



52011SW0050 52011SW0038A1 MCVICAR LAKE

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Red Lake
Red Lake

ONTARIO DEPARTMENT
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RED LAKE

REPORT ON

GEOPHYSICAL SURVEYS

BEFORE MINES LIMITED

LANG LAKE RED LAKE MINING DIVISION ONTARIO



TORONTO, ONTARIO
AUGUST 22ND, 1969

ROSS KIDD
CONSULTING MINING ENGINEER



52011SW0050 52011SW0038A1 MCVICAR LAKE

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 ONTARIO DEPARTMENT OF MINES
 RED LAKE

INTRODUCTION

IN SEPTEMBER, 1968, PROSPECTORS H. W. HAUF AND J. MINOLETTI DISCOVERED COPPER IN A SHEAR ZONE NORTH OF LANG LAKE. THE DISCOVERY WAS STAKED, AND SUBSEQUENTLY BELORE MINES LIMITED ACQUIRED THE CLAIMS.

THE GEOPHYSICAL WORK DESCRIBED IN THIS REPORT WAS THEN CARRIED OUT, IN JUNE AND JULY, 1969. THE GEOPHYSICAL SURVEYS HAD THE FOLLOWING TWO OBJECTIVES:

1. TO LEARN MORE ABOUT THE DIMENSIONS OF THE DISCOVERY ZONE.
2. TO SEARCH THE REMAINDER OF THE PROPERTY FOR OTHER SULFIDE BODIES.

THE GEOPHYSICAL RESULTS ARE SHOWN ON THE MAP WHICH ACCOMPANIES THIS REPORT.

SUMMARY OF RESULTS

FIFTEEN ELECTRICAL CONDUCTORS WERE LOCATED ON THE PROPERTY. FIVE OF THESE, INCLUDING THE CONDUCTOR CAUSED BY THE DISCOVERY ZONE, ARE CONSIDERED TO HAVE ECONOMIC POSSIBILITIES.

THE DISCOVERY ZONE HAS BEEN TRACED FOR A STRIKE LENGTH OF 800 FEET WITHIN THE PROPERTY.

TWO BANDS OF MAGNETIC HIGHS WERE ALSO LOCATED. IT SEEMS VERY PROBABLE THAT THESE ARE REPRESENTATIVE OF THE TWO LIMBS OF AN ANTICLINAL STRUCTURE UNDERLYING THE PROPERTY.

LOCATION OF PROPERTY

THE PROPERTY LIES IN THE PATRICIA DISTRICT OF NORTHWESTERN ONTARIO, ABOUT 115 MILES ENE OF RED LAKE, AND 60 MILES WEST OF PICKLE LAKE.

A KEY MAP INCLUDED IN THE MAP ACCOMPANYING THIS REPORT SHOWS THE GENERAL LOCATION OF THE PROPERTY, WHILE ANOTHER INCLUDED MAP SHOWS THE LOCATIONS OF THE INDIVIDUAL CLAIMS MAKING UP THE PROPERTY.

ACCESS TO THE PROPERTY

BOTH RED LAKE AND PICKLE LAKE MAY BE REACHED BY ROAD FROM THE MAIN TRANSCANADA HIGHWAY (NO. 17). BUSH PLANE SERVICE IS AVAILABLE IN BOTH TOWNS TO PROVIDE ACCESS TO LANG LAKE.

RED LAKE MAY ALSO BE REACHED BY DAILY AIR SERVICE FROM WINNIPEG.

GENERAL GEOLOGY

THE GENERAL GEOLOGY IS DESCRIBED IN A REPORT BY H. C. LAIRD PUBLISHED IN VOLUME 39, PART 3, OF THE ONTARIO DEPARTMENT OF MINES, AND ACCOMPANIED BY MAP NO. 39D.

THE PROPERTY IS SHOWN AS ENTIRELY UNDERLAIN BY KEEWATIN GREENSTONES AND LESSER BANDED IRON FORMATION. THESE GREENSTONES ARE PART OF A BELT SOME 22 MILES LONG IN THE EAST-WEST DIRECTION, AND HAVING A MAXIMUM WIDTH OF ABOUT 6 MILES. A LARGE GABBROIC INTRUSIVE LIES ABOUT 3 MILES TO THE SOUTH.

DR. LAIRD BELIEVES THAT THE IRON FORMATION ALONG

THE NORTH SHORE OF LANG LAKE IS PART OF AN ASSEMBLAGE OF KEEWATIN SEDIMENTARY ROCKS UNDERLYING THAT PART OF THE LAKE, AND OUTCROPPING AS BANDED SLATES ON THE SOUTH SHORE. HE SUGGESTS, IN TWO PLACES IN HIS REPORT, THAT THE SHORELINE ROCK DIPS SUGGEST A SYNCLINAL BASIN UNDER THE LAKE.

DR. LAIRD ALSO STATES THAT THERE IS EVIDENCE OF A FAULT OCCUPYING THE LENGTH OF LANG LAKE, AND HE MAPS THE PRESENCE OF THIS FAULT AT THE NARROWS ON THE LAKE.

HE SAYS THAT THE ROCKS OF THE AREA ARE GENERALLY SHEARED IN THE N80°E DIRECTION, AND THAT A COMPLEMENTARY SET OF FRACTURES AT E30°S APPEAR NEAR LANG LAKE.

HE FURTHER STATES THAT THE IRON FORMATION ALONG LANG LAKE DOES NOT CONTAIN GOLD. SPECKS OF MOLYBDENITE OCCUR IN A QUARTZ VEIN ON THE NORTH SHORE OF THE LAKE, WHILE A HEAVY GOSSAN IS MARKED ON MAP 39D ABOUT WHERE PRESENT CLAIM KRL 61944 IS LOCATED (SOUTH OF THE PROPERTY). NEITHER OF THESE OCCURRENCES WERE SEEN DURING THE COURSE OF THE GEOPHYSICAL WORK, SINCE THEY ARE BOTH OFF THE CLAIMS SURVEYED.

HISTORY OF PROPERTY

THE AREA COVERED BY THE CLAIMS WAS VERY PROBABLY WELL PROSPECTED DURING THE ACTIVITY IN THE AREA IN 1928, FOLLOWING THE DISCOVERY OF GOLD NEAR SHONIA LAKE BY W. W. "HARDROCK" SMITH AND STANLEY WATSON. DR. LAIRD'S REPORT MENTIONS THAT CLAIMS WERE HELD NORTH OF LANG LAKE BY KENORA PROSPECTOR'S AND MINERS, LIMITED, BUT NO WORK

ON THE CLAIMS IS DESCRIBED.

NO EVIDENCE OF OLD PICKET LINES OR WORK TRAILS OR DRILL ROADS WAS SEEN DURING THE PRESENT WORK, AND IT IS CONCLUDED THAT NO WORK OTHER THAN PROSPECTING HAS BEEN DONE ON THE CLAIMS BEFORE.

METHODS OF GEOPHYSICS USED

PICKET LINES WERE CUT ACROSS THE EXPECTED ROCK AND SHEAR TRENDS AT 400 FOOT INTERVALS, AND STATIONS WERE ESTABLISHED EVERY 100 FEET ALONG THE LINES. THE PICKET LINE LOCATIONS ARE SHOWN ON THE ACCOMPANYING MAP.

READINGS WERE THEN TAKEN OF THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD AT 100 FOOT INTERVALS ALONG THE LINES. THESE READINGS HAVE BEEN CORRECTED FOR DIURNAL AND DAY-TO-DAY EFFECTS, AND THE CORRECTED READINGS ARE SHOWN ON THE MAP. THE READING VALUES HAVE ALSO BEEN CONTOURED, AND THE CONTOUR INTERVALS COLORED FOR MORE READY IDENTIFICATION.

READINGS WERE ALSO TAKEN OF THE ELECTROMAGNETIC DIP ANGLES AT 100 FOOT INTERVALS. THE TRANSMITTING STATION USED WAS NPG (JIM CREEK) AT 18.6 KHZ, AND CHECK READINGS WERE MADE FROM TIME TO TIME USING NAA AT 17.8 KHZ. THE DIP ANGLES ARE SHOWN ON THE ACCOMPANYING MAP, AS WELL AS THE RESULTING CONDUCTORS.

MORE DETAILED READINGS WERE TAKEN, AT 50 FOOT SPACING, WHERE NEEDED FOR INTERPRETATION PURPOSES.

A TOTAL OF 860 MAGNETIC READINGS WERE TAKEN, AND 818 ELECTROMAGNETIC READINGS. PICKET LINE MILEAGE IS 18.2.

- 2 -

GEOPHYSICAL RESULTS

TWO PARALLEL BANDS OF MAGNETIC HIGHS WERE LOCATED, ONE ALONG THE SOUTH BOUNDARY OF THE PROPERTY AND THE OTHER ALONG THE NORTH BOUNDARY.

EACH BAND IS MADE UP OF TWO PARALLEL AND SEPARATED HIGHS, ONE BEING OF LOWER MAGNETIC INTENSITY THAN THE OTHER.

IN THE CASE OF THE NORTH BAND, THE STRONGER OF THE MAGNETIC PAIR LIES TO THE NORTH, WHILE IN THE SOUTH BAND THE STRONGER HIGH IS ON THE SOUTH.

IT IS CLEAR THAT THE TWO BANDS ARE THE TWO LIMBS OF A FOLDED STRUCTURE, OR RATHER THAT THEY SHOW THE EXISTENCE OF SUCH A STRUCTURE. SINCE THE LANG LAKE SYNCLINE LIES JUST TO THE SOUTH, THE STRUCTURE UNDERLYING THE PROPERTY MUST BE AN ANTICLINE.

IT IS ALSO CLEAR THAT THE MAGNETIC HIGHS ARE CAUSED BY MAGNETITE-BEARING IRON FORMATION, SINCE THESE ROCKS ARE EXPOSED WITHIN THE SOUTH BAND ALONG THE NORTH SHORE OF LANG LAKE. SINCE THIS IRON FORMATION CARRIES NEITHER GOLD NOR IMPORTANT SULFIDES, AND IT IS TOO SMALL FOR IRON-MINING POSSIBILITIES, IT CAN BE CONCLUDED THAT THE SOURCES OF THE MAGNETIC HIGHS ARE NOT OF COMMERCIAL INTEREST. THEIR VALUE LIES IN INDICATING THE GEOLOGICAL STRUCTURE PRESENT ON THE CLAIMS.

ABOUT 15 ELECTRICAL CONDUCTORS WERE LOCATED BY THE ELECTROMAGNETIC SURVEYS. THESE ALSO OCCUR LARGELY IN TWO BANDS, ONE FOLLOWING THE SOUTH MAGNETIC BAND AND THE OTHER

OCCUPYING A ZONE EXTENDING ALONG THE EXPECTED POSITION OF THE AXIAL PLANE OF THE POSTULATED ANTICLINE.

IT IS THOUGHT THAT THOSE CONDUCTORS ASSOCIATED WITH THE SOUTH MAGNETIC BAND ARE PROBABLY DUE TO WEAK CONDUCTIVITY ALONG CONTACTS BETWEEN THE SEDIMENTARY ROCKS ENCLOSING THE IRON FORMATION AND THE SURROUNDING GREENSTONES. THE VAGUE, WEAK, AND DISCONNECTED NATURE OF THESE FEATURES SUPPORTS THIS CONCLUSION. THESE ARE THE "D", "E", AND "K" CONDUCTORS, AND THESE ARE NOT THOUGHT TO BE OF ECONOMIC INTEREST.

THOSE CONDUCTORS LYING ALONG THE ANTICLINAL AXIAL PLANE ARE CONSIDERED TO BE GEOLOGICALLY FAVORABLE, SINCE THIS COULD BE THE LOCUS OF TENSION BREAKS, SHEARING, OR FAULTING MAKING OPENINGS FOR MINERALIZED SOLUTION ENTRY. THIS GROUP OF CONDUCTORS INCLUDE "A", "B", "C", "F", "G", "H", "L", AND "M". OF THESE, THOSE CONDUCTORS HAVING STRIKE DIRECTIONS AT VARIANCE TO THE NORMAL N 80°E DIRECTION ARE THOUGHT TO BE THE MORE INTERESTING FEATURES. THIS IS BECAUSE OF THE COMMON OCCURRENCE OF OREBODIES IN MINOR STRUCTURES SUBSIDIARY OR TANGENTIAL TO MAJOR STRUCTURES. THESE MORE FAVORABLE CONDUCTORS ARE "A", THE "C" CONDUCTORS, AND "F".

IN ADDITION, IT MAY BE THAT THE SMALLER MAGNETIC ANOMALIES FOUND ALONG THE AXIAL PLANE AREA ARE DUE TO A LATER GEOLOGICAL EVENT THAN THOSE MAGNETITE ANOMALIES WHICH FORM THE NORTH AND SOUTH MAGNETIC BANDS, AND THEY MAY BE DUE TO PYRRHOTITE RATHER THAN MAGNETITE. AS SUCH, THEY MAY BE OF IMPORTANCE, AND CONDUCTORS "B" AND "L" ARE THEREFORE

THOUGHT TO BE OF GREATER INTEREST THAN THE REMAINING CONDUCTORS IN THE CENTRAL SECTION OF THE PROPERTY.

CONDUCTORS "J" AND "N" WITHIN THE NORTH MAGNETIC BELT ARE THOUGHT TO BE DUE TO ROCK CONTACTS IN THE IRON FORMATION-SEDIMENTARY COMPLEX, MUCH LIKE THOSE CONDUCTORS WITHIN THE SOUTH MAGNETIC BELT, AND THEY ARE SIMILARLY THOUGHT TO HAVE NO IMPORTANCE.

CONDUCTOR "O", UNDER THE SMALL LAKE AT THE WEST END OF THE PROPERTY, AS WELL AS THE CONDUCTOR UNDER LANG LAKE AT THE SOUTHEAST CORNER OF THE PROPERTY, ARE THOUGHT TO BE CAUSED BY OVERBURDEN LAKE-BOTTOM EFFECTS OF NO ECONOMIC INTEREST.

TO SUMMARIZE, CONDUCTORS "A", "C", "F", "B", AND "L" ARE THOSE CONDUCTORS THOUGHT TO HAVE POSSIBLE ECONOMIC IMPORTANCE. CONDUCTOR "A" MUST BE CONSIDERED THE MOST INTERESTING AT THIS STAGE, SINCE IT IS CAUSED BY THE KNOWN COPPER DISCOVERY.

CONCLUSIONS

1. THE ELECTROMAGNETIC SURVEY INDICATES FIFTEEN ELECTRICAL CONDUCTORS ON THE CLAIMS.
2. THE MAGNETIC RESULTS STRONGLY SUGGEST THAT THE CLAIMS ARE UNDERLAIN BY TIGHTLY FOLDED ROCKS IN AN ANTICLINAL STRUCTURE.
3. FIVE OF THE CONDUCTORS ARE SELECTED, ON THE BASIS OF THE POSTULATED GEOLOGICAL STRUCTURE AND ON THEIR GEOPHYSICAL CHARACTERISTICS, AS OF POSSIBLE ECONOMIC IMPORTANCE. THESE ARE CONDUCTORS "A", "B", "C", "F", AND "L".

RECOMMENDATIONS

1. FIVE DIAMOND DRILL HOLES ARE RECOMMENDED. THE HOLE DETAILS ARE LISTED IN APPENDIX ONE.

COST ESTIMATES

THE TOTAL SUGGESTED DRILL FOOTAGE IS 2,000 FEET. IT IS THOUGHT THAT THE DRILLING COULD BE DONE SUCCESSFULLY USING "E" EQUIPMENT, AND THUS SAVING ON TRANSPORTATION COSTS.

2,000 FEET EXT DRILLING @ \$4.00	\$ 8,000.00
MOVING OF DRILL, MEN, AND CAMPS FROM PICKLE LAKE AND RETURN.....	3,000.00
SUPERVISION, ASSAYING, TRANSPORTING ENGINEER.....	3,000.00
CONTINGENCIES	1,000.00

TOTAL COST ESTIMATE = \$ 15,000.00

Ross Kidd

TORONTO, ONTARIO
AUGUST 22ND, 1969

ROSS KIDD, P. ENG.
CONSULTING MINING ENGINEER

A P P E N D I X O N E

DETAILS OF DIAMOND DRILL HOLES 1 TO 5

<u>HOLE 1</u>	<u>LOCATION</u>	<u>DIRECTION</u>	<u>ANGLE</u>	<u>LENGTH</u>
	50' S ON LINE 11W	190° T	-50°	300 FT.

(HOLE DESIGNED TO TEST UNDER DISCOVERY TRENCHES)

<u>HOLE 2</u>	ON NORTH BOUNDARY, 65' EAST OF 112N- LINE 16W.	190° T	-50°	300 FT.
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(HOLE DESIGNED TO TEST ALONG STRIKE OF THE DISCOVERY ZONE,
AT A PLACE WHERE THE CONDUCTIVITY IS GREATER)

<u>HOLE 3</u>	450' N ON LINE 16E	355° T	-50°	300 FT.
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(HOLE DESIGNED TO EXPLORE CONDUCTOR B AND CORRELATING MAGNETIC
HIGH)

<u>HOLE 4</u>	SAME SETUP AS HOLE 3	175° T	-40°	800 FT.
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(HOLE DESIGNED TO EXPLORE THE F CONDUCTOR AND THE TWO
C CONDUCTORS)

<u>HOLE 5</u>	150' N ON LINE 68E	345° T	-50°	300 FT.
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(HOLE DESIGNED TO EXPLORE THE L CONDUCTOR AND CORRELATING
MAGNETIC HIGH)

TOTAL DRILL FOOTAGE = 2,000 FEET

A P P E N D I X T W O

DETAILS OF GEOPHYSICAL INSTRUMENTS USED

MAGNETIC SURVEY:

MCPHAR MF-1 FLUXGATE MAGNETOMETER.

SCALE CONSTANT OF 20 GAMMAS PER SCALE DIVISION.

READABLE TO 5 GAMMAS.

ELECTROMAGNETIC SURVEY

RONKA EM 16 ELECTROMAGNETIC UNIT.

SCALE CONSTANT OF 1 DEGREE PER SCALE DIVISION.

READABLE TO $\frac{1}{2}$ DEGREE.



Type of Survey ELECTROMAGNETIC
A separate form is required for each type of survey

Chief Line Cutter or Contractor J. KONDRAT PORT ARTHUR, ONT.
Name Address

Party Chief J. KONDRAT " "
Name Address

Consultant ROSS KIDD 81 HIGHERBURNE ROAD TORONTO 7
Name Address

COVERING DATES Line Cutting JUNE 1 - ~~JUNE 31~~ JUNE 30, 1969
Name Address

Field Geology or Geophysics JULY 1 - JULY 31, 1969

Office AUG. 1 - AUG. 22, 1969

INSTRUMENT DATA Make, Model and Type RONKA EM 16

Scale Constant or Sensitivity 1° per scale division
Or provide copy of instrument data from Manufacturer's brochure.

Total Number of Stations Within Claim Group 818 Number of Miles of Line cut Within Claim Group 18.2

ASSESSMENT WORK CREDITS REQUESTED Geological Survey _____ Days per Claim
Geophysical Survey 40 Days per Claim

MINING CLAIMS TRAVERSED
KRL 62477 to KRL 62496

TOTAL 20 claims

DATE Sep't. 5th, 1969 SIGNED Ross Kidd

SPECIAL PROVISION
ASSESSMENT WORK DETAILS

Type of Survey MAGNETIC
A separate form is required for each type of survey

Chief Line Cutter or Contractor J. KONDRAT PORT ARTHUR, Ont.
Name Address

Party Chief J. KONDRAT " "
Name Address

Consultant ROSS KIDD 81 HIGHBOURNE ROAD TORONTO 7
Name Address

COVERING DATES Line Cutting JUNE 1 - JUNE 30, 1969
Name Address

Field Geology or Geophysics JULY 1 - JULY 31, 1969

Office AUG. 1 - AUG. 22, 1969

INSTRUMENT DATA Make, Model and Type MCPHAR MF-1 FLUXGATE MAGNETOMETER

Scale Constant or Sensitivity 1° per scale division
Or provide copy of instrument data from Manufacturer's brochure.

Total Number of Stations Within Claim Group 860 Number of Miles of Line cut Within Claim Group 18.2

ASSESSMENT WORK CREDITS REQUESTED
Geological Survey _____ Days per Claim
Geophysical Survey 20 Days per Claim

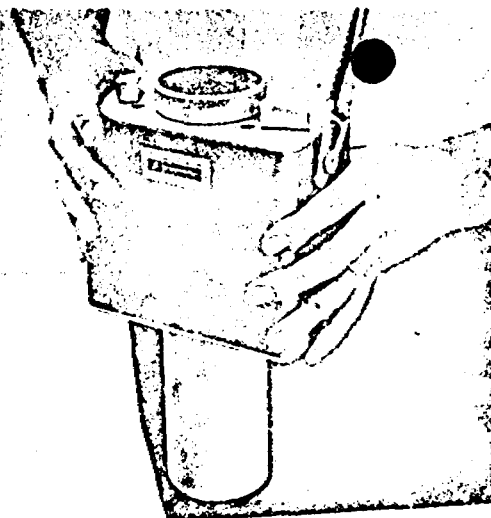
MINING CLAIMS TRAVERSED
KRL 62477 to KRL 62496

TOTAL 20 claims
DATE Sept. 5th, 1969 SIGNED Ross Kidd

Special provision credits do not apply to Radiometric Surveys.



SCINTREX



MF-1

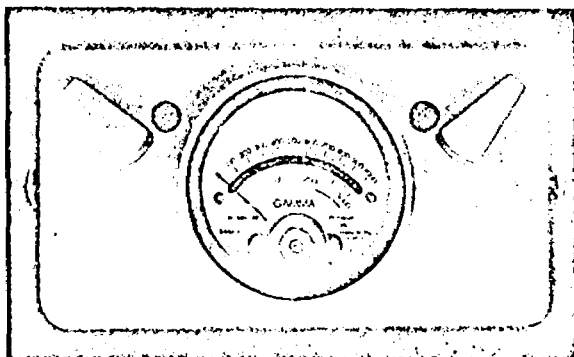
FLUXGATE MAGNETOMETER

The MF-1 Fluxgate Magnetometers and their extended sensitivity series, the MF-1-100's are designed primarily for the oil and mineral exploration industries. They incorporate advanced transistorized circuitry and extensive temperature compensation with light weight and a self-levelling mechanism. Although the basic MF-1 and MF-1-100 are intended primarily for accurate ground surveys in the mining industry, modifications are available for base station recording, for vertical gradient measurements, for measuring susceptibilities, determining remanence of rock samples and for storm monitoring on aeromagnetic surveys.

MF-1 SERIES

(a) MF-1

The MF-1 Fluxgate Magnetometer is a vertical component magnetometer designed for accurate ground surveys in



the mining industry. Advanced transistorized circuitry and extensive temperature compensation is the core of its accuracy, comparable to precision tripod mounted Schmidt type magnetometers. It is a hand held instrument and needs only coarse levelling and no orientation. Features such as direct reading of gamma values and the possibility of accurate zero settings at base stations ensure simplicity of operation and high field economy. The readability is 5 gammas on the 1000 gamma range.

(b) MF-1-G

The MF-1-G Fluxgate Magnetometer has the same electronics and specifications as the MF-1. The difference lies in that the sensor is detached and enclosed in a small cylindrical tube thus permitting the sensor (geoprobe) to be oriented and tilted in any desired direction. Since a 25 foot connecting cable joins the sensor to the instrument housing, the geoprobe may be placed away from local spurious magnetic disturbances in the vicinity of the electronics housing. Thus this magnetometer may be used for the study of the magnetic properties of rocks, remanence etc.

(c) MF-1-GS

The MF-1-GS Magnetometer again has the same electronics and specifications as the MF-1 but has two sensors; the attached self-levelling sensor of the MF-1 as well as the detached geoprobe of the MF-1-G. Thus this magnetometer may be employed on rapid ground magnetometer surveys and also used for vertical gradient measurements and to measure the magnetic properties of rocks.

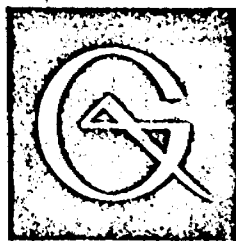
**SPECIFICATIONS OF
FLUXGATE MAGNETOMETER
MODEL MF-1**

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.
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 (3db down)
Connector:	Amphenol 91-MC3F1
Batteries:	12 x 1.5V-flashlight batteries "C" cell type) (AC Power supply available)
Consumption:	50 milliamperes
Dimensions:	Instrument — 6 1/2" x 3 1/2" x 12 1/2" 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.



SCINTREX LIMITED

79 Martin Ross Avenue, Downsview, Ontario, Canada



GEONICS LIMITED

2 Thorncliffe Park Drive, Toronto 17, Ontario, Canada. Telephone: 425-1821 Area Code 416

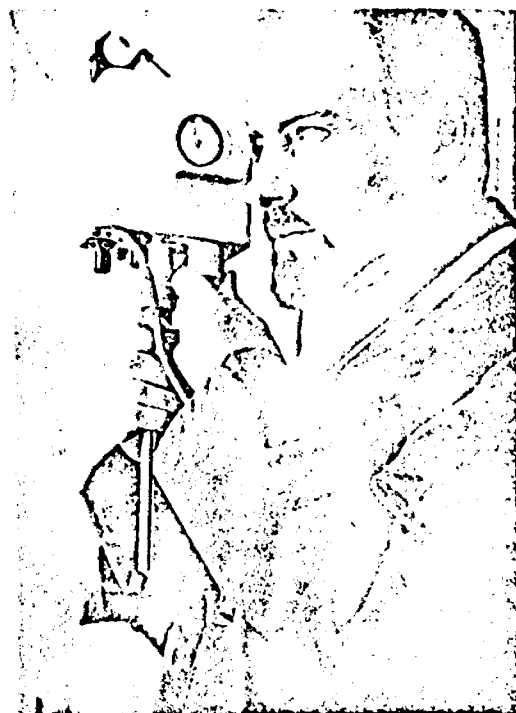
EM 16

VLF ELECTROMAGNETIC UNIT

This light, rugged, self-contained, one-man instrument utilizes the uniform horizontal fields generated by an existing network of reliable Very Low Frequency transmitting stations, for rapid, economical, deep penetration surveys.

Designed and patented by Vaino Ronka, this method measures both the verticle in-phase and out-of-phase (quadrature) components of the VLF fields.

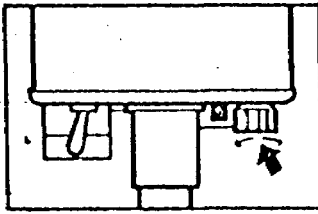
The EM16 has gained wide acceptance with an increasing number of major mining and exploration companies as a basic electromagnetic tool with a growing record of proven ore discoveries. Evidence also indicates a fair response to disseminated bodies. Assessing the data is simplified due to the uniform horizontal primary field.



SPECIFICATIONS

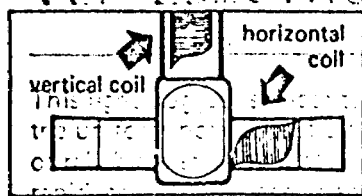
Primary field:	Horizontal from selected VLF transmitting station
Frequency range:	15-25KC station selection. Plug-in units with 2-station switch.
Field measured:	In-phase and out-of-phase (quadrature) components of vertical field
Measurement range:	In-phase $\pm 150\%$. Out-of-phase $\pm 40\%$. Accuracy 1% (dial)
Output readout:	Null-detection by earphone. In-phase and out-of-phase components read directly from mechanical dials.
Temperature range:	-45°C to 70°C
Batteries:	6 size AA penlight cells. Life about 200 hours.
Size:	16 x 5.5 x 3.5 in. (42 x 14 x 12 cm.)
Weight:	2.5 lbs. (1.1 kg.)
Accessories:	1 earphone. 1 carrying bag. Manual of operation. 3 station selection plug-in units (additional frequency units available).
Optional accessories:	Monotonic speaker.

SIMPLE ONE-MAN OPERATION



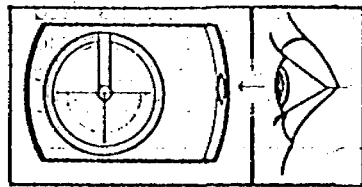
STATION SELECTOR

offer selection of 2 VLF stations and insertion of proper plug-in units, knob rotation allows switching.



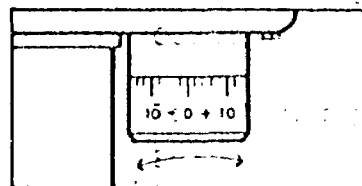
RECEIVING COILS

vertical receiving coil circuit in instrument picks up any vertical signal present. Horizontal receiving coil circuit, after automatic 90° signal phase shift, feeds signal into out-of-phase dial in series with the receiving coil.



IN-PHASE DIAL

shows the tilt-angle of the instrument for minimum signal. This angle is the measure of the verticle in-phase signal expressed in percentage when compared to the horizontal field.

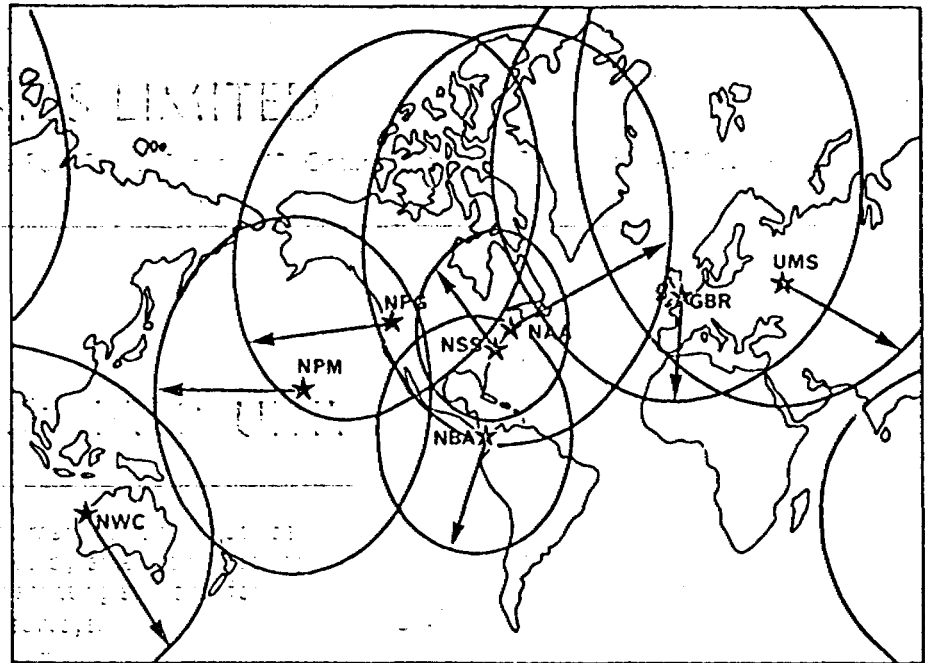


OUT-OF-PHASE DIAL

is calibrated in percentage markings and nulls the vertical quadrature signal in the vertical coil circuit.

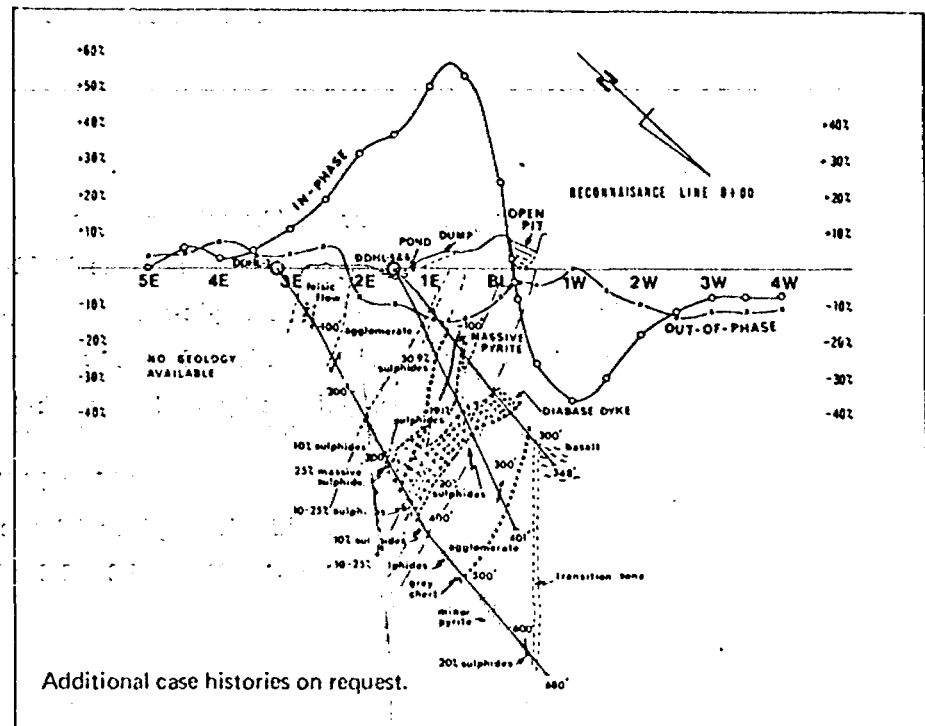
AUTHORIZED AGENT:

AREAS OF VLF SIGNALS



△ Coverage shown only for reliable, fully oriented stations. Others exist, but reliability is unknown. Coverage extent is based on field experience and estimate. Experienced operation of EM16 under weaker signal strengths will enlarge areas shown.

EM16 PROFILE over Lockport Mine property, Newfoundland



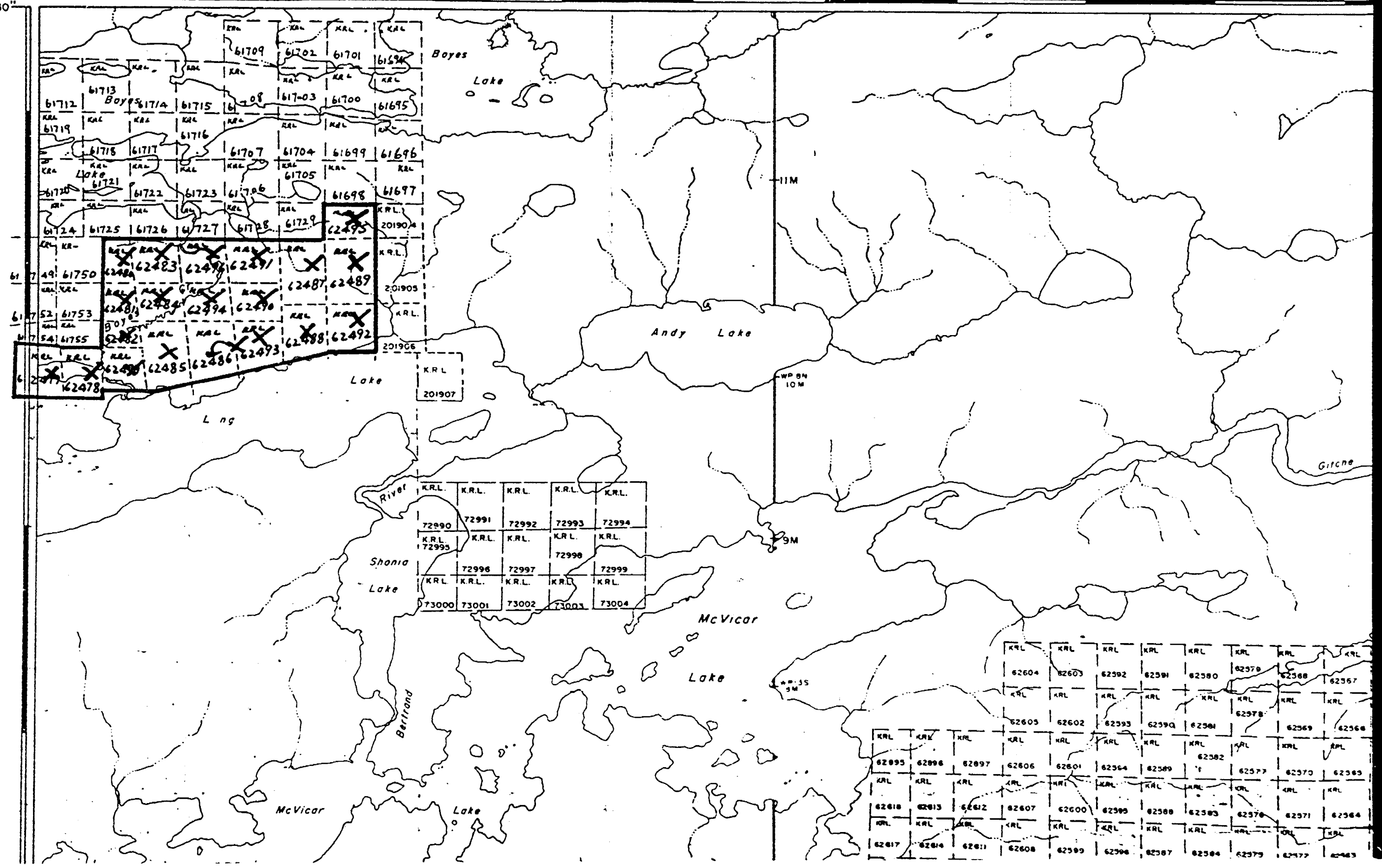
Additional case histories on request.

McVICAR LAKE M. 2741

C3.2582

SADDLE LAKE (M.2575)

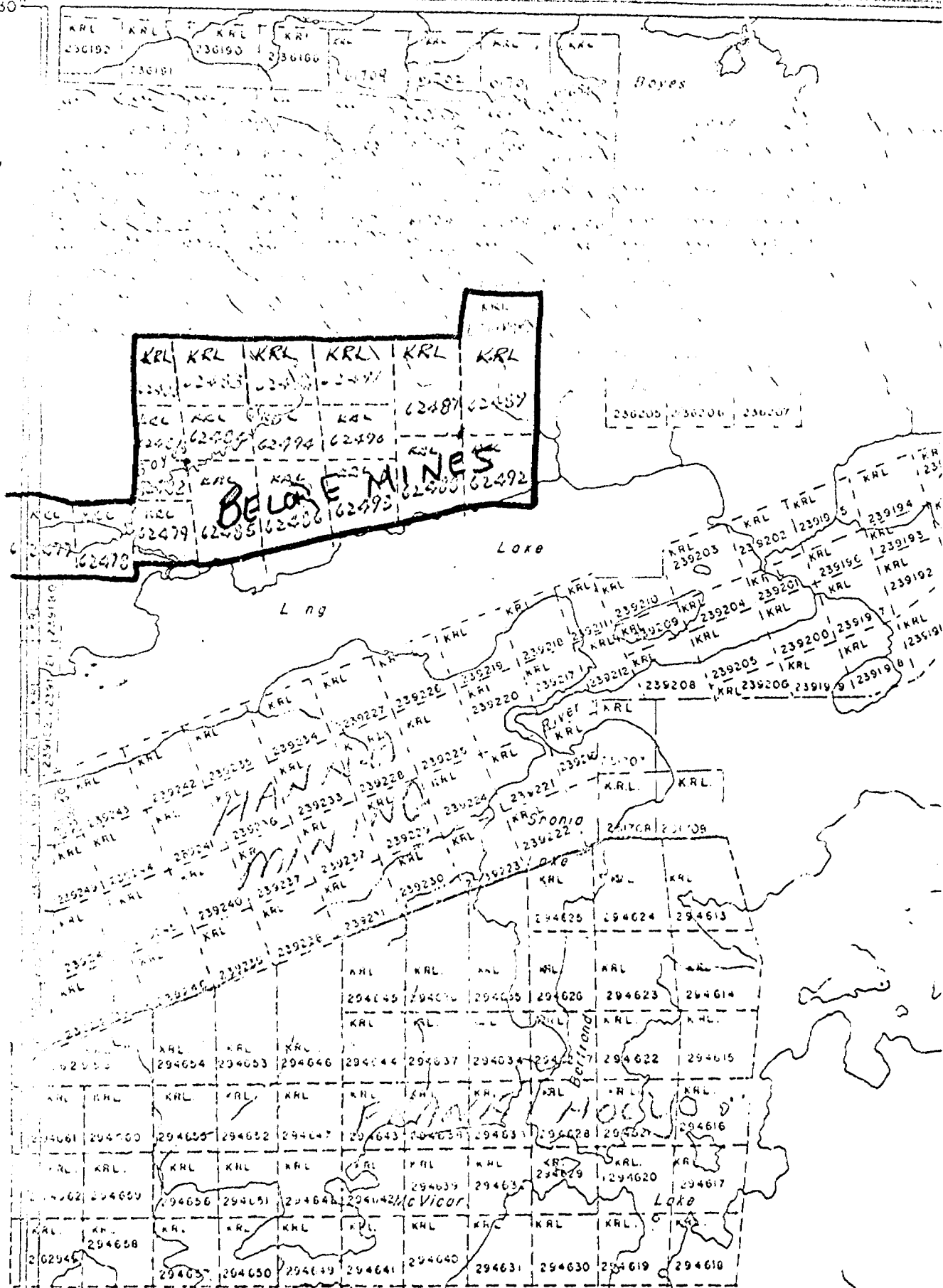
91°30'
51°37'30"



TON LAKE (M.2043)

91°30'

51°37'30"



KRL 62477 KRL 62478 KRL 62479 KRL 62480 KRL 62481 KRL 62482
 KRL 62483 KRL 62484 KRL 62485 KRL 62486 KRL 62487 KRL 62488
 KRL 62489 KRL 62490 KRL 62491 KRL 62492 KRL 62493 KRL 62494
 KRL 62495 KRL 62496 KRL 62497 KRL 62498 KRL 62499 KRL 62500
BELORE MINES

LANG LAKE AREA (M. 2040)

BELORE MINES LIMITED
LANG LAKE AREA.
KRL. 62477-62496.

1" = 1/2 mi.

1/2 mi.

SEE ACCOMPANYING
MAP(S) IDENTIFIED AS

520/11SW-0038-A1 # 1

LOCATED IN THE MAP
CHANNEL IN THE
FOLLOWING SEQUENCE

(X)

