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

for

TUNDRA GOLD MINES LTD.

by

AERODAT LIMITED

JUNE 1983

010C

TABLE OF CONTENTS

LIST OF MAPS

(Scale: 1/15,840)

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 Tundra Gold Mines Ltd. by Aerodat Limited. Equipment operated included a 3 frequency electromagnetic system, a VLF-EM system, and a magnetometer.

The survey was flown on March 6 to March 22, 1983 from an operations base at Wawa Ontario. A total of 563 line miles were flown, at a nominal line spacing of 660 feet. Of the total flown, this report describes 462 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.

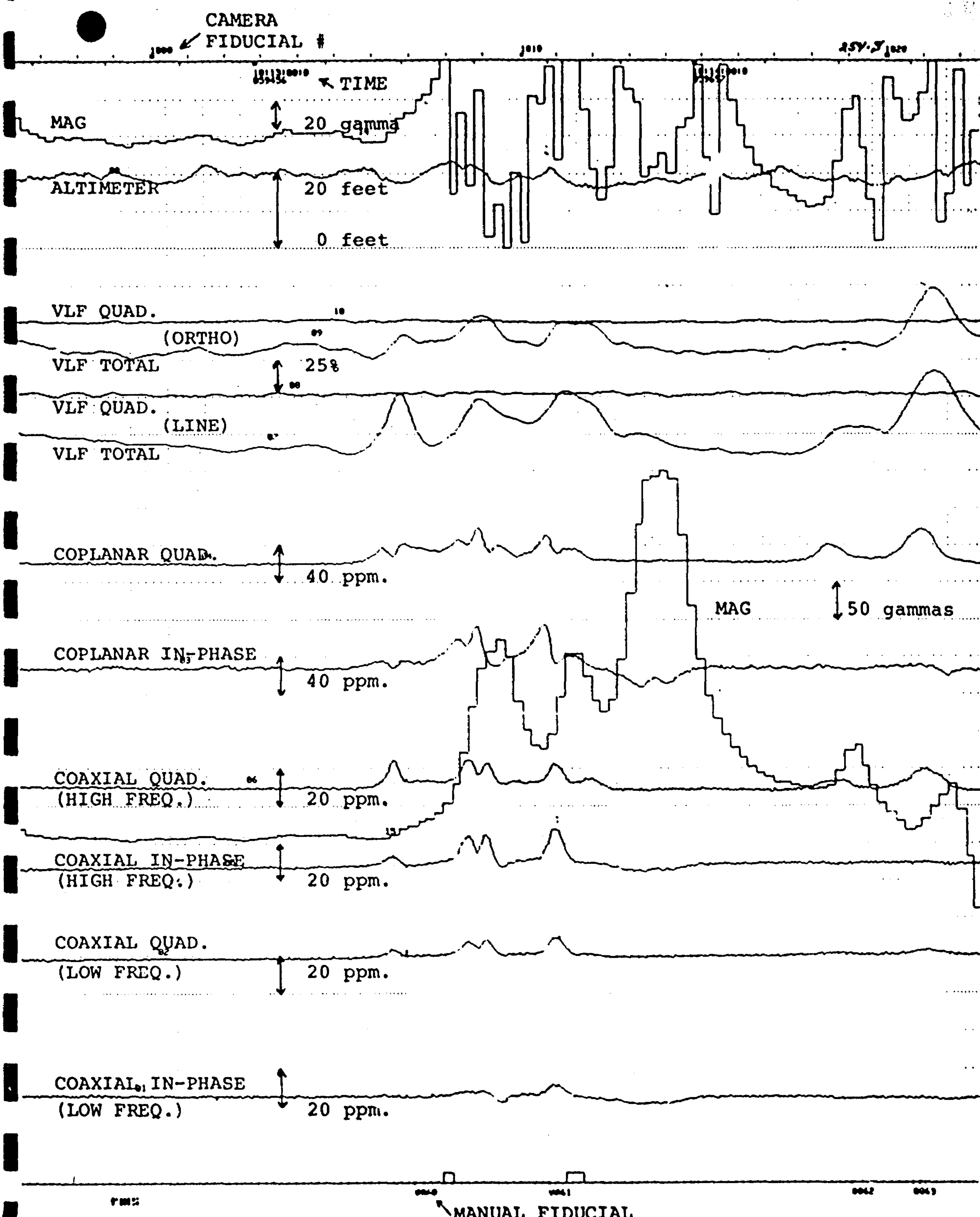
3.2.6 Tracking Camera

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



3.2.8 Digital Recorder

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

Equipment	Interval
EM	0.1 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 in volcanics - length 1000'

2 Multiple poor conductors associated with iron formation

3 A weak formational trend, south flank of iron formation, extends intermittently for four miles, may continue southwest as 22

4 Moderate to fair conductor, coincides with magnetic high. One and one-quarter miles plus.

5 Weak conductor in sediments

6 Isolated poor conductor mapped as sediment-volcanic contact.

7 Fair conductor in volcanics.

8 Short moderate conductor at sediment-volcanic contact

9 Short isolated conductor in volcanics.

10	Weak conductor in sediments, on trend from 5.
11	Formational weak conductor two miles long, higher conductivity at west end.
12	Isolated, moderate conductor at sediment-volcanic contact
13	Weak conductor on north flank of iron formation. May be stratigraphic equivalent of 3.
14	Short, fair magnetic conductor next to diabase dyke.
15	Weak conductor next to diabase dyke. May be overburden.
16	Moderate conductor at sediment-volcanic contact. May be extension of 12 west of diabase dyke.
17	Short, isolated conductor in volcanics. Magnetic low higher priority.
18	Moderate conductor, magnetic, one-half mile long.
19	Weak, cross-cutting conductive trend.

20 Fair conductor, magnetic, 4000 feet long - may be repetition of 18.

21 Isolated sharp conductor, near magnetic peak.

22 Formational, weak conductor on south flank of magnetic high, may be extension of 3.

23 Strong conductor with variable magnetic properties, roughly two miles long.

24 Shorter, fair conductor, magnetic.

25 Fair conductor in magnetic low, sediments

26 Weak conductor on crosscutting magnetic trend.

27 Moderate conductor

28 Short, fair conductor, may be on trend with 25

29 Strong conductor, seven miles in length - may be on trend with 23 - Bibis copper showing at western tip.

NOTE: The interpretation above suggests considerable structural disturbance in the vicinity of 19 and 26.

30	Isolated, weak conductor in volcanics next to diabase dyke.
31	Isolated, short, weak conductor, magnetic
32	Moderate conductor on trend of magnetic low.
33	Isolated, short, possibly overburden
34	Moderate conductor on magnetic high, sediments
35	Strong conductor, flanking magnetics, length one and half miles.
36	Short, moderate, magnetic, sediments
37	Fair conductor in sedimentary trend
38	Moderate conductor one mile long, flanking magnetics
39	Shorter, weak conductor on volcanic-sediment contact
40	On volcanic-sediment contact. Weak definite conductor. Burrey sulfide occurrence.
41	Isolated conductor on magnetic trend.
42, 43	Isolated definite conductors near volcanic sediment contact in intrusive aureole. Interesting.

44 Short, magnetic conductor north of 29 trend

45 Short, weak conductor

46 Moderate conductor on north flank of magnetic high

47 Two mile long. Moderate to fair magnetic conductor.

48 Two mile magnetic conductor similar to 47

49 Short fair conductor in volcanic mapped as granite contact - investigate

50 Isolated definite conductor on intrusive contact.

In addition to the fifty conductive features described above, there are an additional 13 weak indications of conductivity which lie in a range of weak bedrock or conductive overburden contrasts. These are designated by the letter "C" on the interpretation maps. They should be investigated if their locations are enhanced by geological favourability or other locational factors.

Respectfully submitted,

July 11, 1983. Fenton Scott, P. Eng.

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 prc .e 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 infered 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 recovered 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.

42C06SW0050 42C03NW0012 ABBIE LAKE

900

File ______

Ministry of Natural Resources

Ontario

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

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

Type of Survey(s) Airborne Electromagnetic, Magnetic, VLF-EM

Township or Area Pukaskwa River, Abbie Lake

Claim Holder(s) Tundra Gold Mines Limited

Survey Company Aerodat Limited

Author of Report Fenton Scott

Address of Author 17 Malabar Place, Don Mills, Ont.

Covering Dates of Survey March 6 to 22, 1983 (linecutting to office)

Total Miles of Line Cut 450

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	
–Magnetometer	
Radiometric	
–Other	
Geological	
Geochemical	

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

Magnetometer 20.9 Electromagnetic 20.9 Radiometric 20.9 (enter days per claim)

DATE: October 30/83 SIGNATURE: [signature] Author of Report or Agent

MINING CLAIMS TRAVERSED
List numerically

SSM 61590 et al (prefix) (number)

List attched

RECEIVED NOV 1 1983 MINING LANDS SECTION

If space insufficient, attach list

TOTAL CLAIMS ______

OFFICE USE ONLY

Res. Geol. ______ Qualifications ______

Previous Surveys

File No.	Type	Date	Claim Holder

837 (5/79)

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 Electromagnetic VLF-EM

Instrument(s) Geometrics G803 Aerodat 3 freq Totem 2A
(specify for each type of survey)

Accuracy .5 gammas 1 ppm 1% ϕ1mm)
(specify for each type of survey)

Aircraft used Aerospatiale Astar 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 462 Over claims only 450

Ministry of Natural Resources
Ontario

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

#132-83.

2.5971

The 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.

Type of Survey(s): AIRBORNE ELECTROMAGNETIC, MAGNETIC, VLF-EM.	Township or Area: PUKASKWA R. - ABBIE LAKE
Claim Holder(s): TUNDRA GOLD MINES LIMITED/RENE AUDY/PATRICE MORISSETTE/FRANK RECOSKI/G. MOWATT	Prospector's Licence No.: T 1533/D.18269/K.17989 D.18271 K.17988
Address: 4001 INDIAN SCHOOL ROAD N.E. - ALBUQUERQUE, N.M. 87110.	
Survey Company: AERODAT LIMITED	Date of Survey (from & to): 6 3 83 22 3 83 (Day Mo. Yr. Day Mo. Yr.) — Total Miles of line Cut: 450
Name and Address of Author (of Geo-Technical report): FENTON SCOTT 17 MALABAR PLACE DON MILLS, ONTARIO M3B1A4	

Credits Requested per Each Claim in Columns at right

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

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

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	20.9
	Magnetometer	20.9
	~~Radiometric~~ VLF	20.9

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)
OCT. 29/83	[signature] FOR

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Number	Expend. Days Cr.	Mining Claim Prefix	Number	Expend. Days Cr.
SSM	619590	ET AL			
	LIST ATTACHED				

RECEIVED
DEC 1 - 1983
MINING LANDS SECTION

SAULT STE. MARIE MINING DIV.
RECEIVED
NOV 17 1983
A.M. 7,8,9,10,11,12,1,2,3,4,5,6 P.M.

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

Total number of mining claims covered by this report of work. 862

For Office Use Only		
Total Days Cr. Recorded: 54,047.4	Date Recorded: Nov. 17/83	Mining Recorder: [signature] for M. St. Jules
	Date Approved as Recorded: Feb 6/84	Branch Director: [signature]

Certification Verifying Report of Work TUNDRA GOLD MINES

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 M3B 1A4

Date Certified	Certified by (Signature)
OCT. 29/83	[signature]

362 (81/9)

CLAIM LIST — TUNDRA GOLD MINES — PAGE 1.

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9	2	30	8	30	7
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9	7	5	3	5	2
40	8	6	4	6	3
1	9	7	5	7	4
2	90	8	6	8	5
3	1	9	7	9	6
4	2	40	8	40	7
5	3		9	1	8
6	4	666842	90	2	9
7	5	3	1	3	50
8	6	4	2	4	1
9	7	5		5	2
50	8	6	691398	6	3
1	9	7	9	7	4
2	800	8	400	8	5
3	1	9	1	9	6
4	2	50	2	50	7
5	3	1	3	1	8
6	4	2	4	2	9
7	5	3	5	3	60
8	6	4	6	4	1
9	7	5	7	5	2
60	8	6	8	6	3
1	9	7	9	7	4
2	10	8	10	–	5
3	1	9	1	691518	6
4	2	60	2	9	7
5	3	1	3	20	8
6	4	2	4	1	9
7	5	3	5	2	70
8	6	4	6	3	1

SSM 691572	SSM 691620	SSM 692810	SSM 692907	SSM 929993	SSM 693092
3	1	1	8	4	3
4	2	2	9	5	4
5	3	3	10	6	5
6	4	4	1	7	6
7	5	5	2	8	7
8	6	6	3	9	8
9	7	7	4		9
80	8		5	693001	693100
1	9	692868	6	2	1
2	30	9	7	3	2
3	1	70	8	4	3
4	2	1	9	5	4
5	3	2	20	6	5
6	4	3	1	7	6
7	5	4	2	8	7
8	6	5	3	9	8
9	7	6	4	10	9
90		7	5	1	10
1	691737	8	6	2	1
2	8	9	7	3	2
3	9	80	8	4	3
4	40	1		5	4
5	1	2	929968		5
6	2	3	9	693068	6
7	3	4	70	9	7
8	4	5	1	70	8
9	5	6	2	1	9
600	6	7	3	2	20
1	7	8	4	3	1
2	8	9	5	4	2
3	9	90	6	5	3
4	50	1	7	6	4
5	1	2	8	7	5
6	2	3	9	8	6
7	3	4	80	9	7
8	4	5	1	80	8
9	5	6	2	1	9
610	6	7	3	2	30
1	7	8	4	3	1
2		9	5	4	2
3	692803	692900	6	5	
4	4	1	7	6	693168
5	5	2	8	7	9
6	6	3	9	8	70
7	7	4	90	9	1
8	8	5	1	90	2
9	9	6	2	1	3

CLAIM LIST — TUNDRA GOLD MINES — PAGE 3

SSM 691572	SSM 691620	SSM 692810	SSM 692907	SSM 692993	SSM 693092
3	1	1	8	692 4	3
4	2	2	9	5	4
5	3	3	10	6	5
6	4	4	1	7	6
7	5	5	2	8	7
8	6	6	3	9	8
9	7	7	4		9
80	8		5	693001	693100
1	9	692868	6	2	1
2	630	9	7	3	2
3	691631	70	8	4	3
4	2	1	9	5	4
5	3	2	20	6	5
6	4	3	1	7	6
7	5	4	2	8	7
8	6	5	3	9	8
9	7	6	4	10	9
90		7	5	1	10
1	691737	8	6	2	1
2	8	9	7	3	2
3	9	80	8	4	3
4	40	1	692	5	4
5	1	2	692968		5
6	2	3	9	693068	6
7	3	4	70	9	7
8	4	5	1	70	8
9	5	6	2	1	9
600	6	7	3	2	20
1	7	8	4	3	1
2	8	9	5	4	2
3	9	90	6	5	3
4	50	1	7	6	4
5	1	2	8	7	5
6	2	3	9	8	6
7	3	4	80	9	7
8	4	5	1	80	8
9	5	6	2	1	9
610	6	7	3	2	30
1	7 ✓	8	4	3	1
2		9	5	4	2
3	692803	692900	6	5	
4	4	1	7	6	693168
5	5	2	8	7	9
6	6	3	9	8	70
7	7	[illegible]	90	9	1
8	8	5	1	90	2
9	9	6	2	1	3

SSM 693174	SSM 693222
5	3
6	4
7	5
8	6
9	7
80	8
1	9
2	30
3	1
4	2
5	3
6	4
7	5
8	6
9	7
90	8
1	693239
2	
3	
4	
5	
6	
7	
8	
9	
693200	
1	
2	
3	
4	
5	
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7	
8	
9	
10	
1	
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5	
6	
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8	
9	
20	
1	

TOTAL – 862 CLAIMS

Ministry of Natural Resources
Ontario

Technical Assessment Work Credits

File 2.5971

#132-83

Recorded Holder Tundra Gold Mines Limited

Township or Area PUKASKWA RIVER / ABBIE LAKE

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	SSM 619590 to 663 incl.
Electromagnetic 20.9 days	619665 to 89 incl.
Magnetometer 20.9 days	662001 to 10 incl.
Radiometric V.L.F. 20.9 days	662013 to 22 incl.
Induced polarization ______ days	662027 to 44 incl.
Section 86 (18) ______ days	662048 to 55 incl.
Geological ______ days	662057
Geochemical ______ days	662066 to 70 incl.
Man days ☐ Airborne ☑	666538 to 99 incl.
Special provision ☐ Ground ☐	666638 to 71 incl.
☐ Credits have been reduced because of partial coverage of claims.	666738 to 840 incl.
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	666842 to 92 incl.
	691398 to 457 incl.
	691518 to 637 incl.
	691737 to 57 incl.
	692803 to 17 incl.
	692868 to 928 incl.
	692968 to 99 incl.
	693001 to 15 incl.
	693068 to 132 incl.
	693168 to 239 incl.

Special credits under section 86 (15a) 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 86(18)-60:

828

Ontario Ministry of Natural Resources

Geotechnical Report Approval

File 25971

Mining Lands Comments

-okay-

[✓] To: Geophysics Mr. R. Barlow.

Comments

[✓] Approved [ ] Wish to see again with corrections Date Jan 13/84 Signature R. Barlow

[ ] To: Geology - Expenditures

Comments

[ ] Approved [ ] Wish to see again with corrections Date Signature

[ ] To: Geochemistry

Comments

[ ] Approved [ ] Wish to see again with corrections Date Signature

[ ] To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-138C)

1593 (81/10)

Initial Check	Dec. 19, 1983 Mary-Ellen Anderson
Assessed	
Approved Reports of Work sent out	
Notice of Intent filed	
Approval after Notice of Intent sent out	
Duplicate sent to Resident Geologist	
Duplicate sent to A.F.R.O.	

1983 11 08 2.5971

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:

We have received reports and maps for an Airborne Geophysical (Electromagnetic and Magnetometer and VLF) survey submitted on mining claims SSM619590 et al in the Areas of Pukaskwa River and Abbie Lake.

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

We do not have a copy of the report of work which is normally filed with you prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

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

A. Barr:mc

cc: Tundra Gold Mines Limited
c/o H.I. Miller
Suite 1205
45 Richmond Street West
Toronto, Ontario
M5H 1Z2

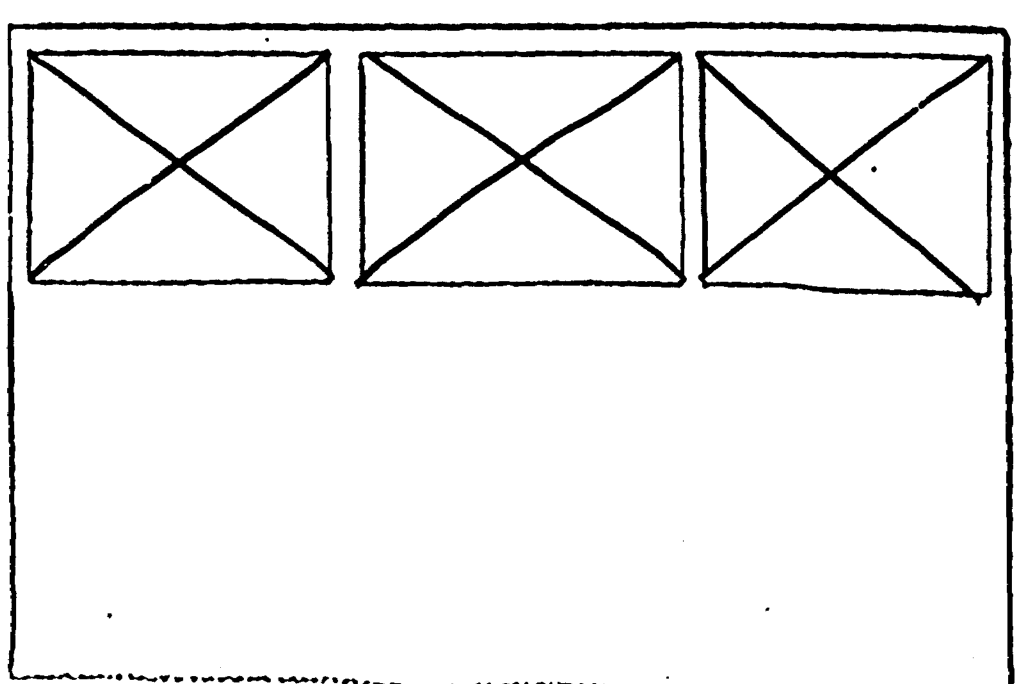
cc: Fenton Scott
17 Malabar Place
Don Mills, Ontario
M3B 1A4

SEE ACCOMPANYING

MAP(S) IDENTIFIED AS

42C/03NW-0012

LOCATED IN THE MAP
CHANNEL IN THE FOLLOWING
SEQUENCE (X)

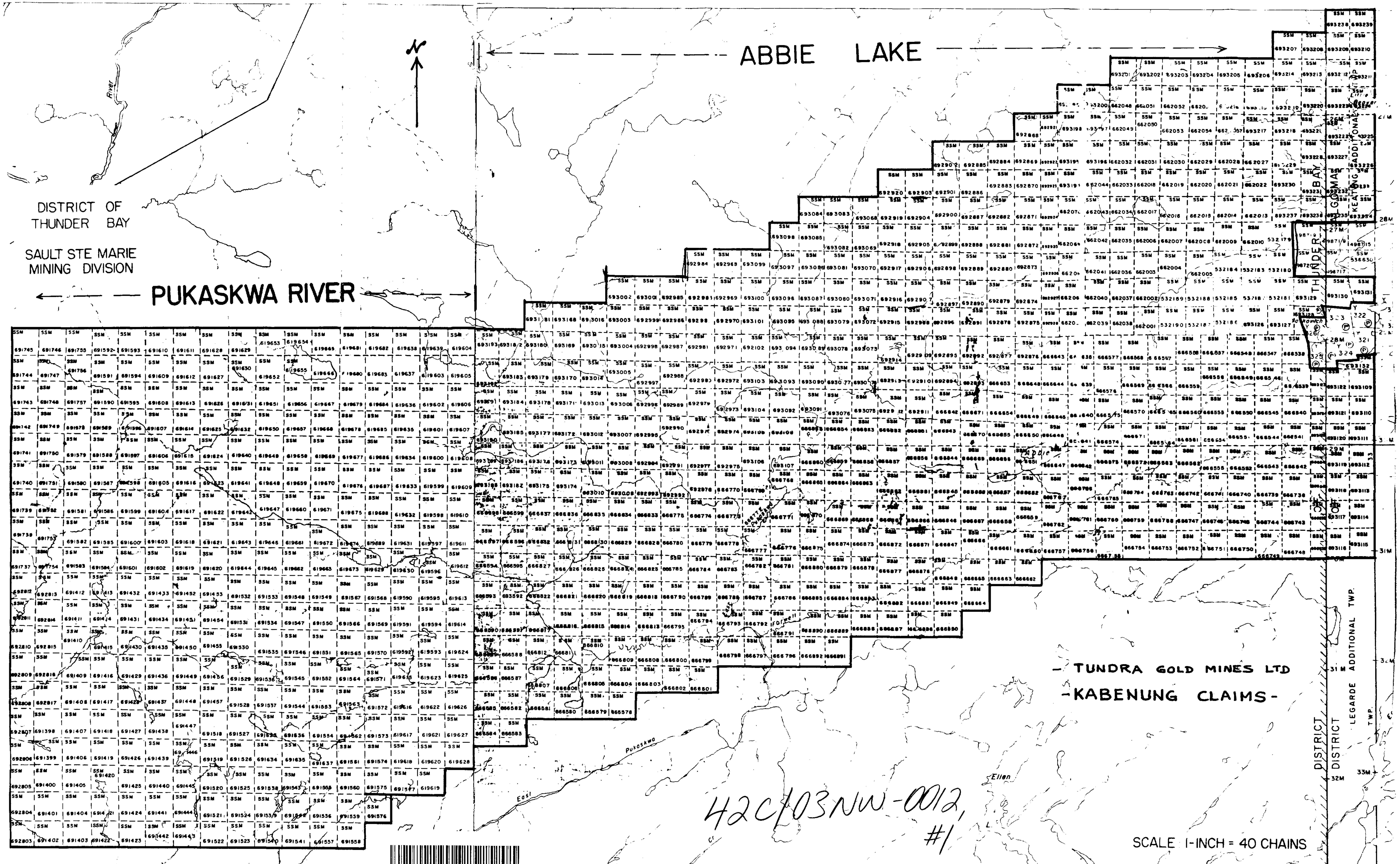


FOR ADDITIONAL

INFORMATION

SEE MAPS:

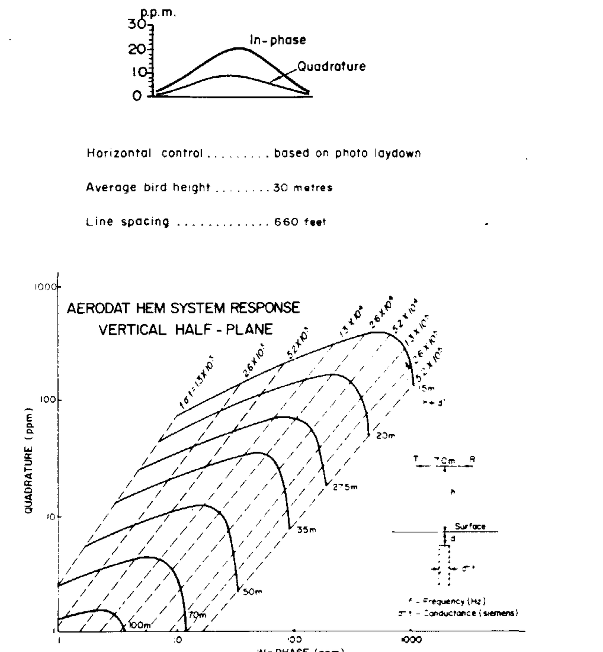
42C/03NW-0012 #4-9

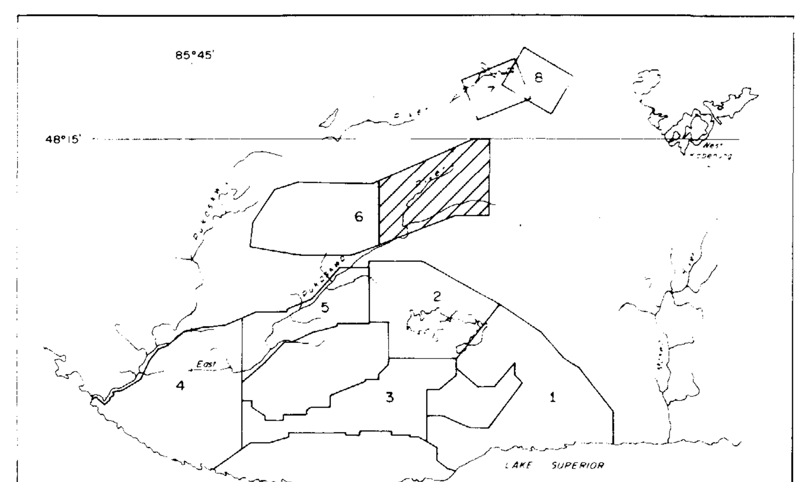


42C06SW0050 42C03NW0012 ABBIE LAKE

200

42 C/03 NW-0012 #2





PROSPECTING GEOPHYSICS LTD.

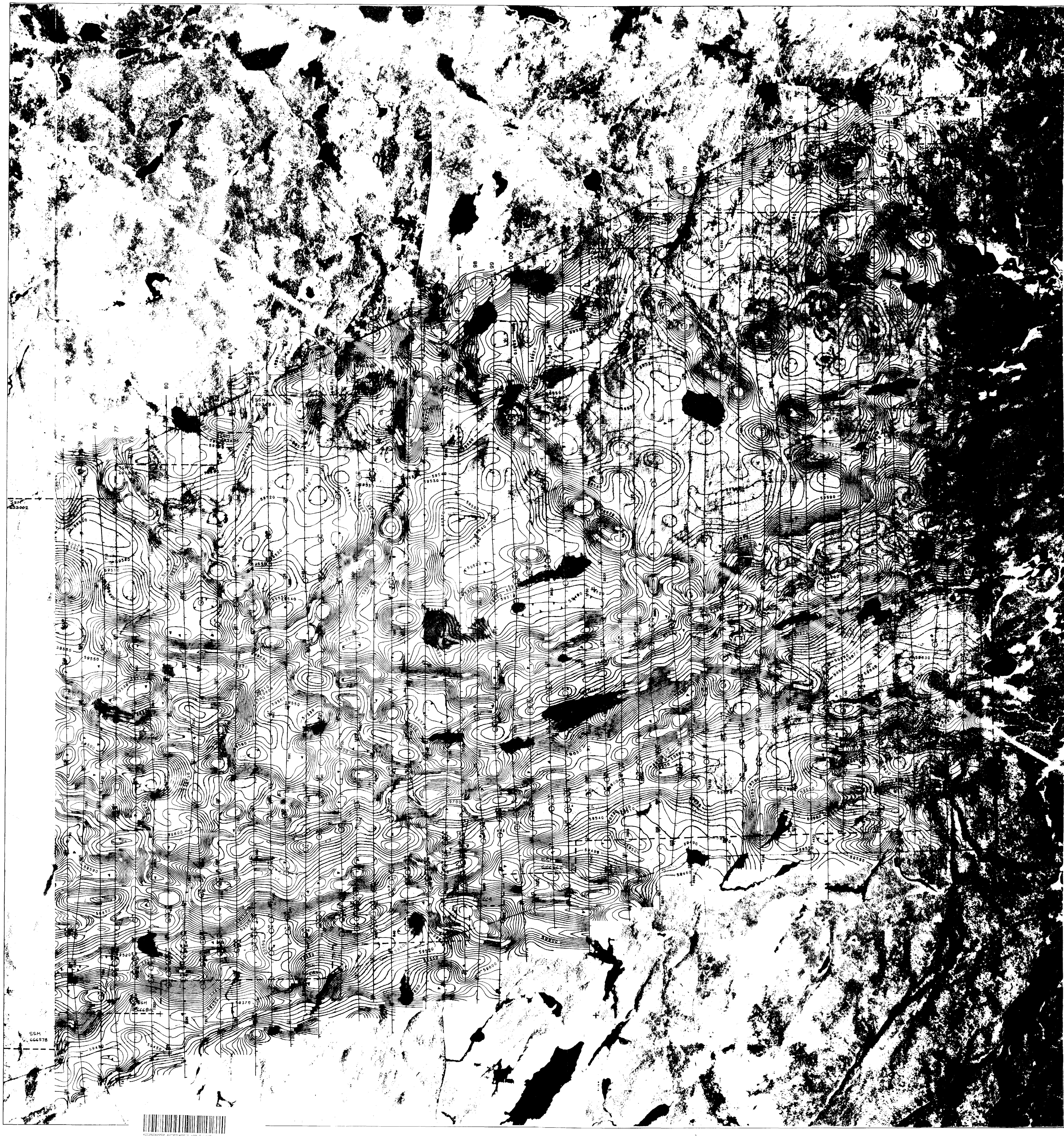
AIRBORNE ELECTROMAGNETIC SURVEY
PROFILES
TUNDRA GOLD MINES - KABENUNG CLS.
WAWA AREA
ONTARIO

SCALE 1/15,840

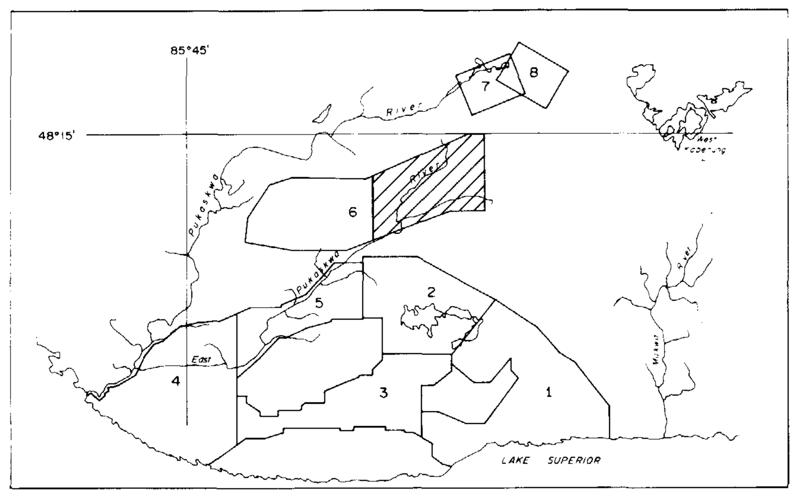
DATE	February, March 1983
N.T.S. No:	41N, 42C
MAP No:	1 (E ½)

AERODAT LIMITED

210



42C/03NW-0012,#3



PROSPECTING GEOPHYSICS LTD.

TOTAL FIELD MAGNETIC MAP

TUNDRA GOLD MINES -KABENUNG CLS.

WAWA AREA

ONTARIO

SCALE 1/15,840

1/2 Mile

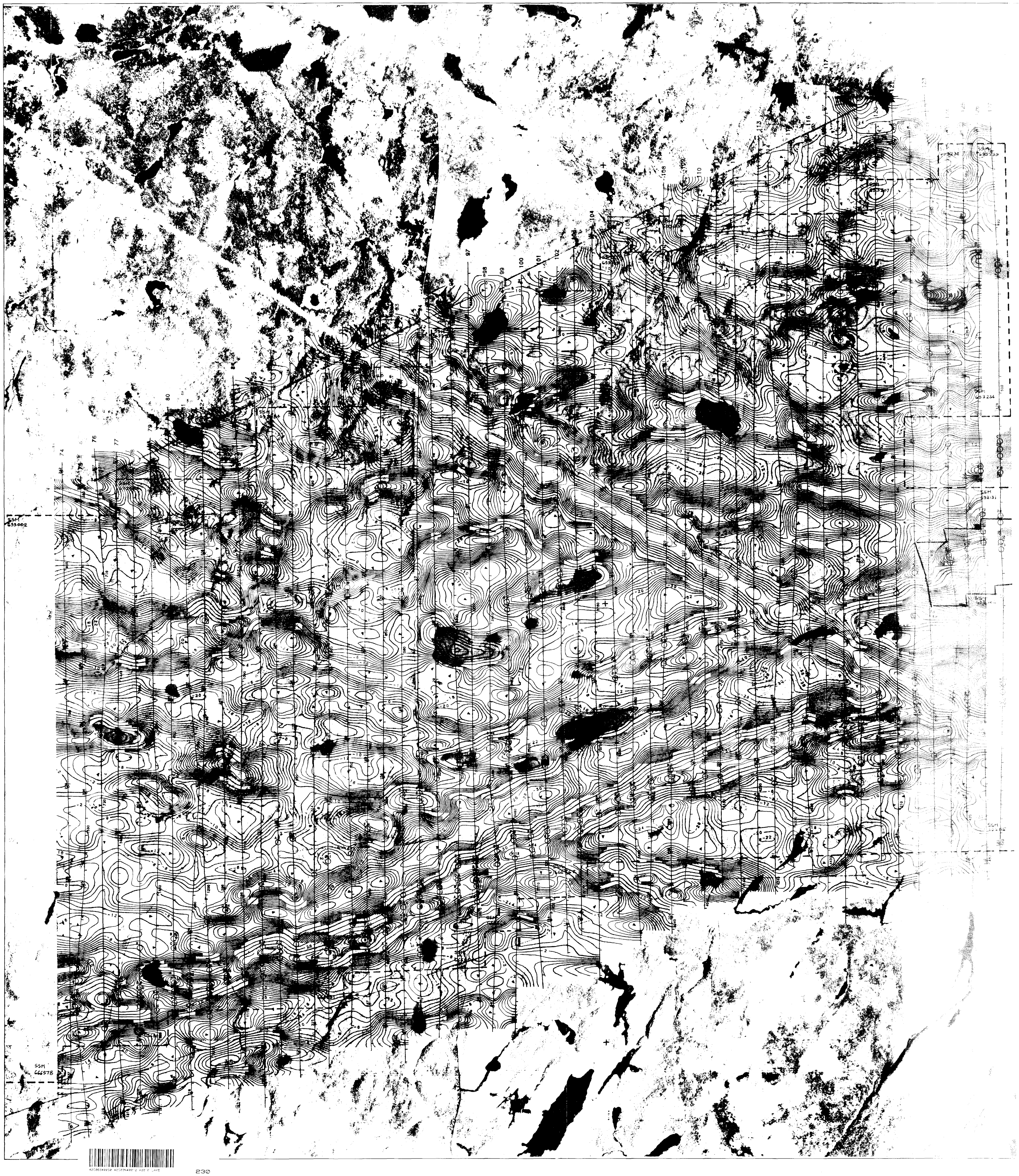
1 Kilometre

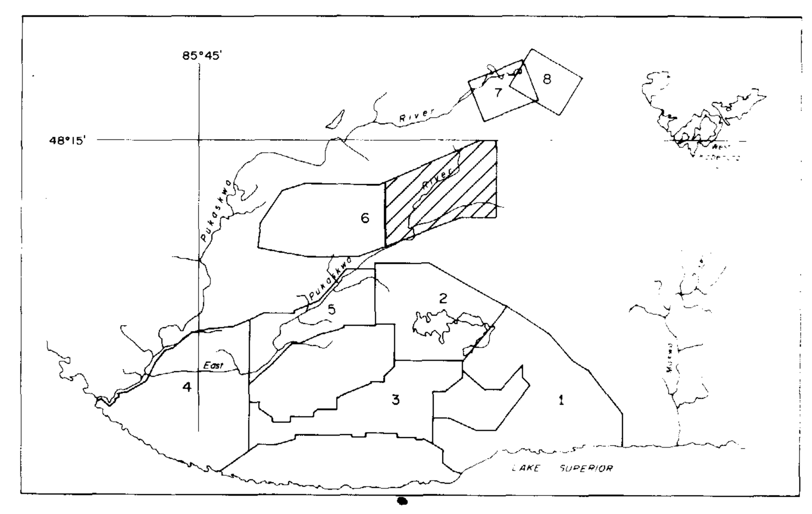
AERODAT LIMITED

DATE: February, March 1983

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

MAP No: 2 (E½)





42C03NW-0012#4

PROSPECTING GEOPHYSICS LTD.

VLF-EM

NAA (MAINE) 17.8 KHz.

TUNDRA GOLD MINES - KABENUNG CLS.

WAWA AREA

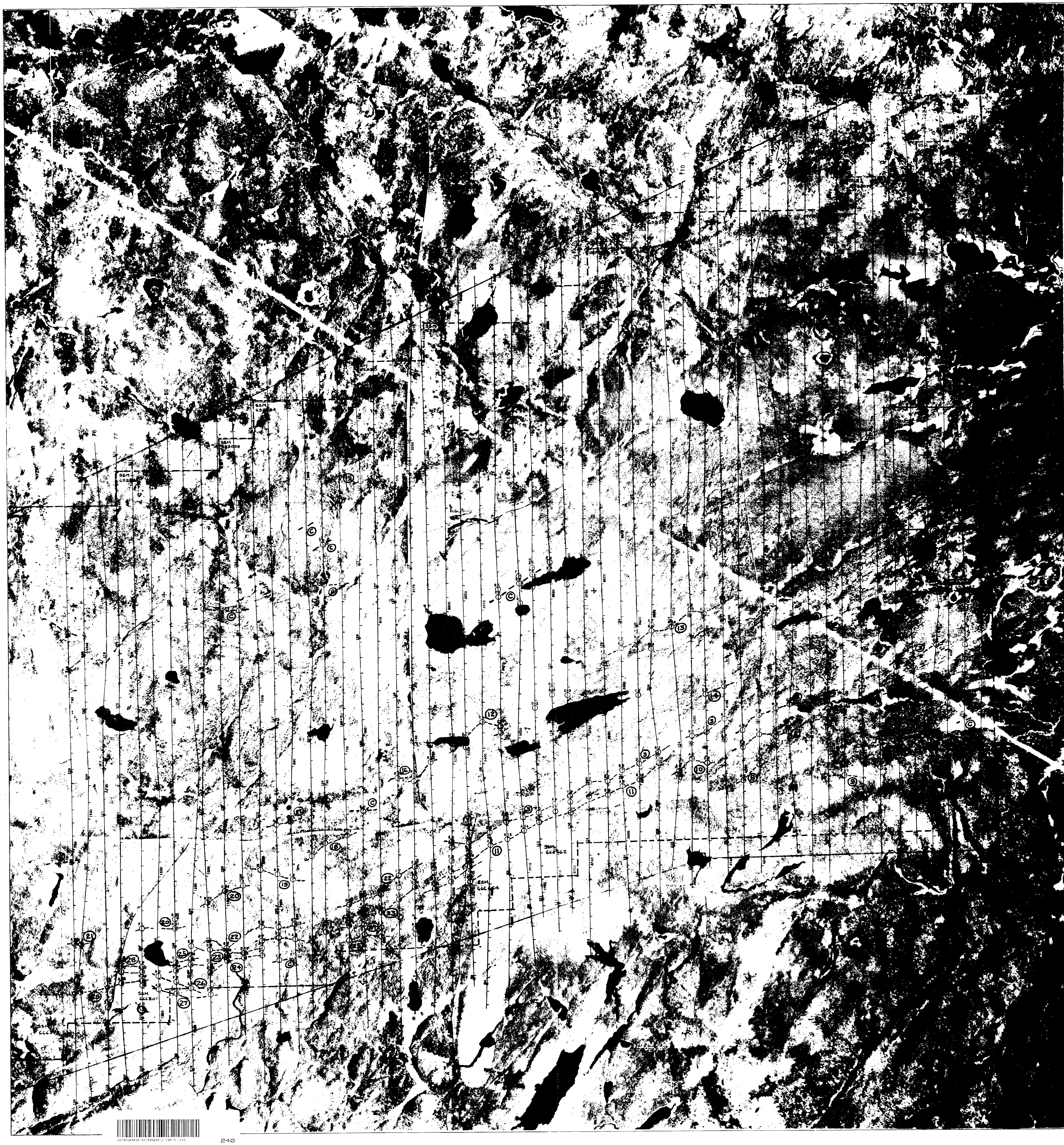
ONTARIO

SCALE 1/15,840

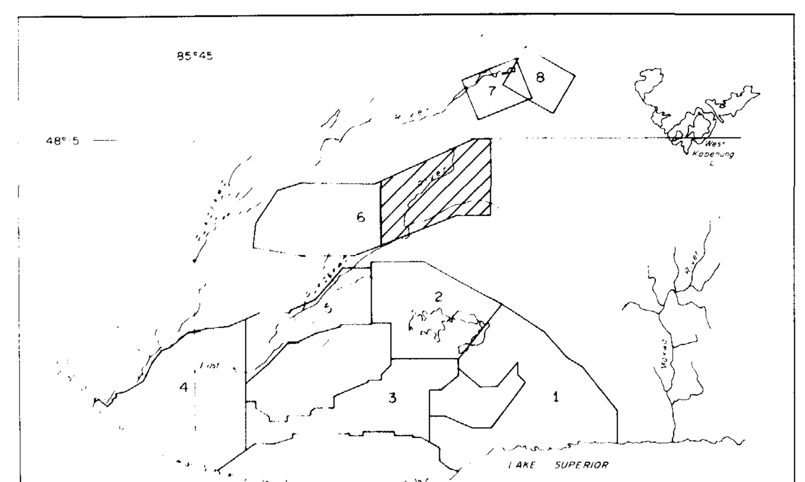
DATE:	February, March 1983
N.T.S. No:	41N, 42C
MAP No:	3 (E½)

AERODAT LIMITED

230



42C/03NW-0012 #5



PROSPECTING GEOPHYSICS LTD.

CONDUCTOR AXIS INTERPRETATION

TUNDRA GOLD MINES - KABENUNG GRP

WAWA AREA

ONTARIO

SCALE 1/15,840

0 — 1/2 Mile

0 — 1 Kilometre

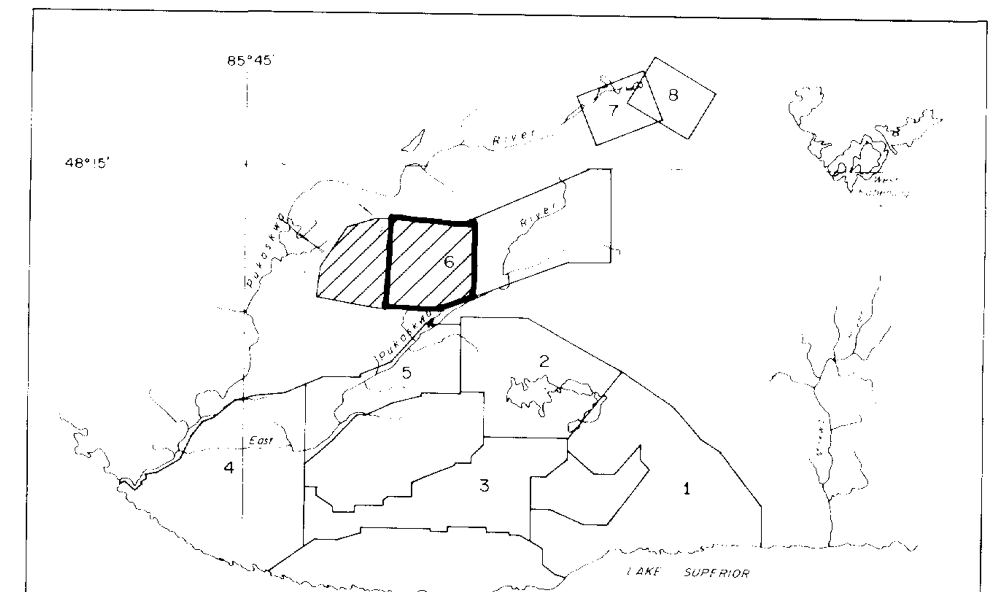
▼AERODAT LIMITED

DATE	February, March 1983
N.T.S. No	41N, 42C
MAP No	4 (E½)

25971

240

42C/03 NW-0012,#9



PROSPECTING GEOPHYSICS LTD.

CONDUCTOR AXIS INTERPRETATION

TUNDRA GOLD MINES LTD.

WAWA AREA

ONTARIO

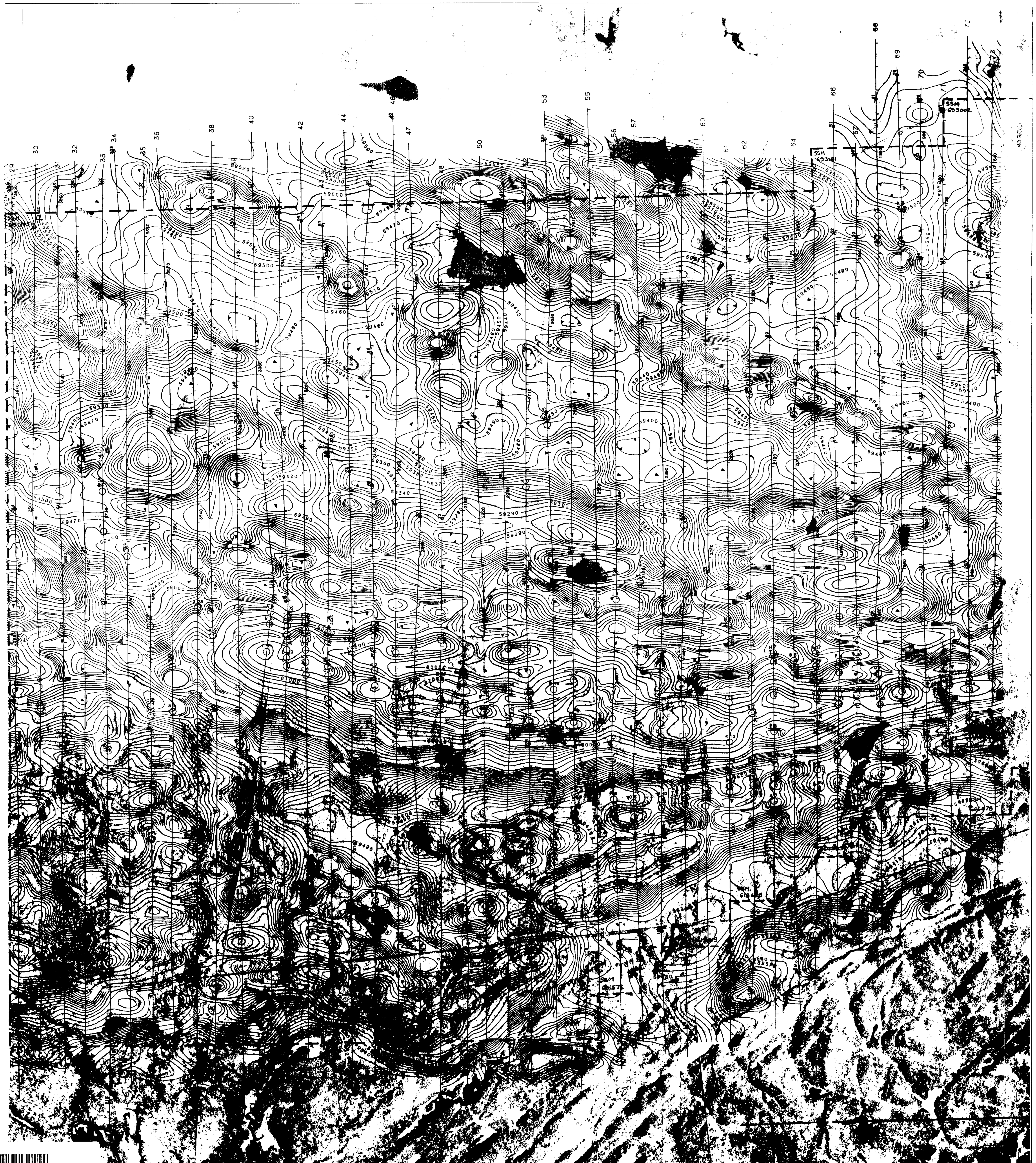
SCALE 1/15,840

1/2 0 1/2 Mile

1 0 1 Kilometre

AERODAT LIMITED

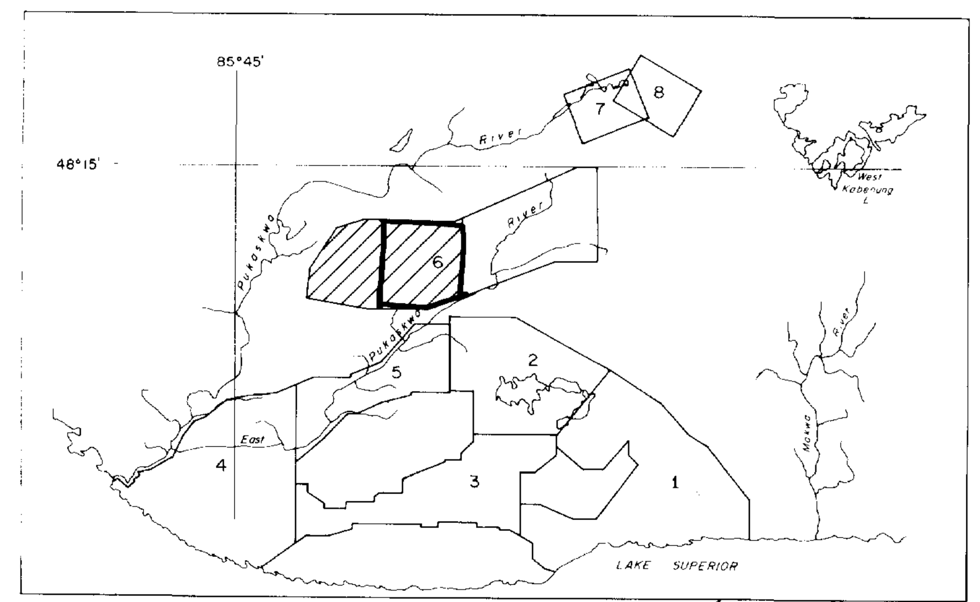
DATE	February, March 1983
N.T.S. No.	41N, 42C
MAP No.	4(W)



42C03NW-0012 #7

LEGEND

100 gammas ....
50 gammas ....
10 gammas ....



PROSPECTING GEOPHYSICS LTD.

TOTAL FIELD MAGNETIC MAP
TUNDRA GOLD MINES LTD.
WAWA AREA
ONTARIO

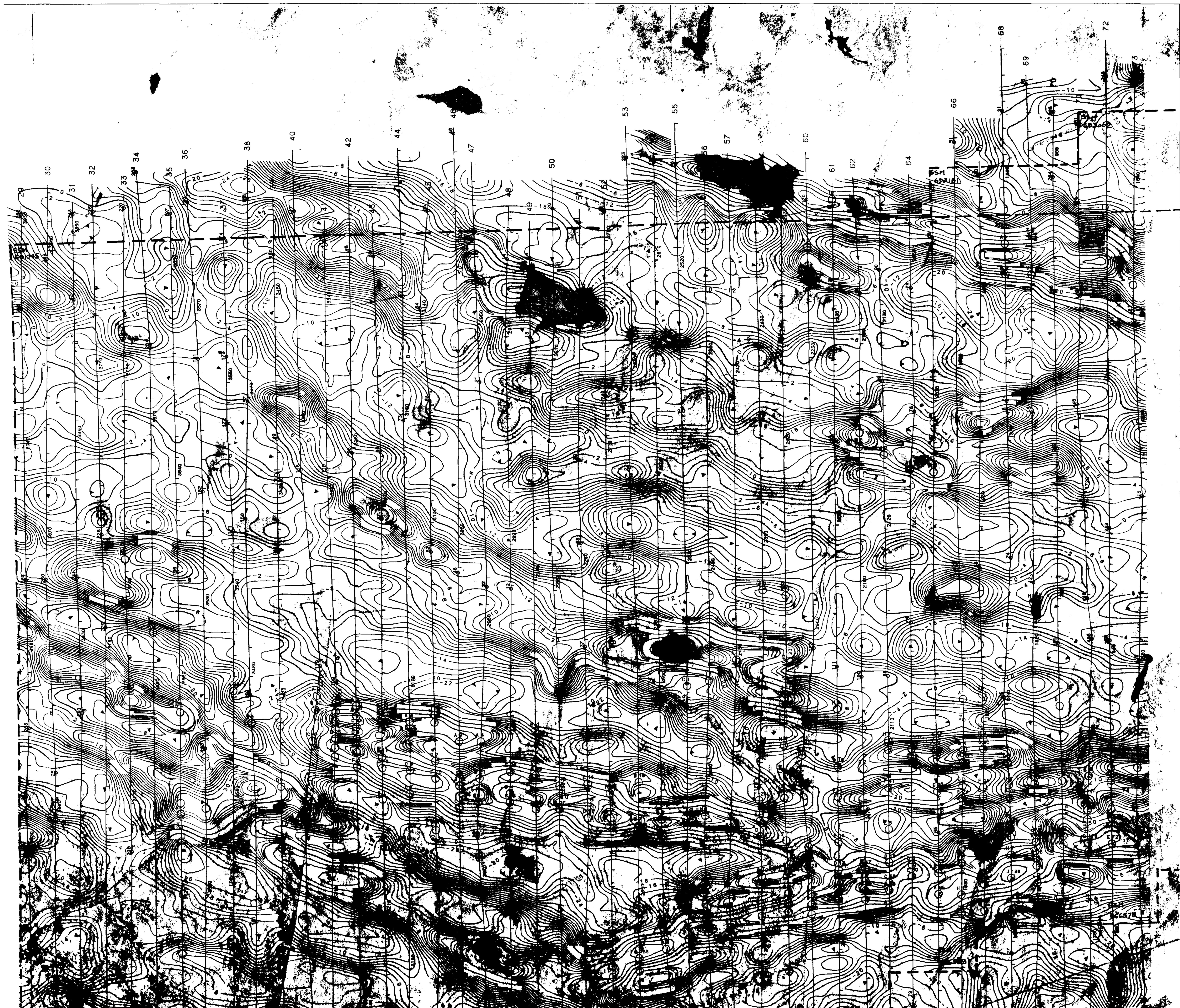
SCALE 1/15,840

1/2 0 1/2 Mile

1 0 1 Kilometre

AERODAT LIMITED

DATE:	February, March 1983
N.T.S. No:	41N, 42C
MAP No:	2 (w)



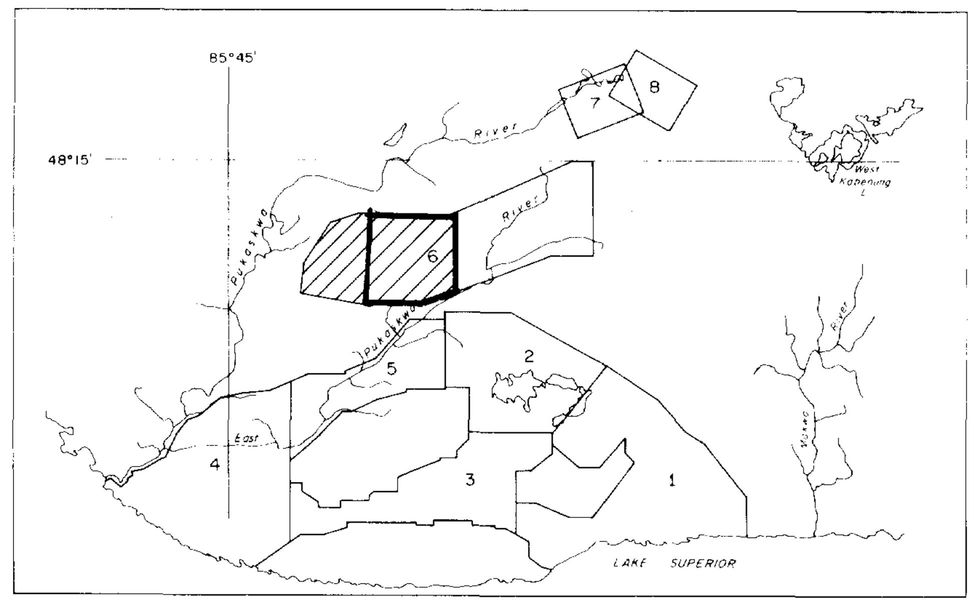
42C03NW-0012,#8

LEGEND

50 % ....

10 % ....

2 % ....



PROSPECTING GEOPHYSICS LTD.

VLF-EM

NAA (MAINE) 17.8 KHz.

TUNDRA GOLD MINES LTD.

WAWA AREA

ONTARIO

SCALE 1/15,840

1/2 0 1/2 Mile

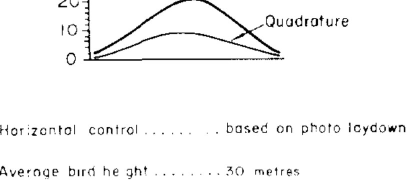
1 0 1 Kilometre

DATE	February, March 1983
N.T.S. No.	41N, 42C
MAP No.	3(w)

▼ AERODAT LIMITED

270

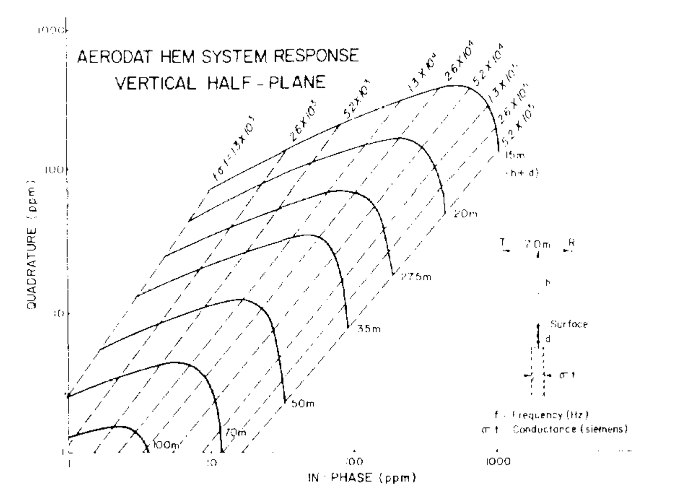
42C/03 NW-0012,#6

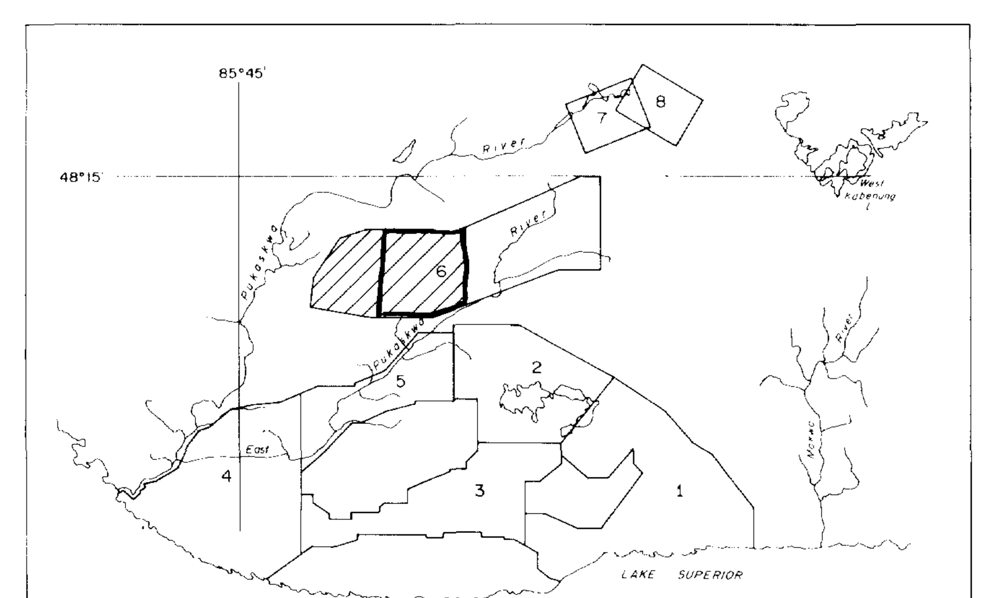


Horizontal control .... based on photo laydown

Average bird height .... 30 metres

Line spacing .... 660 feet





PROSPECTING GEOPHYSICS LTD.

AIRBORNE ELECTROMAGNETIC SURVEY

PROFILES

TUNDRA GOLD MINES LTD.

WAWA AREA

ONTARIO

SCALE 1/15,840

1/2 0 1/2 Mile

1 0 1 Kilometre

AERODAT LIMITED

DATE:	February, March 1983
N.T.S. No:	41N, 42C
MAP No:	14(w)

280