GEOPHYSICAL REPORT

ON THE

FAULT LAKE PROJECT DETOUR LAKE

f o r

INGAMAR EXPLORATIONS LIMITED

Toronto, Ontario, Canada
May, 1981

D. Jones, M.Sc.

1. INTRODUCTION

During the period from March 10 to 15th, 1981, M P H Consulting Limited of Toronto, Ontario, carried out a programme of VLF-EM and Magnetometer surveying on behalf of Ingamar Exploration Limited of Connaught, Ontario, on their Fault Lake property, in the Detour Lake area of northeastern Ontario.

The purpose of this work was to attempt to define similar structure and/or similar geophysical responses to those documented at the Amoco-Campbell Detour Lake deposit situated approximately 5 km along stratigraphy eastward from the Fault Lake property.

The geophysical signature associated with the deposit include a strong electromagnetic response from the pyrite mineralization associated with the deposit with the documented magnetic high of 2000 gammas possibly related to the mafic intrusive.

This report which describes the exploration techniques employed and presents the results of the ground exploration work to date will make recommendations for further exploration of the property.

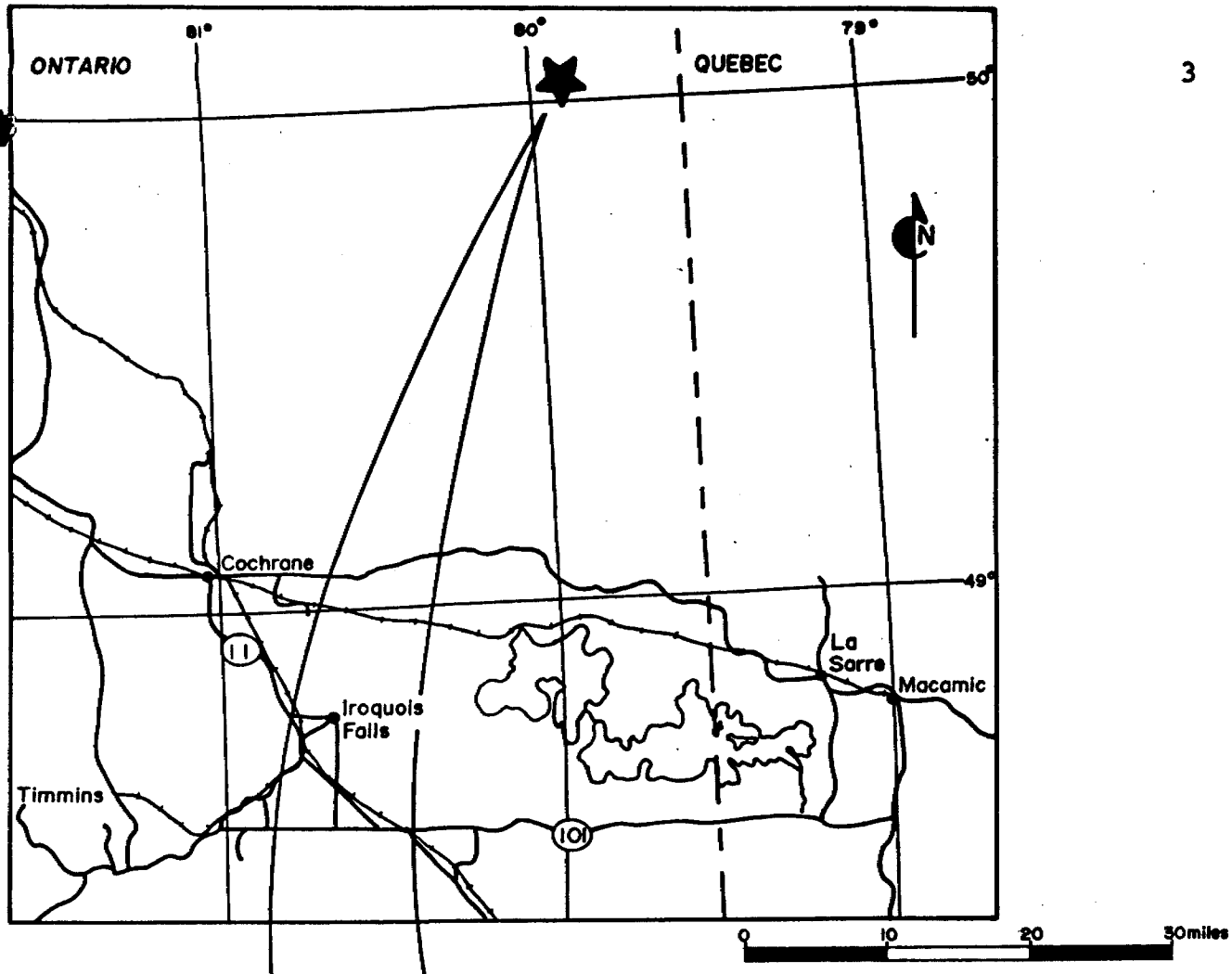
2. LOCATION AND ACCESS

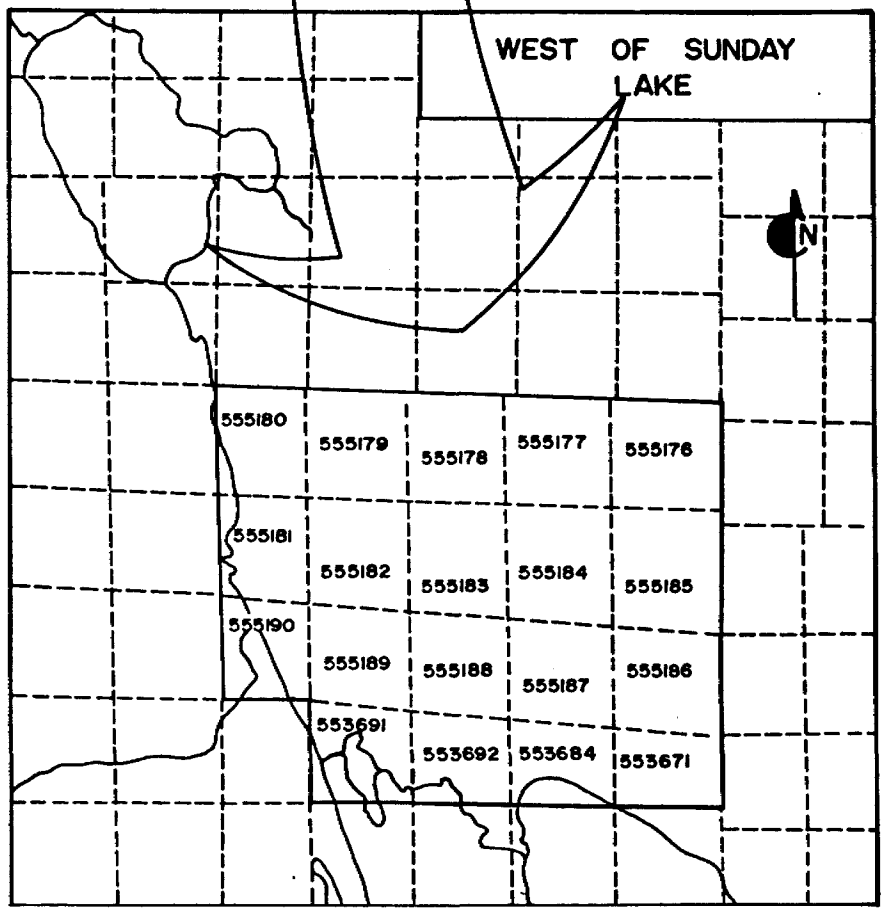
The property consists of 19 contiuous unpatented mining claims numbered 555176 to 555190 inclusive and 552691, 553692, 553684 and 553671.

The claims are located in the west of Sunday Lake township in the Porcupine Mining Division, District of Cochrane.

The property is situated approximately 144 km northeast of Cochrane and approximately 128 km north of La Sarre in northwestern Quebec.

Access to the property is via fixed wing aircraft based at either Timmins or Cochrane. Access in winter is afforded by a winter road. An all weather road under construction from Cochrane and with a completion date in 1982 will serve the Amoco-Campbell Dome Detour Lake mine located approximately 5 km east of the survey area.





4.D

Scale : 1" = 1/2 mile

GLOBAL ENERGY CORPORATION

FAULT LAKE PROJECT
LOCATION MAP

Project No.	By:
Scale:	Drawn:
Drawing No.	Date:

MPH Consulting Limited

3. SURVEY PARAMETERS

3.1 Linecutting

The linecutting was carried out by Ingamar Exploration Limited in November, 1980. A baseline was established with an azimuth of 120° which bisected the property.

Crosslines were established on this baseline at 400 foot intervals with the lines being driven north and south of the baseline at an azimuth of 30° and extended to the property boundaries.

Station intervals for both baselines and crosslines were at 100 foot intervals with approximately 22 miles of line being cut, chained and picketed.

3.2 VLF-EM

Approximately 20 miles of survey lines were covered by this geophysical technique with station observation at 100 foot intervals used to provide systematic coverage of the survey area. Cutler, Maine which transmits at a frequency of 17.8 kHz was used as a signal source. This signal intersects the survey lines at a propagation angle of 62° which will provide adequate electromagnetic coupling with the

interpreted geologic strike.

3.3 Magnetic

Approximately 22 miles of total field magnetometer surveying was conducted on this property. 100 foot station intervals were utilized for routine coverage and 50 foot stations were used for detailing anomalous zones.

3.4 Personnel

The following personnel were connected with this project:

D. Jones, M.Sc. Consultant	Toronto, Ontario
R. Hyland, B.Sc. Geophysicist	Toronto, Ontario
Damon Berryman Operator	Vancouver, B.C.
B. Boudreault Operator	Chicoutimi, Quebec
C. Boudreault Operator	Chicoutimi, Quebec
E. Jones Draftsman	Toronto, Ontario

4. GENERAL GEOLOGY

The geology in the immediate property area is not adequately known, due largely to the poor outcrop distribution in the entire Detour Lake area. Bedrock is suspected to consist of mafic to intermediate metavolcanic flows. Regionally the property is near the nose of a large anticlinal fold in a sedimentary-volcanic sequence. Stratigraphic tops probably lie to the north with the rocks striking at about 90° as evidenced by the geophysical results.

The location of the property is of economic interst in that it lies generally along strike of and 5 km west of the large Amoco Campbell-Dome Detour Lake gold-copper deposit which was discovered in 1974 and is expected to go into production shortly. The gold mineralization at the Detour deposit consists of primary disseminated gold with sulphides in a cherty tuff horizon and gold and sulphides, probably tectonically remobilized from this horizon, occurring in quartz stringer zones. Minor felsic tuffs and altered ultramafic extrusives which stratigraphically underlie the deposit are probably significant to the genesis of the deposit.

Noranda Exploration Co. Ltd. and Amoco Canada Petroleum Co. Ltd. have carried out some diamond drill work in the vicinity of the Ingamar Explorations Ltd. property during the 1970's to test geophysical targets. It is reported that pyrite and

pyrrhotite with some associated graphite mineralization were the cause of the anomalies. No significant assays have been noted.

References:

Johns, G.W. 1979 Burntbush Lake - Detour Lake area (Northern Part), District of Cochrane; O.G.S. Prelim. Map P2242, scale 1: 50,000

Jackson A. Discovery - case history of the Detour Lake gold deposit paper presented at CIMM 82nd Annual Convention, 1980 Toronto

5. INSTRUMENTATION

5.1 VLF Survey

The VLF-EM method employs as a source, one of the numerous submarine communications transmitters in the 15 to 25 kHz band located throughout the world. At the surface of the earth these radio waves propagate predominantly in a single mode along the earth-air interface. This mode is known as the 'surface wave'. Over flat homogenous ground in the absence of vertical conductive discontinuities the magnetic field component of this radio wave is horizontal and perpendicular to its direction of propagation.

Commercial VLF instruments enable detection of disturbing structures by measuring the tilt angle of the major axis of the polarization ellipse. On flat homogeneous ground the tilt angle will be zero, but in the vicinity of conducting disturbances it will acquire a finite value.

Direction of tilt indicates direction of the disturbing structure. Ability to deduce such parameters as depth, depth extent, dip, and width of anomalous structures is minimal. Fortunately, this does not seriously affect location of points where VLF profiles cross the upper

limit of dipping structures which can be identified as areas of greatest change in tilt angle per unit of distance.

The transmitting station used during the survey was Cutler, Maine at 17.8 kHz. The data is presented as profiles with positive to the right, negative to the left. The instruments specifications are given in Appendix 1.

5.2 Magnetometer Systems

A McPhar Model GP70 Proton Precession Field Magnetometer was used to survey the grid. This system utilizes the precession of spinning protons of a hydrogen atom within a hydrocarbon fluid. These spinning magnetic dipoles (protons) are polarized by applying a magnetic field using a current within a coil of wire. When the current is discontinued the protons precess about the earth's magnetic field and in turn generate a small current in the wire. This frequency of precession is proportional to the earth's total magnetic field.

This instrument is read directly in gammas which is the absolute value of the earth's total field for that station.

Correction of the magnetic data for instrument and diurnal drift was done by re-occupying previously established base stations periodically (approximately every 2 hours) during the course of the survey. In this manner a drift curve can be established and adjustment of the field readings can be made such that they are all related to an established datum. Instrument specifications are presented in Appendix I.

6. PRESENTATION OF FIELD DATA

All the field data is presented in a series of maps at the horizontal scale of 1:400.

The VLF-EM data is presented as profiled data along the survey lines and is plotted at a vertical scale of 1" = 40°. In addition the profiled data has been reduced to produce a first derivative contour map of the survey area.

The first derivative values were computed as a simple gradient of percent change per unit distance. Each derivative value was plotted at the midpoint of the two tilt angle values from which it was computed.

The data was originally plotted such that negative derivative values outlined the conductive axes of the anomalies. Consequently only the negative derivative values have been contoured.

The magnetic data is presented as a series of isomagnetic contours superimposed on a map of corrected magnetic values recorded at each station. Contour lines at 50 gammas interval were found suitable to highlight the magnetic expression from the survey area.

7. INTERPRETATION

7.1 Magnetic

The magnetic survey conducted outlined an east-west magnet trend within the survey area.

Magnetic relief within the survey area was approximately 100-300 gammas with very small isolated zones of up to 800 gammas (Map 3). These isolated highs may be caused by cultural effects. (i.e. drill casing).

The minimal magnetic relief precluded a structural interpretation of the area with no crosscutting features noted and no magnetically defined contact zones outlined.

The relief is due to small variations in susceptibility contrast and possibly partly due to the fairly deep overburden coverage 50-100 feet which would tend to smooth any high frequency variations.

Several small (50-100 gammas) isolated, discrete, magnetic lows were also observed. (Map 3).

7.2 VLF-EM

The VLF-EM surveying outlined numerous anomalous horizons within the survey area which generally strike east-west. The anomalies in the main were short discrete

zones within longer weakly conductive horizons although several isolated narrow, discrete anomalies were also observed (Map 2).

Relief in the area was minimal and no topographically related anomalies were noted.

A strong and fairly persistent fault pattern was interpreted from the VLF-EM derivative data and is presented in Map 2. Thirteen conductors were outlined and are discussed in detail in the following section.

Anomaly 'A'- This anomaly straddles the baseline between 8 + 00W and 12 + 00E from an observed strike length of approximately 2000 feet. The anomaly is open to the west and is a broad diffused anomaly with its strongest portion being between lines 0 + 00 and 4 + 00W. The eastern portion of the anomaly appears to be faulted and possibly offset slightly northwards. The conductor showed no magnetic correlation. Interpreted depth for this zone is estimated at approximately 90 feet.

Anomaly 'B'- Anomaly 'B' consists of a number of sub-parallel zones striking approximately east-west. They are located at approximately 10 + 00S between lines 4 + 00W and 12 + 00E. 'B_1' is a long linear weakly conductive anomaly with discrete relatively strong

conductive zones at its extreme east and west ends. Interpreted depth for both discrete zones are 50 and 75 feet respectively and both dip steeply to the north. An interpreted north-south fault transects anomaly 'B' but no lateral displacement of the anomaly is apparent. 'B_2' is a short, one-line anomaly with its eastern portion apparently truncated by a fault. This zone is at an oblique angle to 'B_1' and has a steep north to vertical dip. The estimated depth of the conductive zone is 65 feet. Both 'B_1' and 'B_2' are coincident with a linear magnetic high which is approximately 50 gammas above background.

Anomaly 'C' - This zone is a two line anomaly centred at 4 + 00N on line 8 + 00W. Depth is estimated at approximately 45 feet and the anomaly appears to be vertically dipping. A small (50 gammas), one-station magnetic zone is semi-coincident with anomaly 'C'.

Anomaly 'D'- is located at approximately 22 + 00S and centred on line 12 + 00E. It is a short anomaly with its eastern end abruptly truncated by a north-south fault structure. The conductive zone is estimated to be at a depth of approximately 90 feet and dips 70-90° north. The zone is semi-coincident with a short, discrete, two-line relative magnetic low (100 gammas).

Anomaly 'E'- Anomaly 'E' is comprised of two, short, discrete, parallel conductive zones superimposed on a broader conductive horizon. The two zones are bounded on both ends by interpreted fault structures. Anomaly 'E' is located at approximately 12 + 50S between lines 12 + 00 and 20 + 00E. No depth estimates were interpreted owing to the mutual interference of the two conductive zones. The strength and persistence of the anomaly complex is similar to other conductive horizons in the immediate area and the depth is probably of a similar magnitude. (∿70-100 feet).

A broad magnetic low coincides with the broad conductive horizon which contains anomaly 'E' but there is no apparent direct magnetic correlation with anomaly 'E'.

Anomaly 'F'- is a long, semi-continuous zone located between the baseline and 8 + 00N and between lines 16 + 00E and 56 + 00E. The zone is open eastward. The zone strikes east-west from line 16 + 00 to 32 + 00E where it undergoes a distinct curve to the northeast. At line 40+ 00E, it curves again and resumes an east-west strike.

The major portion of this zone is a weak, broad diffuse conductive horizon. No reasonable depth estimates were possible from the profiles.

The strongest conductive portion of Anomaly 'F is

located at line 20 + 00E.

The VLF-EM data indicates a depth of 50 feet and a dip of approximately 90°. The western extent of anomaly 'F' is truncated by a north-south fault. A smaller on echelon conductive zone is centred at line 28 + 00E at 0 + 50S. It is possibly a continuation of 'F' or a parallel distinct structure.

Anomaly 'F' shows no distinct signature.

Anomaly 'G'- This is a long, weak, diffuse anomalous horizon hosting a series of discrete conductive zones located at approximately 12 + 00 N and entirely traversing the property. The zone is open at either end. The short conductive zones are of low amplitude and have an interpreted depth of approximately 60 - 80 feet. The short, discrete anomalies show no magnetic correlation and no magnetic signature appears coincident with anomaly 'G'.

Anomaly 'H'- This is a short, discrete two-line anomaly located at 4 + 00S on lines 24 + 00 and 28 + 00E. The anomaly sub-parallels and is approximately 300 feet south of 'F'.

This zone is estimated to be approximately 40-50 feet

deep. The zone is apparently bounded on both ends by interpreted north-south faults. No magnetic signature was found to be coincident with anomaly 'H'.

Anomaly 'I' - Anomaly 'I' is a long, diffuse, weakly-conductive horizon containing several discrete, weak anomalies. The anomaly is located at approximately 18 + 00S and between line 16 + 00 and 52 + 00E. (Map 2). Depth estimates at various intervals along the horizon range from 80 - 100 feet. No dip estimates were interpreted.

Anomaly 'I' appears to be faulted at various intervals along its length (Map 2) although no major structural changes are observable. No magnetic signature is attributable to this anomaly. (Map 2).

Anomaly 'J'- is a linear narrow conductive horizon located between 3 + 00S and 6 + 00N and between lines 36 + 00 and 56 + 00E with the anomaly being open to the east. This horizon is faulted by crosscutting north-south structures between lines 44 + 00 and 48 + 00E and lines 48 + 00 and 52 + 00E. The character of the zone is substantially altered on either side of both faults. Depth estimates along the length of the horizon vary from 50 - 90 feet with the depth increasing consistently eastward.

There appears to be a positive magnetic anomaly associated with the western portion of this zone, however any correlation is probably coincidental and not directly attributable to the same causal source.

Anomaly 'K' - This is a narrow discrete anomalous zone located at 5 + 00 S between lines 32 + 00 to 44 + 00E. It is bounded on either end by north-south interpreted faults. Its estimated depth is approximately 45 feet with a vertical dip. The zone shows no magnetic correlation.

Anomaly 'L' - This anomaly is east of and parallels 'K'. It is a narrow discrete horizon and is one of the strongest VLF-EM anomalies found on this property. The anomaly is bounded on its western end by a north-south fault. A second north-south structure appears to transect its conductive axis at line 52 + 00E although the axial base can be followed to line 56 + 00E.

The strongest conductive portion of this zone is coincident with a discrete magnetic low.

Anomaly 'M' - This zone subparallels anomaly 'G' in the northeast corner of the property. It is a broad, weakly conductive anomaly. Depth estimates were not possible due to undue interference from portions of Anomaly 'G'. Anomaly 'M' showed no magnetic conduction.

8. CONCLUSIONS

The geophysical surveys conducted on this property outlined an east-west geologic stratigraphy with a number of north-south faults interpreted from the VLF-EM geophysical data.

The magnetometer survey showed very little magnetic relief and no distinctive rock units or contacts were identified. The minimal magnetic relief precluded any structural interpretations and no distinct magnetic anomalies were outlined.

The VLF EM electromagnetic survey conducted outlined a number of conductive horizons of which thirteen have been discussed in this report. The majority of the anomalies are characterized by discrete weakly conductive zones superimposed on a broader, diffuse conductive horizon. A small number of discrete isolated VLF-EM anomalies were also outlined.

Two anomalies'B'and'J' showed a small coincident magnetic high of approximately 50 gammas and a further three zones 'D', 'E' and 'L' was coincident with small (50 gammas) magnetic lows.

The remainder of the VLF-EM anomalies showed no magnetic correlation.

The Detour Lake gold deposit, situated generally along strike of and approximately 5000 meters east of the property is recognized as a disseminated gold deposit in a sulphide-bearing cherty horizon. The main zone is approximately 50-100 feet in width.

The geophysical response from the main Detour Lake zone shows a magnetic anomaly of approximately 2500 gammas over a background of 500-600 gammas coincident with a strong electromagnetic anomaly. The zone was also a string induced polarization anomaly.

No geophysical signatures outlined on the Fault Lake property during the surveying were similar in either strength or persistence to the response attributable to the Detour Lake gold deposit.

The high frequency utilized by the VLF technique is useful in that even weakly conductive horizons are excited and produce a measurable response. However its major disadvantage is its attenuated depth of penetration in areas of conductive overburden. In areas similar to the Fault Lake property where the overburden conductivity is possibly in the range of 20 - 100 ohm meters, effective exploratory depth may be of the order of 50-150 feet. Thus it is possible that a lower frequency electromagnetic system may outline targets beneath the penetrative depth of the VLF-EM techniques in this area.

9. RECOMMENDATIONS

Exploration of this property with VLF-EM and magnetometer surveying has outlined no obvious geophysically directed targets based upon the Detour Lake gold mine geological model.

The proximity of the property to the Detour Lake deposit and its favourably interpreted stratigraphic location however warrant that further investigation of this property be undertaken to adequately evaluate its potential.

The VLF-EM has outlined a number of conductive zones however no quantitative data concerning the causitive source of these anomalies can be made.

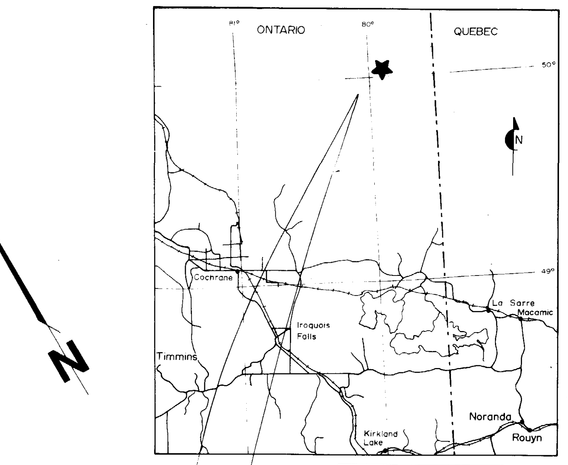
To further evaluate this property it is recommended that a geologic mapping programme be undertaken and an induced polarization survey be conducted to refine and delineate any disseminated sulphide zones which possibly carry economic gold values.

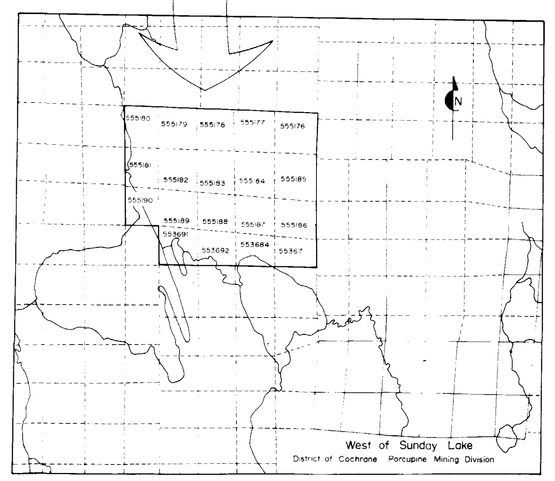
At that time further recommendations to evaluate the property can be made.

Respectfully submitted,

D. Jones, M.Sc.

DJ:g





LEGEND

McPHAR GP 70 PROTON MAGNETOMETER

- 59046 ABSOLUTE MAGNETIC VALUE (gammas)
- MAGNETIC CONTOUR
- MAGNETIC DEPRESSION
- CONTOUR INTERVALS
- 500 gammas
- 100 gammas
- CLAIM POST LOCATION
- CLAIM POST LOCATED BY EXTRAPOLATION
- CLAIM LINE
- PROPERTY BOUNDARY
- LAKE
- CREEK
- HILL
- ROAD

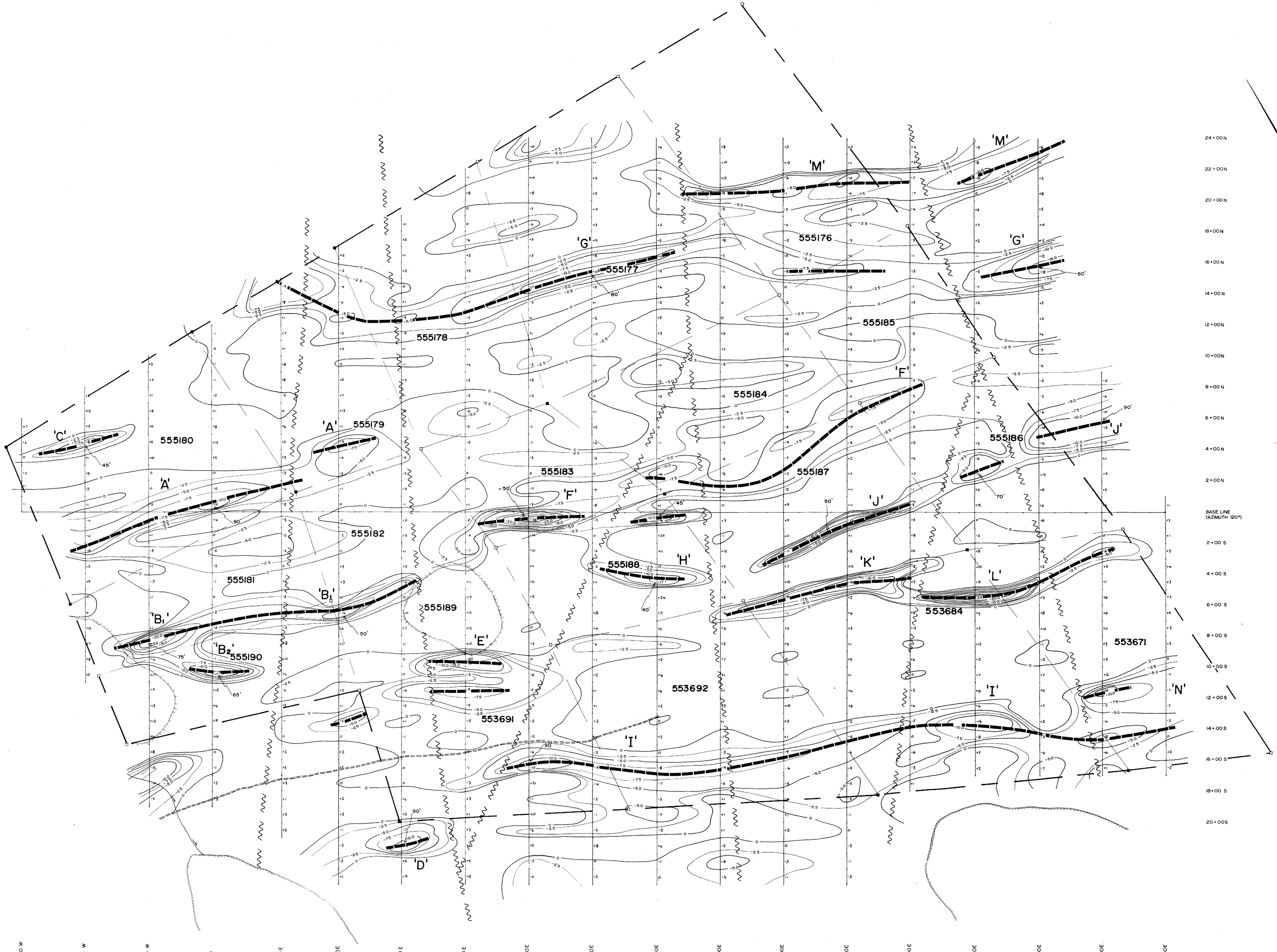
INGAMAR EXPLORATIONS LIMITED

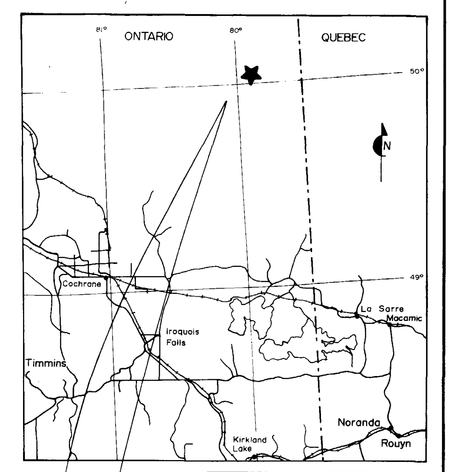
FAULT LAKE PROJECT
MAGNETOMETER SURVEY

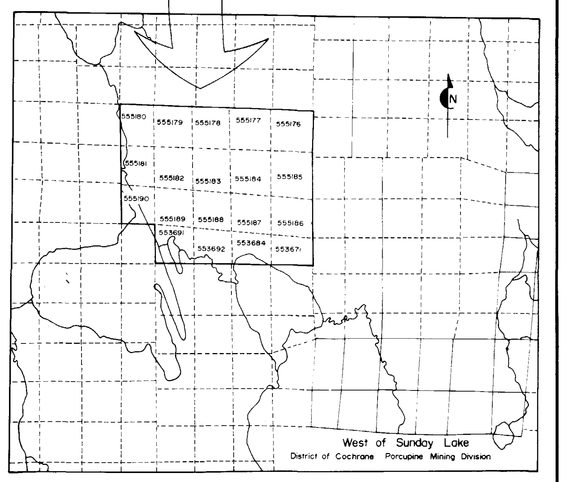
Project No. C 442	By D. Jones
Scale: 1:2400	Drawn E.J.
Drawing No. 3	Date. March, 1981

MPH Consulting Limited

ONTARIO
QUEBEC
Cochrane
Timmins
Iroquois Falls
La Sarre
Macamic
Kirkland Lake
Noranda
Rouyn
West of Sunday Lake
District of Cochrane Porcupine Mining Division
555176
555177
555178
555179
555180
555181
555182
555183
555184
555185
555186
555187
555188
555189
555190
553671
553684
553691
553692
BASE LINE (AZIMUTH 120°)
FAULT LAKE
LINE 12+00 W
LINE 8+00 W
LINE 4+00 W
LINE 0+00
LINE 4+00 E
LINE 8+00 E
LINE 12+00 E
LINE 16+00 E
LINE 20+00 E
LINE 24+00 E
LINE 28+00 E
LINE 32+00 E
LINE 36+00 E
LINE 40+00 E
LINE 44+00 E
LINE 48+00 E
LINE 52+00 E
LINE 56+00 E
LINE 60+00 E
LEGEND
VLF-EM PROFILE MAP
Instrument : GEONICS EM-16
Station : CUTLER MAINE, Frequency, 17.8 KHz
CUTLER MAINE
INPHASE PROFILE
+10%
0
-10%
VERTICAL SCALE 1cm =10%
CONDUCTOR AXIS
CLAIM POST LOCATION
CLAIM POST LOCATED BY EXTRAPOLATION
CLAIM LINE
PROPERTY BOUNDARY
LAKE
CREEK
HILL
ROAD
INGAMAR EXPLORATIONS LIMITED
FAULT LAKE PROJECT
VLF - EM PROFILE MAP
Project No: C442
By: D. Jones
Scale: 1:2400
Drawn: E.J.
Drawing No: 1
Date: March, 1981
MPH Consulting Limited
210







LEGEND

VLF-EM DERIVATIVE MAP

Instrument: GEONICS EM-16

Station: CUTLER MAINE, Frequency 17.8 KHz

CUTLER MAINE

+10 VLF-EM FIRST DERIVATIVE (From Inphase Values)

10 CONTOUR INTERVAL (10%)

10' CONDUCTOR AXIS WITH DEPTH (metres)

CLAIM POST LOCATION

CLAIM POST LOCATED BY EXTRAPOLATION

CLAIM LINE — PROPERTY BOUNDARY

LAKE — CREEK

HILL — ROAD

FAULT

INGAMAR EXPLORATIONS LIMITED

FAULT LAKE PROJECT

VLF-EM FIRST DERIVATIVE MAP

Project No: C-442	By: D. Jones
Scale: 1"=400'	Drawn: E.J.
Drawing No: 2	Date: March, 1981

MPH Consulting Limited