REPORT ON A GEOLOGICAL SURVEY

OGDEN-4

PROJECT 1043-13

NTS: 42-A-6

AMAX MINERALS EXPLORATION

Timmins, Ontario
October, 1981

J. MacPherson
Geologist

SUMMARY

During May and June of 1981, a geological survey was performed on fourteen (14) claims in central Ogden township, District of Cochrane, Ontario.

The property is underlain by rocks of the Deloro Group. These grade from basalt in the south to felsic flows and pyroclastics in the north. A narrow band of sediments is located at the top of the mafic flows.

The horizontal loop survey carried out by Amax in early 1980 outlined one conductor. This was explained by graphite and iron formation in the sediment band.

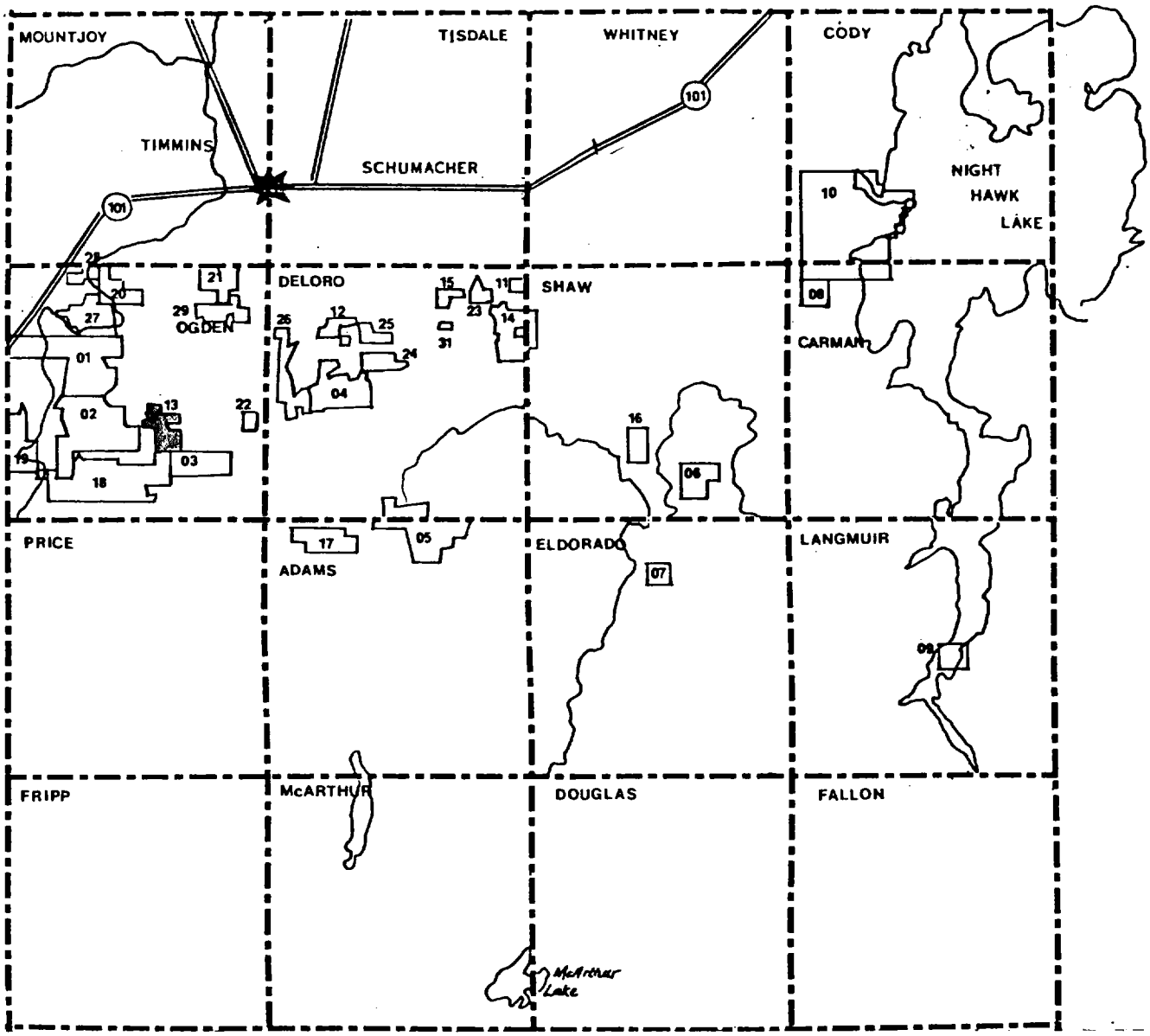
It is recommended that no further work be done for the present. Future work may entail further investigation of a major east-west shear zone on the property.

INTRODUCTION

A detailed geological survey was carried out on a group of fourteen (14) claims in Ogden township during May and June of 1981. The claim numbers are P-555631 - 36, P-567033 - 035, P-567660 - 61 and P-529970 - 72, and are recorded in the name of Amax of Canada Limited.

The property covers several air electromagnetic anomalies uncovered during a helicopter-borne survey carried out by Amax in the fall of 1979.

Detail ground geophysical surveys consisting of magnetometer and horizontal loop (high and low frequencies) were carried out during the early part of 1980.

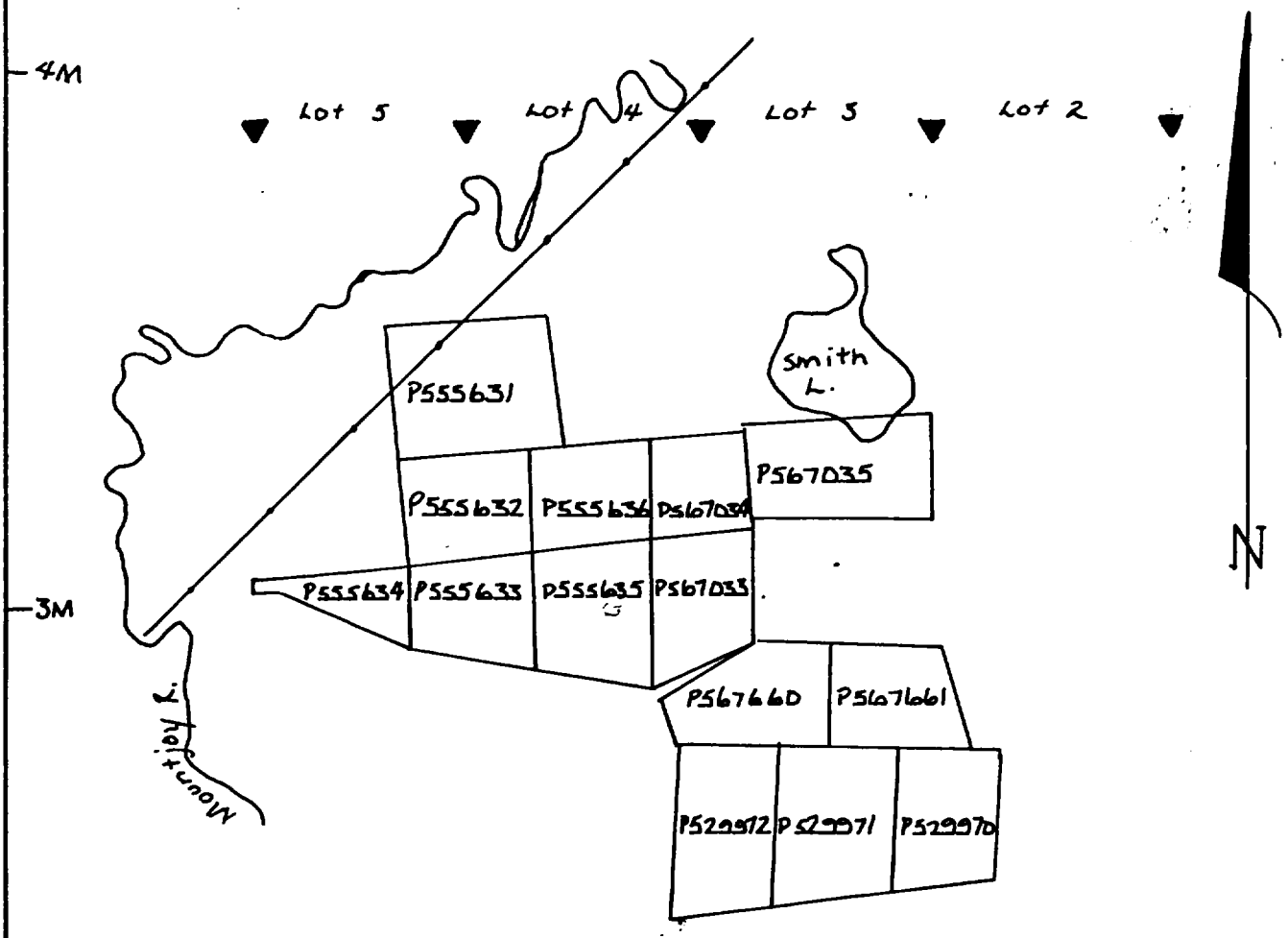


LOCATION MAP

Project 1043-13

OGDEN-4

1"= 4 miles



CLAIM MAP

Project 1043-13

OGDEN-4

Ogden Township

1"=½ mile (approx.)

LOCATION AND ACCESS

The group of fourteen (14) claims is situated in the east-central part of Ogden township in the District of Cochrane, Ontario.

The property is located about 1.5 kilometres south along a major powerline. This powerline can be reached by the road which leads to the old De Santis Mine which exists west, off Pine Street South about 4.8 kilometres south of the city of Timmins.

TOPOGRAPHY AND RESOURCES

The relief on the property is moderate. There are several large outcrop ridges with shallow gullies in between. The land slopes gently west towards the Mountjoy River and to the east towards a swampy depression.

Vegetation consists of mature stands of poplar, with lesser birch and spruce. Alders are present in the depressions.

Smith Lake to the north and the Mountjoy River to the west are the only available sources of water for a diamond drill program.

PREVIOUS WORK

From Assessment Files

There are reports of gold being present in a 500 foot

TABLE OF FORMATIONS

CENZOIC

Quaternary

Recent

Swamp and stream deposits

Pleistocene

Till, clay, sand, gravel

Unconformity

PRECAMBRIAN

Mafic Intrusive Rocks

Olivine diabase, quartz diabase

Intrusive Contact

Huronian Supergroup

Gowganda Formation, Cobalt Group

Arkose, wacke, argillite, conglomerate

Unconformity

ARCHEAN

Mafic Intrusive Rocks

Diabase

Intrusive Contact

Felsic Intrusive Rocks

Quartz feldspar porphyry, granite, diorite, granodiorite

Metamorphosed Mafic Intrusive Rocks

Gabbro, quartz gabbro

Intrusive and Gradational Contact

Metamorphosed Ultramafic Intrusive Rocks

Serpentinized diorite, peridotite

Intrusive Contact

METAVOLCANICS AND METASEDIMENTS

Metasediments

Conglomerate, lithic wacke, iron formation

Metavolcanics

Felsic Calc Alkalic metavolcanics

Massive, fine-grained flows, tuff, lapilli tuff, breccia

Mafic Calc-alkalic metavolcanics

Massive, fine-grained flows, pillowed flows, tuff, lapilli tuff and breccia, sheared, carbonated pyroclastics

Tholeiitic Metavolcanics

Massive to medium grained flows, pillowed flows and flow breccia, minor tuff, lapilli tuff and breccia

Komatiitic Metavolcanics

Peridotite, olivine spinifex, carbonate and talc alteration

oxide shear zone located on Amax claim P-529971. This showing was trenched around 1910 and five foot channel samples returned values averaging from 0.03 to 0.57 ounces per ton gold.

Found in Field

Two trenches about 20 feet long each were found on a quartz vein cutting a graphitic zone in the north west part of P-555633. Two trenches on sulphide iron formation were found in the north east corner of P-555633. All of these trenches appear to be on the same conductive zone, which is represented by a facies change from oxide to sulphide iron formation.

Two small trenches were found on a quartz vein cutting carbonatized basalts in the central part of P-529970.

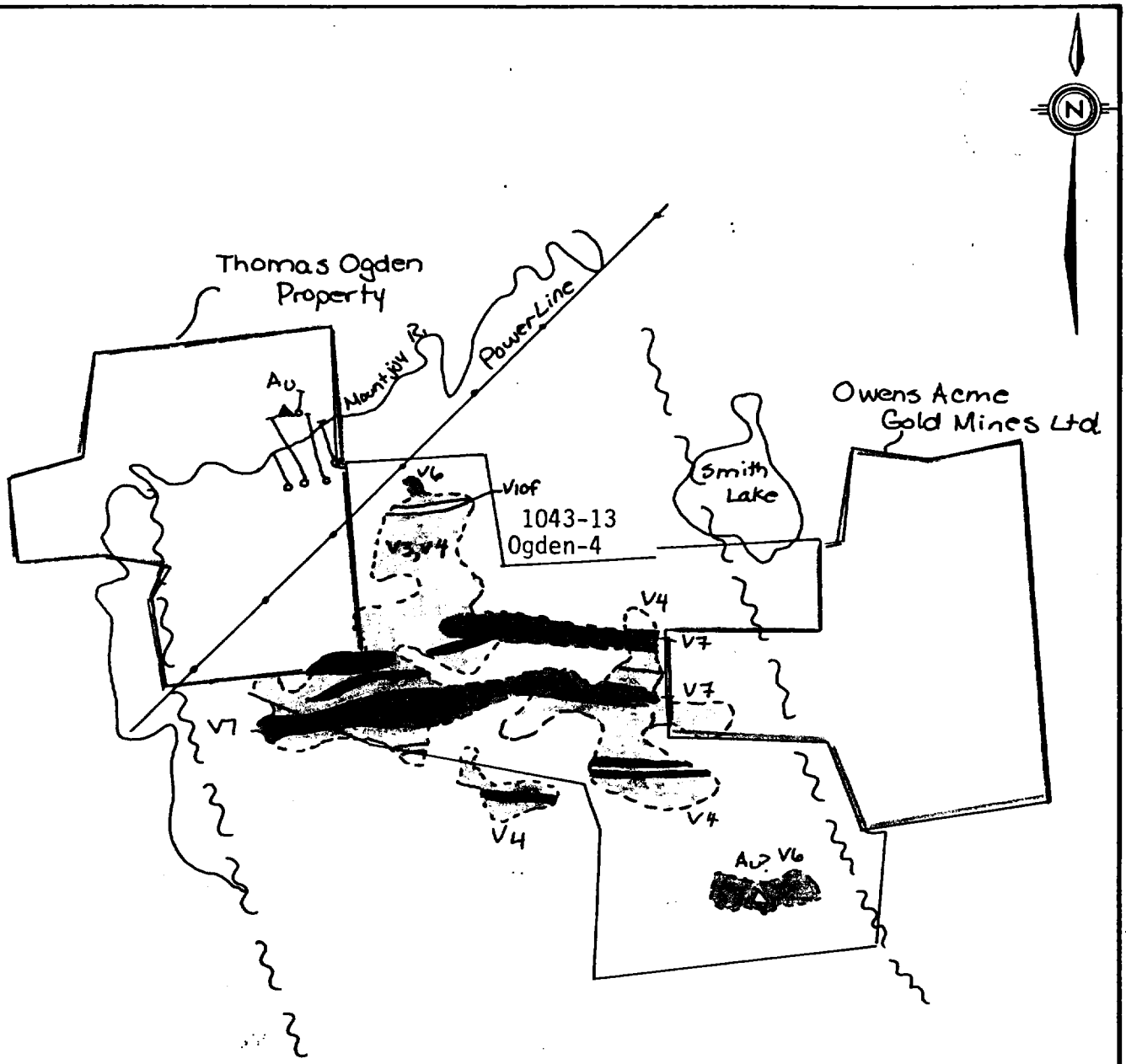
SURVEY METHOD

The survey was performed by J. MacPherson, P. Lickley, D. Messenger and A. Plackitt during June of 1981. Air photos at a scale of 1:30,000 and the Amax detail geophysical grid were used for control while mapping.

Off the grid, traverse lines were run using pace and compass at 400 foot intervals across the remaining claims.

REGIONAL GEOLOGY

The volcanic rocks of the Timmins area consist of the



LEGEND

V4	□	Dacite
V6	■	Andesite
V7	■	Basalt
V10f	□	Felsic Agglomerate
I.F.	■	Iron Formation
	o—I	Diamond Drill Holes (Thomas Ogden Showing)
	~~	Fault (interpreted)
	———	Geological Contact -observed
	- - - -	-interpreted
	▲	Gold Showing (proven)
	△	Gold Occurance (possible)

Note: See geology map in back pocket for more detailed geological interpretation

AMAX MINERALS EXPLORATION

PROJECT: DELORO (1043)
GROUP : 1043-13, Ogden-4
TWP : Ogden
Survey : Compilation
Date : August, 1981
SCALE : F = 1/2 mile (approx.)

older Deloro Group and the younger overlying Tisdale Group.

The Deloro Group is confined to a large domal structure centred in Shaw township. It grades from andesite and basalt flows in the lower portion to dacite and rhyolite pyroclastics near the top. Oxide iron formation is the marker horizon which can be used to separate the two groups of rocks. A major change in volcanism marks the beginning of the Tisdale Group, the Lower Volcanic Formation of which is marked by serpentinized ultramafic flows.

The Destor-Porcupine Fault is the major structural feature in the area, along with the Porcupine Syncline to the north and the Shaw Dome to the south.

PROPERTY GEOLOGY

The property is situated just south of the Destor-Porcupine Fault in rocks of the Upper Metavolcanic Formation of the Deloro Group.

Felsic volcanic flows (rhyolite, dacite) and pyroclastics (agglomerate) are found near the northern boundary of the property. These generally grade southward into andesite and basalt flows. A narrow band of sediment is located at the top of the mafic flows. It consists of cherty sediments, sediment breccia, argillite, graphitic sediments and sulphide as well as oxide iron formation.

A series of four faults are interpreted to be present on the property. These run approximately north-south and have offsets of no more than 300 metres. A series of east-west shears were also located. Quartz veining and moderate carbonatization are usually associated with these. The most persistent of these runs in a easterly direction and could be traced completely across the property.

The rocks are moderately to well foliated, and trend

generally east-west and dip vertically or slightly to the north. Tops are thought to be to the north.

The quartz veins found on the property are usually associated with the shears and run in an east-west direction and appear to dip north. Assays of these quartz veins returned nil to trace gold values.

CONCLUSIONS AND RECOMMENDATIONS

The airborne and ground geophysical conductor on the property was explained by the presence of graphitic sediment.

Quartz veins found in east-west trending shears were sampled and assayed and returned nil to trace gold values.

The property is located south of the Porcupine-Destor Fault in Deloro Group rocks. Past work has shown that the potential for economic gold occurrences is low in this type of environment.

It is recommended that no further work be done on the property at this time. Future work could consist of a more detailed investigation of the main east-west shear.

J. MacPherson

Timmins, Ontario
October, 1981

J. MacPherson
Geologist

APPENDIX A

SCHEDULE OF CLAIMS

PROJECT 1043-13, OGDEN-4

Claim Group	Township	Number	Claim Numbers	Recording Date
1043-13 Ogden-4	Ogden	14	P-555631	April 8, 1980
			P-555632	April 8, 1980
			P-555633	April 8, 1980
			P-555634	April 8, 1980
			P-555635	April 8, 1980
			P-555636	April 8, 1980
			P-567033	April 8, 1980
			P-567034	April 8, 1980
			P-567035	April 8, 1980
			P-567660	April 18, 1980
			P-567661	April 18, 1980
			P-529970	December 29, 1980
			P-529971	December 29, 1980
			P-529972	December 29, 1980

DECLARATION

I, Joseph A. MacPherson, of the City of Sudbury, in the Province of Ontario, with a mailing address of 255 Algonquin Blvd. West, Timmins, Ontario, do hereby declare:

1. I am a geologist employed by Amax of Canada Limited, with offices at 255 Algonquin Blvd. West, Timmins, Ontario.

2. I completed an honours B.Sc. programme (geology) in 1980 at Laurentian University in Sudbury, Ontario.

3. I did personally set forth the facts as outlined in this report and did conduct or supervise, or review, the work contained herein.

4. I do not have, nor do I expect to have, any interest in the properties held by Amax of Canada Limited.

Joseph A. MacPherson

Dated at Timmins, Ontario

Ogden Twp. P-529970
476

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the

1043-13 The Min

42A06NW0219 2.4302 OGDEN 900

Type of Survey(s)
Geological Survey

Claim Holder(s)
Amax of Canada Limited

Survey Company
Amax Minerals Exploration

Survey Dates (linecutting to office): Day 05 Mo. 81 Yr. | Day 06 Mo. 81 Yr.

Total Miles of line Cut

Name and Address of Author (of Geo-Technical report)
J. MacPherson, 255 Algonquin Blvd. West, Timmins, Ontario. P4N 2R8

Special Provisions Credits Requested

Instructions
For first survey: Enter 40 days. (This includes line cutting)
For each additional survey: using the same grid: Enter 20 days (for each)

	Days per Claim
Geophysical	
- Electromagnetic	
- Magnetometer	
- Radiometric	
- Other	
Geological	20
Geochemical	

Man Days

Instructions
Complete reverse side and enter total(s) here

	Days per Claim
Geophysical	
- Electromagnetic	
- Magnetometer	
- Radiometric	
- Other	
Geological	
Geochemical	

Airborne Credits

Note: Special provisions credits do not apply to Airborne Surveys.

	Days per Claim
Electromagnetic	
Magnetometer	
Radiometric	

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
P	555631	~~20~~
	555632	~~20~~
	555633	~~20~~
	555634	~~20~~
	555635	~~20~~
	555636	~~20~~
	567033	~~20~~
	567034	~~20~~
	567035	~~20~~
	567660	~~20~~
	567661	~~20~~
	529970	~~20~~
	529971	~~20~~
	529972	~~20~~

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

RECEIVED
NOV 26 1981
MINING LANDS SECTION

RECORDED
NOV 20 1981
Receipt No. .....

Total number of mining claims covered by this report of work. 14

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
280	Nov. 20/81	
	Date Approved as Recorded	Regional/Branch Director
	82.07.15	

Report Completed

Date of Report: Nov. 17, 1981

Recorded Holder or Agent (Signature): Rosemary Pitts

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Joseph MacPherson

Ontario Resources

Report
Approval

~~2.7290~~
2.4302

Mining Lands Comments

L.D

Incomplete Data

☐ To: Geophysics

Comments

☐ Approved ☐ Wish to see again with corrections	Date	Signature

☒ To: Geology - Expenditures Mr Kusta

Comments

☑ Approved ☐ Wish to see again with corrections	Date Mar 4/82	Signature C Kusta

☐ To: Geochemistry

Comments

RECEIVED
MAR - 5 1982
MINING LANDS SECTION

☐ Approved ☐ Wish to see again with corrections	Date	Signature

November 27, 1981

2.4302

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 a Geological Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims P.555631 et al, in the Township of Ogden.

This material will be examined and assessed and a statement of assessment work credits 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 of Canada Limited
Timmins, Ontario
Attention: Rosemary Tittley

AMAX MINERALS EXPLORATION
(A Division of AMAX OF CANADA LIMITED)

255 Algonquin Blvd. West
Timmins, Ontario
P4N 2R8

Telephone: (705) 264-5247

November 18, 1981

Our File: 1043-13

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

Dear Sir:

Enclosed herewith please find two (2) copies of a report on a Geological Survey along with accompanying survey maps, concerning a survey which was carried out on the below listed contiguous mining claims.

P-555631	P-555632	P-555633	P-555634
P-555635	P-555636	P-567033	P-567034
P-567035	P-567660	P-567661	P-529970
P-529971	P-529972		

A "Report of Work" has been filed with Mr. William Good, Mining Recorder for the Porcupine Mining Division.

Thank you.

Yours truly,
AMAX OF CANADA LIMITED

Rosemary Tittley

Rosemary Tittley (Mrs.)
Land Recorder

Encs. 2

c.c. K. Clemiss/E. Barclay, Toronto

Ontario

Ministry of Natural Resources

File _____

GEOPHYSICAL – 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(s) Geological Survey

Township or Area Ogden

Claim Holder(s) Amax of Canada Limited

Survey Company Amax Minerals Exploration

Author of Report Joseph MacPherson

Address of Author 255 Algonquin Blvd. West, Timmins, Ont.

Covering Dates of Survey May and June 1981
(linecutting to office)

Total Miles of Line Cut _____

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	
–Magnetometer	
–Radiometric	
–Other	
Geological	20
Geochemical	

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

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

DATE: November 17, 1981 SIGNATURE: J. MacPherson
Author of Report or Agent

Res. Geol. _____ Qualifications 23797

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
P	555631
P	555632
P	555633
P	555634
P	555635
P	555636
P	567033
P	567034
P	567035
P	567660
P	567661
P	529970
P	529971
P	529972

TOTAL CLAIMS 14

If space insufficient, attach list

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

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 _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

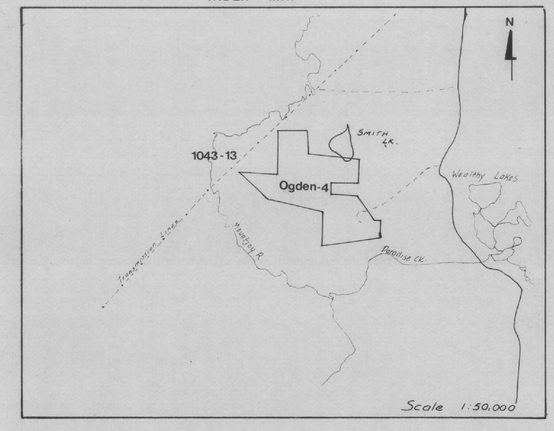
Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

INDEX MAP



LEGEND

VOLCANIC ROCKS

- V4 — Rhyodacite
- V6 — Andesite
- V7 — Basalt
- V9f — Felsic Tuff
- V9i — Intermediate Tuff
- V10f — Felsic AGGLOMERATE

SEDIMENTARY ROCKS

- S — Undifferentiated Sediments
- I.F. — Iron Formation

INTRUSIVE ROCKS

- Ib — Quartz Porphyry
- Ic — Feldspar Porphyry

SYMBOLS

- Py — Pyrite
- Po — Pyrrhotite
- Mag — Magnetite
- Cp — Chalcopyrite
- Tourm — Tourmaline
- Q.V. — Quartz Vein

- Fault - interpreted
- Foliation - unknown dip; - known dip; - vertical dip
- Bedding - known dip
- Geological Contact - projected
- Outcrop boundary
- Claim Post (located)
- Trench
- Grid Line
- Traverse Line
- Swamp
- POND — Beaver Pond
- Stream
- Bush Road
- H.E.M. Conductor Axis

AMAX MINERALS EXPLORATION

GEOLOGICAL SURVEY

OGDEN-4, 1043-13

Ogden Twp.

DISTRICT OF Cochrane

24302

Scale 1:5,000

NTS

June 1981

To Accompany Report By J. Morel Vezina — TIMMINS OFFICE

1043-13