REPORT ON COMBINED HELICOPTER-BORNE MAGNETIC AND ELECTROMAGNETIC SURVEY NEW LISKEARD, ONTARIO.

for
MONOPROS LIMITED
by
AERODAT LIMITED
NOVEMBER 1982

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(Scale: 1:15,000)

Maps

1 Airborne Electromagnetic Survey Profiles and Interpretation 4550 Hz. (coaxial)

2 Total Field Magnetic Map

1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Monopros Limited by Aerodat Limited. Equipment operated included a 3 frequency electromagnetic system and a magnetometer. The survey, located near New Liskeard Ontario was flown on November 2nd and 3rd, 1982 and a total of 300 line kilometers of data was collected. This report refers to 13.5 kilometers of the survey corresponding to the claims indicated on the accompanying maps.

2. AIRCRAFT EQUIPMENT AND PERSONNEL

2.1 Aircraft

The helicopter used for the survey was an Aerospatiale A-Star 350D owned and operated by North Star Helicopter of Timmins, Ontario. Installation of the geophysical and ancillary equipment was carried out by Aerodat at Timmins. The helicopter was operated at a mean terrain clearance of 60 meters.

2.2 Equipment

2.2.1 Electromagnetic System

The electromagnetic system was an Aerodat/ Geonics/Geotech 3 frequency system. Two vertical coaxial coil pairs were operated at 955 and 4535 Hz and a horizontal coplanar coil pair at 4130 Hz. The transmitter-receiver separation was 7 meters. In-phase and quadrature signals were measured simultaneously for the 3 frequencies with a time-constant of 0.1 seconds. The EM bird was towed 30 meters below the helicopter.

2.2.2 Magnetometer

The magnetometer was a Geometrics G-803 proton precession type. The sensitivity of the instrument was 1 gamma at a 1 second sample rate. The sensor was towed in a bird 15 meters below the helicopter.

2.2.3 Magnetic Base Station

An IFG proton precession type magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to facilitate later correlation.

2.2.4 Radar Altimeter

A Hoffman HRA-100 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

2.2.5 Tracking Camera

A Geocam tracking camera was used to record flight path on 35 mm film. The camera was operated in strip mode and the fiducial numbers for cross reference to the analog and digital data were imprinted on the margin of the film.

2.2.6 Radar Positioning System

A Motorola Mini-Ranger (MRS III) radar navigation system was utilized for both navigation and track recovery. Transponders located at fixed known locations were interrogated several times per second and the ranges from these points to the helicopter measured to several meter accuracy. A navigational computer triangulates the position of the helicopter and provides the pilot with navigation information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

2.2.7 Analog Recorders

A RMS 16-channel dot-matrix recorder was used to display the data during the survey. The chart speed was 2 mm/sec. and in addition to manual and time fiducials the following data was recorded:

RMS Dot-matrix

Channel	Input	Scale
00	Altimeter	10 ft/mm (top=500 Ft.)
05	EM Coplanar (in-phase 4130 Hz.)	4 ppm/mm
06	EM Coplanar (quadrature 4130 Hz.)	4 ppm/mm
07	EM Coaxial (in-phase 4535 Hz.)	2 ppm/mm
08	EM Coaxial (quadrature 4535 Hz.)	2 ppm/mm
09	EM Coaxial (in-phase 955 Hz.)	2 ppm/mm
10	EM Coaxial (quadrature 955 Hz.)	2 ppm/mm
11	Magnetometer	4 gammas/mm
12	Magnetometer	2 gammas/mm

2.2.8 Digital Recorder

A Perle DAC/NAV data system recorded the survey data on cassette magnetic tape. Information recorded was as follows:

Equipment	Interval
EM	0.1 sec.
Magnetometer	0.5 sec.
Altimeter	1.0 sec.
Fiducial (time)	1.0 sec.
Fiducial (manual)	0.2 sec.

2.3 Personnel

Personnel directly involved with the survey operation were as follows:

Pilot: John Levesque

Equipment Operator/Technician: P. Moisan

3. DATA PRESENTATION

3.1 Flight Plan

The flight lines were flown in a 30°/210° direction at a mean spacing of 150 meters.

Navigation and flight path recovery were accomplished visually using the MRS III radar positioning system.

3.2 Electromagnetic

The Aerodat 3 frequency system utilizes 2 different transmitter/receiver coil geometries. The traditional coaxial coil configuration is operated at 2 frequencies, 955 and 4535 Hz and a second horizontal coplanar coil configuration is operated at 4130 Hz.

A given conductive source within the detection range of the system will couple differently with the coaxial as opposed to coplanar coil pairs. As a result the characteristic shape of the anomaly may differ significantly between geometries.

In the case of a thin steeply dipping dyke-like feature, the coaxial coil pair yield a symmetric peak directly over the conductor whereas the coplanar coil pair yield a minimum flanked by positive side lobes.

As the dip of the conductor decreases the coaxial anomaly shape changes slightly but in the case of the coplanar coil pair the side lobe on the down dip side strengthens relative to that on the up dip side. This asymmetry characteristic may be used for estimating dip.

As the thickness of the conductor increases the coaxial response shape changes slightly. However, in the case of the coplanar coils the minimum response directly over the conductor diminishes in amplitude relative to the positive side lobes and in the limiting case of a sphere or horizontal sheet-like conductor the minimum will disappear completely.

In general the coaxial coil pairs operated at two frequencies provide a conductive response range sufficiently broad to ensure a good response from geologic conductors. The coplanar coil pair provides additional information well suited to the interpretation of the structure of the conductive anomaly.

The Airborne Electromagnetic Survey Profile Map shows a phasor diagram in the legend for the coaxial coil pair at 4535 Hz. The apparent conductance is determined by applying the inphase and quadrature anomaly amplitudes of the coaxial coil configuration to the phasor diagram for the vertical half-plane model. The relationship of apparent conductance to true conductance, which in the case of narrow, slab-like bodies is the product of the electrical conductivity and average thickness, depends upon how closely the body approximates the sheet-like form, and upon how nearly at right angles its strike direction is to the flight line of the aircraft.

Conductance in mhos is the reciprocal of resistance in ohms and is a geologic parameter because it is characteristic of the conductor alone. It is generally independent of frequency and flying height (or depth of burial) and relatively independent of conductor strike length and dip. The inphase amplitude is a function of both flying height and dip, and is more strongly affected by conductor size than is conductance.

Apparent depths to the conductors can also be determined from the phasor diagram. Although the phasor curves are often able to distinguish between conditions of comparatively thick and thin overburden, the depth estimates are not generally reliable.

Some of the more common reasons for this area;

(i) The conductivity of the body may change with depth

(ii) the conductor plunges

(iii) the dip is substantially less than vertical

(iv) interference from conductive overburden or host rock has distorted the anomalies

(v) the body has too short a strike length to give a good half-plane response

Any of the conditions enumerated above may affect the anomaly amplitudes. Some will cause roughly proportionate changes in both phases, so that the depth estimates tend to be more seriously affected than the conductance estimates.

Anomalies that displayed the characteristics of a steeply dipping conductive source were selected and their amplitudes applied to the phasor diagram. The resulting conductance estimates are symbolized on the interpretation map.

3.3 Magnetics

The Total Field Magnetic Map shows contours of the total magnetic field, uncorrected for regional variation.

A correction for diurnal variation was made by direct subtraction of the recorded magnetic base station variation. An apparent coincidence between an EM and a magnetic anomaly may be caused by a conductor which is also magnetic, or by a conductor which lies in close proximity to a magnetic body. The majority of conductors which are also magnetic are sulphides containing pyrrhotite and/or magnetite. Conductive and magnetic bodies in close association can be, and often are, graphite and magnetite. It is often very difficult to distinguish between these cases. If the conductor is also magnetic, it will usually produce an EM anomaly whose general pattern resembles that of the magnetics. Depending on the magnetic permeability of the conducting body, the amplitude of the inphase EM anomaly will be weakened, and if the conductivity is also weak, the inphase EM anomaly may even be reversed in sign.

4. INTERPRETATION AND RECOMMENDATIONS

Throughout most of the area a response due to conductive overburden can be noted; the mid frequency coplanar and high frequency coaxial response closely resemble each other, with an amplitude ratio of about 4/1.

Cultural anomalies and effects are also noted. Noise from major power lines is very apparent on the analog records but largely suppressed on the filtered profile maps. Cultural features such as fences, telephone and minor power lines are not always distinguishable from steeply dipping bedrock conductors by their profile response. On the interpretation map conductor axes aligned with recognizable cultural features have been interpreted and identified as being of non-geologic origin.

Some anomalies exist within the survey area that have the profile characteristics of a steeply dipping conductive source or a well defined edge on a horizontal conducting layer. In some instances these anomalies may be due to cultural features, not clearly visible on the photomosaic.

The anomalies of probable geologic origin are indicated 'A', 'B', 'C'. They are of low apparent conductance indicative of an electrolytic conductor or minor disseminated mineralization. Conductors A and B fall on the flank of an intense magnetic anomaly of probable mafic volcanic origin.

Follow up for massive sulphide mineralization is not recommended on the basis of the geophysical data alone; however, if the geological setting was considered favourable to gold mineralization further investigation is warranted.

Respectfully submitted,
AERODAT LIMITED

December 7, 1982 R. L. Scott Hogg, B.A. Sc., P. Eng.

REGISTERED PROFESSIONAL ENGINEER
R. L. S. HOGG
PROVINCE OF ONTARIO

83-155

S. 667558

Ontario Ministry of Natural Resources

Report (Geophy Geocher

31M05NE0032 2.6142 BUCKE

900

Please type or print.
If number of mining claims traversed exceeds space on this form, attach a list.
Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
Do not use shaded areas below.

Type of Survey(s): AIRBORNE MAGNETIC AND ELECTROMAGNETIC	Township or Area: NEW LISLEARD AREA BUCKE TWP (M.432)
Claim Holder(s): DONALD BOUCHER	Prospector's Licence No.: A 45229
Address: MONOPROS LIMITED, 20 VICTORIA STREET, TORONTO, ONT. M5C 2N8	
Survey Company: AERODAT LIMITED	Date of Survey (from & to): 2 Day 11 Mo. 82 Yr. – 3 Day 11 Mo. 82 Yr. ; Total Miles of line Cut:
Name and Address of Author (of Geo-Technical report): R.L. SCOTT HOGG 3883 NASHUA DR. MISSISSAUGA, ONT.	

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	
Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	
Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	28
	Magnetometer	28
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Prefix	Number	Expend. Days Cr.
S	667558	
	667559	
	667560	
	667561	
	667562	
	667563	
	667564	
	667565	
	667566	
	667567	
	667568	
	667569	

RECEIVED ... 1 1983 MINING LANDS SECTION

SUDBURY MINING DIV. RECEIVED NOV 16 1983 A.M. 7,8,9,10,11,12,1,2,3,4,5,6 P.M.

SUDBURY MINING DIV. RECEIVED NOV 29 1983 A.M. 7,8,9,10,11,12,1,2,3,4,5,6 P.M.

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.

Total number of mining claims covered by this report of work: 12

For Office Use Only		
Total Days Cr. Recorded: 672	Date Recorded: Nov 29/83	Mining Recorder: C. Miller
	Date Approved as Recorded: 84.3.2	Branch Director: [signature]

Date: 25/11/83 — Recorded Holder or Agent (Signature): Donald Boucher

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: WOLFGANG SKUBLAK, MONOPROS LIMITED, 20 VICTORIA STREET TORONTO, ONT. M5C 2N8

Date Certified: Nov. 10/83 — Certified by (Signature): W. Skublak

File __________

Ontario

Ministry of Natural Resources

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) Airborne magnetic and electro magnetic
Township or Area New Liskeard
Claim Holder(s) Donald Boucher

Survey Company Aerodat Limited
Author of Report R.L. Scott Hogg
Address of Author 3883 Nashua Drive, Mississauga, Ontario
Covering Dates of Survey Nov. 2 and 3, 1983 (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	
Geochemical	

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

Magnetometer 28 **Electromagnetic** 28 **Radiometric** ______
(enter days per claim)

DATE: 9/12/83 **SIGNATURE:** Donald Boucher
Author of Report or Agent

Res. Geol. ________ **Qualifications** 2.4871

Previous Surveys

File No.	Type	Date	Claim Holder

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
S	667558
	667559
	667560
	667561
	667562
	667563
	667564
	667565
	667566
	667567
	667568
	667569

If space insufficient, attach list

TOTAL CLAIMS 12

837 (5/79)

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 ______

SELF POTENTIAL

Instrument ________________ Range ________________

Survey Method ________________

____

Corrections made ________________

____

RADIOMETRIC

Instrument ________________

Values measured ________________

Energy windows (levels) ________________

Height of instrument ________________ Background Count ________________

Size of detector ________________

Overburden ________________

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey ________________

Instrument ________________

Accuracy ________________

Parameters measured ________________

____

Additional information (for understanding results) ________________

____

____

AIRBORNE SURVEYS

Type of survey(s) Airborne magnetic and electromagnetic

Instrument(s) Geometrics G-803 proton precession/aerodat, geonics, geotech 3 frequency system

(specify for each type of survey)

Accuracy 1 Gamma/1 ppm

(specify for each type of survey)

Aircraft used Aerospatial Astar 350 D Helicopter

Sensor altitude Magnetics 45 metres/electomagnetic 30 metres

Navigation and flight path recovery method Motorola Mini-Ranger (Mrs iii) Radar Navigation System

____

Aircraft altitude 60 metres Line Spacing 150 metres

Miles flown over total area 300 kilometres (187.5 miles) Over claims only 13.5km (8.4 miles)

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken ____________________

____

____

Total Number of Samples ____________________

Type of Sample ____________________
(Nature of Material)

Average Sample Weight ____________________

Method of Collection ____________________

____

Soil Horizon Sampled ____________________

Horizon Development ____________________

Sample Depth ____________________

Terrain ____________________

____

Drainage Development ____________________

Estimated Range of Overburden Thickness ____________________

____

____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis ____________________

____

____

____

General ____________________

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ANALYTICAL METHODS

Values expressed in: per cent ☐ p. p. m. ☐ p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others ____________________

Field Analysis (____________________ tests)

Extraction Method ____________________

Analytical Method ____________________

Reagents Used ____________________

Field Laboratory Analysis

No. (____________________ tests)

Extraction Method ____________________

Analytical Method ____________________

Reagents Used ____________________

Commercial Laboratory (____________________ tests)

Name of Laboratory ____________________

Extraction Method ____________________

Analytical Method ____________________

Reagents Used ____________________

General ____________________

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Ministry of Natural Resources
Ontario

Geotechnical Report Approval

File 2.6142

Mining Lands Comments

-okay-

☑ To: Geophysics Mr. R. Barlow.

Comments

☑ Approved ☐ Wish to see again with corrections | Date Jan 21/84 | Signature R Barlow

☐ To: Geology - Expenditures

Comments

☐ Approved ☐ Wish to see again with corrections | Date | Signature

☐ To: Geochemistry

Comments

LD

☐ Approved ☐ Wish to see again with corrections | Date | Signature

☐ To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)

1593 (81/10)

Initial Check	Dec. 19. 1983 Mary Ella Anderson
Assessed	1/3/84 - D.K.
Approved Reports of Work sent out	
Notice of Intent filed	
Approval after Notice of Intent sent out	
Duplicate sent to Resident Geologist	
Duplicate sent to A.F.R.O.	

1983 12 19

Your File: 83-155
Our File: 2.6142

Mr. V.C. Miller
Mining Recorder
Ministry of Natural Resources
199 Larch Street
Sudbury, Ontario
P3E 5P9

Dear Sir:

We have received reports and maps for an Airborne Geophysical (Electromagnetic and Magnetometer) Survey submitted on Mining Claims S 667558 to 69 inclusive in the Township of Bucke.

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

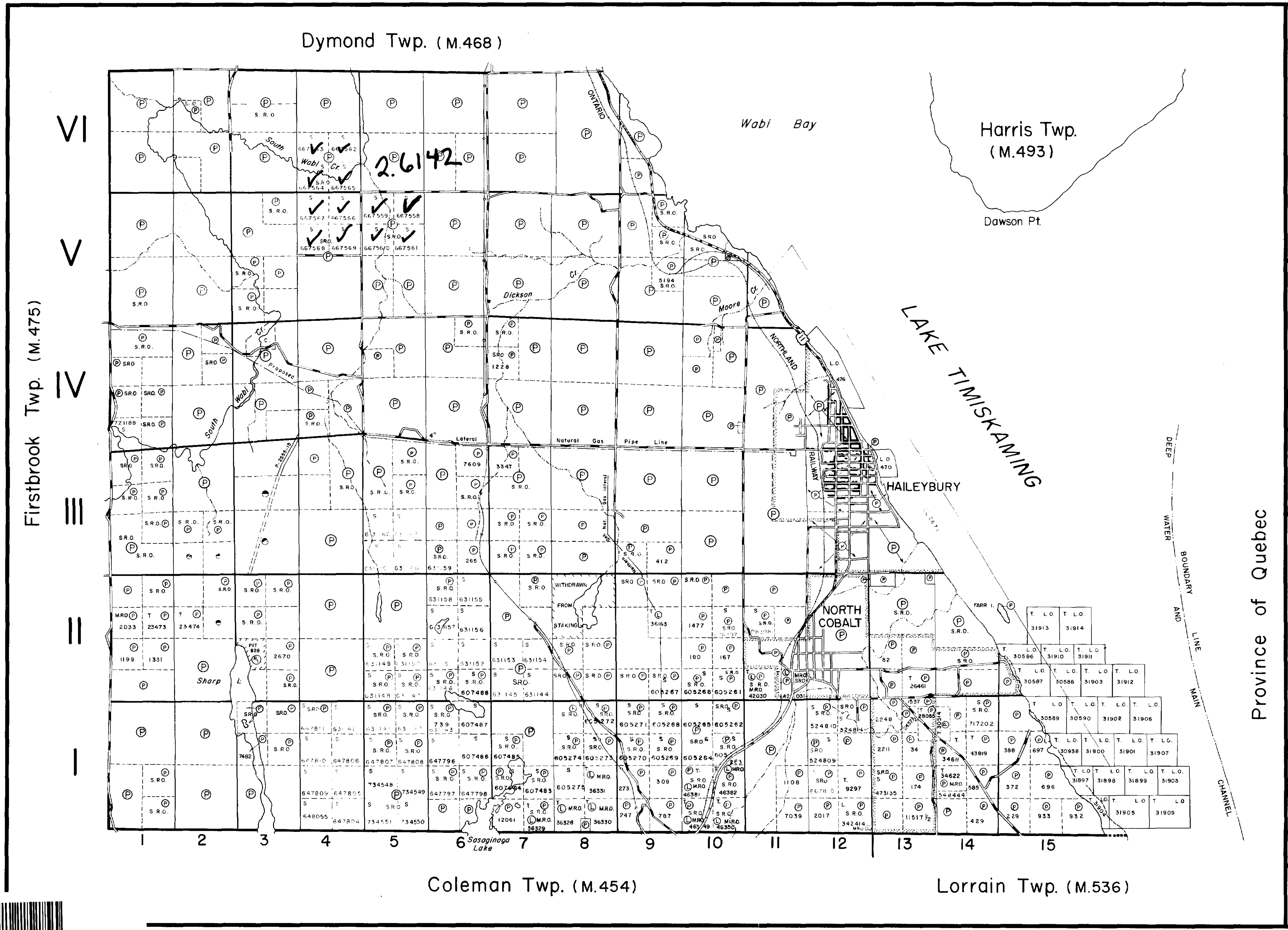
Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-1380

A. Barr:mc

cc: Monopros Ltd
20 Victoria Street
Toronto, Ontario
M5C 2N8

cc: Areodat Limited
3883 Nashua Drive
Mississauga, Ontario
L4V 1R3
Attention: Scott Hogg

cc: Donald Boucher
P.O. Box 28
Toronto Dominion Centre
Toronto, Ontario
M5K 1B8



THE TOWNSHIP OF

BUCKE

DISTRICT OF TIMISKAMING

SUDBURY MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	or Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KINGS HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
PATENTED S.R.O.	
CANCELLED	C.

NOTES

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

Staking of mining claims within Townsites shown thus only with consent of the Minister.

Flooding rights to elevation 595' above sea level in Lake Timiskaming.

Proposed Natural Gas Pipeline along Hwy. 11 through this township.

N. half Lot 8, Con. 2 subject to sanitary control of Constance Lake for Town of Haileybury.

DATE OF ISSUE FEB 2 8 1984 Ministry of Natural Resources TORONTO

Areas withdrawn from staking under Section 43 of the Mining Act, R.S.O. 1970 (Sec. 42, R.S.O. '60).

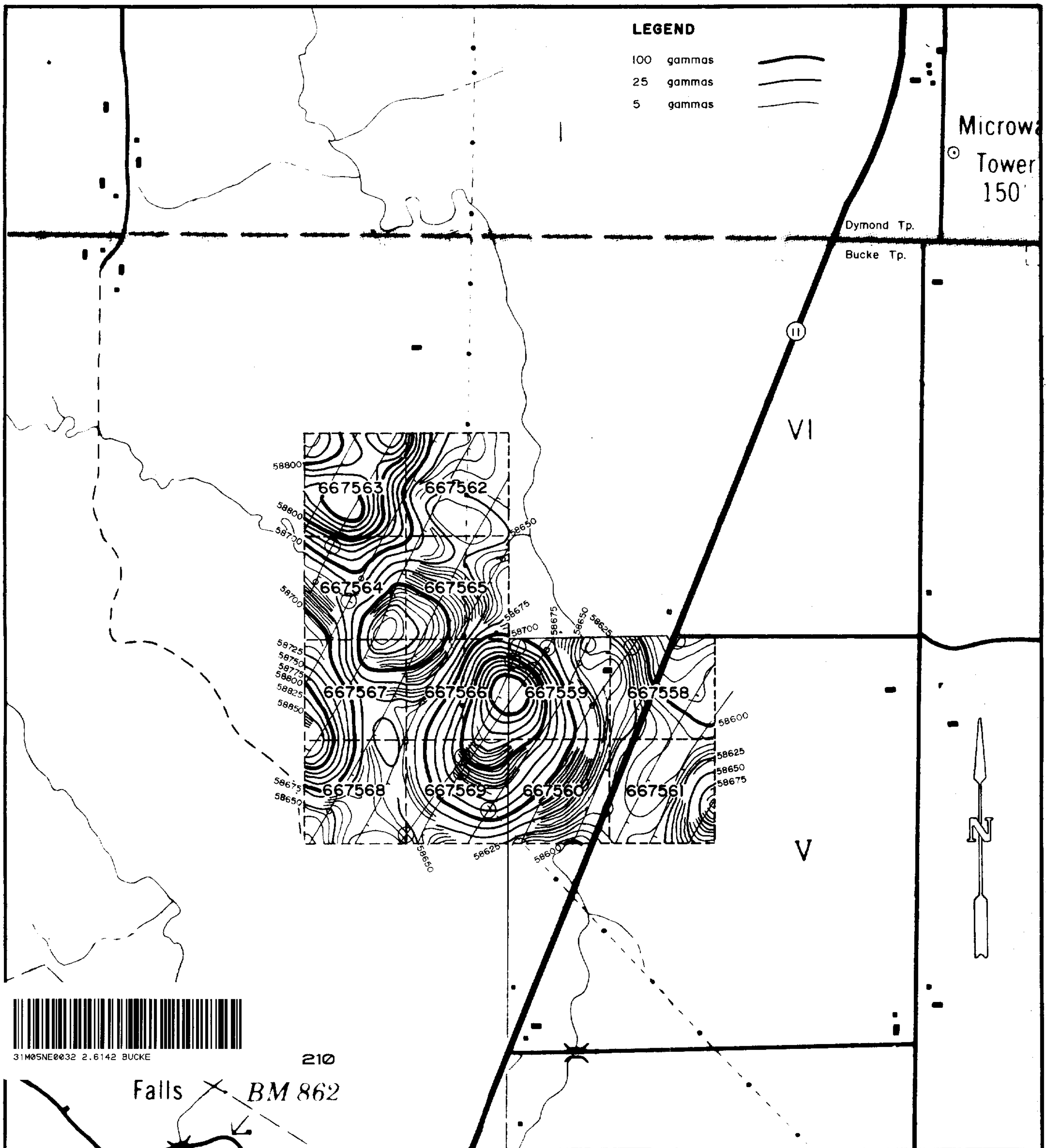
Order No.	File	Date	Disposition
Ⓡ1	160707		S.R.O.

PLAN NO - M.432

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

31M05NE0032 2.6142 BUCKE

200



MONOPROS LIMITED

TOTAL FIELD MAGNETIC MAP

(AIRBORNE SURVEY)

NEW LISKEARD

ONTARIO

SCALE 1/15,000

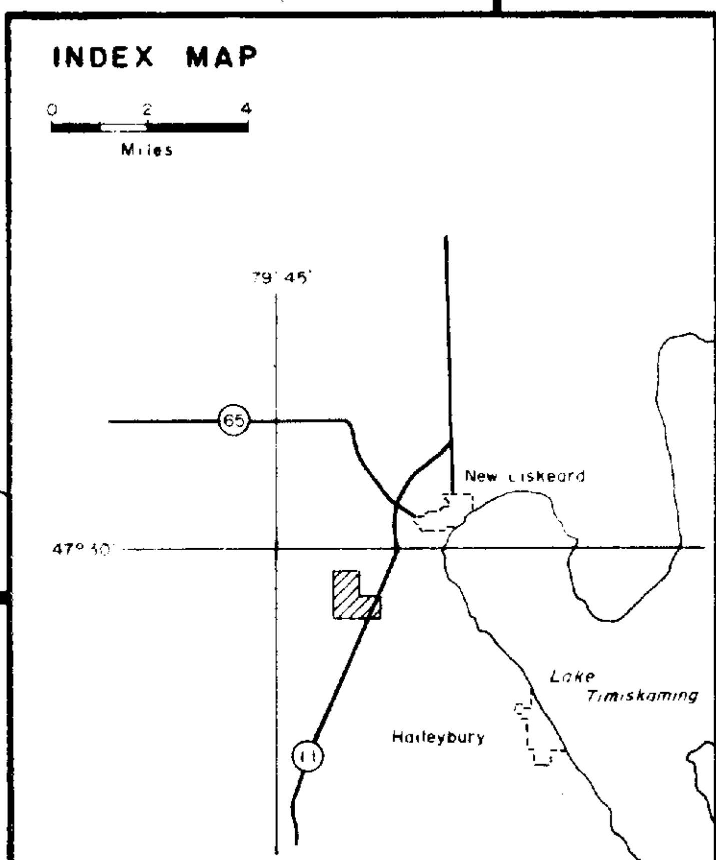
1 0 Kilometre

1/2 0 1/2 Mile

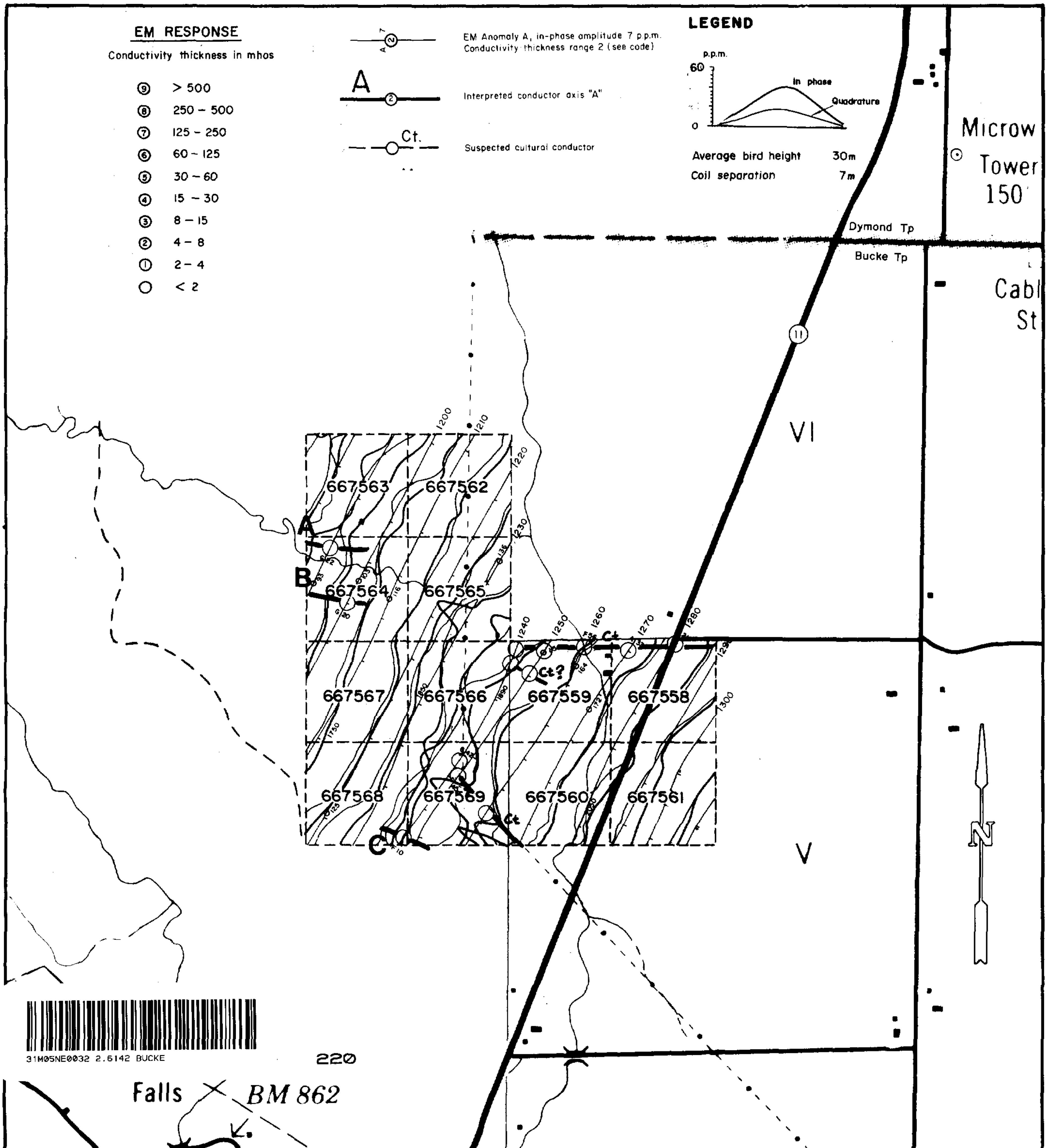
Jacques Letendre

AEROD AT

DATE	:	November, 1982
N.T.S. No.	:	31 M
FIGURE No.	:	3



2.7586



MONOPROS LIMITED

AIRBORNE ELECTROMAGNETIC SURVEY

PROFILES - 4535 Hz.(co-axial)

INTERPRETATION

NEW LISKEARD

ONTARIO

SCALE 1/15,000

1 0 1 Kilometre

1/2 1/2 Mile

26142

AERODAT

DATE November, 1982

N.T.S. No. 31 M

MAP No.