



# OUTER-RIM EXPLORATION SERVICES

ABN 32 059 220 192

26 Leopold Street,  
(P.O. Box 1754)  
AITKENVALE, QLD. 4814

## Geophysical Contracting Services

100% Australian Owned

Tel: 07 4725 3544  
Fax: 07 4725 4805  
Mob: 0412 54 9980  
Email: [mail@outer-rim.com.au](mailto:mail@outer-rim.com.au)

# Volume 1 of 1

**Client** : Pasmenco Mining

**Prospect** : Sawmill Creek, Silver Falls and White Spur.

**Area** : Rosebery, Tas.

**Survey** : Surface and Borehole PEM Survey

**Survey Period** : 8<sup>th</sup> to 19<sup>th</sup> December, 2002

**Operator** : Blade Morley and Llew Wynn

**DAILY LOG: Pasmaenco Mining** - December, 2002

<b>DATE</b>	<b>COMMENTS</b>	<b>CHARGES</b>
6/12/02	I arrived in Melbourne at 5:15am, caught a train to Sale and a bus to Bairnsdale to pick up the Toyota and stayed the night.	1 Mob. day N/A
7/12/02	I left Bairnsdale at 8:30am, drove to Melbourne, picked up Llew, went to the port and boarded the boat at 6.00pm.	1 Mob. day \$ 675.00
8/12/02	We departed the boat at 7.00am and drove to Rosebery, arriving at 10:30am. We went to the Pasmaenco, office got keys to the house, unloaded the truck and went to site (we got there at 1:30pm). We laid out the loop for YWS-1 with plenty of help from the Pasmaenco crew. We finished up at 5.00pm.	½ Mob. day \$ 375.00 ½ Survey day \$ 675.00 ½ Field Assist. day \$ 110.00
9/12/02	We left at 7.00am to go to site, dummied YWS-1 and it was open to 430m. At 10.00am we went to start the generator and it would not go. We tried to figure out problem, couldn't, so took it into town about 11.00am and then had to take it to Burnie. I left for Burnie at 12:30am and got there at 2.00pm. I got the generator fixed and got back to Rosebery at about 4.00pm.	½ Standby day \$ 375.00 ½ Breakdown day N/C
10/12/02	We left at 7.00am, arrived on site at 8:30am and dummied WSP-6. We had to carry gear down a 100m, rehabilitated track. The hole was open to 450m. At 9:30am we set up the transmitter site, tested the loop around WSP-6. At 10.00am we went back to do a PP test with the Z probe and got peculiar readings. We undertook various tests but it took a while to narrow down the problem to the Z probe. At 3.00pm we went back to town to see what we could do to repair the problem.	½ Standby day \$ 375.00 ½ Breakdown day N/C
11/12/02	We left to go to the office at 7:30am to meet Andrew to get instructions on what to do today. At 8:30am, Llew and I went out to White Spur, got the transmitter gear and drove out to the Boco/Sawmill Creek prospect, met up with the Pasmaenco crew and laid out the 500 x 900m fixed loop. We didn't have enough wire for the loop, so Craig and I went back up to White Spur, after setting up the transmitter at 3:30pm. We got back with the extra wire and completed the loop, tested it and started the transmitter. At 4:30pm we started surveying on 4300E and read three stations to check that	

it was all OK. We then packed up and returned by 5.00pm.

1 Survey day \$1450.00  
1 Field Assist. day \$ 220.00

12/12/02 At 7.00am, we went out to Sawmill Creek and started survey after some trouble with surface probe. 10:30 am started Z survey (consultant wrote down every second channel value) and completed line 3850E and line 4000E apt about 2 pm till about 5 pm Packed up gear and went home. EOD 6 pm.

**SURVEY PARAMETERS:**

**Loop SC1** :500 x 900m  
3400E; 1700N: 4300E; 1700N:  
4300E; 1200N: 3400E; 1200N:  
Current :10 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Clock

**Line No.** :**3850E**  
875 to 1450N  
Length :575m  
Channels :20  
Components :Z

**Line No.** :**4000E**  
725 to 1450N  
Length :725m  
Channels :20  
Components :Z

1 Survey day \$1450.00  
1 Field Assist. day \$ 220.00

13/12/02 At 7.00am, we went out to Sawmill and read lines 3550E, 3400E and 4300E (the consultant wrote down every second channel value which slowed us down a little). We completed the surface loop, packed up and headed back to town - we got back at 6.00pm.

**SURVEY PARAMETERS:**

**Loop SC1** :500 x 900m  
3400E; 1700N: 4300E; 1700N:  
4300E; 1200N: 3400E; 1200N:  
Current :10 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Clock

**Line No.** :**3400E**  
675 to 1175N

Length :500m  
Channels :20  
Components :Z

**Line No. :3550E**  
725 to 1450N  
Length :725m  
Channels :20  
Components :Z

**Line No. :4300E**  
750 to 1175N  
Length :425m  
Channels :20  
Components :Z

1 Survey day \$1450.00  
1 Field Assist. day \$ 220.00

14/12/02 We received the batteries for the Z probe last night and started replacing them - we worked on it until about 12.00am. We were up again at 5.00am, checked the glue and batteries with tester. At 6:30am, I took it to the office and made a small test loop but there was no response from the probe. I tested it with tester again and got no battery power again. After a lot of mucking around, we found the problem, resoldered some wires and got it working by 3.00pm. We went out to White Spur and tested the probe on the loop, along with the X-Y and surface probes. We got back to town at 7.00pm.

1 Breakdown day N/C

15/12/02 We left about 7:30am, went out to White Spur and started the survey on YWS-1 (once again, the consultant wrote down every second channel value). There was an off-hole at the very start of hole to about 335m which I think was shale. At 335m there was a definite change. We then read the X-Y, completing the hole. We got back at 7.00pm.

**SURVEY PARAMETERS:**

**Loop WS1** :400 x 400m  
377000E; 5360200N: 377450E; 5360200N:  
377450E; 5359800N: 377700E; 5359800N:

Current :20 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Cable

**Hole No. :YWS-1**  
377226E; 5360063N:  
Length :435m

Channels :20  
Components :Z,X,Y

1 Survey day \$1450.00  
1 Field Assist. day \$ 220.00

16/12/02 We left at 7:30am, went out to site and set up on WSP-6. We read the Z and X-Y, taking 2048 stacks over the anomaly, as requested. We completed the hole by 5.00pm and moved all equipment (except the downhole cable) back to the road with the motor bike. We got back at 6:30pm.

**SURVEY PARAMETERS:**

**Loop WS2** :400 x 400m  
377300E; 5359600N: 377300E; 5359200N:  
377650E: 5359200N: 377650E; 5359600N:

Current :20 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Cable

**Hole No.** :WSP-6  
377456E; 5359451N:

Length :450m  
Channels :20  
Components :Z,X,Y

1 Survey day \$1450.00  
1 Field Assist. day \$ 220.00

17/12/02 We left to go to site at 7.00am. We set up on WSP-10A with the assistance of the six wheeler motorbike again. We laid out the loop and read the Z and X-Y components, using 1024 stacks. We finished at 6:30pm, packed up all the gear and headed back, arriving at 8:30pm.

**SURVEY PARAMETERS:**

**Loop WS3** :400 x 400m  
376400E; 5361010N: 376410E; 5360590N:  
376810E: 5360580N: 376800E; 5361000N:

Current :20 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Cable

**Hole No.** :WSP-10A  
376853E; 5360782N:

Length :620m  
Channels :20  
Components :Z,X,Y

1 Survey day \$1450.00

1 Field Assist. day \$ 220.00

18/12/02 We went to the office, divided the gear between two trucks and left to site around 8:30am. The road out was really rough and we had to use 1<sup>st</sup> gear, low range, all the way out to site. We got there about 10:30am, dummied HRD-1 and set up. The transmitter was overloading so had to use 15 Amps. We read the Z component to 290m, using 1024 stacks and finished around 3.00pm. There was nothing in the hole so the X-Y wasn't justified. We packed up all the gear and drove out, getting back at 5.00pm.

**SURVEY PARAMETERS:**

**Loop SF1** :200 x 200m  
376956E; 5389249N: 377152E; 5389052N:  
376948E: 5389052N: 377144E; 5389246N:

Current :15 amps  
Time Base :20ms  
Ramp Time :1ms  
Sync :Cable

**Hole No.** :**HRD-1**  
376985E; 5389180N:

Length :290m

Channels :20

Components :Z,X,Y

1 Survey day \$1450.00

1 Field Assist. day \$ 220.00

19/12/02 We went to the office at 7:30am, unpacked the truck and hosed off all the seeds, grasses, etc. and cleaned the truck. Went out to site and recovered the loop for WSP-10A and got back to town at 12.00pm. We then packed the truck and left for Devonport around 2.00pm. We got to Devonport at 4:30pm and put the truck on the boat around 7:30pm.

½ Survey day \$ 675.00

½ Field Assist. day \$ 110.00

½ Mob. day \$ 375.00

20/12/02 We drove the vehicle to the airport for Brett to collect tomorrow to drive back to Queensland and caught a plane to Townsville.

1 Mob. day \$ 750.00

# Appendix



# CRONE GEOPHYSICS & EXPLORATION LTD.

3607 WOLFEDALE ROAD, MISSISSAUGA, ONTARIO, CANADA, L5C 1V8  
Phone: (905) 270-0096 Fax: (905) 270-3472 www.cronegeophysics.com

## 3-D PULSE EM - SYSTEM DESCRIPTION

**Name of System:** Crone Pulse EM (PEM).

**Method Employed:** TDEM (Time-domain electromagnetics) or TEM (Transient EM).

**Survey Types:**

- **Surface** - DEEPEM, Large In-Loop, Moving Loop, Moving Coil - 3 components.
- **Borehole** - 3D Borehole PEM - 3 components are measured and oriented.
- **Underground** - 3D Borehole PEM - including flat or up-dipping holes.

**Measured Quantity:** Rate of change of magnetic field in nanoTesla/second (same as nV/m<sup>2</sup>).

**Receiver:** Fully digital (input is digitized before stacking) with 24 bit dynamic range.

**Channels (Gates):**

- Typically 20 logarithmic channels in off-time and 1 during ramp (PP).
- Operator can select from several built-in tables including:
  - 10, 20, or 30 channel system (single, double, triple density)
  - 45 channels 4.5 usec wide covering the end of ramp and start of off-time.
  - 42 channels and PP for 150 msec time base.
  - full sampling of ramp and off-time (8 on ramp and full off-time starting at 0 usec).
- Programmable channel positions in the field.

**Stacking:** 512 to 65536 stacks with spike rejection.

**Gain Control:** Automatic software control (no selection or correction required).

**Rx Operation:** Menu-driven software. Large 16x40 character LCD. Full alphanumeric keyboard.

**Display:** 256 x 128 pixel scrollable graphic LCD for decay curves and profiles in the field.

**Data Handling:** Solid state storage; multiple files; all files can be appended at any time. Plot, list, sort, delete data. RS232 transmission of all data or only certain files.

**Synchronization:** Radio, cable, or crystal clock

**Current Waveform:** Bipolar on-off square waveform with exponential turn-on and ramp off.

**Time Base:** Off-time plus ramp time.

- 8.33, 16.66, 50, 100 and 150 msec for 60 Hz noise rejection (equivalent base frequencies of 30, 15, 5, 2.5, 1.67 Hz.)
- 10.0, 20.0, 50.0, 100.0 and 150 msec for 50 Hz noise rejection (equivalent base frequencies of 25, 12.5, 5, 2.5, 1.67 Hz.)

**Ramp Time:** The time required for the current to turn off.

- 500, 1000, or 1500 usec selections for precisely controlled linear turn-off ramps.
- "fast ramp" option turns current off as quickly as possible for a given loop size and current (2 usec or less to a few hundred usec).

**Transmit Loop:**

- Single turn loop of any dimension (less than 100m x 100m to greater than 2km x 2km).
- Multi-turn 14m diameter loop for near-surface Moving Coil surveys.

**Tx Output Current:**

- 30 Amps maximum at 160 Volts for 4.8 kWatt system.
- 20 Amps maximum at 120 Volts for 2.4 kWatt system.

**Tx Output Voltage:**

- 48 to 240 Volts continuously adjustable for 4.8 kWatt system.
- 24 to 120 Volts continuously adjustable for 2.4 kWatt system.

**Tx Safety features:** Transmitter automatically shuts off when loop is opened. Also shuts off with high instrument temperature and overload. Fuse and circuit breaker overload protection.

**Borehole Probes:** 32 mm diameter.  
Pressure-tested for depths of 2500m or more.

**Operating Temperature:** -40°C to 50°C



# CRONE GEOPHYSICS & EXPLORATION LTD.

3607 WOLFEDALE ROAD, MISSISSAUGA, ONTARIO, CANADA, L5C 1V8  
Phone: (905) 270-0096 Fax: (905) 270-3472 www.cronegeophysics.com

## 3-D PULSE EM - SPECIAL FEATURES

**High Power:** A new 4.8 kWatt transmitter allows very large loops to be used while maintaining a high current.

**Precise Current Ramps:** Precisely- controlled linear ramps of fixed duration allow for proper comparisons to be made between data from different loop sizes, and also allows for the step response transformation.

**Long Time Base (Low Frequency):** A new long time base of 150 msec (1.67 Hz) ensures that very long time constant conductors can be seen in complicated environments.

**Step Response:** A new step response transformation allows even longer time-constant conductors to be seen by reproducing the response that would be seen in a direct measurement of the step response. Our controlled linear ramps and our standard Primary Pulse (PP) measurement on the ramp are necessary for this calculation.

**Fast Ramp Option:** A new "fast ramp" option duplicates the response seen from other pulse-type systems, but this does not allow for the step response calculation. We do not recommend fast ramps because they are not as linear as our controlled ramps, they drift in duration as the loop warms up, and there is no advantage in terms of power put into the ground since the *area* under the dB/dt pulse produced by the ramp is the same.

**Calculation of Impulse Response:** The "fast ramp" response can be calculated (as well as the true impulse response) from our standard linear ramp data.

**True Digital Receiver:** The Crone receiver is a true digital receiver in that the input is immediately digitized before stacking and binning. This produces the following feature (programmable gate positions).

**Programmable Gate Positions:** There is complete freedom of channel (or gate) positions and widths, which can be programmed in the field. There are also numerous built-in tables.

**Full Sampling:** The entire ramp and off-time can be sampled with contiguous channels if desired.

**Current Ramp always Sampled:** A Primary Pulse (PP) measurement is always made on the current ramp, which is of great help to ensure proper polarities, and also is crucial for the step response transformation.

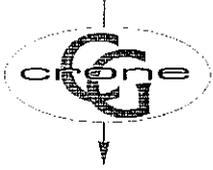
**High Quality LCD Display:** The 256 x 128 pixel LCD on the receiver allows for accurate plots of decay curves and line or borehole profiles on the receiver, and is of great assistance to the operator to monitor noise and anomaly build-up.

**No Data Reduction:** There is no data reduction for surface surveys and Z-component borehole surveys, so that what is seen on the receiver is what will be seen in the final plots. For 3-D borehole surveys, there is only the correction applied to the direction of the X and Y components to aid interpretation. Gain controls are automatic, so that the output is always in nanoTeslas/sec (= nV/m<sup>2</sup>).

**Slim-line Probes:** A 32 mm probe diameter ensures that virtually all holes can be surveyed with 3-component measurements.

**Oriented X and Y Components:** X-Y orientation tools accurately orient the X and Y components. This helps tremendously with giving direction to off-hole conductors and to the centre of in-hole conductors.

**Reliable, Durable and Portable Equipment:** The PEM system has been in use since the early 1970's under temperature extremes of -40°C to +50°C, in desert, jungle, arctic, mountainous, and underground mining conditions.



# CRONE GEOPHYSICS & EXPLORATION LTD.

3607 WOLFEDALE ROAD, MISSISSAUGA, ONTARIO, CANADA, L5C 1V8  
Phone: (905) 270-0096 Fax: (905) 270-3472 www.cronegeophysics.com

## 3-D PULSE EM - APPLICATIONS

- **Base metals** ⇒ direct detection of:
  - ◇ volcanogenic massive sulphide (VMS) deposits
  - ◇ magmatic sulphide deposits
  - ◇ sedex massive sulphide deposits
  - ◇ higher grade ore within disseminated zones⇒ indirect detection of :
  - ◇ sphalerite and other non-conductors
  - ◇ galena and other poorly connected mineralsthrough detection of associated well-connected conductors.  
⇒ detection of conductive marker zones related to deposits
  
- **Gold** ⇒ detection of associated conductors - e.g. pyrite/pyrrhotite  
⇒ detection of the host - e.g. banded iron formations
  
- **Uranium** ⇒ detection of associated graphitic basement conductors  
⇒ detection of associated conductive alteration zones
  
- **Diamonds** ⇒ detection and definition of clay-rich layer overlying kimberlites  
⇒ locating kimberlites under locally thinned conductive cover

In the ore definition, delineation and production stages of a mining operation, Pulse EM can still be highly effective to:

- Define the boundaries of conductive ore
- Determine the size of intersected conductors and thereby determine whether they are connected to main ore zones.
- Reduce the number of necessary drillholes by exploring between holes.
- Survey underground drillholes - even flat or inclined holes.

Pulse EM can also be used for:

- General geological mapping of conductive structures
  - ⇒ shears, fractures, lineaments
  - ⇒ hydrothermal alteration
  - ⇒ graphite-rich rocks, including graphitic schist, shale, slate, and argillite
  - ⇒ clay alteration and zeolites
  - ⇒ differential and clay weathering
  - ⇒ conductive weathered layer at surface
- Groundwater exploration
- Mapping groundwater contamination plumes and freshwater-saltwater interface
- Geothermal exploration
- Mapping depth and thickness of horizontal strata
- Mapping permafrost thickness

# **PLOTS**

# CONTENTS

Plan No.	Plan Type	ID.	Description	Scale
1	Header	3400E	Header information	N/A
2	Profile		Z - Log plot	1:4000
3	Header	3550E	Header information	N/A
4	Profile		Z - Log plot	1:4000
5	Header	3850E	Header information	N/A
6	Profile		Z - Log plot	1:4000
7	Header	4000E	Header information	N/A
8	Profile		Z - Log plot	1:4000
9	Header	4300E	Header information	N/A
10	Profile		Z - Log plot	1:4000
11	Plan	HRD-1	Drillhole Location plan	1:2500
12	Section		Primary Field plot	1:5000
13	Header	HRD-1	Header information	N/A
14	Profile	(SF1)	Z - Log plot	1:2000
15			- Linear, Ch1-10, 1:1500	1:2000
16			- Linear, Ch10-15, 1:10	1:2000
17			- Linear, Ch15-20, 1:2	1:2000
18	Plan	YWS-1	Drillhole Location plan	1:5000
19	Section		Primary Field plot	1:5000
20	Header	YWS-1	Header information	N/A
21	Profile	(WS1)	Z - Log plot	1:2500
22			- Linear, Ch1-10, 1:2500	1:2500
23			- Linear, Ch10-15, 1:150	1:2500
24			- Linear, Ch15-20, 1:2	1:2500
25			X - Log plot	1:2500
26			- Linear, Ch1-10, 1:1000	1:2500
27			- Linear, Ch10-15, 1:150	1:2500
28			- Linear, Ch15-20, 1:2	1:2500
29			Y - Log plot	1:2500
30			- Linear, Ch1-10, 1:1000	1:2500
31			- Linear, Ch10-15, 1:150	1:2500
32			- Linear, Ch15-20, 1:2	1:2500
33			Total Field plot	1:2500
34	Plan	WSP-6	Drillhole Location plan	1:5000
35	Section		Primary Field plot	1:5000
36	Header	WSP-6	Header information	N/A
37	Profile	(WS2)	Z - Log plot	1:2500
38			- Linear, Ch1-10, 1:500	1:2500
39			- Linear, Ch10-15, 1:5	1:2500
40			- Linear, Ch15-20, 1:2	1:2500
41			X - Log plot	1:2500
42			- Linear, Ch1-10, 1:750	1:2500
43			- Linear, Ch10-15, 1:5	1:2500
44			- Linear, Ch15-20, 1:2	1:2500
45			Y - Log plot	1:2500

## CONTENTS

<b>Plan No.</b>	<b>Plan Type</b>	<b>ID.</b>		<b>Description</b>	<b>Scale</b>
46	Profile	WSP-6	Y	- Linear, Ch1-10, 1:750	1:2500
47		(WS2)		- Linear, Ch10-15, 1:5	1:2500
48				- Linear, Ch15-20, 1:2	1:2500
49				Total Field plot	1:2500
50	Plan	WSP-10		Drillhole Location plan	1:5000
51	Section			Primary Field plot	1:10000
52	Header	WSP-10		Header information	N/A
53	Profile	(WS3)	Z	- Log plot	1:3000
54				- Linear, Ch1-10, 1:1000	1:3000
55				- Linear, Ch10-15, 1:5	1:3000
56				- Linear, Ch15-20, 1:2	1:3000
57			X	- Log plot	1:3000
58				- Linear, Ch1-10, 1:1000	1:3000
59				- Linear, Ch10-15, 1:20	1:3000
60				- Linear, Ch15-20, 1:10	1:3000
61			Y	- Log plot	1:3000
62				- Linear, Ch1-10, 1:1000	1:3000
63				- Linear, Ch10-15, 1:20	1:3000
64				- Linear, Ch15-20, 1:10	1:3000
65				Total Field plot	1:3000

# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasmenco Mining	Line : 3400E
Grid : Sawmill Creek	Tx Loop : SC1
Date : Dec 13, 2002	File name : 3400E.PEM
Time Base : 20.00 ms	# Readings: 19
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 4000 sq m
Sync Type : Crystal-MASTER	Polarity : +
Loop Size : 900m X 500m	Receiver : Digital #109
Current : 10 Amps	Operator : Blade Morley

Loop Coordinates (X,Y,Z)

1. 3400m, 1700m, 0m	2. 4300m, 1700m, 0m
3. 4300m, 1200m, 0m	4. 3400m, 1200m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 3400m, 675m, 0m	2. 360deg, 0.1deg, 500m
--------------------	-------------------------

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

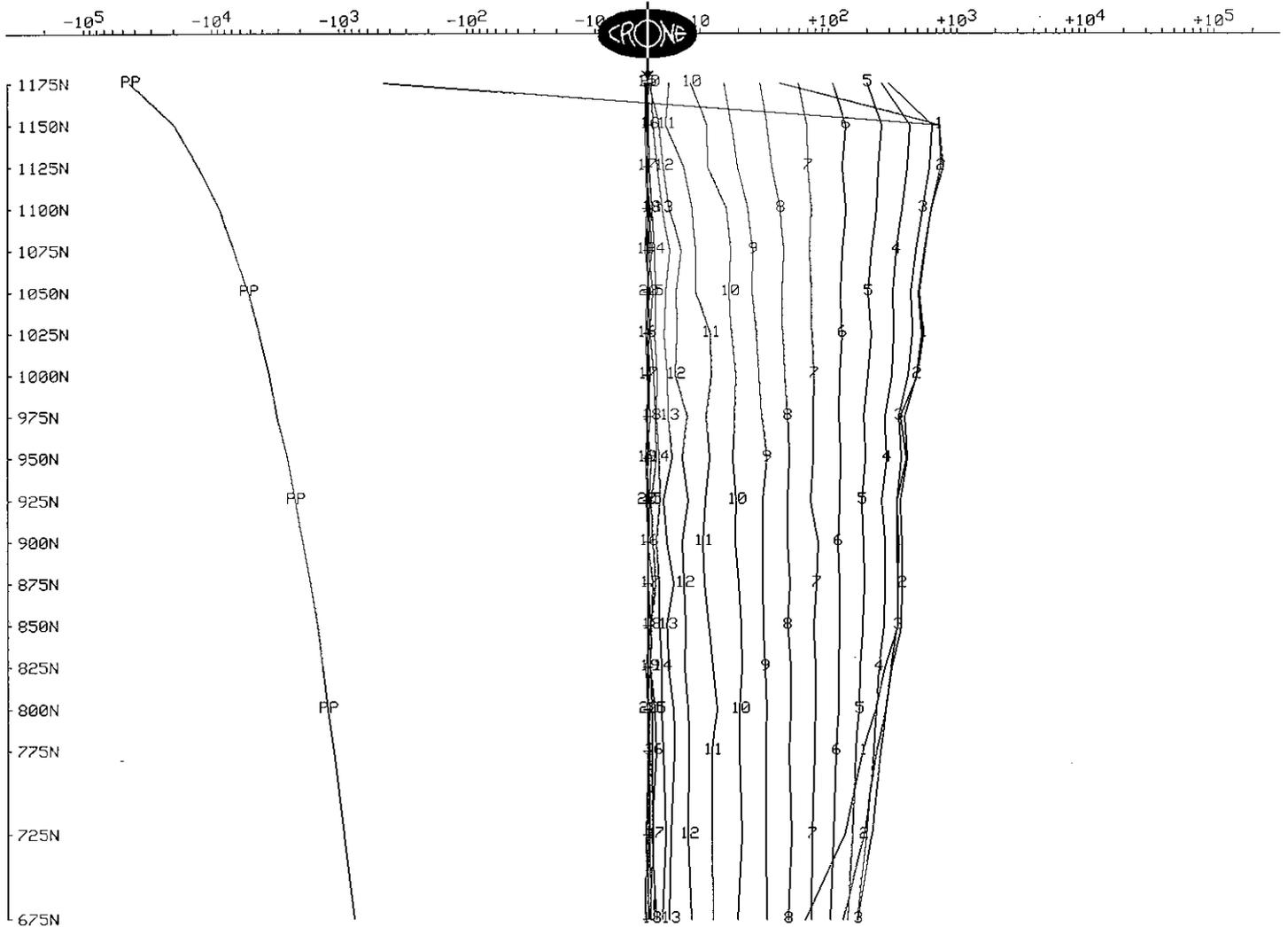
# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasminco Mining  
 Grid : Sawmill Creek  
 Date : Dec 13, 2002

Line : 3400E  
 Tx Loop : SC1  
 File name : 3400E.PEM

**VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP**  
 Scale: 1:4000



# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasmenco Mining	Line : 3550E
Grid : Sawmill Creek	Tx Loop : SC1
Date : Dec 13, 2002	File name : 3550E.PEM
Time Base : 20.00 ms	# Readings: 28
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 4000 sq m
Sync Type : Crystal-MASTER	Polarity : +
Loop Size : 900m X 500m	Receiver : Digital #109
Current : 10 Amps	Operator : Blade Morley

Loop Coordinates (X,Y,Z)

1. 3400m, 1700m, 0m	2. 4300m, 1700m, 0m
3. 4300m, 1200m, 0m	4. 3400m, 1200m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 3550m, 725m, 0m	2. 360deg, 0.1deg, 700m
--------------------	-------------------------

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

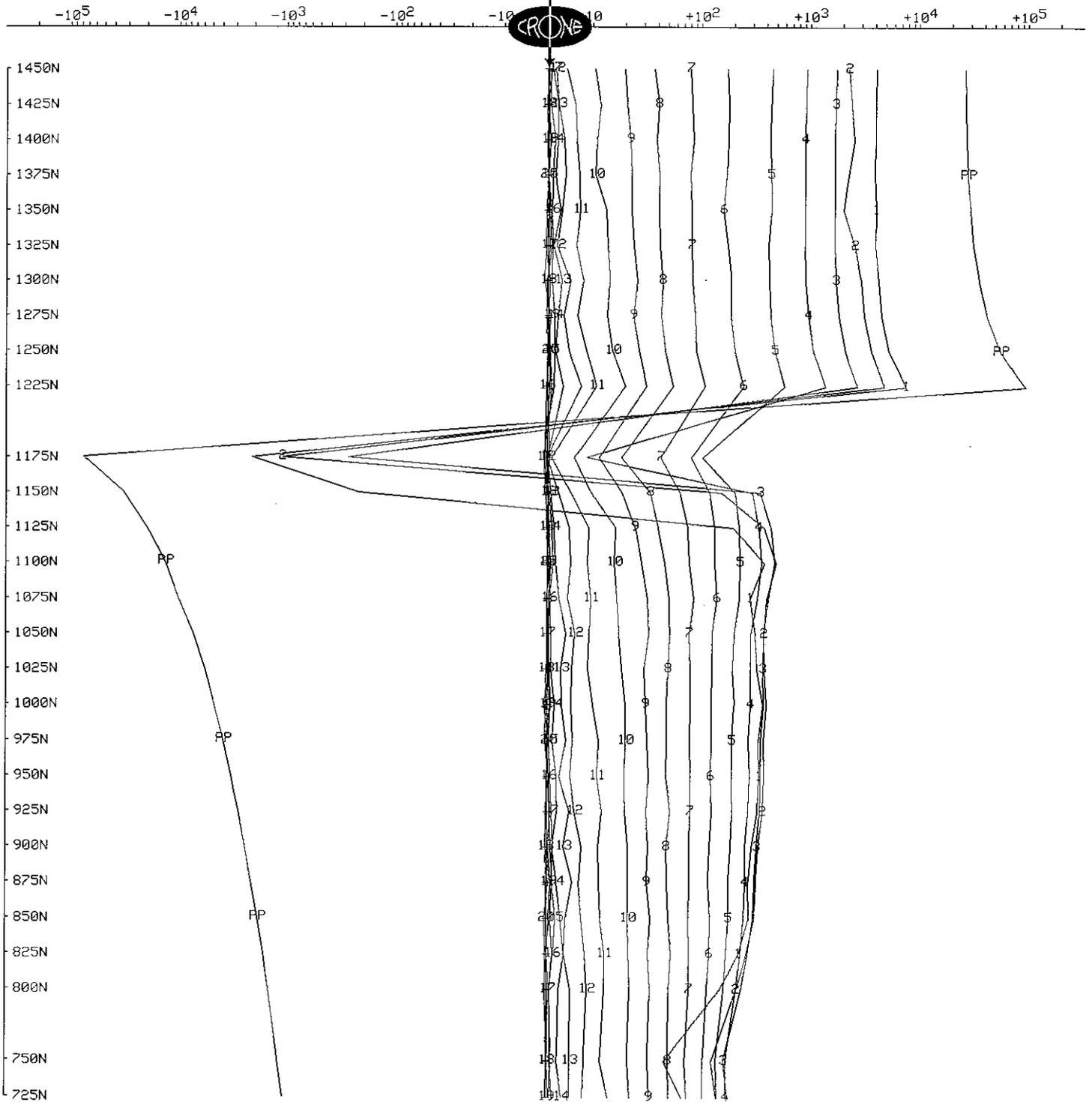
# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasminco Mining  
 Grid : Sawmill Creek  
 Date : Dec 13, 2002

Line : 3550E  
 Tx Loop : SC1  
 File name : 3550E.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP  
 Scale: 1:4000



# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasmenco Mining	Line : 3850E
Grid : Sawmill Creek	Tx Loop : SC1
Date : Dec 12, 2002	File name : 3850E.PEM
Time Base : 20.00 ms	# Readings: 23
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 4000 sq m
Sync Type : Crystal-MASTER	Polarity : +
Loop Size : 900m X 500m	Receiver : Digital #109
Current : 10 Amps	Operator : Blade Morley

Loop Coordinates (X,Y,Z)

1. 3400m, 1700m, 0m	2. 4300m, 1700m, 0m
3. 4300m, 1200m, 0m	4. 3400m, 1200m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 3850m, 875m, 0m	2. 360deg, 0.1deg, 600m
--------------------	-------------------------

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

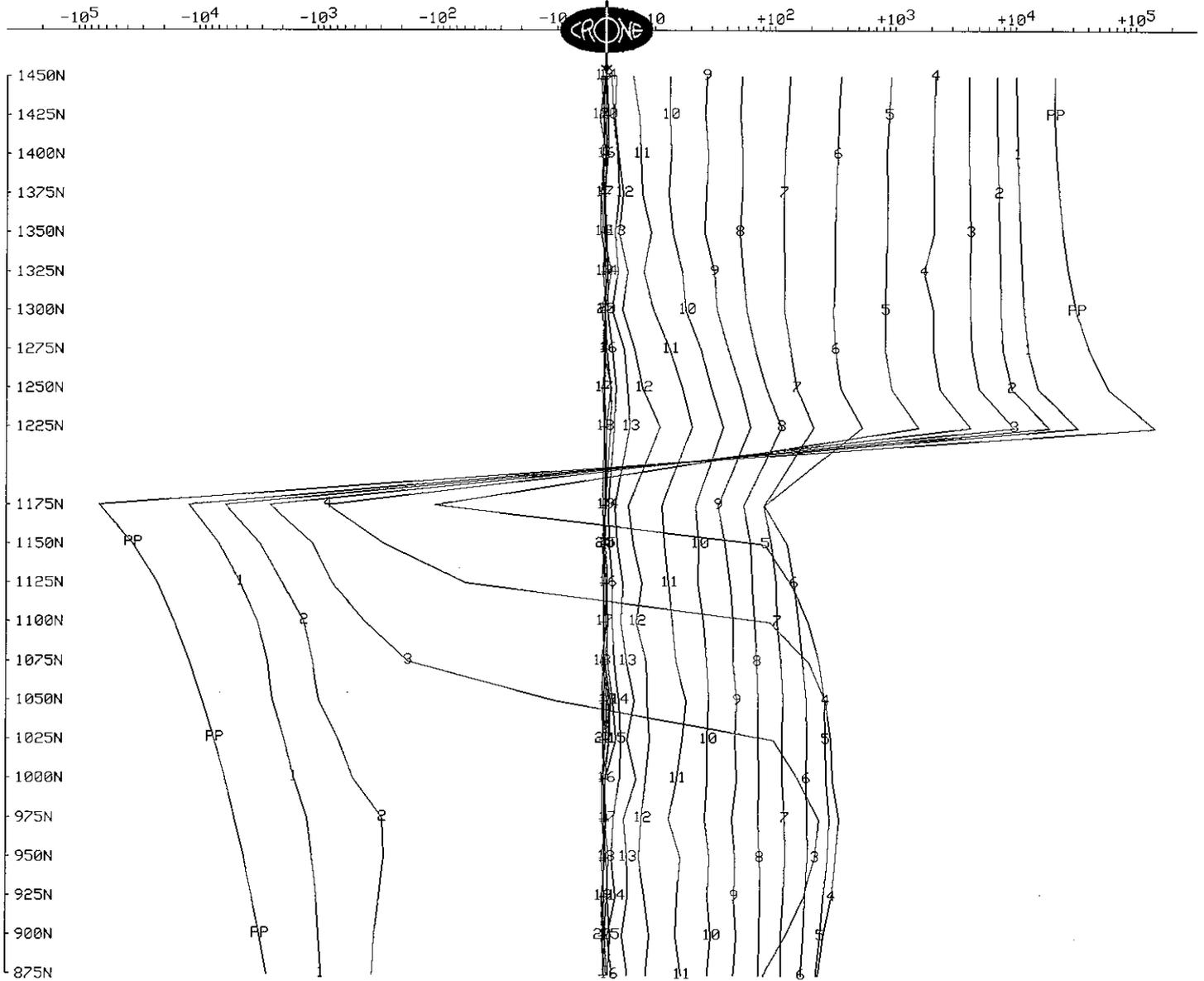
# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasma Mining  
Grid : Sawmill Creek  
Date : Dec 12, 2002

Line : 3850E  
Tx Loop : SC1  
File name : 3850E.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP  
Scale: 1:4000



# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasmenco Mining	Line : 4000E
Grid : Sawmill Creek	Tx Loop : SC1
Date : Dec 12, 2002	File name : 4000E.PEM
Time Base : 20.00 ms	# Readings: 29
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 4000 sq m
Sync Type : Crystal-MASTER	Polarity : +
Loop Size : 900m X 500m	Receiver : Digital #109
Current : 10 Amps	Operator : Blade Morley

### Loop Coordinates (X,Y,Z)

1. 3400m, 1700m, 0m	2. 4300m, 1700m, 0m
3. 4300m, 1200m, 0m	4. 3400m, 1200m, 0m

### Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 4000m, 725m, 0m	2. 360deg, 0.1deg, 750m
--------------------	-------------------------

### Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

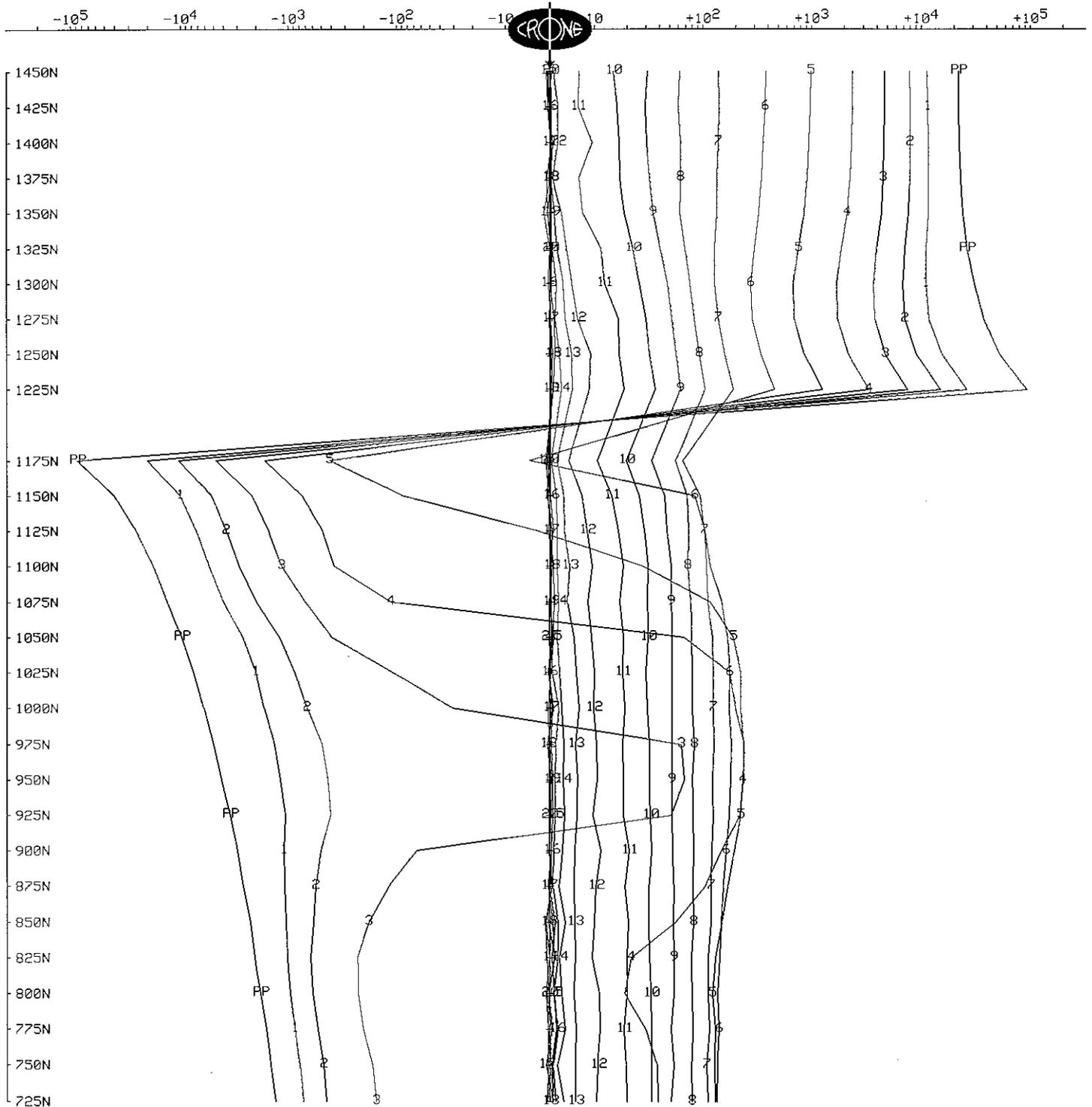
# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasminco Mining  
Grid : Sawmill Creek  
Date : Dec 12, 2002

Line : 4000E  
Tx Loop : SC1  
File name : 4000E.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP  
Scale: 1:4000



# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasmenco Mining	Line : 4300E
Grid : Sawmill Creek	Tx Loop : SC1
Date : Dec 13, 2002	File name : 4300E.PEM
Time Base : 20.00 ms	# Readings: 15
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 4000 sq m
Sync Type : Crystal-MASTER	Polarity : +
Loop Size : 900m X 500m	Receiver : Digital #109
Current : 10 Amps	Operator : Blade Morley

Loop Coordinates (X,Y,Z)

1. 3400m, 1700m, 0m	2. 4300m, 1700m, 0m
3. 4300m, 1200m, 0m	4. 3400m, 1200m, 0m

Line Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 4300m, 750m, 0m	2. 360deg, 0.1deg, 450m
--------------------	-------------------------

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

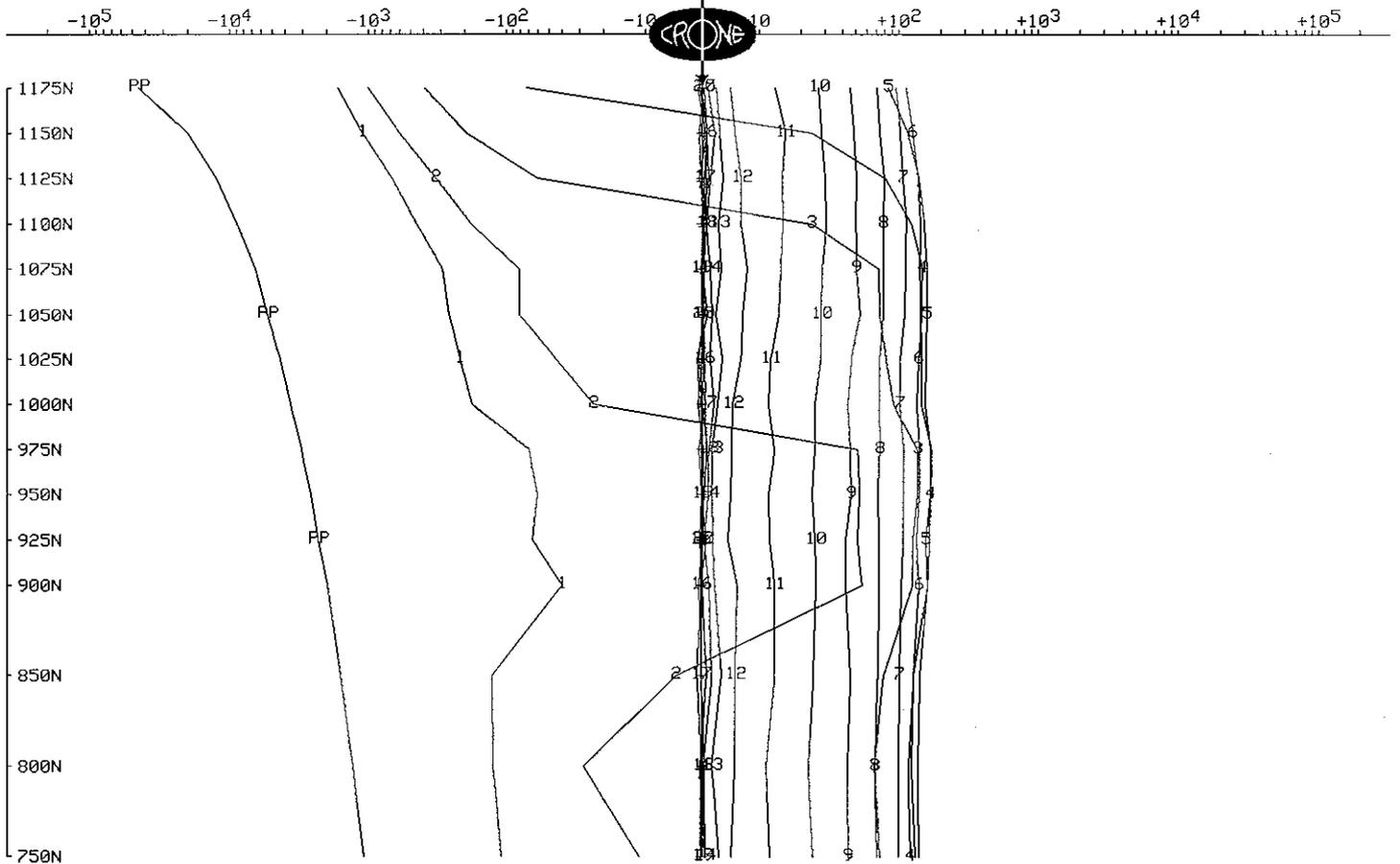
# OUTER-RIM EXPLORATION SERVICES

## Surface Pulse EM Survey

Client : Pasminco Mining  
Grid : Sawmill Creek  
Date : Dec 13, 2002

Line : 4300E  
Tx Loop : SC1  
File name : 4300E.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP  
Scale: 1:4000



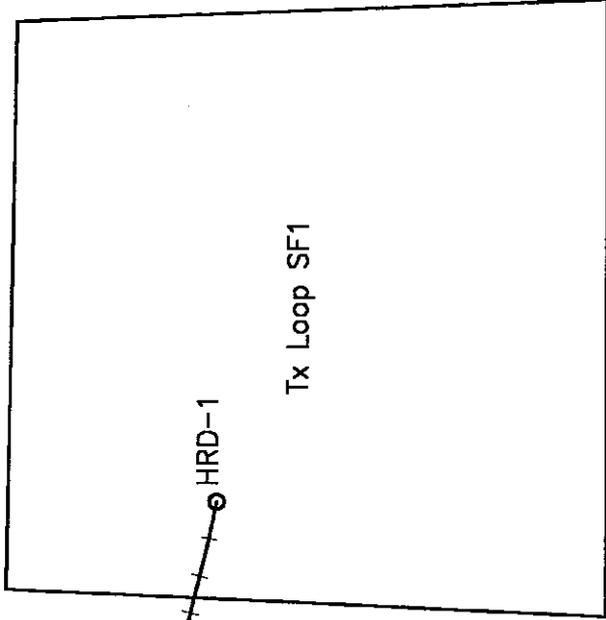
376900E

377000E

377100E

5389200N -

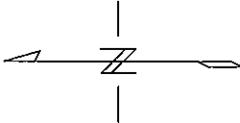
5389100N -



Tx Loop SF1

HRD-1

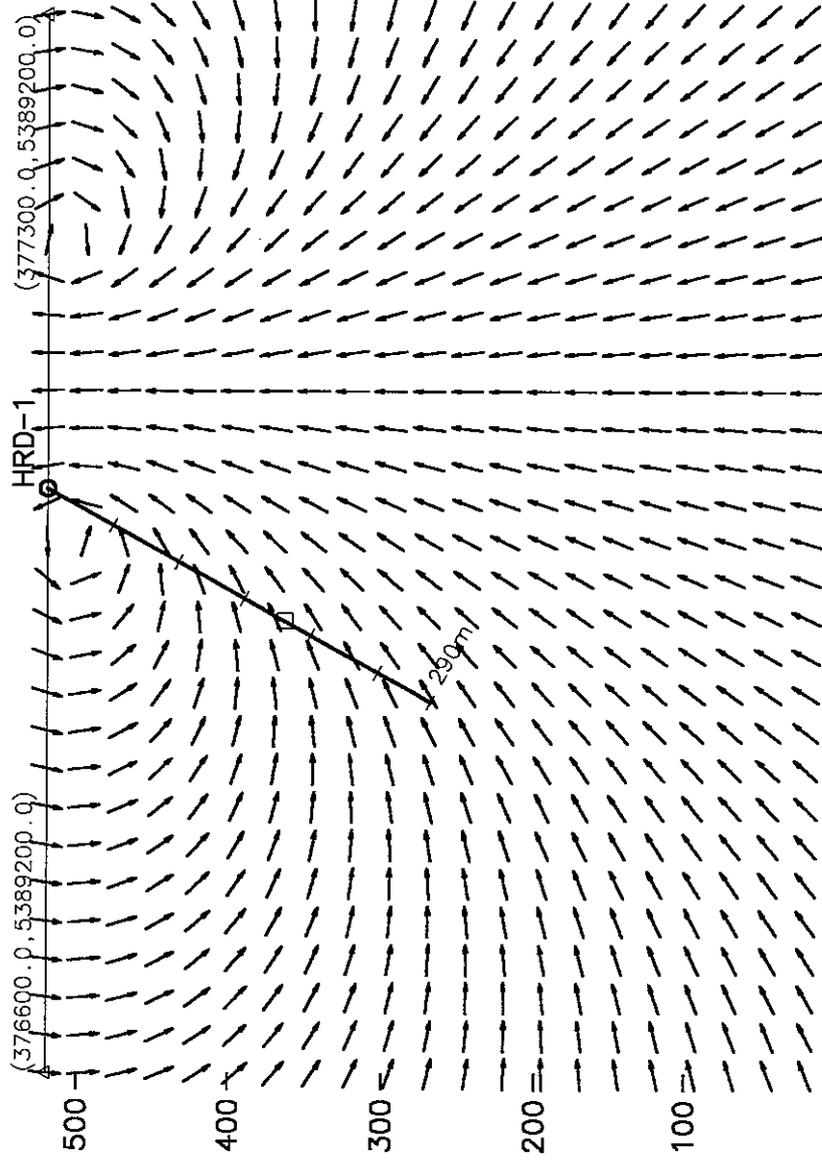
290m



Scale 1:2500  
25 0 25 50  
(metres)

<i>Pasminco Mining</i> Silver Falls
<b>3-D Borehole Pulse EM Survey</b> Borehole & Loop Location Map
Hole: HRD-1 Survey Date: Dec 18, 2002
<b>Outer-Rim Exploration Services</b>

Loop SF1



*Pasminco Mining*

Silver Falls

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

Hole: HRD-1

Survey Date: Dec 18, 2002

**Outer-Rim Exploration Services**

# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasmenco Mining	Hole : HRD-1
Grid : Silver Falls	Tx Loop : SF1
Date : Dec 18, 2002	File name : HRD1Z.PEM
Time Base : 20.00 ms	# Readings: 29
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 6500 sq m
Sync Type : Cable	Polarity : +
Loop Size : 200m X 200m	Receiver : Digital #109
Current : 15 Amps	Operator : Blade Morley

### Loop Coordinates (X,Y,Z)

1. 376956m, 5.38925e+06m, 500m	2. 376948m, 5.38905e+06m, 515m
3. 377152m, 5.38905e+06m, 505m	4. 377144m, 5.38925e+06m, 510m

### Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 376985m, 5.38918e+06m, 520m	2. 282deg, 60deg, 25m
3. 284deg, 60deg, 50m	4. 283deg, 60.5deg, 50m
5. 282deg, 60deg, 50m	6. 283deg, 60deg, 50m
7. 284deg, 60deg, 50m	8. 285deg, 59deg, 15m

### Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

# OUTER-RIM EXPLORATION SERVICES

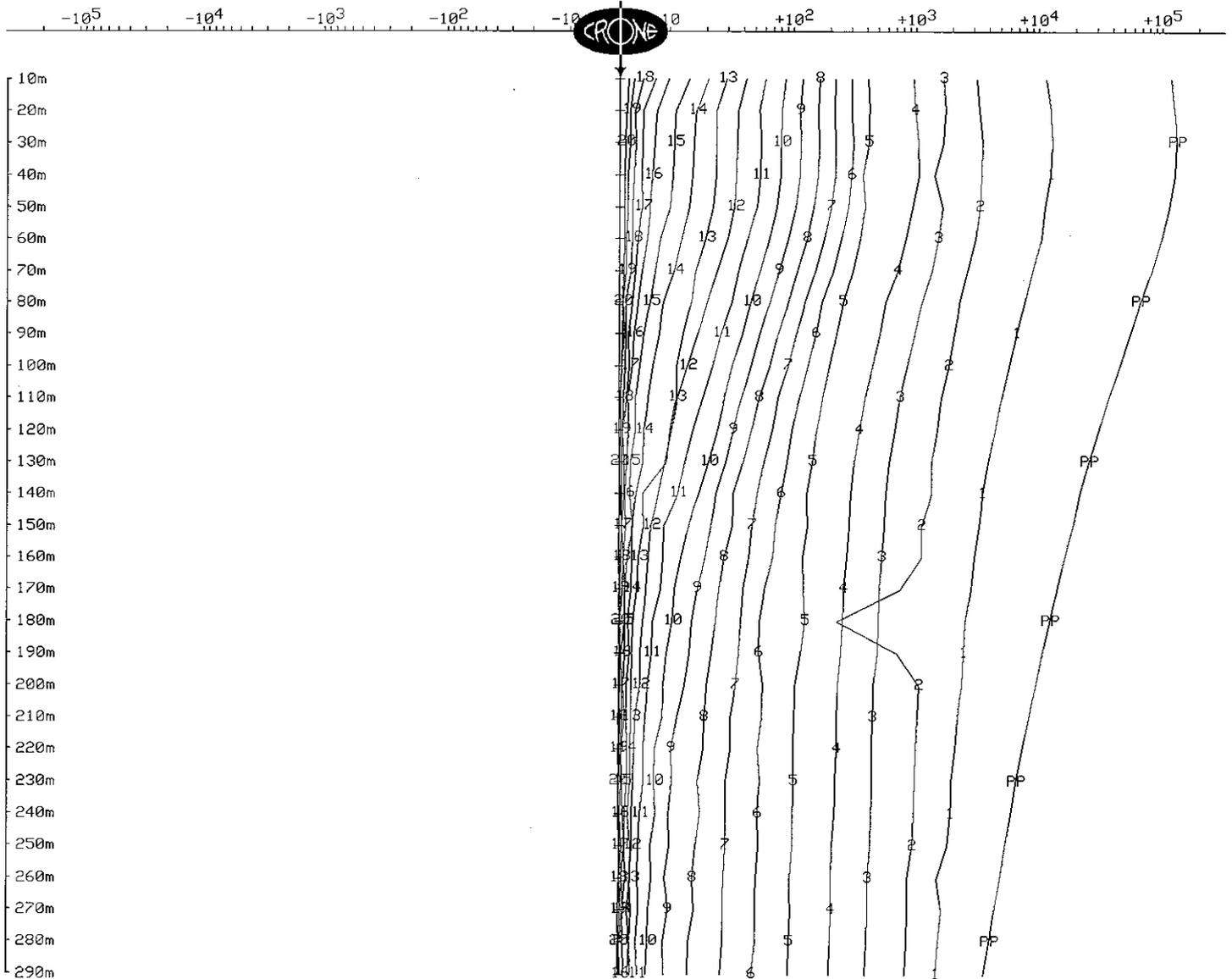
## Borehole Pulse EM Survey

Client : Pasminco Mining  
 Grid : Silver Falls  
 Date : Dec 18, 2002

Hole : HRD-1  
 Tx Loop : SF1  
 File name : HRD1Z.PEM

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

Scale: 1:2000



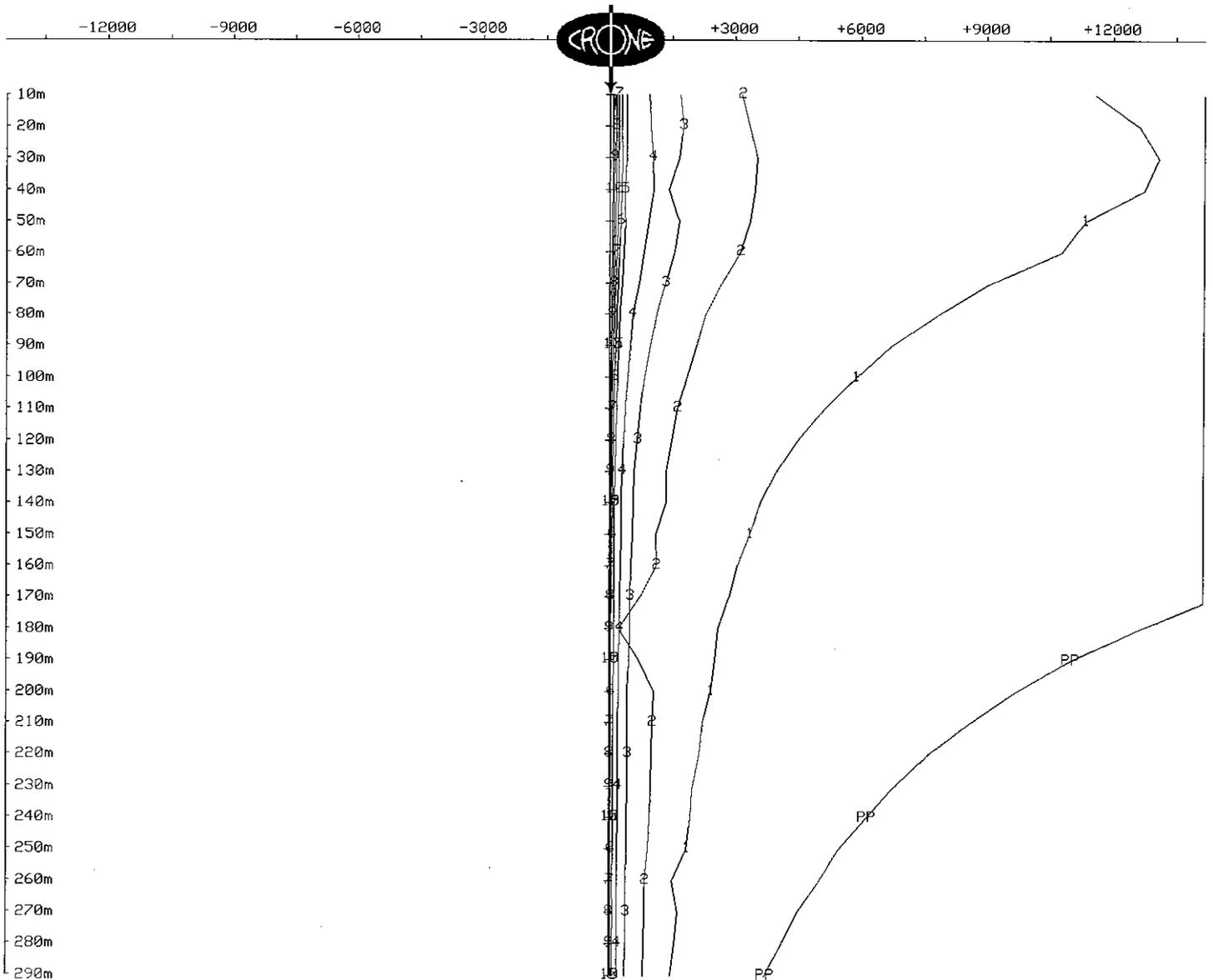
# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : Silver Falls  
Date : Dec 18, 2002

Hole : HRD-1  
Tx Loop : SF1  
File name : HRD1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 10 of 20 channels and PP  
Scale: 1:2000 Unit Scale: 1cm = 1500 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

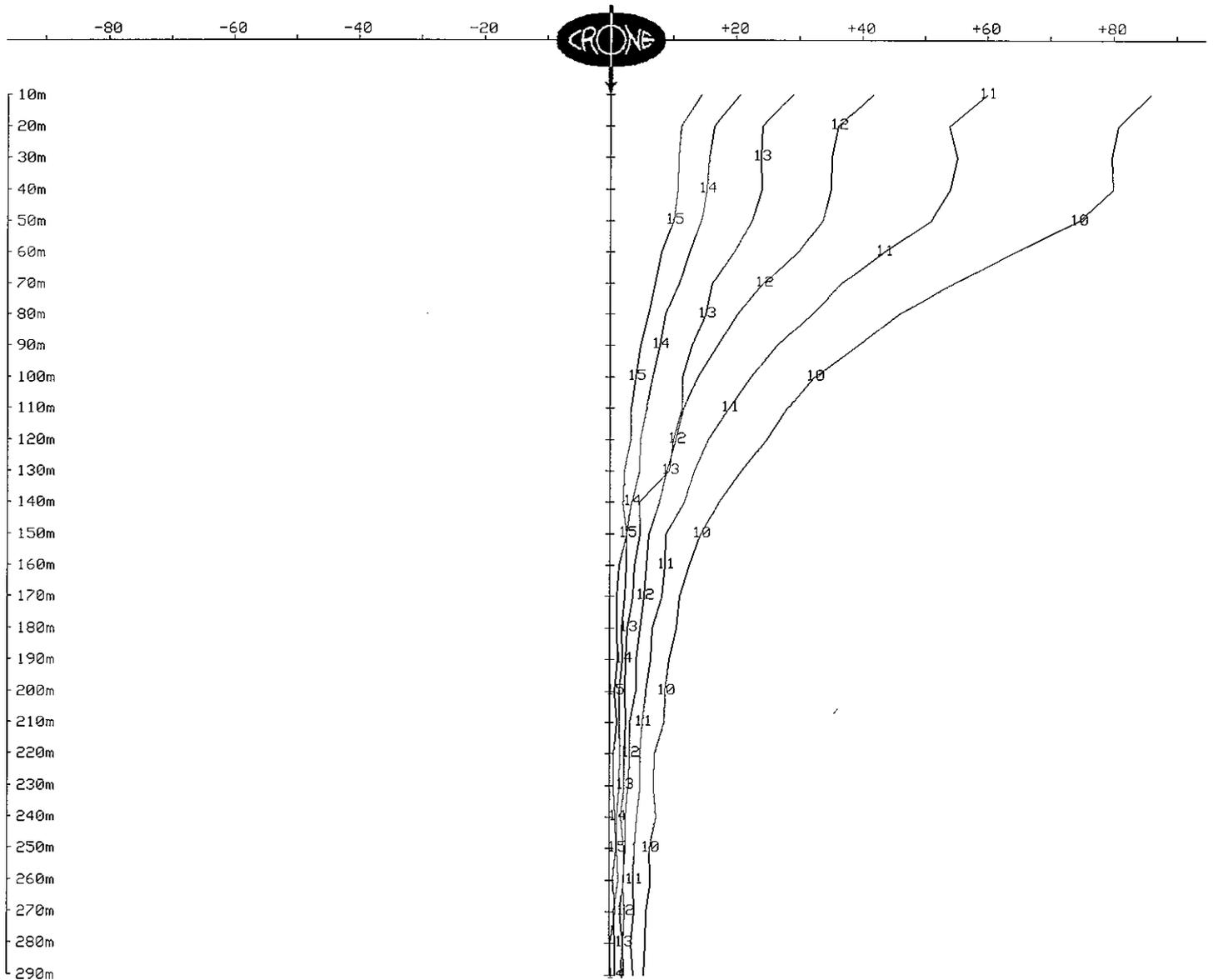
Client : Pasmaico Mining  
Grid : Silver Falls  
Date : Dec 18, 2002

Hole : HRD-1  
Tx Loop : SF1  
File name : HRD1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2000

Unit Scale: 1cm = 10 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

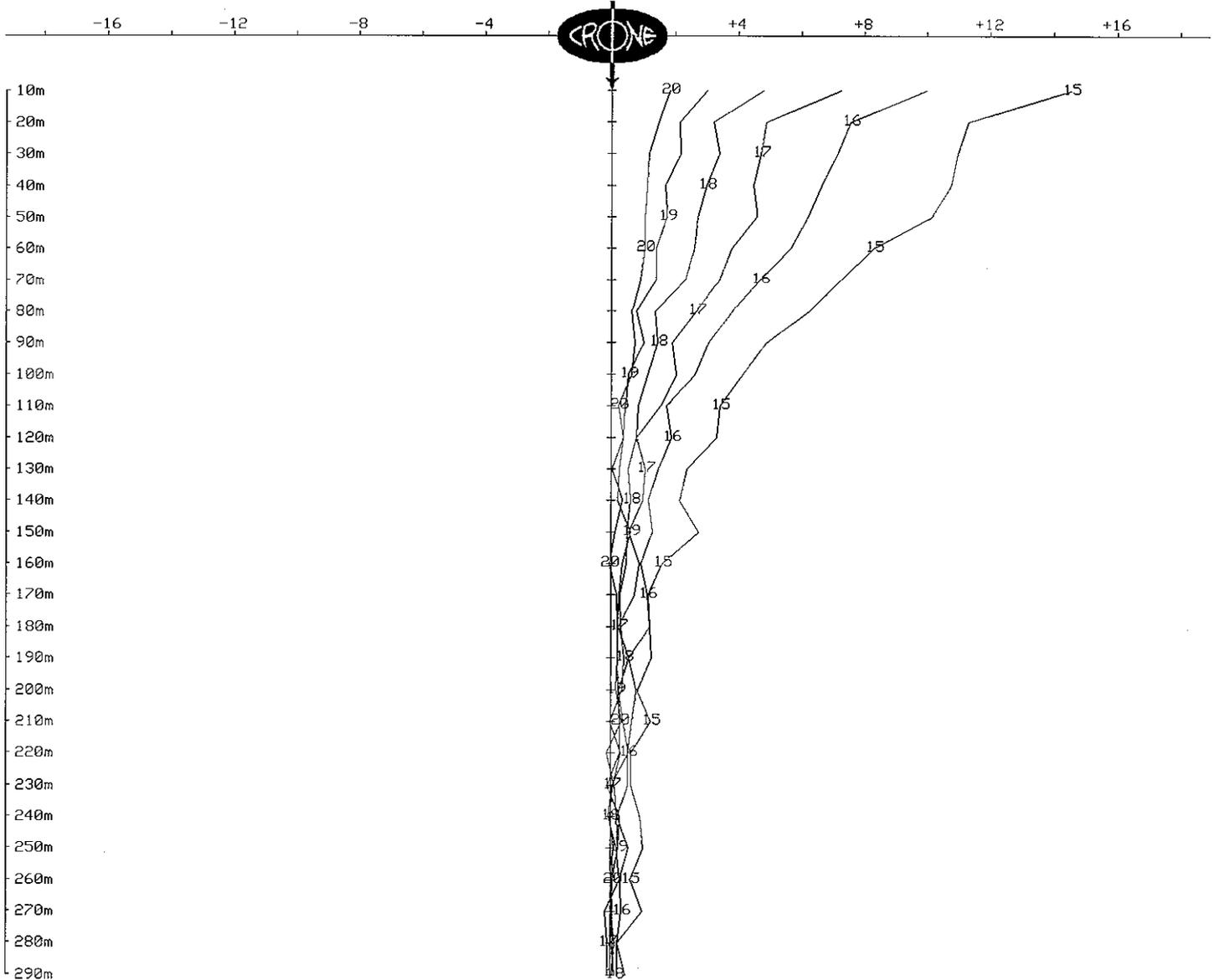
Client : Pasminco Mining  
Grid : Silver Falls  
Date : Dec 18, 2002

Hole : HRD-1  
Tx Loop : SF1  
File name : HRD1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2000

Unit Scale: 1cm = 2 nT/s



377000E 377100E 377200E 377300E 377400E

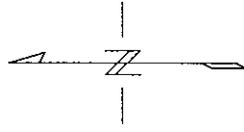
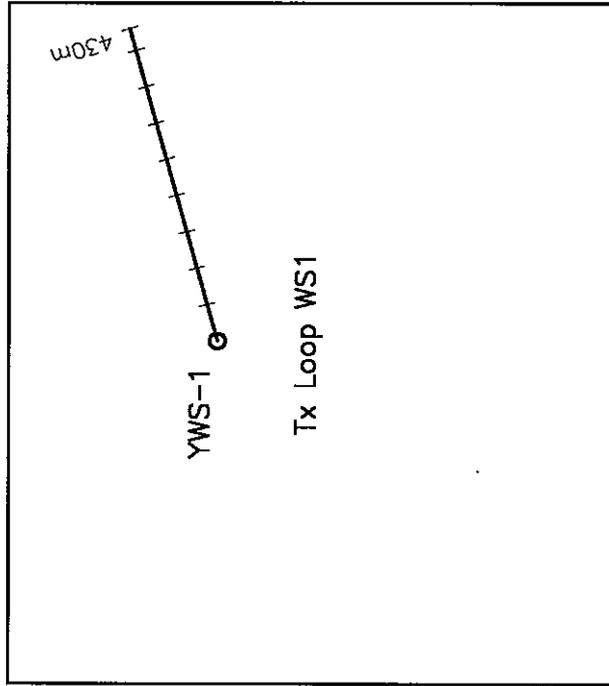
5360200N —

5360100N —

5360000N —

5359900N —

5359800N —



Scale 1:5000  
50 0 50 100  
(metres)

*Pasminco Mining*

White Spur

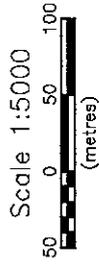
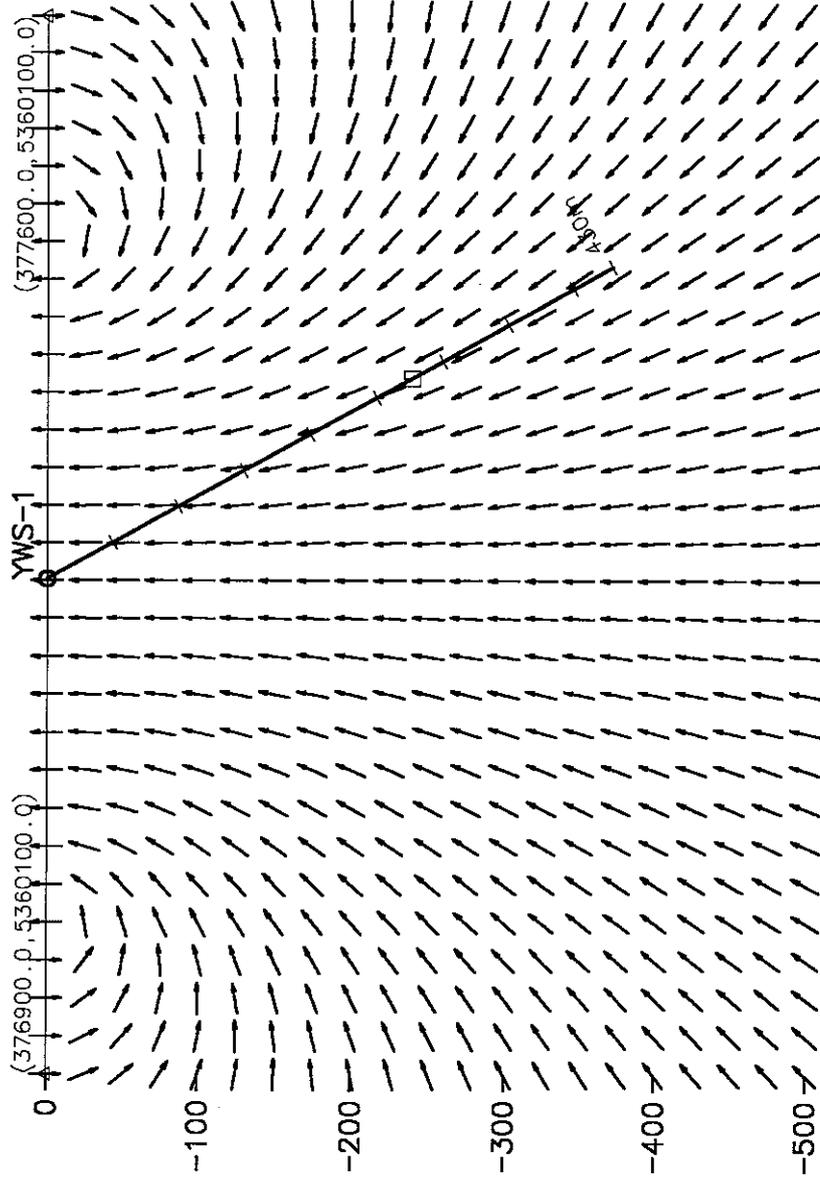
3-D Borehole Pulse EM Survey  
Borehole & Loop Location Map

Hole: YWS-1

Survey Date: Dec 15, 2002

**Outer-Rim Exploration Services**

Loop WS1



*Pasminco Mining*

White Spur

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

Hole: YWS-1

Survey Date: Dec 15, 2002

**Outer-Rim Exploration Services**

# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasmenco Mining	Hole : YWS-1
Grid : White Spur	Tx Loop : WS1
Date : Dec 15, 2002	File name : YWS1Z.PEM
Time Base : 20.00 ms	# Readings: 48
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 6500 sq m
Sync Type : Cable	Polarity : +
Loop Size : 400m X 400m	Receiver : Digital #109
Current : 20 Amps	Operator : Blade Morley

Loop Coordinates (X,Y,Z)

1. 377000m, 5.3598e+06m, 0m	2. 377450m, 5.3598e+06m, 0m
3. 377450m, 5.3602e+06m, 0m	4. 377000m, 5.3602e+06m, 0m

Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 377226m, 5.36006e+06m, 0m	2. 74.5deg, 60deg, 430m
------------------------------	-------------------------

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

# OUTER-RIM EXPLORATION SERVICES

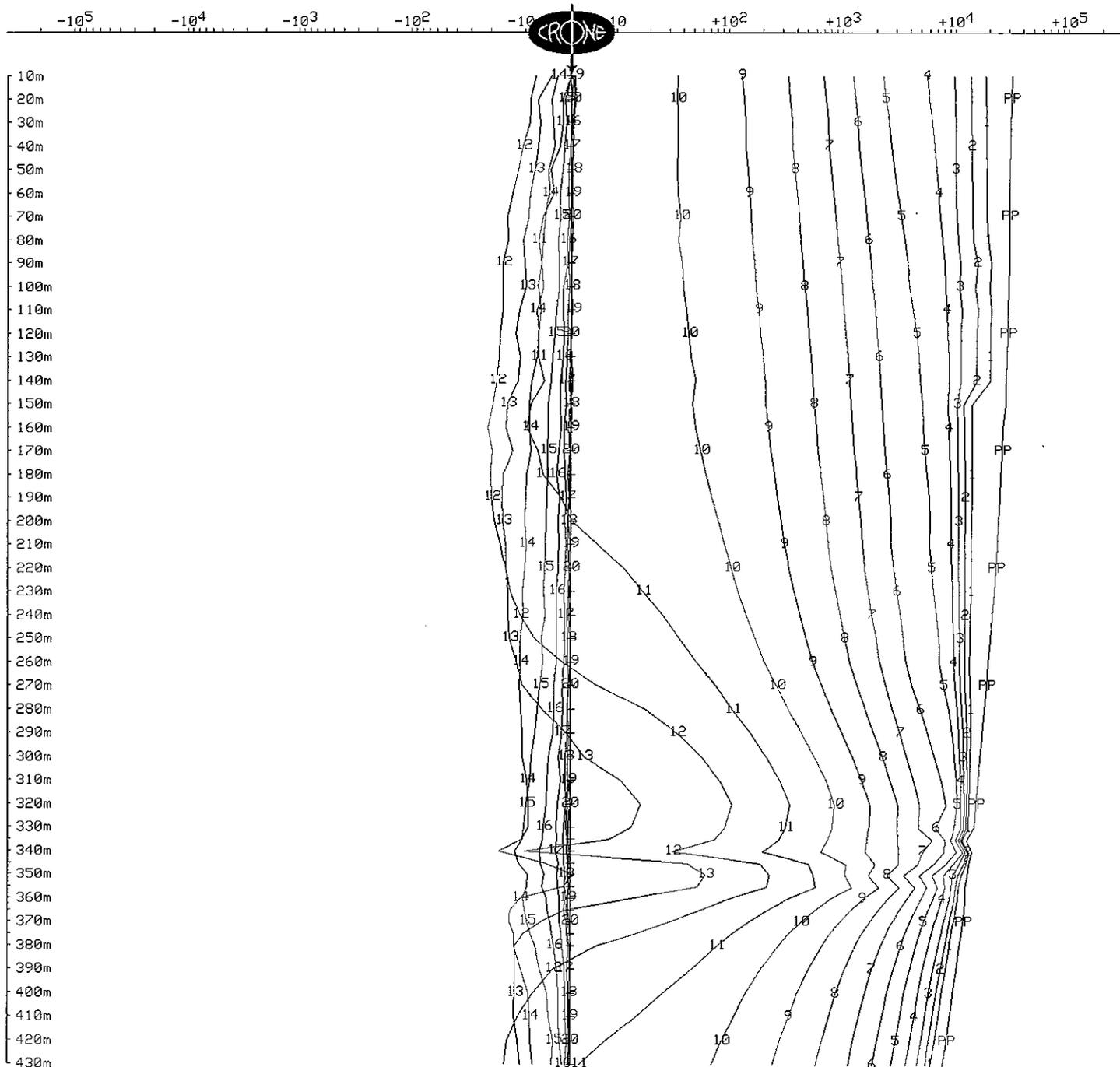
## Borehole Pulse EM Survey

Client : Pasminco Mining  
 Grid : White Spur  
 Date : Dec 15, 2002

Hole : YWS-1  
 Tx Loop : WS1  
 File name : YWS1Z.PEM

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

Scale: 1:2500



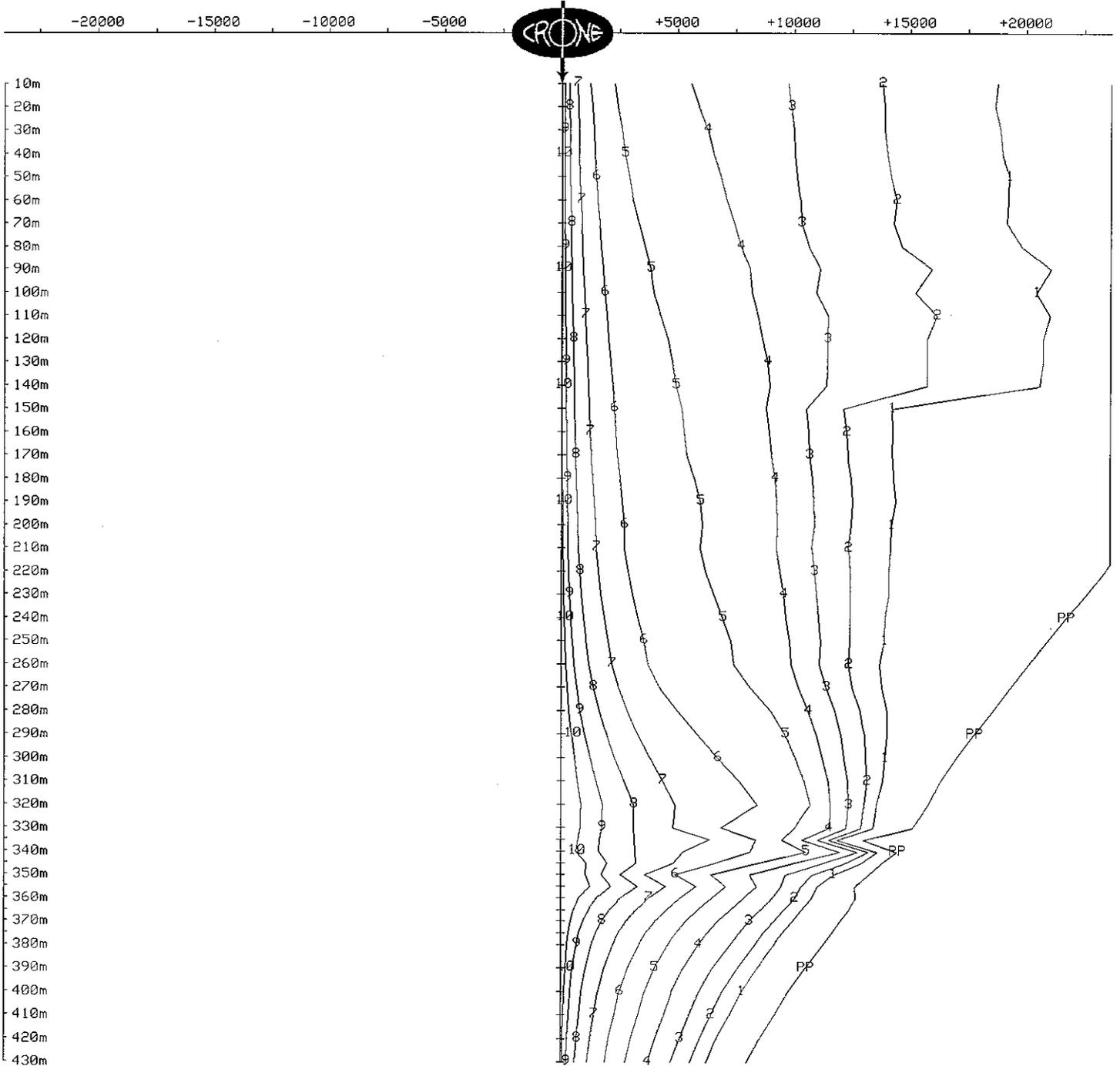
# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasma Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 10 of 20 channels and PP  
Scale: 1:2500 Unit Scale: 1cm = 2500 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

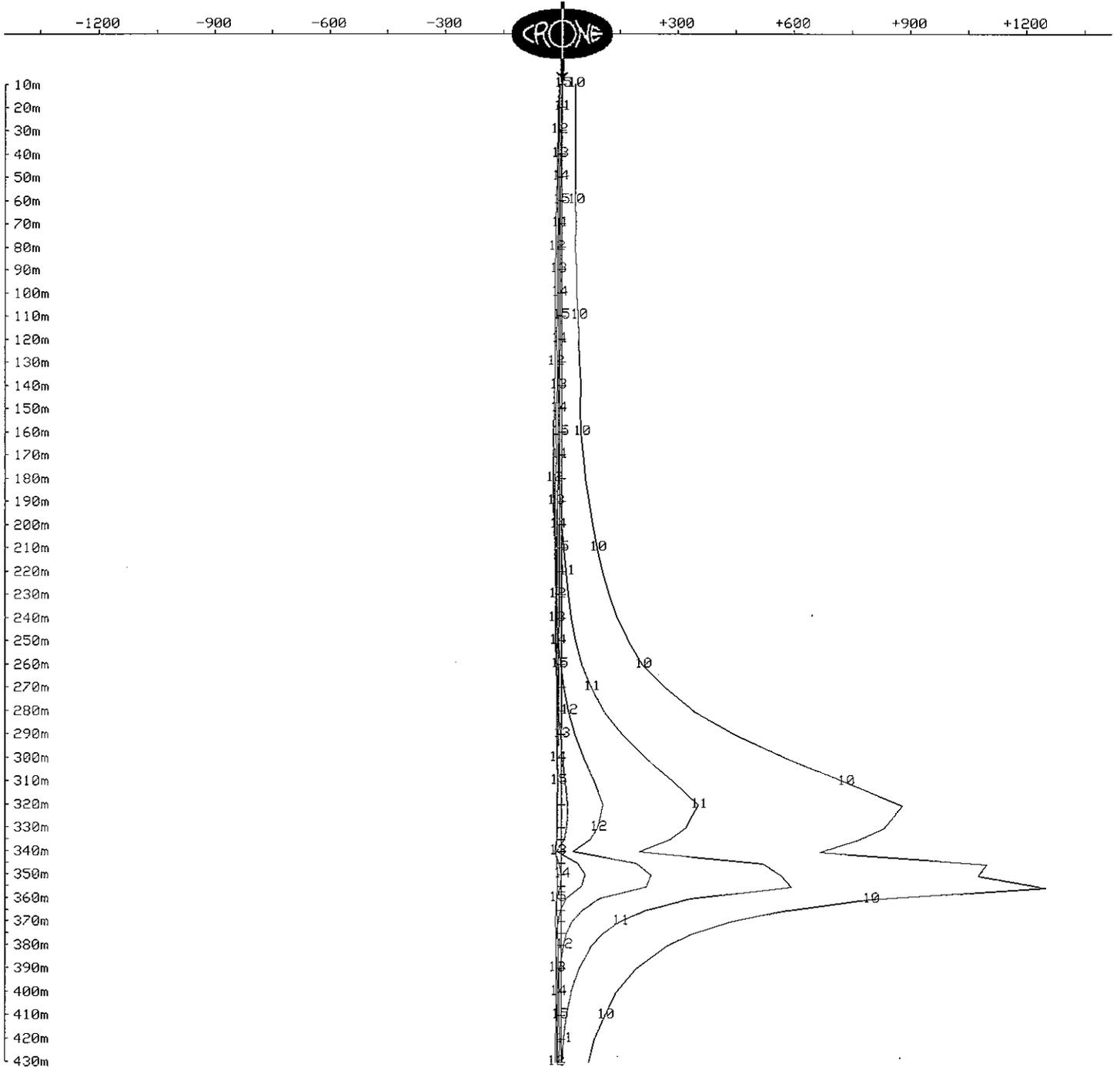
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 150 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

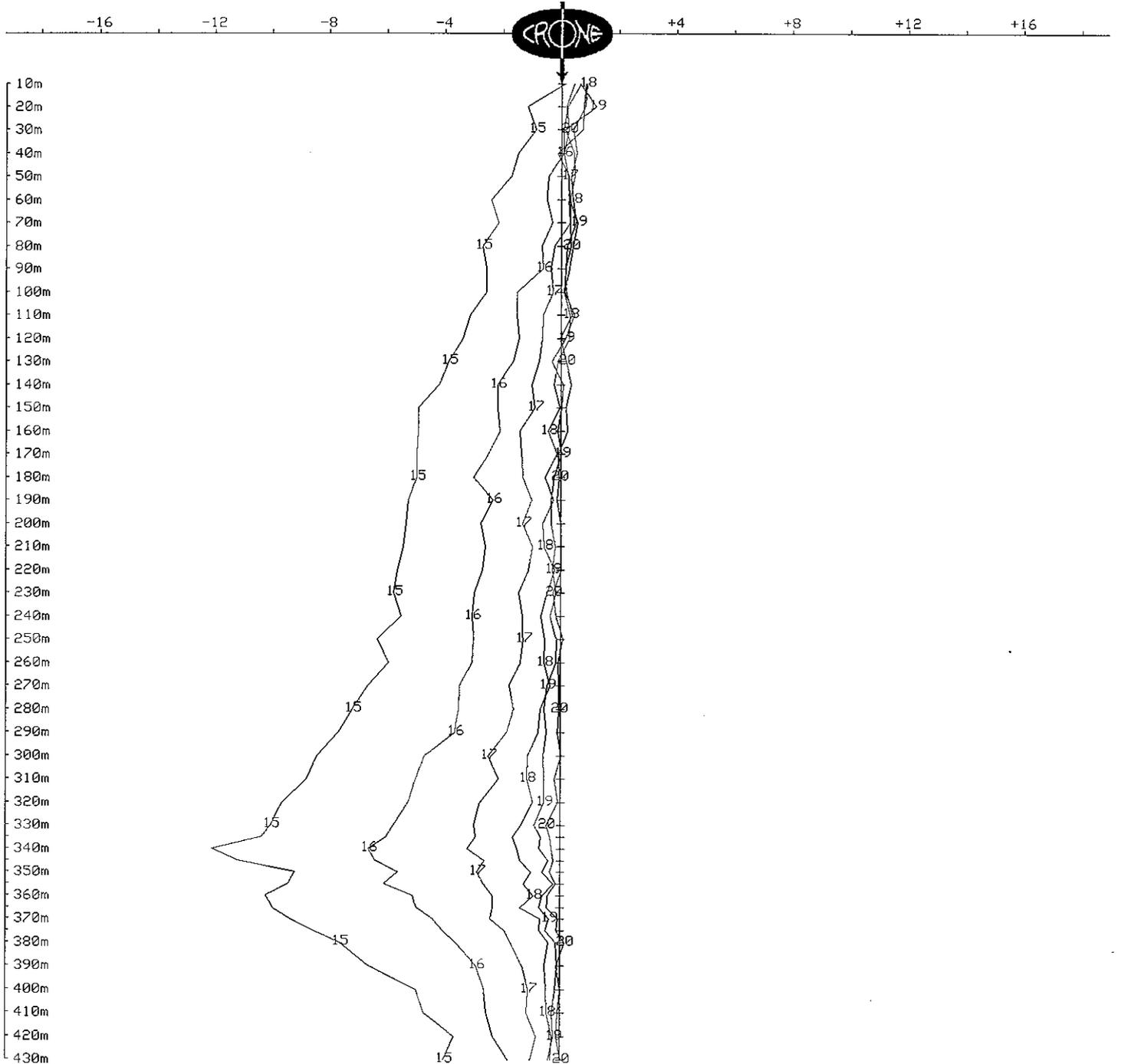
Client : Pasma Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 2 nT/s



# OUTER-RIM EXPLORATION SERVICES

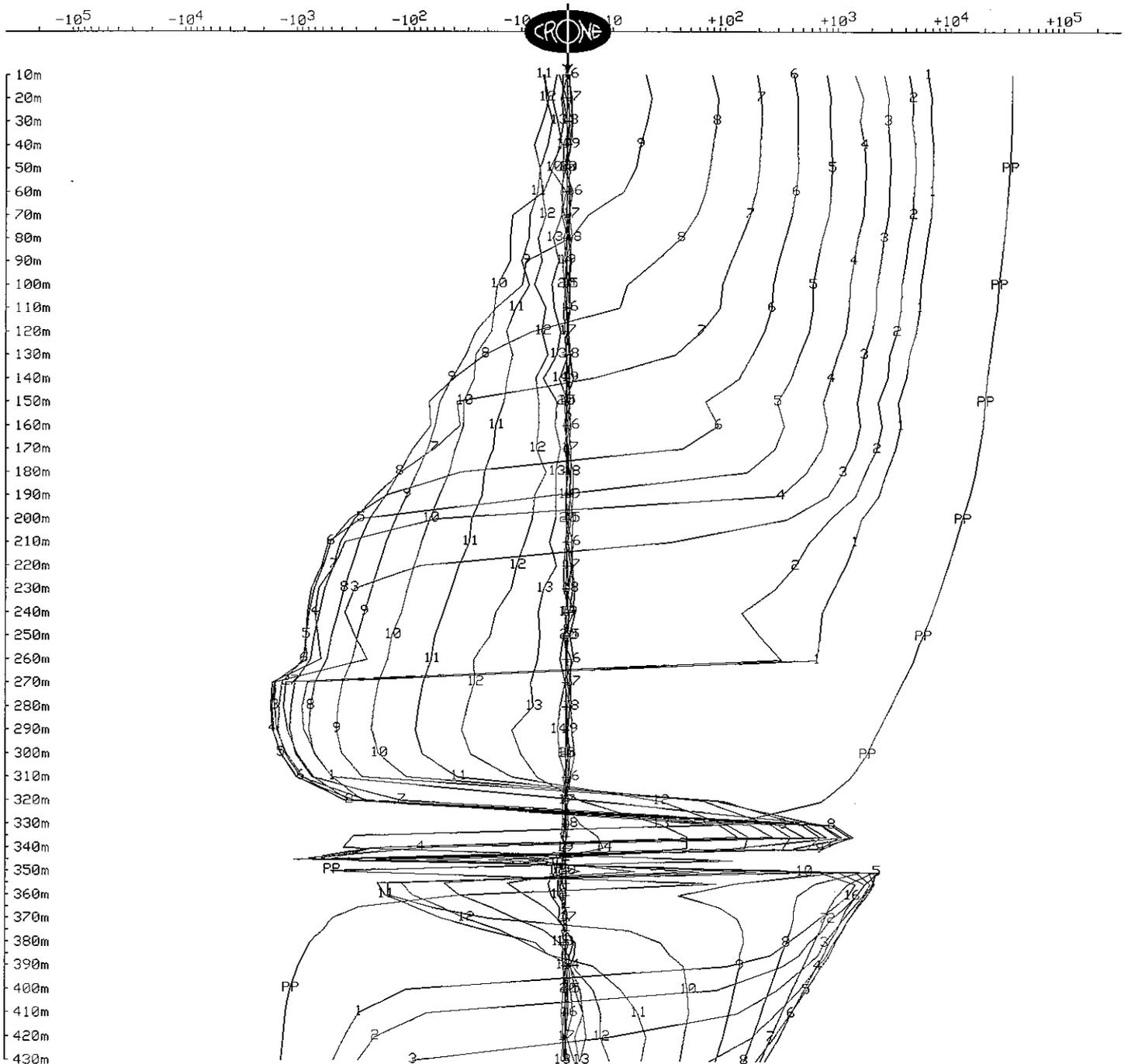
## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:2500



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

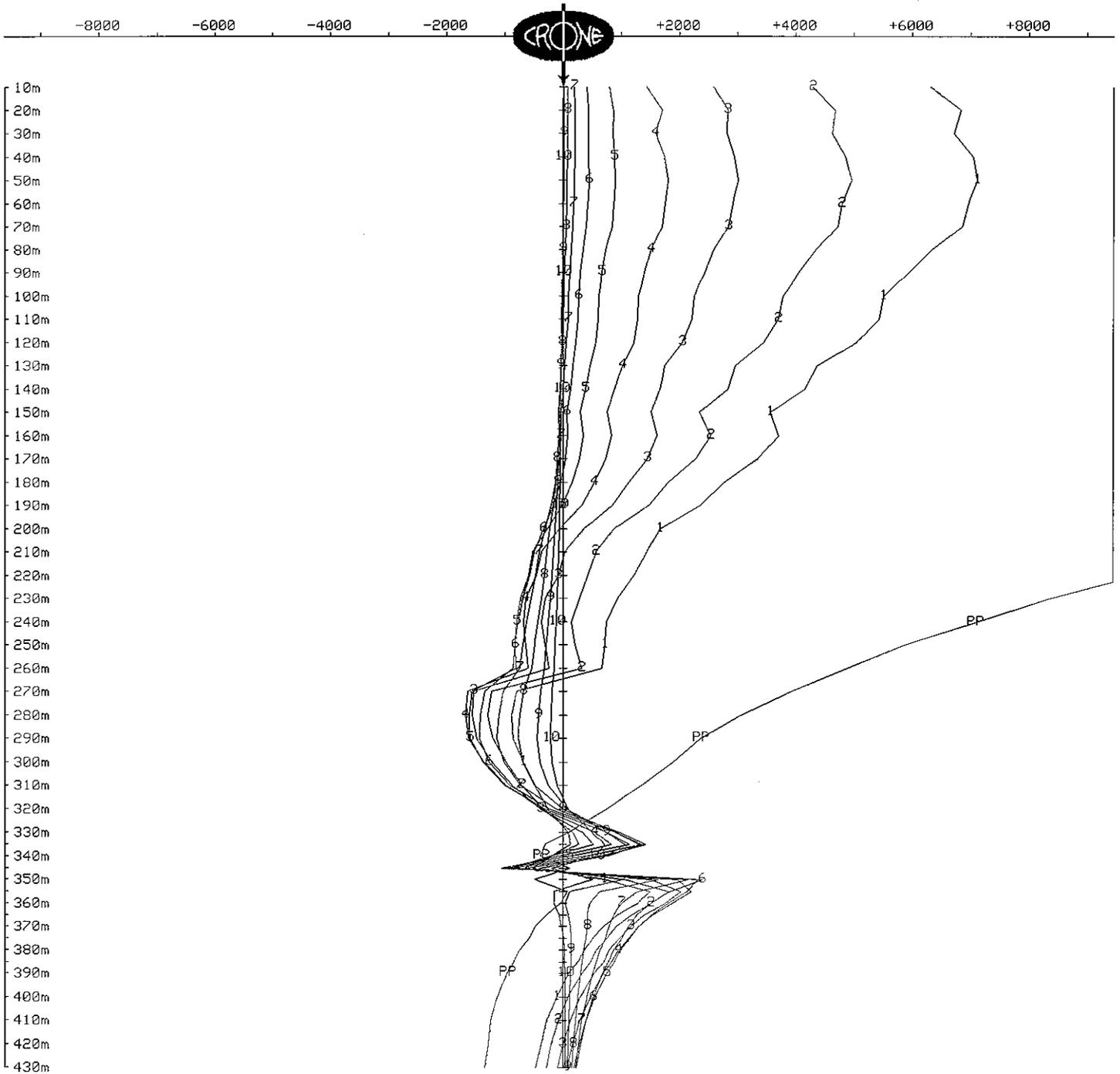
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 10 of 20 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 1000 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

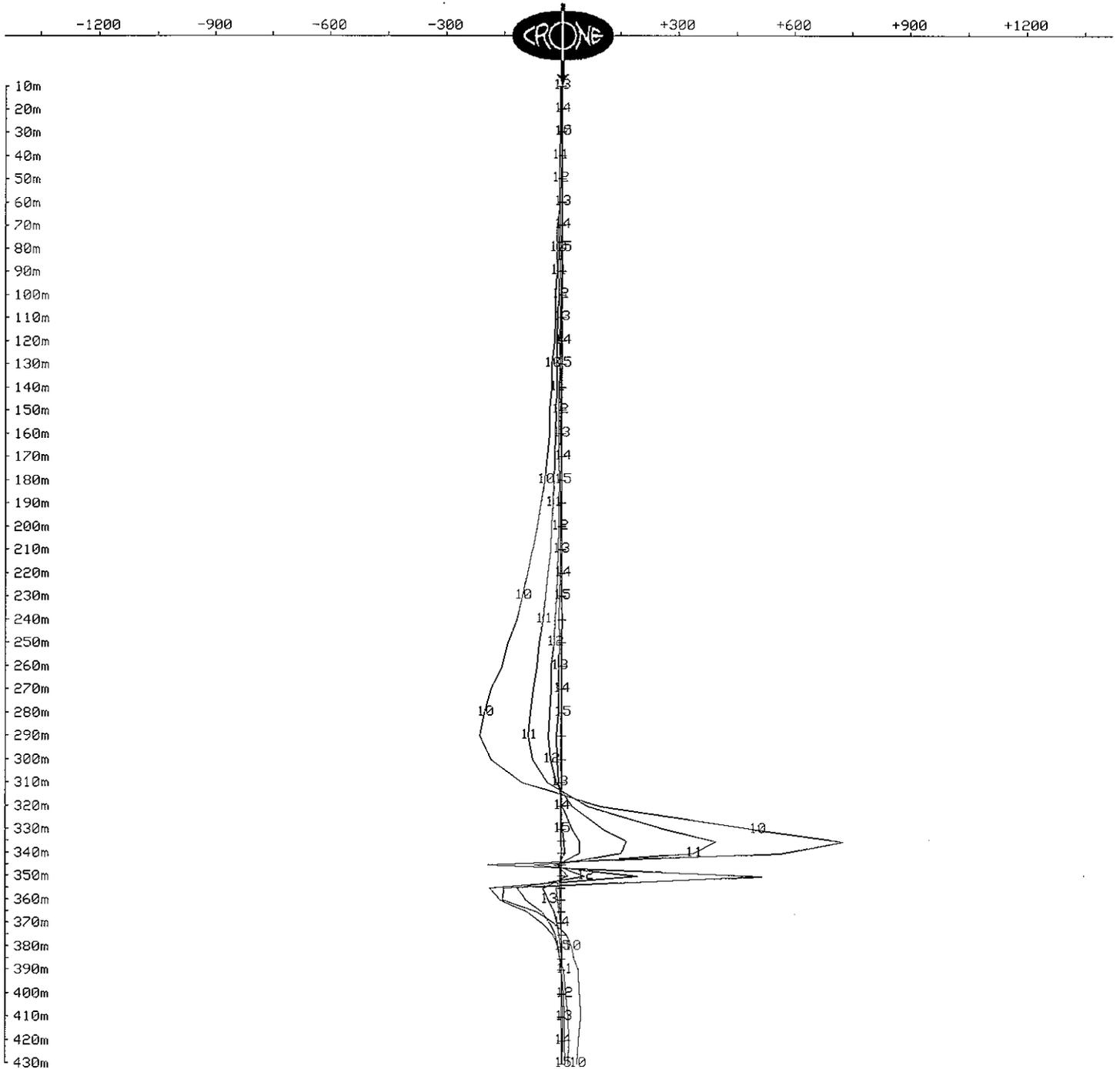
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 150 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

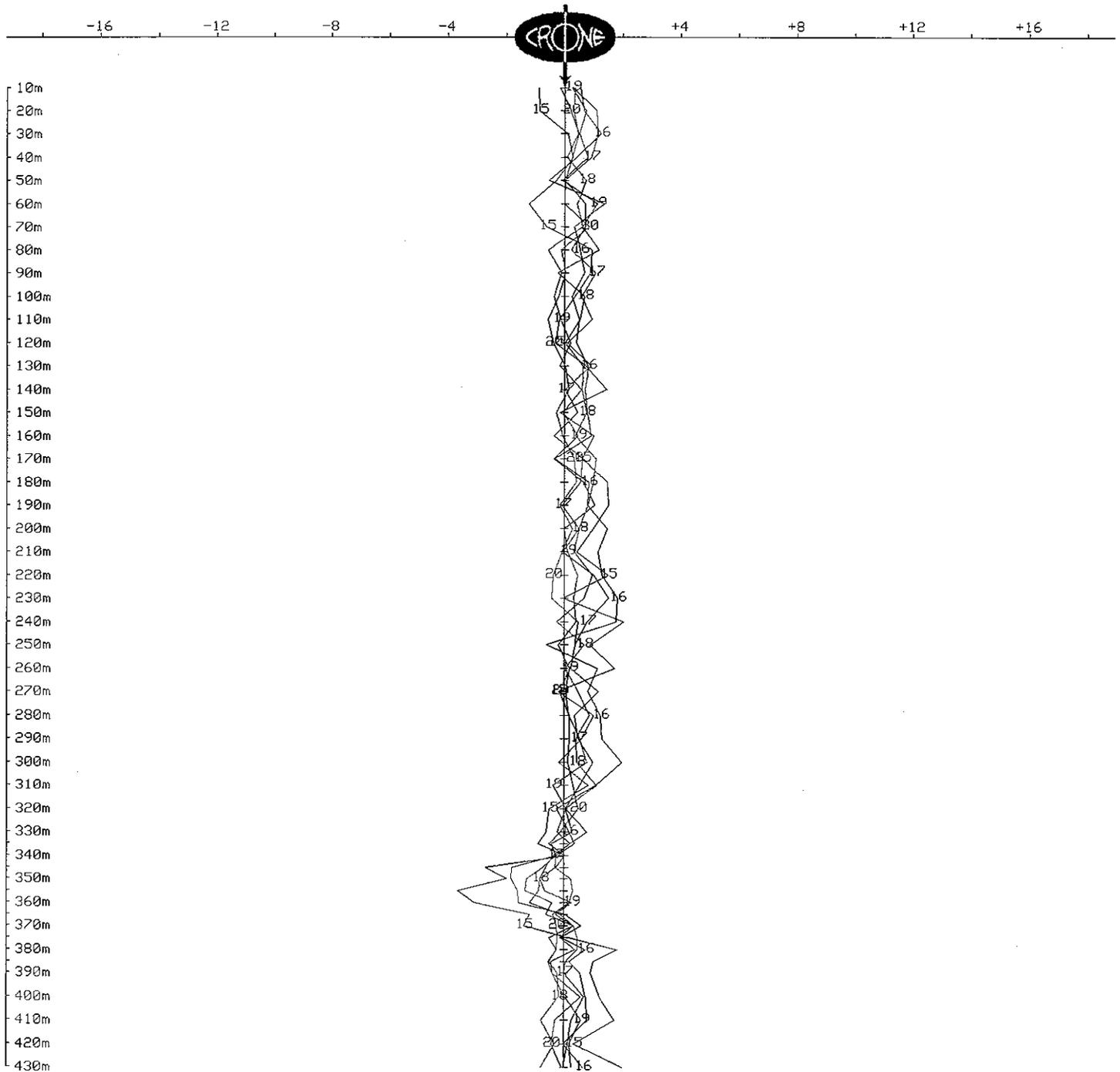
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 2 nT/s



# OUTER-RIM EXPLORATION SERVICES

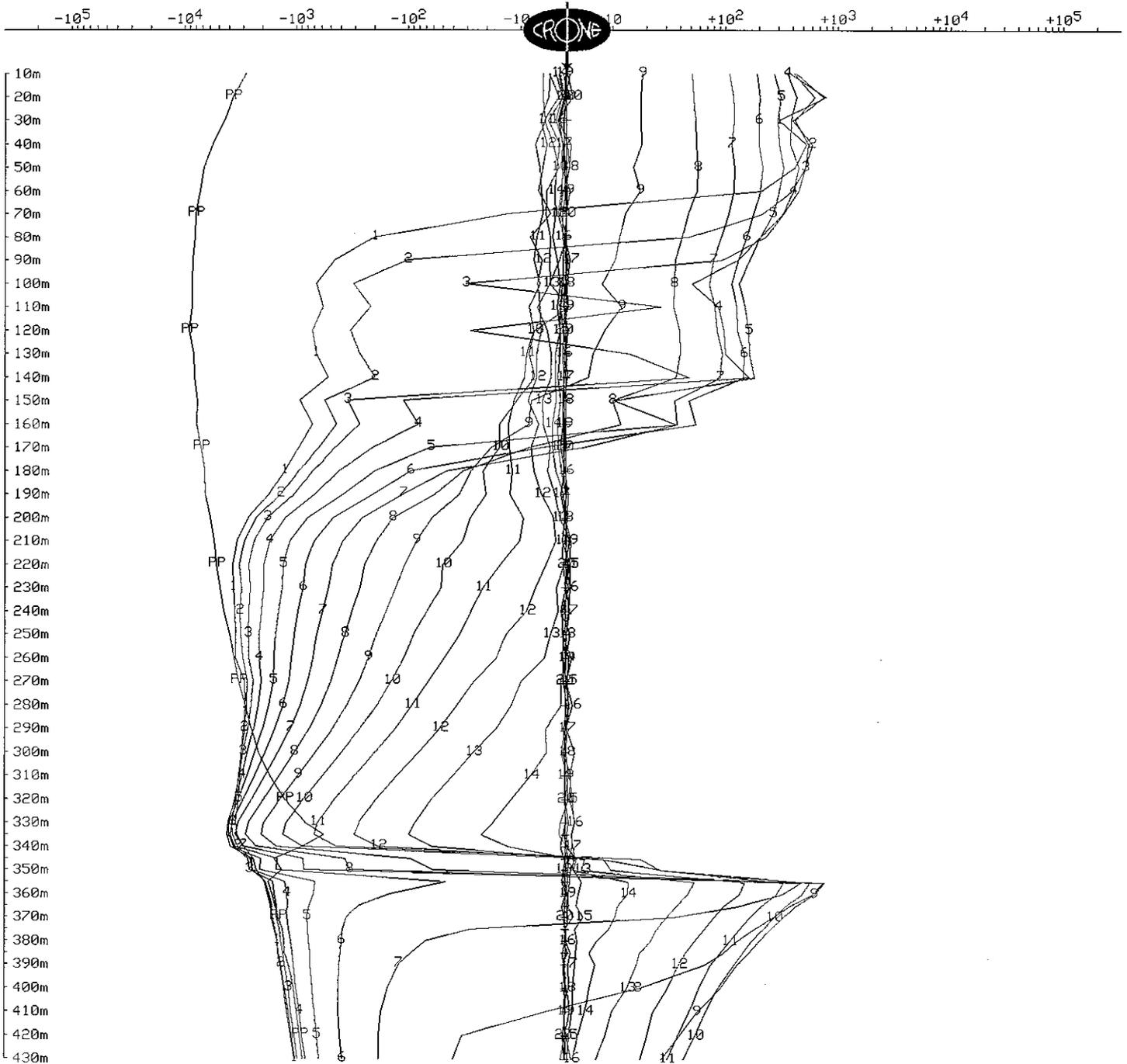
## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT dBy/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:2500



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

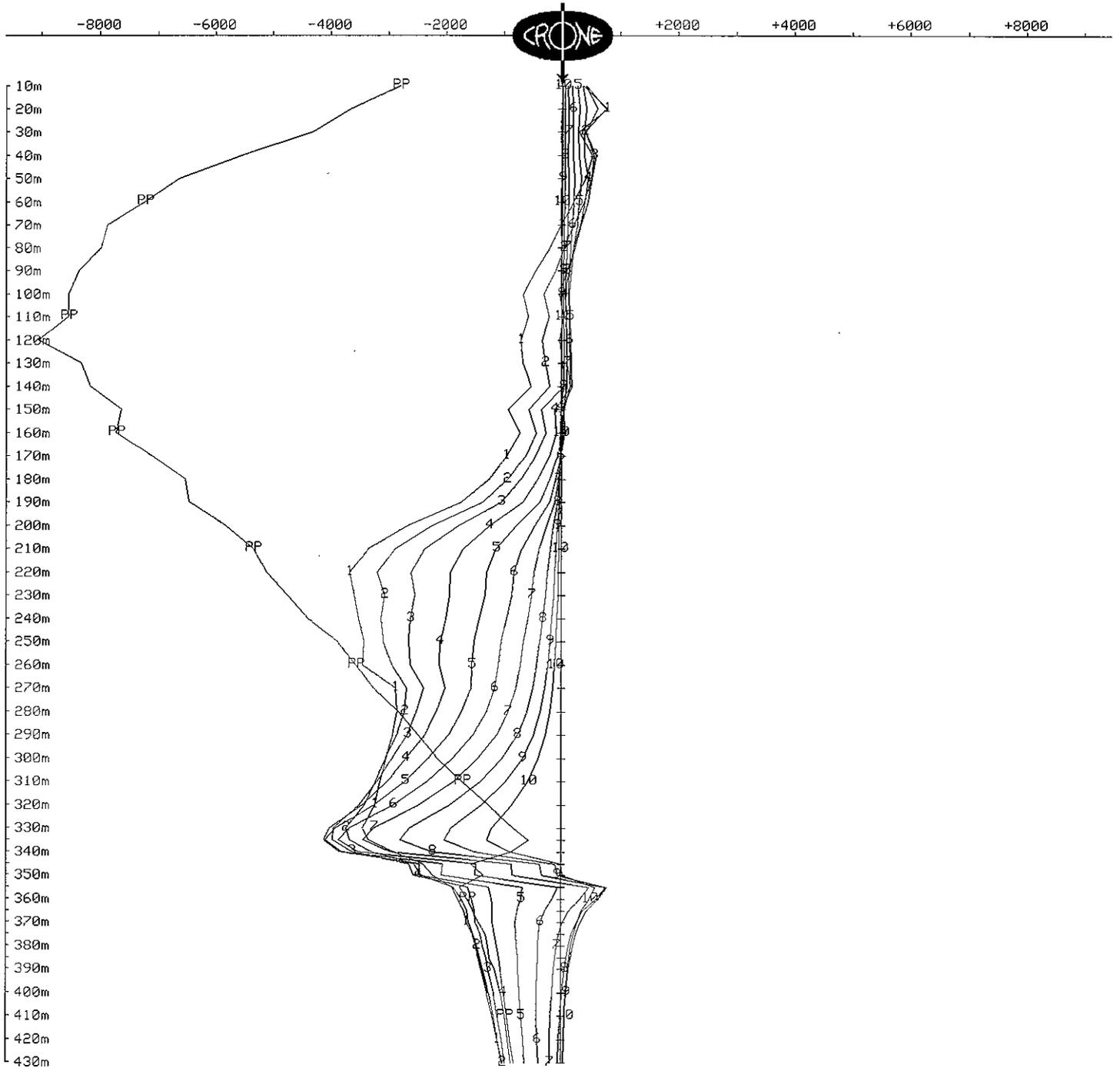
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT  $dBy/dt$  nanoTesla/sec - 10 of 20 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 1000 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

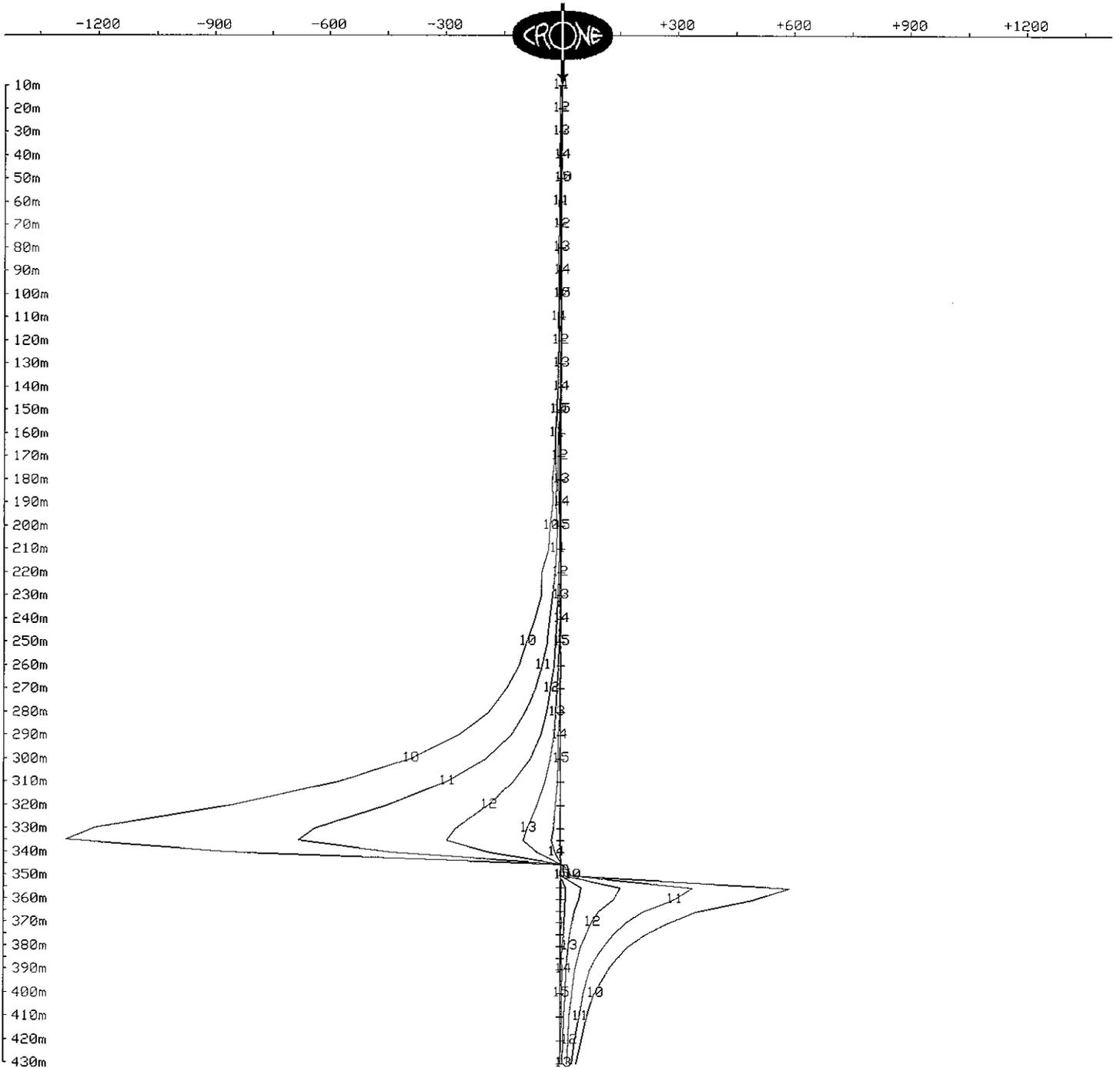
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT dBy/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 150 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

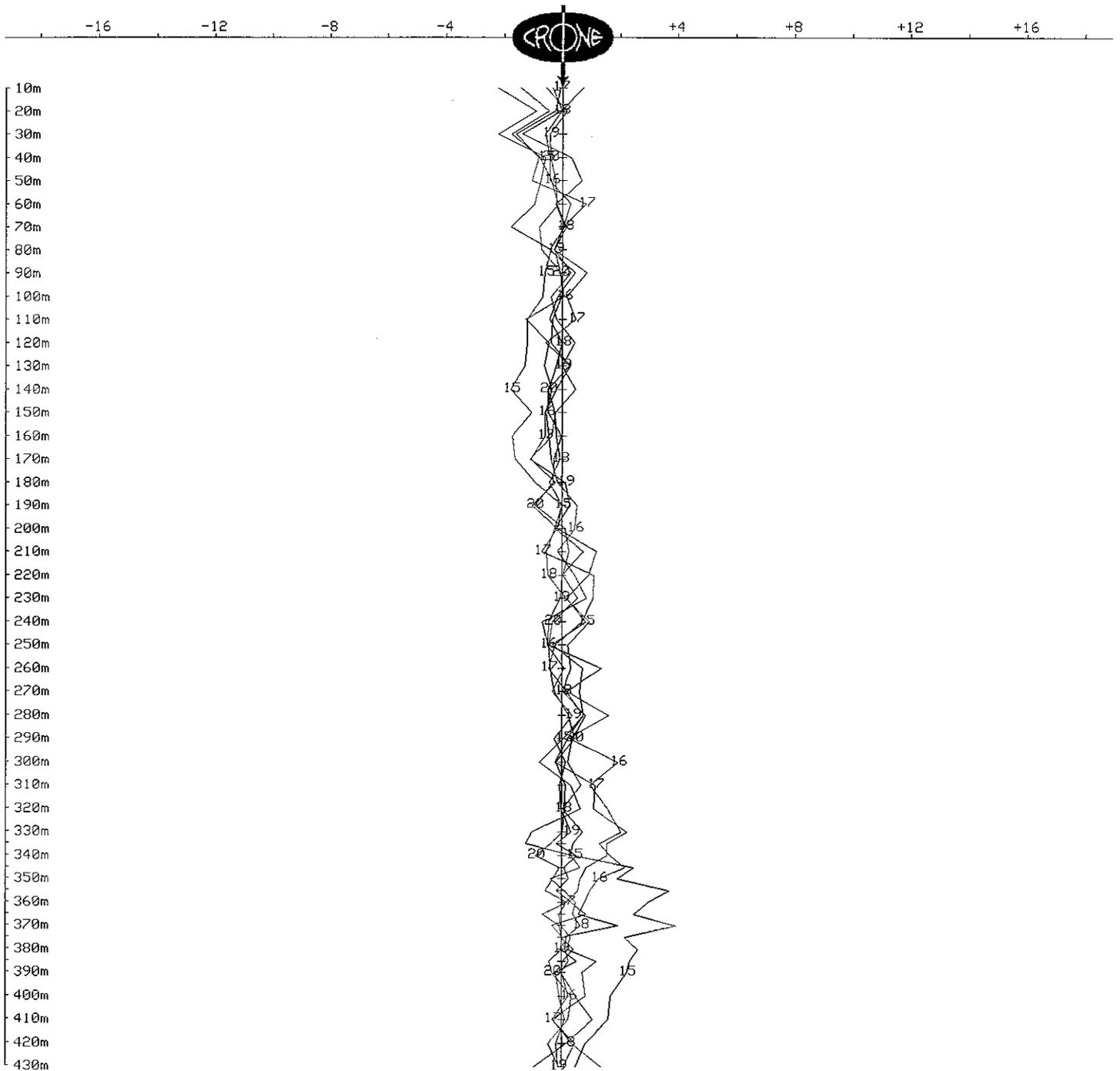
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT dBy/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 2 nT/s



# OUTER-RIM EXPLORATION SERVICES

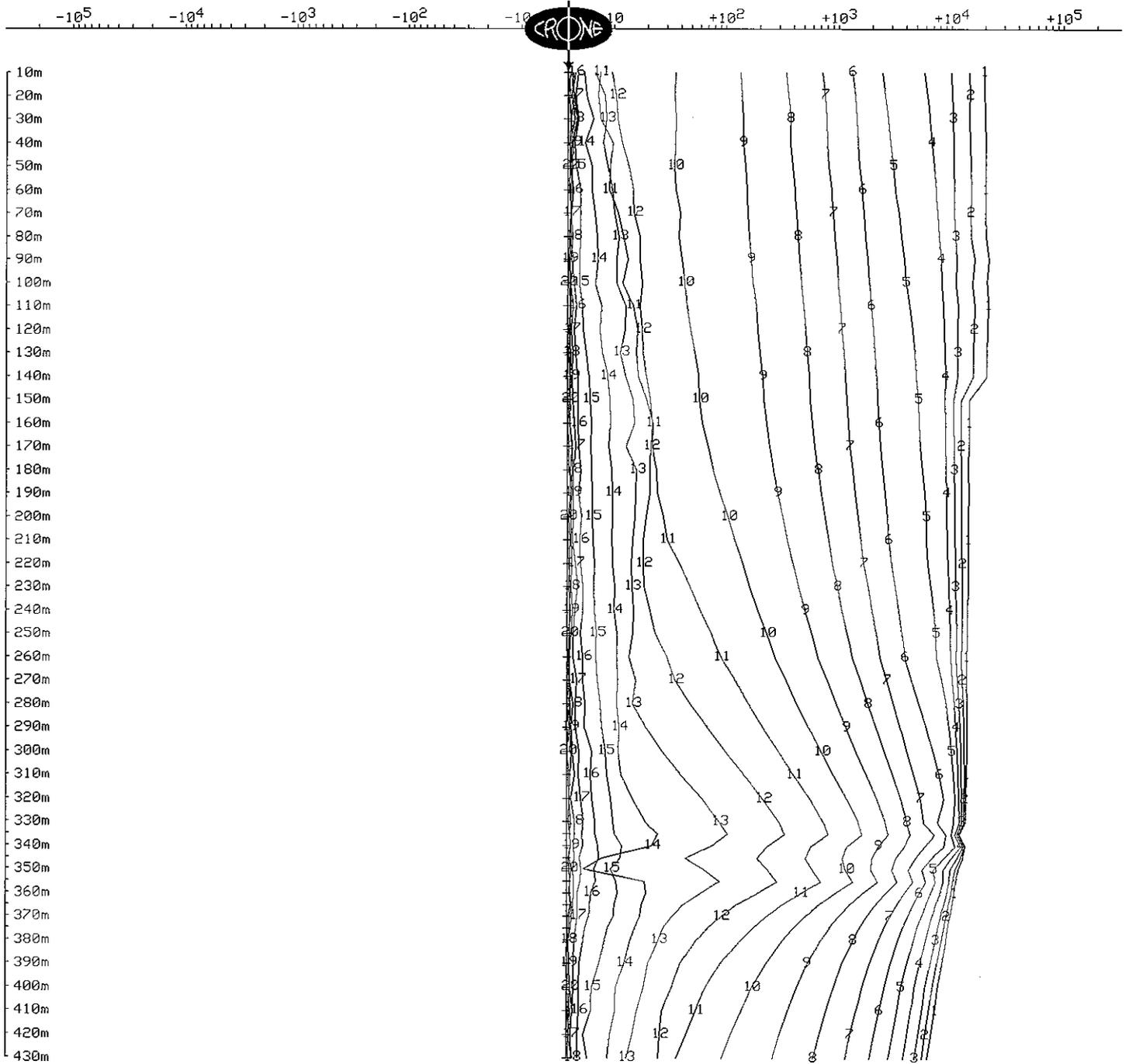
## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 15, 2002

Hole : YWS-1  
Tx Loop : WS1  
File name : YWS1XYZ.PEM

TOTAL FIELD dBxyz/dt nanoTesla/sec - 20 of 20 channels

Scale: 1:2500

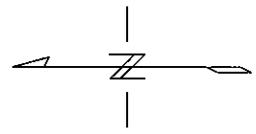
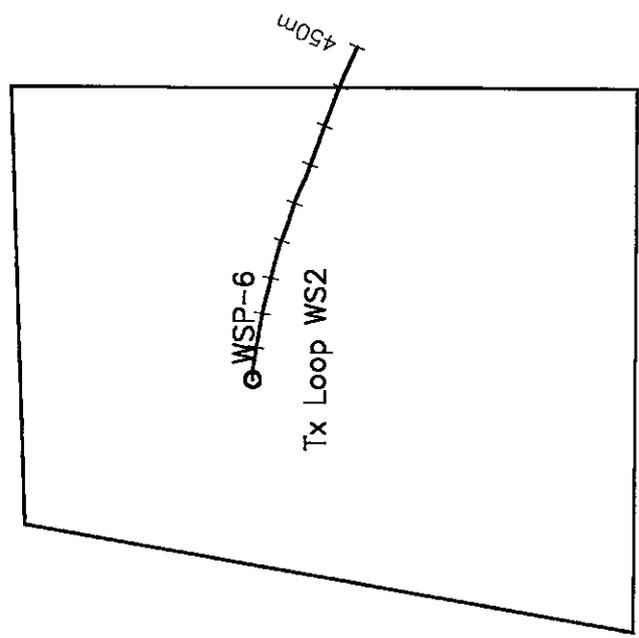


377400E      377600E

5359600N

5359400N

5359200N



Scale 1:5000  
100 0 100  
(metres)

*Pasminco Mining*

White Spur

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

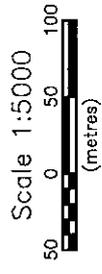
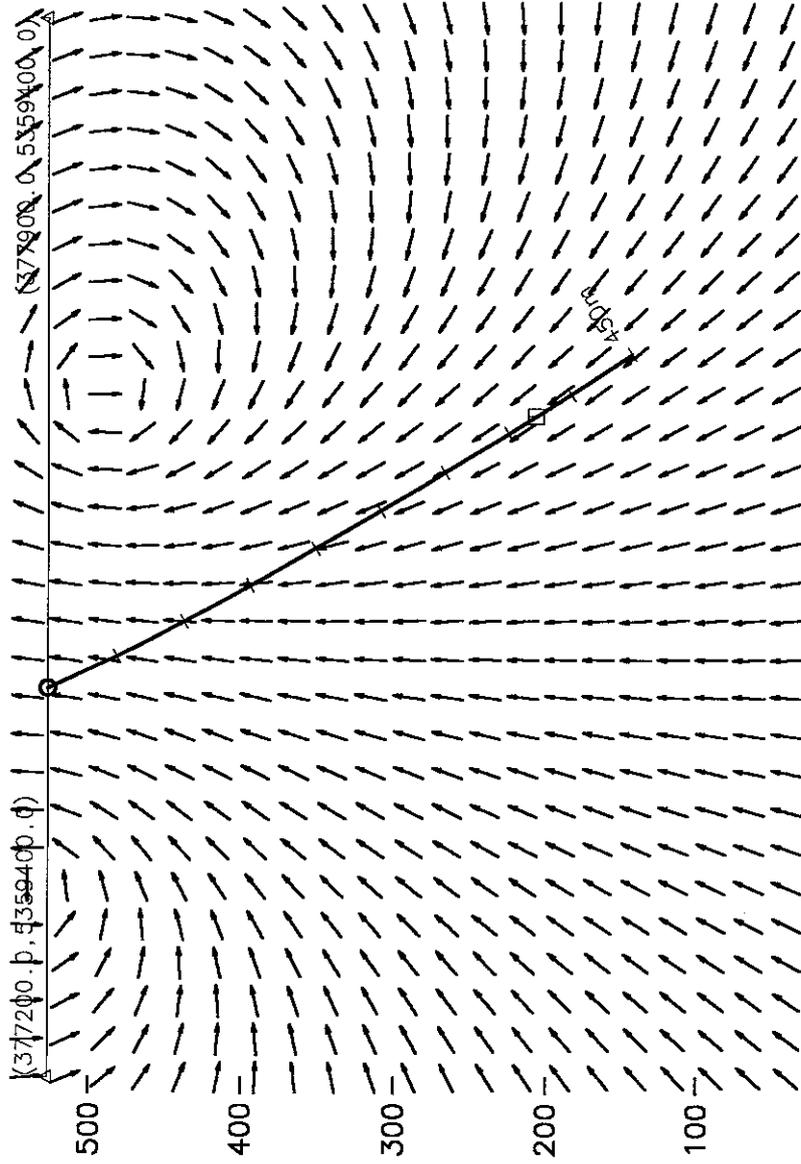
Hole: WSP-6

Survey Date: Dec 16, 2002

**Outer-Rim Exploration Services**

Loop WS2

WSP-6



*Pasminco Mining*

White Spur

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

Hole: WSP-6

Survey Date: Dec 16, 2002

**Outer-Rim Exploration Services**

# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasmenco Mining	Hole : WSP-6
Grid : White Spur	Tx Loop : WS2
Date : Dec 16, 2002	File name : WSP6Z.PEM
Time Base : 20.00 ms	# Readings: 49
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 6500 sq m
Sync Type : Cable	Polarity : +
Loop Size : 350m X 400m	Receiver : Digital #109
Current : 20 Amps	Operator : Blade Morley

### Loop Coordinates (X,Y,Z)

1. 377290m, 5.3592e+06m, 537m	2. 377649m, 5.3592e+06m, 490m
3. 377650m, 5.35961e+06m, 490m	4. 377360m, 5.3596e+06m, 540m

### Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 377456m, 5.35945e+06m, 527m	2. 90deg, 65deg, 15m
3. 98deg, 64.7deg, 30m	4. 100deg, 63.5deg, 30m
5. 100deg, 62deg, 30m	6. 104deg, 61deg, 30m
7. 103deg, 60deg, 30m	8. 106deg, 59.2deg, 30m
9. 109deg, 58.2deg, 30m	10. 109deg, 57.7deg, 30m
11. 113deg, 57deg, 30m	12. 110deg, 56.9deg, 30m
13. 110deg, 56.8deg, 30m	14. 111deg, 56.5deg, 30m
15. 111deg, 56deg, 30m	16. 113deg, 54.7deg, 45m

### Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

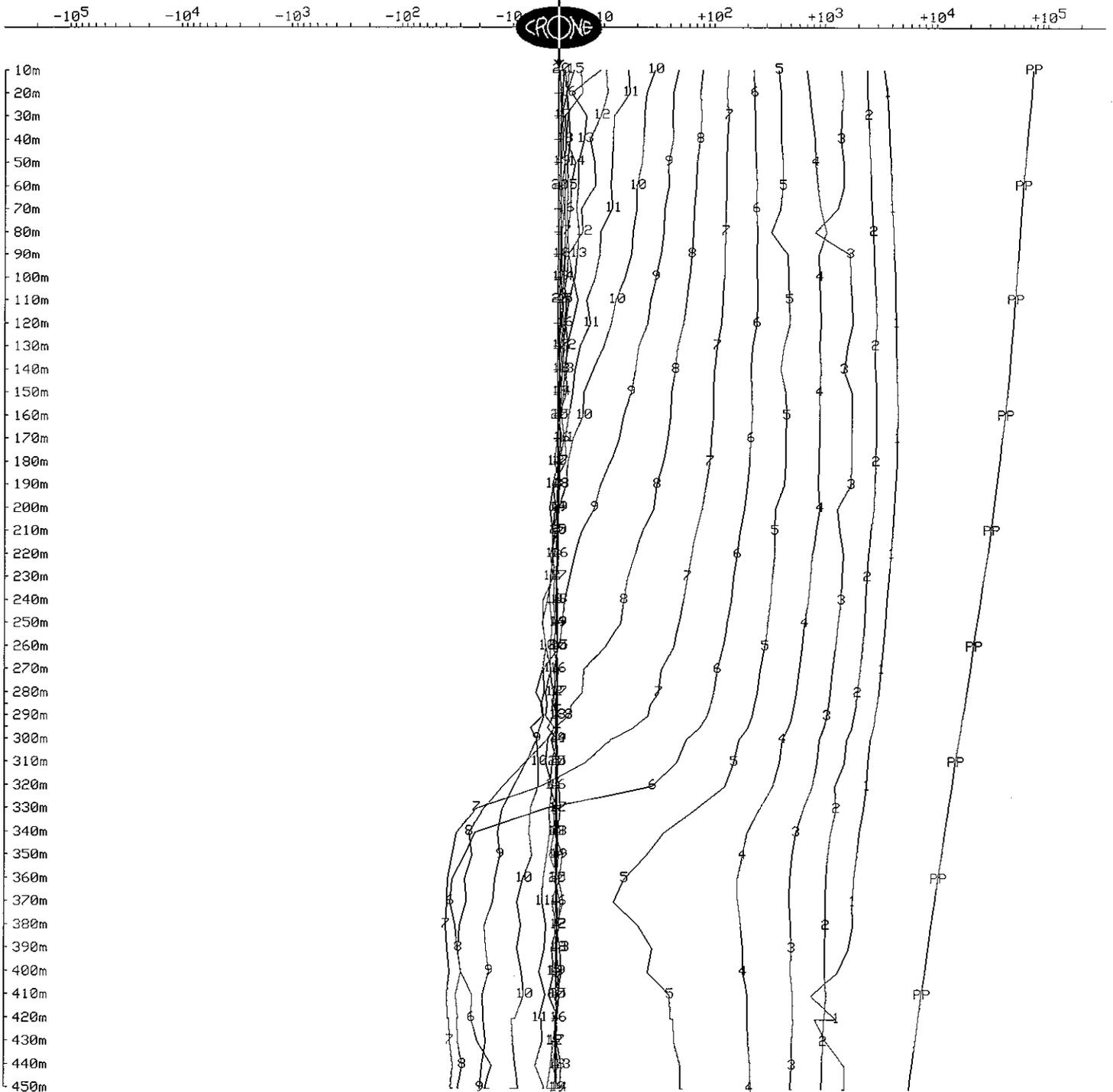
# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 20 of 20 channels and PP  
Scale: 1:2500



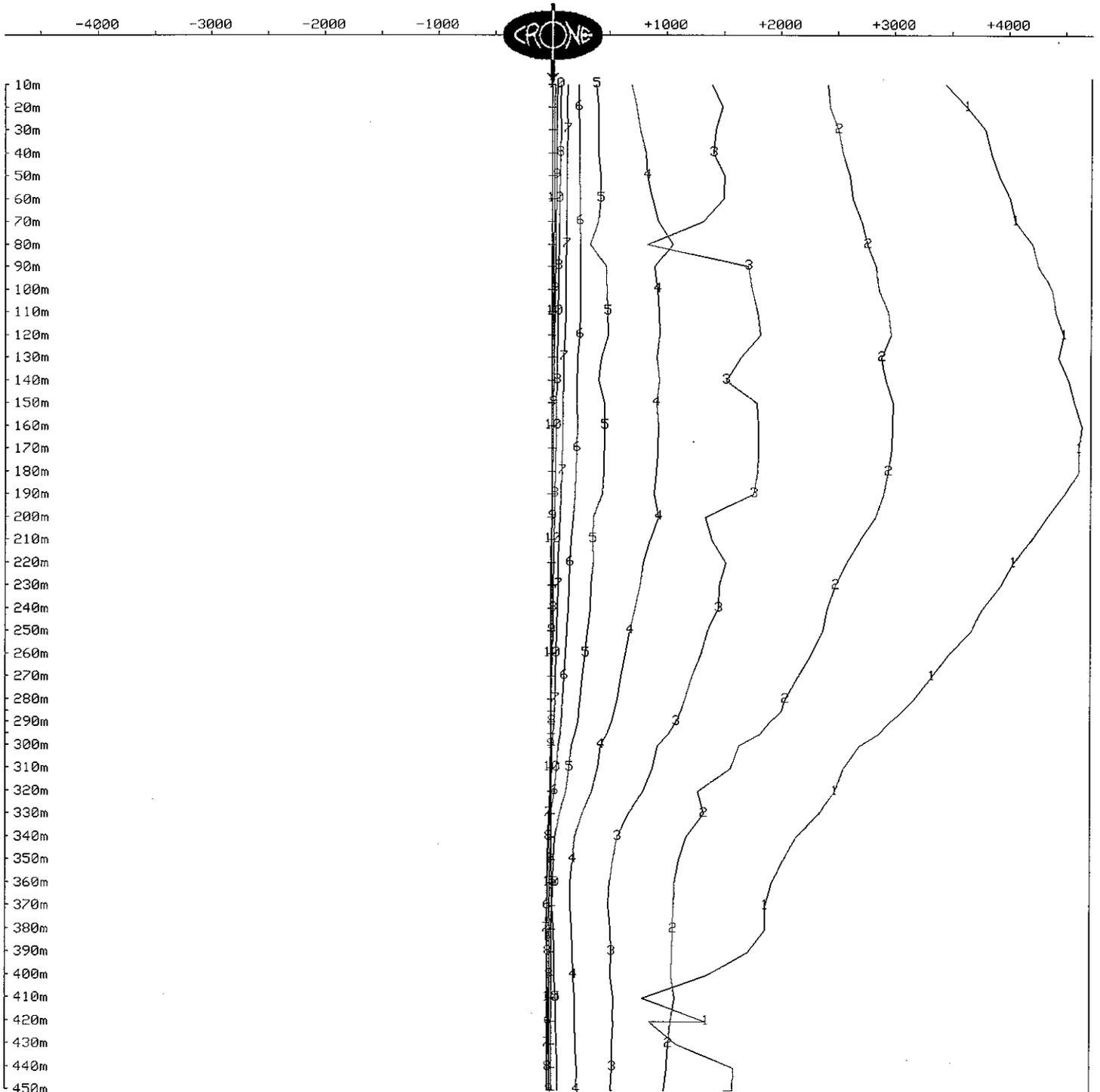
# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasma Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6Z.PEM

**Z COMPONENT** dBz/dt nanoTesla/sec - 10 of 20 channels and PP  
Scale: 1:2500 Unit Scale: 1cm = 500 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

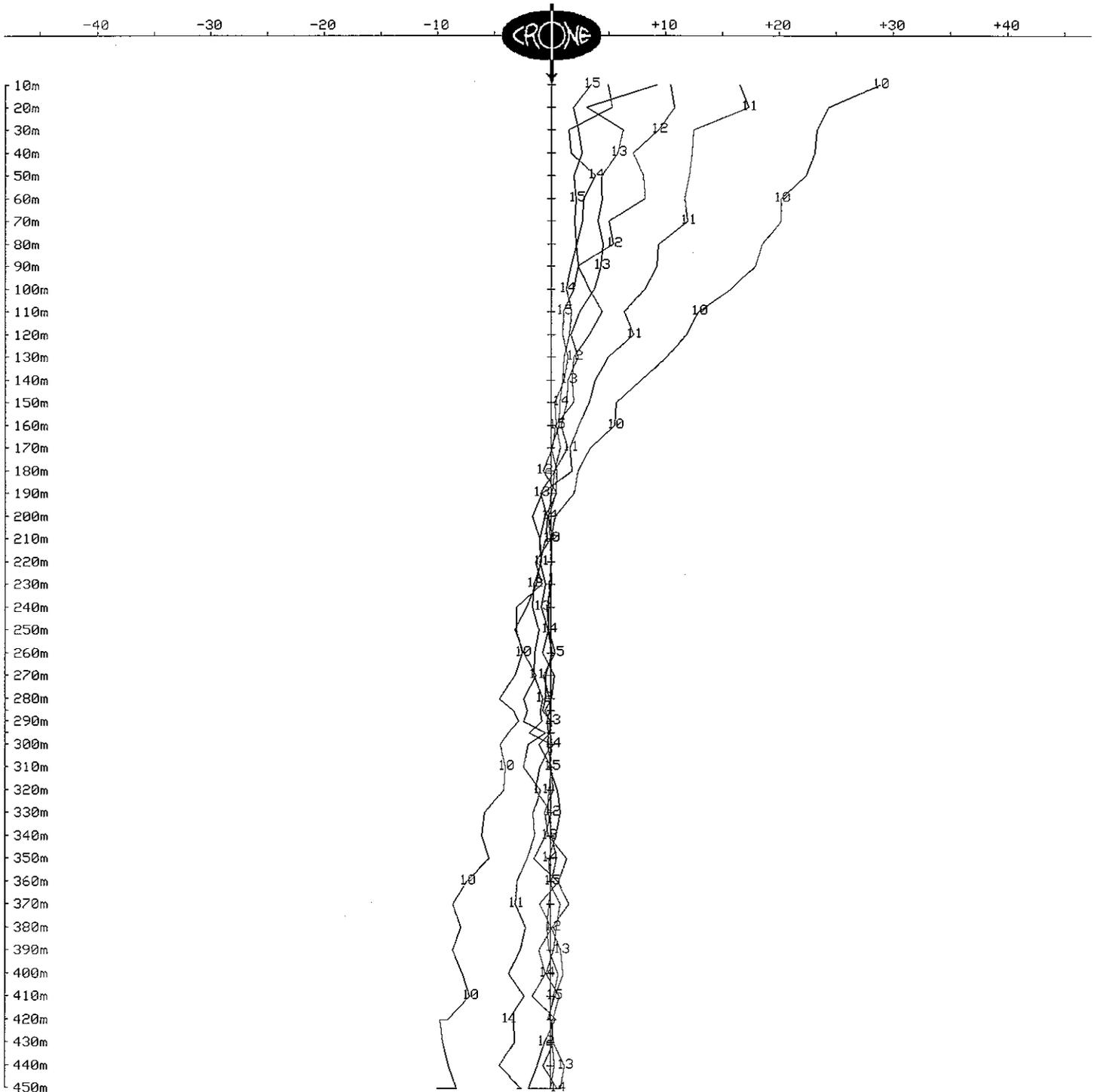
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 5 nT/s





# OUTER-RIM EXPLORATION SERVICES

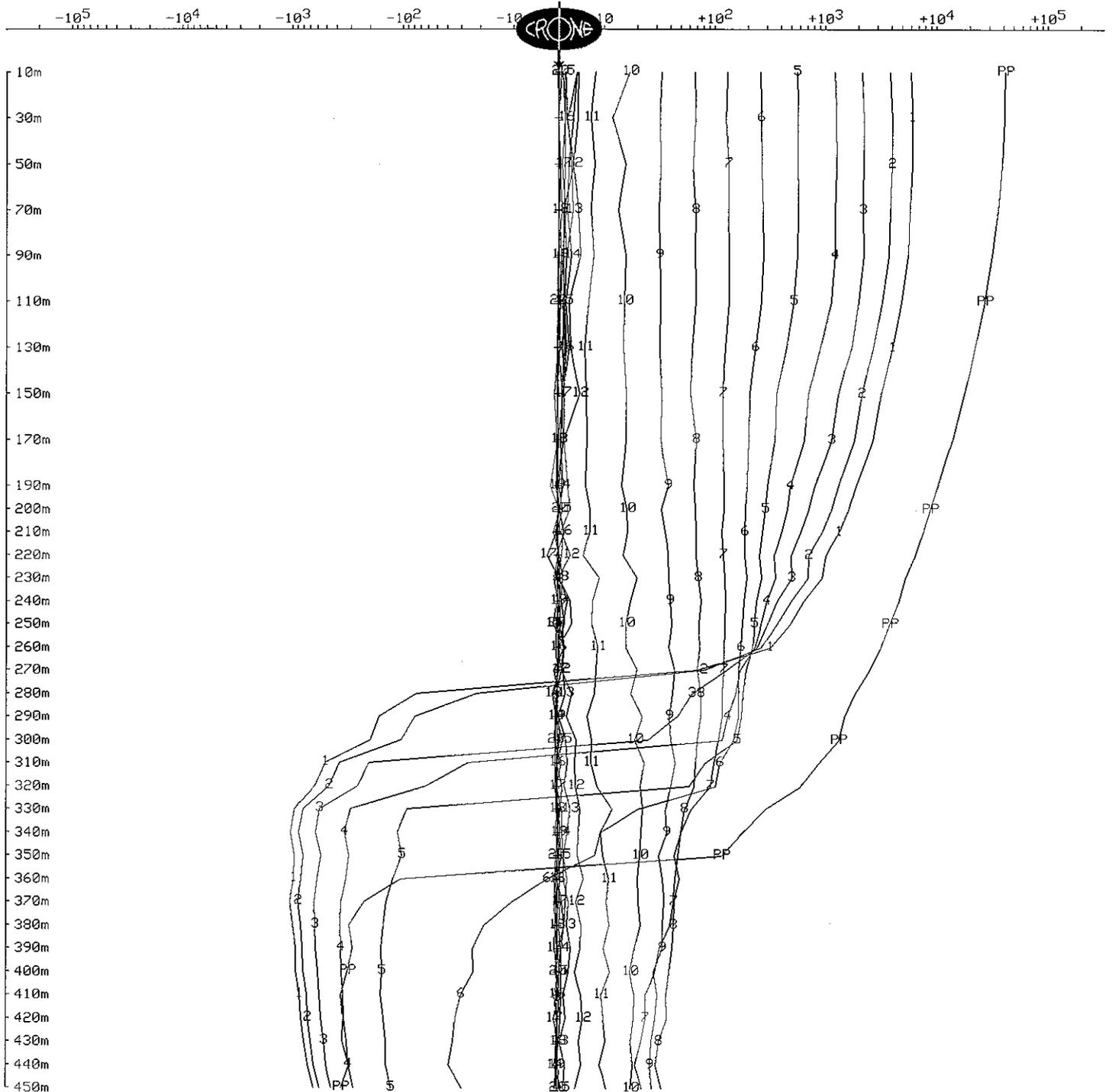
## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:2500





# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

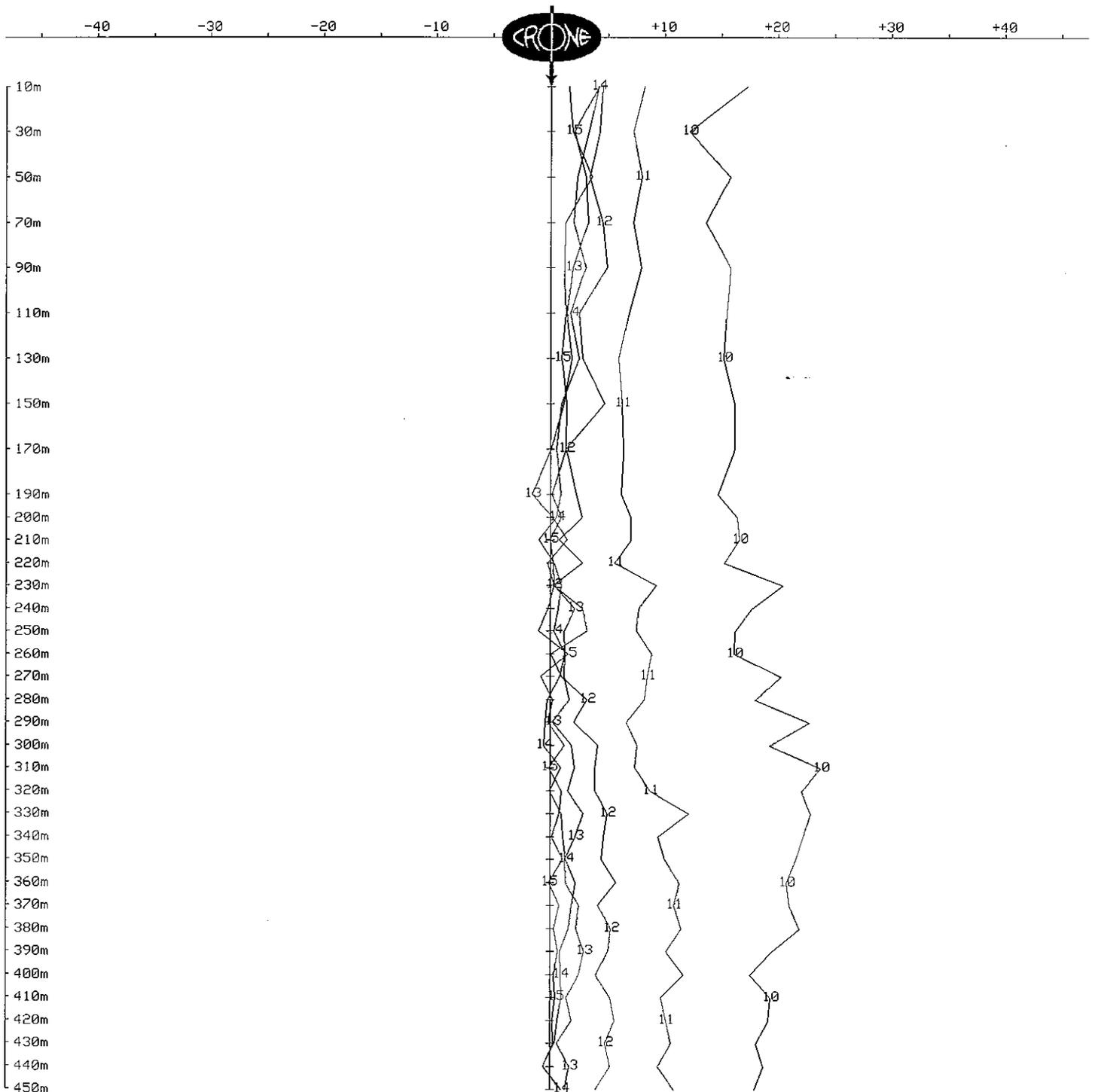
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT dBx/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 5 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

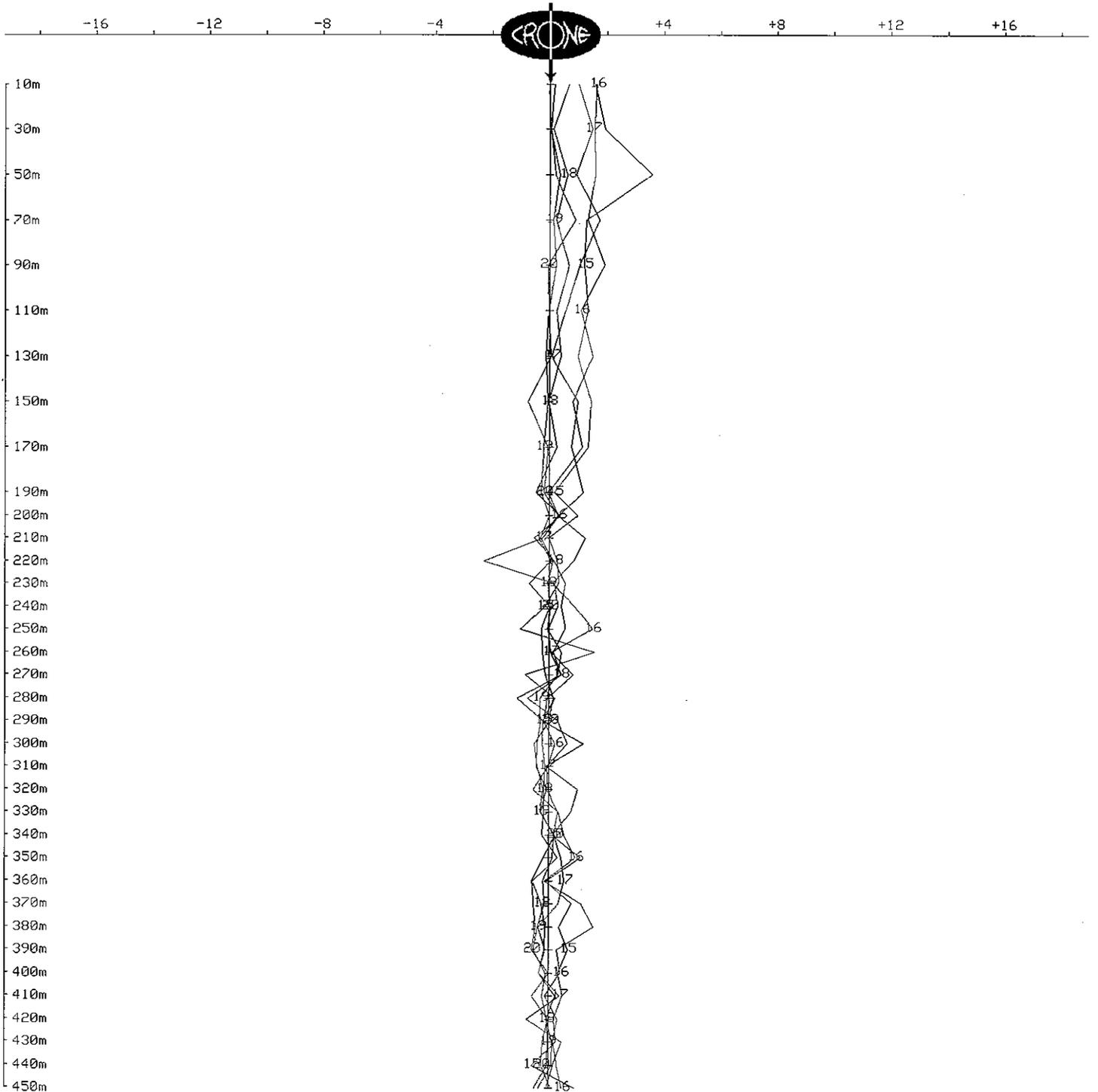
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
X COMPONENT  $dBx/dt$  nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 2 nT/s



# OUTER-RIM EXPLORATION SERVICES

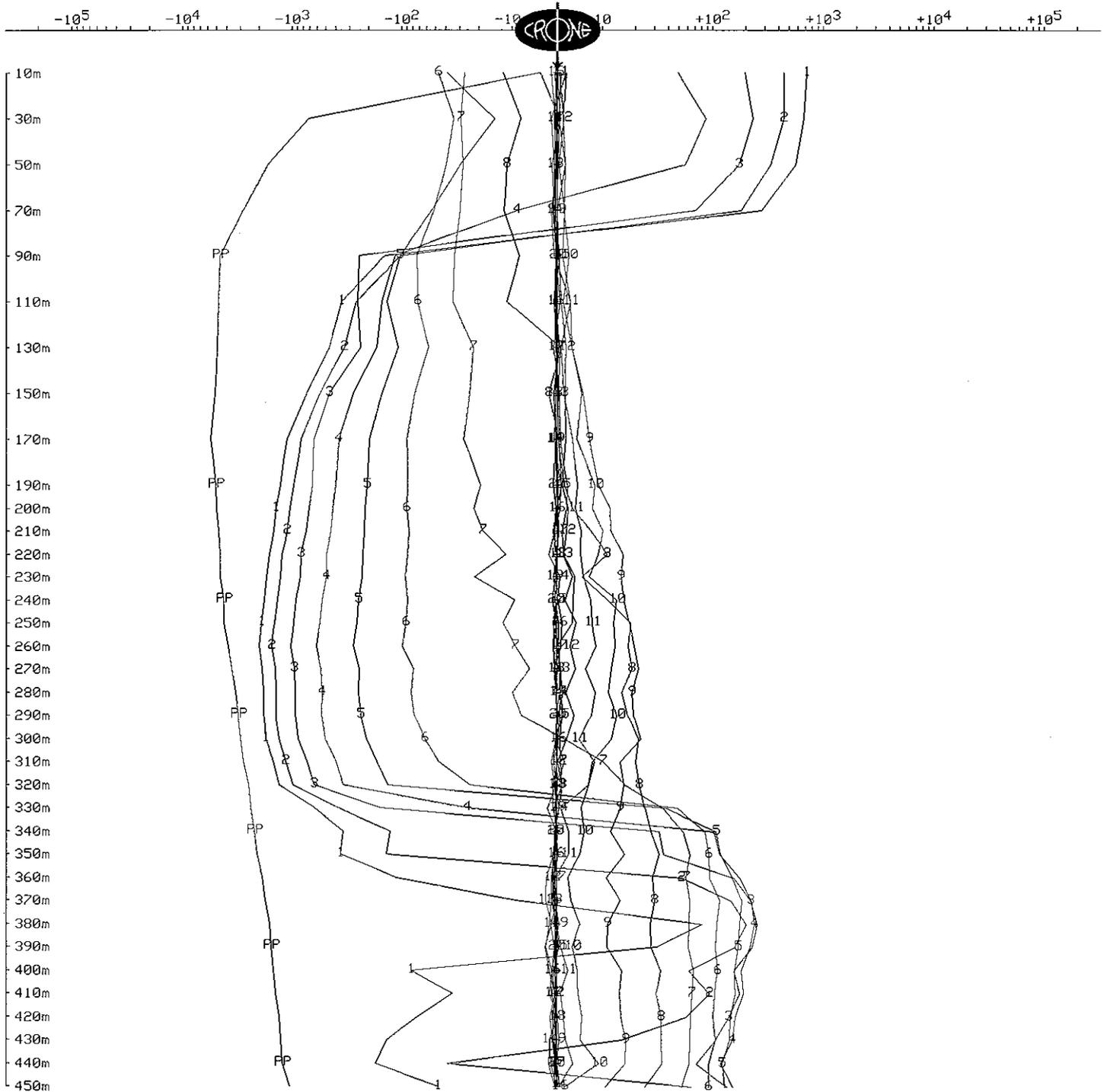
## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT dBy/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:2500



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

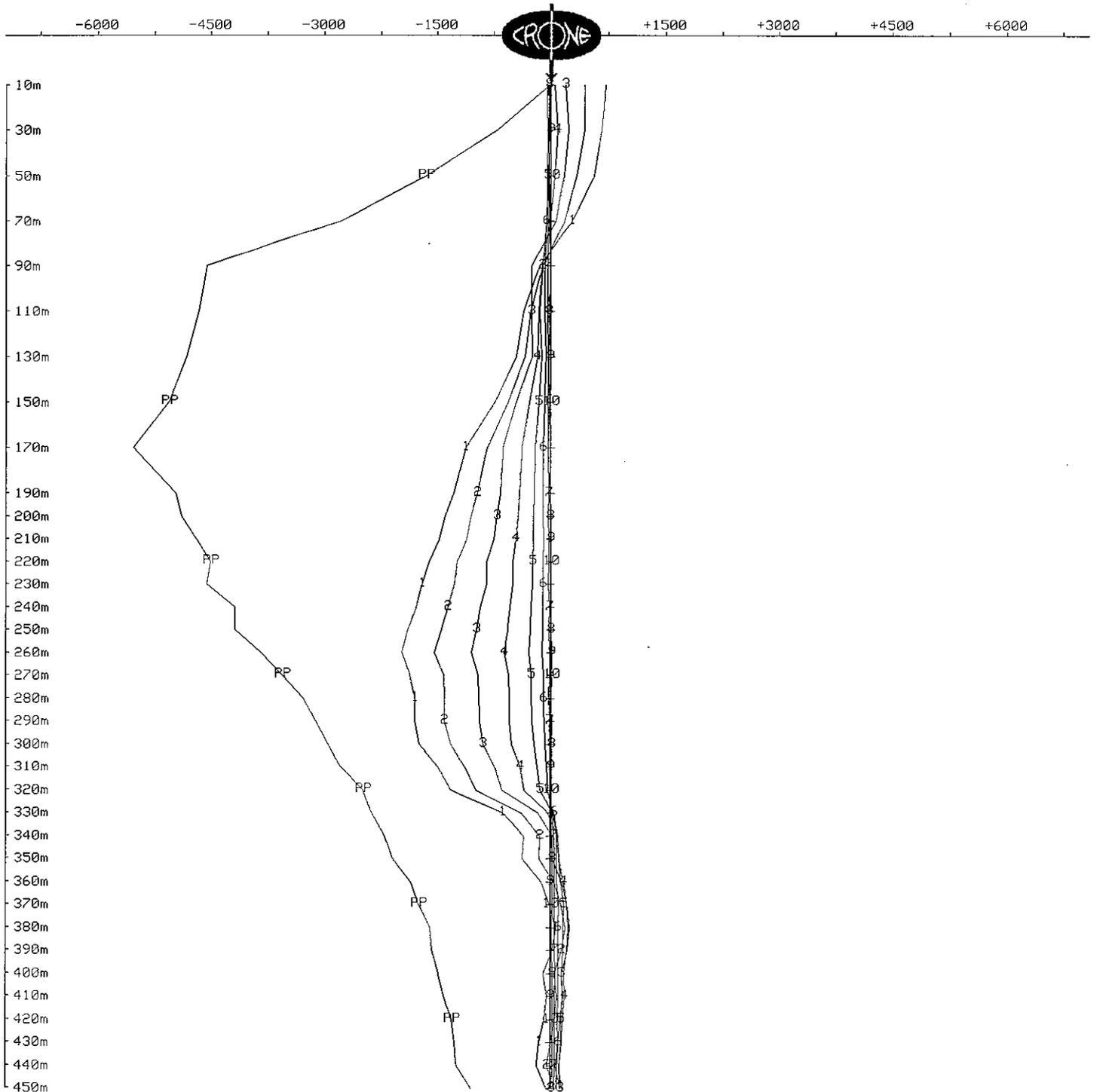
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT  $dBy/dt$  nanoTesla/sec - 10 of 20 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 750 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

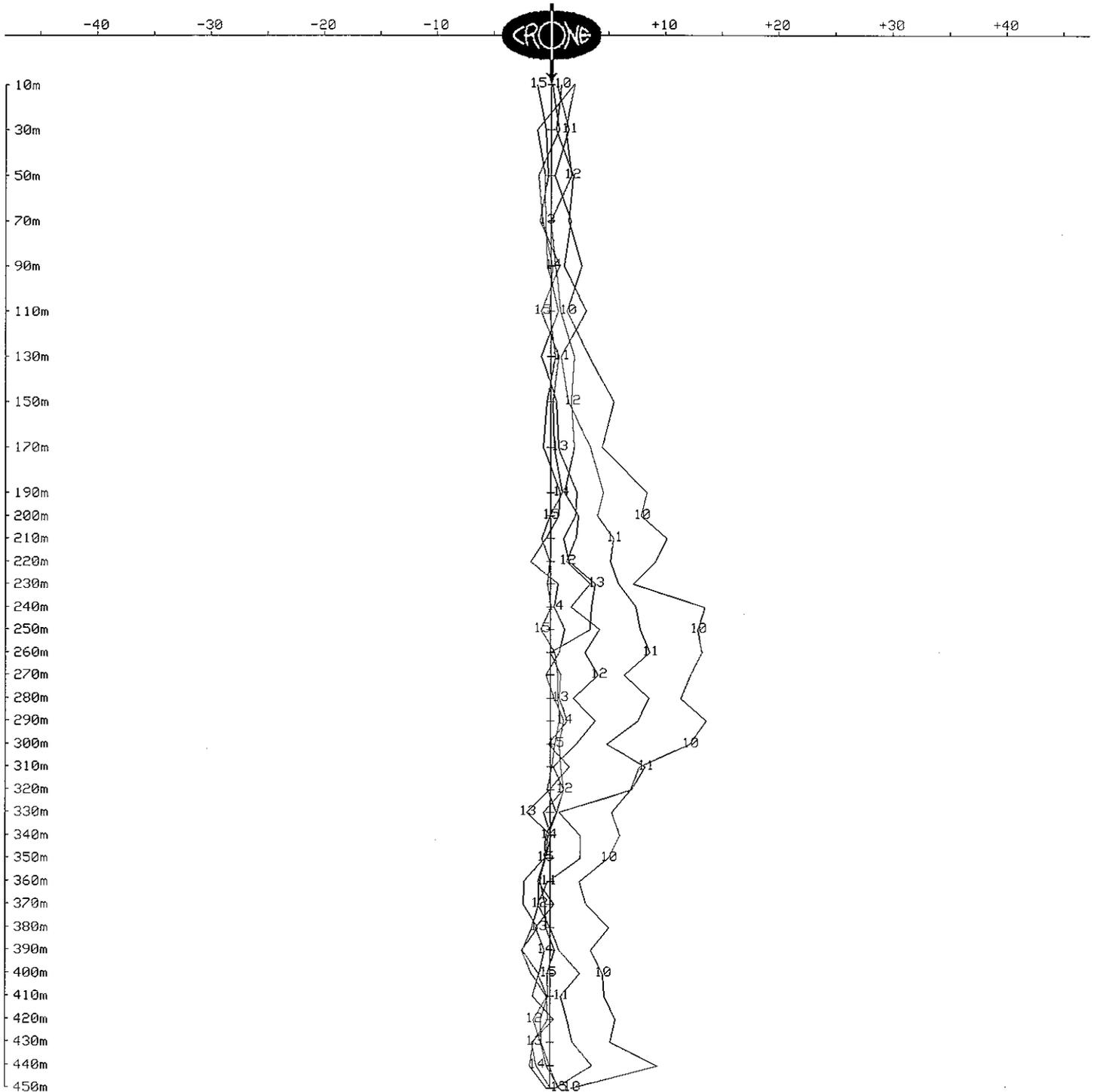
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 16, 2002

Hole : WSP-6  
Tx Loop : WS2  
File name : WSP6XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #14  
Y COMPONENT dBy/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:2500

Unit Scale: 1cm = 5 nT/s





# OUTER-RIM EXPLORATION SERVICES

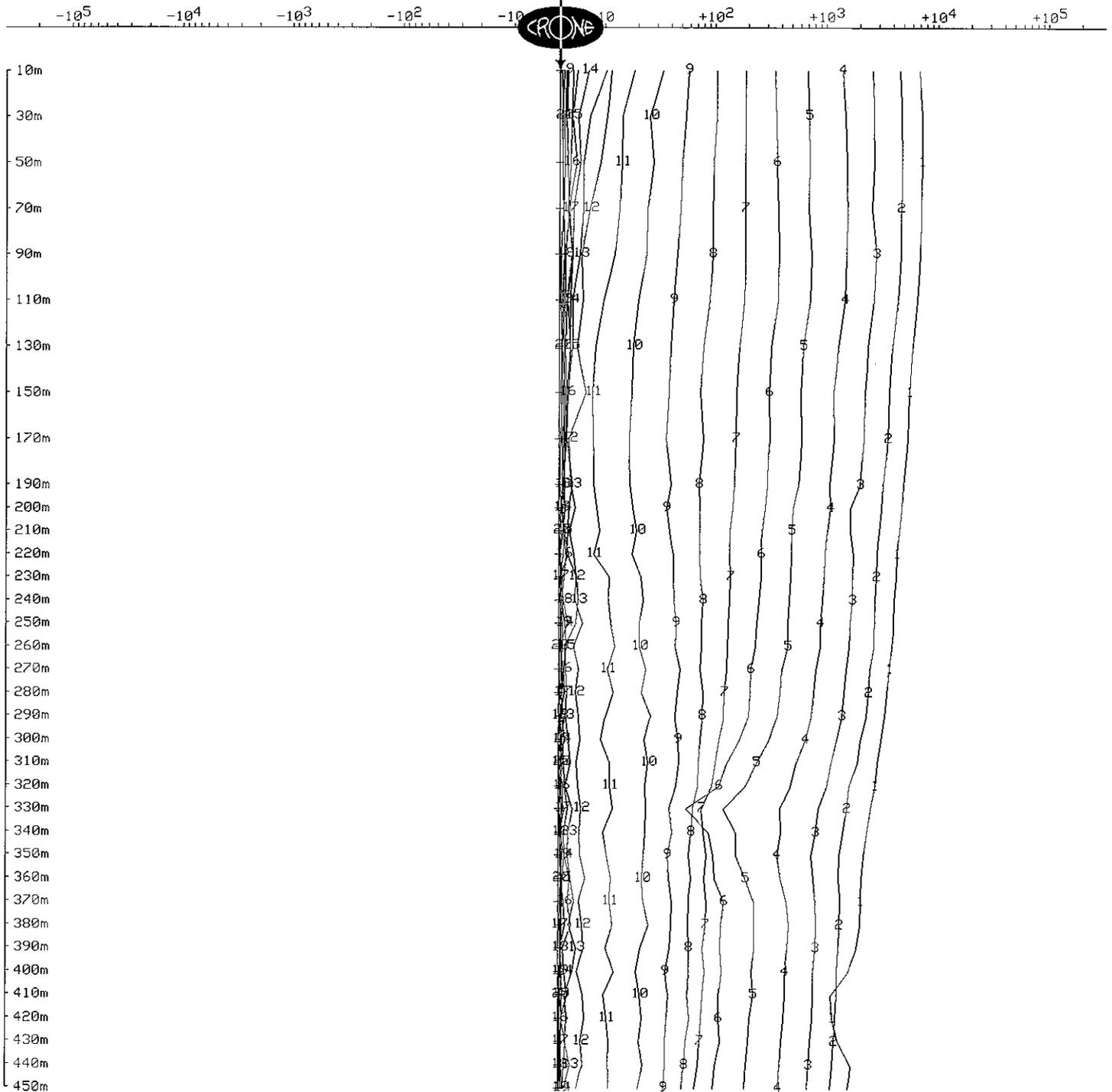
## Borehole Pulse EM Survey

Client : Pasmaico Mining  
 Grid : White Spur  
 Date : Dec 16, 2002

Hole : WSP-6  
 Tx Loop : WS2  
 File name : WSP6XYZ.PEM

TOTAL FIELD dBxyz/dt nanoTesla/sec - 20 of 20 channels

Scale: 1:2500



376400E

376600E

376800E

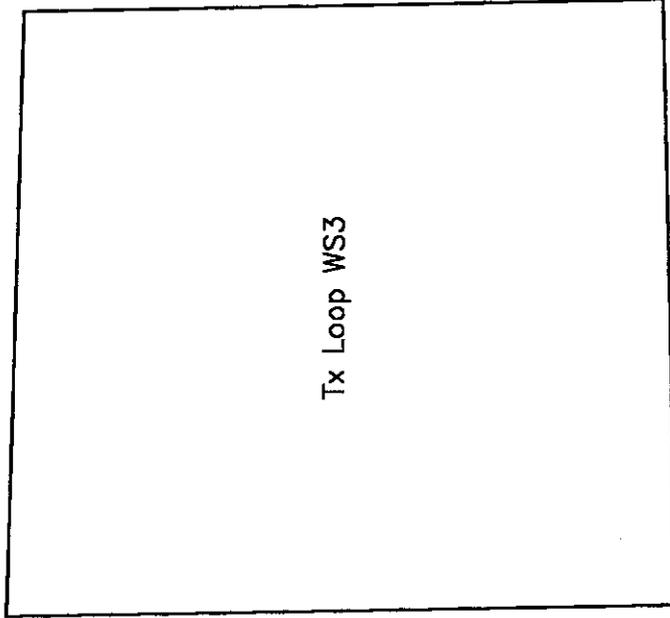
536100N —

5360900N —

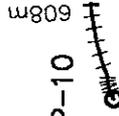
5360800N —

5360700N —

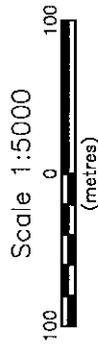
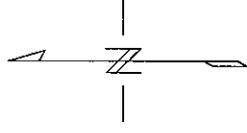
5360600N —



WSP-10



608m



*Pasminco Mining*

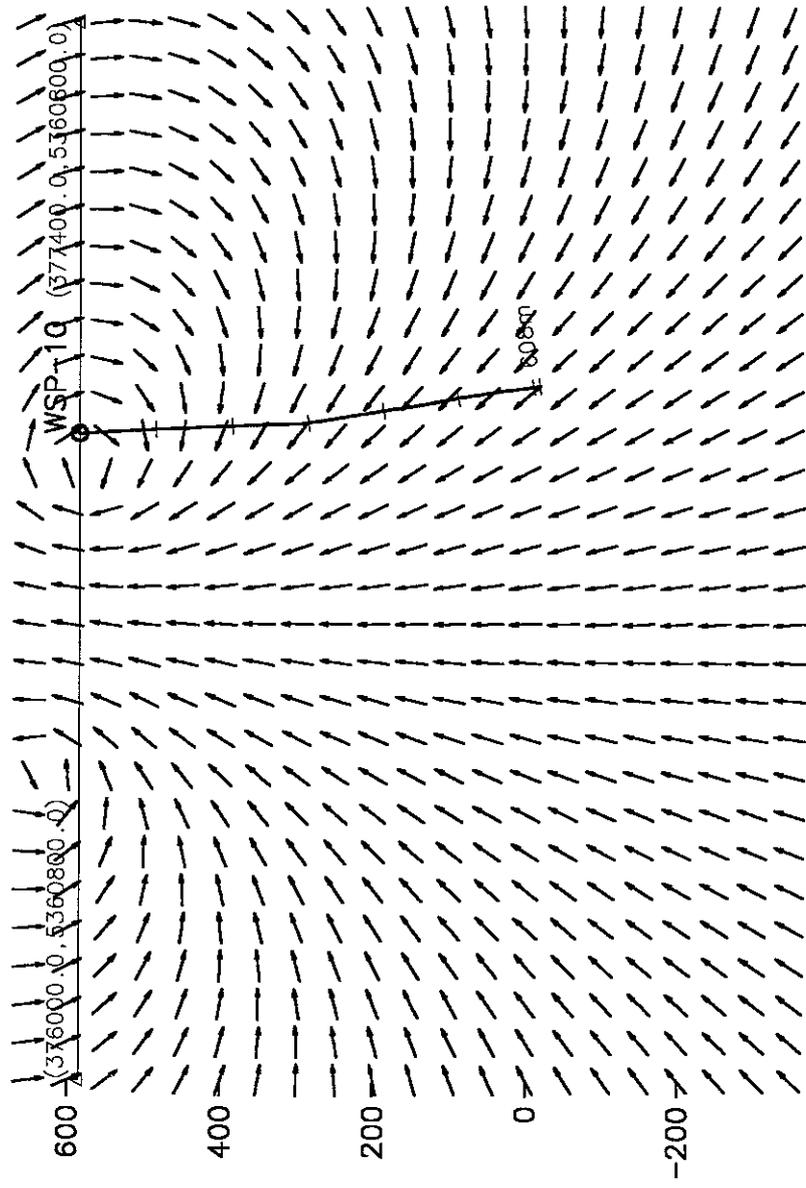
White Spur

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

Hole: WSP-10

Survey Date: Dec 17, 2002

**Outer-Rim Exploration Services**



*Pasminco Mining*  
 White Spur

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

Hole: WSP-10  
 Survey Date: Dec 17, 2002

**Outer-Rim Exploration Services**

# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasmenco Mining	Hole : WSP-10
Grid : White Spur	Tx Loop : WS3
Date : Dec 17, 2002	File name : WSP10Z.PEM
Time Base : 20.00 ms	# Readings: 47
Ramp Time : 1.00 ms	Stn Units : Metric
# Channels: 20	Coil Area : 6500 sq m
Sync Type : Cable	Polarity : +
Loop Size : 400m X 400m	Receiver : Digital #109
Current : 20 Amps	Operator : Blade Morley

**Loop Coordinates (X,Y,Z)**

1. 376400m, 5.36101e+06m, 630m	2. 376410m, 5.36057e+06m, 655m
3. 376810m, 5.36058e+06m, 595m	4. 376800m, 5.361e+06m, 565m

**Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)**

1. 376853m, 5.36078e+06m, 585m	2. 62deg, 87deg, 15m
3. 66deg, 86.5deg, 30m	4. 68deg, 86.5deg, 30m
5. 73deg, 86.5deg, 30m	6. 70.5deg, 87.3deg, 30m
7. 70deg, 87.3deg, 30m	8. 77deg, 87.8deg, 30m
9. 82deg, 87deg, 30m	10. 79deg, 88.8deg, 30m
11. 76deg, 88deg, 35m	12. 89deg, 83deg, 10m
13. 72deg, 81deg, 20m	14. 69deg, 80.3deg, 30m
15. 76deg, 80deg, 30m	16. 73deg, 80.3deg, 30m
17. 75deg, 80deg, 30m	18. 79deg, 80deg, 30m
19. 80deg, 80deg, 30m	20. 81deg, 81deg, 30m
21. 80deg, 81deg, 30m	22. 84.5deg, 81.8deg, 30m
23. 87deg, 82deg, 18m	

**Channel Times (usec)**

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	63	56	2	63	86	74
3	86	112	99	4	112	153	133	5	153	203	178
6	203	270	236	7	270	360	315	8	360	482	421
9	482	639	560	10	639	850	745	11	850	1129	990
12	1129	1498	1314	13	1498	1993	1746	14	1993	2646	2320
15	2646	3514	3080	16	3514	4666	4090	17	4666	6192	5429
18	6192	8221	7206	19	8221	10910	9566	20	10910	14490	12700

# OUTER-RIM EXPLORATION SERVICES

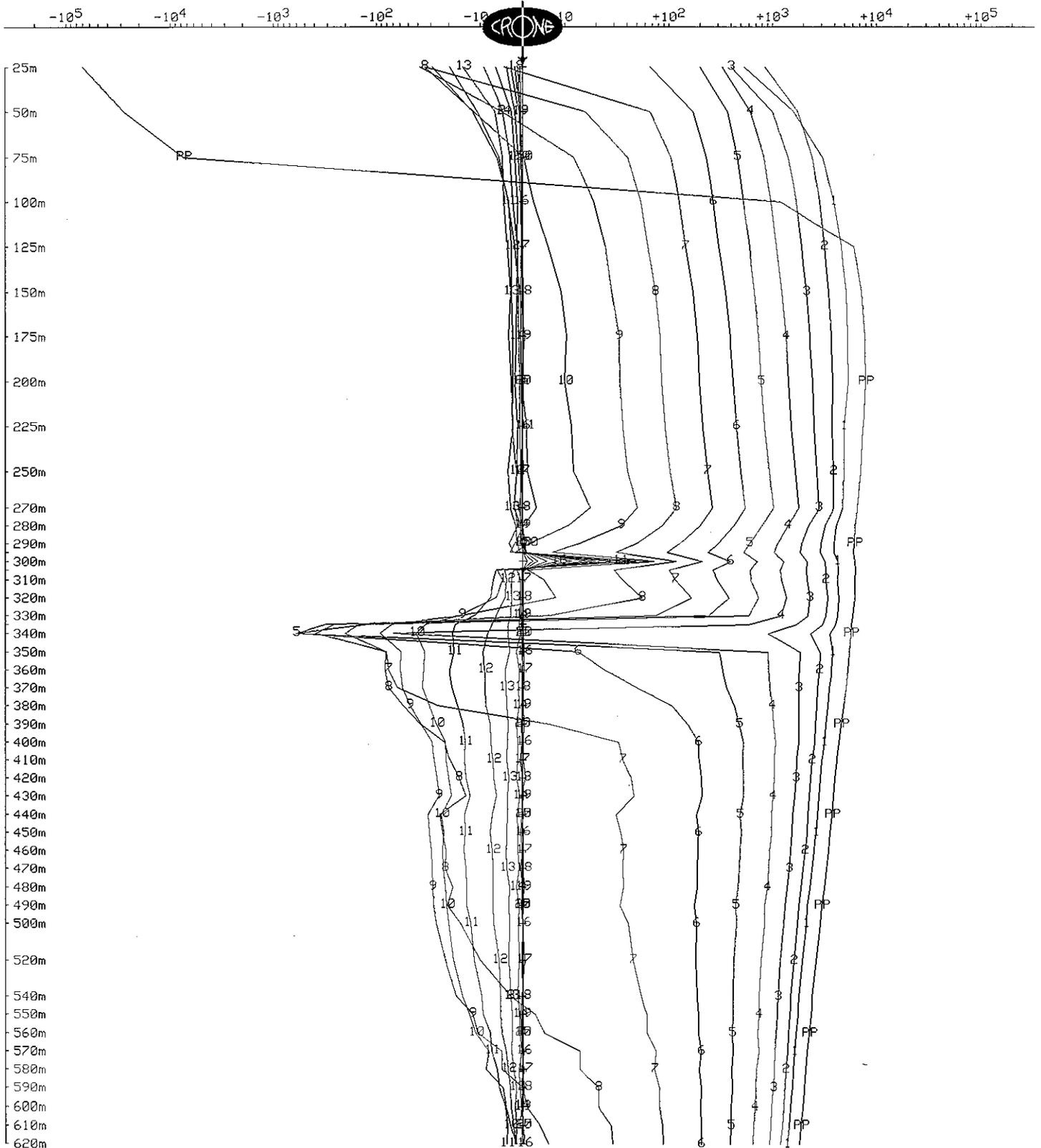
## Borehole Pulse EM Survey

Client : Pasminco Mining  
 Grid : White Spur  
 Date : Dec 17, 2002

Hole : WSP-10  
 Tx Loop : WS3  
 File name : WSP10Z.PEM

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

Scale: 1:3000



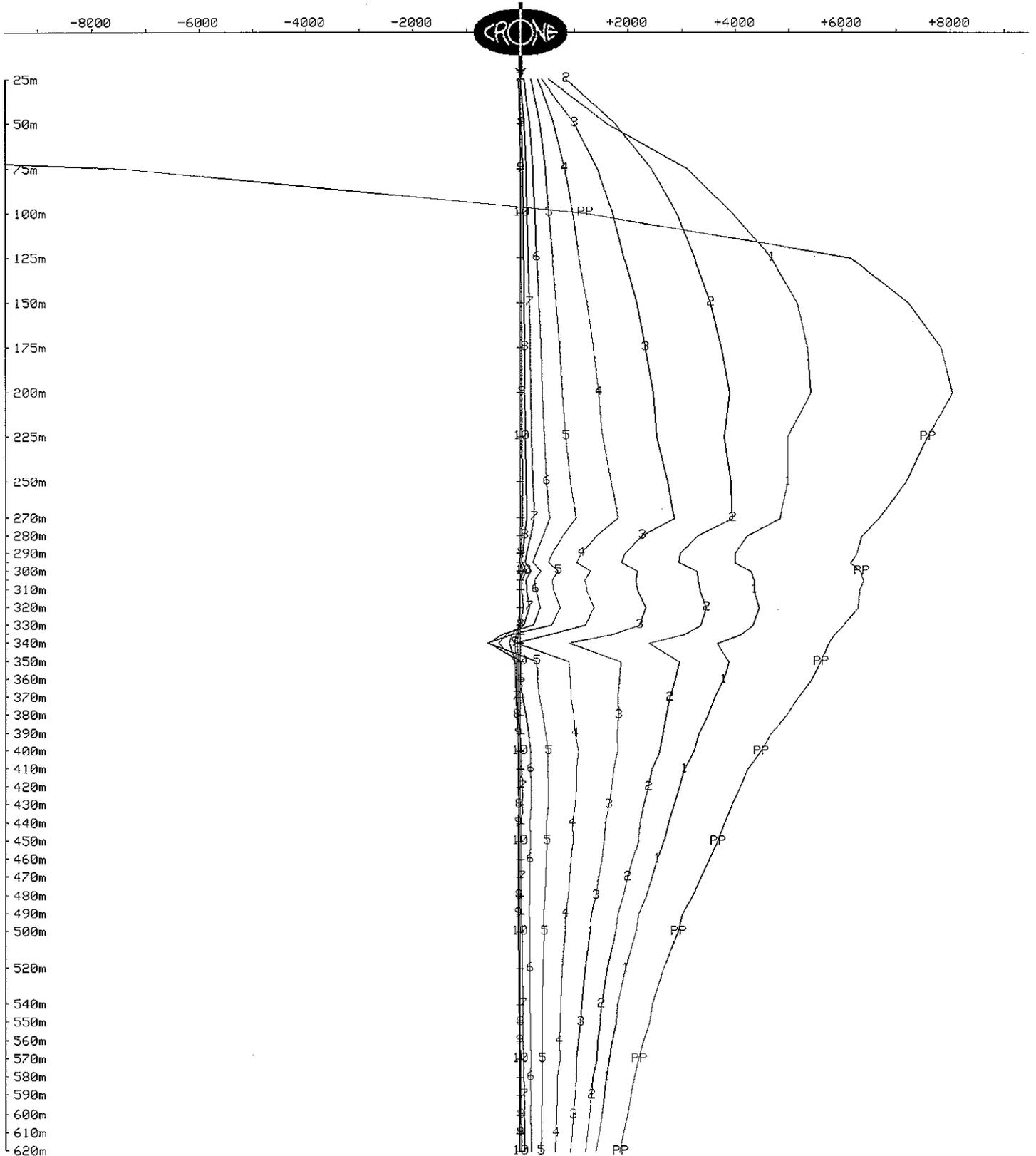
# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 10 of 20 channels and PP  
Scale: 1:3000 Unit Scale: 1cm = 1000 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

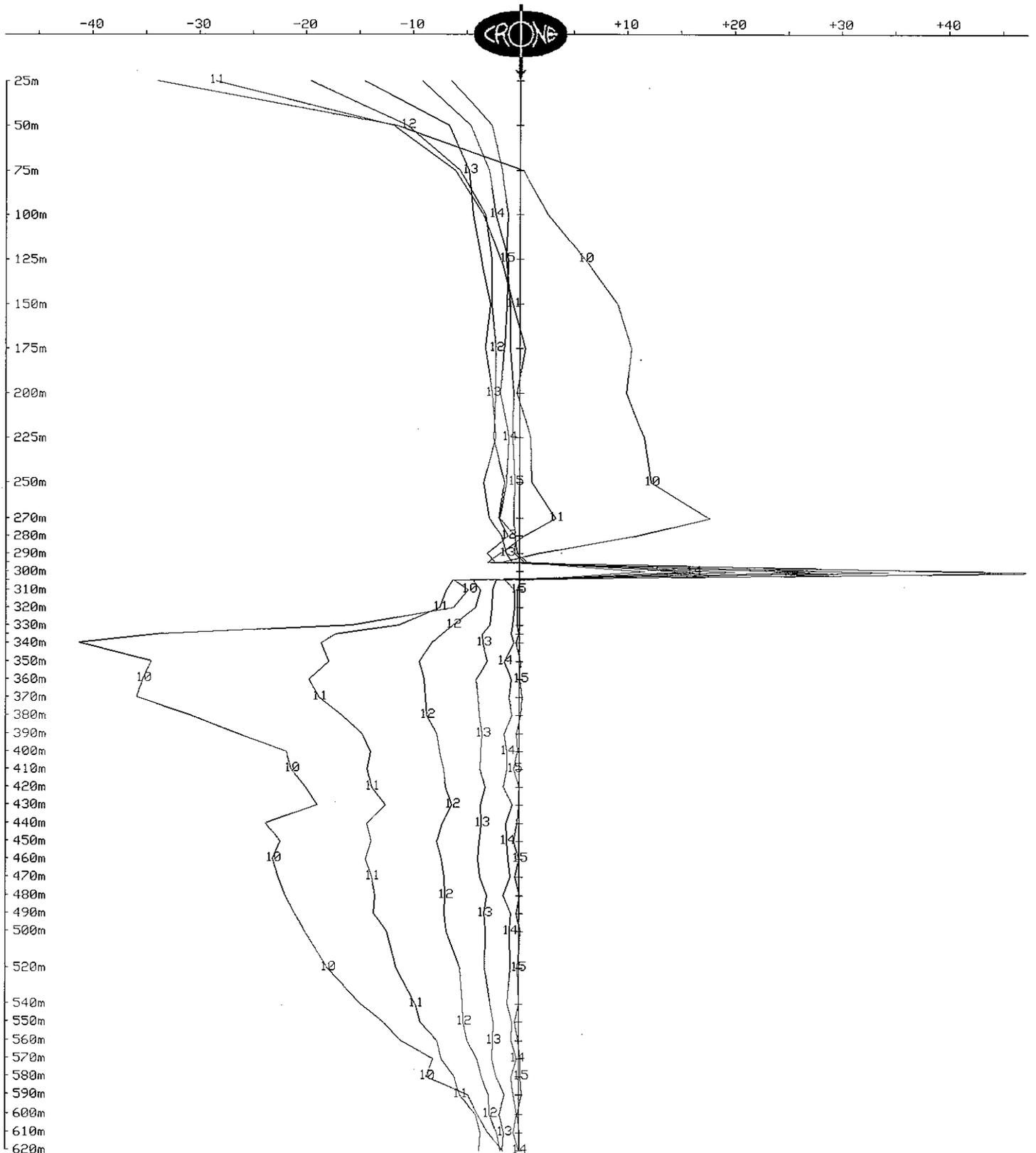
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 5 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

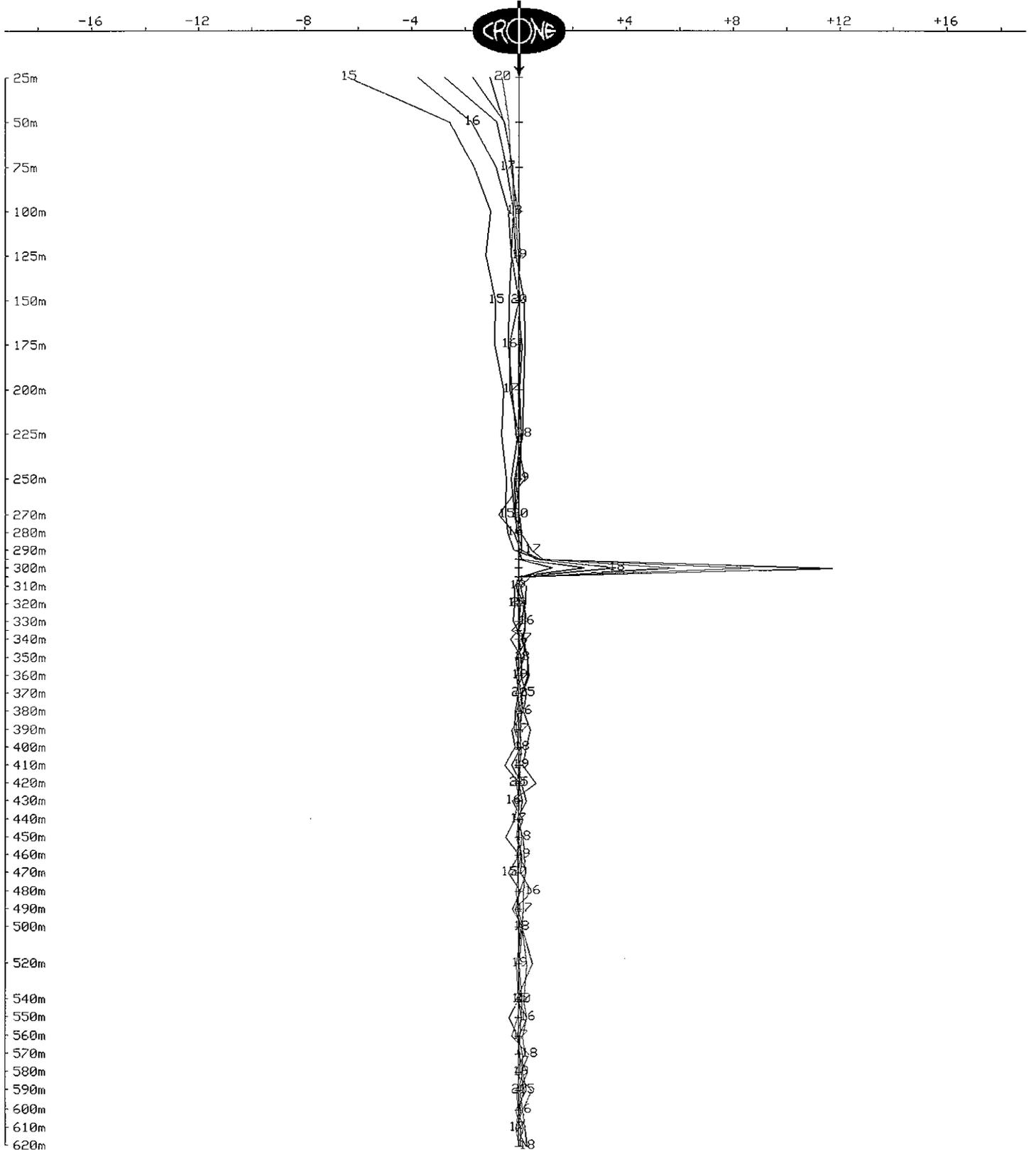
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 2 nT/s



# OUTER-RIM EXPLORATION SERVICES

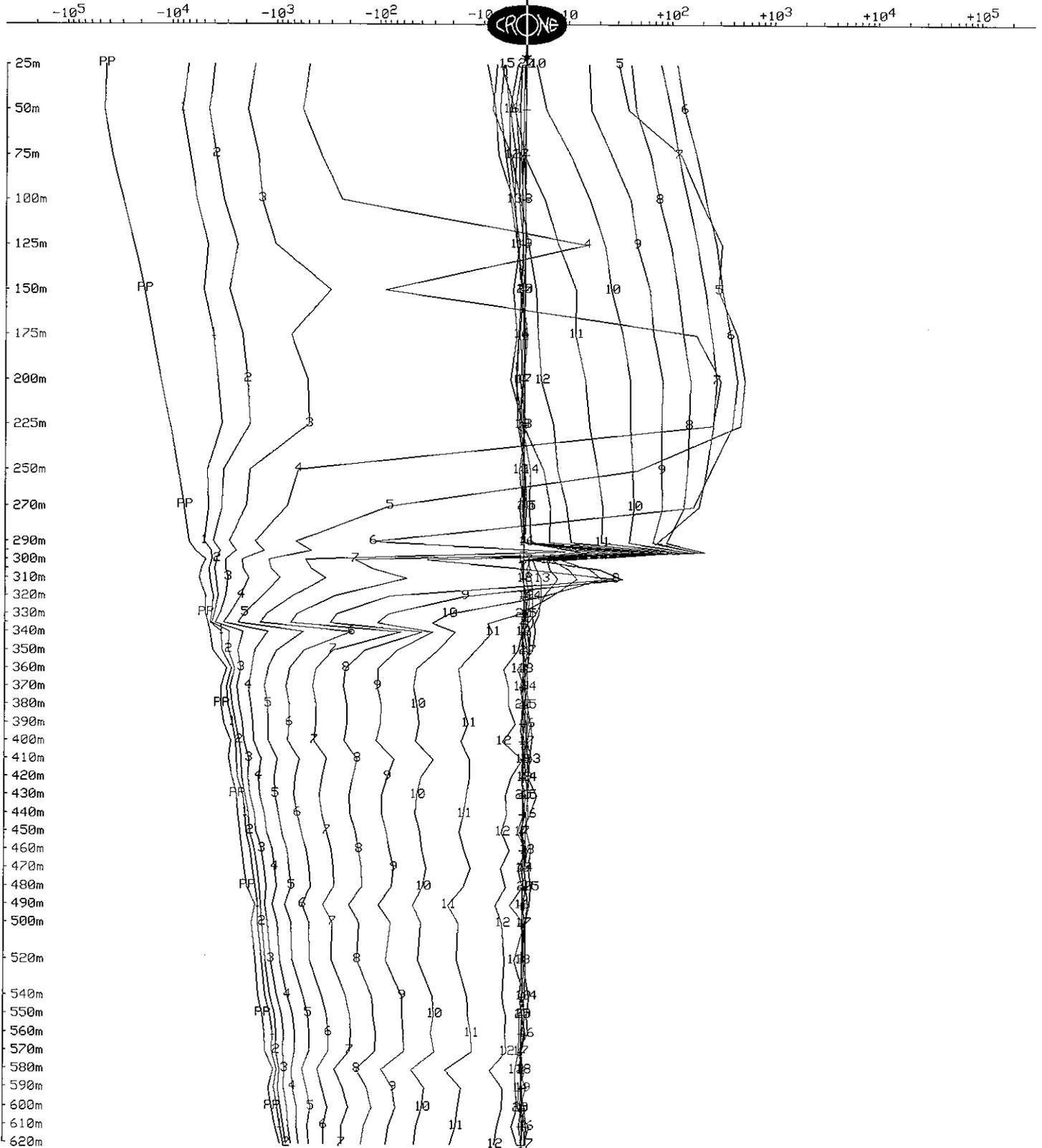
## Borehole Pulse EM Survey

Client : Pasminco Mining  
 Grid : White Spur  
 Date : Dec 17, 2002

Hole : WSP-10  
 Tx Loop : WS3  
 File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
 X COMPONENT dBx/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:3000



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

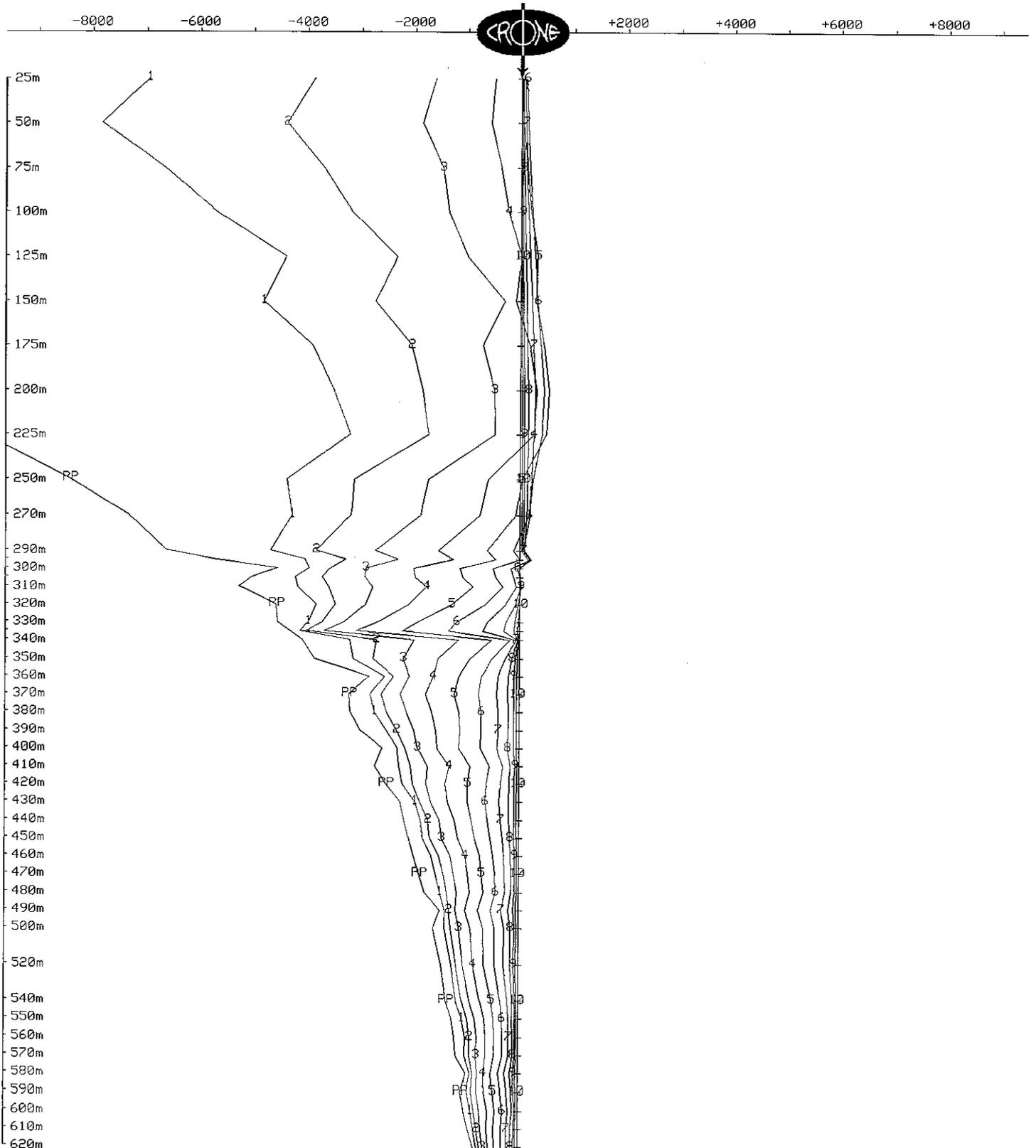
Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values

X COMPONENT dBx/dt nanoTesla/sec - 10 of 20 channels and PP

Scale: 1:3000

Unit Scale: 1cm = 1000 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

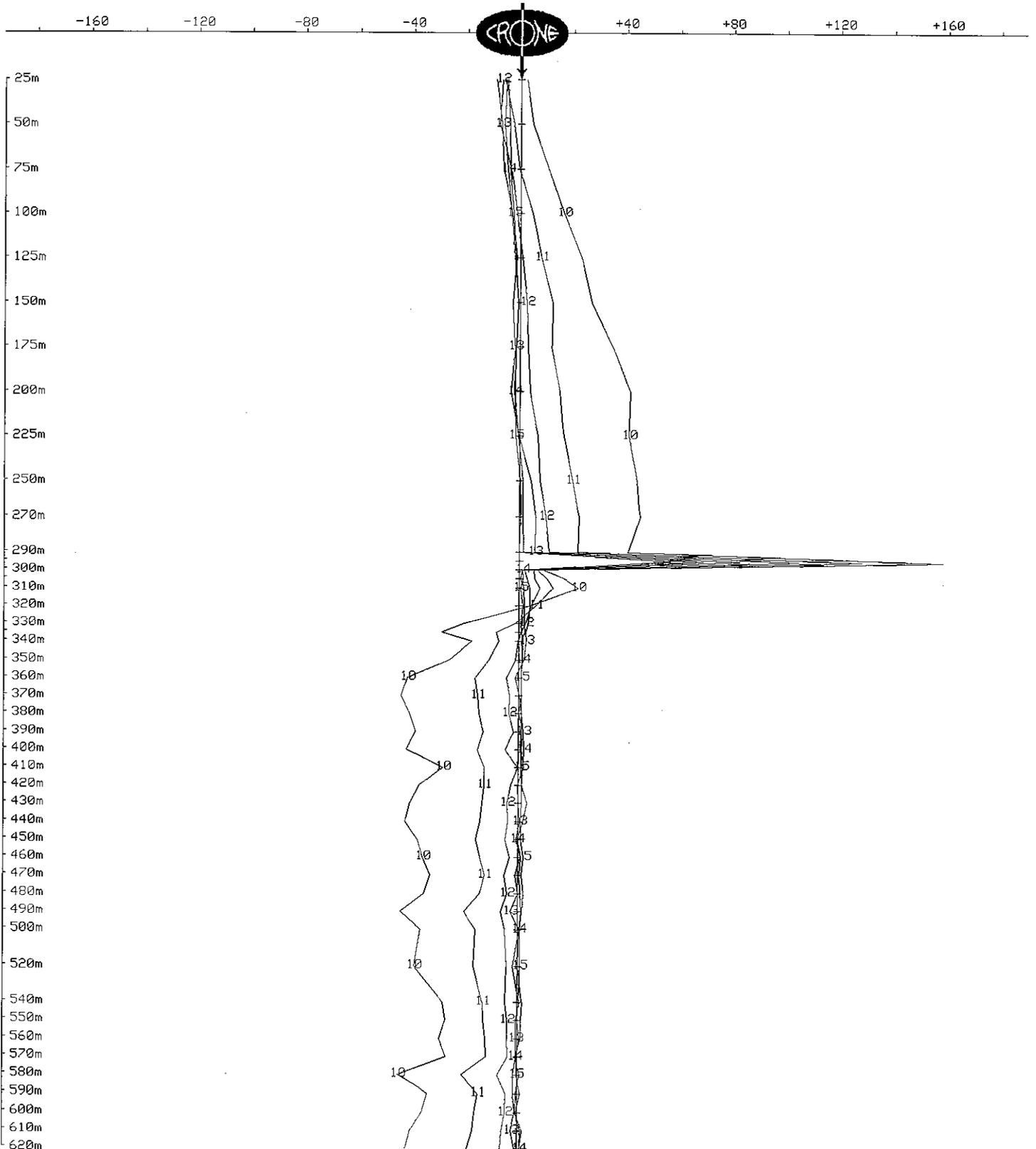
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
X COMPONENT dBx/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 20 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

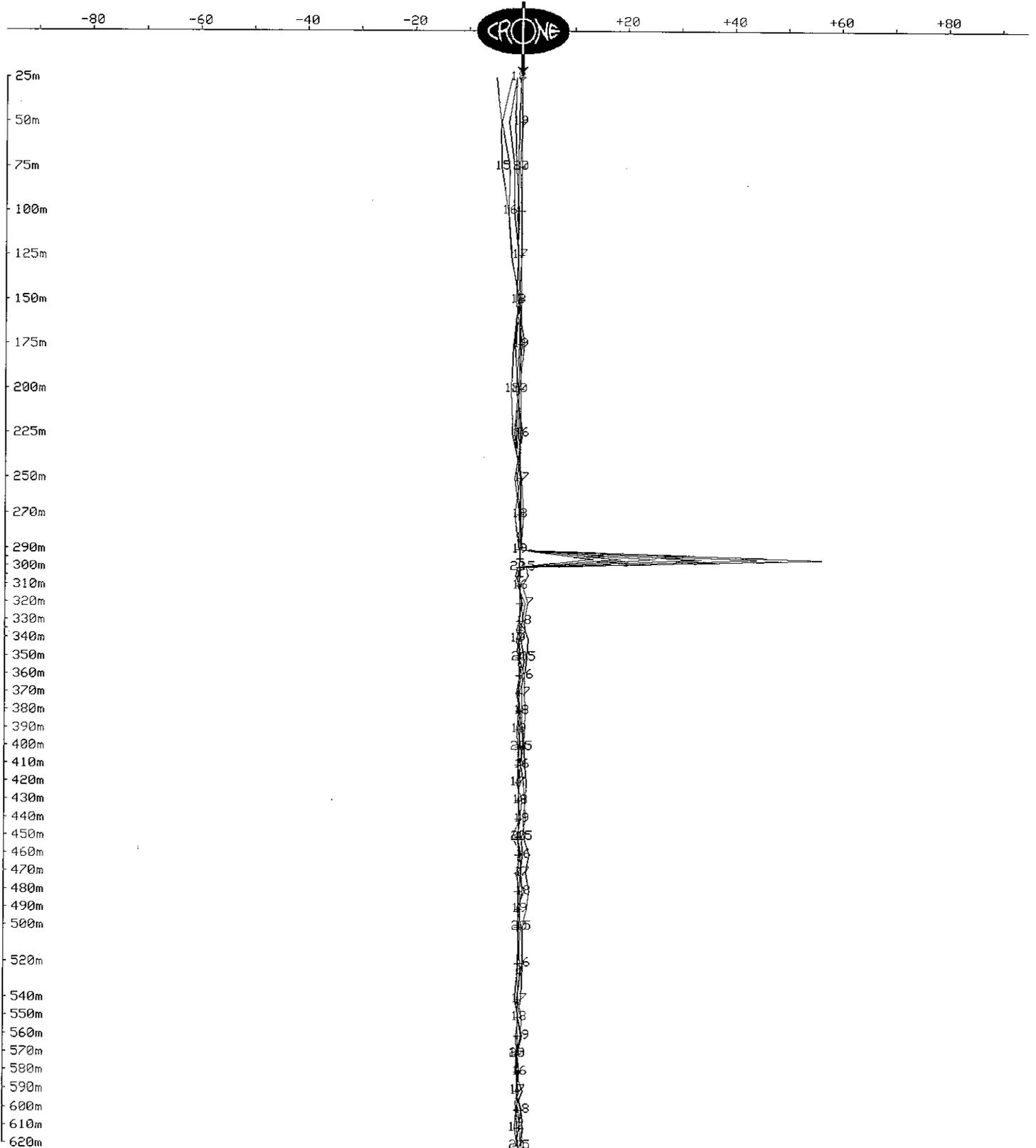
Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
X COMPONENT dBx/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 10 nT/s



# OUTER-RIM EXPLORATION SERVICES

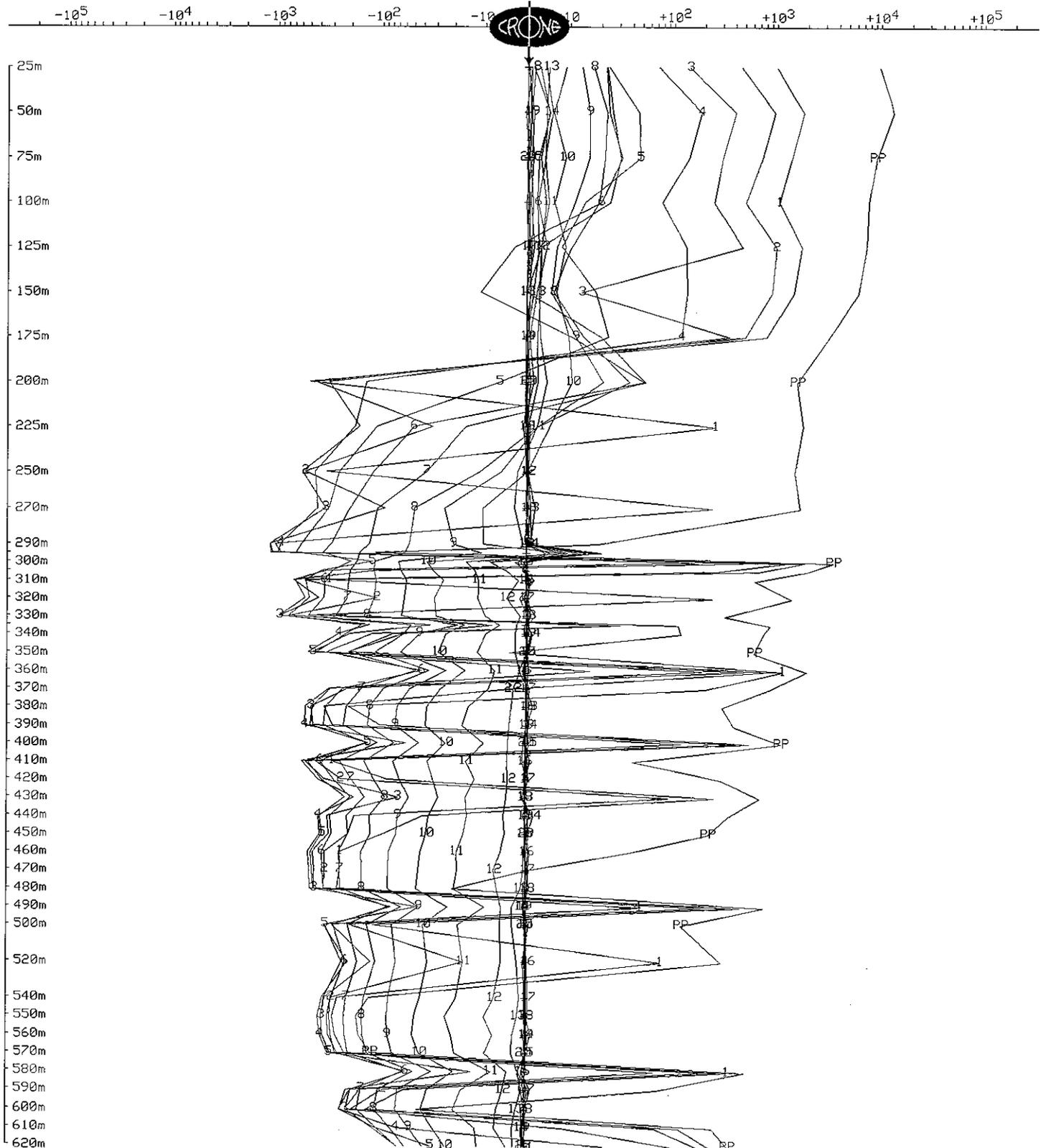
## Borehole Pulse EM Survey

Client : Pasmenco Mining  
Grid : White Spur  
Date : Dec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
Y COMPONENT dBy/dt nanoTesla/sec - 20 of 20 channels and PP

Scale: 1:3000



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasminco Mining  
Grid : White Spur  
Date : Dec 17, 2002

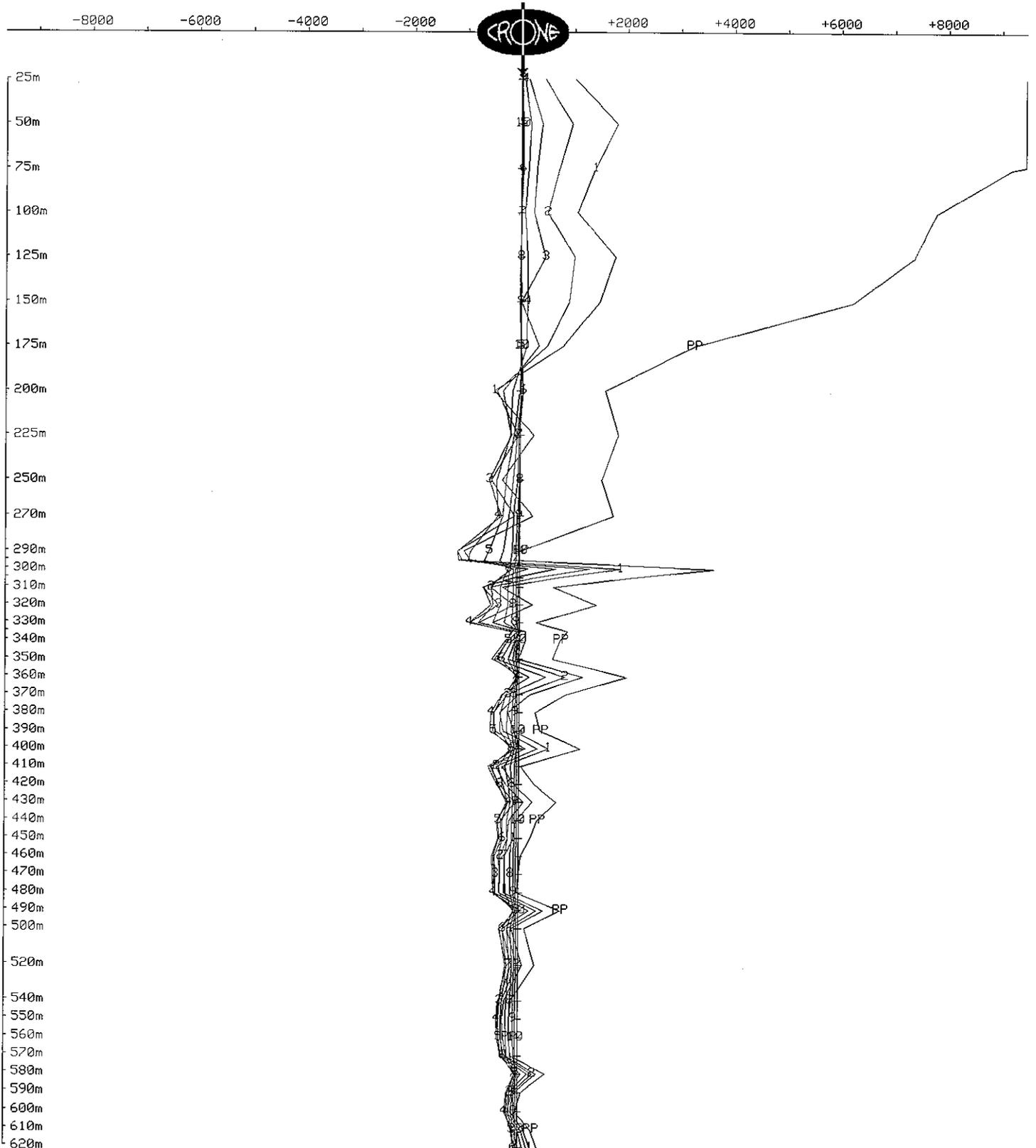
Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values

Y COMPONENT  $dBy/dt$  nanoTesla/sec - 10 of 20 channels and PP

Scale: 1:3000

Unit Scale: 1cm = 1000 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

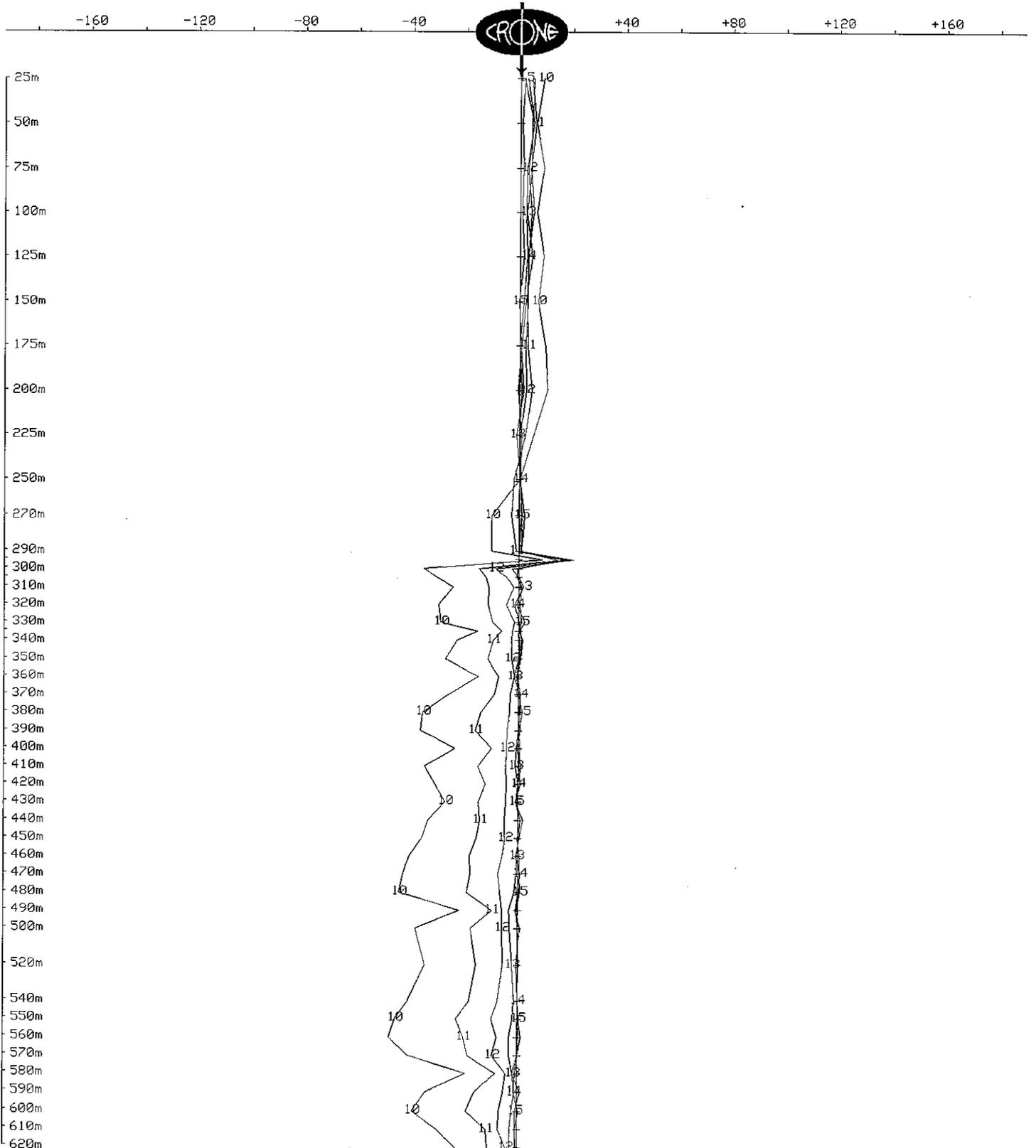
Client : Pasminco Mining  
 Grid : White Spur  
 Date : Dec 17, 2002

Hole : WSP-10  
 Tx Loop : WS3  
 File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
 Y COMPONENT dBy/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 20 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

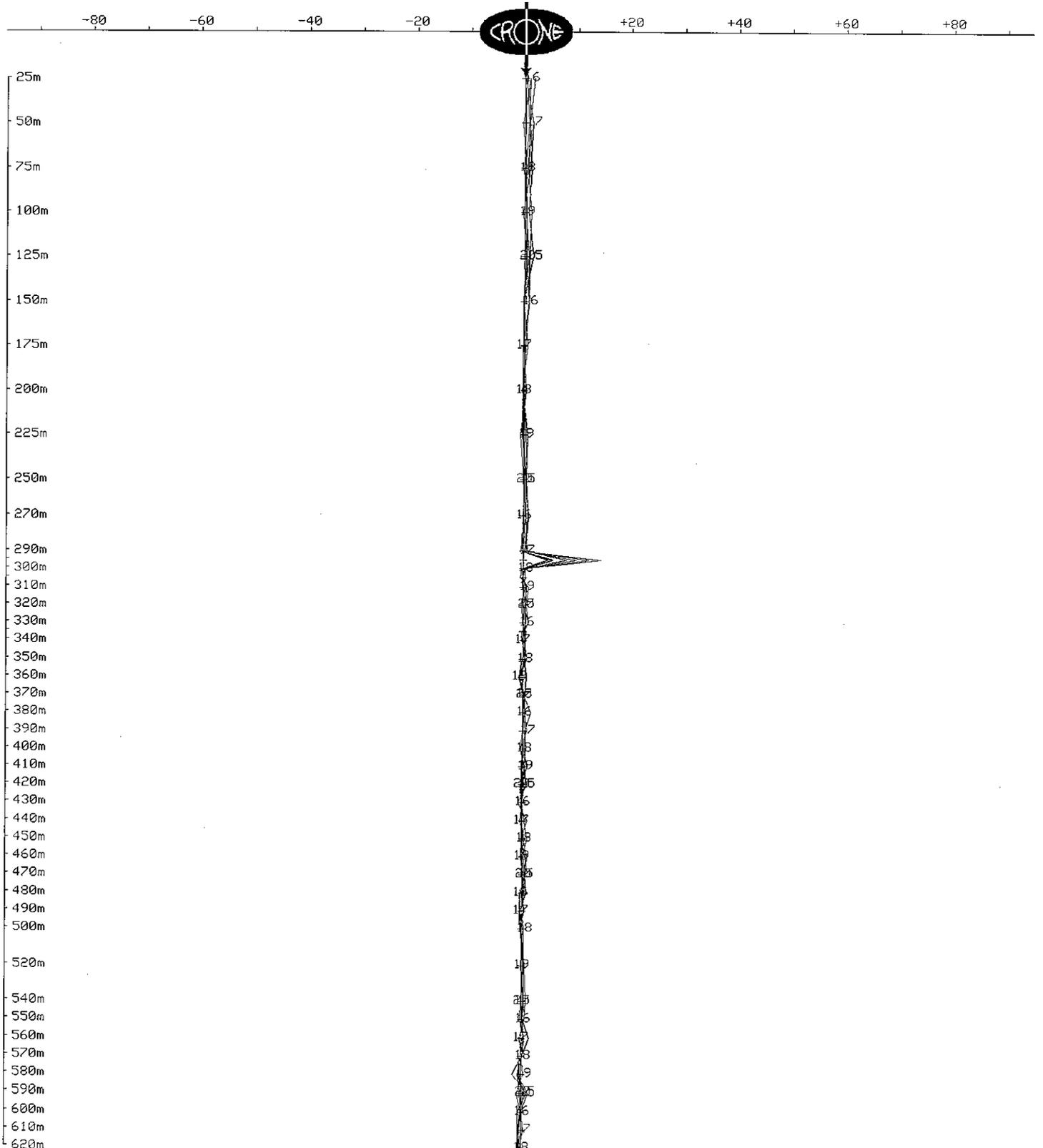
Client : Pasminco Mining  
 Grid : White Spur  
 Date : Dec 17, 2002

Hole : WSP-10  
 Tx Loop : WS3  
 File name : WSP10XY.PEM

Data Corrected for Probe Rotation using Set Values  
 Y COMPONENT dBy/dt nanoTesla/sec - 6 of 20 channels

Scale: 1:3000

Unit Scale: 1cm = 10 nT/s



# OUTER-RIM EXPLORATION SERVICES

## Borehole Pulse EM Survey

Client : Pasma Mining  
Grid : White Spur  
Date : xec 17, 2002

Hole : WSP-10  
Tx Loop : WS3  
File name : WSP10XYZ.PEM

TOTAL FIELD dBxyz/dt nanoTesla/sec - 20 of 20 channels

Scale: 1:3000

