

41N14NW9100 41N13NE-0013 PILOT HARBOUR

010

REPORT ON
COMBINED HELICOPTER-BORNE
MAGNETIC, ELECTROMAGNETIC,
AND VLF-EM SURVEY
JACKFISH LAKE CLAIMS
ONTARIO

RECEIVED

FEB 23 1983

MINING LANDS SECTION

for
VILLENEUVE RESOURCES LIMITED
by
AERODAT LIMITED
FEBRUARY 1983



41N14NW9100 41N13NE-0013 PILOT HARBOUR

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LIST OF MAPS

(Scale: 1/15,840)

- | | |
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| Map 2 | Airborne Electromagnetic Survey Profile Map
(955 Hz. coaxial) |
| Map 3 | Total Field Magnetic Map |
| Map 4 | VLF-EM Total Field Contours |

Data provided but not included in report:

- 1 - master map (2 colour) of coaxial and coplanar profiles with flight path
- 2 - anomaly list providing estimates of depth and conductivity thickness
- 3 - analogue records of data obtained in flight

1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Villeneuve Resources Limited by Aerodat Limited. Equipment operated included a 3 frequency electromagnetic system, a VLF-EM system, and a magnetometer.

The survey was flown on February 20 to February 22, 1983 from an operations base at Wawa Ontario. A total of 317 line miles were flown, at a nominal line spacing of 660 feet. Of the total flown, this report describes 62 line miles.

2. SURVEY AREA/CLAIM NUMBERS AND LOCATIONS

The mining claim numbers and locations covered by this survey are indicated on the map in the following pocket.

3. AIRCRAFT EQUIPMENT

3.1 Aircraft

The helicopter used for the survey was an Aerospatial Astar 350D owned and operated by North Star Helicopters. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey aircraft was flown at a nominal altitude at 60 meters.

3.2 Equipment

3.2.1 Electromagnetic System

The electromagnetic system was an Aerodat/Geonics 3 frequency system. Two vertical coaxial coil pairs were operated at 955 and 4130 Hz and a horizontal coplanar coil pair at 4500 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 electromagnetic bird was towed 30 meters below the helicopter.

3.2.2 VLF-EM System

The VLF-EM System was a Herz 2A. This instrument measures the total field and vertical

quadrature component of two selected frequencies. The sensor was towed in a bird 15 meters below the helicopter.

The sensor aligned with the flight direction is designated as "LINE", and the sensor perpendicular to the line direction as "ORTHO". The "LINE" station used was NAA, Cutler Maine, 17.8 KHz or NLK, Jim Creek Washington, 24.8 KHz. The "ORTHO" station was NSS, Annapolis Maryland, 21.4 KHz. The NSS transmitter was operating on a very limited schedule and was not available during a large part of the survey.

3.2.3 Magnetometer

The magnetometer was a Geometrics G-803 proton precession type. The sensitivity of the instrument was 1 gamma at a 1.0 second sample rate. The sensor was towed in a bird 15 meters below the helicopter.

3.2.4 Magnetic Base Station

An IFG proton precession type magnetometer was operated at the base of operations to record diurnal variations of the earths 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 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.

3.2.6 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.

3.2.7 Analog Recorder

A RMS dot-matrix recorder was used to display the data during the survey. A sample record with channel identification and scales is presented on the following page.

ANALOG CHART

CAMERA FIDUCIAL #

1000 1010 1020 257.7 1020

TIME

MAG

20 gamma

ALTIMETER

20 feet

0 feet

VLF QUAD.

(ORTHO)

VLF TOTAL

25%

VLF QUAD.

(LINE)

VLF TOTAL

COPLANAR QUAD.

40 ppm.

COPLANAR IN-PHASE

40 ppm.

COAXIAL QUAD.

(HIGH FREQ.)

20 ppm.

COAXIAL IN-PHASE

(HIGH FREQ.)

20 ppm.

COAXIAL QUAD.

(LOW FREQ.)

20 ppm.

COAXIAL IN-PHASE

(LOW FREQ.)

20 ppm.

MAG

50 gammas

MANUAL FIDUCIAL

rms

0000

0001

0002

0003

3.2.8 Digital Recorder

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

<u>Equipment</u>	<u>Interval</u>
EM	0.2 second
VLF-EM	0.5 second
magnetometer	0.5 second
altimeter	1.0 second
fiducial (time)	1.0 second
fiducial (manual)	0.2 second

4. DATA PRESENTATION

4.1 Base Map and Flight Path Recovery

The base map photomosaic at a scale of 1/15,840 was constructed from available aerial photography. The flight path was plotted manually on this base and digitized for use in the computer compilation of the maps. The flight path is presented with fiducials for cross reference to both the analog and digital data.

4.2 Electromagnetic Profile Maps

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

Local atmospheric 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 a geological phenomenon. To avoid this possibility, a computer algorithm searches out and rejects the major "sferic" events.

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

Following the filtering processes, a base level correction was made. The correction applied is a linear function of time that ensures that the corrected amplitude of the various inphase and quadrature components

is zero when no conductive or permeable source is present. This filtered and levelled data was then presented in profile map form.

The in-phase and quadrature responses of the coaxial 955 Hz configuration are plotted with the flight path and presented on the photomosaic base.

The in-phase and quadrature responses of the coaxial 4500 Hz and the coplanar 4130 Hz configuration are plotted with flight path and are available as a two colour overlay.

4.3 Magnetic Contour Maps

The aeromagnetic data was corrected for diurnal variations by subtraction of the digitally recorded base station magnetic profile. No correction for regional variation is applied.

The corrected profile data was interpolated onto a regular grid at a 2.5 mm interval using a cubic spline technique. The grid provided the basis for threading the presented contours at a 10 gamma interval.

4.4 VLF-EM Contour and Profile Maps

The VLF-EM "LINE" signal, was compiled in map form. The mean response level of the total field signal was removed and the data was gridded and contoured at an interval of 2%. When the "ORTHO" signal was available it was compiled in a similar fashion.

4.5 Electromagnetic Conductor Symbolization

The electromagnetic profile maps were used to identify those anomalies with characteristics typical of bedrock conductors. The in-phase and quadrature response amplitudes at 4130 Hz were digitally applied to a phasor diagram for the vertical half-plane model and estimates of conductance (conductivity thickness) were made. The conductance levels were divided into categories as indicated in the map legend; the higher the number, the higher the estimated conductivity thickness product.

As discussed in Appendix I the conductance should be used as a relative rather than absolute guide to conductor quality. A conductance value of less than 2 mhos is typical for conductive overburden material and electrolytic conductors in faults and shears. Values greater than 4 mhos generally indicate some electronic conduction by certain metallic sulphides and/or graphite. Gold, although highly conductive, is not expected to occur in sufficient concentration to directly produce an electromagnetic anomaly; however, accessory mineralization such as pyrite or

graphite can produce a measurable response.

With the aid of the profile maps, responses of similar characteristics may be followed from line to line and conductor axes identified.

The distinction between conductive bedrock and overburden anomalies is not always clear and some of the symbolized anomalies may not be of bedrock origin. It is also possible that a response may have been mistakenly attributed to overburden and therefore not included in the symbolization process. For this reason, as geological and other geophysical information becomes available, reassessment of the significance of the various conductors is recommended.

4.6 INTERPRETATION MAPS

The conductive trends are shown and discriminated for descriptive purposes.

These conductors are described below:

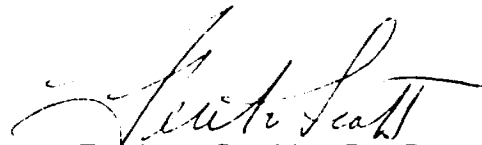
- 1 A weak conductor north of a band of iron formation. Map 2332 suggests the feature is near a volcanic-granite contact.
- 2 A moderate discontinuous conductor to the south of a band of iron formation. Mapped as volcanics.
- 3 A moderate conductor in intermediate to felsic volcanics next to a northwest trending diabase dyke and a VLF-indicated northwest structure.
- 4 This feature may be related to conductive lake sediments. Area is mapped as granite. Response is greater than any other lakes in vicinity.

INTERPRETED MAGNETIC FEATURES

Along the north boundary of the east half of the survey a band of iron formation is displaced one-half mile by a northwest trending left-lateral fault around line 178.

The volcanic rocks are marked by a persistent magnetic high in their south central portion, extending across the survey area. This high is interrupted by a series of northwest-trending diabase dykes. In the west part of the claims this magnetic trend has some coincident VLF response.

Respectfully submitted,



Fenton Scott, P. Eng.

June 7, 1983.

APPENDIX I

GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

The Aerodat 3 frequency system utilizes 2 different transmitter-receiver coil geometries. The traditional coaxial coil configuration is operated at 2 widely separated frequencies and the 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 conductivity and its size and shape; the "geometrical" property of the response is largely a function of the conductors 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 in-phase to quadrature

ratio and a large phase shift a low ratio. This relationship is shown quantitatively for a 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 ppm 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 I and the conductance and in-phase 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, 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 the depth estimate but both should be considered a relative rather than absolute guide to the anomalies 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 sphalerite, cinnabar and stibnite are good conductors; however, they may occur in a disseminated manner that inhibits electrical conduction through the rock mass. In this case the apparent conductance can seriously under rate 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 concentration in association with minor conductive

sulphides, and the electromagnetic response only relate to the minor associate 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 decreases 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 coil 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 follow 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 measurable 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

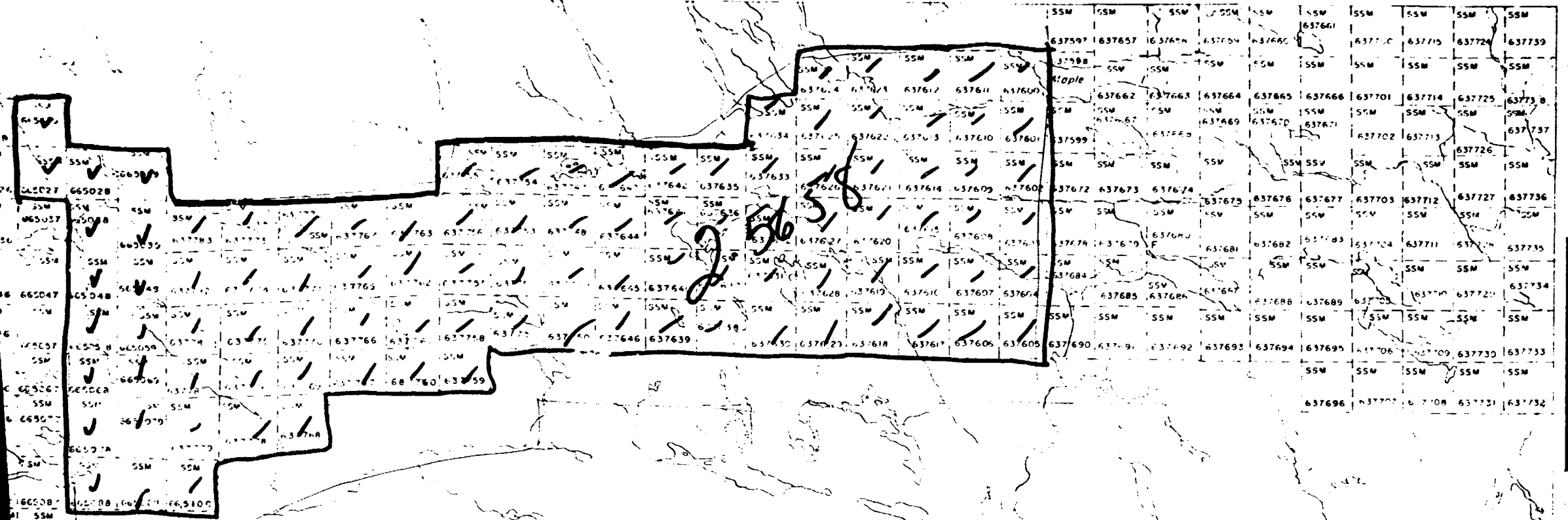
depth.

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.



41N/13NE
 PILOT HARBOUR

M - 0020

1" of charts

Pilot Harbour
 Carn Pt
 Floatinghead Bay



Ministry of Natural Resources

File _____

**GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL
TECHNICAL DATA STATEMENT**

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Aerial Magnetic, E.M., V.L.F.
 Township or Area Pilot Harbour
 Claim Holder(s) Mid-North Engineering Services
 Survey Company Aerodat Limited
 Author of Report Fenton Scott
 Address of Author 17 Malabar Place, Don Mills, Ont.
 Covering Dates of Survey _____
 (linecutting to office)
 Total Miles of Line Cut _____

MINING CLAIMS TRAVERSED
List numerically

SSM (prefix)	637600 (number)
	637601
	637602
	" 603
	" 604
	" 605
	" 606
	" 607
	" 608
	" 609
	" 610
	" 611
	" 612
	" 613
	" 614
	" 615
	" 616
	" 617
	" 618
	" 619
	" 620
	" 621 Cont.
TOTAL CLAIMS	<u>100</u>

If space insufficient, attach list

<u>SPECIAL PROVISIONS CREDITS REQUESTED</u>	<u>DAYS per claim</u>
Geophysical	
–Electromagnetic _____	
–Magnetometer _____	
–Radiometric _____	
–Other _____	
Geological _____	
Geochemical _____	

ENTER 40 days (includes line cutting) for first survey.
 ENTER 20 days for each additional survey using same grid.

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
 Magnetometer 26 Electromagnetic 26 Radiometric 26
 (enter days per claim)

DATE: June 21/83 SIGNATURE: Fenton Scott
 Author of Report or Agent

Res. Geol. _____ Qualifications _____

<u>Previous Surveys</u>			
File No.	Type	Date	Claim Holder

OFFICE USE ONLY

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) Magnetic E.M. V.L.F.

Instrument(s) Geometrics G-803 Aerodat 3 Freq. Totem 2A
(specify for each type of survey)

Accuracy 0.5 Gammas 1 ppm 18 (1 mm)
(specify for each type of survey)

Aircraft used Aero Spatial - A-Star Helicopter

Sensor altitude 150' 100' 150'

Navigation and flight path recovery method Visual Navigation - Manual and Automatic
Fiducials - on Board camera

Aircraft altitude 200' Line Spacing 660'

Miles flown over total area 503 Over claims only 55'

Mining Claims

<u>Prefix</u>	<u>Number</u>
SSM	637622
	" 623
	" 624
	" 625
	" 626
	" 627
	" 628
	" 629
	" 630
	" 631
	" 632
	" 633
	" 634
	" 635
	" 636
	" 637
	" 638
	" 639
	" 640
	" 641
	" 642
	" 643
	" 644
	" 645
	" 646/
	637747
	" 748
	" 749
	" 750
	" 751
	" 752
	" 753
	" 754
	" 755
	" 756

Mining Claims

<u>Prefix</u>	<u>Number</u>
SSM	637757
	" 758
	" 759
	" 760
	" 761
	" 762
	" 763
	" 764
	" 765
	" 766
	" 767
	" 768
	" 769
	" 770
	" 771
	" 772
	" 773
	" 774
	" 775
	" 776
	637778
	" 779
	" 780
	" 781
	" 782
	" 783
	665019
	665027
	" 028
	" 029
	665038
	" 039
	665048
	" 049

Mining Claim

<u>Prefix</u>	<u>Number</u>
SSM	665058
	" 059
	665068
	" 069
	665078
	" 079
	665088
	" 089
	665100



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

July 11
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.

The Mining Act

Type of Survey(s) Aerial Magnetic, E.M., V.L.F. Township or Area Pilot Harbour - PLAN 11-20
 Claim Holder(s) Mid-North Engineering Services Prospector's Licence No. A 22041
 Address Suite 603, 45 Richmond Street West.
 Survey Company Aerodat Limited Date of Survey (from & to) 10 Feb 83 15 Feb 83 Total Miles of line 65
 Name and Address of Author (of Geo-Technical report) Fenton Scott, 17 Malabar Place, Don Mills, Ontario.

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	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	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.	Electromagnetic	Days per Claim
		26
	Magnetometer	26
	XXXXXXXX V.L.F.	26

Expenditures (excludes power strip) SAULT STE. MARIE MINING CO.
 Type of Work Performed **RECEIVED**

Performed on Claim(s) MAY 11 1983
 A.M. 7 8 9 10 11 12 P.M. 1 2 3 4 5 6

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.

Date 9 May 1983 Recorder/Holder's Print (Signature) [Signature]

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 Fenton Scott, 17 Malabar Place, Don Mills, Ontario.
 Date Certified May 5, 1983 Certified by (Signature) [Signature]

Mining Claims Traversed (List in numerical sequence)

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
SSM	637600		SSM	637623	
"	601		"	624	
"	602		"	625	
"	603		"	626	
"	604		"	627	
"	605		"	628	
"	606		"	629	
"	607		"	630	
"	608		"	631	
"	609		"	632	
"	610		"	633	
"	611		"	634	
"	612		"	635	
"	613		"	636	
"	614		"	637	
"	615		"	638	
"	616		"	639	
"	617		"	640	
"	618		"	641	
"	619		"	642	
"	620		"	643	
"	621		"	644	
"	622		"	645	Contd.

Total number of mining claims covered by this report of work. 100

For Office Use Only

Total Days Cr. Recorded 7800 Date Recorded MAY 11, 1983 Mining Recorder [Signature]
 Date Approved as Recorded Branch Director

2
Mining Claim

<u>Prefix</u>	<u>Number</u>
SSM	<u>637646</u>
	637747
	" 748
	" 749
	" 750
	" 751
	" 752
	" 753
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	" 766
	" 767
	" 768
	" 769
	" 770
	" 771
	" 772
	" 773
	" 774
	" 775
	" <u>776</u>
	637778
	" 779
	" 780
	" 781

Mining Claim

<u>Prefix</u>	<u>Number</u>
SSM	637782
	" <u>783</u>
	665019
	665027
	" 028
	" 029
	665038
	" 039
	665048
	" 049
	665058
	" 059
	665068
	" 069
	665078
	" 079
	665088
	" 089
	665100

SAULT STE. MARIE
MINING DIV.
RECEIVED
MAY 11 1983
A.M. P.M.
7:8:9:10:11:12:1:2:3:4:5:6

1

G. BENNETT



Ministry of Natural Resources Ontario

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

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

The Mining Act

Form header containing: Type of Survey(s) Aerial Magnetic, E.M., V.L.F.; Claim Holder(s) Mid-North Engineering Services; Address Suite 603, 45 Richmond Street West; Survey Company Aerodat Limited; Date of Survey (from & to) 10 Feb 83 to 15 Feb 83; Total Miles of line flown 65; Name and Address of Author (of Geo-Technical report) Fenton Scott, 17 Malabar Place, Don Mills, Ontario.

Credits Requested per Each Claim in Columns at right

Table with columns: Special Provisions, Geophysical, Days per Claim, Man Days, Airborne Credits. Includes notes on survey types and credit calculations.

Mining Claims Traversed (List in numerical sequence)

Table with columns: Mining Claim Prefix, Mining Claim Number, Expend. Days Cr., Mining Claim Prefix, Mining Claim Number, Expend. Days Cr. Lists claims from SSM 637600 to 645.

Stamp: RECEIVED SAULT STE MARIE MINING DIV MAY 11 1983. Includes fields for Type of Work Performed and 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.

Date 9 May 1983, Recorded Holder's Agent (Signature) [Signature]

For Office Use Only: Total Days Cr. Recorded 7800, Date Recorded MAY 11, 1983, Mining Recorder ACTING [Signature], Date Approved as Recorded [Signature]

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 here-to, 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: Fenton Scott, 17 Malabar Place, Don Mills, Ontario. Date Certified May 5, 1983, Certified by (Signature) [Signature]

<u>Mining Claim</u>	
<u>Prefix</u>	<u>Number</u>
SSM	<u>637646</u>
	637747
	" 748
	" 749
	" 750
	" 751
	" 752
	" 753
	" 754
	" 755
	" 756
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	" 767
	" 768
	" 769
	" 770
	" 771
	" 772
	" 773
	" 774
	" 775
	" <u>776</u>
	637778
	" 779
	" 780
	" 781

<u>Mining Claim</u>	
<u>Prefix</u>	<u>Number</u>
SSM	637782
	" <u>783</u>
	665019
	665027
	" 028
	" 029
	665038
	" 039
	665048
	" 049
	665058
	" 059
	665068
	" 069
	665078
	" 079
	665088
	" 089
	665100

SAULT STE. MARIE
MINING DIV.
RECEIVED
MAY 11 1983
A.M. P.M.
7 8 9 10 11 12 1 2 3 4 5 6

1

1983 07 07

2.5658

Mrs. M.V. St. Jules
Mining Recorder
875 Queen Street East
P.O. Box 669
Sault Ste. Marie, Ontario
P6A 5N2

Dear Madam:

We have received reports and maps for an Airborne Geophysical (Electromagnetic and Magnetometer) survey submitted on Mining Claims SSM 637600 et al in the Area of Pilot Harbour.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

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

A. Barr:mc

cc: Mid North Engineering Services
Suite 603
45 Richmond Street West
Toronto, Ontario
M5H 1Z2

cc: Fenton Scott
17 Malabar Place
Don Mills, Ontario
M3B 1A4

Mining Lands Comments

~~REPORT NOT SIGNED~~

Note:
line mileage reduced to 50 line miles (total) as confirmed by telephone with Fenton Scott on Oct 3/83
Ray

To: Geophysics

Comments

Approved Wish to

Date Sept 2, '83

Signature R. B. [Signature]

To: Geology - Expenditures

Comments

Approved Wish to see again with corrections

Date

Signature

To: Geochemistry

Comments

LD

~~[Signature]~~

Approved Wish to see again with corrections

Date

Signature

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



Ministry of
Natural
Resources

Nov. 17/83

Your file:

1983 10 26

Our file: 2.5658

Mrs. M.V. St. Jules
Mining Recorder
Ministry of Natural Resources
875 Queen Street East
P.O. Box 669
Sault Ste. Marie, Ontario
P6A 5N2

Dear Madam:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

Just
R. Pichette:mc

Encls:

cc: Mid-North Engineering Services
Suite 603
45 Richmond Street West
Toronto, Ontario M5H 1Z2

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



Ministry of
Natural
Resources

**Technical Assessment
Work Credits**

File
2.5658

Date
1983 10 26

Mining Recorder's Report of
Work No.

Recorded Holder
MID-NORTH ENGINEERING SERVICES

Township or Area
PILOT HARBOUR AREA

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic _____ 20 days	SSM 637600 to 46 inclusive
Magnetometer _____ 20 days	637747 to 76 inclusive
VLF _____ 20 days	637778 to 83 inclusive
Induced polarization _____ days	665019
Other _____ days	665027 to 29 inclusive
Section 77 (19) See "Mining Claims Assessed" column	665038-39
Geological _____ days	665048-49
Geochemical _____ days	665058-59
Man days <input type="checkbox"/> Airborne <input checked="" type="checkbox"/>	665068-69
Special provision <input type="checkbox"/> Ground <input type="checkbox"/>	665078-79
<input type="checkbox"/> Credits have been reduced because of partial coverage of claims.	665088-89
<input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	665100

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

No credits have been allowed for the following mining claims

not sufficiently covered by the survey Insufficient technical data filed

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 — 80; Geological — 40; Geochemical — 40; Section 77 (19)—60:



Ministry of
Natural
Resources

Ontario

Notice of Intent
for Technical Reports

1983 10 26

2.5658

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

1983 11 30

Our File: 2.5658

Mrs. M.V. St. Jules
Mining Recorder
Ministry of Natural Resources
875 Queen Street East
P.O. Box 669
Sault Ste. Marie, Ontario
P6A 5N2

Dear Madam:

RE: Airborne Geophysical (Electromagnetic &
Magnetometer) Survey on Mining Claims
SSM 637600 et al in the Area of Pilot Harbour

The Airborne Geophysical (Electromagnetic & Magnetometer)
Survey assessment work credits as listed with my Notice of
Intent dated July 7, 1983 have been approved as of the
above date.

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

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

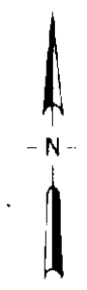
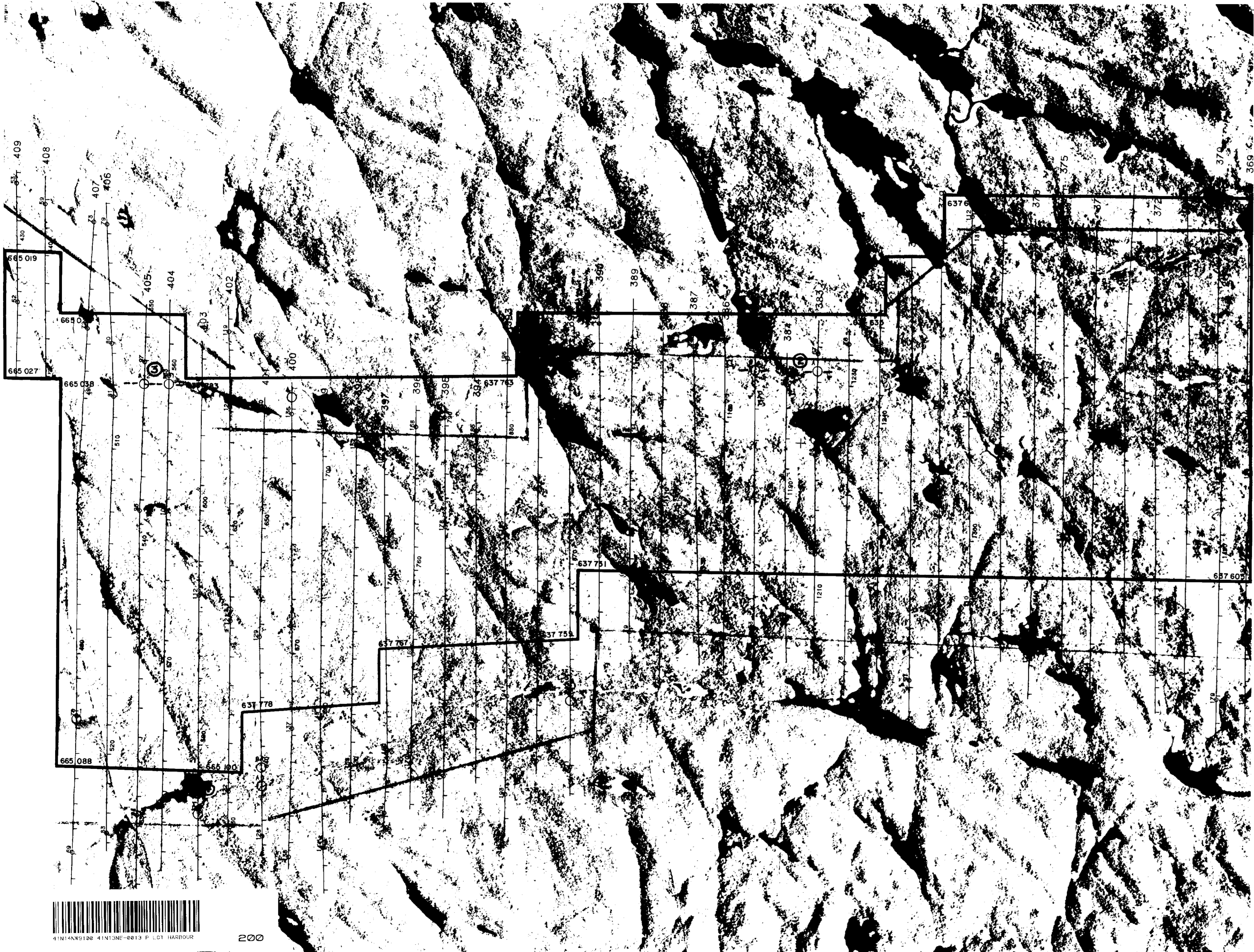
A. Barr:sc

cc: Mid North Engineering Services
Toronto, Ontario

cc: Fenton Scott
Don Mills, Ontario

cc: Resident Geologist
Sault Ste. Marie, Ontario

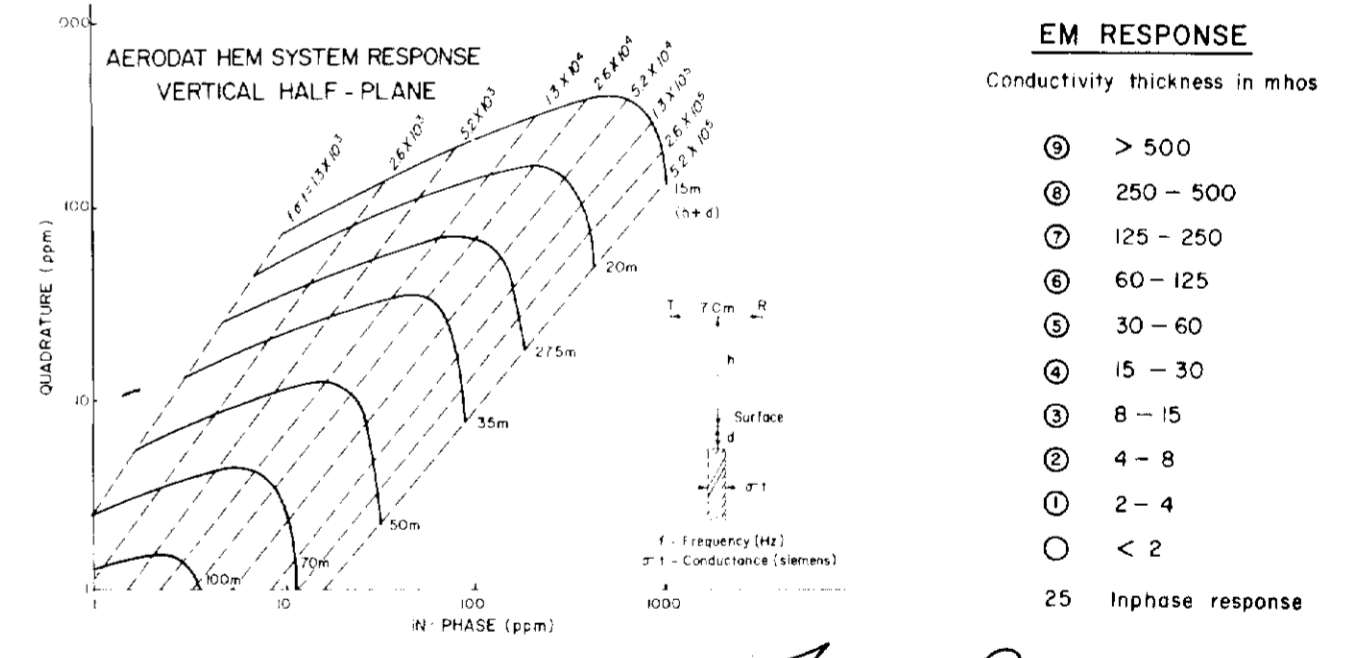
cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario



PEA

41N/13NE-8013 #1

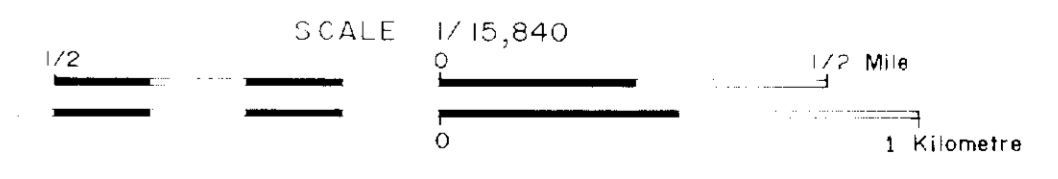
Horizontal control based on photo laydown
 Average bird height 30 metres
 Line spacing 660 feet



PROSPECTING GEOPHYSICS LTD.

AIRBORNE ELECTROMAGNETIC SURVEY

VILLENEUVE RESOURCES LIMITED
 JACKFISH LAKE CLAIMS
 ONTARIO



DATE February, March 1983

▼ AERODAT LIMITED

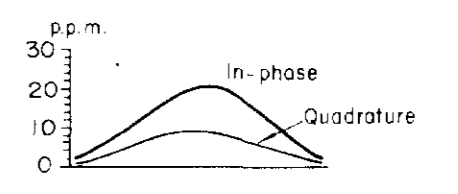
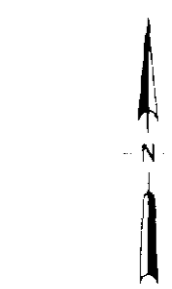
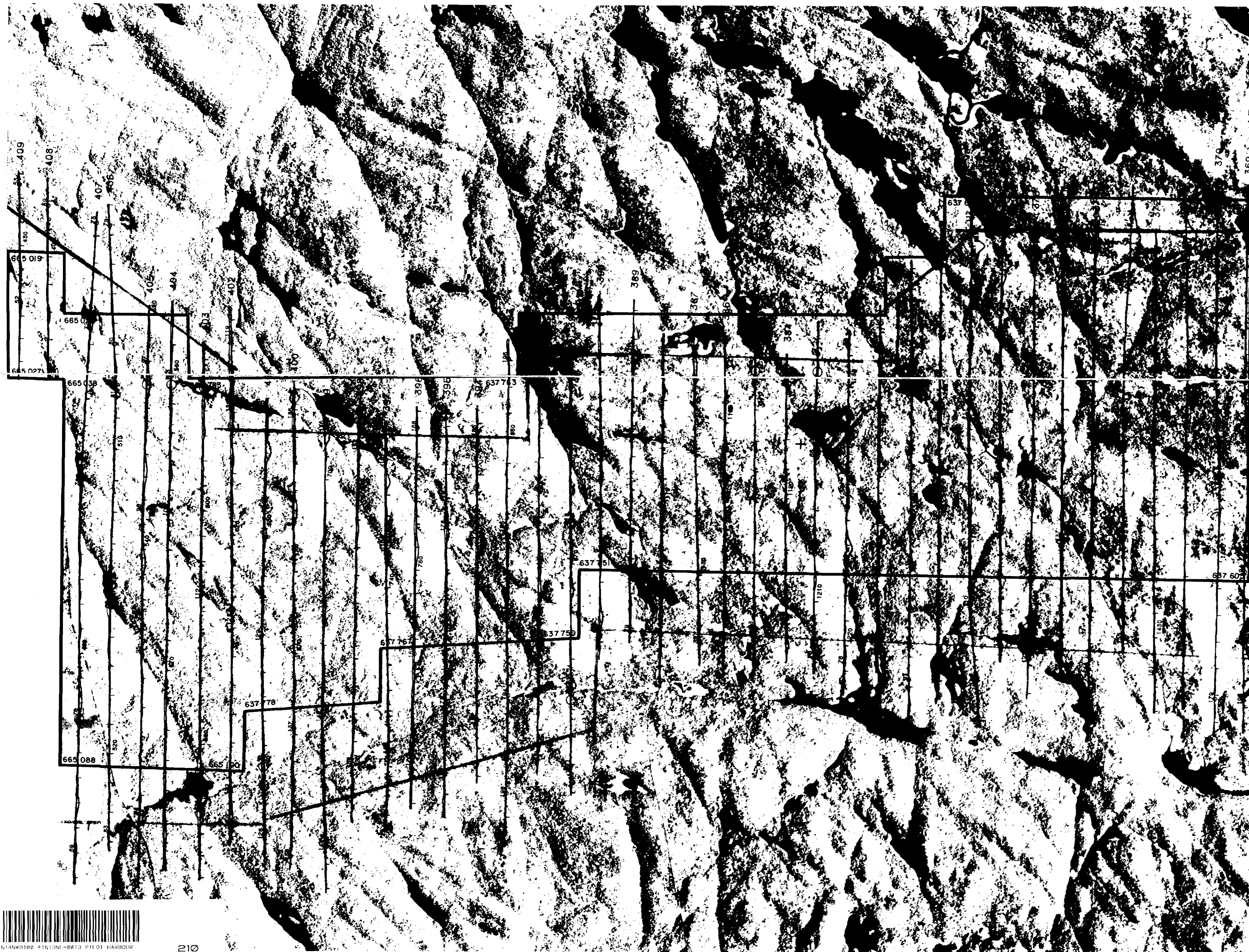
N.T.S. No: 41N, 42C

MAP No: I



200

41N14N9120 41N13NE-8013 P. LOT HARBOUR



P.B.
 41N/13NE - 0013 #1
Just Scott

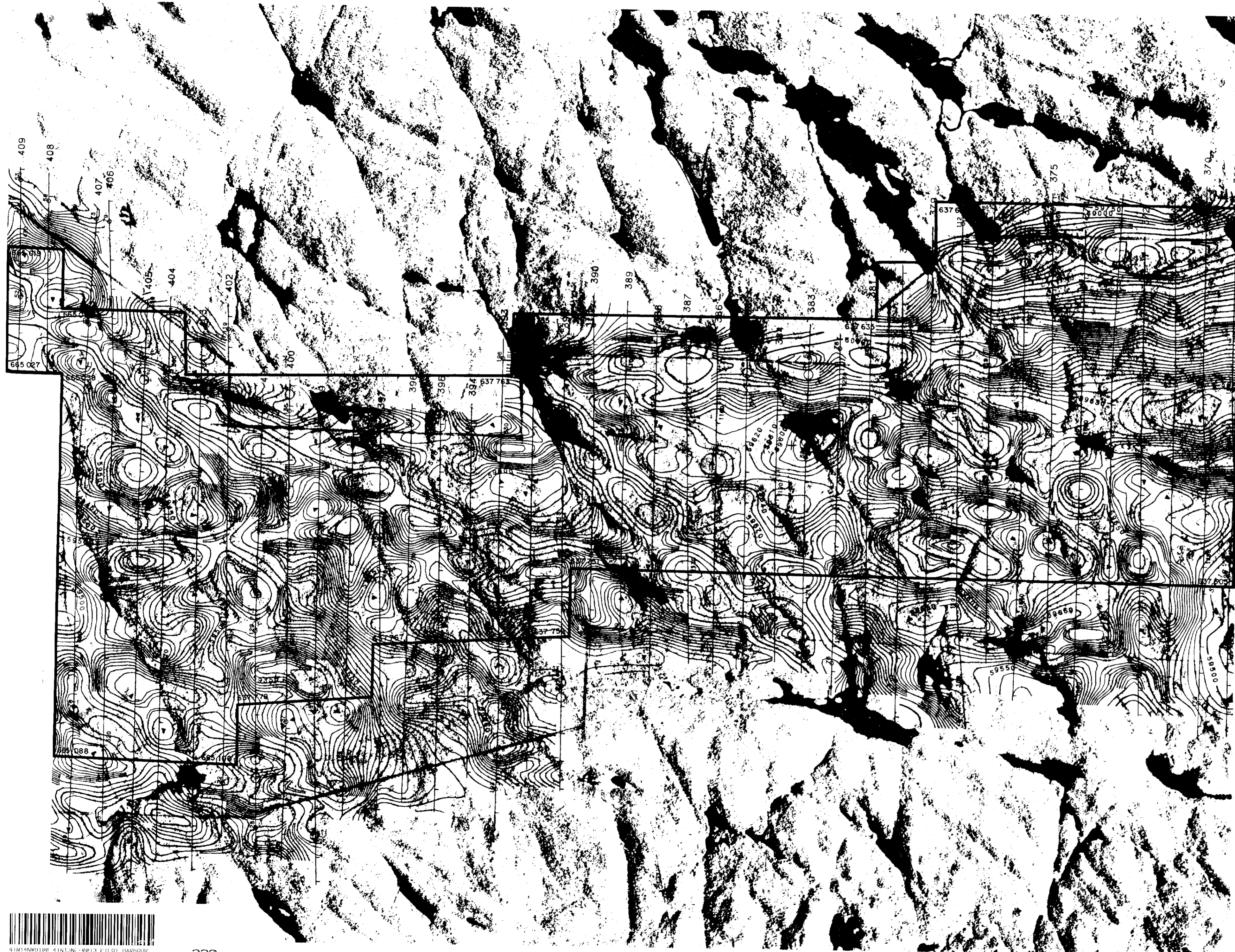
PROSPECTING GEOPHYSICS LTD.
AIRBORNE ELECTROMAGNETIC SURVEY
PROFILES
 VILLENEUVE RESOURCES LIMITED
 JACKFISH LAKE CLAIMS
 ONTARIO

SCALE 1/15,840
 1/2 Mile
 1 Kilometre

DATE	February, March 1983
NTS No.	41N, 42C
MAP No.	2

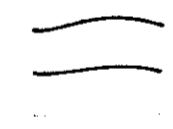
▼ AERODAT LIMITED





LEGEND

- 100 gammas
- 50 gammas
- 10 gammas



41N/13NE-0013 #2

Auto Scale

PROSPECTING GEOPHYSICS LTD.

TOTAL FIELD MAGNETIC MAP
 VILLENEUVE RESOURCES LIMITED
 JACKFISH LAKE CLAIMS
 ONTARIO

SCALE 1:15,840
 1/2 Mile
 1 Kilometre

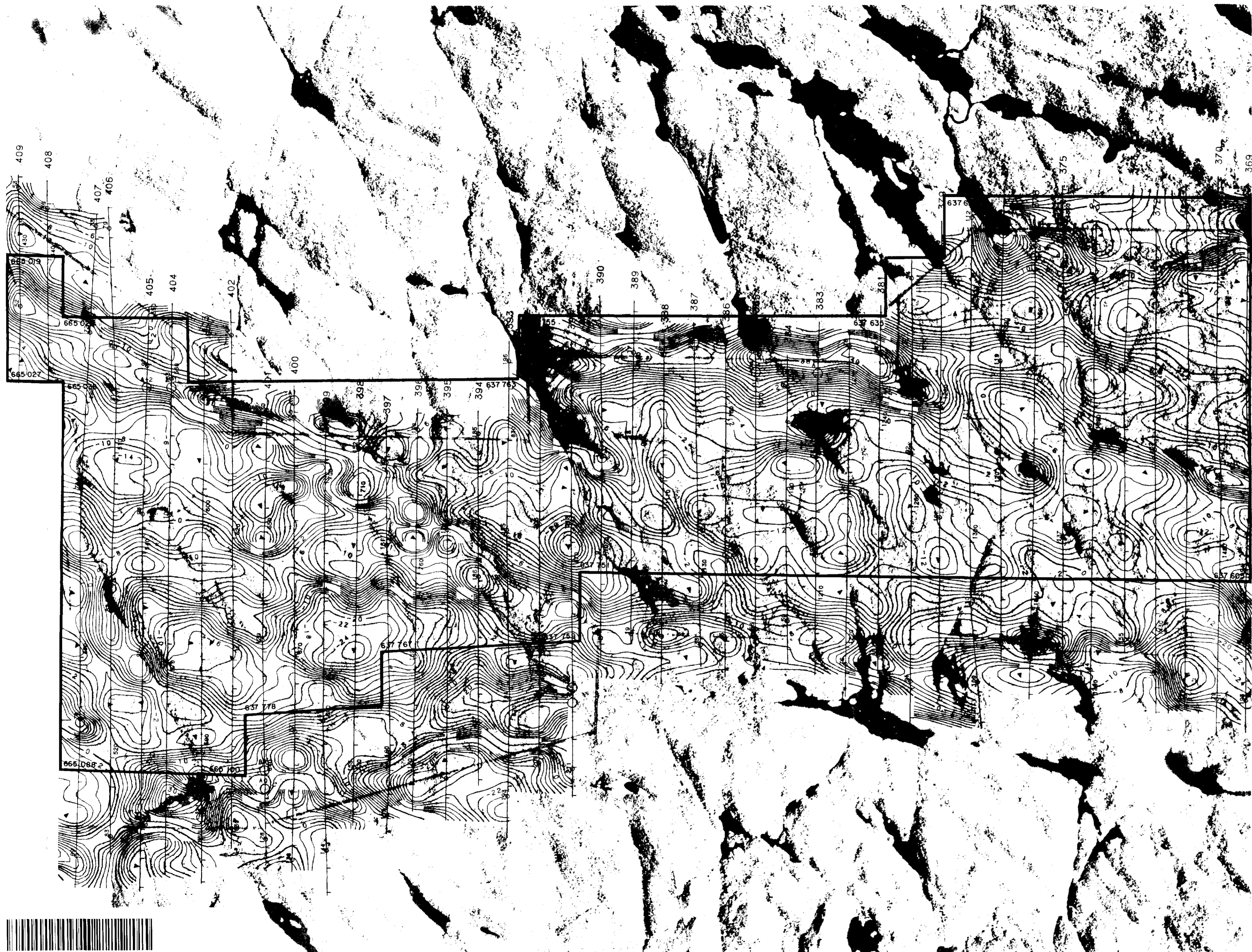
DATE: February, March 1983

▼ AERODAT LIMITED

N.T.S. No. 41N, 42C

MAP No. 3





LEGEND

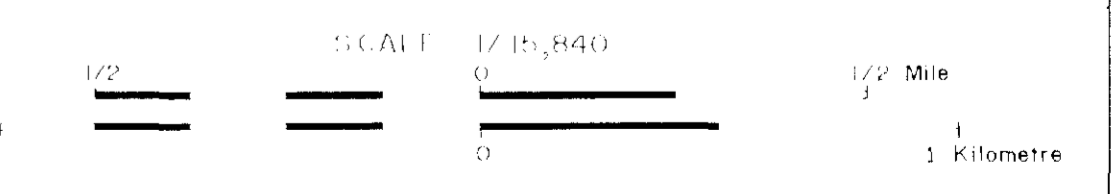
- 100 gamma
- 50 gamma
- 10 gamma

41N/13W-8013 #3
Auto Plot

PROSPECTING GEOPHYSICS LTD.

VLF-EM
 "LINE" NAA (MAINE) 17.8 KHz.

VILLENEUVE RESOURCES LIMITED
 JACKFISH LAKE CLAIMS
 ONTARIO



DATE: February, March 1983

N.T.S. No: 41N, 42C

MAP No: 4

▼ AERODAT LIMITED

