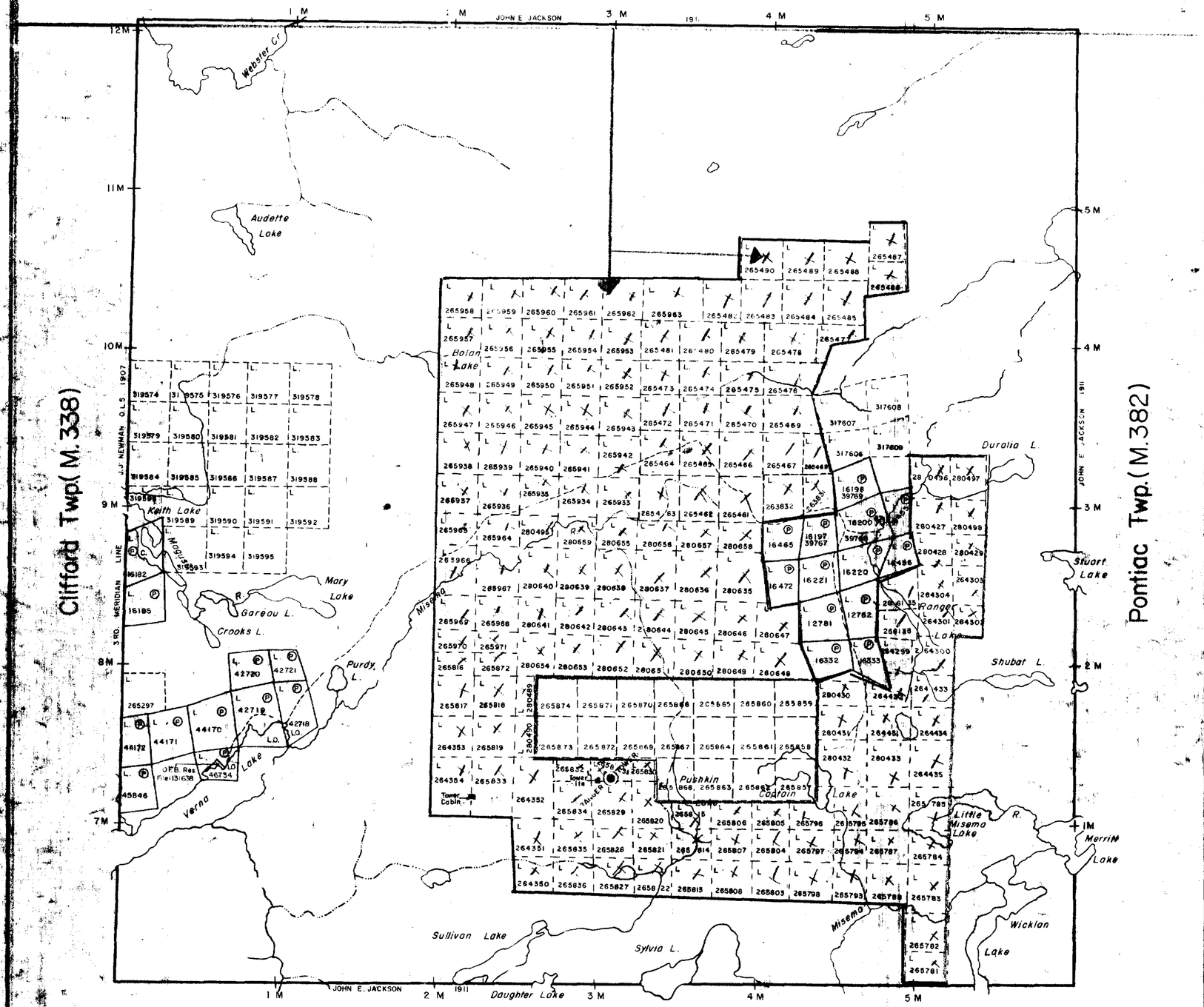
Tannahill Twp.(M.390)



Clifford Twp.(M.338)

Pontiac Twp.(M.382)

Katrine Twp.(M.357)

THE TOWNSHIP
Claim Map
OF

BEN NEVIS

DISTRICT OF
TIMISKAMING

2.448

LARDER LAKE
MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	P
CROWN LAND SALE	C.S
LEASES	L
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	
CANCELLED	C
TRAILS	

NOTES

400' Surface rights reservation around all Lakes & Rivers.

FILE NO. 160705 COVERS RANGER TOWER, TOWER SITE & CABIN SITE.

file 2.448
Airborne
mag & E.M.

DATE OF ISSUE
JAN 1 1972
ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

PLAN NO. M.325

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

PONTIAC

M.382

LARDER LAKE MINING DIVISION

Claim map

DISTRICT OF TIMISKAMING

Scale-40 Chains - 1 Inch

North Ast.

airborne
mag + E.M.
file 2.448

DOKIS

BEN NEVIS

PROVINCE OF QUEBEC

MONTBRAY TWP

Stuart Lake

Clarice Lake

Sunrise Lake

OSSIAN

DASSERAT

1M 2M 3M 4M 5M

55M 54M 53M 52M 51M 50M

DISPOSITION OF CROWN LANDS

PATENTED (P)
LEASED (L)
LICENCE OF OCCUPATION (O)

PLATE 3,5

150 W

140 E

130 W

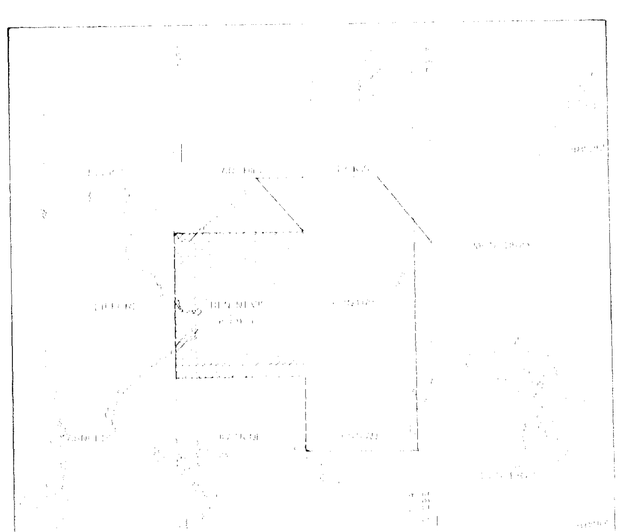
120E

110 E

100E

BEN NEVIS TWP.

PLATE 3,5



LOCATION MAP

PLATE 1

AMAX EXPLORATION INC.

BEN NEVIS AREA, ONTARIO

GEOPHYSICAL SURVEY

1" = 1320'

PLATE 3,5

152 W

150W

140E

130W

120E

110 E

100 E

PONTIAC TWP.

L266053 L266054 L266055 L266060 L266061 L266066

L266048 L266049 L266050 L266051 L266052 L266056 L266059 L266062 L266065

L266047 L266046 L266045 L266044 L266043 L266057 L266058 L266063 L266064

L266038 L266039 L266040 L266041 L266042

L266037 L266036 L266035 L266034 L266033

L266028 L266029 L266030 L266031 L266032

L266027 L266026 L266025 L266024 L266023

L266018 L266019 L266020 L266021 L266022

L265811 L265812 L265823 L265824 L265825

L265810 L265809 L265802 L265801 L265800

L265789 L265790 L265791 L265792 L265799

L266080 L266081 L266082 L266083

L266087 L266086 L266085 L266084

L266088 L266089 L266090 L266091

L266095 L266094 L266093 L266092

L266096 L266097 L266098 L266099 L266100

L266105 L266104 L266103 L266102 L266101

L266106 L266107 L266108 L266109 L266110

L266115 L266114 L266113 L266112 L266111

L266116 L266117 L266118 L266119

L266123 L266122 L266121 L266120

L266124 L266125

L266127 L266126

A -/30

B -/15/15

A 25/5

A -/15/220

A 20/-

A -/7/10

B -/15

A 5/10

A 50/70

PLATE 3,5

LOCATION MAP

PLATE 2

AMAX EXPLORATION INC.

BEN NEVIS AREA, ONTARIO

AIRBORNE GEOPHYSICAL SURVEY

SCALE : 1" = 1320'

SURVEY BY SEIGE ASSOCIATES LIMITED

FLOWN AND COMPILED

FLIGHT ALTITUDE 1000'

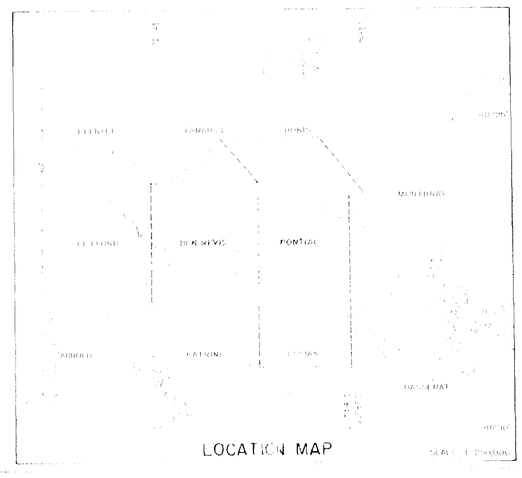
FLIGHT LINE SPACING 1320'

70 - 9314 - 02

230

MAGNETOMETER CONTOUR PLAN

LEGEND



LOCATION MAP

PLATE 3

AMAX EXPLORATION INC.

BEN NEVIS AREA, ONTARIO

AIRBORNE GEOPHYSICAL SURVEY

SCALE 1" = 1320'

SURVEY BY SEIGEL ASSOCIATES LIMITED

FLOWN AND COMPILED

FLIGHT ALTITUDE = 220'

FLIGHT LINE SPACING = 660'

70 - 9314

240

AIRBORNE GEOPHYSICAL SURVEYS

BEN NEVIS AREA - ONTARIO

JEREMY ROTH

AMAX EXPLORATION, INC.,
7 King Street East, Suite 1302,
Toronto, Ontario

SUMMARY

A combined airborne electromagnetic and magnetic survey was executed by Seigel Associates Limited over an area in and around Ben Nevis Township in Northeastern Ontario on behalf of Amax Exploration, Inc. No EM responses were encountered that could be confidently ascribed to a definite bedrock conductor. The aeromagnetic results are largely featureless, reflecting the presence of a large pile of felsic to intermediate volcanics.

I INTRODUCTION

During October and November, 1970, airborne geophysical surveys were undertaken by Seigel Associates Limited on behalf of Amax Exploration, Inc., in and near Ben Nevis Township in Northeastern Ontario. The area surveyed comprised portions of Ben Nevis, Pontiac and Katrine Townships, as shown on the enclosed location map. (Figure 1).

The purpose of the electromagnetic survey was to map the distribution of subsurface conductors within the survey area. Simultaneous magnetometer measurements were taken to provide data to support the analysis of the AEM anomalies.

The survey was conducted with a Scintrex HEM-701 in-phase out-of-phase electromagnetic system operating at 1600 HZ and a Scintrex NPM-1 nuclear resonance, total intensity magnetometer. This equipment was installed in an Alouette II helicopter on charter from Haida Helicopters Limited of Vancouver, B.C. The full details of the geophysical and ancillary equipment used as well as the treatment of the data resulting from these surveys are presented in Appendix A.

The personnel involved in carrying out the survey were:

(Seigel Associates Limited, 222 Snidercroft Road, Concord, Ontario)

Peter Godard	-	geophysicist
Lipton Spence	-	operator
Stuart Mervin	-	navigator
Tony Szantos	-	technician
Ian MacGregor	-	data recovery

(Haida Helicopters, Vancouver, B.C.)

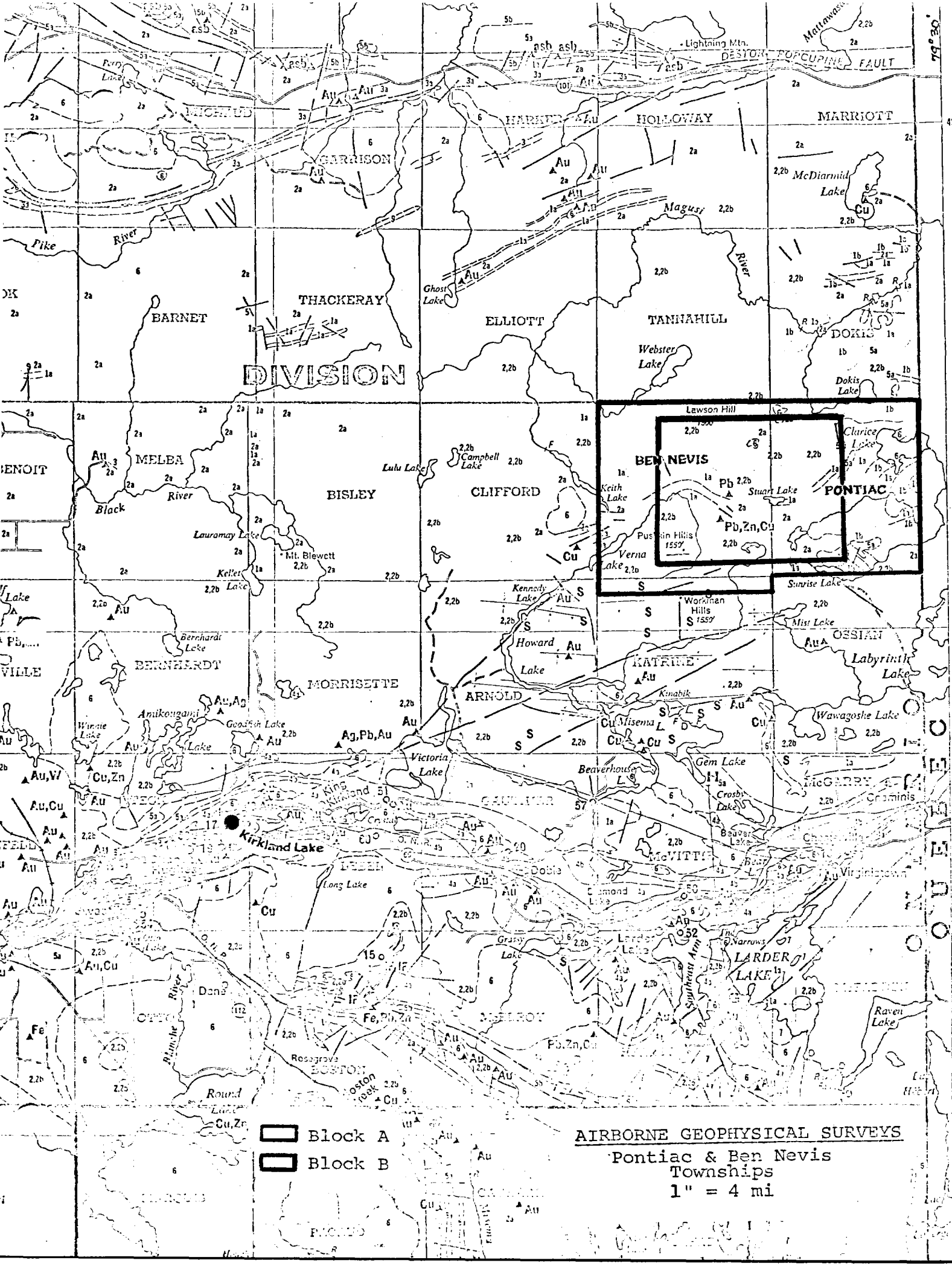
John Laurie	-	pilot
John Oystersen	-	engineer

(Amax Exploration, Inc., 7 King Street East, Toronto)

Jeremy Roth	-	geophysicist

In-flight navigation and flight path recovery were based upon photomosaics at scales of 1" = 2640' and 1" = 1320' respectively. Magnetic tie lines were flown over the area to facilitate the contouring of magnetic data.

The area was flown in two directions so that bi-directional coverage was effected over all claims. Block A (see Figure 1) was flown in an east-west direction at a mean spacing of 1320 feet and a total of 354.3 line miles of EM coverage was effected. A total of 325.8 line miles was flown in a north-south direction (Block B) at mean line spacing of 660 feet, for a combined total of 680.1 line miles. Mean bird height was 200 feet over the survey area. Full logistical details are presented in Table 1. The claims and claim numbers for which assessment work credit is claimed, are listed in Appendix B.


DESTOR-PORCUPINE FAULT
Lightning Mtn.
Mattawasaga
Perry Lake
MICHAUD
GARRISON
HARKER
HOLLOWAY
MARRIOTT
McDiarmid Lake
Magusi River
Pike River
Ghost Lake
THACKERAY
BARNET
ELLIOTT
TANNAHILL
DOKIS
Webster Lake
Dokis Lake
DIVISION
Lawson Hill
BEN NEVIS
PONTIAC
Clarice Lake
Stuart Lake
Keith Lake
Pb
Pb,Zn,Cu
Pushkin Hills 1559'
Verna Lake
Sunrise Lake
Workman Hills 1559'
Mist Lake
MELBA
BISLEY
CLIFFORD
Campbell Lake
Lulu Lake
Black River
Lauramay Lake
Mt. Blewett
Kellet Lake
Kennedy Lake
Howard Lake
OSSIAN
Labyrinth Lake
KATRINE
Kinabik
Misema L.
Wawagoshe Lake
Gem Lake
Crosbie Lake
Beaverhouse L.
McGARRY
Cheminis
BERNHARDT
MORRISETTE
ARNOLD
Bernhardt Lake
Amikougami Lake
Goodfish Lake
Victoria Lake
Kirkland Lake
GAUTHIER
McVITTIE
Virginiatown
Long Lake
Diamond Lake
Grassy Lake
Larder Lake
Inc. Narrows
Southeast Arm
LARDER LAKE
Raven Lake
Dane
Fe
Fe,Pb,Zn
Pb,Zn,Cu
Rosegrove
BOSTON
Boston Creek
Round Lake
Cu,Zn
Au,Cu
Cu,Zn
Au,Ag
Ag,Pb,Au
Au,W
Block A
Block B
AIRBORNE GEOPHYSICAL SURVEYS
Pontiac & Ben Nevis
Townships
1" = 4 mi

GEOLOGY

The area covered by the airborne geophysical surveys is largely underlain by felsic to intermediate volcanics of Archaean age. Locally, some pyroclastic horizons are present and a number of base metal showings have been reported. In particular, located in Ben Nevis Township is the old (long defunct) Interprovincial Mine, which produced a rather modest tonnage of lead, zinc and silver. No recent government geologic map is available for the area, but existing geologic information suggests the area is structurally quite complex. Detailed mapping of the area is currently underway by the ODM under the direction of Mr. Larry Jensen.

III. PRESENTATION OF DATA

The electro-magnetic and magnetic data, together with the altimeter trace and fiducial marks, were recorded on a six channel MFE recorder in the following order and at the following scales.

MFE Recorder (reading from top to bottom)

Channel 1	Altimeter	Logarithmic
Channel 2	Magnetometer (fine scale)	1 mm = 20 gammas
Channel 3	Magnetometer (step indicator)	1 step = 500 gammas
Channel 4	Electromagnetic (in-phase)	1 mm = 5 ppm
Channel 5	Electromagnetic (out-of-phase)	1 mm = 5 ppm

Fiducial markers are presented between channels 5 and 6.

In addition ot the magnetic data recorded on channels 2 and 3 of the MFE recorder, a Mosley 680 chart recorder provided a more easily read trace for the fine scale magnetic features. The data here is presented on a scale of 1" = 200 gammas, with fiducial markers also being shown on this chart.

The electromagnetic anomalies are plotted on a 1" = 1320" photomosaic (Plates 1 and 2) for the east-west direction, along with the flight lines and claim boundaries and numbers. Coding is as described in Appendix A, with the values of in-phase and out-of-phase amplitudes and magnetic correlation (if any) indicated for each anomaly intersection. Where anomaly indications were encountered on adjacent lines, these were tentatively linked together as one conducting system or zone and suitably numbered.

The electromagnetic anomalies, together with the total field aeromagnetic values contoured at 25 gamma intervals are presented in Plate 3 for the north-south direction, (Block B), with flight lines and claim boundaries and numbers also shown on the photomosaic.

I DISCUSSION OF RESULTS

Electromagnetic Results

High frequency transmission, mostly from the television transmitter at Virginiatown, introduced considerable noise to the electromagnetic system. The noise took the form of irregular pulses and cyclic variations, mostly of high frequency and appeared largely on the in-phase channel. This noise was essentially erratic and generally within an envelope of 10 ppm, although especially strong pulses showed a frequent spatial association with hill-tops (wave reflection?). Thus, the survey was rendered ineffective only over very small portions of the total survey mileage flown.

The geologic noise attributed to conductive overburden, on the other hand, was rather limited in extent and intensity. Overburden conductors appear on geophysical traces in the form of broad to very broad anomalous features often of large amplitude, but possessing a ratio of in-phase to out-of-phase of less than one. As such they can be readily recognized and largely disregarded because of their obvious difference from the sharper response expected from steeply dipping narrow conductors of potential economic interest. The survey area is consequently inferred to have generally shallow to non-existent overburden. Narrow river channels, and infrequent lakes and swamps constitute an exception, especially in the north. Thus, survey conditions were generally such as to ensure detection of a strong conductor (e.g. Mattagami orebody at Sturgeon Lake, $\sigma t \simeq 10$ mhos) at depths up to 75 feet.

Within the area covered in the east-west direction (Plates 1 and 2) only very weak EM responses were encountered, all of which were graded as being in thethird category. These are all isolated features, with no correspondence from line to line seemingly evident. Within the area covered in the north-south direction, only weak, isolated anomalies were encountered, with one probably fortuitous exception. Anomalies are generally of poor to suspicious shapes and low confidence is placed in their reflecting the presence of a real bedrock conductor. Some of the suspicion here stems from the above-mentioned electrical interference effects. Several of these weak features are shown on the anomaly compilation sheets to have coincident magnetic features; in view of the earlier comments as to the suspicious nature of the EM responses, the coincidence may be purely fortuitous.

Aeromagnetic

The total intensity magnetic field for the area Block B is shown on Plate 3. The contour interval is 25 gammas and values shown are relative to a base level of 59,000 gammas. The magnetic relief over the entire area is in general quite low, as might be expected for an area underlain by felsic to intermediate volcanics. A few magnetic features of relatively small extent are marked on Plate 3. The linear feature A-A' strikes roughly north-south along the western edge of the survey area. Depth estimates to the source - most likely a diabase dike - suggests that the causative body comes

... 4

se to the surface. B-B' and B_1-B_1' are twin features with maxima 350 and 250 gammas respectively. Their short strike length and plug-like aspect suggest an intrusive of possibly dioritic composition. Again, depth estimates suggest that the body may well be outcropping. The feature C-C' is roughly elliptical high with a maximum amplitute of about 200 gammas. Again the suggested interpretation is an intrusive plug of roughly dioritic composition.

V. RECOMMENDATIONS

The selection of targets for ground follow-up is normally based on the category of the AEM conductor, considerations of conductivity and magnetic correlation as well as the geological environment. None of the AEM responses encountered can be enthusiastically recommended for follow-up.

Jeremy Ruth

TABLE I

Townships Covered (wholly or in part)	Plates	Area Covered	No. of Lines	Mean Line Spacing	Line Direction	Line Miles	Line Miles Within Blocks	Line Miles Over Claims
Block A Ben Nevis, Pontiac Katrine	EM 1, 2	11.2 x 6.2 miles	27	1,320'	E-W	354.3	294.8	Ben 44.1 Nevis 29.5 Pontiac
Block B Ben Nevis, Pontiac	EM Mag 3	6.8 x 5.4 miles	53	660'	N-S	325.8	286.2	Ben 83.82 Nevis 62.81 Pontiac

EM 44.1 + 29.5 × 40 = 2944 ÷ 286 = 10.3 days per claim 680.1 581.0

EM 83.82 + 62.81 × 40 = 5865.2 ÷ 286 = 20.5 days per claim

Mag 83.82 + 62.81 × 40 = 5865.2 ÷ 286 = 20.5 days per claim

EM 31 days

SCHEDULE OF MINING CLAIMS
B NEVIS TOWNSHIP, ONTARIO APPENDIX B

CLAIM NO.	CLAIM NO.	CLAIM NO.	CLAIM NO.
L-263831	L-264435	L-265939	L-280497
L-263832	L-265781	L-265940	L-280498
L-265461	L-265782	L-265941	L-280635
L-265462	L-265783	L-265942	L-280636
L-265463	L-265784	L-265943	L-280637
L-265464	L-265785	L-265944	L-280638
L-265465	L-265786	L-265945	L-280639
L-265466	L-265787	L-265946	L-280640
L-265467	L-265788	L-265947	L-280641
L-265468	L-265793	L-265948	L-280642
L-265469	L-265794	L-265949	L-280643
L-265470	L-265795	L-265950	L-280644
L-265471	L-265796	L-265951	L-280645
L-265472	L-265797	L-265952	L-280646
L-265473	L-265798	L-265953	L-280647
L-265474	L-265803	L-265954	L-280648
L-265475	L-265804	L-265955	L-280649
L-265476	L-265805	L-265956	L-280650
L-265477	L-265806	L-265957	L-280651
L-265478	L-265807	L-265958	L-280652
L-265479	L-265808	L-265959	L-280653
L-265480	L-265813	L-265960	L-280654
L-265481	L-265814	L-265961	L-280655
L-265482	L-265815	L-265962	L-280656
L-265483	L-265816	L-265963	L-280657
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L-264432	L-265936	L-280490	
L-264433	L-265937	L0280495	
L-264434	L-265938	L-280496	

Schedule of Mining Claims
Miniac Township, Ontario

APPENDIX B

CLAIM NO.	CLAIM NO.	CLAIM NO.
L-265789	L-266046	L-266105
L-265790	L-266047	L-266106
L-265791	L-266048	L-266107
L-265792	L-266049	L-266108
L-265799	L-266050	L-266109
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L-266045	L-266104	
L-266035		