

Report  
on  
Geophysical Work

2-30512

**TURN-15 PROPERTY**

Turnbull Township

NTS: 42A/05

November 2004

D. Londry  
Timmins Geophysics Ltd.

REPORT ON  
**GEOPHYSICAL WORK**

ON

**TURN-15**  
TURNBULL TOWNSHIP

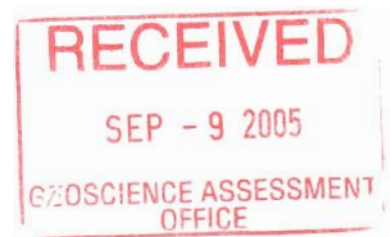
NTS: 42-A/05

PROJ # :

for  
**FALCONBRIDGE LIMITED**

2-30512

NOVEMBER 2004



D. LONDRY  
TIMMINS GEOPHYSICS LTD.

## **SUMMARY AND RECOMMENDATIONS**

HLEM and magnetic surveys were carried out on the Turn-15 property for Falconbridge Limited in June 2004.

The HLEM survey outlined two conductors on the property with coincident magnetic anomalies. Both have been previously tested by diamond drilling. Anomaly 'B' was surveyed at a very poor angle and it is recommended that at least four east-west lines are cut and surveyed over this zone to better define it.

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## INTRODUCTION

During June 2004, magnetic and horizontal loop electromagnetic (HLEM) surveys were run on the TURN-15 property for Falconbridge Limited. This work was part of a larger exploration program which included seven grids in Carscallen, Turnbull, Whitesides and Godfrey Townships.

The property is located 21 kilometres west of the city of Timmins in the southeast corner of Turnbull Township, Porcupine Mining Division (Figure 1(a)). It was accessed from a bush road which runs north from the Mallette haulage road. The grid covers parts of three mining claims which consist of a total of forty-one, 40 acre claim units (Table 1).

The magnetic survey was carried out by J. DerWeduwen and the HLEM survey was run by B. Pigeon and the author of this report.

CLAIM #	# of UNITS	RECORDING DATE	RECORDED HOLDER	DESCRIPTION	TOWNSHIP
P 3002960	16	Nov 29, 2002	Huot, John		Turnbull
P 3002961	16	Nov 29, 2002	Huot, John		Turnbull
P 3002962	9	Nov 29, 2002	Huot, John		Turnbull

**Table 1** : Property Description

## GENERAL GEOLOGY

The geology of Turnbull Township, together with Godfrey Township, is presented on map P2330 (Middleton, 1976) at a scale of 1:31680 and on map P3396 at a scale of 1:50,000, as part of a study of the Kamiskotia area (Barrie, 2000). It is also presented more regionally on map 2205 at a scale of 1:253,440 (Pyke, 1973) and on map P3379 at a scale of 1:100,000 (Ayer et al, 1998).

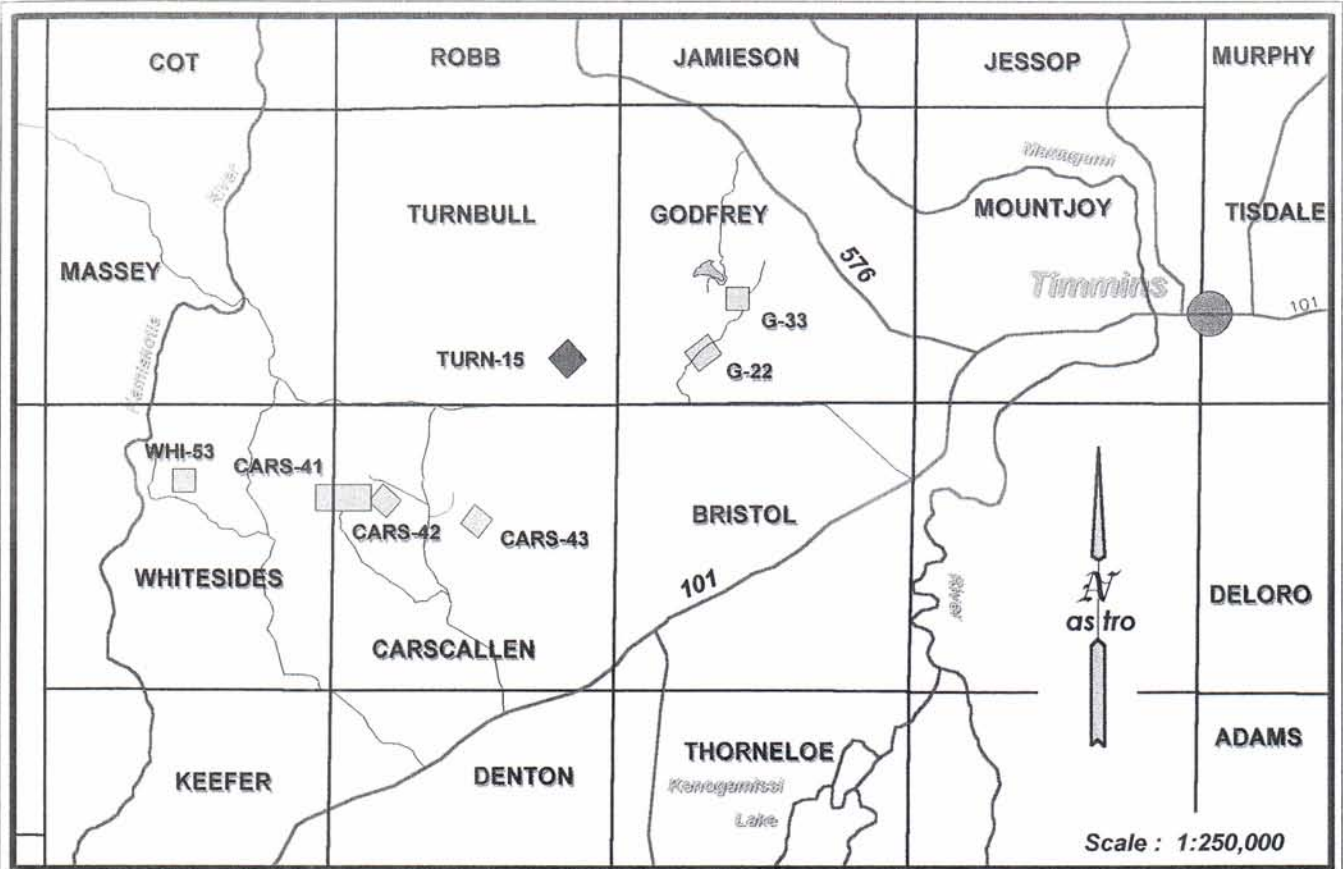


Figure 1(a) : Location Map

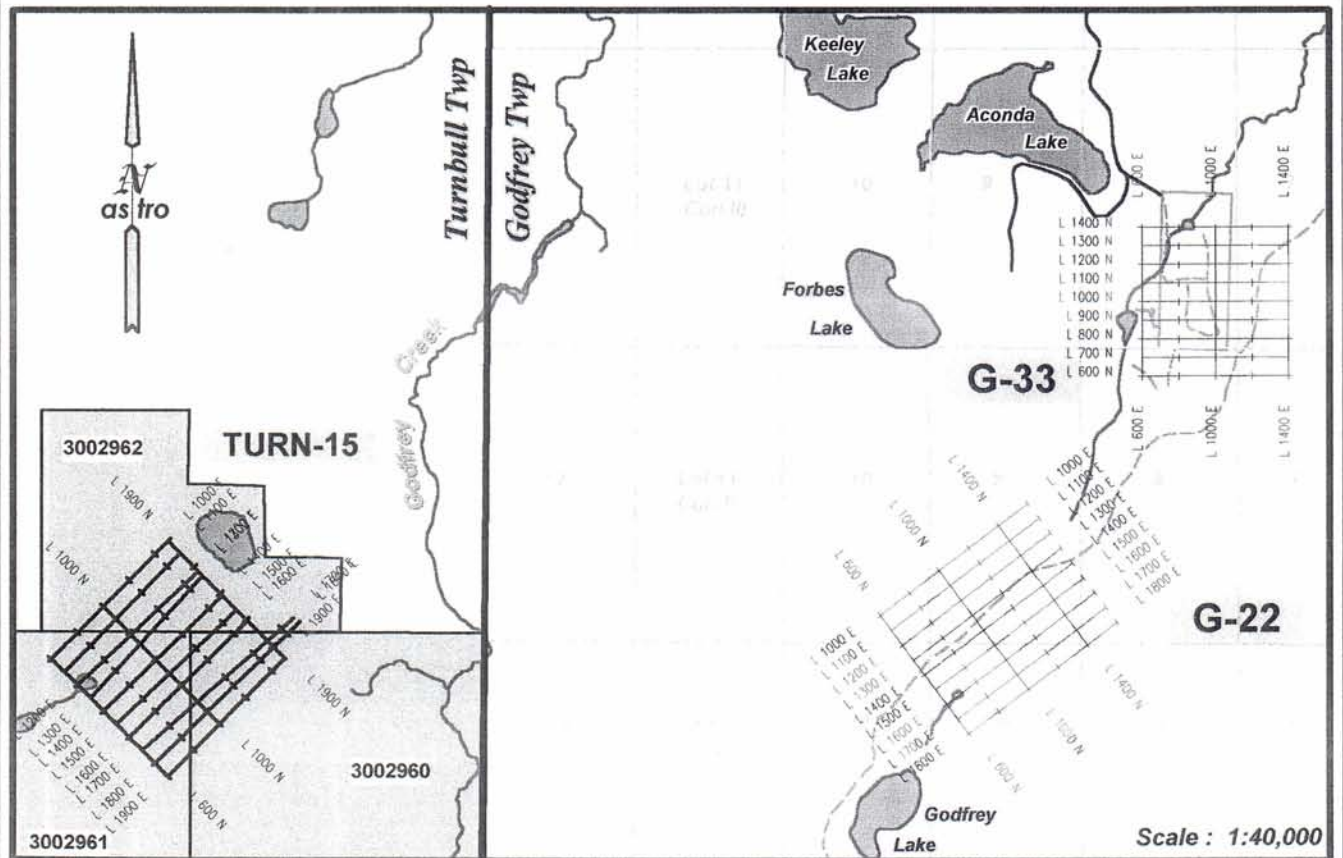


Figure 1(b) : Claim Map

Turnbull Township is underlain by mafic-ultramafic intrusions of the Kamiskotia Gabbroic Complex and surrounding mafic and felsic volcanics of the Kamiskotia Volcanic Complex. The Kam-Kotia, Jameland, Canadian Jamieson and Genex deposits are located within the same stratigraphy to the northeast in Robb, Jamieson and Godfrey Townships.

The TURN-15 grid is underlain by north-south striking felsic and mafic volcanics.

## PREVIOUS WORK

The following is a description of previous exploration work carried out on the TURN-15 property (Table 2).

In 1974, **Conwest Exploration Company Limited** ran magnetic and Turam EM surveys over a block of 6 claims which covered the eastern half of the present survey area. The surveys were carried out along grid lines oriented at 55°Az and spaced every 400 feet. The magnetic readings were taken with a vertical field, fluxgate magnetometer. In 1975, one hole (Hole#5) was drilled on the property to test an EM anomaly; it intersected pyrite and pyrrhotite mineralization.

In 1985, **Chevron Canada Resources Limited** drilled two holes (T85-1 and 2) within the present survey area. The holes intersected pyrite, pyrrhotite and minor chalcopyrite mineralization.

In 1987, the **Geological Survey of Canada** flew an airborne magnetic and EM survey over the Timmins area which included Turnbull Township (OGS, 1988). This survey was flown along north-south lines spaced approximately every 200 metres.

In 1988, **Granges Exploration Ltd.** ran an HLEM survey over part of a block of 37 claims which included the present survey area. The grid on the property consisted of lines oriented at N 60° E and spaced 100 metres and in places 50 metres apart. Four diamond drill holes (FC-1 to 4) were sunk in the same year to test an EM anomaly. No 'significant mineralization' was discovered in the drill holes.



YEAR	COMPANY	GEOPHYSICS	DRILL HOLES	AFRI FILE
1974	Conwest Exploration Company Ltd	Mag, Turam-EM		42A05NE0113
1975	Conwest Exploration Company Ltd		Hole #5	42A05NE0154
1985	Chevron Canada Resources Ltd	Mag, HLEM, Gra	T85-1 and T85-2	42A05NE0149
1988	Granges Exploration Ltd	HLEM	FC-1 TO 6	42A05NE0102
1994	Cambior Inc	Melis EM		42A05NE0025
1996	Cambior Inc	Boehole PEM		42A05NE0076
1996	Falconbridge Limited		T85-2 extension	42A05NE0096
1996	Falconbridge Limited	Mag, HLEM		42A05NE0096

**Table 2.** Summary of previous assessment work.

In 1994, **Cambior Inc** carried out a Melis EM survey over part of 49 claim units in southeast Turnbull Township. The survey was carried out along grid lines oriented N45°E and spaced every 200 metres. Hole FC-95-01 was drilled to the southeast of the present survey area to test an EM anomaly.

In 1996, **Falconbridge Limited** optioned the Cambior property in the southeast corner of Turnbull Township and carried out magnetic and HLEM surveys. The grid on the property consisted of lines oriented at 45° Az, spaced every 100 metres and picketed every 20 metres; it covered the southeast half of the present survey area. The magnetic survey was run with a total field, proton precession magnetometer and the HLEM survey was run with a coil separation of 160 metres and frequencies of 444 and 1777 Hertz. In the same year two holes, T85-1 which was drilled by Chevron in 1985 and FC-4 which was drilled by Granges in 1988, were surveyed with borehole PEM. Hole T85-2 was also deepened from 299 metres to 449 metres. In 1997, the grid was extended to the southwest and surveyed. The 1997 HLEM survey was run with a coil separation of 200 metres and frequencies of 440 and 1760 Hertz.

## SURVEY DESCRIPTIONS

The grid on the TURN-15 property consists of lines oriented at 45° Az, spaced every 100 metres and picketed every 25 metres (Figure 1(b)).

The magnetic readings were taken every 12.5 metres with a Scintrex IGS-2/MP-4. This instrument is a proton precession magnetometer which measures the earth's total magnetic field to an accuracy of 0.1 nT. Diurnal variations were monitored every 10 seconds with a Scintrex MP-3 base station magnetometer, located off the property. A total of 980 readings were taken along 12.1 kilometres of line.

The horizontal loop EM survey was carried out with the Apex Parametrics MaxMin I-5. This instrument measures the in-phase and quadrature components of the secondary field as a percentage of the primary field; the depth of penetration is approximately one half of the coil separation. Readings were taken every 25 metres using a coil separation of 200 metres and frequencies of 222, 444 and 1777 Hertz. A total of 394 stations were read along 12.1 kilometres of line.

## EM RESULTS

The results of the HLEM survey are profiled on maps 1, 2 and 3 at a scale of 1:5000; the profile scale used for all of the frequencies is 1 cm = 20 %. The results using 444 Hertz are also presented in Figure 2 at a scale of 1:10,000. The following is a description of two bedrock conductors which were detected in the survey.

**Anomaly 'A'** strikes southwest from 1235 North on Line 1000 East to 1150 North on Line 1300 East and then south to 1000 North on Line 1400 East. The source of the anomaly is a 20 metre wide zone of very good conductivity at a depth which ranges from 66 metres on Line 1000 East to 120 metres on Line 1400 East (Table 3).

This zone appears to be the target of holes drilled by Conwest in 1975, Chevron in 1985 and

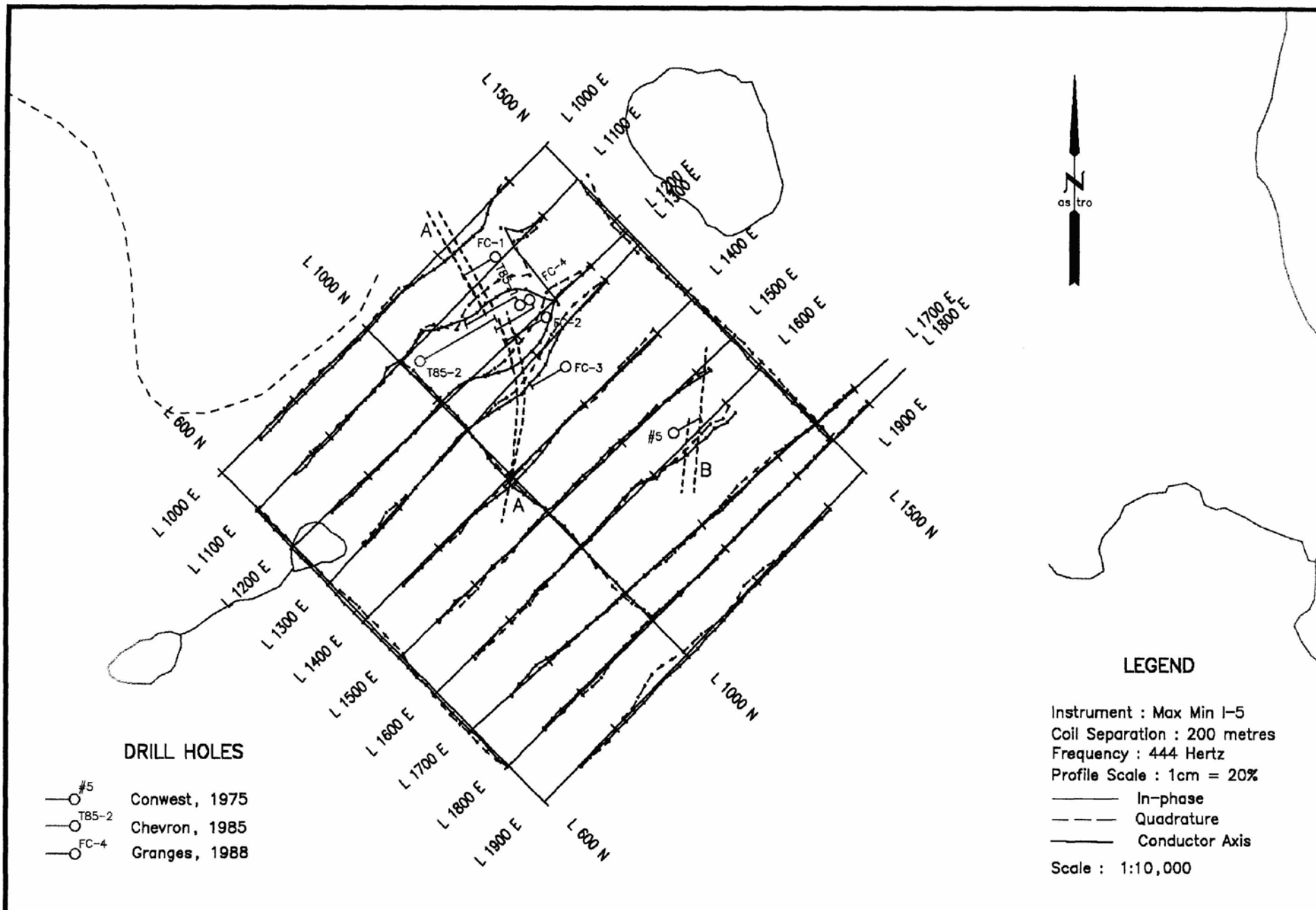


Figure 2 : HLEM Results, 444 Hertz, TURN-15 Property

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
1000 E	1235 N	20	3	4	66	4	
1100 E	1210 N	20	7	4	100	25	
1200 E	1185 N	20	7	4	100	25	
1300 E	1150 N	25	4	3	100	18	
1400 E	1000 N	narrow	2	1	120	28	

**Table 3:** Anomaly 'A' Interpretation, 444 Hz, 200 metre coil separation.

Granges in 1988. The source of the conductivity is pyrite, pyrrhotite and minor chalcopyrite mineralization.

**Anomaly 'B'** strikes north-south between 1425 North on Line 1500 East and 1300 North on Line 1600 East. The anomaly is only partially defined on Line 1500 East and the only parameter which can be interpreted is the southern edge of the conductor. The source of the anomaly on Line 1600 East is very good conductivity at a depth of 120 metres (Table 4). The width and dip of the conductor can not be interpreted because the north shoulder of the anomaly isn't complete.

This anomaly was the likely target of Hole 5 which was drilled by Conwest in 1975. The conductivity is a narrow zone of pyrite and pyrrhotite mineralization which was intersected in the hole.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
1500 E	1425 N	?	?	?	?	?	
1600 E	1325 N	?	4	2	120	34	

**Table 4:** Anomaly 'B' Interpretation, 444 Hz, 200 metre coil separation.

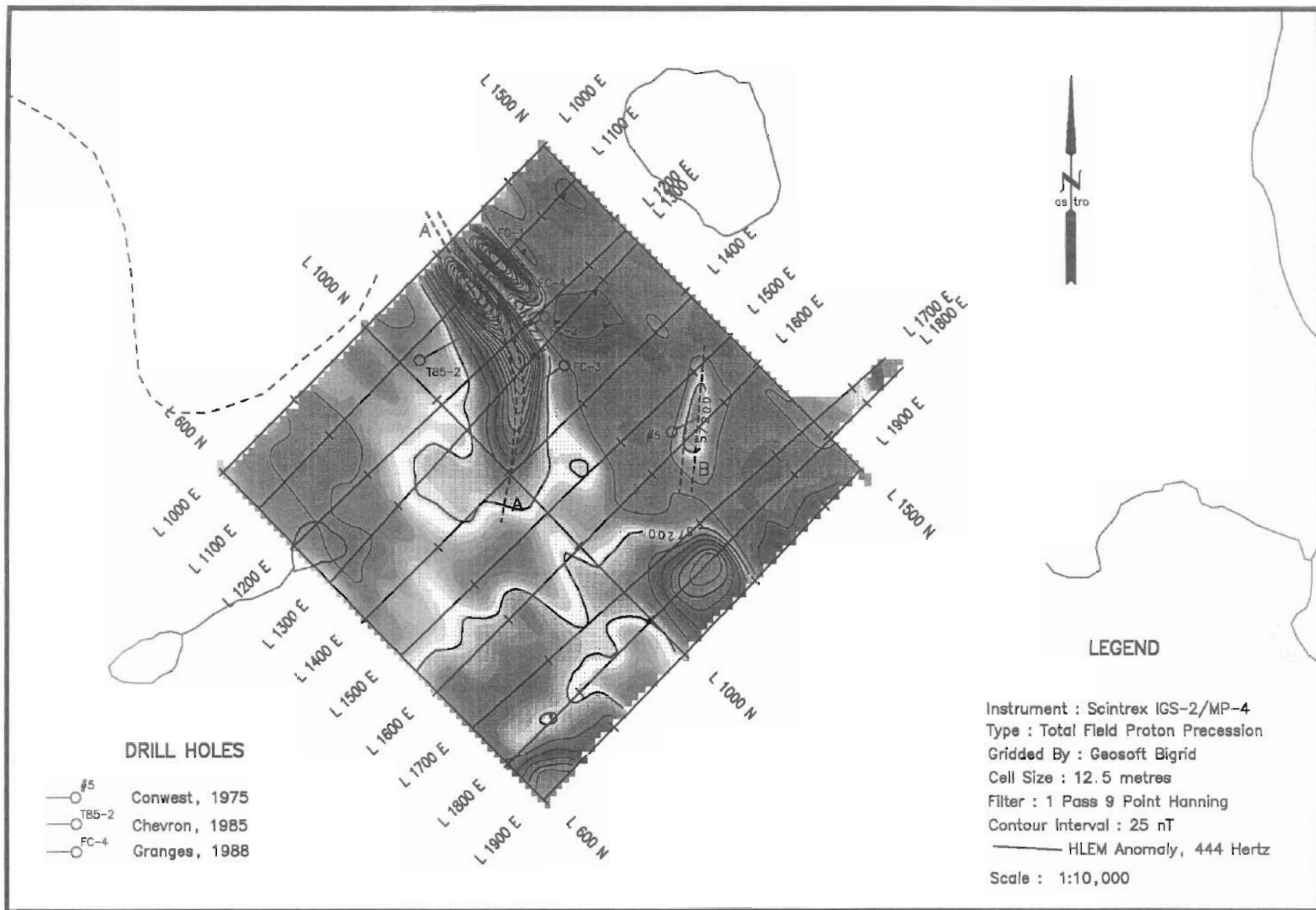


Figure 3 : Total Magnetic Field, Turn-15 Property

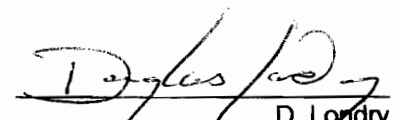
## MAGNETIC RESULTS

The magnetic results are contoured every 25 nT on map 1 at a scale of 1:5000. The results are also plotted in Figure 3 at a scale of 1:10,000.

Both of the conductors detected in the EM survey have coincident magnetic high anomalies. The anomaly associated with conductor 'A' is almost 1000 nT above background and the anomaly associated with conductor 'B' is almost 100 nT above background. The source of these anomalies is pyrrhotite mineralisation which was intersected in the holes drilled to test the EM anomalies.

Three other magnetic high anomalies are only partially defined, at the north end of Lines 1700 and 1800 East, at the south end of Line 1900 East and at approximately 1100 North on Lines 1800 and 1900 East. The source of these anomalies is unknown. An isolated, one station anomaly at 1260 North on Line 1100 East may reflect an old drill collar.

Nov 27, 2004  
Date

  
D. Lordy  
Timmins Geophysics Ltd.

## REFERENCES

**Ayer, J.A. and Trowell, N.F.**

1998: Geological Compilation of the Timmins Area, Abitibi Greenstone Belt; Ontario Geological Survey, Preliminary **Map P.3379**, scale 1:100,000.

**Barrie, C.T.**

2000: Geology of the Kamiskotia area; Ontario Geological Survey, Preliminary **Map P.3396**, scale 1:50,000.

**Middleton, R.S.**

1976: Turnbull and Godfrey townships, District of Cochrane; Ontario Department of Mines, **Map 2330**, scale 1:31680.

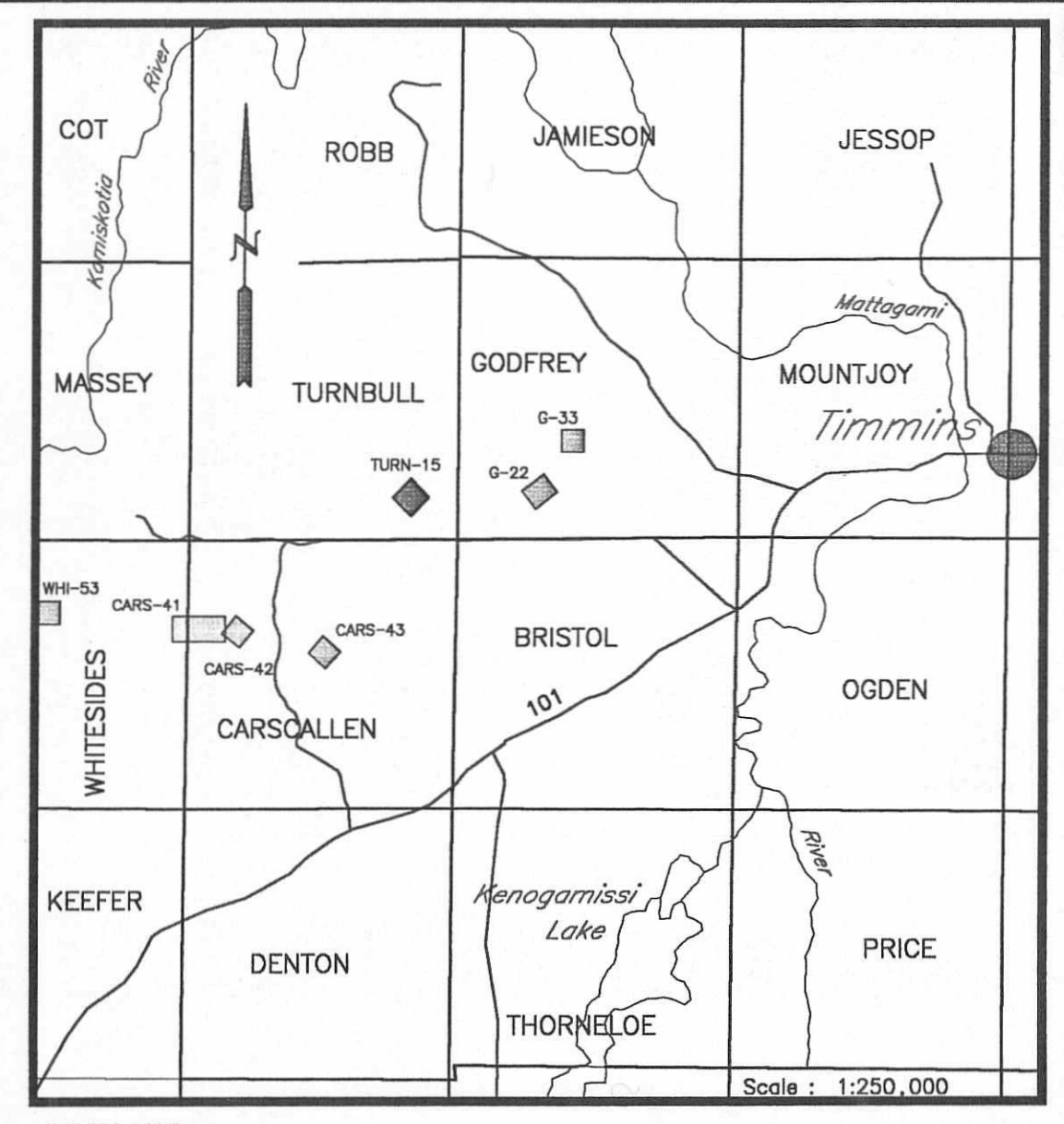
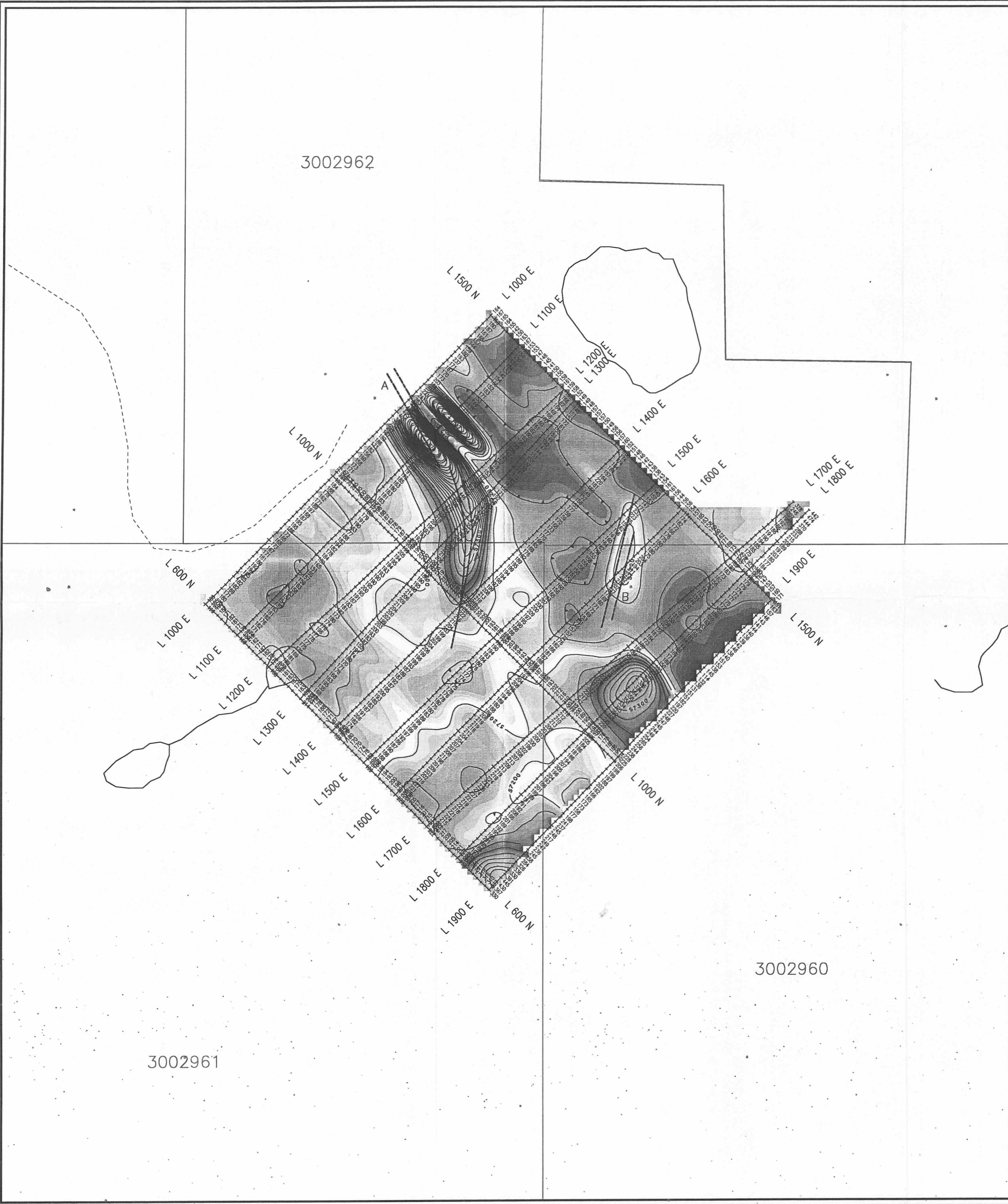
**Ontario Geological Survey**

1988: Airborne Electromagnetic and Total Intensity Survey, Timmins Area, **Turnbull Township**, Districts of Cochrane and Timiskaming Ontario; by Geoterrex Limited, for Ontario Geological Survey. Geophysical/Geochemical Series **Map 81076**. Scale 1:20,000. Survey and compilation from March 1987 to October 1987.

**Pyke, D.R., Ayres, L.D. and Innes, D.**

1973: Timmins-Kirkland Lake Sheet; Ontario Division of Mines, Geological Compilation Series, **Map 2205**, scale 1" = 4 miles.





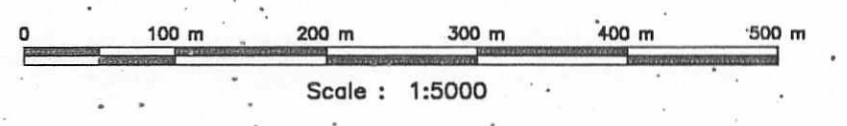
INDEX MAP



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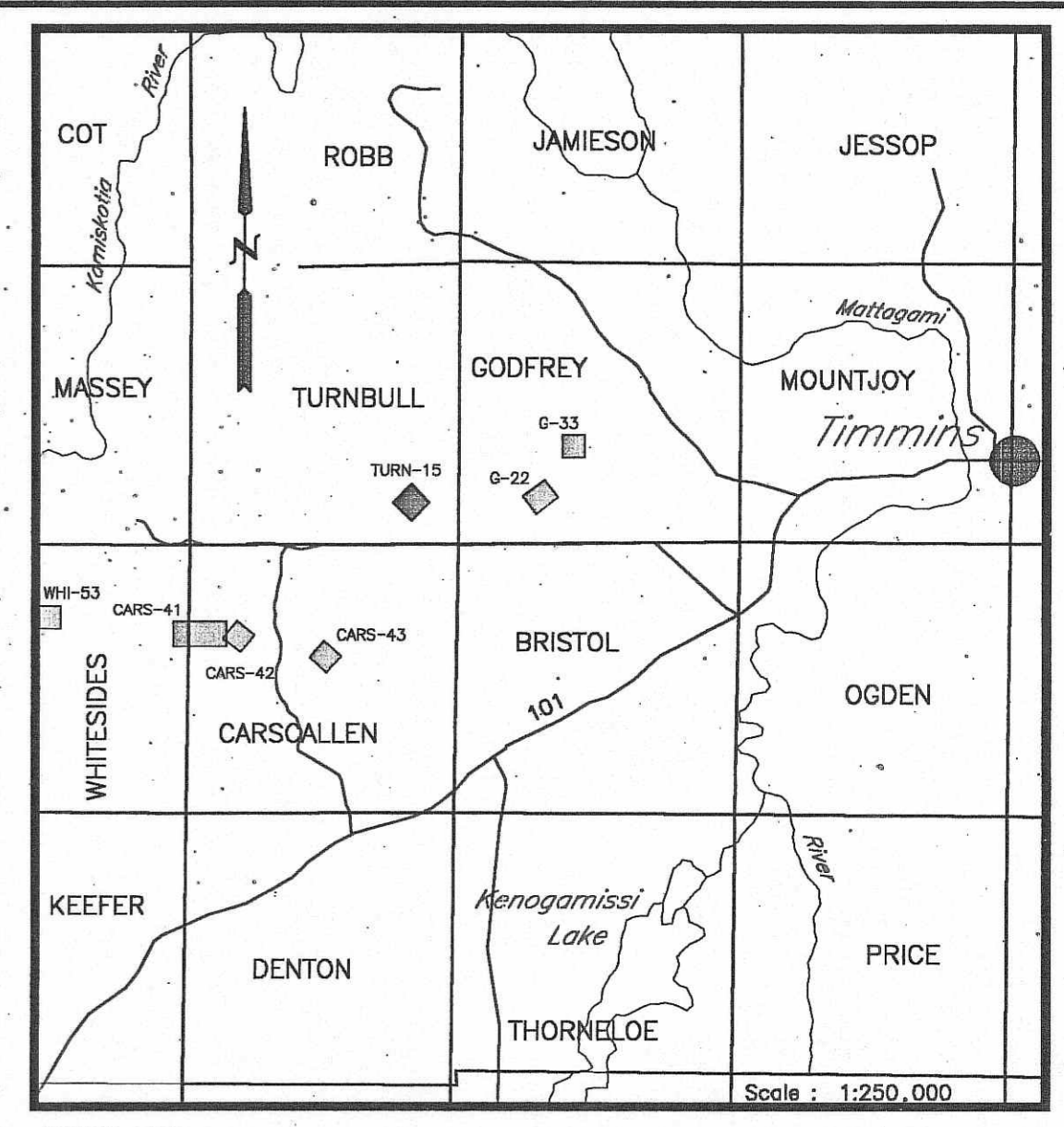
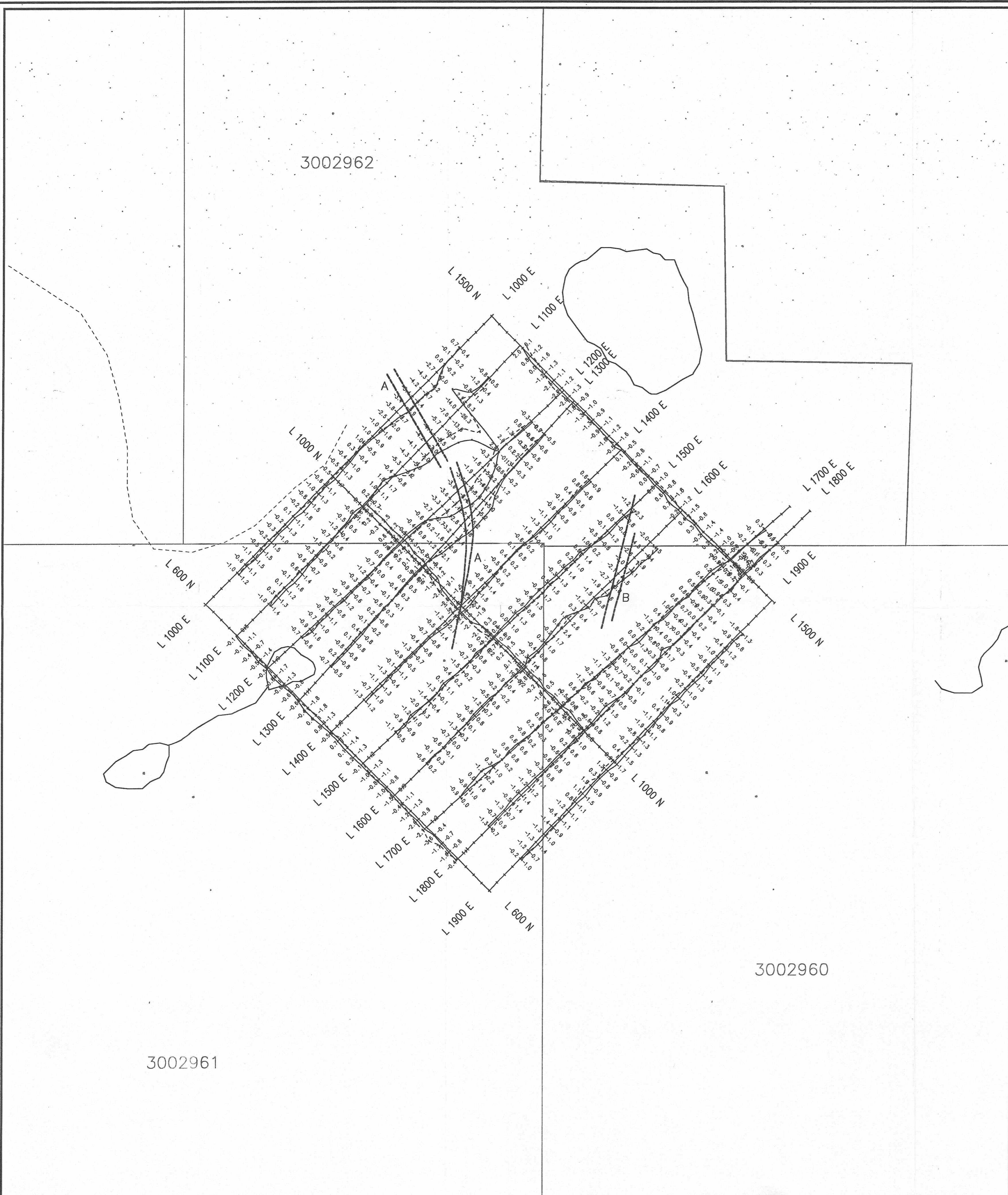
LEGEND

- Instrument : Scintrex IGS-2/MP-4
- Type : Total Field Proton Precession
- Datum Level : 57000 nT
- Contour Interval : 20 nT
- Gridded By : Geosoft Bigrid
- Cell Size : 12.5 metres
- Filter : 1 Pass 9 Point Hanning
- EM Anomaly, 444 Hertz



<b>FALCONBRIDGE LIMITED</b>	
<b>MAGNETIC SURVEY</b>	
TURN-15	
TURNBULL TOWNSHIP	
File : T15.XYZ	Date : June, 2004
NTS : 42-A/05	Proj# :
WORK BY : <i>Timmins Geophysics Ltd.</i>	





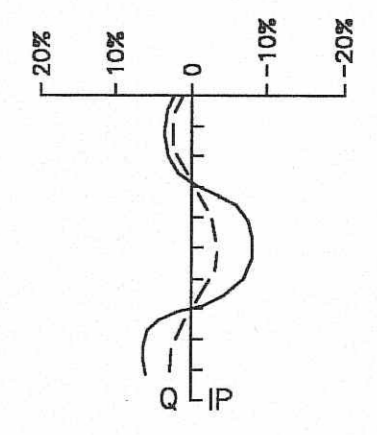
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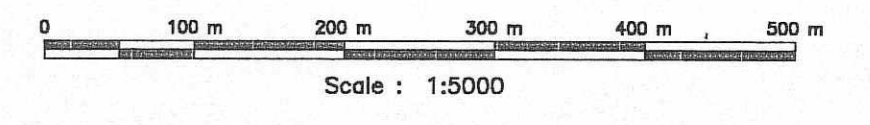
LEGEND

2-30512

Instrument : Apex Parametrics MaxMin I-5  
 Coil Separation : 200 metres  
 Frequency : 222 Hertz  
 Profile Scale : 1cm = 10%



In-phase ———  
 Quadrature - - - - -

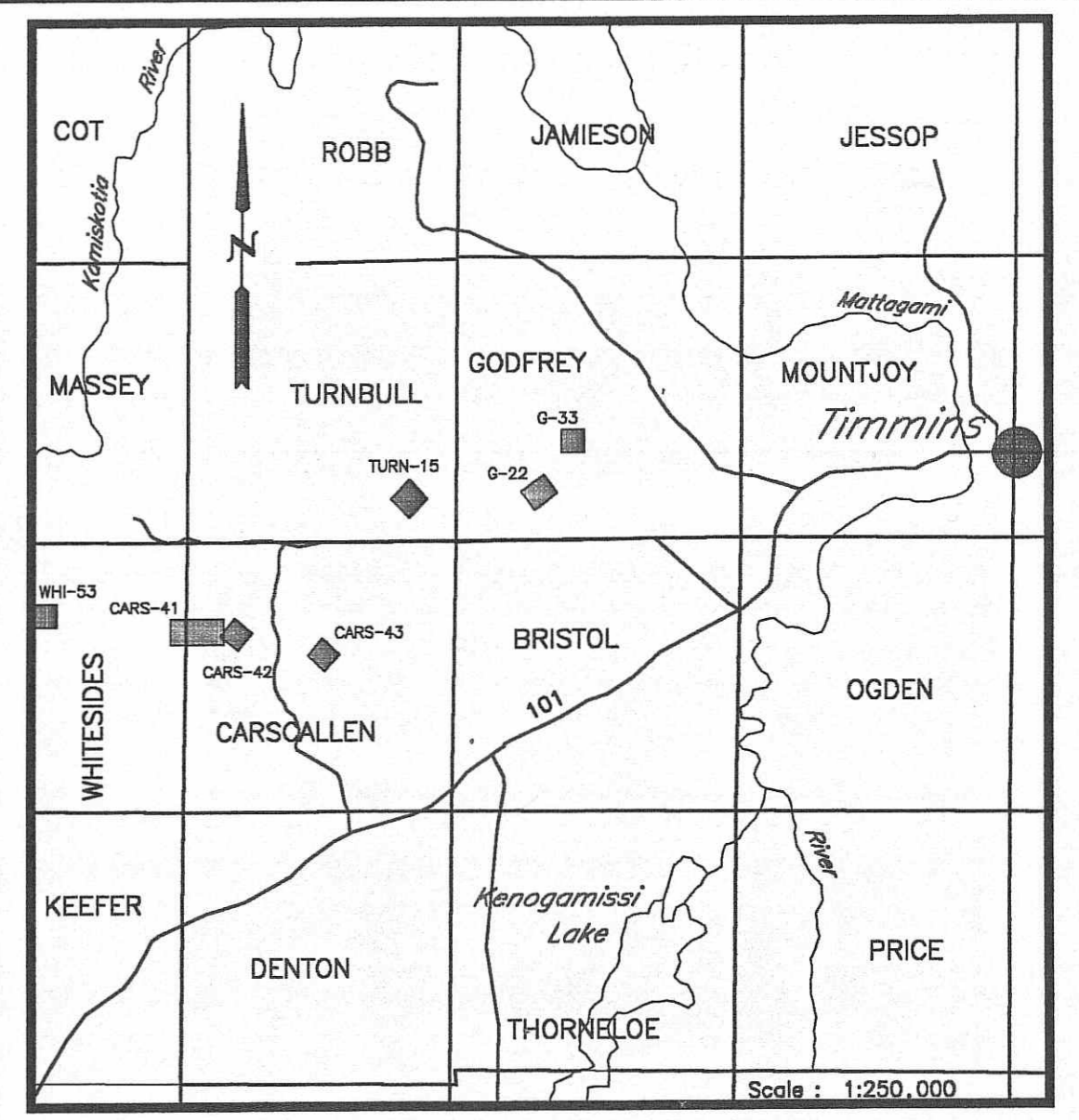
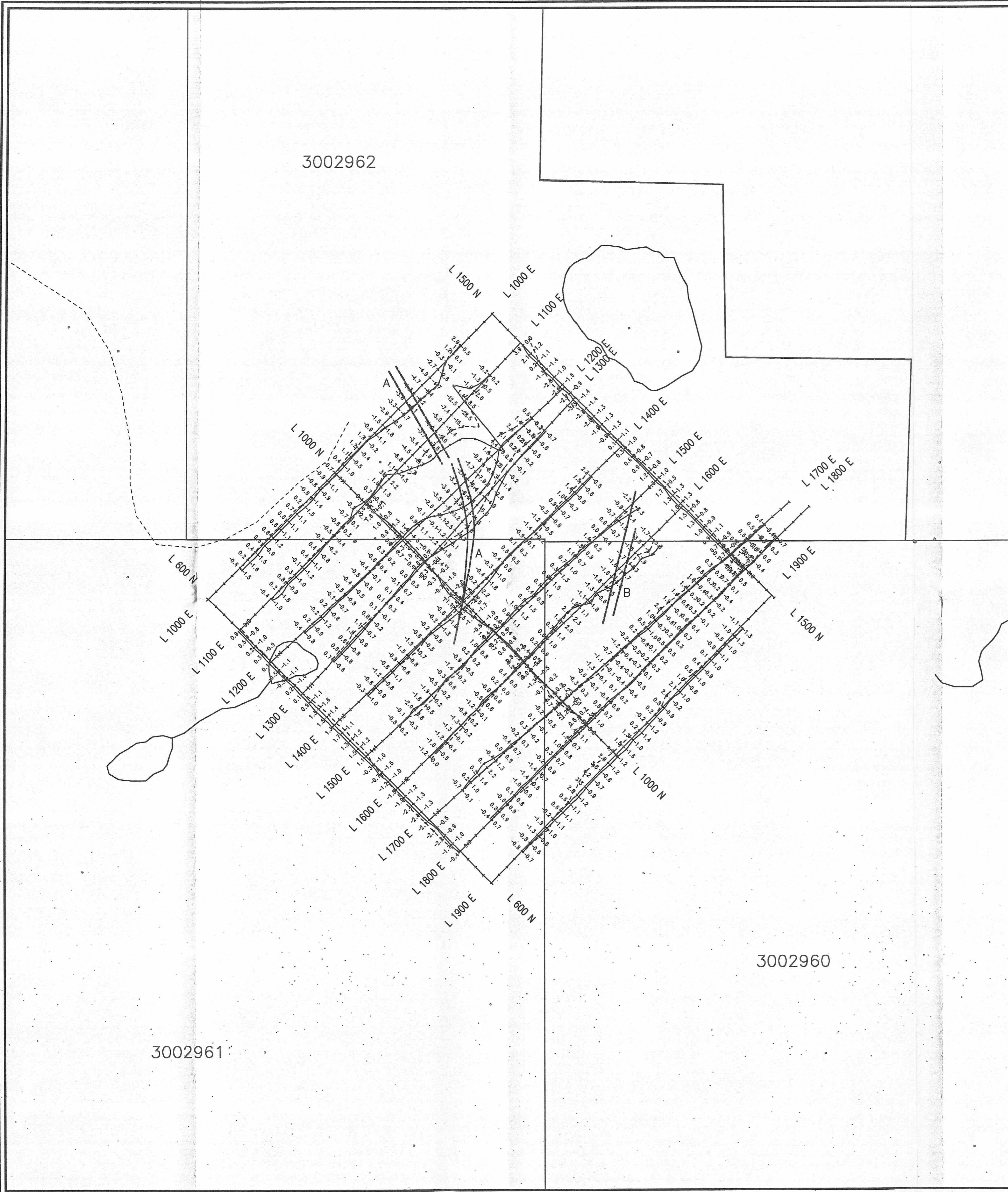


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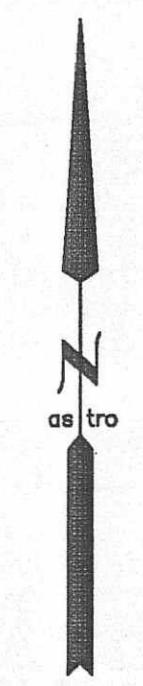
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<b>FALCONBRIDGE LIMITED</b>	
HLEM SURVEY (222 Hz)	
TURN-15	
TURNBULL TOWNSHIP	
File : T15HL.XYZ	Date : June, 2004
NTS : 42-A/05	Proj# :
WORK BY : <i>Timmins Geophysics Ltd.</i>	



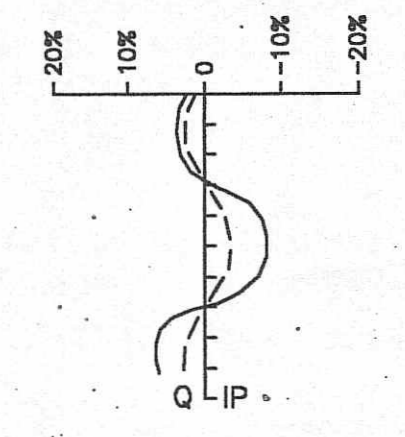


INDEX MAP

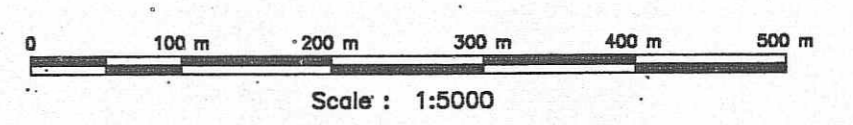


LEGEND **2-30512**

Instrument : Apex Parametrics MaxMin I-5  
 Coil Separation : 200 metres  
 Frequency : 444 Hertz  
 Profile Scale : 1cm = 10%

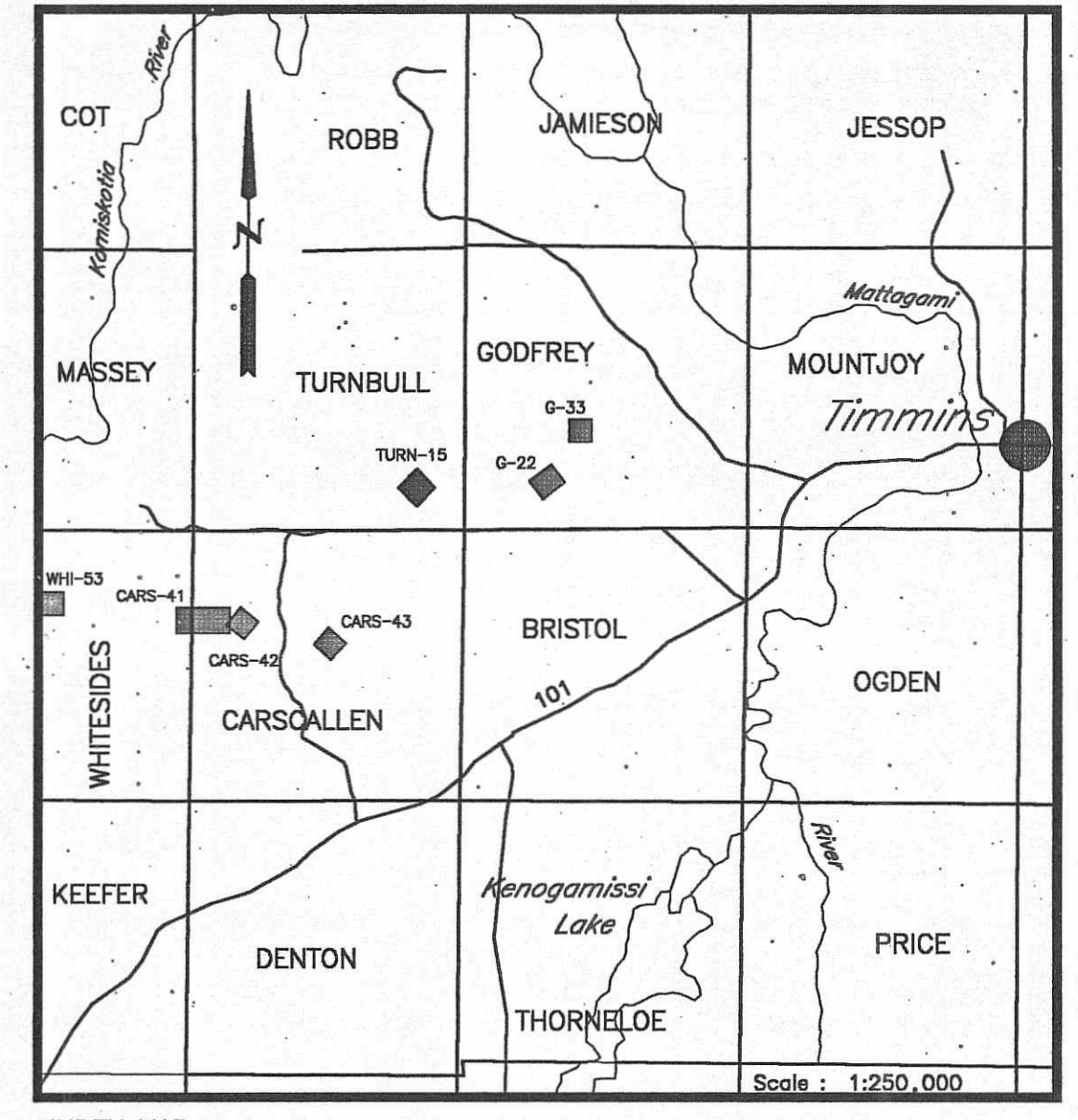
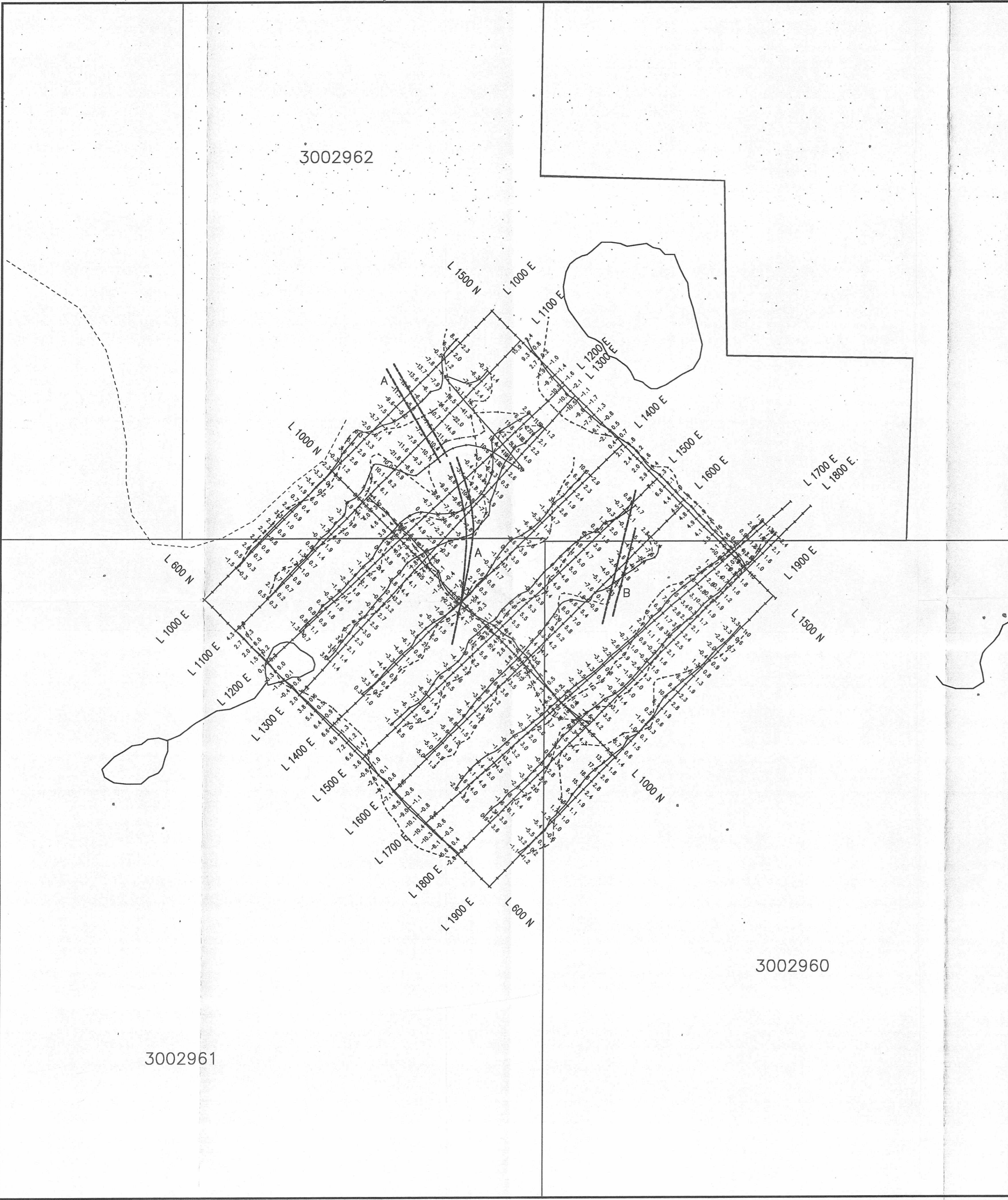


In-phase   
 Quadrature



<b>FALCONBRIDGE LIMITED</b>	
<b>HLEM SURVEY (444 Hz)</b>	
<b>TURN-15</b>	
<b>TURNBULL TOWNSHIP</b>	
File : T15HL.XYZ	Date : June, 2004
NTS : 42-A/05	Proj# :
WORK BY : <i>Timmins Geophysics Ltd.</i>	



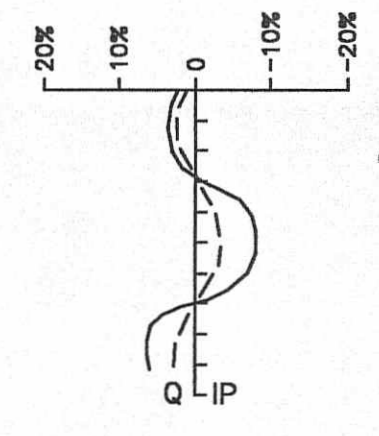


INDEX MAP

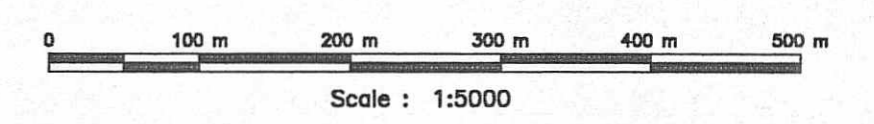


LEGEND **2-30512**

Instrument : Apex Parametrics MaxMin I-5  
 Coil Separation : 200 metres  
 Frequency : 1777 Hertz  
 Profile Scale : 1cm = 10%



In-phase   
 Quadrature



<b>FALCONBRIDGE LIMITED</b>	
<b>HLEM SURVEY (1777 Hz)</b>	
<b>TURN-15</b>	
<b>TURNBULL TOWNSHIP</b>	
File : T15HL.XYZ	Date : June, 2004
NTS : 42-A/05	Proj# :
WORK BY : <i>Timmins Geophysics Ltd.</i>	