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Report #1057

DIGHEM^{III} SURVEY
FOR
NORAMCO EXPLORATIONS INC.
OPIKEIGEN LAKE PROJECT
(PROJECT 1439)
ONTARIO

NTS 42 M/12, 52 P/9

2nd 2.12.93

DIGHEM SURVEYS & PROCESSING INC.
MISSISSAUGA, ONTARIO
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SUMMARY

A DIGHEM^{III} survey was flown for Noramco Explorations Inc., in the Opikeigen Lake area, Ontario.

The purpose of the survey was to detect conductive zones, and to map the magnetic properties of the rock units within the survey area.

Several discrete bedrock conductors were detected by the electromagnetic survey. Some of these have direct magnetic association. The total field and enhanced magnetics yield valuable information about the geology and bedrock structure. The coplanar EM 7200 Hz data were used to produce resistivity maps which show the conductive properties of the survey area. The VLF data show numerous, moderately strong trends. Some of these correlate with interpreted bedrock conductors.

The survey area exhibits potential as host for both conductive massive sulphide deposits and weakly conductive zones of disseminated mineralization. A comparison of the various geophysical parameters, compiled with geological and geochemical information, should be useful in selecting targets for follow-up work.

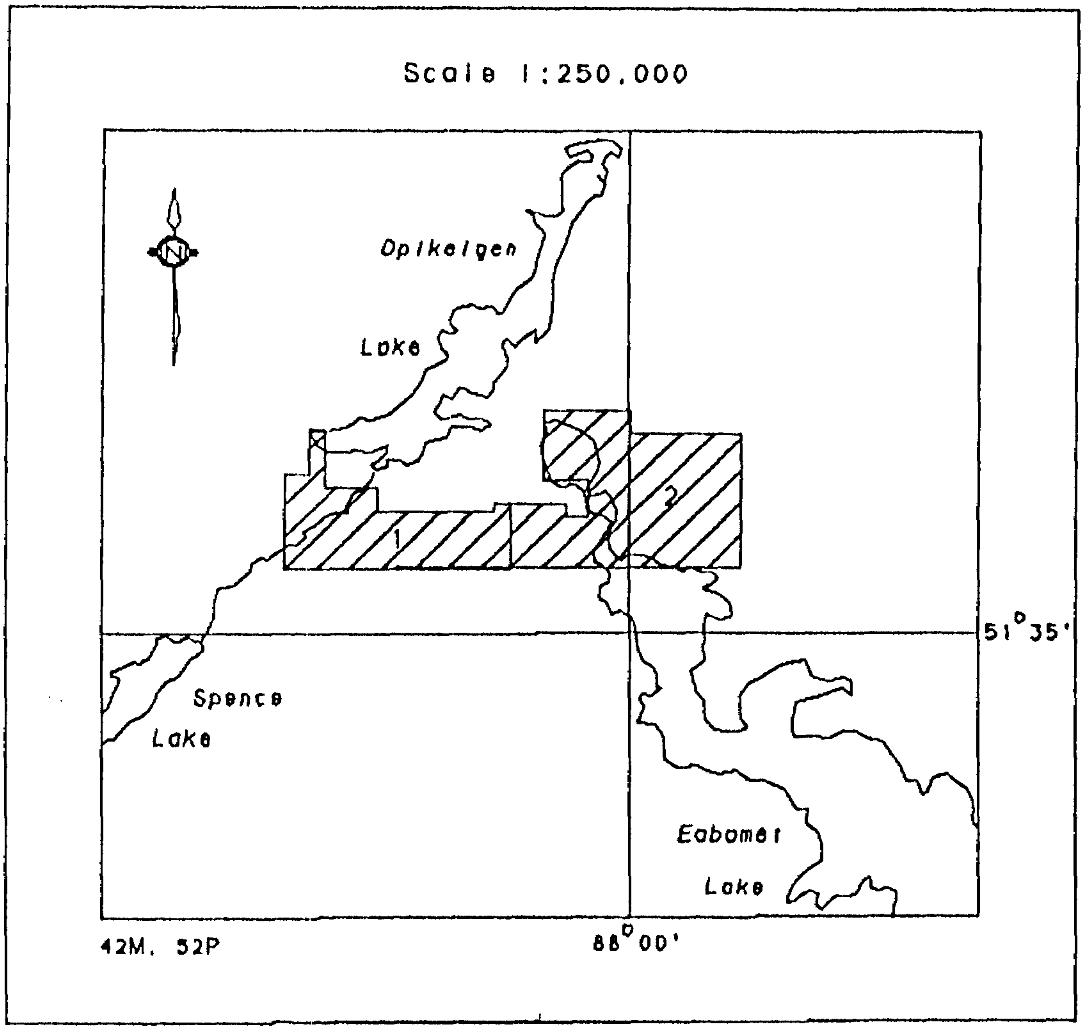

FIGURE 1

THE SURVEY AREA

42M12NW0001 2.12321 WEST OF GIFFORD LAKE

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CONTENTS

INTRODUCTION

A DIGHEM^{III} electromagnetic/resistivity/magnetic/VLF survey was flown for Noramco Explorations Inc., from January 12 to January 13, 1989, in the Opikeigen Lake project area, Ontario (Figure 1). The survey area is located on NTS map sheets 42 M/12, 52 P/9.

Survey coverage consisted of approximately 533 line-km. The flight lines were flown with a 100 m line separation in an azimuthal direction of 0°/180°. Tie lines were flown perpendicular to the flight line direction.

The survey employed the DIGHEM^{III} electromagnetic system. Ancillary equipment consisted of a magnetometer, radio altimeter, video camera, analog and digital recorders, a VLF receiver and an electronic navigation system.

This report is divided into six sections. Section 2 provides details on the equipment used in the survey and lists the recorded data and computed parameters. Section 3 reviews the data processing procedures, with further information on the various parameters provided in Section 5. Section 4 describes the geophysical results, and includes a brief interpretation of the survey data.

The survey results are shown on two separate map sheets for each parameter. Table 1-1 lists the products which can be obtained from the survey. Those which are part of the contract are indicated on this table by showing the presentation scale. These total 10 maps, and colour plots of the resistivity and magnetics. The magnetics colour plot is a compilation of this survey and an adjacent, previously flown survey.

Recommendations for additional products are included in Table 1-1. These recommendations are based on the information content of products that would contribute to reducing the cost of follow up, or increasing the likelihood of exploration success.

Table 1-1 Plots Available from the Survey

MAP	NO. OF SHEETS	ANOMALY MAP	PROFILES ON MAP	CONTOURS INK	CONTOURS COLOR	SHADOW MAP
Electromagnetic Anomalies	2	10,000	N/A	N/A	N/A	N/A
Probable Bedrock Conductors	-	-	N/A	N/A	N/A	N/A
Resistivity (900 Hz)	-	N/A	-	-	-	-
Resistivity (7,200 Hz)	2	N/A	-	10,000	10,000	-
EM Magnetite	-	N/A	-	-	-	-
Total Field Magnetics	2	N/A	-	10,000	10,000	**
Enhanced Magnetics	2	N/A	-	10,000	-	-
Vertical Gradient Magnetics	-	N/A	-	-	-	-
2nd Vertical Derivative Magnetics	-	N/A	-	-	-	-
Magnetic Susceptibility	-	N/A	-	-	-	-
Filtered Total Field VLF	2	N/A	-	10,000	-	-
Electromagnetic Profiles(900 Hz)	-	N/A	-	N/A	N/A	N/A
Electromagnetic Profiles(7200 Hz)	-	N/A	-	N/A	N/A	N/A
Overburden Thickness	-	N/A	-	-	-	-
Digital Profiles		Worksheet profiles				-
		Interpreted profiles				10,000

N/A Not available
*** Highly recommended due to its overall information content
** Recommended
* Qualified recommendation, as it may be useful in local areas
- Not recommended
10,000 Scale of delivered map, i.e, 1:10,000

SURVEY EQUIPMENT

This section provides a brief description of the geophysical instruments used to acquire the survey data:

Electromagnetic System

Model:	$DIGHEM^{III}$
Type:	Towed bird, symmetric dipole configuration, operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres.
Coil orientations/frequencies:	coaxial / 900 Hz coplanar/ 900 Hz coplanar/ 7,200 Hz
Sensitivity:	0.2 ppm at 900 Hz 0.4 ppm at 7,200 Hz
Sample rate:	10 per second

The electromagnetic system utilizes a multi-coil coaxial/coplanar technique to energize conductors in different directions. The coaxial transmitter coil is vertical with its axis in the flight direction. The coplanar coils are horizontal. The secondary fields are sensed simultaneously by means of receiver coils which are maximum coupled to their respective transmitter coils. The system yields an inphase and a quadrature channel from each transmitter-receiver coil-pair.

Magnetometer

Model: Picodas Cesium

Sensitivity: 0.1 nT

Sample rate: 10 per second

The magnetometer sensor is towed in a bird 15 m below the helicopter.

Magnetic Base Station

Model: Geometrics G-826A

Sensitivity: 0.50 nT

Sample rate: once per 5 seconds

An Epson recorder is operated in conjunction with the base station magnetometer to record the diurnal variations of the earth's magnetic field. The clock of the base station is synchronized with that of the airborne system to permit subsequent removal of diurnal drift.

VLF System

Manufacturer: Herz Industries Ltd.

Type: Totem-2A

Sensitivity: 0.1%

The VLF receiver measures the total field and vertical quadrature components of the secondary VLF field. Signals from two separate transmitters can be measured simultaneously. The VLF sensor is towed in a bird 10 m below the helicopter.

Radio Altimeter

Manufacturer: Honeywell/Sperry
Type: AA 220
Sensitivity: 1 m

The radio altimeter measures the vertical distance between the helicopter and the ground. This information is used in the processing algorithm which determines conductor depth.

Analog Recorder

Manufacturer: RMS Instruments
Type: GR33 dot-matrix graphics recorder
Resolution: 4x4 dots/mm
Speed: 1.5 mm/sec

The analog profiles were recorded on chart paper in the aircraft during the survey. Table 2-1 lists the geophysical data channels and the vertical scale of each profile.

Digital Data Acquisition System

Manufacturer: Scintrex

Type: CDI-6

Tape Deck: RMS TCR-12, 6400 bpi, tape cartridge recorder

The digital data were used to generate several computed parameters.

Tracking Camera

Type: Panasonic Video

Model: AG 2400/WVCD132

Fiducial numbers are recorded continuously and are displayed on the margin of each image. This procedure ensures accurate correlation of analog and digital data with respect to visible features on the ground.

Navigation System

Model: Del Norte 547

Type: UHF electronic positioning system

Sensitivity: 1 m

Sample rate: 0.5 per second

The navigation system uses ground based transponder stations which transmit distance information back to the helicopter. The ground stations are set up well away from the survey area and are positioned such that the signals cross the survey block at an angle between 30° and 150°. After site selection, a baseline is flown at right angles to a line drawn through the transmitter sites to establish an arbitrary coordinate system for the survey area. The onboard Central Processing Unit takes any two transponder distances and determines the helicopter position relative to these two ground stations in cartesian coordinates.

Aircraft

The instrumentation was installed in an Aerospatiale AS350B turbine helicopter. The helicopter flew at an average airspeed of 110 km/h with an EM bird height of approximately 30 m.

Table 2-1. The Analog Profiles

Channel Name	Parameter	Sensitivity per mm	Designation on digital profile
CX1I	coaxial inphase (900 Hz)	2.5 ppm	CXI (900 Hz)
CX1Q	coaxial quad (900 Hz)	2.5 ppm	CXQ (900 Hz)
CP2I	coplanar inphase (900 Hz)	2.5 ppm	CPI (900 Hz)
CP2Q	coplanar quad (900 Hz)	2.5 ppm	CPQ (900 Hz)
CP3I	coplanar inphase (7200 Hz)	5.0 ppm	CPI (7200 Hz)
CP3Q	coplanar quad (7200 Hz)	5.0 ppm	CPQ (7200 Hz)
CXS	coaxial sferics monitor		
CPS	coplanar sferics monitor		CPS
ALT	altimeter	3 m	ALT
VF1T	VLF-total: primary station	2.5%	
VF1Q	VLF-quad: primary station	2.5%	
VF2T	VLF-total: secondary stn.	2.5%	
VF2Q	VLF-quad: secondary stn.	2.5%	
CMGC	magnetics, coarse	25 nT	MAG
CMGF	magnetics, fine	2.5 nT	

Table 2-2. The Digital Profiles

Channel Name (Freq)	Observed parameters	Scale units/mm
MAG	magnetics	10 nT
ALT	bird height	6 m
CXI (900 Hz)	vertical coaxial coil-pair inphase	2 ppm
CXQ (900 Hz)	vertical coaxial coil-pair quadrature	2 ppm
CPI (900 Hz)	horizontal coplanar coil-pair inphase	2 ppm
CPQ (900 Hz)	horizontal coplanar coil-pair quadrature	2 ppm
CPI (7200 Hz)	horizontal coplanar coil-pair inphase	4 ppm
CPQ (7200 Hz)	horizontal coplanar coil-pair quadrature	4 ppm
CPS	horizontal coplanar sferics monitor	
	Computed Parameters	
DIFI (900 Hz)	difference function inphase from CXI and CPI	2 ppm
DIFQ (900 Hz)	difference function quadrature from CXQ and CPQ	2 ppm
CDT	conductance	1 grade
RES (900 Hz)	log resistivity	.06 decade
RES (7200 Hz)	log resistivity	.06 decade
DP (900 Hz)	apparent depth	6 m
DP (7200 Hz)	apparent depth	6 m

PRODUCTS AND PROCESSING TECHNIQUES

The following products are available from the survey data. Those which are not part of the survey contract may be acquired later. Refer to Table 1-1 for a summary of the maps which accompany this report and those which are recommended as additional products. Most parameters can be displayed as contours, profiles, or in colour.

Base Maps

Base maps of the survey area were prepared from 1:50,000 topographic maps. These were enlarged photographically to a scale of 1:10,000.

Flight Path

The cartesian coordinates produced by the electronic navigation system were transformed into UTM grid locations during data processing. These were tied to the UTM grid on the base map.

Prominent topographical features are correlated with the navigational data points, to check that the data accurately relates to the base map.

Electromagnetic Anomalies

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. This preliminary EM map is used, by the geophysicist, in conjunction with the computer generated digital profiles, to produce the final interpreted EM anomaly map. This map includes bedrock, surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

Resistivity

The apparent resistivity in ohm-m may be generated from the inphase and quadrature EM components for any of the frequencies, using a pseudo-layer halfspace model. A resistivity map portrays all the EM information for that frequency over the entire survey area. This contrasts with the electromagnetic anomaly map which provides information only over interpreted conductors. The large dynamic range makes the resistivity parameter an excellent mapping tool.

EM Magnetite

The apparent percent magnetite by weight is computed wherever magnetite produces a negative inphase EM response. The results are usually displayed on a contour map.

Total Field Magnetics

The aeromagnetic data are corrected for diurnal variation using the magnetic base station data. The regional IGRF gradient is removed from the data, if required under the terms of the contract.

Enhanced Magnetics

The total field magnetic data are subjected to a processing algorithm. This algorithm enhances the response of magnetic bodies in the upper 500 m and attenuates the response of deeper bodies. The resulting enhanced magnetic map provides better definition and resolution of near-surface magnetic units. It also identifies weak magnetic features which may not be evident on the total field magnetic map. However, regional magnetic variations, and magnetic lows caused by remanence, are better defined on the total field magnetic map. The technique is described in more detail in Section 5.

Magnetic Derivatives

The total field magnetic data may be subjected to a variety of filtering techniques to yield maps of the following:

- vertical gradient
- second vertical derivative
- magnetic susceptibility with reduction to the pole
- upward/downward continuations

All of these filtering techniques improve the recognition of near-surface magnetic bodies, with the exception of upward continuation. Any of these parameters can be produced on request. Dighem's proprietary enhanced magnetic technique is designed to provide a general "all-purpose" map, combining the more useful features of the above parameters.

VLF

The VLF data can be digitally filtered to remove long wavelengths such as those caused by variations in the transmitted field strength. The results are usually presented as contours of the filtered total field.

Digital Profiles

Distance-based profiles of the digitally recorded geophysical data are generated and plotted by computer. These profiles also contain the calculated parameters which are used in the interpretation process. These are produced as worksheets prior to interpretation, and can also be presented in the final corrected form after interpretation. The profiles display electromagnetic anomalies with their respective interpretive symbols. The differences between the worksheets and the final corrected form occur only with respect to the EM anomaly identifier.

Contour, Colour and Shadow Map Displays

The geophysical data are interpolated onto a regular grid using a cubic spline technique. The resulting grid is suitable for generating contour maps of excellent quality.

Colour maps are produced by interpolating the grid down to the pixel size. The distribution of the colour ranges is normalized for the magnetic parameter colour maps, and matched to specific contour intervals for the resistivity and VLF colour maps.

Monochromatic shadow maps are generated by employing an artificial sun to cast shadows on a surface defined by the geophysical grid. There are many variations in the shadowing technique, as shown in Figure 3-1. The various shadow techniques may be applied to total field or enhanced magnetic data, magnetic derivatives, VLF, resistivity, etc. Of the various magnetic products, the shadow of the enhanced magnetic parameter is particularly suited for defining geological structures with crisper images and improved resolution.

Dighem software provides several shadowing techniques. Both monochromatic (commonly grey) or polychromatic (full color) maps may be produced. Monochromatic shadow maps are often preferred over polychromatic maps for reasons of clarity.

Spot Sun

The spot sun technique tends to mimic nature. The sun occupies a spot in the sky at a defined azimuth and inclination. The surface of the data grid casts shadows. This is the standard technique used by industry to produce monochromatic shadow maps.

A characteristic of the spot sun technique is that shadows are cast in proportion to how well the sunlight intersects the feature. Features which are almost parallel to the sun's azimuth may cast no shadow at all. To avoid this problem, Dighem's hemispheric sun technique may be employed.

Hemispheric Sun

The hemispheric sun technique was developed by Dighem. The method involves lighting up a hemisphere. If, for example, a north hemispheric sun is selected, features of all strikes will have their north side in sun and their south side in shadow. The hemispheric sun lights up all features, without a bias caused by strike. The method yields sharply defined monochromatic shadows.

The hemispheric sun technique always improves shadow casting, particularly where folding and cross-cutting structures occur. Nevertheless, it is important to center the hemisphere perpendicular to the regional strike. Features which strike parallel to the center of the hemisphere result in ambiguity. This is because the two sides of the feature may yield alternating patterns of sun and shadow. If this proves to be a problem in your survey area, Dighem's omni sun technique may be employed.

Omni Sun

The omni sun technique was also developed by Dighem. The survey area is centered within a ring of sunlight. This lights up all features without any strike bias. The result is brightly defined monochromatic features with diffuse shadows.

Multi Sun

Two or three spot suns, with different azimuths, may be combined in a single presentation. The shadows are displayed on one map by the use of different colors, e.g., by using a green sun and a red sun. Some users find the interplay of colors reduces the clarity of the shadowed product.

Polychromatic Maps

Any of the above monochromatic shadow maps can be combined with the standard contour-type solid color map. The result is a polychromatic shadow map. Such maps are esthetically pleasing, and are preferred by some users. A disadvantage is that ambiguity exists between changes in amplitude and changes in shadow.

Fig. 3-1 Shadow Mapping

SURVEY RESULTS

GENERAL DISCUSSION

Table 4-1 summarizes the EM responses on the electromagnetic anomaly maps with respect to conductance grade and interpretation.

The electromagnetic anomaly maps show the anomaly locations with the interpreted conductor type, dip, conductance and depth being indicated by symbols. Direct magnetic correlation is also shown if it exists. Bedrock conductors are indicated by the interpretive symbols "D" (for thin dikes) or "B" (for other conductor geometries). Surficial conductors are identified by the interpretive symbol "S". An "E" is used to denote the edge of a broad or flat-lying conductor.

The anomalies shown on the electromagnetic anomaly maps are based on a near-vertical, half plane model. This model best reflects "discrete" bedrock conductors. Wide bedrock conductors or flat-lying conductive units, whether from

TABLE 4-1

EM ANOMALY STATISTICS

FOR THE OPIKEIGEN LAKE PROJECT, ONTARIO

CONDUCTOR GRADE	CONDUCTANCE RANGE SEIMENS (MHOS)	NUMBER OF RESPONSES
7	> 100.0	8
6	50.0 - 100.0	25
5	20.0 - 50.0	43
4	10.0 - 20.0	54
3	5.0 - 10.0	111
2	1.0 - 5.0	142
1	< 1.0	16
*	INDETERMINATE	281
TOTAL		680

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	231
B	DISCRETE BEDROCK CONDUCTOR	81
S	CONDUCTIVE COVER	361
E	EDGE OF WIDE CONDUCTOR	7
TOTAL		680

(SEE EM MAP LEGEND FOR EXPLANATIONS)

surficial or bedrock sources, may give rise to very broad anomalous responses on the EM profiles. These may not appear on the electromagnetic anomaly maps if they have a regional character rather than a locally anomalous character. These broad conductors, which more closely approximate a half space model, will be maximum coupled to the horizontal (coplanar) coil-pair and should be more evident on the resistivity parameter. Resistivity maps, therefore, may be more valuable than the electromagnetic anomaly maps, in areas where broad or flat-lying conductors are considered to be of importance. Contoured and colour resistivity maps, prepared from the 7200 Hz coplanar data are included with this report.

Excellent resolution and discrimination of conductors was accomplished by using a fast sampling rate of 0.1 sec and by employing a common frequency (900 Hz) on two orthogonal coil-pairs (coaxial and coplanar). The resulting "difference channel" parameters often permit differentiation of bedrock and surficial conductors, even though they may exhibit similar conductance values. The inphase and quadrature difference channels are displayed on the digital profiles.

Zones of poor conductivity are indicated where the inphase responses are small relative to the quadrature responses. Where these responses are coincident with strong magnetic anomalies, it is possible that the inphase amplitudes have been suppressed by the effects of magnetite. Most of these poorly-conductive magnetic features give rise to resistivity anomalies which are only slightly below background. If it is expected that poorly-conductive economic mineralization may be associated with magnetite-rich units, most of these weakly anomalous features will be of interest. In areas where magnetite causes the inphase components to become negative, the apparent conductance values may be understated and the calculated depths of EM anomalies may be erroneously shallow.

Resistivity

Apparent resistivity contour and colour maps were prepared from the 7200 Hz coplanar EM data. They show the conductive properties of the survey area.

The background resistivity in the area is approximately 2,000 ohm-m. Bedrock conductors yield moderately strong, linear resistivity lows, such as those associated with conductors 10010F-10110E, 10030C-10320A, 10850H-10950F, 11000B-11150A and 11290C-11470A.

Surficial features, such as Rond Lake, distort the resistivity contours to a small degree. Rond Lake is associated with a resistivity low of 300 ohm-m.

An arcuate resistivity contrast extends from fiducial 932 on line 11220, through fiducial 954 on line 11130, to fiducial 3860 on line 11400. This parallels trends apparent on the magnetics, and may be indicative of a lithological contact. The rock unit within the arcuate trend yields higher resistivities than the surrounding area.

Magnetics

The total field magnetic data have been presented as contours on the base maps using a contour interval of 10 nT where gradients permit. The maps show the magnetic properties of the rock units underlying the survey area.

The total field information has been subjected to a processing procedure which enhances near-surface magnetic units and removes the regional magnetic background. This procedure provides better definition and resolution of magnetic units, and also displays weak magnetic features which may not be clearly evident on the total field maps.

There is ample evidence on the magnetic maps which suggests that the survey area has been subjected to deformation and/or alteration. These structural complexities are evident on the contour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction.

Several northeast/southwest trending structural breaks can be inferred from the magnetic data. Examples of these appear to extend from, anomaly 10010B to 10150D, fiducial 4542 on line 10170 to anomaly 10320A, anomaly 10940A through fiducial 482 on line 11160, and anomaly 11150A to 11370E.

There may also be northwest/southeast trending structural breaks extending from, anomaly 10070E through 10110A, and anomaly 10850F through 11000B.

Most of the magnetic units on sheet 1 are linear, with strikes in a narrow range, from 95°/275° to 100°/280°. There is evidence of trends in the magnetics having these strikes on sheet 2 as well. The overall appearance of sheet 2 differs from that of sheet 1 in that the magnetic highs are scattered and there are numerous arcuate trends with variable strike directions.

If a specific magnetic intensity can be assigned to the rock type which is believed to host the target mineralization, it may be possible to select areas of higher priority on the basis of the total field magnetic maps. This is based on the assumption that the magnetite content of the host rocks will give rise to a limited range of contour values which will permit differentiation of various lithological units.

The magnetic results, in conjunction with the other geophysical parameters, should provide valuable information which can be used to effectively map the geology and structure in the survey areas.

VLF

VLF results were obtained from transmitting stations at Annapolis, Maryland (NSS - 21.4 kHz) and Cutler, Maine (NAA- 24.0 kHz). Data from the Cutler station have been presented as contours of the filtered total field.

The VLF method is quite sensitive to the angle of coupling between the conductor and the propogated EM field. Consequently, conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it.

Many of the discrete bedrock conductors yield well-defined trends on the VLF. Therefore, VLF may be useful as a ground follow-up tool to locate the bedrock conductors.

Most of the VLF trends parallel the stratigraphic strike direction as inferred from the magnetics. Some of these trends may be indicative of conductive material associated with lithological contacts. Breaks or offsets in the VLF trends may reflect structural breaks.

The VLF parameter does not normally provide the same degree of resolution available from the EM data. Closely-spaced conductors, conductors of short strike length or conductors which are poorly coupled to the VLF field, may escape detection with this method. Erratic signals from the VLF transmitters can also give rise to strong, isolated anomalies which should be viewed with caution. The filtered total field VLF contours are presented on the base maps with a contour interval of one percent.

CONDUCTOR DESCRIPTIONS

Sheet 1

Conductors 10010E-10100E, 10010F-10110E, 10130E-10150E

These conductors appear to be associated with a narrow, linear magnetic unit. The EM anomaly shapes reflect thin, near-vertical sources. Conductor 10010F-10110E is likely magnetic. Conductor 10010E-10100E flanks the magnetic feature and may be associated with a contact zone. Conductor 10130E-10150E may result from a similar source.

The conductors yield well-defined resistivity and VLF anomalies. The magnetic contours indicate a structural break in the vicinity of anomalies 10070D and 10070E which appears to extend through anomaly 10110A.

Conductor 10030C-10320A

This conductor reflects a moderately to highly conductive, narrow, south-dipping bedrock source. Compositional changes along strike may yield the changes in calculated conductivities and magnetic correlations.

The highest magnetic intensity is in the area of anomaly 10120C. East of this, most of the conductors are associated with an anomaly that appears as a shoulder on a stronger magnetic anomaly to the north. Anomaly 10230C is coincident with a discrete magnetic low, which may result from a structural break.

Conductor 10070C-10150D

This narrow conductor is directly associated with a magnetic peak. The enhanced magnetics indicate that this peak is part of a continuous magnetic trend. Pyrrhotite-rich material is a possible source.

Conductors 10090D-10120D, 10150C-10270D

Conductor 10090D-10120D is located on strike with conductor 10150C-10270D. They reflect narrow, non-magnetic zones, which may be associated with a contact on the south flank of a narrow magnetic unit. Conductor 10150C-10270D likely dips to the south. The conductor yields conductivities of over 20 siemens in the vicinity of anomalies 10220C to 10250B. Non-magnetic sulphide or graphite-rich mineralization may be the source.

Conductor 10220D-10270E

This is indicative of a moderately conductive, narrow, south-dipping, magnetic bedrock source. It has a strike length of about 500 m. It is located on strike with conductor 10070C-10150D and may be associated with the same horizon, although there is no continuous magnetic zone common to both.

Conductor 10260E-10320B

This weak conductor reflects a narrow, non-magnetic bedrock source. It may be associated with a contact zone as it flanks magnetic anomalies.

Conductors 10520A-10630A, 10690A, 10740A-10910A, 11030A-11080A (continues onto sheet 2)

These conductors reflect narrow, weakly conductive, non-magnetic, bedrock sources. They yield VLF anomalies, but are poorly defined by the resistivity.

Conductors 10520C-10640B, 10610B-10690D, 10650A-11140E, 10720E-10770E, 10850F-10870F, 10890G-11000E, 10990F-11080F, 10890E-10900D, 11010D-11030E (sheet 1 and 2)

These conductors comprise a long, gently curving, semi-continuous, conductive trend. Conductor 10650A-11140E appears to reflect a continuous conductive zone. The magnetic responses along this zone are not continuous, although in some locations this conductor correlates with magnetic anomalies. This may result from magnetic units pinching out or gradual compositional changes. Conductor 10520C-10640B appears to be magnetic. The other conductors flank magnetic anomalies, and are likely associated with contact zones. The conductors appear to dip to the south in the vicinity of anomalies 10590C, 10830E and 10920B.

Structural breaks that transect the conductors can be inferred in several locations. Some may have conductivity associated with them. One such break appears to extend from anomaly 11030E through 10910I. Conductor 11010D-11030E may be associated with this feature. Similarly, conductor 10890E-10900D may be associated with a possible northwest/southeast trending structural break. A northeast/southwest striking fault appears to extend from anomaly 10940A through fiducial 482 on line 11160.

Sheet 2

Conductors 10850H-10950F, 10890I-10910I

These moderately strong conductors are loosely associated with a narrow magnetic unit. Conductor 10850H-10950F correlates directly with the magnetic unit from anomaly 10900G to 10950F. West of anomaly 10900G the magnetic source bends slightly to the south, and the conductive source continues due west such that it flanks the magnetics. Conductor 10850H-10950F appears to dip to the south. Both conductors yield well-defined resistivity and VLF anomalies.

Conductor 10910N-10920H, 10950I-10970H

These reflect weakly conductive, narrow bedrock units. Anomalies 10950I and 10970H correlate with magnetic anomalies.

Conductors 10930F-10940E, 11020G-11201C, 11220B-11280A

These conductors reflect narrow bedrock sources that comprise a semi-continuous conductive trend. They are located on the south flank of a continuous, magnetically inactive zone. They may be associated with a lithological contact or faulted contact. Anomalies 10940E, 11020G, 11070G to 11080H, 11100G, 11140F to 11180D and 11250A to 11270A have magnetic correlations. This may reflect compositional changes along strike, from non-magnetic material to magnetite-rich or pyrrhotite-rich sources.

Conductor 11000B-11150A

This conductor reflects a narrow, weakly conductive bedrock source, which loosely correlates with a magnetic trend. This trend is most apparent on the enhanced magnetics. Examination of the profile data indicates that the EM responses generally flank the magnetic anomalies. The conductivity may be associated with a contact zone.

Conductor 11000H-11060G

This discrete, narrow, bedrock conductor may result from a non-magnetic, sulphide-rich, or graphite-rich bedrock source. It is weakly conductive.

Conductors 11050E-11090D, 11130D-11190C

These conductors are indicative of narrow bedrock sources. They are associated with a magnetic trend, which continues west of anomaly 11050E. The magnetic material appears to diminish east of anomaly 11170B, but the conductive zone continues to anomaly 11190C.

Conductor 11120B-11170A

This conductor reflects a narrow zone of weakly conductive bedrock material. It appears to flank a magnetic unit, and may be associated with a contact zone.

Conductor 11130I

This isolated anomaly appears to correlate directly with the peak of the response from a magnetic feature, which has a strike length of about 300 m. As a result of the anomaly shape being poorly defined, the conductor has been given a questionable bedrock interpretation. This anomaly may warrant further investigation if it has supporting geological or geochemical information.

Conductor 11170C-11190D

This conductor yields poorly defined anomaly shapes. It may reflect a narrow, non-magnetic bedrock source such as graphite-rich or pyrite-rich material.

Conductor 11290C-11470A

The narrow, weakly conductive source of this conductor appears to be associated with a lithological contact. It occurs on strike with conductor 11120B-11170A and likely reflects a similar source.

Conductor 11360B-11390C

This is indicative of a weak to moderately conductive, non-magnetic, bedrock source. Anomaly 11390C has a well-defined, discrete, bedrock style profile shape. However, anomalies 11360B-11380C are poorly defined.

Conductor 11430A-11440A

This conductor comprises anomalies interpreted as questionable bedrock. The anomaly shapes are poorly defined, and there is no magnetic correlation.

Conductor 11450B-11470B

This reflects a narrow, 200 metre long zone of weakly conductive magnetic bedrock material. A slightly less magnetic limb of material continues west from anomaly 11450B for about 250 metres.

Some of the S? anomalies may also be of interest. These may be due to bedrock sources that are partially masked by conductive overburden. Some of these anomalies may reflect broad, weakly conductive zones of disseminated mineralization. Anomalies 10190A to 10400C are S? anomalies that coincide with a continuous magnetite-rich unit. Anomaly 10910M is an is an isolated, questionable surficial response, which coincides with a magnetite-rich unit. The presence of magnetite may result in understated conductivities.

Any of the electromagnetic anomalies that correlate with favourable geological or geochemical data may warrant follow-up using appropriate ground survey techniques.

The anomaly lists appended to this report should be consulted to ensure that no anomalies attributed to bedrock sources are overlooked.

BACKGROUND INFORMATION

This section provides background information on parameters which are available from the survey data. Those which have not been supplied as survey products may be generated later from raw data on the digital archive tape.

ELECTROMAGNETICS

DIGHEM electromagnetic responses fall into two general classes, discrete and broad. The discrete class consists of sharp, well-defined anomalies from discrete conductors such as sulfide lenses and steeply dipping sheets of graphite and sulfides. The broad class consists of wide anomalies from conductors having a large horizontal surface such as flatly dipping graphite or sulfide sheets, saline water-saturated sedimentary formations, conductive overburden and rock, and geothermal zones. A vertical conductive slab with a width of 200 m would straddle these two classes.

The vertical sheet (half plane) is the most common model used for the analysis of discrete conductors. All anomalies plotted on the electromagnetic map are analyzed according to this model. The following section entitled **Discrete Conductor Analysis** describes this model in detail, including the effect of using it on anomalies caused by broad conductors such as conductive overburden.

The conductive earth (half space) model is suitable for broad conductors. Resistivity contour maps result from the use of this model. A later section entitled **Resistivity Mapping** describes the method further, including the effect of using it on anomalies caused by discrete conductors such as sulfide bodies.

Geometric interpretation

The geophysical interpreter attempts to determine the geometric shape and dip of the conductor. Figure 5-1 shows typical DIGHEM anomaly shapes which are used to guide the geometric interpretation.

Discrete conductor analysis

The EM anomalies appearing on the electromagnetic map are analyzed by computer to give the conductance (i.e., conductivity-thickness product) in siemens (mhos) of a vertical sheet model. This is done regardless of the interpreted geometric shape of the conductor. This is not an unreasonable procedure, because the computed conductance increases as the electrical quality of the conductor increases, regardless of its true shape. DIGHEM anomalies

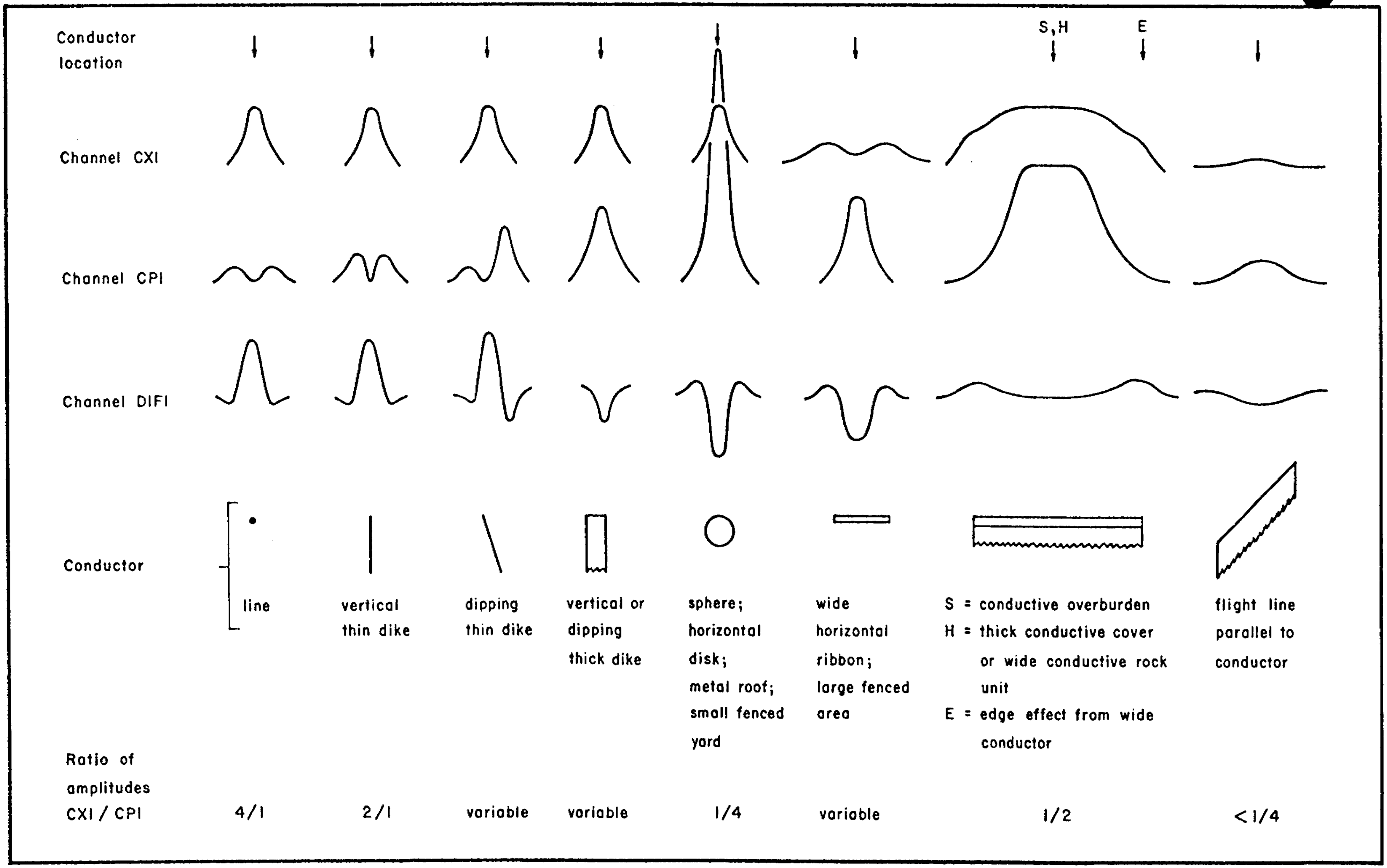

Fig. 5-1 Typical DIGHEM anomaly shapes

are divided into seven grades of conductance, as shown in Table 5-1 below. The conductance in siemens (mhos) is the reciprocal of resistance in ohms.

Table 5-1. EM Anomaly Grades

Anomaly Grade	siemens
7	> 100
6	50 - 100
5	20 - 50
4	10 - 20
3	5 - 10
2	1 - 5
1	< 1

The conductance value is a geological parameter because it is a characteristic of the conductor alone. It generally is independent of frequency, flying height or depth of burial, apart from the averaging over a greater portion of the conductor as height increases. Small anomalies from deeply buried strong conductors are not confused with small anomalies from shallow weak conductors because the former will have larger conductance values.

Conductive overburden generally produces broad EM responses which may not be shown as anomalies on the EM maps. However, patchy conductive overburden in otherwise resistive areas can yield discrete anomalies with a conductance grade (cf. Table 5-1) of 1, 2 or even 3 for conducting clays which have resistivities as low as 50 ohm-m. In areas where ground resistivities are below 10 ohm-m, anomalies caused by weathering variations and similar causes can have any conductance grade. The anomaly shapes from the multiple coils often allow such conductors to be recognized, and these are indicated by the letters S, H, and sometimes E on the electromagnetic anomaly map (see EM map legend).

For bedrock conductors, the higher anomaly grades indicate increasingly higher conductances. Examples: DIGHEM's New Insco copper discovery (Noranda, Canada) yielded a grade 5 anomaly, as did the neighbouring copper-zinc Magusi River ore body; Mattabi (copper-zinc, Sturgeon Lake, Canada) and Whistle (nickel, Sudbury, Canada) gave grade 6; and DIGHEM's Montcalm nickel-copper discovery (Timmins, Canada) yielded a grade 7 anomaly. Graphite and sulfides can span all grades but, in any particular survey area, field work may show that the different grades indicate different types of conductors.

Strong conductors (i.e., grades 6 and 7) are characteristic of massive sulfides or graphite. Moderate conductors (grades 4 and 5) typically reflect graphite or sulfides of a less massive character, while weak bedrock conductors (grades 1 to 3) can signify poorly connected graphite or heavily disseminated sulfides. Grades 1 and 2 conductors may not respond to ground EM equipment using frequencies less than 2000 Hz.

The presence of sphalerite or gangue can result in ore deposits having weak to moderate conductances. As an example, the three million ton lead-zinc deposit of Restigouche Mining Corporation near Bathurst, Canada, yielded a well-defined grade 2 conductor. The 10 percent by volume of sphalerite occurs as a coating around the fine grained massive pyrite, thereby inhibiting electrical conduction.

Faults, fractures and shear zones may produce anomalies which typically have low conductances (e.g., grades 1 to 3). Conductive rock formations can yield anomalies of any conductance grade. The conductive materials in such rock formations can be salt water, weathered products such as clays, original depositional clays, and carbonaceous material.

On the interpreted electromagnetic map, a letter identifier and an interpretive symbol are plotted beside the EM grade symbol. The horizontal rows of dots, under the interpretive symbol, indicate the anomaly amplitude on the flight record. The vertical column of dots, under the anomaly letter, gives the estimated depth. In areas where anomalies are crowded, the letter identifiers, interpretive symbols and dots may be obliterated. The EM grade symbols, however, will always be discernible, and the obliterated information can be obtained from the anomaly listing appended to this report.

The purpose of indicating the anomaly amplitude by dots is to provide an estimate of the reliability of the conductance calculation. Thus, a conductance value obtained from a large ppm anomaly (3 or 4 dots) will tend to be accurate whereas one obtained from a small ppm anomaly (no dots) could be quite inaccurate. The absence of amplitude dots indicates that the anomaly from the coaxial coil-pair is 5 ppm or less on both the inphase and quadrature channels. Such small anomalies could reflect a weak conductor at the surface or a stronger conductor at depth. The conductance grade and depth estimate illustrates which of these possibilities fits the recorded data best.

Flight line deviations occasionally yield cases where two anomalies, having similar conductance values but dramatically different depth estimates, occur close together on the same conductor. Such examples illustrate the reliability of the conductance measurement while showing that the depth estimate can be unreliable. There are a number of factors which can produce an error in the depth estimate, including the averaging of topographic variations by the altimeter, overlying conductive overburden, and the location and attitude of the conductor relative to the flight line. Conductor location and attitude can provide an erroneous depth estimate because the stronger part of the conductor may be deeper or to one side of the flight line, or because it has a shallow dip. A heavy tree cover can also produce errors in depth estimates. This is because the depth estimate is computed as the distance of bird from conductor, minus the altimeter reading. The altimeter can lock onto the top of a dense forest canopy. This situation yields an erroneously large depth estimate but does not affect the conductance estimate.

Dip symbols are used to indicate the direction of dip of conductors. These symbols are used only when the anomaly shapes are unambiguous, which usually requires a fairly resistive environment.

A further interpretation is presented on the EM map by means of the line-to-line correlation of anomalies, which is based on a comparison of anomaly shapes on adjacent lines. This provides conductor axes which may define the geological structure over portions of the survey area. The absence of conductor axes in an area implies that anomalies could not be correlated from line to line with reasonable confidence.

DIGHEM electromagnetic maps are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geology when planning a follow-up program. The actual conductance values are printed in the attached anomaly list for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of conductors in terms of length, strike and dip, geometric shape, conductance, depth, and thickness. The accuracy is comparable to an interpretation from a high quality ground EM survey having the same line spacing.

The attached EM anomaly list provides a tabulation of anomalies in ppm, conductance, and depth for the vertical sheet model. The EM anomaly list also shows the conductance and depth for a thin horizontal sheet (whole plane) model, but only the vertical sheet parameters appear on the EM map. The horizontal sheet model is suitable for a flatly dipping thin bedrock conductor such as a sulfide sheet having a thickness less than 10 m. The list also shows the resistivity and depth for a conductive earth (half space) model, which is suitable for thicker slabs such as thick conductive overburden. In the EM anomaly list, a depth value of zero for the conductive earth model, in an area of thick cover, warns that the anomaly may be caused by conductive overburden.

Since discrete bodies normally are the targets of EM surveys, local base (or zero) levels are used to compute local anomaly amplitudes. This contrasts with the use of true zero levels which are used to compute true EM amplitudes. Local anomaly amplitudes are shown in the EM anomaly list and these are used to compute the vertical sheet parameters of conductance and depth. Not shown in the EM anomaly list are the true amplitudes which are used to compute the horizontal sheet and conductive earth parameters.

Questionable Anomalies

DIGHEM maps may contain EM responses which are displayed as asterisks (*). These responses denote weak anomalies of indeterminate conductance, which may reflect one of the following: a weak conductor near the surface, a strong conductor at depth (e.g., 100 to 120 m below surface) or to one side of the flight line, or aerodynamic noise. Those responses that have the appearance of valid bedrock anomalies on the flight profiles are indicated by appropriate interpretive symbols (see EM map legend). The others probably do not warrant further investigation unless their locations are of considerable geological interest.

The thickness parameter

DIGHEM can provide an indication of the thickness of a steeply dipping conductor. The amplitude of the coplanar anomaly (e.g., CPI channel on the digital profile) increases relative to the coaxial anomaly (e.g., CXI) as the apparent thickness increases, i.e., the thickness in the horizontal plane. (The thickness is equal to the conductor width if the conductor dips at 90 degrees and strikes at right angles to the flight line.) This report refers to a conductor as thin when the thickness is likely to be less than 3 m, and thick when in excess of 10 m. Thick conductors are indicated on the EM map by parentheses "( )". For base metal exploration in steeply dipping geology, thick conductors can be high priority targets because many massive sulfide ore bodies are thick, whereas non-economic bedrock conductors are often thin. The system cannot sense the thickness when the strike of the conductor is subparallel to the flight line, when the conductor has a shallow dip, when the anomaly amplitudes are small, or when the resistivity of the environment is below 100 ohm-m.

Resistivity mapping

Areas of widespread conductivity are commonly encountered during surveys. In such areas, anomalies can be generated by decreases of only 5 m in survey altitude as well as by increases in conductivity. The typical flight record in conductive areas is characterized by inphase and quadrature channels which are continuously active. Local EM peaks reflect either increases in conductivity of the earth or decreases in survey altitude. For such conductive areas, apparent resistivity profiles and contour maps are necessary for the correct interpretation of the airborne data. The advantage of the resistivity parameter is that anomalies caused by altitude changes are virtually eliminated, so the resistivity data reflect only those anomalies caused by conductivity changes. The resistivity analysis also helps the interpreter to differentiate between conductive trends in the bedrock and those patterns typical of conductive overburden. For example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows.

The resistivity profiles and the resistivity contour maps present the apparent resistivity using the so-called pseudo-layer (or buried) half space model defined by Fraser (1978)[1]. This model consists of a resistive layer overlying

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[1] Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, v. 43, p.144-172

a conductive half space. The depth channels give the apparent depth below surface of the conductive material. The apparent depth is simply the apparent thickness of the overlying resistive layer. The apparent depth (or thickness) parameter will be positive when the upper layer is more resistive than the underlying material, in which case the apparent depth may be quite close to the true depth.

The apparent depth will be negative when the upper layer is more conductive than the underlying material, and will be zero when a homogeneous half space exists. The apparent depth parameter must be interpreted cautiously because it will contain any errors which may exist in the measured altitude of the EM bird (e.g., as caused by a dense tree cover). The inputs to the resistivity algorithm are the inphase and qaudrature components of the coplanar coil-pair. The outputs are the apparent resistivity of the conductive half space (the source) and the sensor-source distance are independent of the flying height. The apparent depth, discussed above, is simply the sensor-source distance minus the measured altitude or flying height. Consequently, errors in the measured altitude will affect the apparent depth parameter but not the apparent resistivity parameter.

The apparent depth parameter is a useful indicator of simple layering in areas lacking a heavy tree cover. The

DIGHEM system has been flown for purposes of permafrost mapping, where positive apparent depths were used as a measure of permafrost thickness. However, little quantitative use has been made of negative apparent depths because the absolute value of the negative depth is not a measure of the thickness of the conductive upper layer and, therefore, is not meaningful physically. Qualitatively, a negative apparent depth estimate usually shows that the EM anomaly is caused by conductive overburden. Consequently, the apparent depth channel can be of significant help in distinguishing between overburden and bedrock conductors.

The resistivity map often yields more useful information on conductivity distributions than the EM map. In comparing the EM and resistivity maps, keep in mind the following:

(a) The resistivity map portrays the absolute value of the earth's resistivity, where resistivity = 1/conductivity.

(b) The EM map portrays anomalies in the earth's resistivity. An anomaly by definition is a change from the norm and so the EM map displays anomalies, (i) over narrow, conductive bodies and (ii) over the boundary zone between two wide formations of differing conductivity.

The resistivity map might be likened to a total field map and the EM map to a horizontal gradient in the direction of flight[2]. Because gradient maps are usually more sensitive than total field maps, the EM map therefore is to be preferred in resistive areas. However, in conductive areas, the absolute character of the resistivity map usually causes it to be more useful than the EM map.

Interpretation in conductive environments

Environments having background resistivities below 30 ohm-m cause all airborne EM systems to yield very large responses from the conductive ground. This usually prohibits the recognition of discrete bedrock conductors. However, DIGHEM data processing techniques produce three parameters which contribute significantly to the recognition of bedrock conductors. These are the inphase and quadrature difference channels (DIFI and DIFQ), and the resistivity and depth channels (RES and DP) for each coplanar frequency.

The EM difference channels (DIFI and DIFQ) eliminate most of the responses from conductive ground, leaving

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2 The gradient analogy is only valid with regard to the identification of anomalous locations.

responses from bedrock conductors, cultural features (e.g., telephone lines, fences, etc.) and edge effects. Edge effects often occur near the perimeter of broad conductive zones. This can be a source of geologic noise. While edge effects yield anomalies on the EM difference channels, they do not produce resistivity anomalies. Consequently, the resistivity channel aids in eliminating anomalies due to edge effects. On the other hand, resistivity anomalies will coincide with the most highly conductive sections of conductive ground, and this is another source of geologic noise. The recognition of a bedrock conductor in a conductive environment therefore is based on the anomalous responses of the two difference channels (DIFI and DIFQ) and the resistivity channels (RES). The most favourable situation is where anomalies coincide on all channels.

The DP channels, which give the apparent depth to the conductive material, also help to determine whether a conductive response arises from surficial material or from a conductive zone in the bedrock. When these channels ride above the zero level on the digital profiles (i.e., depth is negative), it implies that the EM and resistivity profiles are responding primarily to a conductive upper layer, i.e., conductive overburden. If the DP channels are below the zero level, it indicates that a resistive upper layer exists, and this usually implies the existence of a bedrock conductor. If the low frequency DP channel is below the zero level and the high frequency DP is above, this suggests that a bedrock conductor occurs beneath conductive cover.

The conductance channel CDT identifies discrete conductors which have been selected by computer for appraisal by the geophysicist. Some of these automatically selected anomalies on channel CDT are discarded by the geophysicist. The automatic selection algorithm is intentionally oversensitive to assure that no meaningful responses are missed. The interpreter then classifies the anomalies according to their source and eliminates those that are not substantiated by the data, such as those arising from geologic or aerodynamic noise.

Reduction of geologic noise

Geologic noise refers to unwanted geophysical responses. For purposes of airborne EM surveying, geologic noise refers to EM responses caused by conductive overburden and magnetic permeability. It was mentioned previously that the EM difference channels (i.e., channel DIFI for inphase and DIFQ for quadrature) tend to eliminate the response of conductive overburden. This marked a unique development in airborne EM technology, as DIGHEM is the only EM system which yields channels having an exceptionally high degree of immunity to conductive overburden.

Magnetite produces a form of geological noise on the inphase channels of all EM systems. Rocks containing less than 1% magnetite can yield negative inphase anomalies caused by magnetic permeability. When magnetite is widely distributed throughout a survey area, the inphase EM channels may continuously rise and fall, reflecting variations in the magnetite percentage, flying height, and overburden thickness. This can lead to difficulties in recognizing deeply buried bedrock conductors, particularly if conductive overburden also exists. However, the response of broadly distributed magnetite generally vanishes on the inphase difference channel DIFI. This feature can be a significant aid in the recognition of conductors which occur in rocks containing accessory magnetite.

EM magnetite mapping

The information content of DIGHEM data consists of a combination of conductive eddy current responses and magnetic permeability responses. The secondary field resulting from conductive eddy current flow is frequency-dependent and consists of both inphase and quadrature components, which are positive in sign. On the other hand, the secondary field resulting from magnetic permeability is independent of frequency and consists of only an inphase component which is negative in sign. When magnetic permeability manifests itself by decreasing the measured amount of positive inphase, its presence may be difficult to recognize. However, when it manifests itself by yielding a negative inphase anomaly (e.g., in the absence of eddy current flow), its presence is assured. In this latter case, the negative component can be used to estimate the percent magnetite content.

A magnetite mapping technique was developed for the coplanar coil-pair of DIGHEM. The technique yields a channel (designated FEO) which displays apparent weight percent magnetite according to a homogeneous half space model.[3] The method can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to 1/4% magnetite by weight when the EM sensor is at a height of 30 m above a magnetitic half space. It can individually resolve steep dipping narrow magnetite-rich bands which are separated by 60 m. Unlike magnetometry, the EM magnetite method is unaffected by remanent magnetism or magnetic

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3 Refer to Fraser, 1981, Magnetite mapping with a multi-coil airborne electromagnetic system: Geophysics, v. 46, p. 1579-1594.

latitude.

The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed. EM magnetite maps can be generated when magnetic permeability is evident as negative inphase responses on the data profiles.

Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden.

Recognition of culture

Cultural responses include all EM anomalies caused by man-made metallic objects. Such anomalies may be caused by inductive coupling or current gathering. The concern of the interpreter is to recognize when an EM response is due to culture. Points of consideration used by the interpreter, when coaxial and coplanar coil-pairs are operated at a common frequency, are as follows:

1. Channel CPS monitors 60 Hz radiation. An anomaly on

this channel shows that the conductor is radiating power. Such an indication is normally a guarantee that the conductor is cultural. However, care must be taken to ensure that the conductor is not a geologic body which strikes across a power line, carrying leakage currents.

2. A flight which crosses a "line" (e.g., fence, telephone line, etc.) yields a center-peaked coaxial anomaly and an m-shaped coplanar anomaly.[4] When the flight crosses the cultural line at a high angle of intersection, the amplitude ratio of coaxial/coplanar response is 4. Such an EM anomaly can only be caused by a line. The geologic body which yields anomalies most closely resembling a line is the vertically dipping thin dike. Such a body, however, yields an amplitude ratio of 2 rather than 4. Consequently, an m-shaped coplanar anomaly with a CXI/CPI amplitude ratio of 4 is virtually a guarantee that the source is a cultural line.

3. A flight which crosses a sphere or horizontal disk yields center-peaked coaxial and coplanar anomalies with a CXI/CPI amplitude ratio (i.e., coaxial/coplanar) of 1/4. In the absence of geologic bodies of this

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[4] See Figure 5-1 presented earlier.

geometry, the most likely conductor is a metal roof or small fenced yard.[5] Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.

4. A flight which crosses a horizontal rectangular body or wide ribbon yields an m-shaped coaxial anomaly and a center-peaked coplanar anomaly. In the absence of geologic bodies of this geometry, the most likely conductor is a large fenced area.[5] Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.

5. EM anomalies which coincide with culture, as seen on the camera film or video display, are usually caused by culture. However, care is taken with such coincidences because a geologic conductor could occur beneath a fence, for example. In this example, the fence would be expected to yield an m-shaped coplanar anomaly as in case #2 above. If, instead, a center-peaked coplanar anomaly occurred, there would be concern that a thick geologic conductor coincided with the cultural line.

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5 It is a characteristic of EM that geometrically similar anomalies are obtained from: (1) a planar conductor, and (2) a wire which forms a loop having dimensions identical to the perimeter of the equivalent planar conductor.

6. The above description of anomaly shapes is valid when the culture is not conductively coupled to the environment. In this case, the anomalies arise from inductive coupling to the EM transmitter. However, when the environment is quite conductive (e.g., less than 100 ohm-m at 900 Hz), the cultural conductor may be conductively coupled to the environment. In this latter case, the anomaly shapes tend to be governed by current gathering. Current gathering can completely distort the anomaly shapes, thereby complicating the identification of cultural anomalies. In such circumstances, the interpreter can only rely on the radiation channel CPS and on the camera film or video records.

MAGNETICS

The existence of a magnetic correlation with an EM anomaly is indicated directly on the EM map. In some geological environments, an EM anomaly with magnetic correlation has a greater likelihood of being produced by sulfides than one that is non-magnetic. However, sulfide ore bodies may be non-magnetic (e.g., the Kidd Creek deposit near Timmins, Canada) as well as magnetic (e.g., the Mattabi deposit near Sturgeon Lake, Canada).

The magnetometer data are digitally recorded in the aircraft to an accuracy of one nT (i.e., one gamma) for proton magnetometers, and 0.01 nT for cesium magnetometers. The digital tape is processed by computer to yield a total field magnetic contour map. When warranted, the magnetic data may also be treated mathematically to enhance the magnetic response of the near-surface geology, and an enhanced magnetic contour map is then produced. The response of the enhancement operator in the frequency domain is illustrated in Figure 5-2. This figure shows that the passband components of the airborne data are amplified 20 times by the enhancement operator. This means, for example, that a 100 nT anomaly on the enhanced map reflects a 5 nT anomaly for the passband components of the airborne data.

The enhanced map, which bears a resemblance to a downward continuation map, is produced by the digital bandpass filtering of the total field data. The enhancement is equivalent to continuing the field downward to a level (above the source) which is 1/20th of the actual sensor-source distance.

Because the enhanced magnetic map bears a resemblance to a ground magnetic map, it simplifies the recognition of trends in the rock strata and the interpretation of geological structure. It defines the near-surface local

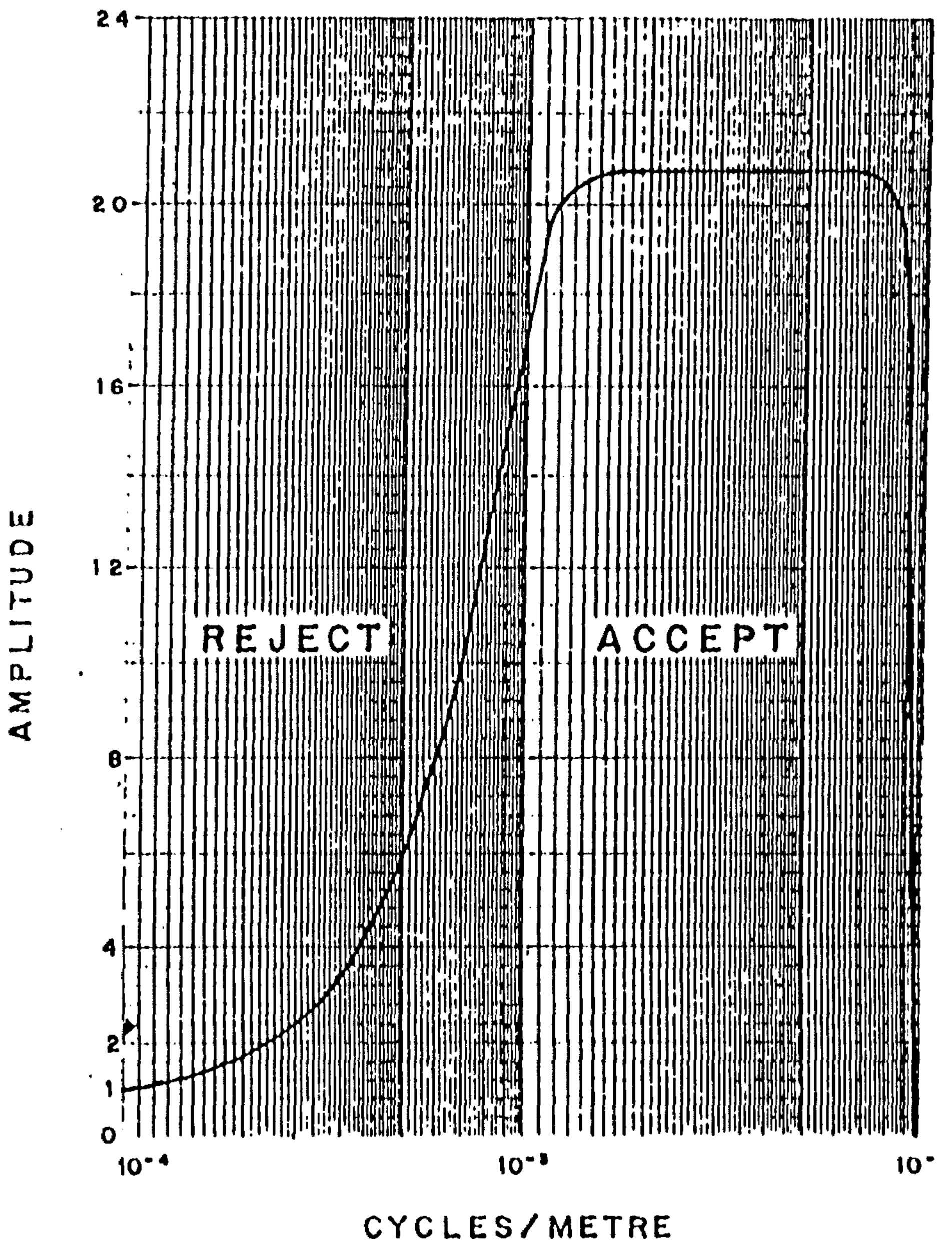

Fig. 5-2 Frequency response of magnetic enhancement operator for a sample interval of 50 m.

geology while de-emphasizing deep-seated regional features. It primarily has application when the magnetic rock units are steeply dipping and the earth's field dips in excess of 60 degrees.

Any of a number of filter operators may be applied to the magnetic data, to yield vertical derivatives, continuations, magnetic susceptibility, etc. These may be displayed in contour, colour or shadow.

VLF

VLF transmitters produce high frequency uniform electromagnetic fields. However, VLF anomalies are not EM anomalies in the conventional sense. EM anomalies primarily reflect eddy currents flowing in conductors which have been energized inductively by the primary field. In contrast, VLF anomalies primarily reflect current gathering, which is a non-inductive phenomenon. The primary field sets up currents which flow weakly in rock and overburden, and these tend to collect in low resistivity zones. Such zones may be due to massive sulfides, shears, river valleys and even unconformities.

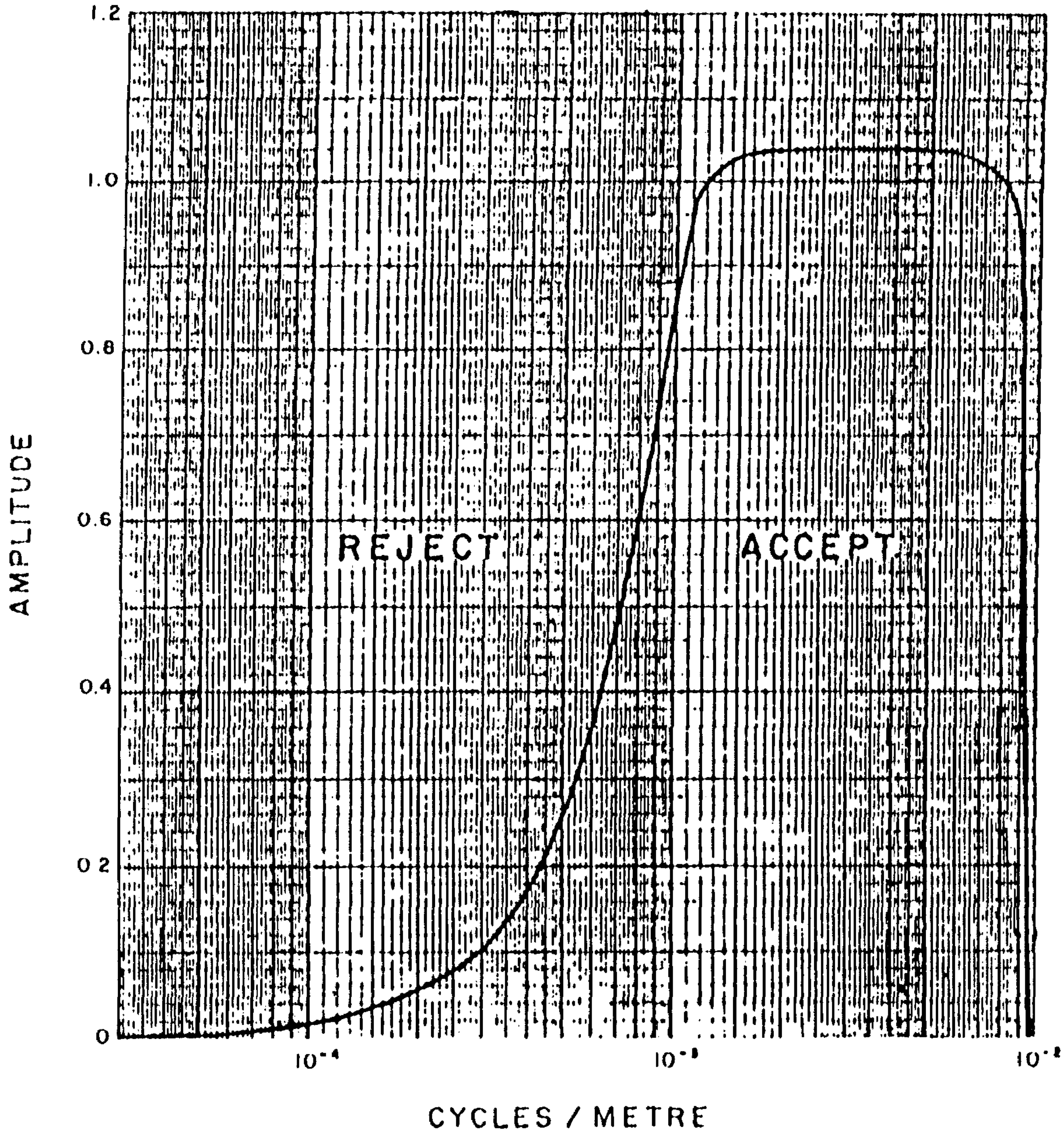

Fig. 5-3 Frequency response of VLF operator.

The VLF field is horizontal. Because of this, the method is quite sensitive to the angle of coupling between the conductor and the transmitted VLF field. Conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it.

The Herz Industries Ltd. Totem VLF-electromagnetometer measures the total field and vertical quadrature components. Both of these components are digitally recorded in the aircraft with a sensitivity of 0.1 percent. The total field yields peaks over VLF current concentrations whereas the quadrature component tends to yield crossovers. Both appear as traces on the profile records. The total field data are filtered digitally and displayed as contours to facilitate the recognition of trends in the rock strata and the interpretation of geologic structure.

The response of the VLF total field filter operator in the frequency domain (Figure 5-3) is basically similar to that used to produce the enhanced magnetic map (Figure 5-2). The two filters are identical along the abscissa but different along the ordinant. The VLF filter removes long wavelengths such as those which reflect regional and wave transmission variations. The filter sharpens short wavelength responses such as those which reflect local geological variations.

CONCLUSIONS AND RECOMMENDATIONS

This report provides a brief description of the survey results and describes the equipment, procedures and logistics of the survey.

The survey was successful in locating numerous zones of interest. The various maps included with this report display the magnetic and conductive properties of the survey area. It is recommended that the survey results be reviewed in conjunction with all available geological, geophysical and geochemical information by qualified personnel. Areas of interest defined by the survey should be subjected to further investigation, using appropriate surface exploration techniques.

It is also recommended that additional processing of existing geophysical data be considered, in order to extract the maximum amount of information from the survey results. The use of Dighem's Imaging Workstation may provide additional useful information from the survey. Current processing techniques can yield structural detail that may be important in further defining the geologic setting.

Respectfully submitted,

DIGHEM SURVEYS & PROCESSING INC.

Doug McConnell

Douglas L. McConnell
Geophysicist

DLM/sdp

A1057FEB.90R

APPENDIX A

LIST OF PERSONNEL

The following personnel were involved in the acquisition, processing, interpretation and presentation of data, relating to a DIGHEM^{III} airborne geophysical survey carried out for Noranda Explorations Inc., over the Opikeigen Lake Project, Ontario.

Phillip Miles	Senior Geophysical Operator
Dan Chinn	Pilot (Peace Helicopters Ltd.)
Joy Yong	Computer Processor
Douglas L. McConnell	Geophysicist
Gary Hohs	Draftsperson
Susan Pothiah	Word Processing Operator

The survey consisted of 533 km of coverage, flown from January 12 to January 13, 1989. Geophysical data were compiled utilizing a VAX 11-780 computer.

All personnel are employees of Dighem Surveys & Processing Inc., except for the pilot who is an employee of Peace Helicopters Ltd.

DIGHEM SURVEYS & PROCESSING INC.

Douglas L. McConnell
Geophysicist

DLM/sdp

Ref: Report #1057

A1057FEB.90R

APPENDIX B

STATEMENT OF COST

Date: February 23, 1989

IN ACCOUNT WITH
DIGHEM SURVEYS & PROCESSING INC.

To: Dighem flying of Agreement dated December 8, 1988, pertaining to an Airborne Geophysical Survey in the Opikeigen Lake Project area, Ontario.

Survey Charges

465 km of flying $ 39,313.50

Allocation of Costs

- Data Acquisition (60%)
- Data Processing (20%)
- Interpretation, Report and Maps (20%)

DIGHEM SURVEYS & PROCESSING INC.

Douglas McConnell

Douglas L. McConnell
Geophysicist

DLM/sdp

A1057FEB.90R

APPENDIX C

STATEMENT OF QUALIFICATIONS

I, Douglas L. McConnell of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist, residing in Toronto, Ontario.
2. I am a graduate of Queens University, with a B.Sc. Engineering, Geophysics (1984).
3. I have been actively engaged in geophysical exploration since 1986.
4. I was personally responsible for the interpretation of the geophysical data described in this report.

Doug McConnell

D.L. McConnell
Geophysicist

A1057FEB.90R

A P P E N D I X   D

EM ANOMALY LIST

1057

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10010	(FLIGHT	3)										
A 6533 S	1	2	1	2	1	4	-	-	-	-	-	-
B 6512 S	1	2	1	2	2	4	-	-	-	-	-	-
C 6485 S	1	2	0	2	2	4	-	-	-	-	-	-
D 6460 S	1	2	1	2	2	4	-	-	-	-	-	-
E 6452 D	59	19	34	14	62	65	63.1	11	2	108	43	74
F 6450 B	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10020	(FLIGHT	3)										
A 6356 S	1	2	1	2	2	4	-	-	-	-	-	-
B 6379 S	1	2	0	2	0	4	-	-	-	-	-	-
C 6402 D	22	7	9	10	30	67	28.8	9	2	138	30	103
D 6403 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10030	(FLIGHT	3)										
A 6287 S	1	2	1	2	2	4	-	-	-	-	-	-
B 6257 S	1	2	0	2	0	4	-	-	-	-	-	-
C 6250 S?	1	2	1	2	2	4	-	-	-	-	-	-
D 6226 D	19	18	9	11	19	45	10.7	19	1	105	146	58
E 6224 D	19	13	8	10	19	75	14.3	19	2	122	43	86
F 6221 S?	1	2	1	2	2	4	-	-	-	-	-	-
G 6215 S?	1	2	1	2	1	4	-	-	-	-	-	-
LINE 10040	(FLIGHT	3)										
A 6119 S	1	2	1	2	0	4	-	-	-	-	-	-
B 6134 S	1	2	1	2	2	4	-	-	-	-	-	-
C 6161 S	1	2	1	2	2	4	-	-	-	-	-	-
D 6178 D	9	10	15	17	51	41	8.8	18	2	112	46	76
E 6180 D	12	16	15	17	51	40	7.8	1	1	93	69	54
LINE 10050	(FLIGHT	3)										
A 6068 S	1	2	1	2	2	4	-	-	-	-	-	-
B 6046 S	1	2	0	2	0	4	-	-	-	-	-	-
C 6035 D	7	5	1	3	7	9	9.7	31	1	170	673	43
D 6022 S?	1	2	1	2	0	4	-	-	-	-	-	-
E 6011 D	20	13	13	18	44	51	14.3	26	2	136	43	100
F 6008 D	20	24	14	18	44	24	9.4	11	1	87	106	47
LINE 10060	(FLIGHT	3)										
A 5927 S	1	2	0	2	0	4	-	-	-	-	-	-
B 5948 B	4	4	5	4	6	7	8.1	29	1	197	795	46
C 5965 D	1	2	1	2	2	4	-	-	-	-	-	-

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10060	(FLIGHT		3)									
D 5967 D	9	6	3	7	17	26	9.6	11	1	82	400	16
LINE 10070	(FLIGHT		3)									
A 5858 S	1	2	1	2	0	4	-	-	-	-	-	-
B 5825 D	29	18	23	10	38	12	26.5	18	1	137	84	93
C 5807 S	1	2	1	2	2	4	-	-	-	-	-	-
D 5800 D	18	9	12	16	36	46	17.3	17	2	113	62	74
E 5797 D	18	18	12	16	36	46	10.1	11	1	75	113	35
LINE 10080	(FLIGHT		3)									
A 5732 D	28	8	20	4	22	15	71.3	7	5	143	7	121
B 5750 B	1	2	1	2	2	4	-	-	-	-	-	-
C 5752 D	9	8	6	13	35	71	6.6	11	1	77	184	30
LINE 10090	(FLIGHT		3)									
A 5644 S	1	2	1	2	0	4	-	-	-	-	-	-
B 5623 S	1	2	1	2	2	4	-	-	-	-	-	-
C 5615 D	45	20	24	10	35	17	41.4	3	2	111	45	76
D 5601 D	1	2	1	2	2	4	-	-	-	-	-	-
E 5595 S?	1	2	1	2	2	4	-	-	-	-	-	-
F 5590 D	8	11	5	13	29	87	4.8	8	1	75	163	31
G 5588 D	8	11	5	13	29	87	4.8	7	1	62	216	17
H 5559 S	1	2	0	2	0	4	-	-	-	-	-	-
LINE 10100	(FLIGHT		3)									
A 5445 S	1	2	1	2	0	4	-	-	-	-	-	-
B 5467 D	41	8	34	8	43	11	119.6	2	9	97	2	84
C 5478 D	1	2	1	1	2	4	-	-	-	-	-	-
D 5482 D	6	6	5	5	9	16	7.4	34	1	160	1035	0
E 5486 D	1	2	1	2	2	4	-	-	-	-	-	-
F 5488 D	7	8	4	8	27	52	5.2	14	1	67	311	17
LINE 10110	(FLIGHT		3)									
A 5303 S	1	2	0	2	2	4	-	-	-	-	-	-
B 5277 D	55	11	39	10	56	13	119.7	9	4	104	10	82
C 5263 D	4	6	2	3	7	4	3.9	25	1	151	170	94
D 5257 D	7	8	5	4	14	11	8.1	40	1	137	1035	0
E 5249 D	6	10	1	8	28	37	3.3	14	1	80	652	6
F 5241 S	1	2	0	2	2	4	-	-	-	-	-	-
G 5219 S	1	2	0	2	0	4	-	-	-	-	-	-
LINE 10120	(FLIGHT		3)									
A 5090 S	1	2	1	2	0	4	-	-	-	-	-	-

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10120	(FLIGHT	3)										
B 5107 S	1	2	1	2	2	4	-	-	-	-	-	-
C 5129 D	23	5	13	3	18	4	82.1	18	3	164	19	132
D 5139 B	5	2	7	2	15	10	21.9	31	1	179	694	40
E 5144 D	7	8	7	4	15	12	9.1	22	1	145	154	90
F 5172 S	1	2	1	2	0	4	-	-	-	-	-	-
LINE 10130	(FLIGHT	3)										
A 5064 S	1	2	0	2	0	4	-	-	-	-	-	-
B 5039 S	1	2	1	2	2	4	-	-	-	-	-	-
C 5013 D	38	8	29	5	37	7	124.0	6	4	132	10	108
D 4994 D	6	8	6	6	14	9	6.4	17	1	190	1035	0
E 4988 S?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10140	(FLIGHT	3)										
A 4875 D	26	6	22	3	23	6	102.0	6	3	163	18	131
B 4889 D	3	3	3	4	7	23	5.3	25	1	162	1035	0
C 4894 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10150	(FLIGHT	3)										
A 4789 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4762 D	27	14	23	10	38	10	30.4	4	3	139	17	109
C 4751 D	6	5	3	3	2	23	10.6	37	1	141	914	19
D 4743 D	12	7	7	6	13	25	15.6	19	1	100	988	0
E 4737 B?	5	8	5	10	18	67	4.2	13	1	52	641	0
LINE 10160	(FLIGHT	3)										
A 4675 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4696 D	7	6	4	2	10	12	10.4	24	1	172	95	120
C 4704 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10170	(FLIGHT	3)										
A 4510 D	12	10	6	6	22	12	11.2	20	1	132	740	23
B 4500 D	7	8	5	5	6	45	7.2	28	1	83	746	4
LINE 10180	(FLIGHT	3)										
A 4416 S	1	2	1	2	2	4	-	-	-	-	-	-
B 4448 D	7	6	6	3	13	8	10.8	14	2	178	60	131
C 4455 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10190	(FLIGHT	3)										
A 4347 S	0	2	1	2	2	4	-	-	-	-	-	-

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10190	(FLIGHT		3)									
B 4335 D	24	11	13	6	24	6	31.1	21	1	155	126	103
C 4325 B	5	4	3	2	4	18	8.4	35	1	128	1031	6
LINE 10200	(FLIGHT		3)									
A 4243 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4269 S	0	1	0	5	6	25	5.7	35	1	76	954	0
C 4278 D	19	6	9	3	16	8	51.7	25	2	181	42	139
D 4285 S	1	2	1	1	2	4	-	-	-	-	-	-
LINE 10210	(FLIGHT		3)									
A 4185 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4169 D	34	9	23	4	31	5	91.4	13	5	130	9	106
C 4160 D	8	7	4	2	10	19	10.6	33	1	162	921	29
LINE 10220	(FLIGHT		3)									
A 4097 S?	1	2	0	2	2	4	-	-	-	-	-	-
B 4104 D	15	4	11	3	19	5	53.1	24	2	142	37	105
C 4112 D	12	6	9	3	15	10	25.3	20	1	142	121	90
D 4118 D	20	9	22	4	31	31	46.2	12	3	128	22	97
LINE 10230	(FLIGHT		3)									
A 4016 S	1	2	1	2	2	4	-	-	-	-	-	-
B 4005 S?	1	2	0	2	0	4	-	-	-	-	-	-
C 3995 D	22	11	13	6	24	8	29.1	12	2	126	43	89
D 3985 D	17	7	10	4	19	18	31.4	20	1	136	127	85
E 3976 D	32	11	25	5	37	11	57.5	20	3	125	25	95
LINE 10240	(FLIGHT		3)									
A 3920 S	1	2	0	2	0	4	-	-	-	-	-	-
B 3929 D	32	6	26	5	33	5	121.9	6	5	121	8	99
C 3936 D	15	3	7	2	8	9	100.5	18	1	165	978	19
D 3942 D	17	7	11	6	15	24	29.8	25	2	178	37	138
LINE 10250	(FLIGHT		3)									
A 3807 D	17	4	10	2	15	5	80.5	20	2	172	57	128
B 3799 D	7	3	3	2	3	11	25.2	21	1	180	1035	0
C 3789 D	13	4	9	7	16	15	28.4	18	3	174	19	141
LINE 10260	(FLIGHT		3)									
A 3734 S	1	2	0	2	0	4	-	-	-	-	-	-
B 3744 D	21	4	16	3	19	19	111.7	6	5	146	10	121

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	COAXIAL 900 HZ		COPLANAR 900 HZ		COPLANAR 7200 HZ		VERTICAL DIKE		HORIZONTAL SHEET		CONDUCTIVE EARTH	
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND SIEMEN	DEPTH* M	COND SIEMEN	DEPTH M	RESIS OHM-M	DEPTH M
LINE 10260	(FLIGHT		3)									
C 3750 D	9	5	4	3	6	25	15.7	24	1	118	246	59
D 3756 D	23	5	17	7	29	5	69.8	14	3	124	20	94
E 3758 B	11	8	17	7	29	20	18.1	2	3	102	24	72
LINE 10270	(FLIGHT		3)									
A 3635 S	1	2	1	2	2	4	-	-	-	-	-	-
B 3626 D	22	5	14	4	19	18	81.1	17	3	136	18	106
C 3621 S?	1	2	1	2	2	4	-	-	-	-	-	-
D 3618 D	8	4	5	3	10	17	18.2	27	1	115	676	14
E 3609 D	25	6	20	6	28	24	77.4	9	3	118	15	90
F 3607 B	10	7	13	6	27	5	16.5	14	2	105	49	69
LINE 10280	(FLIGHT		3)									
A 3510 D	20	6	18	7	28	25	50.1	7	3	108	21	78
B 3512 D	1	2	1	2	2	4	-	-	-	-	-	-
C 3524 B	6	7	3	5	11	14	6.1	10	1	98	157	47
LINE 10290	(FLIGHT		3)									
A 3401 S	0	2	0	2	2	4	-	-	-	-	-	-
B 3384 D	24	8	23	6	32	29	56.4	13	2	124	32	90
C 3361 D	11	10	4	5	11	20	9.4	9	1	119	224	61
LINE 10300	(FLIGHT		3)									
A 3311 S	1	2	0	2	2	4	-	-	-	-	-	-
B 3324 D	19	7	14	6	18	32	38.0	17	1	119	86	75
C 3340 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10310	(FLIGHT		3)									
A 3214 S	0	2	0	2	0	4	-	-	-	-	-	-
B 3197 B?	1	2	1	2	2	4	-	-	-	-	-	-
C 3177 B?	8	5	2	5	16	22	8.6	16	1	95	615	5
LINE 10320	(FLIGHT		3)									
A 3136 B?	1	2	0	2	2	4	-	-	-	-	-	-
B 3151 D	6	9	2	9	22	32	3.4	0	1	86	961	0
LINE 10330	(FLIGHT		3)									
A 3025 S	0	6	0	9	8	66	8.1	29	1	38	714	0
LINE 10340	(FLIGHT		3)									
A 2973 S	3	4	0	5	10	49	1.7	14	1	62	843	0

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LINE 10350	(FLIGHT		3)									
A 2879 S?	1	2	0	2	2	4	-	-	-	-	-	-
LINE 10360	(FLIGHT		3)									
A 2819 S?	0	5	0	12	11	82	8.3	26	1	34	709	0
LINE 10370	(FLIGHT		3)									
A 2681 S?	0	2	1	2	2	4	-	-	-	-	-	-
B 2671 S?	0	9	0	5	17	25	8.5	32	1	23	539	0
LINE 10380	(FLIGHT		3)									
A 2606 S?	1	2	1	2	2	4	-	-	-	-	-	-
B 2613 S	0	5	0	2	20	80	6.8	37	1	32	702	0
LINE 10390	(FLIGHT		3)									
A 2519 S	0	3	0	6	22	13	6.7	38	1	27	670	0
LINE 10400	(FLIGHT		3)									
A 2456 S?	1	2	1	2	2	4	-	-	-	-	-	-
B 2463 S	3	6	0	9	27	79	1.4	5	1	44	754	0
C 2468 S	1	6	1	2	27	79	7.1	35	1	36	717	0
LINE 10410	(FLIGHT		3)									
A 2394 S?	5	3	2	2	6	13	9.1	40	1	93	985	0
B 2372 S	1	9	0	14	24	29	0.5	0	1	30	649	0
LINE 10420	(FLIGHT		3)									
A 2311 S?	4	4	2	5	12	22	4.9	35	1	67	850	0
B 2327 S	2	10	0	16	34	61	1.0	0	1	25	632	0
LINE 10430	(FLIGHT		3)									
A 2230 S	1	11	0	18	52	145	0.5	0	1	15	540	0
LINE 10440	(FLIGHT		3)									
A 2181 S	2	14	1	23	69	170	1.4	0	1	11	509	0
LINE 10450	(FLIGHT		3)									
A 2094 S	2	3	0	16	47	162	6.3	23	1	48	767	0
B 2087 S	0	13	0	3	54	173	1.4	5	1	13	479	0
LINE 10460	(FLIGHT		3)									
A 2043 S	1	8	0	15	43	108	2.1	4	1	20	608	0

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1057

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	QUAD PPM	COPLANAR 900 HZ REAL PPM	QUAD PPM	COPLANAR 7200 HZ REAL PPM	QUAD PPM	VERTICAL DIKE COND SIEMEN	DEPTH* M	HORIZONTAL SHEET COND SIEMEN	DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	DEPTH M
LINE 10470	(FLIGHT		3)									
A 1941 S	2	6	0	8	39	36	1.8	9	1	27	685	0
LINE 10480	(FLIGHT		3)									
A 1897 S	0	2	0	2	2	4	-	-	-	-	-	-
LINE 10490	(FLIGHT		3)									
A 1820 S	0	2	0	2	2	4	-	-	-	-	-	-
B 1797 S	2	7	0	11	28	93	2.0	14	1	39	712	0
LINE 10500	(FLIGHT		3)									
A 1732 S	1	2	0	2	2	4	-	-	-	-	-	-
B 1745 S	2	9	0	15	40	116	0.6	0	1	28	673	0
LINE 10510	(FLIGHT		3)									
A 1580 S	1	2	0	2	2	4	-	-	-	-	-	-
B 1547 S	5	5	2	13	21	75	3.5	17	1	23	638	0
C 1543 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 10520	(FLIGHT		3)									
A 1485 B?	1	2	0	2	2	4	-	-	-	-	-	-
B 1503 S	3	4	0	10	22	83	2.1	16	1	28	680	0
C 1510 B?	10	9	9	14	17	14	8.3	8	1	53	268	7
LINE 10530	(FLIGHT		3)									
A 1419 D	2	8	0	4	7	21	0.8	7	1	71	840	0
B 1385 D	10	7	7	6	12	11	12.2	19	1	79	181	32
LINE 10540	(FLIGHT		3)									
A 1335 D	3	6	0	4	7	21	3.9	26	1	89	949	0
B 1349 S	3	5	0	9	17	70	1.8	12	1	42	742	0
C 1361 D	6	8	9	12	22	43	6.2	11	1	41	685	0
LINE 10550	(FLIGHT		3)									
A 1273 D	3	11	0	8	9	55	1.2	2	1	74	863	0
B 1255 S	3	7	0	10	16	90	1.7	11	1	47	747	0
C 1239 D	7	7	8	7	5	42	8.6	31	1	34	652	0
LINE 10560	(FLIGHT		3)									
A 1182 D	3	6	0	3	4	30	1.7	16	1	88	938	0
B 1196 S	1	2	0	2	2	4	-	-	-	-	-	-
C 1207 D	5	7	8	12	21	49	5.4	15	1	50	460	0

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10570 (FLIGHT 3)												
A 1122 D	1	2	0	2	1	4	-	-	-	-	-	-
B 1100 S	1	2	0	2	2	4	-	-	-	-	-	-
C 1088 D	10	9	6	9	24	42	8.5	25	1	38	500	0
LINE 10580 (FLIGHT 3)												
A 1036 B?	1	2	0	2	0	4	-	-	-	-	-	-
B 1049 S	3	3	0	5	5	14	5.1	27	1	81	954	0
C 1059 D	16	6	11	9	19	26	24.2	16	1	55	361	6
LINE 10590 (FLIGHT 3)												
A 983 B	1	2	0	2	0	4	-	-	-	-	-	-
B 969 S	0	3	0	5	2	36	6.6	34	1	85	949	0
C 948 D	24	9	13	7	18	35	35.3	11	1	51	370	3
LINE 10600 (FLIGHT 3)												
A 894 B?	1	4	0	3	0	9	3.3	31	1	154	1035	0
B 919 D	22	5	16	7	20	7	60.0	11	2	104	33	71
LINE 10610 (FLIGHT 3)												
A 842 B	1	2	0	2	0	4	-	-	-	-	-	-
B 809 B	5	3	7	3	8	5	19.5	28	3	149	18	118
LINE 10620 (FLIGHT 3)												
A 773 B?	0	2	0	2	0	4	-	-	-	-	-	-
B 791 S	1	2	0	2	2	4	-	-	-	-	-	-
C 798 B	6	1	1	5	0	45	15.8	19	1	168	1035	0
LINE 10630 (FLIGHT 3)												
A 730 B?	1	2	0	2	0	4	-	-	-	-	-	-
B 700 B?	4	6	9	5	12	25	7.9	27	1	68	815	0
C 694 B?	6	4	11	4	15	20	17.0	33	2	104	37	71
LINE 10640 (FLIGHT 3)												
A 646 B?	2	4	5	4	13	16	3.8	20	1	77	891	0
B 650 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10650 (FLIGHT 3)												
A 546 B	6	10	5	13	41	56	3.7	11	1	37	399	0
B 545 B	6	16	5	13	41	56	2.9	1	1	69	180	25
C 534 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10660 (FLIGHT 3)												
A 508 D	6	8	3	7	21	26	4.2	7	1	42	553	0

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10660	(FLIGHT	3)										
B 509 B	6	8	3	7	21	26	4.2	8	1	71	236	21
LINE 10670	(FLIGHT	3)										
A 445 S	0	3	0	4	0	33	6.3	44	1	96	972	0
B 408 D	3	6	3	7	22	30	3.1	16	1	54	346	8
C 406 D	3	8	3	7	22	30	2.8	9	1	83	202	34
LINE 10680	(FLIGHT	3)										
A 369 B?	1	2	1	2	2	4	-	-	-	-	-	-
B 370 D	5	6	2	5	20	19	4.5	17	1	47	506	0
LINE 10690	(FLIGHT	2)										
A 6373 D	1	7	0	8	5	64	0.5	4	1	92	913	6
B 6353 S	0	5	0	10	8	34	2.6	28	1	61	779	0
C 6341 D	5	9	2	9	17	59	4.5	27	1	66	799	1
D 6337 S?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10700	(FLIGHT	2)										
A 6269 S	1	2	1	2	0	4	-	-	-	-	-	-
B 6283 S	1	2	0	2	2	4	-	-	-	-	-	-
C 6295 D	6	10	8	9	20	43	6.0	14	1	59	825	0
LINE 10710	(FLIGHT	2)										
A 6215 S	1	17	0	31	32	261	0.6	3	1	19	460	0
B 6200 D	6	14	0	14	9	113	2.0	13	1	30	558	0
C 6191 S?	1	5	1	11	11	101	4.8	33	1	46	718	0
LINE 10720	(FLIGHT	2)										
A 6124 S	1	2	0	2	2	4	-	-	-	-	-	-
B 6130 S	4	4	0	5	0	41	4.7	35	1	126	1035	0
C 6145 S	2	9	0	16	25	133	1.2	0	1	32	701	0
D 6156 D	4	9	3	12	30	57	2.6	9	1	37	352	0
E 6157 D	4	11	3	12	30	57	3.2	8	1	38	729	0
LINE 10730	(FLIGHT	2)										
A 6095 S	1	6	0	7	4	57	1.0	10	1	60	794	0
B 6084 S	3	3	0	4	0	37	5.9	48	1	124	1035	0
C 6074 S	1	7	0	24	28	193	0.5	2	1	23	530	0
D 6061 D	1	2	0	2	2	4	-	-	-	-	-	-
E 6059 D	1	10	1	7	9	80	1.3	8	1	42	715	0
F 6046 B?	2	5	0	5	2	102	2.6	29	1	52	758	0

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LINE 10740	(FLIGHT		2)									
A 5981 D	5	13	1	10	22	53	2.5	10	1	51	758	0
B 5996 S	1	2	0	2	2	4	-	-	-	-	-	-
C 6009 B	3	6	2	7	20	38	2.3	17	1	53	781	0
D 6012 B	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10750	(FLIGHT		2)									
A 5953 D	6	18	3	12	31	47	2.7	11	1	45	714	0
B 5934 E	2	7	0	14	25	112	3.0	20	1	44	725	0
C 5928 S?	1	2	0	2	2	4	-	-	-	-	-	-
D 5916 D	17	17	10	17	39	81	8.7	19	1	52	238	13
E 5912 D	7	11	10	17	39	81	5.1	20	1	36	670	0
LINE 10760	(FLIGHT		2)									
A 5824 S?	1	2	0	2	1	4	-	-	-	-	-	-
B 5854 D	9	12	5	10	31	38	5.8	12	1	51	484	0
C 5856 D	6	9	5	10	31	38	4.4	17	1	51	781	0
LINE 10770	(FLIGHT		2)									
A 5795 D	3	8	0	5	4	42	1.6	17	1	75	840	2
B 5778 S	0	2	0	2	2	4	-	-	-	-	-	-
C 5769 S	2	8	0	13	26	110	0.5	0	1	19	529	0
D 5756 D	11	12	3	9	29	39	6.3	24	1	32	632	0
E 5751 D	1	2	1	2	2	3	-	-	-	-	-	-
LINE 10780	(FLIGHT		2)									
A 5653 S	4	4	0	6	1	41	7.1	33	1	107	1035	0
B 5666 S	1	2	0	2	2	4	-	-	-	-	-	-
C 5685 D	8	8	3	8	11	10	6.5	17	1	53	809	0
LINE 10790	(FLIGHT		2)									
A 5622 B	4	6	0	4	4	32	2.7	32	1	107	979	10
B 5606 S?	1	2	0	2	2	4	-	-	-	-	-	-
C 5579 D	26	20	14	10	28	110	16.7	21	1	51	167	15
LINE 10800	(FLIGHT		2)									
A 5496 S	6	4	0	4	0	25	6.6	42	1	119	1035	0
B 5502 S	1	1	0	2	0	4	-	-	-	-	-	-
C 5510 S	5	6	0	9	2	29	2.7	18	1	65	831	0
D 5530 D	15	9	7	9	13	32	14.8	15	1	64	856	0
LINE 10810	(FLIGHT		2)									
A 5466 S?	1	2	0	2	0	4	-	-	-	-	-	-

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LINE 10810	(FLIGHT	2)										
B 5445 S	1	2	0	2	2	4	-	-	-	-	-	-
C 5431 S	1	2	0	2	2	4	-	-	-	-	-	-
D 5418 D	13	8	8	11	26	95	12.5	28	1	46	729	0
LINE 10820	(FLIGHT	2)										
A 5341 S?	1	2	0	2	0	4	-	-	-	-	-	-
B 5359 S	6	5	0	5	0	47	4.3	32	1	85	913	0
C 5371 S	1	2	0	2	2	4	-	-	-	-	-	-
D 5383 D	31	19	17	6	27	35	26.1	9	1	57	736	0
LINE 10830	(FLIGHT	2)										
A 5320 D	3	7	2	6	8	26	2.4	10	1	131	1035	0
B 5296 S?	1	2	0	2	0	4	-	-	-	-	-	-
C 5288 S?	1	2	0	2	1	4	-	-	-	-	-	-
D 5280 S	1	2	0	2	2	4	-	-	-	-	-	-
E 5266 D	57	24	48	16	73	61	54.0	10	2	92	25	65
LINE 10840	(FLIGHT	2)										
A 5198 B?	7	3	0	4	2	14	8.6	34	1	182	1035	0
B 5215 S	5	2	0	3	1	25	6.2	49	1	141	1035	0
C 5239 D	28	8	25	8	41	12	61.5	6	1	119	90	74
LINE 10850	(FLIGHT	2)										
A 5176 B?	1	2	0	2	2	4	-	-	-	-	-	-
B 5158 S	7	3	0	2	2	17	11.4	49	1	166	1035	0
C 5151 S	7	4	0	4	0	42	6.6	40	1	155	1035	0
D 5140 S	1	2	0	2	2	4	-	-	-	-	-	-
E 5121 D	39	24	51	22	97	24	32.0	11	2	85	32	56
F 5117 D	14	13	26	14	55	22	17.0	18	1	57	787	0
G 5106 S	1	2	0	2	2	4	-	-	-	-	-	-
H 5096 D	41	25	21	22	69	40	21.6	10	1	55	73	23
I 5074 S	4	3	0	7	3	50	3.1	34	1	73	850	0
J 5048 S	1	2	0	2	0	4	-	-	-	-	-	-
LINE 10860	(FLIGHT	2)										
A 4929 S	5	3	0	2	0	23	6.7	48	1	190	1035	0
B 4951 S	1	2	0	2	2	4	-	-	-	-	-	-
C 4961 D	16	7	18	4	28	11	37.9	12	2	139	63	96
D 4963 D	7	5	8	4	25	11	15.3	24	2	129	60	88
E 4978 D	38	22	28	24	73	47	24.0	4	2	60	28	34
F 4989 E	1	2	0	2	2	4	-	-	-	-	-	-

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LINE 10860 (FLIGHT 2)												
G 4998 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 10870 (FLIGHT 2)												
A 4892 S?	1	2	0	2	0	4	-	-	-	-	-	-
B 4877 S?	1	2	0	2	2	4	-	-	-	-	-	-
C 4867 S	7	3	0	2	0	20	13.9	46	1	204	1035	0
D 4848 S	6	3	0	4	1	6	8.9	44	1	93	960	0
E 4834 D	45	14	54	15	71	43	75.1	5	6	100	5	82
F 4831 D	16	11	32	15	53	43	22.3	13	1	99	100	56
G 4812 D	76	33	66	35	118	84	47.8	5	4	57	9	39
H 4799 E	1	2	1	2	2	4	-	-	-	-	-	-
I 4770 E?	1	2	0	2	0	4	-	-	-	-	-	-
J 4762 S	1	2	0	2	0	4	-	-	-	-	-	-
LINE 10880 (FLIGHT 2)												
A 4648 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4683 D	33	8	22	6	30	42	80.2	10	3	116	21	86
C 4699 D	63	23	60	31	117	31	52.2	0	5	52	6	36
D 4709 S	1	2	0	2	2	4	-	-	-	-	-	-
E 4719 S	7	6	0	9	6	78	4.5	20	1	69	863	0
LINE 10890 (FLIGHT 2)												
A 4611 S?	1	2	0	2	0	4	-	-	-	-	-	-
B 4603 S	1	2	0	2	0	4	-	-	-	-	-	-
C 4592 S	1	2	1	2	2	4	-	-	-	-	-	-
D 4587 S	1	2	0	2	0	4	-	-	-	-	-	-
E 4556 D	10	10	9	16	44	42	7.2	15	1	77	97	38
F 4553 D	22	7	11	5	12	50	45.0	21	1	93	154	47
G 4547 D	6	4	11	4	2	24	18.3	34	1	57	811	0
H 4534 D	115	52	152	71	278	70	57.8	0	9	42	2	31
I 4532 D	115	52	152	71	278	70	57.8	0	6	53	4	38
J 4522 S	1	2	0	2	2	4	-	-	-	-	-	-
K 4507 S	5	14	0	20	10	74	1.0	2	1	36	649	0
L 4493 S	5	3	0	3	0	21	7.1	53	1	214	1035	0
LINE 10900 (FLIGHT 2)												
A 4355 S	1	2	0	2	1	4	-	-	-	-	-	-
B 4367 S	1	2	0	2	2	4	-	-	-	-	-	-
C 4373 S	1	1	0	2	2	4	-	-	-	-	-	-
D 4399 B?	3	4	2	4	10	14	3.3	20	1	161	1035	0
E 4405 D	23	9	17	7	23	52	40.9	11	2	99	31	68

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LINE 10900	(FLIGHT	2)										
F 4409 D	8	5	10	7	23	52	14.6	30	1	83	628	8
G 4419 D	58	27	64	31	123	32	43.0	0	6	50	4	35
H 4420 D	1	2	1	2	2	4	-	-	-	-	-	-
I 4439 S	6	8	0	11	16	41	3.0	11	1	53	797	0
LINE 10910	(FLIGHT	2)										
A 4335 D	4	10	0	11	11	46	1.8	8	1	84	895	1
B 4319 S	1	2	1	2	2	4	-	-	-	-	-	-
C 4290 S	1	2	0	2	1	4	-	-	-	-	-	-
D 4279 S?	1	2	0	2	2	4	-	-	-	-	-	-
E 4276 S?	6	4	19	4	10	20	34.4	28	1	126	1035	0
F 4271 D	29	9	19	12	15	75	41.2	17	2	95	31	65
G 4266 D	10	8	15	12	15	75	12.6	20	1	58	710	0
H 4255 D	87	49	96	60	207	48	37.1	0	7	46	4	33
I 4253 D	1	2	1	2	2	4	-	-	-	-	-	-
J 4243 S	1	2	0	2	2	4	-	-	-	-	-	-
K 4233 S	1	2	0	2	2	4	-	-	-	-	-	-
L 4226 S	1	2	0	2	2	4	-	-	-	-	-	-
M 4219 S?	0	1	0	7	17	11	6.1	57	1	39	666	0
N 4215 D	5	11	0	7	17	42	2.9	20	1	55	759	0
LINE 10920	(FLIGHT	2)										
A 4114 S	1	2	0	2	2	4	-	-	-	-	-	-
B 4125 D	18	4	14	7	16	41	51.0	22	1	92	127	48
C 4129 D	1	2	1	2	2	4	-	-	-	-	-	-
D 4139 D	102	65	103	76	246	160	32.4	0	3	42	16	22
E 4147 S	1	2	1	2	2	4	-	-	-	-	-	-
F 4153 E?	1	2	1	2	2	4	-	-	-	-	-	-
G 4159 S	8	6	0	10	40	83	5.0	22	1	28	680	0
H 4169 D	8	2	0	3	34	82	17.5	41	1	69	867	0
LINE 10930	(FLIGHT	2)										
A 4016 S	1	2	1	2	2	4	-	-	-	-	-	-
B 4001 S	5	3	0	6	4	48	3.9	33	1	112	1035	0
C 3988 S?	7	6	1	7	17	56	5.6	26	1	84	917	0
D 3983 B?	1	2	1	2	2	4	-	-	-	-	-	-
E 3972 D	59	48	41	53	145	144	17.5	10	1	42	55	16
F 3964 B	5	3	3	15	34	155	4.1	28	1	29	541	0
G 3958 S	3	25	1	36	66	300	0.8	0	1	8	352	0
H 3948 S	3	21	0	32	48	269	0.7	0	1	12	379	0
I 3942 S	3	11	0	18	53	162	0.8	7	1	12	362	0

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1057

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10930 (FLIGHT 2)												
J 3937 S?	1	7	0	17	50	156	4.3	27	1	27	532	0
K 3932 S	6	5	0	7	14	71	4.4	31	1	56	775	0
LINE 10940 (FLIGHT 2)												
A 3811 S	1	2	0	2	2	4	-	-	-	-	-	-
B 3846 S?	7	4	3	6	11	41	8.5	30	1	70	727	0
C 3851 D	8	6	3	19	8	143	4.5	16	1	61	795	0
D 3858 D	28	31	23	36	101	62	10.0	8	1	38	104	8
E 3863 B?	1	2	1	2	2	4	-	-	-	-	-	-
F 3868 S	1	2	1	2	2	4	-	-	-	-	-	-
G 3876 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 10950 (FLIGHT 2)												
A 3770 S	1	2	1	2	1	4	-	-	-	-	-	-
B 3760 S?	1	2	1	2	2	4	-	-	-	-	-	-
C 3738 S	1	2	0	2	0	4	-	-	-	-	-	-
D 3712 D	15	7	8	6	11	30	22.2	32	1	84	528	17
E 3706 S?	1	2	1	2	2	4	-	-	-	-	-	-
F 3696 D	11	10	7	7	59	25	10.7	24	1	28	288	0
G 3690 S	1	2	1	2	2	4	-	-	-	-	-	-
H 3672 S	1	2	1	2	2	4	-	-	-	-	-	-
I 3660 B?	1	2	0	2	2	4	-	-	-	-	-	-
LINE 10960 (FLIGHT 2)												
A 3516 S	1	2	0	2	0	4	-	-	-	-	-	-
B 3525 S	1	2	0	2	2	4	-	-	-	-	-	-
C 3545 S	1	2	0	2	0	4	-	-	-	-	-	-
D 3566 D	24	5	11	10	23	72	50.0	18	1	84	273	32
E 3581 S	1	2	1	2	2	4	-	-	-	-	-	-
F 3607 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 10970 (FLIGHT 2)												
A 3460 S	1	2	0	2	0	4	-	-	-	-	-	-
B 3430 S	4	5	0	8	8	20	2.7	22	1	65	825	0
C 3417 D	22	5	11	6	12	41	54.7	32	1	78	234	32
D 3412 D	6	8	9	4	22	47	9.2	31	1	35	665	0
E 3406 S	1	2	1	2	2	4	-	-	-	-	-	-
F 3398 S?	3	10	2	14	28	101	1.7	12	1	9	366	0
G 3380 S	2	9	0	15	29	123	0.6	2	1	10	382	0
H 3367 S?	4	14	0	23	29	186	1.0	4	1	23	492	0
LINE 10980 (FLIGHT 2)												
A 3180 S	1	2	1	2	2	4	-	-	-	-	-	-

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10980	(FLIGHT		2)									
B 3219 S	1	2	1	2	2	4	-	-	-	-	-	-
C 3221 D	13	7	9	7	10	37	18.9	21	1	77	96	38
D 3225 D	6	10	8	11	24	109	5.3	18	1	43	378	1
E 3235 S?	3	10	3	10	27	89	2.1	10	1	19	343	0
LINE 10990	(FLIGHT		2)									
A 3139 S	0	2	0	2	2	4	-	-	-	-	-	-
B 3128 S	1	2	1	2	2	4	-	-	-	-	-	-
C 3122 S	1	2	1	2	2	4	-	-	-	-	-	-
D 3098 S	3	5	0	9	0	69	2.0	20	1	98	954	6
E 3080 S	1	2	1	2	2	4	-	-	-	-	-	-
F 3075 D	7	5	10	5	19	49	13.9	32	1	76	144	33
G 3071 D	12	8	10	5	19	3	17.4	24	1	72	122	32
H 3067 D	4	5	7	7	22	78	7.1	32	1	38	609	0
I 3061 S	3	10	3	15	26	121	1.5	7	1	18	450	0
J 3054 S	1	2	1	2	2	4	-	-	-	-	-	-
K 3036 S	1	2	1	2	2	4	-	-	-	-	-	-
L 3023 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11000	(FLIGHT		2)									
A 2882 S	1	2	1	2	2	4	-	-	-	-	-	-
B 2895 B	5	10	1	8	16	39	2.7	3	1	78	922	0
C 2929 D	8	8	9	13	9	86	7.3	9	1	64	192	19
D 2932 B?	1	2	1	2	2	4	-	-	-	-	-	-
E 2936 B?	7	2	1	11	13	85	6.6	21	1	79	527	7
F 2940 S?	1	2	1	2	2	4	-	-	-	-	-	-
G 2946 S	5	10	4	15	41	101	2.7	9	1	14	503	0
H 2982 S	6	7	1	10	14	37	3.6	12	1	54	814	0
LINE 11010	(FLIGHT		2)									
A 2838 D	11	17	4	13	37	63	4.7	5	1	40	493	0
B 2820 S	2	4	0	6	0	47	3.5	30	1	118	1035	0
C 2814 S	2	5	0	9	0	67	0.7	6	1	59	787	0
D 2795 B?	1	2	1	2	2	4	-	-	-	-	-	-
E 2792 D	13	30	11	38	48	294	4.1	4	1	31	187	0
F 2787 D	14	6	13	25	48	179	11.5	19	1	60	266	16
G 2774 B?	5	9	5	21	54	79	3.2	11	1	22	567	0
H 2769 S	4	14	2	20	22	80	1.7	2	1	11	425	0
I 2760 S	1	2	0	2	2	4	-	-	-	-	-	-
J 2741 S	2	10	0	12	20	34	1.9	11	1	22	543	0
K 2722 S	1	2	0	2	2	4	-	-	-	-	-	-

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11020	(FLIGHT	2)										
A 2608 D	8	13	6	9	28	32	5.1	2	1	51	477	0
B 2613 S	1	2	0	2	2	4	-	-	-	-	-	-
C 2626 S	3	4	0	5	0	41	5.0	27	1	139	1035	0
D 2639 D	1	2	1	2	2	4	-	-	-	-	-	-
E 2642 D	9	12	8	17	11	103	5.2	9	1	67	193	23
F 2646 D	9	5	8	6	11	24	15.0	32	1	57	308	12
G 2659 S	5	10	4	12	37	72	3.2	9	1	23	517	0
H 2682 S	4	7	0	11	17	58	3.0	12	1	35	725	0
I 2695 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11030	(FLIGHT	2)										
A 2566 D	0	8	0	6	7	54	0.5	1	1	122	1035	0
B 2550 D	14	15	6	12	40	54	7.9	10	1	45	590	0
C 2543 S?	1	6	3	5	6	38	4.4	23	1	201	1035	0
D 2527 S	2	2	0	6	0	55	6.6	42	1	189	1035	0
E 2509 S?	3	11	7	14	30	30	3.4	12	1	96	954	3
F 2502 D	22	14	14	20	48	139	14.3	21	1	41	317	4
G 2498 D	14	5	12	14	30	115	18.1	22	1	107	126	61
H 2482 D	7	10	3	12	14	98	4.1	18	1	33	669	0
I 2475 S	1	2	1	2	2	4	-	-	-	-	-	-
J 2453 S	1	2	0	2	2	4	-	-	-	-	-	-
K 2433 S?	5	5	0	8	14	47	3.6	30	1	51	751	0
LINE 11040	(FLIGHT	2)										
A 2289 S?	1	2	0	2	0	4	-	-	-	-	-	-
B 2301 D	12	13	6	15	34	42	6.3	6	1	30	446	0
C 2336 D	17	11	15	6	26	78	21.5	14	1	79	130	36
D 2340 D	18	6	15	5	26	8	46.8	25	1	92	109	50
E 2350 S?	1	2	1	2	2	4	-	-	-	-	-	-
F 2390 B	6	6	3	8	8	47	5.3	28	1	47	674	0
LINE 11050	(FLIGHT	2)										
A 2266 D	6	14	0	6	24	17	2.7	4	1	93	972	0
B 2256 S	1	2	0	2	2	4	-	-	-	-	-	-
C 2249 D	18	16	10	18	59	45	9.6	13	1	41	248	3
D 2242 S	3	5	6	5	25	28	4.8	30	1	110	1035	0
E 2219 D	4	6	4	4	8	66	5.1	41	1	217	611	79
F 2211 S	1	2	0	2	2	4	-	-	-	-	-	-
G 2205 D	23	6	16	5	39	41	57.8	26	1	73	147	32
H 2200 D	25	11	16	14	39	74	26.3	20	1	62	191	21
I 2187 D	7	4	3	12	27	17	6.2	28	1	30	592	0

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11050	(FLIGHT		2)									
J 2169 S	1	2	0	2	2	4	-	-	-	-	-	-
K 2135 D	8	5	3	14	15	87	6.1	28	1	39	704	0
LINE 11060	(FLIGHT		2)									
A 1993 D	6	8	0	8	11	17	3.0	9	1	84	943	0
B 2007 D	13	14	6	2	26	52	10.0	13	1	24	456	0
C 2032 S?	1	2	0	2	0	4	-	-	-	-	-	-
D 2043 D	8	5	8	8	20	39	10.9	22	1	55	314	8
E 2046 D	14	7	8	8	20	39	18.1	19	1	43	444	0
F 2055 B?	5	4	3	2	14	23	10.6	32	1	49	480	0
G 2098 S	5	5	2	6	14	30	5.1	28	1	60	828	0
LINE 11070	(FLIGHT		2)									
A 1970 D	5	9	0	17	18	114	2.0	6	1	48	752	0
B 1953 D	16	16	6	17	46	104	7.4	15	1	23	565	0
C 1944 S	4	6	4	9	16	61	3.2	19	1	69	850	0
D 1925 S?	1	2	0	0	2	4	-	-	-	-	-	-
E 1909 D	5	13	3	20	37	129	2.0	0	1	45	331	4
F 1905 D	14	12	6	20	37	129	6.9	19	1	25	566	0
G 1894 B?	1	2	1	2	2	4	-	-	-	-	-	-
H 1892 B?	7	5	5	3	17	23	11.0	29	1	49	483	0
I 1883 S	4	9	0	16	31	140	1.5	3	1	18	536	0
J 1865 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11080	(FLIGHT		2)									
A 1652 S	5	4	0	5	5	25	5.8	16	1	93	1035	0
B 1658 S	4	1	2	3	3	14	13.6	41	1	89	1014	0
C 1667 D	7	6	2	8	15	29	5.8	12	1	40	785	0
D 1674 S?	4	4	0	4	6	15	3.1	18	1	71	922	0
E 1688 B?	5	5	2	5	6	24	6.6	24	1	69	790	0
F 1699 D	6	5	8	13	27	73	7.0	16	1	59	352	9
G 1703 D	12	9	8	13	27	73	10.2	14	1	27	395	0
H 1711 S	7	2	4	2	7	8	28.2	35	1	59	277	11
I 1722 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11090	(FLIGHT		2)									
A 1628 S?	1	2	0	2	2	4	-	-	-	-	-	-
B 1613 D	8	14	5	17	43	79	4.1	7	1	21	539	0
C 1604 S	0	2	0	2	2	4	-	-	-	-	-	-
D 1585 D	8	9	4	8	28	43	5.4	23	1	64	814	0
E 1568 D	25	17	12	24	67	152	12.7	9	1	35	277	0

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LINE 11090	(FLIGHT		2)									
F 1557 B?	5	5	5	3	13	8	9.4	31	1	70	528	4
G 1501 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11100	(FLIGHT		2)									
A 1369 S	3	4	1	9	9	40	4.1	19	1	49	801	0
B 1378 D	7	9	2	10	25	22	4.1	11	1	37	391	0
C 1389 S	3	6	0	11	12	37	1.3	8	1	47	744	0
D 1404 E	4	5	0	9	12	65	3.6	17	1	76	903	0
E 1415 D	9	8	6	18	45	105	5.7	7	1	32	337	0
F 1417 S?	1	2	1	2	2	4	-	-	-	-	-	-
G 1423 B?	6	5	6	14	28	81	5.7	7	1	58	529	0
H 1468 S?	4	7	0	6	8	50	2.3	6	1	89	985	0
LINE 11110	(FLIGHT		2)									
A 1322 D	9	9	5	9	14	27	7.0	16	1	35	735	0
B 1280 S	6	6	2	9	21	54	4.3	25	1	25	614	0
C 1273 B?	1	2	1	2	2	4	-	-	-	-	-	-
D 1271 S	1	2	1	2	2	4	-	-	-	-	-	-
E 1266 S?	1	2	1	2	2	4	-	-	-	-	-	-
F 1244 S	3	4	0	4	12	34	4.9	43	1	69	831	0
LINE 11120	(FLIGHT		2)									
A 1073 D	1	2	1	2	2	3	-	-	-	-	-	-
B 1082 D	3	4	2	7	9	63	2.9	23	1	43	754	0
C 1112 D	13	4	12	3	7	105	44.7	25	1	76	104	36
D 1117 D	7	5	12	7	6	21	14.4	20	1	46	318	0
LINE 11130	(FLIGHT		2)									
A 1037 B?	1	2	0	2	2	4	-	-	-	-	-	-
B 1024 D	7	11	4	10	26	33	4.5	16	1	33	701	0
C 1014 D	4	8	2	4	13	20	3.1	21	1	47	754	0
D 994 S	4	4	0	3	4	28	3.6	39	1	69	843	0
E 987 E?	3	8	0	14	25	107	1.9	4	1	22	616	0
F 979 D	20	4	21	3	21	60	136.9	23	1	73	96	35
G 973 D	12	8	21	5	10	56	27.7	24	1	68	89	32
H 924 S	1	2	0	2	2	4	-	-	-	-	-	-
I 916 B?	2	2	0	2	5	17	5.5	46	1	123	1035	0
J 909 S?	3	4	0	5	5	26	2.9	33	1	78	871	0
LINE 11140	(FLIGHT		2)									
A 778 B?	5	5	3	4	8	21	6.2	23	1	46	799	0

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11140	(FLIGHT 2)											
B 787 B?	5	7	3	4	12	24	4.5	21	1	53	771	0
C 803 B?	1	2	1	2	2	4	-	-	-	-	-	-
D 811 S	1	2	1	2	2	4	-	-	-	-	-	-
E 815 D	8	5	20	6	6	47	27.3	23	1	73	91	35
F 819 D	14	6	20	8	23	25	33.7	19	1	45	207	5
G 872 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11150	(FLIGHT 2)											
A 658 D	4	6	1	3	10	5	3.3	0	1	81	1035	0
B 649 D	4	5	1	3	17	13	3.4	12	1	85	648	0
C 630 S?	1	2	1	2	2	4	-	-	-	-	-	-
D 619 S	1	2	1	2	2	4	-	-	-	-	-	-
E 612 D	8	4	10	3	9	10	25.9	22	1	51	332	2
F 549 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11160	(FLIGHT 2)											
A 432 D	1	6	0	5	11	10	2.0	6	1	85	972	0
B 446 S?	1	3	0	5	13	33	2.4	18	1	55	834	0
C 460 D	7	5	8	9	32	3	9.7	18	1	35	659	0
LINE 11170	(FLIGHT 2)											
A 360 D	1	7	0	4	11	8	1.7	10	1	56	811	0
B 344 B?	1	2	1	2	2	4	-	-	-	-	-	-
C 337 S?	1	2	0	2	2	4	-	-	-	-	-	-
D 325 D	4	8	2	4	13	22	3.1	18	1	30	703	0
LINE 11180	(FLIGHT 2)											
A 134 S	1	2	1	2	2	4	-	-	-	-	-	-
B 160 B?	2	3	2	6	11	41	5.4	36	1	54	799	0
C 166 D	3	4	3	7	20	30	3.5	25	1	34	723	0
D 176 D	3	6	1	6	9	11	2.3	7	1	37	761	0
LINE 11190	(FLIGHT 1)											
A 194 S	5	4	0	4	19	21	3.6	46	1	22	501	0
B 229 S	4	6	0	10	15	84	2.2	13	1	29	685	0
C 230 B?	1	2	0	2	2	4	-	-	-	-	-	-
D 239 B?	1	2	1	2	2	4	-	-	-	-	-	-
E 252 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11201	(FLIGHT 1)											
A 5670 S	0	4	1	7	12	43	0.5	0	1	42	719	0

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11201	(FLIGHT		1)									
B 5658 S	1	2	1	2	2	4	-	-	-	-	-	-
C 5655 S?	1	2	1	2	2	2	-	-	-	-	-	-
LINE 11210	(FLIGHT		1)									
A 837 S	1	2	0	2	2	4	-	-	-	-	-	-
B 843 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11220	(FLIGHT		1)									
A 983 S	1	2	0	2	2	4	-	-	-	-	-	-
B 976 S?	1	2	1	2	2	4	-	-	-	-	-	-
C 956 S?	4	4	0	5	9	36	2.6	15	1	60	867	0
D 945 S	1	2	0	2	2	4	-	-	-	-	-	-
E 920 S?	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11230	(FLIGHT		1)									
A 1068 S?	5	6	0	6	16	13	2.5	21	1	38	719	0
B 1110 B?	7	5	2	8	3	44	6.6	23	1	38	744	0
C 1134 S	1	2	0	2	2	4	-	-	-	-	-	-
D 1146 S	1	2	0	2	2	4	-	-	-	-	-	-
E 1167 S	5	3	0	5	15	20	5.3	28	1	57	846	0
LINE 11240	(FLIGHT		1)									
A 1284 S	1	2	1	2	2	4	-	-	-	-	-	-
B 1278 B?	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11250	(FLIGHT		1)									
A 1420 D	9	10	14	14	48	39	8.7	4	1	53	111	15
B 1450 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11260	(FLIGHT		1)									
A 1679 S	1	2	0	2	2	4	-	-	-	-	-	-
B 1665 D	9	9	5	9	11	5	6.9	9	1	29	733	0
C 1618 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11270	(FLIGHT		1)									
A 1797 D	15	17	16	15	43	30	10.1	6	1	22	431	0
B 1871 S	5	3	0	6	1	24	3.5	27	1	59	834	0
LINE 11280	(FLIGHT		1)									
A 1984 D	8	9	2	9	31	14	5.5	22	1	43	736	0
B 1968 S	1	2	0	2	2	4	-	-	-	-	-	-

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● 1057

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11280	(FLIGHT		1)									
C 1948 S	6	5	0	9	5	77	3.4	18	1	54	809	0
D 1942 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11290	(FLIGHT		1)									
A 2073 S	7	3	0	6	14	53	9.0	39	1	30	695	0
B 2078 S	7	6	0	9	17	66	3.7	16	1	39	746	0
C 2091 S?	1	2	0	2	2	4	-	-	-	-	-	-
D 2099 S	5	3	0	5	6	35	6.5	36	1	57	822	0
E 2121 S	1	2	0	2	2	4	-	-	-	-	-	-
F 2139 S	1	2	0	2	0	4	-	-	-	-	-	-
G 2157 S	1	11	0	17	11	149	0.5	1	1	29	630	0
LINE 11300	(FLIGHT		1)									
A 2334 S	1	2	0	2	2	4	-	-	-	-	-	-
B 2324 B	6	7	2	6	7	32	5.3	13	1	89	999	0
C 2282 S	4	4	0	6	0	57	3.2	26	1	59	817	0
LINE 11310	(FLIGHT		1)									
A 2383 S	7	1	1	3	7	17	22.1	39	1	65	895	0
B 2389 S	7	4	1	6	5	45	8.2	22	1	62	874	0
C 2394 S	1	2	1	2	2	4	-	-	-	-	-	-
D 2403 D	5	9	4	5	9	15	4.7	3	1	97	755	0
E 2501 S	4	4	0	5	12	45	3.5	22	1	73	913	0
LINE 11320	(FLIGHT		1)									
A 2634 S	1	2	0	2	2	4	-	-	-	-	-	-
B 2623 D	12	15	5	9	18	37	6.8	6	1	63	529	0
C 2604 S?	1	2	0	2	2	4	-	-	-	-	-	-
D 2566 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11330	(FLIGHT		1)									
A 2740 S	0	3	0	3	5	27	6.4	46	1	45	742	0
B 2758 D	12	13	4	9	17	57	6.7	8	1	51	806	0
C 2779 S?	1	2	1	1	2	4	-	-	-	-	-	-
D 2800 S	5	2	0	1	0	15	12.1	50	1	118	1035	0
E 2820 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11340	(FLIGHT		1)									
A 2989 S	3	1	2	3	7	53	10.3	57	1	82	917	0
B 2980 D	8	9	2	9	13	51	4.9	12	1	54	797	0
C 2961 S?	1	2	0	2	2	4	-	-	-	-	-	-

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11340	(FLIGHT		1)									
D 2938 S	1	2	0	2	2	4	-	-	-	-	-	-
E 2918 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11350	(FLIGHT		1)									
A 3046 D	7	8	2	11	17	73	3.9	14	1	46	767	0
B 3073 S?	6	5	0	7	16	43	5.8	23	1	43	771	0
C 3117 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11360	(FLIGHT		1)									
A 3277 D	10	14	4	6	19	95	6.5	15	1	40	739	0
B 3272 B?	9	4	4	2	9	28	25.5	35	1	32	622	0
C 3253 S	4	4	0	8	20	54	4.0	21	1	48	794	0
D 3214 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11370	(FLIGHT		1)									
A 3345 B?	6	9	0	9	37	73	2.6	9	1	67	850	0
B 3348 S	1	2	1	2	2	4	-	-	-	-	-	-
C 3354 B?	10	4	2	6	13	37	15.6	27	1	25	531	0
D 3364 S	4	5	1	8	17	48	3.0	19	1	29	699	0
E 3388 S	1	2	0	2	2	4	-	-	-	-	-	-
F 3415 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11380	(FLIGHT		1)									
A 3583 S?	1	2	1	2	2	4	-	-	-	-	-	-
B 3577 S	11	7	5	19	23	140	7.1	17	1	21	350	0
C 3575 B?	11	6	5	19	23	140	7.6	18	1	32	283	0
D 3546 S	2	3	0	4	5	34	4.6	35	1	55	828	0
E 3538 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11390	(FLIGHT		1)									
A 3636 S	1	2	0	2	0	4	-	-	-	-	-	-
B 3650 B?	4	7	0	14	2	30	1.7	0	1	63	846	0
C 3660 D	8	3	5	2	6	33	26.9	37	1	37	365	0
D 3688 S	1	2	0	2	1	4	-	-	-	-	-	-
E 3723 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11400	(FLIGHT		1)									
A 3903 S	1	2	0	2	2	4	-	-	-	-	-	-
B 3891 S?	3	6	1	8	2	57	2.2	0	1	73	927	0
C 3886 S	4	4	1	7	2	58	3.3	18	1	41	593	0
D 3873 S	1	2	1	2	2	4	-	-	-	-	-	-

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

	COAXIAL 900 HZ		COPLANAR 900 HZ		COPLANAR 7200 HZ		VERTICAL DIKE		HORIZONTAL SHEET		CONDUCTIVE EARTH	
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND SIEMEN	DEPTH* M	COND SIEMEN	DEPTH M	RESIS OHM-M	DEPTH M
LINE 11410	(FLIGHT	1)										
A 3954 B?	4	5	0	5	22	33	4.3	20	1	66	878	0
B 3975 S	1	2	1	2	2	4	-	-	-	-	-	-
C 3984 S	1	2	0	2	2	4	-	-	-	-	-	-
D 4025 S	0	2	0	2	2	4	-	-	-	-	-	-
LINE 11420	(FLIGHT	1)										
A 4209 S	3	5	0	7	12	33	2.6	14	1	68	871	0
B 4199 B?	3	4	1	7	8	18	2.6	13	1	83	960	0
C 4177 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11430	(FLIGHT	1)										
A 4341 B?	4	11	0	9	13	74	1.7	10	1	40	702	0
B 4353 B?	1	2	0	2	2	4	-	-	-	-	-	-
C 4422 S	3	4	0	4	6	36	6.3	39	1	27	668	0
LINE 11440	(FLIGHT	1)										
A 4610 B?	1	2	1	2	2	4	-	-	-	-	-	-
B 4600 S	5	3	1	2	7	18	8.9	44	1	65	803	0
C 4587 S	1	2	1	2	2	4	-	-	-	-	-	-
D 4581 S	1	2	1	2	2	4	-	-	-	-	-	-
E 4555 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 11450	(FLIGHT	1)										
A 4658 D	9	8	9	15	36	67	7.7	12	1	76	123	34
B 4660 D	9	12	9	15	36	67	6.1	7	1	63	195	19
C 4688 S?	1	2	1	2	2	4	-	-	-	-	-	-
D 4711 S	0	2	0	2	2	4	-	-	-	-	-	-
E 4726 S	1	2	0	2	2	4	-	-	-	-	-	-
F 4754 S	2	9	0	15	13	124	1.4	3	1	28	632	0
LINE 11460	(FLIGHT	1)										
A 4916 S	1	2	1	2	1	4	-	-	-	-	-	-
B 4907 D	9	11	7	11	24	54	6.8	10	1	116	89	72
C 4905 D	9	11	7	11	24	54	6.8	6	1	88	113	44
D 4885 S	1	2	1	2	2	4	-	-	-	-	-	-
LINE 11470	(FLIGHT	1)										
A 4962 D	6	10	4	10	18	59	4.0	11	1	78	223	30
B 4964 D	1	2	1	2	2	4	-	-	-	-	-	-
C 4984 S?	1	2	0	2	2	4	-	-	-	-	-	-
D 4992 S	1	2	1	2	2	4	-	-	-	-	-	-

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND SIEMEN	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND SIEMEN	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 11480	(FLIGHT		1)									
A 5300 S?	0	2	1	2	2	4	-	-	-	-	-	-
B 5215 S?	0	2	1	2	2	4	-	-	-	-	-	-
LINE 11490	(FLIGHT		1)									
A 5358 S?	1	2	1	2	0	4	-	-	-	-	-	-
B 5438 S	0	2	1	2	2	4	-	-	-	-	-	-
LINE 19030	(FLIGHT		3)									
A 7164 S	1	2	0	2	2	4	-	-	-	-	-	-
B 7134 S	1	2	1	2	0	4	-	-	-	-	-	-
C 7110 S	3	3	3	8	15	53	4.7	14	1	49	658	0
D 7105 S	8	3	3	6	17	24	14.5	19	1	59	890	0
LINE 19040	(FLIGHT		3)									
A 7318 S	1	2	0	2	2	4	-	-	-	-	-	-
LINE 19050	(FLIGHT		3)									
A 7047 B?	9	6	7	13	36	70	9.0	0	1	39	641	0

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

Ministry of Northern Development and Mines
Ontario

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

42M12NW0001 2.12321 WEST OF GIFFORD LAKE

900

2.12321

Type of Survey(s): Airborne Geophysical Survey

Township or Area: West of Gifford Lk, Reserve Lk, Rich Lk G-453 G-386 G-388

Claim Holder(s): Pure Gold Resources Inc

Prospector's Licence No.: T-4689

Address: 1375 Main St W North Bay, Ont. P1B 2W7

Survey Company: Aerodat Surveys

Date of Survey (from & to): 12 01 89 / 13 01 89 (Day Mo. Yr.)

Total Miles of line Cut: 533 line km

Name and Address of Author (of Geo-Technical report): 3883 Nashua Dr. Mississauga Ontario L4V 1R3

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	

RECEIVED
1989
MINING LANDS SECTION

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

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.

Mining Claims Traversed (List in numerical sequence)

Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
TB	see claim list attached				

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE
APR 20 1989

Total number of mining claims covered by this report of work: 186

For Office Use Only

Total Days Cr. Recorded: 14,880

Date Recorded: Feb 15/89

Mining Recorder: [signature]

Date Approved as Recorded: 19 April 89

Branch Director: [signature]

Date: Feb 13, 1989

Recorded Holder or Agent (Signature): M Dubeau

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: Noramco Explorations Inc 1375 Main St W North Bay Ont P1B 2W7

Date Certified: Feb 13, 1989

Certified by (Signature): M Dubeau

362 (85/12)

UMFREVILLE LAKE PROPERTY: CLAIM LIST

TB 961077
TB 961078
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TB 961080
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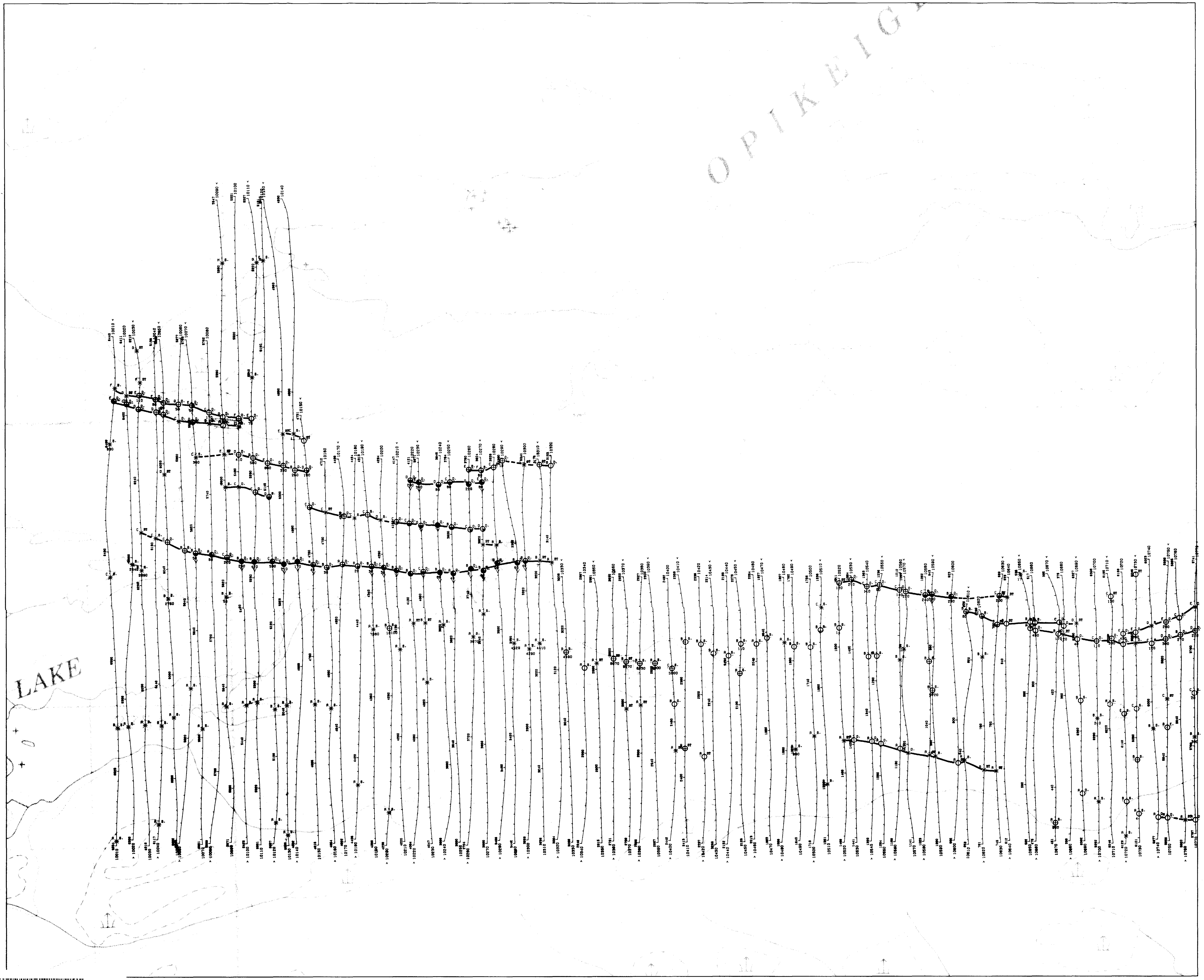
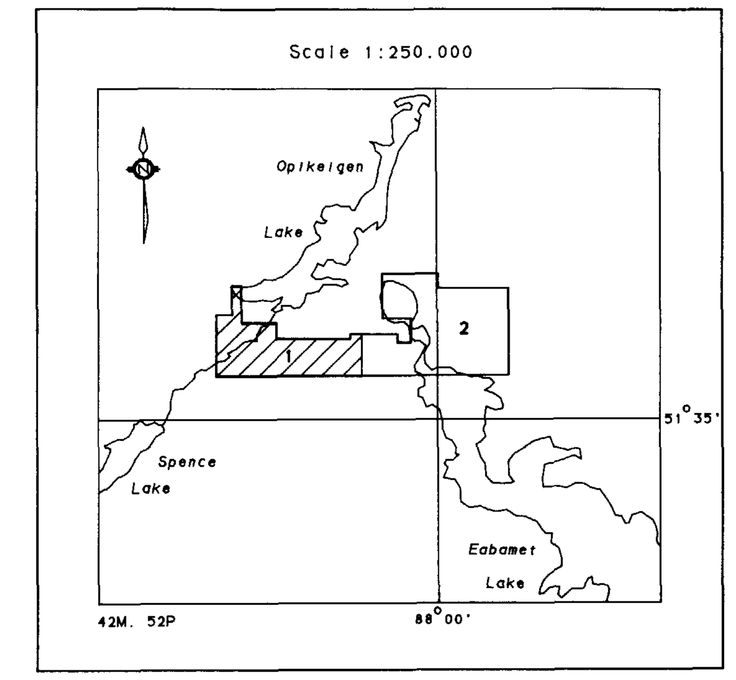
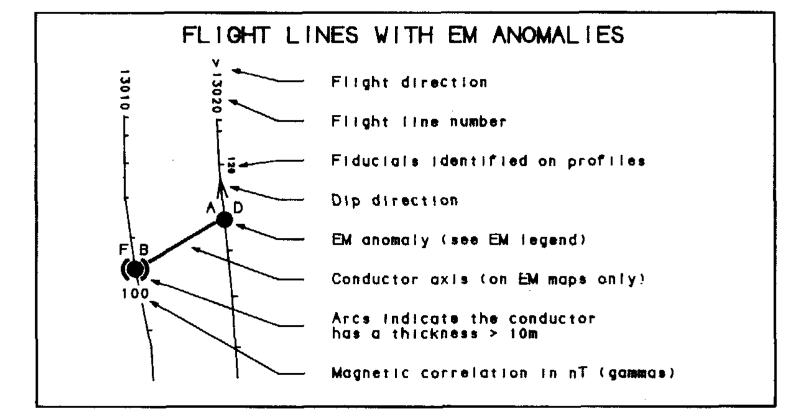






Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◒	20-50 siemens
4	⊕	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — C H.

Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m

Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1438)

ELECTROMAGNETIC ANOMALIES

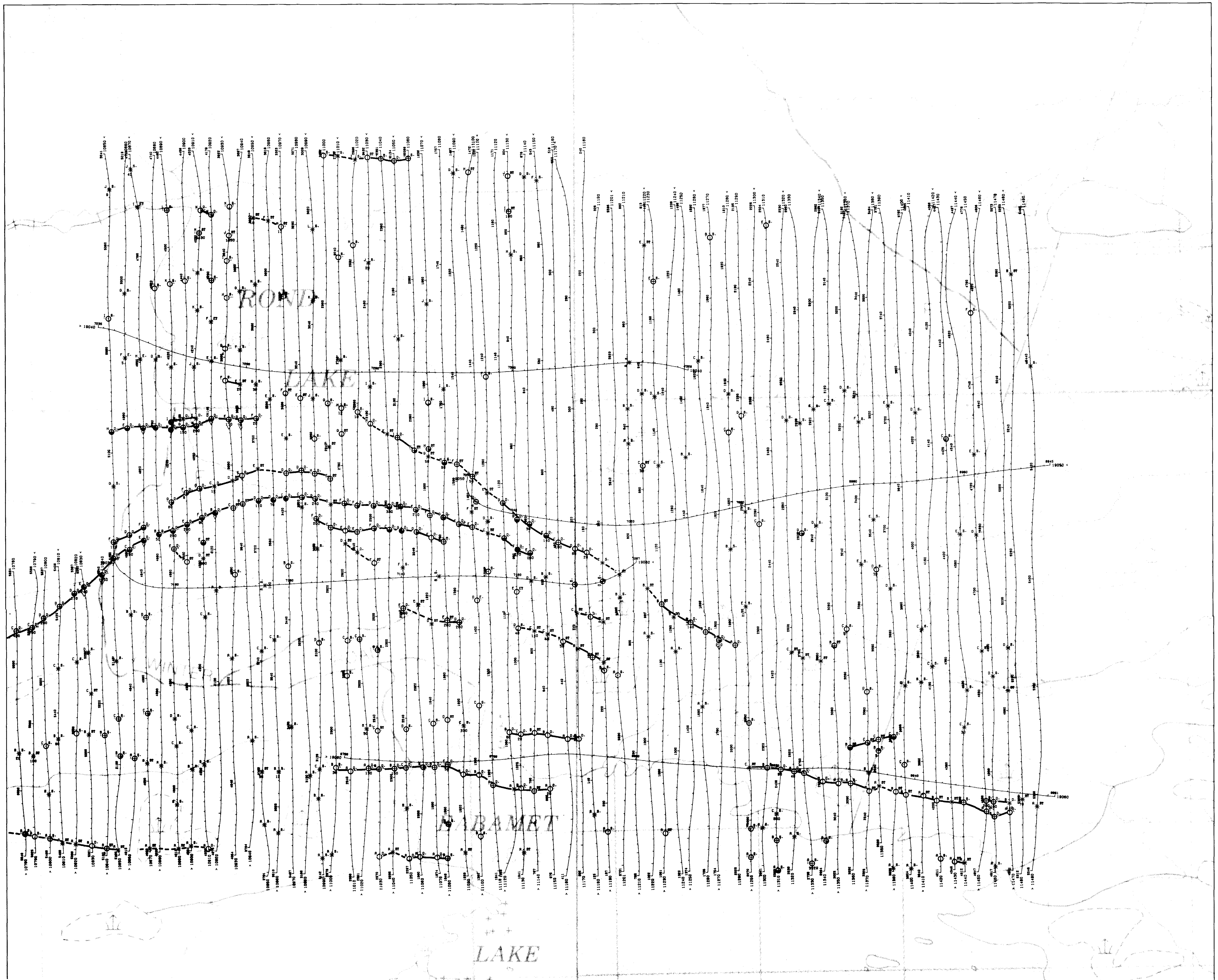
DIGHEM[III] SURVEY	NTS: 42M/13, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 1-1

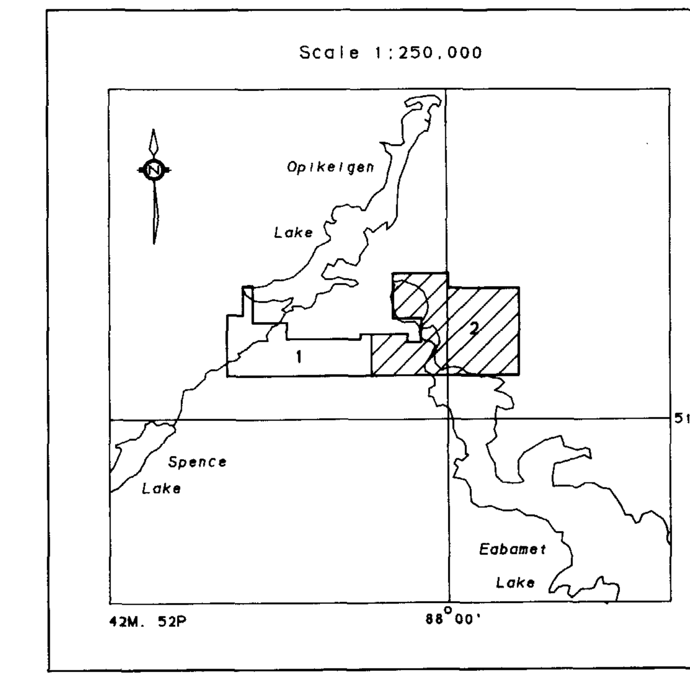
DIGHEM SURVEYS & PROCESSING INC.

0 0.5 1 Km
Scale 1:10000

2.12321

Dighem





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	◔	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — Depth is greater than: 15 m, 30 m, 45 m, 60 m — Inphase and Quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

Interpretive symbol	Conductor ('model')
B.	Bedrock conductor
D.	Narrow bedrock conductor ('thin dike')
S.	Conductive cover ('horizontal thin sheet')
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ('half space')
E.	Edge of broad conductor ('edge of half space')
L.	Culture, e.g. power line, building, fence

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

ELECTROMAGNETIC ANOMALIES

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 2-1

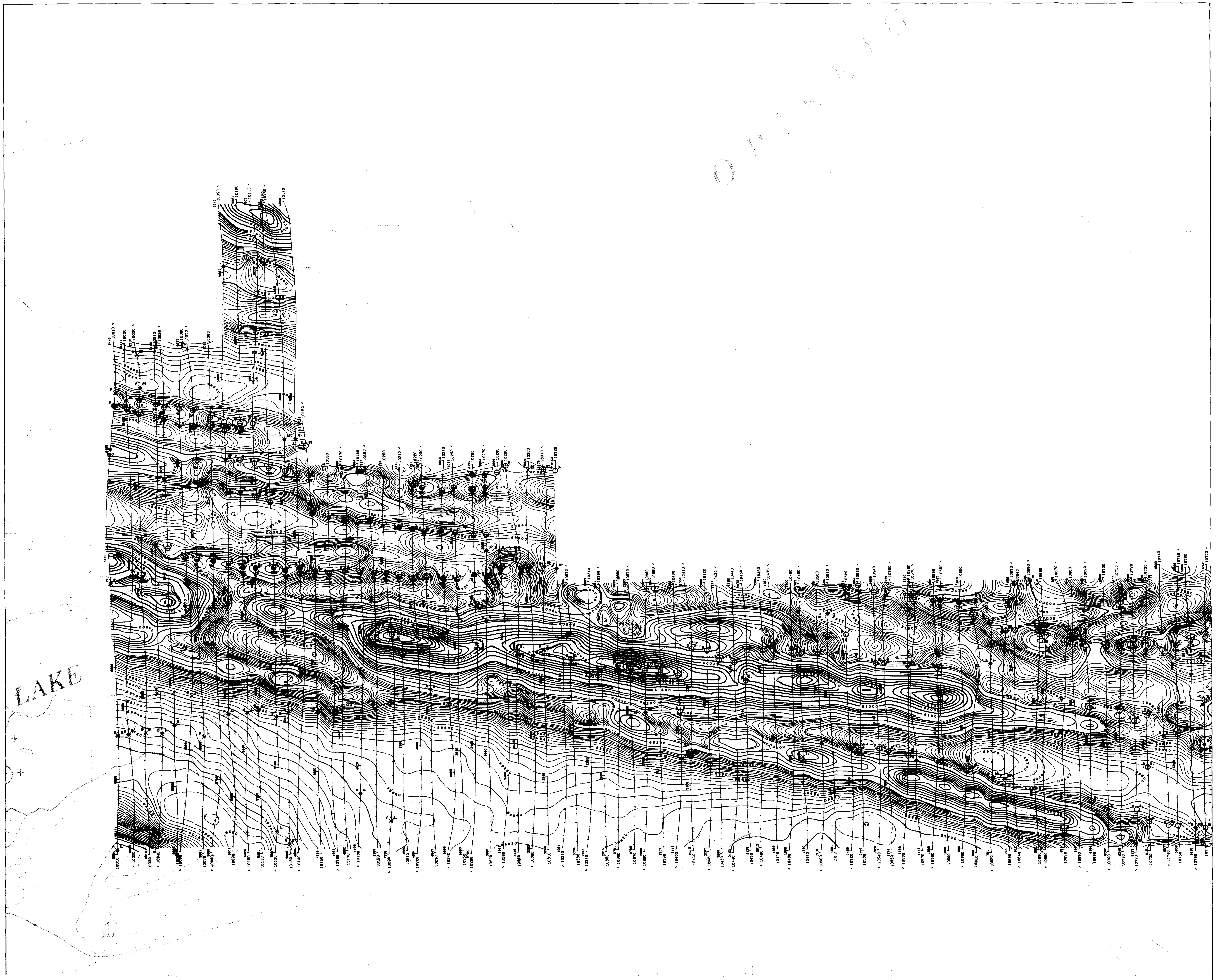
DIGHEM SURVEYS & PROCESSING INC.

0 0.5 1 Km
Scale 1:10000

2.12331

Dighem

210



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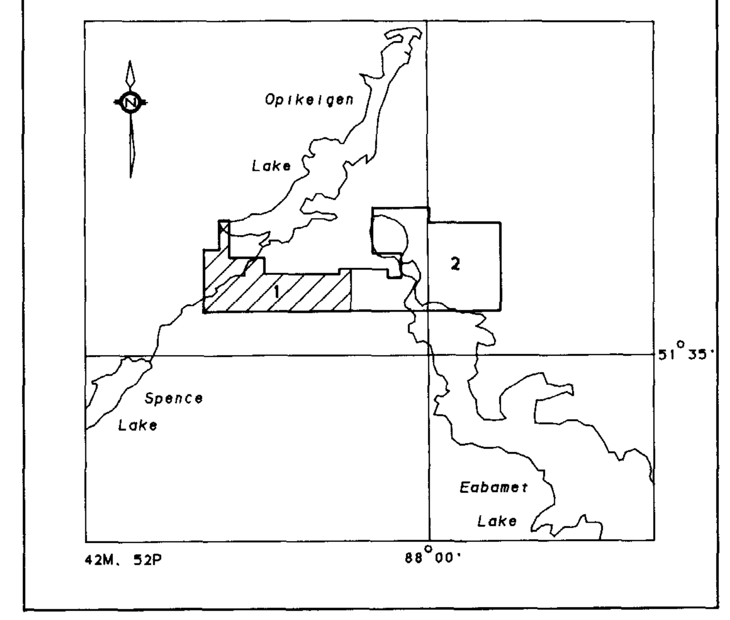


FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	◔	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

Depth is greater than: 15 m, 30 m, 45 m, 60 m

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

TOTAL FIELD CONTOUR INTERVALS

- 500nT
- 100nT
- 20nT
- 10nT
- magnetic low

Magnetic inclination within the survey area: 76 degrees

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

TOTAL FIELD MAGNETICS

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 1-2

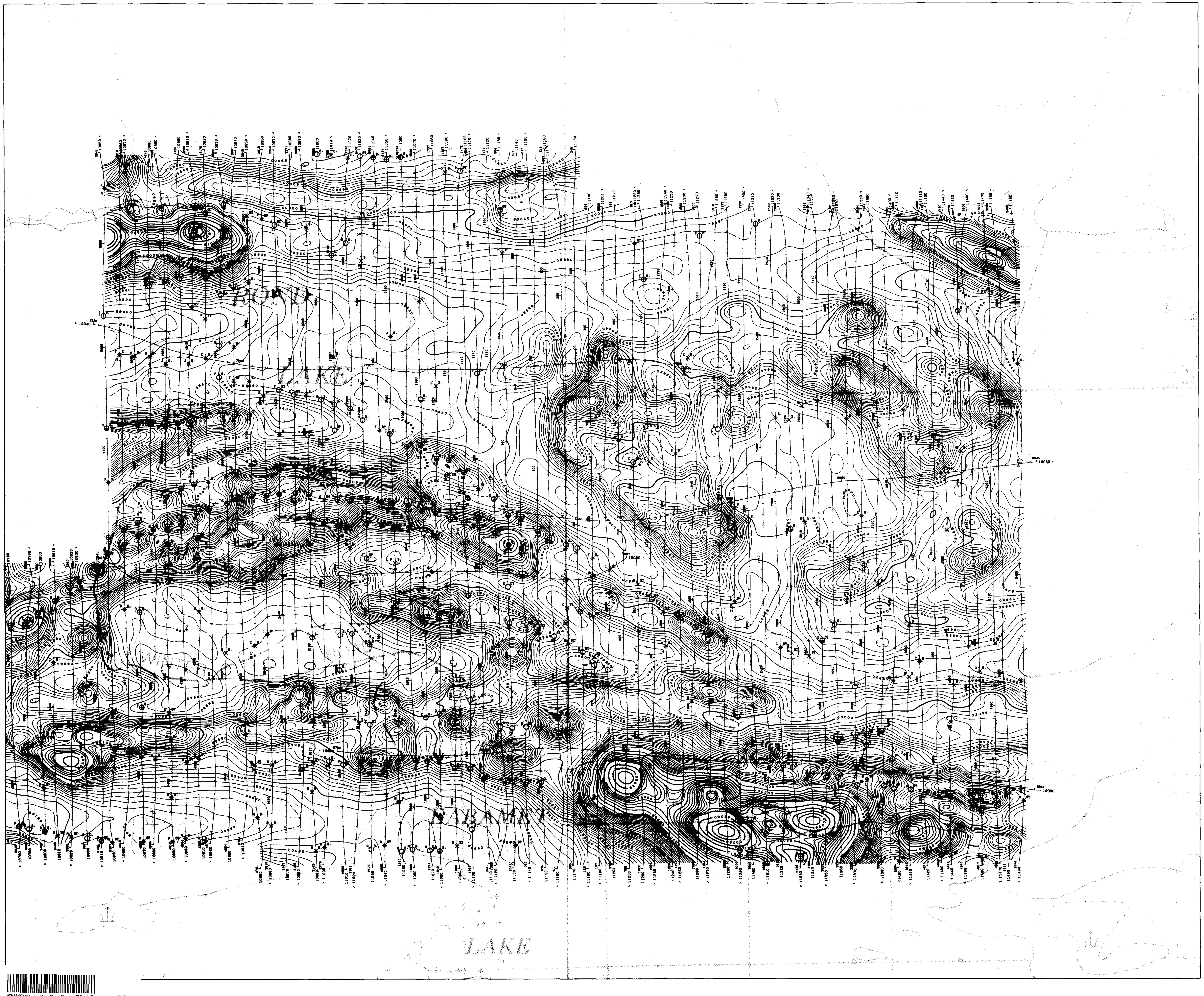
DIGHEM SURVEYS & PROCESSING INC.

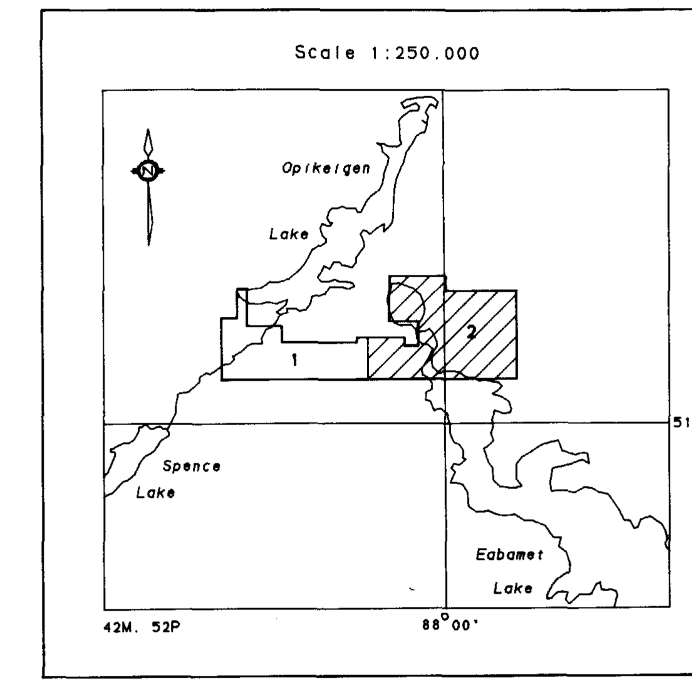
0 — 0.5 — 1 Km
Scale 1:10000

Dighem

2.12321

220





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◒	20-50 siemens
4	⊕	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — C H.

Depth is greater than
· 15 m
: 30 m
⁝ 45 m
⁞ 60 m

Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

TOTAL FIELD CONTOUR INTERVALS

- ------------ 500nT
- ------------ 100nT
- ------------ 20nT
- ------------ 10nT
- ---------- magnetic low

Magnetic inclination within the survey area: 78 degrees

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

TOTAL FIELD MAGNETICS

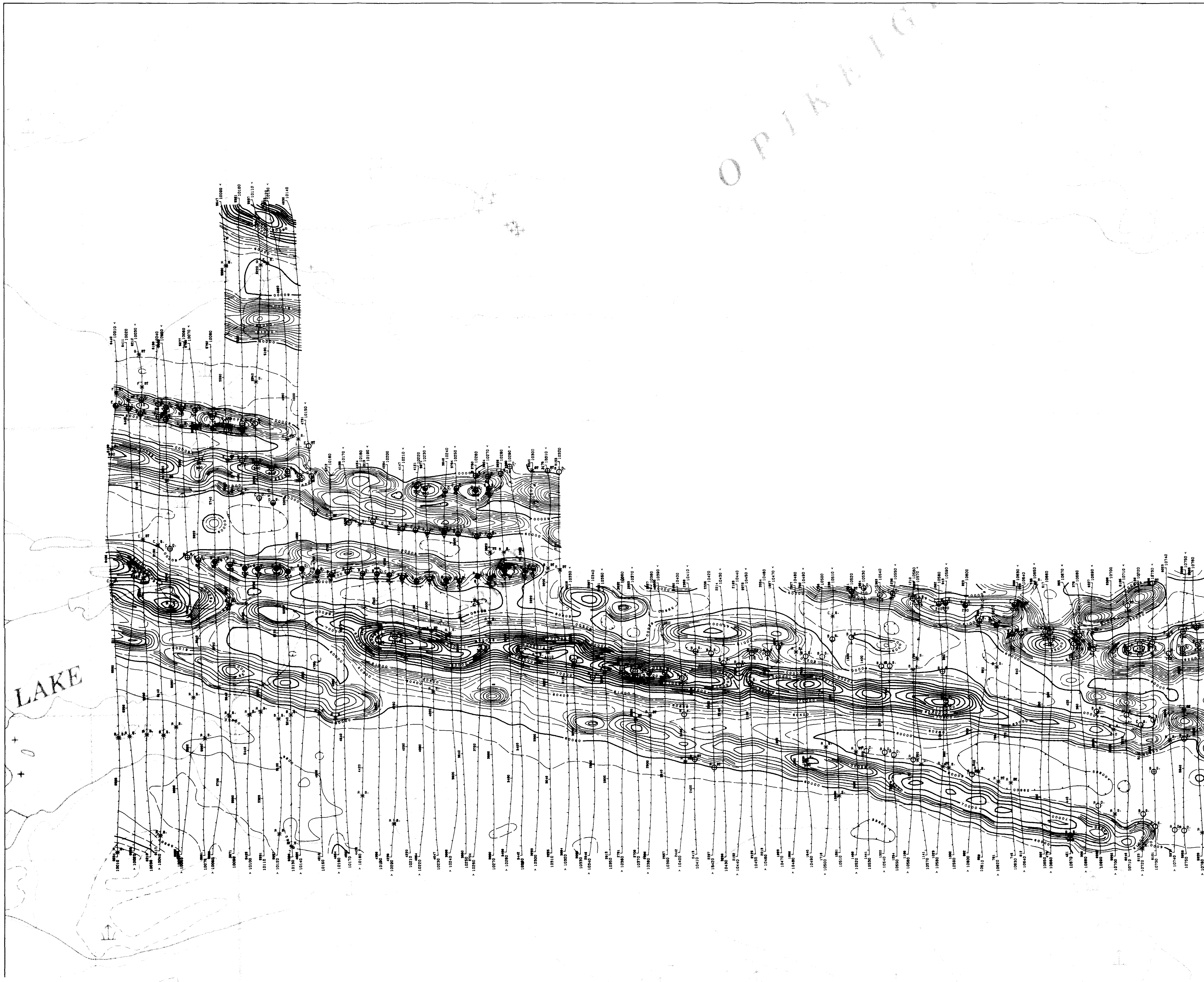
DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 2-2

DIGHEM SURVEYS & PROCESSING INC.

0 0.5 1 Km
Scale 1:10000

Dighem 2.12321

230



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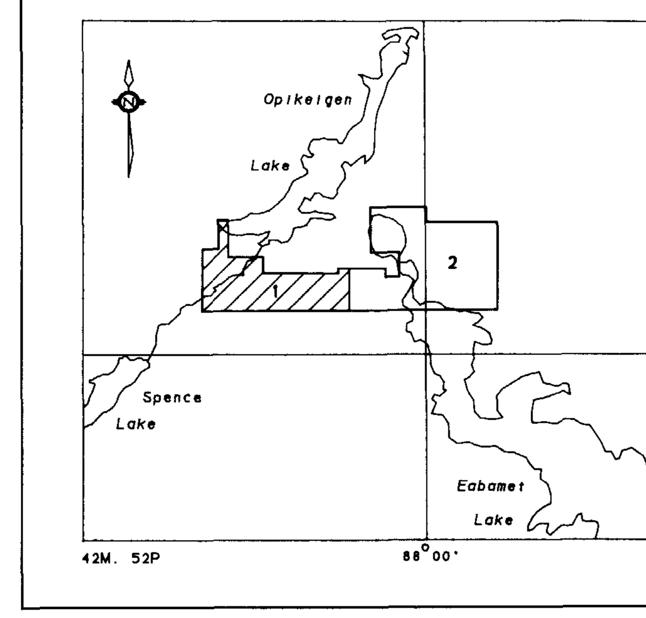
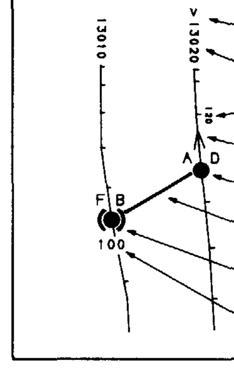


FLIGHT LINES WITH EM ANOMALIES



Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	◔	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of coaxial coil is greater than

Depth is greater than: < 15 m — 5 ppm; ⌒ 30 m — 10 ppm; ⌒ 45 m — 15 ppm; ⌒ 60 m — 20 ppm

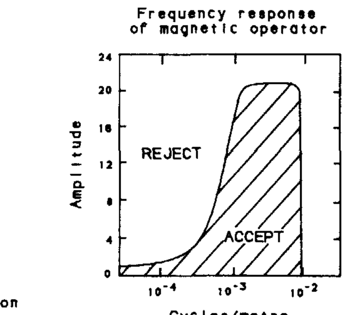
Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

ENHANCED MAGNETIC CONTOURS

Isomagnetic lines (enhanced field)

---5000nT
---1000nT
----200nT
------100nT
--- magnetic depression

Frequency response of magnetic operator



NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

ENHANCED MAGNETICS

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.m.
DATE: JAN. 1989	JOB: 1057	SHEET: 1-3

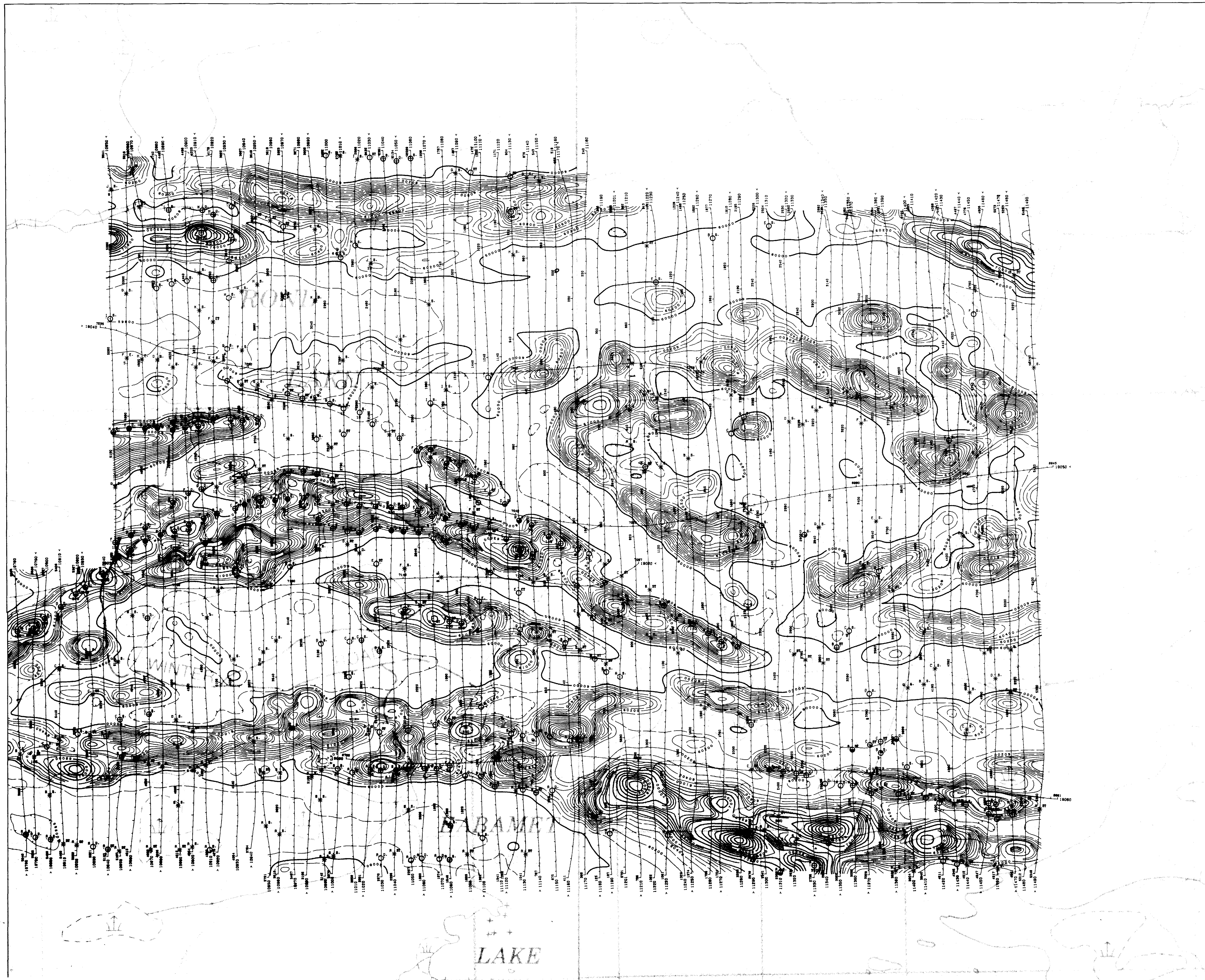
DIGHEM SURVEYS & PROCESSING INC.

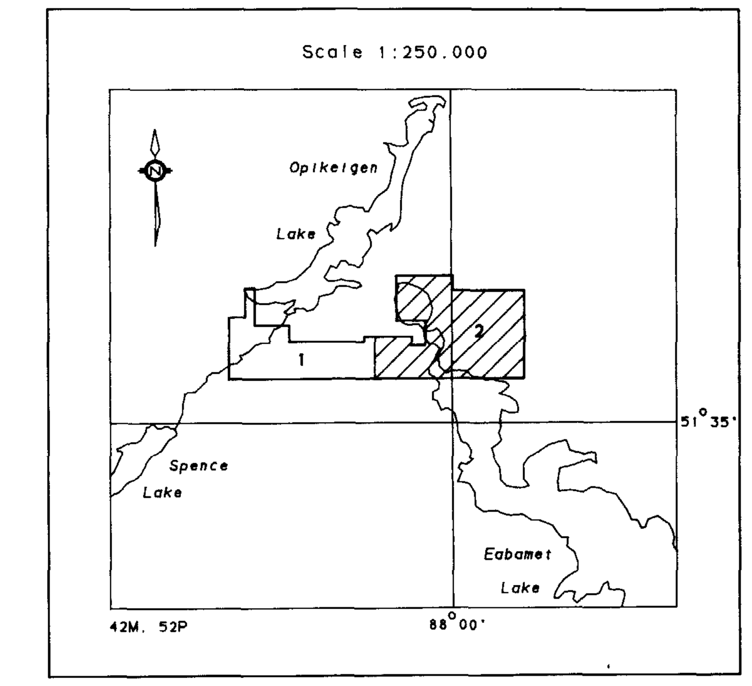
0 0.5 1 Km
Scale 1:10000

2.12321

Dighem

240





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	⊕	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✱	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

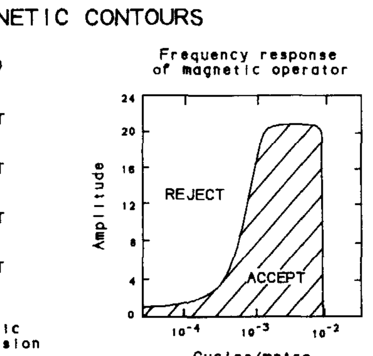
Depth is greater than: 15 m, 30 m, 45 m, 60 m

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

ENHANCED MAGNETIC CONTOURS

Isomagnetic lines (enhanced field)

- ---5000nT
- ---1000nT
- ---200nT
- ---100nT
- --- magnetic depression



NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

ENHANCED MAGNETICS

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.m.
DATE: JAN. 1989	JOB: 1057	SHEET: 2-3

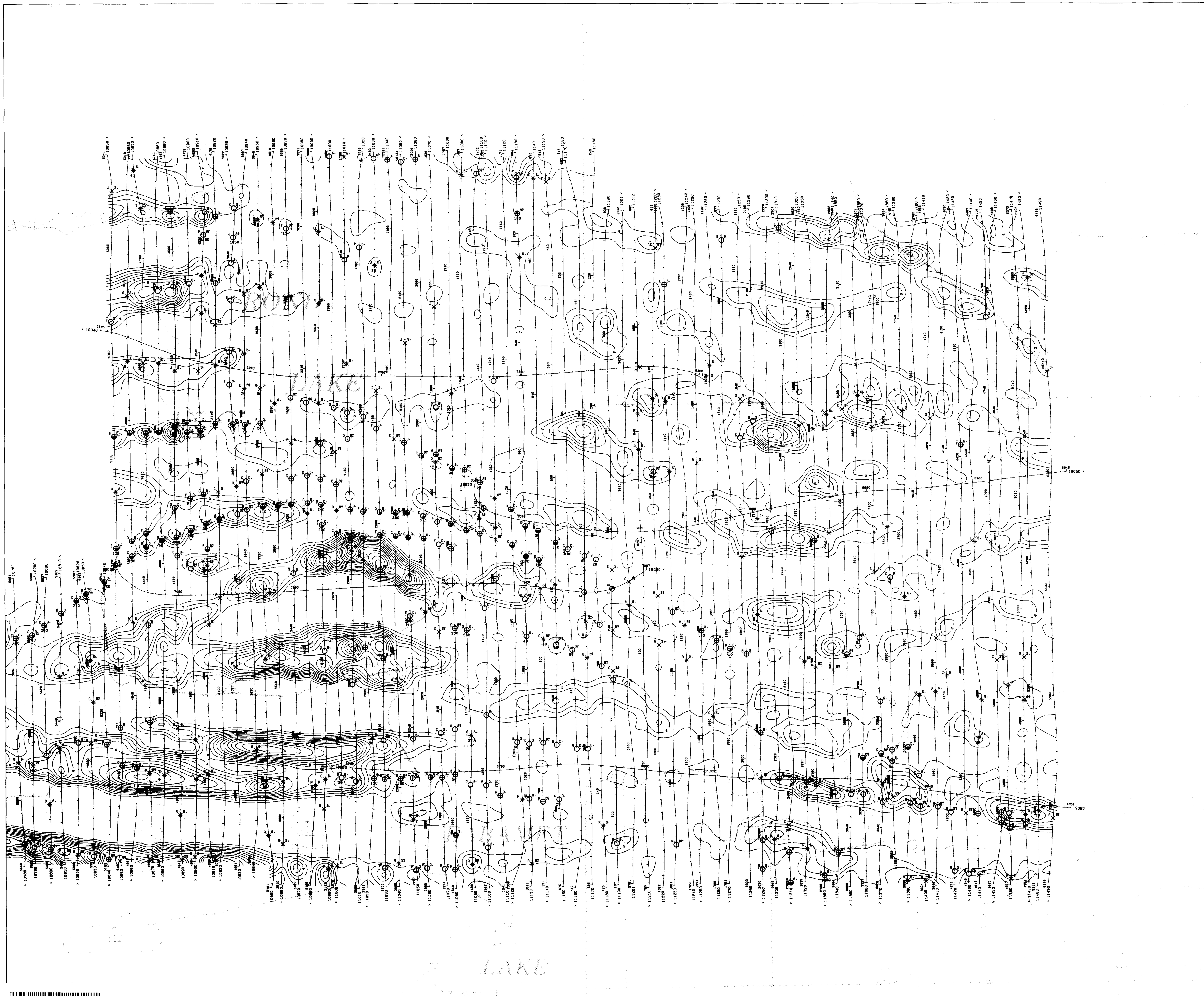
DIGHEM SURVEYS & PROCESSING INC.

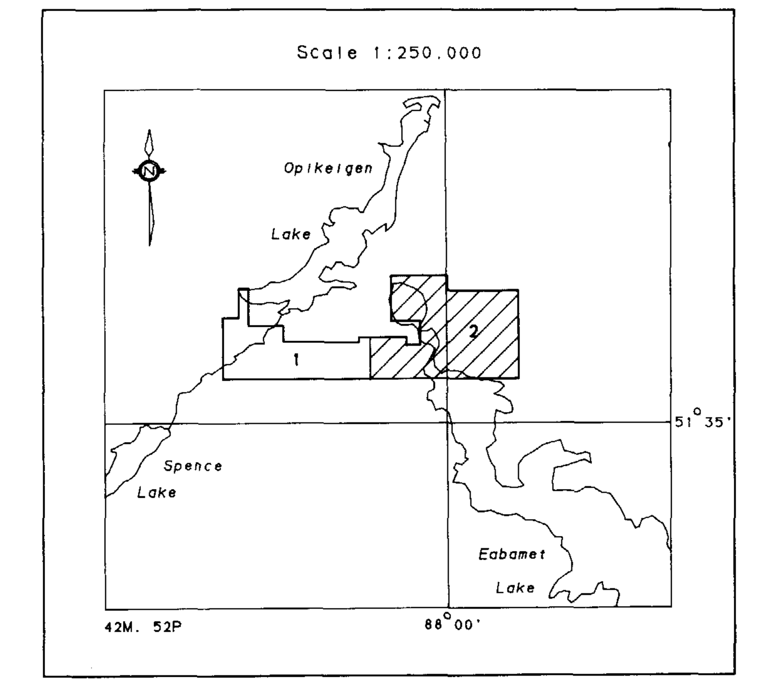
Scale 1:10000 (0 — 0.5 — 1 Km)

Dighem

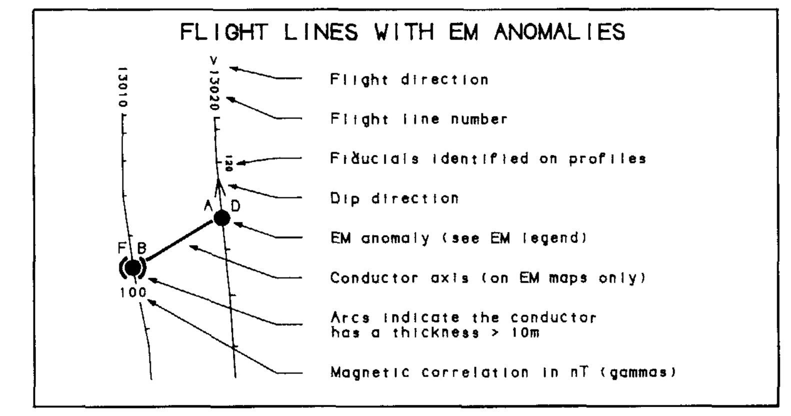
2.12321

250





FLIGHT LINES WITH EM ANOMALIES



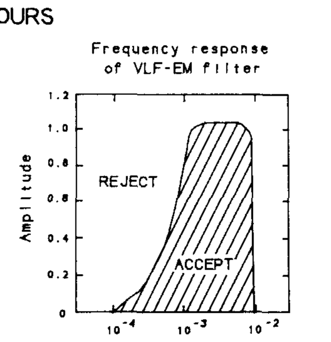
Grade	Anomaly	Conductance
7	●	≥100 siemens
6		50-100 siemens
5		20-50 siemens
4		10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1		<1 siemen
-	*	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of coaxial coil is greater than: ... 5 ppm, ... 10 ppm, ... 15 ppm, ... 20 ppm. Depth is greater than: 15 m, 30 m, 45 m, 60 m.

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

VLF CONTOURS

Contours in percent: 10, 2, 1



VLF STATION

Transmitter	Line
NAA Cutler	All

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

FILTERED VLF

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.m.
DATE: JAN. 1989	JOB: 1057	SHEET: 2-4

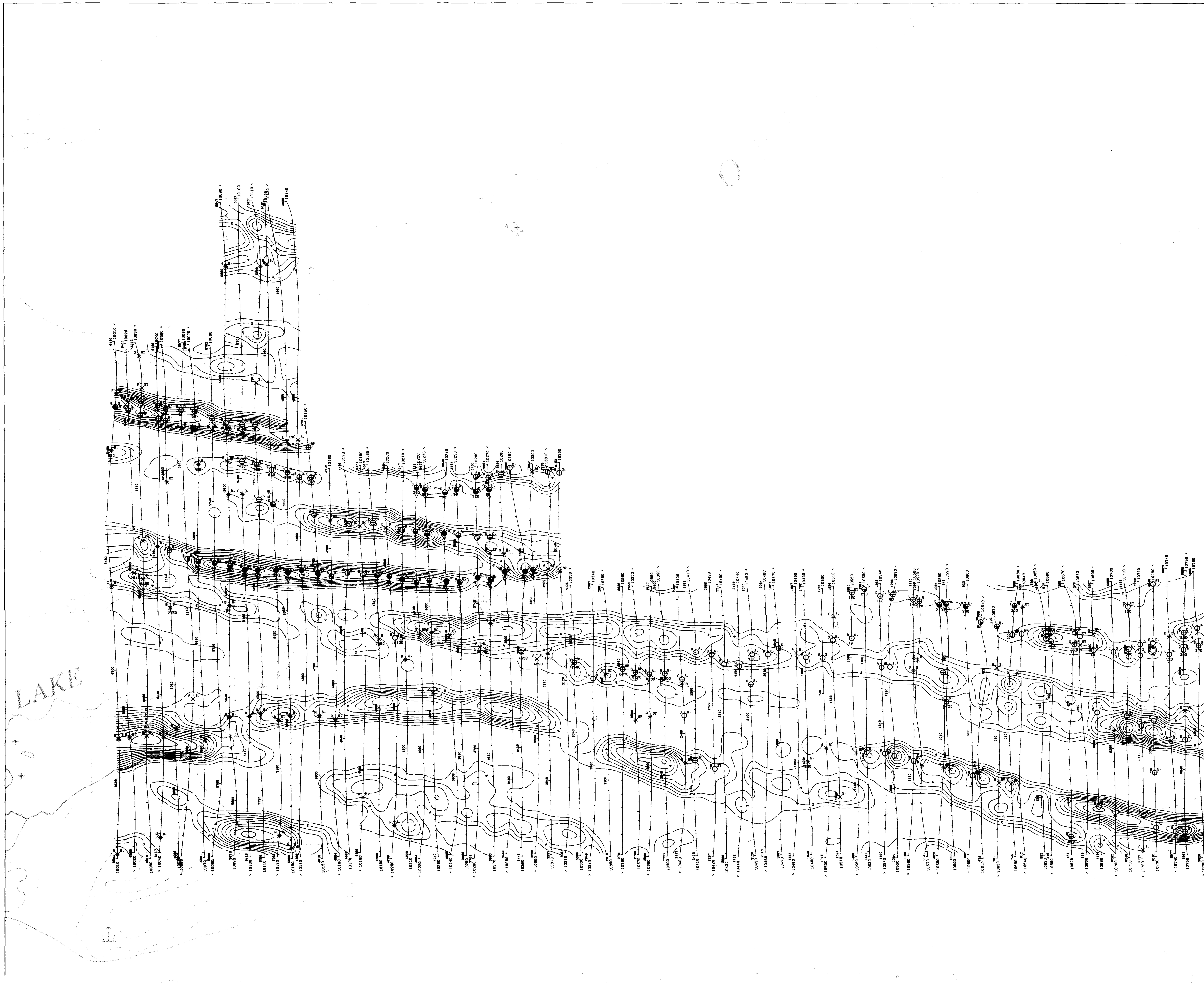
DIGHEM SURVEYS & PROCESSING INC.

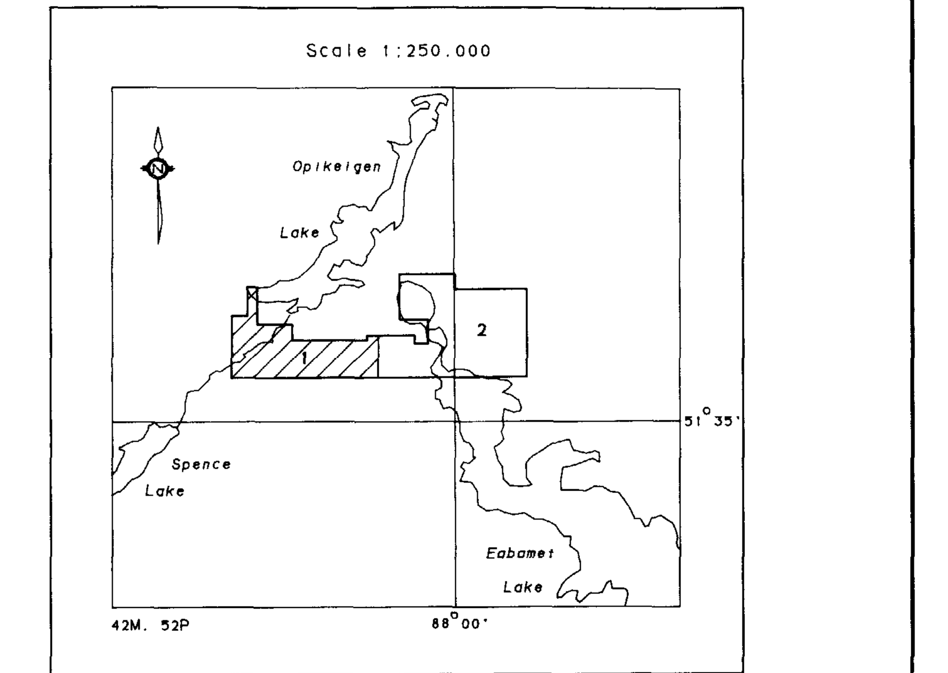
Scale 1:10000 (0 — 0.5 — 1 Km)

Dighem

2.12321

42M12NW0001 2.12321 WEST OF GIFFORD LAKE 260





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	◔	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✳	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of Coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

Depth is greater than: 15 m, 30 m, 45 m, 60 m

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

VLF CONTOURS

Contours in percent: 10, 2, 1

Frequency response of VLF-EM filter

VLF STATION

Transmitter	Line
NAA Cutler	All

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

FILTERED VLF

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 1-4

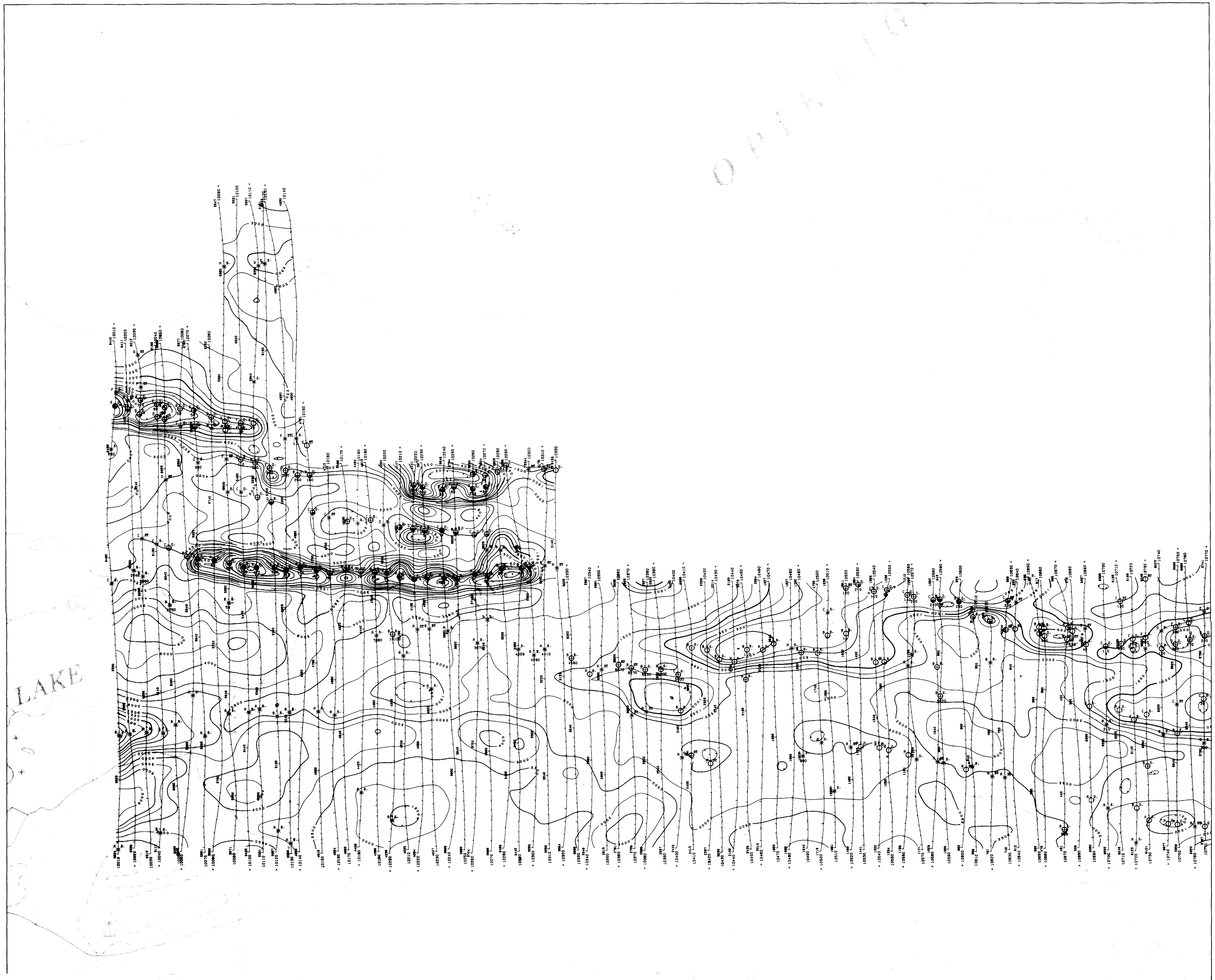
DIGHEM SURVEYS & PROCESSING INC.

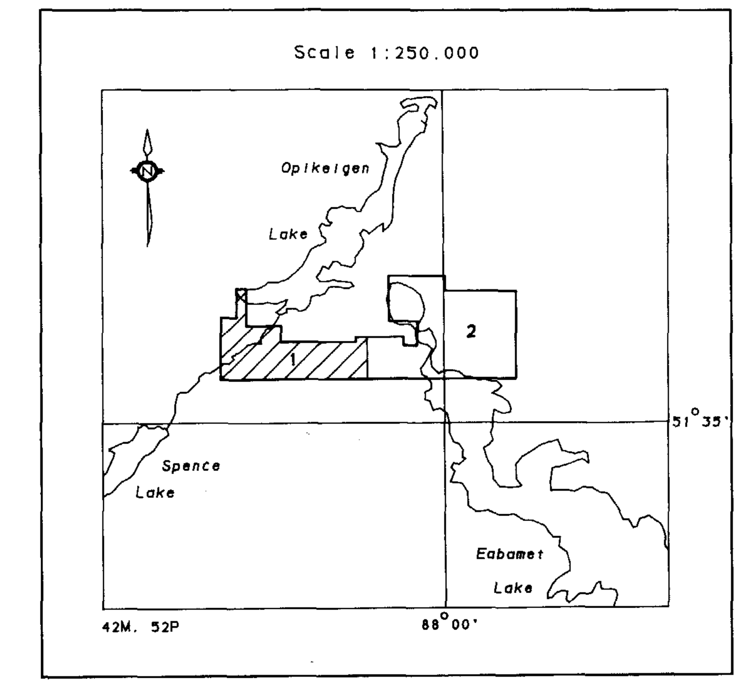
0 — 0.5 — 1 Km
Scale 1:10000

Dighem

2.12321

270





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6	◕	50-100 siemens
5	◑	20-50 siemens
4	⊕	10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1	◌	<1 siemen
-	✱	Questionable anomaly

Anomaly identifier — Interpretive symbol — Inphase and Quadrature of coaxial coil is greater than: . 5 ppm; .. 10 ppm; ... 15 ppm; .... 20 ppm

Depth is greater than: ׀ 15 m; ׀׀ 30 m; ׀ 45 m; ׀ 60 m

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

RESISTIVITY CONTOUR LEVELS

1000, 800, 600, 500, 400, 300, 250, 200, 150, 125, 100

Contours in ohm-m at 10 intervals per decade

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

RESISTIVITY (7200 Hz)

DIGHEM[III] SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.m.
DATE: JAN. 1989	JOB: 1057	SHEET: 1-5

DIGHEM SURVEYS & PROCESSING INC.

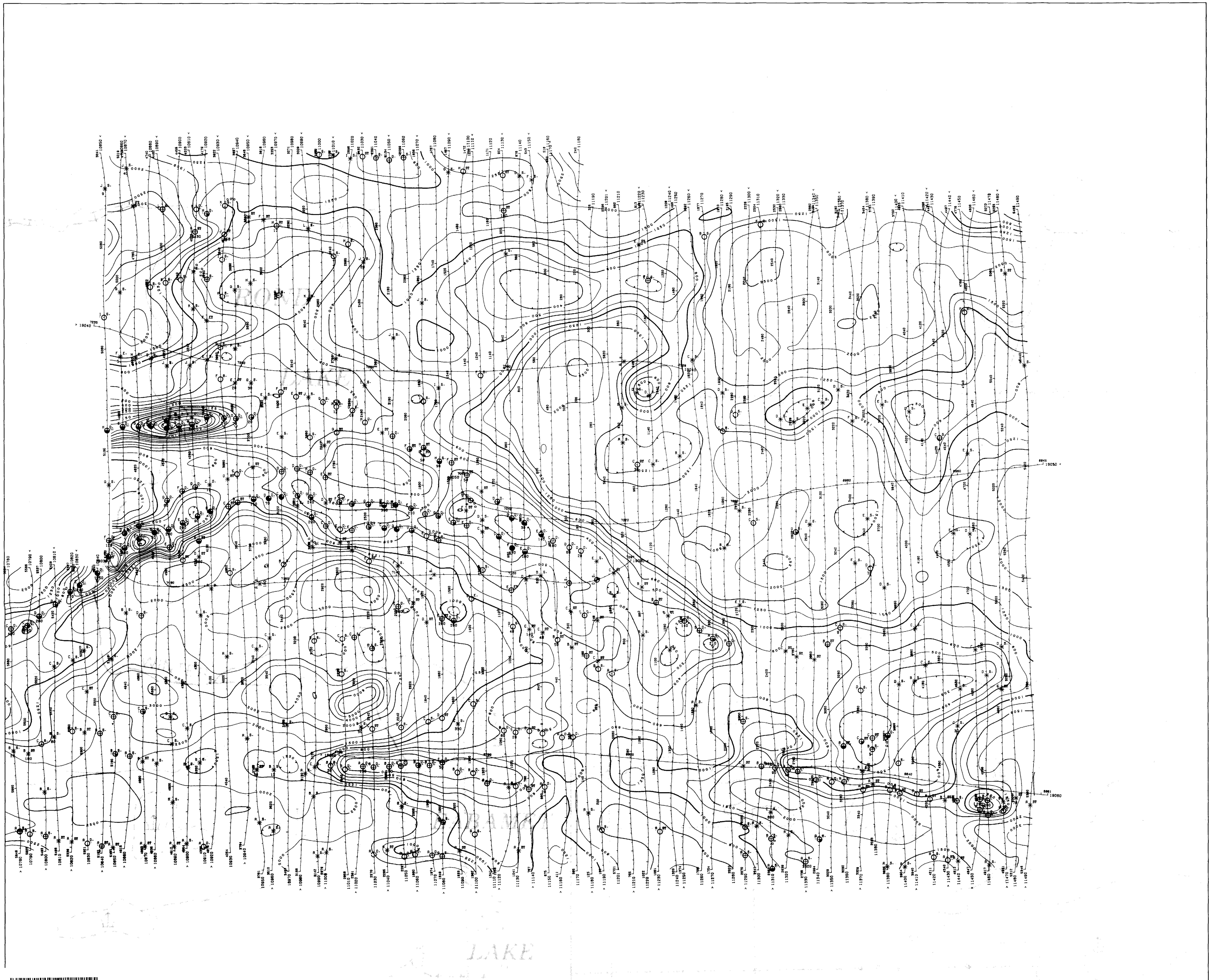
0 0.5 1 Km
Scale 1:10000

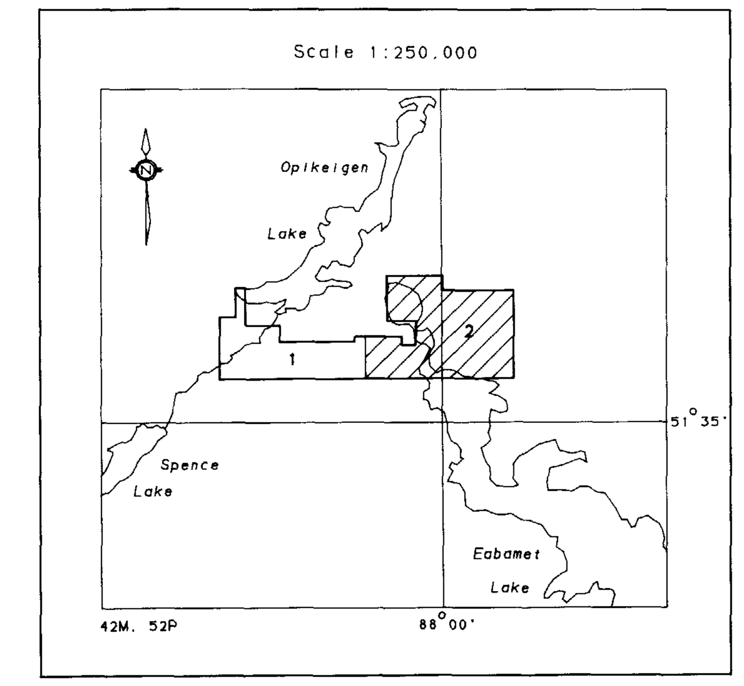
Dighem

2.12321

42M12NW0001 2.12321 WEST OF GIFFORD LAKE

280





FLIGHT LINES WITH EM ANOMALIES

- Flight direction
- Flight line number
- Fiducials identified on profiles
- Dip direction
- EM anomaly (see EM legend)
- Conductor axis (on EM maps only)
- Arcs indicate the conductor has a thickness > 10m
- Magnetic correlation in nT (gammas)

Grade	Anomaly	Conductance
7	●	≥100 siemens
6		50-100 siemens
5		20-50 siemens
4		10-20 siemens
3	⊕	5-10 siemens
2	○	1-5 siemens
1		<1 siemen
-	*	Questionable anomaly

Anomaly identifier — Interpretive symbol

Depth is greater than: 15 m, 30 m, 45 m, 60 m

Inphase and Quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

Interpretive symbol	Conductor ("model")
B.	Bedrock conductor
D.	Narrow bedrock conductor ("thin dike")
S.	Conductive cover ("horizontal thin sheet")
H.	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E.	Edge of broad conductor ("edge of half space")
L.	Culture, e.g. power line, building, fence

RESISTIVITY CONTOUR LEVELS

1000, 800, 600, 500, 400, 300, 250, 200, 150, 125, 100

Contours in ohm-m at 10 intervals per decade

NORAMCO EXPLORATIONS INC.
OPEKEIGAN LAKE PROJECT
(PROJECT 1439)

RESISTIVITY (7200 Hz)

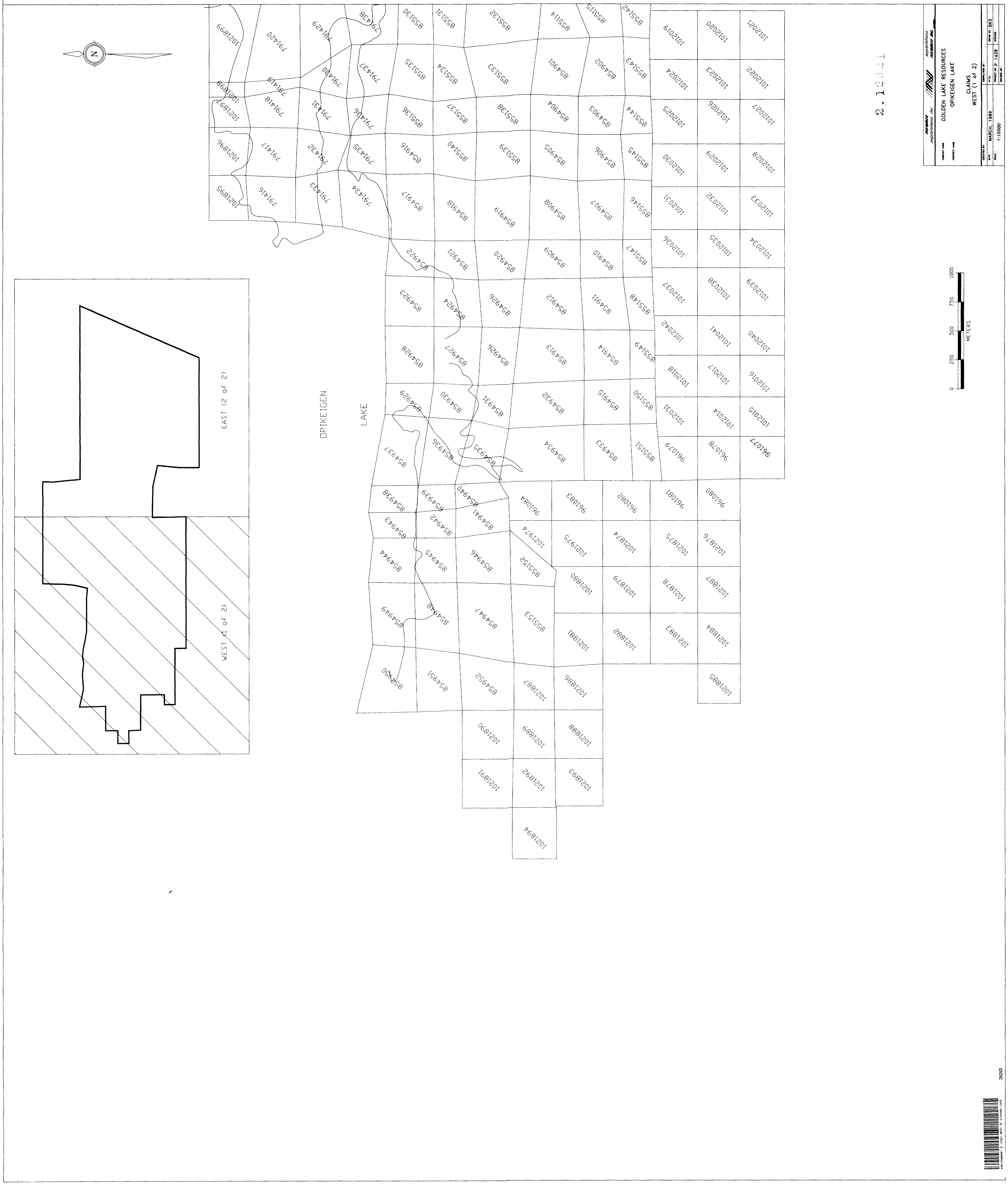
DIGHEM^{III} SURVEY	NTS: 42M/12, 52P/9	GEOPHYSICIST D.M.
DATE: JAN. 1989	JOB: 1057	SHEET: 2-5

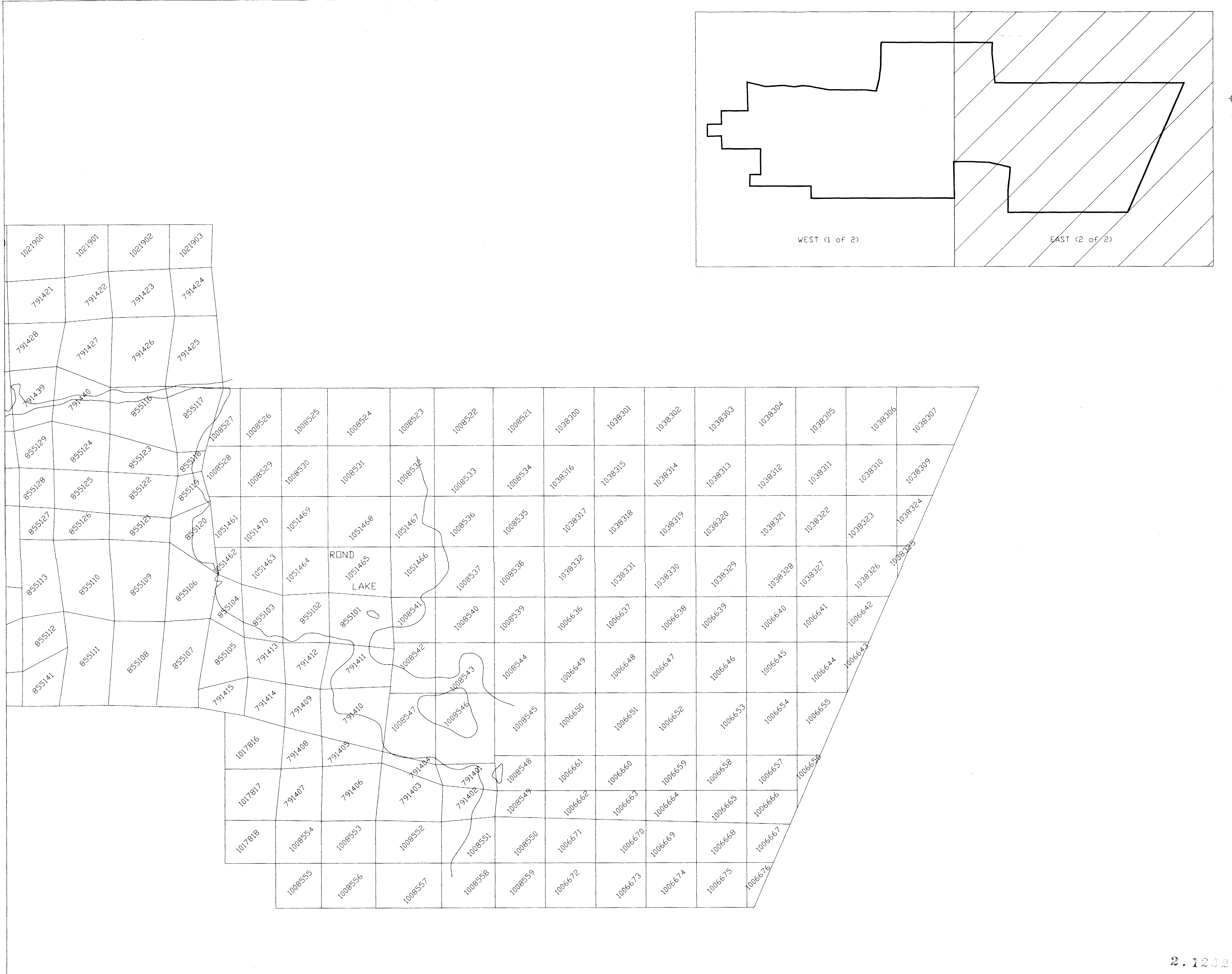
DIGHEM SURVEYS & PROCESSING INC.

0 0.5 1 Km
Scale 1:10000

Dighem 2.1

42M12NW0001 2.12321 WEST OF GIFFORD LAKE 290


GOLDEN LAKE RESOURCES
OPIKEIGEN LAKE
CLAIMS
WEST (1 of 2)
MARCH, 1989
1:10000
OPIKEIGEN
LAKE
EAST (2 of 2)
WEST (1 of 2)
METERS
0
250
500
750
1000



2.12021

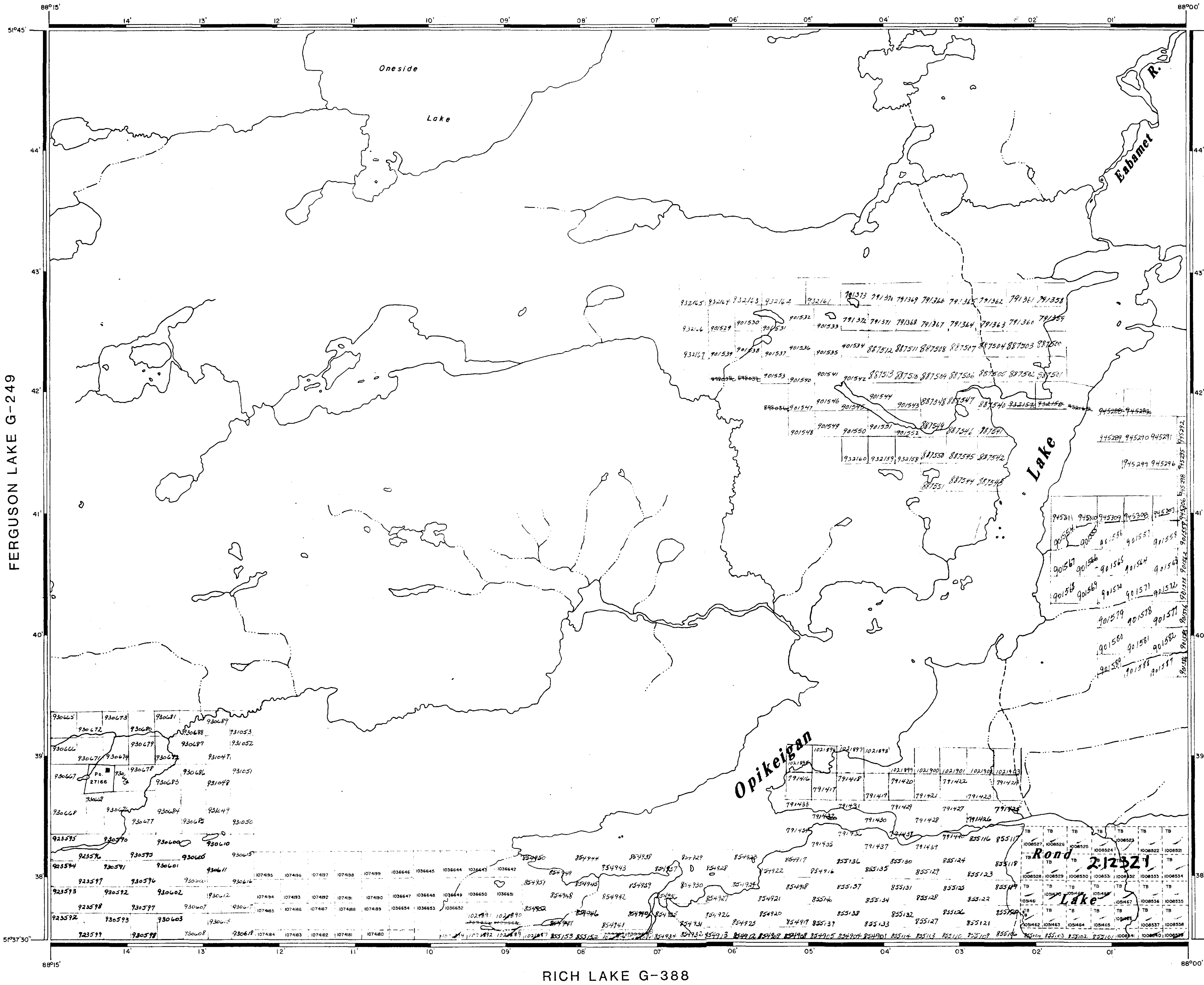
noramco explorations inc. — explorations noramco inc.

COMPANY NAME: GOLDEN LAKE RESOURCES
PROPERTY NAME: OPIKEIGEN LAKE

CLAIMS
EAST (2 of 2)

DATE: MARCH, 1989	N.T.S.	DRAWN BY: DKS	
SCALE: 1:10000	PROJECT NO: P 1439	CHECKED:	

REFERENCES



REFERENCES

LEGEND

HIGHWAY AND ROUTE No.
OTHER ROADS
TRAILS
SURVEYED LINES
TOWNSHIPS, BASE LINES, ETC.
LOTS, MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES
LOT LINES
PARCEL BOUNDARY
MINING CLAIMS ETC.
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES
TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
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
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

AREA
OPIKEIGAN LAKE

M.N.R. ADMINISTRATIVE DISTRICT
GERALDTON

MINING DIVISION
THUNDER BAY

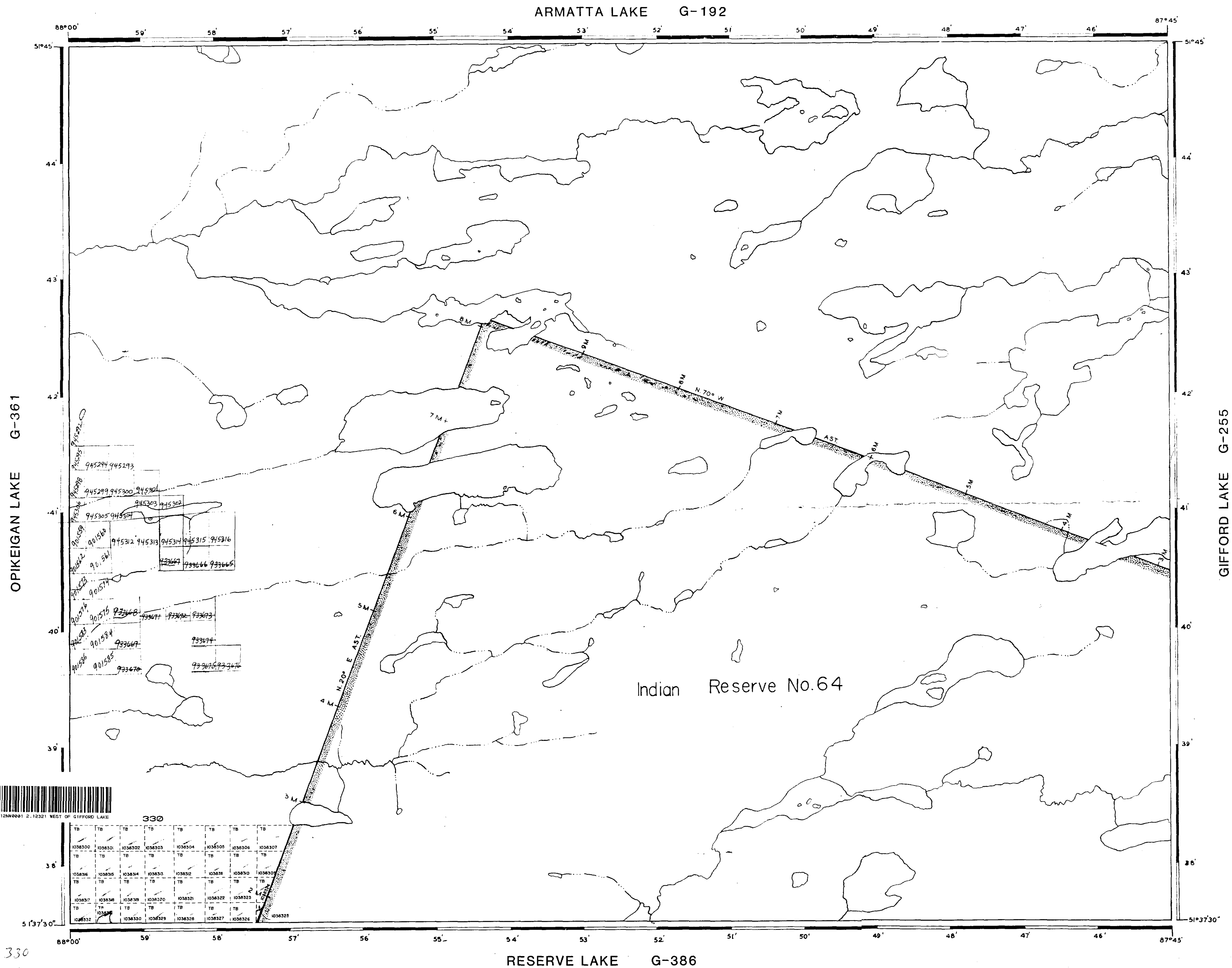
LAND TITLES / REGISTRY DIVISION
KENORA/PATRICIA

Ministry of Natural Resources
Land Management Branch
Ontario

Date: JULY 1981
Number: G-361

42H12NW0001 2.12321 WEST OF GIFFORD LAKE

320



REFERENCES

LEGEND

HIGHWAY AND ROUTE No	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC	
LOTS, MINING CLAIMS, PARCELS, ETC	
UNSURVEYED LINES	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKEG	
MINES	⚒
TRAVERSE MONUMENT	⊕

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
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
RESERVATION	⊙
CANCELLED	⊗
SAND & GRAVEL	⊙

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913 VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC.

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000

METRES 0 200 1000 (1 KM) 2000 (2 KM)

AREA

WEST OF GIFFORD LAKE

M.N.R. ADMINISTRATIVE DISTRICT

GERALDTON

MINING DIVISION

THUNDER BAY

LAND TITLES / REGISTRY DIVISION

KENORA/PATRICIA

Ontario Ministry of Natural Resources — Land Management Branch

Date: JULY, 1981

Number: **G-453**

Sept 8/81

516874

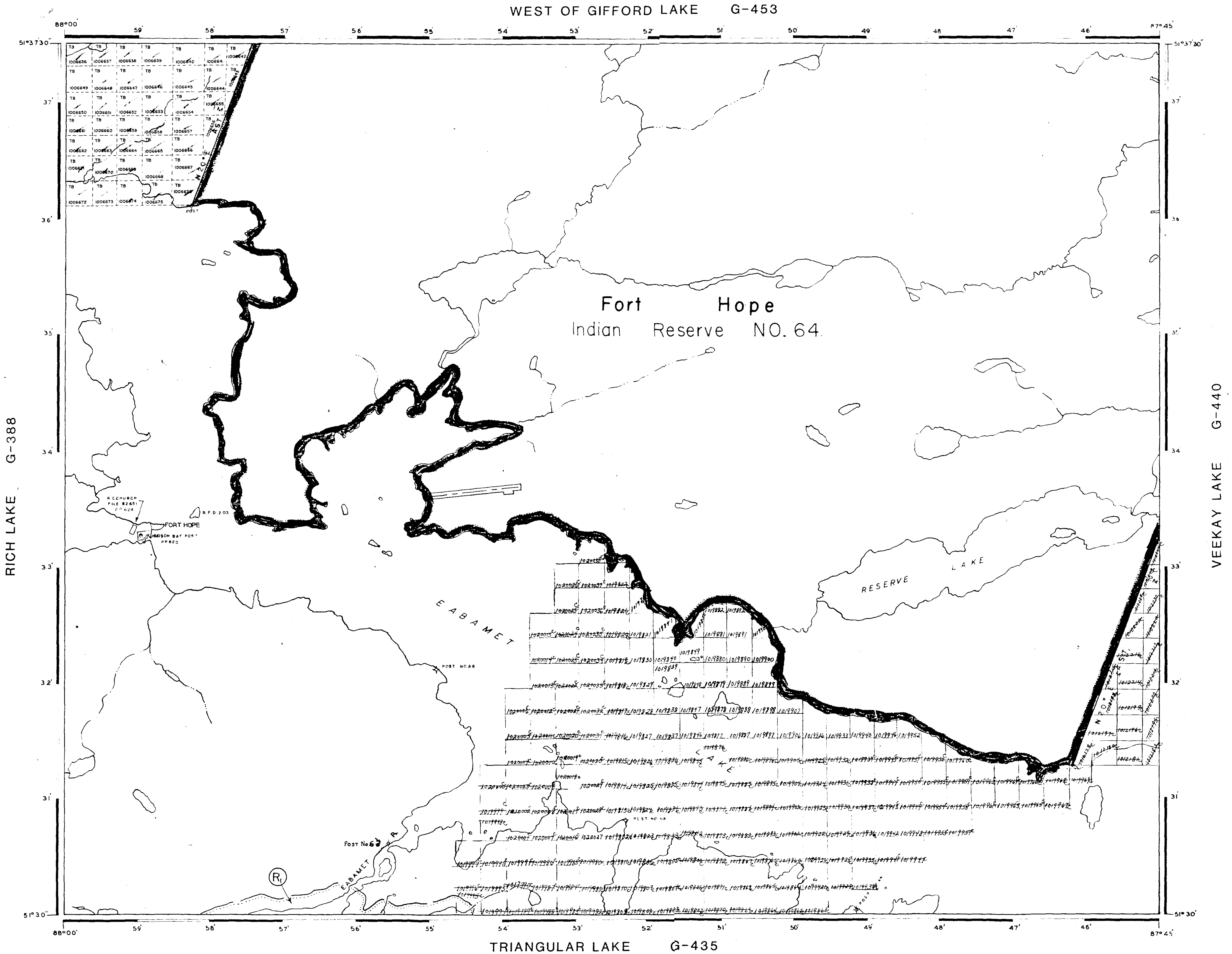
REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
(R1) PARK RESERVE	W 47/83	8/25/83	M&S	188516

DISPOSITION BY EXPLORATORY LICENCE OF OCCUPATION ONLY — APPLY TO MINING RECORDER



R1 W 47/83 ... 200 ft. from ... Disposition by exploratory licence of occupation only.

LEGEND

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT — SYMBOL

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
RESERVATION
CANCELLED
SAND & GRAVEL

SCALE: 1 INCH = 40 CHAINS

AREA

RESERVE LAKE

M.N.R. ADMINISTRATIVE DISTRICT
GERALDTON

MINING DIVISION
THUNDER BAY

LAND TITLES / REGISTRY DIVISION
KENORA/PATRICIA

Ministry of Natural Resources — Land Management Branch
Ontario

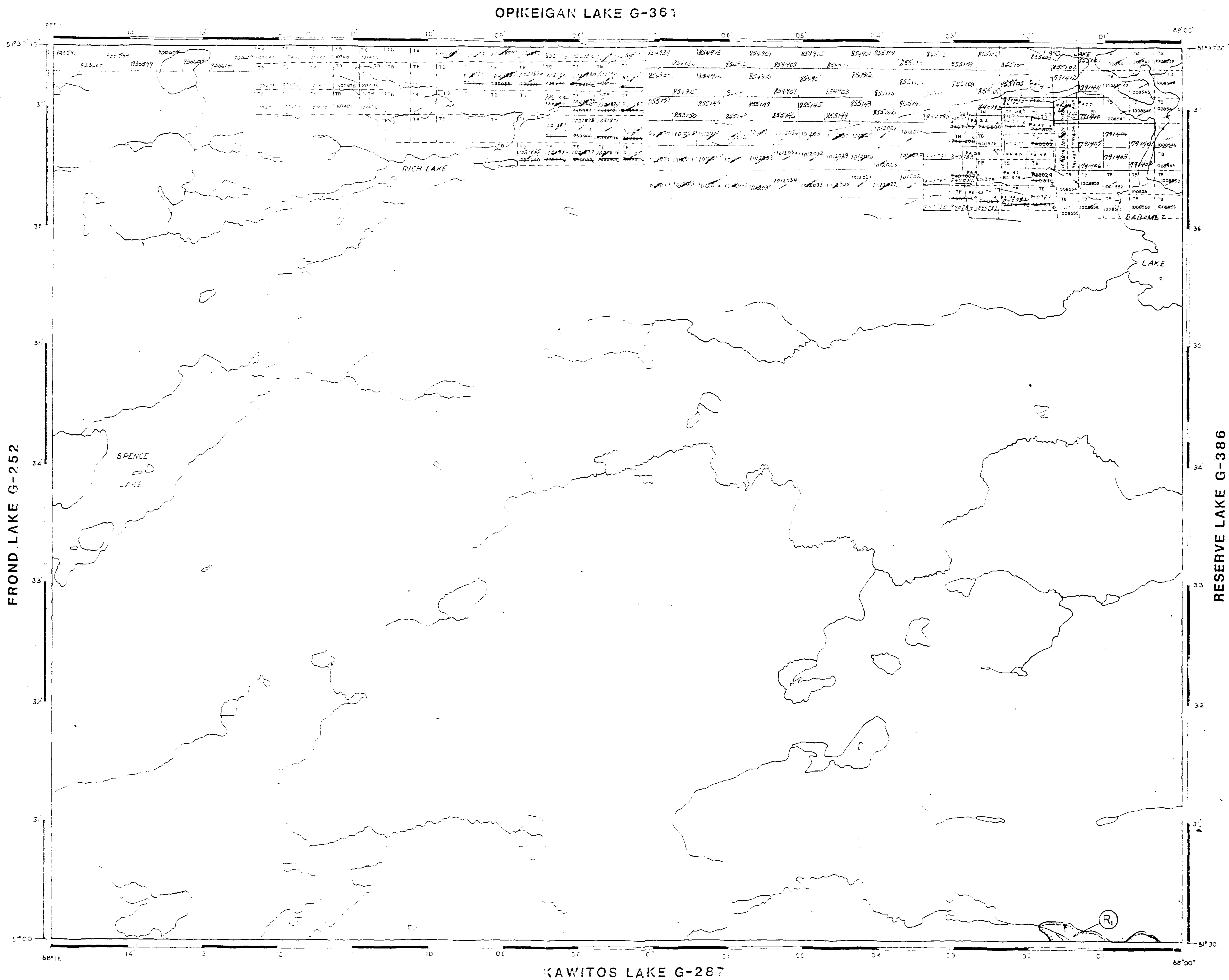
Date: JULY, 1981
Number: **G-386**

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

Description	Order No	Date	Disposition	File
PARK RESERVE	W 47/83	[illegible]	M.&S.	[illegible]

DISPOSITION BY EXPLORATORY LICENCE OF OCCUPATION ONLY – APPLY TO MINING RECORDER



LEGEND

HIGHWAY AND ROUTE No.
OTHER ROADS
TRAILS
SURVEYED LINES:
TOWNSHIPS, BASE LINES, ETC.
LOTS, MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES:
LOT LINES
PARCEL BOUNDARY
MINING CLAIMS ETC.
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON-PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES
TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT — SYMBOL

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
RESERVATION
CANCELLED
SAND & GRAVEL

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 2000

AREA

RICH LAKE

M.N.R. ADMINISTRATIVE DISTRICT

GERALDTON

MINING DIVISION

THUNDER BAY

LAND TITLES / REGISTRY DIVISION

KENORA/PATRICIA

Ontario — Ministry of Natural Resources — Land Management Branch

Date: JULY 1981 — Number: G-388

42M12NW0031 2.12321 WEST OF GIFFORD LAKE

350