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1950, 1951

CANADIAN JOHNS-MANVILLE CO. LTD.

REPORT ON THE GEOMAGNETIC SURVEY OF THE CANADIAN JOHNS-MANVILLE  
CLAIMS IN MANN TOWNSHIP, ONTARIO.

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Summary

The geomagnetic survey of the Johns-Manville group of claims in Mann Township, together with geological information gathered from outcrops occurring in the area and Map 28-B, O.D.M., indicates the presence of several lenticular, east-westerly striking serpentine bodies. These bodies of serpentized ultrabasic rocks, (serpentized peridotites and dunites) intrude a complex of Keewatin volcanics, and are displaced by north-south trending crossfaults.

In the eastern portion of the area, magnetic interpretation indicates a massive lenticular east-west striking plug of serpentized peridotite dipping rather gently away from the central core.

The central part of the area indicates two east-west striking, northerly dipping bodies of serpentized peridotite and diorite which are joined together on the eastern end and becomes separated by a thin band of volcanics towards the west, where they terminate against a north-south trending diabase dyke.

The western portion of the area is characterized by faulting. A prominent north-south fault along a diabase dyke displaces the serpentine bands. The serpentine to the west of the dyke is displaced to the north and continues westerly from the area.

Introduction

The presence of serpentized ultrabasic rocks in Mann Township was indicated by airborne magnetometer and ground dip needle surveys. A part of the anomaly area was acquired by staking thirty claims in the west-central portion of the township. As a prerequisite for further exploration by diamond drilling it was deemed necessary to determine as far as possible the attitude and structure of the serpentine bodies. For this purpose the Canadian Johns-Manville Company conducted a ground magnetometer survey in the summer of 1950 on these claims.

Mann Twp.CANADIAN JOHNS-MANVILLE CO. LTD.Property - Location - Accessibility

The Canadian Johns-Manville property under discussion in this report consists of thirty unpatented mining claims, numbered T29660 - 66 incl; 29669 - 72 incl; 29674 - 86 incl; and 29970-75 incl; located in Lots 6, 7, 8, 9, 10 and 11, Concession IV, Mann Township. The property is best reached by plane from South Porcupine to Pickerel Lake, a distance of 20 miles. Pickerel Lake lies in the northwest portion of the property. The property may also be reached by 11 miles of winter road westerly from the village of Devonshire on Highway No. 11.

Survey Procedure

A three mile, east-west trending base line was established by transit through the centre of the group to provide control for the magnetometer survey. North-south picket lines were established by transit from the base line at 300 foot intervals and were extended to the property boundaries by picket lines. Preliminary dip needle survey along the north south claim lines indicated the approximate position of the anomaly and that the magnetometer survey would have to be carried to the property boundaries.

Magnetic observations were made with a Watts vertical magnetometer with a sensitivity of 29 gammas per scale division, at 100 foot intervals along the base line and picket lines. Due to the isolated location of the property, it was not possible to make an accurate tie to any of the Ontario Department of Mines base stations. However, the approximate absolute value for vertical magnetic intensity of any of the readings shown may be obtained by adding 56,740 gammas.

A few scattered outcrops were found on the property and these are shown on the accompanying map.

General Geology

With the exception of a few scattered outcrops, the area is completely covered by Pleistocene clays and gravels. The surface is generally low lying and covered by spruce swamps. A moderate ridge of higher ground with a few outcrops trends east-west across the property just south of Pickerel Lake.

29749-50-51-52  
153 50-51-52-53

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All the consolidated rocks believed to occur on the property are of Precambrian age and may be divided into three groups in order of their relative age:

- 1 Younger diabase (Matachewan)
- 2 Older diabase, gabbro, diorite and serpentine (Haileyburian)
- 3 Volcanic rocks - Andesitic lavas (Keewatin)

The bedrock of the region consists principally of east-west trending Keewatin volcanics which dip moderately to the north. Small outcrops of dark green to grey andesitic flows, which strike east-westerly and dip 45 degrees north occur in the north west part of the map area.

The volcanics are intruded by sill-like and pipe-like masses of basic and ultra basic rocks of probable Haileyburian age. Outcrops of highly serpentized peridotite and dunite occur in the central part of the map area. These intrusives, which strike east-westerly and dip moderately to the north, are concordant structures within the volcanics. Although no outcrops of gabbroic or dioritic rocks were observed, it is believed that these rock types occur and are probably differentiates of the main ultrabasic intrusive.

Diabase dykes of Matachewan age are common to the area. Although no outcrops of diabase were observed in the area, magnetic interpretation indicates a north-south trending diabase dyke in the west part of the property. The dyke intrudes the volcanics and ultra basic masses.

Faulting is indicated in the western part of the property. A major cross fault along the north-south diabase dyke displaces the ultra basic masses considerably. Movement on this fault is west side to the north. Minor cross faults displace the ultra basic intrusive; displacement being generally west side to the north. No evidence of strike faulting was found, but minor ones probably do occur.

### Interpretation of the Magnetometer Results

#### Younger Diabase

Interpretation for the existence of a north-south trending diabase dyke in the western portion of the property area is mainly based on the abrupt termination of the serpentine bands on the east side of the dyke and their separation and displacement from those which continue to the west of the dyke. Diabase dykes occur frequently in the area. Due to the indication of a dyke-like structure and occurrence of magnetic intensity in the diabase range over the area it is therefore believed reasonable to assume the existence of this diabase dyke.

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CANADIAN JOHNS-MANVILLE CO. LTD.Older Diabase, Gabbro and Diorite

The magnetic susceptibility of rock types such as diabase and gabbro of precambrian age is very similar to that of Keewatin volcanics and indistinguishable magnetically. Although these rock types probably occur in the property area they are not shown on the accompanying map, due to the lack of definite proof of their existence by outcrop.

An area of diorite is indicated to exist on claims 29661 -2 and 3. No outcrops occur in this area, but the magnetite susceptibility is within range for a dioritic body capping serpentine to moderate depth.

Serpentine (Serpentinized peridotite and Serpentinized Dunite)

Of the rock types occurring in the property area the serpentized ultra basics are the most readily delineated by magnetic means. The abundant disseminated magnetite occurring in these rocks give anomalies ranging from 2000 to 14000 gammas above the regional level. However, intimate interlensing with less basic rock types, local deficiencies in magnetite content, areas of heavy overburden and 100 foot spacing of readings prohibit delineation of each separate band. For these reasons, interpreted areas of serpentized ultrabasics may include minor bands of other rock types.

In the eastern<sup>a</sup> portion of the property area an east-west striking serpentized ultra basic pipe-like mass is indicated. This body does not outcrop, but as shown on the map, it is believed to come to surface over an area 700 feet wide and 4200 feet long, and to dip moderately under the volcanics in all directions from this perimeter.

In the central part of the map area an east-west striking serpentized ultra basic, sill-like mass dipping moderately to the north is indicated. This mass is separated from the eastern pipe at the surface by<sup>a</sup> volcanic and ~~di~~ dioritic capping, but in all probability the two masses unite at depth. Towards the west this mass becomes separated into two bands by a thin band of volcanics. The rapid drop of magnetic intensity to the south of these bands and the gradual magnetic gradient to the north indicates a moderate northerly dip. In the western property area the central serpentized bands are terminated by a north-south diabase dyke. To the north and west of the dyke a serpentized ultra basic mass is again indicated with a northerly dip. ~~These~~<sup>They</sup> appear to be<sup>a</sup> faulted extensions of the central serpentine masses.

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A major north-south fault in the region of the diabase dyke is indicated, due to the displacement of the serpentine masses.

The change of strike of the indicated serpentine contact is believed due to minor cross faulting rather than to a simple "pinching and swelling" of the serpentine mass. A closer grid of readings would determine which is the case.

Volcanics

Generally the magnetic field over the volcanic rocks is low, except where concentrations of magnetite occur in more basic flows. In the eastern and along the northern part of the property the high magnetic field is due to the presence of underlying serpentized ultra basics.

Conclusions

The magnetometer is the most practical and ideally suited method for outlining the extent and determining the structure of serpentized ultrabasic rocks in this area.

All areas marked as serpentized peridotite and dunite on the accompanying map should be considered as "predominantly serpentized peridotite and dunite."

Detail of Survey

The survey was commenced on May 27, 1950 and completed on July 31, 1950, or occupied a total of 66 days. A total of 32.25 miles of line were cut, chained and picketed, which includes 2.25 miles of base line. A total number of 1596 stations were established during this survey.

The following is the breakdown of the actual man days required to complete the magnetometer survey.

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(a)	Line cutters - 4 men Sherman Tough - Contractor 180 man days x 4	720 days ✓
(b)	Magnetometer Operator & Assistant J. Hart 35 man days x 4 D. Doal 35 " " "	140 ✓ " 140 ✓ "
(c)	Consultants - Field Work N. W. Hendry 5 man days x 4 H. L. Garvie 5 " " "	20 ✓ " 20 ✓ "
(d)	Dip needle & Field Geology F. Kaltwasser 15 man days x 4 R. Kaltwasser 15 " " "	60 ✓ " 60 ✓ "
(e)	Office Work & Interpretation N. W. Hendry 5 man days x 4 H. L. Garvie 6 " " " J. Koski 6 " " " J. Hart 10 " " " D. Doal 4 " " "	20 ✓ " 24 ✓ " 24 ✓ " 40 ✓ " <u>16 ✓ "</u>
	Total man days	1284 ✓

Assessment Work Distribution

On each of claims T29660 - 66 incl; 29669 - 72 incl;  
29674 - 86 incl; and 2997 - 75 incl; 40 days work.

Respectfully submitted

N. W. Hendry, P. E.



Report on the Geomagnetic Survey of MacVeigh-Tough Group of Claims, Mann Township, Ontario

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### Summary

The geomagnetic survey of the MacVeigh-Tough group of claims in Mann Township, together with the geological information obtained from the limited number of rock outcrops on the adjacent claims, indicate the presence of a massive, homogeneous serpentized peridotite pipe in the northwest section of the claim group. The remainder of the property is overlain by Keewatin volcanics, probably andesite.

High magnetic readings were obtained over claims T29749 and T29751 in the northwest corner of the property, over the serpentized peridotite mass. The readings drop off in all directions from this point and finally reach a normal for basic volcanic rocks over the most easterly of the claims in the group. A secondary zone of high readings appears in the southern part of claim T29749, indicating an intermediate peak to the peridotite mass.

No major faulting is indicated to be present within the property area.

### Introduction

A magnetometer survey was carried out in May, June and July, 1950, over the MacVeigh-Tough group of 9 claims located in central Mann Township for the purpose of outlining in detail and determining the nature, so far as possible, of the basic and ultrabasic rocks known to be present as a result of an airborne magnetometer survey of the area. It was considered essential to determine the location of any serpentine bodies by geophysical means and thereby provide a basis for systematic drilling of those areas considered to be favorable for the presence of asbestos.

### Property - Location - Accessibility

The MacVeigh-Tough Property under discussion in this report consists of 9 unpatented claims located in Lots 5, 6 and 7, Concessions 3 and 4, Mann Township. The property is best reached by plane from South Porcupine to Pickerel Lake, a distance of approximately thirty miles, thence by trail, westerly to the property. A winter road extending from Highway No. 11 to Pickerel Lake, passes a short distance south of the property area.

### Survey Procedure

An East-West trending base line, being the extension of the base line providing the control for the magnetic survey covering a much greater area, was established by transit over the northern part of the group. North-South trending lines were turned off this base line by transit at 300 foot intervals and extended by picketing to the boundaries of the property.

Magnetic observations were made with a Watts vertical magnetometer with a sensitivity of 29 gammas per scale division, at 100 foot intervals along the main base line and the north-south picket lines. Due to the isolated location of the property, it was not possible to make an accurate tie to any of the Ontario Department of Mines base stations. However, the approximate absolute value for vertical magnetic intensity of any of the readings shown may be obtained by adding 56,740 gammas.

No rock outcrops were found within the property boundaries.

### General Geology

The consolidated rocks of the general area are all pre-Cambrian and consist principally of Keewatin volcanics, pillow lavas and flows intruded by sill-like and pipe-like masses of basic and ultra-basic rock types of probable Haileyburian age. North-south trending Matachewan diabase dykes are commonly found intruding both the above-mentioned rock types in the general area.

The basic and ultrabasic masses of the region are generally concordant structures, being parallel in dip and strike to the surrounding formations. They are never more than a few miles in horizontal extent and their mode of termination, whether by faulting or by a simple "lensing-out" has not yet been definitely determined. In addition to these concordant masses, there are commonly large, pipe-like bodies of ultra-basic rocks, such as is present in the northwest portion of the property area.

Unfortunately no outcrops were found within the limits of the claim group which would have assisted in the geological and geophysical interpretation. Several small outcrops on claims adjacent on the north, consisted of dark green to grey andesites. However, the magnetic field over diorite and gabbro is indistinguishable from that over andesite and for this reason some of the areas shown as volcanics on the accompanying map might consist, in part, of diorite.



The accompanying map shows the probable distribution of the serpentized ultrabasic zones in the property area. It will be noted that the one existing zone, in the northwest portion of the property area, tends to be aligned generally along the regional strike, lying in an east-west direction. The mass appears to be at the surface over an area of some 500 feet wide by 2000 feet long and to plunge beneath the volcanics in every direction from these limits. The steepest plunge is towards the southeast where the magnetic readings fall off most rapidly. A broken line on the accompanying map shows the approximate outline of the mass at a depth of 600 feet below the surface. Even at Line 99E the pipe is still plunging, being about 2000 feet under the lavas at this point. The 12,000 gamma anomaly in the south portion of claim T29749 may represent another peak of the ultrabasic mass which reaches the surface or nearly so. On the accompanying map this area has been shown as volcanics on the assumption that the ultrabasic rocks do not come to the surface.

No major faults are indicated to be present from the magnetic work and, of course, the lack of surface outcrops serves neither to prove or disprove this.

### Conclusions

The magnetometer method is ideally suited for outlining serpentized ultrabasic rocks in this area. The marked difference in magnetic properties between the serpentized ultrabasic rock types and the enclosing volcanics makes for a reasonably accurate delineation of these former bodies.

The zones marked as serpentized peridotite on the accompanying map should be considered as "predominantly serpentized peridotite."

### Detail of Survey

The survey was commenced on May 27, 1950 and completed on July 31, 1950, or occupied a total of 67 days. A total of 10.55 miles of line was cut, chained and picketed, which includes 1 mile of base or control line surveyed. A total number of 545 stations were established in this distance.

The following is the breakdown of the actual man-days required to complete the magnetometer survey:

(a)	Line Cutters - 4 men	June 25 to July 10		
	Sherman Tough - Contractor			
	40 man days x 4			160 days
(b)	Instrument Operators & Assistants	July 12-30		
	Magnetometer J.S. Hart	10 man days x 4	40	"
	D. Doal	10 man days x 4	40	"
(c)	Consultants - Field Work			
	H. L. Garvie	4 man days x 4	16	"
	N. W. Hendry	4 " "	16	"
(d)	Office Work			
	H. L. Garvie	2 " "	8	"

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## Interpretation of the Magnetometer Results

### Older Diabase & Gabbro

The magnetic field over the older diabase is uniformly low and in many cases not distinguishable from that over volcanic rocks. No older diabase or gabbro is shown on the accompanying map but this does not mean that none is present. However, there is no definite information to suggest the presence of these rockstypes in the property area.

### Volcanics

The magnetic field over the volcanic series is generally low with local higher than normal' anomaly areas. These local areas of higher than normal readings are caused, apparently, by concentrations of magnetite within these formations. This condition is not readily apparent in the area in question due to the masking effect of the underlying serpentized peridotite. However, on the basis of the conclusion that the plunging peridotite pipe underlies the volcanic rocks at varying depths, thereby greatly influencing the magnetic readings, the distribution of the volcanic series is thought to occupy all of the property area with the exception of a small portion of the northwest corner.

### Serpentine & Serpentized Peridotite

It is assumed, with reasonable justification, that ultrabasic rocks which have been highly or moderately serpentized, nearly always carry a high proportion of magnetite as compared with the magnetic content of adjacent formations, such as volcanics and sediments. This is related in part, to the alteration of the ferromagnesian-rich ultrabasic intrusives. In general, serpentine and serpentized peridotite lying near the surface yields anomalies of from 5000 to 7000 gammas above the regional level. A few broad, strong anomalies are as high as 10,000 to 14,000 gammas and it is often the case that the anomalies of this order and higher are produced by serpentized peridotites rather than serpentized dunites.

There may be exceptions to the above values, and the serpentized ultrabasic rocks might be quite deficient in magnetite. A few intrusives of gabbro and related rocks may, on the other hand, carry a high magnetite content. Errors of interpretation will occur over such conditions, but there is reason to suppose that these are few in number. Other difficulties are encountered because of the tendency for the ultrabasic rocks to be interbanded and interlensed with basic, less magnetic formations. The heterogeneity of each rock type, the unknown bedrock topography and the 100 foot spacing of measurements prohibit the delineation of each separate band; the whole must be interpreted as one.

The foregoing should explain why, in some places, an area of interpreted serpentized ultrabasic rocks may include some gabbro out-crops.

(d) Office Work (cont.)

N. W. Hendry	4 man days	x 4	16 days
J. Hart	10 " "	x 4	40 "
D. Doal	7 " "	x 4	28 "

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(e) Dip needle survey

F. Kaltwasser	8 " " "	32 "
R Kaltwasser	8 " " "	32 "
May 27 to June 15		

Total days	428
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Assessment Work Distribution

On each of Claims T29749 to T 29757 incl. 40 days work

Respectfully submitted

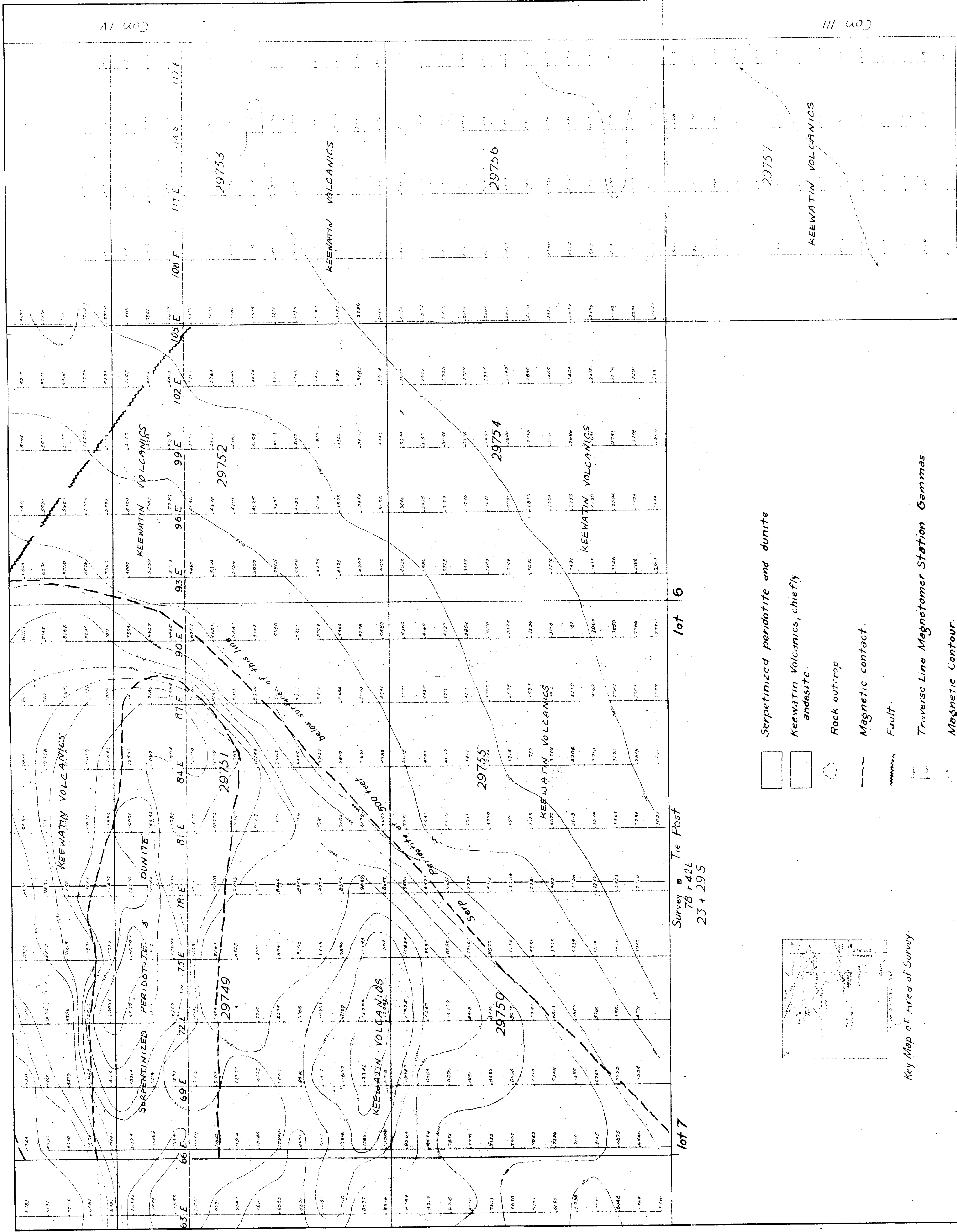
*N.W. Hendry P.E.*  
*per J. J. Karki*  
 N. W. Hendry, P.E.

November 18th, 1950

428  
 64  
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 364




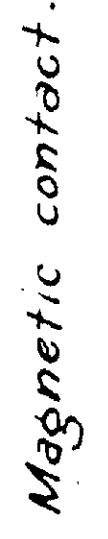



9  $\frac{428}{477}$

40 days per claim



Vertical intensity equals plotted readings plus 50,740 gammas.

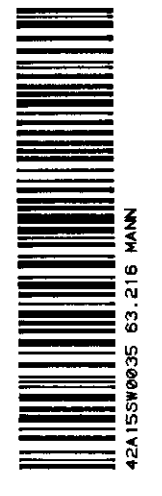
Key Map of Area of Survey.

-  Serpentinized peridotite and dunite
-  Keewatin Volcanics, chiefly andesite
-  Rock outcrop
-  Magnetic contact.
-  Fault.
-  Traverse Line Magnetometer Station. Gammas.
-  Magnetic Contour.

CANADIAN JOHNS - MANVILLE COMPANY LTD.  
 MATHESON MUNRO MINE ONTARIO  
 GEOLOGICAL AND GEOMAGNETIC  
 CONTOUR MAP  
 GROUP IN MANN TWP  
 ONTARIO DATE Nov 21, 1950  
 SCALE 1" = 200 FT

DRAWN	CORRECT
TRACED	APPROVED

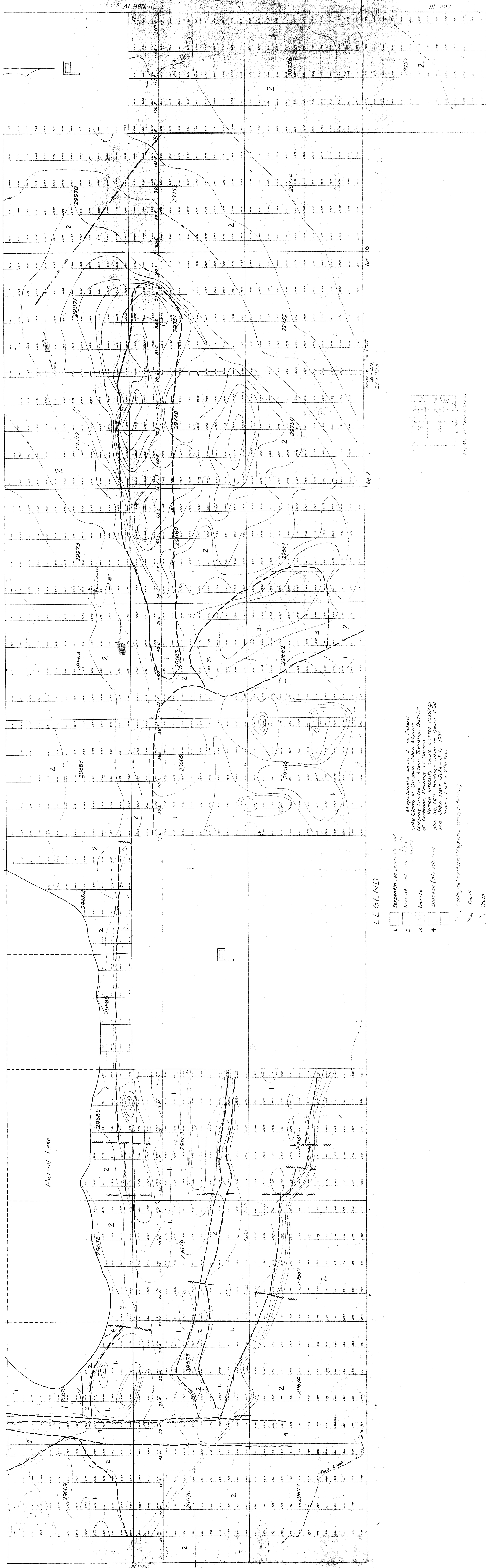
CERTIFIED TRUE COPY  
 Signed *H. J. Slenderby P.E.*  
*per J. J. Fok*



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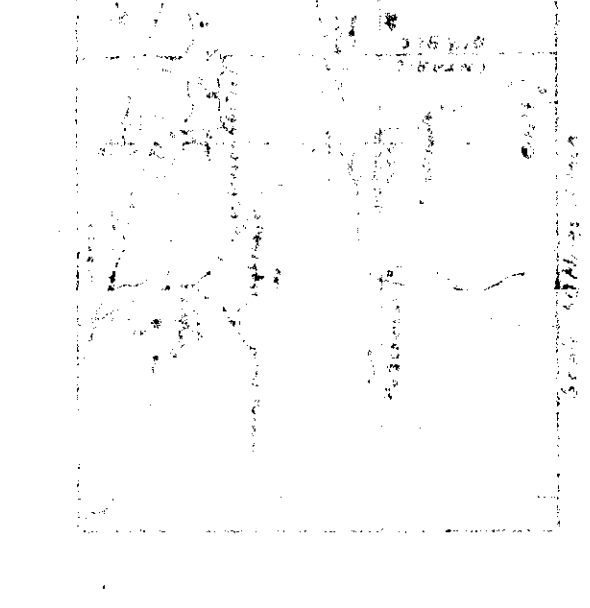


METEOROLOGICAL AND GEOMATICS  
 GROUP IN MINNAPOLIS  
 1988-2001

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 Signed [Signature]  
 per [Signature]

Survey by Post  
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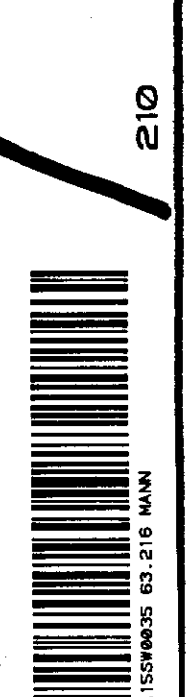


Map of Area of Survey

LEGEND

- 1. Serpentine parallel to and
- 2. Heavily wooded area
- 3. Diorite
- 4. Database (M. Johnson)
- (contour correct magnetic interpretation)
- Fault
- Creek
- Tail
- Camp Base
- Outcrops
- Contours (Magnetic Interpretation)
- Traverse Line Magnetometer

Magnetometer survey of the Pickens  
 Lake Claims in Mann Township, District  
 of Carleton, Province of Ontario  
 plus 36,741 readings taken on Dwyer Dial  
 and Scale 1 inch = 200 feet

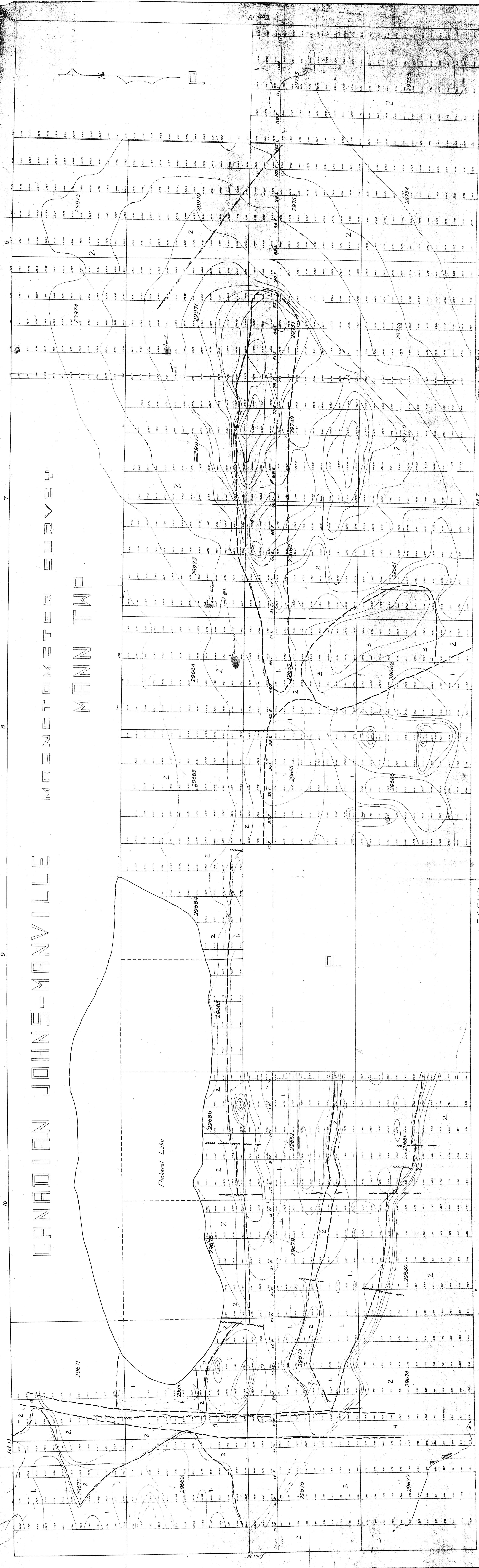




# CANADIAN JOHNS-MANVILLE

# MAGNETOMETER SURVEY

# MANN TWP



LEGEND

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231-235