INTRODUCTION

In June, 1969, a magnetometer survey was carried out on 49 claims in Kilmer and Hecla Townships. This survey is described in a report by Bradshaw, June 30, 1969. Subsequently, an additional 14 claims were staked on behalf of Ashland and Elgin and further survey work was completed. This included a magnetometer survey on the recently staked 14 claims, a Crone VLM electromagnetic survey over a portion of the property and a geochemical survey in the northwest portion of the property. The geochemical survey is described in the Appendices to this report.

The latest survey work was completed in early September, 1969. The object of this work was to fully outline a carbonatite intrusive and locate possible areas for a drill investigation, in the search for base metals.

PROPERTY, LOCATION AND ACCESS

The original property consists of 49 unpatented mining claims in Kilmer and Hecla Townships described as follows:

Kilmer Township:	P96885 to P96909 (inclusive) P96862 to P96879 (inclusive)
Hecla Township:	P96880 to P96884 (inclusive) P96861

The claims were staked in March, 1968, and a year's assessment work has been filed on the claims to keep them in good standing until March, 1970.

The newly acquired 14 claims are described as follows:

Kilmer Township: P215702 to P215705 (inclusive)
P215709 to P215713 (inclusive)

Hecla Township: P217506 to P217508 (inclusive)
P215707 to P215708 (inclusive)

The claims were recorded on August 26, 1969, and the magnetometer survey completed on the property shall keep the property in good standing until August 26, 1971.

All of the claims form a contiguous claim block of 63 claims located some 150 miles north of Timmins, Ontario, in Kilmer and Hecla Townships. Coral Rapids on the C.N.R. rail line, approximately 10 miles southeast of the property, is accessible by rail from Timmins. A helicopter is required to reach the property from Coral Rapids. Float or ski-equipped aircraft may land on the Mattagami River, three miles north of the property.

PREVIOUS WORK

There is no record of any previous exploration on the recently staked 14 claims. A report by the writer, June 30, 1969, describes a magnetometer survey completed on the adjacent 49 claims.

GEOLOGY

The geology of the area is shown on recently published Map 2161, Coral Rapids-Cochrane Sheet by the Ontario Department of Mines. Geophysical Map 23070 by the Federal Department of Surveys shows the airborne magnetic survey of the area.

August 26, 1971.

Map 2161 indicates that the general area is overlain by Lower to Upper Devonian sediments. As indicated by a nearby drill

hole by Moose River Oils (see report by Bradshaw, June 30, 1969), these sediments are not present adjacent to the property. It is, therefore, unlikely that sediments are present within the property's boundaries.

The airborne magnetic data indicates the carbonatite intrusive adjacent to a major diabase dyke trending northeast along the south boundary of the property.

MAGNETOMETER SURVEY RESULTS AND INTERPRETATION

The Appendices to this report provides the data concerning the survey method and instrumentation. The magnetic data has been plotted on a map at a scale one inch to four hundred feet (Plate 1) together with the data on the original claims to facilitate interpretation.

The new magnetic data indicates, in general, a more simplified pattern than apparent from the original data although a relief of almost 5000 gammas is present. The complex of magnetic highs and lows forms a ring, slightly oval-shaped, about an area of little magnetic relief. This inner area, of comparitively minor magnetic relief, ranges from 150 to 900 gammas, with quite gradual changes in intensity. It measures approximately 6800 feet, in a north-northeast direction, by 5000 feet. It is thought to represent a carbonatite intrusive.

To the south, the outer ring of the carbonatite is represented by a fairly uniform crescent-shaped magnetic high extending from the 3 mile post on the Kilmer-Hecla Township boundary to the

north end of Line 76 East. The north portion of the ring is somewhat more irregular in shape and is comprised of a complex series of magnetic highs and lows. This outer ring of excessive magnetic relief is variable in width. The south portion averages about 1400 feet wide whereas the north half ranges from a few hundred feet to about three-quarters of a mile. A fault trending east-northeast through the centre of the carbonatite is postulated because of differing magnetic characteristics of the outer ring.

A prominent magnetic high is located on the south portion of the ring. It is about 3500 feet long, 600 feet wide and shows discontinuity towards the west end, perhaps because of faulting. Certain other areas of the south outer ring show pinching of the magnetic intensity which may indicate faulting. A major diabase dyke, as indicated from the isomagnetics, abuts against the south portion of the outer ring of the carbonatite intrusive.

The complexity in magnetic pattern of the north portion of the outer rim is difficult to interpret. The disuniformity of the isomagnetics suggest more and stronger faulting which may account for extreme changes in magnetic intensities. The whole of the outer ring of the carbonatite intrusive is probably a zone of variable alteration, with perhaps some intrusives, related to the carbonatite core.

ELECTROMAGNETIC SURVEY RESULTS AND INTERPRETATION

The electromagnetic survey data, using a Crone VLM unit is plotted on Plates 2 and 3. Individual conductive zones are

superimposed on the magnetometer plan (Plate 1) to facilitate the interpretation of faulting on the property. The survey method and instrumentation is described in the Appendices to this report.

Several weak to moderately strong conductive zones have been detected by the survey. The stronger conductors are located within the area interpreted to be underlain by carbonatite. Termed A to G inclusive, the conductors are described as follows:

Conductor A

This conductor is comprised of two intersecting zones, each about 1600 feet long, forming the most prominent electromagnetic feature on the property. On Plate 2 the conductor crosses Lines 32 E, 36 E and 40 E in a northeast direction. On Plate 3 the conductor crosses Lines 6 NE, 12 NE, and 18 NE in a generally north direction. Profiles of the high and low frequency dip angles indicate the strongest conductivity to be present in the vicinity of Lines 40 E, 12 NE and 6 NE. This is a valid bedrock conductor and merits an investigation by drilling.

Based on the shape of the isomagnetics at the projected extension of the conductor axis, the conductors are interpreted to represent fault or shear zones as shown on Plate 1.

Conductor B

Two intersecting zones of conductivity also form Conductor B. On Plate 2 the conductor crosses Lines 20 and 28 E, a length of about 1500 feet in a northeast direction. The generally north striking portion of the conductor crosses Line 12 NW and appears to be 800

or 900 feet in length. The profiles on Line 28 E indicate strong conductivity with a possible south dip.

Correlating the shape and intensity of the isomagnetics to the projection of these conductors again suggests that the conductors follow fault or shear zones.

Conductor C

This conductive zone crosses Lines 12 NE and 6 NE and is well defined, although weak, on Line 12 NE. About 700 feet long and striking west-northwest the conductor may be the faulted extension of Conductor B.

Conductor D

Crossing Lines 12 NW and 18 NW, this conductor strikes east-northeast for a length of about 900 feet. Although the conductivity is quite weak it corresponds to a magnetic low with a peak of -1200 gammas.

Conductor E

Striking northeast this conductor crosses Lines 6 NW and 12 NW. Of week to moderate strength on Line 6 NW, the conductor corresponds, in part, to a magnetic high.

Conductor F

Striking east-west on the south flank of a magnetic high this conductor crosses the south portion of Lines 20 E and 28 E for a distance of more than 800 feet. Although weak, this relationship of conductivity to a magnetic anomaly merits more investigation.

Conductor G

The validity of this conductor crossing Lines 12 SE and 18 SE is uncertain. The conductor axis corresponds, in direction, with the rim of the carbonatite.

Inflections of the dip angle profiles indicate very weak conductivity along the south and northeast rims of the carbonatite intrusive. This feature, particularly to the northeast, is thought to represent faulting or shearing as shown on Plate 1.

CONCLUSIONS

The magnetometer survey defines very well the carbonatite mass having an oval shape and measuring 6800 feet by 5000 feet. A east-northeast striking fault appears to bisect the carbonatite and outer rim as indicated by the character of the outer rim in the north as compared with the south. The outer rim of variable width up to about three quarters of a mile is postulated to represent altered and possibly intrusive rocks related to the carbonatite.

A number of conductive zones when correlated with the shape and intensity of the isomagnetics indicate that the conductors probably correspond at least in part with shear zones or faults . These faults form two main sets, a northeast direction and a northerly direction. These sets and the east-northeast direction form a triangular pattern apparently characteristic, at least in theory, with the evolution of a carbonatite. There is insufficient data available to arrive at any valid conclusions as to age relationship

of the faults to the carbonatite or whether or not a local or regional stress accounts for the faulting.

The significant feature as indicated by the electromagnetic survey is that some of the faults contain conductive mineralization. These zones and certain magnetic anomalies, especially those which show some relationship with conductivity, are priority targets in a diamond drill investigation. It is proposed, however, that recommendations concerning specific drill targets await the results of the geochemical analyses and interpretation. The analyses are presently underway and, therefore, the recommendations will be available within the next two weeks.

The geophysical work correlated with the geochemistry may indicate that consideration should be given to additional detailed geophysical work, particularly electromagnetic, to more fully delineate drill targets. On the other hand the best approach might be to set up a preliminary winter drill programme to evaluate the presently known drill targets before considering further survey work.

Respectfully submitted,

SHIELD GEOPHYSICS LIMITED,

R. J. Bradshaw, F.G.A.C.,

Consulting Geologist.

Timmins, Ontario,

September 15, 1969.

A P P E N D I C E S

APPENDIX I

Survey Method and Instrument Data

Electromagnetic Survey

Any alternating magnetic field will induce an electrical eddy current in the medium through which the magnetic field passes. If a source of an alternating magnetic field is located near a conductive body, anomalously strong eddy currents will be induced in the deposit due to its high electrical conductivity. Electrical currents induced in the conductive body will produce a secondary magnetic field proportional to the intensity of current flow.

A receiver coil tuned to the frequency of the transmitting device will pick up both the directly transmitted signal and the eddy current signal.

A Crone VEM electromagnetic unit was used in this survey. The unit consists of a vertically mounted, battery powered transmitting coil operating at frequencies of 1800 and 480 cps. and a receiving coil tuned to the transmitting frequency, an inclinometer, an amplifier and a headset.

Throughout the survey, the transmitter and receiver were separated by distances of 400, 800 and 1200 feet. The plane of the transmitter coil was oriented so that the transmitter was vertical and pointed towards the receiver. Orientation was obtained using a plate on which predetermined receiver positions were plotted. Stations were read at one hundred foot intervals. At all times, the receiver "faced" the transmitter. The results obtained are dip angles, measured in degrees. The dip angles are obtained by first

orienting the receiving coil in the plane of the magnetic field by rotating the coil about a vertical axis until a null or minimum signal is obtained, and then rotating the coil about a horizontal axis until a null or minimum signal is obtained. The angle which the magnetic field makes with the horizontal is recorded as a "dip" or "tilt" angle. In the absence of a conductor the dip angle will be zero since no secondary field is present. In the presence of a conductor, the axis of the receiver coil points towards the conductor and the plane of the coil away from the conductor. In the presence of a conductor, the secondary magnetic field is usually displaced from the primary in phase as well as direction so that the total field is elliptically polarized. The receiver cannot then be nulled completely but a minimum signal can be obtained, the width of the minimum being an indication of the phase displacement.

The tilt angles are plotted as profiles, the zero or "crossover" point indicating the focus of the conductor axis.

Once a conductor axis has been established, the transmitter is set up over the conductor and lines are read on both sides of the transmitter and the conductor axis is traced out by "leap frogging" from "crossover" to "crossover".

Specifications

Operating Frequencies: 480 and 1800 cycles per second

Maximum Range: Up to 2000 foot separation between transmitter and receiver on high power for a $\pm$ 7° null width at both 480 and 1800 cps.

Depth of Exploration: Roughly half the distance between transmitter

and receiver under optimum conditions.

Transmitter Power Supply: Rechargeable NiCad battery mounted on a packboard.

Weights:		
	Packboard mounted batteries	44 lbs.
	Transmitter coil	16 lbs.
	Transmitter mast	6 lbs.
	Transmitter control box	8 lbs.
	Receiver	13 lbs.

Magnetometer Survey

A Sharpe M.F.-1-100 fluxgate magnetometer was used in the magnetic survey. This instrument measures the vertical component of the earth's magnetic field in gammas. Base stations for determining the magnetic diurnal variations were established along the main base line at 400 foot intervals. Magnetic readings were taken at 50 foot intervals, along the cross lines.

APPENDIX II

Survey Method and Analytical Procedure

GEOCHEMICAL SURVEY

Using a 5 foot auger various locations on the property were checked to determine depth of muskeg. It was found that most of the property is covered by more than 5 feet of muskeg. A small portion in the northeast of the property is covered by 1 to 4 feet of muskeg over a clay horizon. The auger samples were taken from the clay horizon six inches below the muskeg - clay interface as shown on the attached plan. The samples were analyzed for copper, zinc, and uranium. Zinc is associated with columbium, niobium and tantalum as a trace element.

In the case of copper and zinc the extraction involving treatment with a mixture of HNO_3 and HCl, and analyses by atomic absorption was utilized. For uranium the sample was treated with HNO_3 and analyzed by the fluorimetric method.

Drainage on the property is very poor with almost the entire property covered by muskeg swamp.

SURVEY RESULTS

The standard deviation formula was applied to the analytical results as follows:

$$Sd = \sqrt{\frac{\Sigma(x - \bar{x})^2}{N - 1}}$$

Σ = sum
x = individual analyses in ppm
$\bar{x}$ = average of individual analyses in ppm
N = number of samples

For Zn : Sd = 9
and
For Cu : Sd = 5

According to the formula an analytical result greater than twice the standard deviation plus the mean of the analyses, in ppm, has a better than 95 per cent probability of being anomalous.

Four samples contain anomalous amounts of zinc and one sample an anomalous amount of copper as shown on the attached plan.

No uranium analyses appear to be anomalous.

The anomalous values are related to a limited extent in that they are located east of and within 800 feet of the Pike River and more or less coincide to the west edge of a zone of extreme magnetic susceptibility.

CONCLUSIONS

No reasonably valid conclusions can be derived from the survey results.

Report No. 379-9

BONDAR-CLEGG & COMPANY LTD.

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Zn ppm	U ppm					REMARKS
C-68	15	25	0.8					
69	15	40	1.5					
70	19	45	0.4					
71	13	20	2.0					
72	14	27	0.4					
73	15	21	1.0					
74	15	40	2.0					
75	17	31	2.0					
76	14	35	0.8					
77	8	31	0.8					

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Zn ppm	U ppm					REMARKS
C-32	24	30	0.4					
33	22	30	2.0					
34A	23	28	2.0					
34B	18	15	1.0					
35	22	24	2.5					
36	26	15	0.8					
37	25	27	1.5					
39	24	23	2.0					
40	19	32	3.0					
41	17	16	0.4					
42	10	14	0.8					
43	15	15	1.5					
44	15	39	1.5					
45	23	28	2.0					
46	17	27	2.0					
47	16	35	1.5					
48	19	31	0.4					
49	20	32	0.4					
50	21	55	2.0					
51	19	27	0.8					
52	16	43	1.0					
53	20	26	0.8					
54	21	30	3.0					
55	20	37	2.0					
56	17	30	1.5					
57	17	20	1.0					
58	20	26	2.0					
59	20	46	2.0					
60	18	31	1.0					
61	16	52	2.0					
62	15	25	1.5					
63	10	19	2.0					
64	11	15	1.0					
65	10	20	4.0					
66	15	27	ND					ND - not detectable
67	10	25	1.5					

BRANCH OFFICES
1500 PEMBERTON AVE., NORTH VANCOUVER, B.C.
BOX 487, CAMPBELLTON, N.B.

BONDAR-CLEGG & COMPANY LTD.

760 BELFAST ROAD (M.R. 1), OTTAWA 8, ONTARIO
PHONE: 237-3110 TELEX: 013-3548

GEOCHEMICAL LAB REPORT

No: 379-9

Extraction: HNO_3-HCl--Cu;Zn; HNO_3-- U

Method: Atomic Absorption -- Cu;Zn; Fluorimetric -- U

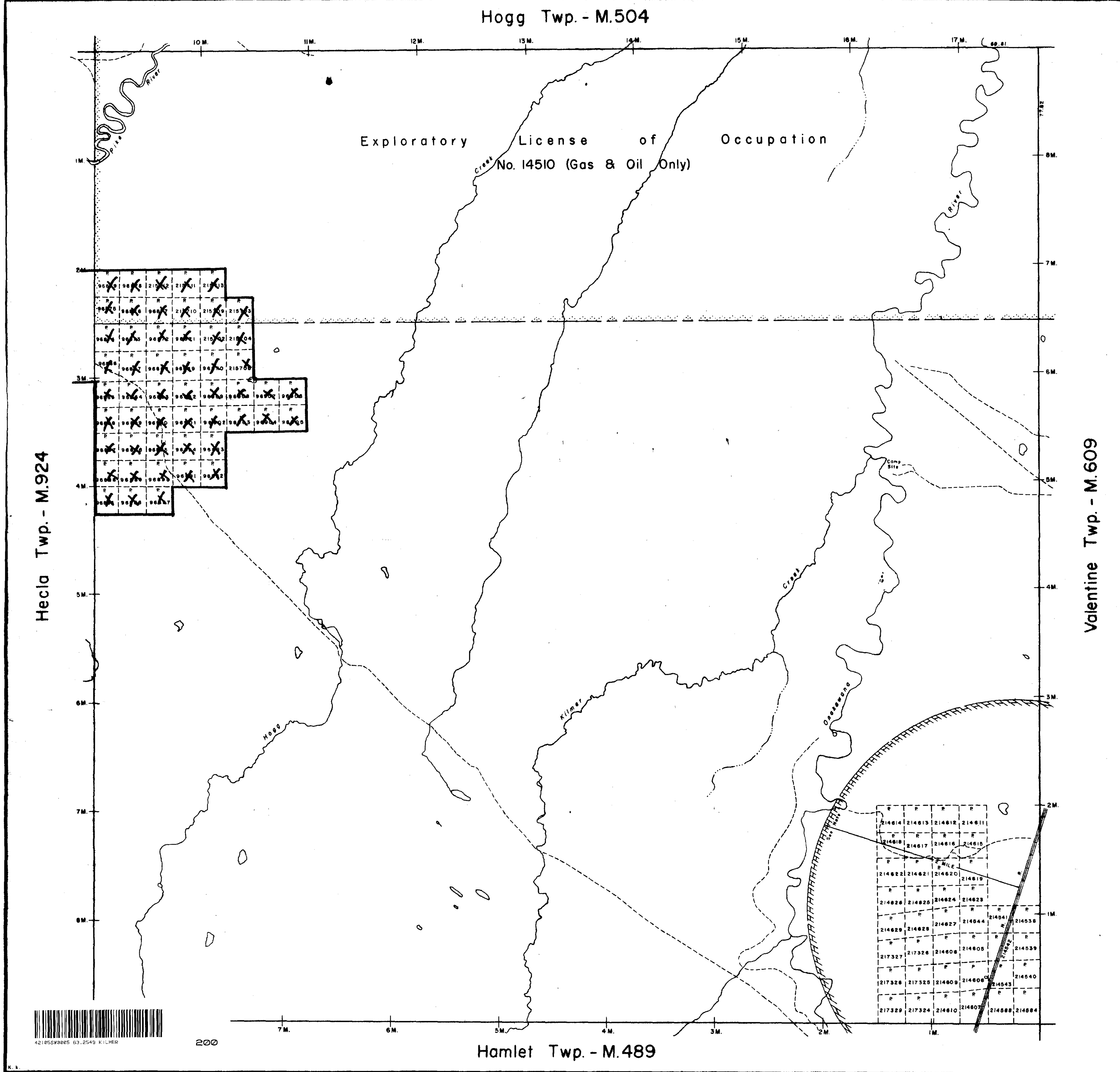
Fraction Used: -80 mesh (soils)

From: (Mr. R. J. Bradshaw) Shield Geophysics Limited

Date: September 24 1969

Analyst: J. H. & M.R.

SAMPLE NO.	Cu ppm	Zn ppm	U ppm					REMARKS
C-1	6	19	1.5					
2	10	25	2.0					
3	10	20	0.8					
4	10	30	1.5					
5	10	33	1.0					
6	10	22	2.0					
7	12	20	1.0					
8	9	23	0.8					
9	10	29	0.8					
10	11	40	0.8					
11	14	27	1.5					
12	16	24	1.5					
13	15	19	0.6					
14	18	27	0.8					
15	17	23	0.8					
16	19	24	0.8					
17	18	26	1.0					
18	19	23	ND					ND- not detectable
19	18	25	1.0					
20	14	19	1.0					
21	17	22	2.0					
22	16	17	0.6					
23	15	18	0.4					
24	19	26	1.5					
25	18	40	2.0					
26	19	50	ND					
27	20	26	2.5					
28	18	27	2.0					
29	20	30	1.5					
30	20	35	2.0					
31	22	49	0.6					



~~THE TOWNSHIP~~ OF
Claim Map
KILMER

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

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

NOTES

400' Surface Rights Reservation along the shores of all lakes and rivers.

Staking within the hatched area subject to flooding reservation to contour 295' to H.E.P.C.O. without compensation. - Files: 85747 and 161671.

DATE OF ISSUE
JUN 1 1970
ONTARIO DEPT. OF MINES

PLAN NO.- M-519

DEPARTMENT OF MINES
- ONTARIO -

KILMER TWP.

PORCUPINE MINING DIVISION

DISTRICT CLAIM MAP COCHRANE.

Scale, 40 chains to an inch.

HOGG TWP.

LEGEND

CANCELLED	C
PATENTED LAND	(P)
CROWN LAND SALE	C.S
LEASES	(L)
LOCATED LAND	LOC
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O
SURFACE RIGHTS ONLY	S.R.O

NOTE

STAKING IS ALLOWED WITHIN THE HATCHED AREA SUBJECT TO FLOODING RESERVATION TO CONTOUR 295' TO H.E.P.C. WITHOUT COMPENSATION.
H.E.P.C. IS RELIEVED FROM ALL LIABILITIES FOR DAMAGES DUE TO SEEPAGE AND CHANGES IN SUB-SURFACE WATER CONDITIONS OVER CLAIMS ON ANY PART OF THE AREA, WHICH MIGHT BE CAUSED BY RIVER LEVEL CHANGES RESULTING FROM WATER POWER DEVELOPMENT FILE: 85747 & 161671

400' Surface Rights Reservation around all Lakes and Rivers.

EXPLORATORY LICENSE OF OCCUPATION
Nº 14510 (GAS & OIL ONLY.)

HECLA T'WP.

VALENTINE T'WP.

SEE NOTE

HECLA

CLAIM MAP

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

Scale — 40 Chains — 1 Inch

North Ast

NOTE

400' Surface Rights Reservation around all Lakes and Rivers.

RAPLEY

EXPLORATORY LICENSE OF OCCUPATION

Nº 14510 (GAS & OIL ONLY)

Flooding Rights up to contour 241' reserved to M.N.R. of Ontario File: 142889

MATTAGAMI RIVER

Pike River

SANBORN

KILMER

B.P.T.

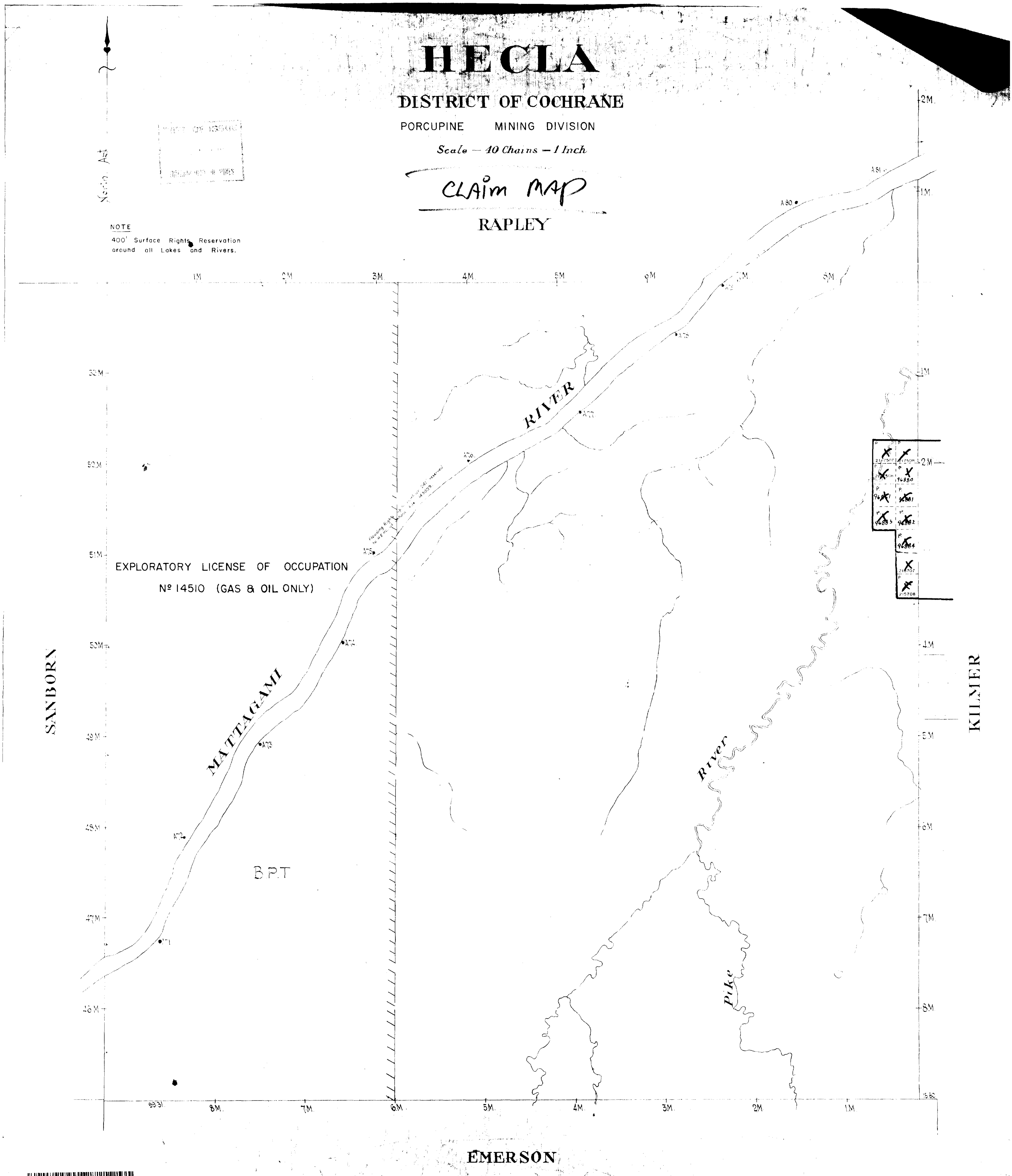
EMERSON

A71. A72. A73. A74. A75. A76. A77. A78. A79. A80. A81.

P. 217507 217508 P. 96880 96881 96882 96883 96884 215707 215708

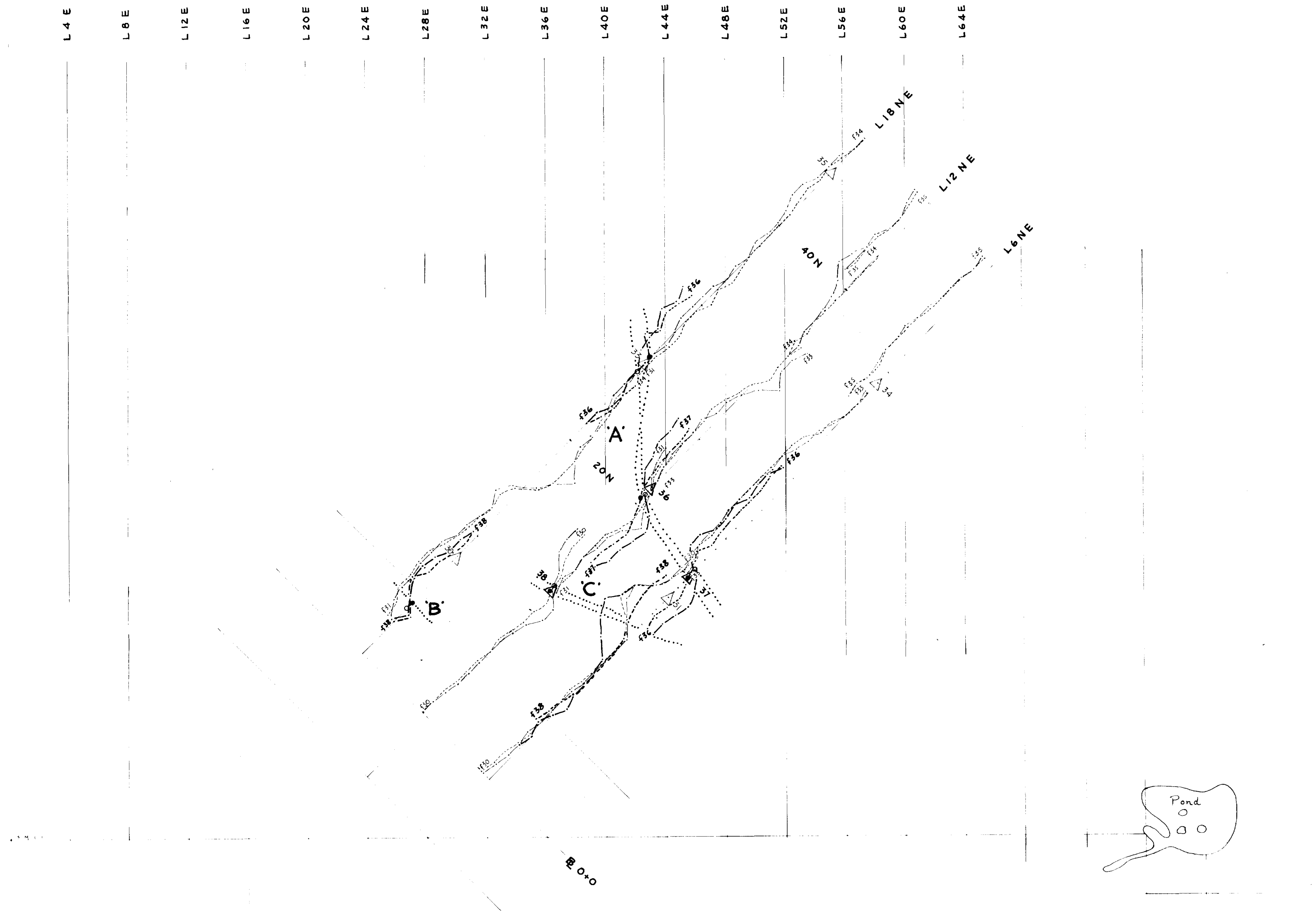
1M. 2M. 3M. 4M. 5M. 6M. 7M. 8M.

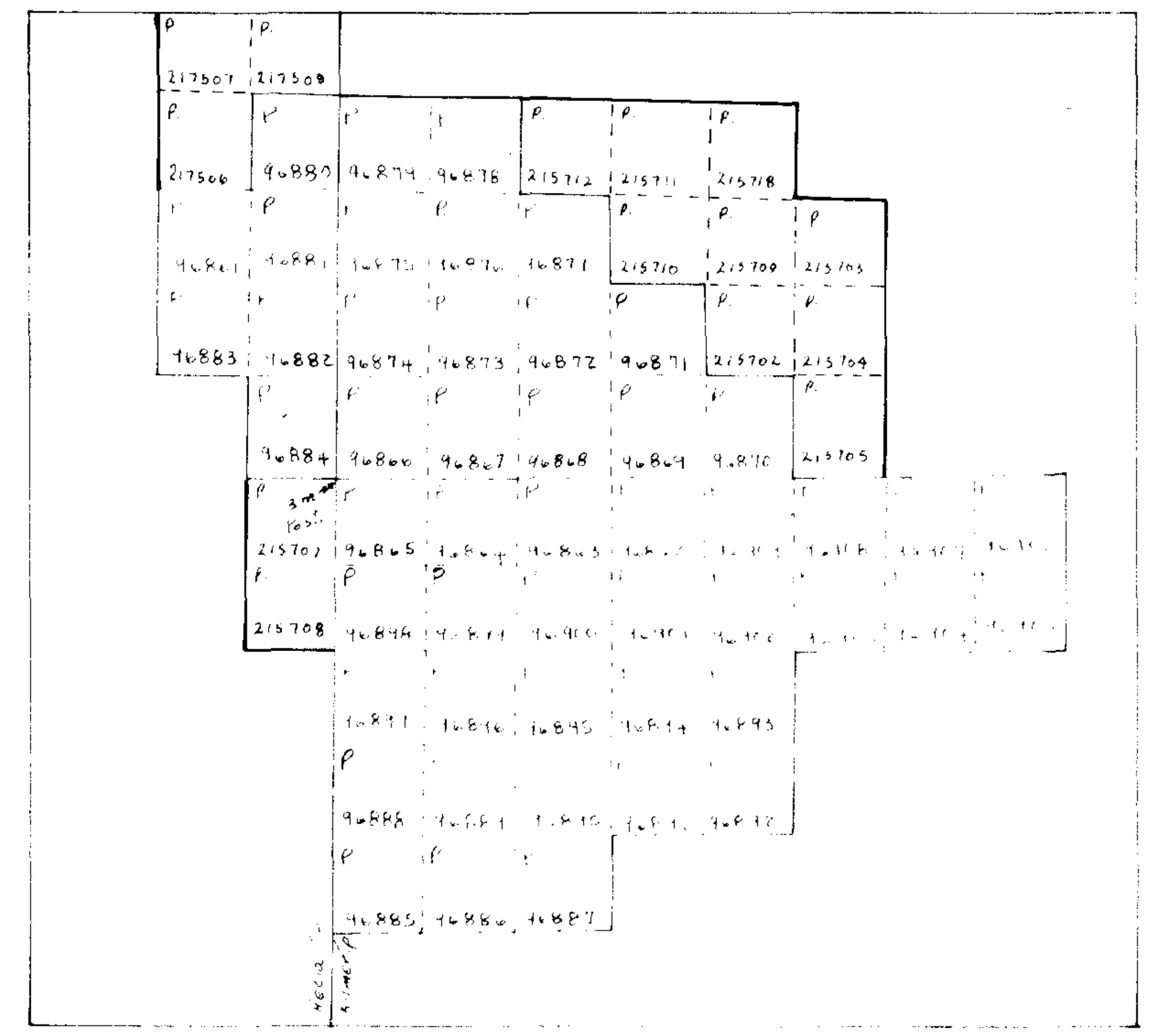
99.31. 15.80



42105SW0005 63.2549 KILMER

230

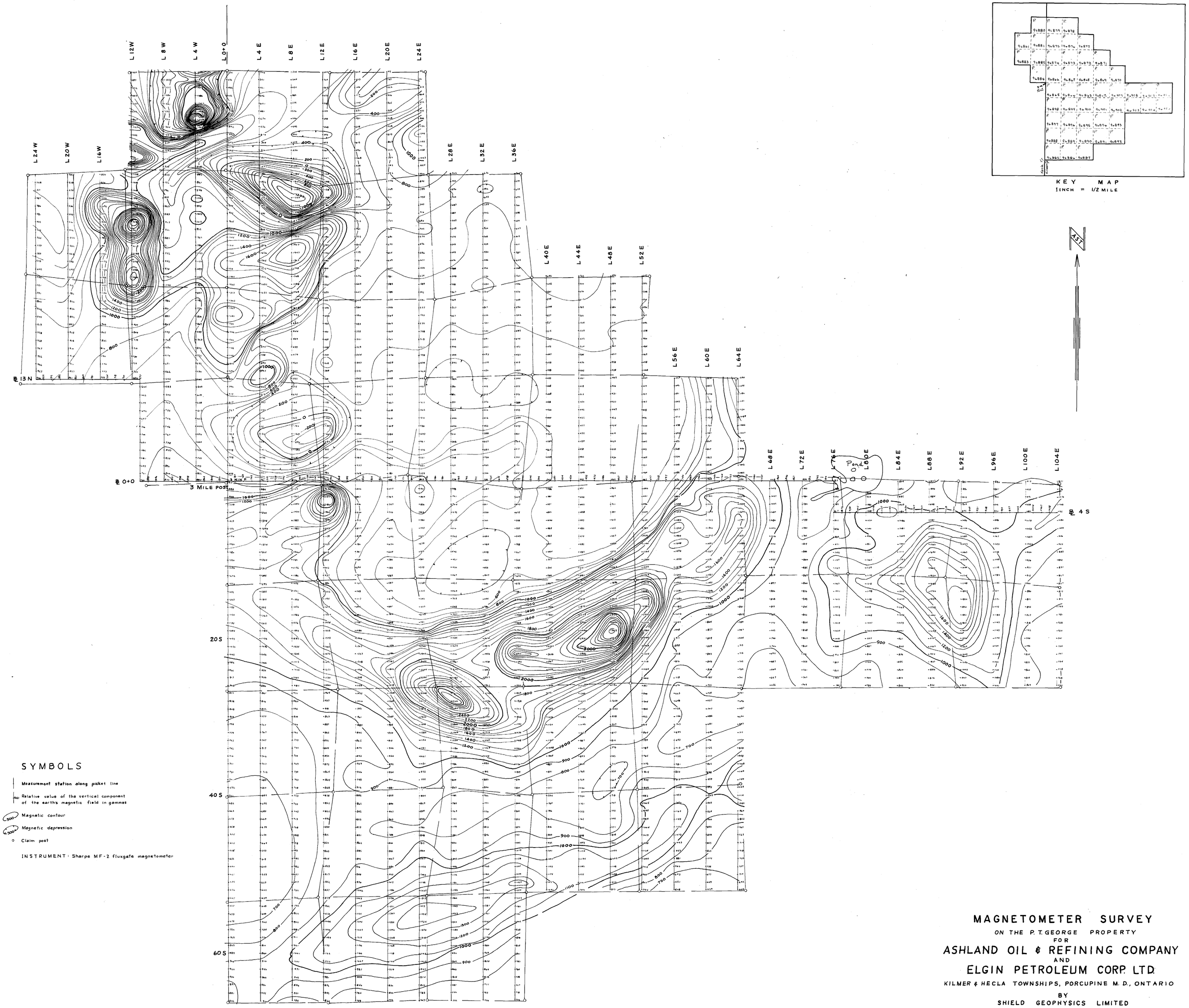




KEY MAP
1 INCH = 1/2 MILE

FOR LEGEND & TITLE SEE PLATE 2

PLATE 3



SYMBOLS

- Measurement station along picket line
- 985 Relative value of the vertical component of the earths magnetic field in gammas
- 500 Magnetic contour
- 6500 Magnetic depression
- Claim post

INSTRUMENT: Sharpe MF-2 fluxgate magnetometer

MAGNETOMETER SURVEY

ON THE P. T. GEORGE PROPERTY

FOR

ASHLAND OIL & REFINING COMPANY

AND

ELGIN PETROLEUM CORP. LTD.

KILMER & HECLA TOWNSHIPS, PORCUPINE M. D., ONTARIO

BY

SHIELD GEOPHYSICS LIMITED

SCALE

0 400 800 1200 1600 2000

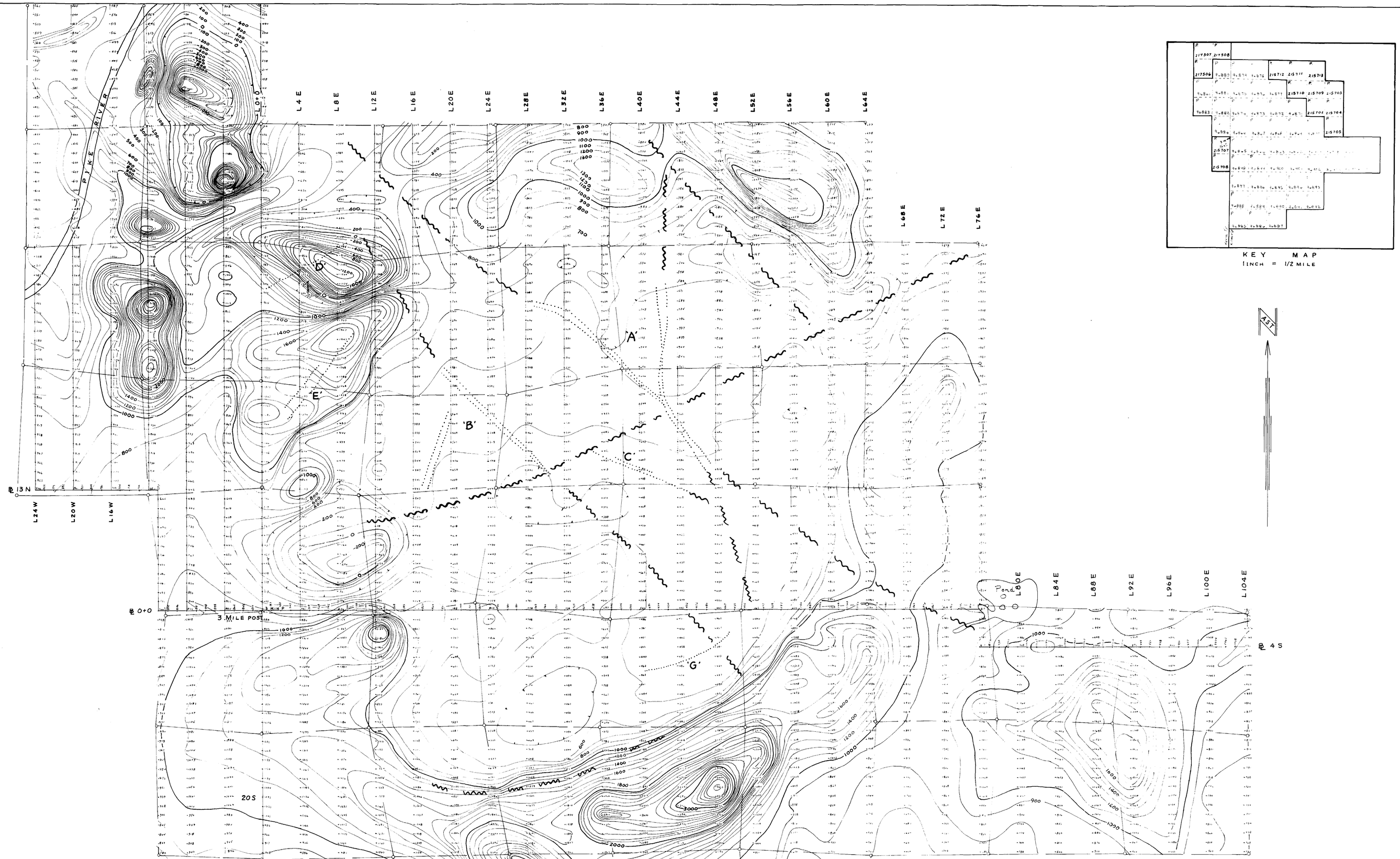
FEET

JUNE 1969

J. Pozsgai July, 1969

250

63-2549



SYMBOLS

- Measurement station along picket line
- Relative value of the vertical component of the earth's magnetic field in gammas
- Magnetic contour
- Magnetic depression
- Claim post

INSTRUMENT: Sharpe MF-2 fluxgate magnetometer

- Faults - interpreted
- Conductors

MAGNETOMETER SURVEY

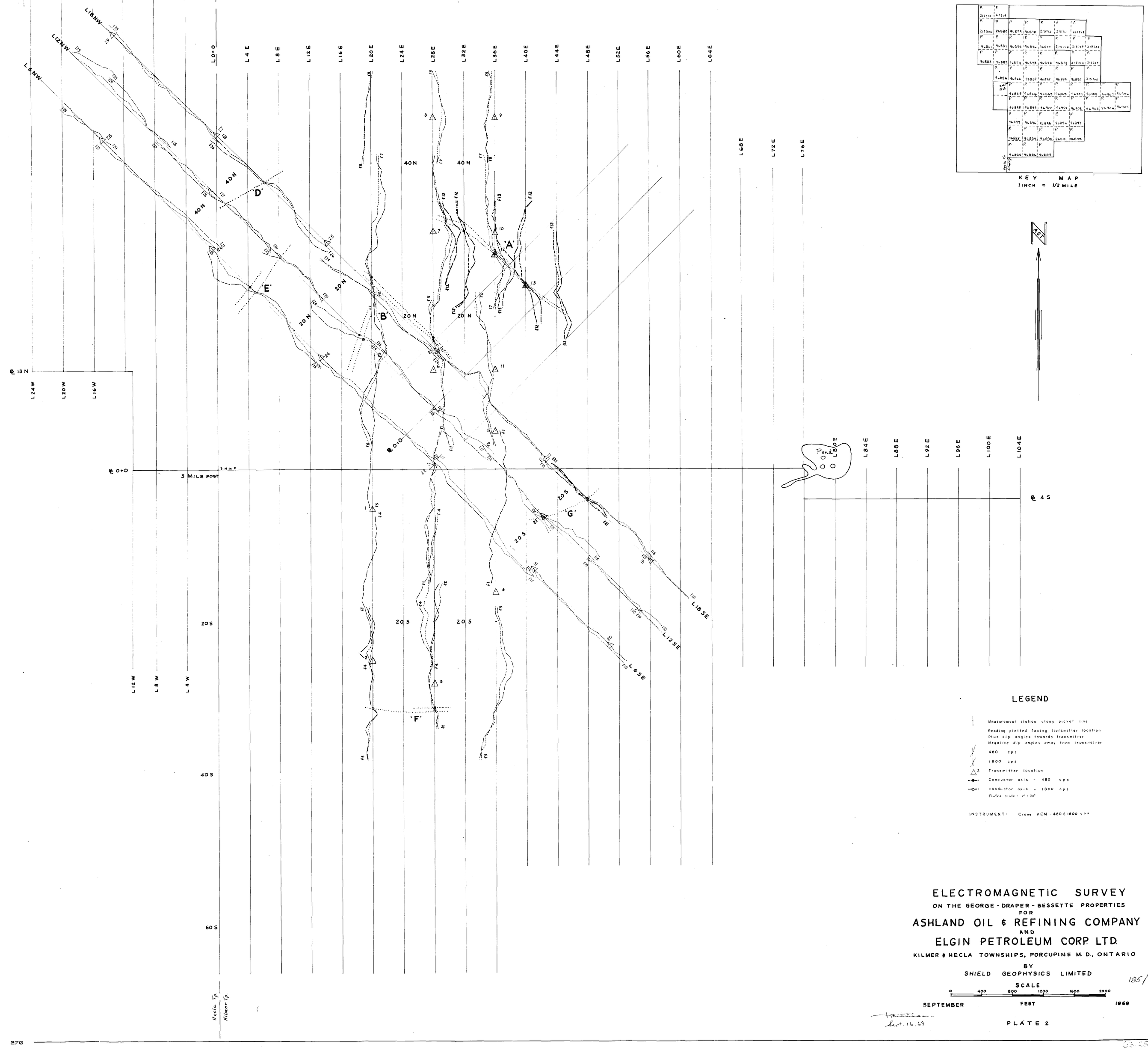
ON THE GEORGE - DRAPER - BESSETTE PROPERTIES
FOR
ASHLAND OIL & REFINING COMPANY
AND
ELGIN PETROLEUM CORP. LTD.
KILMER & HECLA TOWNSHIPS, PORCUPINE M.D., ONTARIO
BY
SHIELD GEOPHYSICS LIMITED

SCALE
0 400 800 1200 1600 2000
FEET

SEPTEMBER 1969

PLATE 1

F.I. 63.2549



LEGEND

- Measurement station along picket line
- Reading plotted facing transmitter location
  Plus dip angles towards transmitter
  Negative dip angles away from transmitter
- 480 cps
- 1800 cps
- △2 Transmitter location
- Conductor axis - 480 cps
- Conductor axis - 1800 cps

  Profile scale: 1" = 20"

INSTRUMENT: Crone VEM - 480 & 1800 cps

ELECTROMAGNETIC SURVEY

ON THE GEORGE - DRAPER - BESSETTE PROPERTIES

FOR

ASHLAND OIL & REFINING COMPANY

AND

ELGIN PETROLEUM CORP. LTD.

KILMER & HECLA TOWNSHIPS, PORCUPINE M. D., ONTARIO

BY

SHIELD GEOPHYSICS LIMITED

SCALE

0 400 800 1200 1600 2000

FEET

SEPTEMBER 1969

PLATE 2

185/D.

Sept. 16, 69