REPORT ON
GEOPHYSICAL WORK

ON

MAHAFFY 12
MAHAFFY TOWNSHIP

NTS: 42-A/12

PROJ # : 8036

for
FALCONBRIDGE LIMITED

APRIL 2000

D. LONDRY
TIMMINS GEOPHYSICS LTD.

SUMMARY AND RECOMMENDATIONS

HLEM and magnetic surveys were carried out on the Mahaffy 12 property for Falconbridge Limited in December of 1998.

The magnetic survey mapped north-south to northwest-southeast striking diabase dikes. The EM survey mapped a number of conductors which strike northeast in the south half of the property, east-west through the central area and southeast in the north half.

All of the anomalies, except for 'G' and 'K' have been previously tested with diamond drill holes. The source of anomaly 'G' is a narrow zone of poor conductivity, however, it is the only conductor on the property with a coincident magnetic response. Anomaly 'K' is a partially defined response on the north edge of the grid at 2200 East; the source of this anomaly is also a narrow zone of poor conductivity.

It is recommended that anomaly 'G' is drilled on Line 2250 East and that the grid is extended to the north to determine the strike and extent of anomaly 'K'.

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INTRODUCTION

During December 1998, magnetic and horizontal loop electromagnetic (HLEM) surveys were carried out on the Mahaffy 12 property for Falconbridge Limited.

The property is located 37 kilometres northwest of the city of Timmins in the southwest portion of Mahaffy Township, Porcupine Mining Division (Figure 1(a)). It was accessed by snowmobile from a logging road which runs north from Highway 576 at Kamiskotia. Thorburn Creek flows north directly to the west of the property.

The surveys covered parts of 10 claims (Figure 1(b)) which are comprised of a total of 92, forty acre claim units; the claim numbers are listed in Table 1.

The magnetic survey was carried out by J. derWeduwen and the HLEM survey was run by B. Pigeon and L. Eden.

CLAIM #	# of UNITS	RECORDING DATE	DESCRIPTION	TOWNSHIP
1207794	13	July 09, 1996		Reid
1211742	4	July 10, 1998		Reid
1211743	8	July 10, 1998		Reid
1218745	16	June 20, 1997		Reid
1218746	7	June 20, 1997		Reid
1226430	12	Dec. 05, 1997		Reid
1227611	8	Nov. 25, 1997		Reid
1227612	3	Nov. 25, 1997		Reid
1227613	6	Nov. 25, 1997		Reid
1228069	15	May 27, 1997		Reid

Table 1 : Property Description

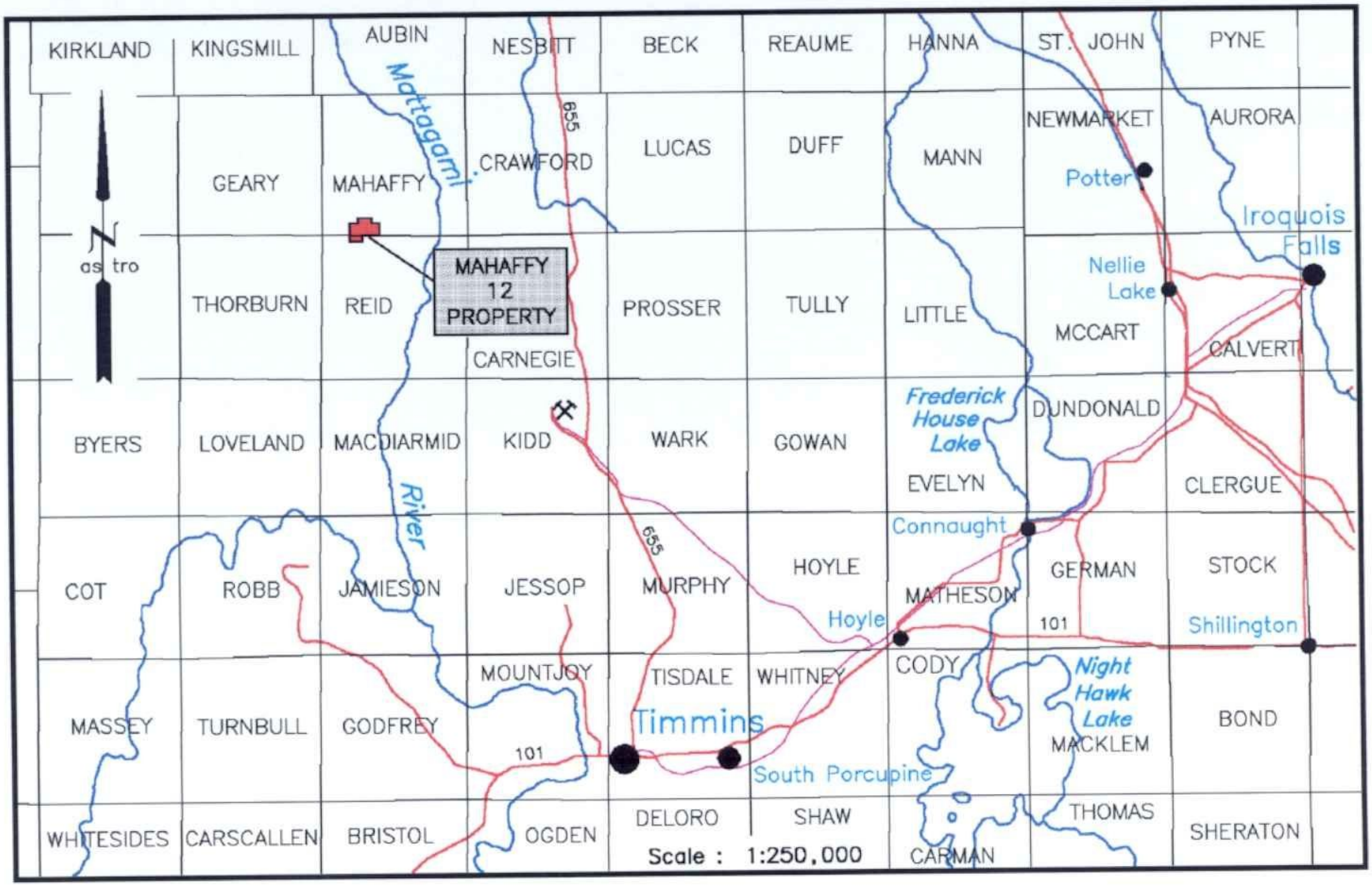

Figure 1(a) : Location Map

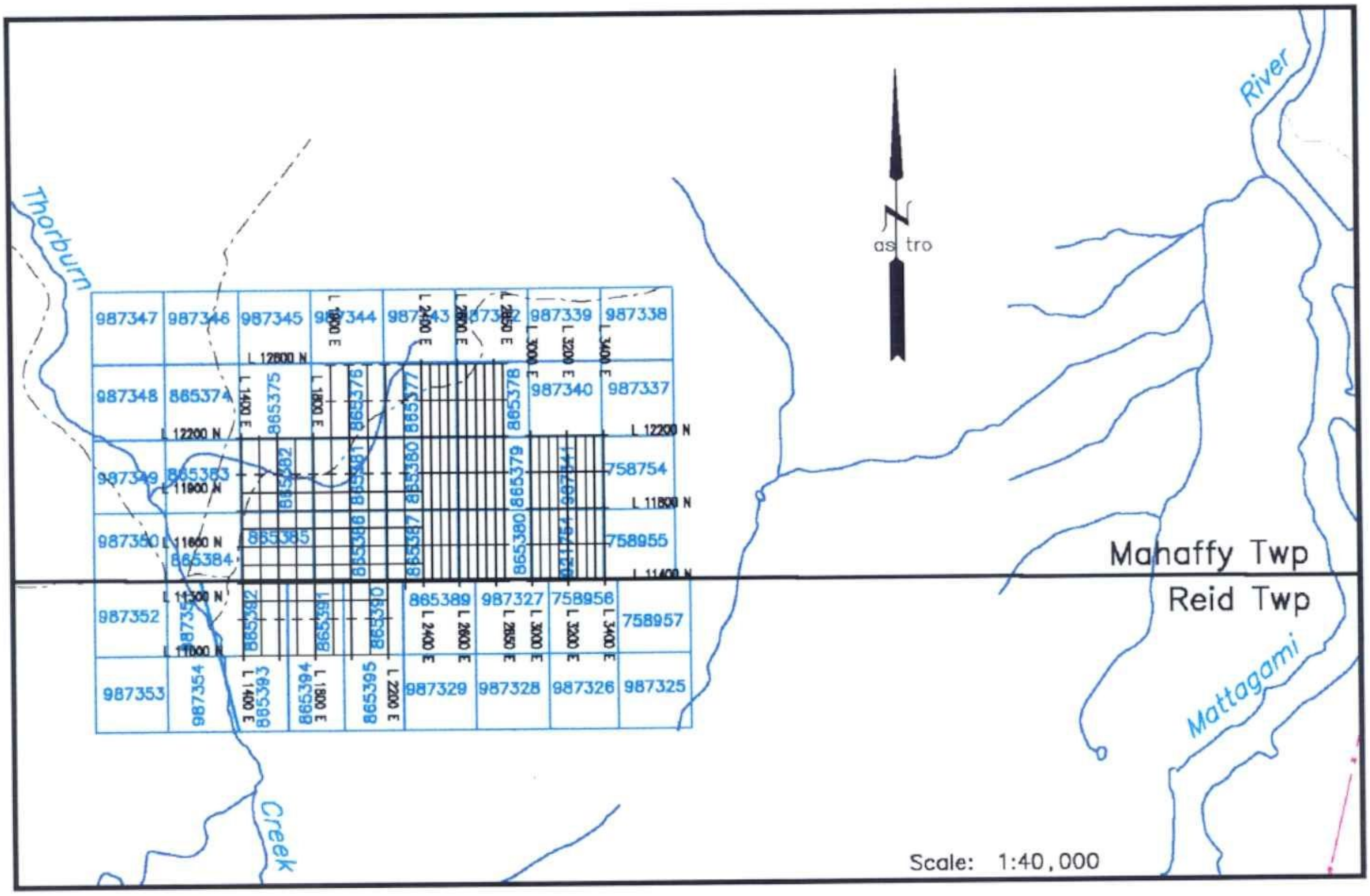

Figure 1(b) : Claim Map

GENERAL GEOLOGY

Mahaffy Township is located near the west end of the Abitibi greenstone belt which consists of predominantly east-west striking, steeply dipping Archean sediments and ultramafic to felsic volcanics. These rocks have been intruded by ultramafic to felsic bodies, north-south striking Matachewan diabase dikes and east northeast striking Keweenawan diabase dikes.

The geology of Mahaffy Township is presented on map 2205 at a scale of 1 inch to 4 miles (Pyke etal, 1973) and on map P3379 at a scale of 1:100,000 (Ayer etal, 1998).

Previous work in the area indicates that the Mahaffy 12 property is underlain by east southeast to east northeast striking intermediate to felsic volcanics and sill-like, ultramafic bodies. North-south striking magnetic anomalies suggest that all of the rocks are cut by diabase dikes. The Mattagami River Fault strikes north-south along the western edge of the present Mahaffy 12 grid.

PREVIOUS WORK

Interest in this area began in the 1960's after the discovery of the Texasgulf orebody to the east southeast, in Kidd Township. Since 1960, a number of companies have carried out work using a variety of geophysical techniques in the search for base metal deposits (Table 2).

All of the early electromagnetic work, before 1973, used dip angle techniques including the fixed vertical loop transmitter method (VLEM) and the "shoot-back" method of Crone's. After 1973 most of the electromagnetic work involved the horizontal loop method, with coil separations between 500 and 600 feet or 160 and 200 meters. A PEM survey was run along widely spaced lines in the 1970's by Rosario Resources; it was conducted with a moving transmitter loop at a distance of 300 metres from the receiving coil. In the early 80's, PEM surveys were run by Utah with a fixed 400 by 400 foot transmitter loop.

YEAR	COMPANY	GEOPHYSICS	DRILL HOLES	ASSESSMENT/ AFRI FILE
1964	Mespi Mines Limited	Amag, AEM		T-787
1964	Texasgulf Inc	None filed	M12-1	T-442
1964	Black River Mining Limited	Mag, JEM	64-1 to 6	T-928
1971	Newmont Mining Corp of Canada Ltd	Amag, Rad		T-40
1972	Caltor Syndicate	Mag, VLEM	72-1 to 4	T-235
Summer 1977	Rosario Resources Canada Limited	Mag, HLEM (300'), PEM, IP, Grav		T-1841
Winter 1978	Rosario Resources Canada Limited	Mag, HLEM (200m)		T-1841
Summer 1978	Rosario Resources Canada Limited	Mag, HLEM (150, 200m)	RM-1 to 6	T-1841
Winter 1979	Rosario Resources Canada Limited		RM79-1, 2	T-1841
1980	Utah, Rosario, Aquitaine JV	Mag, HL, IP, PEM	UR80-1 to 6	T-1841
1981	Utah, Rosario, Aquitaine JV		23 OB holes	T-1841
1987	Kidd Creek Mines Ltd	Mag, HL (160m)	MF12-1,2	T-2844
1988	Falconbridge Limited		MF12-3 to 7	42A13SE0345
1990	Falconbridge Limited		MF12-12,13	42A13SE0060
1991	Falconbridge Limited		MF12-26,27	42A13SE0004

Table 2 : Summary of Previous Work

In 1964, **Black River Mines Limited** carried out magnetic and EM surveys over the west half of the Mahaffy 12 survey area. The surveys were run along lines spaced every 400 feet and oriented northwest southeast. Black River drilled six holes (64-1 to 64-6) to test three conductors on the property.

In 1972, **Caltor Syndicate** carried out magnetic and VLEM surveys over most of the present survey area. These surveys were run along north-south lines spaced every 400 feet. Caltor drilled four holes (72-1 to 4) to test conductivity in the southwest corner of the present grid.

The most extensive work was done by **Rosario Resources Canada Limited** between 1977 and 1979 and by a subsequent joint venture between Rosario, **Utah Mines Ltd.** and **Aquitaine of Canada Ltd.** in 1980 and 1981.

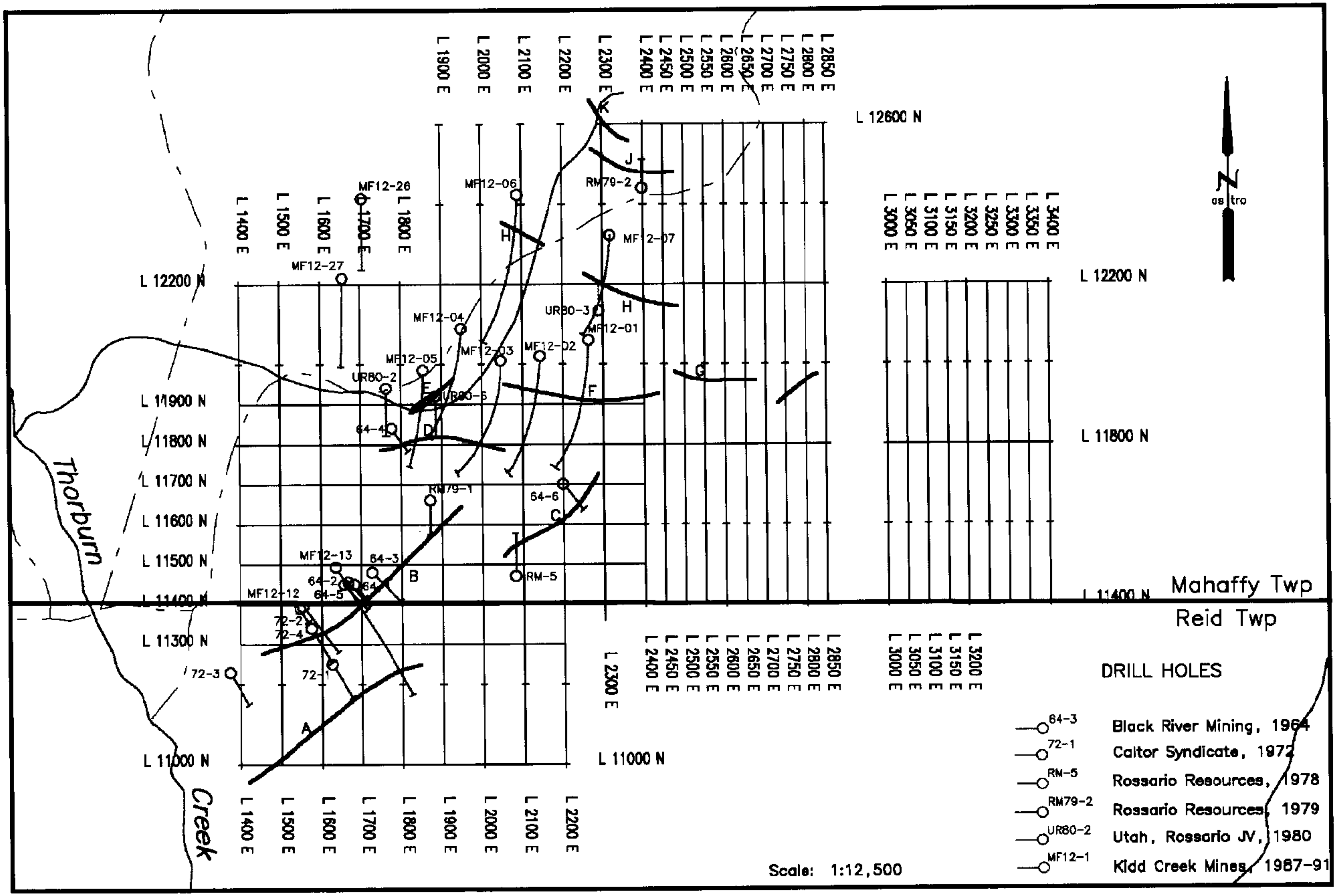

Figure 2: Approximate Location of Previous Drill Holes

In 1977, Rosario carried out a PEM survey on north-south lines spaced every 800 feet using a coil separation of 300 feet. In 1978, they ran an HLEM survey along north-south lines spaced every 400 feet with a coil separation of 500 feet. In 1978, Rosario drilled hole RM-5 and in 1979 drilled holes RM79-1 and RM79-2 to test conductors on the property.

In 1980, Utah detailed some of the conductors with a PEM survey, using 400 x 400 foot transmitter loops. During the same year, Utah also ran an induced polarization (IP) survey along selected lines on the property using a pole dipole array with an "a" spacing of 200 feet; readings were taken for n=1 to 4. The surveys were followed by three drill holes (UR80-2,3 and 6) to test two of the conductors.

Between 1987 and 1991, **Kidd Creek Mines Ltd/Falconbridge Limited** drilled a number of holes on the property (MF12-1 to 7, 12, 13, 26 and 27) to test the conductors at a greater depth.

The area has been covered by several airborne magnetic and electromagnetic surveys including **Keevil Mining Group Ltd** in 1966, **Mespi Mines Limited** in 1971 and **Phelps Dodge Corporation of Canada** in 1974. A magnetic and radiometric survey in Reid Township was flown for **Newmont Mining Corporation** of Canada Ltd. in 1971.

In 1987, the **Ontario Geological Survey** flew a combined airborne magnetic and EM survey over the Timmins area which included Mahaffy Township. This survey was flown along north-south lines spaced approximately every 200 metres.

SURVEY DESCRIPTIONS

The grid on the property consists of north south lines spaced every 100 metres over the west half of the survey area and every 50 metres over the east half. East-west tie lines were established every 400 metres and east-west grid lines were cut every 200 metres in the west central portion of the grid; all of the lines were picketed every 20 metres.

The magnetic readings were taken every 10 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 grid at 10200 East, 10360 North; the base station value to which all of the readings were levelled is 59237 nT. A total of 5484 readings were taken along 54.4 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 20 metres using a coil separation of 200 metres and frequencies of 222, 444 and 1777 Hertz. A total of 2171 stations were read along 53.6 kilometres of line.

MAGNETIC RESULTS

The total magnetic field is contoured every 25 nT on map 1 at a scale of 1:5000. The results are also presented in Figure 2 at a scale of 1:12,500.

The magnetic field trends northeast in the south half of the property and southeast in the north half of the property. These trends are interrupted by linear, north-south to north northwest striking, high magnetic anomalies which represent diabase dikes. They are located at 2500 East, between the south end of Line 1900 East and the north end of 1500 East, along the east side of the survey area and along the west side of the survey area. Magnetic high anomalies, with a short strike length, extend from the central diabase dike (at 2500 East) in an east northeast direction at 11500 North and in an east southeast direction at 12100 North. These coincide with slight offsets in the diabase and may represent branches of the main diabase intruded along geological contacts. A third anomaly, with a similar amplitude and strike length, strikes east from the diabase at 11950 North and coincides with EM anomaly 'G'.

A partially defined, east northeast striking magnetic high anomaly located between 11600 North on Line 3000 East and 11800 North on Line 3400 East may represent an ultramafic body. The high frequency, isolated magnetic high at 2200 East, 11700 North is likely cultural and may reflect the collar of hole 64-6.

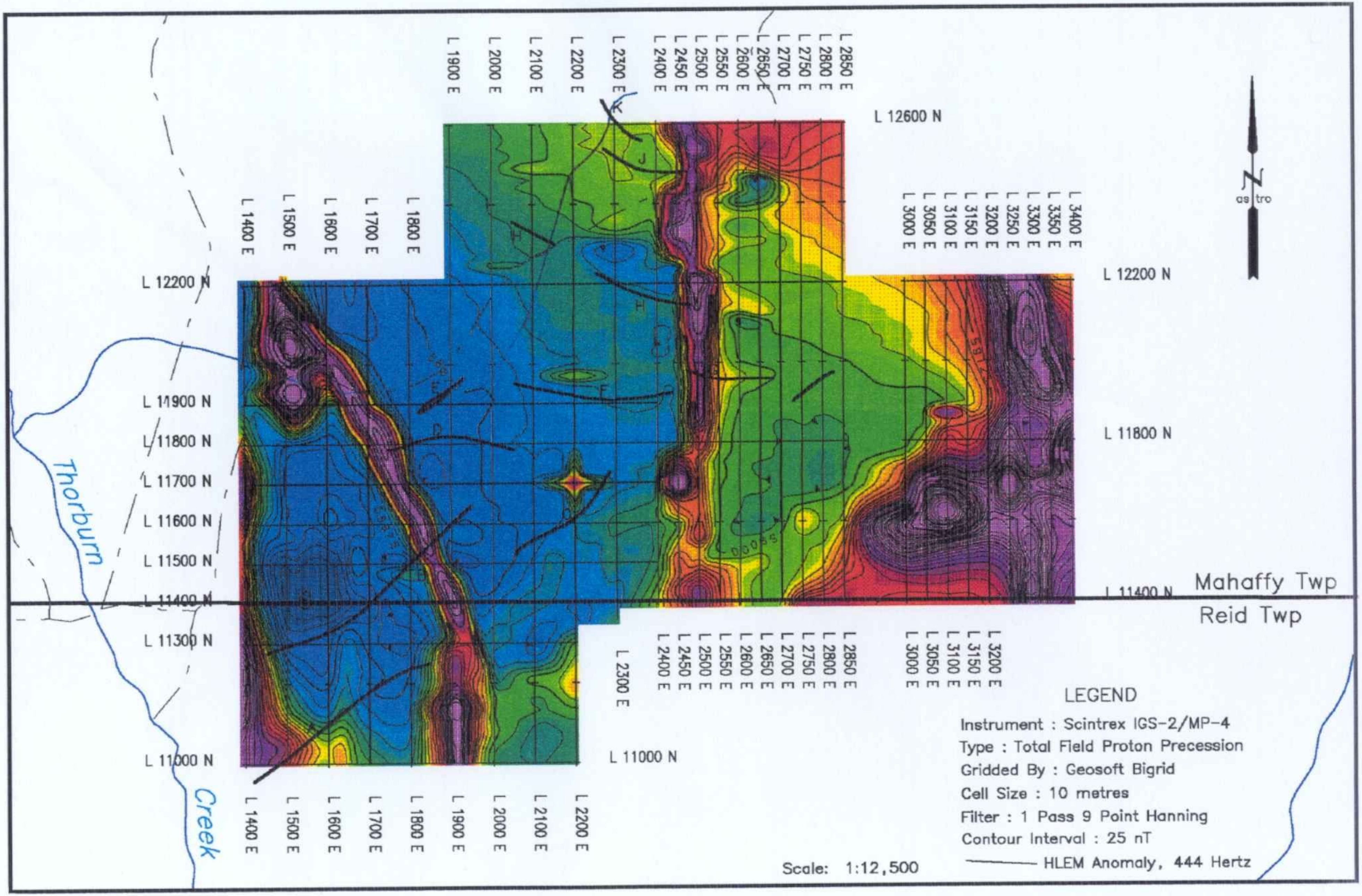

Figure 3 : Total Magnetic Field, Mahaffy 12 Property

EM RESULTS

The results of the HLEM survey are profiled on maps 2, 3 and 4 at a scale of 1:5000; the profile scale used for all of the frequencies is 1 cm = 25 %. The results using 444 Hertz are also presented in Figure 3 at a scale of 1:12,500.

The following is a description of the conductors detected in the survey and labelled 'A' to 'K' on the maps.

Anomaly 'A' is a poorly defined, low amplitude response which strikes northeast between 1480 East on Line 11000 north and 11240 North on Line 1800 East. It is difficult to interpret any parameters for the source because the anomaly is incomplete to the south and because of the influence of the much stronger response of anomaly 'B' to the north. The anomaly is mainly a quadrature response indicating poor conductivity.

Hole 72-1, drilled by Caltor in 1972 to investigate felsic pyroclastics to the north of anomaly 'A', did not reach the conductor.

Anomaly 'B' strikes northeast between 1520 East on Line 11300 North and 1900 East on Line 11600 North. The source of the anomaly is a narrow zone of good conductivity at a depth which varies from less than 20 metres on Line 11400 North to greater than 100 metres at the northeast end (Table 4).

Conductor 'B' was first drilled by Texas Gulf in 1961 (Hole M21-1). Black River located this zone in their 1964 JEM survey and drilled four holes (Holes 64-1, 2, 3, 5) to test it. The source of the EM anomaly is pyritic graphite, however, two of the Black River holes, 64-2 and 64-3, returned base metal values; the best intersection ran .15% copper, .52% lead, 1.05% zinc and .54 oz/ton silver over 2.9 feet.

The conductor was detected in a VLEM survey carried out by Caltor in 1972 and the west end was tested with two diamond drill holes. Hole 72-2 was stopped after 175 feet because of poor ground conditions and Hole 72-4 intersected a graphitic tuff unit. Hole 72-3 , drilled to the southwest of the previous two described holes, was entirely in an ultramafic unit.

CONDUCTOR	COMPANY, YEAR	SURVEYS	σt	DRILL HOLE	SOURCE	ASSESSMENT/ AFRI FILE
A	Caltor, 1972 Rossario,1977 Falconbridge, 1990	VLEM PEM	POOR	72-1 MF12-13	No conductor intersected	T-235 T-1841 42A13SE0060
B	Black River, 1964 Caltor, 1972 Rossario, 1977 Utah,1980 Falconbridge, 1990	JEM VLEM PEM IP	GOOD	64-1,2,3,5 72-2,4 RM79-1 MF12-12,13	Pyritic Graphite	T-928 T-235 T1841 T-1841 42A13SE0060
C	Black River, 1964 Caltor, 1972 Rossario, 1977 Rossario, 1978 Utah,1980	JEM VLEM HLEM,PEM HLEM IP	GOOD	64-6 RM-5	Graphite & 7% Pyrite	T-928 T-235 T-1841 T-1841 T-1841
D	Black River, 1964 Caltor, 1972 Rossario, 1977 Rossario, 1978 Utah,1980 Falconbridge, 1987/88	JEM VLEM HLEM, PEM HLEM PEM, IP	POOR	64-4 UR80-2,6 MF12-3,4,5	Graphite & Massive Pyrite	T-928 T-235 T-1841 T-1841 T-1841 42A13SE0345
E	Black River, 1964 Caltor, 1972 Rossario, 1977 Rossario, 1978 Utah,1980 Falconbridge, 1987/88	JEM VLEM PEM HLEM PEM, IP	GOOD	MF12-4,5	Graphite & Massive Pyrite	T-928 T-235 T-1841 T-1841 T-1841 42A13SE0345
F	Black River, 1964 Caltor, 1972 Rossario, 1977 Rossario, 1978 Utah,1980 Falconbridge, 1987	JEM VLEM HLEM,PEM HLEM PEM, IP	POOR	MF12-1,2,3	Massive Pyrite & Graphite	T-928 T-235 T-1841 T-1841 T-1841 42A13SE0347
G	Caltor, 1972 Rossario, 1977	VLEM HLEM,PEM	POOR			T-235 T-1841
H	Rossario, 1977 Rossario, 1978 Utah,1980 Falconbridge, 1988	HLEM HLEM IP	POOR	UR80-3 MF12-6,7	Graphite & 25% Pyrite	T-1841 T-1841 T-1841 42A13SE0345
J	Rossario, 1978 Utah,1980	HLEM PEM, IP	POOR	RM79-2	Graphite & Massive Pyrite	T-1841 T-1841
K	Rossario, 1978 Utah,1980	HLEM PEM, IP	POOR			T-1841 T-1841

Table 3 : Summary of Conductors

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
11300 N	1520 E	narrow	-6	-11	26	4	
1600 E	11335 N	narrow	-31	-12	34	54	
11400 N	1700 E	narrow	-42	-13	<20	67	
1700 E	11400 N	narrow	-44	-12	<20	74	
11500 N	1800 E	narrow	-34	-16	22	37	
1800 E	11500 N	narrow	-33	-11	34	62	
11600 N	1900 E	narrow	-4	-3	100	14	
1900 E	11600 N	narrow	-3	-2	120	21	

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

Anomaly 'C' strikes northeast between 11560 North on Line 2100 East and 2270 East on Line 11700 North. The source of the anomaly is a narrow zone of good conductivity at a depth which ranges from 40 metres on Line 2200 East to 100 metres on Line 11700 North (Table 5). This conductor has been interpreted by some of the previous companies to be the same stratigraphic horizon as conductor 'B', separated by a diabase dike/fault.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
2100 E	11560 N	narrow	-9	-7	72	16	
11600 N	2180 E	narrow	-14	-7	58	18	
2200 E	11610 N	narrow	-23	-12	42	31	
11700 N	2270 E	narrow	-5	-3	106	21	

Table 5: Anomaly 'C' Interpretation, 444 Hz, 200 metre coil separation.

In 1964, Black River drilled Hole 64-6 to test anomaly 'C' and intersected graphite with disseminated pyrite. The conductor was detected in a VLEM survey carried out by Caltor in 1972, however, they did not drill it. In 1977/78, Rosario carried out HLEM and PEM surveys and drilled Hole RM-5 which also intersected pyritic graphite.

Anomaly 'D' is a low amplitude response which strikes east-west between Lines 11800 East and 12000 East at 11800 North. The source of the anomaly is a narrow zone of poor conductivity at a depth of 40 metres (Table 6).

Hole 64-4, drilled by Black River in 1964, intersected 19 feet of graphite with massive pyrite and marcasite. It was also drilled by Utah (Holes UR80-2 and UR80-6) in 1981 and Kidd Creek (Holes MF12-3, 4 and 5) in 1988.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
1800 E	11800 N	narrow	-2	-4	40	2	
1900 E	11810 N	?	-3	-5	40	2	
2000 E	11800 N	narrow	-2	-3	64	3	
11800 N	2000 E	narrow	-2	-4	40	2	

Table 6: Anomaly 'D' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'E' strikes northeast between 1850 East on Line 11900 North and 11940 North on Line 1900 East. The source of the anomaly is good conductivity at a depth of 80 metres on Line 11900 North and 120 metres on Line 1900 East (Table 7).

This anomaly was tested with two holes by Kidd Creek (MF-4 and 5) in 1988. Both holes intersected widely spaced graphite zones with massive pyrite, explaining both anomalies 'D' and 'E'.

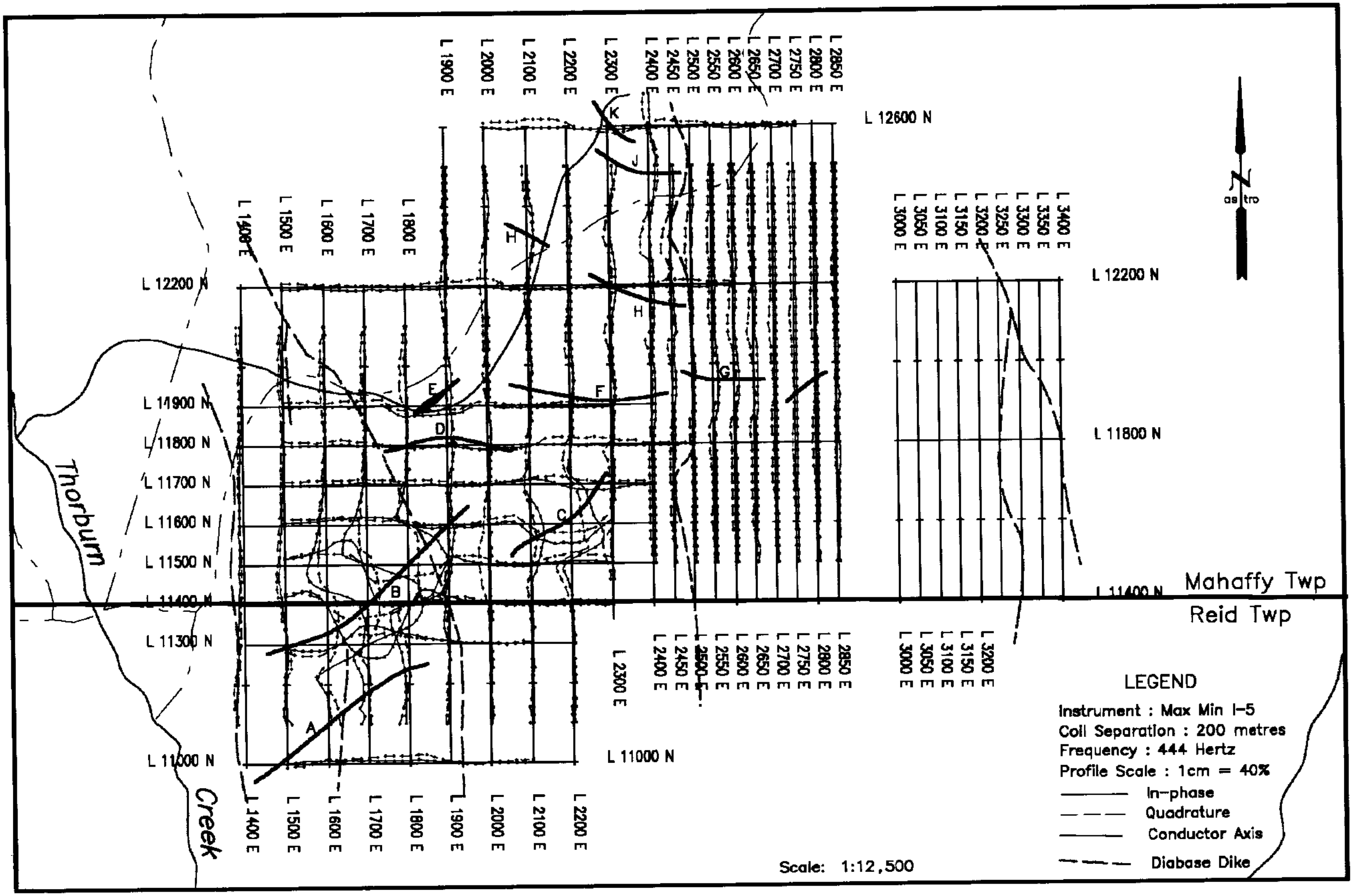

Figure 4 : HLEM Results, 444 Hertz, Mahaffy 12 Property

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
11900 N	1850 E	20	-9	-6	80	18	
1900 E	11920 N	?	-3	-2	120	21	

Table 7: Anomaly 'E' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'F' is a very low amplitude anomaly which strikes east-west between 11940 North on Line 2100 East and 11920 North on Line 2400 East. It represents a narrow zone of very poor conductivity at a shallow depth (Table 8).

This anomaly was tested by Kidd Creek with two holes (MF12-01 and MF12-02) in 1987 and one hole (MF12-03) in 1988. The conductivity was explained by intersections of massive pyrite.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
2100 E	11940 N	narrow	-1	-3	20	1	
2200 E	11920 N	narrow	-1	-4	<20	1	
2300 E	11910 N	narrow	-1	-4	<20	1	
2400 E	11920 N	narrow	-1	-2	40	1	

Table 8: Anomaly 'F' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'G' is also a low amplitude response which strikes east-west between Lines 2500 East and 2650 East at 11960 North. The source of the anomaly is a narrow zone of poor conductivity at a shallow depth (Table 9). It has a coincident magnetic response and has not been previously tested.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
2500 E	11970 N	narrow	-1	-4	<20	1	
2550 E	11960 N	narrow	-2	-6	20	1	
2600 E	11960 N	narrow	-2	-4	40	2	
2650 E	11960 N	narrow	-1	-3	20	1	

Table 9: Anomaly 'G' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'H' strikes southeast between 12340 North on Line 2100 East and 12150 North on Line 2450 East. The source of the anomaly is a narrow zone of poor conductivity at a depth which ranges from less than 20 metres on Line 2450 East to 60 metres on Line 2300 East (Table 10).

Hole UR80-3, which was drilled by Utah in 1980 to test anomaly ‘H’, intersected graphite with up to 25% pyrite. Kidd Creek also drilled two holes (MF12-6 and 7) in 1988 to test this conductor and intersected a graphite zone with massive sulphides (pyrite).

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
2100 E	12340 N	narrow	-3	-7	24	2	
2300 E	12200 N	narrow	-3	-4	64	4	
2400 E	12160 N	narrow	-1	-3	20	1	
2450 E	12150 N	narrow	-1	-4	<20	1	

Table 10: Anomaly 'H' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'J' strikes east-west between 480 North on Line 3000 West and 460 west on Line 2500 West. It is a poorly defined anomaly because of the low amplitude and affect from the higher amplitude response of anomaly 'H', to the south; the in-phase/quadrature ratio, however, suggests poor conductivity (Table 11).

An EM survey by Rosario in 1978 also outlined poor conductivity which was tested by diamond drilling in the winter of 1979; Hole RM79-2 intersected graphite and massive pyrite.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
2300 E	12520 N	?	-2	-8	<20	1	
2400 E	12480 N	narrow	-7	-8	60	7	
2450 E	12480 N	?	-2	-4	40	2	

Table 11: Anomaly 'J' Interpretation, 444 Hz, 200 metre coil separation.

Anomaly 'K' is a one line anomaly centered at 2000 West on Line 800 North. The source of the anomaly is poor conductivity at a depth of 20 metres (Table 12). More work would have to be carried out in order to determine the strike and extent of this zone.

LINE	ANOMALY CENTER	ANOMALY WIDTH (m)	IP (%)	Q (%)	DEPTH (m)	CONDUCTIVITY THICKNESS (mhos)	COMMENTS
12600 N	2300 E	narrow	-2	-7	<20	1	

Table 12: Anomaly 'K' Interpretation, 444 Hz, 200 metre coil separation.

April 8, 2000
Date

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Timmins Geophysics Ltd.

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Pyke, D.R., Ayres, L.D. and Innes, D.G.
1973: Timmins-Kirkland Lake Sheet, Districts of Cochrane, Sudbury and Timiskaming; Ontario Div. Mines, **Map 2205**, Geol. Comp. Ser., Scale 1 inch to 4 miles.

Geophysical Survey Report

covering

Borehole Pulse EM Surveys
over the
Mahaffy Township
for
Falconbridge Exploration Ltd.
during
February - April, 1999.

by

CRONE GEOPHYSICS & EXPLORATION LTD.

Survey Area:	**Mahaffy Township, Timmins, Ontario.**
Survey Type:	**3D Borehole Pulse EM Survey.**
Survey Operator:	**Henry Odwar.**
Survey Period:	**February - April, 1999.**
Report By:	**Henry Odwar.**
Report Date:	**May, 1999.**
Submitted To:	**Falconbridge Exploration Ltd. Timmins, Ontario.**

2.20231

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PULSE ELECTROMAGNETIC SURVEY

APPENDICES

1.0 INTRODUCTION

This geophysical survey report outlines the survey parameters for the 3D Borehole Pulse EM survey which was carried out for Falconbridge Exploration Ltd. 11 holes were surveyed.

2.0 PROPERTY LOCATION AND ACCESS

Mahaffy Township is located near Timmins, Ontario. The survey crew accessed the property on a daily basis by road from the city of Timmins.

3.0 PERSONNEL

The personnel involved in this project included:

Henry Odwar	Operator	Toronto, Ontario
Henry Odwar	Data Presentation	Toronto, Ontario

4.0 SURVEY PARAMETERS

Table I: Survey Parameters

Grid	**Tx Loop**	**Loop Co-ordinates**	**Loop Size**	**Current**	**Time Base**	**Ramp Time**	**Channels**
MAH12	MF1	1700E - 2400E 11700N - 12200N	~700 x 500m	15 amps	16.66 ms	1.5 ms	20
MAH12	MF2	2000E - 2500E 12200N - 12600N	~500 x 400m	15 amps	16.66 ms	1.5 ms	20
MAH12	MF3	1500E - 1900E 11100N - 11500N	~400 x 400m	15 amps	20 ms	1.5 ms	20
MAH12	MF4	1700E - 2000E 11500E - 11800N	~300 x 300m	15 amps	20 ms	1.5 ms	20
MAH13	MF5	2500E - 2700E 11960N - 12200N	~200 x 220m	18 amps	20 ms	1.5 ms	20
MAH16	MF16-1	250E - 600E 1260N - 1600N	~340 x 350m	16 amps	20 ms	1.5 ms	20
MAH16	MF16-2	900E - 1200E 1100N - 1400N	~300 x 300m	16 amps	20 ms	1.5 ms	20
MAH16	MF16-3	1900E - 2100E 18000N - 18200N	~200 x 200m	16 amps	16 ms	1.5 ms	20

Table II: Survey Coverage: Borehole

Hole	Survey Date	Loop	Collar CO-ordinates	Dip°	Azimuth°	Depth (m)	Surveyed Section	Comp.
MF12-02	22/02/99	MF1	2145E/12100N	55°	180°	660	40 - 660 m	X, Y, Z
MF12-03	24/02/99	MF1	2055E/12050N	55°	180°	800	30 - 800 m	X, Y, Z
MF12-05	02/03/99	MF1	1850E/12000N	55°	180°	897	30 - 897 m	X, Y, Z
MF12-06	05/03/99	MF1	2095E/12500N	55°	180°	628	40 - 628 m	X, Y, Z
MF12-07	11/03/99	MF2	2360E/12300N	57°	189°	828	30 - 828 m	X, Y, Z
MF12-13	21/03/99	MF3	1640E/11515N	50°	145°	545	30 - 545 m	X, Y, Z
MF12-28	26/03/99	MF4	1800E/11660N	50°	135°	325	20 - 325 m	X, Y, Z
MF13-04	27/03/99	MF5	2600E/12100N	50°	180°	245	10 - 240 m	X, Y, Z
MF16-01	01/04/99	MF16-3	1950E/18100N	50°	180°	263	50 - 260 m	X, Y, Z
MF16-02	25/03/99	MF16-2	1050E/1240N	50°	180°	255	50 - 255 m	X, Y, Z
MF16-03	24/03/99	MF16-1	505E/1400N	45°	210°	254	30 - 254 m	X, Y, Z

5.0 SURVEY METHODS

The Crone Pulse EM system is a time domain electromagnetic method that utilizes an alternating pulsed primary current with a controlled shut-off and measures the rate of decay of the induced secondary field across a series of time windows during the off-time. The system uses a transmit loop of any size or shape. A portable **120VDC, 4.5hp Motor Generator** powers the **PEM 2.4 kW Transmitter** which provides a precise current waveform through the loop. The receiver apparatus is moved along surface lines or down boreholes.

The transmitter cycle consists of slowly increasing the current over a few milliseconds, a constant current , abrupt linear termination of the current ("Ramp Time") , and finally, zero current for a selected length of time in milliseconds ("Time Base"). The EMF created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor. The receiver, which is synchronized to the off-time of the transmitter, measures this transient magnetic field where it cuts the receiver apparatus. These readings are across fixed time windows or "Channels" and are recorded with the **PEM Digital Receiver**. Synchronization between the receiver and transmitter is maintained by a direct cable, radio link, or crystal clock.

Borehole PEM: The 3D borehole equipment uses an axial component (Z) probe and a cross-component (XY) probe to measure the three components of the induced secondary field. The first pass with the 'Z' probe detects any in-hole or off-hole anomalies and gives information of size, conductivity, and distances to the edges of conductors. The second pass with the 'XY' probe measures two orthogonal components of the EM field in a plane orientated at right angles to the borehole. These results give directional information to the center of the conductive body. While being lowered down the hole, the probe will rotate about its axis. This rotation will cause a change in the measurement of the X and Y components of the EM field.

The correction can be made by comparing the measurement of the 'PP' channel to theoretical values and calculating the amount of probe rotation. To calculate the theoretical 'PP' value requires knowing the co-ordinates of the loop and the hole, and the hole deviations. A second method of rotation correction involves the use of the orientation tool. This attachment for the XY probe uses dipmeters to calculate the rotation and the dip of the probe at every survey point. The dipmeters are accurate to 0.5 degrees from vertical.

Specifications of the equipment used for the survey can be found in Appendix C at the end of the report.

6.0 PRODUCTION SUMMARY

Table IV: Production Summary

Date	**Description**
February 19	Mobilization and arrival in Timmins.
February 20	Met with Sharon and went to find Mahaffy grid.
February 21	Located MF12-02, MF12-03 and MF12-05. Laid 500x700 m loop.
February 22	Surveyed MF12-02
February 23	Completed surveying MF12-02 and part of MF12-03
February 24	Completed surveying MF12-03.
February 25	Acquired Z component for MF12-05.
March 02	Completed surveying MF12-05
March 03	Dummy probed MF12-06, MF12-07. Pulled loop MF1.
March 04	Pulled equipment form REID, Laid MF2.
March 05	Surveyed MF12-06.
March 11	Pulled equipment from REID, Surveyed MF12-07.
March 12	Pulled loop and equipment from Mahaffy.
March 20	Laid MF3.
March 21	Surveyed MF12-13.
March 23	Went to look for MAH16 grid.
March 24	Surveyed MF16-03.
March 25	Surveyed MF16-02.
March 26	Surveyed MF12-28.
April 01	Surveyed MF16-01.

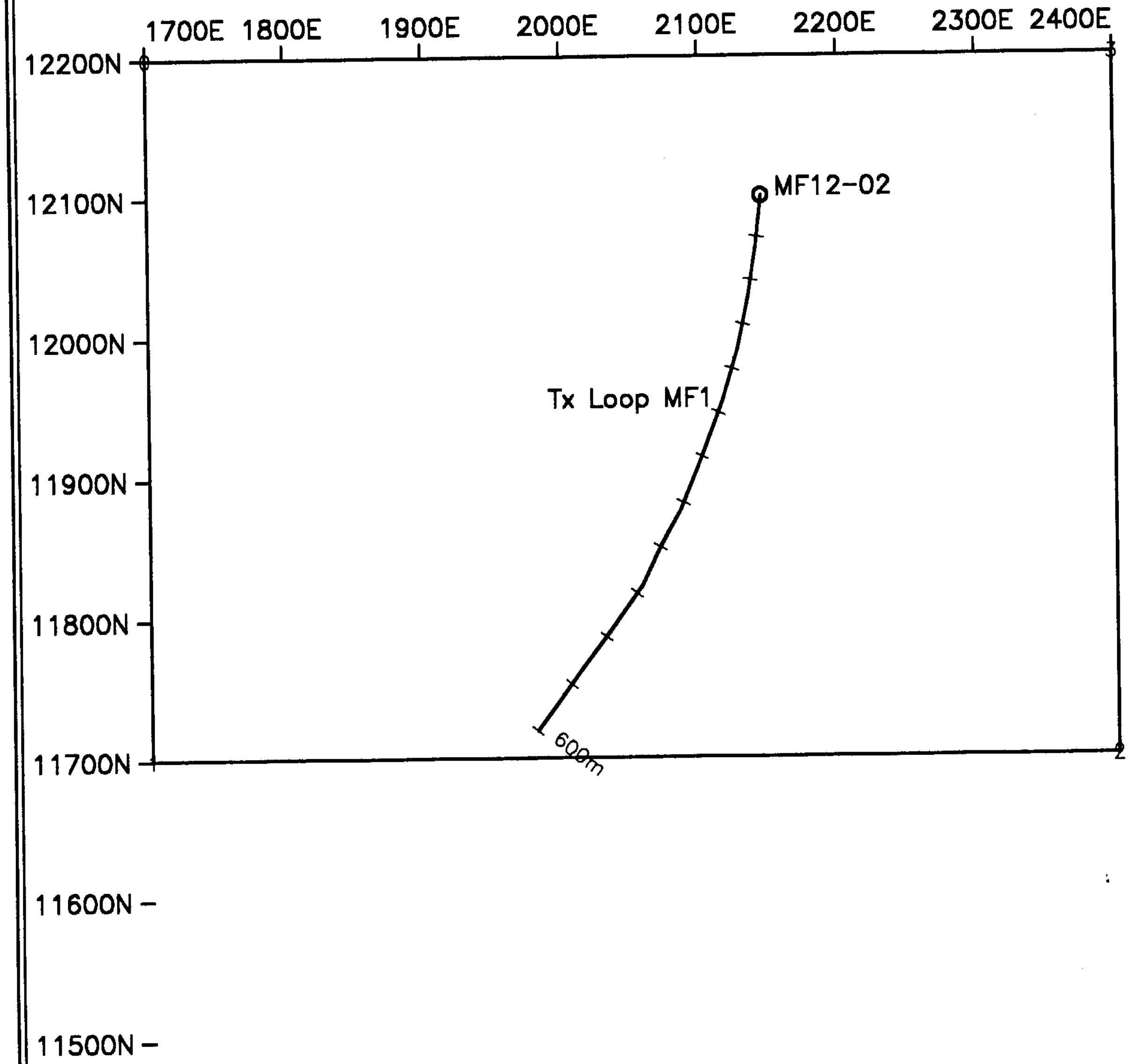
Respectfully submitted,

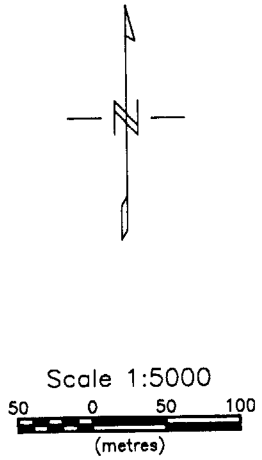
Henry Odwar

Henry Odwar, M.Sc.
Crone Geophysics & Exploration Ltd.

APPENDIX A:

Plans, Sections & Pulse EM Data Profiles (Linear, 5-axis)





FALCONBRIDGE LTD.

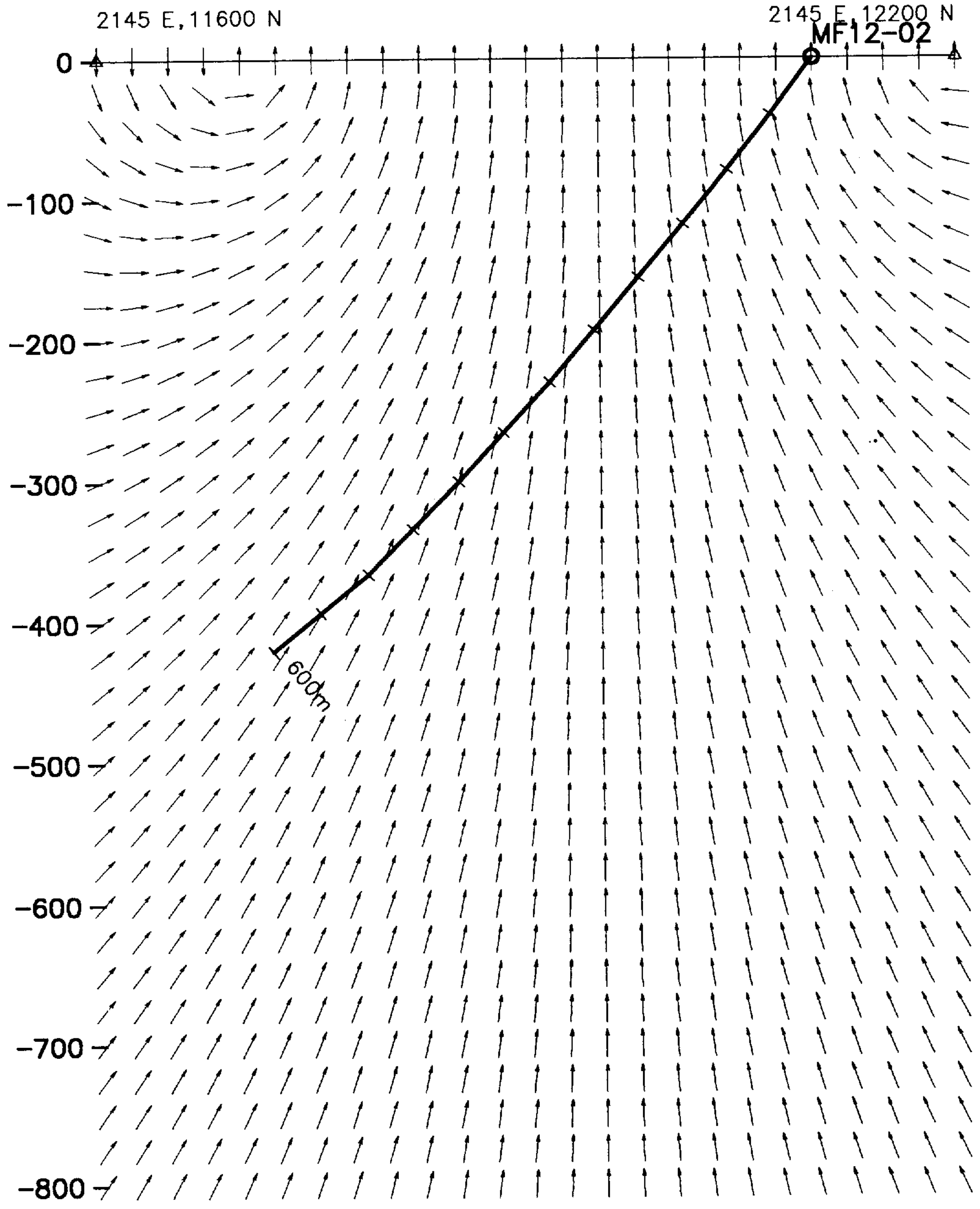
MAH12

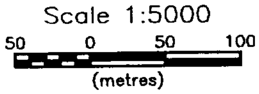
3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: MF12-02

Survey Date: Feb 22, 1999

Crone Geophysics & Exploration Ltd.



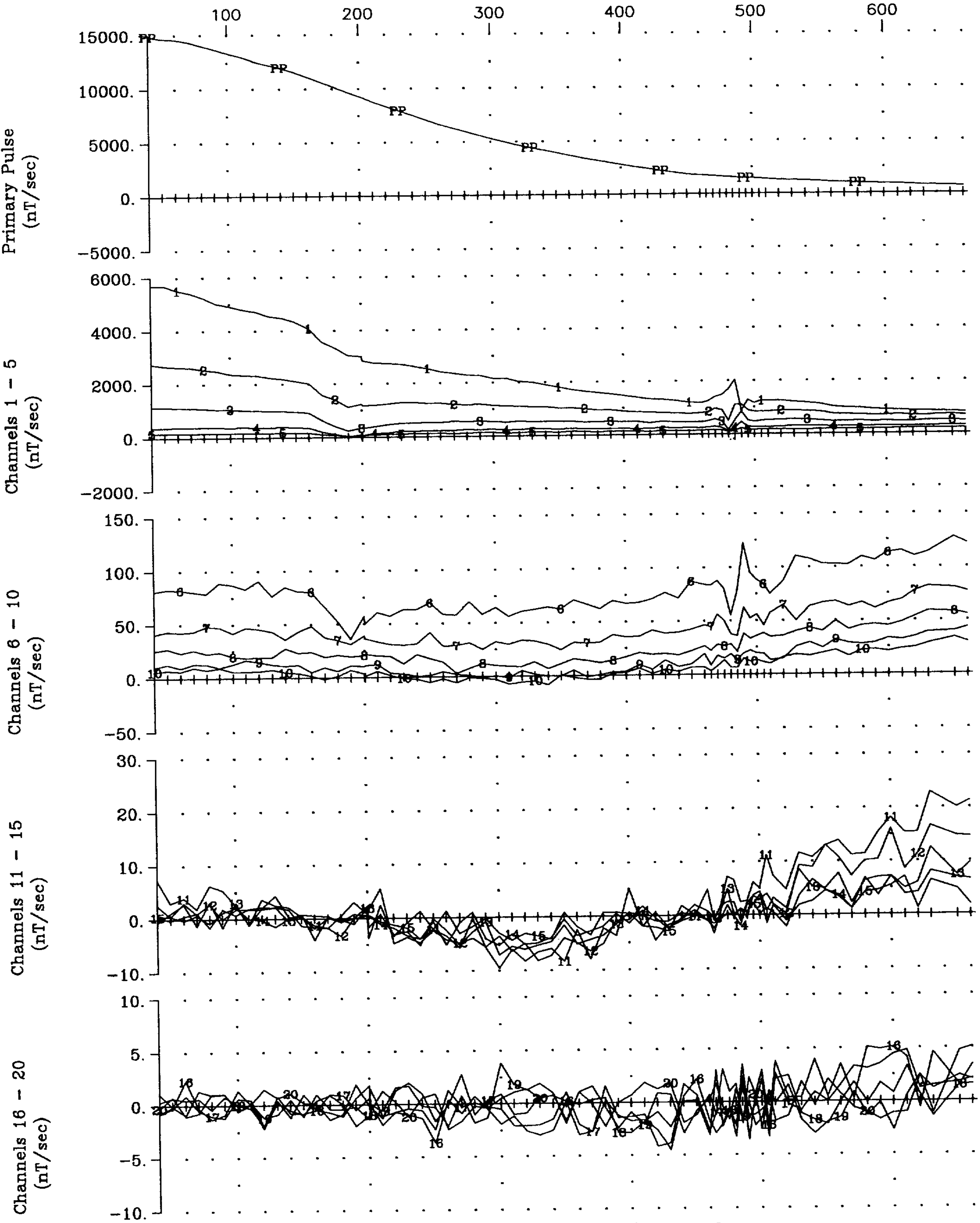


FALCONBRIDGE LTD.
MAH12

3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF12-02
Survey Date: Feb 22, 1999

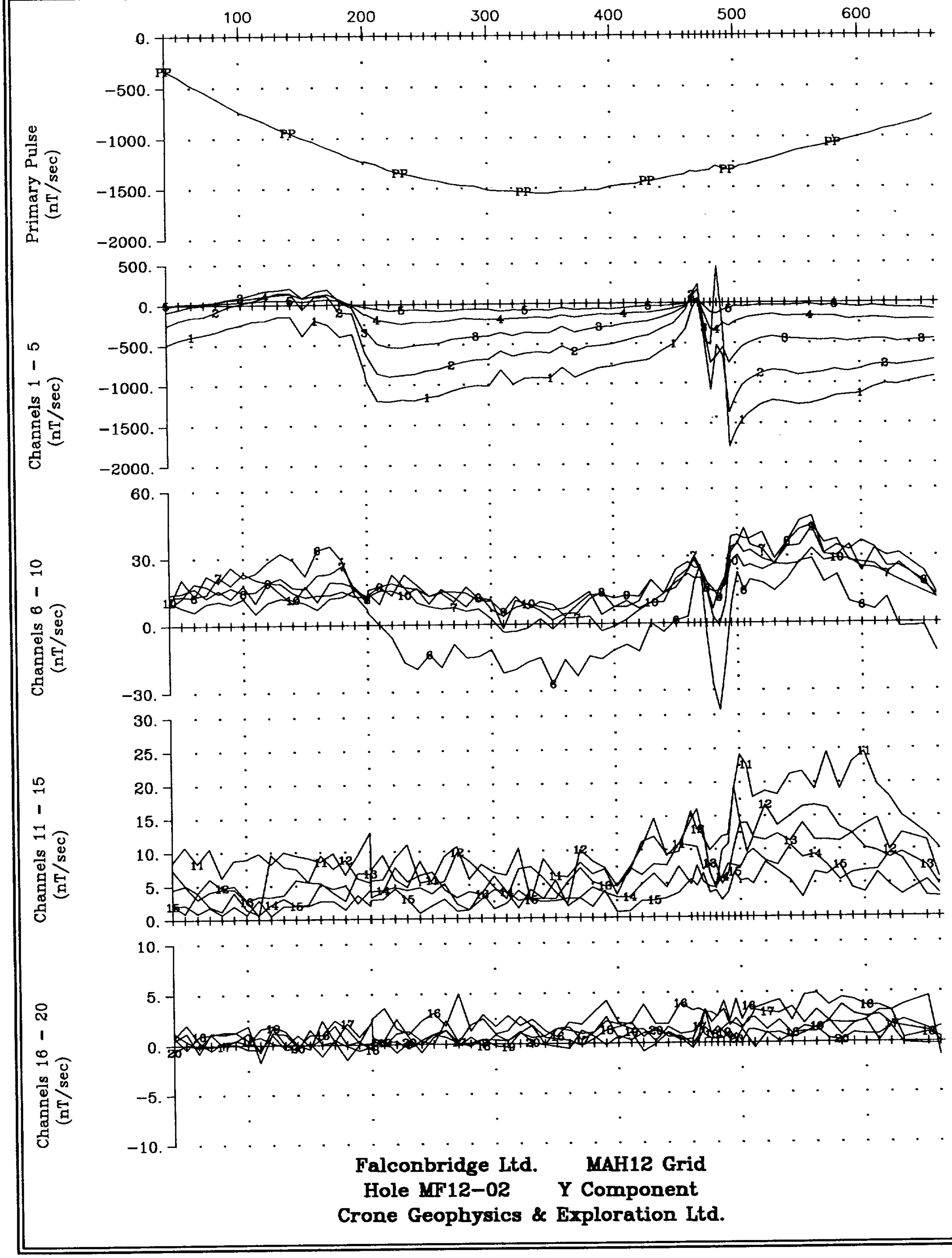
Crone Geophysics & Exploration Ltd.



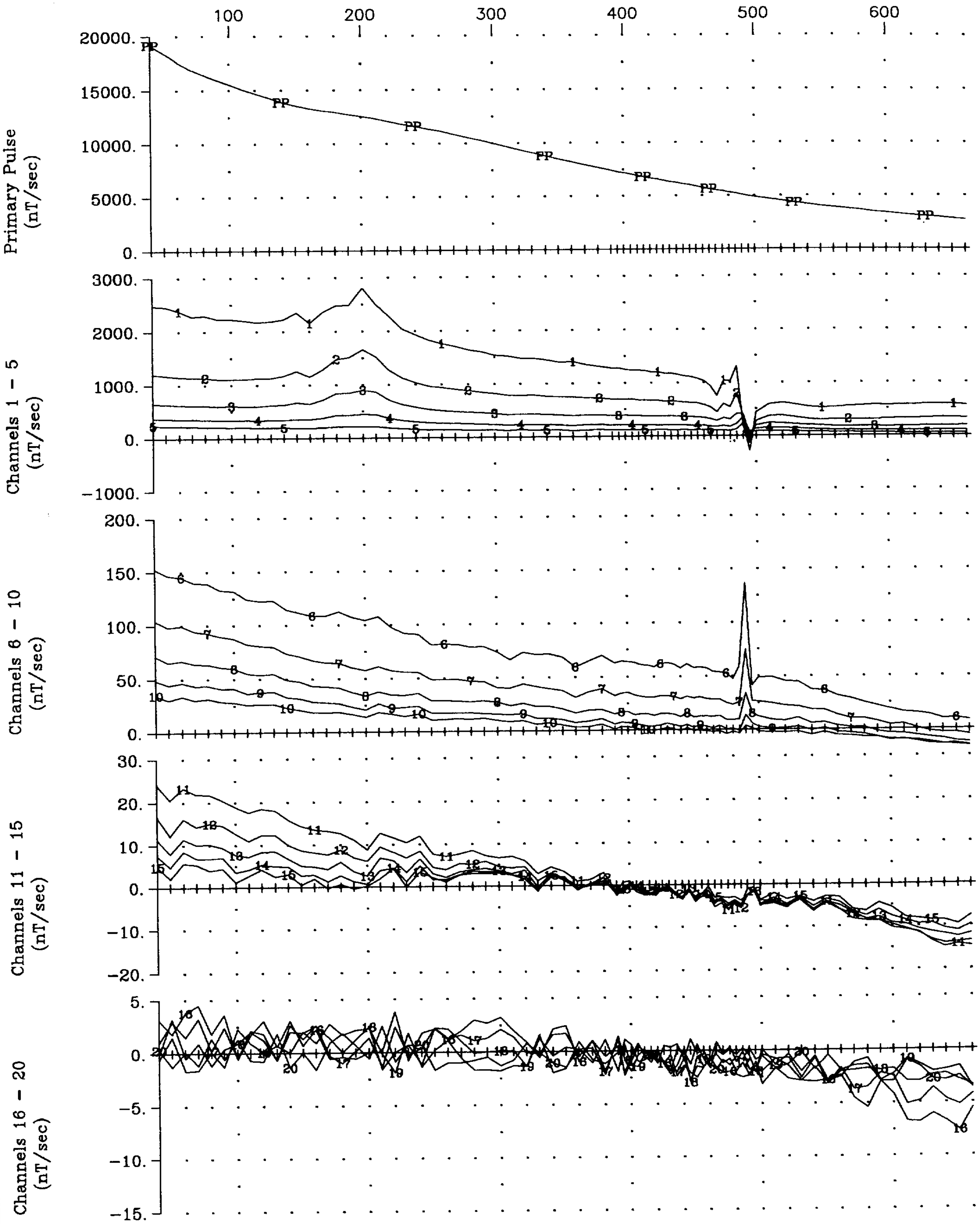
Falconbridge Ltd. **MAH12 Grid**

Hole MF12-02 **X Component**

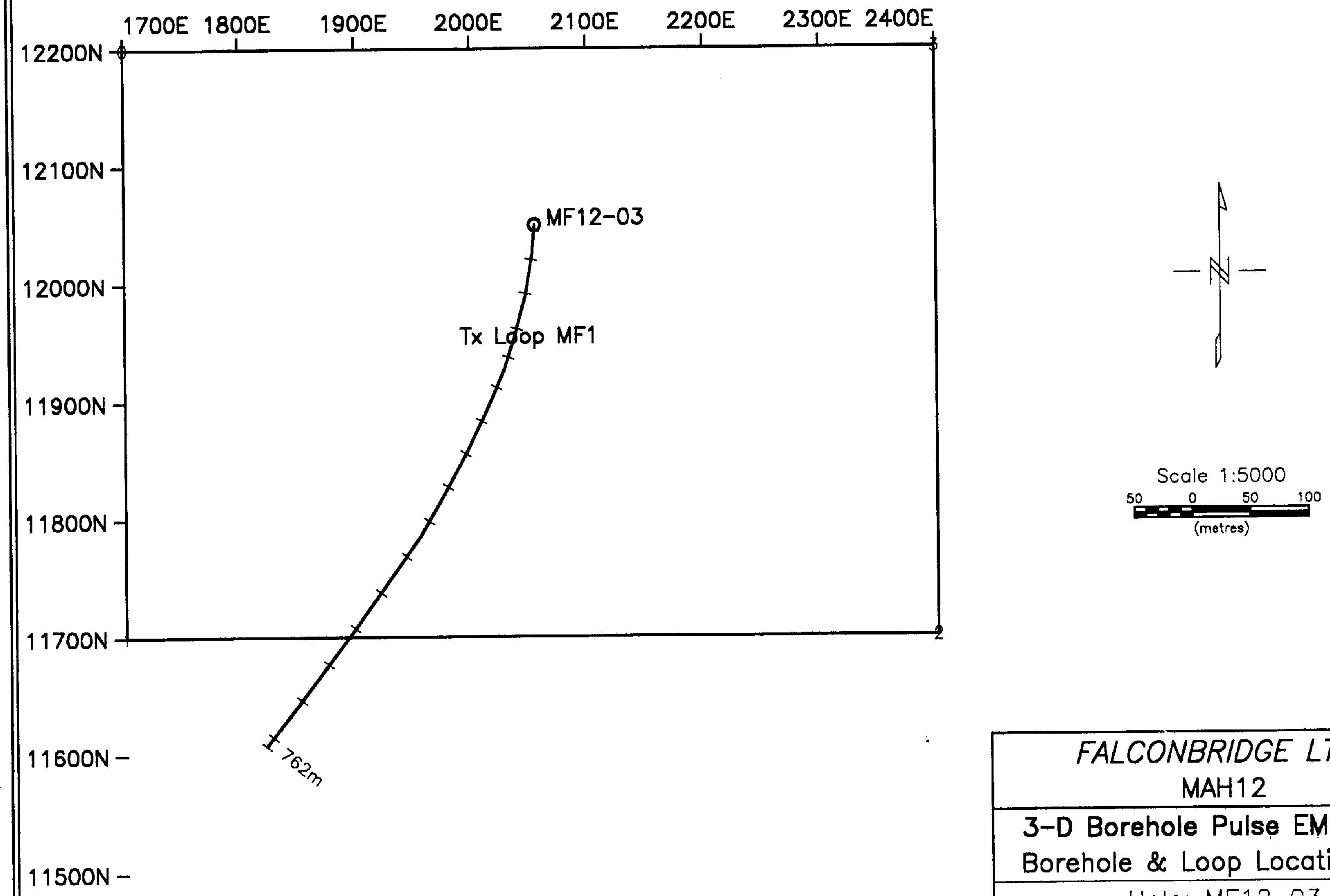
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**
Hole MF12-02 **Y Component**
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**
Hole MF12-02 **Z Component**
Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

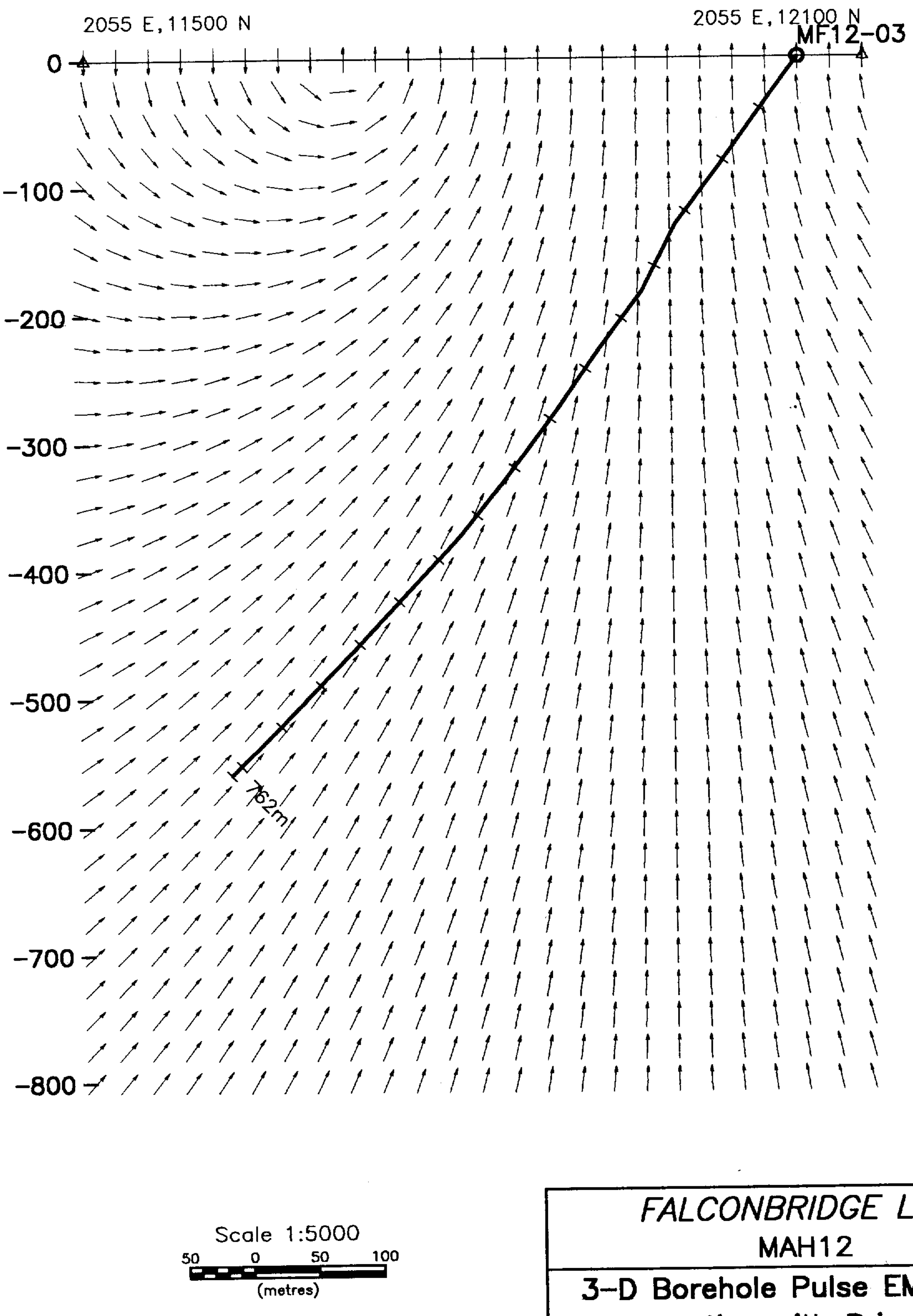
3-D Borehole Pulse EM Survey

Borehole & Loop Location Map

Hole: MF12-03

Survey Date: Feb 23, 1999

Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

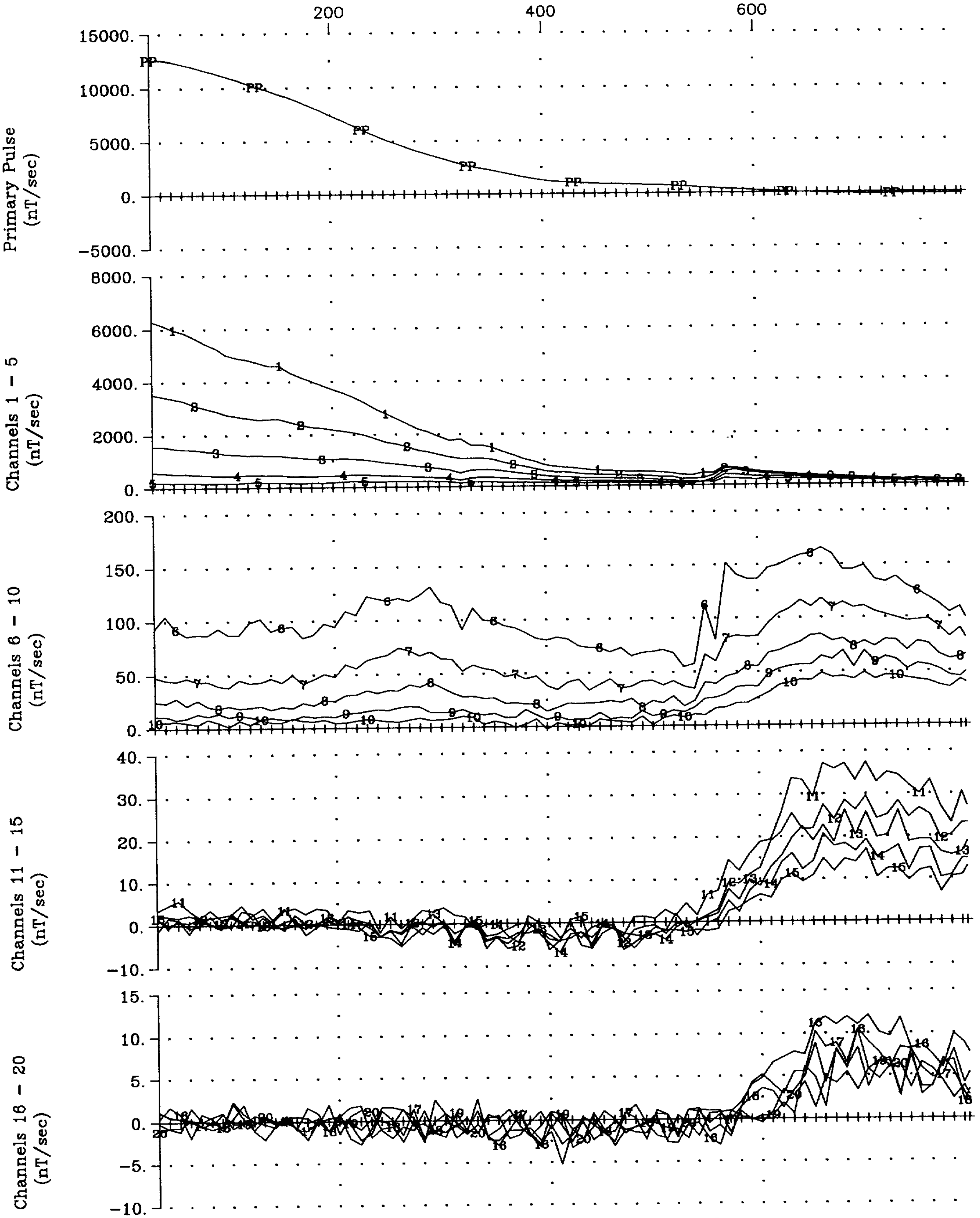
MAH12

3-D Borehole Pulse EM Survey
Hole Section with Primary Field

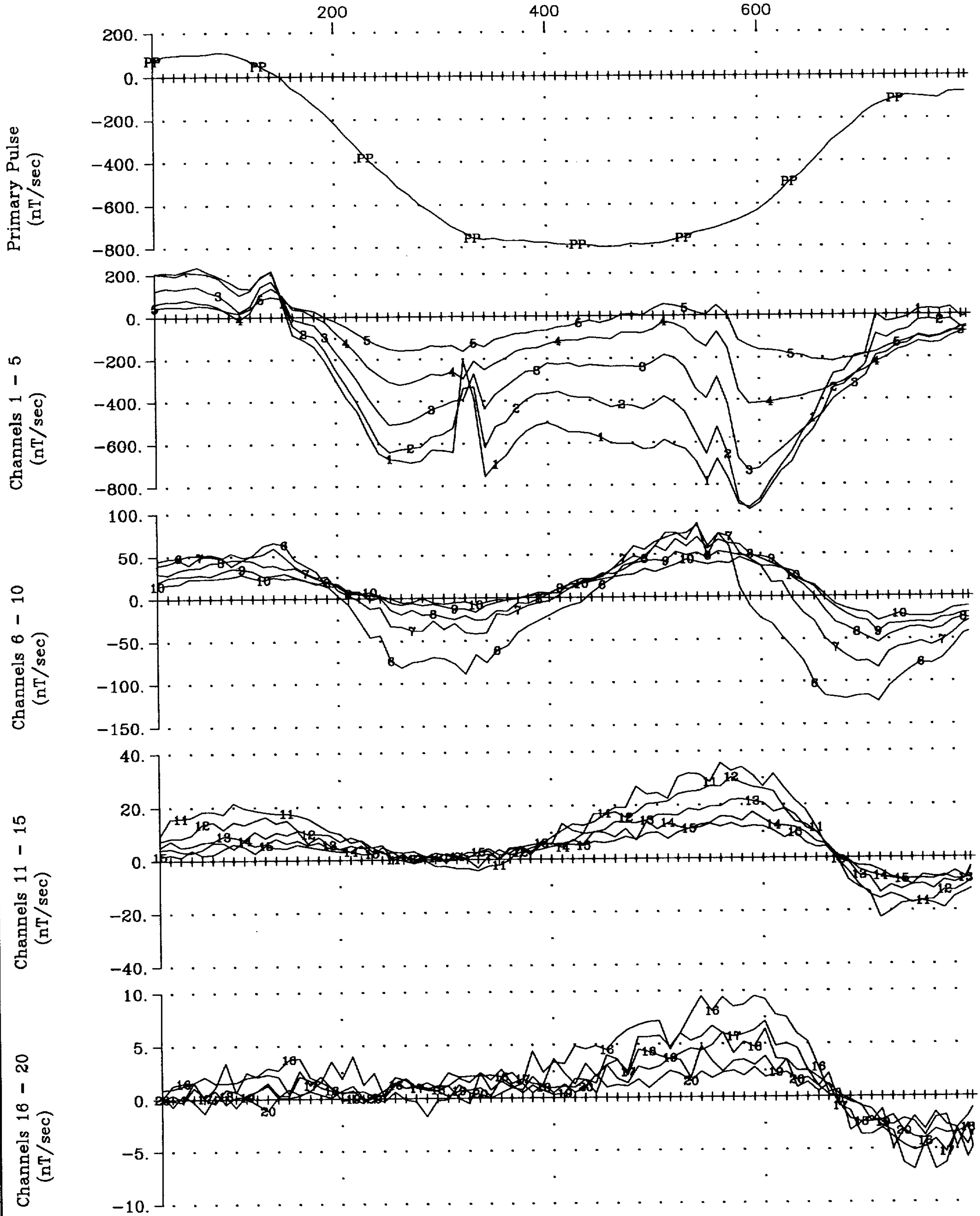
Hole: MF12-03

Survey Date: Feb 23, 1999

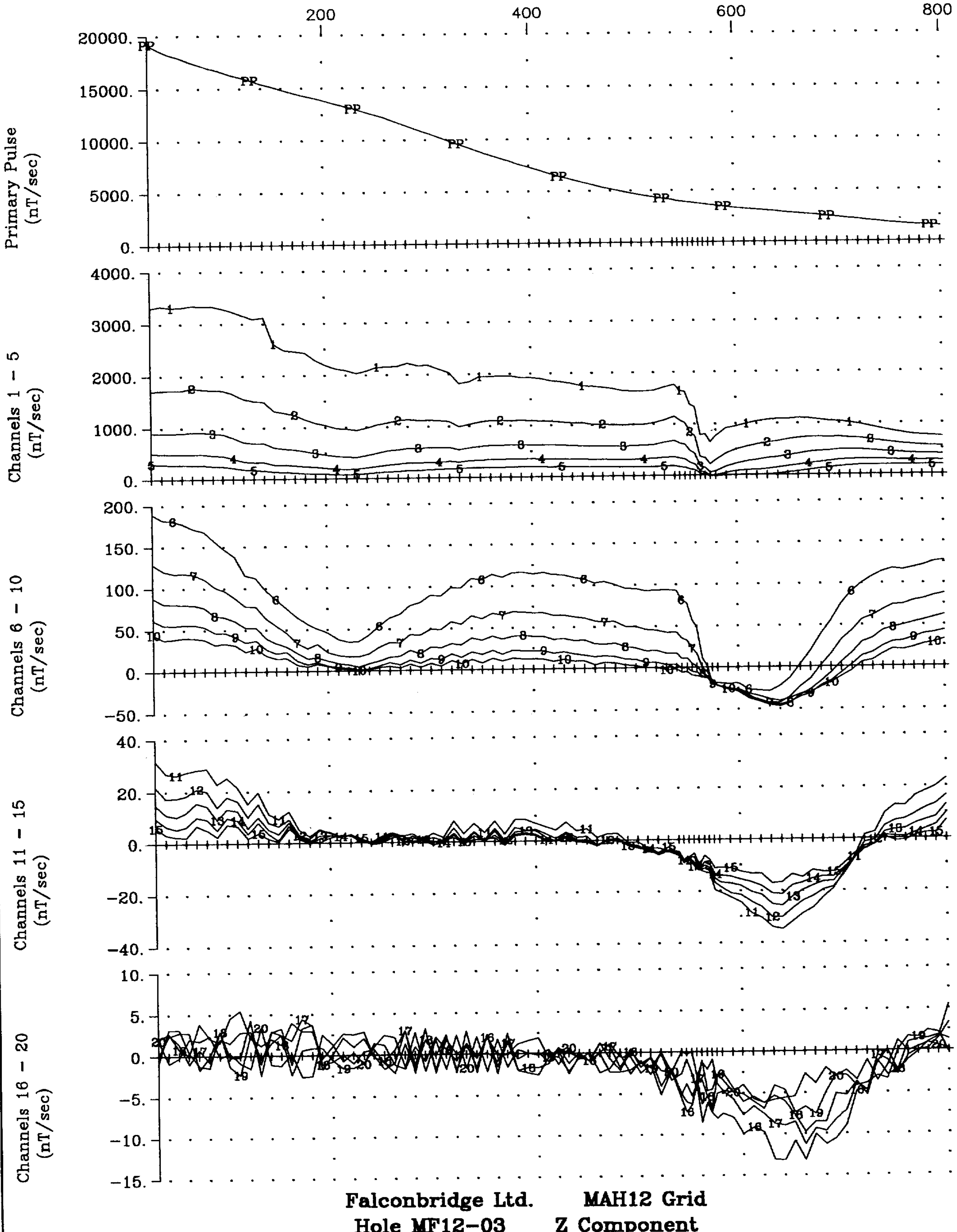
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd.   MAH12 Grid
Hole MF12-03   X Component
Crone Geophysics & Exploration Ltd.



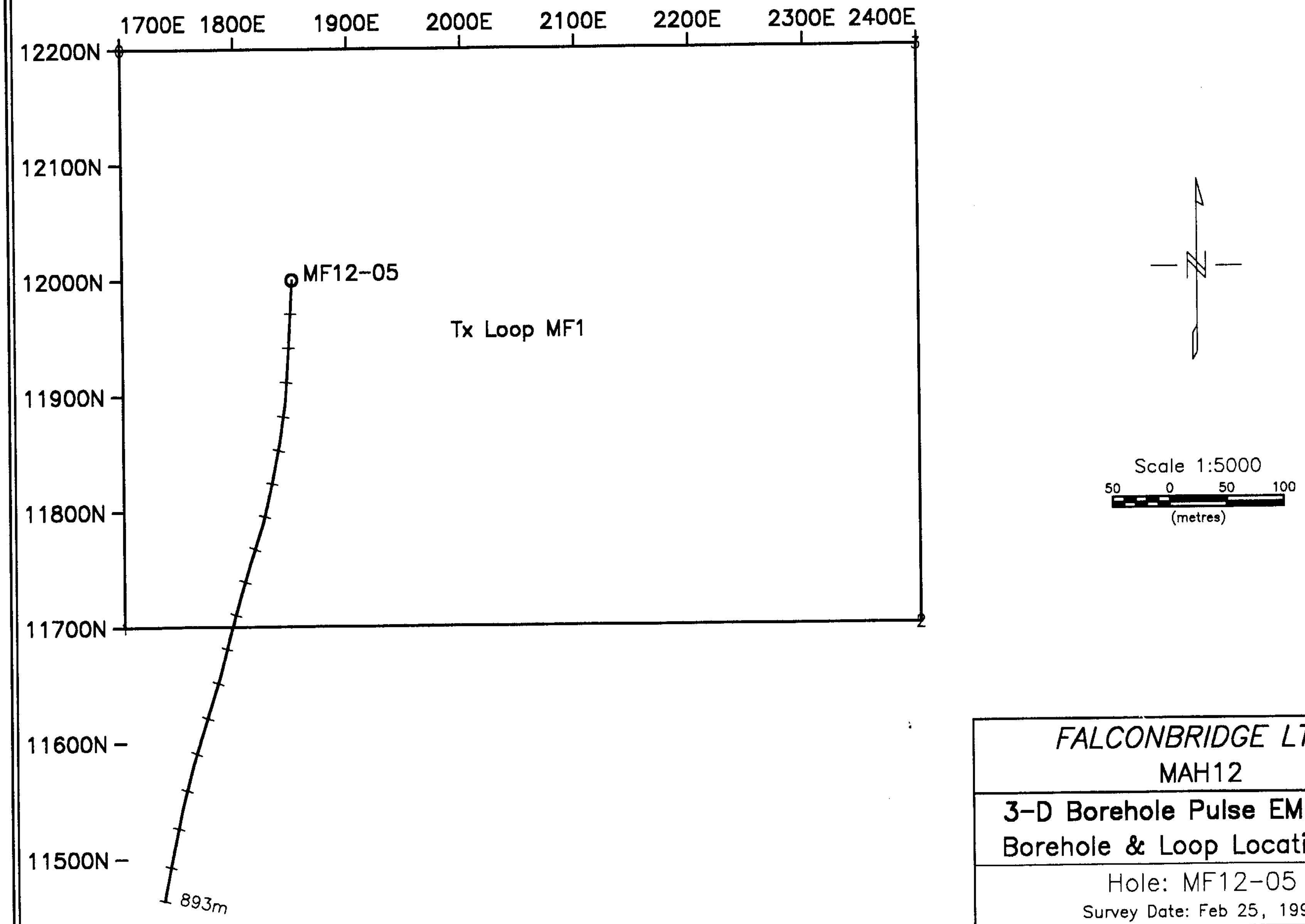
Falconbridge Ltd. **MAH12 Grid**
Hole MF12−03 **Y Component**
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid

Hole MF12-03 Z Component

Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

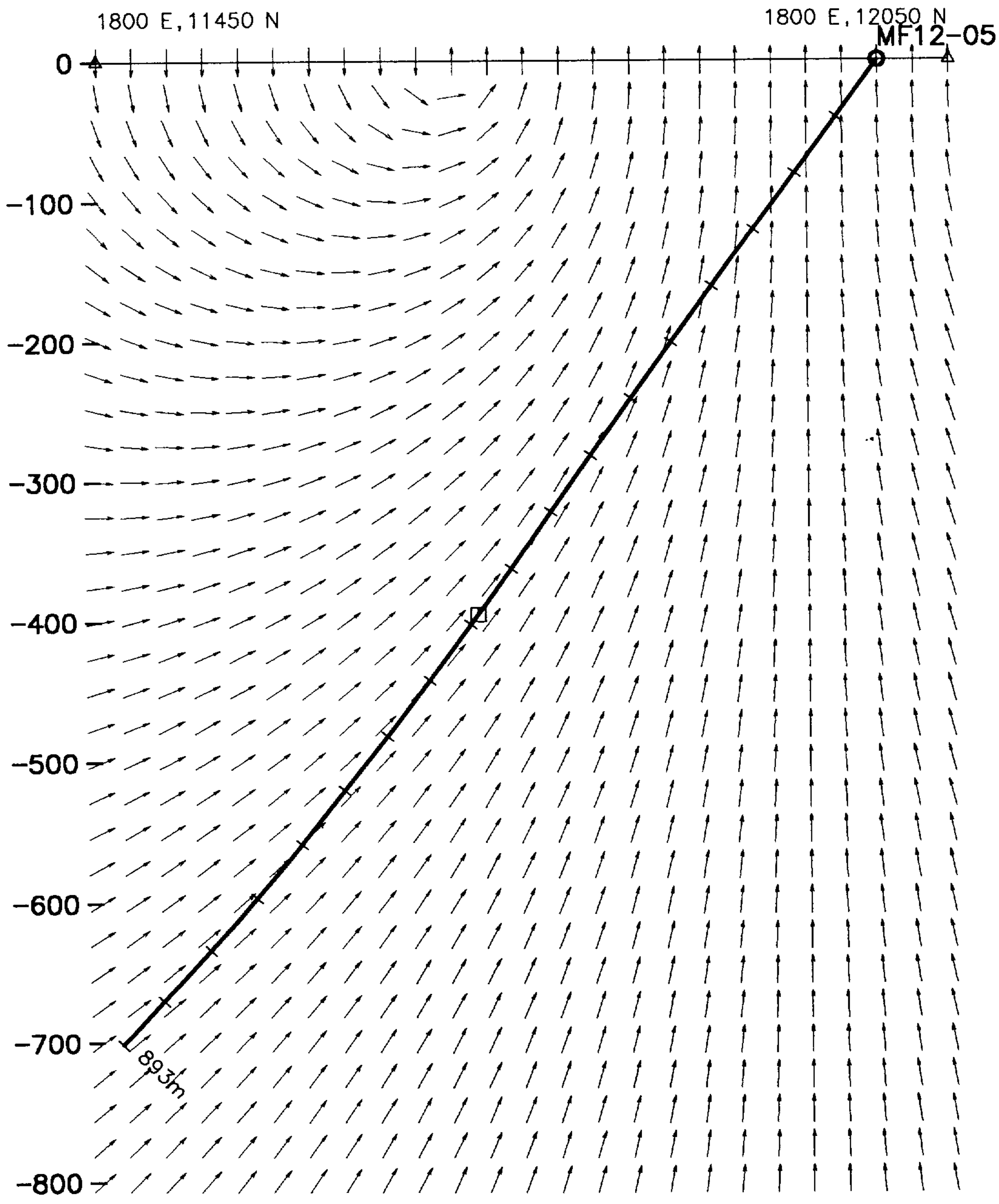
3-D Borehole Pulse EM Survey

Borehole & Loop Location Map

Hole: MF12-05

Survey Date: Feb 25, 1999

Crone Geophysics & Exploration Ltd.



Scale 1:5000

50 0 50 100

(metres)

FALCONBRIDGE LTD.

MAH12

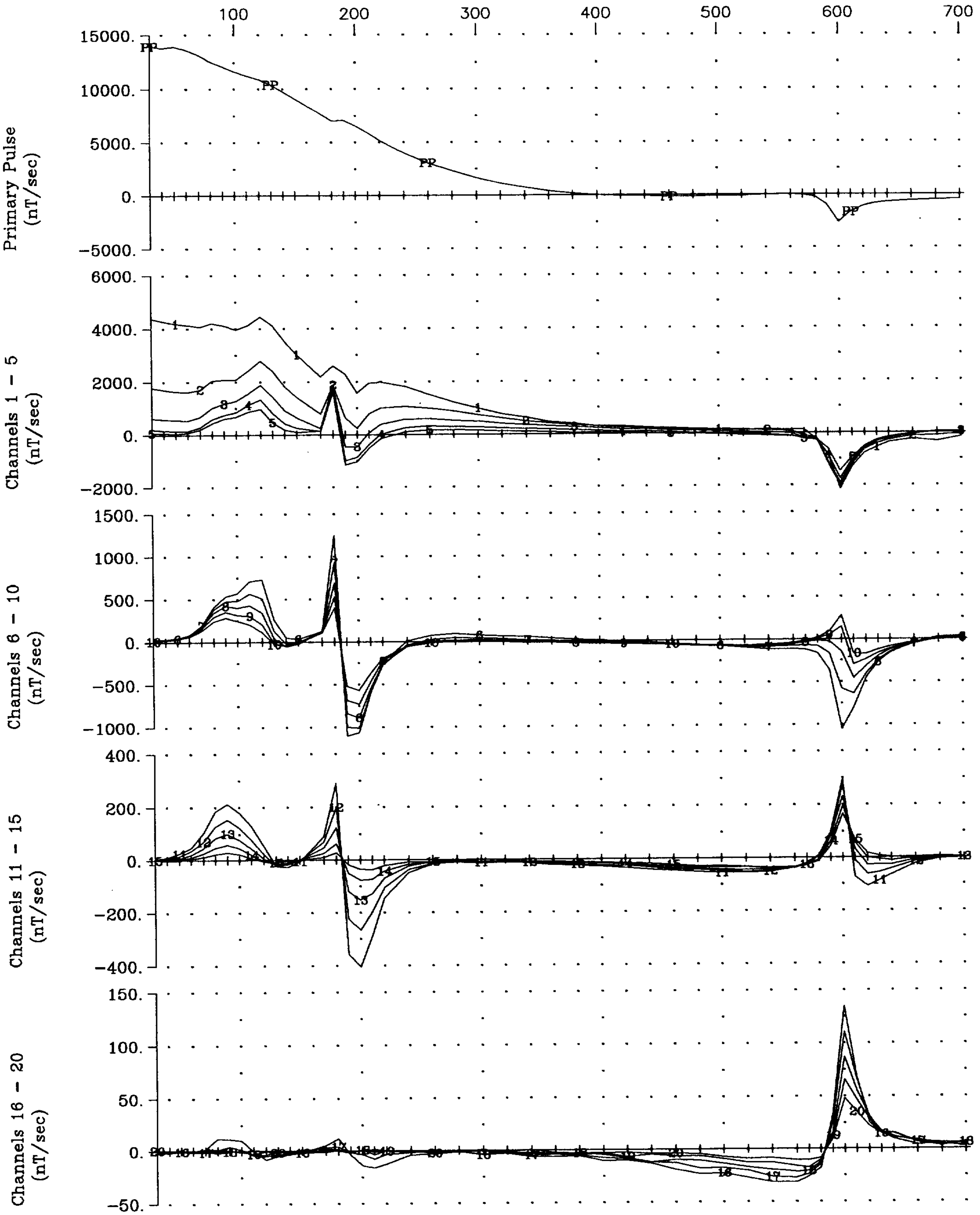
3-D Borehole Pulse EM Survey

Hole Section with Primary Field

Hole: MF12-05

Survey Date: Feb 25, 1999

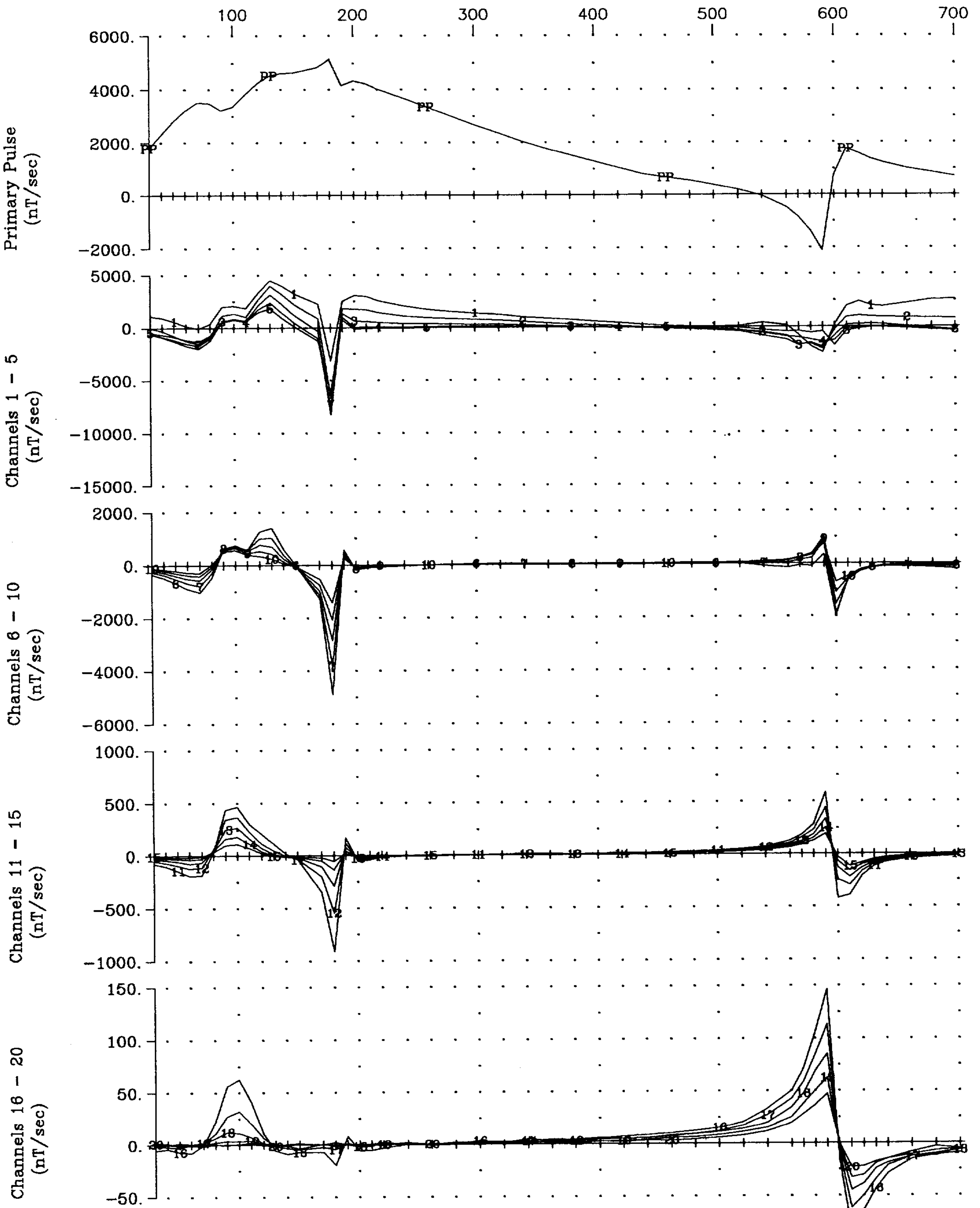
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**

Hole MF12-05 **X Component**

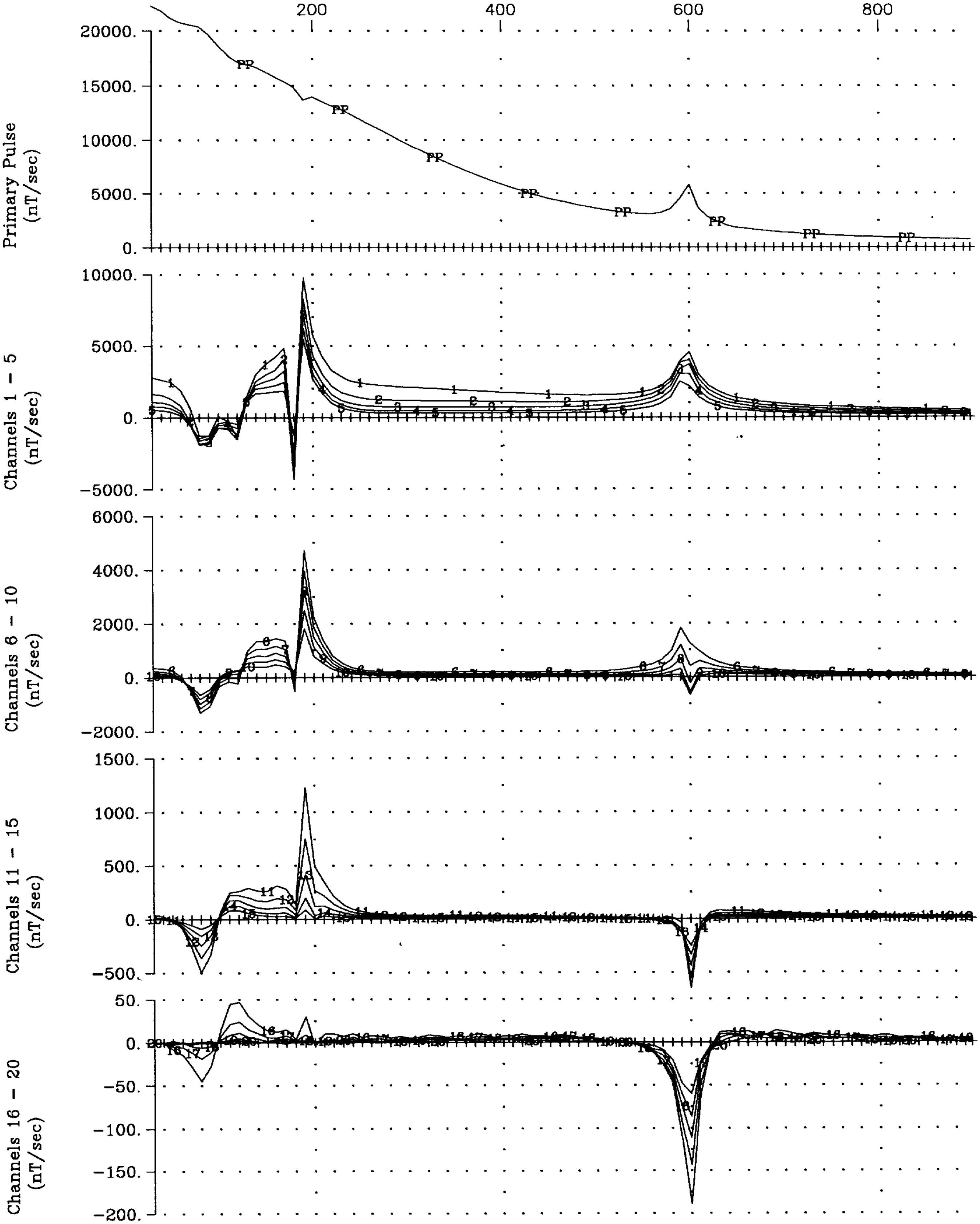
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**

Hole MF12-05 **Y Component**

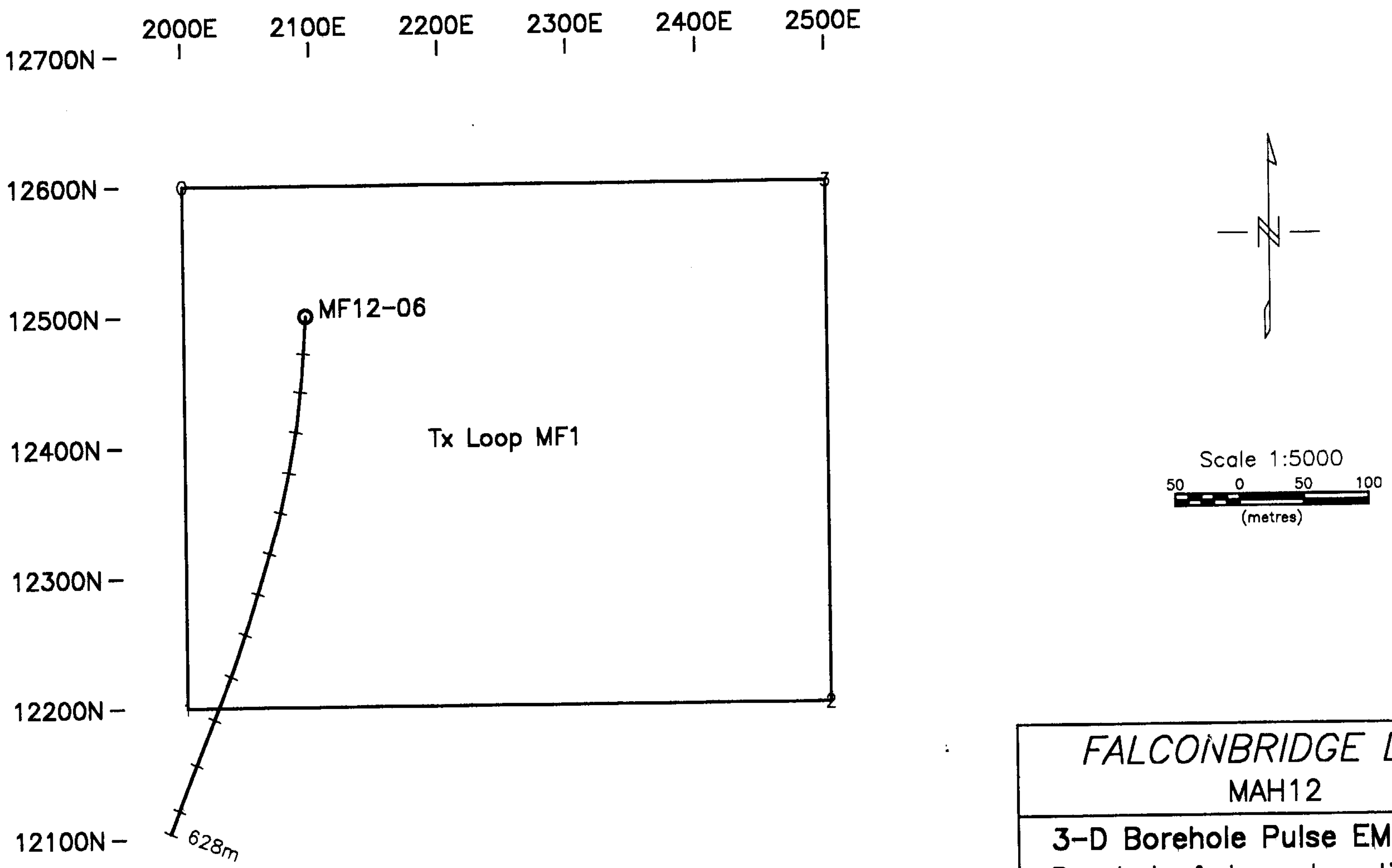
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid

Hole MF12–05 Z Component

Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

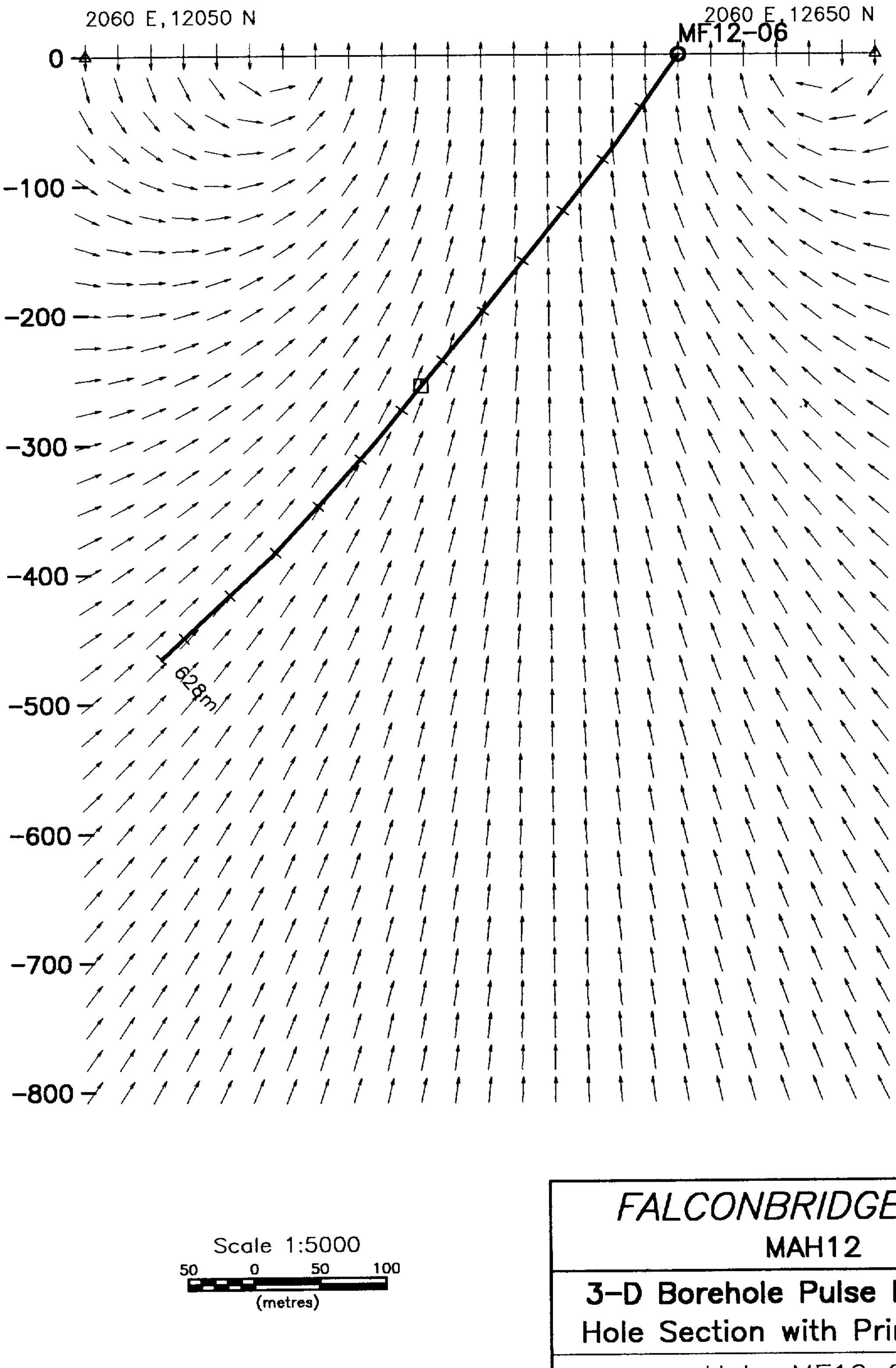
3-D Borehole Pulse EM Survey

Borehole & Loop Location Map

Hole: MF12-06

Survey Date: Mar 5, 1999

Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

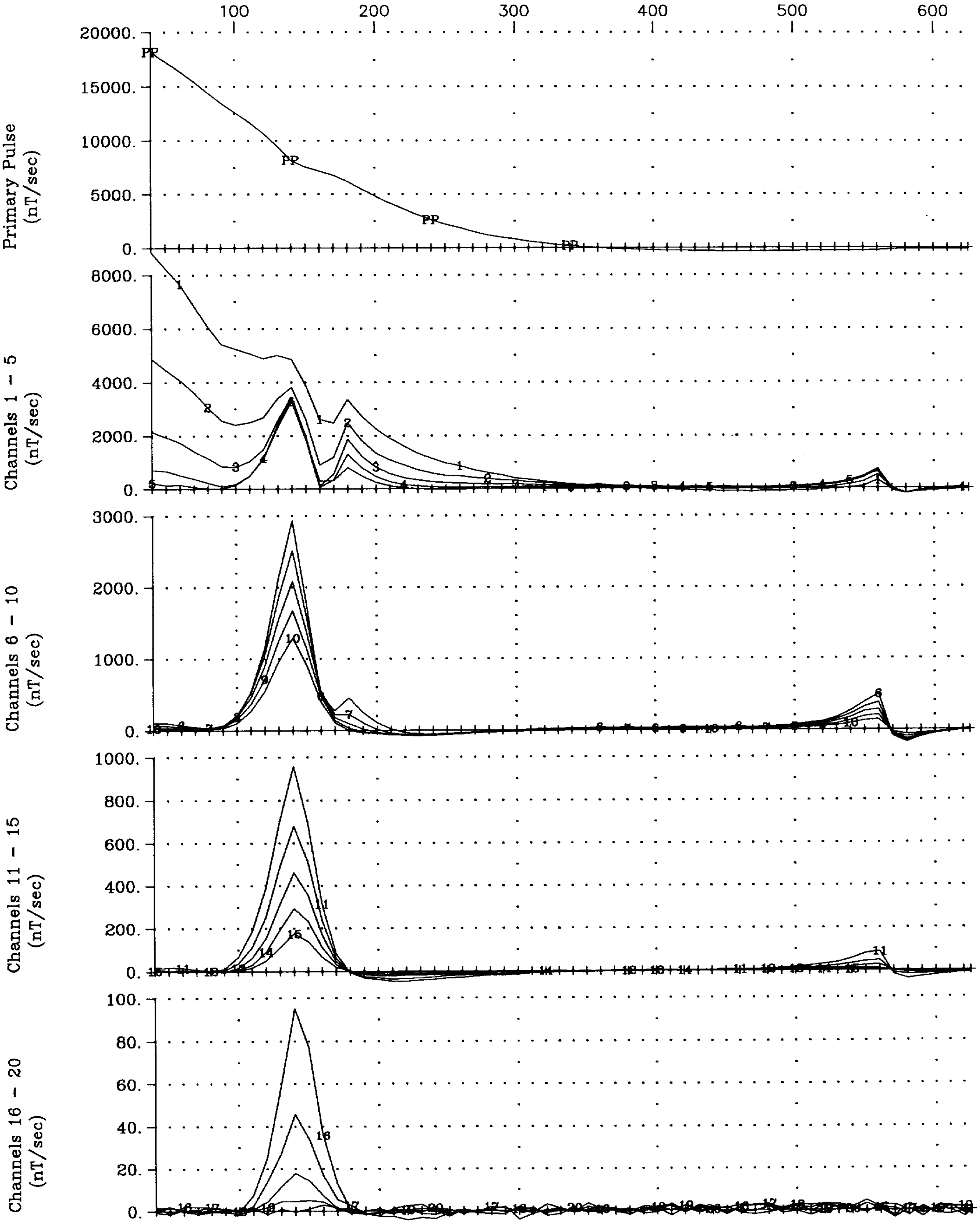
3-D Borehole Pulse EM Survey

Hole Section with Primary Field

Hole: MF12-06

Survey Date: Mar 5, 1999

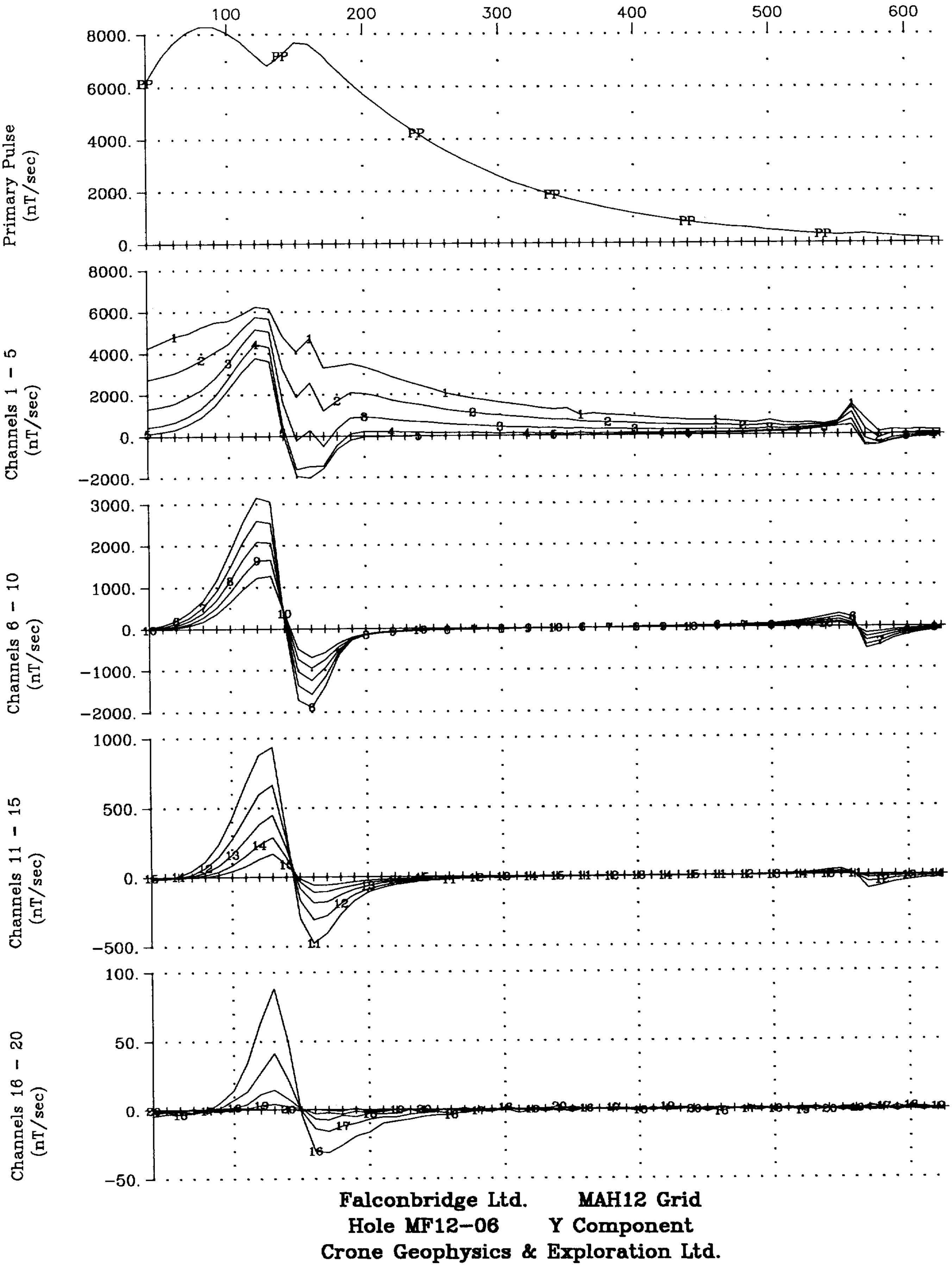
Crone Geophysics & Exploration Ltd.



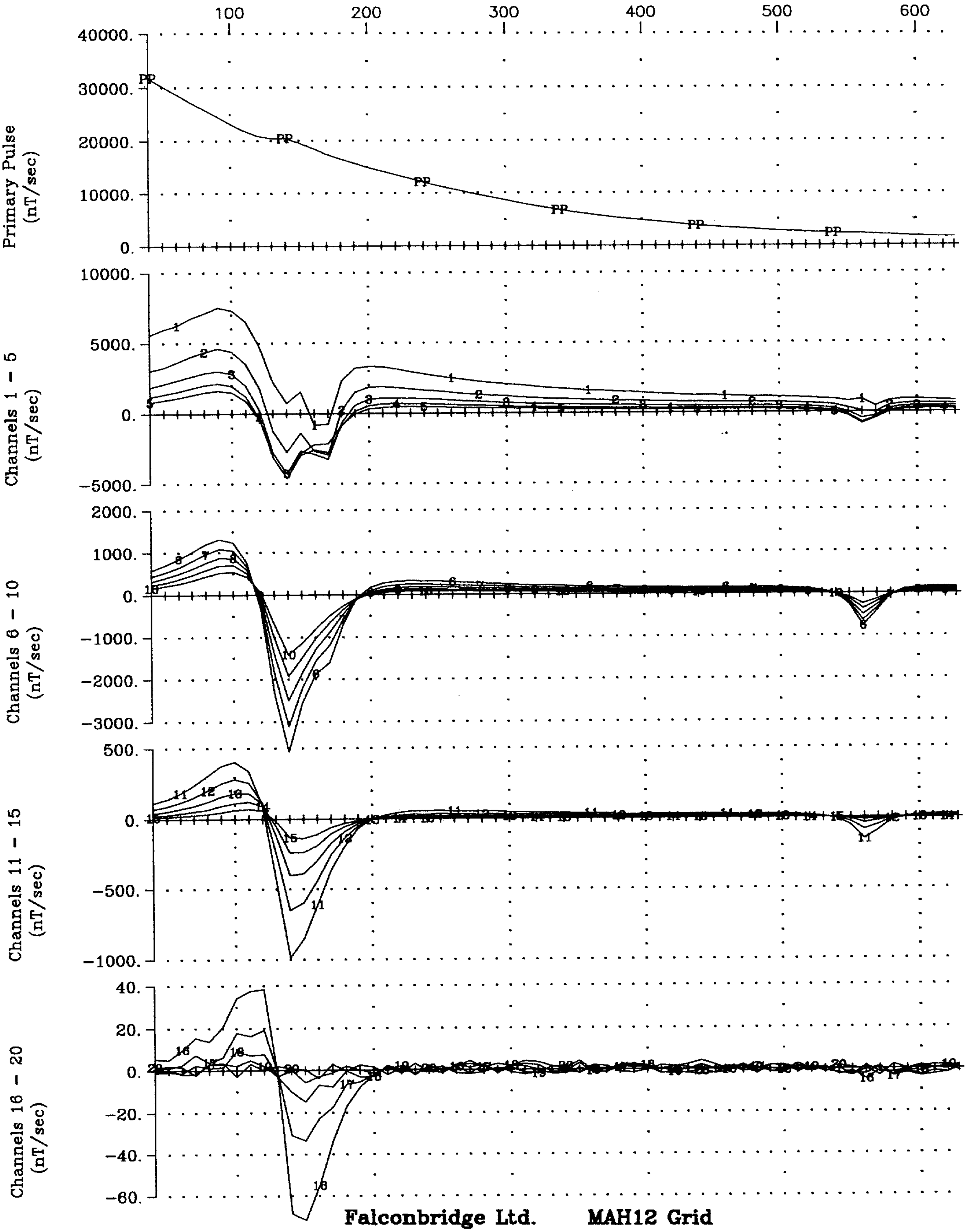
Falconbridge Ltd. MAH12 Grid

Hole MF12-06 X Component

Crone Geophysics & Exploration Ltd.



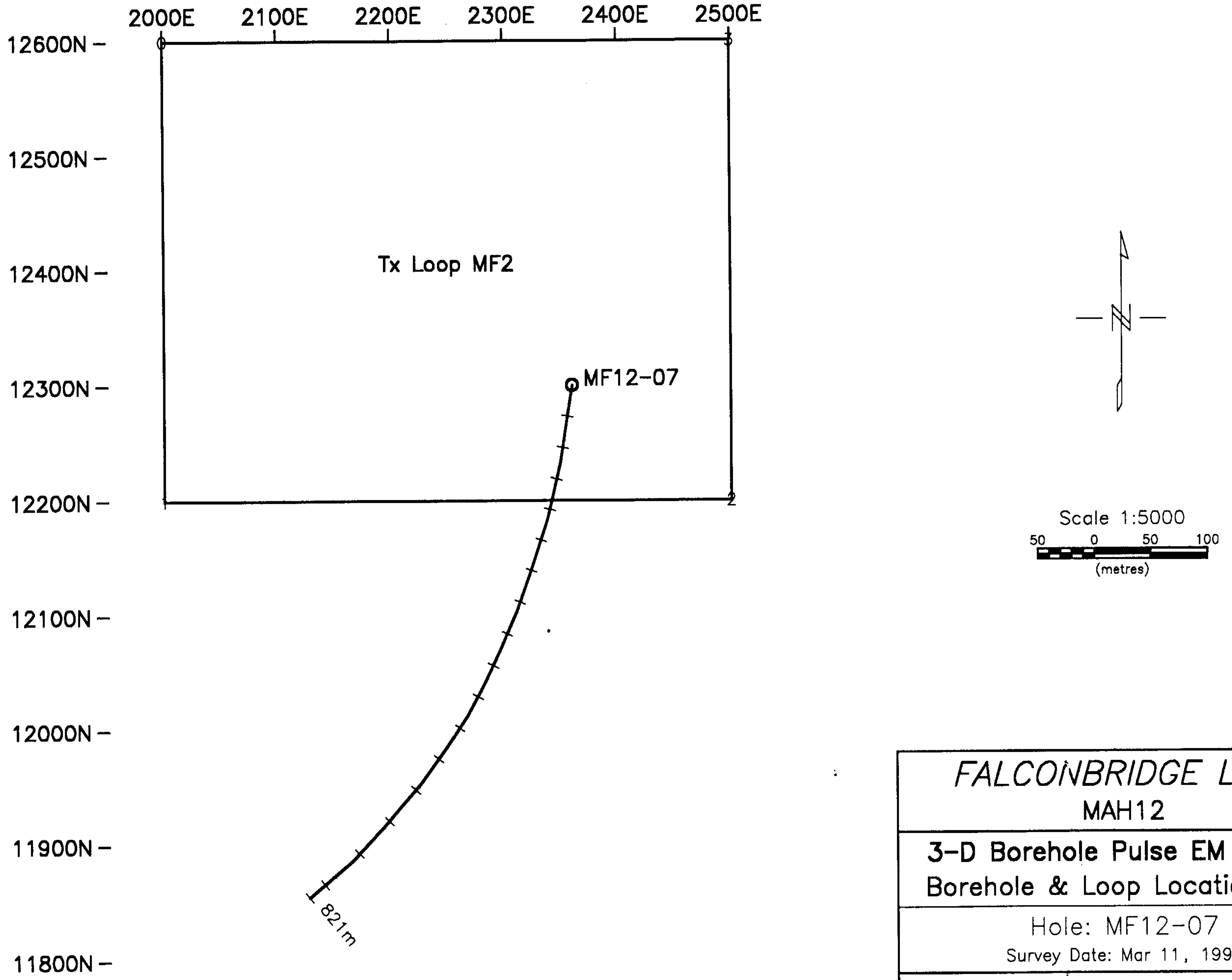
Falconbridge Ltd.   MAH12 Grid
Hole MF12-06   Y Component
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**

Hole MF12-06 **Z Component**

Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

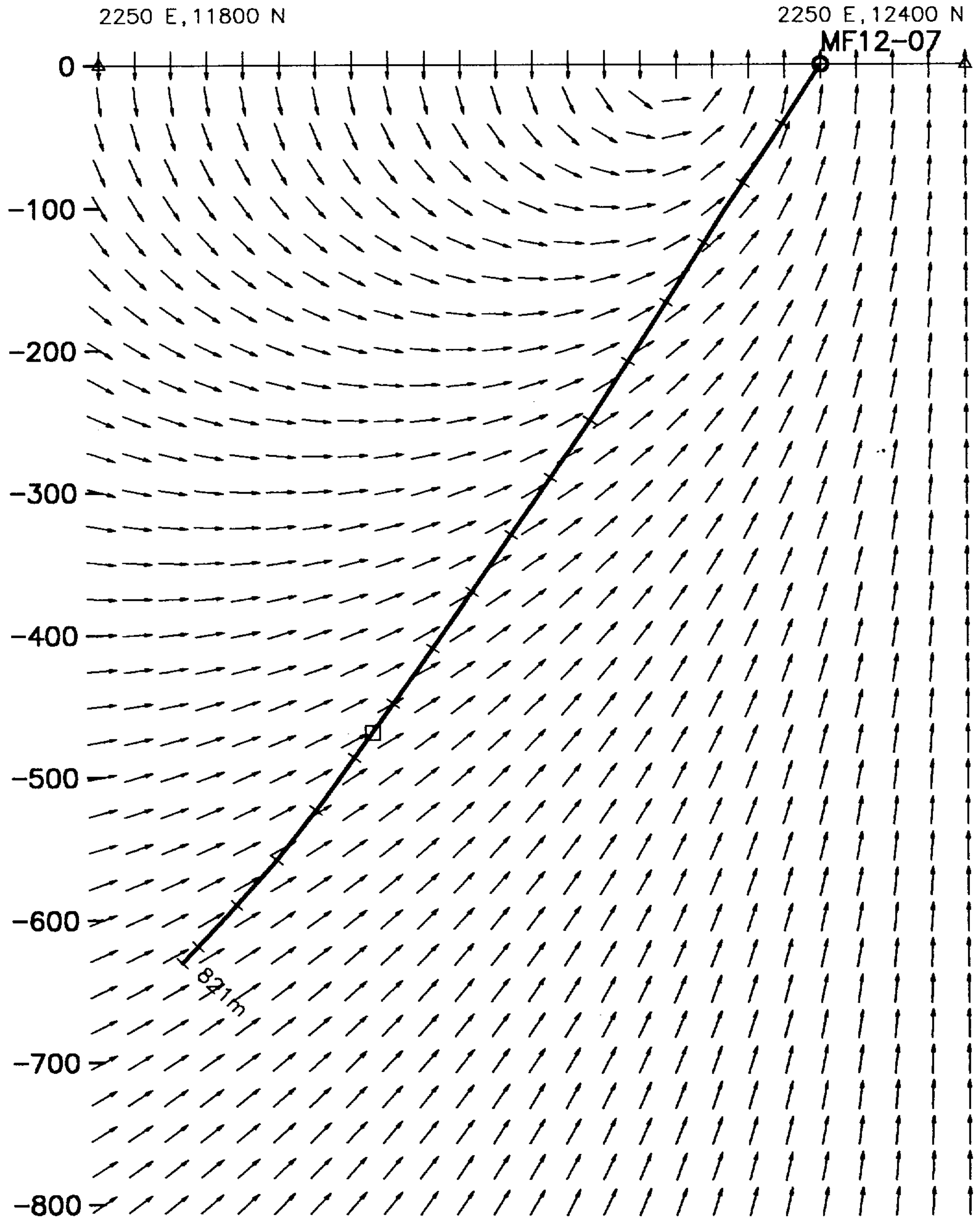
3-D Borehole Pulse EM Survey

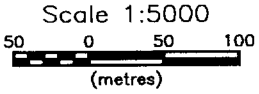
Borehole & Loop Location Map

Hole: MF12-07

Survey Date: Mar 11, 1999

Crone Geophysics & Exploration Ltd.





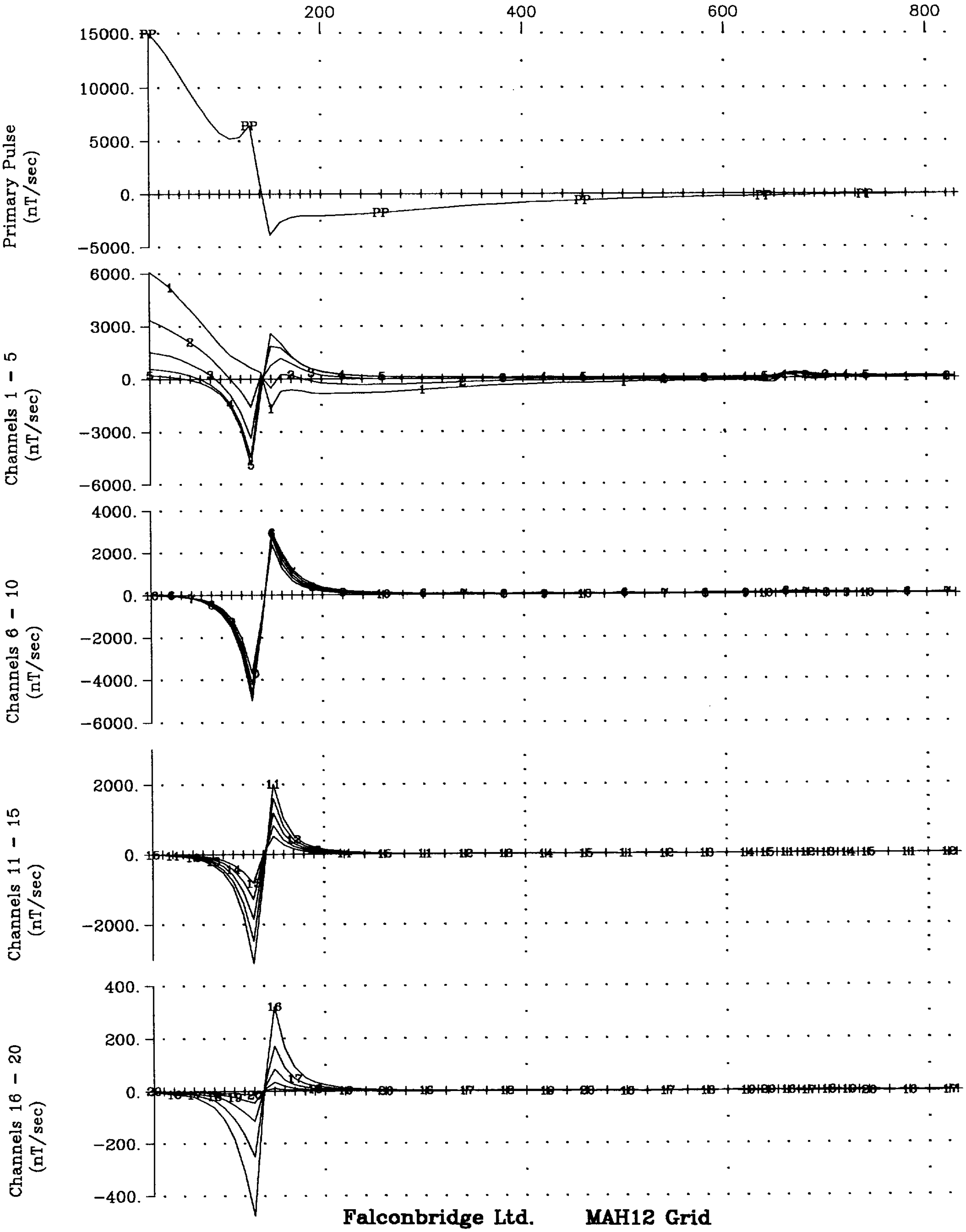
FALCONBRIDGE LTD.

MAH12

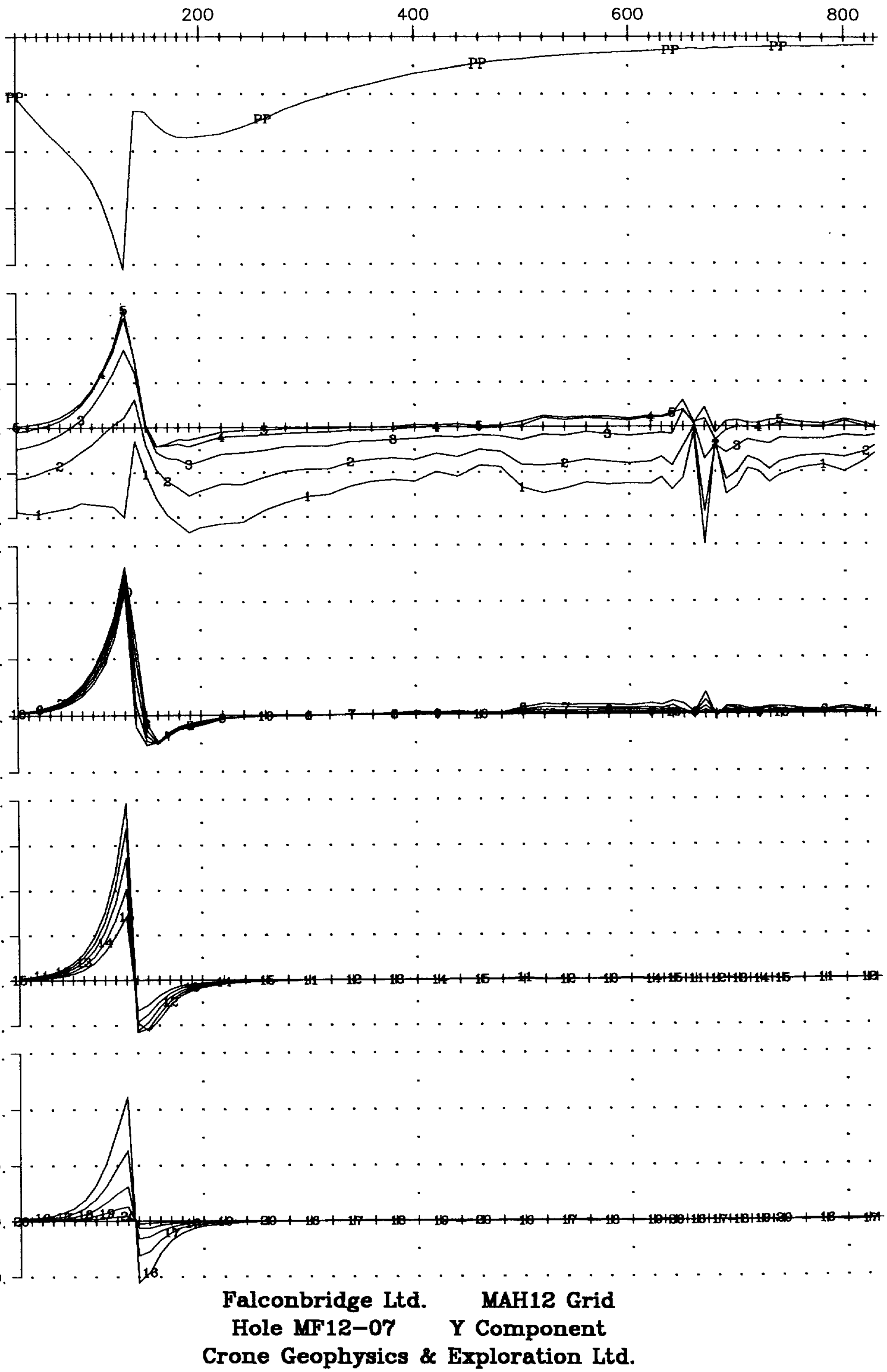
3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF12-07
Survey Date: Mar 11, 1999

Crone Geophysics & Exploration Ltd.



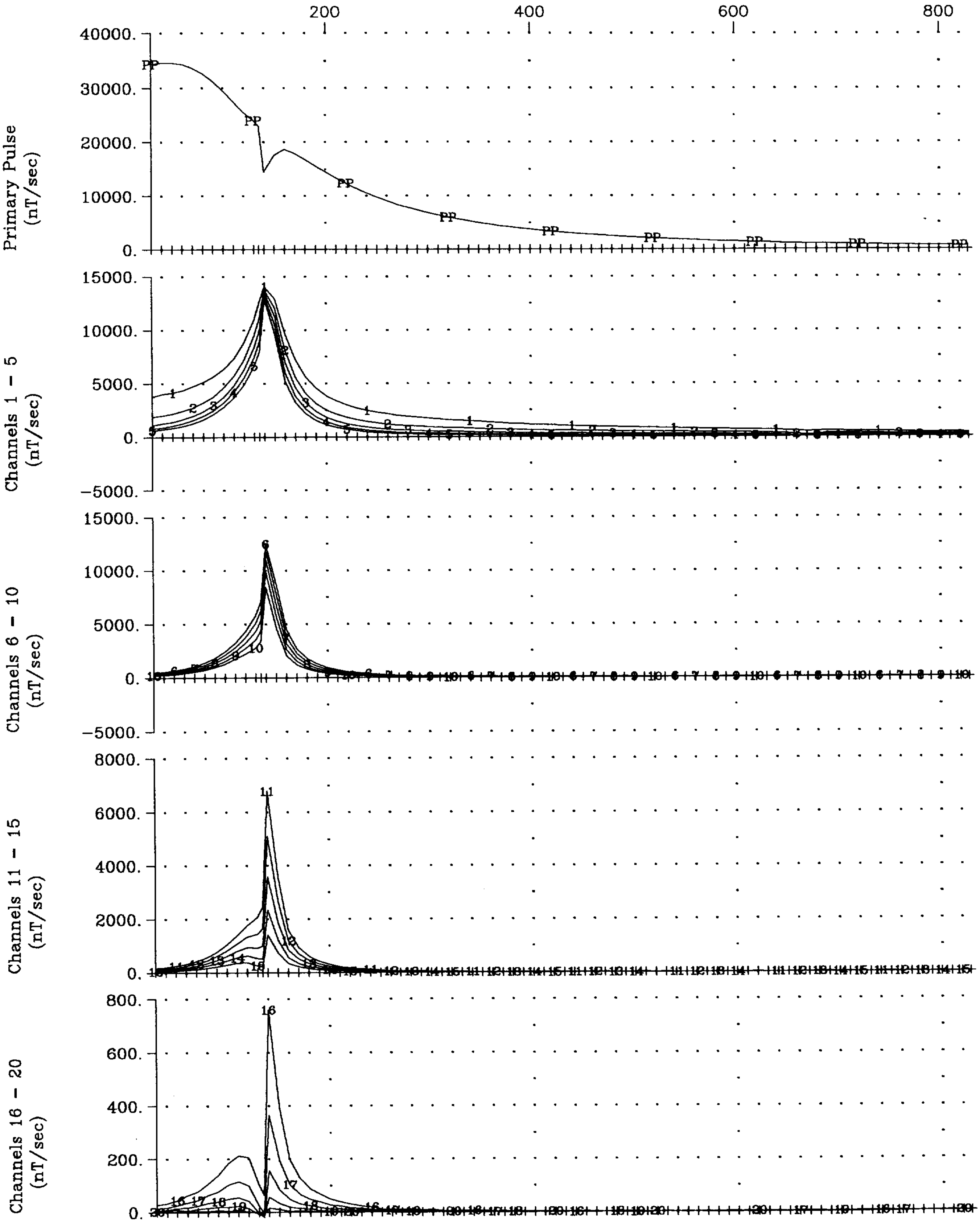
Falconbridge Ltd. MAH12 Grid
Hole MF12-07 X Component
Crone Geophysics & Exploration Ltd.



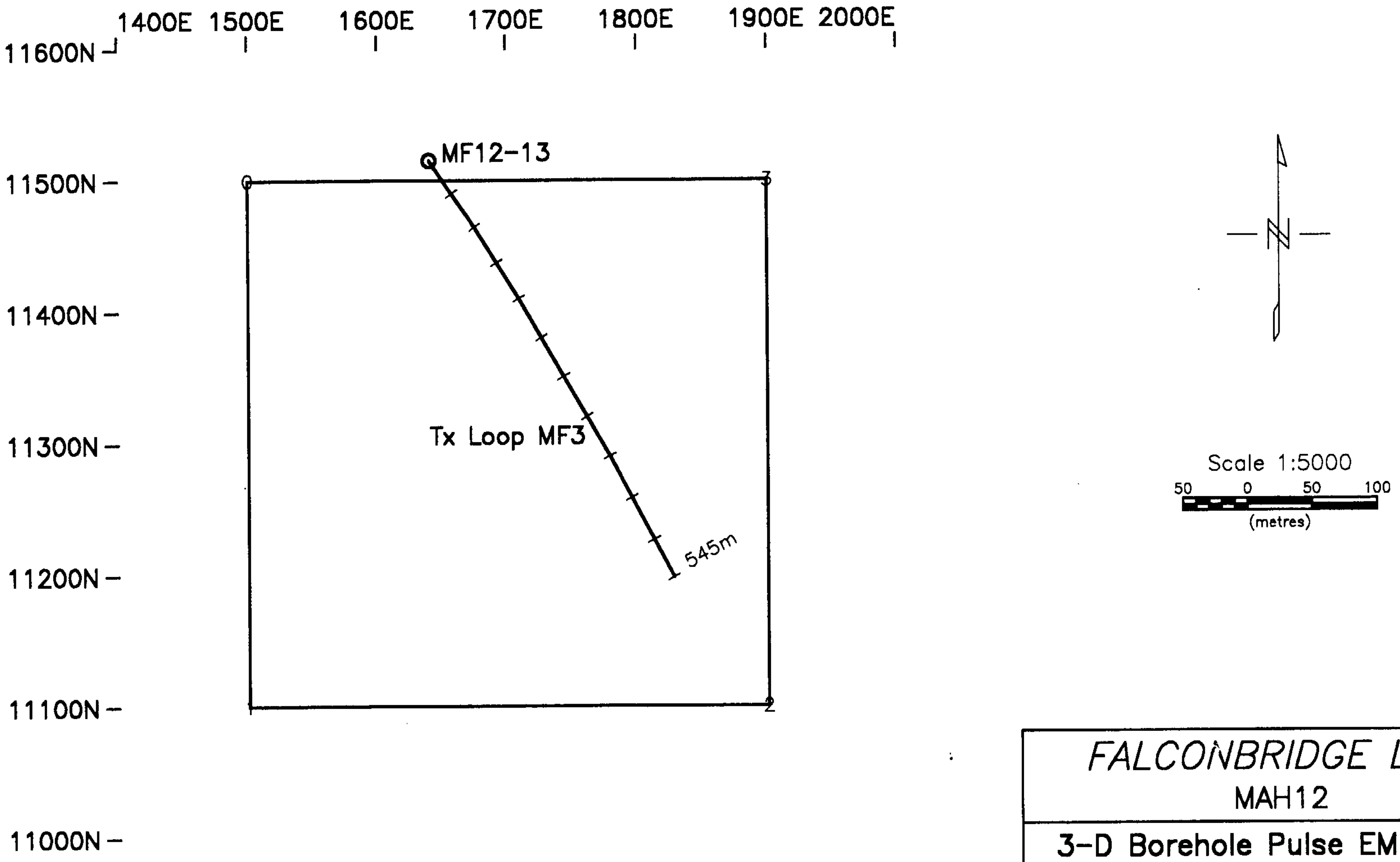
Falconbridge Ltd. **MAH12 Grid**

Hole MF12-07 **Y Component**

Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid
Hole MF12-07 Z Component
Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH12

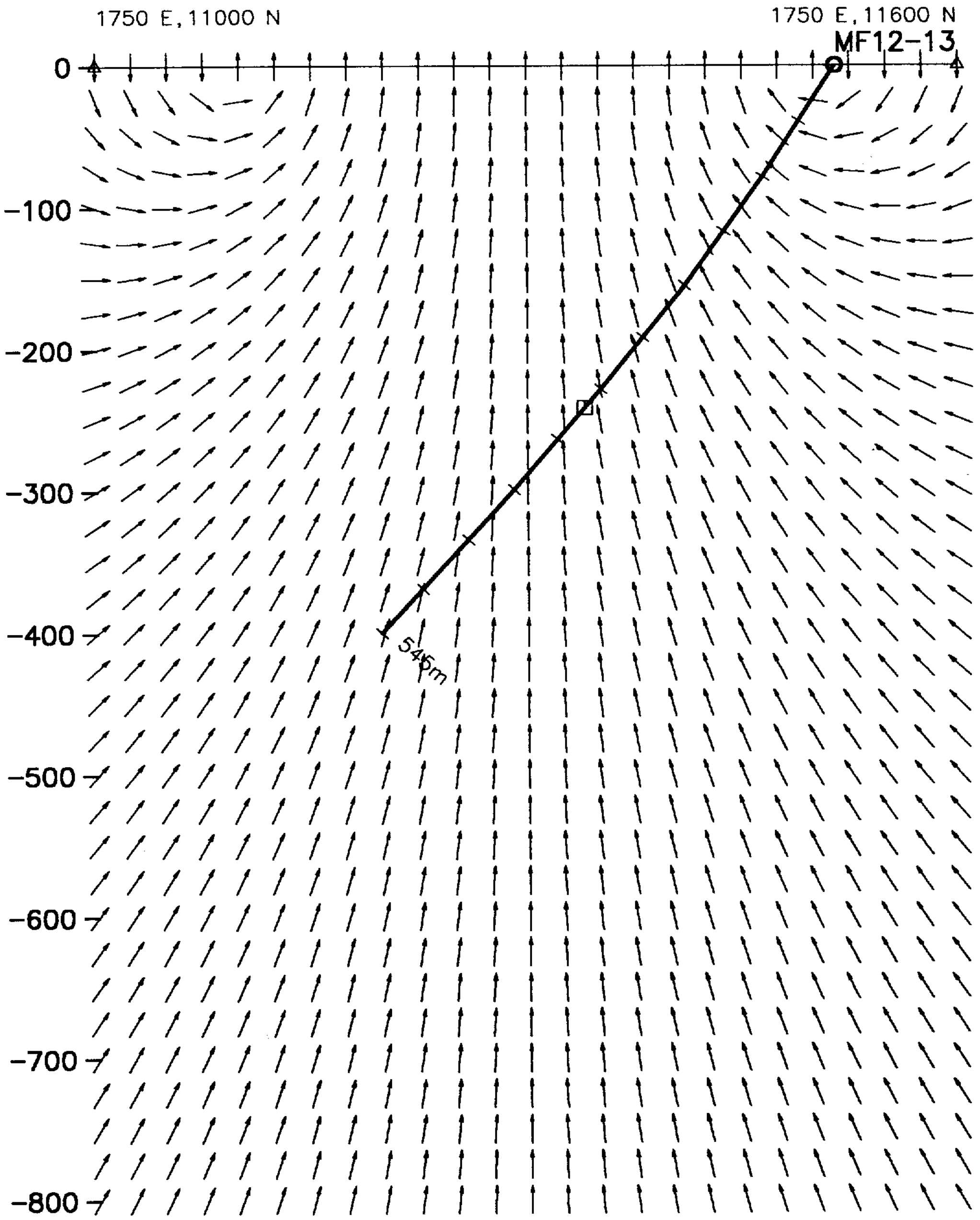
3-D Borehole Pulse EM Survey

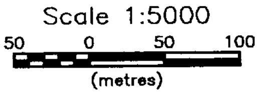
Borehole & Loop Location Map

Hole: MF12-13

Survey Date: Mar 21, 1999

Crone Geophysics & Exploration Ltd.





FALCONBRIDGE LTD.

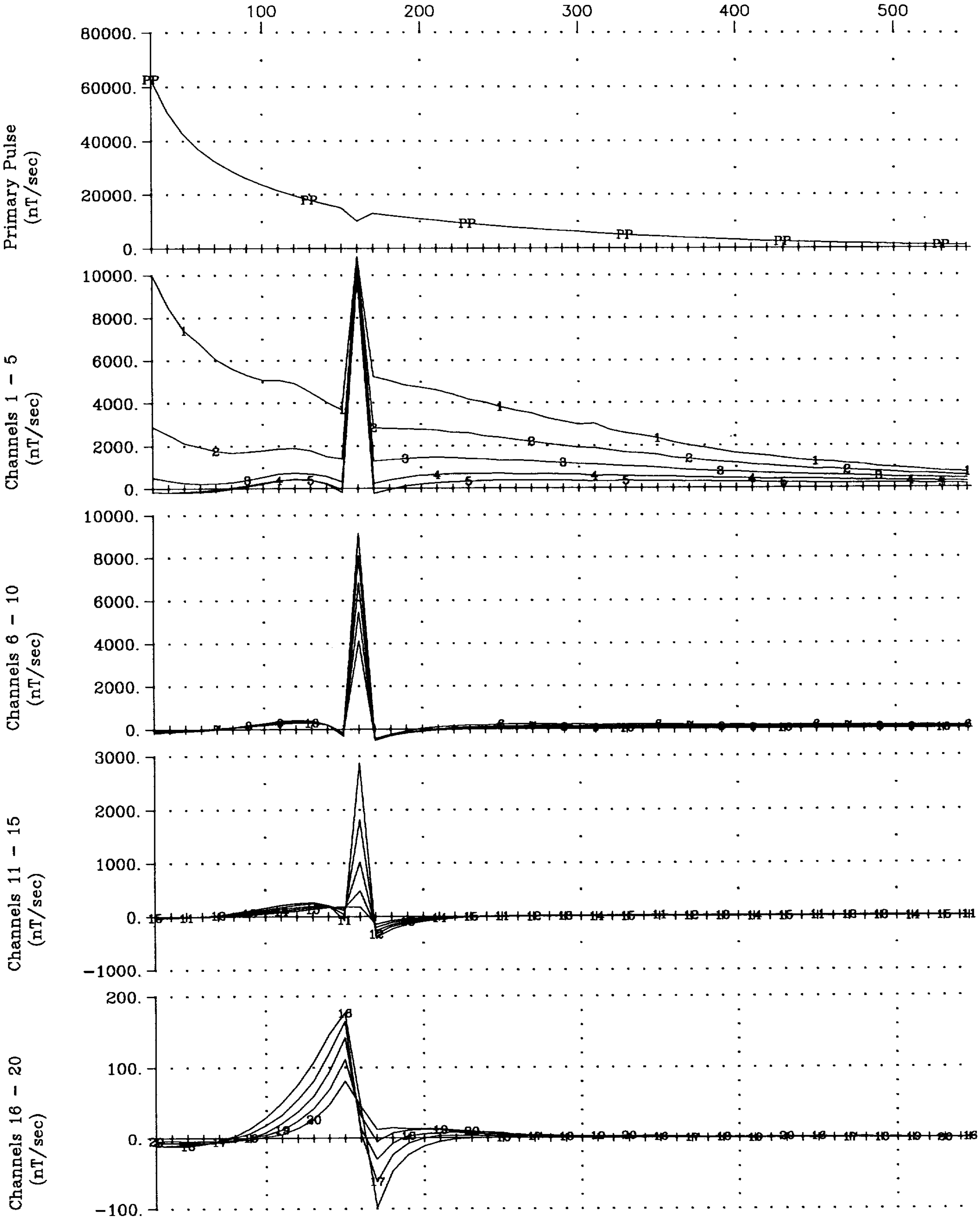
MAH12

3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF12-13

Survey Date: Mar 21, 1999

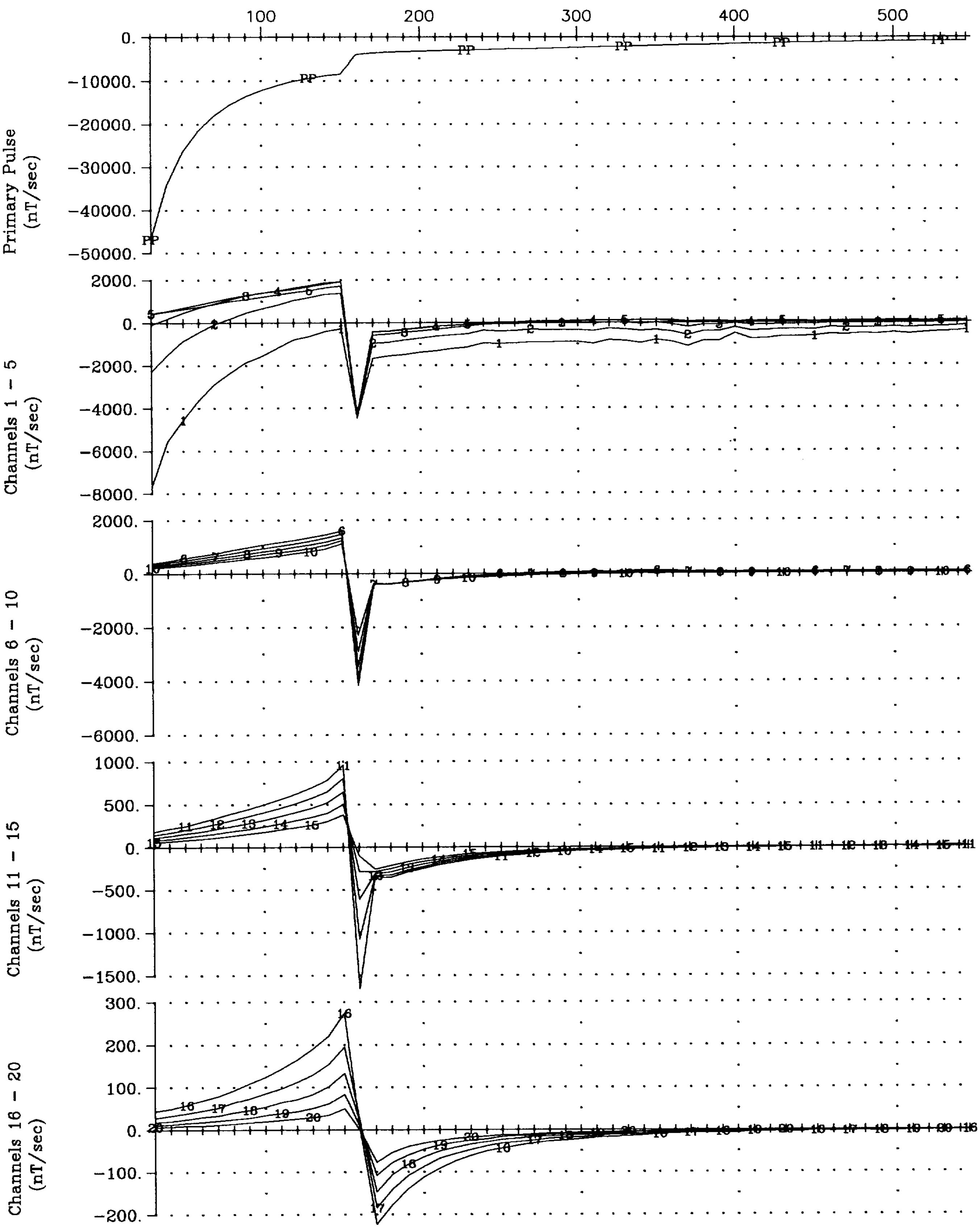
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH12 Grid**

Hole MF12-13 **X Component**

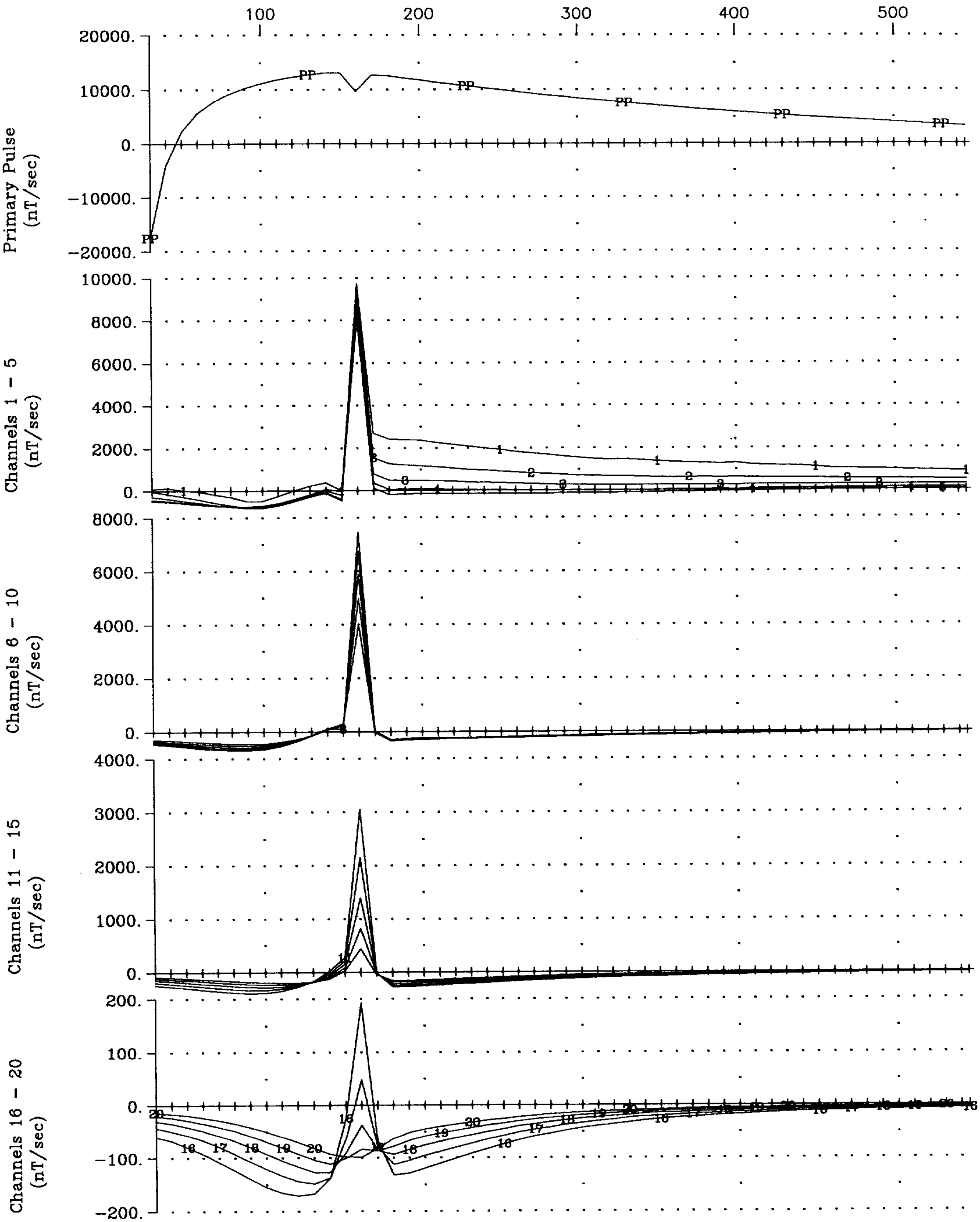
Crone Geophysics & Exploration Ltd.



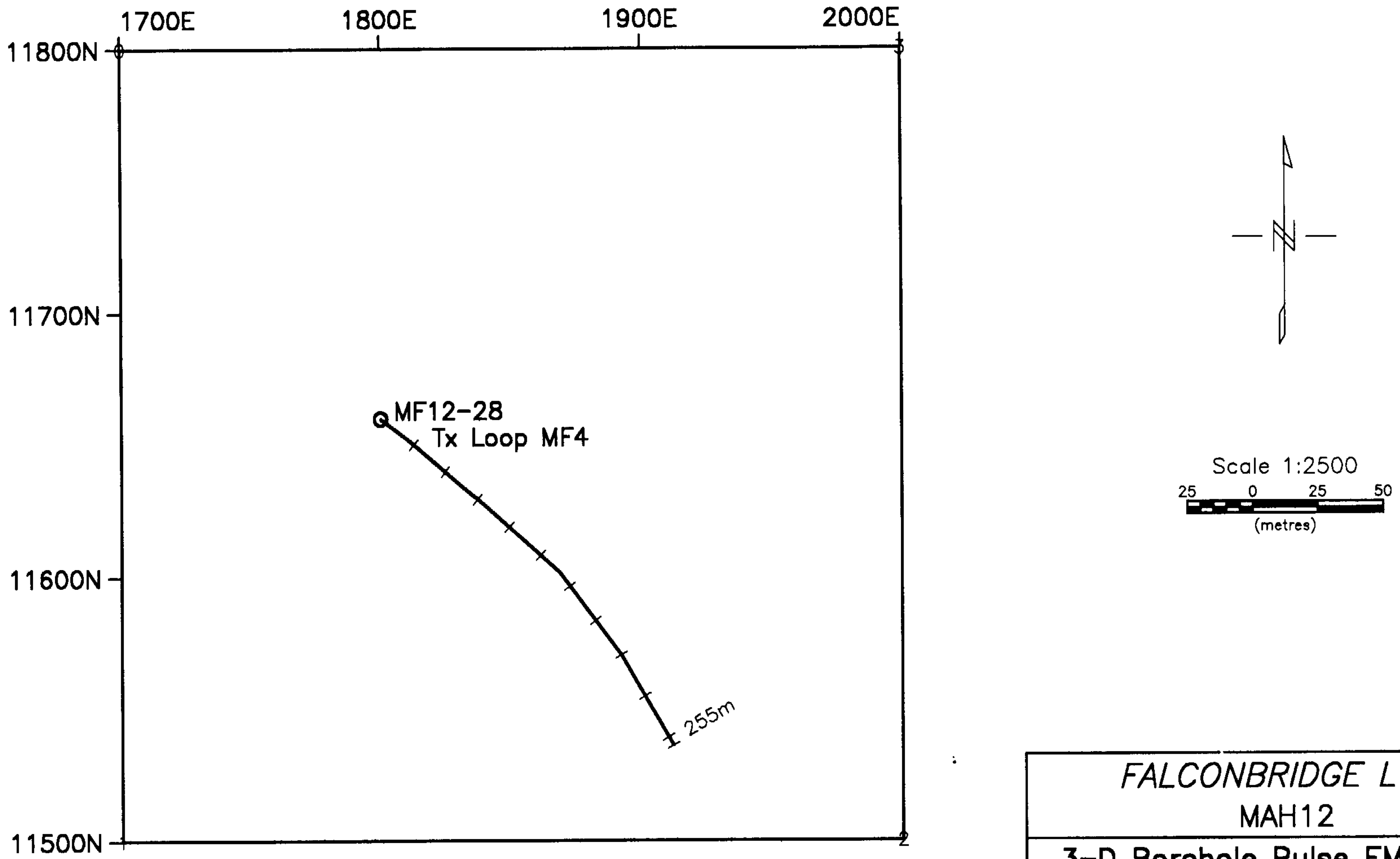
Falconbridge Ltd. **MAH12 Grid**

Hole MF12-13 **Y Component**

Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid
Hole MF12-13 Z Component
Crone Geophysics & Exploration Ltd.

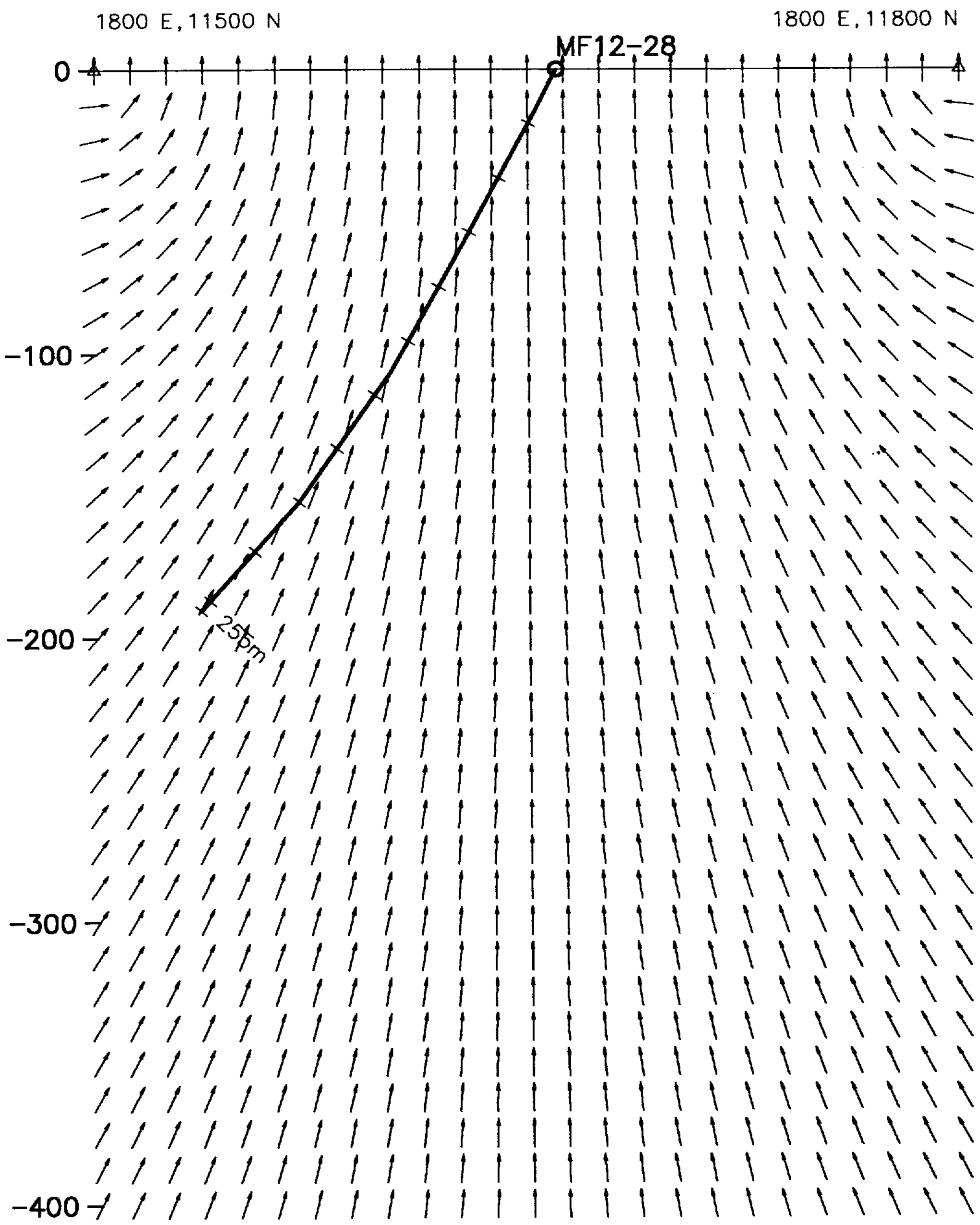


FALCONBRIDGE LTD.
MAH12

3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: MF12-28
Survey Date: Mar 26, 1999

Crone Geophysics & Exploration Ltd.



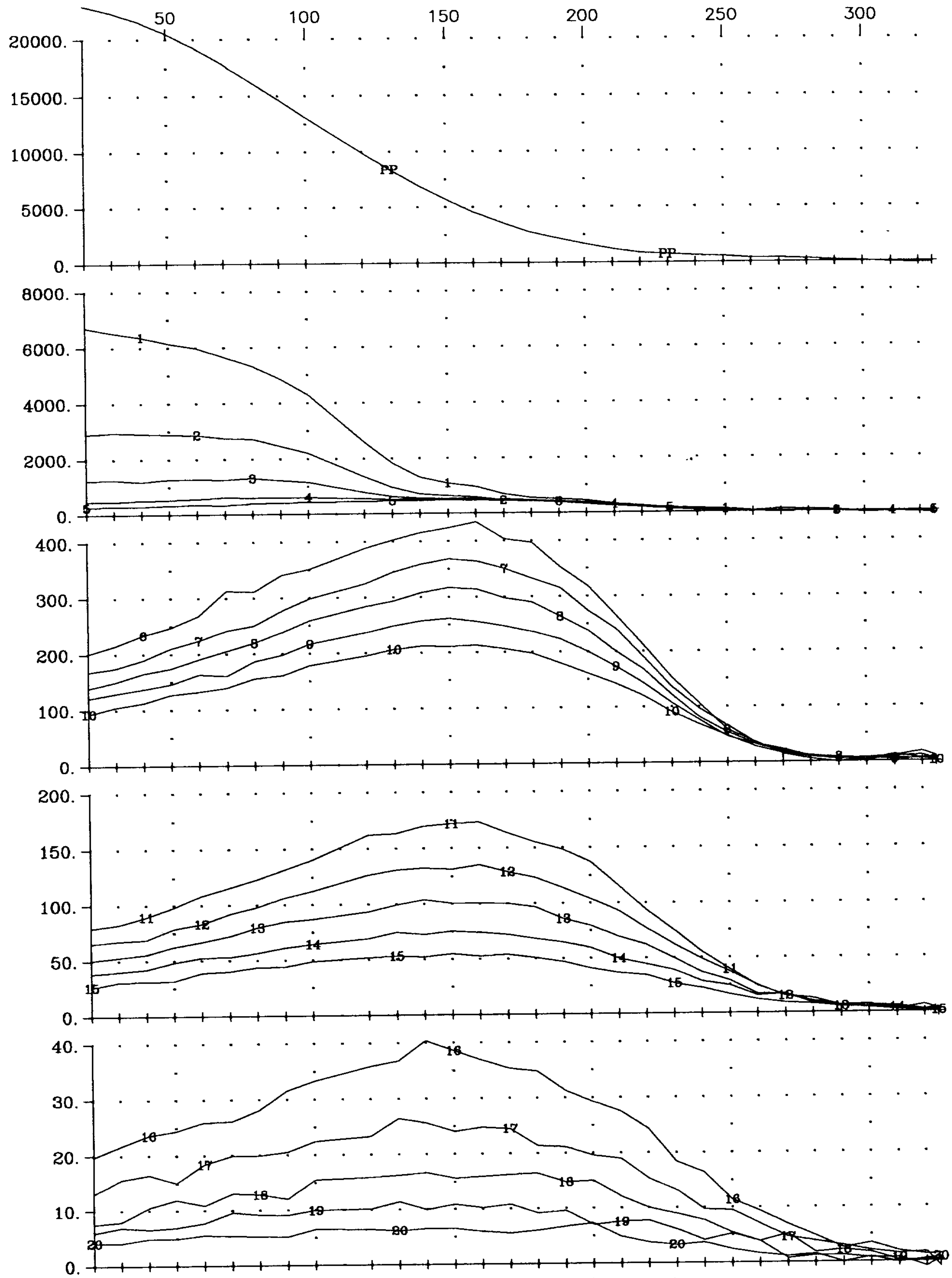
Scale 1:2500
25 0 25 50
(metres)

FALCONBRIDGE LTD.
MAH12

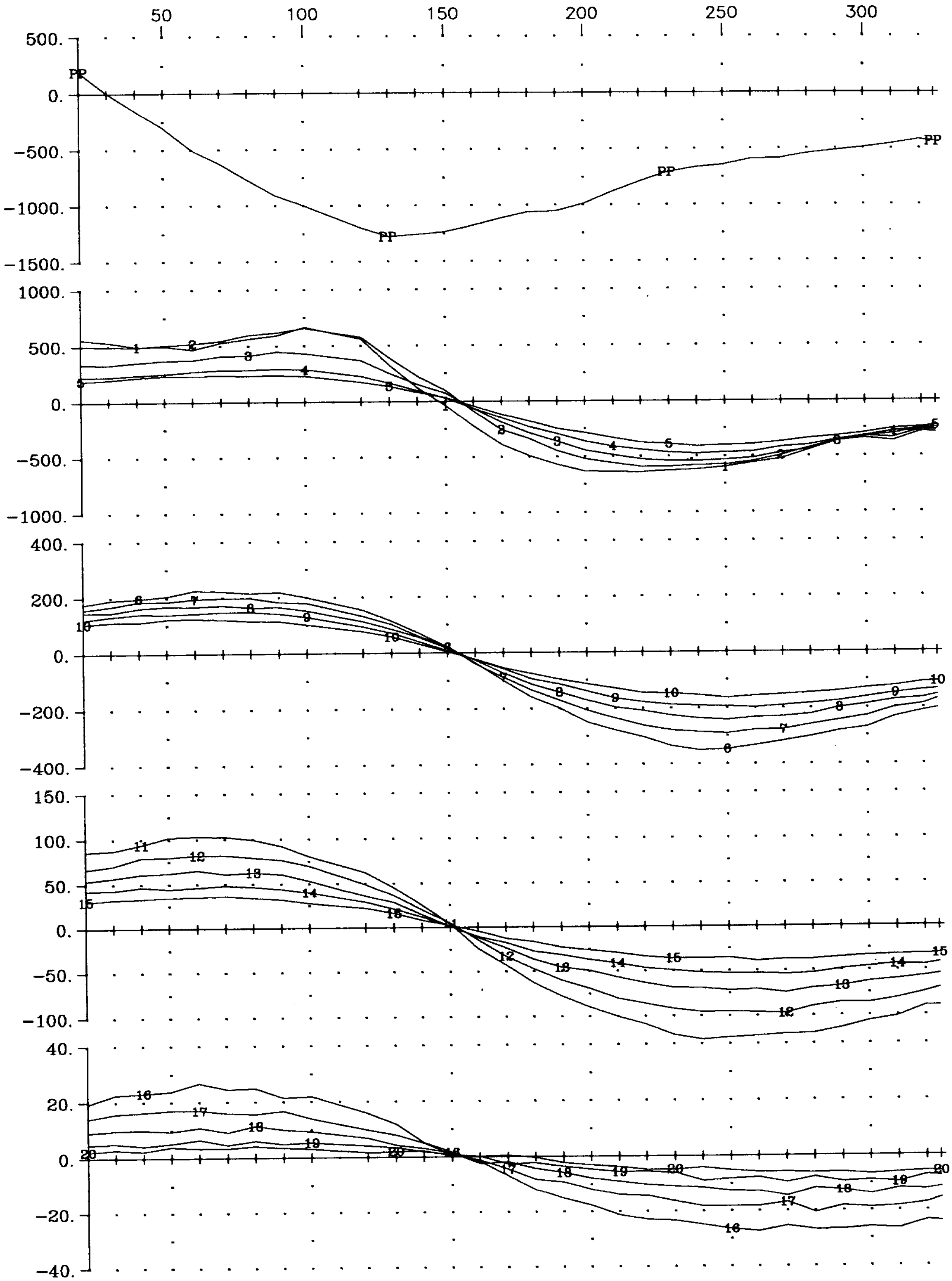
3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF12-28
Survey Date: Mar 26, 1999

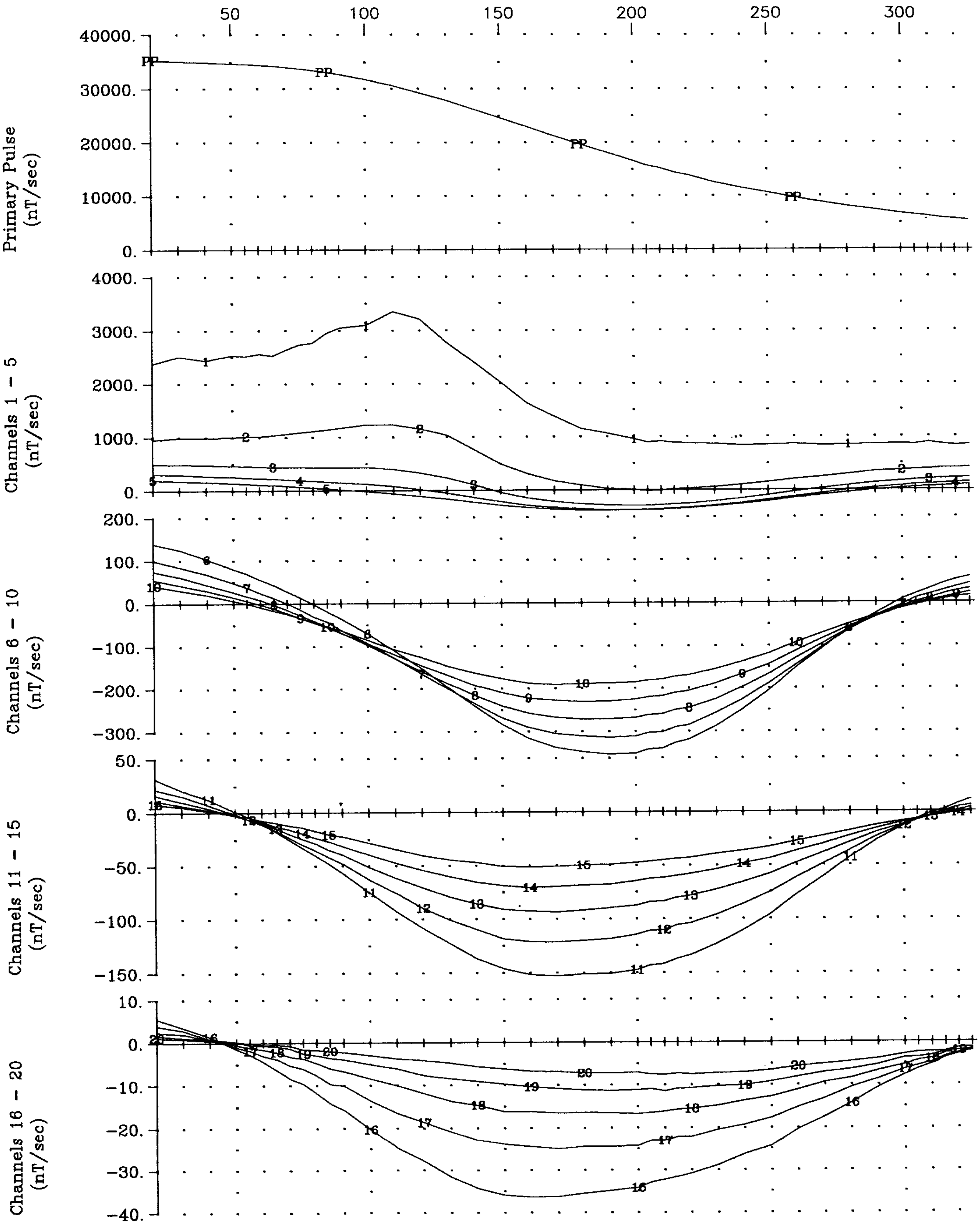
Crone Geophysics & Exploration Ltd.



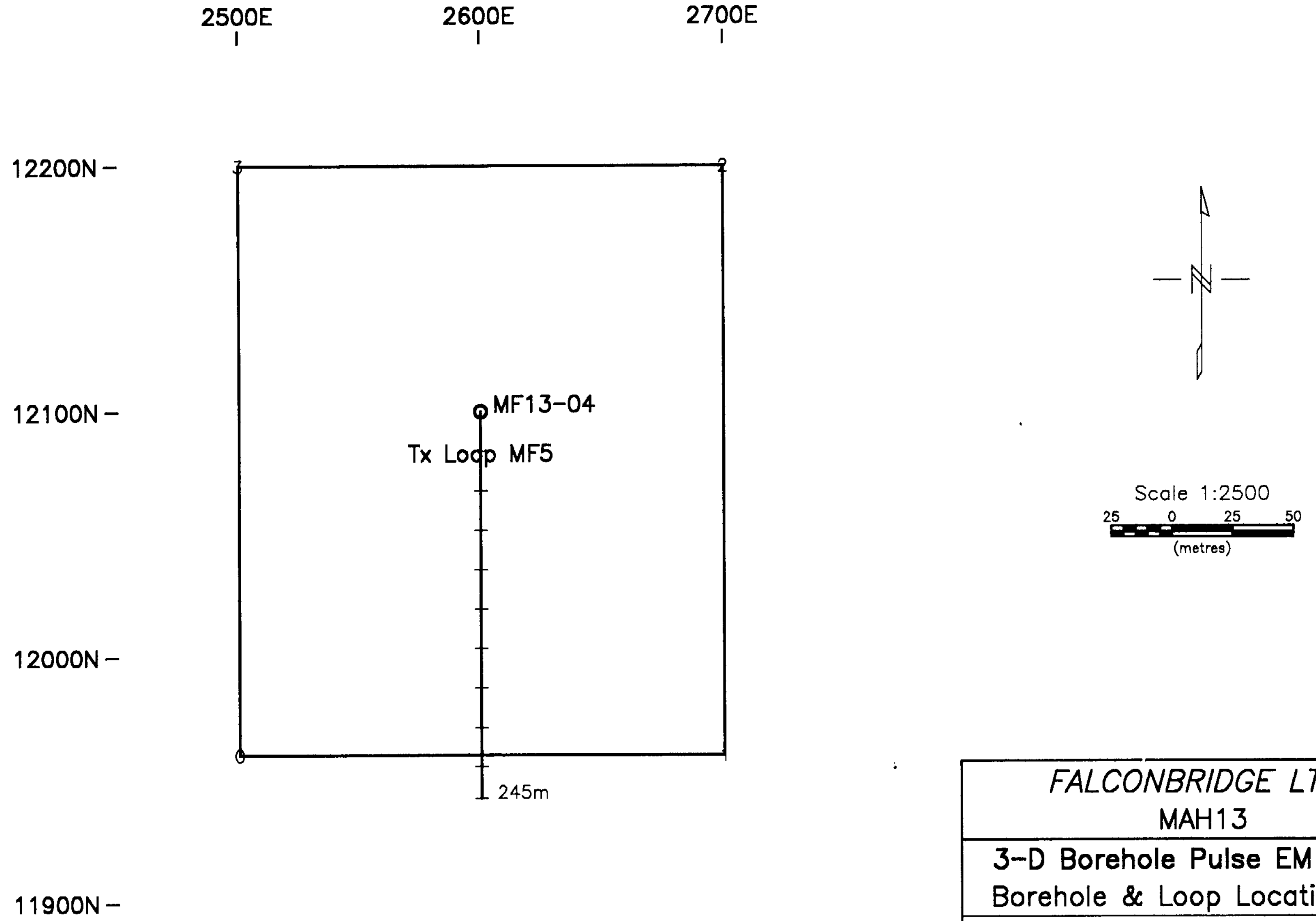
Falconbridge Ltd. MAH12 Grid
Hole MF12-28 X Component
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid
Hole MF12-28 Y Component
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH12 Grid
Hole MF12-28 Z Component
Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

MAH13

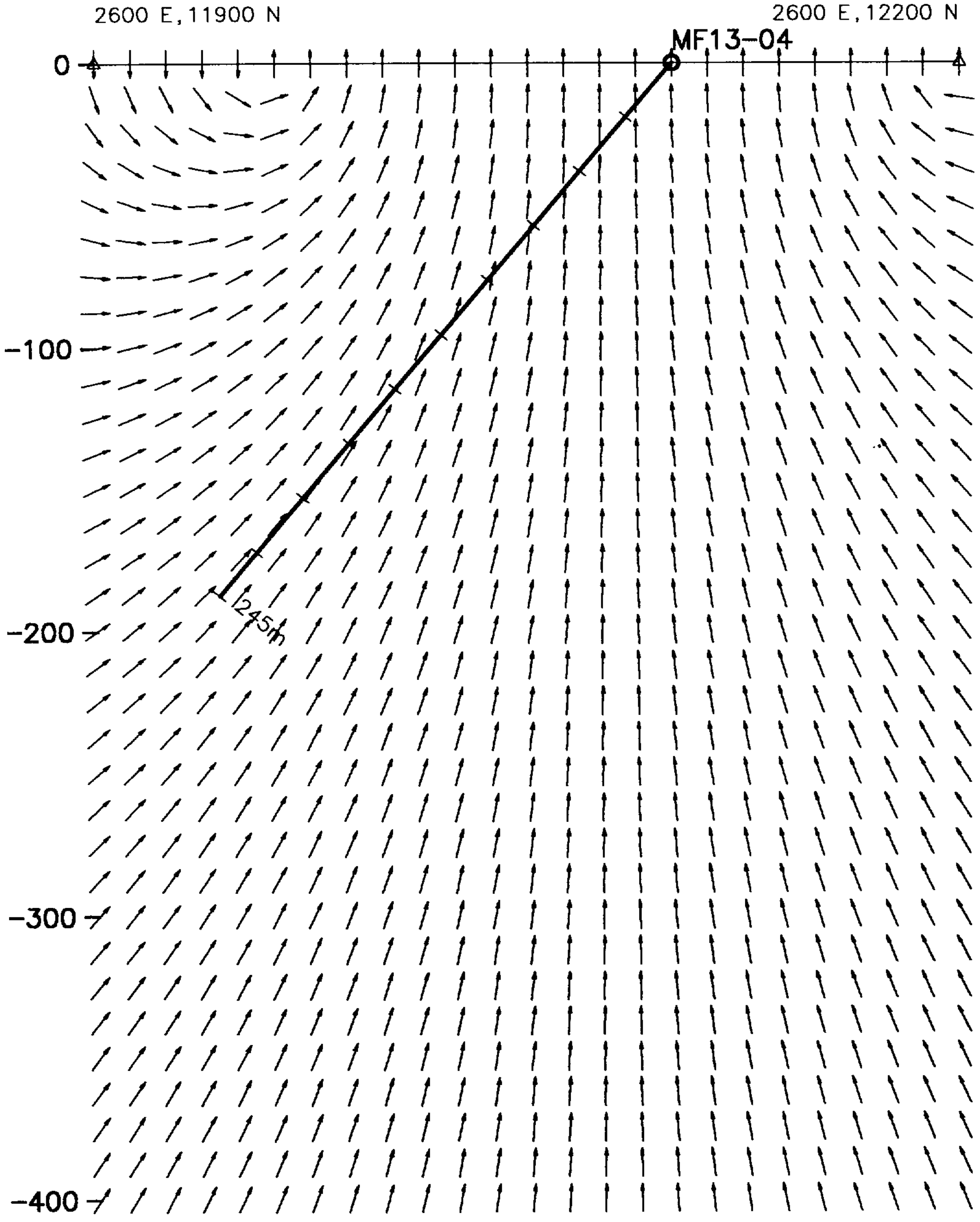
3-D Borehole Pulse EM Survey

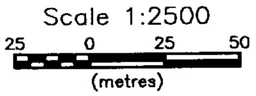
Borehole & Loop Location Map

Hole: MF13-04

Survey Date: Mar 27, 1999

Crone Geophysics & Exploration Ltd.





FALCONBRIDGE LTD.

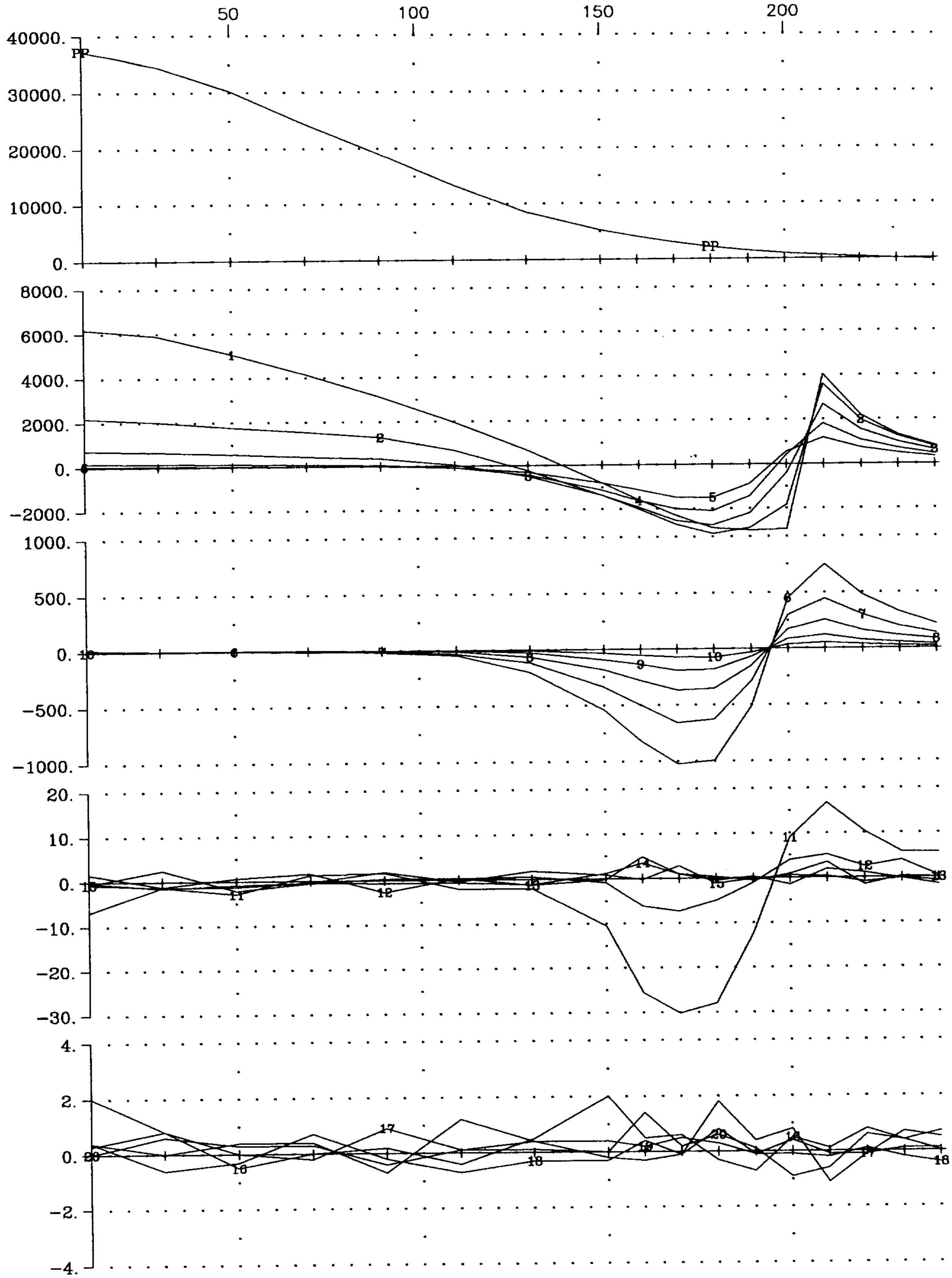
MAH13

3-D Borehole Pulse EM Survey
Hole Section with Primary Field

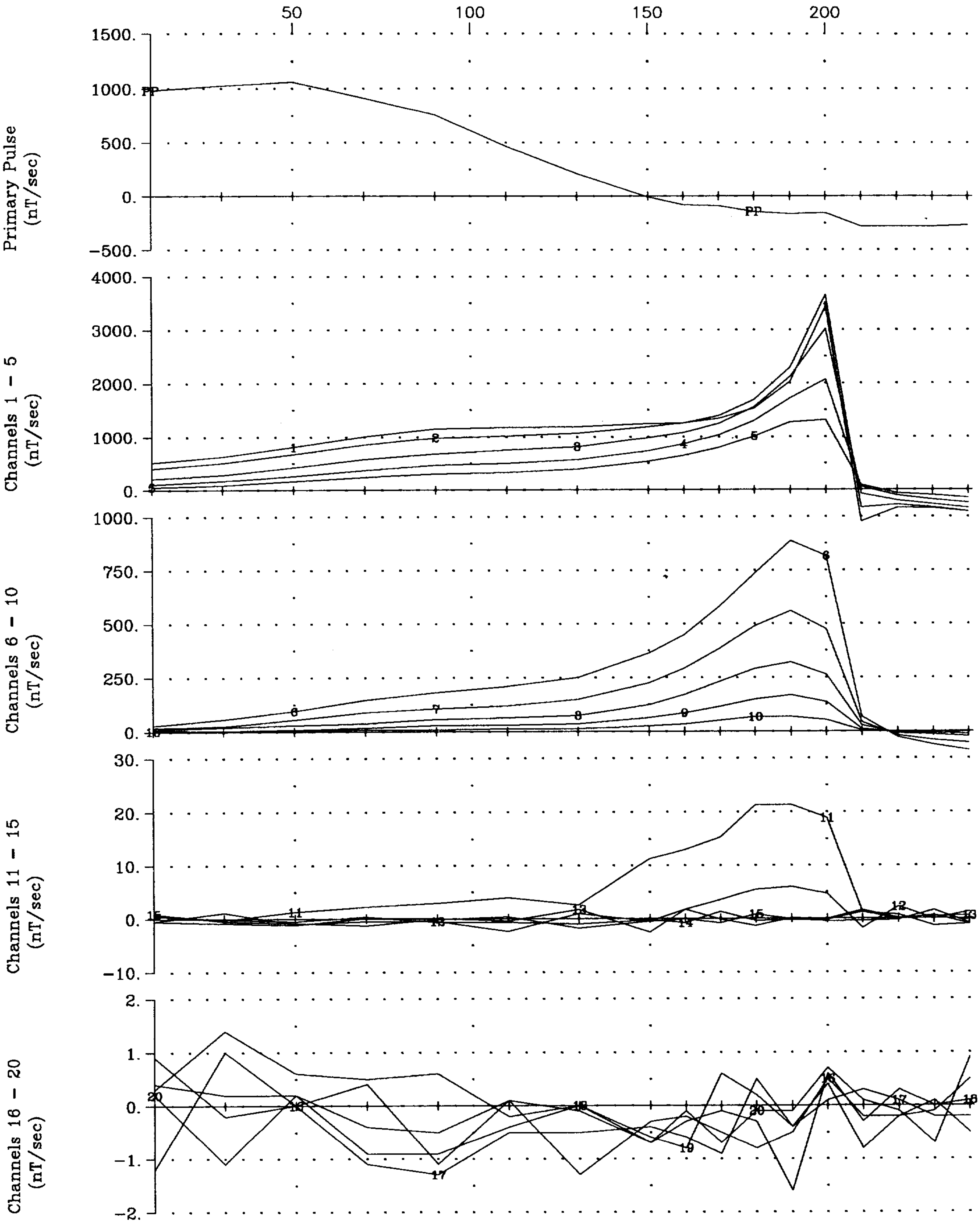
Hole: MF13-04

Survey Date: Mar 27, 1999

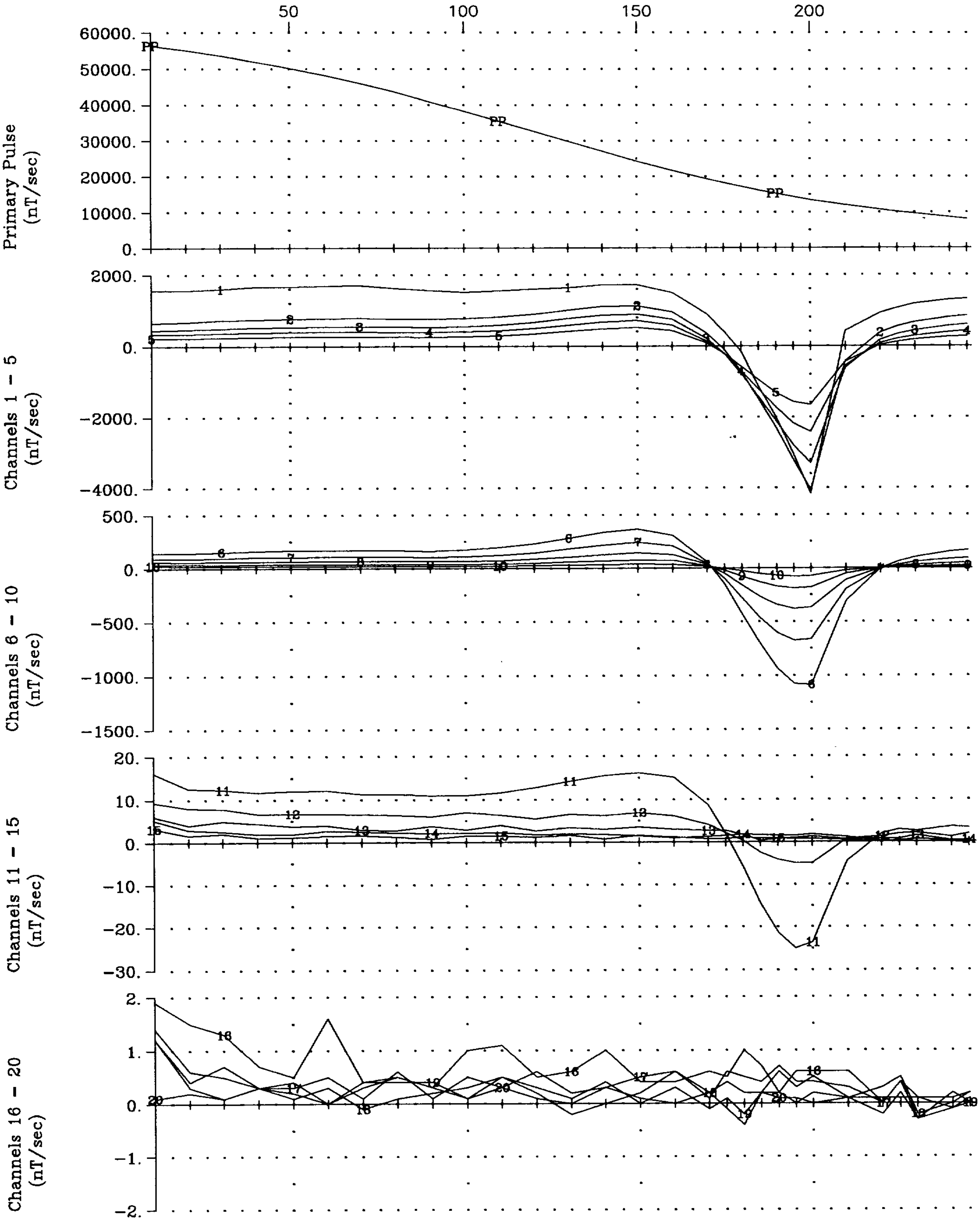
Crone Geophysics & Exploration Ltd.



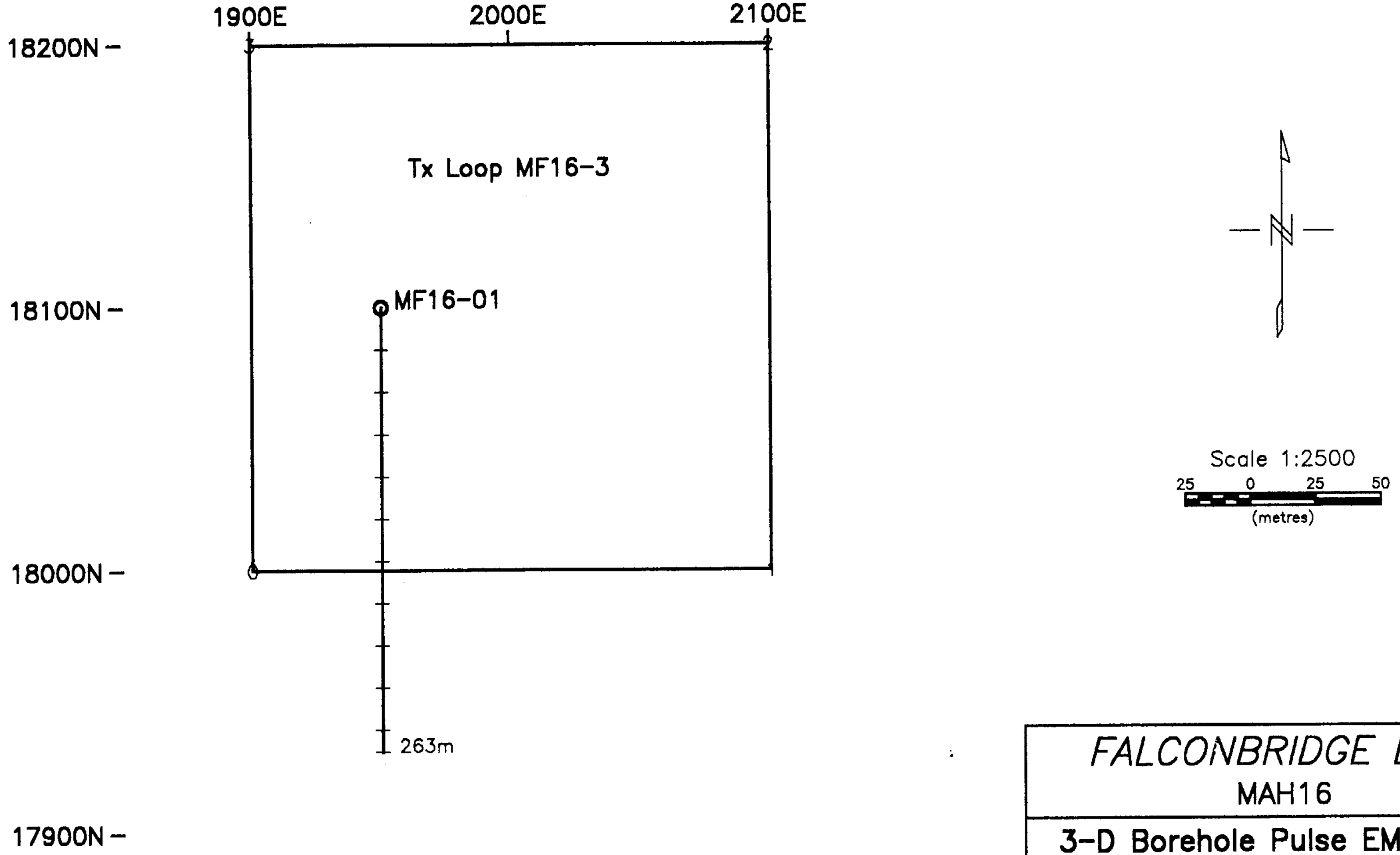
Falconbridge Ltd. MAH13 Grid
Hole MF13-04 X Component
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH13 Grid
Hole MF13-04 Y Component
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH13 Grid**
Hole MF13-04 **Z Component**
Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

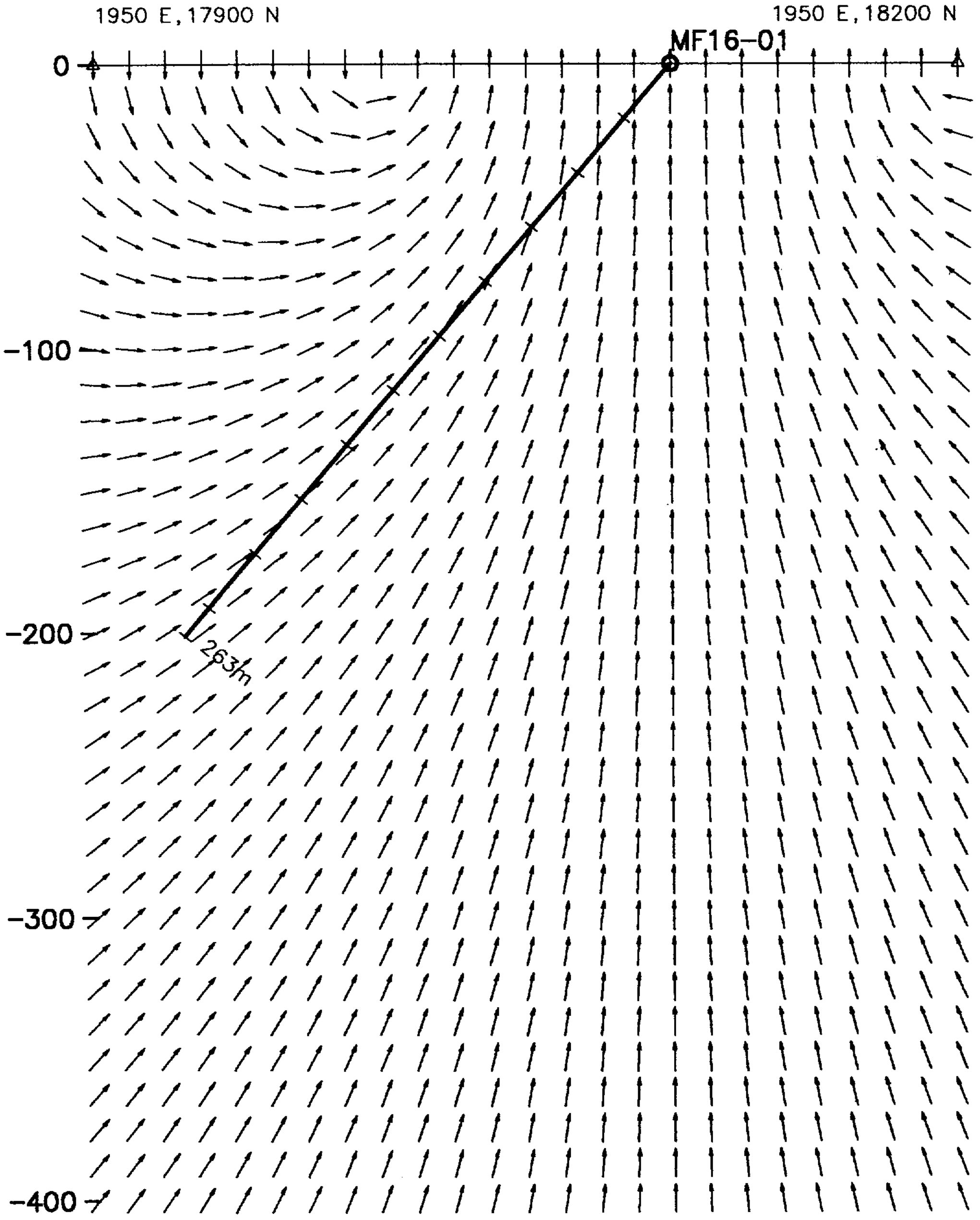
MAH16

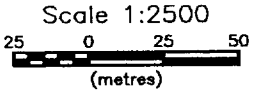
3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: MF16-01

Survey Date: Apr 1, 1999

Crone Geophysics & Exploration Ltd.





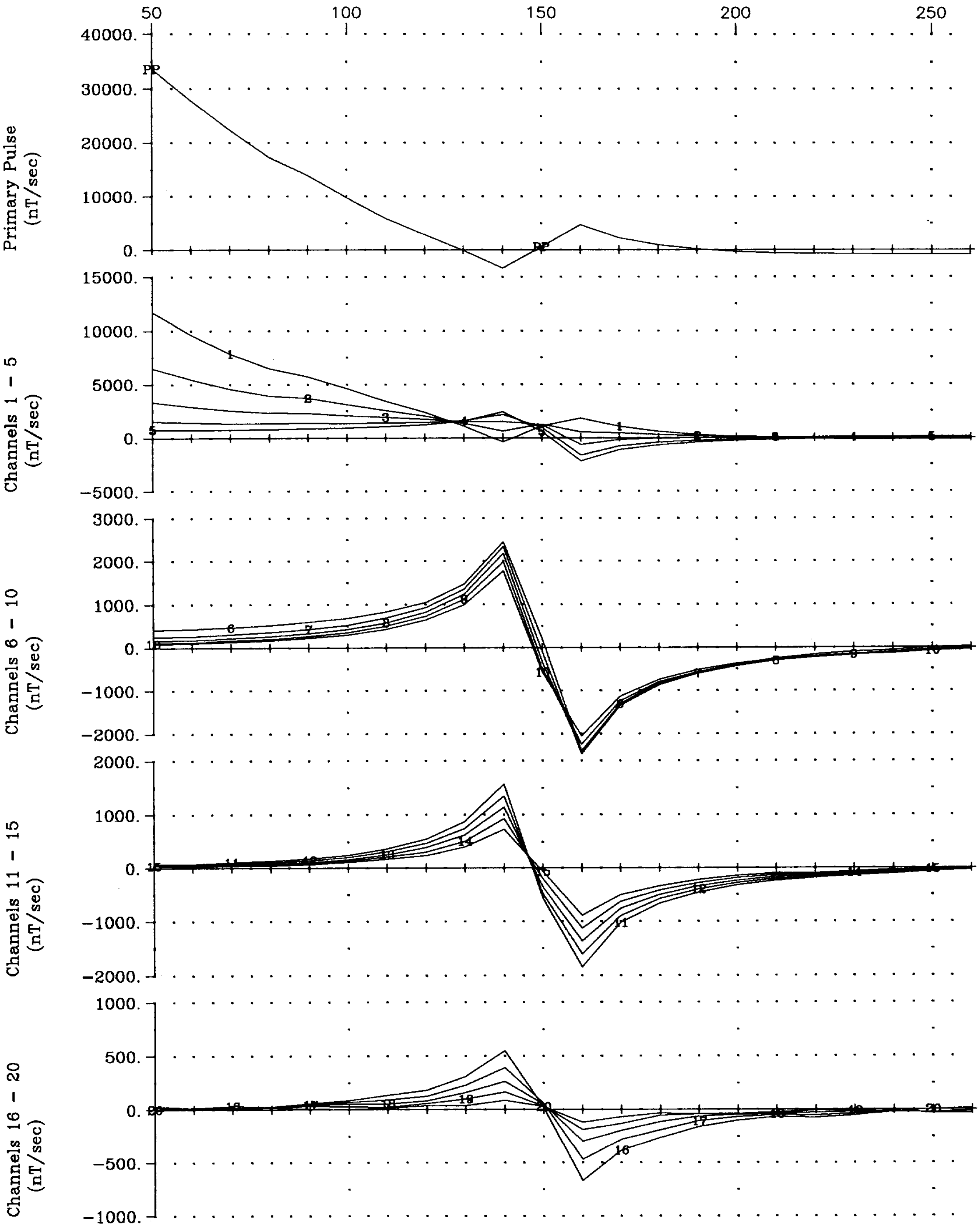
FALCONBRIDGE LTD.

MAH16

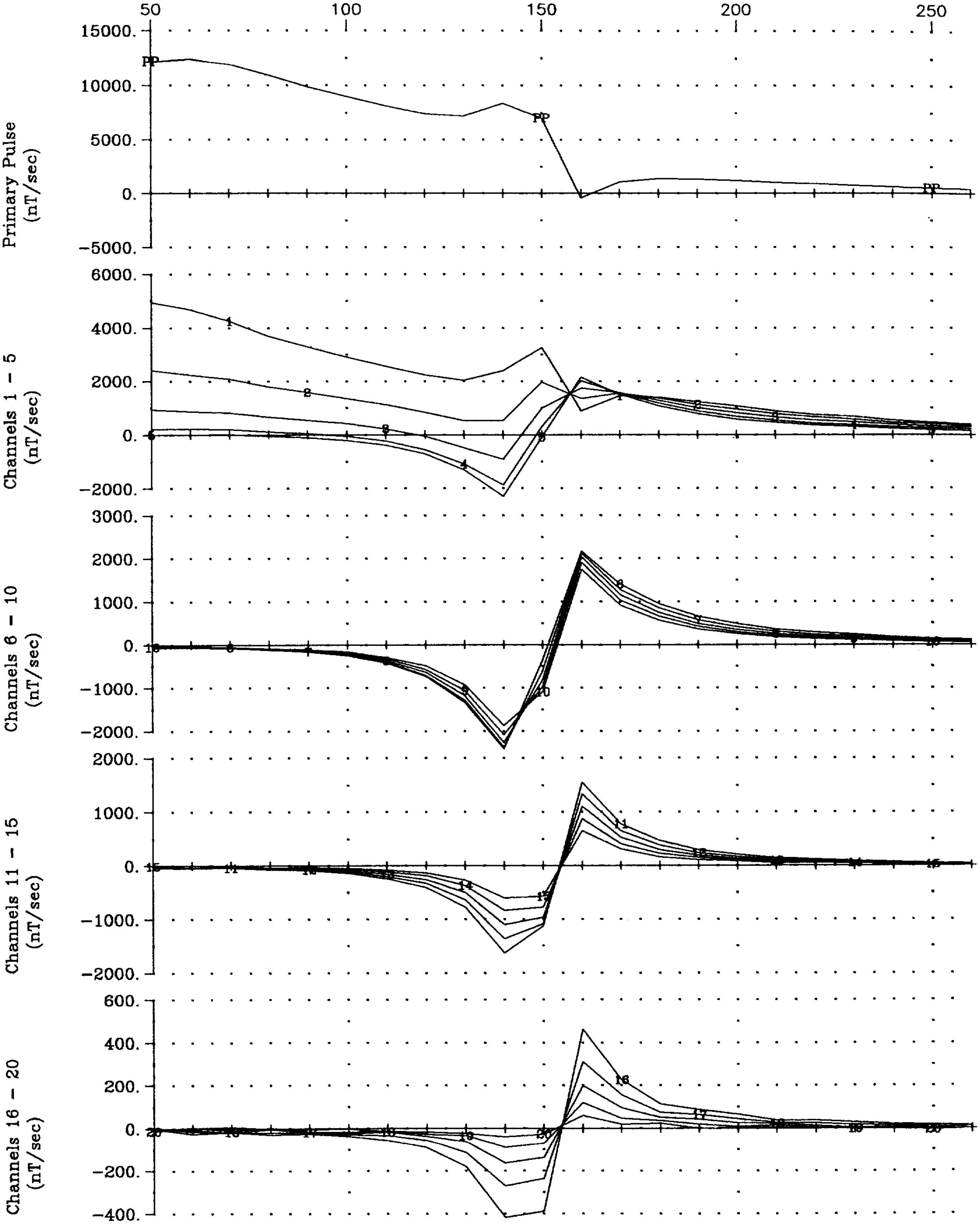
3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF16-01
Survey Date: Apr 1, 1999

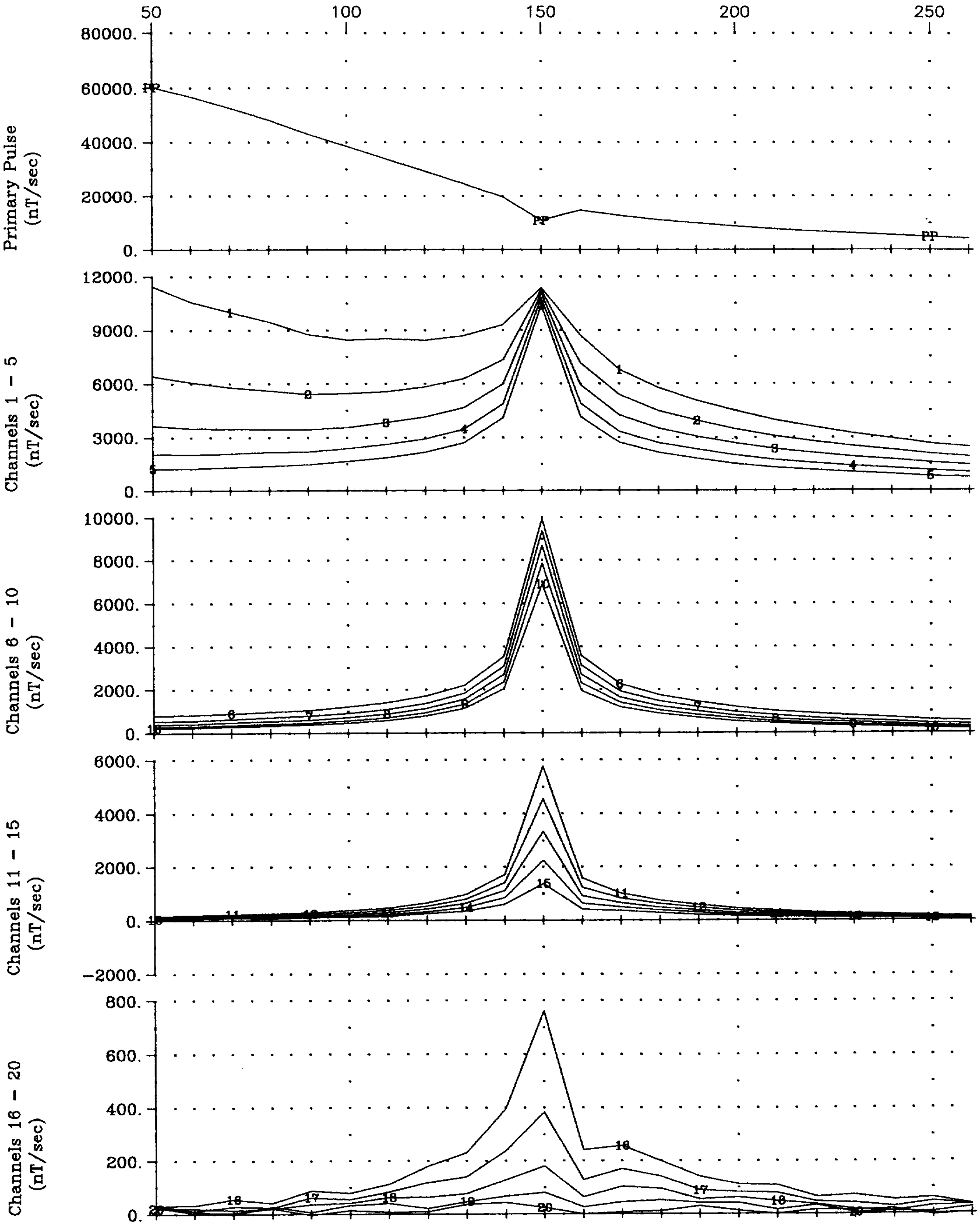
Crone Geophysics & Exploration Ltd.



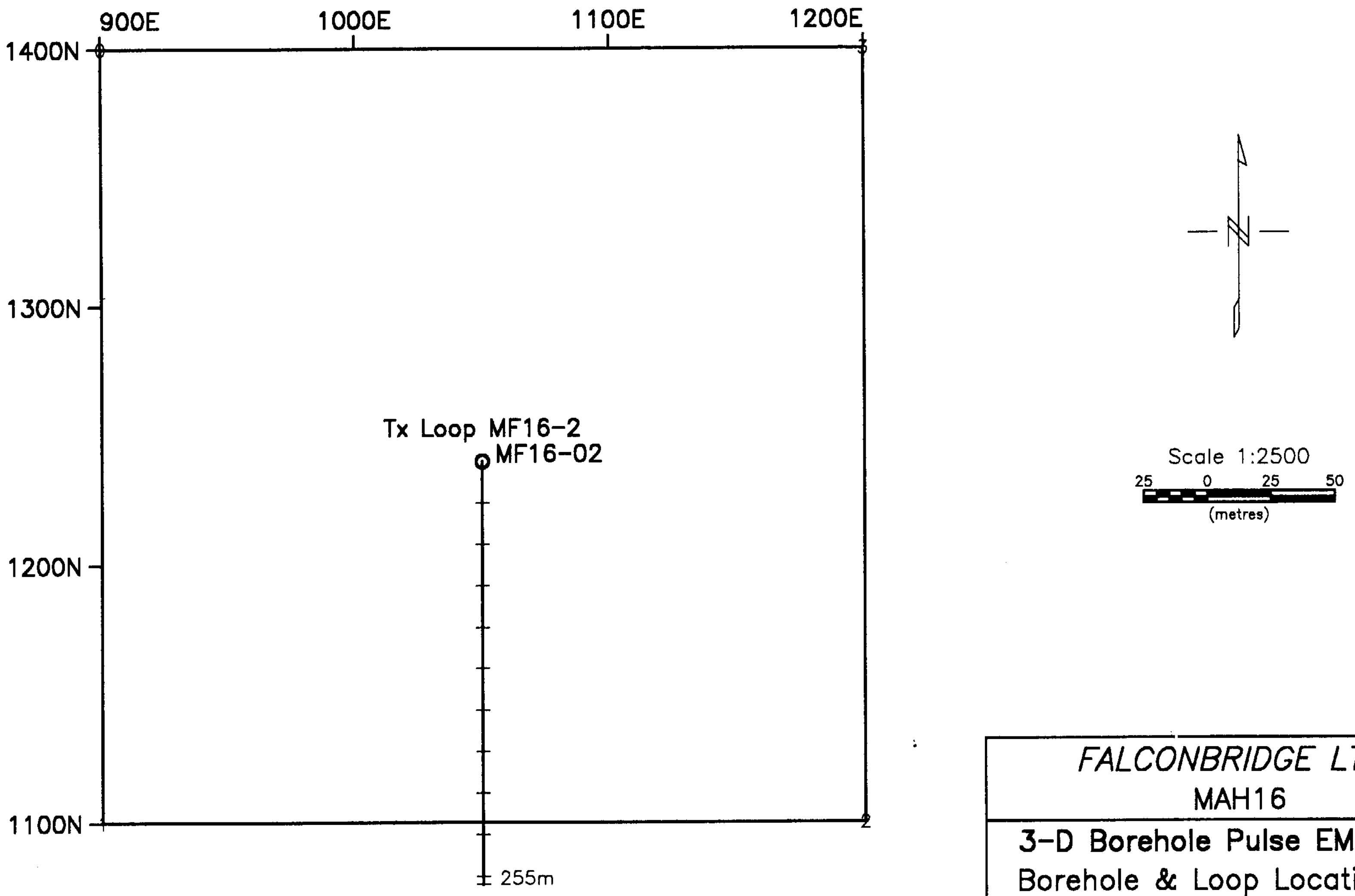
Falconbridge Ltd. **MAH16 Grid**
Hole MF16-01 **X Component**
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH16 Grid**
Hole MF16-01 **Y Component**
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd.   MAH16 Grid
Hole MF16-01   Z Component
Crone Geophysics & Exploration Ltd.



FALCONBRIDGE LTD.

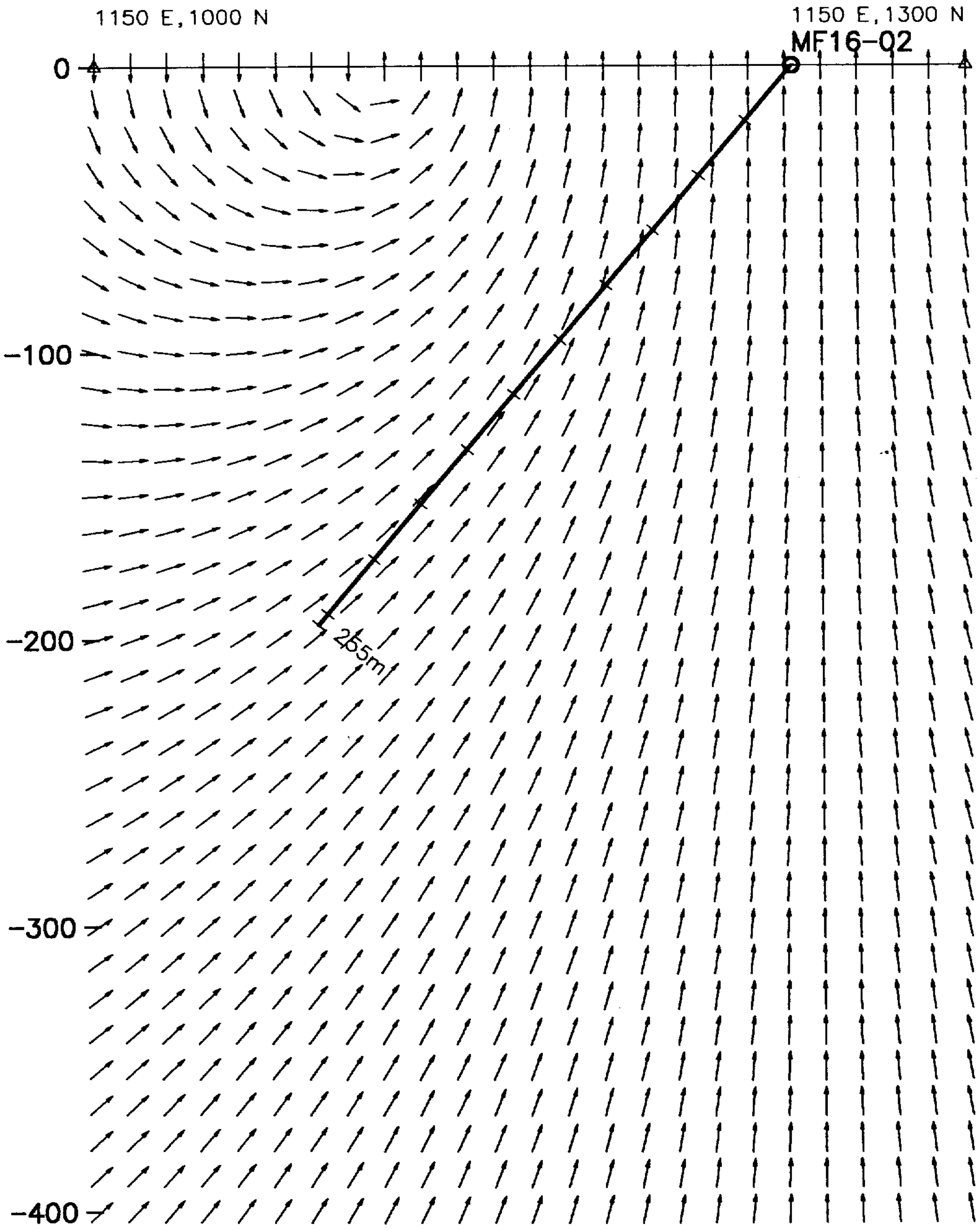
MAH16

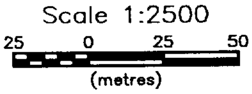
3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: MF16-02

Survey Date: Mar 25, 1999

Crone Geophysics & Exploration Ltd.





FALCONBRIDGE LTD.

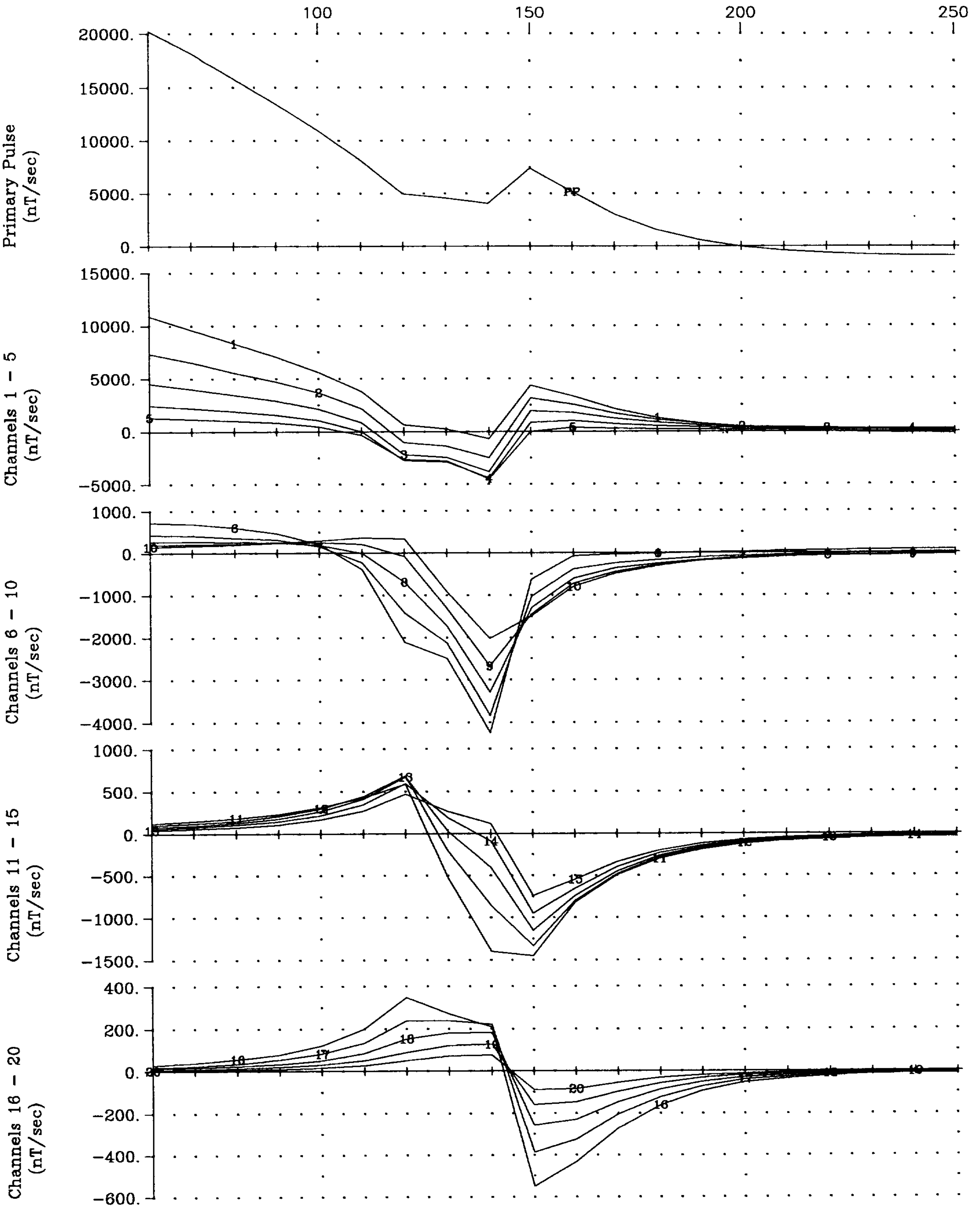
MAH16

3-D Borehole Pulse EM Survey
Hole Section with Primary Field

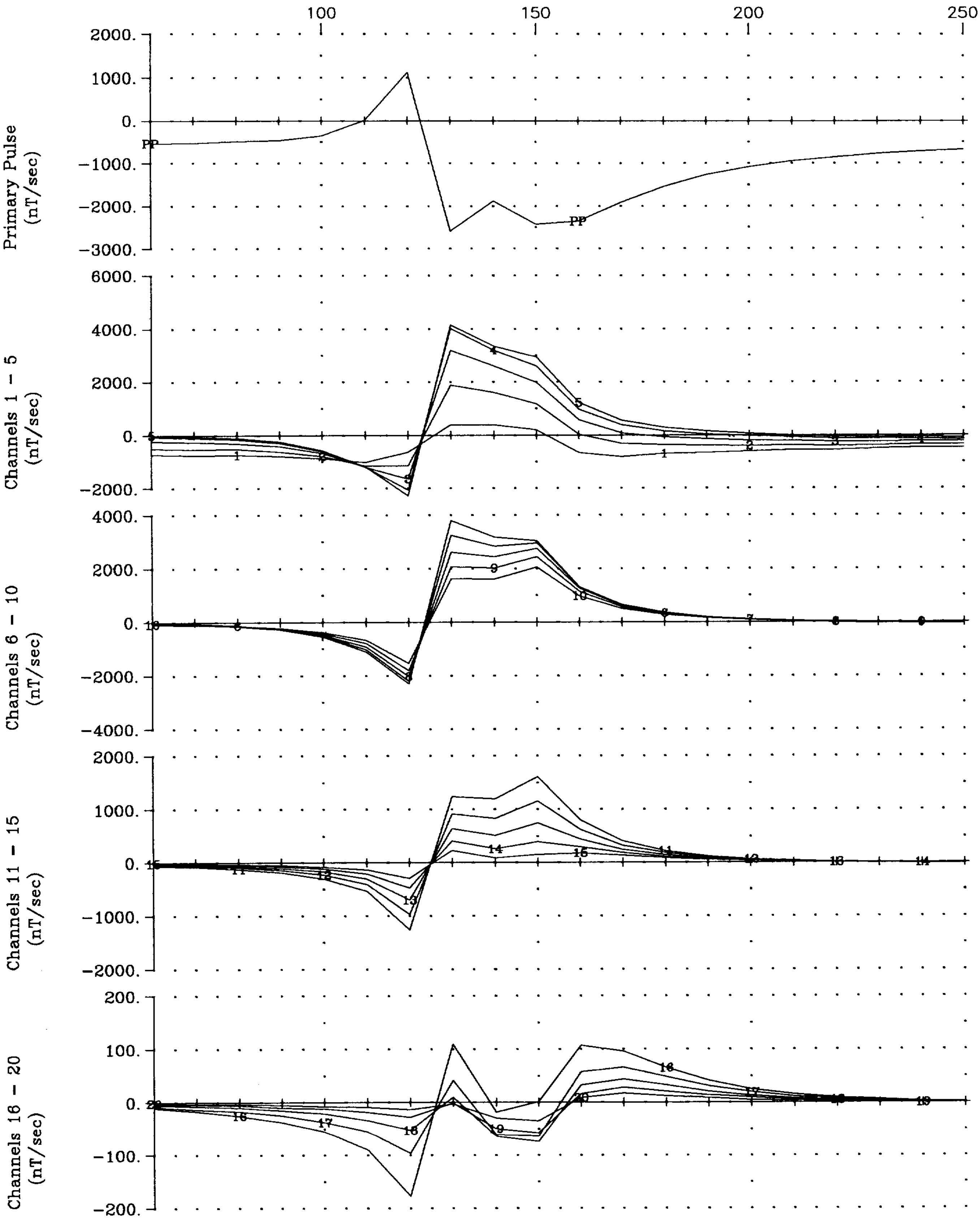
Hole: MF16-02

Survey Date: Mar 25, 1999

Crone Geophysics & Exploration Ltd.



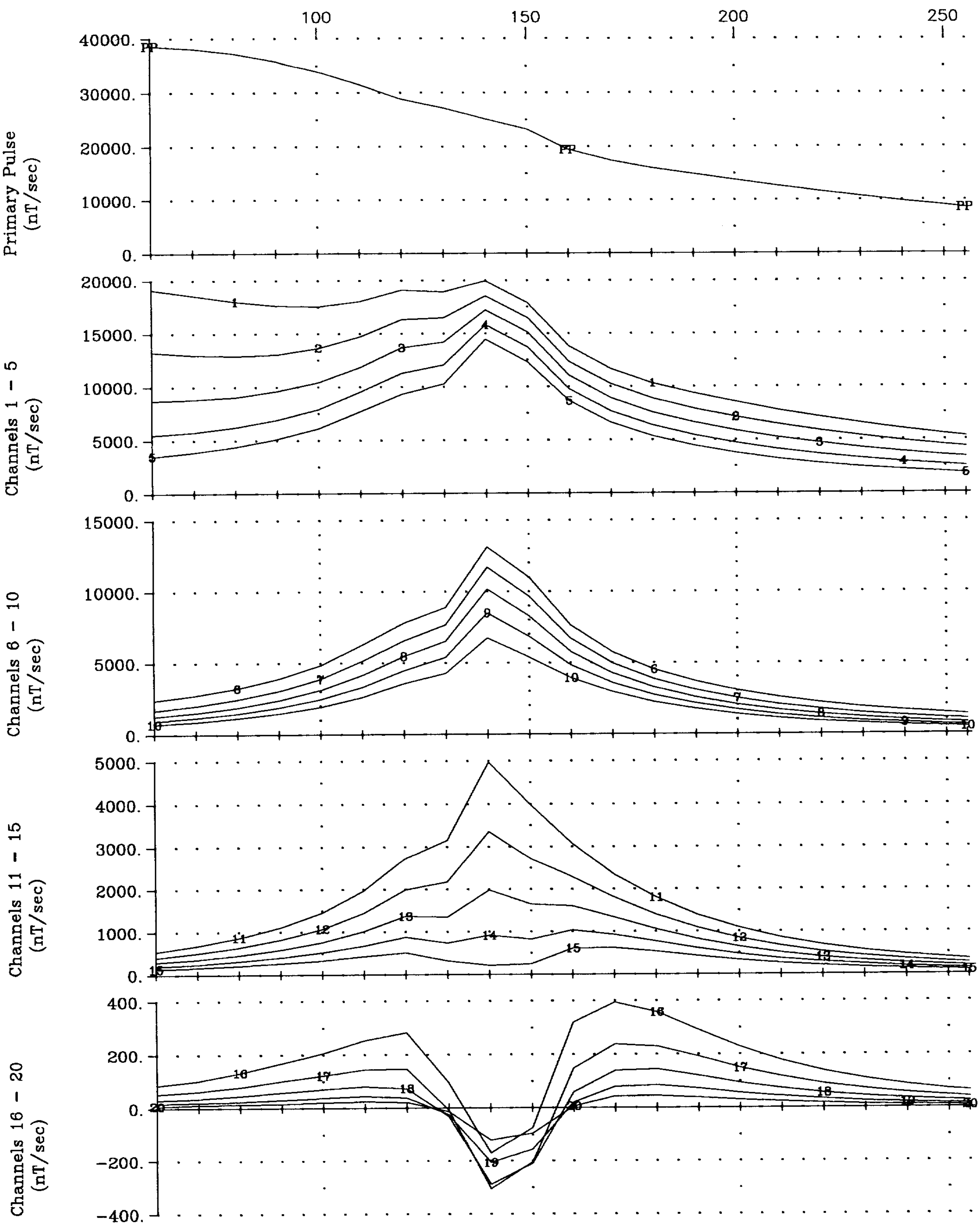
Falconbridge Ltd. **MAH16 Grid**
Hole MF16-02 **X Component**
Crone Geophysics & Exploration Ltd.



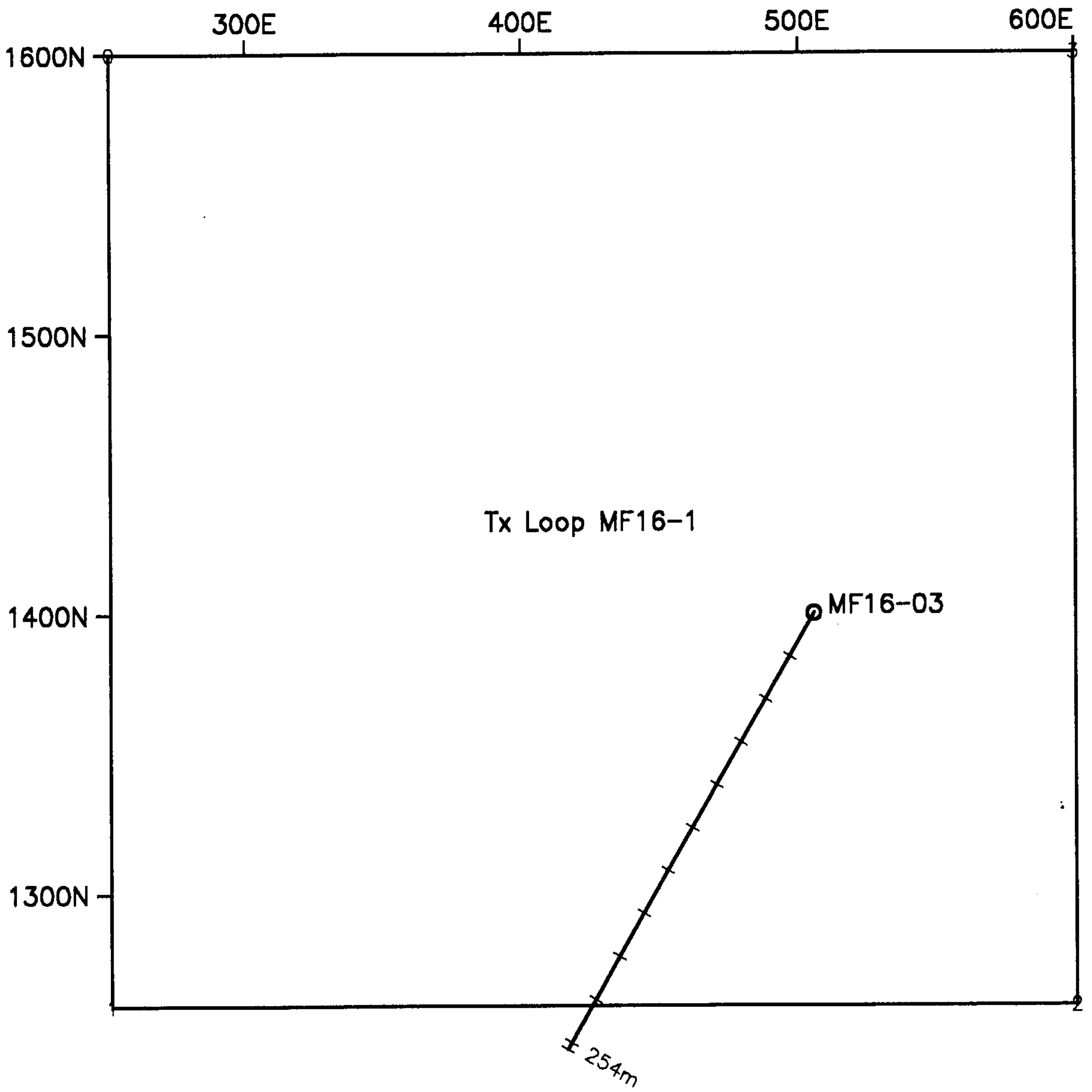
Falconbridge Ltd. **MAH16 Grid**

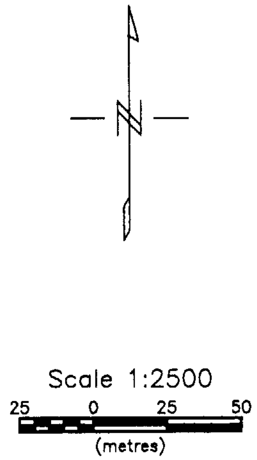
Hole MF16−02 **Y Component**

Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH16 Grid
Hole MF16-02 Z Component
Crone Geophysics & Exploration Ltd.



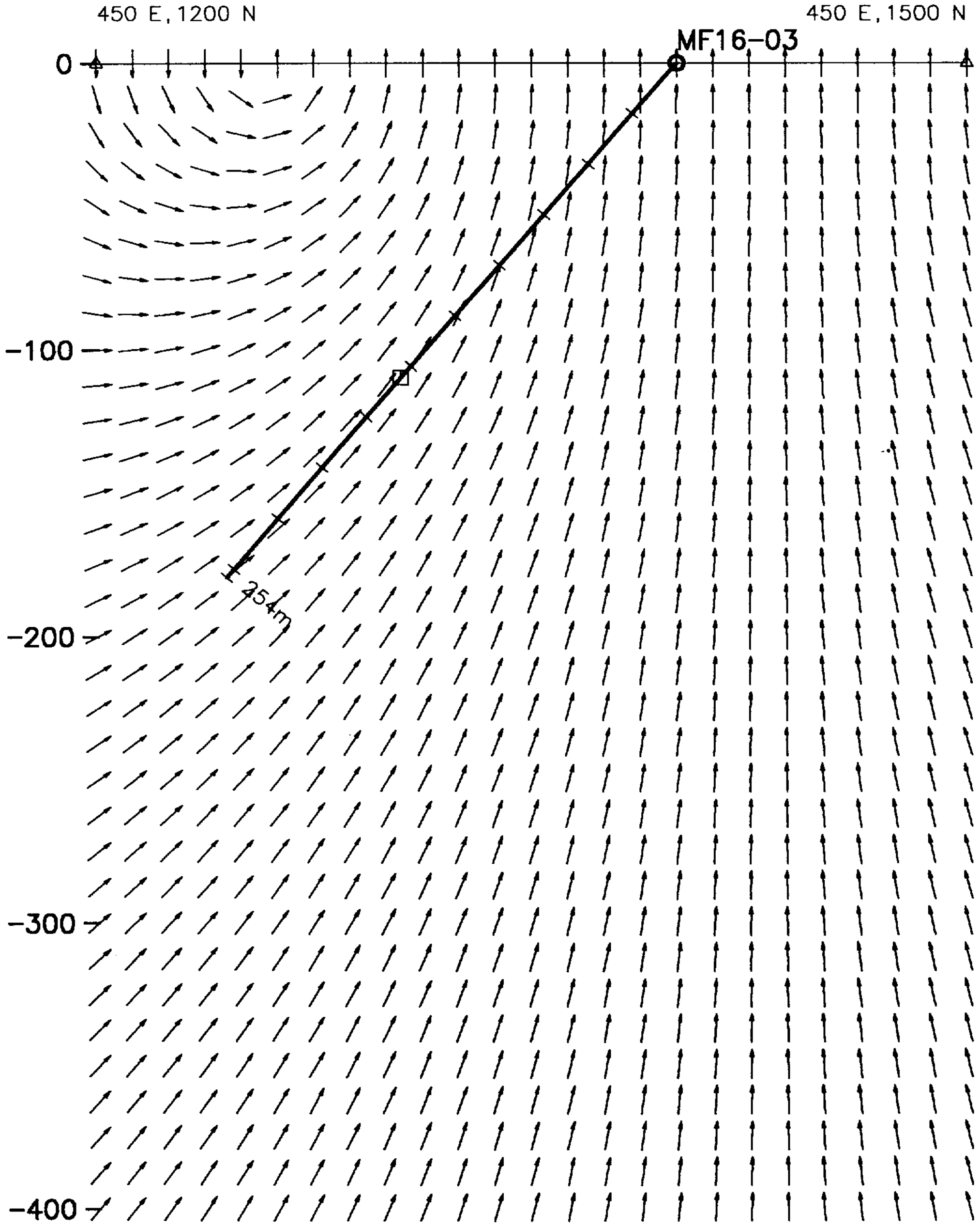


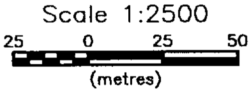
FALCONBRIDGE LTD.
MAH16

3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: MF16-03
Survey Date: Mar 24, 1999

Crone Geophysics & Exploration Ltd.



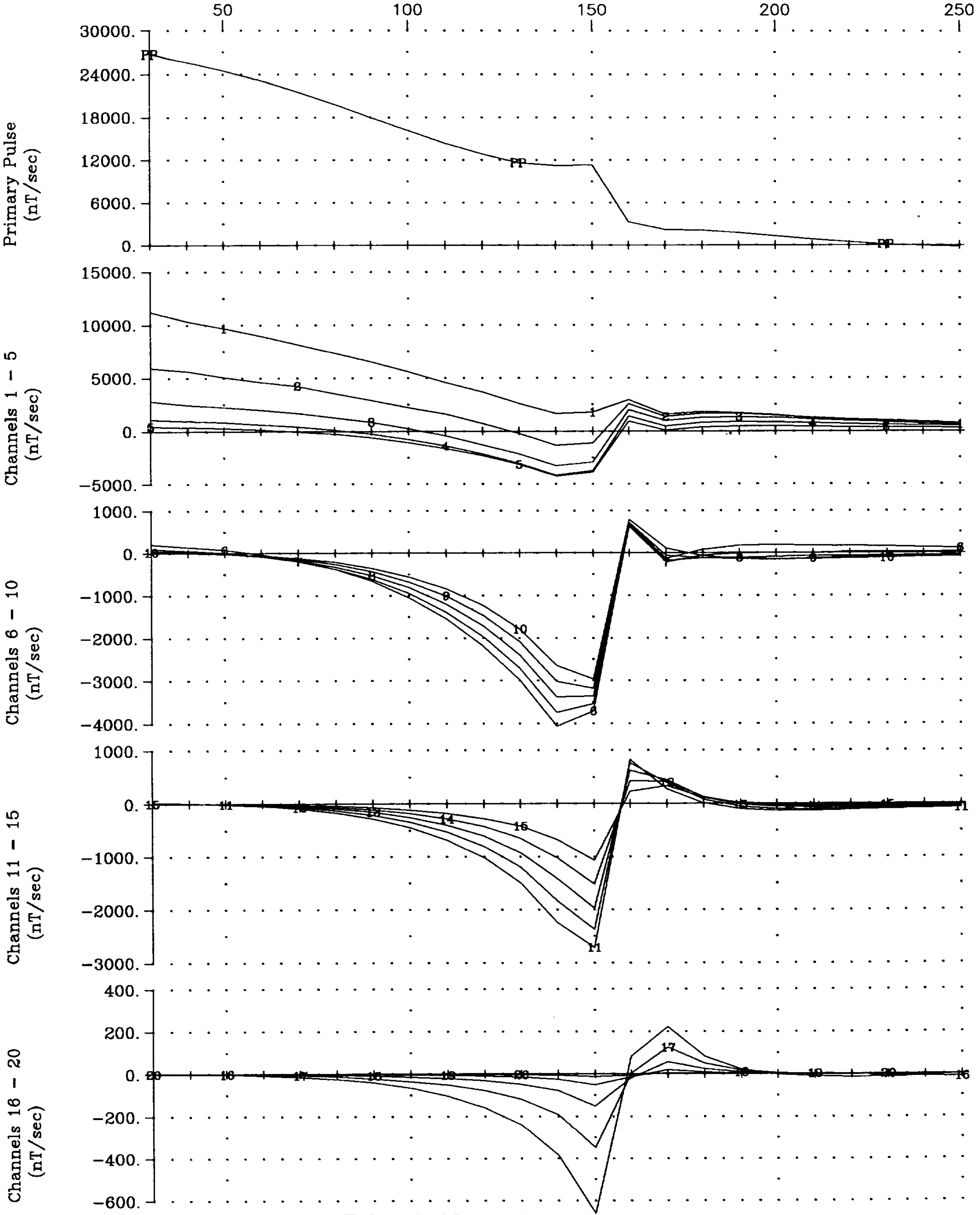


FALCONBRIDGE LTD.
MAH16

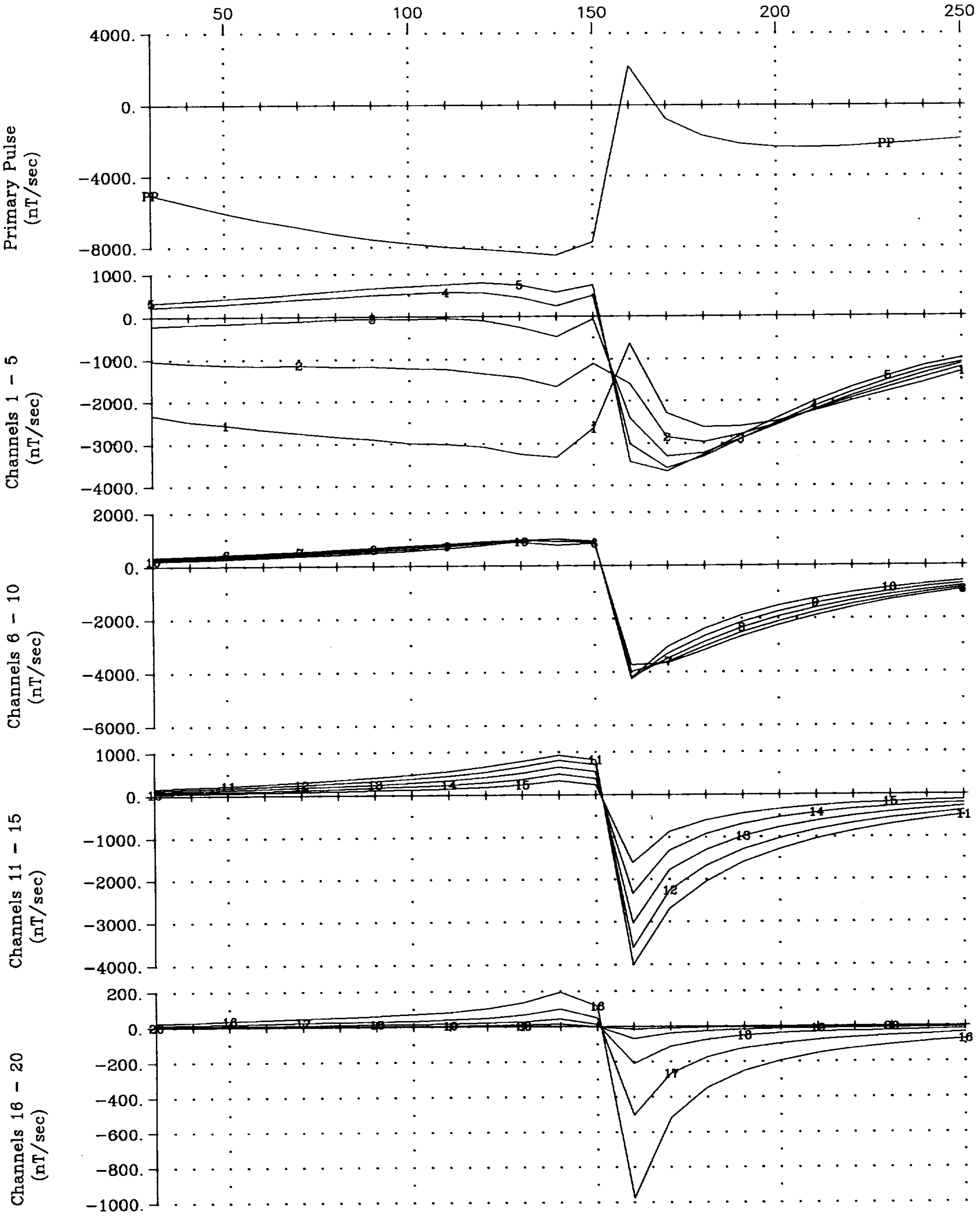
3-D Borehole Pulse EM Survey
Hole Section with Primary Field

Hole: MF16-03
Survey Date: Mar 24, 1999

Crone Geophysics & Exploration Ltd.



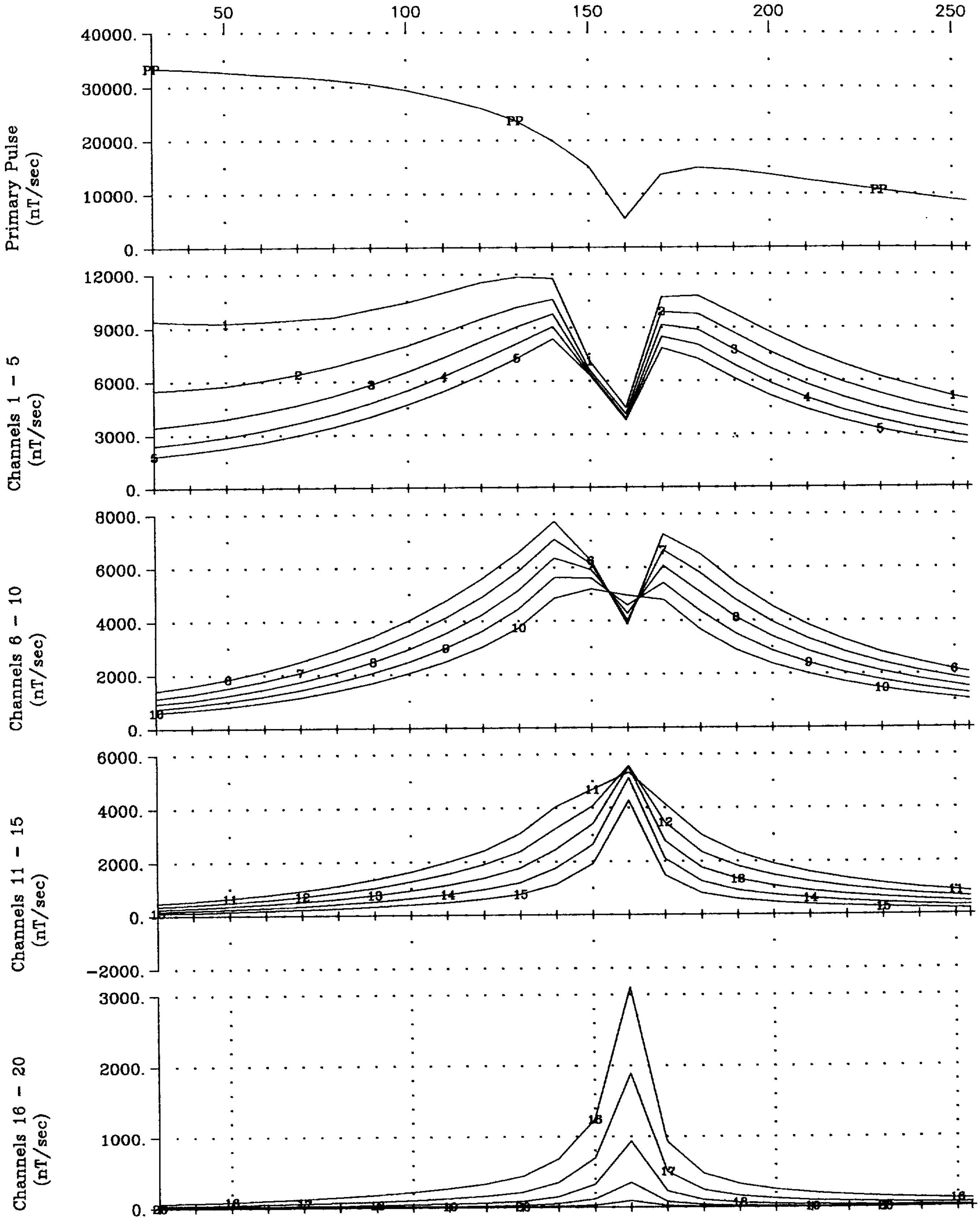
Falconbridge Ltd. **MAH16 Grid**
Hole MF16-03 **X Component**
Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. MAH16 Grid

Hole MF16-03 Y Component

Crone Geophysics & Exploration Ltd.



Falconbridge Ltd. **MAH16 Grid**
Hole MF16-03 **Z Component**
Crone Geophysics & Exploration Ltd.

APPENDIX B

Pulse EM Data Profiles (Lin-log)

CRONE GEOPHYSICS & EXPLORATION LTD

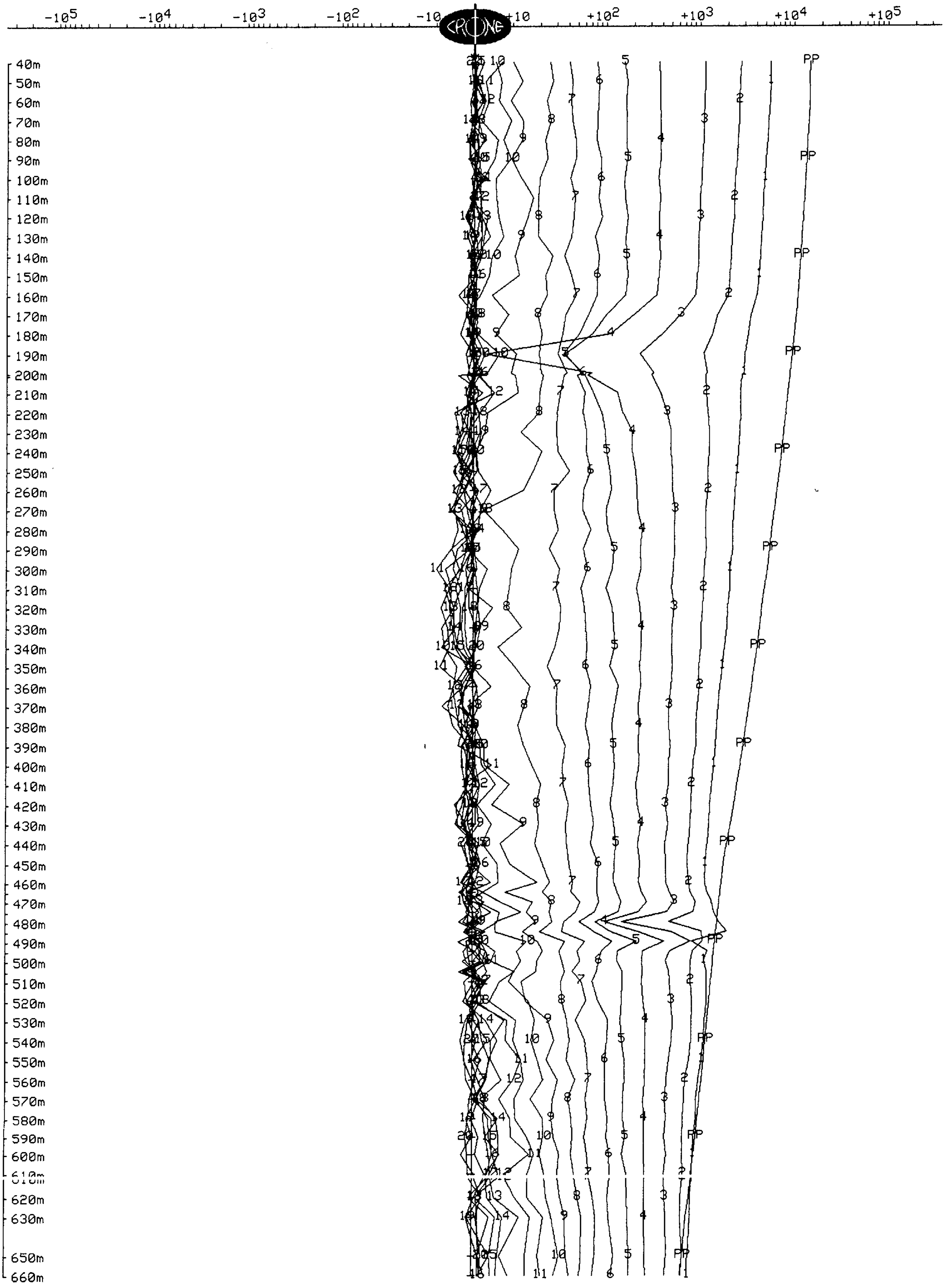
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Feb 22, 1999

Hole : MF12-02
Tx Loop : MF1
File name : M1202XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

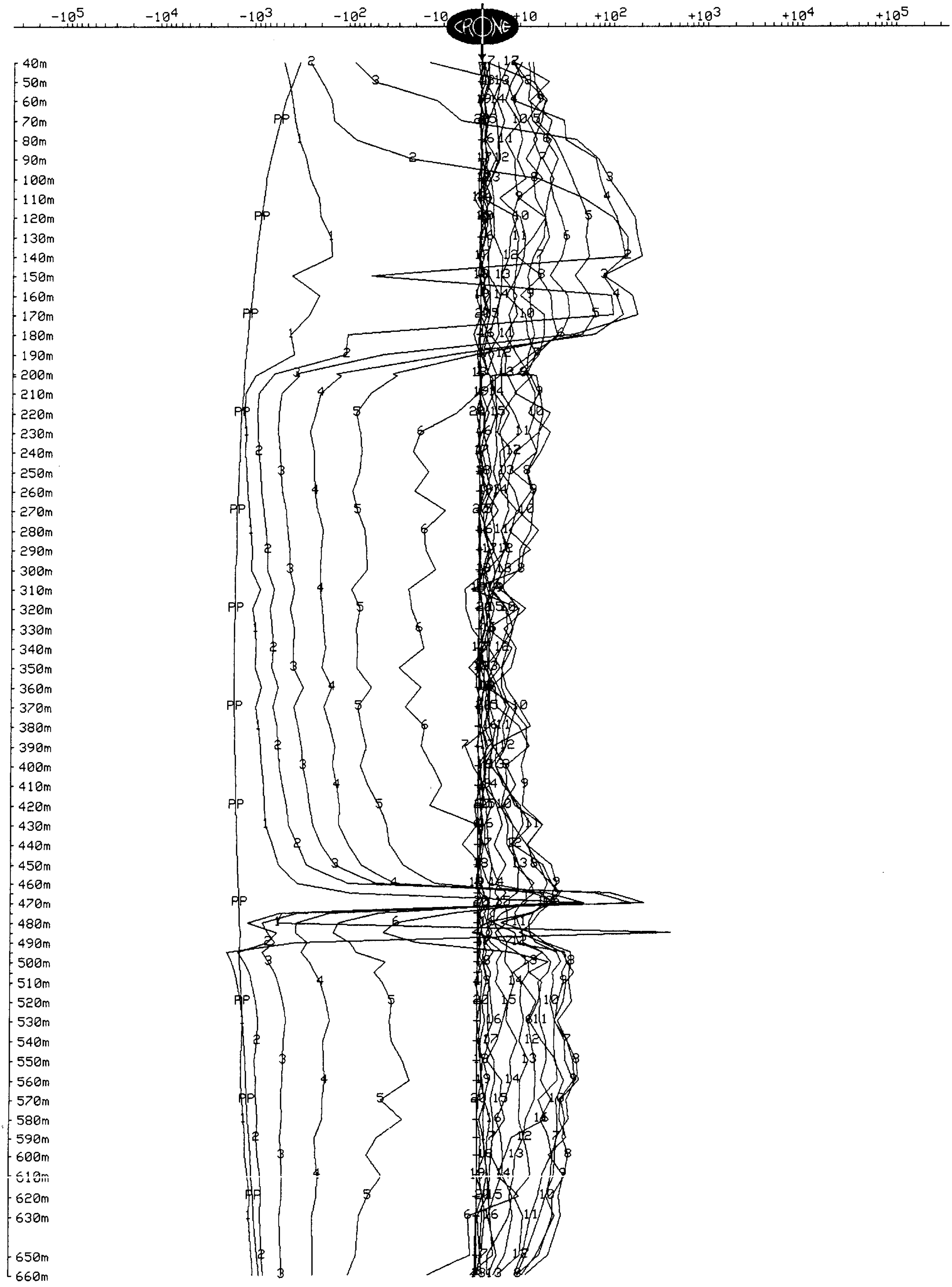
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF12-02**
Grid	: **MAH12**	Tx Loop	: **MF1**
Date	: Feb 22, 1999	File name	: M1202XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20

Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



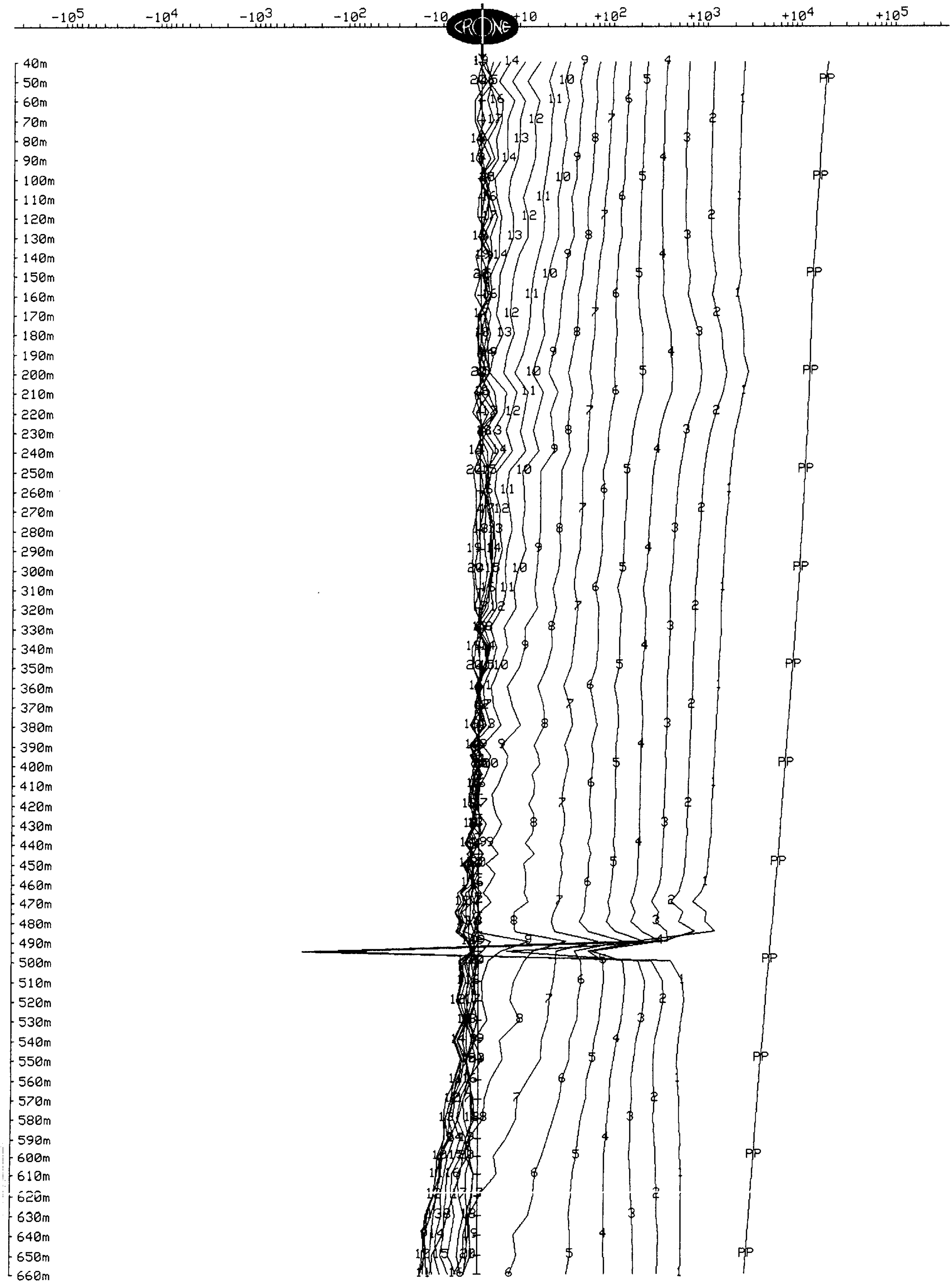
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : FALCONBRIDGE LTD.		Hole	: MF12-02
Grid : MAH12		Tx Loop	: MF1
Date : Feb 22, 1999		File name	: MF1202Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



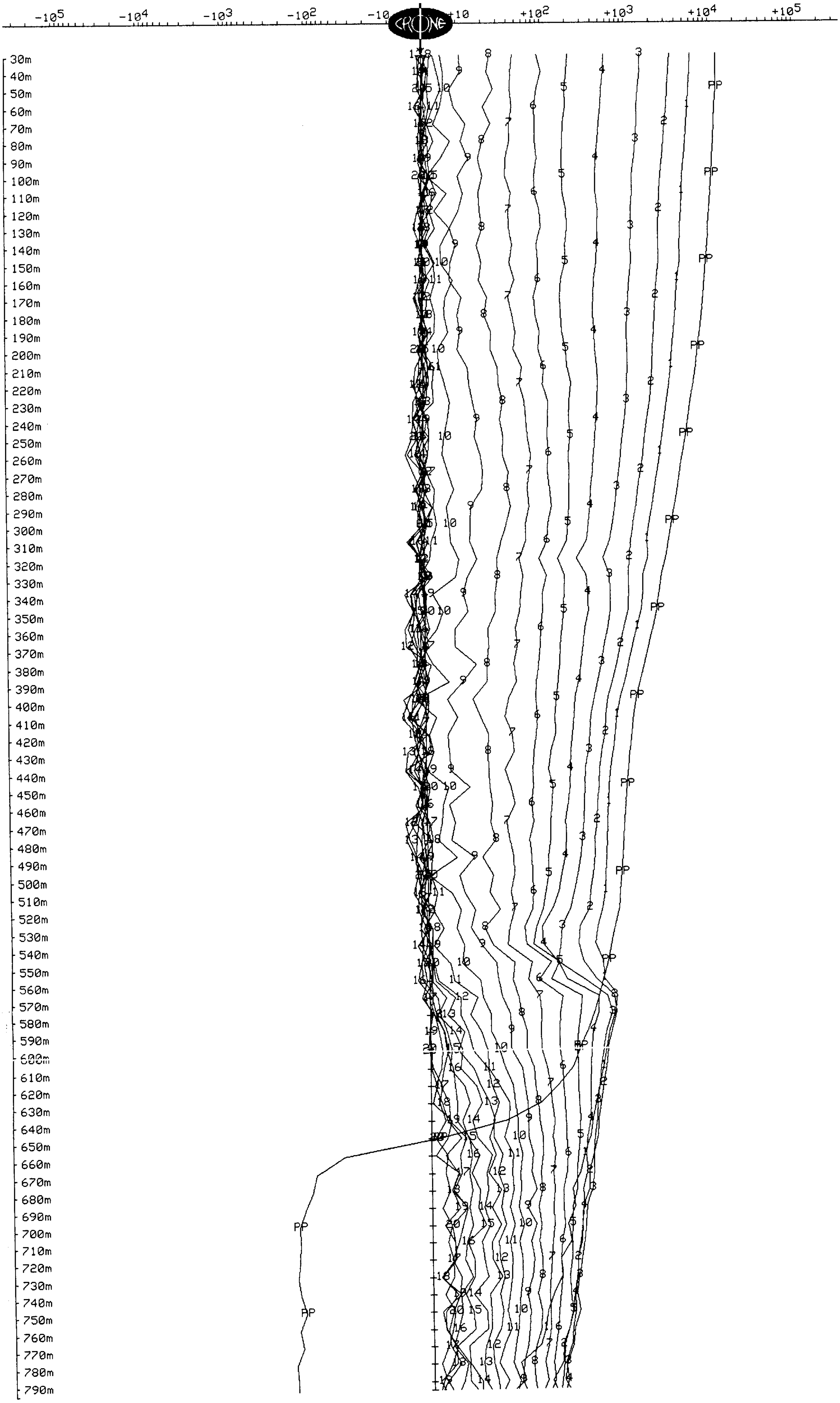
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH12**
Date : Feb 24, 1999

Hole : **MF12-03**
Tx Loop : **MF1**
File name : M1203XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

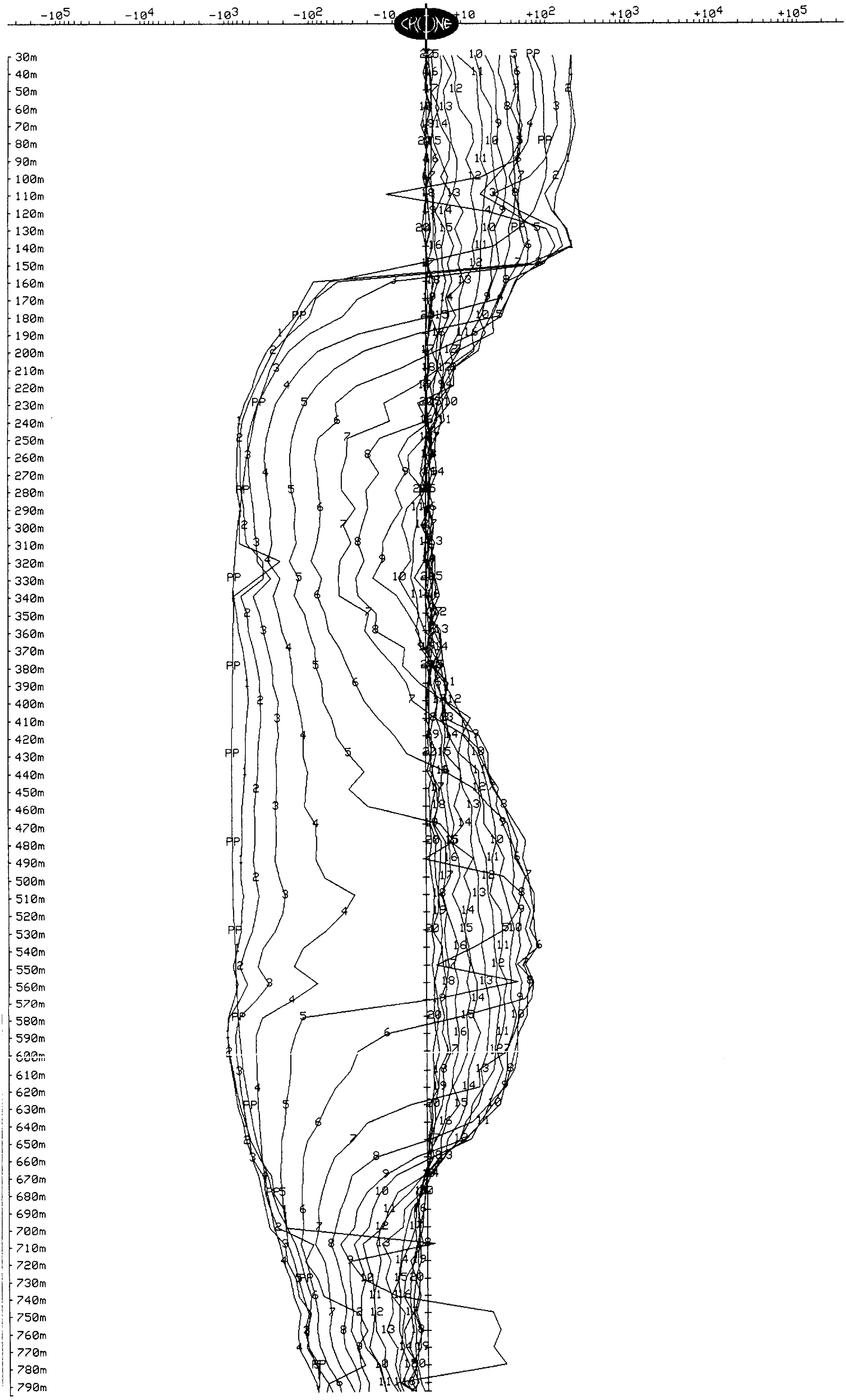
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Feb 24, 1999

Hole : MF12-03
Tx Loop : MF1
File name : M1203XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



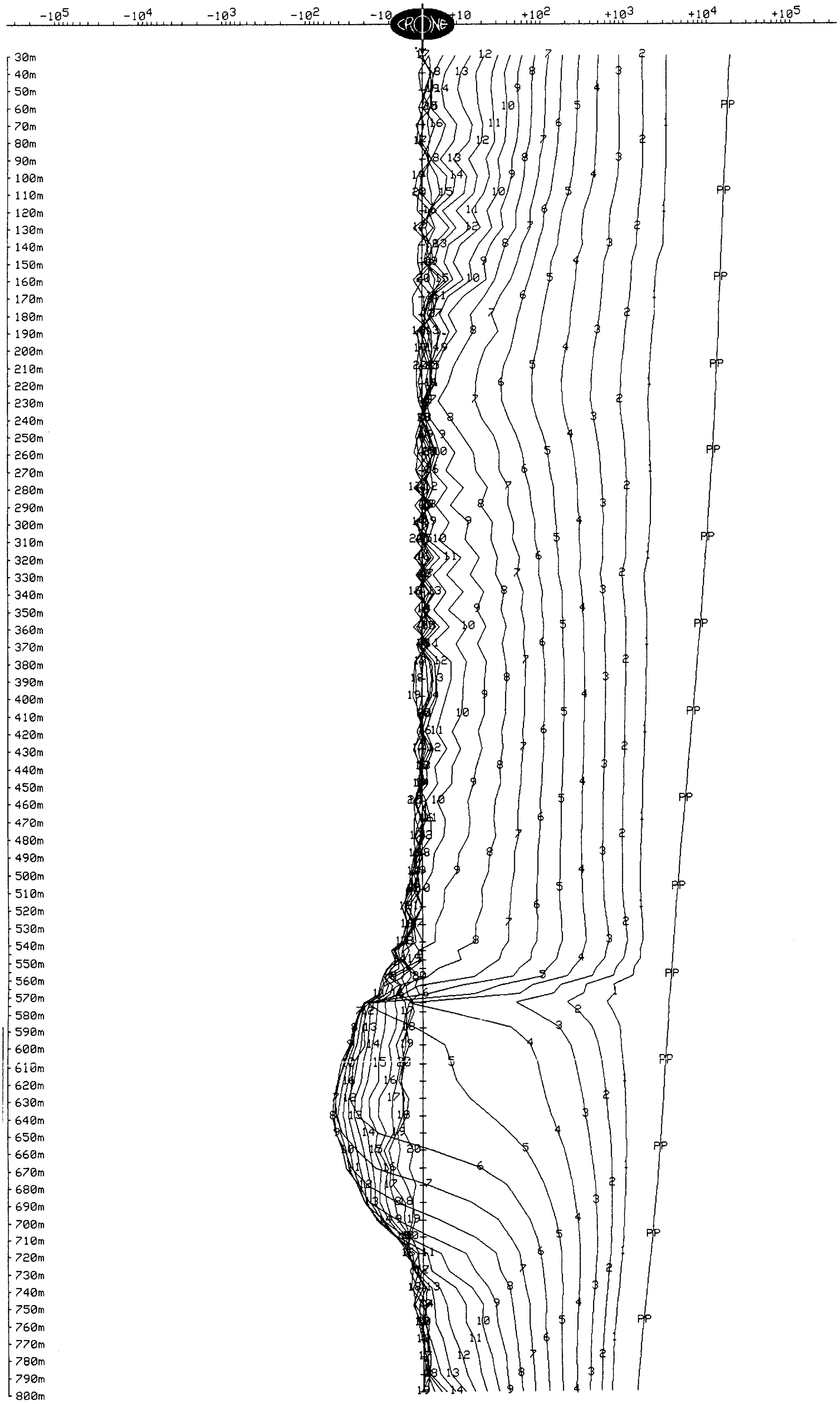
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF12-03**
Grid	: **MAH12**	Tx Loop	: **MF1**
Date	: Feb 23, 1999	File name	: MF1203Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

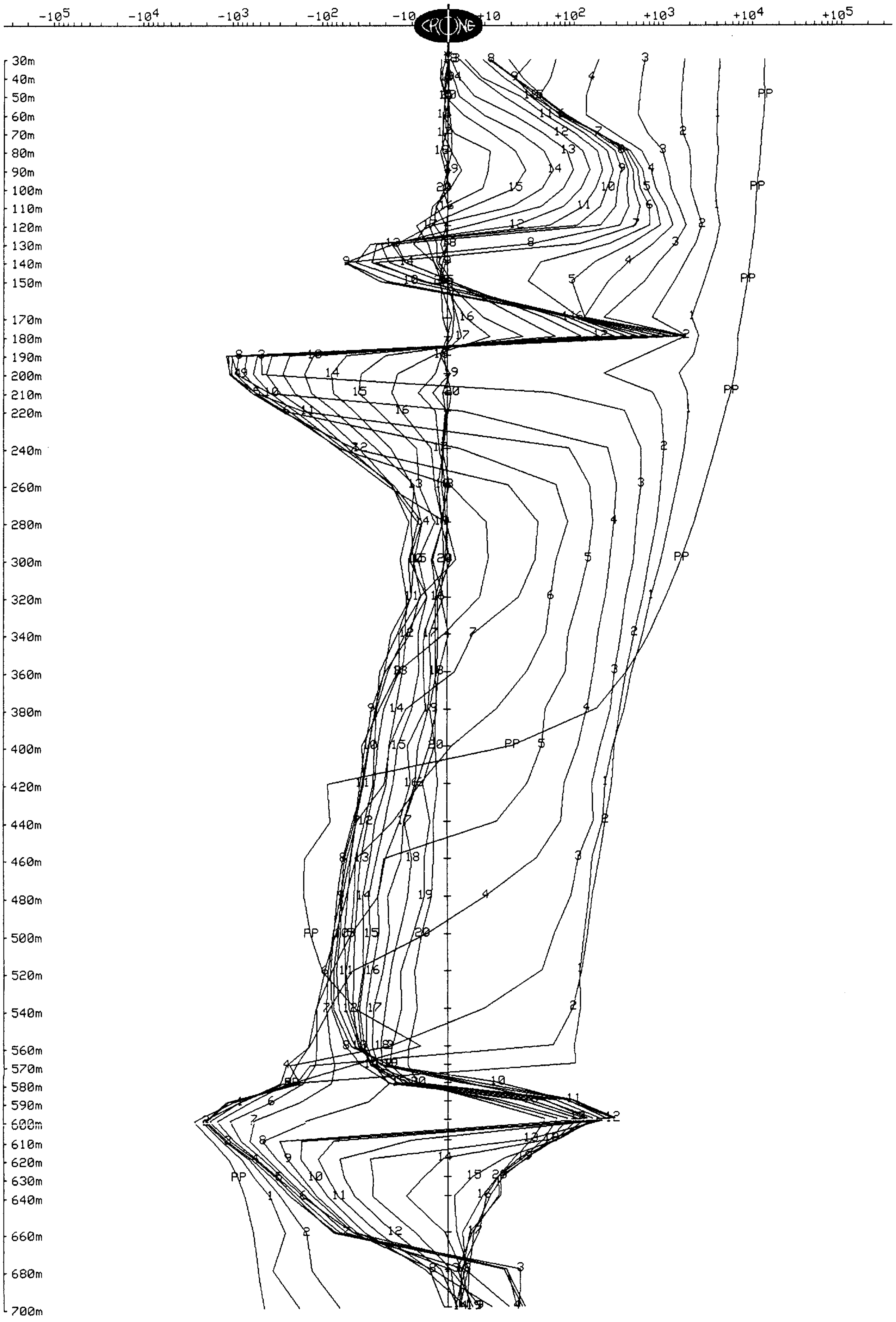
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 2, 1999

Hole : MF12-05
Tx Loop : MF1
File name : M1205XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

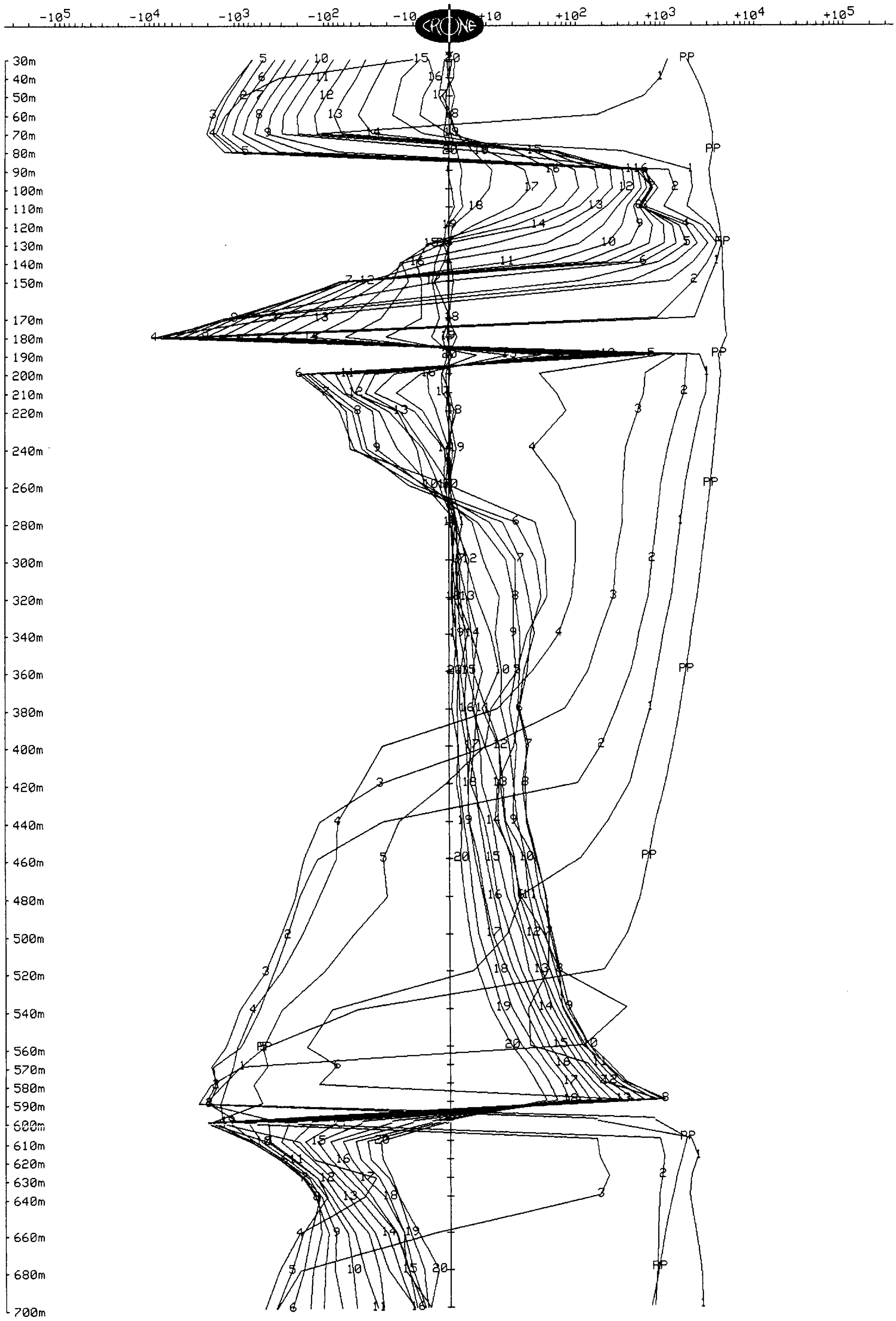
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 2, 1999

Hole : MF12-05
Tx Loop : MF1
File name : M1205XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

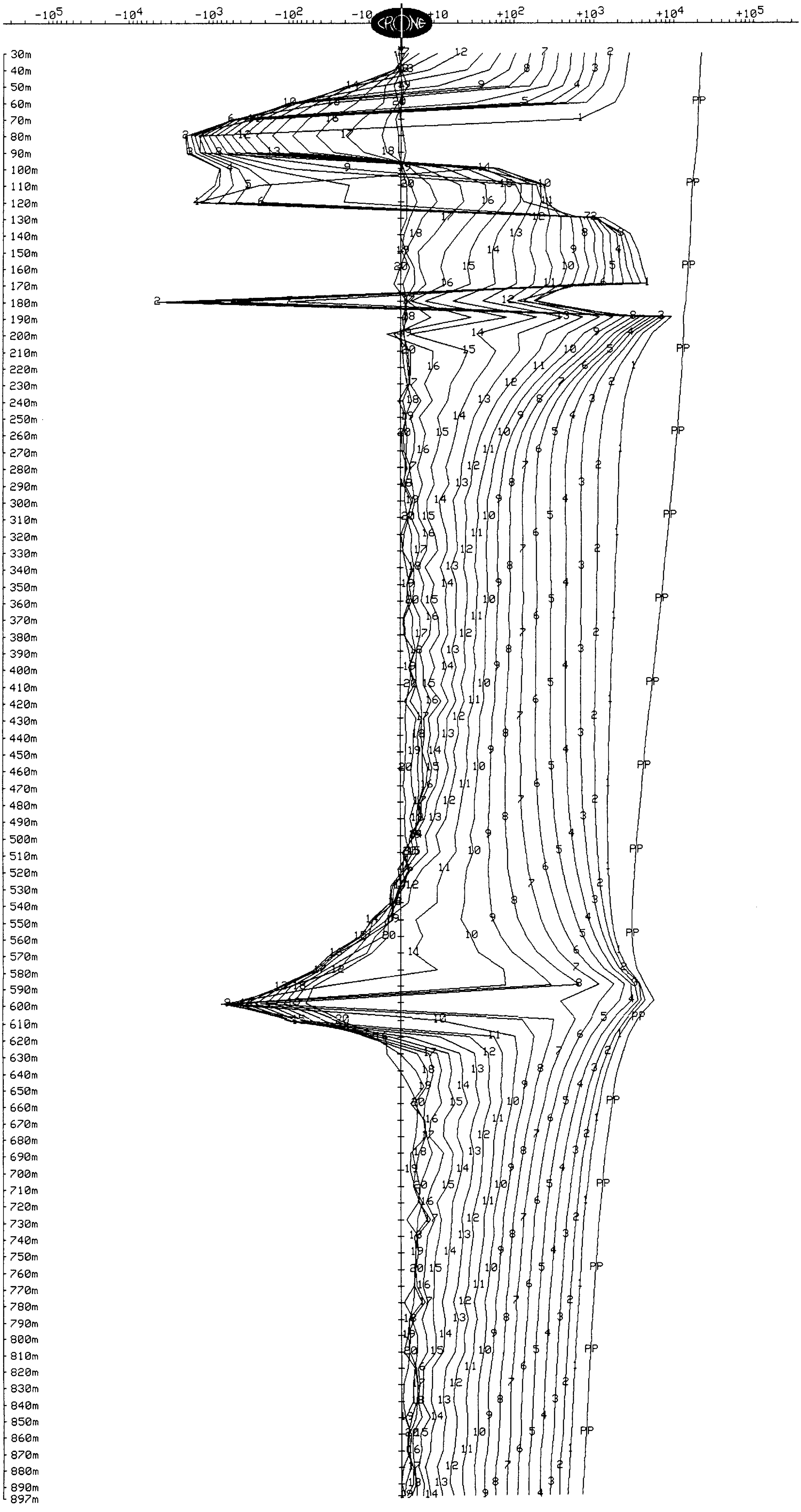


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF12-05
Grid	: MAH12	Tx Loop	: MF1
Date	: Feb 25, 1999	File name	: MF1205Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



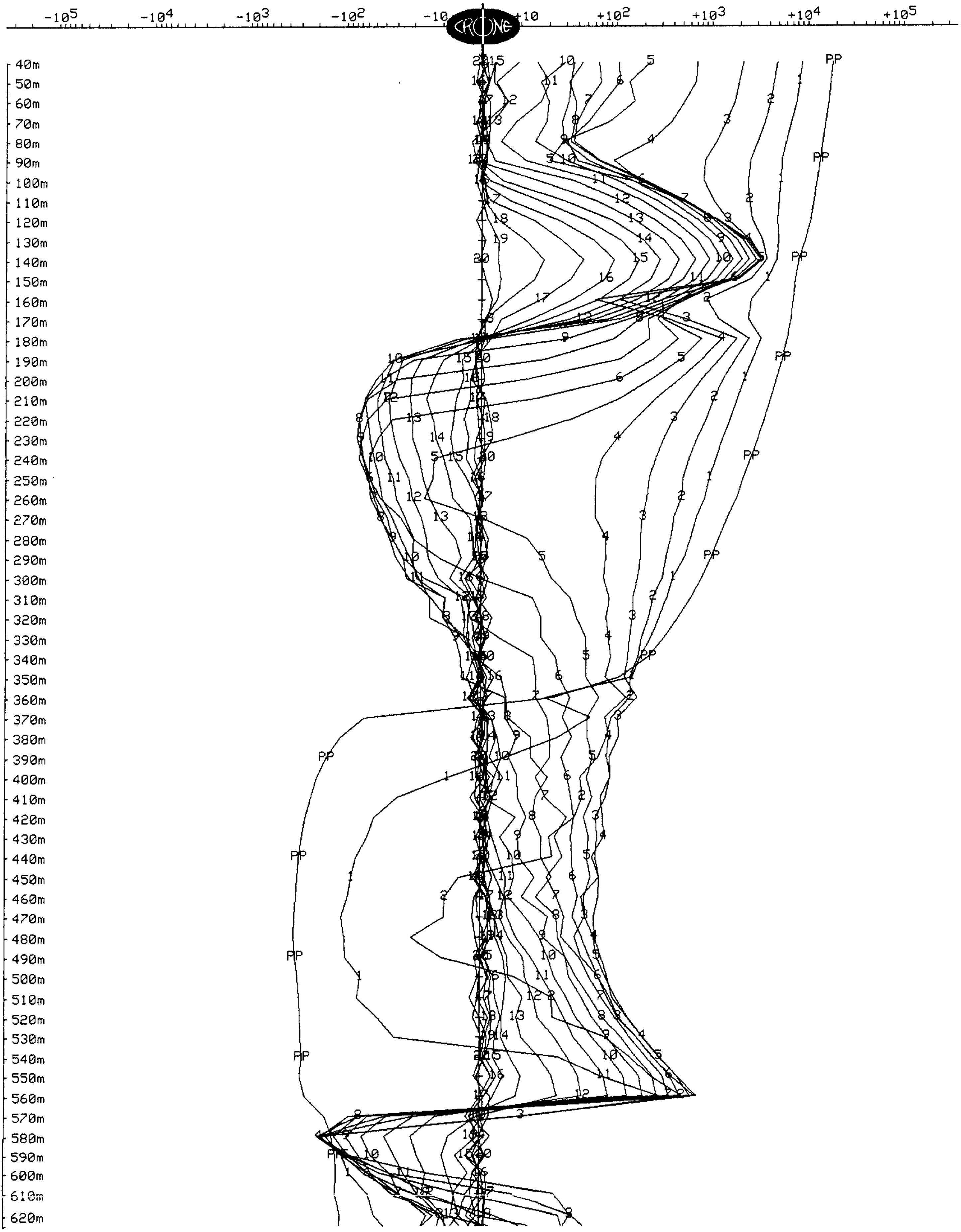
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 5, 1999

Hole : MF12-06
Tx Loop : MF1
File name : M1206XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP
Scale: 1:2500

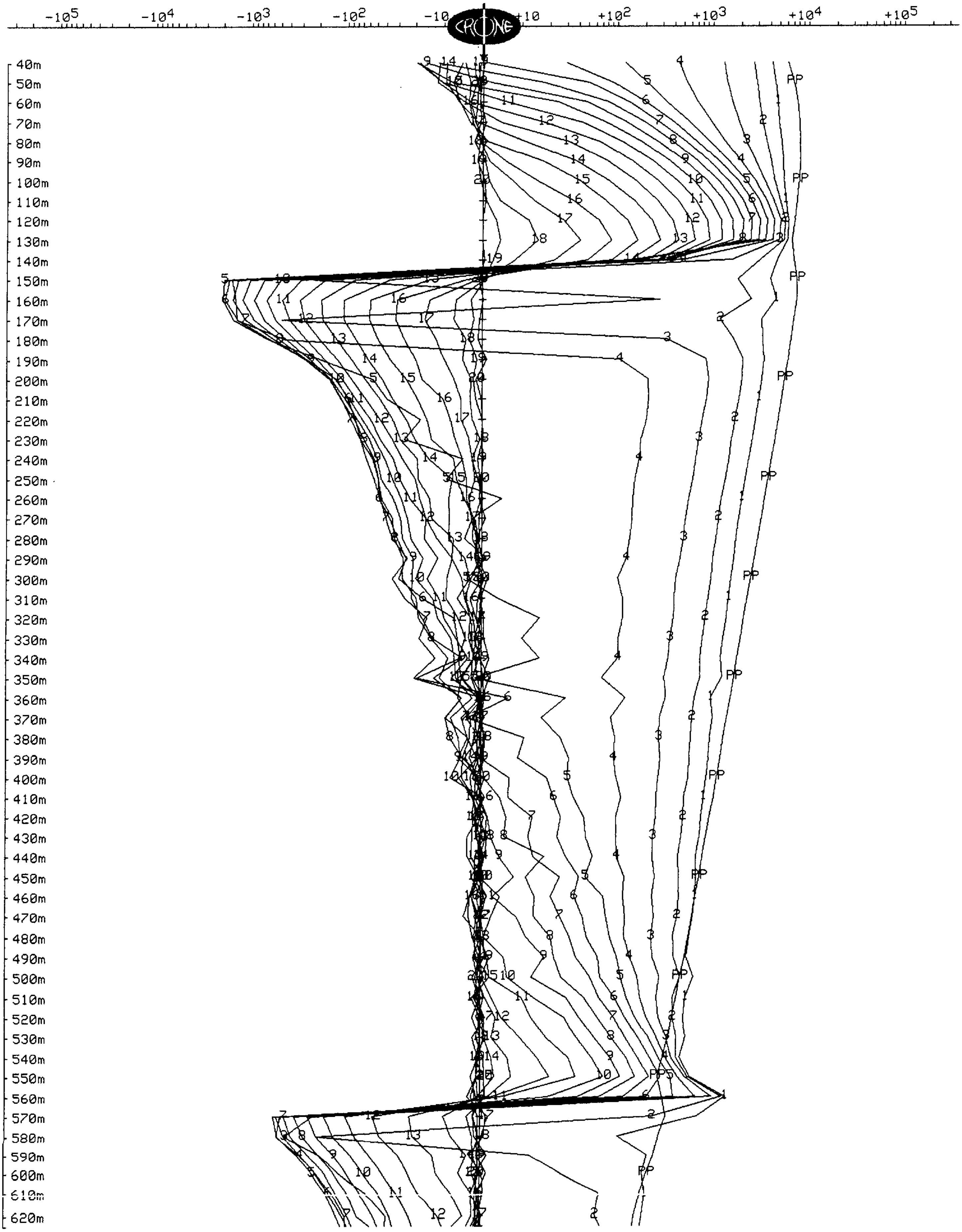


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 5, 1999

Hole : MF12-06
Tx Loop : MF1
File name : M1206XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP
Scale: 1:2500



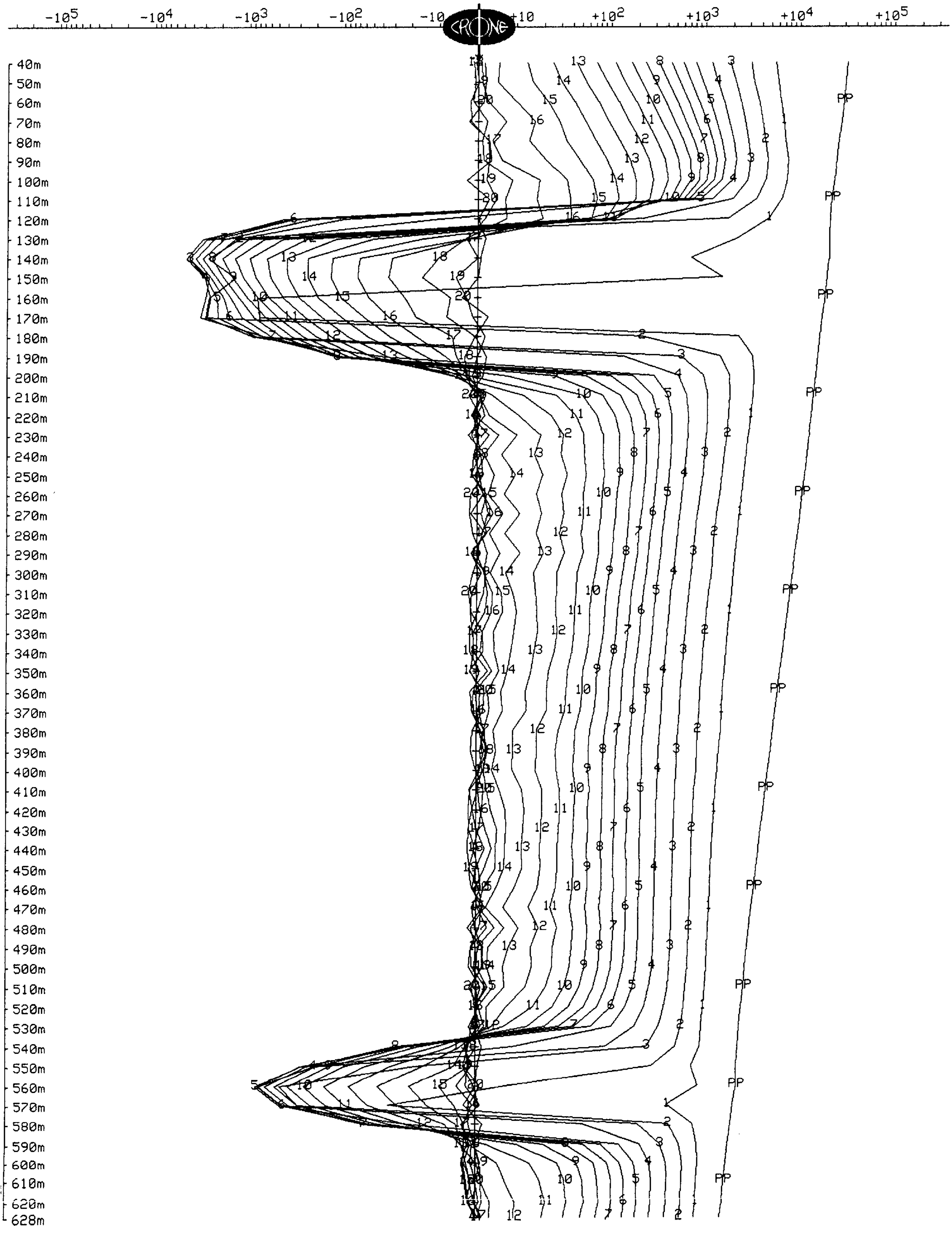
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 5, 1999

Hole : MF12-06
Tx Loop : MF1
File name : MF1206Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



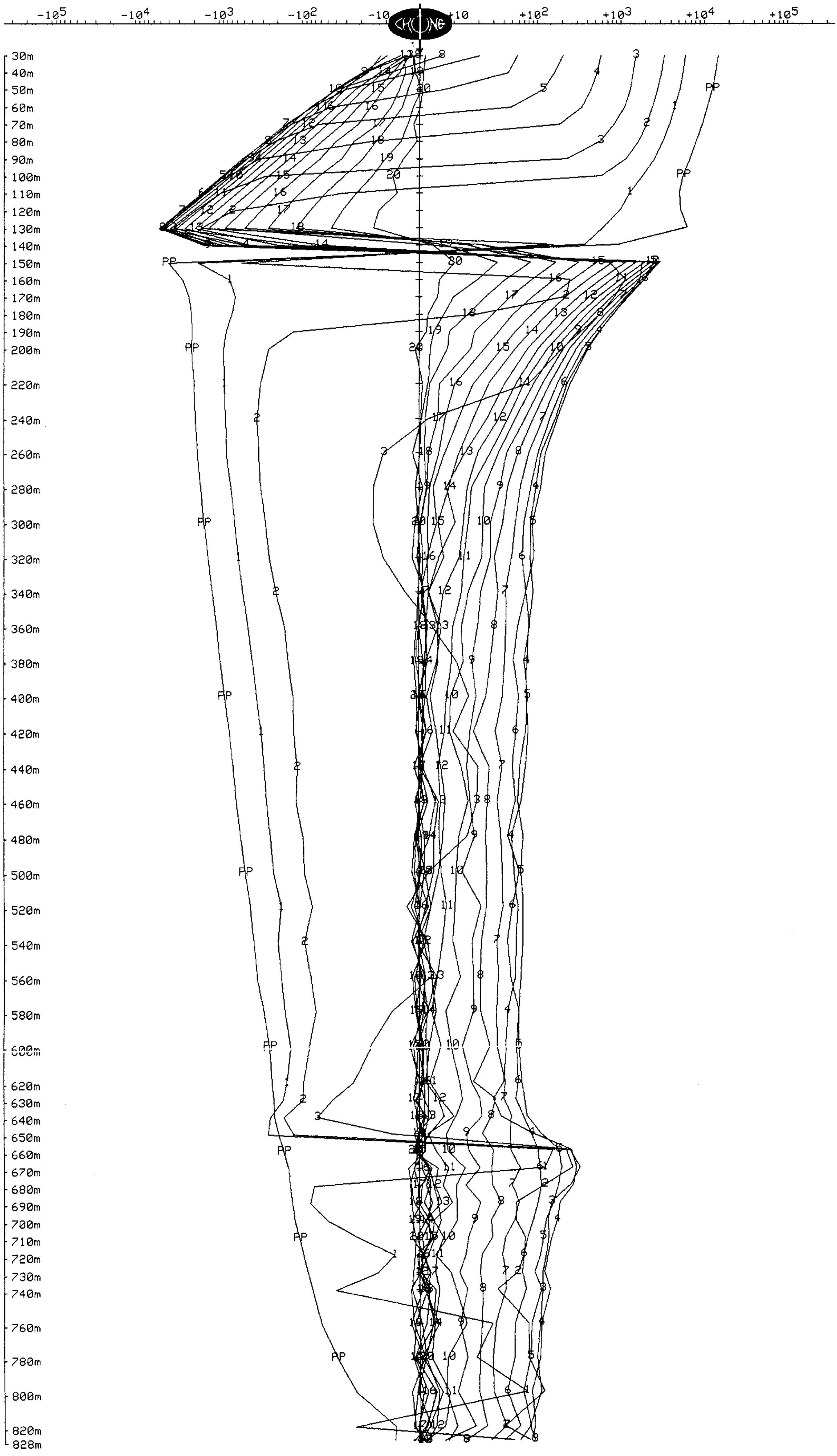
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client : FALCONBRIDGE LTD.
Grid : MAH12
Date : Mar 11, 1999

Hole : MF12-07
Tx Loop : MF2
File name : 1207XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

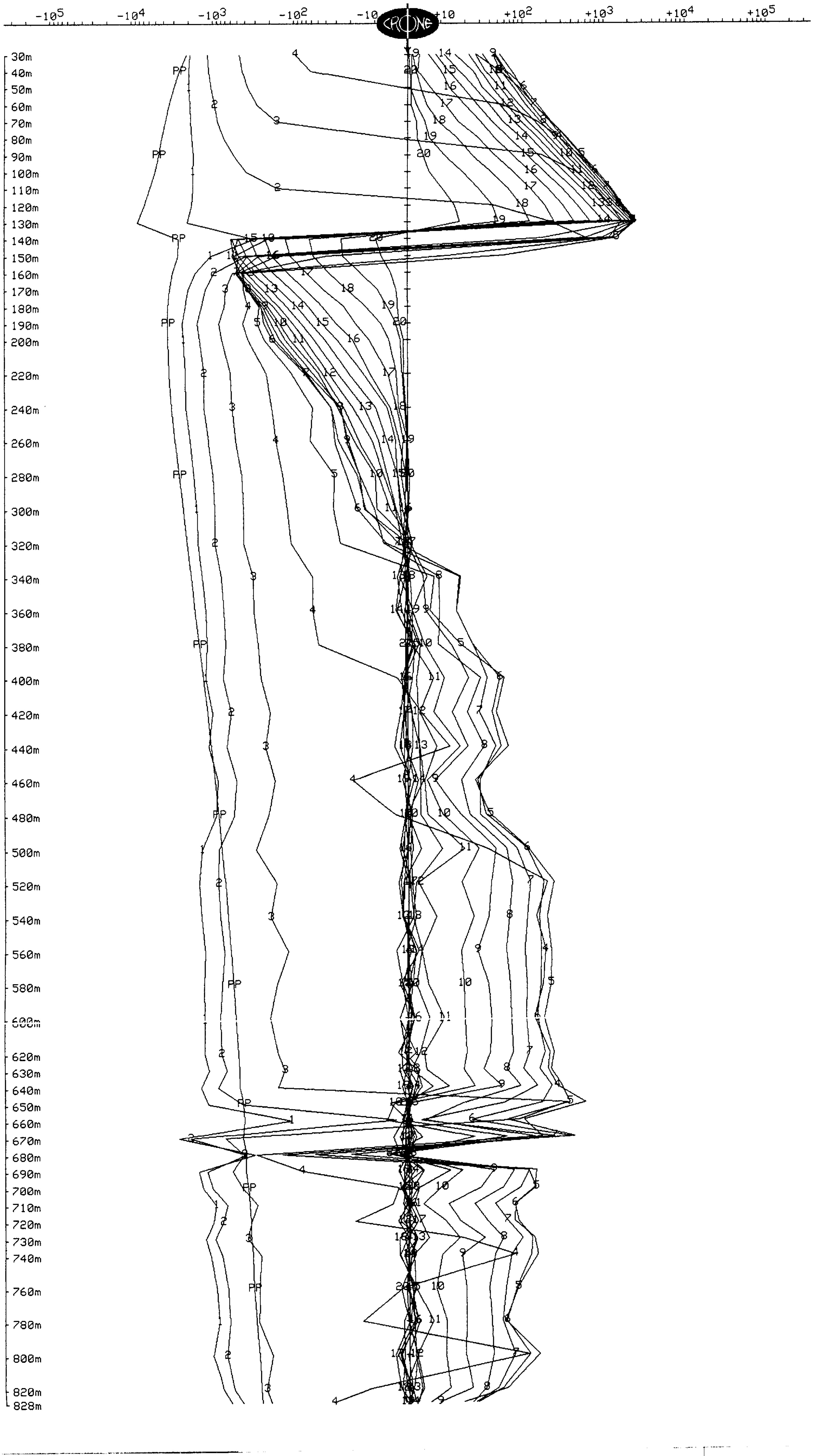
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH12**
Date : Mar 11, 1999

Hole : **MF12-07**
Tx Loop : **MF2**
File name : 1207XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

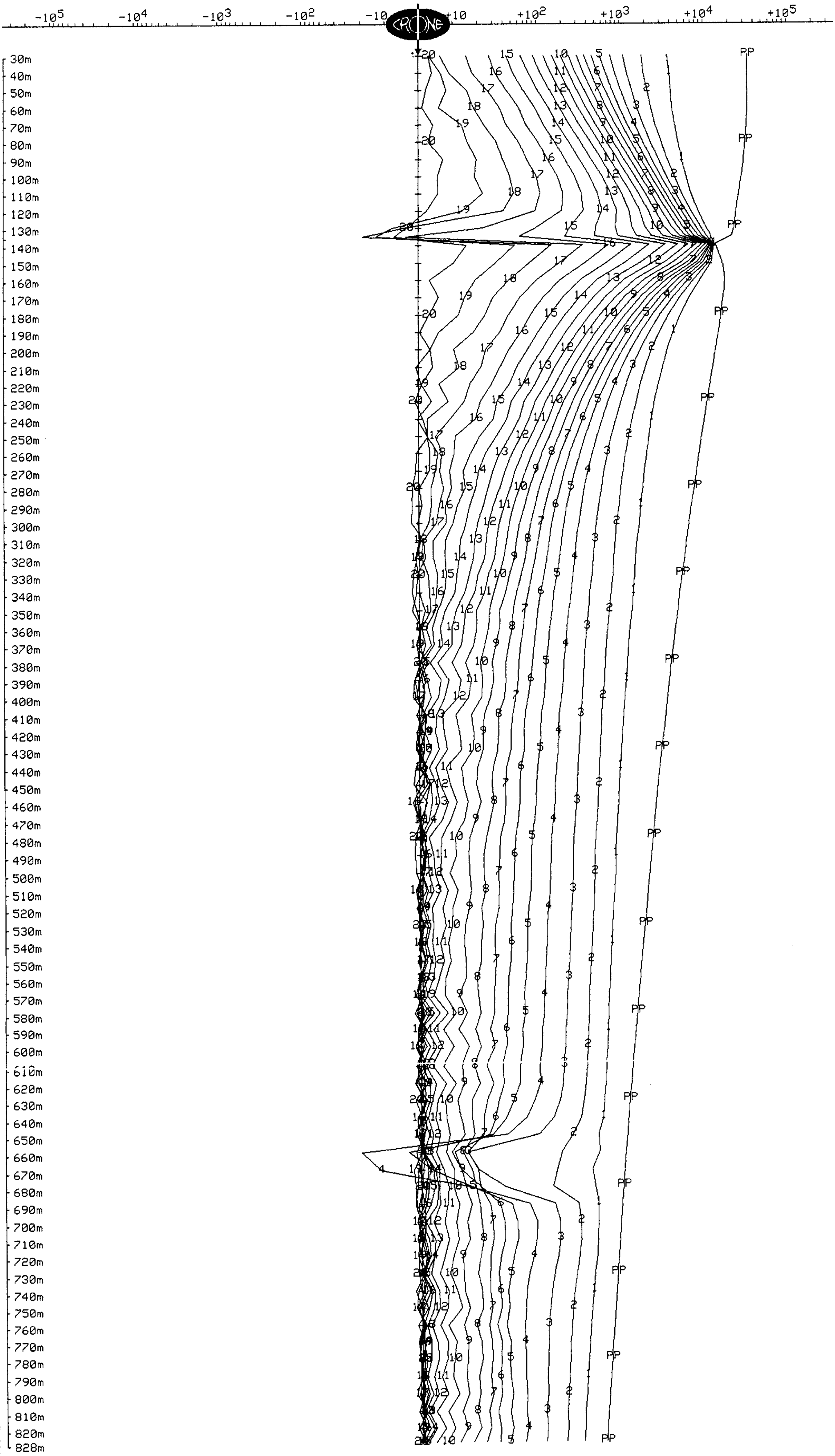


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF12-07
Grid	: MAH12	Tx Loop	: MF2
Date	: Mar 11, 1999	File name	: 1207Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

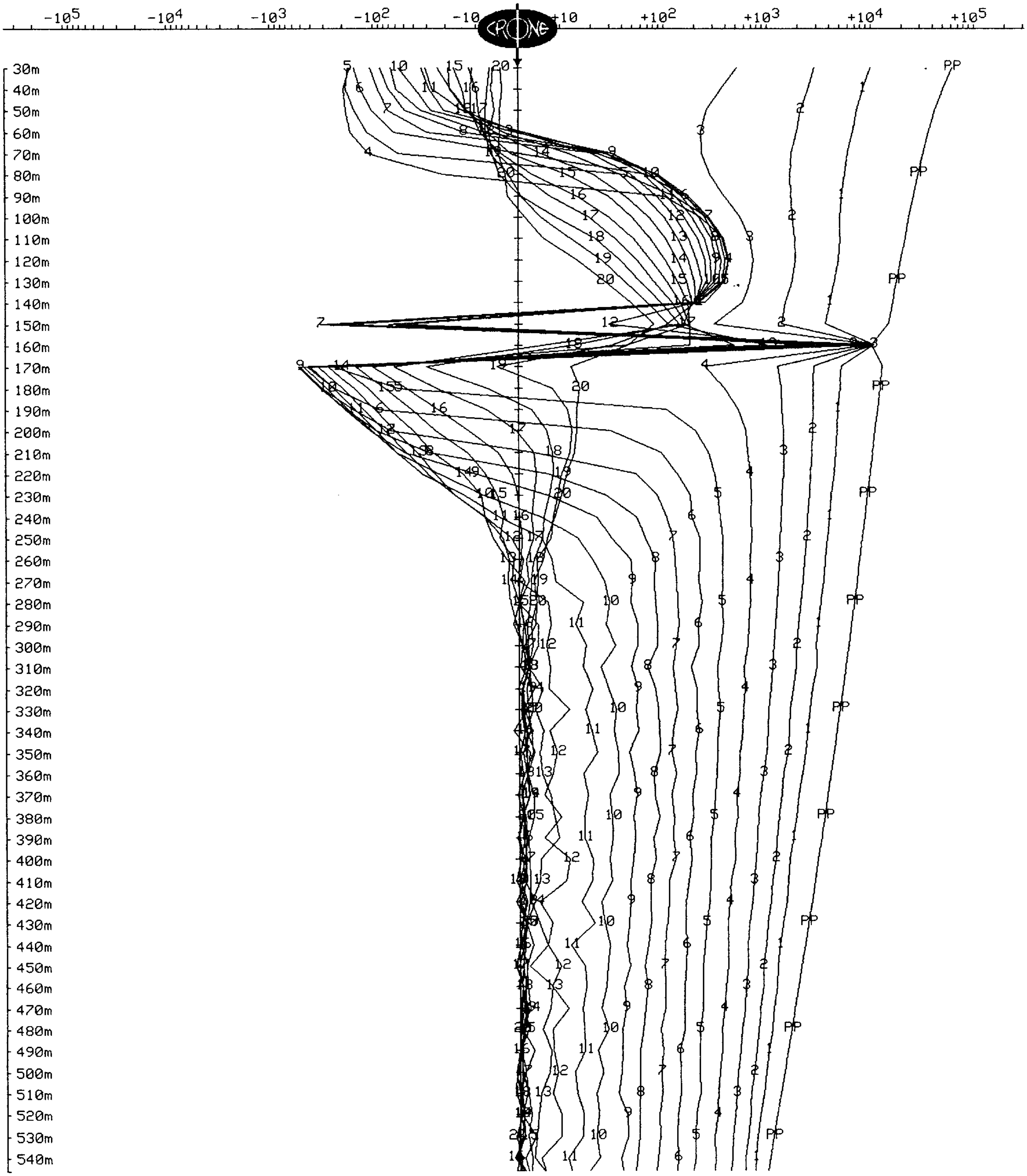
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF12-13**
Grid	: **MAH12**	Tx Loop	: **MF3**
Date	: Mar 21, 1999	File name	: M1213XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20

X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

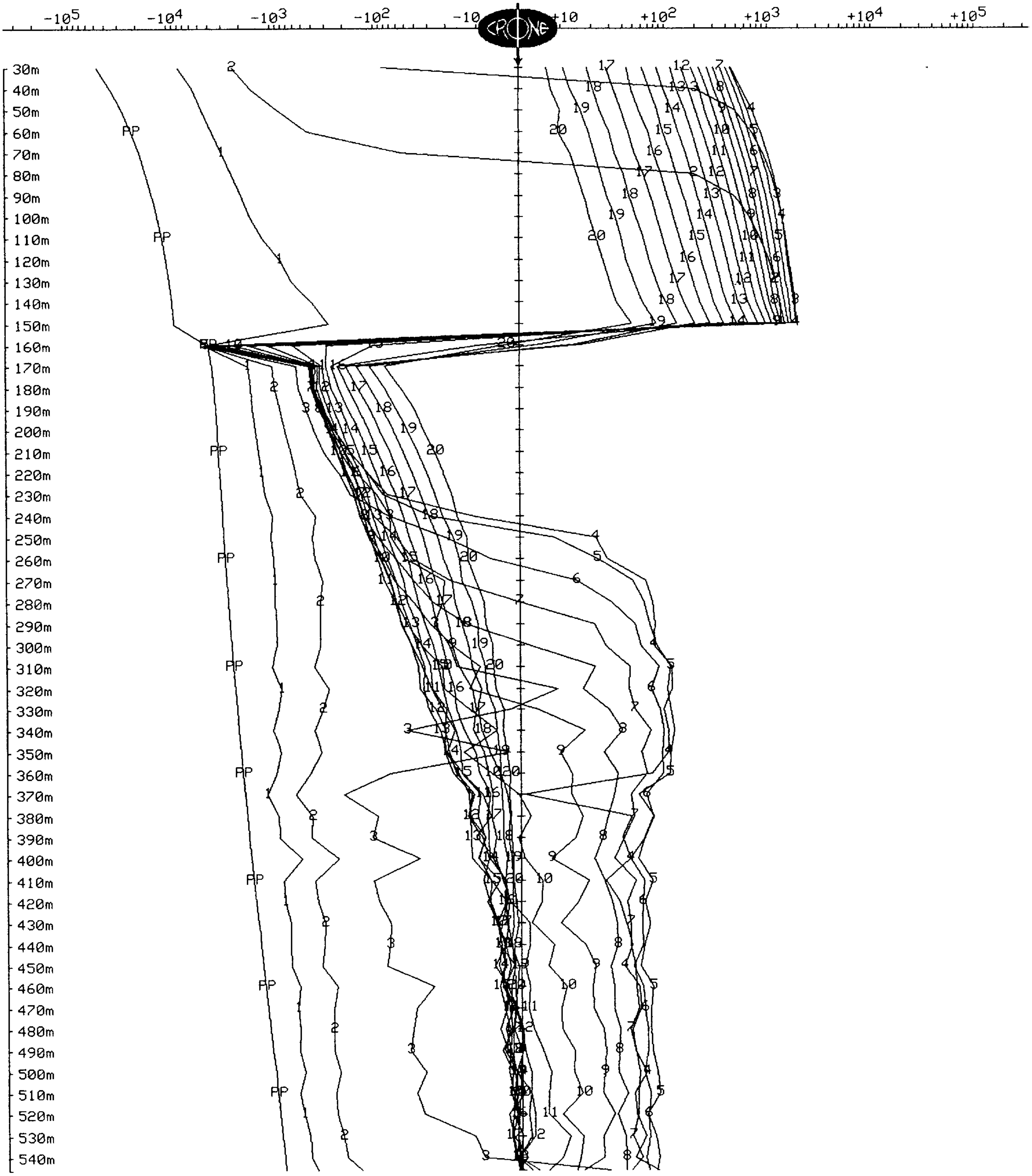


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF12-13**
Grid	: **MAH12**	Tx Loop	: **MF3**
Date	: Mar 21, 1999	File name	: M1213XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



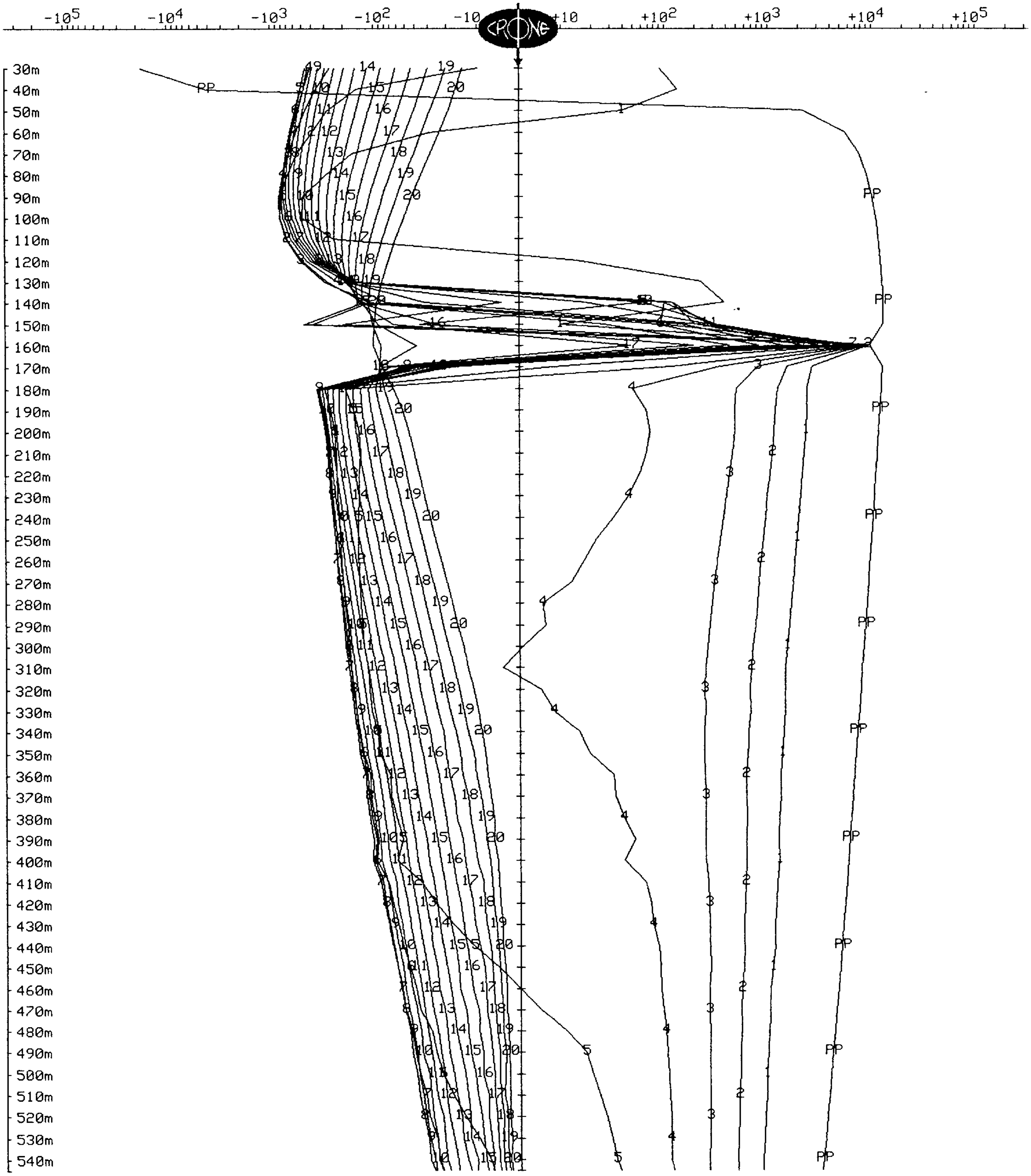
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF12-13
Grid	: MAH12	Tx Loop	: MF3
Date	: Mar 21, 1999	File name	: MF1213Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

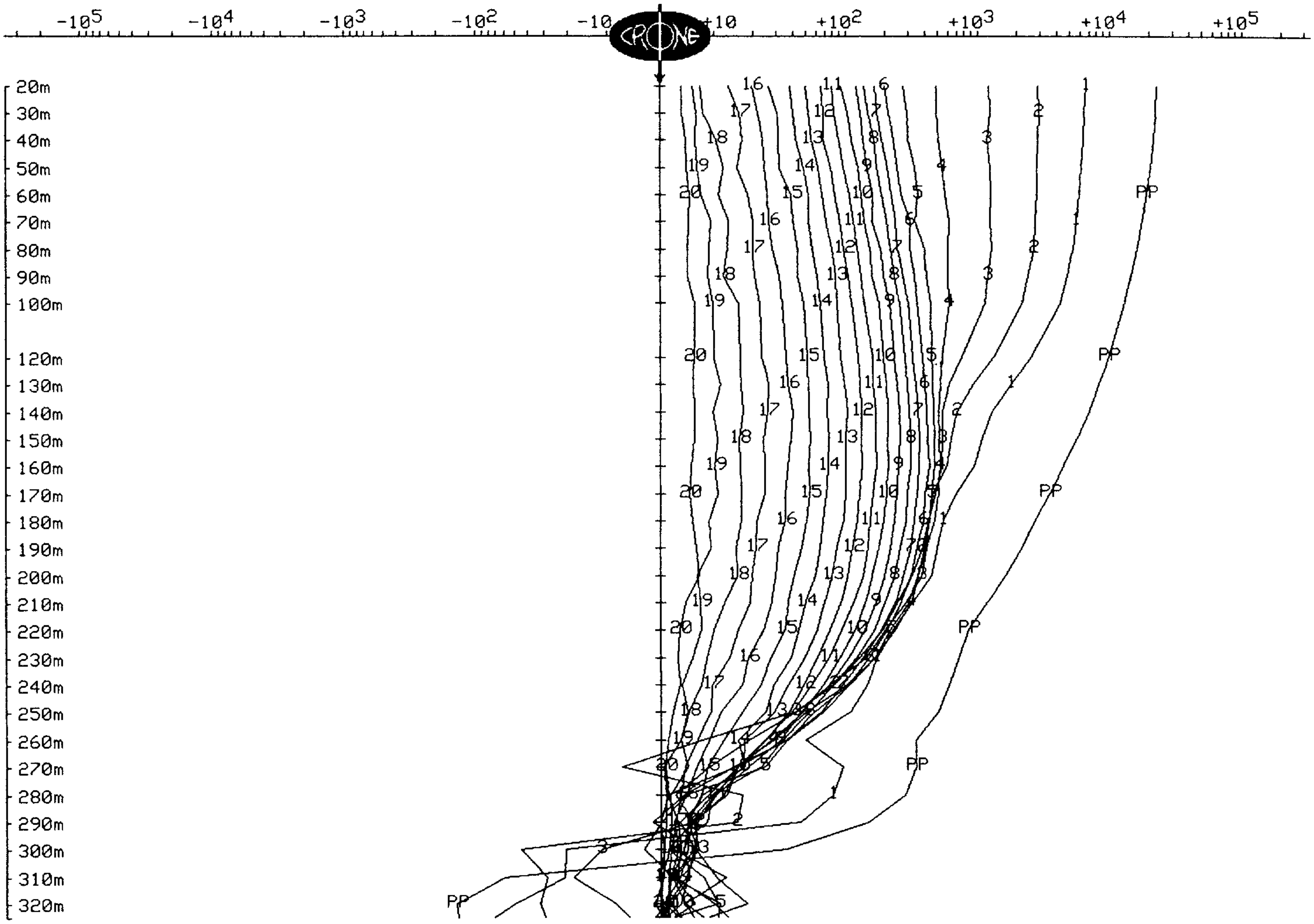


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF12-28
Grid	: MAH12	Tx Loop	: MF4
Date	: Mar 26, 1999	File name	: 1228XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

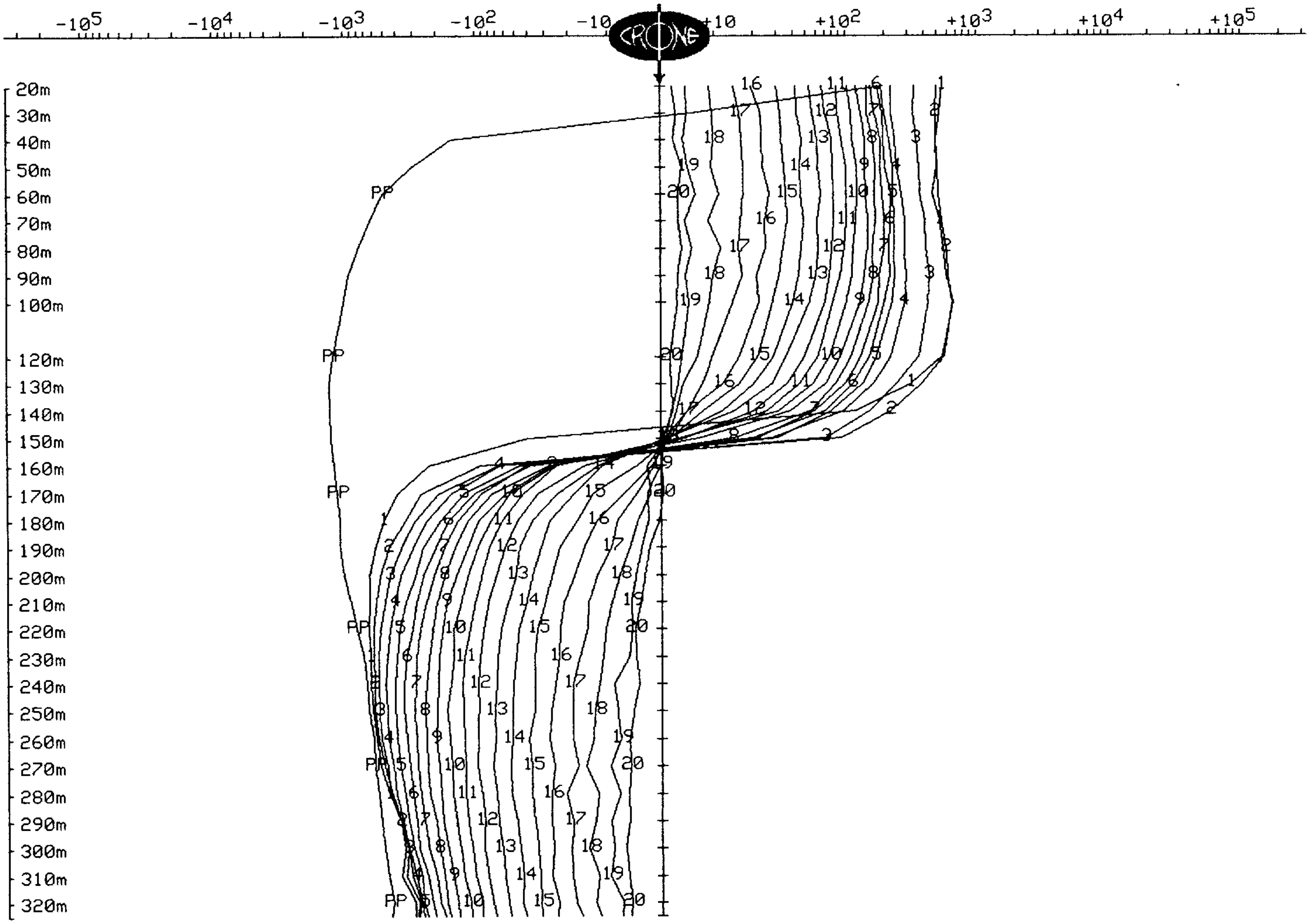


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF12-28**
Grid	: **MAH12**	Tx Loop	: **MF4**
Date	: Mar 26, 1999	File name	: 1228XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



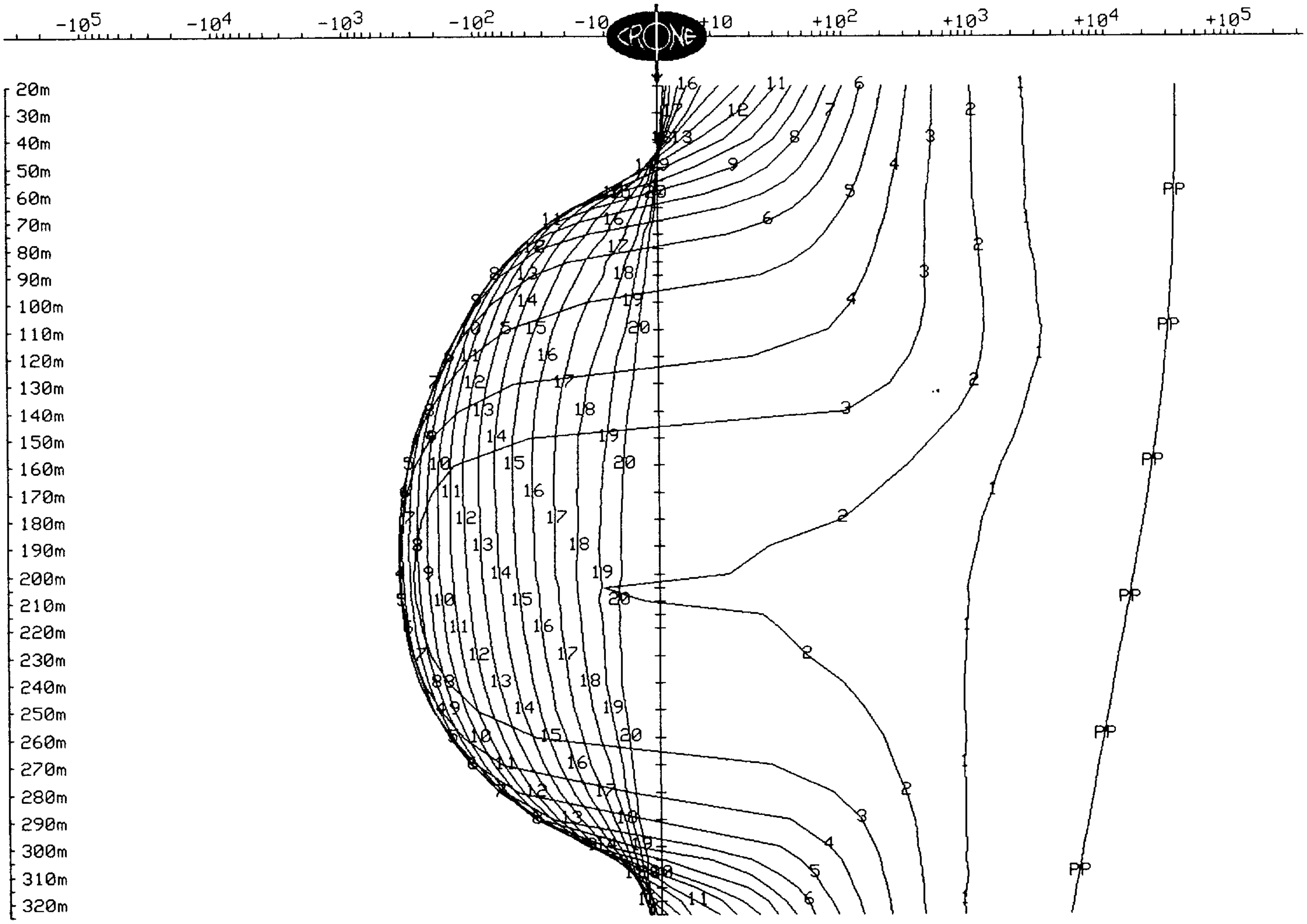
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF12-28
Grid	: MAH12	Tx Loop	: MF4
Date	: Mar 26, 1999	File name	: 1228Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



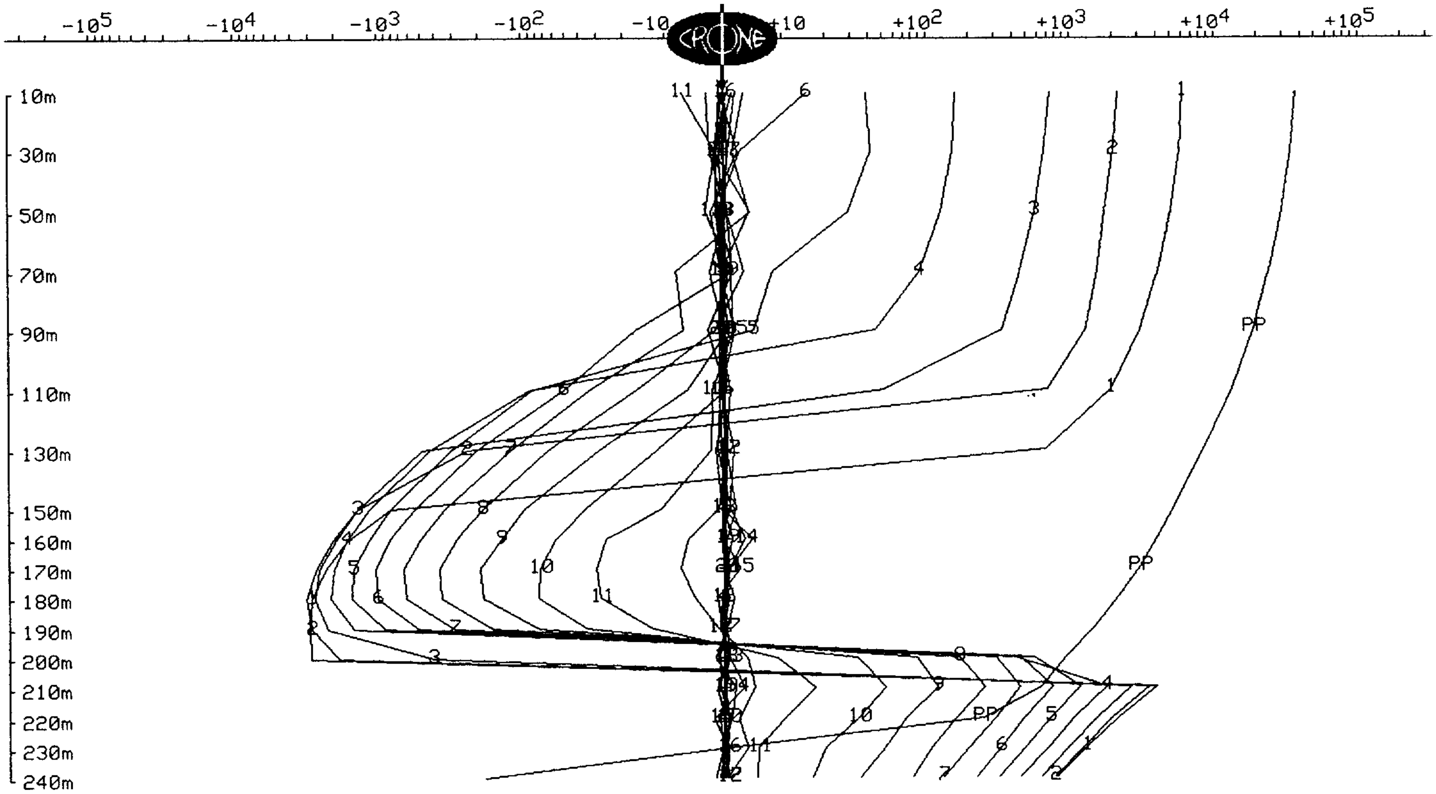
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF13-04**
Grid	: **MAH13**	Tx Loop	: **MF5**
Date	: Mar 27, 1999	File name	: MF134XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

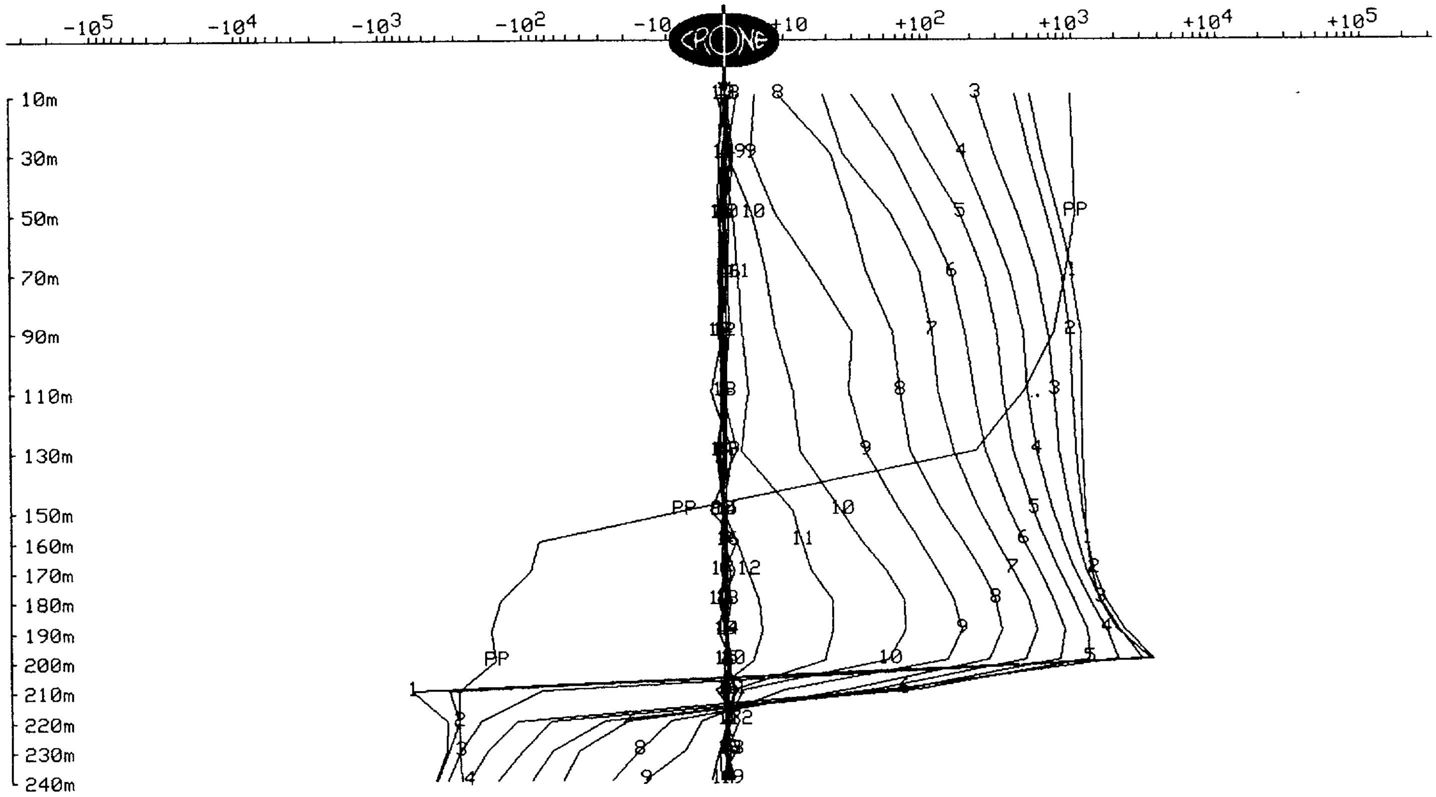
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH13**
Date : Mar 27, 1999

Hole : **MF13-04**
Tx Loop : **MF5**
File name : MF134XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



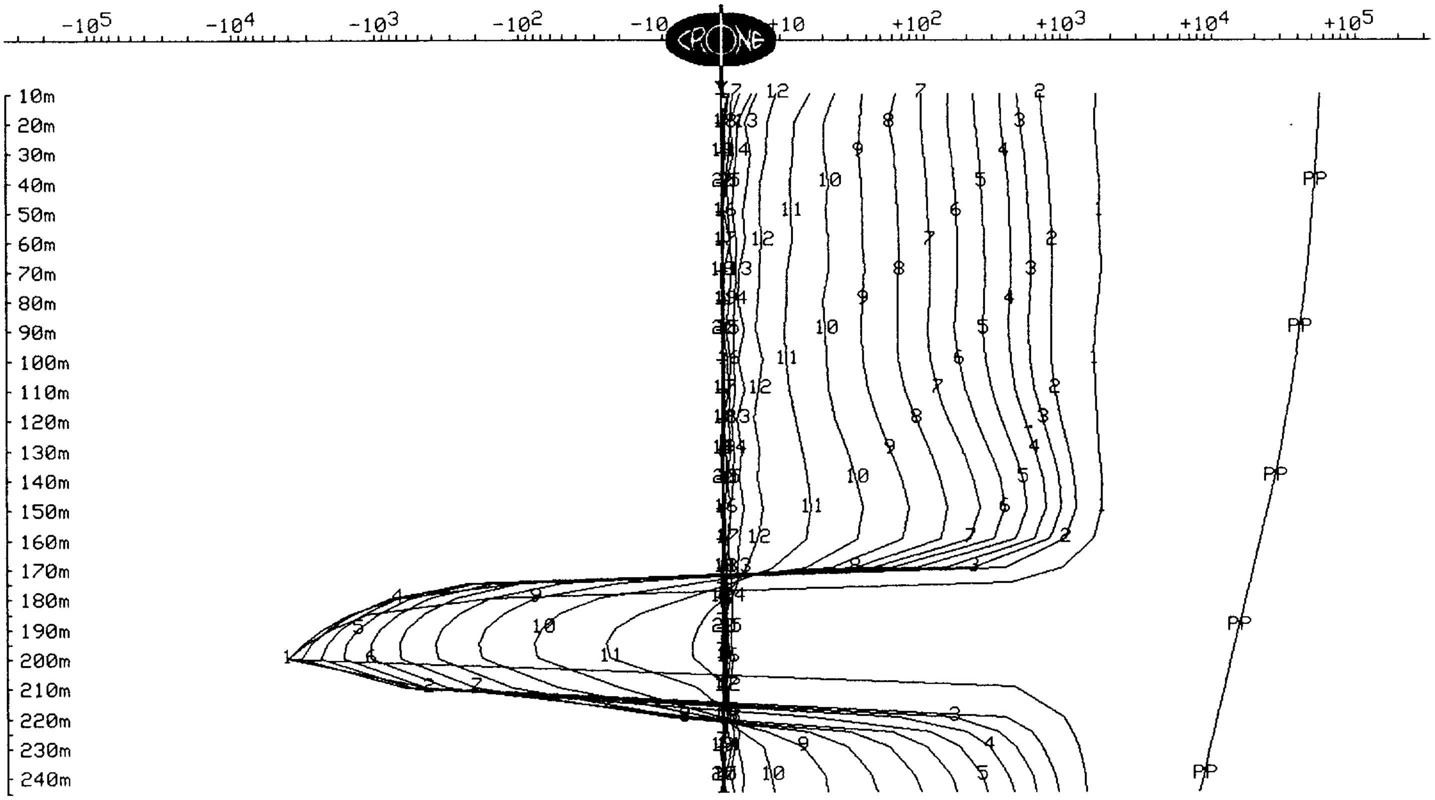
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF13-04**
Grid	: **MAH13**	Tx Loop	: **MF5**
Date	: Mar 27, 1999	File name	: MF1304Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

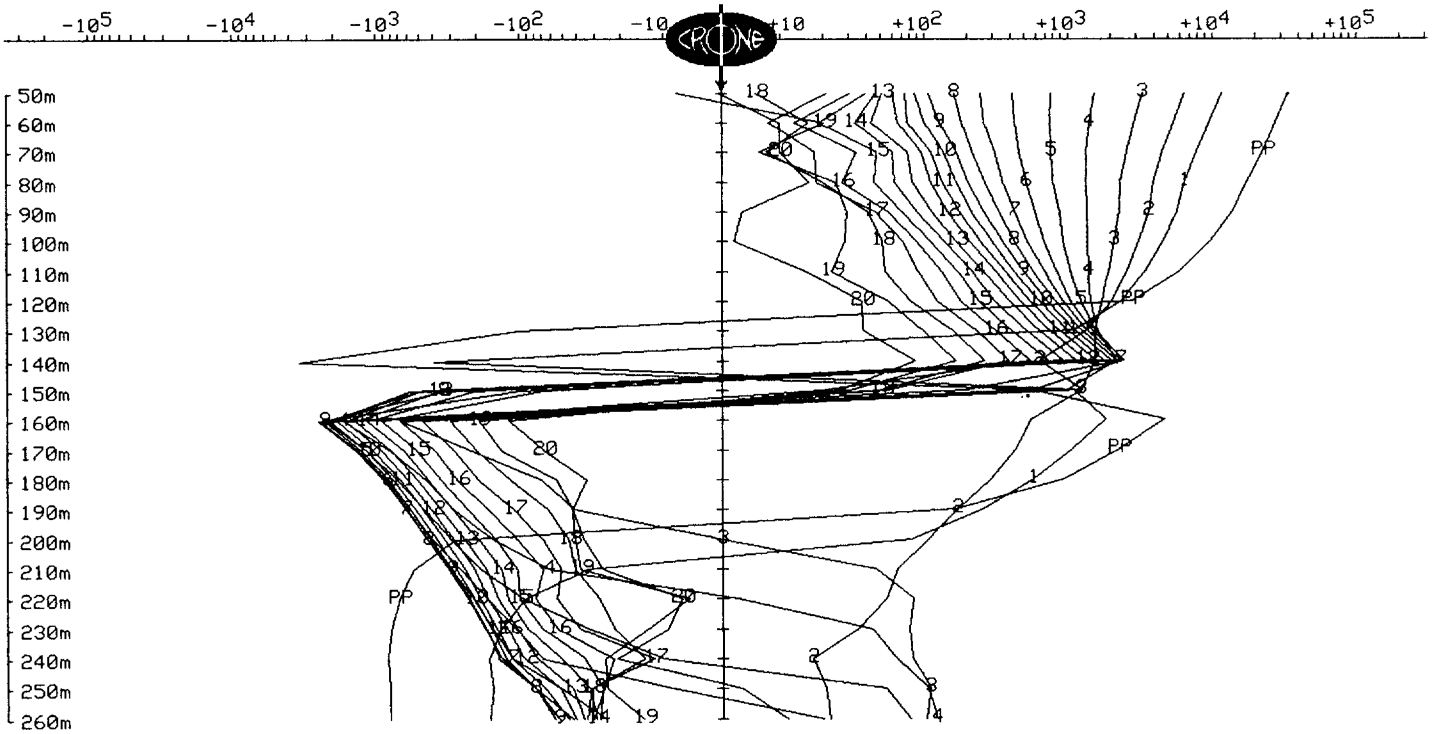


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF16-01**
Grid	: **MAH16**	Tx Loop	: **MF16-3**
Date	: Apr 1, 1999	File name	: MF161XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #10
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



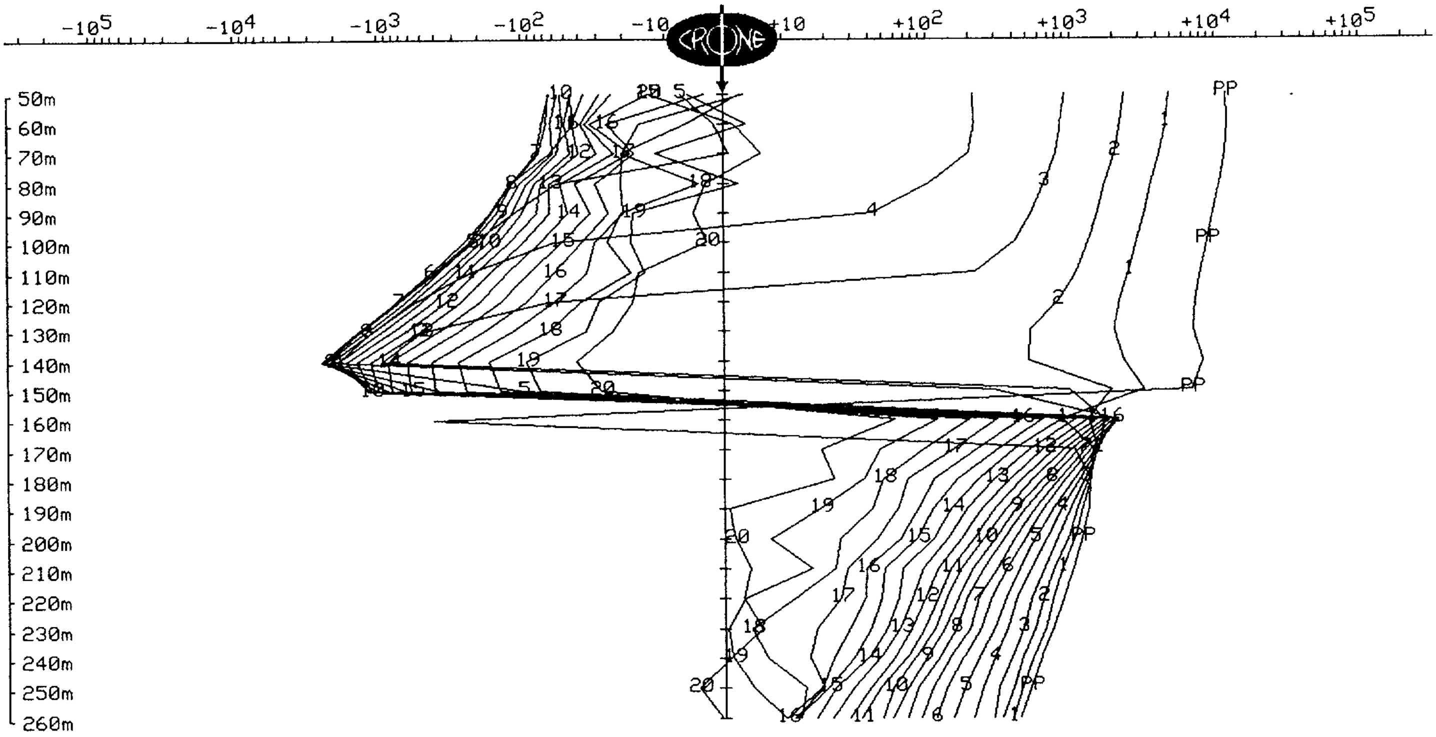
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH16**
Date : Apr 1, 1999

Hole : **MF16-01**
Tx Loop : **MF16-3**
File name : MF161XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #10
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500

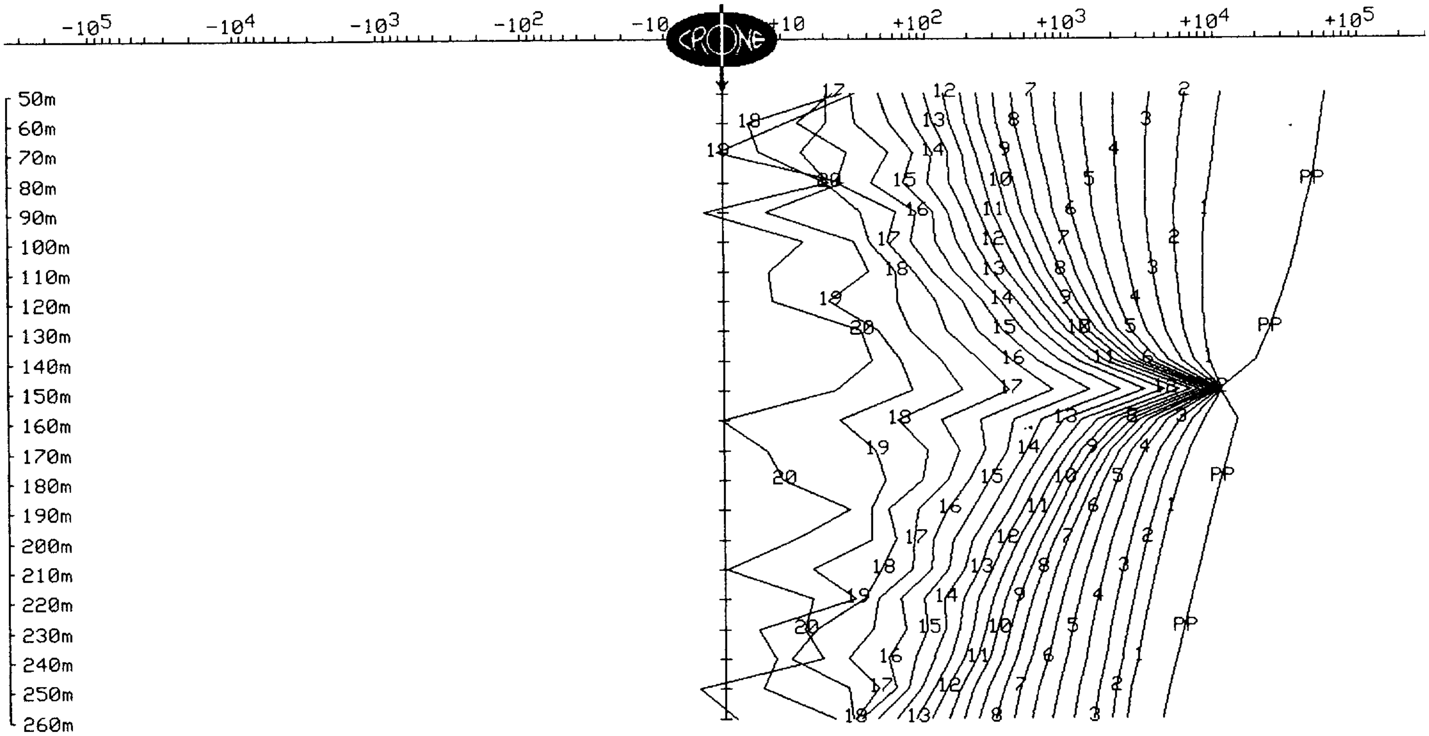


CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF16-01**
Grid	: **MAH16**	Tx Loop	: **MF16-3**
Date	: Apr 1, 1999	File name	: MF161Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

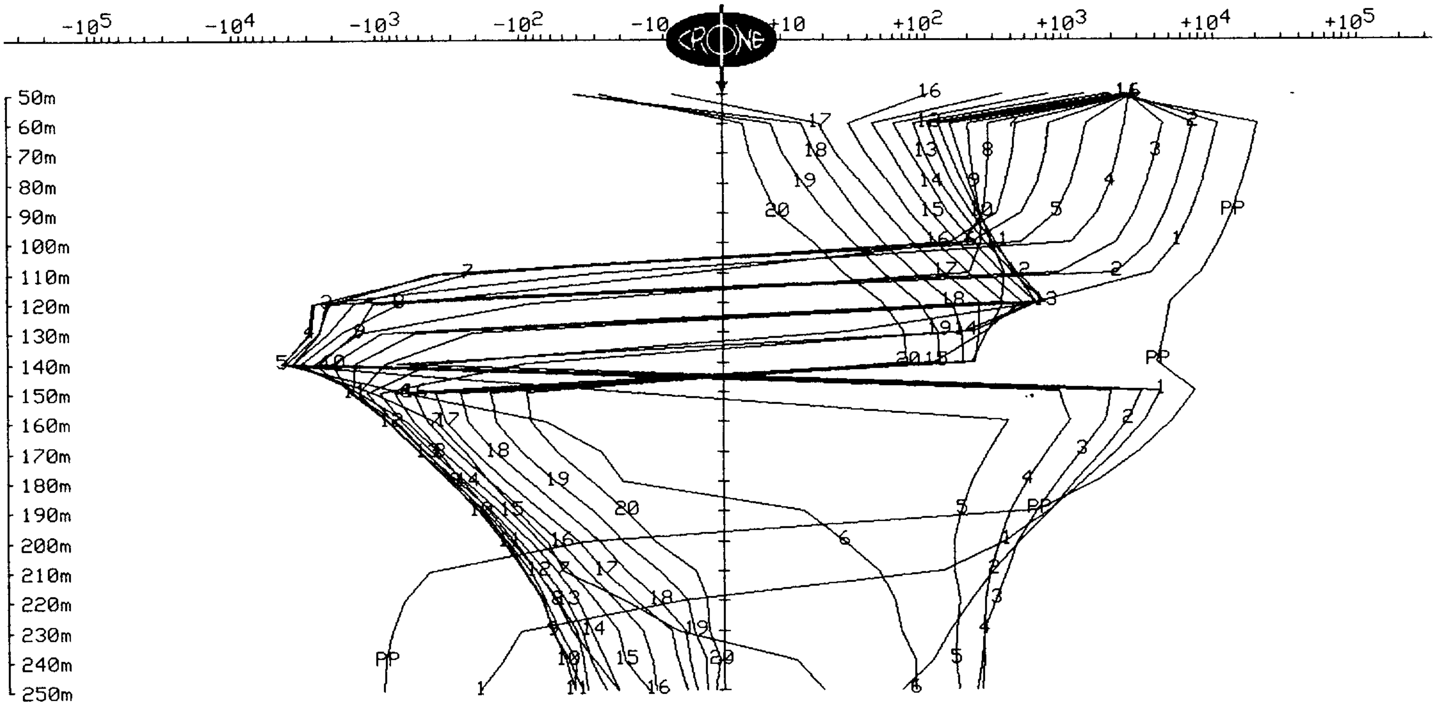
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH16**
Date : Mar 25, 1999

Hole : **MF16-02**
Tx Loop : **MF16-2**
File name : 1602XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

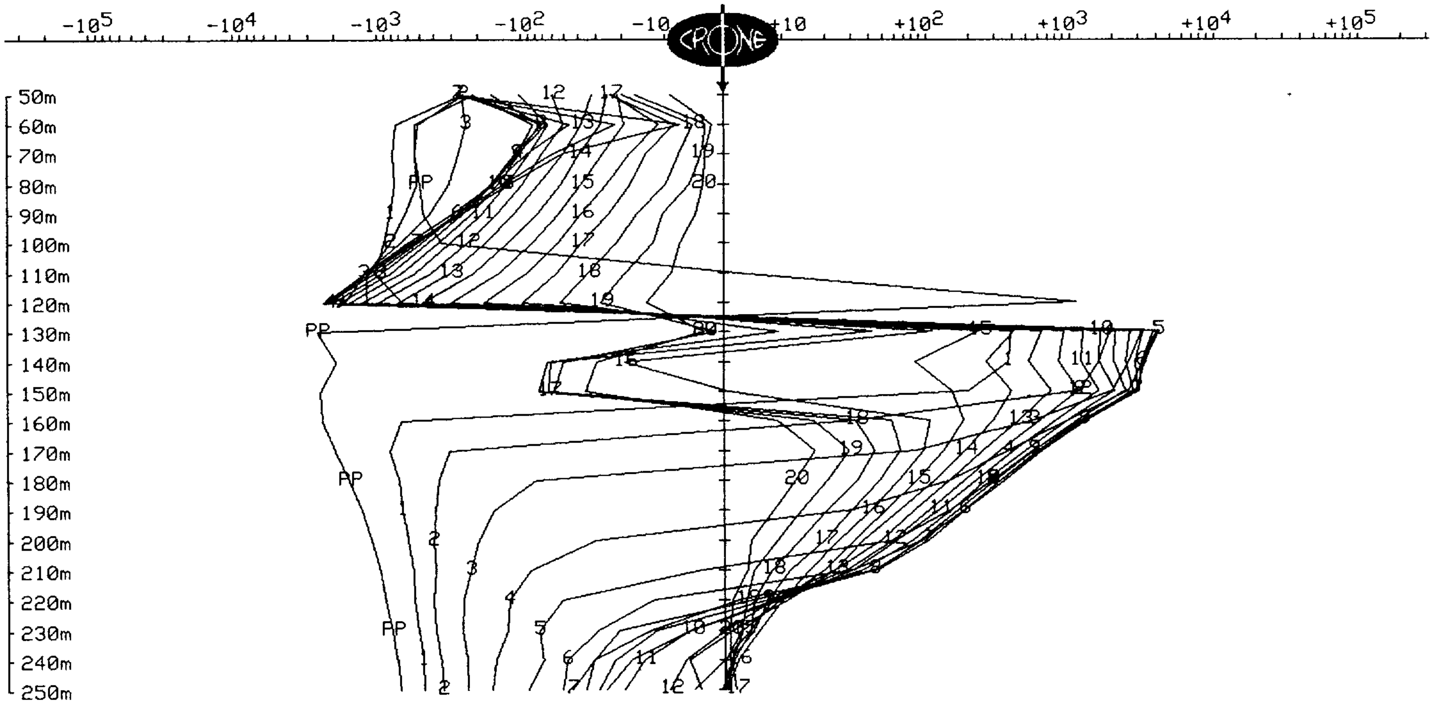
BOREHOLE PEM

Client	: FALCONBRIDGE LTD.	Hole	: MF16-02
Grid	: MAH16	Tx Loop	: MF16-2
Date	: Mar 25, 1999	File name	: 1602XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20

Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



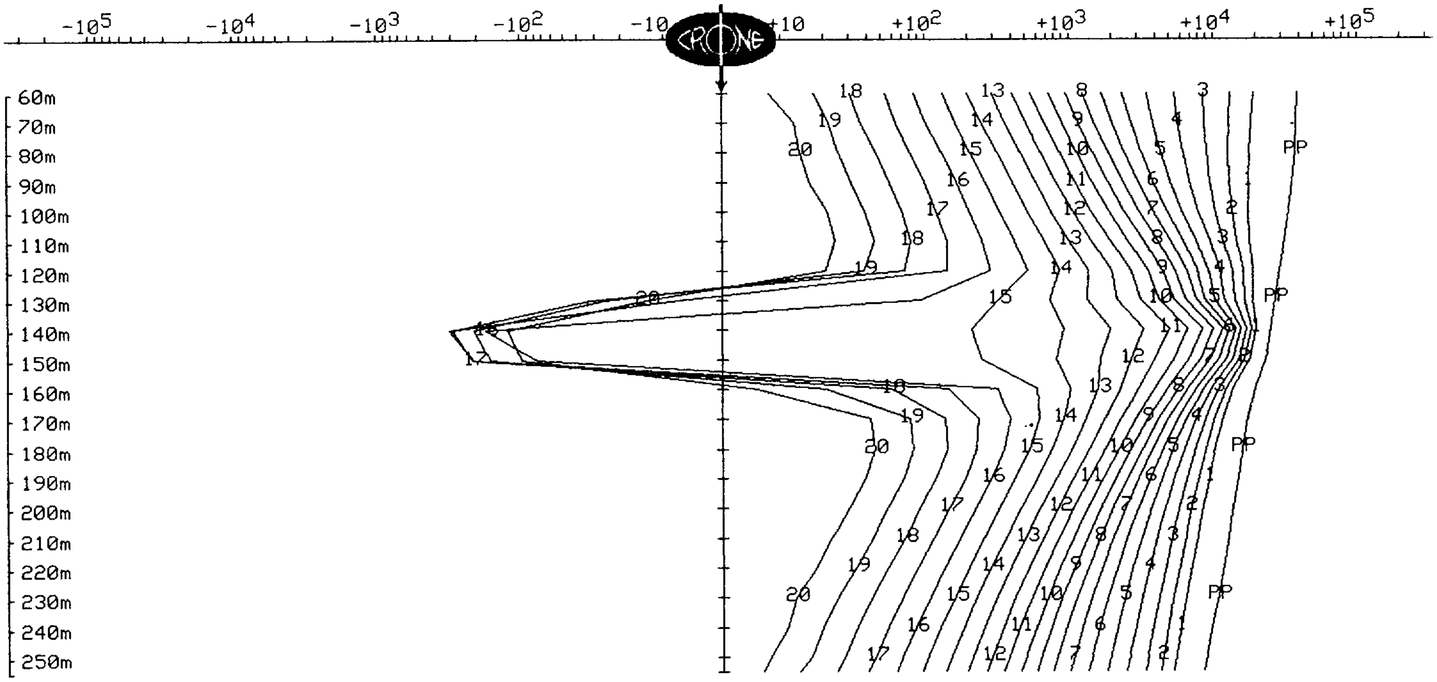
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF16-02**
Grid	: **MAH16**	Tx Loop	: **MF16-2**
Date	: Mar 25, 1999	File name	: MF1602Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



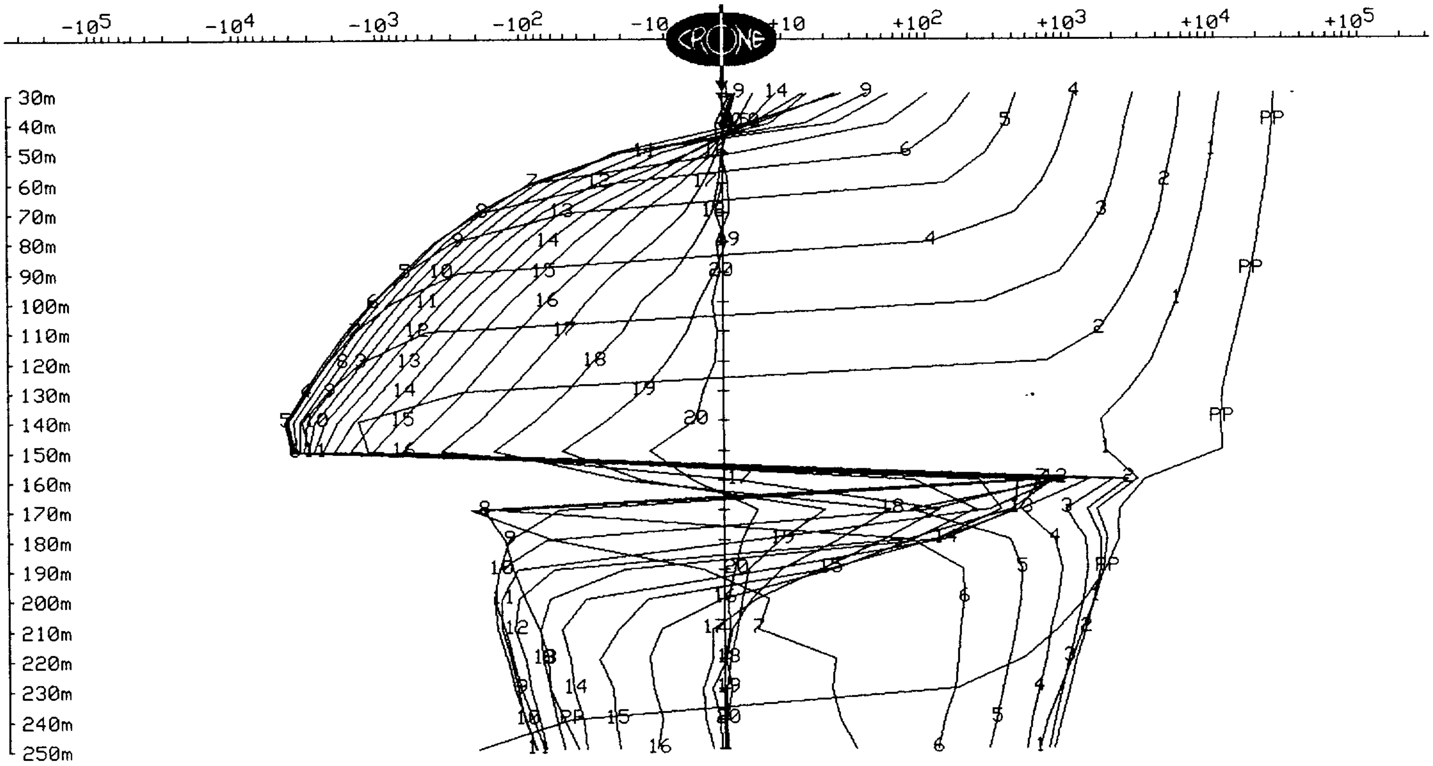
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF16-03**
Grid	: **MAH16**	Tx Loop	: **MF16-1**
Date	: Mar 24, 1999	File name	: 1603XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
X COMPONENT dBx/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



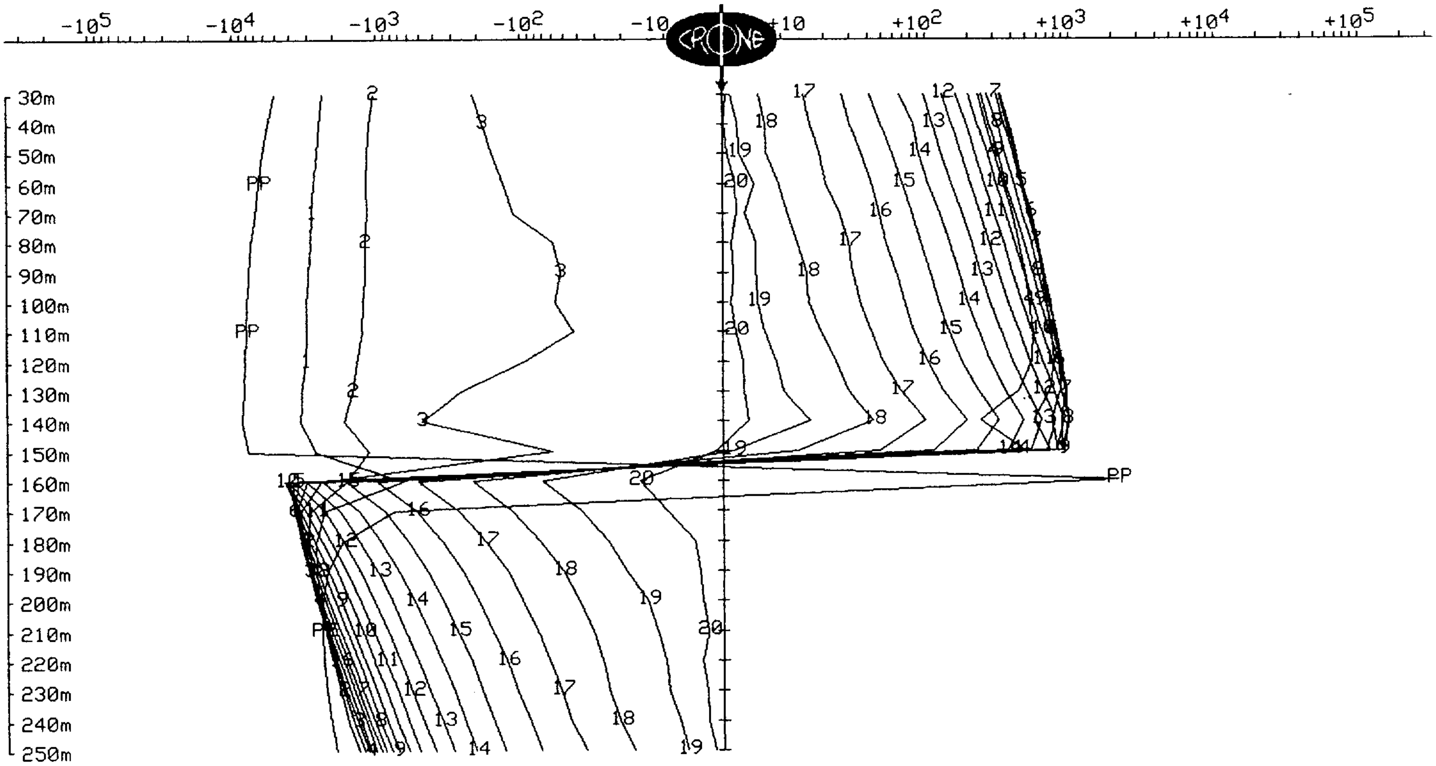
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: **FALCONBRIDGE LTD.**	Hole	: **MF16-03**
Grid	: **MAH16**	Tx Loop	: **MF16-1**
Date	: Mar 24, 1999	File name	: 1603XYT.PEM

Data Corrected for Probe Rotation using Orientation Tool #20
Y COMPONENT dBy/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



CRONE GEOPHYSICS & EXPLORATION LTD

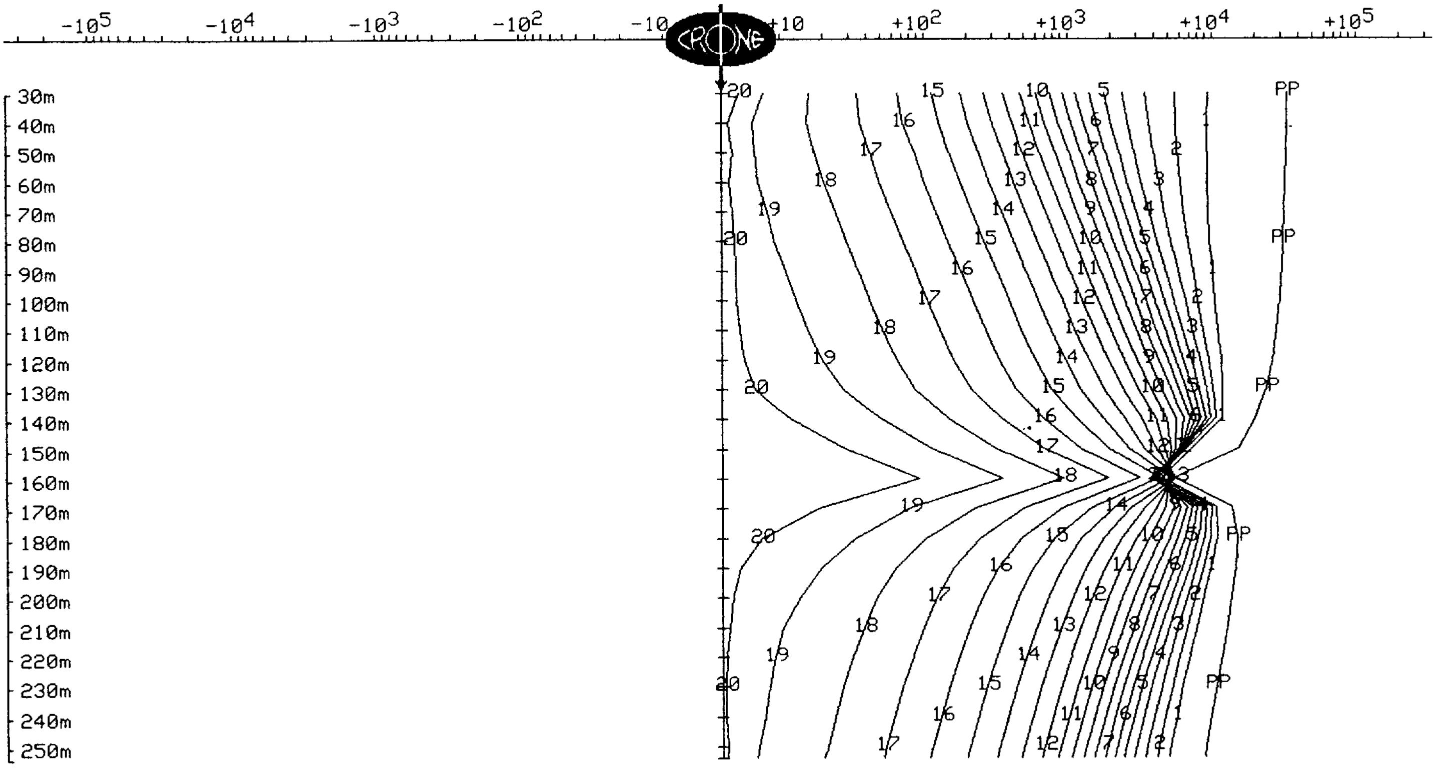
BOREHOLE PEM

Client : **FALCONBRIDGE LTD.**
Grid : **MAH16**
Date : Mar 24, 1999

Hole : **MF16-03**
Tx Loop : **MF16-1**
File name : MF1603Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels and PP

Scale: 1:2500



APPENDIX C

Crone Instrument Specifications

CRONE PULSE EM SYSTEM

SYSTEM DESCRIPTION

The Crone Pulse EM system is a time domain electromagnetic method (TDEM) that utilizes an alternating pulsed primary current with a controlled shut-off and measures the rate of decay of the induced secondary field across a series of time windows during the off-time. The system uses a transmit loop of any size or shape. A portable power source feeds a transmitter which provides a precise current waveform through the loop. The receiver apparatus is moved along surface lines or down boreholes.

The transmitter cycle consists of slowly increasing the current over a few milliseconds, a constant current, abrupt linear termination of the current, and finally zero current for a selected length of time in milliseconds. The EMF created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor. The receiver, which is synchronized to the off-time of the transmitter, measures this transient magnetic field where it cuts the surface coil or borehole probe. These readings are across fixed time windows or "channels".

SYSTEM TERMINOLOGY

Ramp Time

"Ramp time" refers to the controlled shut-off of the transmitter current. Three ramp times are selectable by the operator; 0.5ms, 1.0ms, and 1.5ms. By controlling the shut-off rather than having it depend on the loop size and current ensures that the same waveform is maintained for different loops so data can be properly compared.

The 1.5ms ramp is the normally used setting for good conductors. It keeps the early channel responses on scale and decreases the chance of overload. The faster ramp times of 1.0ms and 0.5ms will enhance the early time responses. This can be useful for weak conductors when data from the higher end of the frequency spectrum is desired.

Time Base

Time base is the length of time the transmitter current is off (it includes the ramp time). This also equals the on time of the current. Eight time bases are selectable by the operator. They include the original time bases used in the analog system as well as time bases to eliminate the effects of powerline interference. The eight time bases are as follows: compatible to analog Rx: 10.89ms, 21.79ms; 60hz powerline noise reduction: 8.33ms, 16.66ms, & 33.33ms; 50hz powerline noise reduction: 10.00ms, 20.00ms, & 40.00ms

Since readings are taken during the off cycles, the time base will have an effect on the receiver channels. Normally, a standard time base is selected for the type of system and survey being used, but this can be changed to suit a particular situation. A longer time base is preferred for conductors of greater time constants, and in surveys such as resistive soundings where more channels are desired.

Zero Time Set

The term "zero time set" or "ZTS" refers to the starting point for the receiver channel measurements. It is manually set on the receiver by the operator thus allowing adjustments for the ramp times and fine tuning for any fluctuations in the transmitter signal.

Receiver Channels

The rate of decay of the secondary field is measured across fixed time windows which occupy most of the off-time of the transmitter. These time windows are referred to as "channels". These channels are numbered in sequence with "1" being the earliest. The analog and datalogger receivers measured eight fixed channels. The digital receiver, being under software control, offers more flexibility in the channel positioning, channel width, and number of channels.

PP Channel

The PEM system monitors the primary field by taking a measurement during the current ramp and storing this information in a "PP channel". This means that data can be presented in either normalized or unnormalized formats, and additional information is available during interpretation. The PP channel data can provide useful diagnostic information and helps avoid critical errors in field polarity.

Synchronization

Since the PEM system measures the secondary field in the absence of the primary field, the receiver must be in "sync" with the transmitter to read during the off-time. There are three synchronization methods available: cable connection, radio telemetry, and crystal clock. This flexibility enhances the operational capabilities of the system.

SURVEY METHODS

The wide frequency spectrum of data produced by a Pulse EM survey can be used to provide structural geological information as well as the direct detection of conductive or conductive associated ore deposits. The various types of survey methods, from surface and borehole, have greatly improved the chances of success in deep exploration programs. There are eight basic profiling methods as well as a resistivity sounding mode.

Moving Coil

A small, multi-turn transmitter loop (13.7m diameter) is moved for each reading while the receiver remains a fixed distance away. This method is ideal for quick reconnaissance in areas of high background conductivity.

Moving Loop

Same as Moving Coil method, but with a larger transmit loop (100 to 300 meters square). This method provides deeper penetration in areas of high background conductivity, and works best for near-vertical conductors. This method can be used in conjunction with the Moving In-loop survey for increased sensitivity to horizontal conductors.

Moving In-Loop

A transmit loop of size 100 to 300 meters square is moved for each reading while the receiver remains at the center of the loop. This method provides deep penetration in areas of very high background conductivity, and works best for near-horizontal conductors. It can be used in conjunction with the Moving Loop survey.

Large In-Loop

A very large, stationary transmit loop (800m square or more) is used, and survey lines are run inside the loop. This mode provides very deep penetration (700m or more) and couples best with shallow dip conductors (<45 deg.) under the loop.

Deepem

A large, stationary transmit loop is used, and survey lines are run outside the loop. This mode provides very deep penetration, and couples best with steeply dipping conductors (>45 deg.) outside the loop.

Borehole (Z Component only)

Isolated Borehole: A drill hole is surveyed by lowering a probe down a hole and surveying it with a number of transmit loops laid out on surface. The data from multiple loops gives directional information on the conductors.

Multiple Boreholes: One large transmit loop is used to survey a number of closely spaced holes. The change in anomaly from hole to hole provides directional information.
These methods have detected conductors to depths of 2500m from surface and up to 200m from the hole.

3-D Borehole

Drill holes are surveyed with both the Z and the XY borehole probes. The X and Y components provide accurate direction information using just one transmit loop.

Since the probe rotates as it moves down the hole a correction is required for the X-Y data. This is accomplished in one of two ways. The standard approach is to use the measurement of the primary field from the "PP" channel, apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation device for the X-Y probe which is produced in co-operation with IFG Corp. This attachment uses dipmeters to calculate the probe rotation.

Underground Borehole

Underground drill holes can be surveyed in any of the above mentioned borehole methods with one or more transmit loops on the surface. Near-horizontal holes can be surveyed using a push-rod system.

Resistivity Soundings

By reading a large number of channels in the centre of a transmit loop it is possible to perform a decay curve analysis giving a best-fit layer earth model using programs such as ARRTI or TEMIX.

EQUIPMENT

Transmit Loops

The PEM system can operate with practically any size of transmit loop, from a multi-turn circular loop 13.7m in diameter, to a 1 or 2 turn loop of any shape up to 1 or 2 kilometers square using standard insulated copper wire of 10 or 12 gauge. The multi-turn loop is made in two sections with screw connectors. The 10 or 12 gauge loop wire comes on spools in either 300m or 400m lengths. The spools can be mounted on packframe winders for laying out or retrieving.

Power Supply

The PEM system normally operates with an input voltage from 24v to 120v. Modifications have recently been made to increase the power to 240 volts. The maximum current is still 20 amps. For low power surveys a 20amp/hr 24v battery can be used. The power supply requires a motor generator and a voltage regulator to control and filter the input voltage to the transmitter.

Specifications: PEM Motor Generator

- 4.5 hp Wisconsin, (2 kw) - 11 hp Honda (4 kw); 4 cycle engine
- belt drive to D.C. alternator
- cable output to regulator

- maximum output: 120v, 20amp (2 kw); 240v, 20amp (4 kw)
- fuse type overload protection
- steel frame
- external gas tank
- unit weight: 33kg (2 kw); 52kg (4 kw)
- optional packframe
- wooden shipping box
- shipping weight: 47kg (2 kw); 80kg (4 kw)

Specifications: PEM Variable Voltage Regulator

- selectable voltage between 24v and 120v or 48v and 240v
- 20amp maximum current
- fuse and internal circuit breaker protection
- cable connections to motor generator and transmitter
- anodized aluminum case
- unit weight 10kg; shipping weight 18kg
- padded wooden shipping box

Transmitter

The transmitter controls the bi-polar on-off waveform and linear current shut-off ramp. The latest 2000w PEM Transmitter has the following specifications:

Specifications: PEM Transmitter

- time bases: 10.89ms, 21.79ms, 8.88ms, 16.66ms, 33.33ms, 10ms, 20ms, 30ms
- ramp times: 0.5ms, 1.0ms, 1.5ms
- operating voltage: 24v to 120v (2 kw); 48v to 240v (4 kw)
- output current: 5amp to 20amp
- monitors for input voltage, output current, shut-off ramp, tx loop continuity, instrument temperature, and overload output current
- automatic shut-off for open loop, high instrument temperature, and overload
- fuse and circuit breaker overload protection
- three sync modes: 1) built-in radio and antenna
  2) cable sync output for direct wire link to receiver or remote radio
  3) connectors for the crystal clock
- anodized aluminum case
- optional packframe
- unit weight 12.5kg; shipping weight 22kg
- padded wooden shipping box

Receiver

The receivers measure the rate of decay of the secondary field across several time channels. Three types of receivers are available with the PEM system: Analog Rx, Datalogger Rx, and Digital Rx. The Analog Rx and Datalogger Rx read eight fixed time channels while the Digital Rx, under software control, offers a variety of channel configurations. The Digital Rx has been used in the field for contract surveys since 1987.

Specifications: Digital PEM Receiver

- operating temperature -40°C to 50°C
- optional packframe
- unit weight 15kg; shipping weight 25.5kg
- padded wooden shipping box

Hardware:
- 24v rechargeable gel cell battery supply
- two CMOS microprocessors (NSC800)
- alphanumeric keyboard
- 2 x 16 character cold weather display
- 16 x 40 character (256 x 128 pixels graphic) display
- 64k byte solid state memory storage
- cable, radio or crystal clock synchronization
- RS-232 serial I/O

Sampling process features:
- 16 bit A/D conversion
- digital recording of data in nano-tesla/sec
- rejection of atmospheric noise samples based on digital threshold detection
- automatic gain control to optimize receiver signal to noise ratio

Menu driven operating software system offering the following functions:
- controls channel positions, channel widths, and number of channels using a basic slice of 4.5msec
- time bases: 10.89ms, 21.79ms, 8.88ms, 16.66ms, 33.33ms, 10ms, 20ms, and 30ms
- ramp time selectable in 4.5msec steps
- sample stacking from 512 to 65536
- scrolling routines for viewing data
- graphic display of decay curve and profile with various plotting options
- routines for memory management
- control of data transmission
- provides information on instrument and operating status

Sync Equipment

There are three modes of synchronization available; radio, cable, and crystal clock. The radio sync signal can be transmitted through a booster antenna from either the PEM Transmitter internal radio or through a Remote Radio.

Specifications: Sync Cable
- 2 conductor, 24awg, Teflon coated
- approx. 900m per aluminum spool with connectors

Specifications: Remote Radio
- operating frequency 27.12mhz
- 12v rechargeable gel cell battery supply
- fuse protection
- sync wire link to transmitter
- coaxial link to booster antenna
- anodized aluminum case
- unit weight 2.7kg

Specifications: Booster Antenna
- 8m, 4 section aluminum mast
- guide rope support
- ¼ wave CB fiberglass antenna
- range up to 2km
- coaxial connection to transmitter or remote radio

Specification: Crystal Clocks

- heat stabilized crystals
- 24v rechargeable gel cell battery supply
- anodized aluminum case
- rx unit can be separate or housed in the receiver
- outlet for external supplementary battery supply

Surface PEM Receive Coil

The Surface PEM Receive Coil picks up the EM field to be measured by the receiver. The coil is mounted on a tripod that can be positioned to take readings of any component of the field.

Specifications: Surface PEM Receive Coil

- ferrite core antenna
- built-in preamplifier
- VLF filter
- 10khz bandwidth
- 23:1 amplifier gain
- two 9v transistor battery supply
- tripod adjustable to all planes
- unit weight 4.5kg; shipping weight 13.5kg
- padded wooden shipping box

Borehole PEM Z Component Probe

The Z component probe measures the axial component of the EM field. The Z component data is not affected by probe rotation so no correction are required.

Specifications: Borehole PEM Z Component Probe

- ferrite core
- built-in preamplifier
- dimensions: length - 1.6m; dia - 3.02cm (3.15cm for high pressure tested probes)
- internal rechargeable ni-cad battery supply
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths 1300m, 2000m, and 2800m
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total weight 17kg

Borehole PEM XY Component Probe

The XY probe measures two orthogonal components of the EM field perpendicular to the axis of the hole. Correction for probe rotation can be achieved by two methods. The standard approach is to use the measurement of the primary field from the "PP" channel, apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation device for the X-Y probe that uses dipmeters to calculate the probe rotation.

Specifications: Borehole PEM XY Component Probe

- ferrite core
- built-in preamplifier
- dimensions: length - 2.01m; dia - 3.02cm
- internal rechargeable ni-cad battery supply
- selection of X or Y coils by means of a switch box on surface or automatic switching with Digital receiver
- replaceable heat shrink tubing for abrasion protection

- pressure tested for depths to 2800m
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 20kg

Orientation Device

The orientation device is an optional attachment for the XY probe which measures the rotation of the probe using two dipmeters.

Specifications: Orientation Device

- 2 axis tilt sensors
- sensitivity +/- 0.1 deg.
- operating range -89.5 to -10 deg.
- dimensions: length - 0.94m; dia - 28.5cm
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 11kg

Borehole Equipment

To lower the probe down a drill hole requires a cable and spool, winch assembly frame and cable counter. Borehole surveys also require equipment to "dummy probe" the hole before doing the survey.

Specifications: Borehole Cable

- two conductor shielded cable
- kevlar strengthened
- lengths are available up to 2600m on three sizes of spools.
- shipped in wooden box

Specifications: Slip Ring

- attaches to side of borehole cable spool providing a connection to the receiver while allowing the spool to turn.
- VLF filter
- pure silver contacts

Specifications: Borehole Frame

- welded aluminum frame
- removable axle
- chain driven, 3 speed gear box
- hand or optional power winding
- hand brake and lock
- two sizes: standard for up to 1300m cable; larger for longer cables
- shipped in wooden box

Specifications: Borehole Counter

- attaches to the drill hole casing
- calibrated in meters
- shipped in wooden box; total weight 13kg

Specifications: Dummy Probe and Cable

- solid steel or steel pipe
- same dimensions as borehole probe
- shear pin connection to dummy cable
- steel dummy cable on aluminum spool
- cable mounts on borehole frame
- various lengths to 2600m on 3 spool sizes.

INTERPRETATION OF BOREHOLE EM RESULTS
FOR FALCONBRIDGE LIMITED
HOLES
MF12-02, MF12-03, MF12-05, MF12-06, MF12-07, MF12-13, MF12-28, MF13-04, MF16-01, MF16-02, MF16-03
LOCATED IN
MAHAFFY TOWNSHIP
PORCUPINE MINING DIVISION

2.20231

SHARON TAYLOR
APRIL 2000

Introduction

This report documents the results of 3 component borehole EM surveys carried out in holes MF12-02, MF12-03, MF12-05, MF12-06, MF12-07, MF12-13, MF12-28, MF13-04, MF16-01, MF16-02, and MF16-03, all located in Mahaffy Township in the Porcupine Mining Division. All surveys were performed during February and March 2000. The logistical information pertaining to these surveys is documented in the attached report.

Interpretation Notes

In borehole EM, a current is passed through a transmitter loop located on the surface, and a receiver is lowered down a drillhole. The current in the transmitter is an alternating pulse with a controlled ramp shut-off. This shut-off induces eddy currents to flow in conductive bodies, which in turn set up their own magnetic fields which are measured by the receiver apparatus. The currents decay over time, and by taking readings at various times after the transmitter current has turned off, the characteristics of the target can be determined. Currents decay slowly in a good conductor, and quickly in a poor conductor. The amplitude of the secondary currents will be determined by the transmitter current, the geometry between the transmitter and target, and the conductance of the target.

If the hole approaches the side of the conductor located closest to the loop edge, anomalies will be 'normally coupled'. This means that an intersected target will have a positive z component response, and targets lying off the hole will have a negative z component peak with flanking positive shoulders. A positive to negative crossover on the x component indicates that the center of the target lies below the hole, and vice-versa for a negative to positive crossover. On the y component, a negative to positive crossover indicates that the source is located to the left of the hole (looking in the direction of the hole azimuth), and to the right if the polarity is positive to negative. This polarity is typical when transmitter loops are located around the collar of the hole. If the transmitter loop is located in such a position that the hole approaches the side of the target which is farthest from the loop, then the coupling is said to be 'reversed', and one would interpret the data exactly the opposite as described above i.e. in-hole anomalies are negative and off-hole anomalies are positive, and a target located above the hole would have a positive to negative crossover on the x component, and targets to the right would have a y component crossing from negative to positive.

Results

MF16-01 - This hole was surveyed with a collar loop, which will give anomalies of normal coupling. There is a positive peak at 155m on the z component, indicating an in-hole anomaly. The x component crosses from positive to negative at this depth (center of conductor below hole) and the y component crosses from negative to positive (center of conductor to the left - east). The purpose of surveying this hole was to determine if there were any conductors in the vicinity of the hole in addition to the one intersected in the hole. Since the only anomaly located in the hole correlates with barren sulphides intersected in the hole, no further work is recommended.

MF16-02 - This hole was surveyed with a collar loop, which will give anomalies of normal coupling. The results contain two positive peaks on the early channels on the z component , located at 125m and 145m. The anomaly at 145m is an edge-type anomaly. Both anomalies locate conductors whose center is below (x crosses from positive to negative) and to the left – east (y crosses from negative to positive). No further work is recommended.

MF16-03 - This hole was surveyed with a collar loop, which will give anomalies of normal coupling. There is a 20 channel positive peak at 170m on the z component, indicating an in-hole anomaly. The x component crosses from negative to positive at this depth (center of conductor above the hole) and the y component crosses from positive to negative (center of conductor to the right - west). The purpose of surveying this hole was to determine if there were any conductors in the vicinity of the hole in addition to the one intersected in the hole. Since the only anomaly located in the hole correlates with barren sulphides intersected in the hole, no further work is recommended.

MF12-02 – Of minor interest is an early channel response at 200m and a very sharp positive peak at 490m. The late time results, which are indicative of strong conductors, show an increasing negative value toward the bottom of the hole. This indicates an approach to a large off-hole anomaly, centered approximately 20m beyond the end of the hole. The y component will cross from positive to negative (source to right of hole), and the x component is expected to peak or cross from positive to negative (source below hole). Looking closely at the profile, there is a change in the slope, indicating a second off-hole target at approx 450m. This conductor is located above the hole, and to the west (based on mid-time channels). The distance to the conductors is 70m (anomaly at 450m) and 150m (anomaly below hole - approx 680m). Looking at the drillhole locations, the off-hole at 450m would have been intersected by MF12-03, and the anomaly at 680m is interpreted to be caused by the western end of the strongly conductive graphite intersected in MF12-13.

MF12-03 – There are two significant borehole responses in this hole, a 13 channel off-hole at 230m and a second off-hole at 640m. The source of the anomaly at 215m is located to the right (west) of the hole. There is a small x response, indicating the center of the conductor is primarily beside the hole, but also above. The off-hole at 640m is present on all 20 channels, and outlines a large conductor located 60m away, to the right of the hole. The x component has a positive peak, indicating the conductive center lies below the hole.

MF12-05 –There are numerous responses in this hole. There is an 18 channel off-hole at 80m and a 10 channel off-hole at 110m. At early times to middle times, there are two relatively symmetrical off-hole anomalies. Both are 20m away, located below and to the west of the hole. At late times, there is a negative to positive crossover on the z component, indicating a sub-parallel conductor. The z crossover corresponds to a positive peak on both the x and y components at 100m, locating the source above and east of the hole. The most significant is an off-hole anomaly at 600m. This is an extremely conductive target located 20m away to the right and below the hole. There is also an in-hole at 600m, but it is a weaker conductor, and extends east of the hole. The next most significant response is an 18 channel in-hole at 185m. The zone continues downdip.

MF12-06 – Similar to MF12-05, there are very high amplitude anomalies in this hole. The strongest response is an off-hole response at 145m. The anomaly is very unsymmetrical, almost a z crossover at 130m. At early times, there are two distinct off-hole anomalies, at 145m and 170m. The anomalies are both located approx. 20m away and show symmetry. The fact that there is rotation indicates that there is significant width to the conductor. The target is located below and to the right (west) of the hole. There is also a 15 channel off-hole anomaly at 560m. Its source is located 20m away, below and to the right (west) of the hole. There is also a three channel off-hole anomaly at 165m.

MF12-07 – This hole was surveyed with a collar loop (normal coupling). There are two anomalies in the results: an in-hole at 140m, located above and to the right (west). This response is seen over a large distance, and corresponds to a large conductor. Negative late time values on the z component at 135m are interpreted to correspond to a separate off-hole anomaly, also located above and to the west. It is difficult to calculate a distance because of the in-hole anomaly. There is also an 11 channel off-hole anomaly at 660m, located 15m away, above and to the right (west) of the hole.

MF12-13 – This hole was surveyed to help explain the source of the response in MF12-28. The loop location is south of the hole collar, which means that coupling is reversed. The results show two closely spaced anomalies located at 160m and 170m. The upper anomaly is an off-hole anomaly at 150m, located 10m away above and to the east of the hole. There is a late time in-hole at 165m whose center is located to the left (east) and below the hole.

MF12-28 – This hole was surveyed with a collar loop. There is a very large, broad negative (off-hole) anomaly in the z component along the entire 325m hole. The shape of the anomaly is very broad, with a flat top, indicating there are two anomalies, located at 160 and 200m. Both are very good conductors, with the lower conductor being the better target. The y component crosses from positive to negative at both positions, indicating sources located to the right (west). The x component shows a positive peak. The anomaly at 160m can be correlated to the off-hole response at 150m in MF12-13 and the lower, more conductive anomaly correlates to the in-hole anomaly at 165m (graphite).

MF13-04 – This hole was surveyed using a collar loop. The results show a 12 channel off-hole anomaly, with the source located 20m away, above and to the west of the hole. This conductor correlates with graphite intersected in the hole, and no further work is recommended.

Summary and Recommendations

3 component borehole EM surveys were carried out in holes MF12-02, MF12-03, MF12-05, MF12-06, MF12-07, MF12-13, MF12-28, MF13-04, MF16-01, MF16-02, and MF16-03, all located in Mahaffy Township. No targets were located in MF13-04, MF16-01, MF16-02, and MF16-03. Numerous anomalies were located in the remainder of the holes, and each should be evaluated in a geological context.

Respectfully submitted,

Sharon Taylor

Sharon Taylor

HOLE NUMBER: MF12-28

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 36
CLAIM NUMBER: Prop#JV37, Spect Targ#563
LOCATION: Karvinen Property

PLOTTING COORDS GRID: UTM
NORTH: 5405203.00N
EAST: 458625.00E
ELEV: 290.00

ALTERNATE COORDS GRID: MF12 Grid
NORTH: 116+60mN
EAST: 18+40mE
ELEV: 290.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 326.00M
START DEPTH: 0.00M
FINAL DEPTH: 326.00M

COLLAR ASTRONOMIC AZIMUTH: 135° 0' 0"
GRID ASTRONOMIC AZIMUTH: 0° 0' 0"

DATE STARTED: 03/21/1999
DATE COMPLETED: 03/24/1999
DATE LOGGED: 04/28/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: YES
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley Bros.
CASING: 13m NQ left in hole
CORE STORAGE: Minesite
UTM COORD.:

COMMENTS : Semi massive barren Py in altered rhyolite intersected at target depth. Collared on P865387
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
20.00	127° 0' 0"	-50° 0' 0"	S	OK		-	-	-	-	-	
80.00	130° 0' 0"	-50° 0' 0"	S	OK		-	-	-	-	-	
140.00	132° 0' 0"	-50° 0' 0"	S	OK		-	-	-	-	-	
200.00	143° 0' 0"	-49° 0' 0"	S	OK		-	-	-	-	-	
260.00	149°30' 0"	-44° 0' 0"	S	OK		-	-	-	-	-	
325.00	148° 0' 0"	-43° 0' 0"	S	OK		-	-	-	-	-	
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LOGGED BY: G Collins

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 13.00	«┤ob├»					
13.00 TO 13.55	«4,f,*b»	FELSIC LAPILLISTONE -Light grey to white felsic lapillistone. Unit is composed of angular framework supported lapilli sized felsic fragments. -Core is broken and leached due to interaction with ground water. -A moderately strong schistocity defined by flattened fragments and an anastamosing sericitic cleavage, 30° TCA is observed. -Downhole contact is sharp, parallel to schistocity.		-Unit is strongly silicified, overprinted by minor fracture controlled sericite/chlorite.	-No sulphides are observed, however unit is strongly leached and heavily iron stained.	
13.55 TO 33.00	«2,a,*t»	SHEARED MAFIC VOLCANICS -Light grey to green, fine grained mafic volcanics. -Unit is massive and aphanitic in texture, overprinted by a strong schistocity that obscures primary volcanic textures. -Massive sections are interspaced gradationally by spotty/clastic looking intervals. -Spotted intervals are defined by abundant porphyroblastic carbonatization. -Schistocity increases in intensity towards a brecciated interval hosting a 10cm thick seam of gouge material. Schistocity is 30° TCA. ╣19.6-19.8╠ «┤FAI├» -Interflow felsic ash tuff observed between 26.2 and 28.6m. Tuff is composed of lapilli sized felsic material near the base, to fine, cherty ash near the uphole contact. Upward fining sequence supports north stratigraphic facing. -Tuff intruded by thin mafic dyke between 27.3 and 27.7m. ╣26.2-28.6╠ «4,t,*a»		-Unit overprinted by strong pervasive carbonatization. -Porphyroblasts of carbonate render sections of interval, spotted in texture.	-Isolated patches of Py/Po	-Fining within tuffaceuos section between 26.2 and 28.6m supports an uphole facing direction.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-Downhole contact is marked by the appearance of a selvage like feature.				
33.00 TO 147.60	«2,p,e»	AMYGDULAR PILLOWED MAFIC VOLCANICS -Light green to buff/grey pillowed mafic volcanics. -Mafics are highly vesicular, hosting amygdules ranging from 1 to 10mm in diameter that occupy up to 15% of rock. Amygdules are infilled by qtz/calcite. -Unit is pervasively carbonatized. Porphyroblasts of calcite render core spotted in appearance. -Pillows are defined by thin dark green, chloritic selvages. Hyaloclastite/interflow breccia material occurs locally between pillows. -Minor shear zones developed around gouge filled seams are observed between 48.8 and 48.9m, 57.1 and 57.3m, 61.5 and 61.6m, 93.1 and 93.3m, and 95.55 and 95.65m. ╣48.8-48.9╠ «┤FAI├» ╣57.1-57.3╠ «┤FAI├» ╣61.5-61.6╠ «┤FAI├» ╣93.1-93.3╠ «┤FAI├» ╣95.55-95.65╠ «┤FAI├» -Around faults/slips, foliation cleavage becomes stronger commonly rotating oblique to core axis. rotation is believed symptomatic of drag folding. -Interflow tuffaceous sequences identified between 84.0 and 85.65m, and 98.9 and 103.1m. -Tuffs poorly graded, composed primarily of granule to lapilli sized, felsic fragments. ╣84.00-84.65╠ «3,t,*a» ╣98.90-103.10╠ «3,t,*a»		-Unit is strongly pervasively carbonatized. -Carbonate filled amygdules occupy 10-15% of core. -Porphyroblasts of calcite render core spotted in appearance. -Wispy buff coloured sericite occurs throughout unit.	-Minor disseminated euhedral Py observed locally.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-Downhole contact is sharp, 50° TCA.				
147.60 TO 156.60	«4,*b,C»	HETEROLITHIC FELSIC FRAGMENTALS -Felsic dominated heterolithic fragmental. -Interval is crosscut by numerous gouge faults/slips, separating the fragemental into two distinct sub-lithologies. -From 147.6 to 154.65m, unit is composed of framework supported angular lapilli sized fragments. Fragments are dominantly felsic, however mafic volcanic and diorite clasts are also observed. -Interval is strongly overprinted by pervasive chloritic alteration, and matrix controlled silicification. Late brittle fracturing has introduced strong fracture controlled carbonate alteration. -Gouge faults observed at 152.8m, 154.1m, and 154.65m. Fault at 154.65m appears to terminate chlorite/silica alteration. ╣154.60-154.65╠ «┤FAI├» -From 154.65 to 156.6m, unit is composed of finer grained material. Matrix supported lapilli sized fragments of felsic and mafic material occupy 35-50% of unit. Sub-unit is poorly sorted, resembling slump/mixed debris. -Interval is strongly schistose, locally exhibiting a strong parasitic crenulation fabric. -Schistocity rotates from 50° to 0° towards 154.9m around a secondary fold axis, parallel to schistocity. ╣155.0-156.6╠ «┤S1 45°├» «┤S2 45°├» -Downhole contact is sharp, marked by 15cm thick seam of gouge. Gouge fault appears to cut core axis 35° TCA.		-From 147.60 to 154.65m, alteration is characterised by moderate to strong pervasive dark green choritization, overprinted by matrix controlled silicification, and fracture/foliation controlled coarse grained sericitic alteration. Produces alligator skin textures, similar to those associated with copper stringer mineralization at Kidd. -Downhole from 154.65m, chloritic alteration is not as strongly developed. -Fracture controlled carbonate alteration is strong thoughout interval.	-Minor disseminated and stringer controlled Py. -No base metal sulphides observed.	-Focused chloritic alteration.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
156.60 TO 160.05	«5,a,E,s»	SULPHIDIC CHERT/MUDSTONE-ARGILLITE -Dark grey fine grain meta-siltstone, chert and argillite host 15% brecciated colliform to nodular textured and disseminated Py. -Interval is strongly brecciated, infilled by abundant fracture controlled qtz/carbonate and carbonaceous alteration. Minor amounts of gouge are observed on fracture and slip surfaces. -Bedding/banding occurs at poor angles to core axis. Pyritic bands, are locally co-laminar to to finely layered beds of chert, 10 to 15 deg TCA. -Downhole contact is marked by a strongly sheared gouge filled seam and quartz/albite veining. Veining is observed from 159.4 to 160.05m. -Gouge fault appears to cut core 35° TCA.		-Fracture and veinlet controlled qtz/carbonate and qtz/albite alteration increase towards lower contact. -65cm thick qtz/albite/carbonate vein hosting 3-5% disseminated Py is observed between 159.4 and 160.05m.	-Banded to colliform, nodular and disseminated Py occupy 15% of unit.	-Sulphides are moderately to strongly conductive. Connectivity is poor between sulphides along core length.
160.05 TO 160.20	«4,f»	FELSIC VOLCANICLASTIC -Dark grey, felsic lapillistone. Unit is strongly schistose overprinted by strong pervasive sericitic alteration, and minor fracture controlled carbonaceous alteration. -Downhole contact is strongly sheared, containing minor amounts of gouge material.		-Strong pervasive sericitic alteration. -Minor fracture controlled carbonaceous alteration.	-Trace Py	
160.20 TO 160.90	«10,a»	DIABASE/MAFIC INTRUSIVE -Fine grained olive coloured, plagioclase phyric mafic intrusive. -Upper and lower contacts are sharp but irregular. Unit appears to chill against uphole and downhole contact. -Stoped fragments of felsic volcaniclastic occur within dyke near lower contact.		-Plagioclase appear weakly saussertised.	-No sulphides observed.	-Unit has magnetic susceptability common to mafic rocks. Interval may be related to synvolcanic mafic sill?
160.90 TO 305.50	«4,1,m,bx»	MASSIVE FLOW TEXTURED RHYOLITE -Light grey, massive to curdy textured rhyolite. -Massive to brecciated looking intervals hosting		-Moderate to strongly developed anastamosing fracture controlled to pervasive sericitic and chloritic alteration.	-Trace disseminated Py observed throughout unit. Rare, isolated specs of fine disseminated Sph observed throughout unit.	-Numerous gouge faults and rotating foliation cleavage suggest major structural complexity, possibly related to large scale regional

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		trace disseminated quartz phenocrysts are interspaced by curdy, fragmental textured intervals. -Locally, isolated to coallescing spherulitic textures are developed. -Unit is overprinted by moderate to strong fracture controlled to pervasive sericite and chlorite alteration. -An anastamosing foliation cleavage defined by chlorite/sericite partings is observed throughout interval. -From 160.9 to 164.0m, foliation cleavages range between 40 and 45° TCA. ╣160.9-164.0╠ «┤S1 45°├» -Between 164.0 and 175.0m, foliation flattens to between 30 and 35° TCA. ╣164.0-175.0╠ «┤S1 35°├» -From 227.0 to 233.0m, foliation rotates to 50° TCA. ╣227.0-233.0╠ «┤S1 50°├» -Small brittle faults containg minor gouge observed at 160.2m, 162.1m, 202.65m, 217.5m, 222.0m, 224.85m, 229.65m, 238.15m, 259.0m, 261.5m, and 262.8m. -Fault observed at 202.65m appears to truncate zone of strongly developed coarse grained sericitic alteration. -From 261.0 to 305.5, fracture controlled sericite/chlorite alteration produces exceptional and unique textures within rhyolite. Alteration appears to be controlled by primary permeability controls, becoming most strongly developed within the matrix of hyaloclastitic sections and along flow laminations. -Alteration appears to enhance and produce curdy		-Zones of primary permeability are infilled and replaced by chorite and sericite. Sericite appear to be in greater abundance than chlorite. -Qtz/carbonate veinlet containing chlorite and trace disseminated Py observed between 197.25 and 197.40m. -Fracture/matrix controlled dark green sericite/chlorite becomes exceptionally strong between 261.0 and 297.0m. Core alternates between hard, siliceous unaltered qtz/phyric felsic material, and soft green sericite/chlorite filled fractures. -55cm thick qtz/calcite/chlorite vein observed from 286.15 to 286.70m.	-Section between 263.0 and 263.6m, hosts 2-3% disseminated Py in isolated patches coincedent with fracture controlled sericitic/chloritic alteration. -Rhyolite hosts 1 to 2% fine disseminated euhedral Py between 293.9 and 299.0m.	deformation related to brittle offsets occurring within the Mattagami River fault zone.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		textures, possibly digesting and rounding angular hyaloclastite fragments and widening flow shear laminations.				
		-Good example of curdy fragmental texture believed related to altered hyaloclastite interval between 264.0 and 266.0m.				
		-Good example of cm scale flow banding between 274.5 and 276.0m.				
		-Between 278.0 and 297.0m, unique textures interpreted as being related to brittle/ductile shearing observed. Interval has overall appearance of curdy textured fragmental. Fragment forms appear strongly flattened, surrounded by strongly developed seams of chlorite/sericite.				
		-Protolith is believed to be similar to intervals of rhyolite logged uphole (i.e. flow textured to auto-brecciated and fragmental rhyolite.				
		-Multiple slips and gouge faults occur throughout section. Locally, foliation rotates into and out of brittle faults.				
		-More gouge faults noted at 283.2m, 286.05m, 289.6m, 290.1m, 291.65m, 292.9m, 293.8 to 293.9m, and 304.15m.				
		-Qtz/carbonate chlorite vein hosting disseminated Py observed below gouge fault at 286.05 from 286.15 to 286.70m.				
		-A strongly crenulated, anastamosing foliation cleavage rotates from 45 to 50° TCA, to 0 to 30° between 280.7 and 281.3m, and 289.6 and 289.9m.				
		-Crenulation liniations are not consistant, rather occur at erratic orientations. Sericite/chlorite partings anastamose around brittle, unfoliated fragments of rhyolite. Foliation may be product of crude drag folding into brittle faults.				
		-Core has poor competancy, and is easily broken, snapped along sericite/chlorite filled fractures.				
		-Alteration is strongly developed along fracture shear surfaces, but does not seem to pervasively alter rhyolite fragments.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		╣278.0-297.0m╠ «FZ,SZ» -Unit becomes strongly foliated 40° TCA towards downhole contact. Fragments of rhyolite are brittley fractured and offset across sercite/chlorite shears. -Downhole contact is sharp but irregular.				
305.50 TO 308.85	«5,a,g,f»	CARBONACEOUS MUDSTONE/DEBRIS FLOW -Fine grain dark grey to black carbonaceous mudstone and argillite. Dark grey fragments of fine grained mudstone occur within a matrix of darker grey to black carbonaceous argillite. -Argillite hosts minor disseminated Py. -Unit is strongly foliated, 40° TCA. Argillite is also weakly brecciated and fractured, infilled by minor qtz/carbonate material along hairline fractures. «┤S0 40°├» -Downhole contact is sharp but irregular.		-Moderate to strong fracture controlled to pervasive carbonaceous alteration. -Minor fracture filling qtz/carbonate alteration.	-3-5% fine to medium grained disseminated euhedral Py observed between 306.5 and 306.8m. -1% disseminated Py observed between 306.8 and 308.85m. -No base metal sulphides observed.	-Carbonaceous material renders interval weakly conductive.
308.85 TO 318.90	«2,a,m»	MAFIC VOLCANIC -Fine grain buff to green coloured fine grained mafic volcanic. Unit is relatively massive, and featureless in texture, overprinted by a moderate to strong foliation cleavage, 40° TCA. «┤S1 40°├» -Minor gouge material observed in slips observed at 310.95m, 316.4m and 317.4m. -Vague lapilli sized fragment forms are developed adjacent to the downhole contact. -Downhole contact appears gradational.		-Minor fracture controlled qtz/carbonate alteration. -Wispy fracture/cleavage controlled yellow/brown sericite observed throughout interval.	-Trace disseminated euhedral Py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
318.90 TO 324.05	«4,bx,f»	BRECCIATED FELSIC VOLCANIC -Fine grain dark grey insitu brecciated massive to fragmental textured rhyolite. -From upper contact to 321.65m, unit becomes increasingly brecciated, infilled by sericite/chlorite fractures. Rhyolite is extremely hard, and aphanitic. -Downhole from 321.65, unit becomes gradationally more fragmental intexture. -Downhole contact is sharp 50° TCA, marked by a thin qtz/carbonate veinlet.		-Fracture/cleavage controlled sericite/chlorite alteration occurs throughout interval. -10cm thick qtz/carbonate veinlet observed between 320.1 and 320.2m.	-20% disseminated euhedral Py observed between 318.90 and 319.25m. -15% disseminated euhedral Py observed between 321.40 and 322.25m. Py appears to replace rhyolite fragments.	
324.05 TO 326.00	«3,f,C»	HETEROLITHIC FRAGMENTAL -Matrix supported mixed mafic and rhyolite fragments. Fragments range from sandy ash to lapilli in size. -Rhyolite fragments occupy 10 to 15% of unit. Remainder of fragments are mafic in composition. -Unit is moderately foliated, 50° TCA.		-Minor wisps of fracture/foliation controlled yellow/brown sericite observed throughout interval. -Weak fracture controlled to pervasive sericite.	-2% medium grained diseeminated euhedral Py.	
326.00 TO 326.00	«EOH»					

HOLE NUMBER : MF12-28 ASSAYS SHEET DATE: 12/04/2000

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU04551	155.00	156.60	1.60	9	71	3	6.0	7	0									
AU04552	156.60	158.00	1.40	16	34	34	28.0	27	1									
AU04553	158.00	159.40	1.40	18	38	30	41.0	24	0									
AU04554	159.40	160.05	0.65	8	93	3	25.0	7	0									
AU04555	160.05	161.00	0.95	115	91	3	23.0	7	0									
AU04556	263.00	263.60	0.60	70	66	13	7.0	21	1									
AU03749	286.00	286.70	0.70	6	137	3	10.0	3	0									
AU04557	304.25	305.50	1.25	10	116	4	10.0	7	0									
AU04558	305.50	306.40	0.90	71	165	9	57.0	0	0									
AU04559	306.40	308.00	1.60	14	28	2	137.0	10	0									
AU04560	308.00	308.50	0.50	4	6	2	44.0	14	0									
AU04561	318.90	319.25	0.35	92	244	8	54.0	7	0									
AU04562	321.40	322.25	0.85	47	103	1	41.0	7	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU01336	14.00	17.00	3.00	69.04	11.29	3.68	1.39	0.84	1.53	5.15	0.61	0.15	0.10		5.79	99.57	20	130					10	10	<5	10	2,a,*t	3(j)	187
AU01337	26.95	27.25	0.30	72.87	14.15	1.01	0.94	1.51	1.43	3.78	0.46	0.11	0.06		3.39	99.71	25	190					5	5	<5	15	4,t,*a	4jB	358
AU01338	50.00	51.40	1.40	48.19	12.12	5.30	3.80	0.44	0.46	17.55	0.84	0.22	0.66		10.16	99.74	30	150					5	15	5	15	2,p,e	2(j)v!	195
AU01339	71.00	74.00	3.00	53.27	13.84	9.18	2.00	1.95	1.63	6.20	0.85	0.16	0.13		10.67	99.88	15	90					10	15	5	10	2,p,e	3(j)!	108
AU01340	84.55	84.85	0.30	51.48	16.13	4.67	3.99	1.48	1.68	10.43	1.08	0.22	0.12		8.50	99.78	25	120					10	15	5	5	4,t,*a	2(h)w!	206
AU01341	92.00	95.00	3.00	54.28	16.47	5.78	2.21	2.97	1.58	6.75	1.00	0.17	0.11		8.12	99.44	20	100					10	15	5	10	2,p,e	2(j)w!	159
AU01342	99.50	101.00	1.50	50.71	13.92	6.46	4.04	1.21	1.30	8.89	0.88	0.18	0.11		11.97	99.67	20	100					10	10	5	10	3,t,*a	2(j)w!	155
AU01343	116.00	119.00	3.00	47.95	13.14	9.90	2.72	1.57	1.17	7.77	0.78	0.14	0.13		14.62	99.89	15	80					5	10	5	10	2,p,e	3(j)!	104
AU01344	143.00	146.00	3.00	53.14	14.83	7.02	3.87	0.90	2.05	7.29	0.94	0.19	0.11		9.10	99.44	20	100					10	15	5	5	2,p,e	2(j)w!	149
AU03741	152.00	155.00	3.00	69.43	11.41	4.36	1.59	0.84	1.61	4.37	0.53	0.15	0.08		5.40	99.77	25	170					5	10	<5	20	4,f	3(j)	168
AU03742	164.00	167.00	3.00	74.34	10.67	1.01	3.22	0.14	2.52	2.68	0.13	0.01	0.03		4.85	99.60	45	210					5	10	<5	20	4,l,m,b	4(h)B	291
AU03743	182.00	185.00	3.00	75.22	11.96	0.55	3.36	0.16	2.56	2.28	0.15	0.01	0.02		3.49	99.76	50	240					5	5	<5	25	4,l,m,b	4(h)B	366
AU03744	200.00	203.00	3.00	74.15	11.28	0.12	1.77	0.21	2.45	5.44	0.15	0.01	0.10		3.76	99.44	55	220					5	10	<5	20	4,m,l,b	4(h)B	406
AU03745	218.00	221.00	3.00	77.22	11.07	0.91	1.63	0.21	2.20	3.10	0.13	0.02	0.07		3.23	99.79	50	210					10	65	<5	20	4,m,l,b	4(h)B	333
AU03746	239.00	242.00	3.00	76.98	11.03	0.29	2.97	0.18	2.22	2.45	0.13	0.01	0.05		3.17	99.48	45	220					5	<5	<5	15	4,m,l,b	4(h)B	410
AU03747	254.00	257.00	3.00	78.44	10.62	0.14	2.38	0.18	2.21	2.65	0.13	0.02	0.05		2.76	99.58	40	210					5	5	<5	20	4,m,l,b	4(j)B	420
AU03748	269.00	272.00	3.00	76.30	12.39	0.04	3.38	0.26	2.21	1.82	0.17	0.02	0.02		2.93	99.54	55	260					5	<5	<5	15	4,m,l,b	4(h)B	494
AU01345	287.00	290.00	3.00	72.73	11.82	0.79	4.54	0.15	2.12	3.21	0.17	0.01	0.08		4.20	99.82	45	240					<5	10	<5	20	4,m,l,b	4(j)B	386
AU01346	299.00	302.00	3.00	74.62	12.43	0.31	2.32	0.16	3.26	2.41	0.18	0.02	0.03		3.77	99.51	60	250					5	10	<5	20	4,m,l,b	4(h)z	333
AU01347	314.00	317.00	3.00	51.73	12.91	5.28	4.97	0.23	3.76	6.54	0.97	0.09	0.14		13.00	99.62	20	70					5	5	5	20	2,a,m	2(h)w!	139
AU01348	319.25	321.40	2.15	79.57	10.40	0.35	1.75	0.12	2.73	1.90	0.12	0.02	0.01		2.65	99.62	105	180					5	5	<5	15	4,bx,f	4hz	325
AU01349	322.25	324.05	1.80	68.68	11.92	3.24	2.63	0.14	3.43	2.13	0.13	0.03	0.05		7.12	99.50	135	230					5	10	<5	20	4,bx,f	4hz	175
AU01350	324.05	325.80	1.75	45.46	13.11	6.24	7.21	0.71	3.27	7.79	1.01	0.12	0.13		14.37	99.42	25	80					5	5	10	15	3,f,C	2(h)u!	128

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU01336	14.00	17.00	3.00			<5		0.15	70																				
AU01337	26.95	27.25	0.30			<5		0.07	25																				
AU01338	50.00	51.40	1.40			<5		0.15	100																				
AU01339	71.00	74.00	3.00			5		0.17	140																				
AU01340	84.55	84.85	0.30			5		0.14	170																				
AU01341	92.00	95.00	3.00			5		0.08	160																				
AU01342	99.50	101.00	1.50			5		0.03	140																				
AU01343	116.00	119.00	3.00			5		0.18	140																				
AU01344	143.00	146.00	3.00			5		0.09	145																				
AU03741	152.00	155.00	3.00			<5		0.79	35																				
AU03742	164.00	167.00	3.00			<5		0.02	5																				
AU03743	182.00	185.00	3.00			<5		0.07	5																				
AU03744	200.00	203.00	3.00			<5		0.13	10																				
AU03745	218.00	221.00	3.00			<5		0.04	15																				
AU03746	239.00	242.00	3.00			<5		<0.01	5																				
AU03747	254.00	257.00	3.00			<5		<0.01	5																				
AU03748	269.00	272.00	3.00			<5		<0.01	15																				
AU01345	287.00	290.00	3.00			<5		0.20	5																				
AU01346	299.00	302.00	3.00			<5		0.24	15																				
AU01347	314.00	317.00	3.00			5		0.25	230																				
AU01348	319.25	321.40	2.15			<5		0.08	10																				
AU01349	322.25	324.05	1.80			<5		0.17	10																				
AU01350	324.05	325.80	1.75			5		0.79	230																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU01336	14.00	17.00	3.00											<5						<5			<10		0.39	0.33	4	39	12
AU01337	26.95	27.25	0.30											<5						<5			<10		0.37	0.07	5	48	3
AU01338	50.00	51.40	1.40											<5						<5			<10		0.34	0.44	1	43	34
AU01339	71.00	74.00	3.00											<5						<5			<10		0.43	0.66	3	25	8
AU01340	84.55	84.85	0.30											<5						<5			<10		0.48	0.29	1	48	10
AU01341	92.00	95.00	3.00											<5						<5			<10		0.44	0.35	2	30	5
AU01342	99.50	101.00	1.50											<5						<5			<10		0.52	0.46	1	41	8
AU01343	116.00	119.00	3.00											<5						<5			<10		0.45	0.75	2	25	6
AU01344	143.00	146.00	3.00											<5						<5			<10		0.56	0.47	1	43	17
AU03741	152.00	155.00	3.00											<5						<5			<10		0.46	0.38	3	38	12
AU03742	164.00	167.00	3.00											<5						<5			<10		0.74	0.09	2	83	71
AU03743	182.00	185.00	3.00											<5						<5			<10		0.78	0.05	1	89	31
AU03744	200.00	203.00	3.00											<5						<5			<10		0.44	0.01	3	93	48
AU03745	218.00	221.00	3.00											<5						<5			<10		0.56	0.08	3	77	310
AU03746	239.00	242.00	3.00											<5						<5			<10		0.75	0.03	2	92	28
AU03747	254.00	257.00	3.00											<5						<5			<10		0.68	0.01	2	93	28
AU03748	269.00	272.00	3.00											<5						<5			<10		0.82	0.00	1	95	19
AU01345	287.00	290.00	3.00											<5						<5			<10		0.77	0.07	1	88	67
AU01346	299.00	302.00	3.00											<5						<5			10		0.70	0.02	2	92	62
AU01347	314.00	317.00	3.00											<5						5			10		0.65	0.41	1	61	22
AU01348	319.25	321.40	2.15											<5						<5			10		0.69	0.03	3	91	42
AU01349	322.25	324.05	1.80											<5						<5			10		0.75	0.27	2	64	71
AU01350	324.05	325.80	1.75											<5						5			<10		0.69	0.48	1	60	7

HOLE NUMBER: MF13-04

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 36
CLAIM NUMBER: Prop#33, Spect Targ#561
LOCATION: Karvinen Property

PLOTTING COORDS GRID: UTM
NORTH: 5405641.00N
EAST: 459377.00E
ELEV: 290.00

ALTERNATE COORDS GRID: MF12 Grid
NORTH: 121+ 0mN
EAST: 26+ 0mE
ELEV: 290.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 245.00M
START DEPTH: 0.00M
FINAL DEPTH: 245.00M

COLLAR ASTRONOMIC AZIMUTH: 180° 0' 0"

GRID ASTRONOMIC AZIMUTH: 0° 0' 0"

DATE STARTED: 03/18/1999
DATE COMPLETED: 03/21/1999
DATE LOGGED: 04/05/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: YES
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley Bros.
CASING: 4m NQ Left in Hole
CORE STORAGE: Minesite
UTM COORD.:

COMMENTS : Intersected conductive argillite at base of felsic volcanic pile. Collared on claims P865379
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
13.00	183° 0' 0"	-51° 0' 0"	S	OK		-	-	-	-	-	
73.00	183° 0' 0"	-51° 0' 0"	S	OK		-	-	-	-	-	
133.00	187° 0' 0"	-50° 0' 0"	S	OK		-	-	-	-	-	
185.00	189° 0' 0"	-45° 0' 0"	S	OK		-	-	-	-	-	
245.00	189° 0' 0"	-45° 0' 0"	S	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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LOGGED BY: G Collins

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 4.00	«┤ob├»					
4.00 TO 39.95	«4,l,*e,<Se >»	AUTOBRECCIATED SERICITIC RHYOLITE FLOWS -Light grey to yellow, massive, flow textured and autobrecciated rhyolite. -Rhyolite hosts 1 to 3% disseminated quartz phenocrysts. -Massive sections are weakly brecciated, overprinted by fracture controlled sericitic alteration. -Hyaloclaste intervals interspace massive and flow textured intervals, possibly defining discrete flow lobes. Coarse yellow sericite alteration becomes pervasive within hyaloclastite/interlobe intervals. -Hyaloclastite observed between 14.1 and 14.5m, 27.9 and 28.2m, 35.4 and 35.8m, 38.0 and 38.3m, and 38.5 and 38.6m. -Example of flow shear laminations observed at 24.2m. -Well developed flow banding observed at 32.5. -Fracture filling hematite infills leached and vuggy core near surface. Core is blocky and rust stained from bedrock collar to 26.0m. -Towards downhole contact, rhyolite develops a strong schistocity, 45° TCA. Qtz/carbonate veining, chlorite slips, and gouge material occur within a fault/shear zone between 39.5 and 39.95m. ╣39.50-39.95╠ «┤S2 45°├» ╣39.90-39.95╠ «┤FAI├» -Downhole contact is faulted.		-Strong fracture controlled to pervasive yellow-green sericitic alteration. -Within fractures, sericite is relatively coarse grained. Sericite is preferentailly concentrated along primary fractures, flow laminations and within hyaloclatitic sections. -Sericitic alteration appears to increase in strength towards lower contact. -Unit is weakly brecciated, infilled by minor qtz/albite and qtz/carbonate fractures.	-No sulphides observed.	
39.95 TO 66.30	«4,m,f»	MASSIVE TO FRAGMENTAL TEXTURED RHYOLITE -Dark grey to green, massive, crackle brecciated rhyolite. Towards lower contact, unit becomes more fragmental in texture. Rhyolite hosts 1 to		-Minor fratcure controlled sericitic alteration. -Strong pervasive silicification. -From 58.7 to 61.3m, tensional gashes	-Autobrecciated section between 61.6 and 61.7m hosts disseminated SPH. ╣61.6-61.7╠ «1%SPH»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		3% disseminated quartz phenocrysts, and is similar in appearance to the previous unit, but is less sercicitic. -From 39.95 to 50.8m, vague monolithic fragments/blocks of rhyolite are observed. Wispy fracture controlled sericitic alteration, is observed anastamosing around fragments. -Section is weakly schistose, 50° TCA «┤S2 50°├» -From 58.8 to 66.3m, rhyolite becomes more massive, but strongly insitu brecciated. Brecciation produces a crackled texture. -Downhole contact is marked by a thin seam of gouge.		are infilled by erratically oriented qtz/albite veining. Veining occupies 15% of interval.		
66.30 TO 75.70	«4,q,n»	QUARTZ PORPHYRITIC RHYOLITE -Dark grey to black quartz phyric rhyolite. Unit hosts 3 to 5% disseminated quartz phenocrysts. -Rhyolite is highly siliceous, exhibiting cherty concoidal fracture surface when broken. -Unit is strongly insitu brecciated. Brecciation is infilled by hairline thick seams of sericite. -Uphole contact is sharp but irregular. Fragments/blobs of quartz phyric rhyolite observed several cm above the lower contact of the previous unit indicating transport/remixing of QP fragments into in the previous unit. -Densely packed yellow/green spherulites are observed from 75.4 to 75.7m. -A moderately strong schistocity is developed within spherulitic section, 50° TCA. -Downhole contact is sharp, parallel to schistocity.		-Strong pervasive silicification renders unit extremely hard. -Well developed network of thin fracture controlled sericite. -Minor qtz/albite veining. Veining occupies less than 5% of interval.	-No sulphides observed.	Unit interpreted as autobrecciated lobe of quartz porphyritic rhyolite intruding into fragmental pile.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
75.70 TO 167.25	«4,f,*h»	RHYOLITE FRAGMENTAL -Dark grey to green felsic volcaniclastics. -Unit is composed of interbedded sequences of framework supported lapillistones and agglomeratic fragmentals. Fragments are typically vaguely defined, outlined by wispy anastamosing fracture controlled chlorite/sericite. Occasionally, fragments having sharp angular outlines are observed. -Unit is predominantly monolithic, with greater than 95% of volcaniclastic material being felsic. Felsic fragments commonly host 1 to 2% disseminated quartz phenocrysts. Isolated fragments of argillitic material are observed. -Several argillite fragments noted between 78.9 and 81.0m. Argillite fragments are nearly entirely replaced by Po. -A weak schistocity defined by flattened fragments and an anastamosing sericite/chlorite cleavage occurs throughout unit. ╣78.0-78.1╠ «┤S2 33°├» -Foliation steepens to 45° TCA between 95.0 and 104.0m. ╣95.0-104.0╠ «┤S2 45°├» -Intervals of broken, leached and vuggy core observed from 113.2 to 113.3m, 118.7 to 119.0m, 119.3 to 119.9m, 131.2 to 131.3m, and 133.3 to 134.2m. -A strong schistocity is developed around a shear zone focussed at the downhole contact, from 166.0 to 167.25m. A weak lineation raking 80° on the cleavage surface is noted. ╣166.0-167.25╠ «┤S2 33°├» -Downhole contact is marked by a 2cm thick seam of consolidated gouge material.		-Moderate to strong pervasive silicification. -Wispy fracture controlled dark green sericite +/- chlorite observed throughout unit. -Fracture controlled carbonate alteration occurs throughout unit. -Localized bands of pervasively carbonatized material are observed. -Qtz/carbonate material fills tensional fractures occupying 2-4% of unit between 100.0 and 135.0m. -Intervals of strong pervasive dark green sericite/chlorite alteration developed between 128.0 and 132.5m. -Sericitic alteration increases towards the downhole contact. -Qtz/carbonate-chlorite veinlet observed between 148.4 and 148.6m.	-Trace disseminated Py observed throughout unit. -Argillite fragments are commonly replaced by Po containing trace ammounts of exsolved Cp. -Between 157.5 and 161.0m, minor stringer controlled to disseminated Py and trace disseminated Sph is observed within a strongly silicified interval. Sulphides are accompanied by a dark black amorphous mineral resembling magnetite (non-magnetic), possibly manganese oxide? -Sphalerite ranges in colour from buff to deep red.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
167.25 TO 178.70	«3,D,*a»	FELDSPAR PHYRIC ASH TUFF -Light grey, fine grain feldspar phyric tuff. Tuff appears to be predominantly composed of ash size mafic material. Some qtz/eyes are observed. -Tuff interpreted to be of intermediate (dacitic) volcanic composition. -Near the lower contact, vague lapilli sized fragment forms are apparent, suggesting a downhole coarsening in fragment size. Grading throughout the interval suggests an uphole facing direction. -Unit is overprinted by a moderately strong foliation cleavage, 30° TCA. «┤S2 30°├» -2.5cm thick gouge seam observed at 167.9m. -Downhole contact is diffuse, marked by strong pervasive chloritization.		-Moderate to strong fracture controlled to pervasive carbonatization. -Near uphole contact, carbonaceous material accompanies veining between 167.65 and 167.75m, and 171.2 and 171.5m.	-Minor disseminated Po observed in carbonaceous sections between 167.65 and 167.75 and 171.2 and 171.3m.	
178.70 TO 201.25	«3,C,f»	INTERCALATED DACITE FLOWS AND FRAGMENTALS -Brecciated massive and pillowed dacitic flows are interspaced by interflow fragmental sequences. -Flows are buff to green in colour, insitu brecciated, and highly vesicular. Insitu brecciation becomes more strongly developed towards the uphole contact of each flow. Brecciated sections grade into dacite fragmental sequences. ╣178.7-182.3╠ «3,f» -Dacitic fragmental. Unit grades from matrix supported lapilli sized mafic/dacite fragments observed near the uphole contact grade into larger (1-3cm diameter) framework supported clasts related to the underlying flow. ╣182.3-188.6.╠ «3,l,bx,e» -Breciated dacite flow. Interval hosts up to 1%		-Weak to moderately strong pervasive sericitic alteration. -Minor fracture controlled carbonatization.	-Minor disseminated to patchy textured Po. -3cm wide interval occurring at the base of the dacite flow between 182.3 and 188.6m.	-Grading indicates an uphole (north) facing direction.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		disseminated qtz phenocrysts and abundant quartz filled amygdules. Downhole contact is marked by thin band hosting 30% Po. ╢188.6-201.25╟ «3,f» -Dacitic to felsic fragmentals. Three upward fining fragmental sequences noted. Basal portion of sequences consist of framework supported dacitic fragments. Fragment size decreases uphole. -Heterolithic interval between 192.5 and 194.0m contains up to 50% angular felsic fragments. -Dowhole contact is sharp, 35° TCA.				
201.25 TO 206.50	«5,a,g»	CARBONACEOUS ARGILLITE AND SILTSTONE -Dark grey to black fine grained greywacke. Sediment grades from dark grey silts in and out of darker grey to black carbonaceous argillite. -Argillites are weakly to moderately conductive, depending on graphite content, hosting 3 to 5% patchy to disseminated euhedral PY mineralization. -Unit exhibits a weakly developed cleavage foliation, 40° TCA «┤S2 40°├» -Core is brecciated and leached around gouge material accompanying qtz/carbonate veinlet between 204.35 and 204.5m. ╢204.35-204.50╟ «┤FAI├» -Downhole contact is sharp, 40° TCA.		-Moderate to strong fracture controlled qtz/carbonate alteration. -Qtz/carbonate filled fractures and veinlets occupy 5% of interval.	-Unit hosts 3-5% patchy to disseminated euhedral PY. -Ground water leaching along fractures and fault seam has lead to the oxidation of Py to hemitite.	-Moderately strong conductor.
206.50 TO 245.00	«2,p,e,bx»	BRECCIATED AMYGDULAR MAFIC VOLCANICS -Light grey to green, brecciated pillowed to fragmental textured amygdular mafic volcanics. -Unit hosts 1 to 3% disseminated qtz/carbonate and chlorite filled amygdules. -Pillow selvages are poorly defined. Pillow		-Minor fracture controlled qtz/carbonate alteration.	-Trace disseminated PY.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		interiors are relatively massive, becoming increasingly brecciated towards pillow margins. Pillow debris and hyaolclastite, is observed in selvages. -Weak foliation cleavage observed, 37° TCA. «┤S2 37°├»				
245.00 TO 245.00	«EOH»					

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU01322	158.00	159.50	1.50	13	207	13	12.0	3	0									
AU01323	159.50	161.00	1.50	7	113	7	10.0	7	0									
AU01324	201.50	203.00	1.50	21	137	2	33.0	0	0									
AU01325	203.00	204.50	1.50	18	101	1	23.0	10	0									
AU01326	204.50	206.00	1.50	28	105	8	36.0	10	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU04724	11.00	14.00	3.00	73.71	12.10	0.29	0.15	0.21	9.12	2.20	0.14	0.01	0.08		1.42	99.43	55	240					5	5	<5	25	4,L,*e,	4(h)B	126
AU04725	29.00	32.00	3.00	75.18	11.56	0.20	0.12	0.16	8.79	2.20	0.14	0.02	0.08		1.26	99.71	55	240					5	5	<5	30	4,l,*e,	4(h)B	126
AU04726	44.00	47.00	3.00	76.18	11.48	0.56	0.83	1.96	3.20	2.49	0.14	0.01	0.05		2.59	99.49	55	250					5	15	<5	15	4,m,f	4(h)B	201
AU04727	62.00	65.00	3.00	78.14	11.09	0.46	0.26	0.39	5.81	1.81	0.14	0.02	0.07		1.69	99.88	55	220					5	5	<5	20	4,m,f,b	4(h)B	167
AU04728	71.00	72.00	1.00	77.09	10.34	0.86	0.43	0.83	5.72	2.19	0.13	0.01	0.10		2.10	99.80	55	180					5	10	<5	30	4,q,P	4(h)B	140
AU04729	77.00	78.50	1.50	73.18	11.39	1.64	1.09	0.28	4.21	3.68	0.17	0.01	0.12		4.11	99.88	55	250					<5	15	5	20	4,f,*h	4(h)B	186
AU04730	95.00	98.00	3.00	74.62	11.58	2.24	0.44	2.00	3.19	2.43	0.16	0.01	0.06		3.18	99.91	55	260					<5	15	<5	10	4,f,*h	4(h)B	156
AU04731	113.00	116.00	3.00	76.32	11.20	1.29	0.42	3.51	2.01	3.01	0.13	0.01	0.10		1.87	99.87	55	220					5	20	<5	20	4,f,*h	4(h)B	164
AU04732	128.00	131.00	3.00	74.33	11.57	2.23	0.57	2.38	2.80	2.62	0.14	0.01	0.07		3.02	99.74	50	230					5	20	<5	15	4,f,*h	4(h)B	156
AU04733	146.00	147.50	1.50	75.35	8.84	3.58	0.71	1.37	2.26	2.87	0.13	0.01	0.11		4.43	99.66	50	180					5	15	<5	20	4,f,*h	4(h)B	123
AU04734	156.50	158.00	1.50	73.50	11.58	2.16	0.72	2.60	2.37	2.92	0.18	0.02	0.09		3.52	99.66	50	240					<5	15	5	15	4,f,*h	4(h)B	162
AU04735	164.00	165.50	1.50	72.98	11.57	2.56	0.98	1.05	2.86	2.50	0.18	0.01	0.04		4.77	99.50	50	230					5	10	<5	15	4,f,*h	4(h)B	179
AU04736	173.00	176.00	3.00	53.57	13.60	7.47	2.30	0.70	2.28	7.55	0.68	0.13	0.34		11.29	99.91	20	120					10	10	5	10	3,D,*a	3(j)!	130
AU04737	185.00	188.00	3.00	52.66	14.31	7.38	2.13	1.77	2.15	6.63	0.71	0.12	0.23		11.36	99.45	20	120					10	10	5	15	3,e,l	3(j)!	127
AU04738	194.00	197.00	3.00	55.99	14.01	5.68	2.21	2.18	1.73	6.96	0.98	0.32	0.15		9.60	99.81	25	140					5	10	5	5	3,C,f	2(j)yB	146
AU04739	212.00	215.00	3.00	52.72	13.37	7.69	2.52	2.31	0.99	6.82	0.94	0.19	0.15		11.95	99.65	20	100					10	10	5	5	2,p,e,b	2(j)w!	122
AU04740	242.00	245.00	3.00	54.65	15.58	5.04	2.49	2.00	1.09	8.00	1.12	0.19	0.10		9.34	99.60	20	120					10	15	5	5	2,p,e,b	2(j)w!	192

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU04724	11.00	14.00	3.00			<5		<0.01	5																				
AU04725	29.00	32.00	3.00			<5		<0.01	5																				
AU04726	44.00	47.00	3.00			<5		<0.01	10																				
AU04727	62.00	65.00	3.00			<5		<0.01	5																				
AU04728	71.00	72.00	1.00			<5		<0.01	5																				
AU04729	77.00	78.50	1.50			<5		0.02	10																				
AU04730	95.00	98.00	3.00			<5		<0.01	5																				
AU04731	113.00	116.00	3.00			<5		0.06	5																				
AU04732	128.00	131.00	3.00			<5		0.05	5																				
AU04733	146.00	147.50	1.50			<5		0.06	5																				
AU04734	156.50	158.00	1.50			<5		0.03	10																				
AU04735	164.00	165.50	1.50			<5		0.03	15																				
AU04736	173.00	176.00	3.00			<5		0.09	120																				
AU04737	185.00	188.00	3.00			<5		0.58	125																				
AU04738	194.00	197.00	3.00			<5		0.03	60																				
AU04739	212.00	215.00	3.00			5		0.33	150																				
AU04740	242.00	245.00	3.00			5		0.13	170																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04724	11.00	14.00	3.00											<5						<5			10		0.14	0.02	33	95	24
AU04725	29.00	32.00	3.00											<5						<5			<10		0.11	0.02	42	96	31
AU04726	44.00	47.00	3.00											<5						<5			<10		0.44	0.05	6	62	8
AU04727	62.00	65.00	3.00											<5						<5			10		0.25	0.04	19	88	13
AU04728	71.00	72.00	1.00											<5						<5			<10		0.32	0.08	12	78	12
AU04729	77.00	78.50	1.50											<5						<5			<10		0.41	0.14	5	73	54
AU04730	95.00	98.00	3.00											<5						<5			<10		0.30	0.19	11	46	8
AU04731	113.00	116.00	3.00											<5						<5			<10		0.25	0.12	12	34	6
AU04732	128.00	131.00	3.00											<5						<5			<10		0.34	0.19	9	42	8
AU04733	146.00	147.50	1.50											<5						<5			<10		0.37	0.40	7	37	11
AU04734	156.50	158.00	1.50											<5						<5			10		0.37	0.19	7	39	6
AU04735	164.00	165.50	1.50											<5						<5			<10		0.48	0.22	5	52	10
AU04736	173.00	176.00	3.00											<5						<5			<10		0.42	0.55	2	36	14
AU04737	185.00	188.00	3.00											<5						<5			<10		0.43	0.52	2	32	6
AU04738	194.00	197.00	3.00											<5						<5			<10		0.43	0.41	2	33	5
AU04739	212.00	215.00	3.00											<5						<5			<10		0.47	0.58	2	26	4
AU04740	242.00	245.00	3.00											<5						<5			<10		0.42	0.32	2	34	8

HOLE NUMBER: MF15-01

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 36
CLAIM NUMBER:
LOCATION: Mahaffy Twp.

PLOTTING COORDS GRID: UTM
NORTH: 5405930.00N
EAST: 463760.00E
ELEV: 290.00

ALTERNATE COORDS GRID: MF25 grid
NORTH: 18+40N
EAST: 1+50E
ELEV: 290.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 173.00M
START DEPTH: 0.00M
FINAL DEPTH: 173.00M

COLLAR ASTRONOMIC AZIMUTH: 180° 0' 0"
GRID ASTRONOMIC AZIMUTH: 180° 0' 0"

DATE STARTED: 02/25/1999
DATE COMPLETED: 02/27/1999
DATE LOGGED: 03/10/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: NO
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley Bros.
CASING: 37m
CORE STORAGE: Kidd Creek Mine site
UTM COORD.:

COMMENTS : Testing spectrEM target 553: hit zone of 5-10% pyrrhotite stringers over 5.5m
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
47.00	182° 0' 0"	-50° 0' 0"	S	OK		-	_	_	-	-	
102.00	187° 0' 0"	-46° 0' 0"	S	OK		-	_	_	-	-	
161.00	193° 0' 0"	-44° 0' 0"	S	OK		-	_	_	-	-	
-	-	-	-	-		-	-	-	-	-	
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G. Collins
P. Prince

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 37.00	«┤ob├»					
0.00 TO 104.10	«7,G,S» mafic intrusive	-Fine to medium grained, dark green coloured mafic intrusion -Fine white coloured leucoxenes are visible throughout -Fractured to massive textured -From 37 to 60m: extensively fractured with abundant quartz-calcite-epidote veining -╢37-60╟«┤S0 50°├»: weak to moderate schistosity at 45 to 55° TCA, veining is oriented parallel to foliation -From 60 to 104.1m: intrusion is massive and homogeneous with minor quartz-calcite-epidote veining, grain size of gabbroic rock slightly increases -Minor disseminated euhedral pyrite crystals and blebby pyrrhotite are locally present -From 99.2 to 104.1m: fine grained chilled interval -Lower contact is sharp at 65° TCA		-Moderate localized fracture controlled calcite and epidote alteration -Quartz-calcite-epidote veining throughout	-Trace disseminated pyrite and pyrrhotite	
104.10 TO 109.60	«2,*a,po,se» mafic volcanic	-Fine grained, pale green coloured, locally tuffaceous, hosting stringer pyrrhotite mineralization -Weak schistosity at 65° TCA, stringers are oriented parallel to foliation -Fractured and veined: abundant fine quartz-calcite veinlets are evident throughout -Very good conductive horizon, strongly magnetic -Lower contact is sharp at 70° TCA with down hole pillow mafics		-Localized weak pervasive sericite alteration -Quartz-calcite veining throughout	-Stringer pyrrhotite zone, 5 to 10% pyrrhotite, trace to 1% pyrite, rare isolated speck of chalcopyrite -Trace fine disseminated pyrrhotite blebs are visible within tuffaceous intervals	-Excellent conductor, strongly magnetic
109.60 TO 173.00	«2,p.S» mafic volcanic	-Fine grained, pale green coloured mafic volcanics -Extensively fractured and veined: abundant quartz, feldspar, carbonate and epidote veining -Locally pillowed texture is evident -From 109.6 to 139.5m: abundant feldspathic veining, with minor quartz, calcite and epidote veinlets. Veining has no preferred orientation -From 139.5 to 173m: dominantly fine quartz-calcite veinlets, oriented parallel to		-From 109.6 to 139.5m: fracture controlled feldspar alteration -Weak to moderate fracture controlled calcite alteration throughout -Quartz-calcite-epidote veining is present throughout	-Trace fracture controlled pyrite mineralization, locally minor fine euhedral pyrite crystals within quartz-calcite veins	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		foliation -╢139.5-173╟«┤S0 70°├»: weak to moderate schistosity at 70° TCA -Minor jointing parallel to foliation at 60-70° TCA				
173.00 TO 173.00	«E.O.H.»					

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU04512	104.00	105.30	1.30	315	3980	44	75.0	24	1									
AU04513	105.30	106.00	0.70	97	227	1	65.0	38	0									
AU04514	106.00	107.00	1.00	234	1440	34	36.0	17	0									
AU04515	107.00	108.00	1.00	422	1770	43	45.0	34	1									
AU04516	108.00	109.00	1.00	246	2720	39	42.0	27	1									
AU04517	109.00	110.00	1.00	63	108	1	54.0	3	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU04707	65.00	68.00	3.00	48.24	13.26	9.59	7.07	2.88	0.08	14.35	1.25	0.12	0.22		2.43	99.49	30	70					125	110	55	190	7a	7hv	106
AU04708	122.00	125.00	3.00	47.09	15.30	8.79	8.61	3.03	0.03	12.11	0.81	0.07	0.20		3.54	99.58	20	40					80	85	125	385	2p	2hu	129

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU04707	65.00	68.00	3.00			35		0.16	285																				
AU04708	122.00	125.00	3.00			30		0.09	225																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04707	65.00	68.00	3.00											5						40			10		0.54	0.72	8	36	38
AU04708	122.00	125.00	3.00											<5						30			10		0.63	0.57	15	42	28

HOLE NUMBER: MF16-01

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 424
CLAIM NUMBER: Prop#AQ27, Spec Targ#328
LOCATION: SE Mahaffy TWP

PLOTTING COORDS GRID: UTM
NORTH: 5405020.00N
EAST: 465686.00E
ELEV: 290.00

ALTERNATE COORDS GRID: Carn61 Grd
NORTH: 181+ 0mN
EAST: 19+50mE
ELEV: 290.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 263.00M
START DEPTH: 0.00M
FINAL DEPTH: 263.00M

COLLAR ASTRONOMIC AZIMUTH: 180° 0' 0"
GRID ASTRONOMIC AZIMUTH: 0° 0' 0"

DATE STARTED: 03/29/1999
DATE COMPLETED: 03/31/1999
DATE LOGGED: 04/30/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: NO
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley Bros.
CASING: 50m NQ left in hole
CORE STORAGE: Minesite
UTM COORD.:

COMMENTS : Intersected conductive Po mineralization at 152m. Collared on Claim P1228724
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
59.00	186° 0' 0"	-48° 0' 0"	S	OK		-	-	-	-	-	
119.00	189° 0' 0"	-42° 0' 0"	S	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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LOGGED BY: G Collins

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 50.00	«┤ob├»					
50.00 TO 105.45	«7,a,m»	LEUCOXENE BEARING MAFIC DYKE/SILL -Dark green, fine grained massive leucoxene bearing mafic intrusive. Unit strongly resembles high level gabbro sill termed A/D1 at the Kidd Creek Mine. -Unit hosts 1 to 2% disseminated cream coloured leucoxene grains. -From 50.0 to 65.6m, unit is relatively fine grained, and non-foliated. -Intervals of badly broken and leached core observed from 62.5 to 62.8m, 63.7 to 64.0m, and 65.6 to 65.8m. -Gouge material accompanies breccia filling qtz/carbonate veining between 65.6 and 65.8m. Brittle fault zone. ╡65.6-65.8╞ «┤FAI├» -From 65.8 to 78.5m, unit becomes more medium grain and spotted in texture. -Core becomes increasingly sheared towards 78.6m. Shear zone is focussed at 78.6m, and is characterized by strong carbonatization and poor core recoveries. ╡78.0-79.5╞ «SZ» -From 79.5m to 83.0m, unit becomes even coarser in grain sized, and ophitic in texture. Glomeroporpyroblasts of plagioclase are observed. -Downhole from 83.0m, unit becomes increasingly aphanitic. A series of low angle joints running 20° TCA produces blocky core between 90.0 and 95.0m. -Downhole contact is irregular, marked by a thin chill zone.		-Minor gash filling chlorite. -Fracture controlled to pervasive carbonatization is strongly developed between 62.0 and 65.0m, and 84.5 and 89.0m.	-Trace disseminated Po noted throughout unit. -3 to 5% fracture controlled to disseminated Po observed between 87.35 and 87.7m. -Assay taken.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
105.45 TO 133.30	«2,a,p»	PILLOWED MAFIC VOLCANICS -Dark green fine grained pillowed mafic volcanics. -Mafics are non-vesicular, characterized by thin chloritic selvages, hosting little to no hyaloclastite. -Locally selvages host trace amounts of Po. Selvages commonly control minor qtz/carbonate veining. -Lower contact is sharp, 60° TCA, marked by a thin qtz/carbonate veinlet.		-Minor fracture and selvage controlled qtz/carbonate veining. -Minor fracture controlled epidote.	-Trace Po observed in selvages.	
133.30 TO 151.05	«7,a,m»	MAFIC SILL/DYKE -Dark green, fine grain leucoxene bearing mafic diorite sill. -Diorite is massive and non-foliated, hosting 1% disseminated cream coloured leucoxene grains. -Unit is weakly fractured, infilled by minor qtz/carbonate, albite/epidote veining, and gash filling chlorite. -Similar in appearance to first unit. -Downhole contact is sharp, 65° TCA.		-Minor fracture controlled qtz/carbonate, and albite/epidote alteration.	-No sulphides observed	
151.05 TO 155.90	«3,*t,*a»	PYRRHOTITE BEARING INTERMEDIATE TUFF/EXHALITE -Light grey to green, strongly foliated aphanitic unit, hosting minor disseminated and fracture controlled Po. -Bleached mafic, and siliceous and sericitic lapilli sized fragments are observed from 151.05 to 151.35m. -Sheared cherty/exhalite intervals hosting 4-6% Po observed between 151.35 and 151.60m, 152.18 and 152.26m, and 153.2 and 153.25m. Po bearing intervals are strongly conductive. Trace fine disseminated reddish Sph is also observed. -From 151.35 to 153.25m, unit is light grey to buff in colour. A strong sercitic cleavage foliation 55° TCA is observed.		-Minor fracture controlled carbonate alteration. -From 151.05 to 153.25m, unit is moderately sericitic. -From 153.25 to 155.0m, pervasive carbonate alteration is moderate to strong. No sericite observed. -From 155.0 to 155.9m, unit appears weakly silicified and chloritized.	-Three intervals hosting 4-10% Po observed. ╣151.35-151.60╠ «7% Po, Tr Sph» ╣152.18-152.26╠ «10% Po, Tr Sph» ╣153.20-153.25╠ «5% Po, Tr Sph»	-Po mineralization is strongly conductive. -On fracture surfaces, mm thick discs of Po are common. Po mineralization appears connective, offering an explaination to target HLEM anomaly.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-Between 153.25 and 155.0m, unit is darker green in colour and grainier in texture. Interval appears more mafic in composition. -From 155.0 to 155.9, unit is dark green in colour, but hosts abundant sericite. Foliation is so strongly developed that a slatey cleavage, 65° TCA is developed. -Downhole contact is sharp but broken, parallel to schistocity.				
155.90 TO 263.00	«2,a,p»	PILLOWED MAFIC VOLCANICS -Fine grain dark green to buff coloured pillowed mafic volcanics. -Pillows are non-vesicular, characterized by massive unbrecciated interiors rimmed with dark chloritic selvages. -Very little hyaloclastite material is observed in selvages. -Between 158.0 and 221.0m, unit is strongly pervasively carbonatized. Qtz/carbonate veining is 5-10% abundant. -Mafics become buff to yellow brown in colour between 177.0 and 221.0m. Buff coloured bleaching coincides with the development of weak pervasive sericitization in strongly carbonatized mafics. -Bleaching and carbonatization appear focussed around strongly schitose interval between 182.0 and 188.0m. Qtz/carbonate veining occupies 5-10% of interval between 182.0 and 188.0m. Foliation rotates from 50° near 182.0m, to 30° at 183.7m. -Foliation gradually rotates back to 50° downhole from 183.7m. -Downhole from 221.0m, unit becomes less schistose. Carbonatization drops off and unit becomes darker green in colour.		-Fracture and veinlet controlled carbonatization is strongly developed througout unit. -Between 158.0 and 221.0m, carbonatization becomes strong, and pervasive. -Large bull qtz/carbonate vein observed between 161.6 and 162.8m. A smaller vein is observed between 163.75 and 163.95m. -Qtz/carbonate veining becomes 7-10% abundant between 176.0 and 186.0m. Veinlets commonly host trace disseminated Py and Po. -Wispy, fracture controlled chocolate brown mineral observed between 177.0 and 177.8m. Mineral accompanies qtz/carbonate veining that also hosts minor sericite, and an orangish dusty looking mineral resembling orpiment. Interval also hosts trace dissemated Py. Was sampled for Au.	-Minor fracture and selvage controlled Po. -Qtz/carbonate veins commonly host trace disseminated Py.	
263.00 TO 263.00	«EOH»					

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU04570	87.35	87.70	0.35	511	106	1	65.0	0	0									
AU04571	150.40	151.35	0.95	96	139	1	67.0	0	0									
AU04572	151.35	152.20	0.85	108	994	17	52.0	10	0									
AU04573	152.20	153.50	1.30	80	286	8	14.0	0	0									
AU04574	177.00	177.80	0.80	85	58	1	93.0	17	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU04625	68.00	71.00	3.00	48.49	13.45	11.32	6.68	2.17	0.09	13.23	1.19	0.10	0.20		2.94	99.86	25	70					10	10	5	30		2,7hv	99
AU04626	107.00	110.00	3.00	45.65	13.67	9.12	4.72	2.23	0.42	14.03	1.37	0.13	0.26		7.96	99.56	30	80					10	10	5	25		2,7hv	116
AU04627	137.00	140.00	3.00	45.89	14.13	11.01	6.76	1.82	0.02	15.22	1.41	0.14	0.28		2.97	99.65	30	90					15	10	10	25		2,7hv	110
AU04628	167.00	170.00	3.00	43.65	13.82	9.45	7.77	2.39	0.02	10.45	0.75	0.06	0.15		11.11	99.62	15	40					10	15	10	35		2,7hu!	117
AU04629	191.00	194.00	3.00	44.28	14.18	11.43	4.84	0.86	0.53	9.70	0.74	0.05	0.21		12.78	99.60	15	40					10	35	15	40		2,7hw!	111
AU04630	227.00	230.00	3.00													0.00											2,a,p		******
AU04631	227.00	230.00	3.00	47.88	15.32	11.99	4.79	2.50	0.05	9.70	0.78	0.05	0.19		6.29	99.54	15	40					10	45	15	40		2,7hw	105
AU04631	254.00	257.00	3.00													0.00											2,a,p		******
TU04630	254.00	257.00	3.00	48.17	15.37	11.63	5.30	2.02	0.03	9.85	0.78	0.06	0.18		6.15	99.54	15	40					10	5	15	45		2,7hw	112

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU04625	68.00	71.00	3.00			5		0.13	305																				
AU04626	107.00	110.00	3.00			5		0.15	305																				
AU04627	137.00	140.00	3.00			5		0.16	315																				
AU04628	167.00	170.00	3.00			5		0.09	230																				
AU04629	191.00	194.00	3.00			5		0.12	225																				
AU04630	227.00	230.00	3.00																										
AU04631	227.00	230.00	3.00			5		0.14	235																				
AU04631	254.00	257.00	3.00																										
TU04630	254.00	257.00	3.00			5		0.10	255																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04625	68.00	71.00	3.00											<5						5			<10		0.55	0.84	1	33	5
AU04626	107.00	110.00	3.00											<5						5			<10		0.44	0.67	1	31	4
AU04627	137.00	140.00	3.00											<5						5			<10		0.51	0.78	1	35	5
AU04628	167.00	170.00	3.00											<5						5			<10		0.64	0.68	1	40	6
AU04629	191.00	194.00	3.00											<5						5			<10		0.54	0.81	3	30	41
AU04630	227.00	230.00	3.00																						******	******	******	******	******
AU04631	227.00	230.00	3.00											<5						5			<10		0.54	0.78	3	25	18
AU04631	254.00	257.00	3.00																						******	******	******	******	******
TU04630	254.00	257.00	3.00											<5						5			<10		0.56	0.76	3	28	2

HOLE NUMBER: MF16-02

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 422
CLAIM NUMBER: Prop#AQ26, Spect Targ#552
LOCATION: SE Mahaffy TWP

PLOTTING COORDS GRID: UTM
NORTH: 5405379.00N
EAST: 464782.00E
ELEV: 290.00

ALTERNATE COORDS GRID: MF16 Grid
NORTH: 12+40mN
EAST: 10+50mE
ELEV: 290.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 256.00M
START DEPTH: 0.00M
FINAL DEPTH: 256.00M

COLLAR ASTRONOMIC AZIMUTH: 180° 0' 0"

GRID ASTRONOMIC AZIMUTH: 0° 0' 0"

DATE STARTED: 03/16/1999
DATE COMPLETED: 03/18/1999
DATE LOGGED: 03/20/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: YES
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley
CASING: 55m NW
CORE STORAGE: Minesite
UTM COORD.:

COMMENTS : Intersected Po from 125.8 to 126.5m. Collared on claim P1211741
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
70.00	184° 0' 0"	-49°30' 0"	S	OK		-	-	-	-	-	
130.00	191° 0' 0"	-49° 0' 0"	S	OK		-	-	-	-	-	
190.00	190° 0' 0"	-48° 0' 0"	S	OK		-	-	-	-	-	
250.00	191° 0' 0"	-47° 0' 0"	S	OK		-	-	-	-	-	
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LOGGED BY: G Collins

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 53.00	«┤ob├»					
53.00 TO 85.75	«7,b,N»	OPHITIC TEXTURED DIORITE -Dark green, medium grained ophitic textured diorite. Rock is composed of chloritized amphibole and sausseritized feldspars phenocrysts occurring in a 50:50 ratio. Unit hosts 1 to 3% fine disseminated cream coloured leucoxene grains. -Unit is massive in texture, crosscut by minor qtz/carbonate and qtz/epidote veinlets. Minor gash filling chlorite is also observed. -A weak to moderately strong schistocity, 75° TCA is developed between 60.3 and 61.6m. ╣60.3 to 61.8╠ «┤S0 75°├» -From 82.0 to 85.75m, fracturing and qtz/epidote veining becomes strongly developed. -Downhole contact is marked by a rapid reduction in phenocryst size, possibly due to chilling against following unit.		-Minor fracture controlled qtz/carbonate, and qtz/epidote veining. -10cm wide qtz/epidote veinlet noted between 69.8 and 69.9m. -Strong pervasive carbonatization accompanies schistose interval between 60.3 and 61.6m. -Minor gash filling chorite.	-Trace disseminated PO.	
85.75 TO 102.20	«2,a,p»	PILLOWED MAFIC VOLCANICS -Dark green, fine grain pillowed mafic volcanics. Pillows have massive, weakly insitu brecciated interiors and are rimmed by thin chloritic selvages. -Unit is overprinted by minor fracture filling qtz/carbonate alteration. -Towards lower contact, unit becomes increasingly schistose. ╣98.5 to 102.2╠ «┤S0 70°├» -Lower contact is indistinct.		-Minor fracture controlled qtz/carbonate veining. -From 98.5 to 102.2m, strong carbonatization accompanies shear zone.	-Trace disseminated and fracture controlled PO.	-Downhole contact occurs within shear zone.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
102.20 TO 121.60	«7,b,N»	OPHITIC TEXTURED DIORITE -Dark green fine to medium grained ophitic textured diorite. -Unit is similar in appearance to diorite occuring at the top of the hole. -Unit is massive in texture, overprinted by minor qtz/carbonate, qtz/epidote veining, and gash filling chlorite. -Downhole contact is marked by a gradational reduction in grain size towards a sharp contact, resembling a thin chill zone.		-Minor fracture controlled qtz/carbonate, and qtz/epidote veining.	-Speck of CP noted in qtz/carbonate veinlet at 120.6m.	
121.60 TO 125.80	«2,a,p»	PILLOWED MAFIC VOLCANICS -Fine grain dark green pillowed mafics volcanics. -Pillows are non-vesicular with massive fine grained interiors, outlined with darker green chloritic selvages. -Weakly defined flow shear laminations are observed locally within pillows between 124.8 and 125.5m. -Downhole contact is sharp, 45° TCA.		-Minor fracture controlled qtz/carbonate veining.	-Trace fracture controlled PO.	-Flow shear laminations suggest mafics are Aluminous. -See WR values.
125.80 TO 126.50	«5,E,Sul»	SULPHIDIC EXHALITE -Cherty exhalite horizon hosting semi-massive PO and minor fracture controlled to disseminated SPH. -From 125.8 to 126.25m, light grey to green in colour, very hard, and finely laminated. -Interval hosts minor fracture controlled to patchy PO <5% and minor fracture controlled to disseminated SPH, and dusty SPH staining. -From 126.25 to 126.50m, unit hosts 25% PO, and is strongly conductive. -Bedding laminations are 50 to 55° TCA. ╣125.8 to 126.25╠ «┤LAMS 50°├»		-Strongly developed fracture controlled carbonate alteration.	-From 125.8 to 126.25m, unit hosts 4-6% fracture to patchy textured PO hosting trace ammounts of exsolved textured CP. -Minor fracture controlled and fine disseminated Sph observed throughout unit. Minor Sph staining also observed ╣125.80 to 126.25╠ «5%PO,0.5%SPH» -From 126.25 to 126.50m, PO mineralization occupies 25% of core. ╣126.25 to 126.50╠ «25% PO»	-Strongly conductive interval.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-Downhole contact is sharp but irregular. -From 125.8 to 126.25m				
126.50 TO 128.70	«2,p,bx»	BRECCIATED PILLOWED MAFIC VOLCANICS -Weakly brecciated pillowed mafic volcanics host minor selvage controlled PO. -Pillows have massive fine grained interiors commonly becoming weakly brecciated near selvages. Selvages contain minor Po. -Pillow selvage at 128.5m, hosts PO and a 1cm patch of CP with Tr Sph. -Upper contact is bleached, and moderately silicified. -Lower contact is defined by minor fault gouge and qtz/carbonate veining.		-Section is strongly pervasively carbonatized.	-Minor selvage controlled PO containing trace exsolved textured CP. ╣126.5 to 128.5╠ «1-2% PO»	
128.70 TO 142.65	«7,a,N»	OPHITIC TEXTURED DIORITE -Dark green, fine grained massive mafic intrusive/diorite. -Unit is weakly fractured, infilled by minor qtz/carbontate and qtz/albite veining, and gash filling chlorite. -Downhole contact is sharp, and silicified.		-Minor fracture controlled qtz/carbonate, qtz/albite, and gash filling chlorite. -Unit is overprinted by strong pervasive carbonatization.	-No sulphides observed.	
142.65 TO 154.90	«2,p,m»	PILLOWED TO MASSIVE MAFIC FLOWS -From 142.65 to 146.0m, choritic selvages hosting minor amounts of carbonaceous material and trace Po are observed. -Downhole from 146.0m, distinct selvage forms are not observed. Unit is more massive in texture. -Mafics are weakly insitu brecciated overprinted with minor fracture controlled carbonaceous alteration, and strong pervasive carbonatization.		-Strong pervasive carbonatization. -Minor fracture controlled carbonaeous material enhances weak insitu brecciation.	-0.5% selvage controlled Po observed between 144.9 and 145.5m.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-Downhole contact is sharp, marked by a flow contact, resembling a pillow selvage.				
154.90 TO 174.70	«2,7,a,bx»	MAFIC VOLCANIC/DIORITE -Fine to medium grained light green diorite. Unit is weakly to moderately brecciated, infilled by extensive qtz/carbonate veining, and gash filling chlorite. -Phenocryst size increases gradationally towards lower contact. -Downhole contact is sharp, 50° TCA.		-Unit is strongly carbonatized near the upper contact. Carbonatization drops off gradationally away from the upper contact. -Qtz/carbonate +/- chorite veinlets occupy 3-5% of unit. -25cm thick qtz/carbonate vein containing chorite and axinite observed between 163.55 and 163.80m.	-No sulphides observed.	
174.70 TO 232.25	«2,a,p»	PILLOWED MAFIC VOLCANICS Dark green, fine grained pillowed mafic volcanics. -Pillows have massive, non-vesicular interiors and are defined by well developed chloritic selvages. Selvages commonly host minor amounts of hyaloclastite debris. -Pillows are weakly insitu brecciated. -Unit is non-foliated. -Downhole contact is indistinct, marked by a disappearance of distinguishable selvages.		-Minor fracture and selvage controlled chlorite. -Strong pervasive carbonatization. -30cm thick qtz/carbonate veinlet observed between 226.56 and 226.95m.	-No sulphides observed.	
232.25 TO 247.10	«2,a,m»	MASSIVE MAFIC VOLCANICS -Dark green fine grained massive mafic volcanics. -Interval may represent a thicker flow unit within a sequence of pillowed flows. -Unit is non-foliated, but weakly brecciated, infilled by minor fracture controlled qtz/carbonate alteration. -Downhole contact is sharp, marked by minor qtz/carbonate veining.		-Moderate to strong fracture controlled to pervasive qtz/carbonate alteration.	-No sulphides observed.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
247.10 TO 256.00	«2,p,bx»	BRECCIATED PILLOWED MAFIC VOLCANICS -Dark green, pillowed mafic volcanics. Unit is similar in appearance to previous pillowed mafic units. -Pillow interiors are fine grained and non-vesicular outlined by thin choritic selvages. -Pillows are weakly insitu brecciated, accompanied by fracture controlled qtz/carbonate veining. Fracturing becomes more pronounced towards pillow margins.		-Strong fracture controlled to pervasive carbonatization. -Dark green chlorite is commonly developed within selvages.	-No sulphides observed.	
256.00 TO 256.00	«EOH»					

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU04547	124.25	125.80	1.55	103	99	1	63.0	14	0									
AU04548	125.00	126.25	1.25	86	2200	7	36.0	27	0									
AU04549	126.25	126.50	0.25	356	3480	52	71.0	65	1									
AU04550	126.50	128.00	1.50	171	456	1	39.0	24	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU04718	70.00	73.00	3.00	50.57	13.99	11.09	5.94	1.72	0.18	12.26	1.10	0.10	0.18		2.43	99.56	25	60					20	10	5	40	7,b,N	7hv	108
AU04719	88.00	91.00	3.00	49.14	12.70	10.99	4.81	1.64	0.05	12.82	1.28	0.12	0.20		5.77	99.52	30	80					20	15	10	25	2,a,p	2hv	100
AU04720	115.00	118.00	3.00	49.21	13.19	9.90	7.13	1.84	0.19	13.93	1.25	0.12	0.21		2.63	99.60	25	80					20	15	10	25	7,b,N	7(h)v	111
AU04721	128.00	128.70	0.70	51.63	13.70	4.63	5.18	2.60	0.08	15.27	1.72	0.18	0.20		4.48	99.67	30	120					15	35	5	5	2,p,bx	2(h)v	187
AU04722	148.00	151.00	3.00	50.80	14.43	12.28	5.11	1.68	0.13	9.41	0.78	0.06	0.19		4.86	99.73	15	40					15	10	15	50	2,p,m	2hw	102
AU04723	172.00	174.70	2.70	49.40	13.77	12.09	8.13	1.25	0.13	10.55	0.70	0.06	0.17		3.19	99.44	15	50					20	10	15	45	2,7,a,b	2(h)u	102
AU03738	199.00	202.00	3.00	50.48	14.02	13.12	4.97	1.61	0.06	9.14	0.75	0.05	0.18		5.46	99.84	15	40					20	10	15	45	2,a,p	2hw	95
AU03739	235.00	238.00	3.00	50.21	14.01	12.42	4.87	1.89	0.06	9.50	0.77	0.06	0.20		5.50	99.49	15	40					20	10	15	45	2,a,m	2hw	97
AU03740	250.00	253.00	3.00	49.52	14.06	13.55	4.49	1.18	0.10	9.11	0.74	0.06	0.18		6.83	99.82	15	40					15	10	15	45	2,p,bx	2hw	95

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU04718	70.00	73.00	3.00			5		0.10	280																				
AU04719	88.00	91.00	3.00			5		0.14	300																				
AU04720	115.00	118.00	3.00			5		0.15	300																				
AU04721	128.00	128.70	0.70			5		0.65	315																				
AU04722	148.00	151.00	3.00			5		0.09	240																				
AU04723	172.00	174.70	2.70			5		0.03	215																				
AU03738	199.00	202.00	3.00			5		0.13	225																				
AU03739	235.00	238.00	3.00			5		0.12	225																				
AU03740	250.00	253.00	3.00			5		0.15	230																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04718	70.00	73.00	3.00											<5						5			10		0.54	0.79	1	32	6
AU04719	88.00	91.00	3.00											<5						5			10		0.47	0.87	2	28	9
AU04720	115.00	118.00	3.00											<5						5			10		0.55	0.75	1	38	8
AU04721	128.00	128.70	0.70											<5						5			<10		0.45	0.34	1	42	13
AU04722	148.00	151.00	3.00											<5						5			<10		0.56	0.85	3	27	6
AU04723	172.00	174.70	2.70											<5						5			<10		0.65	0.88	2	38	8
AU03738	199.00	202.00	3.00											<5						5			<10		0.56	0.94	3	25	6
AU03739	235.00	238.00	3.00											<5						5			<10		0.55	0.89	3	26	5
AU03740	250.00	253.00	3.00											<5						5			<10		0.54	0.96	3	24	8

FALCONBRIDGE LIMITED
DRILL HOLE RECORD

HOLE NUMBER: MF16-03

DATE: 04/12/2000
IMPERIAL UNITS:
METRIC UNITS: X

PROJECT NAME: KIDD/HBED/EAL JV
PROJECT NUMBER: 424
CLAIM NUMBER: Prop#AQ27, Spect Targ#551
LOCATION: SE Mahaffy TWP

PLOTTING COORDS GRID: UTM
NORTH: 5405520.00N
EAST: 464224.00E
ELEV: 290.00

ALTERNATE COORDS GRID: MF15 Grid
NORTH: 14+ 0mN
EAST: 5+ 5mE
ELEV: 290.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 254.00M
START DEPTH: 0.00M
FINAL DEPTH: 254.00M

COLLAR ASTRONOMIC AZIMUTH: 210° 0' 0"
GRID ASTRONOMIC AZIMUTH: 0° 0' 0"

DATE STARTED: 03/19/1999
DATE COMPLETED: 03/21/1999
DATE LOGGED: 04/11/1999

COLLAR SURVEY: NO
RQD LOG: NO
HOLE MAKES WATER: NO

PULSE EM SURVEY: YES
PLUGGED: YES
HOLE SIZE: BQ

CONTRACTOR: Bradley Bros.
CASING: 28m NQ rods
CORE STORAGE: Minesite
UTM COORD.:

COMMENTS : Collared on claim P1228724 Intersected conductive Po from 158.5 to 159.1m
WEDGES AT:

DIRECTIONAL DATA:

Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (M)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
40.00	215° 0' 0"	-44° 0' 0"	S	OK		-	_	_	-	-	
100.00	218° 0' 0"	-44°30' 0"	S	OK		-	_	_	-	-	
160.00	232° 0' 0"	-44° 0' 0"	A	OK	Bad azimuth due to Po	-	_	_	-	-	
220.00	224° 0' 0"	-42° 0' 0"	S	OK		-	_	_	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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-	-	-	-	-		-	-	-	-	-	
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-	-	-	-	-		-	-	-	-	-	
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LOGGED BY: G Collins

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 28.00	«┤ob├»					
28.00 TO 88.65	«7,b,N»	OPHITIC TEXTURED DIORITE -Dark green, medium grained ophitic and spotty textured mafic intrusive. -Unit hosts 1-2% fine disseminated cream coloured leucoxene grains. -Unit is massive and non-foliated. Minor fracturing is infilled by qtz/carbonate veinlets and gash filling chlorite. -Joint running subparallel to core produces block core between 48.0 and 49.5m. -Minor gouge is developed along slip surfaces within sheared zone of qtz/carbonate veining. (45° TCA) -Blocky inclusions of mafic volcanics occur between 71.4 and 72.1m, and 72.8 and 73.25m. -Inclusions interpreted to be xenoliths. -Grain size becomes fine adjacent to the downhole contact, indicating chilling. -Downhole contact is sharp, 50° TCA.		-Moderate to strong fracture/veinlet controlled to pervasive carbonatization. -Minor qtz/epidote stringers. -Minor gash filling chlorite. -10cm thick Qtz/carbonate veinlet observed between 69.35 and 69.45m.	-Coarse grain disseminated euhedral Py is observed between 45.3 and 46.8m. -Shiny Py clusters up to 2cm in diameter observed -Interval also hosts minor veinlet controlled Po.	
88.65 TO 134.85	«2,a,p»	PILLOWED MAFIC VOLCANICS -Dark green, fine grain pillowed mafic volcanics. -Pillows have massive non-vesicular interiors and are outlined by well developed chloritic selvages. -Selvages are typically thin (<3cm) and do not contain notable amounts of hyaloclatitic material. -Qtz/carbonate veining occupies 5-7% of unit. -Downhole contact is marked by extensive brecciation and qtz/carbonate veining.		-Strong selvage and veinlet controlled to pervasive carbonatization. -Qtz/carbonate veining becomes 10-15% abundant between 109.0 and 114.0m. -Qtz/carbonate veining infills breccia, occupying 30% of unit between 131.4 and 137.0m.	-Trace amounts of Po accompanies qtz/carbonate veining. -Assays taken.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
134.85 TO 158.40	«7,a,m»	FINE GRAINED DIORITE -Dark green fine grain leucoxene bearing diorite. -Unit is massive in texture, overprinted by minor fracture filling qtz/carbonate veining. -Uphole contact is brecciated, infilled by extensive qtz/carbonate veining. -Jointing produces blocky core between 147.0 and 147.8m. -Downhole contact is sharp, 65° TCA.		-Minor fracture controlled qtz/carbonate alteration. -Extensive qtz/carbonate veining observed near the upper contact, and between 147.4 and 147.8m.	-Trace stringer controlled Po accompanies qtz/carbonate veining between 147.5 and 147.75m.	
158.40 TO 159.00	«5,E,g,s»	CHERT-GRAPHITE HOSTING PYRRHOTITE -Finely laminated light grey siliceous chert and dark grey/black graphitic argillite hosting 30% pyrrhotite. -Bedding laminations appear distorted by strong shearing. Shearing defines a cleavage, 65° TCA. -Interval is strongly conductive. Conductive material is gapped by a 15cm thick interval of tuffaceous mafic material from 158.75 and 158.90m. -Downhole contact is sharp, 65° TCA.		-Fracture/veinlet controlled carbonate alteration is strong.	-Unit host 30% wispy to laminar patches of Po. -Trace Cp and Sph observed.	-Conductive interval.
159.00 TO 254.00	«2,a,p»	PILLOWED MAFIC VOLCANICS -Dark green, fine grained pillowed mafic volcanics. -Pillows are well defined, with thin chloritic selvages, and massive non-vesicular interiors. -Unit is similar in appearance to previous pillowed mafic unit. -Mafics are weakly fractured, overprinted by minor fracture controlled qtz/carbonate veining. -Strongly developed carbonatized shear zone identified between 237.3 and 238.0m, 70° TCA. ╣237.3-238.0╠ «SZ» -1cm thick gouge seam observed at 237.85m. -Less strongly developed carbonatized shears observed between 220.6 and 221.1m, and 244.3 and		-Minor fracture and selvage controlled qtz/carbonate alteration. -Downhole from 215.0m, unit becomes strongly pervasively carbonatized. -Pervasive carbonatization is strongest within sheared intervals noted between 220.6 and 221.1m, 237.3 and 238.0m, and 244.3 and 248.5m.	-Trace disseminated and selvage controlled Po.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		248.5m.				
254.00 TO 254.00	«EOH»					

ASSAYS SHEET

DATE: 12/04/2000

Sample	From (M)	To (M)	Leng. (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Cu/Zn	Co ppm	Pt ppb	Pd ppb	S ppm	Se ppm	As ppm	Hg ppb	Sb ppm
AU01327	45.30	46.80	1.50	248	139	1	4.0	3	0									
AU01328	131.40	133.00	1.60	157	103	1	63.0	3	0									
AU01329	133.00	134.50	1.50	45	117	1	82.0	7	0									
AU01330	134.50	136.00	1.50	5	46	1	30.0	7	0									
AU01331	136.00	137.50	1.50	44	89	1	66.0	0	0									
AU01332	157.00	158.40	1.40	75	110	1	82.0	0	0									
AU01333	158.40	159.00	0.60	328	1540	45	119.0	3	1									
AU01334	159.00	160.00	1.00	161	117	1	210.0	0	0									
AU01335	160.00	161.00	1.00	66	69	1	107.0	0	0									

Sample	From (M)	To (M)	Leng. (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	BA PPM	RB PPM	SR PPM	CO2 %	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM
AU04741	31.00	34.00	3.00	49.13	13.53	7.29	6.29	3.27	0.14	14.25	1.50	0.13	0.18		4.07	99.78	30	90					15	10	5	15	7,b,N	7hv	126
AU04742	61.00	64.00	3.00	49.92	12.53	8.36	5.83	2.21	0.05	16.18	1.62	0.15	0.23		2.79	99.87	35	100					20	20	5	10	7,b,N	7hv	118
AU04743	97.00	100.00	3.00	49.36	13.02	10.79	4.52	1.48	0.15	13.37	1.32	0.12	0.21		5.12	99.46	30	80					15	15	10	25	2,a,p	2hv	105
AU04744	142.00	145.00	3.00	49.05	13.51	9.43	6.44	2.28	0.05	14.12	1.51	0.15	0.21		3.04	99.79	35	100					10	15	10	25	7,a,m	7hv	115
AU04745	172.00	175.00	3.00	49.36	14.24	13.01	4.87	1.52	0.03	9.37	0.75	0.05	0.19		6.25	99.64	15	40					20	10	15	45	2,a,p	2hw	98
AU04746	226.00	229.00	3.00	48.02	13.38	12.38	5.17	1.51	0.07	10.25	0.87	0.07	0.20		7.81	99.73	15	50					15	10	15	40	2,a,p	2(h)v	96
AU04747	250.00	253.00	3.00	48.49	12.85	9.03	4.97	2.31	0.38	10.79	0.89	0.13	0.20		9.48	99.52	25	80					10	10	10	30	2,a,p	2(h)v!	110

Sample	From (M)	To (M)	Leng. (M)	AG PPM	AU PPB	CO PPM	PB PPM	S PPM	V PPM	AS PPM	SN PPM	CD PPM	SB PPM	BI PPM	SE PPM	HF PPM	TA PPM	W PPM	MO PPM	TH PPM	U PPM	B PPM	CS PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	GD PPM
AU04741	31.00	34.00	3.00			5		0.03	315																				
AU04742	61.00	64.00	3.00			5		0.07	350																				
AU04743	97.00	100.00	3.00			5		0.22	305																				
AU04744	142.00	145.00	3.00			5		0.09	295																				
AU04745	172.00	175.00	3.00			5		0.16	230																				
AU04746	226.00	229.00	3.00			5		0.29	225																				
AU04747	250.00	253.00	3.00			5		0.13	170																				

Sample	From (M)	To (M)	Leng. (M)	DY PPM	ER PPM	LU PPM	OS PPB	IR PPB	RU PPB	RH PPB	PT PPB	PD PPB	LI PPM	BE PPM	MN PPM	GA PPM	GE PPM	IN PPM	TL PPM	SC PPM	BR PPM	YB PPM	NB PPM	HG PPB	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04741	31.00	34.00	3.00											<5						5			<10		0.51	0.54	1	38	3
AU04742	61.00	64.00	3.00											<5						5			<10		0.46	0.67	1	36	9
AU04743	97.00	100.00	3.00											<5						5			10		0.44	0.83	2	28	10
AU04744	142.00	145.00	3.00											<5						5			<10		0.52	0.70	2	36	7
AU04745	172.00	175.00	3.00											<5						5			<10		0.55	0.91	3	25	7
AU04746	226.00	229.00	3.00											<5						5			<10		0.55	0.93	3	27	7
AU04747	250.00	253.00	3.00											<5						5			<10		0.52	0.70	2	32	4

Ontario Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use)
W0060. 00177
Assessment Files Research Imaging

FINAL REVISED

subsection 65(2) and 66(3) of the Mining Act. Under section 8 of the Mining Act, ssesment work and correspond with the mining land holder. Questions about this orthern Development and Mines, 3rd Floor, 933 Ramsey Lake Road, Sudbury,

42A14SW2008 2.20231 MAHAFFY 900

Instructions:
- For work performed on Crown Lands before **recording** a claim, use form 0240.
- Please type or print in ink.

1. Recorded holder(s) (Attach a list if necessary)

Name FALCONBRIDGE LIMITED	Client Number 130679
Address KIDD CREEK MINESITE HWY 655 NORTH, BOX 1140	Telephone Number (705) 267-1188
TIMMINS ONTARIO, P4N 7H9	Fax Number (705) 267-8874
Name EXPLORERS ALLIANCE CORPORATION	Client Number 303065
Address 8th FLOOR, 350 BAY STREET	Telephone Number (416) 360-5333
TORONTO, ONTARIO M5H 2S6	Fax Number (416)360-4419

2. Type of work performed: Check (✓) and report on only ONE of the following groups for this declaration.

☒ Geotechnical: prospecting, surveys, assays and work under section 18 (regs)

☒ Physical: drilling stripping, trenching and associated assays

☐ Rehabilitation

		Office Use
Work Type: Linecutting, HLEM/Mag, Diamond Drilling, Borehole PEM Surveys		Commodity
		Total $ Value of Work Claimed $112,159
Dates Work Performed From Day 01 | Month 08 | Year 1998 To Day 14 | Month 04 | Year 2000		NTS Reference
Global Positioning System Data (if available)	Township/Area REID/MAHAFFY TWPS	Mining Division Porcupine
See Drill Logs	M or G-Plan Number G3966, 3024	Resident Geologist District Timmins

Please remember to:
- obtain a work permit from the Ministry of Natural Resources as required;
- provide proper notice to surface rights holders before starting work;
- complete and attach a Statement of Costs, form 0212;
- provide a map showing contiguous mining lands that are linked for assigning work;
- include two copies of your technical report.

RECEIVED
APR 18 2000
GEOSCIENCE ASSESSMENT OFFICE

3. Person or companies who prepared the technical report (Attach a list if necessary)

Name GREG COLLINS	Telephone Number (705) 267-1188 ext.(6)
Address KIDD CREEK MINESITE, BOX 1140, TIMMINS ONTARIO P4N 7H9	Fax Number (705) 267-8874
Name DOUG LONDRY	Telephone Number (705) 523-5479
Address 547 Loach's Road, Sudbury Ont., P3E 2R3	Fax Number (705) 523-5479
Name CRONE GEOPHYSICS AND EXPLORATION LTD	Telephone Number (905) 270-0096
Address 3607 WOLFEDALE ROAD, MISSISSAUGA ON, L5C 1V8	Fax Number (905) 270-3472

RECEIVED
APR 17 2000
9:00AM
PORCUPINE MINING DIVISION

4. Certification by Recorded Holder or Agent

I, Greg Collins (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent Greg Co		Date Apr 14 2000
Agent's Address Box 1140, Timmins P4N 7H9	Telephone Number (705) 264-5200 (Ext 8245)	Fax Number 267-8874

0241 (03/97)

3

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

See FINAL REVISED

APR 17 '00 16:34 705 267 8874 PAGE.02

Reid Malaffy Corrections

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

FINAL REVISED

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work Performed on this claim or other mining land.	Value of work Applied to this Claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
865389			$400		
865393			$400		
865394			$400		
865395			$400		
987327			$400		
987328			$400		
987329			$400		
987351			$400		
987354			$400		
758956			$400		
758957			$400		
758958			$400		
987320			$400		
987321			$400		
987322			$400		
987323			$400		
987324			$400		
987325			$400		
987326			$400		
987352			$400		
987353			$400		
865374			$400		
865375			$400		
865376		~~$1,823~~ 2,083	$400		~~$1,423~~ $1,683
865377		$4,787	$400		$4,387
~~865378~~		[illegible]	~~$400~~		~~$1,423~~
865382		~~$1,823~~ 2,083	$400		~~$1,423~~ $1,683
865383			$400		
865384			$400		
865387		~~$1,823~~ 2,083	$400		~~$1,423~~ $1,683
865388		~~$1,823~~ 2,083	$400		~~$1,423~~ $1,683
987339			$400		
987340			$400		
987341		$2,735	$400		$2,335
987342			$400		
Column Totals		~~$16,637~~ $15,854	~~$14,000~~ $13,600	$0	~~$13,837~~ 13,454

0290 (02/96)

04/17/00 15:25 ☎705 267 8874 FALCONBRIDGE EXP 002/006

Column Totals	$16,637	$14,000	$0	$13,701

0290 (02/96)

3

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

[illegible] FINAL REVISED

APR 17 '00 16:35 705 267 8874 PAGE.03

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

FINAL REVISED

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work Performed on this claim or other mining land.	Value of work Applied to this Claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
987343			$400		
987344			$400		
987345			$400		
987346			$400		
987347			$400		
987348			$400		
987349			$400		
987350			$400		
758754		~~$1,823~~ $ 2,083	$400		~~$1,423~~ $ 1,683
758755			$400		
758756			$400		
758757			$400		
758758			$400		
758955		~~$1,823~~ $ 2,083	$400		~~$1,423~~ $ 1,683
987315			$400		
987316			$400		
987317			$400		
987318			$400		
987319			$400		
987330			$400		
987331			$400		
987332			$400		
987333			$400		
987334			$400		
987335			$400		
987336			$400		
987337			$400		
987338			$400		
865379		$20,564	$400		$20,164
865385		$27,310	$400		$26,910
865386	1	$4,068	$400		$3,668
865378	1	~~$1,823~~ $ 2,086	$400		~~$1,423~~ $ 1,686
865381	1	$5,685	$400		$5,285
865380	1	$5,864	$400	$400	$5,064
865390	1		$400		
	Column Totals	$85,597	~~$28,000~~ $ 27,600	$400	~~$78,197~~ $ 79,597

0290 (02/96)

04/17/00 15:25 705 267 8874 FALCONBRIDGE EXP 003/006

	Column Totals	$85,597	$25,200	$0	$81,861

0290 (02/96)

3

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

All FINAL REVISED

Mining Claim Number. Or if	Number of Claim	Value of work	Value of work	Value of work	Bank. Value of work

705 267 8874 PAGE.04 APR 17 '00 15:36

Ontario Ministry of Northern Development and Mines

Schedule for Declaration of Assessment Work on Mining Land

Transaction Number (office use) W0060.00177

FINAL REVISED

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work Performed on this claim or other mining land.	Value of work Applied to this Claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
865391	1	$3,170	$400		$2,770
1211741	16	$23,053		$21,600	$1,453
1228724	16	$47,905			$47,905
921754	1	$2,464		$400	$2,064
865392	1		$400		
Column Totals		$162,189	~~$28,000~~ $28,400	$22,400	~~$133,389~~ $133,789

0290 (02/96)

04/17/00 15:25 ☎705 267 8874 FALCONBRIDGE EXP 004/006

Column Totals	$162,189	~~$25,200~~ $25,600	~~$21,600~~ $22,000	~~$136,989~~ $136,589

G.C.

0290 (02/96)

3

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use) W0060.00177-

Personal information collected on this form is obtained under the authority of subsection 6 (1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, this information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to a Provincial Mining Recorder, Ministry of Northern Development and Mines, 3rd Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

Work Type	Units of work Depending on the type of work, list the number of hours/day worked, metres of drilling, kilometres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
Linecutting	56 km	$304/km	$17,024
HLEM (222,444,1777Hz – 200m)	53.6 km	$176/km	$9,434
Mag (Scintrex IGS-2/MP-4) [redacted]	54.4 km	$107/km	$5,821
HLEM/ MAG Reports (JS44,JS12)	2 Reports with copies	$535/ Report	$535
Diamond Drilling (Holes MF13-04, MF12-28, MF15-01, MF16-01, MF16-02, MF16-03)	1515m	$60/m	$90,900
Bore-hole Surveys	20 days	$1,605/day	$32,100
Surface TEM/BHPEM Report	1 Report with copies	$500/ Report	$500
Geological Supervision and Services	25 days	$200/day	$5,000
Associated Costs (e.g. supplies, mobilization and demobilization).			
Transportation Costs			
Truck Rental and Fuel	25 days	$35/day	$875
Food and Lodging Costs			
		Total Value of Assessment Work	$162,189

RECEIVED
APR 18 [illegible]
GEOSCIENCE ASSESSMENT OFFICE

RECEIVED
APR 17 2000
PORCUPINE MINING DIVISION

Calculations of Filing Discounts:

1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

TOTAL VALUE OF ASSESSMENT WORK x 0.50 = Total $ value of worked claimed.

Note:

- Work older than 5 years is not eligible for credit.
- A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification. If verification and/or correction/clarification is not made, the Minister may reject all or part of the assessment work submitted.

Certification verifying costs:

I, Greg Collins (please print full name), do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying Declaration of Work form as Senior Field Geologist. (recorded holder, agent, or state company position with signing authority) I am authorized to make this certification.

**Ministry of
Northern Development
and Mines**

**Ministère du
Développement du Nord
et des Mines**

Ontario

Geoscience Assessment Office
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (888) 415-9845
Fax: (877) 670-1555

Visit our website at:
www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm

July 7, 2000

FALCONBRIDGE LIMITED
SUITE 1200, 95 WELLINGTON STREET WEST
TORONTO, ONTARIO
M5J-2V4

Submission Number: 2.20231

Dear Sir or Madam:

		Status
Subject: Transaction Number(s):	W0060.00177	Approval

We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice. Allowable changes to your credit distribution can be made by contacting the Geoscience Assessment Office within this 45 Day period, otherwise assessment credit will be cut back and distributed as outlined in Section #6 of the Declaration of Assessment work form.

Please note any revisions must be submitted in DUPLICATE to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact BRUCE GATES by e-mail at bruce.gates@ndm.gov.on.ca or by telephone at (705) 670-5856.

Yours sincerely,

Steven B. Beneteau

ORIGINAL SIGNED BY
Steve B. Beneteau
Acting Supervisor, Geoscience Assessment Office
Mining Lands Section

Correspondence ID: 15037
Copy for: Assessment Library

Work Report Assessment Results

Submission Number: 2.20231

Date Correspondence Sent: July 07, 2000

Assessor: BRUCE GATES

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W0060.00177	987343	REID, MAHAFFY	Approval	July 07, 2000

Section:
16 Drilling PDRILL
18 Other DHGEO
14 Geophysical EM
14 Geophysical MAG

Correspondence to:
Resident Geologist
South Porcupine, ON

Assessment Files Library
Sudbury, ON

Recorded Holder(s) and/or Agent(s):
Greg Collins
TIMMINS, ON, CAN

FALCONBRIDGE LIMITED
TORONTO, ONTARIO

EXPLORERS ALLIANCE CORPORATION
TIMMINS, ONTARIO

NOTES

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

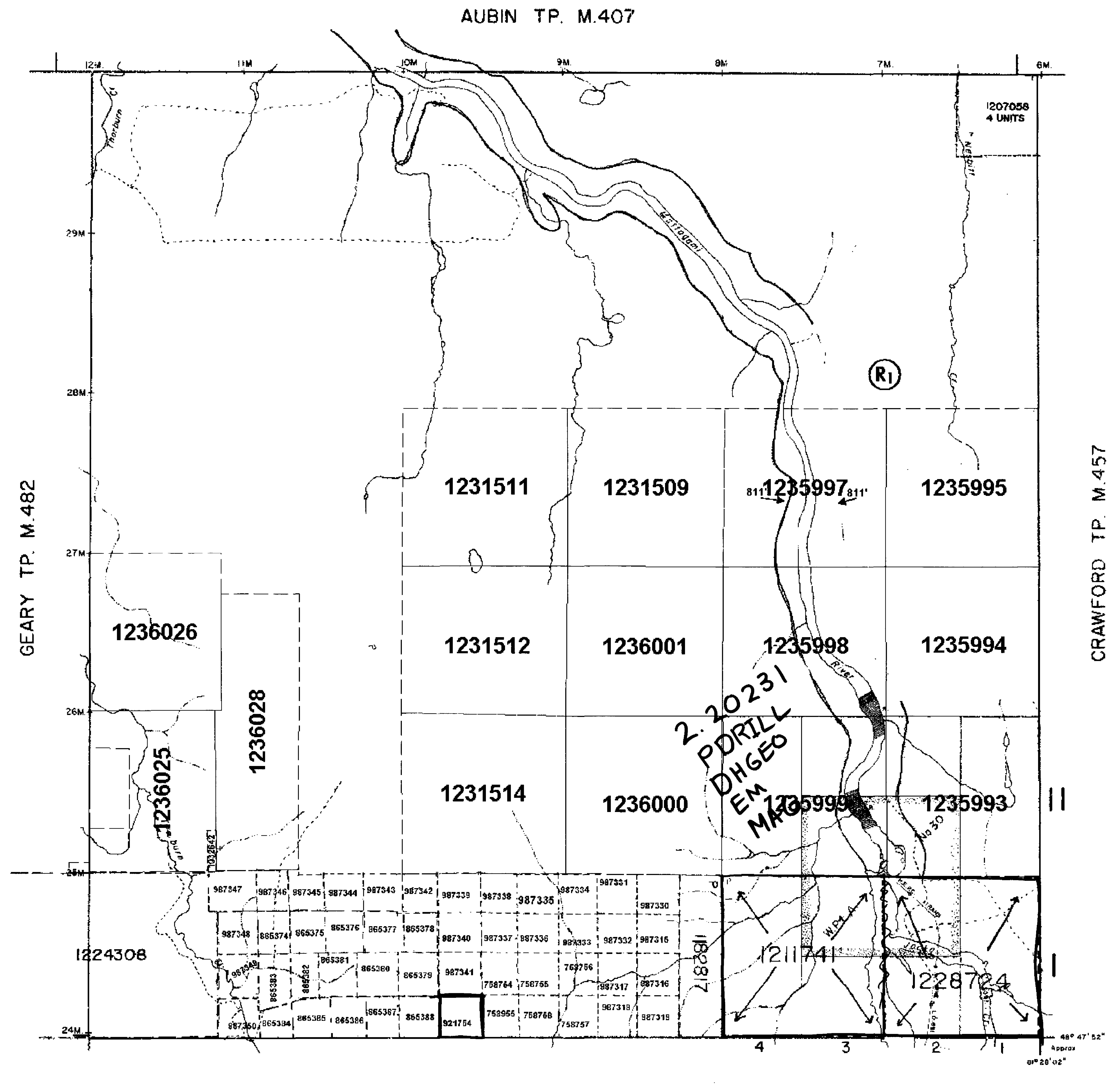
Subdivision of this township into lots and consessions is partially annalled July 2,63.

L.O. 7085 Flooding Rights in lots 1,2 and 3, Con. I to H.E.P.C.

FLOODING RESERVATION TO CONTOUR ELEVATION 811 ft ON MATTAGAMI RIVER RESERVED TO ONTARIO HYDRO

Ⓡ₁ Sec. 35 W - LL - C 1586/99 07/05/99 M+S

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.



42A14SW2008 2.20231 MAHAFFY 200

LEGEND

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

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	◓
MINING RIGHTS ONLY	◒
LEASE SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	⬒
MINING RIGHTS ONLY	⬓
LICENCE OF OCCUPATION	▼
CROWN LAND SALE	C.S.
ORDER-IN-COUNCIL	OC
RESERVATION	Ⓡ
CANCELLED	ⓧ
SAND & GRAVEL	Ⓢ
L.U.P.	●

SCALE : 1 INCH 40 CHAINS

FEET 0 500 1000 2000 4000 6000 8000

METRES 0 200 400 600 800 1 KM 2 KM

ACRES	HECTARES
40	16

TOWNSHIP

MAHAFFY

DISTRICT

COCHRANE

MINING DIVISION

PORCUPINE

Ministry of Natural Resources
Ontario Surveys and Mapping Branch

Date MAY 3, 1973

Whitney Block
Queen's Park, Toronto
RECEIVED MAY 8, 1980

Plan No. G-3024

AREAS WITHDRAWN FROM DISPOSITION

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

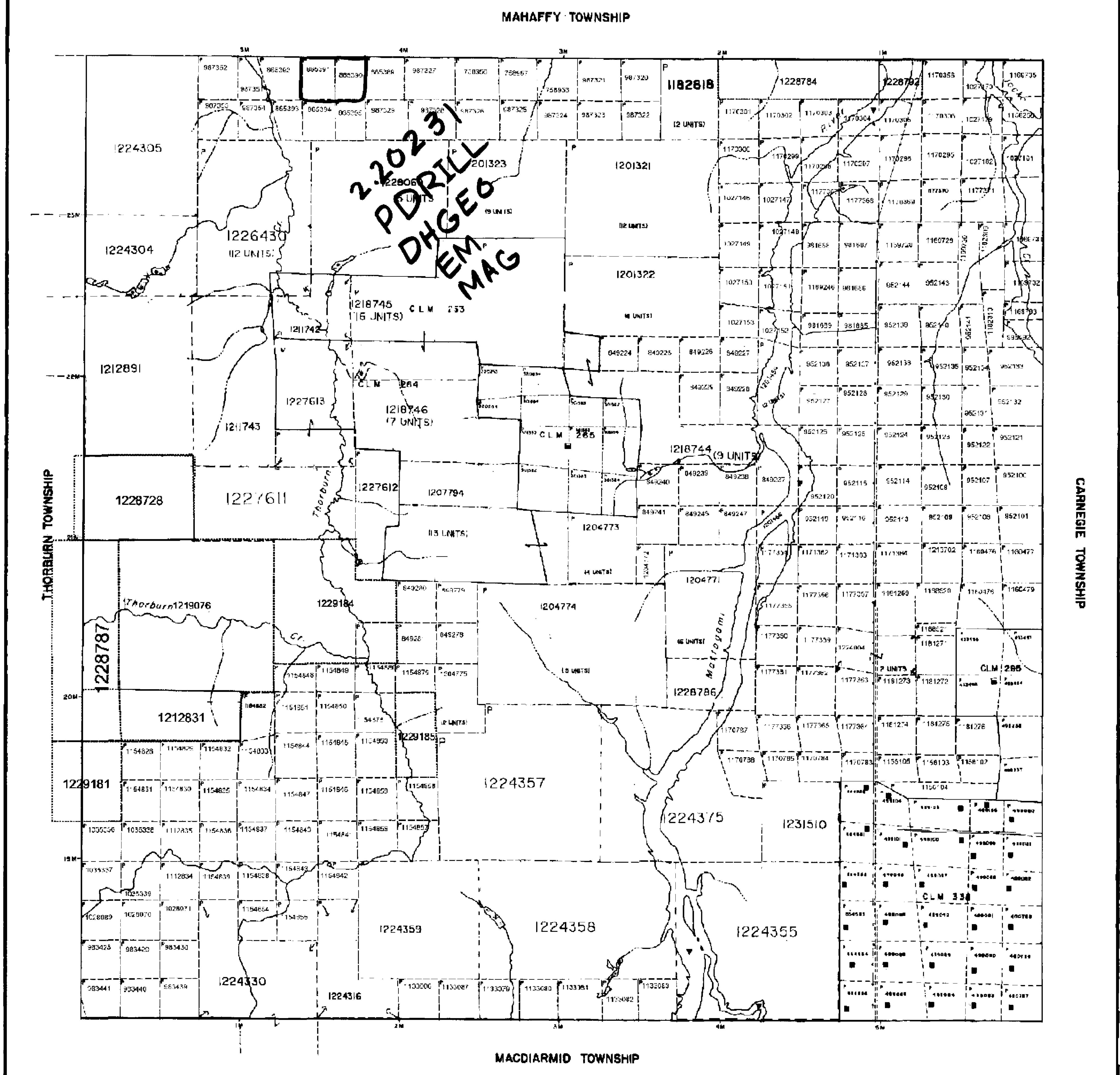
Description	Order No.	Date	Disposition	File

NOTES

TOWNSHIP SUBDIVISION ANNULLED AUGUST 19, 1958

FLOODING ON MATTAGAMI RIVER L.O. 7085

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.



LEGEND

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

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	◒
" , MINING RIGHTS ONLY	◓
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	⬒
" , MINING RIGHTS ONLY	⬓
LICENCE OF OCCUPATION	▼
ORDER IN COUNCIL	OC
RESERVATION	Ⓡ
CANCELLED	⊗
SAND & GRAVEL	Ⓢ

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

SCALE 1:20 000

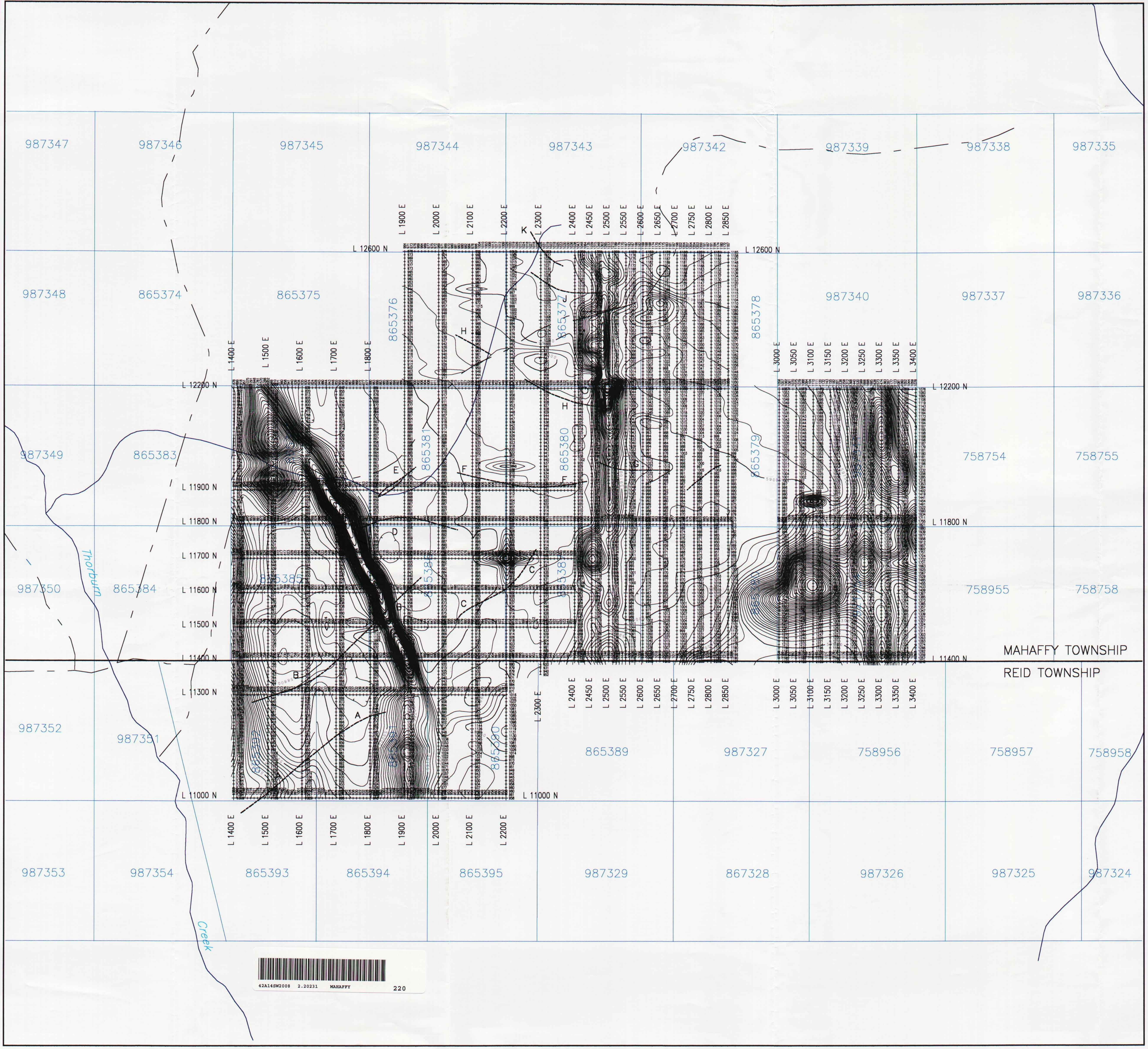
TOWNSHIP
REID

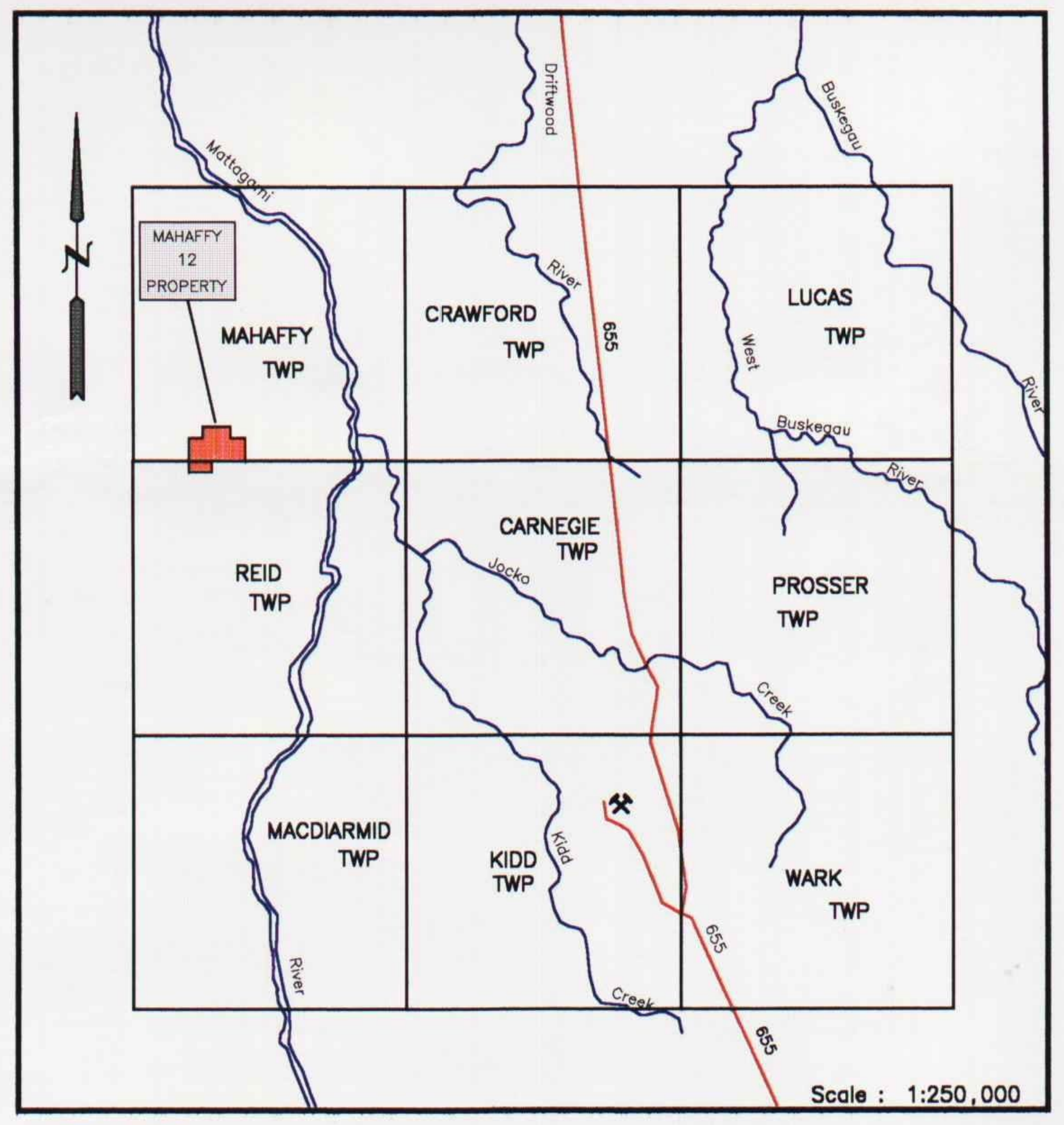
M N R ADMINISTRATIVE DISTRICT
TIMMINS
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
COCHRANE

Ontario
Ministry of Natural Resources
Ministry of Northern Development and Mines

Date SEPTEMBER, 1986
ACTIVATED APR 6/88 BY GYE.
CHECKED BY: A.R.W.
Number
G-3966

42A14SW2008 2.20231 MAHAFFY 210





INDEX MAP

LEGEND

Instrument : Scintrex IGS-2/MP-4
Type : Total Field Proton Precession
Datum Level : 58000 nT
Contour Interval : 25 nT
Gridded By : Geosoft Bigrid
Cell Size : 10.0 metres
Filter : 1 Pass 9 Point Hanning
— — — EM Anomaly, 444 Hertz

2.20231

0 100 m 200 m 300 m 400 m 500 m
Scale : 1:5000

FALCONBRIDGE LIMITED

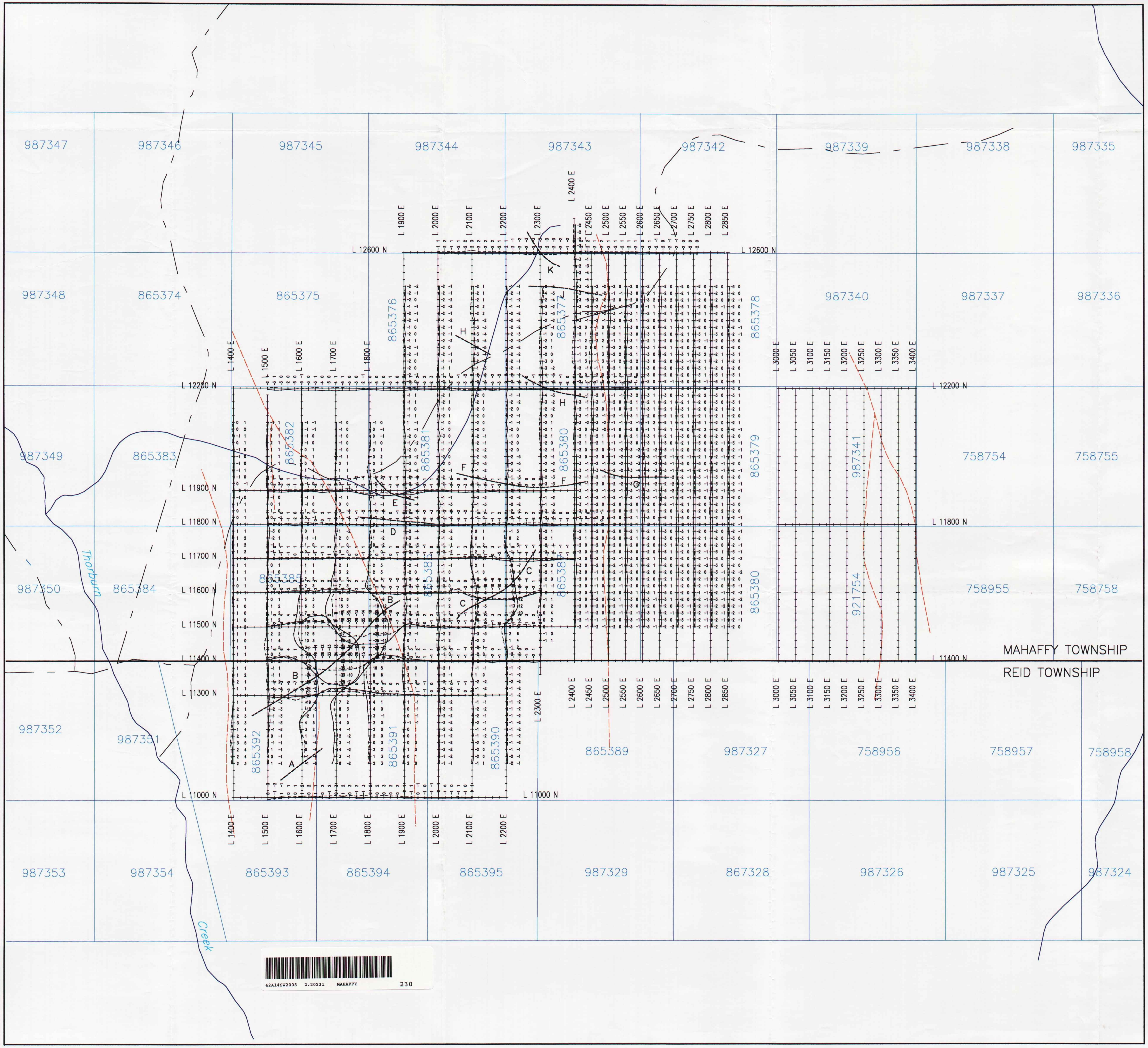
MAGNETIC SURVEY

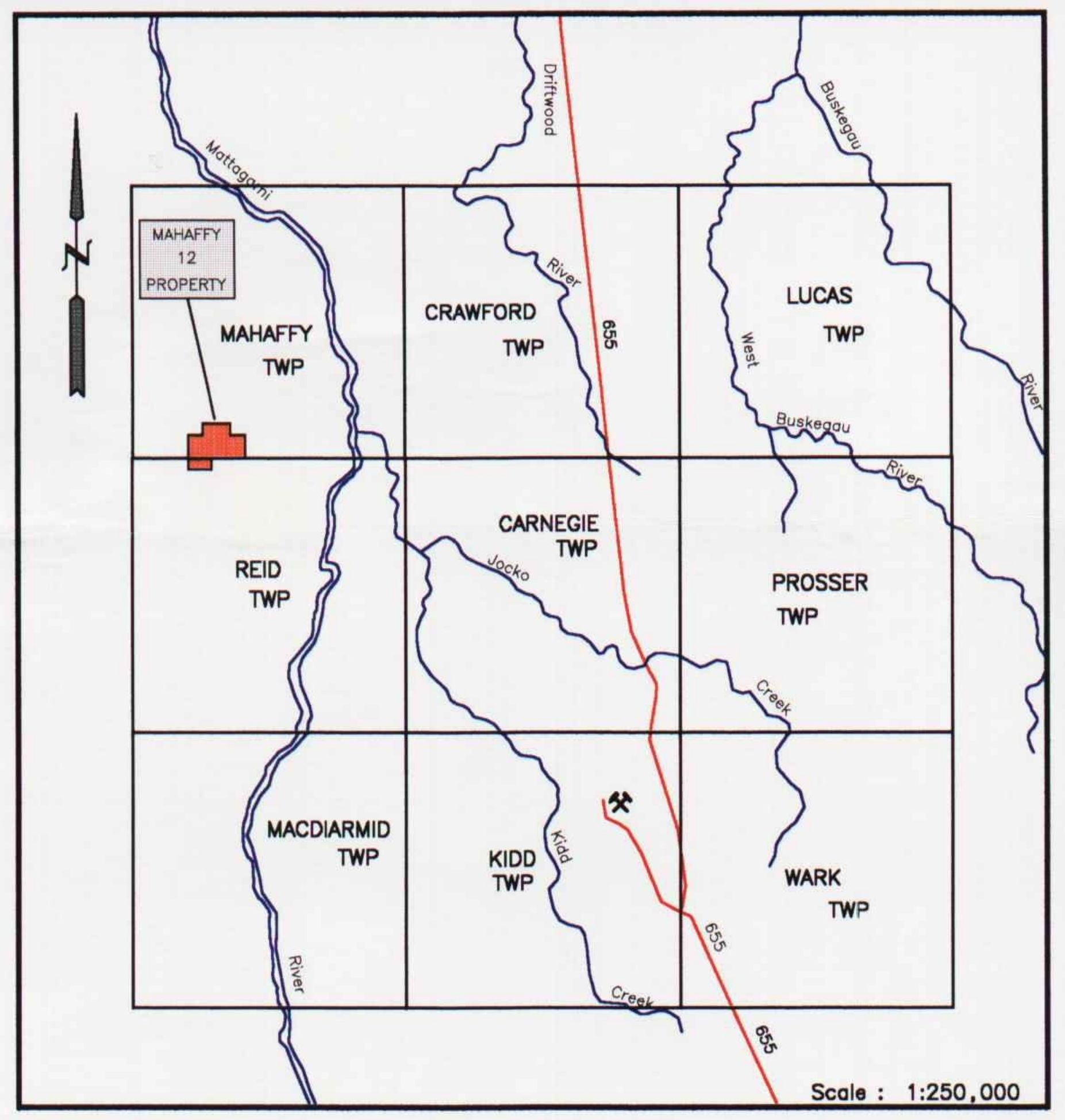
MAHAFFY 12

MAHAFFY TOWNSHIP

File : M12.XYZ	Date : February, 1999
NTS : 42-A/12	Proj # : 8036

WORK BY : Timmins Geophysics Ltd.

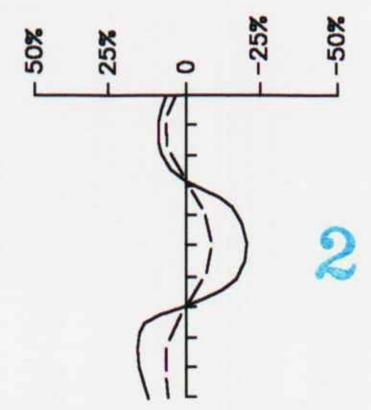




INDEX MAP

LEGEND

Instrument : Apex Parametrics MaxMin I-5
Coil Separation : 200 metres
Frequency : 222 Hertz
Profile Scale : 1cm = 25%



In-phase ————
Quadrature — — — —

0 100 m 200 m 300 m 400 m 500 m
Scale : 1:5000

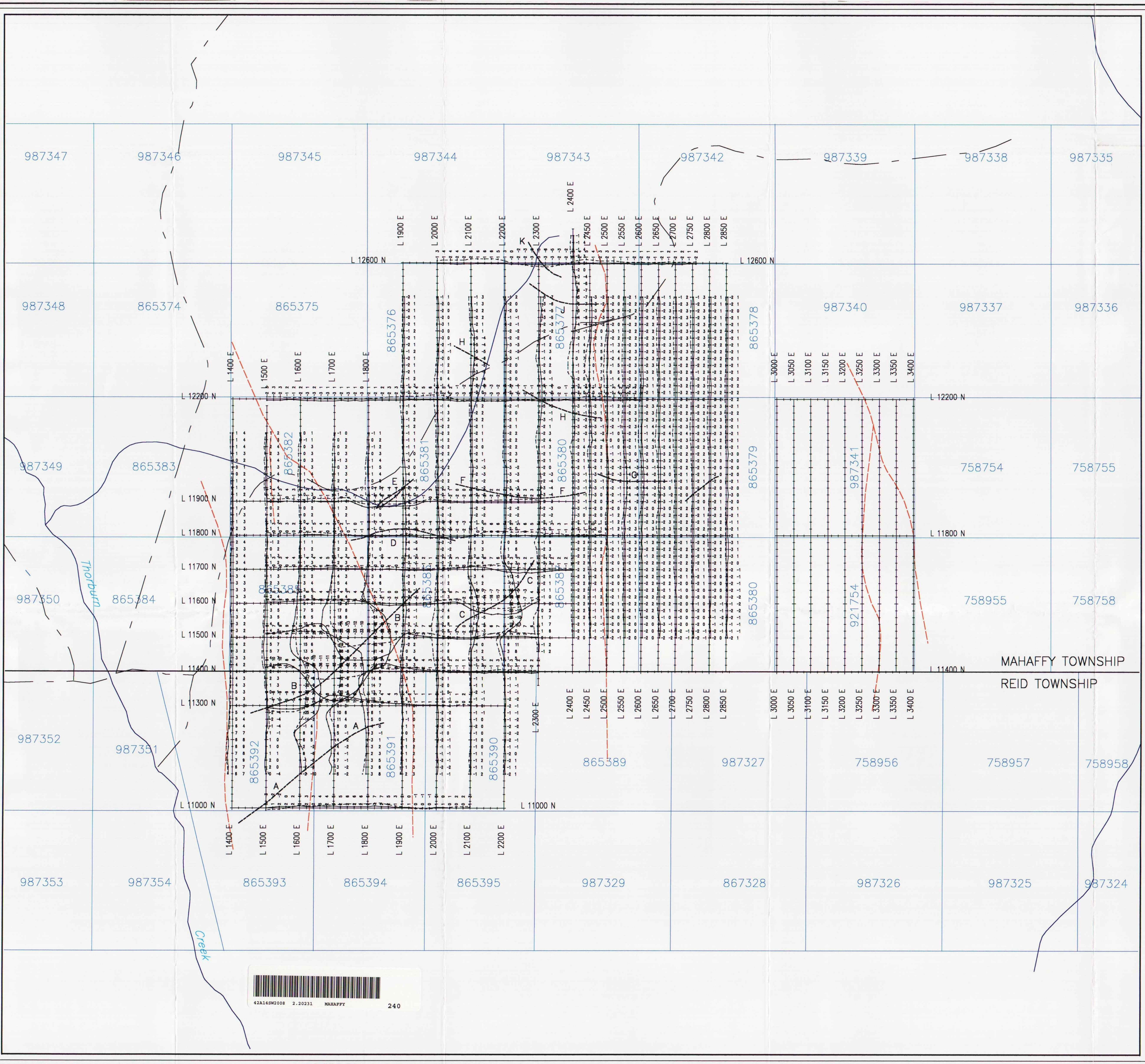
FALCONBRIDGE LIMITED

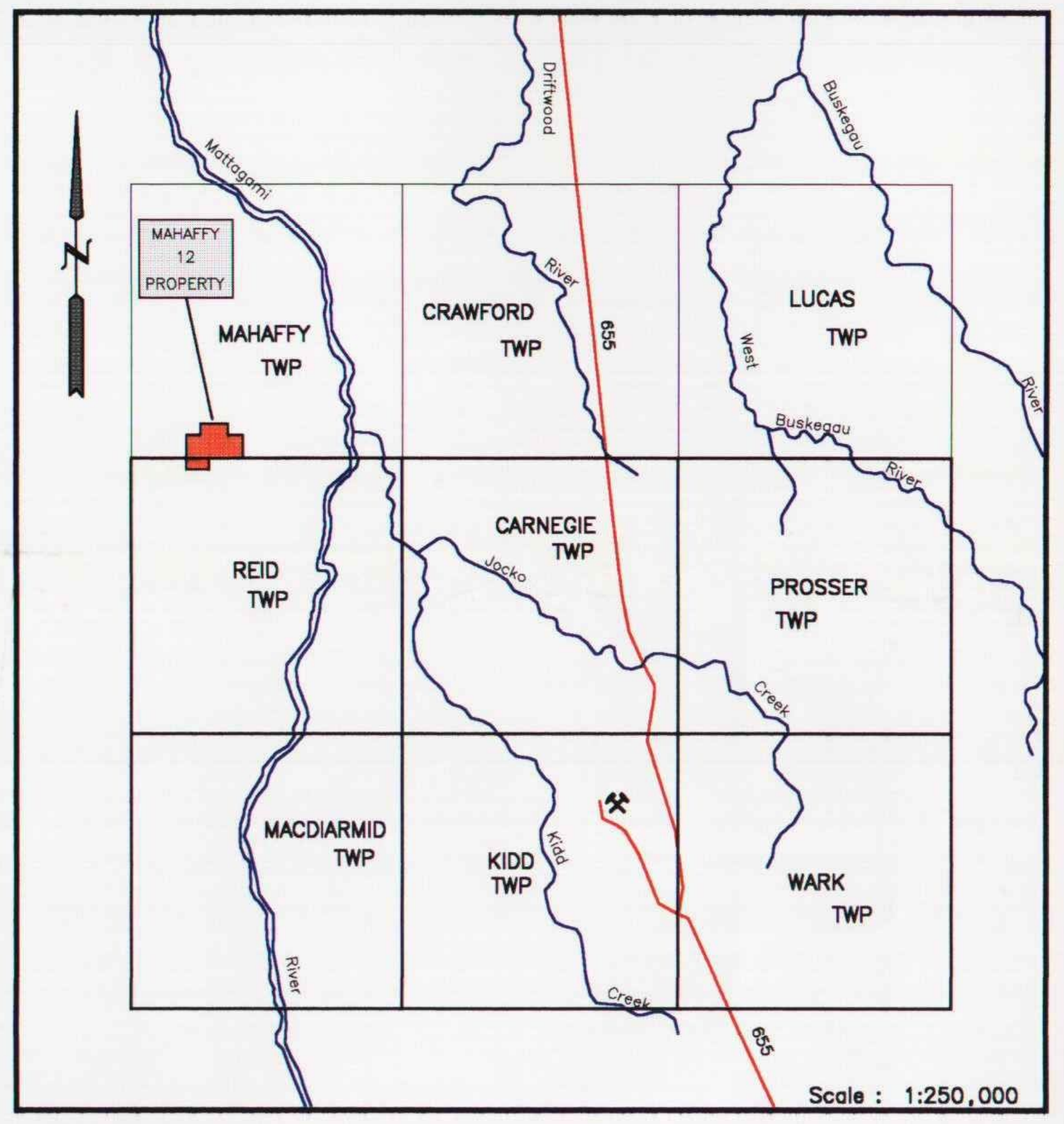
HLEM SURVEY (222 Hz)

MAHAFFY 12

MAHAFFY TOWNSHIP

File : M12HL.XYZ	Date : February, 1999
NTS : 42-A/12	Proj # : 8036
WORK BY : Timmins Geophysics Ltd.	

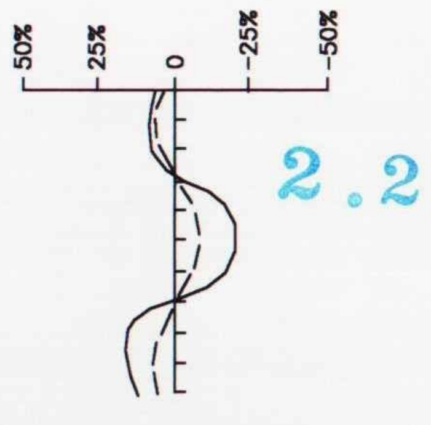




INDEX MAP

LEGEND

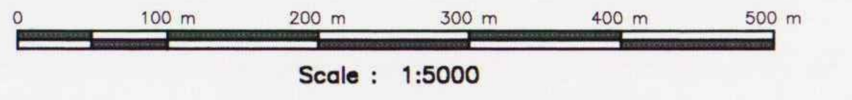
Instrument : Apex Parametrics MaxMin I-5
Coil Separation : 200 metres
Frequency : 444 Hertz
Profile Scale : 1cm = 25%



In-phase ——————
Quadrature — — — —

Diabase Dike

2.20231



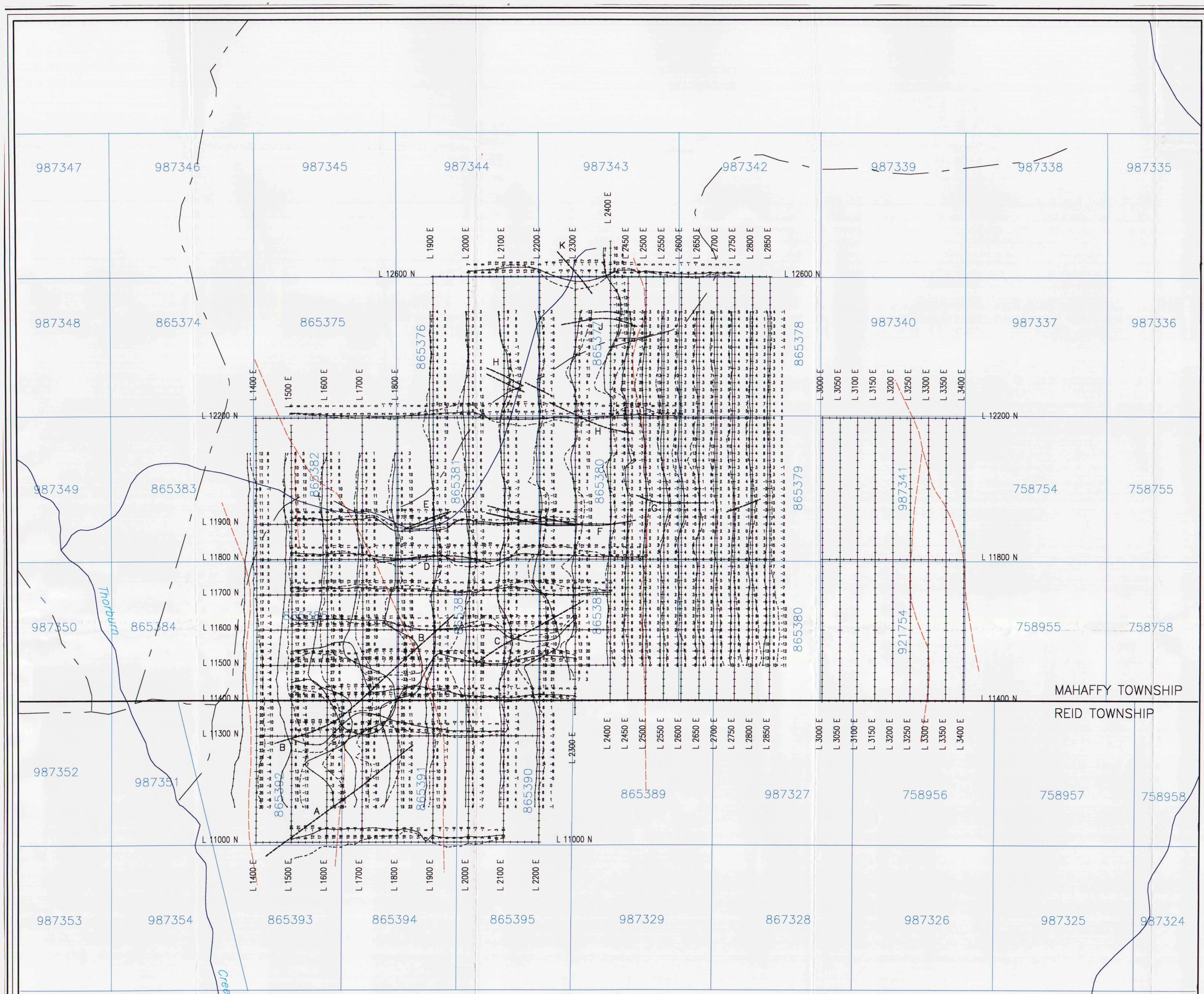
FALCONBRIDGE LIMITED

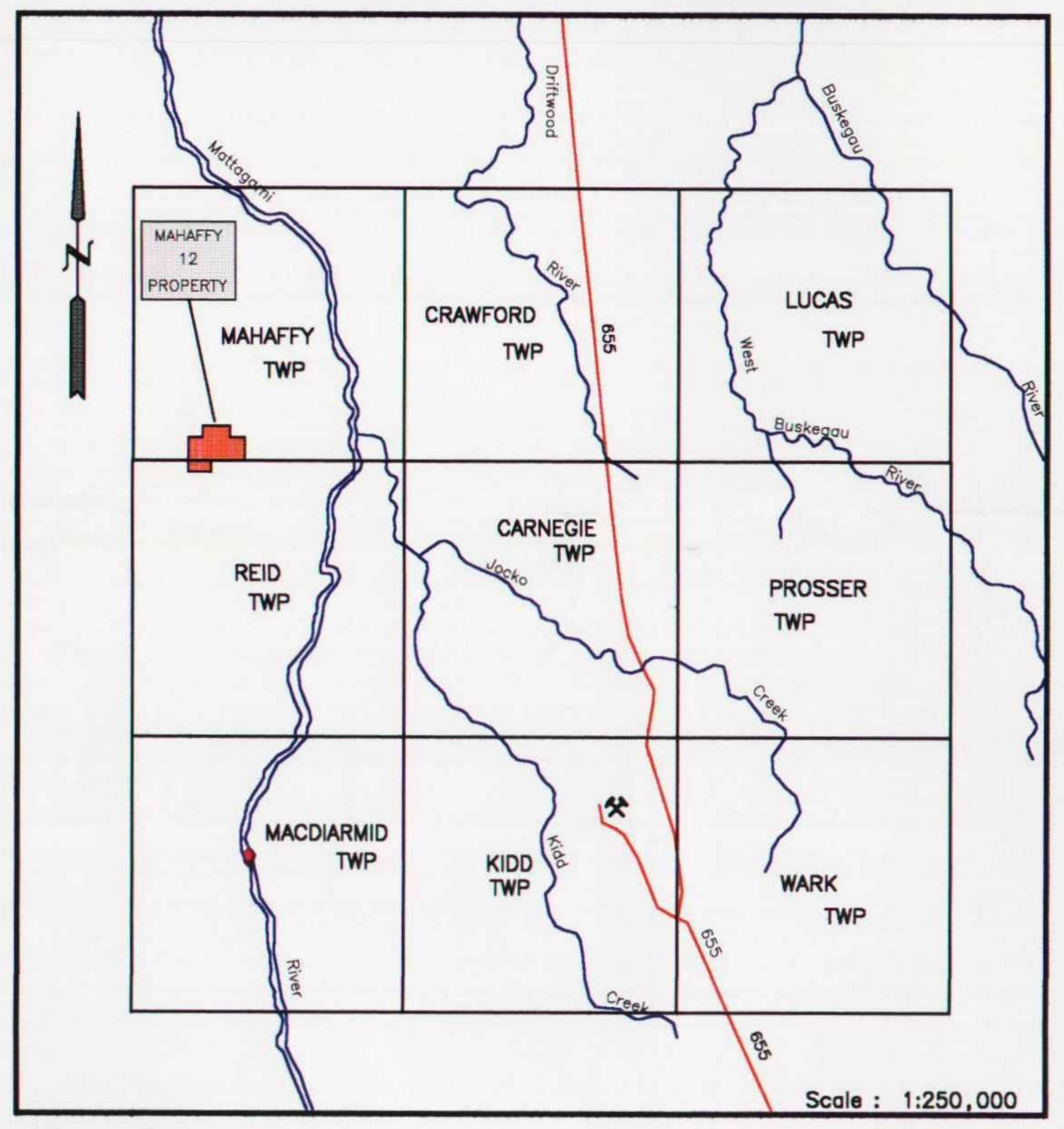
HLEM SURVEY (444 Hz)

MAHAFFY 12

MAHAFFY TOWNSHIP

File : M12HL.XYZ	Date : February, 1999
NTS : 42-A/12	Proj # : 8036
WORK BY : Timmins Geophysics Ltd.	

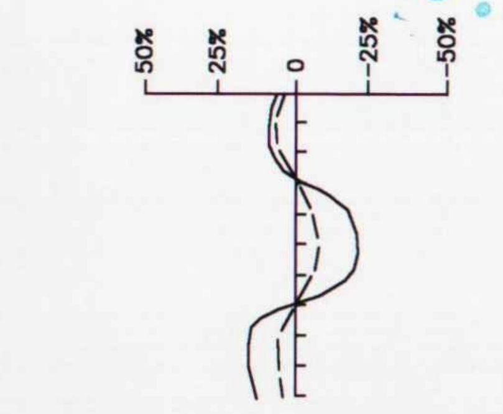




INDEX MAP

LEGEND

Instrument : Apex Parametrics MaxMin I-5
Coil Separation : 200 metres
Frequency : 1777 Hertz
Profile Scale : 1cm = 25%



In-phase	———
Quadrature	— — — —

0 100 m 200 m 300 m 400 m 500 m

Scale : 1:5000

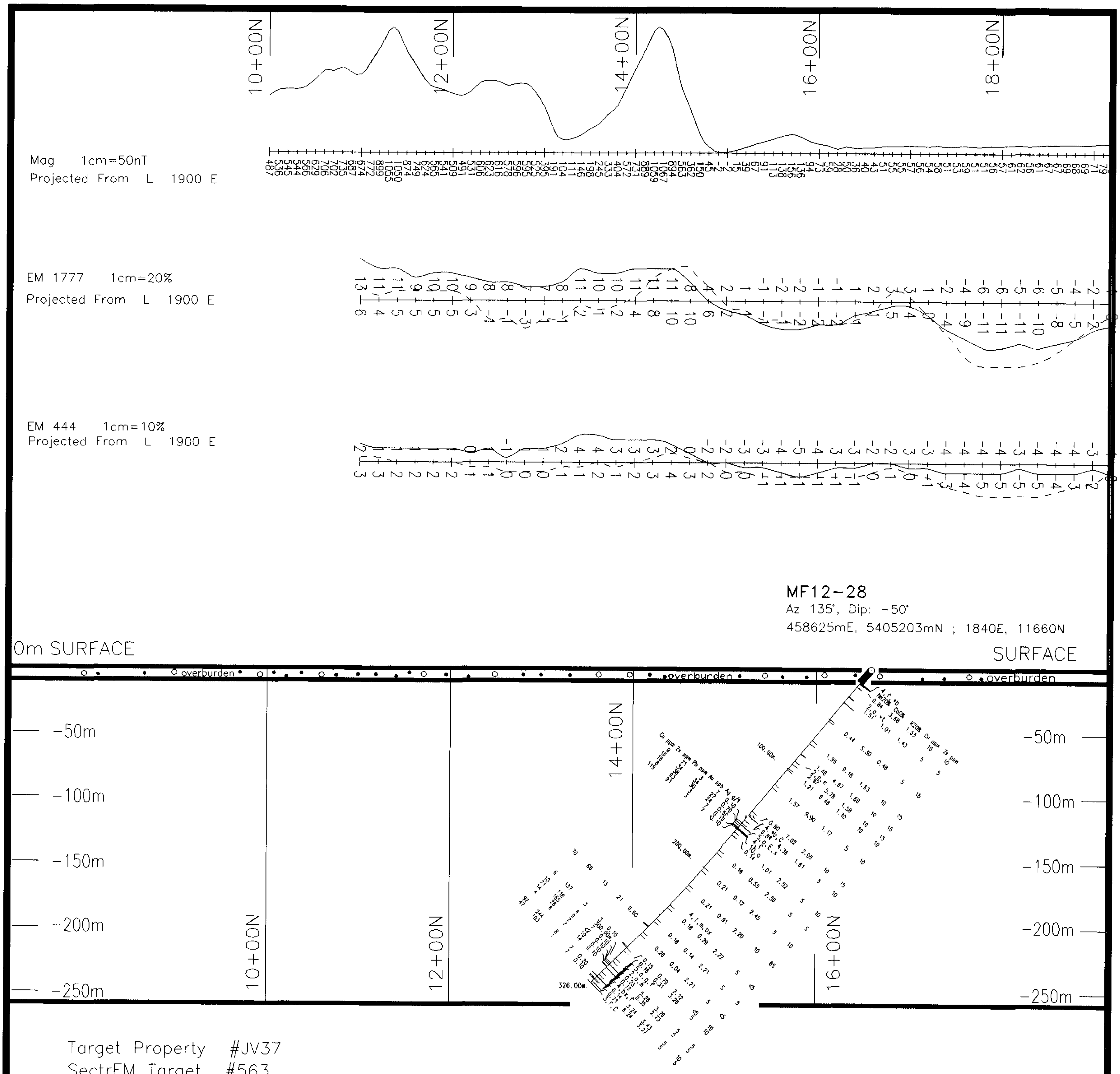
FALCONBRIDGE LIMITED

HLEM SURVEY (1777 Hz)

MAHAFFY 12

MAHAFFY TOWNSHIP

File : M12HL.XYZ	Date : February, 1999
NTS : 42-A/12	Proj # : 8036
WORK BY : Timmins Geophysics Ltd.	



Target Property #JV37

SectrEM Target #563

Comments:

KIDD/HBED/EAL JV GEOCHEM TABLE MF12-28

SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU01336	14.00	17.00	3.0	69.04	11.29	3.68	1.39	0.84	1.53	5.15	0.61	0.15	0.10		5.79	99.57	20	130	10	10	<5	10	2,a,+t	3(j)	187	<5	0.15	70	<5	<5	<10	0.39	0.33	4	39	12
AU01337	26.95	27.25	0.3	72.87	14.15	1.01	0.94	1.51	1.43	3.78	0.46	0.11	0.06		3.39	99.71	25	190	5	5	<5	15	4,t,+a	4jB	358	<5	0.07	25	<5	<5	<10	0.37	0.07	5	48	3
AU01338	50.00	51.40	1.4	48.19	12.12	5.30	3.80	0.44	0.46	17.55	0.84	0.22	0.66		10.16	99.74	30	150	5	15	5	15	2,p,e	2(j)v!	195	<5	0.15	100	<5	<5	<10	0.34	0.44	1	43	34
AU01339	71.00	74.00	3.0	53.27	13.84	9.18	2.00	1.95	1.63	6.20	0.85	0.16	0.13		10.67	99.86	15	90	10	15	5	10	2,p,e	3(j)!	108	5	0.17	140	<5	<5	<10	0.43	0.66	3	25	8
AU01340	84.55	84.85	0.3	51.48	16.13	4.67	3.99	1.48	1.88	10.43	1.08	0.22	0.12		8.50	99.78	25	120	10	15	5	5	4,t,+a	2(h)w!	206	5	0.14	170	<5	<5	<10	0.48	0.29	1	48	10
AU01341	92.00	95.00	3.0	54.28	16.47	5.78	2.21	2.97	1.58	6.75	1.00	0.17	0.11		8.12	99.44	20	100	10	15	5	10	2,p,e	2(j)w!	159	5	0.08	160	<5	<5	<10	0.44	0.35	2	30	5
AU01342	99.50	101.00	1.5	50.71	13.92	6.46	4.04	1.21	1.30	8.89	0.88	0.18	0.11		11.97	99.67	20	100	10	10	5	10	3,t,+a	2(j)w!	155	5	0.03	140	<5	<5	<10	0.52	0.46	1	41	8
AU01343	116.00	119.00	3.0	47.95	13.14	9.90	2.72	1.57	1.17	7.77	0.78	0.14	0.13		14.62	99.89	15	80	5	10	5	10	2,p,e	3(j)!	104	5	0.18	140	<5	<5	<10	0.45	0.75	2	25	6
AU01344	143.00	146.00	3.0	53.14	14.83	7.02	3.87	0.90	2.05	7.29	0.94	0.19	0.11		9.10	99.44	20	100	10	15	5	5	2,p,e	2(j)w!	149	5	0.09	145	<5	<5	<10	0.56	0.47	1	43	17
AU03741	152.00	155.00	3.0	69.43	11.41	4.36	1.59	0.84	1.61	4.37	0.53	0.15	0.08		5.40	99.77	25	170	5	10	<5	20	4,f	3(j)	168	<5	0.79	35	<5	<5	<10	0.46	0.38	3	38	12
AU03742	164.00	167.00	3.0	74.34	10.67	1.01	3.22	0.14	2.52	2.68	0.13	0.01	0.03		4.85	99.60	45	210	5	10	<5	20	4,l,m,	4(h)B	291	<5	0.02	5	<5	<5	<10	0.74	0.09	2	83	71
AU03743	182.00	185.00	3.0	75.22	11.96	0.55	3.36	0.16	2.56	2.28	0.15	0.01	0.02		3.49	99.76	50	240	5	5	<5	25	4,l,m,	4(h)B	386	<5	0.07	5	<5	<5	<10	0.78	0.05	1	89	31
AU03744	200.00	203.00	3.0	74.15	11.28	0.12	1.77	0.21	2.45	5.44	0.15	0.01	0.10		3.76	99.44	55	220	5	10	<5	20	4,m,l,	4(h)B	406	<5	0.13	10	<5	<5	<10	0.44	0.01	3	93	48
AU03745	218.00	221.00	3.0	77.22	11.07	0.91	1.63	0.21	2.20	3.10	0.13	0.02	0.07		3.23	99.79	50	210	10	65	<5	20	4,m,l,	4(h)B	333	<5	0.04	15	<5	<5	<10	0.56	0.08	3	77	310
AU03746	239.00	242.00	3.0	76.98	11.03	0.29	2.97	0.18	2.22	2.45	0.13	0.01	0.05		3.17	99.48	45	220	5	<5	<5	15	4,m,l,	4(h)B	410	<5	<0.01	5	<5	<5	<10	0.75	0.03	2	92	28
AU03747	254.00	257.00	3.0	78.44	10.62	0.14	2.38	0.18	2.21	2.65	0.13	0.02	0.05		2.76	99.58	40	210	5	5	<5	20	4,m,l,	4(j)B	420	<5	<0.01	5	<5	<5	<10	0.68	0.01	2	93	28
AU03748	269.00	272.00	3.0	76.30	12.39	0.04	3.38	0.26	2.21	1.82	0.17	0.02	0.02		2.93	99.54	55	260	5	<5	<5	15	4,m,l,	4(h)B	494	<5	<0.01	15	<5	<5	<10	0.82	0.00	1	95	19
AU01345	287.00	290.00	3.0	72.73	11.82	0.79	4.54	0.15	2.12	3.21	0.17	0.01	0.08		4.20	99.82	45	240	<5	10	<5	20	4,m,l,	4(j)B	386	<5	0.20	5	<5	<5	<10	0.77	0.07	1	88	67
AU01346	299.00	302.00	3.0	74.62	12.43	0.31	2.32	0.16	3.26	2.41	0.18	0.02	0.03		3.77	99.51	60	250	5	10	<5	20	4,m,l,	4(h)z	333	<5	0.24	15	<5	<5	10	0.70	0.02	2	92	62
AU01347	314.00	317.00	3.0	51.73	12.91	5.28	4.97	0.23	3.76	6.54	0.97	0.09	0.14		13.00	99.62	20	70	5	5	5	20	2,a,m	2(h)w!	139	5	0.25	230	<5	5	10	0.65	0.41	1	61	22
AU01348	319.25	321.40	2.1	79.57	10.40	0.35	1.75	0.12	2.73	1.90	0.12	0.02	0.01		2.65	99.62	105	180	5	5	<5	15	4,bx,f	4hz	325	<5	0.08	10	<5	<5	10	0.69	0.03	3	91	42
AU01349	322.25	324.05	1.8	68.68	11.92	3.24	2.63	0.14	3.43	2.13	0.13	0.03	0.05		7.12	99.50	135	230	5	10	<5	20	4,bx,f	4hz	175	<5	0.17	10	<5	<5	10	0.75	0.27	2	64	71
AU01350	324.05	325.80	1.8	45.46	13.11	6.24	7.21	0.71	3.27	7.79	1.01	0.12	0.13		14.37	99.42	25	80	5	5	10	15	3,f,C	2(h)u!	128	5	0.79	230	<5	5	<10	0.69	0.48	1	60	7

KIDD/HBED/EAL JV ASSAY TABLE MF12-28

SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Ga %	ROCK T
AU04551	155.00	156.60	1.6	9	71	3	6	7	0.1							4,f
AU04552	156.60	158.00	1.4	16	34	34	28	27	0.7							5,a,E,
AU04553	158.00	159.40	1.4	18	38	30	41	24	0.5							5,a,E,
AU04554	159.40	160.05	0.7	8	93	3	25	7	0.1							FZ, QV
AU04555	160.05	161.00	0.9	115	91	3	23	7	0.1							4,f-10
AU04556	263.00	263.60	0.6	70	66	13	7	21	0.6							4,l,bx
AU03749	286.00	286.70	0.7	6	137	3	10	3	0.1							QV
AU04557	304.25	305.50	1.2	10	116	4	10	7	0.1							4,m,l
AU04558	305.50	306.40	0.9	71	165	9	57	<2	0.1							5,a,g.
AU04559	306.40	308.00	1.6	14	28	2	137	10	0.1							5,a,g.
AU04560	308.00	308.50	0.5	4	6	2	44	14	0.1							5,a,g.
AU04561	318.90	319.25	0.4	92	244	8	54	7	0.2							4,bx,f
AU04562	321.40	322.25	0.9	47	103	1	41	7	0.1							4,bx,f

FALCONBRIDGE LIMITED

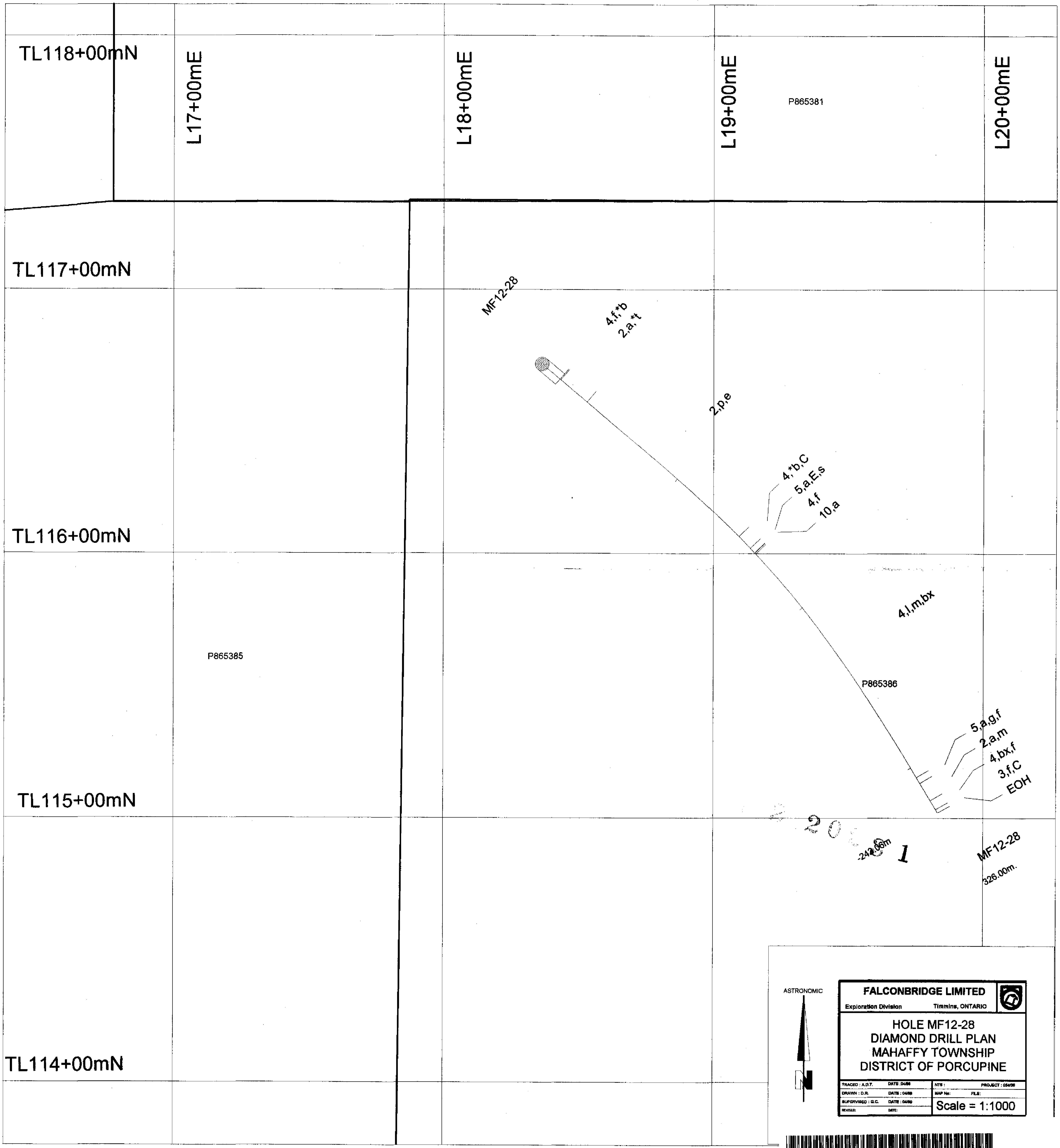
Exploration Division
Timmins ONTARIO

ROTATED SECTIION LOOKING NORTHWEST
DDH MF12-28
GRID MF12

Az 225°
MahaffyTwp.

Target Property #: JV37
Project #:

SCALE 1:2,500 (metres)
0 28 56 84 112

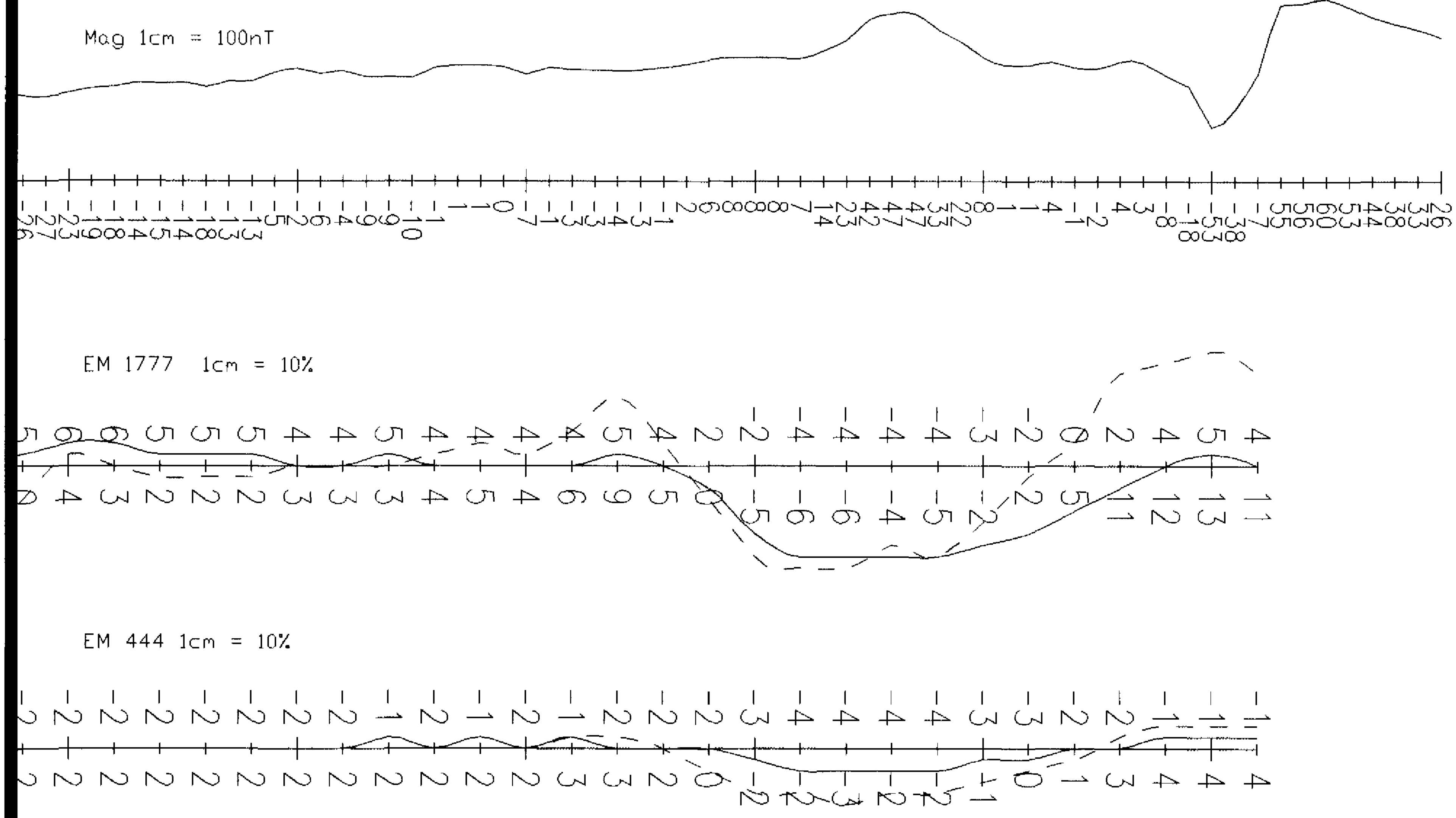


FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

HOLE MF12-28
DIAMOND DRILL PLAN
MAHAFFY TOWNSHIP
DISTRICT OF PORCUPINE

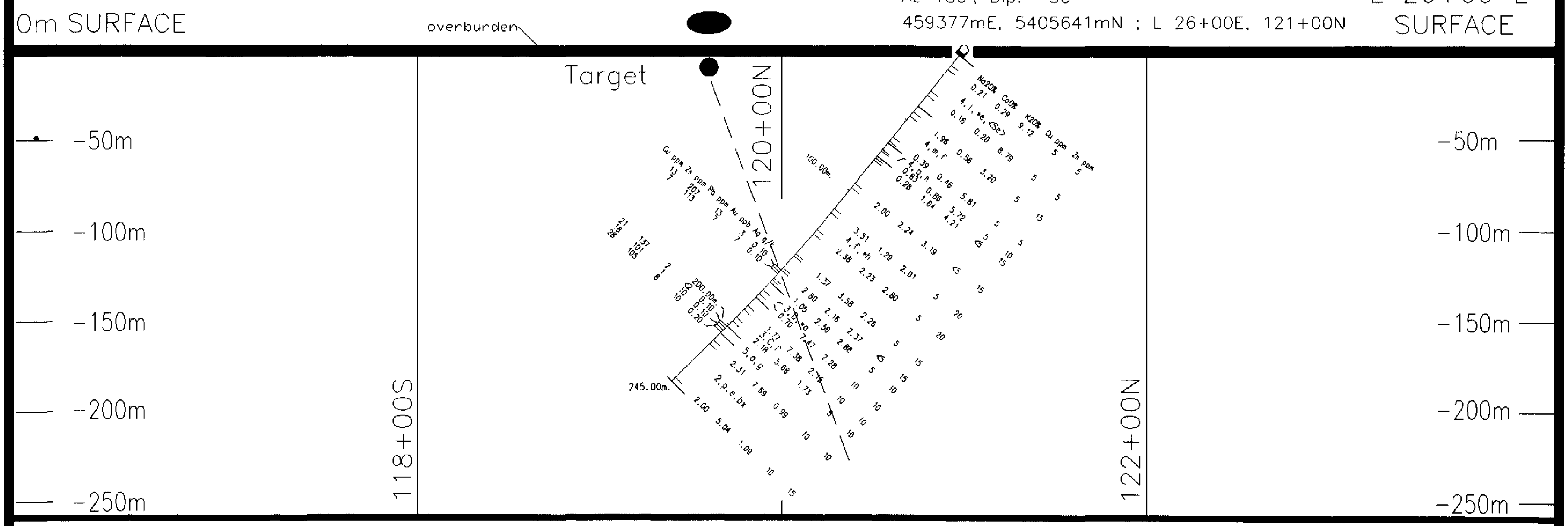
TRACED : A.D.T.	DATE :04/99	NTS :	PROJECT : 034/98
DRAWN : D.R.	DATE : 04/99	MAP No:	FILE:
SUPERVISED : G.C.	DATE : 04/99	Scale = 1:1000	
REVISED:	DATE:		



Target Width: narrow
Dip: -60° North
Depth: 90m
6 mhos
Centre: 119+60 N

MF13-04
Az 180°, Dip: -50°
459377mE, 5405641mN ; L 26+00E, 121+00N

L 26+00 E



Target Property JV33
SectrEM Target 561

Comments:

KIDD/HBED/EAL JV GEOCHEM TABLE MF13-04

SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04724	11.00	14.00	3.0	73.71	12.10	0.29	0.15	0.21	9.12	2.20	0.14	0.01	0.08		1.42	99.43	55	240	5	5	<5	25	4,L,+e	4(h)B	126	<5	<0.01	5	<5	<5	10	0.14	0.02	33	95	24
AU04725	29.00	32.00	3.0	75.18	11.56	0.20	0.12	0.16	8.79	2.20	0.14	0.02	0.08		1.26	99.71	55	240	5	5	<5	30	4,l,+e	4(h)B	126	<5	<0.01	5	<5	<5	<10	0.11	0.02	42	96	31
AU04726	44.00	47.00	3.0	76.18	11.48	0.56	0.83	1.96	3.20	2.49	0.14	0.01	0.05		2.59	99.49	55	250	5	15	<5	15	4,m,f	4(h)B	201	<5	<0.01	10	<5	<5	<10	0.44	0.05	6	62	8
AU04727	62.00	65.00	3.0	78.14	11.09	0.46	0.26	0.39	5.81	1.81	0.14	0.02	0.07		1.69	99.88	55	220	5	5	<5	20	4,m,f,	4(h)B	167	<5	<0.01	5	<5	<5	10	0.25	0.04	19	88	13
AU04728	71.00	72.00	1.0	77.09	10.34	0.86	0.43	0.83	5.72	2.19	0.13	0.01	0.10		2.10	99.80	55	180	5	10	<5	30	4,q,P	4(h)B	140	<5	<0.01	5	<5	<5	<10	0.32	0.08	12	78	12
AU04729	77.00	78.50	1.5	73.18	11.39	1.64	1.09	0.28	4.21	3.68	0.17	0.01	0.12		4.11	99.88	55	250	<5	15	5	20	4,f,+h	4(h)B	186	<5	0.02	10	<5	<5	<10	0.41	0.14	5	73	54
AU04730	95.00	98.00	3.0	74.62	11.58	2.24	0.44	2.00	3.19	2.43	0.16	0.01	0.06		3.18	99.91	55	260	<5	15	<5	10	4,f,+h	4(h)B	156	<5	<0.01	5	<5	<5	<10	0.30	0.19	11	46	8
AU04731	113.00	116.00	3.0	76.32	11.20	1.29	0.42	3.51	2.01	3.01	0.13	0.01	0.10		1.87	99.87	55	220	5	20	<5	20	4,f,+h	4(h)B	164	<5	0.06	5	<5	<5	<10	0.25	0.12	12	34	6
AU04732	128.00	131.00	3.0	74.33	11.57	2.23	0.57	2.38	2.80	2.62	0.14	0.01	0.07		3.02	99.74	50	230	5	20	<5	15	4,f,+h	4(h)B	156	<5	0.05	5	<5	<5	<10	0.34	0.19	9	42	8
AU04733	146.00	147.50	1.5	75.35	8.84	3.58	0.71	1.37	2.26	2.87	0.13	0.01	0.11		4.43	99.66	50	180	5	15	<5	20	4,f,+h	4(h)B	123	<5	0.06	5	<5	<5	<10	0.37	0.40	7	37	11
AU04734	156.50	158.00	1.5	73.50	11.58	2.16	0.72	2.60	2.37	2.92	0.18	0.02	0.09		3.52	99.66	50	240	<5	15	5	15	4,f,+h	4(h)B	162	<5	0.03	10	<5	<5	10	0.37	0.19	7	39	6
AU04735	164.00	165.50	1.5	72.98	11.57	2.56	0.98	1.05	2.86	2.50	0.18	0.01	0.04		4.77	99.50	50	230	5	10	<5	15	4,f,+h	4(h)B	179	<5	0.03	15	<5	<5	<10	0.48	0.22	5	52	10
AU04736	173.00	176.00	3.0	53.57	13.60	7.47	2.30	0.70	2.28	7.55	0.68	0.13	0.34		11.29	99.91	20	120	10	10	5	10	3,D,+a	3(j)!	130	<5	0.09	120	<5	<5	<10	0.42	0.55	2	36	14
AU04737	185.00	188.00	3.0	52.66	14.31	7.38	2.13	1.77	2.15	6.63	0.71	0.12	0.23		11.36	99.45	20	120	10	10	5	15	3,e,l	3(j)!	127	<5	0.58	125	<5	<5	<10	0.43	0.52	2	32	6
AU04738	194.00	197.00	3.0	55.99	14.01	5.68	2.21	2.18	1.73	6.96	0.98	0.32	0.15		9.60	99.81	25	140	5	10	5	5	3,C,f	2(j)yB	146	<5	0.03	60	<5	<5	<10	0.43	0.41	2	33	5
AU04739	212.00	215.00	3.0	52.72	13.37	7.69	2.52	2.31	0.99	6.82	0.94	0.19	0.15		11.95	99.65	20	100	10	10	5	5	2,p,e,	2(j)w!	122	5	0.33	150	<5	<5	<10	0.47	0.58	2	26	4
AU04740	242.00	245.00	3.0	54.65	15.58	5.04	2.49	2.00	1.09	8.00	1.12	0.19	0.10		9.34	99.60	20	120	10	15	5	5	2,p,e,	2(j)w!	192	5	0.13	170	<5	<5	<10	0.42	0.32	2	34	8

KIDD/HBED/EAL JV ASSAY TABLE MF13-04

SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Gn %	ROCK T
AU01322	158.00	159.50	1.5	13	207	13	12	3	0.1							4,f,+h
AU01323	159.50	161.00	1.5	7	113	7	10	7	0.1							4,f,+h
AU01324	201.50	203.00	1.5	21	137	2	33	<2	0.1							5,o,g
AU01325	203.00	204.50	1.5	18	101	1	23	10	0.1							5,o,g
AU01326	204.50	206.00	1.5	28	105	8	36	10	0.2							5,o,g

42A14SW2008 2.20231 MAHAFFY

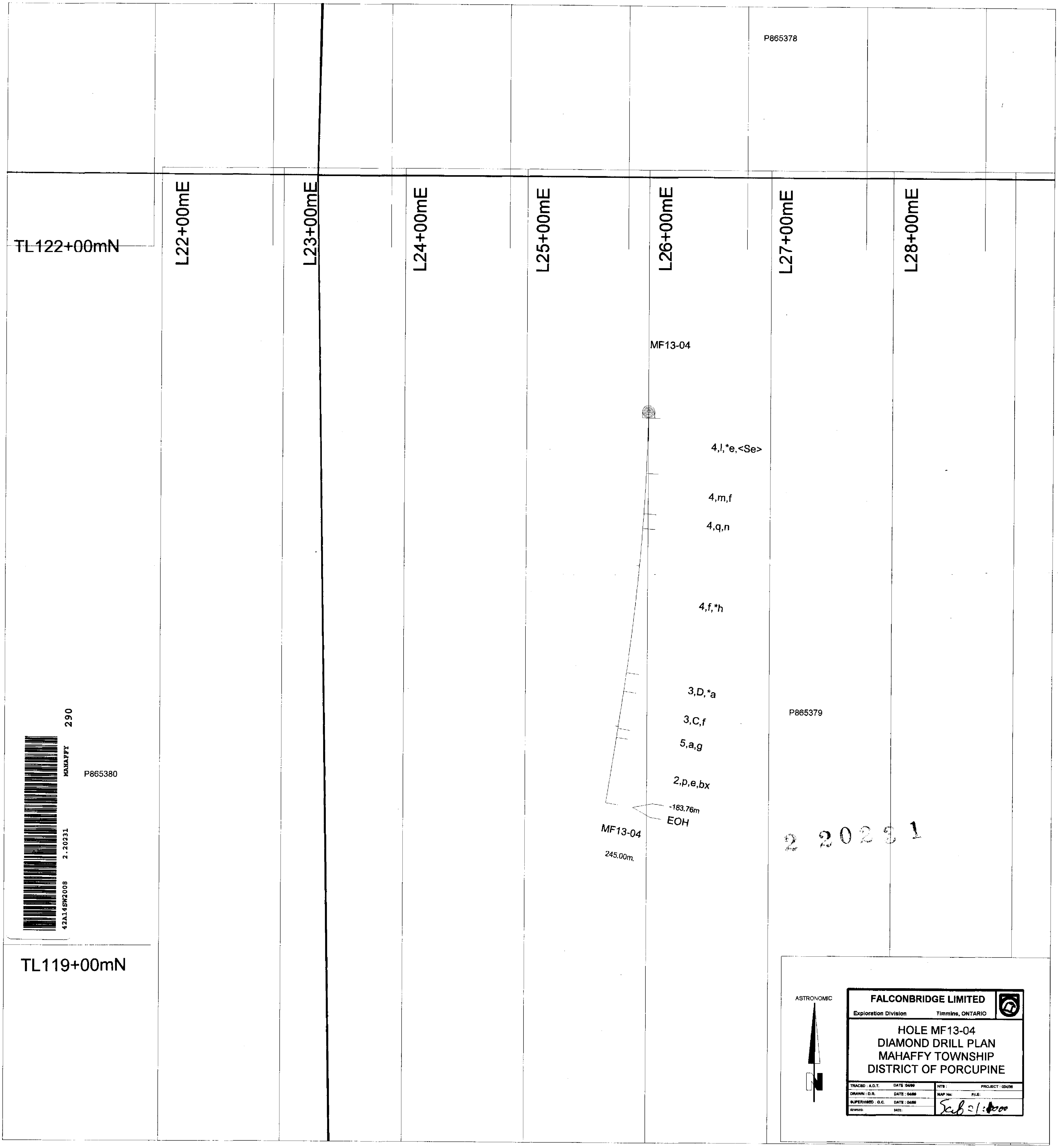
280

FALCONBRIDGE LIMITED
Exploration Division
Timmins ONTARIO

DRILL HOLE SECTION 26+00E
LOOKING WEST
DDH MF13-04
GRID MF12

Az 180°
Mahaffy Twp.

Target Property #: JV33
Project #: 036
SCALE 1:2,500 (metres)
0 28 56 84 112

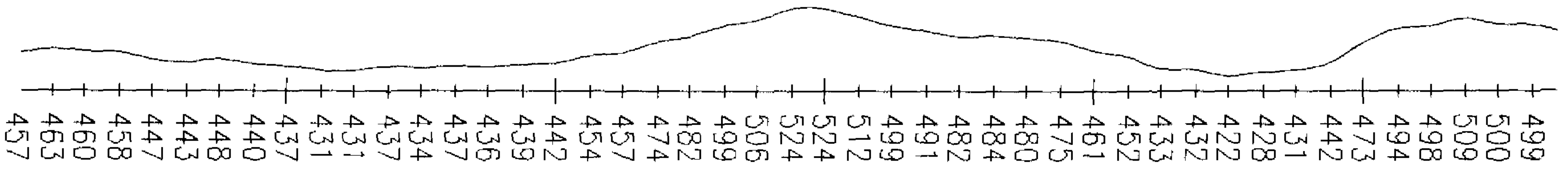


FALCONBRIDGE LIMITED
Exploration Division Timmins, ONTARIO

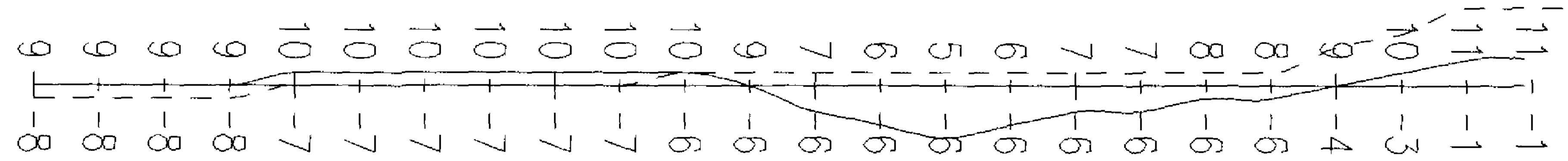
HOLE MF13-04
DIAMOND DRILL PLAN
MAHAFFY TOWNSHIP
DISTRICT OF PORCUPINE

TRACED : A.D.T. DATE : 04/99
DRAWN : D.R. DATE : 04/99
SUPERVISED : G.C. DATE : 04/99
REVISED: DATE:
NTS : PROJECT : 034/36
MAP No: FILE:
Scale 1:1000

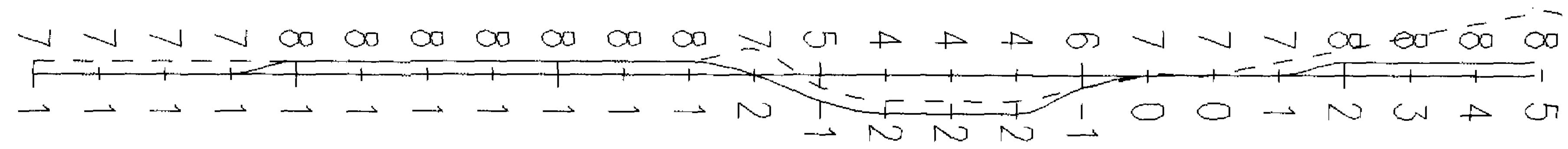
Mag 1cm = 200nT



EM 1777 1cm = 10%

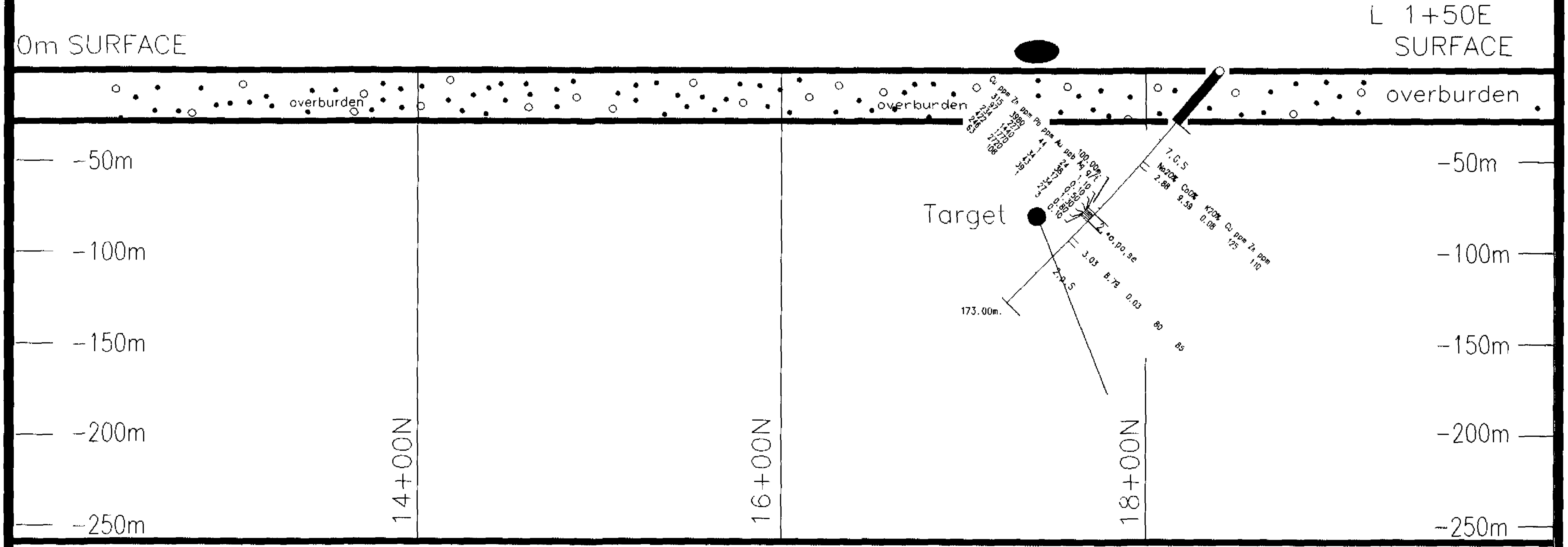


EM 444 1cm = 10%



Target Width: 40m
Dip: -55 TO 60° North
Depth: 80m
18mhos
Centre: L1+50E, 17+40N

MF15-01
Az 180°, Dip: -50°
463760mE, 5405930mN ; L 1+50E, 18+40N



Target Property AQ26
SectrEM Target 553

Comments:

KIDD/HBED/EAL JV GEOCHEM TABLE MF15-01																																								
SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04707	65.00	68.00	3.0	48.24	13.26	9.59	7.07	2.88	0.08	14.35	1.25	0.12	0.22		2.43	99.49	30	70	125	110	55	190	7a	7hv	106	35	0.16	285	5	40	10	0.54	0.72	8	36	38
AU04708	122.00	125.00	3.0	47.09	15.30	8.79	8.81	3.03	0.03	12.11	0.81	0.07	0.20		3.54	99.58	20	40	80	85	125	385	2p	2hu	129	30	0.09	225	<5	30	10	0.63	0.57	15	42	28

KIDD/HBED/EAL JV ASSAY TABLE MF15-01																
SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Gn %	ROCK T
AU04512	104.00	105.30	1.3	315	3980	44	75	24	1.1							2+a
AU04513	105.30	106.00	0.7	97	227	1	65	38	0.1							2+a
AU04514	106.00	107.00	1.0	234	1440	34	36	17	0.5							2+a
AU04515	107.00	108.00	1.0	422	1770	43	45	34	1.3							2+a
AU04516	108.00	109.00	1.0	246	2720	39	42	27	0.8							2+a
AU04517	109.00	110.00	1.0	63	108	1	54	3	0.1							2+a

42A14SW2008 2.20231 MAHAFFY 300

FALCONBRIDGE LIMITED
Exploration Division Timmins ONTARIO

DRILL HOLE SECTION 1+50E
LOOKING WEST
DDH MF15-01
GRID MF52

Az 180° MahaffyTwp.
Target Property #: AQ26
Project #: 422
SCALE 1:2,500 (metres)
0 28 56 84 112

2 20231

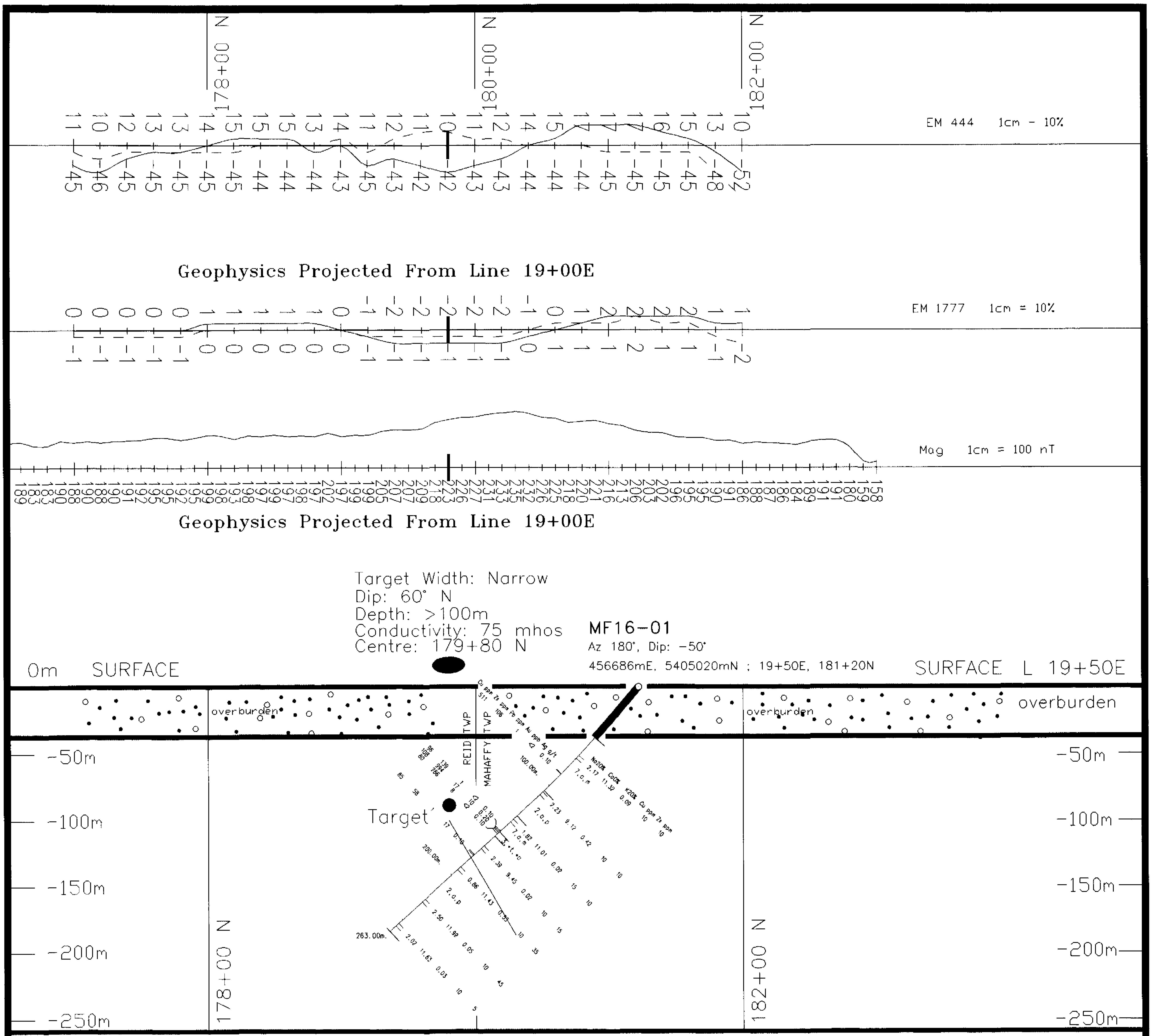
P1211741

FALCONBRIDGE LIMITED

Exploration Division **Timmins, ONTARIO**

HOLE M15-01
DIAMOND DRILL PLAN
MAHAFFY TOWNSHIP
DISTRICT OF PORCUPINE

TRACED : A.D.T.	DATE :04/99	NTS :	PROJECT : 034/36
DRAWN : D.R.	DATE : 04/99	MAP No:	FILE:
SUPERVISED : G.C.	DATE : 04/99	Scale = 1 : 1000	
REVISED:	DATE:		



Target Property #27
SpectrEM target #: 328

Comments :

KIDD/HBED/EAL JV GEOCHEM TABLE MF16-01																																								
SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04625	68.00	71.00	3.0	48.49	13.45	11.32	6.68	2.17	0.09	13.23	1.19	0.10	0.20		2.94	99.86	25	70	10	10	5	30		2,7hv	99	5	0.13	305	<5	5	<10	0.55	0.84	1	33	5
AU04626	107.00	110.00	3.0	45.65	13.67	9.12	4.72	2.23	0.42	14.03	1.37	0.13	0.26		7.96	99.56	30	80	10	10	5	25		2,7hv	116	5	0.15	305	<5	5	<10	0.44	0.67	1	31	4
AU04627	137.00	140.00	3.0	45.89	14.13	11.01	6.76	1.82	0.02	15.22	1.41	0.14	0.28		2.97	99.65	30	90	15	10	10	25		2,7hv	110	5	0.16	315	<5	5	<10	0.51	0.78	1	35	5
AU04628	167.00	170.00	3.0	43.65	13.82	9.45	7.77	2.39	0.02	10.45	0.75	0.06	0.15		11.11	99.62	15	40	10	15	10	35		2,7hu!	117	5	0.09	230	<5	5	<10	0.64	0.68	1	40	6
AU04629	191.00	194.00	3.0	44.28	14.18	11.43	4.84	0.86	0.53	9.70	0.74	0.05	0.21		12.78	99.60	15	40	10	35	15	40		2,7hw!	111	5	0.12	225	<5	5	<10	0.54	0.81	3	30	41
AU04631	227.00	230.00	3.0	47.88	15.32	11.99	4.79	2.50	0.05	9.70	0.78	0.05	0.19		6.29	99.54	15	40	10	45	15	40		2.7hw	105	5	0.14	235	<5	5	<10	0.54	0.78	3	25	18
AU04630	254.00	257.00	3.0	48.17	15.37	11.63	5.30	2.02	0.03	9.85	0.78	0.06	0.18		6.15	99.54	15	40	10	5	15	45		2,7hw	112	5	0.10	255	<5	5	<10	0.58	0.76	3	28	2

KIDD/HBED/EAL JV ASSAY TABLE MF16-01																	
SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Gn %	ROCK T
AU04570	87.35	87.70	0.4	511	106	1	65	<2	0.1							7,o,m
AU04571	150.40	151.35	0.9	96	139	1	67	<2	0.1							7,3,+t
AU04572	151.35	152.20	0.8	108	994	17	52	10	0.2							3,+t,+
AU04573	152.20	153.50	1.3	80	286	8	14	<2	0.1							3,+t,+
AU04574	177.00	177.80	0.8	85	58	1	93	17	0.1							2,p,Cb

FALCONBRIDGE LIMITED
Exploration Division
Timmins ONTARIO

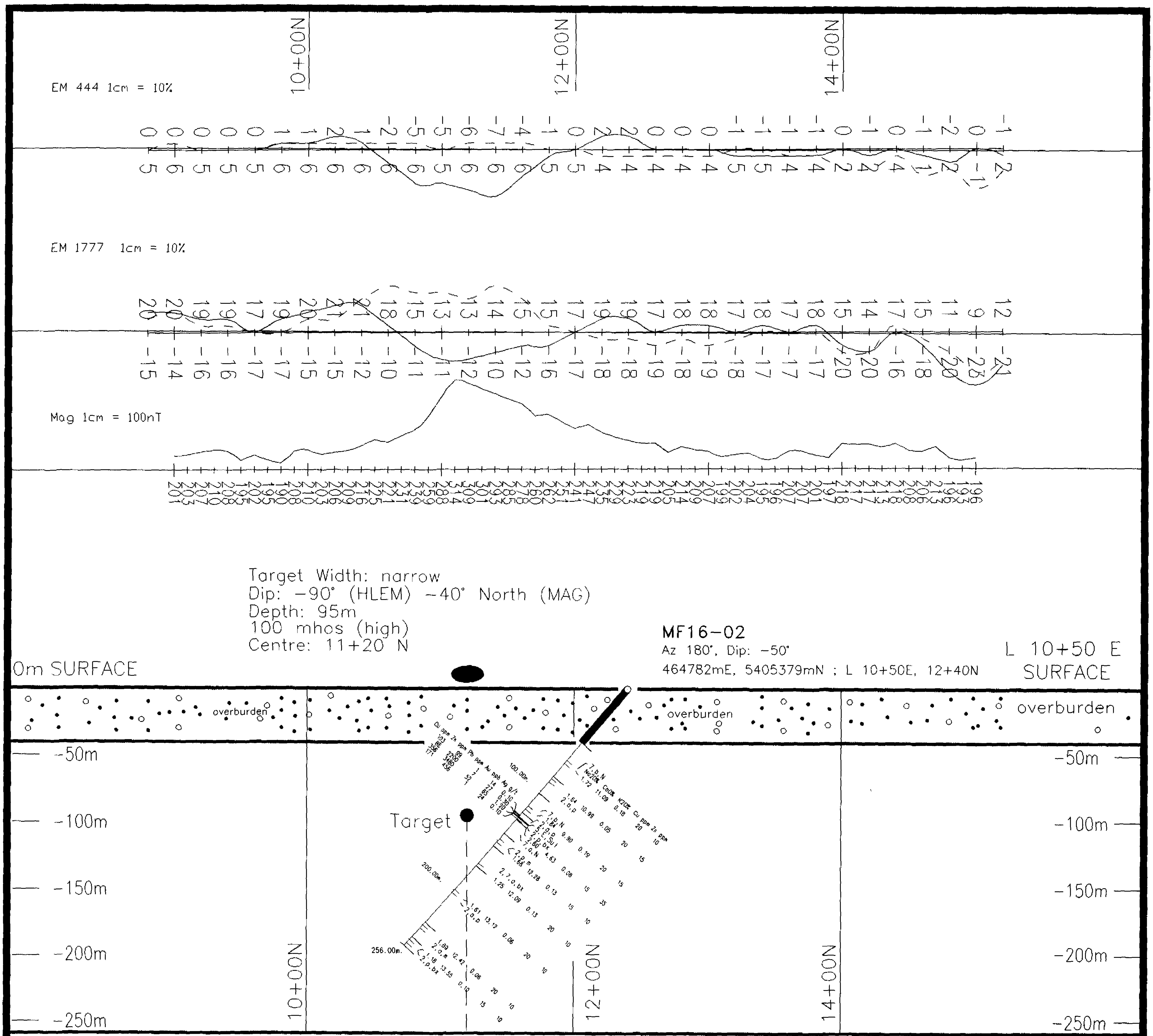
DRILL HOLE SECTION 19+50E
LOOKING WEST
DDH MF16-01
GRID CARN 61
Az 180°
MAHAFFY Twp.
Property #: 27
Project #: 037
SCALE 1:2,500 (metres)
0 28 56 84 112

FALCONBRIDGE LIMITED

Exploration Division **Timmins, ONTARIO**

HOLE M16-01
DIAMOND DRILL PLAN
MAHAFFY/REID TWPS
DISTRICT OF PORCUPINE

TRACED : A.D.T.	**DATE :04/99**	**NTS :**	**PROJECT : 034/36**
DRAWN : D.R.	**DATE : 04/99**	**MAP No:**	**FILE:**
SUPERVISED : G.C.	**DATE : 04/99**	SCALE = 1:1000	
REVISED:	**DATE:**		



Target Width: narrow
Dip: -90° (HLEM) -40° North (MAG)
Depth: 95m
100 mhos (high)
Centre: 11+20 N

MF16-02
Az 180°, Dip: -50°
464782mE, 5405379mN ; L 10+50E, 12+40N

Target Property # : AQ27
SectrEM Target

Comments:

KIDD/HBED/EAL JV GEOCHEM TABLE MF 16-02

SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04718	70.00	73.00	3.0	50.57	13.99	11.09	5.94	1.72	0.18	12.28	1.10	0.10	0.18		2.43	99.58	25	80	20	10	5	40	7,b,N	7hv	108	5	0.10	280	<5	5	10	0.54	0.79	1	32	6
AU04719	88.00	91.00	3.0	49.14	12.70	10.99	4.81	1.64	0.05	12.82	1.28	0.12	0.20		5.77	99.52	30	80	20	15	10	25	2,o,p	2hv	100	5	0.14	300	<5	5	10	0.47	0.87	2	28	9
AU04720	115.00	118.00	3.0	49.21	13.19	9.90	7.13	1.84	0.19	13.93	1.25	0.12	0.21		2.63	99.60	25	80	20	15	10	25	7,b,N	7(h)v	111	5	0.15	300	<5	5	10	0.55	0.75	1	38	8
AU04721	128.00	128.70	0.7	51.63	13.70	4.63	5.18	2.60	0.08	15.27	1.72	0.18	0.20		4.48	99.67	30	120	15	35	5	5	2,p,bx	2(h)v	187	5	0.65	315	<5	5	<10	0.45	0.34	1	42	13
AU04722	148.00	151.00	3.0	50.80	14.43	12.28	5.11	1.68	0.13	9.41	0.78	0.06	0.19		4.86	99.73	15	40	15	10	15	50	2,p,m	2hw	102	5	0.09	240	<5	5	<10	0.56	0.85	3	27	6
AU04723	172.00	174.70	2.7	49.40	13.77	12.09	8.13	1.25	0.13	10.55	0.70	0.06	0.17		3.19	99.44	15	50	20	10	15	45	2,7,o,	2(h)u	102	5	0.03	215	<5	5	<10	0.65	0.88	2	38	8
AU03738	199.00	202.00	3.0	50.48	14.02	13.12	4.97	1.61	0.06	9.14	0.75	0.05	0.18		5.46	99.84	15	40	20	10	15	45	2,o,p	2hw	95	5	0.13	225	<5	5	<10	0.56	0.94	3	25	6
AU03739	235.00	238.00	3.0	50.21	14.01	12.42	4.87	1.89	0.06	9.50	0.77	0.06	0.20		5.50	99.49	15	40	20	10	15	45	2,o,m	2hw	97	5	0.12	225	<5	5	<10	0.55	0.89	3	26	5
AU03740	250.00	253.00	3.0	49.52	14.06	13.55	4.49	1.18	0.10	9.11	0.74	0.06	0.18		6.83	99.82	15	40	15	10	15	45	2,p,bx	2hw	95	5	0.15	230	<5	5	<10	0.54	0.96	3	24	8

KIDD/HBED/EAL JV ASSAY TABLE MF 16-02

SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Ga %	ROCK T
AU04547	124.25	125.80	1.5	103	99	1	83	14	0.1							2,o,p
AU04548	125.00	128.25	1.2	86	2200	7	36	27	0.3							5,E,Su
AU04549	126.25	126.50	0.2	358	3480	52	71	65	1.2							5,E,Su
AU04550	126.50	128.00	1.5	171	456	1	39	24	0.1							2,p,bx

42A14SW2008 2.20231 MAHAFFY 340

FALCONBRIDGE LIMITED
Exploration Division Timmins ONTARIO

DRILL HOLE SECTION 10+50E
LOOKING WEST
DDH MF16-02
GRID MF 16
Az 180° Mahafy Twp.

Target Property #: AQ27
Project #: 424

SCALE 1:2,500 (metres)
0 28 56 84 112

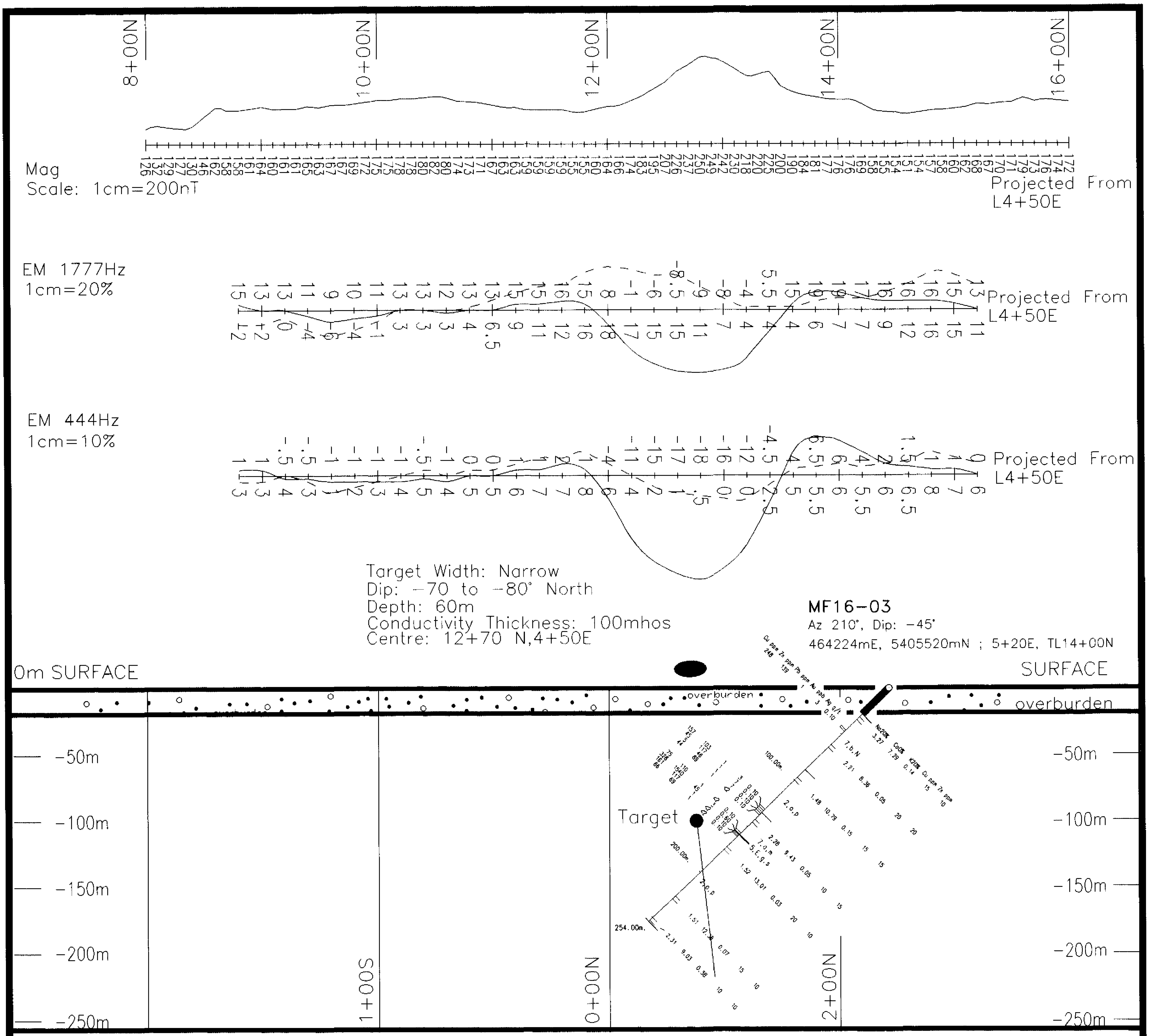
2.20231

FALCONBRIDGE LIMITED

Exploration Division **Timmins, ONTARIO**

HOLE M16-02
DIAMOND DRILL PLAN
MAHAFFY TOWNSHIP
DISTRICT OF PORCUPINE

TRACED : A.D.T.	DATE :04/99	NTS :	PROJECT : 034/36
DRAWN : D.R.	DATE : 04/99	MAP No:	FILE:
SUPERVISED : G.C.	DATE : 04/99	SCALE = 1:1000	
REVISED:	DATE:		



Target Width: Narrow
Dip: -70 to -80° North
Depth: 60m
Conductivity Thickness: 100mhos
Centre: 12+70 N,4+50E

MF16-03
Az 210°, Dip: -45°
464224mE, 5405520mN ; 5+20E, TL14+00N

Target Property AQ27,AQ26
SectrEM Target 551

Comments: Section centered at 0+00N on L4+50E, 12+00N

KIDD/HBED/EAL JV GEOCHEM TABLE MF16-03

SAMPL. No.	FROM (M)	TO (M)	Int (M)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	TIO2 %	P2O5 %	MNO %	CR2O3 %	LOI %	SUM %	Y PPM	ZR PPM	CU PPM	ZN PPM	NI PPM	CR PPM	FIELD NAME	CHEM ID	ALUM	CO PPM	S PPM	V PPM	BE PPM	SC PPM	NB PPM	MGO#	CA/AL	NI/MGO	ISHIKW	ZN/NA2
AU04741	31.00	34.00	3.0	49.13	13.53	7.29	6.29	3.27	0.14	14.25	1.50	0.13	0.18		4.07	99.78	30	90	15	10	5	15	7,b,N	7hv	126	5	0.03	315	<5	5	<10	0.51	0.54	1	38	3
AU04742	61.00	64.00	3.0	49.92	12.53	8.36	5.83	2.21	0.05	16.18	1.62	0.15	0.23		2.79	99.87	35	100	20	20	5	10	7,b,N	7hv	118	5	0.07	350	<5	5	<10	0.46	0.67	1	36	9
AU04743	97.00	100.00	3.0	49.36	13.02	10.79	4.52	1.48	0.15	13.37	1.32	0.12	0.21		5.12	99.46	30	80	15	15	10	25	2,a,p	2hv	105	5	0.22	305	<5	5	10	0.44	0.83	2	28	10
AU04744	142.00	145.00	3.0	49.05	13.51	9.43	6.44	2.28	0.05	14.12	1.51	0.15	0.21		3.04	99.79	35	100	10	15	10	25	7,a,m	7hv	115	5	0.09	295	<5	5	<10	0.52	0.70	2	36	7
AU04745	172.00	175.00	3.0	49.36	14.24	13.01	4.87	1.52	0.03	9.37	0.75	0.05	0.19		6.25	99.64	15	40	20	10	15	45	2,a,p	2hw	98	5	0.16	230	<5	5	<10	0.55	0.91	3	25	7
AU04746	226.00	229.00	3.0	48.02	13.38	12.38	5.17	1.51	0.07	10.25	0.87	0.07	0.20		7.81	99.73	15	50	15	10	15	40	2,a,p	2(h)v	96	5	0.29	225	<5	5	<10	0.55	0.93	3	27	7
AU04747	250.00	253.00	3.0	48.49	12.85	9.03	4.97	2.31	0.38	10.79	0.89	0.13	0.20		9.48	99.52	25	80	10	10	10	30	2,a,p	2(h)v!	110	5	0.13	170	<5	5	<10	0.52	0.70	2	32	4

KIDD/HBED/EAL JV ASSAY TABLE MF16-03

SAMPL. No.	FROM (M)	TO (M)	Int (M)	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Au ppb	Ag ppm	Est.Ni %	Est.Po %	Est.Py %	Est.Cp %	Est.Sp %	Est.Gn %	ROCK T
AU01327	45.30	46.80	1.5	248	139	1	4	3	0.1							7,b,N
AU01328	131.40	133.00	1.6	157	103	1	63	3	0.1							2,o,p
AU01329	133.00	134.50	1.5	45	117	1	82	7	0.1							2,o,p
AU01330	134.50	136.00	1.5	5	46	1	30	7	0.1							7,o,m
AU01331	136.00	137.50	1.5	44	89	1	66	<2	0.1							7,o,m
AU01332	157.00	158.40	1.4	75	110	1	82	<2	0.1							7,o,m
AU01333	158.40	159.00	0.6	328	1540	45	119	3	0.6							5,E,g,
AU01334	159.00	160.00	1.0	161	117	1	210	<2	0.1							2,o,p
AU01335	160.00	161.00	1.0	66	69	1	107	<2	0.1							2,o,p

42A14SW2008 2.20231 MAHAFFY 360

FALCONBRIDGE LIMITED

Exploration Division Timmins ONTARIO

ROTATED SECTIION LOOKING
NORTHWEST
DDH MF16-03
GRID MF52

Az 300° MahaffyTwp.

Target Property #:
Project #: 424,422

SCALE 1:2,500 (metres)
0 28 56 84 112

2 20231

FALCONBRIDGE LIMITED
Exploration Division **Timmins, ONTARIO**

HOLE M16-03
DIAMOND DRILL PLAN
MAHAFFY TOWNSHIP
DISTRICT OF PORCUPINE

TRACED : A.D.T.	DATE :04/99	NTS :	PROJECT : 034/36
DRAWN : D.R.	DATE : 04/99	MAP No:	FILE:
SUPERVISED : G.C.	DATE : 04/99	SCALE = 1:1000	
REVISED:	DATE:		