REPORT ON GEOPHYSICAL SURVEYS
ELIEFF GROUP OF CLAIMS
KENOGAMING TOWNSHIP
PORCUPINE MINING DIVISION
PROVINCE OF ONTARIO

by

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Exploration Department
Canadian Johns-Manville Co. Ltd.

February 22nd, 1977
Asbestos, Quebec

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Introduction:

The following report describes the magnetic and electromagnetic surveys completed during the early winter of 1977 on two mining claims recorded in the name of Canadian Johns-Manville Company Limited and located in Kenogaming Township, Porcupine Mining Division.

Cutting and chaining of picket lines were carried out by Company personnel based at the Matheson, Ontario, Exploration Office. This work was under the direct supervision of R. Haley.

Magnetometer surveying was conducted by R. Haley, senior fieldman and geophysical operator with Canadian Johns-Manville Company Limited using a Scintrex Fluxgate instrument. D. Desjardins assisted with this program.

Electromagnetic surveying was also carried out by R. Haley and D. Desjardins using a McPhar R.E.M. Vertical Loop Unit.

Supervision and interpretation of this work were the responsibility of the writer, Exploration Manager with Canadian Johns-Manville Company Limited based at Asbestos, Quebec.

Property:

The claims surveyed are situated in Kenogaming Township and are numbered - P-450019 and P-450447. These two claims were staked on March 4th and recorded on the 5th, 1976. Transfer to Canadian Johns-Manville Company Limited was completed on October 29th, 1976.

Holdings comprise approximately 80 acres.

Location and Accessibility:

The Elieff Group of claims is located in the east-central part of

Location and Accessibility: (Cont'd)

Kenogaming Township, Porcupine Mining Division.

Access, for the purpose of the geophysical surveys, was by four-wheeled drive truck from Highway No. 101 (Chapleau-Timmins) to the saw mill on the north-east corner of Akweskwa Lake, then by skidoo, south along the lake, to the property.

Under non-freezing conditions the claims are readily accessible by float-equipped aircraft or motor boat.

Topography:

The area is characterized by relatively slight relief but contains numerous outcrops of volcanics, serpentinite and diabase. Several trenches have been excavated in the north-central part of claim P-450019.

Drainage is to the east, via a small creek in the south part of claim P-450019, which empties into Akweskwa Lake. This lake is part of the Kamiskotia River system which flows north to the Mattagami. A low-lying area of swamp borders this creek. Second growth poplar, birch and jack pine were noted on the outcrop areas with spruce and alders in the low-lying sections.

Previous Work:

Initial exploration work in the area was carried out in 1947-48 by N. Elieff for Hoodoo Lake Mines Limited. Stripping, trenching and sampling were conducted over altered shear zones for Au mineralization. Low values were reported-erratic V.G. was noted in shear zones containing moderate pyrite mineralization.

In 1950 the property was acquired by Dunvegan Mines Limited and during the course of exploration programs two showings containing Ni mineralization were discovered. Note that one of these showings occurs in the southwest corner of current claim P-450019.

As part of the Dunvegan program old trenches were cleaned out and sampled for Zn. Sampling of the mineralized shear zones by Hollinger Mines showed Zn to be

Previous Work: (Cont'd)

in the order of 0.50% and Au, on the average, to be <0.10 ozs.

Norduna Mines - a Falconbridge subsidiary - optioned the holdings in the early 1950's, carried out surface programs followed by diamond drilling. In 1952 two holes were drilled on claim P-450019 to test the serpentinite and the mineralized volcanics. In 1954 two holes were drilled in the southwest corner of P-450019 to test the Ni mineralization, low values were reported.

In 1956 six holes were drilled by Dunvegan Mines to test the serpentinite in the east-central part of claim P-450019. Only minor disseminated sulphide mineralization was reported.

Jonsmith Mines Limited took over the property in 1960 and later (1966) optioned the claims to Falconbridge Nickel Company. Eleven (11) holes were drilled during the period of this option and were concentrated along the sheared and altered tuff-agglomerate band to the north of the central ultrabasic intrusive. Scattered, narrow, sub-ore Zn and Au values were reported. Due to the negative results obtained, the holdings were allowed to lapse.

Two claims, covering Ni, Au and Zn mineralization, were staked by Canadian Johns-Manville Company Limited during 1976 and the exploration programs discussed in this report, conducted.

General Geology:

The geology of the area and of the Elieff Group has been thoroughly described by V.G. Milne in O.D.M. Geological Report 97, entitled "Geology of the Kukatush-Sewell Lake Area, District of Sudbury" and published in 1972. Results of the mapping are shown on Map No. 2231 - Penhorwood-Kenogaming Townships - on a scale of 1" = 2,640' and on Chart A, Figure 5 - Surface Plan of Dunvegan Mines Limited property, which accompany the report.

On the Elieff claims tuffs and agglomerates, altered by sericitization and carbonatization, and containing moderate pyrite mineralization strike in a

General Geology: (Cont'd)

northwesterly direction and have near-vertical dips. The meta-volcanics have been intruded by ultramafic rocks - serpentinites - and by later feldspar porphyry and northwesterly trending diabase dikes.

The sulphides, mainly pyrite, are concentrated in narrow quartz-sericite schists. Sphalerite occurs associated with pyrite in stringers of quartz and carbonate. Minor sphalerite and chalcopyrite mineralization was reported in one trench on claim P-450019 by V.G. Milne.

Although erratic V.G. occurs in several of the moderately pyritized shear zones and Au has been panned from oxidized surface material, fresh trench rock showed only low Au values.

Line Cutting and Chaining:

Using a Brunton Compass, the No. 1 Base Line was started from a point on the claim line 800 feet north of the No. 2 Post of P-450019 and was cut and chained on an astronomic bearing due west for a length of 1,370 feet.

The No. 2 Base Line was started from a point on the claim line 390 feet north of the No. 3 Post of P-450547 and was cut and chained due East for a length of 1,230 feet.

With the exception of Line 0+00, established along the east boundary of claim P-450019 and west boundary of P-450547, picket lines were turned off at right angles to the Base Lines and cut and chained to the north and south limits of the property.

Offset lines were spaced at 200 foot intervals with marked pickets established every 100 feet along the lines by chainage.

Total miles of base and picket lines cut and chained by Company personnel on the Elieff Group - 4.07.

Electromagnetic Survey:

An electromagnetic survey was conducted over the Kenogaming Township claims by R. Haley assisted by D. Desjardins. R. Haley is a geophysical operator with Canadian Johns-Manville Company Limited. Both men are based at Matheson.

Field work was carried out during January 1977. Readings were recorded using a McPhar dual frequency vertical loop reconnaissance Electromagnetic unit operating on a frequency of 1,000 cycles per second.

The McPhar unit is suitable for use as both a reconnaissance and relatively detailed instrument. In this survey the transmitter was held vertically at a distance of 200 feet from the receiver; the receiver was then tilted about the axis joining the two coils until a null was observed. Both transmitter and receiver were moved on the same picket line 200 feet apart, and readings were recorded at 50 foot intervals. Under these operating conditions a depth penetration of 100 feet was attained.

Null widths, which were extremely low, were recorded at each station but have not been shown on the accompanying plan. Walki-talki units were used by the operators when essential for communication throughout this work. A total of 380 stations was recorded during the course of the survey.

The results of the survey are shown on the accompanying Electromagnetic Profile Plan on a scale of one inch equals 200 feet. Profiles have been plotted on a scale of one inch equals 20 degrees.

Geological contacts and structures, as interpreted from the magnetometer survey and previous geological mapping by Government and Company geologists, have been shown on this plan. Conductors have been marked with dashed purple lines and designated:- W-weak.

All conducting zones delineated on the Elieff Group fall in the weak category, and, in a majority of cases are one-line situations. Cross-overs range from a minimum of +1, -1 to a maximum of +2, -5. This latter conductor is located

Electromagnetic Survey: (Cont'd)

in the southwest part of claim P-450019 and occurs in the metavolcanics.

Three weak conductors occur within or along the contact of the main serpentinite intrusive and may be indicative of minor sulphide mineralization.

The northwesterly trending altered and mineralized zone on claim P-450019, which has been trenched and sampled, is marked by a weak, discontinuous conductor. Lack of linearity may be due to the cross-cutting series of diabase dikes.

Two weak conductors occur in the metavolcanics on claim P-450547 - these appear of little economic significance.

Magnetometer Survey:

A magnetometer survey was conducted over the Elieff claims by R. Haley assisted by D. Desjardins. Readings were recorded using a Scintrex Fluxgate Magnetometer - Model MF-1 (Serial No. 409107) having sensitivities of 20, 50, 200, 500 and 2,000 gammas as per division for the corresponding scales. Work was carried out during January 1977.

Prior to the survey the instrument had been checked and adjusted, so that a gamma value of 1,220 corresponds closely with an absolute value of 57,599 ± 15.

One base control station was established on picket line 0+00 at the No. 3 Post of claim P-450547 and was given a fixed value of 1,350 gammas.

During the course of the survey, the base control station was observed at regular intervals (four readings per day) as a check on the working condition of the instrument and to record the daily diurnal variation. A ski-doo was utilized for this purpose. Stations were spaced at 50 foot intervals along the picket lines and a total of 395 readings recorded on the claims group.

The results of the survey are shown on the accompanying Geo-Magnetic Contour Plan on a scale of one inch equals 200 feet.

Magnetometer Survey: (Cont'd)

Contour lines of equal magnetic intensity have been drawn at 500 gamma intervals from 500 to 5,000 and at 1,000 gamma intervals up to 8,000.

Magnetic readings over the ultramafic intrusives - highly serpentinized peridotites - range in value from 2,500 gammas along the overburden - covered contacts to a maximum of 8,400 over outcrops in the central part. Average values vary from 3,000 to 4,500 gammas.

The main intrusive on claim P-450019 strikes slightly north of west has near vertical dips and ranges in width from 200 feet on the east to 1,100 feet along the west boundary.

Felsic to intermediate meta-volcanics cover the greater part of the property. Magnetic intensities over these volcanics range from 1,000 to 2,500 gammas adjacent to the main ultramafic intrusive, but in general are considerably weaker - 1,000 to 640 gammas - in the northern and eastern parts of the claims.

Six northwesterly trending diabase dikes intrude the formations on the Elieff Group. The occurrence of these intrusives had been noted by previous geological mapping and the magnetometer survey has further delineated the contacts in overburden - covered sections of the claims. Minor displacements may occur along these diabase dikes.

Magnetic intensities - up to 24,000 gammas - in the extreme northeast corner of claim P-450547 are no doubt caused by a narrow band of iron formation. A linear trend to the southwest may indicate the extension of this band. If this is the case the iron mineralization along the possible extension would be non-magnetic hematite.

Conclusions and Recommendations:

The weak conducting zones delineated by the electromagnetic survey are not indicative of economic sulphide mineralization. In the trenched area on claim P-450019 the weak conductor has been thoroughly tested by diamond drilling

Conclusions and Recommendations: (Cont'd)

and mineralization, consisting of Au, Ag and Zn was found to be sub-ore. Due to the number of diabase dikes intersecting this zone, there is little or no large, low-grade tonnage potential on this claim.

As previous diamond drilling and geological mapping failed to reveal any indication of chrysotile mineralization in the ultramafic intrusive further exploration does not appear warranted at this time.

It is recommended that a thorough geochemical survey be considered for these claims. Same should be carried out during the 1977 field season.

Submitted: February 1977

by: F.J. Evelegh

GEOL. LEGEND

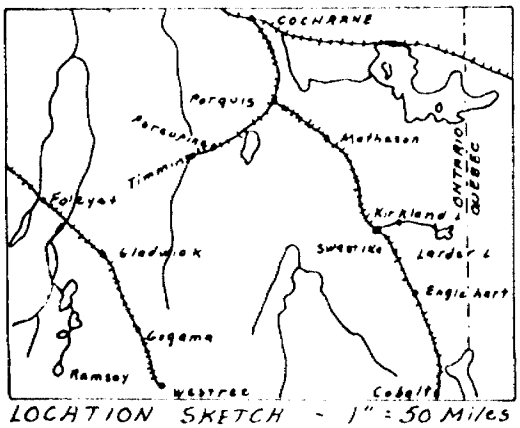
- Quartz diabase, diabase
- 5 — Granite 5a, Syenite 5b, Feldspar porphry 5c, Quartz feldspar 5d, Felsite 5e, Lamprophyre 5f
- Diorite 4a, Gabbro diabase 4d
- Peridotite & Dunite (Serpentinized) (Asb. - Asbestos recognized)
- Pyroxenite
- 3 — Rhyolite
- 2 — Andesite basalt pillow lava 2a, Diabasic lava 2b, Spherulitic lava 2c, Fragmental lava 2d, Tuff & Chert 2e, Talc-chlorite schist 2f
- 1 — Greywacke 1a, Arkose 1b, Quartzite 1c, Argillite or shale 1d, Conglomerate 1e, Iron formation 1f, Chlorite schist 1g
- Carbonate rock

GEO-CHEM SYMBOLS

Q.T.-T.H.M. - Quick Test - Total Heavy Metals.
H.X.-T.H.M. - Hot Extraction - Total Heavy Metals.

- (Y) Nil
- (G) 1 - 100
- (B) 101 - 200
- (L) 201 - 400
- (R) 401 - 500+
- (*) Power Auger

R.S. - Red sand
B.S. - Brown sand
B.M. Black Muck
W.S. - White sand
Cl. - Clay



LOCATION SKETCH - 1" = 50 Miles

TOPO-SYMBOLS

- Outcrop
- Higher ground
- Scarp
- Muskeg or Swamp
- Creek
- Drill hole
- Bush road
- Direction in which lava flows face, indicated by shape of pillows

ELECTRO-MAG SYMBOLS

Scale - 40 units - 1"
Conducting Zone - S- Strong M- Medium W- Weak

RONKA H.L. UNIT

- In phase curve
- Out phase curve

NPCS Not proper coil spacing
East - Positive. West - Negative

McPHAR V.L. UNIT

Dip angle profile
North & East Positive
South & West Negative

Geol. Survey by -
Mag survey by -
E.M. survey by -

GEO-MAG SYMBOLS

- Contour interval 500 gammas
- BCS#1 — Magnetic Base Control Station
- Geological Contact
- Fault Zone - G - Geological M - Magnetic T - Topographic

LEGEND SHEET
PROVINCE OF ONTARIO

SEPT. 1966

MB

22/2/77

F.J.E.

File 2.2362

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey Geophysical

Township or Area Kenogaming

Claim holder(s) Canadian Johns-Manville Company Limited

Author of Report F.J. Evelegh

Address P.O. Box 1500, Asbestos, Quebec

Covering Dates of Survey January 6 - February 22, 1977
(linecutting to office)

Total Miles of Line cut 4.07

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
--Electromagnetic	40
--Magnetometer	20
--Radiometric	
--Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: February 22, 1977 SIGNATURE: F.J. Evelegh
Author of Report or Agent

PROJECTS SECTION L.D

Res. Geol. _____ Qualifications 63.1067

Previous Surveys _____

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
P	450019
P	450547

TOTAL CLAIMS 2.

If space insufficient, attach list

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations Mag.- 395; E.M. -380 Number of Readings Mag. - 418; E.M. -402

Station interval Mag.- 50'; E.M. 50'

Line spacing 200'

Profile scale or Contour intervals Mag.- 500 ±1,000 gammas; E.M. 1"= 20°
(specify for each type of survey)

MAGNETIC

Instrument Scintrex Fluxgate Magnetometer - Model MF-1 - Serial #409107

Accuracy - Scale constant see attached photocopy

Diurnal correction method Base Station read at regular intervals & readings corrected accordingly

Base station location No. 1 - at #3 Post of Claim 450547 (line 0+00 at 1,100' North of Base Line #1)

ELECTROMAGNETIC

Instrument McPhar Dual Frequency Reconnaissance Electromagnetic Unit - Serial #30-6507

Coil configuration Vertical

Coil separation 200 Feet

Accuracy

Method: ☐ Fixed transmitter ☐ Shoot back ☒ In line ☐ Parallel line

Frequency 1,000 C.P.S.
(specify V.L.F. station)

Parameters measured dip angle and width of null

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION – RESISTIVITY

Instrument

Time domain Frequency domain

Frequency Range

Power

Electrode array

Electrode spacing

Type of electrode

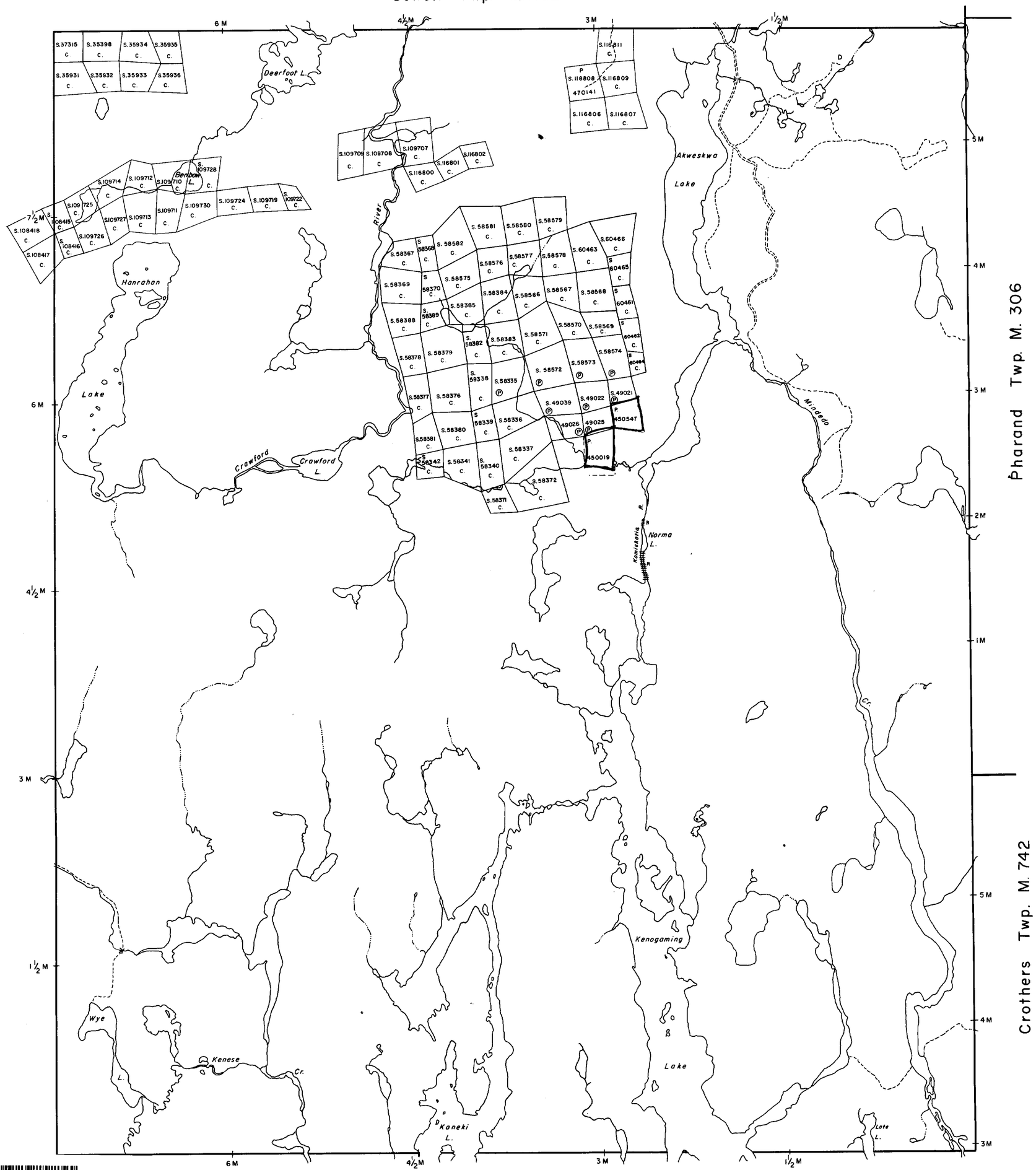
Sewell Twp. M.1102

Penhorwood Twp. M.1055

Pharand Twp. M. 306

Crothers Twp. M. 742

Regan Twp. M.1075



THE TOWNSHIP OF 2.2362.

KENOGAMING

DISTRICT OF SUDBURY

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	● or Ⓟ
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.
PATENTED S.R.O.	◒

NOTES

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

DATE OF ISSUE APR 20 1977

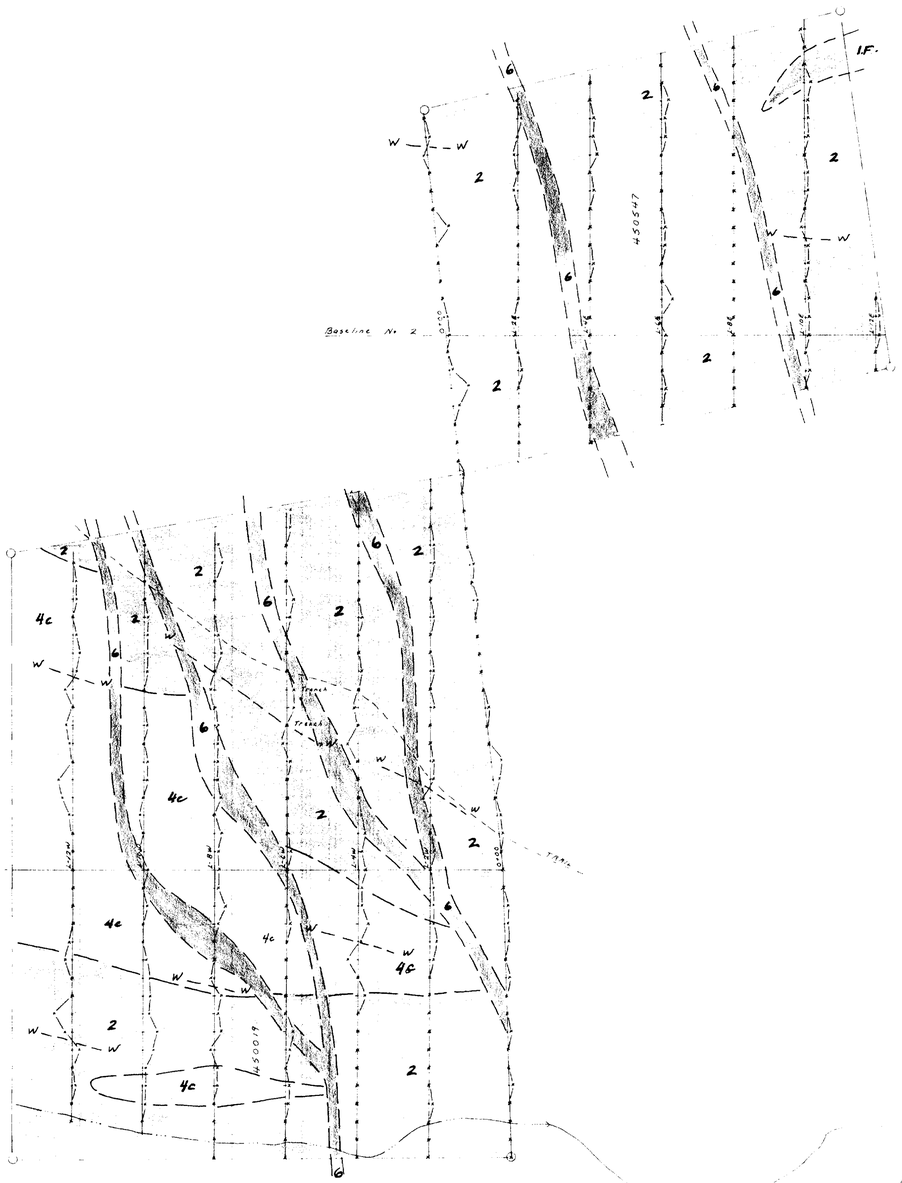
PLAN NO.- M.967

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

42A04NW0150 2.2362 KENOGAMING

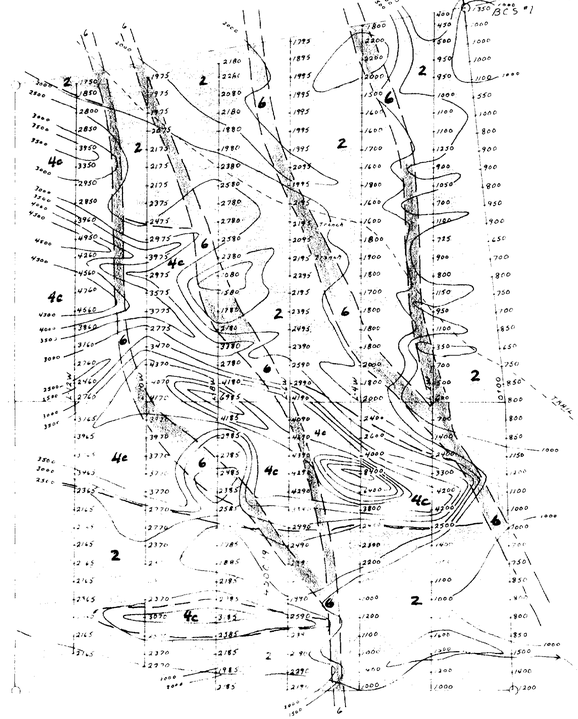
200

ADJOINS SHEET No.



ELECTRO MAGNETIC PROFILE PLAN

INSTRUMENT - McPHAR R.E.M. UNIT - SERIAL NO. 30-6507
INLINE METHOD - 200' SPACING - PROFILE SCALE 1"=1"
OPERATOR - R. HALEY & D. DESJARDINS



GEO-MAGNETIC CONTOUR PLAN

INSTRUMENT - MF1 FLUXGATE MAGNETOMETER
SERIAL NO. 409107
OPERATOR - R. HALEY

AKWESKWA LAKE

AKWESKWA LAKE

FEB. 24/77

KENOGAMING TWP.

ONT. 1"=200'

AKWESKWA L.
GR.#2

AKWESKWA L.
GR.#1

ELIEFF GR.

STAKED

STAKED

STAKED

LEGEND

6		QUARTZ DIABASE
4B		GABBRO
4C	4C	PERIDOTITE
2		BASIC & INTERMEDIATE VOLCANICS
I.F.	IF	IRON FORMATION

220

FEB. 22/77

ONT. 1"=1320' PROPERTY PLAN KENOGAMING & SEWELL TWPS.