



42B08NW0003 2.923 NOVA

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JUL 4 - 1972

PROJECTS
SECTION

AMAX POTASH LTD.

GROUND MAGNETOMETER / GEOLOGICAL SURVEYS

NOVA - OATES GROUP #2 (42B-8)

Nova, Oates and Oswald Townships

Porcupine Mining Division

June 19, 1972.

B.I. MacDonald
Geologist

INTRODUCTION

In June 1970 Amax Exploration, Inc., acquired a group of 25 claims located in southwest Nova Township and extending into Oates and Oswald Townships.

Immediately upon claim recording a linecutting contract was let to F. Warne, Pine St. South, Timmins. Subsequent to this geophysical (ground magnetometer and ground electromagnetic) and geological surveys were conducted in the months of July, August and September, 1970.

In March 1971 a combined AEM-AM survey was contracted to Geoterrex Ltd. in the Nova area which covered this claim group. *Airborne*
see File 2-909

Additional field examination of outcrop on claim group was performed by writer in July 1971. A drill program of two holes was also initiated in July 1971. Claims were transferred to Amax Potash Ltd. in the fall of 1971.

X This presentation reports upon the ground magnetometer and geological surveys.

EXPLORATION HISTORY

This area was prospected for gold prior to 1960 but there is no documentation of this work in government records either provincial or federal. As part of the federal government regional aeromagnetic program this area was flown in 1962-63 and the data was published in 1963 - Geophysics Paper 2264 Oswald Lake.

Subsequent to this, in 1964 the area in part was covered by combined AEM-AM surveys flown by the Ivanhoe Syndicate (consortium of mineral exploration companies) for which Area Mines Ltd. were operators.

Area acquired the portion of this claim group which is located in Nova Township in 1964 and established a grid system with north south lines at 400 foot intervals. One drill hole was collared northwest of north boundary of claim group and drill log indicates "iron formation" type sulphides, pyrrhotite, pyrite and magnetite in siliceous matrix as conductor source. Trenching was also performed by Area along north boundary of present claim group which exposed a width of 75 feet of massive to semi massive sulphides in "iron formation".

In 1965 the area was part of an ODM mapping program under the direction of G. Bennett, ODM field geologist. The results of this program were published in 1965 in the form of 1"=2640', Preliminary Map P-346. In 1969, ODM Geology Report 78 "Geology of the Belford - Strachan Area, G. Bennett", was published which encompasses area mapped in 1965.

LOCATION AND ACCESS

Claim group is located in southwest Nova Township and extends south with one claim in Oswald Township and twelve claims in Oates Township.

Access to the property is via Department of Lands and Forests Access Road which extends north from Highway 101 (2 miles east of Foleyet) twelve miles into Oates Township where it ends at the Ivanhoe River at north end of quarter mile system of rapids. Boat down river six miles to a point one mile south of Nova-Oates Township boundary where west boundary of property contacts with the Ivanhoe River.

Access also via drill road north from end of Lands and Forests Access Road by all terrain vehicle.

SURVEY DESCRIPTION

A cut line grid was established on the above property by F.W. Warne, Timmins Contractor, during the period June 11 to July 8, 1970 with base line orientation 240° - 060° from Mileage 9 Post (Nova Township south boundary). This point is 60+00E, B.L.-1 on grid system. B.L.-1 extends from 0+00E to 98+00E. At 98+00E B.L.-2 orientation 045° commences at 0+00N and extends to 36+00N. Picket lines are established at 400 foot intervals at 90° to respective base lines and extended to property boundary. In north boundary area an existing grid was utilized to provide additional magnetic data.

The magnetometer survey was performed by M. Manitowabi (1st year Cambrian College, Sault Ste. Marie) operator, C. Britt (high school student, Kirkland Lake) helper, under supervision of A. Mathias party chief (c/o Amax Potash Ltd.) with a McPhar Fluxgate magnetometer model M-500A, sensitivity + 10 gammas per scale division. Base stations were established at 800 foot intervals along base line 1 and 2 with main base at 0+00E BL 1.

Stations were established at 100 foot intervals along diurnal picket lines with readings corrected for instrument drift and diurnal variations utilizing established base stations. Accuracy of survey is felt to be + 10 gammas per scale division. A total of 1130 stations were occupied on the above claims with the total number of observations 1170.

The geological survey was performed by Leonard Kydd (graduate geological technician, Cambrian College) in the period of July 8 to August 22, 1970 and the writer July 30, 31, 1971 with traverses performed along established grid system.

DATA PRESENTATION

Both the magnetometer and geological survey data is plotted at a scale of 1"=400 (Plan 1 and 2). The magnetic data is contoured at an interval of 100 gammas. Claim boundaries and numbers are indicated on both plans.

RESULTS - (Magnetometer)

The magnetic relief in the area is quite subdued with a background response of 500 - 600 gammas (90% of readings are in this range).

Superimposed on this background are two anomalous features, A & B. Anomaly A extending from 20+00E 5+00N (B.L.-1) to 88+00E 6+00N (B.L.-1) with a maximum magnetic signature of 1500 gammas. Subsequent diamond drilling Hole KX-66-71 indicates that causitive body is intensely sheared "serpentinite with concentrations of magnetite and minor pyrrhotite". Contacts with adjacent rocks indicate that body is concordant and represents geological trend in area.

Anomaly B is a narrow feature with magnetic signature up to 5000 gammas which extends northeast off the property (24+00N 12+00W to 36+00N 6+00W (B.L.-2)). Trenching in the area has exposed massive to semimassive pyrrhotite pyrite in "iron formation" environment as causitive body.

GEOLOGICAL SURVEY

The claim group has very limited exposures (2%) which is general for the area. Bennett in his mapping (P346 Nova Township) did not note any outcrop in this area.

Amphibolite gneiss is exposed in the area of B.L.-1 between 28+00E and 48+00E. The rock is generally dark green to black on fresh surface and weathers grey green. There is a well developed lineation (alignment of amphibole minerals) which trends 080° to 090° with dips vertical to 60° south.

In the northwest area of the property felsic metatuffs and flows contact with the amphibolite gneiss. These rocks are sericite quartz feldspar schists and appear to have schistosity developed parallel to bedding planes. Contacts between amphibolite and metatuffs trend 020° to 030° and dips are generally vertical.

An exposure of heavy sulphide mineralization (pyrrhotite pyrite magnetite) occurs in old trench on north boundary of P-264451. Sulphides are in siliceous matrix within felsic metatuff environment. Trend of rocks in area is 105° - 110° with dips 75° to 85° to the south. Magnetic data in the area indicates that this is local fold superimposed upon regional trend of 045°.

Granitic dykes up to 10 feet wide cut all rock units previously described. The rocks are generally granidioritic in composition and appear to have been contaminated by basic host rocks into which they intrude.

Metamorphism in this area is amphibolite facies as evidenced by mineral assemblage in basic metavolcanics (hornblende, with minor leucoxene, chlorite, magnetite and epidote) and felsic metavolcanics, (sericite-quartz-feldspar).

SUMMARY AND CONCLUSIONS

The magnetometer survey has defined two positive magnetic anomalies which have been exposed by diamond drilling (A) and outcropping (B). The magnetometer survey along with geological survey has provided a basic geological picture. Unfortunately the magnetic susceptibilities of the metabasic volcanics and the metafelsic volcanics in the area are similar and it has been impossible to separate these units by this magnetometer survey.

B. Mac Donald
19/6/72

APPENDIX I

P 256475
P 256476
P 256477
P 256478
P 256479

P 256480
P 256481
P 256482
P 256483
P 256484

P 256485
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P 264462



42B08NW0003 2.923 NOVA

900

File L. 923

TECHNICAL DATA STATEMENT

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 Ground Magnetometer

Township or Area Nova-Oates, Oswald

Claim holder(s) Amax Potash Ltd.

Author of Report B.I. MacDonald

Address 153 Hemlock St., Timmins, Ont.

Covering Dates of Survey June, 1970 - May 17, 1972
(linecutting to office)

Total Miles of Line cut 25 miles

MINING CLAIMS TRAVERSED List numerically

(prefix)

(number)

SPECIAL PROVISIONS CREDITS REQUESTED

DAYS
per claim

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

ENTER 20 days for each additional survey using same grid.

Geophysical

-Electromagnetic _____

-Magnetometer 40

-Radiometric _____

-Other _____

Geological _____

Geochemical _____

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

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

DATE: May 17/72 SIGNATURE: B.I. MacDonald
Author of Report

PROJECTS SECTION

Res. Geol. Timmins Qualifications 63-2232

Previous Surveys 2,909, 2,528 (Airborne) L.A.

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

TOTAL CLAIMS 25

OFFICE USE ONLY

If space insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 1130 Number of Readings 1170
Station interval 100 foot
Line spacing 400 foot
Profile scale or Contour intervals 100 gammas
(specify for each type of survey)

MAGNETIC

Instrument Fluxgate - McPhar Model M-800A
Accuracy - Scale constant 20 gammas / scale division
Diurnal correction method Base station control
Base station location 800 foot intervals along B.L.-1 & B.L.-2
(intersection of every second line and base line)

ELECTROMAGNETIC

Instrument _____
Coil configuration _____
Coil separation _____
Accuracy _____
Method: Fixed transmitter Shoot back In line Parallel line
Frequency _____
(specify V.L.F. station)

Parameters measured _____

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 _____

GEO PHYSICAL - GEOLOGICAL - GEOCHEMICAL TECHNICAL DATA STATEMENT

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 _____ Geological _____
Township or Area _____ Nova-Gates Oswald _____
Claim holder(s) _____ Amax Potash Ltd. _____

Author of Report _____ B.J. MacDonald _____
Address _____ 153 Hemlock St., Timmins, Ont. _____
Covering Dates of Survey _____ July 8, 1970 - May 11, 1972 _____
(linecutting to office)
Total Miles of Line cut _____ 250 _____

MINING CLAIMS TRAVERSED

List numerically

..... (prefix) (number)

<u>SPECIAL PROVISIONS</u>		<u>DAYS</u>
<u>CREDITS REQUESTED</u>		<u>per claim</u>
ENTER 40 days (includes line cutting) for first survey.	Geophysical -Electromagnetic _____ -Magnetometer _____ -Radiometric _____	
ENTER 20 days for each additional survey using same grid.	-Other _____ Geological _____ <u>20</u> _____ Geochemical _____	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: May 17/72 SIGNATURE: B. MacDonald
Author of Report

PROJECTS SECTION
Res. Geol. _____ Qualifications _____
Previous Surveys _____

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

TOTAL CLAIMS 25

OFFICE USE ONLY

If spec insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations _____ Number of Readings _____

Station interval _____

Line spacing _____

Profile scale or Contour intervals _____
(specify for each type of survey)

MAGNETIC

Instrument _____

Accuracy - Scale constant _____

Diurnal correction method _____

Base station location _____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: Fixed transmitter Shoot back In line Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION - RESISTIVITY

Instrument _____

Time domain _____ Frequency domain _____

Frequency _____ Range _____

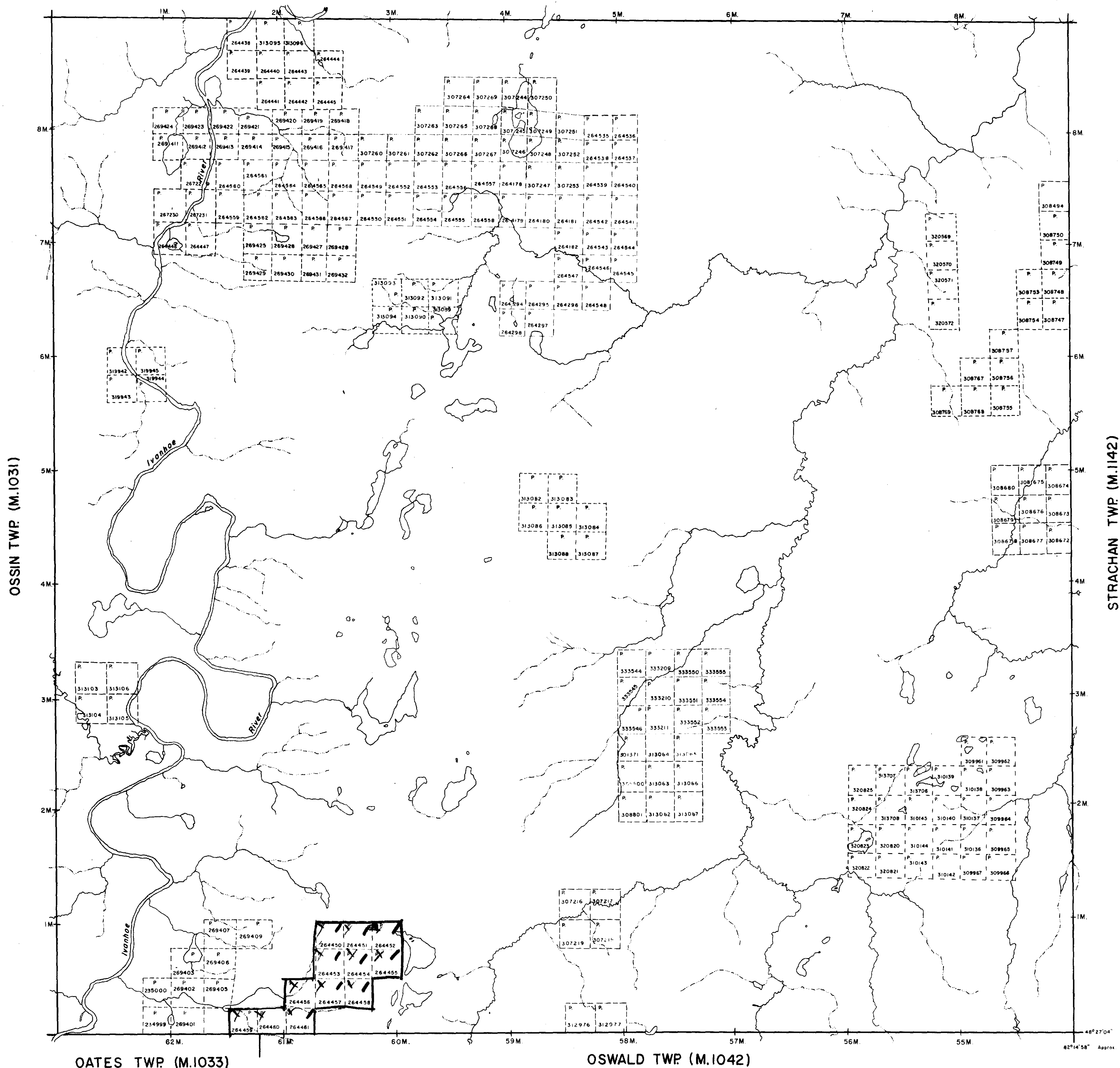
Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

BELFORD TWP (M.657)



OSSIN TWP (M.1031)

STRACHAN TWP (M.1142)

OATES TWP (M.1033)

OSWALD TWP (M.1042)

THE TOWNSHIP OF
Claim Map
NOVA

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 MUSKES	—
MINES	—
CANCELLED	—

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

*Geological
map*

2.923

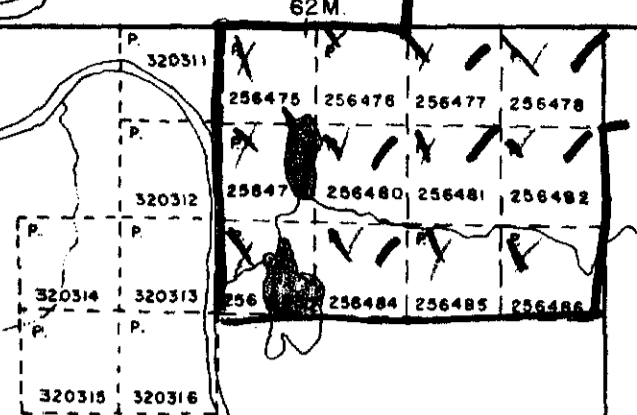
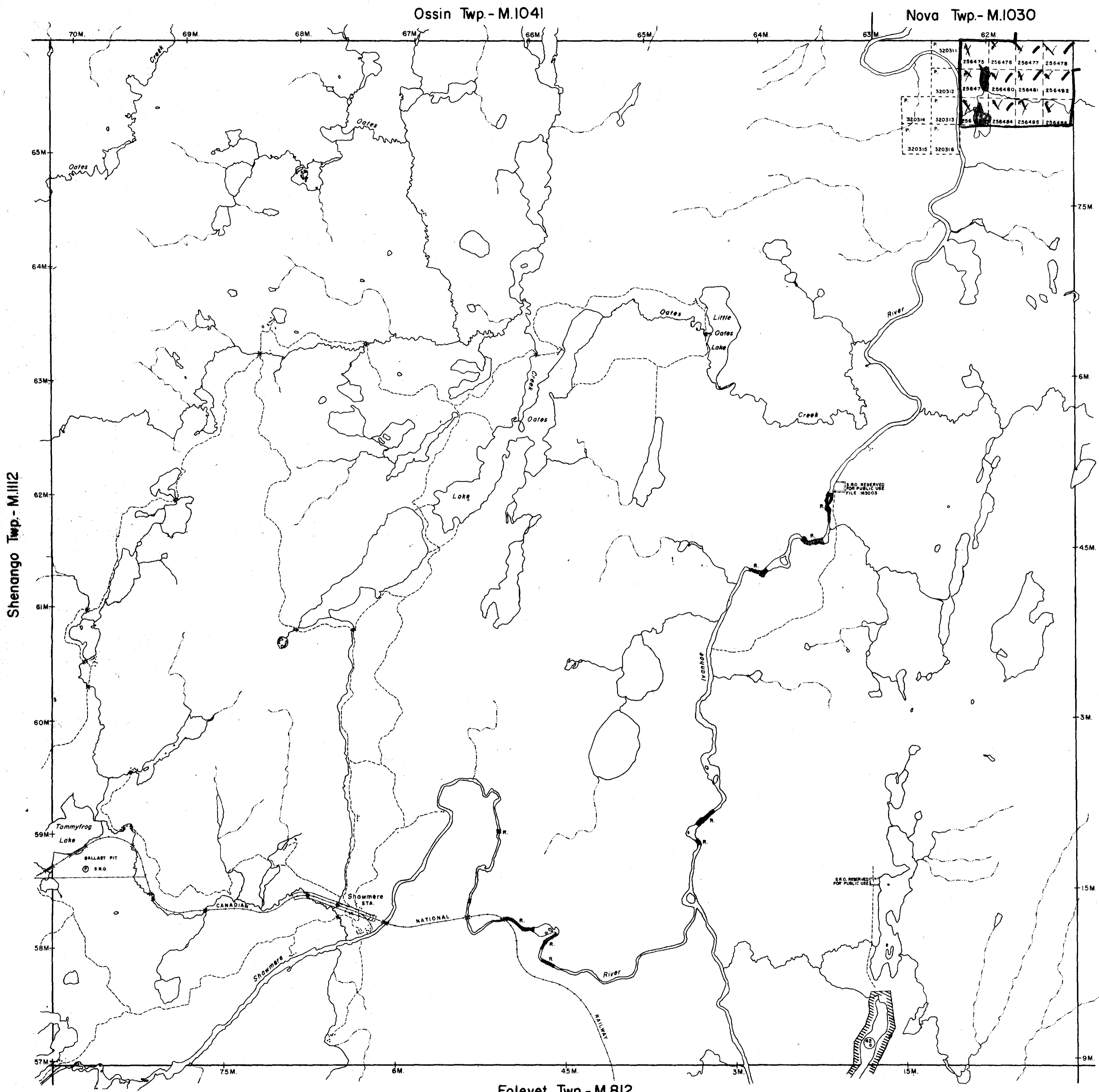
DATE OF ISSUE
JUL 6 1972
ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

PLAN NO.- **M.1030**

**ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS**

484821, 485821
484822, 485822





THE TOWNSHIP OF
Claim Map
OATES

DISTRICT OF
SUDBURY

**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	R
CANCELLED	C

NOTES

400' Surface Rights Reservation around all lakes and rivers.

Areas withdrawn from staking under Section 42 of The Mining Act.

File	Date	Disposition
163002	25/8/70	S.R.O.

Geological = /
History = /

2.923

DATE OF ISSUE

JUL 6 1972

ONT. DEPT. OF MINES
 AND NORTHERN AFFAIRS

PLAN NO.- **M.1033**

**ONTARIO
 DEPARTMENT OF MINES
 AND NORTHERN AFFAIRS**



Nova Twp. (M.1030)

Strachan Twp. (M.1142)

THE TOWNSHIP OF
Claim Map
OSWALD

DISTRICT OF
SUDBURY

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 MUSKES	—
MINES	—
CANCELLED	—

NOTES

400' Surface Rights Reservation around
all lakes and rivers.

1 = Map

2. 923

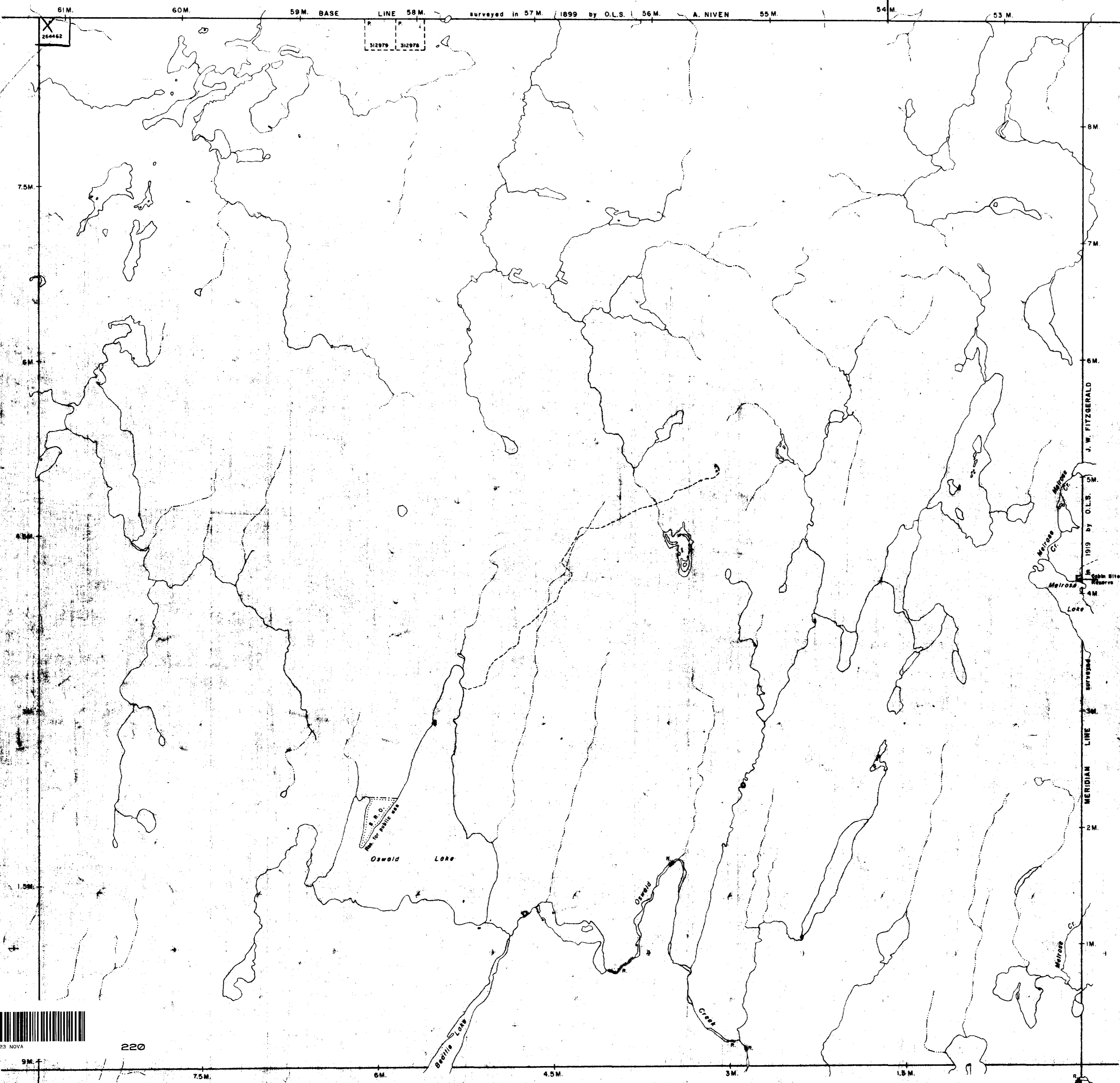
DATE OF ISSUE

JUL 6 1972

ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

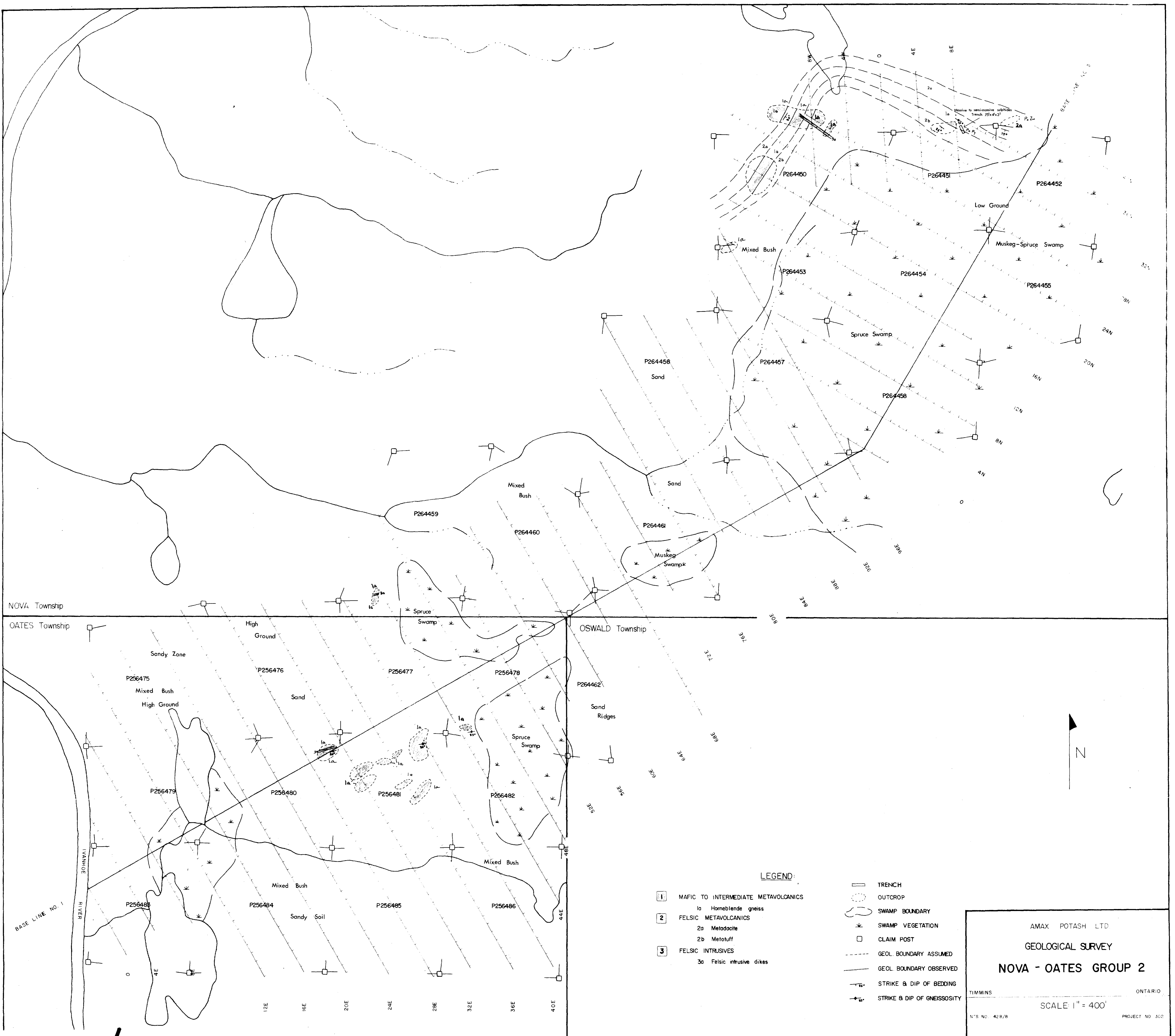
PLAN NO. **M-1042**

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS



220

Muskego Twp. (M.881)



LEGEND:

- 1 MAFIC TO INTERMEDIATE METAVOLCANICS
 - 1a Hornblende gneiss
- 2 FELSIC METAVOLCANICS
 - 2a Metadacite
 - 2b Metatuff
- 3 FELSIC INTRUSIVES
 - 3a Felsic intrusive dikes

- TRENCH
- OUTCROP
- SWAMP BOUNDARY
- SWAMP VEGETATION
- CLAIM POST
- GEOL. BOUNDARY ASSUMED
- GEOL. BOUNDARY OBSERVED
- STRIKE & DIP OF BEDDING
- STRIKE & DIP OF GNEISSOSITY

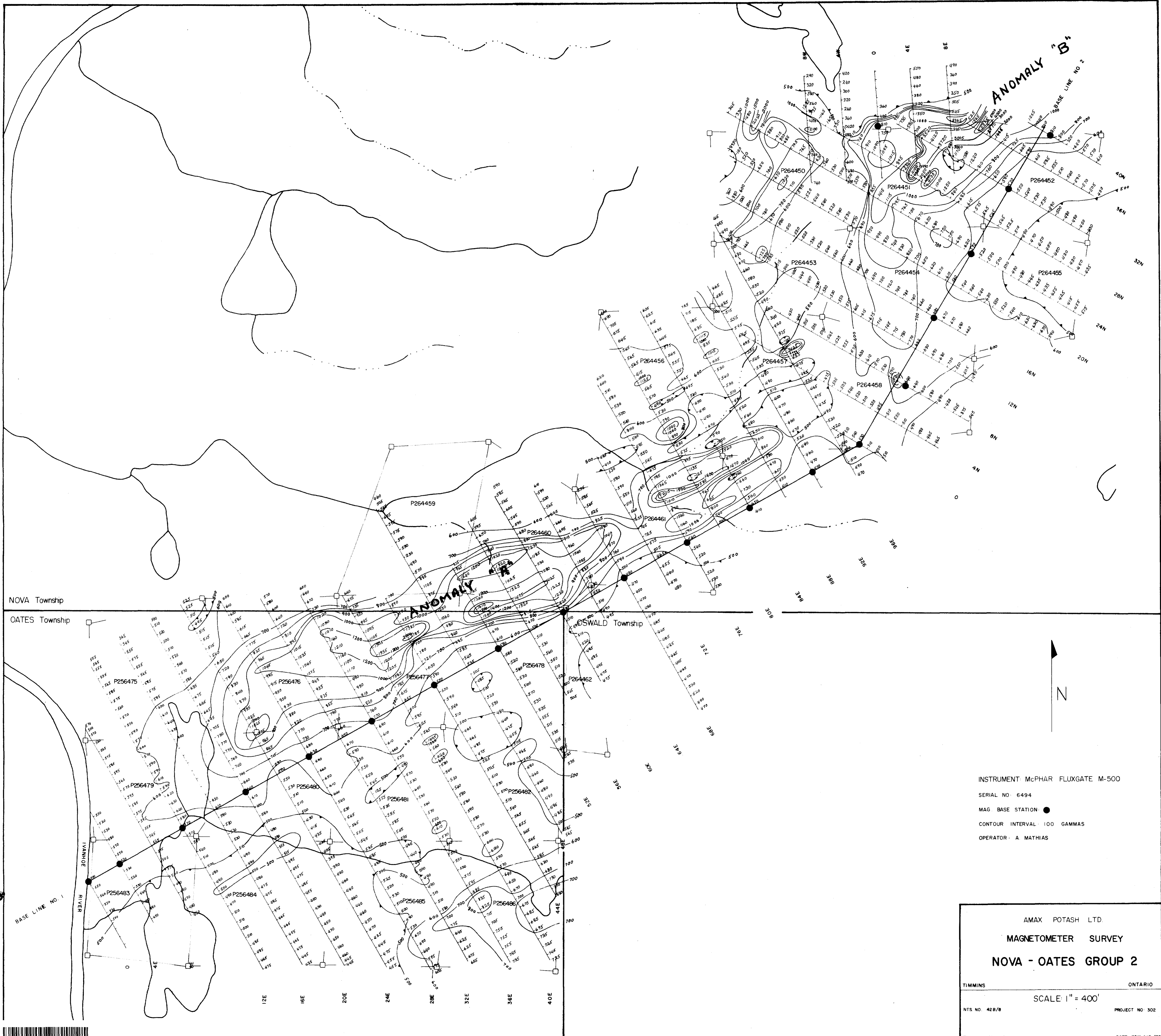
AMAX POTASH LTD
GEOLOGICAL SURVEY
NOVA - OATES GROUP 2

TIMMINS, ONTARIO

SCALE: 1" = 400'

N'S No. 428/B PROJECT NO. 502

TO ACCOMPANY REPORT BY B.I. McDONALD TIMMINS DATE JULY/AUG 70



NOVA Township

OATES Township

OSWALD Township

INSTRUMENT: McPHAR FLUXGATE M-500

SERIAL NO: 6494

MAG BASE STATION: ●

CONTOUR INTERVAL: 100 GAMMAS

OPERATOR: A MATHIAS

AMAX POTASH LTD.

MAGNETOMETER SURVEY

NOVA - OATES GROUP 2

TIMMINS

ONTARIO

SCALE: 1" = 400'

NTS. NO. 42B/8

PROJECT NO. 302

TO ACCOMPANY REPORT BY: B. I. MacDONALD TIMMINS DATE: JULY/AUG. 1970

