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REPORT ON
COMBINED HELICOPTER-BORNE
MAGNETIC, ELECTROMAGNETIC AND VLF
SURVEY
FRECHEVILLE AND STOUGHTON TOWNSHIPS
ONTARIO

for
EDDA RESOURCES INC.
by
AERODAT LIMITED
April, 1986

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(Scale: 1:10,000)

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1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Edda Resources Inc. by Aerodat Limited. Equipment operated included a three-frequency electromagnetic system, a proton precession magnetometer, a VLF-EM system, a tracking camera, an altimeter and a radar positioning system. Electromagnetic, magnetic and altimeter data were recorded both in digital and analog form. Positioning data were stored in digital form and on film as well as being recorded manually by the operator in flight.

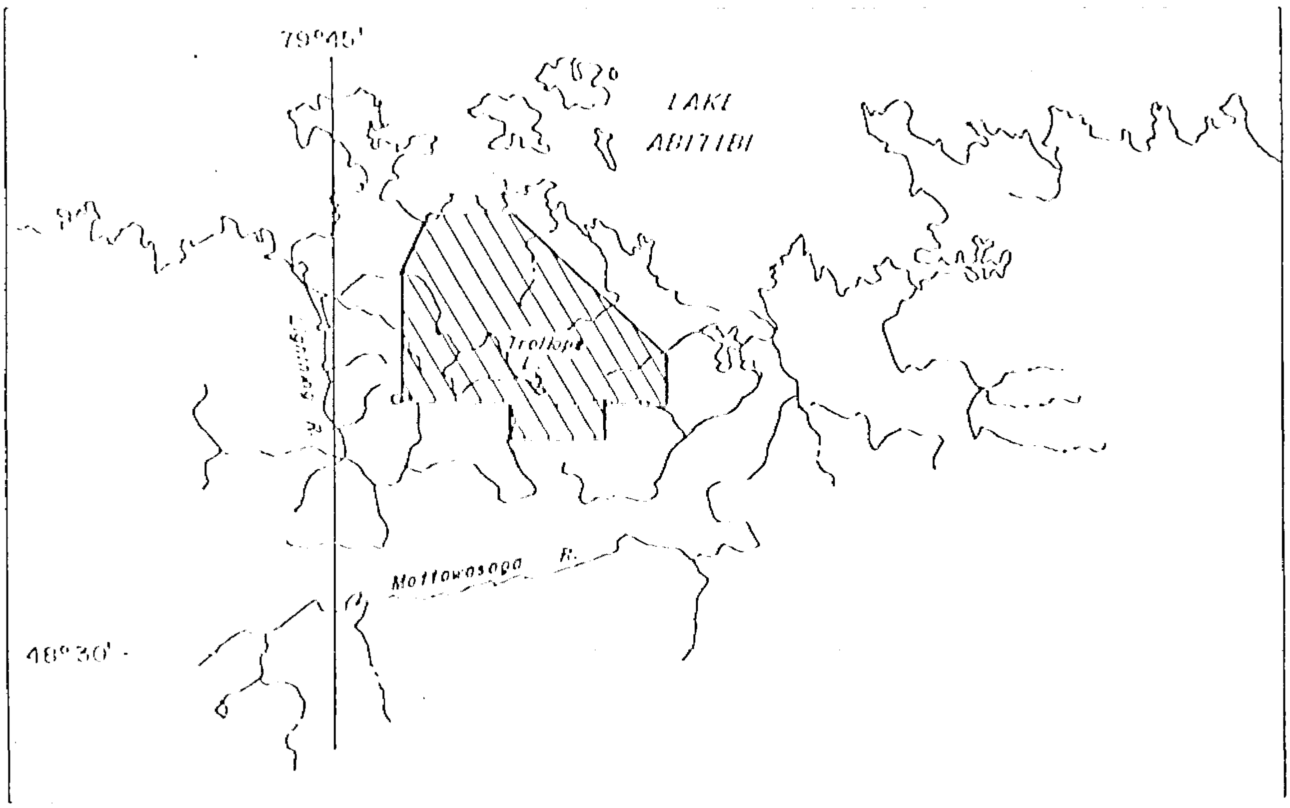
The survey area is located in the Townships of Frecheville and Stoughton south of Lake Abitibi in the province of Ontario. The survey was flown February 4th and 5th, 1986 employing a north-south line direction at a nominal spacing of 100 metres. Coverage and data quality were considered to be well within the specifications described in the contract.

The purpose of the survey was to record airborne geophysical data over and around ground that is of interest to Edda Resources Inc.

A total of 640 kilometres of the recorded data were compiled in map form and are presented as part of this report according to specifications outlined by Edda Resources Inc.

2. SURVEY AREA LOCATION

The survey area is depicted on the index map shown below. It is centred at 48 degrees 35 minutes North latitude, 79 degrees 40 minutes West longitude, approximately 5 kilometres west of the Ontario-Quebec interprovincial border (NTS Reference Map No. 32 D/12). The eastern portion of the survey area can be accessed from Highway 101 via bush roads in the northern part of Marriott Township.



3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

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

3.2 Equipment

3.2.1 Electromagnetic System

The electromagnetic system was an Aerodat 3-frequency system. Two vertical coaxial coil pairs were operated at 935 and 4600 Hz and a horizontal coplanar coil pair at 4175 Hz. The transmitter-receiver separation was 7 metres. Inphase and quadrature signals were measured simultaneously for the 3 frequencies with a time constant of 0.1 seconds. The electromagnetic bird was towed 30 metres below the helicopter.

3.2.2 VLF-EM System

The VLF-EM system was a Herz Totem 1A. This instrument measured the total field and quadrature component of the selected frequency. The sensor was towed in a bird 12 metres below the helicopter. The transmitting station used was NLK (Seattle, Washington, 24.8 kHz).

3.2.3 Magnetometer

The magnetometer was a Geometrics G-803 proton precession type. The sensitivity of the instrument was 1 gamma at a 0.5 second sampling rate. The sensor was towed in a bird 12 metres below the helicopter.

3.2.4 Magnetic Base Station

An IFG proton precession magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field.

The clock of the base station was synchronized with that of the airborne system to facilitate later correlation.

3.2.5 Radar Altimeter

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

3.2.6 Tracking Camera

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

3.2.7 Analog Recorder

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

Channel	Input	Scale
00	Low Frequency Inphase	2 ppm/mm
01	Low Frequency Quadrature	2 ppm/mm
02	High Frequency Inphase	2 ppm/mm
03	High Frequency Quadrature	2 ppm/mm
04	Mid Frequency Inphase	4 ppm/mm
05	Mid Frequency Quadrature	4 ppm/mm
06	VLF-EM Total Field	2.5%/mm
07	VLF-EM Quadrature	2.5%/mm
14	Magnetometer	5 gamma/mm
15	Magnetometer	50 gamma/mm
13	Altimeter (500 ft. at top of chart).	10 ft./mm

3.2.8 Digital Recorder

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

Equipment	Interval
EM	0.1 seconds
VLF-EM	0.5 seconds
Magnetometer	0.5 seconds
Altimeter	0.5 seconds
MRS III	0.5 seconds

3.2.9 Radar Positioning System

A Motorola Mini-Ranger (MRS III) radar navigation system was utilized for both navigation and track recovery. Transponders located at fixed locations were interrogated several times per second and the ranges from these points to the helicopter were measured to an accuracy of about 10 metres. A navigational computer triangulated the position of the helicopter and provided the pilot with navigational information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

4. DATA PRESENTATION

4.0 Base Map and Flight Path

A photomosaic base at a scale of 1:10,000 was prepared by enlargement of aerial photographs of the survey area.

The flight path was derived from the Mini-Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured several times per second, and the position of the helicopter calculated by triangulation. It is estimated that the flight path is generally accurate to about 10 metres with respect to the topographic detail of the base map. The flight path is presented with fiducials for cross-reference to both the analog and digital data.

4.1 Electromagnetic Profile Maps

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

Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking would reduce their ampli tude but would leave a broader residual response that could be confused with a geological phenomenon. To avoid this possibility, a computer algorithm searched out and rejected the major sferic events.

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

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

The inphase and quadrature responses of the 935 Hz coaxial configuration have been presented along with the flight path and fiducials on a greyflex copy of the photo base map.

4.2 Total Field Magnetic Contours

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

The corrected profile data were interpolated onto a regular grid at a 25m true scale interval using a cubic spline technique. The grid provided the basis for threading the presented contours at a 5 gamma interval.

The aeromagnetic data has been presented with flight path and electromagnetic anomaly information on a greyflex copy of the photo base map.

4.3 VLF-Total Field EM

The VLF-EM signals from NLK (Seattle, Washington) were compiled in map form and presented on a greyflex copy of the photo base map along with flight lines and anomaly information.

5. INTERPRETATION AND RECOMMENDATIONS

Geology

The area is essentially underlain by basic volcanic rocks as shown on the 1":4 mile Ontario Department of Mines, Timmins-Kirkland Lake Sheet, Geological Compilation Series, Map 2046. In the southwestern part of Frecheville Township which is also the southwestern perimeter of the survey area, there is an intrusive zone of basic and ultrabasic rocks. The survey area was located immediately to the north of the Destor-Porcupine Fault, which is well known as a favourable zone for gold mineralization in the Timmins-Matheson area. The geophysical targets presented herein should be carefully correlated with more detailed geologic maps, and in some cases may warrant subsequent investigation on the ground due to the high mineral potential of the area.

Magnetics

The magnetic map is characterized by a distinctive magnetic feature that corresponds to a cross fold north of Trollope Lake. The northern perimeter of the feature is centred on line 480. South of Trollope Lake, the geology is generally striking east-west.

VLF

The transmitting station, Seattle, Washington, couples well with a number of east-west to northwest-southeast conductive trends throughout the area. A number of these trends correlate well with the magnetics. For example, the northeast margin of the fold near Trollope Lake is also defined by the VLF contours.

The VLF method was also effective in mapping bedrock conductive trends. For example, Zone 4 (see Recommendations section), has a coincident VLF expression. A number of other VLF trends that are clearly associated with geologic noise due to conductive overburden have also been delineated. Many of the VLF conductors in the western end of the area are most likely due to conductive overburden.

Electromagnetics

The electromagnetic data was first checked by a line-by-line examination of the analog records. Record quality was very good with little or no sferic interference; instrument and system noise were well within specifications. Whenever present, geologic noise due to conductive overburden was mainly confined to the mid-frequency coplanar and high frequency coaxial data. Most of the overburden cover in general appears to be confined to the perimeter of the survey area.

Anomalies were picked off the analog trace of the low frequency (935 Hz) coaxial response. These selections were checked with a proprietary computerized selection program on both the low and high frequency coaxial responses and were further compared to the coplanar profile data.

Conductor axes were then plotted on the interpretation map using line to line correlations of the electromagnetic profiles.

Results and Recommendations

Zone 2

The anomaly centres within Zone 2 are generally associated with weak zones of conduction. Since there is extensive conductive overburden cover, geologic noise is evident on all the EM channels except the low frequency inphase. Despite the geologic noise, however, the zone exhibits the characteristic shape of steeply dipping conductors on the coaxial and coplanar channels.

The anomaly centre intersecting line 411 at the eastern end of the zone has a coincident magnetic expression that produces typical negative inphase responses. There is also a coincident VLF expression along the eastern end of the zone. This zone of weak bedrock conduction warrants further examination particularly if there is supportive geologic data.

Zone 3

This zone consists of only 2 anomaly centres on line 420 having a moderate conductance of 6 mhos. The conductor is interpreted to be dipping to the north and is at a depth of the order of 25 metres. It should also be noted that a much weaker anomaly centre approximately 300 metres southwest of the zone has also been selected on line 400.

This conductive trend is flanking a weak magnetic anomaly immediately to the north and is located about 0.5 kilometres west of the northern tip of the fold centred on line 480. There does not appear to be an obvious VLF expression associated with the zone. Zone 3 and the isolated weak anomaly on line 400, 300 metres to the southwest, warrant further investigation.

Zone 4

Zone 4 is a well defined trend of bedrock conductors that have a similar change in strike direction as the magnetics around the fold. Hence, the strike at the west of the zone is WNW-ESE and at the east the strike changes to NW-SE. The dip is interpreted to be to the south.

The zone has a coincident VLF signature. Since this zone is of definite bedrock origin due to its typical steeply dipping EM signature, it warrants further work.

Zone 5

This zone of moderately good bedrock conduction has a strike length of about 1 kilometre and is striking NW-SE. Dip information is inconsistent throughout the zone. For example, the conductor intersecting line 690 has a southerly dip while other conductors (660A, 660B and 670A), appear to be dipping to the north.

Zone 5 is flanking a magnetic feature that is immediately to the northeast. The weak conductor intersecting line 690 has a coincident VLF expression.

It should be noted that Zone 5 is on strike with Zone 4 and may, therefore, be in a similar geological environment. Like Zone 4, therefore, it is also recommended that Zone 5 be investigated further in subsequent exploration programs.

Zone 6

Anomaly centre 750A is an extremely weak zone of bedrock conduction. It is a typical peak coaxial response (high frequency, only) and assymetric W-shaped response on the coplanar system. A dip to the north is inferred.

A change in magnetic gradient is detected east of the zone. The zone does not appear as a VLF conductor. Despite the weak EM expression of this zone, this conductor warrants further investigation.

Summary

The present combined electromaghnetic/magnetic VLF-EM survey was successful in defining six zones of bedrock conduction that warrant further examination. The other conductors that appear on the anomaly map are in general quite weak with the possible exception of the conductor intersecting line 400 approximately 300 metres southwest of Zone 3. These weak conductors only warrant further examination after the main six zones have been investigated.

There also may be further zones of weak bedrock conduction that have not been identified in this initial interpretation in areas of conducting overburden. If there is evidence to support examining conductive trends within the overburden covered areas, a subsequent evaluation of theses areas may be warranted.

It should be noted that a vertical gradient map would be quite useful in this area in delineating magnetic units and therefore assist in mapping the geology, particularly in light of the extensive overburden cover.

Respectfully submitted,

AERODAT LIMITED

Douglas H. Pitcher

April, 1986

J8555

Douglas H. Pitcher

Manager, Data Production

Geophysicist

STATEMENT OF QUALIFICATIONS

1. I am currently Manager, Data Production at Aerodat Limited whose responsibilities include the generation of final geophysical maps and reports as well as the coordination of the geophysicists and data technicians.

2. I obtained a B.Sc. (Hons.) degree in physics from Memorial University (1970) and an M.Sc. degree in geophysics from the University of Toronto (1972).

3. I am a professional geophysicist, and a member of the Society of Exploration Geophysicists, Canadian Exploration Geophysical Society and the Prospectors and Developers Association.

4. I have worked in the mining industry since 1972 both for government and private industry as a research geophysicist and consultant involving all types of conventional ground and airborne geophysical mining techniques.

5. I have published papers on induced polarization, airborne electromagnetics, geomagnetics and data processing using microcomputers.

6. I have no direct or indirect interest in Edda Resources Inc. or in any properties lying within the surveyed area.

Douglas H. Pitcher

APPENDIX I

GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

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

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

Electrical Considerations

For a given conductive body the measure of its conductivity or conductance is closely related to the measured phase shift between the received and transmitted electromagnetic field. A small phase shift indicates a relatively high conductance, a large phase shift lower conductance. A small phase shift results in a large inphase to quadrature ratio and a large phase shift a low ratio. This relationship is shown quantitatively for a non-magnetic vertical half-plane model on the accompanying phasor diagram. Other physical models will show the same trend but different quantitative relationships.

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

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

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

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

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

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

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

Geometrical Considerations

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

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

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

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

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

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

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

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

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

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

Magnetics

The Total Field Magnetic Map shows contours of the total magnetic field, uncorrected for regional variation. Whether an EM anomaly with a magnetic correlation is more likely to be caused by a sulphide deposit than one without depends on the type of mineralization. An apparent coincidence between an EM and a magnetic anomaly may be caused by a conductor which is also magnetic, or by a conductor which lies in close proximity to a magnetic body. The majority of conductors which are also magnetic are sulphides containing pyrrhotite and/or magnetite. Conductive and magnetic bodies in close association can be, and often are, graphite and magnetite. It is often very difficult to distinguish between these cases. If the conductor is also magnetic, it will usually produce an EM anomaly whose general pattern resembles that of the magnetics. Depending on the magnetic permeability of the conducting body, the amplitude of the inphase EM anomaly will be weakened, and if the conductivity is also weak, the inphase EM anomaly may even be reversed in sign.

VLF Electromagnetics

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

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

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

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

The vertical quadrature component over steeply dipping sheet-like conductor will be a cross-over type response with the cross-over closely associated with the upper edge of the conductor.

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

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

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

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

APPENDIX II

ANOMALY LIST

ANOMALIES, FROM 932 Hz COAXIAL INPHASE

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
1	130	A	0	2.2	10.6	0.2	0	54
1	240	A	0	4.9	19.4	0.5	0	45
1	250	A	0	5.6	14.7	0.9	0	49
1	260	A	0	9.6	32.0	0.9	0	35
1	270	A	1	8.6	24.7	1.0	0	41
1	280	A	0	3.2	18.2	0.2	0	39
1	280	B	0	6.9	23.1	0.7	0	43
1	290	A	0	8.3	30.2	0.7	0	37
1	300	A	0	5.3	18.0	0.6	0	35
2	310	A	0	5.1	15.6	0.7	0	47
2	320	A	0	4.0	18.0	0.3	0	30
2	330	A	0	4.9	16.3	0.6	0	42
2	340	A	0	4.1	12.0	0.7	0	40
2	350	A	1	6.2	14.2	1.2	0	45
2	360	A	0	0.3	8.9	0.0	0	36
2	360	B	0	4.9	16.4	0.6	0	44
2	370	A	0	5.1	17.6	0.6	0	40
2	370	B	0	4.7	16.0	0.6	1	32
2	370	C	0	1.5	9.4	0.1	0	34
2	380	A	0	0.0	8.9	0.0	0	39
2	380	B	0	6.4	20.4	0.8	0	38
2	380	C	0	5.6	20.6	0.6	0	36
2	390	A	0	3.9	13.3	0.5	5	30
2	390	B	0	4.4	10.6	0.9	0	44
2	390	C	0	-0.1	6.4	0.0	0	43
2	400	A	0	-3.1	5.1	0.0	0	34
2	400	B	0	3.8	11.5	0.6	0	43

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.

ANOMALIES, FROM 932 Hz COAXIAL INPHASE

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	410	A	0	3.2	9.9	0.5	1	39
2	410	B	1	5.4	13.3	1.0	0	40
2	411	A	0	-3.3	4.9	0.0	0	35
2	420	A	2	2.0	2.0	2.4	64	28
2	420	B	3	8.5	7.3	5.7	26	32
2	420	C	1	7.0	17.8	1.1	0	41
2	430	A	0	2.5	7.9	0.4	2	42
2	430	B	2	6.3	9.8	2.2	0	54
2	440	A	2	12.4	22.4	2.4	0	37
2	440	B	2	16.4	28.5	2.8	0	37
2	450	A	2	10.6	12.7	3.9	0	52
2	450	B	2	9.8	14.9	2.7	0	48
2	450	C	0	2.8	12.6	0.2	0	44
2	450	D	1	1.2	1.3	1.6	55	50
2	462	A	2	13.3	20.5	3.1	0	43
2	462	B	2	13.9	19.6	3.5	0	44
2	470	A	2	7.2	11.3	2.3	0	52
2	470	B	2	7.6	12.9	2.1	1	42
2	480	A	0	1.9	6.2	0.3	13	34
2	480	B	1	10.5	21.8	1.8	0	35
2	490	A	1	6.3	13.2	1.4	0	46
2	490	B	0	3.0	13.6	0.3	0	41
2	490	C	1	3.9	8.8	1.0	11	35
2	500	A	0	4.0	23.6	0.2	0	33
2	500	B	2	7.7	13.4	2.0	12	30
2	510	A	0	3.1	13.5	0.3	0	40
2	510	B	0	2.8	14.5	0.2	0	37
2	510	C	1	5.6	11.3	1.4	7	36
2	520	A	1	6.7	14.7	1.4	0	38
2	530	A	0	4.3	14.6	0.5	0	38
2	540	A	0	2.3	12.0	0.2	0	37

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.

ANOMALIES, FROM 932 Hz COAXIAL INPHASE

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	541	A	0	-0.7	6.7	0.0	0	35
2	550	A	0	-0.2	2.0	0.0	0	43
2	560	A	0	0.4	3.2	0.0	11	34
2	570	A	0	2.5	9.7	0.3	0	49
2	570	B	0	0.0	2.1	0.0	0	35
3	640	A	0	0.9	1.6	0.6	59	30
3	650	A	0	0.6	0.1	23.3	148	41
3	650	B	3	1.8	1.2	4.3	66	43
3	650	C	0	0.7	0.5	2.4	103	45
3	660	A	4	13.2	8.5	10.0	22	33
3	660	B	1	1.9	2.3	1.8	50	34
3	670	A	1	1.0	1.1	1.4	73	38
3	750	A	0	1.1	0.6	4.7	95	41

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 Natural Resources / Ministry of Northern Affairs and Mines
Ontario

Report of Work 51/86

(Geophysical, Geological, Geochemical and Expenditures)

5

32D12SE0017 2.9123 STOUGHTON

900

Mining ...

Type of Survey(s): HELICOPTER HEM / MAG / VLF-EM	Township or Area: FRECHEVILLE AND STOUGHTON
Claim Holder(s): EDDA RESOURCES — See Attached list	Prospector's Licence No.: T1565
Address: Suite 1710, 390 Bay St, Toronto, Ont. M5H 2Y2	
Survey Company: AERODAT LTD.	Date of Survey (from & to): 4 2 86 — 5 2 86 (Day / Mo. / Yr. — Day / Mo. / Yr.)
Total Miles of line Cut: —	
Name and Address of Author (of Geo-Technical report): AERODAT LTD. 3883 NASHUA DR. MISSISSAUGA, ONT L4V 1R3	

Credits Requested per Each Claim in Columns at right

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

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

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	30
	Magnetometer	30
	~~Radiometric~~ VLF-EM	20

Mining Claims Traversed (List in numerical sequence) See attached list

Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.

RECEIVED
FEB 21 1986
MINING LANDS SECTION

LARDER LAKE MINING DIVISION
RECEIVED
FEB 13 1986

Total number of mining claims covered by this report of work. 217

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures				Total Days Credits
$	÷	15	=	

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Date	Recorded Holder or Agent (Signature)
February 10/86	[signature]

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
17,360	FEB 13 1986	[signature]
	Date Approved as Recorded: 86.5.?	Branch Director: [signature]

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: R.L. Scott Hogg c/o AERODAT LTD. 3883 Nashua Dr. Mississauga, Ontario L4V 1R3

Date Certified	Certified by (Signature)
February 10/86	[signature]

1362 (85/5)

Ronald Crichton
65 Tweedsmuire Rd.
Kirkland Lake, Ontario
P2N 1J3

Licence #K18365

L822170
822171
822172

Norman Gilmore
34 Earl Street
Kirkland Lake, Ontario
P2N 2X7

Licence #K20296

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Bert Hosick
17 McKelvie Ave.
Kirkland Lake, Ontario
P2N 2K3

Licence #K20297

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George Harkin
22 Wye Street
Chaput Hughes, Ontario
POK 1A0

Licence #K19712

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George Harkin Cont'd

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Michel Barrette
89 Queen Street
Kirkland Lake, Ontario
P2N 2R7

Licence #K20274

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Edwin Potter
80 Lebel Avenue
Kirkland Lake, Ontario
P2N 2Z8

Licence #H9757

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Edwin Potter Cont'd

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29

Ministry of Northern Development and Mines
Ontario

Order of the Minister

May 23

Room 6610, Whitney Block
Queen's Park
Toronto, Ontario
M7A 1W3
416/965-4888

Mining Act

In the matter of mining claims:

L 822170, et al,
in the Townships of
Frecheville and Stoughton
as listed on Report of Work #57.

On consideration of an application from the recorded holder, See Attached List under Section 77 Subsection 22 of the Mining Act, I hereby order that the time for filing reports and plans in support of Airborne Geophysical(Electromagnetic,Magnetometer & VLF) assessment work recorded on February 13, 1986 be extended until and including May 23, 1986.

1986.05.13
Date

[signature]
Signature of Director, Land Management Branch

Copies:

Edda Resources
Toronto, Ontario

Mining Recorder
Kirkland Lake, Ont.
File: 57/86

Ronald Crichton
Kirkland Lake, Ontario

Norman Gilmore
Kirkland Lake, Ont.

Douglas Pitcher
c/o Aerodat Ltd
Mississauga, Ontario

Bert Hosick
Kirkland Lake, Ontario

George Harkin
Chaput Hughes, Ontario

Michel Barrette
Kirkland Lake, Ontario

Edwin Potter
Kirkland Lake, Ontario

AB

1333 (85/12)

April 7, 1986 Report of Work 57/86

Edda Resources
Suite 1710
390 Bay Street
Toronto, Ontario
M5H 2Y2

Dear Sirs:

RE: Mining Claims L 822170, et al,
in Frecheville and Stoughton Townships

We have not received the reports and maps (in duplicate) for the Airborne Magnetometer, Electromagnetic & VLF Surveys on the above-mentioned claims.

As the assessment "Report of Work" was recorded by the Mining Recorder on February 13, 1986 the 60 day period allowed by Section 77 of the Mining Act for the submission of the technical reports and maps to this office will expire on April 14, 1986.

If the material is not submitted to this office by April 14, 1986 we will have no alternative but to instruct the Mining Recorder to delete the work credits from the claim record sheets.

For further information, please contact Mr. Arthur Barr at (416)965-4888.

Yours sincerely,

J.C. Smith, Supervisor
Mining Lands Section

Whitney Block, 6th Floor
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

AB/mc
cc: Ronald Crichton
Kirkland Lake, Ontario

Norman Gilmore
Kirkland Lake, Ontario

~~Scott Hogg~~ Douglas Pitcher,
c/o Aerodat Ltd
Mississauga, Ontario

Mining Recorder - Kirkland Lake, Ont
file # 57/86

Bert Hosick
Kirkland Lake, Ontario

George Harkin
Chaput Hughes, Ontario

Michel Barrett
Kirkland Lake, Ontario

Edwin Potter
Kirkland Lake, Ontario

Encl.

May 12th

Ministry of Northern Development and Mines
Ontario

Order of the Minister

Room 6610, Whitney Block
Queen's Park
Toronto, Ontario
M7A 1W3
416/965-4888

Mining Act

In the matter of mining claims: See Attached List.

Advance to May 23.

On consideration of an application from the recorded holder, See Attached List under Section 77 Subsection 22 of the Mining Act, I hereby order that the time for filing reports and plans in support of Airborne Geophysical (Electromagnetic, Magnetometer & VLF) assessment work recorded on February 13, 1986 be extended until and including May 12, 1986.

86-04-09
Date

[signature]
Signature of Director, Land Management Branch

Copies:

Edda Resources
Suite 1710
390 Bay Street
Toronto, Ontario
M5H 2Y2

Mining Recorder
Kirkland Lake, Ontario
File #57/86

Ronald Crichton
Kirkland Lake, Ontario

Norman Gilmore
Kirkland Lake, Ontario

Douglas Pitcher
c/o Aerodat Ltd
Mississauga, Ontario

Bert Hosick
Kirkland Lake, Ontario

George Harkin
Chaput Hughes, Ontario

Michel Barrette
Kirkland Lake, Ontario

Edwin Potter
Kirkland Lake, Ontario

Q.K.

FILE

Mining Lands Section File No 2.9123

Control Sheet

TYPE OF SURV__ ✓ GEOPHYSICAL

_____ GEOLOGICAL

_____ GEOCHEMICAL

_____ EXPENDITURE

MINING LANDS COMMENTS:

____

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____

J. Hurst

Signature of Assessor

May 20/86

Date

D. ...

NOTES

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

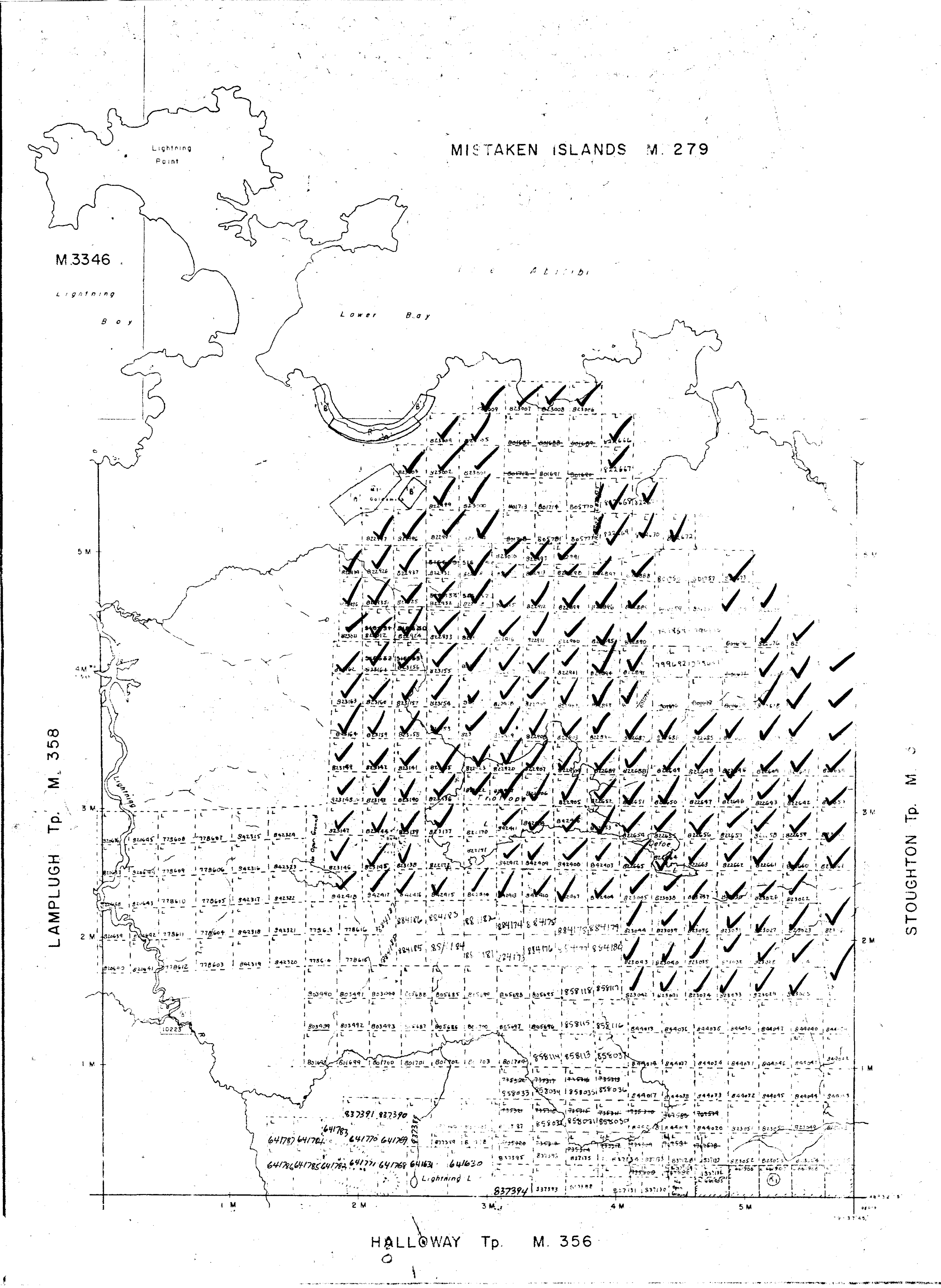
The shoreline of Lake Abitibi forms the boundary of this Township

'A' Area Withdrawn from prospecting staking out sale or lease Sec 9/81, NRW 105/81 Sec 36, The Mining Act R.S.O. 1980

Order NRW 105/81 Rescinded May 19, 1983

'B' Area withdrawn from prospecting staking out sale or lease May 19, 1983, N.R.O. 33/83 Sec 36, The Mining Act R.S.O. 1980

(R) Sec 36/80 W-9/86 24/01/86 MAS



SCALE: 1 INCH = 40 CHAINS

ACRES 40 | HECTARES 16

TOWNSHIP

MAR 3 1986

FRECHEVILLE

DISTRICT

COCHRANE

MINING DIVISION

LARDER LAKE

Ministry of Natural Resources

Ontario — Surveys and Mapping Branch

Plan No.

M.348

32D12SE0017 2.9123 STOUGHTON

200

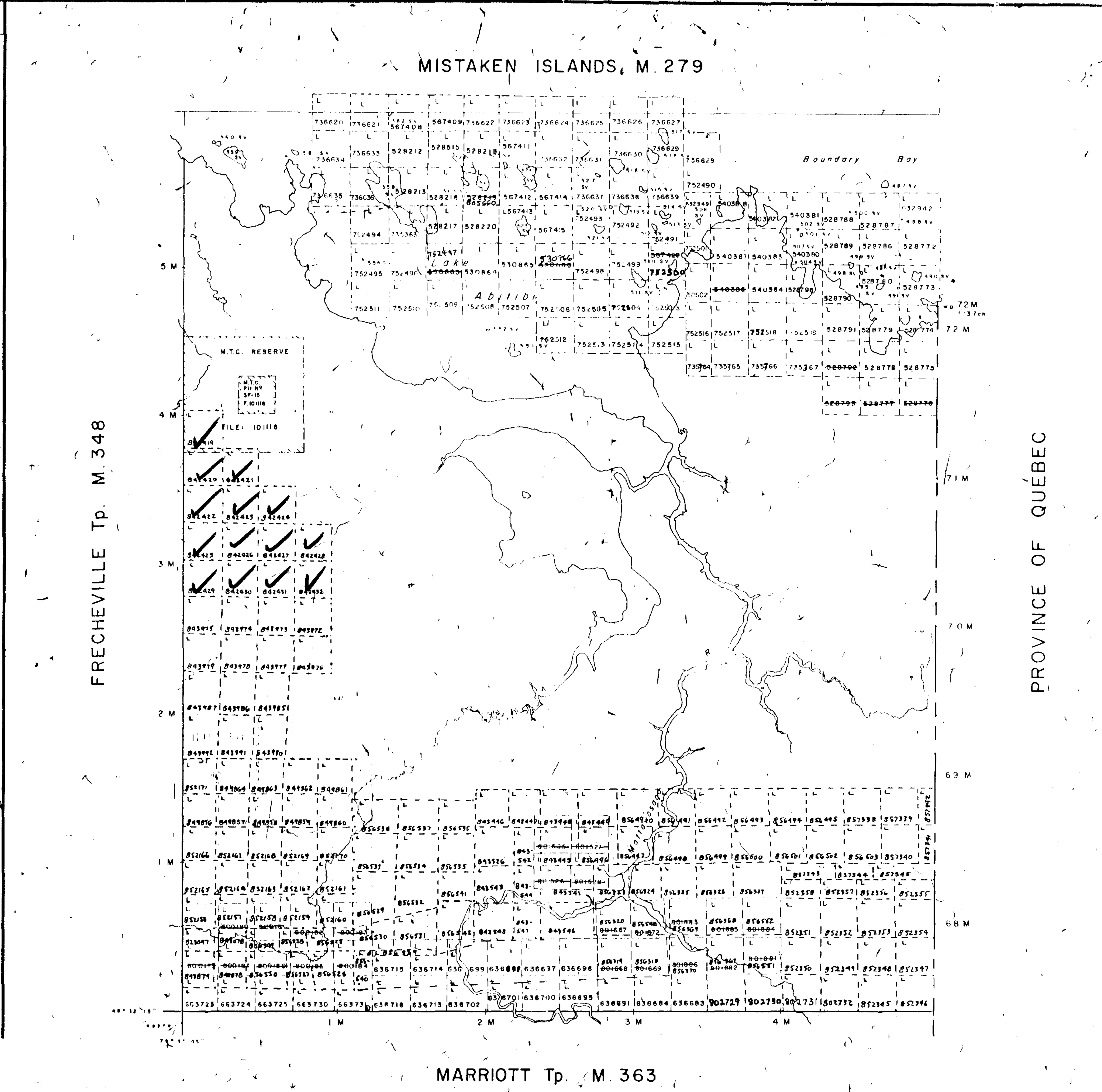
NOTES

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

The shoreline of Lake Abitibi forms the boundary of this Township

SAND & GRAVEL

M.T.C. Gravel Pit 3E 20



32D12SE0017 2.9123 STOUGHTON

210

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
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES

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	▼
CROWN LAND SALE	CS
ORDER-IN-COUNCIL	OC
RESERVATION	®
CANCELLED	⊗
SAND & GRAVEL	⊙

August 1/85

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000

METRES 0 200 400 600 800 1 KM 2 KM

ACRES	HECTARES
40	16

TOWNSHIP

STOUGHTON

DISTRICT

COCHRANE

MINING DIVISION

LARDER LAKE

Ministry of Natural Resources

Ontario

Surveys and Mapping Branch

Date 12 74

Plan No. M.389

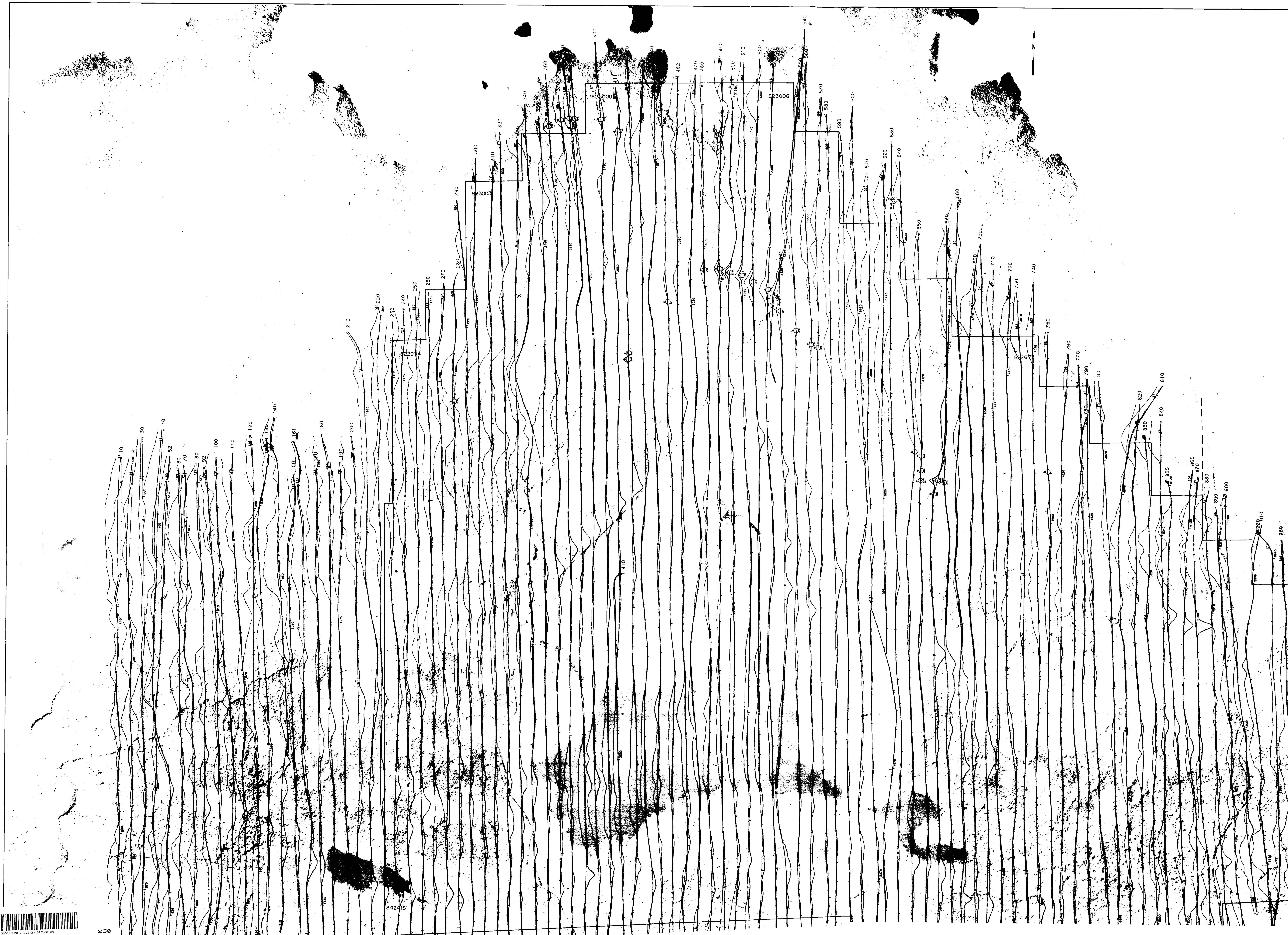
Whitney Block Queen's Park, Toronto

Received August 14-198[illegible]


EDDA RESOURCES INC.
AIRBORNE ELECTROMAGNETIC SURVEY
INTERPRETATION MAP
FRECHEVILLE AND STOUGHTON TOWNSHIPS
ONTARIO
SCALE 1/10,000
AERODAT LIMITED
DATE: February 1986
N.T.S. No: 32D
MAP No: 1
J 8556
LAKE ABITIBI
INTERPRETATION LEGEND
Interpreted bedrock conductor axis
Conductive Zone
Horizontal control .... MRS III
Average bird height .... 30 metres
Line spacing .... 100 metres
AERODAT HEM SYSTEM RESPONSE
VERTICAL HALF - PLANE
QUADRATURE (ppm)
IN - PHASE (ppm)

EDDA RESOURCES INC.
TOTAL FIELD MAGNETIC MAP
FRECHEVILLE AND STOUGHTON TOWNSHIPS
ONTARIO
SCALE 1/10,000
LEGEND
125 gammas
25 gammas
5 gammas
AERODAT LIMITED
DATE: February 1986
N.T.S. No: 32D
MAP No: 2
J8556
LAKE ABITIBI
79°45'
48°30'


EDDA RESOURCES INC.
VLF-EM TOTAL FIELD CONTOURS
FRECHEVILLE AND STOUGHTON TOWNSHIPS
ONTARIO
SCALE 1/10,000
1/2 mile
Kilometre
AERODAT LIMITED
DATE: February 1986
N.T.S. No: 32D
MAP No: 3
J8556
LAKE ABITIBI
79°45'
48°30'
VLF-EM TOTAL FIELD CONTOURS
VLF STATION: NLK (Jim Creek, Wash.) 24.8 kHz
SENSOR ELEVATION: 48 m.
CONTOUR INTERVAL
50 %
10 %
2 %
240



EDDA RESOURCES INC.

AIRBORNE ELECTROMAGNETIC SURVEY
PROFILES – 935 Hz (coaxial)

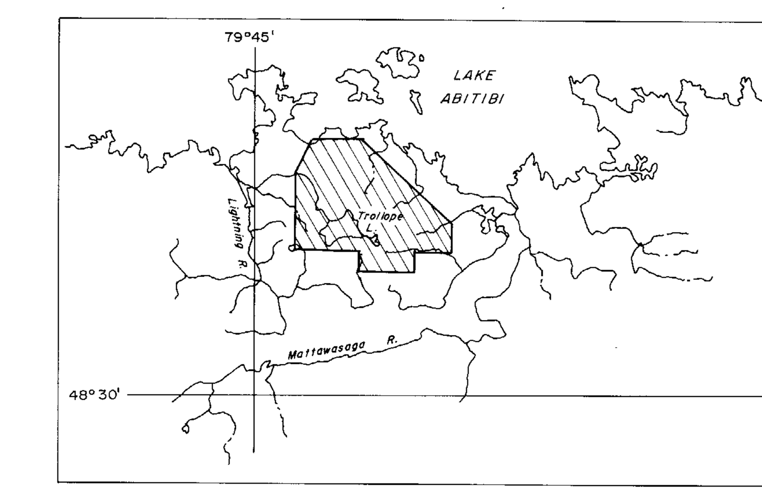
FRECHEVILLE AND STOUGHTON TOWNSHIPS
ONTARIO

SCALE 1/10,000

▼AERODAT LIMITED

DATE:	February 1986
N.T.S. No:	32D
MAP No:	4

J 8556



250

FRECHEVILLE TWP.
STOUGHTON TWP.


FRECHEVILLE TWP.
STOUGHTON TWP.
1010
1020
1030
1040
230

FRECHEVILLE TWP.
STOUGHTON TWP.
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FRECHEVILLE TWP.
STOUGHTON TWP.
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