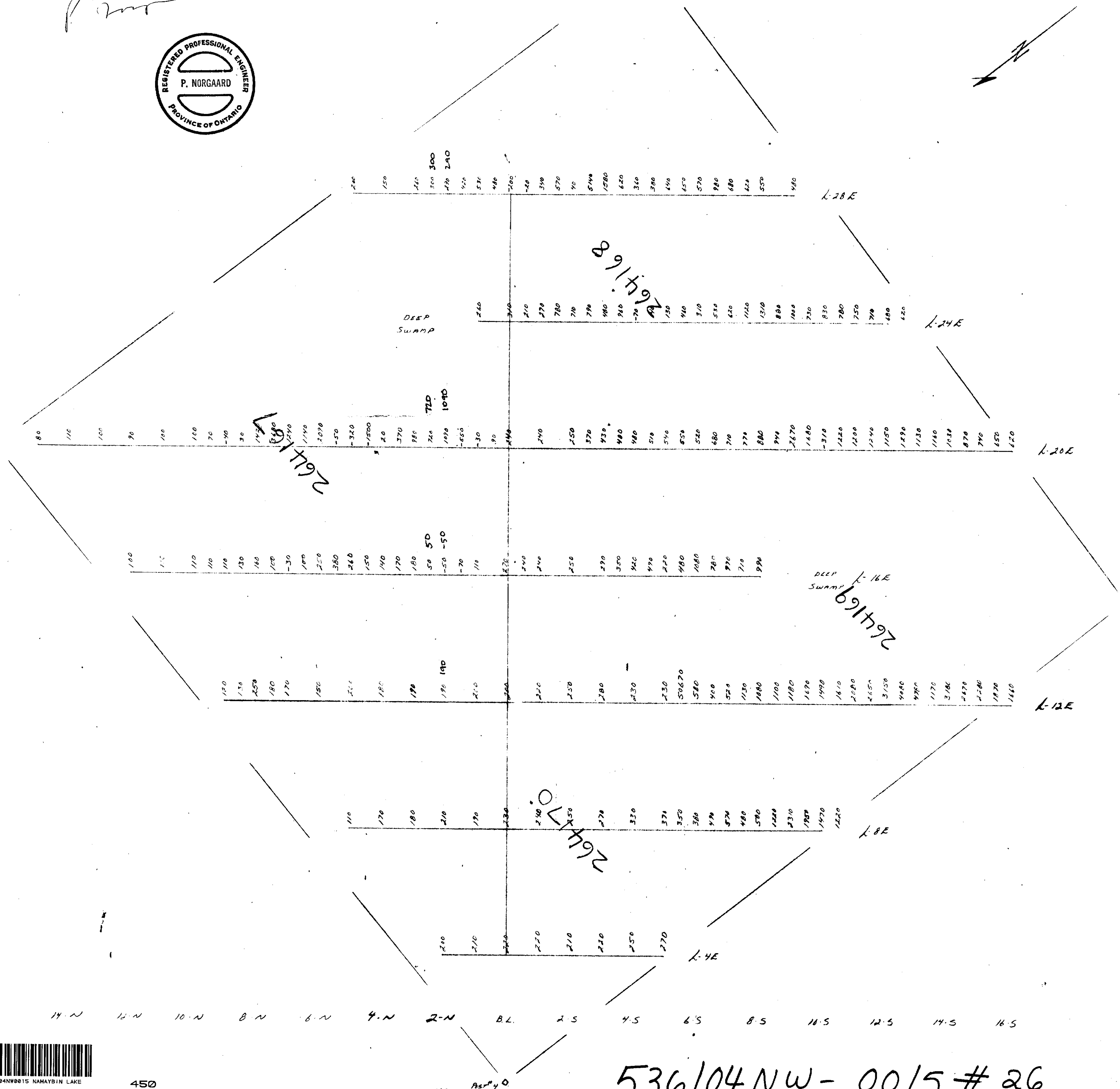
PROJECT: SEREM LTEE. MUSKRAT DAM LAKE AREA.
CONDUCTOR: XLIII SECTION:
SURVEY: MAGNETIC
SCALES: 1" = 200'
LEGEND:
WORK BY: T.R.-G.P.-G.C. PLOT BY: P.M. DATE: JULY - 70





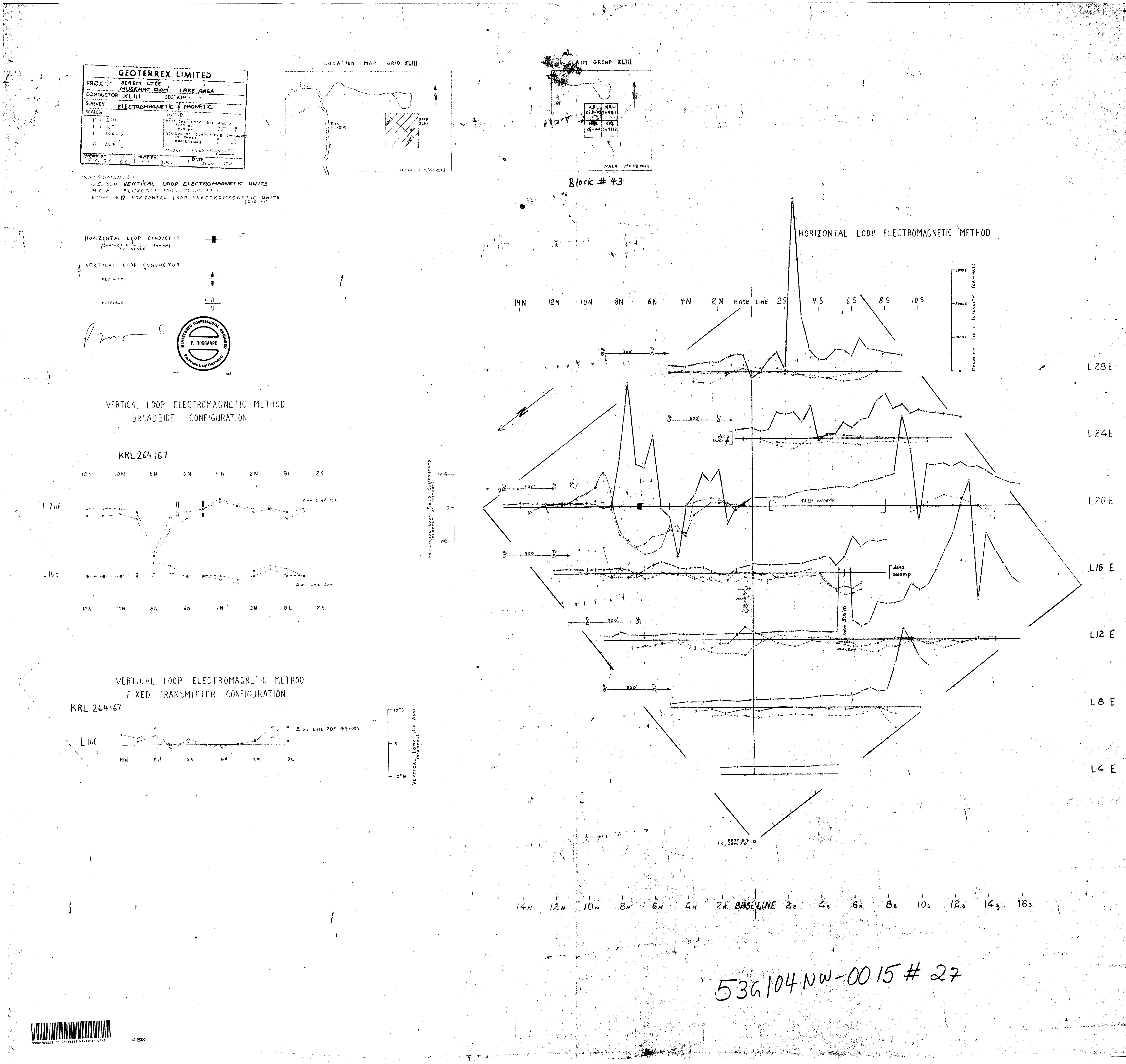
Block # 43

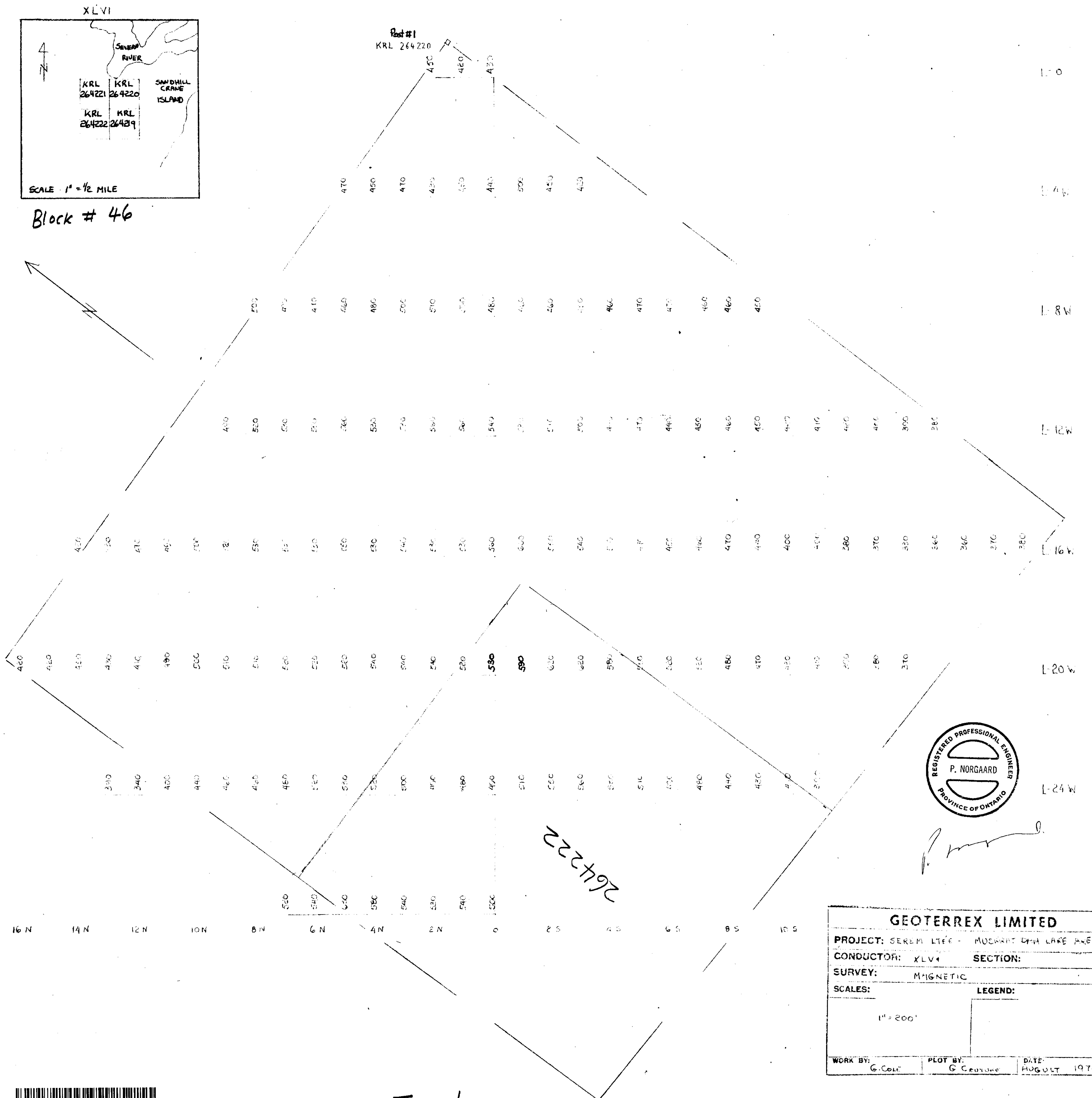
REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO



450

53G/04NW-0015 #26


GEOTERREX LIMITED
PROJECT: SEREM LTÉE
MUSKRAT DAM LAKE AREA
CONDUCTOR: XLIII
SECTION:
SURVEY: ELECTROMAGNETIC & MAGNETIC
SCALES:
1" = 200'
1" = 10°
1" = 1000 γ
1" = 20%
LEGEND:
VERTICAL LOOP DIP ANGLE
1600 Hz
400 Hz
HORIZONTAL LOOP FIELD COMPONENTS
IN PHASE
QUADRATURE
MAGNETIC FIELD INTENSITY
WORK BY:
PLOT BY:
DATE:
INSTRUMENTS:
VERTICAL LOOP ELECTROMAGNETIC UNITS
HORIZONTAL LOOP ELECTROMAGNETIC UNITS
LOCATION MAP GRID XLIII
FOX RIVER
CLAIM GROUP XLIII
Block # 43
HORIZONTAL LOOP CONDUCTOR
(CONDUCTOR WIDTH SHOWN TO SCALE)
VERTICAL LOOP CONDUCTOR
DEFINITE
POSSIBLE
P. NORGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION
KRL 264167
L20E
L16E
VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION
KRL 264167
L16E
HORIZONTAL LOOP ELECTROMAGNETIC METHOD
14N 12N 10N 8N 6N 4N 2N BASE LINE 2S 4S 6S 8S 10S
L28E
L24E
L20E
L16E
L12E
L8E
L4E
deep swamp
DEEP SWAMP
POST #4 KRL 264170
14N 12N 10N 8N 6N 4N 2N BASELINE 2S 4S 6S 8S 10S 12S 14S 16S
53G104NW-0015 # 27



GEOTERREX LIMITED

PROJECT: SEREM LTÉE - MUCKRAT DAM LAKE AREA
CONDUCTOR: XLVI SECTION:
SURVEY: MAGNETIC
SCALES: 1" = 200'
LEGEND:
WORK BY: G. COLE
PLOT BY: G. CENTURE
DATE: AUGUST 1970

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

470

53G/04NW-0015 #28

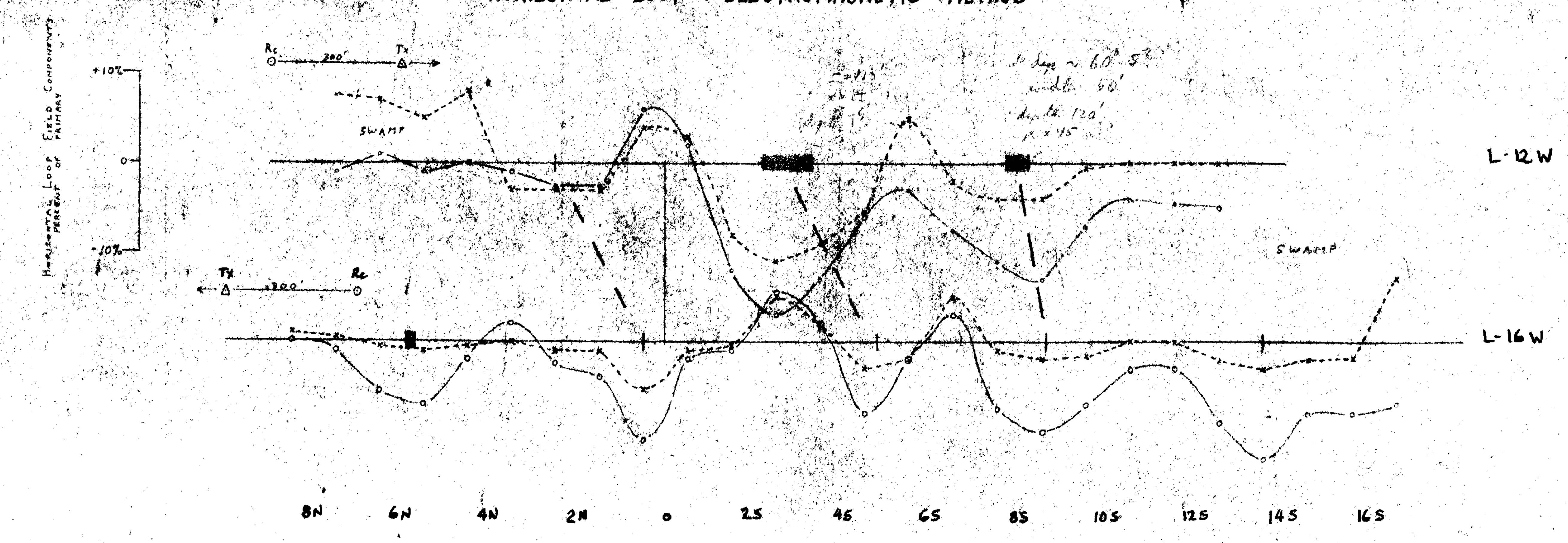
GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRATDAM LAKE AREA	
CONDUCTOR: GRID XLVI SECTION:	
SURVEY: ELECTROMAGNETIC AND MAGNETIC	
SCALES:	LEGEND:
1" = 200'	Vertical Loop Dip Angle 400 Hz
1" = 20°	Horizontal Loop Field Components Quadrature
1" = 200	Magnetic Field Intensity
1" = 10%	
WORK BY: TY	PLOT BY: TK	DATE: August 1970

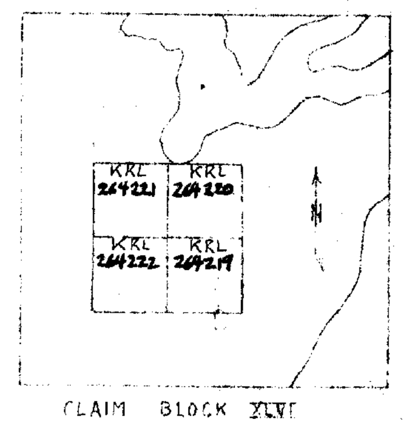
INSTRUMENTS: Vertical Loop Electromagnetic Units; MF-2 Fluxgate Magnetometer; Ronka Mark IV Horizontal Loop Electromagnetic Units (876 Hz)

Definite Conductor

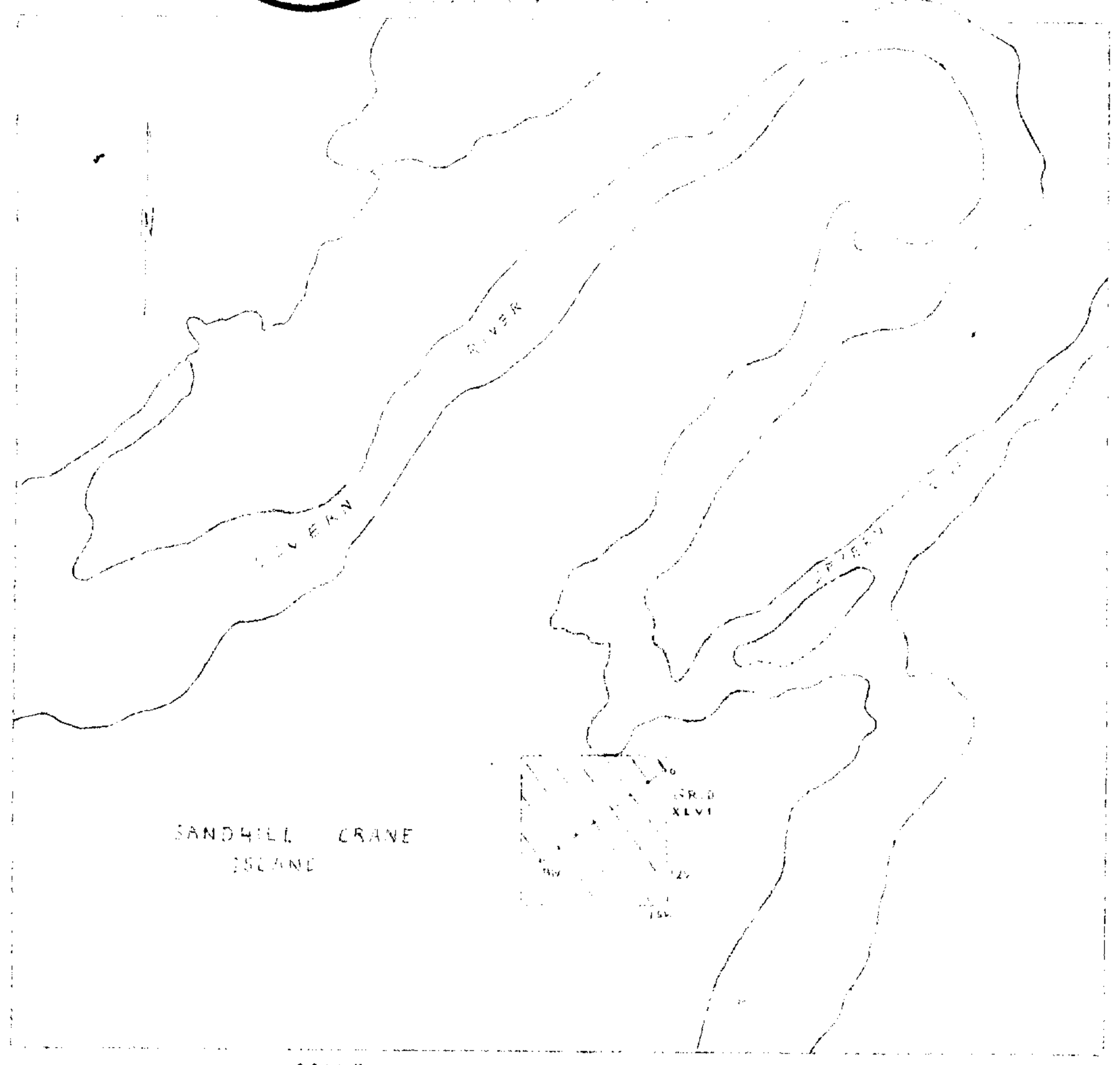
Possible Conductor

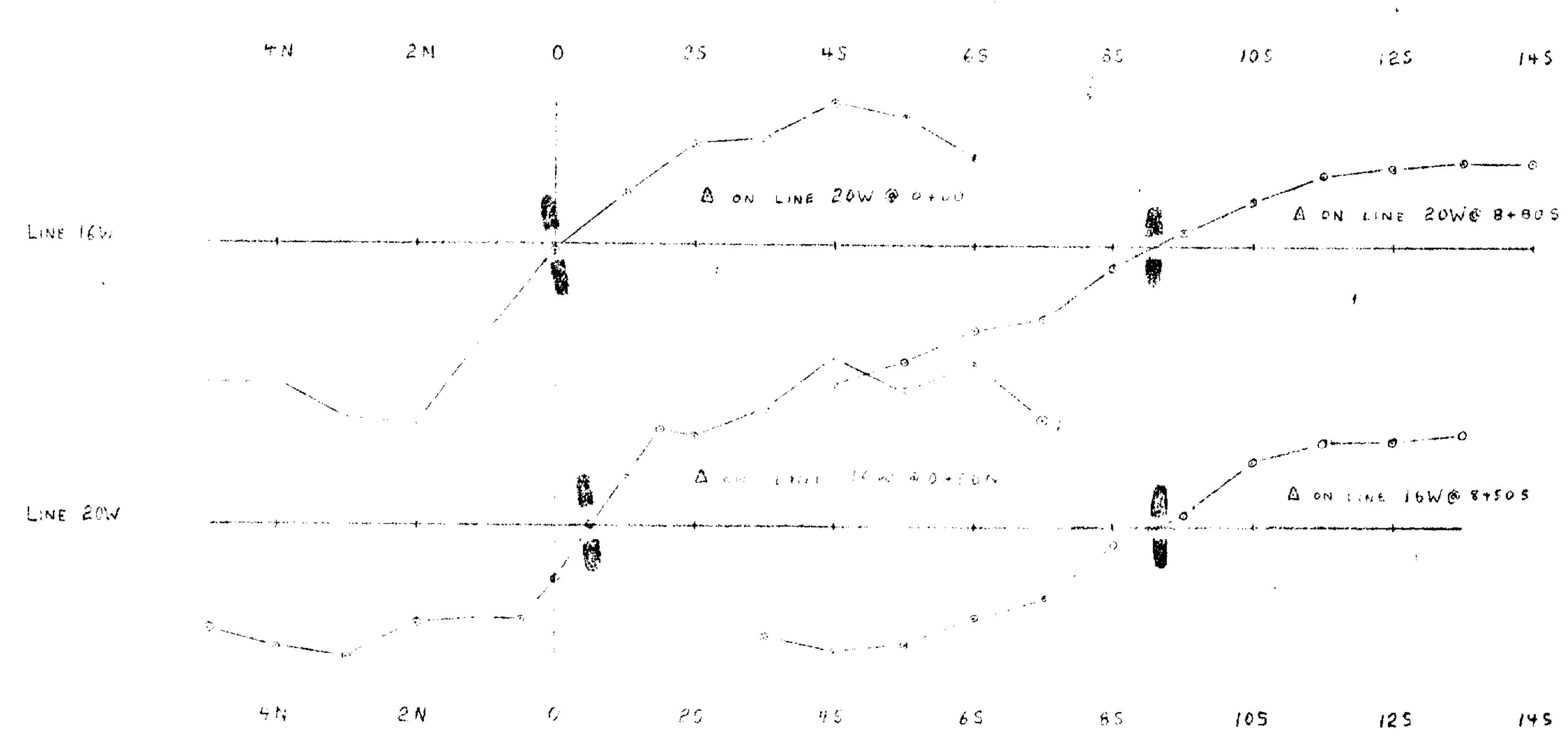
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO





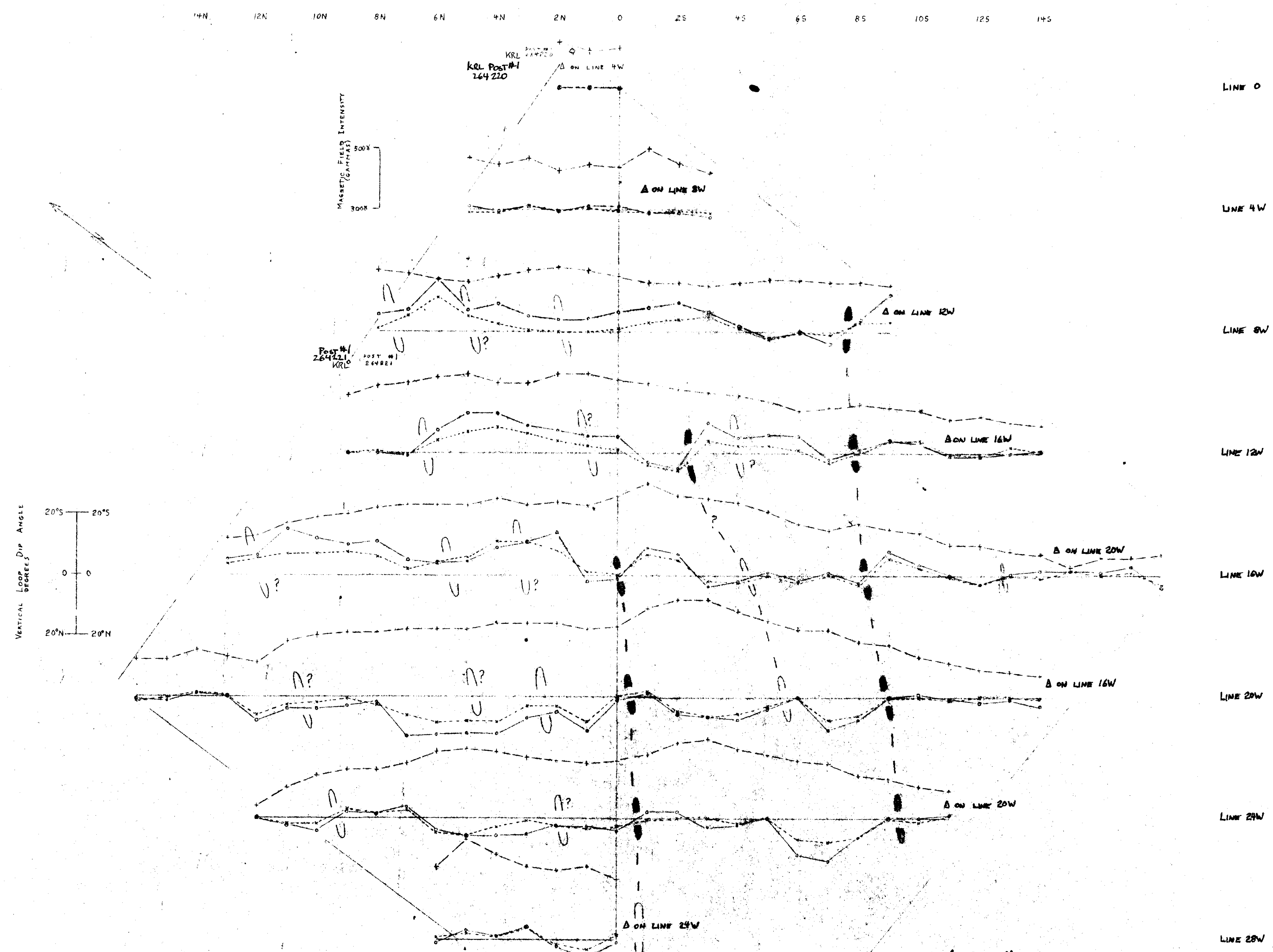
Block # 46





VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION

VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53G/04 NW - 0015 #29

480

GEOTERREX LIMITED

PROJECT:	JEREM LTÉE - MUSKRAT DAM LAKE AREA
CONDUCTOR: XLVII	SECTION:
SURVEY:	MAGNETIC
SCALES: 1" = 200'	LEGEND:
WORK BY: T.K. A.S.	PLOT BY: G.C.
DATE: AUGUST 1970	

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

490

53G/04 NW-0015 #30

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: GRID XLVII **SECTION:**

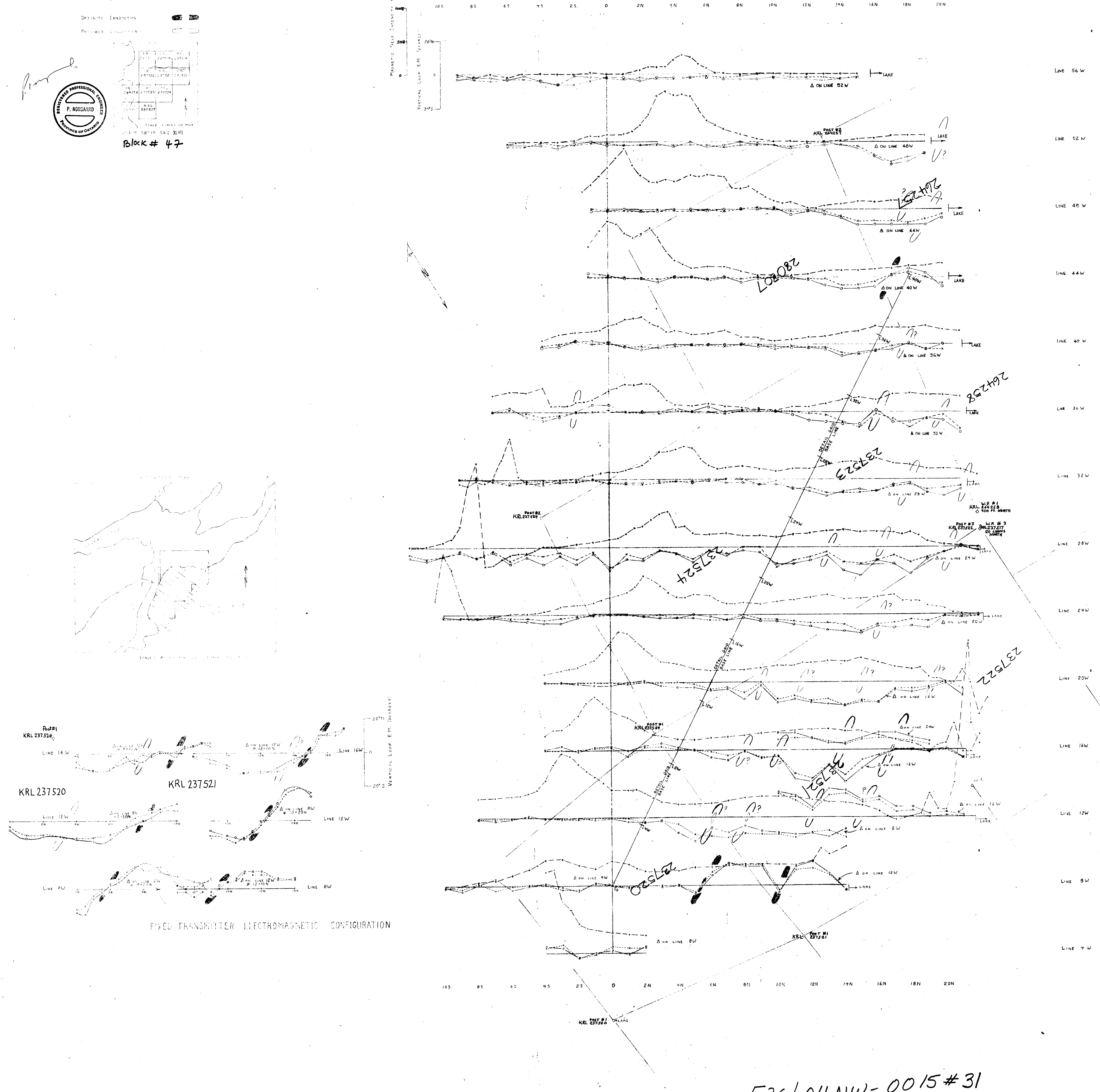
SURVEY: ELECTROMAGNETIC AND MAGNETIC

SCALES: 1" = 200' 1" = 20° 1" = 500γ

LEGEND: Vertical Loop EM 1600 Hz 400 Hz Magnetic Field Intensity

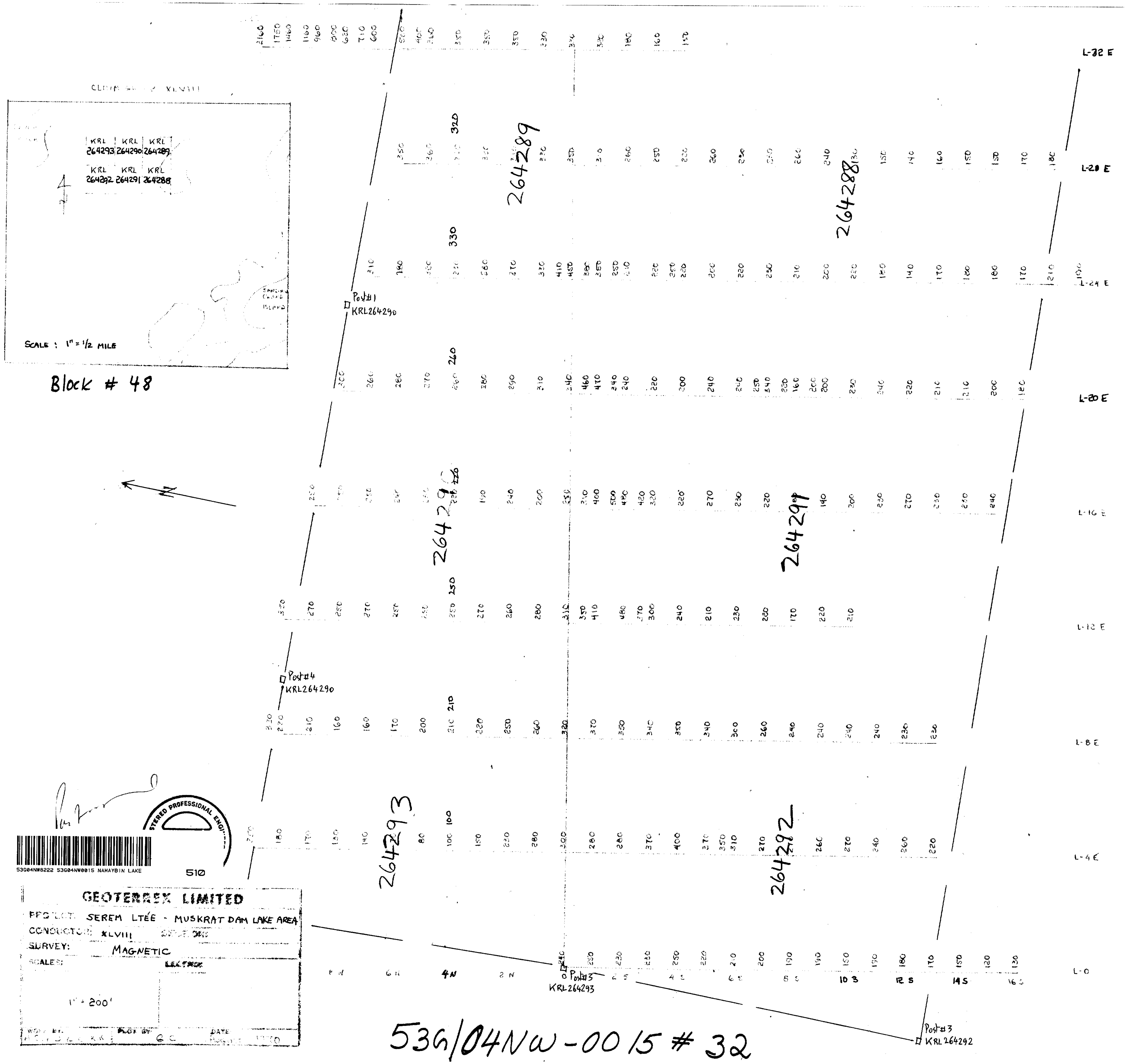
WORK BY: **PLOT BY:** K.K. **DATE:** AUGUST 1970

INSTRUMENTS: SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MF-2 FLUXGATE MAGNETOMETER



536/04NW-0015 #31

500



KRL 264293
KRL 264290
KRL 264289
KRL 264292
KRL 264291
KRL 264288
SCALE : 1" = 1/2 MILE
Block # 48
L-32 E
L-28 E
L-24 E
L-20 E
L-16 E
L-12 E
L-8 E
L-4 E
L-0
264289
264288
264290
264291
264293
264292
Post#1 KRL264290
Post#4 KRL264290
Post#3 KRL264293
Post#3 KRL264292
53G04NW8222 53G04NW0015 NAMAYBIN LAKE
510
GEOTERREX LIMITED
SEREM LTÉE - MUSKRAT DAM LAKE AREA
SURVEY: MAGNETIC
1" = 200'
53G/04NW-0015 # 32

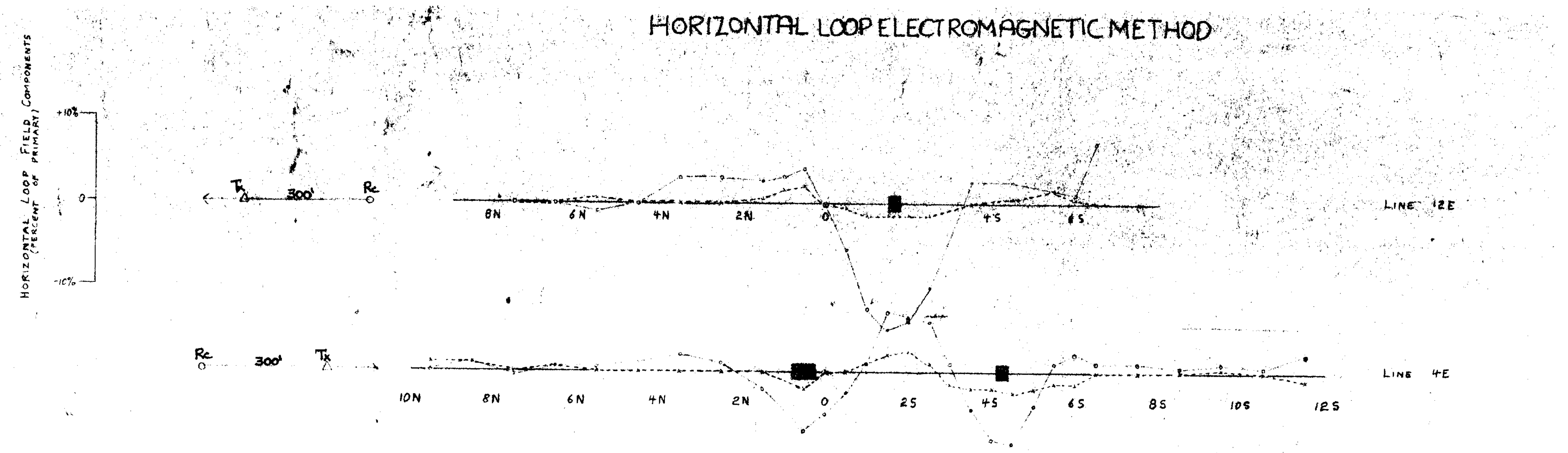
GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: XLVIII	SECTION:
SURVEY: ELECTROMAGNETIC & MAGNETIC	
SCALES: 1" = 200' ; 1 = 10° ; 1 = 500γ ; = 10%	LEGEND: VERTICAL LOOP DIP ANGLE 1800 Hz o——o ; 400 Hz x----x ; MAGNETIC FIELD INTENSITY +——+
WORK BY: A.S., F.D., G.C., K.K.	PLOT BY: B.K.
DATE: JULY 1970	

INSTRUMENTS:
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
M.F.-2 FLUXGATE MAGNETOMETERS

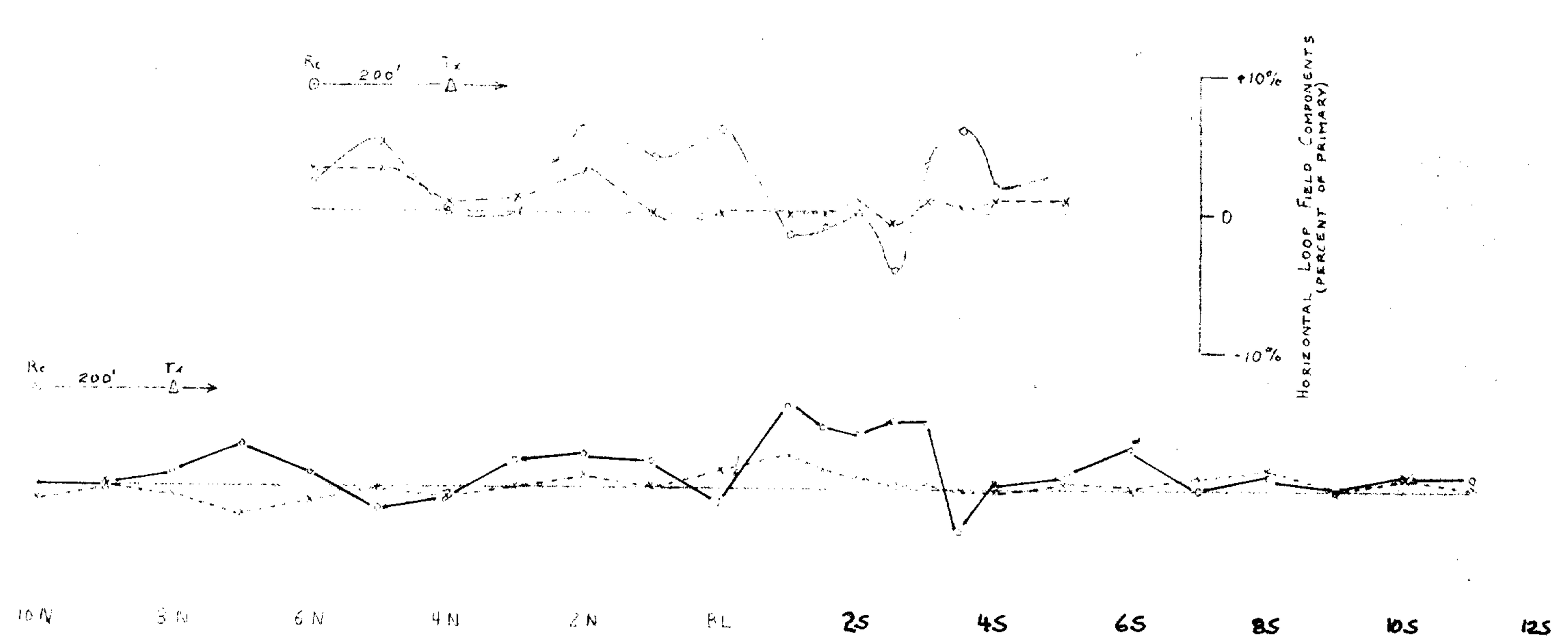
DEFINITE CONDUCTOR
POSSIBLE CONDUCTOR
HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

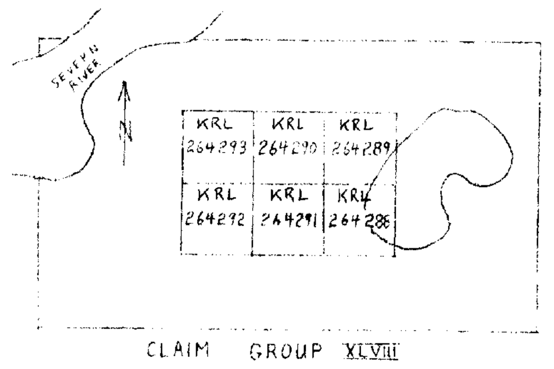
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

HORIZONTAL LOOP ELECTROMAGNETIC METHOD

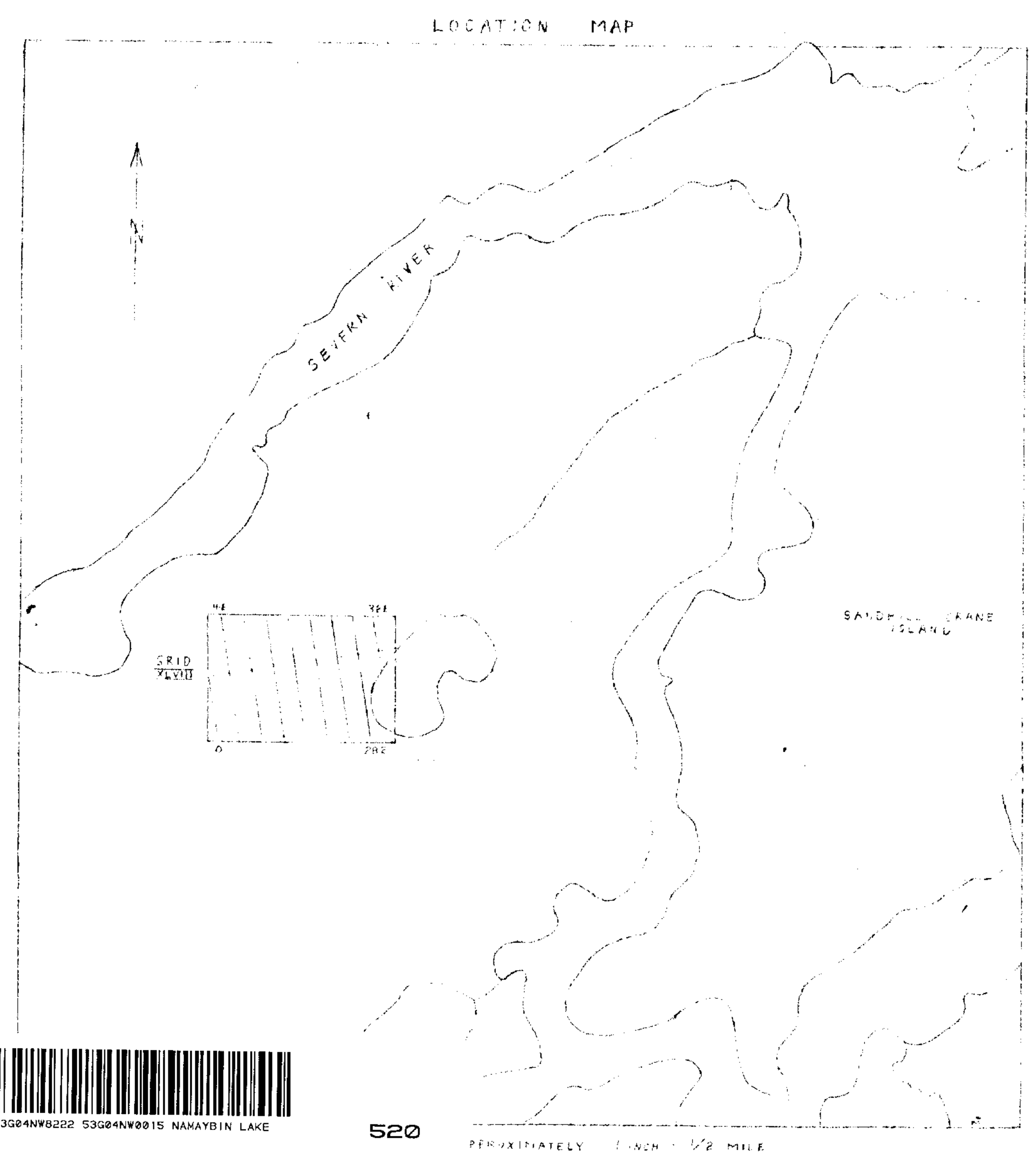


HORIZONTAL LOOP ELECTROMAGNETIC METHOD

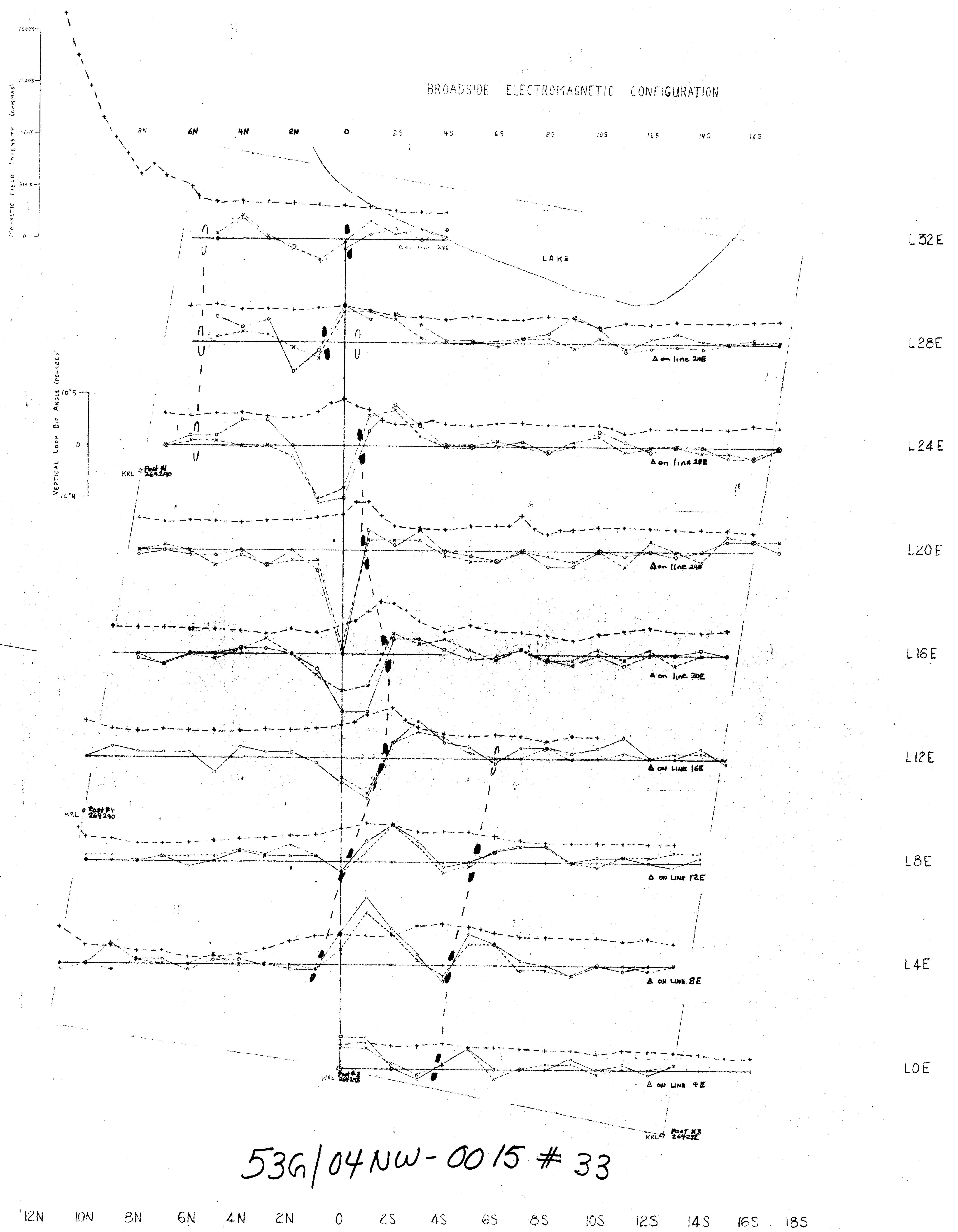




Block # 48



BROADSIDE ELECTROMAGNETIC CONFIGURATION



53G/04NW-0015 #33

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: IV SECTION:

SURVEY: MAGNETIC

SCALES: 1" = 200 FEET

LEGEND:

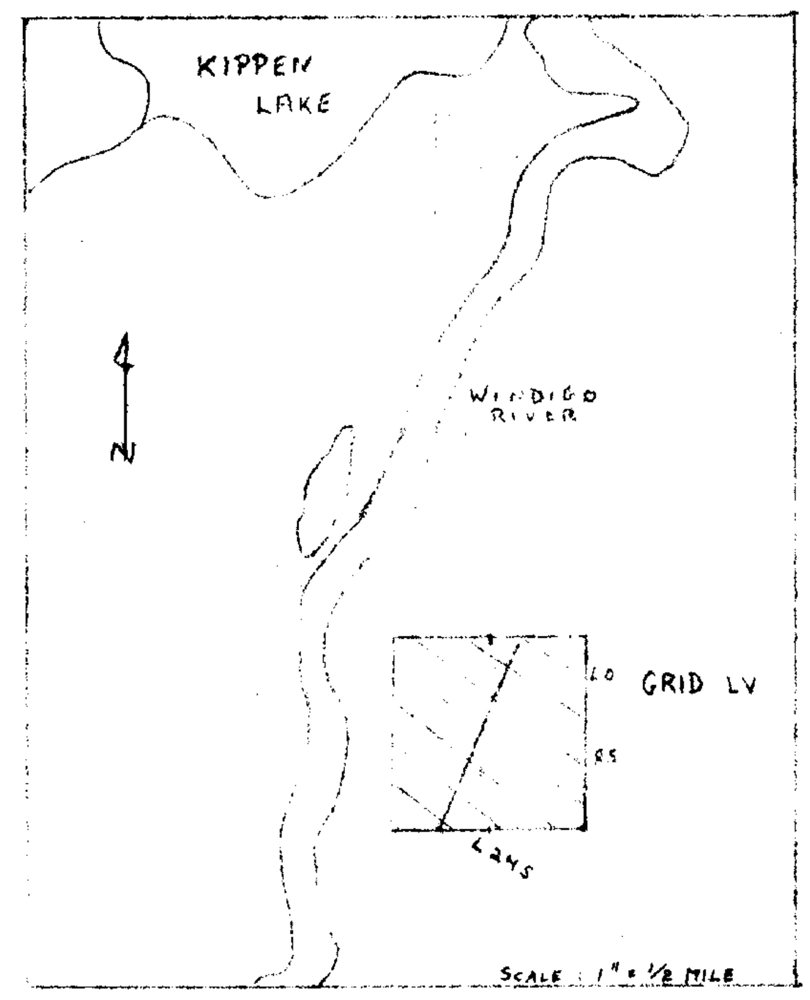
VERTICAL MAGNETIC FIELD READINGS IN GAMMAS

WORK BY: PLOT BY: CK DATE: SEPT 1970

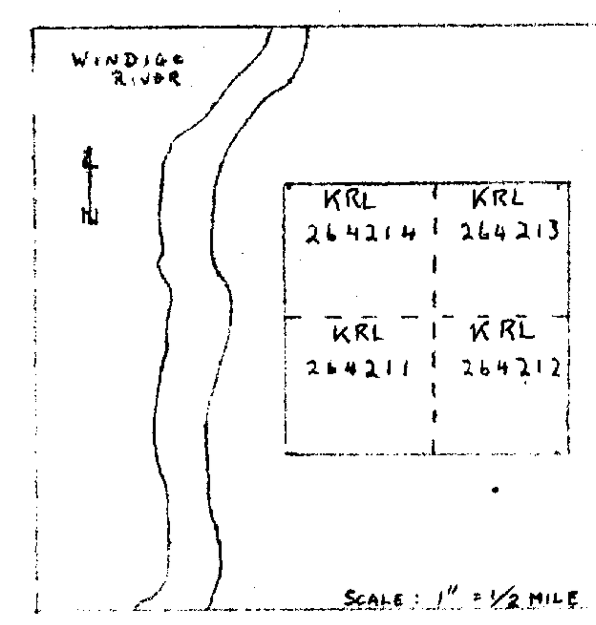
INSTRUMENT: MF-2 FLUXGATE MAGNETOMETER

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

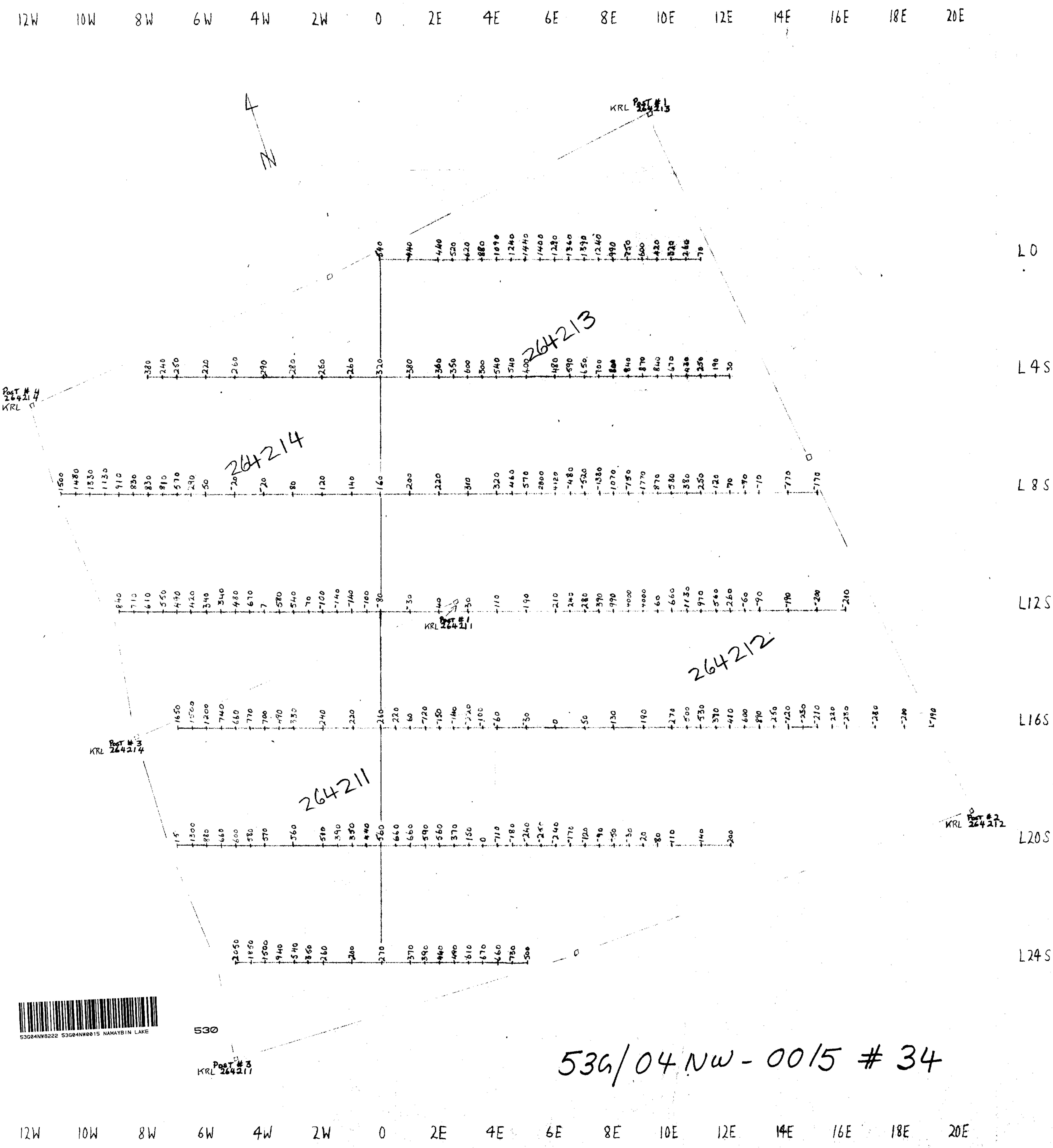
LOCATION MAP GRID IV



CLAIM GROUP IV



Block # 55



GEOTERREX LIMITED

PROJECT: SEREM LTÉE
MUSKRAT DAM LAKE AREA
CONDUCTOR: LV **SECTION:**
SURVEY: ELECTROMAGNETIC & MAGNETIC

SCALES:
1" = 200'
1" = 10°
1" = 1000γ
1" = 10%

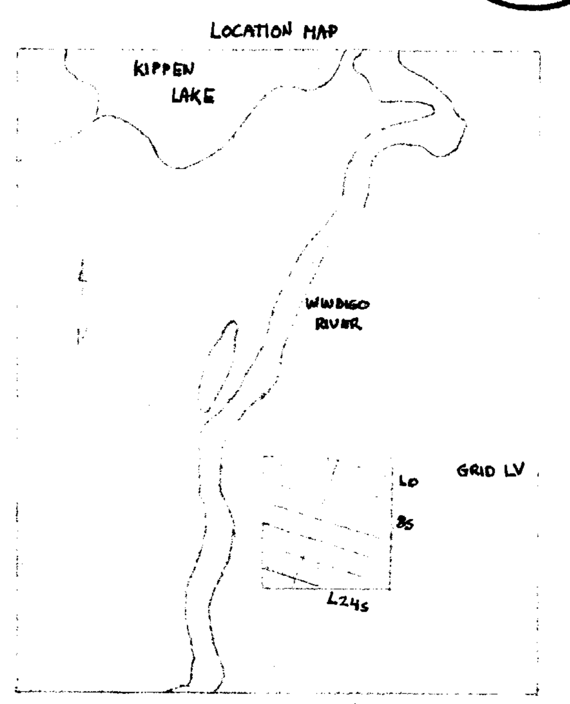
LEGEND:
VERTICAL LOOP DIP ANGLE
1600 Hz
400 Hz
HORIZONTAL LOOP FIELD COMPONENTS
IN PHASE
QUADRATURE
MAGNETIC FIELD INTENSITY

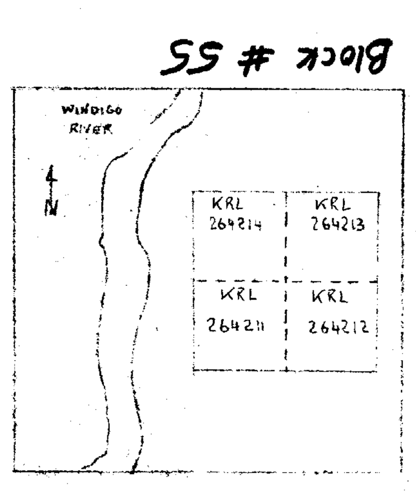
WORK BY: H.S. G.C. C.P. & S. | **PLOT BY:** B.K. | **DATE:** SEPTEMBER 1972

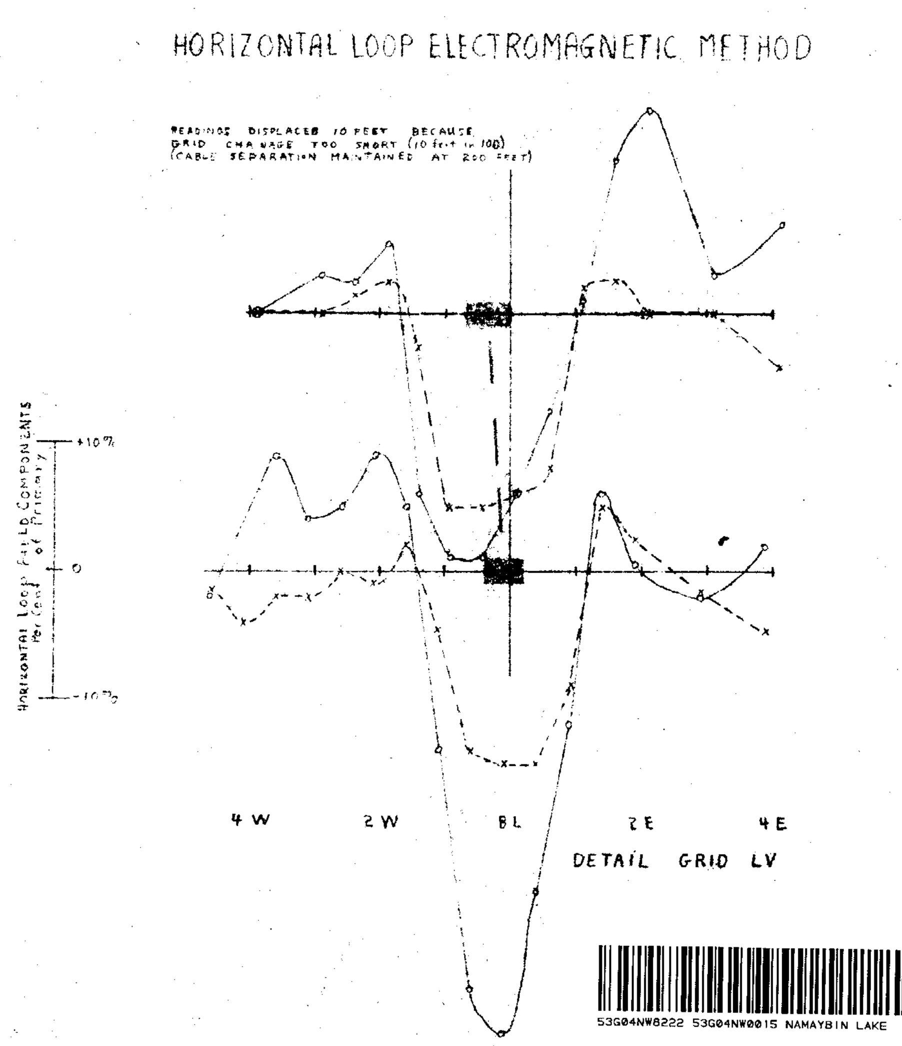
INSTRUMENT:
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MF2 FLUXGATE MAGNETOMETERS
RONKA MARK IV HORIZONTAL LOOP ELECTROMAGNETIC UNITS (876 Hz)

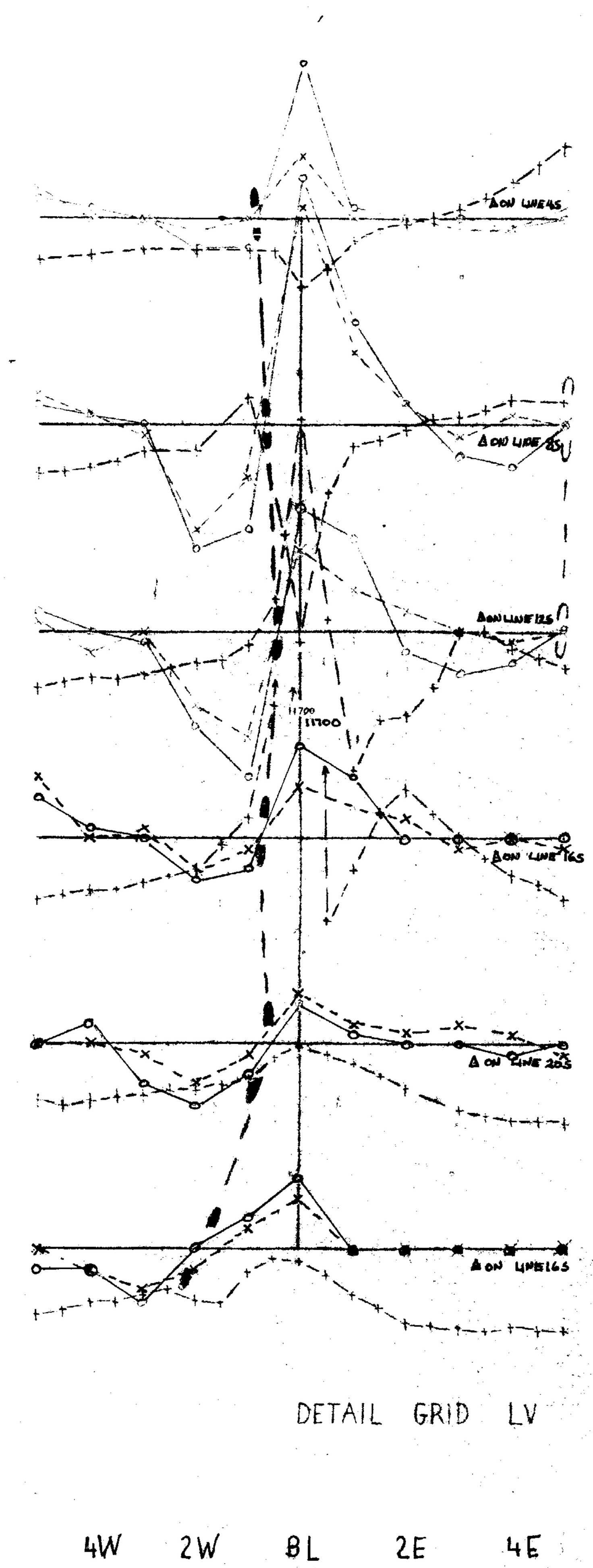
DEFINITE CONDUCTOR
POSSIBLE CONDUCTOR
HORIZONTAL LOOP CONDUCTOR

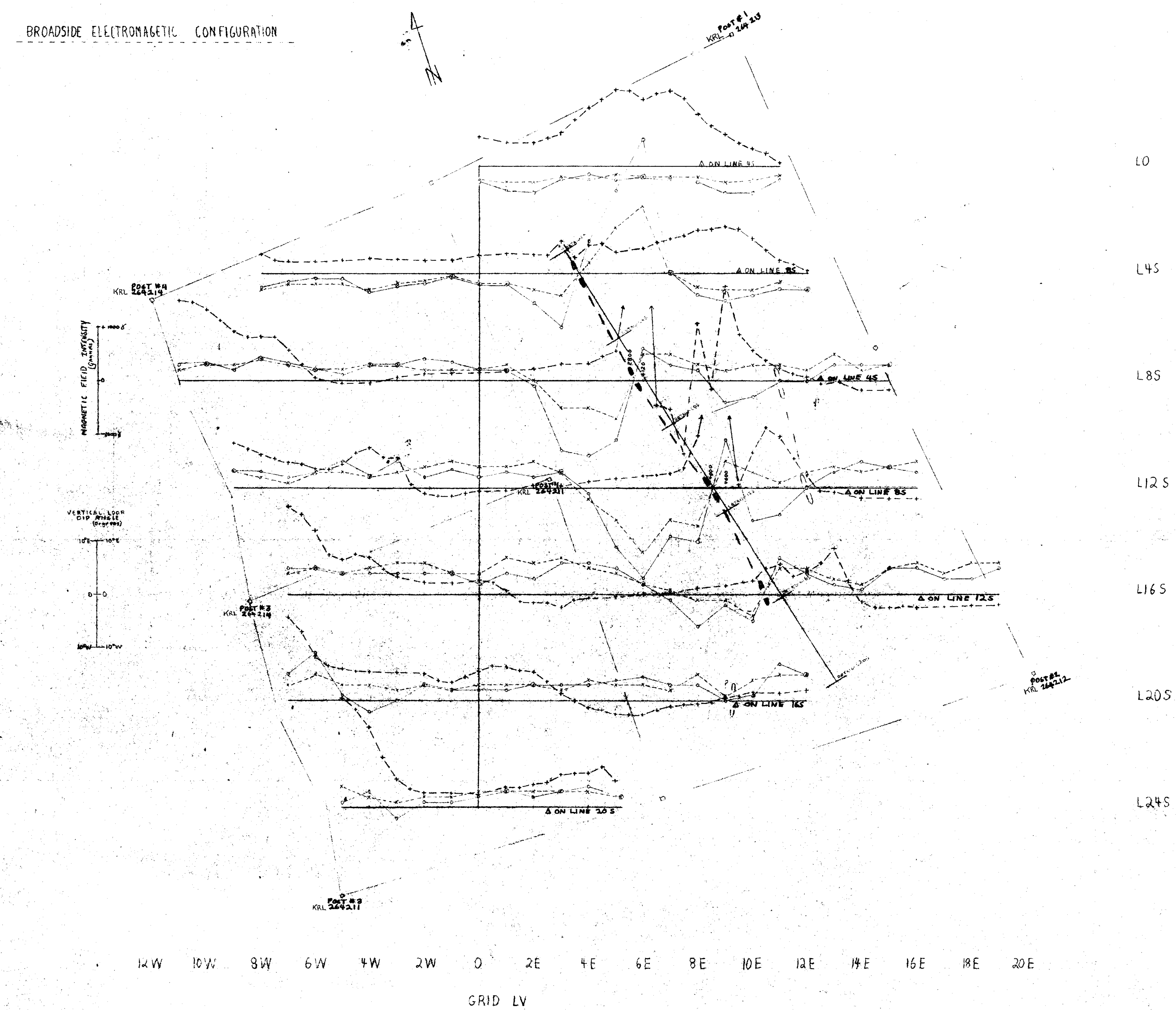
REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO











536/04NW -0015 #35

540

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: LX SECTION:

SURVEY: MAGNETIC

SCALES: 1" = 200 FEET

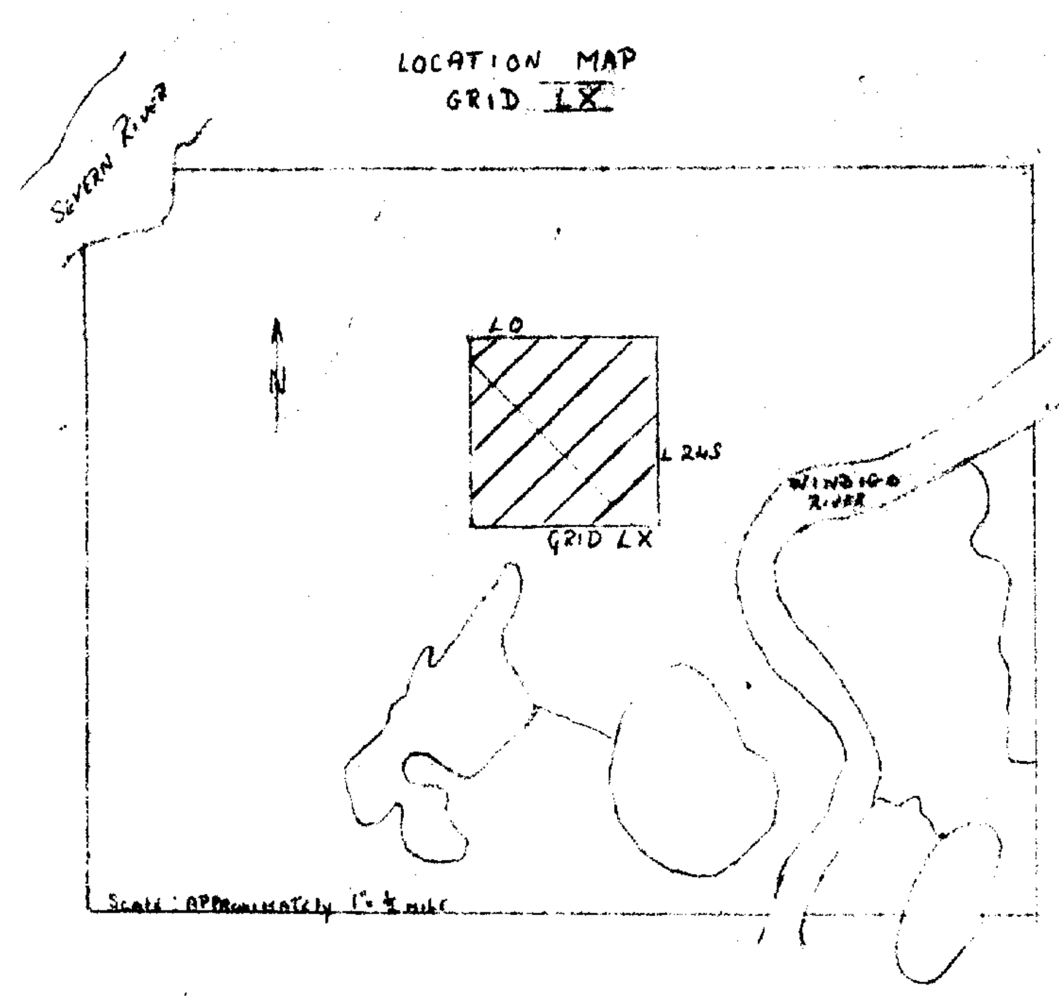
VERTICAL MAGNETIC FIELD READINGS IN GAMMAS

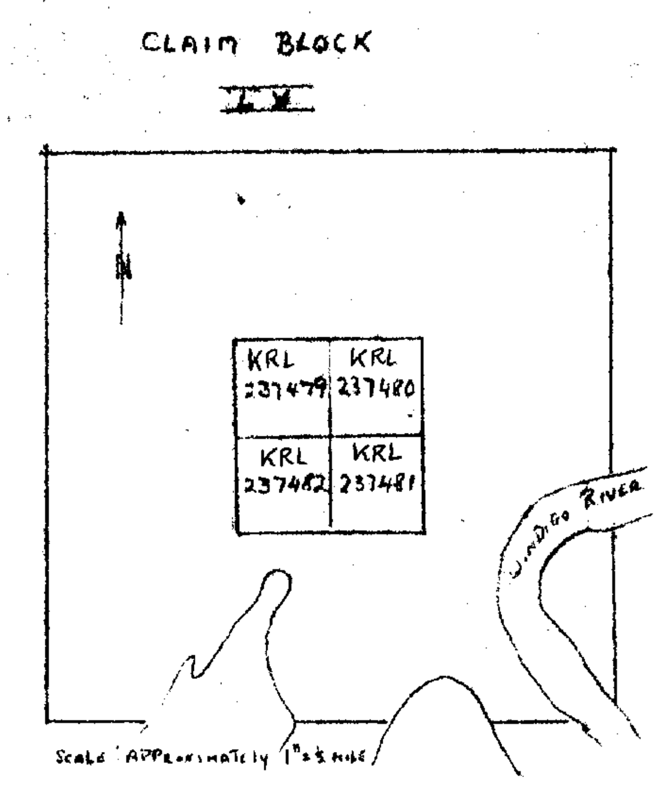
LEGEND:

WORK BY: PLOT BY: CK DATE: SEPT. 1970

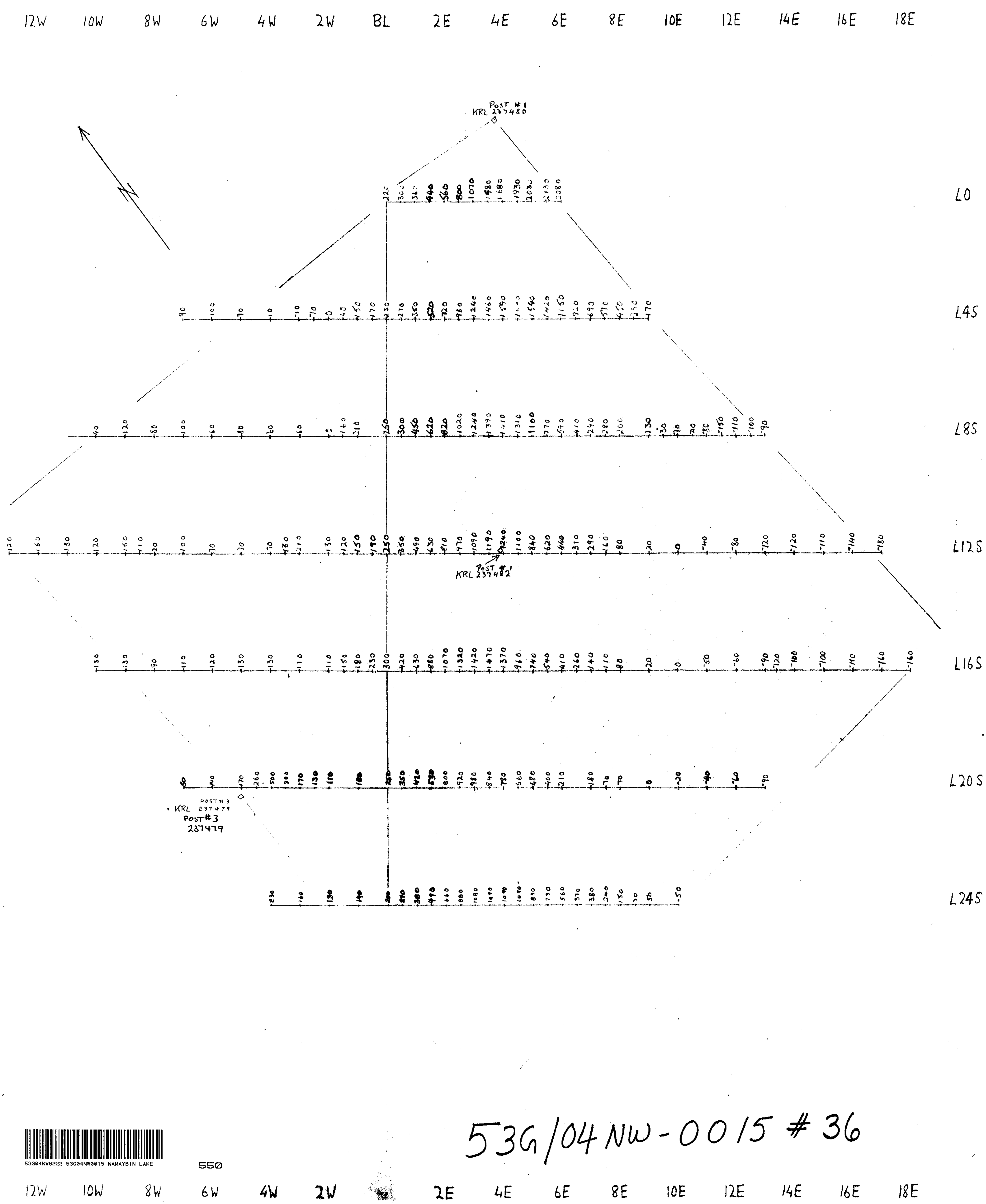
INSTRUMENT: MF-2 FLUXGATE MAGNETOMETER

P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO





Block # 60



53G/04NW-0015 #36

550

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE, AREA	
CONDUCTOR: LX	SECTION:
SURVEY: ELECTROMAGNETIC & MAGNETIC	
SCALES: 1" = 200' ; 1" = 10° ; 1" = 500 γ ; 1" = 10%	LEGEND: VERTICAL LOOP DIP ANGLE 1600 Hz o——o 400 Hz x- - - -x ; HORIZONTAL LOOP FIELD COMPONENTS IN PHASE o——o QUADRATURE x- - - -x ; MAGNETIC FIELD INTENSITY +——+
WORK BY: A.S., G.C., F.D. PLOT BY: B K	DATE: 5 SEPTEMBER 1974

INSTRUMENT :
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MF-2 FLUXGATE MAGNETOMETERS
RONKA MK 4 HORIZONTAL LOOP ELECTROMAGNETIC UNITS (876 Hz)

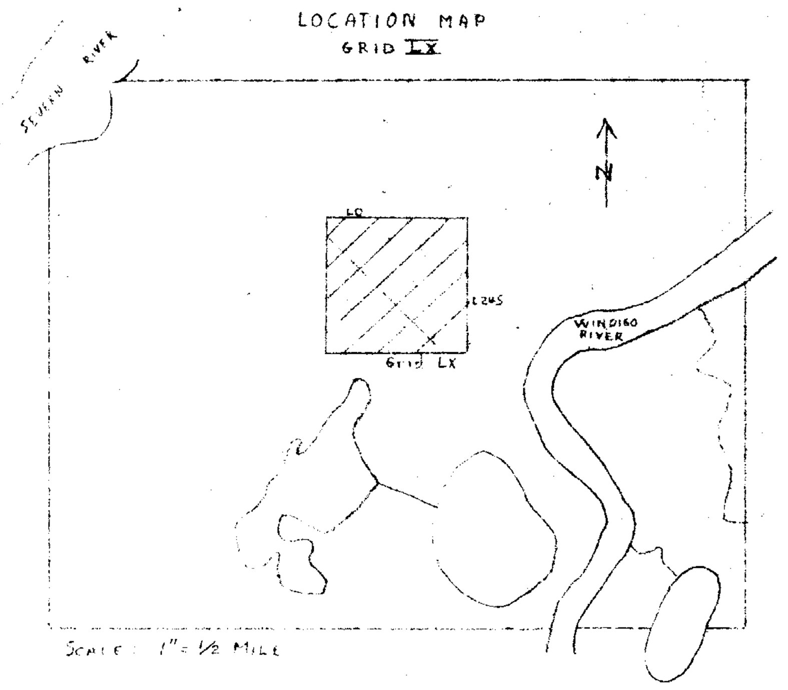
VERTICAL LOOP DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

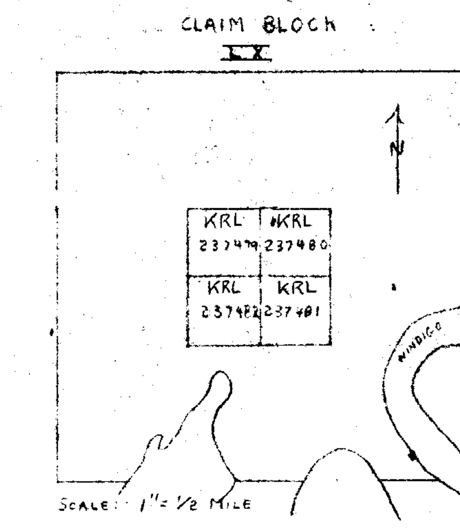
HORIZONTAL LOOP CONDUCTOR (CONDUCTOR WIDTH SHOWN TO SCALE)

P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

LOCATION MAP GRID IX

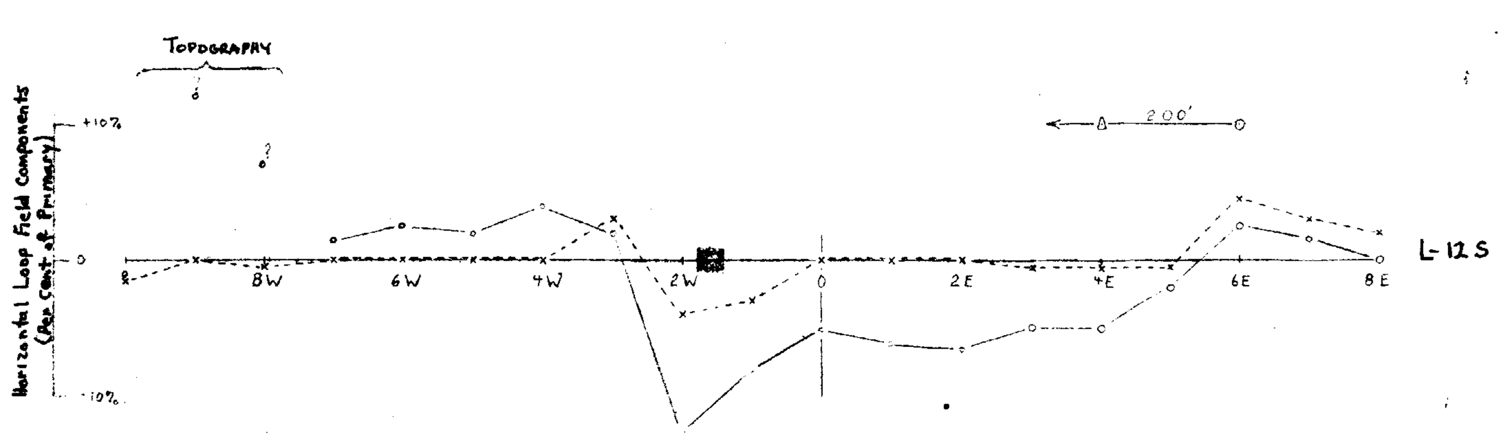


CLAIM BLOCK IX

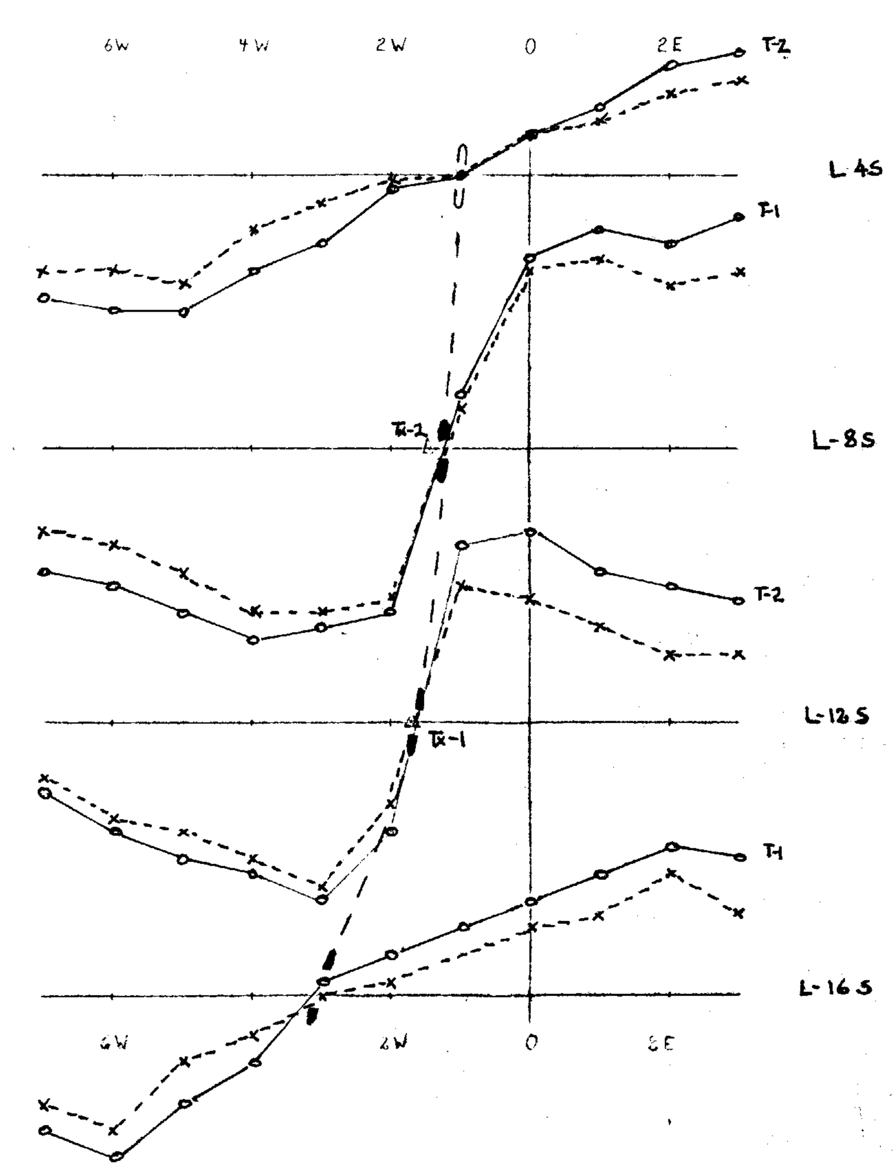


Block # 60

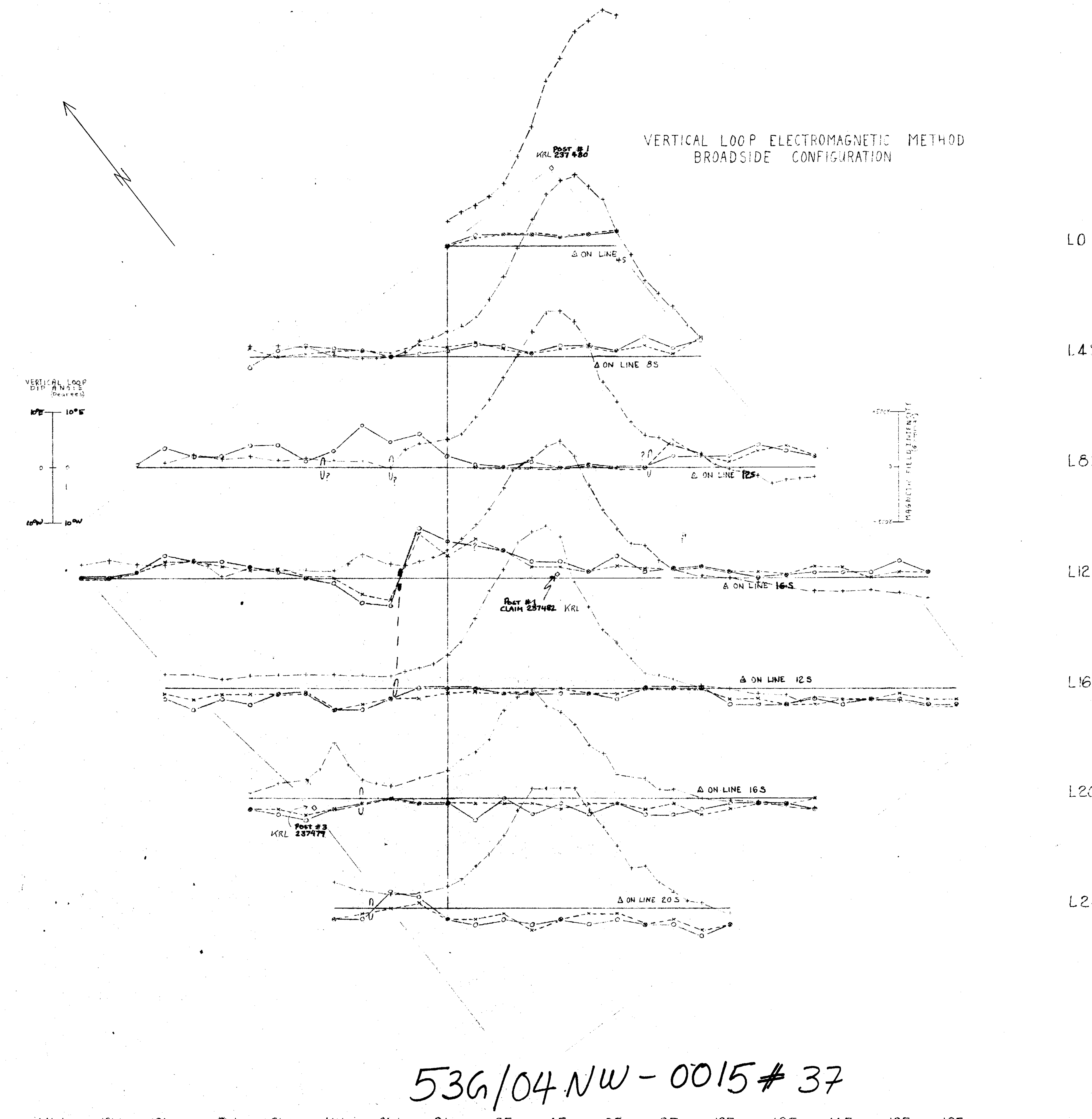
HORIZONTAL LOOP ELECTROMAGNETIC METHOD



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



53G/04NW-0015 #37

560

G… ERREX LIMITED

PROJECT: SEREM LTEE. MUSKRAT DAM LAKE AREA.

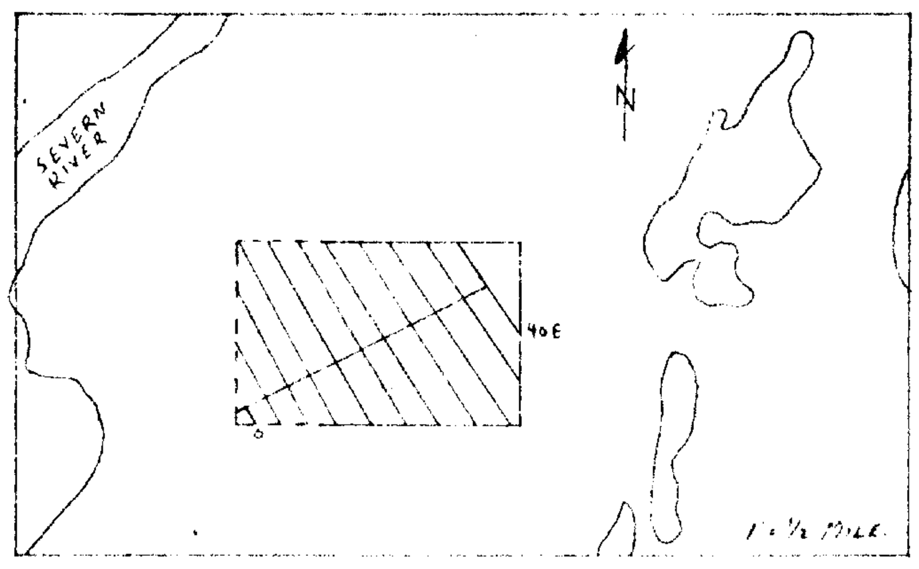
LXI

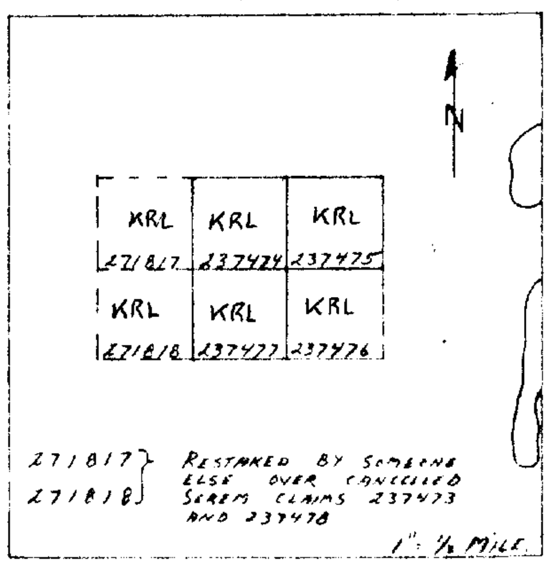
SURVEY: MAGNETIC

SCALES: 1" = 200' ; 1" = 500 γ

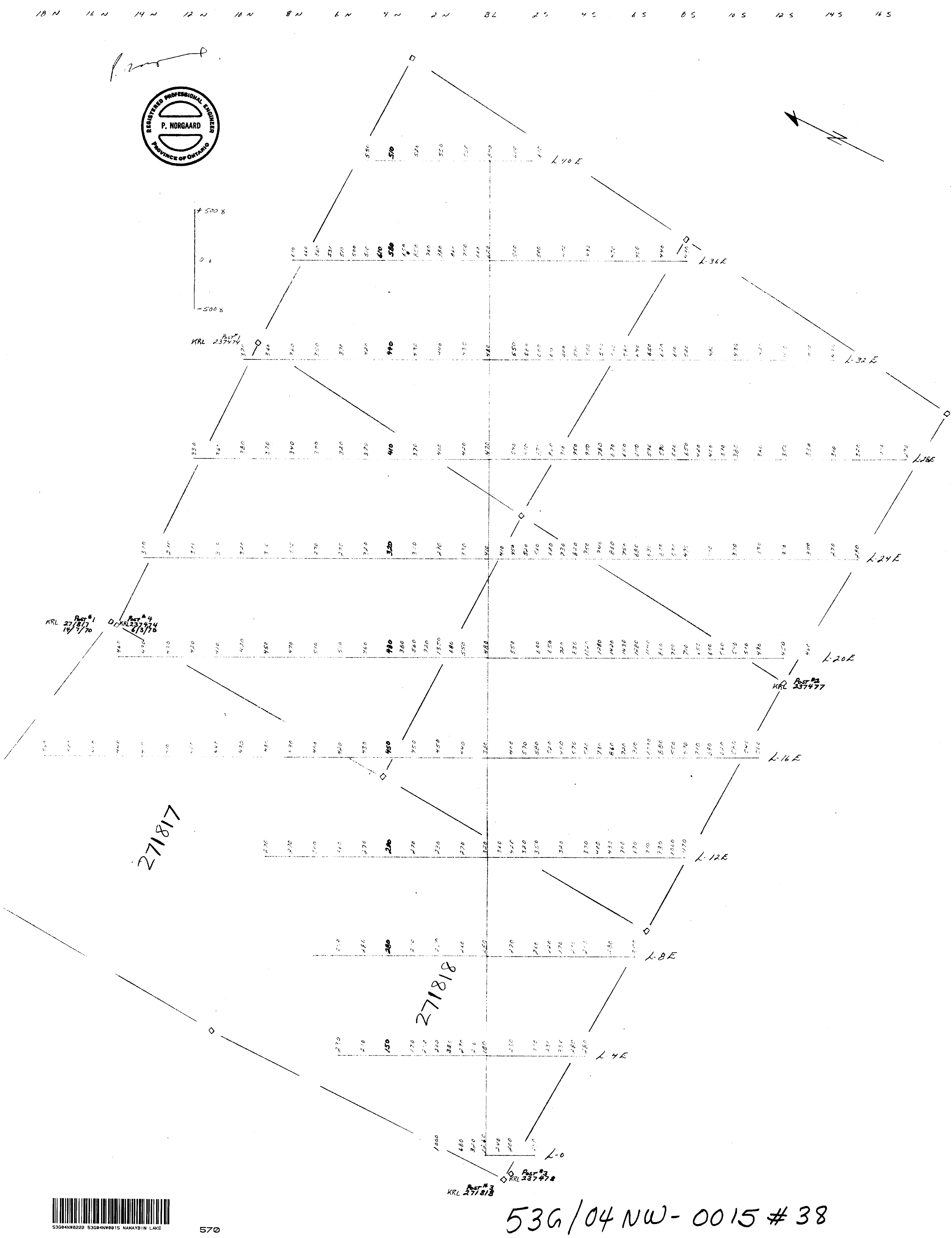
LEGEND:

WORK BY: KK-GC-AS-BK-GC- | PLOT BY: P.M. | DATE: AUG -70





Block # 61



53G/04NW-0015 #38

570

GEOTERREX LIMITED

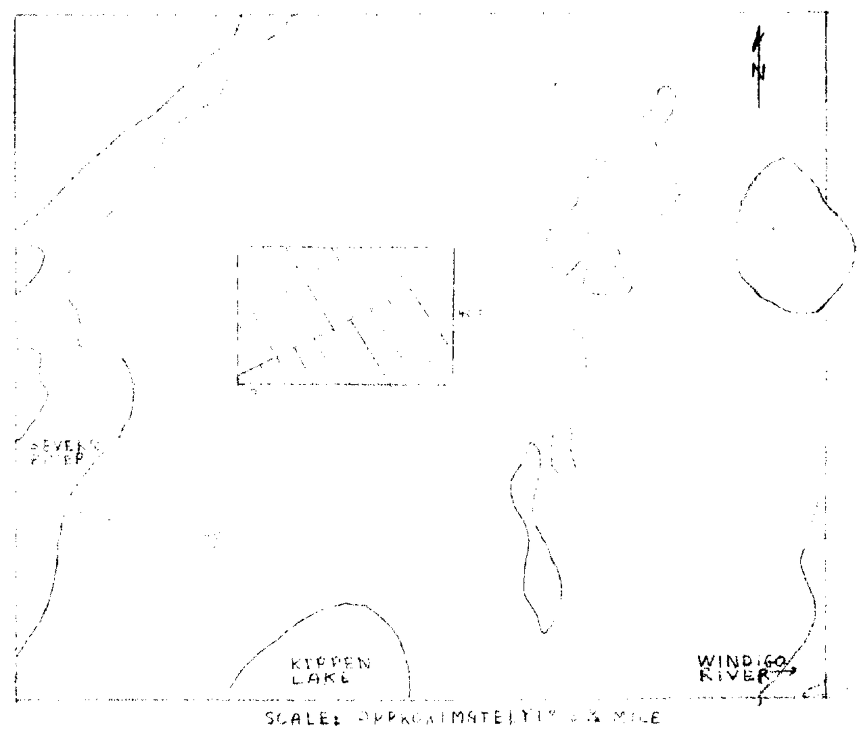
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: LXI SECTION:
SURVEY: MAGNETIC AND ELECTROMAGNETIC
SCALES: [illegible] 10% 500γ 10%
LEGEND: VERTICAL LOOP DIP ANGLE; MAGNETIC FIELD INTENSITY; HORIZONTAL LOOP FIELD COMPONENTS: IN PHASE, QUADRATURE
WORK BY: [illegible] PLOT BY: [illegible] DATE: AUGUST 1970

INSTRUMENTS: SE300 Vertical Loop Electromagnetic Units
MF-2 Fluxgate Magnetometer
Ronka Mark IV Horizontal Loop Electromagnetic Units

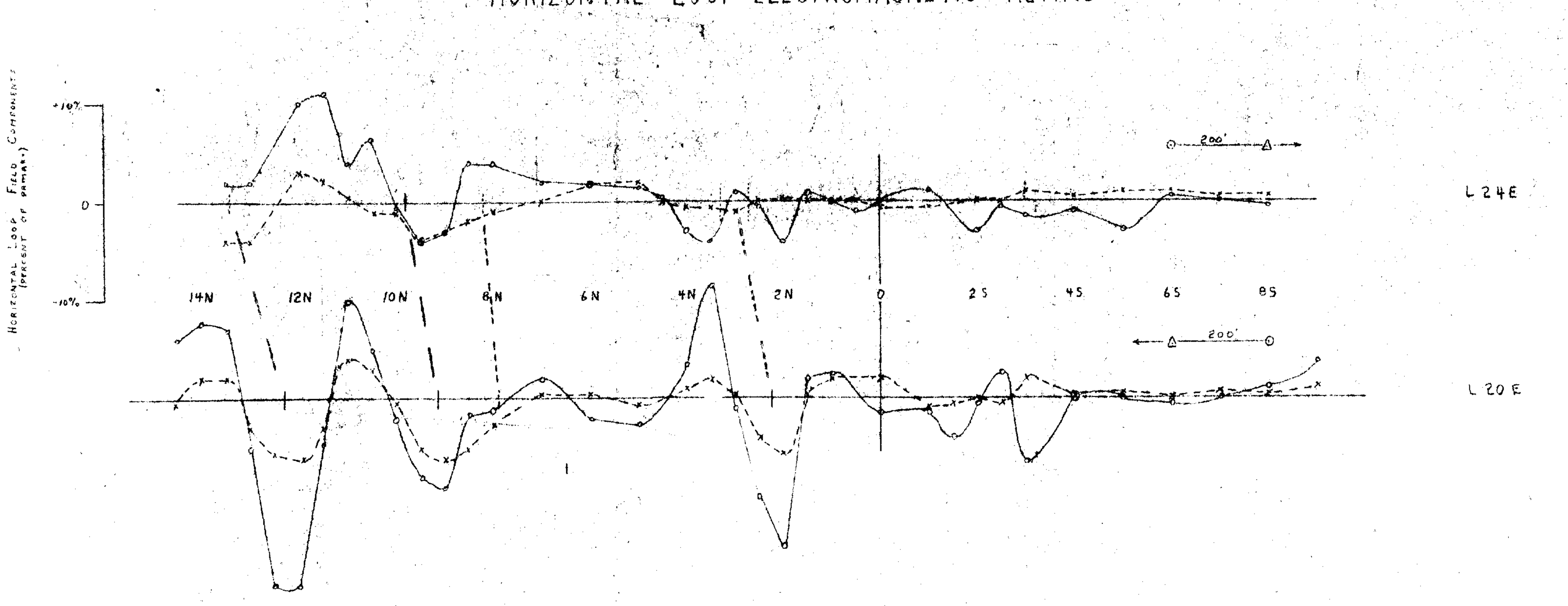
Definite Conductor
Possible Conductor
Horizontal Loop Conductor (Conductor width shown to scale)

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

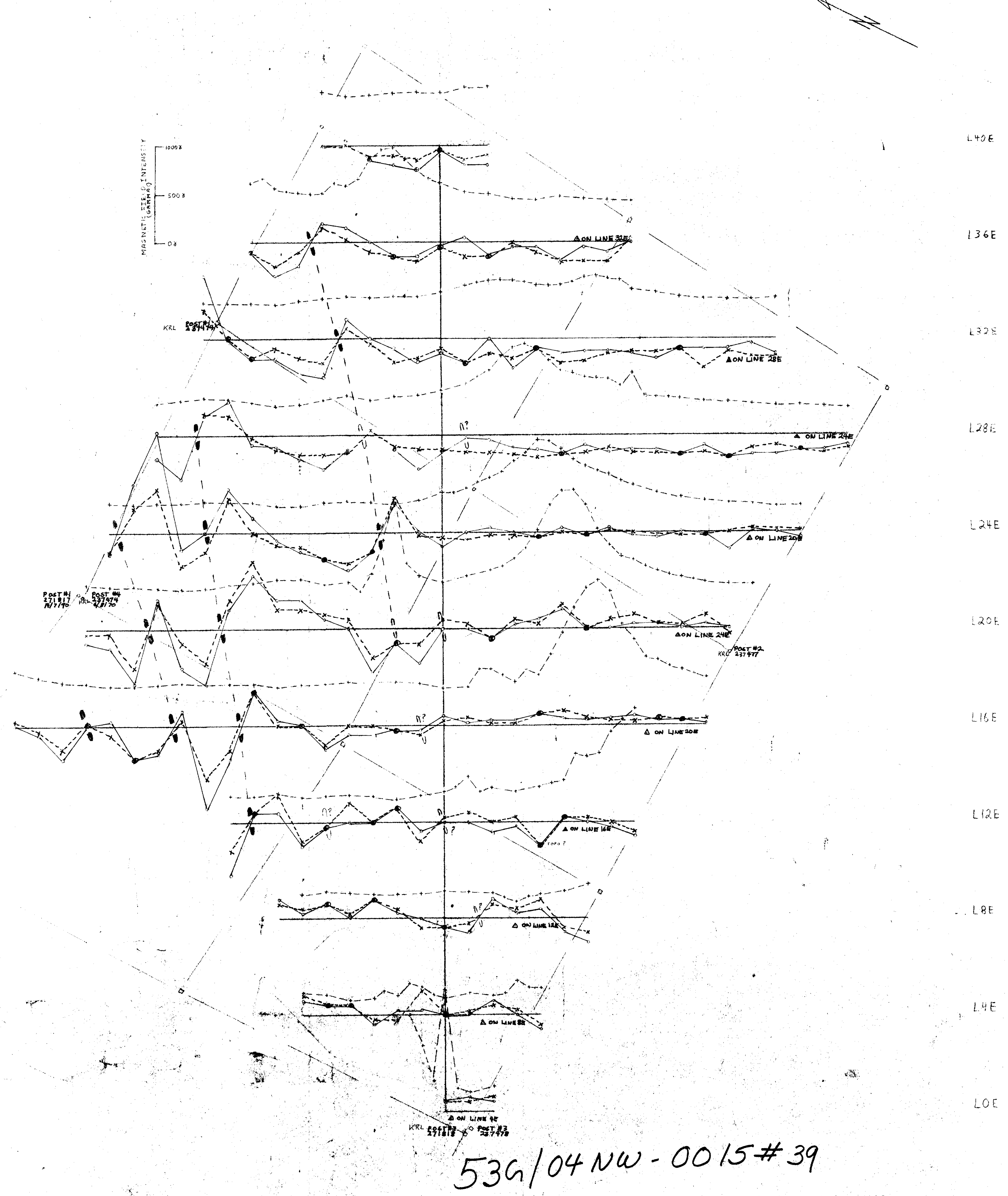
LOCATION MAP



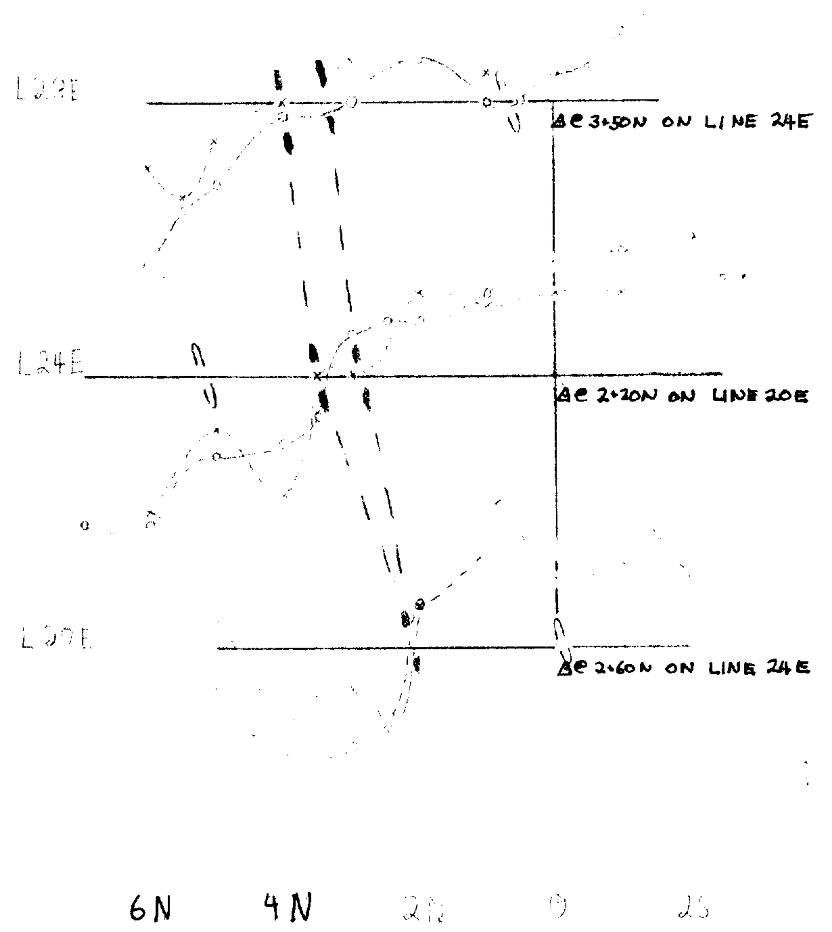
HORIZONTAL LOOP ELECTROMAGNETIC METHOD

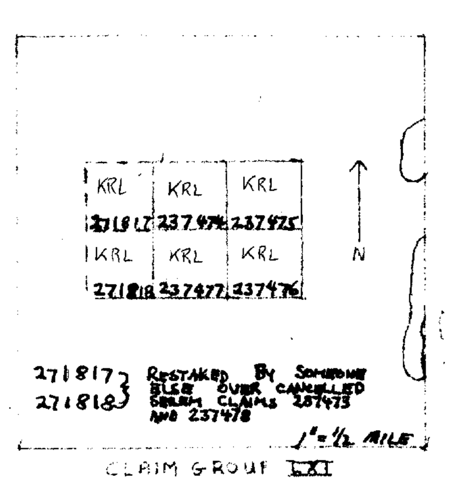


VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION





Block # 60

53G/04NW-0015 #39

53G04NW8222 53G04NW0015 NAMAYBIN LAKE 580

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: XXIX SECTION:

SURVEY: MAGNETIC

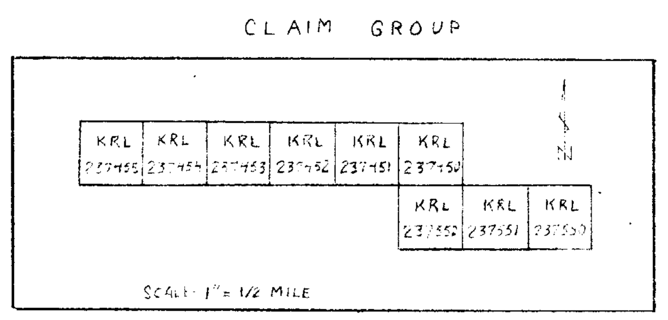
SCALES: 1" = 200 FT

LEGEND: VERTICAL-MAGNETIC-FIELD READINGS IN GAMMAS

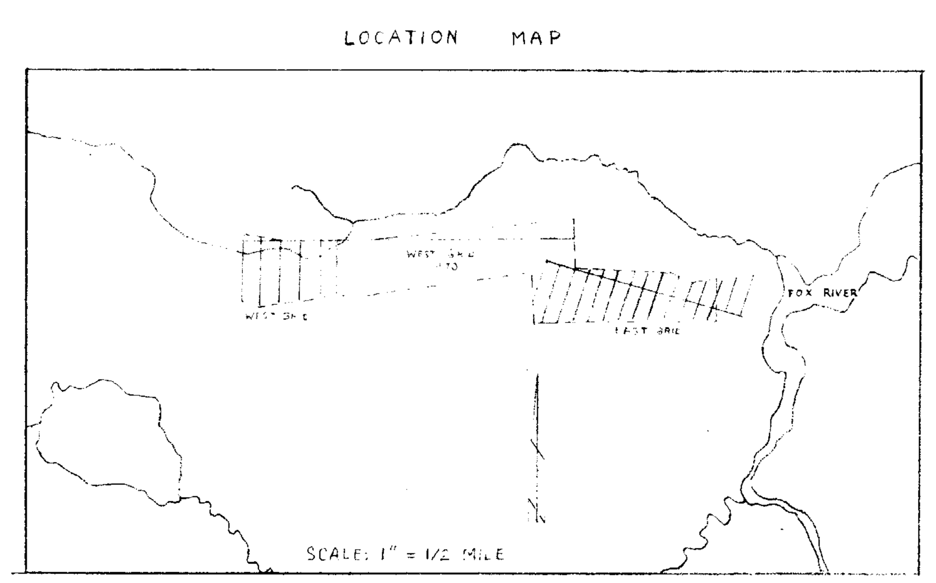
WORK BY: D.M. | PLOT BY: R.A.S. | DATE: FEBRUARY 1971

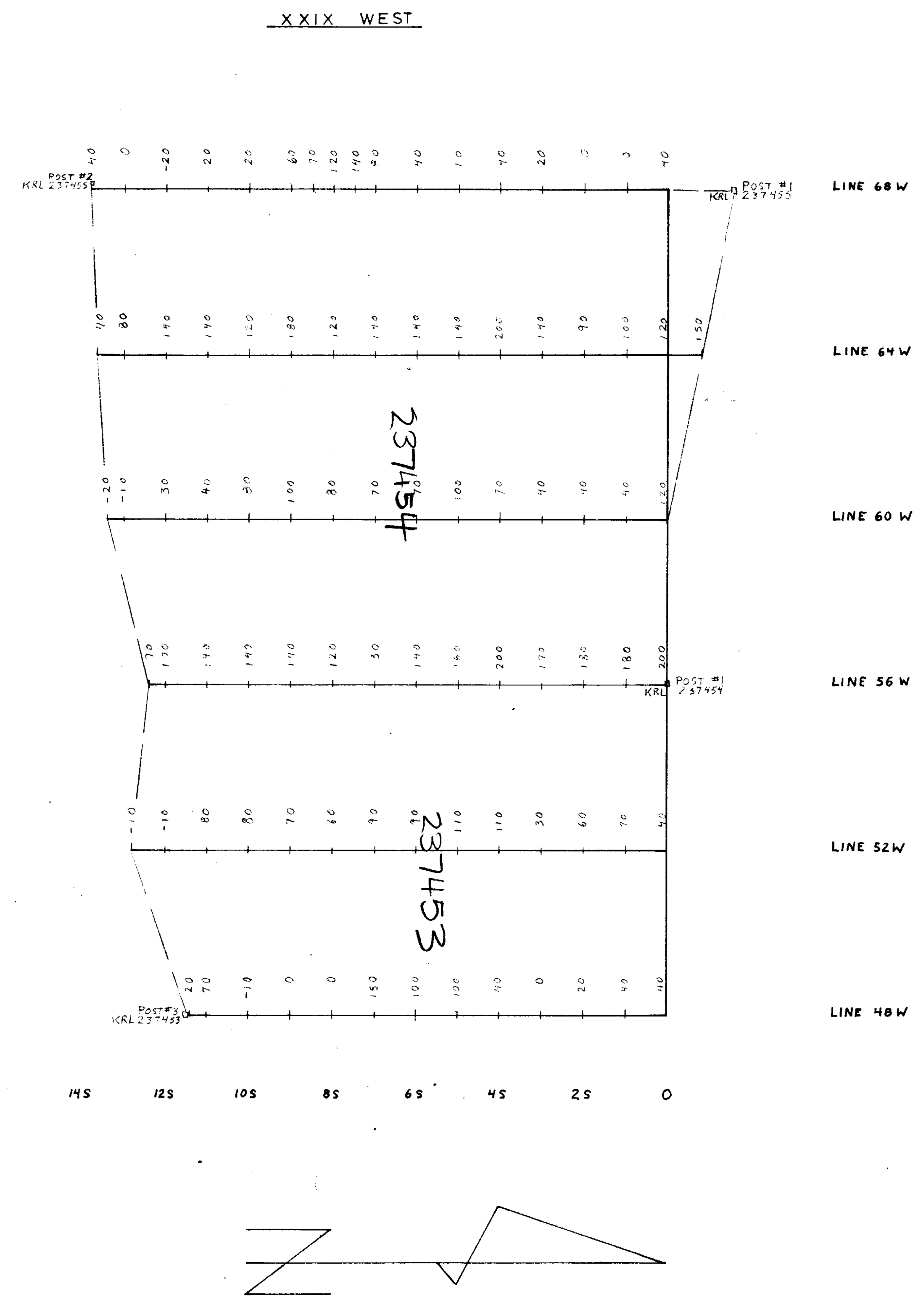
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

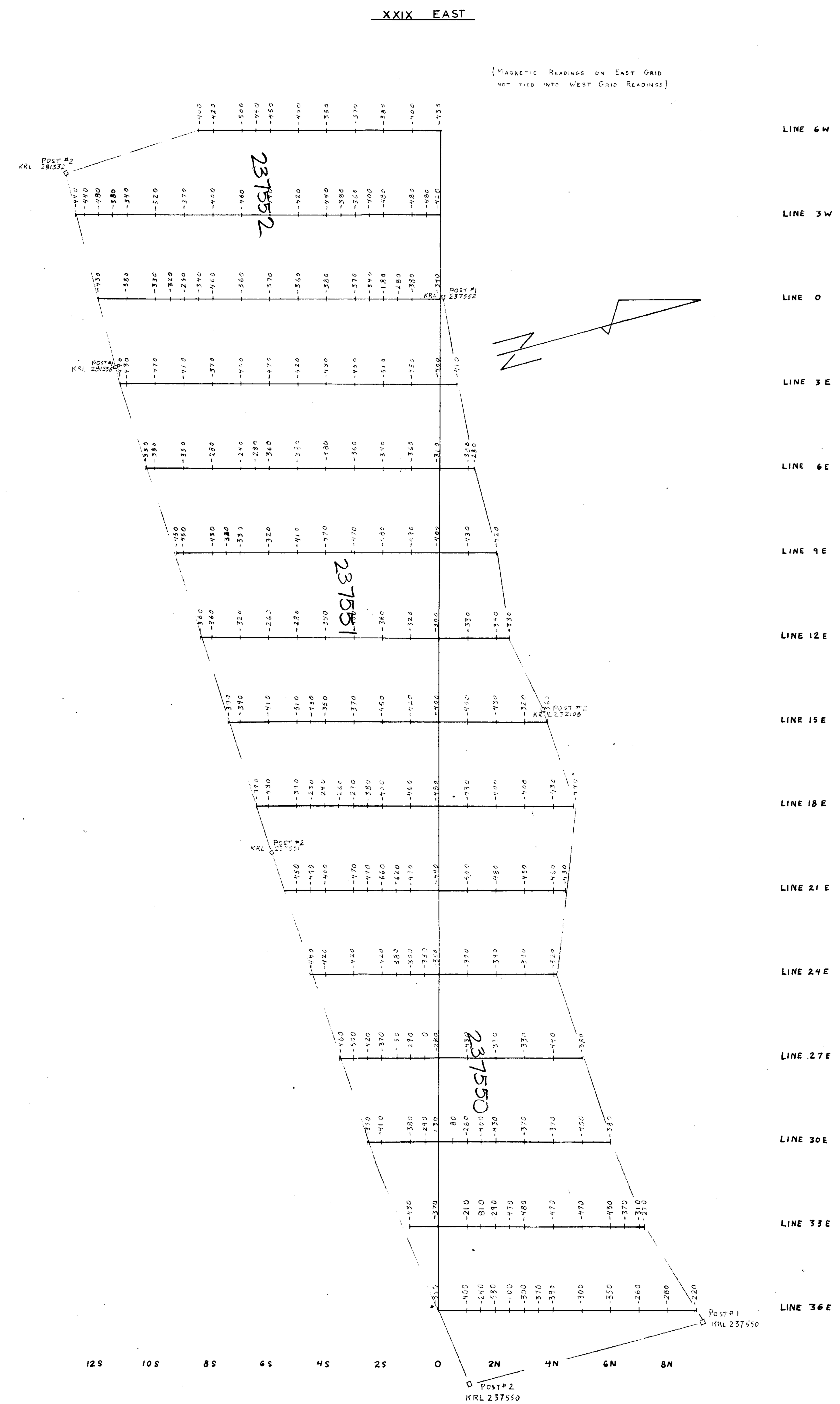
INSTRUMENT: MF1 MAGNETOMETER



Block # 29







53G/04 NW-0015 #40

590

GEOTERREX LIMITED

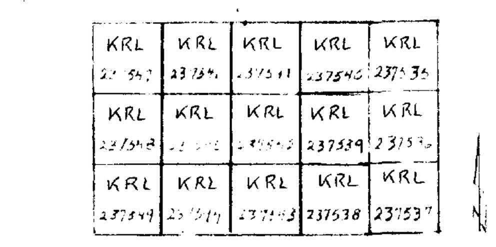
PROJECT SEREM LTÉE – MUSKRAT DAM LAKE AREA
CONDUCTOR: XXX SECTION:
SURVEY: MAGNETIC
SCALES: LEGEND:

1 INCH = 200 FEET
VERTICAL-MAGNETIC-FIELD READINGS IN GAMMAS
CONTOUR INTERVAL ~500 GAMMAS

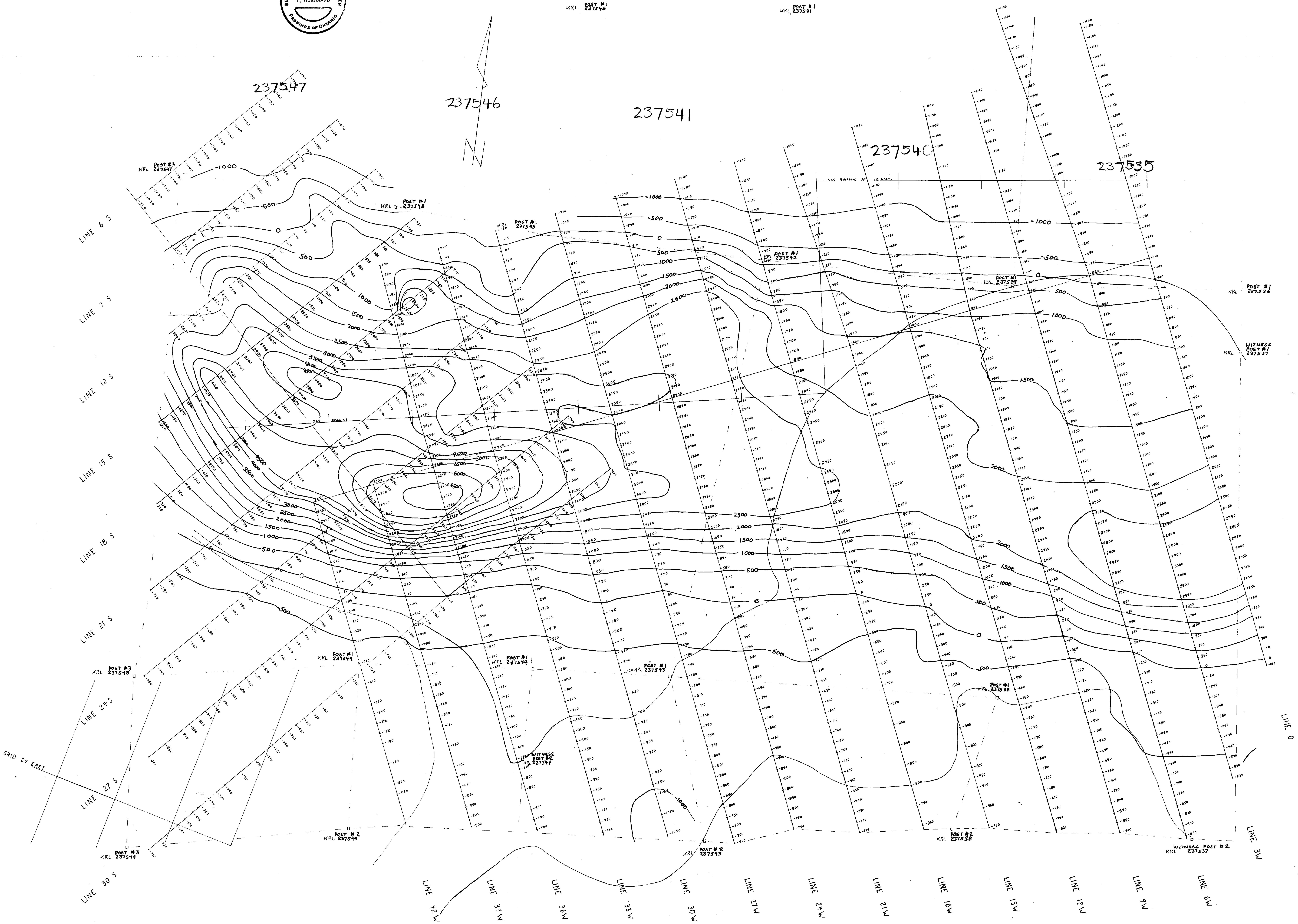
MINERAL CLAIM POST
LOCATIONS WHERE MAGNETIC READINGS TAKEN
MAGNETIC CONTOUR 500

WORK BY: F.K., O.K., D.M. | PLOT BY: L.L., R.A.S. | DATE: FEBRUARY 1971

INSTRUMENT: M F I FLUXGATE MAGNETOMETER

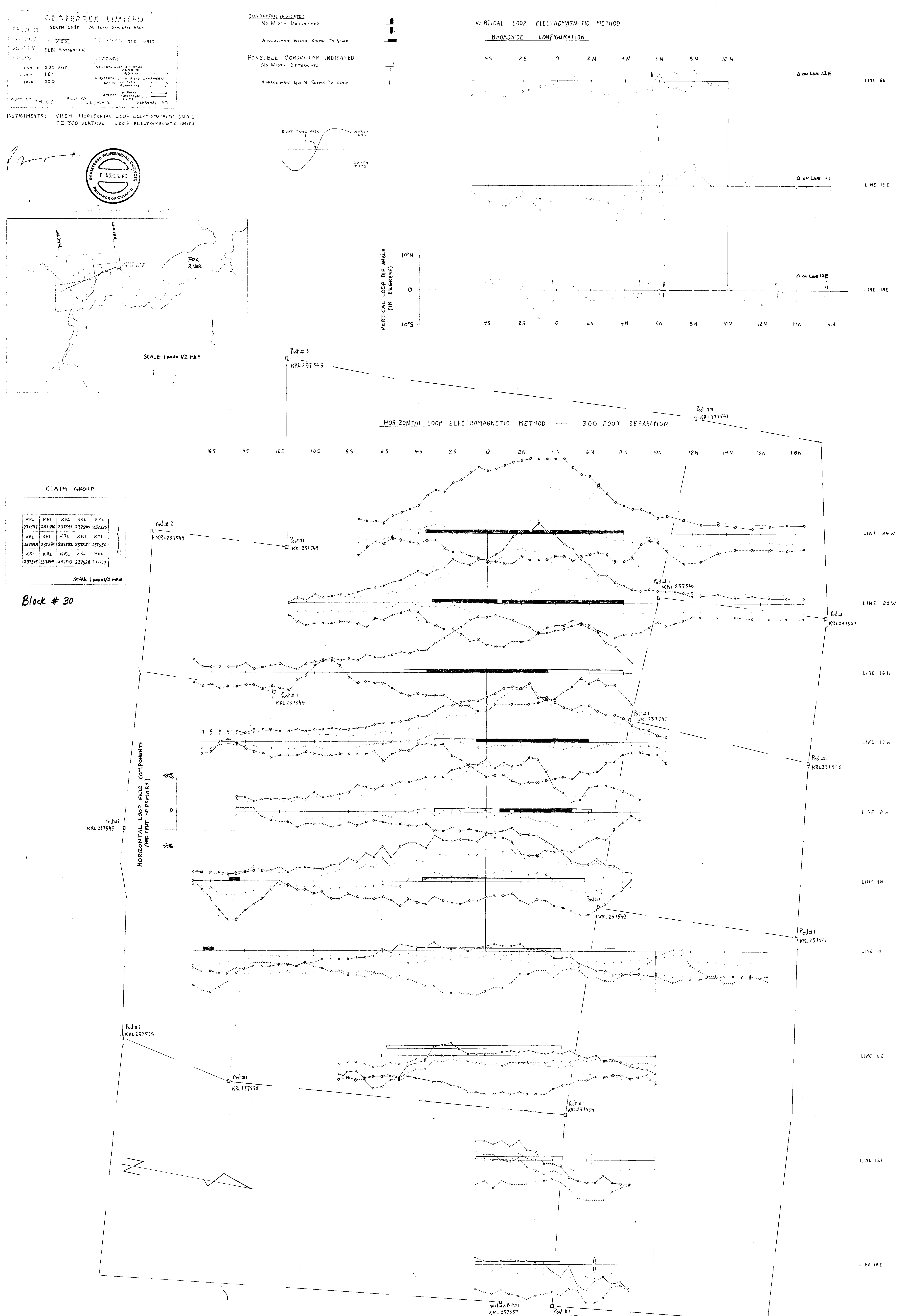


REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO



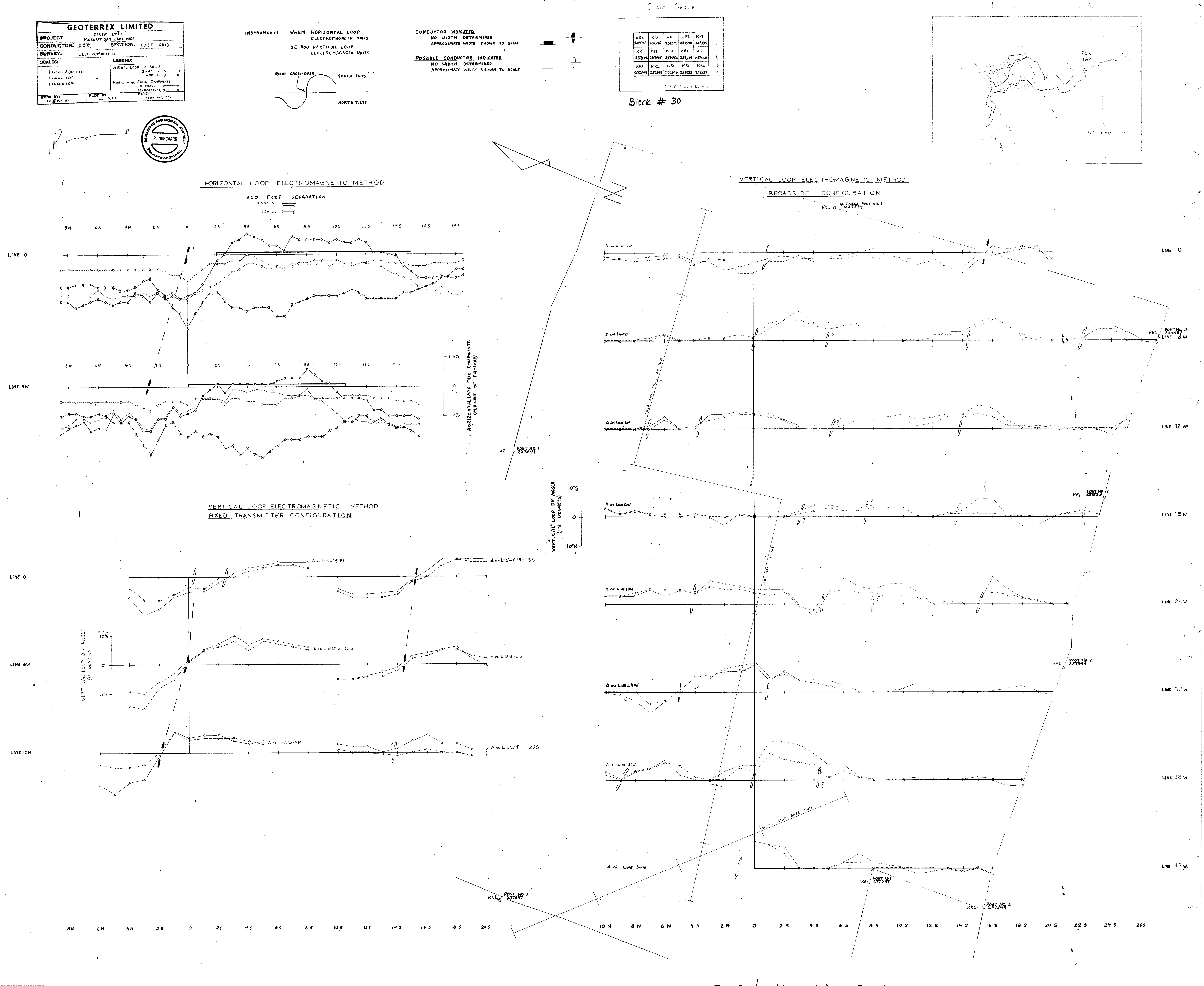
53G/04NW-0015 # 41

600



53G04NW8222 53G04NW0015 MANAYBIN LAKE 610

53G/04NW-0015 #42



53G/04NW-0015 #43

620

B

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: XXIX WEST

SURVEY: ELECTROMAGNETIC AND MAGNETIC

SCALES:
1" = 200'
1" = 1000 γ
1" = 20°
1" = 20%

LEGEND:
VERTICAL LOOP DIP ANGLE 2400 Hz, 600 Hz
HORIZONTAL LOOP DIP ANGLE IN PHASE, QUADRATURE
MAGNETIC FIELD INTENSITY

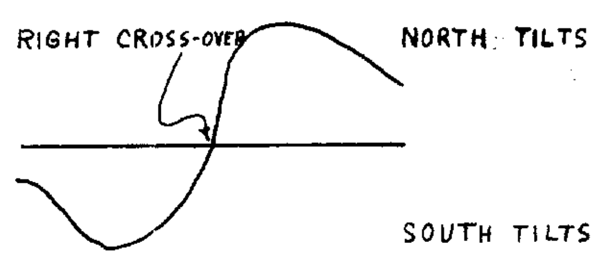
WORK BY: R.M., D.M. | PLOT BY: L.L., R.A.S. | DATE: FEBRUARY 1971

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

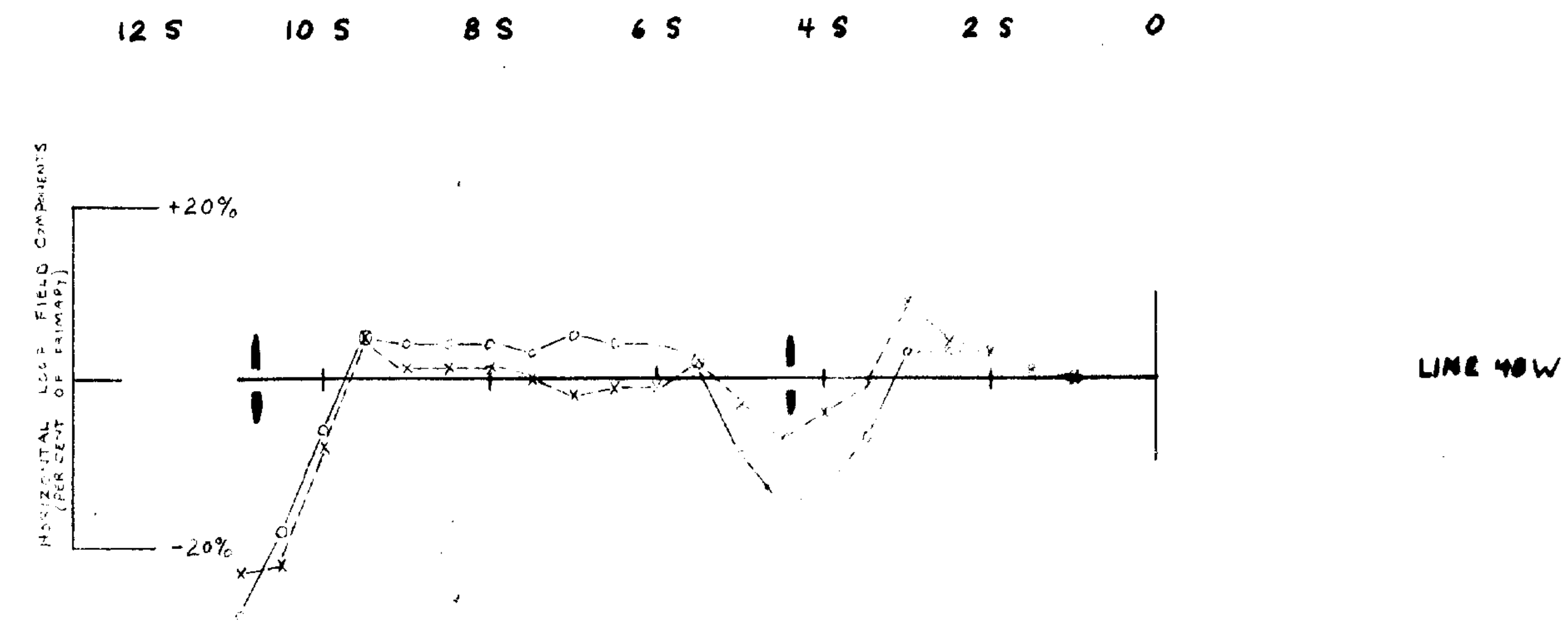
INSTRUMENTS:
VHEM HORIZONTAL AND VERTICAL LOOP ELECTROMAGNETIC UNITS
MFI FLUXGATE MAGNETOMETER

CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

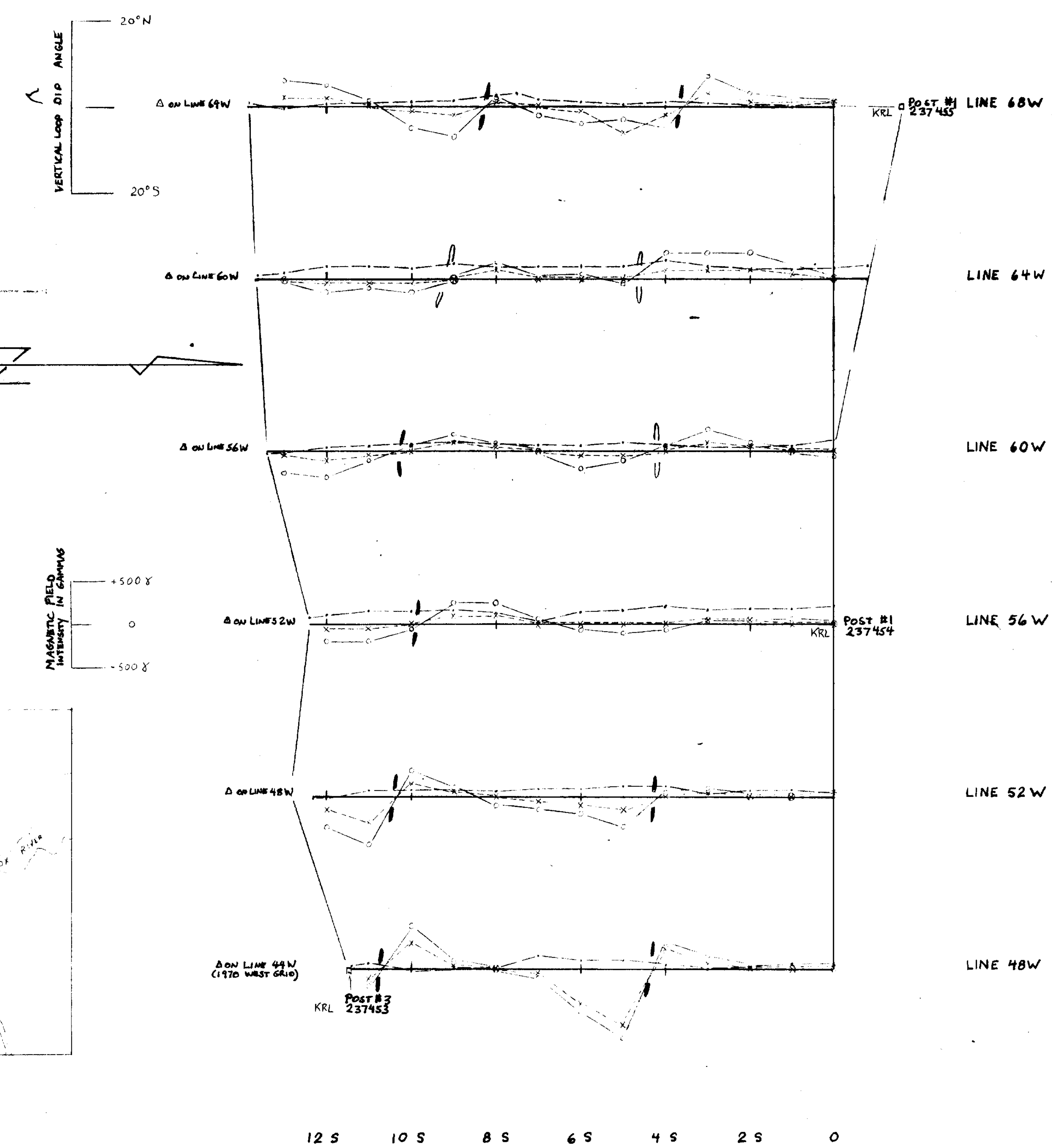
POSSIBLE CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE



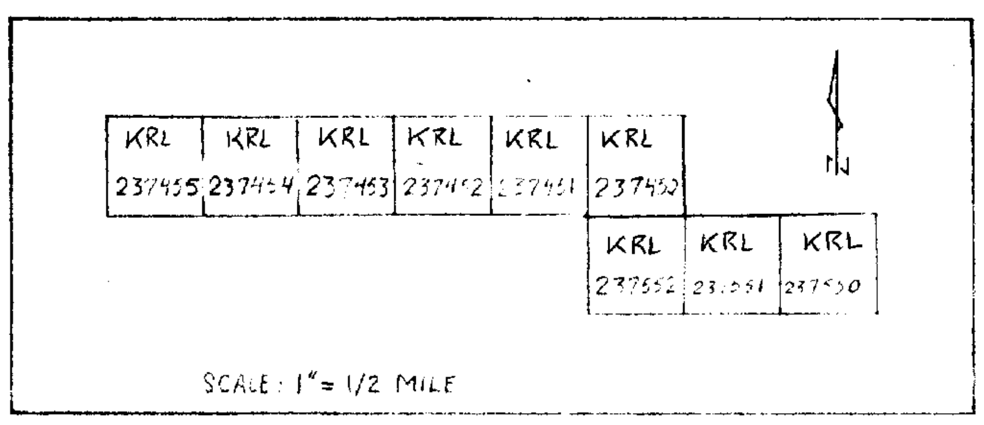
HORIZONTAL LOOP ELECTROMAGNETIC METHOD
200 FOOT SEPARATION
FREQUENCY – 2400 Hz



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION

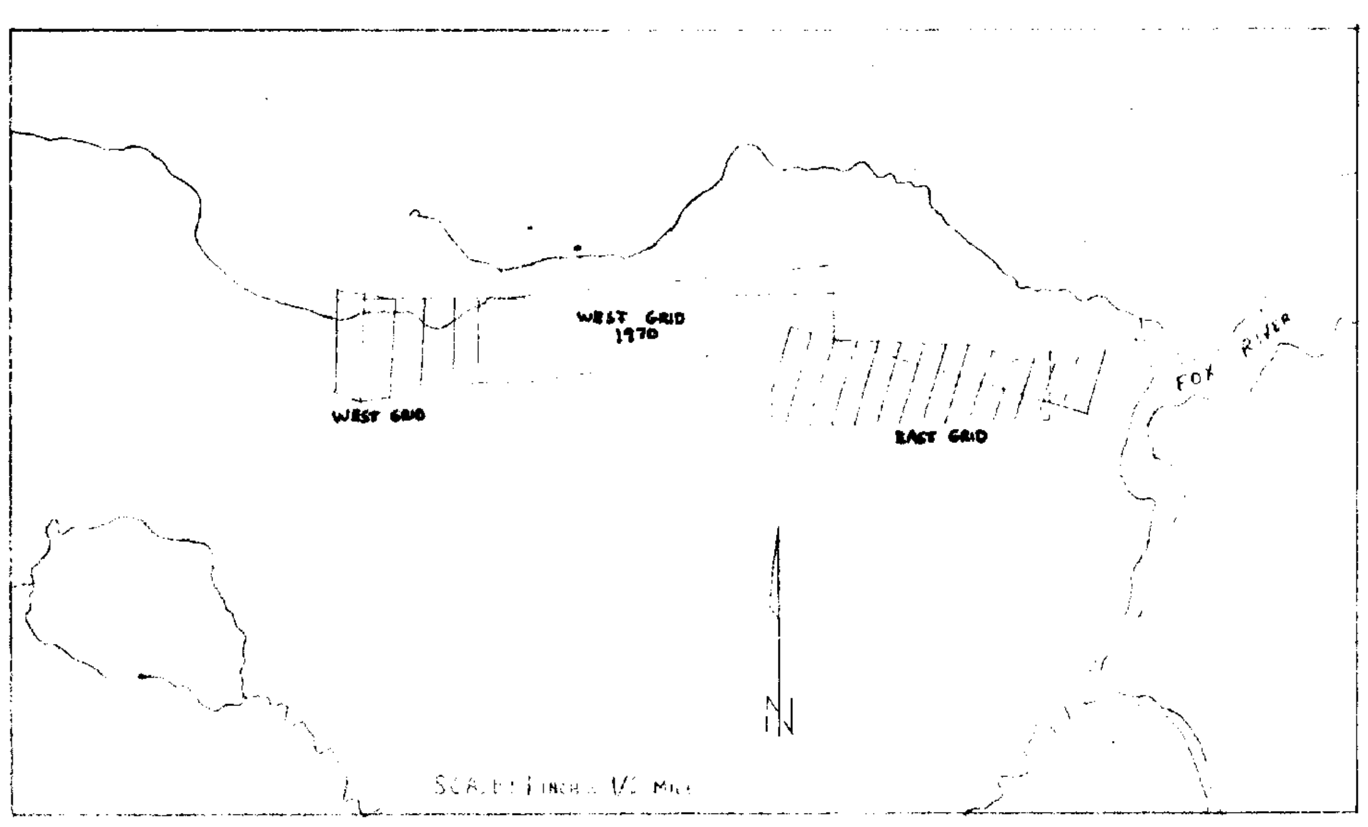


CLAIM GROUP



Block #39 WEST

LOCATION MAP



53G/04NW-0015 #44

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

630

GEOTERREX LIMITED

PROJECT: SEREM LTEE, MUSKRAT DAM LAKE AREA
CONDUCTOR: XXIXEAST SECTION:
SURVEY: ELECTROMAGNETIC AND MAGNETIC

SCALES: 1"=200', 1"=500§, 1"=20°, 1"=20%

LEGEND: VERTICAL LOOP DIP ANGLE 1800 Hz, 480 Hz; HORIZONTAL LOOP DIP ANGLE, IN PHASE, QUADRATURE; MAGNETIC FIELD INTENSITY

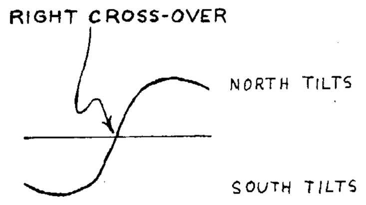
WORK BY: BH, PM, GC — PLOT BY: KKS — DATE: FEB.15, 71

P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

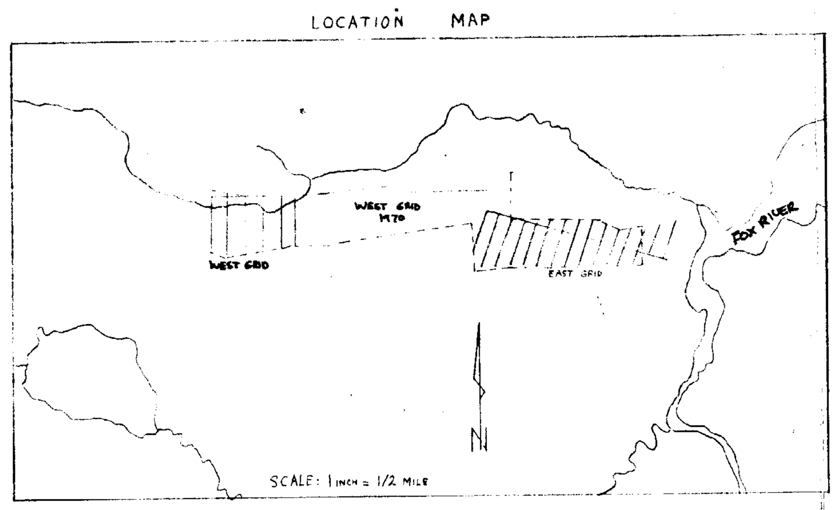
INSTRUMENTS:
VHEM HORIZONTAL LOOP ELECTROMAGNETIC UNITS
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MFI FLUXGATE MAGNETOMETER

CONDUCTOR INDICATED
- NO WIDTH DETERMINED
- APPROXIMATE WIDTH SHOWN TO SCALE

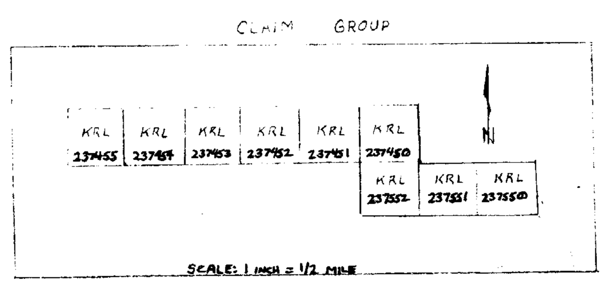
POSSIBLE CONDUCTOR INDICATED
- NO WIDTH DETERMINED
- APPROXIMATE WIDTH SHOWN TO SCALE



LOCATION MAP

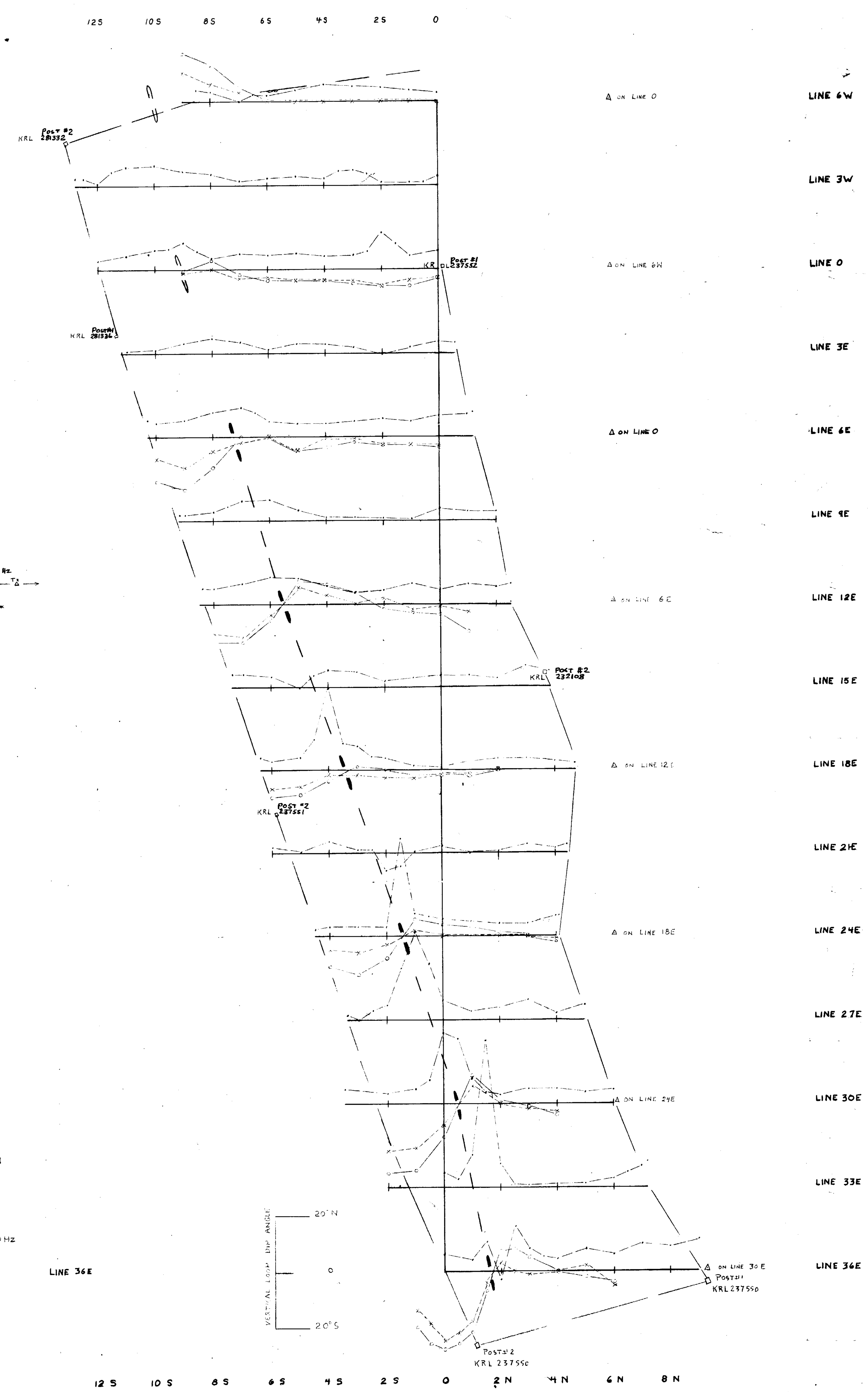


CLAIM GROUP

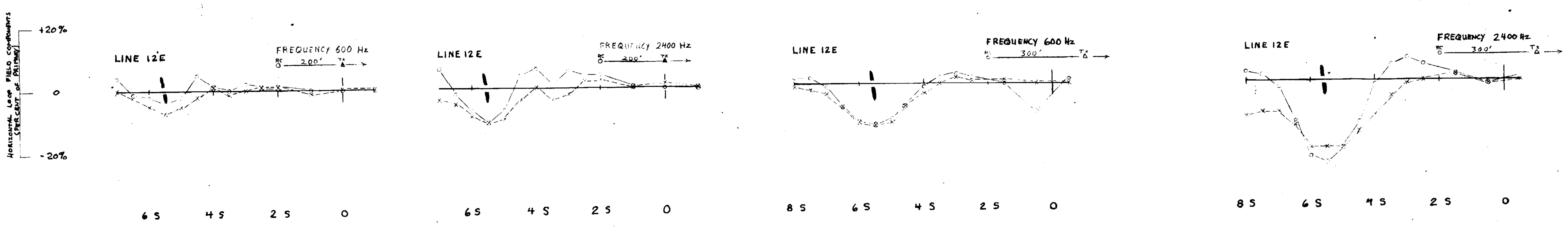


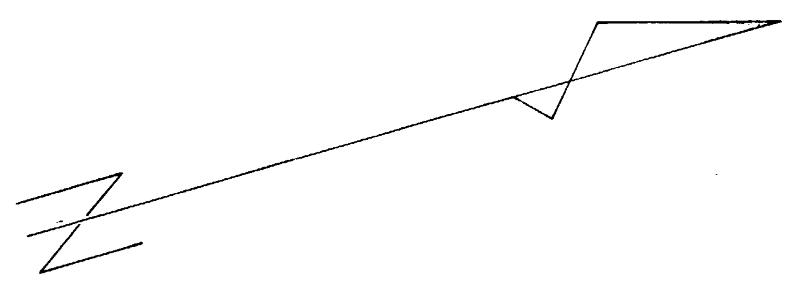
Block # 39 EAST

VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION

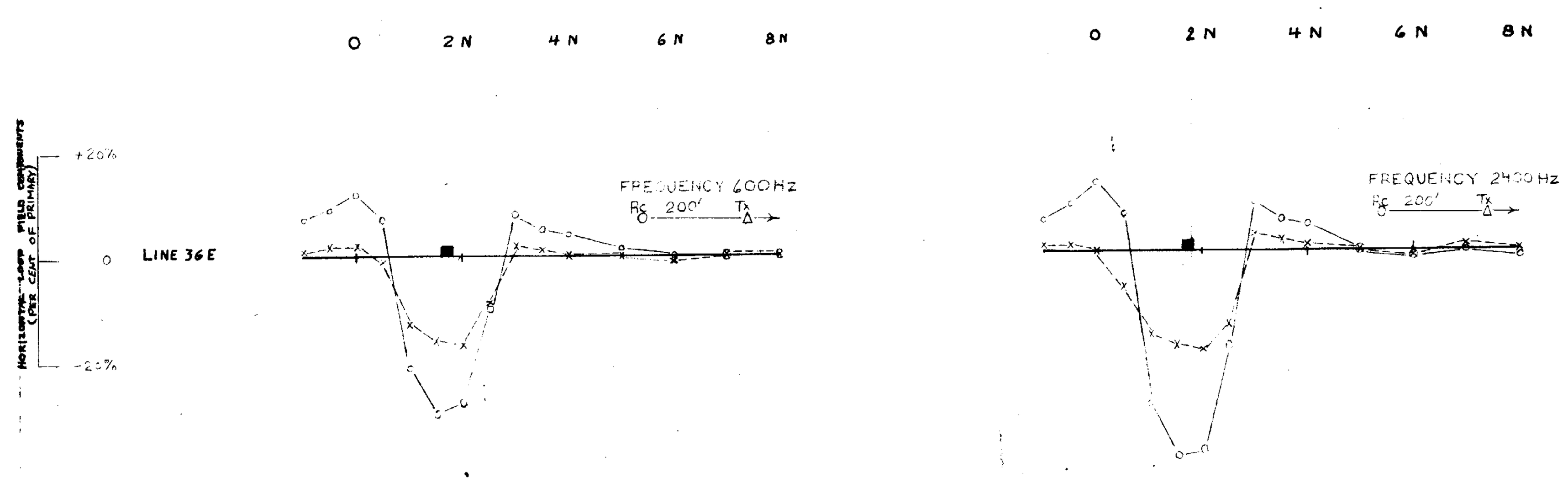


HORIZONTAL LOOP ELECTROMAGNETIC METHOD





HORIZONTAL LOOP ELECTROMAGNETIC METHOD



536/04 NW-0015 #45

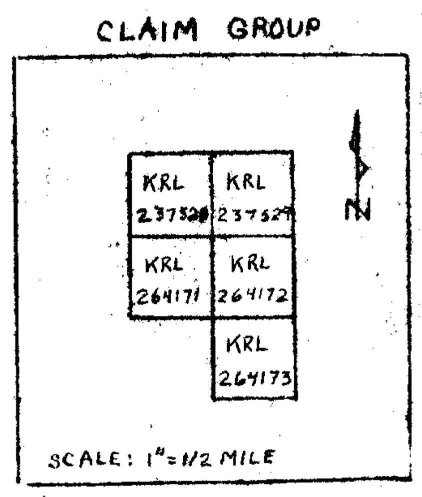
640

GEOTERREX LIMITED	
PROJECT	SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR	XLII
SURVEY:	MAGNETIC
SCALES: 1" = 200 FEET VERTICAL-FIELD-MAGNETOMETER READINGS IN GAMMAS	LEGEND:
WORK BY: D.M. PLOT BY: R.A.S.	DATE: FEBRUARY 1974

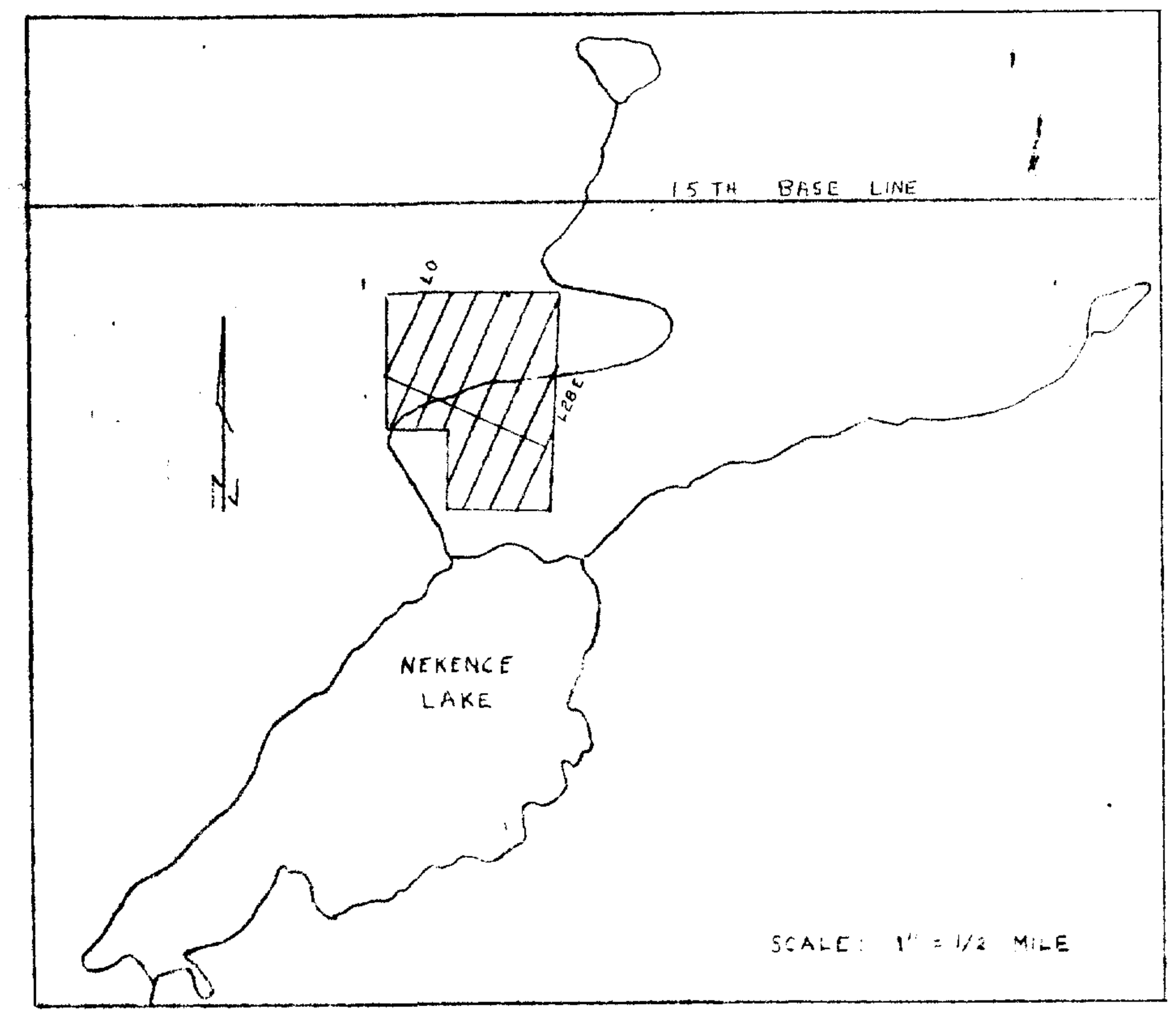
INSTRUMENT:
M 700 FLUXGATE MAGNETOMETER

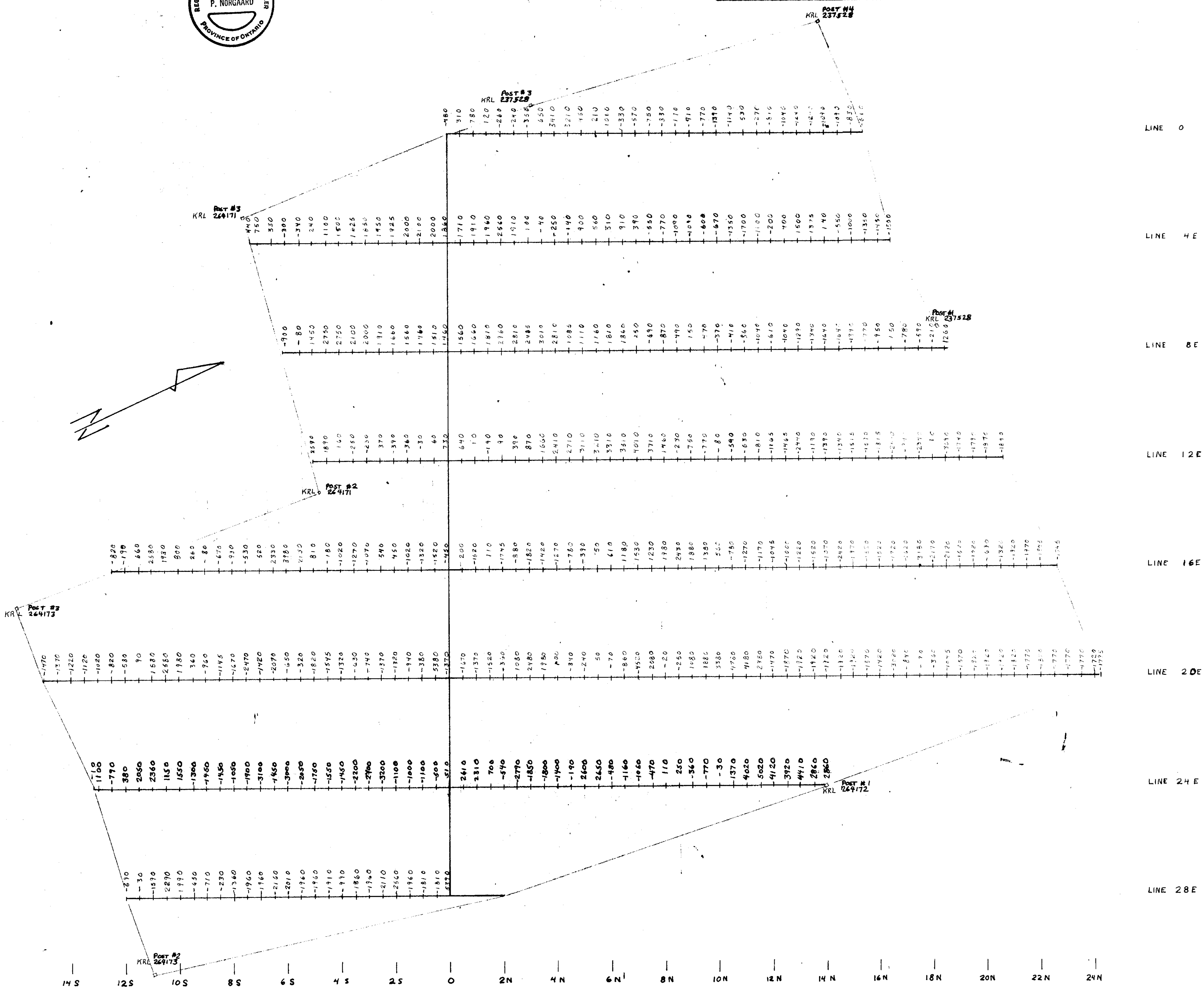
P. Norgaard

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO



Block # 42

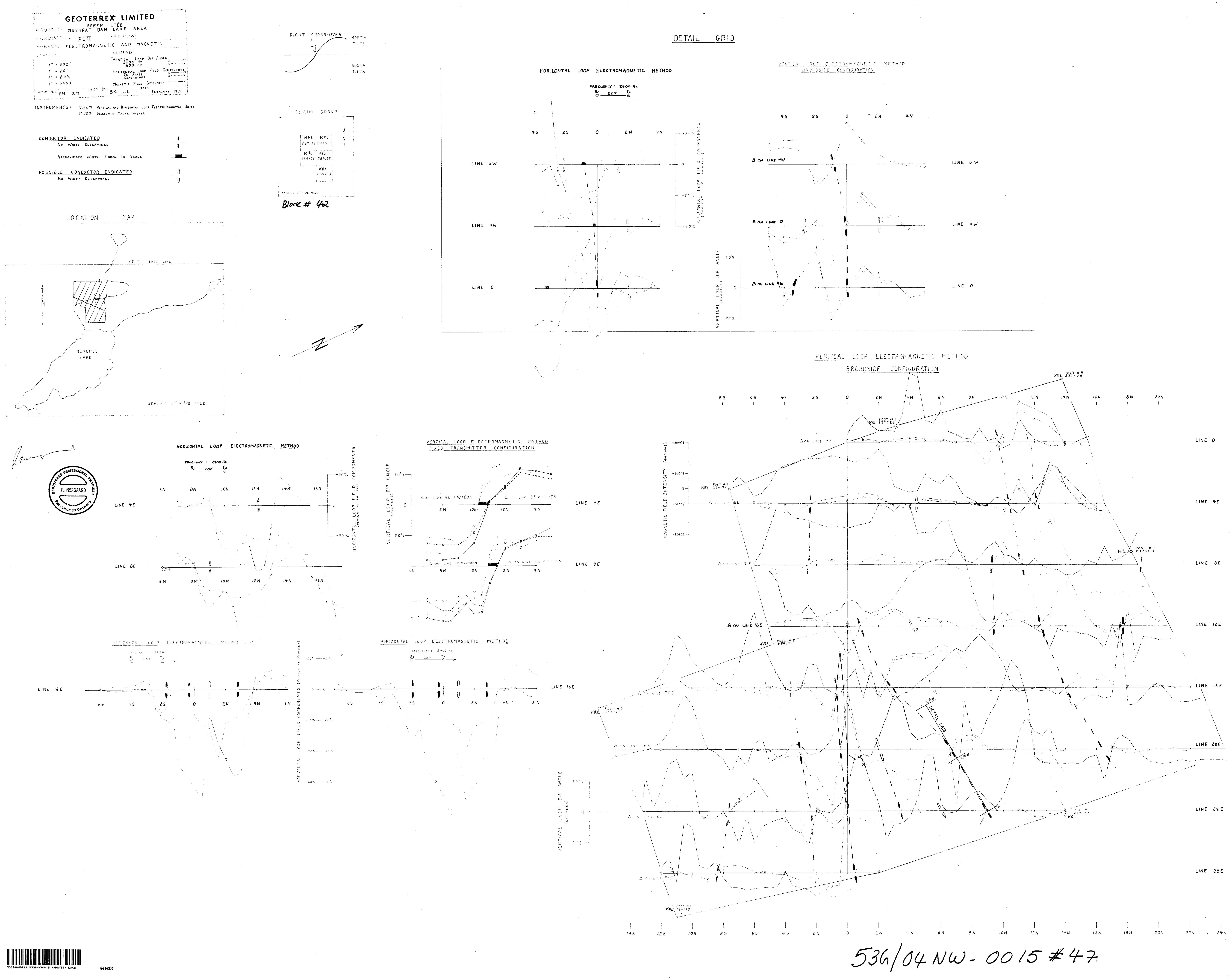




53G/04NW-0015 #46

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

650


GEOTERREX LIMITED
SEREM LTÉE
MUSKRAT DAM LAKE AREA
XLII
ELECTROMAGNETIC AND MAGNETIC
LEGEND:
1" = 200'
1" = 20°
1" = 20%
1" = 500γ
Vertical Loop Dip Angle 2400 Hz 600 Hz
Horizontal Loop Field Components In Phase Quadrature
Magnetic Field Intensity
P.M. D.M.
B.K. L.L.
February 1971
INSTRUMENTS: VHEM Vertical and Horizontal Loop Electromagnetic Units
M700 Fluxgate Magnetometer
CONDUCTOR INDICATED
No Width Determined
Approximate Width Shown To Scale
POSSIBLE CONDUCTOR INDICATED
No Width Determined
RIGHT CROSS-OVER
NORTH TILTS
SOUTH TILTS
CLAIM GROUP
Block # 42
LOCATION MAP
NEHENCE LAKE
DETAIL GRID
HORIZONTAL LOOP ELECTROMAGNETIC METHOD
FREQUENCY: 2400 Hz
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION
FIXED TRANSMITTER CONFIGURATION
MAGNETIC FIELD INTENSITY (GAMMAS)
VERTICAL LOOP DIP ANGLE (DEGREES)
HORIZONTAL LOOP FIELD COMPONENTS (PERCENT OF PRIMARY)
P. NOSGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
660
536/04NW-0015 #47

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: XLIII SECTION:

SURVEY: MAGNETIC

SCALES: 1" = 200'

LEGEND:

VERTICAL-MAGNETIC-INTENSITY READINGS IN GAMMAS

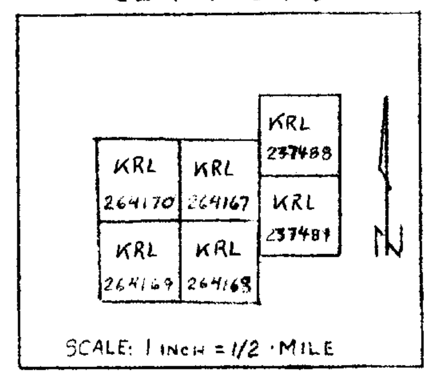
WORK BY: D.M. PLOT BY: R.A.S. DATE: FEBRUARY 1971

INSTRUMENT: M 700 FLUXGATE MAGNETOMETER

P. Norgaard

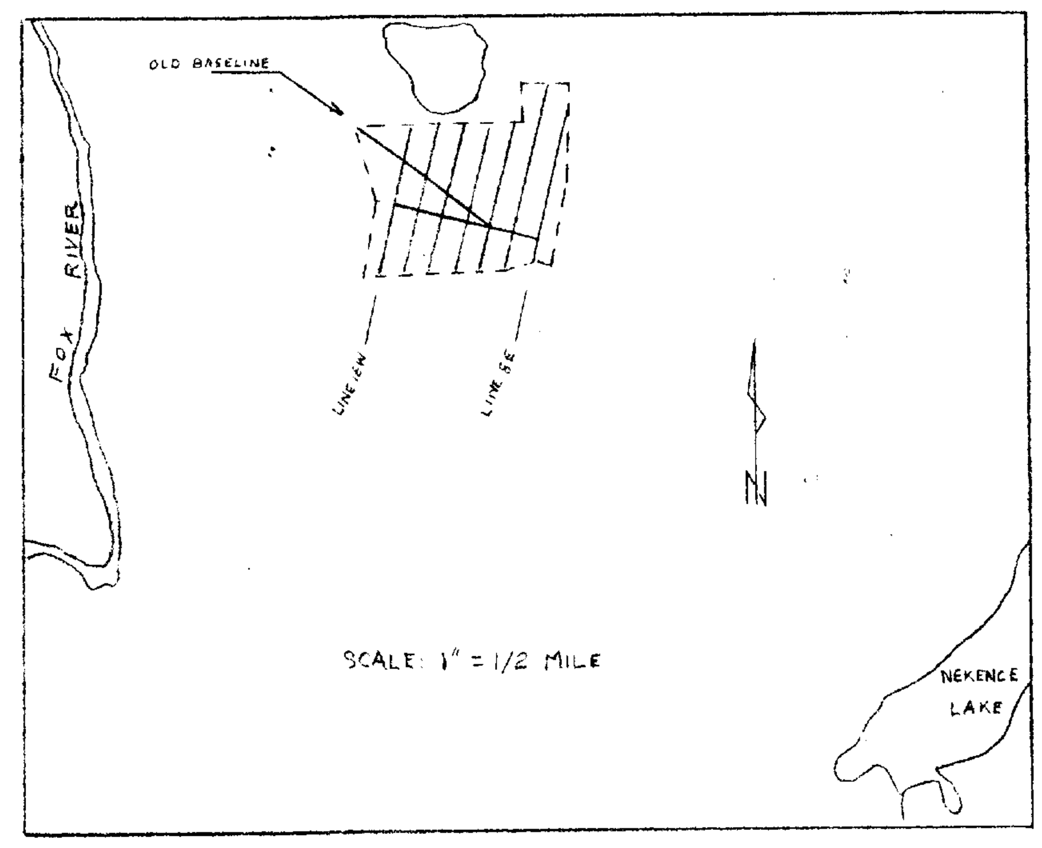
REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO

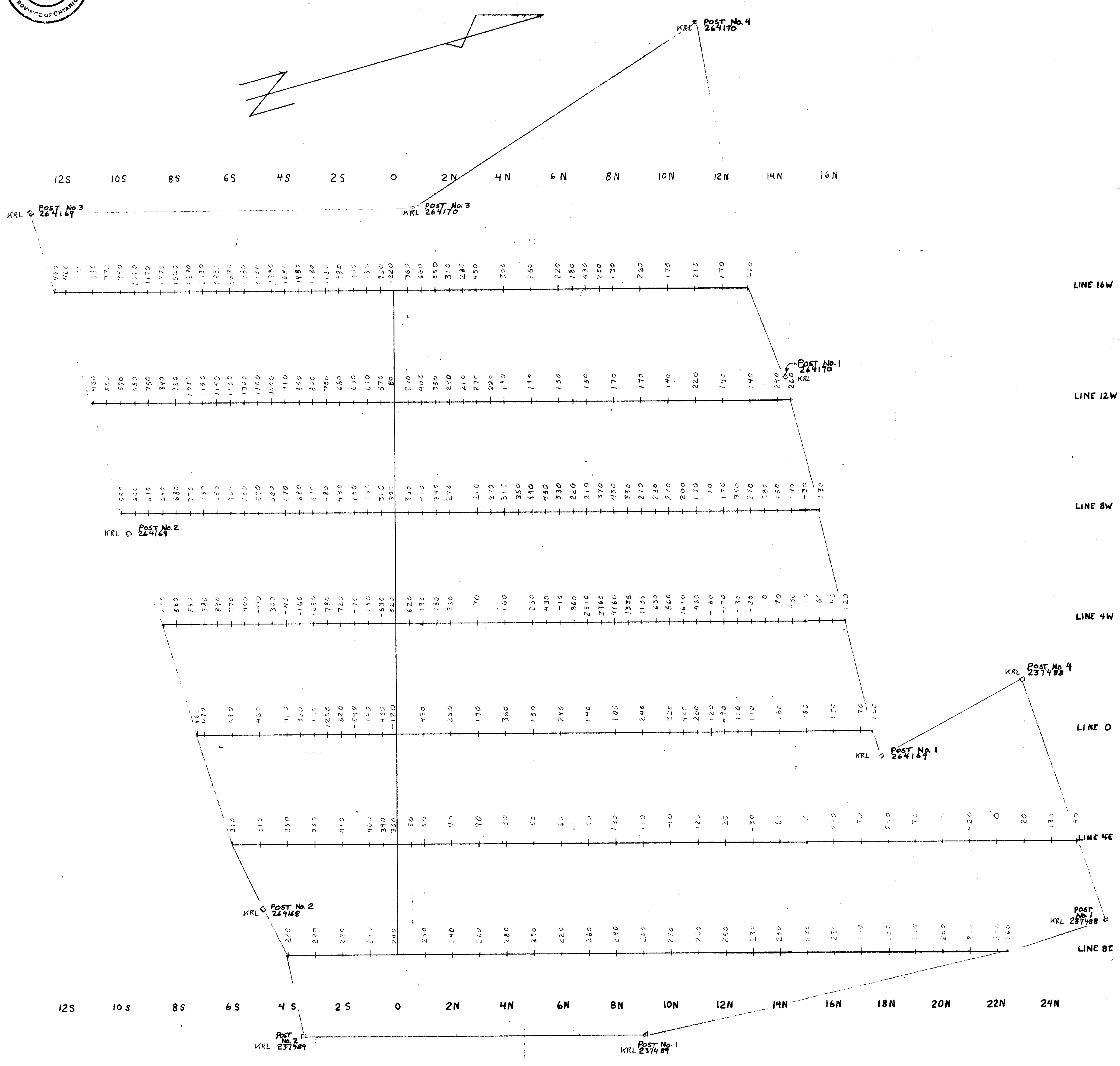
CLAIM GROUP



Block #43

LOCATION MAP





53G/04NW-0015 #48

53G04NW0222 53G04NW0015 NAMAYBIN LAKE

670

GEOTERREX LIMITED
SEREM LTÉE

PROJECT: MUSKRAT DAM LAKE AREA
CONDUCTOR: XLIII SECTION:
SURVEY: ELECTROMAGNETIC AND MAGNETIC

SCALES: 1" = 1000 γ, 1" = 200', 1" = 10°, 1" = 20%

LEGEND:
Vertical Loop Dip Angle (High frequency, Low frequency)
Horizontal Loop Dip Angle (In Phase, Quadrature)
Magnetic Field Intensity

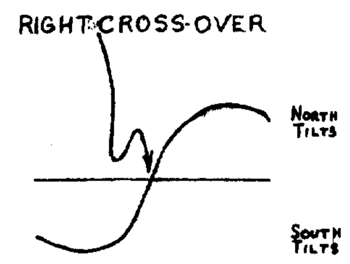
WORK BY: D.M., G.C. PLOT BY: L.L., R.A.S. DATE: FEB. 16, 71

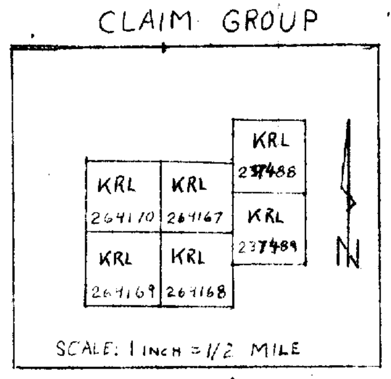
INSTRUMENTS:
VHEM VERTICAL AND HORIZONTAL LOOP ELECTROMAGNETIC UNITS
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
M 700 FLUXGATE MAGNETOMETER

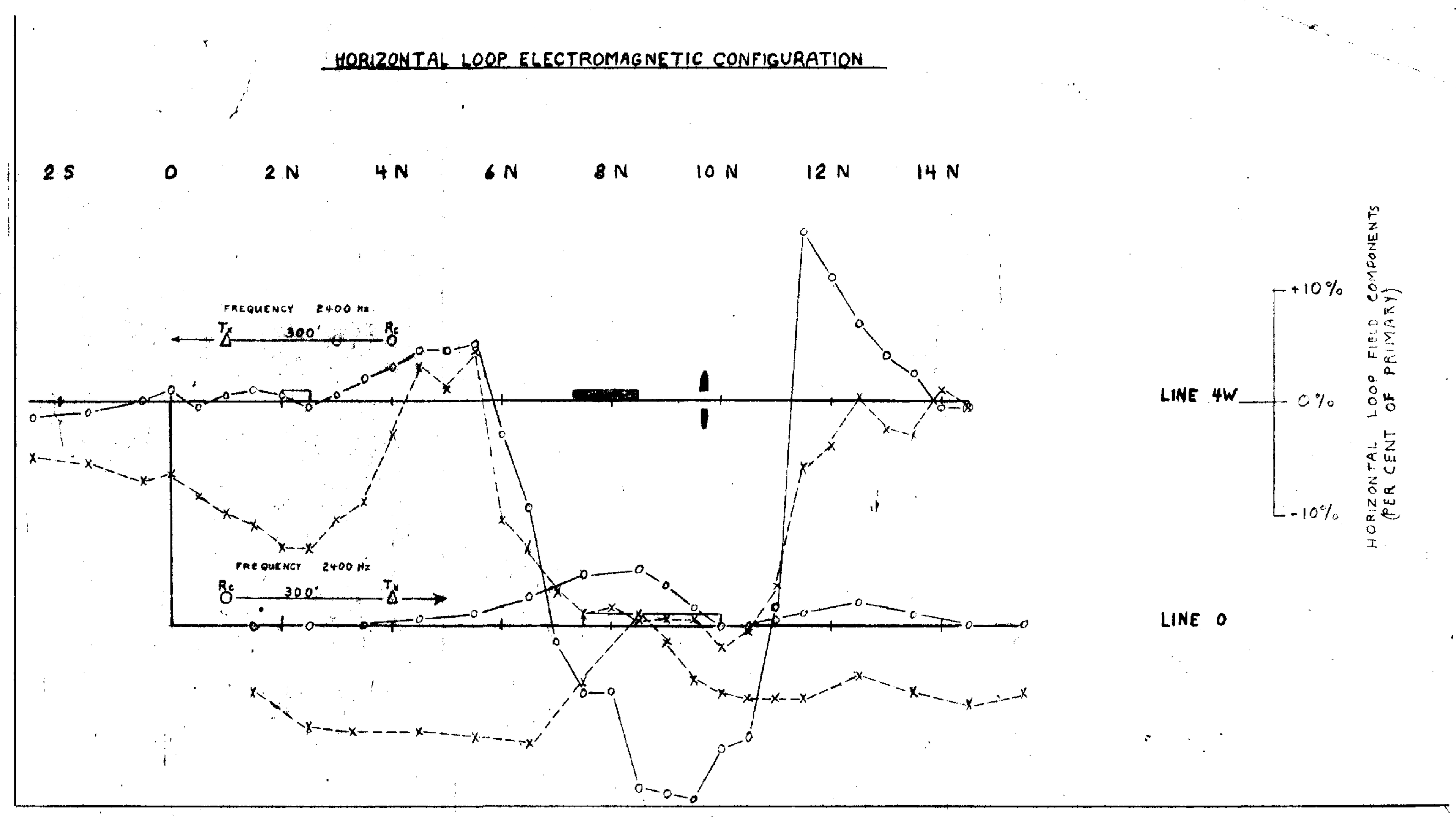
VERTICAL LOOP CONDUCTORS
Conductor Indicated
Possible Conductor Indicated

HORIZONTAL LOOP CONDUCTORS
Conductor Indicated (Approximate Width Shown To Scale)
Possible Conductor Indicated (Approximate Width Shown To Scale)
Conductor Indicated

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO





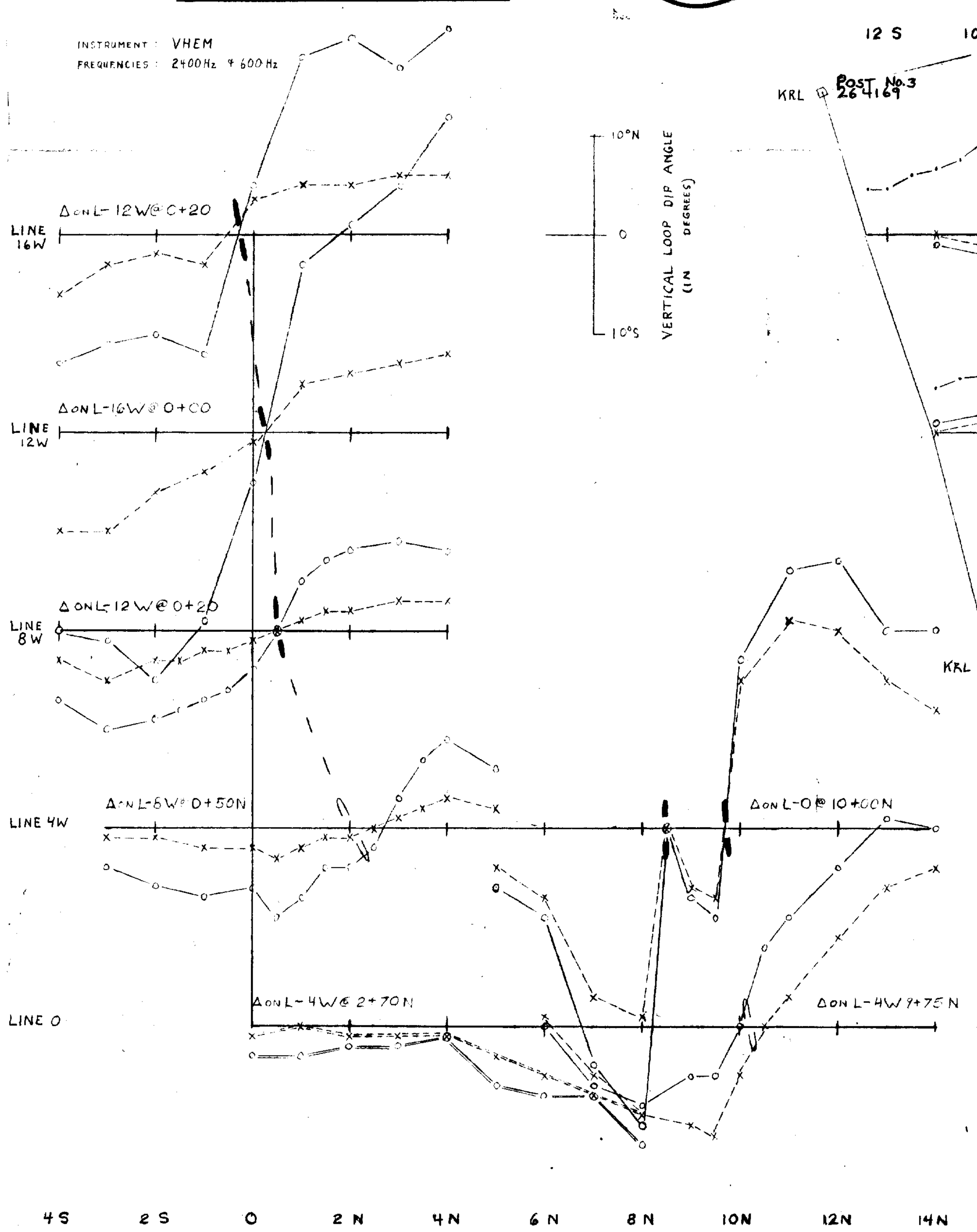


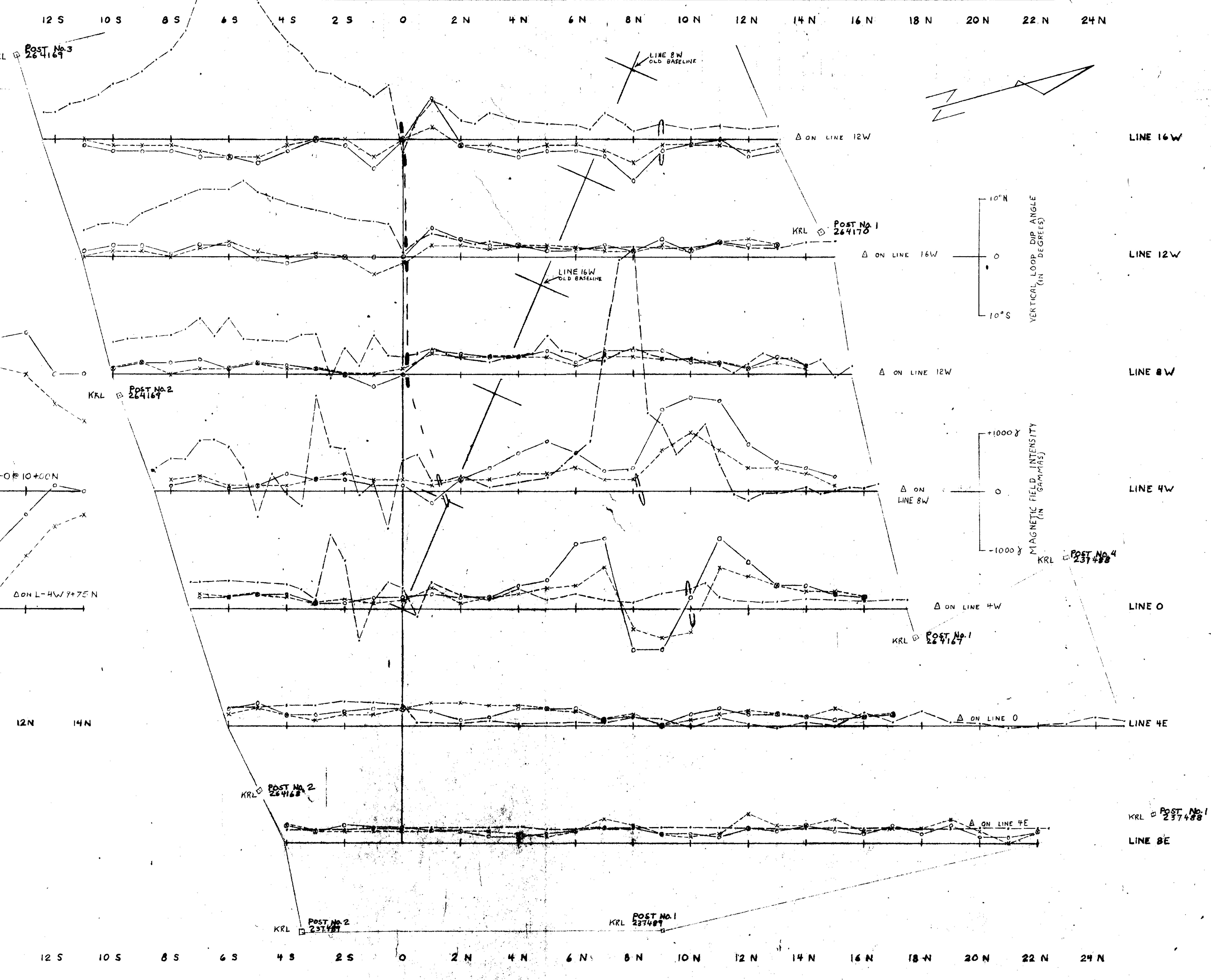
VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION

INSTRUMENT: SE 300
FREQUENCIES: 1600 Hz + 400 Hz

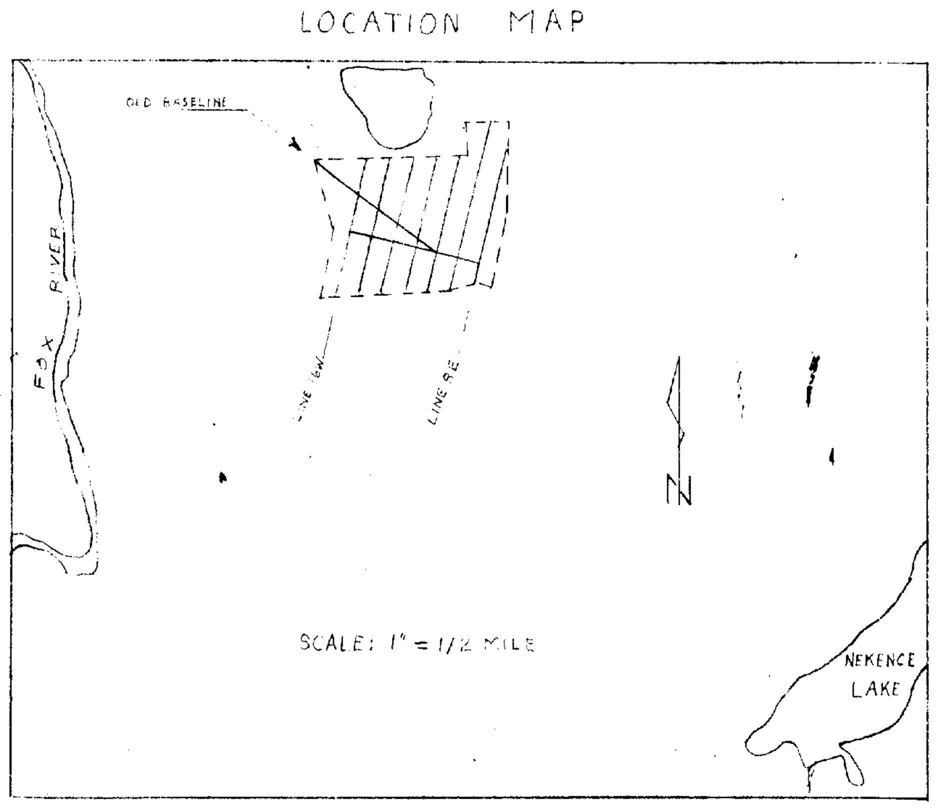
VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION

INSTRUMENT: VHEM
FREQUENCIES: 2400 Hz + 600 Hz





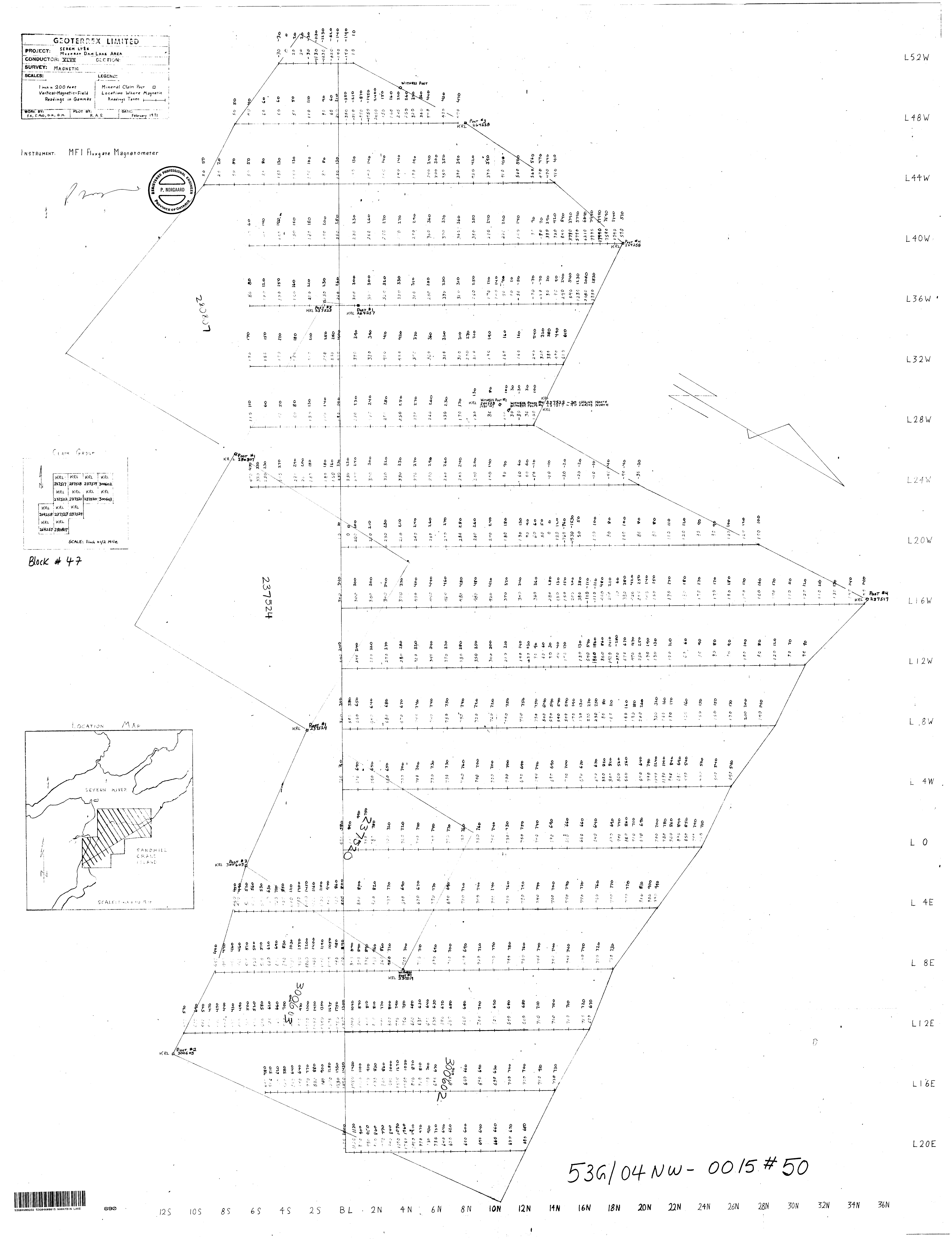
LOCATION MAP



53G/04NW-0015 #49

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

680


GEOTERREX LIMITED
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: XLVII SECTION:
SURVEY: MAGNETIC
SCALES:
1 inch = 200 feet
Vertical-Magnetic-Field Readings in Gammas
LEGEND:
Mineral Claim Post
Locations Where Magnetic Readings Taken
WORK BY: F.K., S.McD., O.K., D.M.
PLOT BY: R.A.S.
DATE: February 1971
INSTRUMENT: MF1 Fluxgate Magnetometer
P. NORGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
Claim Group
SCALE: 1 inch = 1/2 Mile
Block # 47
Location Map
SEVERN RIVER
SANDHILL CRANE ISLAND
L52W
L48W
L44W
L40W
L36W
L32W
L28W
L24W
L20W
L16W
L12W
L 8W
L 4W
L 0
L 4E
L 8E
L12E
L16E
L20E
12S
10S
8S
6S
4S
2S
BL
2N
4N
6N
8N
10N
12N
14N
16N
18N
20N
22N
24N
26N
28N
30N
32N
34N
36N
280807
237524
237520
300603
300602
53G/04NW-0015 #50

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA

CONDUCTOR: XLVII SECTION.

SURVEY: VERTICAL LOOP ELECTROMAGNETIC & MAGNETIC

SCALES:	LEGEND:
1" = 200'	Vertical Loop Dip Angle
1" = 20°	1600 Hz
1" = 500γ	400 Hz
	Magnetic Field Intensity

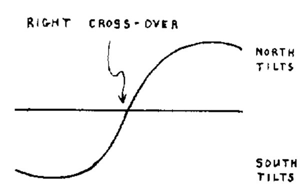
WORK BY:	PLOT BY:	DATE:
S.M., F.K., O.K.	L.L., B.K., R.A.S.	February 1971

INSTRUMENTS: SE 300 Vertical Loop Electromagnetic Units
MF-1 Fluxgate Magnetometer

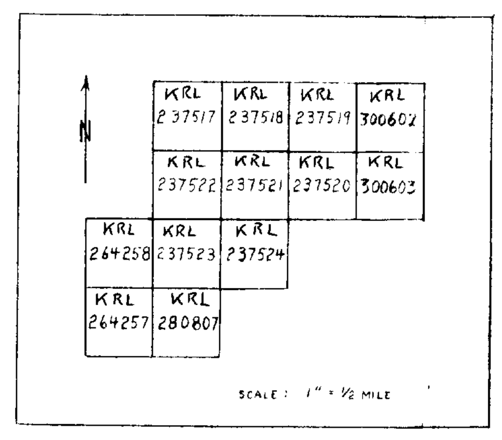
CONDUCTOR INDICATED
No Width Determined
Approximate Width Shown To Scale

POSSIBLE CONDUCTOR INDICATED
No Width Determined
Approximate Width Shown To Scale

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

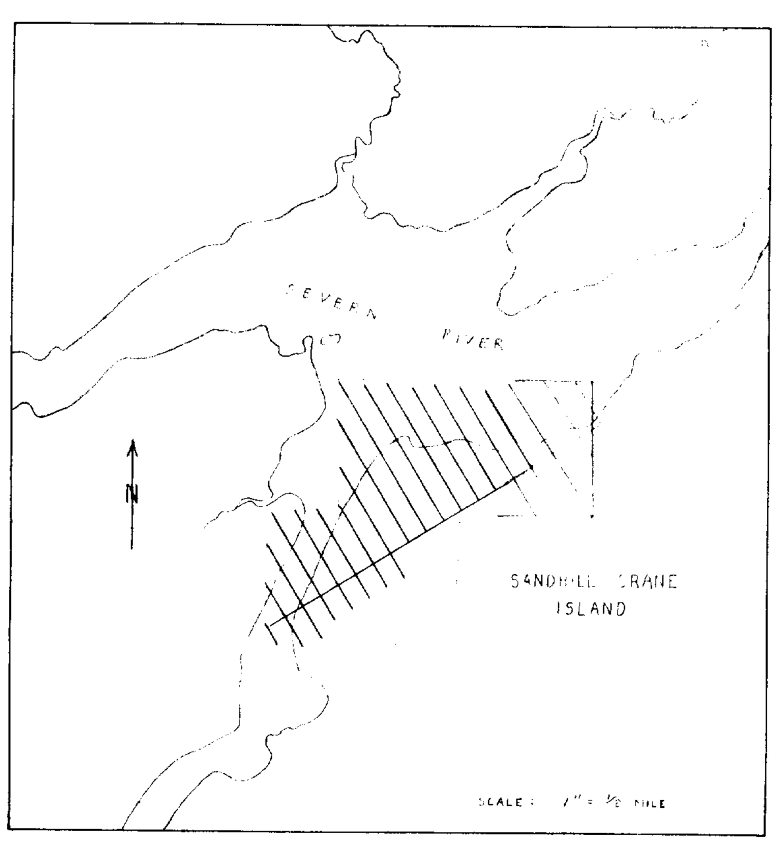


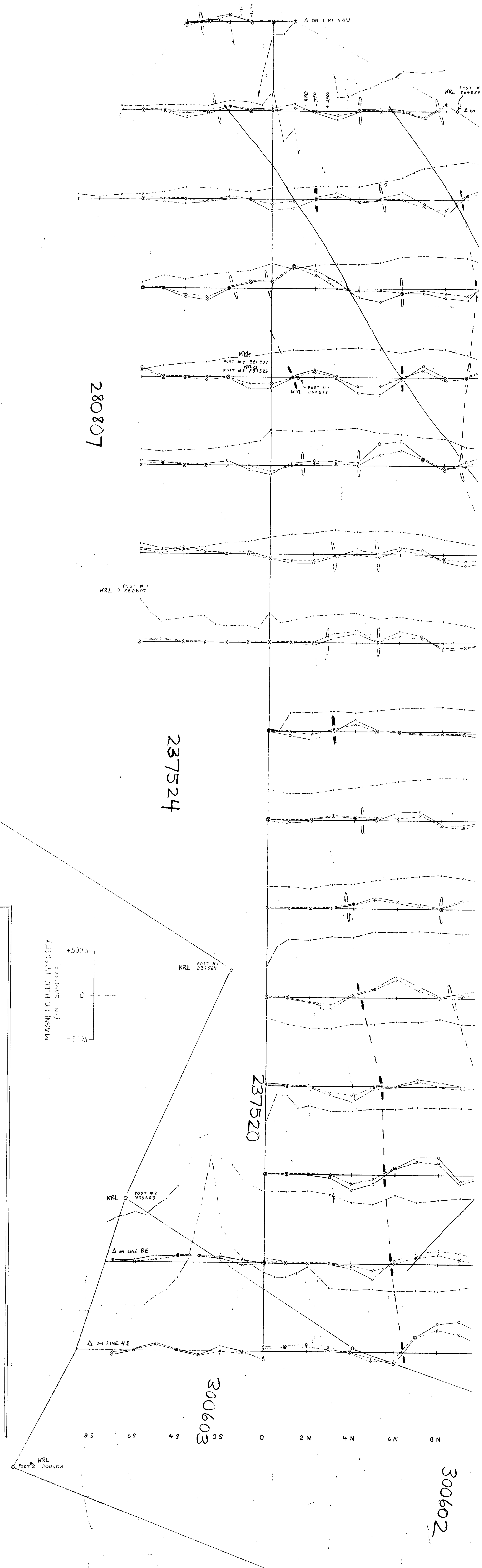
CLAIM GROUP



Block # 47

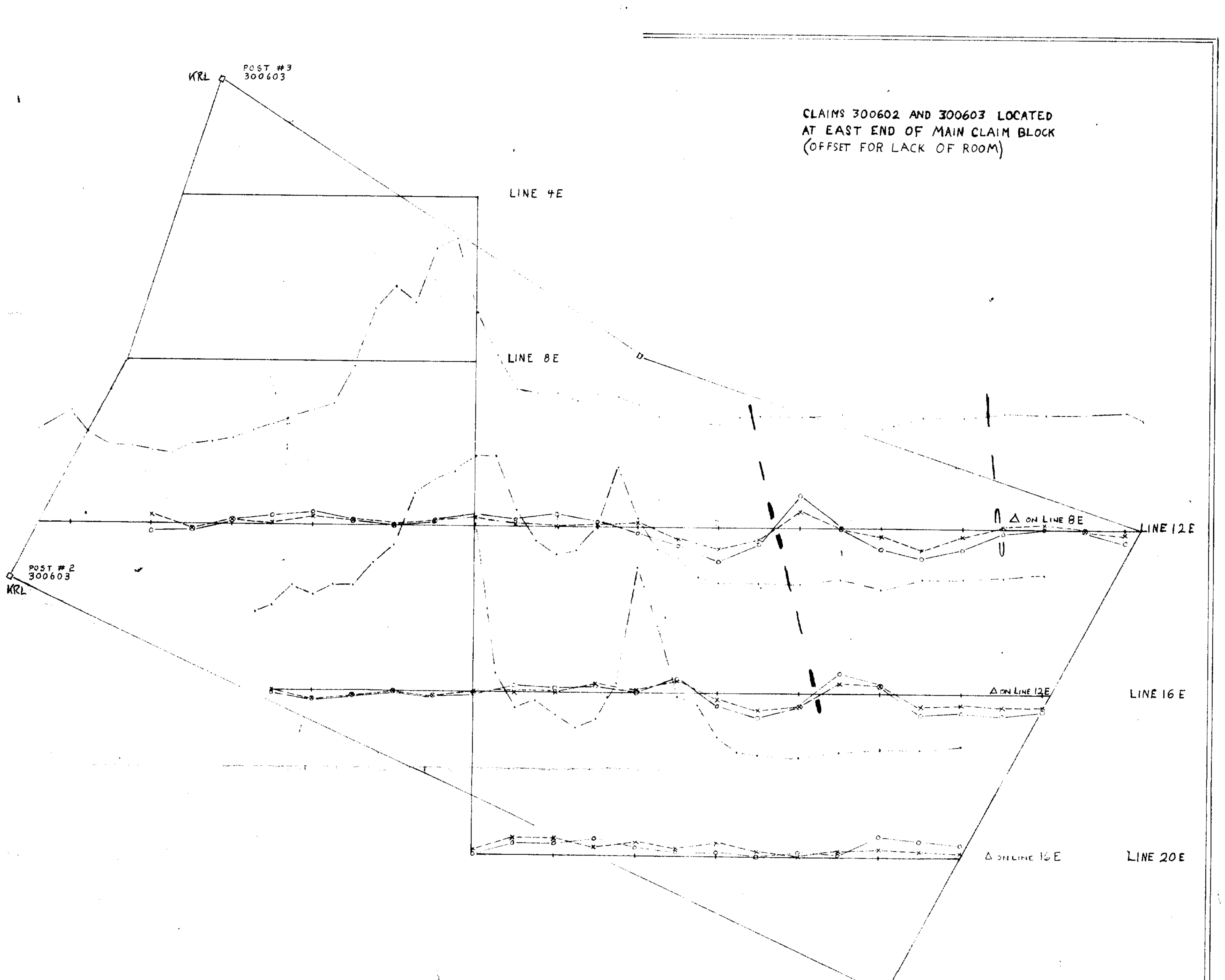
LOCATION MAP





VERTICAL LOOP DIP ANGLE

MAGNETIC FIELD INTENSITY (IN GAMMAS)
+500
0
-500



53G04NW8222 53G04NW8815 NAMATBIN LAKE

700


GEOTERREX LIMITED
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: XLVII SECTION:
SURVEY: ELECTROMAGNETIC (DETAIL)
SCALES: 1" = 200' 1" = 20° 1" = 20%
LEGEND: Vertical Loop Dip Angle 1600 Hz 400 Hz
Horizontal Loop Field Components In Phase Quadrature
WORK BY: S.Mc., O.K.
PLOT BY: L.L., B.K., RAS
DATE: March 1971 February 1971
INSTRUMENTS: SE 300 Vertical Loop Electromagnetic Units
VHEM Horizontal Loop Electromagnetic Units
REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO
CONDUCTOR INDICATED
No Width Determined
Approximate Width Shown To Scale
POSSIBLE CONDUCTOR INDICATED
No Width Determined
Approximate Width Shown To Scale
RIGHT CROSS-OVER
NORTH TILTS
SOUTH TILTS
HORIZONTAL LOOP ELECTROMAGNETIC METHOD
FREQUENCY: 2400 Hz
300'
LINE 44W
LINE 40W
LINE 36W
HORIZONTAL LOOP FIELD COMPONENTS
+20%
0
-20%
VERTICAL LOOP
FIXED TRANS
LOCATION MAP
SEVERN RIVER
LINE 8E
SANDHILL CRANE ISLAND
LINE 52W
SCALE: 1" = 1/2 MILE
CLAIM GROUP
KRL 237517
KRL 237518
KRL 237519
KRL 300602
KRL 237522
KRL 237521
KRL 237520
KRL 300603
KRL 264258
KRL 237523
KRL 237524
KRL 264257
KRL 280807
SCALE: 1" = 1/2 MILE
Block # 47
Post #1 KRL 280807
LINE 12W
LINE 0
LINE 8E
Post #1 KRL 237524
Post #3 KRL 300603
Post #2 KRL 300603
HORIZONTAL LOOP FIELD COMPONENTS (PER CENT OF PRIMARY)
Δ on L-40W @ 1+20S
Δ on L-36W @ 1+00N
Δ on L-40W @ 1+00S
Δ on L-36W @ 6+00N
Δ on L-0 @ 5+50N
Δ on L-4W @ 5+50N
Δ on L-0 @ 5+20N
Δ on L-4E @ 6+50N
Witness Post #1 KRL 237519
710

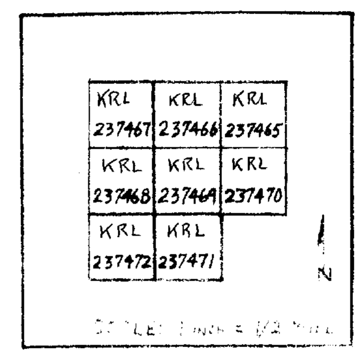
GEOTERREX LIMITED

PROJECT:	SEREM LTEE MUSKRAT DAM LAKE AREA
CONDUCTOR:	LVI
SURVEY:	MAGNETIC
SCALES:	1 inch = 200 feet. Vertical-Magnetic-Field Readings in Gammas
LEGEND:	Mineral Claim Post ◻ Locations at which Magnetic Readings were taken
WORK BY: D.M.	PLOT BY: RAS February 1971

INSTRUMENT: M700 Fluxgate Magnetometer

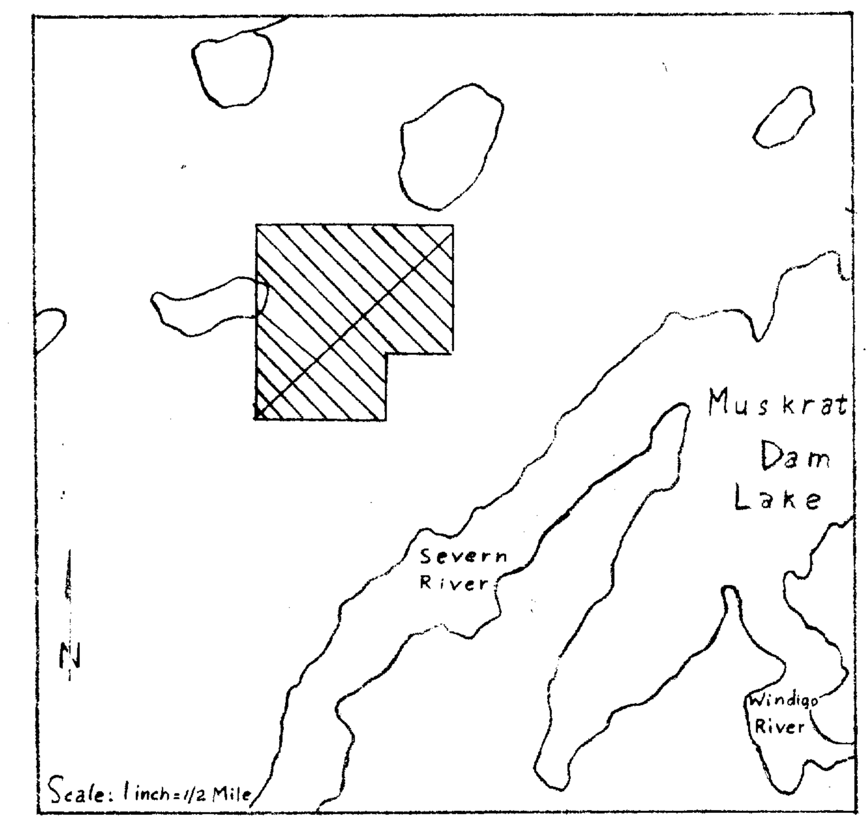
P. NORGAARD — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

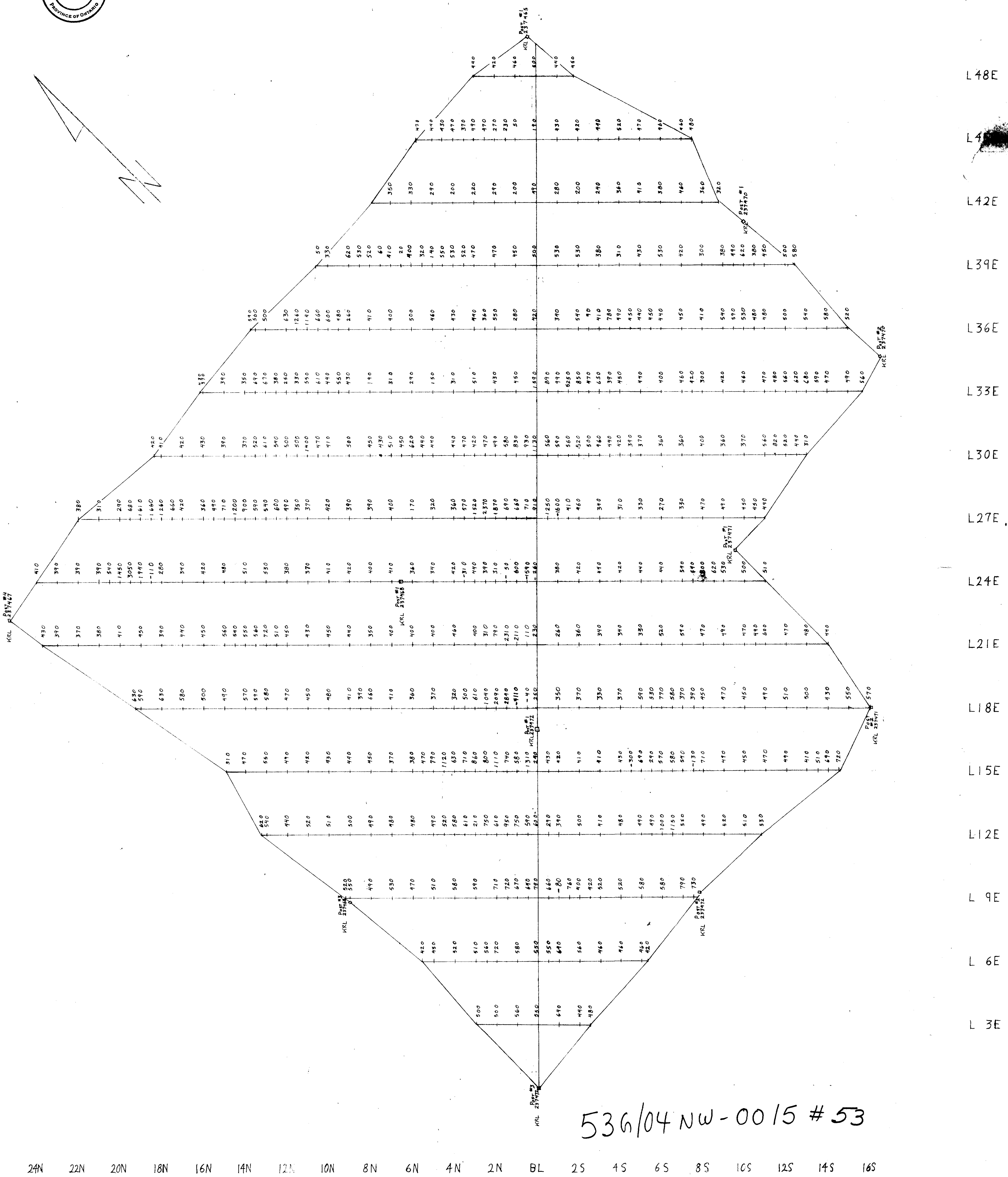
CLAIM GROUP LVI



Block # 56

LOCATION MAP GRID LVI





53G/04NW-0015 #53

720

536/04NW-0015 #54

GEOTERREX LIMITED

PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA
CONDUCTOR: LVI SECTION:
SURVEY: ELECTROMAGNETIC AND MAGNETIC
SCALES: 1" = 500' 1" = 200' 1" = 20° 1" = 20%
LEGEND:
Vertical Loop Dip Angle 1600 HZ o——o 400 HZ x——x
Horizontal Loop Field Components In Phase o——o Quadrature x– – –x
Magnetic Field Intensity
WORK BY: D.M. G.C. E.M. PLOT BY: L.L. DATE: JAN 23

INSTRUMENTS:
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
VHEM HORIZONTAL LOOP ELECTROMAGNETIC UNITS (2400 HZ) (600 HZ)
M 700 FLUXGATE MAGNETOMETER

CONDUCTOR INDICATED

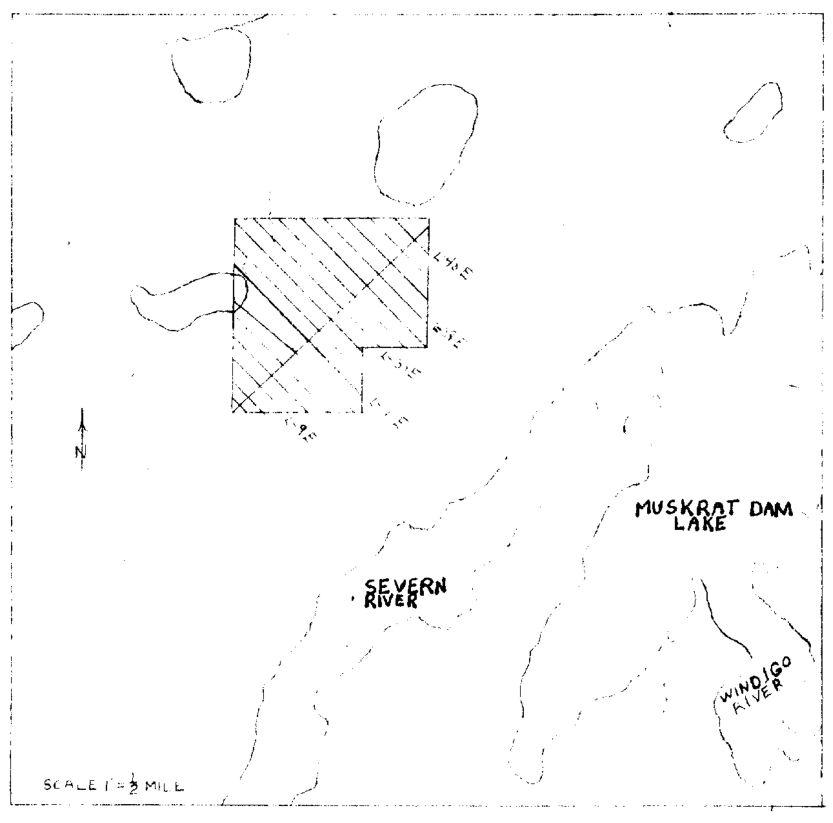
No Width Determined

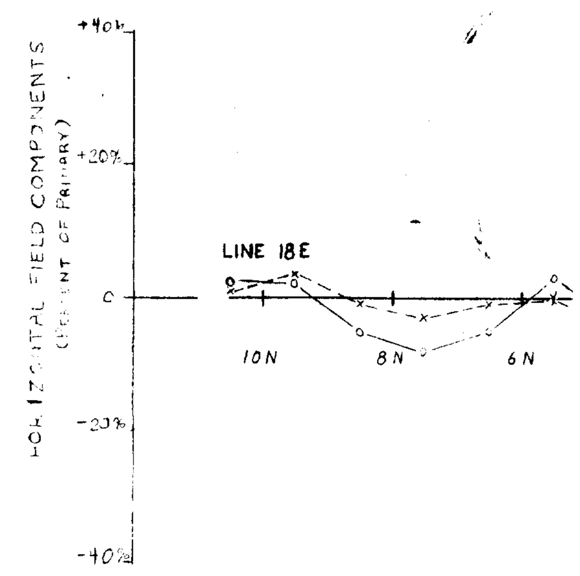
Approximate Width Shown To Scale

POSSIBLE CONDUCTOR INDICATED

No Width Determined

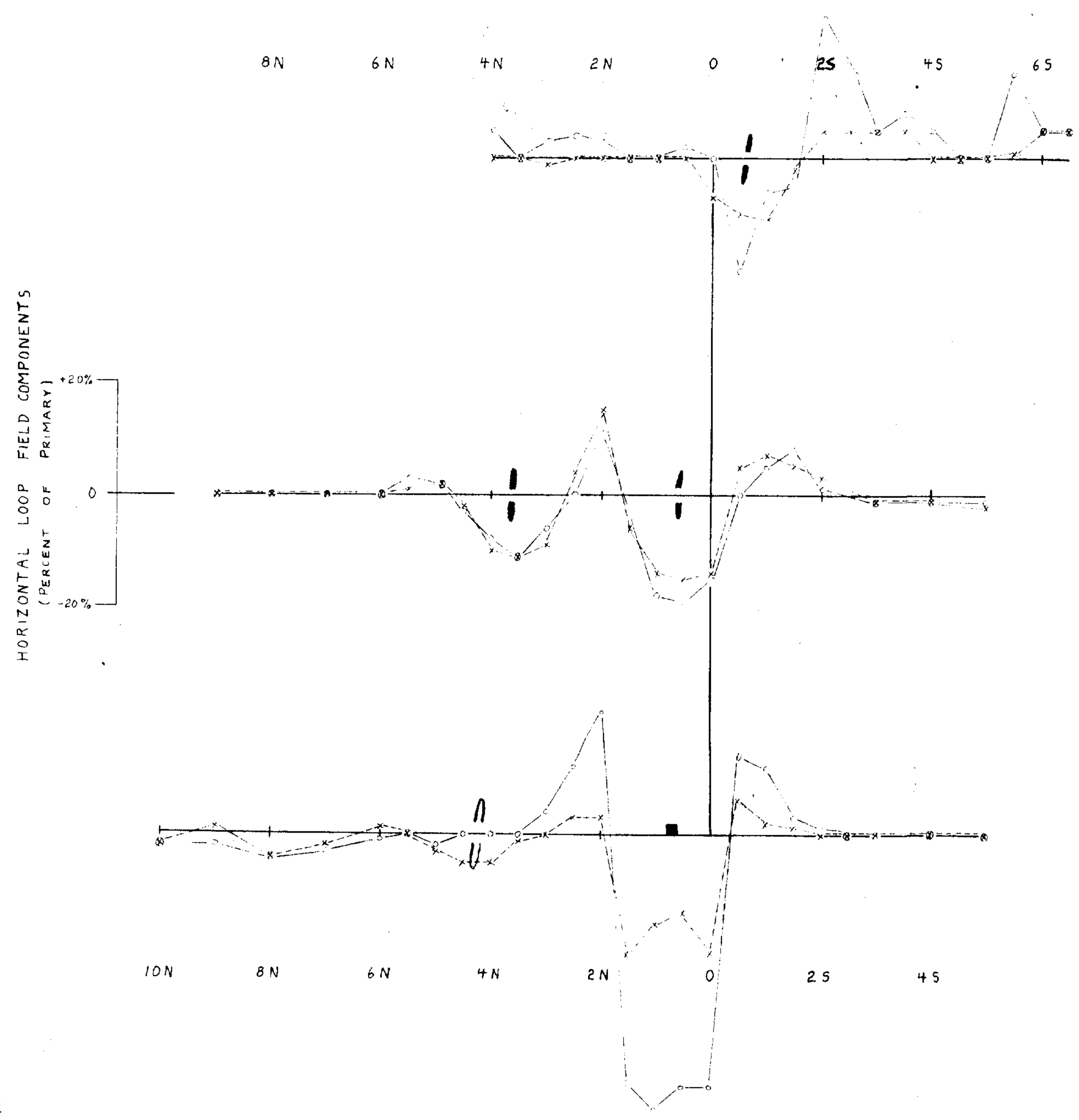
LOCATION MAP GRID LVI

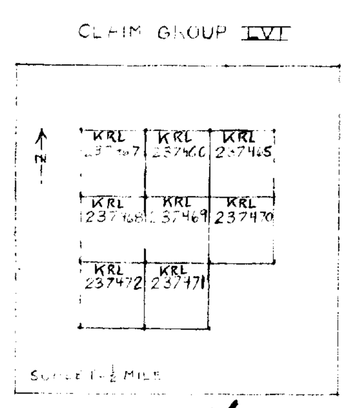




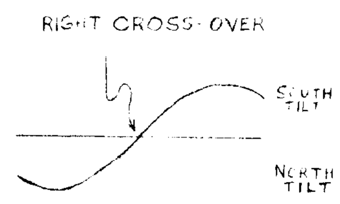
HORIZONTAL LOOP ELECTROMAGNETIC METHOD

200' SEPARATION FREQUENCY 2400 Hz

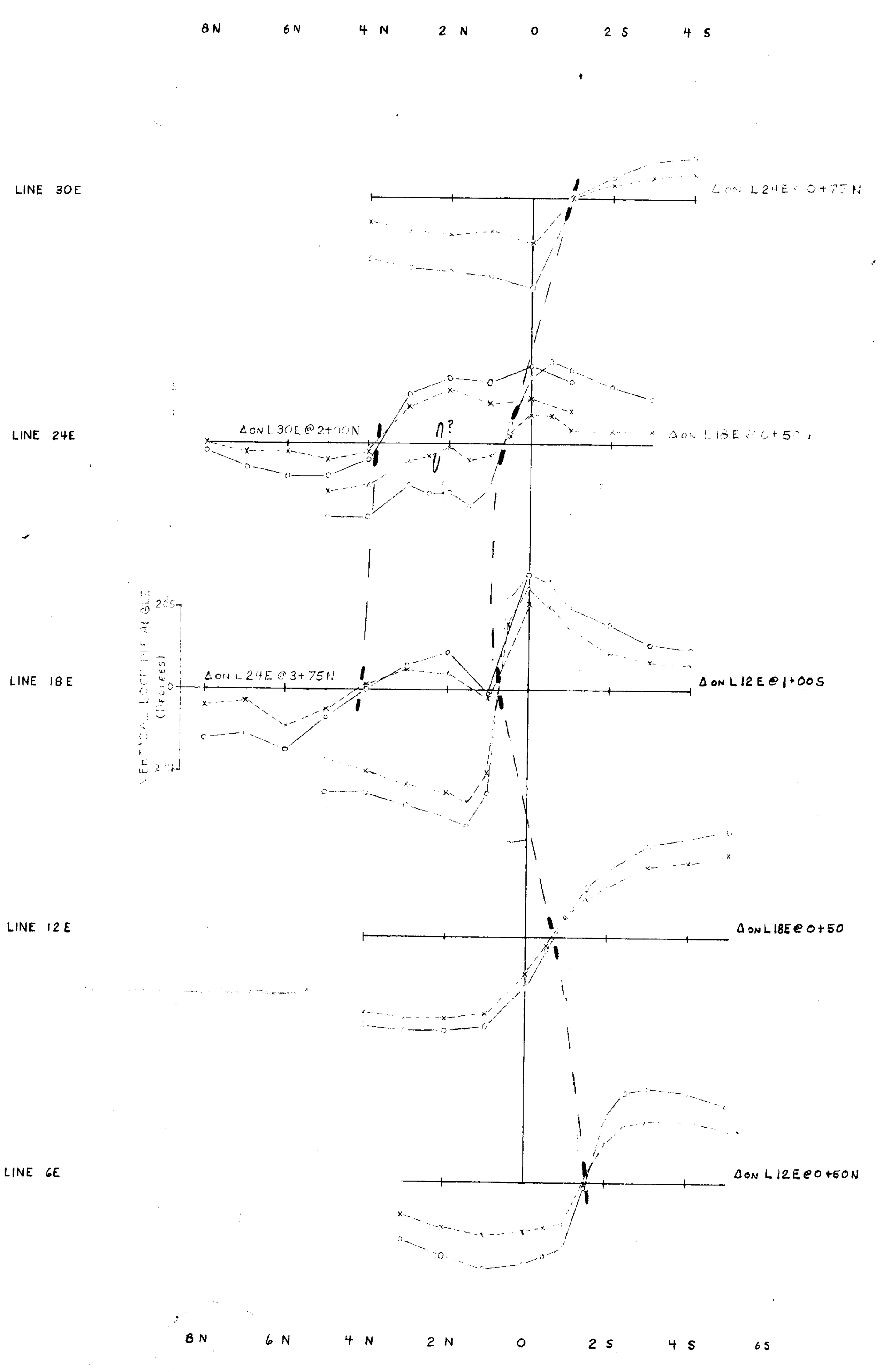


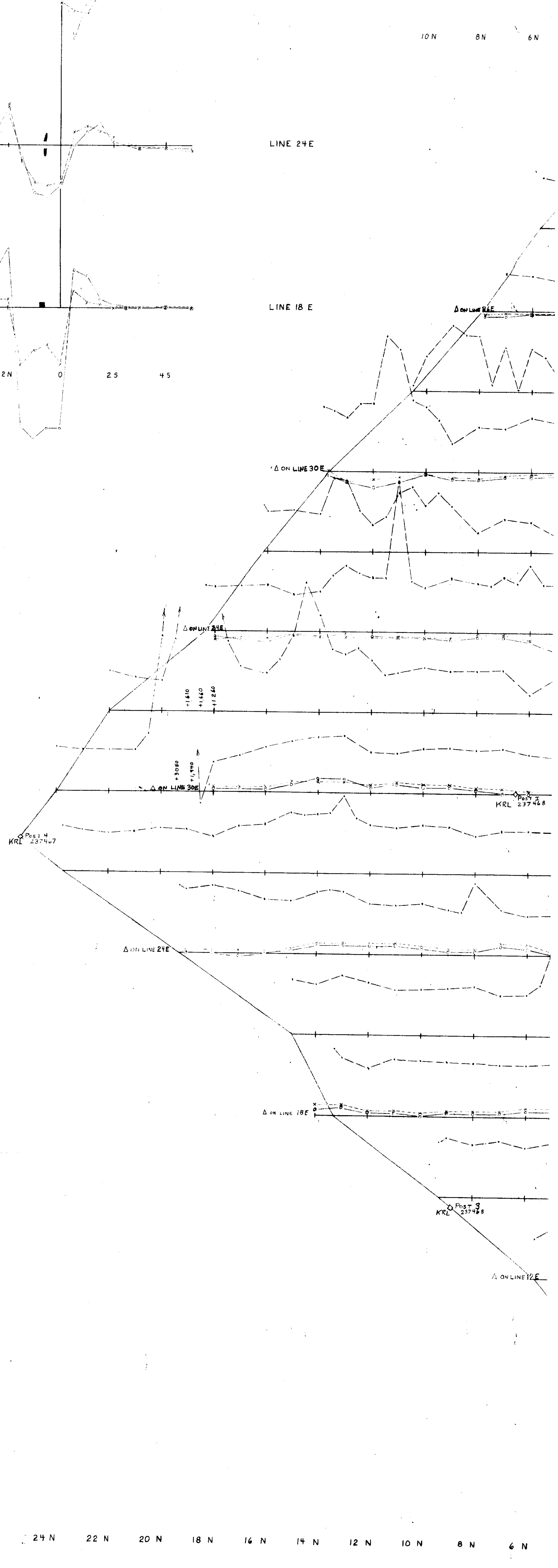


Block # 56



VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION





730

GEOTERREX LIMITED

PROJECT: SEREM LTÉE
MUSKRAT DAM LAKE AREA

CONDUCTOR: LVII SECTION:

SURVEY: MAGNETIC

SCALES:
1" = 200 FEET
VERTICAL-MAGNETIC-
FIELD READINGS
IN GAMMAS

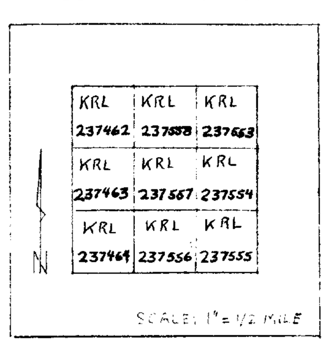
LEGEND:

WORK BY: D.M., R.A.S. | PLOT BY: R.A.S. | DATE: FEBRUARY 1971

INSTRUMENT: MF1 FLUXGATE MAGNETOMETER

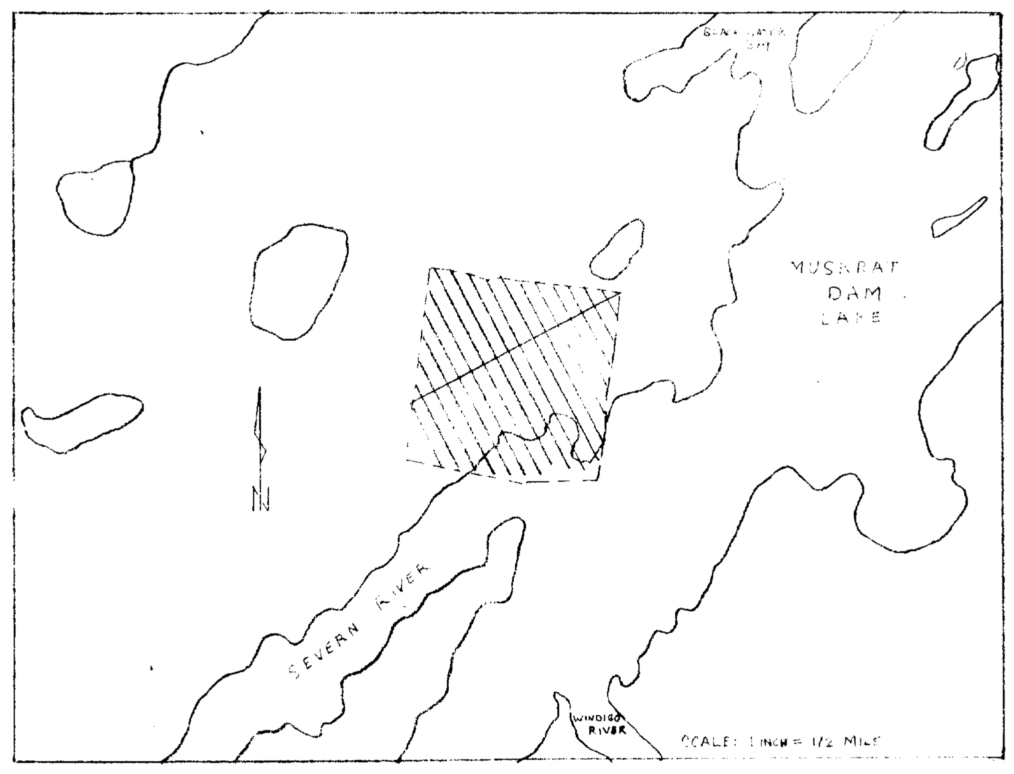
REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

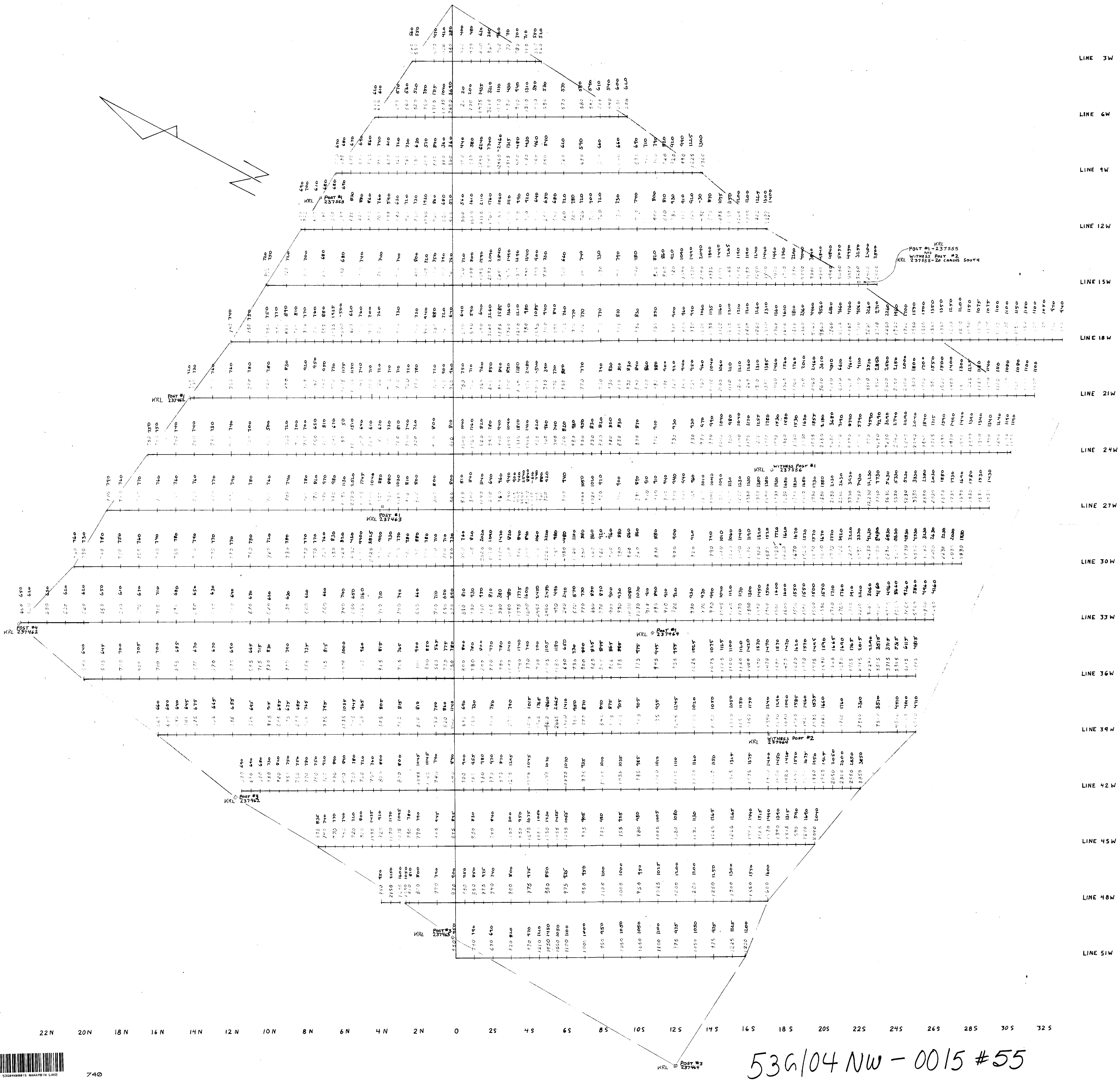
CLAIM GROUP



Block # 57

LOCATION MAP





53G04NW8202 53G04NW0015 NAKAYBIN LAKE

740

53G/04 NW-0015 #55

GEOTERREX LIMITED

SEREM LTÉE
MUSKRAT DAM LAKE AREA

CONDUCTOR: LVII

SURVEY: ELECTROMAGNETIC

SCALES:
1" = 200 FEET
1" = 20 %

LEGEND:
HORIZONTAL LOOP FIELD COMPONENTS
IN PHASE
QUADRATURE

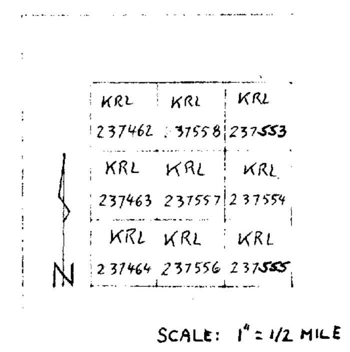
WORK BY: G.C. PLOT BY: L.L., R.A.S. DATE: FEBRUARY 1971

INSTRUMENT:
VHEM HORIZONTAL LOOP ELECTROMAGNETIC UNITS

CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

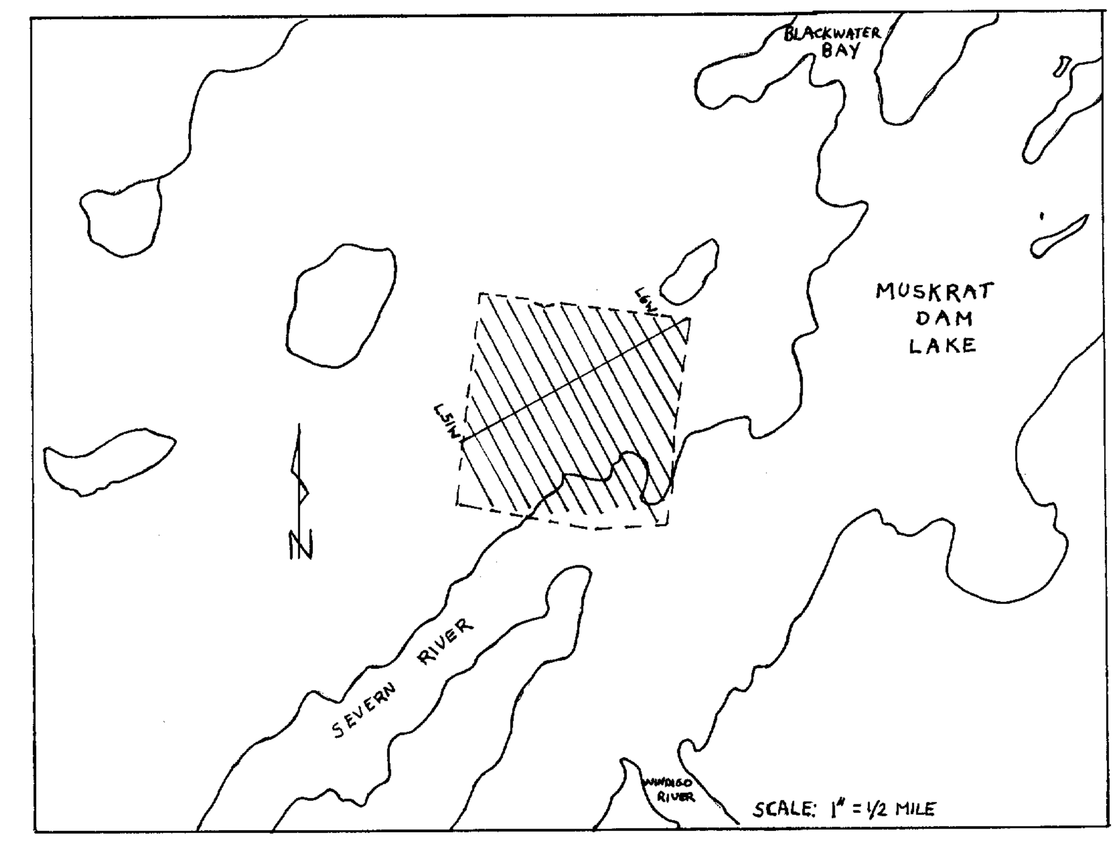
POSSIBLE CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

CLAIM GROUP



Block # 57

LOCATION MAP

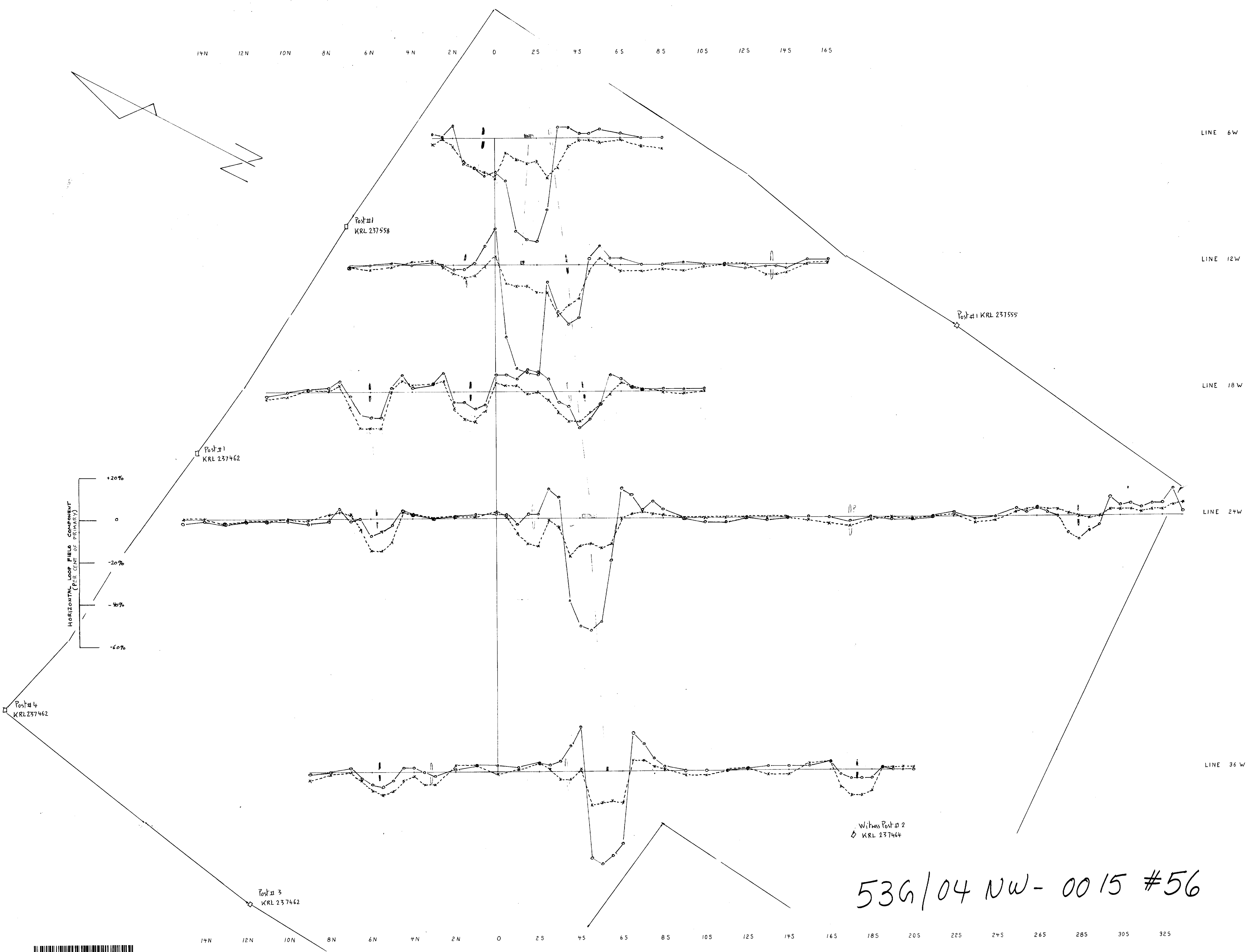


P. Norgaard (signature)

REGISTERED PROFESSIONAL ENGINEER
P. NORGAARD
PROVINCE OF ONTARIO

HORIZONTAL LOOP ELECTROMAGNETIC METHOD

SEPARATION: 200 FEET FREQUENCY: 2400 Hz.



53G/04 NW-0015 #56

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

750

GEOTERREX LIMITED

PROJECT SEREM LTÉE
MUSKRAT DAM LAKE AREA
CONDUCTOR: LVII
SURVEY: ELECTROMAGNETIC AND MAGNETIC
SCALES:
1" = 200 FEET
1" = 20°
1" = 1000 γ
LEGEND:
VERTICAL LOOP DIP ANGLE
1600 Hz
400 Hz
MAGNETIC FIELD INTENSITY

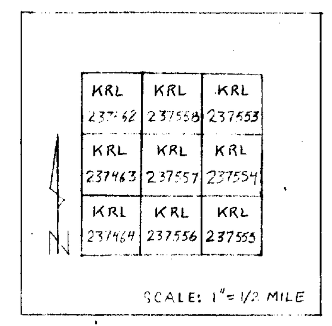
WORK BY: R.A.S., D.M., G.C. | **PLOT BY:** L.L., R.A.S. | **DATE:** FEBRUARY 1971

INSTRUMENTS:
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
MFI FLUXGATE MAGNETOMETER

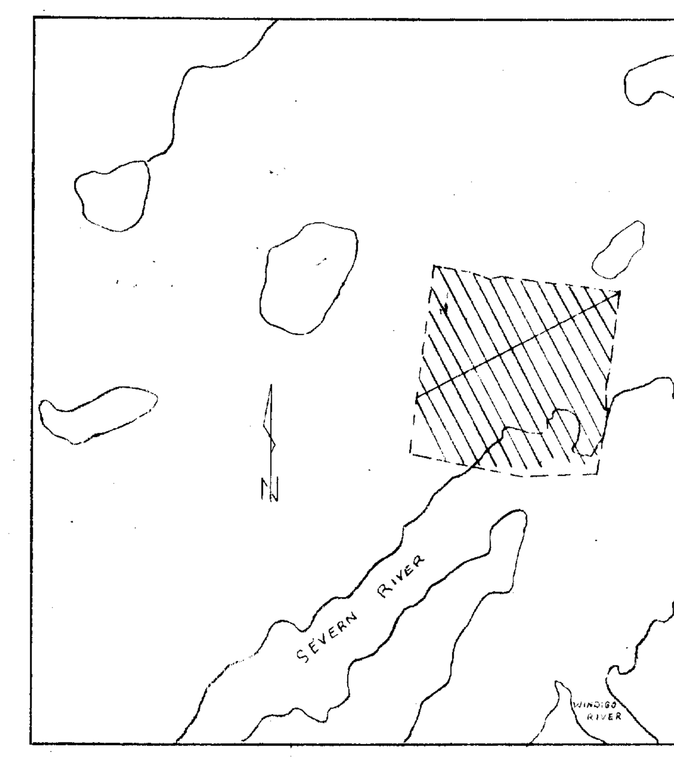
CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

POSSIBLE CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

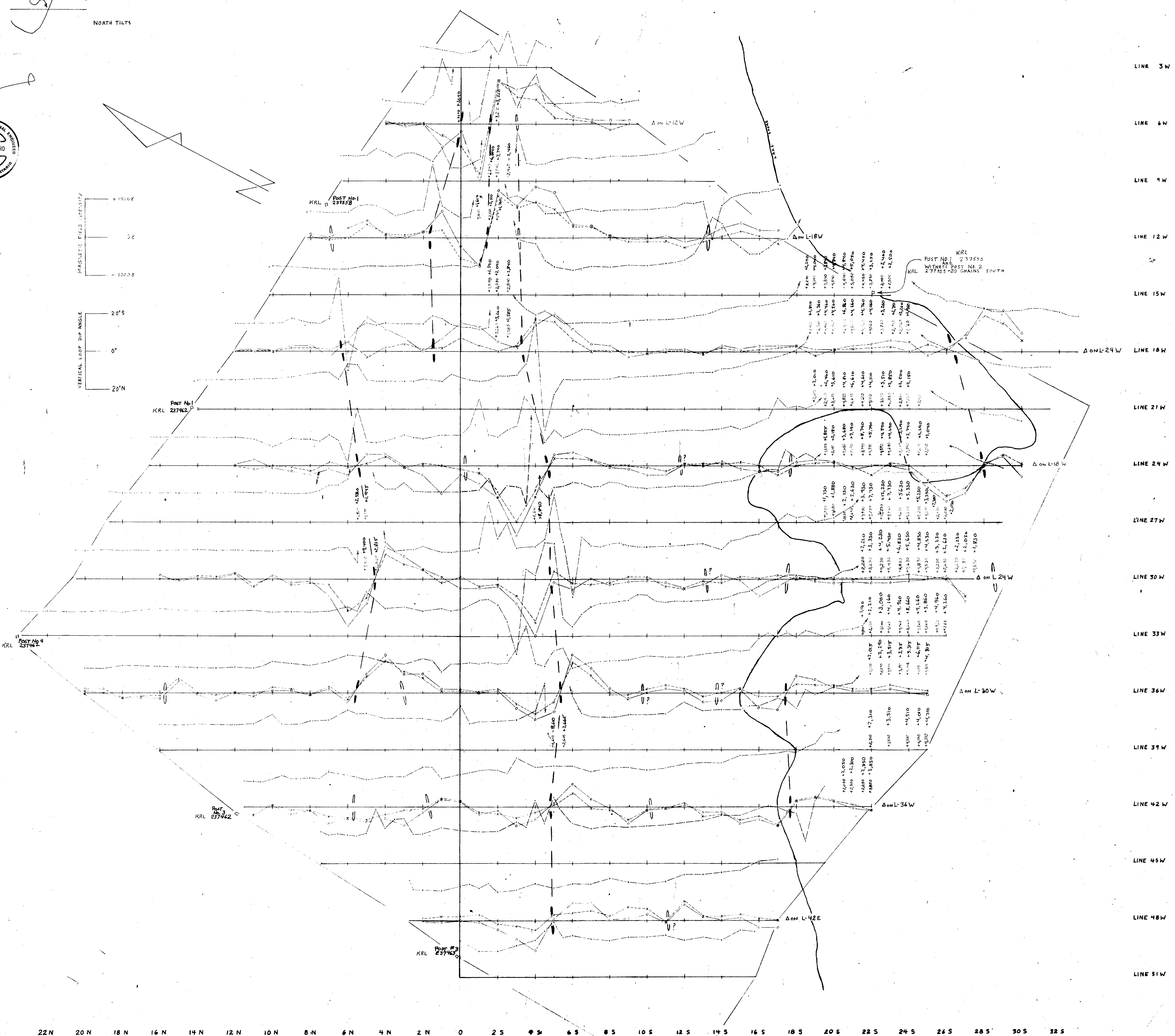
RIGHT CROSS-OVER
SOUTH TILTS
NORTH TILTS



Block #57



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION

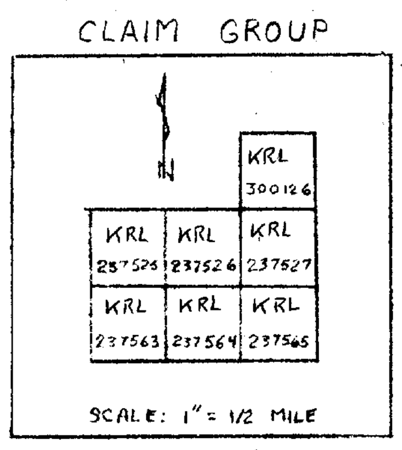


GEOTERREX LIMITED

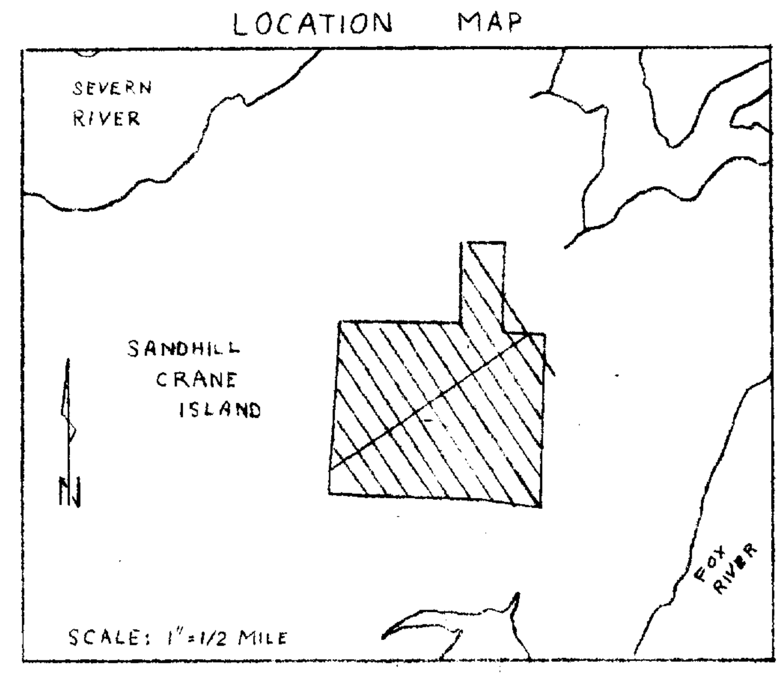
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: LXII	SECTION:
SURVEY: MAGNETIC	
SCALES: 1"=200' VERTICAL-MAGNETIC-FIELD INTENSITY READINGS IN GAMMAS	LEGEND:
WORK BY: F.K., D.M.	PLOT BY: R.A.S.	DATE: FEBRUARY 1971

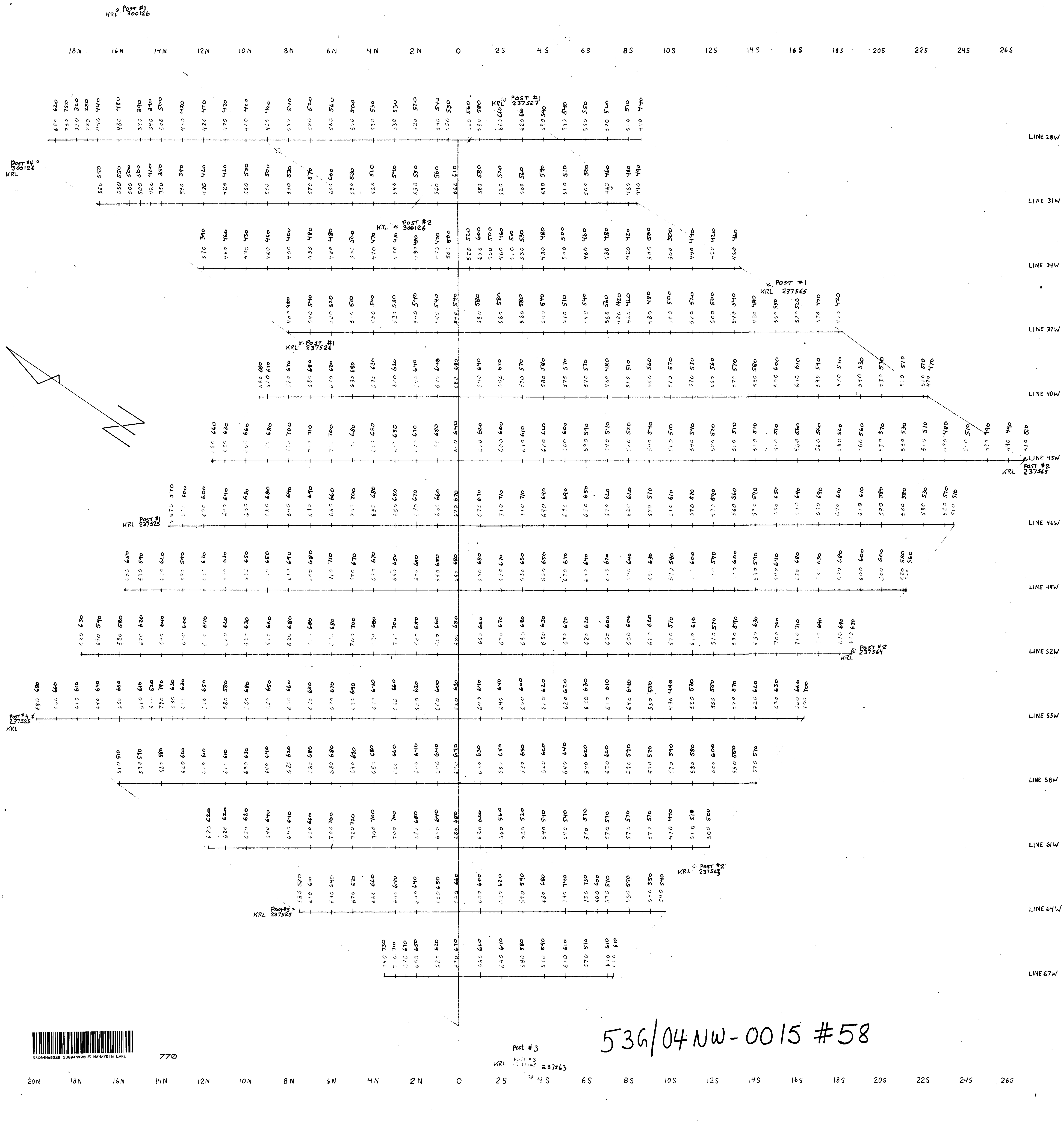
INSTRUMENT: MF1 FLUXGATE MAGNETOMETER

REGISTERED PROFESSIONAL ENGINEER P. NORGAARD PROVINCE OF ONTARIO



Block # 62





53G/04NW-0015 #58

53G04NW8222 53G04NW0015 NAMAYBIN LAKE

770

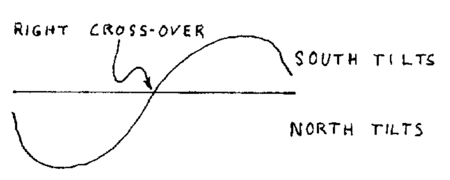
GEOTERREX LIMITED	
PROJECT: SEREM LTÉE MUSKRAT DAM LAKE AREA	
CONDUCTOR: LXII	SECTION:
SURVEY: ELECTROMAGNETIC AND MAGNETIC	
SCALES: 1" = 200' 1" = 10° 1" = 10% 1" = 200 γ	LEGEND: VERTICAL LOOP DIP ANGE 1600 Hz 400 Hz; HORIZONTAL LOOP FIELD COMPONENTS IN PHASE QUADRATURE; MAGNETIC FIELD INTENSITY.
WORK BY: L. McL., S. McD., F.K., D.M. PLOT BY: L.L., R.A.S.	DATE: FEBRUARY 1971

INSTRUMENTS:

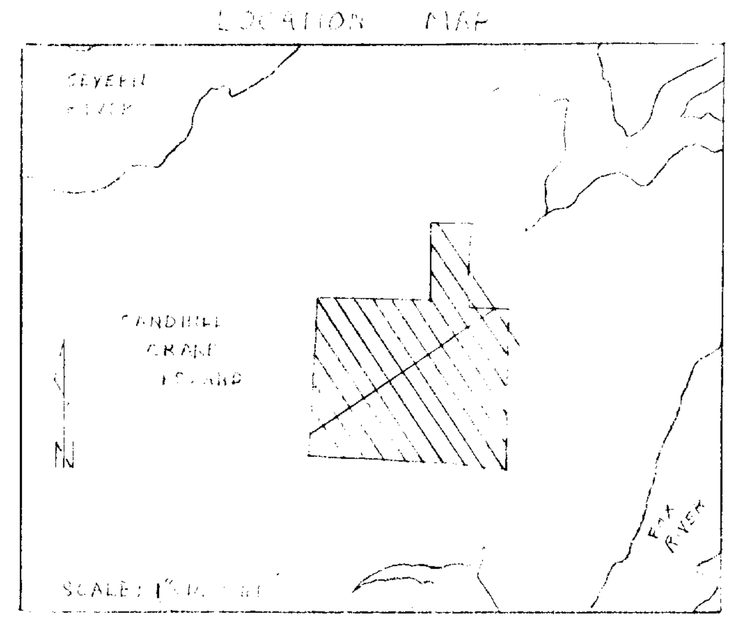
SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS
VHEM HORIZONTAL LOOP ELECTROMAGNETIC UNITS
MF1 FLUXGATE MAGNETOMETER

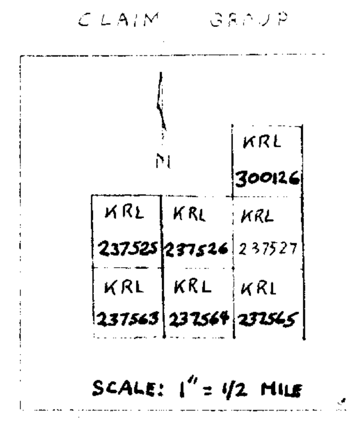
CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE

POSSIBLE CONDUCTOR INDICATED
NO WIDTH DETERMINED
APPROXIMATE WIDTH SHOWN TO SCALE



P. NORGAARD
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO





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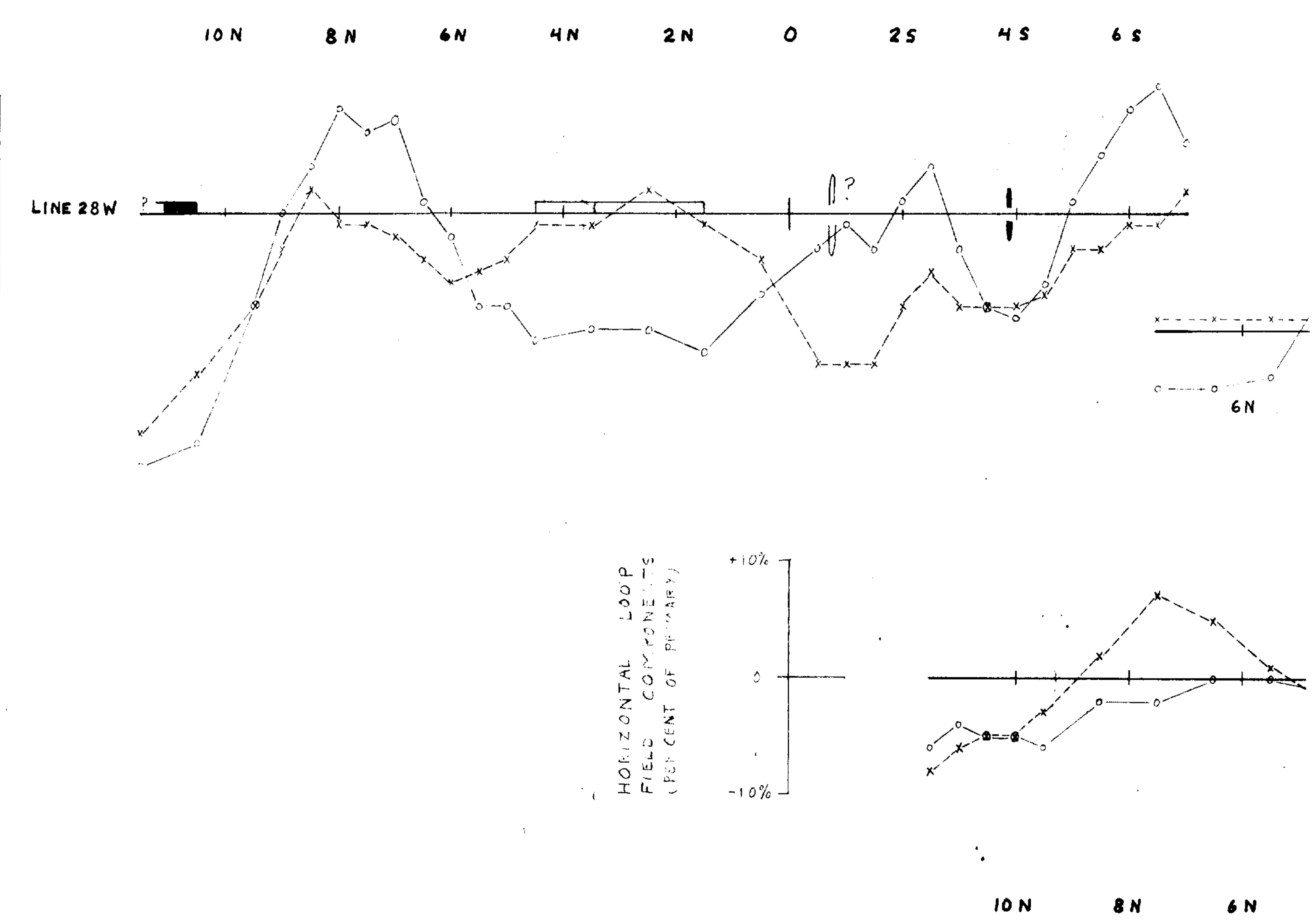
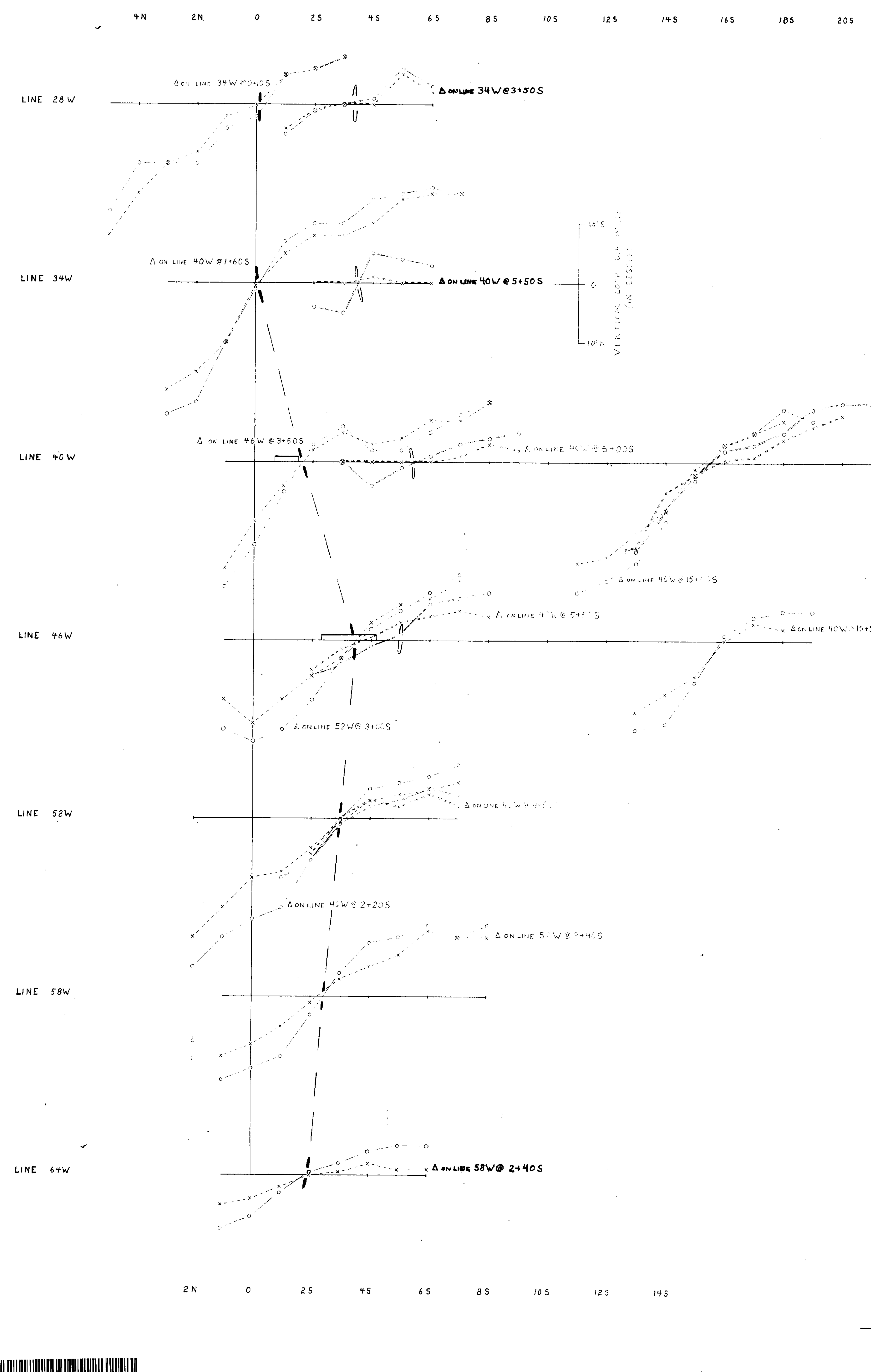
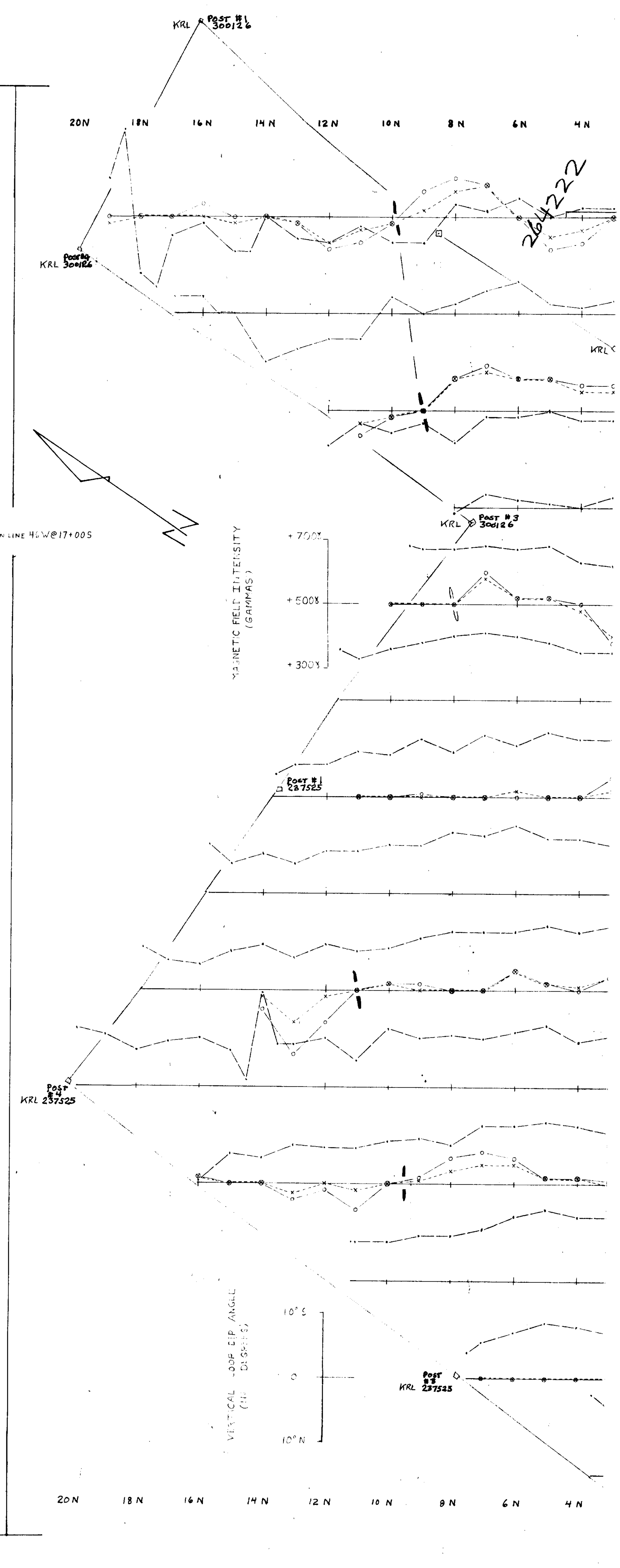


VERTICAL LOOP ELECTROMAGNETIC METHOD

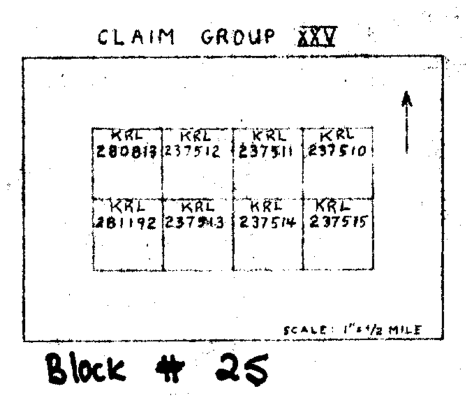
FIXED TRANSMITTER CONFIGURATION

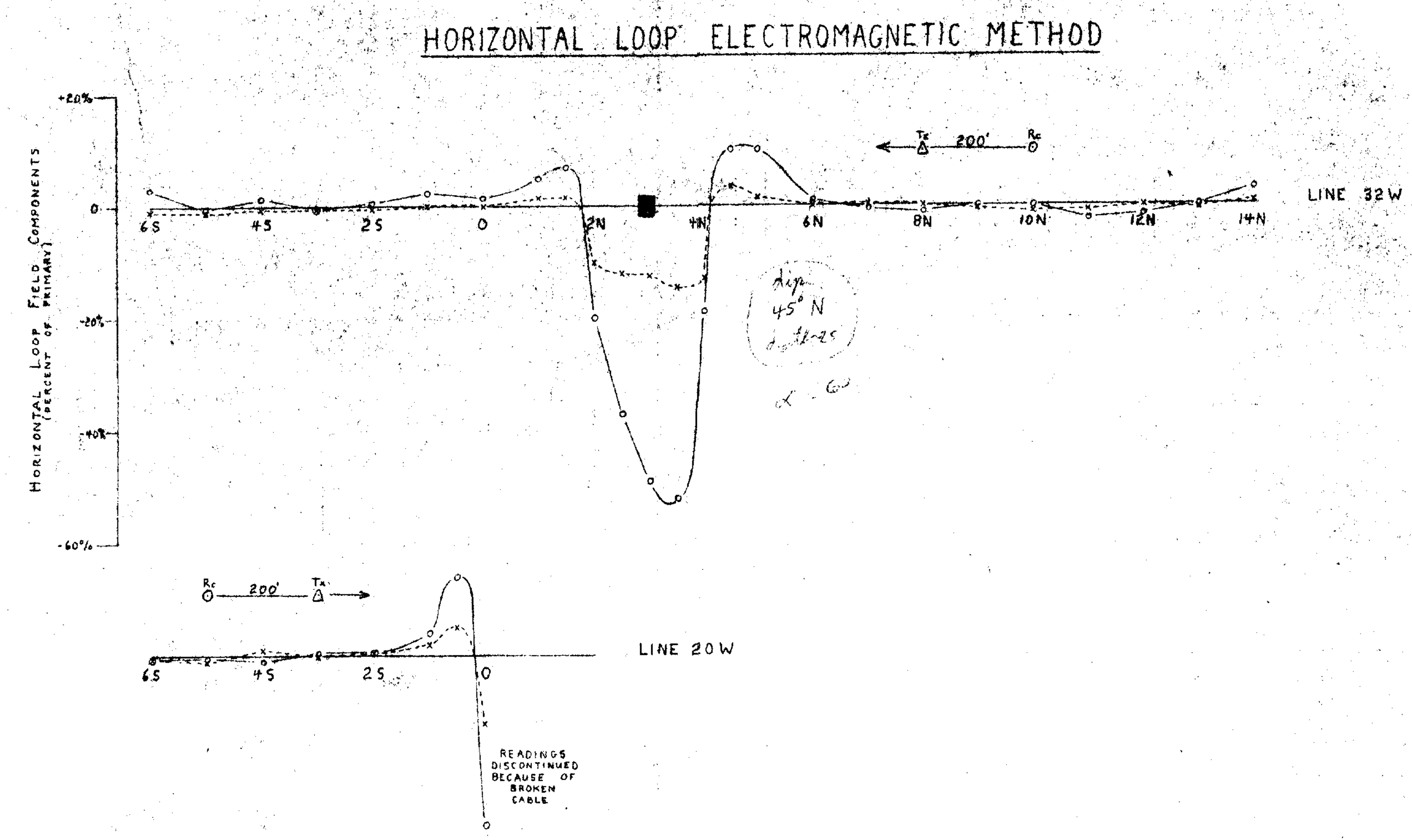


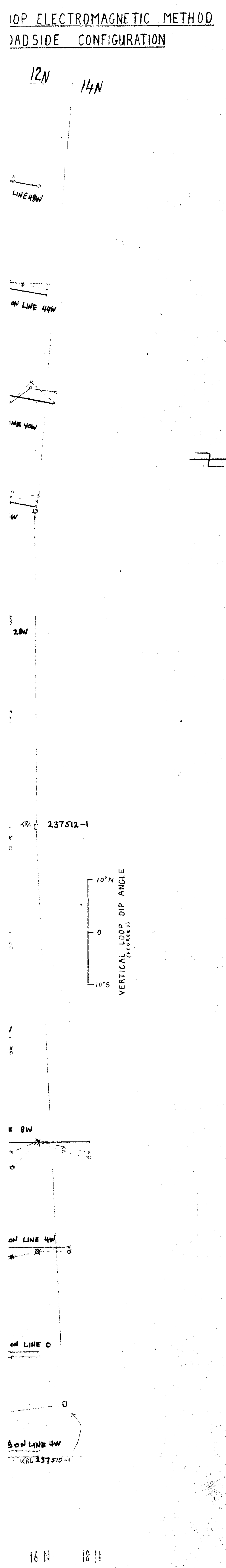


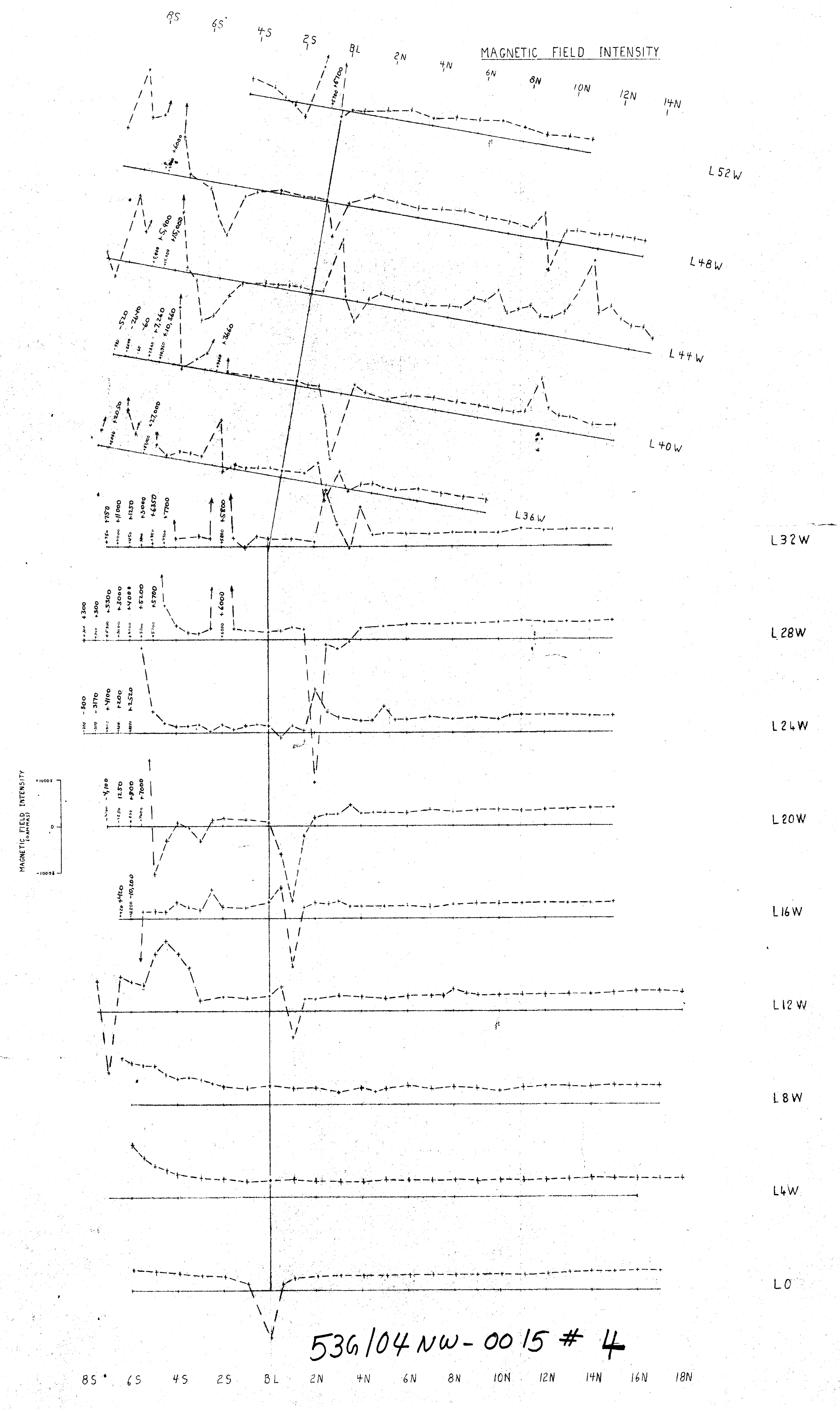
53C04NW0222 53C04NW0015 NAHAYBIN LAKE

780









536/04NW-0015 # 4

DEFINITE CONDUCTOR

POSSIBLE CONDUCTOR

GEOTERREX LIMITED

PROJECT: SEREM LTEE MUSKRAT DAM LAKE AREA

CONDUCTOR: XL **SECTION:**

SURVEY: ELECTROMAGNETIC & MAGNETIC

SCALES:
1" = 200'
1" = 10°
1" = 2000γ

LEGEND:
VERTICAL LOOP DIP ANGLE
1600 Hz
400 Hz
MAGNETIC FIELD INTENSITY

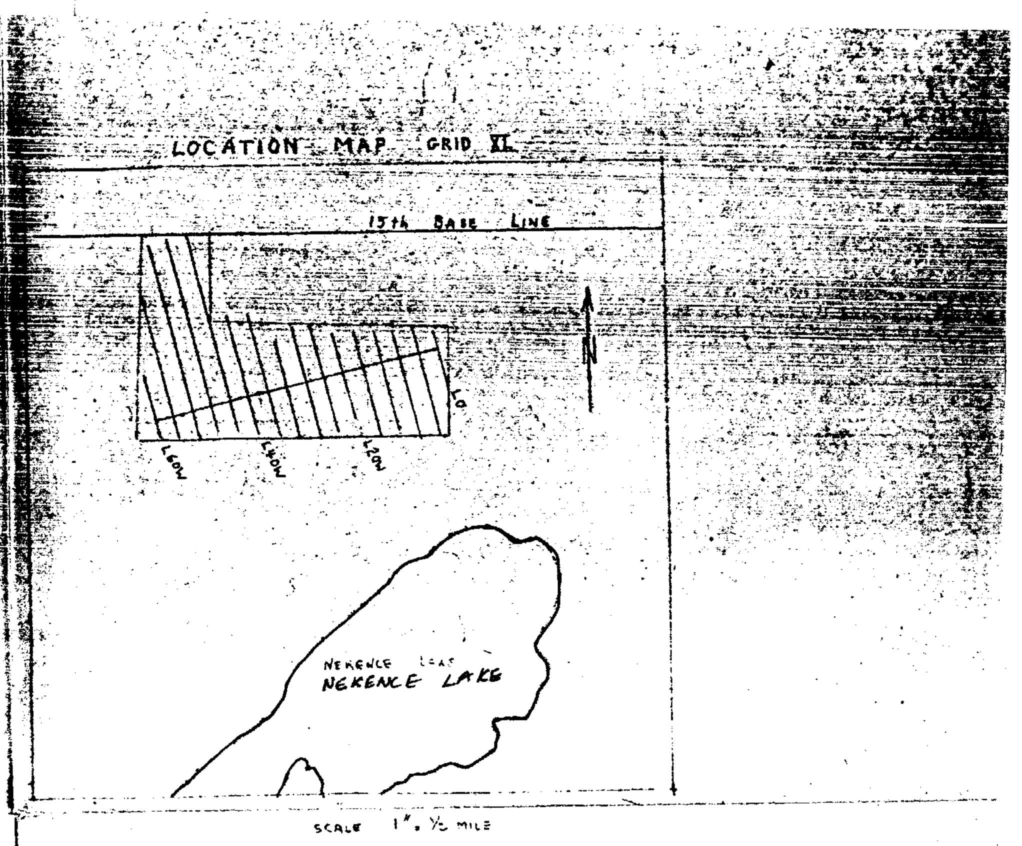
WORK BY: A.S. C.C. T.S. **PLOT BY:** A.S. **DATE:** SEPTEMBER 1970

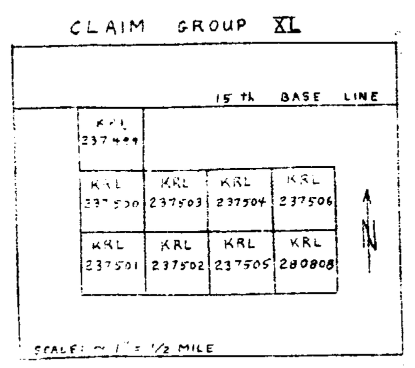
INSTRUMENTS: SE 300 VERTICAL LOOP ELECTROMAGNETIC UNITS

MF-2 FLUXGATE MAGNETOMETER

DEFINITE CONDUCTOR

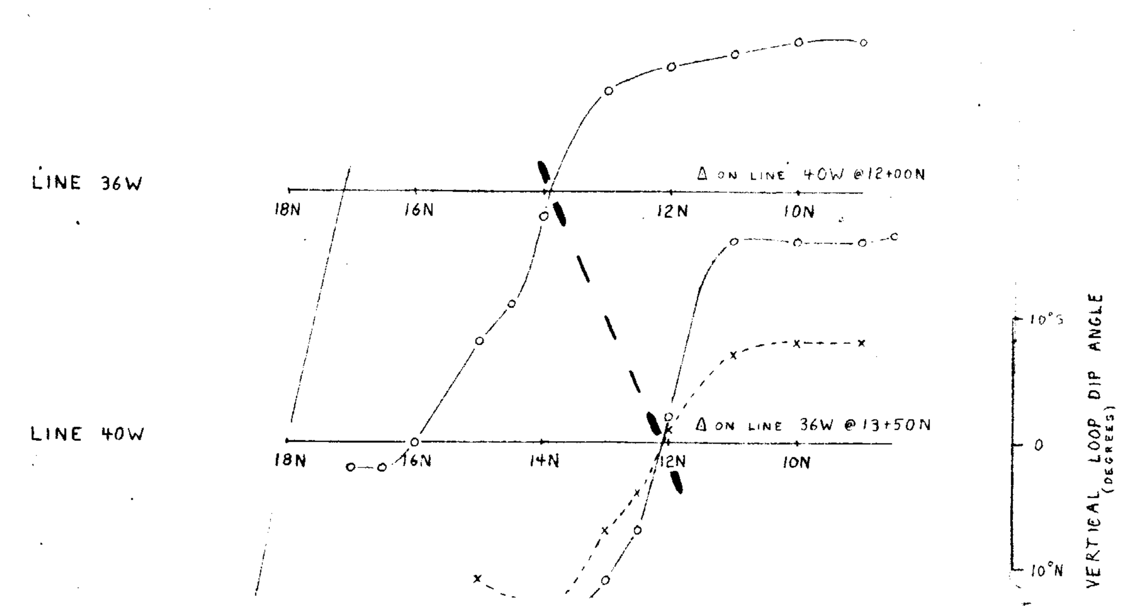
POSSIBLE CONDUCTOR



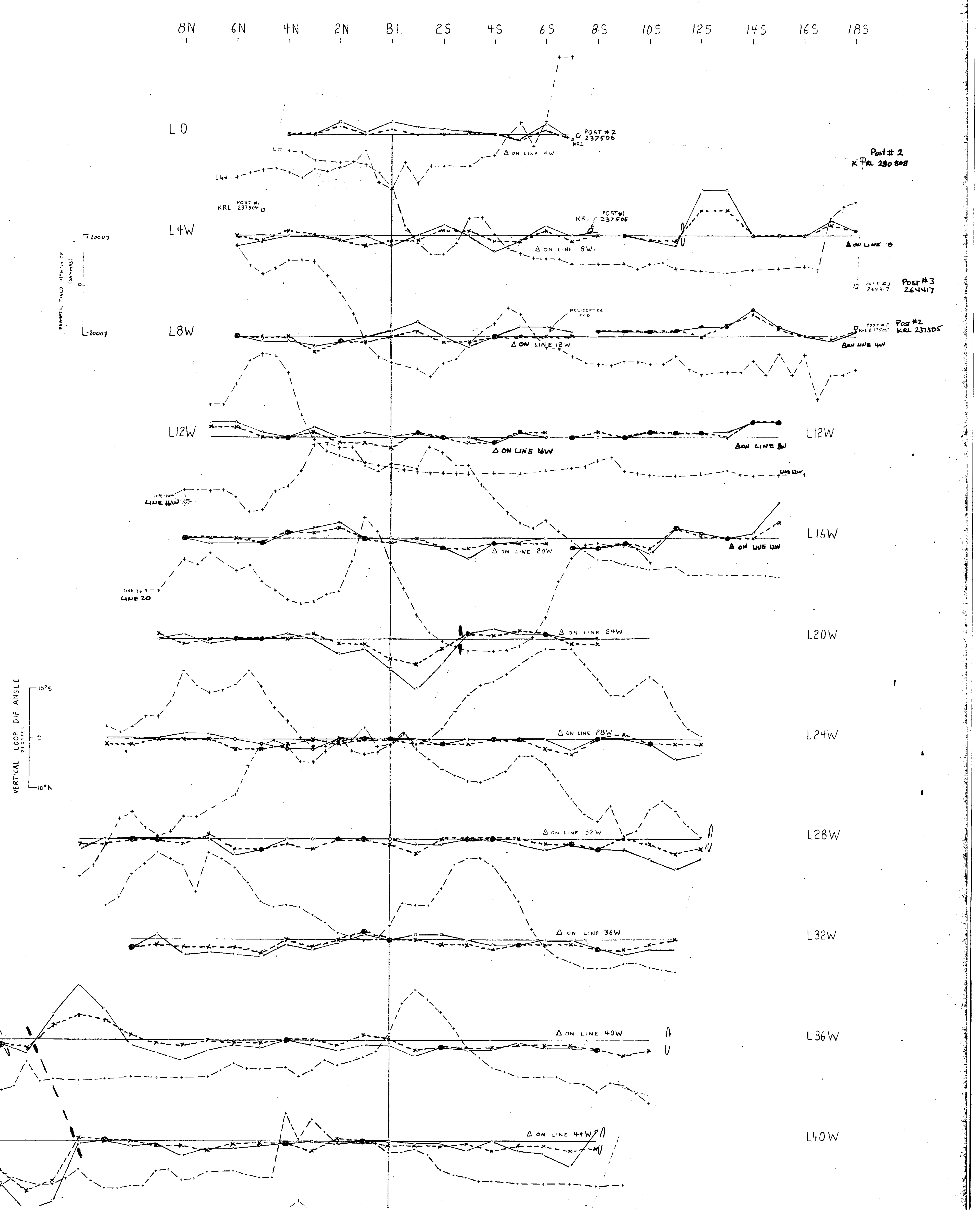


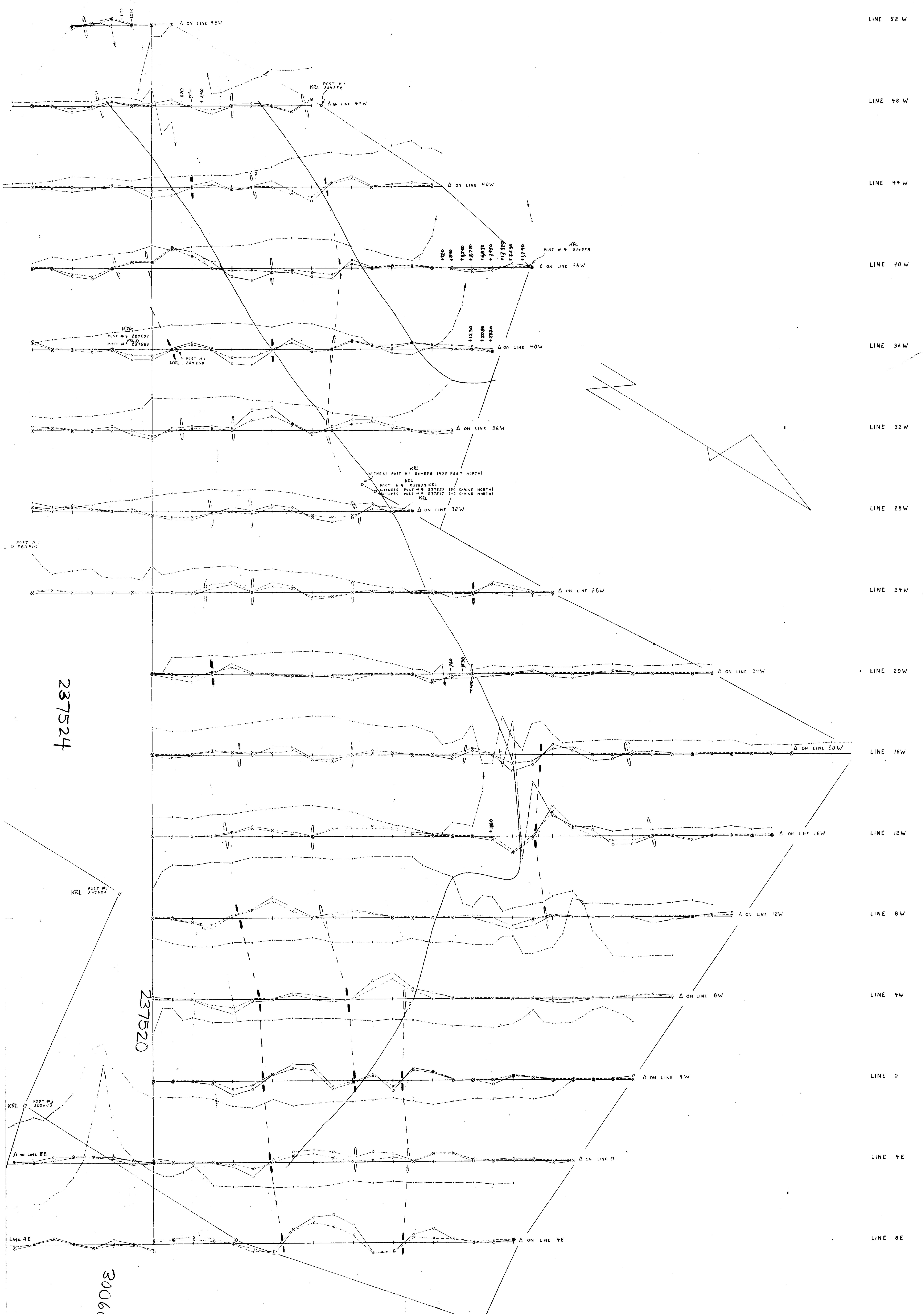
Block # 40

VERTICAL LOOP ELECTROMAGNETIC METHOD
FIXED TRANSMITTER CONFIGURATION



VERTICAL LOOP ELECTROMAGNETIC METHOD
BROADSIDE CONFIGURATION





53G/04NW-0015 #51

53G/04NW-0015 #52

53G/04NW-0015 #54

53G/04NW-0015 #59