



42A12NE0524 2.2693 MACDIARMID

010

REPORT ON  
HORIZONTAL AND VERTICAL LOOP ELECTROMAGNETIC  
AND  
MAGNETIC SURVEYS

**RECEIVED**  
MAY 25 1978  
MINING LANDS SECTION

MATTAGAMI RIVER CLAIMS  
MACDIARMID-2  
PROJECT 824-02

MacDiarmid Township  
Northeastern Ontario

NTS: 42-A-11/12

AMAX MINERALS EXPLORATION  
Timmins, Ontario

Timmins, Ontario  
April 1978

John F. Gillan  
Geologist

## SUMMARY

A 17 Km. grid was cut and 22 Km. of Maxmin surveys and 6.3 Km. of detailed V.E.M. surveys defined two separate conductors. The shorter conductor was drilled by Mespi Mines in 1968 and found to be caused by graphitic tuffs in a highly fractured felsic to intermediate volcanic rock assemblage. The longer conductor is at least 1200 meters (4,000 feet) long, as defined by V.E.M. and has two stronger zones within its length. The two stronger zones are both 400 meters (1,200 feet) long as defined by the 600 foot cable Maxmin survey. The northern H.E.M. zone was also detected by the 400 foot cable Maxmin survey. This latter zone represents an untested conductor within a geologically favourable area and should be considered as a first priority drill target.

## INTRODUCTION

This report deals with electromagnetic and magnetic surveys covering the MacDiarmid-2 property, Project 824-02. The eight contiguous claims were acquired by Amax Potash Limited on February 7, 1977 to cover an Input anomaly system located by the 1970 Input Mark V survey flown for Hollinger. It covers 17 separate anomalies as defined by the Input Mark VI A survey flown for Amax in May 1977.

The Magnetometer and H.E.M. surveys were completed by Geoex Limited personnel and the V.E.M. detailed survey was completed by Amax personnel in March 1977.

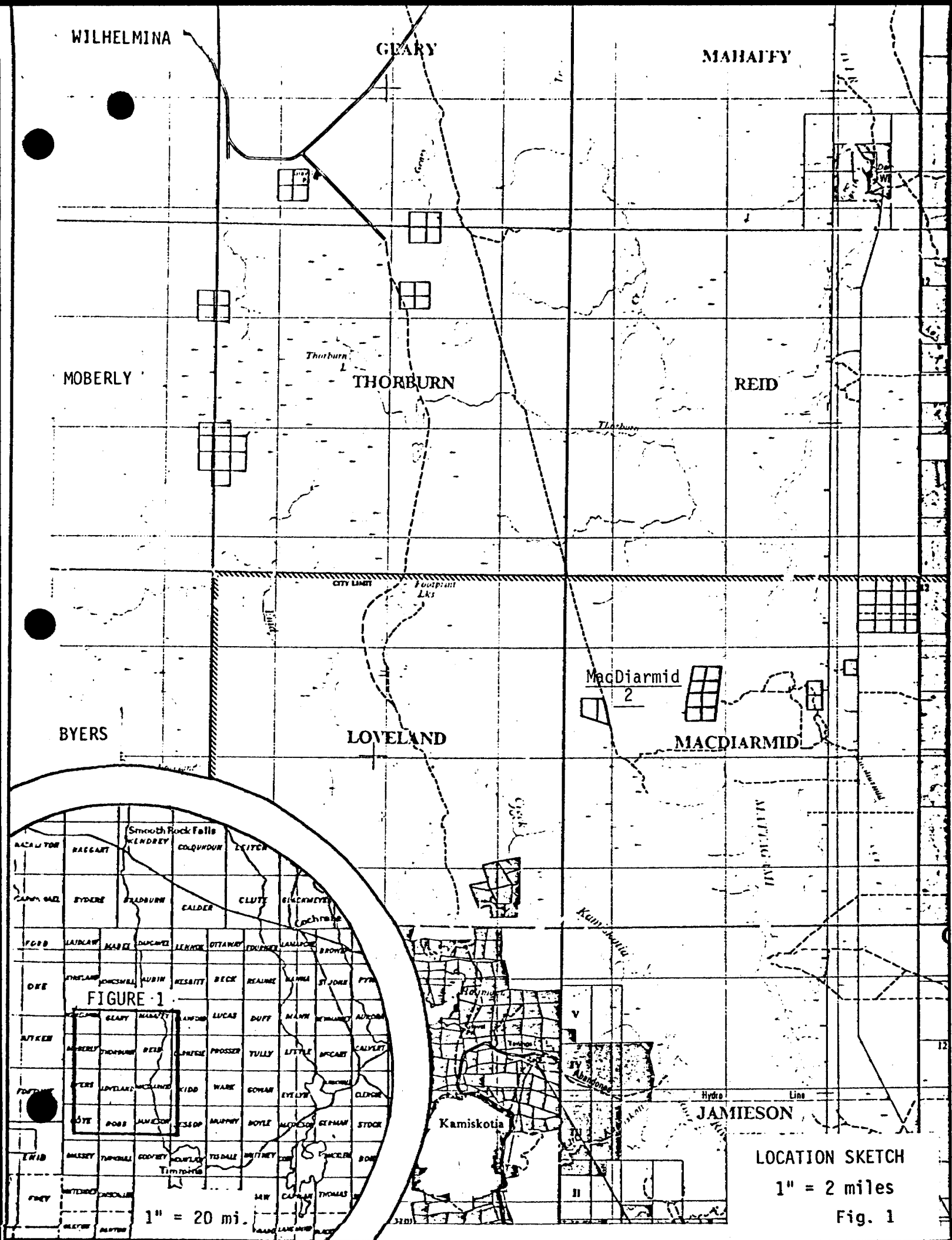
## LOCATION AND ACCESS

The property is located approximately 17 miles northwest of Timmins along the west bank of the Mattagami River in MacDiarmid township (Figure 1).

Summer access is by boat launched in the Mattagami River at Sandy Falls. Winter access is by snowmobile from the Sandy Falls hydro road which extends south to Timmins. Helicopter access is available from Timmins.

## TOPOGRAPHY AND RESOURCES

The west bank of the river forms an abrupt topographic break with numerous narrow creek valleys crossing the property. The flat hills are covered with mixed poplar, spruce and balsam, and the valleys support stunted spruce and alders. The northwest corner of the property is poorly drained and is covered by dense alders and mixed spruce and cedar. No attempts have been made to harvest the timber on the property. Clay and gravel overburden to a depth of 180 feet should be expected.



WILHELMINA

GEARY

MAHAFFY

MOBERLY

THORBURN

REID

BYERS

LOVELAND

MacDiarmid  
2

MACDIARMID

JAMIESON

Kamiskotia

FIGURE 1

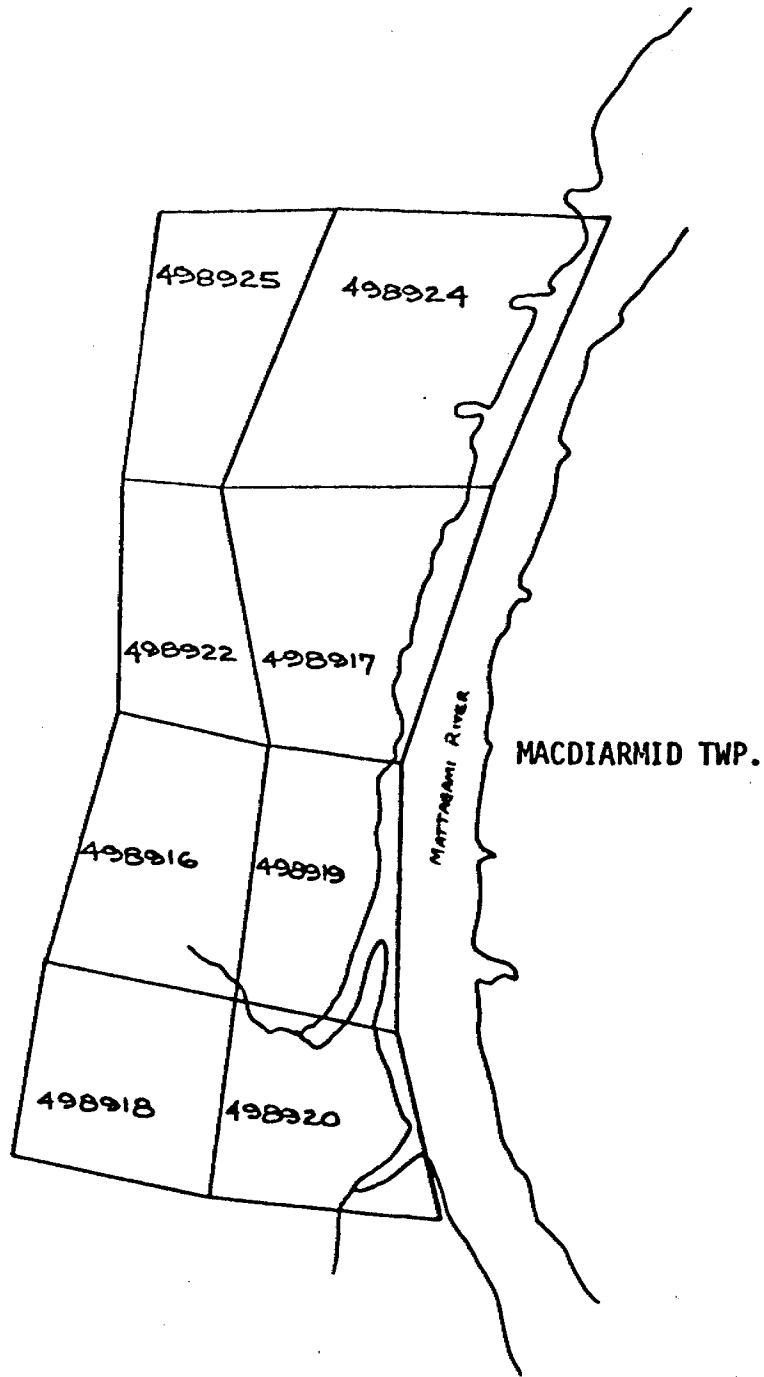
1" = 20 mi.

LOCATION SKETCH

1" = 2 miles

Fig. 1

2 M



16 M

MACDIARMID TWP.

CLAIM MAP  
PROJECT 324-02

MACDIARMID-02  
Macdiarmid Township

Scale: 1" = 1/4 mile

GENERAL GEOLOGY

Three data points are available within the claim group. Gabbro was intersected by Hollinger in the southern end of the group within the weakly conductive A.E.M. zones. An old drill set-up was found on the northern boundary. Drill logs indicate basic volcanics and chloritic schists with minor graphite in the north. An outcrop of dacite tuff was found just south of our northern claim boundary on the river in claim P-498924.

PREVIOUS WORK

Hollinger detected an A.E.M. response similar to ours in their Input Mark V survey in 1970 (Timmins File T-560). Their follow-up included ground geophysics using the Ronka Mark III system with a 300 foot coil separation, and recommendations for detailed EM-17 work. One drill hole was apparently spotted on the best of the Ronka targets and there is no record of the EM-17 survey. The 200 feet of overburden in that drill hole is sufficient to invalidate the results of the entire survey.

Mattagami Lake Mines flew the area using Turair in 1971 (T-1514). A broad zone of weak conductivity at the southwest corner of the claim group and one strong anomaly was located on our claim P-498919 near the river. No further work has been filed for assessment credit.

Chance Mining flew the area in 1964 (T-840) and found two weakly conductive zones coincident with that found by Mattagami Lake Mines at the southwest corner of our group. No follow-up work was filed for assessment credit.

### SURVEY METHODS

An Apex Maxmin II instrument was used with frequencies of 444 and 1777 Hz and coil separation of 600 feet. Detail H.E.M. work at 400 foot cable separation was completed over parts of the grid. Further V.E.M. detail using the Crone large loop instrument with frequencies of 390 and 1800 Hz was completed in the anomalous areas. The H.E.M. surveys were completed by Geoex Limited and the V.E.M. survey by Amax personnel in March 1978.

The magnetometer survey was completed by Geoex Limited personnel in February and March 1978, using a Scintrex MP-2 proton magnetometer.

The surveys were conducted on a picket line grid with 25 meter stations along lines 125 meters apart.

### RESULTS AND DISCUSSIONS

#### Electromagnetic Surveys (see Map 1, 2 and 3; back pocket)

The H.E.M. surveys defined three conductors, two of which have been joined up by the V.E.M. work. The following parameters have been defined for the three conductors:

CONDUCTOR "A" - northwest corner; lines 875N, 1000N and 1125N  
Strike:           Approximately north-south  
Length:           Approximately 300 meters (1,000 feet)  
Width:            Narrow  
Depth:            Approximately 60 meters (200 feet)  
Dip:              Approximately 75<sup>o</sup> easterly  
Conductivity:    Approximately 150 mhos  
Coincident Magnetics:   within a broad magnetic low

CONDUCTOR "B" - central conductor; lines 250N, 375N and 500N

Strike: 010<sup>0</sup>  
Length: Approximately 375 meters (1230 feet)  
Width: Narrow  
Depth: Approximately 85 meters (280 feet)  
Dip: Vertical  
Conductivity: 150 mhos  
Coincident Magnetics: within and parallel to a large mag high trend

CONDUCTOR "C" - southern conductor; lines 375S, 250S and 125S

Strike: 010<sup>0</sup>  
Length: Approximately 250 meters (820 feet)  
Width: Narrow  
Depth: Approximately 45 meters (150 feet)  
Dip: Vertical  
Conductivity: 20 mhos  
Coincident Magnetics: same mag relationship as conductor "B"

The V.E.M. survey joined conductors "B" and "C" and extended the conductor north from conductor "B". The V.E.M. conductor axis is coincident with the H.E.M. axes.

Magnetic Survey (see Map 4; back pocket)

The magnetometer survey outlined an elongated mag high which extends north-south with the highest magnetics in the southeast corner. Maximum relief is approximately 1500 gammas. The mag high branches into two narrow zones at line 500N which diverges from the main north trend.

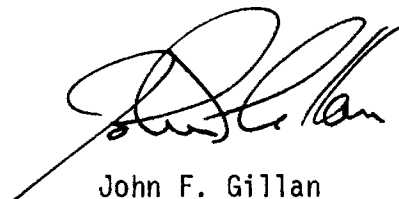
The altered ultramafic flow and serpentized peridotite rock assemblage drilled by Hollinger lies within a magnetically low area.



CONCLUSIONS AND RECOMMENDATIONS

1. Two zones of conductivity have been defined by electromagnetic surveys.
2. The north zone (conductor "A") was drilled and found to be due to graphite within intermediate volcanic rocks. Minor amounts of chalcopyrite and pyrite were noted.
3. The south zone (conductors "B" and "C") is parallel to the magnetic trend and represents an untested conductor in a geologically favourable environment.

It is recommended that conductor "B" should be drilled as soon as logistically feasible.



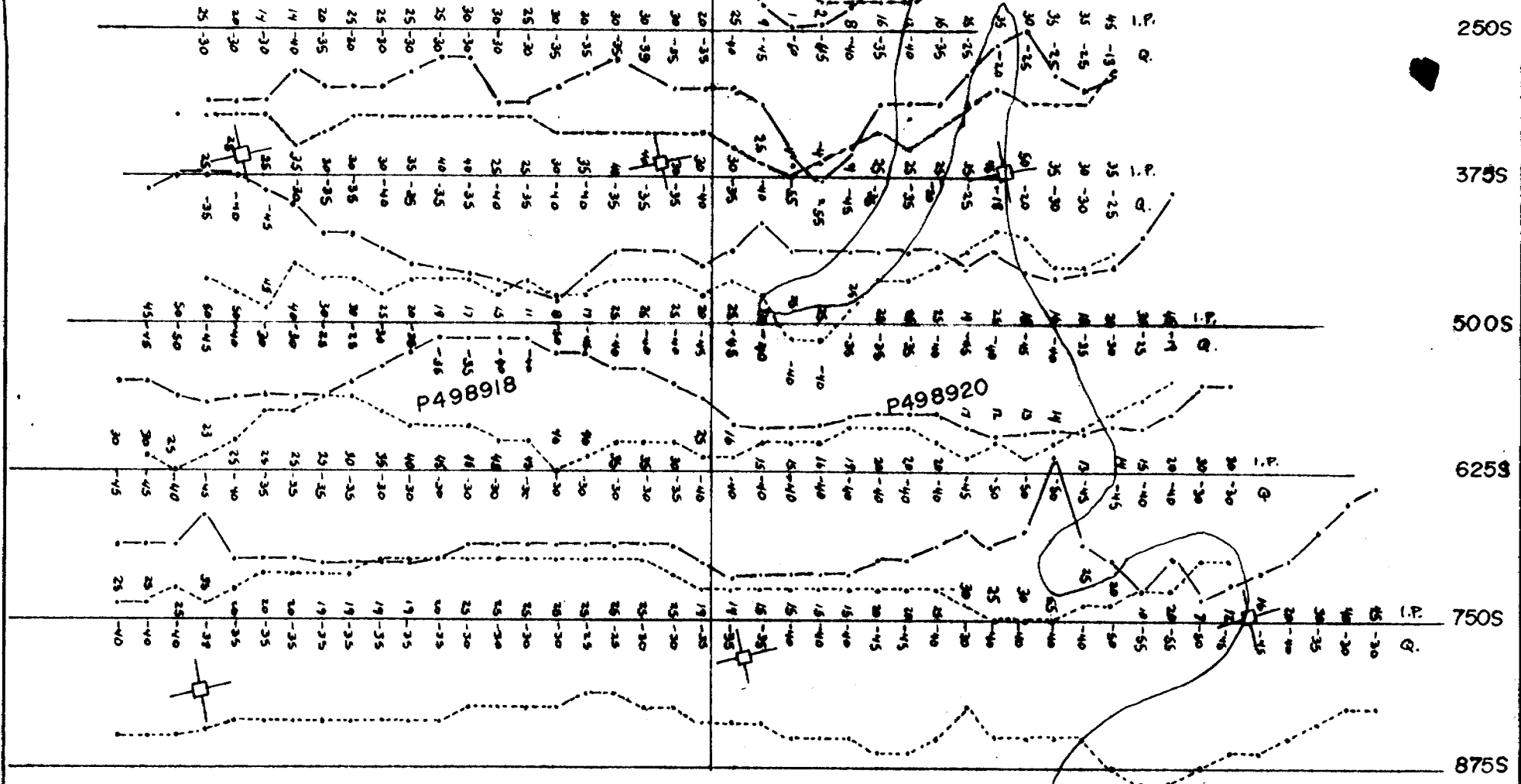
John F. Gillan  
Geologist



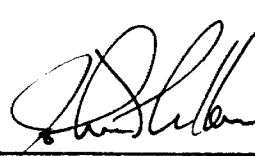
APPENDIX A

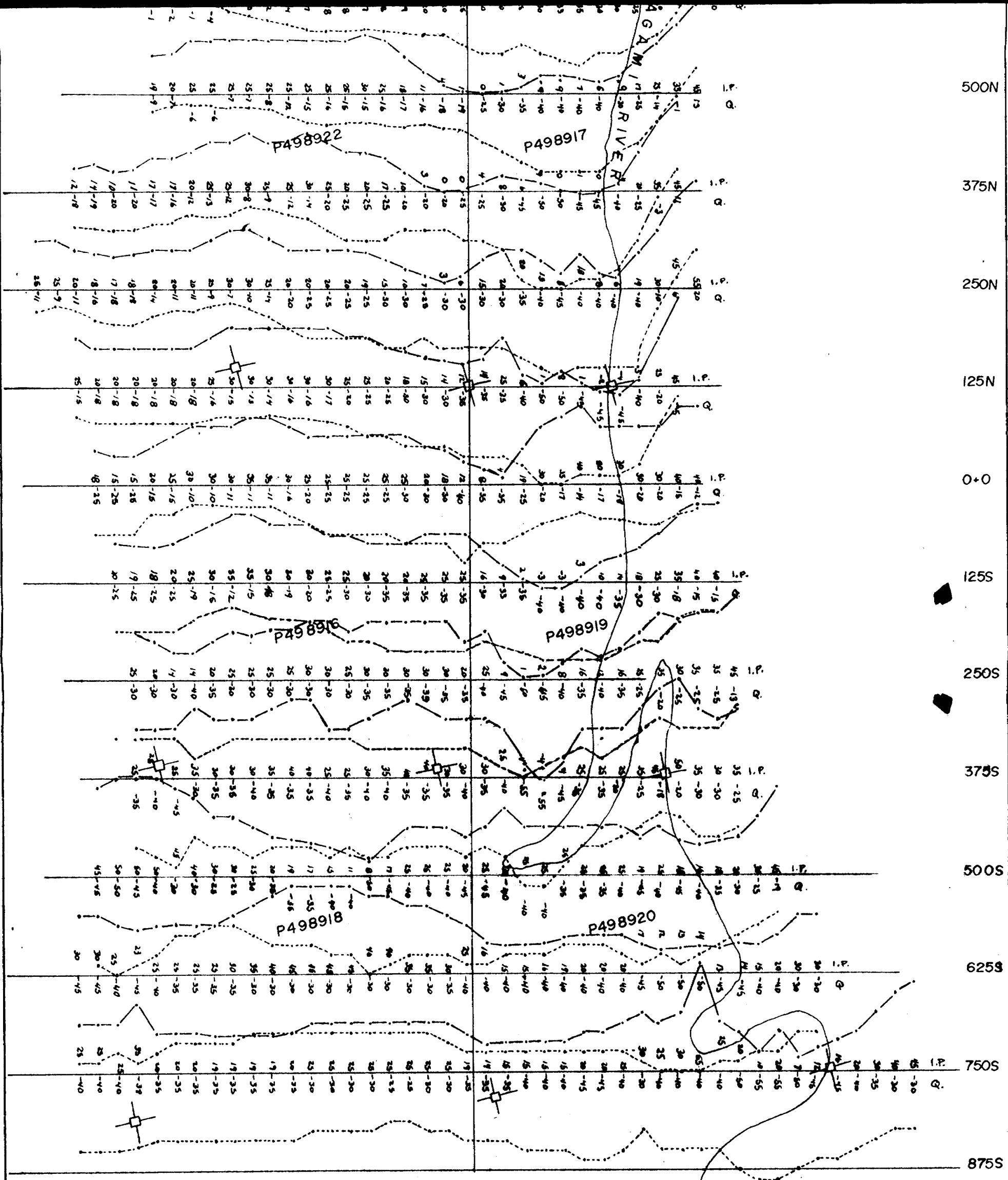
SCHEDULE OF CLAIMS

PROJECT 824-02

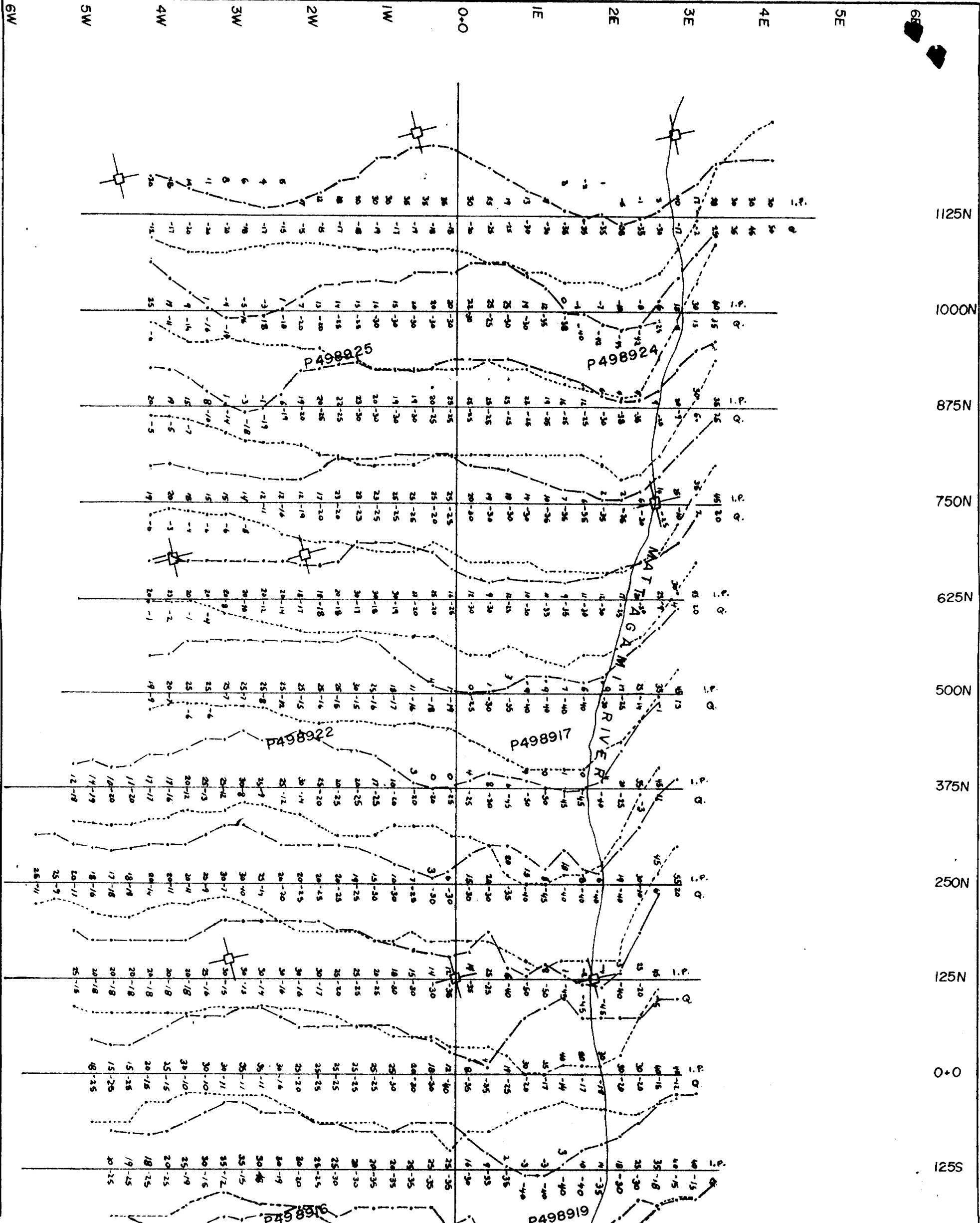
<u>Claim Group</u>	<u>Township</u>	<u>Number</u>	<u>Claim Numbers</u>	<u>Recording Date</u>
824-02	MacDiarmid	8	P-498916	February 7, 1977
			P-498917	February 7, 1977
			P-498918	February 7, 1977
			P-498919	February 7, 1977
			P-498920	February 7, 1977
			P-498922	February 7, 1977
			P-498924	February 7, 1977
			P-498925	February 7, 1977



<b>AMAX MINERALS EXPLORATION</b>		
<b>ELECTROMAGNETIC SURVEY</b>		
PROPERTY:	MacDiarmid -2	
PROJECT:	824-02	
LOCATION:	MacDiarmid Twp.	N.T.S. 42 A/II
INSTRUMENT:	Maxmin II H.E.M.	
CABLE LENGTH:	600'	FREQUENCY: 1777 Hz.
PROFILE SCALE:	1cm = 20%	
MAP SCALE:	1cm = 50m	
IN PHASE:	—————	
QUADRATURE:	-----	
HELICOPTER PAD:		
CLAIM POST:		
		
To Accompany: Report on H.E.M., V.E.M. & Mag Surveys By: J. F. Gillan		
Drawn By: G.R. Smith	Date: April, 1978	



500N  
375N  
250N  
125N  
0+0  
125S  
250S  
375S  
500S  
625S  
750S  
875S



1125N  
1000N  
875N  
750N  
625N  
500N  
375N  
250N  
125N  
0+0  
125S

6E  
5E  
4E  
3E  
2E  
1E  
0+0  
1W  
2W  
3W  
4W  
5W  
6W

P498925

P498924

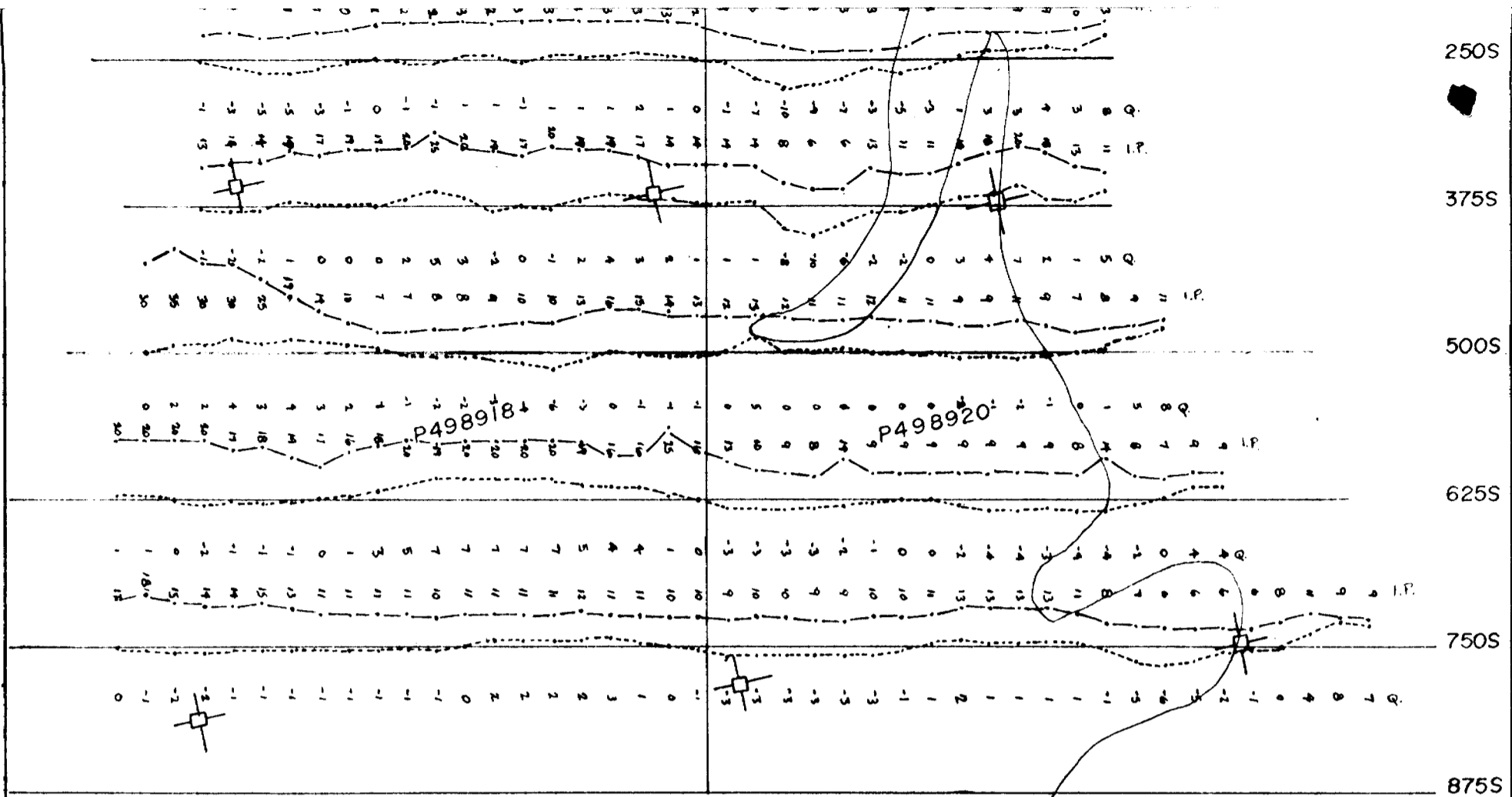
P498922

P498917

P498916

P498919

MATT GA RIVER



<b>AMAX MINERALS EXPLORATION</b>		
<b>ELECTROMAGNETIC SURVEY</b>		
PROPERTY:	MacDiarmid - 2	
PROJECT:	824-02	
LOCATION:	MacDiarmid Twp.	N.T.S.: 42 A/II
INSTRUMENT:	Maxmin II H.E.M.	
CABLE LENGTH:	600'	FREQUENCY: 444 Hz.
PROFILE SCALE:	1cm = 20%	
MAP SCALE:	1cm = 50m	
IN PHASE:	—————	
QUADRATURE:	- - - - -	
HELICOPTER PAD:	(H)	
CLAIM POST:	⊠	
To Accompany: Report on H.E.M., V.E.M. & Mag Surveys		
By: J. F. Gillan		
Drawn By: G.R. Smith	Date: April, 1978	

625N  
500N  
375N  
250N  
125N  
0+0  
125S  
250S  
375S  
500S  
625S  
750S  
875S

GAGAN  
RIVER

P498922

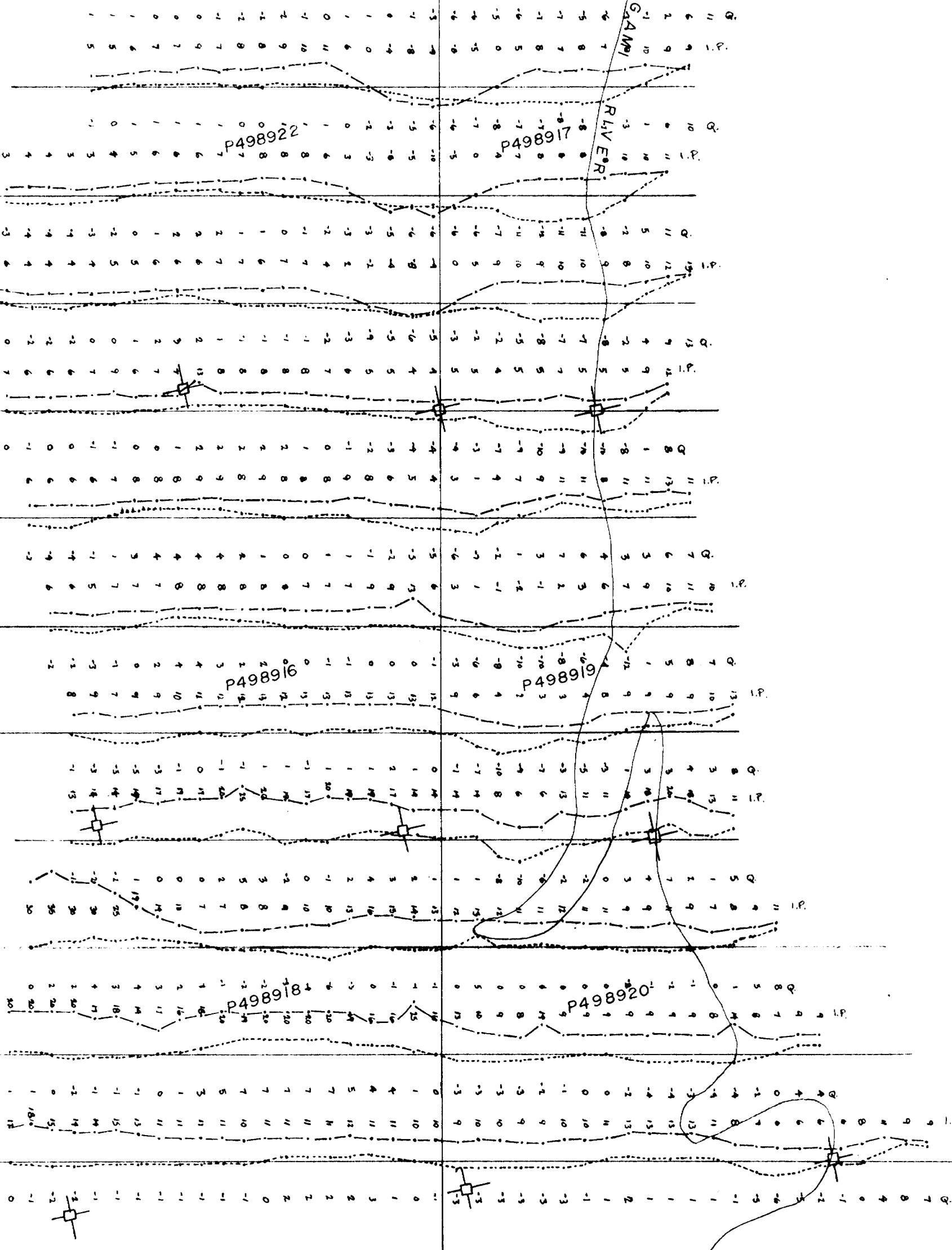
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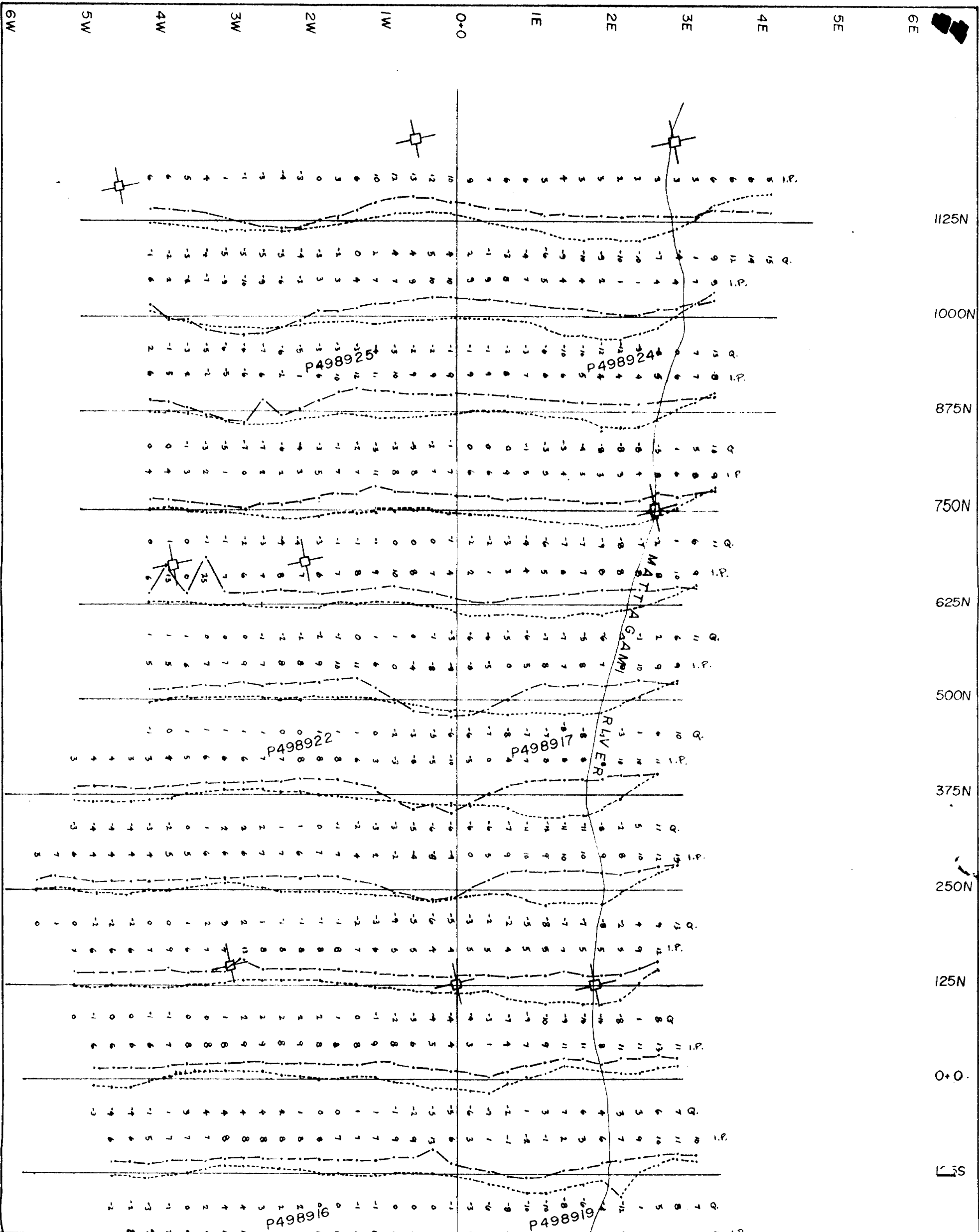
P498916

P498919

P498918

P498920





6W

5W

4W

3W

2W

1W

0+0

1E

2E

3E

4E

5E

6E

1125N

1000N

875N

750N

625N

500N

375N

250N

125N

0+0

125S

P498925

P498924

P498922

P498917

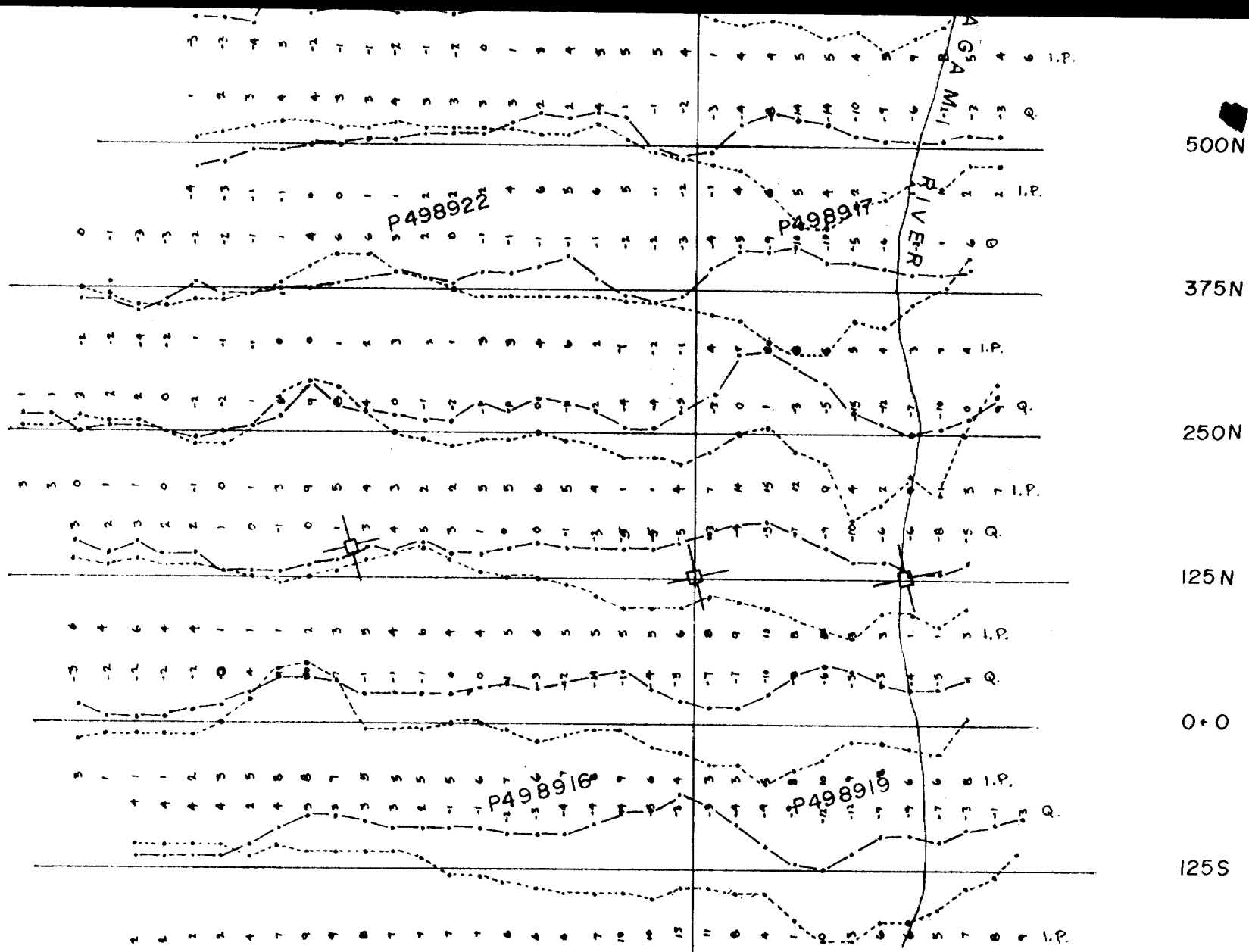
P498919

P498916

MATIAGAMA RIVER



RIVER





**AMAX MINERALS EXPLORATION**

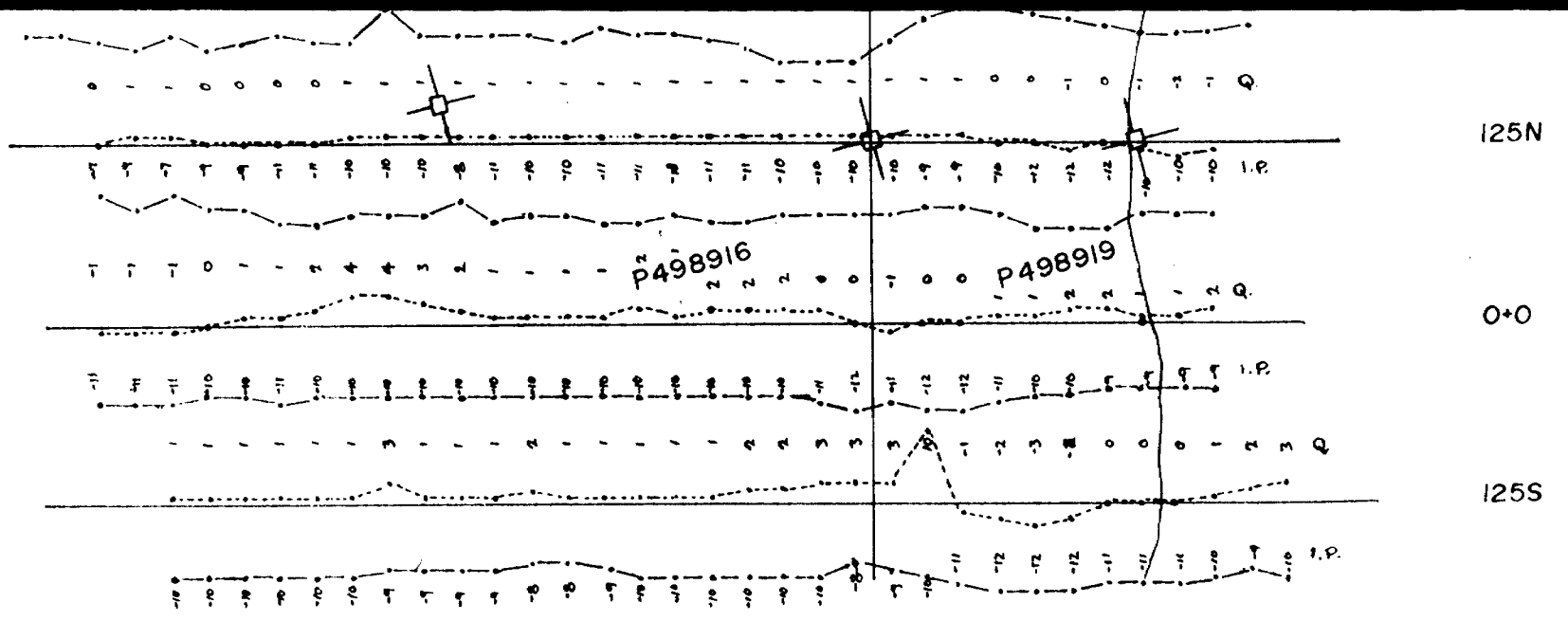
**DETAIL ELECTROMAGNETIC SURVEY**

PROPERTY: MacDiarmid -2  
 PROJECT: 824-02  
 LOCATION: MacDiarmid Twp N.T.S. 42 A/11  
 INSTRUMENT: Maxmin II H.E.M. FREQUENCY: 444Hz.  
 CABLE LENGTH: 400' 1777 Hz.  
 PROFILE SCALE: 1cm = 10%  
 MAP SCALE: 1cm = 50m.  
 IN PHASE: \_\_\_\_\_  
 QUADRATURE: \_\_\_\_\_  
 HELICOPTER PAD:   
 CLAIM POST: 

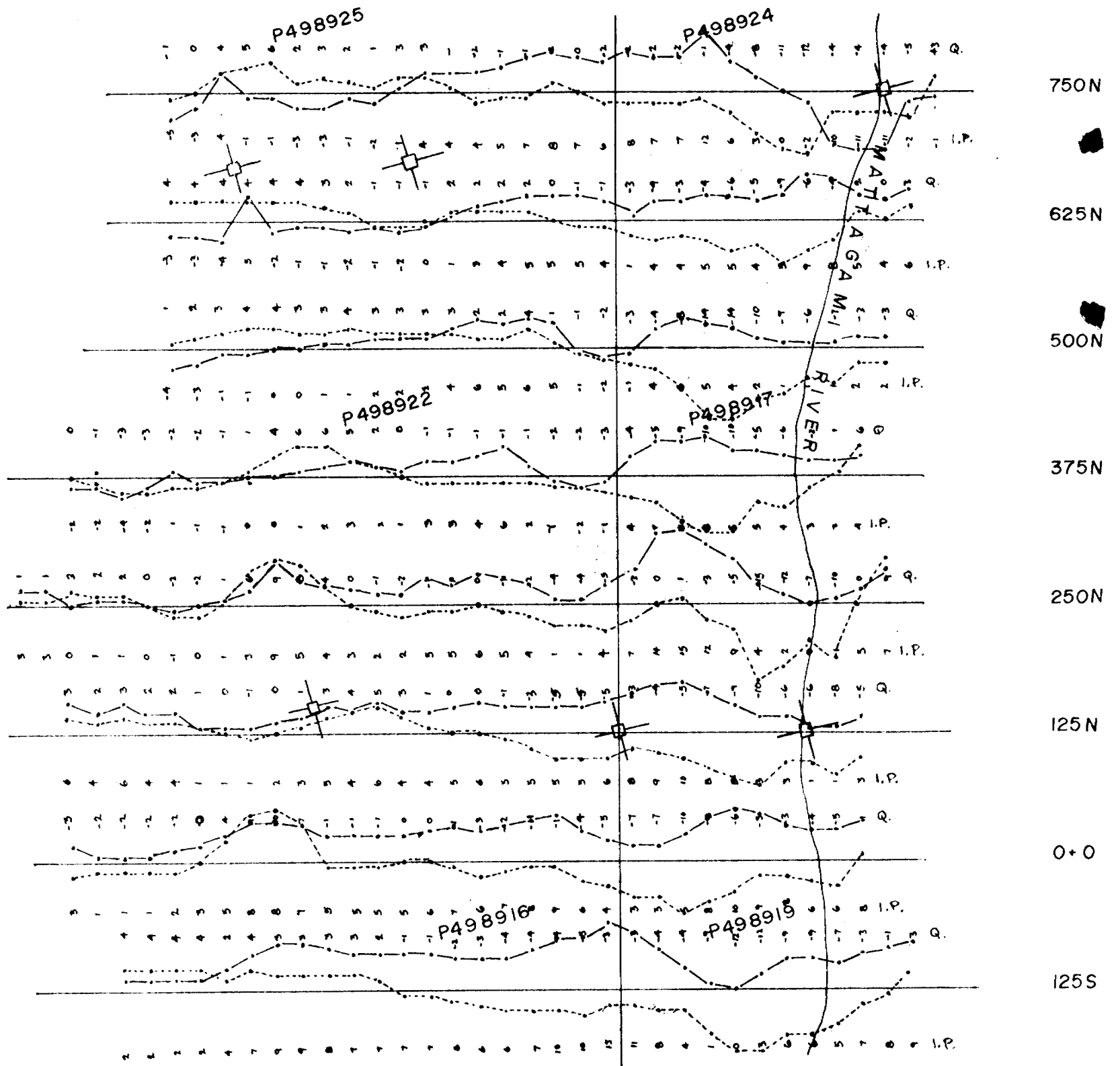


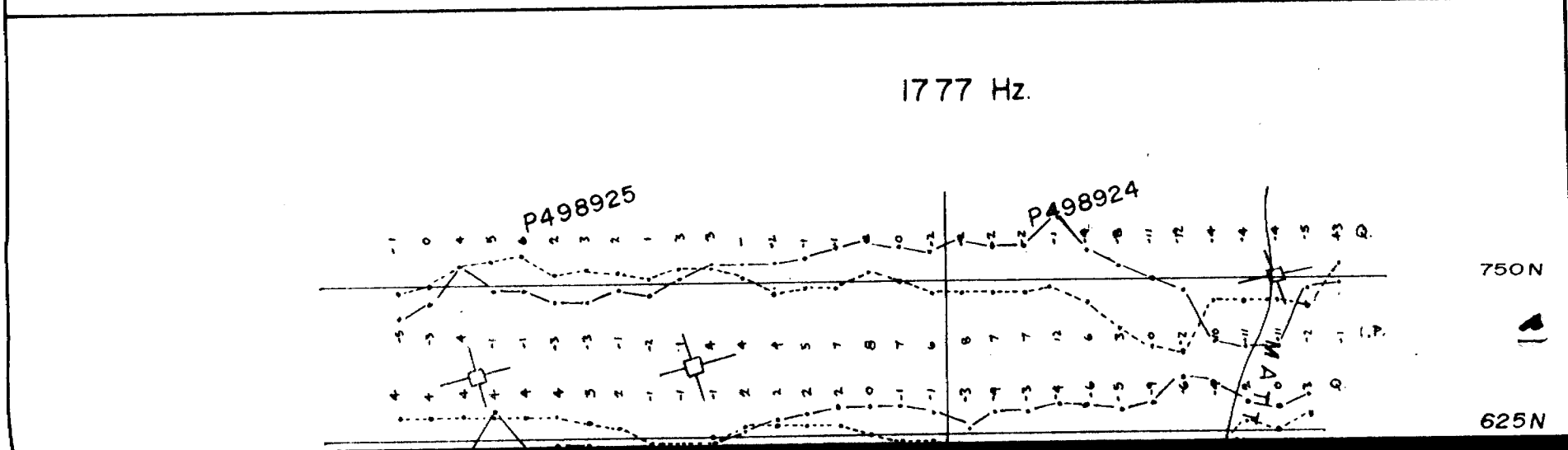
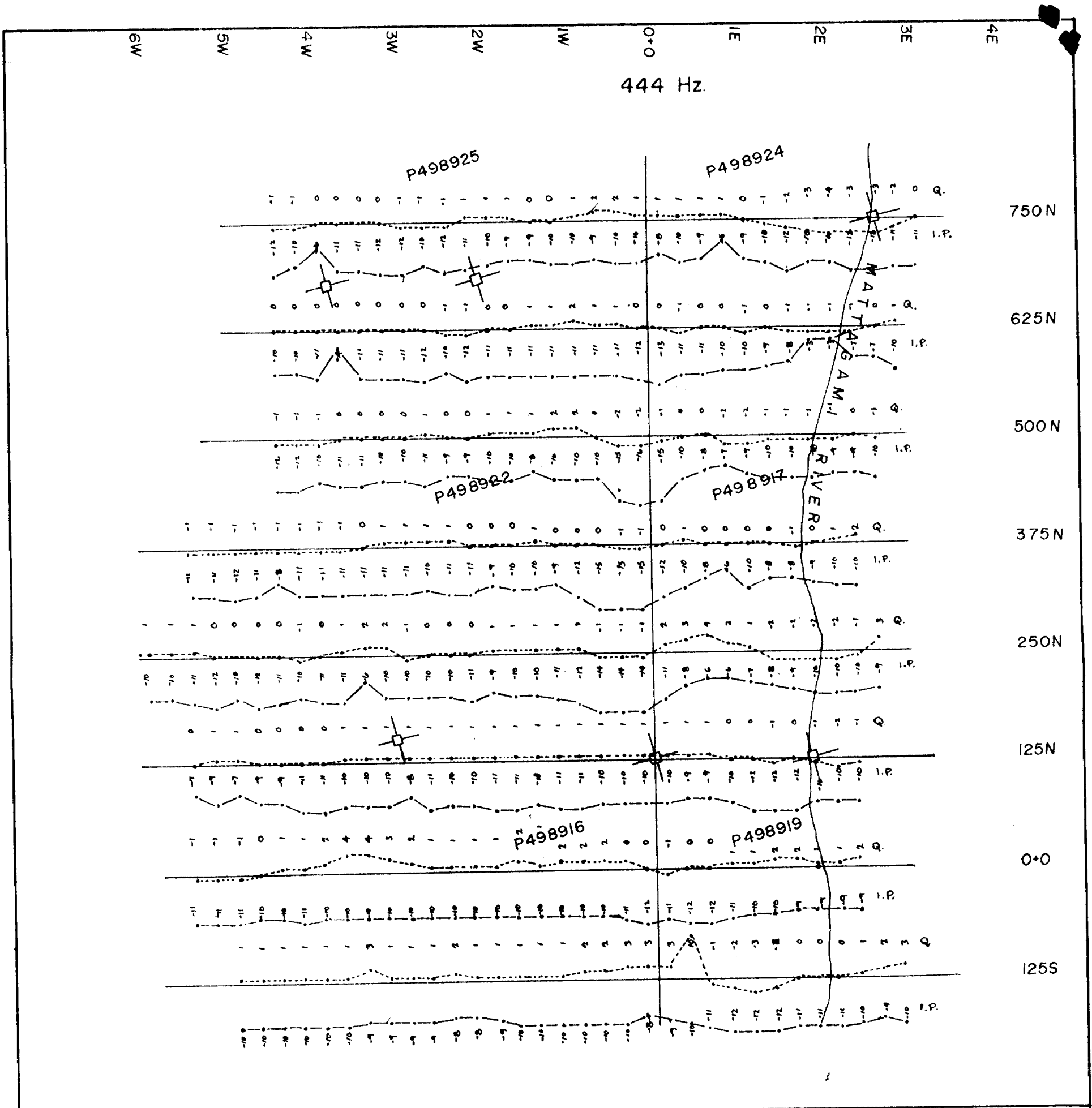
To Accompany: Report on H.E.M., V.E.M. & Mag Surveys  
By: J. F. Gillan

Drawn By G.R. Smith Date: April, 1978



1777 Hz.







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(s) Electromagnetic & Magnetometer  
Township or Area MacDiarmid Township  
Claim Holder(s) Amax Potash Limited  
  
Survey Company Geonex Limited  
Author of Report John F. Gillan  
Address of Author 255 Algonquin Blvd. West, Timmins  
Covering Dates of Survey Linecutting - October 25-30, 1977  
Surveys: February 22-25, 1978  
(linecutting to office)  
Kilometers  
Total Miles of Line Cut 17 Km

**MINING CLAIMS TRAVERSED**  
List numerically

(prefix)	(number)
P	498916
P	498917
P	498918
P	498919
P	498920
P	498922
P	498924
P	498925

If space insufficient, attach list

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>	DAYS per claim
Geophysical	
-Electromagnetic	<u>40</u>
-Magnetometer	<u>20</u>
-Radiometric	
-Other	
Geological	
Geochemical	

ENTER 40 days (includes line cutting) for first survey.  
ENTER 20 days for each additional survey using same grid.

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

Magnetometer Electromagnetic Radiometric  
(enter days per claim)

DATE: May 15, 1978 SIGNATURE: [Signature]  
Author of Report or Agent

L.I.D.

Res. Geol. 2.2677 J on Qualifications 100 file

Previous Surveys

File No.	Type	Date	Claim Holder

TOTAL CLAIMS 8

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations EM 505 Mag 707 Number of Readings EM 2020 Mag 707
Station interval 25 meters Line spacing 125 meters
Profile scale 1 cm = 20%
Contour interval 100 gammas

MAGNETIC

Instrument Scintrex MP-2 Proton Magnetometer
Accuracy -- Scale constant 1 gamma
Diurnal correction method Base station check in
Base Station check-in interval (hours) 1 hour
Base Station location and value Base line at 0+00 : 59994 gammas

ELECTROMAGNETIC

Instrument Apex Maxmin II
Coil configuration Horizontal Loop Coplanar
Coil separation 600 feet ; detail at 400 feet
Accuracy 1% per scale division
Method: [ ] Fixed transmitter [ ] Shoot back [x] In line [ ] Parallel line
Frequency 444 and 1777 Hz (specify V.L.F. station)
Parameters measured In phase + Quadrature

GRAVITY

Instrument
Scale constant
Corrections made
Base station value and location
Elevation accuracy

INDUCED POLARIZATION RESISTIVITY

Instrument
Method [ ] Time Domain [ ] Frequency Domain
Parameters -- On time Frequency
-- Off time Range
-- Delay time
-- Integration time
Power
Electrode array
Electrode spacing
Type of electrode

REID TWP. - M.575

THE TOWNSHIP  
2.2693 OF  
**MACDIARMID**

DISTRICT OF  
 COCHRANE

PORCUPINE  
 MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Lac.
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	—

NOTES

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

Flooding rights to areas along Mattagami River reserved to H.E.P.C. - L.O. 7085.

This township lies within the Municipality of CITY of TIMMINS.

DATE OF ISSUE  
 MAY 31 1978  
 SURVEYS AND MAPPING  
 BRANCH

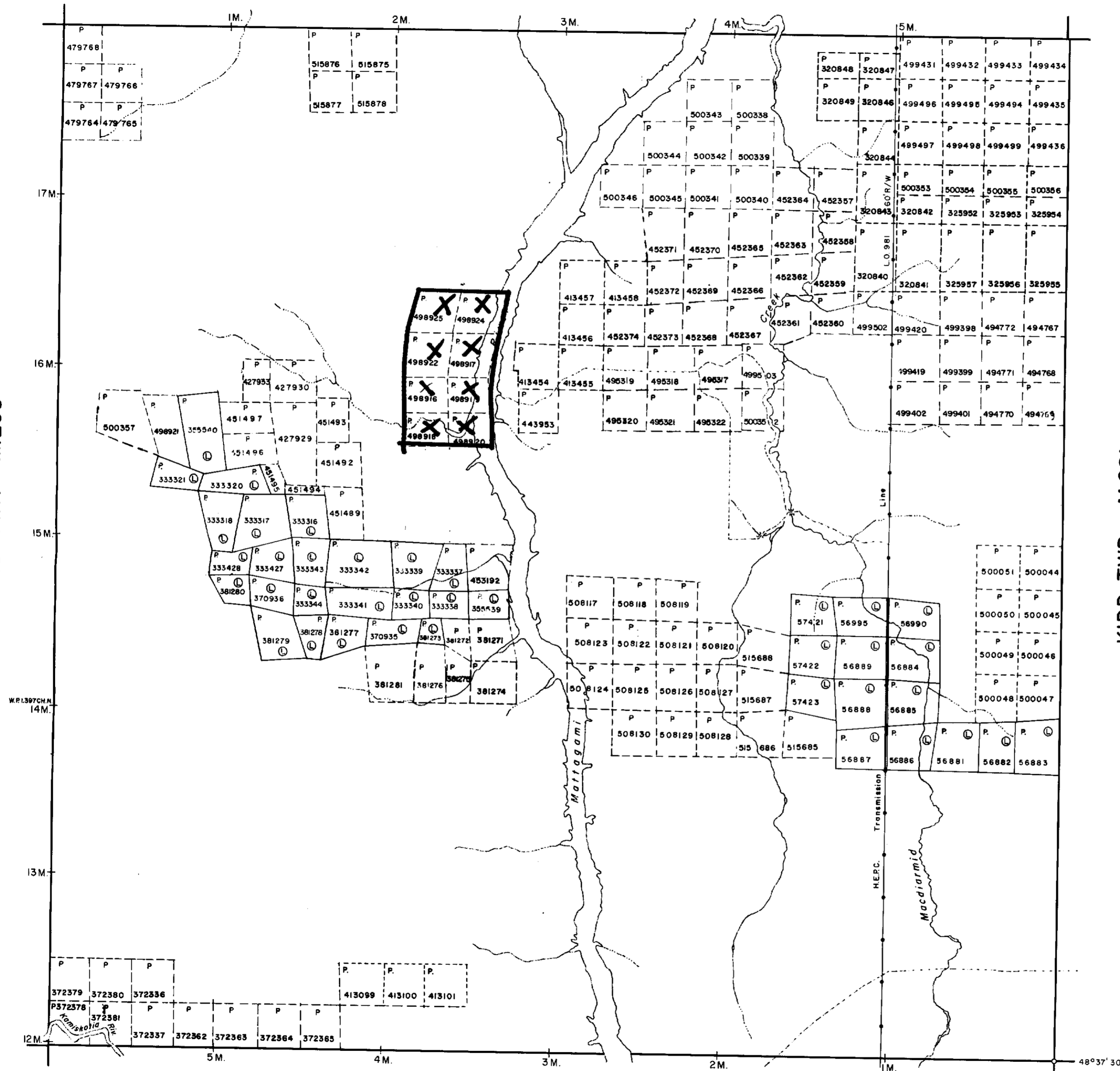
PLAN NO. **M.294**

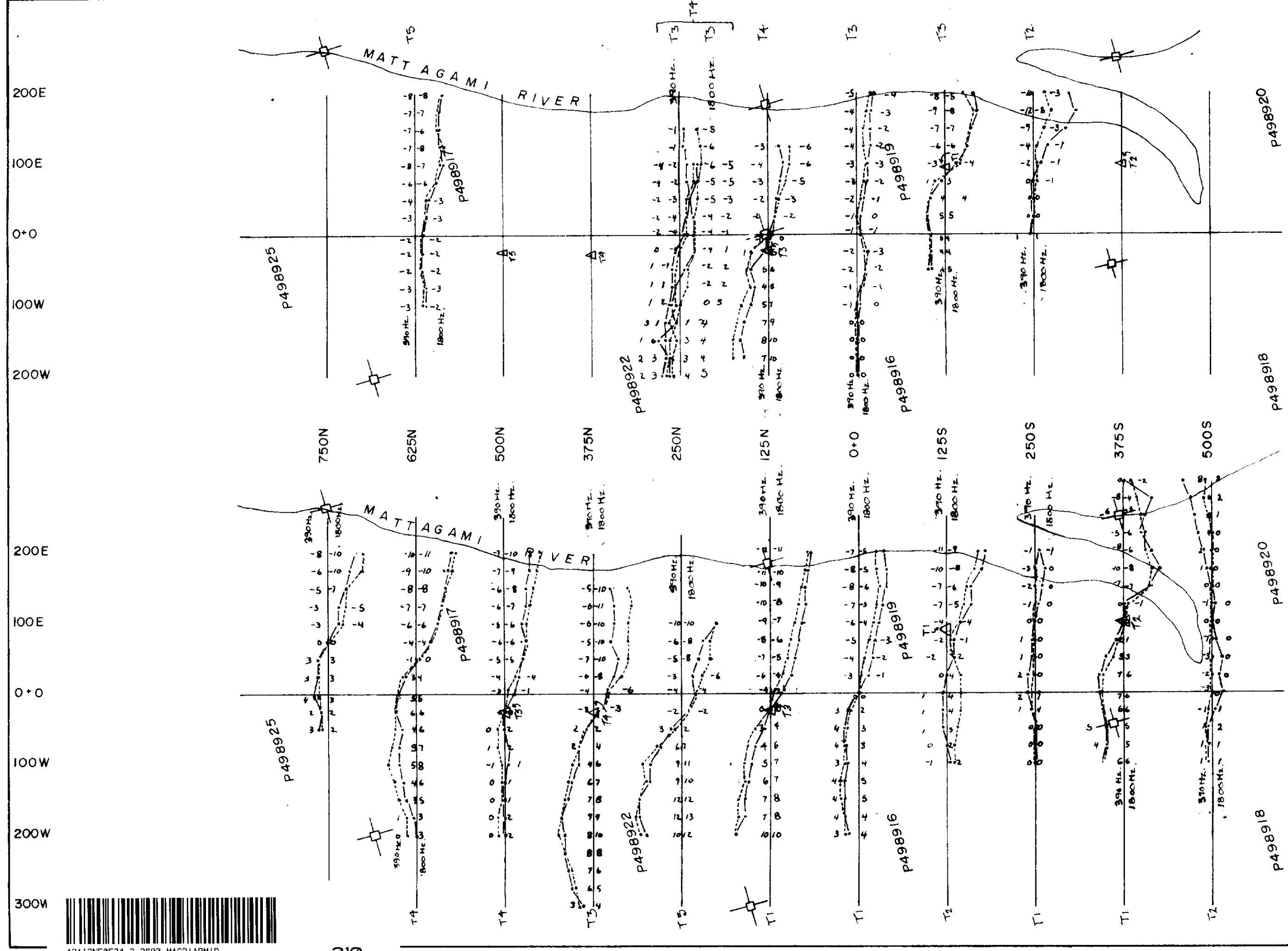
ONTARIO  
 MINISTRY OF NATURAL RESOURCES  
 SURVEYS AND MAPPING BRANCH

LOVELAND TWP. - M.293

KIDD TWP. - M.291

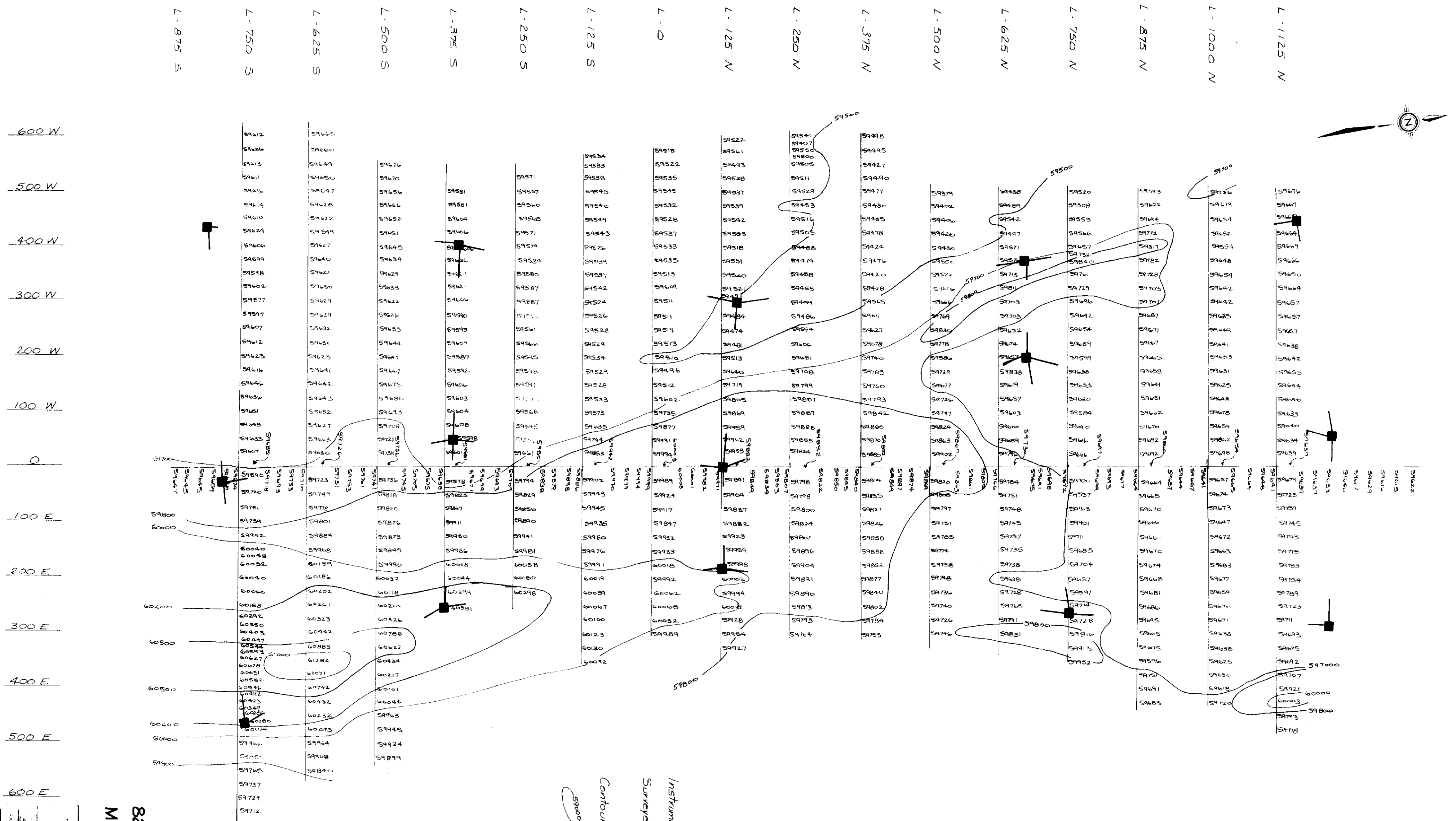
JAMIESON TWP. - M.288





<b>AMAX MINERALS EXPLORATION</b>	
ELECTROMAGNETIC SURVEY	
PROPERTY:	MacDiarmid -2
PROJECT:	824-02
LOCATION:	MacDiarmid Twp. N.T.S. 42 A /11
INSTRUMENT:	Crone Large Loop V.E.M.
CABLE LENGTH:	FREQUENCY: 390 Hz. 1800 Hz.
PROFILE SCALE:	1cm = 10%
MAP SCALE:	1cm = 50m
LOW FREQ:	390 Hz.
HIGH FREQ:	1800 Hz.
HELICOPTER PAD:	(H)
CLAIM POST:	⊕
TRANSMITTER LOCATION:	△ T1
To Accompany: Report on H.E.M., V.E.M. & Mag Surveys	
By: J. F. Gillan	
Drawn By: G.R. Smith	Date: April, 1978

*[Handwritten Signature]*



**LEGEND**

Instrument: Sintex MP-2  
 Surveyed by: R.G. & D.B.  
 March, 1978  
 Contour Interval: 100m  
 Magnetic Contour

824-02  
 MACDIARMID-2



42A12NE0524 2.2693 MACDIARMID

MAGNETOMETER  
 NORTH TIMMINS AREA  
 MacDiarmid Twp., Ont.  
 S.G. 42-A-11  
 Len: 50m  
 May 78  
 April 78