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Geophysical Survey Assessment Report

Quantec

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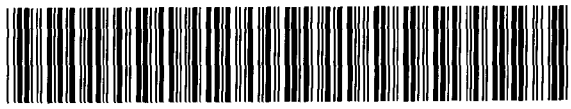
GEOSCIENCE ASSESSMENT OFFICE

Regarding the 3-D BOREHOLE TRANSIENT ELECTROMAGNETIC SURVEYS over the SHAWDOME PROPERTY Shaw Twp, ON on behalf of NORANDA INC., Rouyn-Noranda, QUEBEC

QCI QCI QCI QCI QCI QCI

QCI C-464
J. Legault
S. Coulson
C. Sawyer,
November, 1999
Porcupine, ON



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LIST OF FIGURES AND TABLES

1. INTRODUCTION

- **QCI Project No:** C-464
- **Client Name:** **NORANDA INC.**
- **Client Address:** 101 Aveue Portelance,
  CP 4000,
  Rouyn-Noranda, Quebec,
  J9X 5B6
  Canada
- **Project Name:** Shawdome Property
- **Survey Period:** August 28TH-October 24TH 1999
- **Survey Types:** LPTEM 3-D Borehole Surveys
- **Client Representatives:** Robert Boucher
- **Objectives:**

  The detection of potential off-hole conductor responses associated with veinlet to massive sulphide zones within the search radius of 100 to 150 meters from the boreholes.

- **Report Type:** Assessment

2 GENERAL SURVEY DETAILS

2.1. LOCATION

- **Province:** Ontario
- **Country:** Canada
- **Nearest Settlement:** South Porcupine, ON
- **NTS Map Reference:** 42 A/6

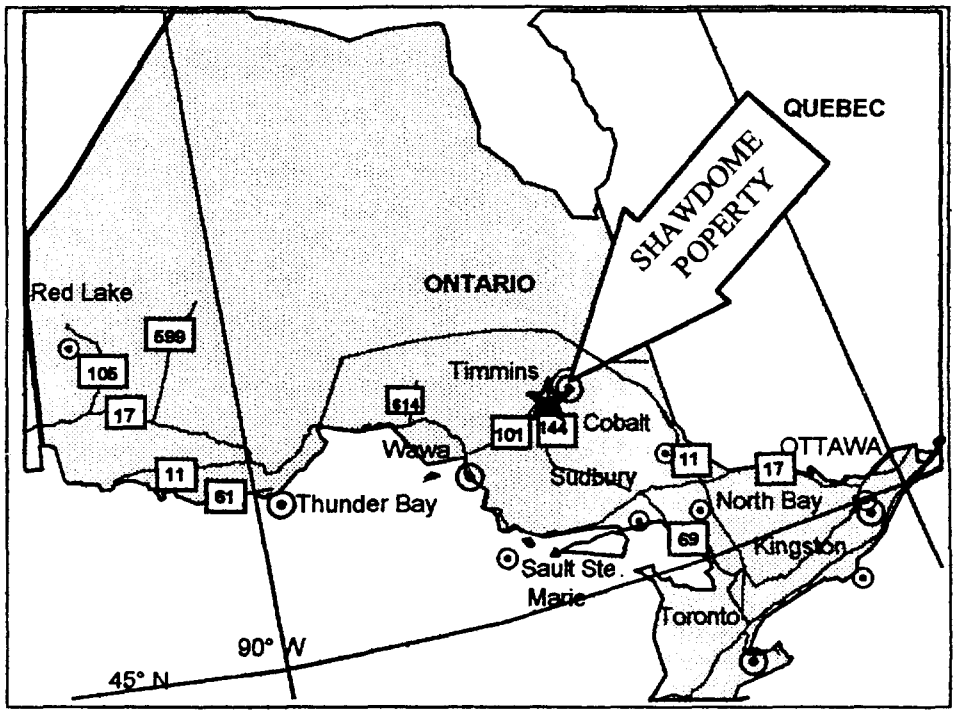


Figure 1: General Survey Location of the Shawdome Property.

2.2. ACCESS

- **General Location of Property:** approx. 2km south-east of South Porcupine, ON
- **Base of Operations:** Porcupine, ON
- **Nearest Highway:** Hwy. 101
- **Mode of Access to Property:** 4x4 truck along trails to drilling area

2.3. SURVEY GRID

- **Coordinate Reference System:** Local grid established prior to survey.
- **Method of Chaining:** metric
- **Loop Perimeter Direction:** approximately NS and EW

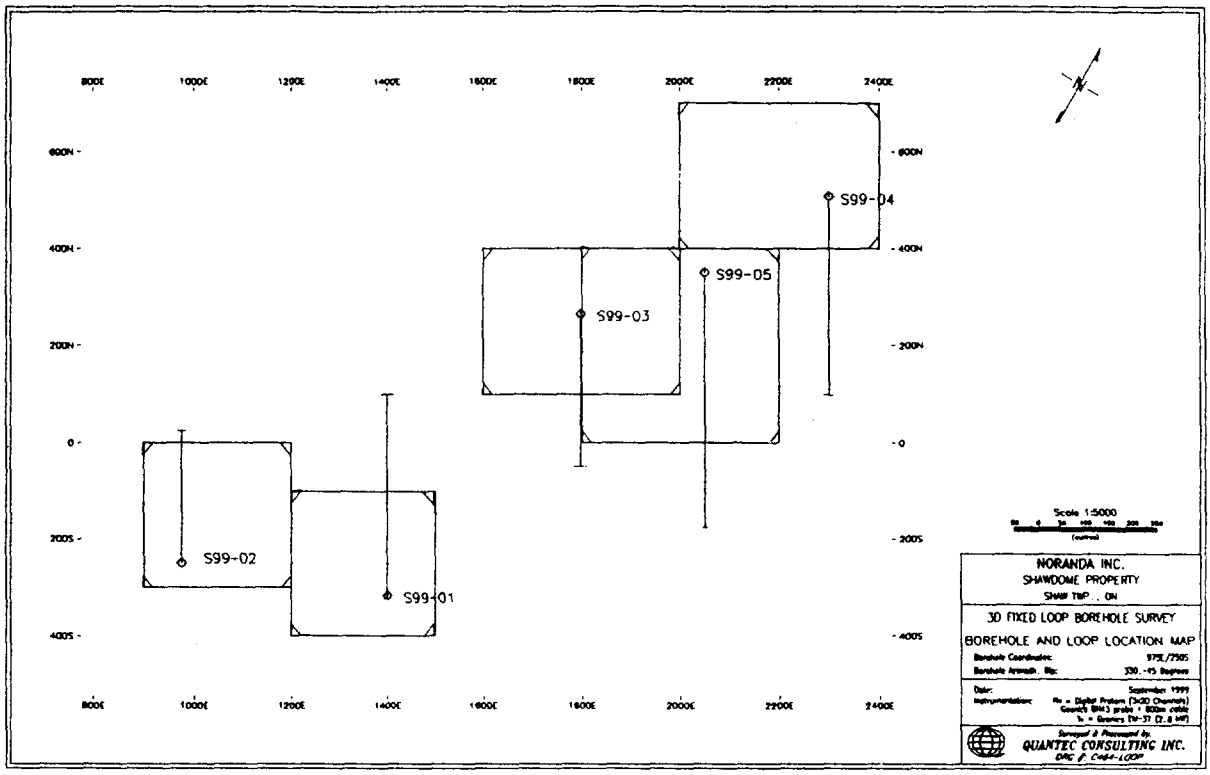


Figure 2: Drill Hole and Transmit Loop Locations for Shawdome Property

3. SURVEY WORK

3.1. GENERALITIES

- **Survey Dates:** Aug. 28th, Sep. 3rd, Sep. 9th, Oct. 4th, Oct 24th , 1999
- **Survey Period:** 5 days
- **Survey/Loop Days:** 5 days
- **Mob/Demob Day:** 0
- **Total Survey Coverage:** 2,955 meters from 4 boreholes (see Table I)

HOLE	SURVEY TYPE	START (depth m)	END (depth m)	TOTAL (m)	DRILLED DEPTH(m)
S99-01	3-D (C loop)	0	600	600	602
S99-02	3-D (C loop)	0	420	420	423
S99-03	3-D(C loop)	0	470	470	472
S99-04	3-D (C loop)	0	565	565	572
S99-05	3-D (C loop)	0	540	540	540
			Total	2595	

Table I: Borehole TEM Coverage at the Shawdome Property.

3.2. SPECIFICATIONS

- **Method:** Transient Electromagnetic
- **Technique:** Profiling
- **Configuration:** 3-D Borehole
- **Output Power Stage:** Low Power
- **Dimension:** 3D (X, Y and Z components)
- **Borehole Names/Locations:** see Table II and Fig. 2
- **Borehole Azimuth/Dips:** see Table II
- **Loop Locations:** see Table II and Fig. 2
- **Loop Sizes:** see Table II and Fig. 2

HOLE	COLLAR LOCATION	AZIMUTH/DIP	LOOP SIZE	LOOP LOCATION
S99-01	14+00E/3+25S	330/-45	300m x 300m	100S-400S;1200E-1500E
S99-02	9+75E/2+50S	330,-50	300m x 300m	0-300N;900E-1200E
S99-03	18+00E/2+60N	150,-50	300m x 400m	100N-400N;1600E—2000E
S99-04	23+10E/5+00N	150/-45	300m x 400m	400N-700N;2000E-2400E
S99-05	20+50E/3+50N	150/-45	400m x 400m	0-400N;1800E-2200E

Table II: Borehole and Loop Locations at the Shawdome Property.

3.3. PERSONNEL

- **Field Project Manager:** Chris Sawyer, Mississauga, ON
- **Field Assistants:** Donald McLaren, North Bay, ON

3.4. INSTRUMENTATION

- **Receiver:** Geonics Digital Protem (3 channels, 20 time gates)
- **Receiver Coils:** Geonics BH43-3D probe with Tilt Sensors.
- **Transmitter:** Geonics EM-37 (30 Hz, 50% duty cycle)
- **Power Supply:** Geonics GPU-2000 with Honda 5.5HP with Gerator alternator (2.8kVA @ 400Hz)
- **Survey Parameters:**

Pulse repetition frequency:	30Hz
Gain:	3 to 6
Integration number:	15
Loop Size:	300m x 300m to 400m x 400m
Current:	17.5 – 19.5 amps
Turn-off time:	220 – 235 μs
Gate position:	(see Appendix C)
Synchronization mode:	Crystal

Table III: System Parameters for Borehole TEM Survey.

- **Coil Conventions:** (see Fig. B3)

COMPONENT	COIL ORIENTATION
Z	Positive Axially Up hole
X	+ up orthogonal to hole and along BH azimuth
Y	+ left orthogonal to hole and horizontal

Table IV: Coil Conventions for Borehole TEM Survey.

- **Data Reduction:** nanoVolts/metre^2

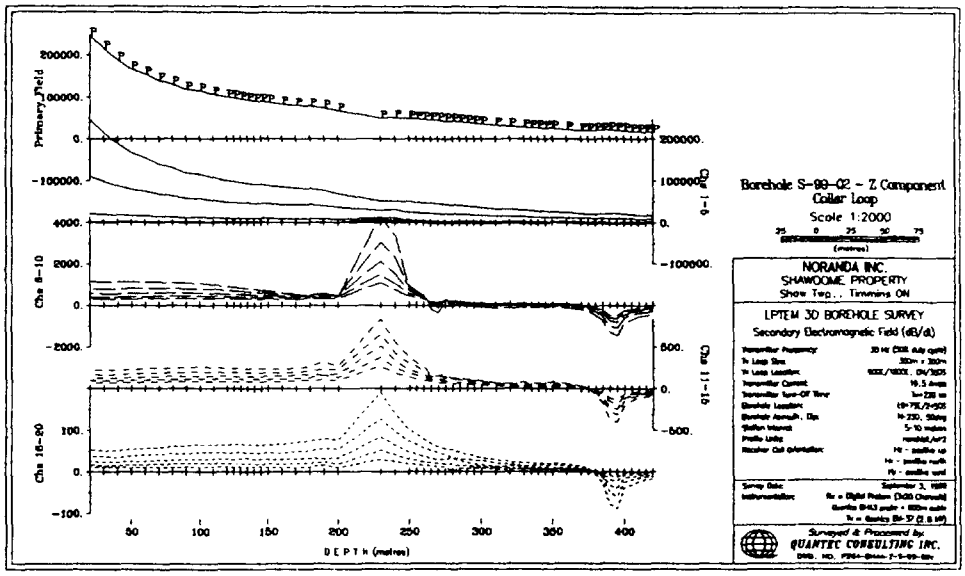


Figure 3: Borehole TEM 4-Axis Profile Format.

- **Profiles:**

Profile Format	4-Axis (see Fig. 3)
# of Profiles:	16
Map Scale:	1:2000
Components:	3D survey: Total Field, X, Y and Z

Table V: Borehole TEM Profile Specifications.

- **Digital Data:** Daily raw files and processed data (Geosoft .XYZ format) on 3.5 inch HD (1.44 Mbytes) diskette(s) - see Appendix G

a) raw data dump files, according to acquisition date (DDMMYY.RAW)
Geonics Digital Protem format (refer to Protem manual)

b) reduced XYZ ASCII data files, according to hole number and component
(i.e. b2897k.xyz where b=borehole, k=component - Z.X, Y or T for Total Field).

Column 1: hole number
Column 2: Station number i.e. depth down hole(m)
Column 3: Primary pulse (millivolts)
Column 4: Channel 1 secondary rate of decay of TEM field (nanoVolt/m^2)
Column 5: Channel 2 ...
⇓
Column 23: Channel 20 secondary rate of decay of TEM field (nanoVolt/m^2)

4. SURVEY RESULTS

The results of the borehole TEM survey over the Shawdome property indicate that mineralization tested by the drill holes has strong conductivity thickness but is limited in surface area and continuity. In addition, the ultramafic rocks associated with the mineralization are moderately to strongly conductive.

4.1. HOLE S99-01

The results of the TEM survey indicate off-hole conductors of small to moderate surface area (<50m x 50m) but moderate to strong conductivity located at 250m, 350m and 420. Minor in-hole responses detected at 440m and 510m should be evident in the core.

The off-hole conductor at 250m is interpreted as a moderate surface area (<50m x 50m), moderate strength conductor located approximately 25 metres above and to the right of the drill hole. Based on the lack of crossovers in the Hx and Hy components. the conductor is expected to dip shallow to the drill hole.

The off-hole conductor at 350m is interpreted as a crossover or dipolar type anomaly indicating a body of finite dimensions sub-parallels the drill hole. The source of this strong conductor lies approximately 25 metres below and and left of the drill hole.

The off-hole conductor at 420m is interpreted as a moderate to strong conductance body lying approximately 25 metres above and to the right of the drill hole. A strong short wavelength in-hole response at 440m may be related to this conductor.

4.2. HOLE S99-02

The TEM result indicate two (2) zones of conductivity – the first at 225m and the second at 395m. An obstruction was encountered in the drill hole near 200m which required replacing the drill rods in the hole to 220m to permit logging the lower portion of the drill hole. Unfortunately when the rods were retrieved the hole could only be logged to 200m depth leaving a 200m gap of not data. As no obvious source of a conductor was evident in the core it is believed that the strong positive Hz response at 220m may be the positive shoulder of a dipolar or crossover type response. Therefore, a possible source of this anomaly may be a strong, small area (20m x 20m) conductor lying sub-parallel and above, within 10 metres, of the drill hole. However without the complete data set the interpretation is inconclusive.

The conductor detected off-hole at 395m is interpreted as a small surface area (<50m x 50m) strong conductor located approximately 15 metres to the right (east) and above (up dip) of the drill hole.

4.3. HOLE S-99-03

The data indicates an anomalous feature in the lower portion of the hole from 380 to 450 meters. The response includes edge type responses at 380 and 405 meters which should be evident in the core. An off-hole response centred at 425 meters suggests a moderate area (<50m x 50m), high conductance body of finite dimensions with a sub-vertical dip which is

evident in the core. An off-hole response centred at 425 meters suggests a moderate area (<50m x 50m), high conductance body of finite dimensions with a sub-vertical dip which is centred east of the hole approximately 25 meters. An oblique angle of the body relative to the drill hole is necessary in order to explain the all positive response in the Hx component. The increasing secondary field response at the end of the hole suggests a possible conductor beyond the end of the hole. This may also be due to the hole entering the more conductive ultramafic unit.

4.4. HOLE S99-04

The TEM results of S99-04 indicate a strong positive to negative trending Hz response from 160m to the end of the hole at 565m. The source is interpreted as a distant large area conductive body sub-paralleling the hole possibly above and to the right of the drill hole. However, due to the lack of significant results in the Hx and Hy components it is difficult to determine conclusively, a precise location for the conductive source.

4.5. HOLE S99-05

The TEM survey of S99-05 yielded a number of short wavelength response interpreted as weak in-hole conductors which should be evident in the core. The most significant response however is building positive Hz response a the bottom of the drill hole. This indicates a possible large area (>100m x 100m), moderate to strong conductor located beyond the end of the drill hole. A location of the conductor relative to the drill hole is undetermined due the incomplete Hx and Hy responses.

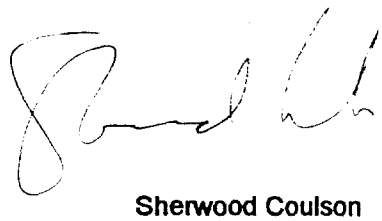
5. CONCLUSIONS AND RECOMMENDATIONS

The results of the TEM surveys in the Shawdome holes successfully delineated a number of small area, moderate to high conductivity thickness conductors. Some have been tested by drilling and others remained untested. It appears that these conductors vary in dip relative to the drill holes suggesting a complex geologic environment. If any of the off-hole conductors detected are felt to be significant, follow-up drilling is recommended to determine their source. Some consideration should also be given to extending hole S99-05 to determine the possible source of the building response at the end of the drill hole. It is further recommended that any subsequent drill holes be logged using Borehole TEM to extend the area of investigation surrounding the drill hole.

RESPECTFULLY SUBMITTED

Chris Sawyer, B.Sc.
Geophysicist

Jean Legault, P.Eng.
Senior Geophysicist



Sherwood Coulson
Senior Geophysicist

Porcupine, ON
October 1999

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Chris Sawyer, declare that:

1. I am a geophysicist with residence in Mississauga, Ontario and am presently employed in this capacity with Quantec Consulting Inc. of Porcupine, Ontario.

2. I am a graduate of York University, Ont., in 1997, with an Bachelor of Science Degree in Earth Science.

3. I have practiced my profession in Canada since graduation.

4. I have no interest nor do I expect to receive any interest, direct or indirect, in the properties or securities of **NORANDA INC.**

5. I am responsible for the data acquisition, validation, and plotting of the results for this survey. Also I am the technical writer for this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time this report was written.

Porcupine, Ontario
October, 1999

Chris Sawyer, B.Sc
Geophysicist
Quantec Consulting Inc.

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Sherwood T. Coulson, hereby declare that:

1. I am a consulting geophysicist with residence in Porcupine, Ontario and am presently employed in this capacity with Quantec Consulting Inc. of Porcupine, Ontario.

2. I am a graduate of Cambrian College, Sudbury, Ontario in 1974 with an Honours Diploma in Geophysical Engineering Technology.

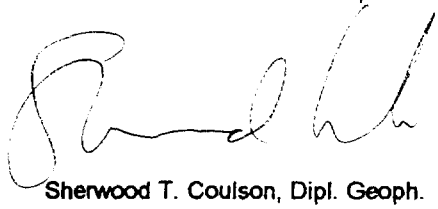
3. I have practiced my profession in Europe and North America continuously since graduation.

4. I am a member of the Canadian Society of Exploration Geophysicists and the Prospectors and Developers Association.

5. I have no interest nor do I expect to receive any interest, direct or indirect, in the properties or securities of **NORANDA INC.**

6. I reviewed the final data processing and the accuracy of the survey results. The statements made by me in this report represent my best opinion and judgment based on the information available to me at the time of the writing of this report.

Porcupine, ON
October, 1999



Sherwood T. Coulson, Dipl. Geoph.
Geophysicist
Quantec Consulting Inc.

APPENDIX B

SURVEY PROCEDURES AND GENERAL THEORY

TEM Borehole and Surface

TEM profiling is conducted on lines either adjacent to (Off-Loop mode) or surrounded by (In-Loop mode) a large fixed rectangular transmit loop. Current is passed through the loop which following the Turn-Off, produces a primary magnetic field (H) both inside and outside (Figure B1). This primary field induces a vortex current pattern, which energizes conductors and which in turn create their own secondary magnetic field (Bs). The rate of change of the decaying secondary magnetic flux (dBs/dt) is measured as the vertical (**Hz**), in-line horizontal (**Hx**) and/or cross line horizontal (**Hy**) vector components on surface using an air-core sensor coil. These measurements of the TEM decay (20 log-time slices) are taken during the "Off-Time", using a 30 cycle/sec, base repetition rate.

In keeping with the industry standard, the primary field is always considered positive up inside the loop and negative down outside. Similarly, for secondary EM fields, the receiver coil is oriented positive vertical up for the **Hz** component. The convention for In-Loop surveys, has the in-line component, **Hx** oriented either positive east (for grid EW lines) or north (for grid NS lines). The Off-Loop survey convention differs, with the receiver coil orientation for **Hx** pointing positive away from the transmit loop (for EW or NS lines). Finally, the sign convention in all cases, has the **Hy** component pointing positive orthogonal to the left of the **Hx**, according to the right-hand-rule.

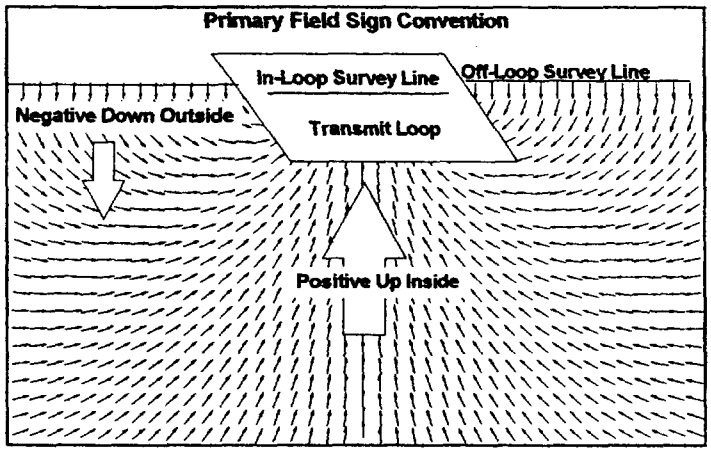


Figure B1: Primary field sign convention for TEM surveys.

Borehole TEM surveys are conducted in either a 1-D mode or 3-D mode. The borehole survey is particularly useful to determine the geometrical relationship between a conductor or a complex swarm of conductors around the drill hole. Of particular importance is its application in cases where the drilling is believed to have missed the target of interest. A 1-D borehole survey can effectively determine the direction and distance from the drill hole to the conductor by comparing the results of logs from several loops positioned around the hole (Figure B2), or by comparing the response from hole-to-hole. Additionally, conductors located below the end of a drill hole, which either may be too deep and/or have gone previously undetected from surface, may be discovered during the course of a borehole. Similar determinations can be made from a 3D borehole survey by measuring two orthogonal secondary field components in addition to the axial component.

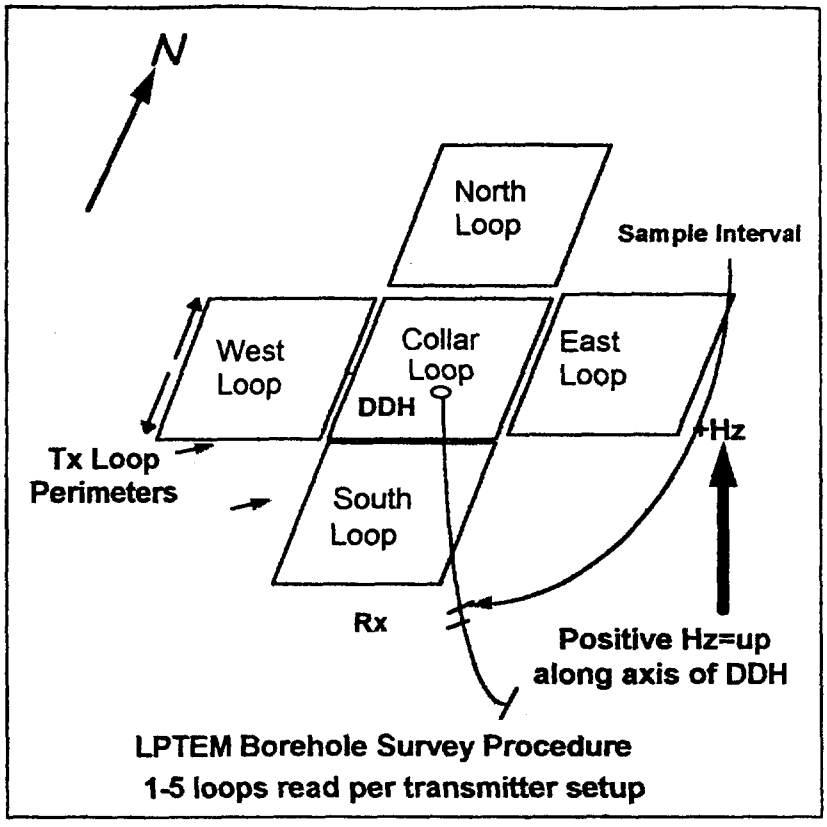


Figure B2: Loop Configurations and Polarity Conventions for 1D Borehole Profiling.

For 3-D and 1-D borehole surveys, the probe is manually lowered down the borehole at the end of a cable and, at successive depths, measurements of one (1-D) to three (3-D) orthogonal components of the TEM field (Hx, Hy, Hz) are individually obtained in succession by electronically switching the sensor coils in the borehole antenna through the use of a relay/switching system from surface, via the borehole-cable shield. As the probe is free to rotate on its vertical axis, a correction is later applied to the 3-D data in order to rotate the components into their respective coordinate axes.

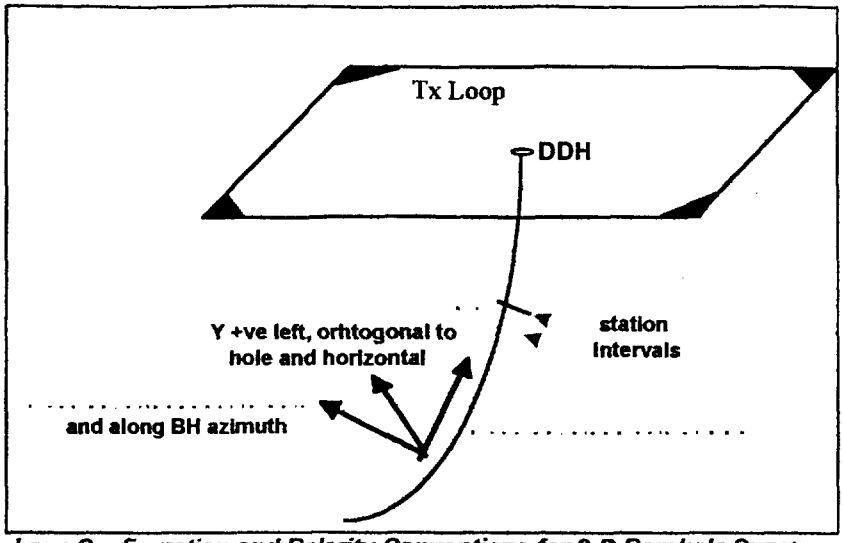


Figure B3: Loop Configuration and Polarity Conventions for 3-D Borehole Surveys

The secondary fields induced decay at a rate proportional to the conductivity-thickness and are then measured and profiled by the borehole sensor-probe.

a) Hz is positive up along the axis of borehole,
b) Hx is positive perpendicular to the borehole axis and pointing upward, in a vertical plane, in the direction of the azimuth of the hole,
c) Hy is positive 90° counterclockwise to Hx and horizontal, according to the right-hand rule.

At the end of each survey day, the stored data are transferred to a microcomputer where they corrected for the turn-off time, loop area, system gain and current, and converted from millivolts to nanoVolts per ampere meter squared or nanoVolts per meter squared. The data are then transferred to disk for storage and processing. Report quality field plots are generated on site, using a 24-pin printer in order to monitor the data characteristics and to provide a preliminary interpretation capability.

The following equations govern the transient EM response for buried plate-like conductive bodies[1]

Target Response to Transmitter Current Waveform:

$$emf = \frac{1}{\tau} e^{-t/\tau}$$

$$\begin{aligned} where:\ t &= fixed\ time \\ e &= exponential\ decay \\ \tau &= time\ constant\ of\ conductor \end{aligned}$$

The time constant of the response is alternatively defined as the slope of the lin-log decay curve (Geonics) or, more exactly, as the time channel where the amplitude of the decay collapses to 37% (1/e) of its maximum value. Both τ and the analogous decay strength (i.e., the number of anomalous channels above background), are commonly used as indicators of conductor quality. This relationship between decay-strength and the conductivity-thickness can easily be demonstrated in the following equation for a vertically dipping conductive sheet:

$$\tau = \frac{\sigma\mu th}{\pi^2}\ for\ a\ thin\ plate$$

$$\begin{aligned} where\ \sigma &= conductivity\ of\ target \\ \mu &= magnetic\ susceptibility \\ t &= thickness\ of\ plate \\ h &= vertical\ extension\ of\ plate \end{aligned}$$

thereby giving, for an infinite vertical sheet:

$$\sigma t = \frac{\pi^2}{\mu h}\tau \approx \tau/_{0.31}\ mhos/metre\ (siemens)$$

From these equations and relationships, it therefore becomes obvious of the common use of the anomaly strength of decay as a simple, rule-of thumb indicator of the relative conductivity-thickness product for TEM surveys.

In addition, the total secondary field is calculated using the three components (Hx, Hy and Hz) in the following formula

$$Htot = \sqrt{Hx^2 + Hy^2 + Hz^2}\ nanoVolt/Am^2.$$

[1] From Geonics Limited, EM-37 TEM System Design Parameter, Mississauga, Ont., 1982.

APPENDIX C

INSTRUMENT SPECIFICATIONS

GEONICS LIMITED

EM-37 Transmitter
Technical Specifications

Current Wave form:	bipolar square wave.
Repetition Rate:	3Hz, 7.5Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz, 6.25Hz or 25Hz in countries using 50Hz power line frequency; all six base frequencies are switch selectable.
Turn-off Time(t):	fast linear turn-off maximum of 450 μsec. at 30 amps into a 300x600 meter loop. Decreases proportionally with current and the root of the loop area to a maximum of 20 μ sec. Actual value of t read on front panel meter.
Transmitter Loop:	any dimensions from 40x40 meters to 300x600 meters maximum at 30 amps. Larger dimensions at reduced current. Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest setting to prevent overload.
Protection:	circuit breaker protection against input over voltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage output voltage and current indicated on front panel meter.
Output voltage:	24 to 160 volts (zero to peak) maximum
Output power:	2800 watt maximum
Motor generator:	5 HP Honda gasoline engine coupled to a 120 volt, three phase, 400 Hz alternator. Approximately 8 hours continuous operation from built-in fuel tank.

Component Dimensions and Weights

Transmitter Console :	20 by 42 by 32 cm, 20 kg
GPU:	44 by 32 by 21 cm, 65 kg

APPENDIX C

INSTRUMENT SPECIFICATIONS

GEONICS LIMITED

Digital Protem Ground Transient Electromagnetic System
Technical Specifications

Receiver

Measured Quantity: Time rate of decay of magnetic flux along 3 axes

Sensors:

1. (L.F.): Air-cored coil of bandwidth 60 kHz; 100 cm diameter
2. (H.F.): Air-cored coil of bandwidth 850 kHz; 100 cm diameter
3. (3D-3): Three orthogonal component sensor; simultaneous operation
4. (3D-1): Three orthogonal component sensor; sequential operation

Time channels: 20 geometrically spaced time gates for each base frequency gives range from 6 μsec to 800 msec.

Repetition Rate: (Base Frequency) 0.3 Hz, 0.75, 3, 7.4, 30, 75 or 285 Hz for 60 Hz power-line networks

Synchronization: (switch selectable):
(1) reference cable
(2) high stability (oven controlled) quartz crystals.

Integration time: 2, 4, 8, 15, 30, 60, 120, 240 sec.

Calibration: Internal self calibration
External Q coil calibration (optional)

Keyboards: Two 3 x 4 matrix sealed key pads with positive tactile feedback

Gain: Automatic or manual control

Dynamic Range: 23 bits (132 dB)

Display Quantity:

(1) Table of time rate of decay of magnetic flux (dB/dt)
(2) Curve of rate of decay of magnetic flux (dB/dt)
(3) Table of apparent resistivity (ρ_a)
(4) Curve of apparent resistivity (ρ_a)
(5) Profile of dB/dt
(6) Real time noise monitor
(7) Calibration curve
(8) Data acquisition statistics (real time)

Storage: Solid state memory with capacity for over 3000 data sets

Display: 8 lines by 40 character (240 x 64 dot) graphic LCD

Data Transfer: Standard RS-232 communications port.

Processor: CMOS 68HC000 8 MHz CPU

Receiver Battery: 12 volts rechargeable battery for 8 hours continuous operation. 6 hours in XTAL mode

Receiver Size: 34 x 38 x 27 cm

Receiver Weight: 15 kg

Operating Temp.: -40°C to +50°C

Transmitters: (1) Geonics TEM47
(2) Geonics TEM57
(3) Geonics TEM37

Gate Locations

GATE	285/237.5 Hz			75/62.5 Hz			30/25 Hz			GATE
1	6.000	6.813	1.625	32.00	35.25	6.500	80.00	88.13	16.25	1
2	7.625	8.688	2.125	38.50	42.75	8.500	96.25	106.9	21.25	2
3	9.750	11.13	2.750	47.00	52.5	11.00	117.5	131.3	27.5	3
4	12.50	14.19	3.375	58.00	64.75	13.50	145.0	161.9	33.75	4
5	15.88	18.07	4.375	71.5	80.25	17.50	178.8	200.6	43.75	5
6	20.25	23.06	5.625	89.00	100.3	22.50	222.5	250.6	56.25	6
7	25.88	29.44	7.125	111.5	125.8	28.50	278.8	314.4	71.25	7
8	33.00	37.56	9.125	140.0	158.3	36.50	350.0	395.6	91.25	8
9	42.13	47.94	11.63	176.5	199.8	46.50	441.3	499.4	116.3	9
10	53.75	61.13	14.75	223.0	252.5	59.00	557.5	631.3	147.5	10
11	68.50	77.94	18.88	282.0	319.8	75.50	705.0	799.4	188.8	11
12	87.38	99.38	24.00	357.5	405.5	96.00	893.8	1014	240.0	12
13	111.4	126.7	30.63	453.5	514.8	122.5	1134	1287	306.3	13
14	151.7**	166.4	29.38	576.0	654.3	156.5	1440	1636	391.3	14
15	181.1	206.0	49.88	732.5	832.3	199.5	1831	2081	498.8	15
16	231.0	262.8	62.63	932.0	1059	254.5	2330	2648	636.3	16
17	294.6	335.2	81.25	1187	1349	325.0	2966	3373	812.5	17
18	375.9	427.7	103.6	1512	1719	414.5	3779	4297	1036	18
19	479.5	545.6	132.1	1926	2190	528.5	4815	5475	1321	19
20	611.6	695.9	168.5	2455	2792	674.0	6136	6978	1685	20
21*	780.1			3129			7821			21*

* End of Gate 20

** A Gap of 9.7 µsec exists between Gate 13 and Gate 14 in the micro-frequency range/

This Table applies to both synchronization modes regardless of which of TEM37, TEM47 and TEM57 transmitters is used, provided that correct Tx model is selected in Header (2.4).

Note: 7.5/6.25 and 0.75/0.625 Hz proportional to 75/62.5 Hz
3/2.5 and 0.3/0.25 Hz proportional to 30/25 Hz

APPENDIX C

INSTRUMENT SPECIFICATIONS

GEONICS LIMITED

BH-43 3-D Borehole Probe with Tilt Sensors
Technical Specifications

Measured Quantity:	Time derivative of axial and radial magnetic field
Sensors:	Three orthogonal coils (one axial, two radial)
Overall Length:	334 cm
Maximum Diameter:	3.8 cm
Weight:	9.5 kg
Sensor-Preamplifier Resonant Frequency:	10 kHz
Sensor Areas:	100 m^2
Operating Temperature:	-30 degrees C to +80 degrees C
Probe Rotation Correction:	Two orthogonal tilt meters with range ±1° to ±80° from vertical
Battery:	Rechargeable NiCd sealed pack for 15 hours continuous operation

Cable

Type:	Two-conductor shield polyurethane jacket Kevlar membrane
Diameter:	5.6 mm
Weight:	40 kg/km
Length:	730m

APPENDIX D

PRODUCTION SUMMARY

SHAWDOME PROPERTY					
3D BOREHOLE TEM SURVEYS					
DATE	DESCRIPTION	HOLE	START (m)	END (m)	TOTAL (m)
28-Aug	Put in 300m x 300m loop for S-99-01. Read hole. Pulled in loop.	S-99-01	0	600	600
3-Sep	Put in 300m x 300m loop for S-99-02. Read hole. Pulled in loop.	S-99-02	0	420	420
9-Sep	Put in 400m x 300m loop for S-99-03. Read hole. Pulled in loop.	S-99-03	0	470	470
4-Oct	Put in 400m x 300m loop for S-99-04. Read hole.	S-99-04	0	565	565
5 Oct	Retrieved transmit loop.	S-99-04			
24 Oct	Laid 400m x 400m loop and read hole S-99-05.	S-99-05	0	540	5440
25 Oct	Retrieve loop.				

APPENDIX E

OPERATOR COMMENTS

The borehole survey over the Shawdome Property progressed smoothly and without incident. Access to the grid was good and old cut grid lines made loop installation easier.

The holes were logged using a delay of –80 μs to provide a more accurate primary field measurement. The result of the negative delay is a saturation of channel 1 with primary field, but decreased logging time. The data was rotated using tilt meter methods.

Chris Sawyer, Geophysicist

APPENDIX F

LIST OF MAPS

- **LPTEM Borehole Profiles:** **Multi-Channel 4-Axis Profile Plots:** (time rate of decay of the secondary electromagnetic field, 3D:Total Field, X, Y and Z components, 1:2000 scale, nanoVolts per metre^2)

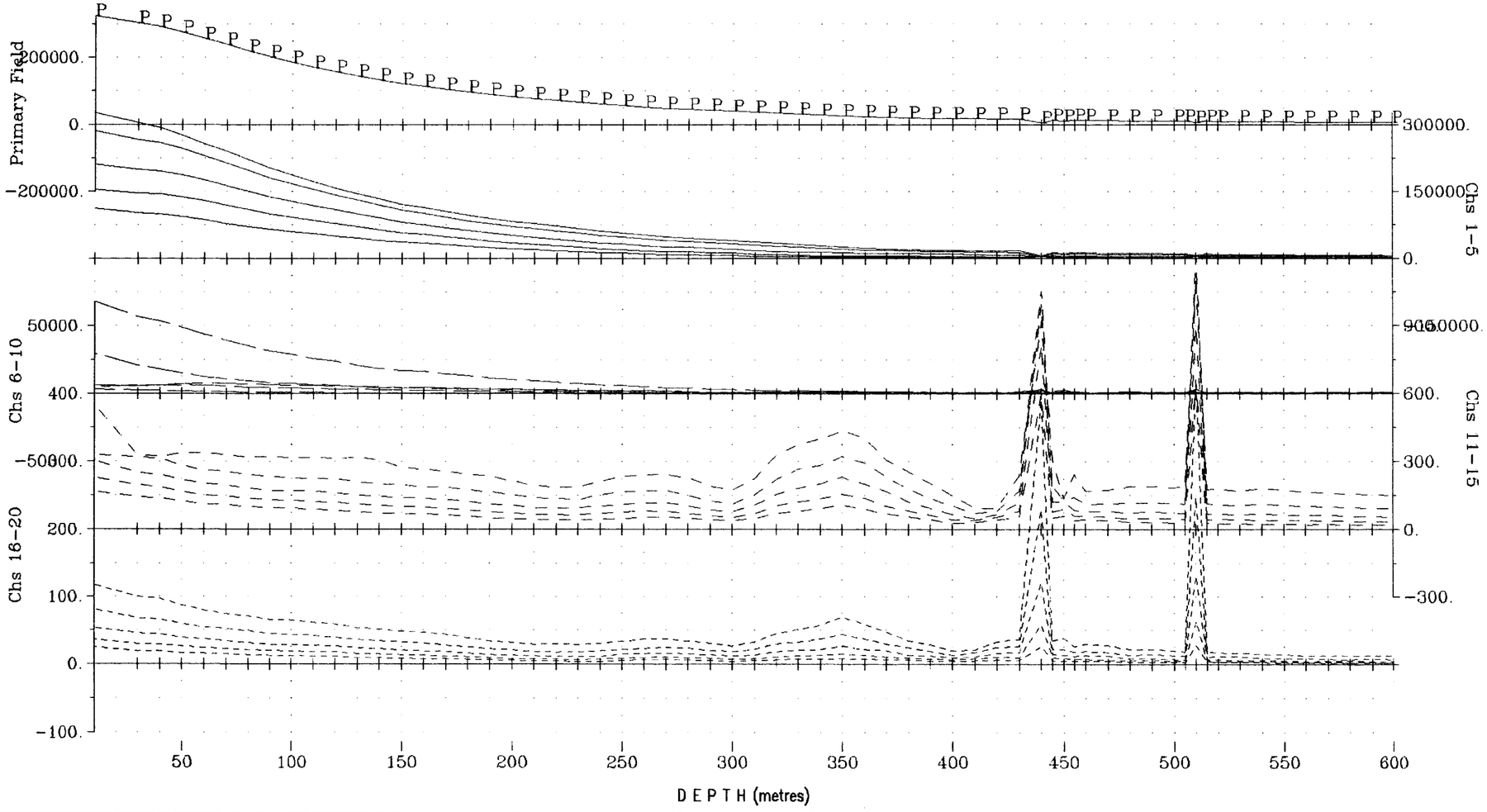
HOLE	DRAWING # (K=X,Y,Z and TF for Total Field
S99-01	C-464-BH4A-K-S-99-01c
S99-02	C-464-BH4A-K-S-99-02c
S99-03	C-464-BH4A-K-S-99-03c
S99-04	C-464-BH4A-K-S-99-04c
S99-05	C-464-BH4A-K-S-99-05c
TOTAL	16

- Borehole Loop Location Map: DWG #: C464-TEM-LOOP

TOTAL PROFILES=16
TOTAL PLAN MAPS=1

APPENDIX G

PROFILES AND PLAN



Borehole S99-01 – Total Field
Collar Loop

Scale 1:2000

25 0 25 50 75

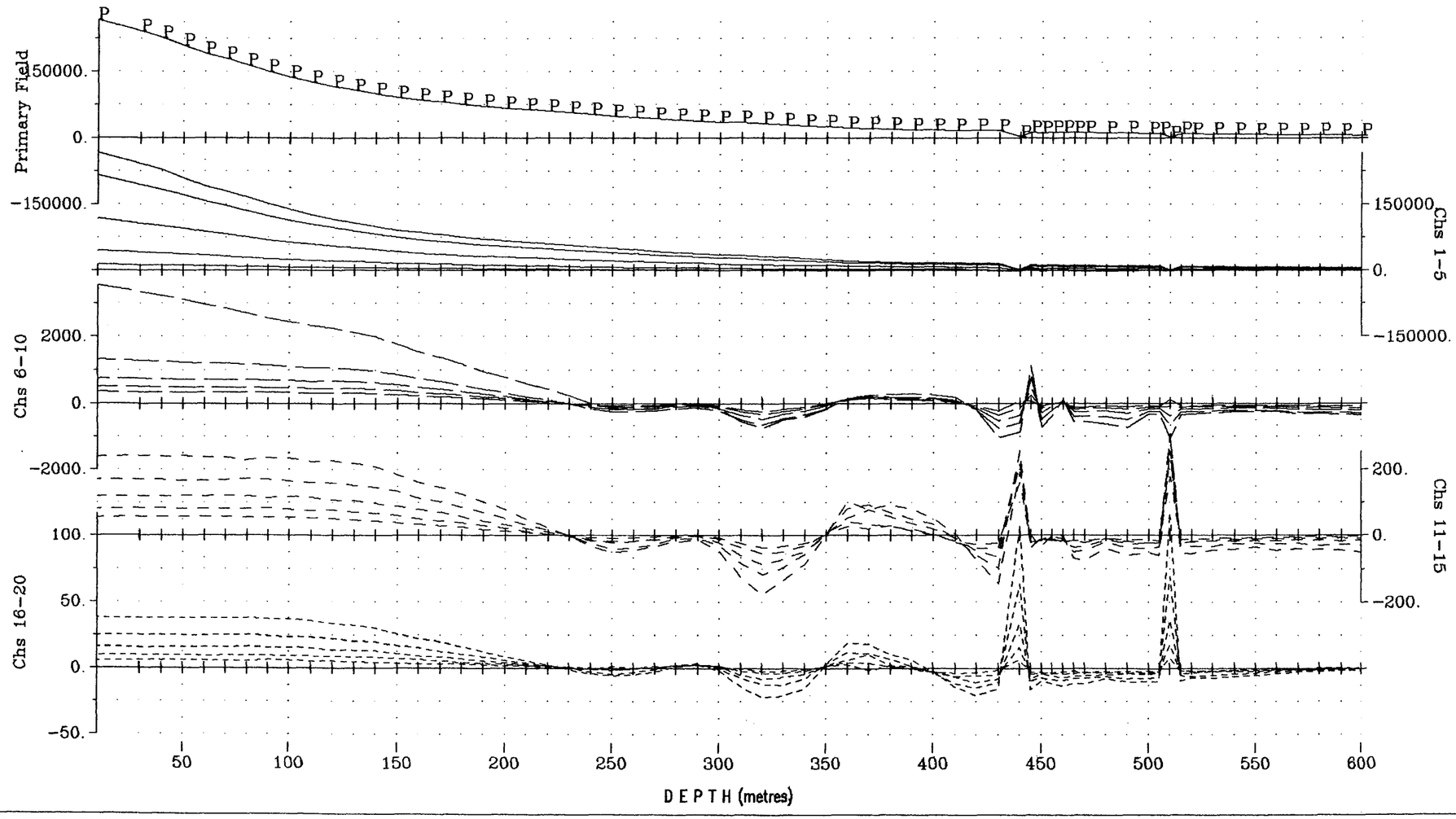
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	1200E-1500E;100S-400S
Transmitter Current:	19.0 Amps
Tx Turn-Off-Time and Rx Delay:	220 us, -85 us
Borehole Location:	14+00E, 3+25S
Borehole Azimuth, Dip:	000, -45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive north, Hy - positive west
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	August 28, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	Geonics BH43 probe + 600m cable
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-TF-S99-01c



Borehole S99-01 – Z Component
Collar Loop

Scale 1:2000

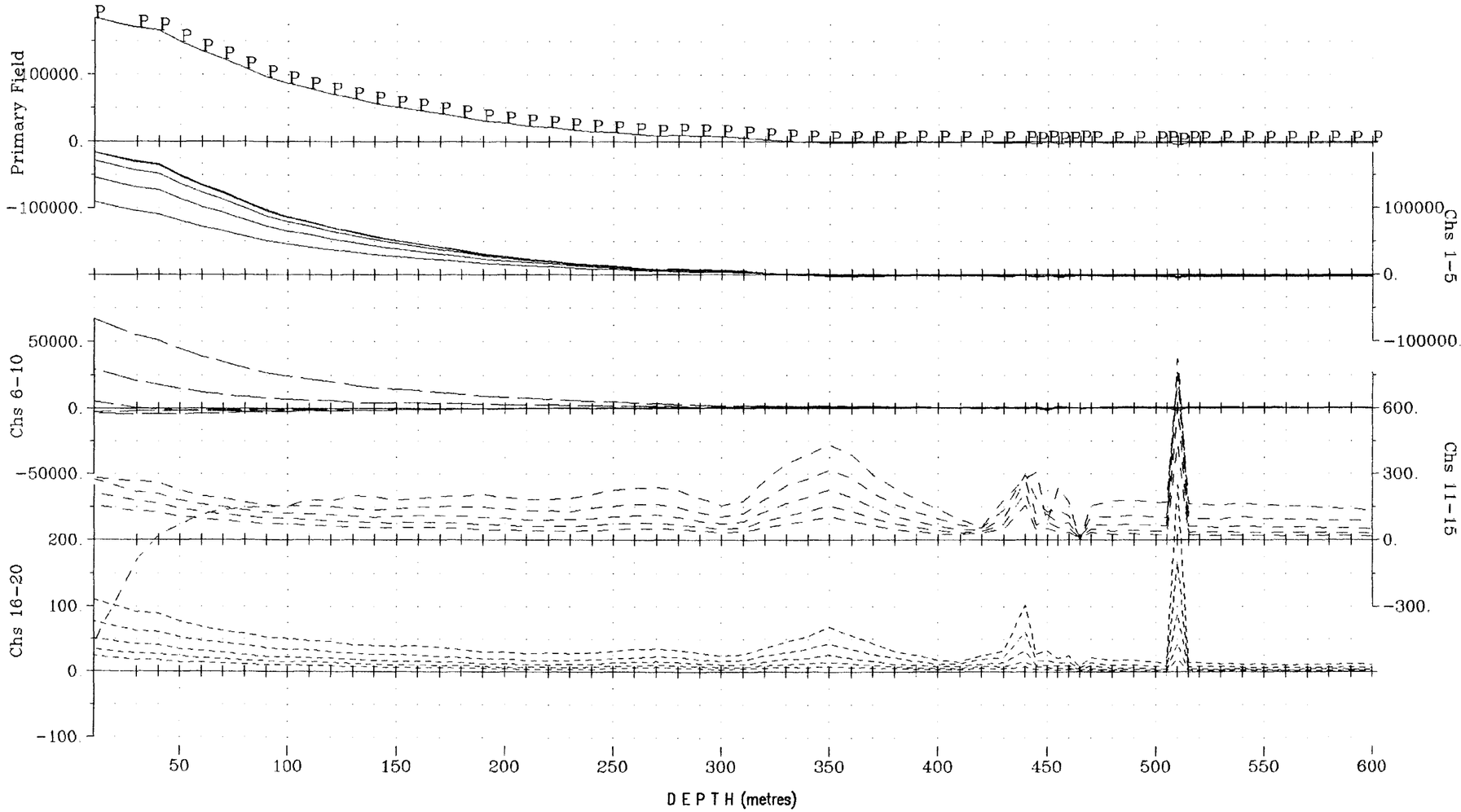
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	1200E-1500E;100S-400S
Transmitter Current:	19.0 Amps
Tx Turn-Off-Time and Rx Delay:	220 us, -85 us
Borehole Location:	14+00E, 3+25S
Borehole Azimuth, Dip:	000, -45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north, Hy - positive west
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	August 28, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-Z-S99-01c



Borehole S99-01 – X Component
Collar Loop

Scale 1:2000

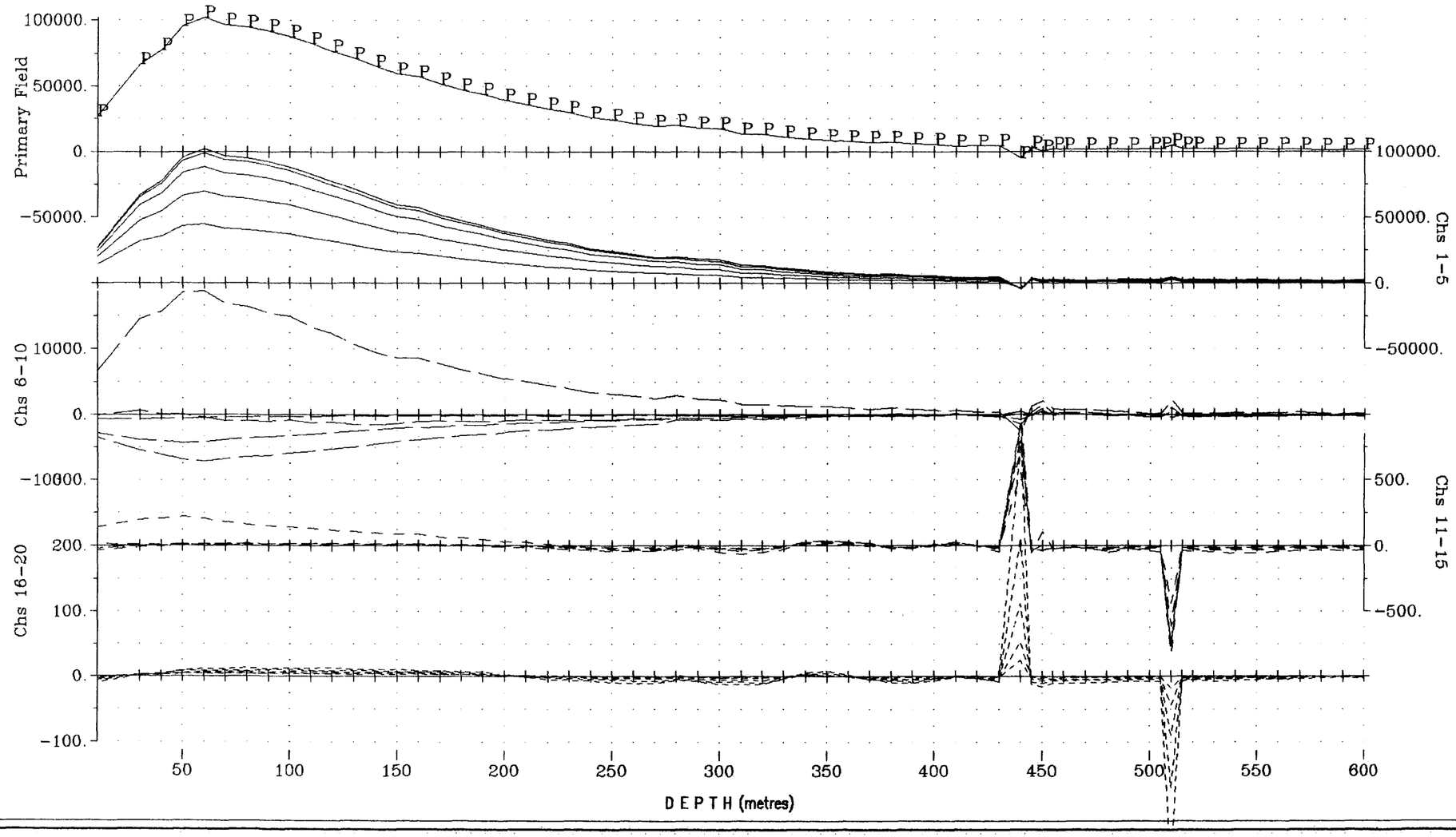
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	1200E-1500E;100S-400S
Transmitter Current:	19.0 Amps
Tx Turn-Off-Time and Rx Delay:	220 us, -85 us
Borehole Location:	14+00E, 3+25S
Borehole Azimuth, Dip:	000, -45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north, Hy - positive west
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	August 28, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-X-S99-01c



Borehole S-99-01 – Y Component
Collar Loop

Scale 1:2000

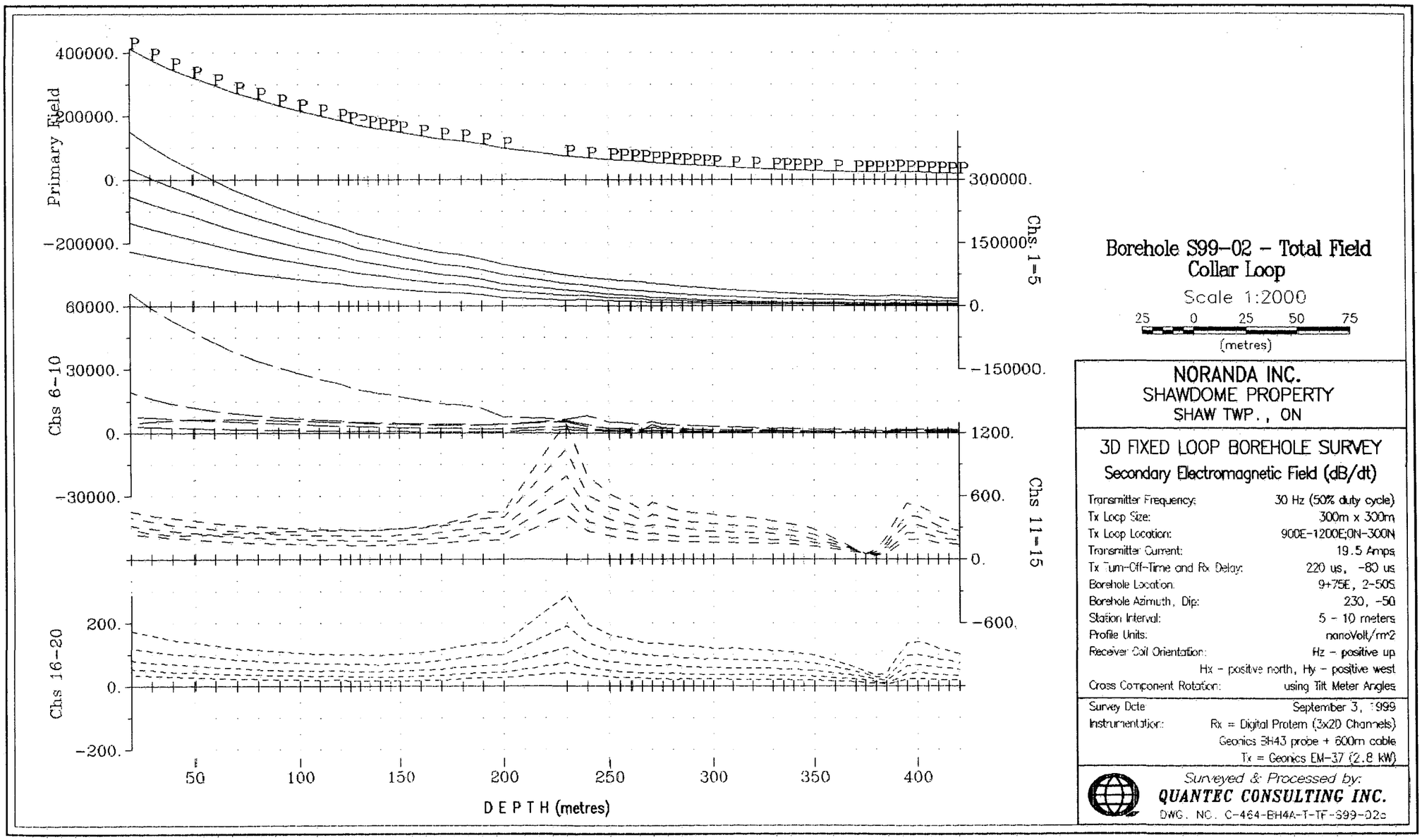
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

LPTEM 3D BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	1200E/1500E, 100S/400S
Transmitter Current:	19.0 Amps
Transmitter Turn-Off Time:	Rx=-85usec, Tx=220us us
Borehole Location:	L14+00E/3+25S
Borehole Azimuth, Dip:	N-000, 45degN
Station Interval:	5-10 metres
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north Hy - positive west
Survey Date:	August 28, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. P264-BH4A-Y-S-99-01c



Borehole S99-02 - Total Field
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

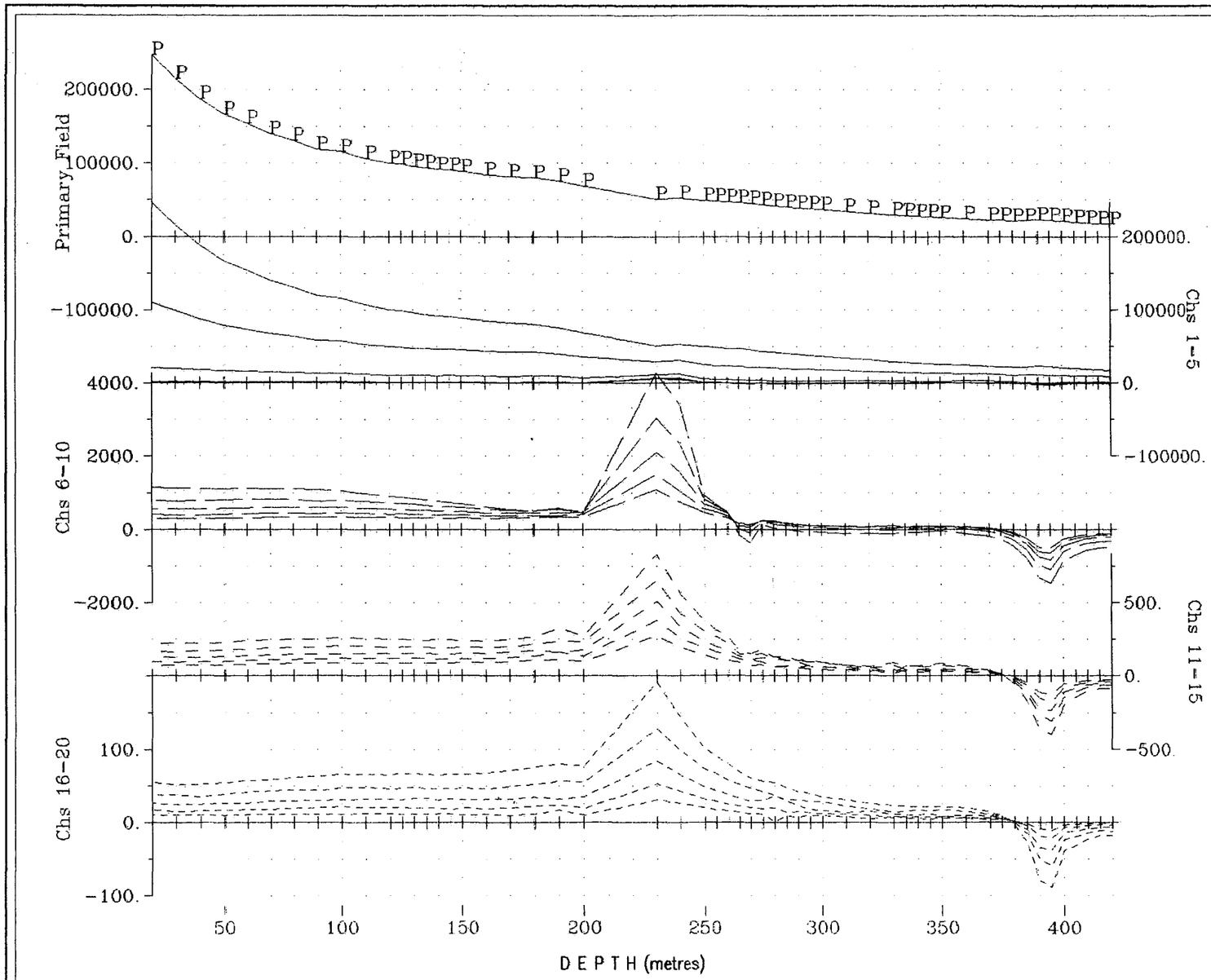
NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	900E-1200E;0N-300N
Transmitter Current:	19.5 Amps
Tx Turn-Off-Time and Rx Delay:	220 us, -80 us
Borehole Location:	9+75E, 2-50S
Borehole Azimuth, Dip:	230, -50
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north, Hy - positive west
Cross Component Rotation:	using Tilt Meter Angles
Survey Date	September 3, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-TF-S99-02a

Plotted Wed 12-08-1999 @



Borehole S-99-02 - Z Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

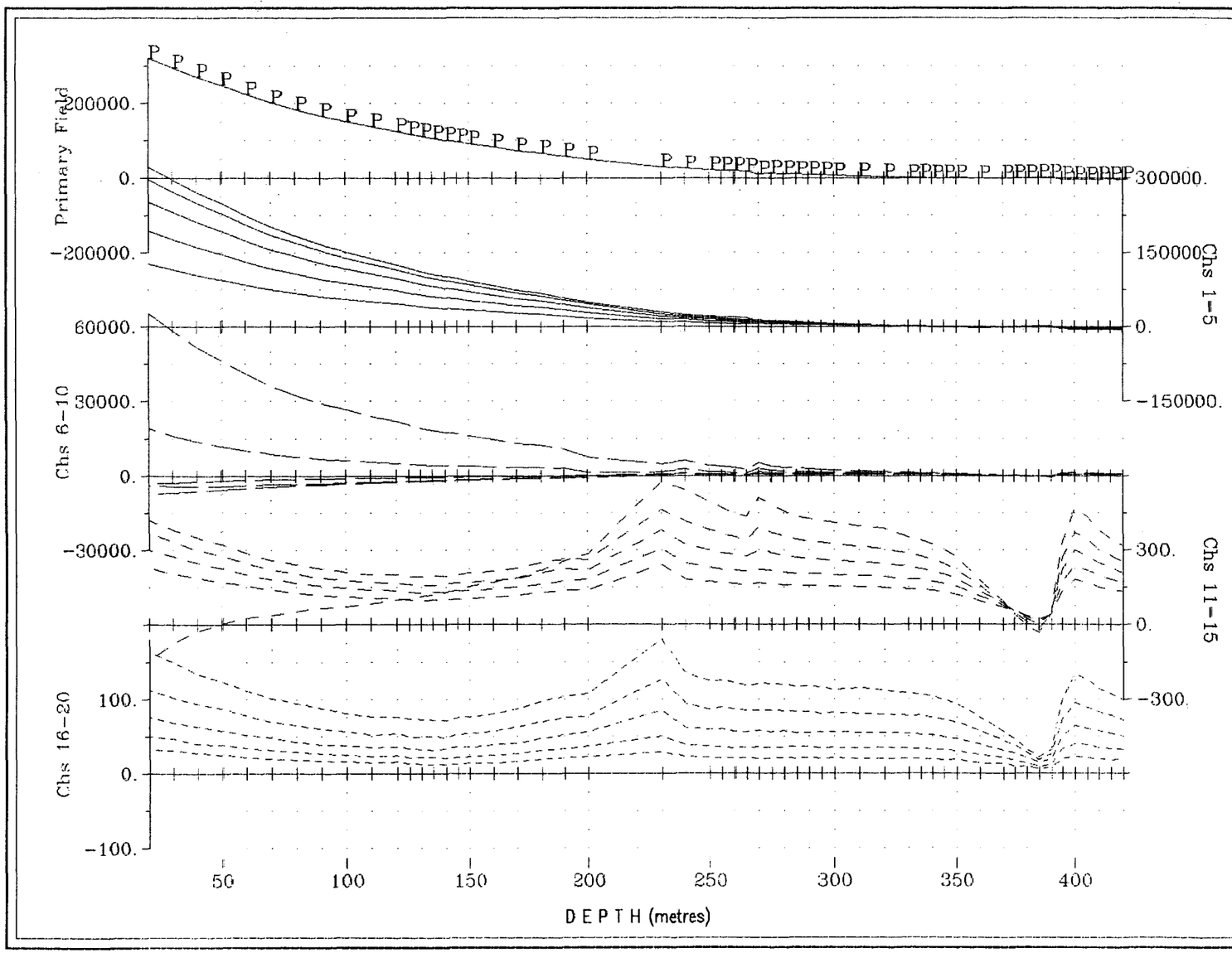
NORANDA INC.
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

LPTEM 3D BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	900E/1200E, 0N/300S
Transmitter Current:	19.5 Amps
Transmitter Turn-Off Time:	Tx=220 us
Borehole Location:	L9+75E/2+50S
Borehole Azimuth, Dip:	N-230, 50deg
Station Interval:	5-10 metres
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north Hy - positive west
Survey Date:	September 3, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. P264-BH4A-Z-S99-02c

Plotted Wed 12-08-1999 @



Borehole S99-02 – X Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

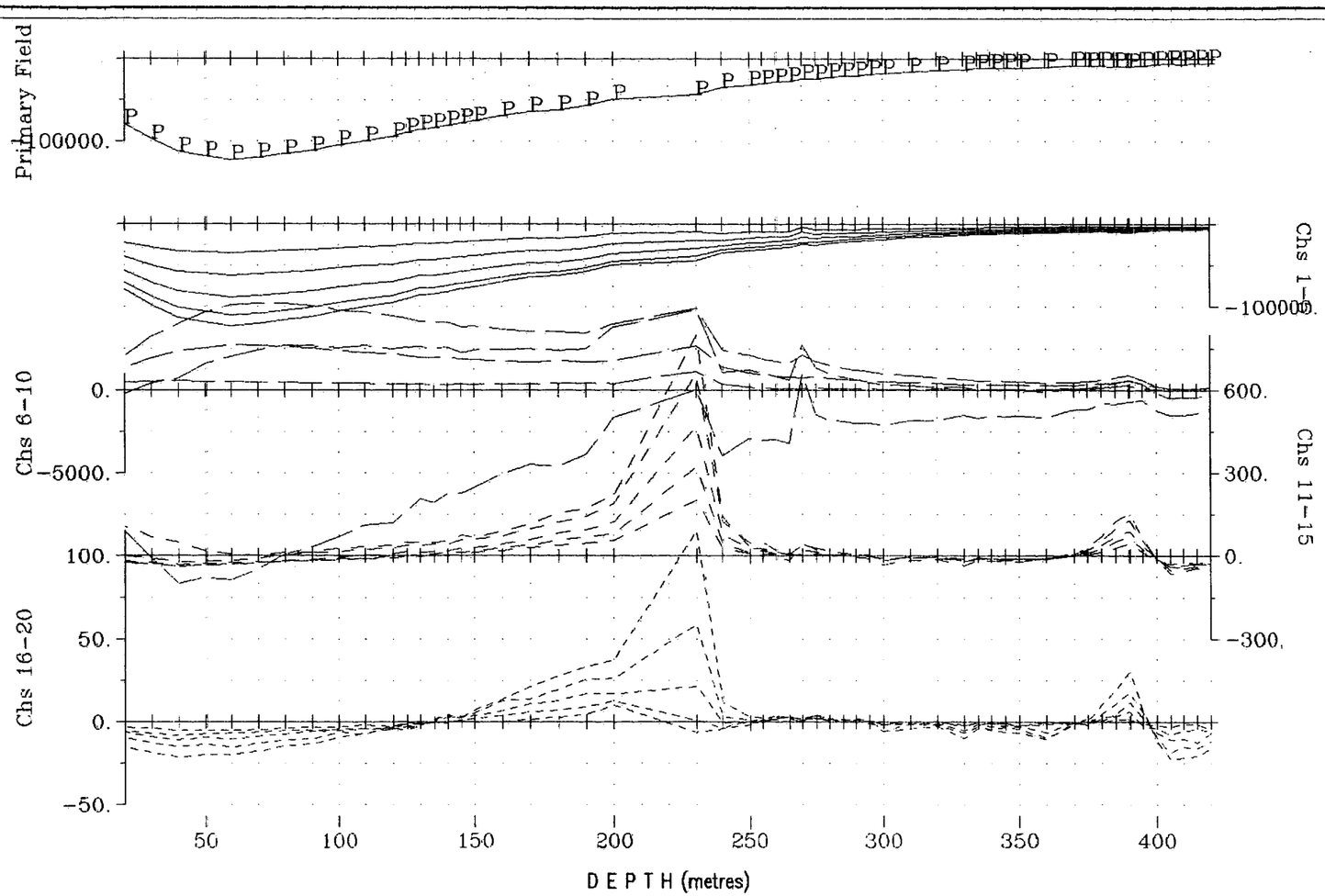
NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	900E-1200E;0N-300N
Transmitter Current:	19.5 Amps
Tx Turn-Off-Time and Rx Delay:	220 us, -80 us
Borehole Location:	9+75E, 2+50S
Borehole Azimuth, Dip:	230, -50
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north, Hy - positive west
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	September 3, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH-43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-X-S99-02c

Plotted Wed 12-08-1999 @



Borehole S-99-02 - Y Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

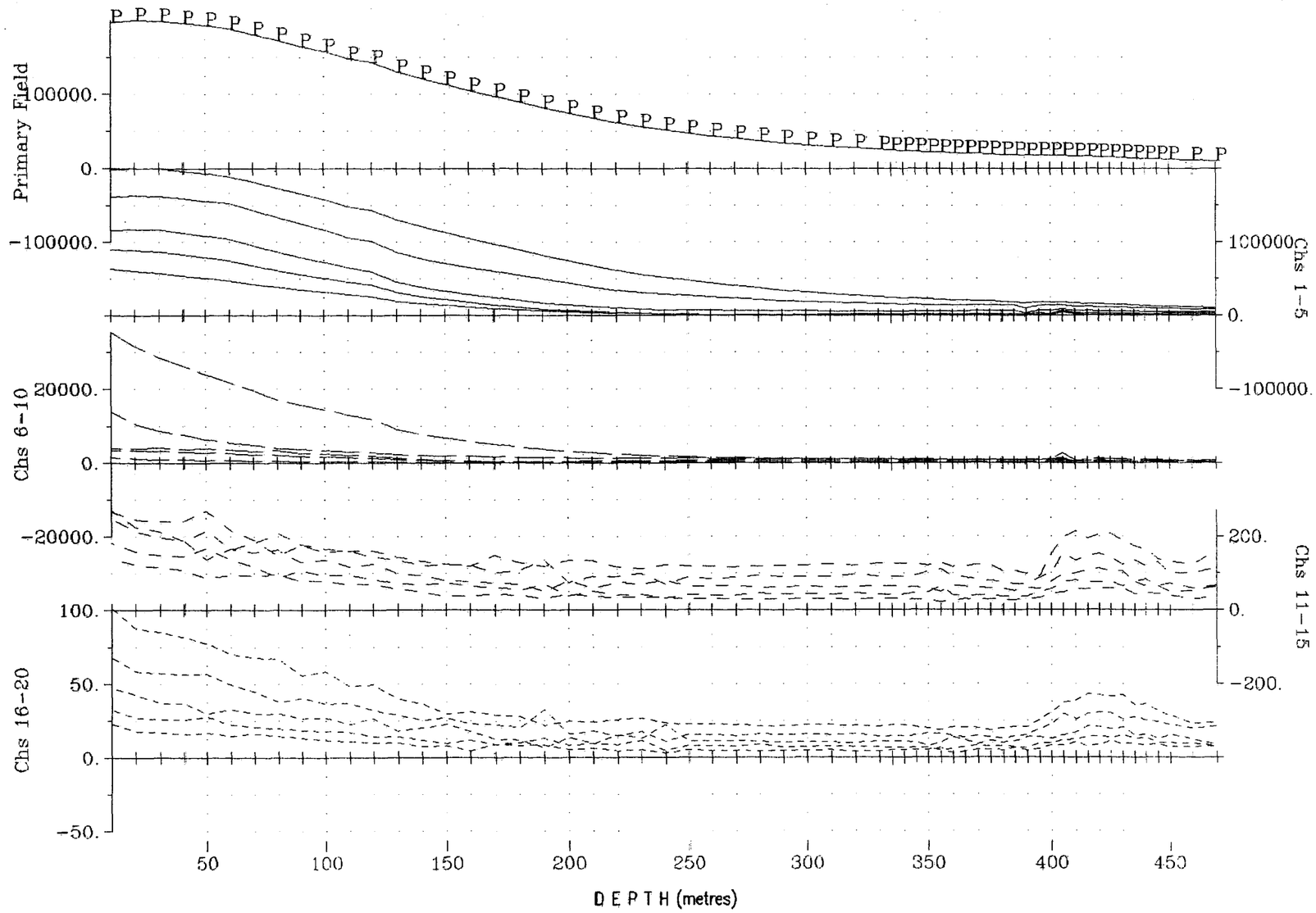
LPTEM 3D BOREHOLE SURVEY

Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 300m
Tx Loop Location:	900E/1200E, 0N/300S
Transmitter Current:	19.5 Amps
Transmitter Turn-Off Time:	Tx=220 us
Borehole Location:	L9+75E/2+50S
Borehole Azimuth, Dip:	N-230, 50deg
Station Interval:	5-10 metres
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive north Hy - positive west
Survey Date:	September 3, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. P264-BH4A-Y-S-99-02c

Plotted Wed 12-08-1999 @



Borehole S-99-03 – Total Field
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

NORANDA INC
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

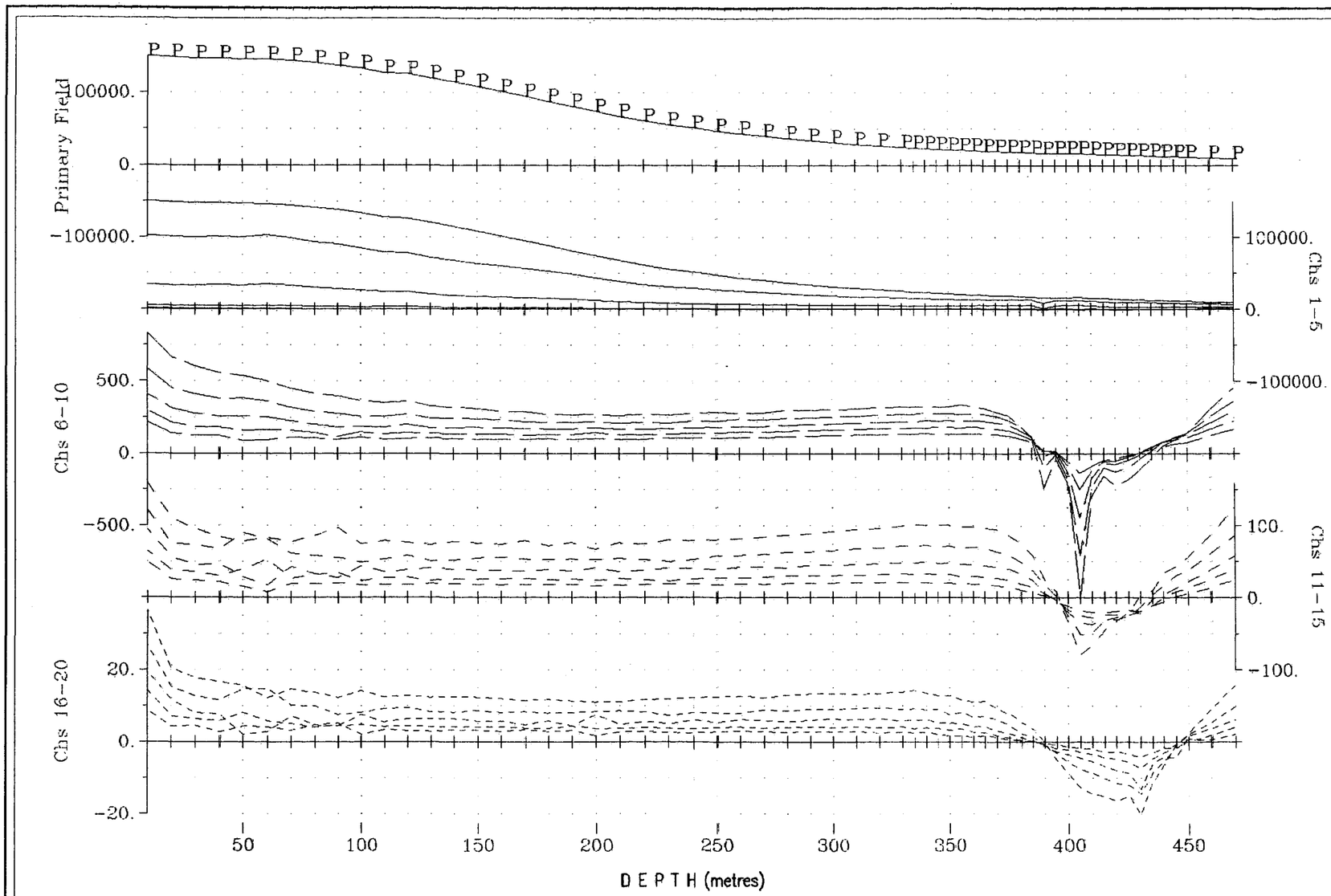
3D FIXED LOOP BOREHOLE SURVEY

Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 300m
Tx Loop Location:	16+00E/20+00E, 1+00N/4+00N
Transmitter Current:	17.5 Amps
Transmitter Turn-Off Time:	235 us
Borehole Location:	18+00E, 2+60N
Borehole Azimuth, Dip:	150, -50
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up hole Hx - positive grid south, Hy - positive grid east
Cross Component Rotation:	using Title Meter Angles
Survey Date:	September 9, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics BH43 1D probe+1.6 km cable Tx = Geonics EM-37 (2.3 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. 0464-BH4A-T-TF-S-99-03c

Plotted Wed 12-08-1999 @



Borehole S-99-03 - Z Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

NORANDA INC
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

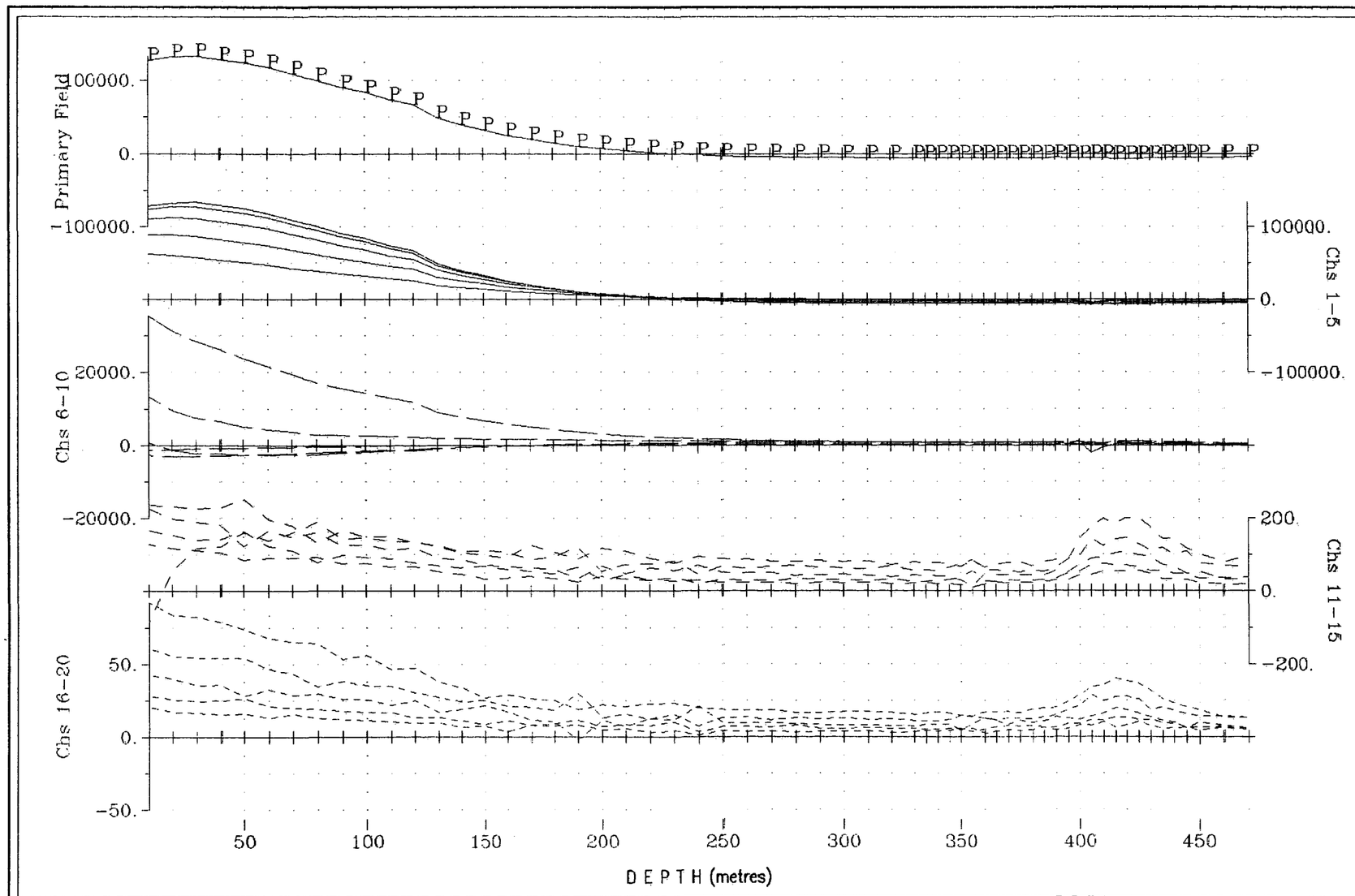
3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 300m
Tx Loop Location:	16+00E/20+00E, 1+00N/4+00N
Transmitter Current:	17.5 Amps
Transmitter Turn-Off Time:	235 us
Borehole Location:	18+00E, 2+60N
Borehole Azimuth, Dip:	150, -50
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up hole Hx - positive grid south, Hy - positive grid east
Cross Component Rotation:	using Title Meter Angles

Survey Date:	September 9, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics BH43 1D probe+1.6 km cable Tx = Geonics EM-37 (2.3 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C464-BH4A-T-Z-S-99-03c

Plotted Wed 12-08-1999 @



Borehole S-99-03 – X Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

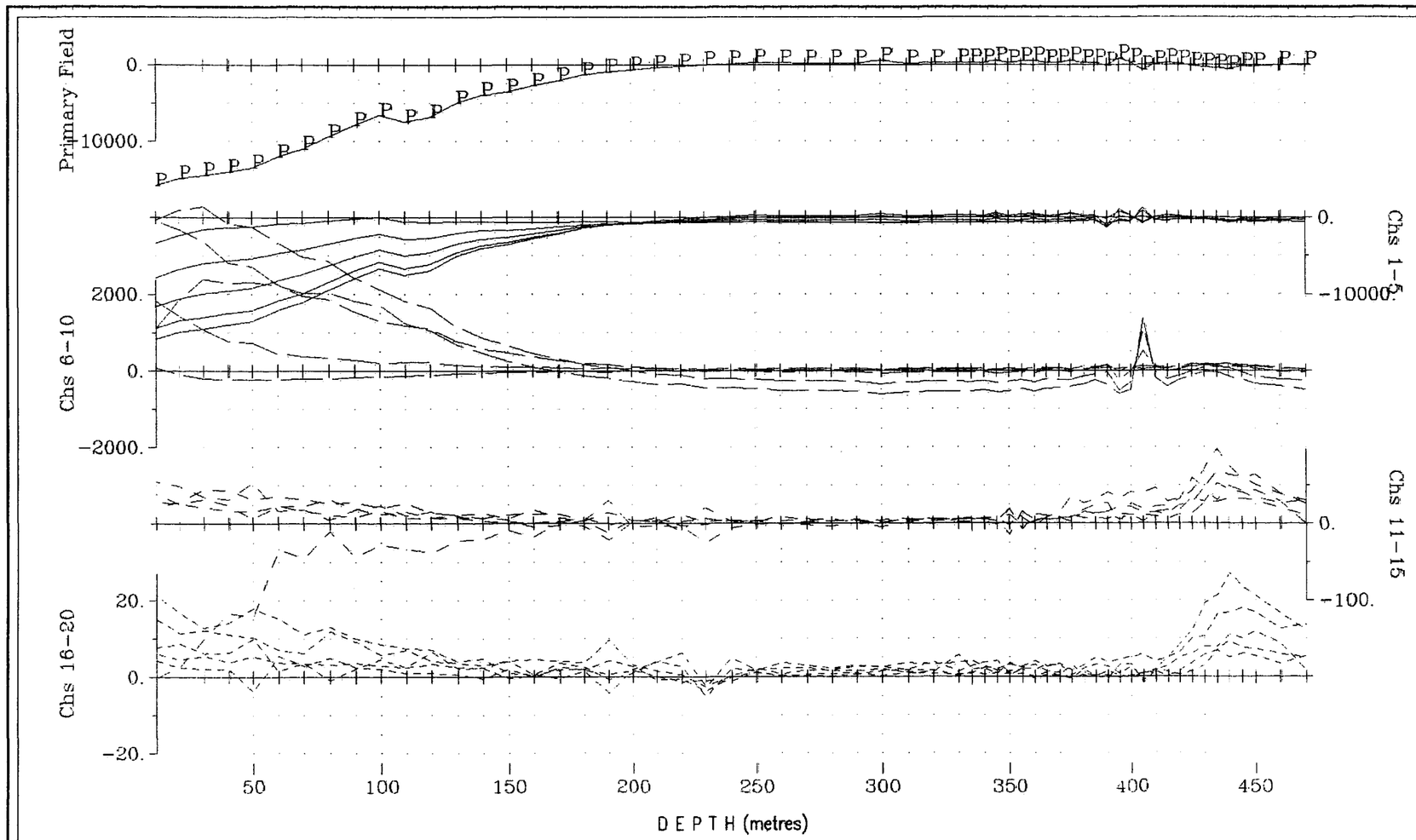
NORANDA INC
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 300m
Tx Loop Location:	16+00E/20+00E, 1+00N/4+00N
Transmitter Current:	17.5 Amps
Transmitter Turn-Off Time:	235 us
Borehole Location:	18+00E, 2+60N
Borehole Azimuth, Dip:	150, -50
Station Interval:	5 – 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz – positive up hole
	Hx – positive grid south, Hy – positive grid east
Coss Component Rotation:	using Title Meter Angles
Survey Date:	September 9, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics BH43 1D probe+1.6 km cable
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C464-BH4A-T-X-S-99-03c

Plotted Wed 12-08-1999 @



Borehole S-99-03 - Y Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

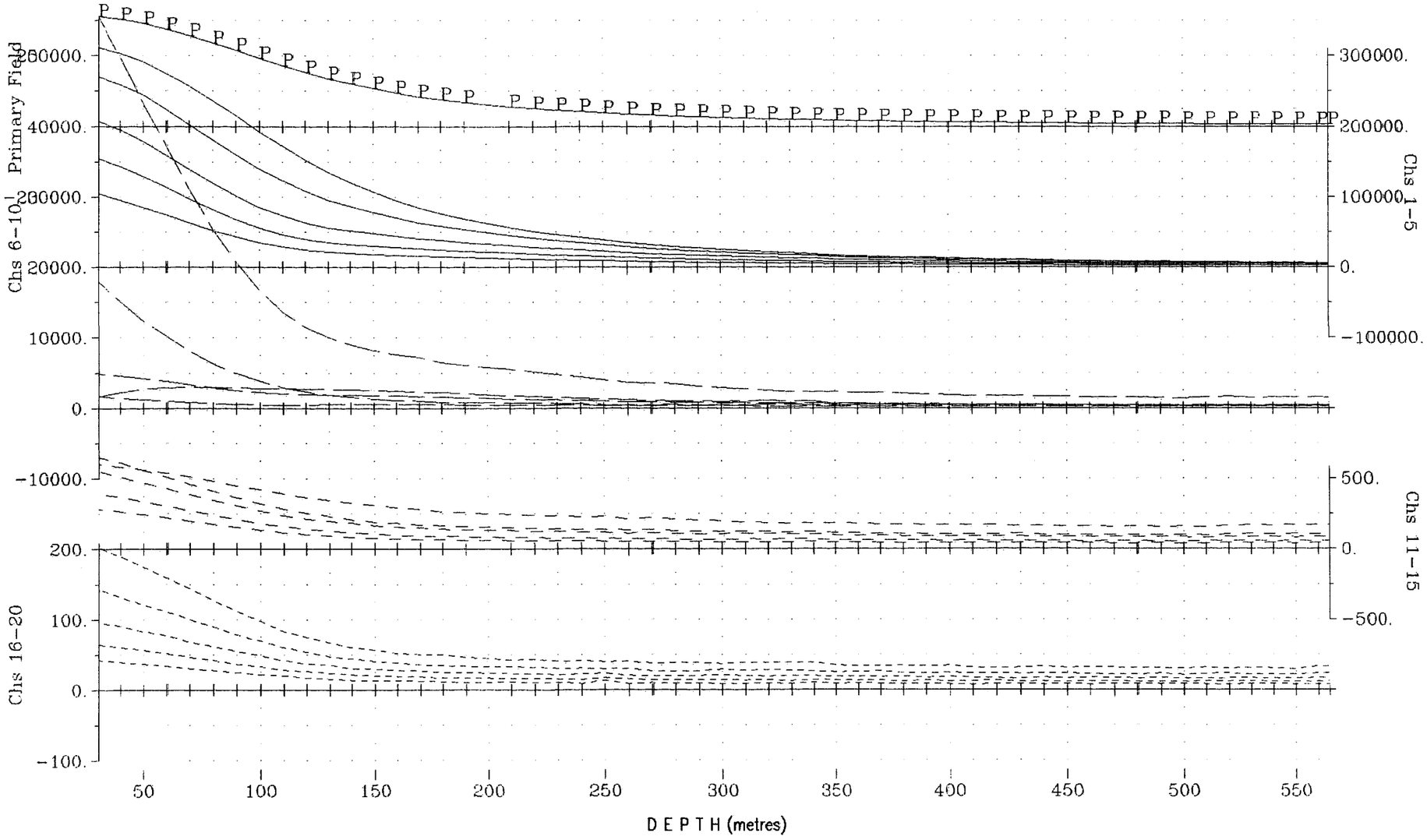
NORANDA INC
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 300m
Tx Loop Location:	16+00E/20+00E, 1+00N/4+00N
Transmitter Current:	17.5 Amps
Transmitter Turn-Off Time:	235 us
Borehole Location:	18+00E, 2+60N
Borehole Azimuth, Dip:	150, -50
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m2
Receiver Coil Orientation:	Hz - positive up hole
	Hx - positive grid south, Hy - positive grid east
Cross Component Rotation:	using Title Meter Angles
Survey Date:	September 9, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics BH43 1D probe+1.6 km cable
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C464-BH4A-T-Y-S-99-03c

Plotted Wed 12-08-1999 @



Borehole S99-04 – Total Field
Collar Loop

Scale 1:2000

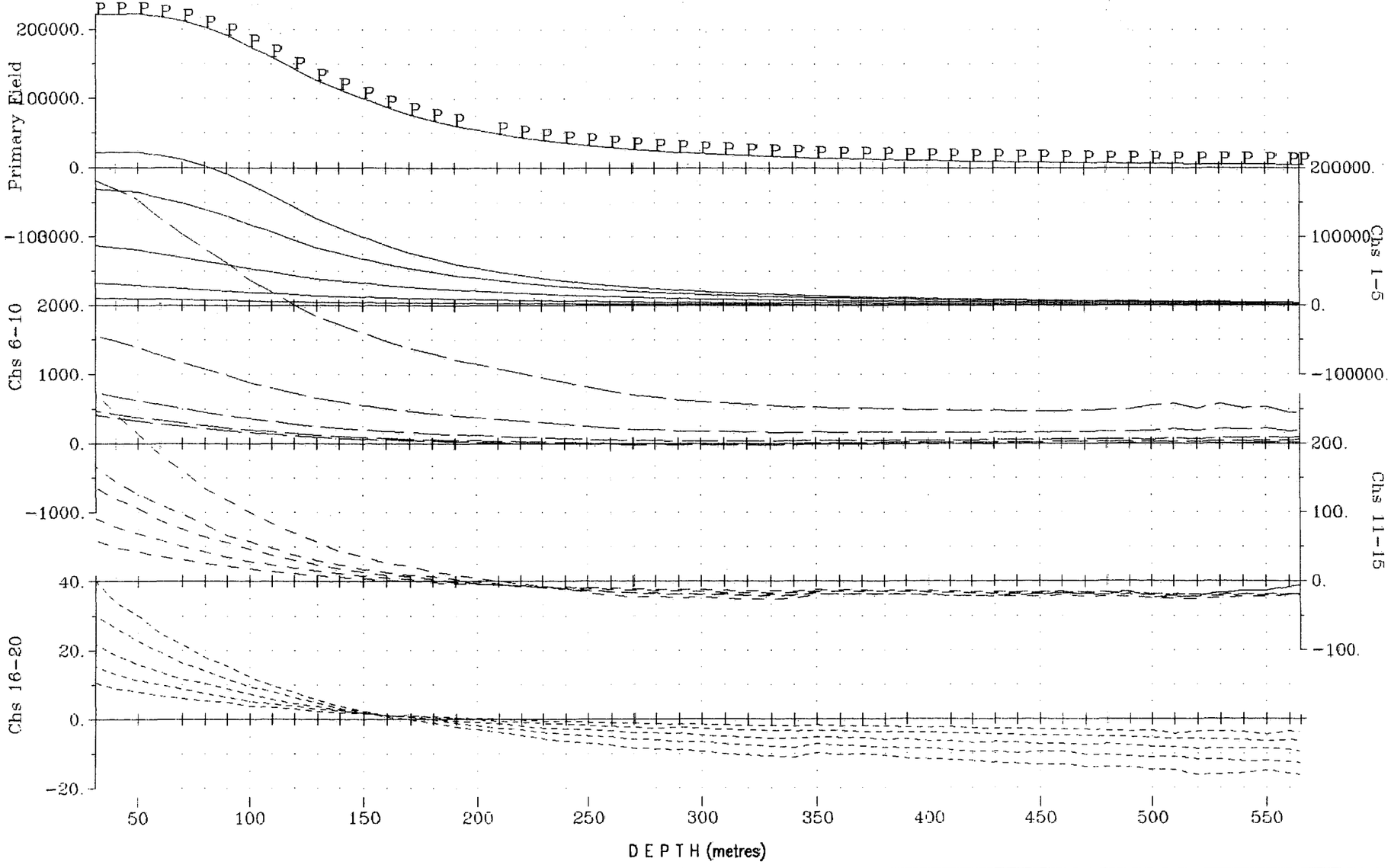
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 400m
Tx Loop Location:	2000E-2400E;400N-700N
Transmitter Current:	18.5 Amps
Transmitter Turn-Off Time:	250 us
Borehole Location:	2310E/500N
Borehole Azimuth, Dip:	150,-45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	October 4, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH-43-T-TF-S99-04c



Borehole S99-04 – Z Component
Collar Loop

Scale 1:2000

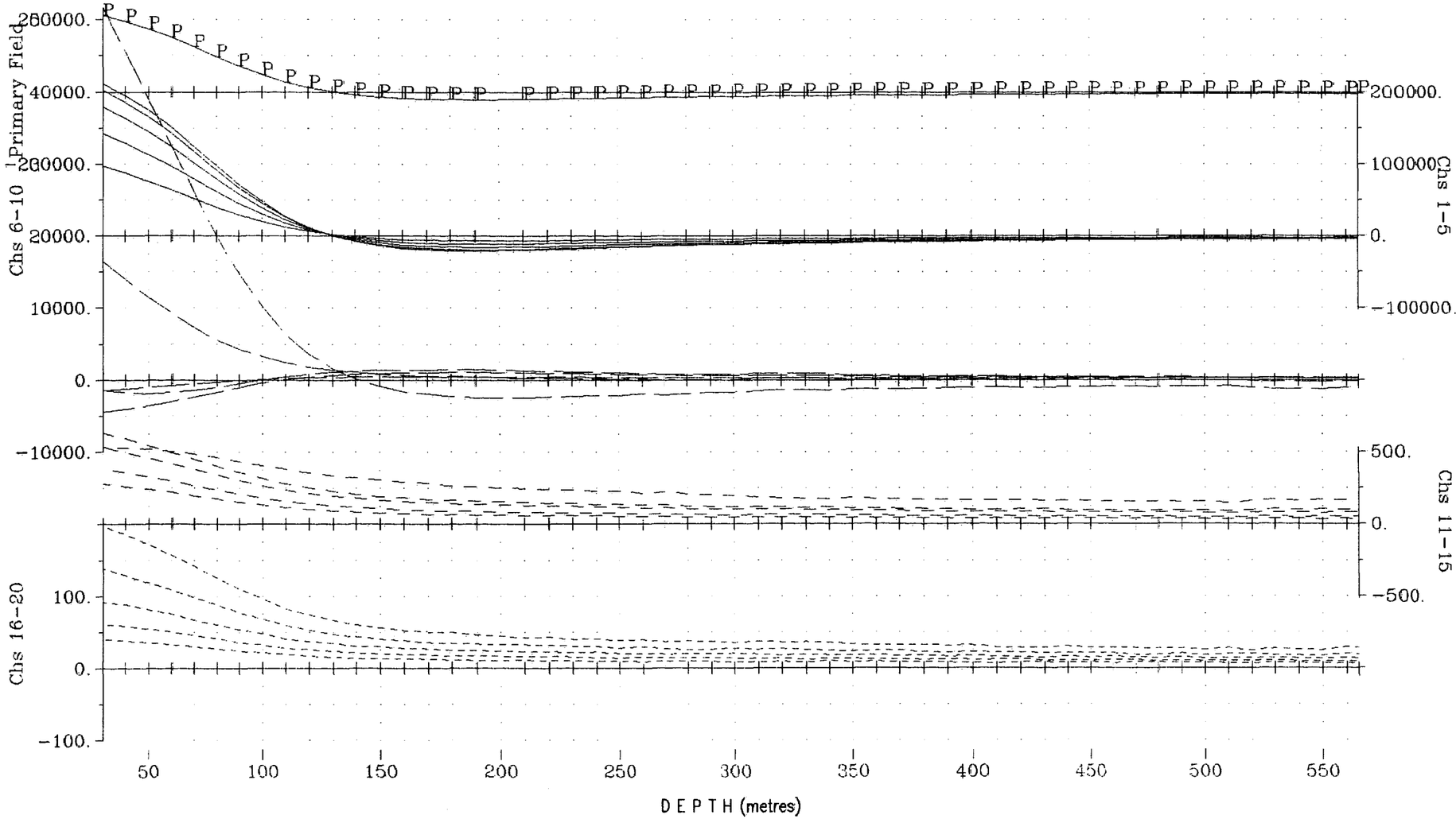
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 400m
Tx Loop Location:	2000E-2400E;400N-700N
Transmitter Current:	18.5 Amps
Transmitter Turn-Off Time:	250 us
Borehole Location:	2310E/500N
Borehole Azimuth, Dip:	150, -45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	October 4, 1999
Instrumentation:	Rx = Digital Proterm (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-Z-S99-04c



Borehole S99-04 – X Component
Collar Loop

Scale 1:2000

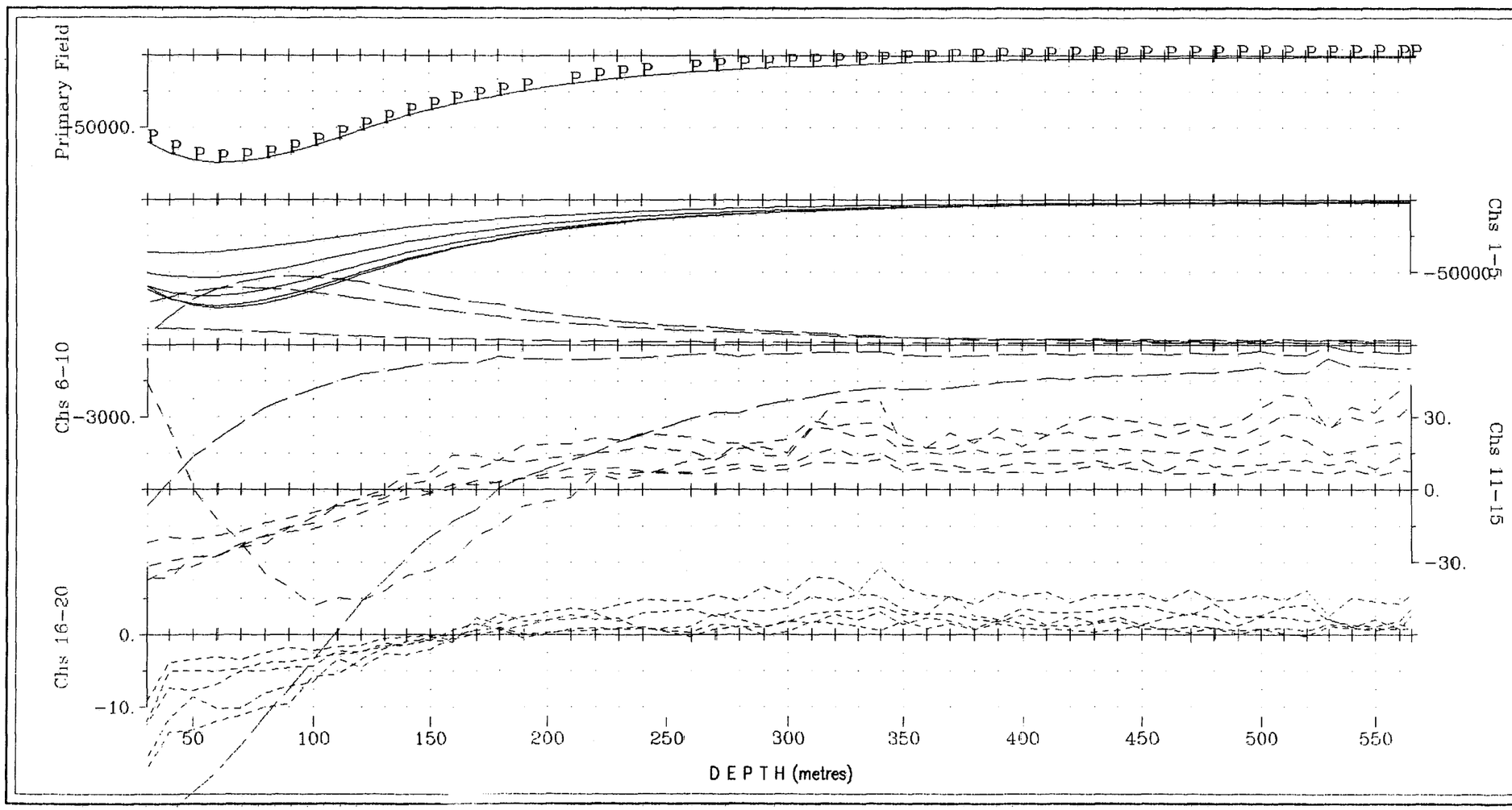
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 400m
Tx Loop Location:	2000E-2400E;400N-700N
Transmitter Current:	18.5 Amps
Transmitter Turn-Off Time:	250 us
Borehole Location:	2310E/500N
Borehole Azimuth, Dip:	150,-45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	October 4, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics EH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-X-S99-04c



Borehole S99-04 - Y Component
Collar Loop

Scale 1:2000

25 0 25 50 75

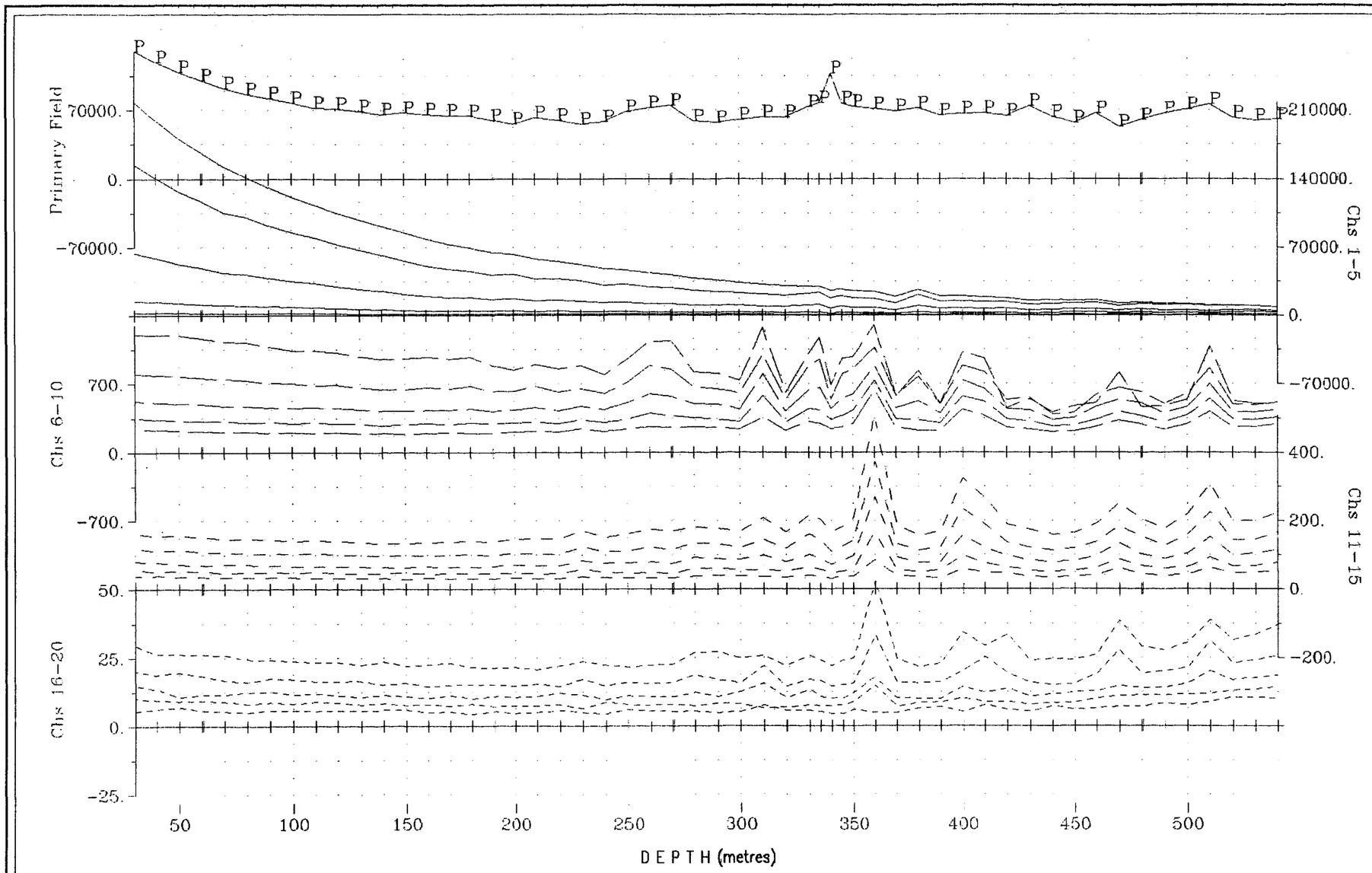
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300m x 400m
Tx Loop Location:	2000E-2400E;400N-700N
Transmitter Current:	18.5 Amps
Transmitter Turn-Off Time:	250 us
Borehole Location:	2310E/500N
Borehole Azimuth, Dip:	150,-45
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	October 4, 1999
Instrumentation:	Rx = Digital Proterm (3x20 Channels) Geonics EH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-Y-S99-04c



Borehole S99-05 – Total Field
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

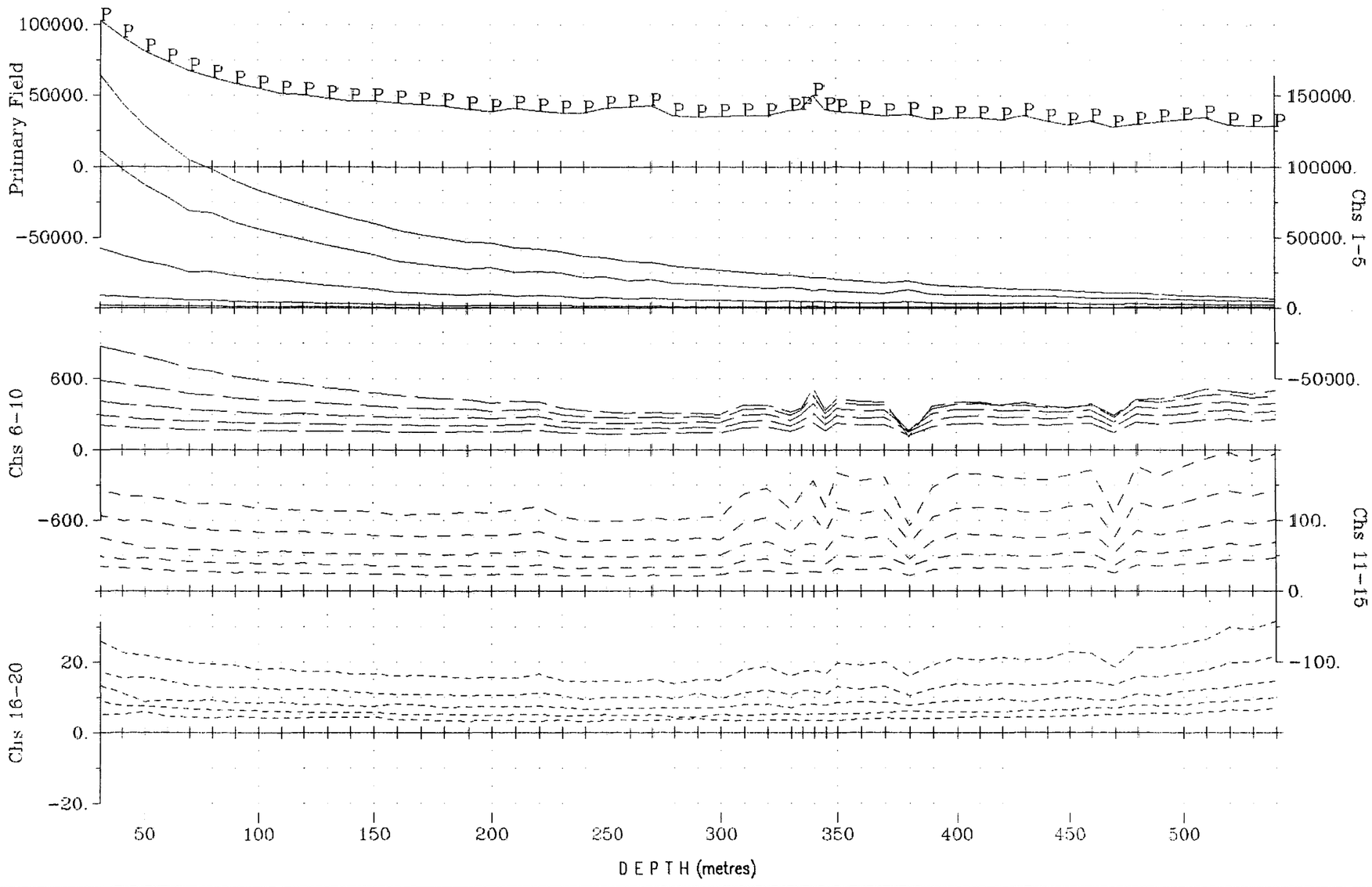
NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 400m
Tx Loop Location:	1800E-2200E;0N-400N
Transmitter Current:	16.5 Amps
Tx Turn-Off-Time and Rx Delay:	250 µs, -80 us
Borehole Location:	20+50E, 3+50N
Borehole Azimuth, Dip:	150, -65
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	October 24, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	Geonics BH43 probe + 600m cable
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-TF-S99-05c

Plotted Wed 12-08-1999 @



Borehole S99-05 – Z Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

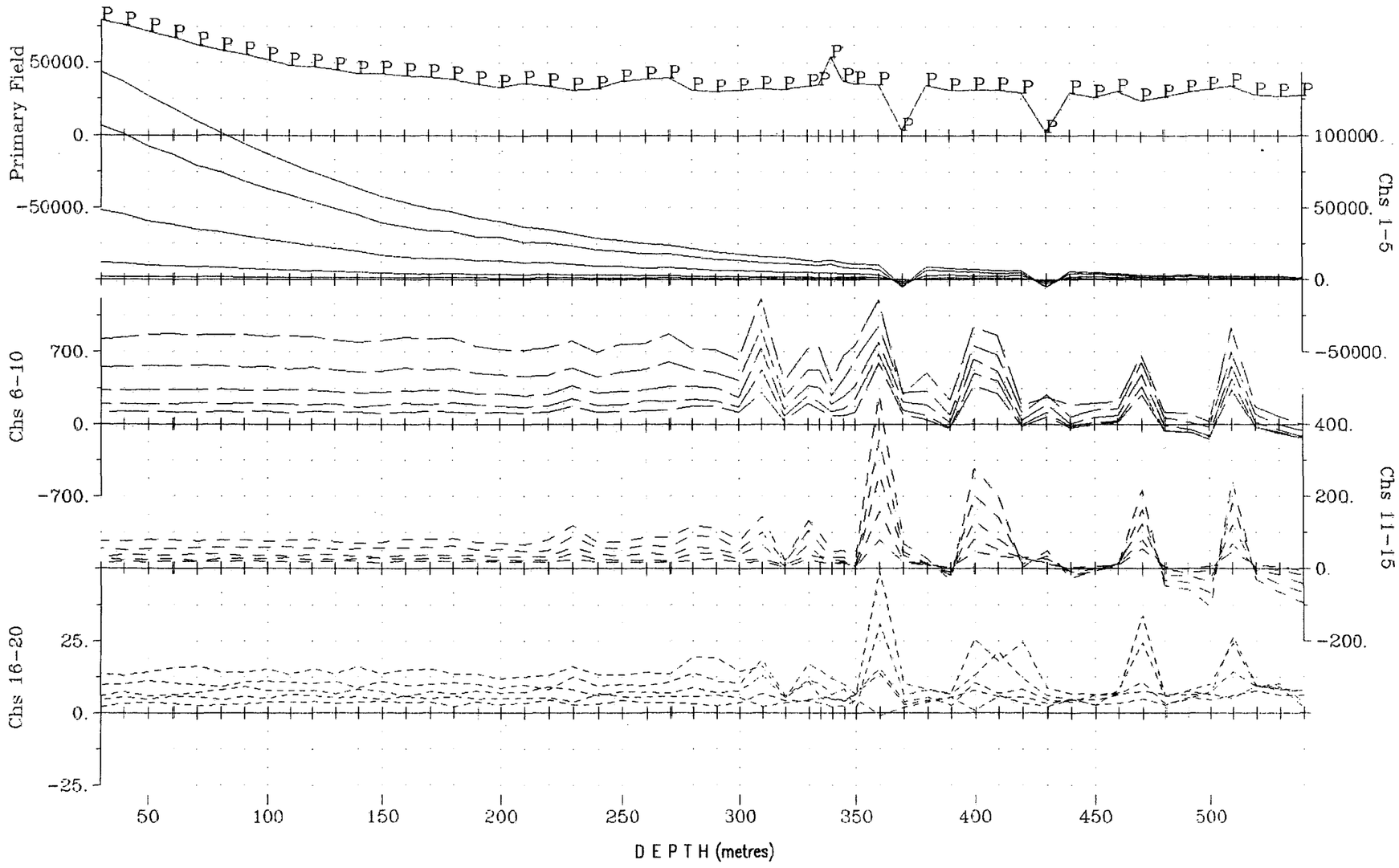
NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 400m
Tx Loop Location:	1800E-2200E;0N-400N
Transmitter Current:	16.5 Amps
Tx Turn-Off-Time and Rx Delay:	250 us, -80 us
Borehole Location:	20+50E, 3+50N
Borehole Azimuth, Dip:	150,-65
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	Using Tilt Meter Angles
Survey Date:	October 24, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH-4A-T-Z-S99-05c

Plotted Wed 12-08-1999 @



Plotted Wed 12-08-1999 @

Borehole S99-05 – X Component
Collar Loop

Scale 1:2000

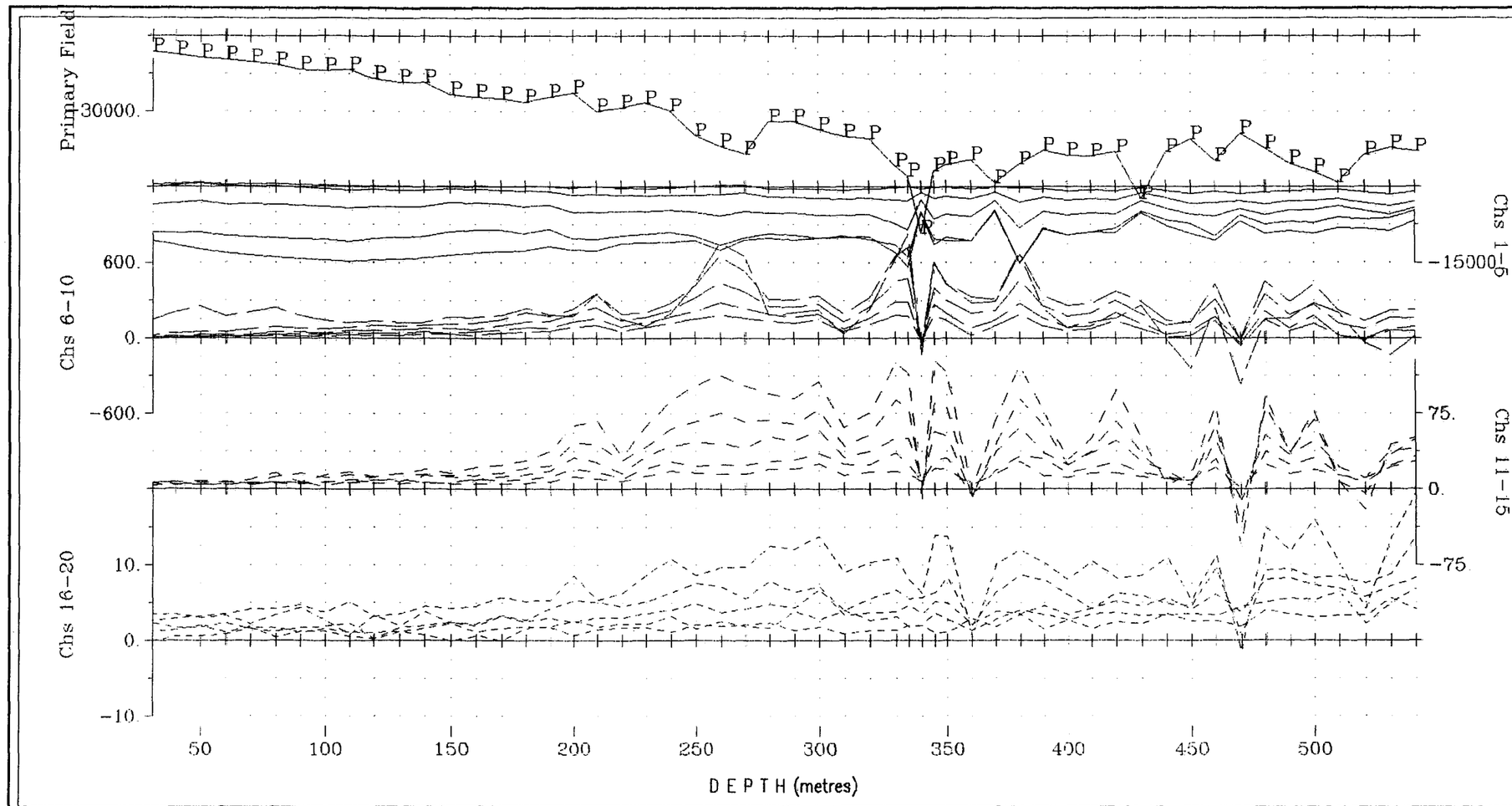
25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400m x 400m
Tx Loop Location:	1800E-2200E;0N-400N
Transmitter Current:	16.5 Amps
Tx Turn-Off-Time and Rx Delay:	250 us, -80 us
Borehole Location:	20+50E, 3-50N
Borehole Azimuth, Dip:	150,-65
Station Interval:	5 - 10 meters
Profile Units:	nanoVolt/m2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south, Hy - positive east
Cross Component Rotation:	Using Tilt Meter Angles
Survey Date:	October 24, 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	Geonics BH43 probe + 600m cable
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C-464-BH4A-T-X-S99-05c



Borehole SD-99-05 - Y Component
Collar Loop

Scale 1:2000

25 0 25 50 75
(metres)

NORANDA INC.
SHAWDOME PROPERTY
Shaw Twp., Timmins ON

3D FIXED LOOP BOREHOLE SURVEY
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	400mX400m
Tx Loop Location:	BLON-TL400N, 1800E-2200E
Transmitter Current:	16.5 Amps
Tx Turn-Off-Time and Rx Delay:	250 us, -80 us
Borehole Location:	3+50N, 20+50E
Borehole Azimuth, Dip:	150, -65
Station Interval:	10m, 5m
Profile Units:	nanoVolt/m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south, Hy - positive east
Cross Component Rotation:	using Tilt Meter Angles
Survey Date:	24-10-99
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 575m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:
QUANTEC CONSULTING INC.
DWG. NO. C464-BH4A-T-Y-SD-99-05c

Plotted Wed 12-08-1999 @

2.2. ACCESS

- **General Location of Property:** approx. 2km south-east of South Porcupine, ON
- **Base of Operations:** Porcupine, ON
- **Nearest Highway:** Hwy. 101
- **Mode of Access to Property:** 4x4 truck along trails to drilling area

2.3. SURVEY GRID

- **Coordinate Reference System:** Local grid established prior to survey.
- **Method of Chaining:** metric
- **Loop Perimeter Direction:** approximately NS and EW

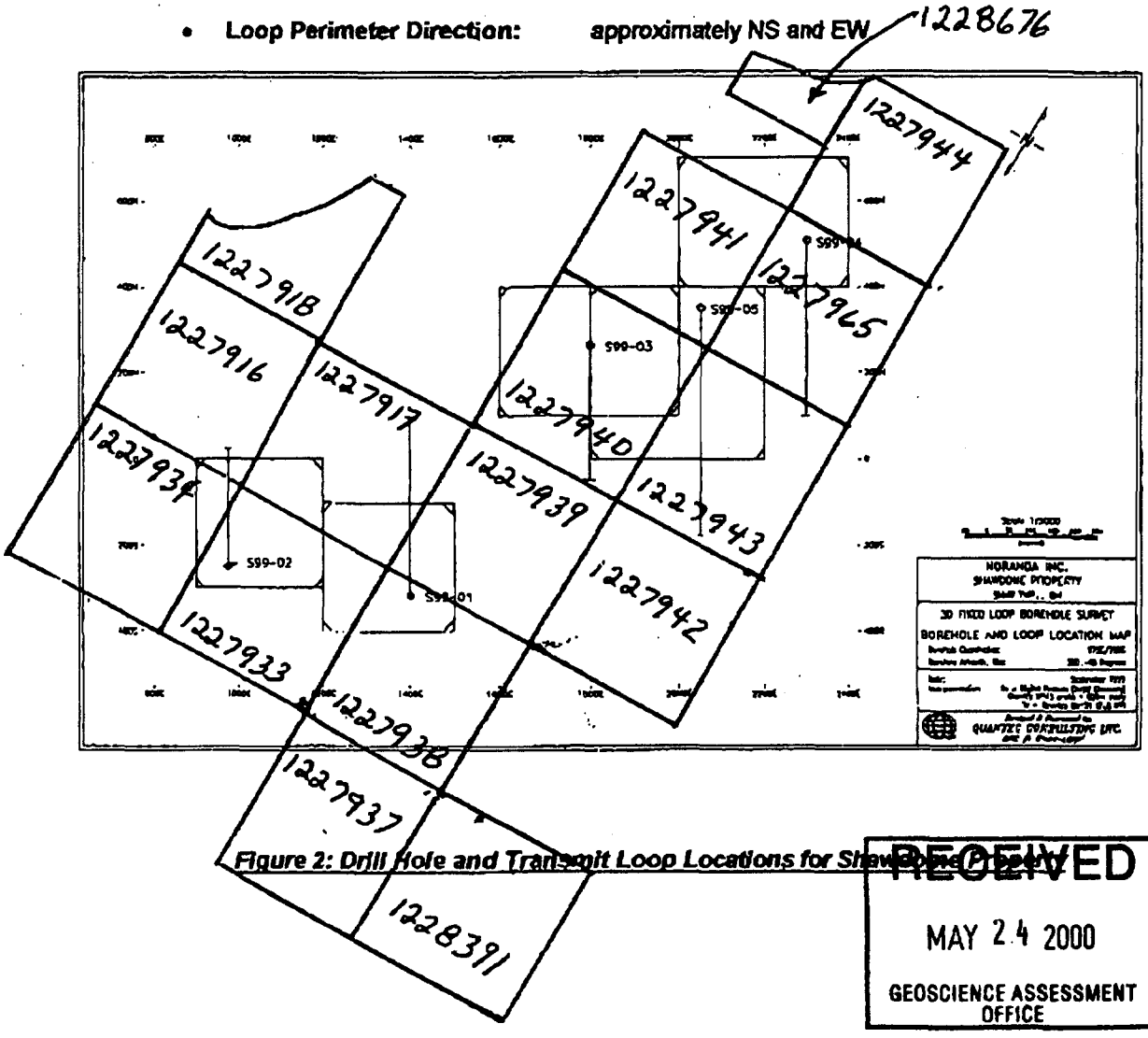


Figure 2: Drill Hole and Transmit Loop Locations for Shawdome Property

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W0060.00236

Ontario Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

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

Transaction Number (office use): ROBERT-NEW2

Assessment Files Research Imaging

:tion 65(2) and 66(3) of the Mining Act. Under section 8 of the Mining Act, the
ınt work and correspond with the mining land holder. Questions about this collection
ınd Mines, 6th floor, 933Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

recording a claim, use form 0240.

42A06NE2016 2.20292 WHITNEY 900

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

Name JACQUES ROBERT (25%)	Client Number 188148
Address 321 HAILEYBURY CR. PORCUPINE, ON P0N 1C0	Telephone Number (705) 235-8029
	Fax Number
Name	Client Number
Address SEE ATTACHED	Telephone Number
	Fax Number

2. Type of work performed Check ☑ and report only ONE of the following groups for this declaratio

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

☐ Physical: drilling, stripping, trenching and associated assays

☐ Rehabilitation

Work Type: Geotechnical Survey; Geophysical; BOREHOLE	2.20292	Office Use
		Commodity $1,200
		Total $ Value of Work Claimed ~~$5,200~~
Dates Work Performed: From 15 (Day) 9 (Month) 1999 (Year) To 30 (Day) 11 (Month) 1999 (Year)		NTS Reference
Global Positioning System Data (if available)	Township/Area: WHITNEY	Mining Division: Porcupine
	M or G-Plan number: M-319	Resident Geologist District: Timmins

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

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3. Person or companies who prepared the technical report

Name Noranda Mining and Exploration Inc.	Telephone Number (807) 623-4339
Address 874 Tungsten Street, Thunder Bay, Ont P7B 6J3	Fax Number (807) 623-0452
Name QUANTEC CONSULTING INC.	Telephone Number (705) 235-2166
Address PO BOX 580, 101 KING ST, PORCUPINE, ON P0N 1C0	Fax Number 235-2255
Name	Telephone Number
Address	Fax Number

4. Certification by Recorded Holder or Agent

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

Signature of Recorded Holder or Agent: Richard Kruse		Date: 09-May-00
Agent's Address: 874 TUNGSTEN ST THUNDER BAY, ON P7B 6J3	Telephone Number: (807) 623-4339	Fax Number: (807) 623-0452

WJ0060.00236

OTHER HOLDERS

Mike Tremblay (25%)
box 209, Porcupine, Ont.
P0N 1C0
Client no. 203056
Tél. 705-235-3087

Pat Coyne (25%)
79 Graham Lane
Timmins, Ont.
P4N 7Z5
Client no. 122014
Tel. 705-264-5210

Woody Ouderkirk (25%)
172 Lyn View Rise
SE Calgary, Alberta

Client no. 303871
Tel. 403-236-9800

2.20292

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5. Work to be recorded and distributed Work can only be assigned to claims that are contiguous (adjoining) to the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form.

W0060.00236

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
P 1227939	1	$1,125.00	$400.00	$0.00	$725.00
P 1227940	1	$2,250.00	$400.00	$0.00	$1,850.00
P 1227941	1	$1,125.00	$400.00	$0.00	$725.00
P 1227943	1	$1,125.00	$400.00	$0.00	$725.00
P 1227965	1	$1,575.00	$400.00	$0.00	$1,175.00
	Column Totals:	$7,200.00	$2,000.00	$0.00	$5,200.00

I, Richard Kruse , do hereby certify that the above work credits are eligilbe under subsection 7(1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to the claim where the work was done.

Signature of Recorded Holder or Agent (authorized in writing) Richard Kruse | Date 09-May-00

6. Instructions for cutting back credits that are not approve

Some of the credits claimed in this declaration may be cut back. Please check ☑ in the boxes below to show how you wish to priorize the deletion of credits:

- ☒ 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- ☐ 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- ☐ 3. Credits are to be cut back equally over all claims listed in this declaration; or
- ☐ 4. Credits are to be cut back as priorized on the attached appendix or as follows (describe);

Note: if you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only

Received Stamp	Deemed Approved Date	Date Notification Sent
	Date Approved	Total Value of Credit Approved
	Approved for Recording by Mining Recorder (Signature)	

2.20292

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MAY 11 2000
GEOSCIENCE ASSESSMENT OFFICE

W0060.00237

Ontario Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

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

Transaction Number (office use): salo-new2

Assessment Files Research Imaging

Personal Information collected on this form is obtained under the authority of subsection 65(2) and 66(3) of the Mining Act. Under section 8 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th floor, 933Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

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

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

Name	Larry Salo	Client Number	191085
Address	RR #1 Connaught, On	Telephone Number	(705) 363-2108
	P0W 1A0	Fax Number	
Name		Client Number	
Address		Telephone Number	
		Fax Number	

2. Type of work performed Check (☑) and report only ONE of the following groups for this declaratio

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

☐ Physical: drilling, stripping, trenching and associated assays

☐ Rehabilitation

Work Type	Geotechnical Survey Geophysical BORE HOLE	2.2029	Office Use Commodity Total $ Value of Work Claimed $2175 $3375
Dates Work Performed	From 15 (Day) 9 (Month) 1999 (Year) To 30 (Day) 11 (Month) 1999 (Year)		NTS Reference
Global Positioning System Data (if available)	Township/Area: Whitney M or G-Plan number: M. 319		Mining Division: Porcupine Resident Geologist District: Timmins

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

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MAY 11 2000
GEOSCIENCE ASSESSMENT OFFICE

3. Person or companies who prepared the technical report

Name	Noranda Mining and Exploration Inc.	Telephone Number	(807) 623-4339
Address	874 Tungsten Street, Thunder Bay, Ont P7B 6J3	Fax Number	(807) 623-0452
Name	QUANTEC CONSULTING INC.	Telephone Number	(705) 235-2166
Address	PO BOX 580 101 KING ST, PORCUPINE, ON	Fax Number	235-2255
Name		Telephone Number	
Address		Fax Number	

4. Certification by Recorded Holder or Agent

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

Signature of Recorded Holder or Agent	Richard Kruse	Date	09-May-00
Agent's Address	874 TUNGSTEN ST, THUNDER BAY ONT. P7B 6J3	Telephone Number	807-623-4339
		Fax Number	623-0452

5. Work to be recorded and distributed Work can only be assigned to claims that are contiguous (adjoining) to the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form.

W0060.00237

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
P 1227916	1	$1,125.00	$400.00	$0.00	$725.00
P 1227917	1	$1,125.00	$400.00	$0.00	$725.00
P 1227933	1	$1,125.00	$400.00	$0.00	$725.00
Column Totals:		$3,375.00	$1,200.00	$0.00	$2,175.00

I, Richard Kruse , do hereby certify that the above work credits are eligilbe under subsection 7(1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to the claim where the work was done.

Signature of Recorded Holder or Agent (authorized in writing) Richard Kruse Date 09-May-00

6. Instructions for cutting back credits that are not approve

Some of the credits claimed in this declaration may be cut back. Please check ☑ in the boxes below to show how you wish to priorize the deletion of credits:

- ☒ 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- ☐ 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- ☐ 3. Credits are to be cut back equally over all claims listed in this declaration; or
- ☐ 4. Credits are to be cut back as priorized on the attached appendix or as follows (describe);

Note: if you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only

Received Stamp	Deemed Approved Date	Date Notification Sent
	Date Approved	Total Value of Credit Approved
	Approved for Recording by Mining Recorder (Signature)	

2.20292

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GEOSCIENCE ASSESSMENT OFFICE

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

W0060.00237

MAY 15 '00 10:14 807 623 0452 PAGE.03

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use): W0060.00237

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

Work Type	Units of work Depending on the type of work, list the number of *hours/days worked, metres of drilling, kilometres of grid line, number of samples, etc.*	Cost Per Unit of work	Total Cost
BOREHOLE GEOPHYSICAL SURVEY	1.5 DAYS	2250/DAY	3375
Associated Costs (e.g. supplies, mobilization and demobilization).			
Transportation Costs			
Food and Lodging Costs			
		Total Value of Assessment Work	3375

Calculations of Filing Discounts:

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

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

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

Certification verifying costs:

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

Signature	Date
	RECEIVED 15 2000 GEOSCIENCE ASSESSMENT OFFICE

0212 (03/97)

05/15/2000 MON 10:13 FAX 807 623 0452 NORANDA INC 003/003

0212 (03/97)

Signature	Date
Richard Lemire	5/9/2000

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use)
W0060.00236

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

MAY 15 '00 10:13 807 623 0452 PAGE.02

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use)
W0060.00236

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

Work Type	Units of work Depending on the type of work, list the number of hours/days worked, metres of drilling, kilometres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
BOREHOLE GEOPHYSICAL SURVEY	3.5 DAYS	2057/DAY	7200
Associated Costs (e.g. supplies, mobilization and demobilization).			
Transportation Costs			
Food and Lodging Costs			
		Total Value of Assessment Work	7200

2.20.92

Calculations of Filing Discounts:

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

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

Note:

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

Certification verifying costs:

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

Signature _____ Date _____

0212 (03/97)

RECEIVED
MAY 15
GEOSCIENCE ASSESSMENT OFFICE

05/15/2000 MON 10:13 FAX 807 623 0452 NORANDA INC 002/003

0212 (03/97)

K. Richard Munro 5/17/2000

M/D/Y

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Ontario

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

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

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

May 25, 2000

JACQUES ROBERT
BOX 491
PORCUPINE, Ontario
P0N-1C0

Dear Sir or Madam:

Submission Number: 2.20292

Subject: Transaction Number(s):		**Status**
	W0060.00236	Approval
	W0060.00237	Approval

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

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

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

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

Yours sincerely,

Steven B. Beneteau

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

Correspondence ID: 14910
Copy for: Assessment Library

Work Report Assessment Results

Submission Number: 2.20292

Date Correspondence Sent: May 25, 2000 **Assessor:** BRUCE GATES

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W0060.00236	1227939	WHITNEY	Approval	May 25, 2000

Section:
18 Other DHGEO

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W0060.00237	1227916	WHITNEY	Approval	May 25, 2000

Section:
18 Other DHGEO

Correspondence to:

Resident Geologist
South Porcupine, ON

Assessment Files Library
Sudbury, ON

Recorded Holder(s) and/or Agent(s):

Richard Kruse
THUNDER BAY, ON, CANADA

JACQUES ROBERT
PORCUPINE, Ontario

MICHAEL A TREMBLAY
PORCUPINE, Ontario

PATRICK BERNARD COYNE
TIMMINS, Ontario

WOODY OUDERKIRK
TIMMINS, ONTARIO

LARRY JOHN SALO
CONNAUGHT, Ontario

Correspondence ID: 14910

MAP SYMBOLOGY

Aerial Cableway
Boundary
International
Interprovincial
District, Township, Indian Reserve
Approximate
Lot, Concession
Approximate
Park Boundary
Bridge
Road, Railroad
Building
Chimney
Cliff, Pit, Pits
Contours
Interpolated
Approximate
Depression
Control Points
Horizontal
Vertical
Culvert
Falls
Double Line River
Fence, Hedge, Wall
Feature Outline (Construction Features etc.)
Flooded Land
Lock
Marsh or Swamp
Mast
Mine Head Frame
Outcrop

Pipeline (labeled group)
Railroad
Single Track
Double Track
Abandoned
Turntable
Road
Highway, County, Township
Access (road of occasional maintenance or significant driveway)
Trail Blaze Road (Portage, Alley)
Rapids
Double Set of Rapids with multiple rapids
Double Set of Rapids with multiple rapids
Reservoir
River, Stream, Canal
Approximate, Seasonal
Direction of Flow
Rock
Significant
Shrub
Spot Elevations (Lake Elevation)
Tower
Transmission Line
Poles
Pylons
Tunnel
Utility Poles
Wharf, Dock, Pier
Wooded Area

AREAS WITHDRAWN FROM DISPOSITION

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

Description	Order No.	Date	Disposition	File

(P.) APPLICATION PENDING UNDER PUBLIC LANDS ACT
SURFACE RIGHTS WITHDRAWN

THIS TWP. IS SUBJECT TO FOREST ACTIVITY IN 1994/95
FURTHER INFORMATION AVAILABLE ON FILE.

NOTE:

BOUNDARY CHANGED SEPT. 23, 1994
AS PER G. SHERMAN

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.

HOYLE TWP.

TISDALE TWP.

CODY TWP.

SHAW TWP

Porcupine Lake

PORCUPINE

Bobs Lot

Deadmans Point

Dams

Rapids

(2 UNITS)

LEGEND

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

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	◒
" , MINING RIGHTS ONLY	◒
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	■
" , MINING RIGHTS ONLY	■
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	◐
CANCELLED	⊘
SAND & GRAVEL	◐

NOTE MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1870, CHAP. 380, SEC. 83 SUBSEC. I

Metres 500 0 1000 Metres
Chains 10 0 10 20 30 40 50 60 70 Chains
Feet 500 0 1000 2000 3000 4000 5000 Feet

SCALE 1:20 000
GRID ZONE: 17

FLOODING RIGHTS RESERVED TO THE CROWN.
– DUCKS UNLIMITED – SEE LAND ROLL FILE.

TOWNSHIP

WHITNEY

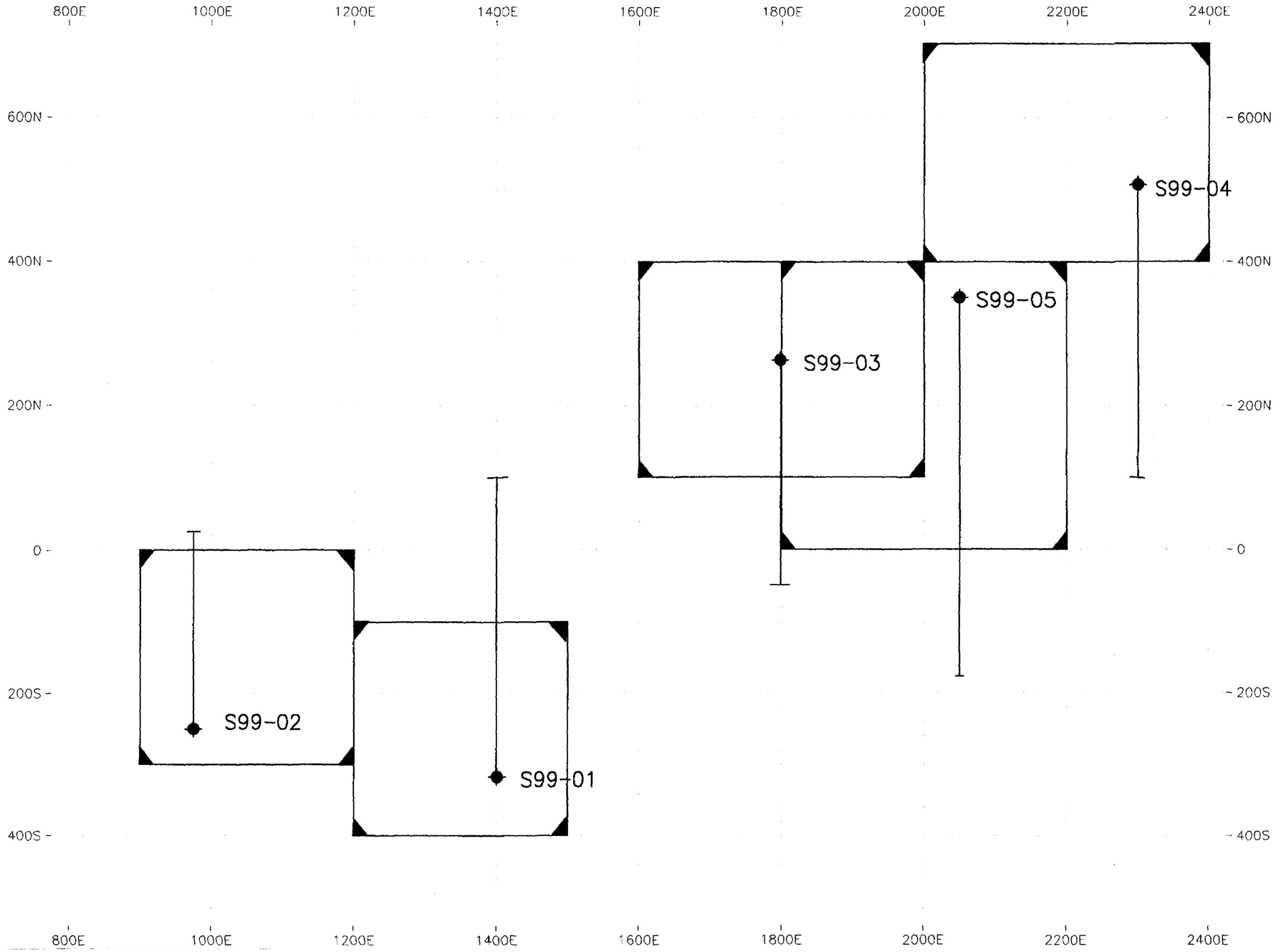
M N R ADMINISTRATIVE DISTRICT
TIMMINS
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
COCHRANE

Ministry of Natural Resources — Land Management Branch
Ontario

ORIGINAL COMPILATION	JULY 1984	Number
CHECKED BY:		G-3975
REVISED:		
ACTIVATED BY: D.C. – JULY 26, 1994		

2.20292
DHGEO

42A06NE2016 2.20292 WHITNEY 200



Scale 1:5000

50 0 50 100 150 200 250

(metres)

NORANDA INC.

SHAWDOME PROPERTY

SHAW TWP., ON

3D FIXED LOOP BOREHOLE SURVEY

BOREHOLE AND LOOP LOCATION MAP

Borehole Coordinates:	975E/250S
Borehole Azimuth, Dip:	330,-45 Degrees
Date:	September 1999
Instrumentation:	Rx = Digital Protem (3x20 Channels) Geonics BH43 probe + 600m cable Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC CONSULTING INC.

DRG #: C464-LOOP

42A06NE2016 2.20292 WHITNEY 210