HELICOPTER GEOPHYSICAL SURVEY

MATACHEWAN, ONT.

for

FALCONBRIDGE LTD.

by

GEOPHYSICAL SURVEYS INC.
2272 Léon Harmel,
Québec, QUE.
G1N 4L2.

SEPTEMBER 1985

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1. INTRODUCTION

Geophysical Surveys Inc. has carried out an airborne geophysical survey of 268 line kilometres in the Matachewan area, Ontario for Falconbridge Ltd. in July 1985.

The lines were spaced 100 metres apart, the survey area is shown on the index map (figure 1.1). The survey area was flown twice, ounce with our REXHEM-4 system and a second time with our gradiometer for the measurement of the vertical gradient.

The REXHEM-4 instrumentation includes an EMEX-1 from Geotech Ltd, a G803 proton magnetometer from Geometrics Ltd, a VLF system TOTEM-2A from Herz Industries Ltd, and a digital data acquisition system from Sonotek Ltd. Four pairs of coils are installed in the EMEX-1 bird shell; two pairs are in a standard vertical coaxial configuration and the two others are in a horizontal coplanar configuration. The transmitting frequencies are 736 and 4150 Hz for the coaxial, 900 and 5000 Hz for the coplanar coils.

The electromagnetic coils mounted in a bird shell of 8 metres in length were towed 30 metres below the helicopter at an average height of 30 metres above ground.

The magnetic sensor was towed 18 metres below the helicopter at an average height of 42 metres above ground. The survey data quality is excellent particularly with a noise level less than one ppm on the electromagnetic traces and of two gammas on the magnetic records.

For the measurement of the vertical magnetic gradient, the whole EMEX-1 system was removed from the helicopter and replaced by three V-200 Scintrex cesium vapour magnetometers.

The sensors installed vertically 2m apart were towed 30m below the helicopter at an average height of 45 metres above ground.

In flight, the noise levels of the total magnetic field and the vertical magnetic gradient as determined by fourth difference calculations were respectively less than 0.04 gammas and 0.075 gammas/m.

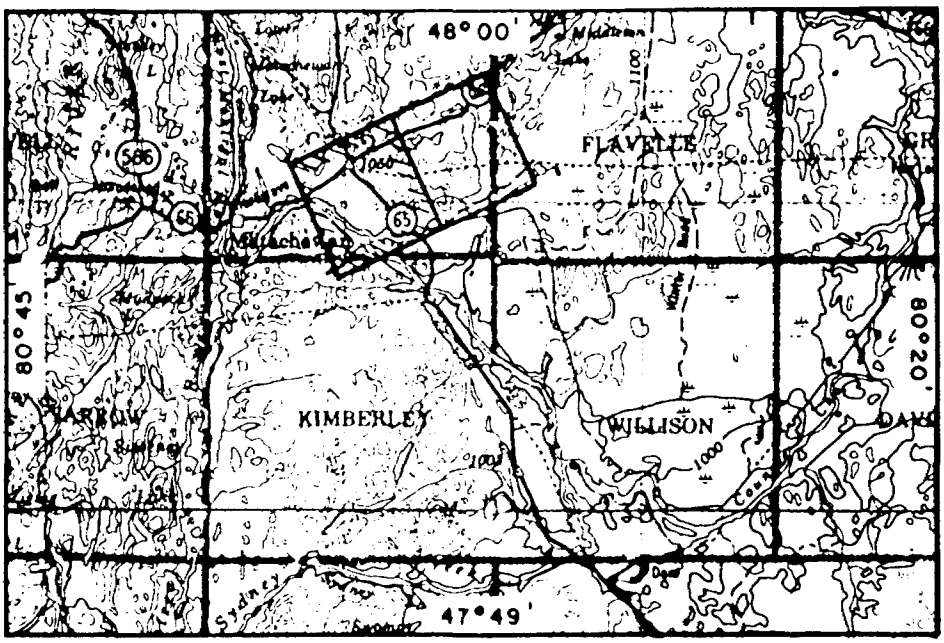


FIGURE 1.1

The total field and the quadrature component of the VLF electromagnetic field were recorded simultaneously from two stations, NAA Culter, Maine and from NSS Annapolis, Maryland.

The data processing and interpretation were done in Quebec on a PDP11/70 computer and a Zeta drum plotter.

2. DATA PRESENTATION

The maps at a scale of 1:5,000 and 1:10,000 accompanying this report are:

- the isomagnetic contours of the total field
- the isomagnetic contours of the vertical magnetic gradient
- the total field and quadrature profiles of the VLF-EM
- the electromagnetic anomalies shown by symbols
- the in-phase and quadrature profiles of the electromagnetic field recorded at 639 Hz

The Applicon color maps of the total field and the vertical magnetic gradient were only produced at a scale of 1:10,000.

3. INTERPRETATION OF THE ELECTORMAGNETIC DATA

One conductor of about 300m in length was detected in your survey area along four consecutive flight lines.

This conductor is a priority target and more especially over the anomaly 15101A which has an higher amplitude than the three others anomalies.

Moreover, it's conductivity thickness value of 14 mhos may originate from sulphides mineralization.

4. GENERAL INTERPRETATION

The EM conductor parameters, apparent conductance and conductor depth are defined by a computer-based interpretative procedure using the graphic terminal model 4052 from Tektronix Ltd.

The model used is the vertical thin sheet (figure 4.1) The EM anomalies are picked on the screen by the geophysicist with a cursor and the conductor parameters, conductivity-thickness, depth, and location are automatically calculated and stored on a cassette for later transmission on the main computer and the plotting of these anomalies.

The apparent conductance obtained this way is the product of the electrical conductivity and average thickness.

The best conductivity-thickness product approximations are made from the stronger anomaly responses, whereas for weaker anomalies less than 3 ppm, the approximation is less valid, usually the mhos calculation for each conductor is a good discriminating parameter. Depth estimated to the tops of the conductors should however be treated with caution as the geometry and strength of the anomaly are critical in this approximation.

Most overburden have apparent conductances lower than 4 mhos and also the very weak bedrock conductors and the "structural" conductors such as unmineralized faults and shears.

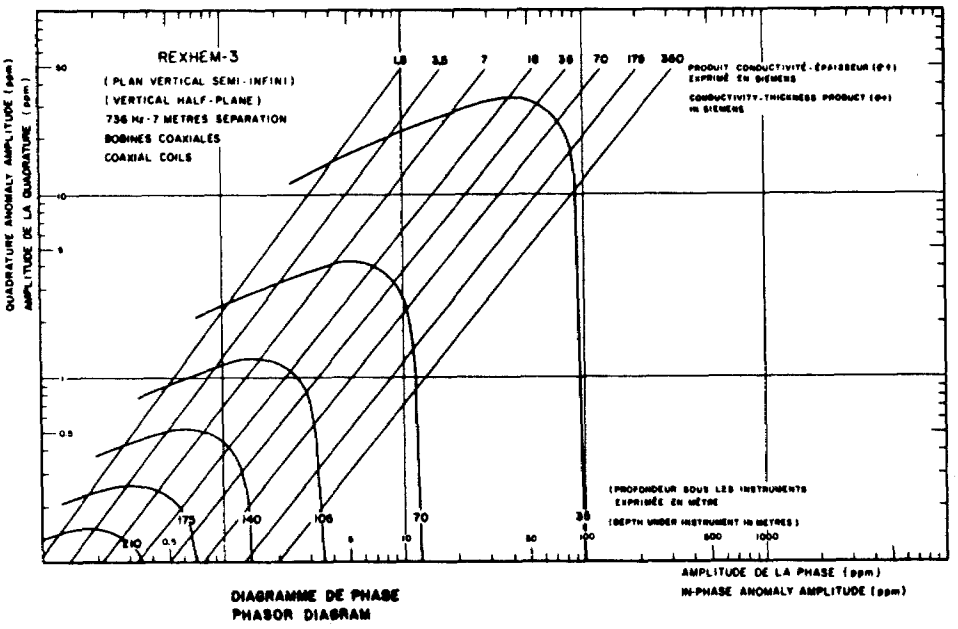


DIAGRAMME DE PHASE
PHASOR DIAGRAM

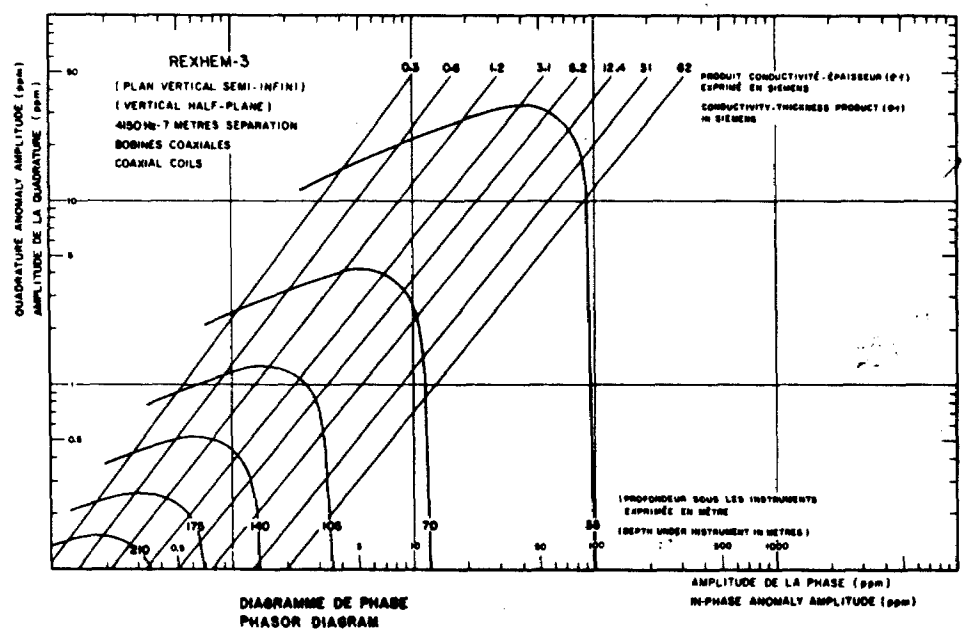


DIAGRAMME DE PHASE
PHASOR DIAGRAM

FIG.4.1 PHASOR DIAGRAMS - VERTICAL HALF-PLANE

Ordinarily, the overburden conductor are easily distinguished from these bedrock and structural features by the shapes of their responses. The overburden conductors are identified by the symbol X on the electromagnetic anomalies map but, when the anomaly cannot be related with confidence to an overburden response, the X is put in a circle. (see the legend of the electromagnetic anomalies map)

Poor to moderate conductance (4 to 20 mhos) may originate from massive sulphides, if they are not well connected or if they are of a poorly-conducting variety such as pyrite or galena.

A strong conductance higher than 20 mhos indicates well-connected mineralization extending throughout a fairly large region, and this often suggests either graphitic zones or massive sulphides.

When long conductors without magnetic correlation are located on/or parallel to known faults or photographic linears, graphite is most likely the cause. It is unfortunate that graphite can also occur as relatively short conductors and produce attractive looking anomalies. With no other information than the airborne results, these must be examined on the ground.

An EM anomaly with a magnetic correlation may be caused by a conductor which is also magnetic, or by a conductor which lies near 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 are often graphite and magnetite. It is usually very difficult to distinguish between cases.

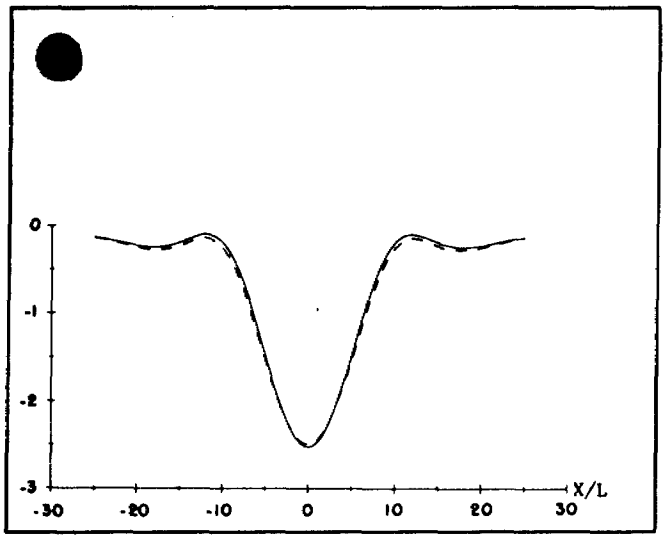
When the conductor is strongly magnetic, the amplitude of the in-phase EM anomaly is weakened and if the conductivity is also weak, the in-phase EM anomaly may even be reversed in sign. These anomalies are indicated by the letter M inside a circle on the electromagnetic anomalies map.

Contact zones can often be predicted when anomaly trends coincide with the lines of maximum gradient along a flanking magnetic anomaly.

The characteristic response curve of the coplanar coil over thin conductor (minimum over the conductor with two adjacent peaks) is particularly useful to differentiate closely spaced conductors from thick massive conductor or from thick massive conductor of variable conductivity. (figures *4.2 and 4.3*)

Power lines sometimes produce spurious anomalies but, these can be identified by reference to the monitor trace.

Railroad pipeline and other artificial conductors are recognized by studying the video tapes.



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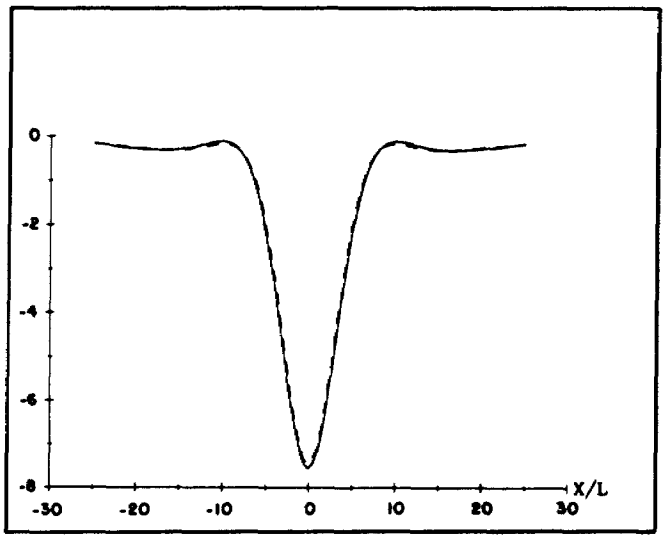

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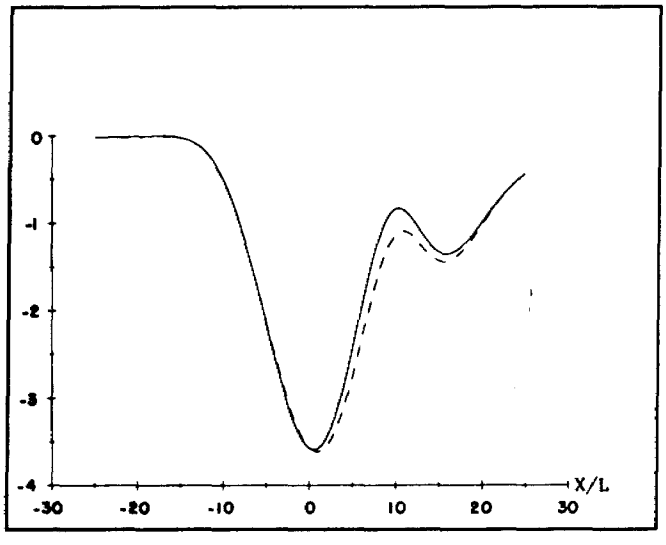

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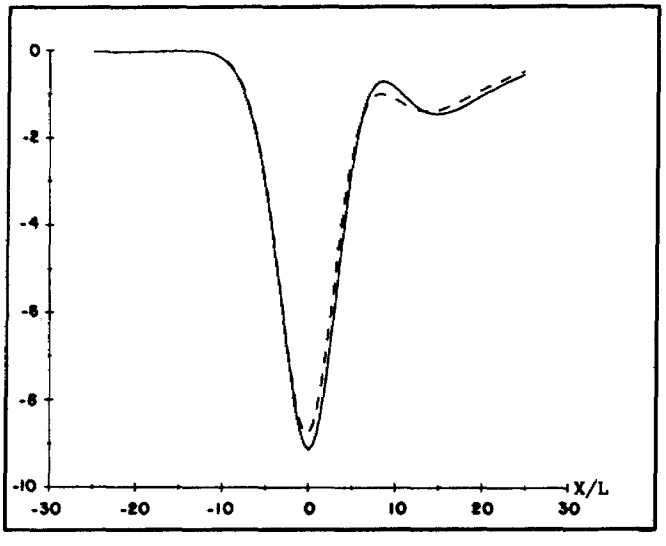

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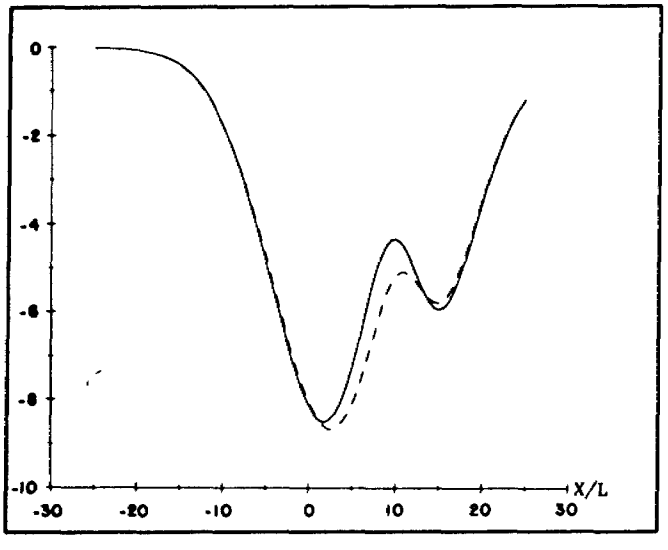

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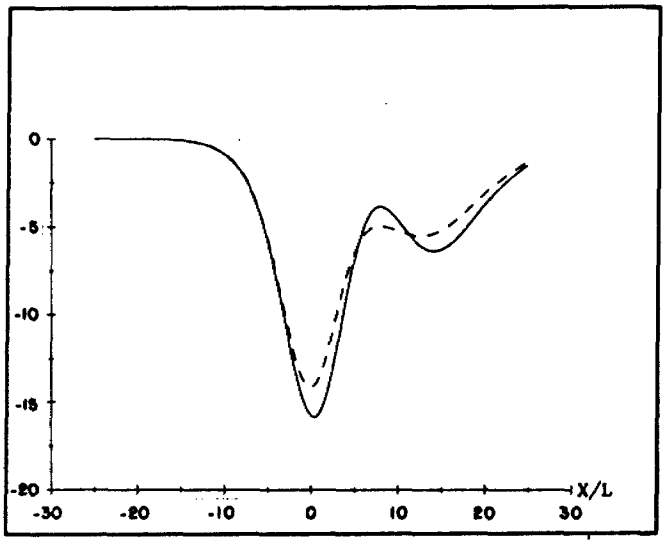


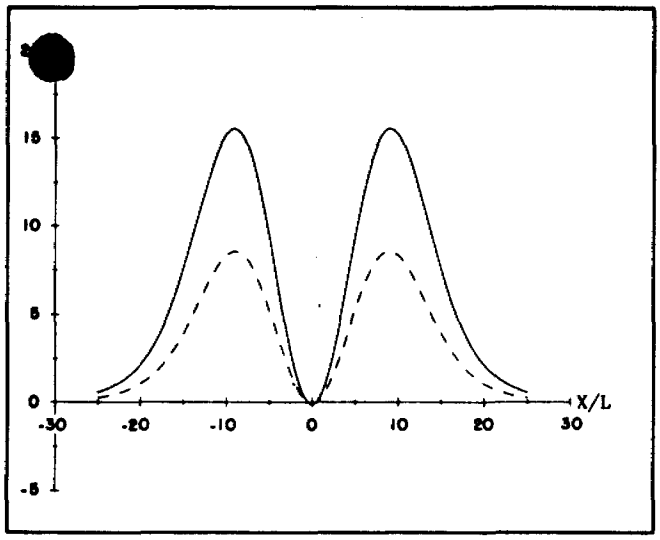
STRIKE, DIP, PLUNGE=(60.0, 30.0, 0.0)

COAXIAL COILS, FREQUENCY = 736 Hz, SEPARATION = 7 METRES

DEPTH UNDER THE INSTRUMENTS = 50 METRES, REAL (SOLID) IMAGINARY (DASH) IN P.P.M.

CONDUCTANCE = 20 SIEMENS

FIG.4.2 MODEL CURVES



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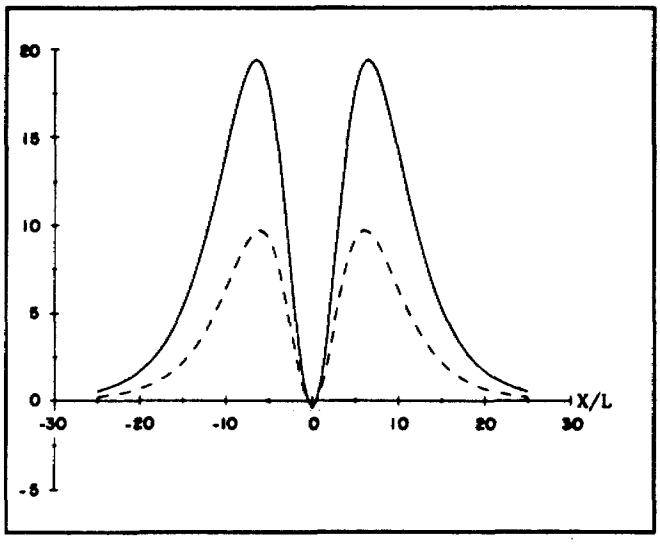

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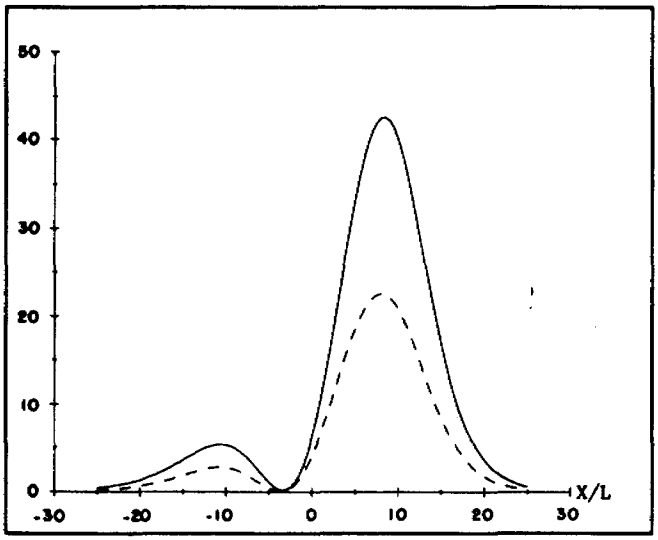

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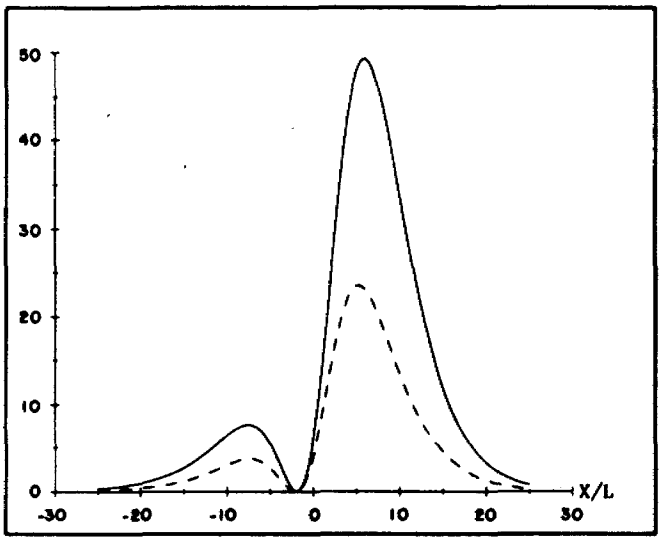

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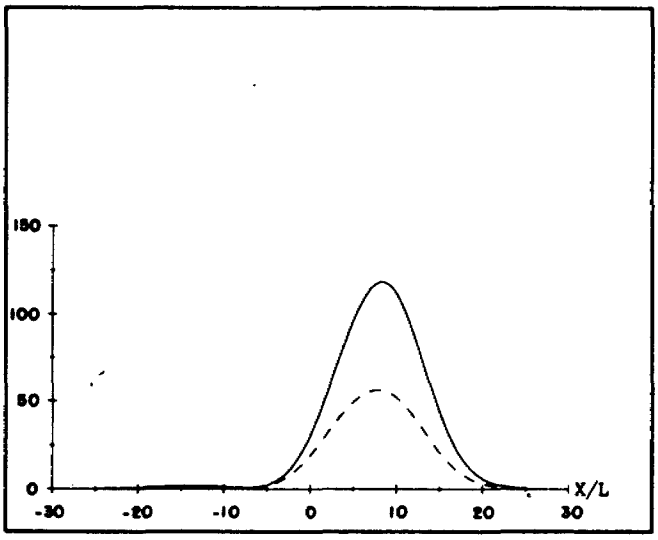

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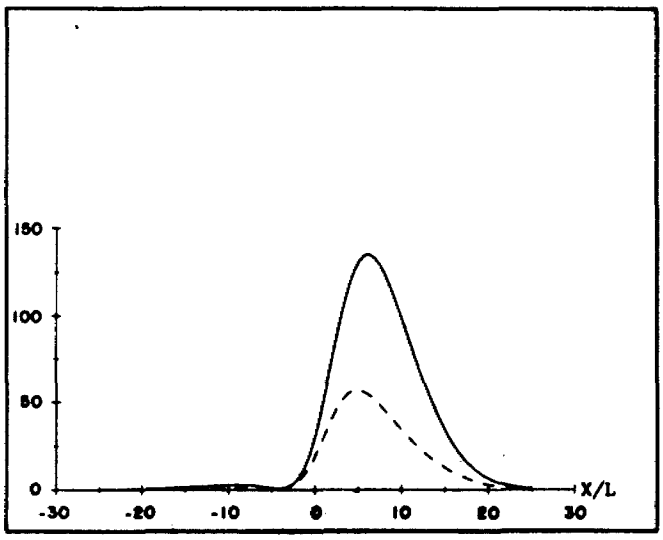

STRIKE, DIP, PLUNGE=(60.0, 30.0, 0.0)

HORIZONTAL COPLANAR COILS, FREQUENCY = 1800 Hz, SEPARATION = 7 METRES
DEPTH UNDER THE INSTRUMENTS = 50 METRES, REAL (SOLID) IMAGINARY (DASH) IN P.P.M.
CONDUCTANCE = 20 SIEMENS

FIG.4.3 MODEL CURVES

Commercial sulphide ore bodies are rare, and those that respond to airborne survey methods usually have medium to high conductivity. Many have magnetic correlation caused by magnetite and/or pyrrhotite and most of them are relatively short conductors.

5. DESCRIPTION OF THE GEOPHYSICAL INSTRUMENTATION

5.1 The REXHEM-4

The REXHEM-4 main component is a new towed electromagnetic prospecting system which features multiple simultaneous frequencies and coil configuration, providing more diagnostic geophysical information about conductors, thereby increasing the chances of discovering massive sulphide ores.

Four pairs of coils are installed in a kevlar bird shell 8 metres in length; two pairs are in a standard coaxial (maximum coupled) configuration and the two others are in a horizontal coplanar (minimum coupled) configuration.

The transmitting frequencies are 736 and 4150 Hz for the coaxial coils, 900 and 5000 Hz for the coplanar coils.

The advances design of this electromagnetic system offers the following features:

a) A noise level smaller than 0.5 ppm is obtained by using kevlar for the bird shell, a material offering a degree of structural rigidity not previously available; also, a new suspension system reduces bird bending noise. The noise level is actually the lowest of all existing helicopter electromagnetic systems.

b) High resolution. The short rise time of 0.1 second combined with the small coil separation (8 metres) provides exceptionnaly high resolution. The REXHEM-4 is an ideal system to discriminate between closely-spaced multiple conductors and to identify conductors too small to be detected by airborne electromagnetic system having a large coil separation.

c) Eight channels of electromagnetic data recorded from coaxial and coplanar coil pairs at four different frequencies provide more diagnostic geophysical information and yield conductivity-thickness products more accurately than those derived from less sophisticated systems. The conductivity-thickness values calculated from different frequencies and transferred on the phasor diagram permit to check if the model used is appropriate for the interpretation. Consequently, this test is useful to discriminate bedrock conductors from overburden

thickness and conductivity may be quite variable in a survey area, the depth of penetration of an airborne system may be insufficient to detect bedrock conductors. Part of the survey area would therefore remain effectively unexplored. With the information gathered on the eight channels of electromagnetic data, these areas can now be identified and retained for further exploration by some ground geophycical techniques that are capable of penetrating the overburden masking effect.

In addition, the use of multiple frequencies allows for a wider range of bedrock conductors to be energized.

The low frequencies of the REXHEM-4 system are much less sensitive to surface conductors that the two higher frequencies and is therefore more effective to detect underlying massive sulphide ores.

The massive sulphide lens may be masked by a strong overburden response at the high frequencies but low conductivity mineralization without interfering surface conductors will respond better at the higher frequencies.

d) Unique ability to determine conductor geometry by comparison of the electromagnetic responses from the coaxial and the coplanar coil configurations. Closely spaced thin conductors can be differentiated from thick massive conductors or from thick massive conductors of variable conductivity.

This discrimination is made possible by comparing the characteristics of anomaly shape (minimum response over the conductor with two adjacent peaks) obtained over thin conductors as defined by the coplanar coils.

Moreover, the relative amplitude of the two peaks of these anomalies is an indication of the conductor dip-angle.

The coplanar coil pair yields data which are unaffected by the conductor orientation relative to the flight direction. This coil configuration can therefore detect the conductors striking parallel to the flight line which cannot be energized by the coaxial coil pairs.

e) Improved electronic signal processing substantially reduces interference from thunderstorm radiation spherics and from radar, FM, television and standard broadcast transmitters. The REXHEM-4 can thus be flown near urban areas.

The system is equipped with a 60 Hertz power line monitor and a "spherics" monitor to distinguish power lines and spherics from target conductors.

The proton magnetometer, model G803 from Geometrics Inc., has a sensitivity of 0.5 gamma; the VLF-EM is the TOTEM-2A from Herz Industries Ltd., operating simultaneously at two frequencies. Consequently, two VLF stations can be tuned to energize conductors in the survey area which may be oriented perpendicular or parallel to the flight lines.

The digital data acquisition system is the Sonotek SDS-1200 which features Z-80 microprocessor, interactive communication via keyboard and alphanumeric display, complete read-after-write, verification of magnetic tape records, and analog-to digital-to analog data replay capability in flight for 100% confidence level. An another key feature of this system is the fact that all data collection routines, checking, buffering, recording and verification are software controlled and therefore programs can be easily altered to suit almost any special requirement. The memory capacity of 64K bytes, combined with the power and speed of Z-80 microprocessor, enables us to do real-time data processing, in addition to all the usual data acquisition and formatting functions.

The GR-33 graphic recorder, from RMS Instruments Ltd., operated under control of a host computer allows the annotation of recording parameters and messages. This computer controls the 1240 individual printing elements for the maximum flexibility in creating high resolution graphic images. Up to 32 analog or 32 digital signals may be recorded in a format similar to a conventional multichannel strip chart recorder.

The video flight path recorder with automatic iris wide angle lens assures perfect exposures with no operator adjustment. It records both video and data which is stored alphanumerically in the top portion of each frame. Data and video are available for review immediately after each flight with no further processing. Therefore, anomaly identification and localization can be carried out in the field more rapidly and precisely than with a conventional 35mm tracking camera.

5.2 *The vertical magnetic gradiometer*

Three V-200 Scintrex cesium vapour magnetometers were used for the measurement of the total field from the lower and upper sensors and the vertical magnetic gradient.

The sensors installed vertically 2m apart were towed 30m below the helicopter on a 6m bird. The vertical magnetic gradient was measured twice a second with a sensitivity of 0.005 gammas per m.

The accessory equipment consists of a TOTEM-2A, VLF-EM system, a Sonotek SDS-1200 digital data acquisition, a GR-33 graphic recorder, a video flight path recorder and a radar altimeter.

6. DESCRIPTION OF THE ANALOGUE CHARTS

6.1 The REXHEM-4 survey

The geophysical data were recorded on sixteen channels by the RMS graphic recorder (figure 6.1). These channels of information are:

i) The spherics activity (1 channel)

ii) The elevation above ground (1 channel)

iii) The electromagnetic data, phase and quadrature recorded at frequencies of 736, 900, 4150 and 5000 Hz (8 channels)

iv) The VLF data, total field and quadrature recorded from two stations (4 channels)

v) The magnetic data shown at two different vertical scales (100 gammas and 1000 gammas) (2 channels)

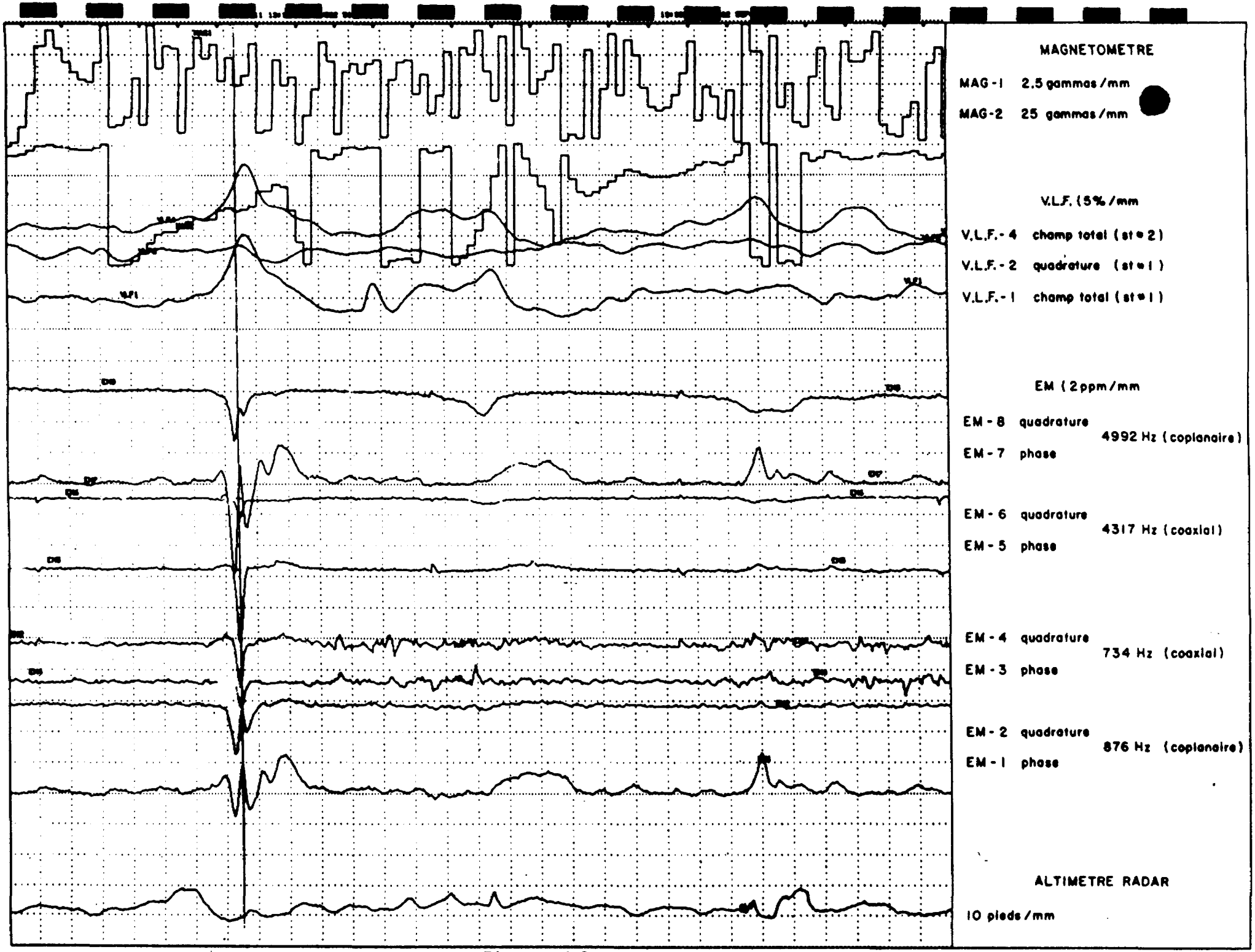
MAGNETOMETRE
MAG-1 2.5 gammas/mm
MAG-2 25 gammas/mm
V.L.F. (5%/mm
V.L.F.-4 champ total (st*2)
V.L.F.-2 quadrature (st*1)
V.L.F.-1 champ total (st*1)
EM (2ppm/mm
EM-8 quadrature
4992 Hz (coplanaire)
EM-7 phase
EM-6 quadrature
4317 Hz (coaxial)
EM-5 phase
EM-4 quadrature
734 Hz (coaxial)
EM-3 phase
EM-2 quadrature
876 Hz (coplanaire)
EM-1 phase
ALTIMETRE RADAR
10 pieds/mm

Figure 6.1

6.2 The vertical magnetic gradiometer survey

The geophysical data were recorded on fifteen channels by the RMS graphic recorder (figure 6.2) These channels of information are:

TFA1	Total magnetic field (upper mag) 1000 gammas/2cm
TFA2	Total magnetic field (upper mag) 100 gammas/4cm
TFA3	Total magnetic field (upper mag) 10 gammas/4cm
TFB1	Total magnetic field (lower mag) 100 gammas/4cm
TFB2	Total magnetic field (lower mag) 10 gammas/4cm
VLF-1	Total field from NSS Annapolis
VLF-2	Quadrature from NSS Annapolis
VLF-3	Total field from NAA Cutler
VLF-4	Quadrature from NAA Cutler
GRD1	Vertical magnetic gradient ± 5 gammas/4cm
TFAD	Fourth difference (upper mag) 2 gammas/2cm
TFBD	Fourth difference (lower mag) 2 gammas/2cm
GR4D	Fourth difference gradient 2 gammas/2cm
RALT	Radar altimeter
BALT	Barometric altimeter

The analogue chart scale is approximatively at 1:10,000. The chart paper moves through the recorder console at a speed of 2.5mm/sec. and the average speed of the helicopter is 90 kilometres per hour.

The camera fiducial marks were printed on the analogue chart at an interval of 0.5 second. A longer fiducial mark was printed at every multiple of 10. The text printed over these fiducial marks, for example A 004001 14:01:54 00507, are respectively the line number, the time and the fiducial number at the fiducial mark located immediately at the left of the A letter.

VERTICAL MAGNETIC GRADIENT

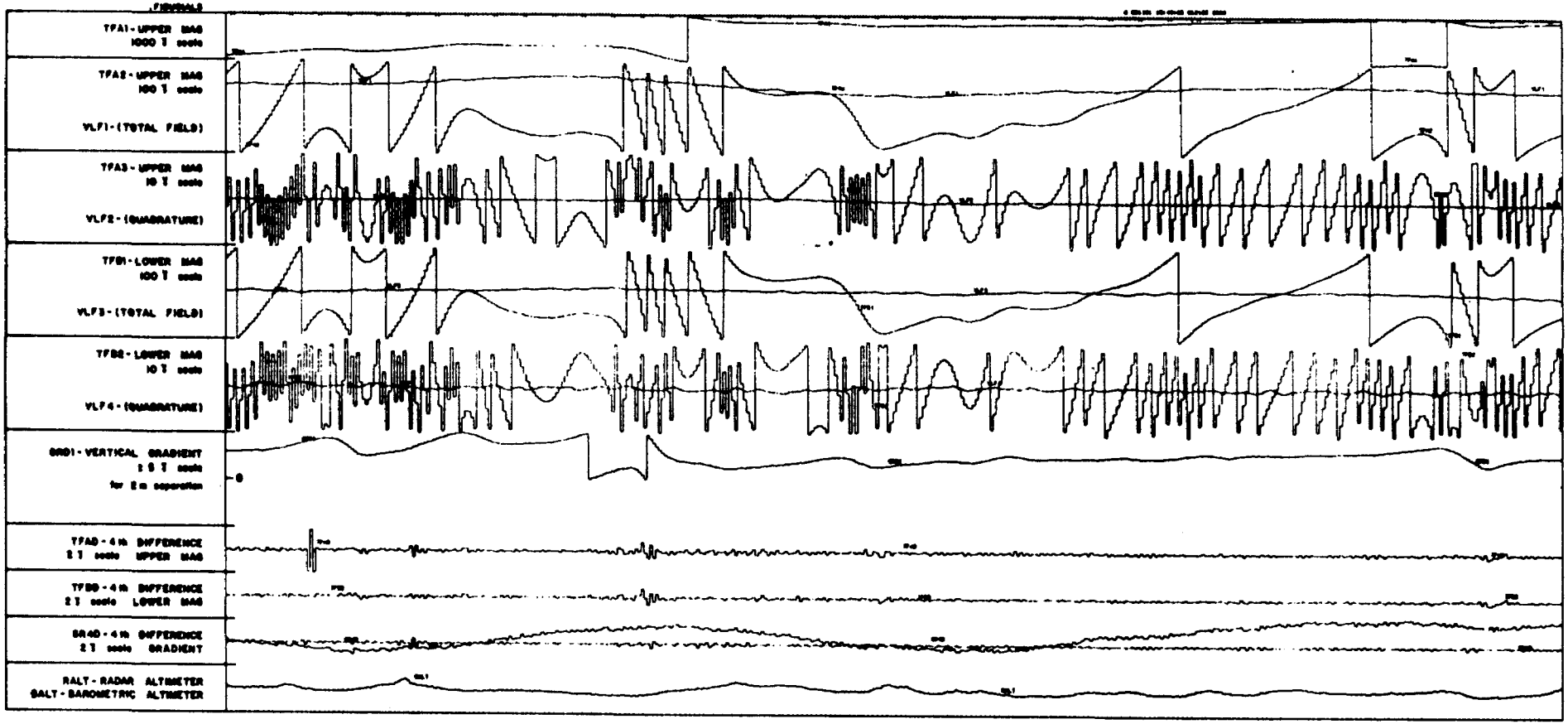

FIGURE 6.2

ANOMALY LIST

MATACHEWAN

ANOMALY	FIDUCIAL	PHASE (PPM)	QUAD. (PPM)	CONDUCTOR MHOS	CONDUCTOR DEPTH	ELEVATION (METRE)	MAGNETOMETER FID.	MAGNETOMETER GAMMAS
14901 A	118.0	- 4	- 4	8	35	35		
15002 A	453.0	- 5	- 4	14	33	37		
15101 A	731.0	-12	-10	14	41	11		
15202 A	1115.0	- 4	- 4	8	44	26		

Written by

Claude Jobin

Claude Jobin, Geophysicist

Verified by

Jean-Pierre Déry

Jean-Pierre Déry, Geophysicist

900

Mining Lands Section

File No 2·8706

Control Sheet

TYPE OF SURVEY

✓ GEOPHYSICAL

____ GEOLOGICAL

____ GEOCHEMICAL

____ EXPENDITURE

MINING LANDS COMMENTS:

Two quad

<Cairo>

lgd

L.D.

J. Hurst

Signature of Assessor

Jan 14/86

Date

Ministry of Natural Resources
Ontario

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

Mining Act

28706

Jan 17/86 #471

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

(File L8003508)

Type of Survey(s)	Township or Area
Airborne, Electromagnetic	Cairo N.T.S. 41 P 15

Claim Holder(s)	Prospector's Licence No.
Falconbridge Ltd.	A 21647

Address: 167 Wilson Ave., Timmins, Ontario, P4N 2T2

Survey Company	Date of Survey (from & to) Day / Mo. / Yr.	Total Miles of line Cut
Geophysical Surveys Inc.	3 / 07 / 85 — 11 / 07 / 85	268 Km

Name and Address of Author (of Geo-Technical report)
Geophysical Surveys Inc., 2272 Leon Harmel, Quebec, QUE., G1N 4L2

Credits Requested per Each Claim in Columns at right

		Days per Claim
Special Provisions For first survey: Enter 40 days. (This includes line cutting) For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	40
	Magnetometer	40
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.	Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
	see attached list				

RECEIVED
DEC 1
MINING LANDS
ON

LARDER LAKE
MINING DIV.
RECEIVED
NOV 28 1985
AM
7 8 9 10 11 12 1 2 3 4

LARDER LAKE
NOV
AM P.M.

Total number of mining claims covered by this report of work: 61

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.

Date	Recorded Holder or Agent (Signature)
Nov 26/85	C. S. Bruce

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
4888	NOV 28 1985	
	Date Approved as Recorded	Branch Director
	86.1.17	

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
Scott Bruce, 167 Wilson Ave., Timmins, Ont. P4N 2T2

	Date Certified	Certified by (Signature)
	NOV 25/85	C. S. Bruce

3382 (83/9)

LIST A

RECORD NUMBER

L803508	L843161
803509	843162
	843163
	843164
	843165
	843166
	843167
	843168
	843169
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778375	843347
800638	843348
800639	843349
800640	843350
800641	
800642	842977
800643	842978
802370	843882
802455	843883
802456	
802457	
802458	
802459	
802460	
802461	
802600	
802601	
802602	
802603	
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821314	
821315	
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843153	
843154	
843155	
843156	
843157	
843158	
843159	
843160	

Ontario

Ministry of Natural Resources

File _____

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

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

Type of Survey(s) Helicopter Geophysical Survey

Township or Area Cairo Twp., Matachewan, Ontario

Claim Holder(s) Falconbridge Ltd.

A-21647

Survey Company Geophysical Survey Inc.

Author of Report Claude Jobin

Address of Author 2272 Leon Harmele, Quebec, Que. G1N 4L2

Covering Dates of Survey July 1985 July 3- July 11
(linecutting to office)

Total Miles of Line Cut _____

SPECIAL PROVISIONS CREDITS REQUESTED

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

ENTER 20 days for each additional survey using same grid.

DAYS per claim

Geophysical
--Electromagnetic _____
--Magnetometer _____
--Radiometric _____
--Other _____
Geological _____
Geochemical _____

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

Magnetometer 40 Electromagnetic 40 Radiometric _____
(enter days per claim)

DATE: _____ SIGNATURE: _____
Author of Report or Agent

Res. Geol. _____ Qualifications _____

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

(prefix) (number)

see attached list A

TOTAL CLAIMS 59

If space insufficient, attach list

OFFICE USE ONLY

837 (5/79)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION
RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

_____

Additional information (for understanding results) _____

_____

_____

AIRBORNE SURVEYS

Type of survey(s) see enclosed sheet B

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

_____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

_____

_____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

_____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

_____

Drainage Development _____

Estimated Range of Overburden Thickness _____

_____

_____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

_____

_____

_____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ANALYTICAL METHODS

Values expressed in: per cent ☐
p. p. m. ☐
p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

LIST A

RECORD NUMBER

L803508	L843161
803509	843162
	843163
	843164
	843165
	843166
	843167
	843168
	843169
778374	843170
778375	843347
800638	843348
800639	843349
800640	843350
800641	
800642	842977
800643	
802370	
802455	843883
802456	
802457	
802458	
802459	
802460	
802461	
802600	
802601	
802602	
802603	
802607	
802648	
802649	
821304	
821306	
821312	
821313	
821314	
821315	
821585	
821591	
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843160	

Geophysical Surveys Inc. has carried out an airborne geophysical survey of 268 line kilometres in the Matachewan area, Ontario for Falconbridge Ltd. in July 1985.

The lines were spaced 100 metres apart, the survey area is shown on the index map (figure 1.1). The survey area was flown twice, ounce with our REXHEM-4 system and a second time with our gradiometer for the measurement of the vertical gradient.

The REXHEM-4 instrumentation includes an EMEX-1 from Geotech Ltd, a G803 proton magnetometer from Geometrics Ltd, a VLF system TOTEM-2A from Herz Industries Ltd, and a digital data acquisition system from Sonotek Ltd. Four pairs of coils are installed in the EMEX-1 bird shell; two pairs are in a standard vertical coaxial configuration and the two others are in a horizontal coplanar configuration. The transmitting frequencies are 736 and 4150 Hz for the coaxial, 900 and 5000 Hz for the coplanar coils.

The electromagnetic coils mounted in a bird shell of 8 metres in length were towed 30 metres below the helicopter at an average height of 30 metres above ground.

The magnetic sensor was towed 18 metres below the helicopter at an average height of 42 metres above ground. The survey data quality is excellent particularly with a noise level less than one ppm on the electromagnetic traces and of two gammas on the magnetic records.

For the measurement of the vertical magnetic gradient, the whole EMEX-1 system was removed from the helicopter and replaced by three V-200 Scintrex cesium vapour magnetometers.

The sensors installed vertically 2m apart were towed 30m below the helicopter at an average height of 45 metres above ground.

In flight, the noise levels of the total magnetic field and the vertical magnetic gradient as determined by fourth difference calculations were respectively less than 0.04 gammas and 0.075 gammas/m.

The total field and the quadrature component of the VLF electromagnetic field were recorded simultaneously from two stations, NAA Culter, Maine and from NSS Annapolis, Maryland.

The data processing and interpretation were done in Quebec on a PDP11/70 computer and a Zeta drum plotter.

LES RELEVÉS GÉOPHYSIQUES INC. — *GEOPHYSICAL SURVEYS INC.*
2272 Léon Harmel
Parc Jean-Talon Nord
Québec G1N 4L2

Adresse télégraphique: GEOAIR Canada
Tél: (418) 687-4055
Télex: 051-31523

2.8706

January 10, 1986.

Mr. Arthur Barr
Land Manager Branch
Ministry of Natural Resources
Whitney block, 6th floor,
99 Wellessly street west, room 6610,
Queen Park, Toronto, ONTARIO.
M7A 1W3.

Dear sir:

Please find here enclosed my curriculum vitae requested with the report of the helicopter-borne geophysical survey flown for Falconbridge in the Matachewan area.

Best regards,

Claude Jobin

Claude Jobin
President

CJ/lr.

Encl.

CURRICULUM VITAE

NAME Claude Jobin, Geophysicist

DATE OF BIRTH May 9, 1944

EDUCATION 1964 - B. Sc. in Geology from the University of Montreal

1966 - Master degree in Geophysics from l'Ecole Polytechnique de Montreal

Title of the Master Thesis: Seismic and electrical methods applied to the identification of soil deposits in the St-Lawrence Valley and to the determination of the thickness of contemporary glaciers.

PROFESSIONAL EXPERIENCE:

Worked in geological mapping for the Quebec Ministry of Energy and Resources and in geophysics for La Société Québécoise d'Exploration Minière (SOQUEM) and the Ministry of Energy, Mines and Resources, Canada.

Taught geology and astronomy in professional colleges.

Vice-President and Geophysicist for Geophysical Surveys Inc. from 1971 to 1978. Acceded to the position of President of the company in 1979.

Technical Counsellor for l'Association Québécoise de Télédétection in 1977.

Member of: L'Association des Géologues du Québec, Canadian Exploration Geophysical Society, The Society of Exploration Geophysicsts, European Association of Exploration Geophysicists.

Publication: " A Seismic Investigation - Peyto Glacier, Banff National Park and Woolsey Glacier, Mount Revelstoke National Park" Geo-exploration, no. 13 (1975) pp. 117-127.

" Summary of the evaluation of two VLF airborne systems and their application for ground surveys"

" Open file 581 - Geological Survey of Canada".

Lectures: "The REXHEM-3 - a sophisticated helicopter geophysical platform for mining exploration", presented in 1983 at a convention held in France by the European Association of Exploration Geophysicists.

"A new helicopter-borne vertical magnetic gradiometer system for mining exploration", presented in 1985 at a convention held in Hungary by the European Association of Exploration Geophysicists.

Throughout the years, lectures on geophysics have also been given at the Laval University and at workshops held by the Canadian Institute of Mines and the ACFAS.

Principal surveys or geophysical tasks effected under his responsability in the last five years include:

- Airborne electromagnetic surveys performed with the aid of the EMAL system constructed by the SOQUEM Research group. The EMAL system was installed in a Cessna 150 in accordance with the Rio-Mullard configuration (10,000 kilometres)

- Helicopter-borne electromagnetic, magnetic and radiometric surveys using the LHEM-250 system from Lockwood Surveys Inc., the Geonics EM-33 system and the Geotech Limited's EMEX-1 system. Accessory equipment included were fluxgate and nuclear precession magnetometers, gamma ray spectrometer combined with 400 to 2000 cubic inches of NAI crystals. The helicopters used for these surveys were the Alouette III, the Alouette II, the Jet Ranger II, the Hughes 500D and the Astar (120,000 kilometres).

- Helicopter-borne geophysical surveys to measure the vertical magnetic gradient using cesium vapour magnetometers (50,000 kilometres).

- Airborne radiometric and VLF surveys conducted with the use of an Islander and a Cessna 180 (20,000 kilometres).

- Magnetic, VLF and induced polarization surveys effected with the use of 250 and 2500 watts transmitters. The induced polarization apparatus used during the surveys was supplied either by Scintrex, Crone, Huntec or SOQUEM. The VLF equipment was the EM-16 from Geonics, while the magnetometers were nuclear precession instruments manufactured by Barringer Research and Geometrics.

- Gravity surveys conducted using Lacoste-Romberg models G and HG-16 gravimeters and the Scintrex CG-2 gravimeter. The HG-16 gravimeter was designed for helicopter-borne readings. It is lowered from the helicopter to the ground by means of a cable connected to a control panel. The levelling of the gravimeter and the gravity reading are effected by means of the remote control located in the helicopter. A Hughes 500D was used in the execution of this survey.

- Aeromagnetic data interpretation for purposes of mineral exploration and hydrocarbon research. Programs were written to calculate the energy spectrum of the total magnetic field data and the thickness of the sedimentary formations. Residual and regional maps of the magnetic field were then traced using a matched filter as was the map of the downward continuation of the regional magnetic component.

- Geophysical marine surveys (seismic, VLF and magnetic). Instruments installed in the boat consisted of: a nuclear precession magnetometer, a KEM electromagnetometer from McPhar Geophysics Ltd., and a MK2A hydrosounder from Huntec Ltd. The radio navigational system from Del Norte Technology Inc was connected to a Hewlett Packard 9820A computer and was used to localize the position of the boat and the geophysical data.

- In conformity with an exclusivity agreement with Questor Surveys Ltd., INPUT surveys totalling more than 120,000 line kilometres have been interpreted and compiled under the supervision of Mr. Jobin since 1977.

RESEARCH PROJECTS:

Development of an instrument capable of simultaneous measurement of the earth's magnetic field and the electromagnetic field at a very low frequencies from three (3) VLF stations.

Development of a helicopter-borne gradiometer for the purpose of measuring the vertical magnetic gradient.

DETAILS OF PROFESSIONAL EXPERIENCE

01-06-64/05-09-64	Ministry of Energy and Resources, QUEBEC. - geological mapping
1964 to 1967	University of Montreal - assistant Professor of Geology
25-05-65/19-09-65	Ministry of Energy and Resources, QUEBEC. - geological mapping
01-05-66/15-08-66	SOQUEM - geophysical surveys
1966 to 1967	Ecole Polytechnique de Montreal - assistant Professor of Geology
24-05-67/26-09-67	Ministry of Energy, Mines and Resources, CANADA - Seismology and Geology
25-05-68/19-09-68	Ministry of Energy, Mines and Resources, CANADA - Seismology and Geology
January to June 68	Collège Lionel-Groulx (Ste-Thérèse) - Professor of Geology
Sept. 68 to Sept. 69	Collège Lionel-Groulx (Ste-Thérèse) - Professor of Geology
30-06-69/03-09-69	Ministry of Energy and Resources - geological mapping
19-05-70/01-09-70	Ministry of Energy, Mines and Resources - Seismology
January to June 70	Collège Lionel-Gould (Ste-Thérèse) - Professor of Geology and of Astronomy
25-05-71/20-09-71	Ministry of Energy, Mines and Resources, CANADA - Seismology
01-09-71/ to date	Geophysical Surveys Inc. - Ground and airborne geophysical surveys

RESUME OF PRINCIPAL GEOPHYSICAL TASKS UNDERTAKEN

PLACE	YEAR	TYPE OF WORK	KILOMETRES	CLIENT
Lac Evans, Grande-Baleine, Gagnon, QUEBEC.	1971-73	Aeromagnetic surveys	464,000	Ministry of Energy and Resources, QUE.
Gaspesia, QUEBEC.	1973-77	Airborne and helicopter-borne MAG, EM and radiometric surveys	50,000	M.E.R. and SOQUEM
Abitibi, QUEBEC.	1974-77	Geophysical ground surveys (VLF, MAG and induced polarization)	1,000	LOUVEM, SOQUEM, M.E.R.
Abitibi, Gaspesia, Canton Region and St-Lawrence Lowlands	1975-77	Ground and helicopter-borne gravimetric surveys	5,000 sta.	M.E.R., SOQUEM, Geological Survey of Canada
Southern part of Quebec	1975-77	Aeromagnetic data interpretation	120,000	M.E.R.
Lac Chibougamau, QUEBEC.	1976	Marine geophysical surveys (seismic, VLF and MAG)	480	M.E.R.
QUEBEC	1977-85	INPUT SURVEYS	120,000	M.E.R. and SDBJ
Quebec, United States, British Columbia, Saskatchewan, Northwest territories, Ontario	1978-85	Helicopter-borne EM surveys using the REXHEM system	90,000	M.E.R., ESSO Minerals Canada Getty Mines, Uranerz, Seru Nuclear Canada, TexasGulf (U.S.), Noranda Exploration Falconbridge etc.
Quebec, New Brunswick Nova Scotia, Ontario	1985	Helicopter-borne surveys to measure the vertical magnetic gradient		Geological Survey of Canada Minerais Lac, Barrick Resources, Falconbridge

January 10, 1986 File: 2.8706

Falconbridge Ltd
167 Wilson Avenue
Timmins, Ontario
P4N 2T2

Dear Sirs:

RE: Airborne Geophysical (Electromagnetic & Magnetometer) Surveys on Mining Claims L 778374, et al, in Cairo Township

---

Please have Mr. Claude Jobin or Mr. Jean-Pierre Dery furnish this office with a brief resume of his qualifications for our records, as per the attached guideline.

For further information, please contact Dennis Kinvig at (416)965-4888.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

DK/mc

cc: Geophysical Surveys Inc
2272 Leon Harmel
Quebec, Quebec
G1N 4L2

Mining Recorder
Kirkland Lake, Ontario
File: #471

1985 12 10 File: 2.8706

Mining Recorder
Ministry of Northern Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

We received reports and maps on December 5, 1985 for Airborne Geophysical (Magnetometer & Electromagnetic) Surveys submitted on Mining Claims L 778374, et al, in Cairo Township.

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

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

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

AB/mc

cc: Falconbridge Limited
P.O. Box 40
Commerce Court West
Toronto, Ontario
M5L 1B4

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

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

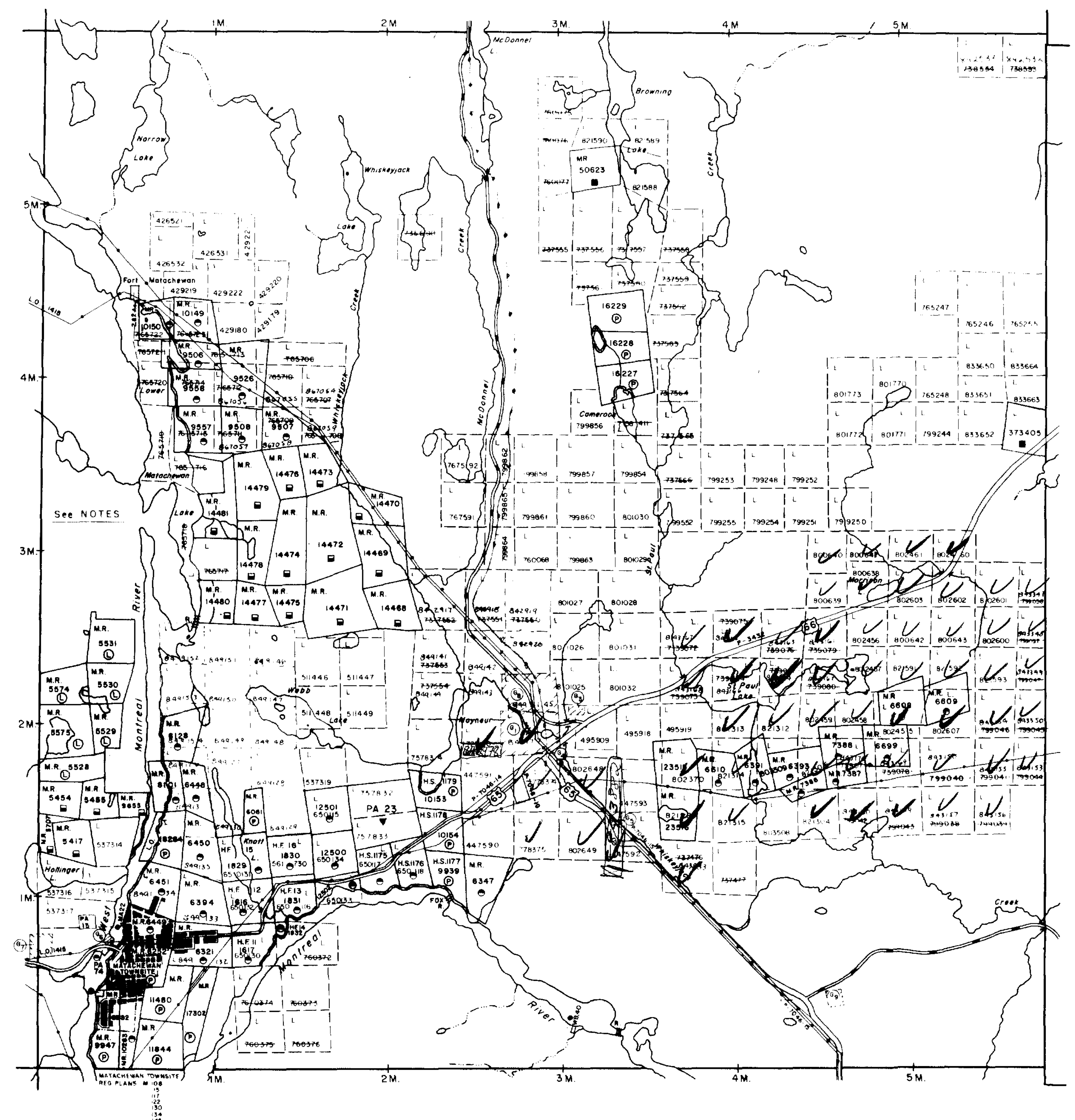
Description	Order No.	Date	Disposition	File

SAND and GRAVEL

G1	M.T.C.	Gravel	Pit 206
G3	M.T.C.	Gravel	Pit 3-3
G4		Gravel	Pit 2-5
G5		Gravel	Pit 204, File 127307
G6		Gravel	Pit
G7	M.T.C.		Pit 3F 4, File 127307
G8	M.T.C.	Gravel	Pit 3F-21
G9	M.T.C.		Pit 3F 28

NOTES

AREA WEST OF WEST MONTREAL RIVER CLOSED TO STAKING SUBJECT TO SEC 38( ) OF THE MINING ACT, 20 SEPT, 1978.



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	Ⓟ or ●
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	Ⓛ or ■
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	L.O. or ▼
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

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

August 22/85

TOWNSHIP

CAIRO

M.N.R. ADMINISTRATIVE DISTRICT

KIRKLAND LAKE

MINING DIVISION

LARDER LAKE

LAND TITLES / REGISTRY DIVISION

TIMISKAMING

Ministry of Natural Resources
Ontario

Land Management Branch

Date JANUARY 1985

Number G-3209

41P15NE8325 2.8706 CAIRO

200

800640
800641
800638
Morrison
800639
802461
802460
843165
P-3432
66
843163
802603
802602
802601
843347
843166
St Paul Lake
843164
843161
802456
800642
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M.R. 6608
M.R. 6609
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843349
M.R. 6393
M.R. 7388
M.R. 8024506699
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802607
843154
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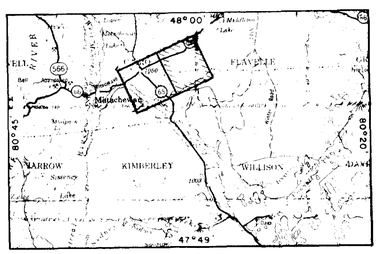


FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION

Cairo Twp

CLAIMS MAP

EAST SHEET

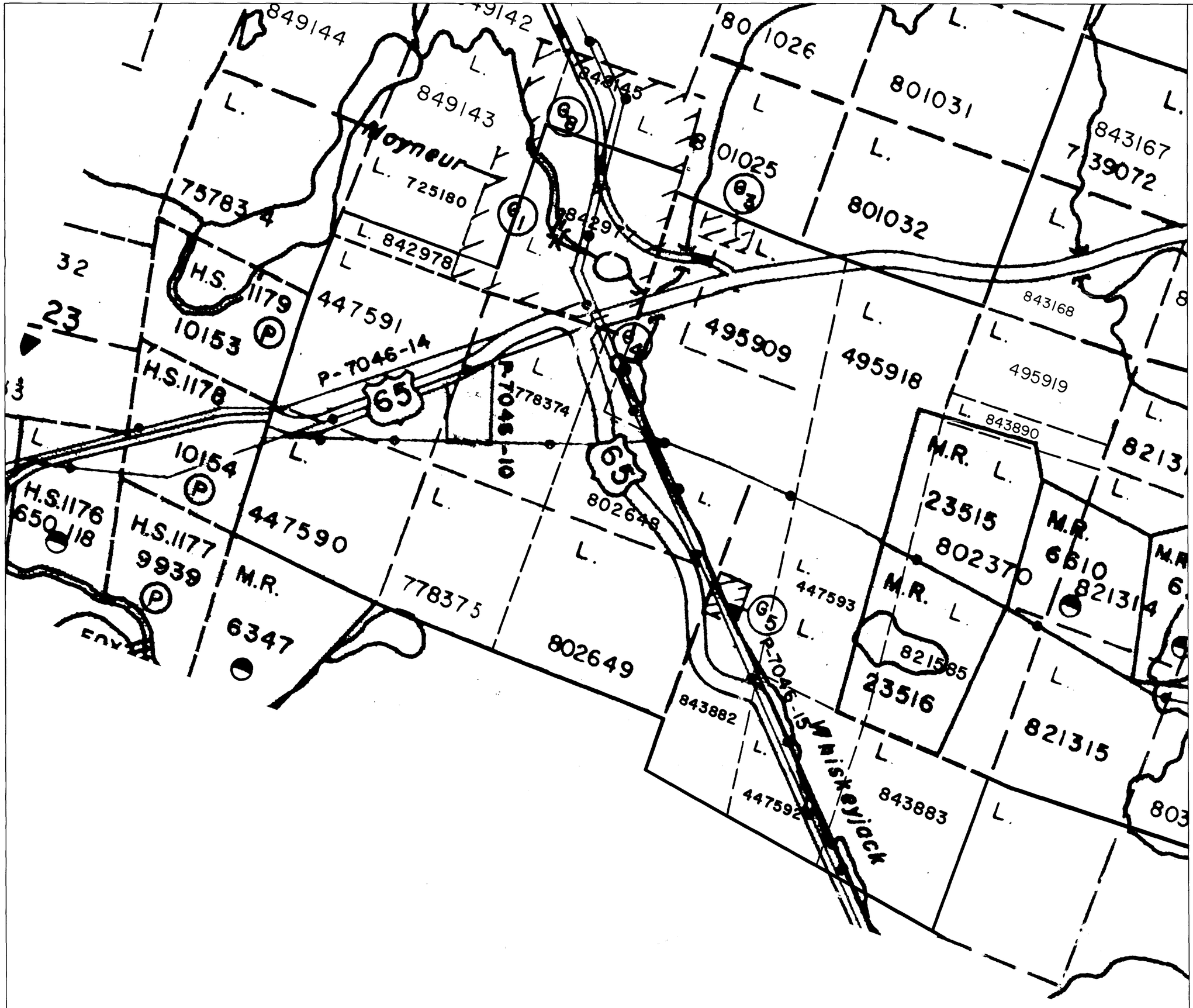
28706

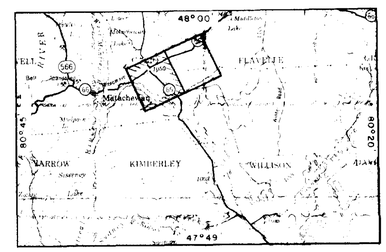
SCALE: 1/5000

Nov. 1985

41P15NE8325 2.8706 CAIRO

210





FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION

Cairo Twp

CLAIMS MAP

2870C WEST SHEET

SCALE 1/5000

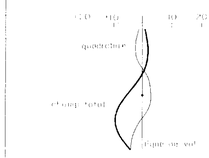
MATACHEWAN

PROFILS DU CHAMP TOTAL ET DE LA COMPOSANTE EN QUADRATURE DU CHAMP ÉLECTROMAGNÉTIQUE À TRÈS BASSE FRÉQUENCE

VOL ET COMPILATION PAR
LES RELEVES GEOPHYSIQUES INC.

1985

LÉGENDE

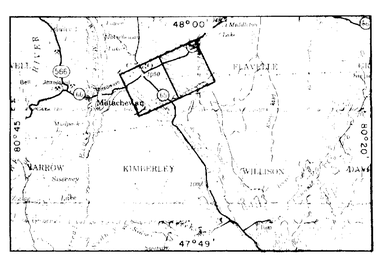


Échelle verticale des profils: (1" = 1 mm)
Ligne de vol = 3500

Station V.L.F. utilisée : NAA, Cutler, Maine, 24.0 kHz

Un plan indicateur précisant la géologie du Ministère de l'Énergie, Mines et Ressources Canada, publié en 1970 à l'échelle 1:15,000

LES RELEVÉS GÉOPHYSIQUES INC



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION

Cairo Twp

EXECUTE PAR	
EXECUTED BY RELEVES GEOPHYSIQUES Inc.	1985
INTERPRETE PAR	
INTERPRETED BY	
APPROUVE PAR	
APPROVED BY	
TRACE PAR	
DRAWN BY RELEVES GEOPHYSIQUES	10/85

PLAN No

ECHELLE
SCALE 1:5000

MATACHEWAN

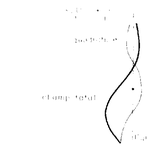
28106

PROFILS DU CHAMP TOTAL ET DE LA COMPOSANTE EN QUADRATURE DU CHAMP ÉLECTROMAGNÉTIQUE À TRÈS BASSE FRÉQUENCE

WEST SHEET

VOL. ET COMPILATION PAR
LES RELEVES GEOPHYSIQUES INC.
1985

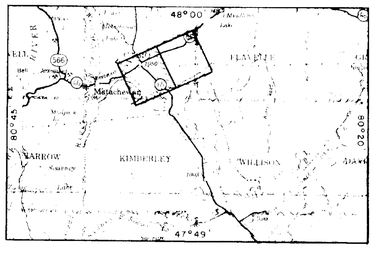
LÉGENDE



NAA, Cutler, Maine, 24.0 kHz

NAA

LES RELEVÉS GÉOPHYSIQUES INC



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

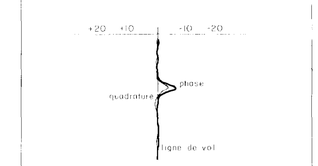
EXÉCUTÉ PAR		
EXÉCUTÉS PAR LES RELEVÉS GÉOPHYSIQUES Inc.	/85	ÉCHELLE
INTERPRÉTÉ PAR		ÉCHELLE VERTICALE
APPROUVÉ PAR		ÉCHELLE HORIZONTALE
APPROUVÉ PAR		ÉCHELLE
APPROUVÉ PAR		
DESSINÉ PAR		
DRAWN BY LES RELEVÉS GÉOPHYSIQUES	10/85	

MATACHEWAN

PROFILS DES COMPOSANTES EN PHASE ET EN QUADRATURE DU CHAMP ÉLECTROMAGNÉTIQUE
(BOBINES COAXIALES 639 hz)

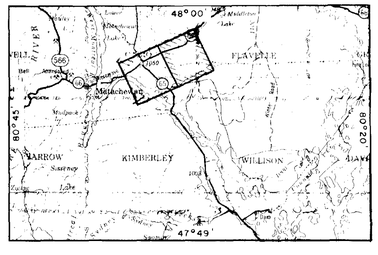
VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.
1985

LÉGENDE



Echelle verticale des profils (2ppm= 1mm)
ligne de vol 14501 — 7200

La photo mosaïque provient de photographies du Ministère de l'Energie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15 000



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

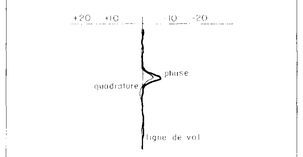
EXÉCUTÉ PAR EXECUTED BY RELEVÉS GEOPHYSIQUES INC. /85	PLAN No.
INTERPRÉTÉ PAR INTERPRETED BY	ÉCHELLE SCALE 1/5000
APPROUVÉ PAR APPROVED BY	0 100 200 300m
DESSINÉ PAR DRAWN BY RELEVÉS GEOPHYSIQUES 10/85	

MATACHEWAN

PROFILS DES COMPOSANTES EN PHASE ET EN QUADRATURE DU CHAMP ÉLECTROMAGNÉTIQUE
(BOBINES COAXIALES 639 hz)

VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.
1985

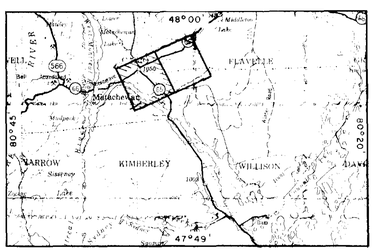
LÉGENDE



Échelle verticale des profils (2ppm = 1mm)
Ligne de vol 1450 7800

La photo-mosaïque provient de photographies du Ministère de l'Energie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15 000

LES RELEVÉS GÉOPHYSIQUES INC.



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXÉCUTÉ PAR EXECUTED BY RELEVÉS GÉOPHYSIQUES inc. /85 INTERPRÉTÉ PAR INTERPRETED BY APPROUVÉ PAR APPROVED BY DESSINÉ PAR DRAWN BY RELEVÉS GÉOPHYSIQUES 10/85		PLAN No. ÉCHELLE 1/5000 SCALE 0 100 200 300m

MATACHEWAN

J8106

CARTE DES ANOMALIES
ÉLECTROMAGNÉTIQUES

EAST GRID

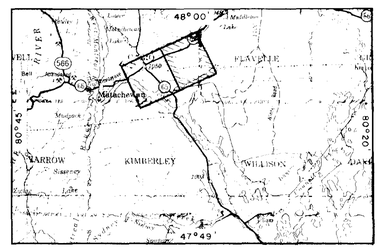
VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.

1985

LÉGENDE

Anomalie 1/2 Open
Anomalie de 1/2 Hyper
Anomalie Hyper
Anomalie positive de mort-terrain
Anomalie de mort-terrain
Anomalie positive en phase et négative en quadrature (Pouvoirs magnétique et conductivité)
Anomalie doublure
Indice 1 spectrique des anomalies en valeur approchée du produit conductivité-épaisseur
Axe du conducteur
Anomalie magnétique associée
Ligne de transmission
Ligne de vol et points de fiducie numérotés

Le photo-mosaïque provient de photographies du Ministère de l'Énergie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15 000



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PN-611, GOLDHUNTER OPTION
Cairo Twp

EXÉCUTÉ PAR EXECUTED BY	RELEVÉS GÉOPHYSIQUES INC. /85
INTERPRÉTÉ PAR INTERPRETED BY	
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DESSINÉ PAR DRAWN BY	RELEVÉS GEOPHYSIQUES 10/85

PLAN No.

ÉCHELLE SCALE 1/5000
0 100 200 300m

MATACHEWAN

CARTE DES ANOMALIES
ÉLECTROMAGNÉTIQUES

VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.

1985

LÉGENDE

Anomalie 220 Hz/pm

Anomalie de 40 Hz/pm

Anomalie 10 Hz/pm

Anomalie possible de peu d'intérêt

Anomalie de peu d'intérêt

Anomalie positive en phase et négative en quadrature, direction magnétique présumée

Anomalie douteuse

Limite stratigraphique des anomalies, et valeur apparente du pendage conducteur apparent

Axe du conducteur

Anomalie magnétique associée

Ligne de base nivelée

Ligne de vol et points de début numérotés

La photo-mosaïque provient de photographies du Ministère de l'Energie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15 000

Les positions indiquées le long des lignes de vol

sont basées sur [illegible] PEN [illegible]

[illegible]

[illegible]

[illegible]

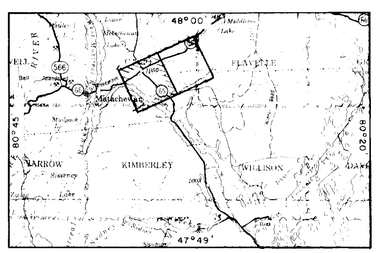
[illegible]

[illegible]

[illegible]

[illegible]

LES RELEVÉS GÉOPHYSIQUES INC.



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXÉCUTÉ PAR / EXECUTED BY	RELEVÉS GEOPHYSIQUES Inc	/85
INTERPRÉTÉ PAR / INTERPRETED BY		
APPROUVÉ PAR / APPROVED BY		
DESSINÉ PAR / DRAWN BY	RELEVES GEOPHYSIQUES	10/85

PLAN No

ÉCHELLE / SCALE 1/5000
0 100 200 300m

41P15NE8325 2.8286 CAIRO

280

MATACHEWAN

28 NW

CARTE AÉROMAGNÉTIQUE
DU CHAMP TOTAL

CAMP [illegible]

VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.

1985

COURBES DE NIVEAU MAGNÉTIQUE

500 gammas
100 gammas
50 gammas
10 gammas
Dépression magnétique
Ligne de vol 3401 775

La photo-mosaïque provient de photographies du Ministère de l'Energie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15000

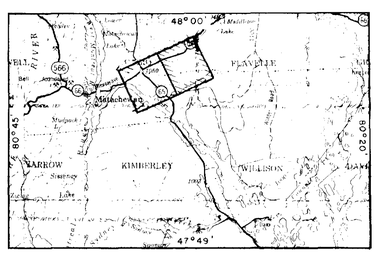
Cette carte a été compilée d'après les données enregistrées par les Relevés Géophysiques Inc., à l'aide d'un gradiomètre Scintrex, en juin et juillet 1985. Deux magnétomètres à vapeur de cesium d'une sensibilité de 0,005 gamma et espacés de 16 pieds remorqués sous l'hélicoptère, à une élevation moyenne de 100m au-dessus du sol. L'espacement moyen des lignes de vol était de 100m et, en plus du gradiomètre, l'hélicoptère était équipé

d'un VLF (E de Herz Industries (1978) LTD) mesurant le champ total et la composante en quadrature du champ électromagnétique secondaire à deux fréquences,

d'un système d'enregistrement numérique des données SDS 1200 de Scintrex Ltd.

d'un altimètre, radar Kelsa KRA 10.

LES RELEVÉS GÉOPHYSIQUES INC.



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXÉCUTÉ PAR EXECUTED BY RELEVES GEOPHYSIQUES INC. /85		PLAN No.
INTERPRÉTÉ PAR INTERPRETED BY	ÉCHELLE SCALE 1/5000	
APPROUVÉ PAR APPROVED BY	0 100 200 300m	
DESSINÉ PAR DRAWN BY RELEVES GEOPHYSIQUES INC. 10/85		

MATACHEWAN

2016

CARTE AÉROMAGNÉTIQUE
DU CHAMP TOTAL

WE - 3451

VOL ET COMPILATION PAR
LES RELEVÉS GÉOPHYSIQUES INC.
1985

COURBES DE NIVEAU MAGNÉTIQUE

500 gammas
100 gammas
50 gammas
10 gammas
Dépression magnétique — 3401
Ligne de vol — 775

La photo mosaïque provient de photographies du Ministère de l'Energie, Mines et Ressources Canada, prises en 1978 à l'échelle 1:15 000

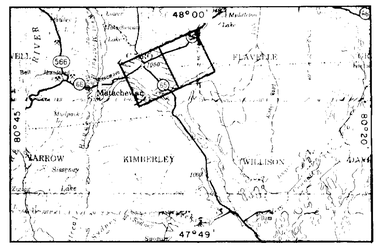
Cette carte a été compilée d'après les données enregistrées par les Relevés Géophysiques Inc., à l'aide d'un système aéroporté, en mars et 1985. Elle montre l'intensité du champ total d'une polarisation de l'eau gravé et soustrait de la valeur sommaire sous l'hypothèse, à une élévation moyenne de 305 m au-dessus du sol. L'espacement moyen des lignes de vol était de 800 m et, en gros de gradiomètre, l'espacement était de 200 m.

Pour plus de détails techniques, veuillez consulter le rapport technique et la description de matériel utilisé pour l'établir Spécifications à bord Inc.

Pour une copie d'enregistrement magnétique des données sur bande de Société Ltée.

Pour de l'information additionnelle, veuillez nous contacter.

LES RELEVÉS GÉOPHYSIQUES INC.



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXECUTÉ PAR EXECUTED BY: RELEVES GEOPHYSIQUES Inc. /85		PLAN No
INTERPRÉTÉ PAR INTERPRETED BY		
APPROUVÉ PAR APPROVED BY	ÉCHELLE SCALE 1/5000	0 100 200 300m
DESSINÉ PAR DRAWN BY: RELEVES GEOPHYSIQUES 10/85		

41P15NE8325 2.0786 CAIRO

300

MATACHEWAN

CARTE AEROMAGNETIQUE DU
GRADIENT VERTICAL

VOL ET COMPILATION PAR
LES RELEVES GEOPHYSIQUES INC.
1985

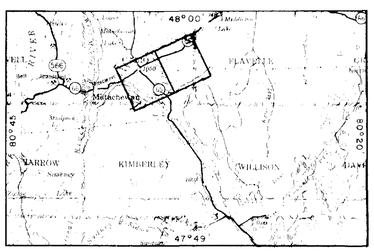
COURBES DE NIVEAU MAGNETIQUE

0 gamma/metre
5 gammas/metre
1 gamma/metre
.1 Gamma/metre
.025 gamma/metre

Ligne de vol 4001

La photo-mosaique provient de photographies du Ministere de l'Energie, Mines et Ressources Canada, prises en 1978 à l'echelle 1:15 840.

LES RELEVES GÉOPHYSIQUES INC



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXECUTE PAR	
EXECUTED BY RELEVES GEOPHYSIQUES INC. /85	
INTERPRETE PAR	ECHELLE 1/4000
INTERPRETED BY	SCALE
APPROUVE PAR	0 100 200 400m
APPROVED BY	
DESSINE PAR	PLAN No.
DRAWN BY RELEVES GEOPHYSIQUES 10/85	

MATACHEWAN

CARTE AEROMAGNETIQUE DU
GRADIENT VERTICAL

VOL ET COMPILATION PAR
LES RELEVES GEOPHYSIQUES INC.

1985

COURBES DE NIVEAU MAGNETIQUE

0 gamma / metre
.5 gamma / metre
1 gamma / metre
2 gamma / metre
.025 gamma / metre

Ligne de vol 350

La photo mosaique provient de photographies du Ministere de l'Energie, Mines et Ressources Canada, prises en 1978 à l'echelle 1:15000

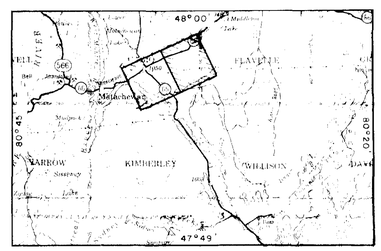
Cette carte a été preparée d'après les données recueillies par les releves aeroportés Inco, à l'aide d'un magnetometre à vapeur de cesium (type Barringer) et d'un système Sercel de navigation par satellite. Les releves ont été effectués le long de lignes de vol espacées de 200 metres, orientées N-S, et de lignes de contrôle espacées de 1000 metres, orientées E-O. Le releve a été effectué par Les Releves Geophysiques Inc., en juin et juillet 1985.

Les VIII lignes de vol additionnelles ont été ajoutées par Falconbridge Ltd. et ont été compilées et dessinées par Les Releves Geophysiques Inc. en octobre 1985.

Les données magnetiques ont été corrigées pour la variation diurne et normalisées à une valeur de référence de 58000 nT.

Les altitudes sont de 150 metres au-dessus du sol.

LES RELEVÉS GÉOPHYSIQUES INC.



FALCONBRIDGE LTD/LTÉE

PN-611, GOLDHUNTER OPTION
Cairo Twp

EXECUTE PAR
EXECUTED BY RELEVES GEOPHYSIQUES INC. /85
INTERPRETE PAR
INTERPRETED BY
APPROUVE PAR
APPROVED BY
DESSINE PAR
DRAWN BY RELEVES GEOPHYSIQUES 10/85

ECHELLE 1/5000
SCALE
PLAN No.