GÉRARD LAMBERT
GÉOSCIENCES

*Société de consultation et de génie-conseil en géophysique.*



# QUEENSTON MINING INC.

## ROBERTSON PROPERTY

Robertson Twp.

Matatchewan area, Ontario

## Report on Downhole Pulse E.M. surveys

Rouyn-Noranda, Québec

September 18 1991

Gérard Lambert, P.Eng.

Consulting Geophysicist

679, avenue Murdoch, Rouyn-Noranda (Québec) Canada J9X 1H7
Téléphone: (819) 762-3182 Télécopieur: (819) 762-5364


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## Introduction

Between January and September 1991, geophysical investigations consisting namely in borehole Pulse E.M. surveys were successfully carried out in 14 diamond drill holes on the ROBERTSON Twp. property, for QUEENSTON MINING Inc.

The purpose of these surveys was to map the extent of conductive massive sulphides in the immediate surroundings of each hole surveyed, within a nominal search radius of about 125m.

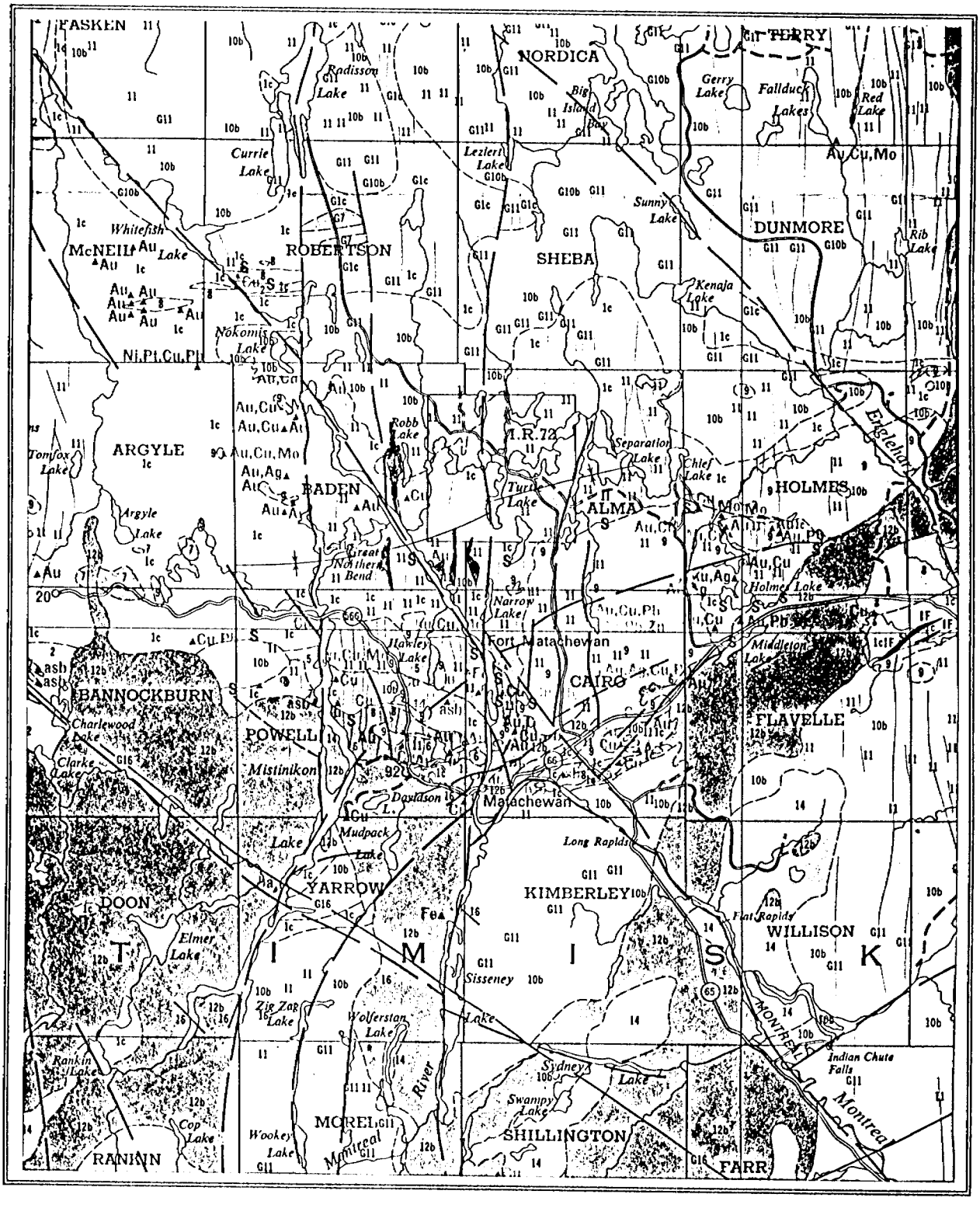
The holes in question were investigating a surface geophysical conductor (MaxMin H.E.M.) which turned out to be caused by mineralized massive to semi-massive sulphides.

This report describes the Pulse E.M. work and discusses the results and interpretation of the data. Recommendations for any future work are presented in the conclusion.

The field work was carried out by crews of Val d'Or Geophysique Ltd of Val d'Or.

## Description of the work site

The Robertson Twp. property is located in the central area of Robertson Township, about 25 kilometers NNW of Matatchewan and 58 kilometers southeast of Timmins. It is accessible by a gravel road leading Northwest from Matatchewan. Please refer to the location maps appended to this report.




LOCATION MAP

SCALE 1:250,000

## Description of the P.E.M. surveys

The downhole Pulse E.M. work was carried out in fourteen holes. Table 1. below summarizes the P.E.M. work and shows which holes were probed.

| Hole No | Azimuth/Dip | Length probed | Tx Loop |
|---|---|---|---|
| RBN90-02 | 025°/-55° | 292m | 1(collar) |
| RBN90-02 | 025°/-55° | 290m | 2(east) |
| RBN90-02 | 025°/-55° | 290m | 3(west) |
| RBN90-04 | 205°/-55° | 340m | 1(collar) |
| RBN91-05 | 025°/-55° | 365m | 1(collar) |
| RBN91-06 | 025°/-50° | 292m | 3(west) |
| RBN91-06 | 025°/-50° | 292m | 2(east) |
| RBN91-07 | 025°/-47° | 220m | 2(collar) |
| RBN91-08 | 025°/-50° | 322m | 2(collar) |
| RBN91-09 | 025°/-50° | 372m | 2(collar) |
| RBN91-10 | 025°/-60° | 500m | 5(collar) |
| RBN91-11 | 025°/-65° | 333m | 6(collar) |
| RBN91-13 | 025°/-61° | 610m | 6(collar) |
| RBN91-14 | 025°/-65 | 523m | 6(collar) |
| RBN91-15 | 205°/-55° | 346m | 7(collar) |
| RBN91-15 | 205°/-55° | 346m | 9(east) |
| RBN91-15 | 205°/-55° | 346m | 10(downdip) |
| RBN91-17 | 025°/-60° | 395m | 8(collar) |
| RBN91-18 | 025°/-50° | 204m | 8(collar) |

Table 1.

Each hole was surveyed with the P.E.M. technique using the transmit loops which are shown on the various sketches at the end of this report.

The type of E.M. activation of the mineralized plane was determined by positionning each transmit loop so as to obtain the required coupling (minimum or maximum) with a steeply southerly-dipping (-90° to -80° South) conductive planar target, at a given vertical depth.

The P.E.M. technique used involved a Crone 20-channel digital time domain E.M. receiver, measuring the amplitude of the 20 windows that divide the secondary field decay curve.

The Pulse E.M. transmitter injected a square wave of 16.6 msec duration and 1.5 msec fall-off ramp time, circulating 5 to 8 amperes in the single-turn loop laid out on the ground.

Reference for transmitter-receiver synchronisation of the transmitted pulse was obtained through a cable link between Tx and Rx.

Readings of the secondary field's axial component amplitude and decay rate were taken along the holes, every 10 meters, with detailed readings every 5 meters. The data was digitally recorded in the receiver for later processing and plotting.

## Results and interpretation

Two basic questions arise in the process of exploring for massive sulphides with diamond drilling: i) In the case of a "dry" hole, is there a chance that this hole may have missed a blind conductive mineralized massive sulphide zone nearby?
ii) In the case of a hole which has intersected conductive sulphide mineralization, how big is the mineralized zone, how far away can we afford to step out and drill the next hole and still be in conductive sulphides?
Referring to the Pulse E.M. profiles appended to this report, we will attempt to provide some answers to these questions in the following analysis of Pulse E.M. results.

## Hole RBN-90-02

The Pulse E.M. profiles in hole 90-2 returned a very sharp, strong and double-peaked 15-channel off-hole response at 175m and 205m, in coincidence with two sulphide intersections. The character of the anomaly indicates that the hole passes at a very short (almost zero) distance from the near electrical edge of a highly conductive metallic tabular plate.

Directionnal soundings with an East loop (loop 2) and a West loop (loop 3) indicate that the bulk of the conductive sulphides lie to the East, as the anomaly persists with the East loop and decreases in amplitude with the west loop, suggesting that not much continuity exists in that direction. Knowing from the MaxMin data that the conductor exists near surface on line 100E at about 0+85N, we interpret that the edge in question is probably the lower-western electrical edge of a southerly-dipping conductor which plunges to the East. The reader can also refer to the discussion of the Pulse E.M. results in hole RBN-91-11, drilled under RBN-90-02. A close examination of the P.E.M. profiles, particularly with the East loop, permits to see a significant buildup toward the positive side before entering the off-hole anomaly. This behaviour may in fact illustrate a long in-hole response on top of which is superimposed the off-hole anomaly discussed above. This in-hole component would indicate the presence of conductivity around the hole. Clearly the sulphide mineralization is electrically zoned and we are not looking at one homogeneously conductive plate.

On the appended North-South section (Section 100E) showing hole 90-2, I have drawn the trace of the hole and the position of the MaxMin conductor. The position of the interpreted off-hole conductor clearly demonstrates the 70° southerly dip of the conductor.

Hole RBN-90-04

The Pulse E.M. profiles in this hole clearly show an in-hole response (the profiles are reversed because the hole is going toward the loop instead of going away from the loop, but that's O.K.) at 235-240m, in coincidence with a good intersection of sulphide mineralisation. The fairly long wavelength, the number of channels responding (17-18) and the large amplitude of the response all point to a fair-size conductor of "good" conductance (i.e. semi-massive to massive sulphides), the near-central part of which was pierced by this hole. The late-time channels show an off-hole signature, thus indicating a substantial inward migration of the late time currents, which may in turn suggest an electrical edge not too far (30m-50m?).

On section 225E appended, one can see the consistent 70° dip to the south, as one joins the axis of the MaxMin conductor near surface at about 125N-130N, with the intersection point in hole 90-4.

A small-amplitude and short-wavelength spike at 185m in hole 90-4 suggest the presence of a small pocket of conductive sulphides which do not appear to extend anywhere.

Hole RBN-91-05

Hole 91-5, drilled just to the East of hole 90-2 has evidently intersected strongly conductive metallic mineralization at about 220m, because we observe a well-defined 18-channel In-Hole P.E.M. anomaly at that point. The geophysical response indicates that the hole has intersected an area near the central core of the conductive plate. The wavelength of the response certainly suggests that the plate in question has respectable dimensions. A second anomaly, at about 340m in hole 91-5, is a minor negative pseudo-off-hole response indicating the presence nearby of a small-size poorly-conductive sulphide pod of limited lateral extent.

Hole RBN-91-06

This hole was drilled in the western portion of the MaxMin conductor at shallow depths (-100m vertical). The Pulse E.M. profiles returned, with the west loop (loop 3), a sharp 15-channel combined in-hole (early times) and off-hole (late times) response at 110m along the hole. The off-hole component of the anomaly has a very short wavelength and evidently arises from currents circulating very close to the hole. A significant sulphide intersection was noted at 130m-135m, just below the

anomaly, and this could lead to believe that the response arises from the lower electrical edge of the mineralized lens.

The east loop survey produced a longer-wavelength off-hole response at about 125m (slightly lower), superimposed by an in-hole spike at 130m-135m in coincidence with the sulphides. The longer wavelength of the off-hole response implies that the induced eddy currents probably flow at a distance (30m-50m) away from the hole in the east direction. In turn, if they flow, it is because they have more room to circulate in that portion of the sulphide lenses than in the west portion and that these lenses do extend eastward from RBN-91-06.

Hole RBN-91-07

This relatively short hole was drilled to investigate the eastern extension of the mineralization at -100m vertical. Only a weak negative deflection is noted in the P.E.M. profiles at about 175m. It must be emphasized that the loop used for this survey was in relatively poor coupling with the top part of the sulphide lens and that it not surprising to have no large anomalous responses. It can be safely stated however that no significant conductive sulphides occur in the immediate vicinity of this hole.

Hole RBN-91-08

This hole was drilled below RBN-91-07 in order to investigate east of holes 4 and 5 at about -175m vetical. Although the hole intersected semi-massive sulphides at about 220m, the Pulse E.M. profiles show a mostly off-hole response just below, at 235m. The anomaly is a 20-channel response and it is sharp and strong. This response is probably due to the eastern electrical edge of the sulphide sheet which terminates (temporarily?) just off to the west. A directionnal sounding using an east loop may permit to find out about the possibility of more sulphides to the east at that level.

Hole RBN-91-09

This hole was meant to test the eastern continuation of the sulphides at -250m vertical. It returned a minor intersection of sulphides around 265m-280m and the Pulse E.M. survey resulted in a 15-channel off-hole response centered on 275m. It is most likely that this anomaly reflects the presence of the eastern electrical border of the mineralization at that level, some 20-30 meters away. A sounding with an East loop may help establish if the electrical conductivity (and consequently the sulphides) persists toward that direction (eastward), within the first 125m.

Hole RBN-91-10

This hole was drilled below hole RBN-91-05 in order to test the downward continuation of the sulphide lens in that sector. The Pulse E.M. profiles show a 15-channel off-hole response at 305m, just below the beginning of a 100m section of intensely altered rocks. The anomaly has a definite upward migration, thus strongly suggesting that it is responding to the lower electrical edge of the main sulphide lens.

A second response was also outlined at 395m, where a short-wavelength but strong, crossover-type anomaly can be seen. It is associated with a 10m-wide sulphide intersection and is typical of a lower-border intersection. Both anomalies strongly suggest that the bulk of the electrical conductivity lies upward of hole RBN-91-10.

Hole RBN-91-11

This hole was drilled under RBN-90-02 and returned two anomalies. The first is an off-hole response at 175m. It is not very sharp and has a short wavelength. An upward migration of the late-time channels (toward the interior of the conductive plate) is visible. This anomaly probably relates with the first off-hole in RBN-90-02, itself related to a first mineralized layer.

The second anomaly appears to be an edge response, centered at 250m and coincident with a 10m section of sulphides. Most channels respond, indicating a relatively "good" conductivity. The short wavelength is however not diagnostic of a large area of electrical continuity. It may however be very intriguing to check the downward extension of this zone.

Hole RBN-91-13

This hole is the deepest drilled to date and it investigated the area under holes 4, 5 and 10 at -450m vertical. The results were somewhat deceiving, as no significant economic mineralization has been intersected. The Pulse E.M. profiles indicate a long-wavelength, well-defined 12-channel off-hole anomaly centered on 400m. Its asymetry and position with respect to the minor sulphides intersected at 490m and 525m leaves no doubt about the interpretation that it is due to the lower edge of the sulphide zone which terminates probably 75m - 100m further updip.
We can safely state that the Pulse E.M. survey in this hole has adequately mapped the lower limit of the main sulphide lens. There is however some activity at the end of the hole which is abnormal but there is not enough data to make sense of the observed movements. We suspect that the hole is approaching another sulphide zone, possibly a minor one, judging from the

short wavelength of the "anomaly". The only way to better understand what is happening in that area is to deepen the hole by 150m-200m and resurvey that portion.

Hole RBN-91-14

This hole was drilled east and slightly up from hole RBN-91-13 and below RBN-91-09. It did not intersect massive sulphides. Minor pyrite was intersected at about 460m-490m. A 14-channel off-hole anomaly was defined at 390m. As in the case of hole 13 and consistent with the off-hole anomaly in RBN-91-09, it more than likely that this anomaly represents the effect of the lower eastern edge of the main sulphide lens and that there appears to be no reason to believe, from a geophysical point of view, that significant sulphides are present below this hole. This is not to say that there is no east-west continuation of the known sulphides, but this will have to be verified with directionnal soundings.

Hole RBN-91-15

The collar loop survey returned a partly defined off-hole response at the bottom of the hole. The negative maximum was not reached, so it is difficult to estimate the real wavelength of the anomaly and to exactly position the electrical edge of the

causative lens.

Detail surveys were carried out using an East loop and a North loop (downdip). The East loop profiles show a decrease in amplitude, a slight increase in wavelength and a probable downward displacement of the anomaly maximum. These combined observations tend to indicate that the conductive sulphides have some extent eastward but they would appear to plunge downward at the same time. The P.E.M. results in hole RBN-91-14 support this conclusion, as the off-hole anomaly in that hole would position the eastern lower edge of the sulphides further east and down from hole 15.

The north loop was designed to energize the lower (downdip) portion of the sulphide horizon in order to test the electrical continuity in that direction, while minimum coupling with the upper portion of the sulphide lens. The anomaly appears to persist and this would indicate that enough electrical continuity exists (and consequently enough interconnected sulphides) in the lower portion of the lens to allow eddy currents to circulate. The actual electrical edge which causes the off-hole peak is probably situated fairly close to the hole itself and likely just off to the west.

Holes RBN-91-17 and RBN-91-18

The Pulse E.M. profiles in these holes are essentially flat and non-anomalous. It can be stated that no significant conductive sulphides are present within a radius of 100m to 125m of these holes.

Conclusion and recommendations

The borehole Pulse E.M. surveys that were carried out in 14 holes on Queenston Mining's Robertson Twp. property have been so far extremely successful and useful in guiding the drill program and allowed an optimization in the positionning of drill holes so that the extensions of the sulphide lens could be explored with as much chance of success as possible.

From the downhole geophysical results obtaind thus far, it makes no doubt that some portions of the main sulphide lens have been delimited and blocked out, but the sulphides are not confined to only one single layer. Electrical zoning is quite evident in sections 100E to 225E and we believe that repetitions of sulphide beds or layers are common.

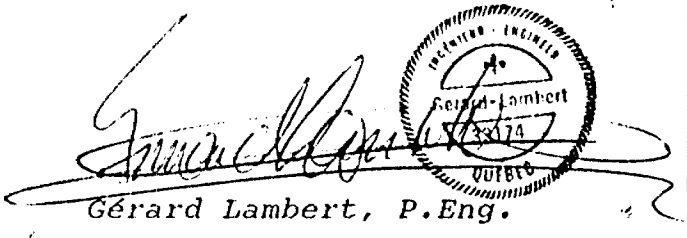
The lower eastern border of the lens may be closed for the time being, but we still recommend that the area under hole RBN-91-11

be investigated with another hole designed to test 120 meters below that hole, along the mineralized horizon. Please refer to the schematic longitudinal section appended.

As well, deepenning of RBN-91-13 may be worthwhile in order to check the possibility of more sulphides there, as suggested by movements in the P.E.M. profiles.

It would also be justified to investigate the eastern continuity of the lens between -150m and -400m vertical by probing holes 9 and 14 with an east loop, as was done with hole 15.

Outside the known sulphide lens, systematic exploratory drilling at 250m centers should be considered. Using this approach, if any other lens of massive sulphide occur, it should become detectable by a direct hit or by its geophysical signature.



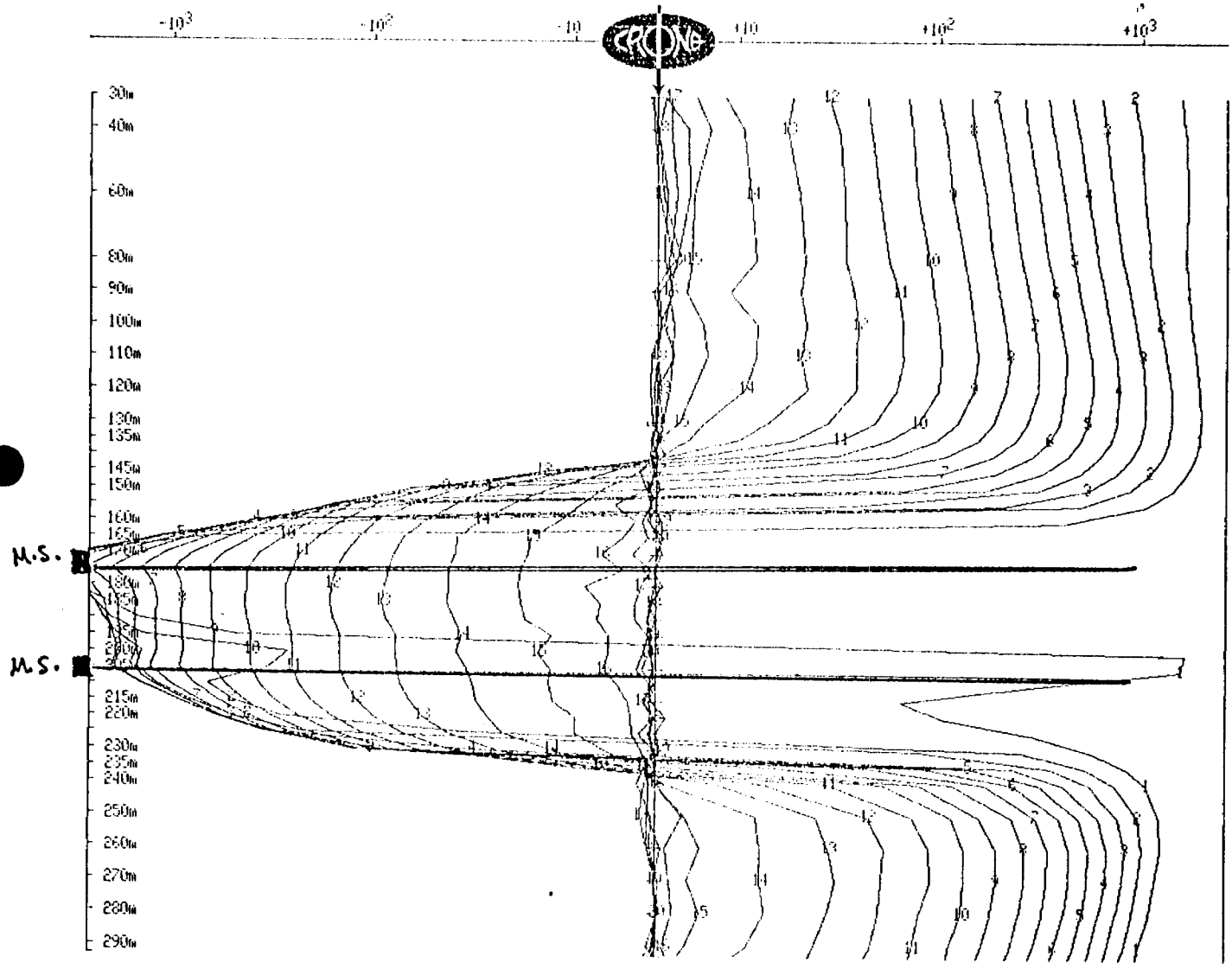

Rouyn-Noranda, Québec
September 18 1991

Gérard Lambert, P.Eng.
Consulting Geophysicist

CRONE GEOPHYSICS & EXPLORATION LTD
VAL D'OR GEOPHYSIQUE LTEE
BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN-90-2 |
| Grid | : RADISSON | Tx Loop | : 1 (COLLAR LOOP) |
| Time Base | : 16.66 ms | Date | : Jan 14, 1990 |
| Ramp Time | : 1.50 ms | File | : 9002T1.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

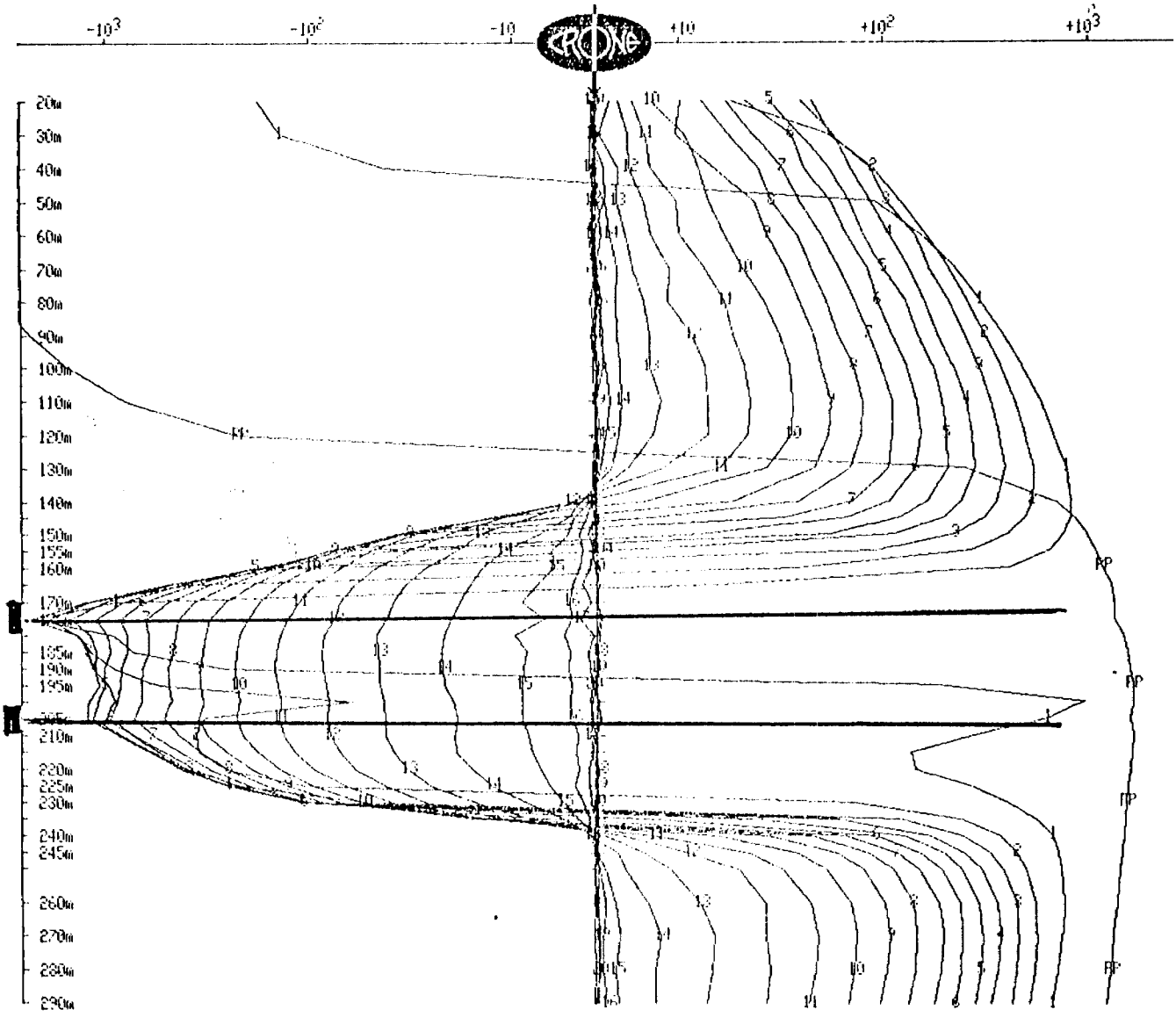



Double-peaked 15-channel OFF-HOLE anomaly caused by two thin mineralized horizons.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 90-2 |
| Grid | : RADISSON | Tx Loop | : 2 (EAST LOOP) |
| Time Base | : 16.66 ms | Date | : Mar 16, 1991 |
| Ramp Time | : 1.50 ms | File | : 9002T2.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



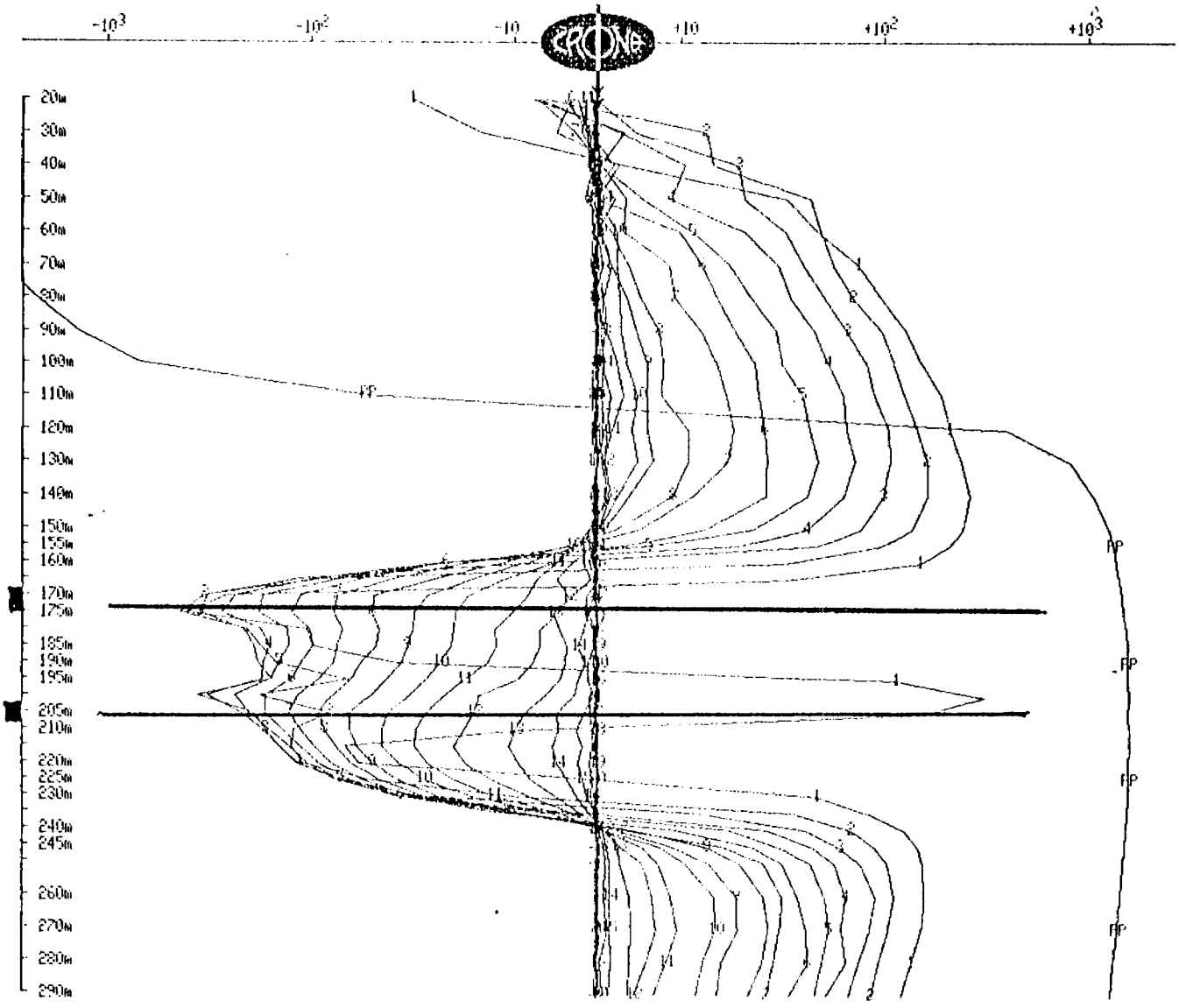

The OFF-HOLE anomaly with this loop is essentially identical to the collar loop survey.

1

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 90-2 |
| Grid | : RADISSON | Tx Loop | : 3 (WEST LOOP) |
| Time Base | : 16.66 ms | Date | : Mar 17, 1991 |
| Ramp Time | : 1.50 ms | File | : 9002T3.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP




M.S.

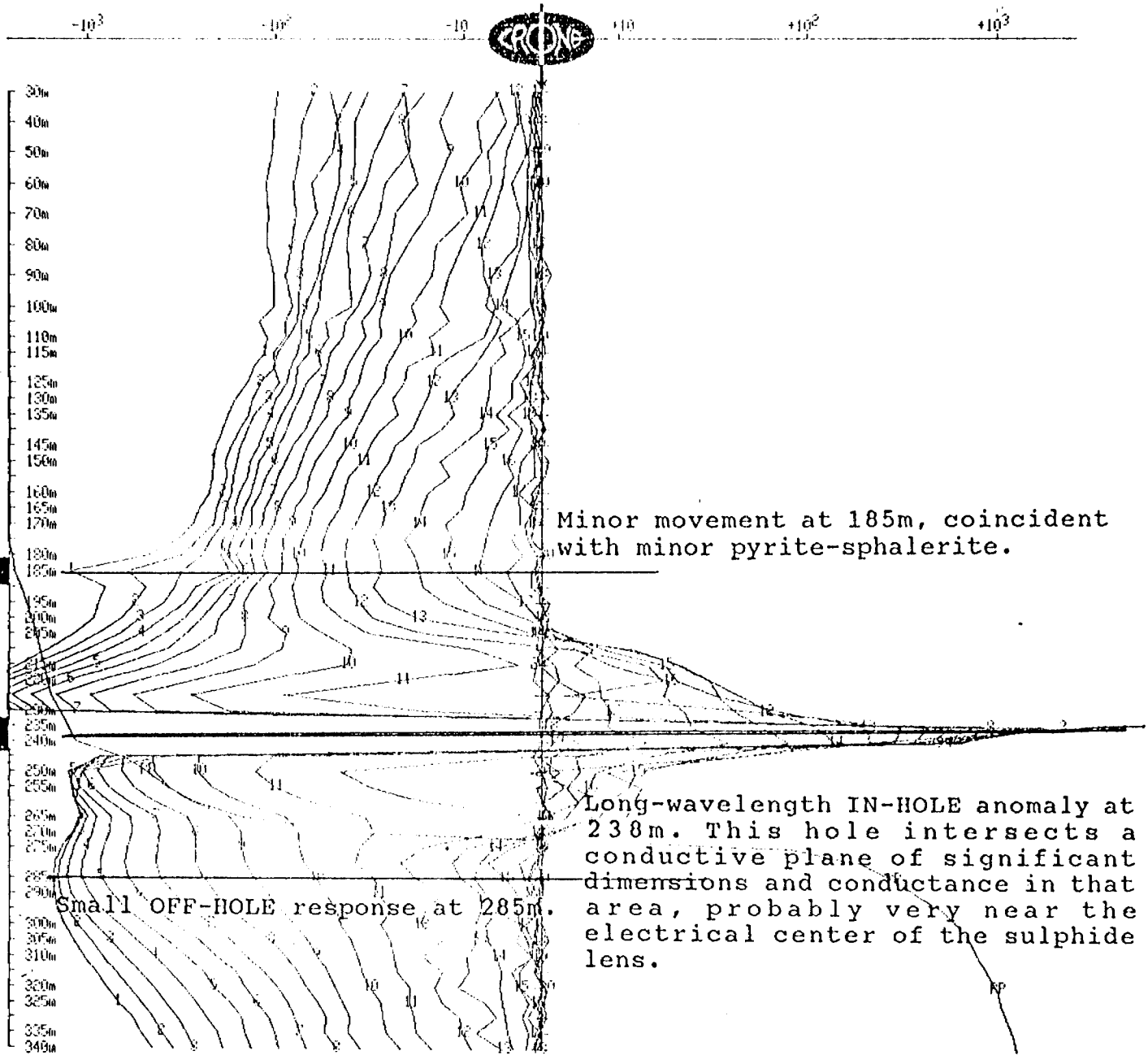
M.S.

The OFF-HOLE anomaly has decreased in amplitude, indicating limited extent toward the West, at least at that depth.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN-90-4 |
| Grid | : RADISSON | Tx Loop | : 1 |
| Time Base | : 16.66 ms | Date | : Jan 15, 1990 |
| Ramp Time | : 1.50 ms | File | : 9004T1.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP




Minor movement at 185m, coincident with minor pyrite-sphalerite.

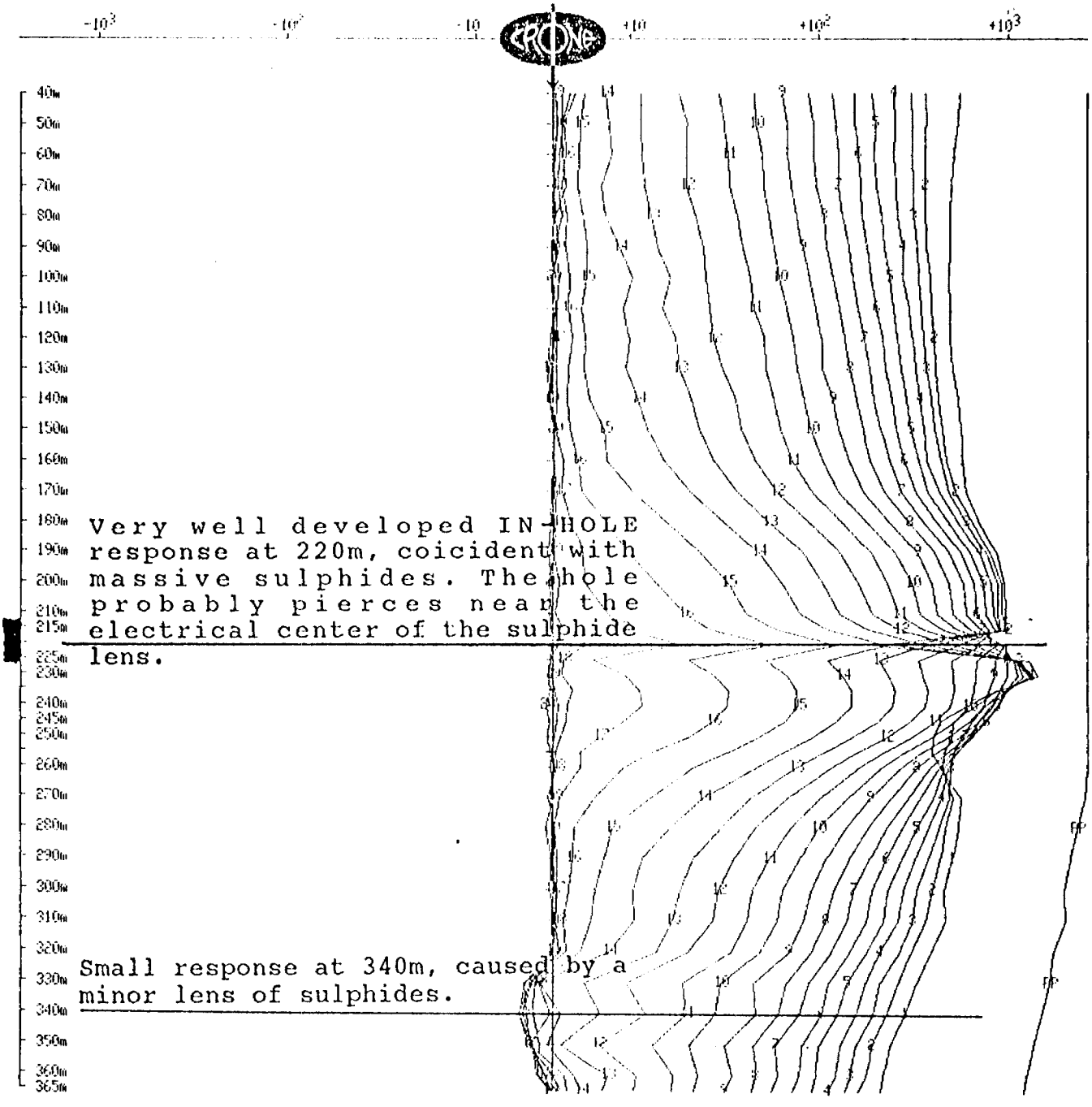
Long-wavelength IN-HOLE anomaly at 238m. This hole intersects a conductive plane of significant dimensions and conductance in that area, probably very near the electrical center of the sulphide lens.

Small OFF-HOLE response at 285m.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN9005 |
| Grid | : RADISSON | Tx Loop | : 1 |
| Time Base | : 16.66 ms | Date | : Feb 11, 1991 |
| Ramp Time | : 1.50 ms | File | : 9105T1.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP




Very well developed IN-HOLE response at 220m, coicident with massive sulphides. The hole probably pierces near the electrical center of the sulphide lens.

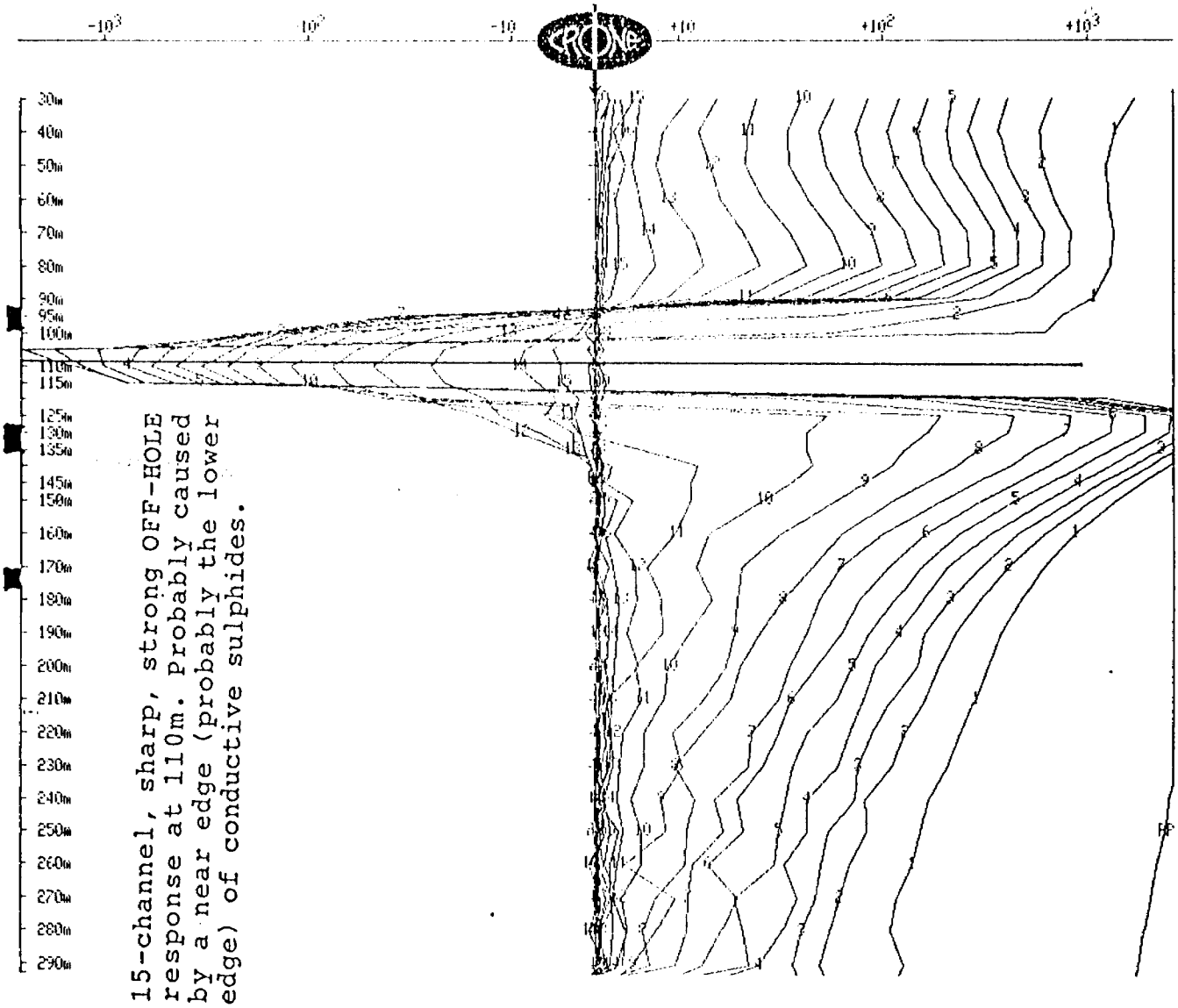
M.S.

Small response at 340m, caused by a minor lens of sulphides.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 91-6 |
| Grid | : RADISSON | Tx Loop | : 3 (WEST LOOP) |
| Time Base | : 16.66 ms | Date | : Mar 16, 1991 |
| Ramp Time | : 1.50 ms | File | : 9106T3.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



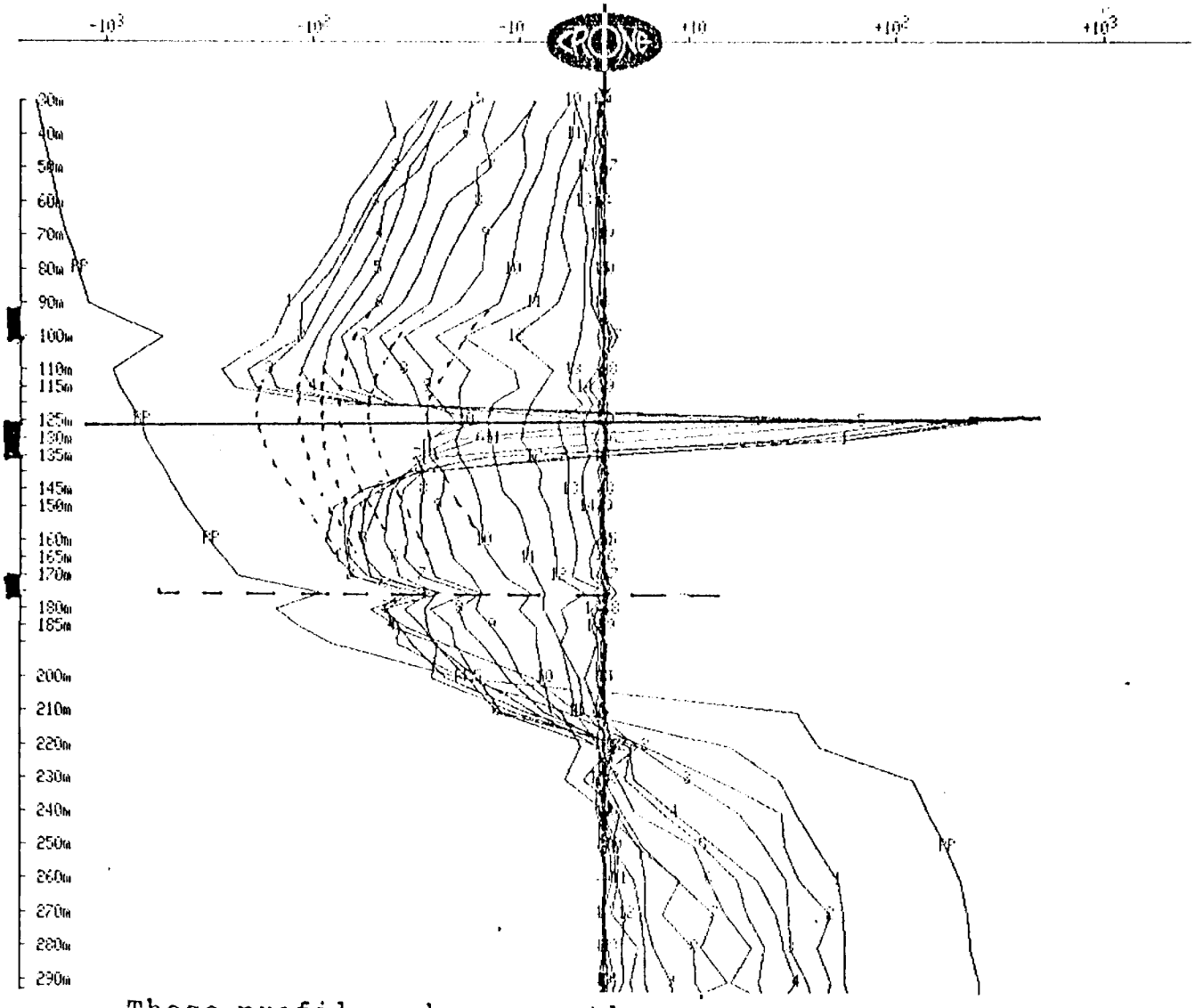

M.S.

15-channel, sharp, strong OFF-HOLE response at 110m. Probably caused by a near edge (probably the lower edge) of conductive sulphides.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 91-6 |
| Grid | : RADISSON | Tx Loop | : 2 (EAST LOOP) |
| Time Base | : 16.66 ms | Date | : Mar 16, 1991 |
| Ramp Time | : 1.50 ms | File | : 9106T2.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

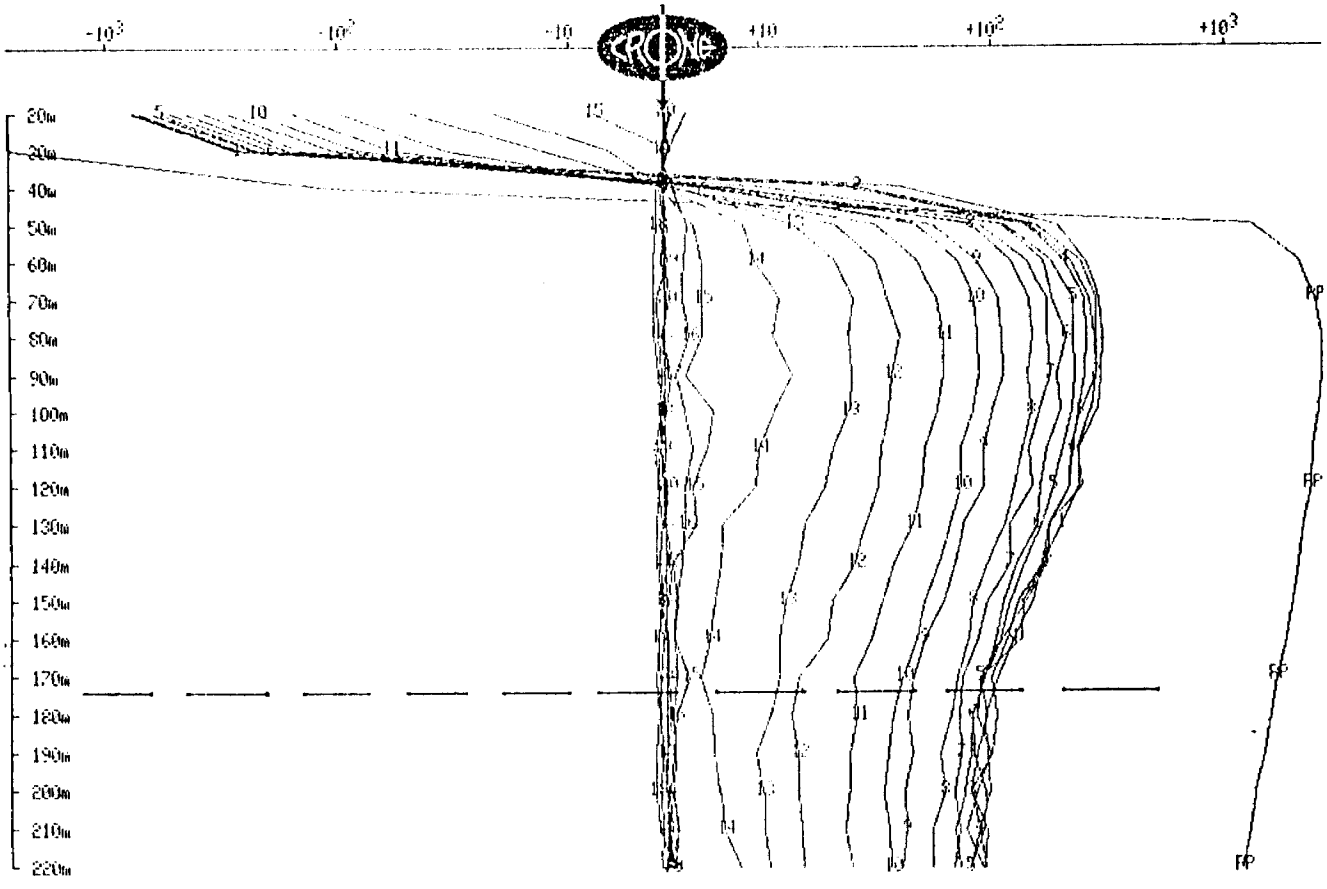



These profiles show a mostly OFF-HOLE response, except for the sharp positive peak where massive sulphides were intersected. This sounding suggests that most of the currents induced in the sulphide lens with the east loop were displaced toward the East of the hole.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSTQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-7 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Time Base | : 16.66 ms | Date | : Mar 15, 1991 |
| Ramp Time | : 1.50 ms | File | : 9107T2.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

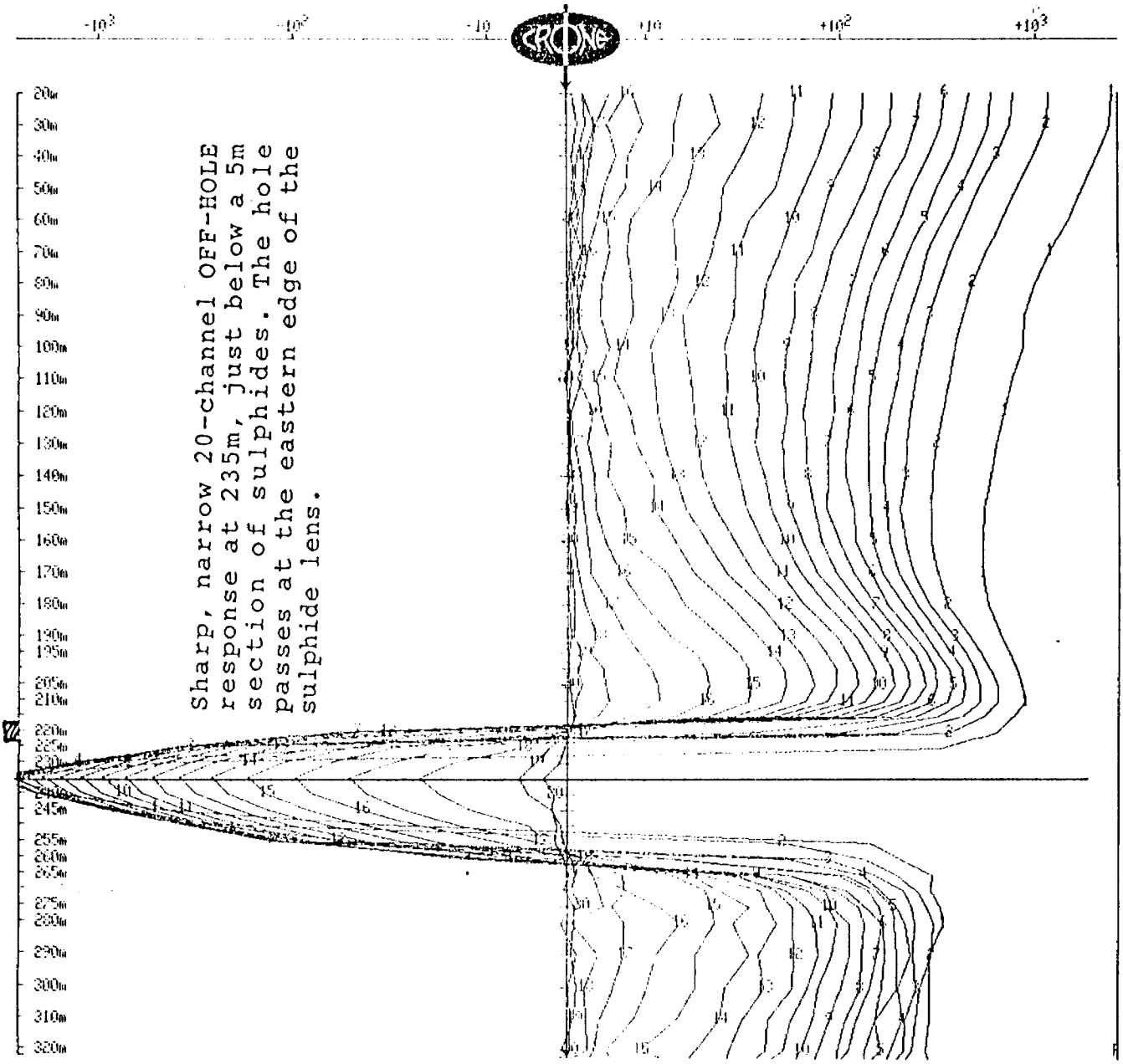



Weak OFF-HOLE response at 175m. The upper part of the sulphide lens being in poor coupling with the primary field of loop 2, no significant response is generated by that part.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-8 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Time Base | : 16.66 ms | Date | : Mar 14, 1991 |
| Ramp Time | : 1.50 ms | File | : 9108T2.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



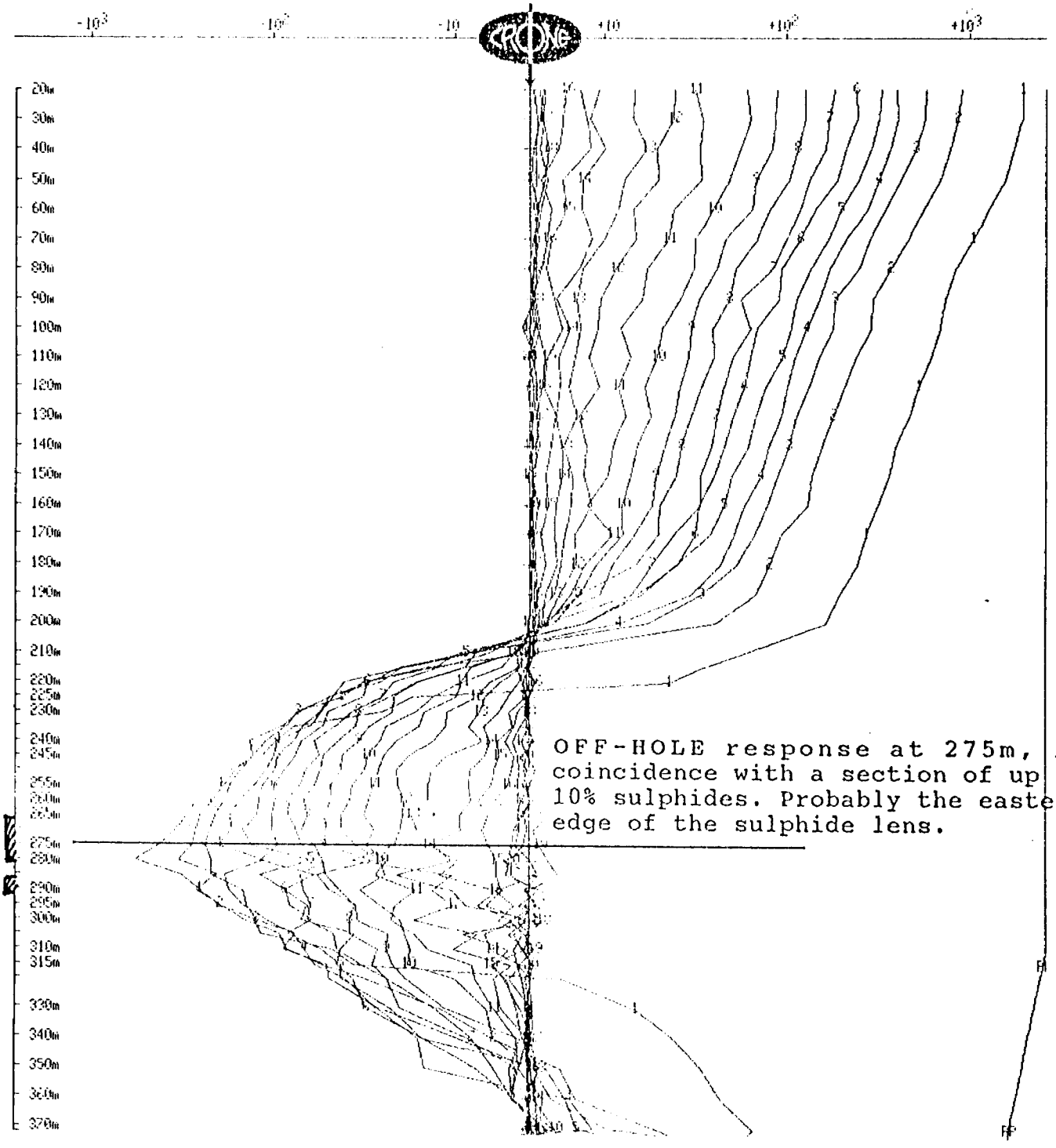

Sharp, narrow 20-channel OFF-HOLE response at 235m, just below a 5m section of sulphides. The hole passes at the eastern edge of the sulphide lens.

S.S.M.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-9 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Time Base | : 16.66 ms | Date | : Mar 14, 1991 |
| Ramp Time | : 1.50 ms | File | : 9109T2.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



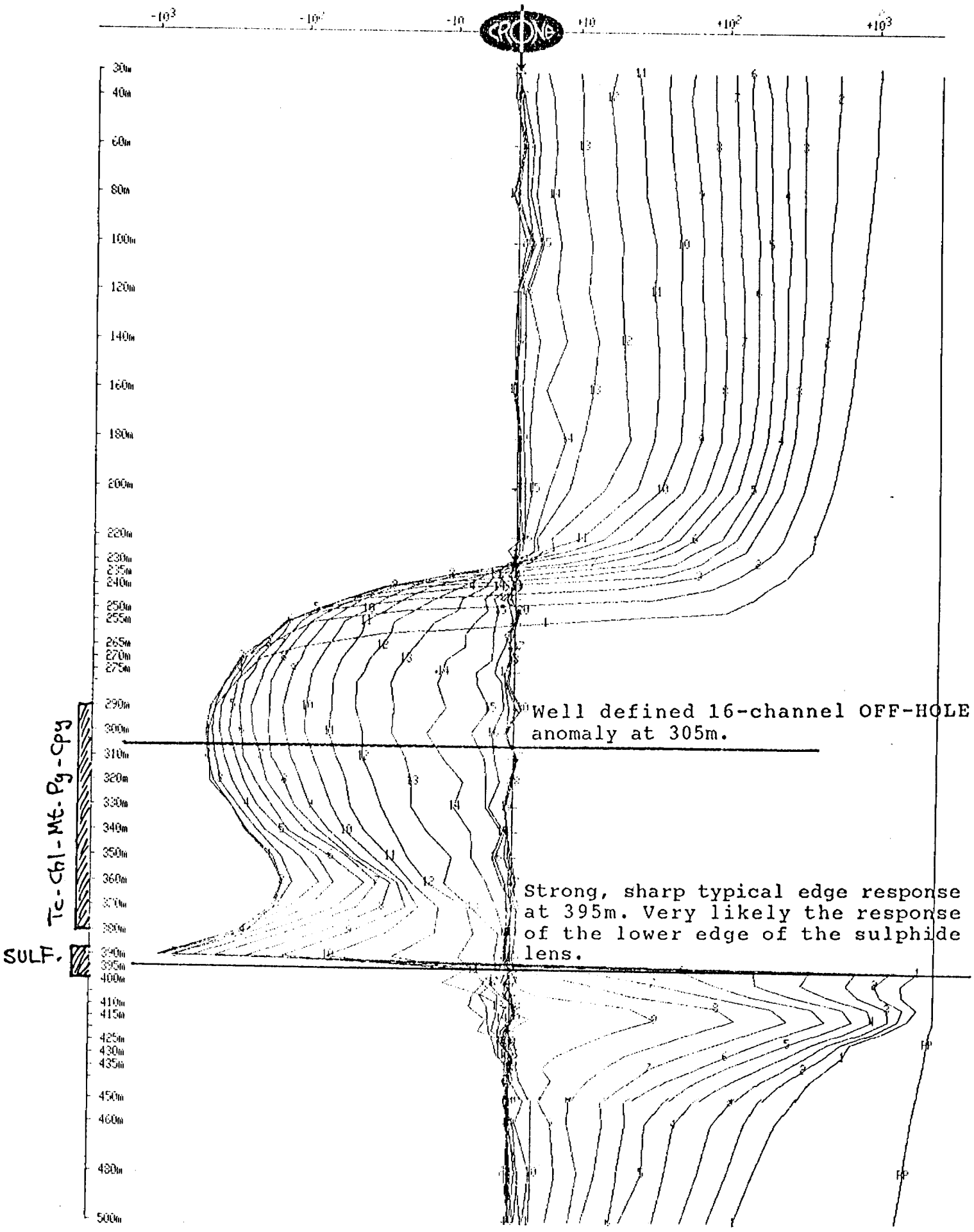

10% Sul.

OFF-HOLE response at 275m, in coincidence with a section of up to 10% sulphides. Probably the eastern edge of the sulphide lens.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-10 |
| Grid | : ROBERTSON | Tx Loop | : 5 |
| Time Base | : 16.66 ms | Date | : Mar 25, 1991 |
| Ramp Time | : 1.50 ms | File | : 9110T5.PEM |
| Scale | : 1:2000 | | |

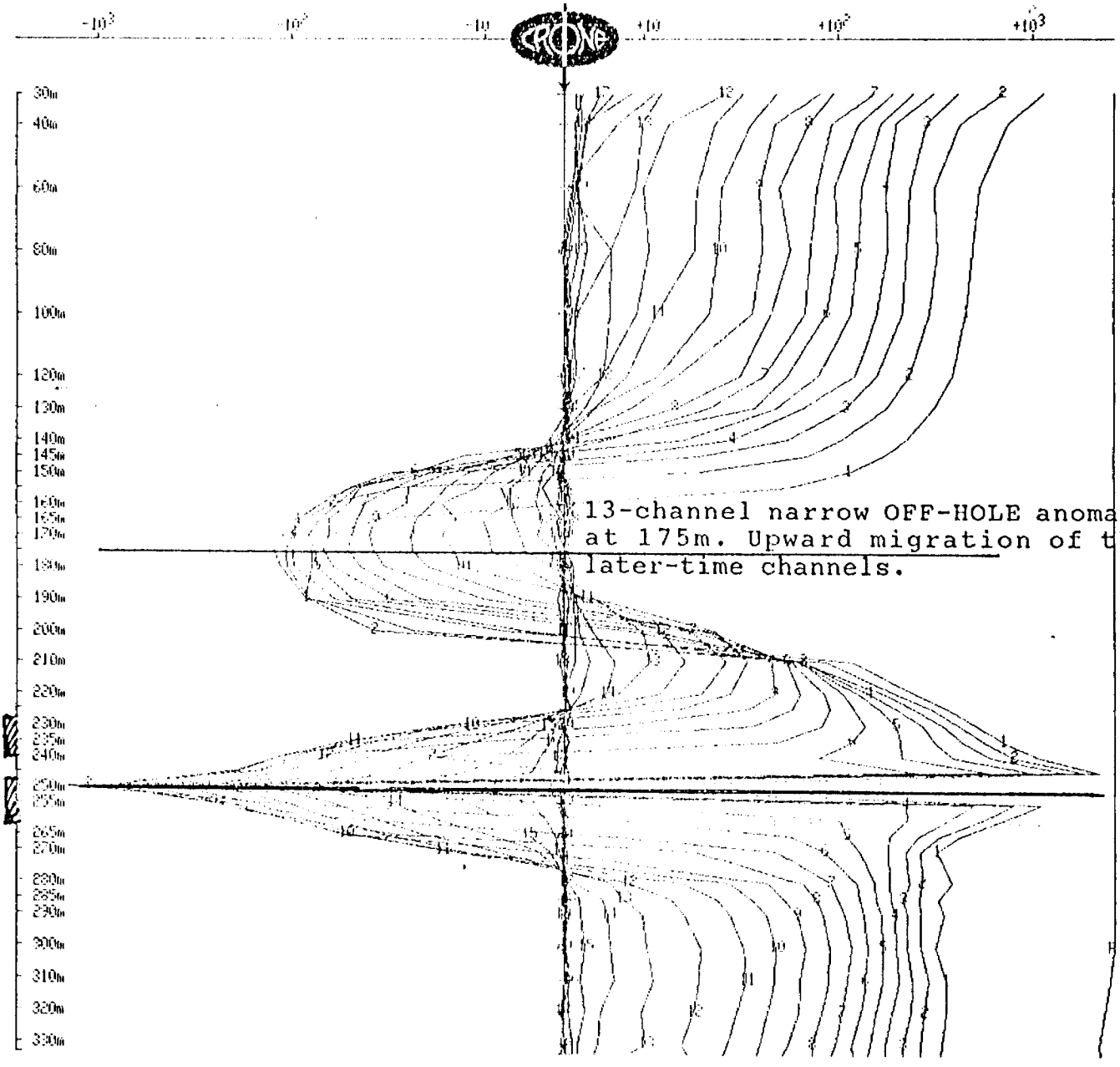
AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-11 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Time Base | : 16.66 ms | Date | : Jun 1, 1991 |
| Ramp Time | : 1.50 ms | File | : 9111T6.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP




13-channel narrow OFF-HOLE anomaly at 175m. Upward migration of the later-time channels.

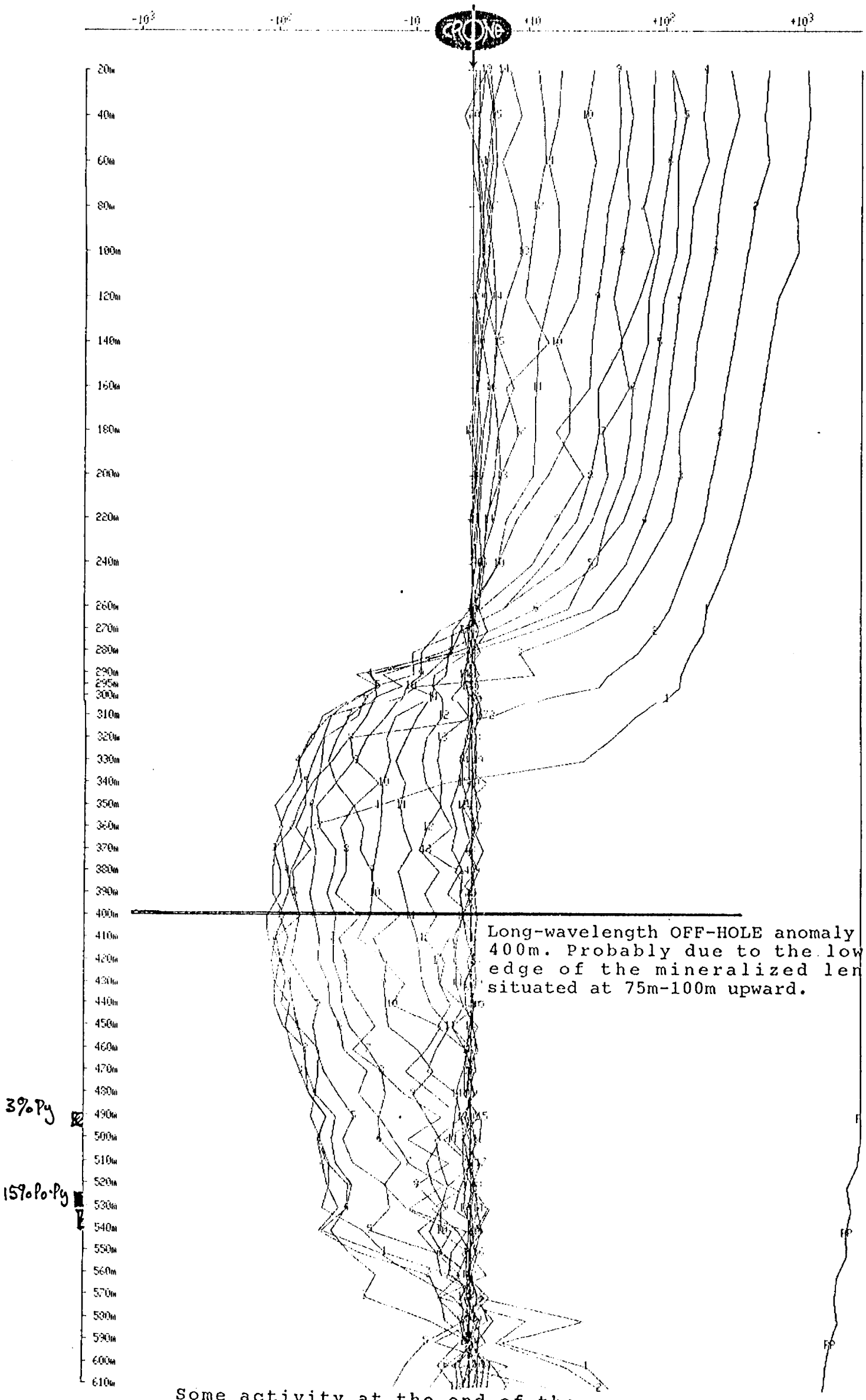
10% Py

Sharp near-edge response at 250m, coincident with a section of up to 10% sulphides.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-13 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Time Base | : 16.66 ms | Date | : Jun 1, 1991 |
| Ramp Time | : 1.50 ms | File | : 9113T6.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



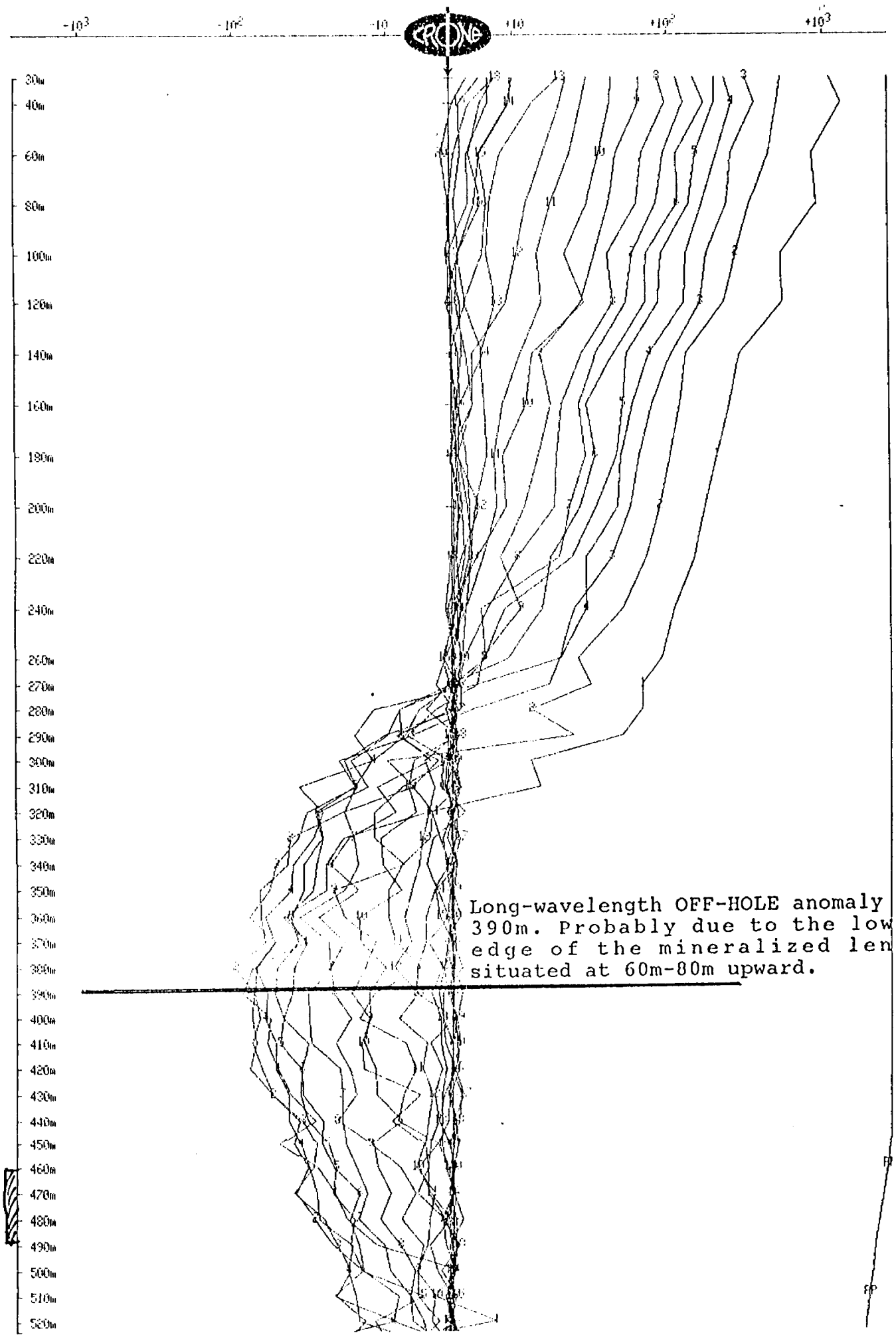

Long-wavelength OFF-HOLE anomaly at 400m. Probably due to the lower edge of the mineralized lens, situated at 75m-100m upward.

Some activity at the end of the hole. Conductive sulphides nearby?

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-14 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Time Base | : 16.66 ms | Date | : May 31, 1991 |
| Ramp Time | : 1.50 ms | File | : 9114T6.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

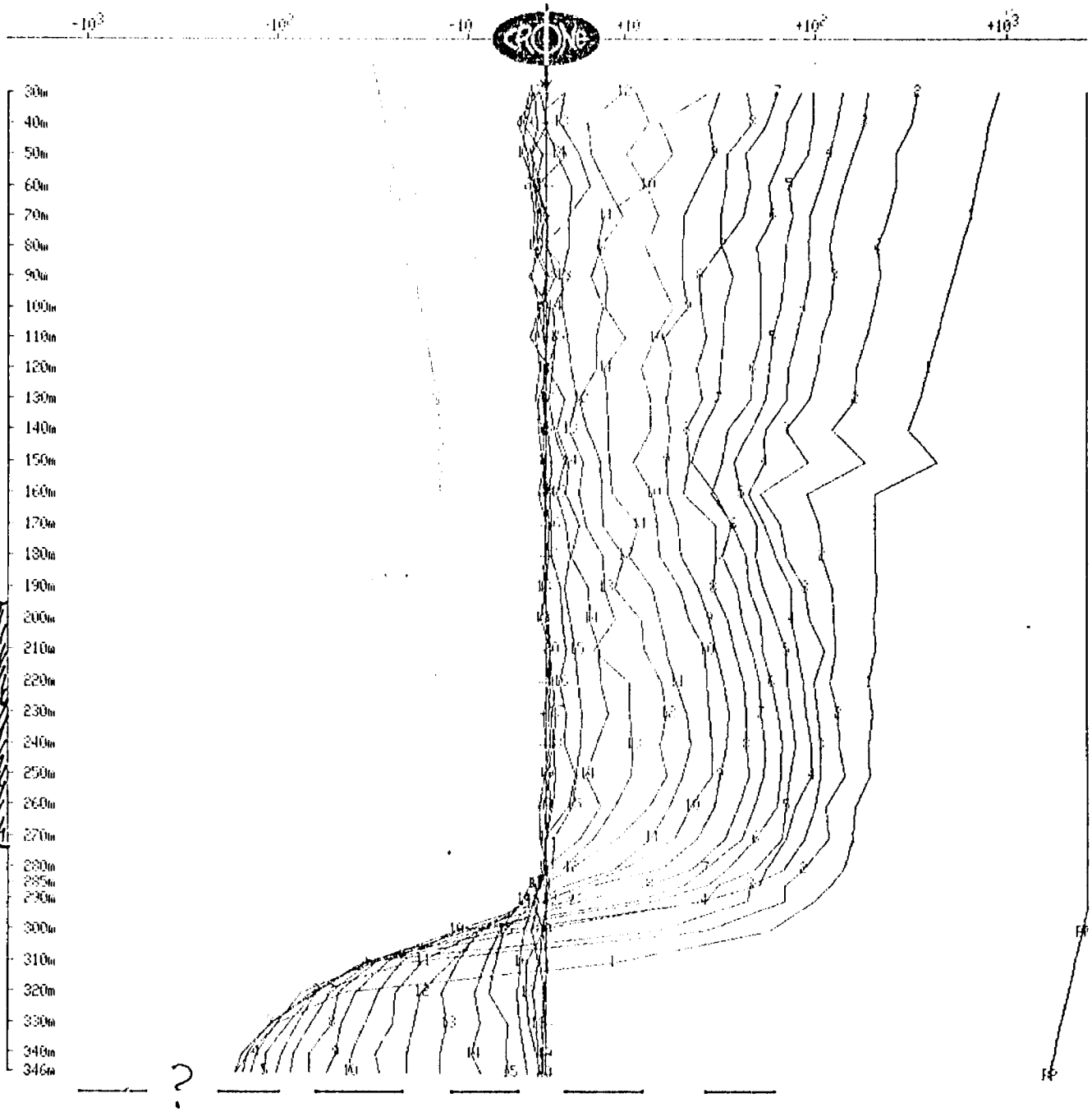



Long-wavelength OFF-HOLE anomaly at 390m. Probably due to the lower edge of the mineralized lens, situated at 60m-80m upward.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-15 |
| Grid | : ROBERTSON | Tx Loop | : 7 (COLLAR LOOP) |
| Time Base | : 16.66 ms | Date | : Aug 22, 1991 |
| Ramp Time | : 1.50 ms | File | : 9115T7.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

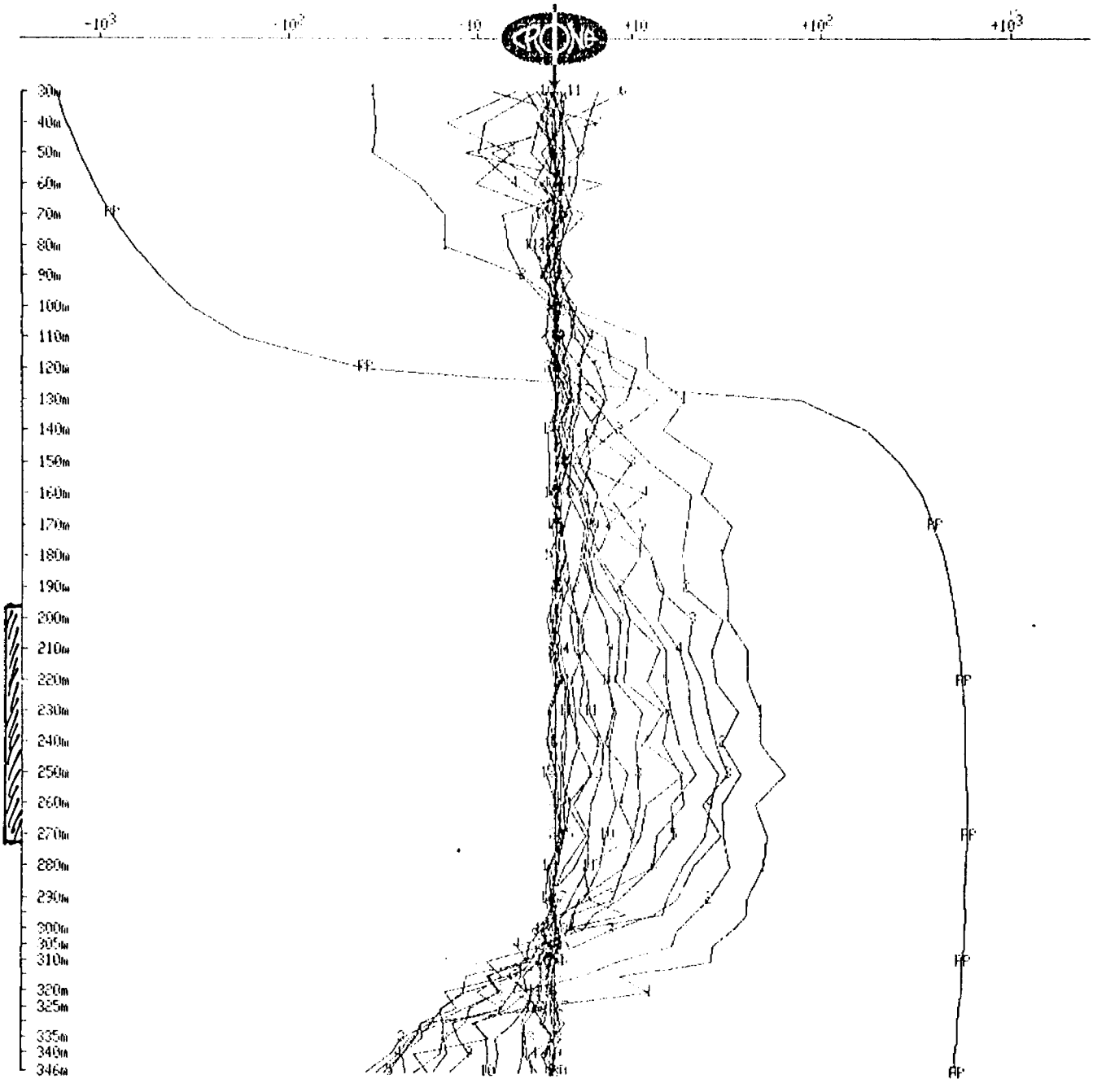



OFF-HOLE response partly defined at the end of the hole. The exact position of the anomaly center is unknown. Estimated distance to edge is about 40m-60m.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-15 |
| Grid | : ROBERTSON | Tx Loop | : 9 (EAST LOOP) |
| Time Base | : 16.66 ms | Date | : Sep 13, 1991 |
| Ramp Time | : 1.50 ms | File | : 9115T9.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP



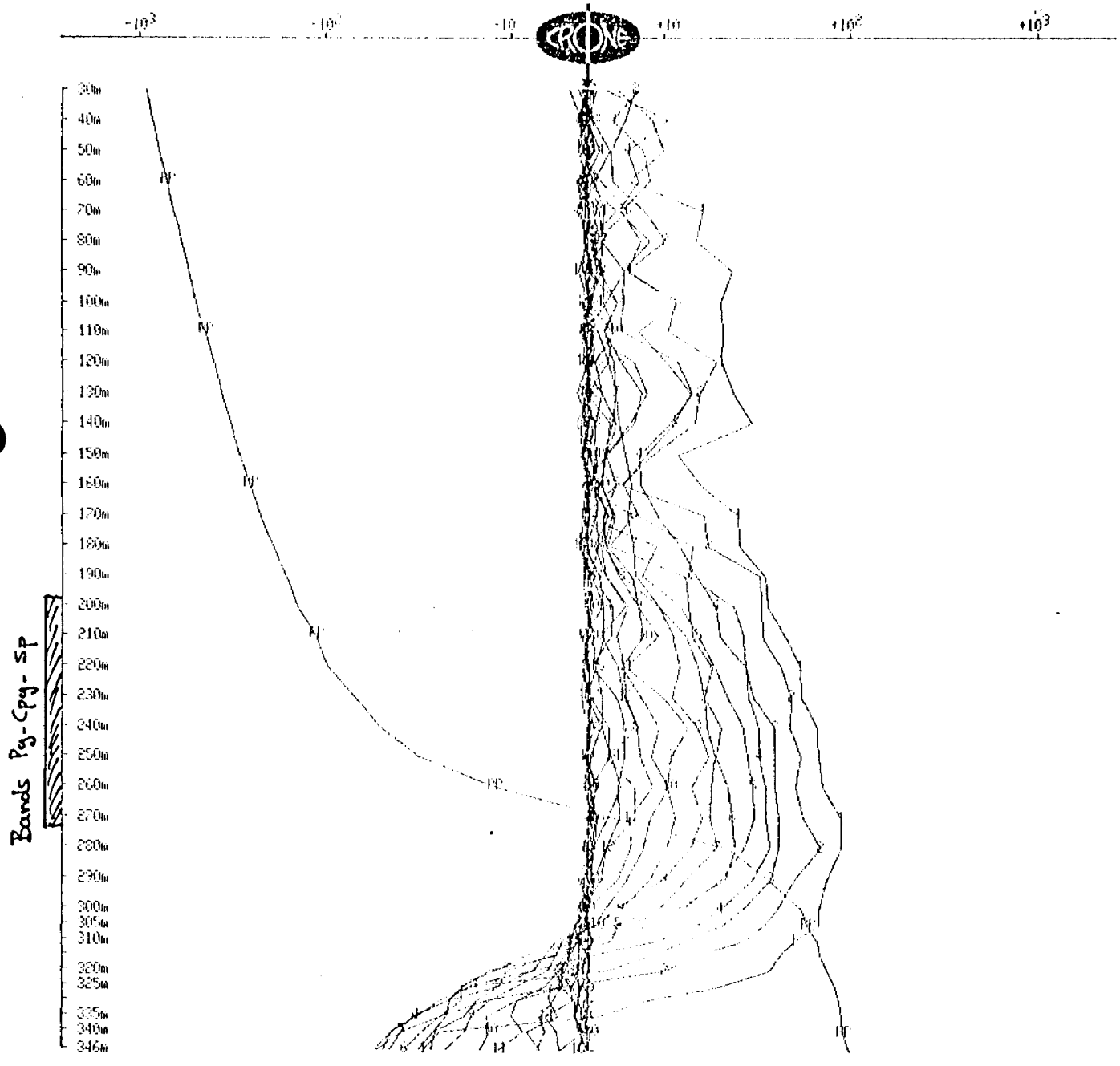

Bands Pg-Cmy-Sp

The anomaly amplitude has decreased with the east loop. Probably indicates a limited extent in that direction.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSIQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-15 |
| Grid | : ROBERTSON | Tx Loop | : 10 (DOWNDIP LOOP) |
| Time Base | : 16.66 ms | Date | : Sep 13, 1991 |
| Ramp Time | : 1.50 ms | File | : 9115T10.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

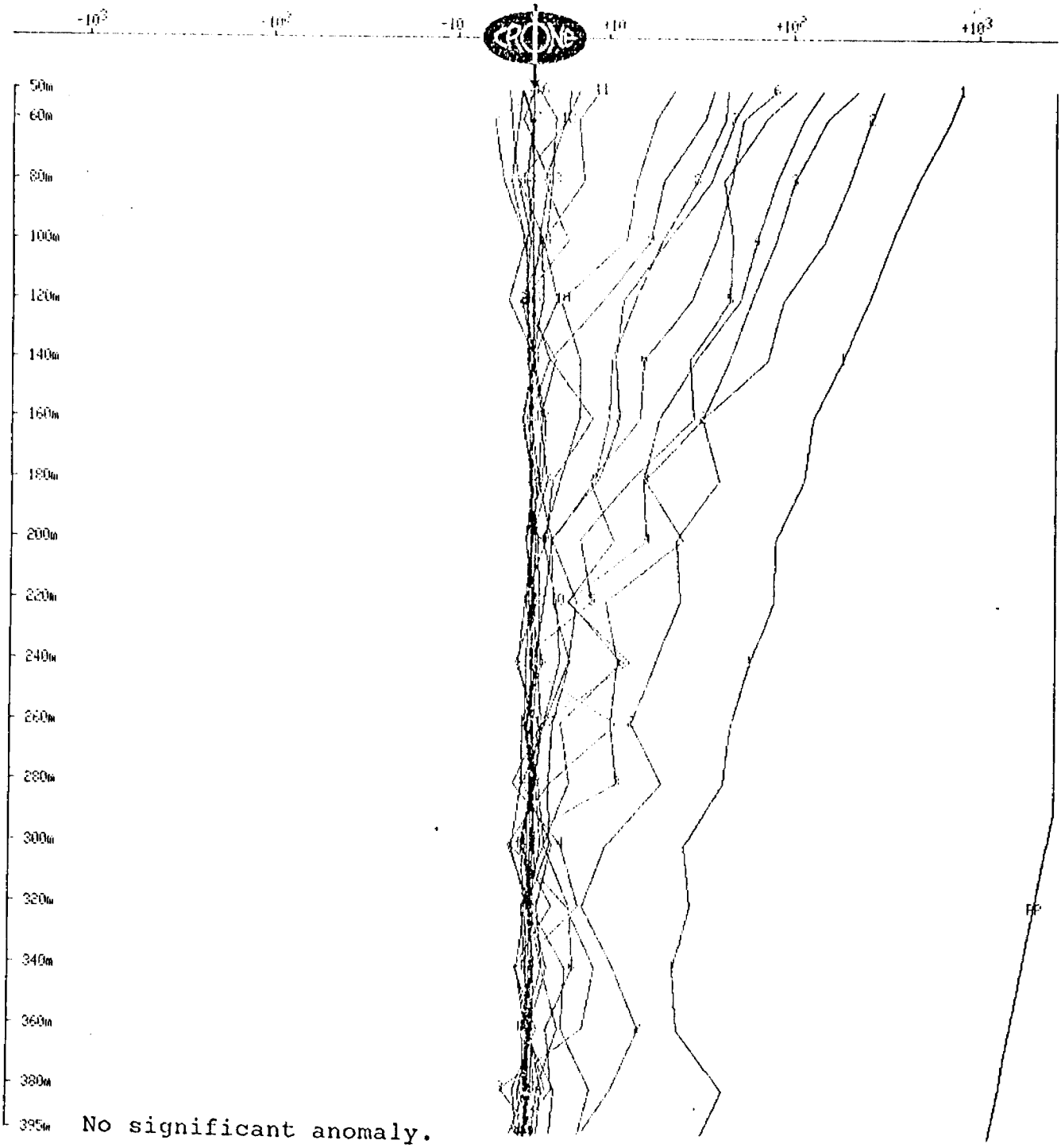



The OFF-HOLE anomaly persists with the downdip loop. The center of the response may in fact have moved downward somewhat. There probably exists a downward continuity to the sulphides.

# CRONE GEOPHYSICS & EXPLORATION LTD
# VAL D'OR GEOPHYSTQUE LTEE
# BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-17 |
| Grid | : ROBERTSON | Tx Loop | : 8 |
| Time Base | : 16.66 ms | Date | : Aug 22, 1991 |
| Ramp Time | : 1.50 ms | File | : 9117T8.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP

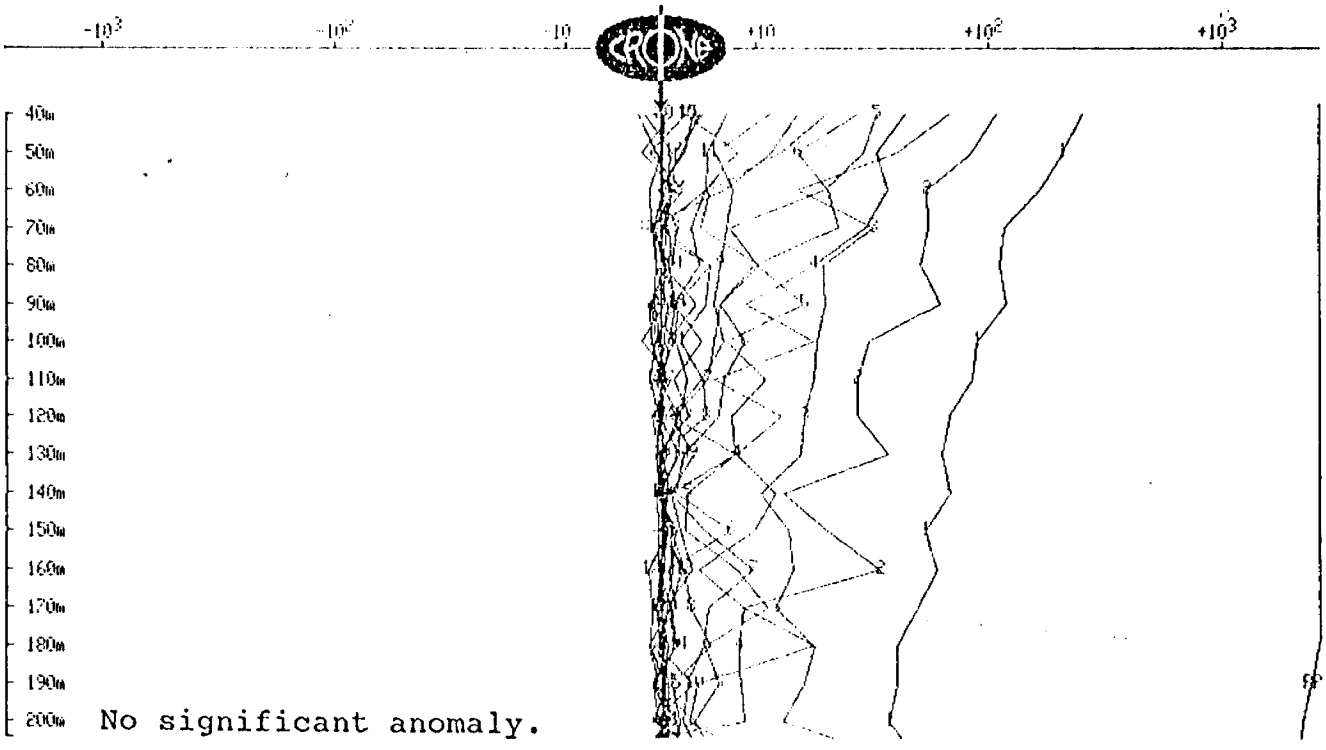



No significant anomaly.

CRONE GEOPHYSICS & EXPLORATION LTD
VAL D'OR GEOPHYSIQUE LTEE
BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-18 |
| Grid | : ROBERTSON | Tx Loop | : 8 |
| Time Base | : 16.66 ms | Date | : Aug 23, 1991 |
| Ramp Time | : 1.50 ms | File | : 9118T8.PEM |
| Scale | : 1:2000 | | |

AXIAL COMPONENT dBa/dt nanoTesla/sec - 20 channels and PP




No significant anomaly.

*REPORT FOR* : *QUEENSTON MINING INC.*

*SURVEY AREA* : *ROBERTSON PROJECT*

*SURVEY* : *BOREHOLE AND SURFACE PEM SURVEY*

*SURVEYED BY* : *VAL D'OR GEOPHYSICS*

*SURVEY PERIOD* : *WINTER 1991*

2.14629

*REPORT BY* : *D. WATSON, B.Sc., GEOPHYSICIST*

Qual. 2.2595

*REPORT DATE* : *JUNE 10, 1991*



CRONE GEOPHYSICS & EXPLORATION LTD.

| | |
|---|---|
| Report For | : Queenston Mining Inc. |
| Survey Area | : Robertson Project |
| Survey | : Borehole and Surface PEM Survey |
| Surveyed By | : Val d'Or Geophysics |
| Survey Period | : Winter 1991 |
| Report By | : D. Watson, B.Sc., Geophysicist |
| Report Date | : June 10, 1991 |

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## GENERAL INFORMATION:

This report covers the results of both the surface and borehole pulse EM surveys carried out on the Robertson Project near Matchewan Ontario during the winter of 1991. Preliminary interpretations were done by Gerard Lambert. His report covered the surface PEM survey and the results of holes 90-2, 90-4 and 91-5. In addition to these holes this report includes a discussion of the PEM results of holes 91-6, 91-7, 91-8, 91-9, 91-10, 91-11 91-13 and 91-14.

## Discussion of the results:

### Section 0+00 - Hole 91-6

This hole was read from two transmit loops (2 & 3) which are 200m x 200m. An **Off-hole** anomaly showing on both profiles occurs at 110 metres indicating a small conductor 10 metres above the hole. Also an **In-hole** response which correlates with a sulphide rich horizon occurs at 130 metres. The east loop shows a broad **Off-hole** anomaly peaking at 135 metres indicating a larger conductor 130 metres to the east. A weak surface conductor was picked up at 1+00W on line 0+00. This conductor would correspond to the small up-dip conductor at 110 metres.

## Section 1+00E - Hole 90-2, 91-11

Hole 90-2 was logged from three of strike loops with similar results in all three logs which show two conductors at 195m and 205 metres and indicating two conductors within 25 metres of the hole. Hole 91-11 drilled below 91-2, shows again two anomalies but more widely separated, one at 170 metres **Off-hole** and the one at 250 metres is an edge anomaly with the conductor extending to the east.

## Section 2+00E - Hole 91-5, 91-10

In hole, 91-5 an **In-hole** response occurs at approximately 230 metres and corresponds with the sulphide zone which was logged between 738-4' to 799' (225m - 243m). A weak **Off-hole** response is noticed near the bottom of the hole at 340 metres. Hole 91-10 drilled behind 91-5 shows a strong **Off-hole** anomaly at 300m indicating a conductor 50 metres off the hole and is probably the bottom of the **In-hole** conductor picked up in hole 91.5. **In-hole** responses occur at 390 metres and 415 metres and correspond with sulphide sections logged in the hole. The **Off-hole** response detected at the bottom of hole 91-5 would indicate the top of the lower sulphide zone.

## Section 2+50E - Holes 90-4 and 91-13

Hole 90-4 drilled down-dip intersected the conductor at 240 metres and near the east edge of the conductor. Hole 91-13 drilled the opposite way shows a broad "tear-drop" shaped anomaly at the bottom of the hole. The anomaly is considered to be actually two **Off-hole** responses, one peaking at approximately 370 metres and the other at 480 metres. The anomaly at 370 metres is interpreted to be the bottom end (100 metres up-dip) of the conductor intersected in hole 90-4. This then unfortunately would terminate the massive sulphide body. The anomaly at 480 metres relects the lower sulphide zone to the west.

## Section 3+00E - Holes 91-7 and 91-8

A reverse Off-hole anomaly occurs at 80 metres in hole 91-7 and a sharp high conductivity Off-hole anomaly occurs at 225 metres in hole 91-8. Both anomalies indicates a conductor to the west approximately 40 metres from hole 91-7 and 10 metres from 91-8. This would outline the east edge of the massive sulphide body.

## Section 4+00E - Holes 91-9, 91-14

Hole 91-9 shows a strong Off-hole anomaly at 280 metres again mapping out the east edge of the massive sulphide body, 80 metres to the west of the hole. The response pattern in hole 91-14 is similar to that obtained in hole 91-13 and the anomaly is probably reflecting both the upper and lower sulphide zones at least 120 metres from the hole (up and to the west).

## SUMMARY;

The borehole PEM results have defined three separate conductive bodies. The more highly conductive one is that which hosts the higher Cu-Zn values and this zone appears to have been defined as having a strike extent of approximately 150 metres and a depth extent of above 200 metres. (i.e. bottoms at 230 metres). The chlorite alteration zone appears to also be conductive and has been defined by the PEM survey. Holes 91-13 and 91-14 have cut the zones off to the east and below section 200E. Another small conductor also occurs above hole 91-6. It does not appear to have much strike extent and therefore would not warrant drilling.

Since there was little surface PEM response I have to conclude that the conductor does not have a depth extent much greater the 200 metres. If it had a continuous down-dip extent greater than 200 metres a much better surface PEM expression would have been evident. I would recommend exploring along strike to the west of line 0+00 but at depths greater than 200 metres.

Respectfully submitted,

Dave Watson, B.Sc.,
Geophysicist

# I. SYSTEM DESCRIPTION

## Overview

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".

## Ramp Times

The term "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.

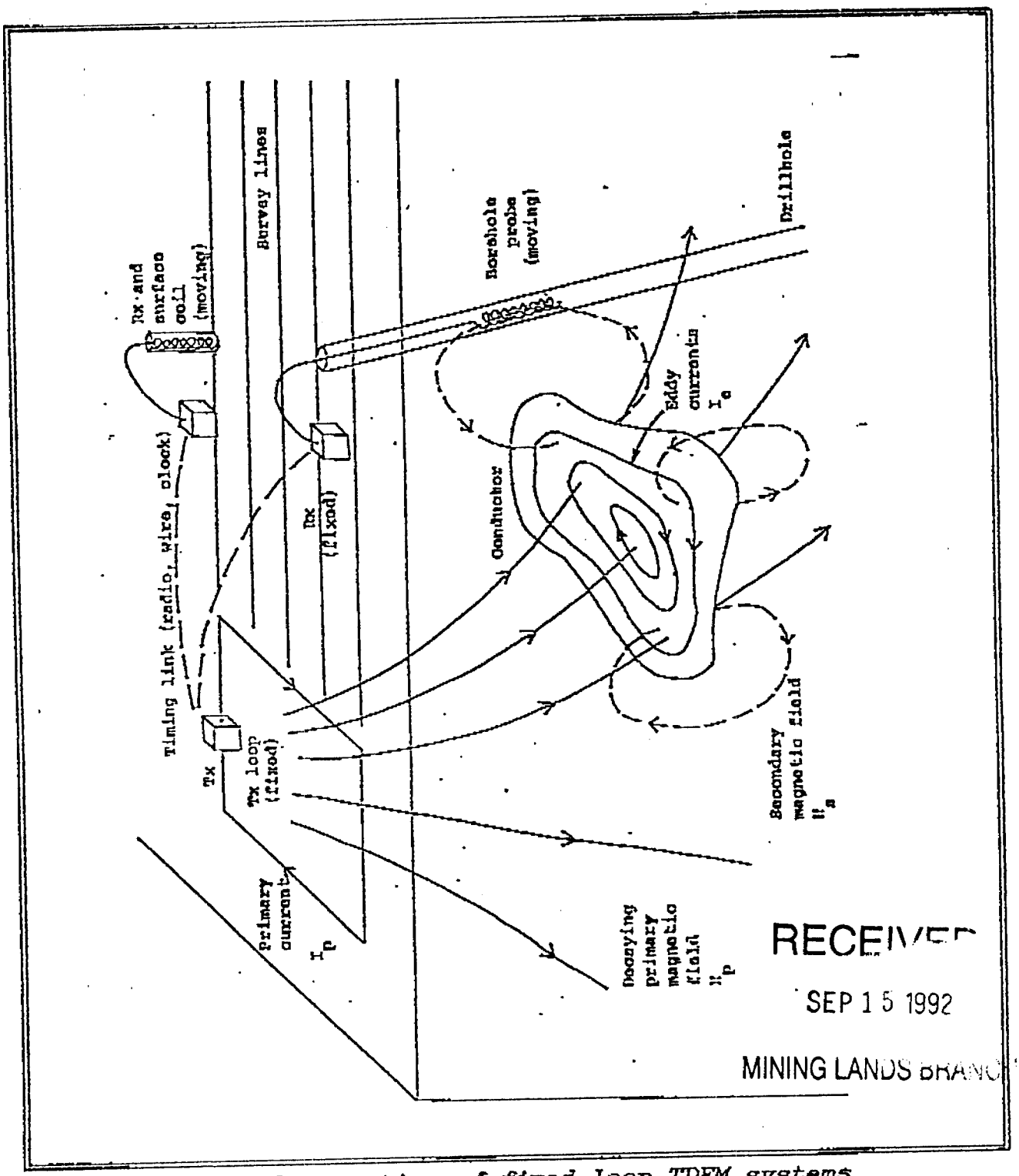



*FIGURE 1: Typical operation of fixed loop TDEM systems.*
*A large transmit loop is placed to best couple with conductive bodies. As the current in the transmit loop is shut off, eddy currents are induced in the conductor. When the current is zero the secondary field begins to decay, and it is this rate of decay which is measured by the borehole probe or the surface coil.*

## Time Bases

The "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 |
| | 30.00ms |

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.

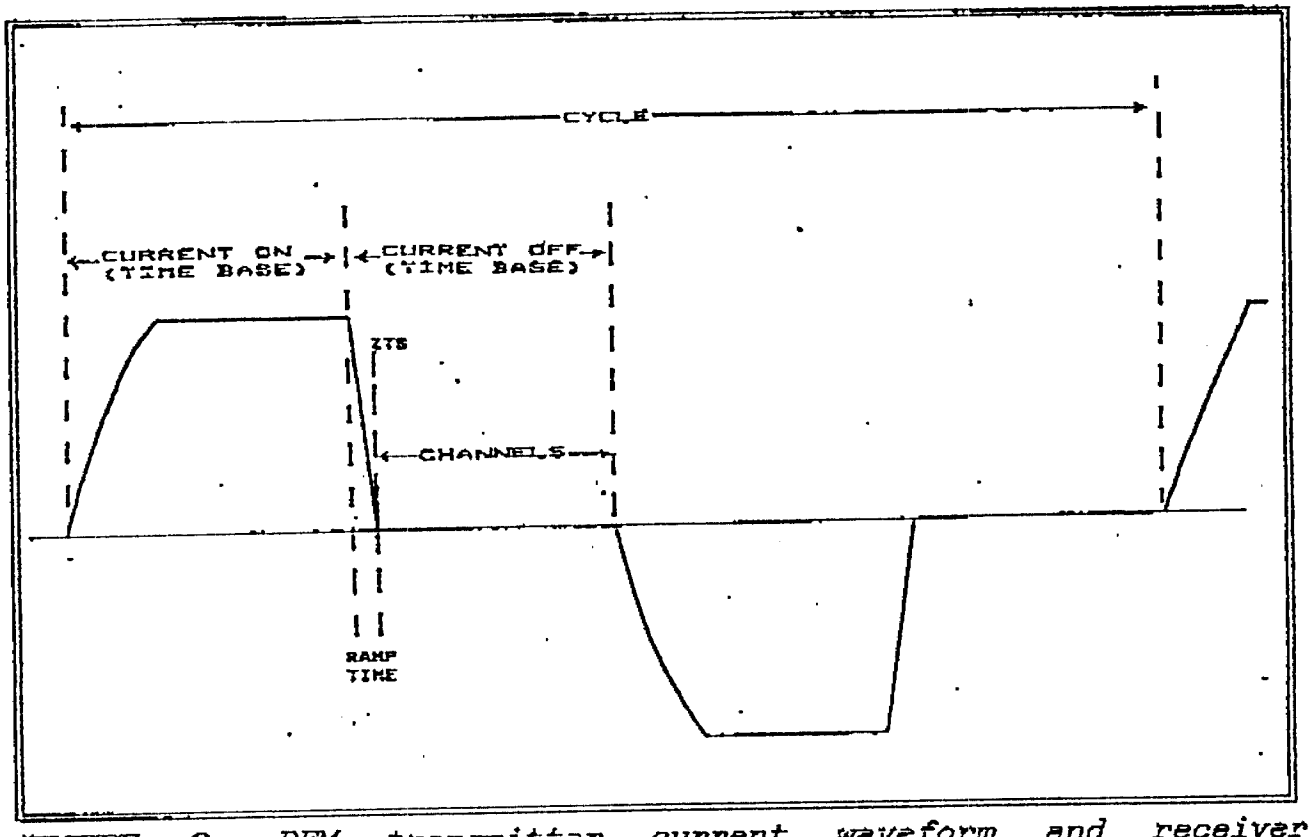



*FIGURE 2: PEM transmitter current waveform and receiver measurements.*

## 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.

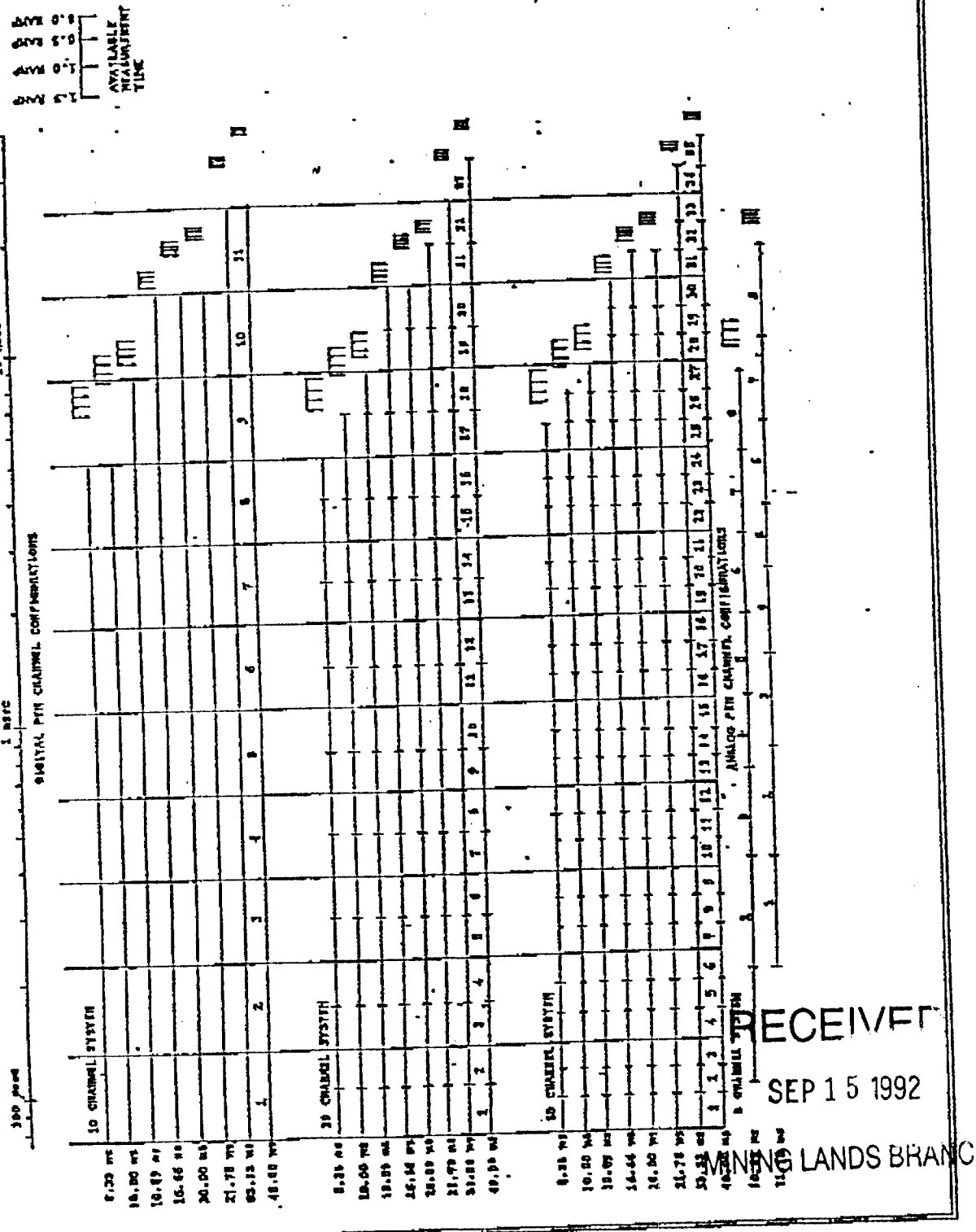



*FIGURE 3: Receiver channel configuration.*

# III. 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 operates with an input voltage from 24v to 120v. A 20amp/hr 24v battery can be used for low power surveys where portability is important. Higher power surveys use a motor generator and voltage regulator to provide input voltage up to 120v. The generator is always connected to a voltage regulator which controls and filters the output. The equipment now in use for most surveys is a variable voltage regulator and a 4.5hp, 2000w motor generator.

**Specifications: 2000w PEM Motor Generator**

- 4.5 hp Wisconsin, 4 cycle engine
- belt drive to D.C. alternator
- cable output to regulator
- maximum output: 120v, 30amp
- fuse type overload protection
- steel frame
- external gas tank
- unit weight: 33kg
- optional packframe
- wooden shipping box
- shipping weight: 47kg

**Specifications: PEM Variable Voltage Regulator**

- selectable voltage between 24v and 120v
- 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: 2000w PEM Transmitter**

- time bases: 10.89ms, 21.79ms, 8.33ms, 16.66ms, 33.33ms, 10ms, 20ms, 30ms
- ramp times: 0.5ms, 1.0ms, 1.5ms
- operating voltage: 24v to 120v
- 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 optional 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 veriety 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 peckframe
- unit weight 15kg; shipping weight 23kg
- 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 42 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 4.5µsec
- time bases: 10.89ms, 21.79ms, 8.33ms, 16.66ms, 33.33ms, 10ms, 20ms, and 30ms
- ramp time selectable in 4.5µsec 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

GÉRARD LAMBERT
GÉOSCIENCES
Société de consultation et de génie-conseil en géophysique.

Interpretation comments on the downhole Pulse E.M. results, Joutel Resources, Robertson Township.



BOREHOLE PULSE E.M. RESULTS

- The Pulse E.M. in Hole 90-2 gave a very sharp, and strong off-hole response indicating that the hole passes at a very short (almost zero) distance from the near edge of a highly conductive metallic tabular plate. Knowing from the MaxMin data that the conductor exists at surface on L100E, I interpret that the edge in question must be the lower-western edge of a southerly-dipping conductor which plunges to the East.

On the attached north-south section (1+00E) showing hole 90-2, I have drawn the trace of the hole and the position of the MaxMin conductor. The position of the interpreted off-hole conductor clearly demonstrates the 70° southerly dip of the conductor.

- As for hole 90-4, the Pulse E.M. profiles clearly show an in-hole response (the profiles are reversed because the hole is going toward the loop, but that's O.K.) at 235-240m, in coincidence with the presence of good sulphide mineralisation. The fairly long wavelength, the number of channels responding (17-18) and the large amplitude of the response all point to a fair-size conductor of "good" conductance (i.e. semi-massive to massive sulphides), the near-central part of which was pierced by this hole. The late-time channels give an off-hole signature, thus indicating a substantial inward migration of the late currents, which may in turn suggest an edge not too far (30m-50m?).

679, avenue Murdoch, Rouyn-Noranda (Québec) Canada J9X 1H7
Téléphone: (819) 762-3182 Télécopieur: (819) 762-5364

On section 2+50E attached, one can see the consistent 70° dip to the south, as one joins the axis of the MaxMin conductor near surface with the intersection point in hole 90-4.

A small amplitude and short-wavelength spike at 185m in hole 90-4 suggest the presence of a small pocket of conductive sulphides which do not appear to extend anywhere.

- Hole 90-5, drilled just to the East of hole 90-2 has evidently intersected strongly conductive metallic mineralization at about 220m, because we observe a well-defined 18-channel In-Hole P.E.M. anomaly at that point. The geophysical response indicates that the hole has intersected an area near the central core of the conductive plate and its wavelength certainly suggests that the plate in question has respectable dimensions (hundreds of feet by hundreds of feet). A second anomaly, at about 340m in hole 90-5, is a minor negative pseudo-off-hole response indicating the presence nearby of a small-size poorly-conductive sulphide pod of limited lateral extent.



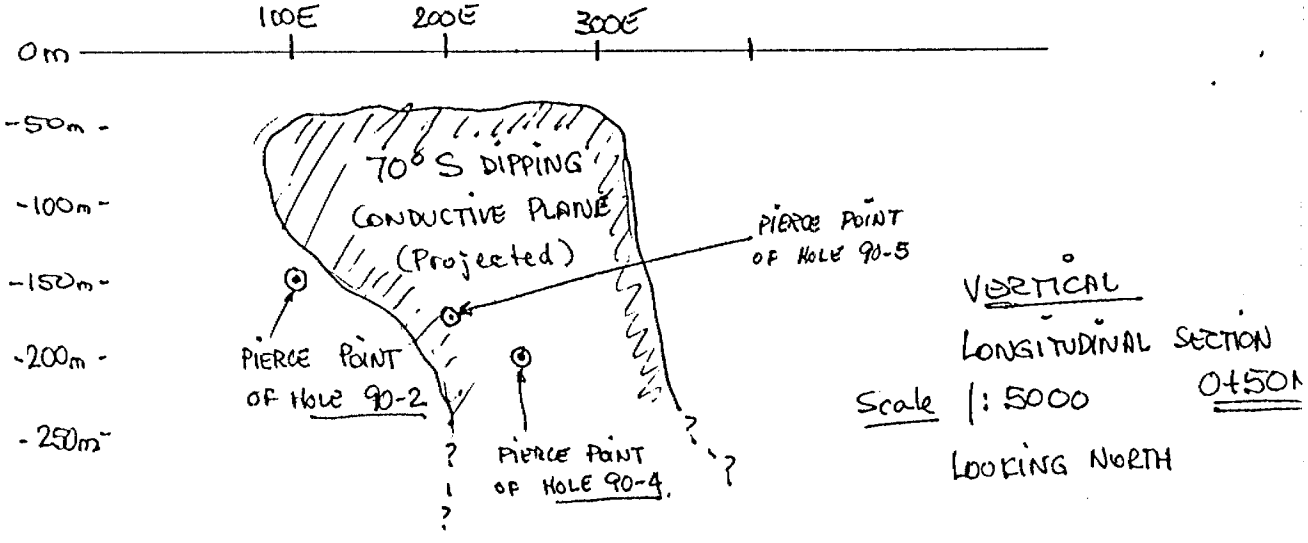
From the downhole geophysical results obtaind thus far, it makes no doubt that holes 90-4 and 90-5 intersect a major (in terms of conductivity-thickness and surface) conductive plane. There remain a substantial volume of unexplored ground in all directions from holes 90-4 and 90-5 (see longitudinal section on sketch, next page).

## Survey Description

The DEEPEM technique is a fixed-transmitter-loop type of E.M. method, whereby a single-turn transmit loop is laid out in the field, with its position and dimensions set so as to energize properly the volume of rock to be investigated.
A square wave current is injected into the transmit loop by a motor-generator-powered transmitter, thus creating a time-domain primary E.M. field. Large Eddy currents are induced in conductive material each time the current rises or drops off. A time-domain receiver is used to measure the horizontal (along the line) (X) and vertical (Z) components of the magnetic fields associated with these Eddy currents. The decay time of these fields, as well as their relative amplitudes are usually diagnostic of the conductor types and their physical parametres (depth, geometry, ot). We will discuss the interpretation aspect later in this report.
readings were taken every 50 metres.
The data is presented in the form of profiles of the amplitudes of the 20 channels, plotted at a logarithmic scale.
The loop layout is shown on the maps appended to this report.

## Results and interpretation

Normally, a sub-vertical tabular conductor's DEEPEM signature is expressed by a positive peak of the horizontal component profile and an inflection or a "crossover" in the vertical component profile, changing from negative to positive directly above the conductor's upper edge, as the survey progresses along a direction going away from the loop's near wire. The deeper the conductor, the longer the wavelength of the responses. Also, the rate of decay from the early-time channels to the late-time channels is normally a good estimator for the conductance of the causative body. The slower the decay rate, the better the conductance.

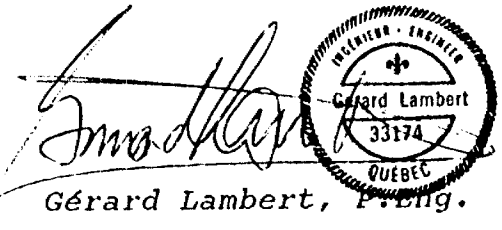



*SURFACE PULSE E.M. RESULTS*

*Grid lines 300W to 400E inclusive (lines every 100m) were surveyed from 250S to 500N using the DEEPEM technique in order to map any conductive material which would have been missed by the MaxMin survey of 1989. Unfortunately the DEEPEM results are deceiving. No new conductors were mapped. In fact the survey barely outlined the conductor that had been traced as a result of the MaxMin survey and which constitutes the know sulphides. Part of the reason for this may lie in the poor coupling between the conductor and the transmit loop's primary field. It must be kept in mind that the conductor is overlain by 25 to 40 meters of conductive overburden and that it is barely visible on the MaxMin profiles. The DEEPEM profiles (both the Z and X components) are show on the map accompanying this note.*

*In summary, I recommend that the next drill holes be collared so that they aim at investigating upper part of the conductor, between the levels -40m and -150m, every 75 meters between 100E. and 300E. I feel that substantial tonnage (possibly 500,000 tonnes) can be built just in that volume of rock.*

*A second pass, aiming at intersecting the conductor just East (maybe 70m-80m) of hole 90-4 should be made. Then a deeper level should be investigated (between -150m and -250m vertically). Systematic drilling complemented with the use of the downhole Pulse E.M. method should adequately test the economic value of the conductive sulphide body being investigated.*




*Rouyn Noranda, Québec*

*February 13 1991*

*Gérard Lambert, P.Eng.*

*Consulting Geophysicist*

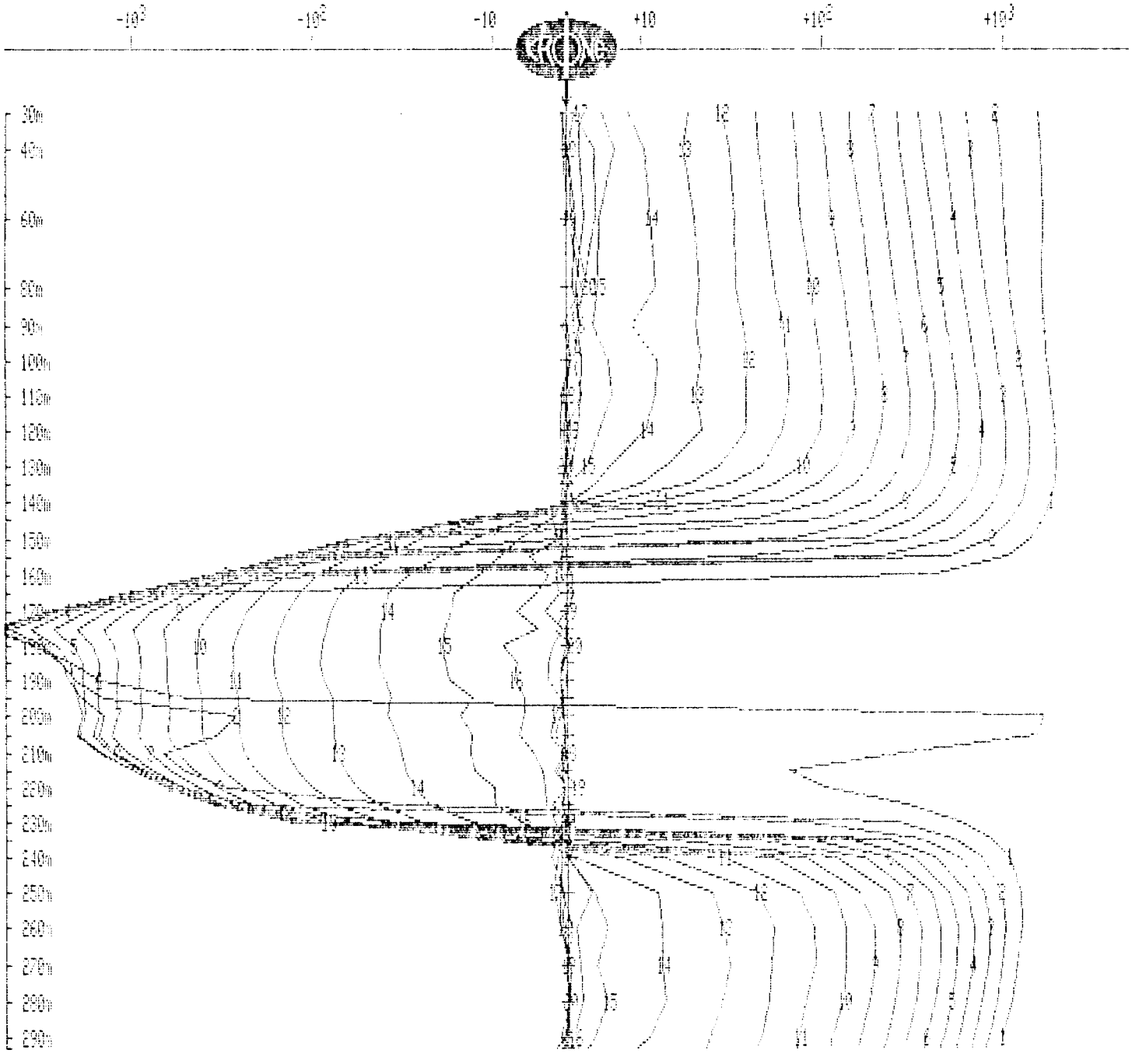
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN-90-2 |
| Grid | : RADISSON | Tx Loop | : 1 |
| Date | : Jan 14, 1990 | File name | : RBN902T1.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



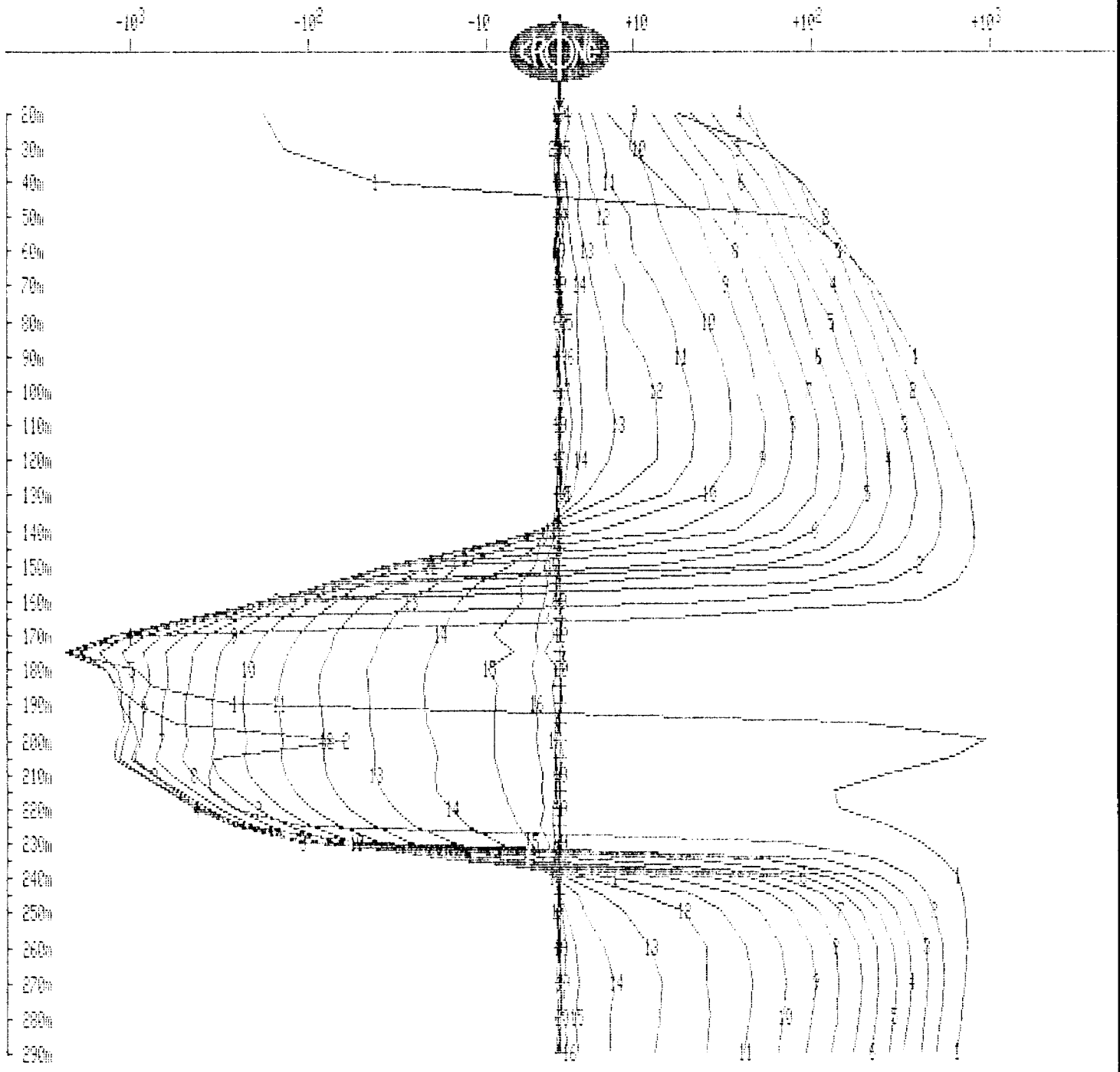
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 90-2 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 16, 1991 | File name | : 902T2.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



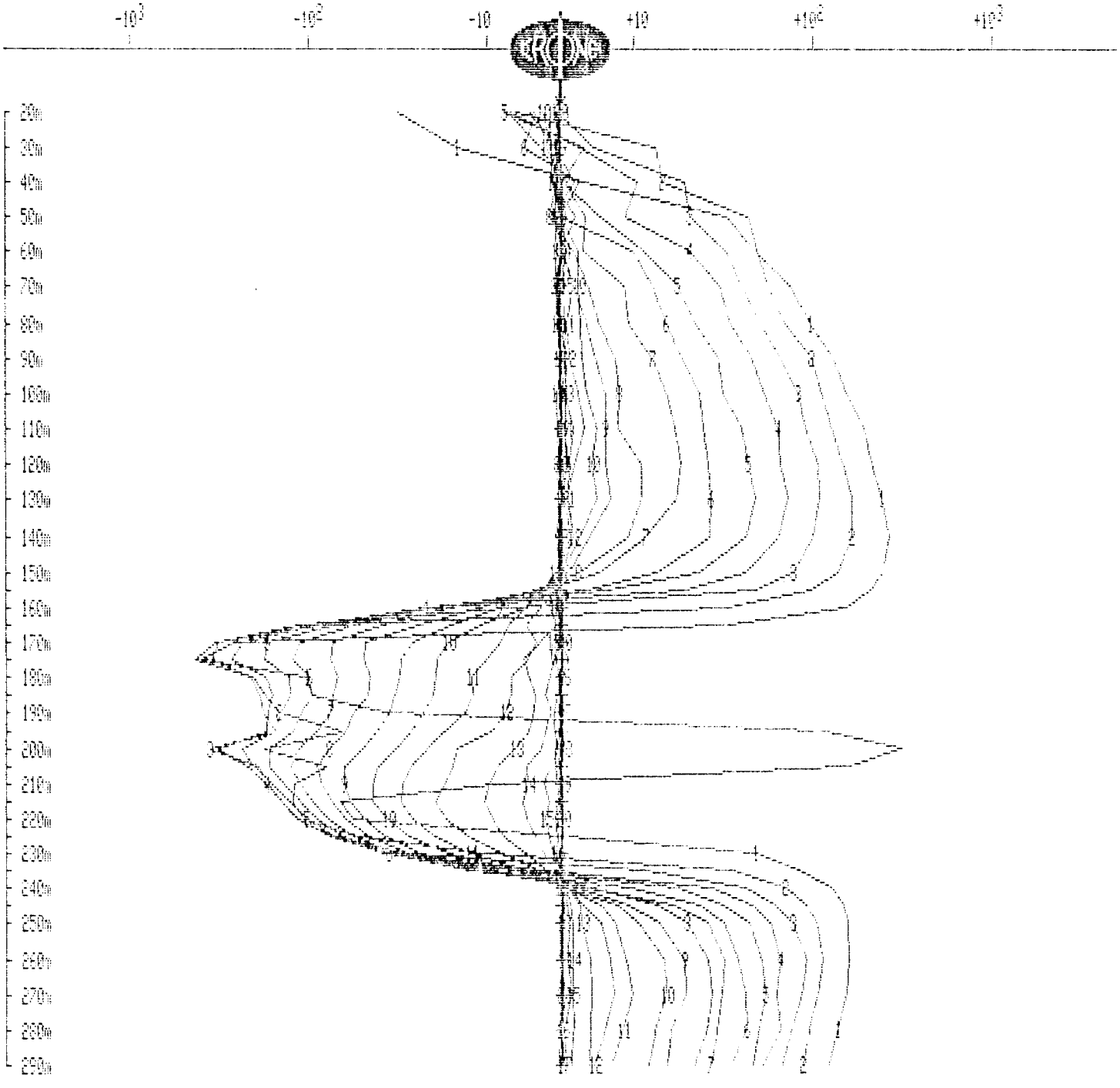
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 90-2 |
| Grid | : RADISSON | Tx Loop | : 3 |
| Date | : Mar 17, 1991 | File name | : 902T3.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



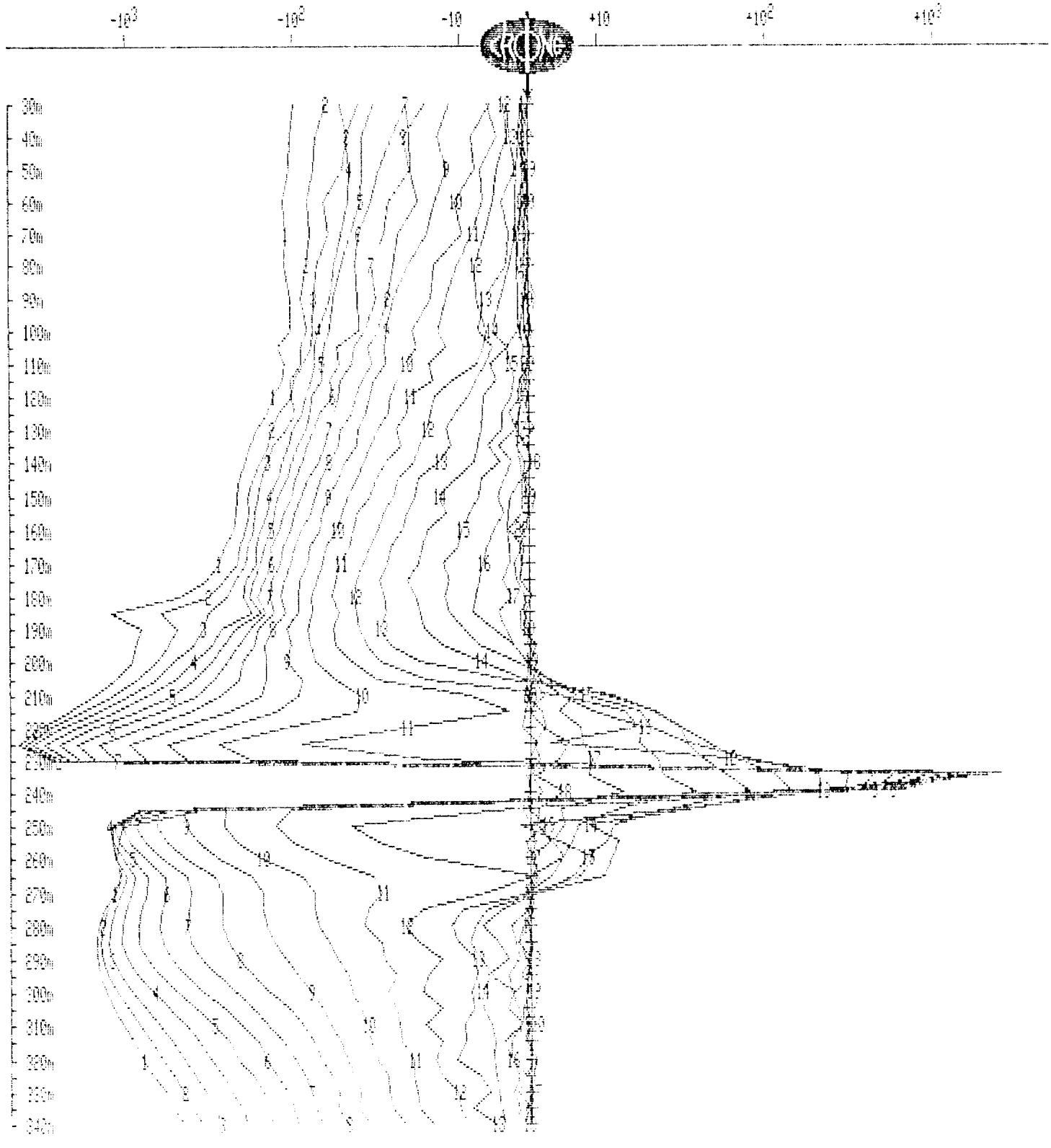
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN-90-4 |
| Grid | : RADISSON | Tx Loop | : 1 |
| Date | : Jan 15, 1990 | File name | : RBN904T1.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



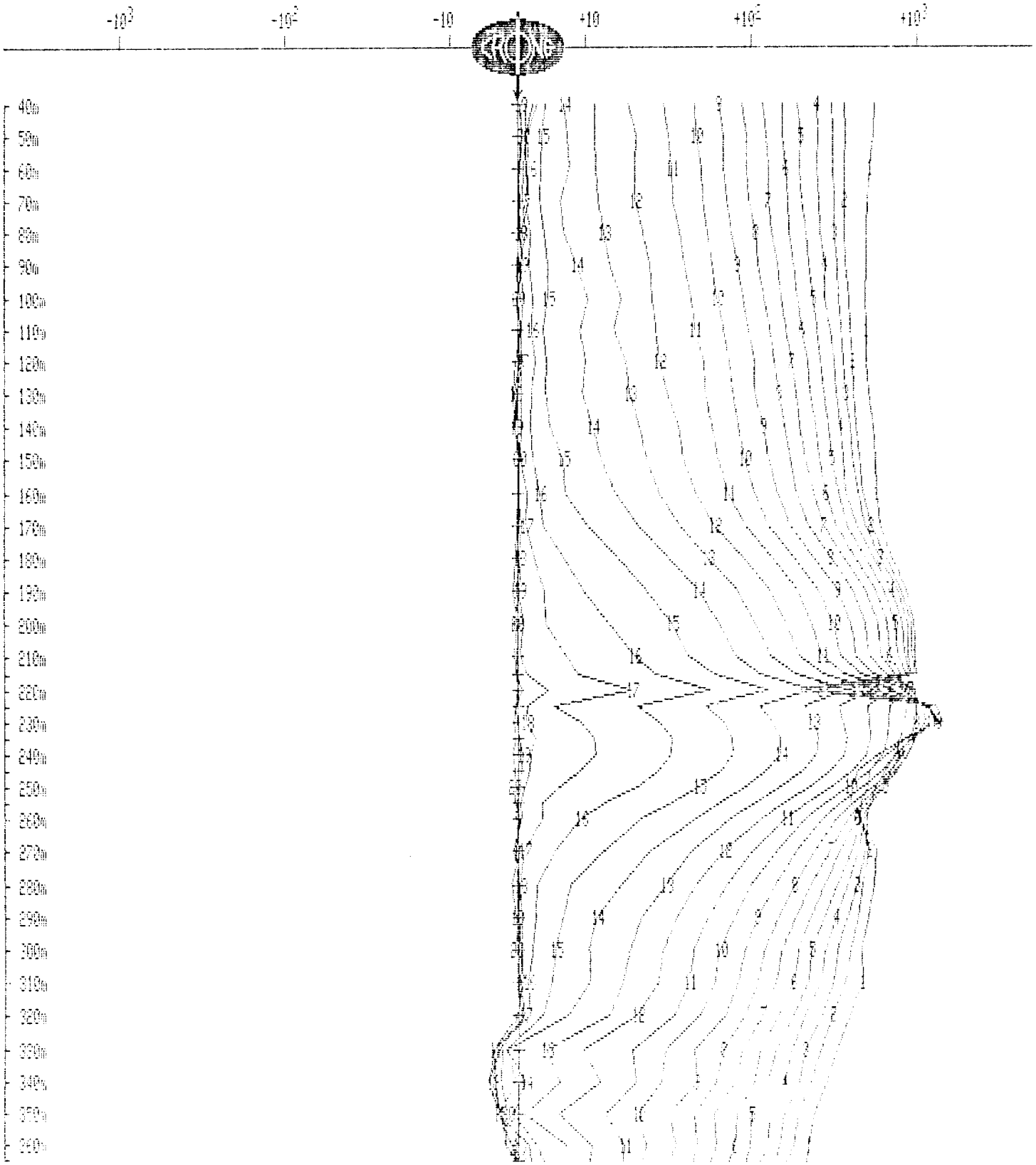
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Hole | : RBN9005 |
| Grid | : RADISSON | Tx Loop | : 1 |
| Date | : Feb 11, 1991 | File name | : 9005T1.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



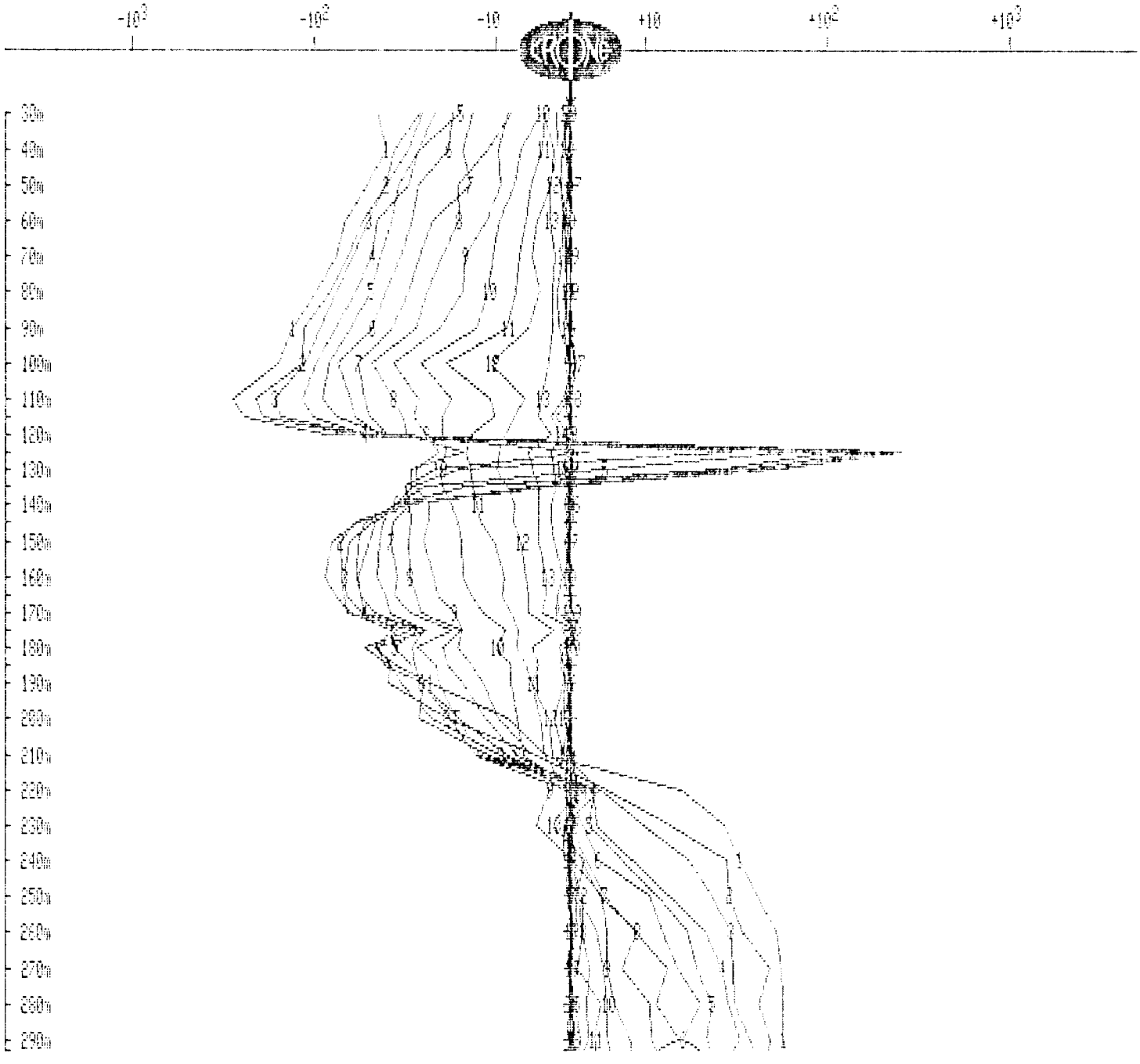
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 91-6 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 16, 1991 | File name | : 916T2.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



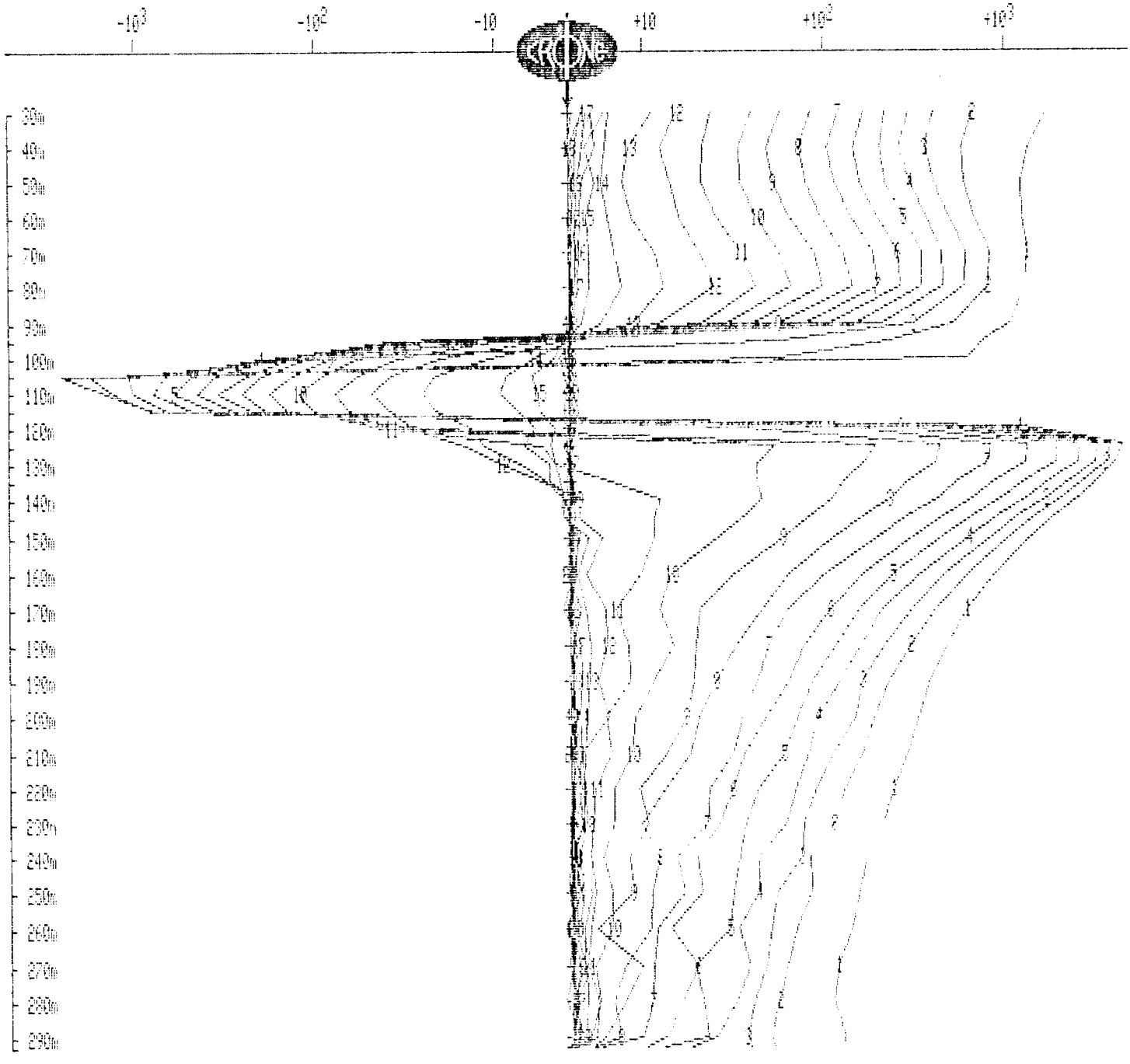
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEESTON | Hole | : 91-6 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 16, 1991 | File name | : 916T3.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



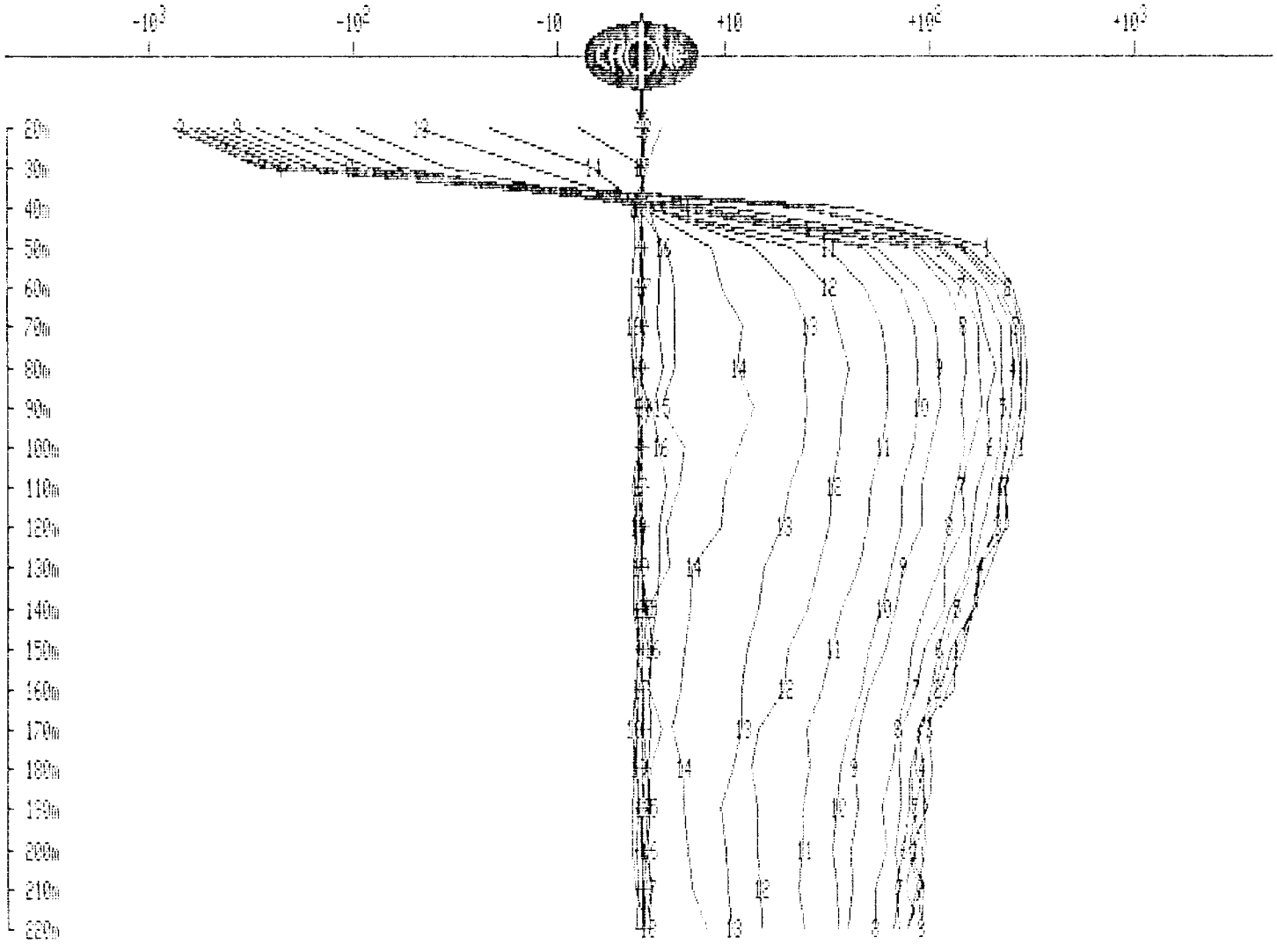
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-7 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 15, 1991 | File name | : 917T2.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



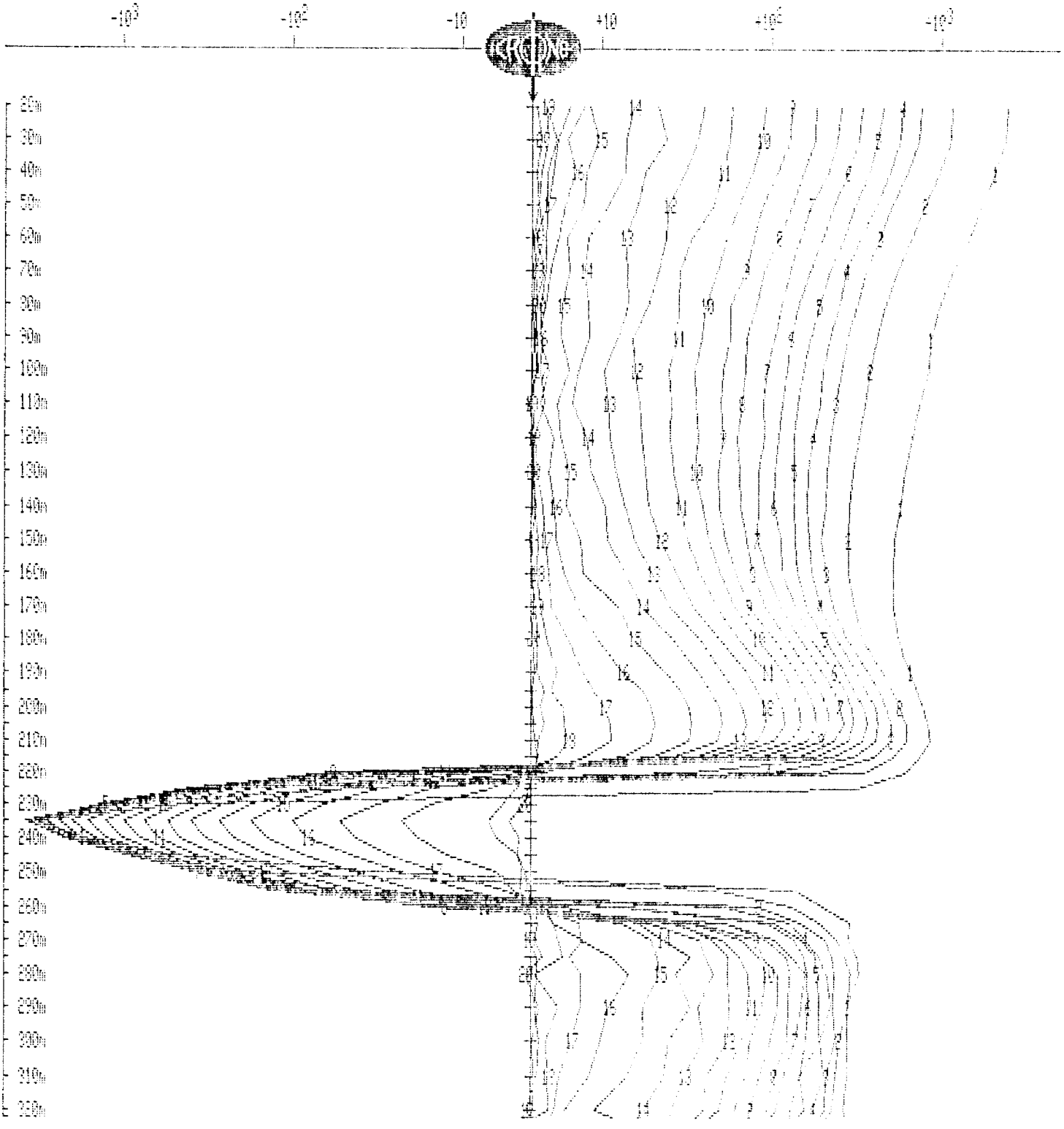
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-8 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 14, 1991 | File name | : 918T2.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



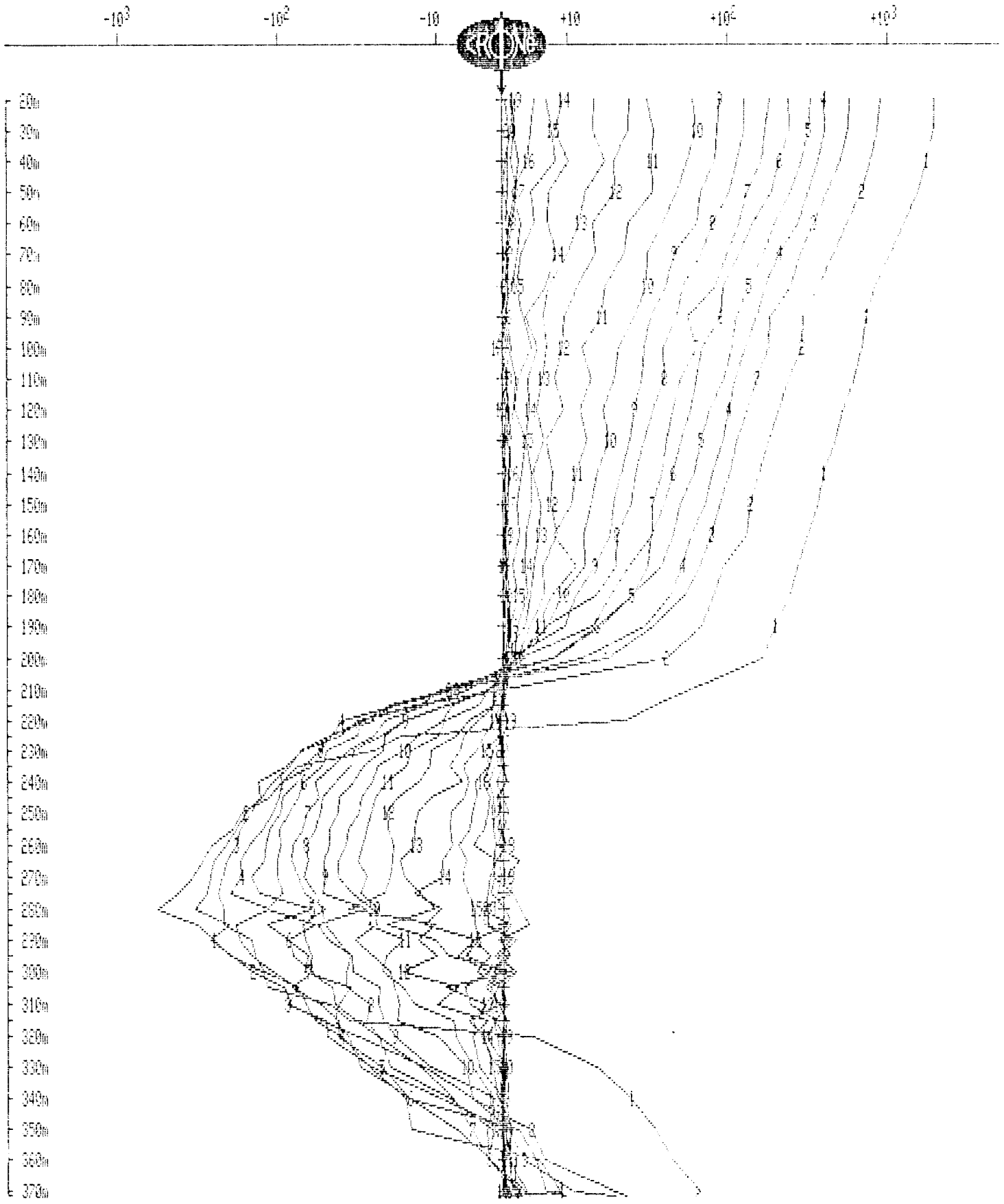
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-9 |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Mar 14, 1991 | File name | : 919T2.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



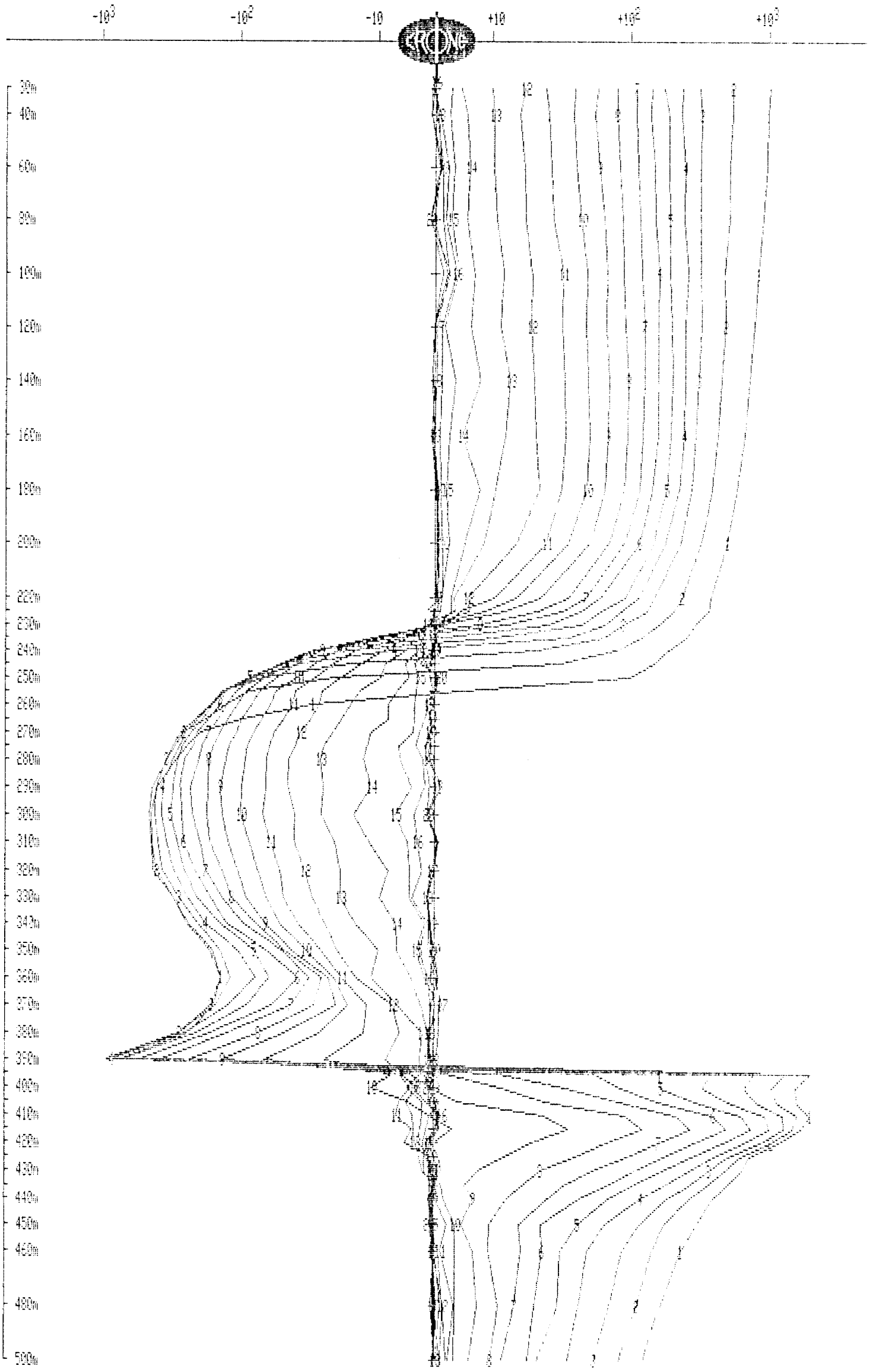
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-10 |
| Grid | : ROBERTSON | Tx Loop | : 5 |
| Date | : Mar 25, 1991 | File name | : 9110T5.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



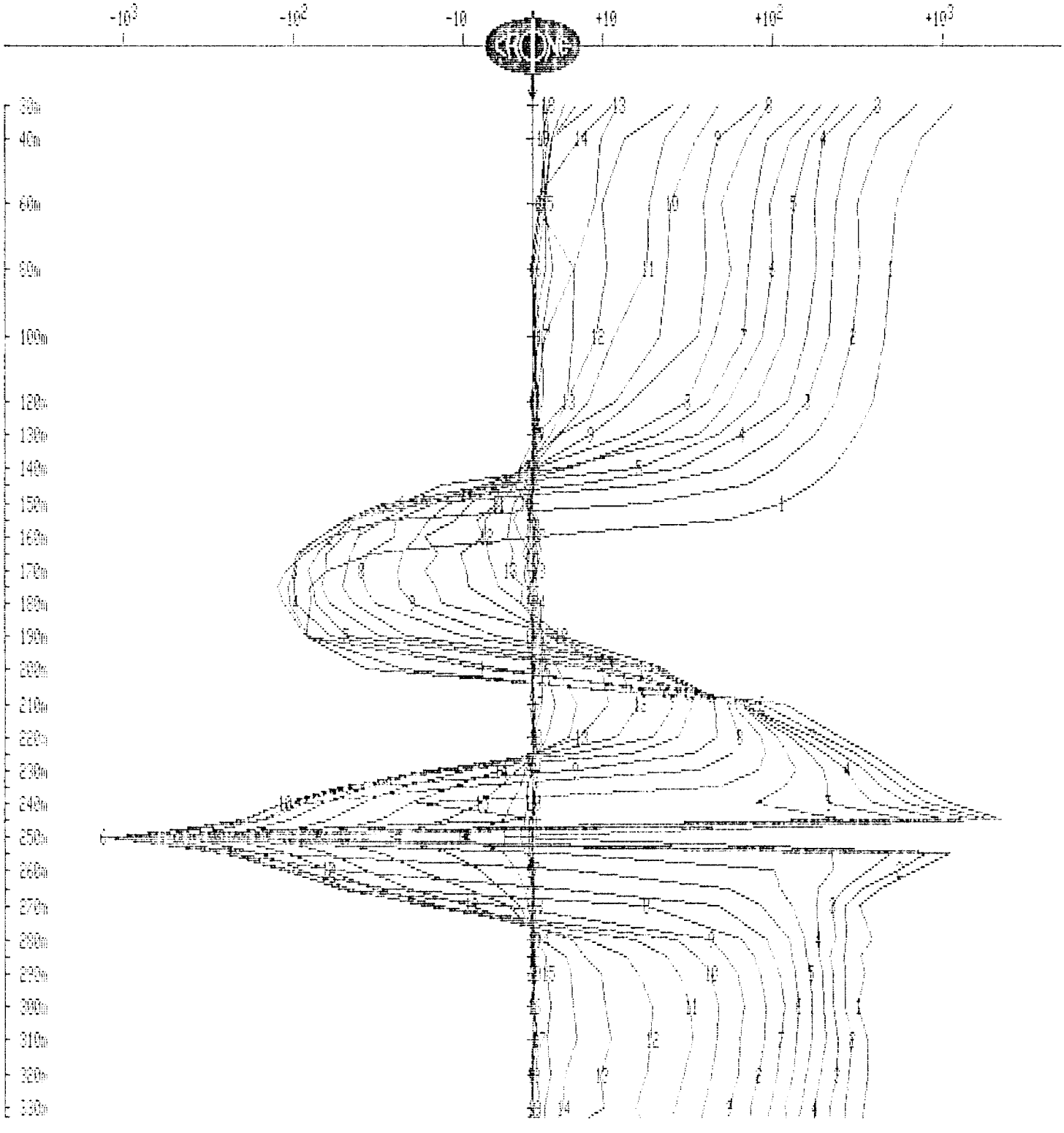
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-11 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Date | : Jun 1, 1991 | File name | : 9111T6.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



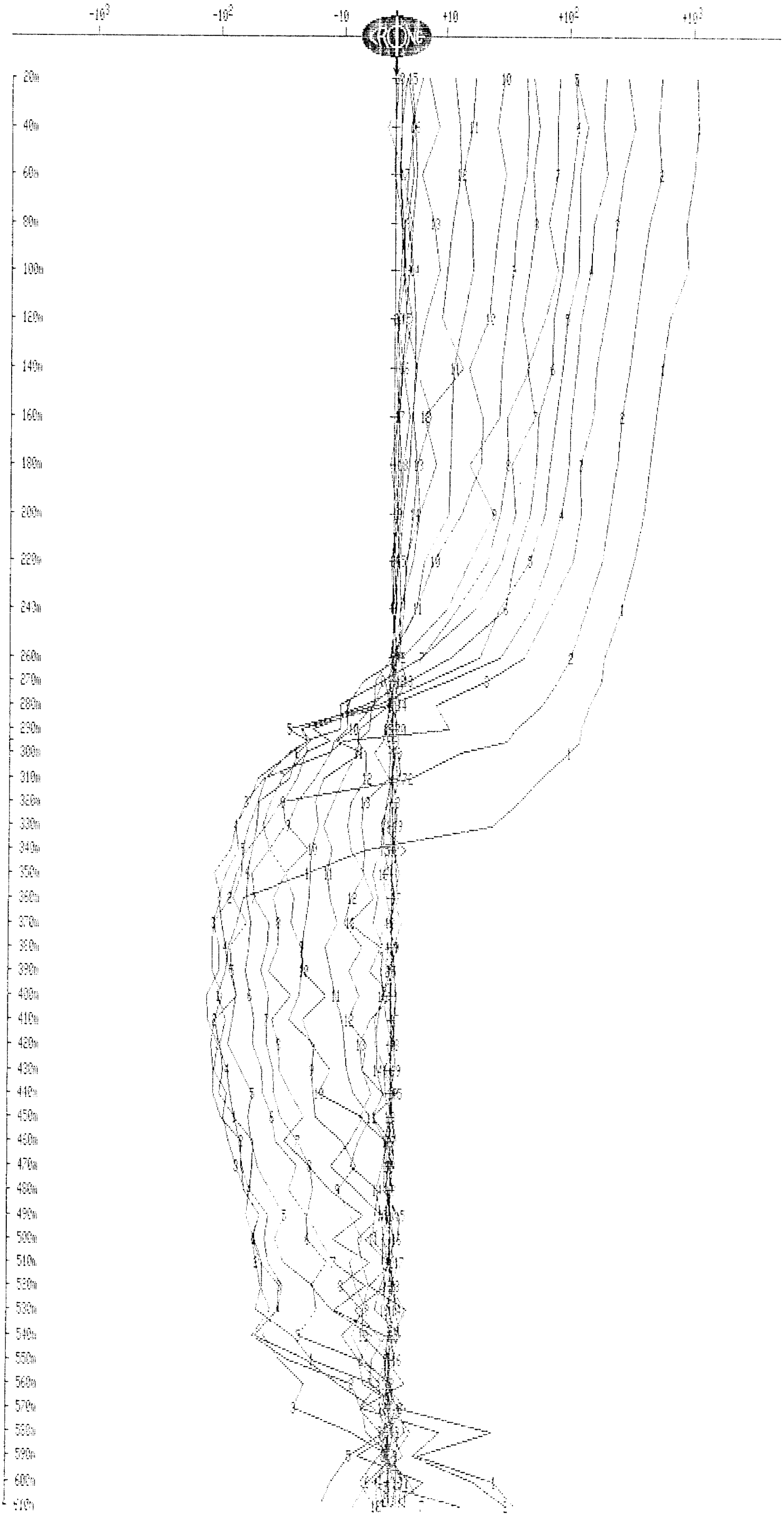
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-13 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Date | : Jun 1, 1991 | File name | : 9113T6.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



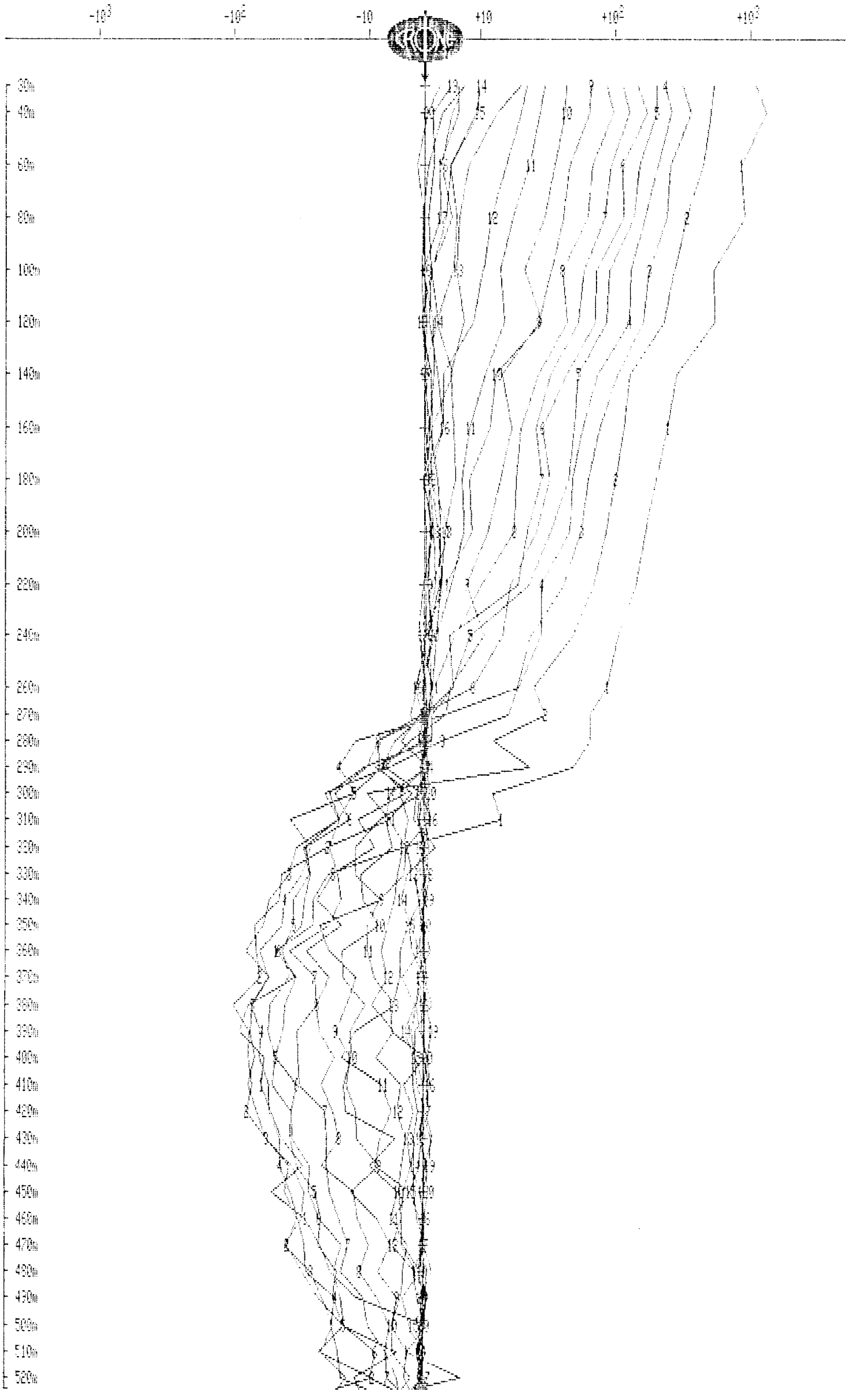
# CRONE GEOPHYSICS & EXPLORATION LTD

## BOREHOLE PEM

| | | | |
|---|---|---|---|
| Client | : QUEENSTON | Hole | : 91-14 |
| Grid | : ROBERTSON | Tx Loop | : 6 |
| Date | : May 31, 1991 | File name | : 9114T6.PEM |

Z COMPONENT dBz/dt nanoTesla/sec - 20 channels

Scale: 1:2000



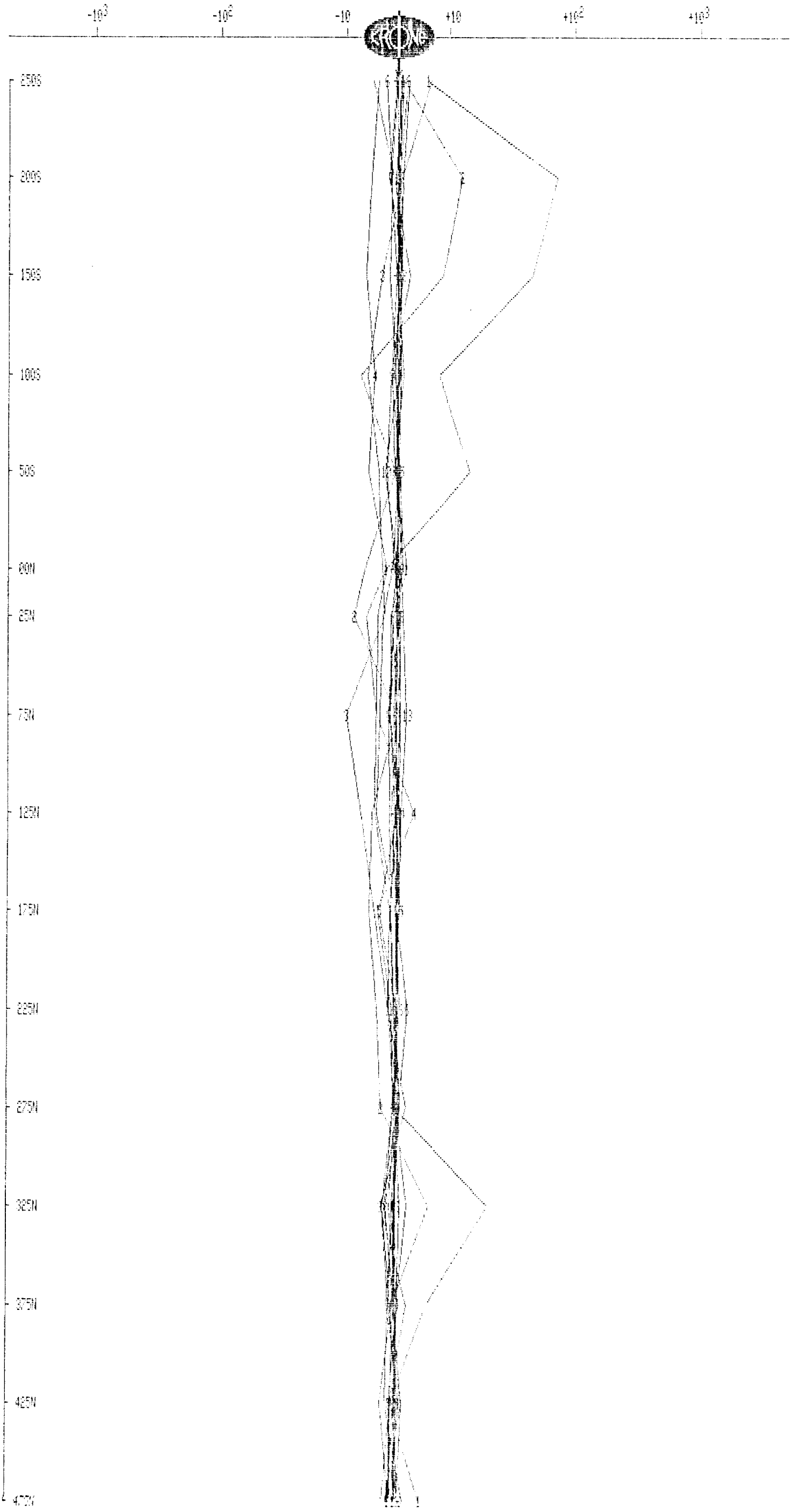
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 300W |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 25, 1991 | File name | : L3WT2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500



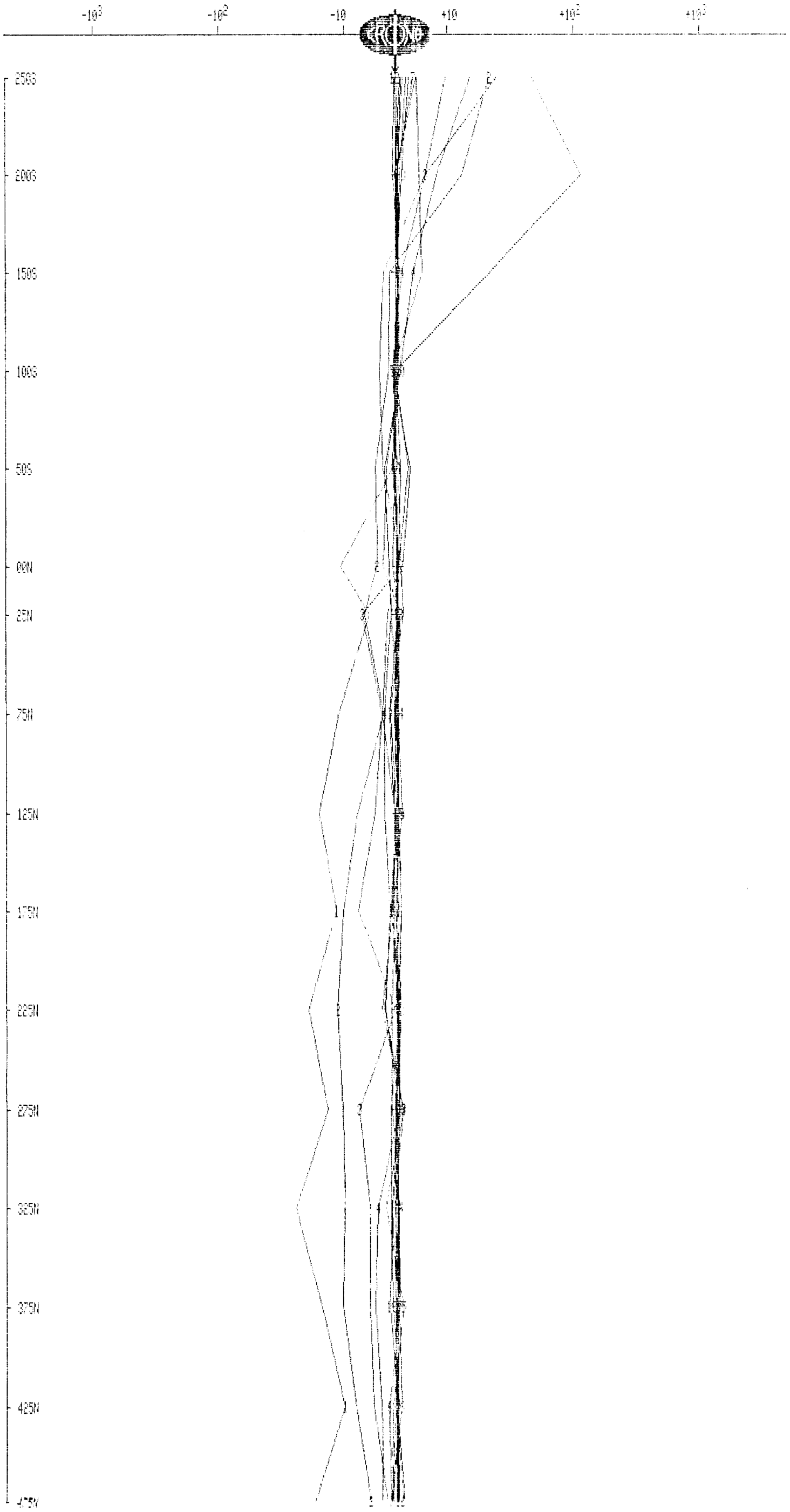
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 300W |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 25, 1991 | File name | : L3WT2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



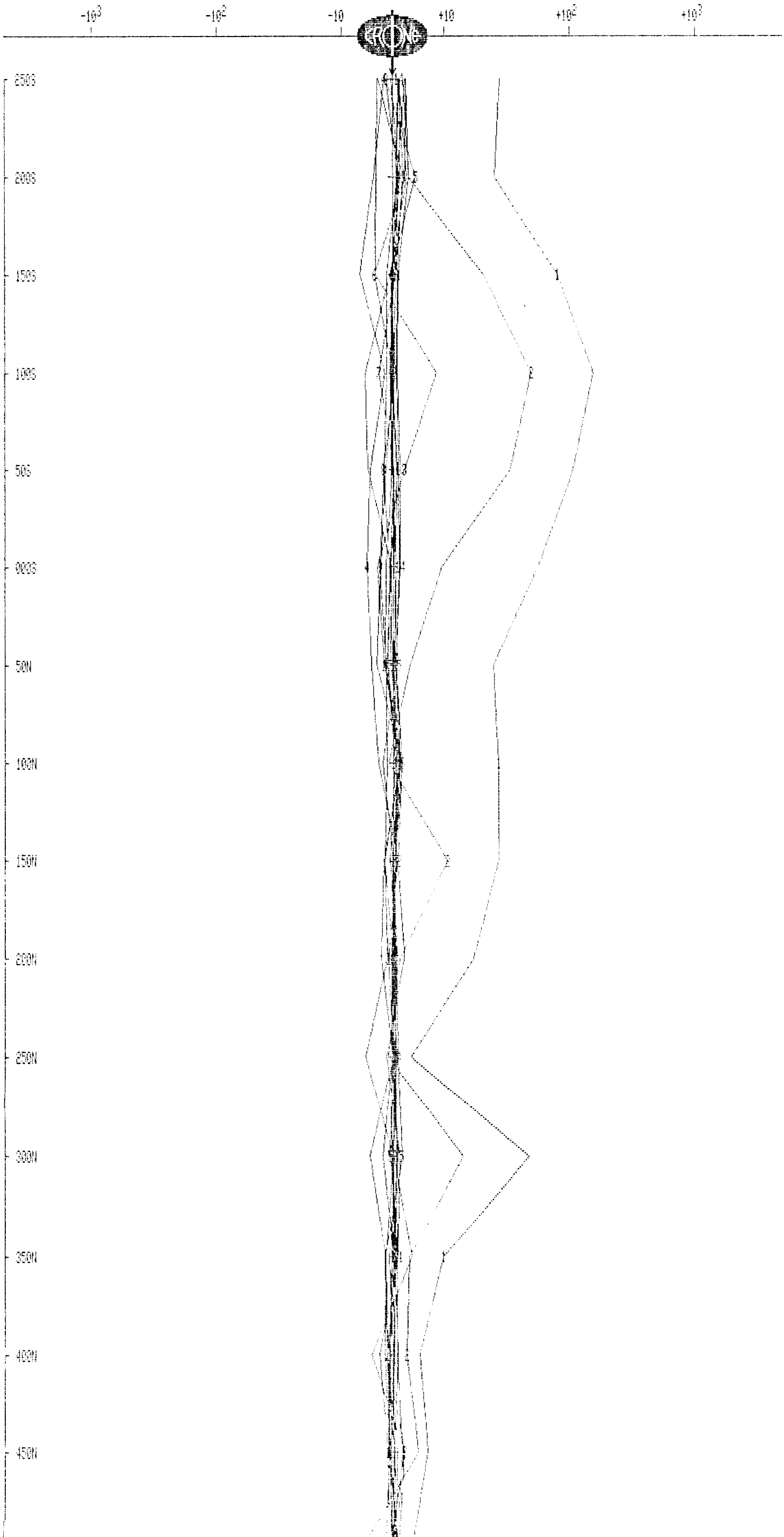
CRONE GEOPHYSICS & EXPLORATION LTD

# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 200W |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 25, 1991 | File name | : L2WT2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500



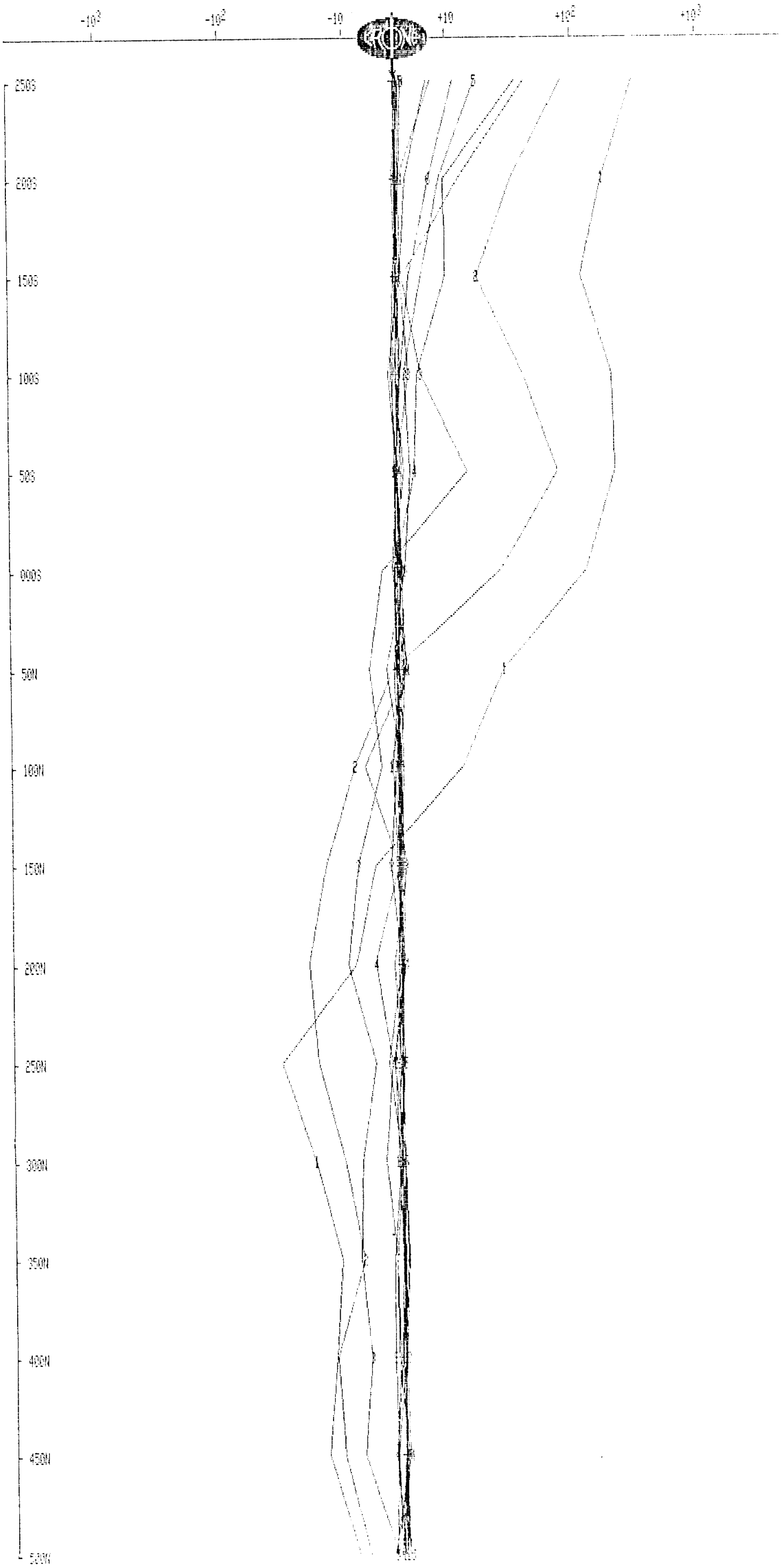
# SURFACE PEM

Client : JOUTEL-RESS
Grid : RADISSON
Date : Jan 25, 1991

Line : 200W
Tx Loop : 2
File name : L2WT2.PEM

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



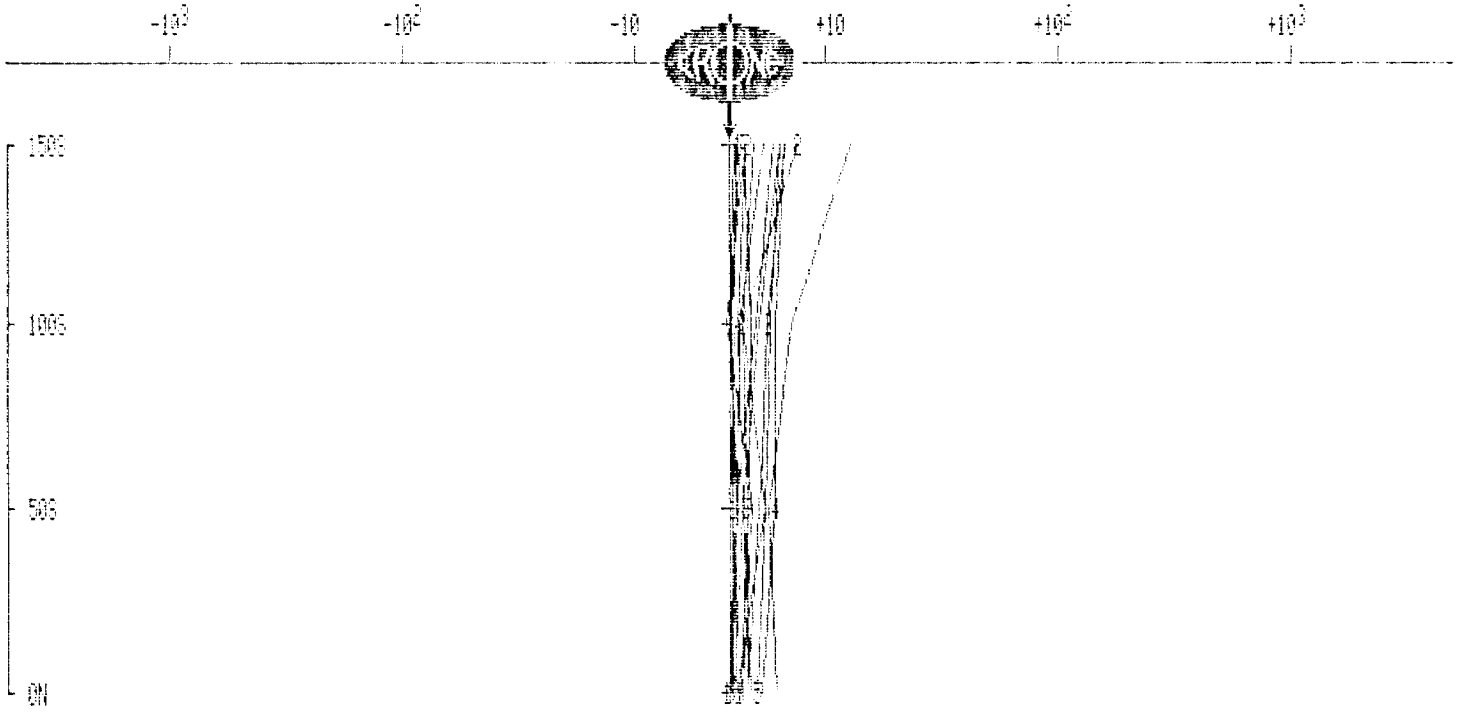
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 100W |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 16, 1991 | File name | : L1WT2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



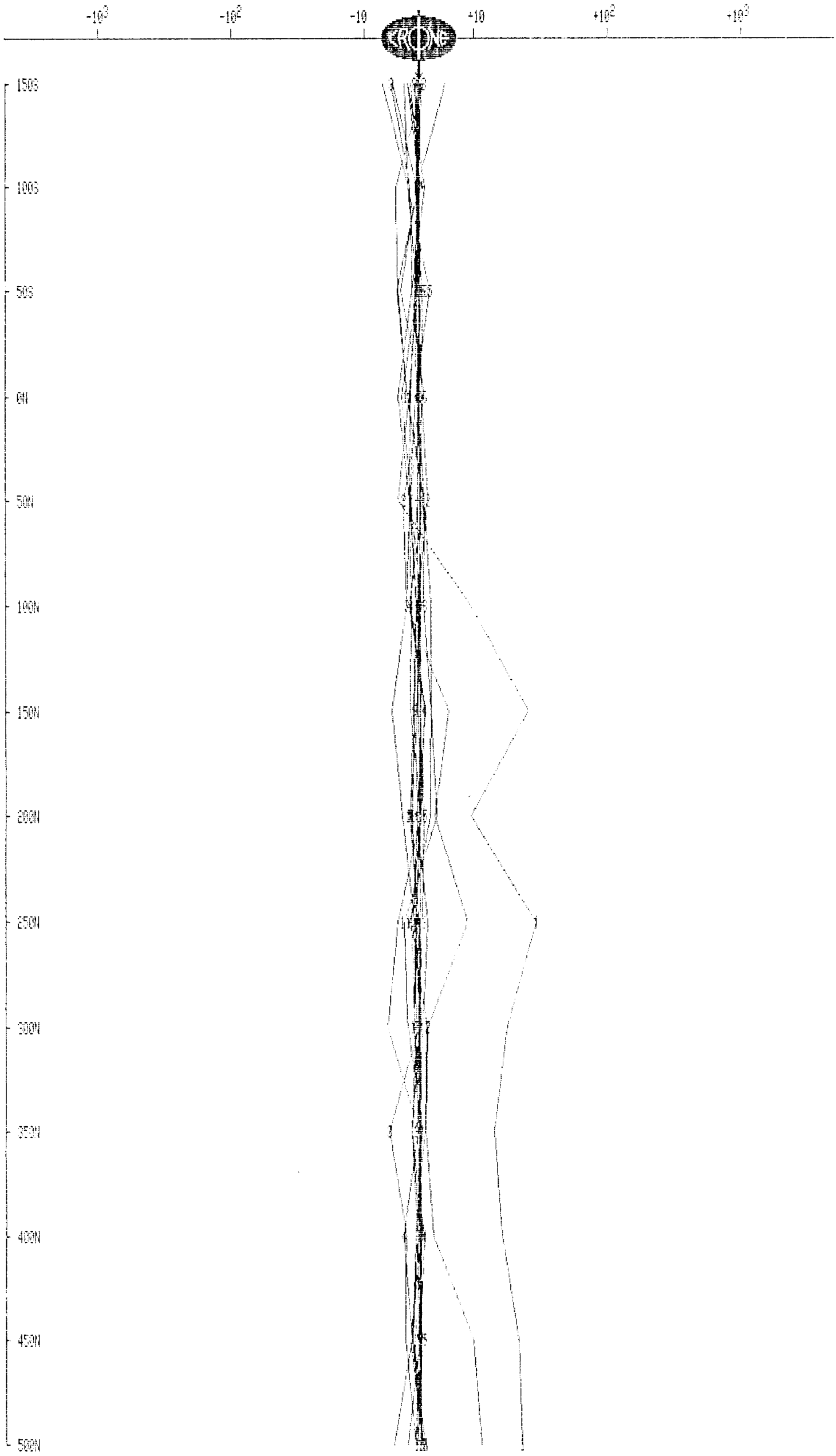
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 100W |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 16, 1991 | File name | : L1WT2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500



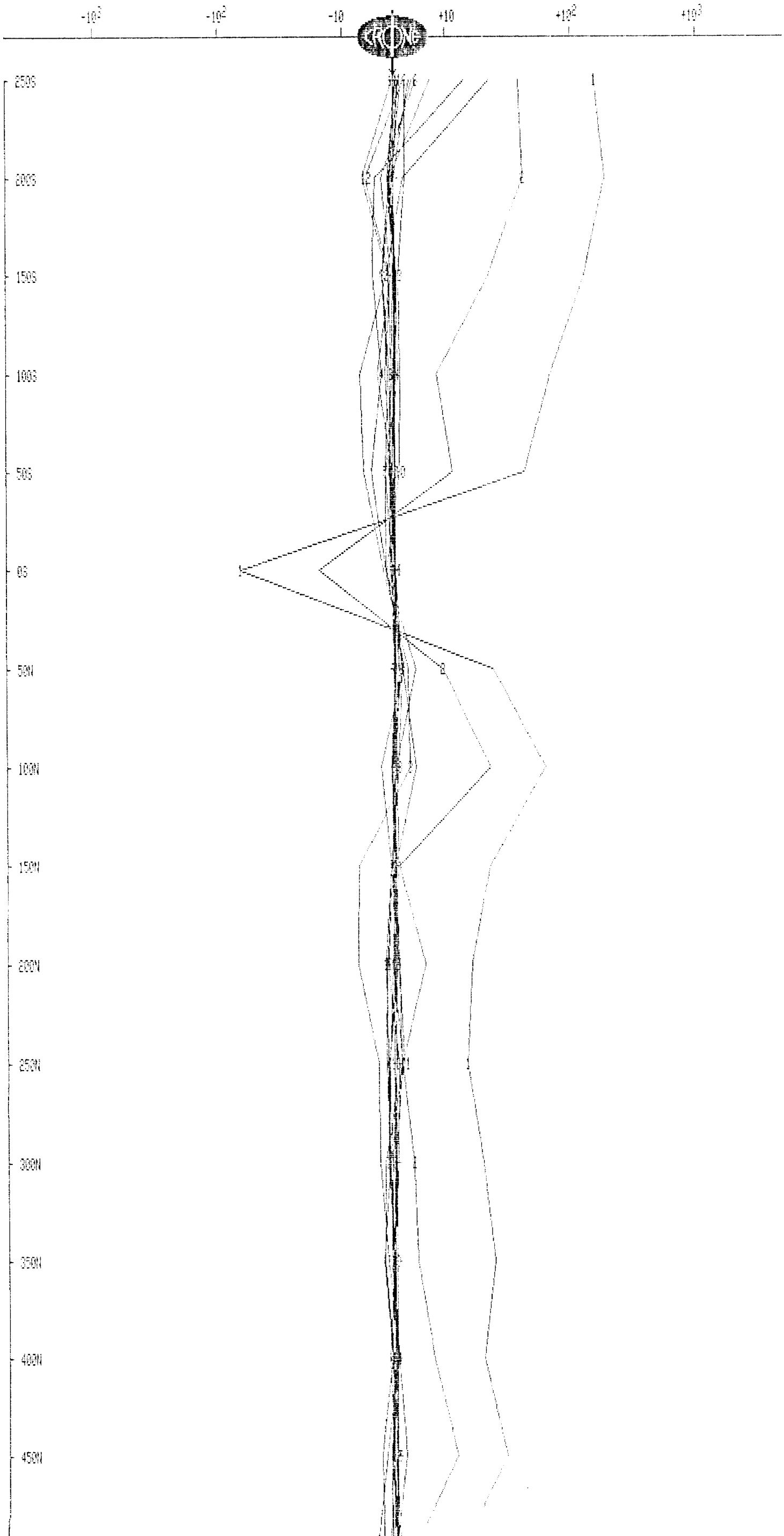
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 0E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 16, 1991 | File name | : LOT2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500



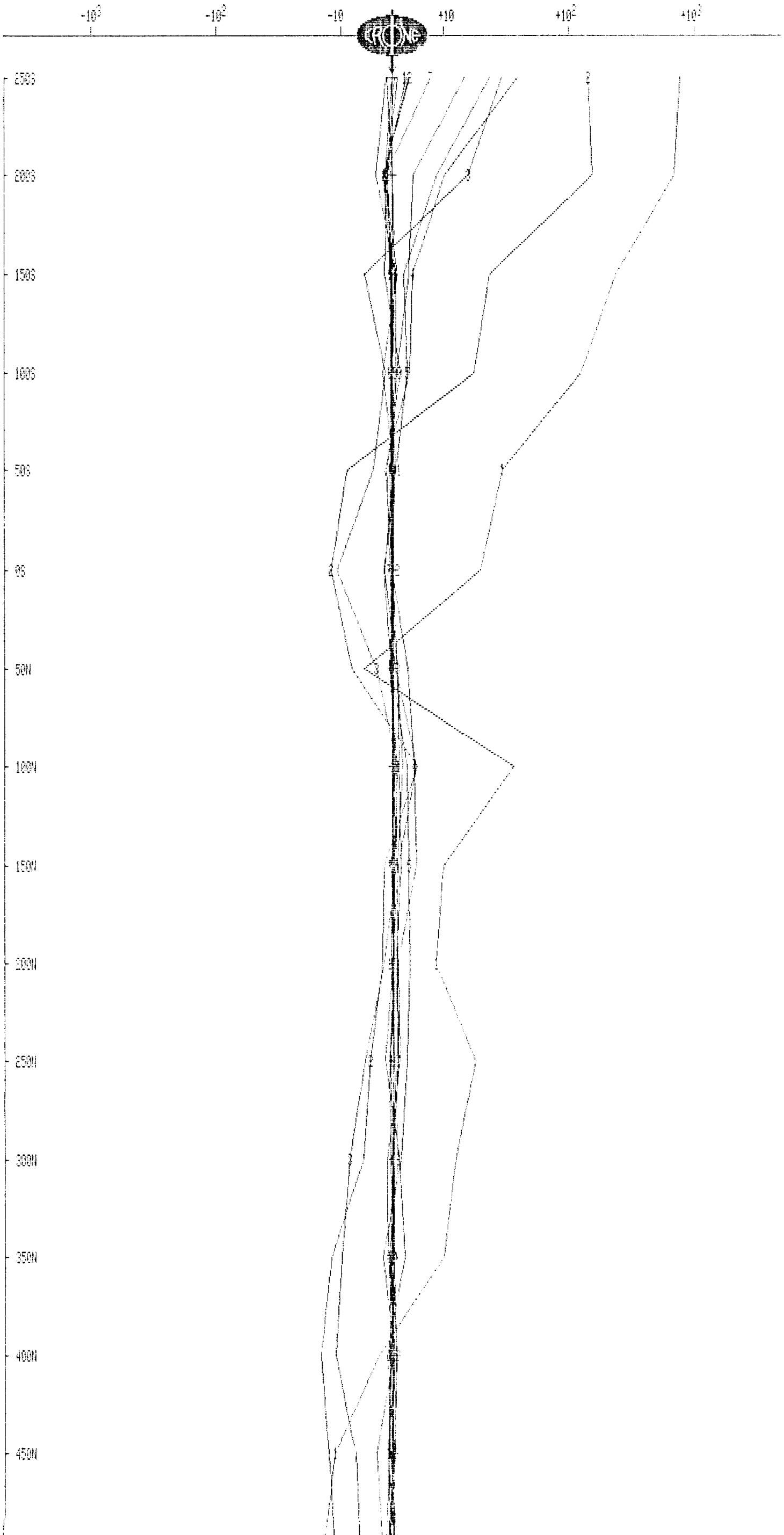
# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : OE |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 16, 1991 | File name | : LOT2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500

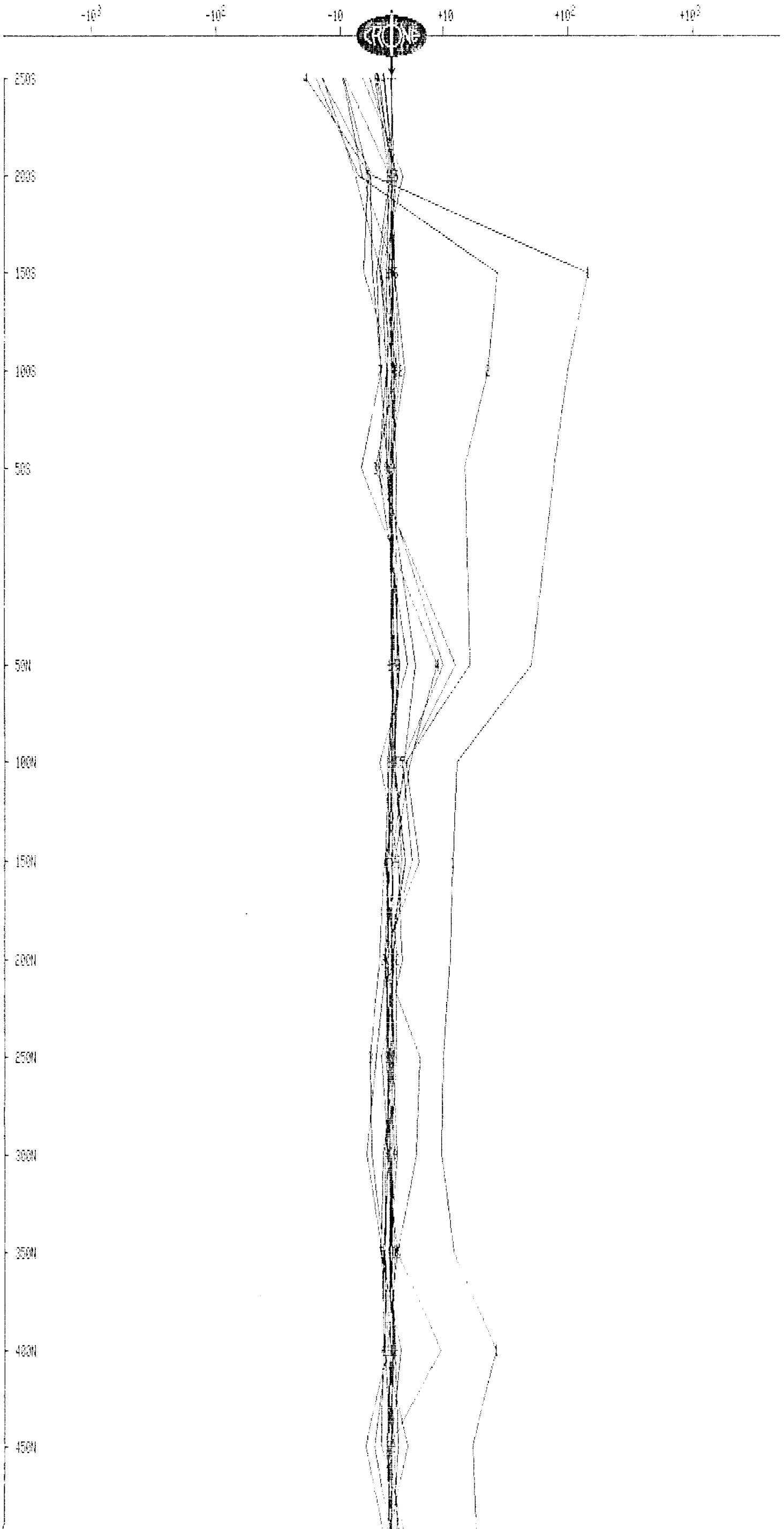


# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 100E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L1ET2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500

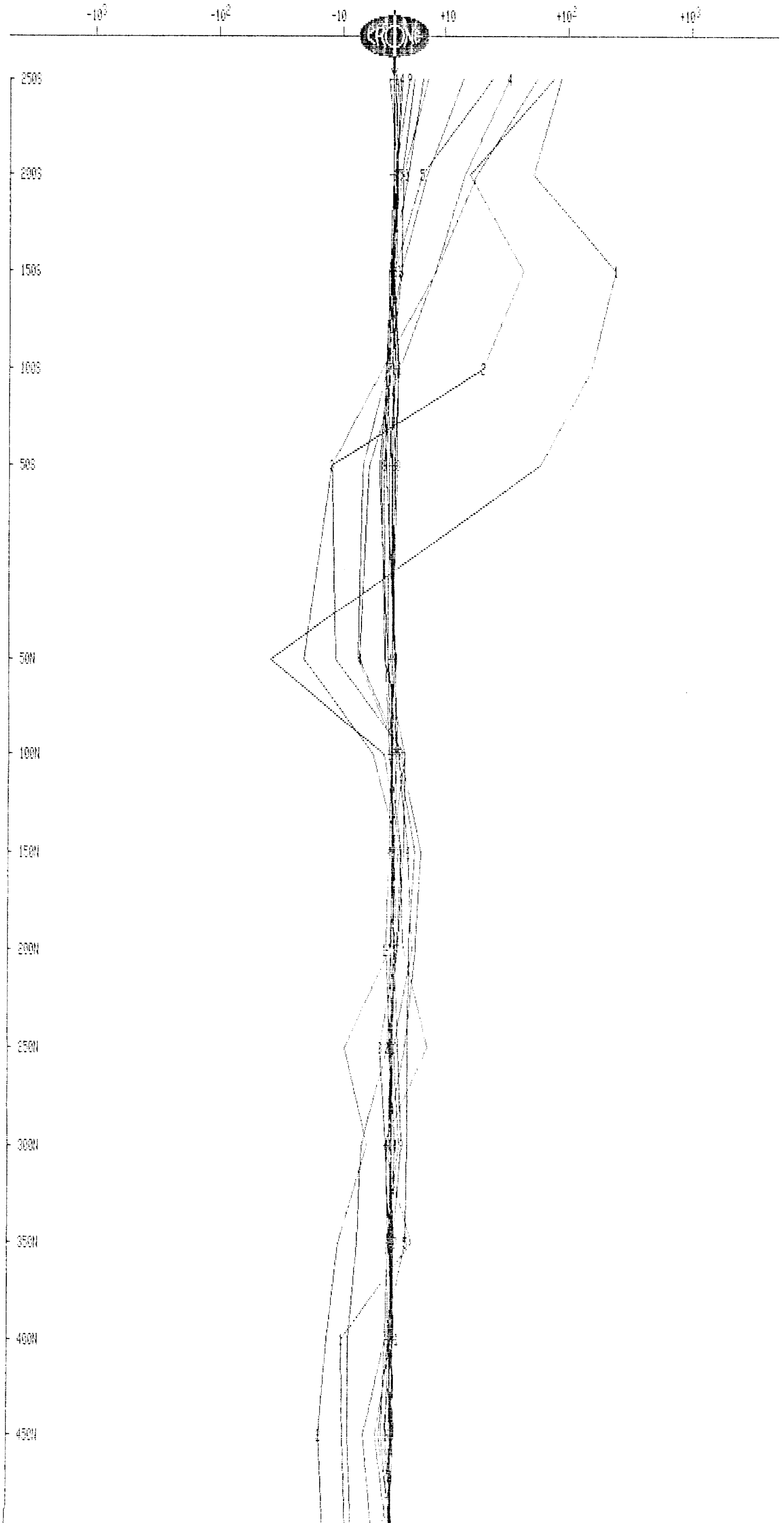


# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 100E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L1ET2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



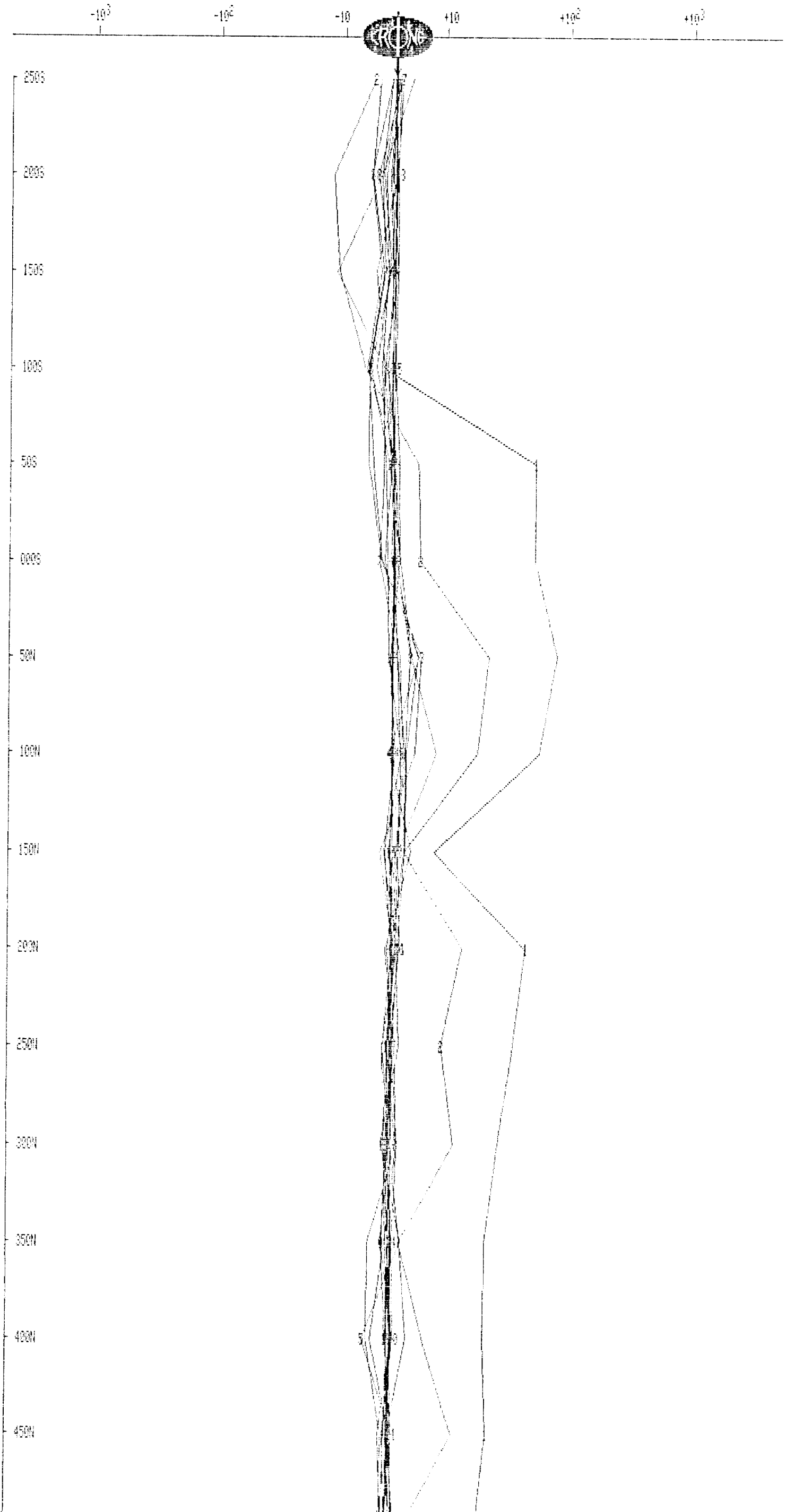
# SURFACE PEM

Client : JOUTEL-RESS
Grid : RADISSON
Date : Jan 22, 1990

Line : 200E
Tx Loop : 2
File name : L2ET2.PEM

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500

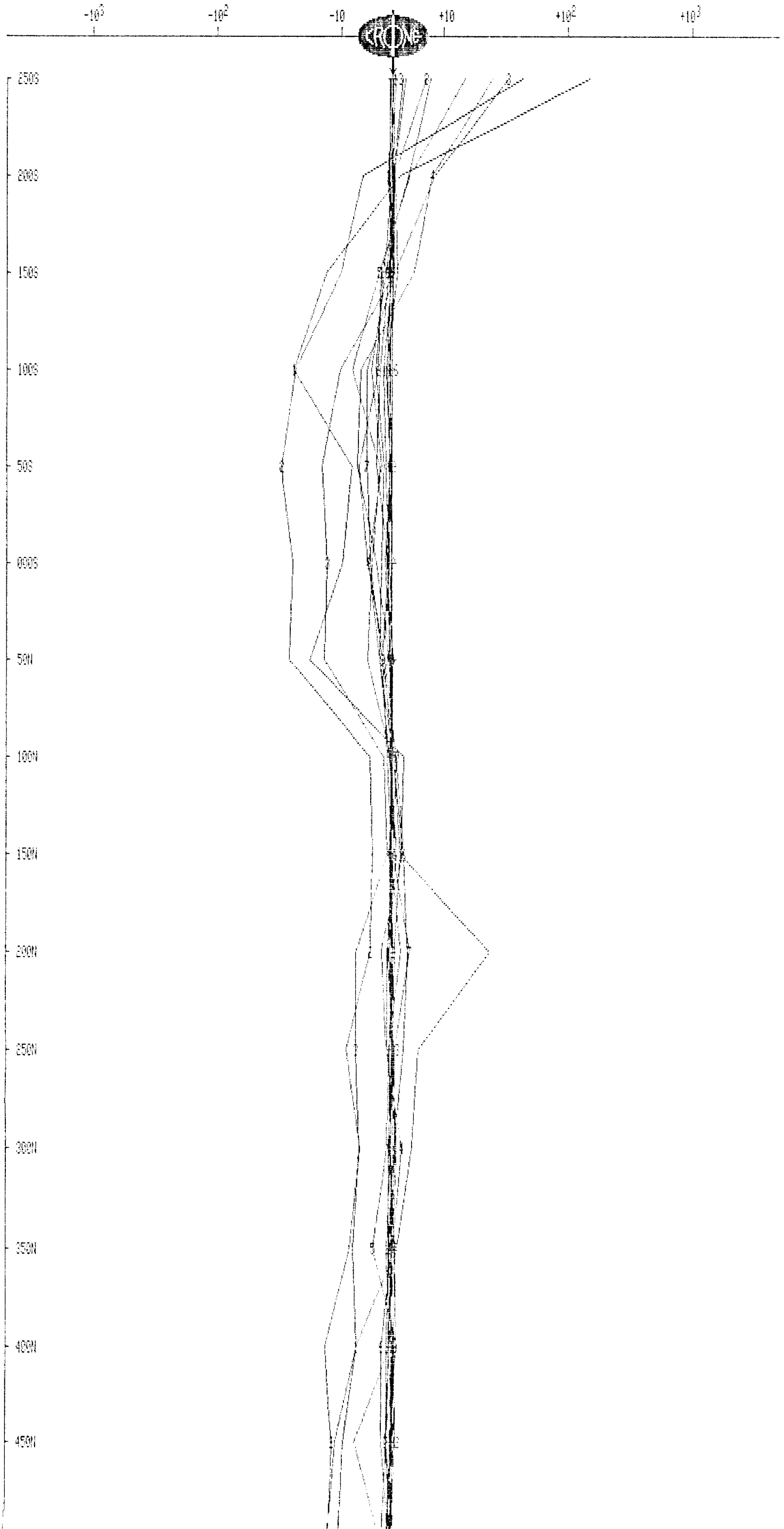


# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 200E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L2ET2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



# CRONE GEOPHYSICS & EXPLORATION LTD

## SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 300E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L3ET2.PEM |

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

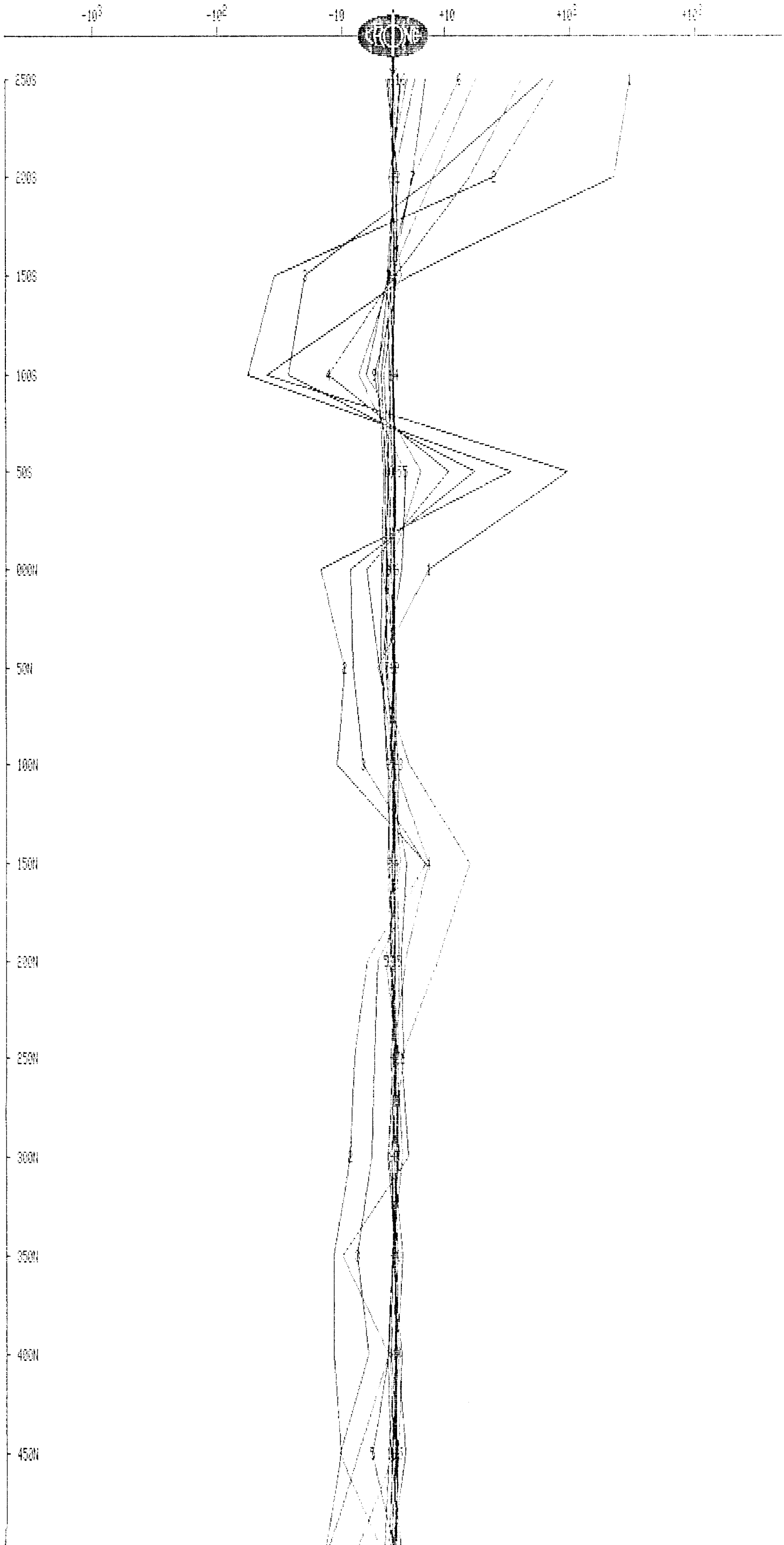
Scale: 1:2500

# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 300E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L3ET2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



# CRONE GEOPHYSICS & EXPLORATION LTD

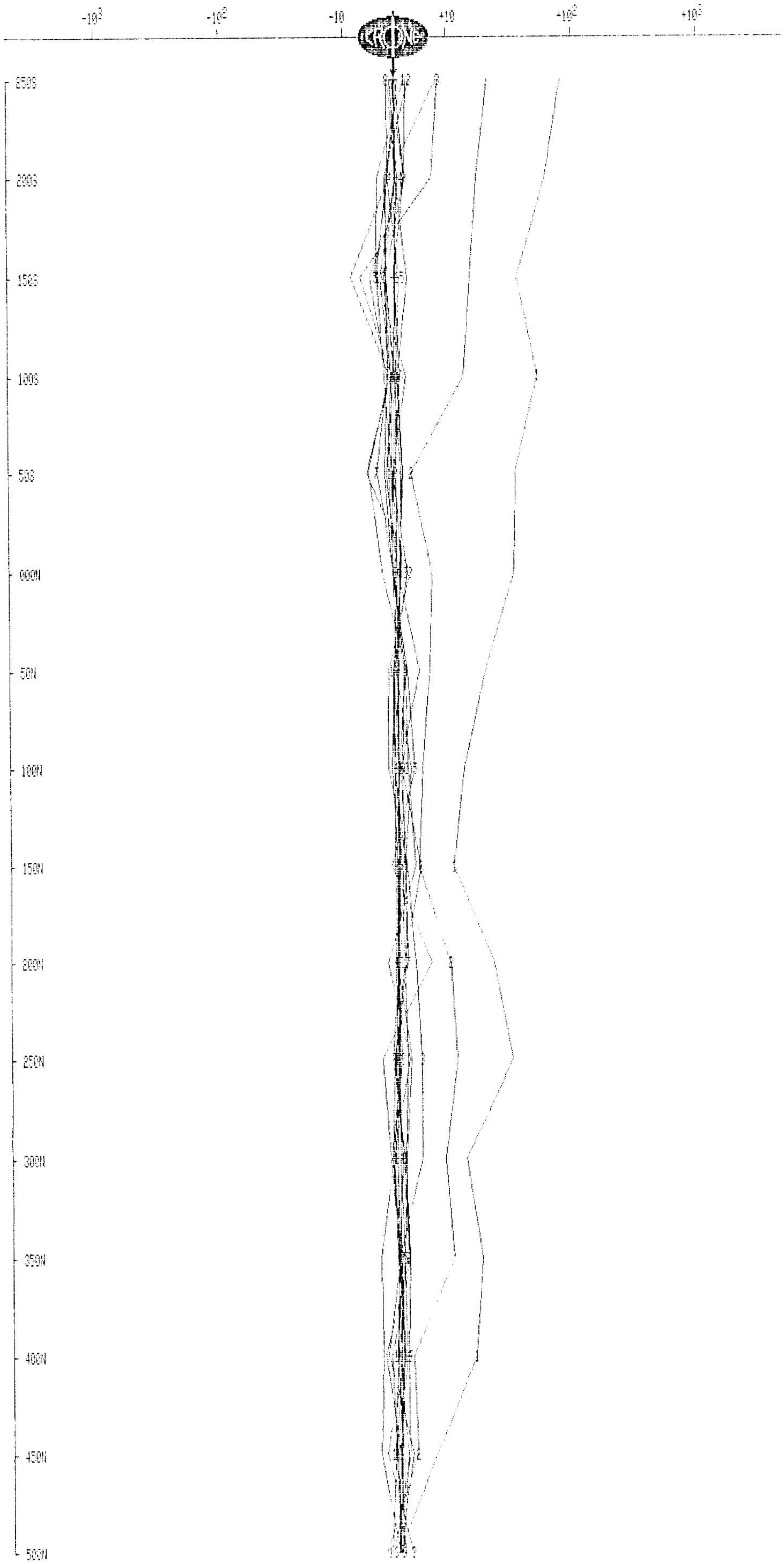
## SURFACE PEM

Client : JOUTEL-RESS
Grid : RADISSON
Date : Jan 22, 1990

Line : 400E
Tx Loop : 2
File name : L4ET2.PEM

IN-LINE HORIZONTAL COMPONENT dBx/dt nanoTesla/sec - 16 channels

Scale: 1:2500

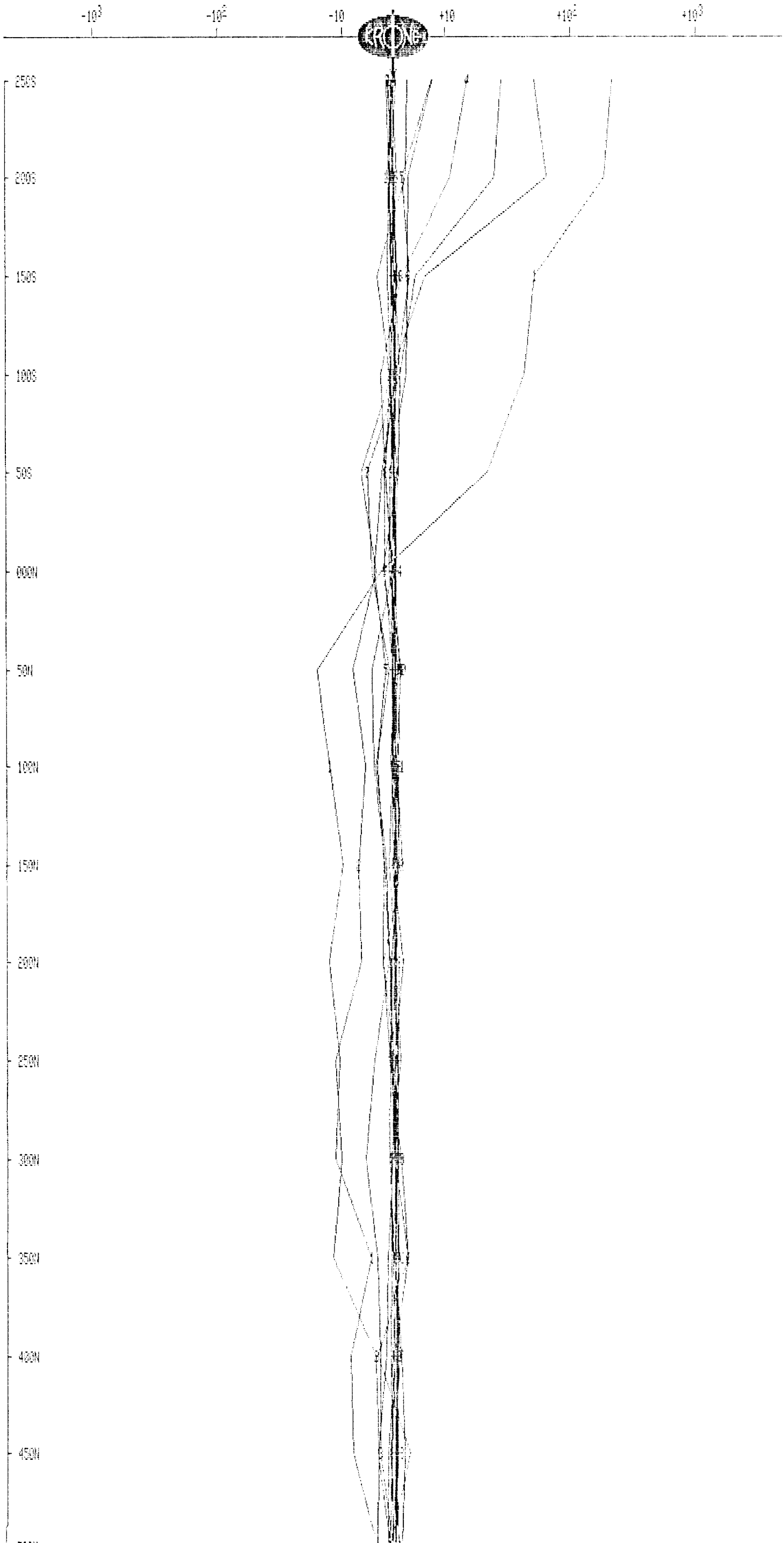


# SURFACE PEM

| | | | |
|---|---|---|---|
| Client | : JOUTEL-RESS | Line | : 400E |
| Grid | : RADISSON | Tx Loop | : 2 |
| Date | : Jan 22, 1990 | File name | : L4ET2.PEM |

VERTICAL COMPONENT dBz/dt nanoTesla/sec - 16 channels

Scale: 1:2500



Ontario

42A02NE0012 2.14629 ROBERTSON

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Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Section
Mining Lands Branch
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

Our File: 2.14629
Transaction #: W9280.00116

September 21, 1992

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

Dear Sir:

RE: Approval of Assessment Work on mining claims L 983163 et al. in Robertson Township.

---

The deficiencies in this file have been rectified and therefore the Assessment Credits for Geophysics, section 14 of the Mining Act Regulations, as listed on the attached Assessment Work Credit Form, have been approved as of SEPTEMBER 18, 1992.

Please indicate this approval on the claim record sheets.

If you have any questions please call Clive Stephenson at (705) 670-5856.

Yours sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Branch
Mines and Minerals Division

CDS/jl
Enclosures:

cc: Assessment Files Office
Toronto, Ontario

Resident Geologist
Kirkland Lake, Ontario

Ministry of Northern Development and Mines

Ontario

# Report of Work Conducted After Recording Claim

Transaction Number: W9280-00016

Mining Lands

Mining Act

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.14629

**Instructions:**
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requirements of filing assessment work or consult the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

| Recorded Holder(s) | Client No. |
|---|---|
| Queenston Mining Inc | 185109 |
| **Address** | **Telephone No.** |
| P. O. Box 193 Kirkland Lake, Ontario P2N 3H7 | (705) 567-3261 |
| **Mining Division** / **Township/Area** | **M or G Plan No.** |
| Larder Lake / Robertson | M310 |

**Dates Work Performed** From: 1991-01-13 To: 1991-09-18

**Work Performed** (Check One Work Group Only)

| | Work Group | Type |
|---|---|---|
| | Geotechnical Survey | Pulse Electromagnetic |
| | Physical Work, Including Drilling | |
| | Rehabilitation | |
| | Other Authorized Work | |
| | Assays | |
| | Assignment from Reserve | |

RECEIVED
JUN 22 1992
MINING LANDS BRANCH

**Total Assessment Work Claimed on the Attached Statement of Costs** $ 44414

**Note:** The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

**Persons and Survey Company Who Performed the Work** (Give Name and Address of Author of Report)

| Name | Address |
|---|---|
| Gerard Lambert | 679, Av. Murdoch, Rouyn-Noranda, P. Q. J9X 1H7-Author |
| Val d'Or Geophysique (Survey Co.) | 50 Boul. Lamaque, Val d'Or, P.Q. J9P 2H6 |
| Crone Geophysics & Expl. Ltd. | 3607 Wolfedale Rd. Mississauga, Ont. L5C 1V8-Author |
| | |

(attach a schedule if necessary)

**Certification of Beneficial Interest** * See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.

Date: 1992-05-22

Recorded Holder or Agent (Signature):

**Certification of Work Report**

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying: W. J. McGuinty P. O. Box 193, Kirkland Lake, Ont. P2N 3H7

Telepone No. (705) 567-3261 | Date: 1992-05-22 | Certified By (Signature):

**For Office Use Only**

| Total Value Cr. Recorded | Date Recorded | Mining Recorder | Received Stamp |
|---|---|---|---|
| $44,414. Res. | MAY 29, 1992 | | |
| | Deemed Approval Date: AUG. 27, 1992 | Date Approved | |
| | Date Notice for Amendments Sent | | |

0241 (03/91)

| Work Report Number for Applying Reserve | Claim Number (see Note 2) | Number of Claim Units | Value of Assessment Work Done on this Claim | Value Applied to this Claim | Value Assigned from this Claim | Reserve: Work to be Claimed at a Future Date |
|---|---|---|---|---|---|---|
| | 983163 | 1 | $ 1023. | 0 | 0 | $ 1023. |
| | 983165 | 1 | $34240. | 0 | 0 | $34240. |
| | 983166 | 1 | $ 2218. | 0 | 0 | $ 2218. |
| | 983167 | 1 | $ 1504. | 0 | 0 | $ 1504. |
| | 983168 | 1 | $ 2767. | 0 | 0 | $ 2767. |
| | 983170 | 1 | $ 373. | 0 | 0 | $ 373. |
| | 1073669 | 1 | $ 71. | 0 | 0 | $ 71. |
| | 1073670 | 1 | $ 35.36 | 0 | 0 | $ 35.36 |
| | 1145901 | 1 | $ 2182. | 0 | 0 | $ 2182. |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | 9 | | $44414. | 0 | 0 | $44414. |
| | Total Number of Claims | | Total Value Work Done | Total Value Work Applied | Total Assigned From | Total Reserve |

0241 (03/91)

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark (✓) one of the following:

1. ☐ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☒ Credits are to be cut back as priorized on the attached appendix. Please deduct from 983165

In the event that you have not specified your choice of priority, option one will be implemented.

**Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.**

**Note 2: If work has been performed on patented or leased land, please complete the following:**

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.

Signature

Date

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des mines

# Statement of Costs for Assessment Credit

# État des coûts aux fins du crédit d'évaluation

**Mining Act/Loi sur les mines**

Transaction No./N° de transaction: W9280-00116

Personal information collected on this form is obtained under the authority of the **Mining Act**. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la **Loi sur les mines** et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

## 1. Direct Costs/Coûts directs

| Type | Description | Amount Montant | Totals Total global |
|---|---|---|---|
| **Wages Salaires** | Labour Main-d'oeuvre | | |
| | Field Supervision Supervision sur le terrain | | |
| **Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil** | Type Survey | 36225 | |
| | Interpretation | 2785 | |
| | | | 39010 |
| **Supplies Used Fournitures utilisées** | Type | | |
| | | | |
| | | | |
| | | | |
| **Equipment Rental Location de matériel** | Type ATV | 650 | |
| | Ski-doo | 635 | |
| | | | 1285 |
| | **Total Direct Costs Total des coûts directs** | | 40295 |

## 2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work Indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

| Type | Description | Amount Montant | Totals Total global |
|---|---|---|---|
| **Transportation Transport** | Type | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **Food and Lodging Nourriture et hébergement** | | 1769 | 1769 |
| **Mobilization and Demobilization Mobilisation et démobilisation** | | 2350 | 2350 |
| | **Sub Total of Indirect Costs Total partiel des coûts indirects** | | 4119 |
| | **Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)** | | 4119 |
| | **Total Value of Assessment Credit** (Total of Direct and Allowable Indirect costs) **Valeur totale du crédit d'évaluation** (Total des coûts directs et indirects admissibles) | | 44414 |

**Note:** The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

**Note :** Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

RECEIVED
JUN 22 1992
MINING LANDS BRANCH

### Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

| Total Value of Assessment Credit | Total Assessment Claimed |
|---|---|
| × 0.50 = | |

### Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

| Valeur totale du crédit d'évaluation | Évaluation totale demandée |
|---|---|
| × 0,50 = | |

### Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Exploration Manager (Recorded Holder, Agent, Position in Company) I am authorized

to make this certification

### Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ (titulaire enregistré, représentant, poste occupé dans la compagnie) je suis autorisé

à faire cette attestation.

| Signature | Date |
|---|---|
| | 1992-05-22 |

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

MICHIE TWP. M. 301

SEE FILE R9108.00123
MINING CLAIMS RECORDED IN PORCUPINE DIVISION

M.300 McNEIL TWP.

SHEBA TWP. M.385

BADEN TWP. M.205

THE TOWNSHIP
OF

# ROBERTSON

DISTRICT OF
TIMISKAMING

LARDER LAKE
MINING DIVISION

SCALE 1 INCH 40 CHAINS

LEGEND

| | |
|---|---|
| PATENTED LAND | (P) |
| CROWN LAND SALE | CS |
| LEASE | (L) |
| LOCATED LAND | LM |
| LICENSE OF OCCUPATION | LO |
| MINING RESERVE | MRO |
| SURFACE RIGHTS ONLY | SRO |
| ROAD | |
| IMPROVED ROAD | |
| KING'S HIGHWAY | |
| RAILWAYS | |
| POWER LINES | |
| MARSH OR MUSKEG | |
| MINE | |
| ABANDONED | |
| REMOTE TOURIST SETUP | (RTS) |

NOTES

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

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.

PLAN NO. M.310

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

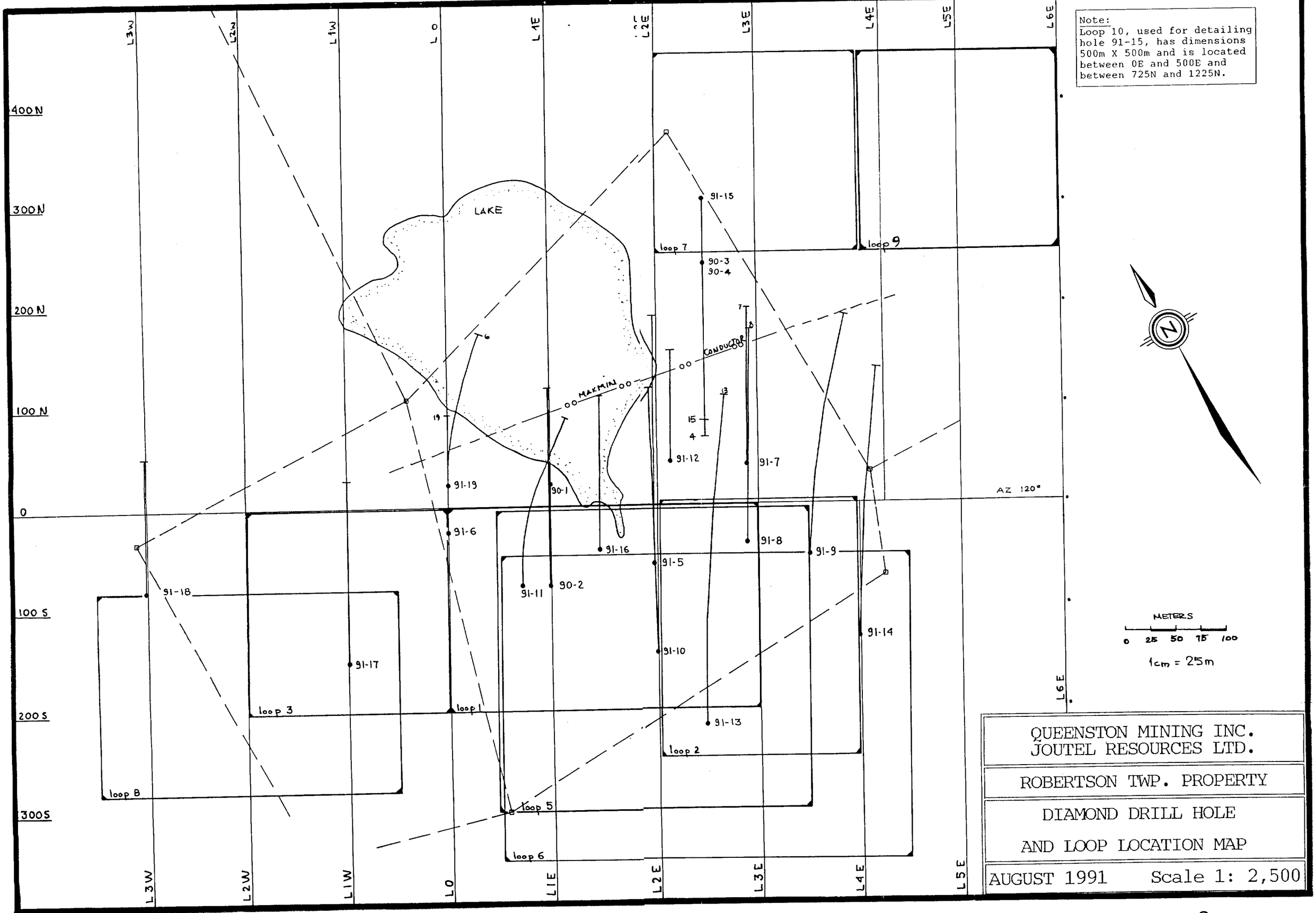




200

TRIM LINE

Note:
Loop 10, used for detailing hole 91-15, has dimensions 500m X 500m and is located between 0E and 500E and between 725N and 1225N.



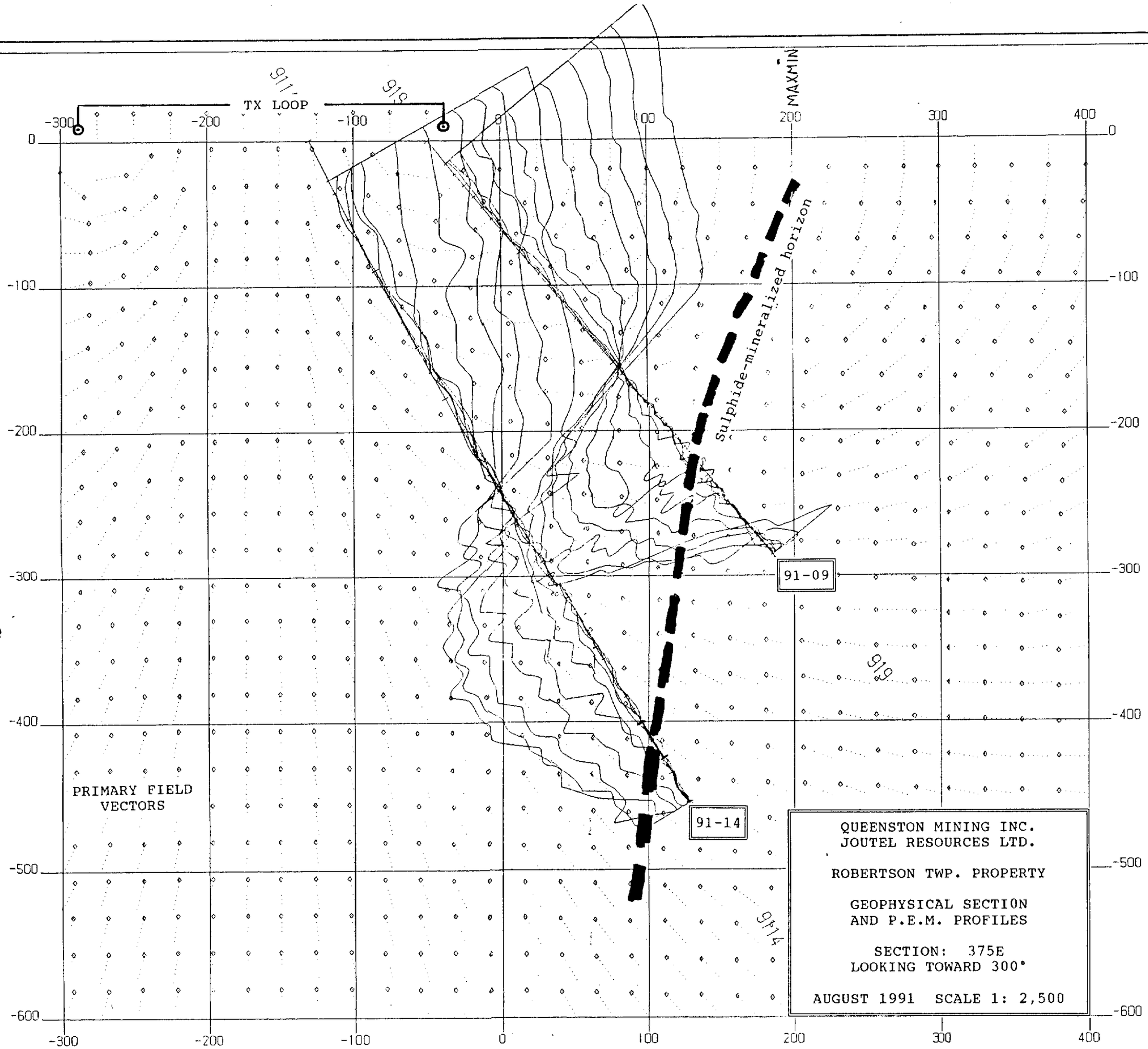

QUEENSTON MINING INC.
JOUTEL RESOURCES LTD.

ROBERTSON TWP. PROPERTY

DIAMOND DRILL HOLE
AND LOOP LOCATION MAP

AUGUST 1991 Scale 1: 2,500

2.14629




Scale 1:2500

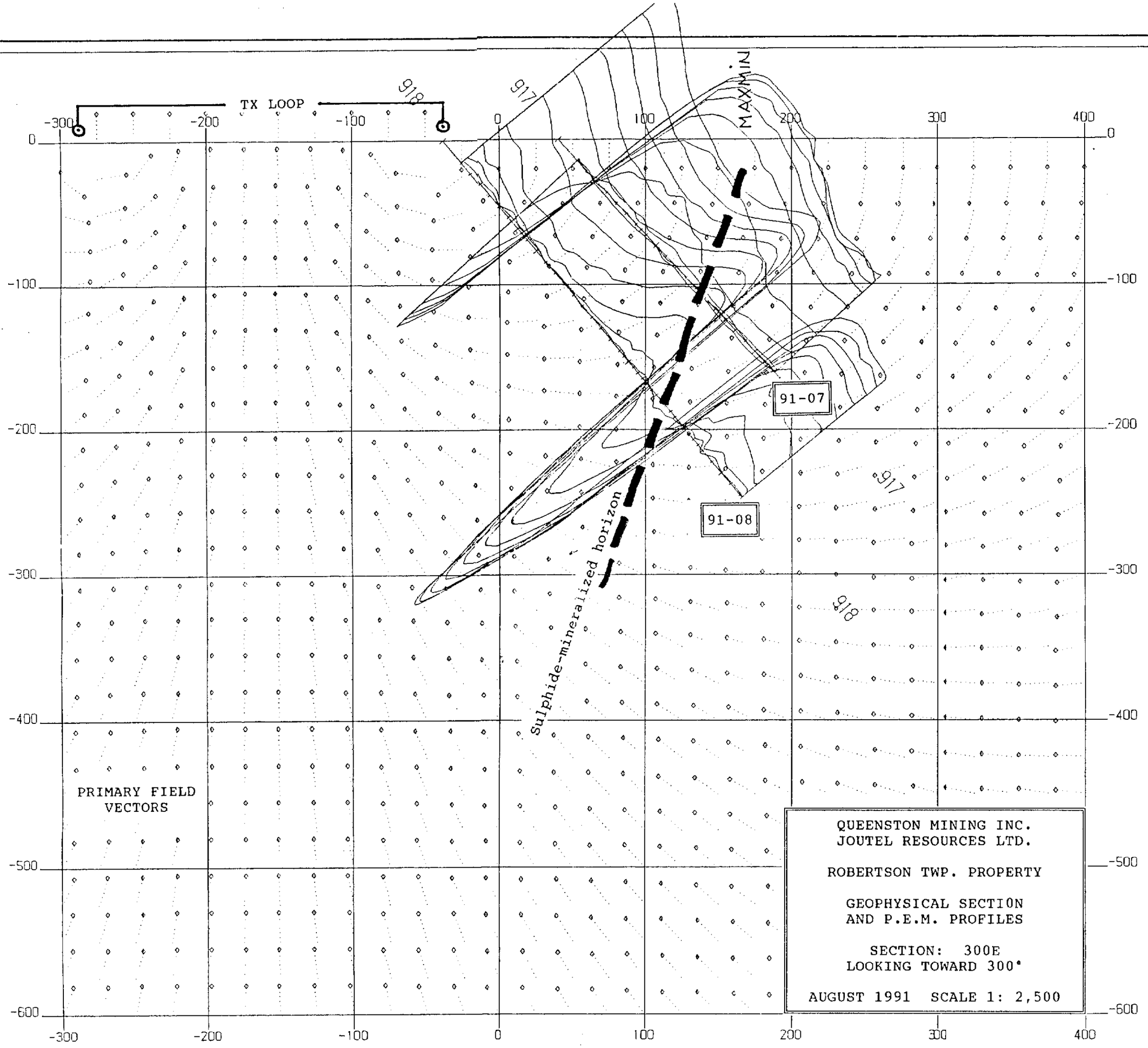
25 0 25 50 75 100 125

(metres)



220

2.14629




Scale 1:2500

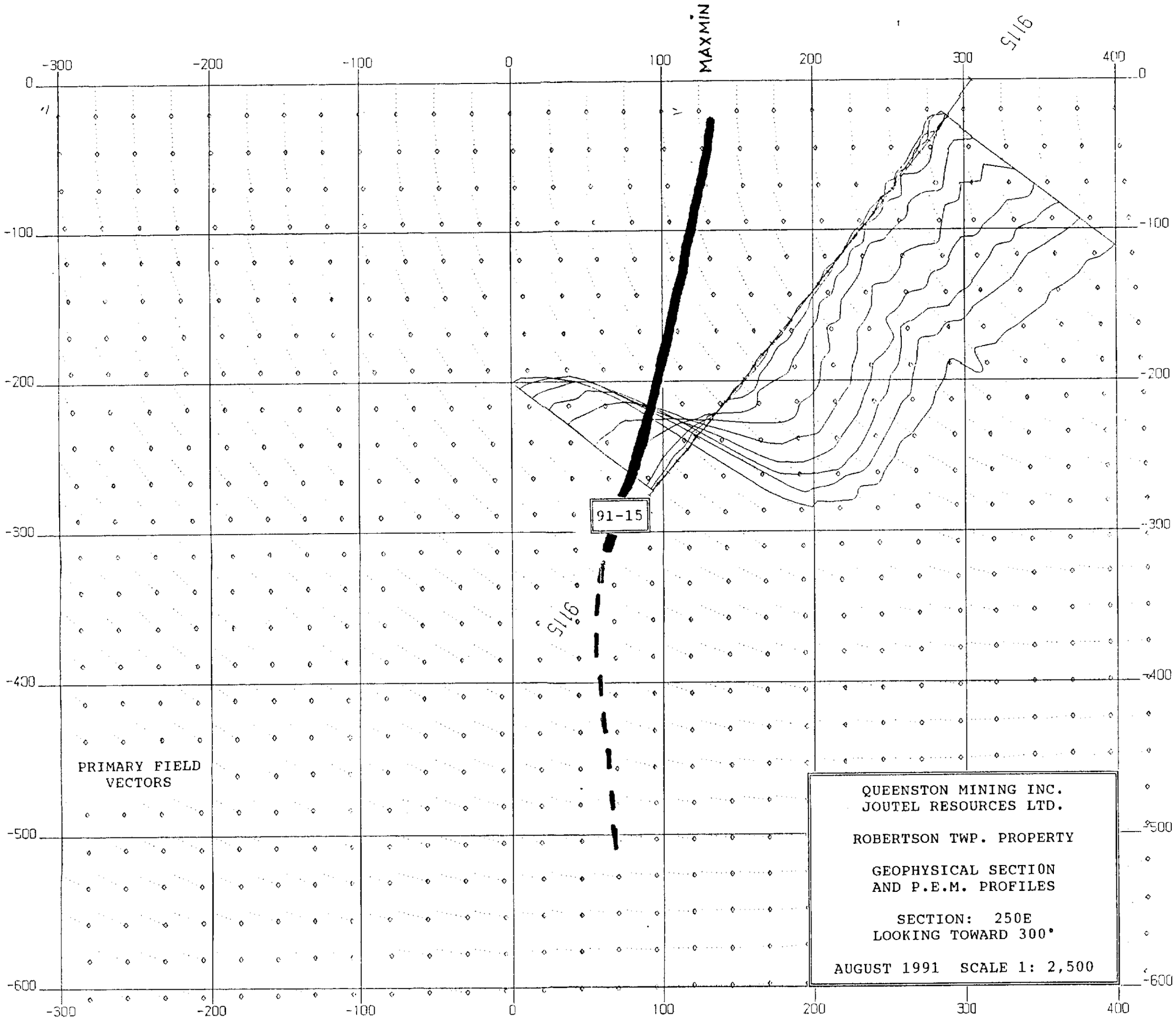
25 0 25 50 75 100 125

(metres)

42A02NE0012 2.14629 ROBERTSON



2.14629

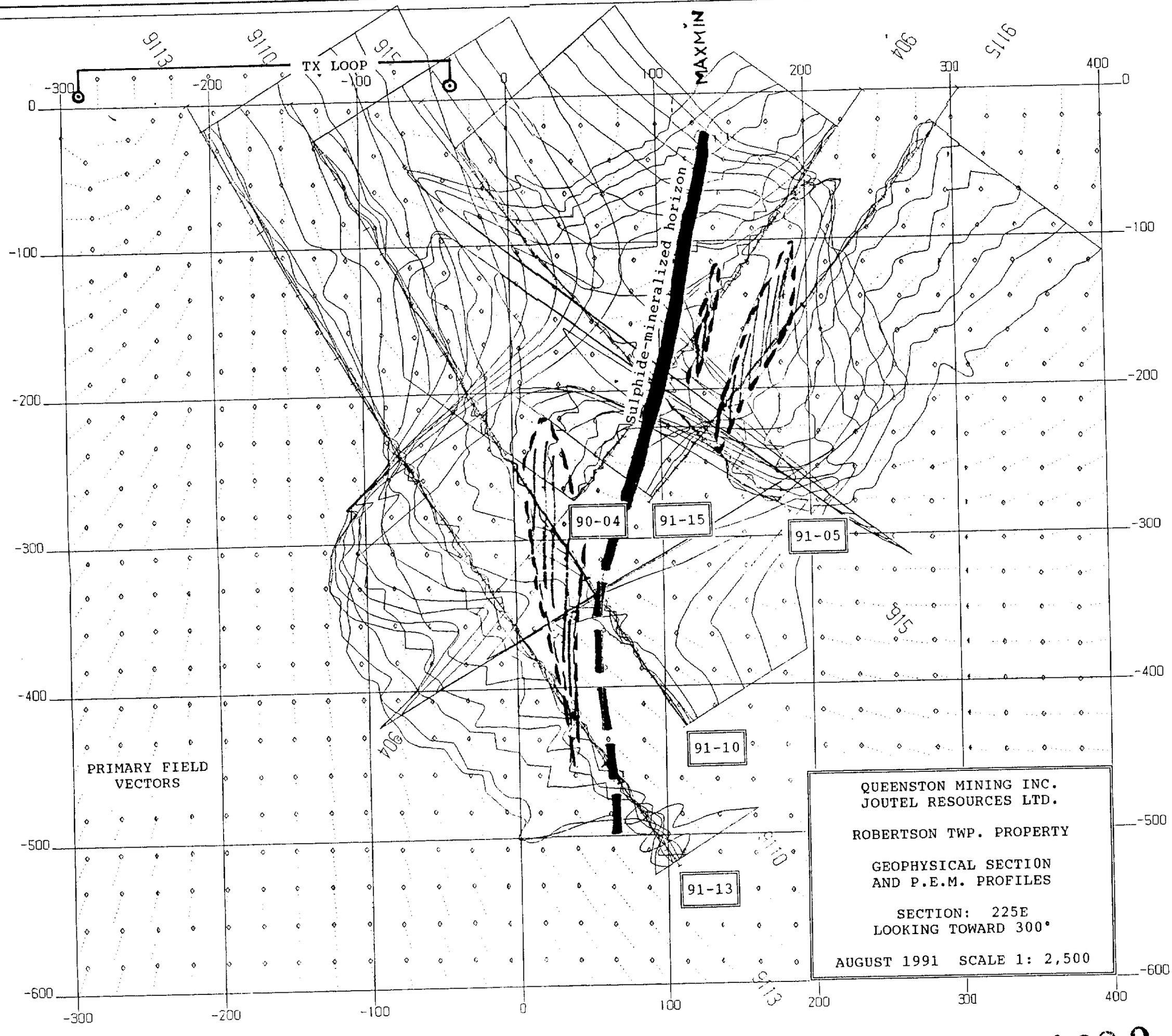



Scale 1:2500

25 0 25 50 75 100 125
(metres)

2.14629

42A02NE0012 2.14629 ROBERTSON




QUEENSTON MINING INC.
JOUTEL RESOURCES LTD.

ROBERTSON TWP. PROPERTY

GEOPHYSICAL SECTION
AND P.E.M. PROFILES

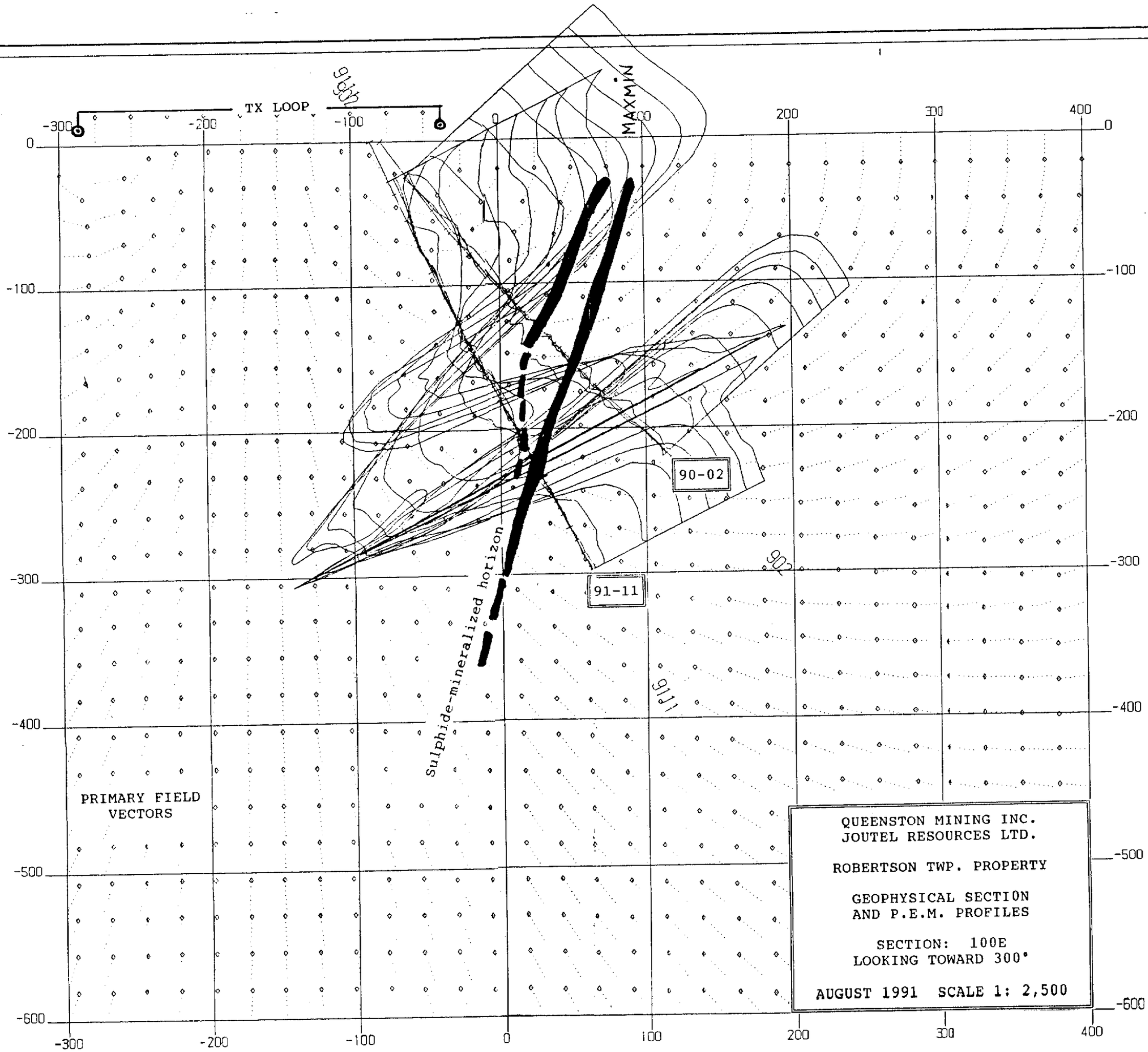
SECTION: 225E
LOOKING TOWARD 300°

AUGUST 1991 SCALE 1: 2,500

Scale 1:2500

25 0 25 50 75 100 125
(metres)

2.14629




42A02NE0012 2.14629 ROBERTSON



2.14629

TX LOOP

916

MAXMIN

Sulphide-mineralized horizon

91-06

918

PRIMARY FIELD VECTORS

-300 -200 -100 0 100 200 300 400

0 -100 -200 -300 -400 -500 -600

QUEENSTON MINING INC.
JOUTEL RESOURCES LTD.

ROBERTSON TWP. PROPERTY

GEOPHYSICAL SECTION
AND P.E.M. PROFILES

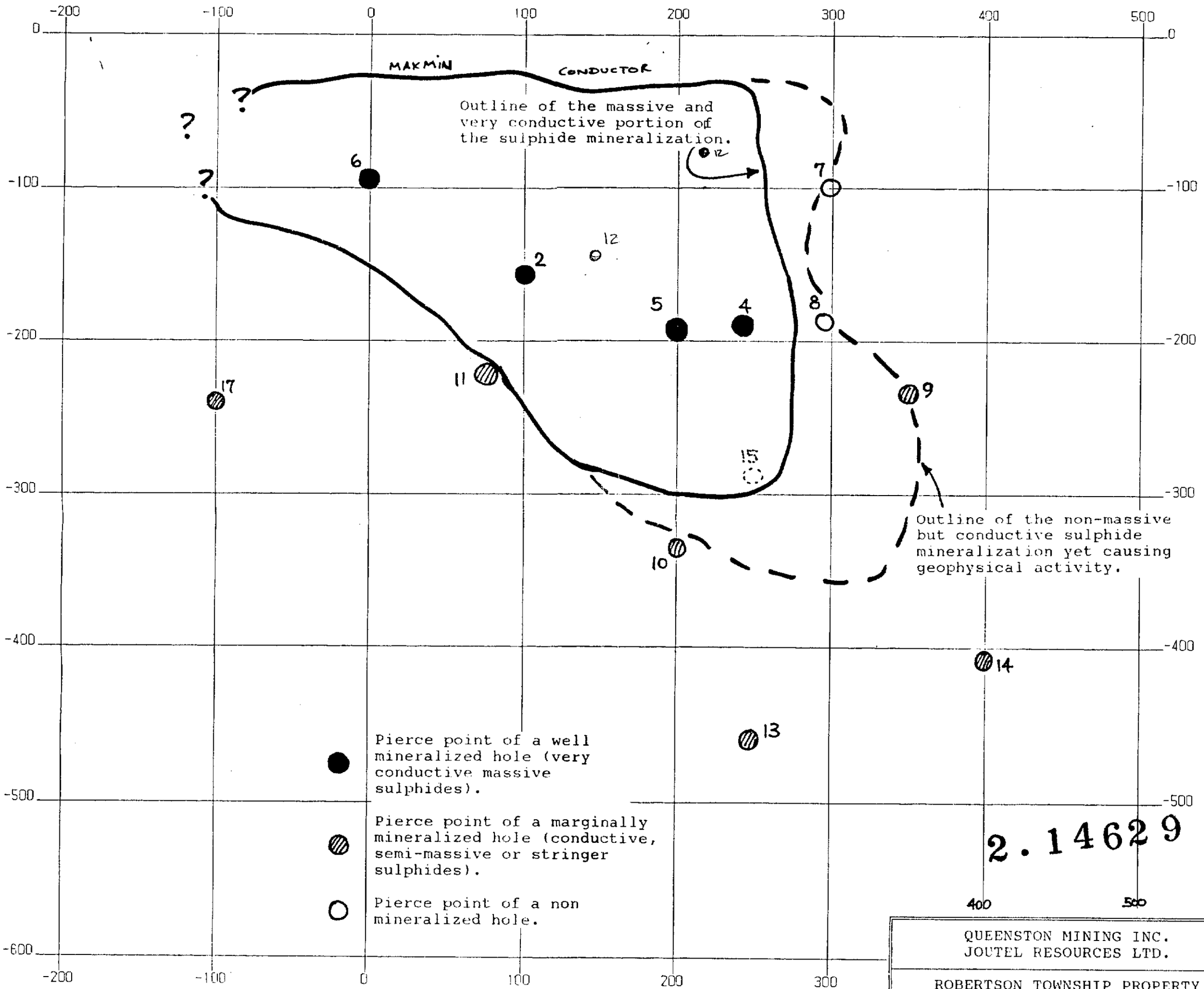
SECTION: 000E
LOOKING TOWARD 300°

AUGUST 1991 SCALE 1: 2,500

Scale 1:2500

25 0 25 50 75 100 125
(metres)

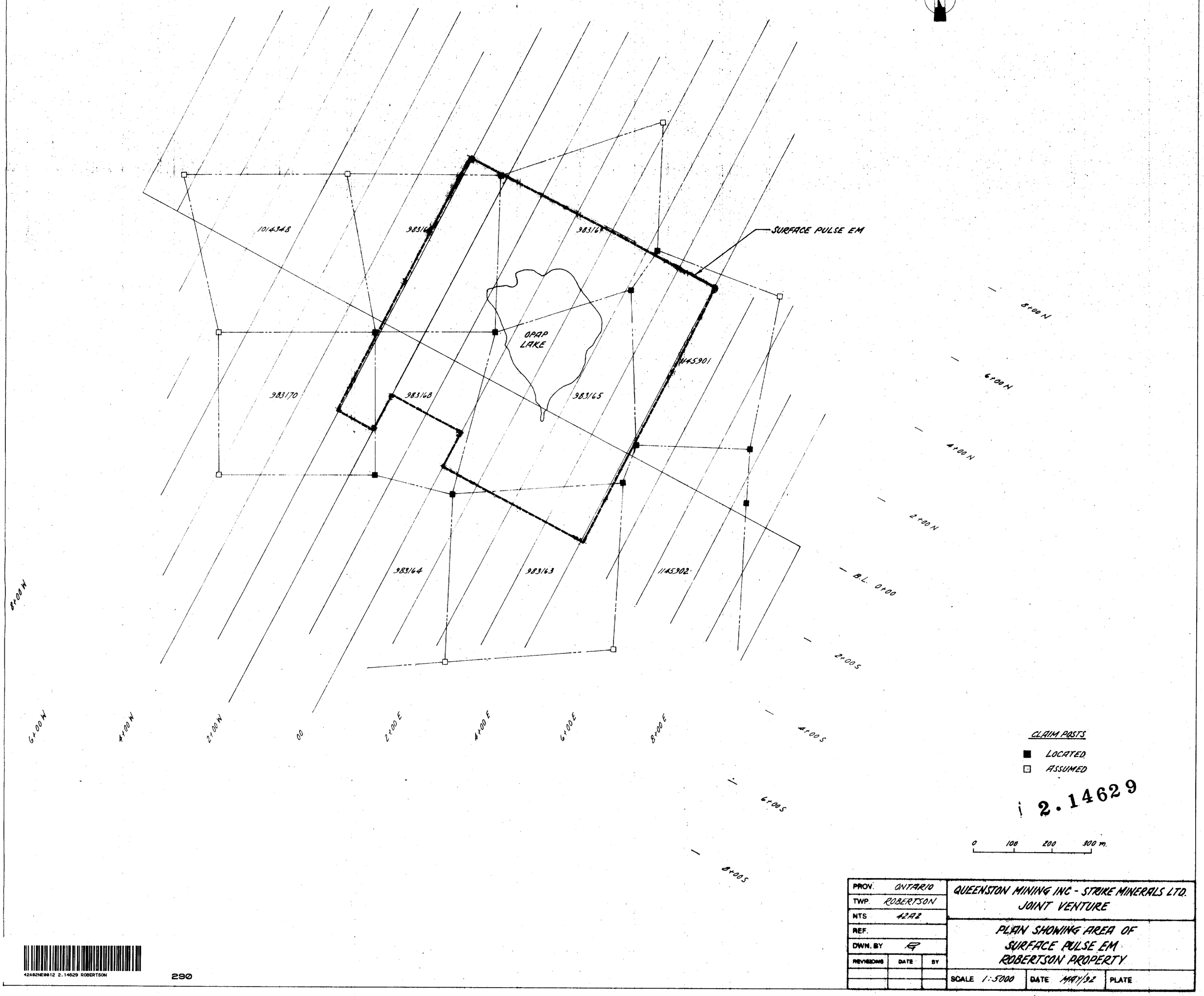
2.14629




| |
|---|
| QUEENSTON MINING INC.<br>JOUTEL RESOURCES LTD. |
| ROBERTSON TOWNSHIP PROPERTY |
| VERTICAL LONGITUDINAL SECTION |
| PROJECTION LOOKING TOWARD 030° |
| August 1991 \| Scale 1:2,500 |

2.14629

42A02NE0012 2.14629 ROBERTSON




CLAIM POSTS

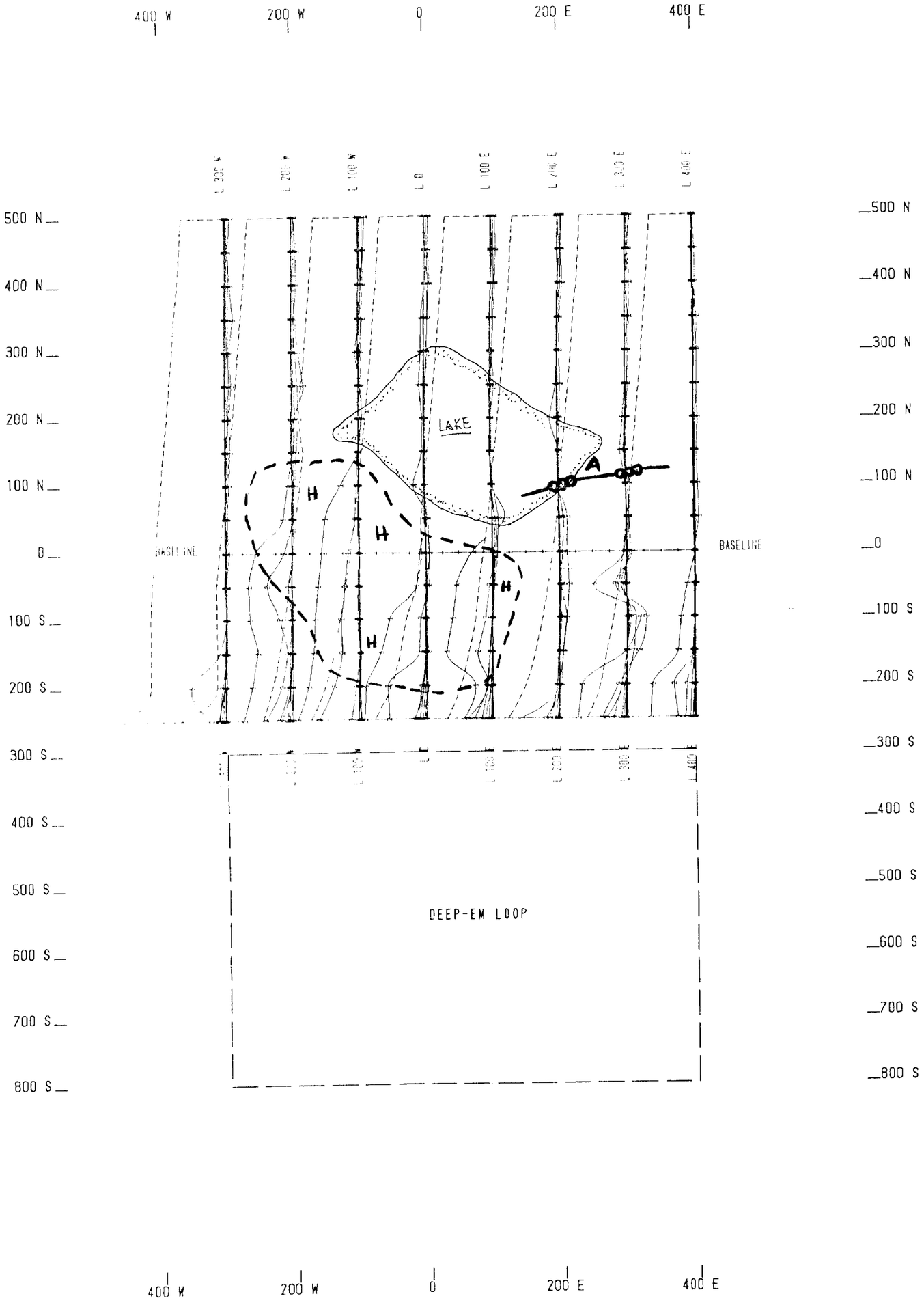
■ LOCATED

□ ASSUMED

2.14629

0 100 200 300 m.

| | | | |
|---|---|---|---|
| PROV. ONTARIO | | | QUEENSTON MINING INC - STRIKE MINERALS LTD. JOINT VENTURE |
| TWP. ROBERTSON | | | |
| NTS 42A2 | | | PLAN SHOWING AREA OF SURFACE PULSE EM ROBERTSON PROPERTY |
| REF. | | | |
| DWN. BY EG | | | |
| REVISIONS | DATE | BY | |
| | | | SCALE 1:5000 / DATE MAY/92 / PLATE |
| | | | |




## LEGEND

### INTERPRETATION.

L. L — Relatively low resistivity unit with respect to immediate surroundings. Bedrock valley, thicker overburden, with or whitout an associated tectonic structure..

H. H — Relatively high resistivity unit with respect to immediate surroundings. Bedrock ridge, thinner overburden, more resistive lithological unit..

Well-defined Pulse DEEPEM bedrock conductor. Conductance higher than 40 mhos. Definitely metallic causes, continuous, massive to semi-massive mineralisation..

Low conductivity Pulse DEEPEM conductor, or lower than 20 mhos. Causes possibly metallic: Discontinuous, stringer or disseminated mineralisation. Or electrolytic: conductive tectonic structure..

20 m 50 mhos — Depth, conductance and dip estimates of bedrock conductors..

Interpreted shear zone.

Interpreted fault.

### E.M. PULSE PROFILES

Vertical componante dBz/dt

First cm., Linear scale, 1 cm = 100 nTesla/s
1 cm = 1 decade nTesla/s

16 channels
B.P.

10000 1000 100 0 -100 -1000 -10000

Base Time: 8.33 ms
Ramp Time: 1.50 ms
Instrument: CRONE System

Scale 1:5000

100 0 100 200 300
(metres)

42A02NE0012 2.14629 ROBERTSON

300

# QUEENSTON MINING INC.

## ROBERTSON PROJECT

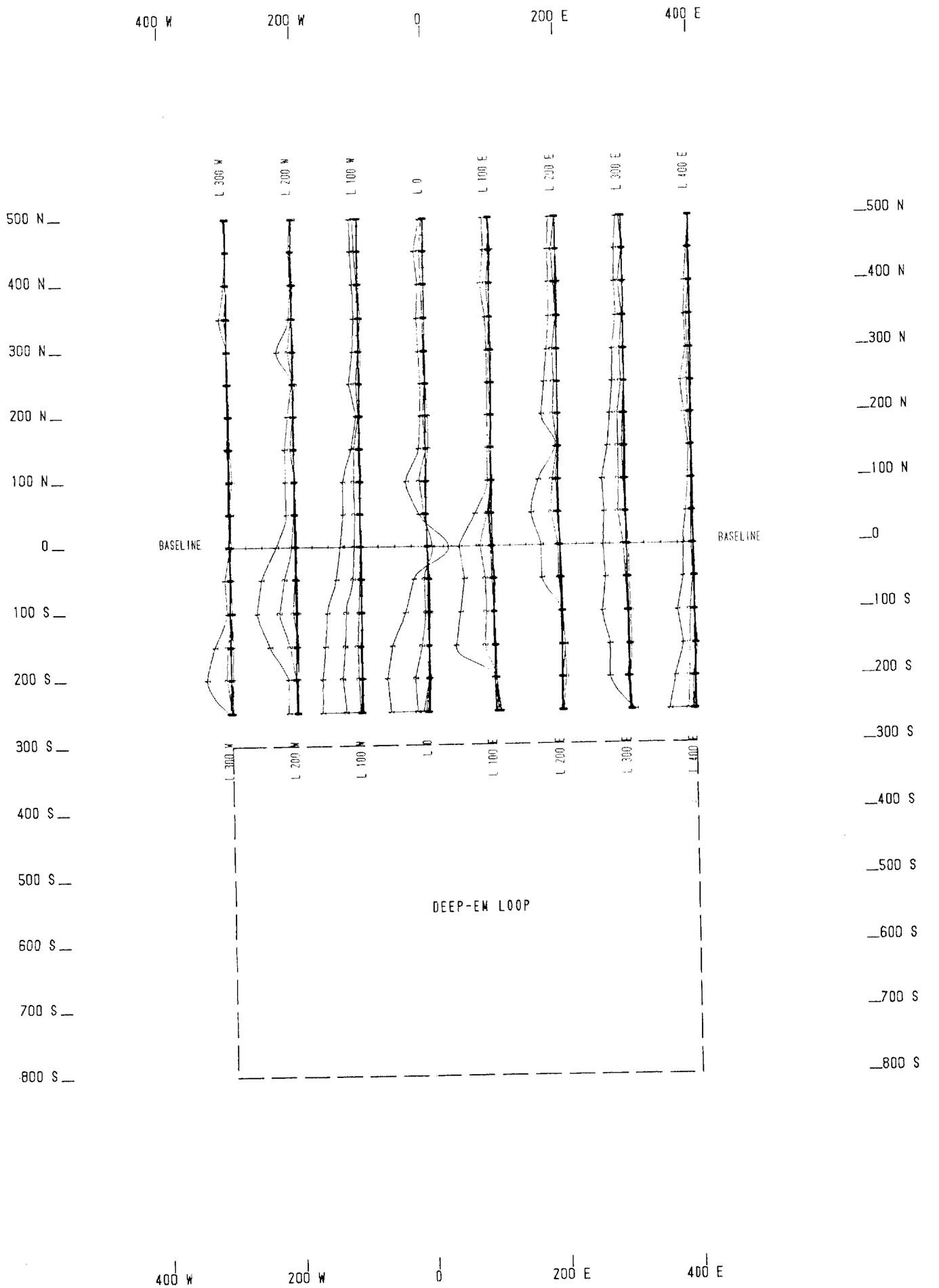
## PULSE E.M. SURVEY (DEEPEM)

VERTICAL COMPONANTE PROFILES (Z)

*VAL D'OR GEOPHYSIQUE LTEE*

Interpreted by: G. Lambert, Eng. Date 01/1991

Scale 1 : 5000 Drawing no. 91-645-5.2




## LEGEND

### INTERPRETATION.

Relatively low resistivity unit with respect to immediate surroundings. Bedrock valley, thicker overburden, with or without an associated tectonic structure..

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Depth, conductance and dip estimates of bedrock conductors..

Interpreted shear zone.

Interpreted fault.

### E.M. PULSE PROFILES

Horizontal componante dBx/dt

First cm., Linear scale; 1 cm = 100 nTesla/s
1 cm = 1 decade nTesla/s

16 channels

10000 1000 100 0 -100 -1000 -10000

Base Time: 8.33 ms
Ramp Time: 1.50 ms
Instrument: CRONE System

Scale 1:5000

# QUEENSTON MINING INC.

## ROBERTSON PROJECT

## PULSE E.M. SURVEY (DEEPEM)

HORIZONTAL COMPONANTE PROFILES (X)

*VAL D'OR GEOPHYSIQUE LTEE*

Interpreted by: G. Lambert, Eng. Date 01/1991

Scale 1 : 5000 Drawing no. 91-645-5.1