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Report on the 2013 Sunday Lake Exploration Program

Transition Metals Corp. and Impala Platinum Holdings Limited

Written By:
Steven Flank – Project Geologist
Grant Mourre – Exploration Manager

August , 2015

Introduction

The Sunday Lake Project is a PGM-Cu-Ni exploration project located 25km north of Thunder Bay Ontario within the Midcontinent Rift (MCR). The project is a joint venture agreement between Impala Platinum (Implats) and Transition Metals Corp. (TMC). Based on the limited work completed to date TMC believes the SLI has the potential to host a significant PGM-Cu-Ni deposit and warrants further work.

This report documents the results of exploration activities on the Sunday Lake Project completed between August 8th to September 30th, 2013.

Location

The Sunday Lake Project is located approximately 25km north of the City of Thunder Bay, Ontario. It is comprised of staked mining claims, optioned mining claims, optioned patents and leased patents which cover 2612ha (Figure 1). Access to the Sunday Lake property is attained by travelling north on Hwy. 527 from Thunder Bay, Ontario for 25km to Barnum Lake road. Travel west on Barnum Lake road for 7.5km to an unmarked, unmaintained logging road known as Ton Lake Road. The Ton Lake Road is followed west for another 7.5km to access the property.

Land Tenure

The Sunday Lake property is comprised of 11 claims totalling 98 units and 3 privately owned patents (19889, 19890, 6056). See Figure 1 and Figure 2.

Table 1: Summary of the Sunday Lake claims.

Claim Number	Township	Recording Date	Claim Due Date	Units	Work Required	Total Applied	Total Reserve
4210856	JACQUES	2006-Aug-18	2015-Aug-18	8	$3,200	$22,400	$0
4210857	JACQUES	2006-Aug-18	2015-Aug-18	6	$2,400	$16,800	$4,764
4210858	JACQUES	2006-Aug-18	2015-Aug-18	10	$4,000	$28,000	$36,093
4230099	JACQUES	2008-Feb-21	2016-Feb-21	12	$4,800	$28,800	$0
4247181	JACQUES	2010-Oct-18	2015-Oct-18	2	$800	$2,400	$0
4274640	JACQUES	2013-May-13	2016-May-13	10	$4,000	$4,000	$0
3009143	ONION LAKE AREA	2005-Feb-11	2017-Feb-11	8	$3,200	$32,000	$39,715
4210859	ONION LAKE AREA	2006-Aug-18	2015-Aug-18	12	$4,800	$33,600	$6,679
4210860	ONION LAKE AREA	2006-Aug-18	2015-Aug-18	8	$3,200	$22,400	$0
4210861	ONION LAKE AREA	2006-Aug-18	2015-Aug-18	8	$3,200	$22,400	$0
4274641	ONION LAKE AREA	2013-May-13	2016-May-13	14	$5,600	$5,600	$0
				98			

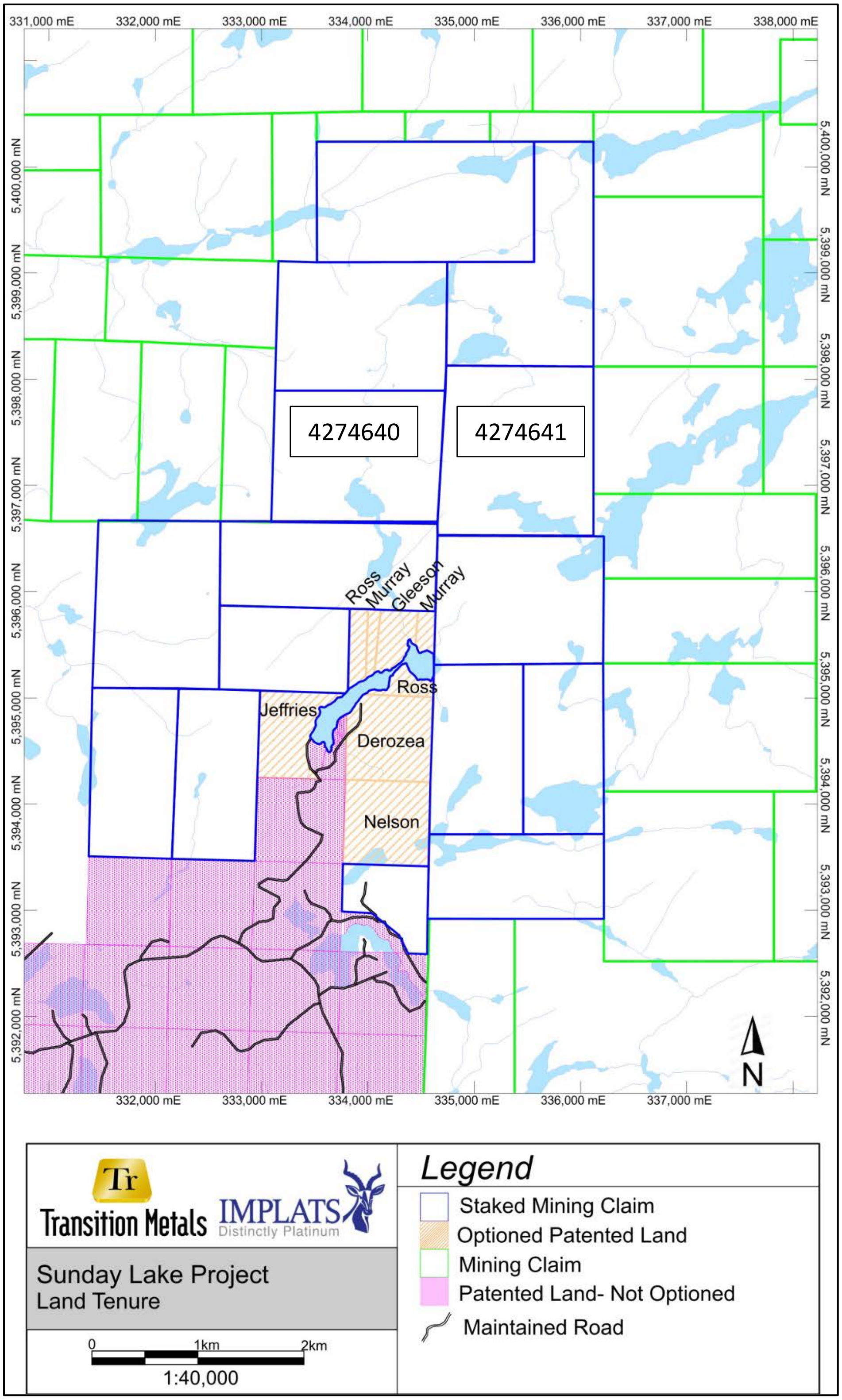


Figure 1: Sunday Lake land tenure.

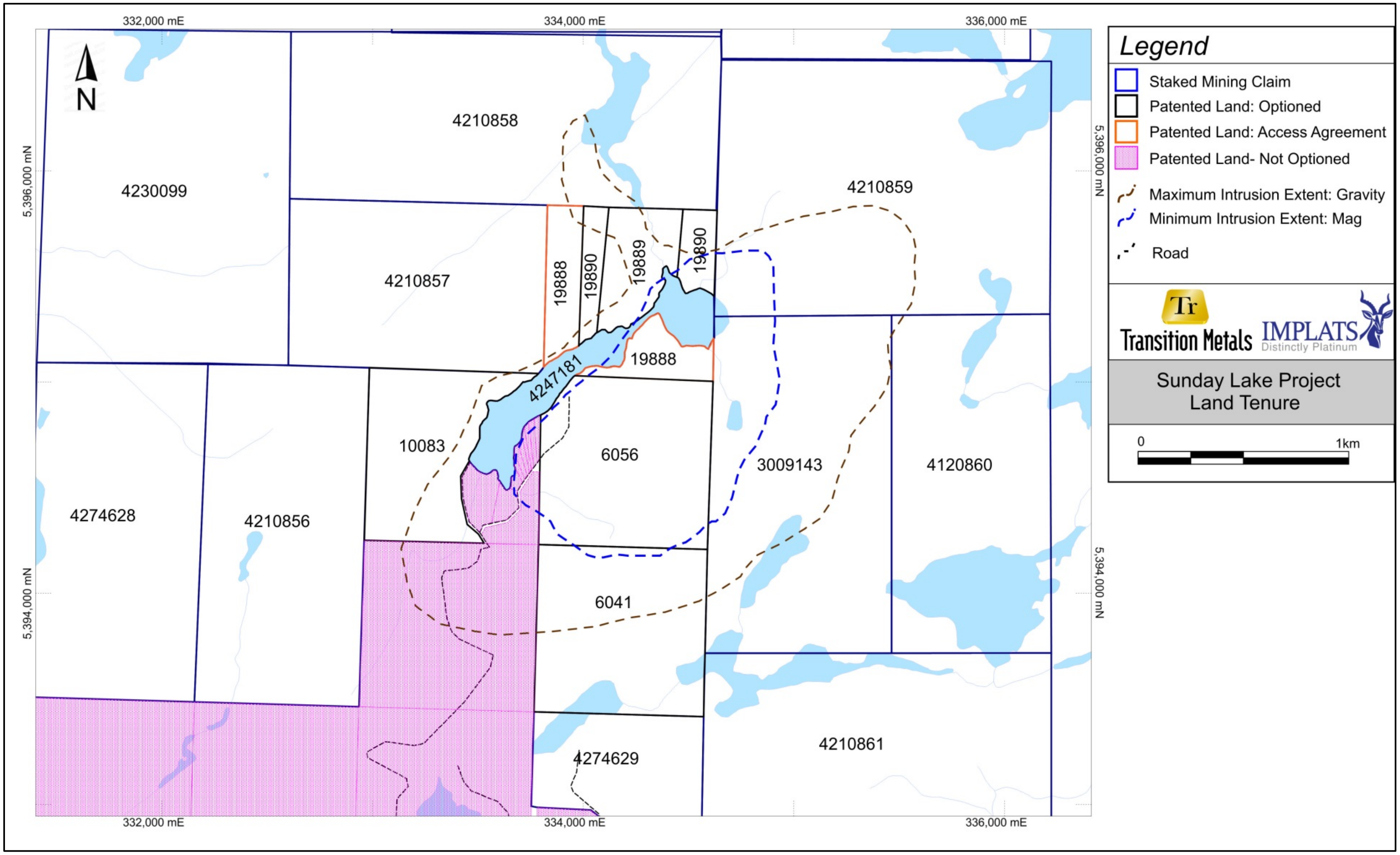


Figure 2: Sunday Lake Land Tenure with claim and patent numbers.

Regional Geology

The Sunday Lake Intrusion is a Proterozoic aged mafic-ultramafic intrusion associated with the ~1.1 Ga MCR. The MCR is believed to be an ancient failed rift which is expressed as a 2,500km long arcuate shaped package of volcanic, sedimentary and intrusive which extends from Kansas, through Lake Superior and terminating at the Grenville front in Northern Michigan (Figure 3). Exploration of MCR related intrusions has persisted for decades within the Duluth Complex, the Great Lakes Nickel Deposit and the Coldwell Complex (Marathon deposit) focusing largely on the base metal potential of these large tonnage, low grade deposits. As the geological understanding of the MCR became better understood, researchers recognized the potential for world class Ni-Cu-PGM deposits similar to those hosted in the analogous Norilsk mining camp of Russia. This information, coupled with rising precious metal prices in the late 1990's – early 2000's spurred a flurry of exploration activity in the region. This activity ultimately led to new discoveries in Michigan (Eagle Mine), Minnesota (Tamarack Tamarack deposit) and in Ontario (Thunder Bay North Deposit).

Unlike the large tonnage, low grade deposits previously discovered, these new discoveries boasted high grade Ni-Cu dominated mineralization at Eagle and Tamarack, and high grade PGM dominated mineralization at Thunder Bay North. Mineralization is hosted within irregularly shaped, primitive, ultramafic to mafic intrusions associated with the earliest stages of rift development. As such it was recognized that these 'early-rift' type intrusions were highly prospective for magmatic PGM-Cu-Ni mineralization.

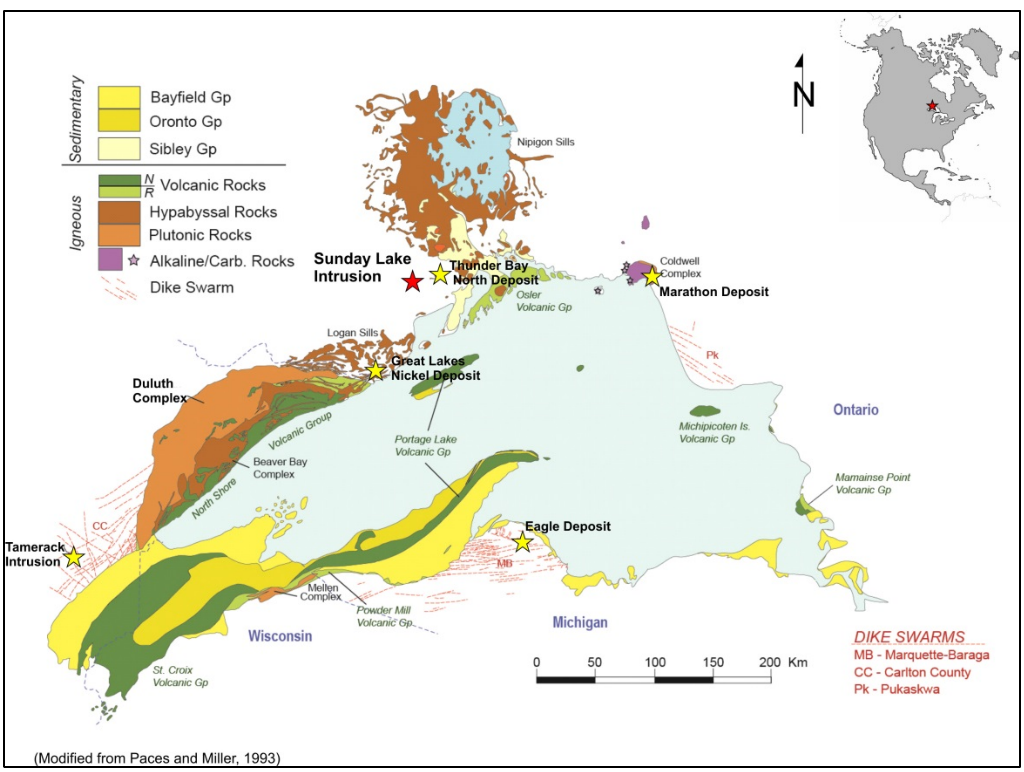


Figure 3: Geology of the Midcontinent Rift with notable mineral deposits and intrusions.

Summary of Work

Line Cutting, Geological Mapping

Haveman Brothers Exploration Services of Thunder Bay, Ontario was contracted to complete a 46.45 line km grid over the northeast and east portions of the Sunday Lake Property, as well as refurbish 5.6 line km's of an existing grid cut by Rio Tinto in 2012 (Figure 4). This grid was then utilized to complete geological mapping, ground gravity, ground magnetic, and ground electromagnetic surveys.

Ground Geophysics

Eastern Geophysics of West Pubnico, Nova Scotia was contacted to complete the ground gravity and magnetic surveys while Crone Geophysics of Mississauga, Ontario completed the ground electromagnetic survey. Table 2 summarizes the data collected.

Table 2: Summary of Ground Geophysical Data

Gravity	584 stations collected
Magnetic	54.3 km surveyed
Electromagnetic	30.1km surveyed

Gravity data was merged with data collected by RTEC in 2012 thereby eliminating the need to re-survey the RTEC grid. Magnetic data was collected on both the RTEC and 2013 grids, while EM data was collected on selected lines of interest. Refer to Appendix 1 and 2 for complete geophysical reports.

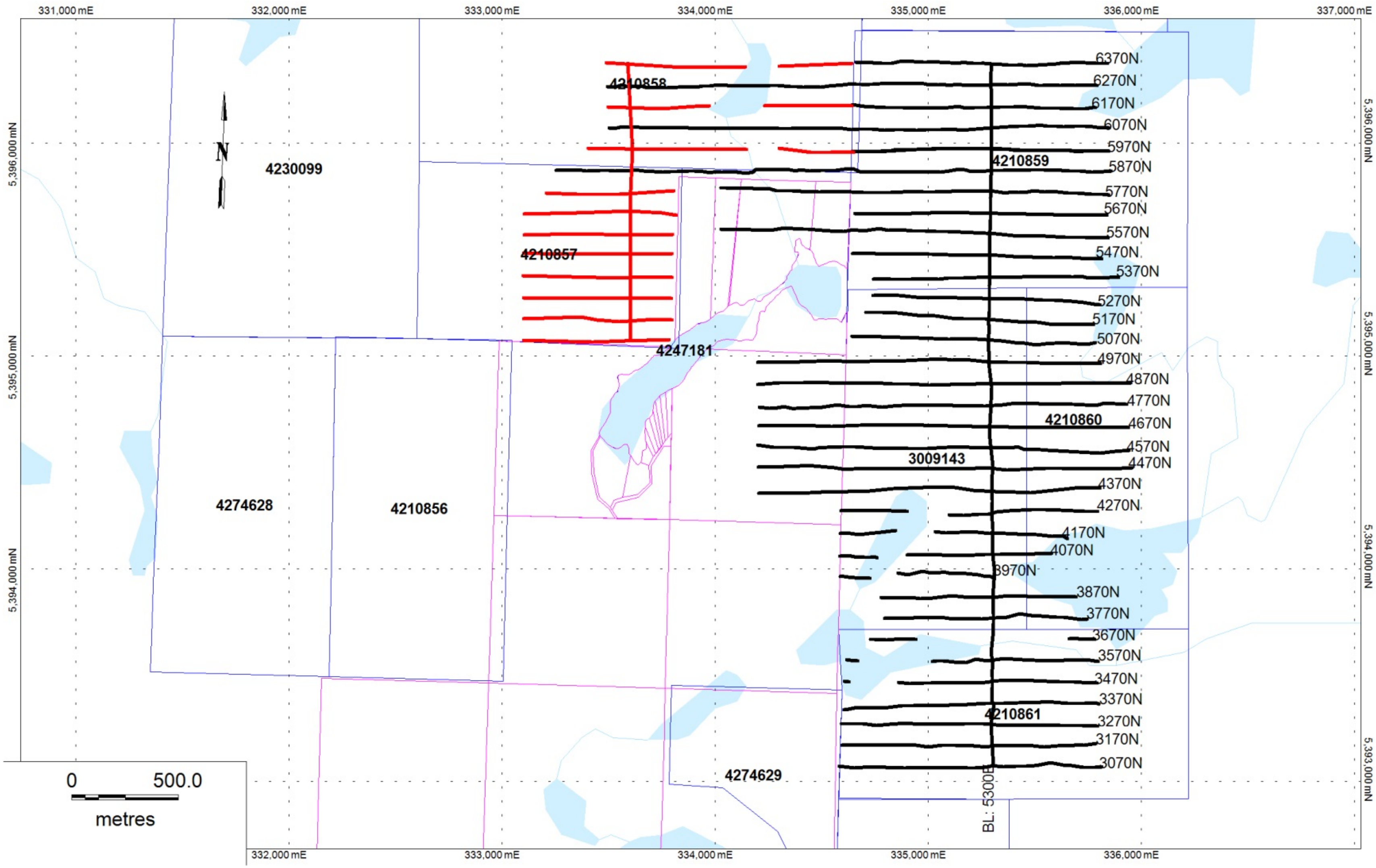


Figure 4: Map of the 2013 Sunday Lake ground grid. Black lines were cut by Transition Metals and the red lines were the previous Rio Tinto grid.

Appendix A: Ground Magnetic, Gravity and Summary Report

Interpretational Report

on

Ground Geophysical Surveys

on the

Sunday Lake Property

for

Transition Metals Corp.

Robert E. Gillick
Robert E. Gillick & Associates Ltd.

North Bay, Ontario, Canada
September, 2013

Table of Contents:

List of Figures:

List of Appendices:

1.0 INTRODUCTION

The following report consists of a description and brief interpretation of ground gravity and magnetics surveys carried out on the Sunday Lake property of Transition Metals Corp. The surveys were carried out by Eastern Geophysics Limited of West Pubnico, Nova Scotia, during September, 2013.

The report is not intended to be a comprehensive geophysical analysis of the property. Drilling data, geochemical data, local geological mapping data, as well as other ground geophysical data were not included in the analysis. Limited use was made of historical regional airborne survey data and regional geology maps downloaded from the OGS digital archives.

2.0 LOCATION & GEOLOGICAL SETTING

The Sunday Lake property is located about 25 kilometres north of Thunder Bay, Ontario, in Jacques Township.

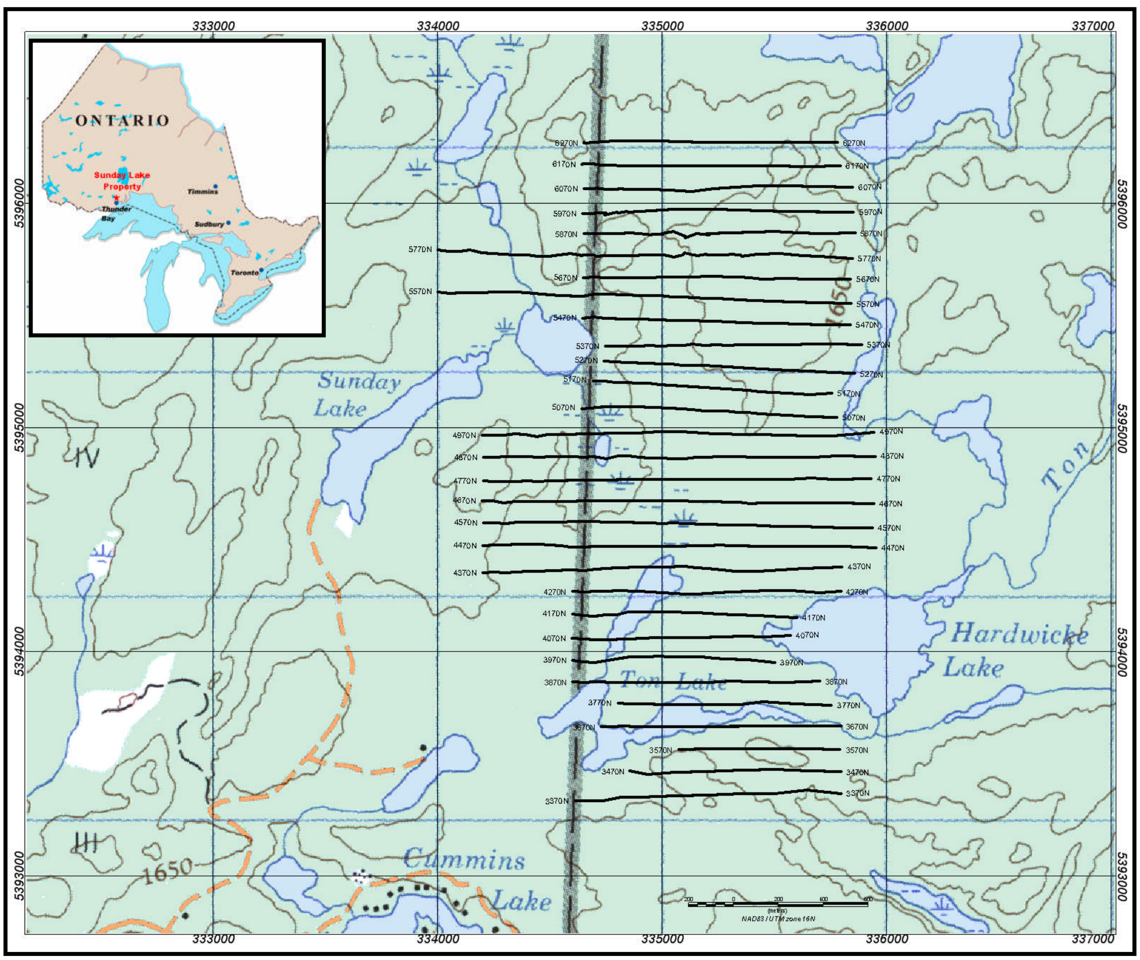


Figure 1: Location map of Sunday Lake property showing gravity survey lines. *(Note: Blue UTM gridlines on NTS underlay image are NAD27; black UTM gridlines on overlay are NAD83).*

OGS historical regional geological mapping indicates that the Sunday Lake area is underlain by an ENE-striking belt of Archean mainly metasedimentary rocks including wackes, siltstones, arkoses, conglomerates, migmatites, chert, iron formation and possibly minor metavolcanics. The metasediments are bounded to the north by a belt of Archean granites. The northern part of the Sunday Lake survey area may overlie the contact between metasediments and granites. A granitic pluton is also indicated in the OGS mapping about two kilometres southwest of the southern part of the survey area.

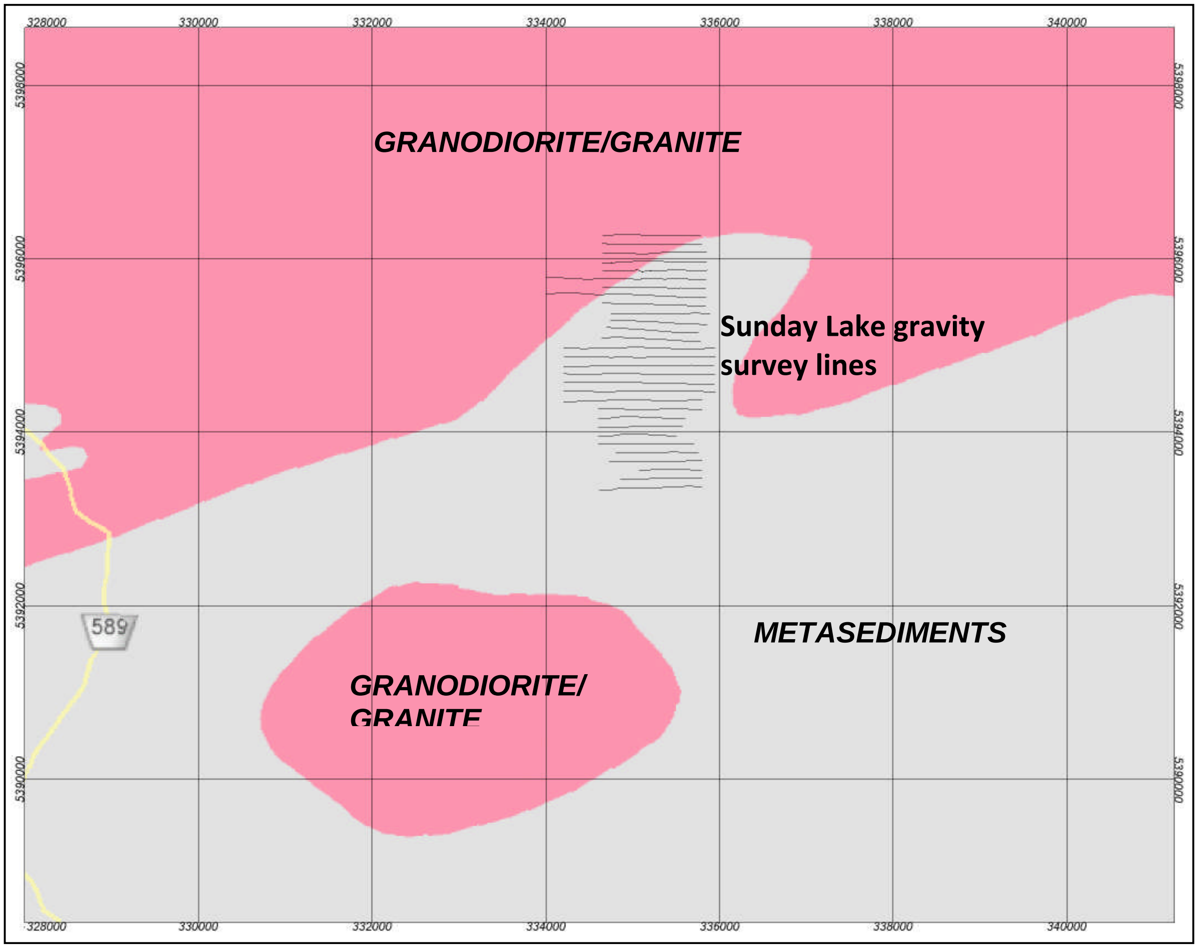


Figure 2: Undifferentiated regional geology of Sunday Lake area from OGS compilation.

3.0 DESCRIPTION OF GEOPHYSICAL SURVEYS

Gravity Survey:

A total of 584 gravity stations were read along east-west oriented survey lines (see *Figures 1 & 2*) at intervals of 50, 100 or 150 metres. All readings were taken with a Lacoste Romberg model G gravimeter. Horizontal and vertical positioning of each station was established using differential GPS. Standard corrections (drift, tidal, latitude, free-air, Bouguer) were applied to the gravity data by the operator to produce a Bouguer gravity dataset.

A detailed description of the gravity survey logistics, instrumentation, procedure and personnel is given in the Eastern Geophysics Limited logistics report included in *Appendix A*.

Magnetics Survey:

A total of 54.3 line kilometres of magnetometer surveying was carried out on the Sunday Lake property. The lines read included the gravity survey lines shown in *Figures 1 & 2* as well as additional lines to the south, north and northwest of the gravity coverage (see *Figure 9* on page 8).

The magnetics survey was carried out using a GSM-19 Overhauser magnetometer operating in "walking" mode. The roving magnetometer was programmed to read at 1 second intervals which produced an along-line reading interval of about 1 metre. Diurnal variation was measured using a recording base station magnetometer.

A detailed description of the magnetometer survey logistics, instrumentation, procedure and personnel is given in the Eastern Geophysics Limited logistics report included in *Appendix A*.

4.0 RESULTS AND INTERPRETATION

Gravity:

Bouguer gravity (*Figure 3*) shows a positive regional gradient of about 1.2 mgal/km towards the south or south southwest. Most of the regional gravity increase is probably related to a granitic pluton located about two kilometres south southwest of the survey area (see *Figure 2*).

Superimposed on the regional gradient is a large and prominent local gravity high in the southwestern part of the survey area.

The regional gradient exhibits enough linearity that a first-order (i.e. planar) surface appears to be suitable as a regional estimator for regional-residual separation. A perspective view of the Bouguer gravity and the first-order regional trend is shown in *Figure 4*. A second-order regional (not shown) was also tried but was judged to remove too much of the local anomaly after regional-residual separation.

The slab density used for the determination of Bouguer gravity was 2.67 g/cc. According to Brian d'Entremont of Eastern Geophysics Limited, this value was arrived at based on discussion with the client (Transition Metals Corp.) and also based on previous gravity surveying in the area. No other Bouguer density values were used by the author.

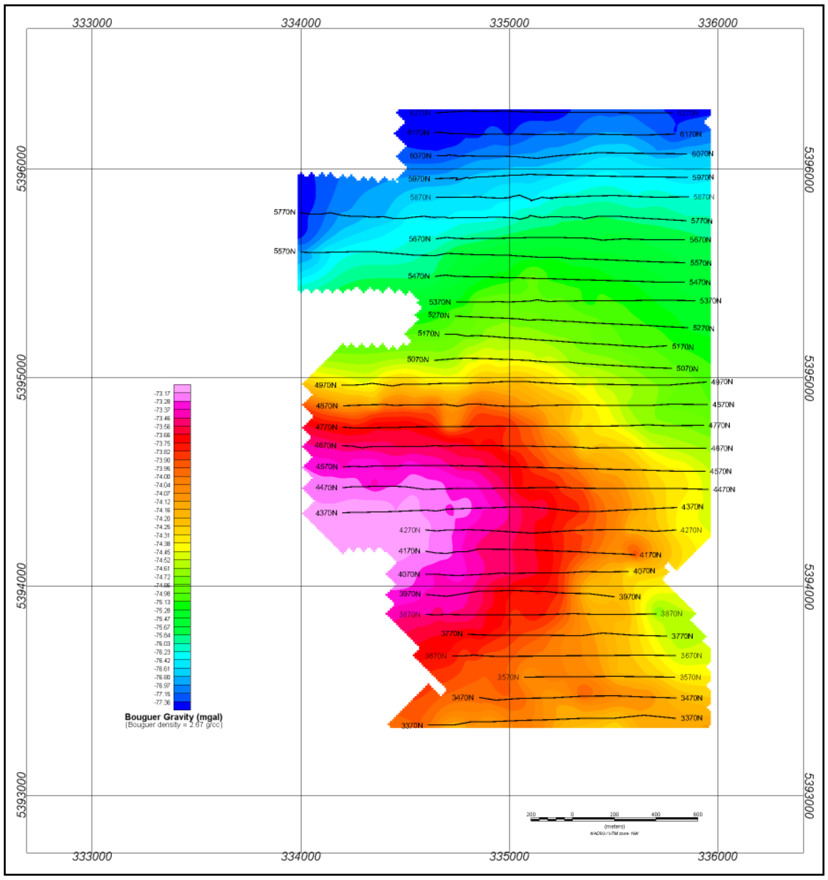


Figure 3: Bouguer Gravity.

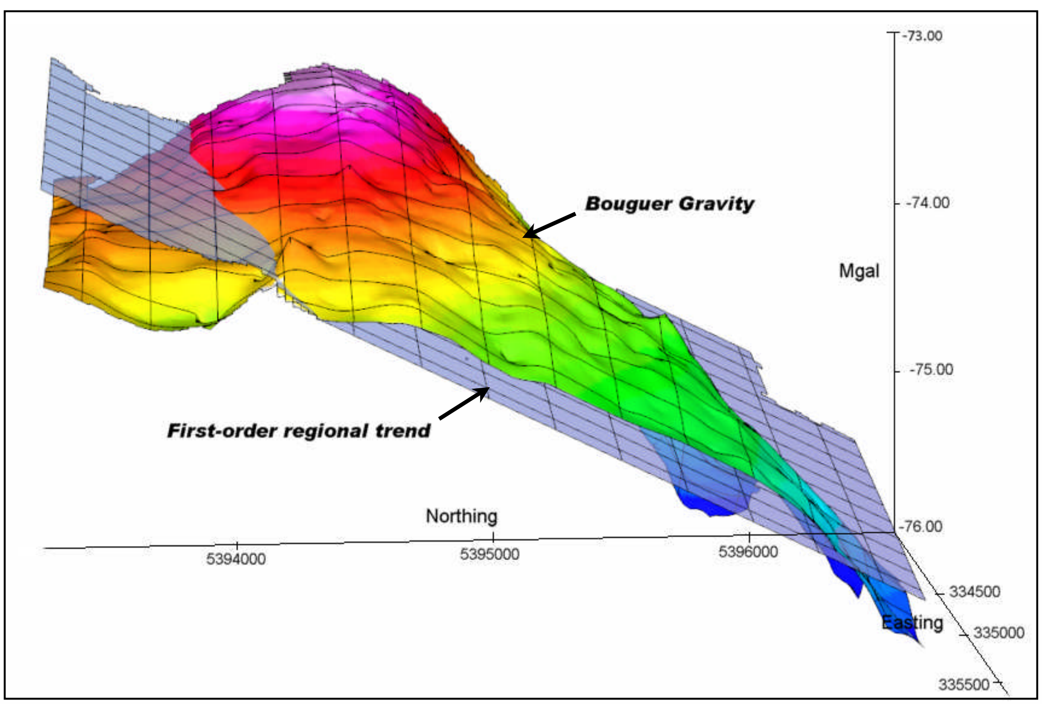


Figure 4: Perspective view (looking west) of Bouguer gravity and first-order regional trend

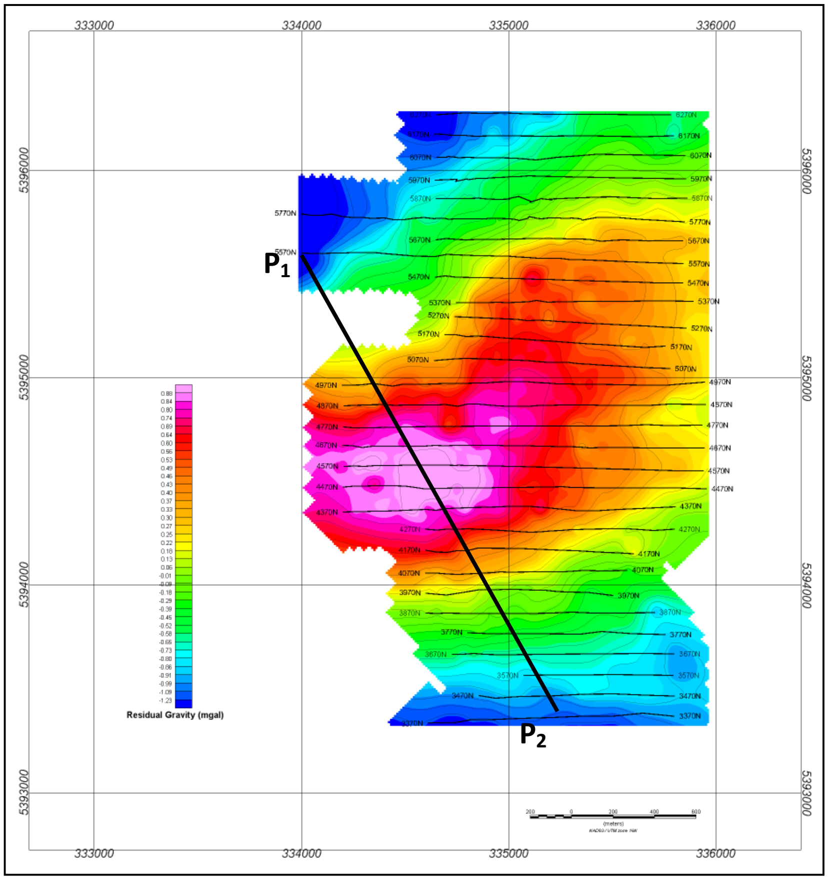


Figure 5:

Residual Gravity.

(Extracted profile P_1P_2 is shown in *Figure 7* on next page)

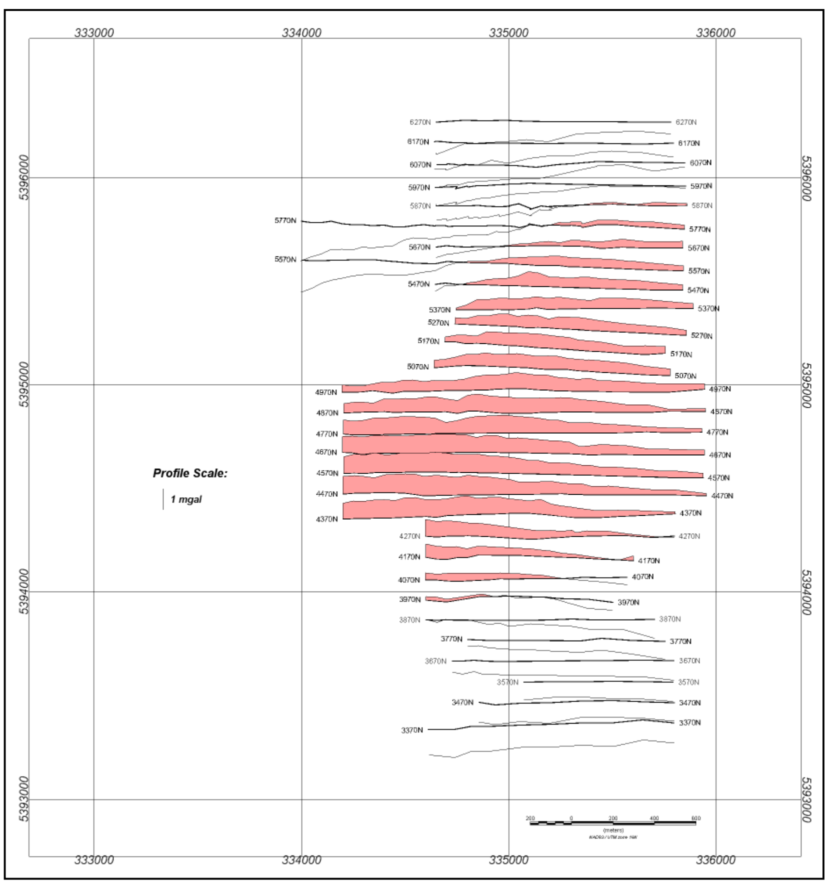


Figure 6:

Residual Gravity Profiles.

The residual gravity exhibits a broad high trending roughly northeasterly through the central part of the surveyed area (*Figures 5 & 6*). The anomaly is not fully defined to the west and southwest although residual gravity values at the western ends of several of the profiles suggest a possible lessening of the response indicating that the anomaly is peaking within the surveyed area.

Figure 7 shows profile P_1P_2 extracted from the gridded residual gravity. The profile is oriented to cross approximately perpendicular to the apparent NE strike of the anomalous trend.

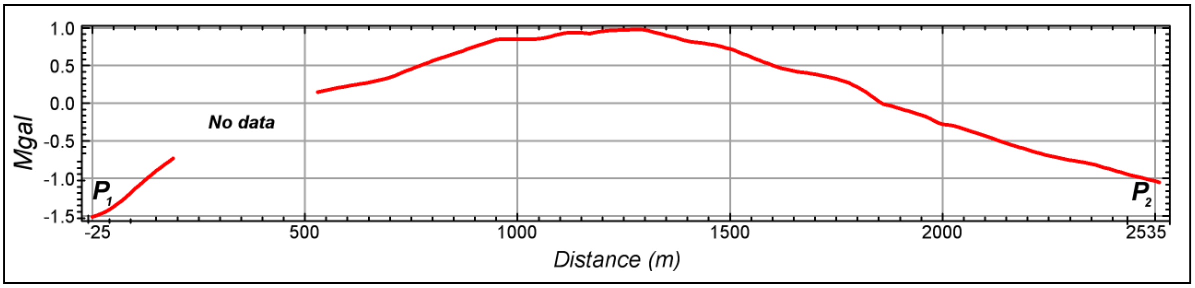


Figure 7: Extracted residual gravity profile P_1P_2. See *Figure 5* for profile location.

The residual gravity high along profile P_1P_2 is at least 2500 metres in width and has an amplitude of at least 2.5 milligals.

The results of forward modeling of this profile using several sphere models are shown in *Figure 8* on the next page. Sphere densities ranging from 0.10 to 0.45 g/cc were chosen to simulate a range of possible density contrasts between the rock volume producing the P_1P_2 anomaly and the surrounding rock. The lower density contrast (i.e. 0.10 g/cc) should be a reasonable estimate for a granitic/granodiorite intrusive within metasediments; the higher density contrast (i.e. 0.45 g/cc) should be a reasonable estimate for a gabbro or peridotite intrusive.

As would be expected, the curve fit to the P_1P_2 anomaly for the lower density spheres is best when the spheres are large (900-1000 metres in radius) and near the surface (depth to top 0-150 metres). For the higher density spheres a good fit is obtained with spheres of smaller radii (600-700 metres) and located at greater depth (about 400 metres to the top).

Sphere modeling should provide a rough idea of the possible sizes and depths of the volume of excess mass which could produce the P_1P_2 anomaly. Inversion modeling using a 3D block mesh of the subsurface should be considered for more accurate results.

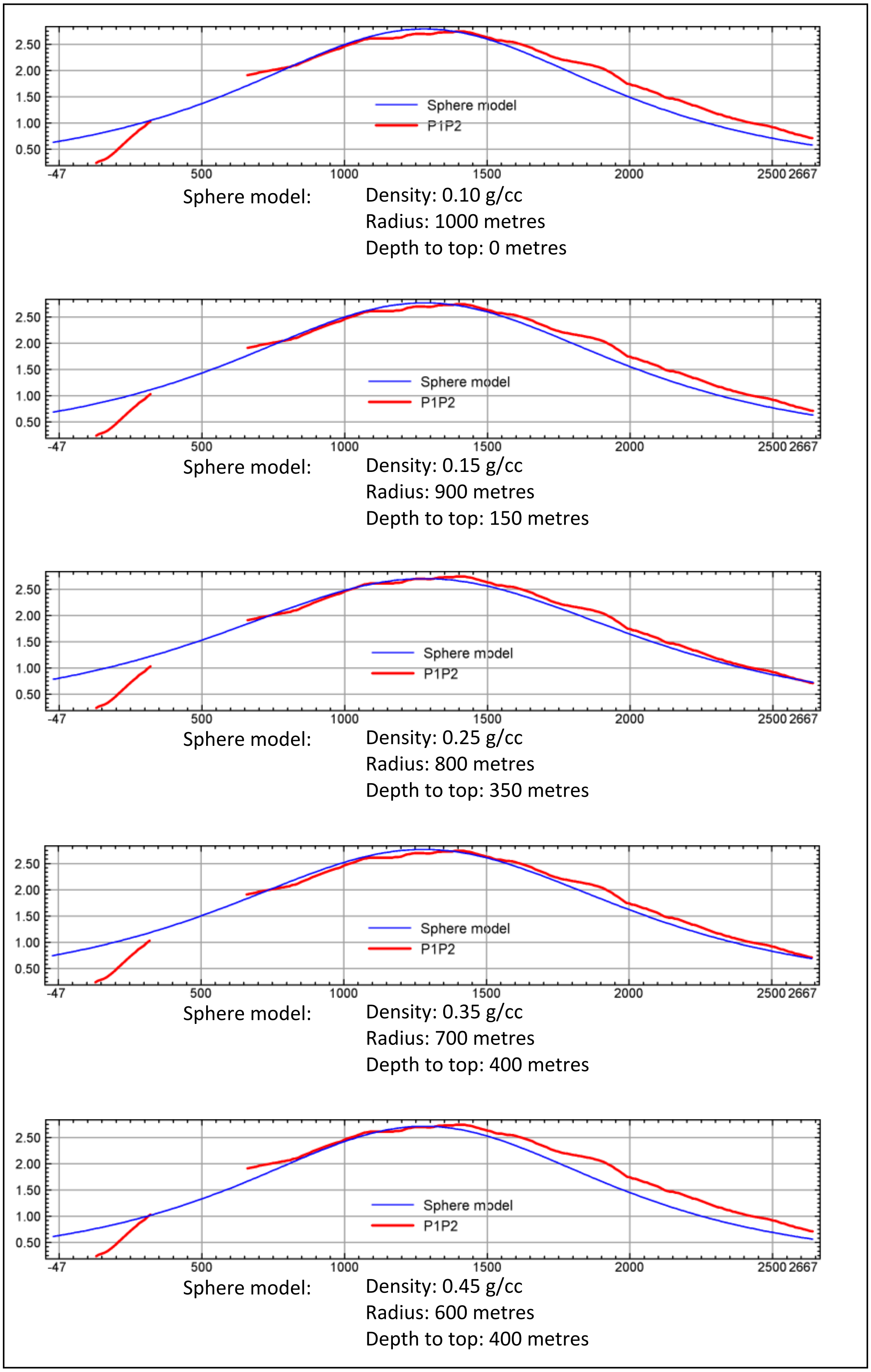


Figure 8: Gravity forward modeling of spheres to fit P_1P_2 profile.

Magnetics:

Figures 9 & 10 show the ground and airborne total field magnetics, respectively, over the Sunday Lake area.

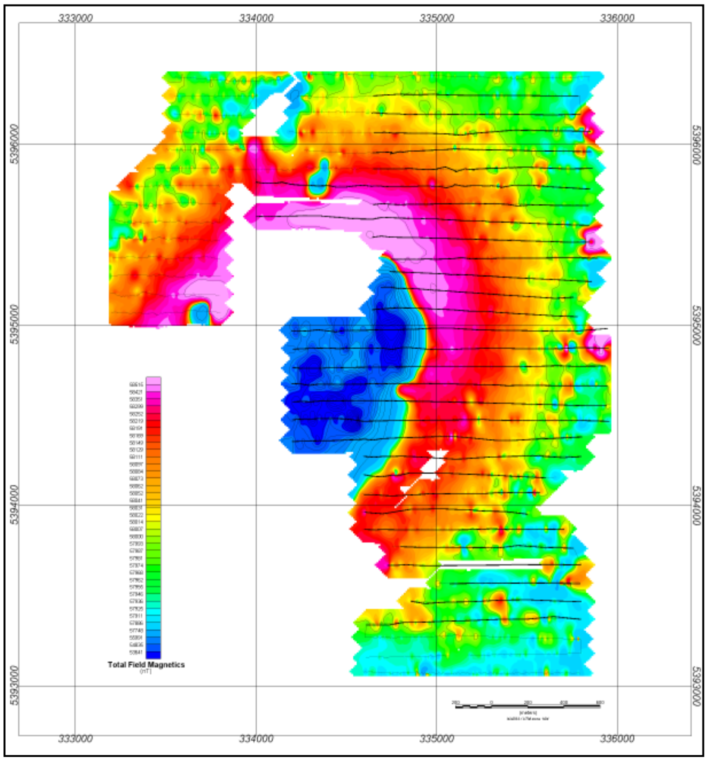


Figure 9:

Ground total field magnetics.

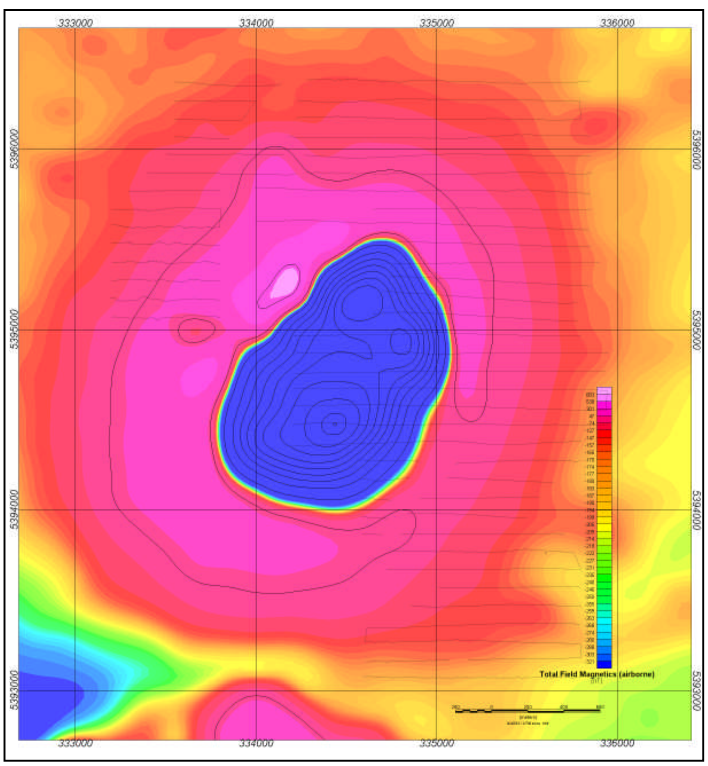


Figure 10:

Airborne total field magnetics (from OGS archives, Shebandowan survey).

The magnetics are dominated by a strong, near-circular magnetic low in the west central part of the survey area. The low is ringed by a smaller amplitude magnetic high. Amplitude variation over the circular low and ring-shaped high ranges over about 10,000 nT in the ground data and about 5,000 nT in the airborne data. The relative high-low variation between the positive ring and the negative core is illustrated in the perspective view of the airborne anomaly shown in *Figure 11*.

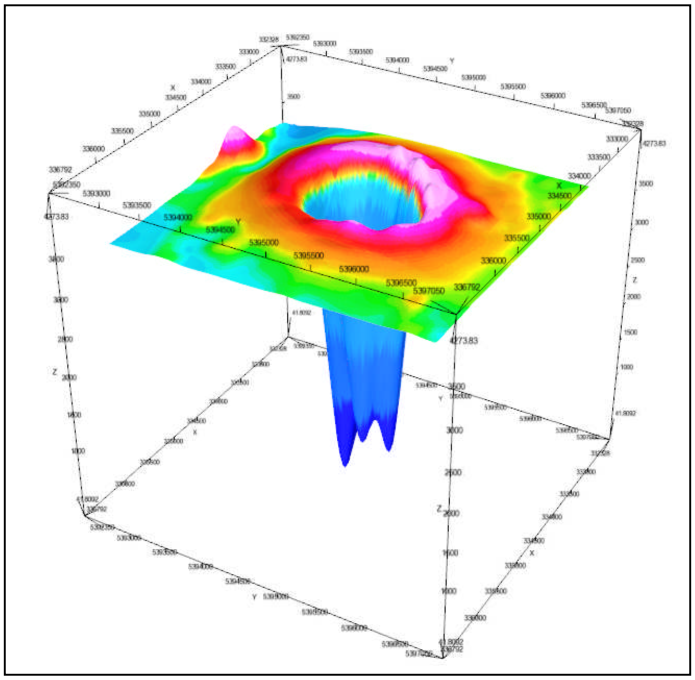


Figure 11:

Perspective view of Sunday Lake airborne magnetic anomaly.

The large negative magnetic anomaly has been confirmed by drilling to be the response from a reversely magnetized mafic to ultramafic intrusion possibly intruded along a crustal rift. The circularity of the feature also suggests the possibility that intrusion may have occurred within a local crustal fracture zone perhaps related to a meteorite impact. The ring-shaped high may represent magnetic alteration along the contact of the intrusion. The ring anomaly could also be explained as the positive (unreversed) response of a pre-existing magnetic rock which was later intruded by the reversely magnetized ultramafic.

<u>Suggested targets:</u>

Superimposed on the main magnetic low are sharper, and presumably shallower, magnetic lows and highs suggesting localized changes in magnetic mineralization which may be interesting near-surface exploration targets. Localized lows and highs along the rim of the main anomaly may also warrant further investigation. *Figure 12* shows a number of these smaller features picked from the ground magnetics results as well as the airborne magnetics and ground gravity. The magnetic picks include both localized lows and highs; the gravity picks include only localized highs. Higher priority targets, with longer strike lengths and/or larger and stronger localized gravity highs, are identified with a red star. A cluster of localized magnetic anomalies and gravity highs within the main magnetic low is circled as a high priority zone.

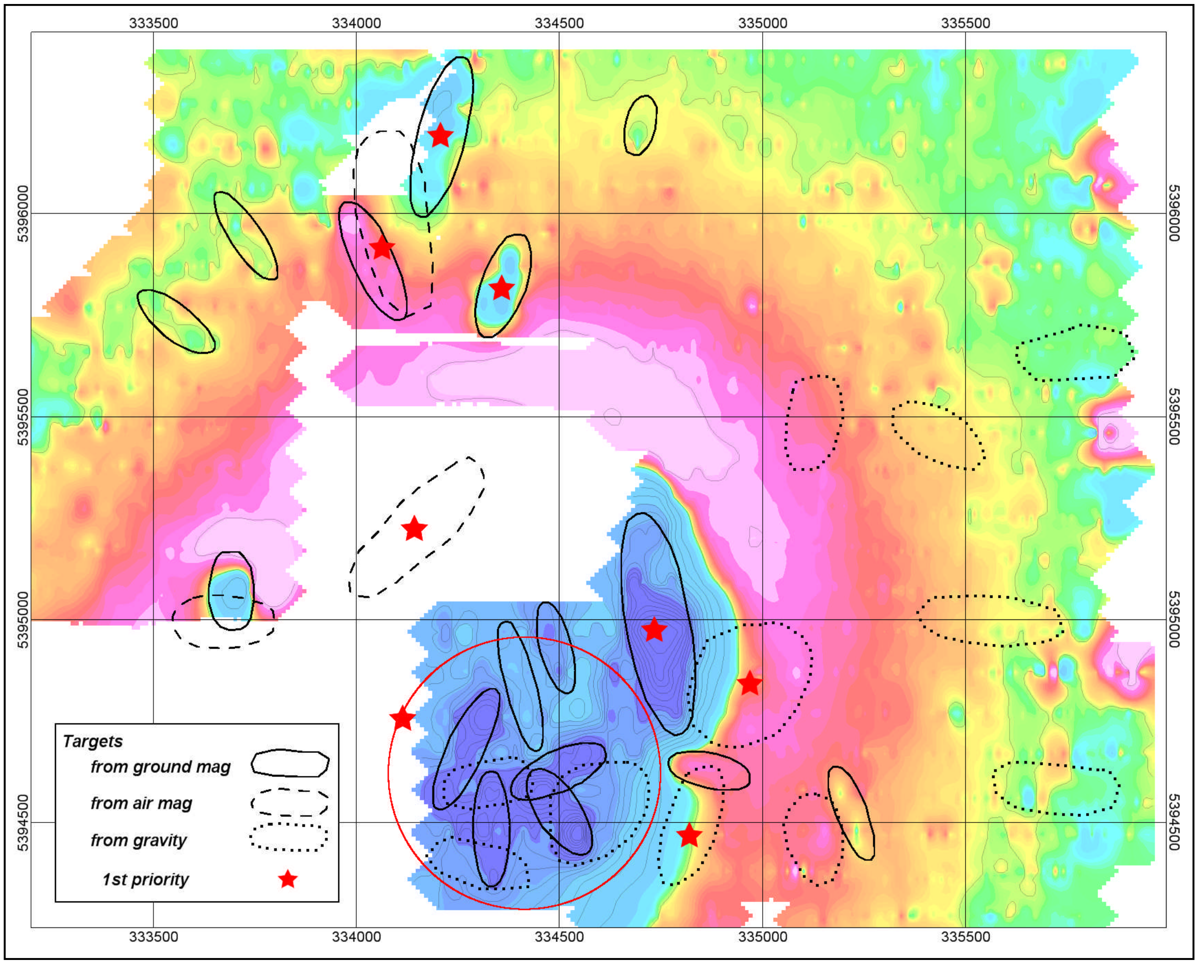


Figure 12: Suggested targets. Coloured underlay is ground magnetics.

5.0 CONCLUSIONS

Ground magnetic and gravity surveys have defined prominent responses over a feature in the Sunday Lake area believed to be a reversely magnetized mafic to ultramafic intrusive (gabbro/peridotite).

The magnetic anomaly is near-circular and strongly negative with amplitudes exceeding 10,000 nT. A ring of positive magnetic response, about 1000 nT in amplitude, surrounds the negative anomaly suggesting possible magnetic alteration around the contact of the intrusion. Alternatively, the reversely magnetized rock may have been intruded into a normally magnetized, positively anomalous, host rock or overlying rock.

A gravity anomaly about 2.5 milligals in amplitude is centred over the negative magnetic anomaly. Simple forward gravity modeling using sphere models suggests a depth-to-top of the source (say, a gabbro or peridotite rock with a density of about 3.1 g/cc) of roughly 350-400 metres.

The intrusion may be related to crustal rifting, however, the near-circular shape and ring characteristics of the magnetic anomaly also suggest possible intrusion along a more localized crustal weakening such as a fracture zone resulting from a meteorite impact. There are some indications in the ground magnetics, especially on the northwest side of the ring anomaly, of linear magnetic lows oriented radially to the centre of the circular anomaly (see *Figure 12*) which could be responses of radial fractures possibly emanating from an impact centre.

Superimposed on the main magnetic low are sharper, presumably shallower, magnetic lows and highs possibly related to near-surface fractures. These features may be viable targets as mineral deposition sites for hydrothermal fluids driven upward by the emplacement of the intrusive. Similar localized magnetic anomalies occur to the northwest of the ring anomaly. Localized gravity highs should also be considered viable targets possibly responses of sulfide concentrations.

6.0 RECOMMENDATIONS

1) Ground magnetics appear to provide good structural detail in the area of the central magnetic low. It is recommended that close-sampled magnetometer profiles be taken across known mineralized zones in this area to determine magnetic signatures of these zones to help in selecting and prioritizing targets in this area.

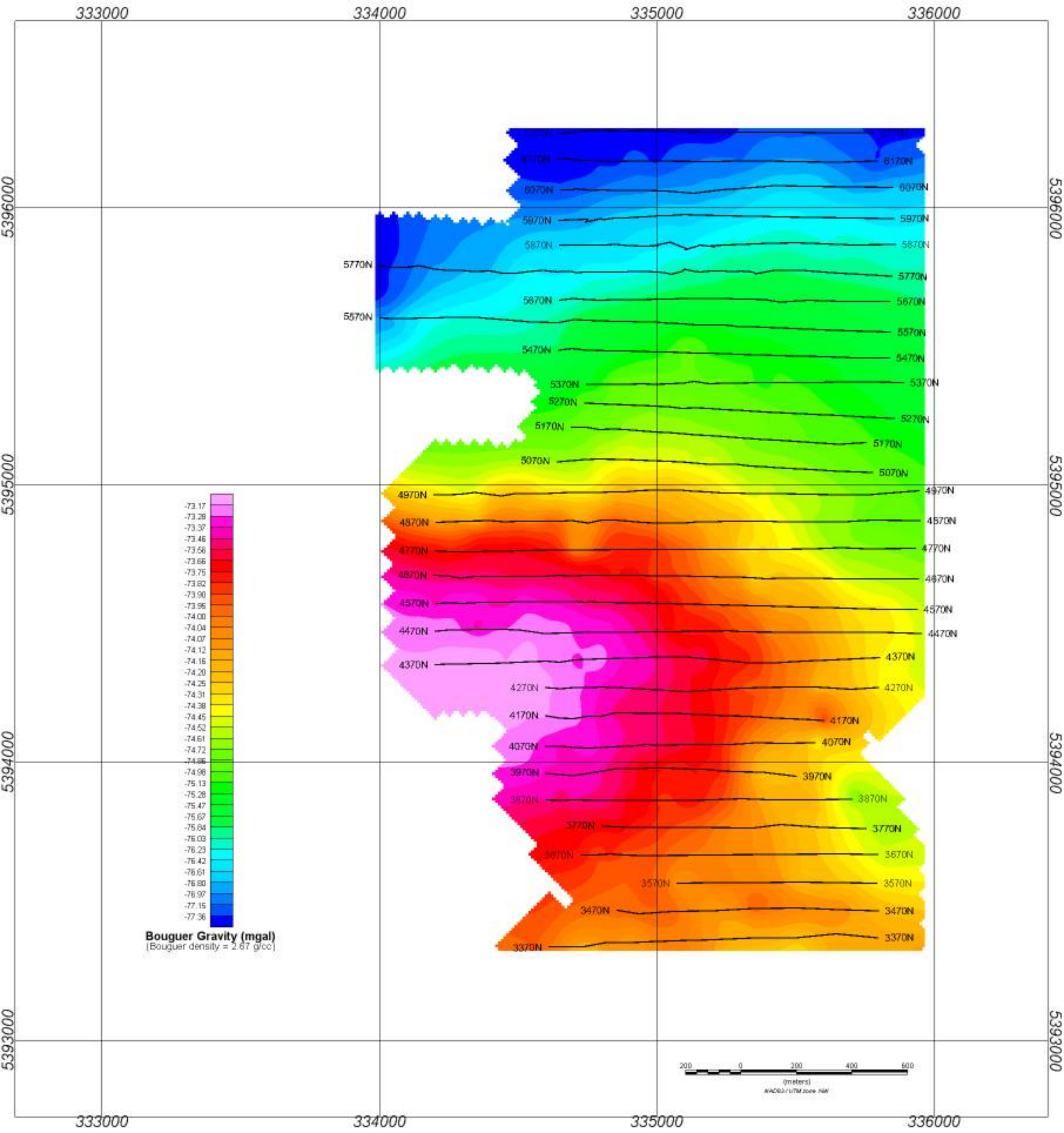
2) Detailed magnetometer coverage should be extended to cover the entire magnetic low, the ring anomaly and about 500 metres of ground outside the ring. Ground magnetometer coverage with 25-metre line spacing would be ideal but expensive. A low-level helicopter survey with 50-metre line spacing would probably be a cheaper and adequate alternative.

3) IP/resistivity surveying should be considered, at least over the central magnetic low area, to investigate for zones of sulfide mineralization and to aid in structural mapping. (Pulse EM surveying has recently been carried out in the area (the author has not seen the data) which should help in determining the conductive nature of known mineralized zones and possibly in defining new targets.)

4) A detailed, tight-contoured analysis of the present ground magnetic data over the ring anomaly and the area surrounding the ring anomaly should be carried out to investigate for subtle, low-amplitude features as potential targets.

5) Inversion modeling of localized magnetic and gravity anomalies should be carried out to help define target dips and depths prior to drilling.

6) A thorough compilation and analysis of all datasets should be carried out for the Sunday Lake property to refine target models and define a robust exploration strategy.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Bouguer Gravity (mgal)
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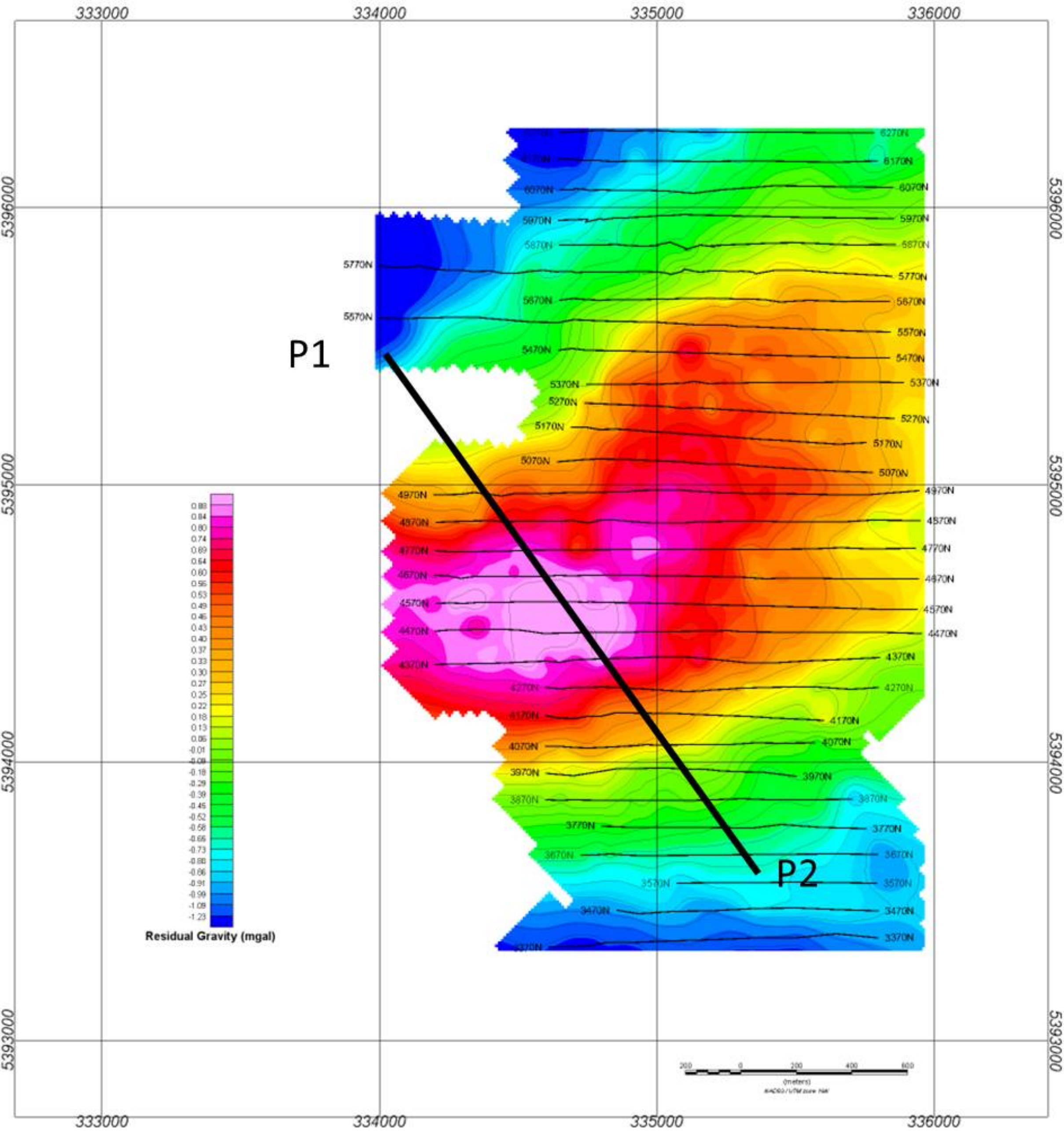
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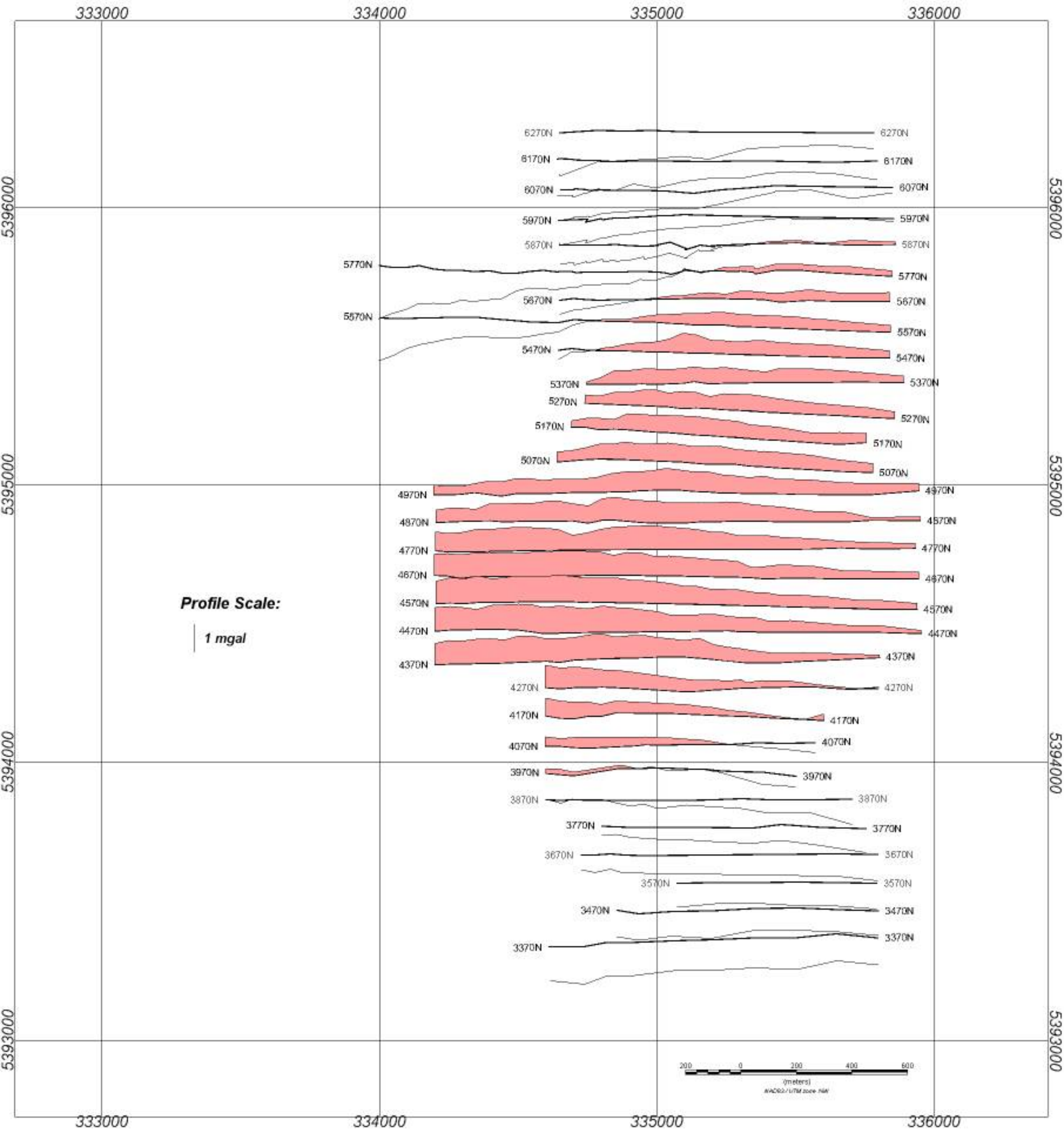
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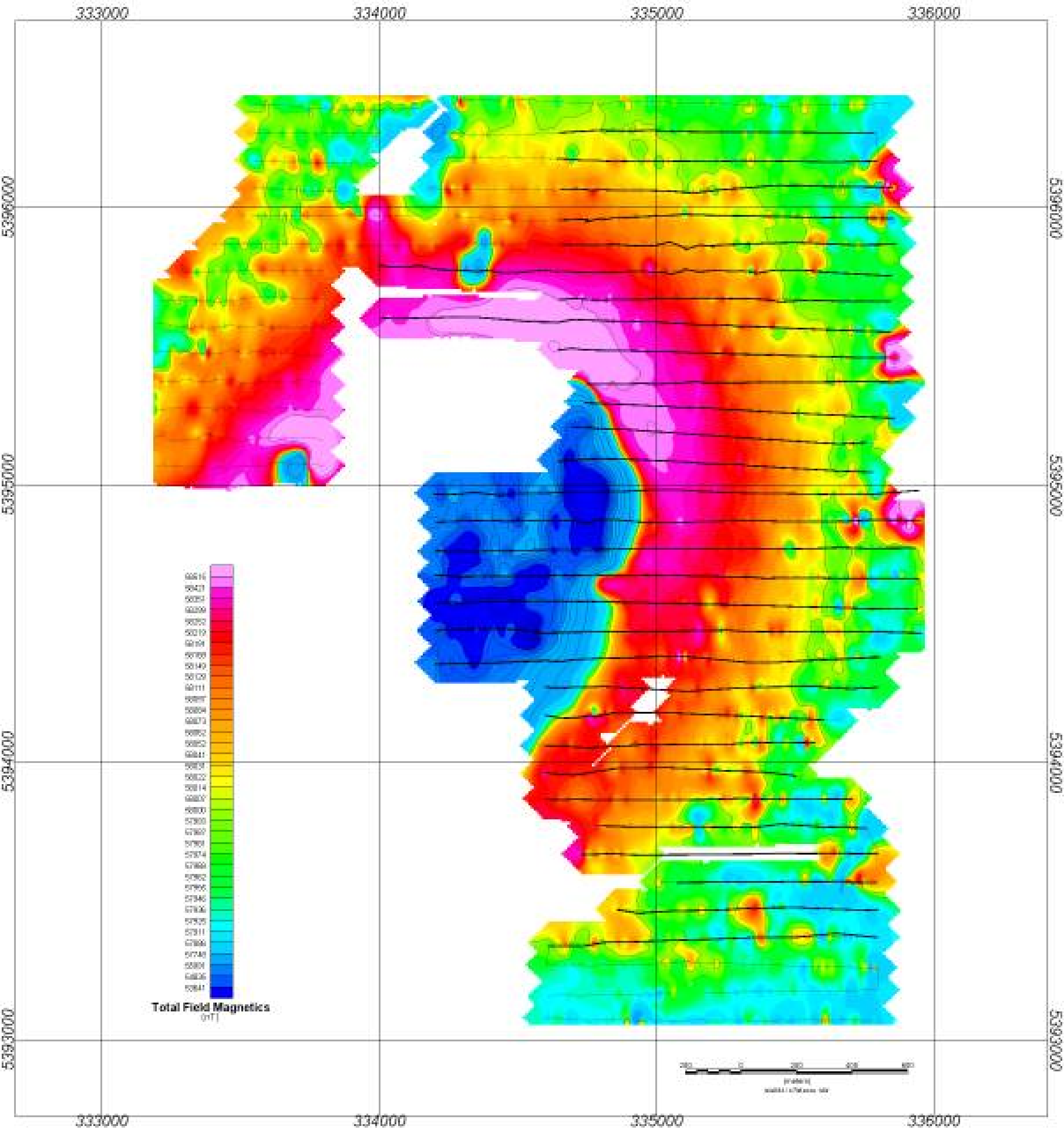

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Total Field Magnetics
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APPENDIX A

Eastern Geophysics Limited

Logistics Reports

LOGISTICS REPORT

TRANSITION METALS CORP.

Gravity Survey
Sunday Lake Property, Thunder Bay, ON
Chief Geophysicist: Kevin Stevens

Project #1307-1 Ref: 1307-1grv

Introduction

This field report covers the survey procedures and parameters for the detailed gravity survey carried out for Transition Metals Corp. on the Sunday Lake Property, north Thunder Bay, Ontario NTS: 52 A/11. This logistics report deals with the fieldwork portion of this contract.

Survey Equipment

2 - LaCoste & Romberg model G gravity meter, Ser. #451 & (#789 spare).
1 - Leica - model 1230 Dual Frequency, Dual Constellation (GPS & GLONASS) RTK, DGPS Base Station.
2 - Leica - model 1230 Dual Frequency, Dual Constellation (GPS & GLONASS) RTK, DGPS Rovers.
2 – Alegro dataloggers model CX, ser.# 44548, and (ser.# 44547 spare)
2 – Laptop computers.
2 – Garmin cx-60 handheld GPS
Registered users of Geosoft^tm geophysical software
Registered users of Leica Geo-Office^tm GPS software version 8.0

Survey Specifications

- Detailed gravity survey with reading intervals of 50, 100 and 150 meters.
- Grid lines spacing of 100m.
- Gravity survey was tied-in to the National Gravity network. (CSGN) base in Thunder Bay.
- DGPS control tied in to a monument previously established by a surveying contractor.
- Gravity readings reduced to Bouguer mgal. values
- All coordinates are in horizontal datum NAD83, UTM zone 16.
- Elevations are in height above mean sea level (MSL) transformed from Elipsoidal heights using HT_2.0 transformation.
- Maximum elevation tolerance of +/- 5 cm./station
- Maximum gravity tolerance of 0.05 mgal./station

Survey Procedure

A gravity and elevation observation were obtained at 50m, 100m and 150m spacings on cut lines. All the gravity data has been calculated or reduced to Bouguer mgal. values. These calculations correct for the following parameters (1) elevation, free- air correction, instrument height; (2) latitude correction; (3) tide correction on a daily basis; (4) instrument drift; and, if required (5) terrain corrections. In order to verify the accuracy of these corrections, 1.0 to 1.5% of the readings were observed again as random repeat readings. This contract specifies repeat readings to be no greater than 0.05 mgal.

National Gravity Network: This survey was tied-in to the Canadian Gravity Standardization Network (CGSN). A CGSN station Thunder Bay, ON was used to tie-in to a local gravity base established by Eastern Geophysics Limited. CGSN station ID# 9382-1998, station value: **980805.04** mgal.
Location: Lat. N48°22’52”, Long. 89°15’43”, elevation 189.000m.

DGPS Control: Horizontal and vertical control was established on a surveyors X marked on an outcrop. Location 5402408.489N, 357881.958E, orthometric (MSL) elevation =508.160 meters. This point was established by a registered land surveyor setting a base on this X for 4 hours and sending the RINEX file to nrcan for processing, **PPP** (Precise Point Positioning).

Local gravity base station #88: Eastern Geophysics established a gravity base at the Days Inn and Suites, 645 Sibley Drive, Thunder Bay, on the north concrete step at exit on the north-east corner of top platform at 5363866N, 332735E.

Local gravity base station #77: Eastern Geophysics established a gravity base 9.70 meters east of GPS base SL-2 on low bedrock between 2 narrow quartz veins.

Local gravity base station #66: Eastern Geophysics established a gravity base 4.10 meters south of GPS base SL-6 on west side of ATV trail on low bedrock. NAD 83 Zone 16 (+/- 0.05 coordinates) are 335392.62 m E, 5395056.68 m N).

Local GPS base SL-2: Eastern Geophysics established this GPS base on the south side of Barnum Road on low bedrock at a marked ‘X’ with coordinates 337020.778 E, 5396126.731 N, and 503.160 meters elevation. The corresponding check point is a marked ‘X’ on elevated bedrock with coordinates 337042.851 E, 5396121.087 N, and 502.161 meters elevation.

Local GPS base SL-6: Eastern Geophysics established this base on the west side of access ATV trail off Barnum Road on a mound of bedrock at a marked ‘X’ with coordinates 335392.199 E, 5395060.705 N, and 505.589 meters elevation. Corresponding check point is a nail in the top of a stump with coordinates of 335388.949 E, 5395047.981 N, and 504.309 meters elevation.

Local GPS base SL-7: Eastern Geophysics established this base on the south side of Ton Lake access road on low bedrock at a marked ‘X’ with coordinates 337826.634 E, 5393319.369 N, and 526.953 meters elevation. The corresponding check point is a marked ‘X’ on a mound of bedrock on the north side of the Ton Lake access road with a coordinates of 337815.505 E, 5393320.853 N, and 526.991 meters elevation.

Personnel
Michael Tatlock and Brian Sutton.

Operator Journal:

Project #1307-1 August 19, 2013 to September 24, 2013.

PROJECT SUMMARY

4.0 - Travel day
22.5 - Operating days gravity
0.0 - Operating day for tie-in
2.5 - Bad Weather days
0.0 - Standby day
0.0 - Days Off
30.0 - Total days August 19, 2013 to September 24, 2013.

A - Gravity coverage:

584 gravity stations read + 19 repeat readings.
771 DGPS stations + 19 repeat readings, 0 stations leveled.
Note: Every gravity station read has a DGPS position, therefore it is complete.

Sunday Lake Grid:		**Total**
L6270N – 4650E to 5775E	=	10 stations
L6170N – 4650E to 5800E	=	14 stations
L6070N – 4650E to 5850E	=	15 stations
L5970N – 4650E to 5850E	=	17 stations
L5870N – 4650E to 5850E	=	19 stations
L5770N – 4000E to 5850E	=	33 stations
L5670N – 4650E to 5850E	=	20 stations
L5570N – 4000E to 5850E	=	33 stations
L5470N – 4650E to 5850E	=	21 stations
L5370N – 4750E to 5900E	=	19 stations
L5270N – 4750E to 5875E	=	19 stations
L5170N – 4700E to 5775E	=	19 stations
L5070N – 4650E to 5800E	=	19 stations
L4970N – 4200E to 5950E	=	30 stations
L4870N – 4200E to 5950E	=	30 stations
L4770N – 4200E to 5950E	=	30 stations
L4670N – 4200E to 5950E	=	30 stations
L4570N – 4200E to 5950E	=	31 stations
L4470N – 4200E to 5950E	=	30 stations
L4370N – 4200E to 5800E	=	28 stations
L4270N – 4600E to 5800E	=	18 stations
L4170N – 4600E to 5600E	=	15 stations

L4070N – 4600E to 5575E = 14 stations
L3970N – 4600E to 5500E = 15 stations
L3870N – 4600E to 5700E = 14 stations
L3770N – 4800E to 5750E = 10 stations
L3670N – 4725E to 4950E + 5650E to 5800E = 7 stations
L3570N – 4600E to 5800E = 6 stations
L3470N – 4850E to 5800E = 8 stations
L3370N – 5075E to 5800E = 10 stations

Total for Sunday Lake Grid = 584 stations
19 repeat readings **= 3.25% repeat**

B - Project Specifications:

1) 1 gravity observation and 1 precise XYZ control measurement were observed at 50, 100 and 150 meters along 100 meter spaced lines on one continuous grid.

2) The distance from the ground to the gravity meter was measured and included in the instrument height (HI) correction. The elevation for that station was at that point on the ground.

3) Horizontal control NAD 83, UTM zone 16. See Appendix B.

4) All daily instrument drift was recorded and included with the data. Daily instrument drift of greater than 0.05 mgal was to be repeated at no additional costs to the client. No excessive drift was recorded for this survey.

5) All random repeat readings were recorded and included in the final data (in red). Repeat readings of greater than 0.05 mgal., were redone in the field at no additional charges to the client. Several repeat readings were checked out and the second pass was within specs.

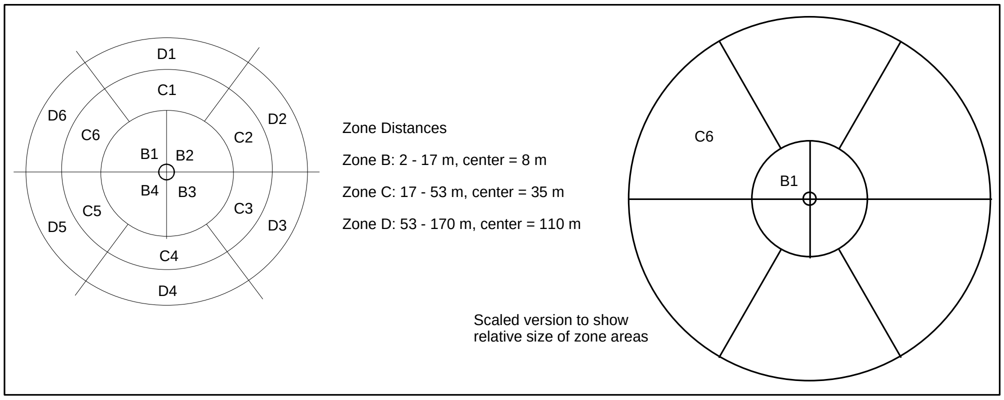
6) All random XYZ position repeats were less than +/- 5 cm.

7) A correction was applied to account for the effect of latitude, due to the Earths rotation and change in radius from the center of mass. This survey will use the IGF1967 formula $Gt = 9.78031846 * \left(1 + 0.0053024 \sin^2 \varphi - 0.0000058 \sin^2 2\varphi\right)$.

8) A correction was applied to account for station readings taken at various elevations above a common datum, in this case, Mean Sea Level. All GPS heights above the ellipsoid will be converted to Mean Sea Level by applying the Geoidal Separation. All heights will be based on the CGVD28 vertical datum with HTv_2.0 transformation program.

9) Inner Terrain Corrections: Only zones B and C were observed in the field. A correction applied to the variable ground elevation in the near vicinity of the station.

The outer radius of the C-zone is 53.3 meters. Terrain effects beyond this distance are insignificant for this region and this survey. The method used follows the Modified Hammer Zones B and C formulae.



C – Survey Parameters:

Site	Sunday Lake Property, Thunder Bay ON, NTS: 52 A/ 11
Survey Crew	2 – Fully trained Eastern Geophysics operators capable of carrying out a precise detailed gravity survey. - Additional helper(s) were not required to assist with logistics.
Survey Equipment	i) 1- LaCoste & Romberg model G gravity meter(s) i) 1- Allegro Data Logger ii) 2-Leica System 1230 Dual frequency RTK, DGPS systems with GLONASS option iii) 1- Garmin – GPS60Cx hand held GPS. iv) Optical equipment was not required. All positions were acquired with DGPS.
Survey Specifications	i) Sunday Lake Property = 584 stations + 19 (3.25%) random repeat readings. ii) No Inner terrain corrections for zones B and C required.
Other Equipment	i) Motorola VHF radios ii) Notebook computers internet capable, printers, etc. iii) Standard safety equipment

Survey Digital Products	i) Raw and corrected digital data. ii) Gravity and elevation Bouguer field profiles. iii) Logistics report outlining type of equipment used, personnel, daily account of field work completion. iv) Detailed interpretative report with recommendations to be carried out by geophysicist, Bob Gillick.

D – Gravity Meter Drift:

EASTERN GEOPHYSICS LIMITED
DAILY DRIFT for L&R GRAVITY METER # 451
TRANSITION METALS CORP.
SUNDAY LAKE GRID, THUNDER BAY, ON.
PROJECT # 1307-1grv

Loop (Date)	**Base Start** (1st base reading)	**Base End** (Last base reading)	**Loop Time** (Total hours)	**Drift/Hour**	**Closure** (Residual drift)
8-22	8:58	19:02	10:04	.0000	-.0004
8-23	8:34	18:46	10:12	.0021	.0214
8-24	8:11	17:16	9:05	.0011	.0097
8-25	9:35	18:44	9:09	-.0006	-.0053
8-26	8:48	18:53	10:05	-.0052	-.0522
8-26_451	9:11	19:00	9:49	.0027	.0268
8-27	9:07	18:36	9:29	.0044	.0416
8-28	8:09	18:41	10:32	-.0016	-.0167
8-29	7:59	18:20	10:21	.0042	.0431
8-30	11:17	15:48	4:31	-.0013	-.0060
8-31	8:05	18:23	10:18	.0038	.0386

9-01	11:39	18:59	7:20	.0019	.0140
9-02	10:16	16:32	6:16	.0065	.0409
9-03	9:22	15:27	6:05	.0038	.0232
9-04	9:56	16:41	6:45	.0027	.0185
9-05	9:33	16:22	6:49	.0056	.0384

EASTERN GEOPHYSICS LIMITED
DAILY DRIFT for L&R GRAVITY METER # 451
TRANSITION METALS CORP.
SUNDAY LAKE GRID, THUNDER BAY, ON.
PROJECT # 1307-1grv

Loop (Date)	**Base Start** (1st base reading)	**Base End** (Last base reading)	**Loop Time** (Total hours)	**Drift/Hour**	**Closure** (Residual drift)
9-07	9:24	16:35	7:11	-.0018	-.0127
9-08	9:13	16:46	7:33	-.0006	-.0045
9-10	10:00	16:46	6:46	.0019	.0128
9-11	9:44	17:25	7:41	.0041	.0313
9-12	9:55	15:39	5:44	-.0002	-.0009
9-21	10:40	17:27	6:47	.0028	.0193
9-22	9:58	19:06	9:08	.0017	.0153

LOGISTICS REPORT

TRANSITION METALS CORP.

Magnetometer Survey
Sunday Lake Property, Thunder Bay, ON
Chief Geophysicist: Kevin Stevens

Project #1307-2 Ref: 1307-2mag

Introduction

This field report covers the survey procedure and parameters for the Magnetometer survey carried out for Transition Metals Corps on the Sunday Lake Propoerty, north Thunder Bay, Ontario NTS: 52 A/11. This logistics report deals with the fieldwork portion of this contract.

Survey Equipment

The Magnetometer systems used for this survey were the GEM, GSM-19W Overhauser magnetic system complete with base station. Base station readings were set at a 1.0 sec reading rate to coincide with the rover magnetometer. The height of the sensor was 1.60m. The GEMLink software was used for data processing. See Appendix A for equipment specifications.

Survey Procedure

Normal field procedures for carrying out a detailed magnetometer survey is to set up the base station at a convenient location of minimal magnetic activity. (NAD 83 335429E 5395983N). At the end of every field day, the mobile magnetometer was coupled with the base station via RS-232 cable link. Diurnal variations were calculated and corrections were applied to the data. In order to obtain a high level of quality control, random repeat readings were taken when possible. At the end of each day, the data was uploaded into a computer and processed using GEMlink software. All additional processing was carried out at our office where the data is eventually archived for a period of two years.

Personnel

Michael Tatlock and Brian Sutton.

PROJECT SUMMARY

0.0 - Travel day
8.0 - Operating days gravity

1.0 - Bad Weather days
0.0 - Standby day
0.0 - Days Off
9.0 - Total days September 13, 2013 to September 21, 2013

Summary:

L6370N – 335850E-333550E (2300m)
L6270N – 335800E-333550E (2250m)
L6170N – 335800E-333550E (2250m)
L6070N – 335850E-333550E (2300m)
L5970N – 335850E-334275E (1575m)
L5970N – 334275E-333500E (2350m)
L5870N – 335850E-333400E (2450m)
L5770N – 335850E-334000E (1850m)
L5770N – 333800E-333300E (500m)
L5670N – 335850E-334650E (1200m)
L5670N – 333800E-333200E (600m)
L5570N – 335850E-334000E (1850m)
L5570N – 333800E-333200E (600m)
L5470N – 335850E-334650E (1200m)
L5470N – 333800E-333200E (600m)
L5370N – 335900E-334750E (1150m)
L5370N – 333800E-333200E (600m)
L5270N – 335850E-334750E (1100m)
L5270N – 333800E-333200E (600m)
L5170N – 335800E-334700E (1100m)
L5170N – 333800E-333200E (600m)
L5070N – 335800E-334650E (1150m)
L5070N – 333800E-333200E (600m)
L4970N – 335800E-334200E (1600m)
L4870N – 335950E-334200E (1750m)
L4770N – 335950E-334200E (1750m)
L4670N – 335950E-334200E (1750m)
L4570N – 335950E-334200E (1750m)
L4470N – 335950E-334200E (1750m)
L4370N – 335800E-334200E (1600m)
L4270N – 335800E-334600E (1200m)
L4170N – 335650E-334600E (1050m)
L4070N – 335600E-334600E (1000m)
L3970N – 335500E-334600E (900m)
L3870N – 335700E-334600E (1100m)
L3770N – 335750E-334750E (1000m)
L3670N – 335800E-335650E (150m)
L3670N – 334950E-334725E (225m)
L3570N – 335800E-335000E (800m)
L3470N – 335800E-334850E (950m)

L3370N – 335800E-334600E (1200m)
L3270N – 335800E-334600E (1200m)
L3170N – 335800E-334600E (1200m)
L3070N – 335800E-334600E (1200m)

Total Line KM Surveyed on the Sunday Lake Property: 54325m (54.325km)

Appendix B: Ground EM Summary Report

Geophysical Survey Report

covering

Surface Pulse EM Surveys

over

Sunday Lake

for

Transition Metals

during

August– September of 2013

By

<u>CRONE GEOPHYSICS & EXPLORATION LTD.</u>

Survey Area:	**Thunder Bay, Ontario**
Survey Type:	**Surface Pulse EM Survey**
Survey Operators:	**Eldon Roul, Taylor Chew**
Lines Surveyed:	**Loop 1; Loop 2**
Survey Period:	**August 17th to September 19th, 2013**
Report By:	**Josh Lymburner**
Report Date:	**September 2013**

TABLE OF CONTENTS

PULSE ELECTROMAGNETIC SURVEY

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

Crone Geophysics & Exploration Limited was contracted by Transition Metals to conduct Surface Pulse Electromagnetic Surveys on its Sunday Lake property. This report summarizes the geophysical work carried out during August- September 2013. Two transmitter loops were utilized to survey 30.075km of surface lines during the survey period.

The appendices to this report contain page size plan maps, PEM profiles (linear 5-axis and logarithmic scale, and Step Response), and Crone Instrument Specifications.

Figure 1: General Location Map

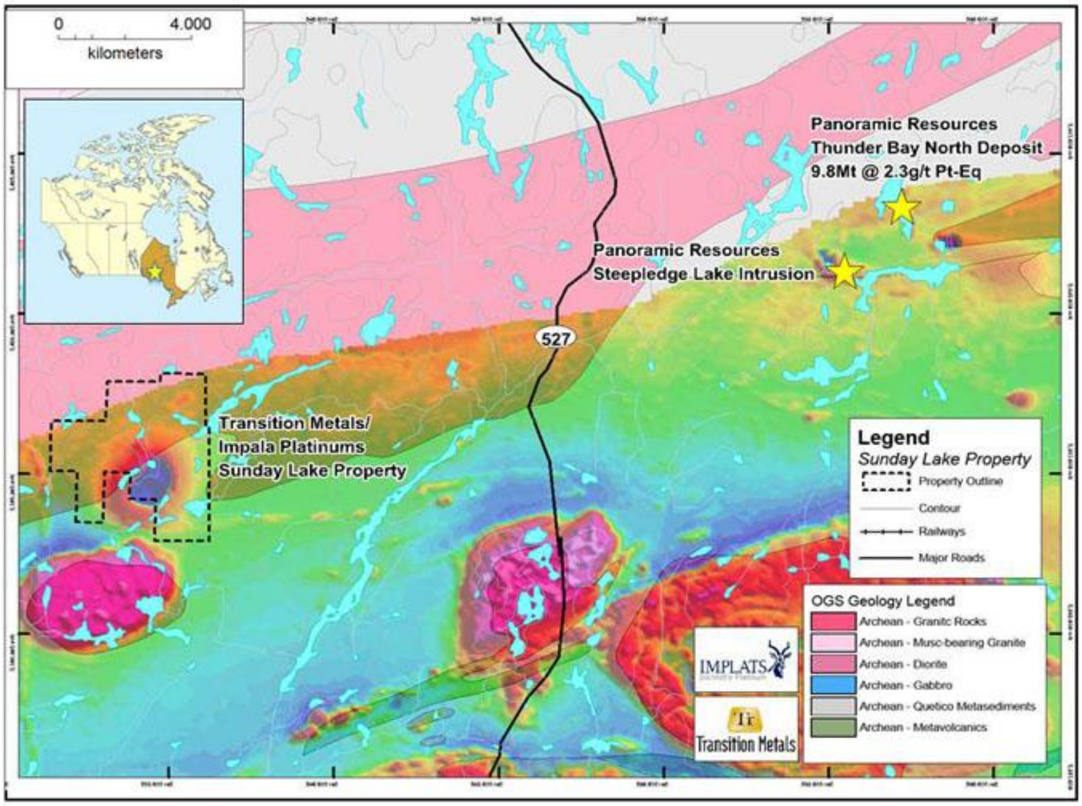


Figure 2: Sunday Lake Project Area

2 PERSONNEL

The following personnel were involved in the collection and processing of the data and production of this report:

Survey Operators: Eldon Roul, Taylor Chew

Data Processing: Kevin Ralph, Mark Hunter, Josh Lymburner

Final Report: Josh Lymburner

3 SURVEY METHOD & EQUIPMENT

Crone Pulse EM is a time domain electromagnetic method in which a precise pulse of current with a controlled linear shut off is transmitted through a large loop of wire on the ground and the rate of decay of the induced secondary field is measured across a series of time windows during the off-time. 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 equipment used for the surface surveys was two Crone High Power Pulse EM systems in series setup. Each system includes a 4.8kW transmitter with a 240V voltage regulator powered by an 11hp motor generator. The Crone Digital Receiver was used to collect the field data. The synchronization between the Transmitter and the Receiver was maintained by crystal clock synchronization.

The surface surveys were carried out using a time base of 16.66 ms with a 1.5 ms shut-off ramp time (*Table III)*. Vertical (Z-component) and in-line (X-component) data were collected at a nominal survey interval of 50 meters.

Data units are nT/s.

4 SURVEY PARAMETERS

Table I: Transmitter Loop Coverage

Loop	Loop Size (meters)	Coordinates
1	1100x1250	334604.7E, 5396471.5N; 334605.7E, 5395481.5N; 334745.9E, 5395364.0N; 335845.4E, 5395371.5N; 335847.2E, 5396140.0N; 335776.4E, 5396253.5N; 335856.7E, 5396304.5N; 335851.0E, 5396472.0N
2	1100x1600	334722.8E, 5395487.0N; 334698.7E, 5395090.0N; 334608.2E, 5395012.5N; 334203.2E, 5394996.5N; 334203.0E, 5394359.5N; 335895.2E, 5394368.0N; 335914.1E, 5394870.0N; 335791.2E, 5394909.0N; 335838.8E, 5395460.0N;

Table II: Surface Pulse EM Survey Coverage

Line (UTM)	Station Interval (meters)	Start (UTM)	End (UTM)	Length Read (meters)	Component Measured
5396370N	50	335650E	334700E	950	Z,X
5396270N	50	335650E	333500E	2150	Z,X
5396170N	50	335600E	334700E	900	Z,X
5396070N	50	335650E	333550E	2100	Z,X
5395970N	50 25	335650E 334150E	334700E 333900E	950 250	Z,X
5395870N	50	335650E	333350E	2300	Z,X
5395770N	50	335650E	334025E	1625	Z,X
5395670N	50	335650E	334700E	950	Z,X
5395570N	50	335650E	334000E	1650	Z,X
5395470N	50	335650E	334650E	1000	Z,X
5395370N	50	335700E	334800E	900	Z,X
5395270N	50	335700E	334800E	900	Z,X
5395170N	50	335600E	334800E	800	Z,X
5395070N	50	335600E	334750E	850	Z,X
5394970N	50	335750E	334250E	1500	Z,X
5394870N	50	335750E	334250E	1500	Z,X
5394770N	50	335750E	334250E	1500	Z,X
5394670N	50	335750E	334250E	1500	Z,X
5394570N	50	335750E	334250E	1500	Z,X
5394470N	50	335750E	334250E	1500	Z,X
5394170N	50	335650E	335050E	600	Z,X
5394070N	50	335550E	334900E	650	Z,X
5393970N	50	335500E	334850E	650	Z,X
5393770N	50	335750E	334750E	100	Z,X
335300E	50	5394270N	5393070N	800	Z,Y

The following table shows the time gates, in ms, which constitute the channel configuration setup in the digital Crone PEM Receivers.

Table III: Channel Configuration, (16.66 ms time base)

Channel	Start	Finish	Channel	Start	Finish
P	-2.000e-04	-1.000e-04			
1	4.800e-05	6.400e-05	**2**	6.400e-05	8.400e05
3	8.400e-05	1.120e-04	**4**	1.120e-04	1.520e-04
5	1.520e-04	2.040e-04	**6**	2.040e-04	2.680e-04
7	2.680e-04	3.600e-04	**8**	3.600e-04	4.800e-04
9	4.800e-04	6.400e-04	**10**	6.400e-04	8.480e-04
11	8.480e-04	1.128e-03	**12**	1.128e-03	1.496e-03
13	1.496e-03	1.992e-03	**14**	1.992e-03	2.644e-03
15	2.644e-03	3.512e-03	**16**	3.512e-03	4.664e-03
17	4.664e-03	6.192e-03	**18**	6.192e-03	8.220e-03
19	8.220e-03	1.092e-03	**20**	1.092e-03	1.440e-02

5 DATA PRESENTATION

The data has been presented in Appendix II, III, IV in the form of linear, log and step profile plots for each line. Each set of lines measured in the same loop have been plotted using the same vertical scale.

6 PRODUCTION SUMMARY

Table IV: Production Summary

Date	Activity
Aug-17-2013	MOB
Aug-18-2013	Standby. Waited for helper to arrive.
Aug-19-2013	Picked up helper. Met with client to discuss grid access. Went to site and checked access.
Aug-20-2013	Started to lay loop 1. Setup TX gear.
Aug-21-2013	Met with client about safety plan. Dropped off borehole gear. Dropped off ATV's at the site. Continued to lay loop 1. Truck got a flat tire on the way out from the grid.
Aug-22-2013	Replaced truck tires. Maintained ATV's (missing lug nuts). Finished laying loop 1.
Aug-23-2013	Fixed ATV issues (wheels). Tested voltage regulators and damping boxes (old vs. new).
Aug-24-2013	Tested new damping boxes in series. Surveyed line 6370N from 5650E to 5400E. Shutdown due to lightening. Z and X components.
Aug-25-2013	Surveyed 6370N from 5450E to 4700E and 6170N from 5600E to 4700E. Z and X components.
Aug-26-2013	Surveyed 6270N from 5650E to 4225E and from 4000E to 3500E. Surveyed 6070N from 3550E to 3850E. Z and X components.
Aug-27-2013	Tested Damping box for series setup. Brought ATV to be serviced. Surveyed 6370N from 5650E to 4700E and 6270N from 4225E to 5600E. Z and X components.
Aug-28-2013	Surveyed 6170N from 5600E to 4700E and 6070N from 4175E to 5650E. Z and X components
Aug-29-2013	Surveyed 5970N from 5650R to 4700E and 5770N from 4700E to 5650E. Z and X components.
Aug-30-2013	Surveyed 6270N from 3500E to 4000E, 6070N from 3825E to 3550E, L5670 from 4700E to 5650E, 5870N from 5650E to 3350E. Z and X components.

Aug-31-2013	Surveyed 5770N from 4700E to 4025E, 5570N from 4000E to 5650E and resurveyed 5870N from 5650E to 3600E. Z and X components.
Sept-1-2013	Surveyed 5470N from 5650E to 3650E. Z and X components. Started to lay loop 2.
Sept-2-2013	Surveyed 5870N from 5650E to 3350E. Z and X components. Continued to lay loop 2.
Sept-3-2013	Continued to lay loop 2. Shipped back equipment.
Sept-4-2013	Started to pick up loop 1. Moved TX gear for loop 2 and setup loop 2.
Sept-5-2013	Surveyed 5370N from 5700E to 4800E, 5270N from 4800E to 5700E, 5170N from 5600E to 4800E and 5070N from 4750E to 5600E. Z and X components.
Sept-6-2013	Picked up repaired ATV. Couldn't survey due to lightning.
Sept-7-2013	Tested all 3 surface coils with both receivers on 5270N 5500E. Surveyed 5970N from 3900 to 4150N at 25m station spacing. Z and X components. Continued to pick up loop 1.
Sept-8-2013	Surveyed 5370N from 5700E to 4800E and 5270N from 4800E to 5700E. Z and X components. Continued to pick up loop 1.
Sept-9-2013	Surveyed 4970N from 5750E to 4250E and 4870N from 5750E to 4250E. Z and X components.
Sept-10-2013	Surveyed from 4670N from 5750E to 4250E and 4770N from 5750E to 4250E. Z and X components.
Sept-11-2013	Surveyed from 4570N from 5750E to 5450E and 4470N from 5750E to 5400E. Z and X components. Stopped surveying due to weather.
Sept-12-2013	DeMOB for the operator. Surveyed 4570N from 5500E to 4250E and 4470N from 5450E to 4250E. Z and X components.
Sept-13-2013	Surveyed 5300E from 4270N to 3070N. Z and X components.
Sept-14-2013	Surveyed 4170N from 5650E to 5050E and 4070N from 4900E to 5550E. Z and X components.
Sept-15-2013	Surveyed 3770N from 5750E to 4750E and 3970N from 4850E to 5500E. Z and X components.
Sept-16-2013	Started to pick up loop 2.
Sept-17-2013	Picked up loop 2 and packed up TX gear in the truck.
Sept-18-2013	Packed up the truck and DeMOB.
Sept-19-2013	DeMOB

7 DATA DISCUSSION

Surface Loop 1

The in-loop stations of Loop 1 show an odd effect where the Z decay starts positive in the early time as expected, and then flips to negative after approximately channel 10. This unexplained response has been seen on other properties in the general area around Thunder Bay. Possible explanations may involve current channeling from the EM electric field, including overburden or perhaps a dominant foliation of the geology in the area. The out-of loop Z data here shows higher amplitude positive late time decays indicating that there may be higher background conductivity in the area.

A number of small, discrete anomalies were found on several lines across the grid. Some of these anomaly picks were correlated across multiple lines indicating that they are coherent and related to the subsurface geology. Possible sources of small single station anomalies in the very early time include, but are not limited to surficial features, fault gouges, and geologic contacts. The discrete anomaly picks are documented in profile in Appendix V. A plan map is included showing possible line-to-line correlation of some anomalies across the grid.

Surface Loop 2

The X component data were gridded and contoured for a selection of channels (4, 6, 8, 10, 12) and are presented in Appendix VI. The gridded data show a migration of subsurface current which cannot be attributed alone to a homogenous half-space of rock with a single conductivity. The contours show a clear positive peak which migrates from east to west in time indicating that the subsurface current distribution is also migrating from east to west.

Discrete anomaly picks were also found for the lines surveyed from Loop 2 and are documented similarly to Loop 1 in Appendix VII.

Surface Loop 09SL01

Few discrete anomaly picks were found on these survey lines, including a small early-time feature on lines 5070N and 5170N at station 5450-5475. These picks are documented in Appendix VIII.

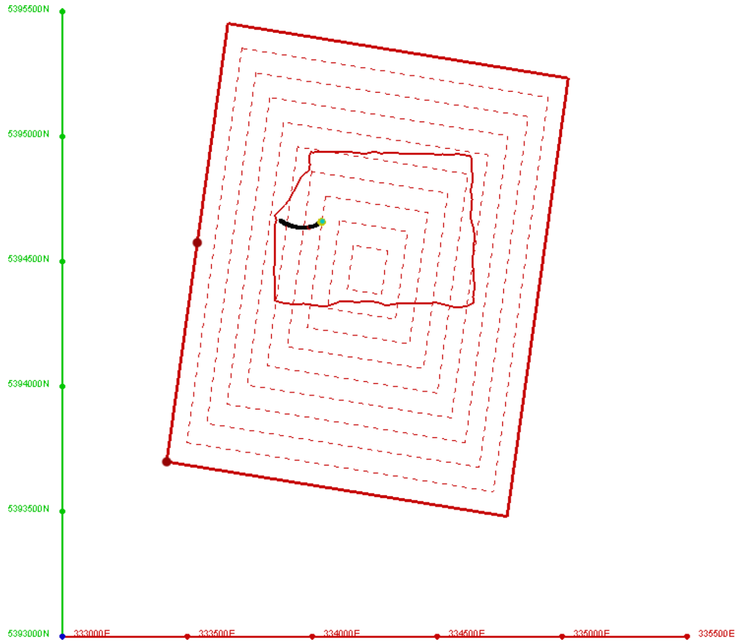
Hole 11SL001

A 3D borehole pulse EM survey was carried out on hole 11SL001 at a timebase of 8.33ms, with a transmitter current of 24 Amperes energizing a 800x600 meter loop. Off-time channels 5-7 showed a dominant in-hole response, while the later time channels 15-16 showed a very broad off-hole response.

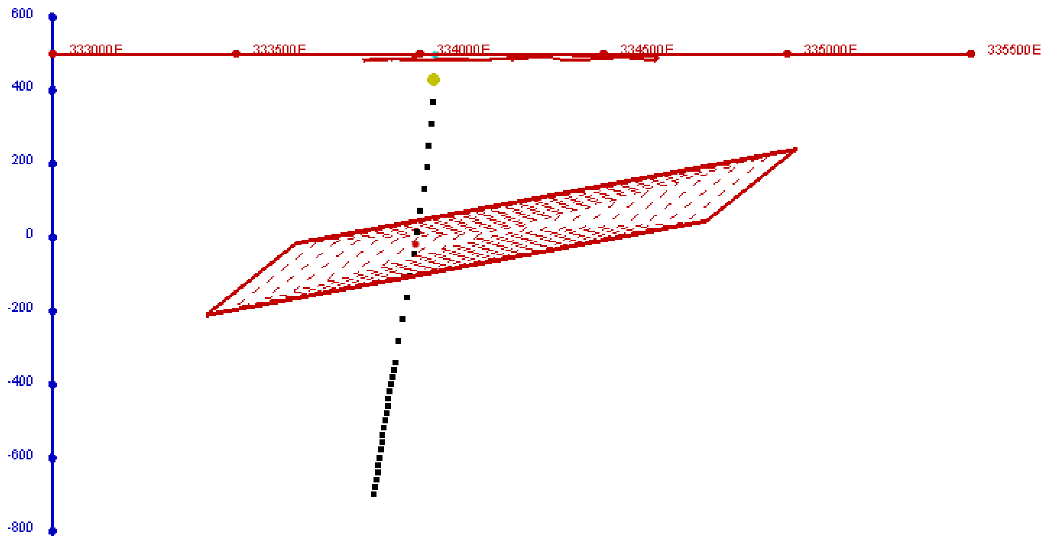
Maxwell (© EMIT) was used to fit a rectangular plate to the early-time anomaly in channels 5-7 as shown in the orthographic figures below. Its parameters are as follows:

- Early Time Plate
  - Conductivity-thickness 1.4S
  - Strike length 1850 meters
  - Depth extents 1450 meters
  - Dip direction east (70°)
  - Dip angle 11°
  - Depth to center 460m

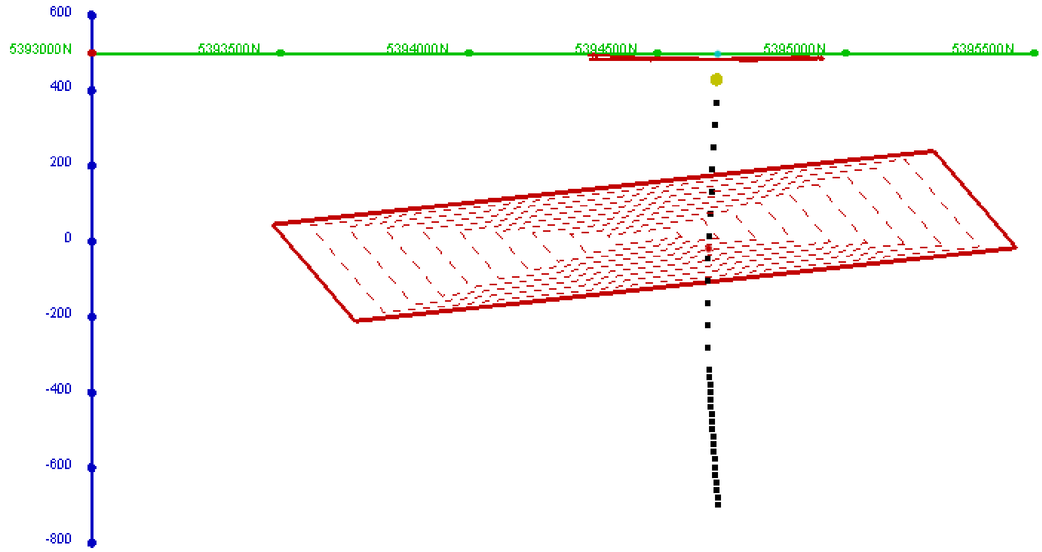
The broad in-hole anomaly shown in the Z component is centered at a depth of 540 meters downhole. The polarity of the X and Y crossovers indicates the center of the conductor is positioned below and left of the borehole. The modeled plate reinforces the qualitative interpretation.



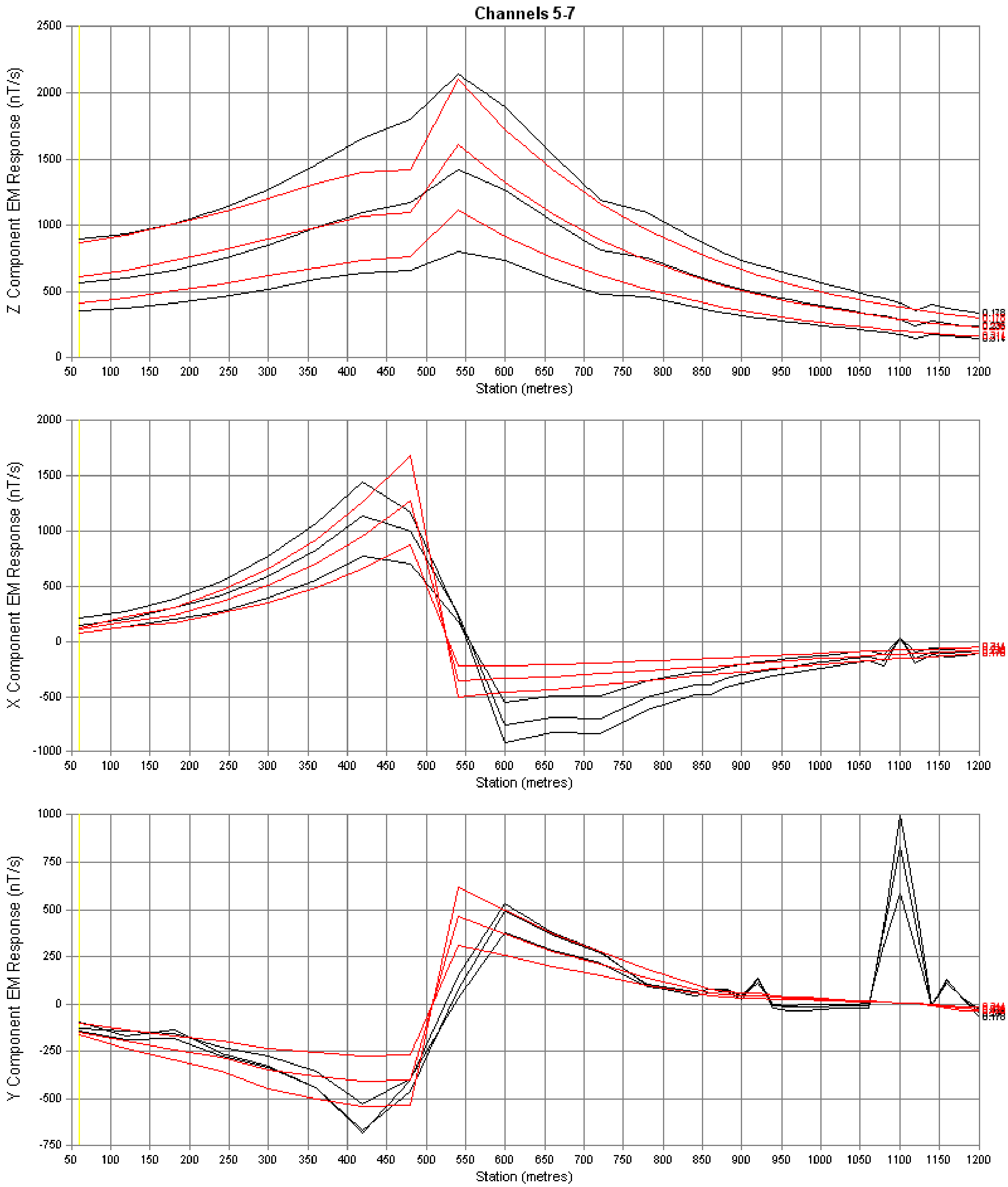
Early Time Plate model Plan View



Early Time Plate model View Looking North (roughly in section with borehole)



Early Time Plate model View Looking West (along borehole azimuth)



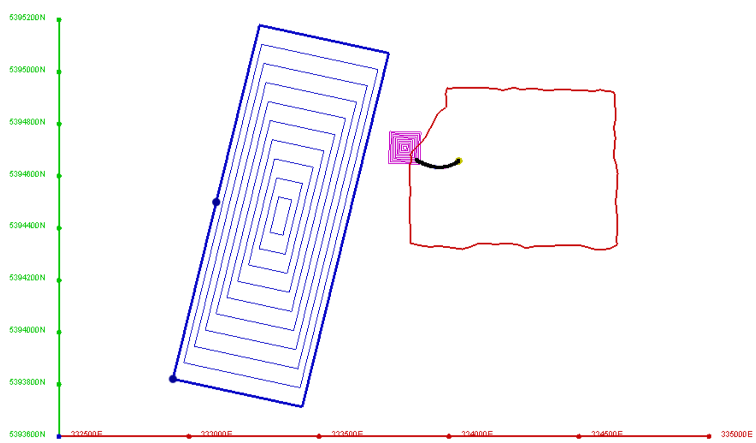
Early Time (ch 5-7) Model Fit

Maxwell (© EMIT) was used to fit 2 rectangular plates to the later-time anomaly in channels 15-16 as shown in the orthographic figures below. Their parameters are as follows:

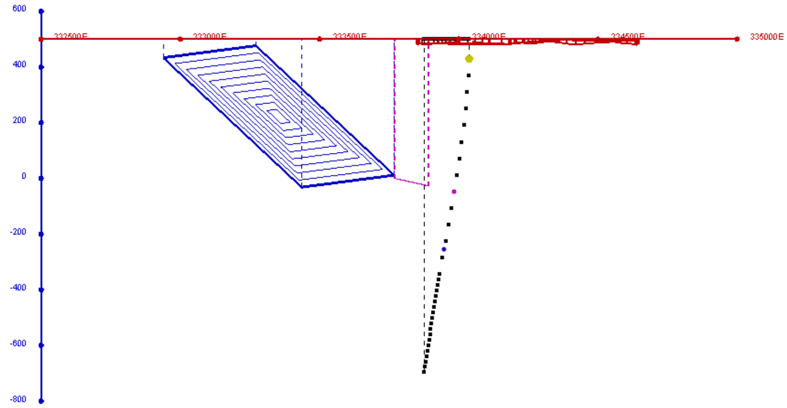
• Large Plate
- Conductivity-thickness 33S
- Strike length 1400 meters
- Depth extents 690 meters
- Dip direction east (106°)
- Dip angle 43°
- Depth to top 30m
- Down-hole closest approach 540 meters
- Off-hole distance 340 meters

• Small Plate
- Conductivity-thickness 77S
- Strike length 120 meters
- Depth extents 120 meters
- Dip direction East (91°)
- Dip angle 12°
- Depth to center 500m
- Down-hole closest approach 540 meters
- Off-hole distance 100 meters

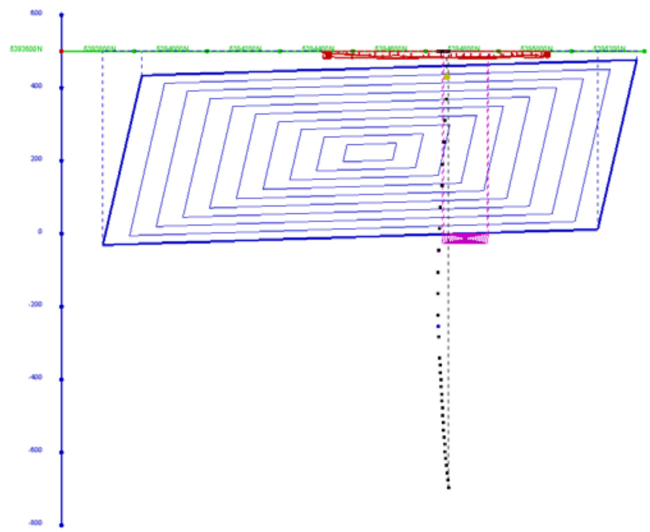
The broad off-hole anomaly in the Z component is centered at a depth of 540 meters downhole. The polarity of the X crossover indicates the center of both conductors is positioned above the borehole. The Y component data is somewhat ambiguous in positioning the larger plate (left and right). The smaller plate has a strong constraint in the Y component indicating to the right. The smaller plate doesn't show a discernible Z anomaly in comparison to the larger plate.
The interpretation and modeling of these later channels is complicated by a superposition of different wavelengths of anomalies, and is further complicated by the noise threshold of the XY data. The response of the larger plate is best controlled in the Z and X components, but is poorly resolved in Y. Thus the North-South positioning of the larger plate should be viewed with skepticism.



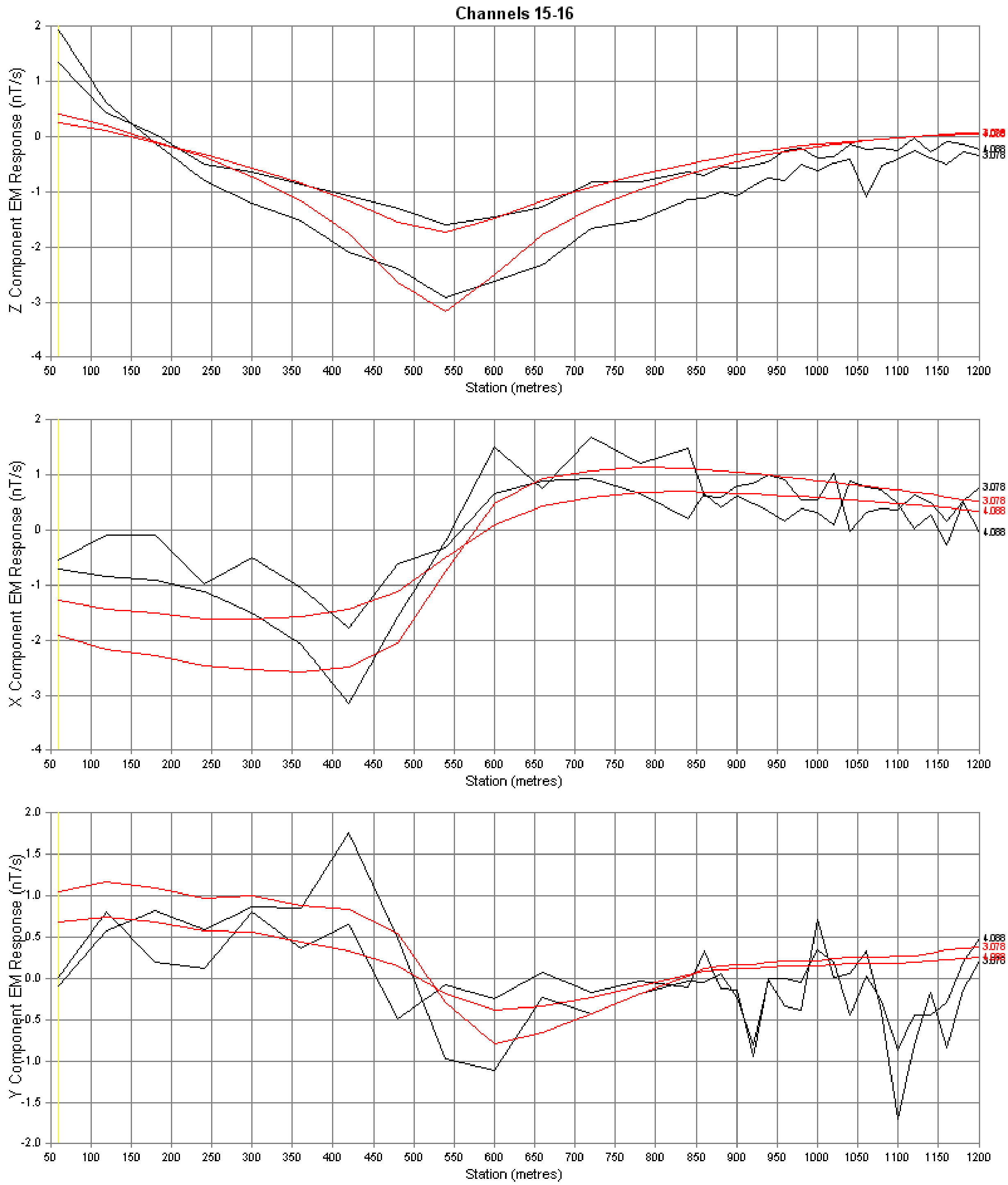
Late Time Plate Model Plan View



Late Time Plate Model View Looking North



Late Time Model View Looking West



Late Time Model Fit

Hole 11SL002

A 3D borehole pulse EM survey was carried out on hole 11SL002 at a timebase of 8.33ms, with a transmitter current of 20 Amperes energizing a 650x400 meter loop. No anomalous features of interest were observed in the Z or XY data profiles.

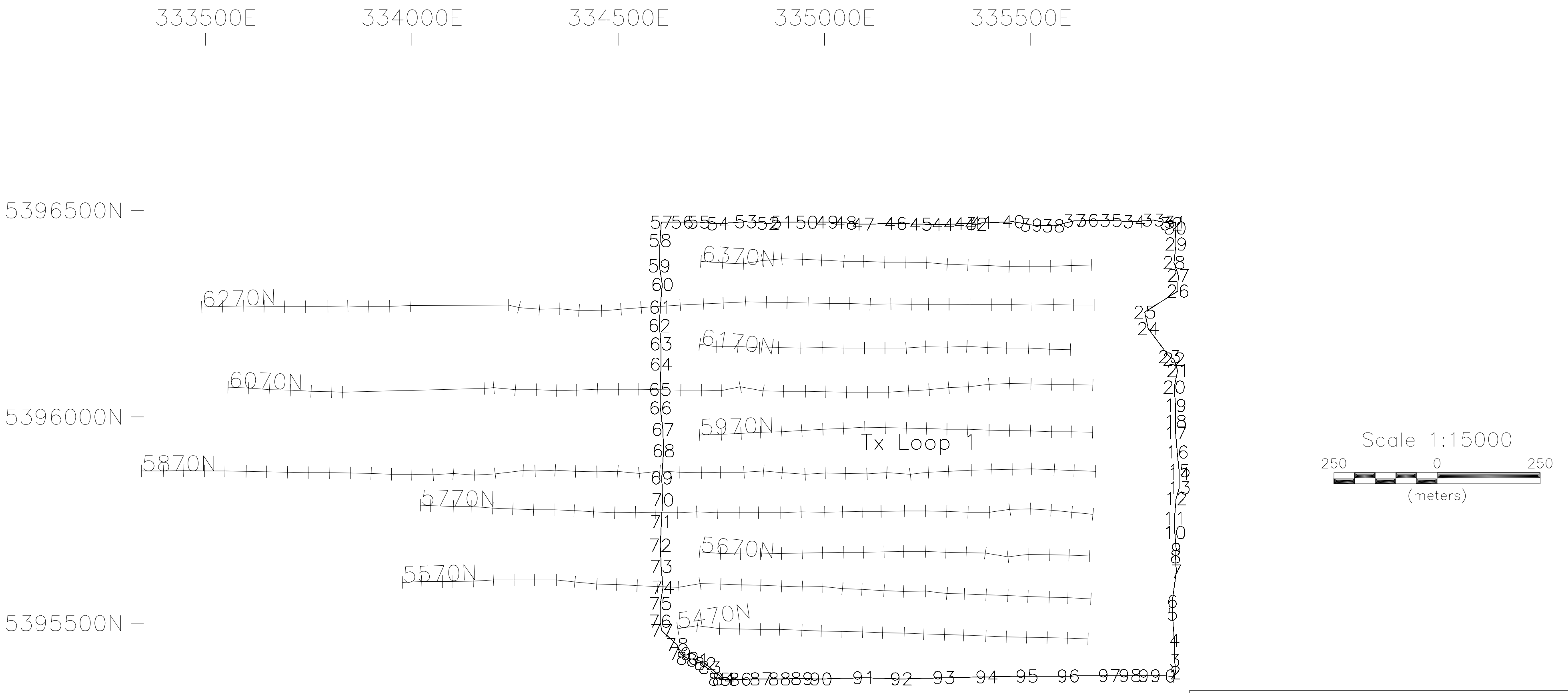
Respectfully submitted,

Josh Lymburner

Geophysicist
Crone Geophysics & Exploration Ltd.

APPENDIX I

PLAN MAPS



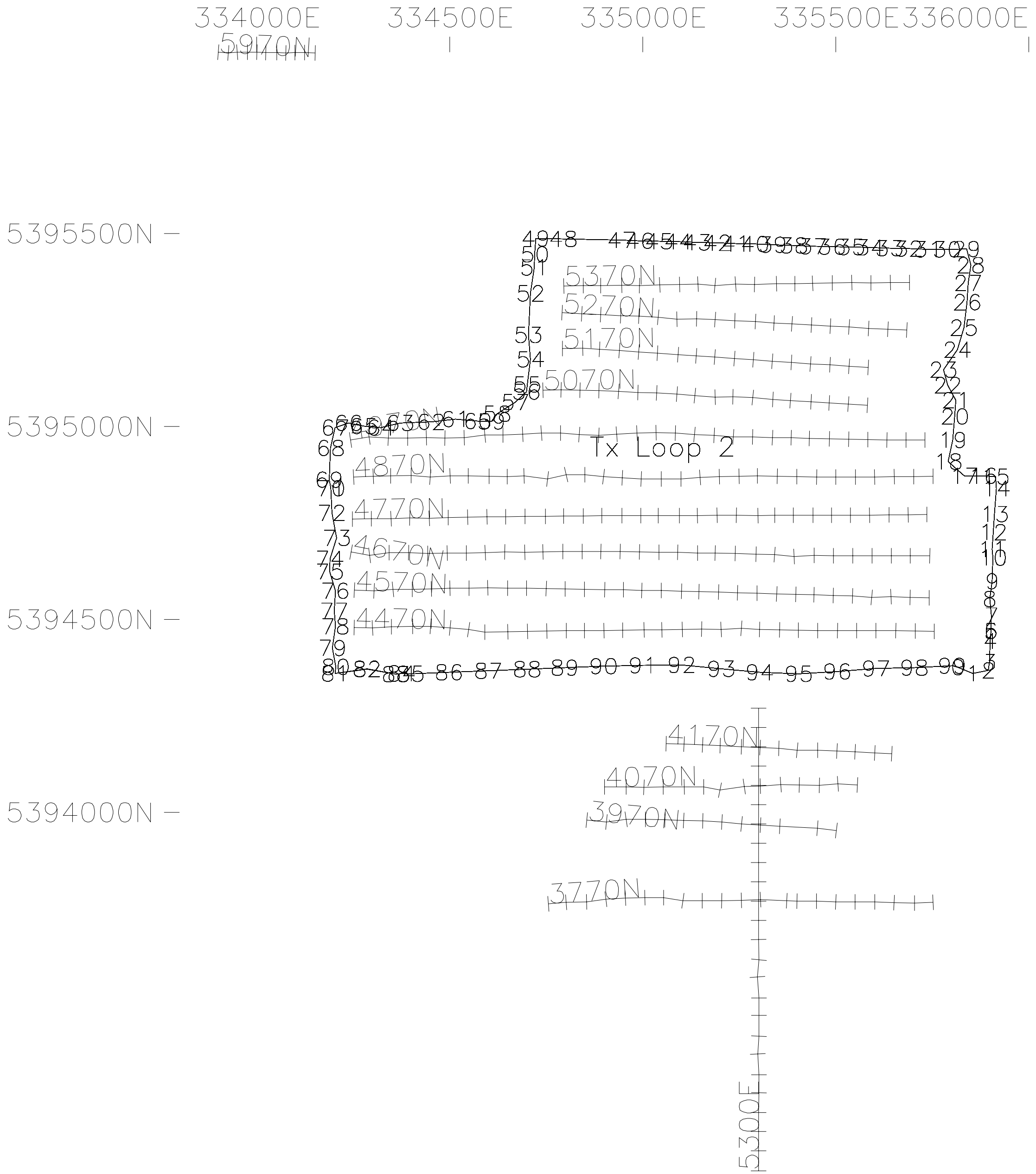
HTX Minerals

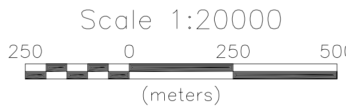
Sunday Lake

Surface Pulse EM Survey
Line & Loop Location Map

Lines: 6270N – 5470N, Loop: 1
Survey Date: August 27-September 1

Crone Geophysics & Exploration Ltd.





HTX Minerals

Sunday Lake

Surface Pulse EM Survey

Line & Loop Location Map

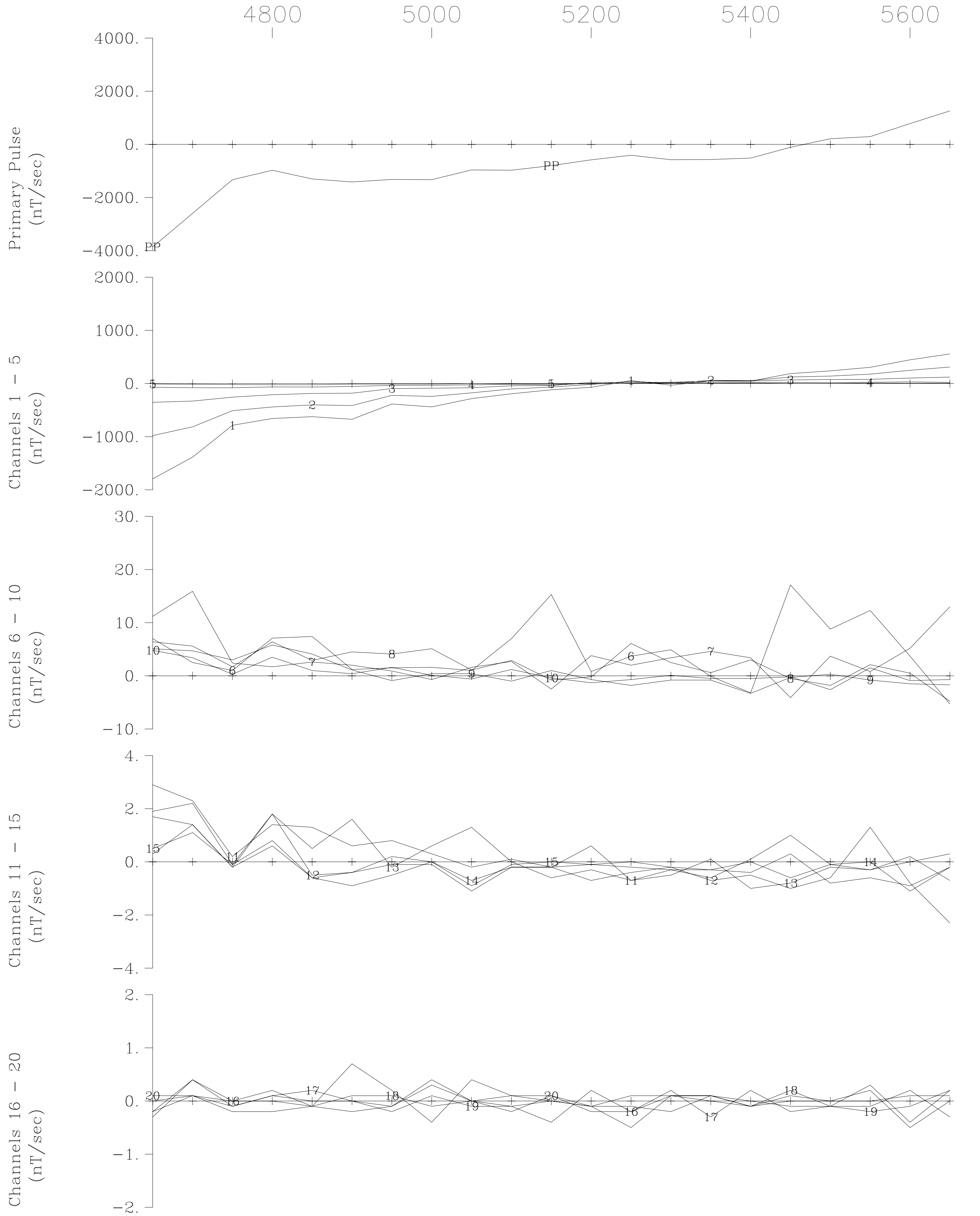
Lines: 5970N-3770N, Loop: 2

Survey Date: Aug-Sept 2013

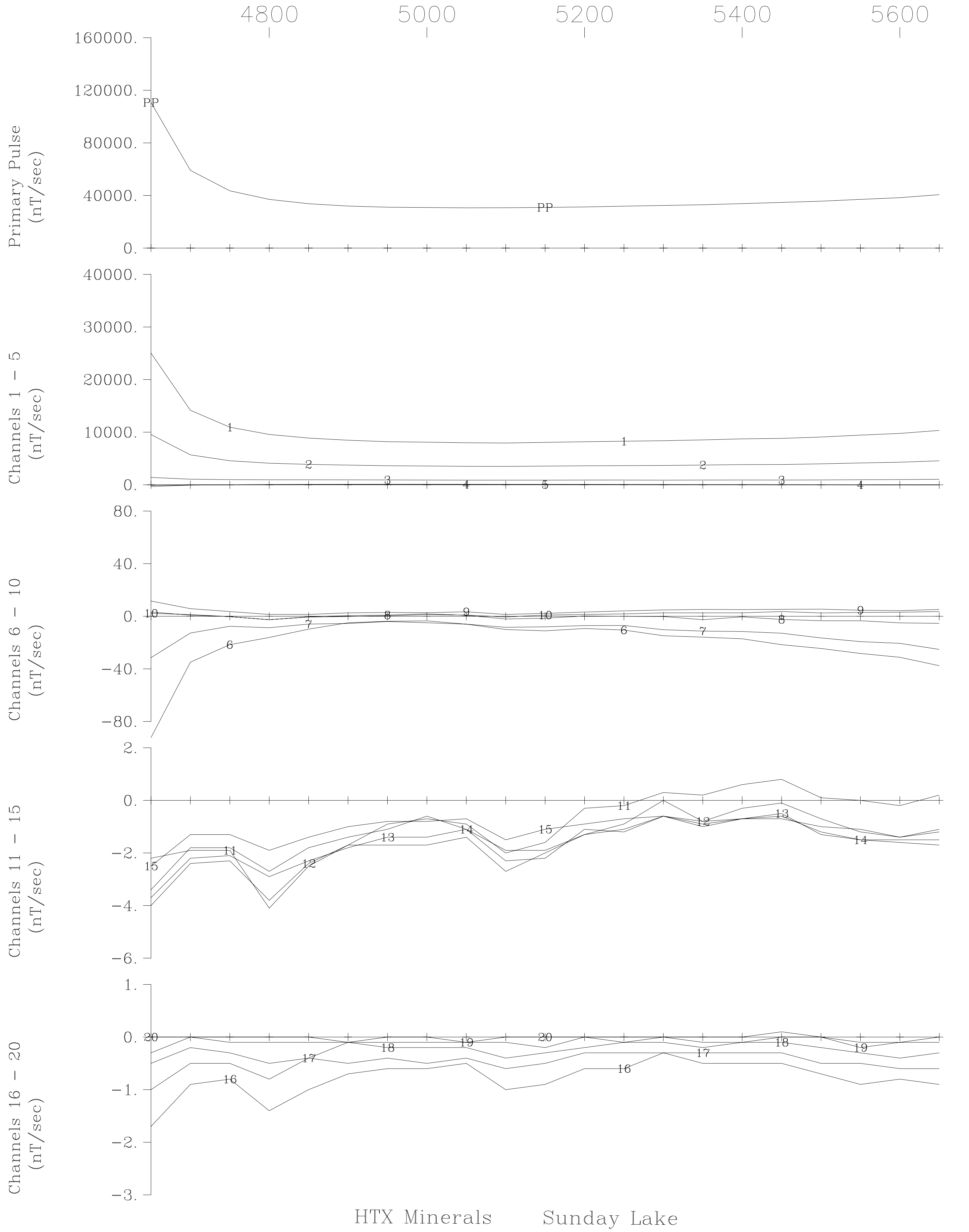
Crone Geophysics & Exploration Ltd.

APPENDIX II

LINEAR (5-AXIS) PULSE EM DATA PROFILES



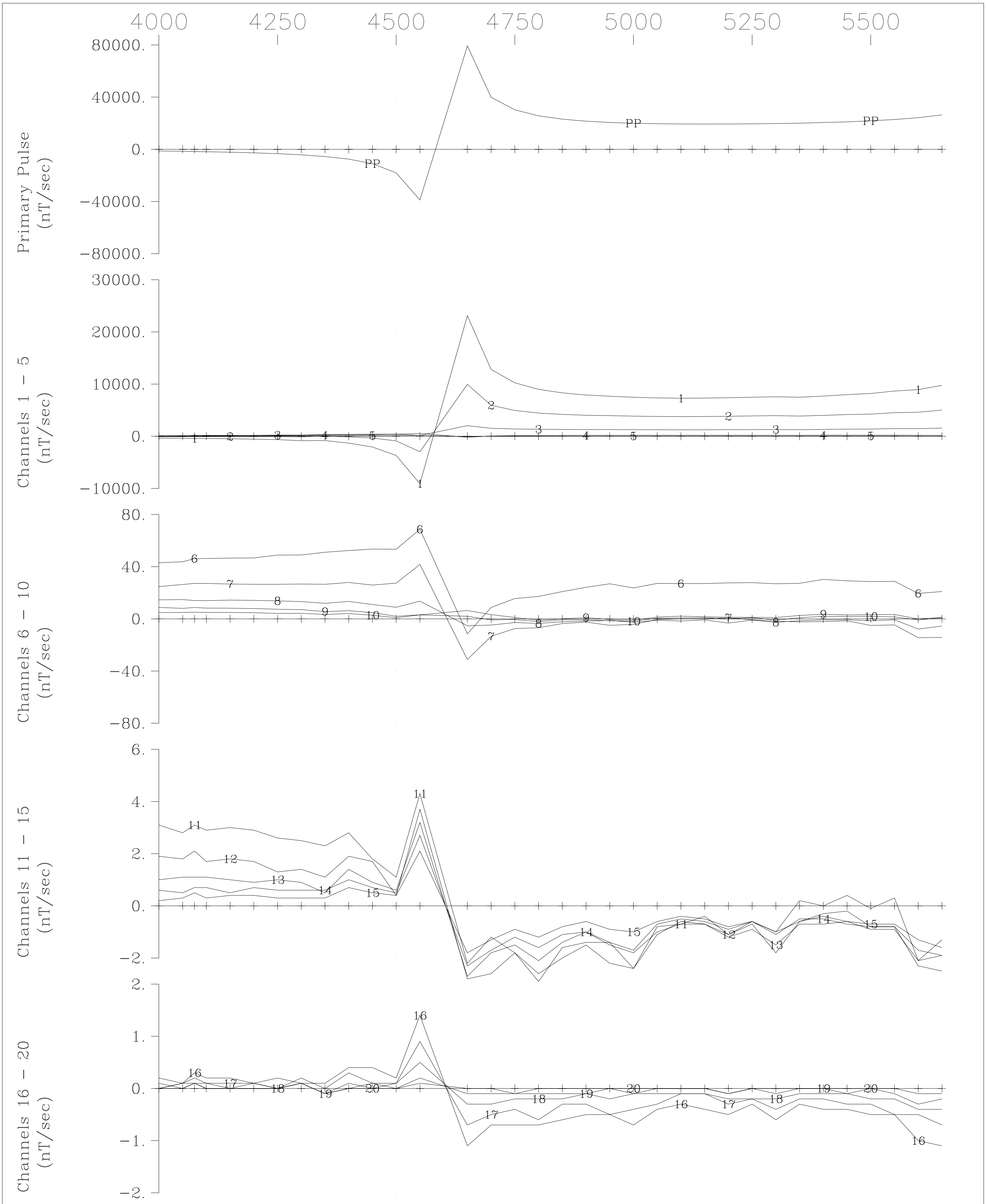
HTX Minerals Sunday Lake
Loop 1, Line 5470N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 5470N Z Component

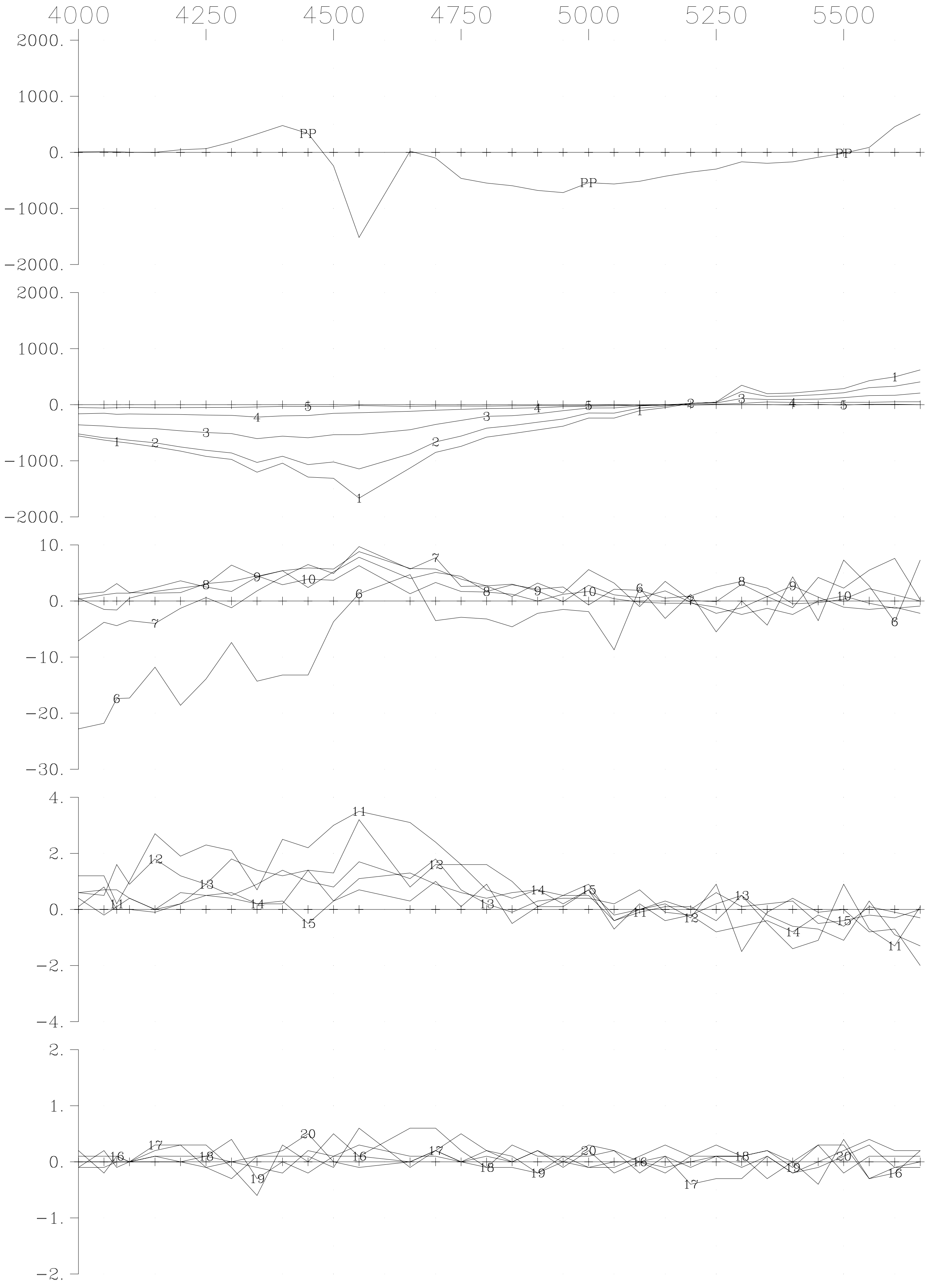
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 5570N Z Component

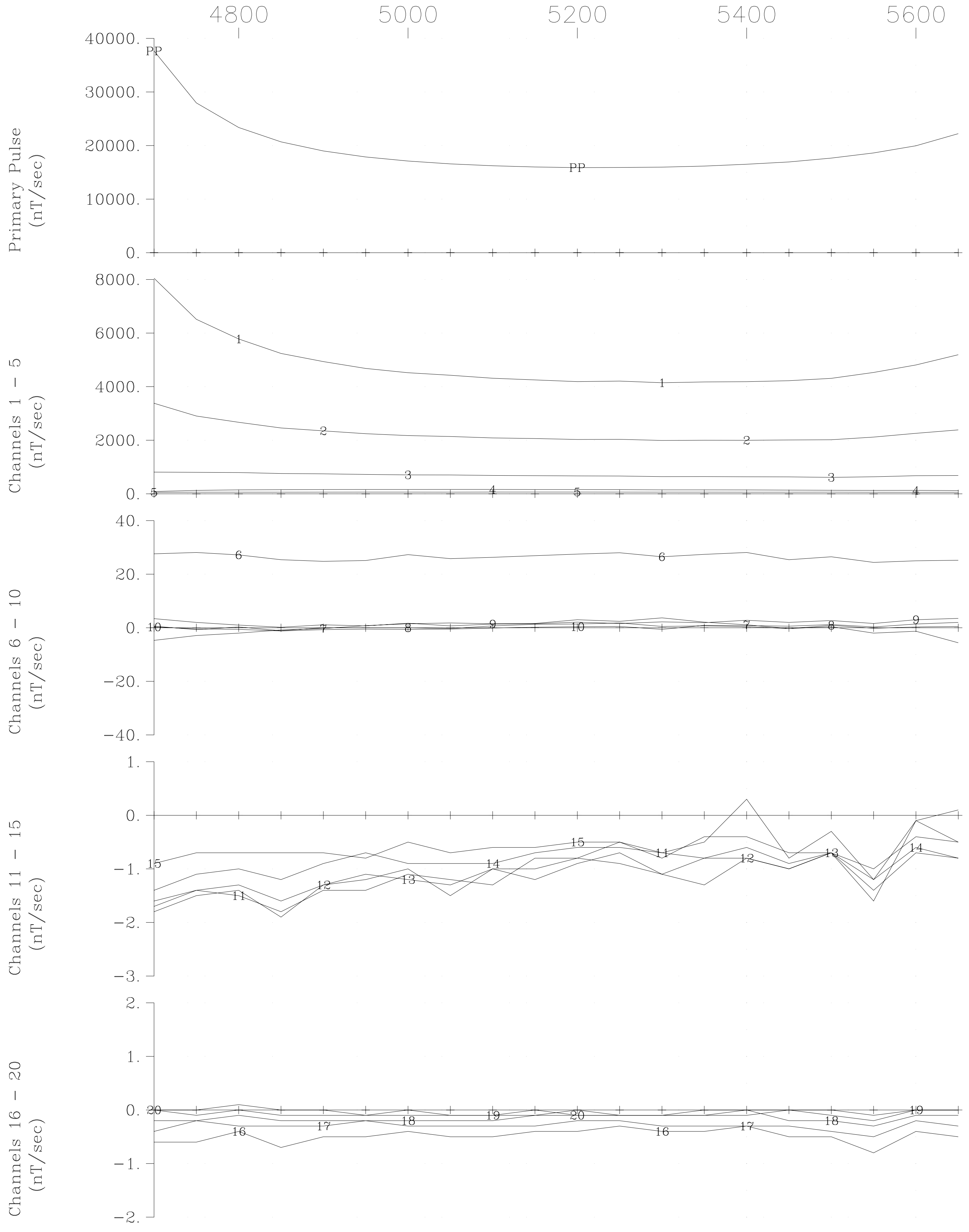
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 5570N X Component

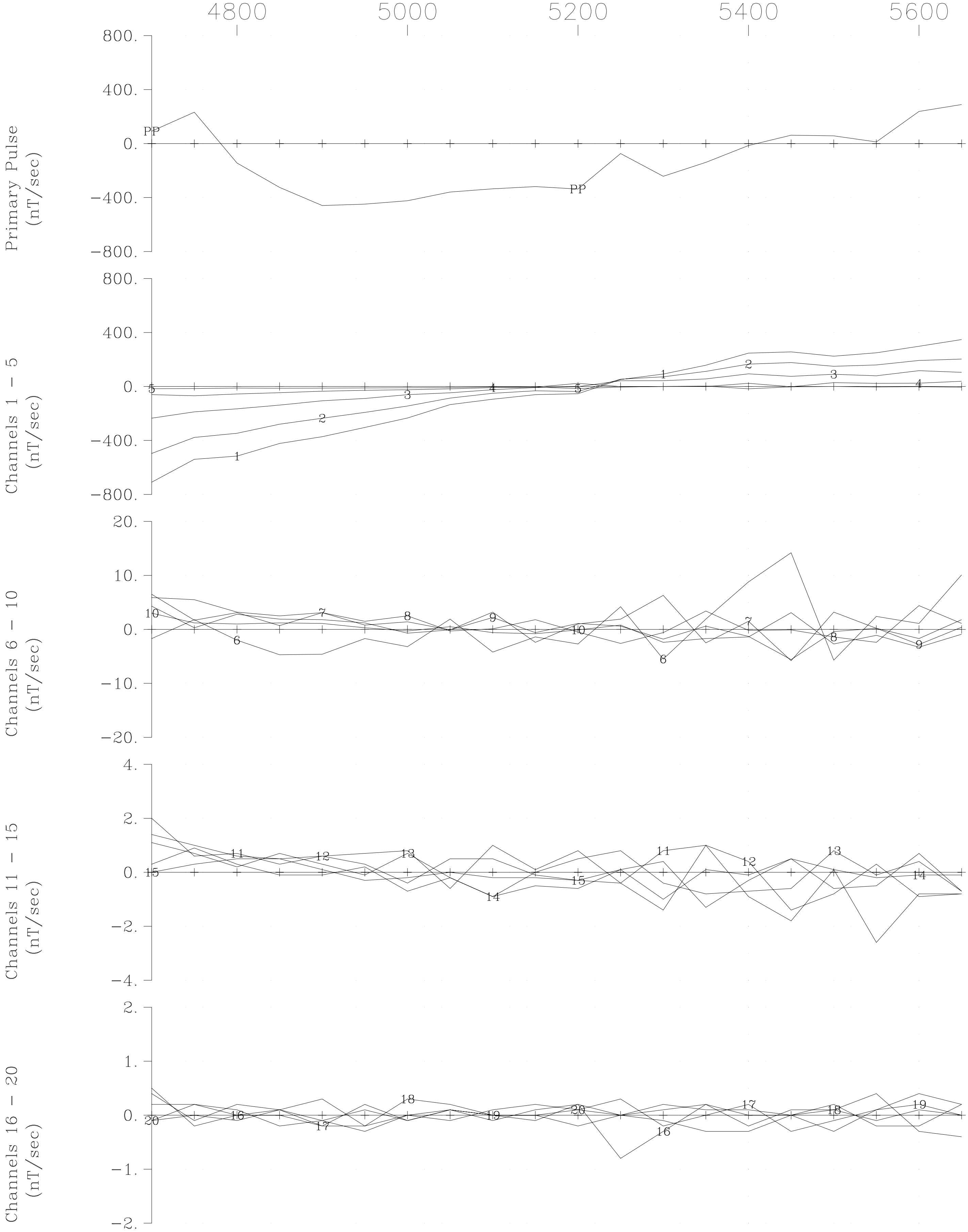
Crone Geophysics & Exploration Ltd.



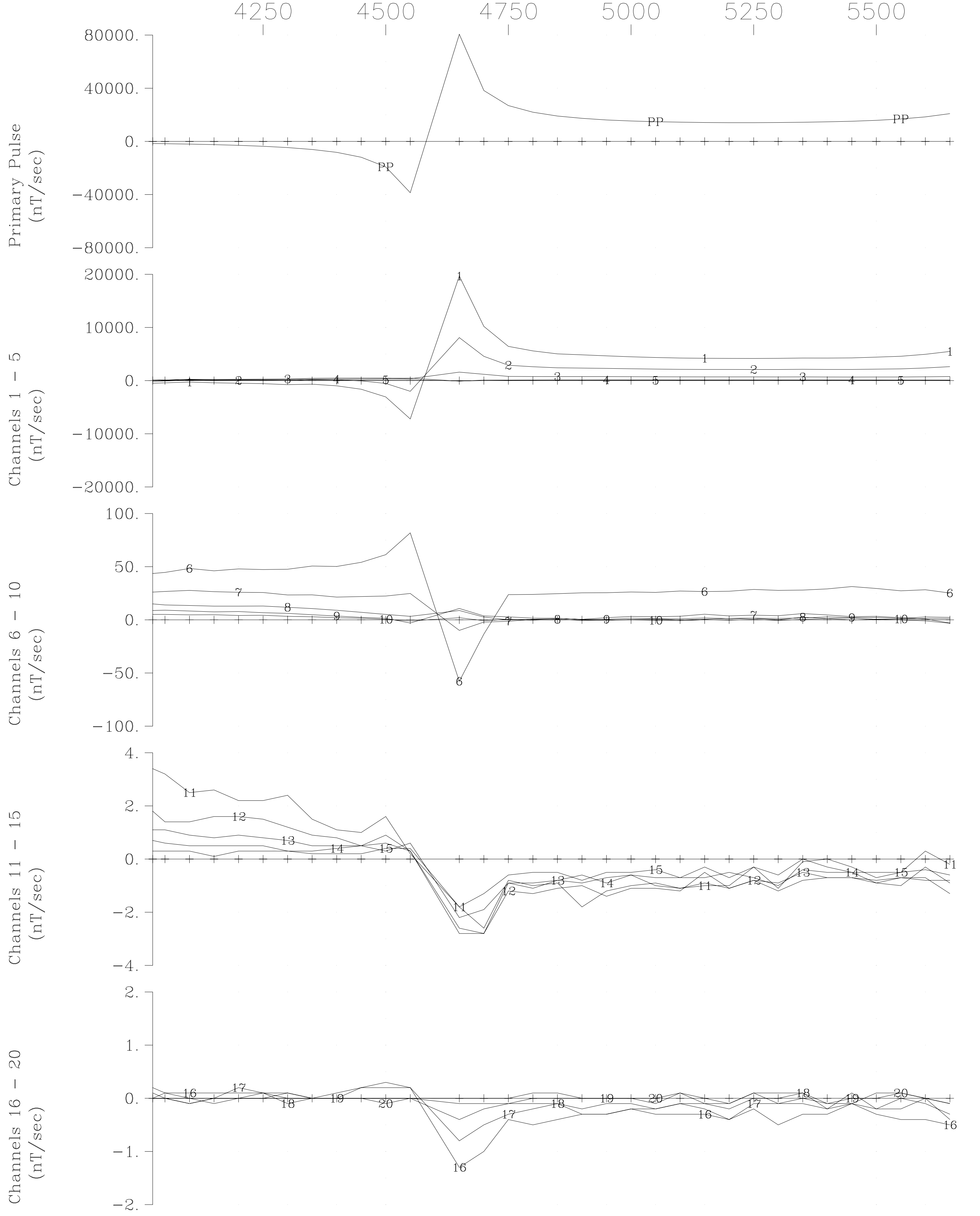
HTX Minerals Sunday Lake

Loop 1, Line 5670N Z Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 5670N X Component
Crone Geophysics & Exploration Ltd.



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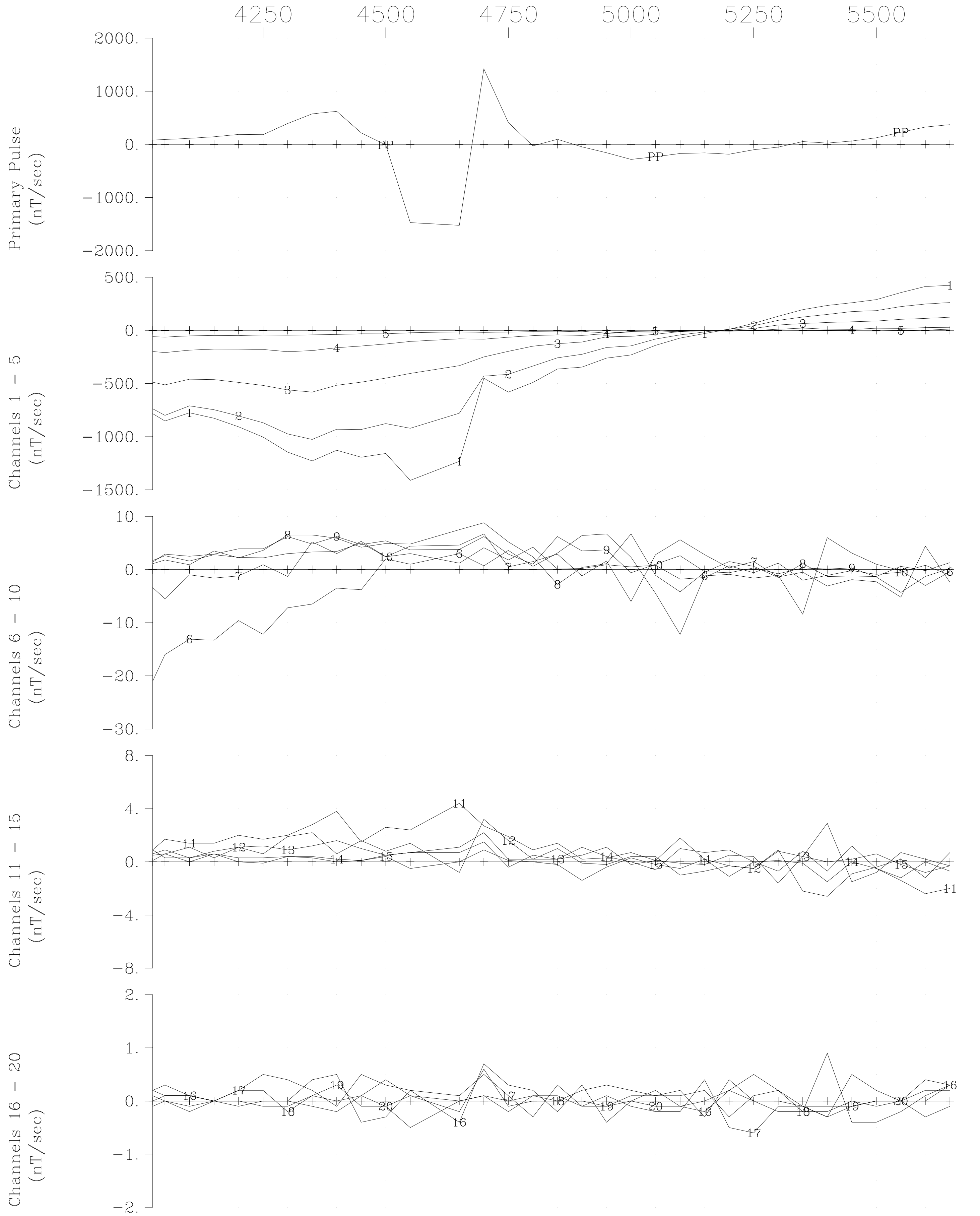

HTX Minerals Sunday Lake

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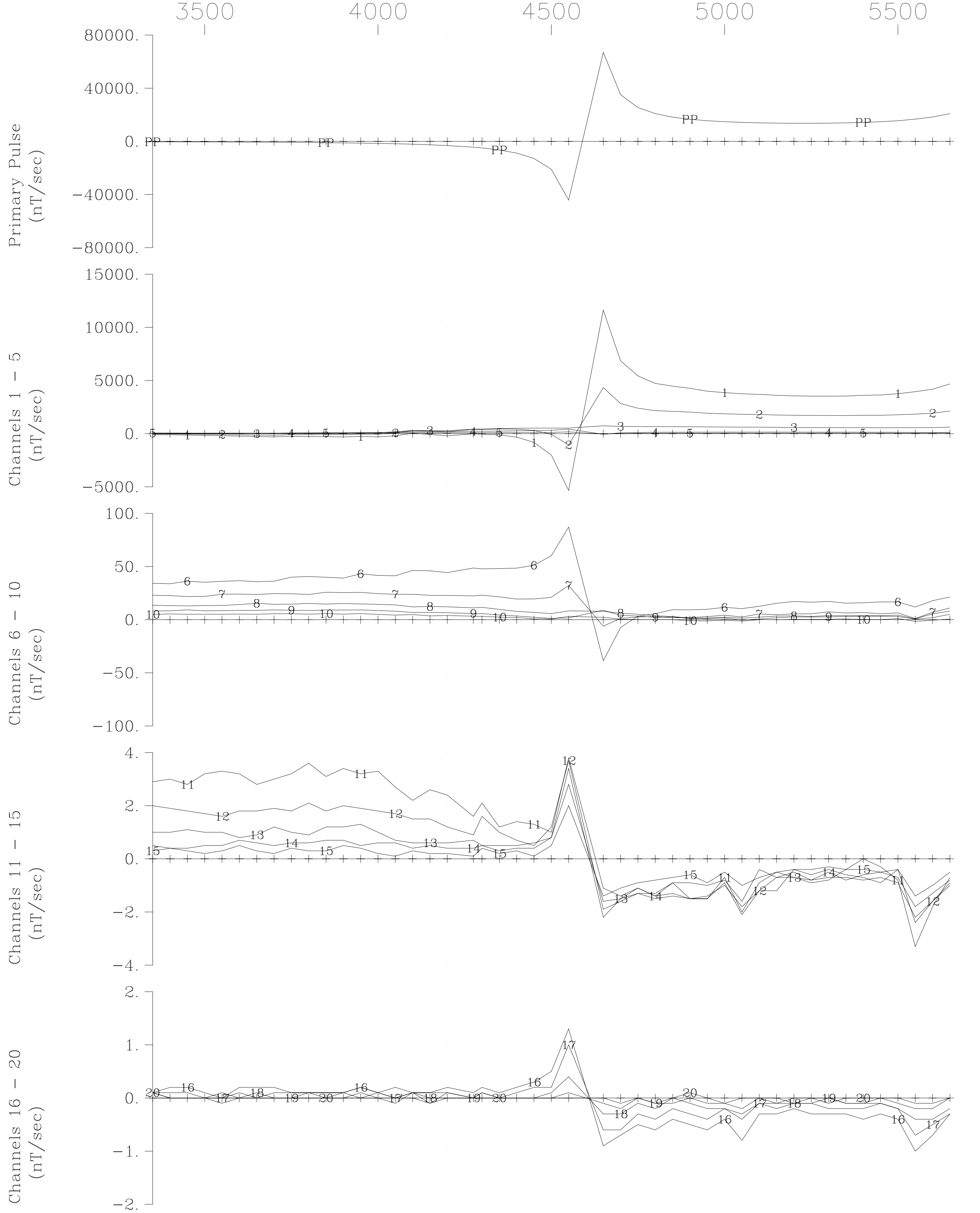

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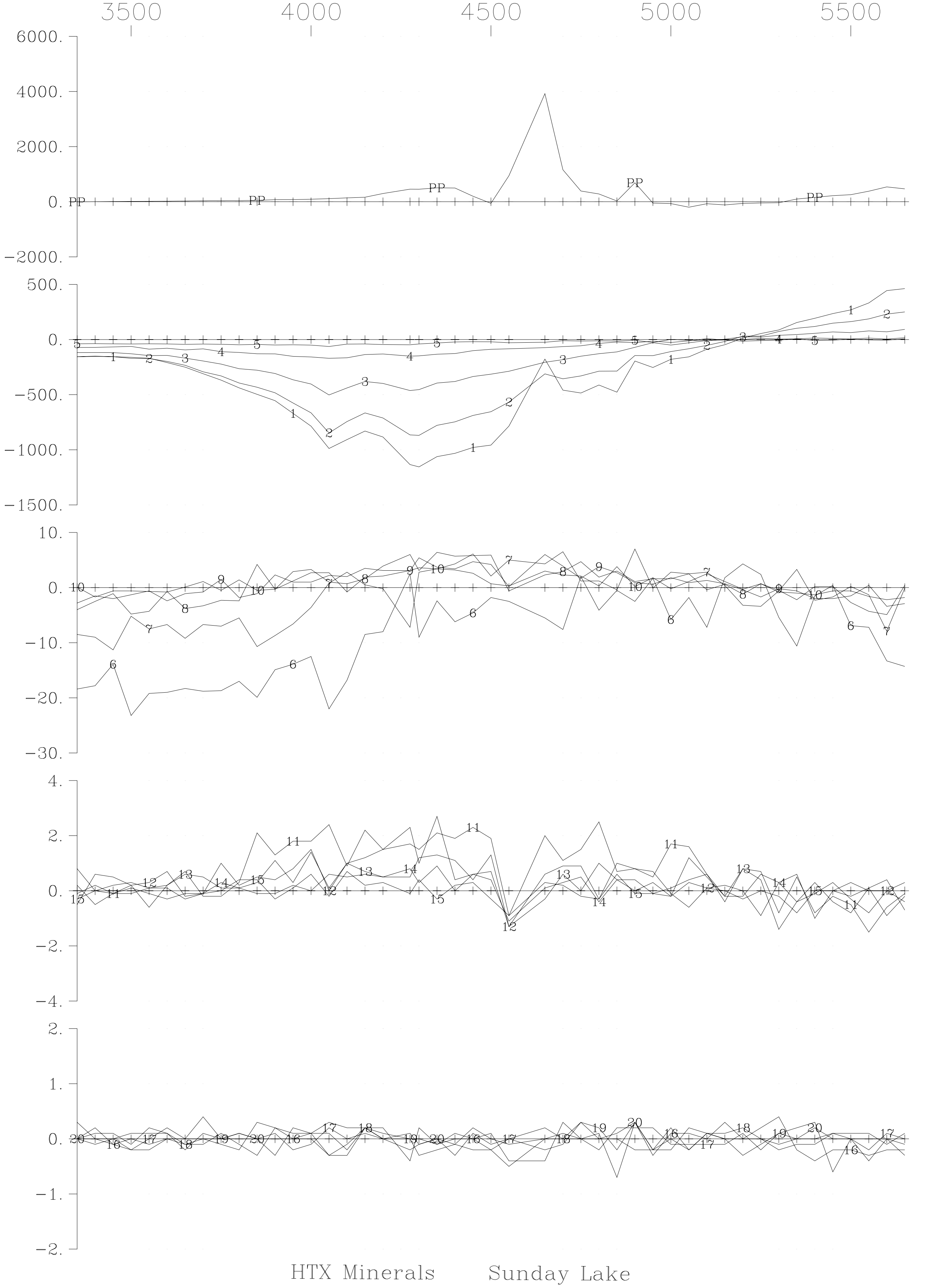

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Loop 1, Line 5870N X Component

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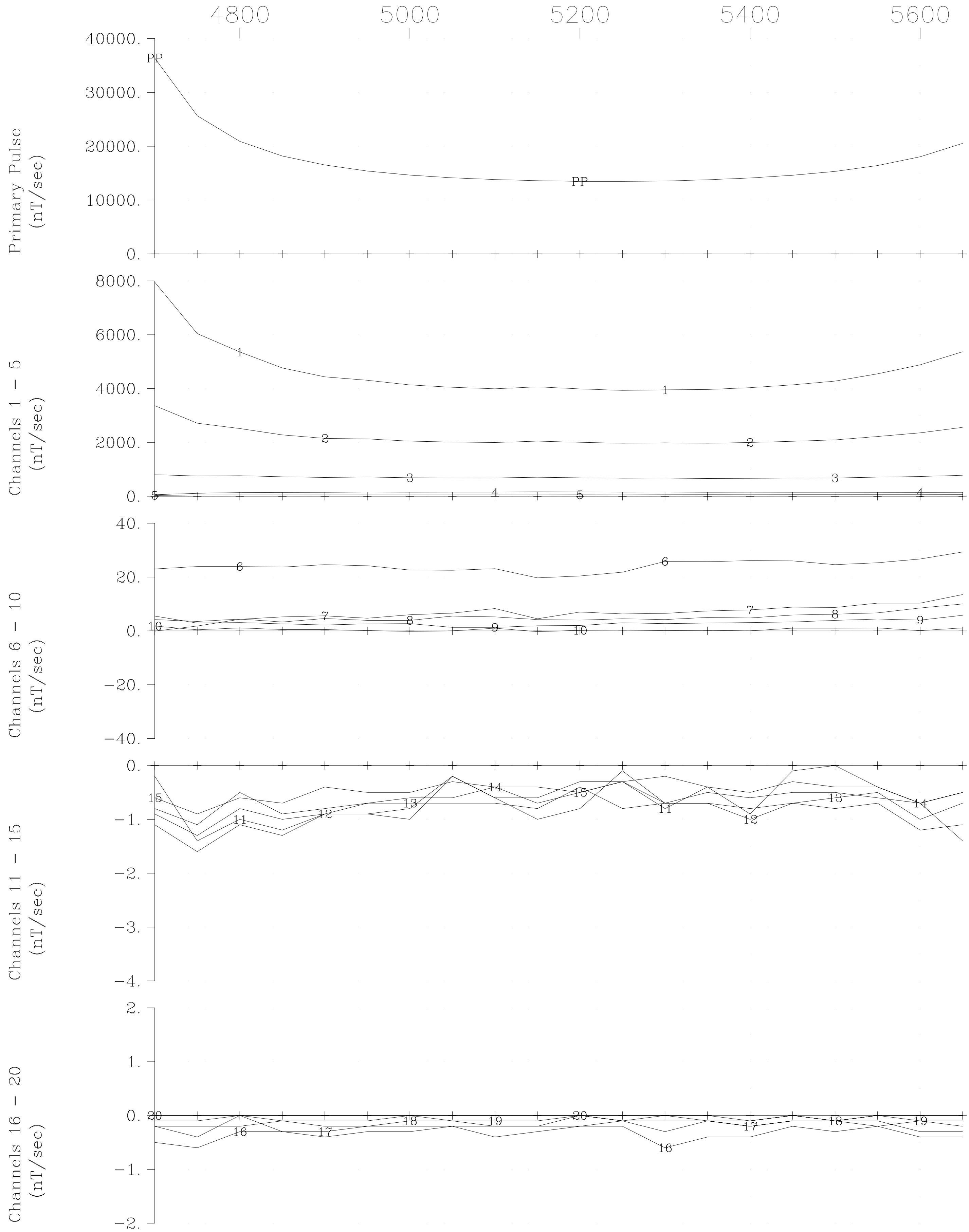

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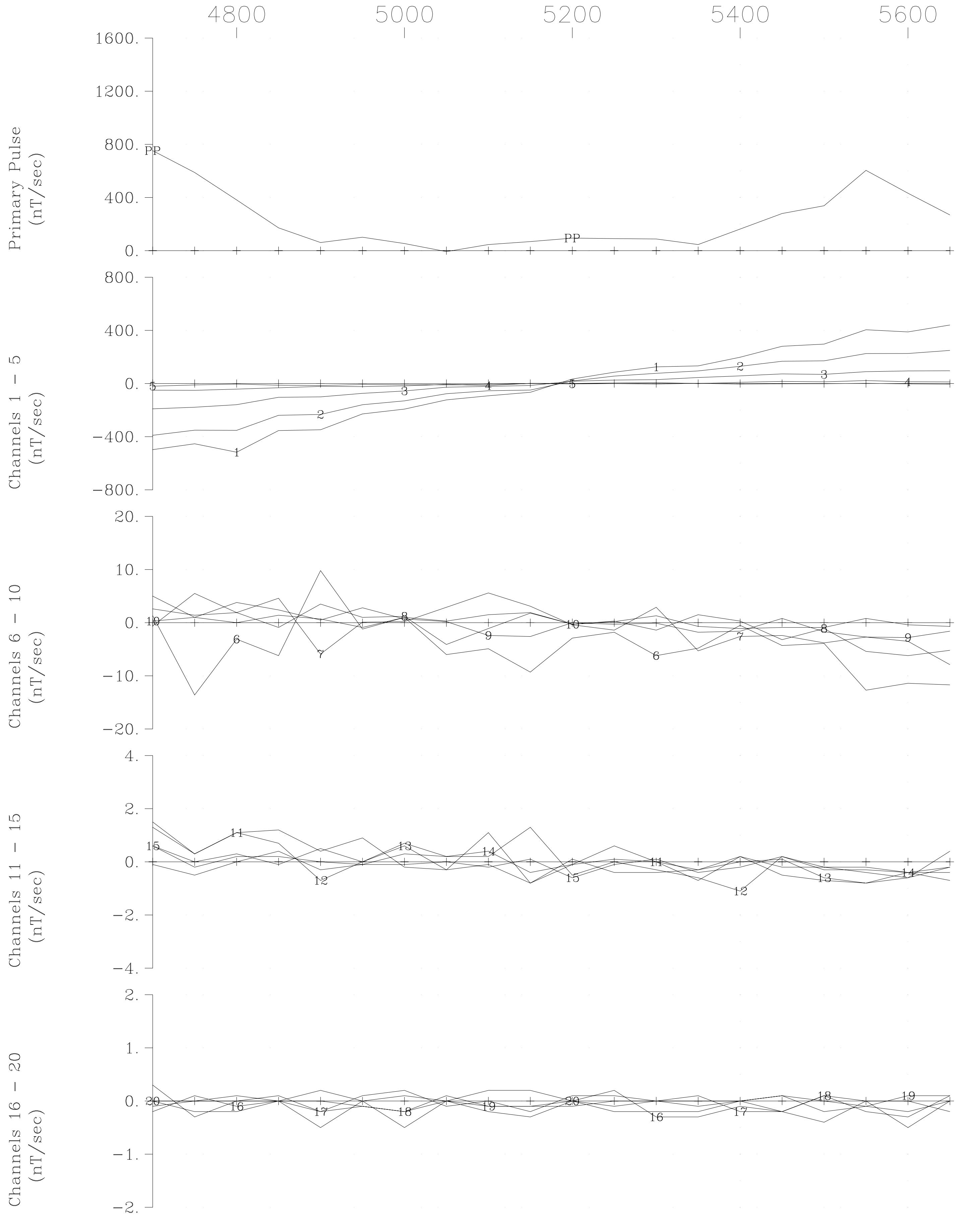
Crone Geophysics & Exploration Ltd.



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Loop 1, Line 5970N X Component

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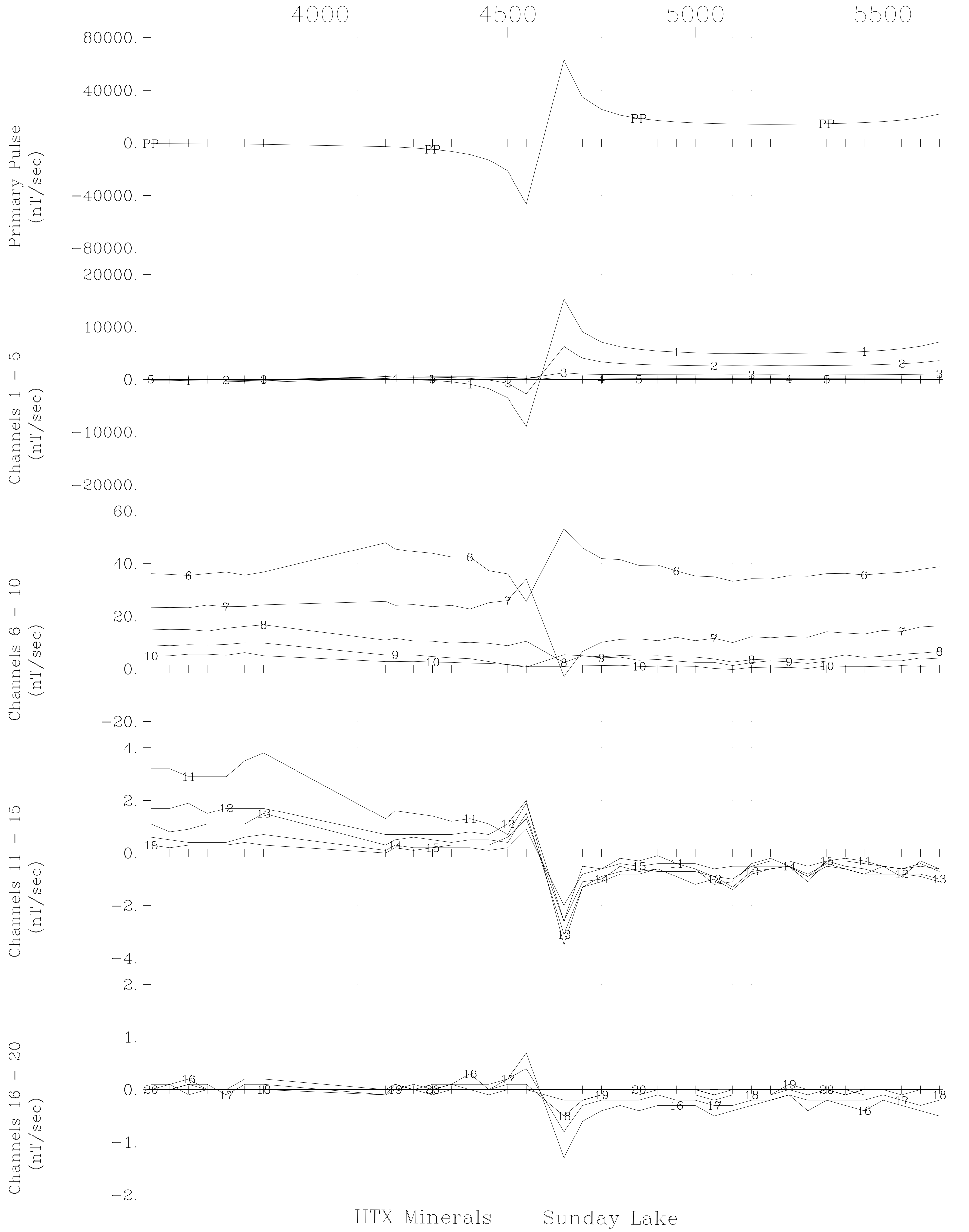
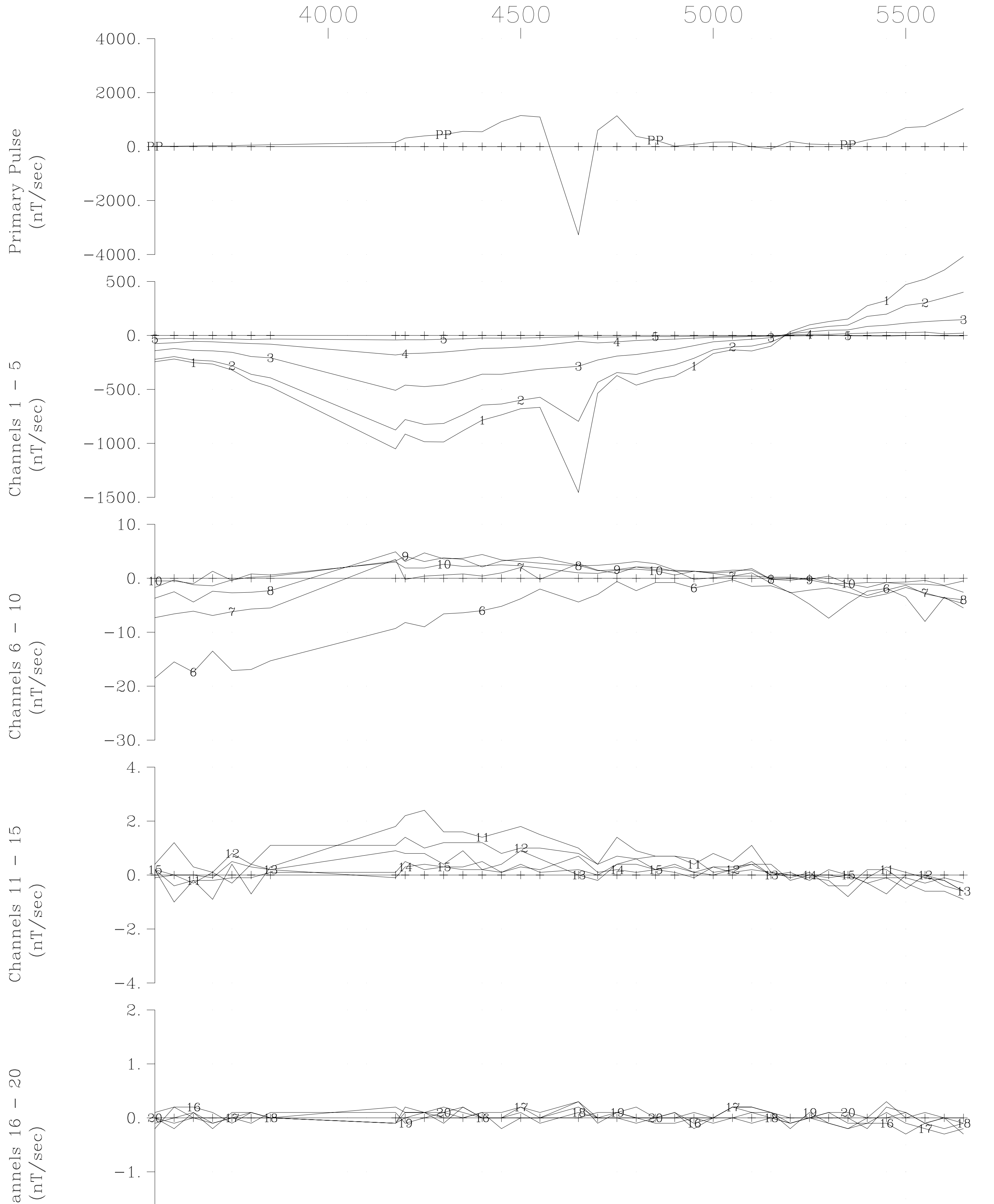


HTX Minerals Sunday Lake

Loop 1, Line 6070N Z Component

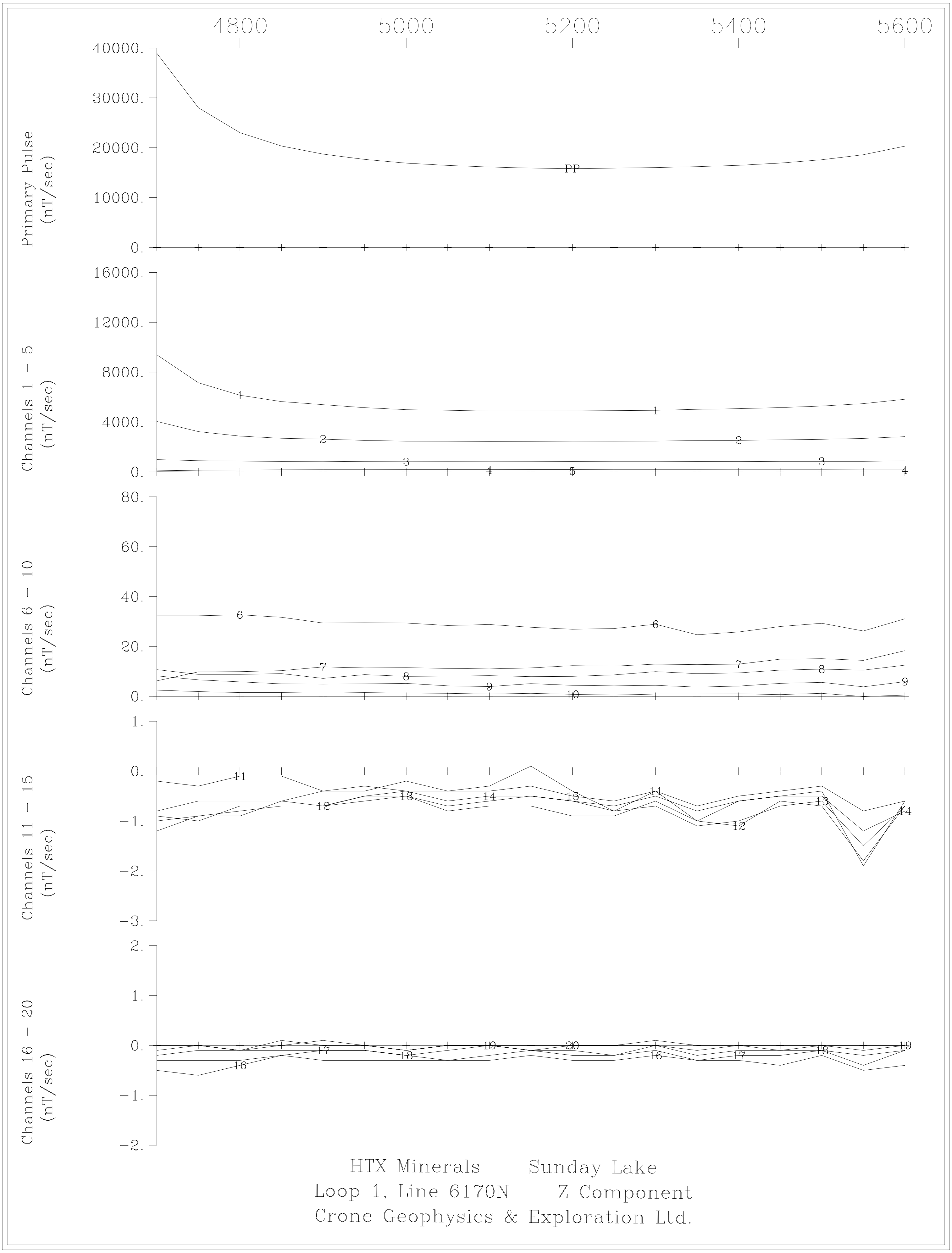
Crone Geophysics & Exploration Ltd.

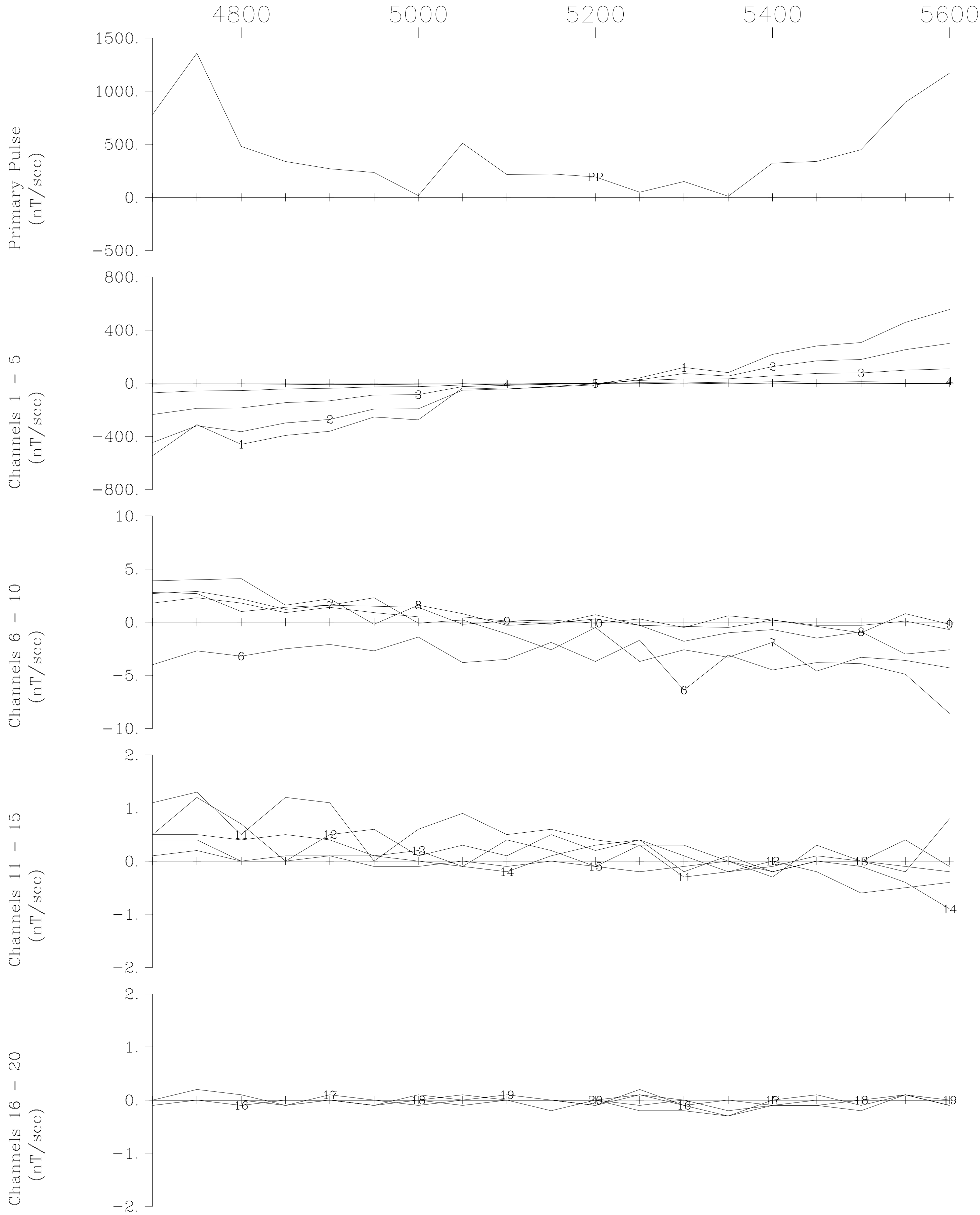


HTX Minerals Sunday Lake

Loop 1, Line 6070N X Component

Crone Geophysics & Exploration Ltd.

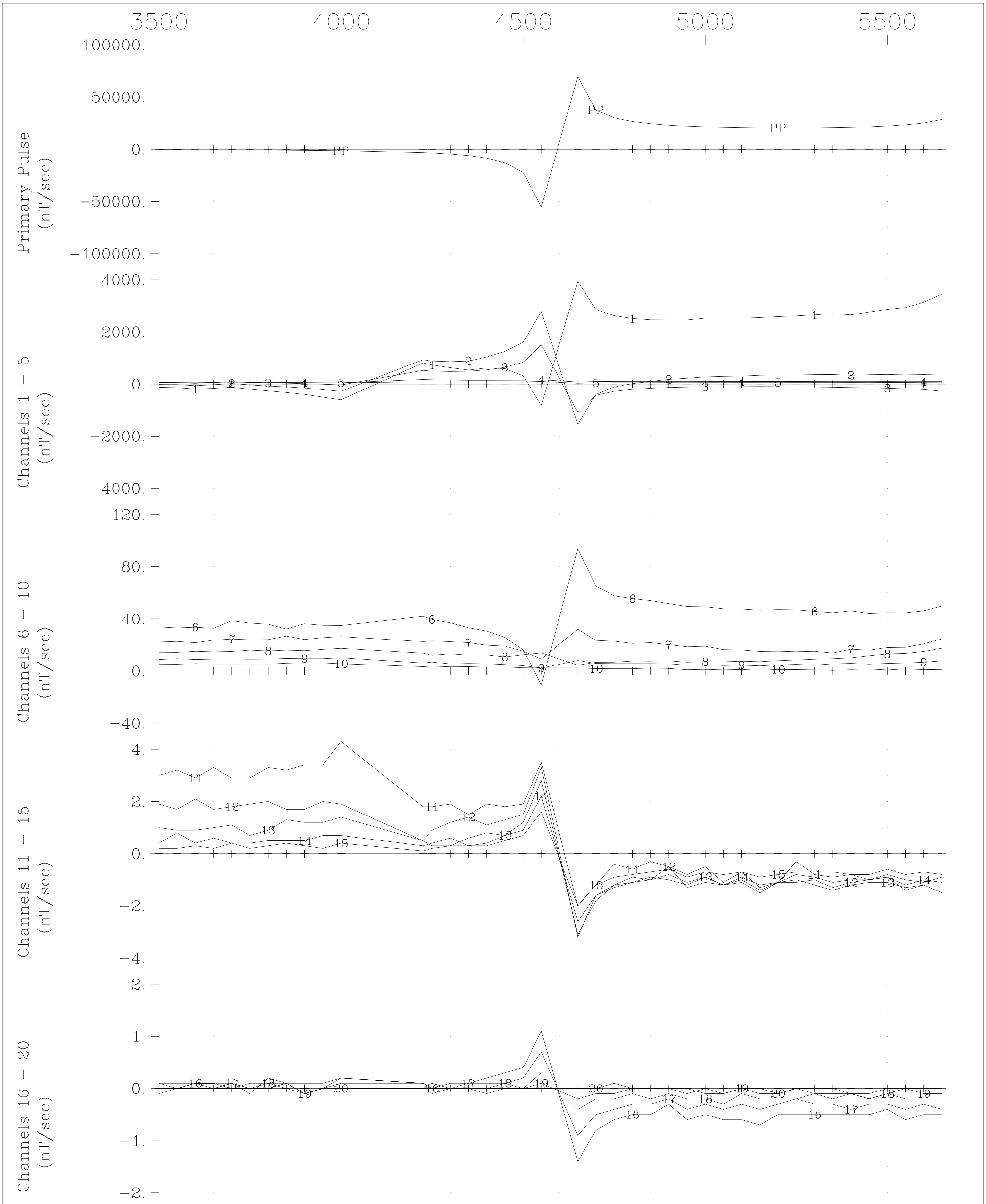

4800
5000
5200
5400
5600
Primary Pulse (nT/sec)
40000.
30000.
20000.
10000.
0.
PP
Channels 1 – 5 (nT/sec)
16000.
12000.
8000.
4000.
0.
Channels 6 – 10 (nT/sec)
80.
60.
40.
20.
0.
Channels 11 – 15 (nT/sec)
1.
0.
-1
-2.
-3.
Channels 16 – 20 (nT/sec)
2.
1.
0.
-1.
-2.
HTX Minerals Sunday Lake
Loop 1, Line 6170N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 6170N X Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 6270N Z Component

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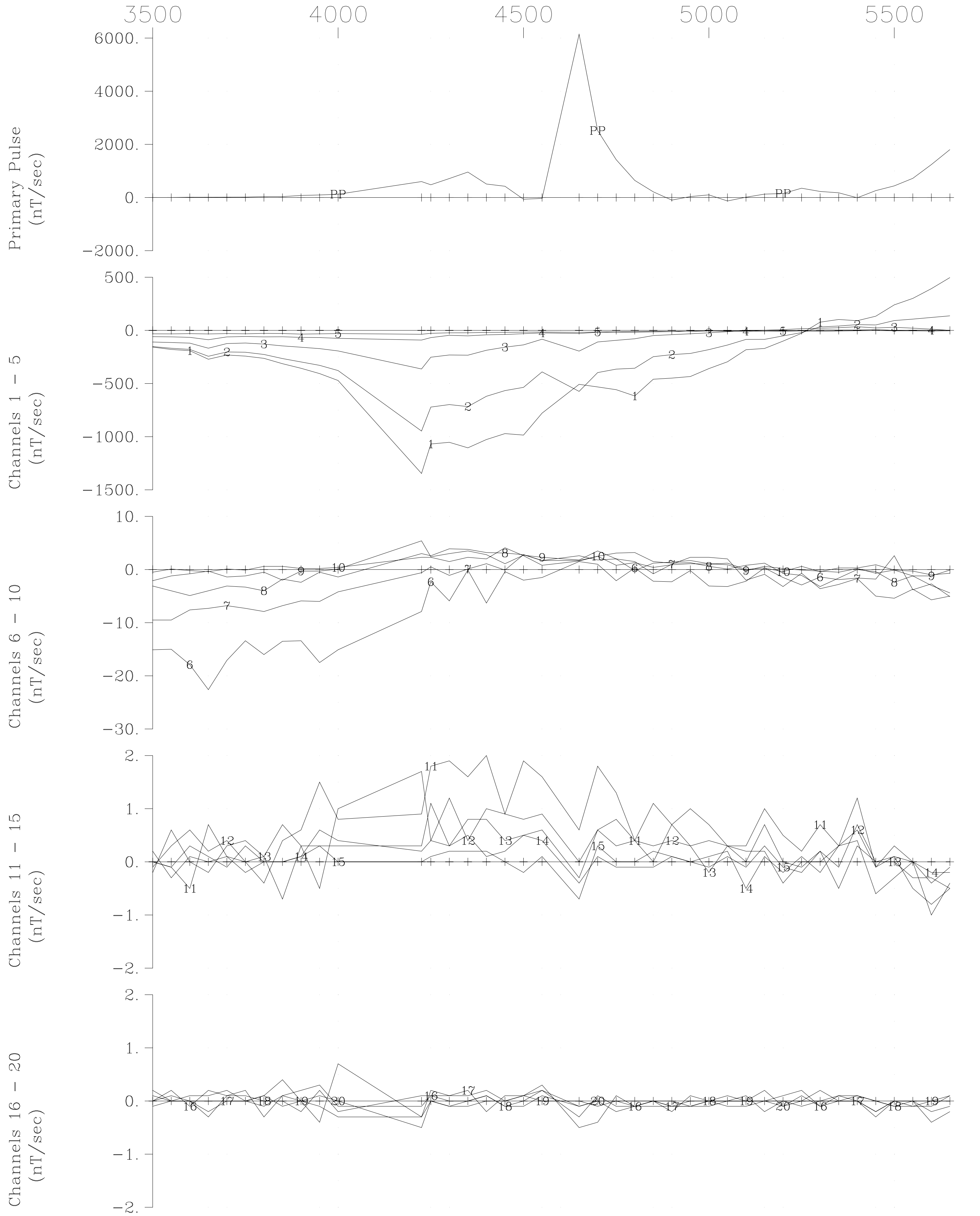

HTX Minerals Sunday Lake

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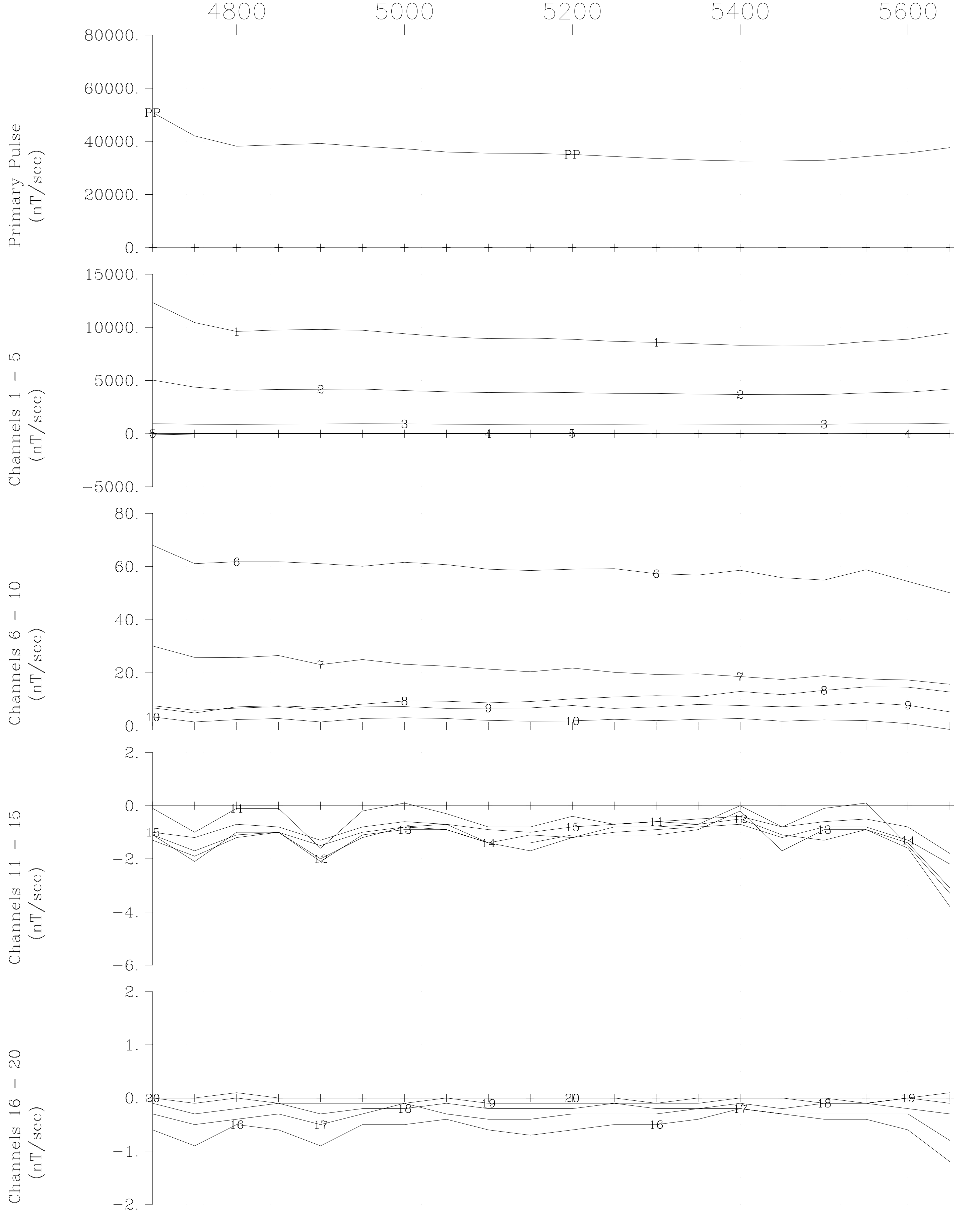

HTX Minerals Sunday Lake

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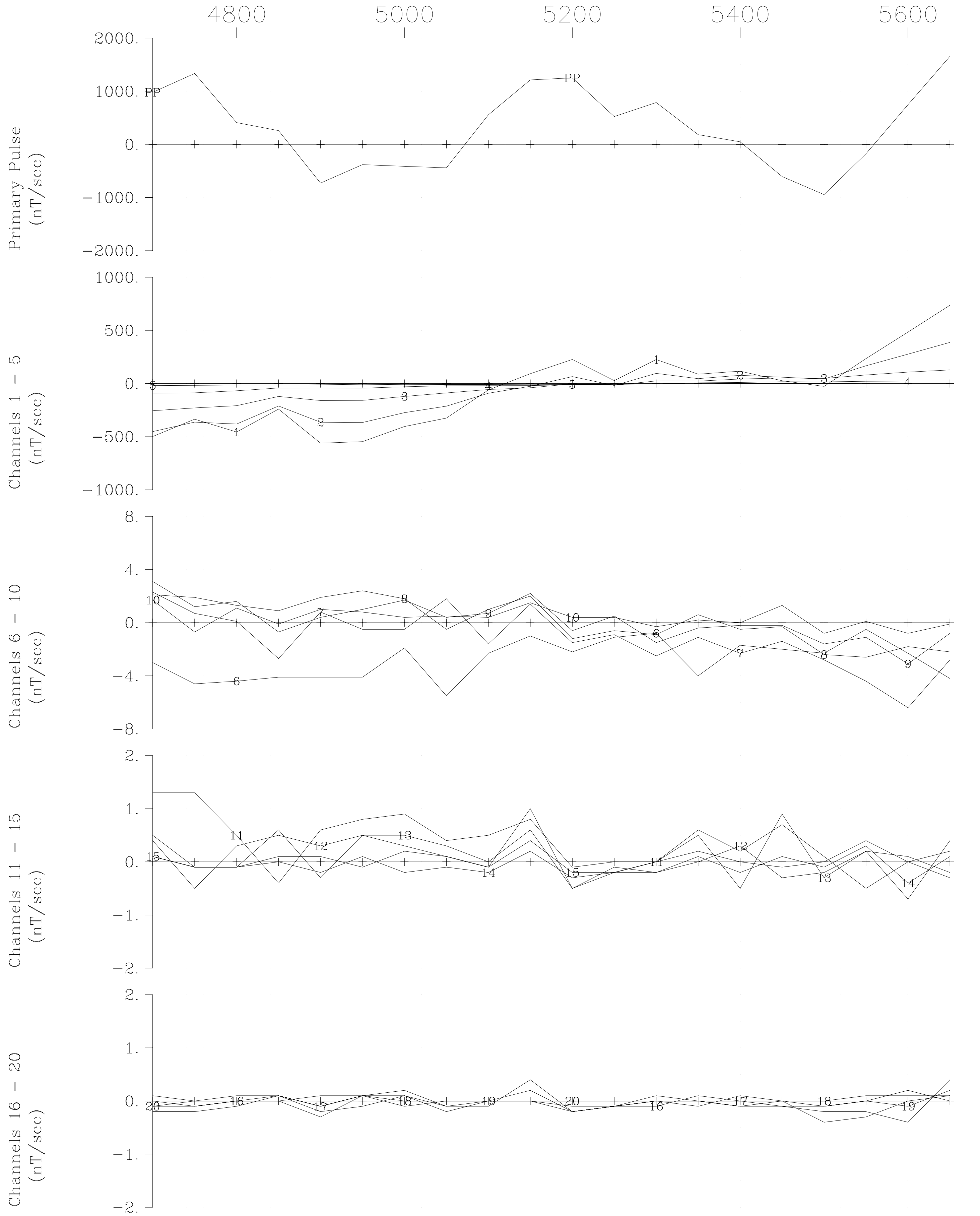

HTX Minerals Sunday Lake

Loop 1, Line 6370N X Component

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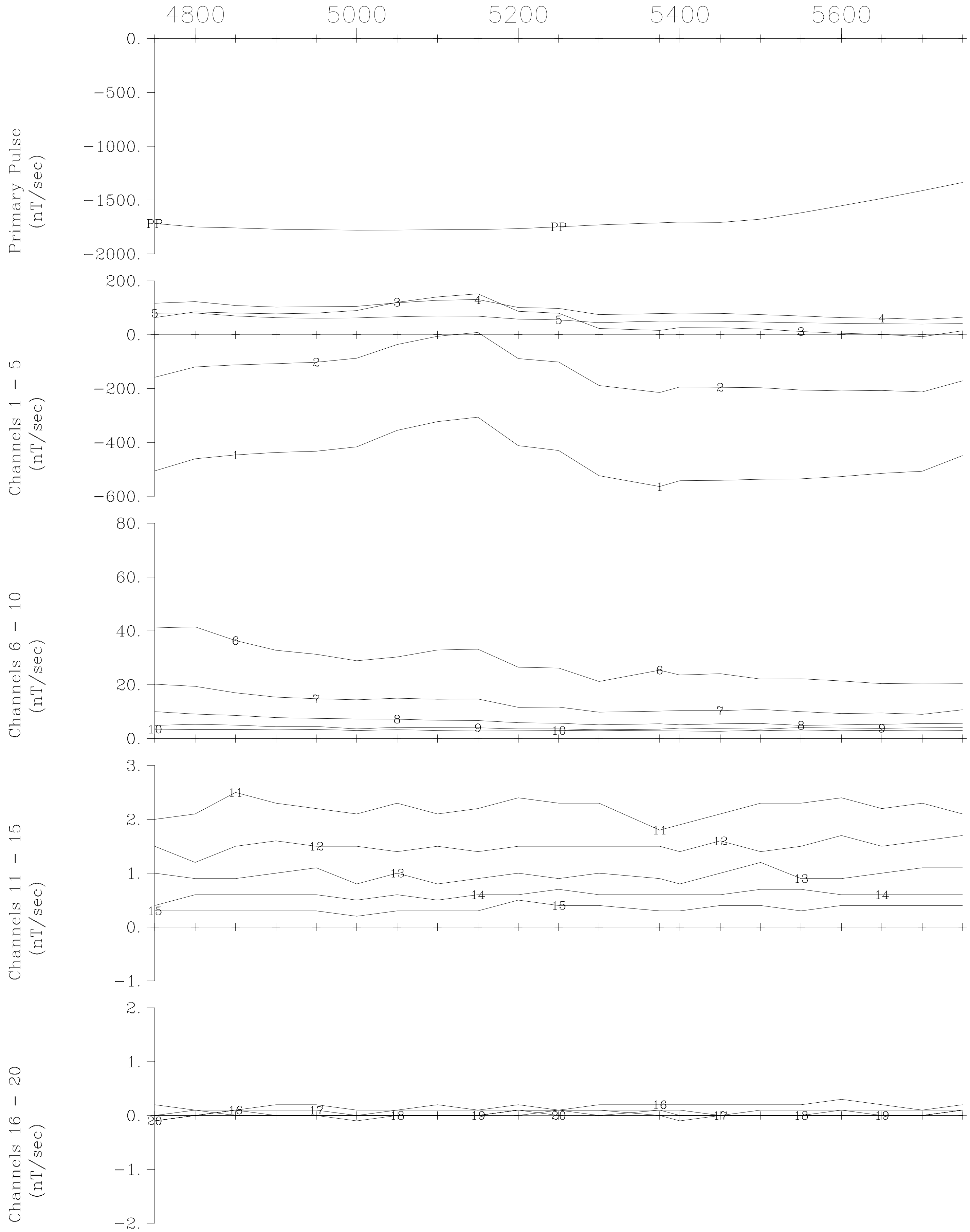
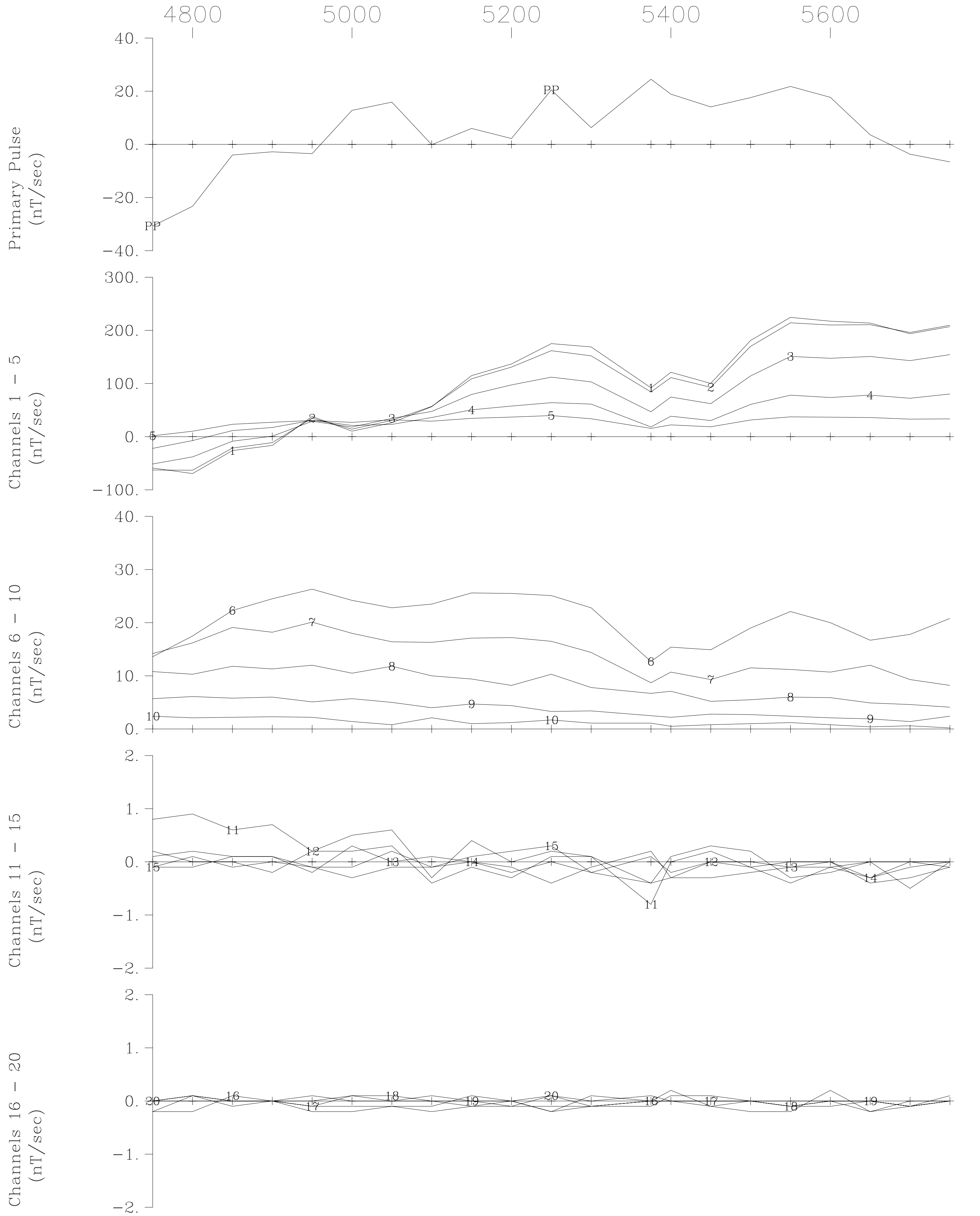


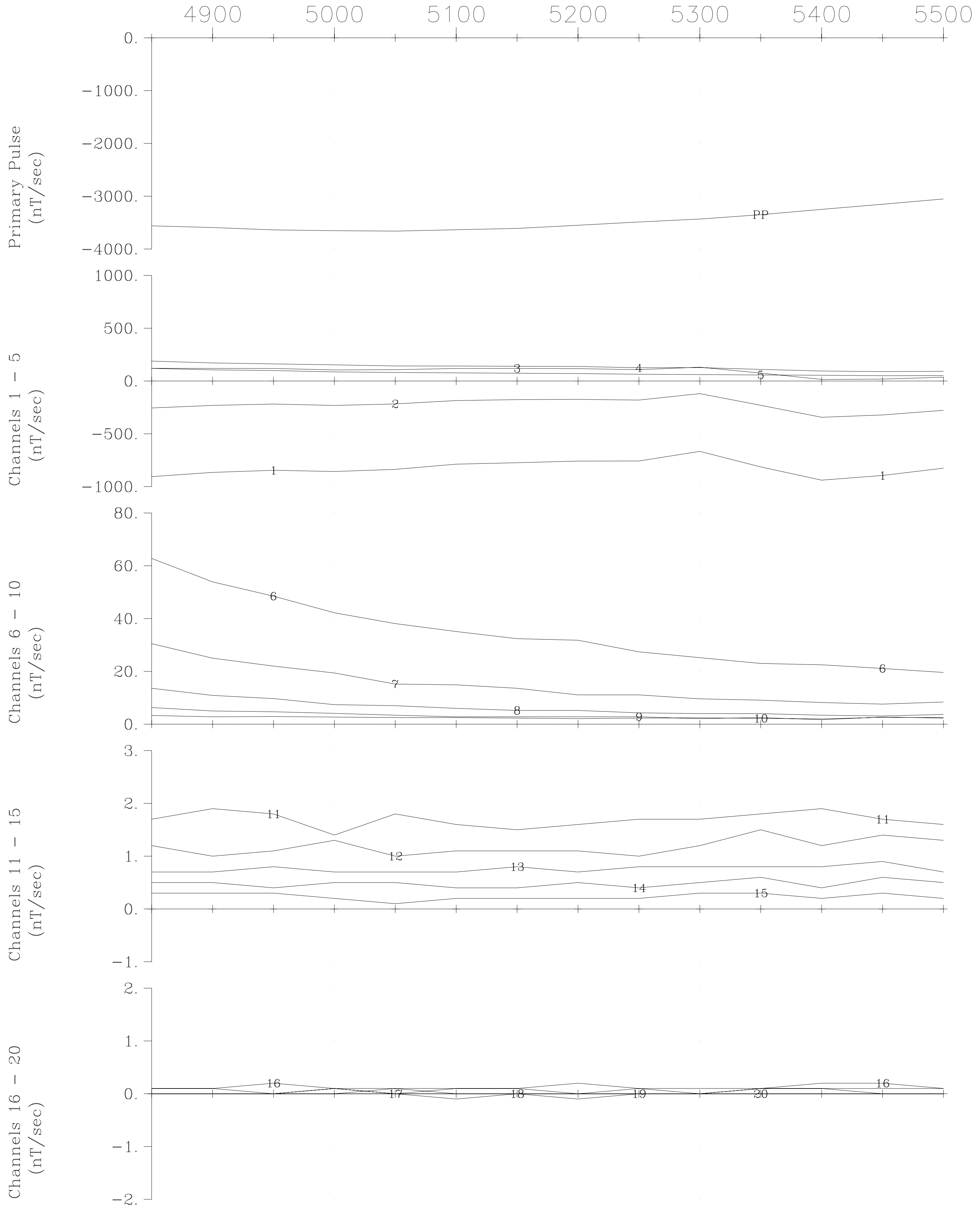
HTX Minerals Sunday Lake
Loop 2, Line 3770N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake

Loop 2, Line 3770N   X Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

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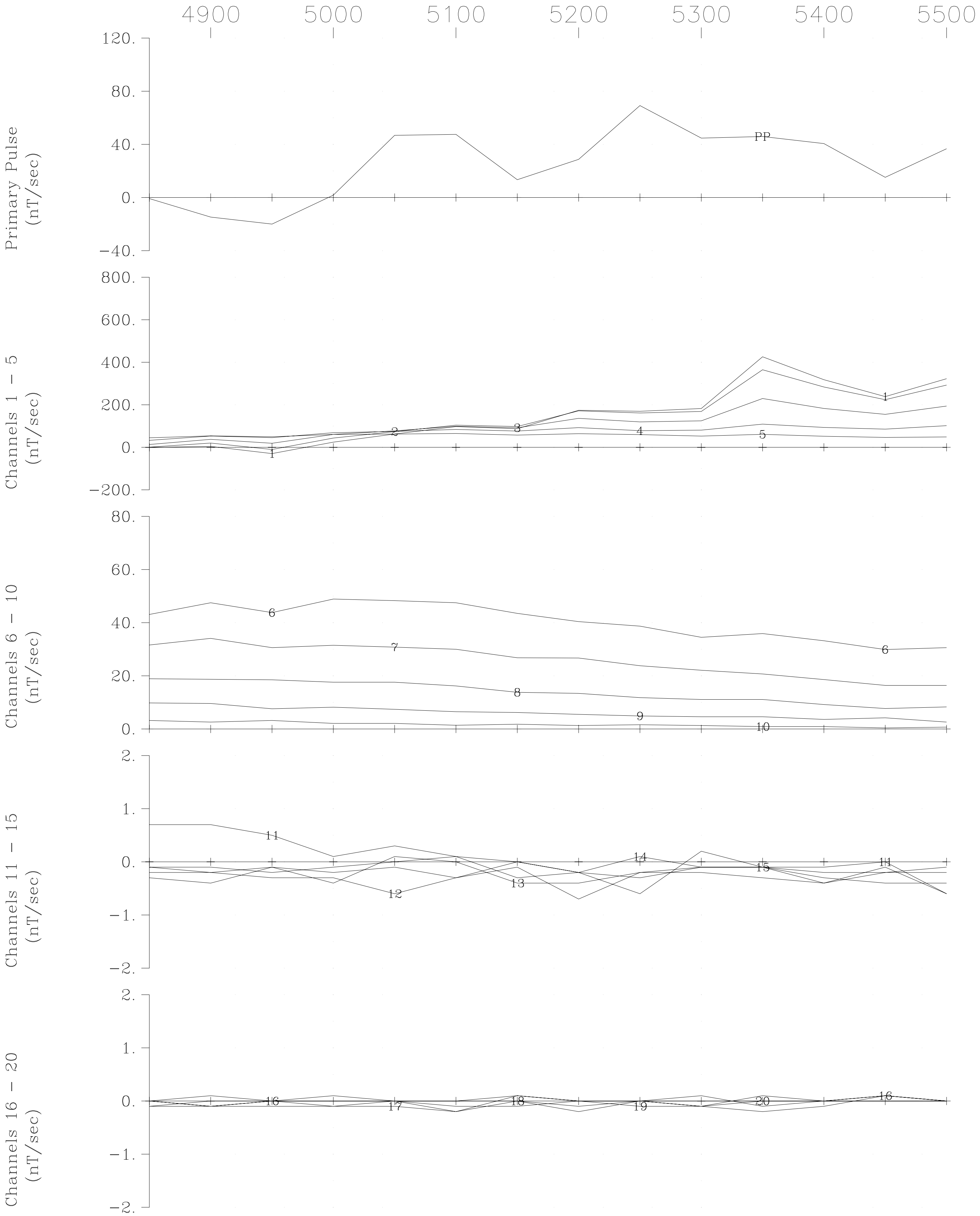

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Loop 2, Line 3970N X Component
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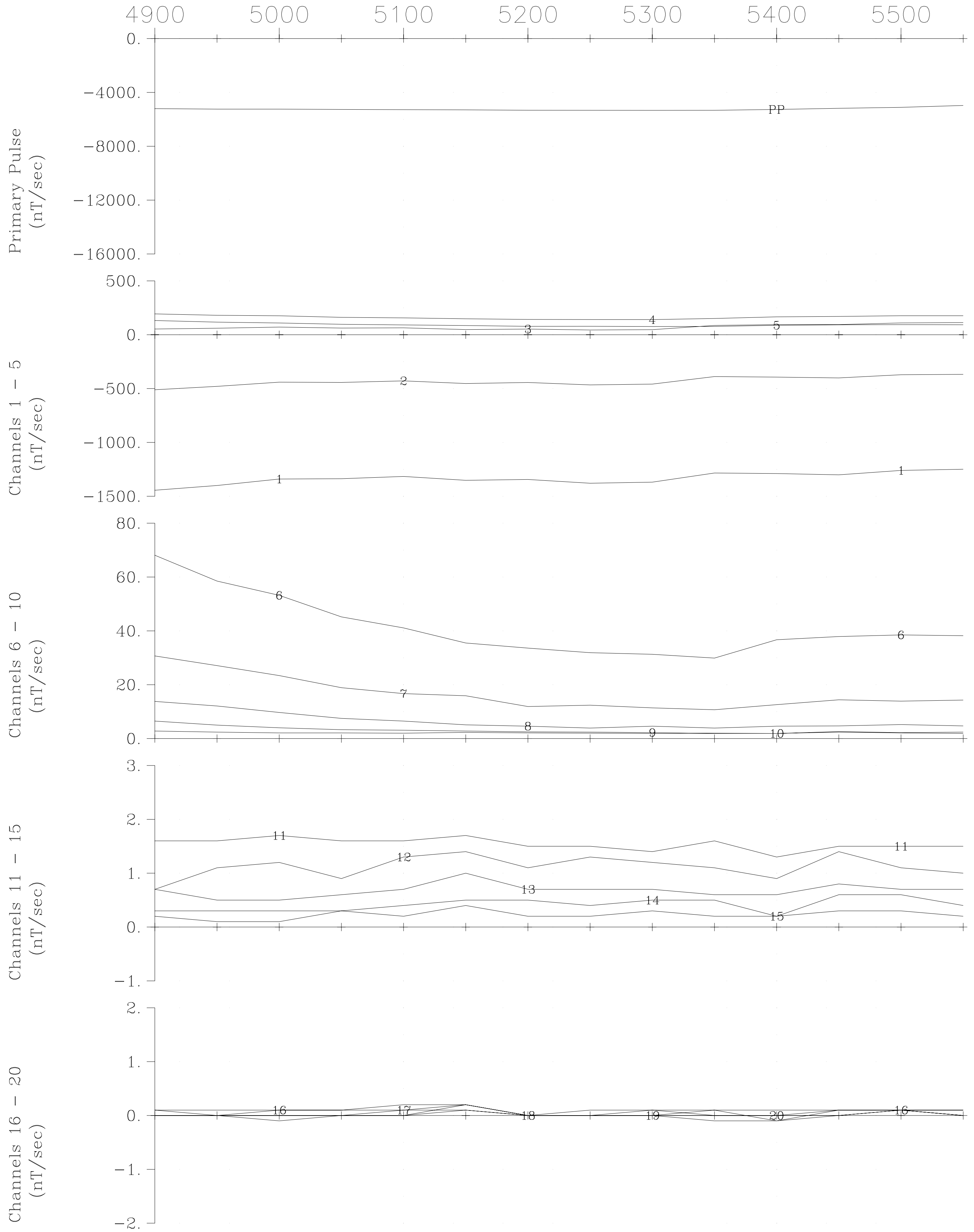

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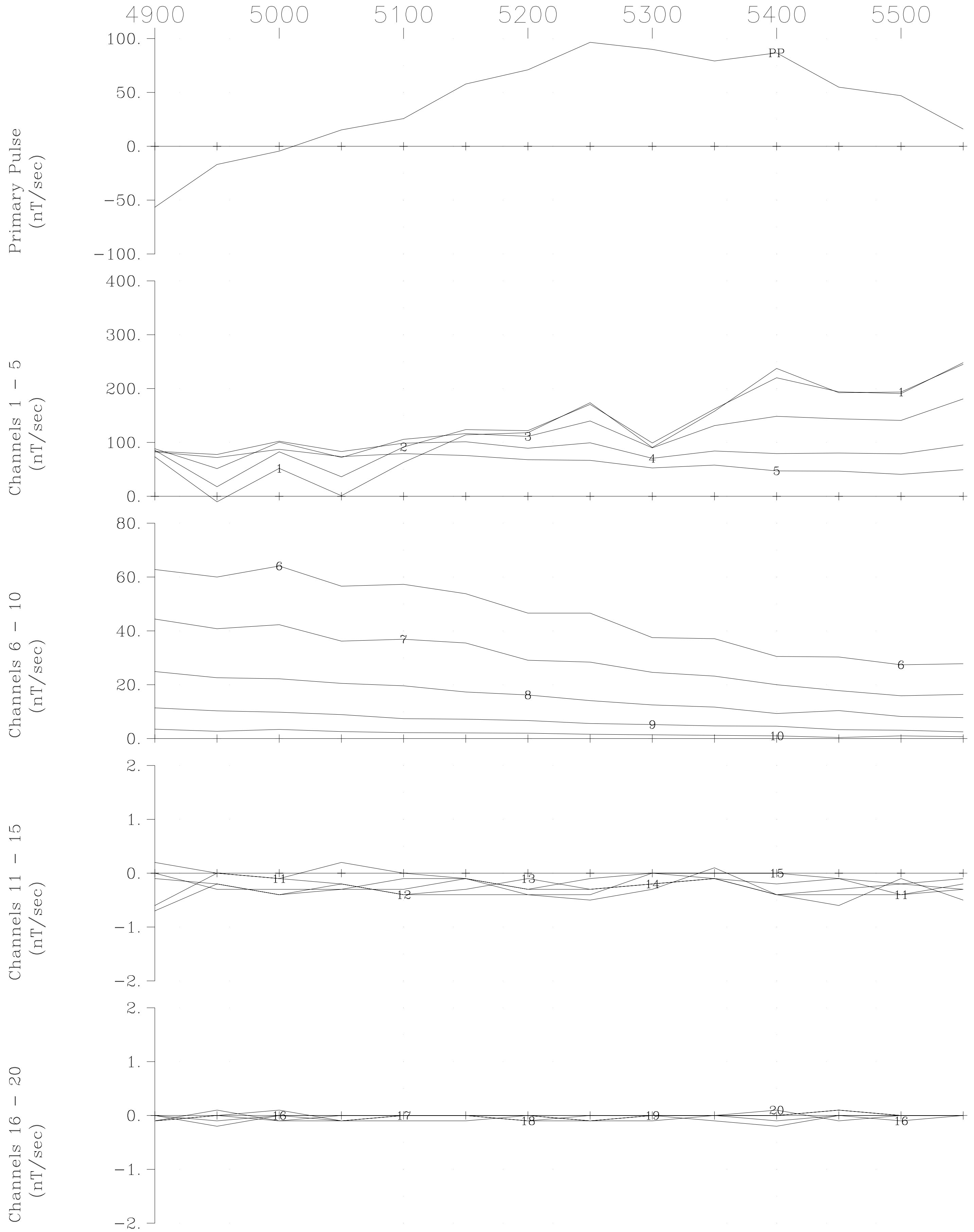

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Loop 2, Line 4070N X Component

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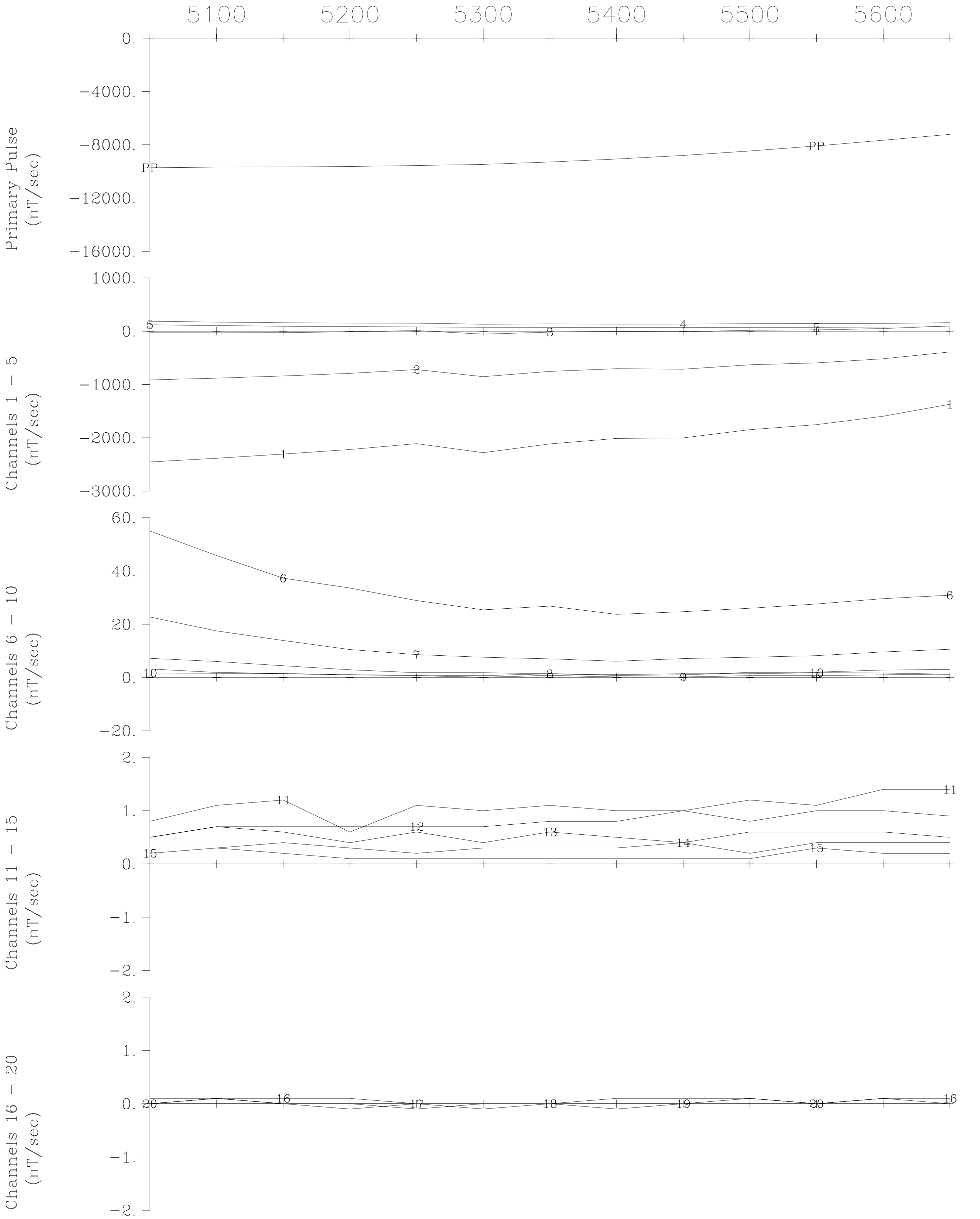

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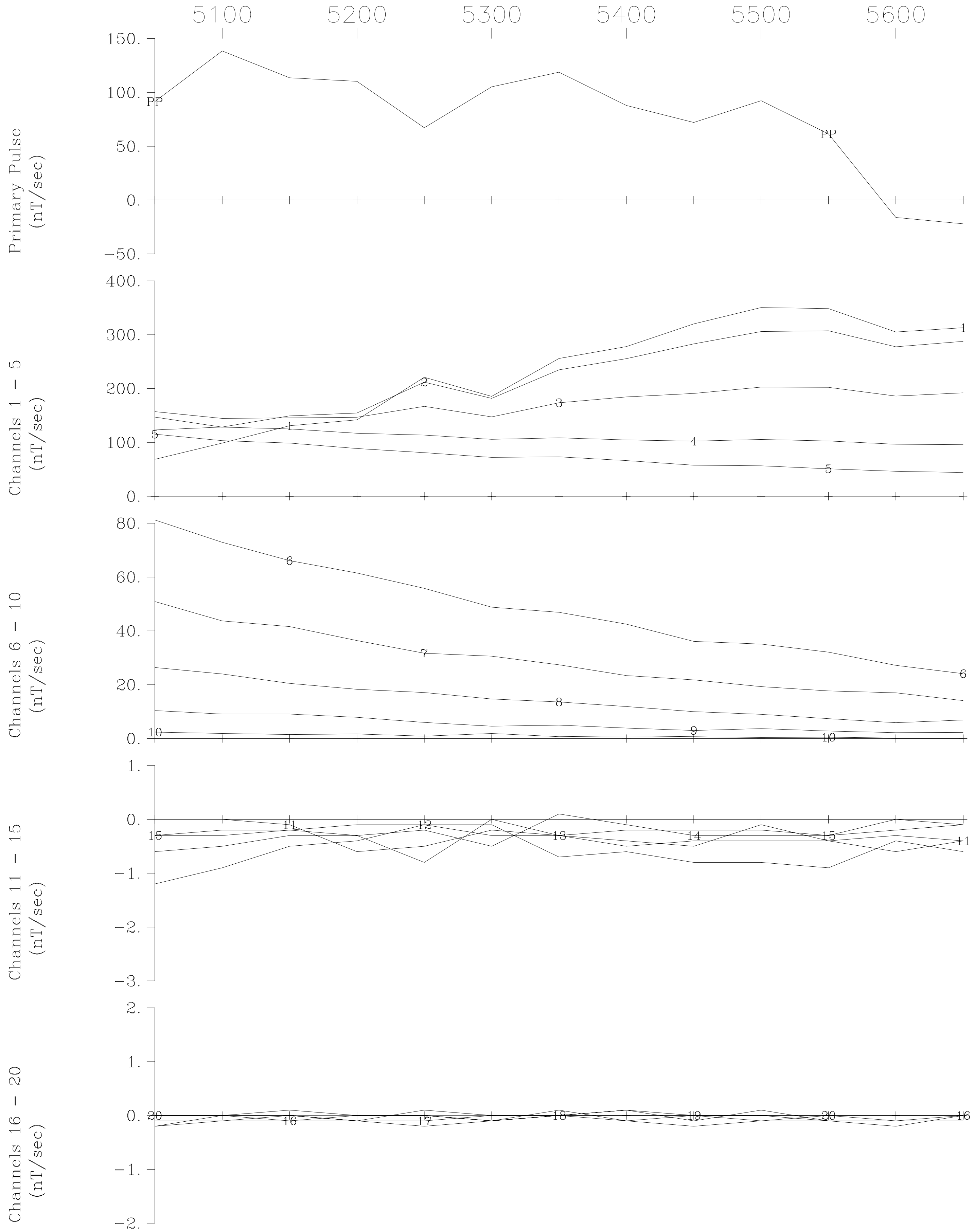

HTX Minerals Sunday Lake

Loop 2, Line 4170N X Component

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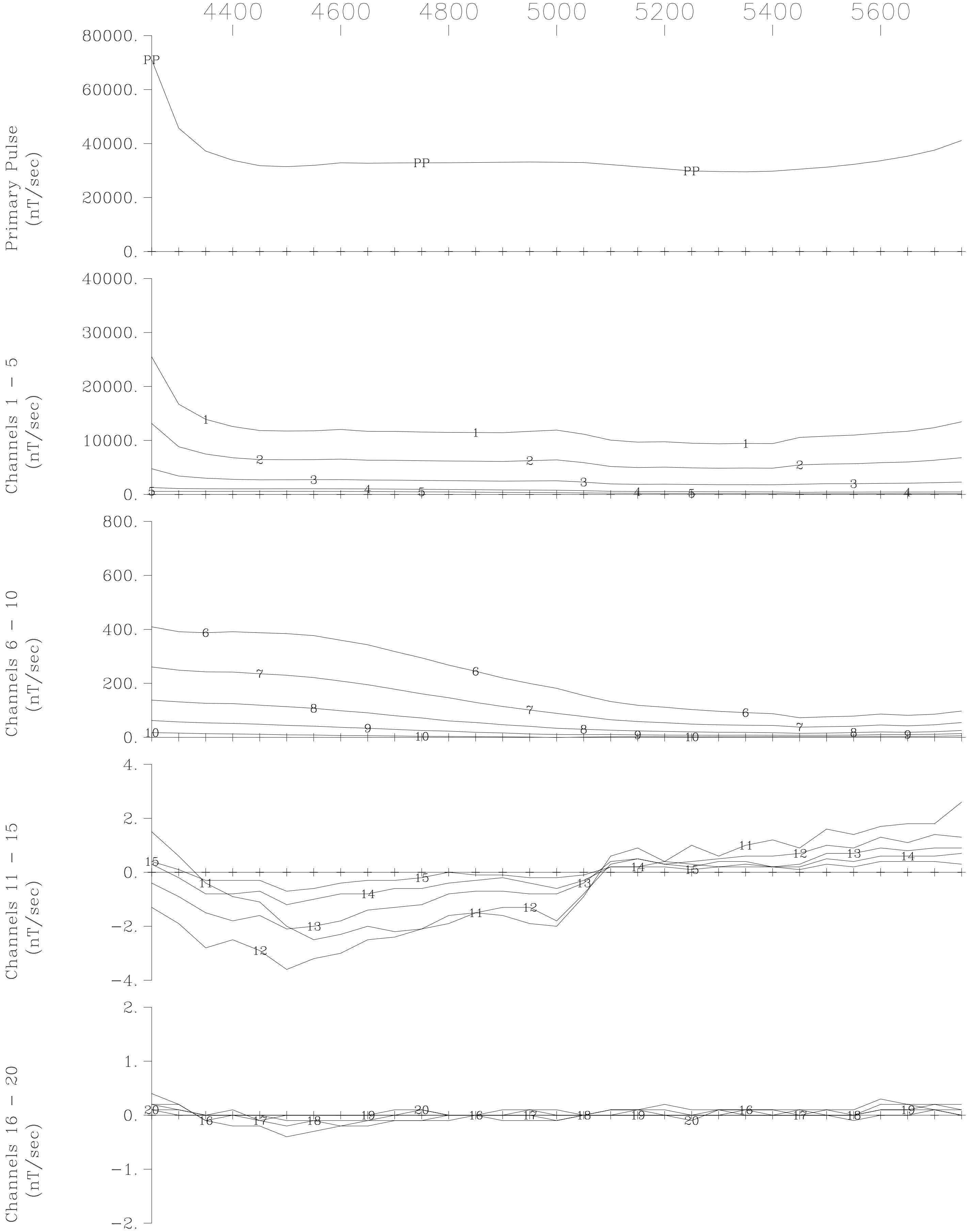
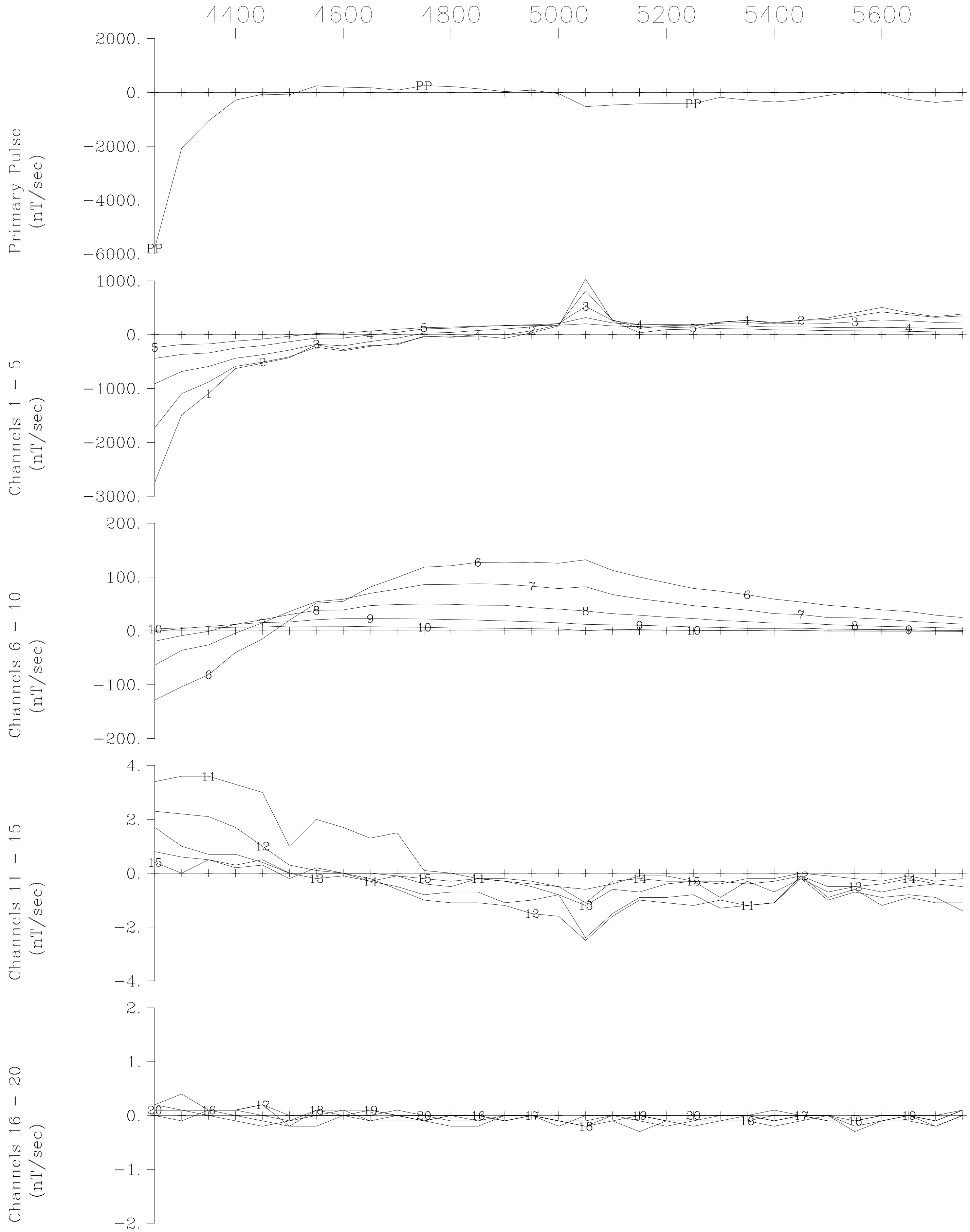


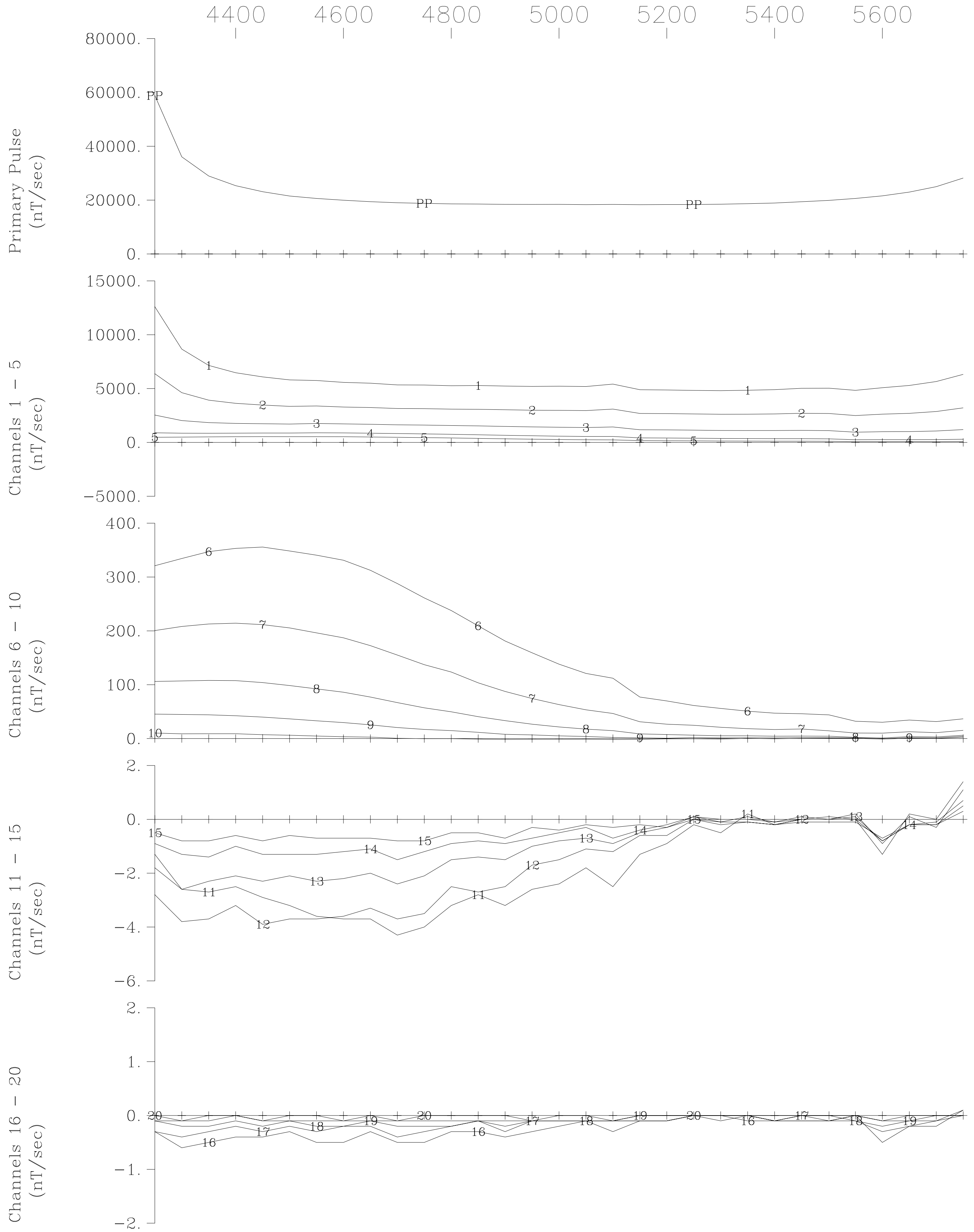
HTX Minerals Sunday Lake
Loop 2, Line 4470N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4470N X Component

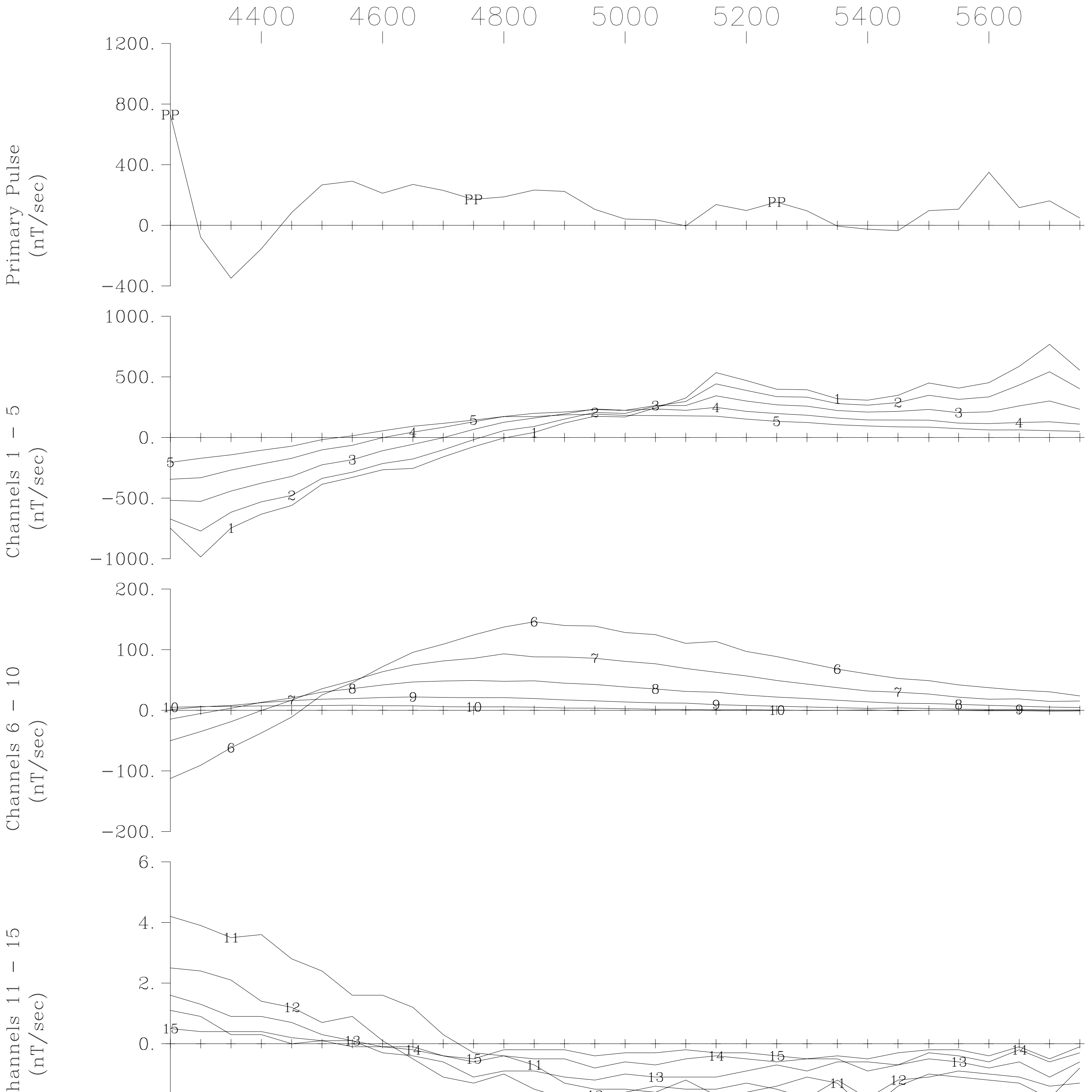
Crone Geophysics & Exploration Ltd.



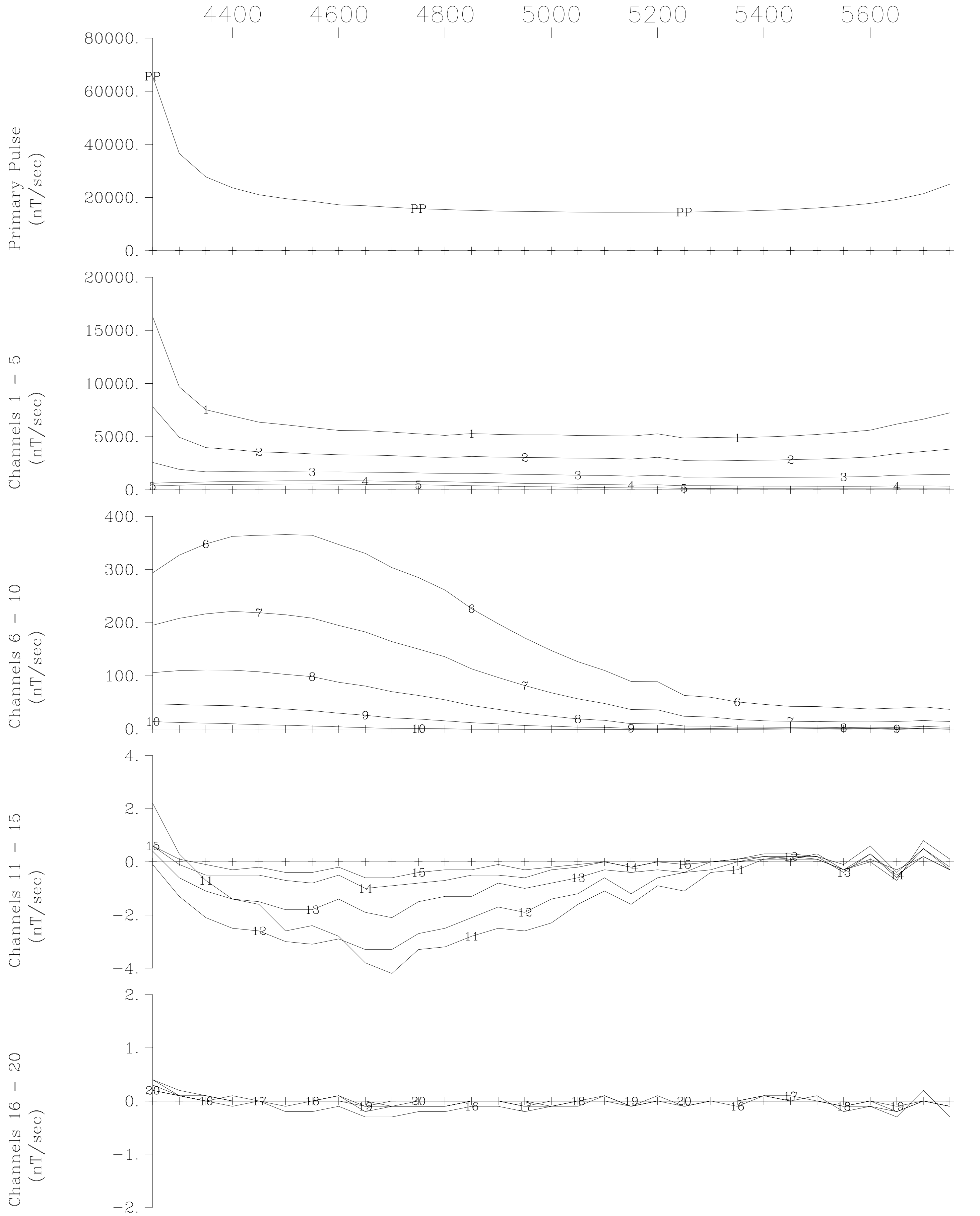
HTX Minerals Sunday Lake

Loop 2, Line 4570N Z Component

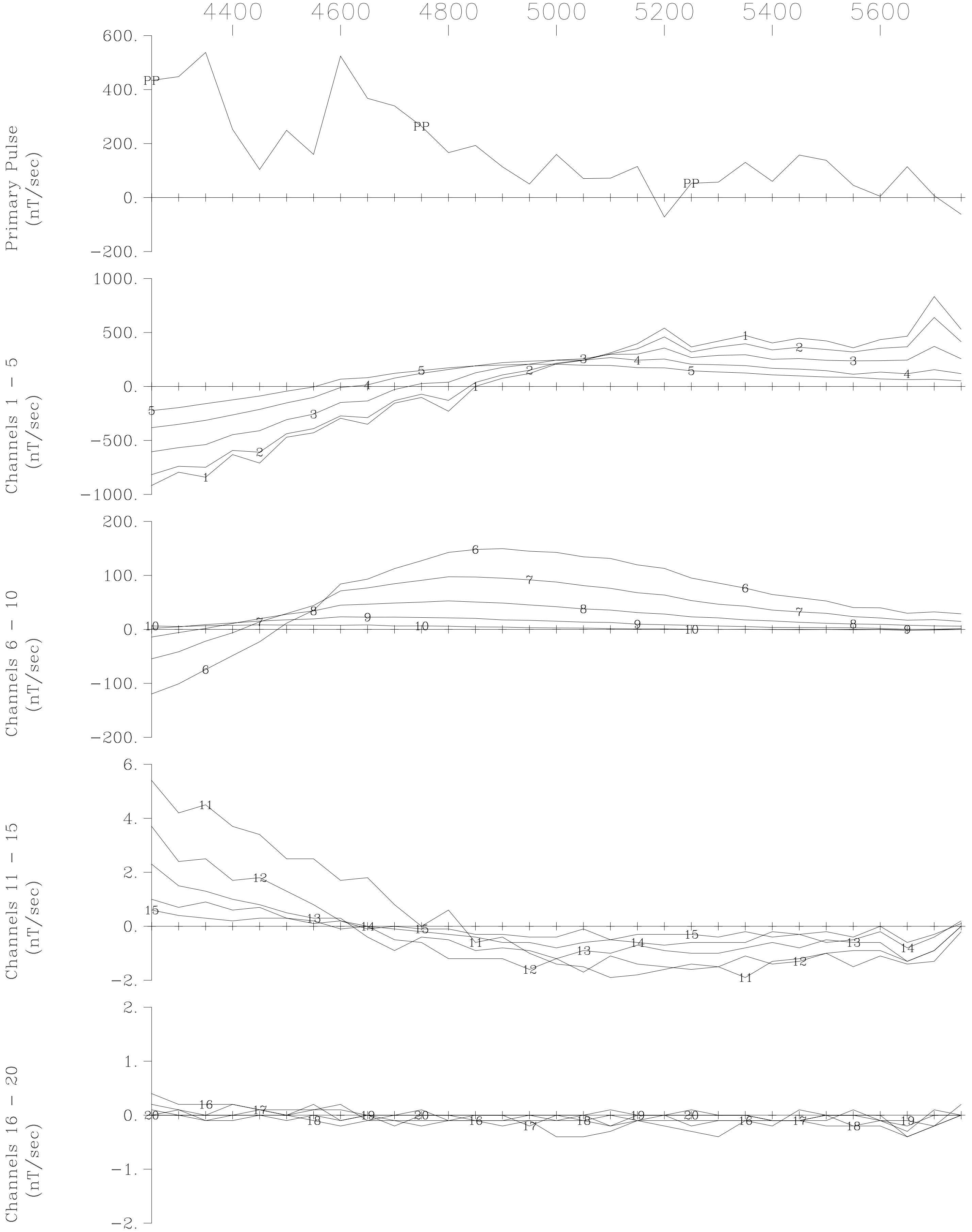
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4570N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake
Loop 2, Line 4670N   Z Component
Crone Geophysics & Exploration Ltd.



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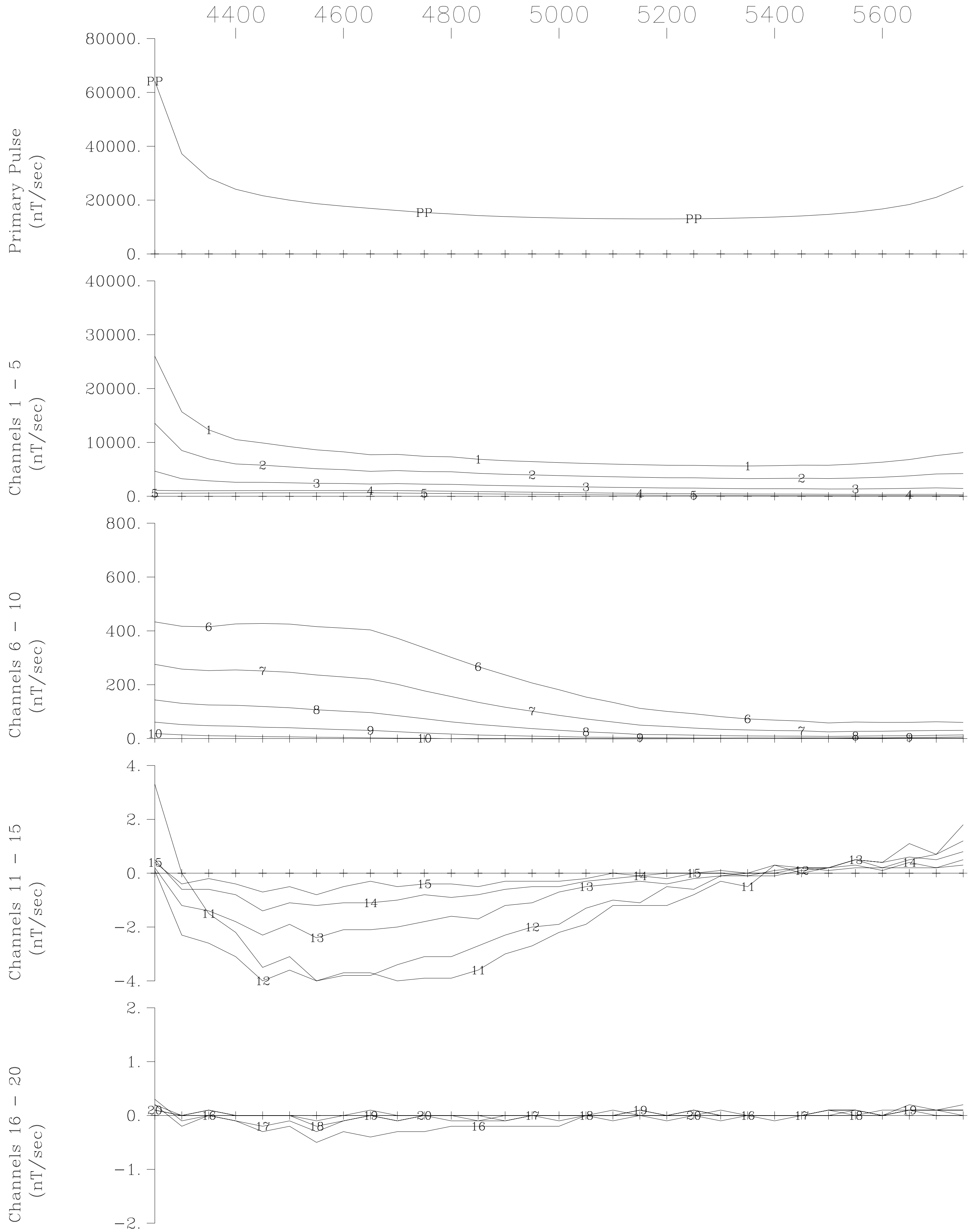
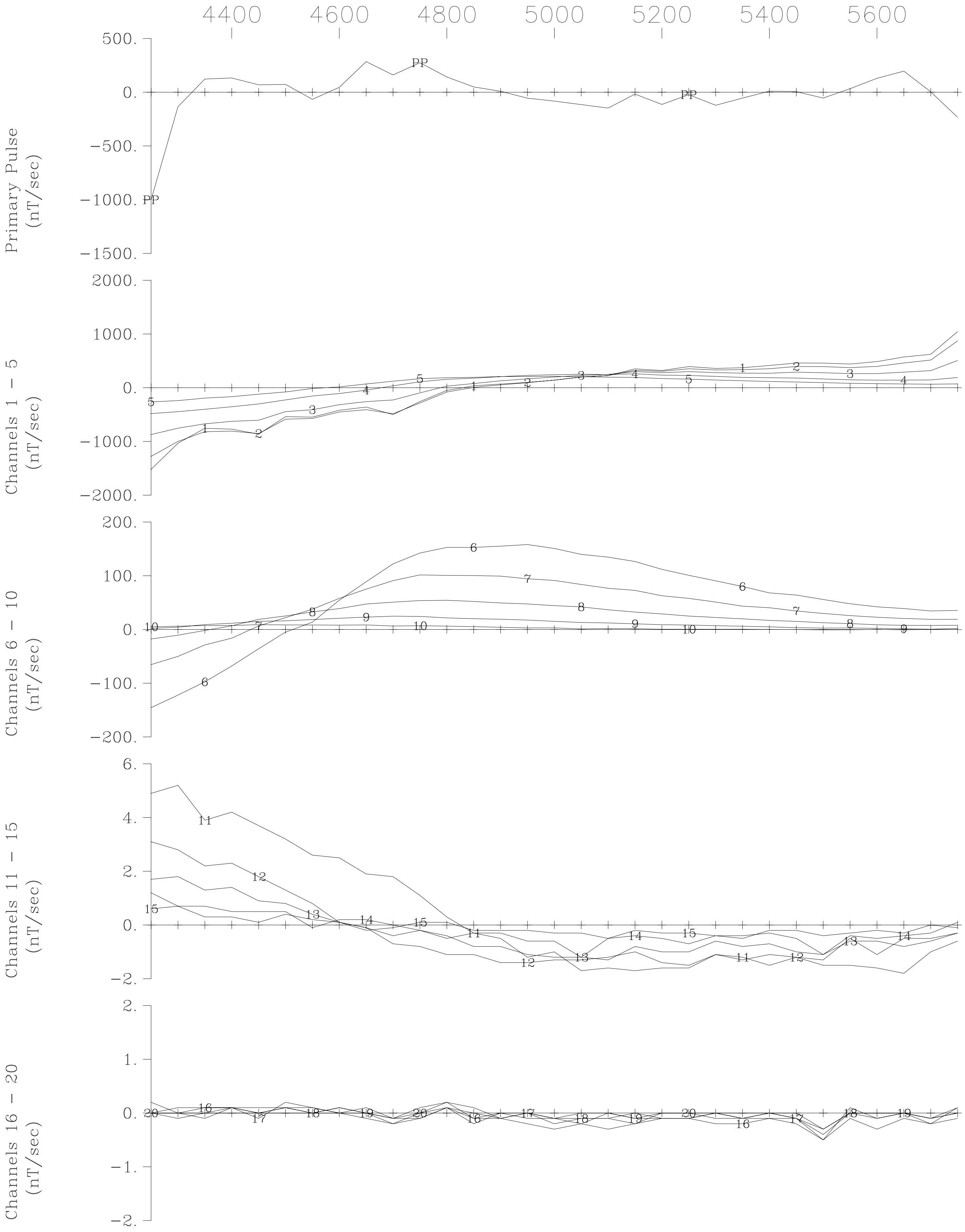
Crone Geophysics & Exploration Ltd.



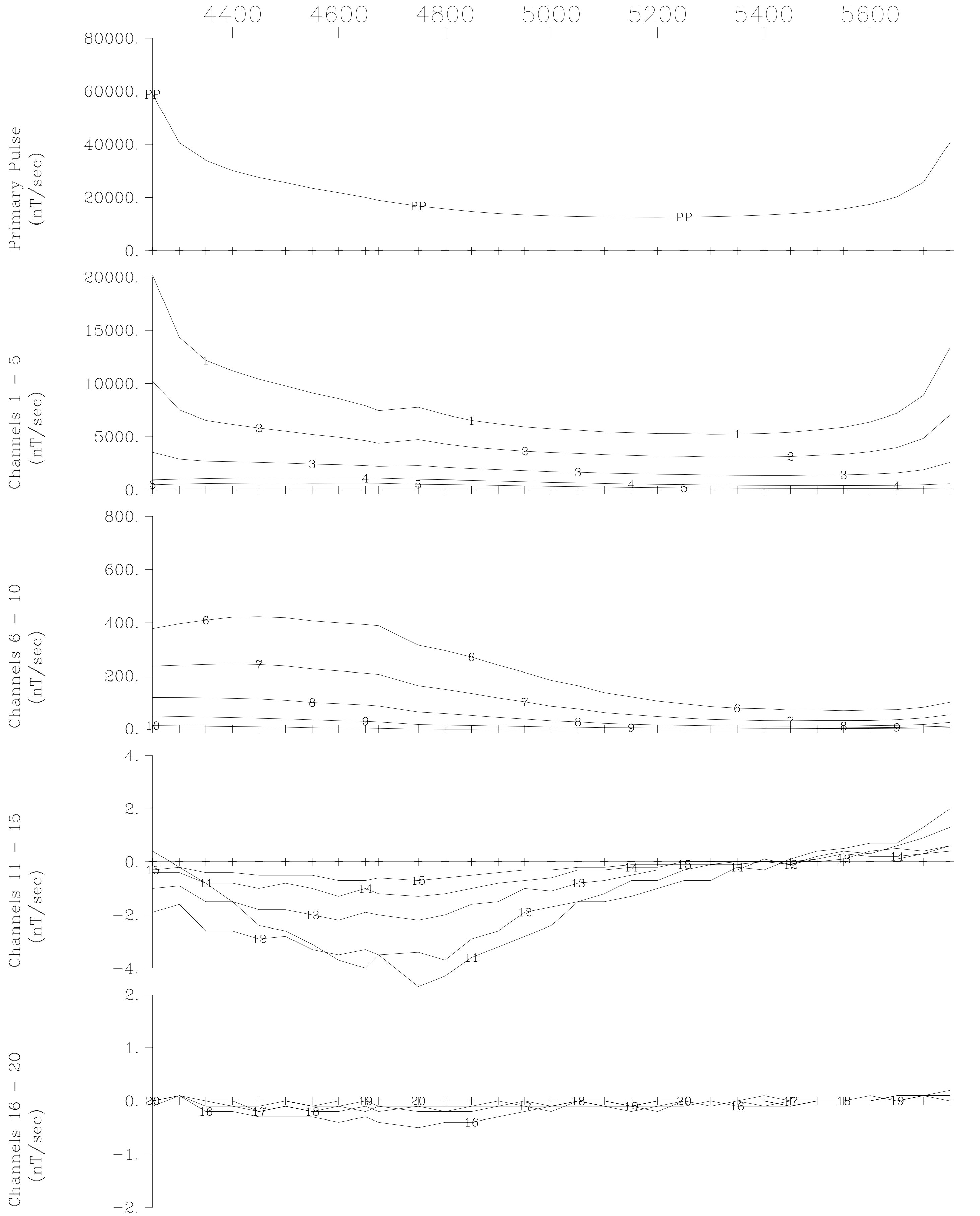
HTX Minerals Sunday Lake
Loop 2, Line 4770N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake

Loop 2, Line 4770N   X Component

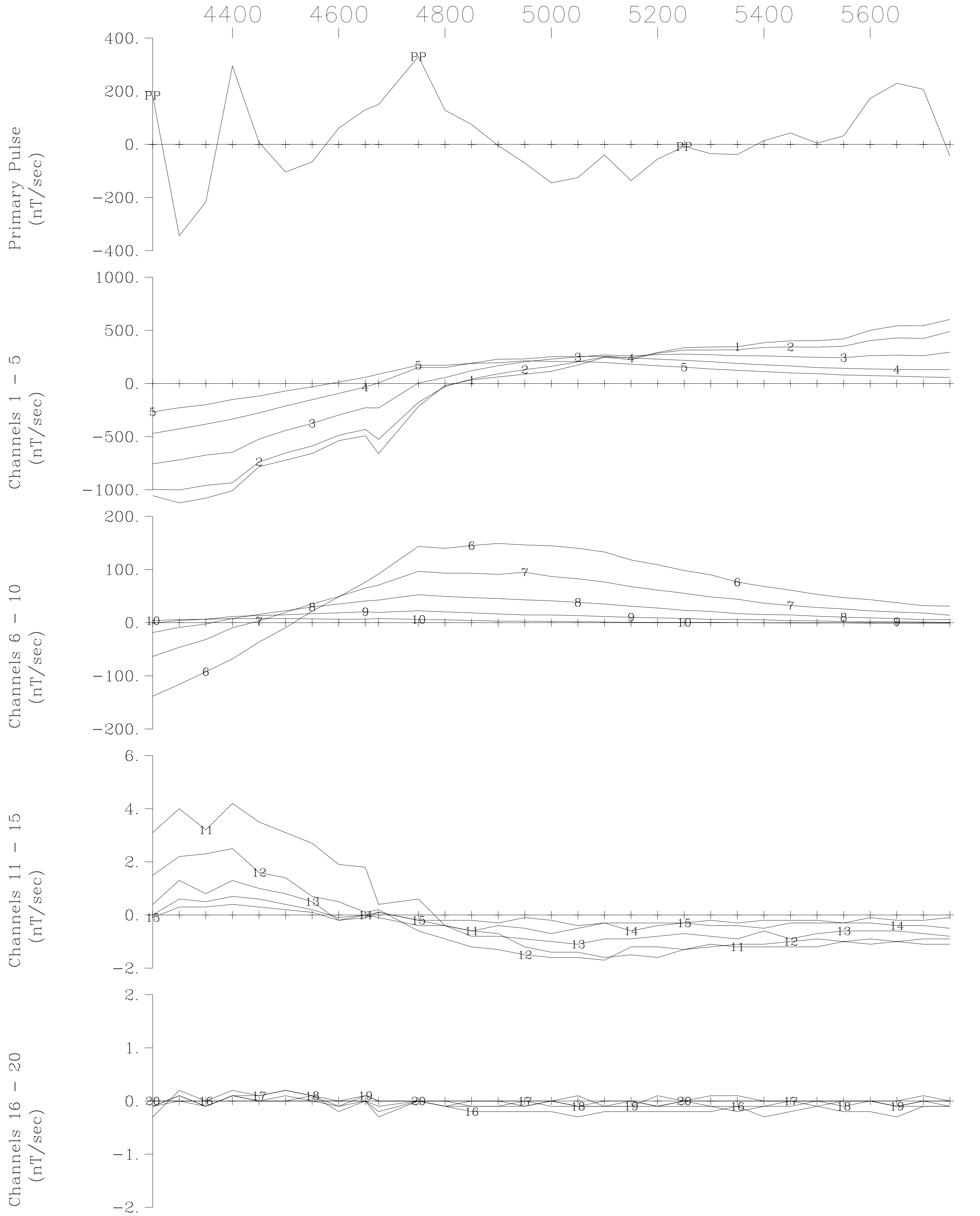
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4870N Z Component

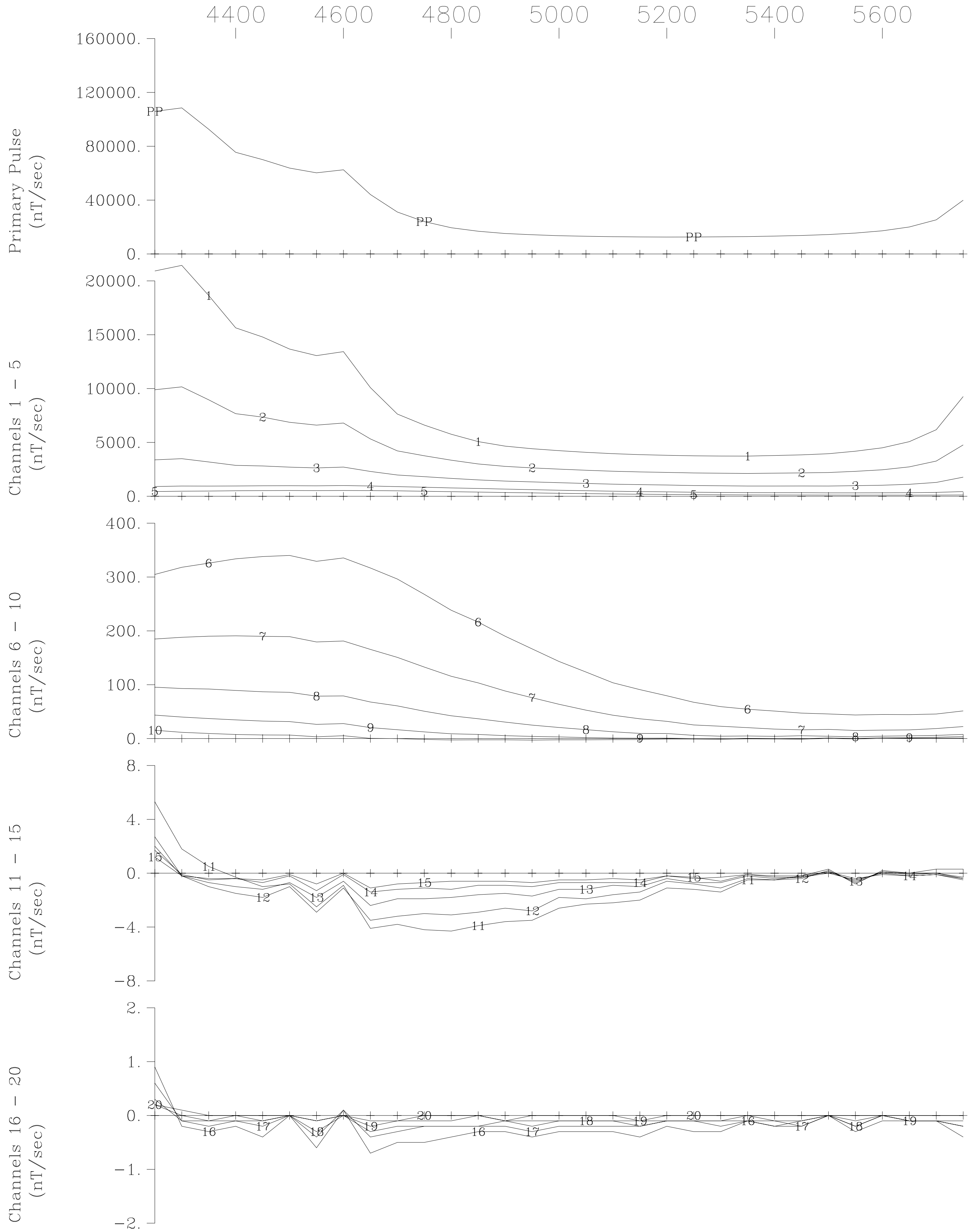
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4870N X Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4970N Z Component

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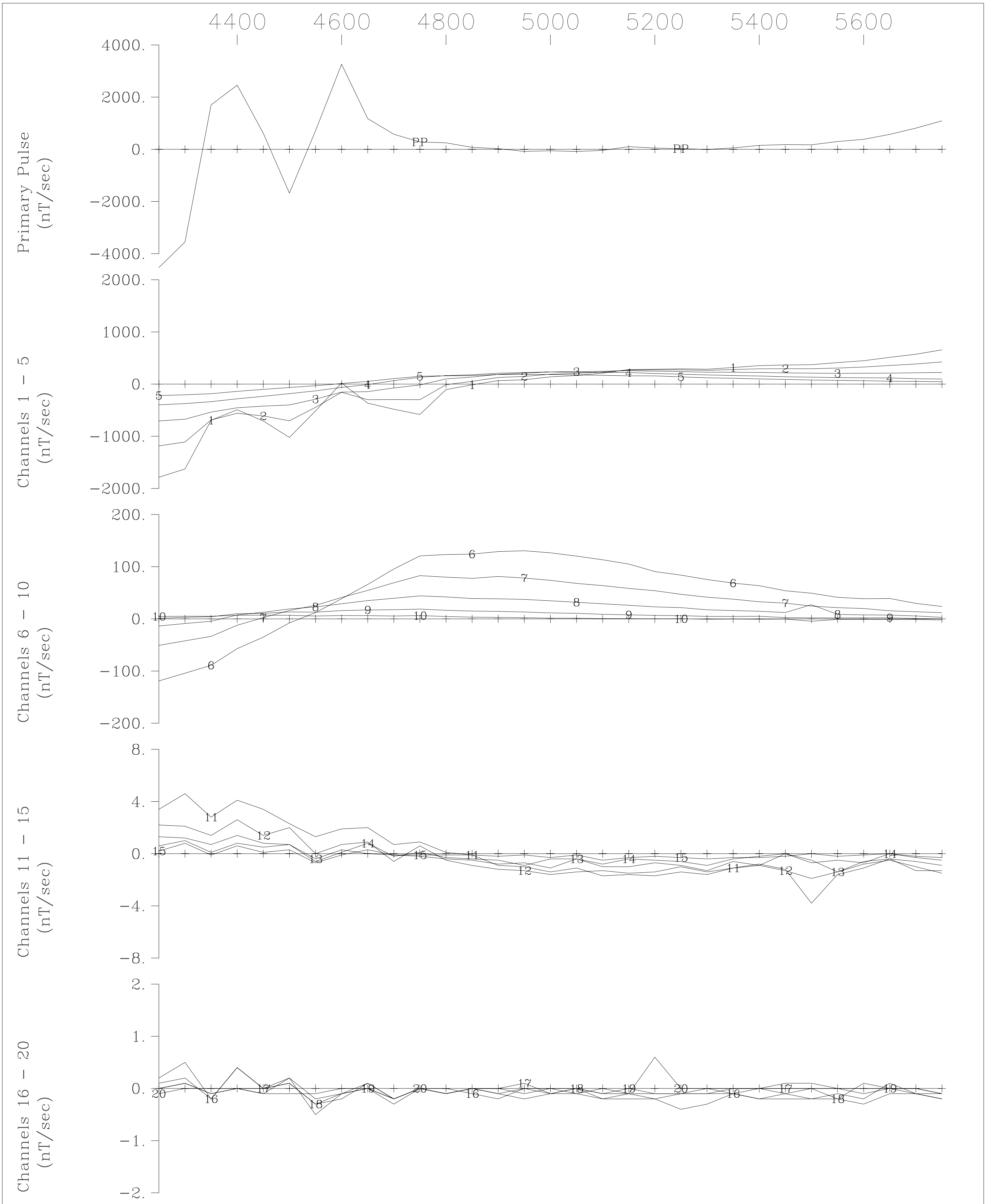

HTX Minerals Sunday Lake

Loop 2, Line 4970N X Component

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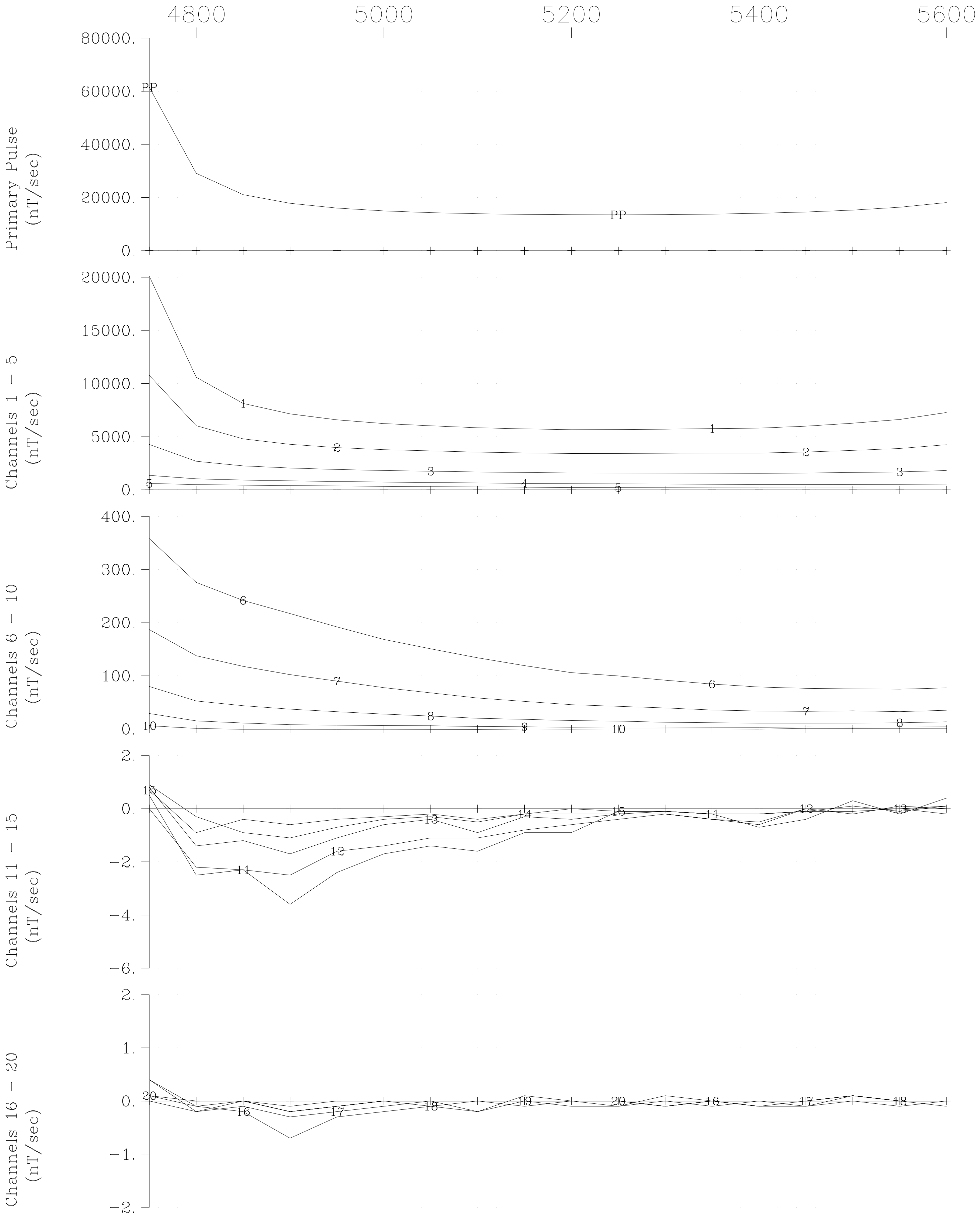
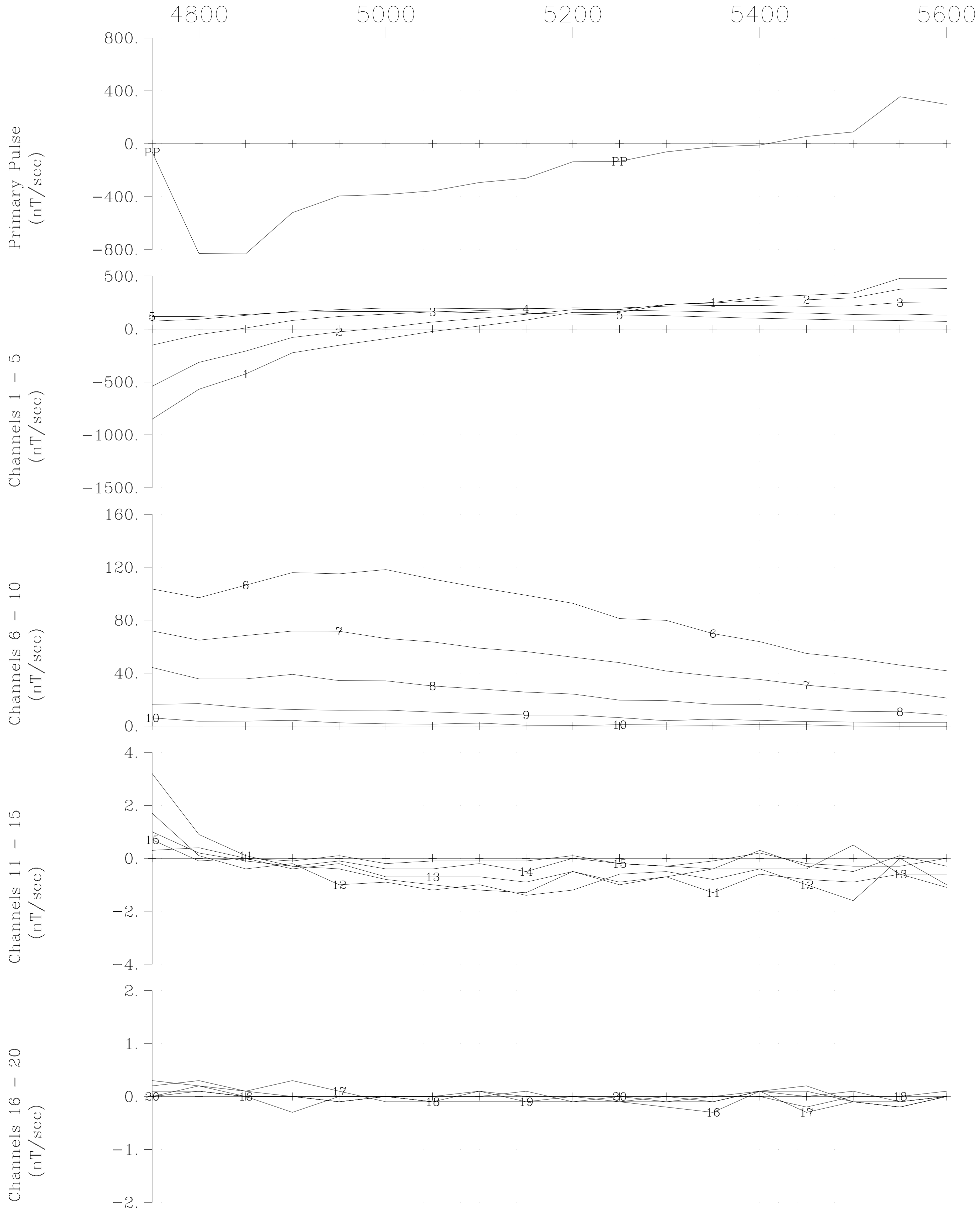


HTX Minerals   Sunday Lake

Loop 2, Line 5070N   Z Component

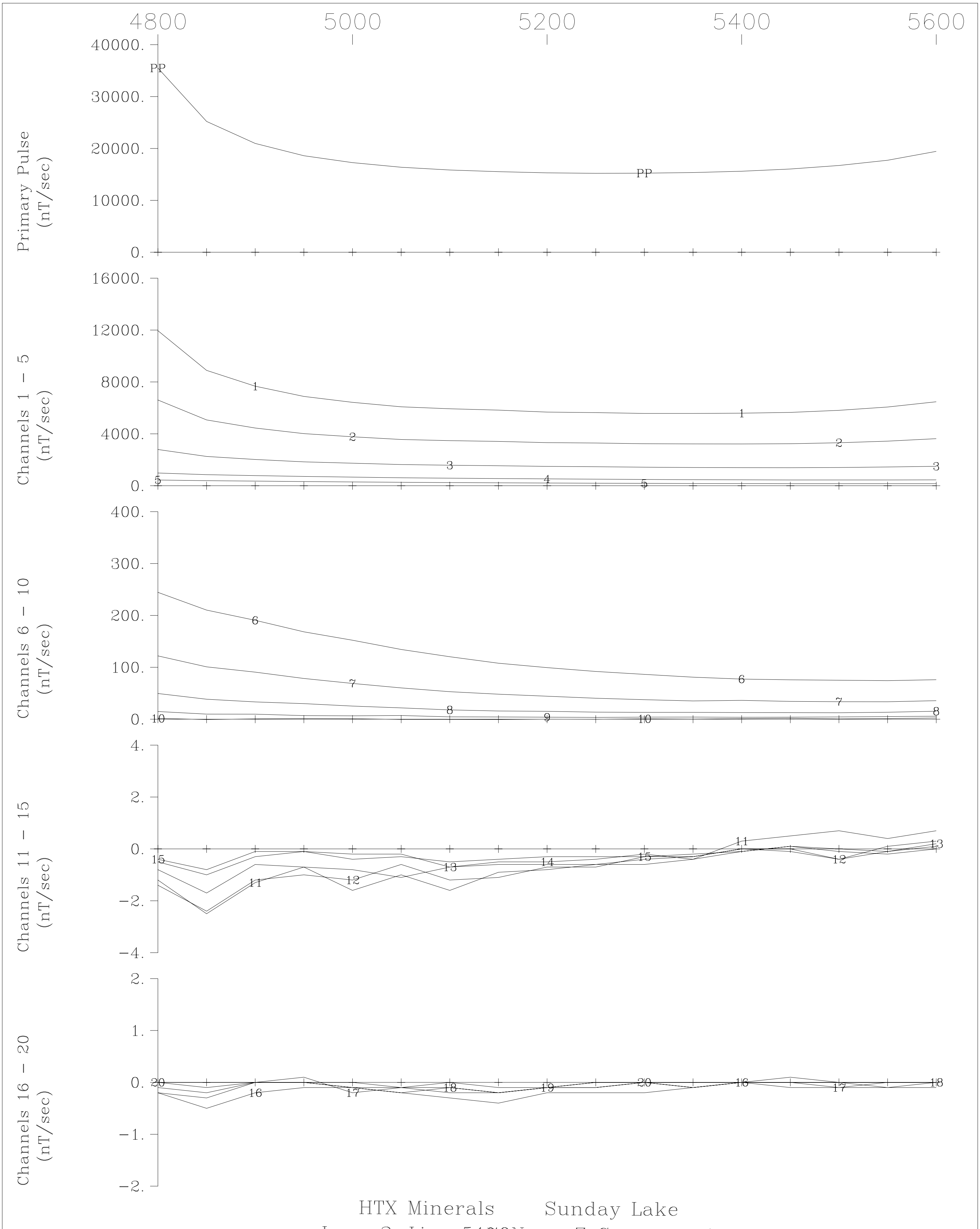
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 5070N X Component

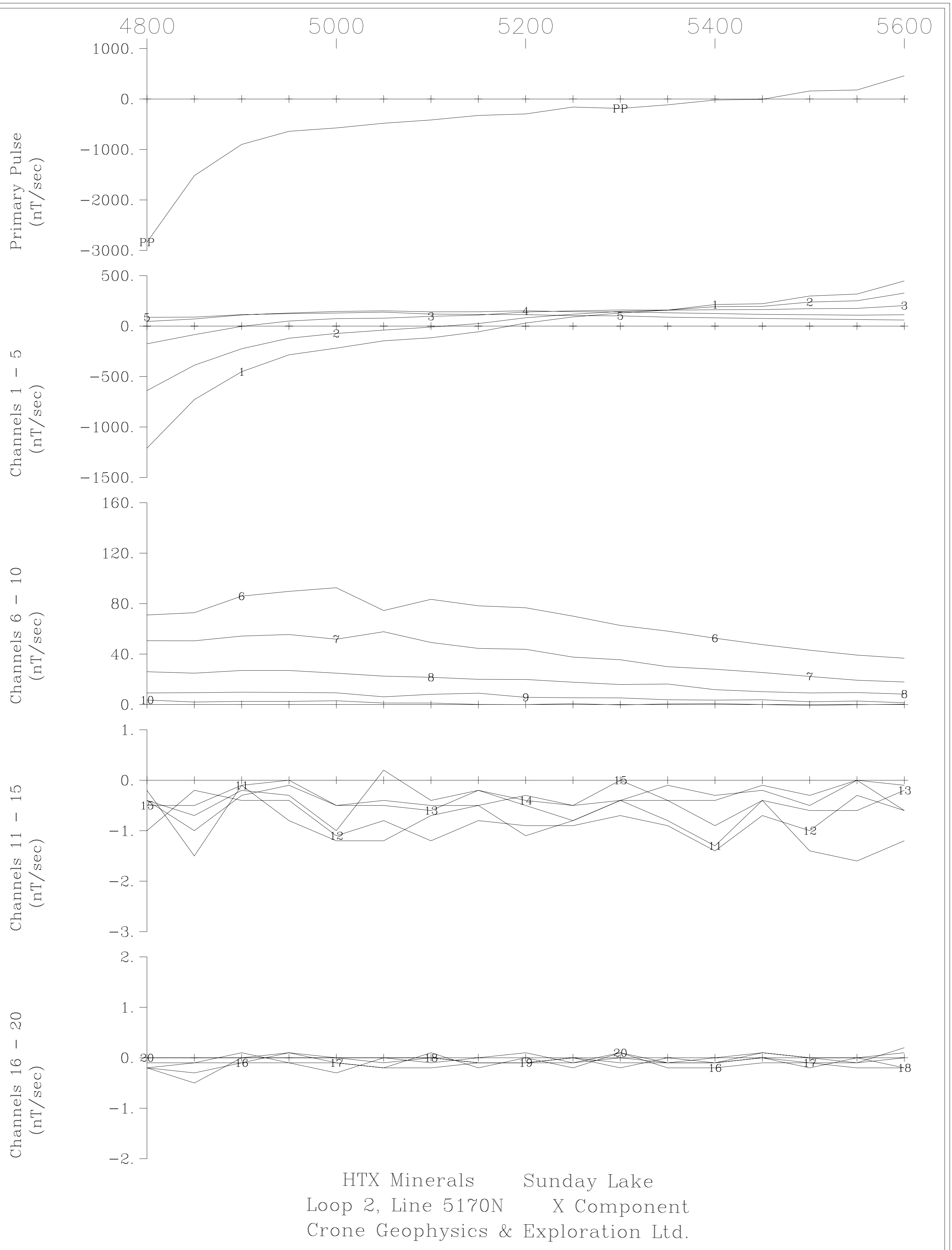
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 5170N Z Component

Crone Geophysics & Exploration Ltd.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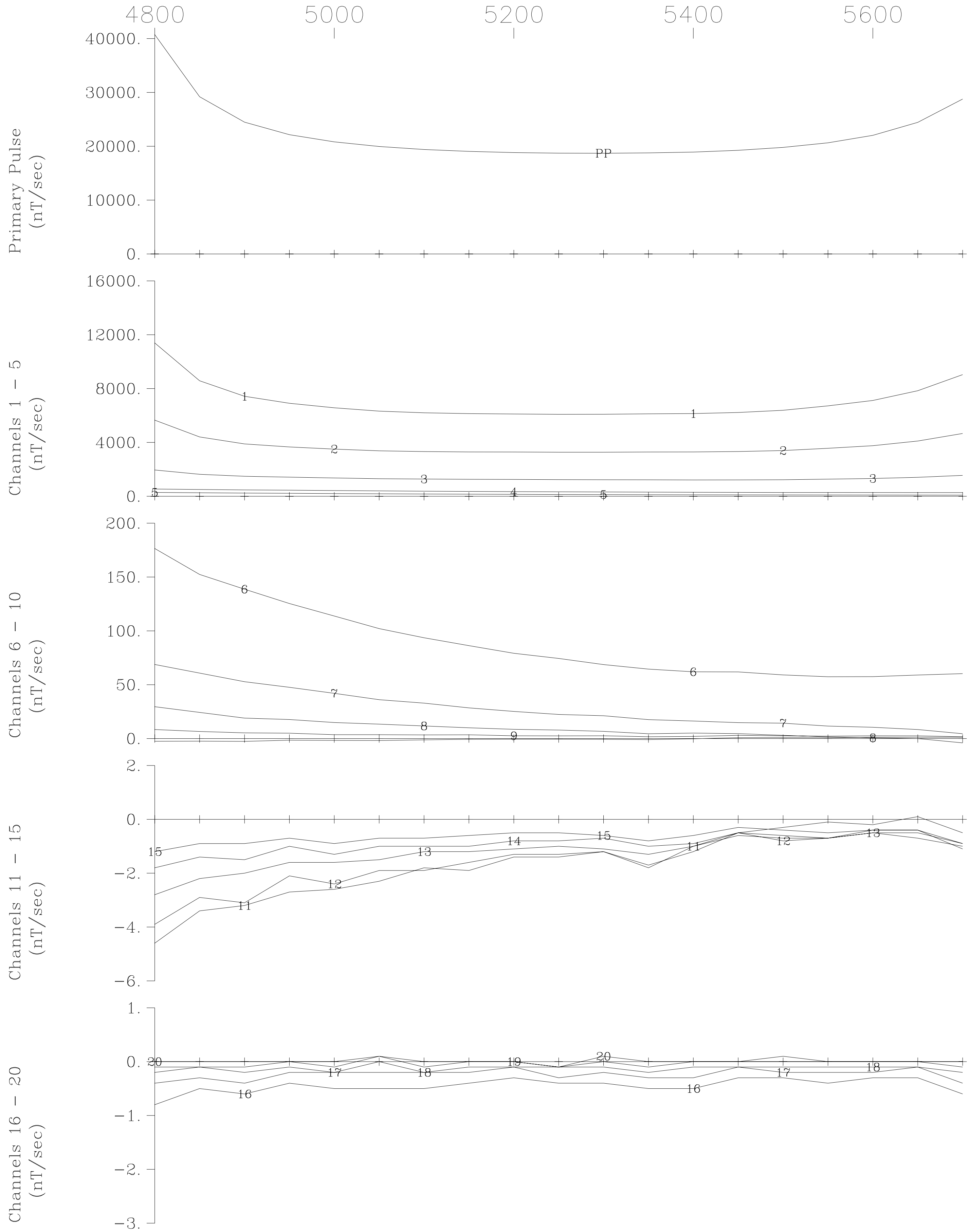
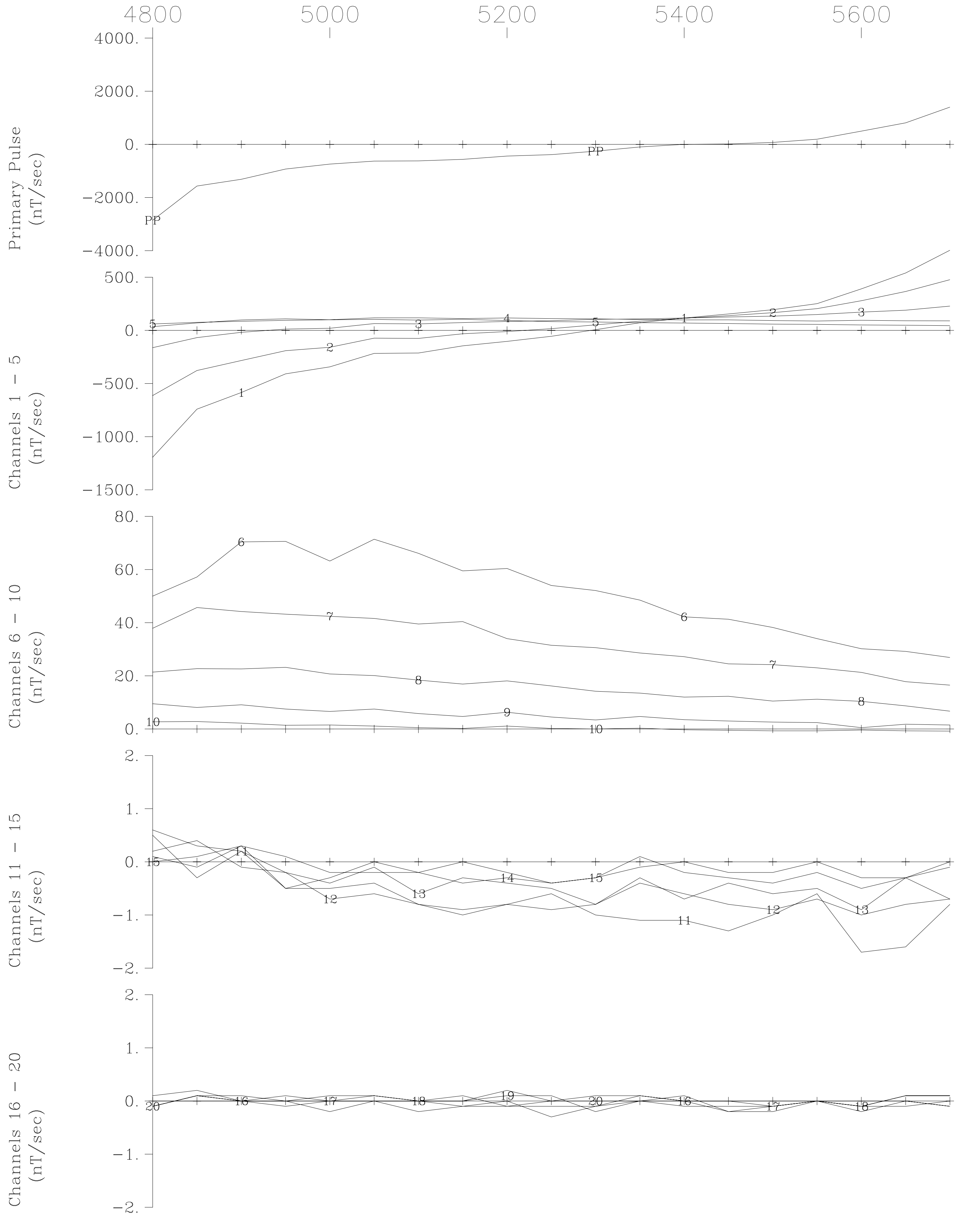
5000
5200
5400
5600
Primary Pulse (nT/sec)
1000.
0.
-1000.
-2000.
-3000.
PP
Channels 1 - 5 (nT/sec)
500.
0.
-500.
-1000.
-1500.
Channels 6 - 10 (nT/sec)
160.
120.
80.
40.
0.
Channels 11 - 15 (nT/sec)
1.
0.
-1.
-2.
-3.
Channels 16 - 20 (nT/sec)
2.
1.
0.
-1.
-2.
HTX Minerals Sunday Lake
Loop 2, Line 5170N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake

Loop 2, Line 5270N   Z Component

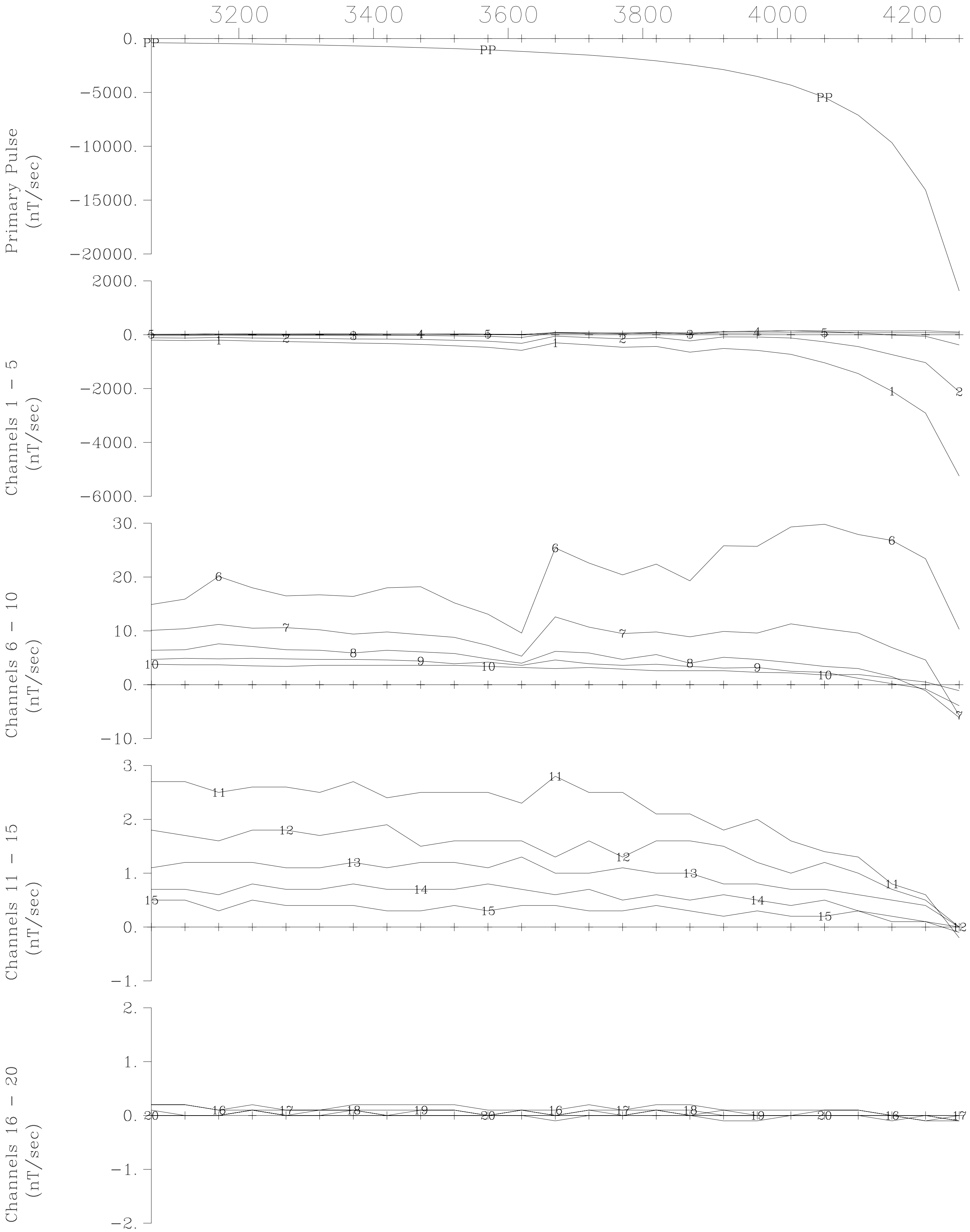
Crone Geophysics & Exploration Ltd.



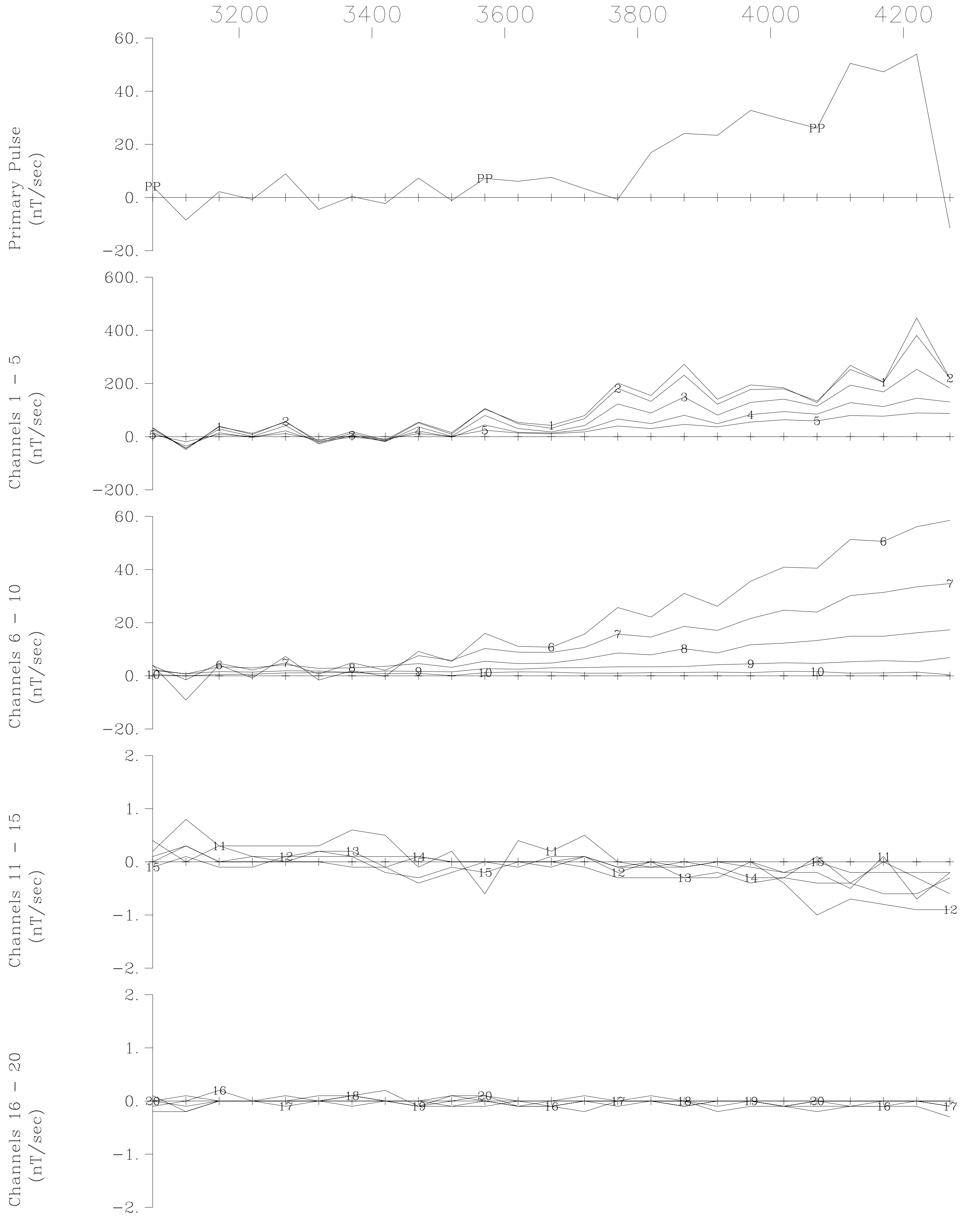
HTX Minerals Sunday Lake

Loop 2, Line 5270N X Component

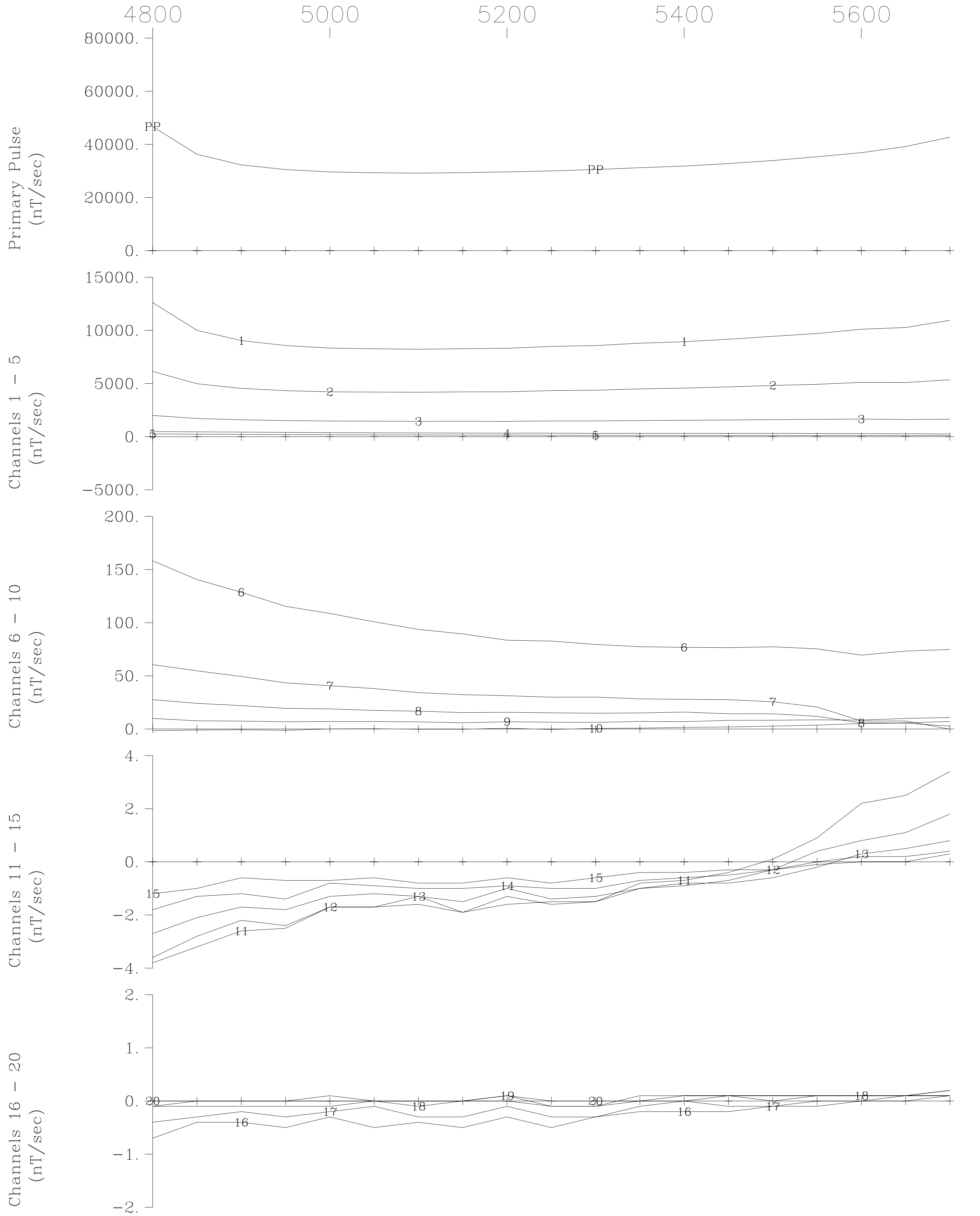
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5300E Z Component
Crone Geophysics & Exploration Ltd.



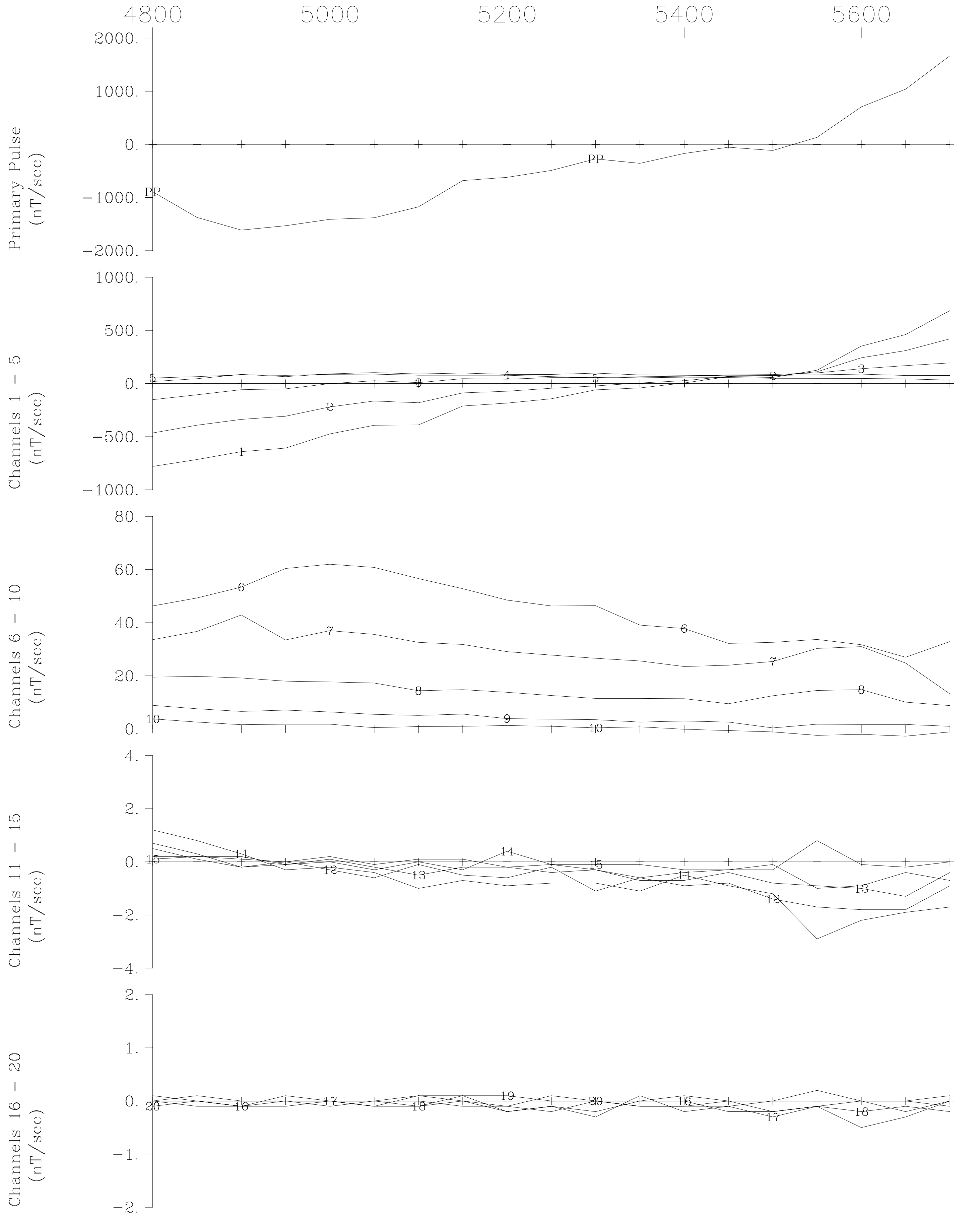
HTX Minerals Sunday Lake
Loop 2, Line 5300E X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 5370N Z Component

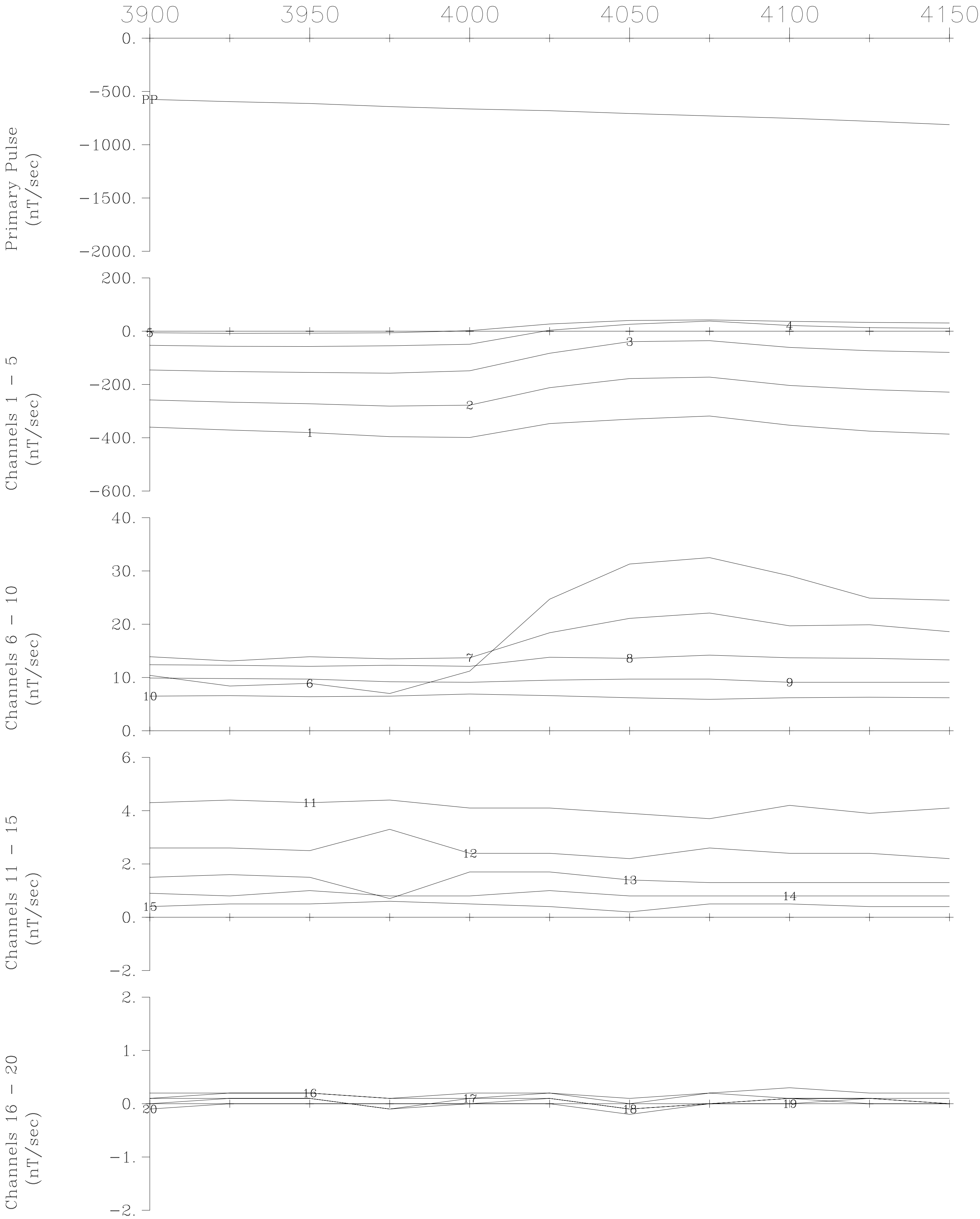
Crone Geophysics & Exploration Ltd.



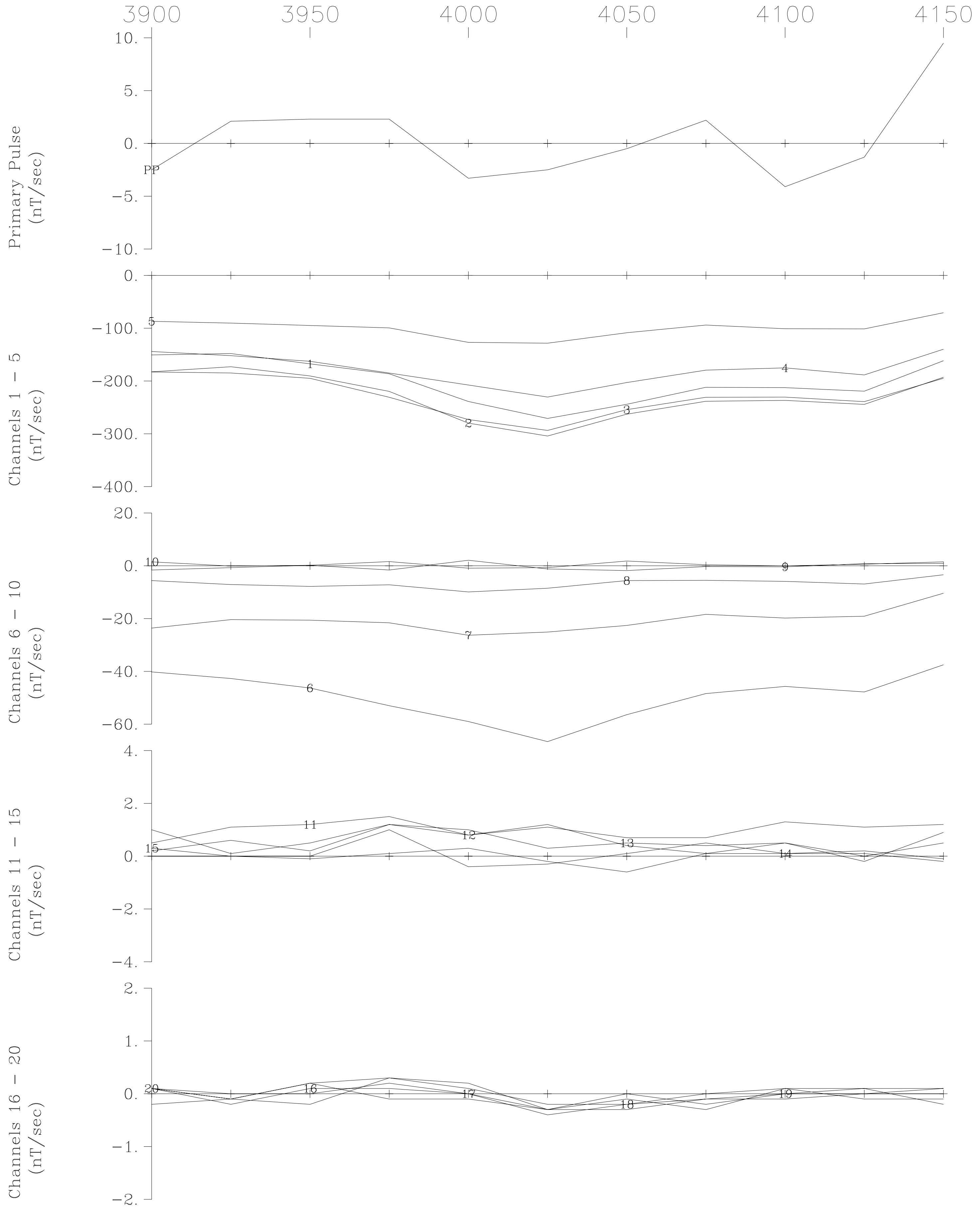
HTX Minerals Sunday Lake

Loop 2, Line 5370N X Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5970N Z Component
Crone Geophysics & Exploration Ltd.



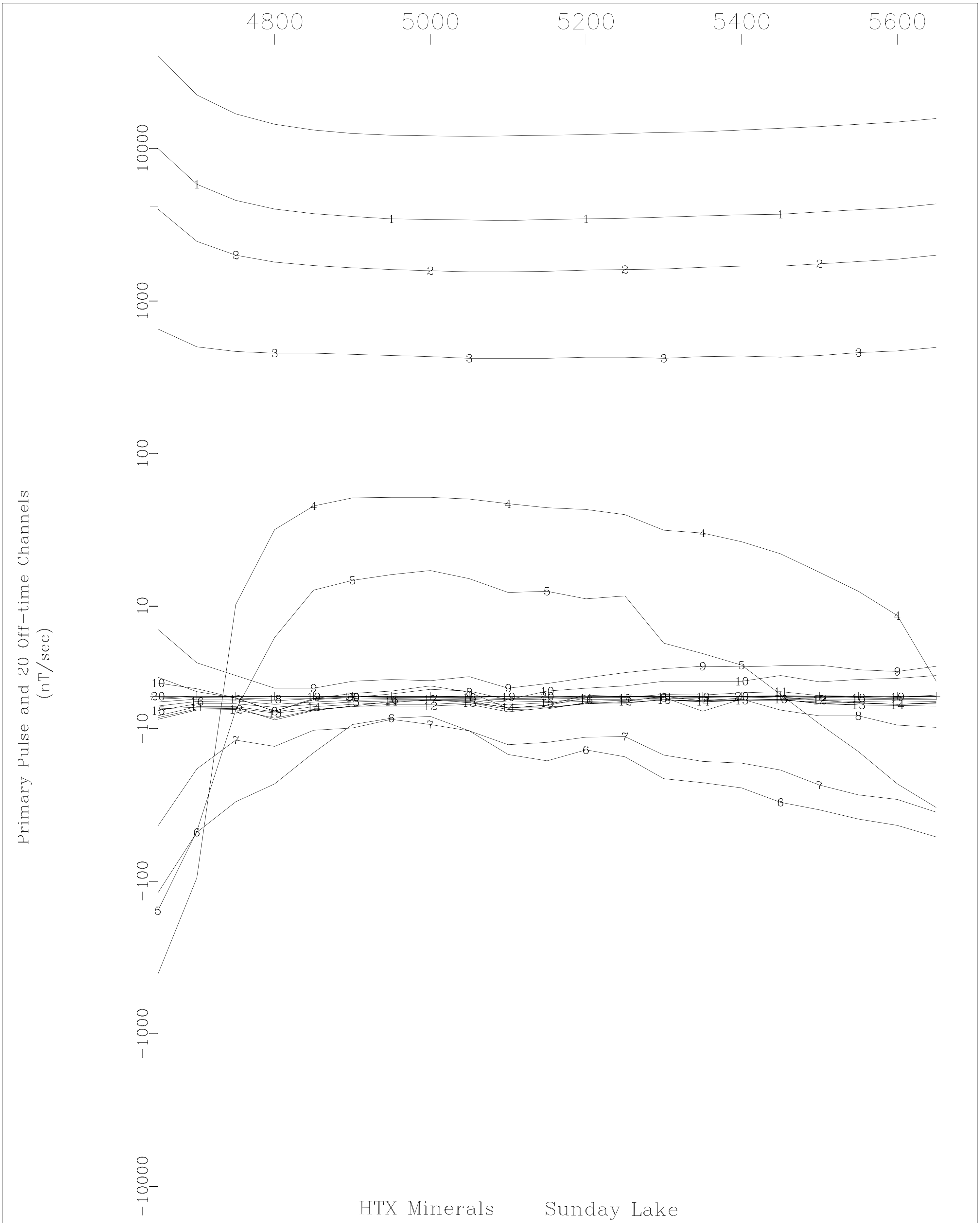
HTX Minerals Sunday Lake

Loop 2, Line 5970N X Component

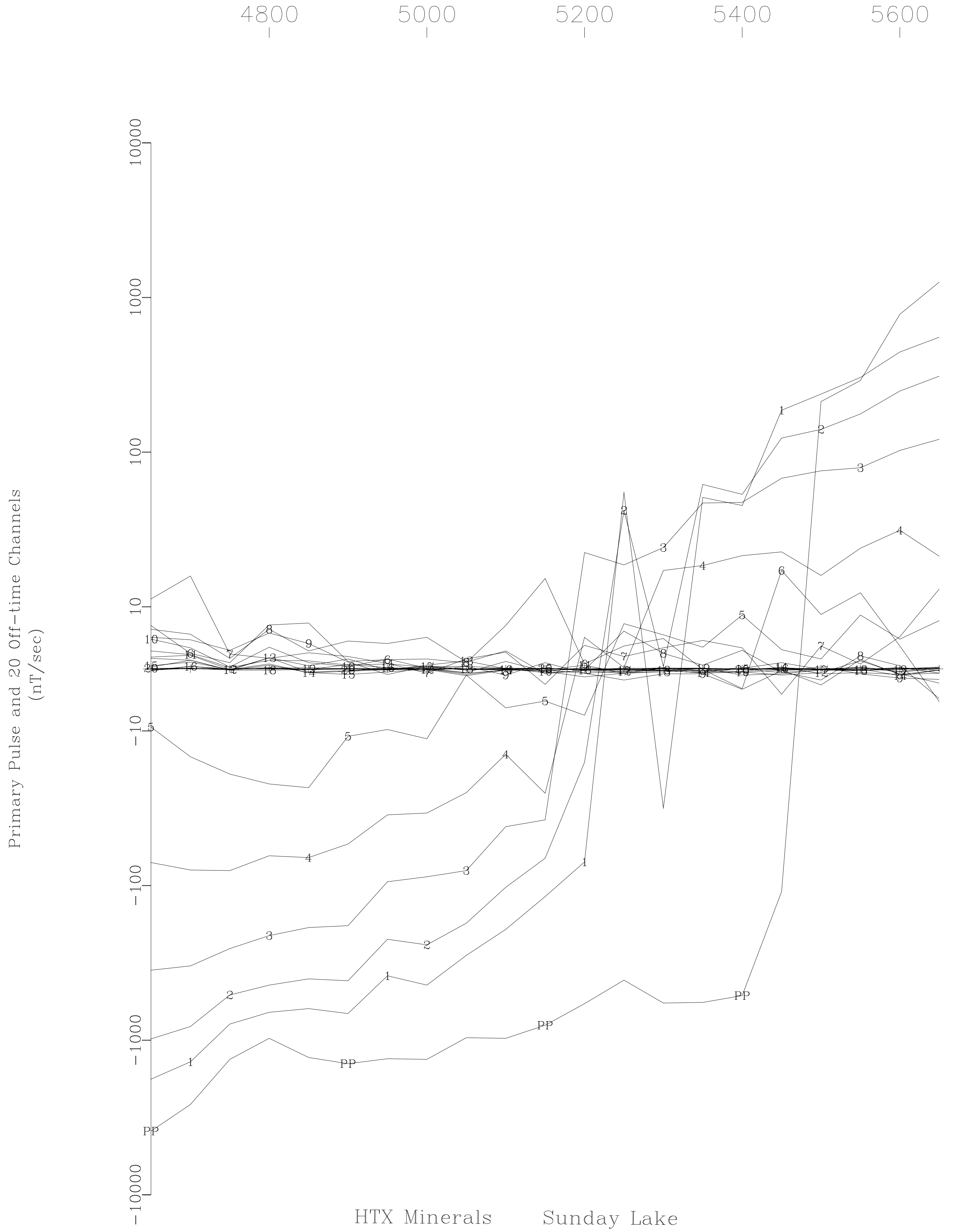
Crone Geophysics & Exploration Ltd.

APPENDIX III

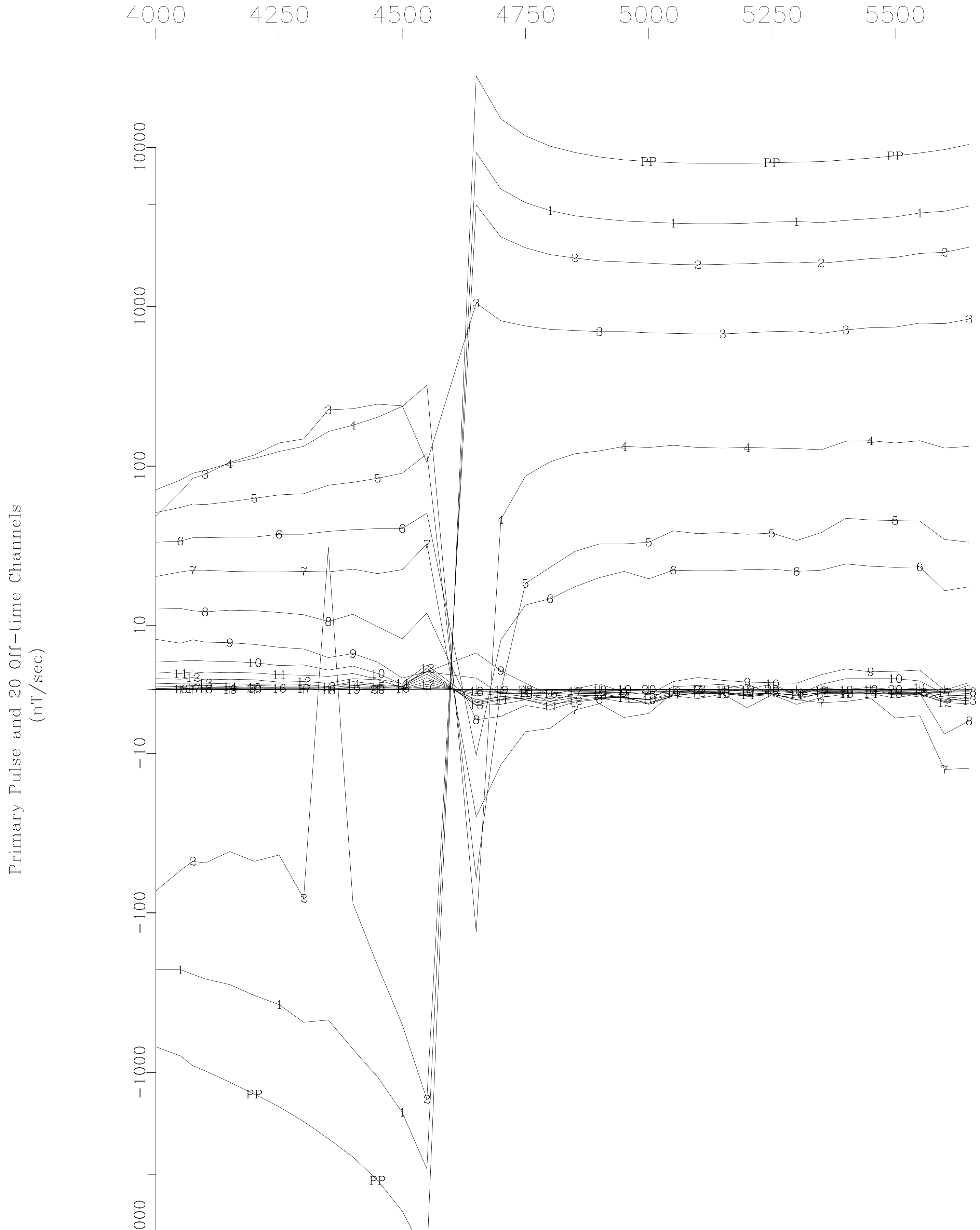
PULSE EM DATA PROFILES (LIN-LOG SCALE)



HTX Minerals Sunday Lake
Loop 1, Line 5470N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 5470N X Component
Crone Geophysics & Exploration Ltd.



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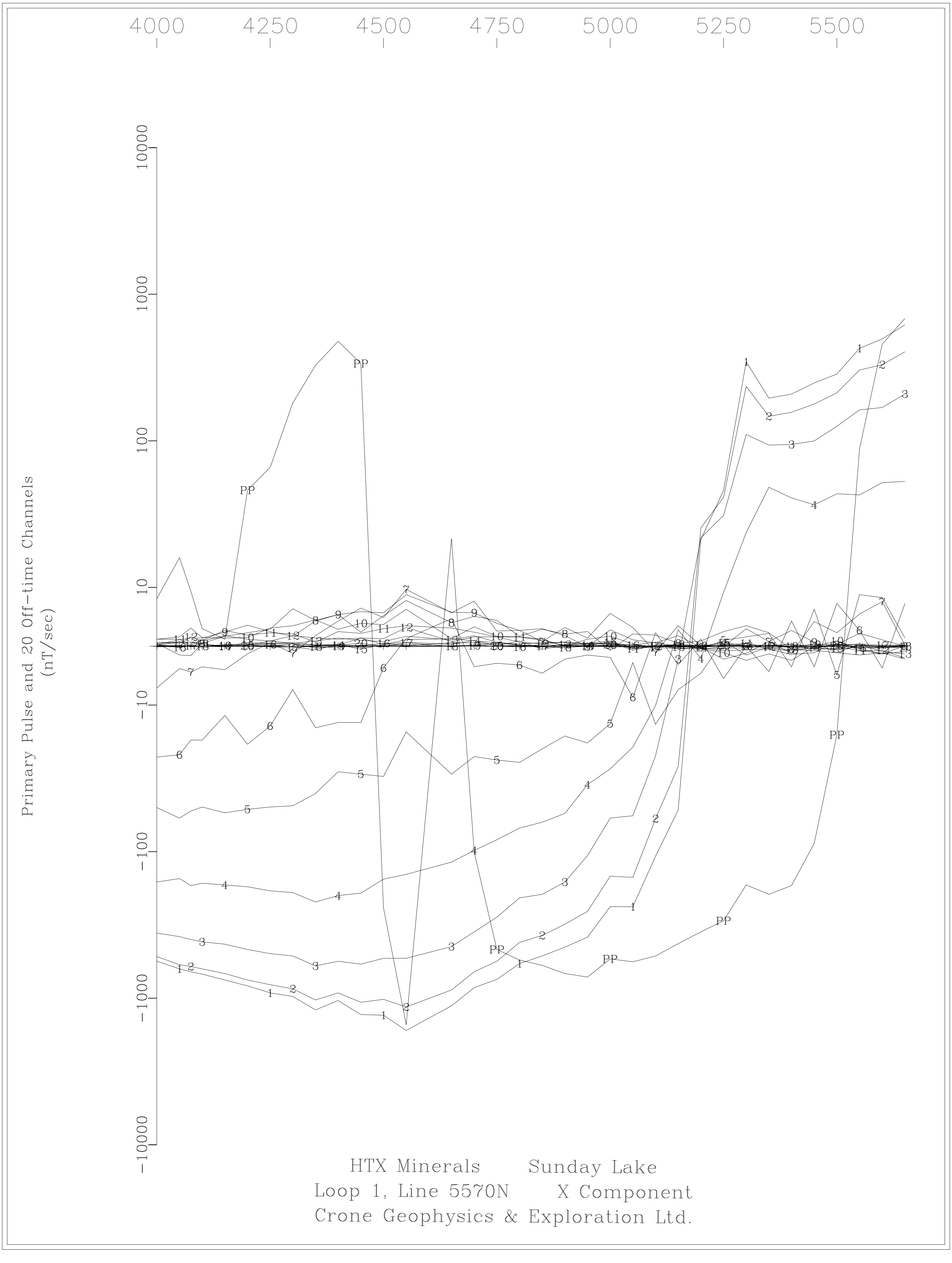
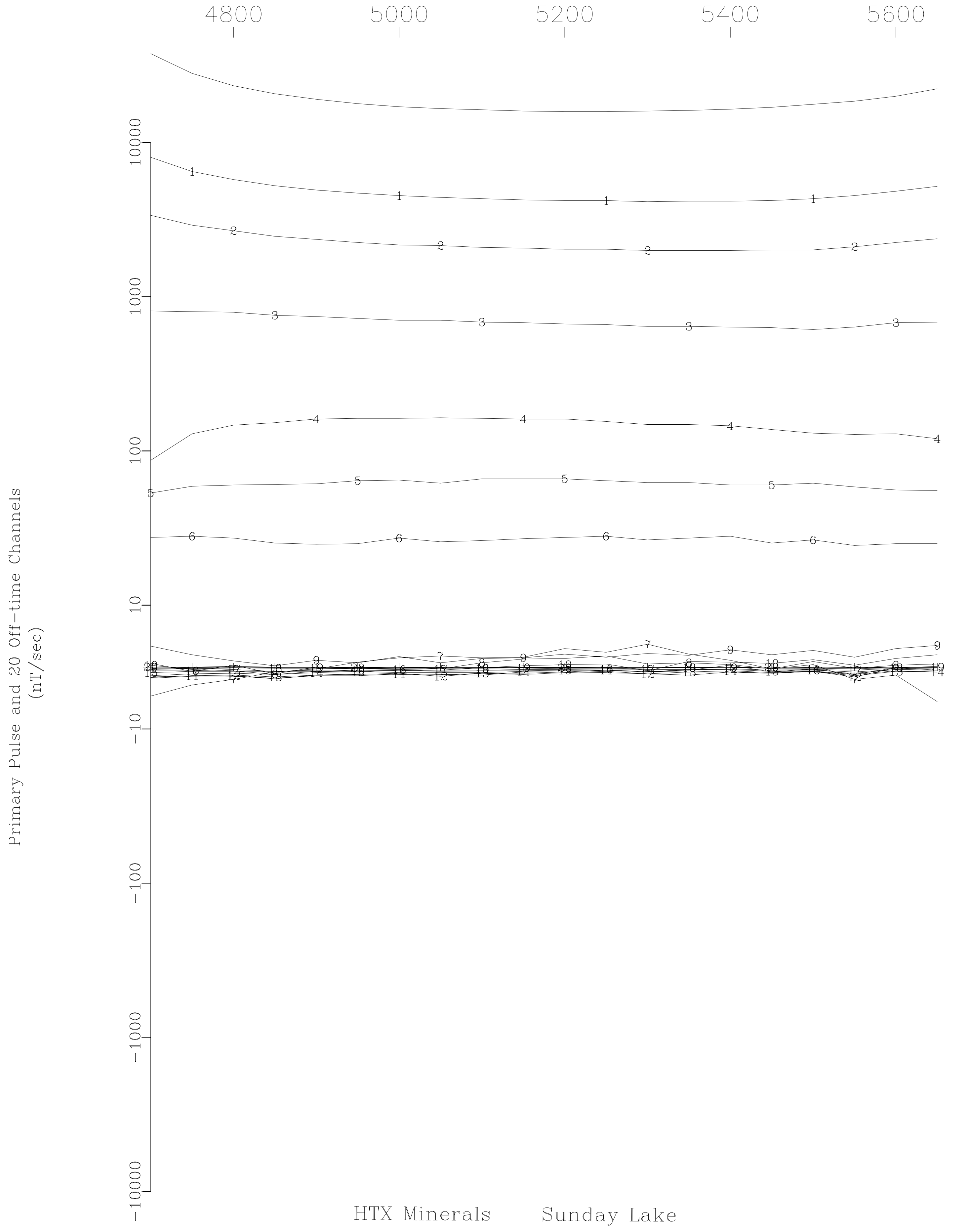
Crone Geophysics & Exploration Ltd.


4000
4250
4500
4750
5000
5250
5500
10000
1000
100
10
−10
−100
−1000
−10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 1, Line 5570N X Component
Crone Geophysics & Exploration Ltd.



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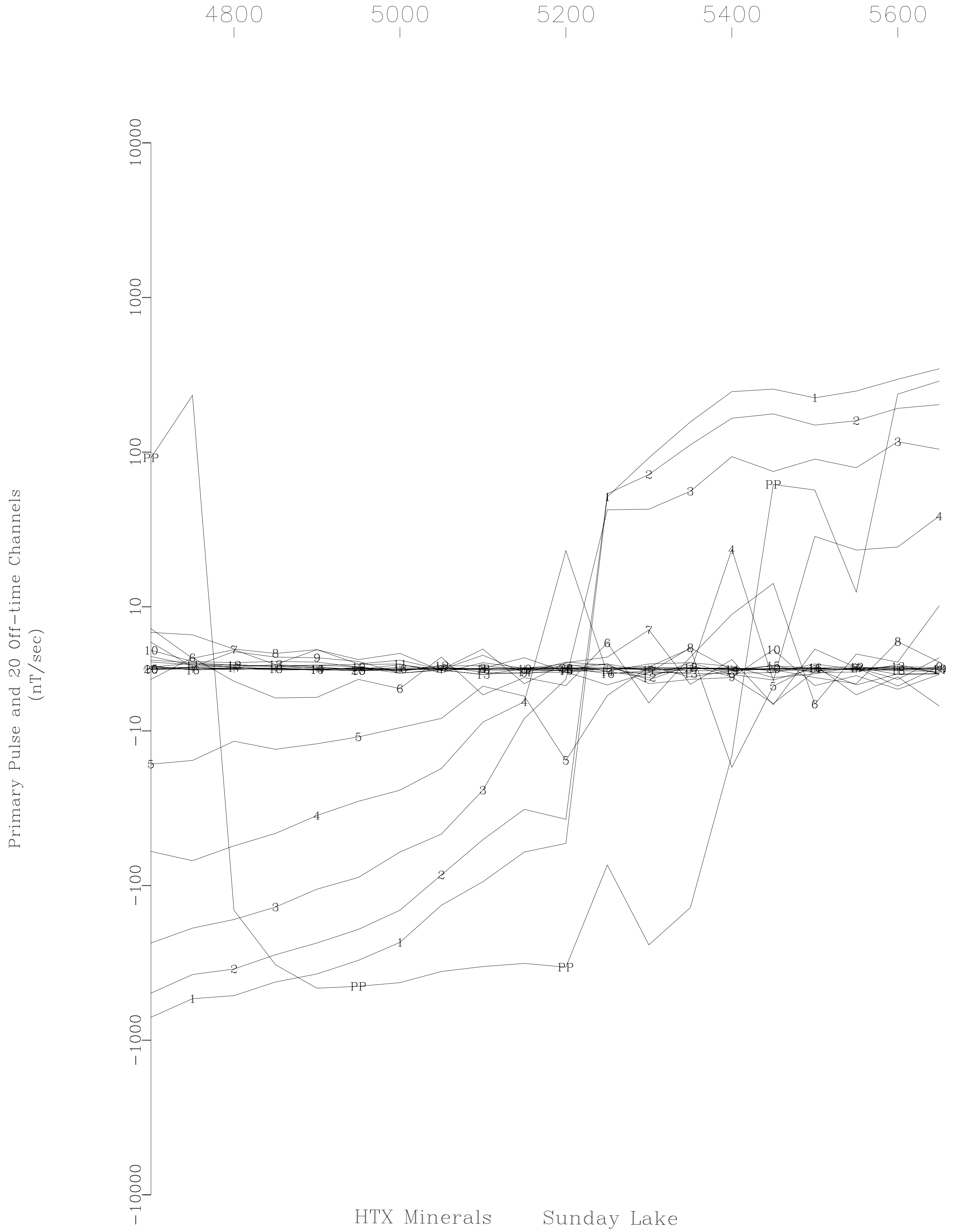
Loop 1, Line 5670N   Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
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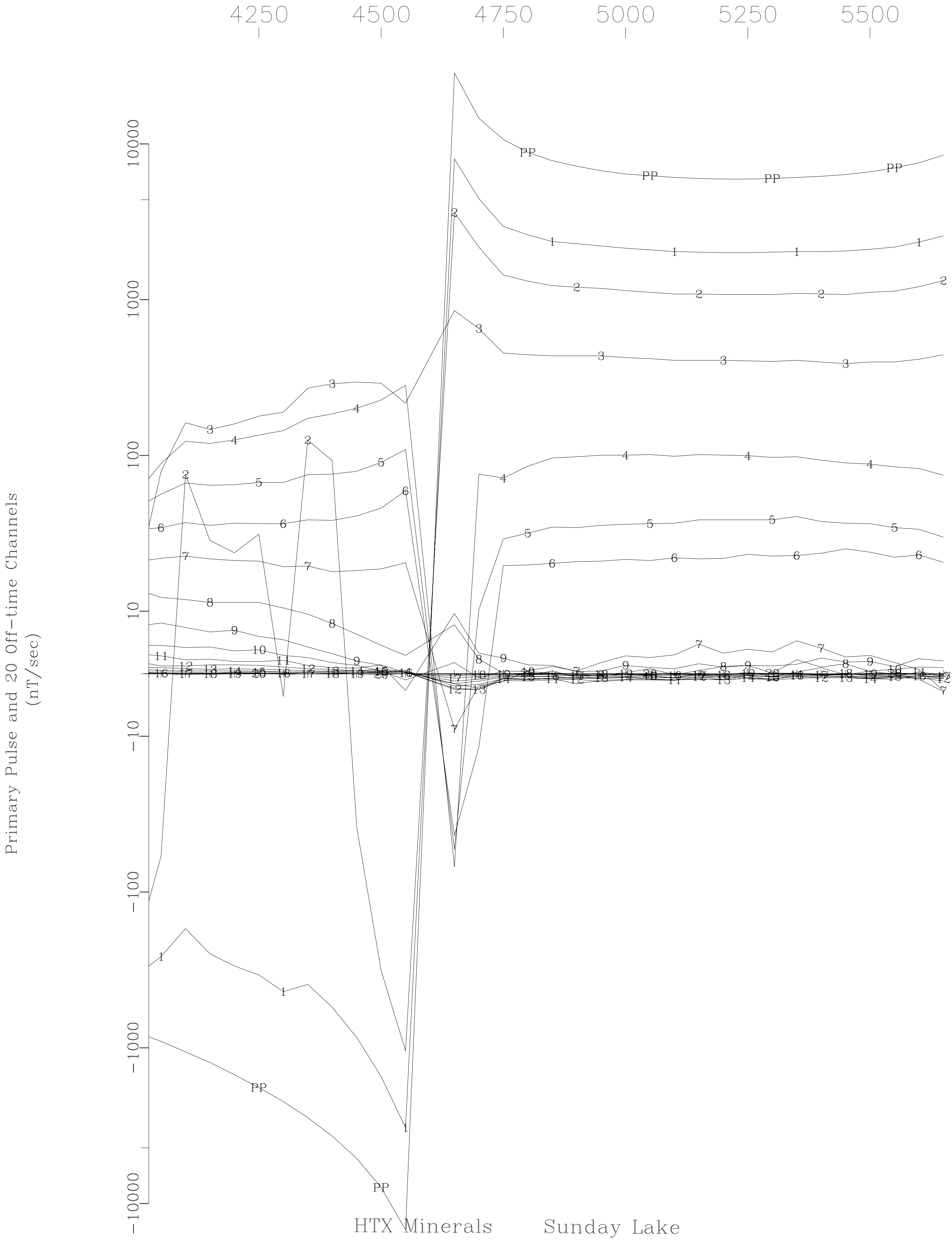
Crone Geophysics & Exploration Ltd.



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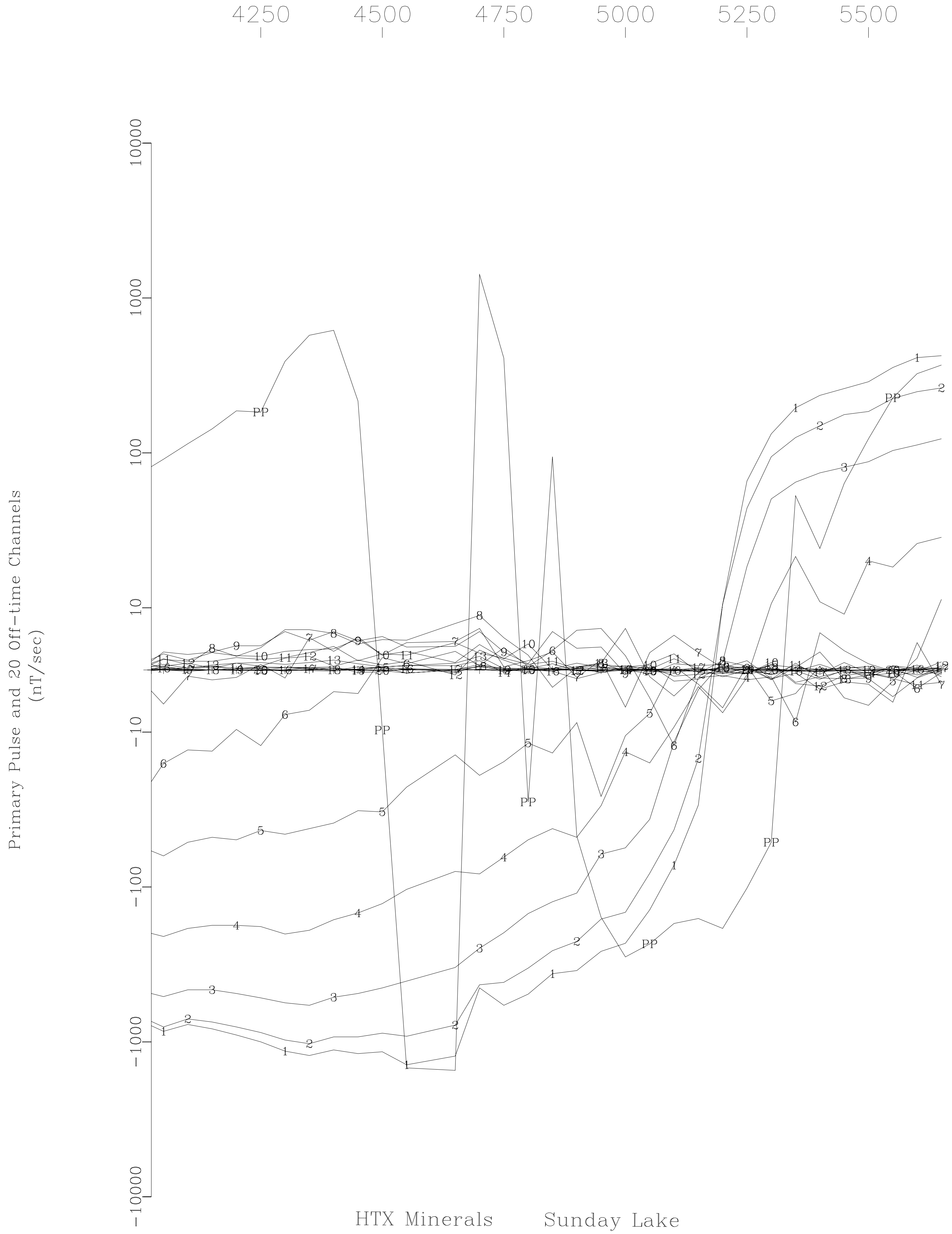
Crone Geophysics & Exploration Ltd.



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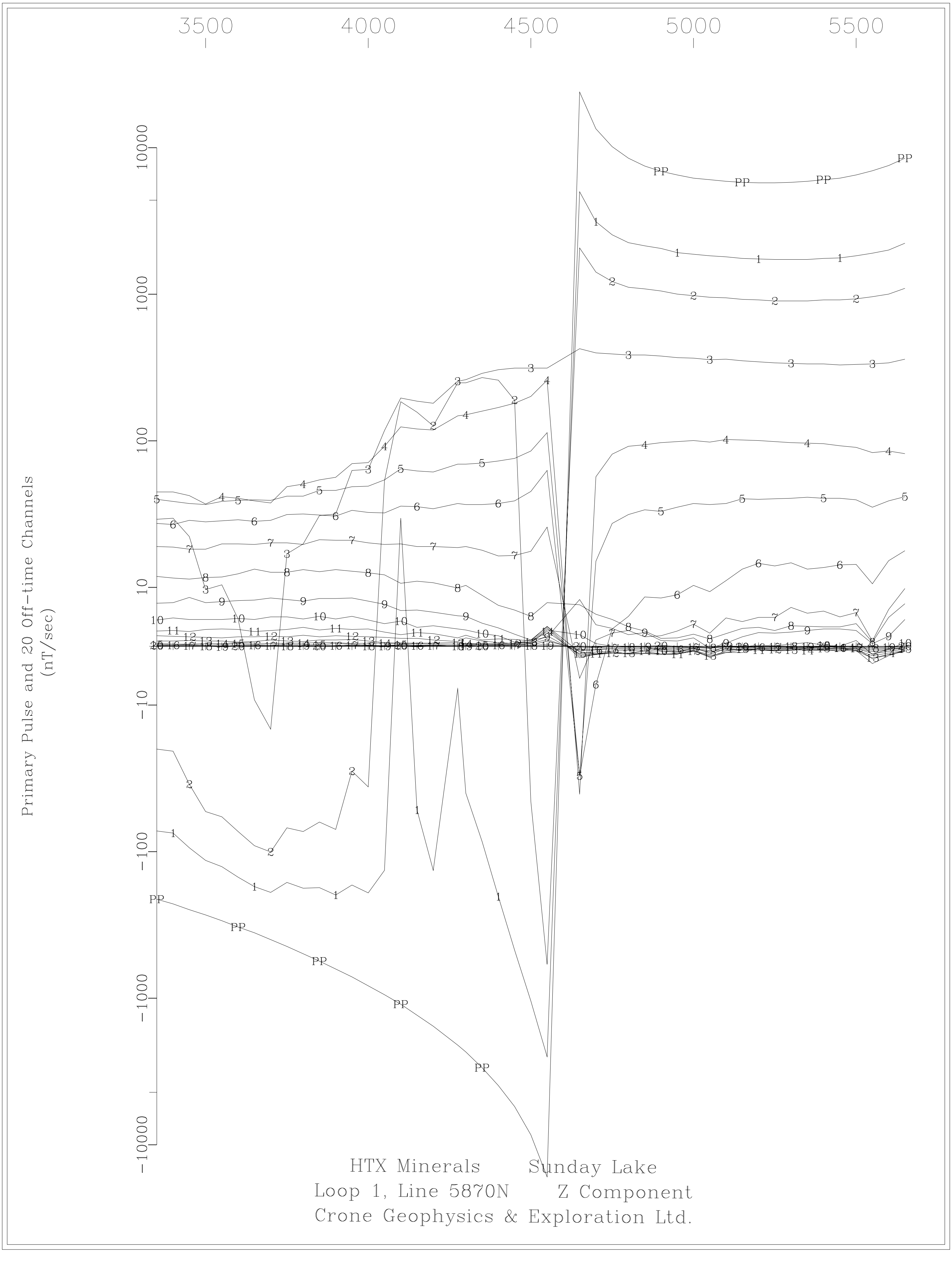

3500
4000
4500
5000
5500
10000
1000
100
10
-10
-100
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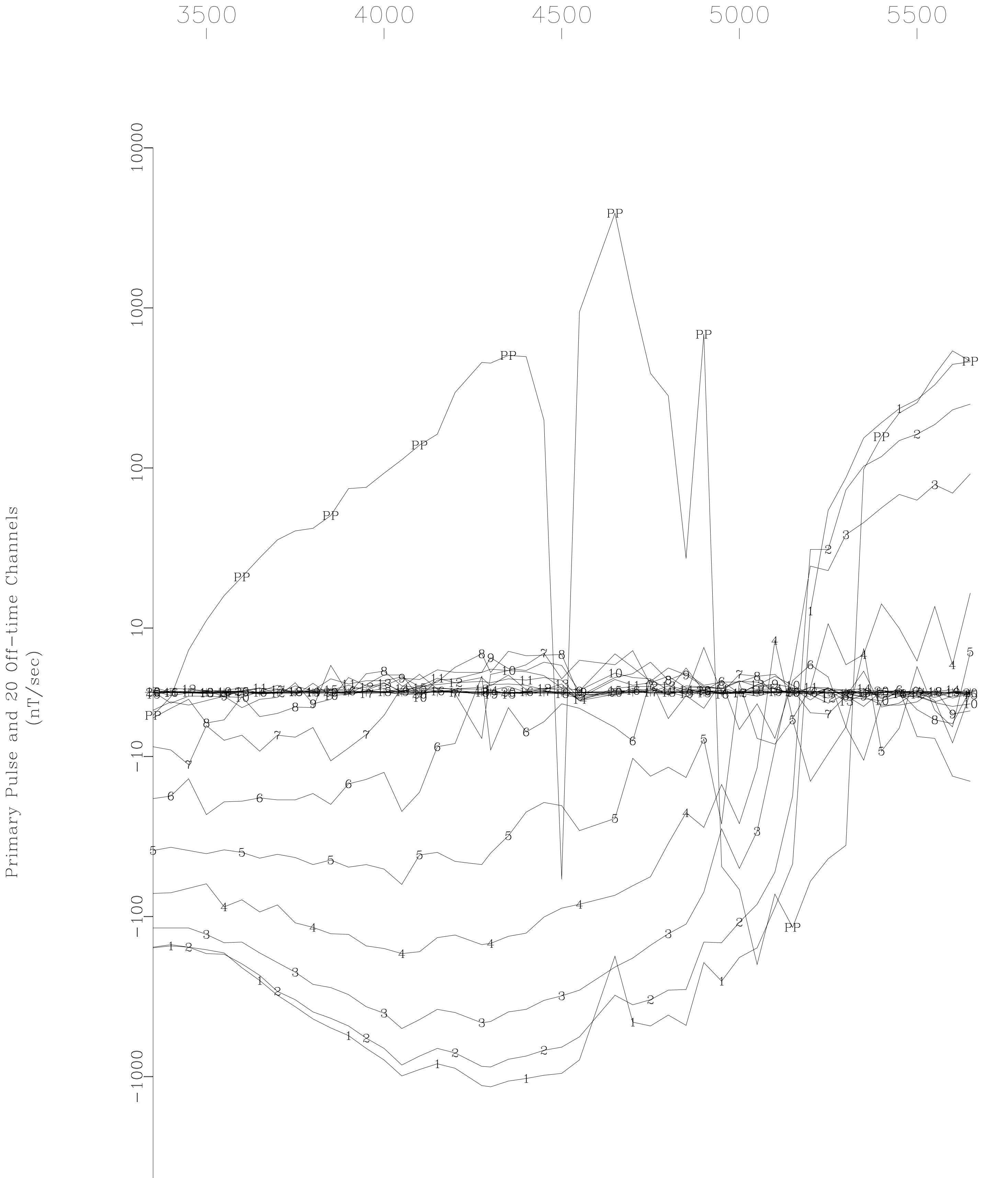
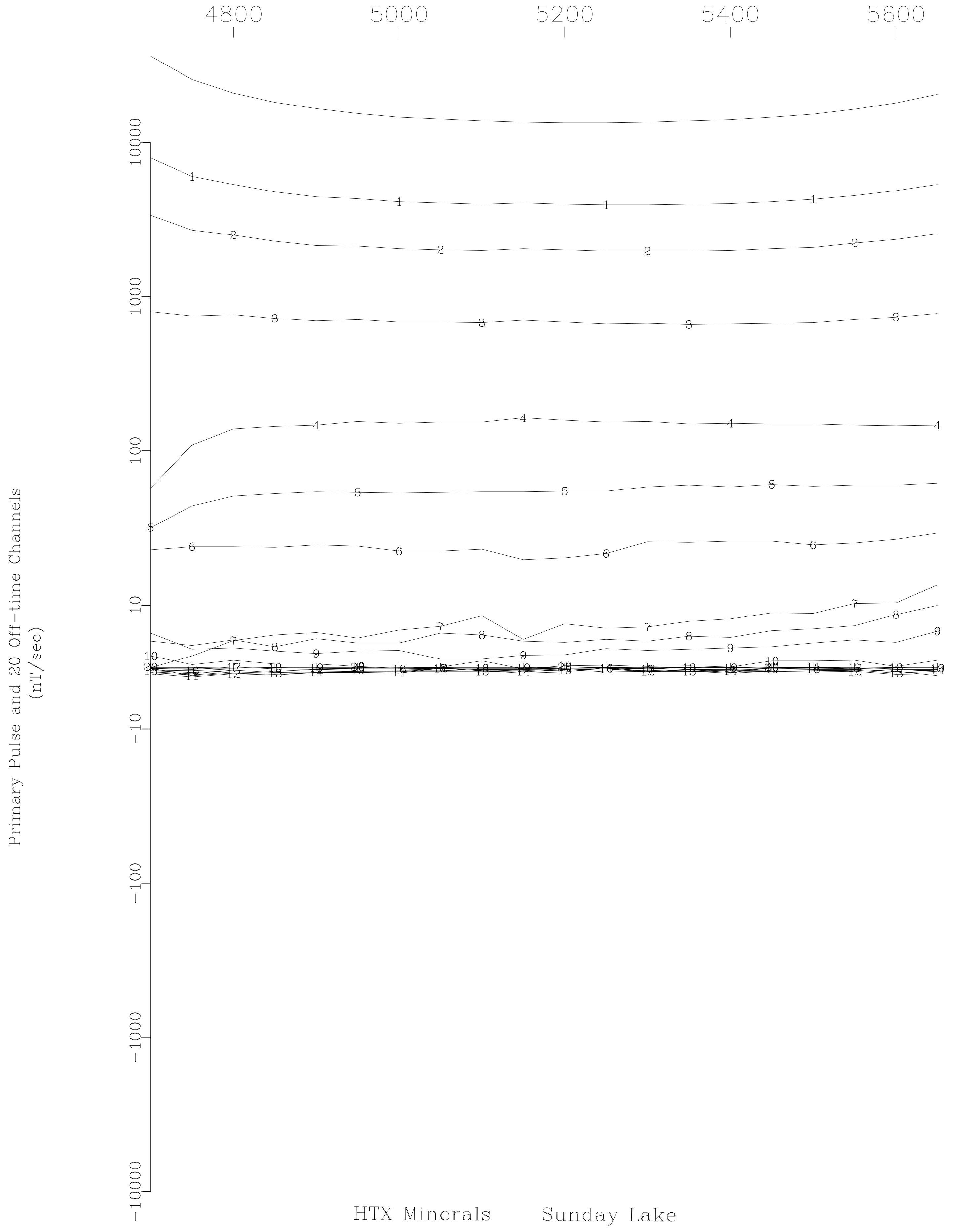
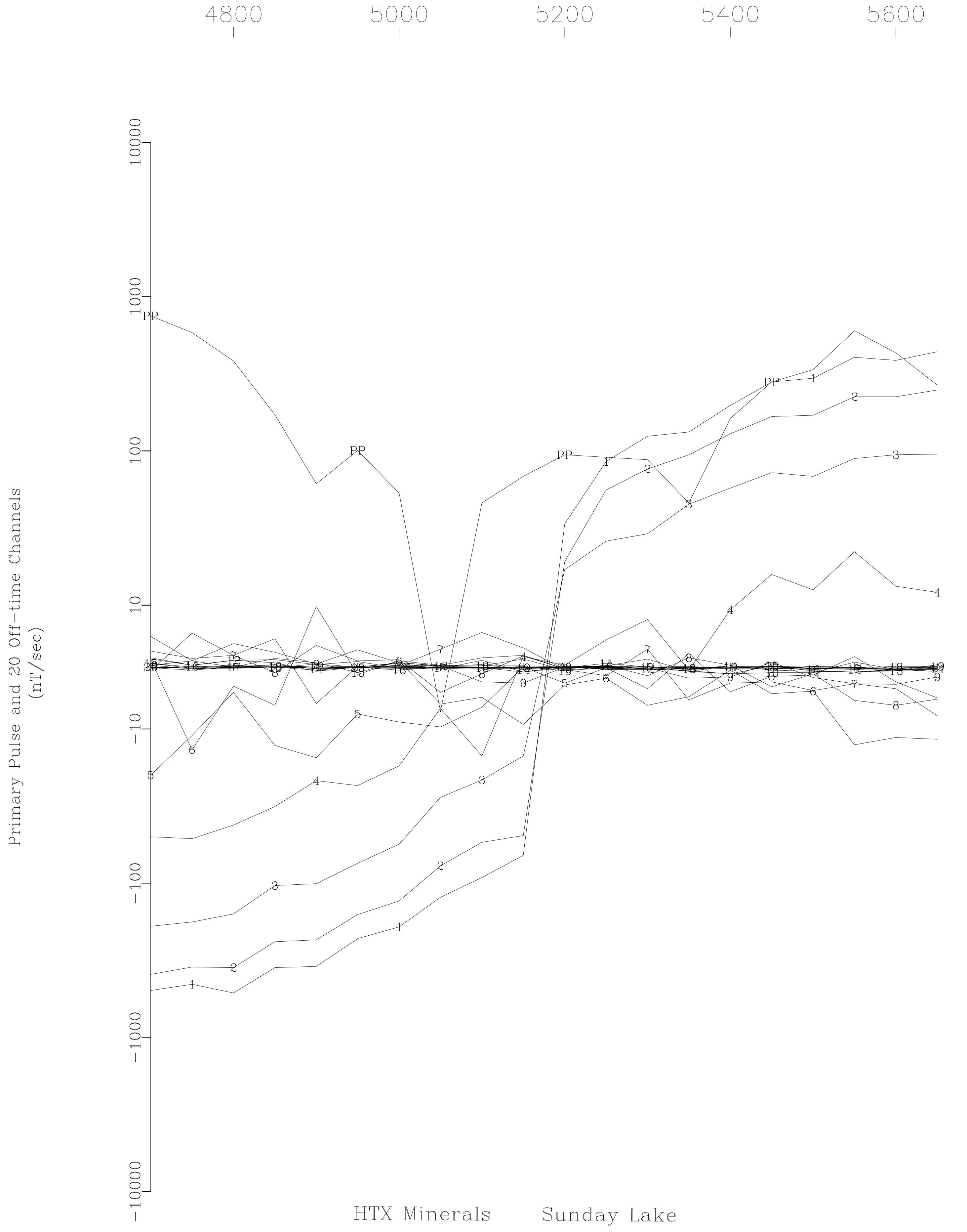
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 1, Line 5870N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake
Loop 1, Line 5870N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 5970N Z Component
Crone Geophysics & Exploration Ltd.



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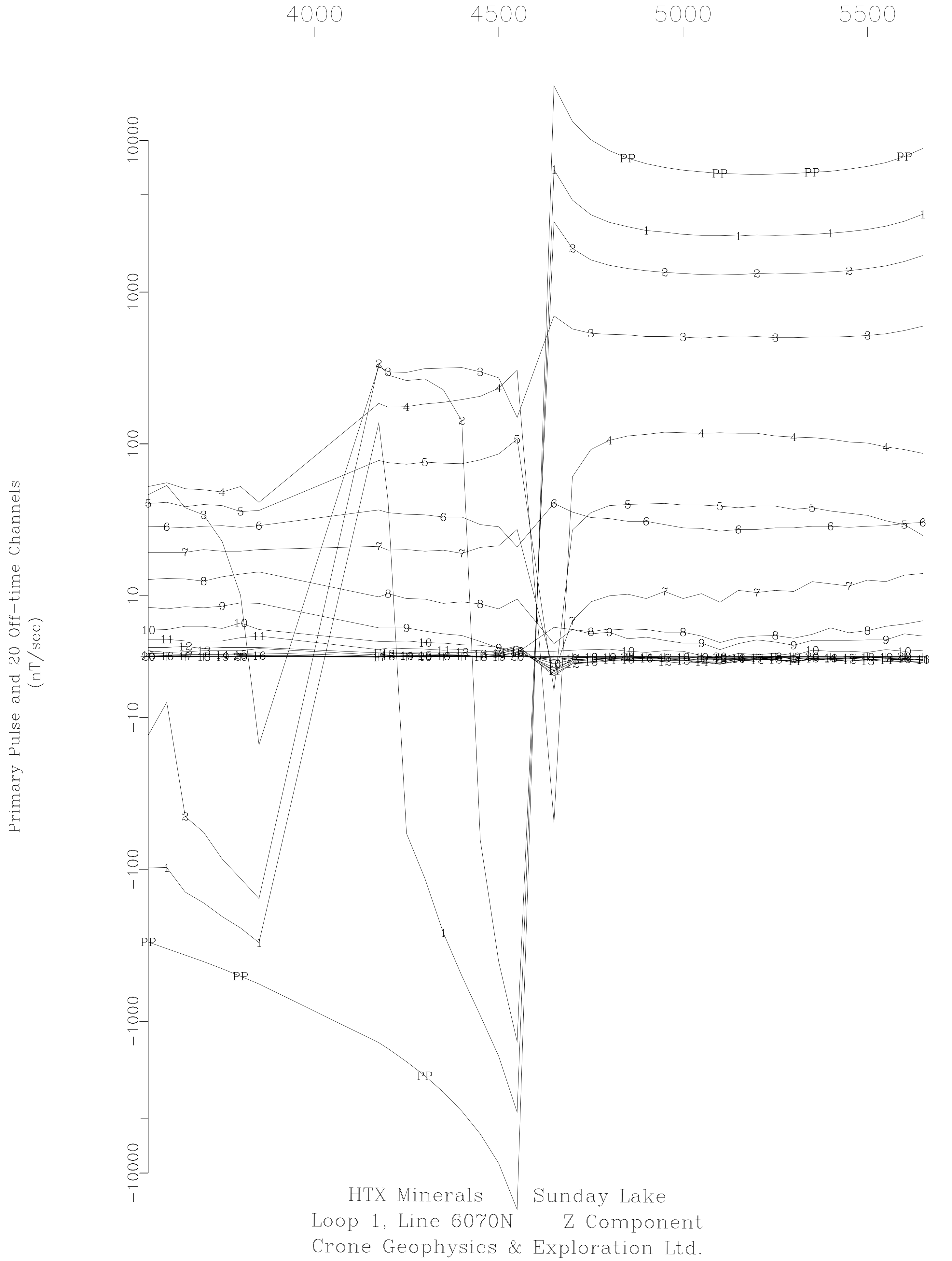
Crone Geophysics & Exploration Ltd.



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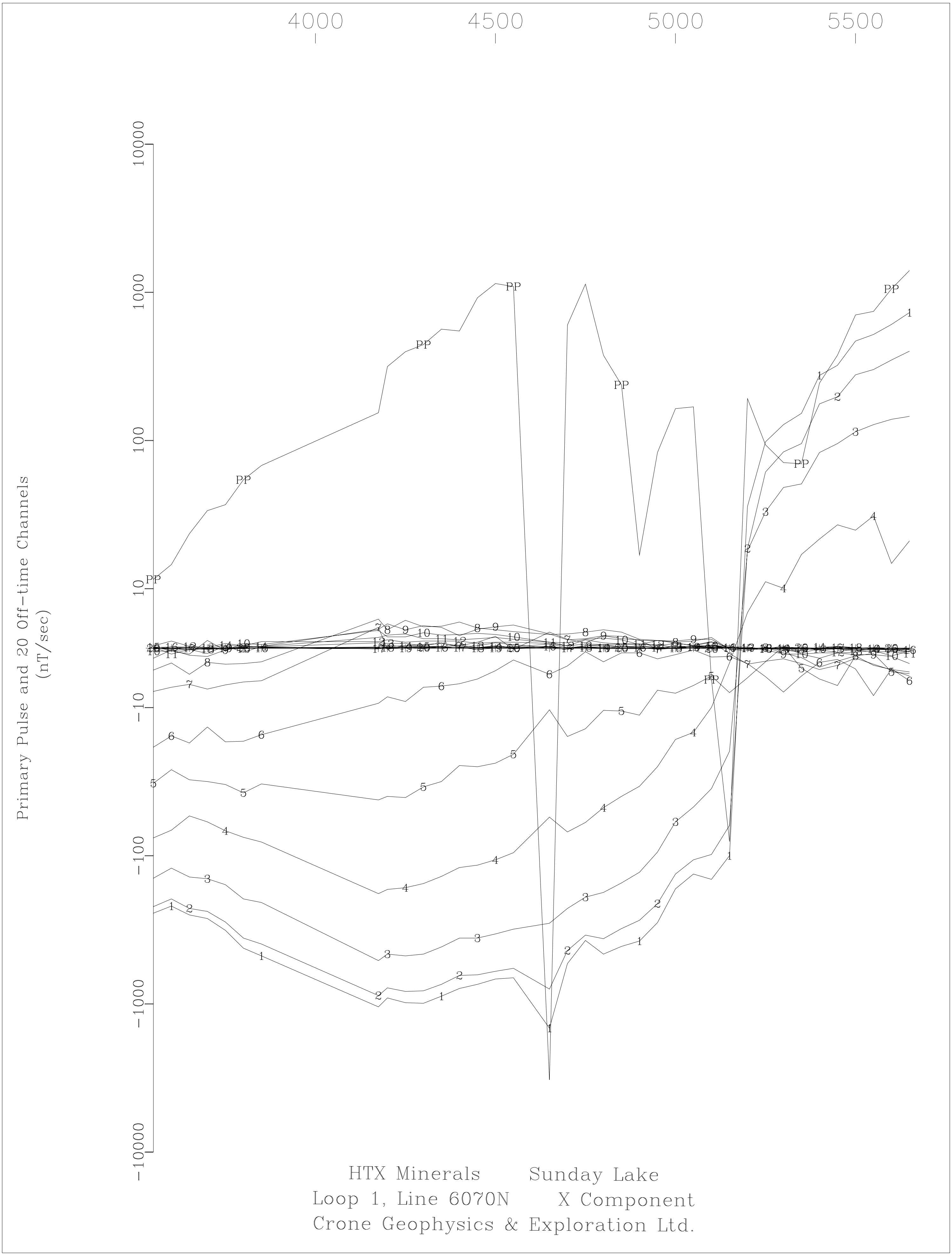
Loop 1, Line 6070N Z Component
Crone Geophysics & Exploration Ltd.



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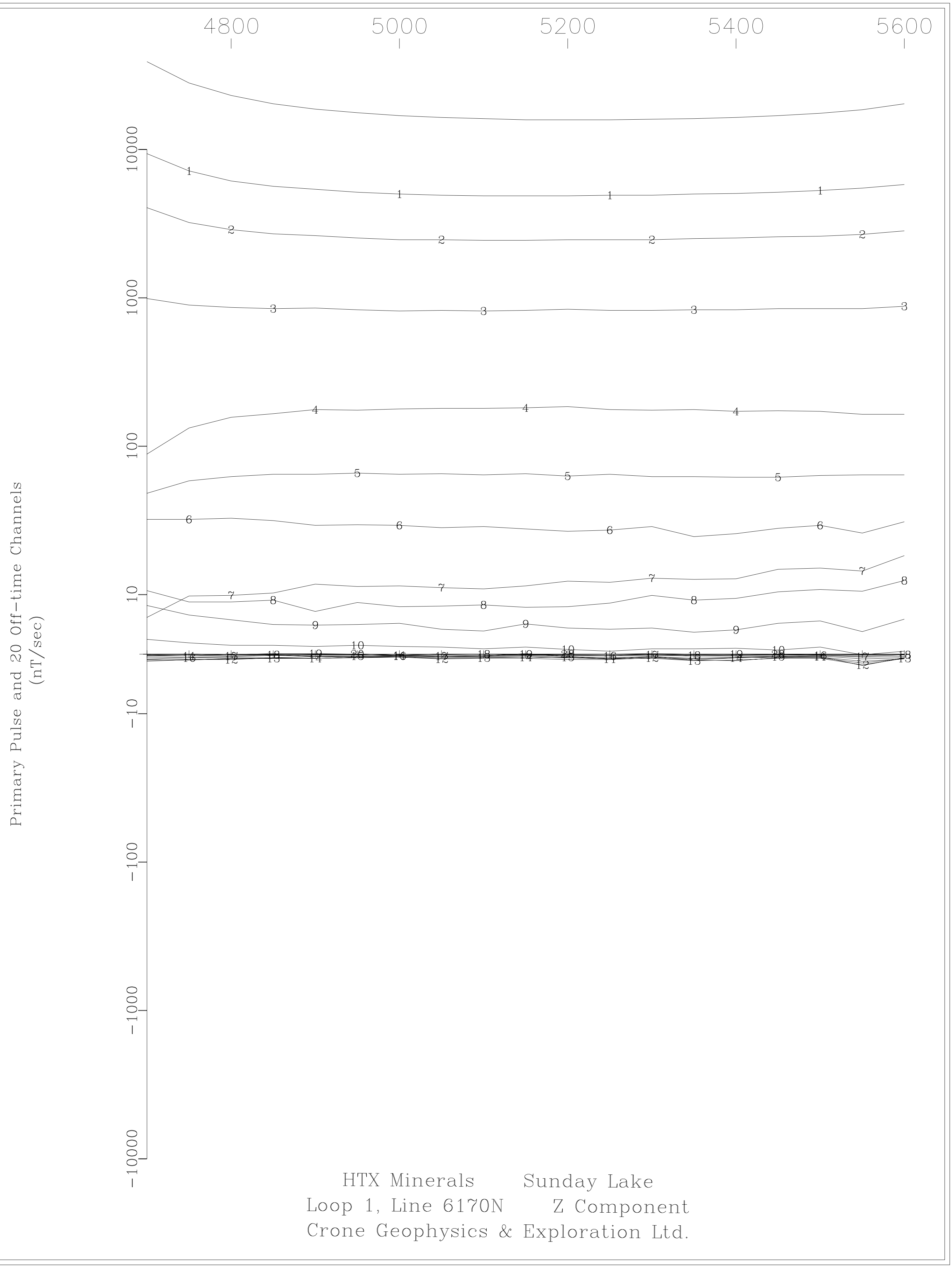
Loop 1, Line 6070N X Component
Crone Geophysics & Exploration Ltd.


4800
5000
5200
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5600
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1000
100
10
-10
-100
-1000
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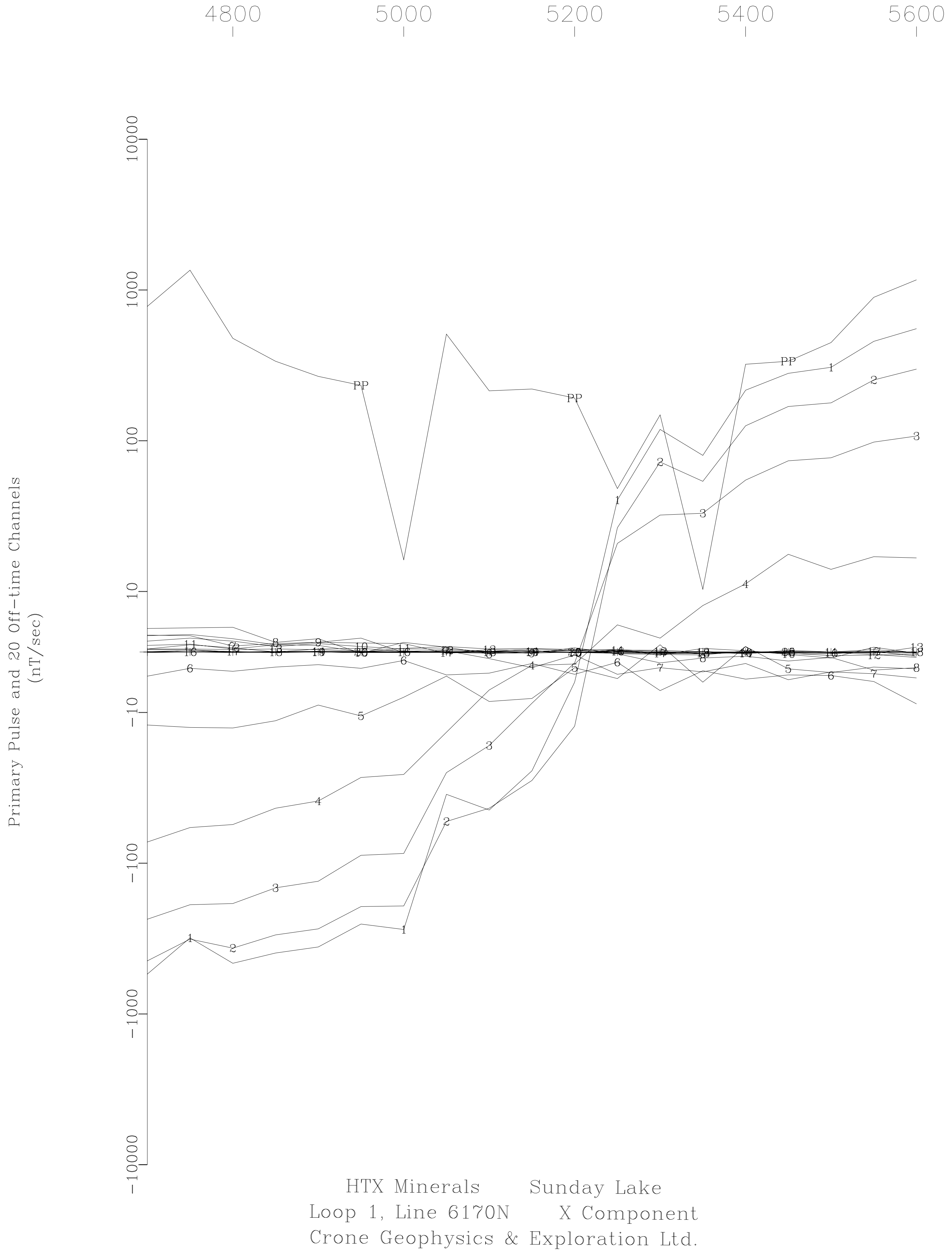
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 1, Line 6170N Z Component
Crone Geophysics & Exploration Ltd.



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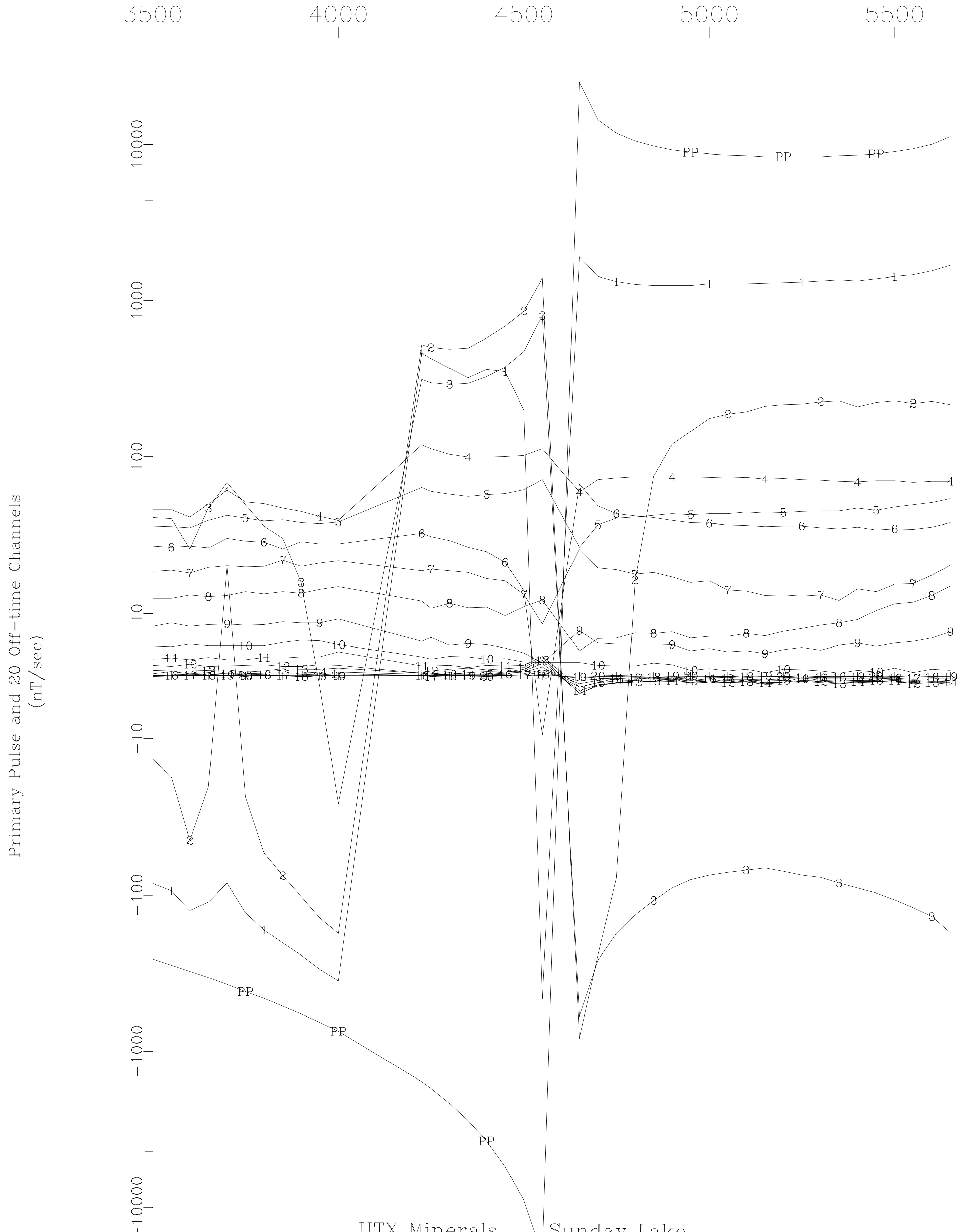
Loop 1, Line 6170N X Component
Crone Geophysics & Exploration Ltd.



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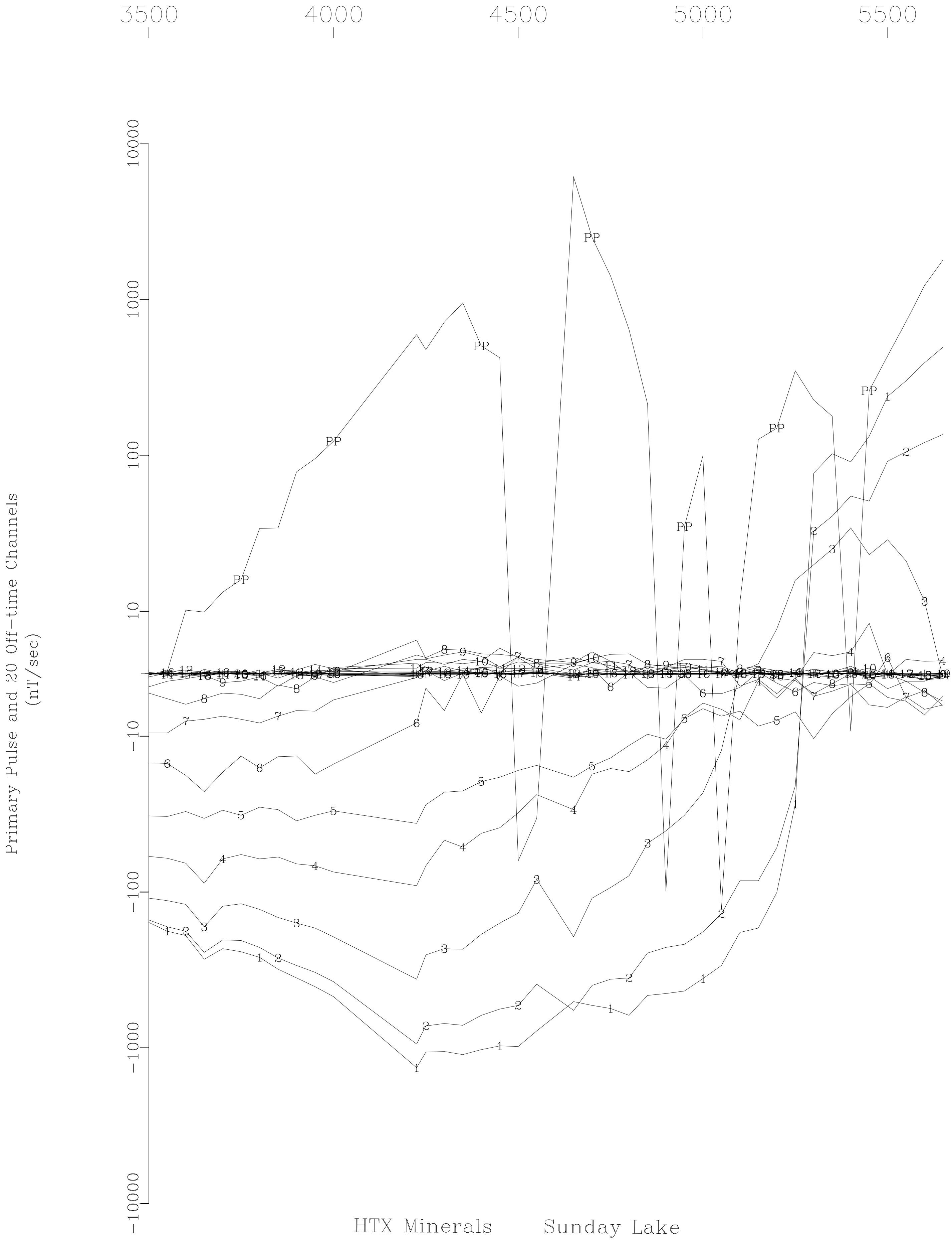
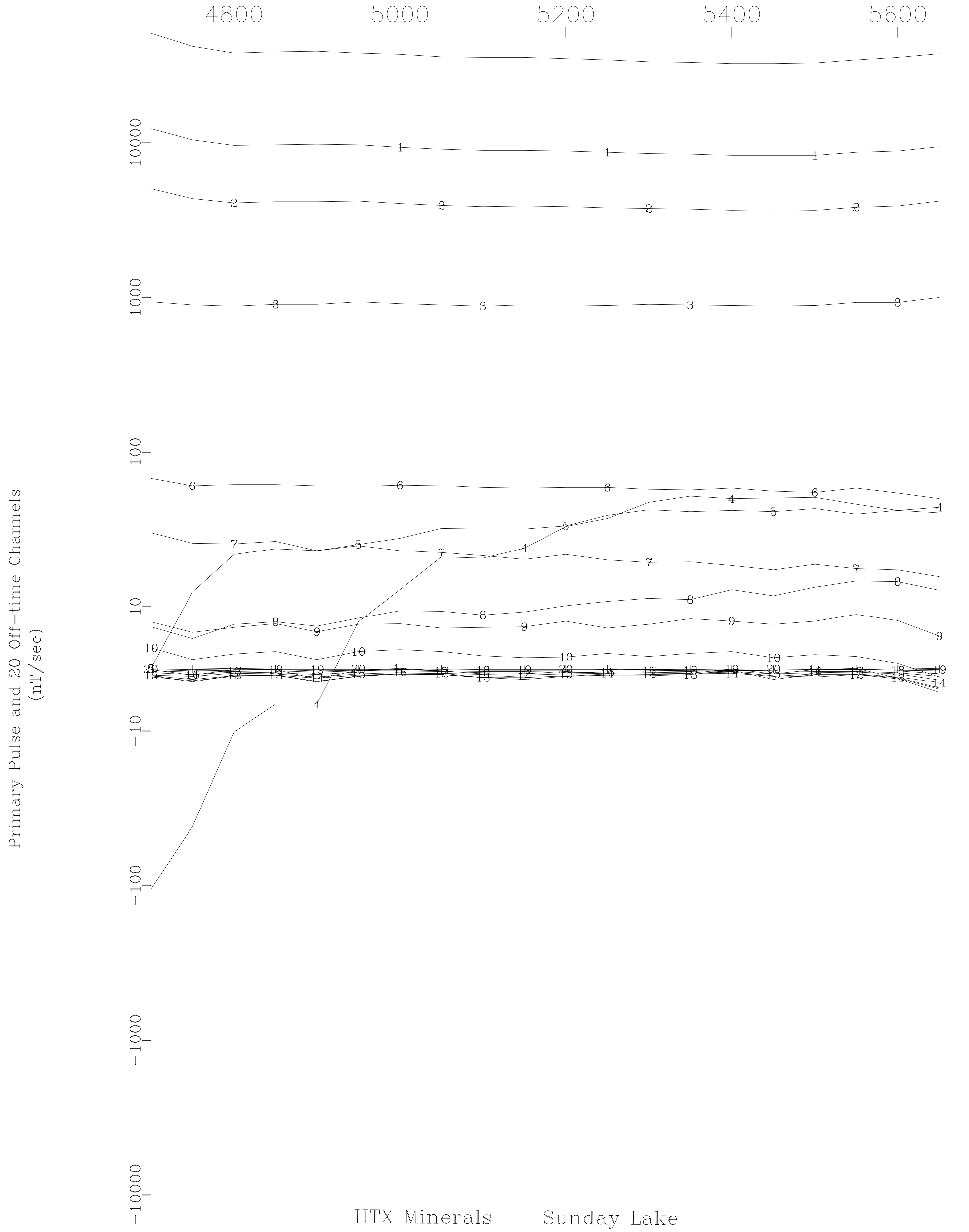
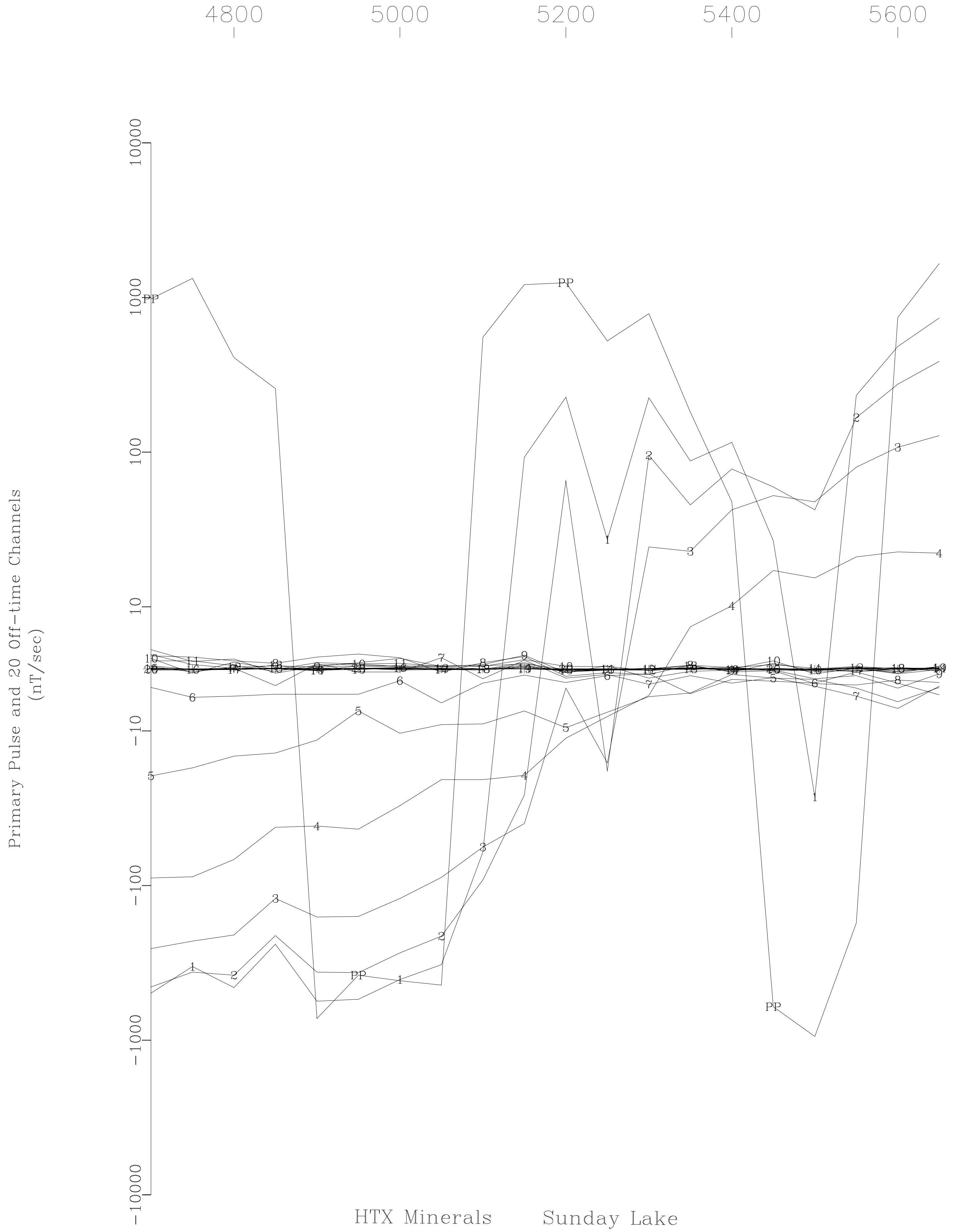


HTX Minerals   Sunday Lake
Loop 1, Line 6270N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 6370N Z Component
Crone Geophysics & Exploration Ltd.



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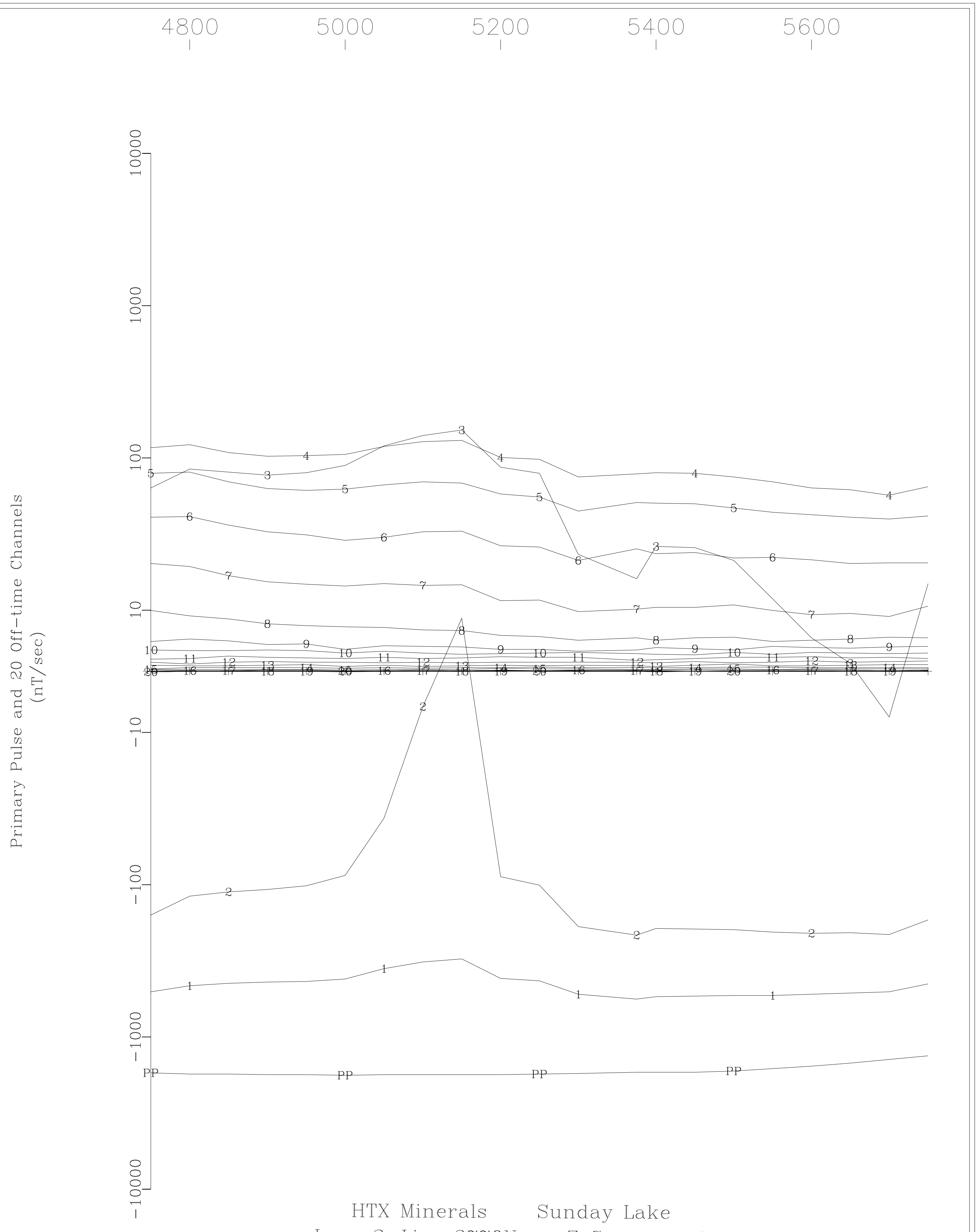
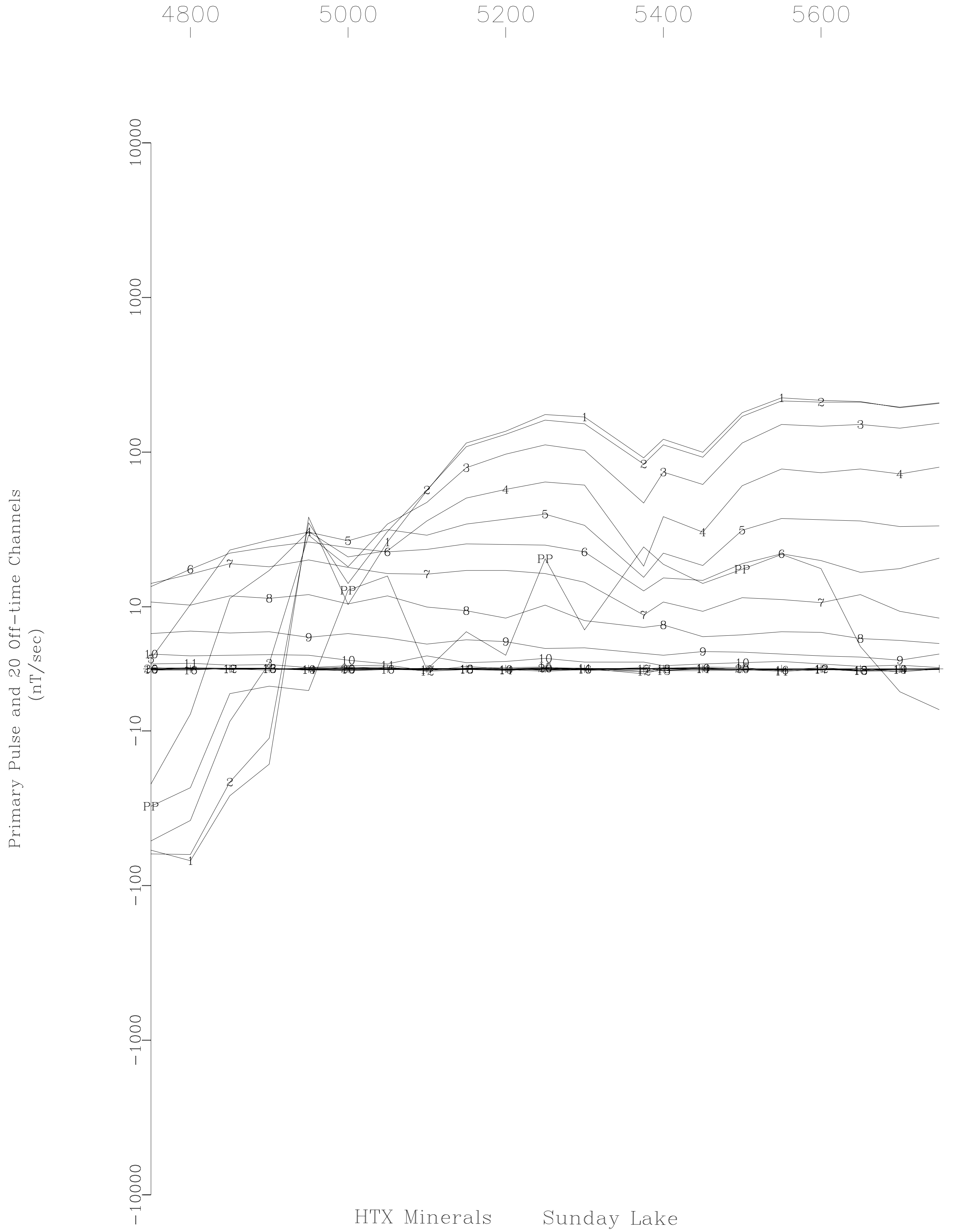
Crone Geophysics & Exploration Ltd.



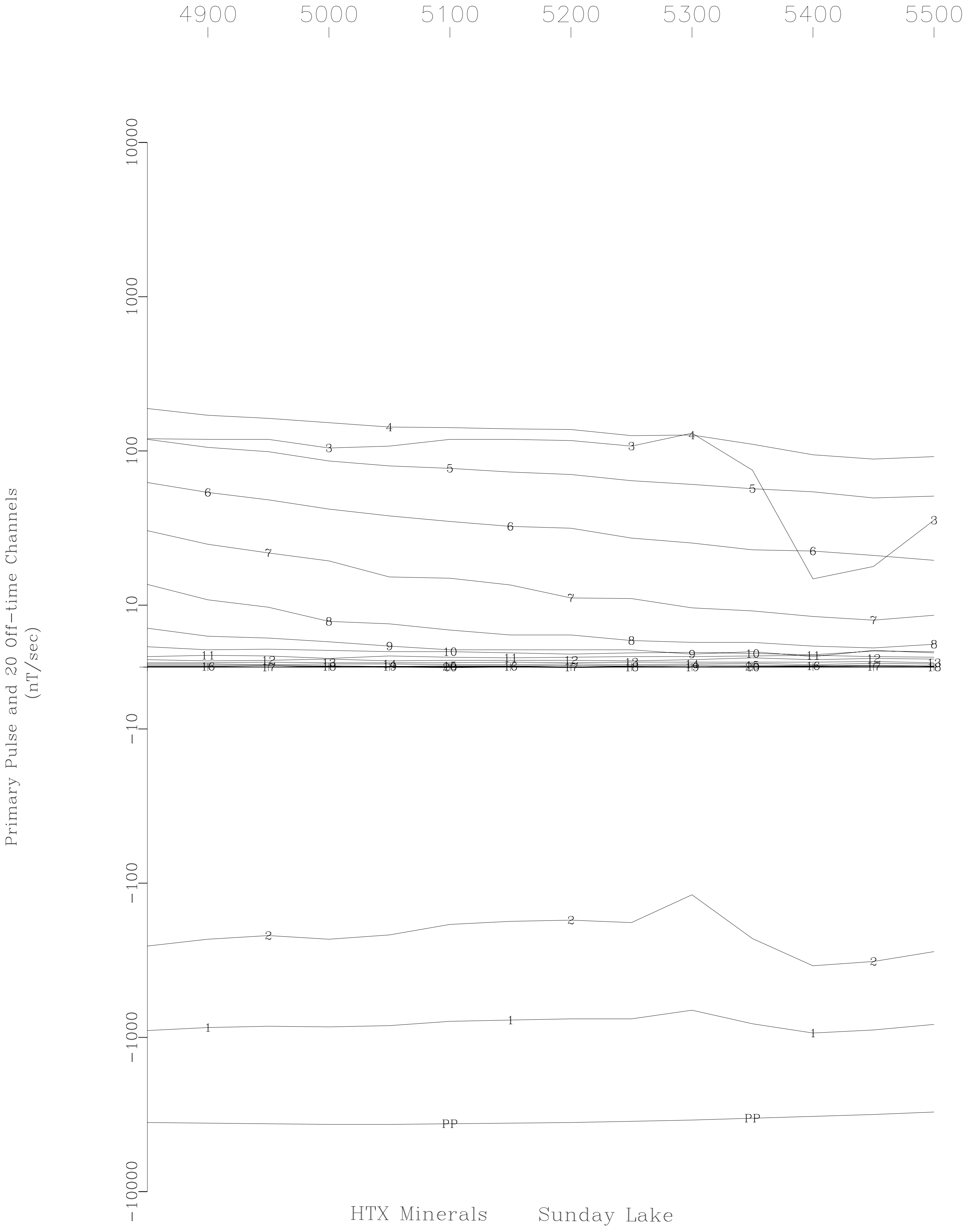
HTX Minerals Sunday Lake

Loop 2, Line 3770N Z Component

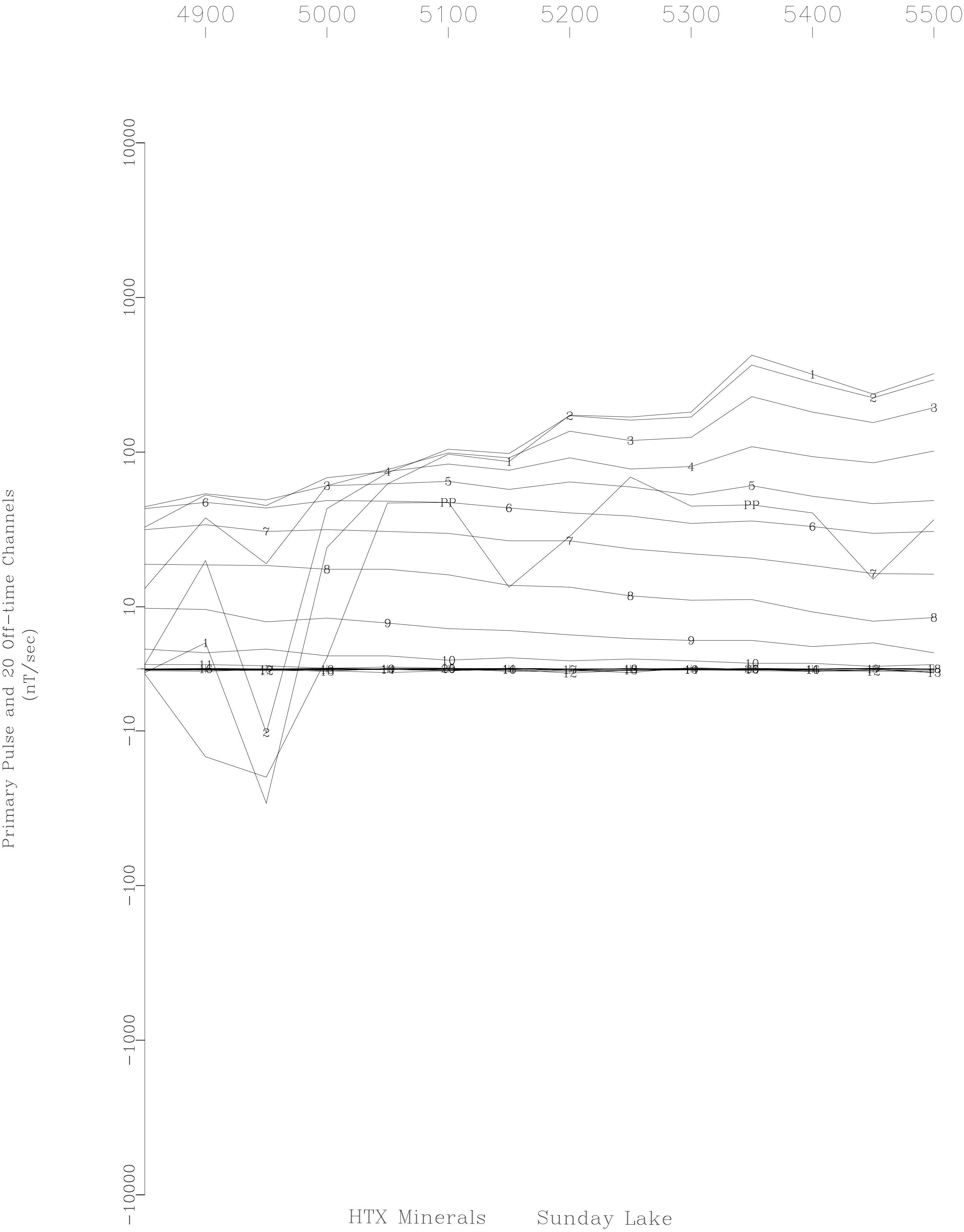
Crone Geophysics & Exploration Ltd.



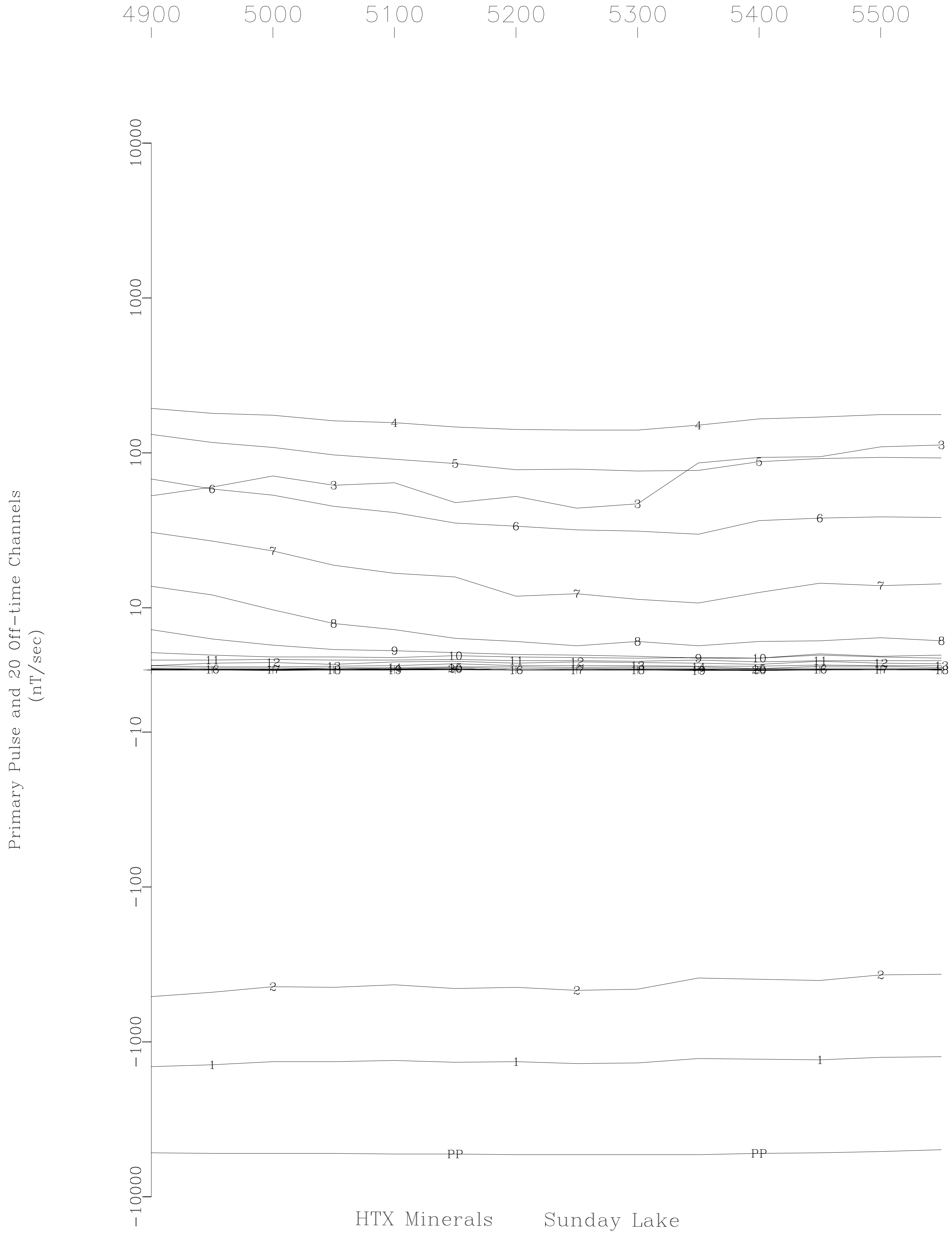
HTX Minerals   Sunday Lake
Loop 2, Line 3770N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 3970N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake
Loop 2, Line 3970N   X Component
Crone Geophysics & Exploration Ltd.



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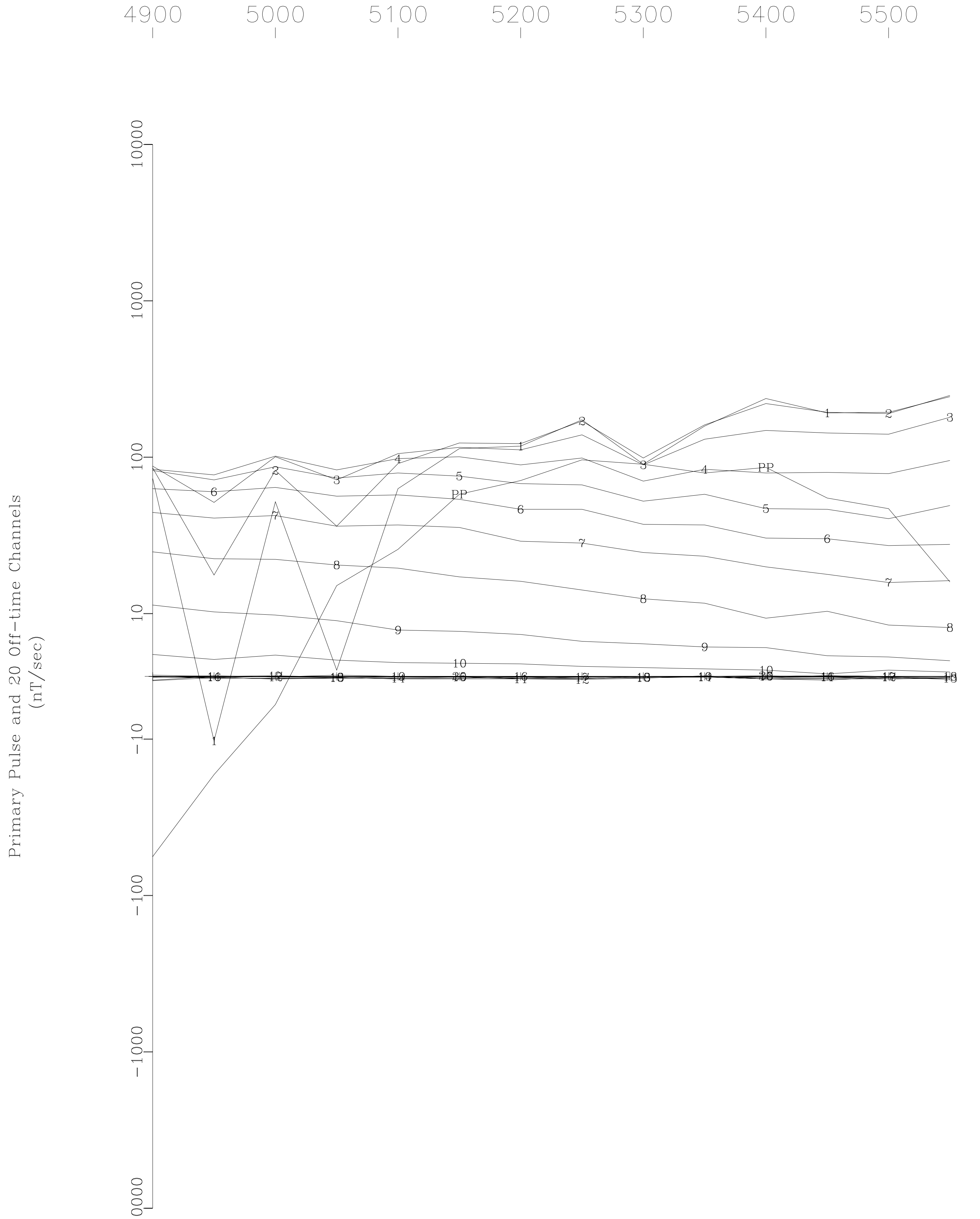
Loop 2, Line 4070N   Z Component
Crone Geophysics & Exploration Ltd.



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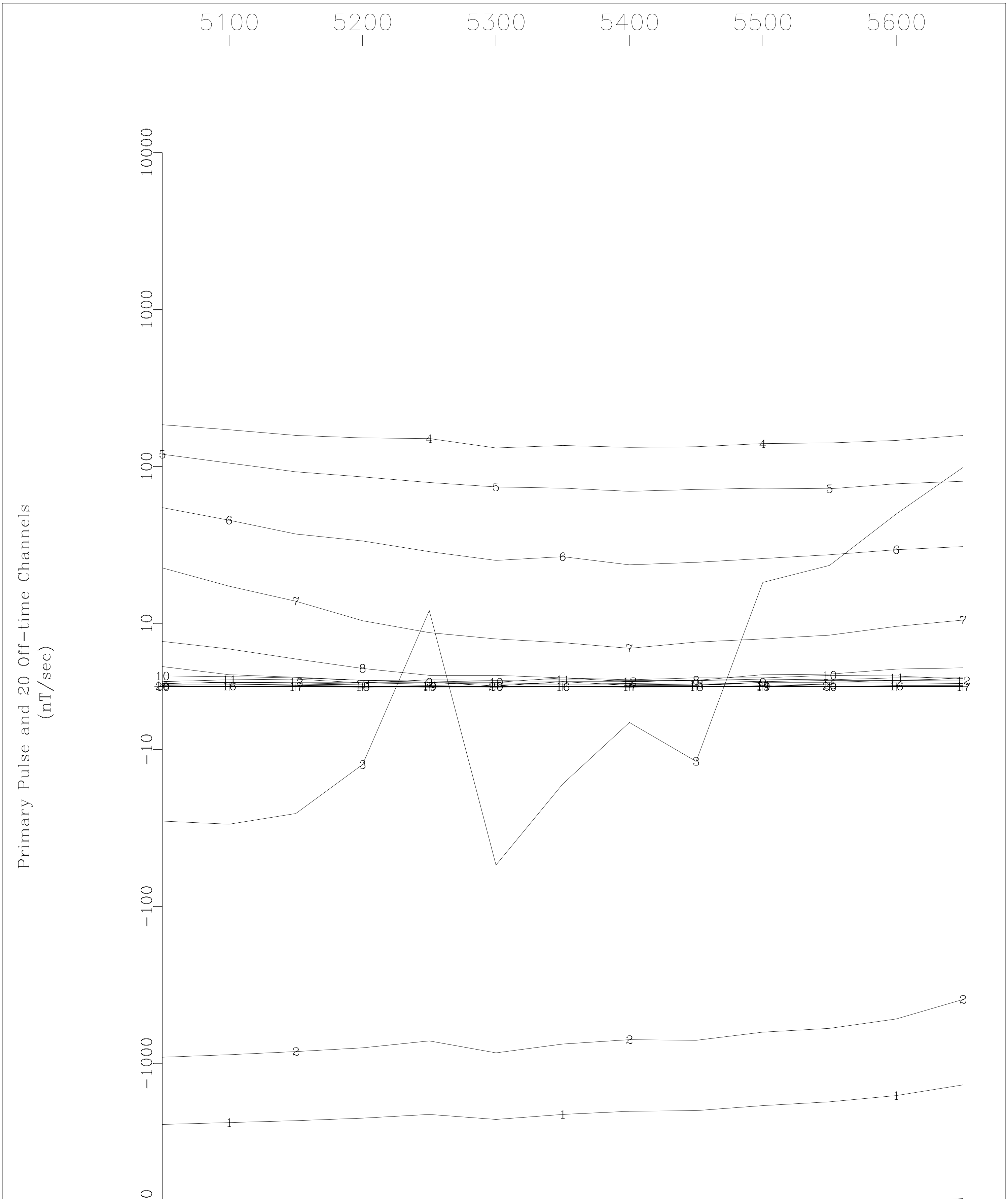
Crone Geophysics & Exploration Ltd.



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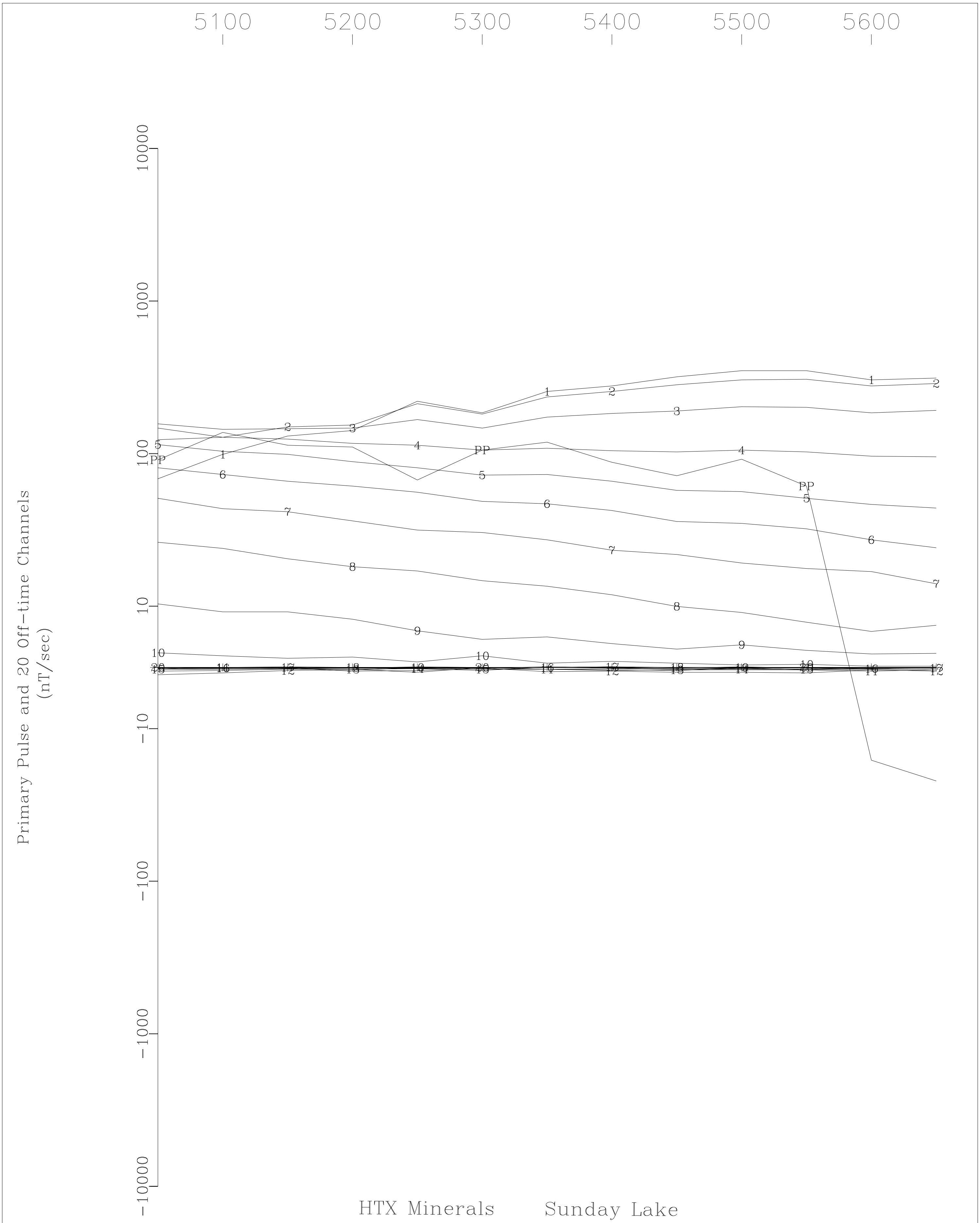
Loop 2, Line 4170N   Z Component
Crone Geophysics & Exploration Ltd.



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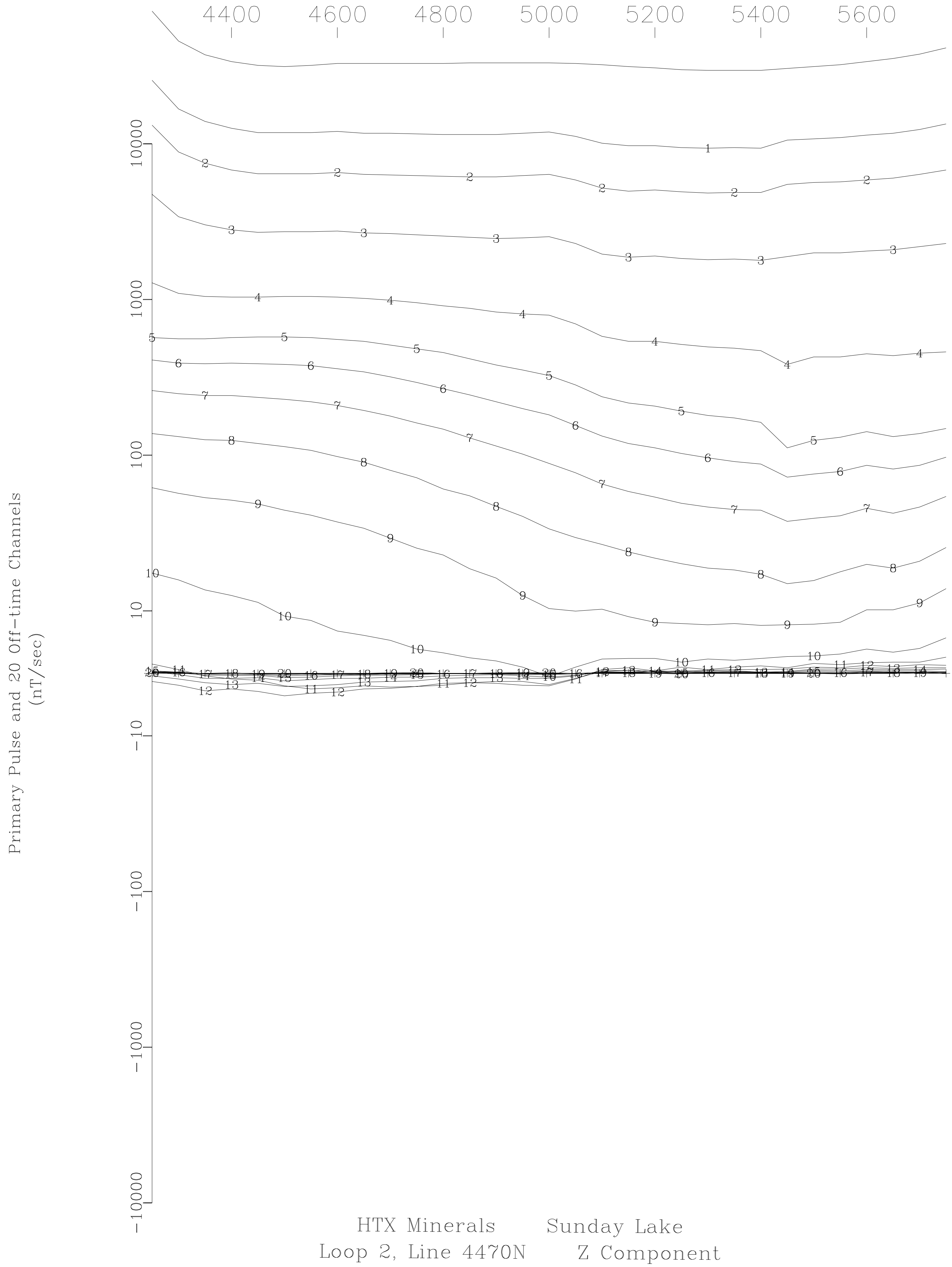
Loop 2, Line 4170N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
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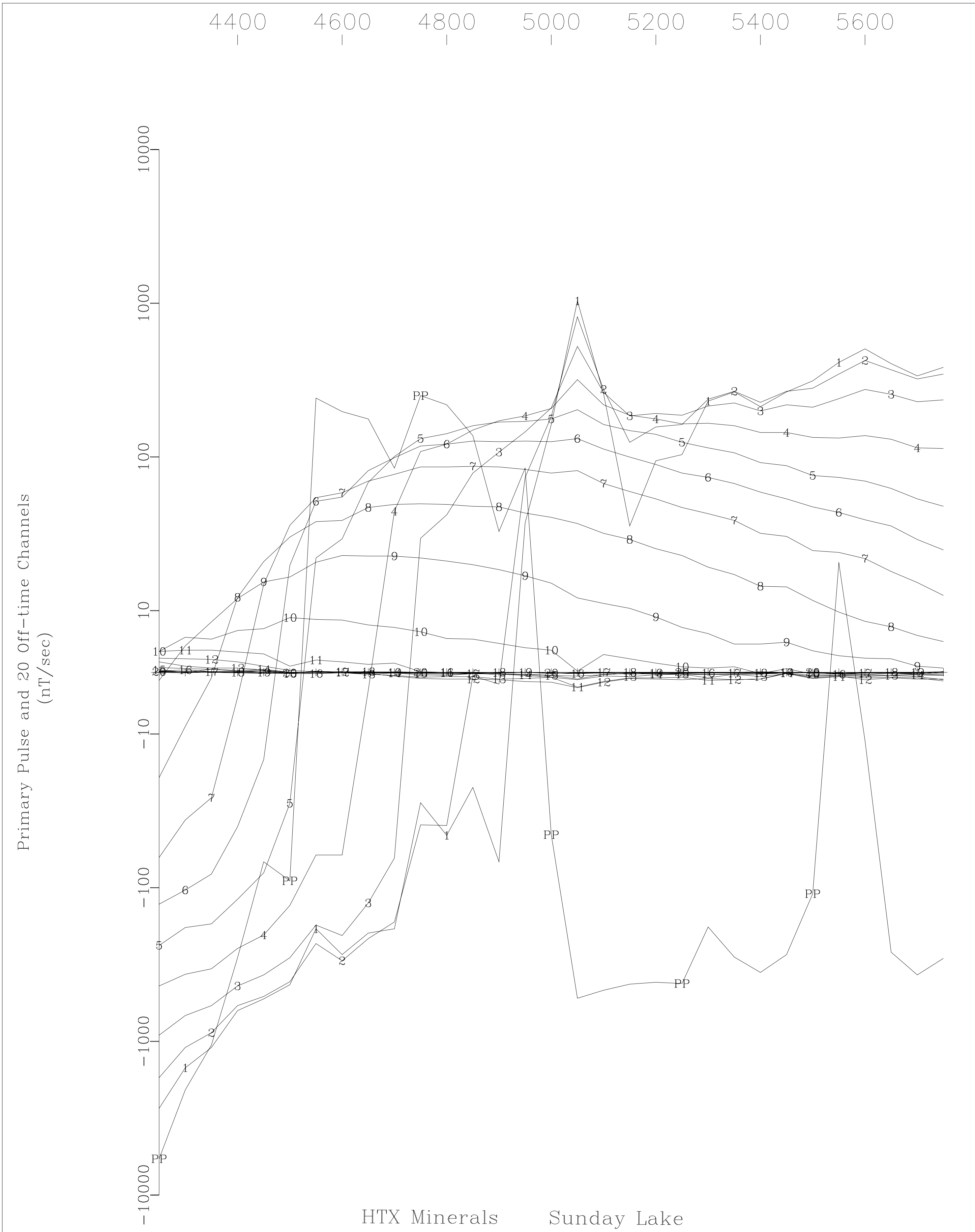
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
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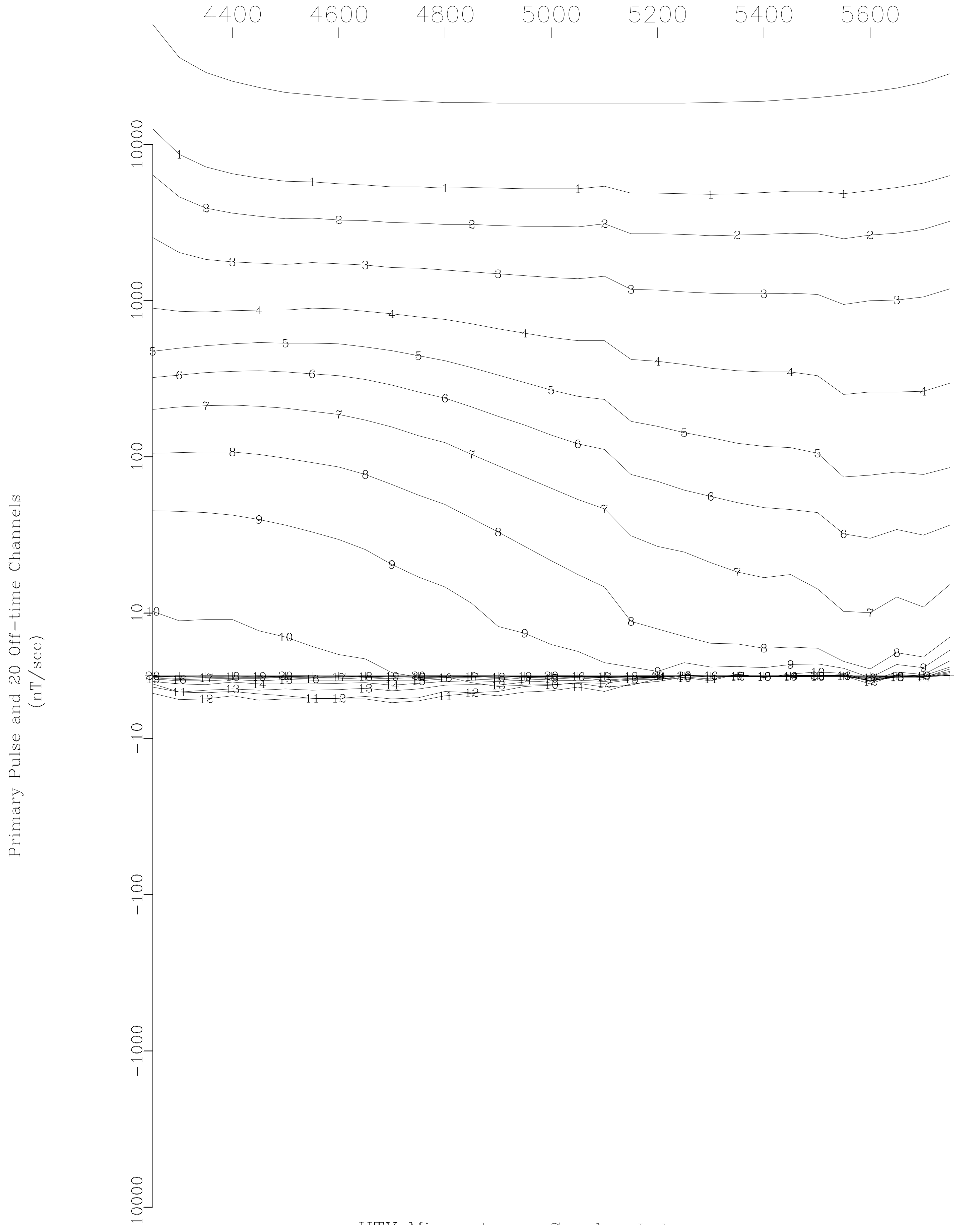
Crone Geophysics & Exploration Ltd.



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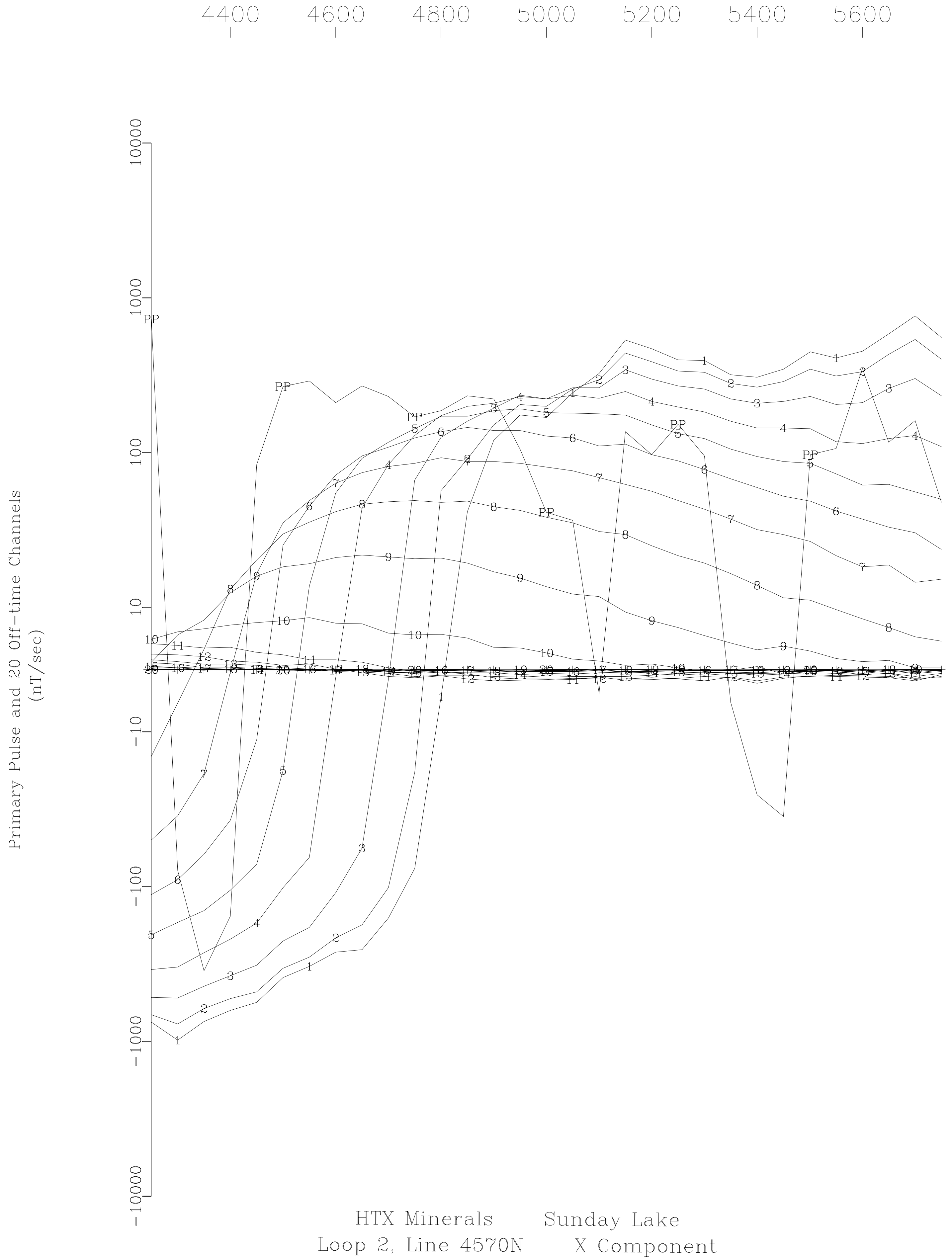
Crone Geophysics & Exploration Ltd.



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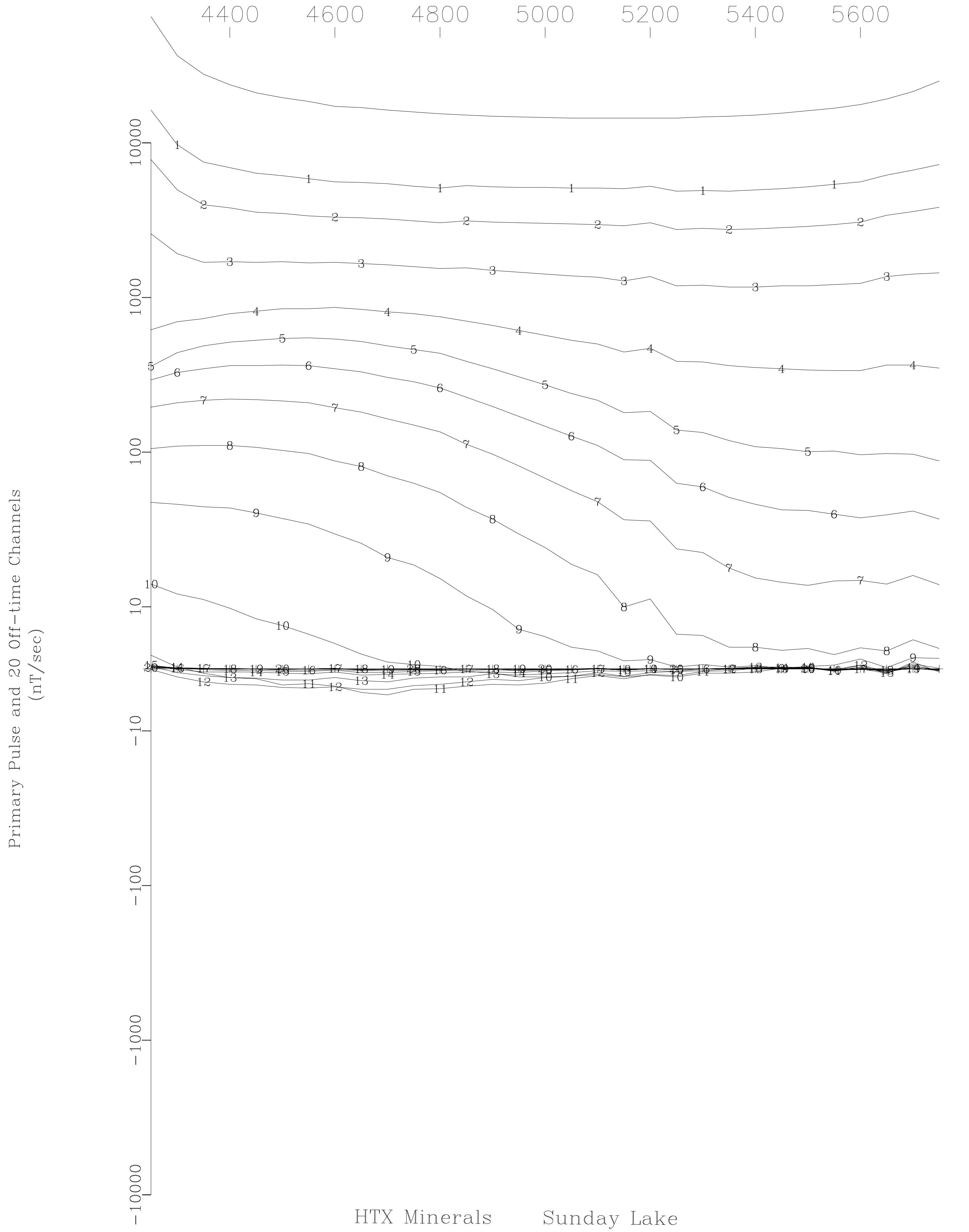

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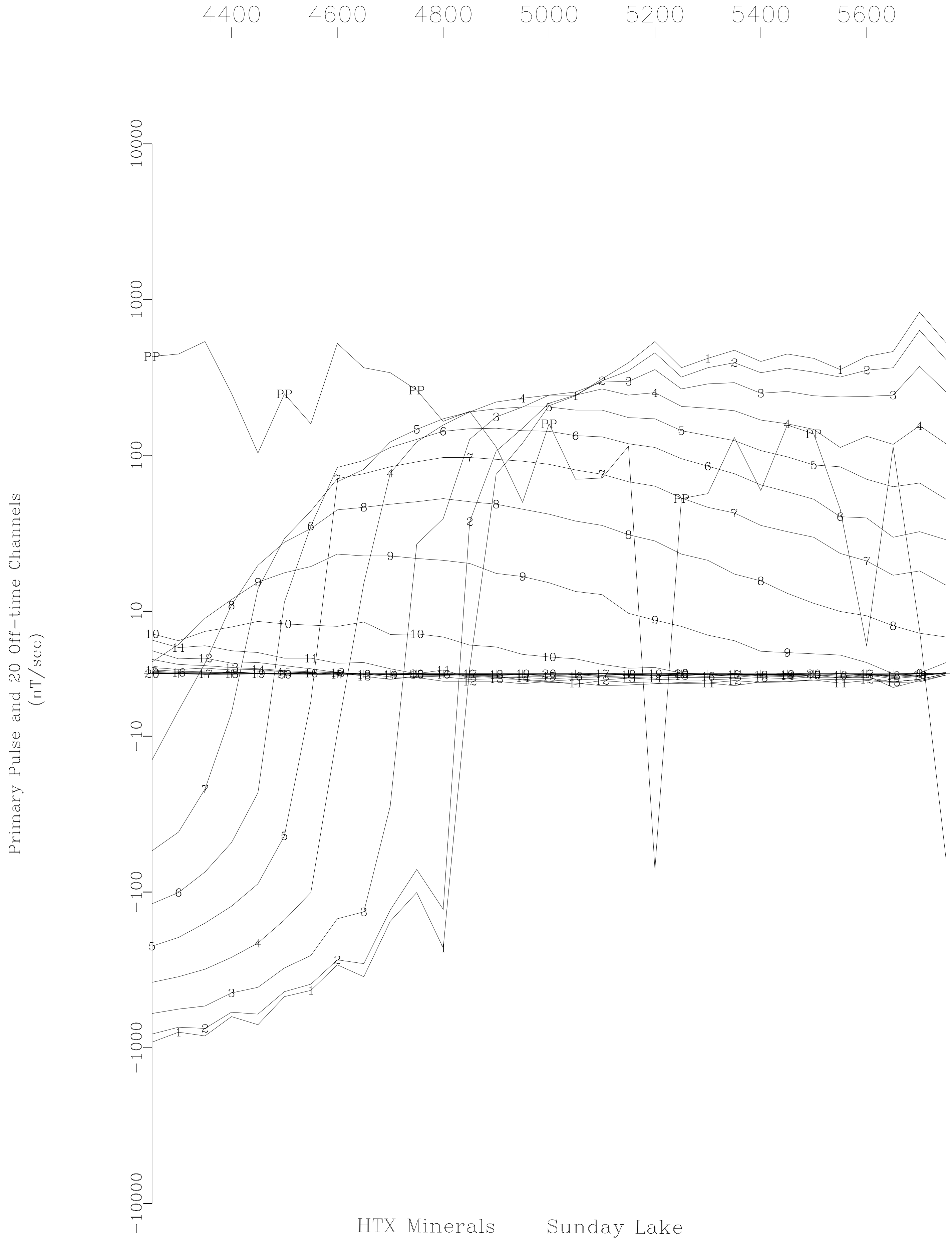
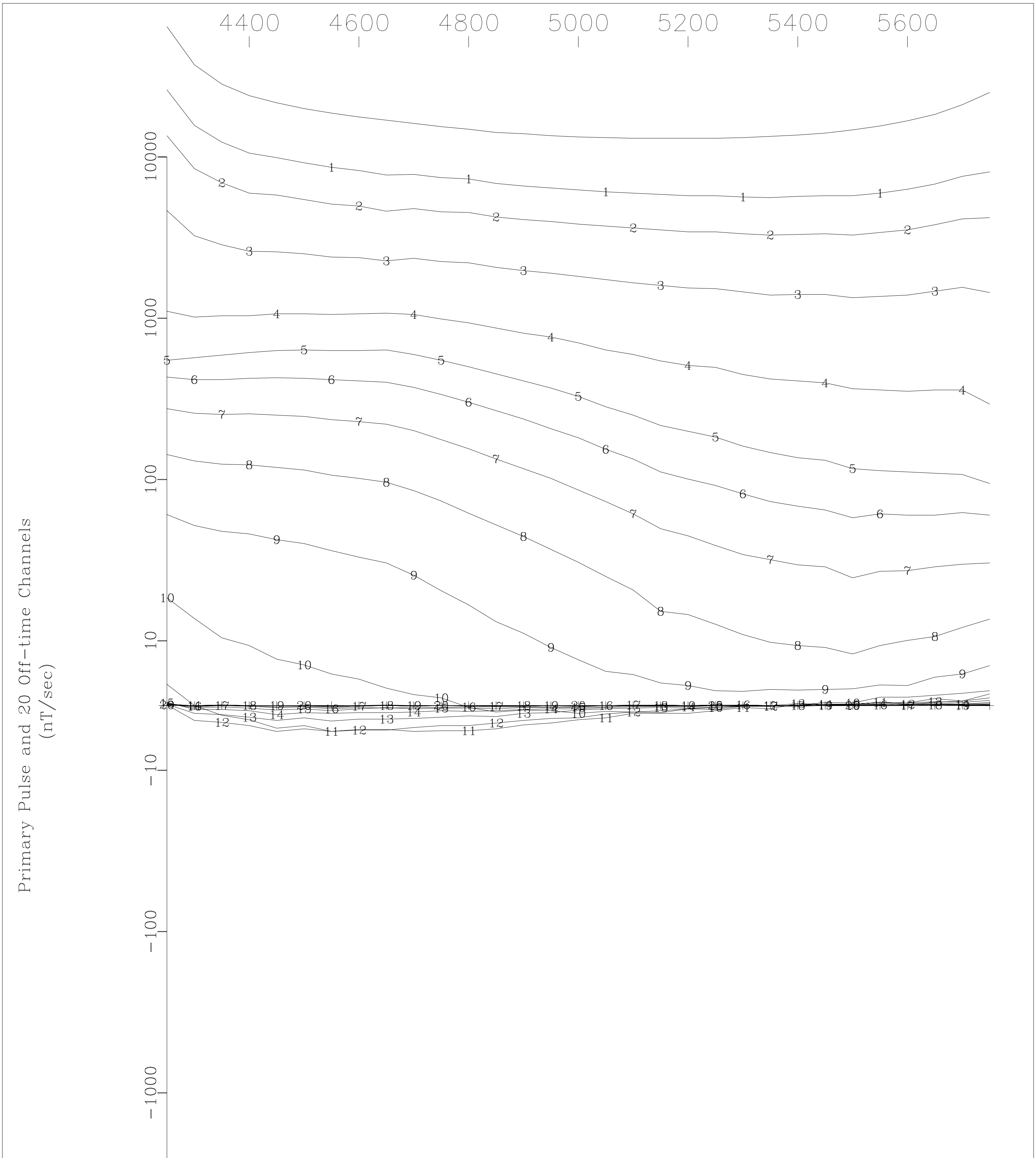
Crone Geophysics & Exploration Ltd.



HTX Minerals   Sunday Lake
Loop 2, Line 4670N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
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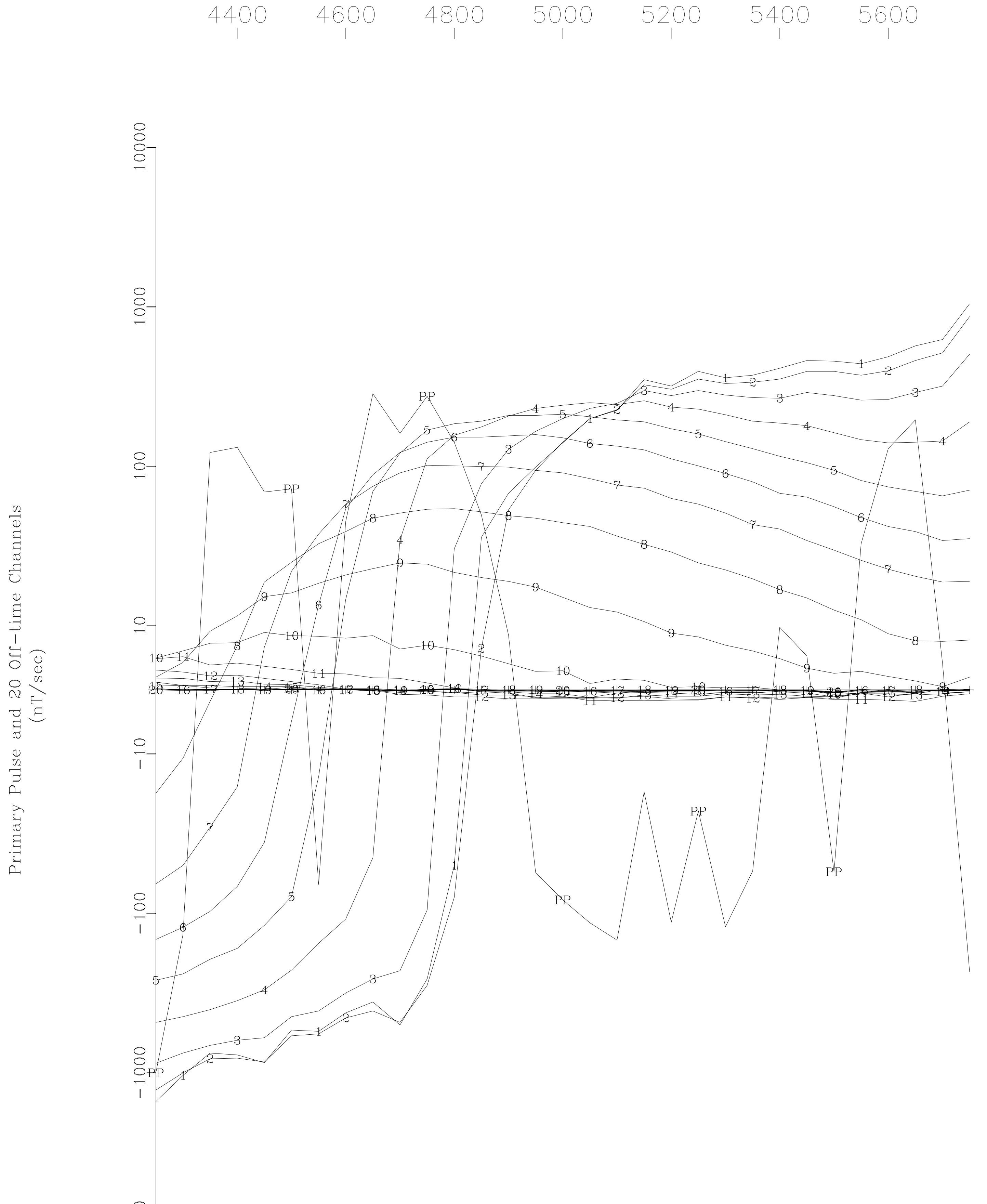
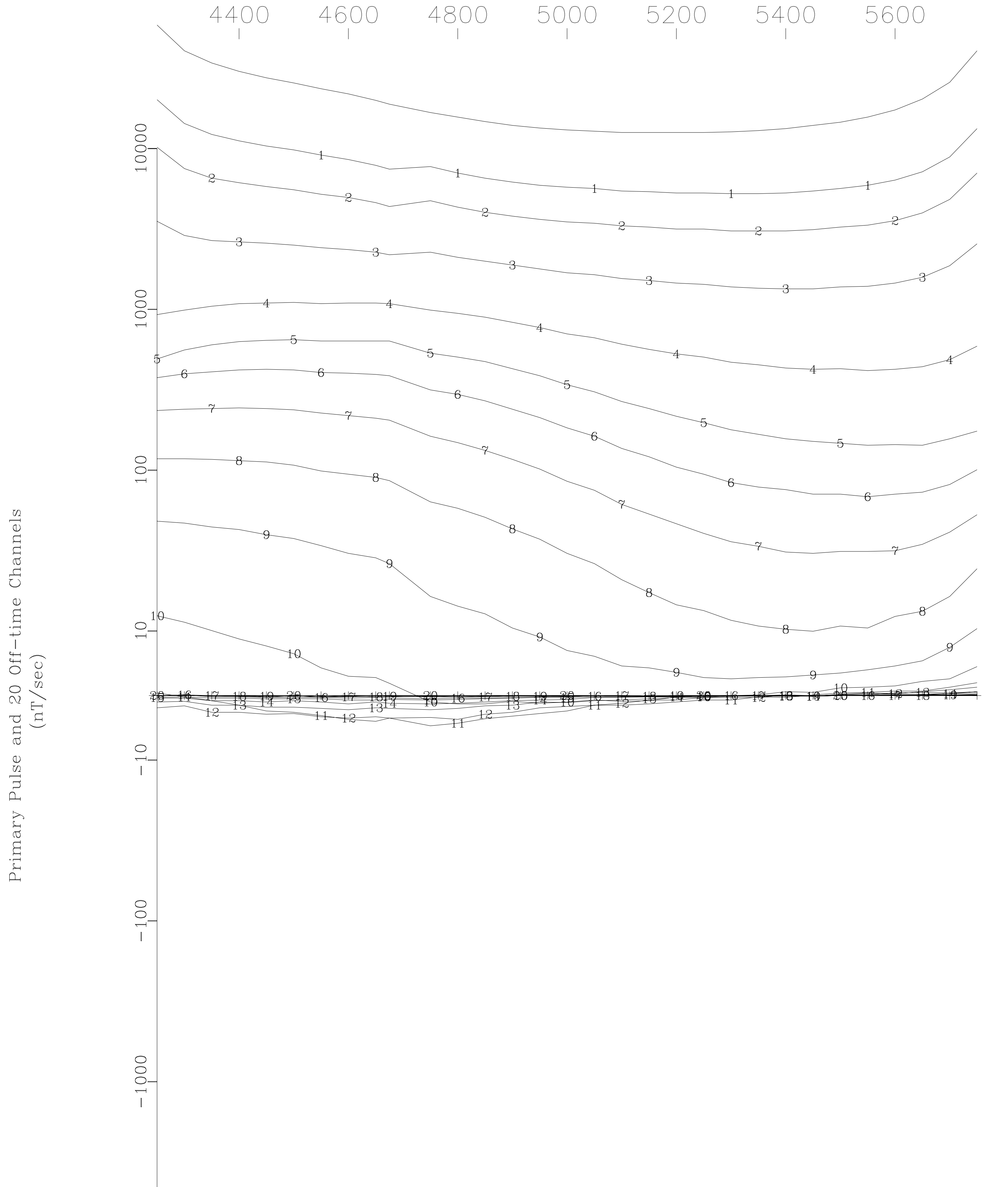
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4770N X Component
Crone Geophysics & Exploration Ltd.



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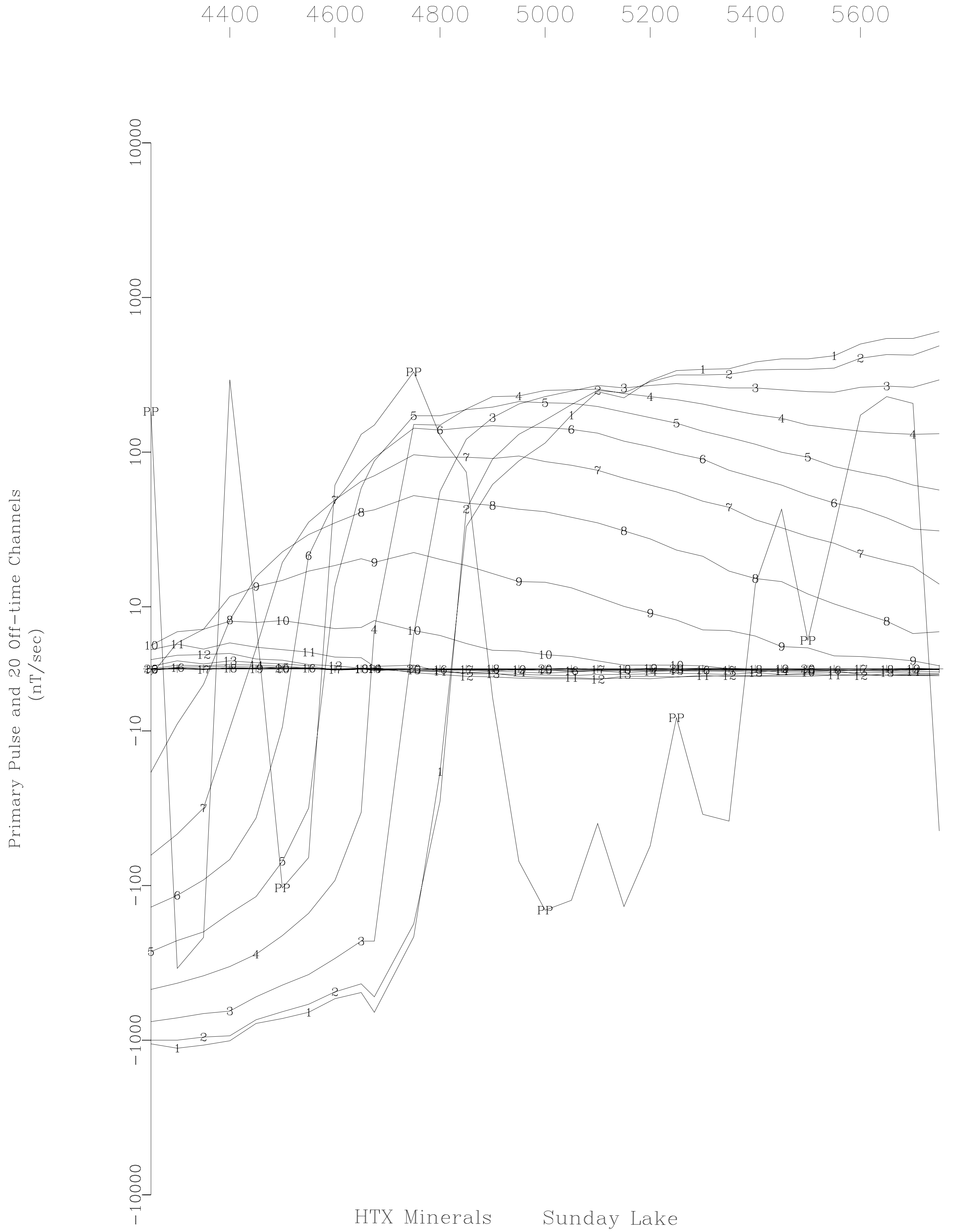
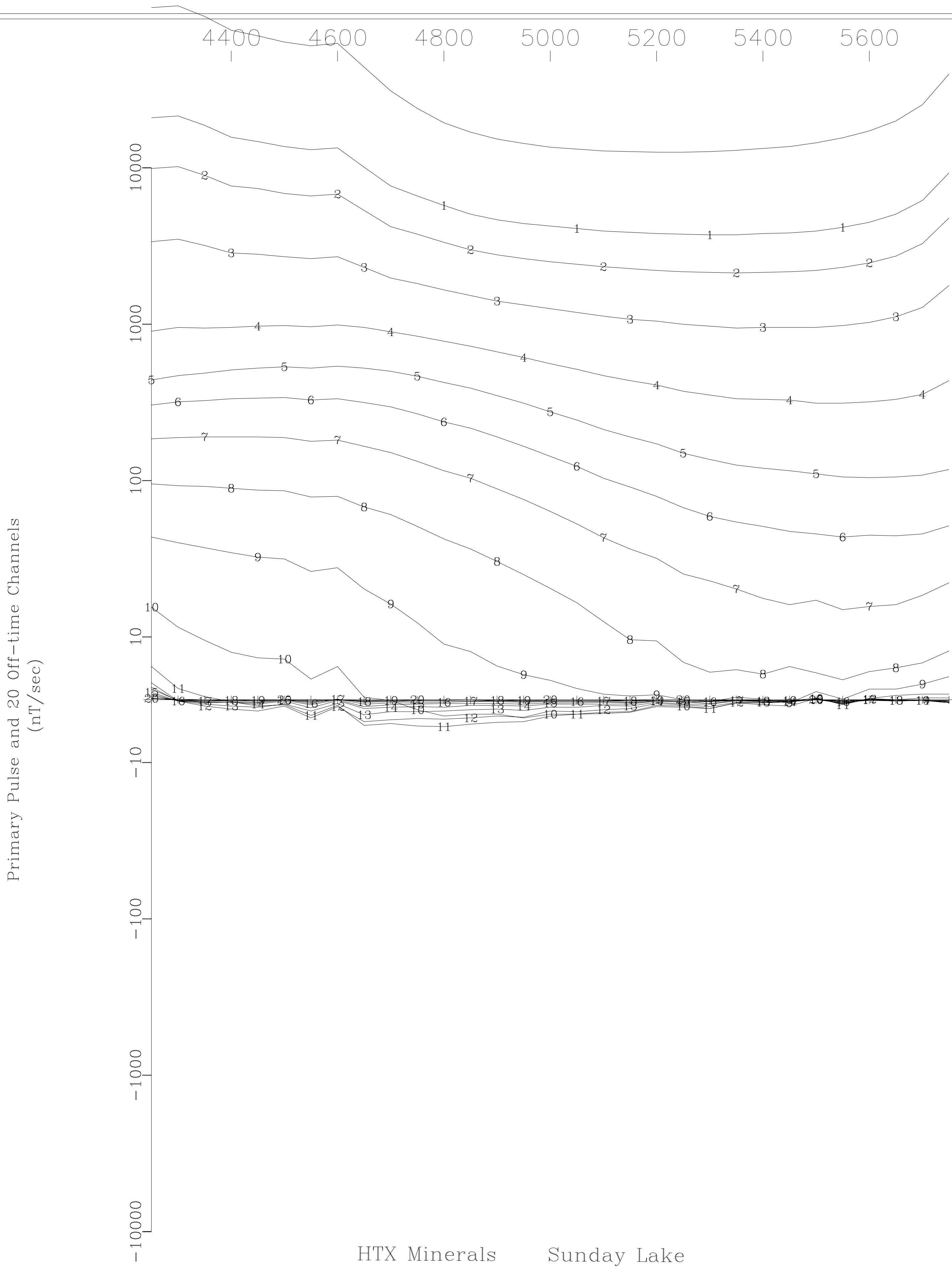
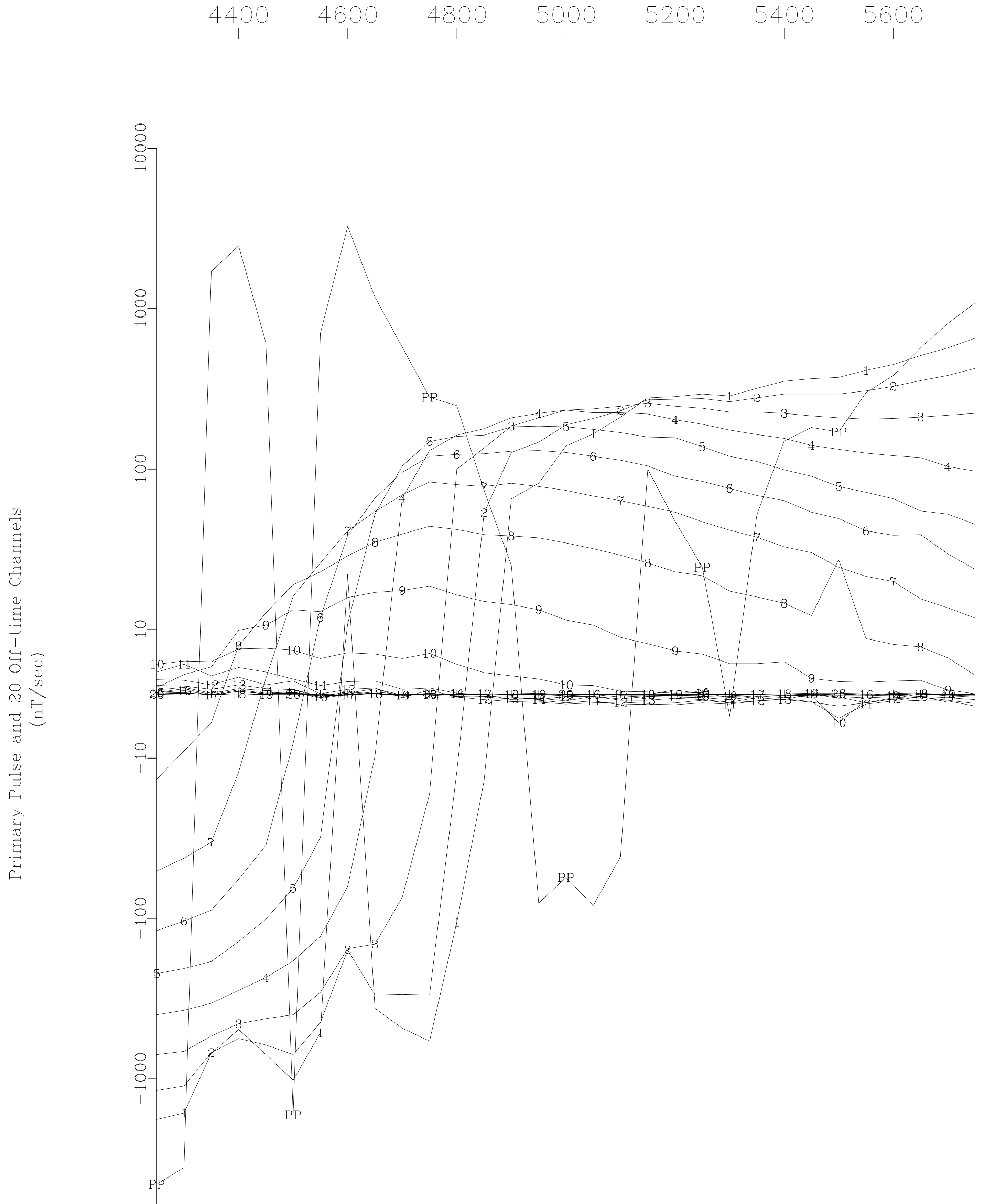
Crone Geophysics & Exploration Ltd.



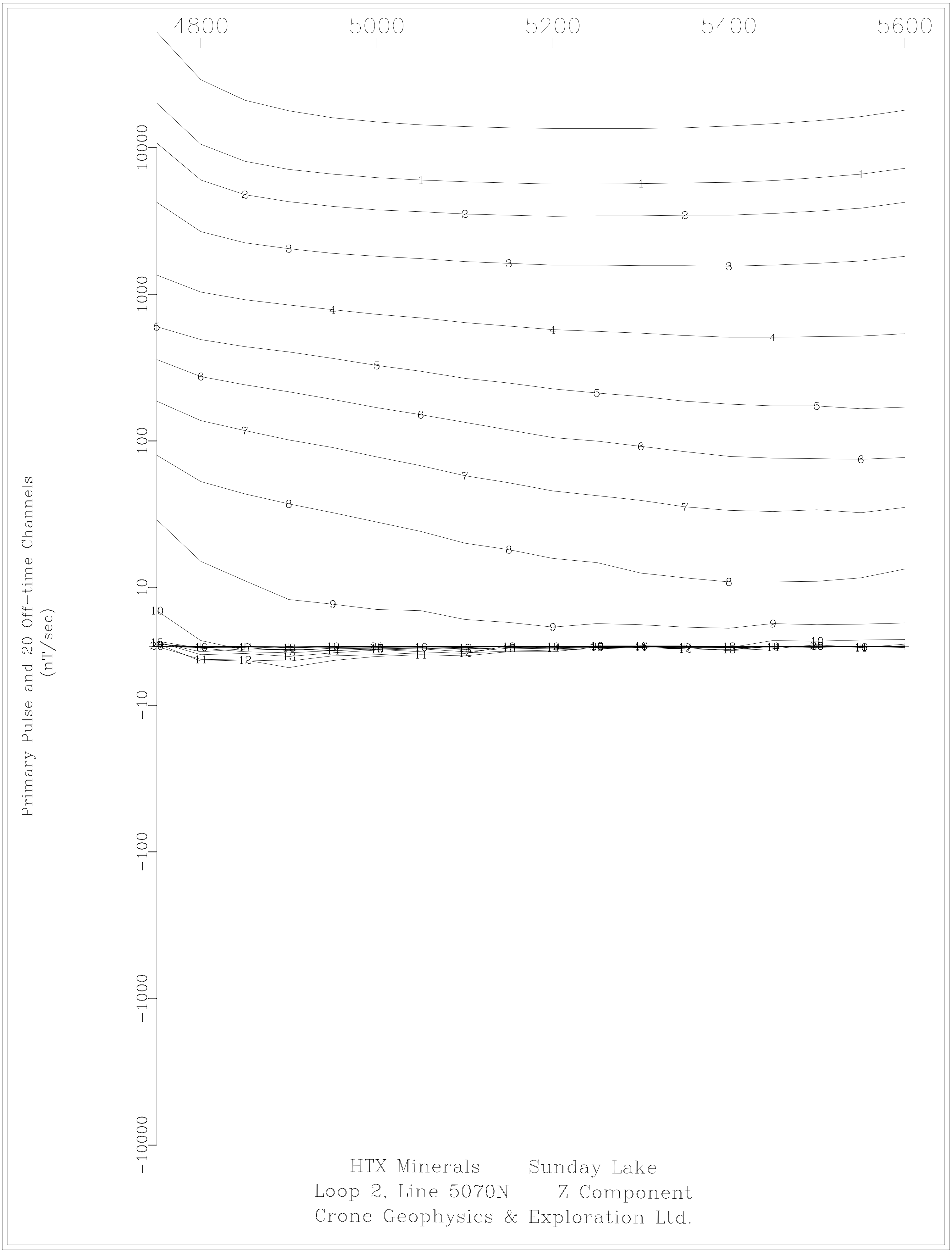
HTX Minerals   Sunday Lake
Loop 2, Line 4870N   X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4970N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4970N X Component
Crone Geophysics & Exploration Ltd.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5000
5200
5400
5600
10000
1000
100
10
-10
-100
-1000
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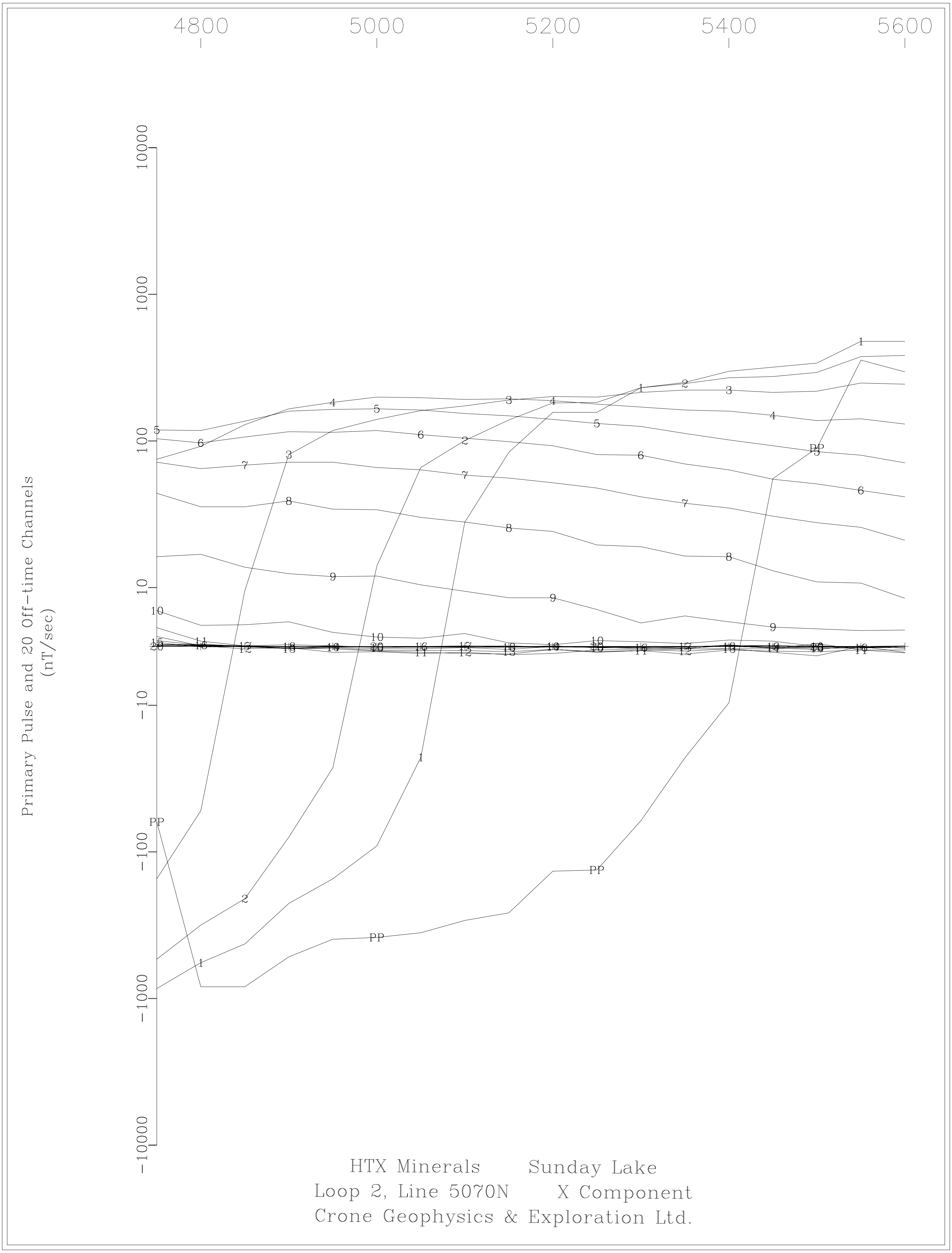
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5070N Z Component
Crone Geophysics & Exploration Ltd.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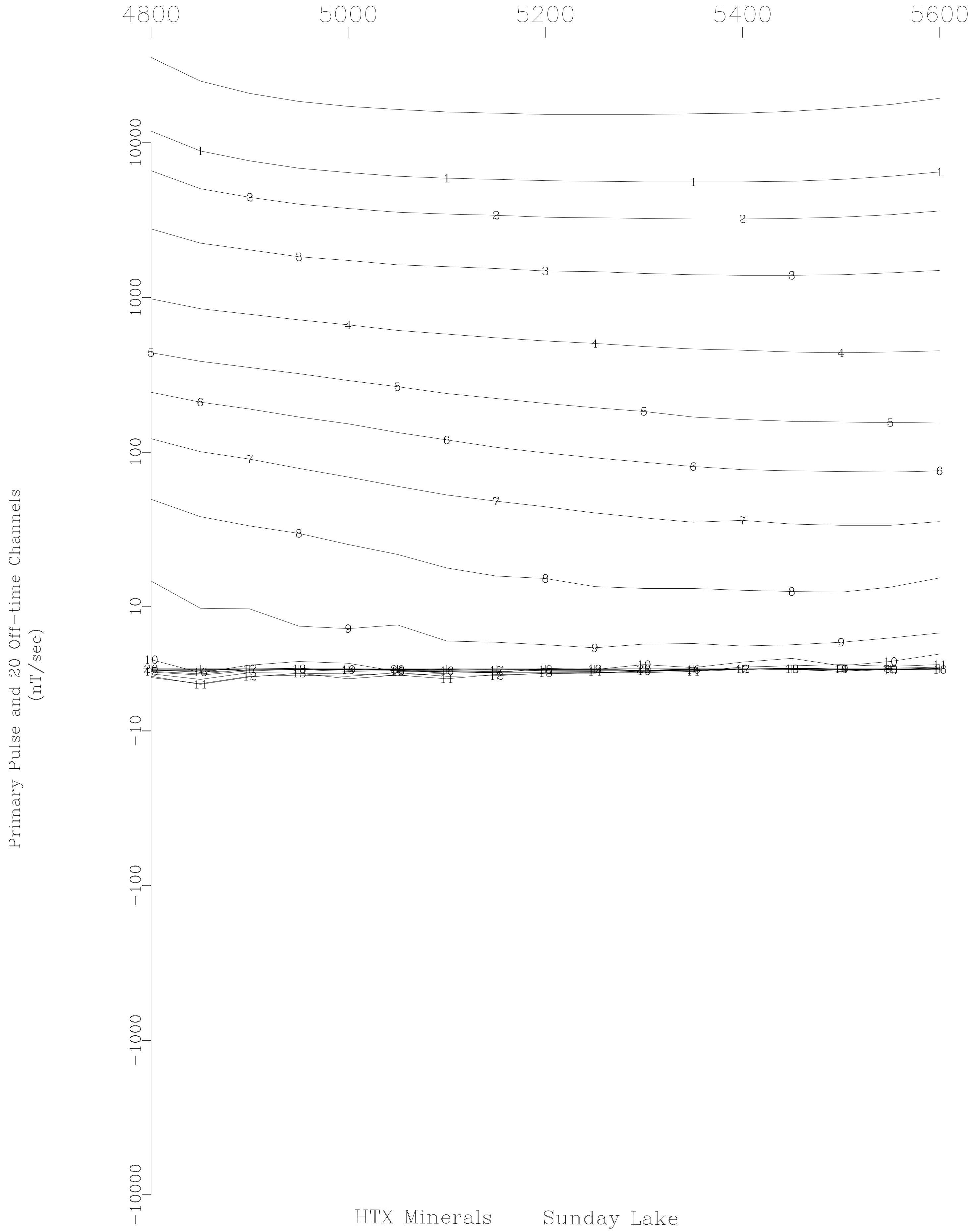
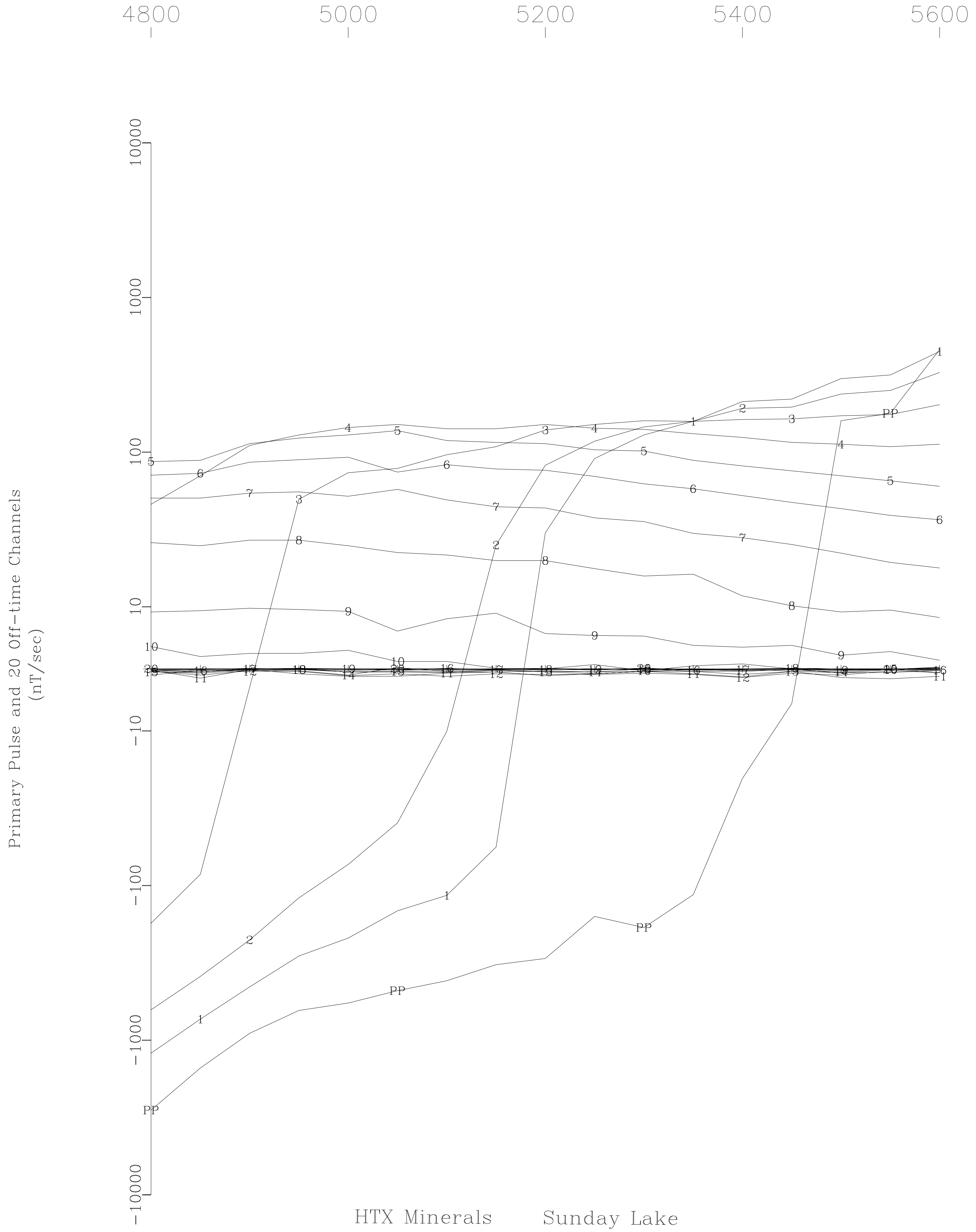
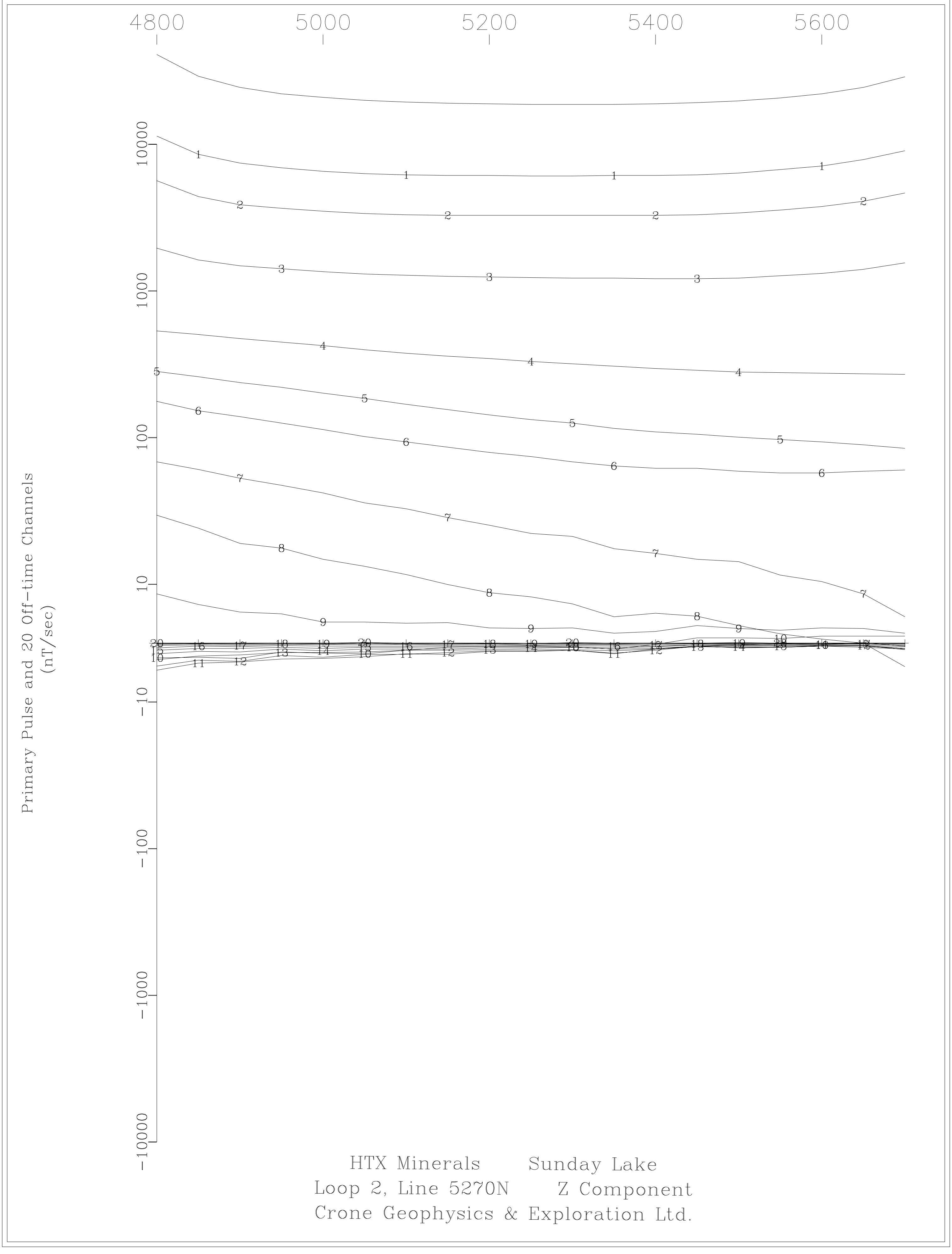
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5070N X Component
Crone Geophysics & Exploration Ltd.

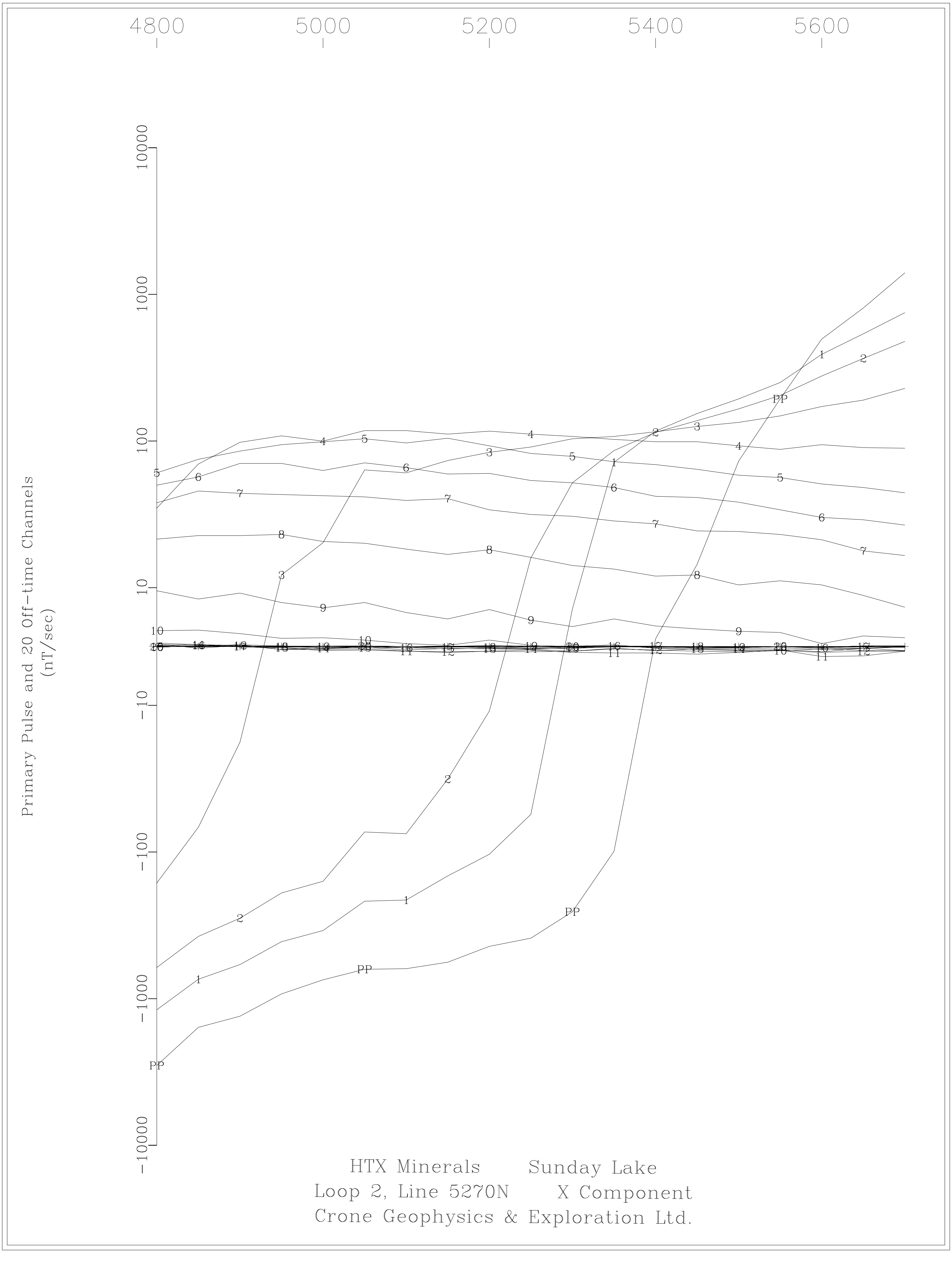


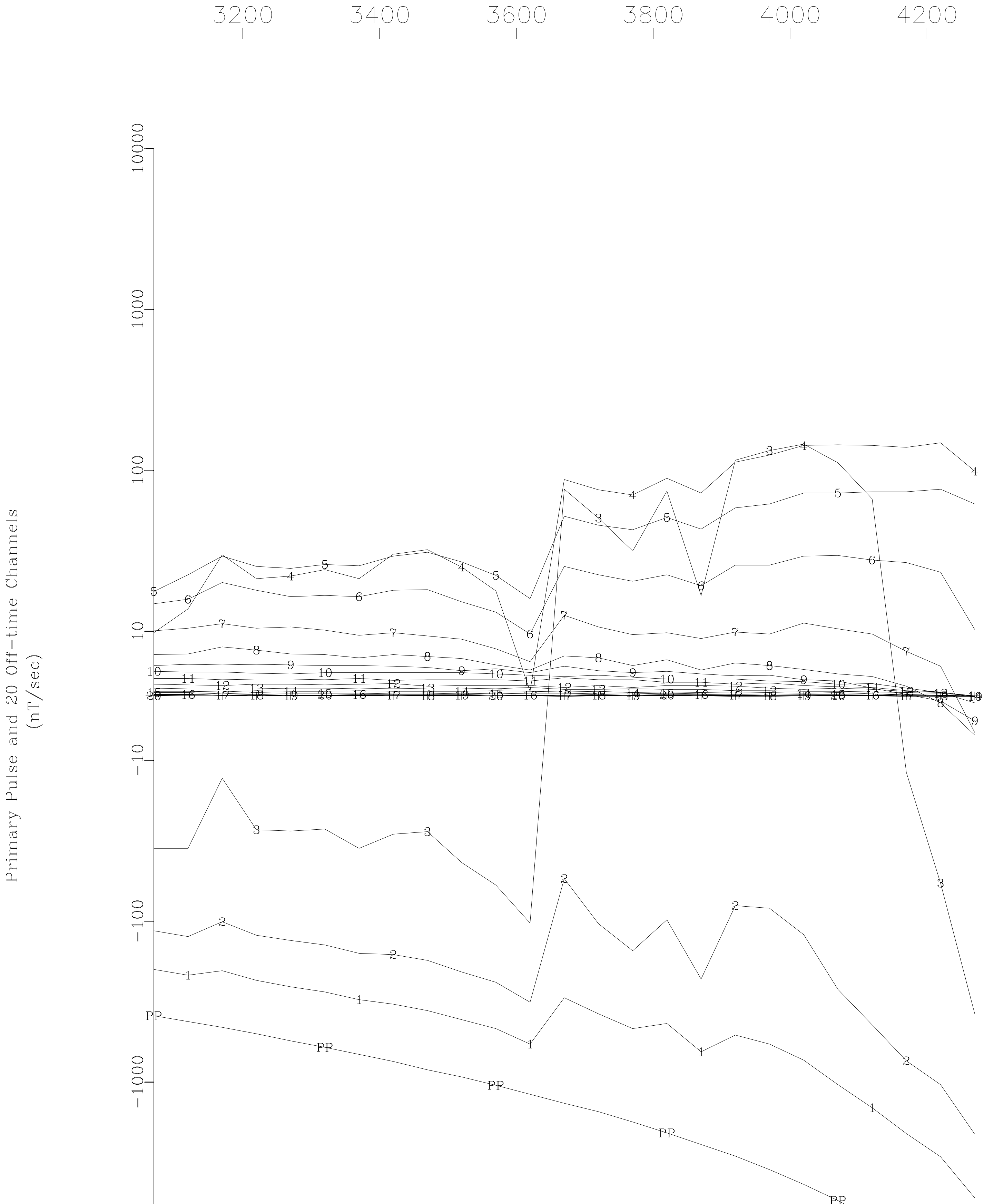
HTX Minerals   Sunday Lake
Loop 2, Line 5170N   Z Component
Crone Geophysics & Exploration Ltd.



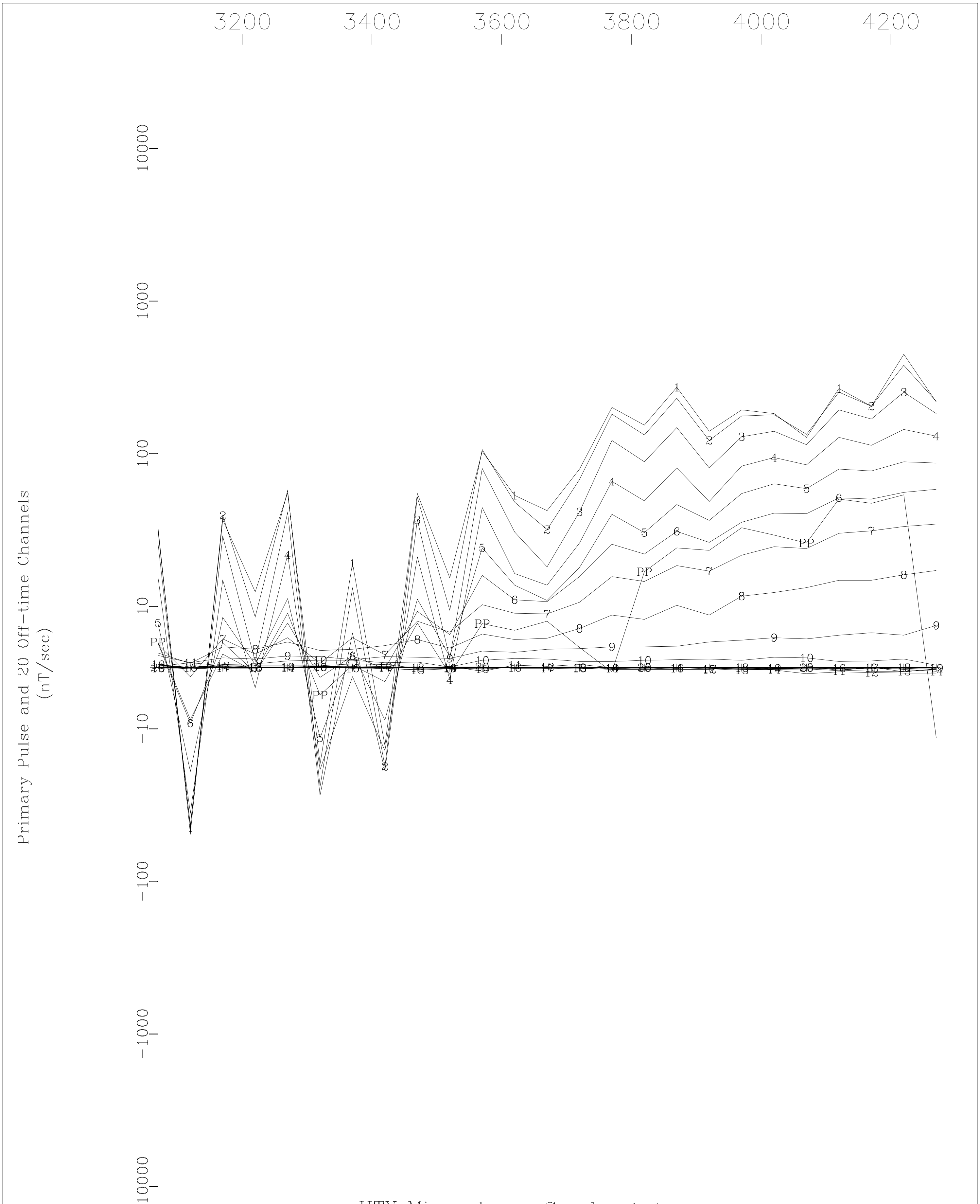
HTX Minerals Sunday Lake
Loop 2, Line 5170N X Component
Crone Geophysics & Exploration Ltd.


4800
5000
5200
5400
5600
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5270N Z Component
Crone Geophysics & Exploration Ltd.

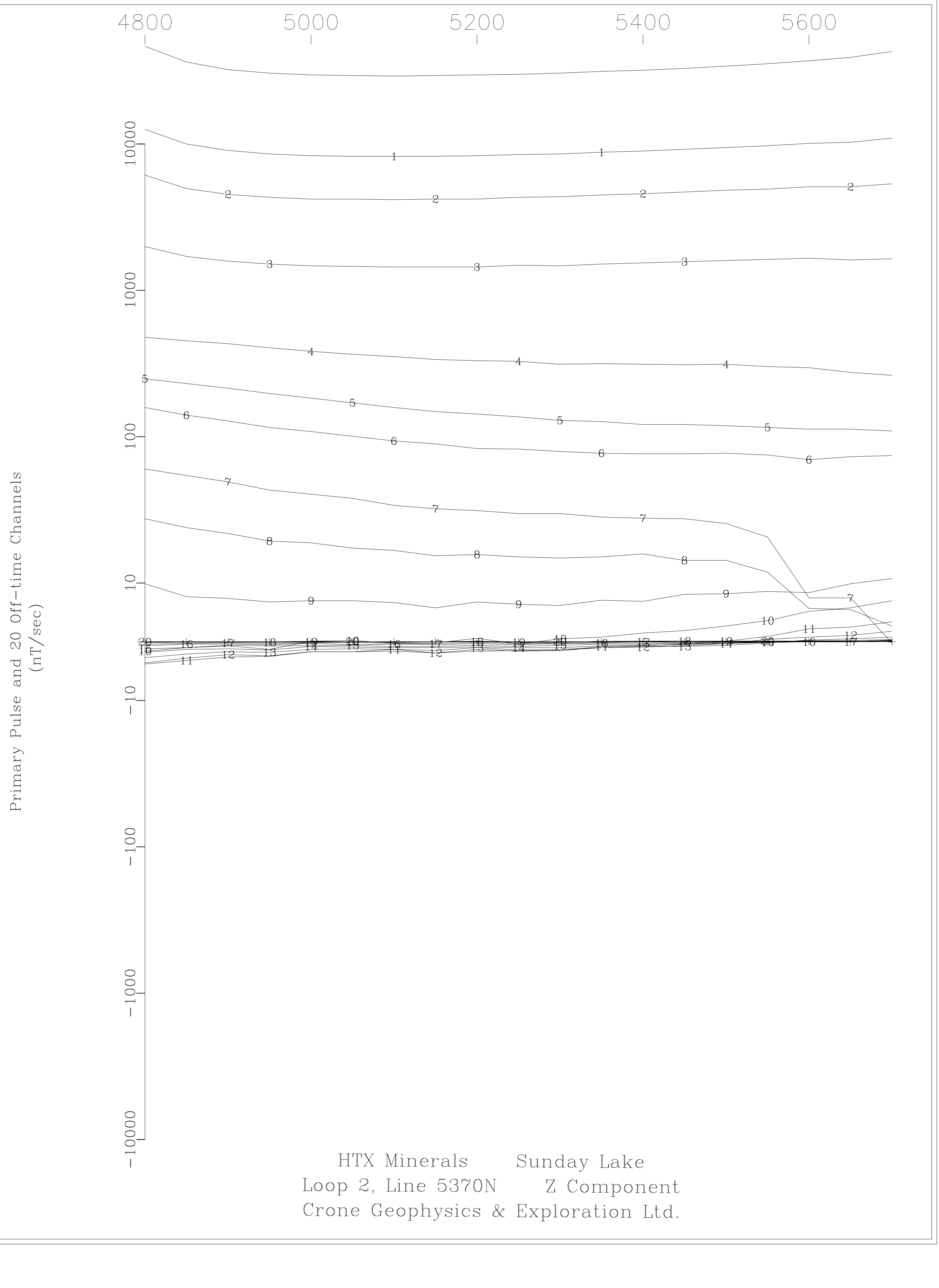

4800
5000
5200
5400
5600
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5270N X Component
Crone Geophysics & Exploration Ltd.

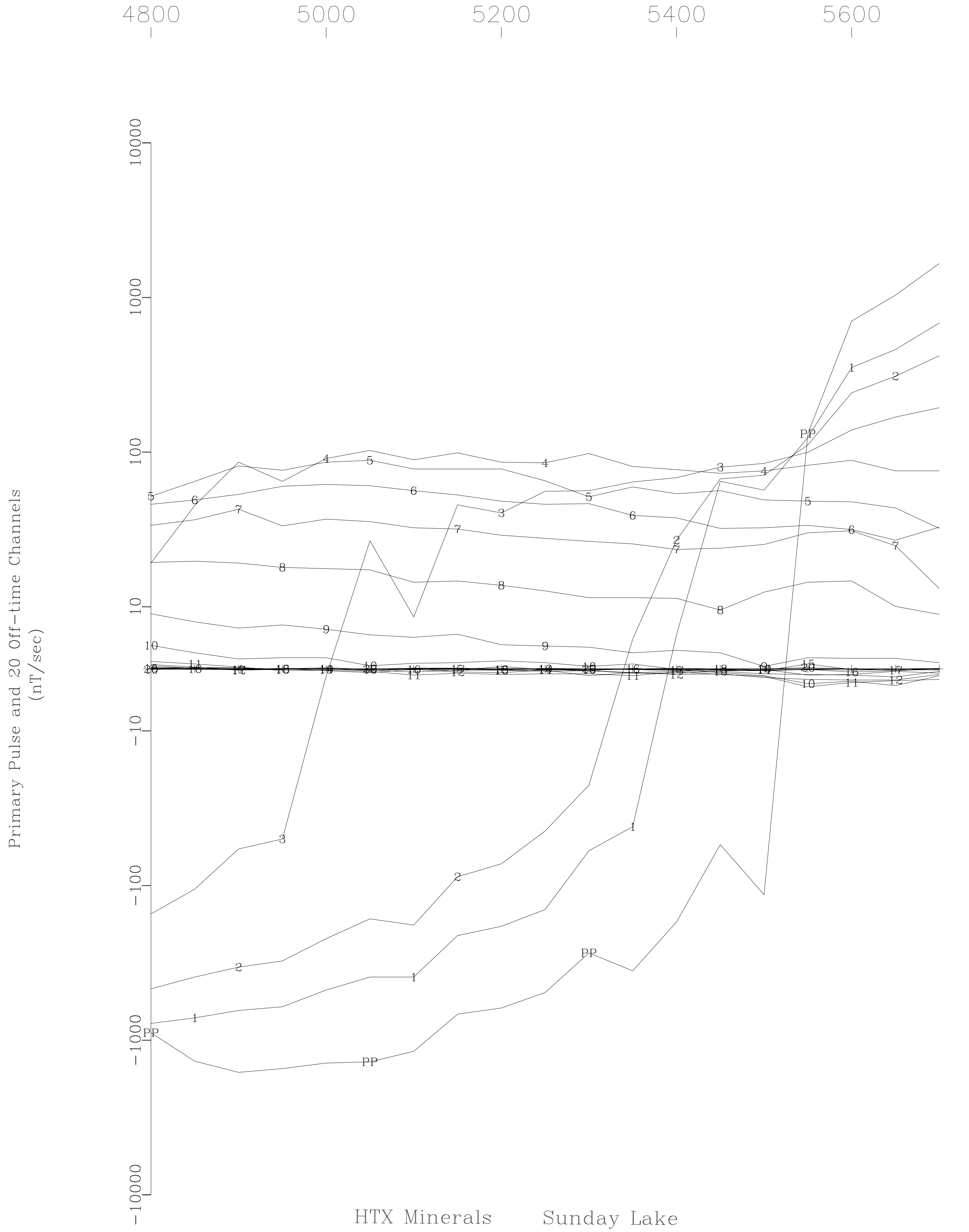


HTX Minerals Sunday Lake
Loop 2, Line 5300E Z Component
Crone Geophysics & Exploration Ltd.

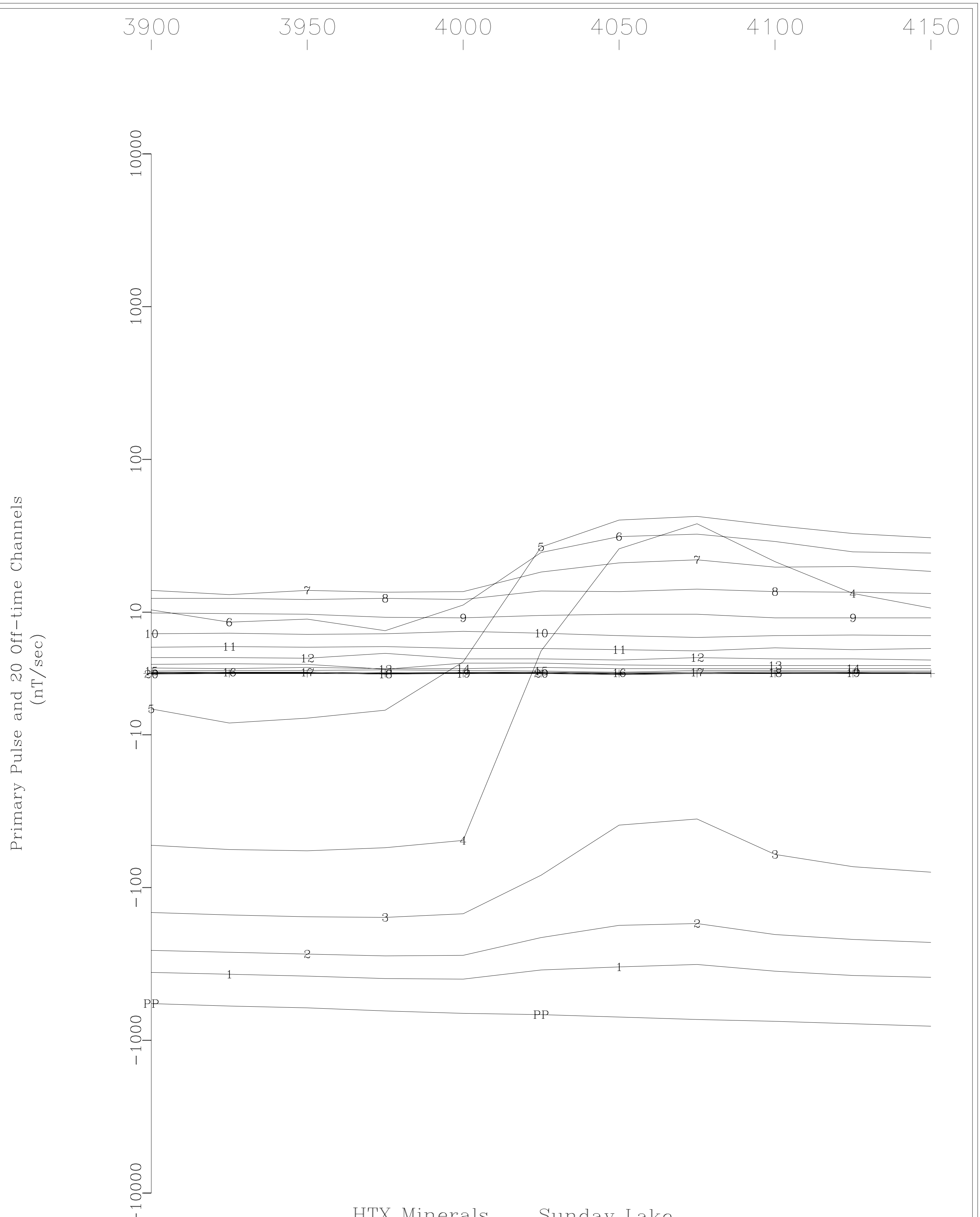


HTX Minerals Sunday Lake
Loop 2, Line 5300E Y Component
Crone Geophysics & Exploration Ltd.

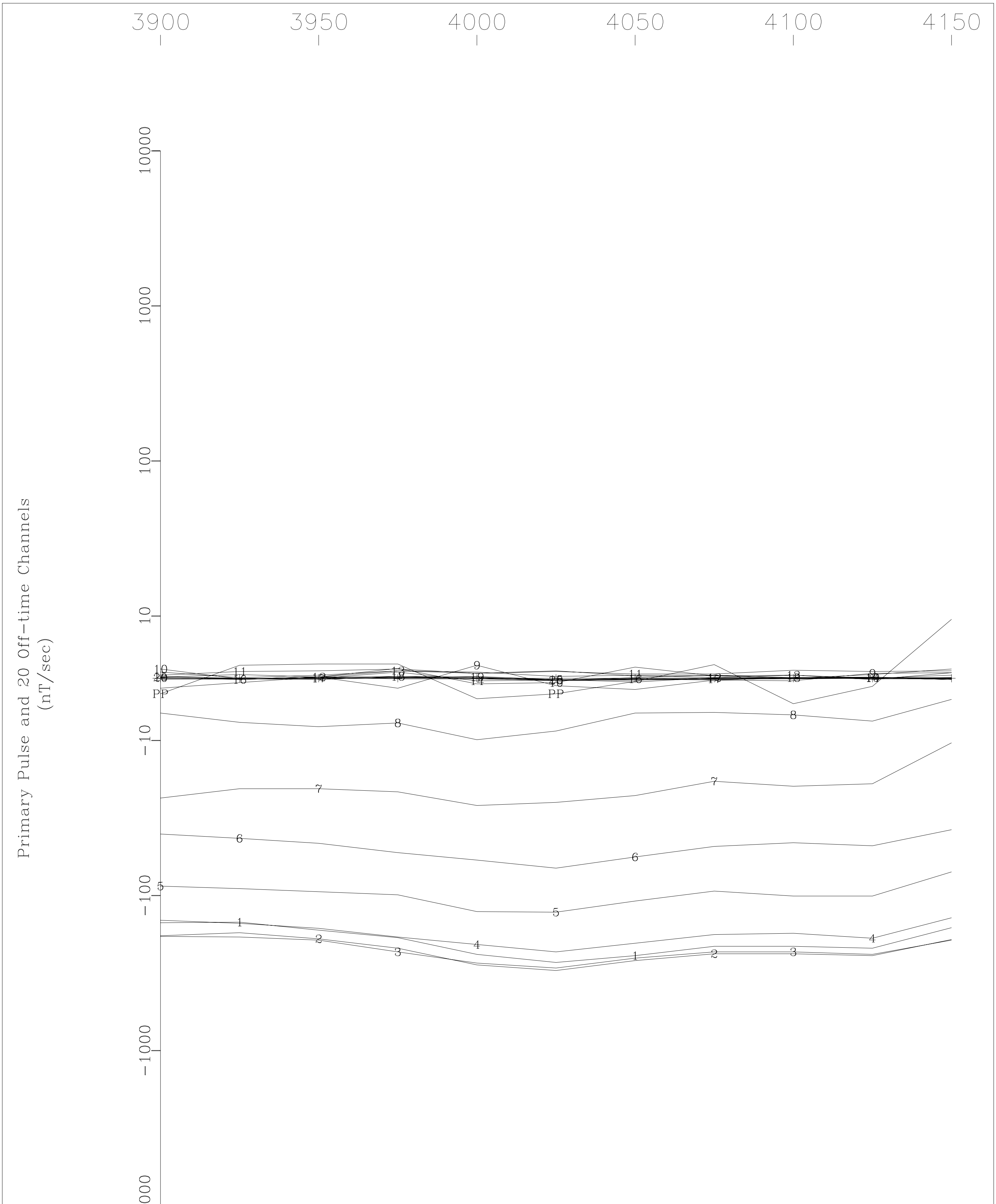

4800
5000
5200
5400
5600
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 20 Off-time Channels
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5370N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5370N X Component
Crone Geophysics & Exploration Ltd.



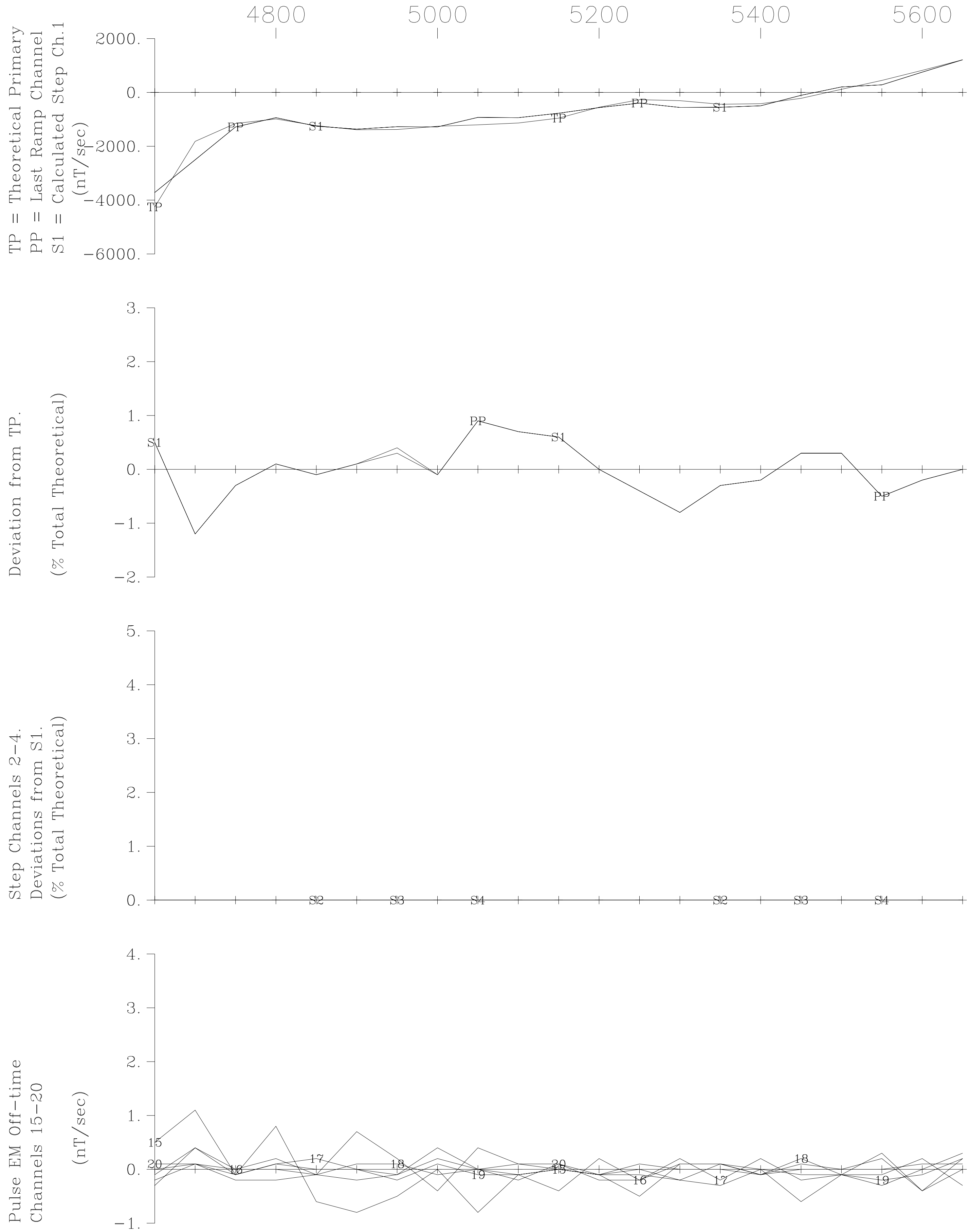
HTX Minerals Sunday Lake
Loop 2, Line 5970N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5970N X Component
Crone Geophysics & Exploration Ltd.

APPENDIX IV

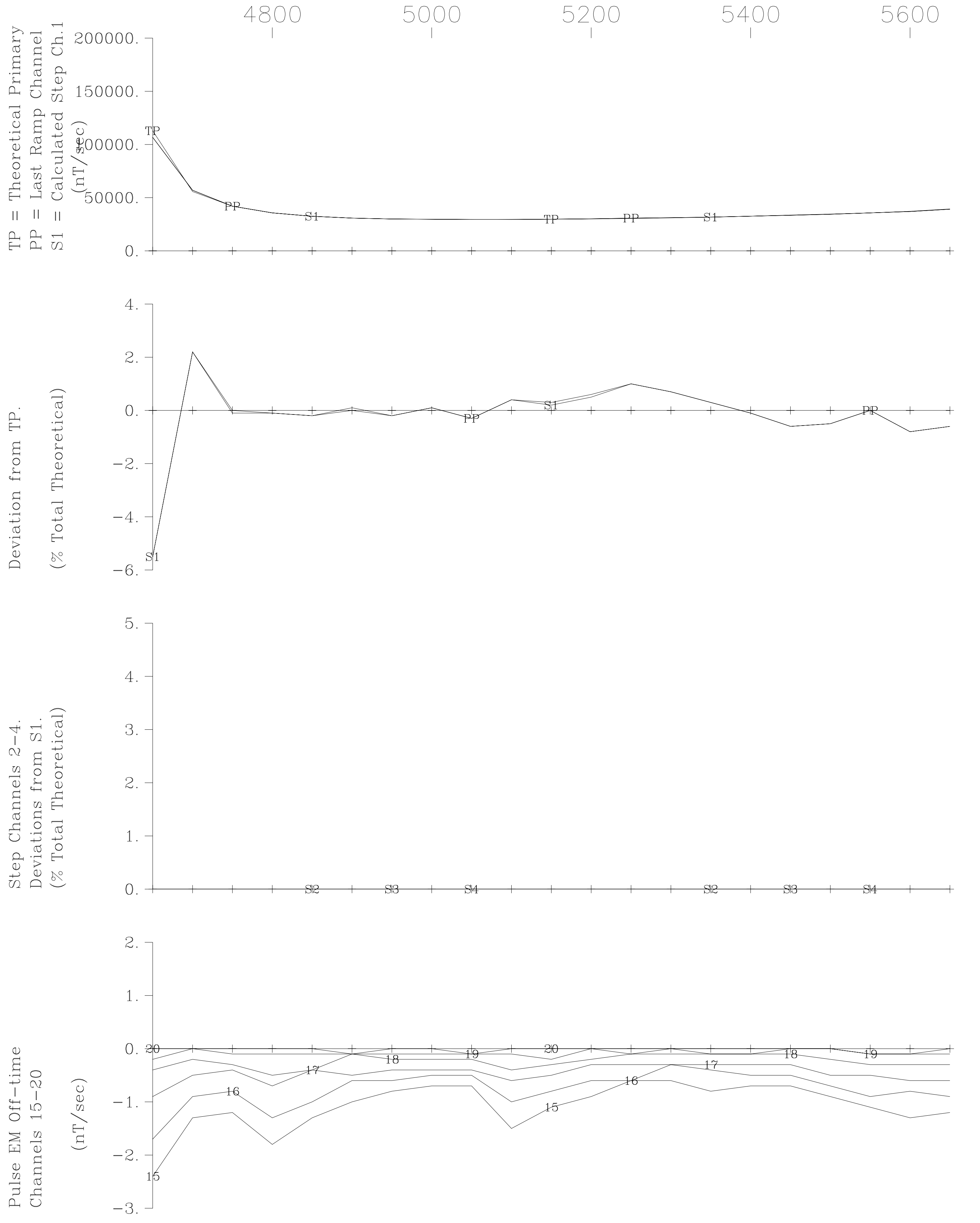
STEP RESPONSE PROFILES



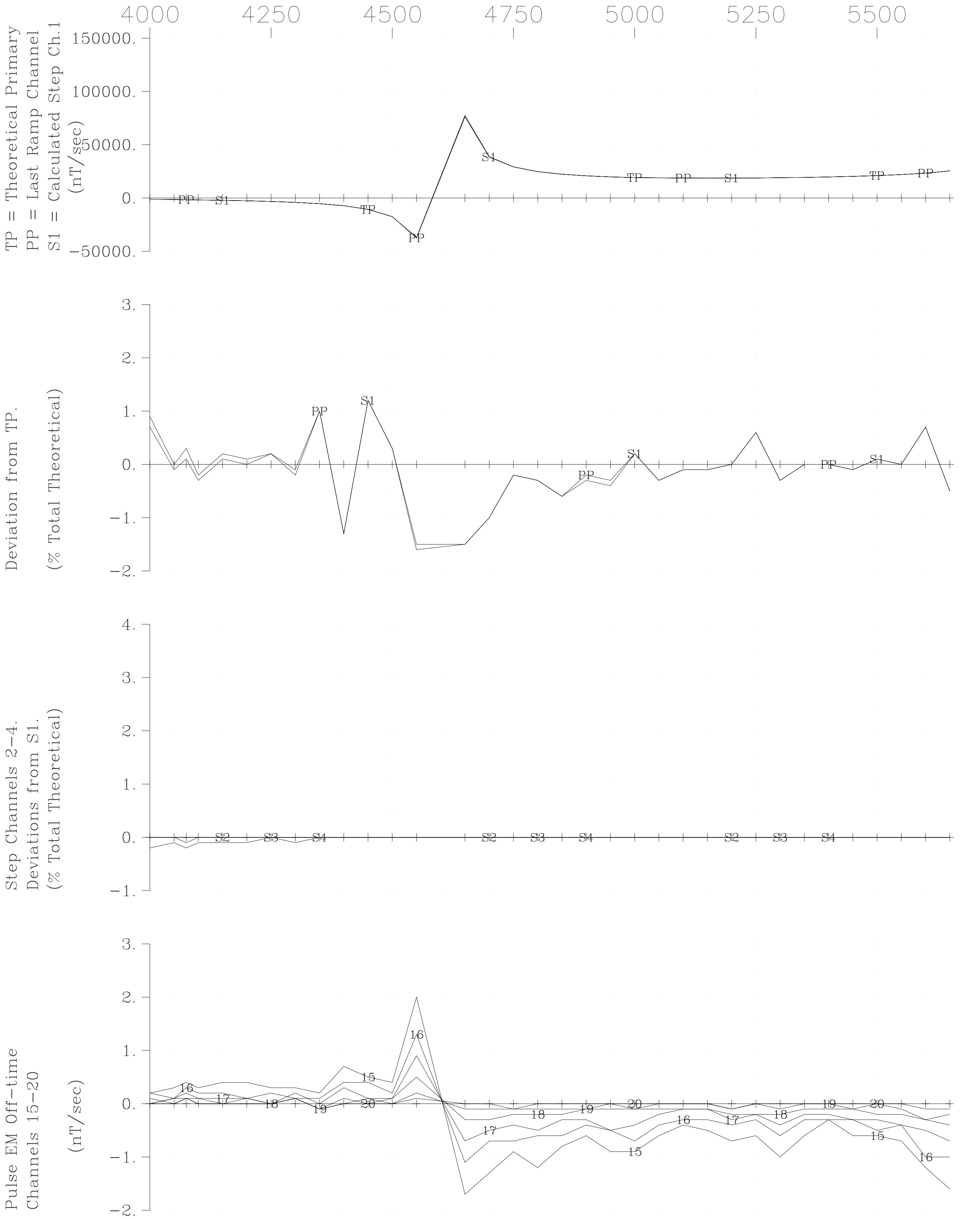
HTX Minerals Sunday Lake

Loop 1, Line 5470N X Component

Crone Geophysics & Exploration Ltd.



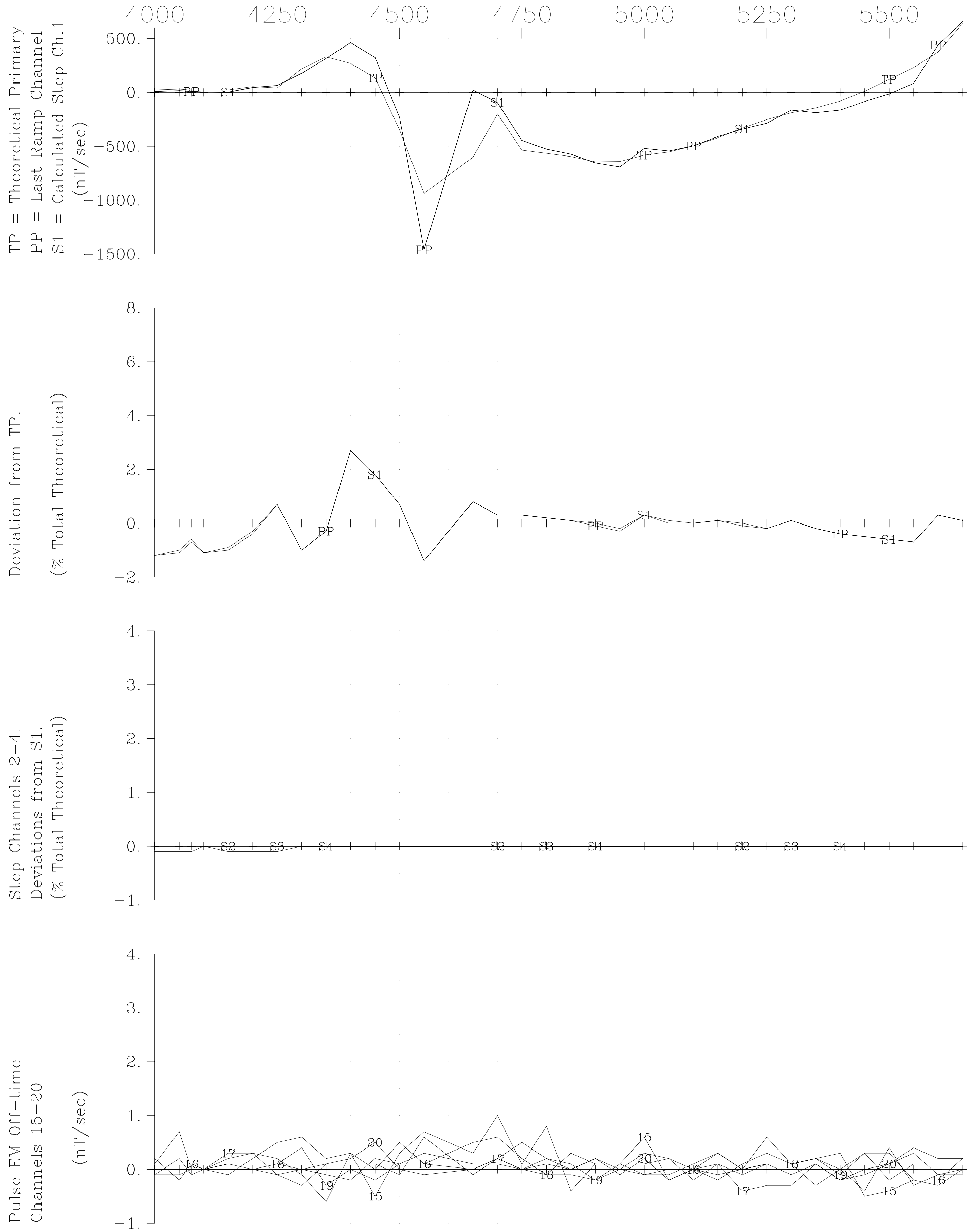
HTX Minerals Sunday Lake
Loop 1, Line 5470N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 5570N Z Component

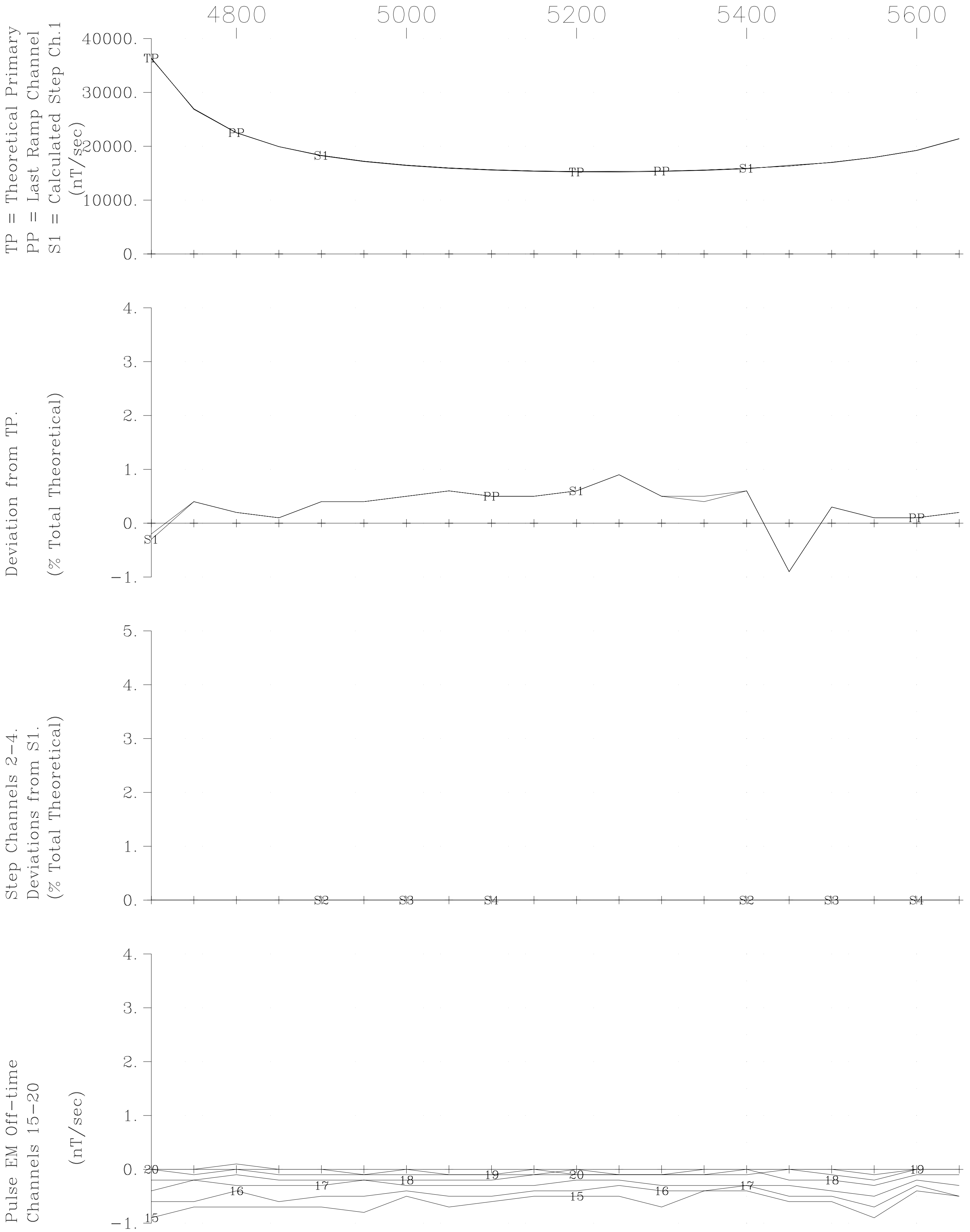
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 5570N X Component

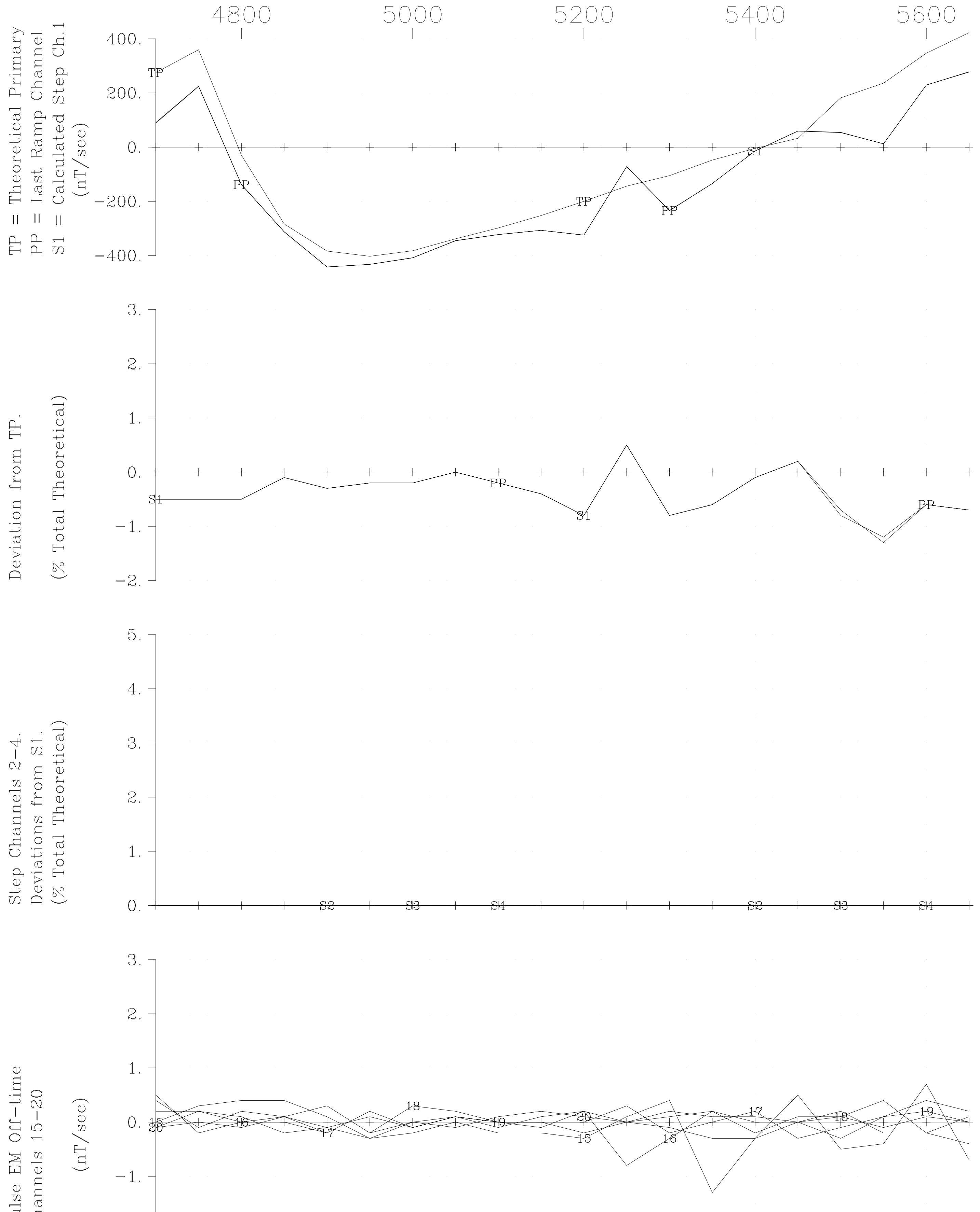
Crone Geophysics & Exploration Ltd.



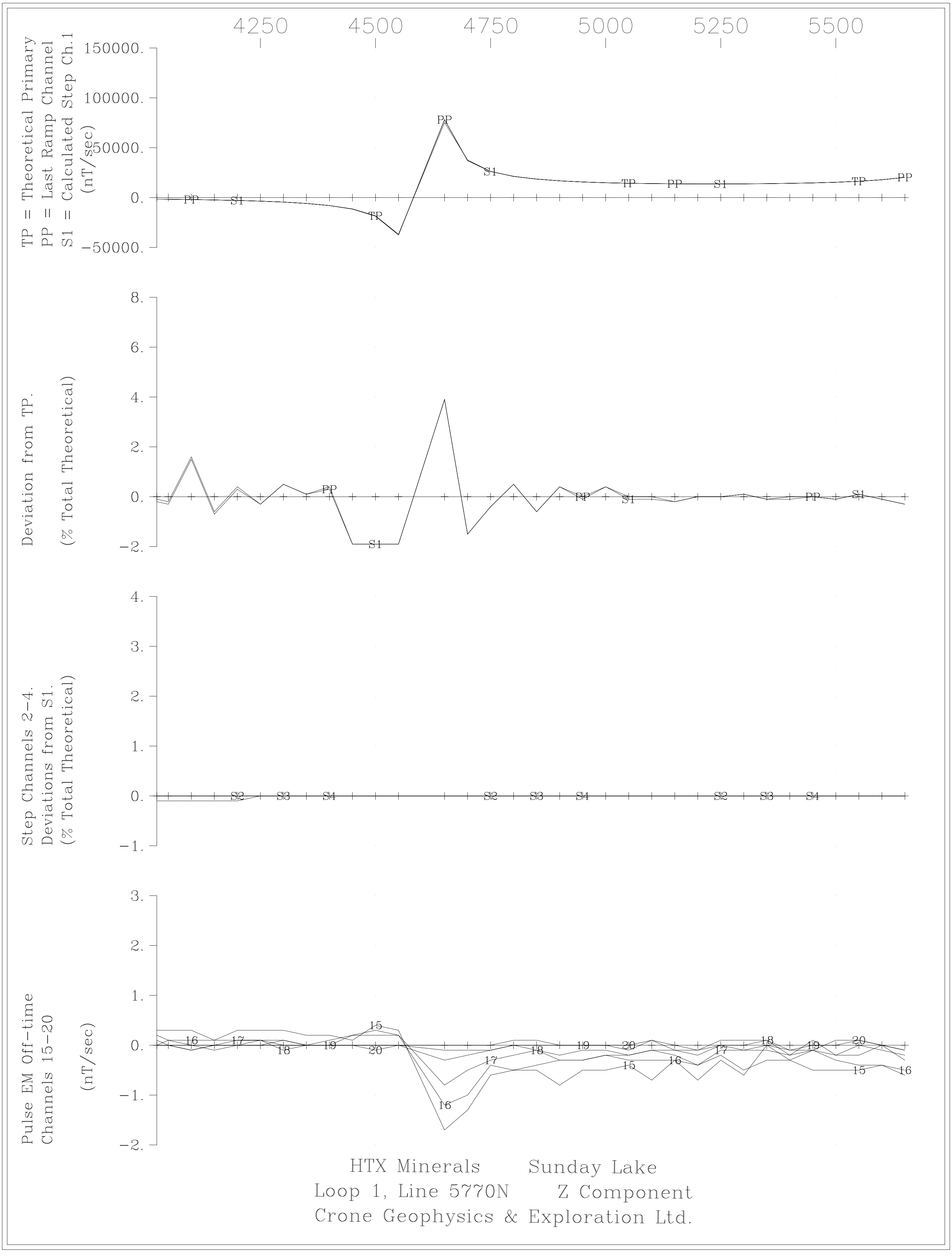
HTX Minerals Sunday Lake

Loop 1, Line 5670N Z Component

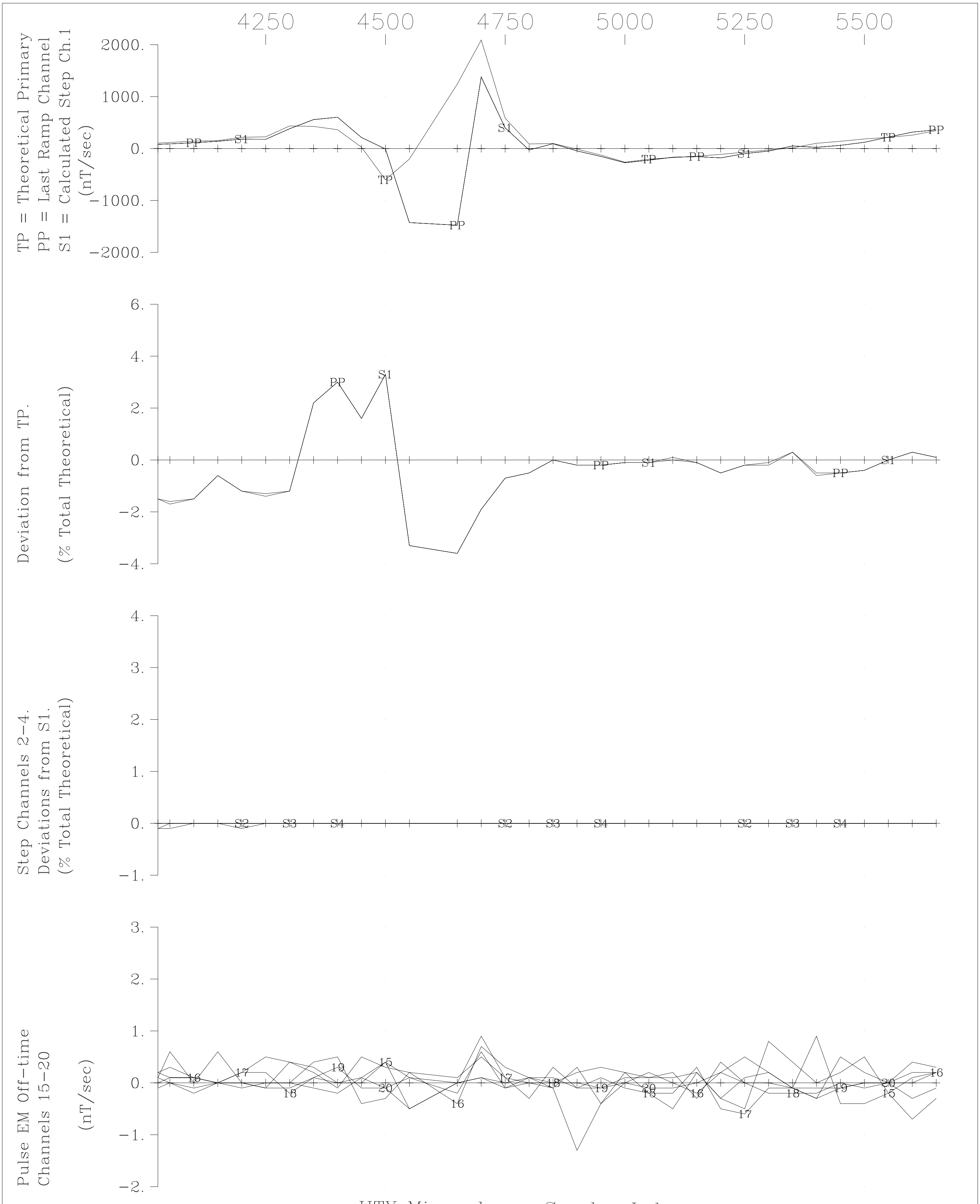
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 5670N X Component
Crone Geophysics & Exploration Ltd.



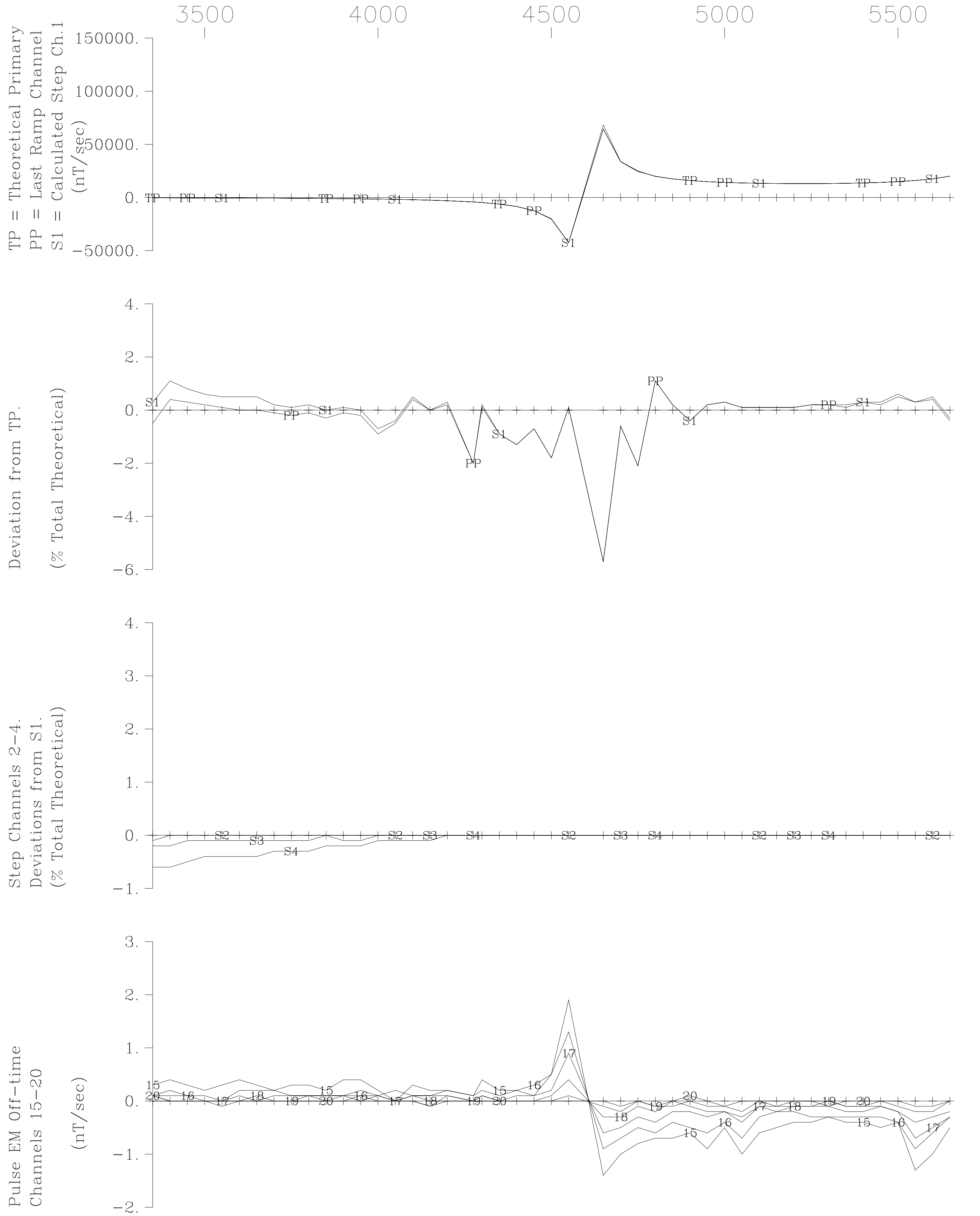
4250
4500
4750
5000
5250
5500
TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
150000.
100000.
50000.
0.
-50000.
Deviation from TP.
(% Total Theoretical)
8.
6.
4.
2.
0.
-2.
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
4.
3.
2.
1.
0.
-1.
Pulse EM Off-time
Channels 15-20
(nT/sec)
3.
2.
1.
0.
-1.
-2.
HTX Minerals Sunday Lake
Loop 1, Line 5770N Z Component
Crone Geophysics & Exploration Ltd.



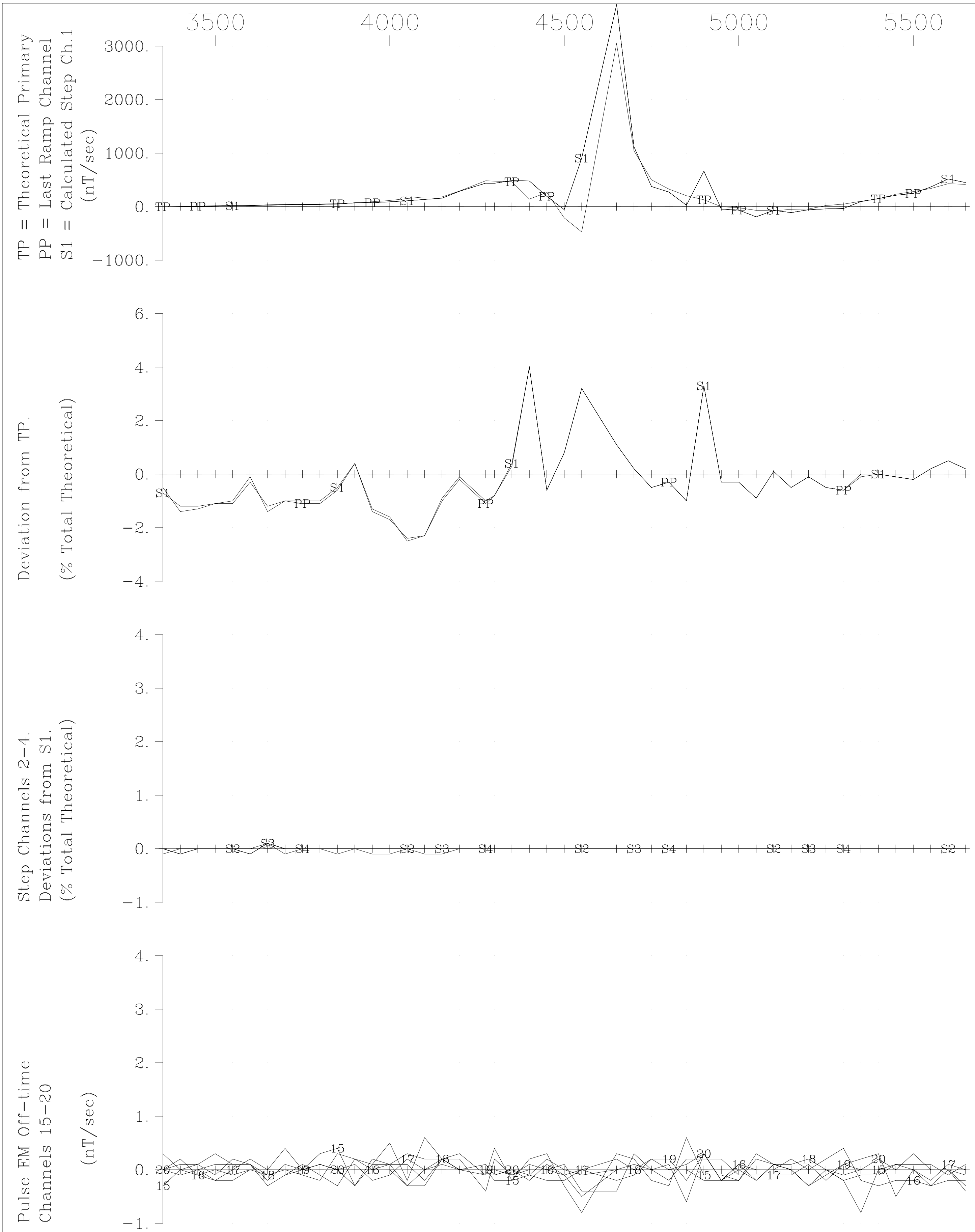
HTX Minerals Sunday Lake

Loop 1, Line 5770N X Component

Crone Geophysics & Exploration Ltd.



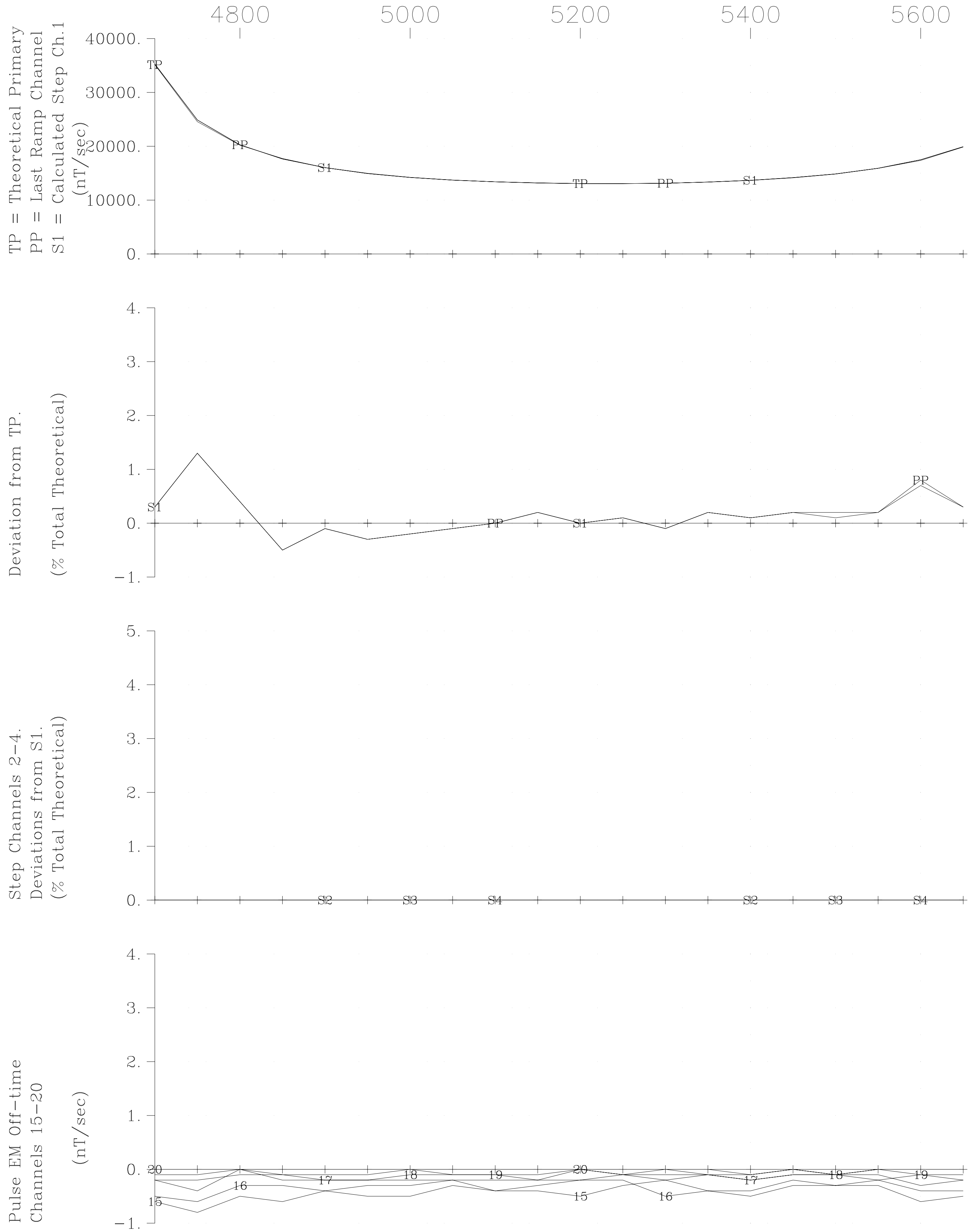
HTX Minerals Sunday Lake
Loop 1, Line 5870N Z Component
Crone Geophysics & Exploration Ltd.



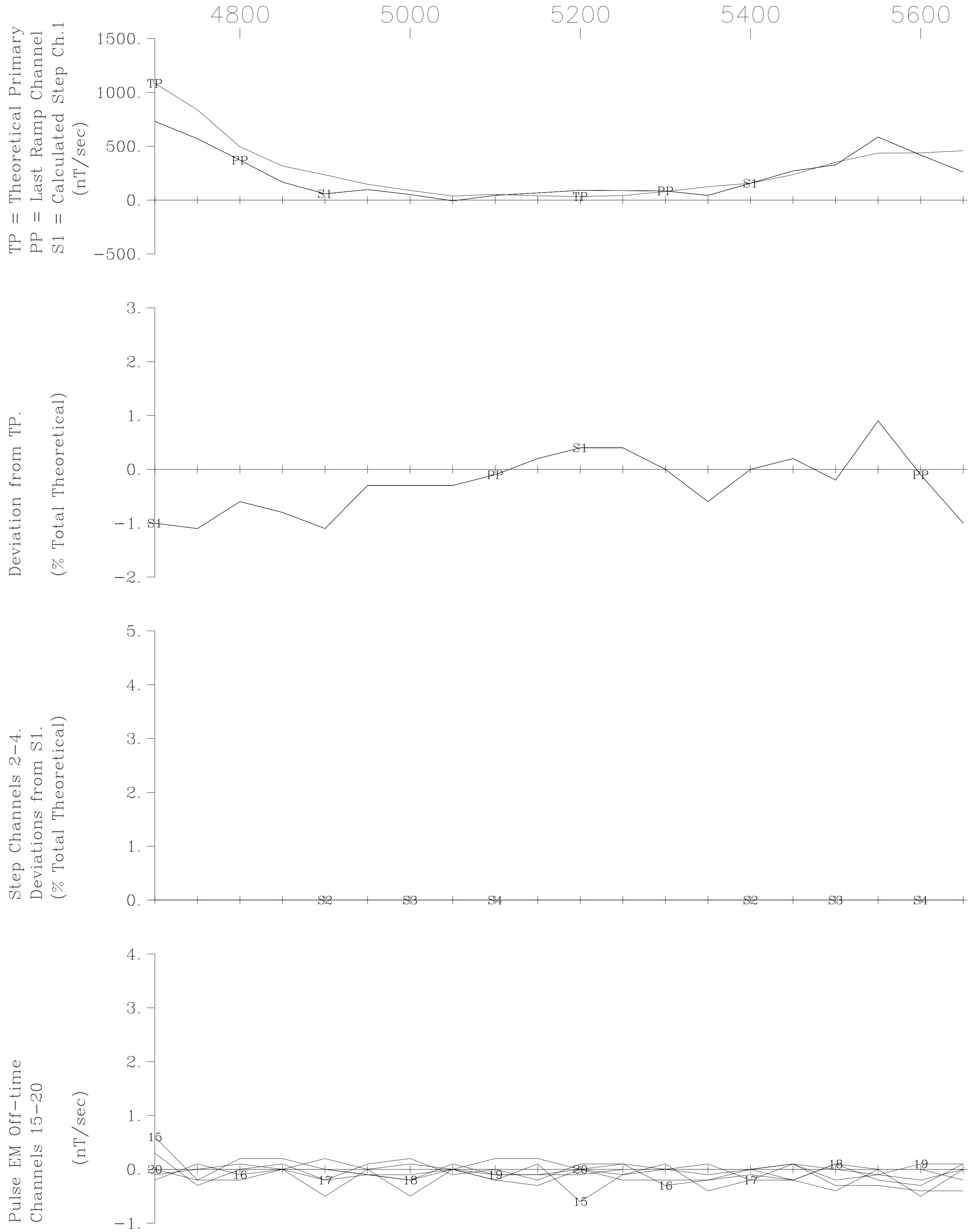
HTX Minerals Sunday Lake

Loop 1, Line 5870N X Component

Crone Geophysics & Exploration Ltd.



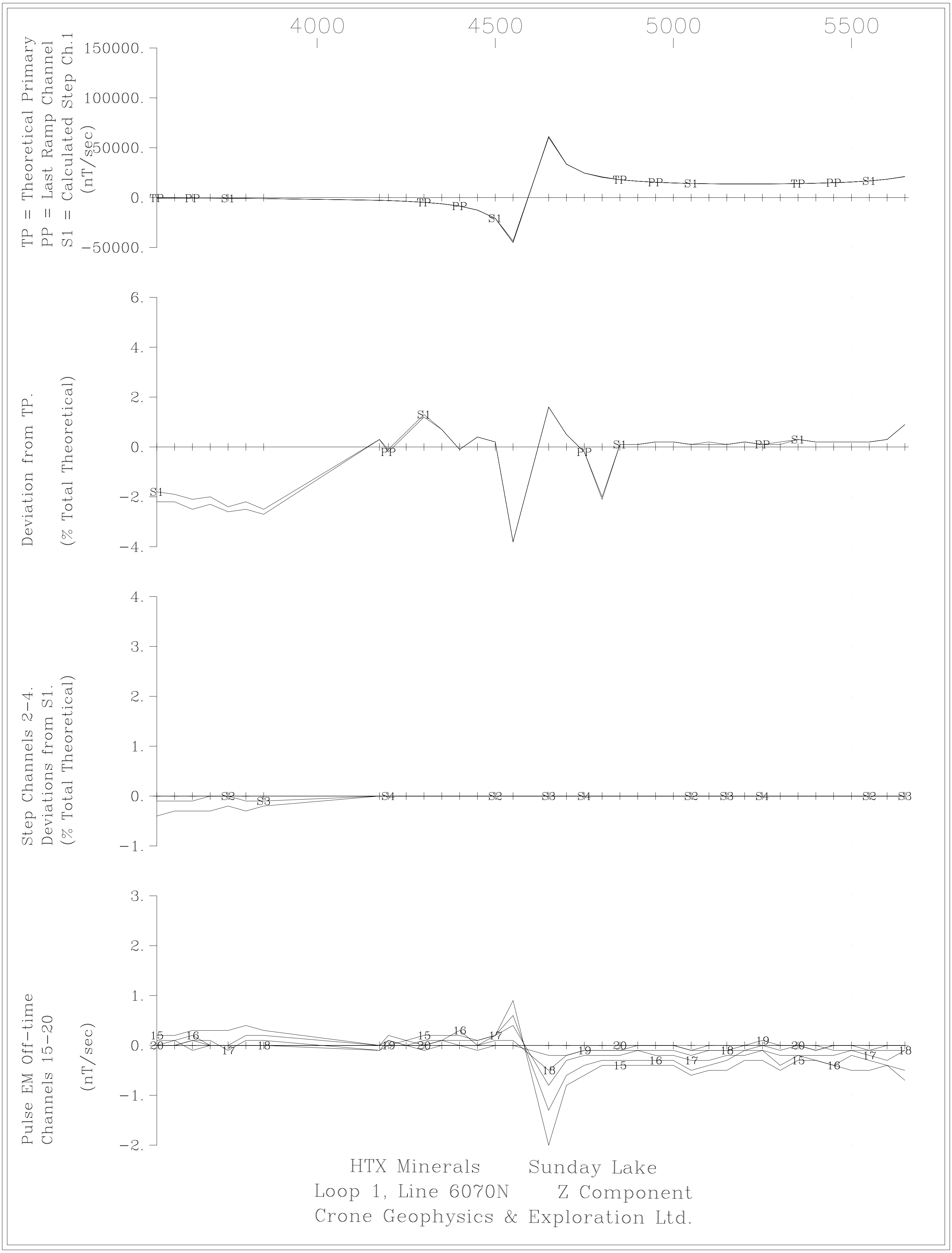
HTX Minerals Sunday Lake
Loop 1, Line 5970N Z Component
Crone Geophysics & Exploration Ltd.



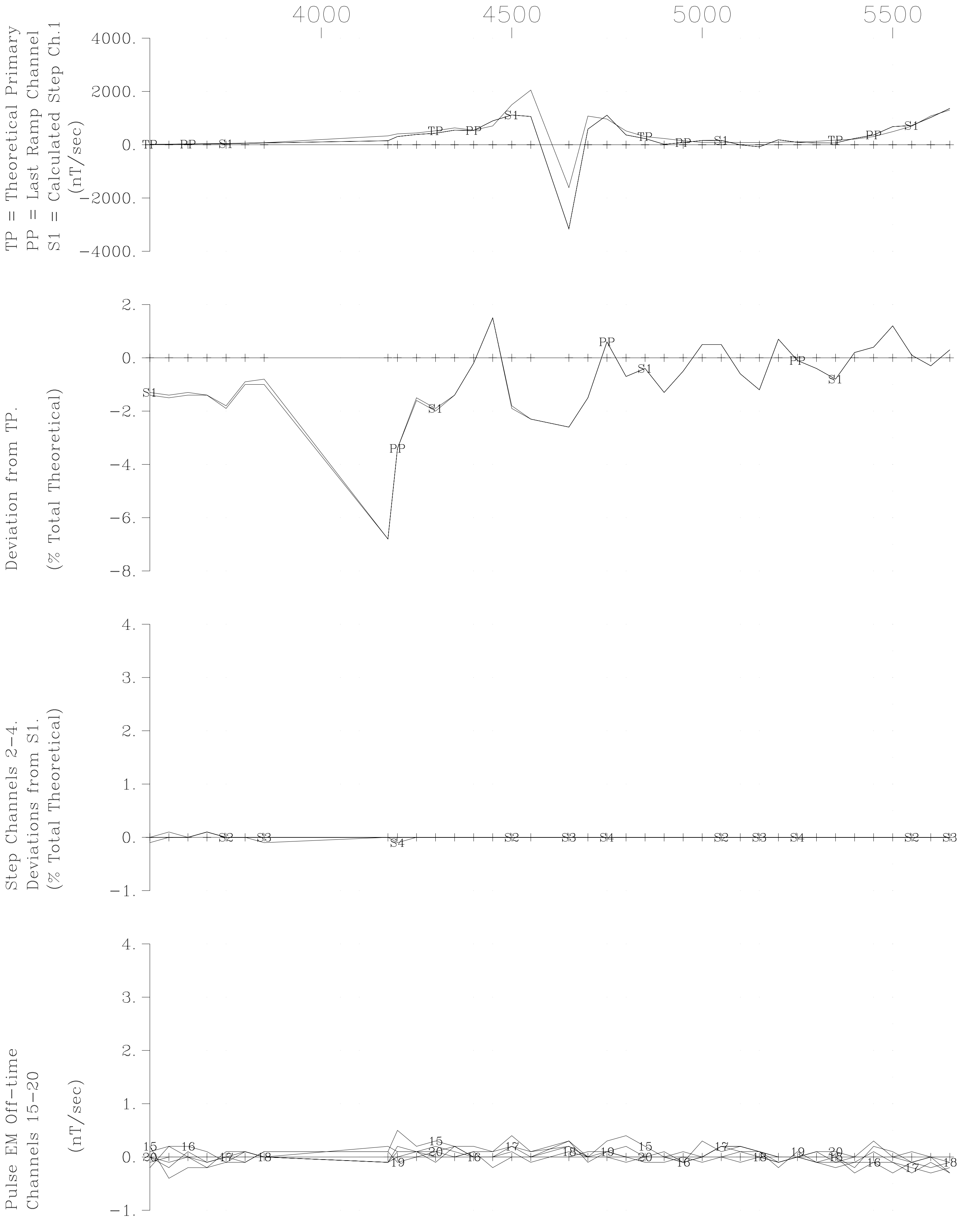
HTX Minerals Sunday Lake

Loop 1, Line 5970N X Component

Crone Geophysics & Exploration Ltd.



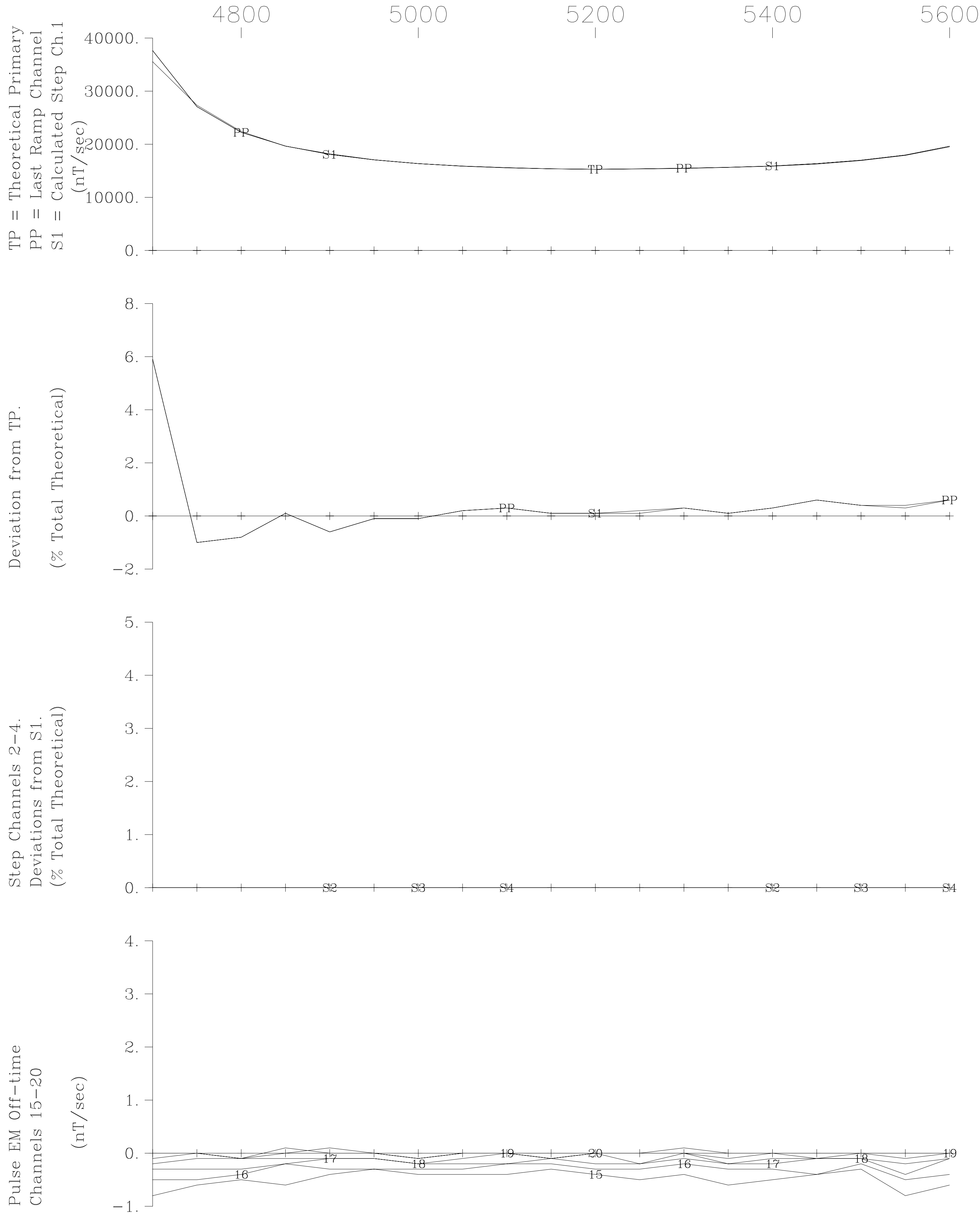
4000
4500
5000
5500
TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
150000.
100000.
50000.
0.
-50000.
Deviation from TP.
(% Total Theoretical)
6.
4.
2.
0.
-2.
-4.
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
4.
3.
2.
1.
0.
-1.
Pulse EM Off-time
Channels 15-20
(nT/sec)
3.
2.
1.
0.
-1.
-2.
HTX Minerals Sunday Lake
Loop 1, Line 6070N Z Component
Crone Geophysics & Exploration Ltd.



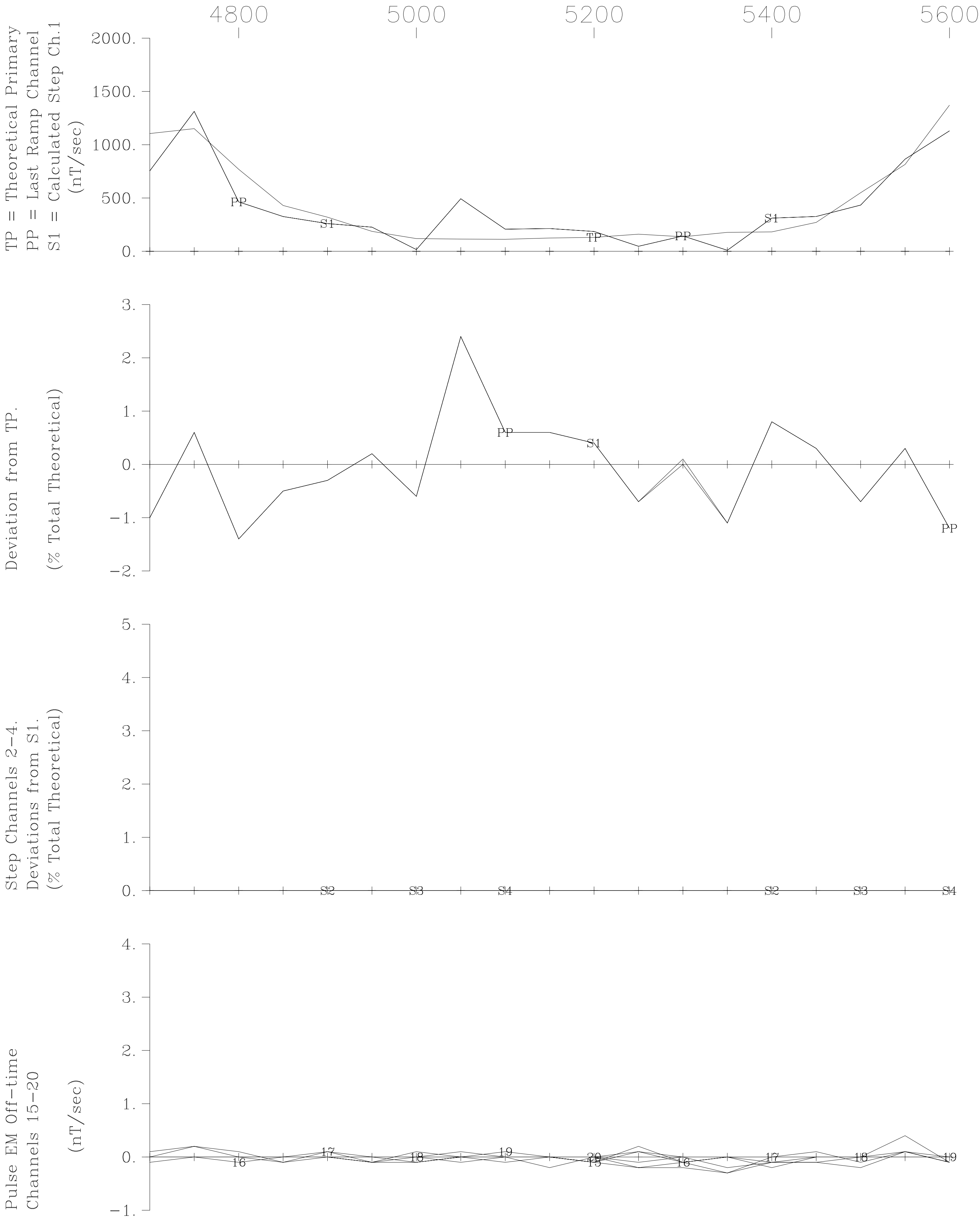
HTX Minerals Sunday Lake

Loop 1, Line 6070N X Component

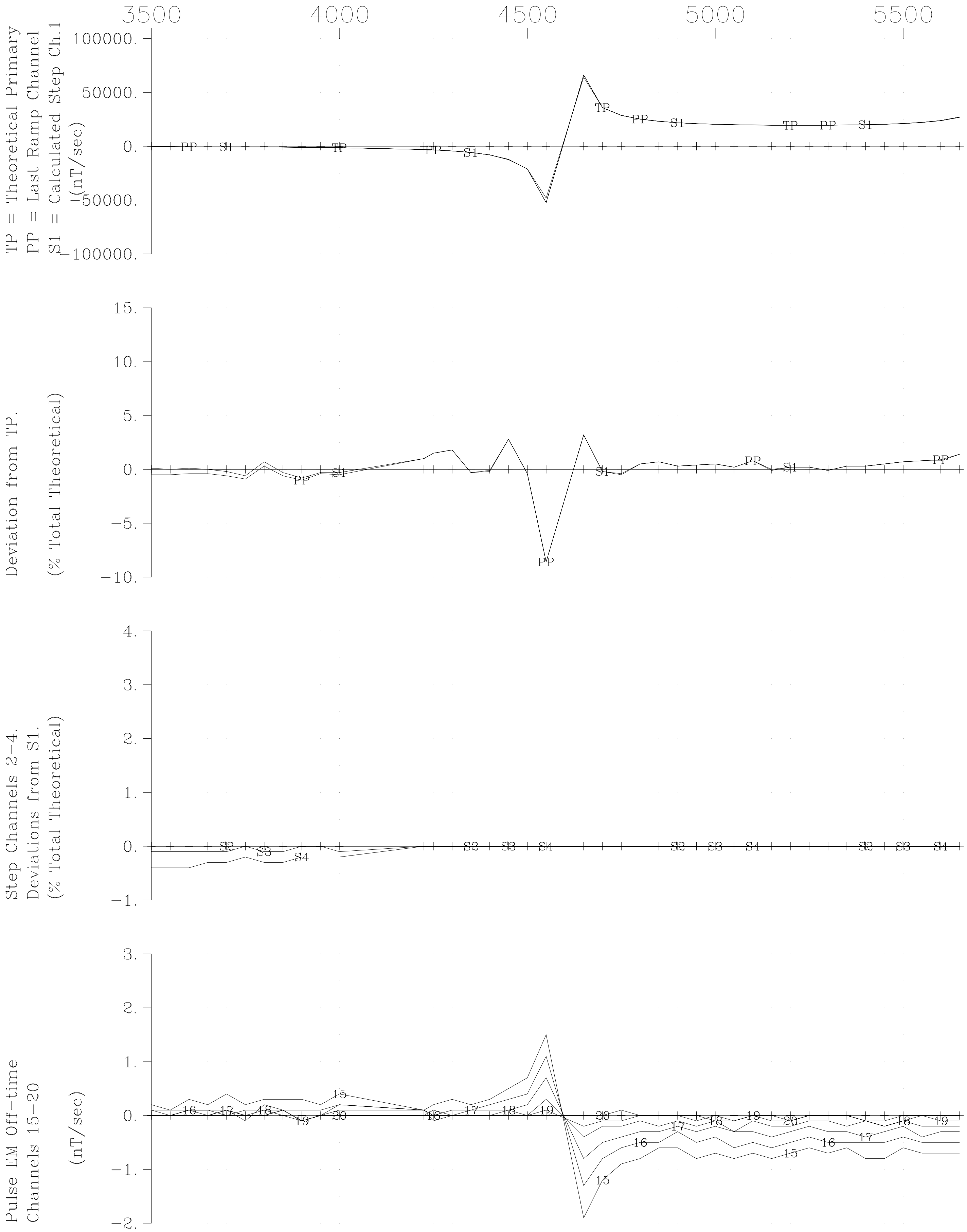
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 1, Line 6170N Z Component
Crone Geophysics & Exploration Ltd.



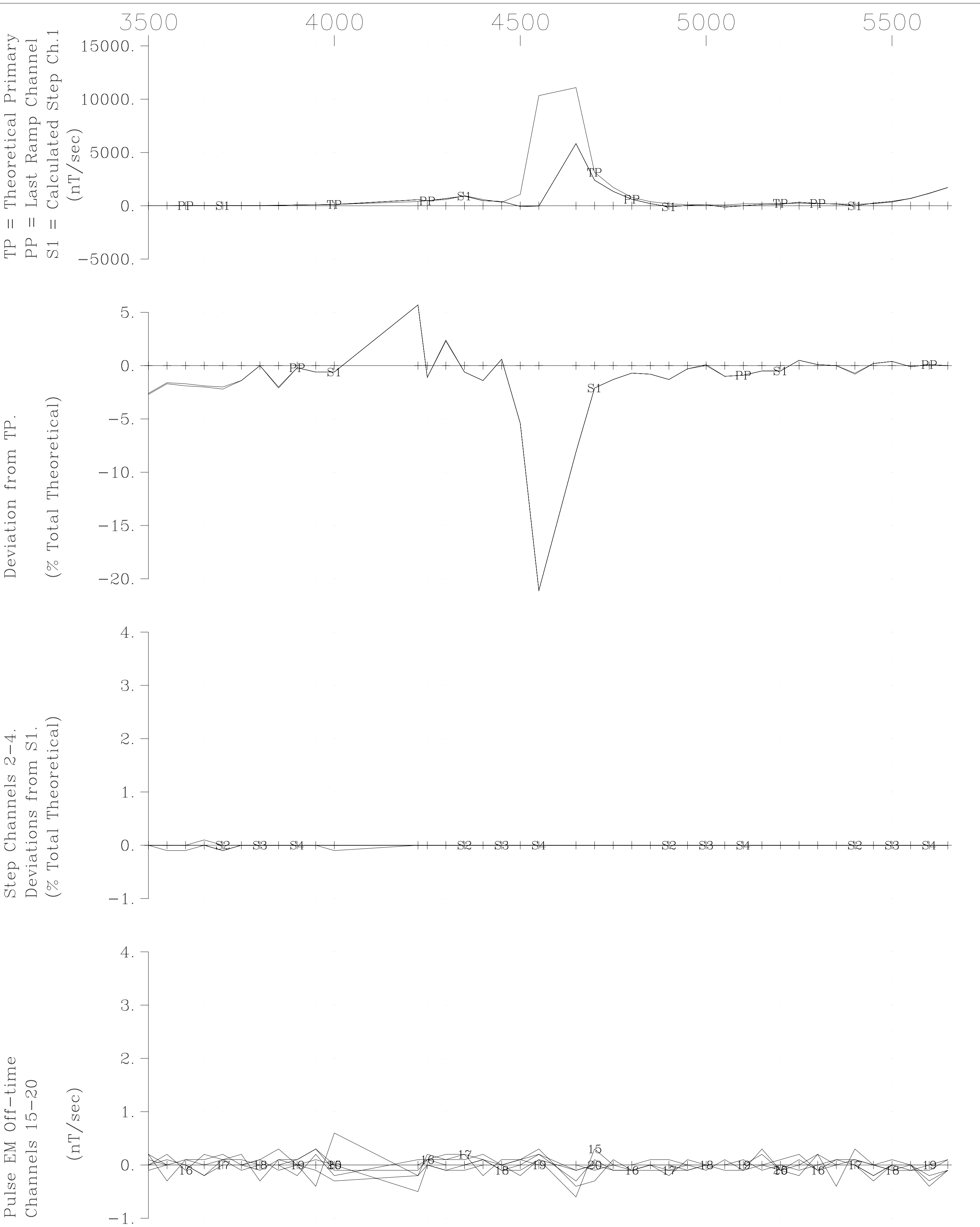
HTX Minerals Sunday Lake
Loop 1, Line 6170N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 6270N Z Component

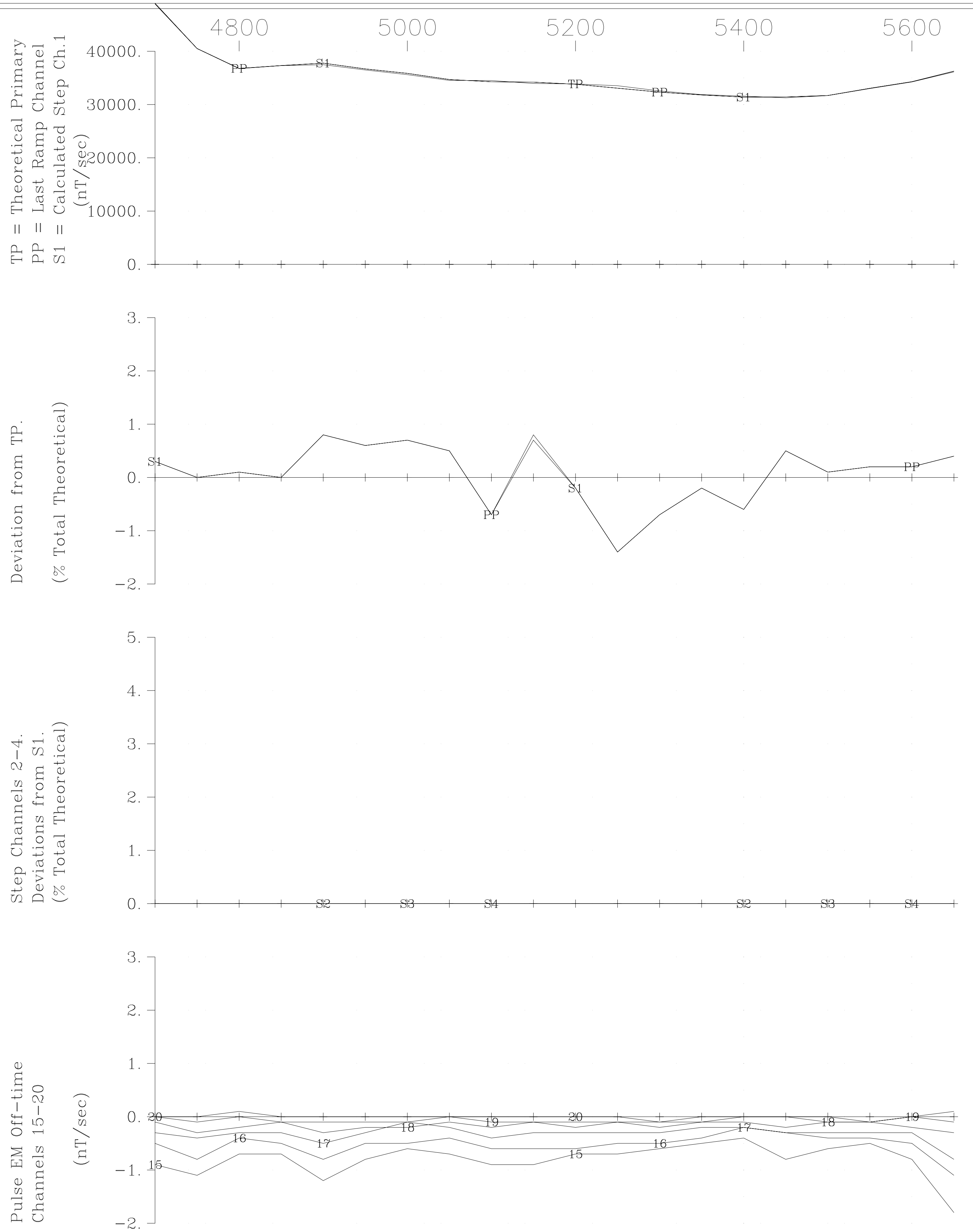
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 1, Line 6270N X Component

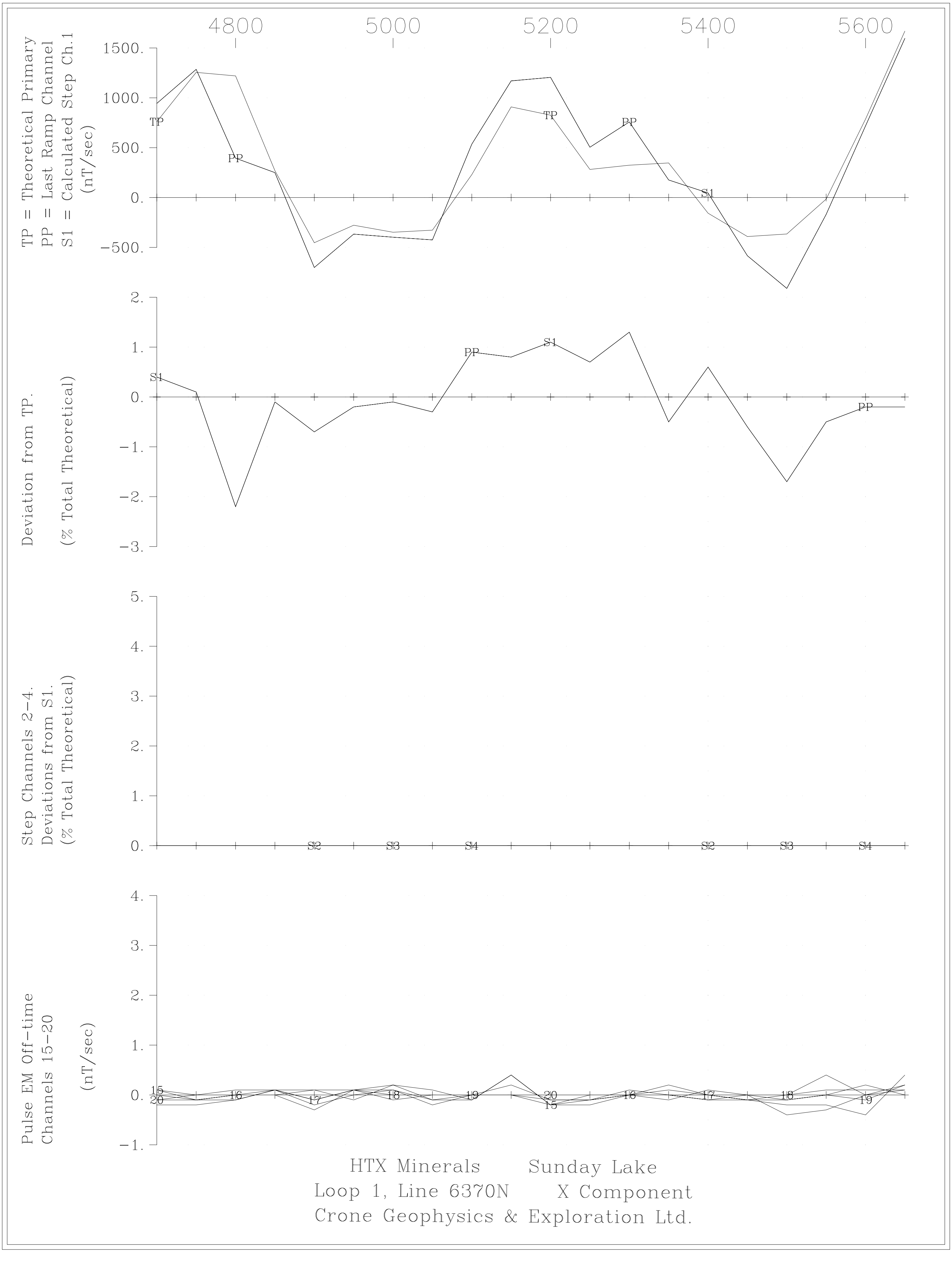
Crone Geophysics & Exploration Ltd.



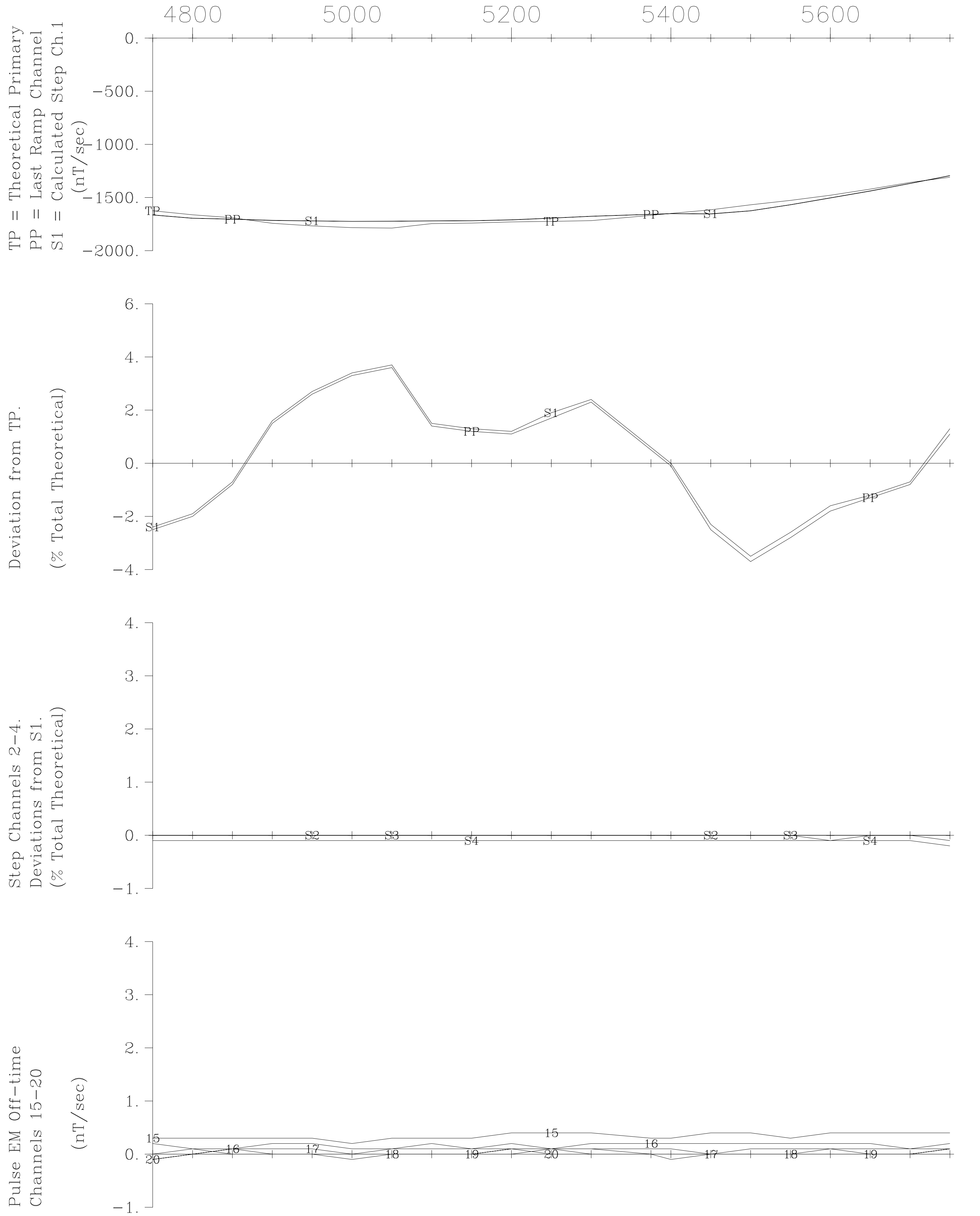
HTX Minerals Sunday Lake

Loop 1, Line 6370N Z Component

Crone Geophysics & Exploration Ltd.



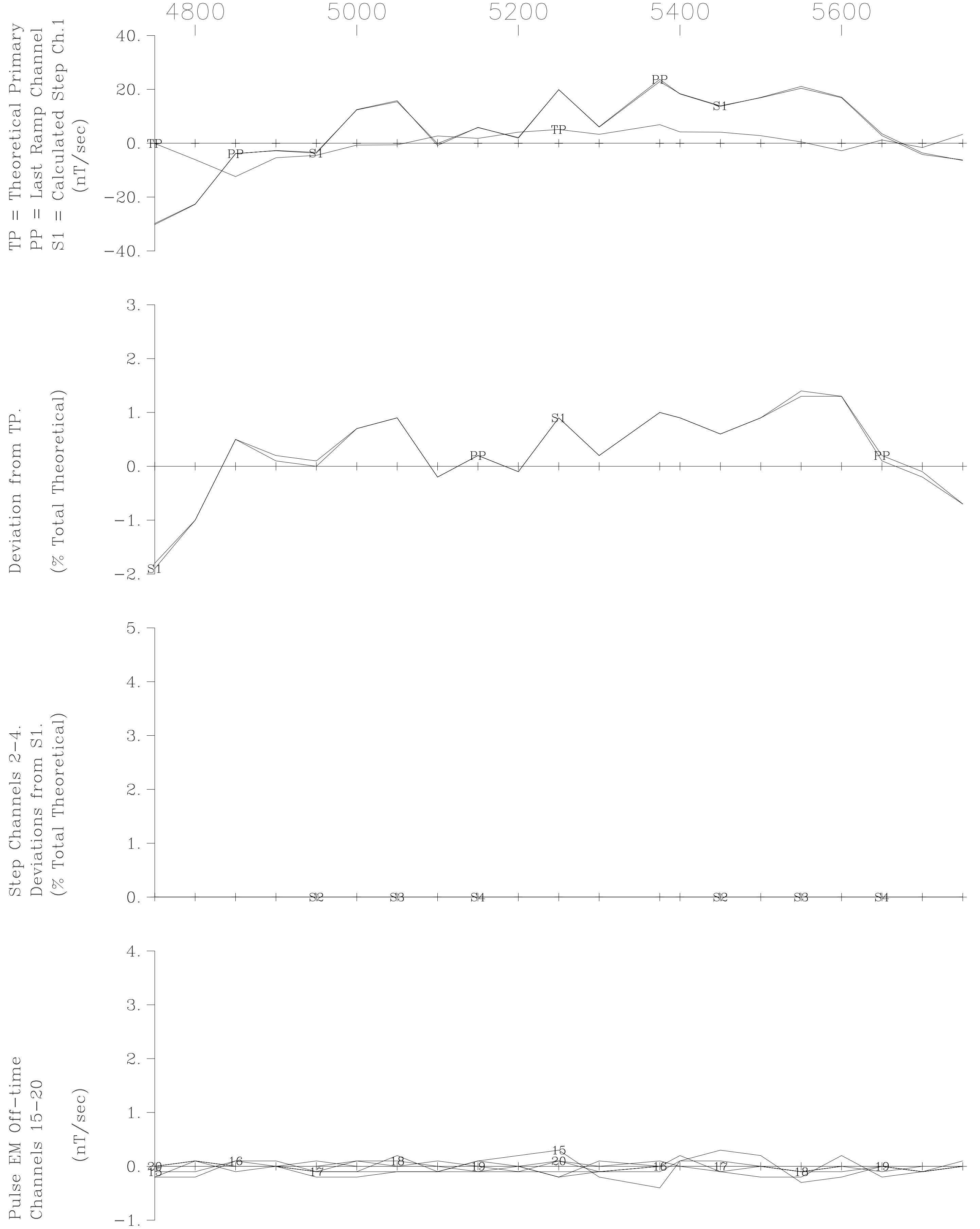
4800
5000
5200
5400
5600
1500.
1000.
500.
0.
-500.
TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
TP
PP
TP
PP
S1
2.
1.
0.
-1.
-2.
-3.
Deviation from TP.
(% Total Theoretical)
S1
PP
S1
PP
5.
4.
3.
2.
1.
0.
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
S2
S3
S4
S2
S3
S4
4.
3.
2.
1.
0.
-1.
Pulse EM Off-time
Channels 15-20
(nT/sec)
15
20
16
17
18
19
20
15
16
17
18
19
HTX Minerals Sunday Lake
Loop 1, Line 6370N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 3770N Z Component

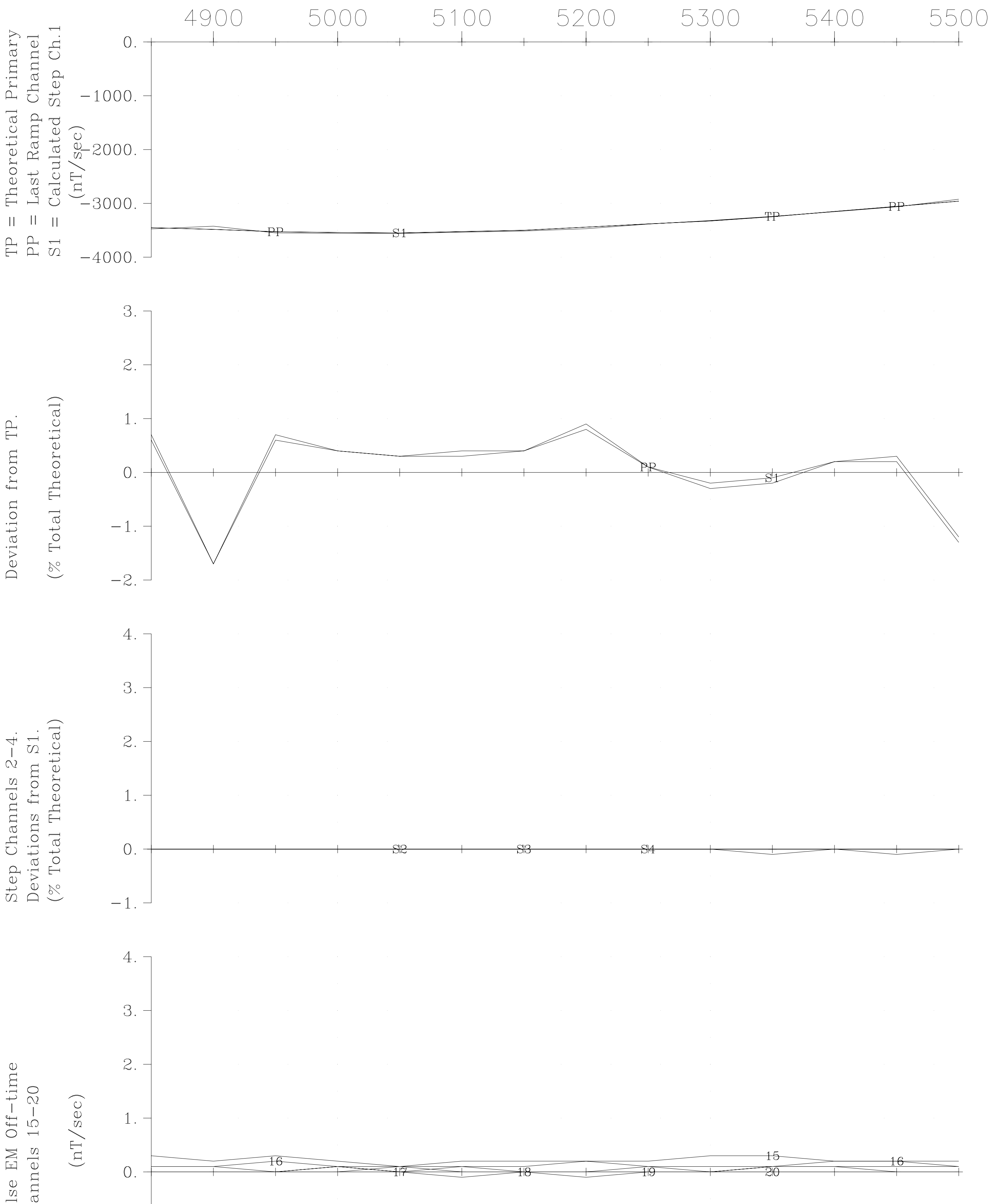
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 3770N X Component

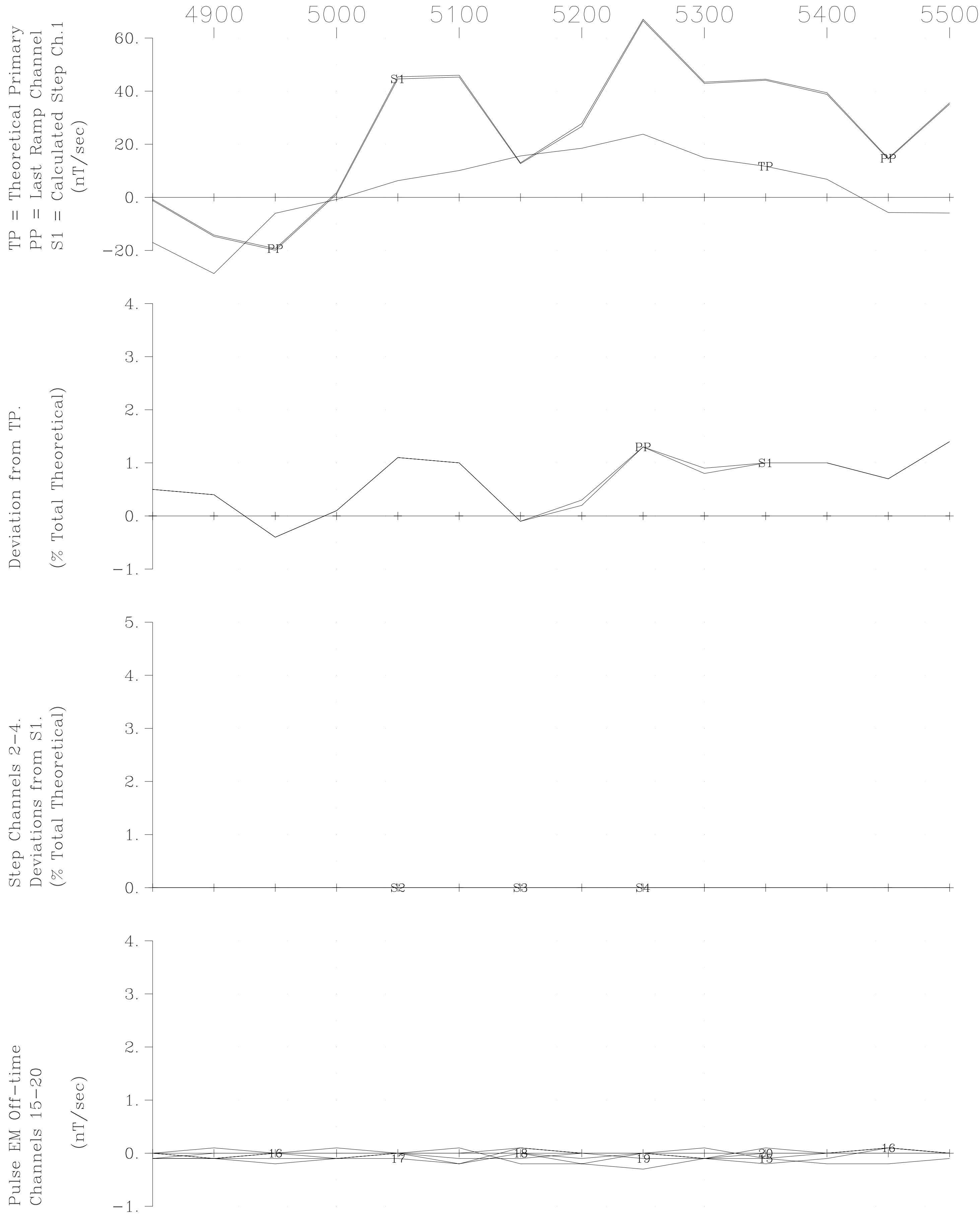
Crone Geophysics & Exploration Ltd.



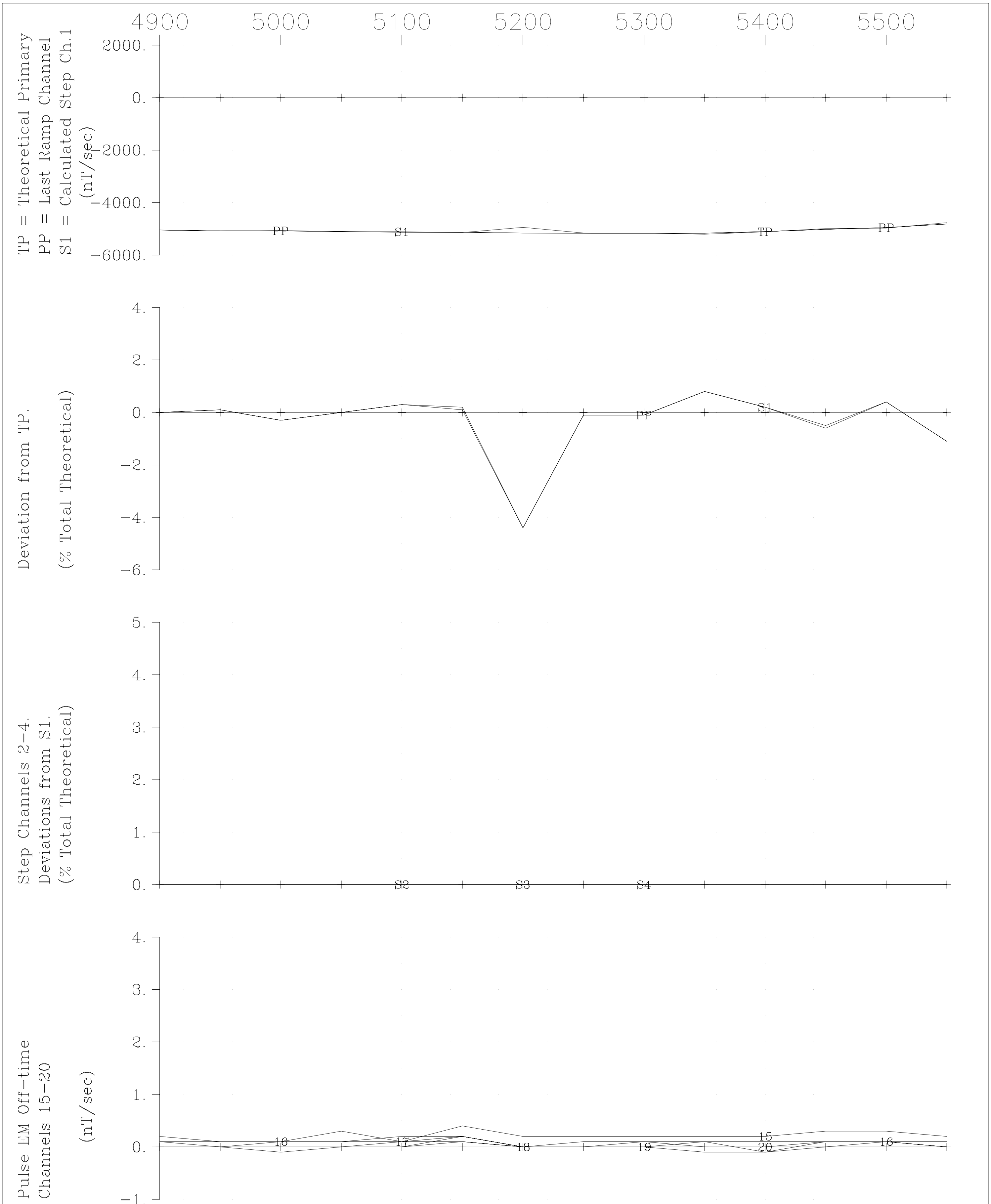
HTX Minerals Sunday Lake

Loop 2, Line 3970N Z Component

Crone Geophysics & Exploration Ltd.



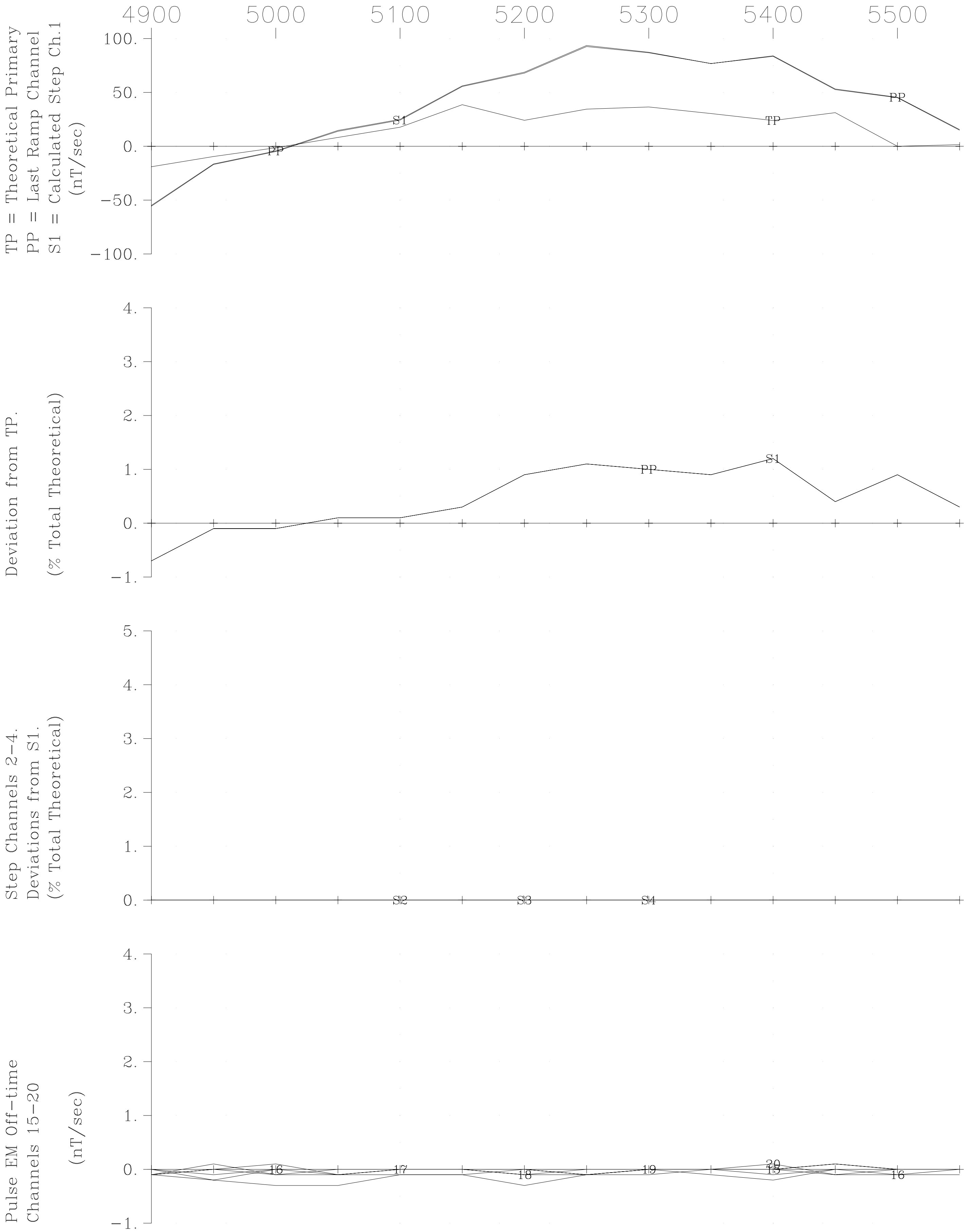
HTX Minerals Sunday Lake
Loop 2, Line 3970N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4070N Z Component

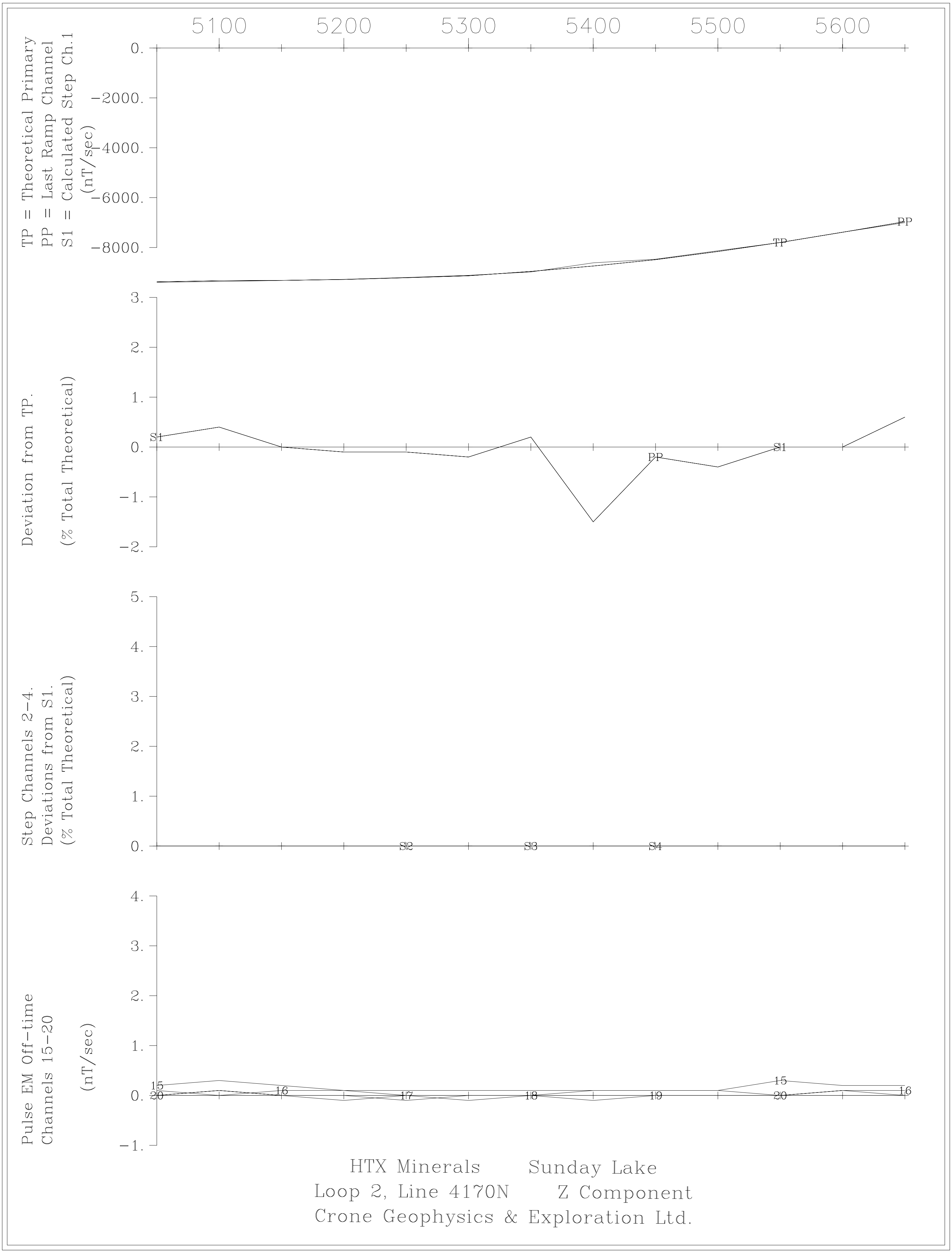
Crone Geophysics & Exploration Ltd.

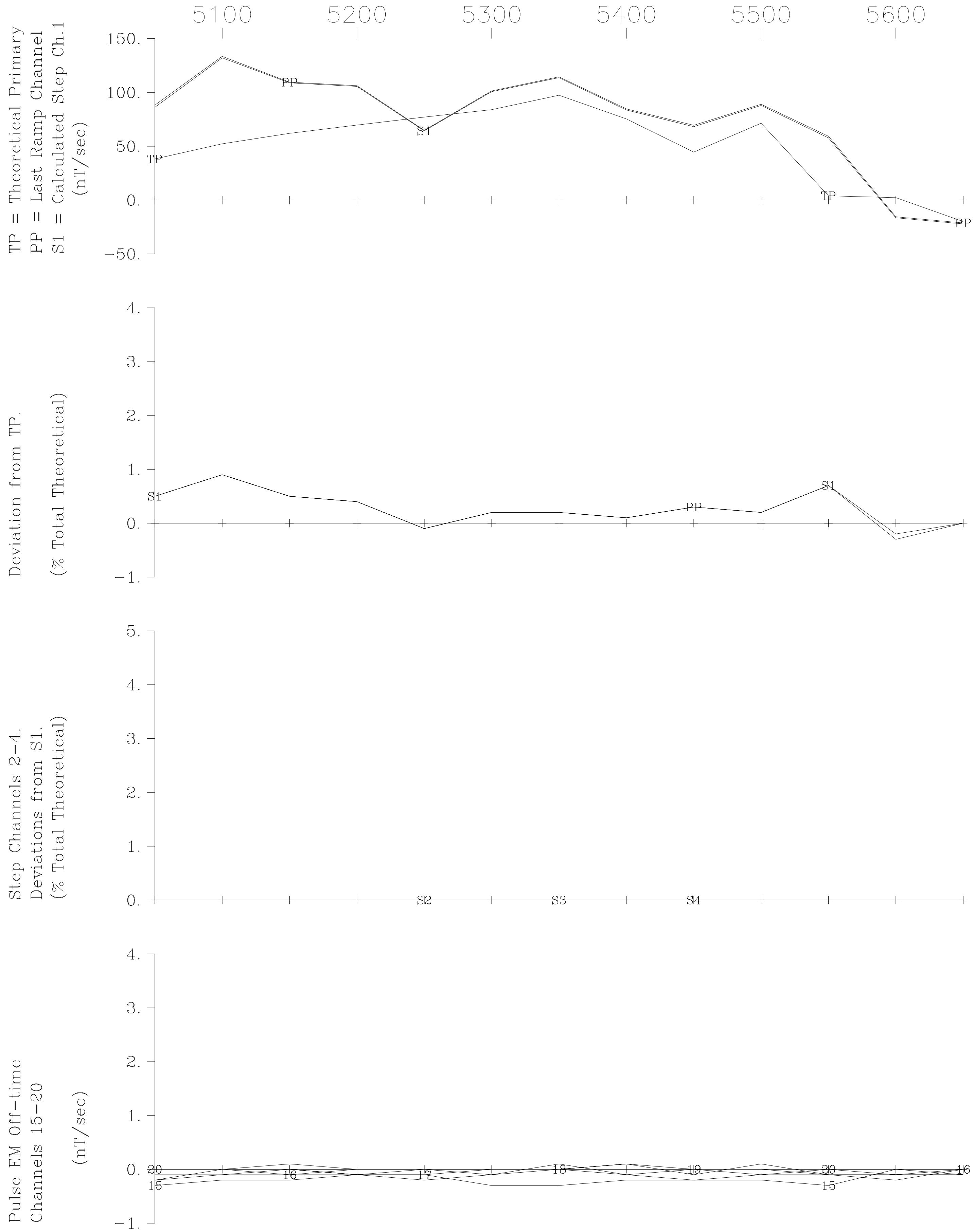


HTX Minerals Sunday Lake

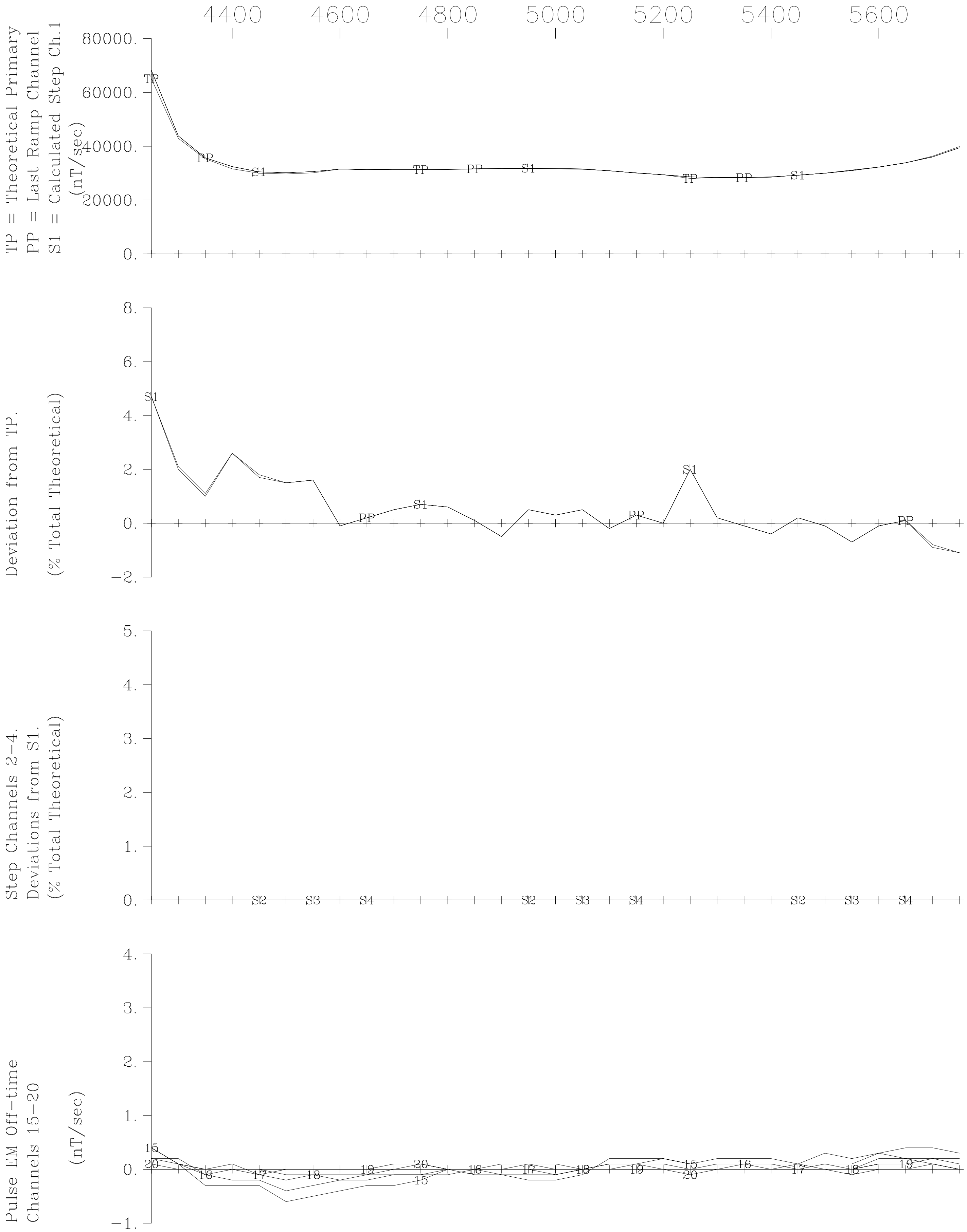
Loop 2, Line 4070N X Component

Crone Geophysics & Exploration Ltd.


5100
5200
5300
5400
5500
5600
TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
0.
-2000.
-4000.
-6000.
-8000.
TP
PP
Deviation from TP.
(% Total Theoretical)
3.
2.
1.
0.
-1.
-2.
S1
PP
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
5.
4.
3.
2.
1.
0.
S2
S3
S4
Pulse EM Off-time
Channels 15-20
(nT/sec)
4.
3.
2.
1.
0.
-1.
15
16
17
18
19
20
HTX Minerals Sunday Lake
Loop 2, Line 4170N Z Component
Crone Geophysics & Exploration Ltd.



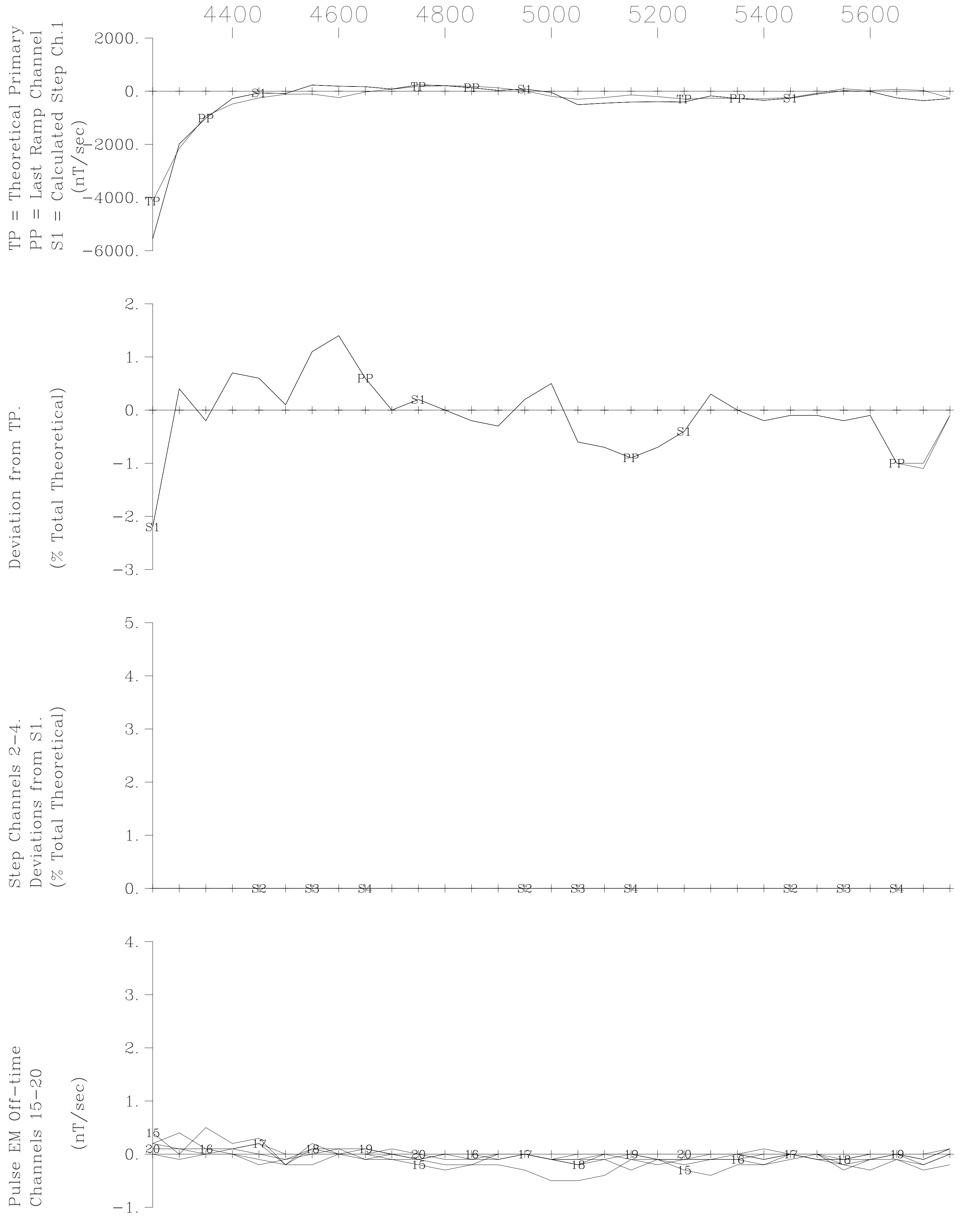
HTX Minerals Sunday Lake
Loop 2, Line 4170N X Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4470N Z Component

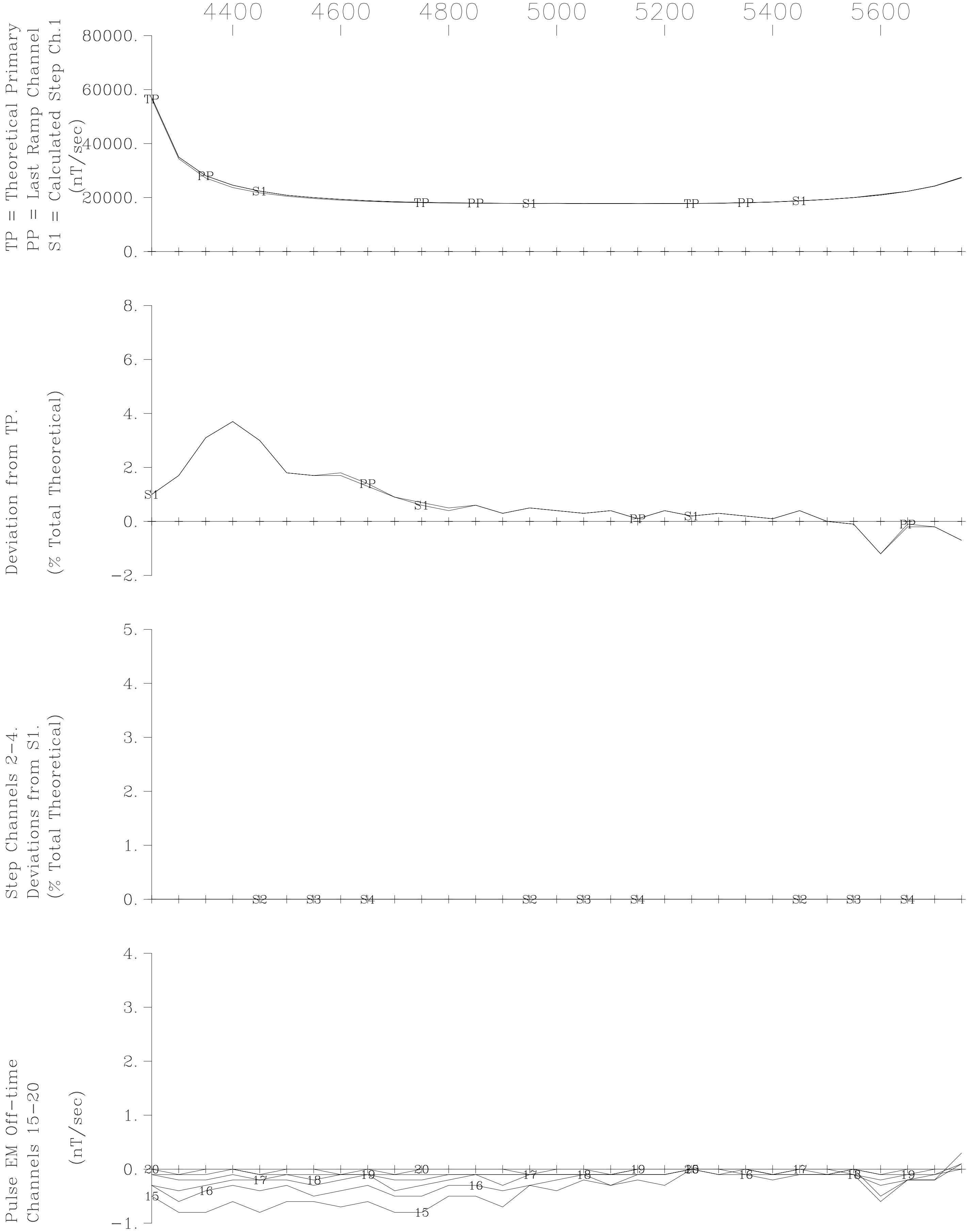
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4470N X Component

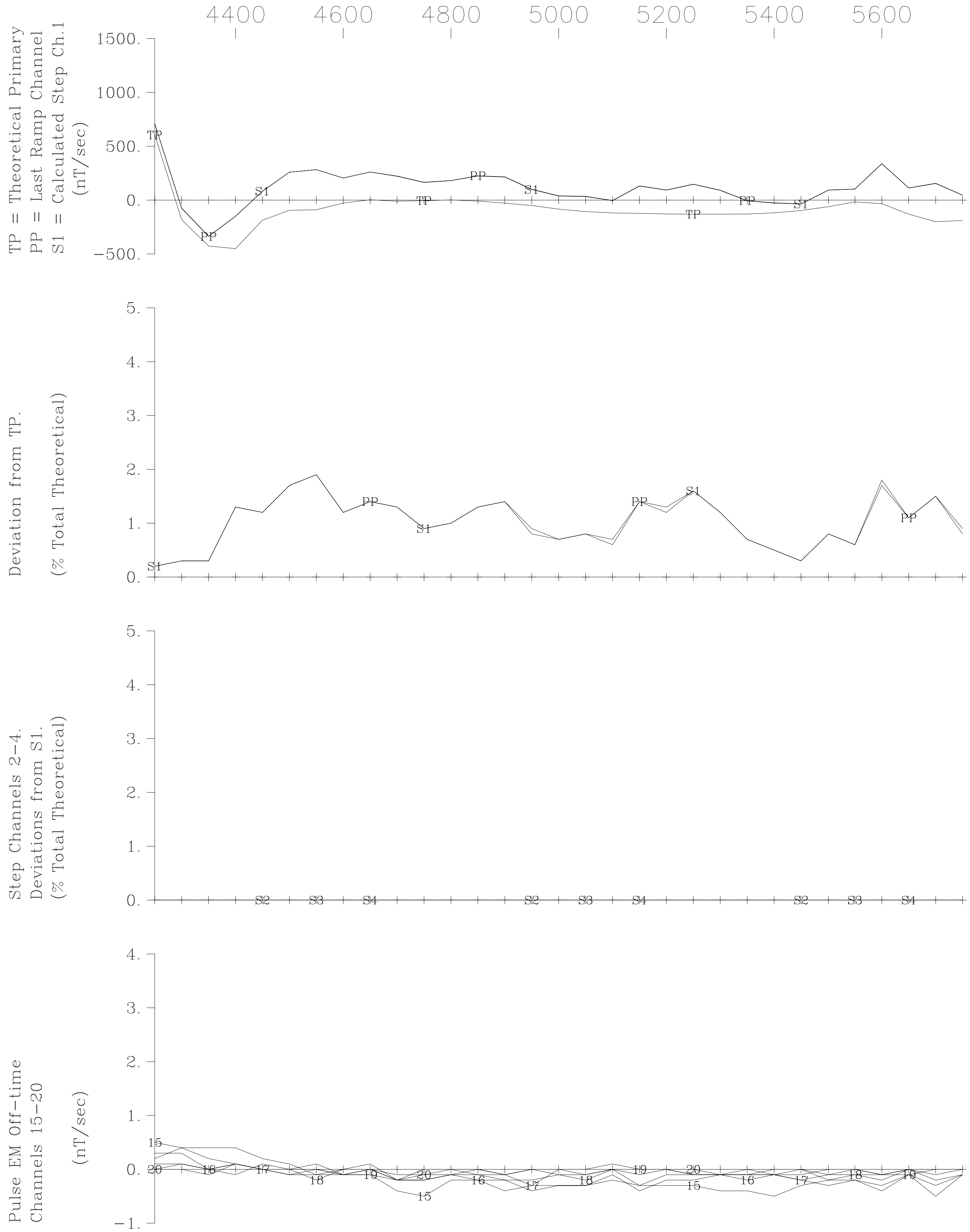
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4570N Z Component

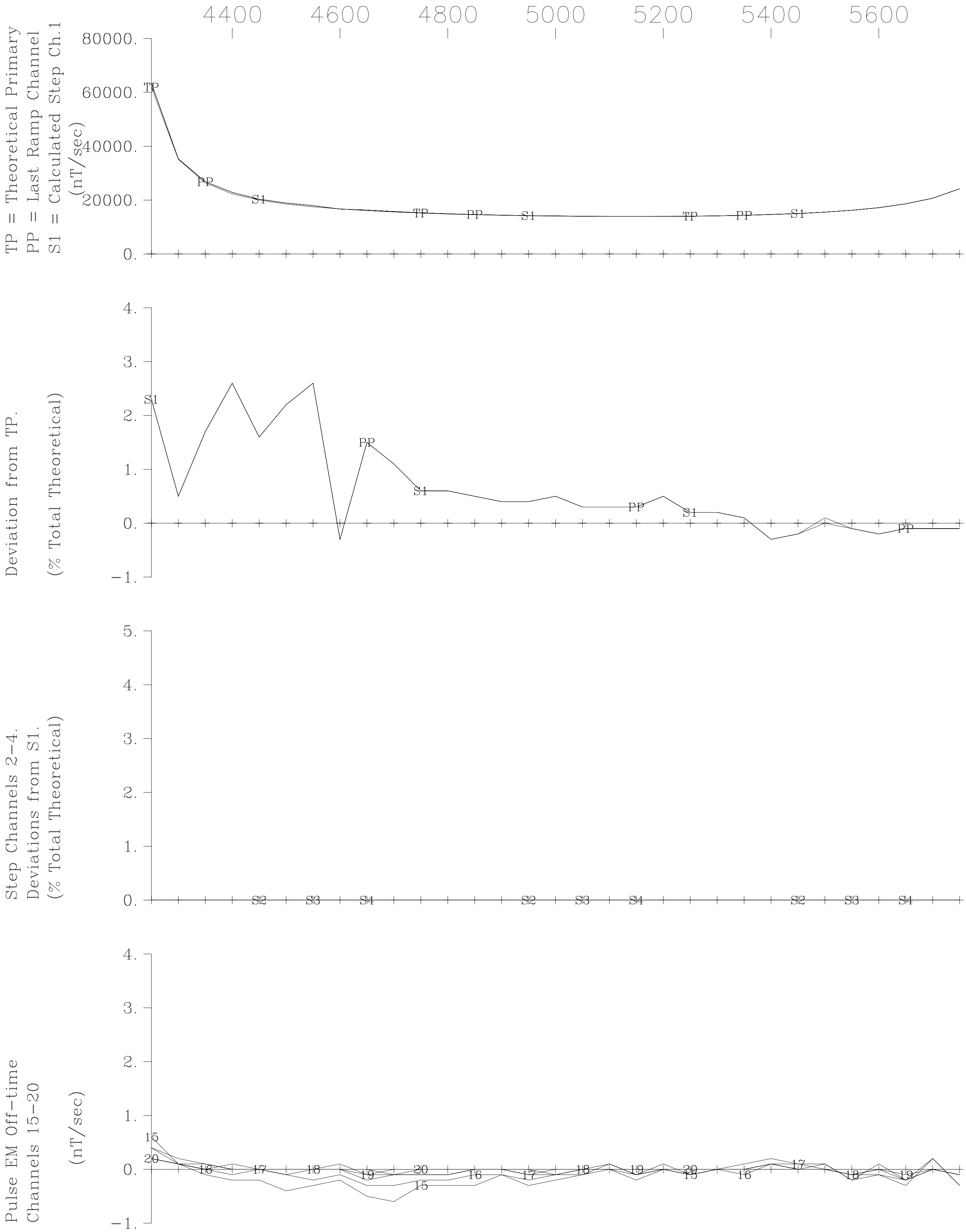
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4570N X Component

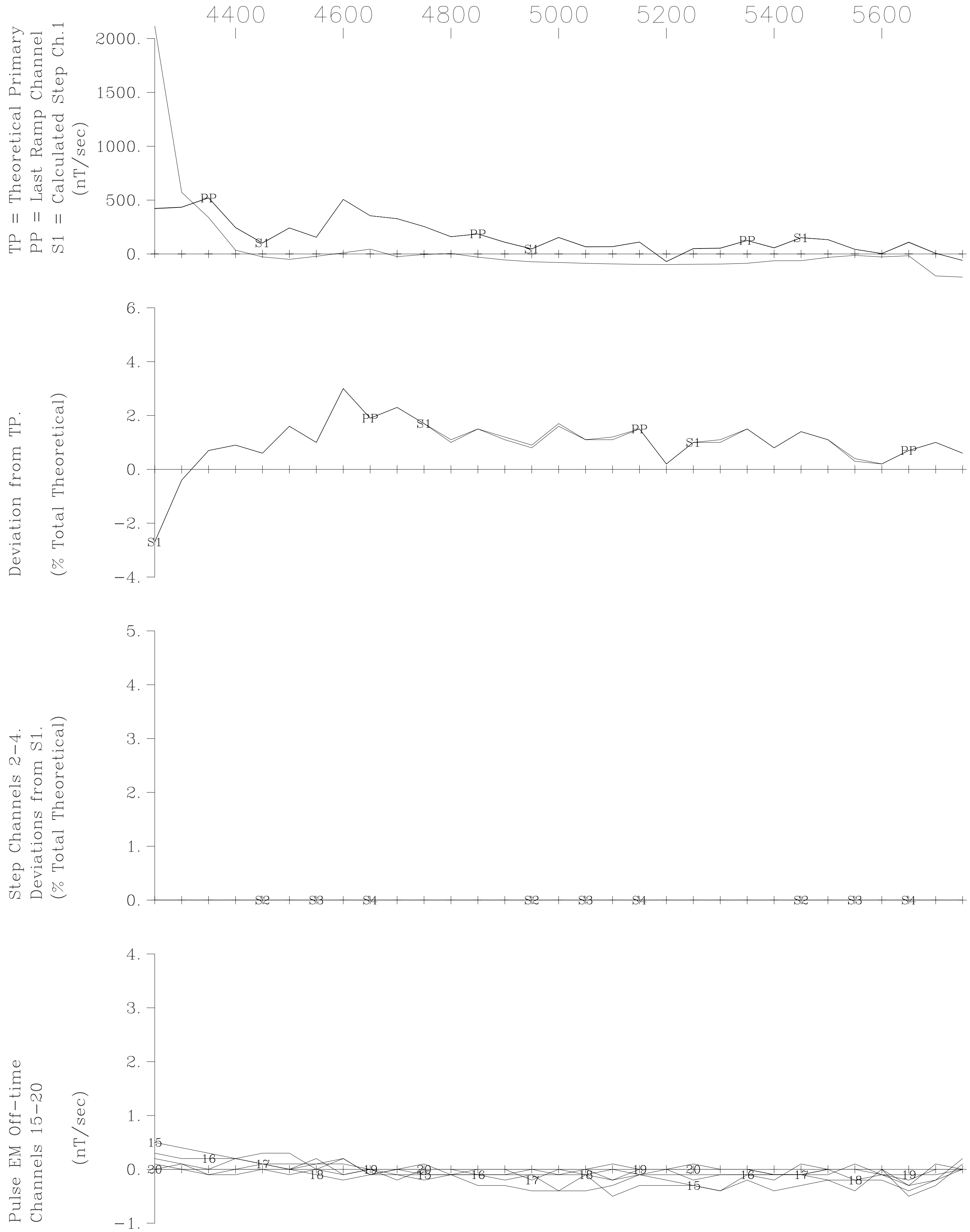
Crone Geophysics & Exploration Ltd.



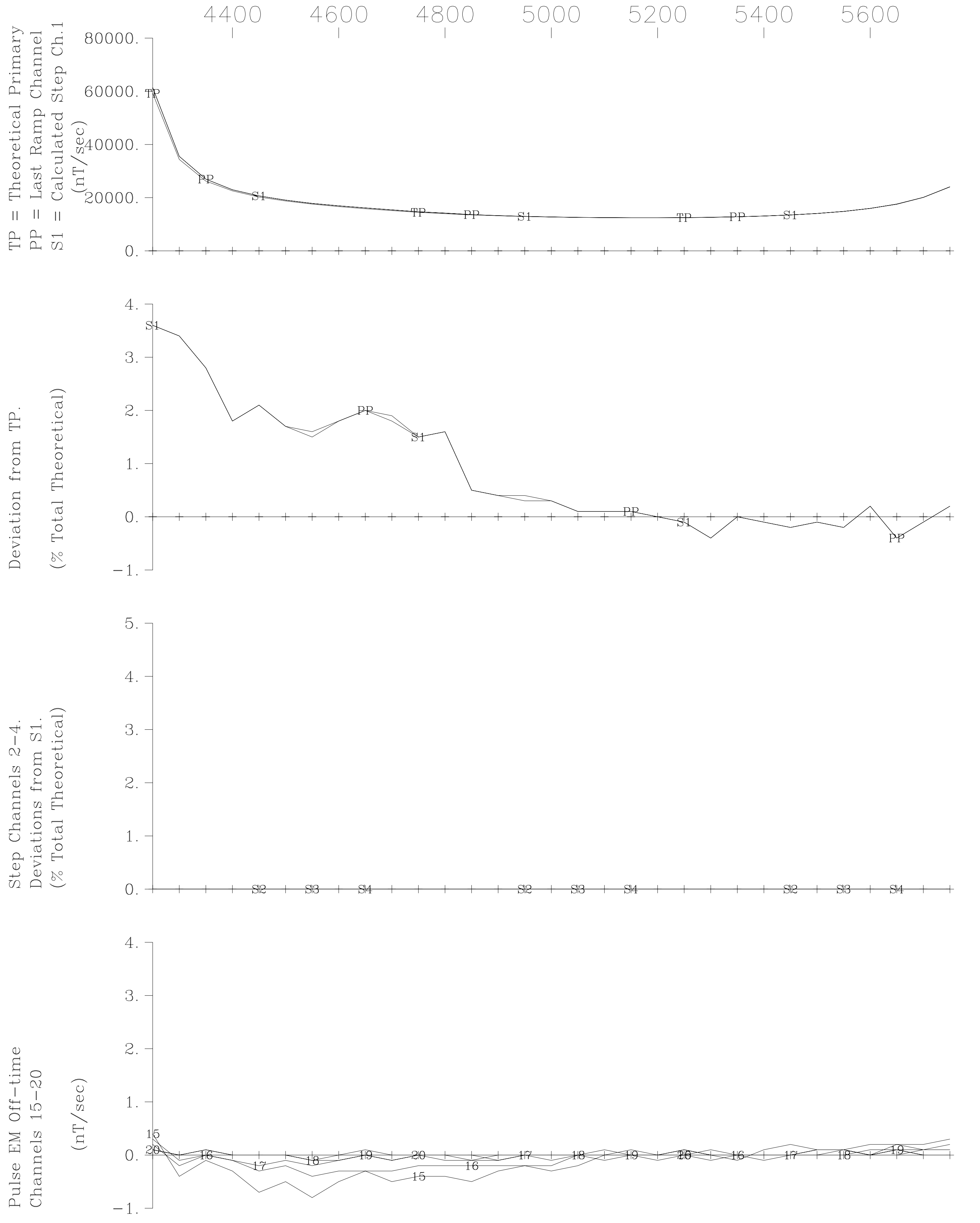
HTX Minerals Sunday Lake

Loop 2, Line 4670N Z Component

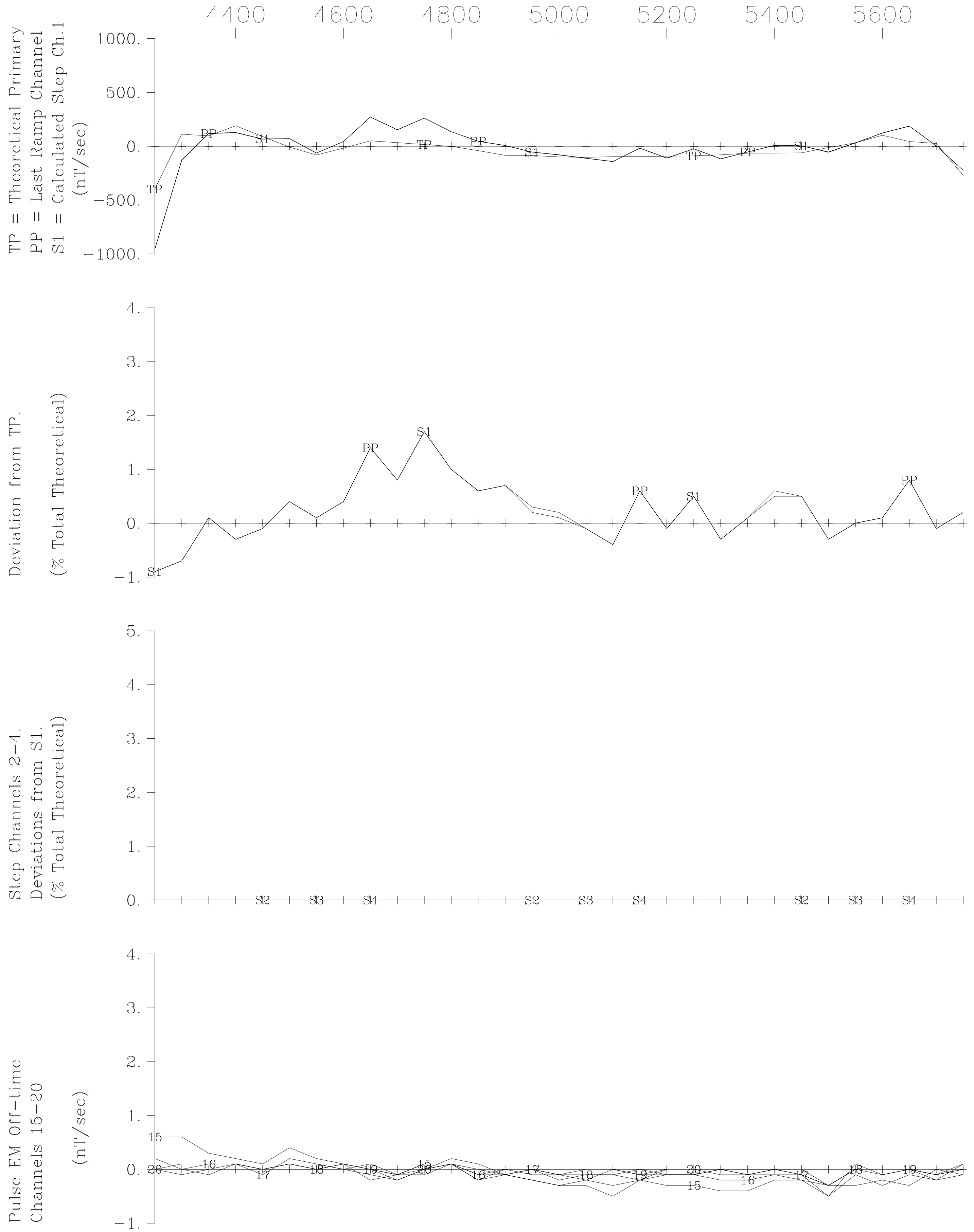
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4670N X Component
Crone Geophysics & Exploration Ltd.



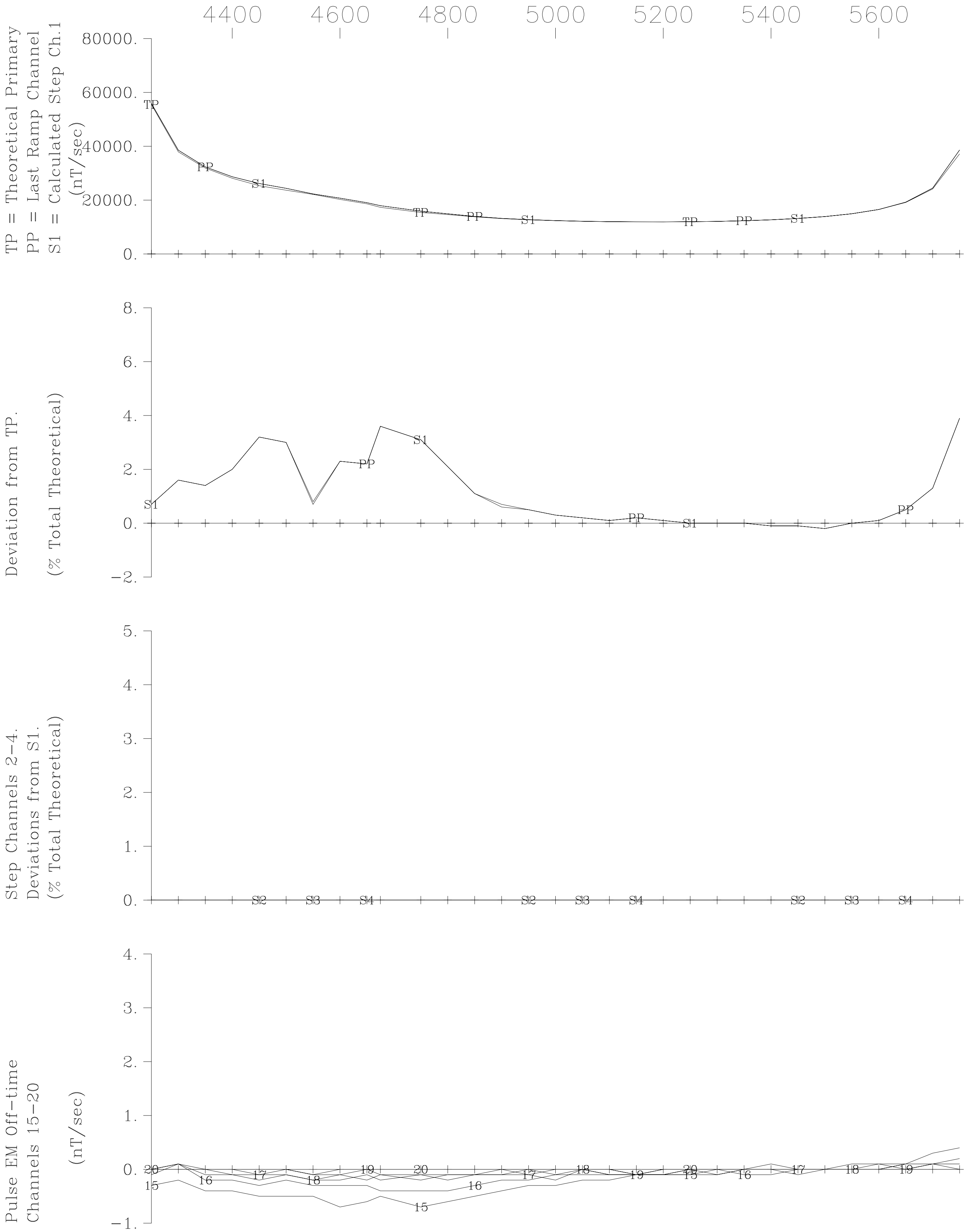
HTX Minerals Sunday Lake
Loop 2, Line 4770N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4770N X Component

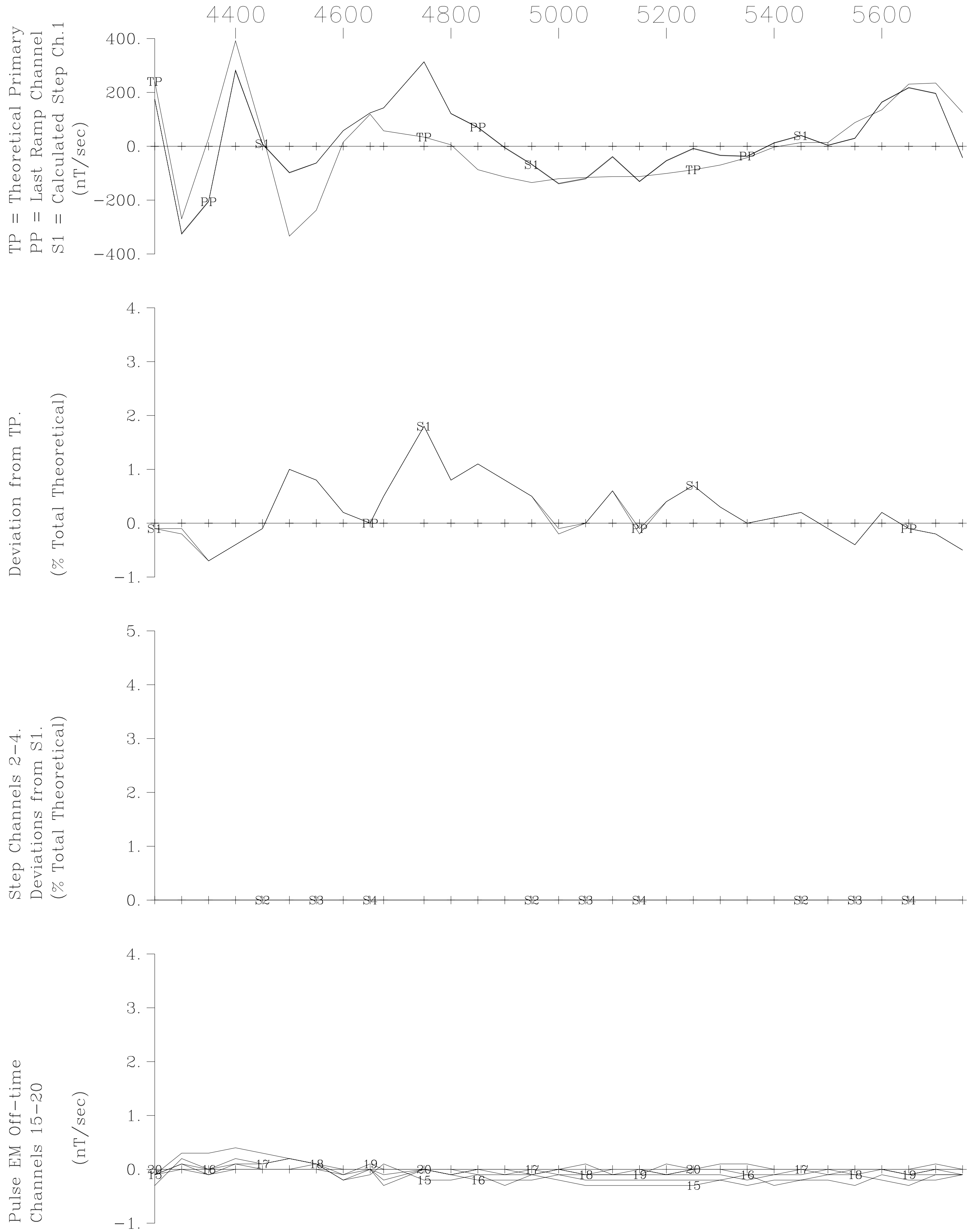
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 4870N Z Component

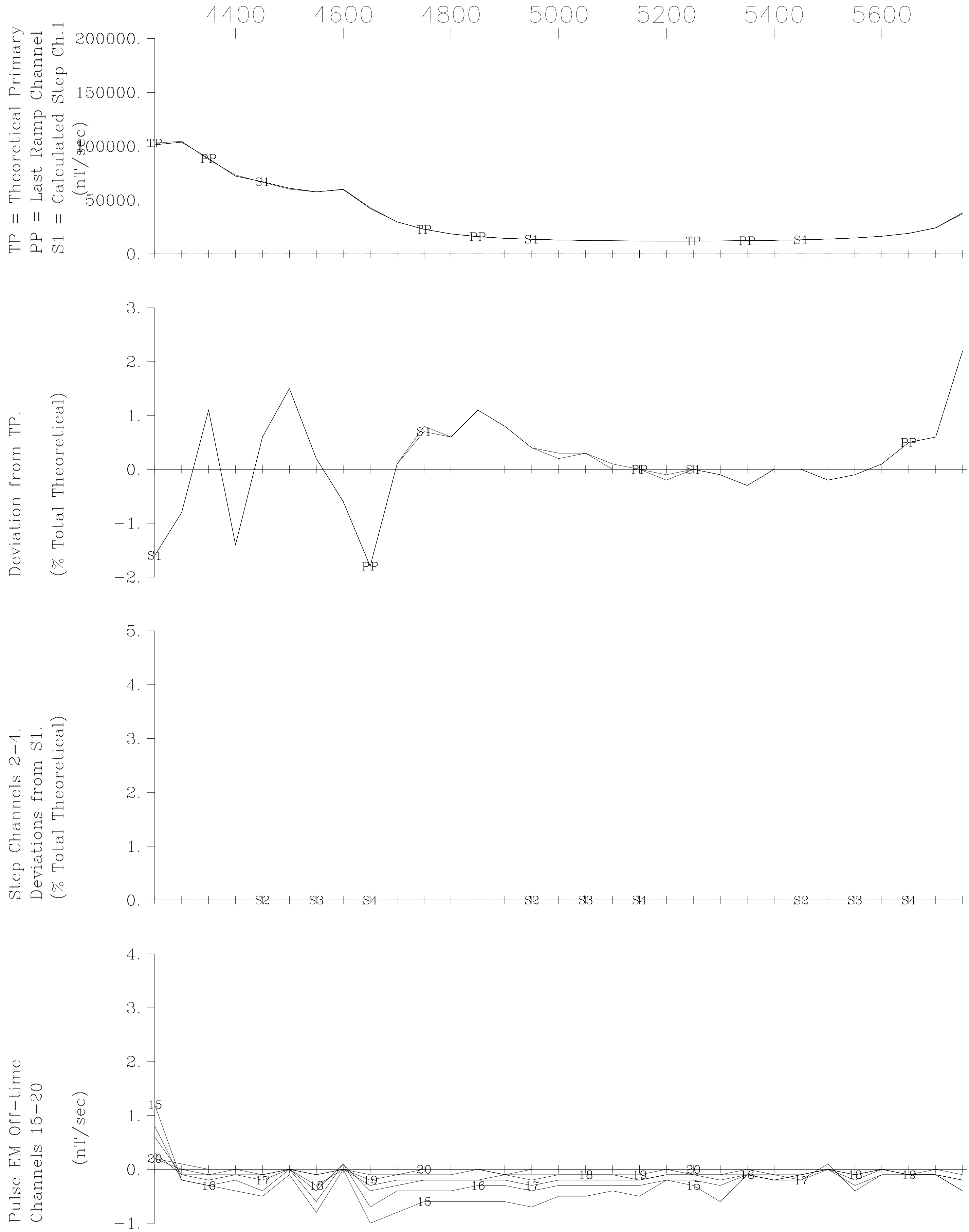
Crone Geophysics & Exploration Ltd.



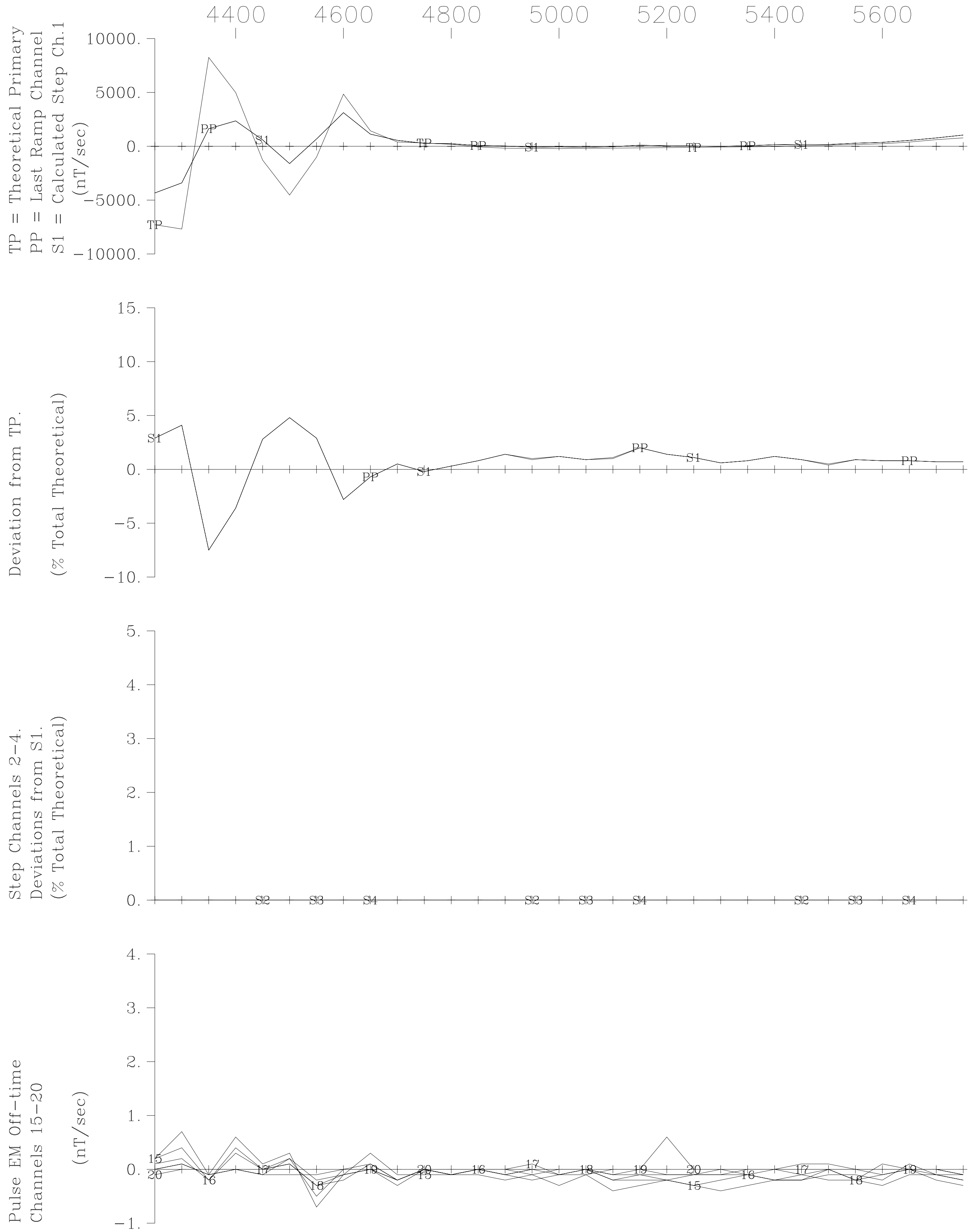
HTX Minerals Sunday Lake

Loop 2, Line 4870N X Component

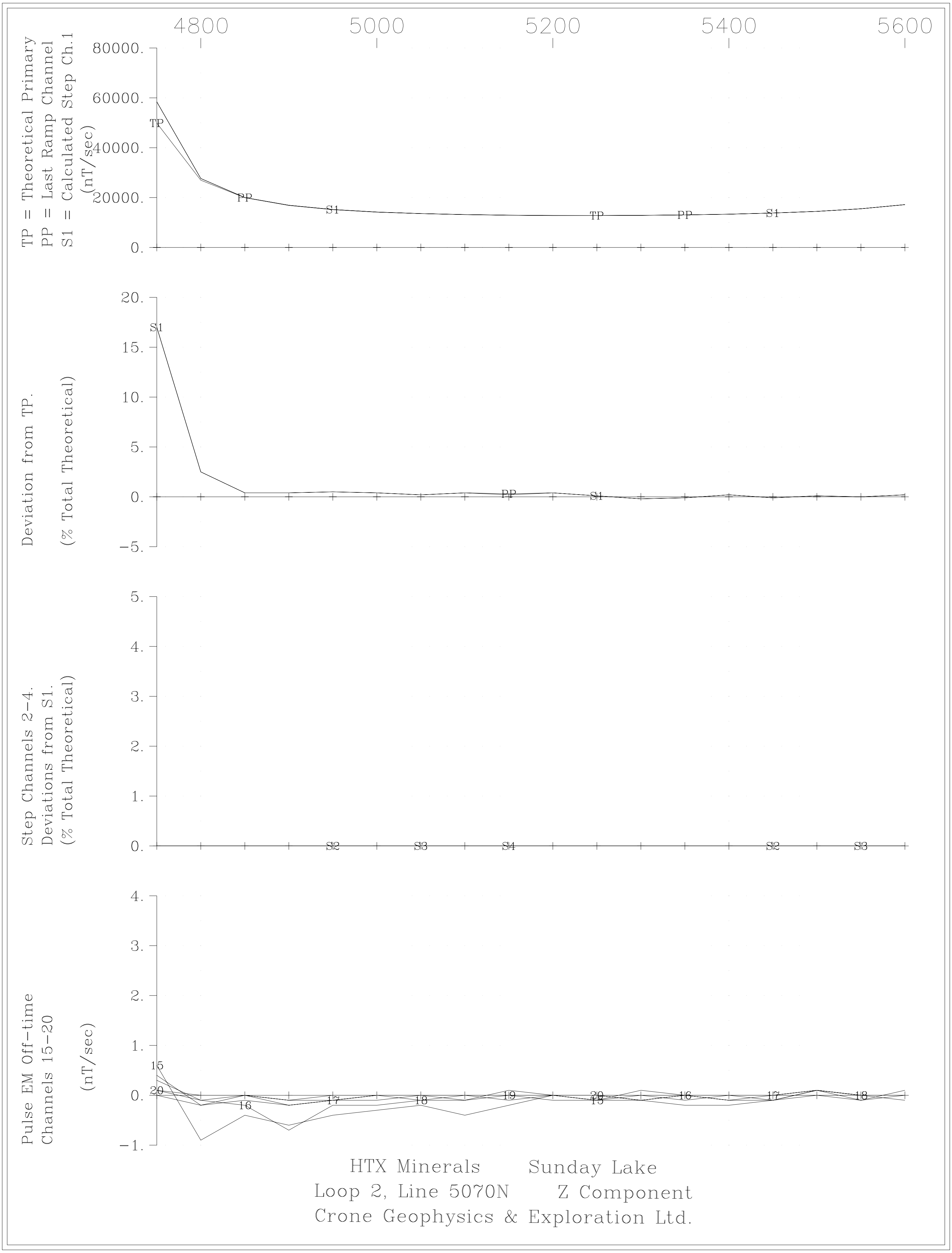
Crone Geophysics & Exploration Ltd.

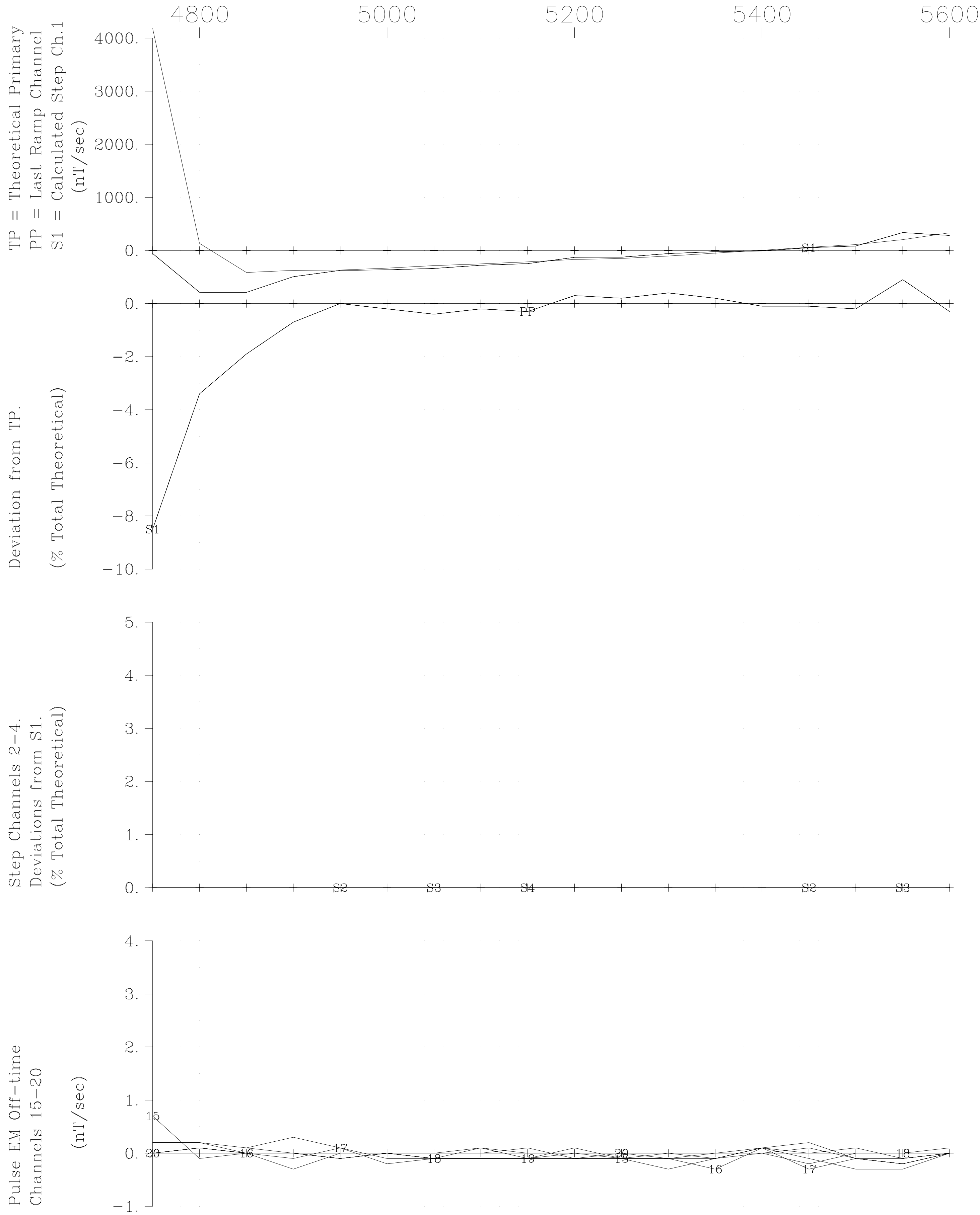


HTX Minerals Sunday Lake
Loop 2, Line 4970N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 4970N X Component
Crone Geophysics & Exploration Ltd.

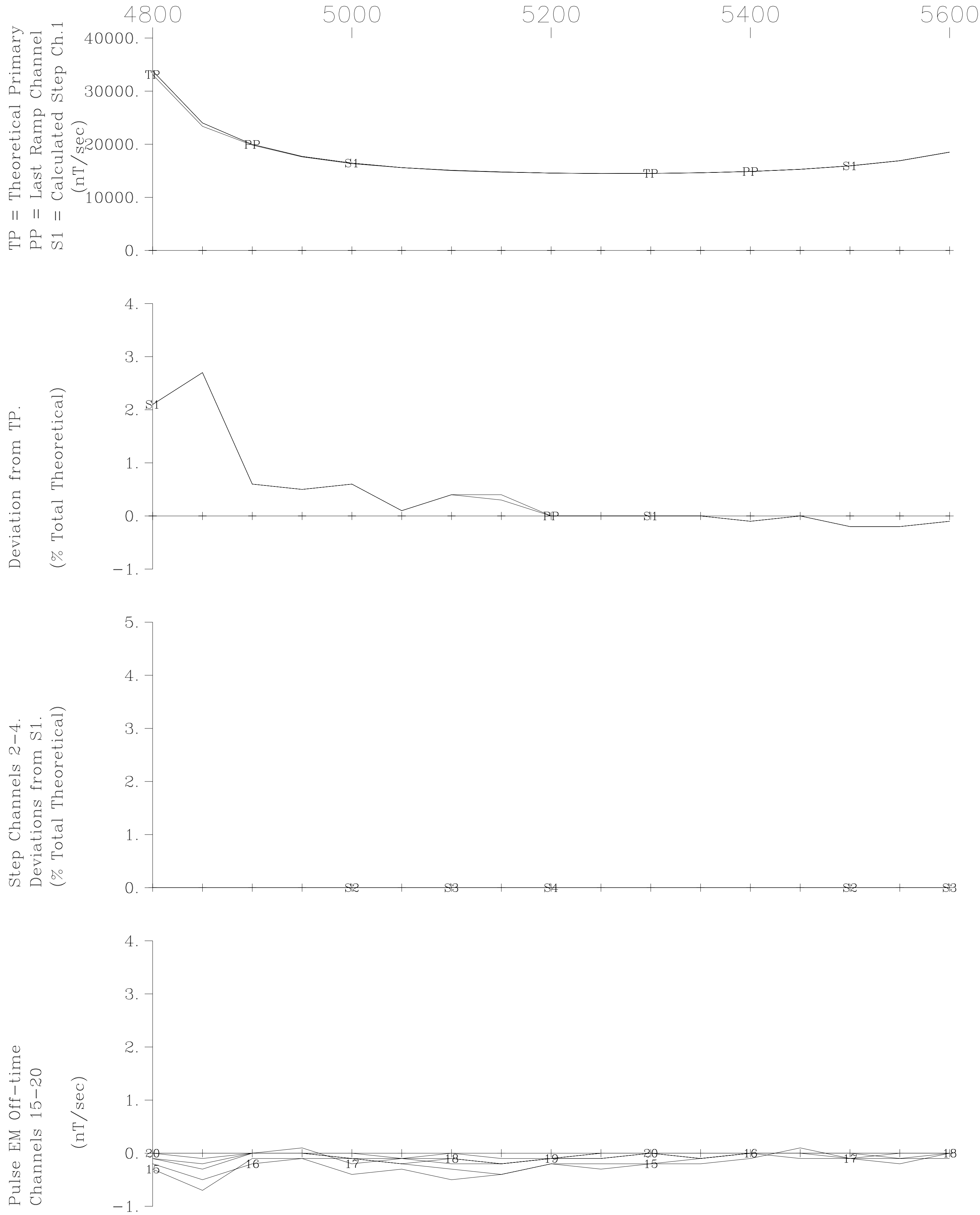

4800
5000
5200
5400
5600
TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
80000.
60000.
40000.
20000.
0.
Deviation from TP.
(% Total Theoretical)
20.
15.
10.
5.
0.
-5.
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
5.
4.
3.
2.
1.
0.
Pulse EM Off-time
Channels 15-20
(nT/sec)
4.
3.
2.
1.
0.
-1.
HTX Minerals Sunday Lake
Loop 2, Line 5070N Z Component
Crone Geophysics & Exploration Ltd.



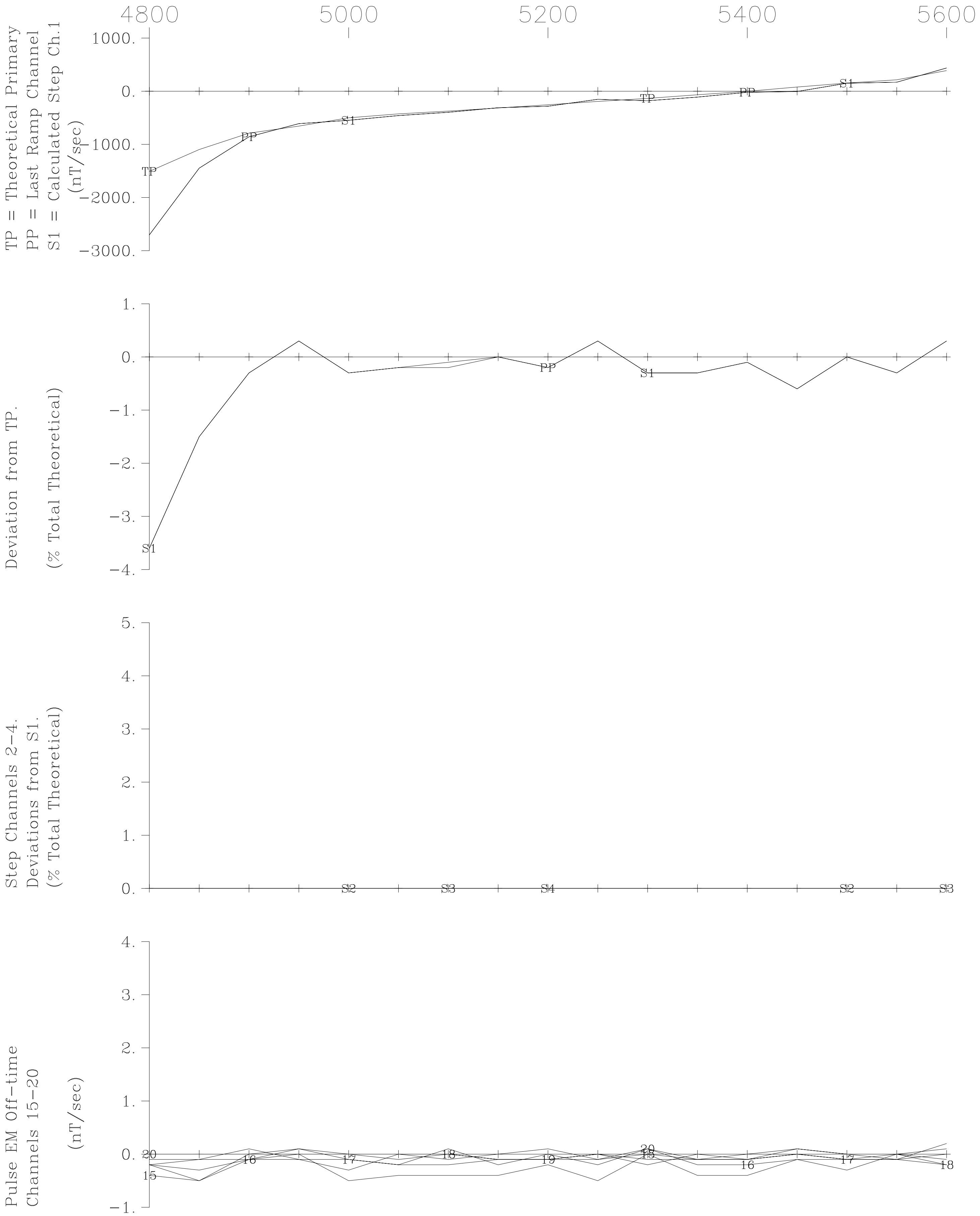
HTX Minerals Sunday Lake

Loop 2, Line 5070N X Component

Crone Geophysics & Exploration Ltd.



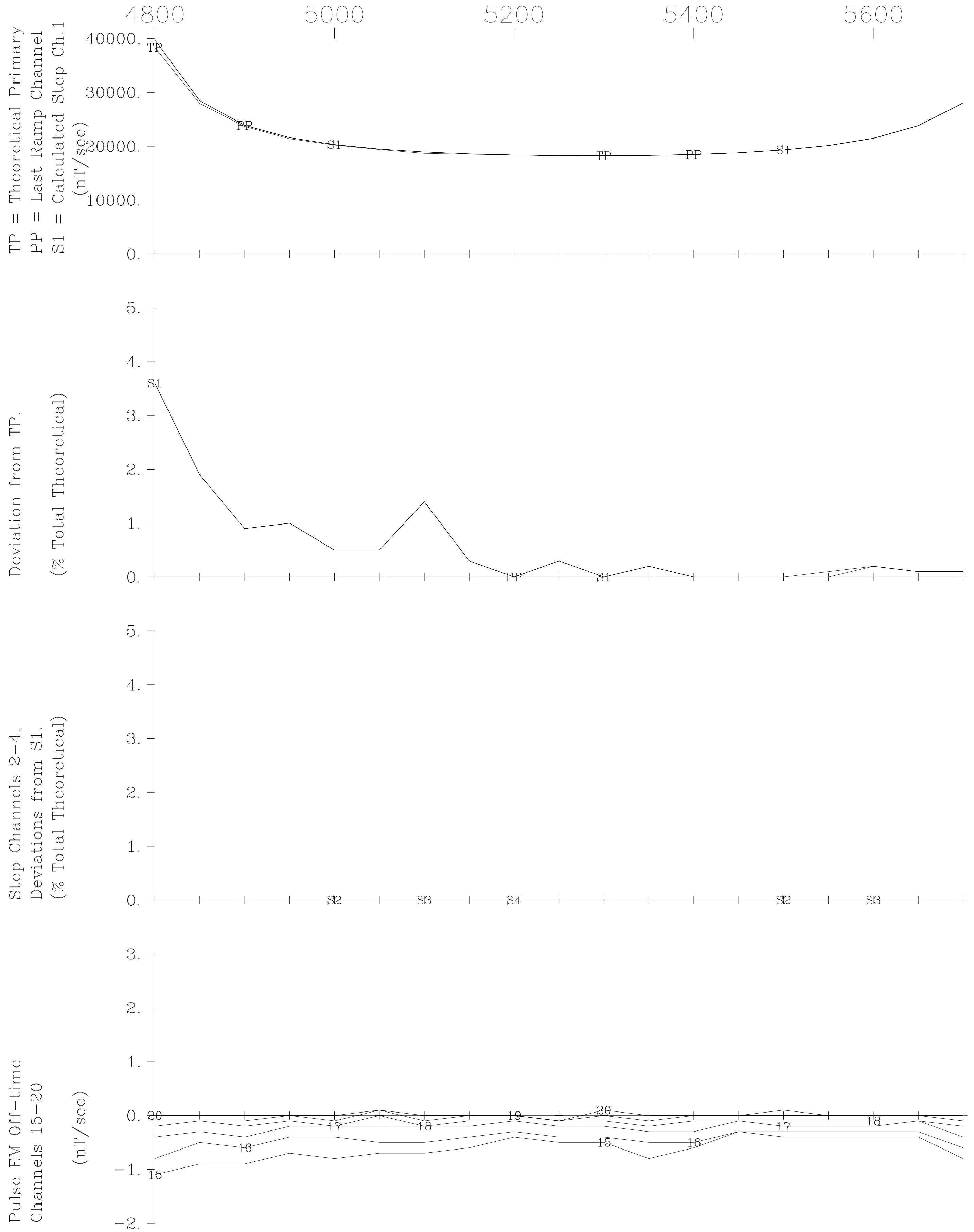
HTX Minerals Sunday Lake
Loop 2, Line 5170N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 5170N X Component

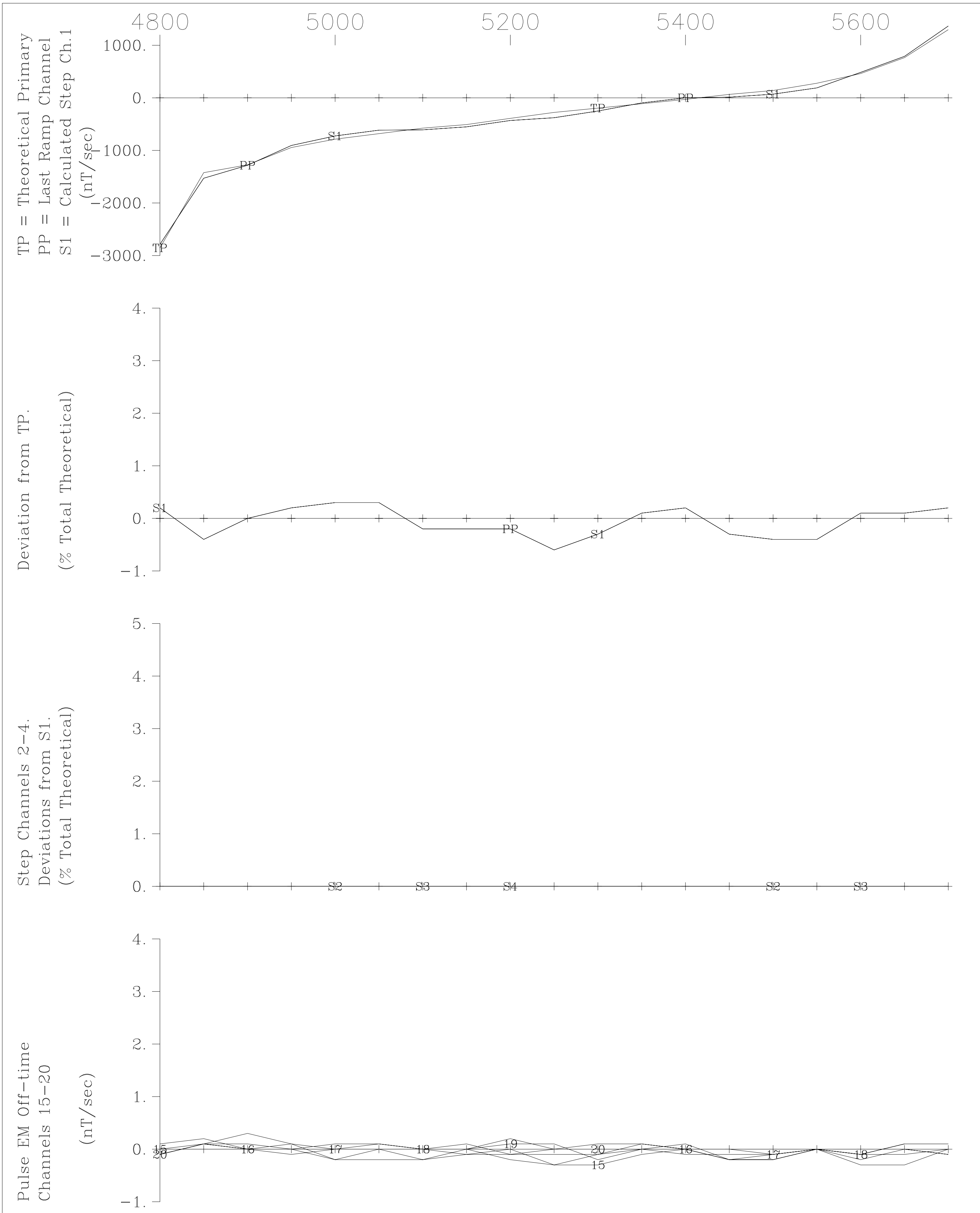
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

Loop 2, Line 5270N Z Component

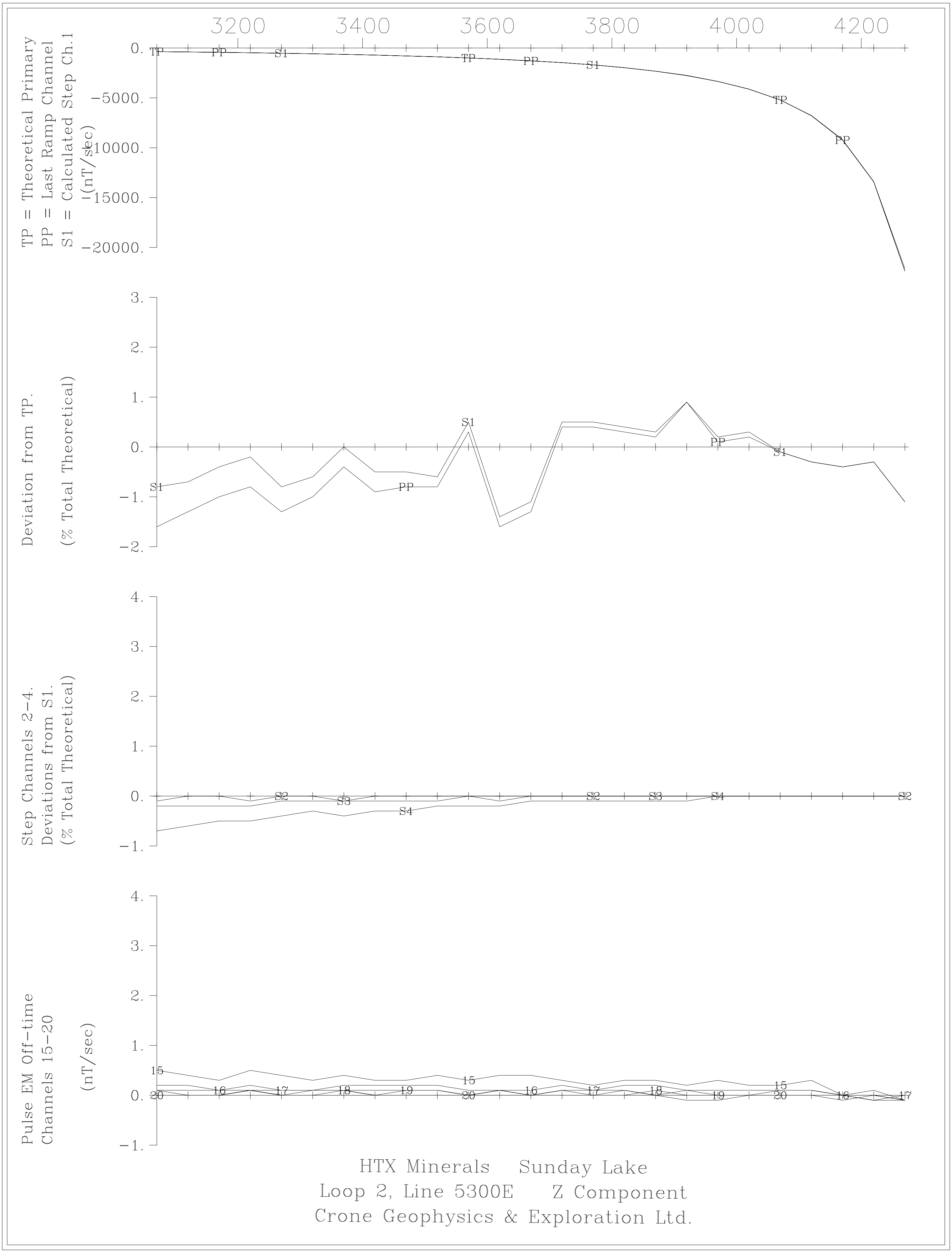
Crone Geophysics & Exploration Ltd.

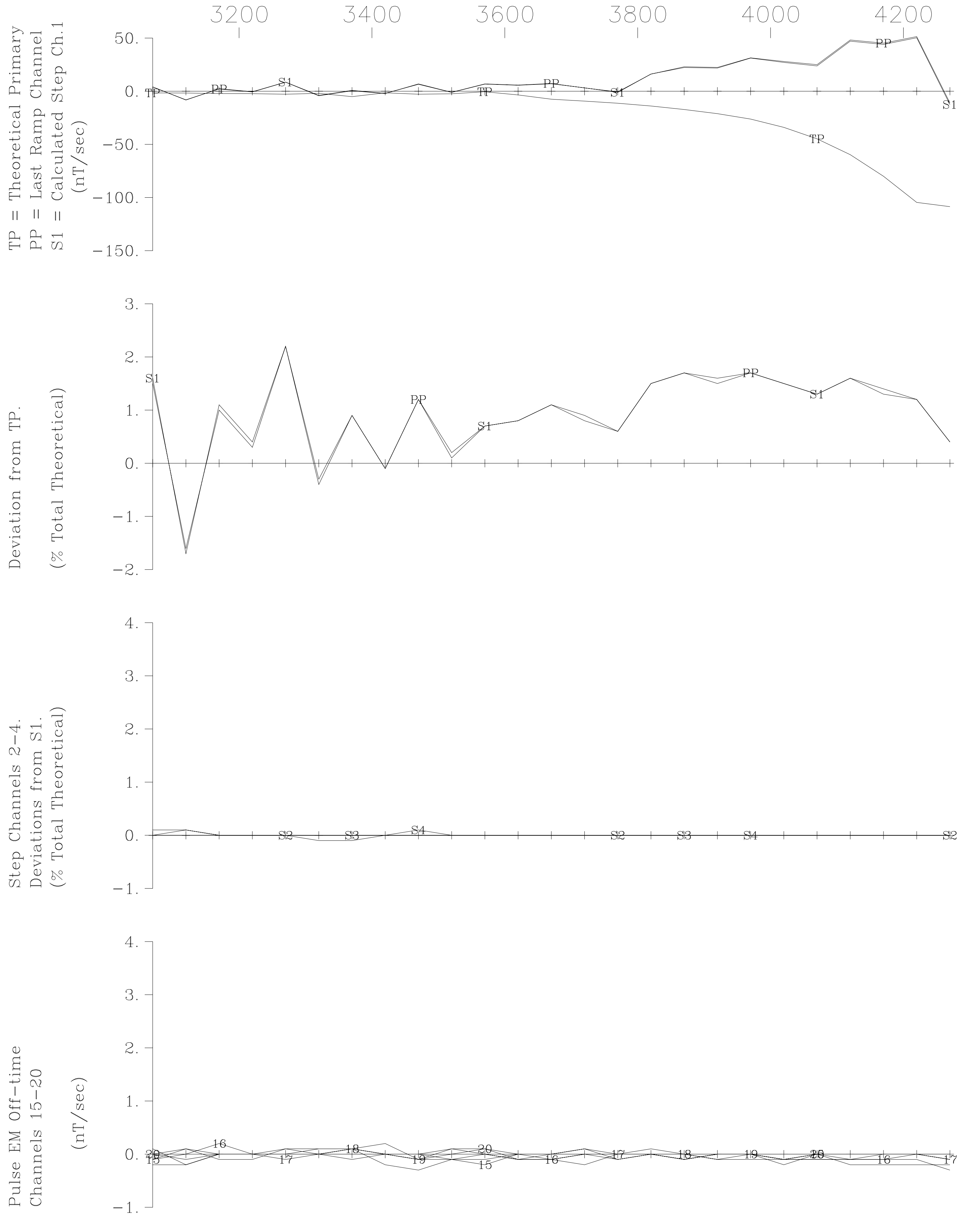


HTX Minerals Sunday Lake

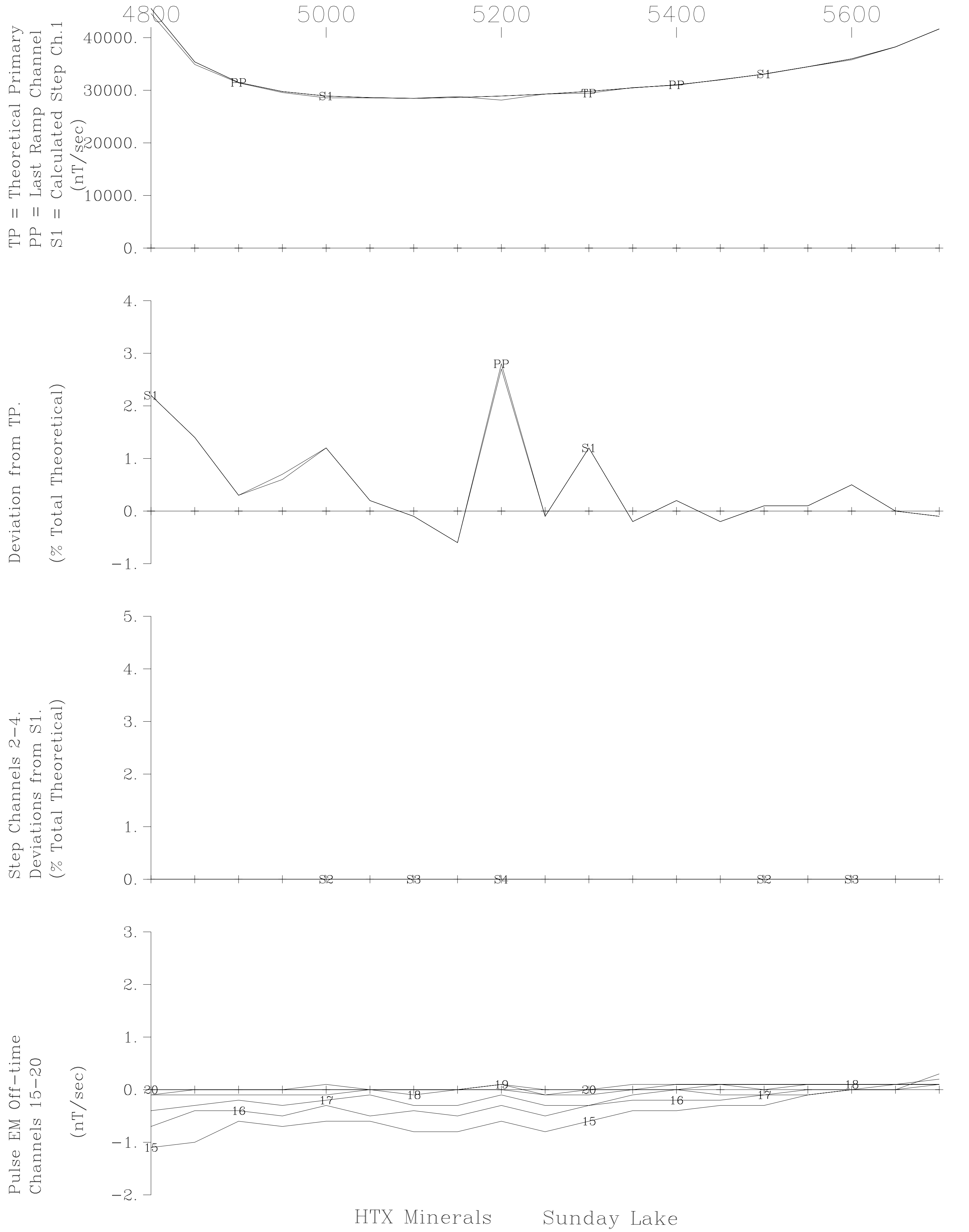
Loop 2, Line 5270N X Component

Crone Geophysics & Exploration Ltd.

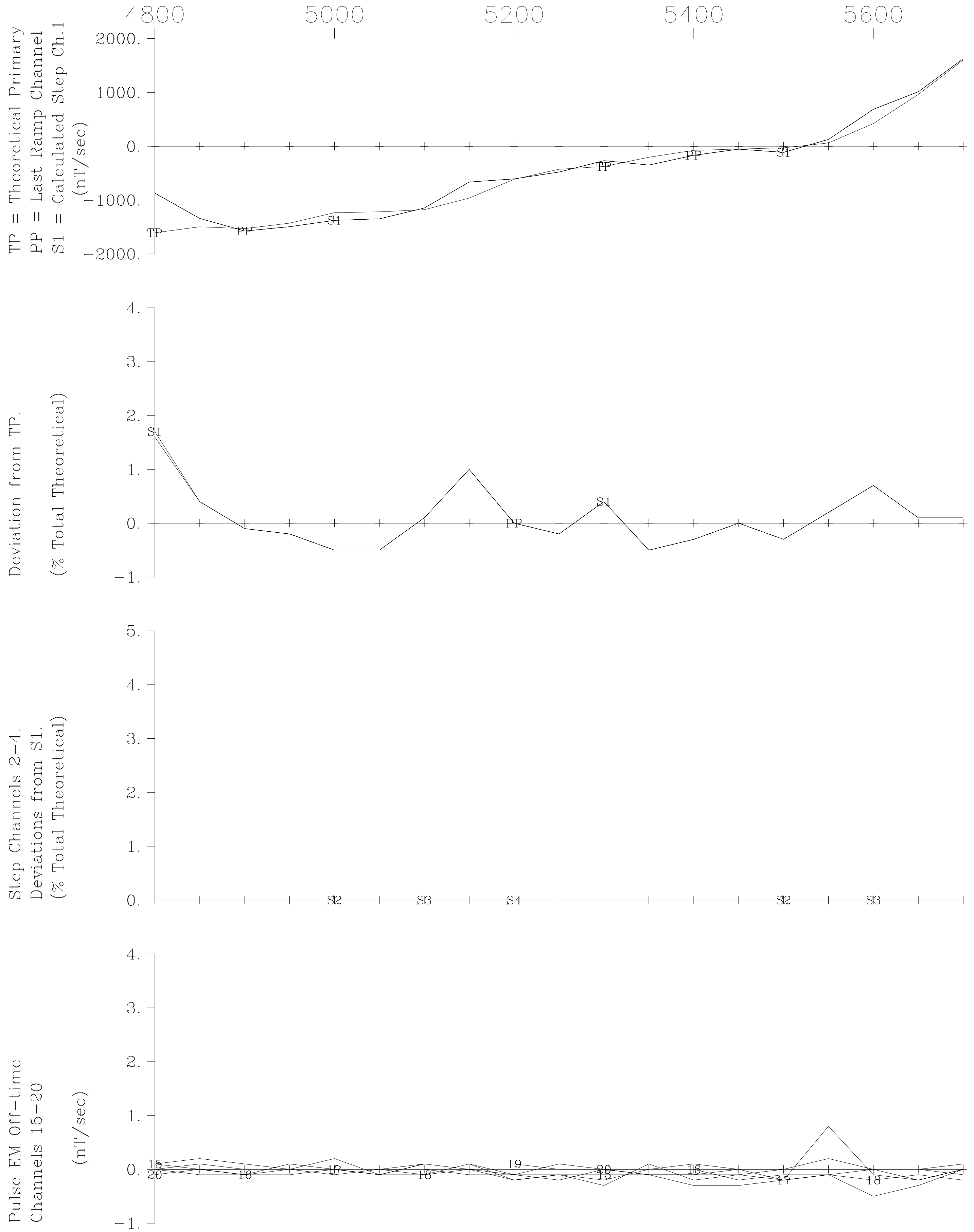

TP = Theoretical Primary
PP = Last Ramp Channel
S1 = Calculated Step Ch.1
(nT/sec)
3200
3400
3600
3800
4000
4200
0.
-5000.
-10000.
-15000.
-20000.
Deviation from TP.
(% Total Theoretical)
Step Channels 2-4.
Deviations from S1.
(% Total Theoretical)
Pulse EM Off-time
Channels 15-20
(nT/sec)
HTX Minerals Sunday Lake
Loop 2, Line 5300E Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5300E Y Component
Crone Geophysics & Exploration Ltd.



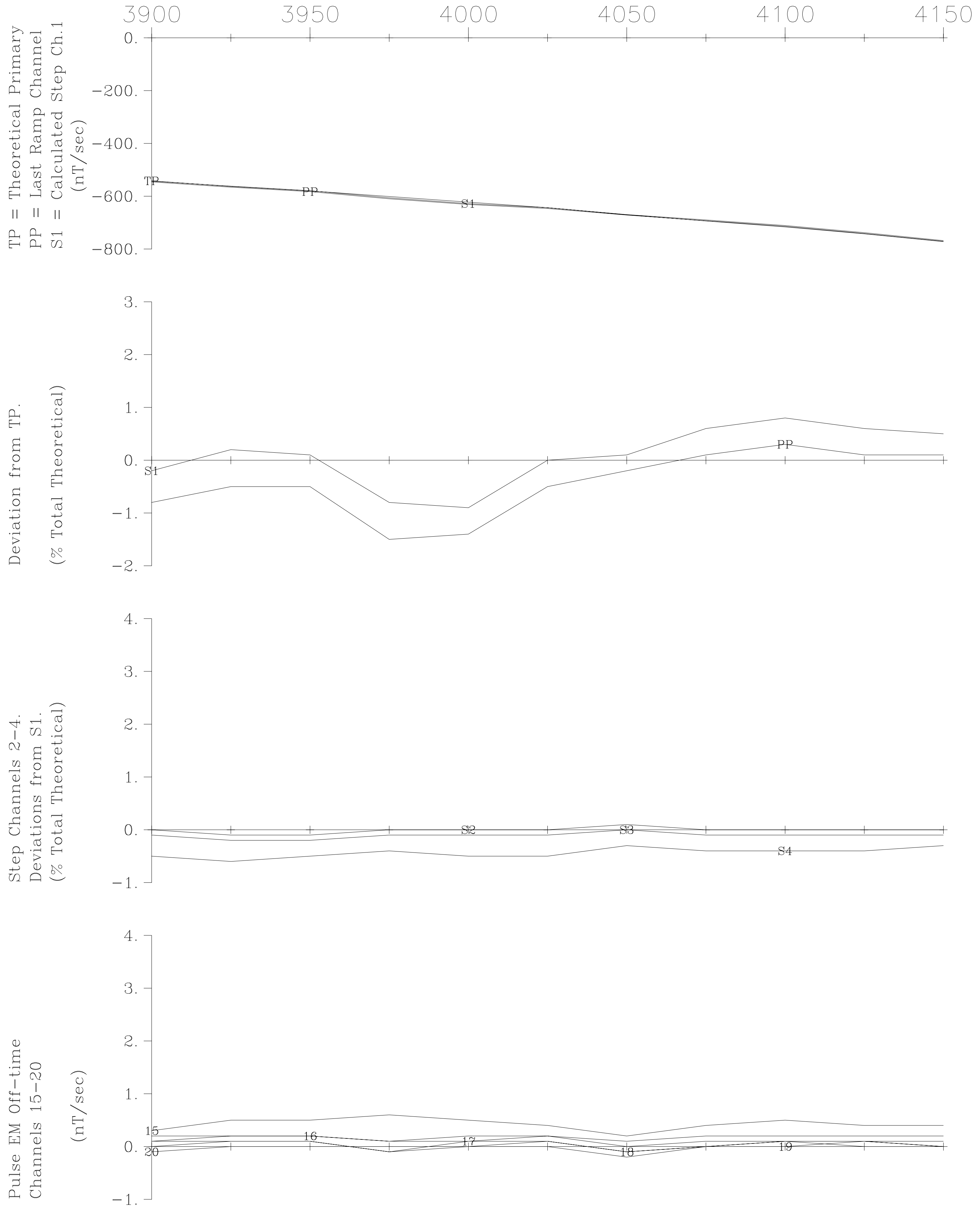
HTX Minerals Sunday Lake
Loop 2, Line 5370N Z Component
Crone Geophysics & Exploration Ltd.



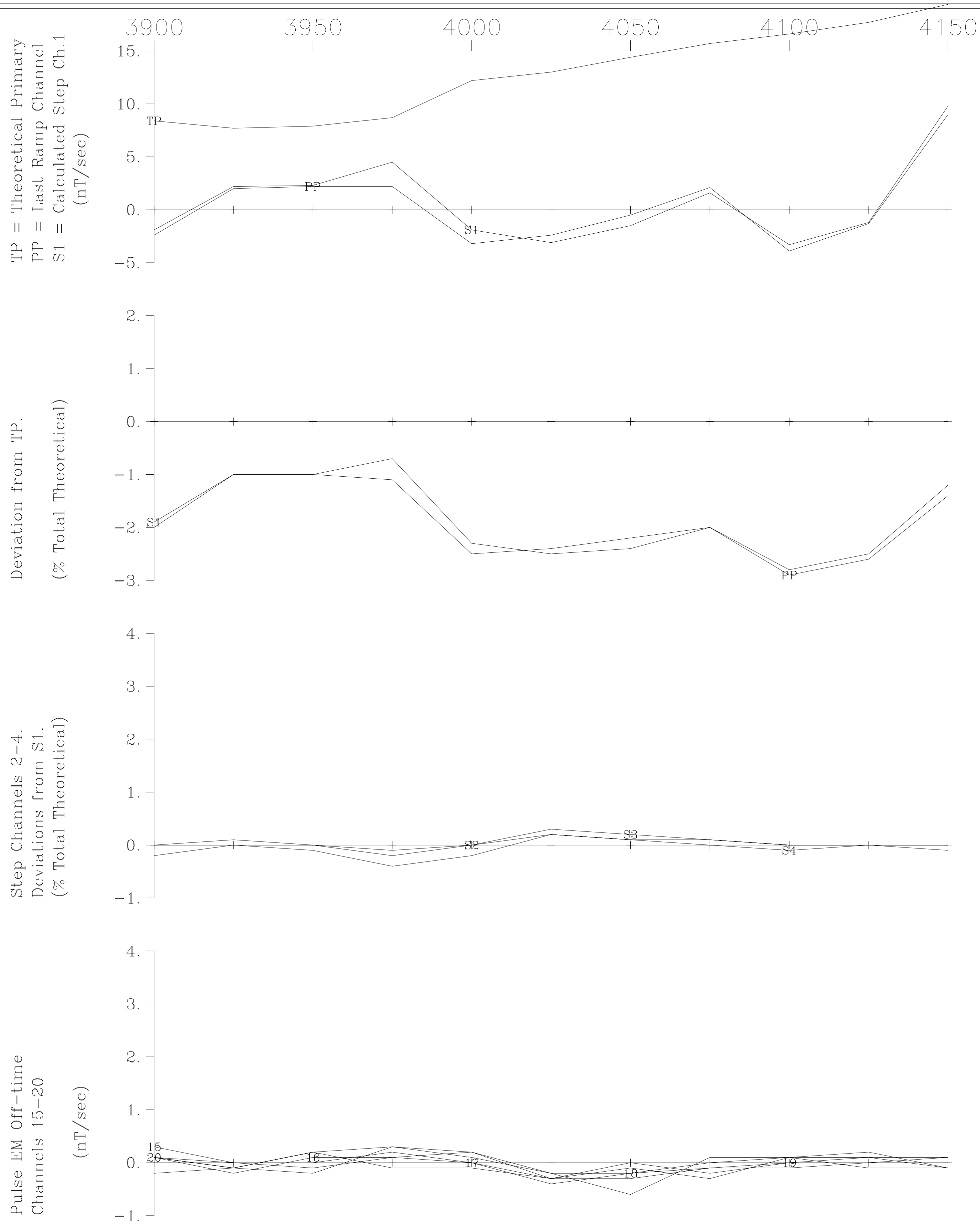
HTX Minerals Sunday Lake

Loop 2, Line 5370N X Component

Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake
Loop 2, Line 5970N Z Component
Crone Geophysics & Exploration Ltd.



HTX Minerals Sunday Lake

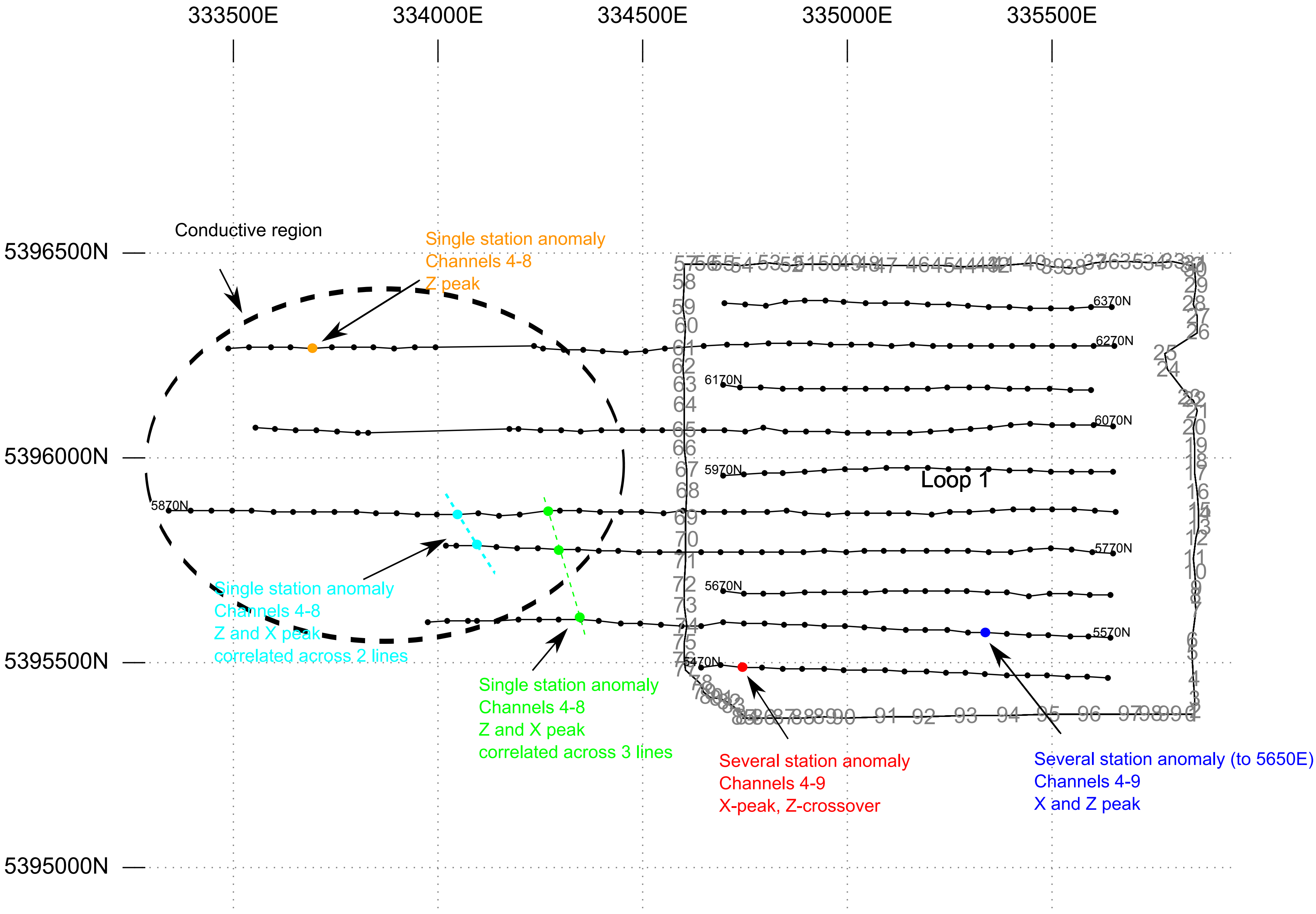
Loop 2, Line 5970N X Component

Crone Geophysics & Exploration Ltd.

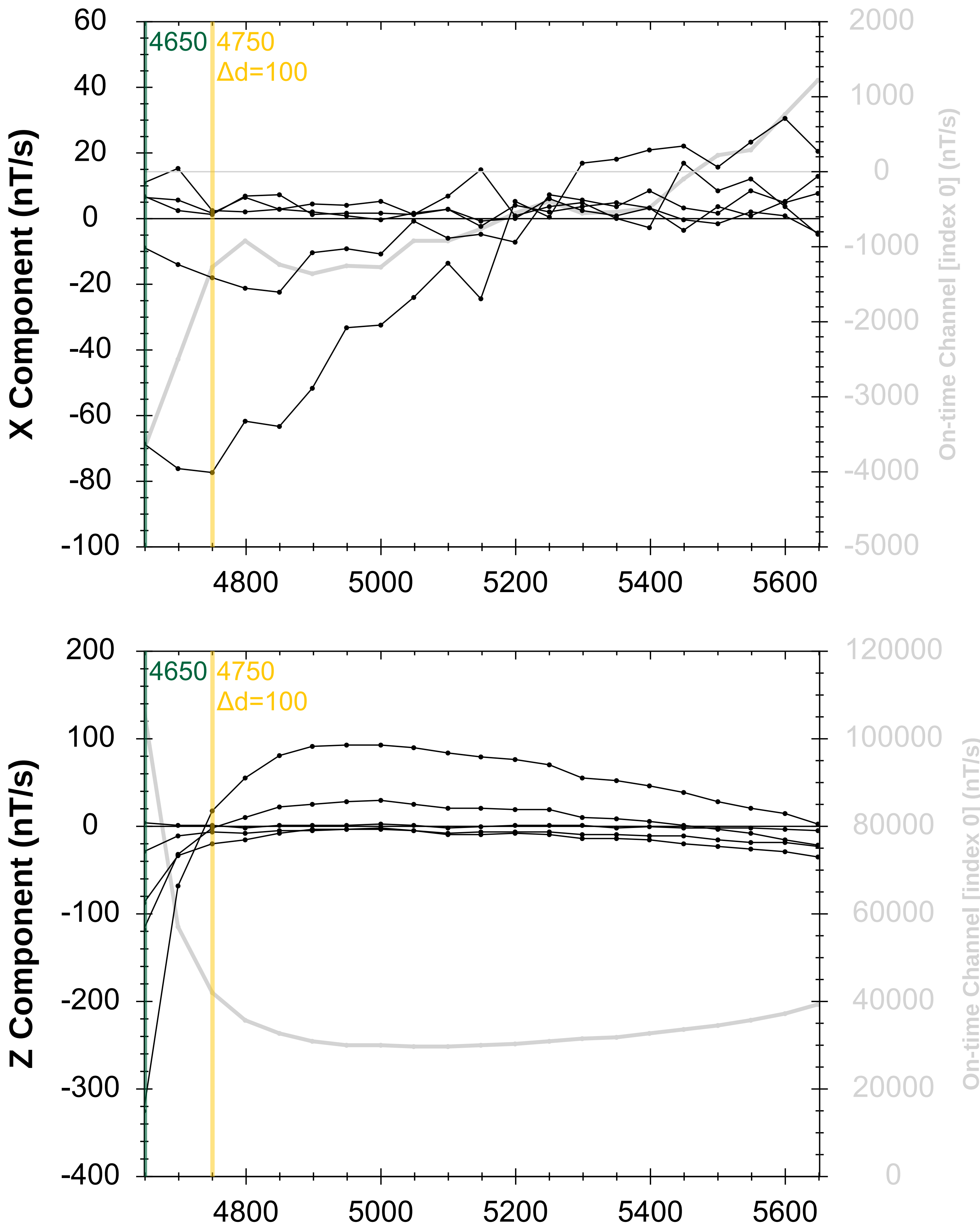
APPENDIX V

LOOP 1 SURFACE PROFILE PICKS (2013)

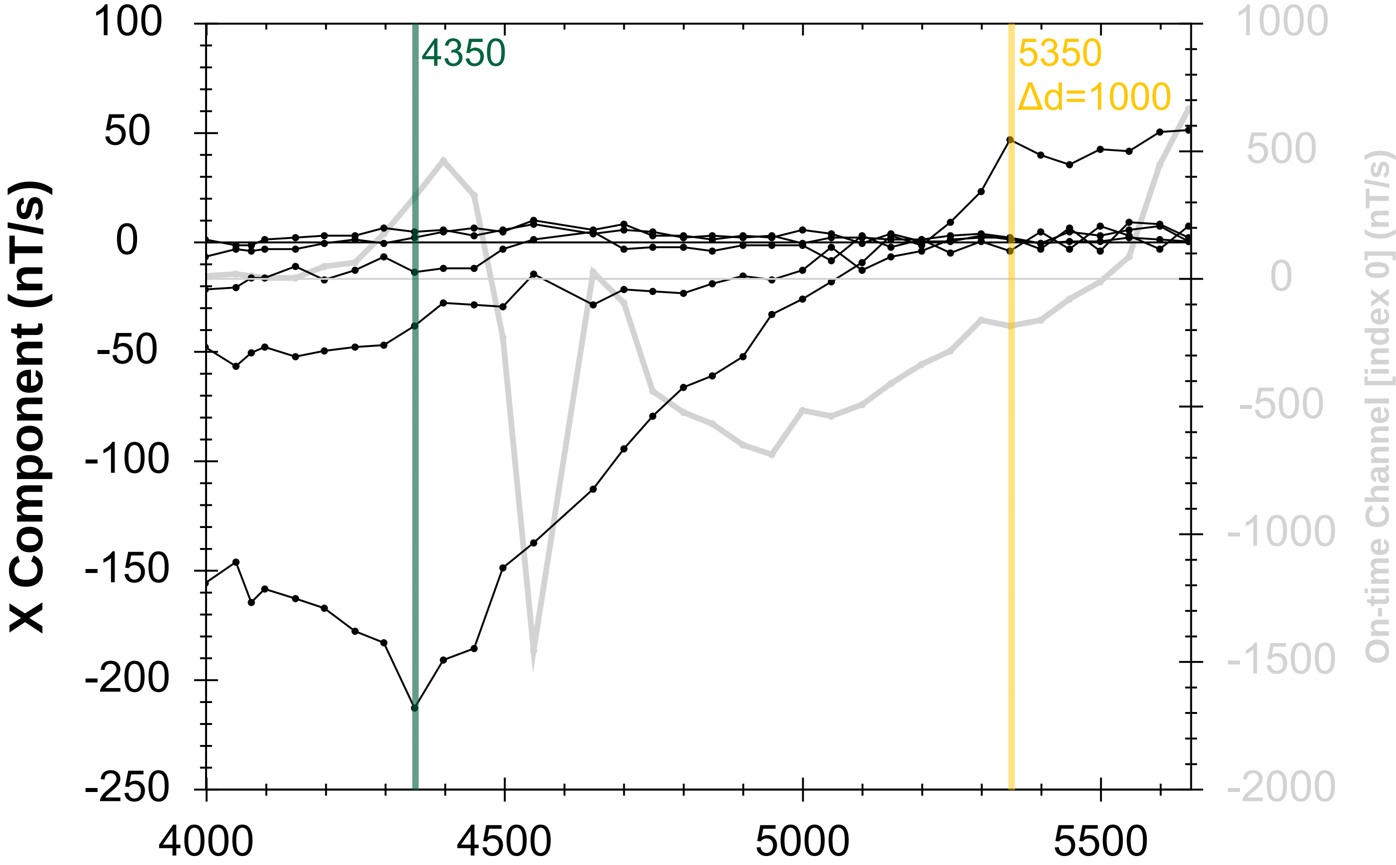
HTX Minerals Sunday Lake
SPEM 2013 Loop 1

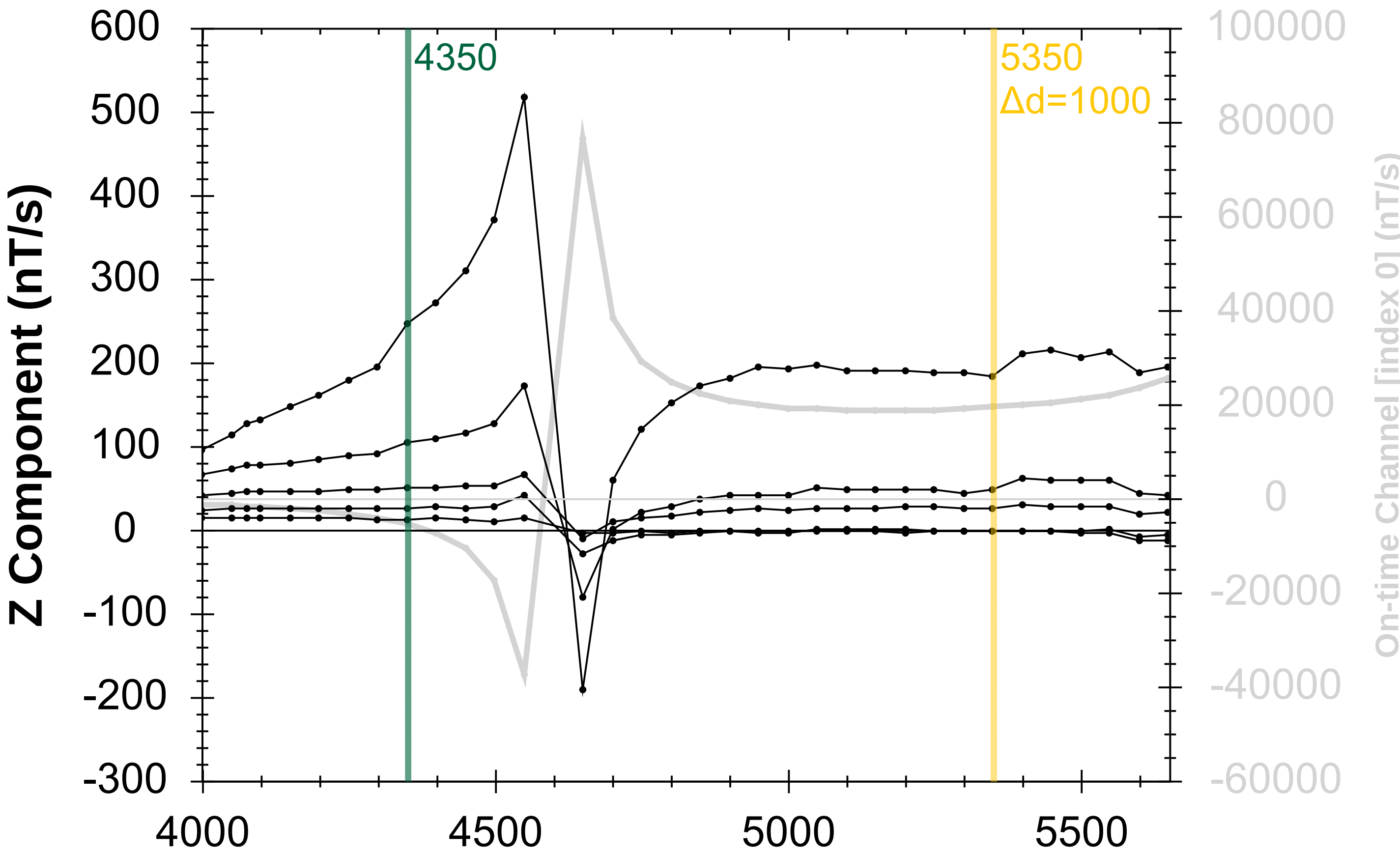


Htx Minerals Sunday Lake September 1, 2013
Line 5470N Loop 1 16.66ms Channels 4-8
Crone Geophysics & Exploration Ltd.

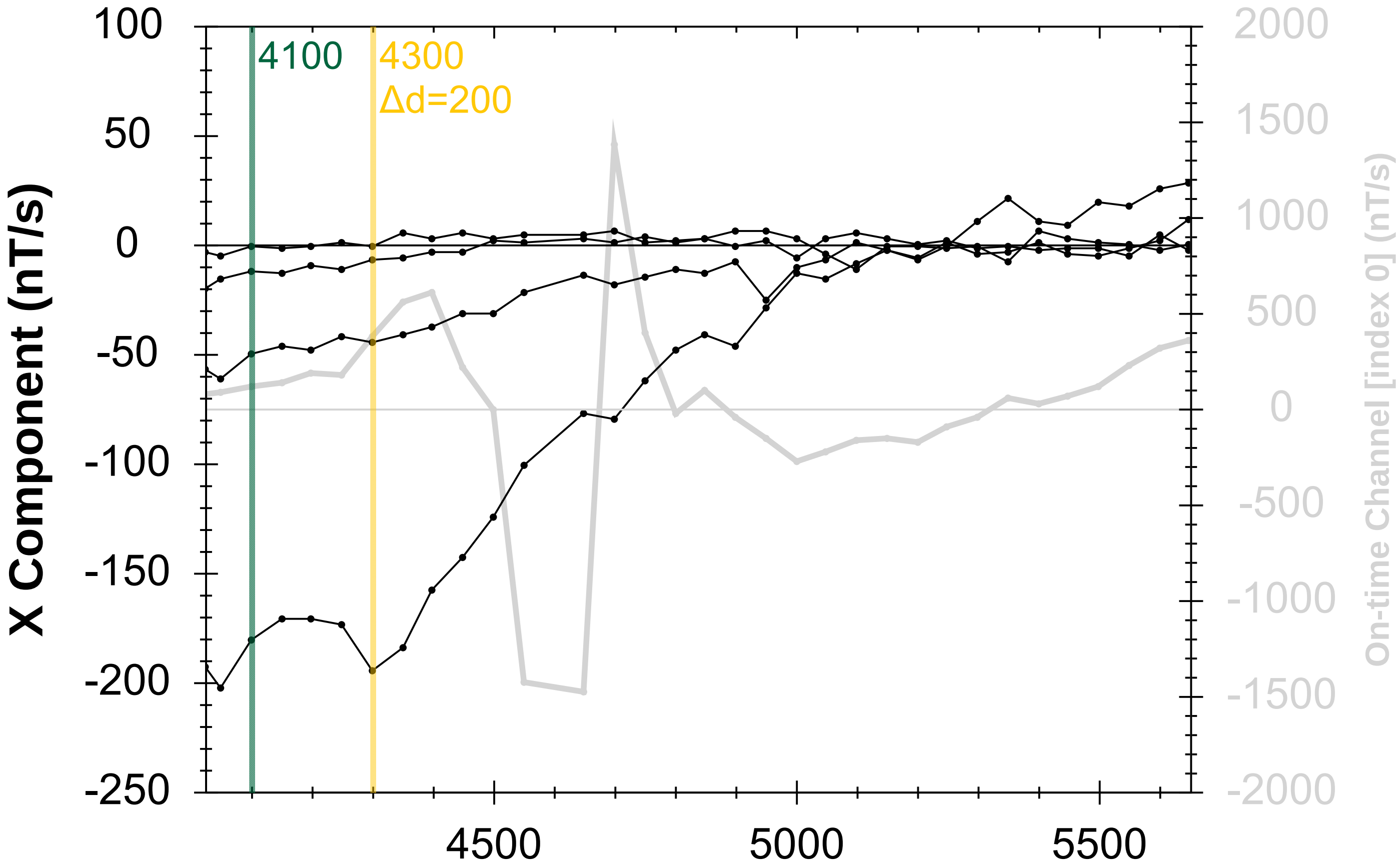


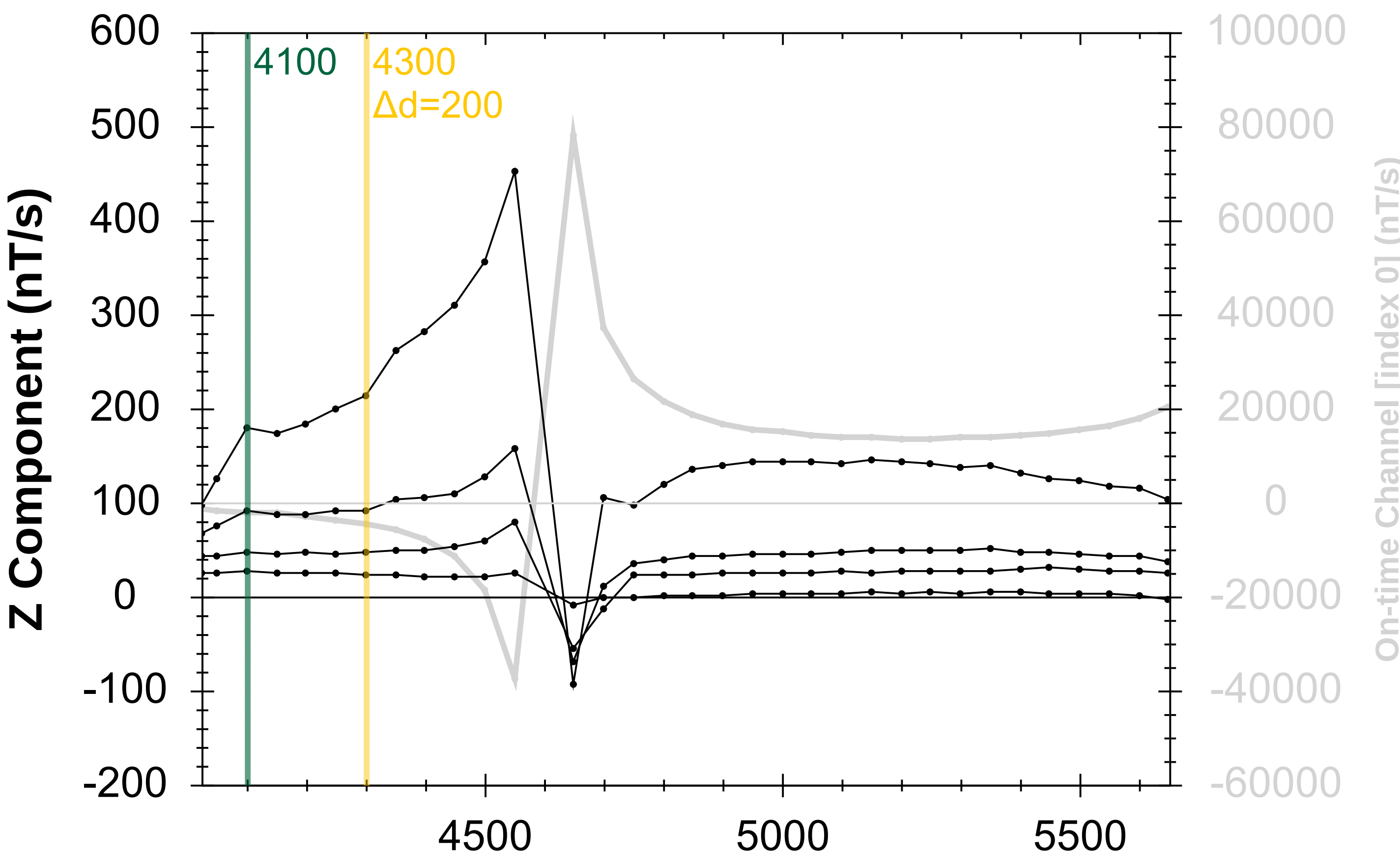
Htx Minerals Sunday Lake August 31, 2013
Line 5570N Loop 1 16.66ms Channels 4-8
Crone Geophysics & Exploration Ltd.



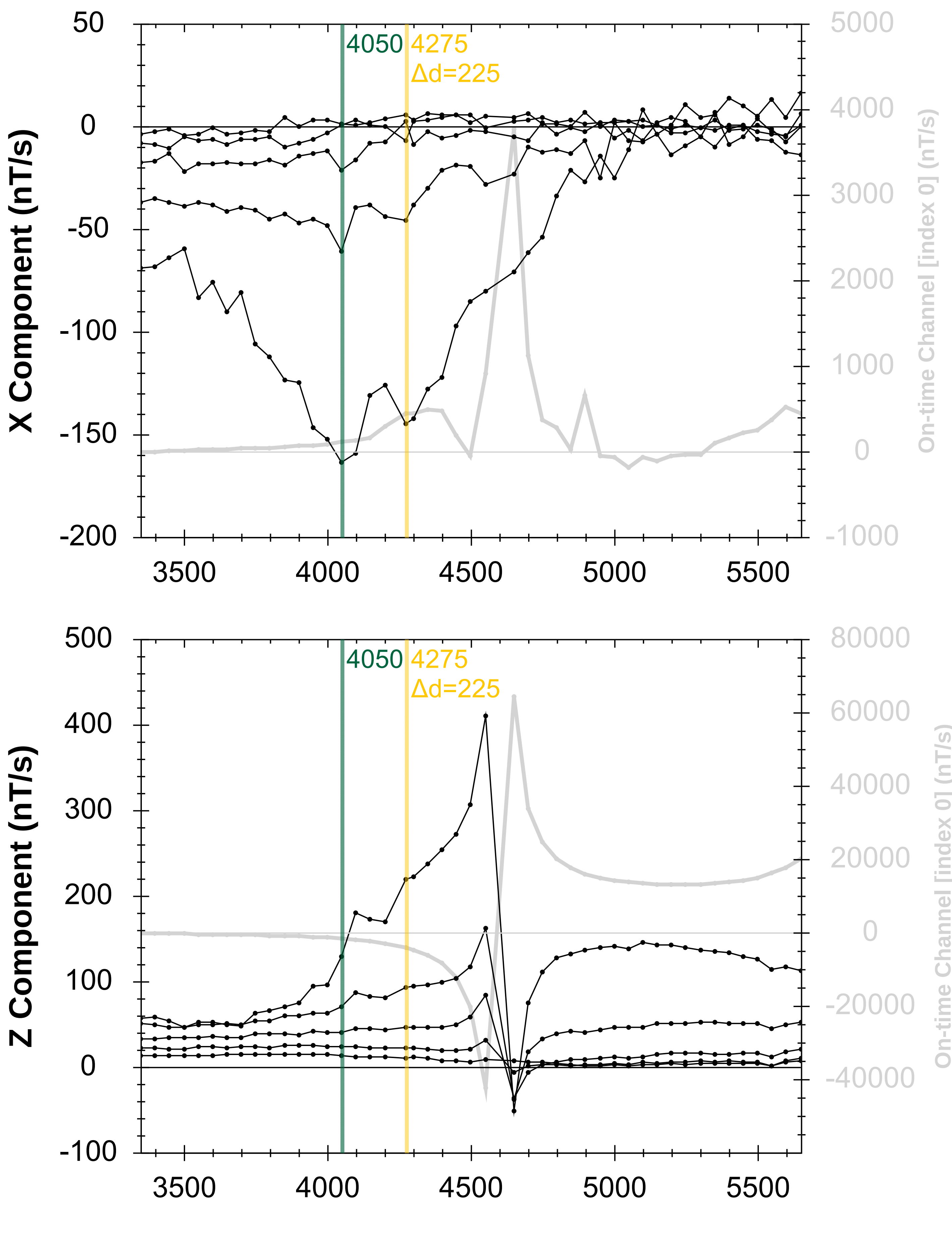


Htx Minerals Sunday Lake August 31, 2013
Line 5770N Loop 1 16.66ms Channels 4-7
Crone Geophysics & Exploration Ltd.

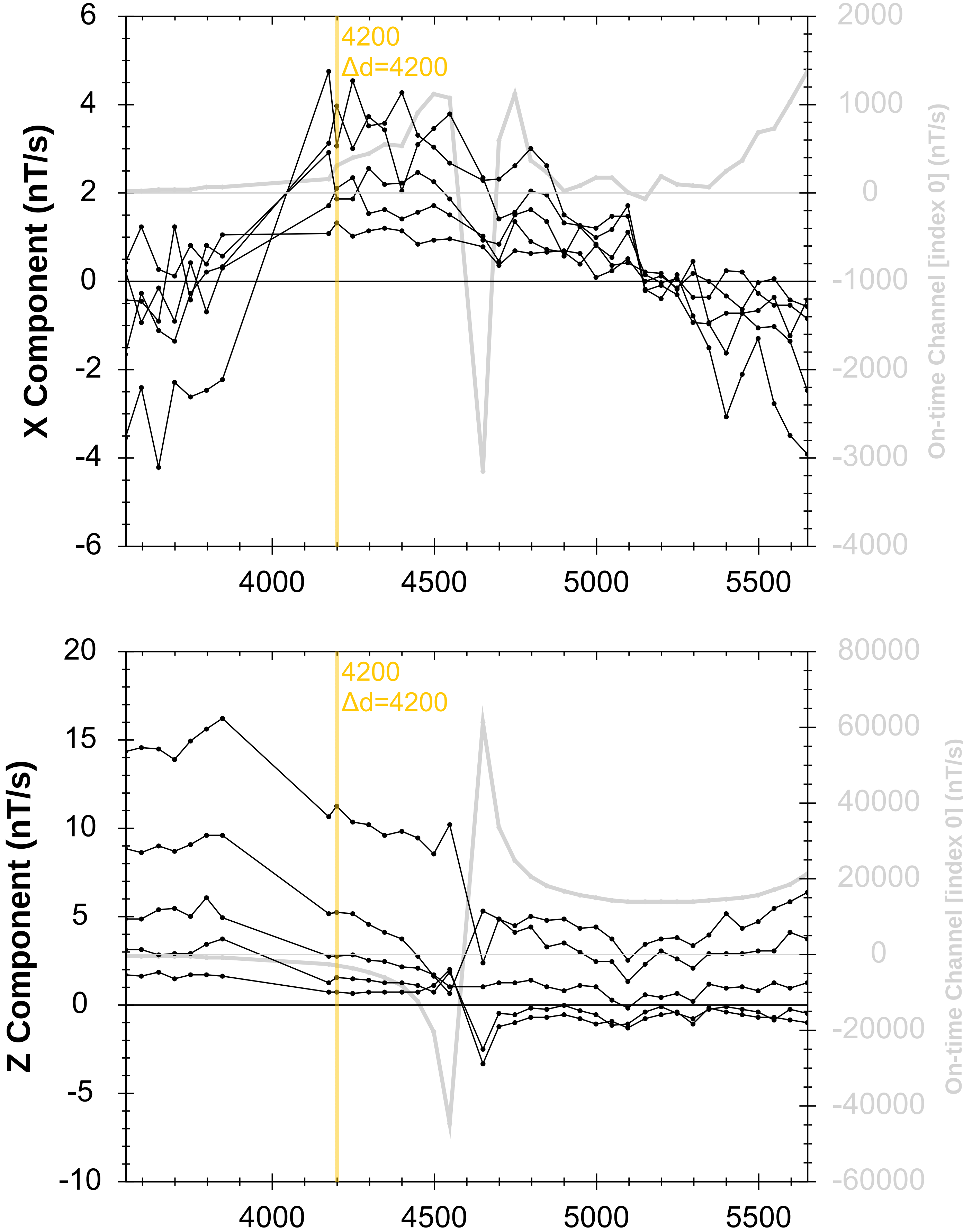




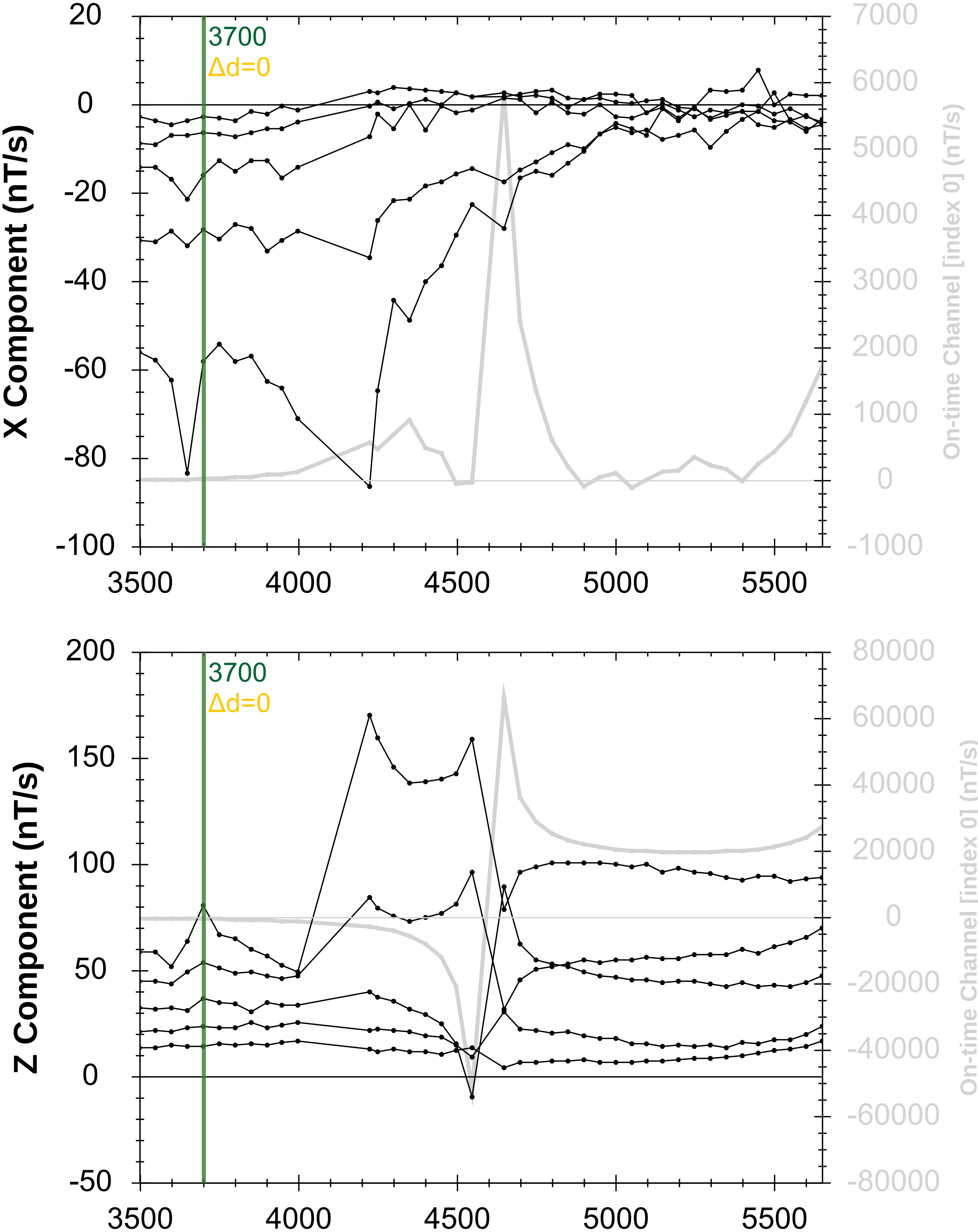
Htx Minerals Sunday Lake September 2, 2013
Line 5870N Loop 1 16.66ms Channels 4-8
Crone Geophysics & Exploration Ltd.



Htx Minerals Sunday Lake August 26, 2013
Line 6070N Loop 1 16.66ms Channels 8-12
Crone Geophysics & Exploration Ltd.

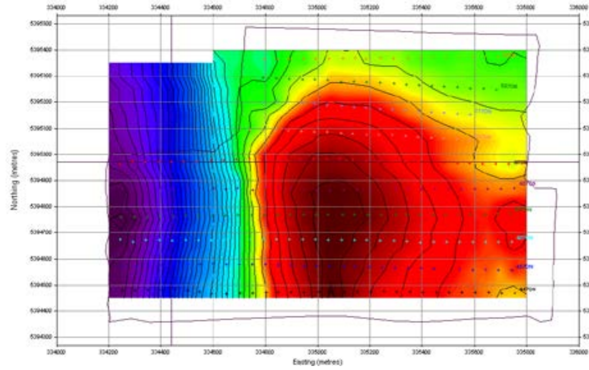


Htx Minerals Sunday Lake August 26, 2013
Line 6270N Loop 1 16.66ms Channels 4-8
Crone Geophysics & Exploration Ltd.

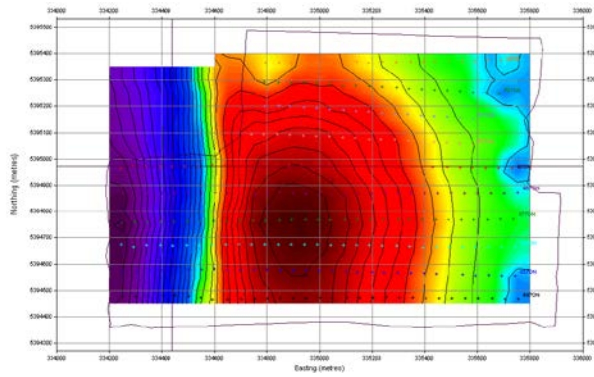


APPENDIX VI

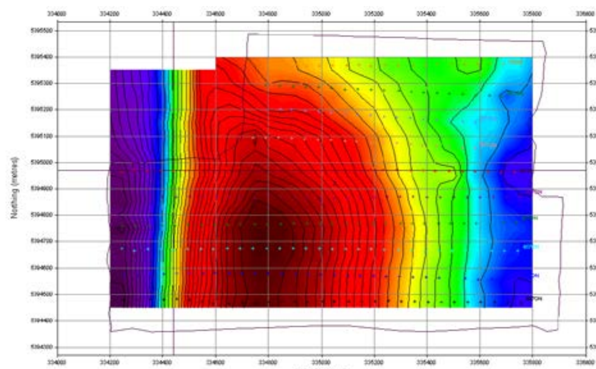
LOOP 2: X-COMPONENT SURFACE GRIDS (2013)



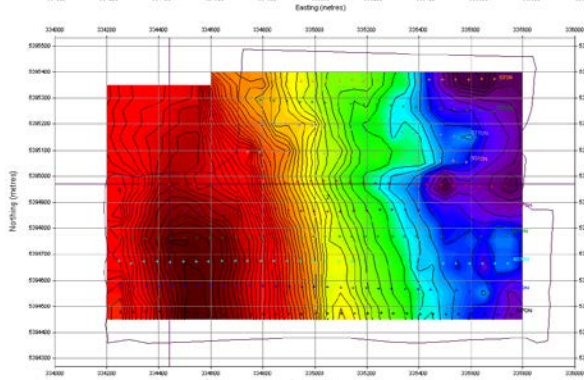
X Component- Channel 4



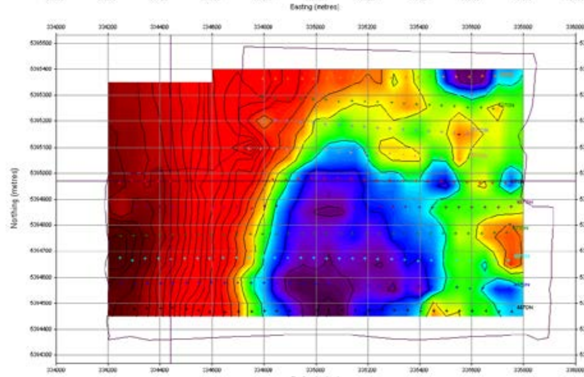
X Component- Channel 6



X Component- Channel 8



X Component- Channel 10

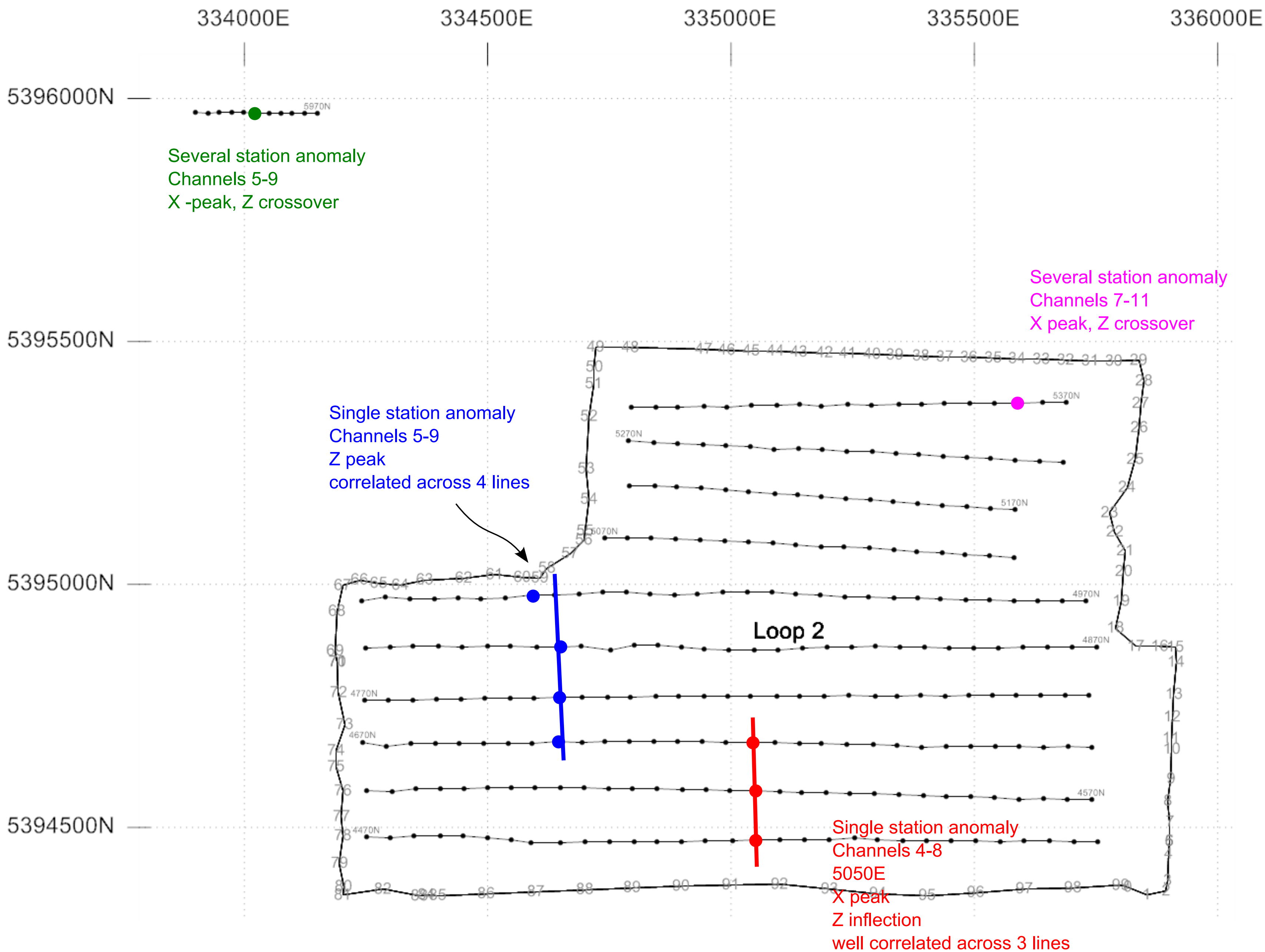


X Component- Channel 12

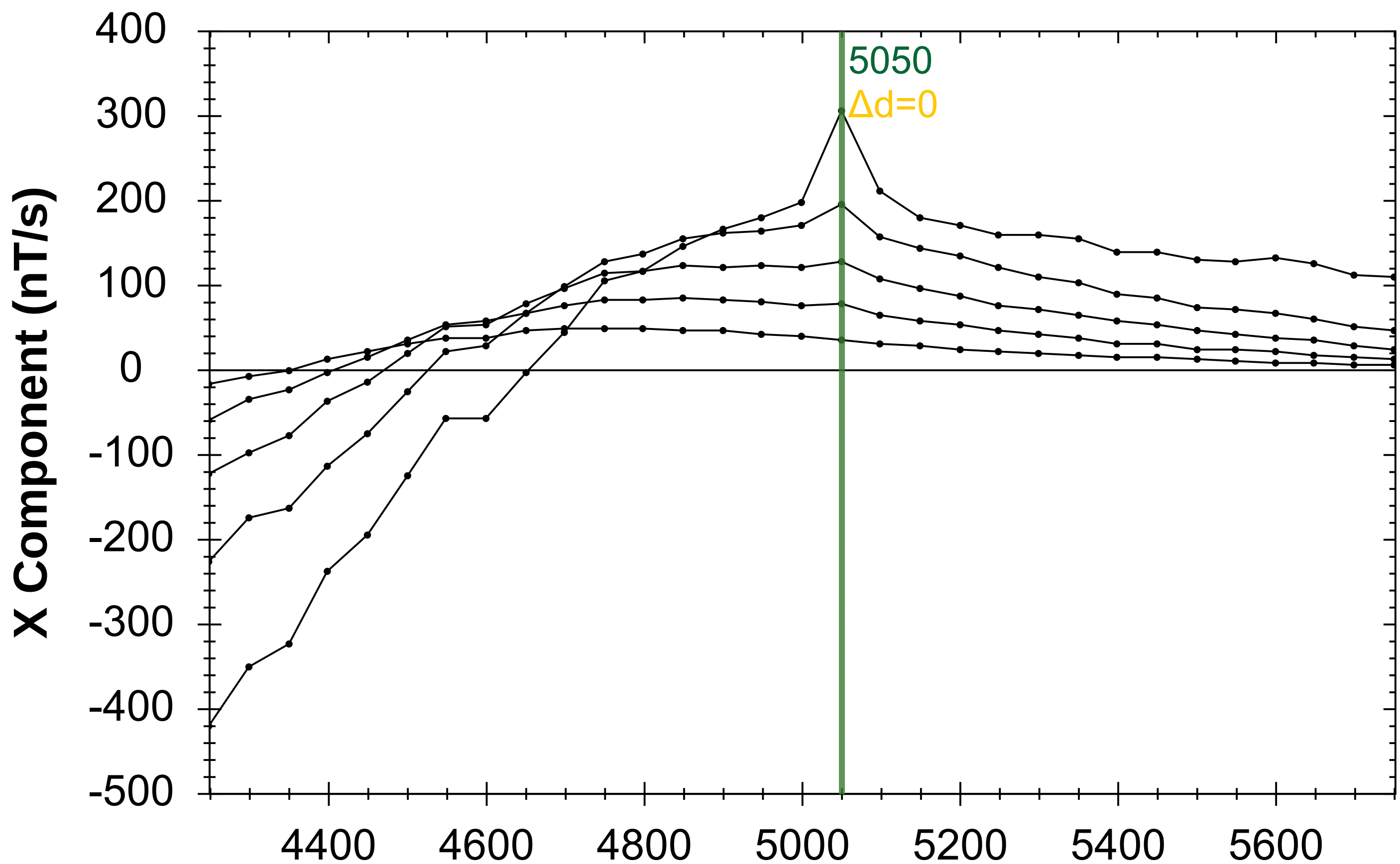
APPENDIX VII

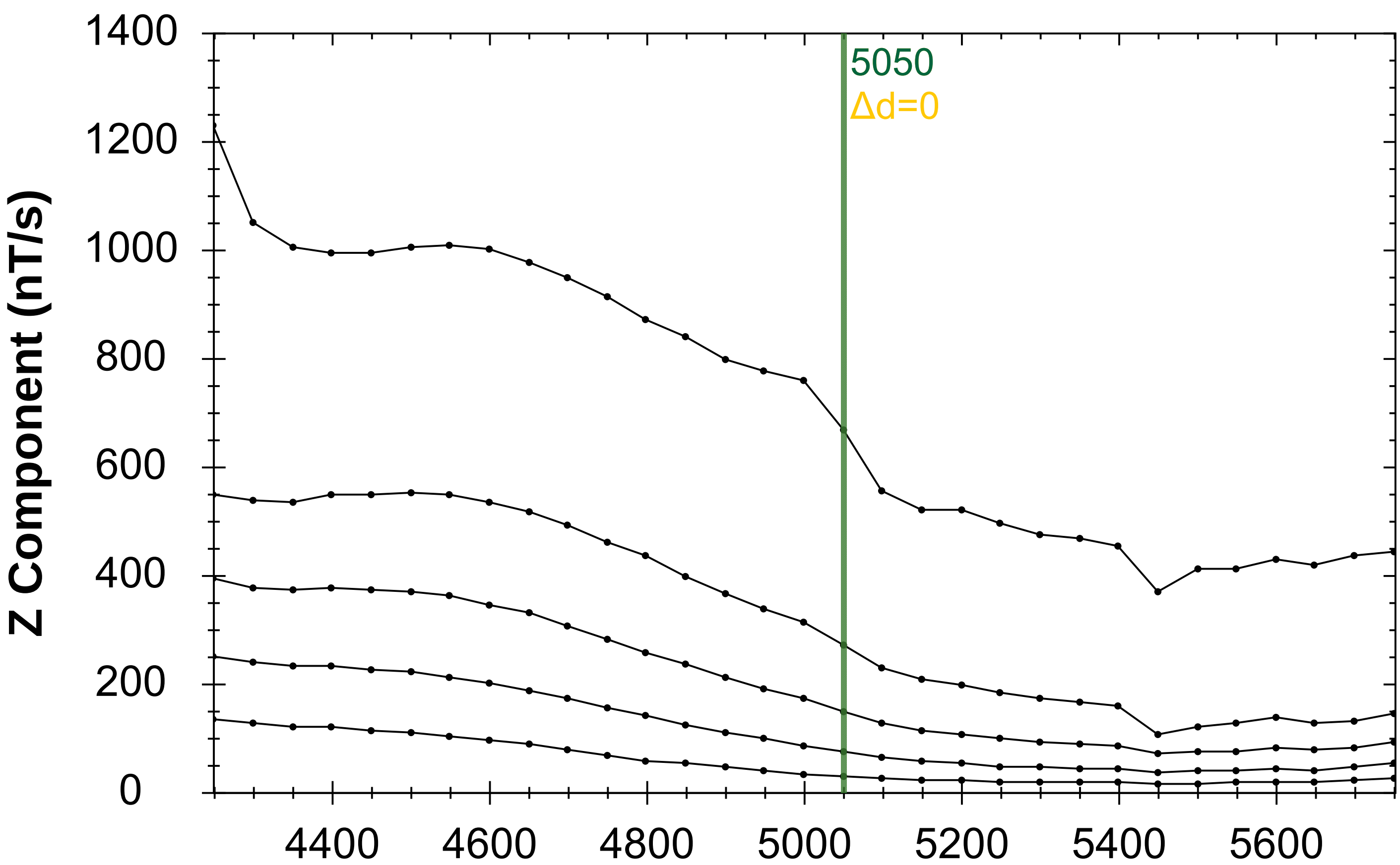
LOOP 2 SURFACE PROFILE PICKS (2013)

HTX Minerals Sunday Lake
SPEM 2013 Loop 2

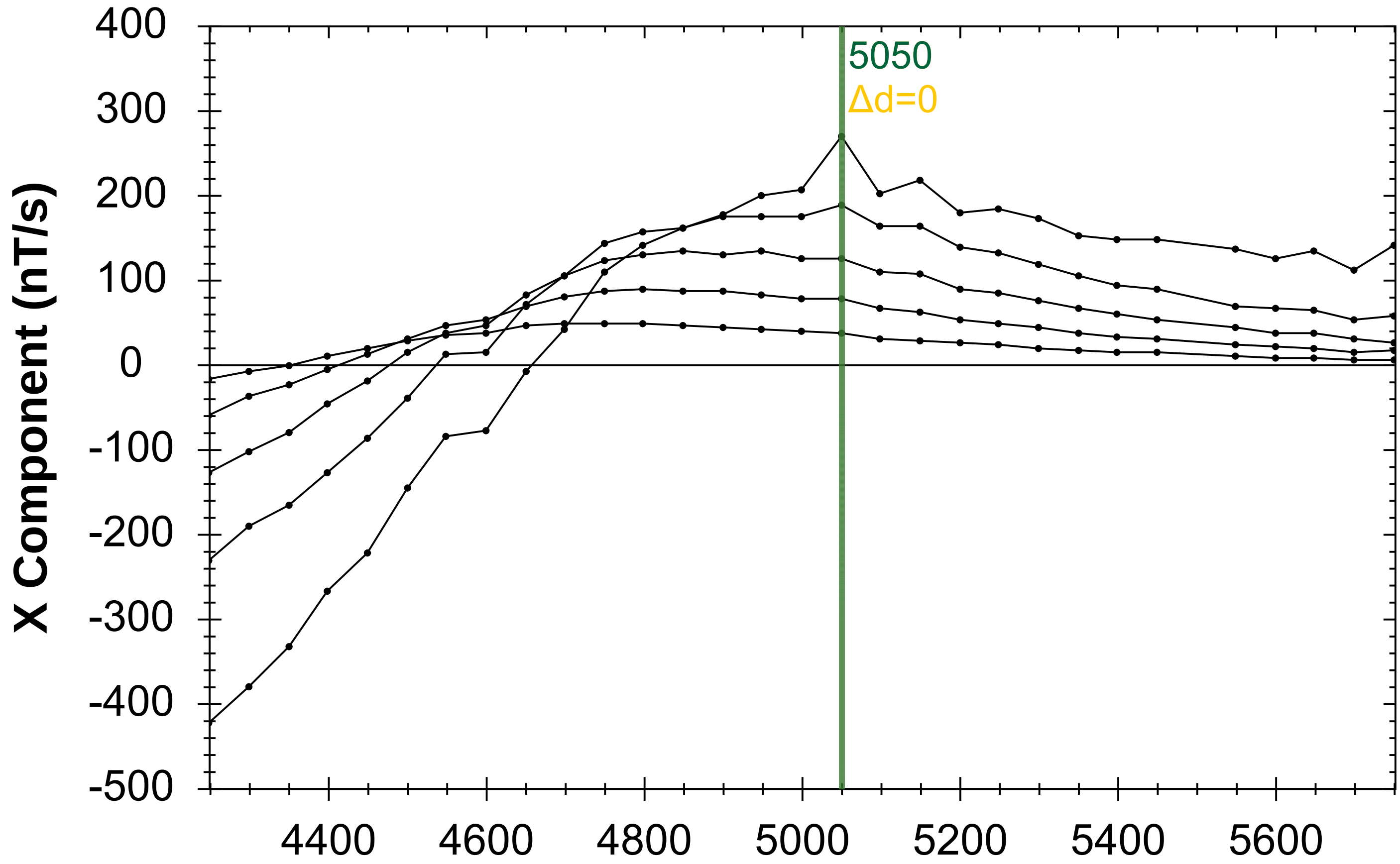


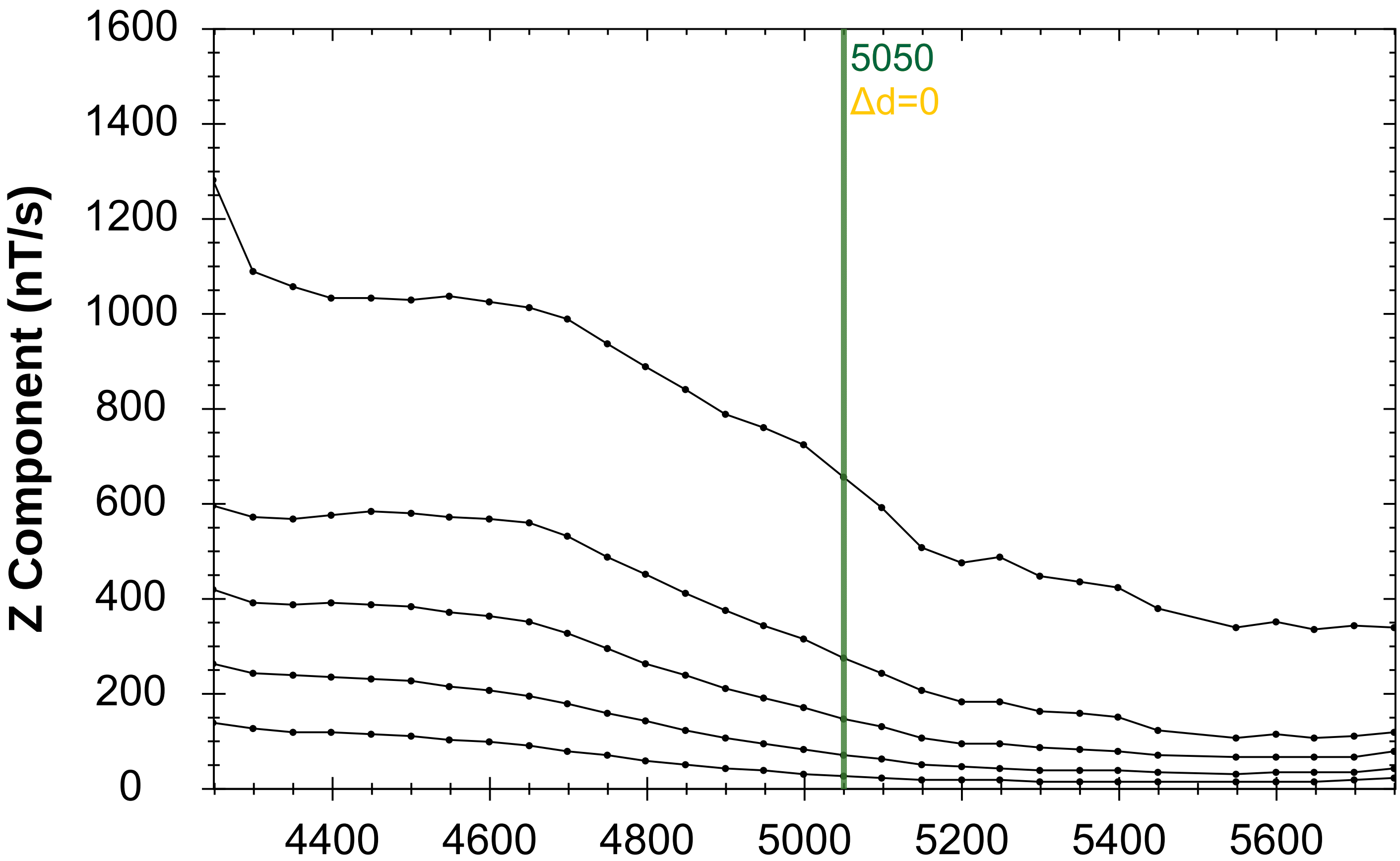
Htx Minerals Sunday Lake September 12, 2013
Line 4470N Loop 2 16.66ms Channels 4-8
Crone Geophysics & Exploration Ltd.



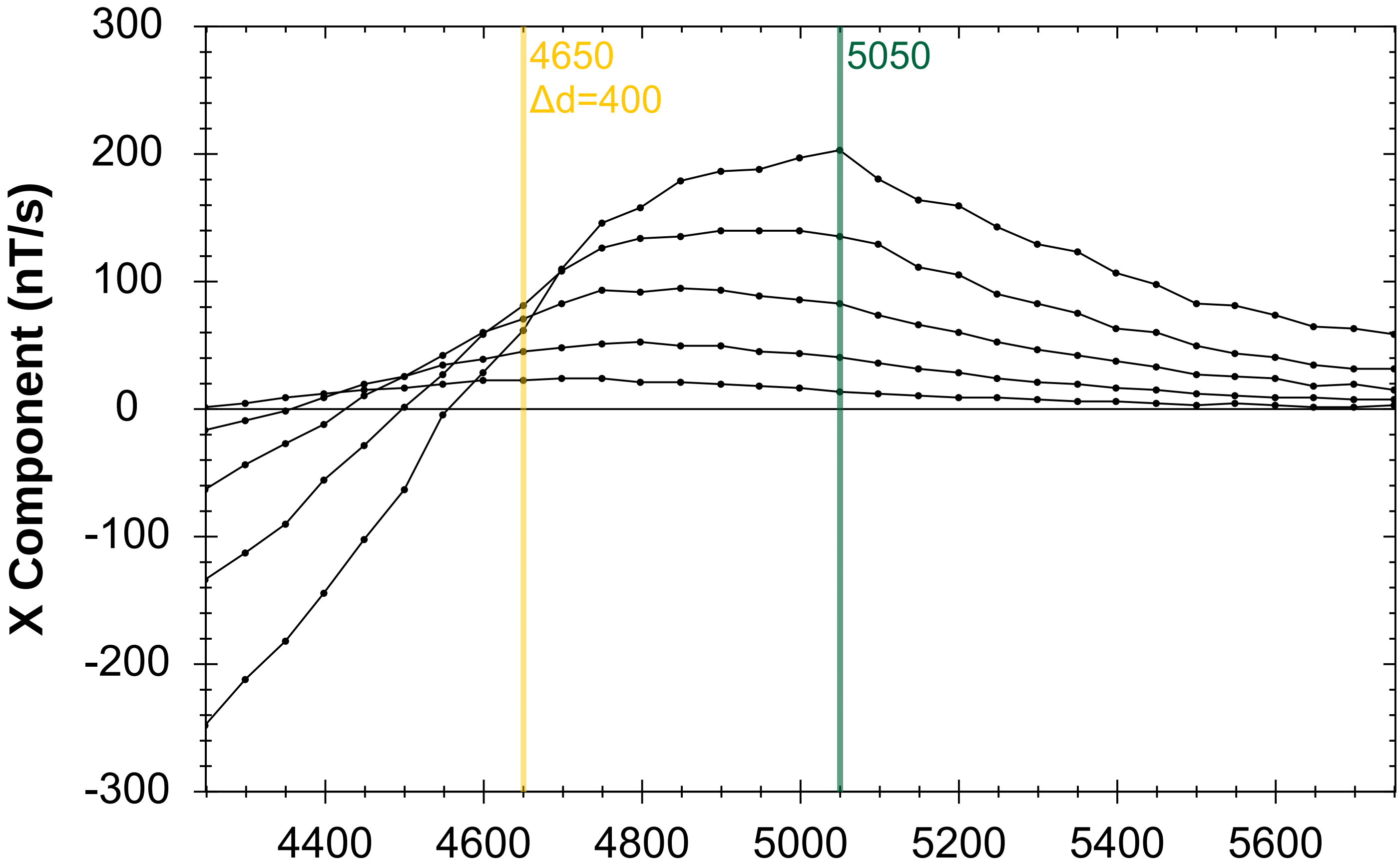


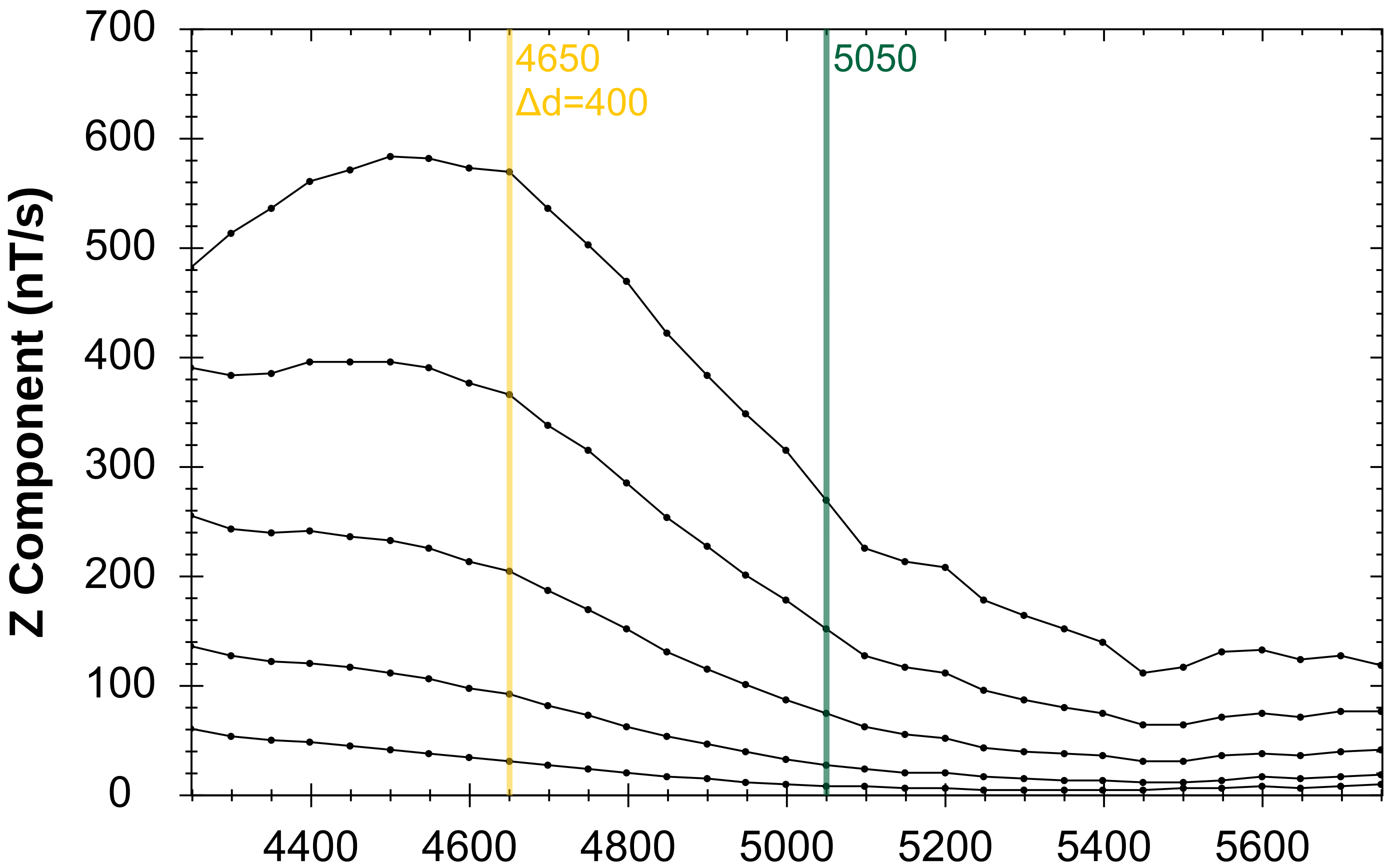
Htx Minerals   Sunday Lake   September 12, 2013
Line 4570N   Loop 2   16.66ms   Channels 4-8
Crone Geophysics & Exploration Ltd.



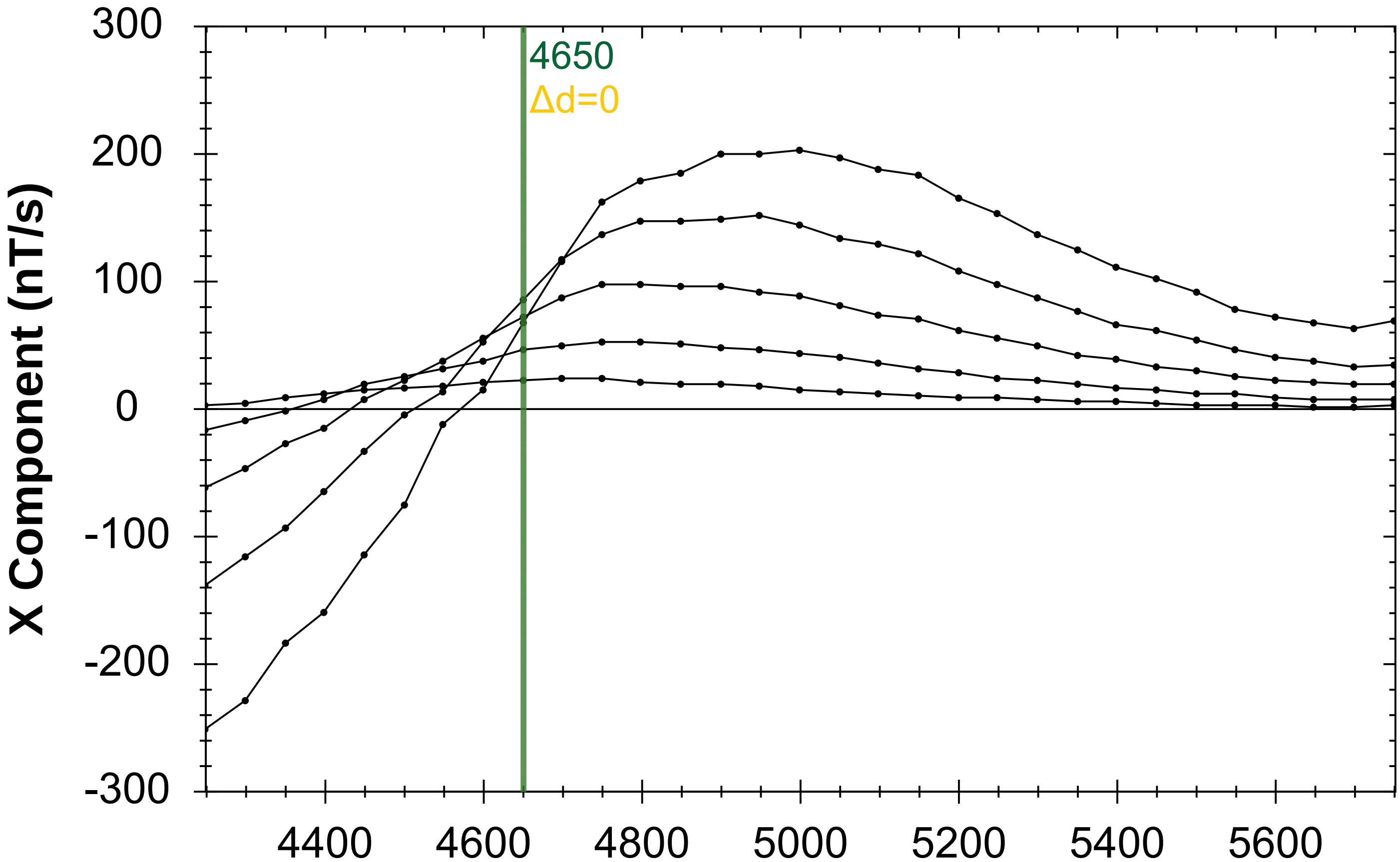


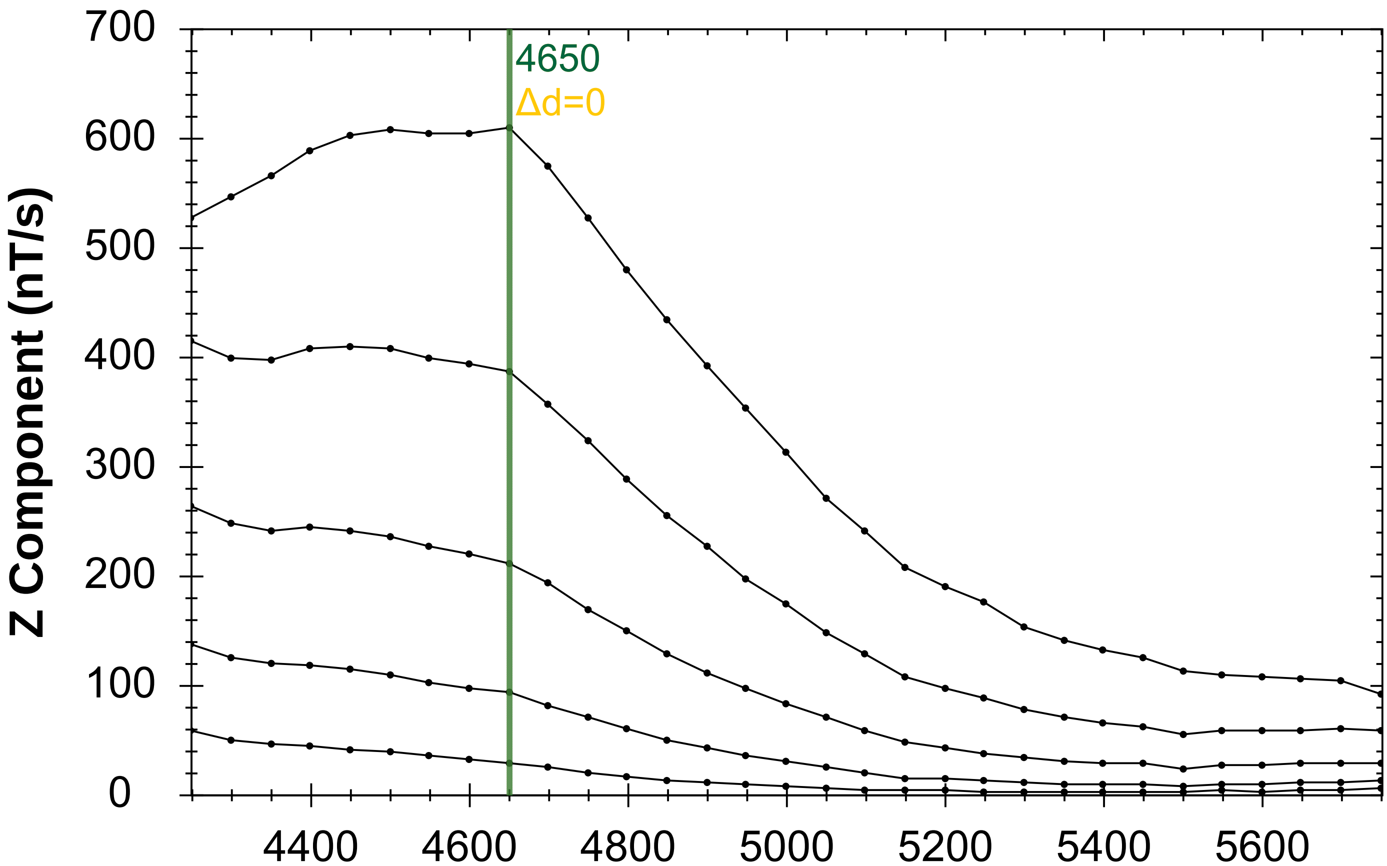
Htx Minerals Sunday Lake September 10, 2013
Line 4670N Loop 2 16.66ms Channels 5-9
Crone Geophysics & Exploration Ltd.



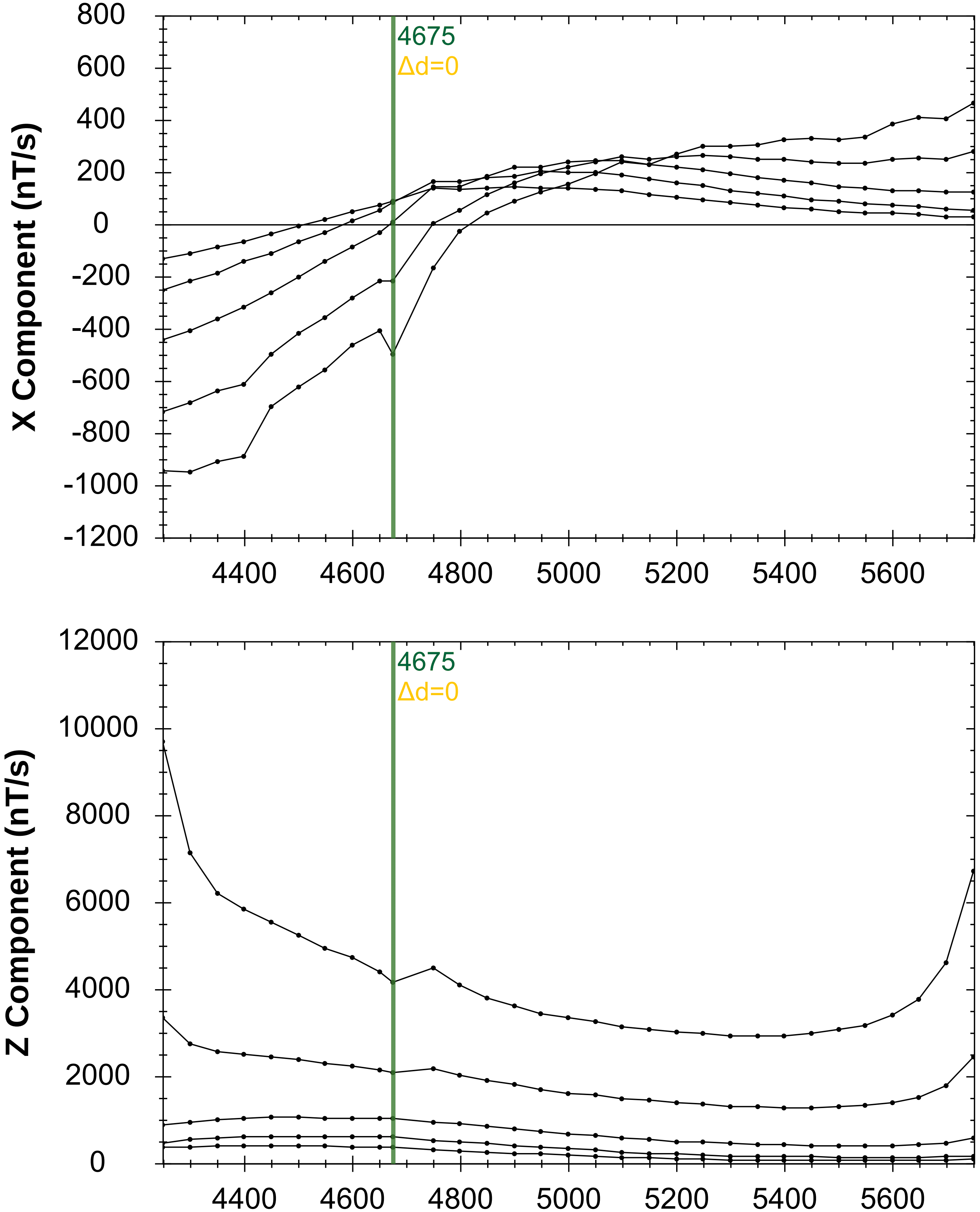


Htx Minerals Sunday Lake September 10, 2013
Line 4770N Loop 2 16.66ms Channels 5-9
Crone Geophysics & Exploration Ltd.

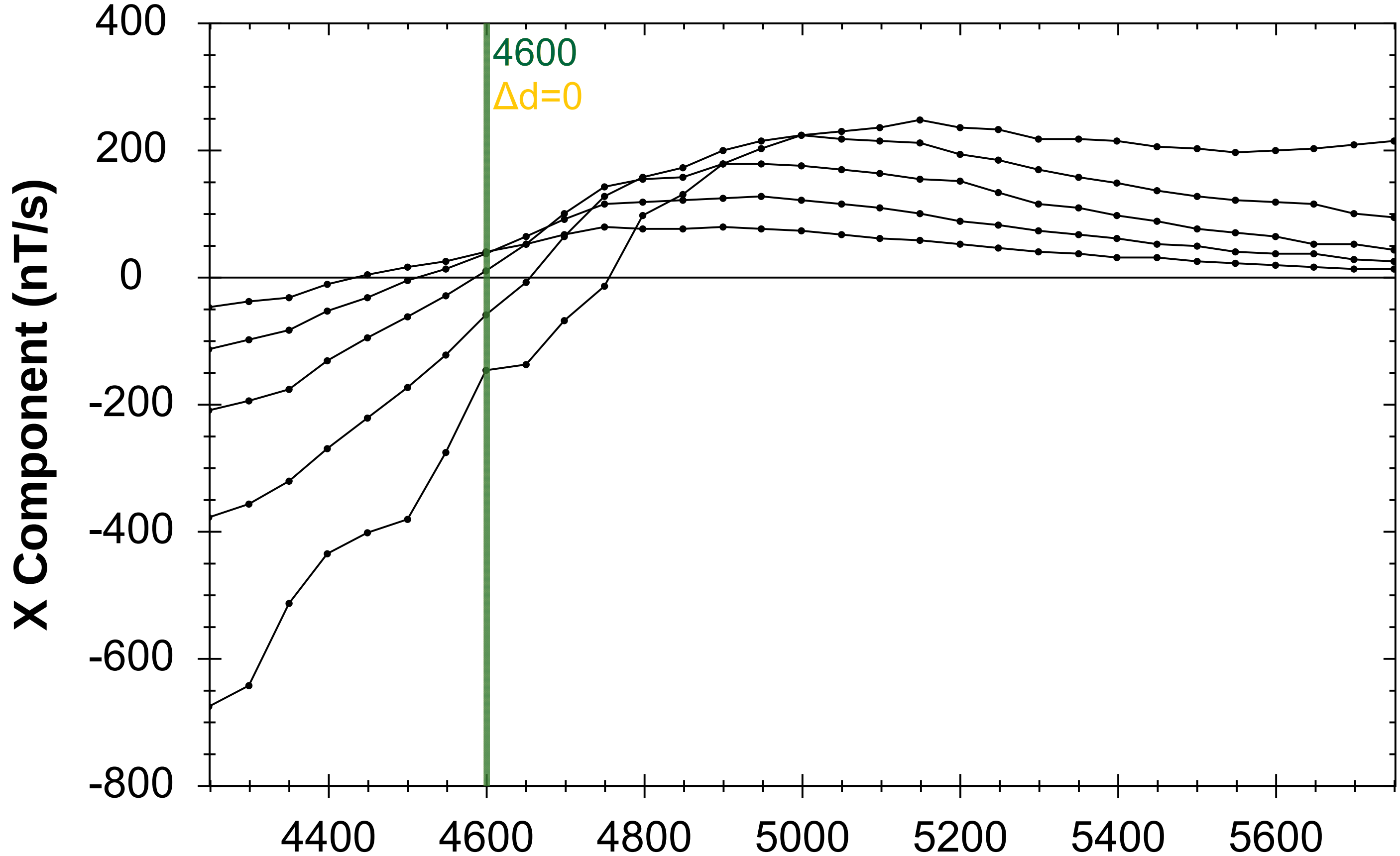


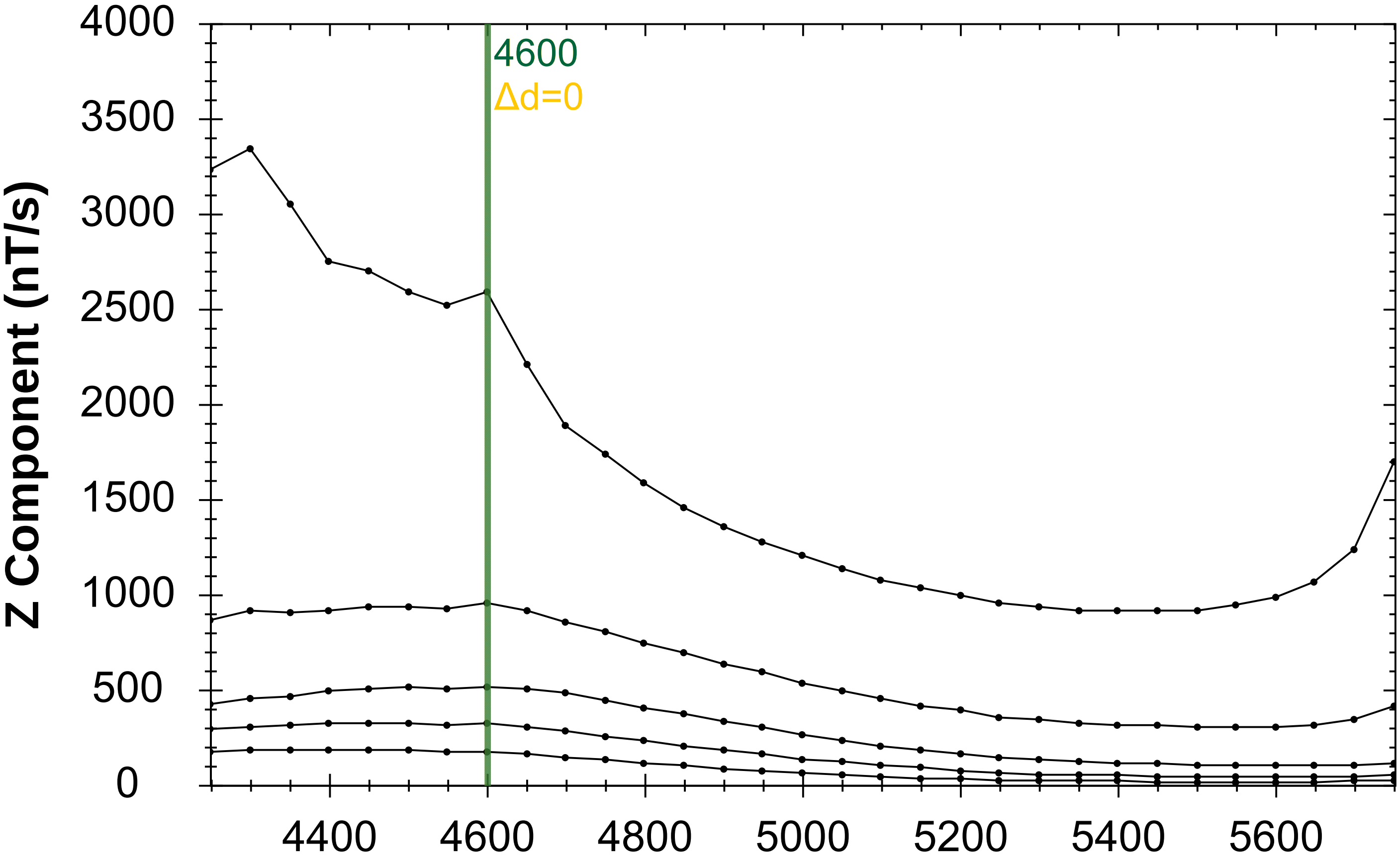


Htx Minerals Sunday Lake September 9, 2013
Line 4870N Loop 2 16.66ms Channels 2-6
Crone Geophysics & Exploration Ltd.

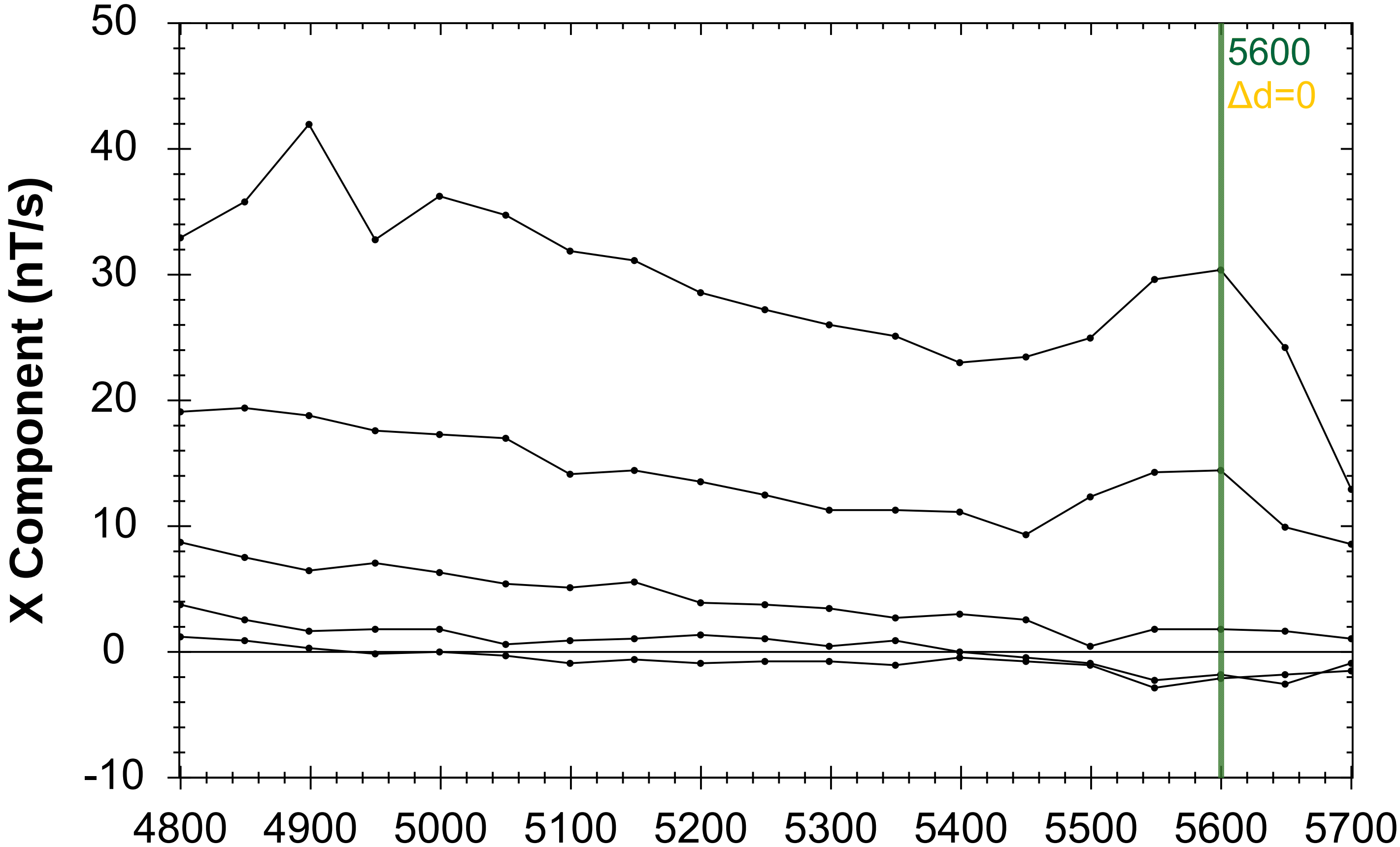


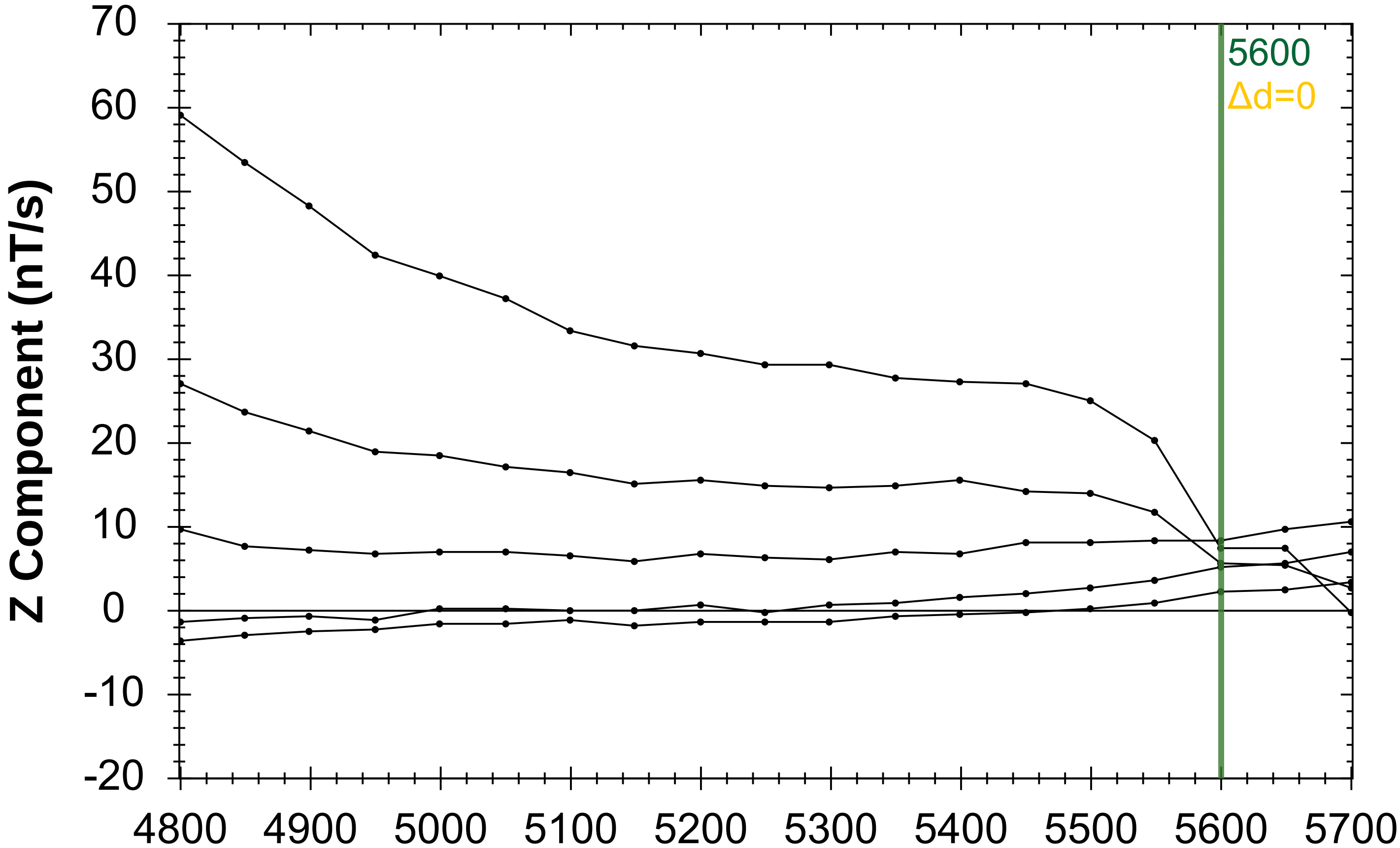
Htx Minerals Sunday Lake September 9, 2013
Line 4970N Loop 2 16.66ms Channels 3-7
Crone Geophysics & Exploration Ltd.



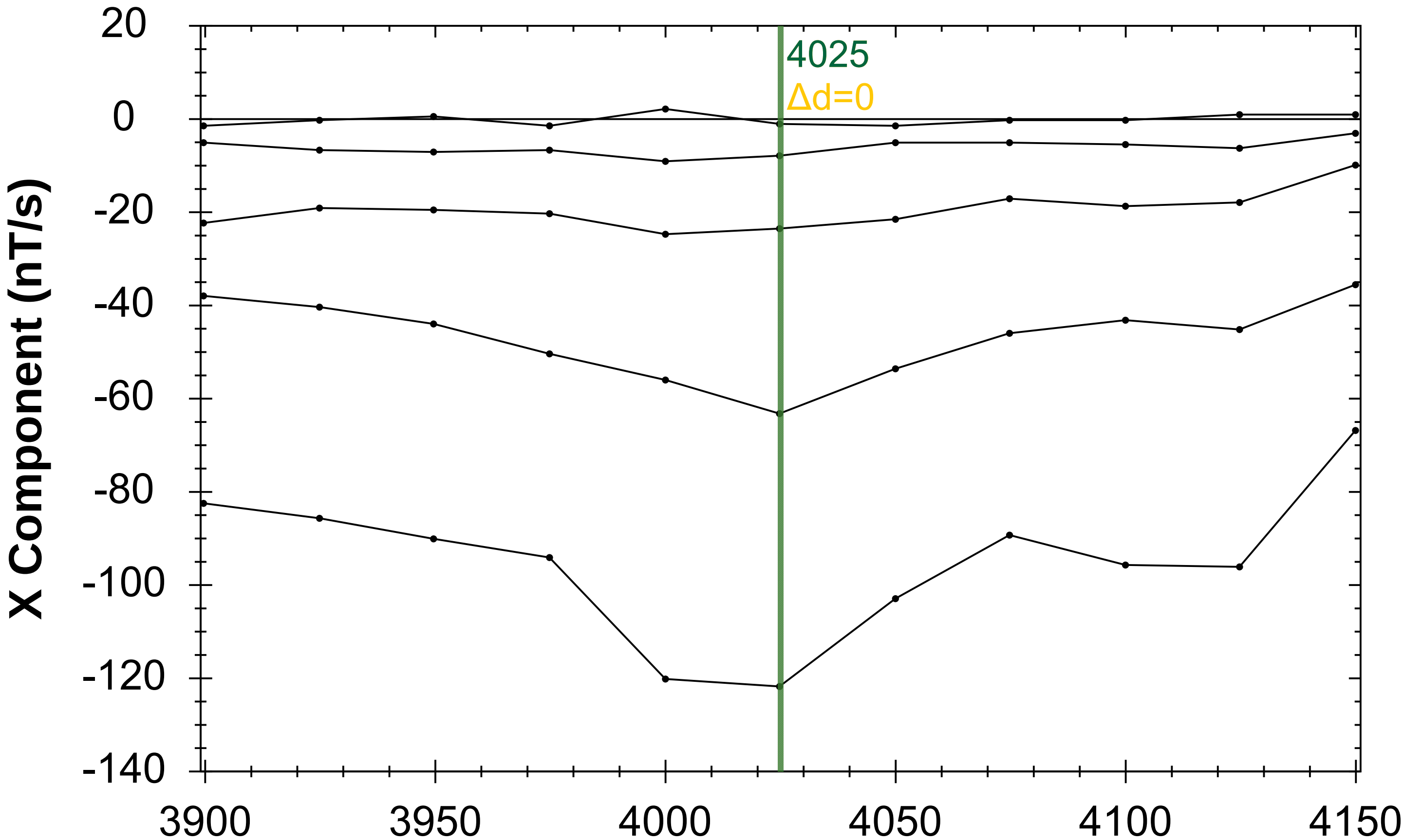


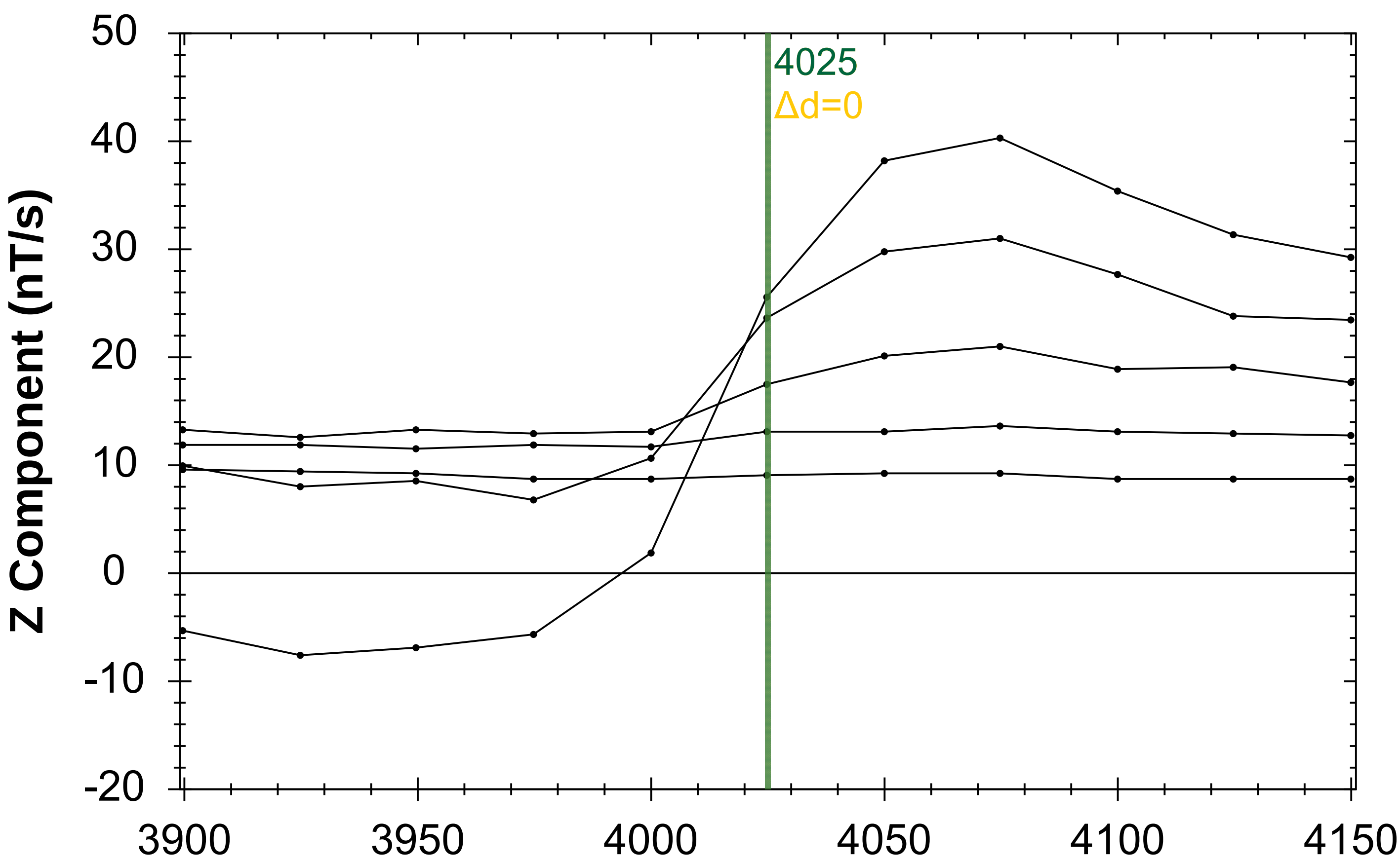
Htx Minerals Sunday Lake September 8, 2013
Line 5370N Loop 2 16.66ms Channels 7-11
Crone Geophysics & Exploration Ltd.





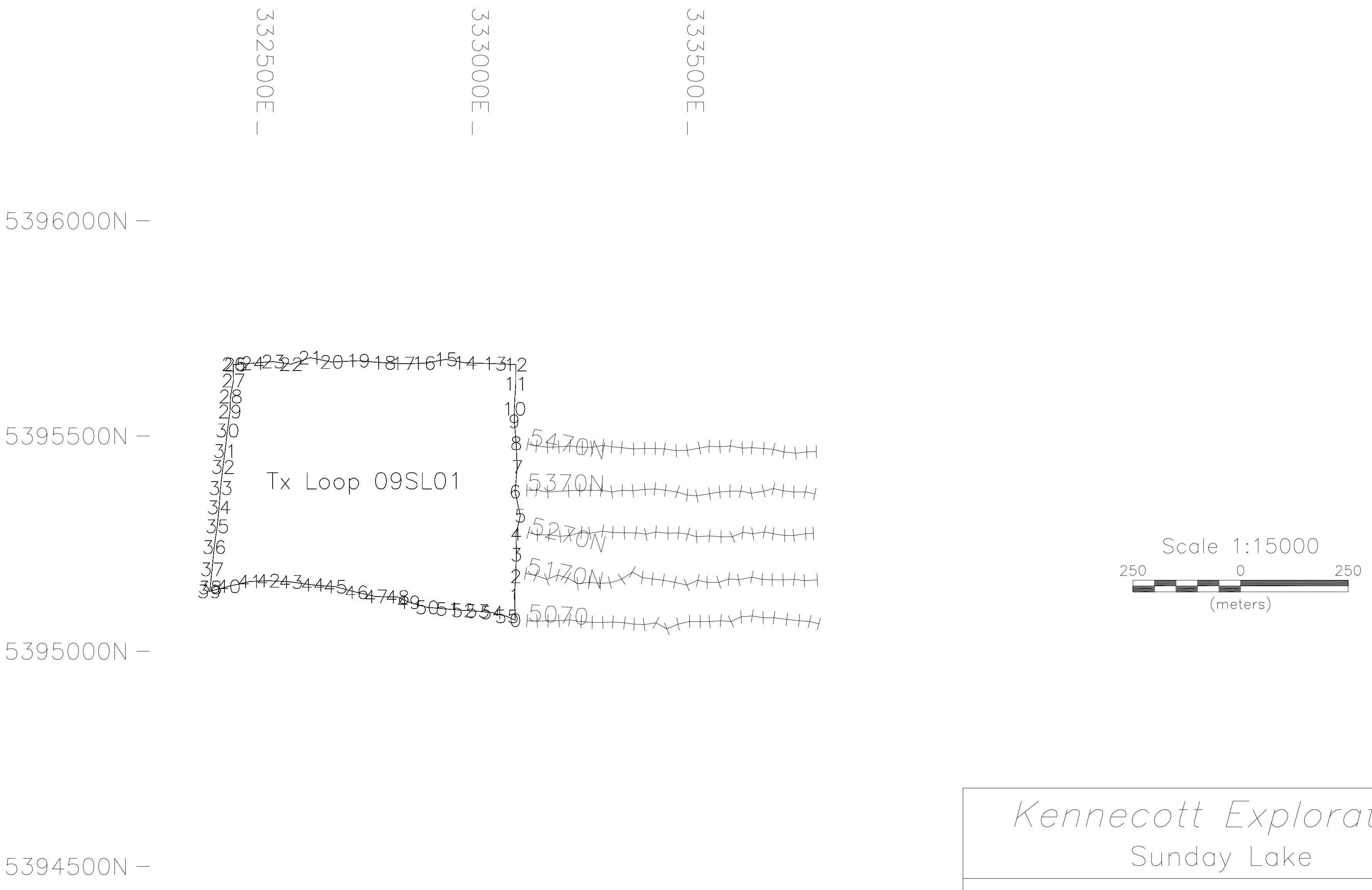
Htx Minerals Sunday September 7, 2013
Line 5970N Loop 2 16.66ms Channels 5-9
Crone Geophysics & Exploration Ltd.





APPENDIX VIII

LOOP 09SL01 SURFACE DATA & PICKS (2009)

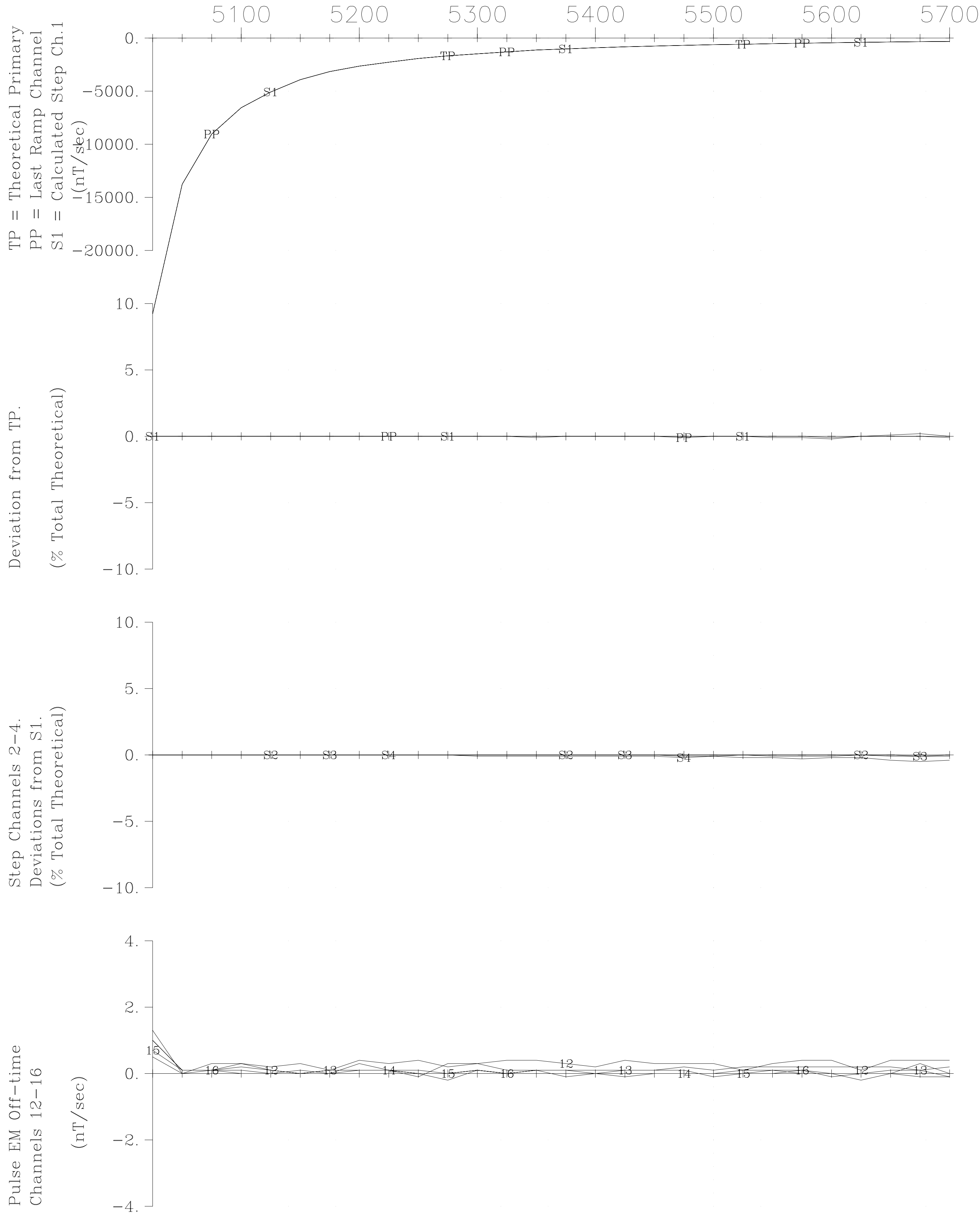


Kennecott Exploration
Sunday Lake

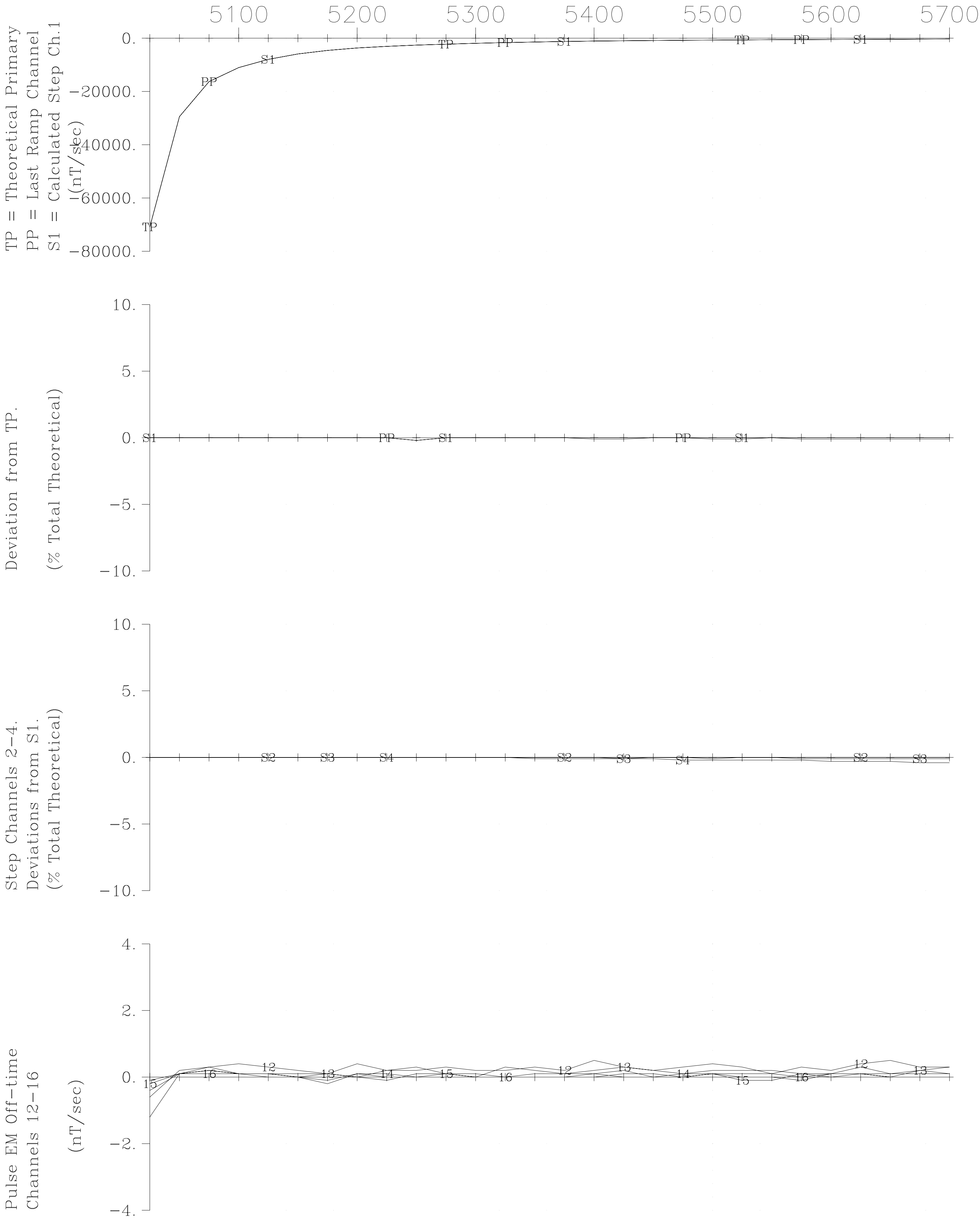
Pulse EM Survey
Line & Loop Location Map

Loop: 09SL01
Survey Date: Aug 5-6, 2009

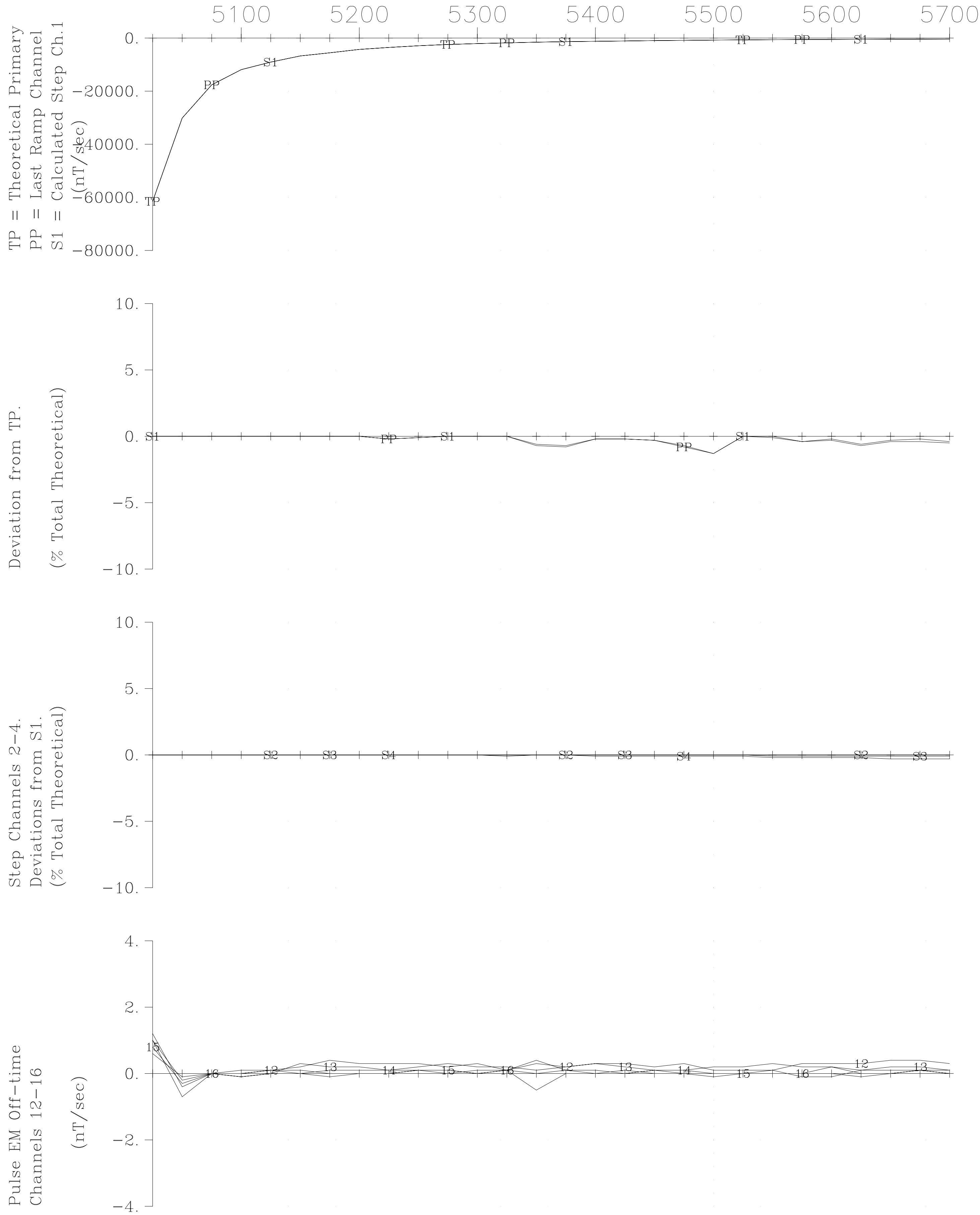
Crone Geophysics & Exploration Ltd.



Kennecott Exploration Sunday Lake
Loop 09SL01, Line 5070N Z Component
Crone Geophysics & Exploration Ltd.



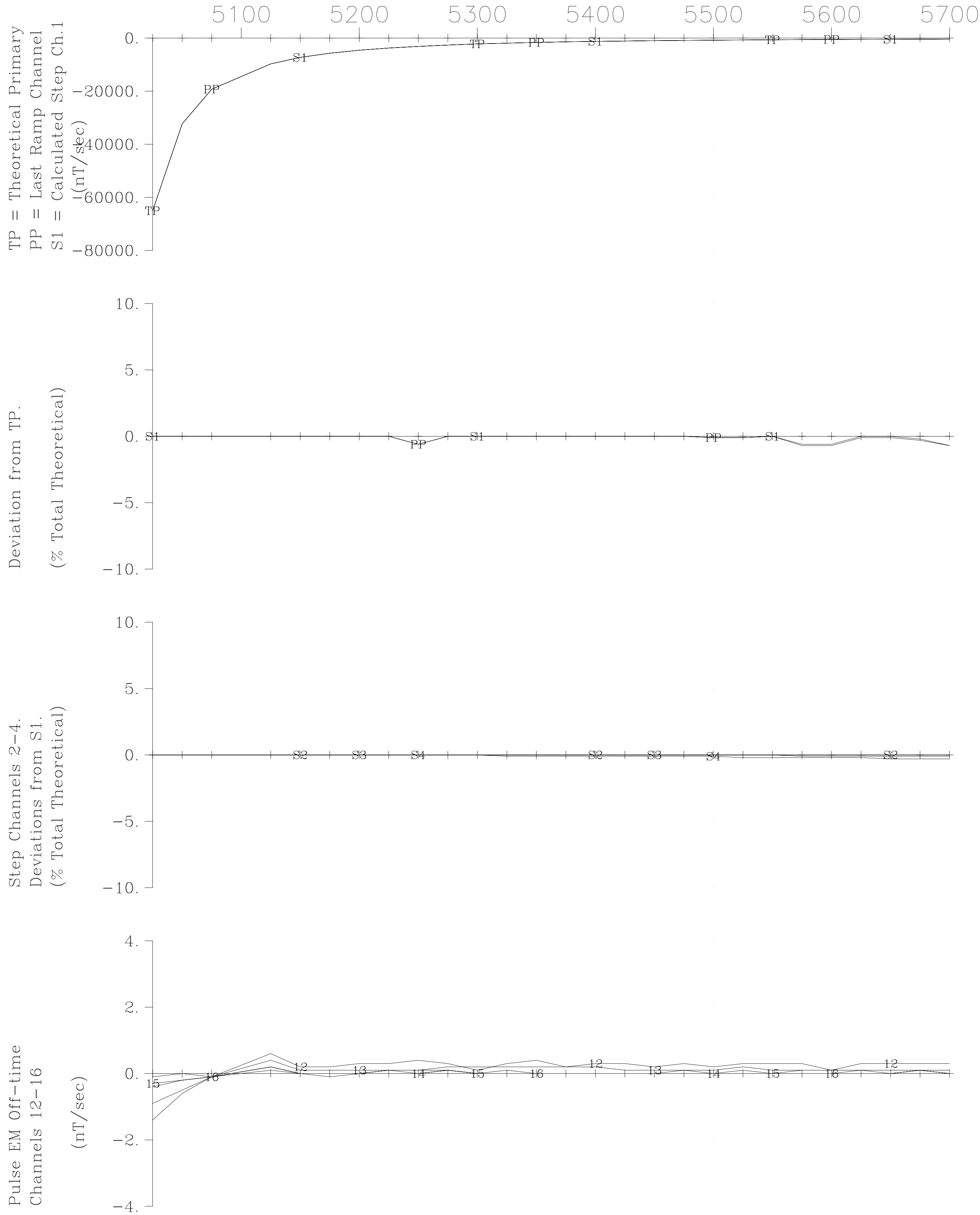
Kennecott Exploration Sunday Lake
Loop 09SL01, Line 5170N Z Component
Crone Geophysics & Exploration Ltd.



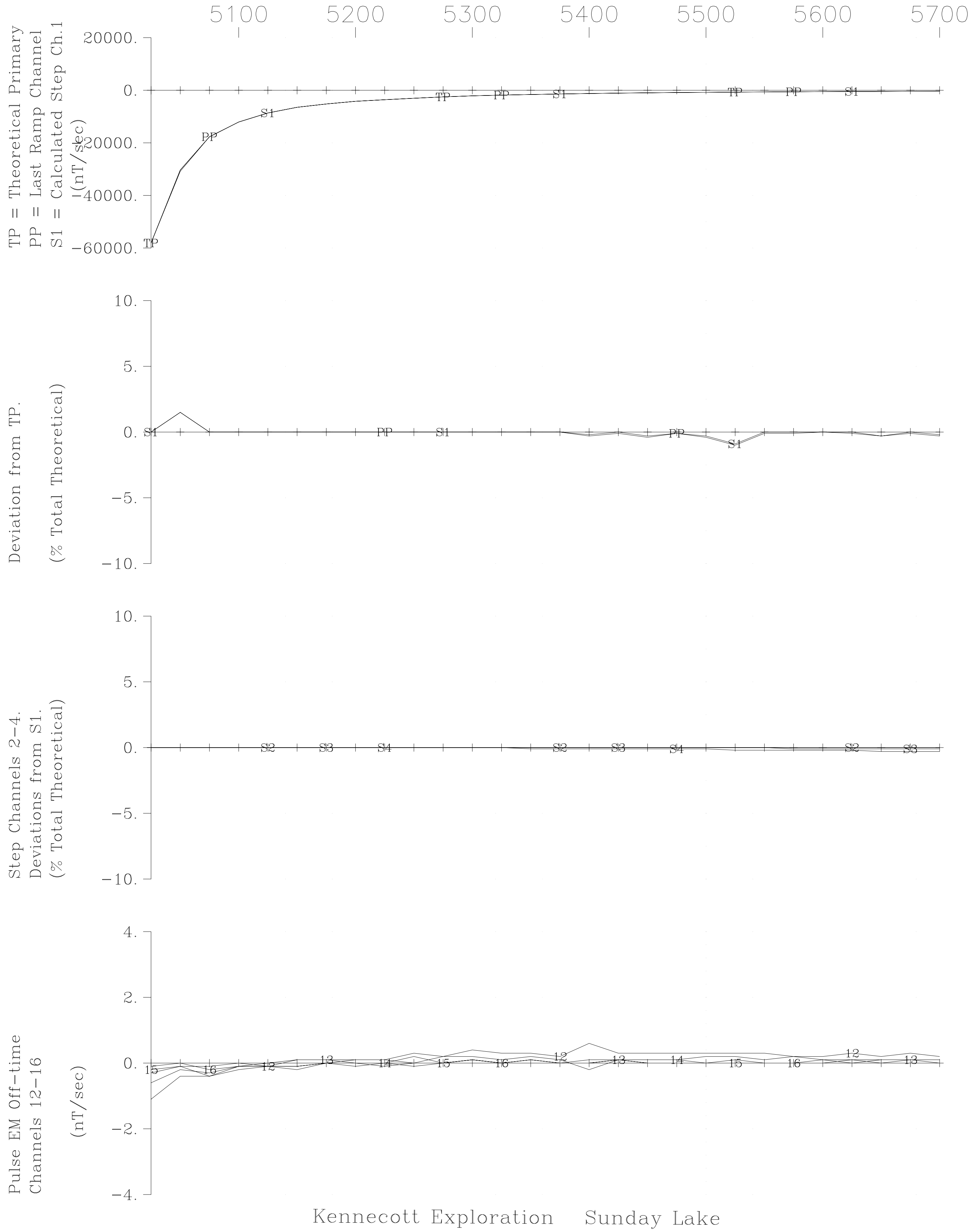
Kennecott Exploration Sunday Lake

Loop 09SL01, Line 5270N Z Component

Crone Geophysics & Exploration Ltd.



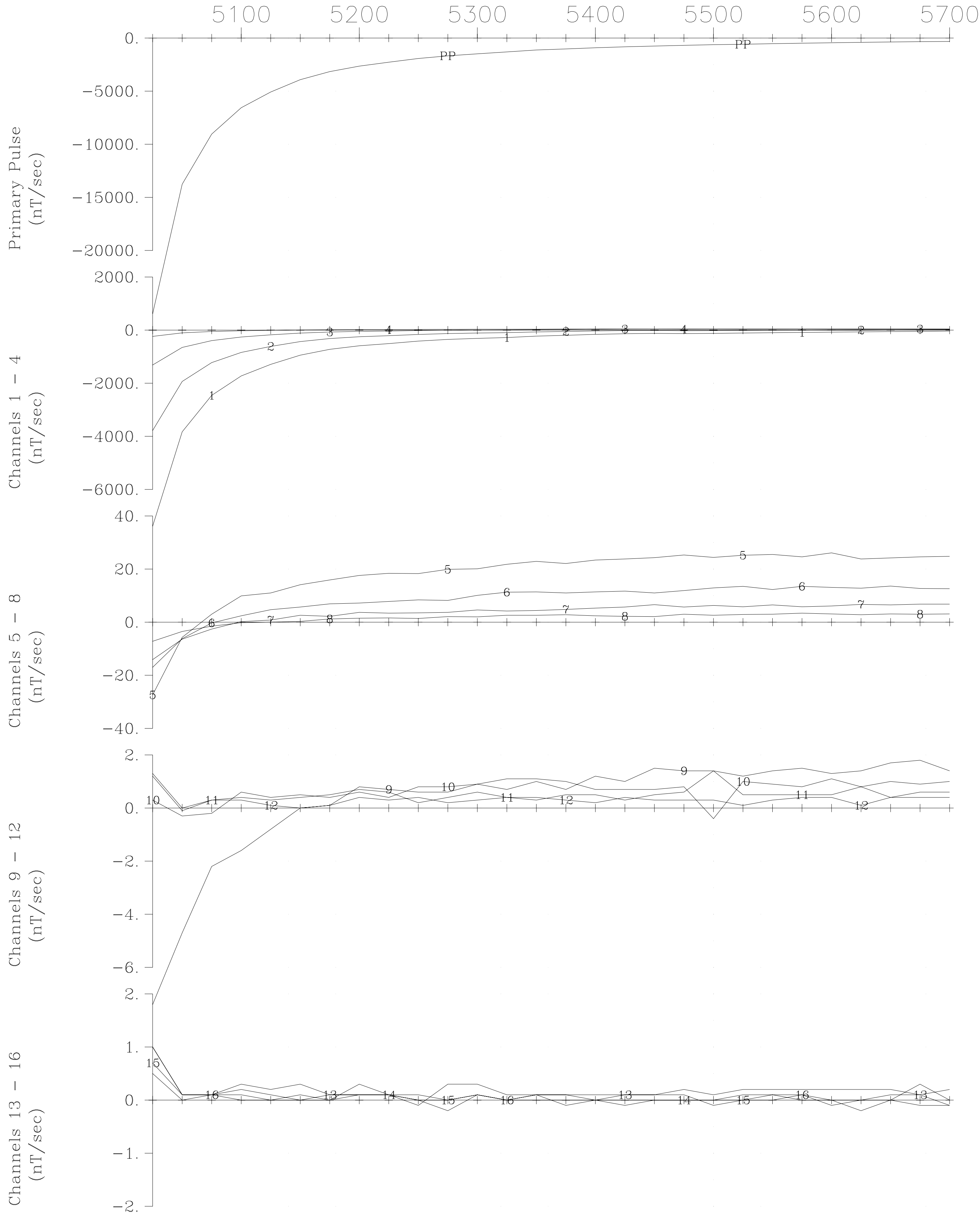
Kennecott Exploration Sunday Lake
Loop 09SL01, Line 5370N Z Component
Crone Geophysics & Exploration Ltd.



Kennecott Exploration Sunday Lake

Loop 09SL01, Line 5470N Z Component

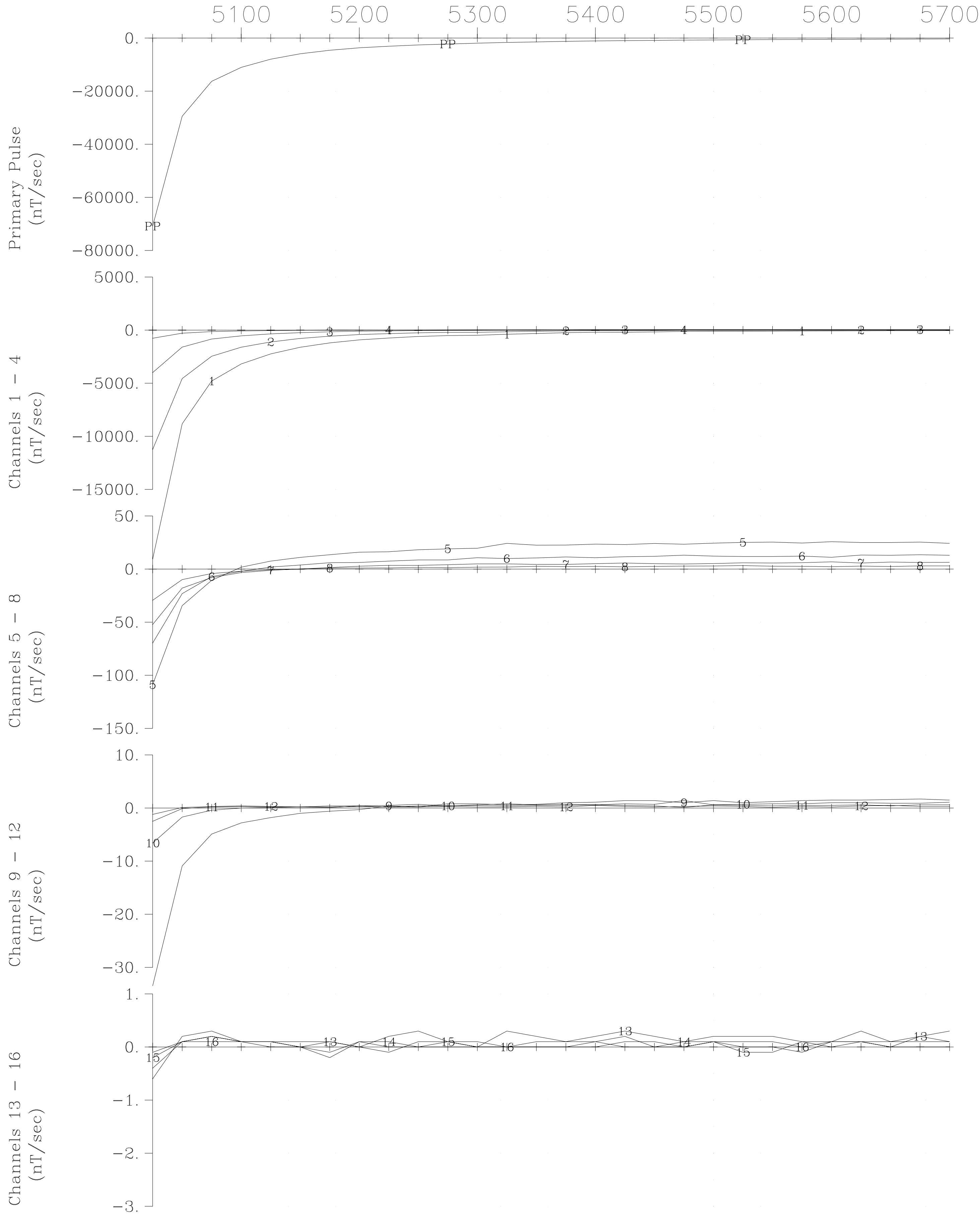
Crone Geophysics & Exploration Ltd.



Kennecott Exploration Sunday Lake

Loop 09SL01, Line 5070N Z Component

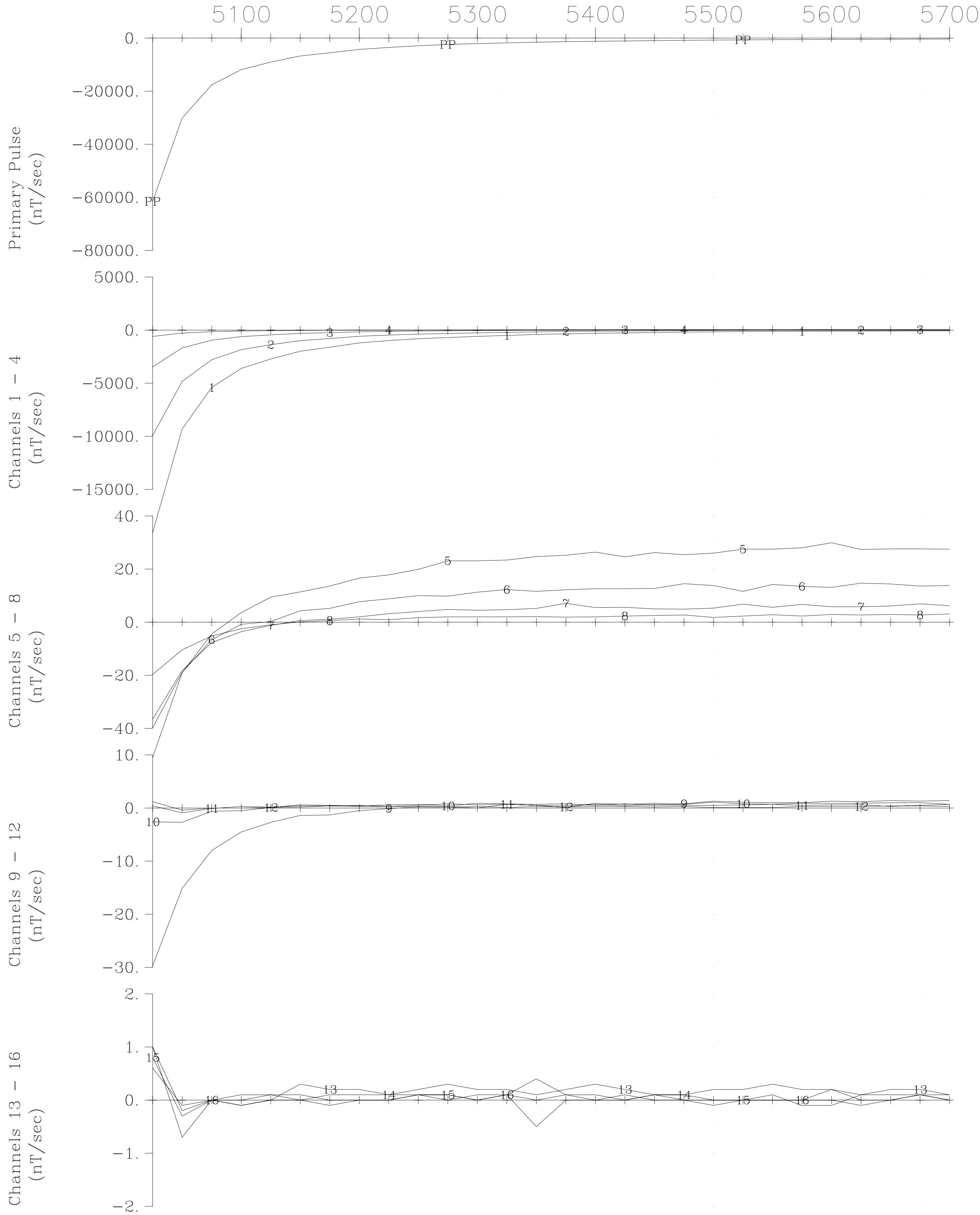
Crone Geophysics & Exploration Ltd.



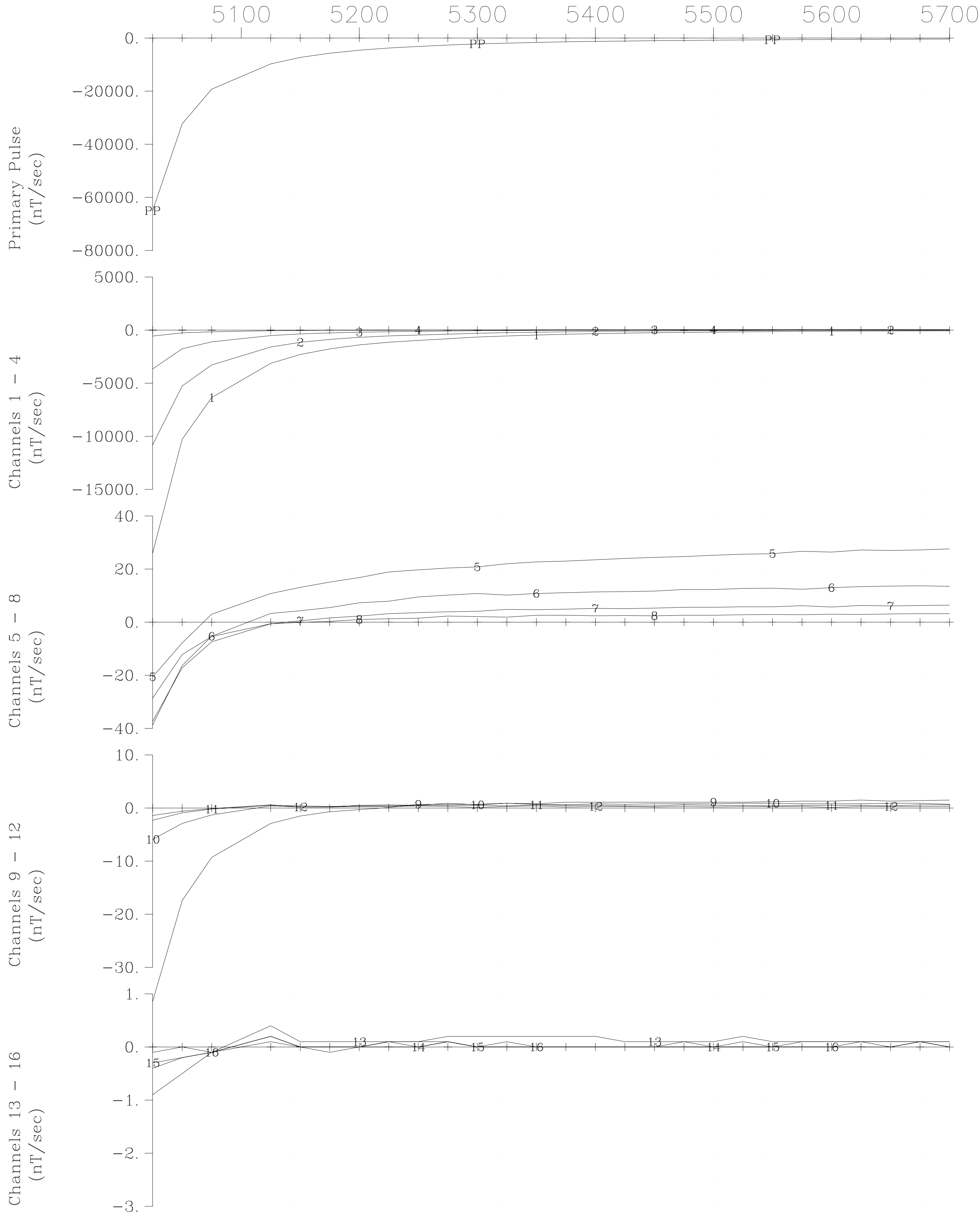
Kennecott Exploration Sunday Lake

Loop 09SL01, Line 5170N Z Component

Crone Geophysics & Exploration Ltd.



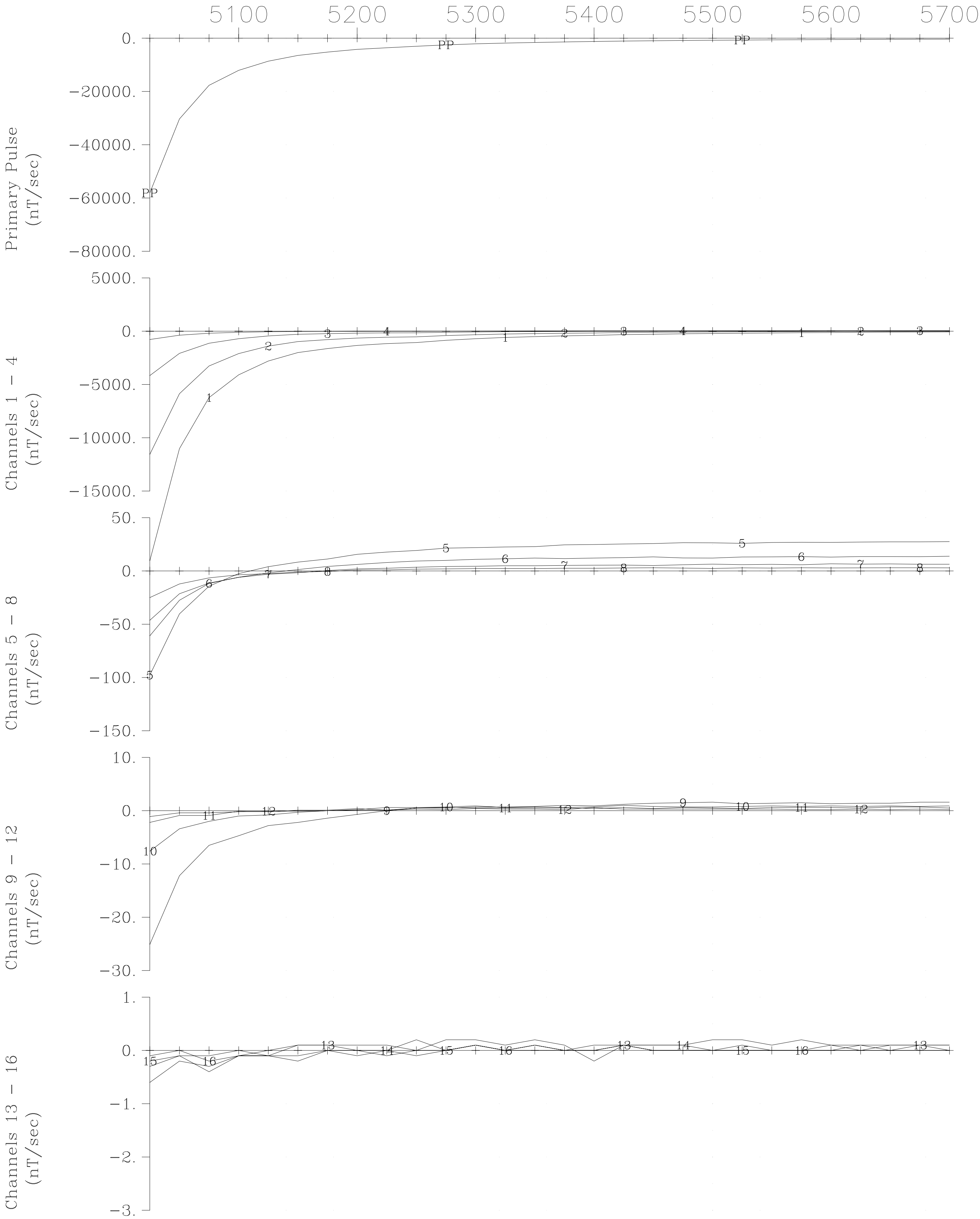
Kennecott Exploration Sunday Lake
Loop 09SL01, Line 5270N Z Component
Crone Geophysics & Exploration Ltd.



Kennecott Exploration Sunday Lake

Loop 09SL01, Line 5370N Z Component

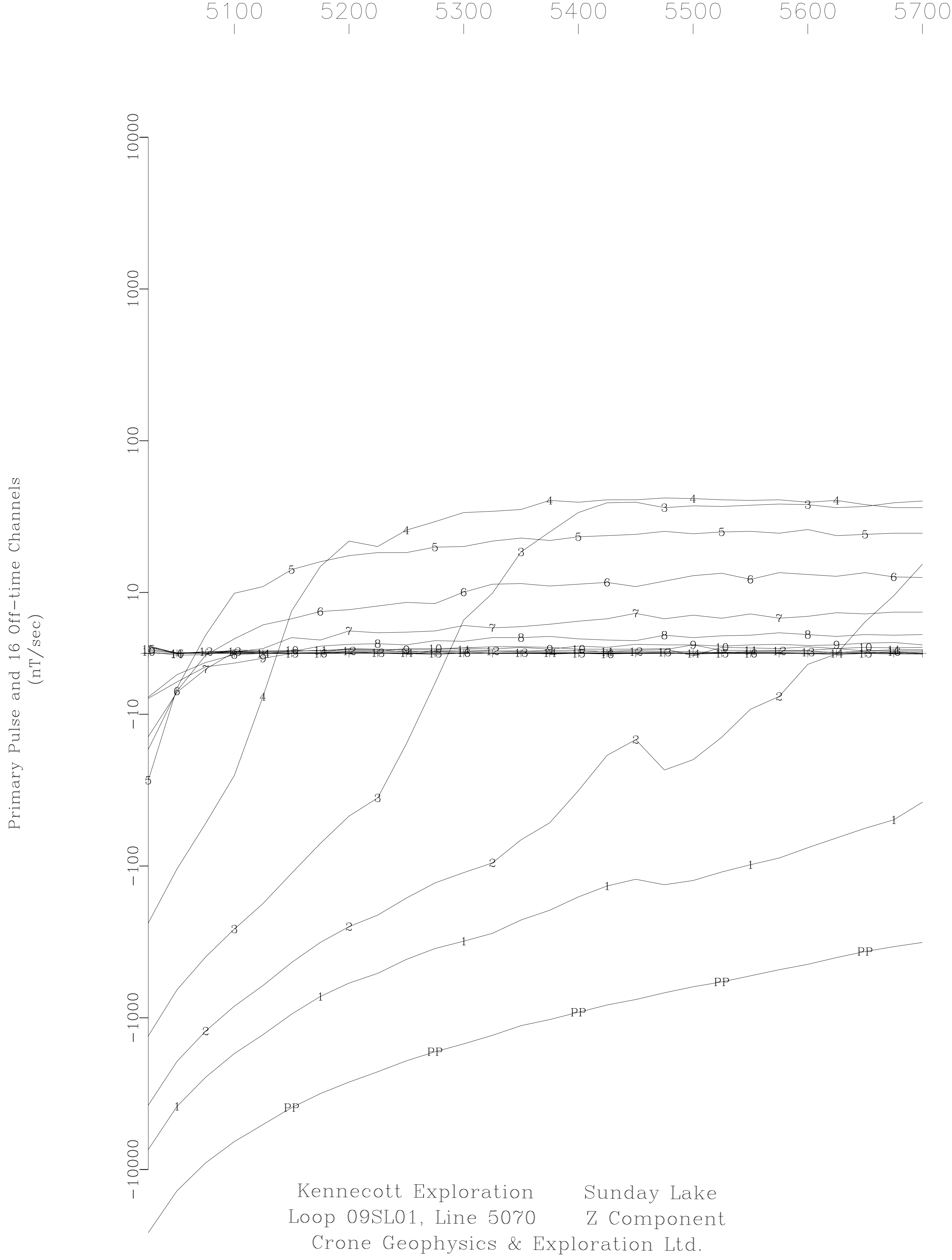
Crone Geophysics & Exploration Ltd.



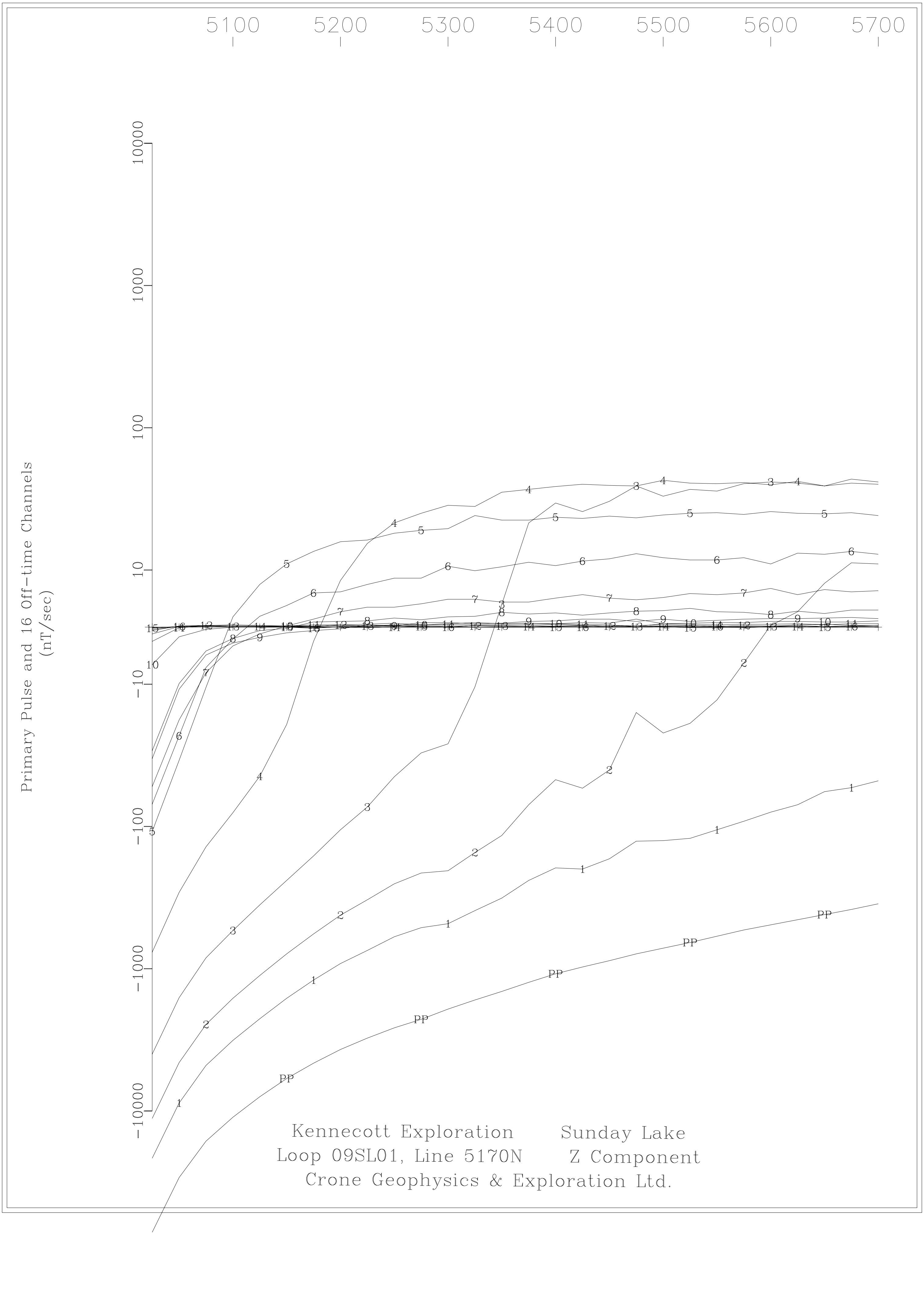
Kennecott Exploration   Sunday Lake

Loop 09SL01, Line 5470N   Z Component

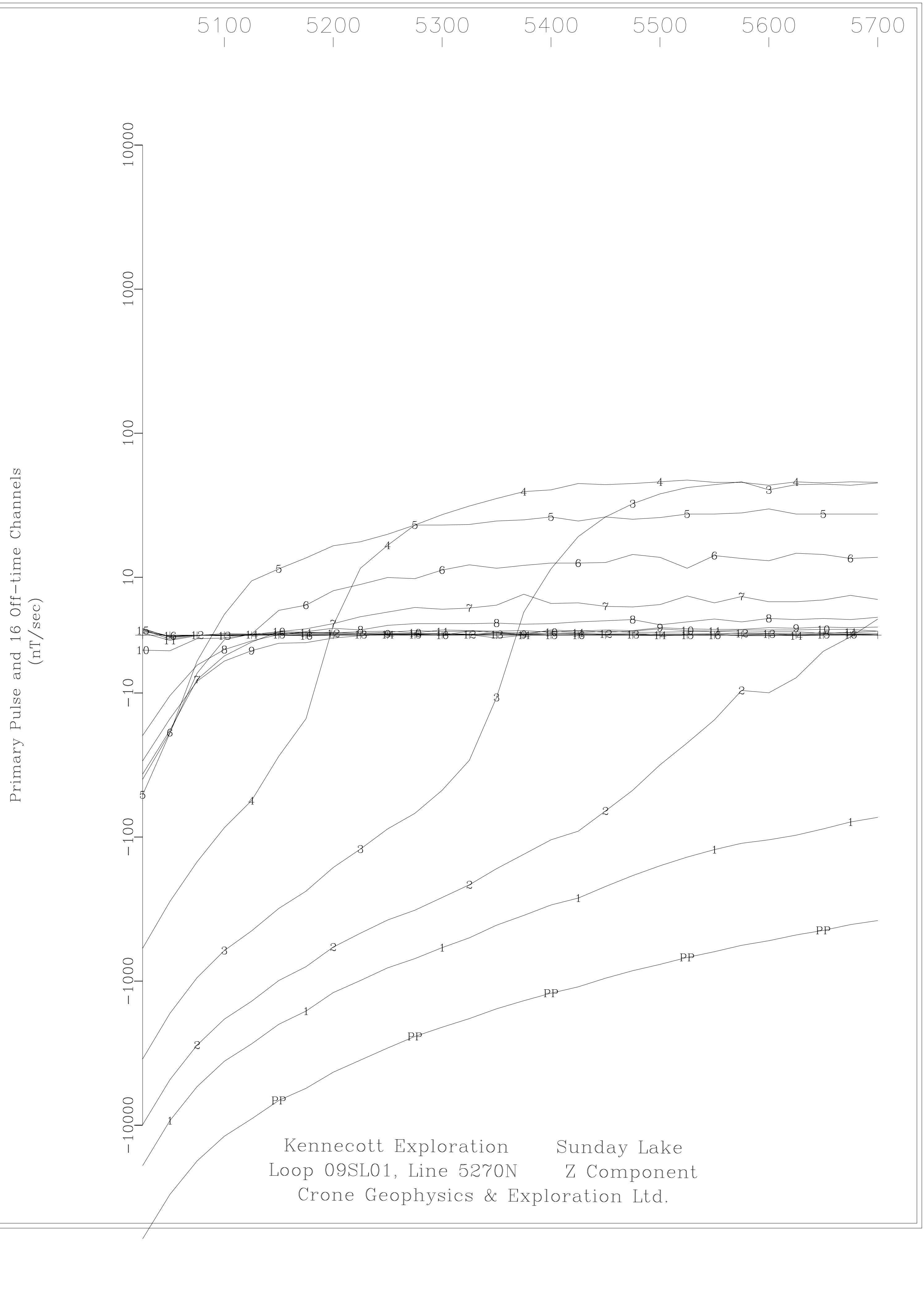
Crone Geophysics & Exploration Ltd.

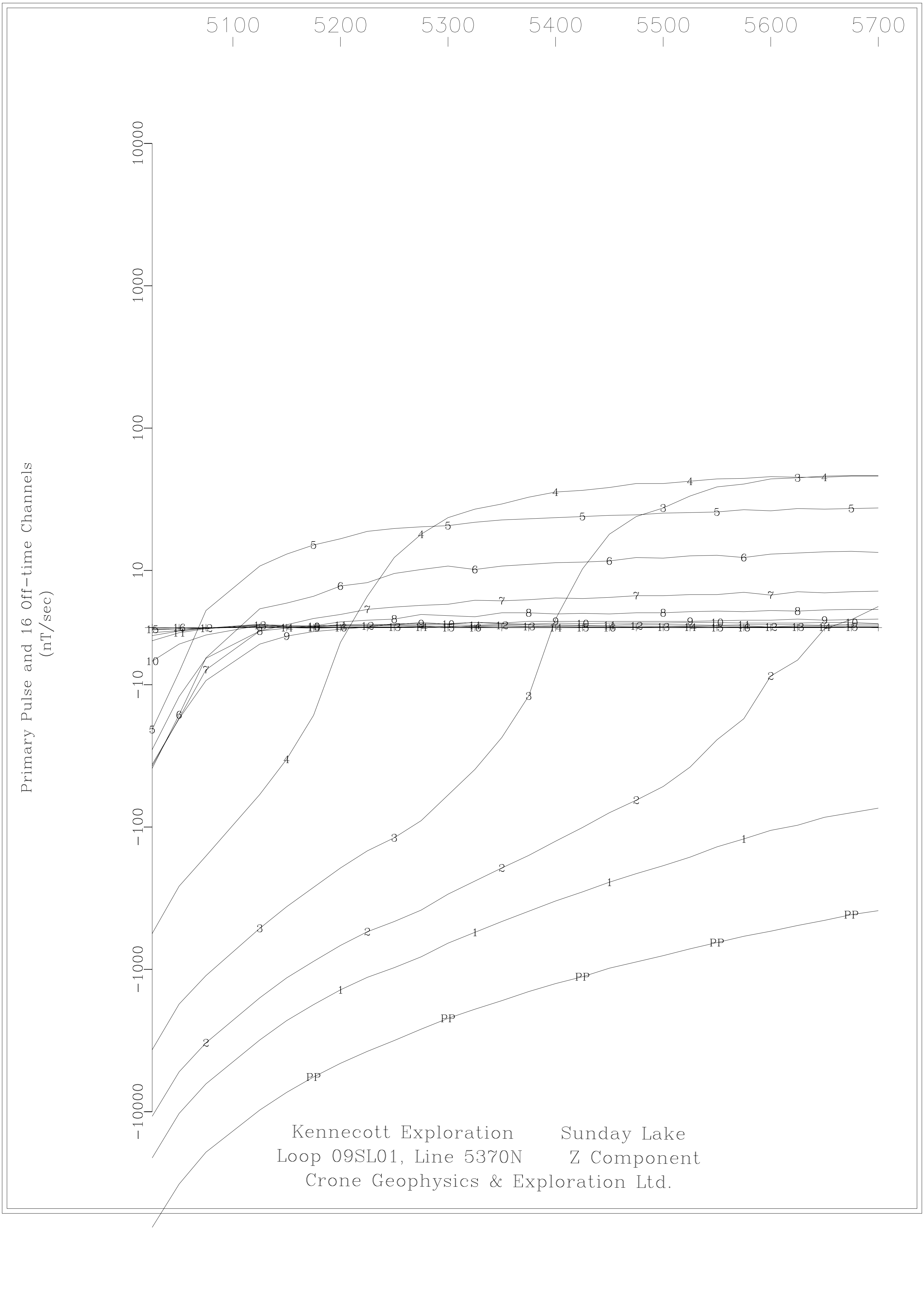


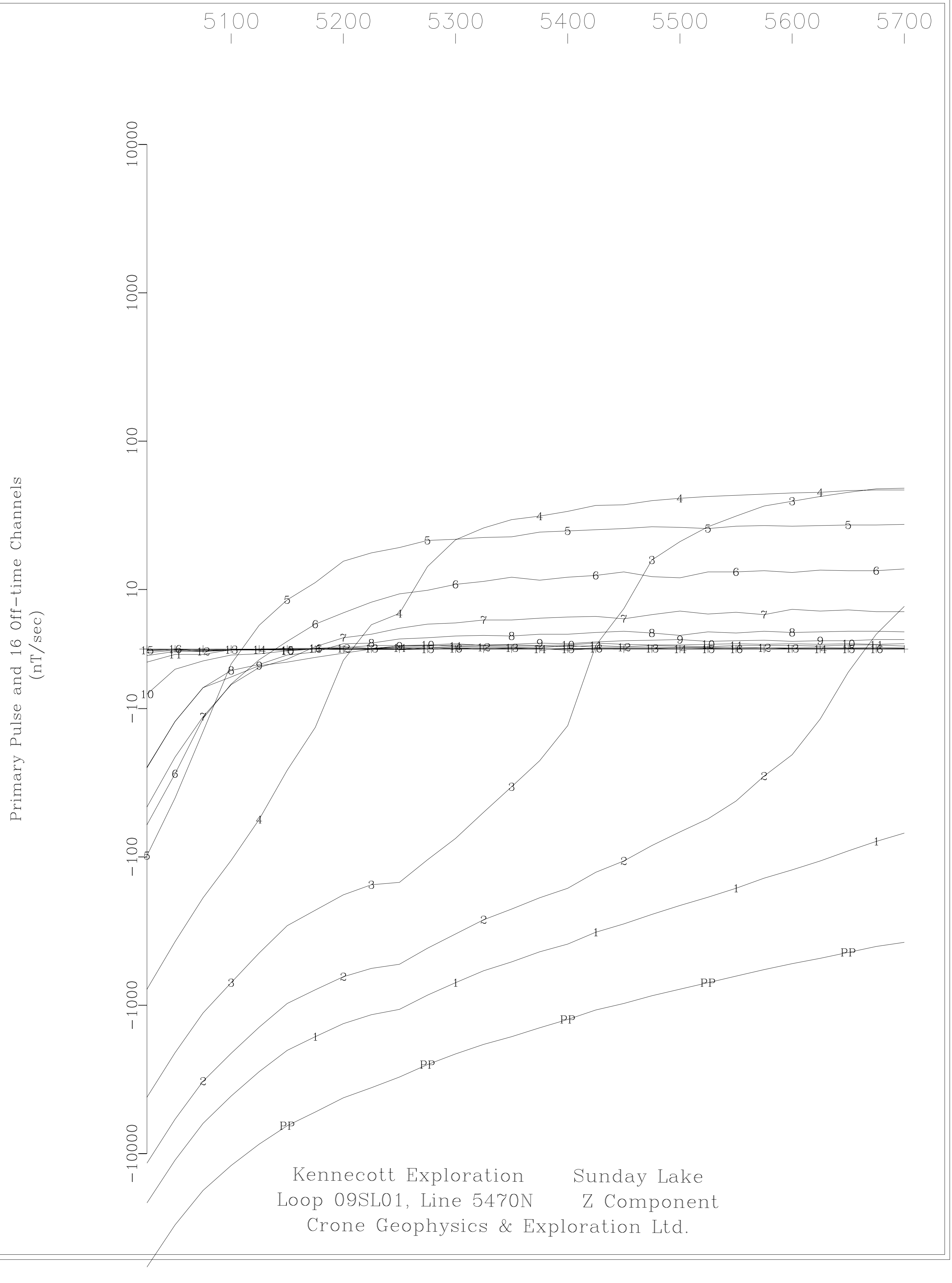
Kennecott Exploration   Sunday Lake
Loop 09SL01, Line 5070   Z Component
Crone Geophysics & Exploration Ltd.



5100
5200
5300
5400
5500
5600
5700
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 16 Off-time Channels
(nT/sec)
Kennecott Exploration
Sunday Lake
Loop 09SL01, Line 5170N
Z Component
Crone Geophysics & Exploration Ltd.

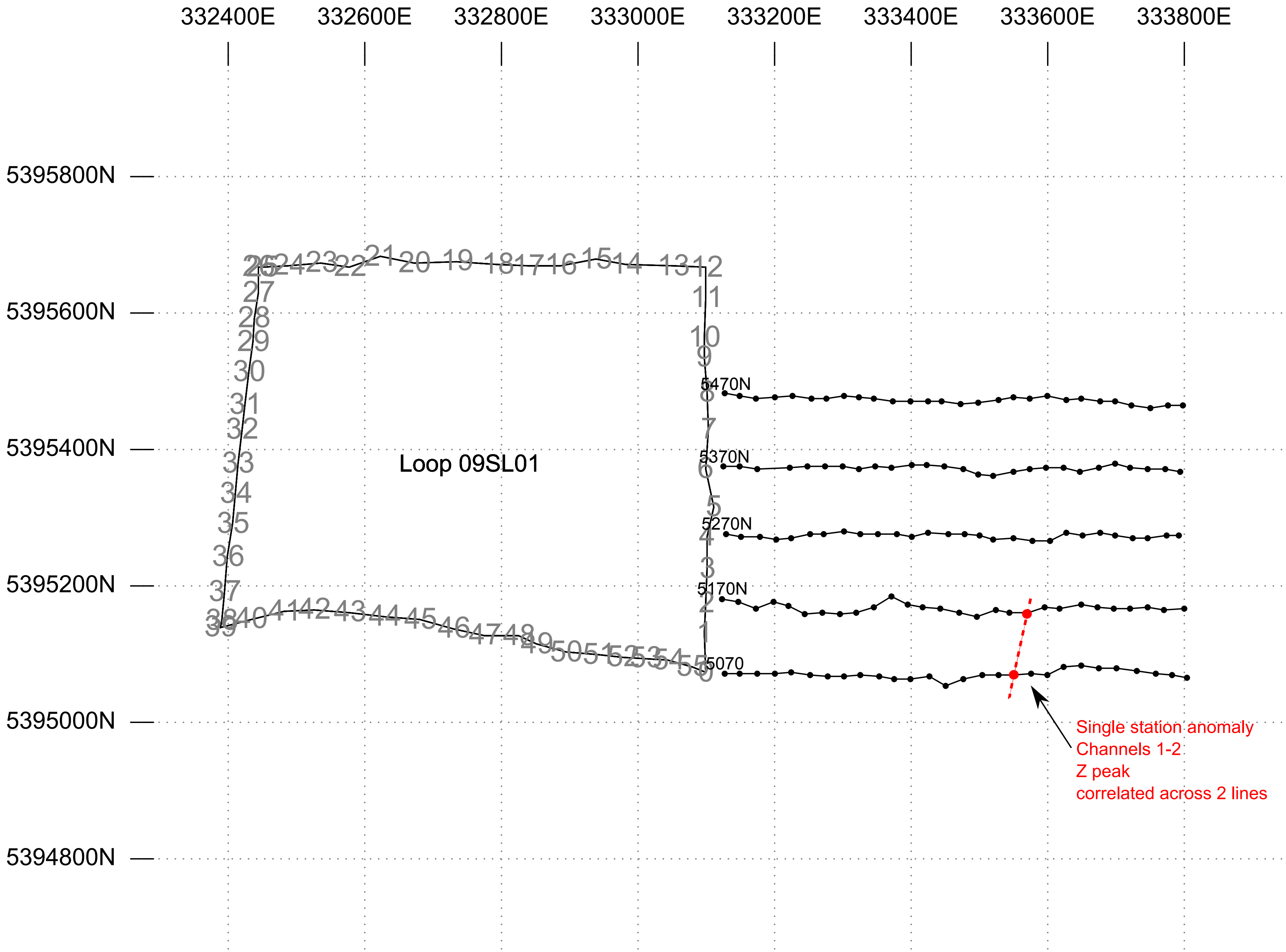

5100
5200
5300
5400
5500
5600
5700
Primary Pulse and 16 Off-time Channels
(nT/sec)
10000
1000
100
10
-10
-100
-1000
-10000
Kennecott Exploration   Sunday Lake
Loop 09SL01, Line 5270N   Z Component
Crone Geophysics & Exploration Ltd.


5100
5200
5300
5400
5500
5600
5700
10000
1000
100
10
-10
-100
-1000
-10000
Primary Pulse and 16 Off-time Channels
(nT/sec)
Kennecott Exploration
Sunday Lake
Loop 09SL01, Line 5370N
Z Component
Crone Geophysics & Exploration Ltd.

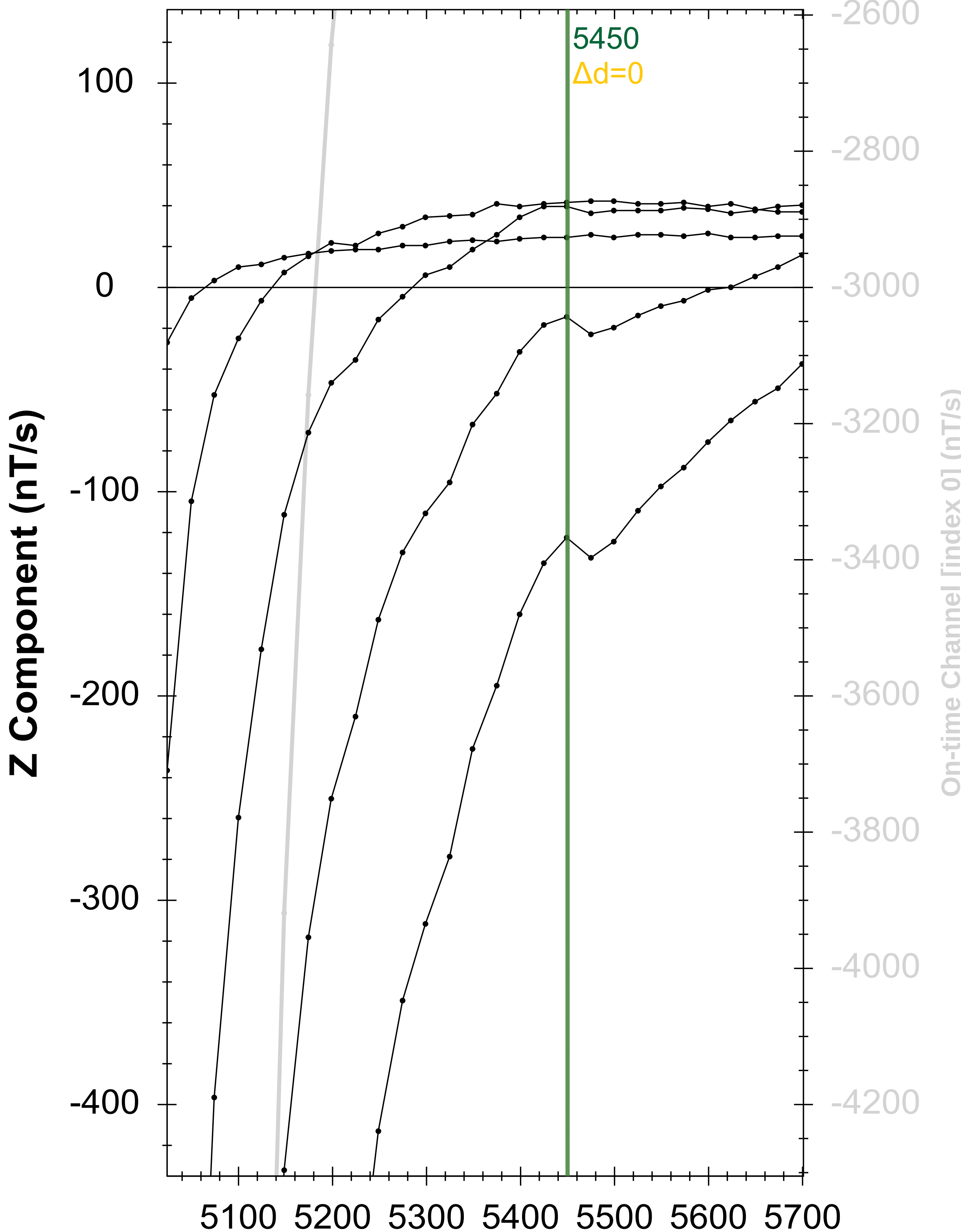


Kennecott Exploration Sunday Lake
Loop 09SL01, Line 5470N Z Component
Crone Geophysics & Exploration Ltd.

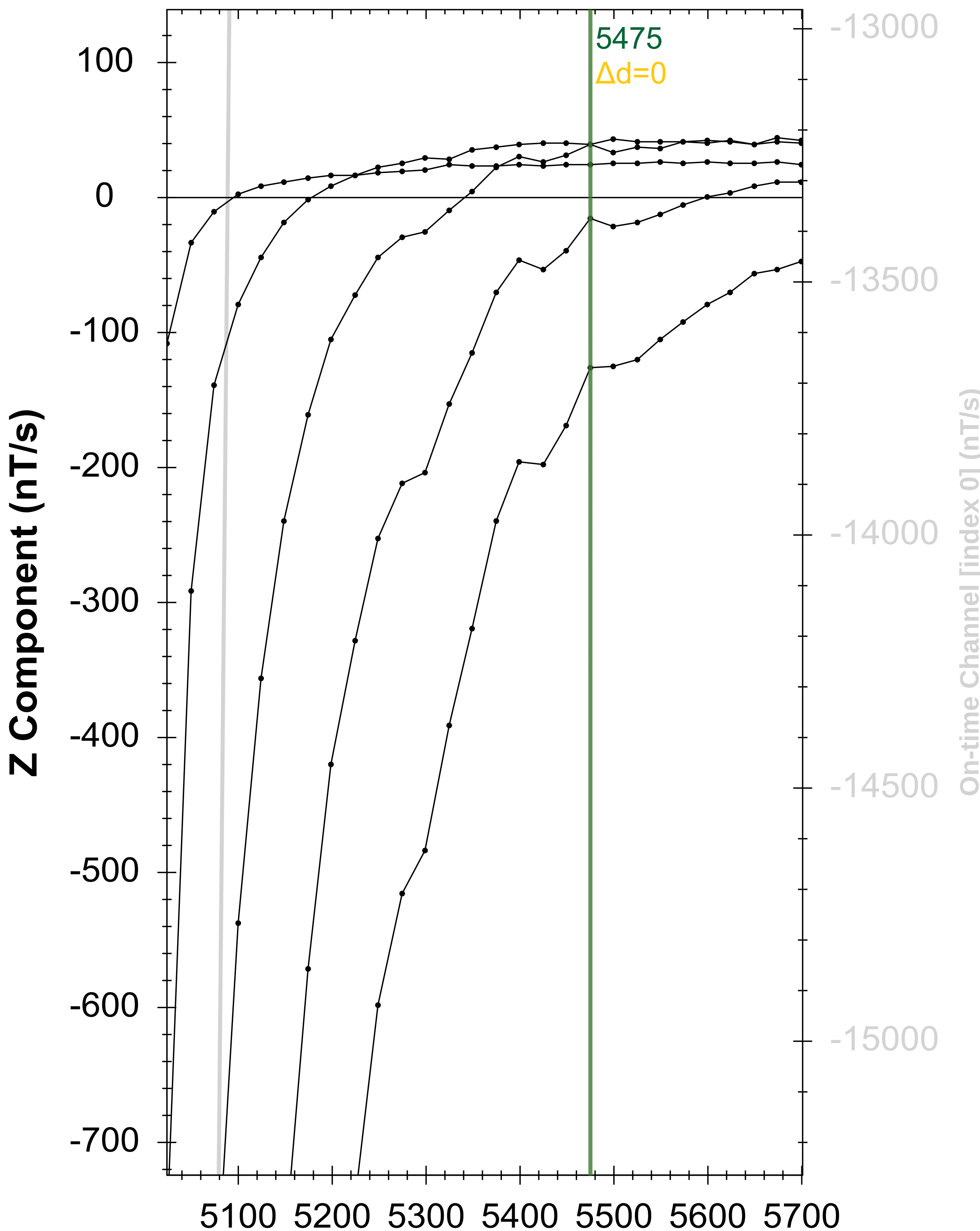
HTX Minerals Sunday Lake
SPEM 2009 Loop 09SL01



Kennecott Exploration Sunday Lake August 5, 2009
Line 5070 Loop 09SL01 8.33ms Channels 1-5
Crone Geophysics & Exploration Ltd.

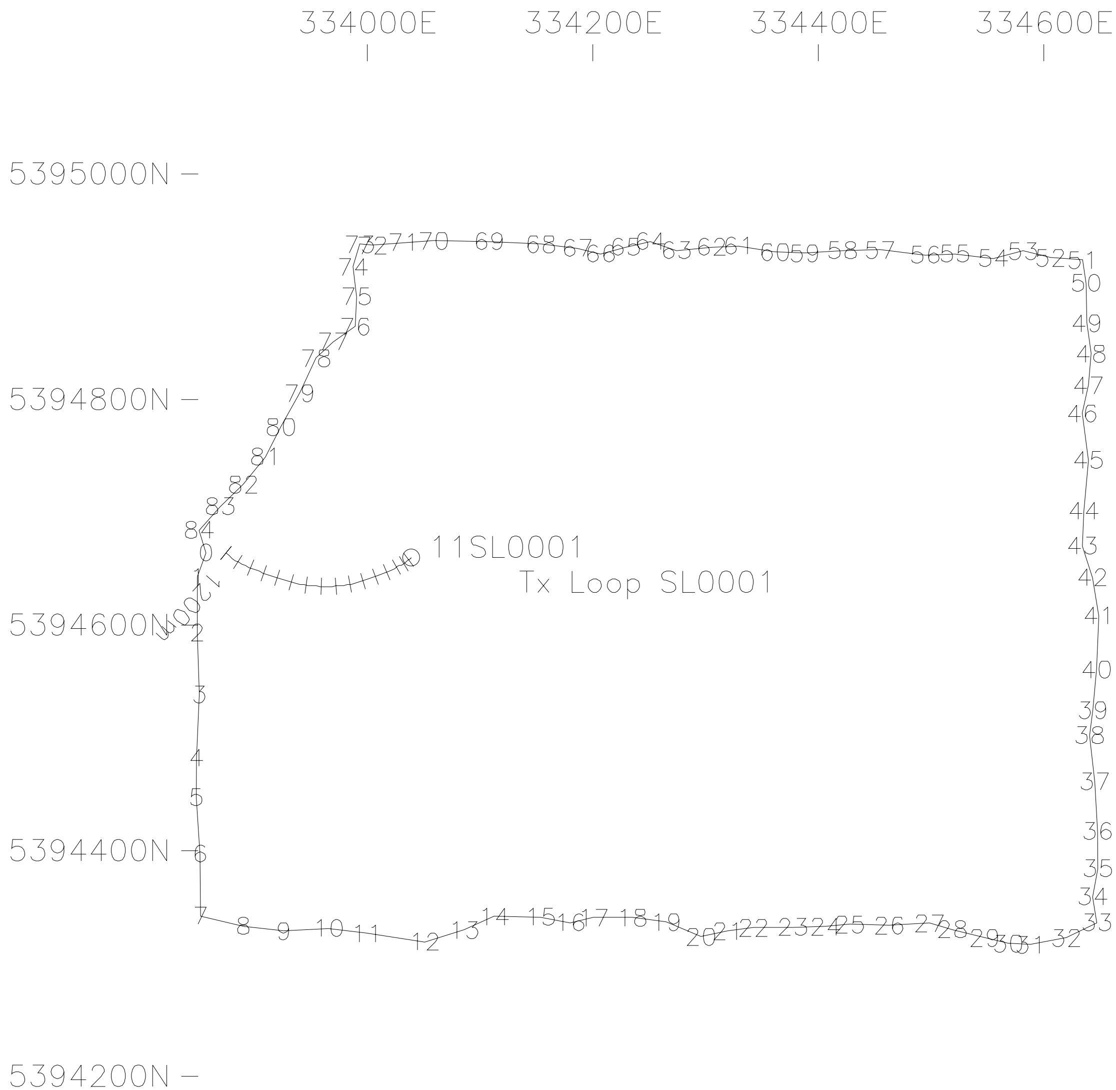


Kennecott Exploration   Sunday Lake   August 5, 2009
Line 5170N   Loop 09SL01   8.33ms   Channels 1-5
Crone Geophysics & Exploration Ltd.



APPENDIX IX

BHEM RESULTS 11SL0001



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100 0 100

(meters)

Rio Tinto Exploration

Sunday Lake

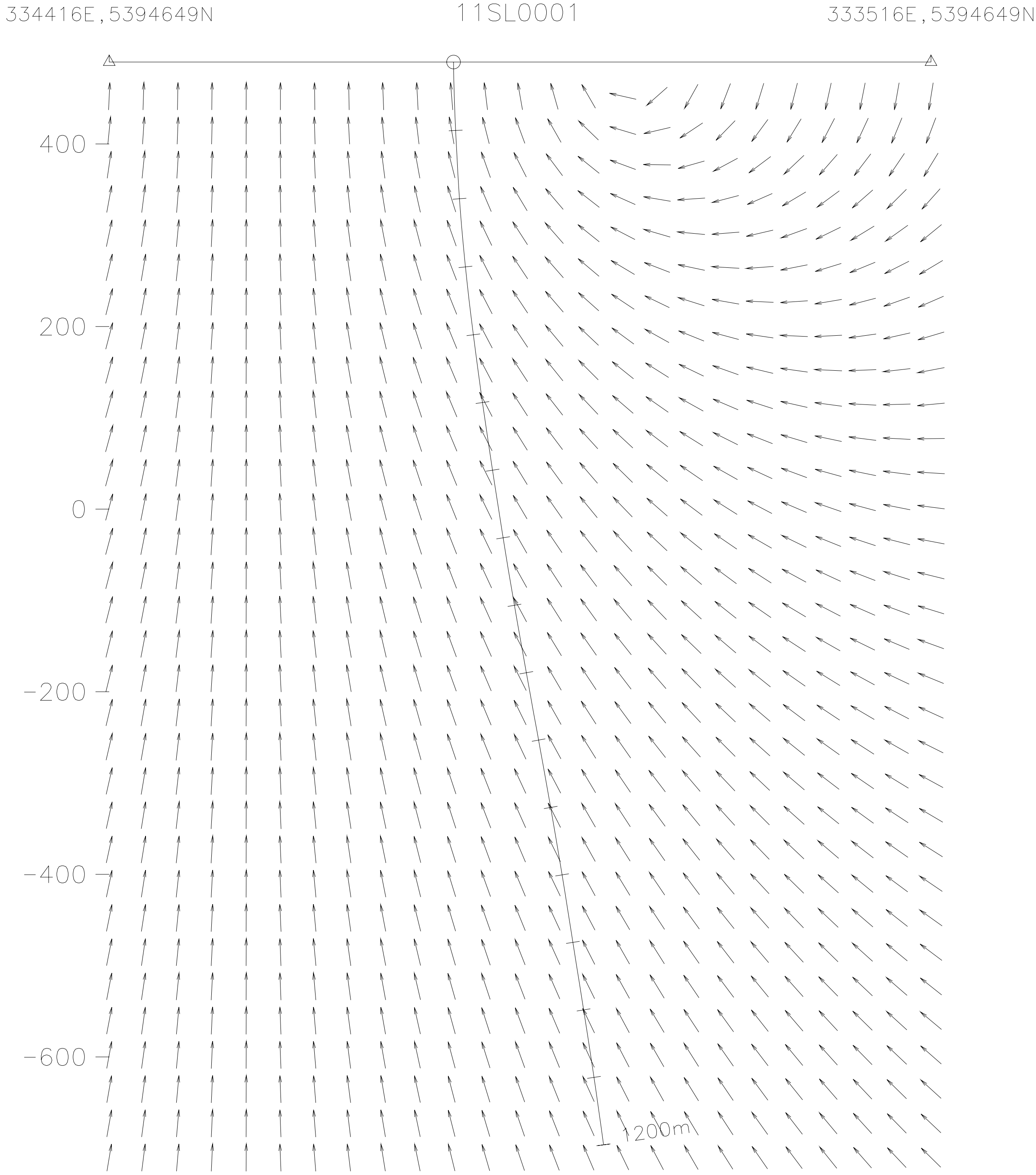
3-D Borehole Pulse EM Survey

Borehole & Loop Location Map

Hole: 11SL0001

Survey Date: January 15, 2012

Crone Geophysics & Exploration Ltd.



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(meters)

Rio Tinto Exploration

Sunday Lake

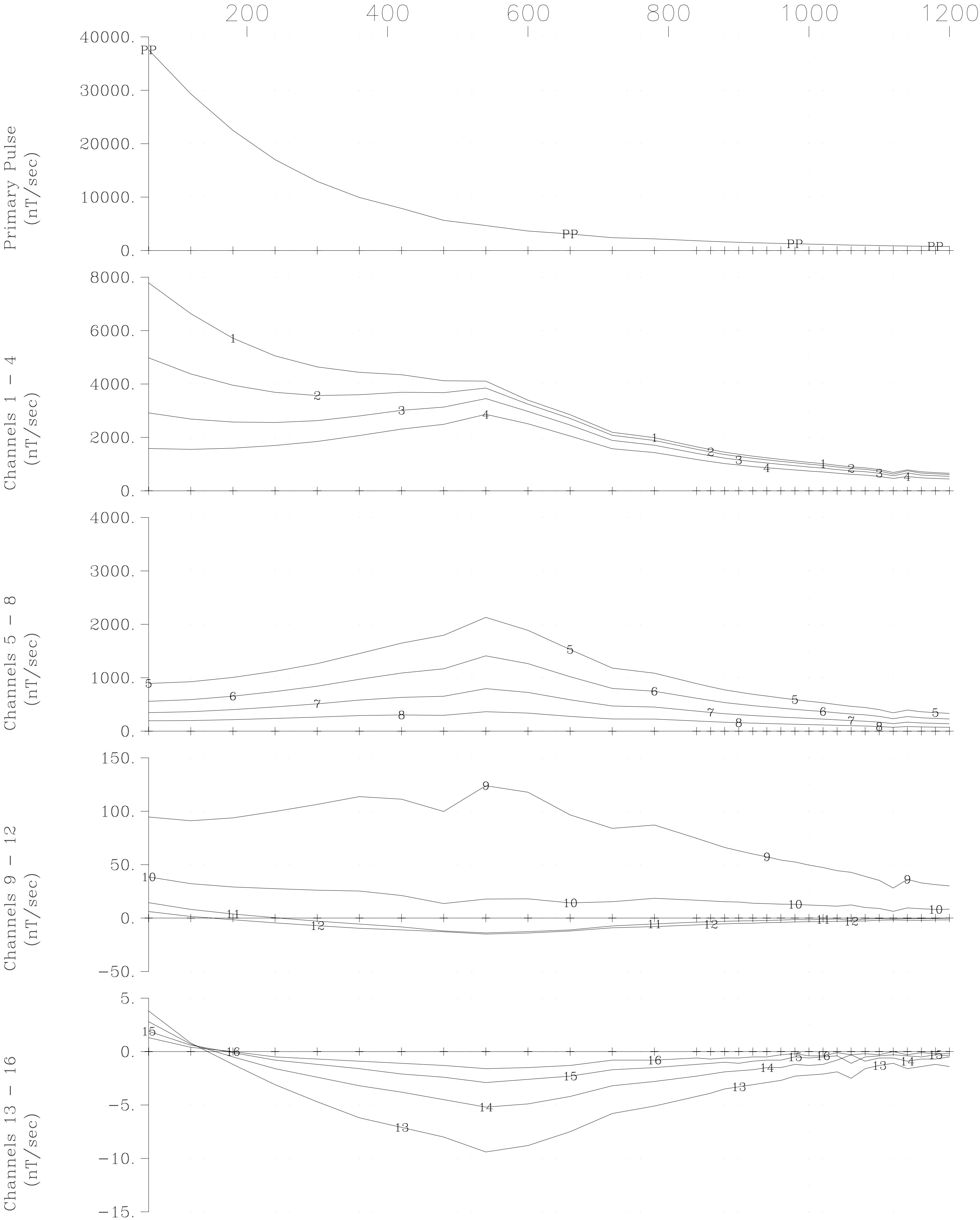
3-D Borehole Pulse EM Survey

Hole Section with Primary Field

Hole:11SL0001, Loop:11SL0001

Survey Date: January 15, 2012

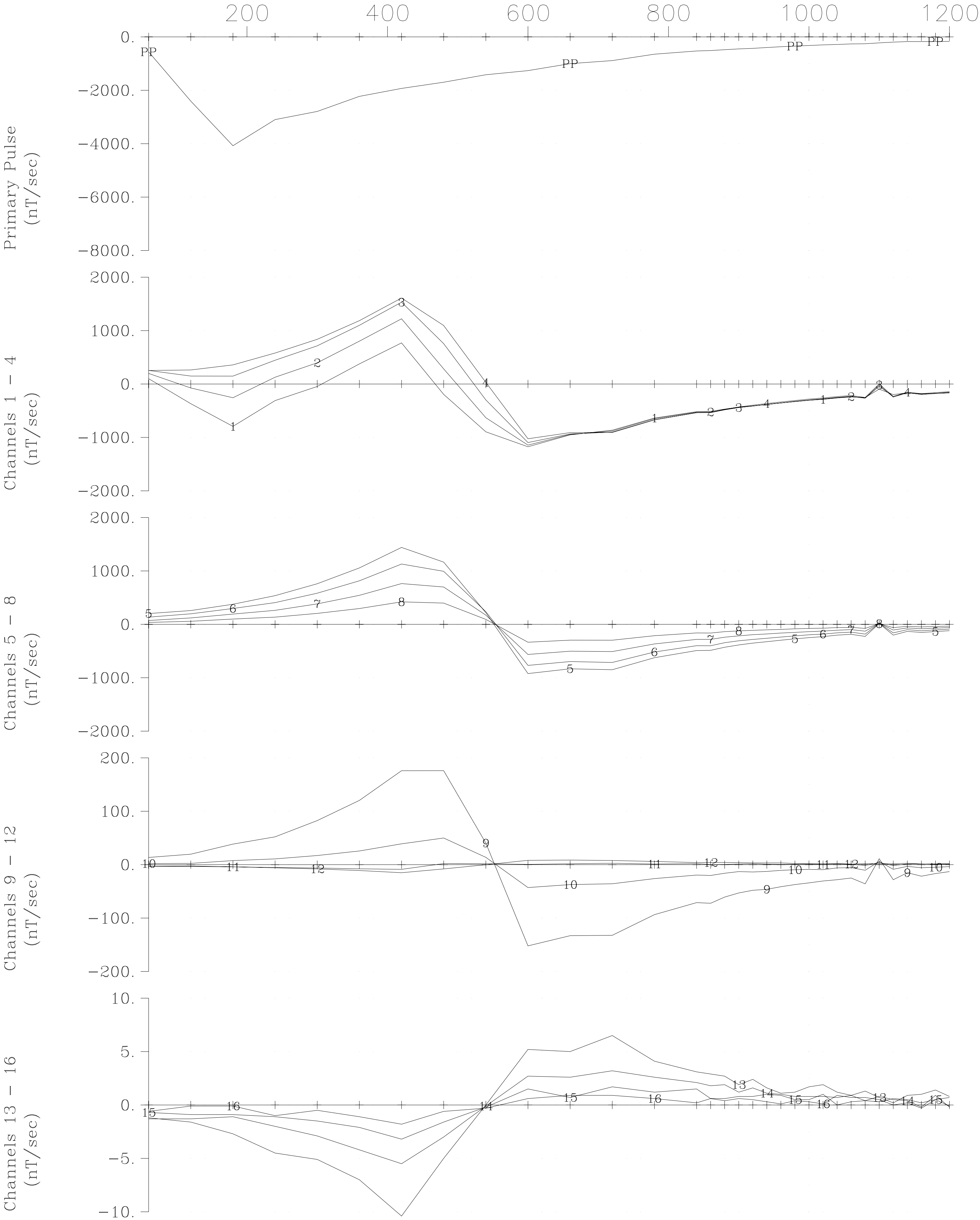
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday Lake

Loop SL0001,Hole 11SL0001 Z Component

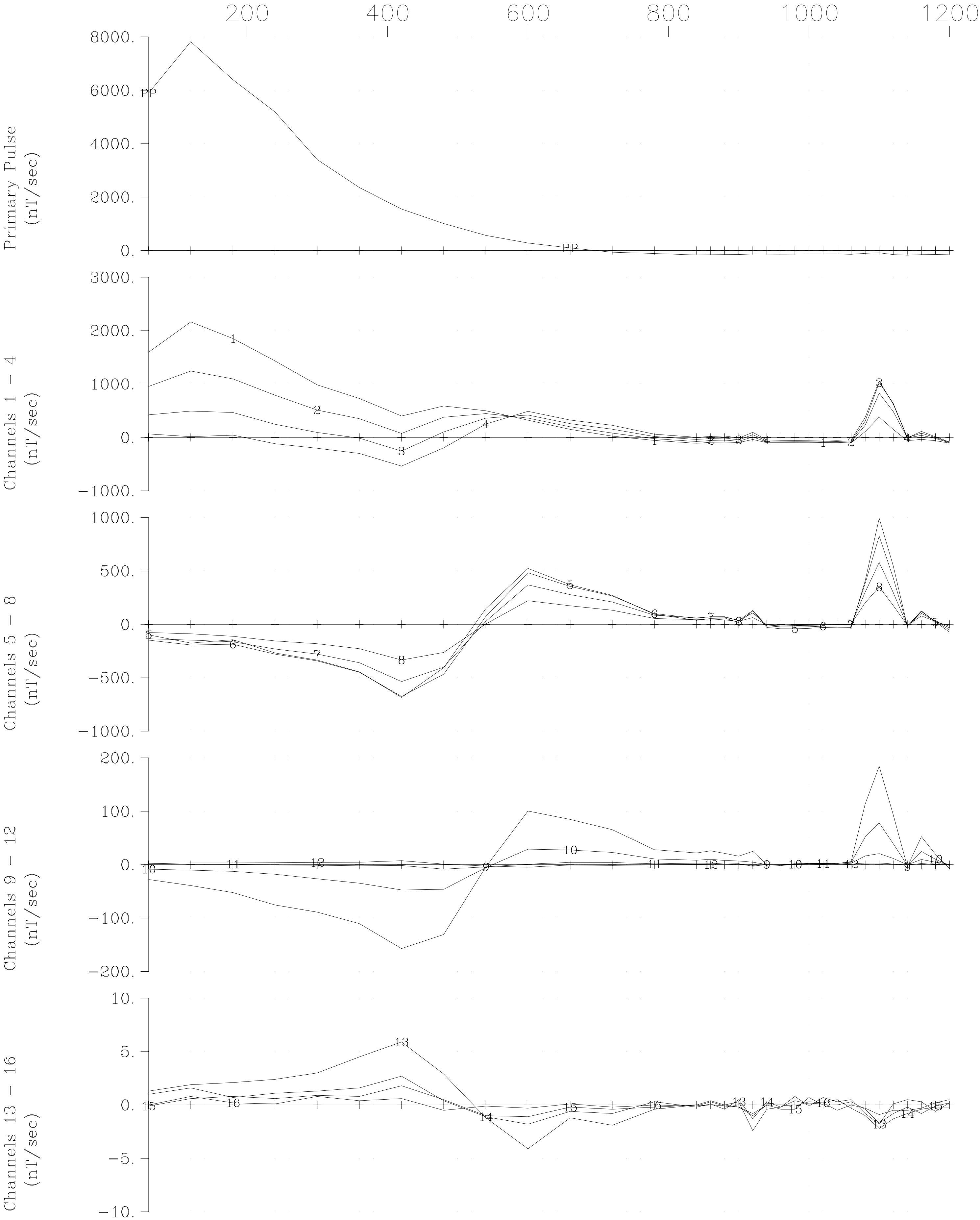
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday Lake

Loop SL0001,Hole 11SL0001 X Component

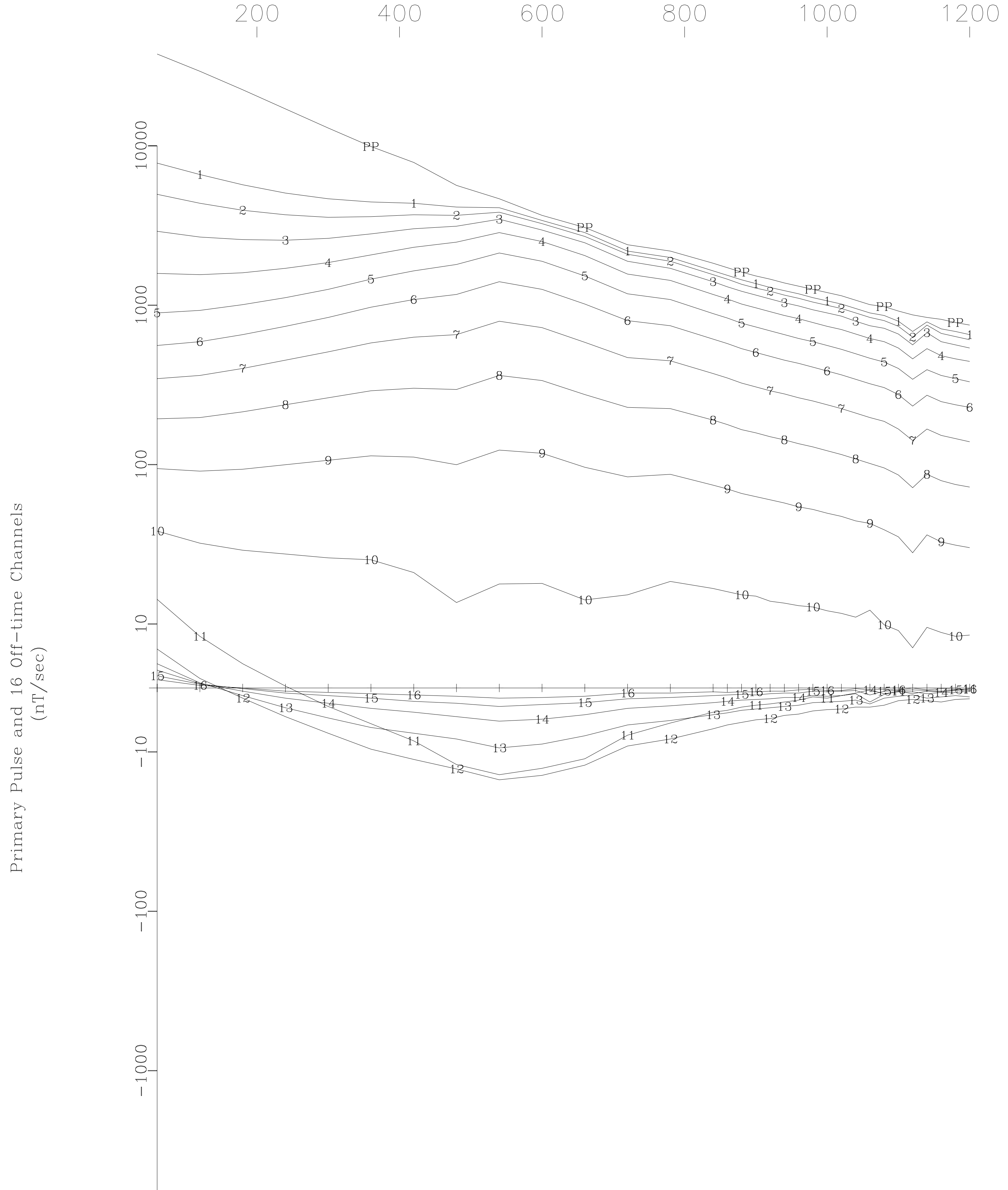
Crone Geophysics & Exploration Ltd.



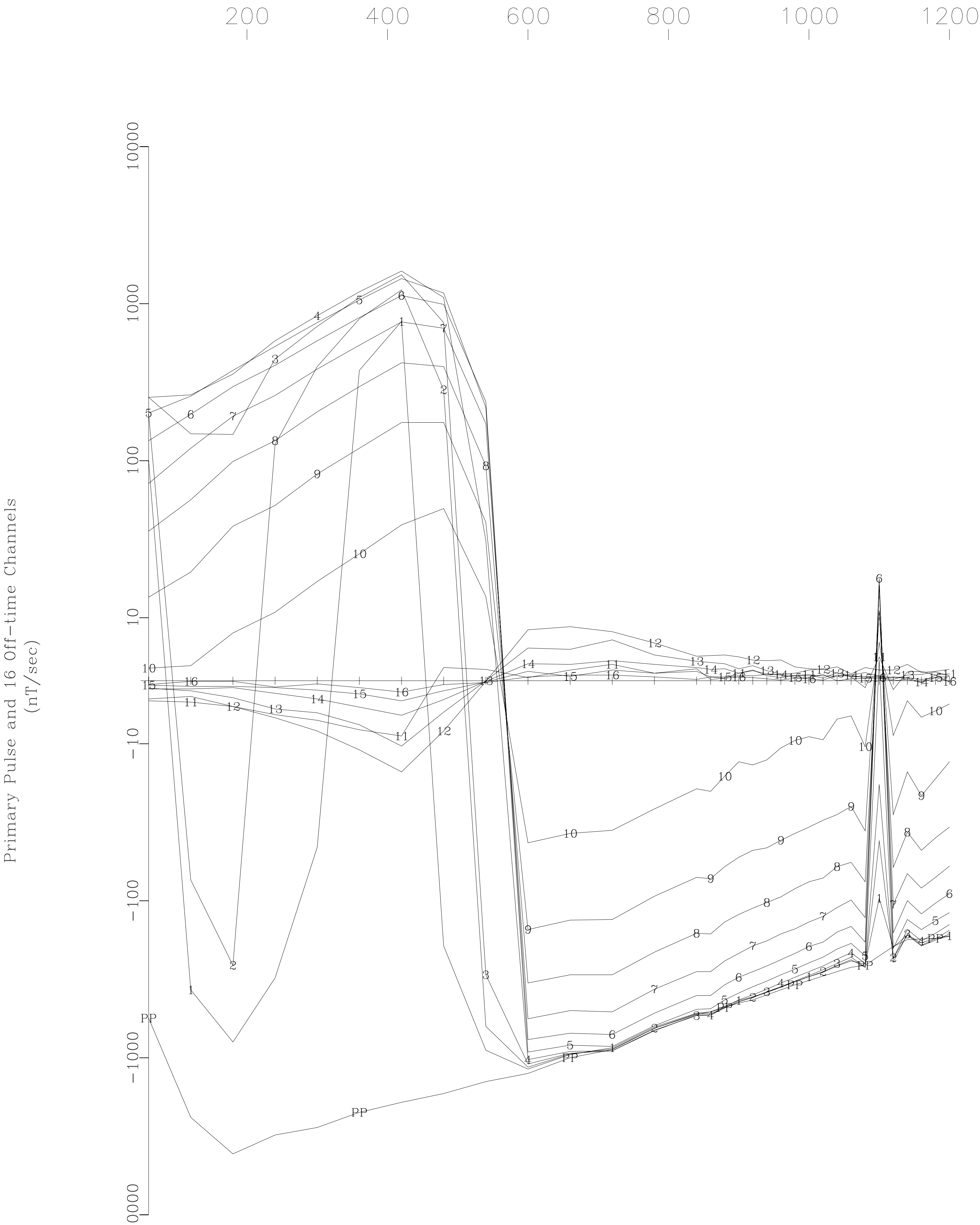
Rio Tinto Exploration   Sunday Lake

Loop SL0001,Hole 11SL0001   Y Component

Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday Lake
Loop SL0001,Hole 11SL0001 Z Component
Crone Geophysics & Exploration Ltd.



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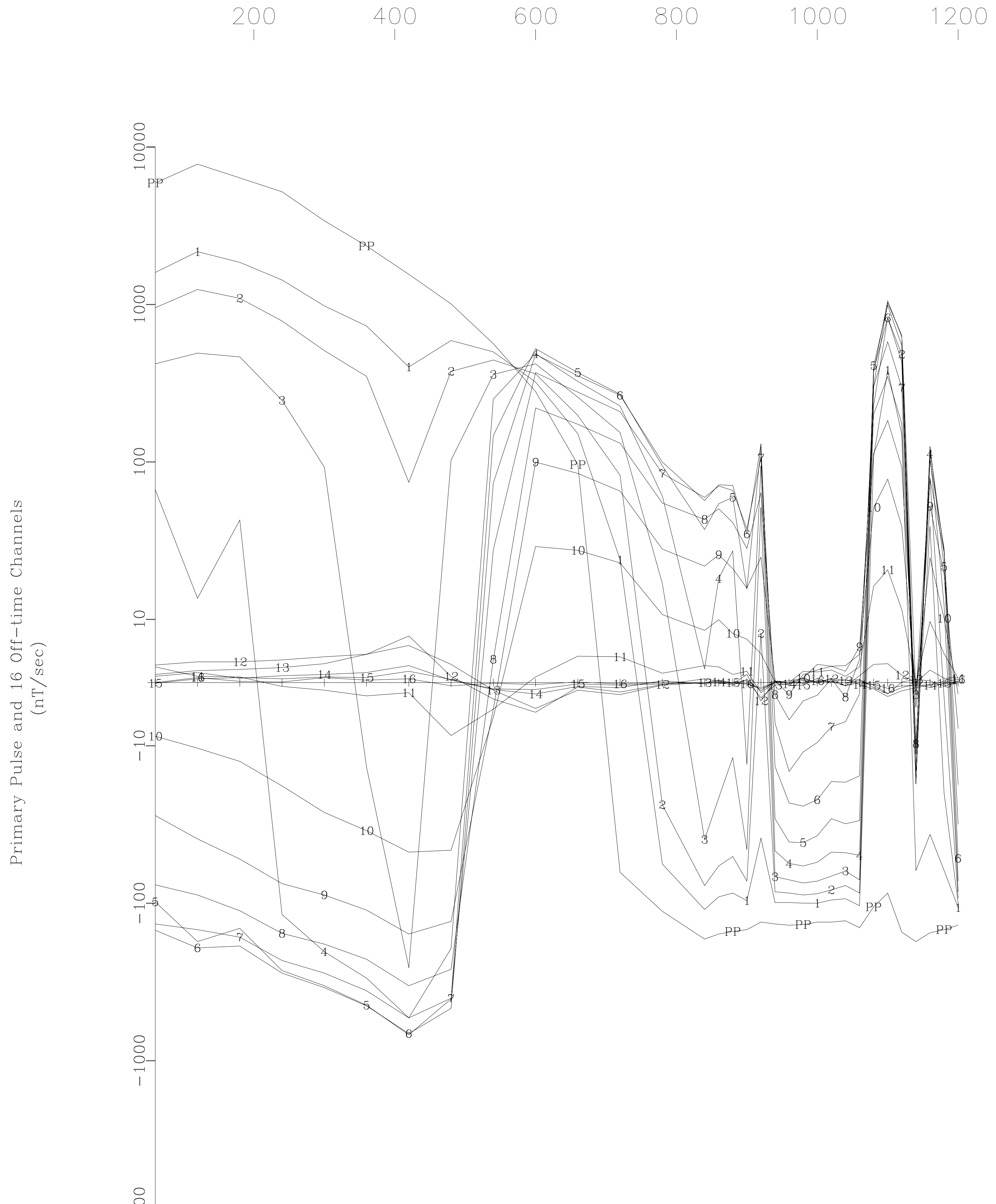
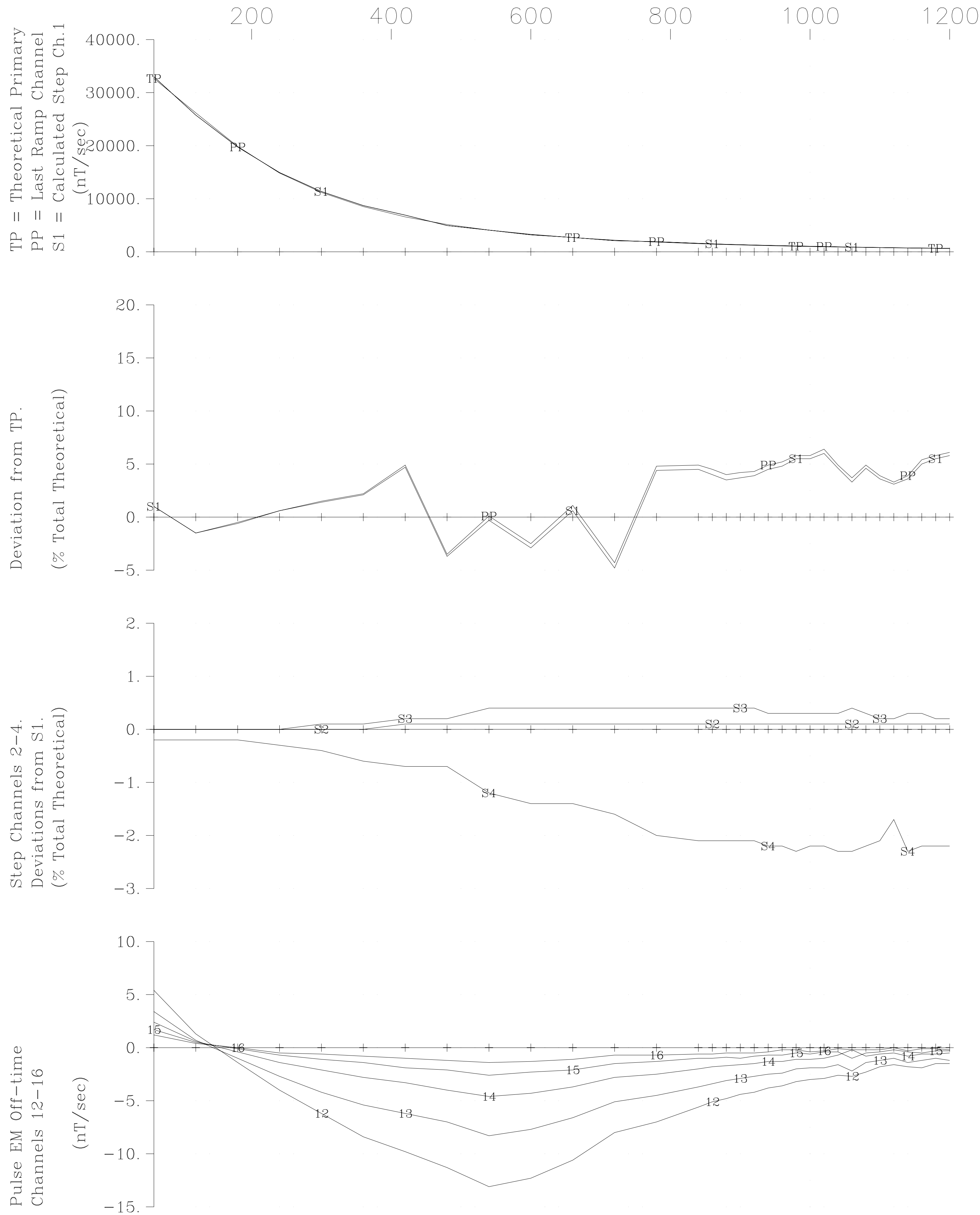
Loop SL0001,Hole 11SL0001 X Component
Crone Geophysics & Exploration Ltd.



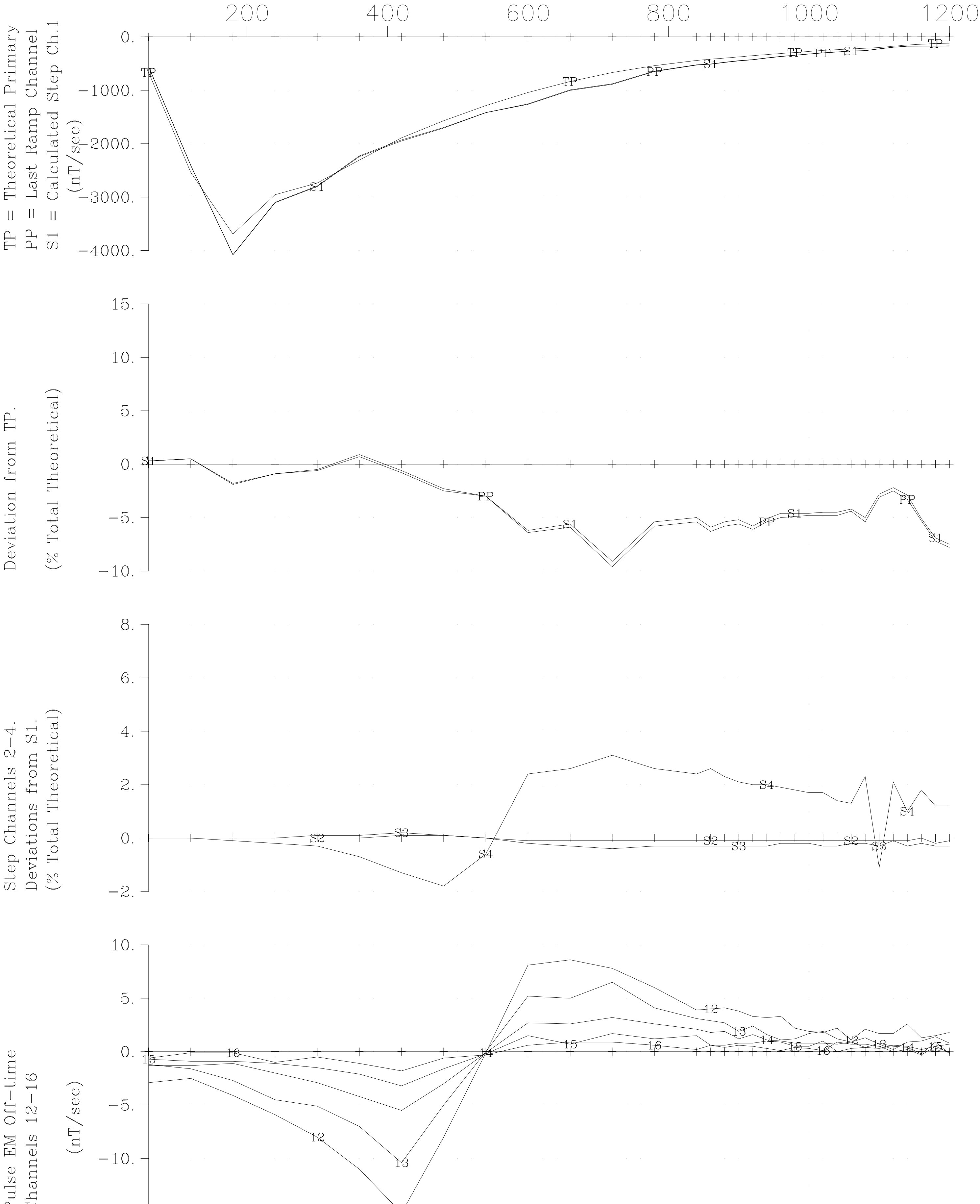
Rio Tinto Exploration Sunday Lake
Loop SL0001,Hole 11SL0001 Y Component
Crone Geophysics & Exploration Ltd.



Kennecott Sunday Lake

Loop SL0001, Hole 11SL0001 Z Component

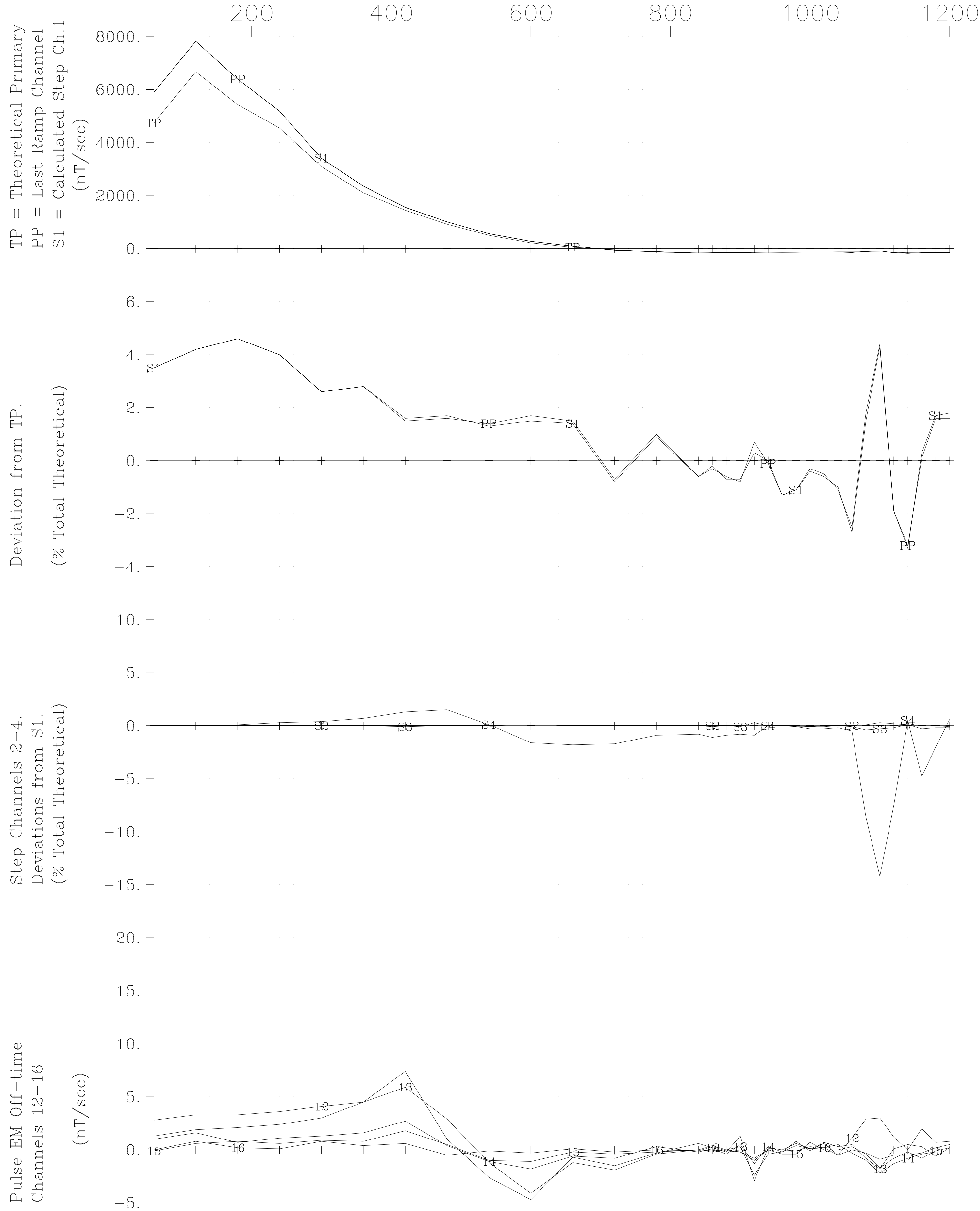
Crone Geophysics & Exploration Ltd.



Kennecott Sunday Lake

Loop SL0001, Hole 11SL0001 X Component

Crone Geophysics & Exploration Ltd.



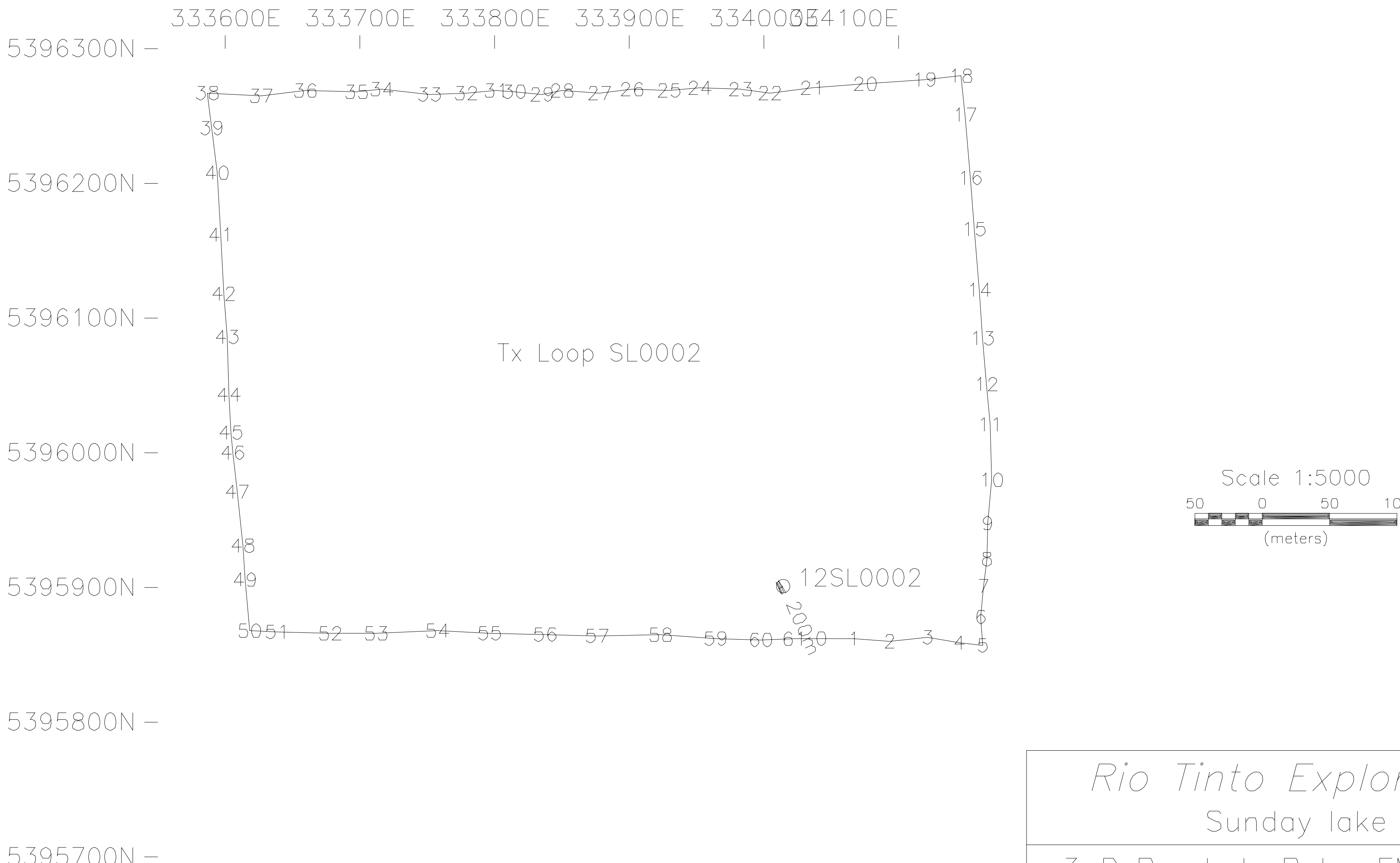
Kennecott Sunday Lake

Loop SL0001, Hole 11SL0001 Y Component

Crone Geophysics & Exploration Ltd.

APPENDIX X

BHEM RESULTS 12SL0002



Rio Tinto Exploration

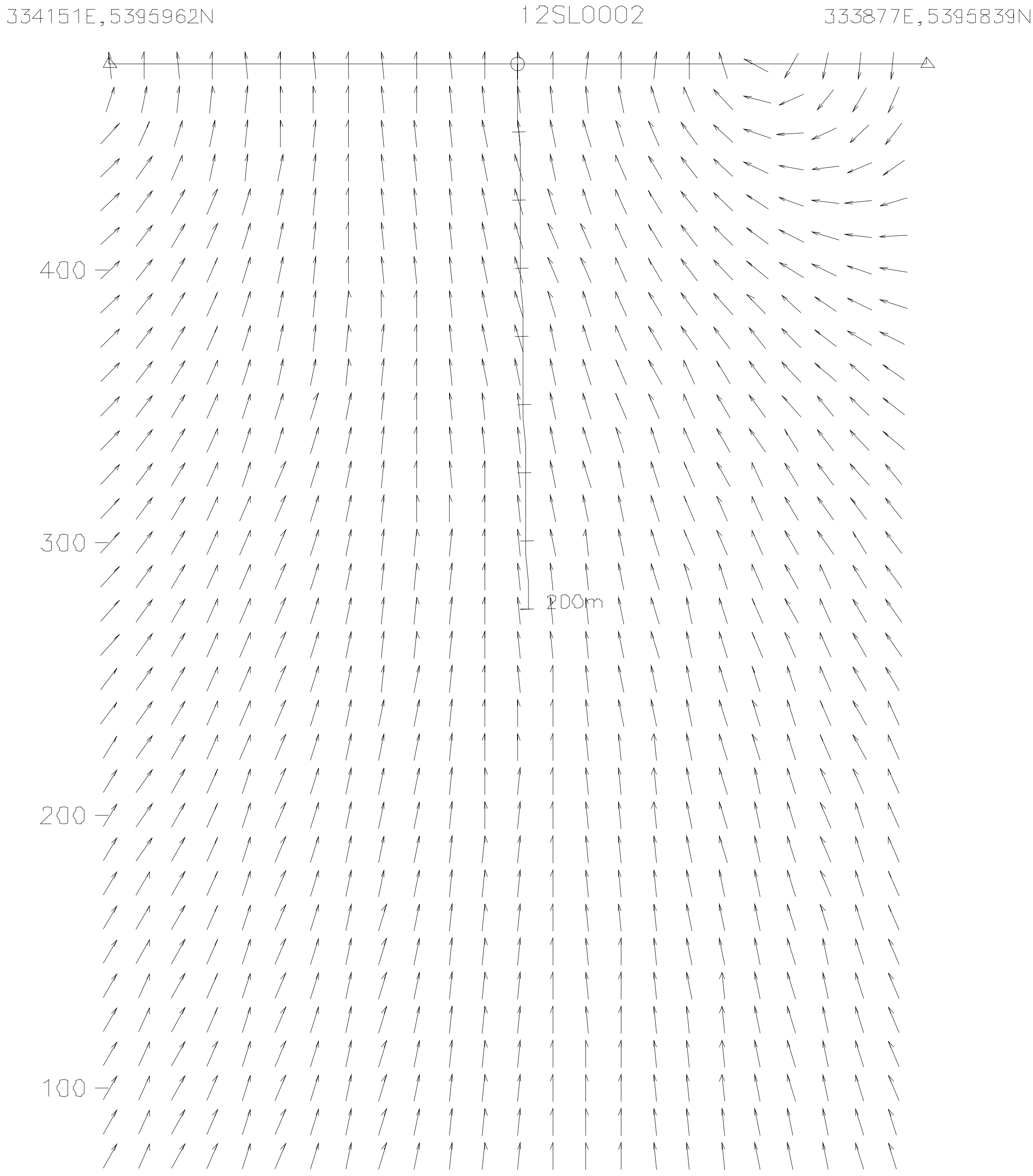
Sunday lake

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

Hole: 12SL0002

Survey Date: January 25, 2012B-RAD

Crone Geophysics & Exploration Ltd.



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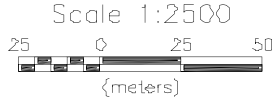


Rio Tinto Exploration

Sunday lake

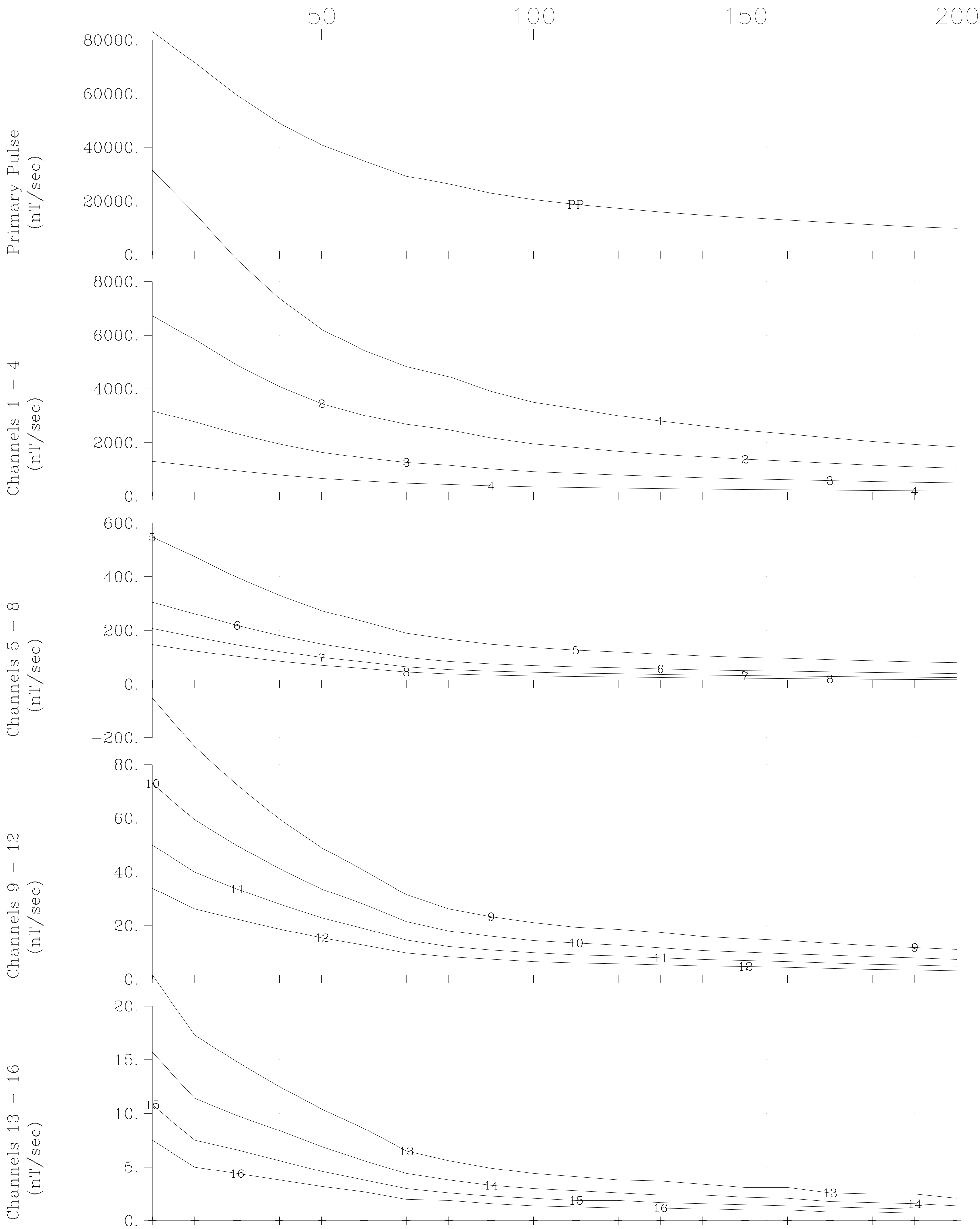
3-D Borehole Pulse EM Survey

Hole Section with Primary Field

Hole: 12SL0002, Loop: SL0002

Survey Date: January 25, 2012

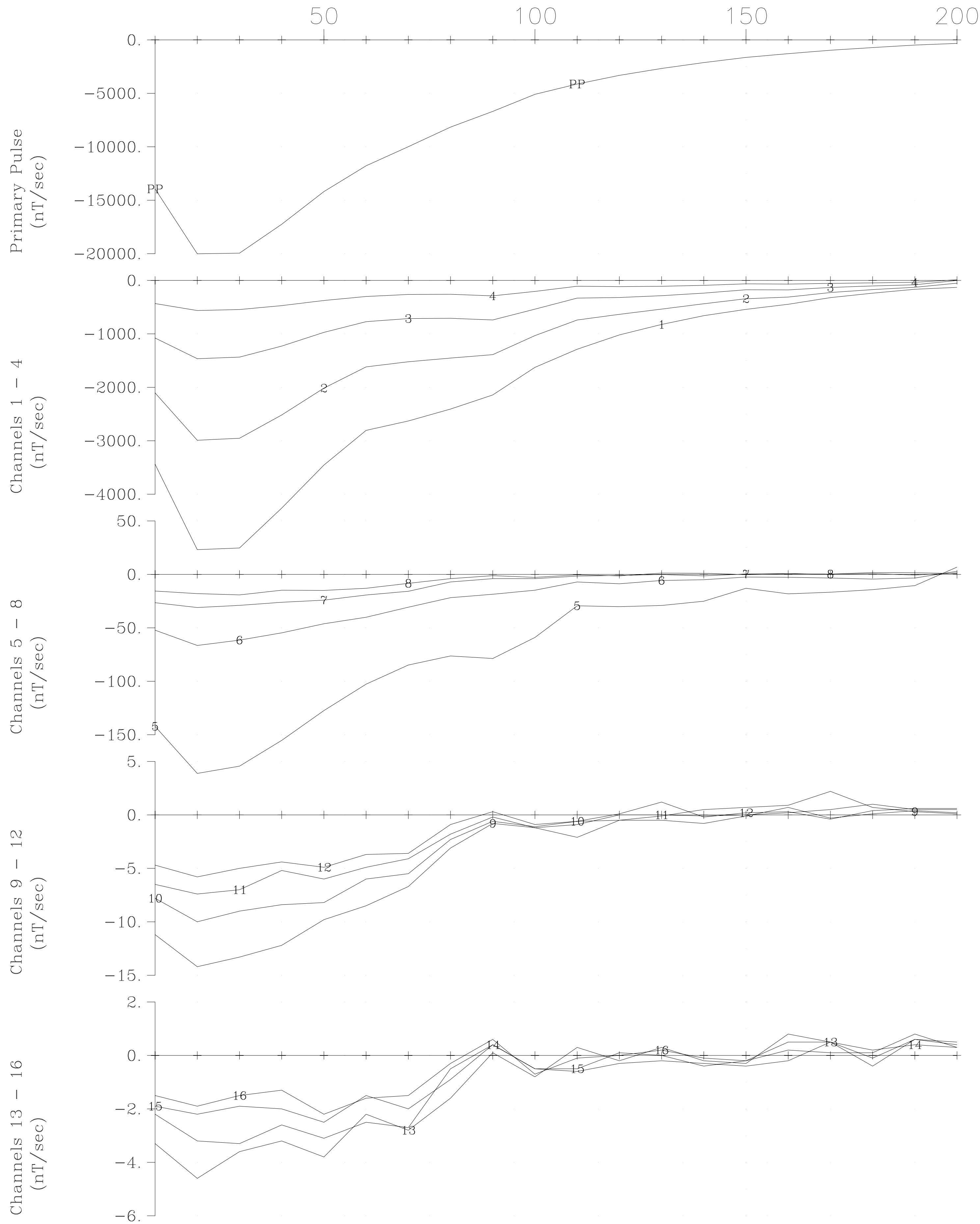
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration   Sunday lake

Loop SL0002, Hole 12SL0002   Z Component

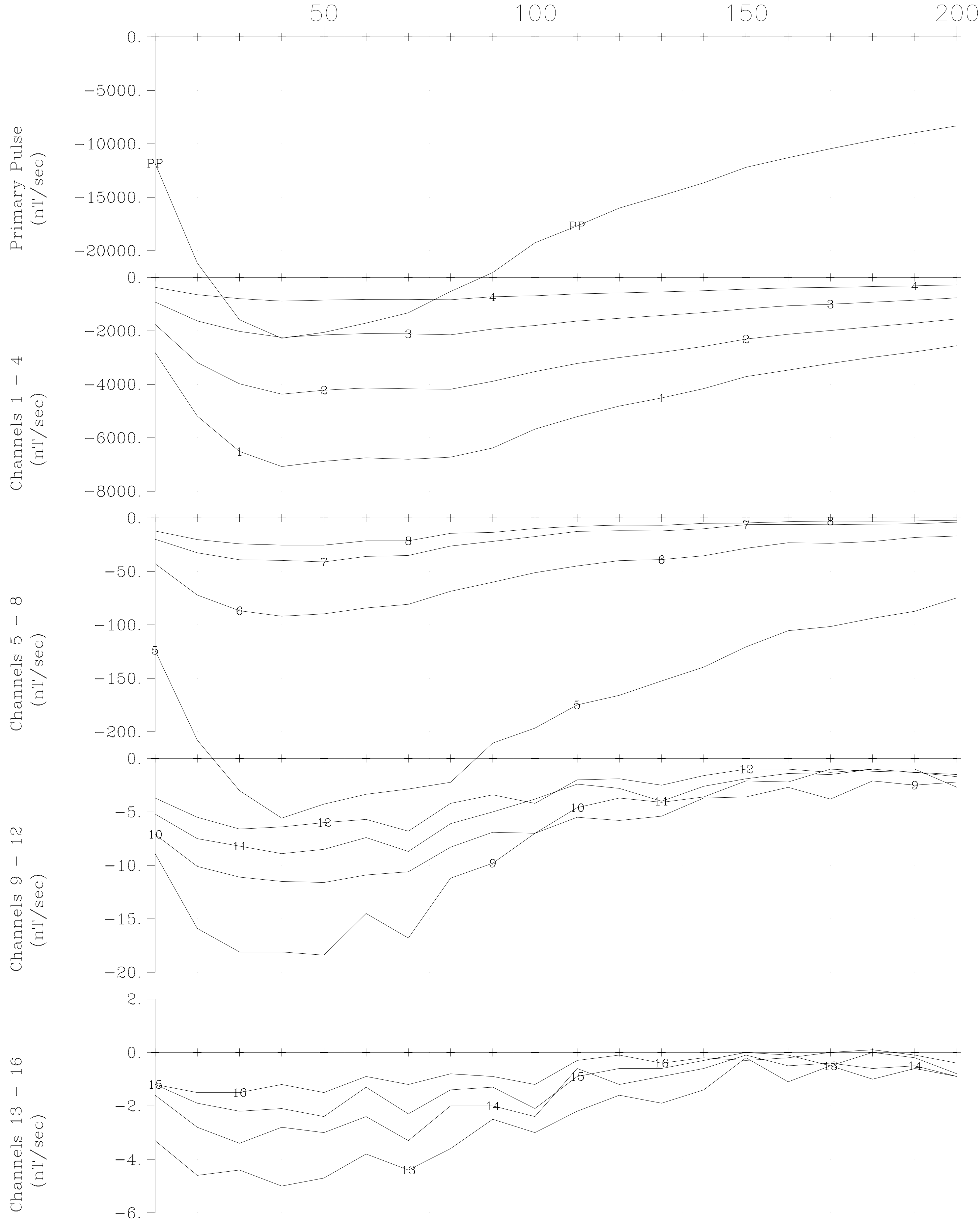
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday lake

Loop SL0002, Hole 12SL0002 X Component

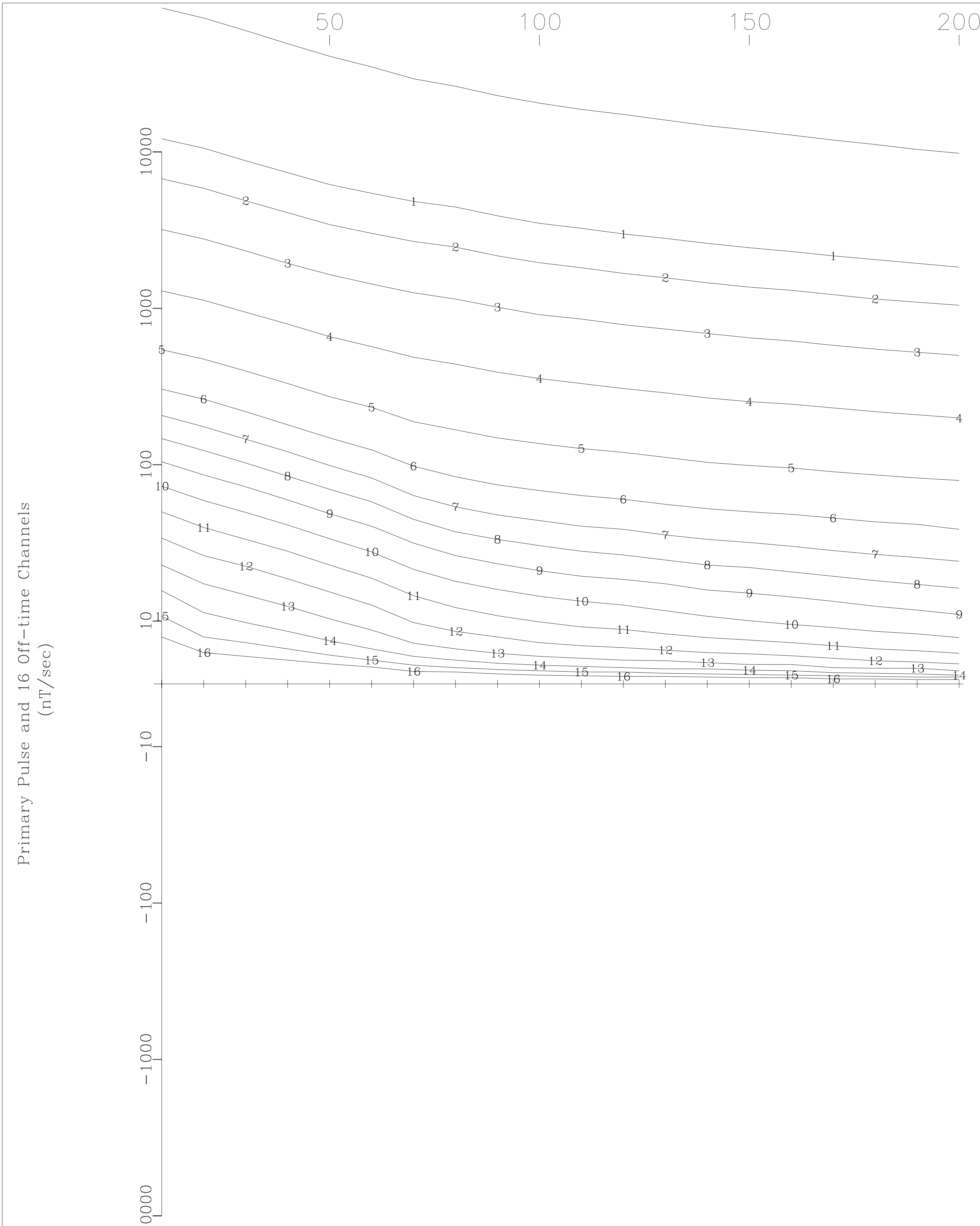
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration   Sunday lake

Loop SL0002, Hole 12SL0002   Y Component

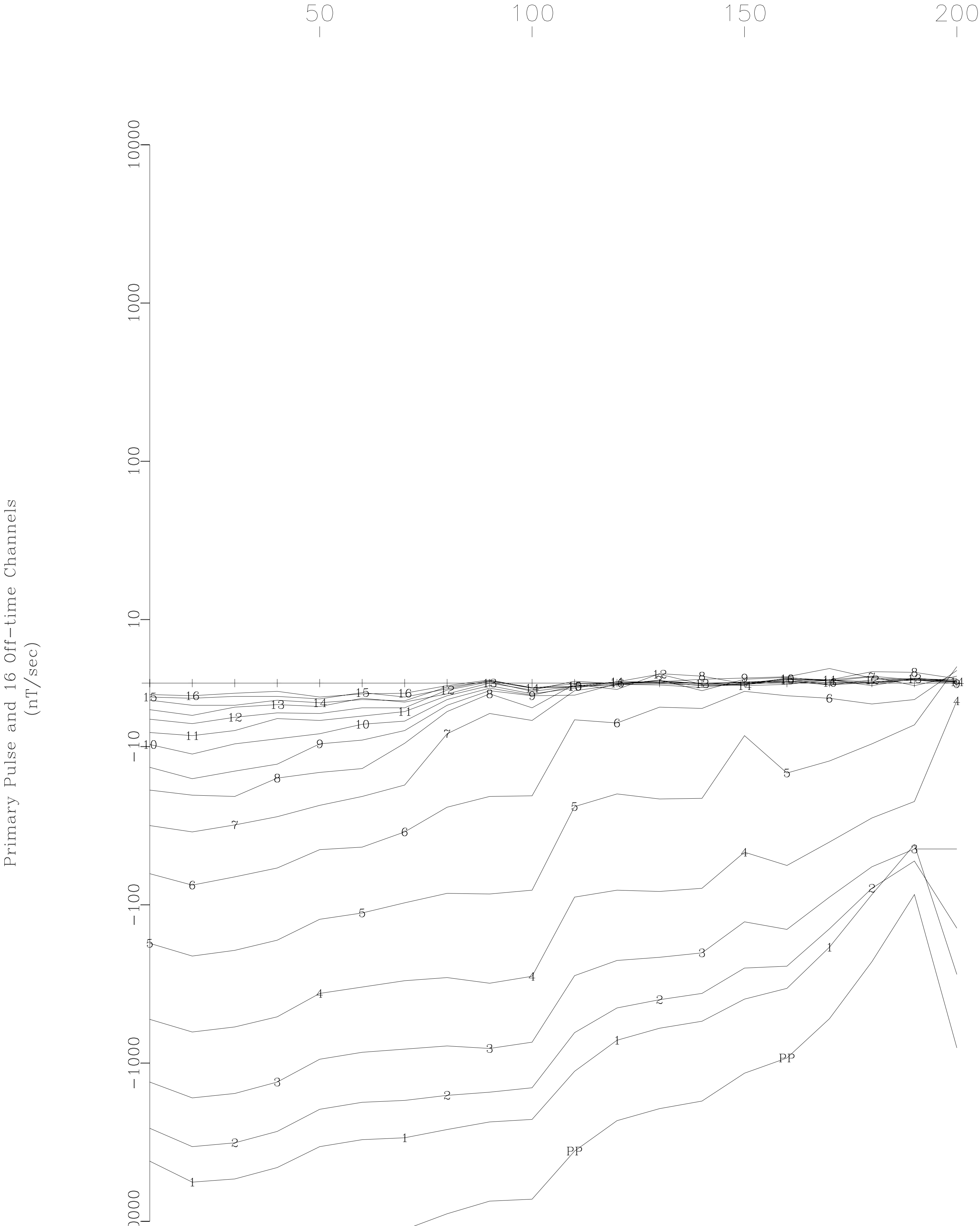
Crone Geophysics & Exploration Ltd.



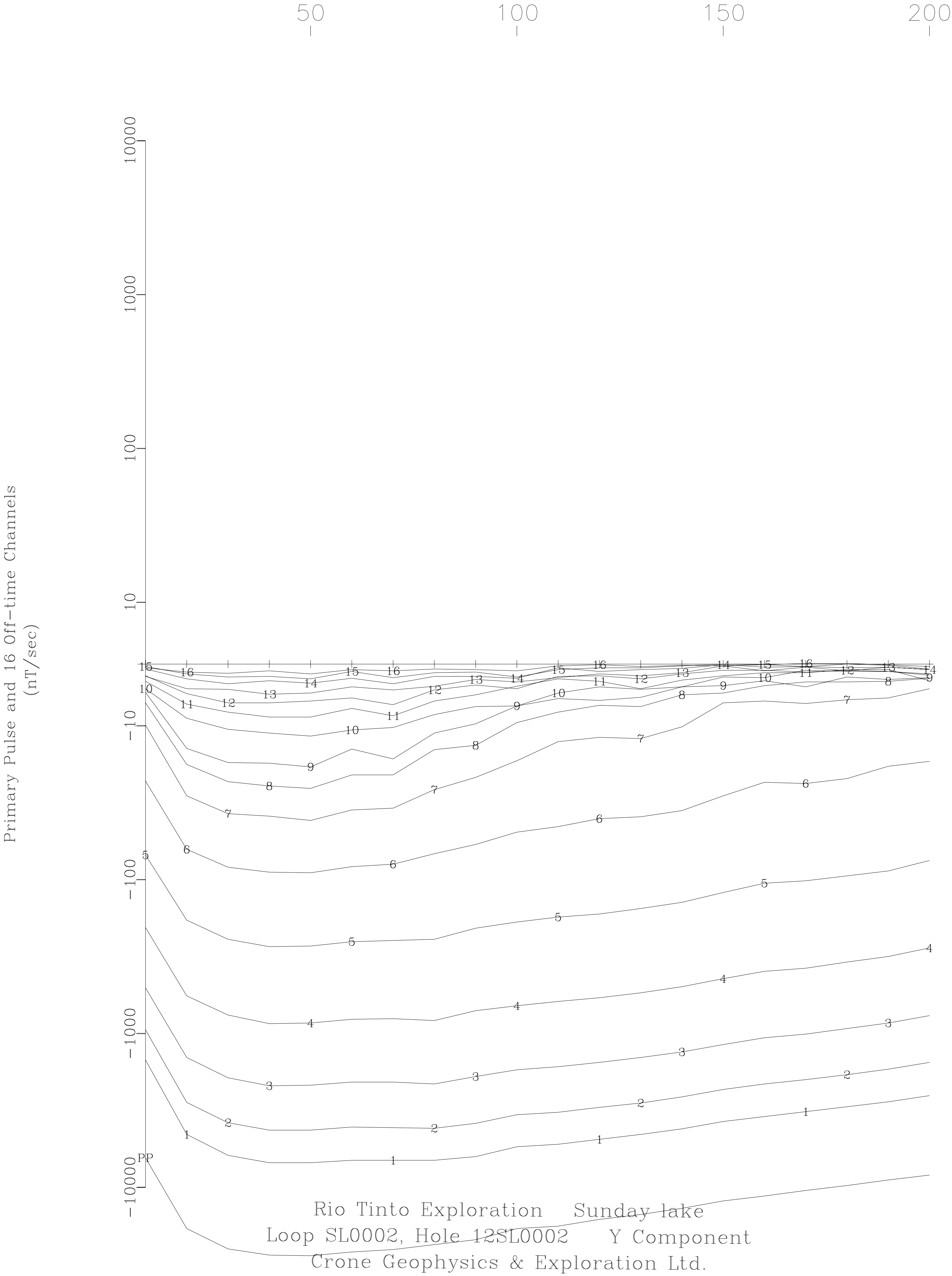
Rio Tinto Exploration Sunday lake

Loop SL0002, Hole 12SL0002 Z Component

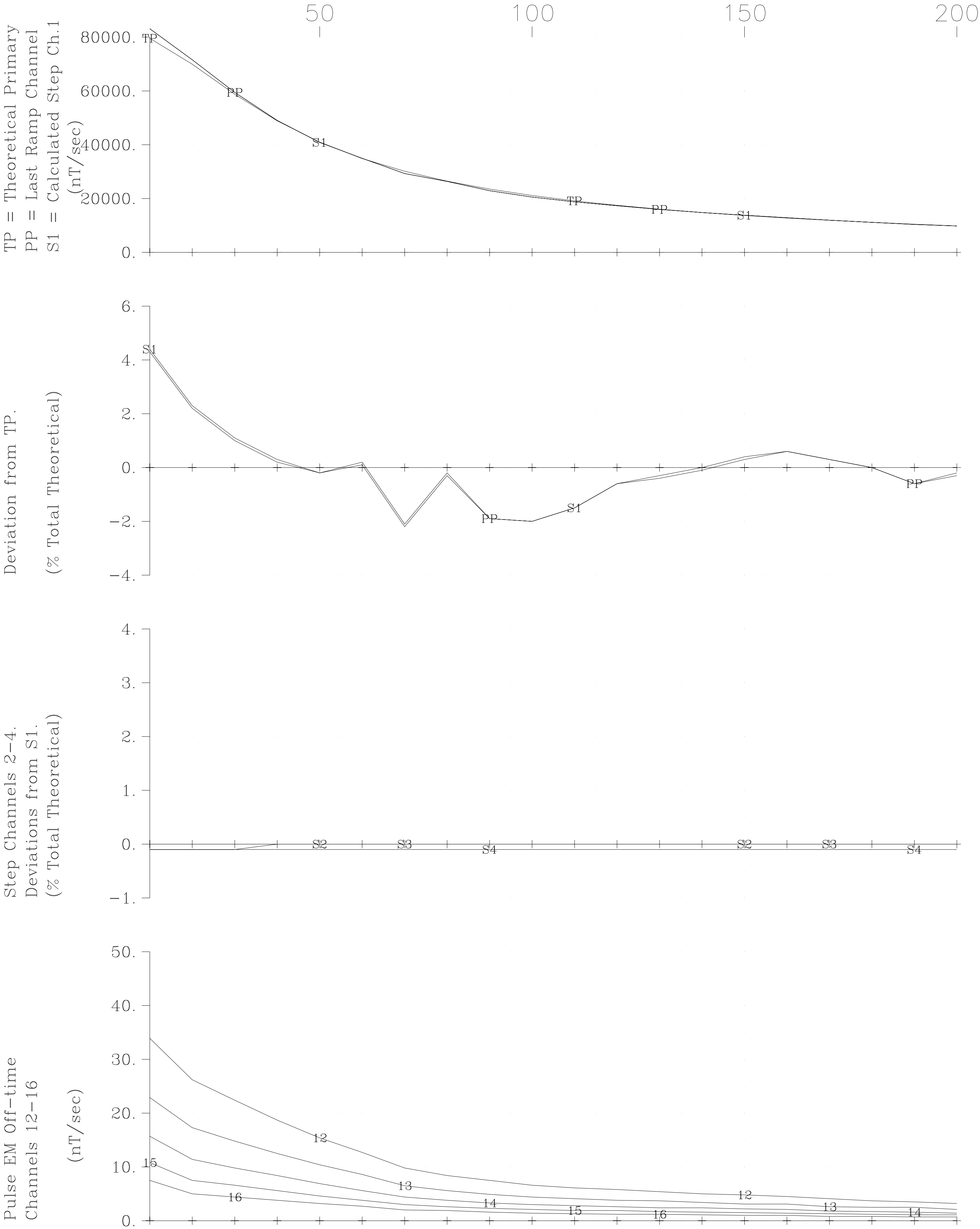
Crone Geophysics & Exploration Ltd.



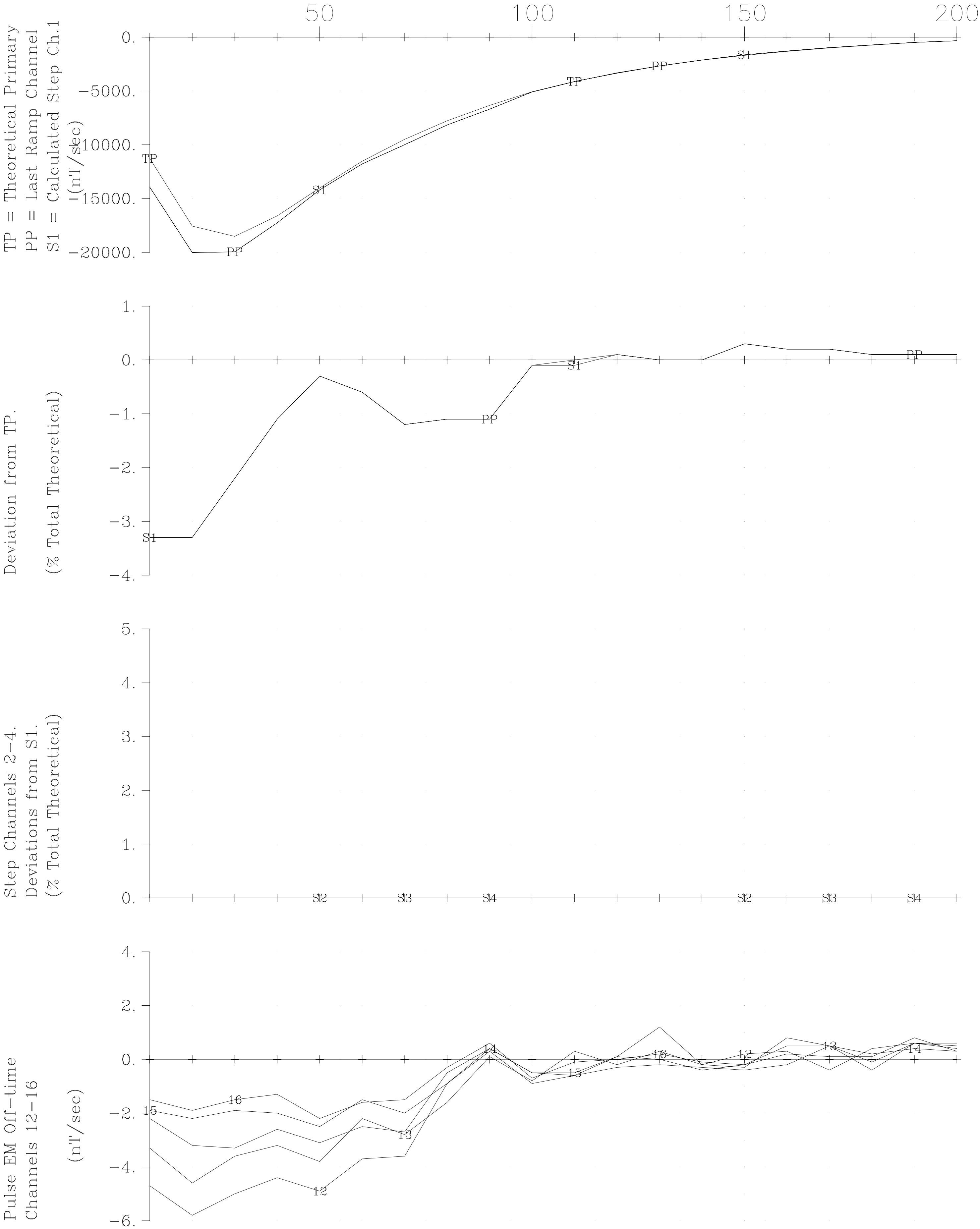
Rio Tinto Exploration Sunday lake
Loop SL0002, Hole 12SL0002 X Component
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration   Sunday lake
Loop SL0002, Hole 12SL0002   Y Component
Crone Geophysics & Exploration Ltd.



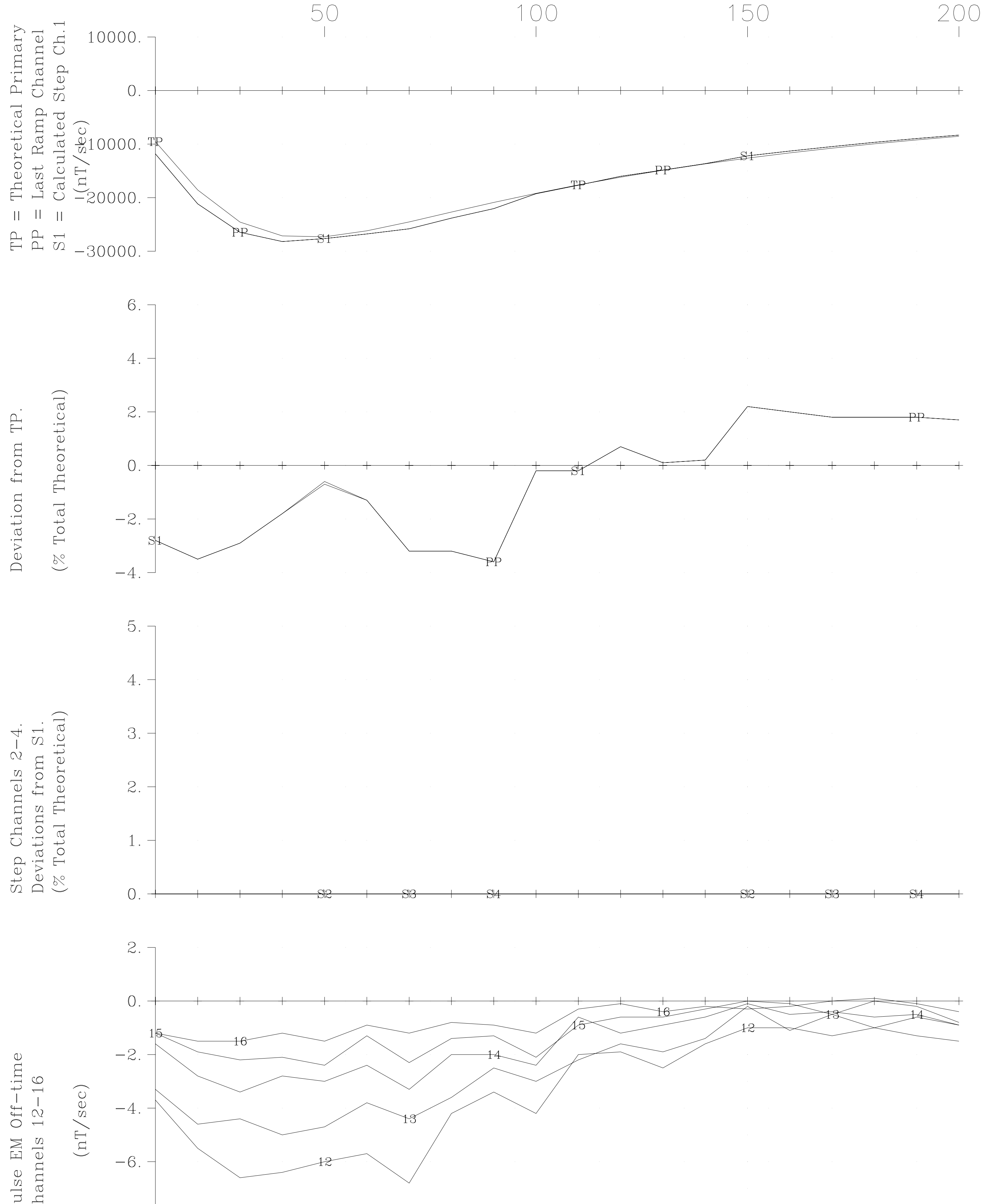
Rio Tinto Exploration Sunday lake
Loop SL0002, Hole 12SL0002 Z Component
Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday lake

Loop SL0002, Hole 12SL0002 X Component

Crone Geophysics & Exploration Ltd.



Rio Tinto Exploration Sunday lake
Loop SL0002, Hole 12SL0002 Y Component
Crone Geophysics & Exploration Ltd.

APPENDIX XI

CRONE INSTRUMENT SPECIFICATIONS

Crone Pulse EM

System Description

SYSTEM DESCRIPTION

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

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

SYSTEM TERMINOLOGY

Ramp Time

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

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

Time Base

Time base is the length of time the transmitter current is off (it includes the ramp time). This also equals the on time of the current. Time bases are available for both 60Hz and 50Hz noise rejection respectively:

- 8.33ms (30Hz), 16.66ms (15Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
- 10ms (25Hz), 20ms (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)

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

Zero Time Set

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

Receiver Channels

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

PP Channel

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

Synchronization

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

SURVEY METHODS

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

Moving Coil

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

Moving Loop

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

Moving In-Loop

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

Large In-Loop

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

Deep EM

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

Borehole (Z Component only)

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

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

3-D Borehole

Drill holes are surveyed with both the Z and the XY borehole probes. The X and Y components provide accurate direction information using just one transmit loop. Since the probe rotates as it moves down the hole a correction is required for the X-Y data. This is accomplished in one of two ways. The measurement of the primary field from the "PP" channel can be used to apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation tool for the X-Y probe. This attachment uses dip meters to calculate the probe rotation. A third method uses another rotation tool with integrated 3-axis accelerometers and 3-axis magnetometers which can be used to correct rotation on steeply dipping holes including vertical.

Underground Borehole

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

Resistivity Soundings

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

EQUIPMENT

Transmit Loops

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

Power Supply

The PEM system has been produced in 2 varieties: high power (4.8 KW), and low power (2.4 KW). The low power PEM system normally operates with an input voltage from 24V to 240V with a maximum output current of 20 amps. For very low power surveys a 20amp/hr 24V battery can be used. The high power system operates on a continuously variable voltage input up to 240V with a maximum output current of 30 amps. The power supply requires a motor generator and a voltage regulator to control and filter the input voltage to the transmitter.

Specifications: PEM Motor Generator

- (2.4 KW) 4.5 hp Robin EH34 engine, 120V 3-phase alternator
- (4.8 KW) 11 hp Robin RGV6100 240V/120V generator (1-phase)
- cable output to regulator
- fuse type overload protection
- steel frame
- external gas tank

- optional packframe for low-power generator
- wooden shipping box
- unit weight: 33kg (2.4 KW); 81kg (4.8 KW)
- shipping weight: 47kg (2.4 KW); 100kg (4.8 KW)

Specifications: PEM Variable Voltage Regulator

- High Power
  - Continuously variable voltage output up to 240V
  - 30 amp maximum current
  - Integrated sealed aluminum case ruggedized for shipping
  - Shipping weight 18kg
- Low Power
  - selectable voltage between 24v and 120v
  - 20amp maximum current
  - anodize d aluminum case
  - padded wooden shipping box
  - unit weight 10kg; shipping weight 18kg
- fuse and internal circuit breaker protection
- cable connections to motor generator and transmitter

Specifications: PEM Transmitter

- High Power
  - Timebases
    - 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
  - ramp times: 0.5ms, 1.0ms, 1.5ms
  - operating voltage: continuously variable input up to 240V
  - output current up to 30amp maximum
  - optional current control feedback system features constant current output with ±0.1 amp precision
  - integrated sealed aluminum case ruggedized for shipping with shock protection
- Low Power
  - Timebases
    - 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz)
  - operating voltage: 24v to 120v
  - output current: 5amp to 20amp
  - anodized aluminum case
  - optional pack frame
  - unit weight 12.5kg; shipping weight 22kg
  - padded wooden shipping box
- 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:
  - built-in radio and antenna
  - cable sync output for direct wire link to receiver or remote radio
  - crystal clock connection with built-in optical isolation

Receiver

The receiver measures the rate of decay of the secondary field across several time channels. The Crone Digital Receiver, in use since 1987 uses software control, offering a variety of programmable channel configurations.

Specifications: Digital PEM Receiver

- 26 bit (156dB) dynamic range
- operating temperature -40°C to 50°C
- built-in non-volatile memory
- optional pack frame
- unit weight 15kg; shipping weight 25.5kg
- padded wooden shipping box
- Menu driven operating software system offering the following functions:
  - controls channel positions, channel widths, and number of channels
  - Timebases: 8.33ms (30Hz), 10ms (25Hz), 16.66ms (15Hz), 20ms, (12.5Hz), 50ms (5Hz), 100ms (2.5Hz), 150ms (1.67Hz), 300ms (0.833Hz), 500ms (0.5Hz), 750ms (0.33Hz), 1000ms (0.25Hz)
  - ramp time selectable
  - sample stacking from 1 to 65536
  - automatic gain and spike rejection
  - scrolling routines for viewing data
  - graphic display of decay curve and profile with various plotting options
  - routines for memory management
  - control of data transmission
  - provides information on instrument and operating status

Sync Equipment

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

Specifications: Sync Cable

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

Specifications: Remote Radio

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

Specifications: Booster Antenna

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

Specification: Crystal Clocks

- heat stabilized crystals
- 24V rechargeable gel cell battery supply

- anodized aluminum case
- rx unit can be separate or housed in the receiver
- outlet for external supplementary battery supply

Surface PEM Receive Coil

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

Specifications: Surface PEM Receive Coil

- ferrite core antenna
- VLF filter
- 10khz bandwidth
- two 9v transistor battery supply
- tripod adjustable to all planes
- unit weight 4.5kg; shipping weight 13.5kg
- padded wooden shipping box

Surface SQUID sensor

CSIRO 1-, 2- or 3- axis high-sensitivity superconducting sensor measures magnetic field in the sub-pT range.

Specifications: Surface SQUID sensor

- liquid nitrogen cooled, 12 hour operation between reservoir refills
- low-noise floor ~350fT/√Hz
- man-portable sensor and control system
- moving loop, or large loop survey configuration
- solid teflon non-magnetic housing
- operational temperature range: -40°C to 40°C
- total system packaged shipping weight (without liquid nitrogen): 62kg

Borehole PEM Z Component Probe

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

Specifications: Borehole PEM Z Component Probe

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

Borehole PEM XY Component Probe

The XY probe measures two orthogonal components of the EM field perpendicular to the axis of the hole. Correction for probe rotation can be achieved by mathematical theoretical primary field reduction or more commonly with an attached orientation tool sensor.

Specifications: Borehole PEM XY Component Probe

- ferrite core
- dimensions: length - 2.01m; dia - 3.02cm
- internal rechargeable ni-cad battery supply

- selection of X or Y coils by means of a switch box on surface or automatic switching with Digital receiver
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths to 2800m
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 20kg

Specifications: Orientation Tool

- 2 axis tilt sensors
- accuracy ± 0.1 deg.
- operating range -88 to -10 deg.
- dimensions: length - 0.94m; dia - 28.5mm
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 14kg

Specifications: Rotation Angle Direction (RAD) Tool

- integrated 3-axis accelerometers and 3-axis magnetometers
- dip and roll accuracy: ±0.5°, azimuth accuracy: ±1.0°
- operating range: all
- simultaneous 3D magnetometer borehole survey by station
- optional continuous logging mode
- dual 3-axis sensors provide an alternative complete borehole Dip-Azimuth measurement
- dimensions: length – 0.75m; dia – 31.8mm
- packaged in padded cover and aluminum tube
- shipped in padded wooden box; total shipping weight 14kg
- NiCd battery provides all-day operation
    - Length - 0.93m; dia – 28.6mm
    - Packaged in padded cover and aluminum tube
    - Shipped in padded wooden box; total shipping weight 14kg

Borehole Equipment

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

Specifications: Borehole Cable

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

Specifications: Slip Ring

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

Specifications: Borehole Winch Frame

- welded aluminum frame
- removable axle
- chain driven, 3 speed gear box
- hand or optional power winding
- hand brake and lock

- optional chain-gear safety cover
- two sizes: standard for up to 1300m cable; large for longer cables
- shipped in wooden box

Specifications: Borehole Counter

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

Specifications: Dummy Probe and Cable

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