2.2586

010

GEOLOGICAL REPORT

ON

TRENCHING PROGRAMME

CLEAVER GROUP-1

PROJECT 705

Cleaver Township, Larder Lake Mining Division

NTS: 42-A-3, 2

AMAX MINERALS EXPLORATION
Timmins, Ontario

Timmins, Ontario
January 1978

R. J. Roussain

SUMMARY

On September 30, 1977, a programme of mechanized trenching was completed on the Amax 705-01 claim group in Cleaver township.

A previously defined conductor was relocated by Radem VLF traverses and exposed in three locations 400 feet apart.

Massive to heavily disseminated sulphide mineralization within siliceous tuffaceous sediments were exposed and mapped as the cause of the electromagnetic anomaly.

INTRODUCTION

The claim group was acquired on April 7, 1975 and has since been covered with a magnetometer, vertical loop and horizontal loop electromagnetic surveys.

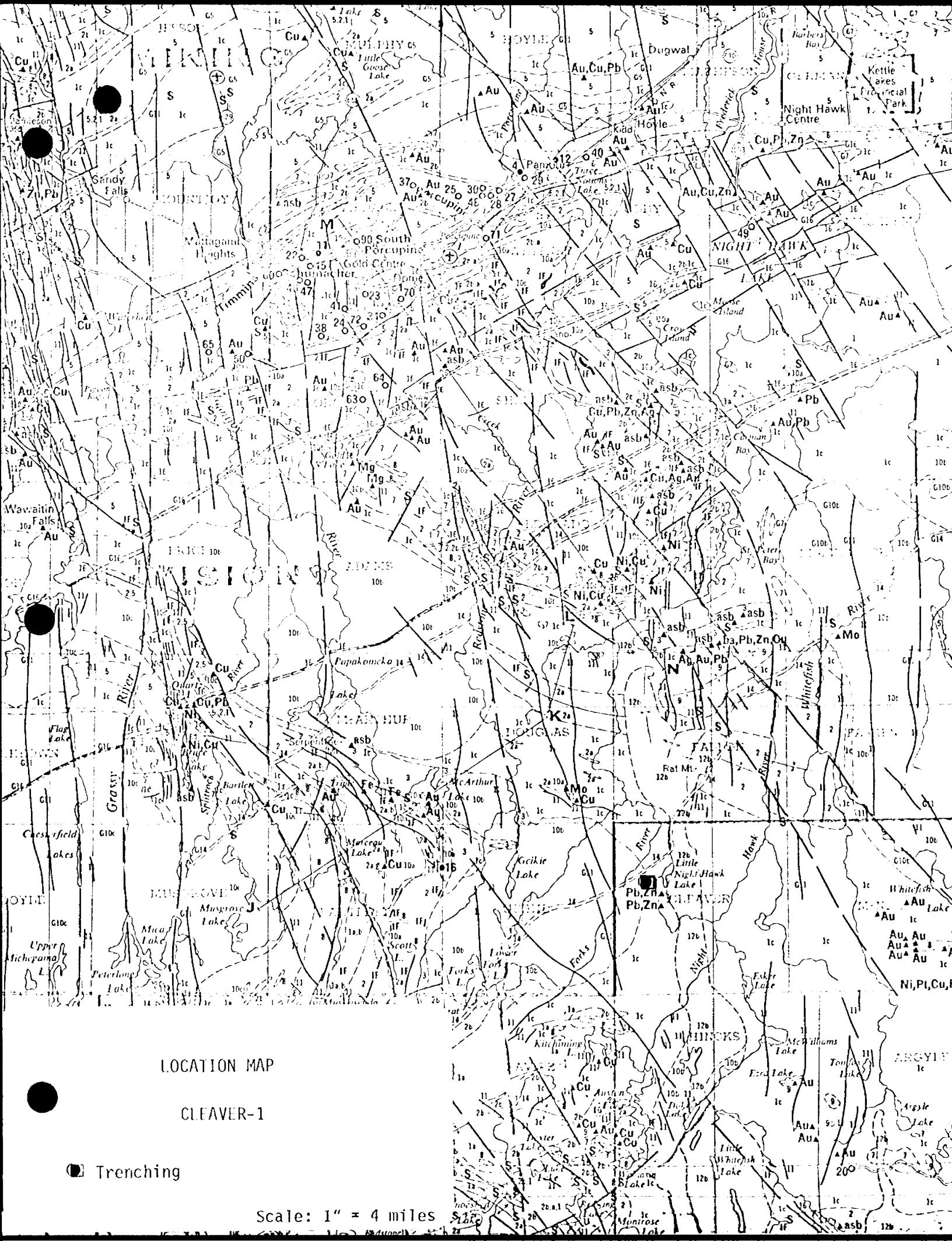
This report describes the procedure and results of mapping rocks exposed by a mechanized trenching programme completed in September 1977, on the below listed mining claims.

L-429441 L-429442

LOCATION AND ACCESS

The claim group is located in Cleaver township approximately 25 miles south east of Timmins. Access to the claim group is much improved since 1975.

Logging operations extending south through Fallon township provide an excellent winter road to Little Nighthawk Lake located north of the claim group. The roads are built and maintained by G. K. Stringer (Logging Contractor) of South Porcupine.


LOCATION MAP
CLEAVER-1
Trenching
Scale: 1" = 4 miles

TOPOGRAPHY AND RESOURCES

Local relief is rugged and relatively well drained with an abundance of outcrop.

The eastern claim is covered by a narrow marshy lake which drains north into a larger unnamed lake lying south of the claim group.

The water covered claim dictates that geophysical surveys be carried out during the winter months.

Vegetation consists of poplar and birch on the high ground with thick alder and cedar near the lake edges.

PREVIOUS WORK

There have been many previous land holders in the area as made evident by the large number of old claim posts. The most recent land holder, prior to Amax Exploration, was Noranda. That Company held a large group of claims in the early 1970's.

The present Amax claims would be in the central part of the former Noranda holdings.

Noranda carried out magnetometer and vertical loop electromagnetic surveys over the complete property.

There is no record or evidence of any previous diamond drilling on the Amax claims.

PRESENT SURVEY

The trenching programme was completed by contractor A. Boudreau of Timmins on September 30, 1977.

Before starting the trenching operations the conductor was relocated with the use of a Radem traverse so as to locate the trench in the most favourable location.

A Model-S Bombardier equipped with a hydraulic back-hoe was used to dig down through the overburden cover and construct a trench 3 to 4 feet wide at right angles to the conductor axis. After exposing the bedrock surface, the bucket teeth are used to fracture and pry out samples of the bedrock. Samples are then taken of the conductive material after checking with an ohmmeter. A map of the trench at a scale of 1 inch equals 10 feet is then prepared.

SURVEY RESULTS

Locations of each of the three trenches completed are illustrated on the accompanying property maps.

In addition, detailed sketches of the three trenches are attached.

Trench 705-01-1
Claim L-429441
Location L4N; 16+00W

Target - Coincident magnetic, V.E.M., H.E.M. and Radem conductor

A sulphide rich horizon within tuffaceous sediments was exposed over a width of 10 feet. Sulphides consist of > 20% combined Po and Py as bands and stringers. The zone strikes at Az 145^{o} and dips at -80^{o} north.

Trench 705-01-2
Claim L-429441
Location L0; 15+10W

Target - Coincident magnetic, V.E.M., H.E.M. and Radem conductor

A 15 foot wide zone of Po, Py stringers in an altered felsic volcanic was exposed, flanked by siliceous tuffaceous sediments on the foot and hanging walls. A lattice work of narrow sulphide stringers accompanied by abundant quartz and carbonate mineralization constitutes the conductive unit.
A strong fault-shear zone cuts through the sulphide zone at Az 176°. The sulphide unit strikes at Az 133° and dips -75° north.

Trench 705-01-3
Claim L-429441
Location L8N; 17+00W

Target - Coincident magnetic and radem feature with weak V.E.M. and H.E.M. responses

The bedrock was difficult to reach and was found at the extreme range of the backhoe at 9 to 10 feet.

A 2 foot wide gossan in a sheared basic tuff was exposed on the bedrock surface as soft red mud within vertical broken plates of the tuff. The gossan was tested with an ohmmeter and was proven conductive. The zone was making abundant water and was quickly flooded, and the walls began to cave. Strike of the conductor was Az 155° and dip -70° south.
A small fault zone striking Az 88° has caused shearing with the rocks exposed.

CONCLUSIONS

The trenching programme was successful in that the conductor was exposed and the nature of the causitive unit identified and sampled.

Assay results reveal that the sulphides sampled in Trench 705-01-02 carry anomalous copper and zinc values, copper up to 240 ppm and zinc up to 1350 ppm.

Due to the difficulty of obtaining a sample on the bare bedrock surface without blasting and coupled with the anomalous metal content of the sulphides, diamond drilling or additional trenching with balsting may be warranted as a means of obtaining the best possible sample of the sulphides beneath the zone of surface oxidation.

R. J. Roussain

I, Randall J. Roussain, residing at 1221 Government Road, South Porcupine, Ontario, employed as a Geological Technician by Amax Minerals Exploration, do hereby certify that:

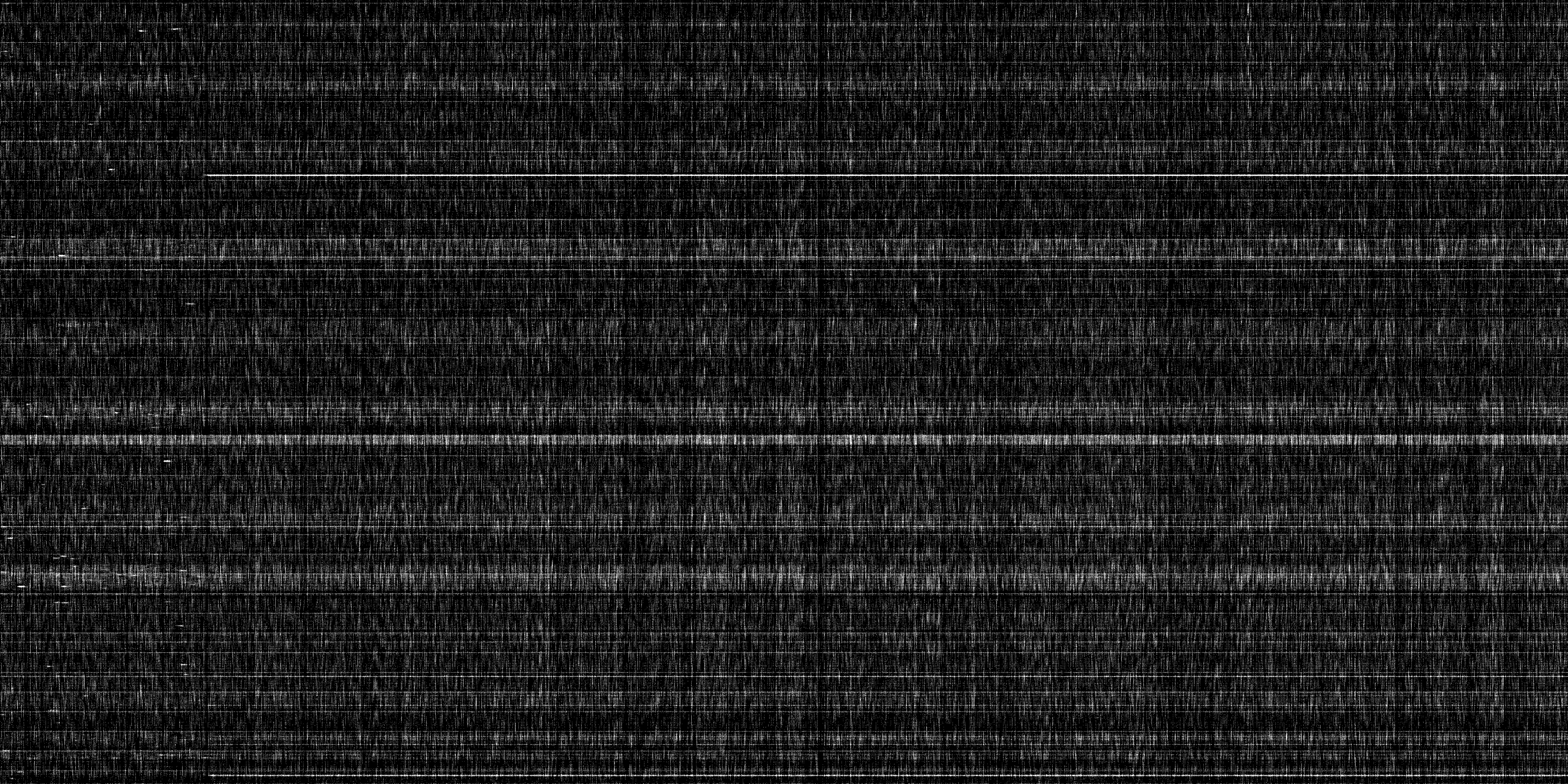
I have completed a two year course at Cambrian College in Sault Ste. Marie, Ontario, as a geology technician and have been employed in all phases of mining exploration for ten years.

I was personally present when the surveys were completed.

R.J. Roussain

.....

Randall J. Roussain

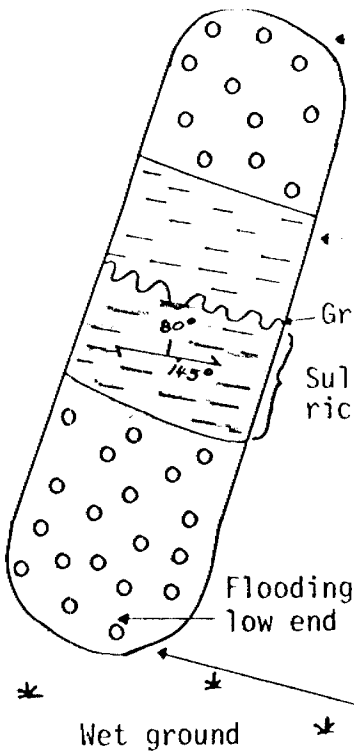


705-01-1

Trench completed on Sept. 30, 1977 by A. Boudreau using a backhoe on a muskeg.
Overburden sandy clay
Trench is 5-6' deep with water flooding lower end.

L-4 N (045°)

16 W



Sandy clay 5' deep

Siliceous tuffaceous gray sediments fine grained, banded, with distinct bedding, generally hard

Gradational contact

Sulphide rich zone

Sulphides appear as thin bands and stringers of tuff laminae V_8-¼" in width, 20% Py, Po, tuff laminae appear as alternate light and dark bands, graphite appears as thin discontinuous lenses up to ¼" long.

Flooding on low end

Bedrock surface is rusted and broken as plates along bedding planes.

Assay sample #B-4373, 4374, 4375, 4382, 4383, 4384

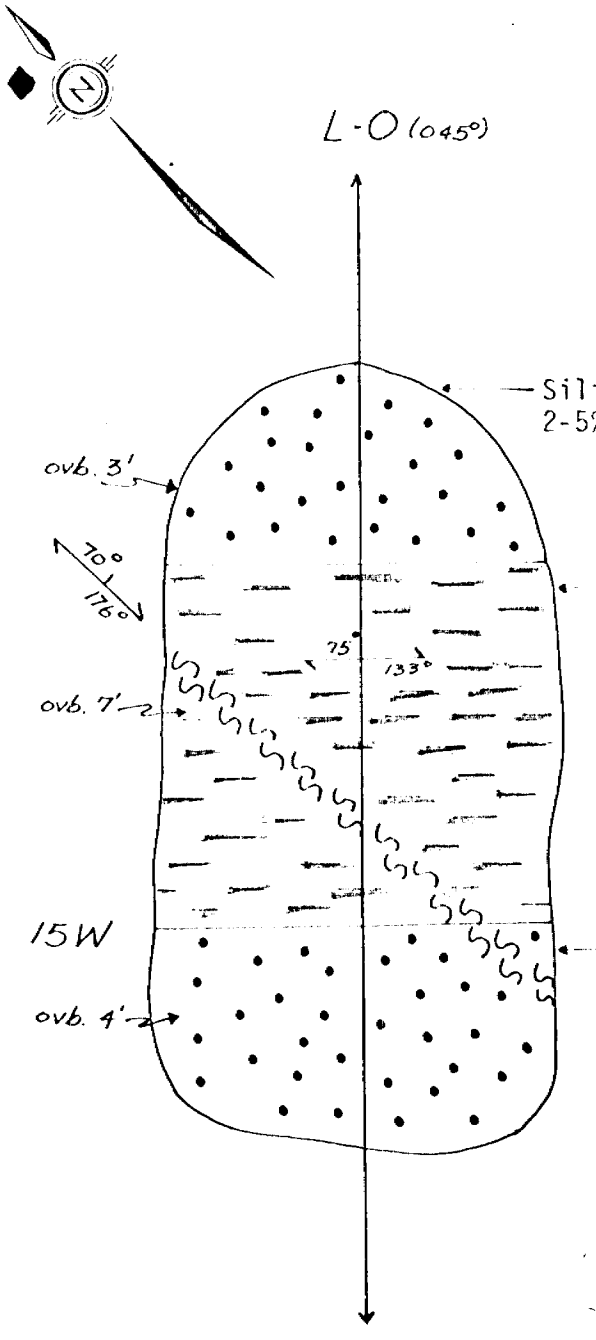
Wet ground

Clay

	Cu	Zn	Au	Ag
4373	102	290	.03	.08
4374	187	397	<.02	1.1
4375	163	323	<.02	1.2
4382	136	355	<.02	.9
4383	200	390	<.02	.9
4384	212	298	<.02	1.1

AMAX EXPLORATION INC.
TYPE OF SURVEY TRENCH
AREA 705-01-1
LOCATION CLEAVER TWP.
DRAWN BY S.S.
SCALE 1" = 10'
DATE OCT. 3/77
TRACED BY S.G.
MAP No
NTS REF 42-A-2
REVISED
TO ACCOMPANY
BY DATE

705-01-2



Trench completed Sept. 30, 1977 by A. Boudreau using a backhoe on a muskeg
Overburden 3'-7' fine sand loam (dry land) Bedrock surface is smooth, hard and strongly rusted where exposed

Siliceous tuffaceous sediments
2-5% Po as blebs and hairline veins

Sulphide zone is strongly sheared and is infused with gray-white milky quartz with sugar grain texture containing Py specks. Sulphides are conductive through rock with probes on separate sulphide patches.

15-20% sulphides

Assay samples: B-4376, 4377, 4378
4385, 4386, 4387

Siliceous tuffaceous sediment carrying up to 15-20% sulphides as streaks are along tuff laminae and have been remobilized into a lattice work by shearing.

Alteration minerals: sericite, muscovite, chlorite, fusite, common

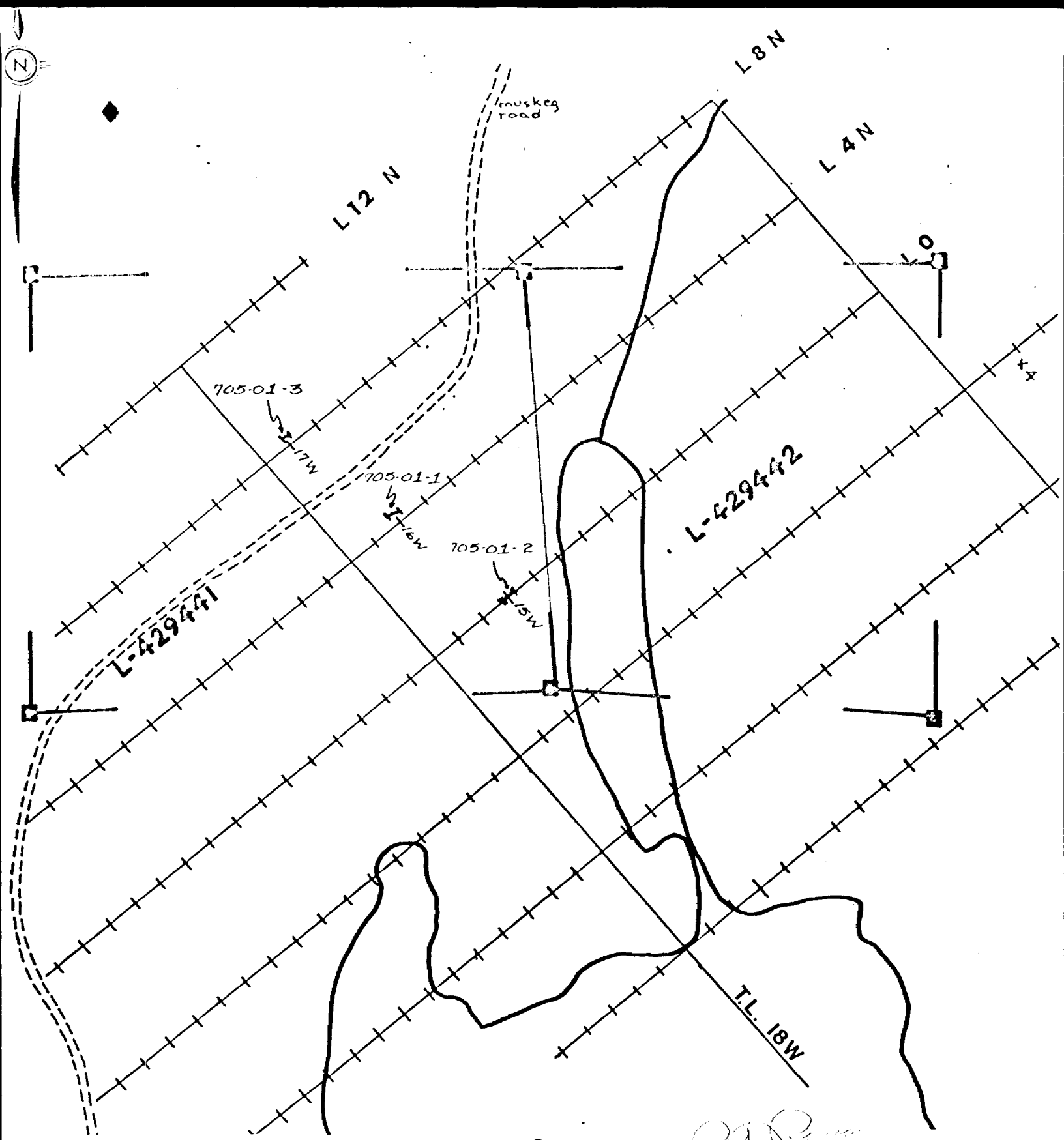
	Cu	Zn	Au	Ag
4376	177	1400	.17	2.8
4377	48	452	.03	.8
4378	85	920	.04	.7
4385	48	255	lt.02	1.6
4386	43	338	lt.02	1.2
4387	240	1350	lt.02	2.7

lt means less than

AMAX EXPLORATION INC.
TYPE OF SURVEY TRENCH
AREA 705-01-2
LOCATION CLEAVER TWP.

DRAWN BY S.S.	SCALE 1" = 10'	DATE OCT 3/77
TRACED BY S.G.	MAP No. NTS REF 42-A-2	REVISED

TO ACCOMPANY
BY DATE



705-01-1 Siliceous tuffaceous sediments, sulphides on tuff laminae.

705-01-2 Siliceous tuffaceous sediments, strongly sheared infused with quartz containing specks of Py.

705-01-3 Basic tuff laminae separated by shearing into plates. 2' wide gossan with specks of Py.

LOCATION MAP

MATACHEWAN CLAIMS

PROJECT 705-01

I Location of trenches

Scale: 1" = 400'

REPORT ON

HORIZONTAL LOOP ELECTROMAGNETIC SURVEY

CLEAVER GROUP-1

PROJECT 705

Cleaver Township, Larder Lake Mining Division

NTS: 42-A-3, 2

AMAX MINERALS EXPLORATION
Timmins, Ontario

Timmins, Ontario
December 20, 1977

R. J. Roussain

SUMMARY

A horizontal loop electromagnetic survey was carried out over two claims located in Cleaver township. The claims are held by Amax Exploration Inc., and were acquired following release of an Input A.E.M. survey by the Ontario Government on April 7, 1975.

INTRODUCTION

The claim group was acquired on April 7, 1975 and has since been covered with a magnetometer and vertical loop electromagnetic survey. This report describes the procedure and results of a horizontal loop electromagnetic survey completed in April 1977 over the below listed mining claims.

L-429441 L-429442

LOCATION AND ACCESS

The claim group is located in Cleaver township approximately 25 miles south east of Timmins. Access to the claim group is much improved since 1975.

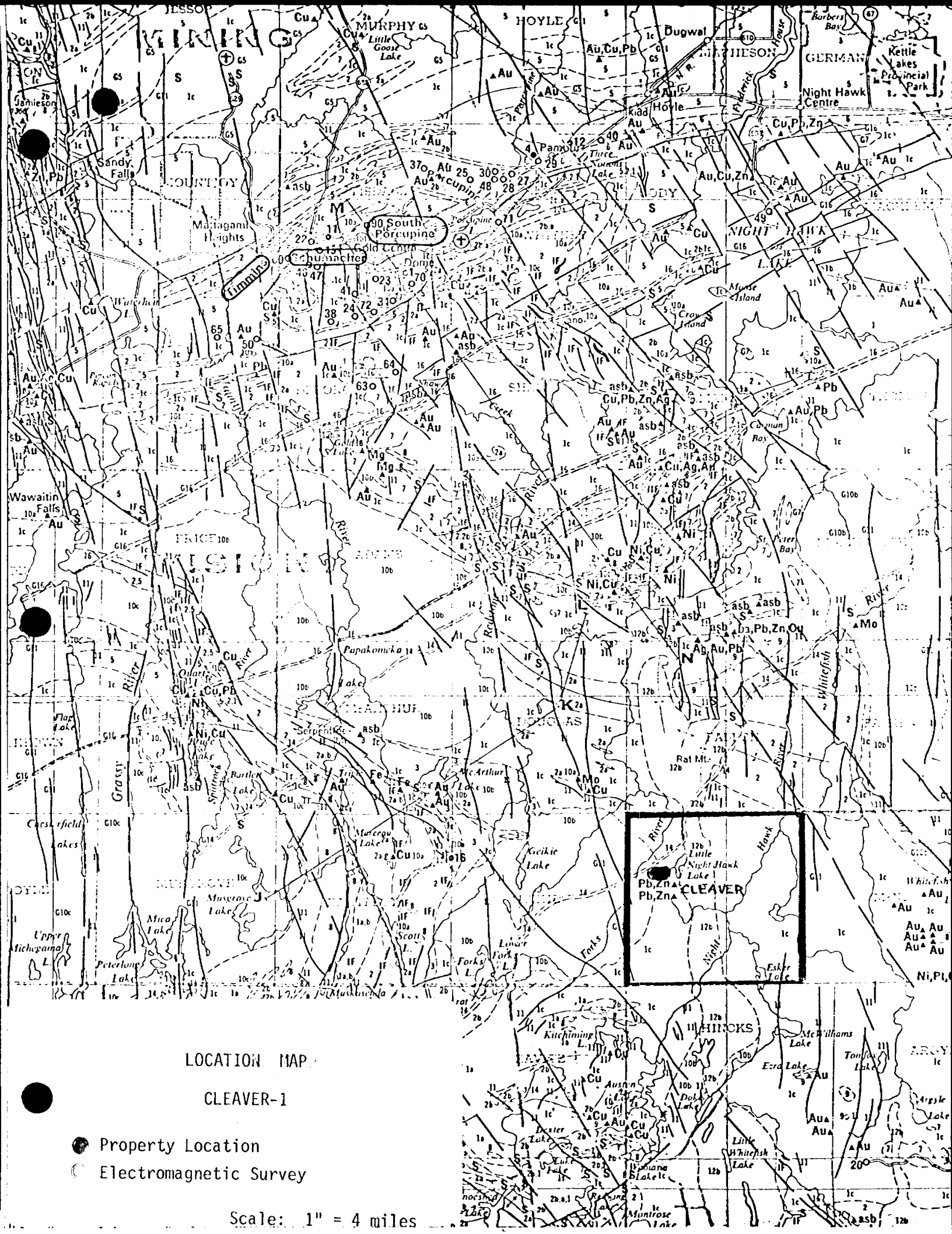
Logging operations extending south through Fallon township provide an excellent winter road to Little Nighthawk Lake located north of the claim group. The roads are built and maintained by G. K. Stringer (Logging Contractor) of South Porcupine.

TOPOGRAPHY AND RESOURCES

Local relief is rugged and relatively well drained with an abundance of outcrop.

The eastern claim is covered by a narrow marshy lake which drains north into a larger unnamed lake lying south of the claim group.

The water covered claim dictates that geophysical surveys be carried out during the winter months.


LOCATION MAP
CLEAVER-1
Property Location
Electromagnetic Survey
Scale: 1" = 4 miles
CLEAVER
Pb,Zn
Pb,Zn
Little Night Hawk Lake
Night Hawk Centre
Kettle Lakes Provincial Park
South Porcupine
Timmins
Schumacher
Gold Centre
Dome
Porcupine
Hoyle
Dugwal
Panoramic
Three
Sandy Falls
Matagami Heights
Wawaitin Falls
Papakomeka Lake
Serpentine Lake
Rat Mt.
Kitchiming L.
Esker Lake
Night Hawk Lake
Whitefish Lake
Little Whitefish Lake
Montrose Lake
Ezra Lake
McWilliams Lake
Gelkie Lake
Forks L.
Lower Fork L.
Scott L.
Mica Lake
Peterlong Lake
Upper Michegama L.
Flat Lake
Butler Lake
Mousseau Lake
Marcegu Lake
Chesterfield Lakes
Dozier Lake
Dobie Lake
Austin
Tomlee Lake
Argyle Lake
Barbers Bay
Common Bay
Peter Bay
Moose Island
Crow Island
Grassy River
Whitefish River
Night Hawk River
Porcupine River
Frederick House River
Mattagami River
Groundhog River
Kiad
Au,Cu,Pb
Au,Cu,Zn
Cu,Pb,Zn
Cu,Pb,Zn,Ag
Cu,Ag,Au
Ni,Cu
Ba,Pb,Zn,Cu
Ag,Au,Pb
Au,Pb
Mo
Mg
asb

Vegetation consists of poplar and birch on the high ground with thick alder and cedar near the lake edges.

PREVIOUS WORK

There have been many previous land holders in the area as made evident by the large number of old claim posts. The most recent land holder, prior to Amax Exploration, was Noranda. That Company held a large group of claims in the early 1970's.

The present Amax claims would be in the central part of the former Noranda holdings.

Noranda carried out magnetometer and vertical loop electromagnetic surveys over the complete property.

There is no record or evidence of any previous diamond drilling on the Amax claims.

PRESENT SURVEY

The horizontal loop electromagnetic survey was completed by Amax Exploration in April 1977.

An Apex Max-Min horizontal loop unit was used to complete the survey at frequencies of 888 and 1777 cps., with a cable length of 300 feet. A total of approximately 85 readings at two frequencies were taken at 100 feet and 50 feet stations whenever anomalous readings were encountered.

SURVEY RESULTS

The field data is presented in profile form with the recorded values plotted along the line.

Results of the electromagnetic survey indicates a conductor denoted as Zone "A" extending from L4N; 6+00E to L4S; 4+00E with by far the most conductive intercept being at L0; 3+00E.

A one line weaker feature was also detected on L8N; 1+50E and is referred to as Zone "B".

Using the information provided by the survey and more particularly of that on LO; 3+00E, the following parameters were determined concerning Zone "A".

Strike:	N-W
Length:	≃1200'
Width:	50'
Depth:	<50'
Dip:	Near vertical, slight to south?
	mhos = 20

Zone "B" is on strike with Zone "A" and may represent the weaker terminus of "A". This zone is too weak to be able to measure or establish any of the characteristics making up its composition.

CONCLUSIONS AND RECOMMENDATIONS

Using the magnetic and vertical loop electromagnetic data provided by prior surveys, it is seen that the horizontal loop electromagnetic survey has confirmed and delimited the previously detected V.E.M. conductor.

Coincident to both Zones "A" and "B" is a magnetic feature that is restricted to the conductor with magnetic and conductive intensity strongest at LO; 3+00E.

It is concluded that the conductors detected as a result of this survey are due to a bedrock source comprised of sulphide mineralization.

Zone "A" should be tested by diamond drilling or trenching at LO; 3+00E to determine the cause and nature of the suspected sulphide mineralization.

R. J. Roussain

File 705-01

GEOPHYSICAL GEOLOGICAL GEOCHEMICAL
TECHNI[CAL DATA STATEMENT]

42A03NE1037 2.2586 CLEAVER

900

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

Type of Survey: Electromagnetic
Township or Area: Cleaver
Claim holder(s): Amax Exploration, Inc.

Author of Report: R. J. Roussain
Address: 255 Algonquin Blvd. West, Timmins
Covering Dates of Survey: April 1977
(linecutting to office)
Total Miles of Line cut: -0-

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	20
- Magnetometer	
- Radiometric	
- Other	
Geological	
Geochemical	

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

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

DATE: ______ SIGNATURE: [signature]
Author of Report or Agent

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
L	429441
L	429442

If space insufficient, attach list

TOTAL CLAIMS 2

OFFICE USE ONLY

PROJECTS SECTION

Res. Geol. ______ Qualifications 63.2531

Previous Surveys ______ [illegible]

Checked by ______ date ______

GEOLOGICAL BRANCH ______

Approved by ______ date ______

GEOLOGICAL BRANCH ______

Approved by ______ date ______

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

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 Apex Max-Min

Coil configuration co-planer

Coil separation 300'

Accuracy 1% per scale division

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

Frequency 888 and 1777 cps.
(specify V.L.F. station)

Parameters measured In phase - Out of phase

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION RESISTIVITY

Instrument _____

Time domain _____ Frequency domain _____

Frequency _____ Range _____

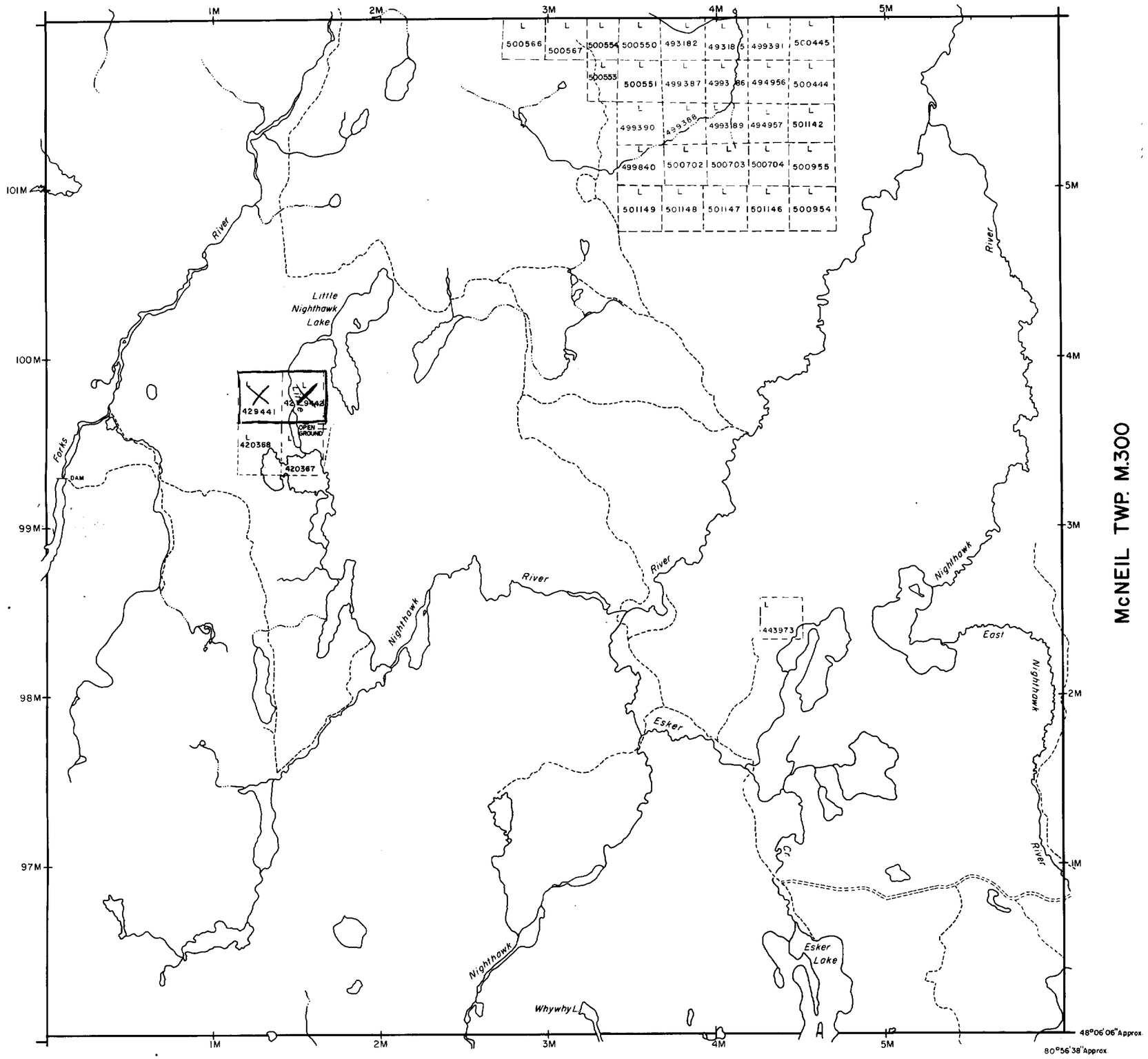
Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

FALLON TWP. M.278



GEIKIE TWP. M.320

McNEIL TWP. M.300

HINCKS TWP. M.223

NOTES

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

LEGEND

PATENTED LAND	Ⓟ or ●
PATENTED FOR SURFACE RIGHTS ONLY	◓
LEASE	Ⓛ
LICENSE OF OCCUPATION	L.O.
CROWN LAND SALES	C.S.
LOCATED LAND	Loc.
CANCELLED	C.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
HIGHWAY & ROUTE NO.	17
ROADS	
TRAILS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	

*used only with summer resort locations or when space is limited

2.2586

TOWNSHIP OF

CLEAVER

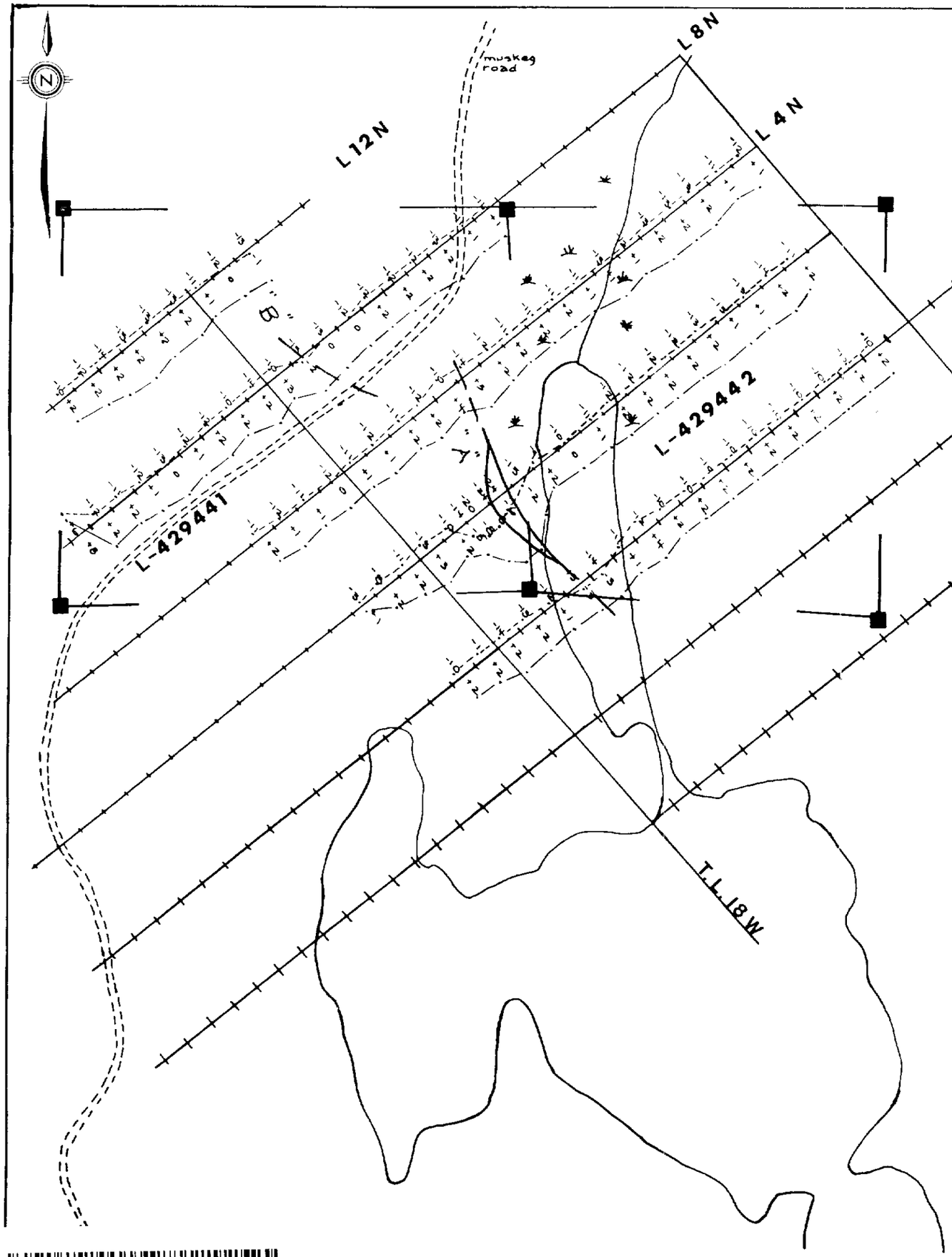
DISTRICT OF
TIMISKAMING

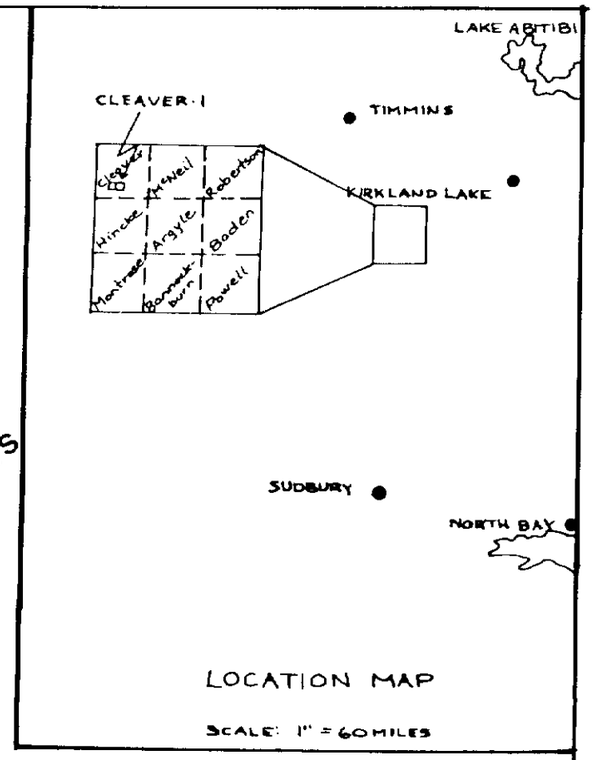
LARDER LAKE
MINING DIVISION

SCALE : 1 INCH = 40 CHAINS (1/2 MILE)

DR. D.KAVANAGH	PLAN NO.	M.269
DATE 29/1/71		

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH





LOCATION MAP

SCALE: 1" = 60 MILES

LEGEND

4 Diabase

Swamp

Instrument: Apex Maxmin II

Cable length: 300'

Frequency: 1777 cps.

Surveyed by: G.T. + J.H.

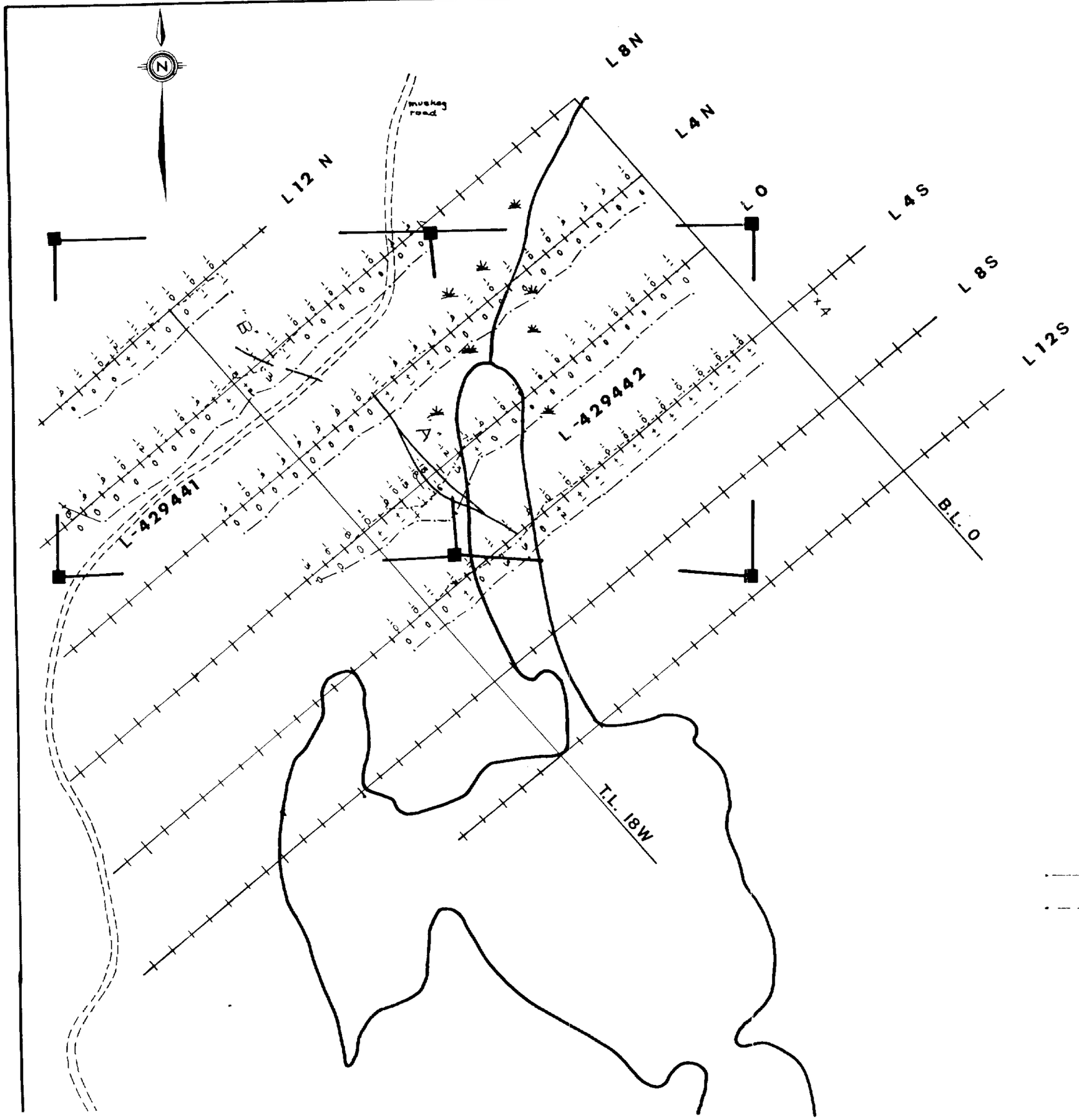
April 5, 1977

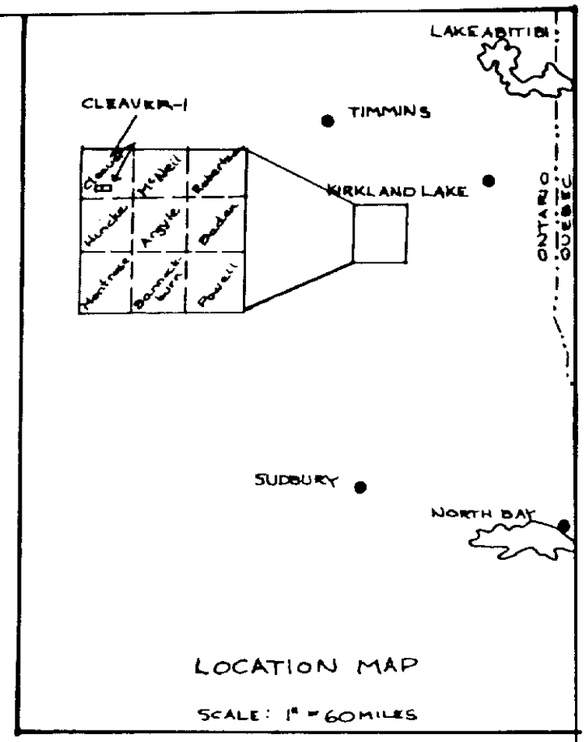
Profile Scale: 1" = 40%

In Phase (left of line)

Q (right of Line)

AMAX EXPLORATION INC. TYPE OF SURVEY ELECTROMAGNETIC AREA MATACHEWAN 705-01 LOCATION CLEAVER GP-1		
DRAWN BY S.D.	SCALE 1" = 400 ft.	DATE APR 5/77
TRACED BY	MAP No. NTS REF 42-A-2-3	REVISED
TO ACCOMPANY BY	DATE	





LEGEND

4 Diabase

* Swamp

Instrument: Apex Maxmin II

Cable length: 300'

Frequency: 888 cps.

Surveyed by: G.T. & J.H.

April 5, 1977

Profile Scale: 1" = 40%

——— In Phase (left of line)

- - - - Q (right of line)

AMAX EXPLORATION INC.		
TYPE OF SURVEY ELECTROMAGNETIC 705-01		
AREA MATACHEWAN		
LOCATION CLEAVER GP-1		
DRAWN BY S.D.	SCALE 1" = 400 ft.	DATE APR. 5/77
TRACED BY	MAP No. NTS REF 42A/2, 3	REVISED
TO ACCOMPANY		
BY	DATE	