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REPORT ON
AN AEROMAGNETIC SURVEY

SOUTH TIMMINS AREA
ONTARIO

RECEIVED

NOV 17 1981

MINING LANDS SECTION

PRICE CLAIMS

PROJECT 1176

AMAX MINERALS EXPLORATION

Timmins, Ontario
November, 1981

B. Groves
Geophysicist

quater file 2.3655

SUMMARY

A helicopter-borne magnetic survey over an area within McArthur, Bartlett, Fripp, Douglas and Geikie townships has defined a sequence of volcanic and intrusive rocks cut by faults and diabase dykes. Two parallel iron formations, displaying the greatest magnetic relief, trend in a northerly/northwesterly direction through the centre of the survey area.

I. INTRODUCTION

A helicopter-borne aeromagnetic survey was performed by Aerodat Limited for Amax Minerals Exploration covering parts of McArthur, Bartlett, Fripp, Douglas and Geikie townships during the period April 27th to May 1st. The area flown has had a long history of gold and base metal exploration and is still considered prospective for these commodities.

Key personnel present for the duration of the survey were:

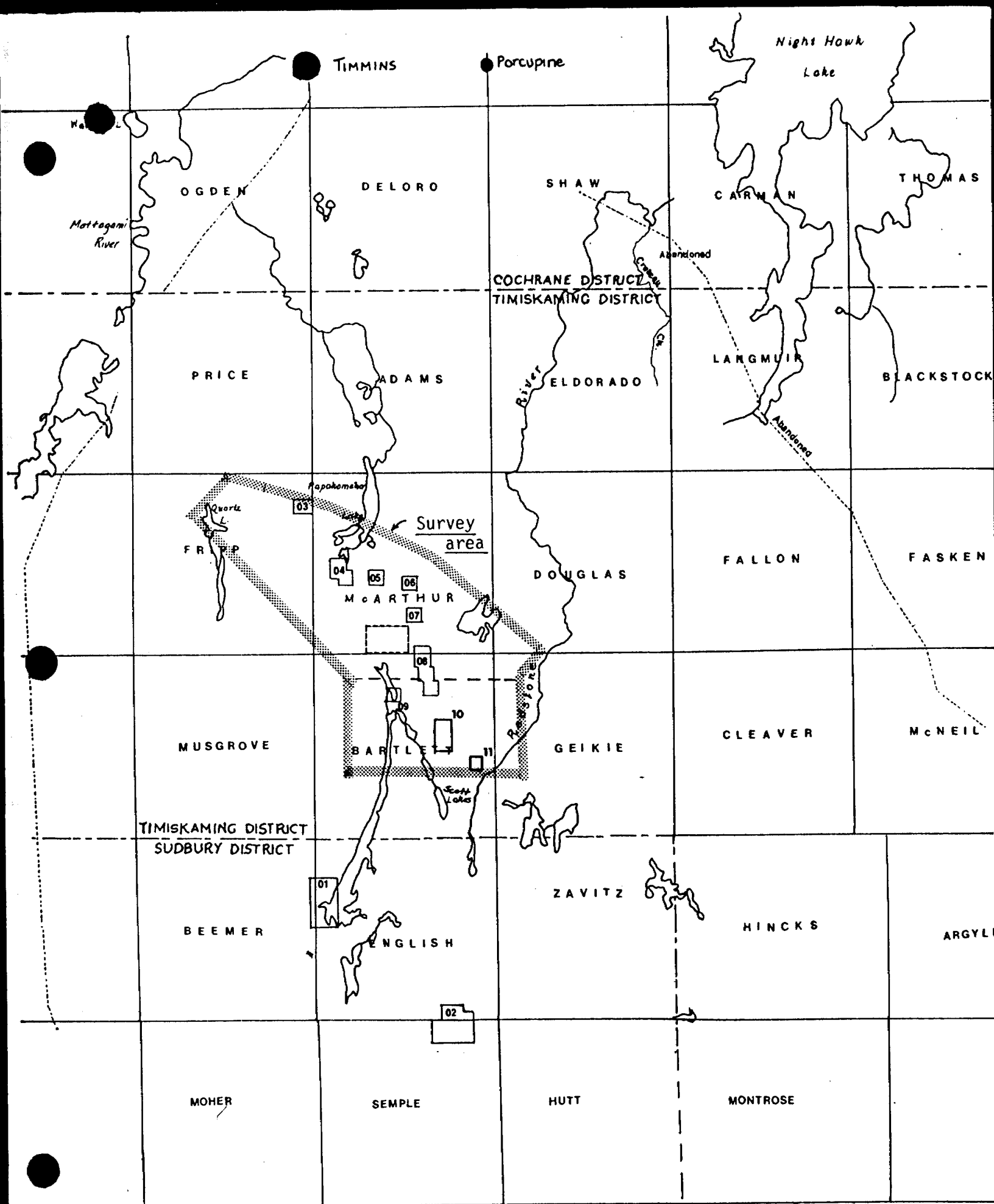
- P. Moisson - party chief, operator and navigator
- B. Healy - helicopter pilot
- B. Groves - Amax geophysicist

II. LOCATION OF SURVEY AREA

Figure 1 presents the location of the survey area which encompasses parts of McArthur, Bartlett, Fripp, Douglas and Geikie townships, south of Timmins, Ontario. The survey area is divided into two (2) blocks, each block having a different flight line direction to maintain perpendicularity with geological strike.

III. EXPLORATION HISTORY

Assessment files revealed extensive previous exploration



Scale 1:250,000

FIGURE 1 - LOCATION OF SURVEY AREA

activity within the area of the airborne survey.

Within McArthur township, the earliest recorded work was that performed by Triple L Gold Mines in 1938. A shaft and two (2) drill holes were put down on the property though results were indefinite.

Subsequent gold exploration within the township was performed by Clodan Mines (1946), Alcide Porcupine Mines (1947), A. Hubery (1959) and Conigo Mines Limited (1965). Trenching and drilling were completed on the properties by these companies. Results were mixed though it appears that Alcide Porcupine Mines had the most favourable assay results with grab sample values ranging up to 0.37 oz/ton.

Other recorded work within McArthur township was concerned with base metal exploration. An airborne electromagnetic survey was flown by Acme Oil and Gas in 1966 revealing the presence of an iron formation which was verified by subsequent drilling. Ground E.M. and magnetic surveys were performed by Paymaster Consolidated Mines (1956), Conigo Mines, (1965), Lakehead Mines (1966), Texasgulf Sulphur Co. (1972), Abitibi Asbestos (1973), Noranda Exploration (1975) and Westfield Minerals (1980). Subsequent drilling revealed non-economic copper and nickel mineralization within ultramafic rocks.

Within Bartlett township, Patterson-Bannerman in 1943 defined a number of "pyrrhotite" veins in an area approximately two kilometres north of Boomerang Lake. Low assay values for gold and copper were typical though highest values of 5.2% copper and 0.14 oz/ton gold were reported. Subsequent gold exploration activity involved Paymaster Consolidated (1956), Queenston Gold Mines (1957), Canadian North Inca Mines (1960) and Silver Summit Mines (1970). Paymaster appears to have had most encouragement from assay results though the highest result reported was only 0.02 oz/ton. Silver Summit reported low (but unspecified) gold values in an iron formation.

Base metal exploration in Bartlett township was mainly concerned with copper, nickel and zinc. Fatima Mining in 1952 performed geological and geophysical work and subsequent drilling on what is now the Texmont Mine property in the north-east corner of the township. Further work on this property was performed by Dominion Gulf and Texmont Mines in 1965. Finely disseminated nickel mineralization in peridotite was defined and trenches, test pits and shaft were sunk on the property. Payqueen Nickel Mines (1957), Sturdy Mines (1958), Ecstall Mining and Silver Summit Mines (1970) were also active though only low values of nickel and copper were reported by Silver Summit.

Previous work recorded within the survey area in Fripp township included trenching on nickel showings held by McCasken-Sandrelli located to the west of the centre of the eastern township boundary. Trace values of nickel and copper were measured. In 1964, O'Leary Malarctic reported drilling an E.M. anomaly which proved to be a graphitic schist. Hollinger in 1964-65 defined a small copper showing in an iron formation which was subsequently drilled in 1970.

IV. GEOLOGY

The survey area is underlain by early precambrian meta-volcanic flows and associated intrusions trending in a north-northwesterly direction. The sequence which becomes younger towards the northeast, consists of basal massive to pillowed mafic metavolcanics overlain by a concordant gabbroic sill. This sill in turn overlain by massive mafic to intermediate metavolcanics.

Felsic volcanic rocks overlie the metavolcanics. This unit contains several sills of gabbro and diorite and numerous layers of iron formation.

The above mentioned metavolcanic sequence is bounded to the north east by porphyritic granodiorite and to the south west by a large granodioritic batholith which has intruded into the basal part of the metavolcanics.

North-northwesterly and north-northeasterly diabase dykes are intrusive into all of the above older rock units.

V. SURVEY SPECIFICATIONS, EQUIPMENT AND PROCEDURES

A total of 1050 line kilometres was flown along north - east oriented flight lines in the northern block and east - west lines in the southern block. Line spacing was 150 metres throughout the survey and the magnetometer sensor was maintained at an average terrain clearance of 55 metres. The average aircraft (Bell Jet Ranger helicopter) ground speed was 110 kilometres per hour.

Survey equipment consisted of a Barringer AM-104 proton precession magnetometer, an Aerodat/Perle data acquisition system, a Hoffman radar altimeter, a Geocam 35mm flight path camera and a Barringer analogue recorder.

Survey navigation was based on photo-mosaics at a scale of 1:15000. Survey lines were visually navigated and fiducial points manually recorded over recognisable terrain features. Flight paths were finally verified by comparison of the 35mm tracking film with the photo-mosaic.

VI. DATA PRESENTATION

The aeromagnetic data are presented in computer contoured

plan form. A nominal contour interval of 20nT has been employed. No filtering has been carried out on the magnetic data.

Figures 2 and 3 present the total field magnetic information at a scale of 1:15000 for the north and south halves respectively, of the survey area.

Recovered flight lines are shown, together with principal topographic features and claim boundaries.

VII. DISCUSSION OF RESULTS

Figure 4 summarizes the interpretation of the aeromagnetic data. The major units defined by the survey are described below.

Iron Formations

Iron formations display the greatest local magnetic relief (up to 5000 nT) within the survey area.

Two parallel formations can be discerned, trending in a north-west direction through the centre of the survey area. The southerly formation displays greater magnetic continuity. Both units are cut by northeasterly trending faults which have a displacement of the order of 200 to 400 metres, and in places, by north-east trending diabase dykes.

Ultramafics

Ultramafics manifest themselves as complex, irregularly shaped patterns of high magnetic relief. These rocks extend along the eastern and northeastern boundaries of the survey area and display a magnetic relief up to 1500 nT compared to the

adjacent metavolcanics. Localized variations in the degree of serpentinization may be inferred from changes in magnetic texture, particularly in the vicinity of McArthur Lake. Northerly and easterly trending faults appear to cut the ultramafic complex with displacements of similar magnitude to those cutting the iron formations.

Mafic Intrusive Rocks

Mafic intrusive rocks can be indentified only in certain areas of the survey where their magnetic expression is greater than that of the host rock. Where this situation exists, the intrusives appear as elongated or sub-circular magnetic expressions with a magnetic relief of up to 500nT. Identification of this unit in most of the survey area is complicated by the proximity of more magnetic units such as iron formations and ultramafics.

Diabase Dykes

Diabase dykes appear on the magnetic map as linear features extending up to several kilometres in length with a magnetic relief of 100 to 200nT. The dykes trend in a northerly direction in the southern part of the survey and in a north-easterly or northwesterly direction in the northern part. Displacement of up to 300 metres in the magnetic expressions due to the dykes suggest the presence of northeasterly trending faults.

Felsic Intrusive and Metavolcanics

Felsic intrusive and metavolcanics generally have no magnetic expression within the survey area. Areas of low magnetic relief are inferred to be due to these rock units.

VIII. CONCLUSIONS

The aeromagnetic survey has outlined several geological units within the area. In order of decreasing magnetic intensity, units defined are iron formations, ultramafic intrusives, mafic intrusives, diabase dykes and felsic intrusive and metavolcanic rocks. In the southern map sheet area, geologic strike appears to be north changing to north west in the northern map area. The sequence of volcanic and intrusive rocks is cut by northerly and northeasterly trending faults and by northeasterly and northwesterly trending diabase dykes.

The degree of detail afforded by the survey should prove useful in ground geological investigations.

Timmins, Ontario
November, 1981


Brian Groves
Geophysicist

APPENDIX A

SCHEDULE OF CLAIMS

PROJECT 1176

PRICE

Claim Group	Township	Number	Claim Numbers	Recording Date
1176-03 Fripp-1	Fripp	4	P-618129	May 21, 1981
			P-618130	May 21, 1981
			P-618131	May 21, 1981
			P-618132	May 21, 1981
1176-04 Mac-1	McArthur	7	P-618267	May 21, 1981
			P-618268	May 21, 1981
			P-618269	May 21, 1981
			P-618270	May 21, 1981
			P-618271	May 21, 1981
			P-618133	May 21, 1981
			P-618134	May 21, 1981
1176-05 Mac-2	McArthur	4	P-618272	May 25, 1981
			P-618273	May 25, 1981
			P-618274	May 25, 1981
			P-618275	May 25, 1981
1176-06 Mac-3	McArthur	4	P-618846	May 21, 1981
			P-618847	May 21, 1981
			P-618848	May 21, 1981
			P-618849	May 21, 1981
1176-07 Mac-3	McArthur	4	P-618850	May 21, 1981
			P-618851	May 21, 1981
			P-618852	May 21, 1981
			P-618853	May 21, 1981
1176-08 Bart-1	Bartlett	13	P-618286	May 21, 1981
			P-618287	May 21, 1981
			P-618288	May 21, 1981
			P-618291	May 21, 1981
			P-618292	May 21, 1981
			P-618293	May 21, 1981
			P-618294	May 21, 1981
			P-618295	May 21, 1981
			P-618296	May 21, 1981
			P-618297	May 21, 1981
	McArthur	P-618298	May 21, 1981	
		P-618285	May 21, 1981	
		P-618290	May 21, 1981	
1176-09 Bart-2	Bartlett	4	P-618125	May 21, 1981
			P-618126	May 21, 1981
			P-618127	May 21, 1981
			P-618128	May 21, 1981

APPENDIX A
(con't)

SCHEDULE OF CLAIMS

PROJECT 1176

PRICE

Claim Group	Township	Number	Claim Numbers	Recording Date
1176-10 Bart-3	Bartlett	8	P-618277	May 21, 1981
			P-618278	May 21, 1981
			P-618279	May 21, 1981
			P-618280	May 21, 1981
			P-618281	May 21, 1981
			P-618282	May 21, 1981
			P-618283	May 21, 1981
			P-618284	May 21, 1981
1176-11 Bart-4	Bartlett	4	P-618241	May 21, 1981
			P-618242	May 21, 1981
			P-618243	May 21, 1981
			P-618244	May 21, 1981



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Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

Re: Airborne Geophysical (Magnetometer) Certificate
on Mining Claims P 618125 et al, in the Townships
of Fripp, McArthur and Bartlett

Enclosed is an Airborne Geophysical Certificate issued
under Section 78 of the Mining Act R.S.O. 1980.

Please indicate on your records that the time for
performing the first and all subsequent periods of work
for the claims listed shall fall due one year later than
the times prescribed in Subsection 1 of Section 76.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

A. Barr/amc

Encl.

cc AMAX Minerals Exploration
Timmins, Ontario
Attn: Rosemary Tittley

cc Resident Geologist
Timmins, Ontario



Ministry of
Natural
Resources

Airborne
Geophysical
Certificate

The Mining Act

This is to certify that AMAX Minerals Exploration has met the requirements of Section 87 of The Mining Act,
with respect to the following mining claims in the Township () of .

FRIPP, McARHUR and BARTLETT

Mining Claims (Please list)

- P 618125 to 34 incl.
- 618241 to 44 incl.
- 618267 to 75 incl.
- 618277 to 88 incl.
- 618290 to 98 incl.
- 618846 to 53 incl.

Date 1982-06-02 Signature of Branch Director [Signature]



Mining Lands Comments

copy from

To: Geophysics *Mr. Barlow.*

Comments

Approved Wish to see again with corrections

Date *Feb 22/82*

Signature *Ryan Barlow*

To: Geology - Expenditures

Comments

Approved Wish to see again with corrections

Date

Signature

To: Geochemistry

Comments

Approved Wish to see again with corrections

Date

Signature

To: Mining Lands Section, Room 6462, Whitney Block.

(Tel: 5-1380)

November 24, 1981

2.4291

Office of the Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

We have received reports and maps for an Airborne Geophysical (Magnetometer) Certificate on Mining Claims P.618125 et al, in the Townships of Fripp, McArthur and Bartlett.

This material will be examined and if found to be in order, a certificate will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

J. Skura/bk

cc: AMAX Minerals Exploration
Timmins, Ontario
Attention: Rosemary Tittley



MINERALS EXPLORATION
(A Division of AMAX OF CANADA LIMITED)

255 Algonquin Blvd. West
Timmins, Ontario
P4N 2R8

November 13, 1981

Telephone: (705) 264-5247

Mr. W. F. Matthews,
Ontario Ministry of Natural Resources,
W 1617, Whitney Block,
Queen's Park,
Toronto, Ontario.
M7A 1W3

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NOV 17 1981

MINING LANDS SECTION

Dear Sir:

Re: Airborne Geophysical Certificate
Our Project: 1176-03 to 11, incl.
Townships of Fripp, McArthur and
Bartlett

Pursuant to Section 87 of the Ontario Mining Act, please accept this letter as our application for an Airborne Geophysical Certificate.

Enclosed are two copies of the Report and Plans covering the Airborne Geophysical Survey conducted over the claims listed on the attached schedule. These claims were recorded on May 21 and 25, 1981.

Thank you.

Yours truly,
AMAX OF CANADA LIMITED

Rosemary Tittley

Rosemary Tittley
Land Recorder

Encs.

c.c. K. Clemis/E. Barclay, Toronto
J. Roth

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NOV 17 1981

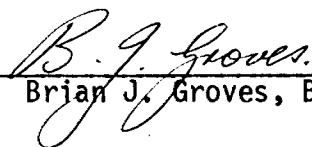
MINING LANDS SECTION

L.D.

STATEMENT OF QUALIFICATIONS

I, Brian J. Groves, residing at 1214 Riverside Drive, Timmins, Ontario, hereby certify that:

1. I am a graduate of the University of Sydney, Sydney, New South Wales, Australia, having received a B.Sc. (Hons.) in Exploration Geophysics in 1976.
2. I have been practising as a geophysicist since joining Amax Exploration (Australia) Inc. of 55 Macquarie Street, Sydney, N.S.W., 2000, Australia, in February 1977.
3. I have been employed as a mineral exploration geophysicist by Amax Minerals Exploration since my transfer from Australia in May, 1980.
4. I am a Member of the Canadian Institute of Mining and Metallurgy and an Associate Member of both the Society of Exploration Geophysicists and the Australian Society of Exploration Geophysicists.



Brian J. Groves, B.Sc.

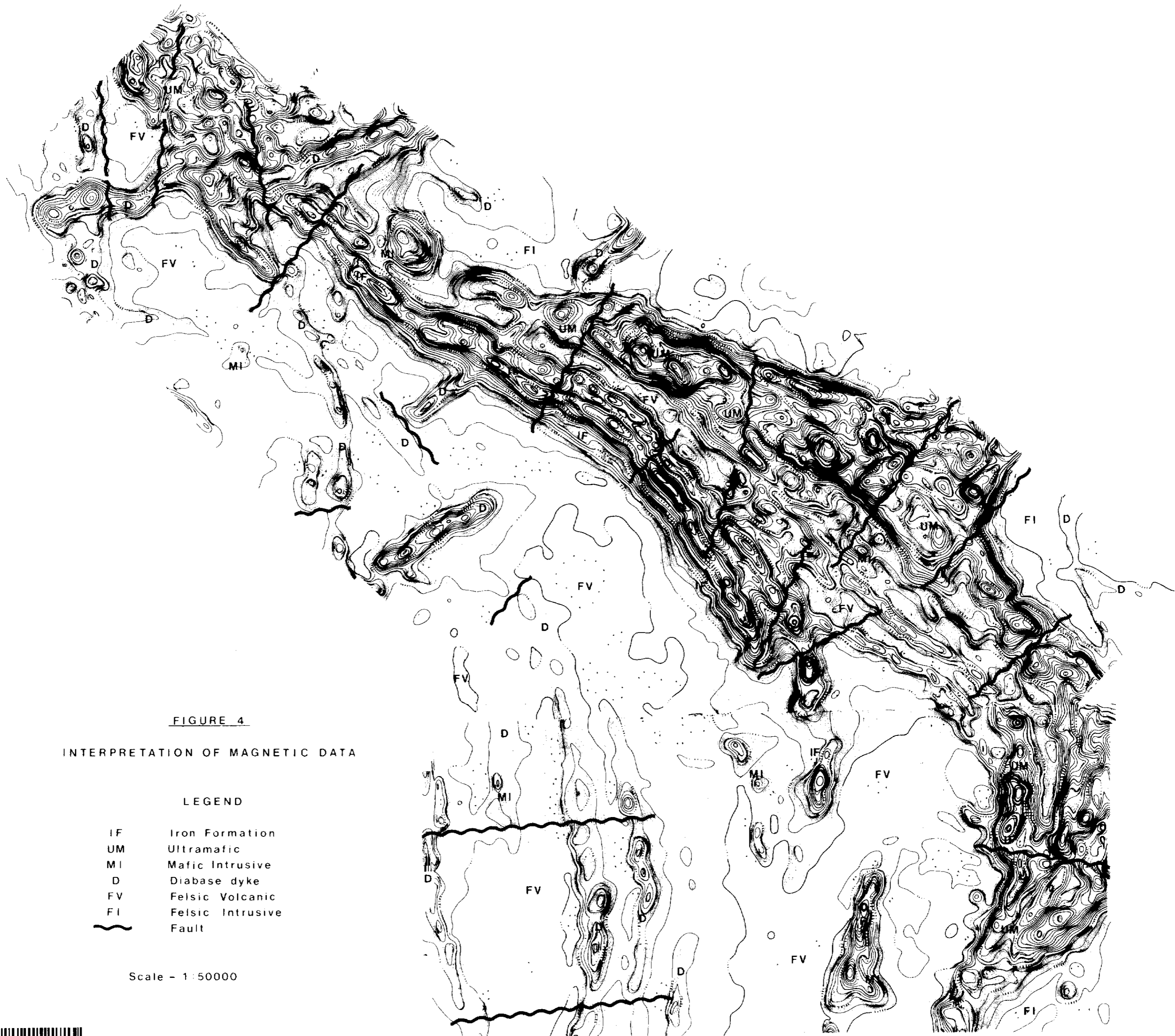


FIGURE 4

INTERPRETATION OF MAGNETIC DATA

LEGEND

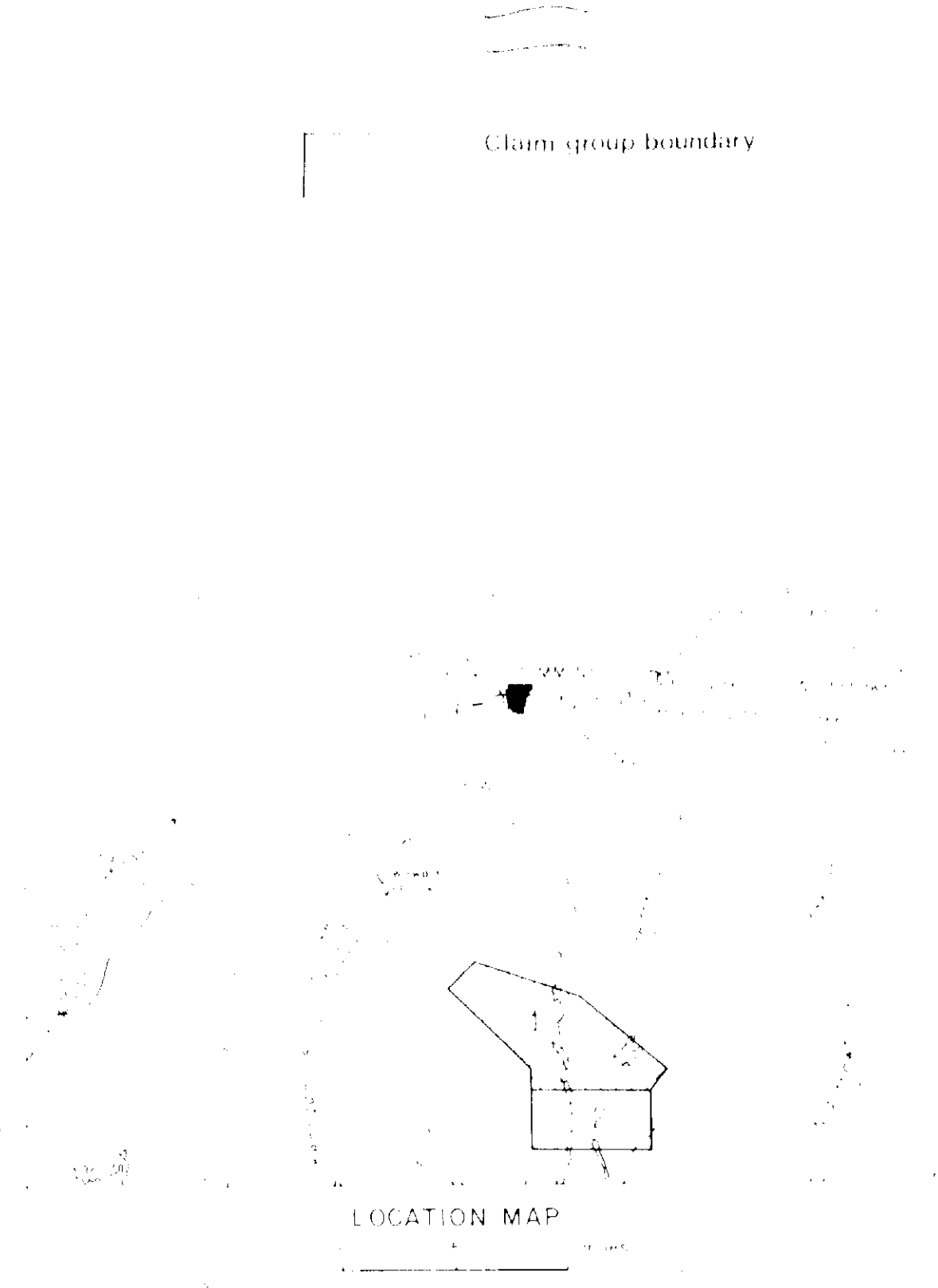
- IF Iron Formation
- UM Ultramafic
- MI Mafic Intrusive
- D Diabase dyke
- FV Felsic Volcanic
- FI Felsic Intrusive
- ~~~~~ Fault

Scale - 1:50000



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B. J. Grew



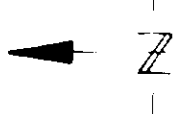
AMAX MINERALS EXPLORATION
SOUTH TIMMINS AREA
ONTARIO
MAP 2
TOTAL FIELD MAGNETIC MAP
NORTH SHEET

SCALE 1:75,000

0 1000 2000 3000 Feet

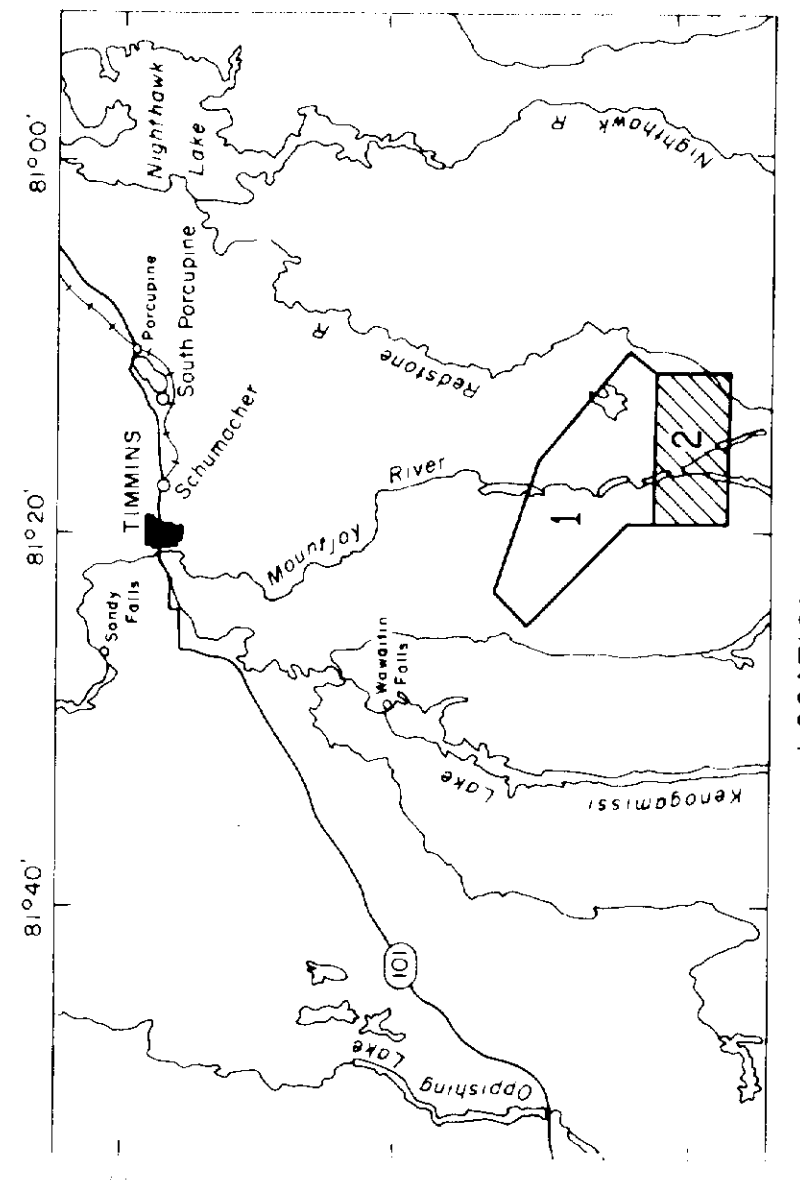
0 1 2 3 Kilometers

DATE August 1988
SHEET No. 47 A
BY J. J. G. / J. J. G.

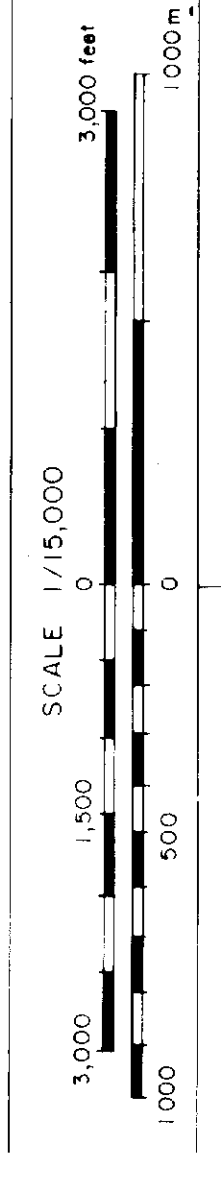


LEGEND
500 gammas
100 gammas
20 gammas

Claim group boundary



AMAX MINERALS EXPLORATION
SOUTH TIMMINS AREA
ONTARIO
MAP 3
TOTAL FIELD MAGNETIC MAP
SOUTH SHEET



DATE August 1981
NTS NO. 42 A

B. J. Grew
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