010

REPORT ON
COMBINED HELICOPTER BORNE MAGNETIC, ELECTROMAGNETIC AND VLF SURVEY
BENNY PROJECT - PN-232
CARTIER AREA
ONTARIO

FOR
FALCONBRIDGE LIMITED
BY
AERODAT LIMITED
February 17, 1989

J8885MNR

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(Scale 1:10,000)

MAPS:

1. AIRBORNE ELECTROMAGNETIC PROFILES;
showing flight lines, fiducials and inphase and quadrature profiles of 33 kHz coplanar response.

2. VLF-EM TOTAL FIELD PROFILES;
showing flight lines, fiducicals, and profiles of VLF-EM response from NSS (Annapolis, Maryland) operating at 21.4 kHz.

1. INTRODUCTION

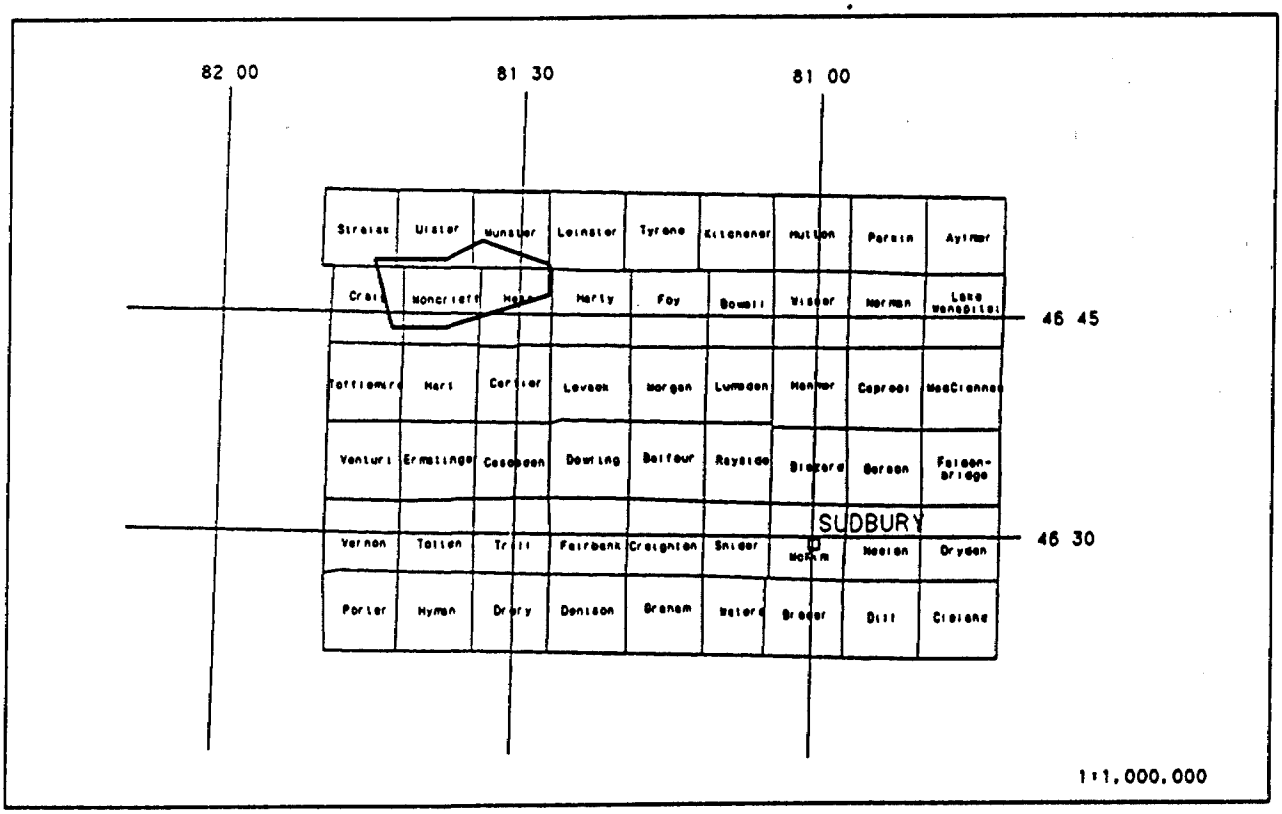
This report describes an airborne geophysical survey carried out on behalf of Falconbridge Limited by Aerodat Limited. Equipment operated included a four frequency electromagnetic system, a high sensitivity cesium vapour magnetometer, a two frequency VLF-EM system, a power line monitor, a video tracking çamera, an altimeter and an electronic positioning system. Electromagnetic, magnetic and altimeter data were recorded both in digital and analog form. Positioning data were stored in digital form, encoded on the VHS format video tape and recorded at regular intervals in UTM co-ordinates on the analog trace, as well as being marked on the flight path map by the operator while in flight.

A total of 1,255 kilometres of the recorded data were compiled in map form of which 291 kilometres is presented in this report covering claim groups in the following townships:

Stralak
Craig
Ulster
Moncrieff
Munster
Hess

2. SURVEY AREA LOCATION

The survey area is depicted on the index map shown below.



3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350B helicopter, (CG-JIX), owned and operated by Lakeland Helicopters Limited, was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey aircraft was flown at a mean terrain clearance of 60 metres.

3.2 Equipment

3.2.1 Electromagnetic System

The electromagnetic system was an Aerodat 4-frequency system. Two vertical coaxial coil pairs were operated at 935 Hz and 4.6 kHz and two horizontal coplanar coil pairs at 4.2 kHz and 33 kHz. The transmitter-receiver separation was 7 metres. Inphase and quadrature signals were measured simultaneously for the four frequencies with a time constant of 0.1 seconds. The electromagnetic bird was towed 30 metres below the helicopter.

3.2.2 VLF-EM System

System was a Herz Totem 2A. This instrument measures the total field and quadrature components of two selected transmitters, preferably oriented at right angles to one

another. The sensor was towed in a bird 12 metres below the helicopter. The normal configuration of transmitting stations monitored was NSS, Annapolis, Maryland for the Line station and NLK, Jim Creek, Washington for the Ortho station broadcasting at 21.4 and 24.8 kHz respectively. Station NAA, Cutler, Maine at 24.5 kHz was also used and occasionally, combinations of the above three were required.

3.2.3 Magnetometer

The magnetometer employed a Scintrex Model VIW - 2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas at a 0.1 second sampling rate. The sensor was towed in a bird 17 metres below the helicopter.

3.2.4 Magnetic Base Station

A Geometrics G-803 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.

3.2.5 Radar Altimeter

A King KRA10A radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

3.2.6 Tracking Camera

A Panasonic video flight path recording system was used to record the flight path on standard VHS format video tapes. The system was operated in continuous mode and the flight number, real time and manual fiducial numbers were registered on the picture frame for cross-reference to the analog and digital data.

3.2.7 Analog Recorder

An RMS dot-matrix recorder was used to display the data during the survey. In addition to manual and time fiducials, the following data were recorded:

Channel	Input	Scale
RALT	Altimeter (150 m at top of chart)	3 m/mm
CXI1	935 Hz Coaxial Inphase	2.5 ppm/mm
CXQ1	935 Hz Coaxial Quadrature	2.5 ppm/mm
CXI2	4.6 kHz Coaxial Inphase	2.5 ppm/mm

Channel	Input	Scale
CXQ2	4.6 kHz Coaxial Quadrature	2.5 ppm/mm
CPI1	4.2 kHz Coplanar Inphase	10 ppm/mm
CPQ1	4.2 kHz Coplanar Quadrature	10 ppm/mm
CPI2	33 kHz Coplanar Inphase	20 ppm/mm
CPQ2	33 kHz Coplanar Quadrature	20 ppm/mm
VLT	VLF-EM Total Field, Line	2.5 %/mm
VLQ	VLF-EM Quadrature, Line	2.5 %/mm
VOT	VLF-EM Total Field, Ortho	2.5 %/mm
VOQ	VLF-EM Quadrature, Ortho	2.5 %/mm
MAGF	Magnetometer, fine	2.5 nT/mm
MAGC	Magnetometer, coarse	25 nT/mm
PWRL	Power Line Monitor	n/a

3.2.8 Digital Recorder

An RMS DGR 33 system recorded the survey on magnetic tape. Information recorded was as follows:

Equipment	Recording Interval
EM system	0.1 seconds
Magnetometer	0.1 seconds
VLF-EM	0.2 seconds
Altimeter	0.5 seconds
NAV System	0.2 seconds.

3.2.9 Radar Positioning System

A Syledis SR3 UHF radio positioning system was used for navigation and track recovery. A network of antennae provided the pilot/operator with constant navigation information, with a positional accuracy of $\pm$ 5 metres.

4. DATA PRESENTATION

4.1 Base Map

A topographic base map at a scale of 1:10,000 was prepared from enlargements of Ontario Basic Mapping topographic maps (originals at 1:20,000).

4.2 Flight Path

The flight path was derived from the Syledis electronic positioning system. It is estimated that the flight path is generally accurate to about 10 metres with respect to the topographic detail of the base map. The flight path is presented with time and navigator's manual fiducials for cross reference to both the analog and digital data.

4.3 Electromagnetic Profiles

The electromagnetic data were recorded digitally at a sample rate of 10/second with a time constant of 0.1 seconds. A two stage digital filtering process was carried out to reject major sferic events and to reduce system noise.

Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude

but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects major sferic events.

The signal to noise ratio was further enhanced by the application of a low pass digital filter. It has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 0.25 seconds. This low effective time constant permits maximum profile shape resolution.

Following the filtering process, a base level correction was made. The correction applied is a linear function of time that ensures the corrected amplitude of the various inphase and quadrature components is zero when no conductive or permeable source is present. The filtered and levelled data were then presented in profile map form.

4.4 VLF-EM Total Field Profiles

The VLF-EM data from NSS (Annapolis, Maryland) operating at 21.4 KHz were presented in profile map form.

5. INTERPRETATION

The geophysical results presented in this report indicate the existence and position of conductivity anomalies. The response will be a maximum over the conductor, with the amplitude being related to the target's conductance and depth. Most of the surveyed blocks exhibit conductivity contrasts which may be interpreted as structural features. However, a more detailed evaluation of the significance of the data presented should be performed by those most familiar with the local geology and with access to additional geological and geophysical information.

Respectfully submitted,

AERODAT LIMITED

February 17, 1989

J8885MNR

Anthony E.Valentini

Geophysicist

APPENDIX I

GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

The Aerodat four frequency system utilizes two different transmitter-receiver coil geometries. The traditional coaxial coil configuration is operated at two widely separated frequencies and the lower frequency horizontal coplanar coil pair is operated at a frequency approximately aligned with one of the coaxial frequencies.

The electromagnetic response measured by the helicopter system is a function of the "electrical" and "geometrical" properties of the conductor. The "electrical" property of a conductor is determined largely by its electrical conductivity, magnetic susceptibility and its size and shape; the "geometrical" property of the response is largely a function of the conductor's shape and orientation with respect to the measuring transmitter and receiver.

Electrical Considerations

For a given conductive body the measure of its conductivity or conductance is closely related to the measured phase shift between the received and transmitted electromagnetic field. A small phase shift indicates a relatively high conductance, a large phase shift lower conductance. A small phase shift results

in a large inphase to quadrature ratio and a large phase shift a low ratio. This relationship is shown quantitatively for a non-magnetic vertical half-plane model on the accompanying phasor diagram. Other physical models will show the same trend but different quantitative relationships.

The phasor diagram for the vertical half-plane model, as presented, is for the coaxial coil configuration with the amplitudes in parts per million (ppm) of the primary field as measured at the response peak over the conductor. To assist the interpretation of the survey results the computer is used to identify the apparent conductance and depth at selected anomalies. The results of this calculation are presented in table form in Appendix II and the conductance and inphase amplitude are presented in symbolized form on the map presentation.

The conductance and depth values as presented are correct only as far as the model approximates the real geological situation. The actual geological source may be of limited length, have significant dip, may be strongly magnetic, its conductivity and thickness may vary with depth and/or strike and adjacent bodies and overburden may have modified the response. In general the conductance estimate is less affected by these limitations than is the

depth estimate, but both should be considered as relative rather than absolute guides to the anomaly's properties.

Conductance in mhos is the reciprocal of resistance in ohms and in the case of narrow slab-like bodies is the product of electrical conductivity and thickness.

Most overburden will have an indicated conductance of less than 2 mhos; however, more conductive clays may have an apparent conductance of say 2 to 4 mhos. Also in the low conductance range will be electrolytic conductors in faults and shears.

The higher ranges of conductance, greater than 4 mhos, indicate that a significant fraction of the electrical conduction is electronic rather than electrolytic in nature. Materials that conduct electronically are limited to certain metallic sulphides and to graphite. High conductance anomalies, roughly 10 mhos or greater, are generally limited to sulphide or graphite bearing rocks.

Sulphide minerals, with the exception of such ore minerals as sphalerite, cinnabar and stibnite, are good conductors; sulphides may occur in a disseminated manner that inhibits electrical

conduction through the rock mass. In this case the apparent conductance can seriously underrate the quality of the conductor in geological terms. In a similar sense the relatively non-conducting sulphide minerals noted above may be present in significant consideration in association with minor conductive sulphides, and the electromagnetic response only relate to the minor associated mineralization. Indicated conductance is also of little direct significance for the identification of gold mineralization. Although gold is highly conductive, it would not be expected to exist in sufficient quantity to create a recognizable anomaly, but minor accessory sulphide mineralization could provide a useful indirect indication.

In summary, the estimated conductance of a conductor can provide a relatively positive identification of significant sulphide or graphite mineralization; however, a moderate to low conductance value does not rule out the possibility of significant economic mineralization.

Geometrical Considerations

Geometrical information about the geologic conductor can often be interpreted from the profile shape of the anomaly. The change in shape is primarily related to the change in inductive coupling among the transmitter, the target, and the receiver.

In the case of a thin, steeply dipping, sheet-like conductor, the coaxial coil pair will yield a near symmetric peak over the conductor. On the other hand, the coplanar coil pair will pass through a null couple relationship and yield a minimum over the conductor, flanked by positive side lobes. As the dip of the conductor decreased from vertical, the coaxial anomaly shape changes only 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.

As the thickness of the conductor increases, induced current flow across the thickness of the conductor becomes relatively significant and complete null coupling with the coplanar coils is no longer possible. As a result, the apparent minimum of the coplanar response over the conductor diminishes with increasing thickness, and in the limiting case of a fully 3 dimensional body or a horizontal layer or half-space, the minimum disappears completely.

A horizontal conducting layer such as overburden will produce a response in the coaxial and coplanar coils that is a function of altitude (and conductivity if not uniform). The profile shape will be similar in both coil configurations with an amplitude ratio (coplanar:coaxial) of about 4:1*.

In the case of a spherical conductor, the induced currents are confined to the volume of the sphere, but not relatively restricted to any arbitrary plane as in the case of a sheet-like form. The response of the coplanar coil pair directly over the sphere may be up to 8* times greater than that of the coaxial pair.

In summary, a steeply dipping, sheet-like conductor will display a decrease in the coplanar response coincident with the peak of the coaxial response. The relative strength of this coplanar null is related inversely to the thickness of the conductor; a pronounced null indicates a relatively thin conductor. The dip of such a conductor can be inferred from the relative amplitudes of the side-lobes.

Massive conductors that could be approximated by a conducting sphere will display a simple single peak profile form on both coaxial and coplanar coils, with a ratio between the coplanar to coaxial response amplitudes as high as 8*.

Overburden anomalies often produce broad poorly defined anomaly profiles. In most cases, the response of the coplanar coils closely follows that of the coaxial coils with a relative amplitude ratio of 4*.

Occasionally, if the edge of an overburden zone is sharply defined with some significant depth extent, an edge effect will occur in the coaxial coils. In the case of a horizontal conductive ring or ribbon, the coaxial response will consist of two peaks, one over each edge; whereas the coplanar coil will yield a single peak.

* It should be noted at this point that Aerodat's definition of the measured ppm unit is related to the primary field sensed in the receiving coil without normalization to the maximum coupled (coaxial configuration). If such normalization were applied to the Aerodat units, the amplitude of the coplanar coil pair would be halved.

Magnetics

The Total Field Magnetic Map shows contours of the total magnetic field, uncorrected for regional variation. Whether an EM anomaly with a magnetic correlation is more likely to be caused by a sulphide deposit than one without depends on the type of mineralization. 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.

VLF Electromagnetics

The VLF-EM method employs the radiation from powerful military radio transmitters as the primary signals. The magnetic field associated with the primary field is elliptically polarized in the vicinity of electrical conductors. The Herz Totem uses three coils in the X, Y, Z configuration to measure the total field and vertical quadrature component of the polarization ellipse.

The relatively high frequency of VLF (15-25) kHz provides high response factors for bodies of low conductance. Relatively "disconnected" sulphide ores have been found to produce measureable VLF signals. For the same reason, poor conductors such as sheared contacts, breccia zones, narrow faults, alteration zones and porous flow tops normally produce VLF anomalies. The method can therefore be used effectively for geological mapping. The only

relative disadvantage of the method lies in its sensitivity to conductive overburden. In conductive ground the depth of exploration is severely limited.

The effect of strike direction is important in the sense of the relation of the conductor axis relative to the energizing electromagnetic field. A conductor aligned along a radius drawn from a transmitting station will be in a maximum coupled orientation and thereby produce a stronger response than a similar conductor at a different strike angle. Theoretically, it would be possible for a conductor, oriented tangentially to the transmitter to produce no signal. The most obvious effect of the strike angle consideration is that conductors favourably oriented with respect to the transmitter location and also near perpendicular to the flight direction are most clearly rendered and usually dominate the map presentation.

The total field response is an indicator of the existence and position of a conductivity anomaly. The response will be a maximum over the conductor, without any special filtering, and strongly favour the upper edge of the conductor even in the case of a relatively shallow dip.

The vertical quadrature component over steeply dipping sheet-like

conductor will be a cross-over type response with the cross-over closely associated with the upper edge of the conductor.

The response is a cross-over type due to the fact that it is the vertical rather than total field quadrature component that is measured. The response shape is due largely to geometrical rather than conductivity considerations and the distance between the maximum and minimum on either side of the cross-over is related to target depth. For a given target geometry, the larger this distance the greater the depth.

The amplitude of the quadrature response, as opposed to shape is function of target conductance and depth as well as the conductivity of the overburden and host rock. As the primary field travels down to the conductor through conductive material it is both attenuated and phase shifted in a negative sense. The secondary field produced by this altered field at the target also has an associated phase shift. This phase shift is positive and is larger for relatively poor conductors. This secondary field is attenuated and phase shifted in a negative sense during return travel to the surface. The net effect of these 3 phase shifts determine the phase of the secondary field sensed at the receiver.

A relatively poor conductor in resistive ground will yield a net positive phase shift. A relatively good conductor in more conductive ground will yield a net negative phase shift. A combination is possible whereby the net phase shift is zero and the response is purely in-phase with no quadrature component.

A net positive phase shift combined with the geometrical cross-over shape will lead to a positive quadrature response on the side of approach and a negative on the side of departure. A net negative phase shift would produce the reverse. A further sign reversal occurs with a 180 degree change in instrument orientation as occurs on reciprocal line headings. During digital processing of the quadrature data for map presentation this is corrected for by normalizing the sign to one of the flight line headings.

APPENDIX II

PERSONNEL

FIELD

Flown - January, 1989

Pilot - Roger Morrow

Operator - Steve Robinson

OFFICE

Processing - Anthony E. Valentini

- George McDonald

Report - Anthony E. Valentini

APPENDIX III

CERTIFICATE OF QUALIFICATIONS

Anthony E. Valentini

1. I am a geophysicist and have been working in this field since 1985.

2. I reside at 48 Village Drive, Stoney Creek, Ontario.

3. I hold an honours B.Sc. in Geophysics from the University of Western Ontario having graduated in 1985.

4. I hold the position of Geophysicist at Aerodat Limited. I have been employed by Aerodat since July 1986.

5. I am a member of the Canadian Exploration Geophysical Society.

6. The accompanying report was prepared from a review of the airborne geophysical survey flown by Aerodat for Falconbridge Limited. I have not visited the property.

7. I have no interest in the property described nor do I hold any securities in Falconbridge Limited.

Signed,

Anthony E. Valentini

Mississauga, Ontario

Anthony E. Valentini
Geophysicist

Qual. 2.10275

Ontario

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Mining Lands Section
880 Bay Street, 3rd Floor
Toronto, Ontario
M5S 1Z8

Telephone: (416) 965-4888

November 24, 1989

Your File: W8907-045
Our File: 2.12328

Mining Recorder
Ministry of Northern Development and Mines
Bag 3000
200 Brady Street, 6th floor
Sudbury, Ontario
P3A 5W2

Dear Sir:

Re: Notice of Intent dated October 23, 1989 for Geophysical (Magnetometer and Electromagnetic) Survey submitted on Mining Claims S 993569 et al in Ulster, Moncrieff, Hess, Munster and Craig Townships.

The assessment work credits, as listed with the above-mentioned Notice of Intent have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

W.R. Cowan
Provincial Manager, Mining Lands
Mines & Minerals Division

LS:eb
Enclosure

cc: Mr. G.H. Ferguson
Mining and Lands Commissioner
Toronto, Ontario

Resident Geologist
Sudbury, Ontario

Falconbridge Ltd.
Falconbridge, Ontario

Anthony E. Valentini
Stoney Creek, Ontario

Michael J. Gray
Sudbury, Ontario

Ministry of Northern Development and Mines
Ontario

Technical Assessment Work Credits

File 2,12328

Date October 23, 1989

Mining Recorder's Report of Work No. W8907-045

Recorded Holder
FALCONBRIDGE LTD.

Township or Area
ULSTER, MONCRIEFF, HESS, MUNSTER, AND CRAIG TOWNSHIPS.

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	S 993569
Electromagnetic 40 days	993653 to 656 incl.
Magnetometer 40 days	994096
Radiometric ____ days	1013391-92
Induced polarization ____ days	1042317 to 63 incl.
Other ____ days	1042367
Section 77 (19) See "Mining Claims Assessed" column	1042369 to 372 incl.
Geological ____ days	1042378
Geochemical ____ days	1042388 to 392 incl.
Man days ☐ Airborne ☒	1042397-98
Special provision ☐ Ground ☐	1042400
☐ Credits have been reduced because of partial coverage of claims.	1042461 to 467 incl.
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	1042469-70
	1042479 to 487 incl.
	1042946, 1042952
	1046856 to 881 incl.
	1046885 to 914 incl.
	1046916 to 944 incl.

Special credits under section 77 (16) for the following mining claims

10 days Airborne VLF+10 days Airborne Electromagnetic S 993568, 993570, 994048 1042368, 1042377, 1042387, 1046883-84.

20 days Airborne VLF + 15 days Airborne Electromagnetic S 830744 to 747 incl.

No credits have been allowed for the following mining claims

☒ not sufficiently covered by the survey ☐ insufficient technical data filed

S 1042468
1042488
1042504

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 60; Geological - 40; Geochemical - 40; Section 77(19) - 60.

Ministry of Northern Development and Mines

Ontario

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

DOCUMENT No. W8907-045

2.1328

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 "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area
Geophysical (Airborne ~~Mag/Em~~) * ELECTROMAGNETIC) (AIRBORNE EM-VLF	Benny - Cartier Area

Claim Holder(s)	Prospector's Licence No.
Falconbridge Limited	A 21647

Address: P.O. Box 40, Falconbridge, Ontario P0M 1S0

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
Aerodat Ltd.	19 1 89 (Day / Mo. / Yr.) 28 1 89 (Day / Mo. / Yr.)	N/A

Name and Address of Author (of Geo-Technical report): Anthony E. Valentini 48 Village Dr., Stoney Creek, Ontario L8E-3N1

Credits Requested per Each Claim in Columns at right

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

SUDBURY MINING DIV. RECEIVED APR 3 - 1989 A.M. P.M.

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

RECEIVED APR 19 1989 MINING LANDS SECTION

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.
S	1042483	80
	1042463	80
	1042464	80
	1042465	80
	1042466	80
	1042468	80
	1042469	80
	1042470	80
	1042479	80
	1042480	80
	1046857	80
	1046858	80
	1046859	80
	1046860	80
	1046861	80
	1046872	80
	1046873	80
	1046874	80
	1046875	80
	1046876	80
	1046916	80

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1046917	80
	1046918	80
	1046919	80
	1046920	80
	1046921	80
	1046923	80
	1046924	80
	1046925	80
	1046931	80
	1046932	80
	1046933	80
	1046934	80
	1046935	80
	1046936	80
	1046937	80
	1046938	80
	1046939	80
	1046940	80
	1046941	80
	1046942	80
	1046943	80
	1046944	80

* Change made per conversation blw M. Gray / K. Giroux . 89.04.07.

Total number of mining claims covered by this report of work: 189

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
14,460	APRIL 7, 1989.	
	Date Approved as Recorded	Branch Director
	See revised work statement	

Date	Recorded Holder or Agent (Signature)
3 April 1989	Michael J. Gray

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

Michael J. Gray #6-351 Wellington Hts.
Sudbury, Ontario P3E 3V8

Date Certified	Certified by (Signature)
3 April 1989	Michael J. Gray

Ministry of Northern Development and Mines

Ontario

2.12321

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

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 "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

SUDBURY MINING DIV. RECEIVED APR 5 – 1989 A.M. P.M.

Type of Survey(s)	Township or Area
Claim Holder(s)	Prospector's Licence No.
Address	
Survey Company	Date of Survey (from & to) Day | Mo. | Yr. | Day | Mo. | Yr.
Name and Address of Author (of Geo-Technical report)	Total Miles of line Cut

Credits Requested per Each Claim in Columns at right

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1046856	80
	1046862	80
	1046863	80
	1046864	80
	1046865	80
	1046889	80
	1046890	80
	1046891	80
	1046892	80
	1046893	80
	1046894	80
	1046895	80
	1046896	80
	1046897	80
	1046904	80
	1046905	80
	1046906	80
	1042327	80
	1042328	80
	1042329	80
	1042330	80
	1042331	80

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1042332	80
	1042333	80
	1042334	80
	1042336	80
	1042357	80
	1042400	80
	1042481	80
	1042482	80
	1042484	80
	1042485	80
	1042486	80
	1042487	80
	1042488	80
	1042504	80
	1046871	80
	1046877	80
	1046878	80
	1046879	80
	1046880	80
	1046881	80
	1046883 *	20 ~~80~~
	1046884 *	20 ~~80~~
	1046922	80

*maximums reached for Geophysical.

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

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.

For Office Use Only		
Total Days Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Branch Director
	See	

Date	Recorded Holder or Agent (Signature)
3 April 1989	Michael G. Ang

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

Date Certified	Certified by (Signature)
3 April 1989	Michael G. Ang

Ministry of Northern Development and Mines

Ontario

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

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 "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

2.12508

SUDBURY MINING DIV.
RECEIVED
APR 5 – 1989
A.M. P.M.
7 8 9 10 11 12 1 2 3 4 5 6

Type of Survey(s)

Township or Area

Claim Holder(s)

Prospector's Licence No.

Address

Survey Company

Date of Survey (from & to) Day | Mo. | Yr. | Day | Mo. | Yr.

Total Miles of line Cut

Name and Address of Author (of Geo-Technical report)

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	40
	Magnetometer	
	~~Radiometric~~ VLF	40

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1046926	80
	1046927	80
	1046928	80
	1046929	80
	1046930	80
	1013391	80
	1013392	80
	1042317	80
	1042318	80
	1042319	80
	1042320	80
	1042321	80
	1042322	80
	1042323	80
	1042324	80
	1042325	80
	1042326	80
	1042335	80
	1042337	80
	1042338	80
	1042339	80
	1042340	80

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1042341	80
	1042342	80
	1042343	80
	1042344	80
	1042345	80
	1042346	80
	1042347	80
	1042348	80
	1042349	80
	1042350	80
	1042351	80
	1042352	80
	1042353	80
	1042354	80
	~~1042355~~	~~80~~
	1042356	80
	1042359	80
	~~1042358~~	~~80~~
	1042360	80
	1042361	80
	1042362	80
	1042363	80
	1042367	80
	1042368 *	20 ~~80~~

* maximum reached for Geophysical

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

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.

For Office Use Only		
Total Days Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Branch Director

Date: 3 April 1989

Recorded Holder or Agent (Signature): Michael A. Hogg

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

Date Certified: 3 April 1989

Certified by (Signature): Michael A. Hogg

Ministry of Northern Development and Mines

Ontario

2.12 28

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

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 "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

SUDBURY MINING DIV. RECEIVED APR 5 – 1989 A.M. P.M.

Type of Survey(s)

Township or Area

Claim Holder(s)

Prospector's Licence No.

Address

Survey Company

Date of Survey (from & to) Day | Mo. | Yr. | Day | Mo. | Yr.

Total Miles of line Cut

Name and Address of Author (of Geo-Technical report)

Credits Requested per Each Claim in Columns at right

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1042369	80
	1042370	80
	1042371	80
	1042372	80
	1042377 *	20~~80~~
	1042378	80
	1042387 *	20~~80~~
	1042388	80
	1042389	80
	1042390	80
	1042391	80
	1042392	80
	1042397	80
	1042398	80
	1042461	80
	1042462	80
	1042467	80
	1046886	80
	1046887	80
	1046888	80
	1046898	80
	1046899	80
	1046900	80

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1046901	80
	1046902	80
	1046903	80
	1046907	80
	1046908	80
	1046909	80
	1046910	80
	1046911	80
	1046912	80
	1046913	80
	1046914	80
	994096	80
	1042952	80
	1042946	80
	993569	80
	993653	80
	993654	80
	993655	80

* maximums reached for Geophysical.

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

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.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Branch Director

Date: 3 April 1989

Recorded Holder or Agent (Signature): Michael G. Gray

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

Date Certified: 3 April 1989

Certified by (Signature): Michael G. Gray

Ministry of Northern Development and Mines
Ontario

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

Mining Act

2.12320

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 "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area

Claim Holder(s)	Prospector's Licence No.

Address

Survey Company	Date of Survey (from & to) Day | Mo. | Yr. | Day | Mo. | Yr.	Total Miles of line Cut

Name and Address of Author (of Geo-Technical report)

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

SUDBURY MINING DIV. RECEIVED APR 3 – 1989 A.M. 7|8|9|10|11|12|1|2|3|4|5|6

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	40
	Magnetometer	
	~~Radiometric~~ VLF	40

Expenditures (excludes power stripping)

Type of Work Performed	

Performed on Claim(s)	

Calculation of Expenditure Days Credits

Total Expenditures			=	Total Days Credits
$	÷	15	=	

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.

Date	Recorded Holder or Agent (Signature)
3 April 1989	Michael G. Gray

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
S	1046866	80
	1046867	80
	1046868	80
	1046869	80
	1046870	80
	1046885	80
	830744 *	35 ~~80~~
	830745 *	35 ~~80~~
	830746 *	~~35 80~~
	830747 *	~~35 80~~
	993568 *	20 ~~80~~
	993570 *	20 ~~80~~
	993656	80
	994048 *	20 ~~80~~

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

* maximums reached for Geophysical.

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

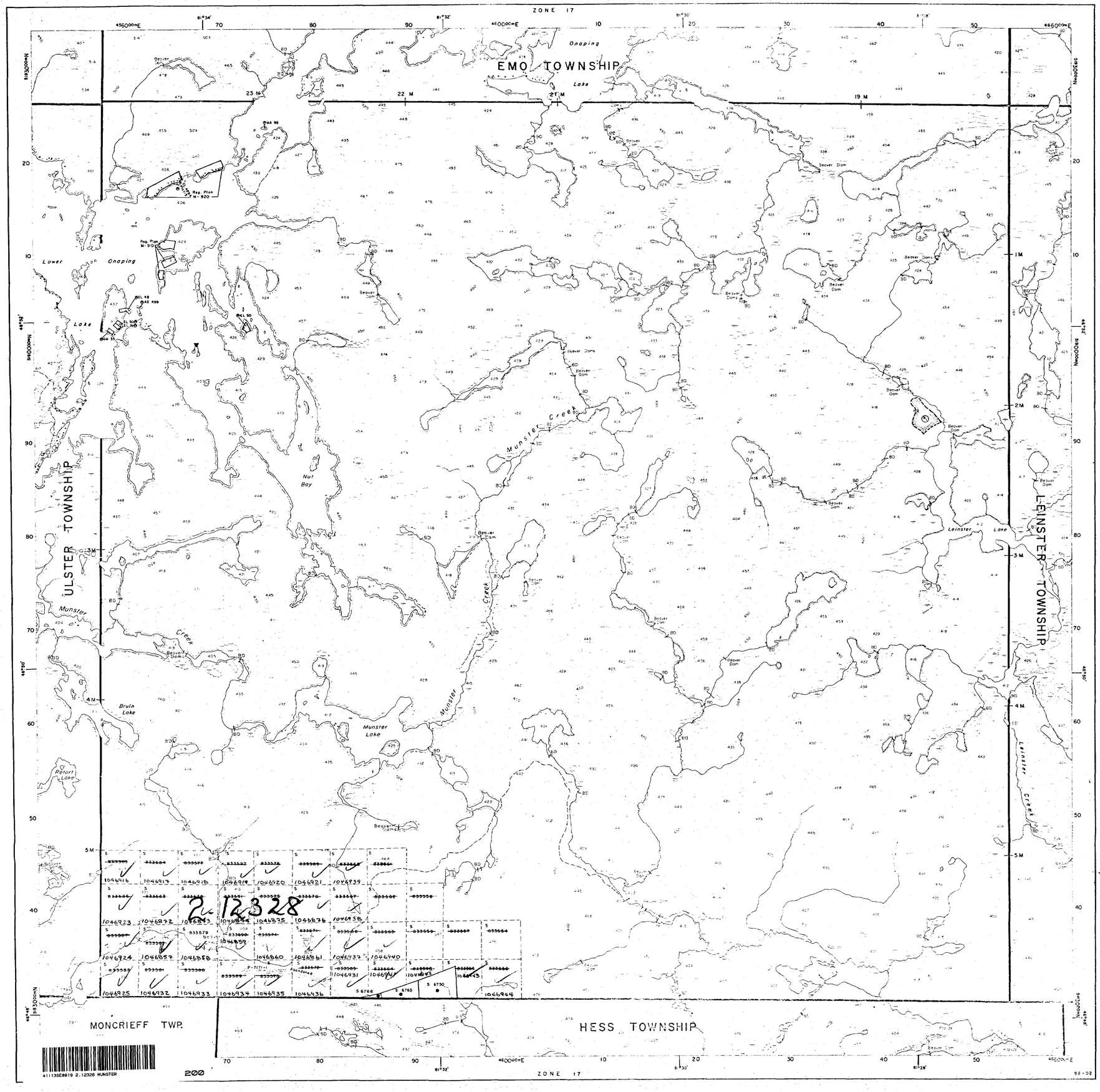
For Office Use Only		
Total Days Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Branch Director

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

Date Certified	Certified by (Signature)
3 April 1989	Michael G. Gray



Ministry of Natural Resources
Ontario

Ministry of Northern Development and Mines

INDEX TO LAND DISPOSITION

PLAN

G-4090

TOWNSHIP

MUNSTER

M.N.R. ADMINISTRATIVE DISTRICT
SUDBURY
MINING DIVISION
SUDBURY
LAND TITLES/REGISTRY DIVISION
SUDBURY

Scale 1:20 000

1000 Metres 0 1000 2000 Metres

1000 Feet 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000 Feet

Contour Interval 10 Metres

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed
- shoreline
- Lot/Concession; surveyed
- unsurveyed
- Parcel; surveyed
- unsurveyed
- Right-of-way; road
- railway
- utility
- Reservation
- Cliff, Pit, Pile
- Contour
- Interpolated
- Approximate
- Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
- double track
- abandoned
- Road; highway, county, township
- access
- trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

Lease
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

- Licence of Occupation
- Order-in-Council (OC)
- Cancelled
- Reservation (R)
- Sand & Gravel (G)

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

	Description	Order No.	Date	Disposition	File
(R)	Sec. 31(b)		26/2/88	M + S	

DATE OF ISSUE
JUN 2 6 1988
SUDBURY
MINING RECORDER'S OFFICE

NOTES

Flooding on Lower Onaping Lake and Nut Bay to contour elevation 111.0 feet. L.O. 9839
File 3857

Map base and land disposition drafting by Surveys and Mapping Branch, Ministry of Natural Resources.

The disposition of land, location of lot fabric and parcel boundaries this index was compiled for administrative purposes only.

41113SE0019 2.12328 MUNSTER

ZONE 17

437000mE 80 90 440000mE 10 20 30 40 50 60 447000mE

81°48' 81°46' 81°44' 81°42'

5160000N 40 50 60 70 80 90 5170000N

STRALAK TOWNSHIP

ULSTER TWP.

OUELLETTE TOWNSHIP

MONCRIEFF TOWNSHIP

TOFFLEMIRE TOWNSHIP

Mg Loc. S. 734697

Copper Lake

Marion Lake

Mogo Rapids

Bluewater Lake

Loon Lake

Spanish River

Spanish Lake

Duck Lake

Little Croig Lake

Agnes

Marguerite Lake

Beaver Dam

Beaver Dams

2.12328

INDEX TO LAND DISPOSITION

PLAN

G-2952

TOWNSHIP

CRAIG

M.N.R. ADMINISTRATIVE DISTRICT

ESPANOLA

MINING DIVISION

SUDBURY

LAND TITLES/REGISTRY DIVISION

SUDBURY

Scale 1:20 000

1000 Metres 1 0 1000 2000 Metres

1000 Feet 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000 Feet

Contour Interval 10 Metres

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed
- shoreline
- Lot/Concession; surveyed
- unsurveyed
- Parcel; surveyed
- unsurveyed
- Right-of-way; road
- railway
- utility
- Reservation
- Cliff, Pit, Pile
- Contour (20)
- Interpolated
- Approximate
- Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
- double track
- abandoned
- Road; highway, county, township
- access
- trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

Lease
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only
- Licence of Occupation
- Order-in-Council (OC)
- Cancelled
- Reservation (R)
- Sand & Gravel (R)

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

	Description	Order No.	Date	Disposition	File
(R)	SEC 36/80	W 4/82	14/6/82	S.R.O.	1376

NOTES

THE SUBDIVISION OF THIS TOWNSHIP INTO LOTS AND CONCESSI
IS ANNULLED AUGUST 21, 1953.

DATE OF ISSUE 16
JUN 16 1988
SUDBURY
MINING RECORDER'S OFFICE

ZONE 17

MUNSTER TOWNSHIP

LEINSTER TOWNSHIP

MONCRIEFF TOWNSHIP

HARTY TOWNSHIP

CARTIER TOWNSHIP

Ministry of Natural Resources — Ontario

Ministry of Northern Development and Mines

IN SERVICE 1988 06 06 km.- vcm

INDEX TO LAND DISPOSITION

PLAN

G-4062

TOWNSHIP

HESS

M.N.R. ADMINISTRATIVE DISTRICT

SUDBURY

MINING DIVISION

SUDBURY

LAND TITLES/REGISTRY DIVISION

SUDBURY

Scale 1:20 000

1000 Metres 0 1000 2000 Metres

1000 Feet 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 Feet

Contour Interval 10 Metres

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

Description	Order No.	Date	Disposition	File
(5) SEC. 35/8	W.59/85		S.R.O.	

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed
- shoreline
- Lot/Concession; surveyed
- unsurveyed
- Parcel; surveyed
- unsurveyed
- Right-of-way; road
- railway
- utility
- Reservation
- Cliff, Pit, Pile
- Contour — 20 —
- Interpolated
- Approximate
- Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
- double track
- abandoned
- Road; highway, county, township
- access
- trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

Lease
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

- Licence of Occupation
- Order-in-Council — OC
- Cancelled
- Reservation
- Sand & Gravel

NOTES

SUBDIVISION OF THIS TOWNSHIP INTO LOTS AND CONCESSIONS WAS PARTIALLY ANNULLED APRIL 21st 1953 (LOTS 9 TO 12, CONS. 3 AND 4, AND LOTS 5 TO 12 CONS. 5 AND 6 EXCEPTED.)

Ministry of Natural Resources
Ontario

Ministry of Northern Development and Mines

INDEX TO LAND DISPOSITION

PLAN
G-4117

TOWNSHIP
ULSTER

M.N.R. ADMINISTRATIVE DISTRICT
SUDBURY
MINING DIVISION
SUDBURY
LAND TITLES/REGISTRY DIVISION
SUDBURY

Scale 1:20 000

2000 Metres 0 1000 2000 Metres

1000 Feet 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000 Feet

Contour Interval 10 Metres

SYMBOLS

- Boundary
  - Township, Meridian, Baseline
  - Road allowance; surveyed
    - shoreline
  - Lot/Concession; surveyed
    - unsurveyed
  - Parcel; surveyed
    - unsurveyed
  - Right-of-way; road
    - railway
    - utility
  - Reservation
- Cliff, Pit, Pile
- Contour — 20
  - Interpolated
  - Approximate
  - Depression
- Control point (horizontal) △
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
  - double track
  - abandoned
- Road; highway, county, township
  - access
  - trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights ●
- Surface Rights Only ◓
- Mining Rights Only ◒

Lease
- Surface & Mining Rights ■
- Surface Rights Only ◨
- Mining Rights Only ◪

Licence of Occupation ▼
Order-in-Council OC
Cancelled ⊗
Reservation R
Sand & Gravel P

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

Description	Order No.	Date	Disposition	File
M+S	W 63/ 75	5/11/75	S R O	127351
M+S	M.N.R. RESERVE	4/10/63	S.R.O.	163005
M+S	M.N.R. RESERVE		S.R.O	77084 Vol. 1
M+S	CROWN RESERVE		S.R.O.	160706

NOTES

Flooding on Onaping Lake to contour elevation 111' - L.O. 9113

TOWNSHIP SUBJECT TO FORESTRY OPERATIONS

DATE OF ISSUE
OCT 17 1989
SUDBURY
MINING RECORDER'S OFFICE

DATE OF ISSUE
AUG 7
SUDBURY
MINING RECORDER'S OFFICE

Map base and land disposition drafting by Surveys and Mapping Branch, Ministry of Natural Resources.

The disposition of land, location of lot fabric and parcel boundaries on this index was compiled for administrative purposes only.

G-4117 ULSTER TOWNSHIP G-4117

Ministry of Natural Resources
Ministry of Northern Development and Mines
Ontario

INDEX TO LAND DISPOSITION

PLAN
G-4086

TOWNSHIP
MONCRIEFF

M.N.R. ADMINISTRATIVE DISTRICT
SUDBURY
MINING DIVISION
SUDBURY
LAND TITLES/REGISTRY DIVISION
SUDBURY

Scale 1:20 000

1000 Metres 0 1000 2000 Metres

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 Feet

Contour Interval 10 Metres

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed
- shoreline
- Lot/Concession; surveyed
- unsurveyed
- Parcel; surveyed
- unsurveyed
- Right-of-way; road
- railway
- utility
- Reservation
- Cliff, Pit, Pile
- Contour — 20
- interpolated
- Approximate
- Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
- double track
- abandoned
- Road; highway, county, township
- access
- trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

FILED

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights ●
- Surface Rights Only ◒
- Mining Rights Only ◒

Lease
- Surface & Mining Rights ■
- Surface Rights Only ◨
- Mining Rights Only ◧

- Licence of Occupation ▼
- Order-in-Council OC
- Cancelled ⊗
- Reservation Ⓡ
- Sand & Gravel Ⓖ

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

	Description	Order No.	Date	Disposition	File
Ⓜ	SEC 36/80	W.4/82	14/6/82	S.R.O.	137685
Ⓢ	SEC 36/80	W.55/88		S.R.O	

SAND AND GRAVEL

Ⓖ DND GRAVEL RESERVE, FILE No. 74146 & 74146.

Ⓖ MTC GRAVEL PIT No. 4E13

Ⓖ MTC GRAVEL PIT No. 4E40

TOWNSHIP SUBJECT TO FORESTRY OPERATIONS
TOWNSHIP SUBJECT TO FORESTRY OPERATIONS

NOTES

1) SUBDIVISION OF THIS TOWNSHIP INTO LOTS AND CONCESSIONS WAS ANNULLED 30TH JUNE 1983.

2) 400 FOOT SURFACE RIGHTS RESERVATION AROUND ALL LAKES AND RIVERS.

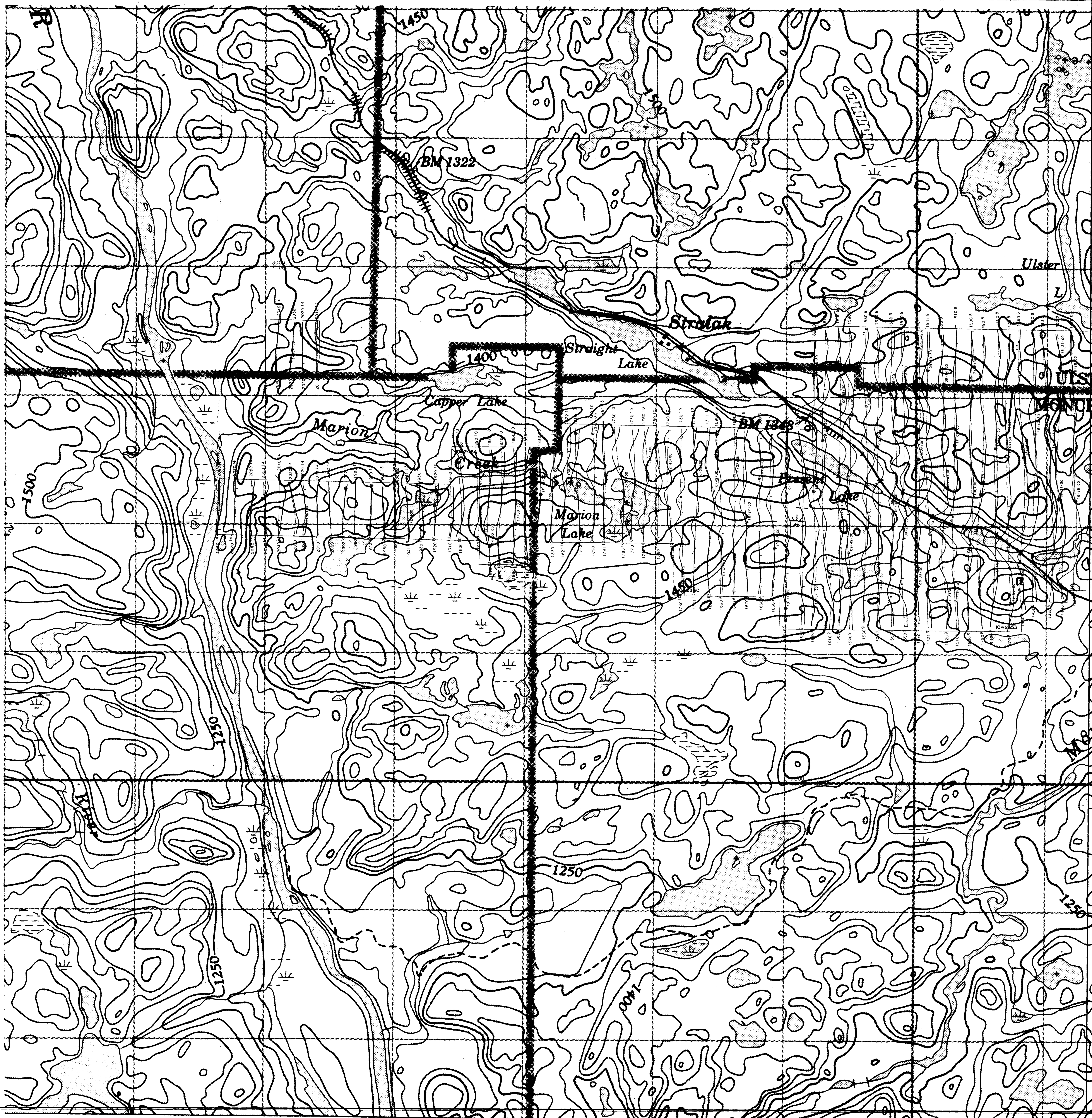
3) DOWSE LAKE DEVELOPMENT PLAN DATED 11TH JUNE 1970, FILE 183096.

DATE OF ISSUE
OCT 17 1989
SUDBURY
MINING RECORDER'S OFFICE

Map base and land disposition drafting by Surveys and Mapping Branch, Ministry of Natural Resources.

The disposition of land, location of lot fabric and parcel boundaries on this index was compiled for administrative purposes only.

MONCRIEFF TWP.
G-4086



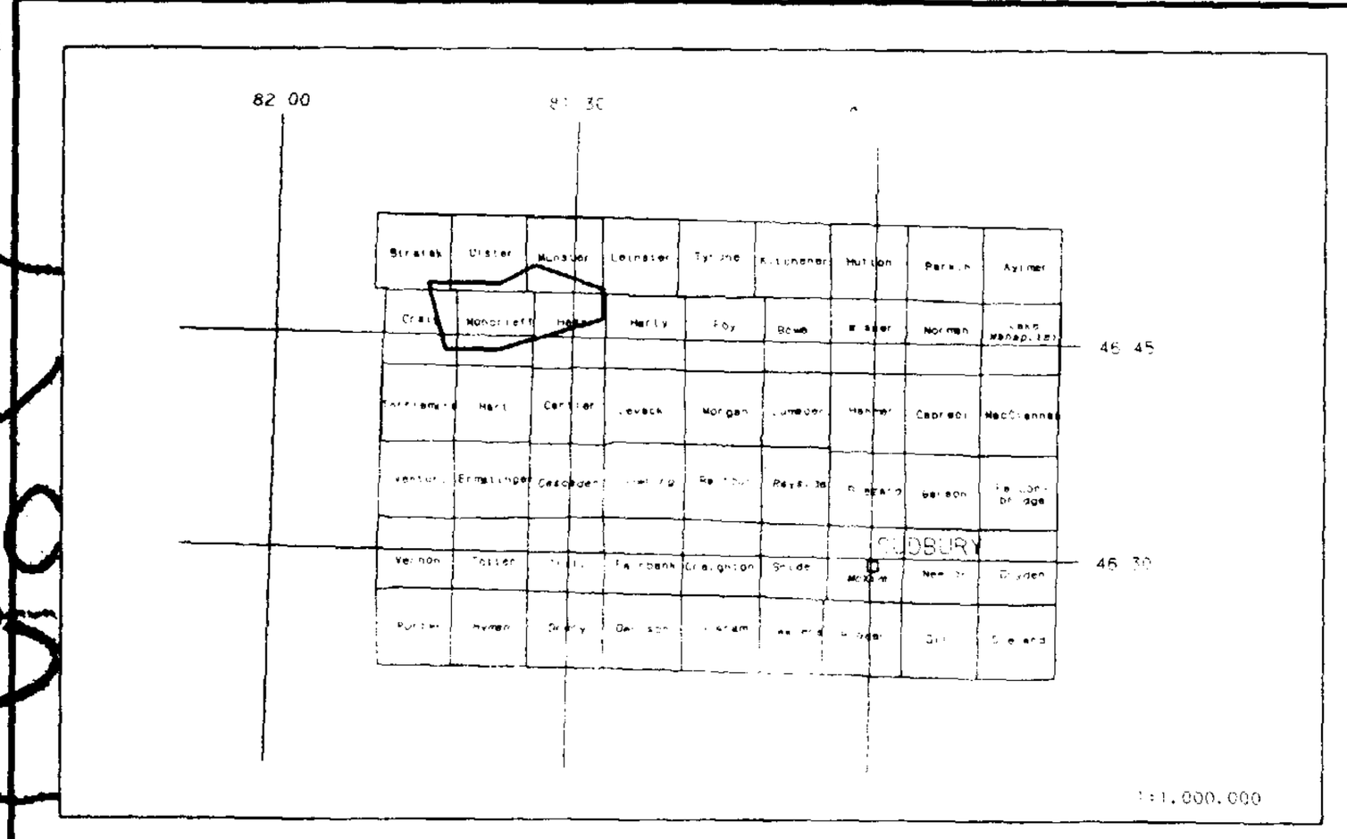
AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited. The four frequency EM bird was towed at an altitude of 30m ; the cesium vapour magnetometer at 43m, and the VLF sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

VLF-EM PROFILES

Station: NSS (Annapolis, Maryland) 21.4 kHz

——— VLF-EM Total Field Intensity (2.5 %/mm)



FALCONBRIDGE LIMITED

VLF-EM PROFILES
2.12328 24 KHz

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

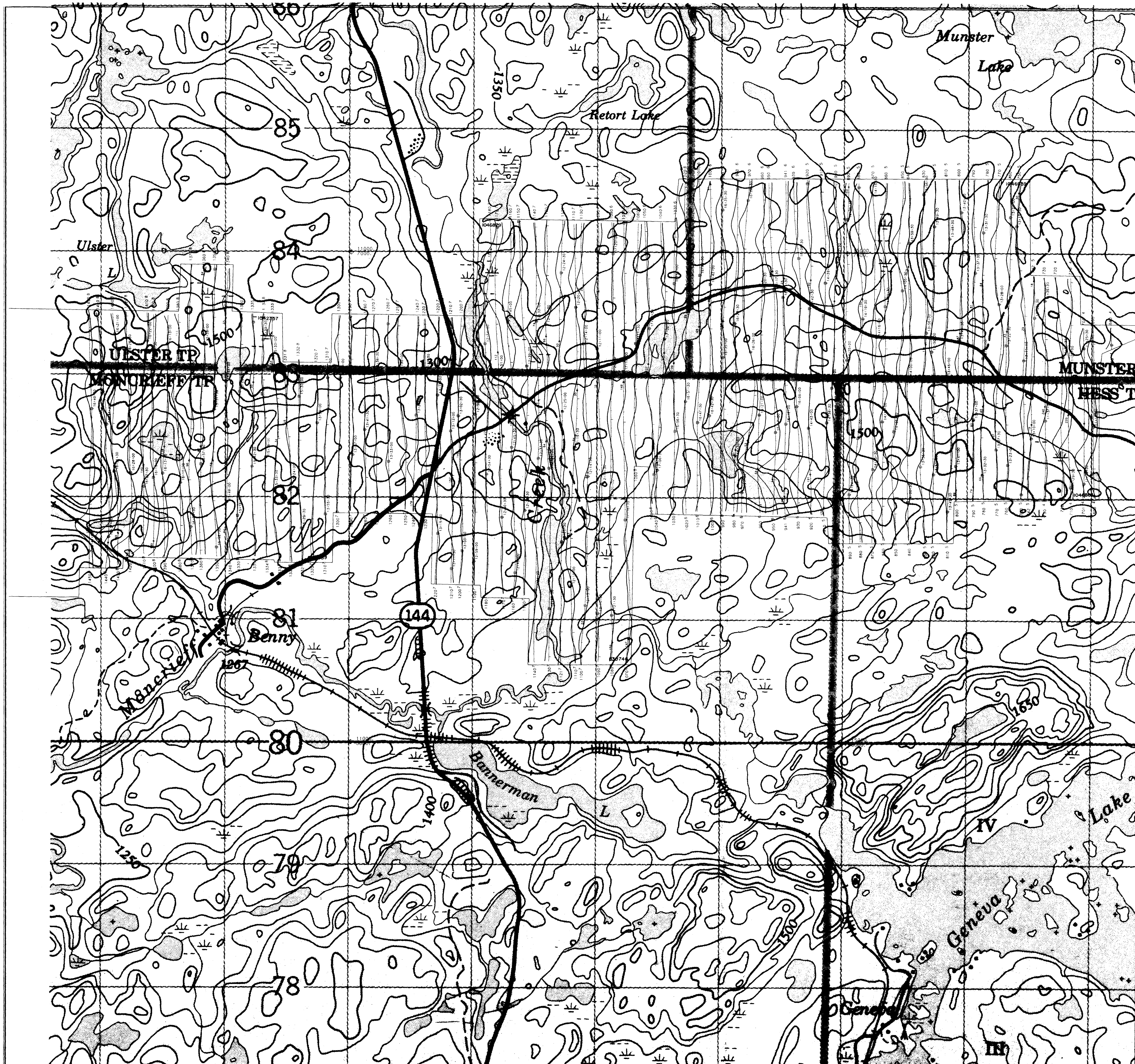
SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE : JAN 1989	
NTS No: 41 I/13	
MAP No: 1-VPROF CLAIMS8885-1	



AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited. The four frequency EM bird was towed at an altitude of 30m, the cesium vapour magnetometer at 43m, and the VLF sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

VLF-EM PROFILES

Station: NSS (Annapolis, Maryland) 21.4 kHz

———— VLF-EM Total Field Intensity (2.5 %/mm)

1:1,000,000

FALCONBRIDGE LIMITED

2.12328

VLF-EM PROFILES 24 KHz

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE : JAN 1989

NTS No: 41 I/13

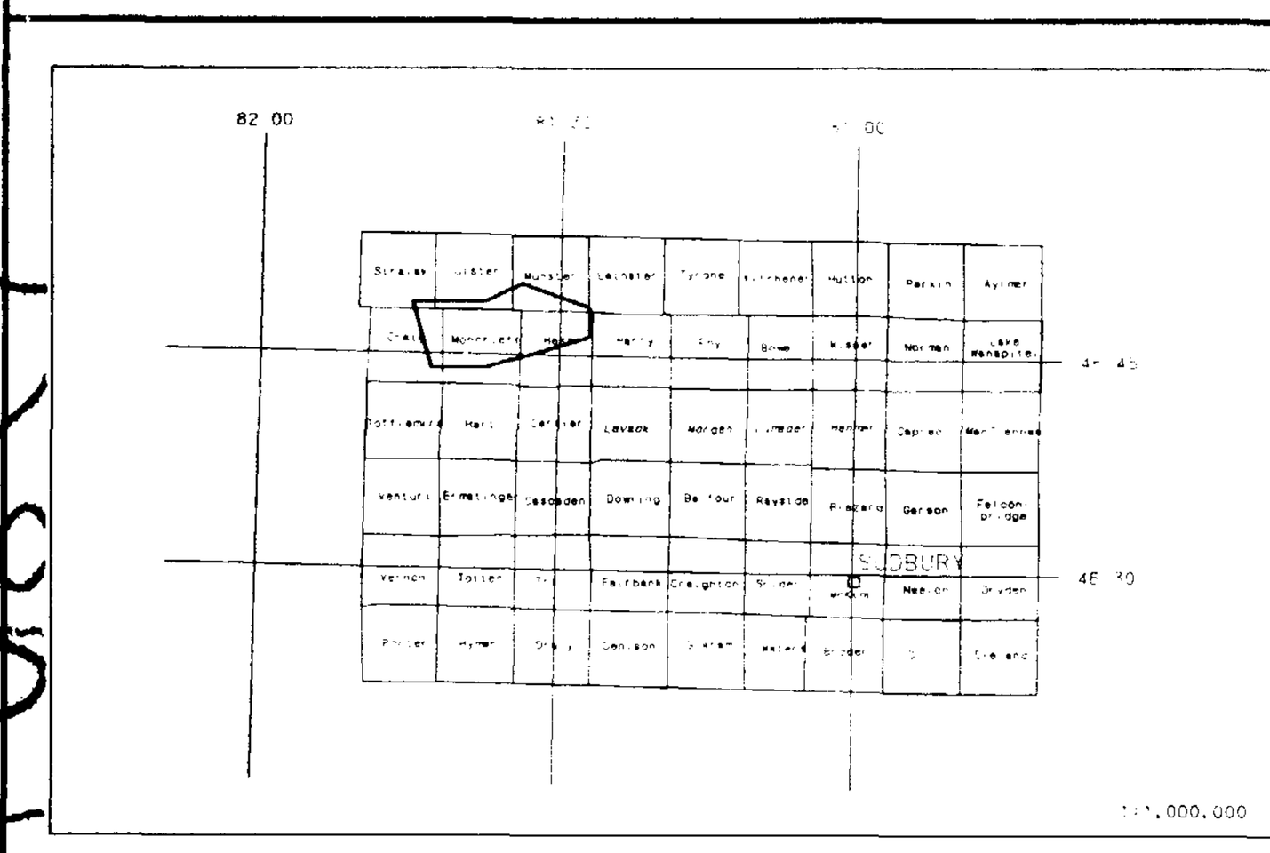
MAP No: 2-VPROF CLAIMS8885-2

AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited. The four frequency EM bird was towed at an altitude of 30m ; the cesium vapour magnetometer at 43m, and the VLF sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

EM PROFILES

Coplanar 40 ppm/mm
——— 32 KHz inphase
——— 32 KHz quadrature



FALCONBRIDGE LIMITED

ELECTROMAGNETIC PROFILES
2.12328 32 KHz

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE : JAN 1989

NTS No: 41 [illegible]/13

MAP No: [illegible] CLAIMS [illegible]3885-1

Munster Lake

Retort Lake

Ulster L

ULSTER TP

MONCREIFF TP

MUNSTER

HESS TI

Benny

Moncrieff

Bannerman L

Geneva Lake

Geneva

144

AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited, the four frequency EM bird was towed at an altitude of 30m, the cesium vapour magnetometer at 45m, and the VLF Sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

EM PROFILES

Coplanar 40 ppm/mm

32 KHz inphase

32 KHz quadrature

FALCONBRIDGE LIMITED

ELECTROMAGNETIC PROFILES

2.12328 32 KHz

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

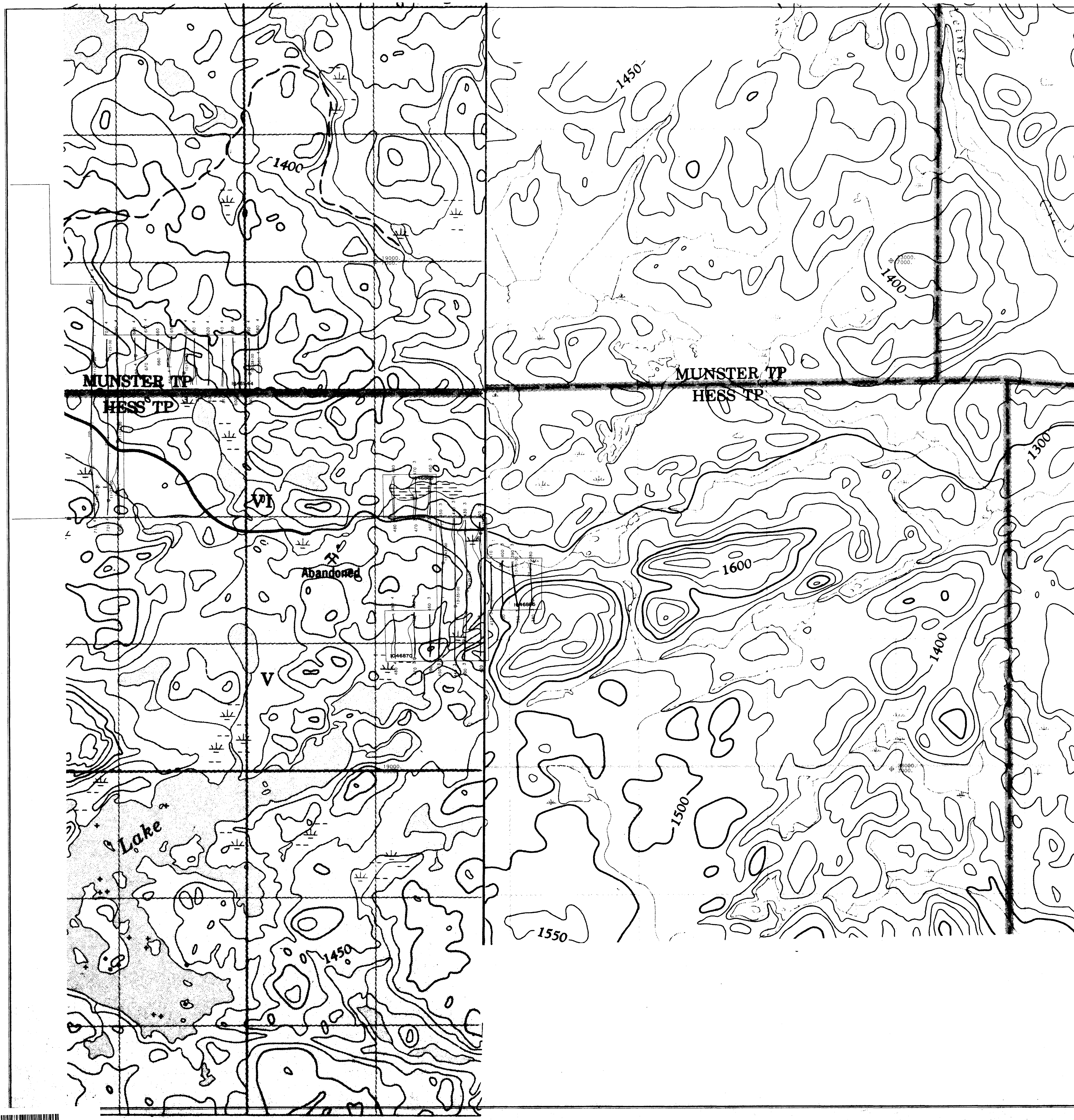
SCALE 1:10,000

AERODAT LIMITED

DATE 1 JAN 1989

NTS No: 41 I/13

MAP No: 2-UM CLAIMS 18885-2



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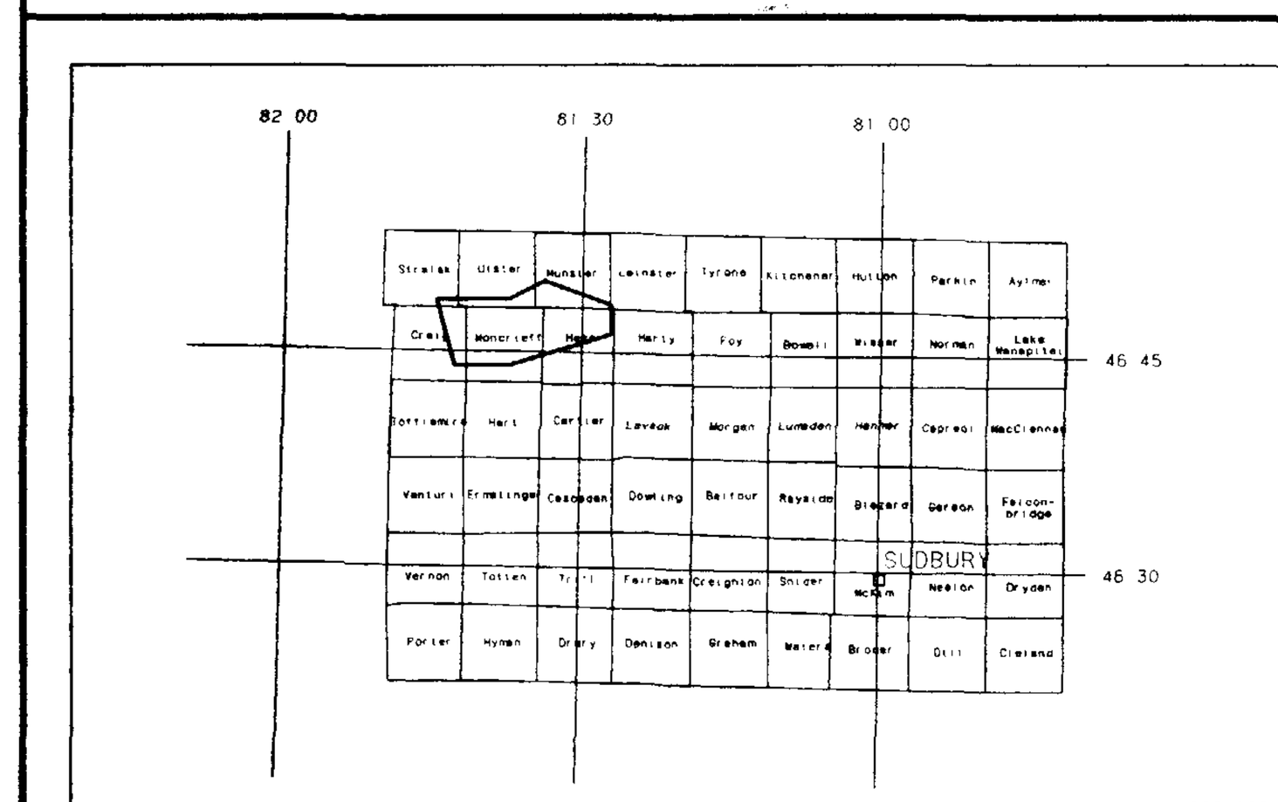
AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited. The four frequency EM bird was towed at an altitude of 30m ; the cesium vapour magnetometer at 43m, and the VLF sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

EM PROFILES

Coplanar 40 ppm/mm
——— 32 KHz inphase
- - - 32 KHz quadrature



FALCONBRIDGE LIMITED

ELECTROMAGNETIC PROFILES 32 KHz

2.12328

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE :	JAN 1989
NTS No:	41 I/13
MAP No:	3-UH CLAIMS J8885-3

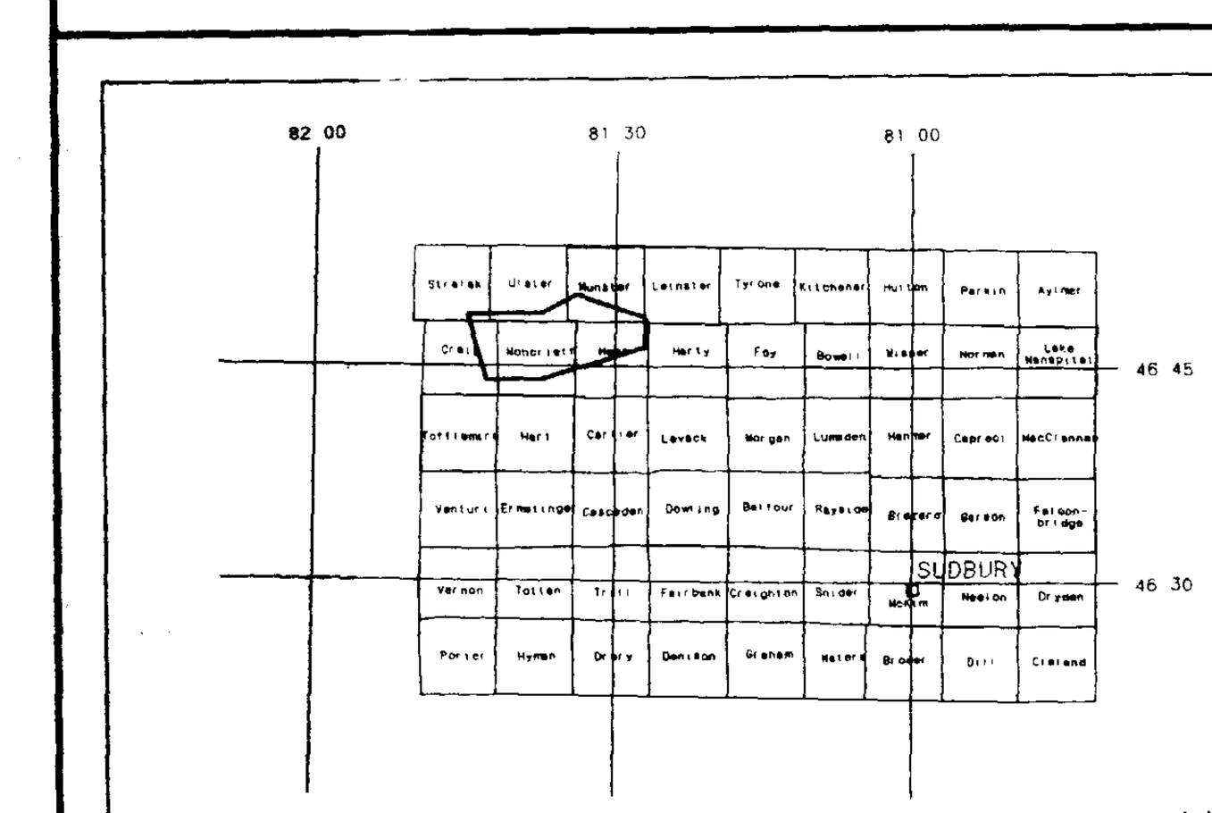
AERODAT HEM/MAG/VLF SURVEY

This map was compiled from data obtained during a helicopter magnetic and electromagnetic survey carried out by Aerodat Limited. The four frequency EM bird was towed at an altitude of 30m ; the cesium vapour magnetometer at 43m, and the VLF sensors (TOTEM-2A) at 47m. The average flight line spacing was 100m. Navigation and flight path recovery were effected using a Syledis UHF navigation system and a VHS video system.

VLF-EM PROFILES

Station: NSS (Annapolis, Maryland) 21.4 kHz

——— VLF-EM Total Field Intensity (2.5 %/mm)



FALCONBRIDGE LIMITED

VLF-EM PROFILES
2.12328 24 KHz

BENNY PROJECT - PN 232

CARTIER AREA, ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE :	JAN 1989
NTS No:	41 I/13
MAP No:	3-VPROF CLAIMS8885-3