Q-Borehole Survey Report

Schlumberger

Survey type:	Offset VSP
Company:	Lamont Doherty Earth Observatory
Well:	Expedition 341, Site U1417E
Field:	Southern Alaska Margin Tectonics
Country:	
Run:	1
Date:	21-Jun-2013

Recorded by: K. Swain

Witnessed by: A. Slagle, L. Drab

Introduction

This was a vertical seismic profile zero offset survey conducted from the JOIDES Resolution during IODP Expedition 341 on 21 June 2013.

Survey Results: Zero Offset VSP

A successful Zero Offset VSP was performed resulting in 2 stations of stacked waveforms. Some noise was observed in the stacked waveforms but over 47 shots were required to obtain these.
Difficulty in obtaining a good geophone clamp/anchor to the borehole wall was evident in the shots.

Recommendations and Conclusion

Further filtering in post acquisition processing is recommended to refine the waveforms before and after the first arrival.

Well Information

Company	**Lamont Doherty Earth Observatory**
Well	**Expedition 341, Site U1417E**
Field	**Southern Alaska Margin Tectonics**
Country	
State	Pacific
Logging Date	21-Jun-2013
Run Number	1
Service Order	
Well Head (Latitude)	N 56.9598
Well Head (Longitude)	W 147.1099
Well Head (X Coordinate)	0.0 UTM
Well Head (Y Coordinate)	0.0 UTM
Total Depth - Driller	4910.0 m
Total Depth - Logger	4910.0 m
Maximum Hole Deviation	0.0 deg
Azimuth of Maximum Deviation	
Program Version	19C0-187
Bit Size	9.875 in
Recorded by	K. Swain
Witnessed by	A. Slagle, L. Drab

Elevation Information

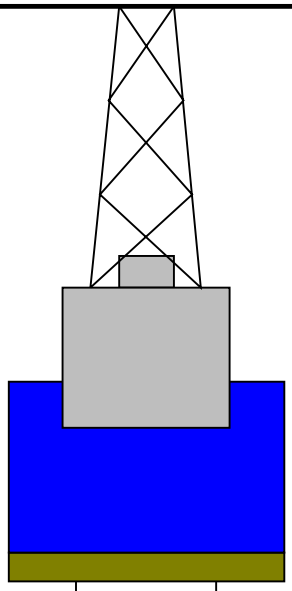
Permanent Datum	MSL
Elevation Permanent Datum	0.0 m
Above Permanent Datum	11.0 m
Drilling Measured From	Drill Floor
Derrick Floor	11.0 m
Ground Level	-4188.5 m
Kelly Bush	11.0 m
Log Measured From	Drill Floor
Elevation Log Zero	11.0 m

Depth Corrected Information

Water Velocity	1500.0 m/s
Seismic Reference Datum	0.0 m

Remarks

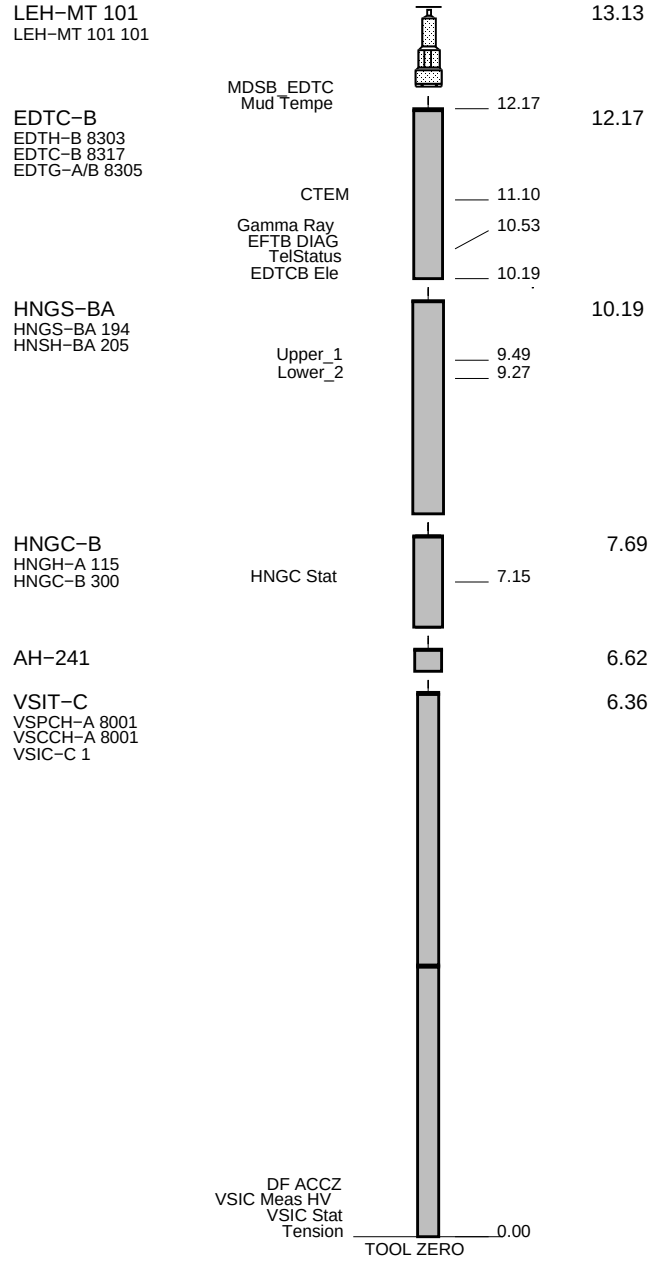
Hole drilled with RCB coring bit and bottom hole assembly (BHA). 9 7/8" BS
Lamont Magnetic Susceptability (MSS) tool run in combination with HRLA/HLDS/HNGS
2 knuckle joints decouple the eccentered HLDS and HNGS from the centered HRLA
and MSS. A thru wired ECH-MRA separates the 2 knuckles for added capability.
2 MCD (mechanical Caliper Device) centralizers run with HRLA.
LDEO-MSS tool run below HRLA consisting of a deep reading sensor only with the
electronics cartridge and ELIC.
RCB coring bit released on bottom of hole prior to logging to allow
wireline tools to pass out of drill collars/pipe into open hole.

Production String	(in) OD	(in) ID	(M) MD	Well Schematic	(M) MD	(in) OD	(in) ID	Casing String
Kelly Bushing Elevation			−4200					
Derrick Floor Elevation			−4200					
Mean Sea Level			−4189					
						4.1		
					0	4.1		Sea Floor
					84	9.875		Open Hole
					624			Total Depth

SURFACE EQUIPMENT

WSAM 808
GSR−U 616008
WITM (EDTS)−A 1

DOWNHOLE EQUIPMENT



MAXIMUM STRING DIAMETER 3.75 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Well Information

Well Type	Vertical Open Hole
Rig / Platform Type	Drillship
Well Reference Azimuth (Magnetic, True, or Grid North)	True North

Elevation Information

Water Depth	4189m
Water Temperature	10c
Water Salinity	-
Weathered Zone Depth	-
Elevation Depth	Sea level

Sea Condition

Sea Condition	1m p to p heave
Wave Height	-
High Tide Level	-
High Tide Time	-
Low Tide Level	-
Low Tide Time	

Velocity Information

Weathered Velocity	-
Elevation Velocity	-

Downhole Equipment Information

Tool Type	VSI
Surface Equipment	MCM OP19.1
Combined Tool	VSIS/VSCC/VSPC/AH244/HNGS/EDTC/LEHMT
Number of Shuttles	1
Nominal Receiver Spacing	n/a
Gimbaled (Y/N)	Y
Downhole Geophone Type	GAC-D
Sensitivity	0.54
Natural Frequency	20.0
Damping Factor	5.74
DC Resistance	1500
Receiver #1	VSIP-8006
Receiver #2	
Receiver #3	
Receiver #4	
Receiver #5	
Receiver #6	
Receiver #7	
Receiver #8	

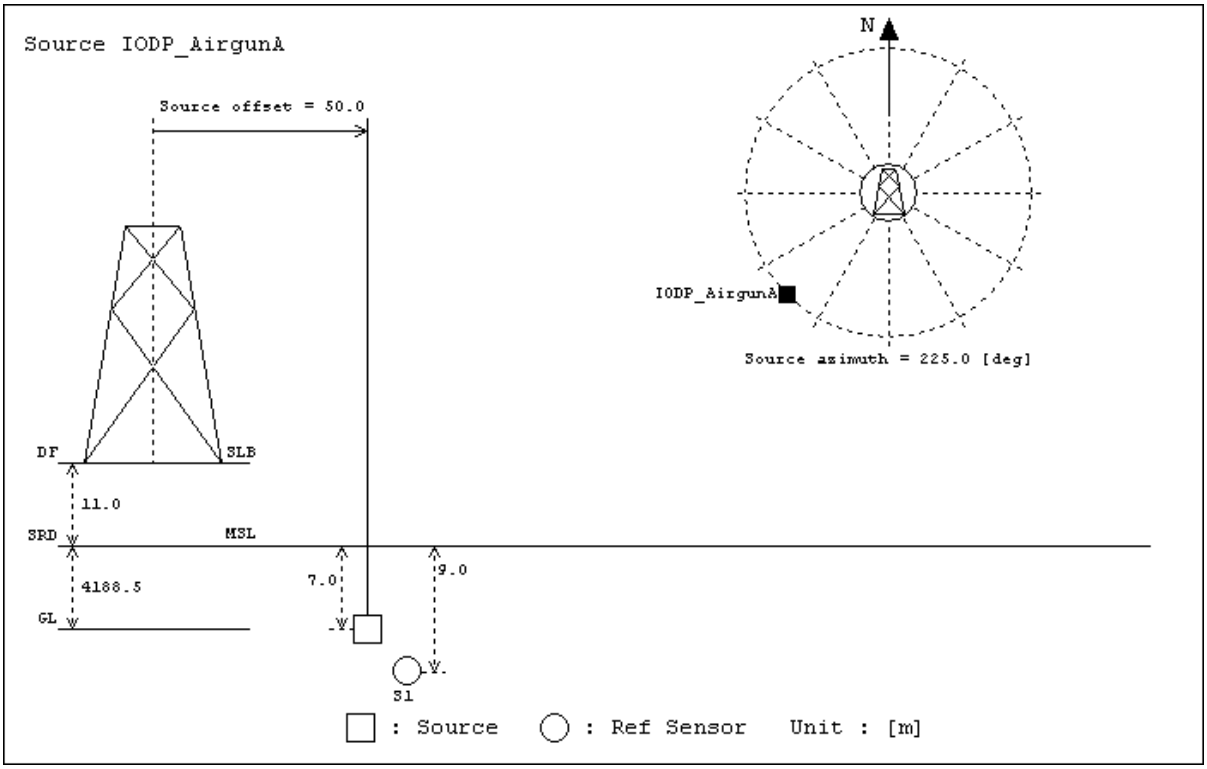
General Information

Survey Type	Offset VSP
Surface Recording Length	500.0 ms
Suface Sampling Rate	1.0 ms
Downhole Recording Length	5000.0 ms
Downhole Sampling Rate	1.0 ms
Top of Survey	4335.7 m
Bottom of Survey	4411.9 m
Number of Shots	46
Number of Downhole Traces	46
Number of Downhole Traces used for Processing	4

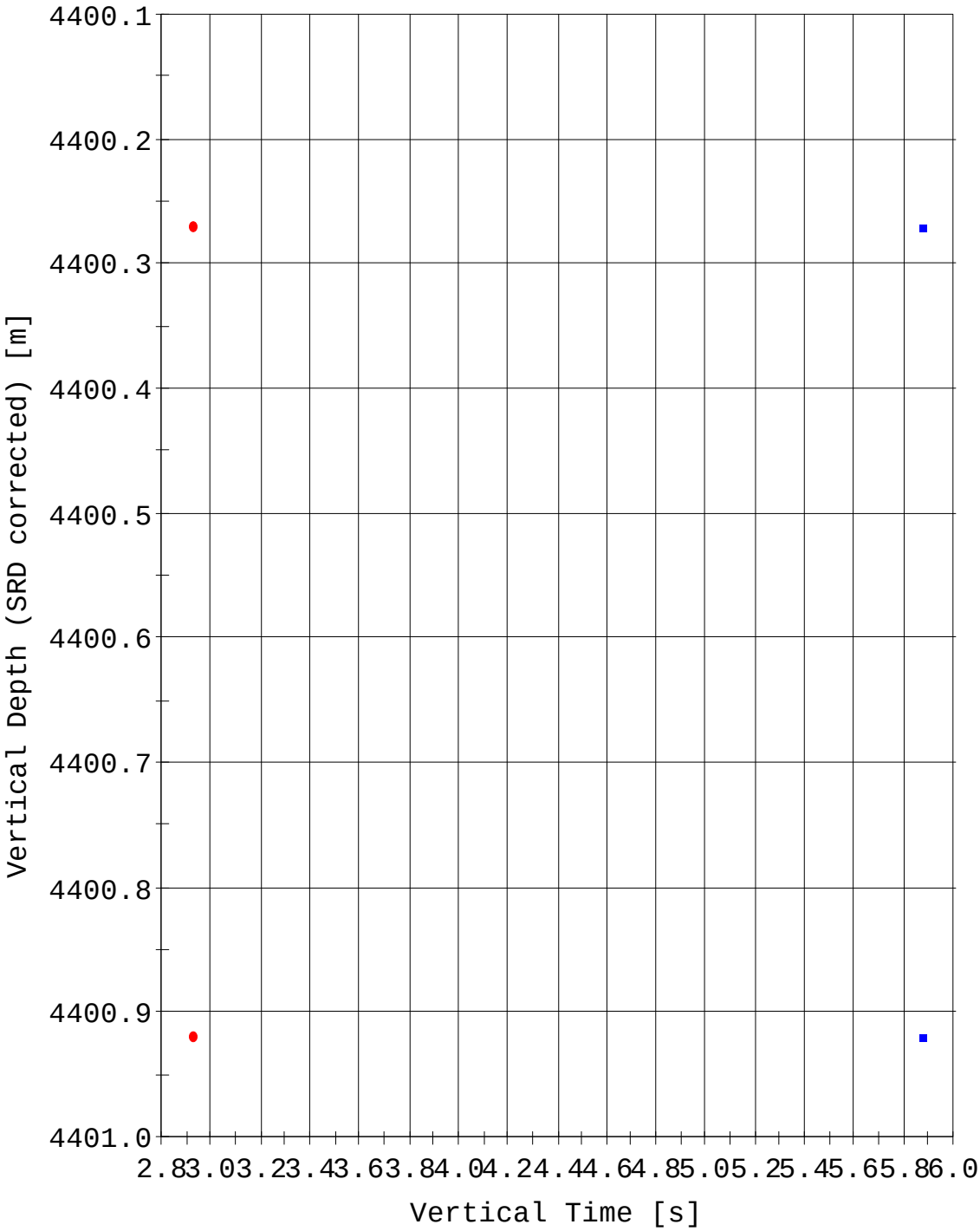
Shot Summary Listing (1/1)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
4411.3	1	11	42.6	21.0	752.9	42
4411.9	1	10	42.0	21.0	750.3	34, 35, 36

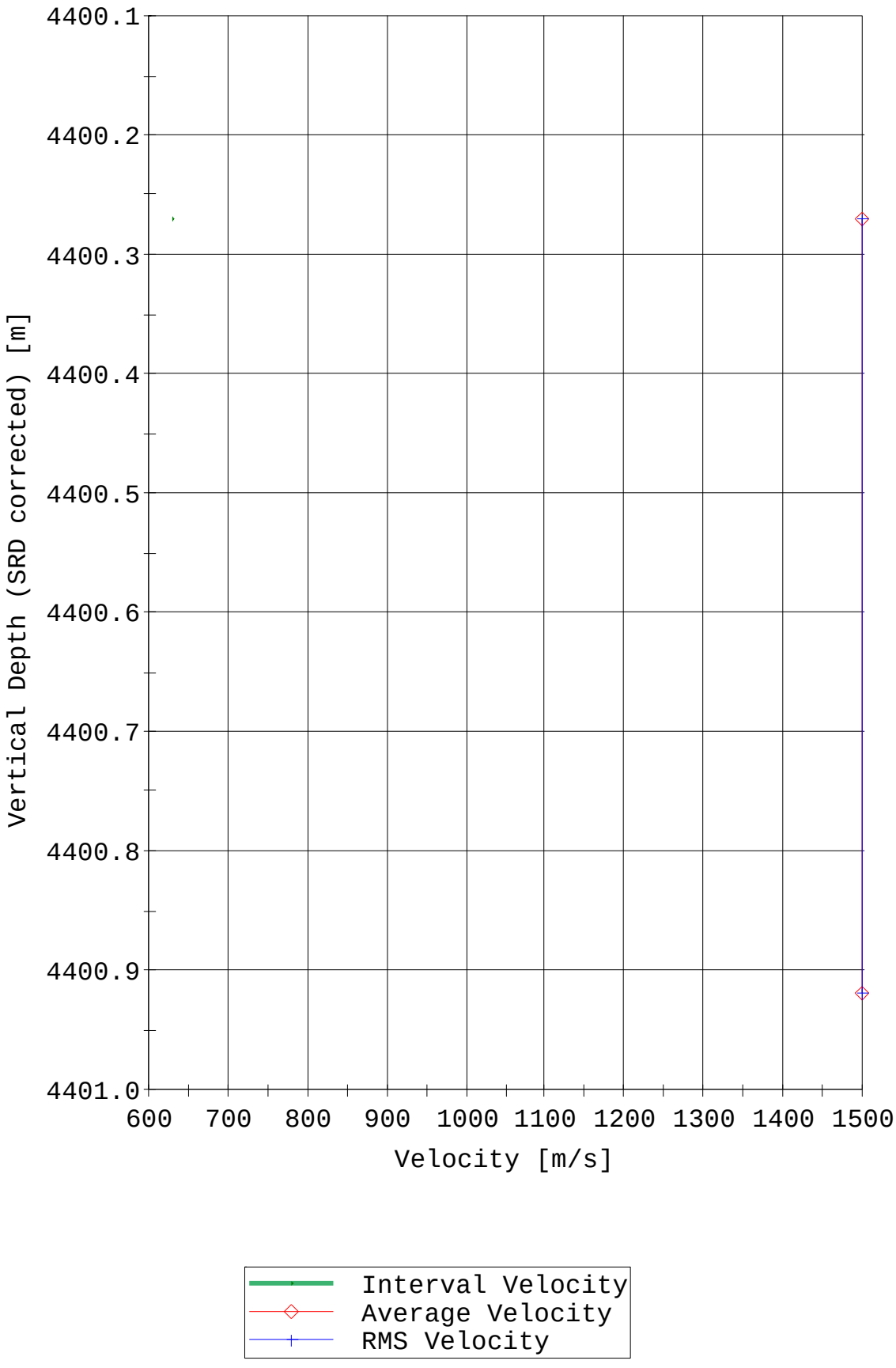
Source Geometry Sketch



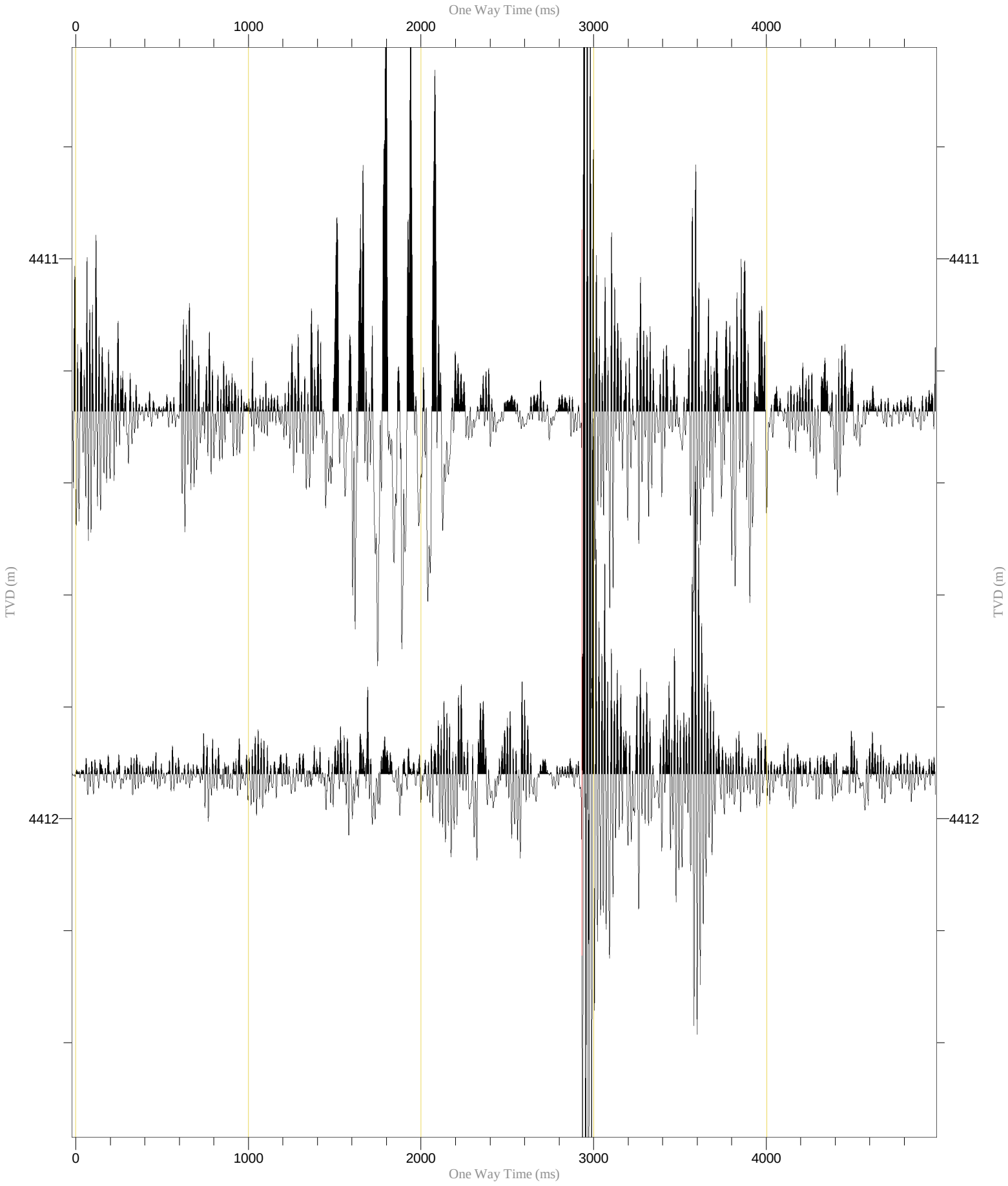
Time Depth Plot



Velocity Plot



Raw Stack (Z)	Normalization Trace by Trace (250%) Polarity Normal One Way Time (ms) Scaling 3.5 cm/sec, 1/10	



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(Engineer)
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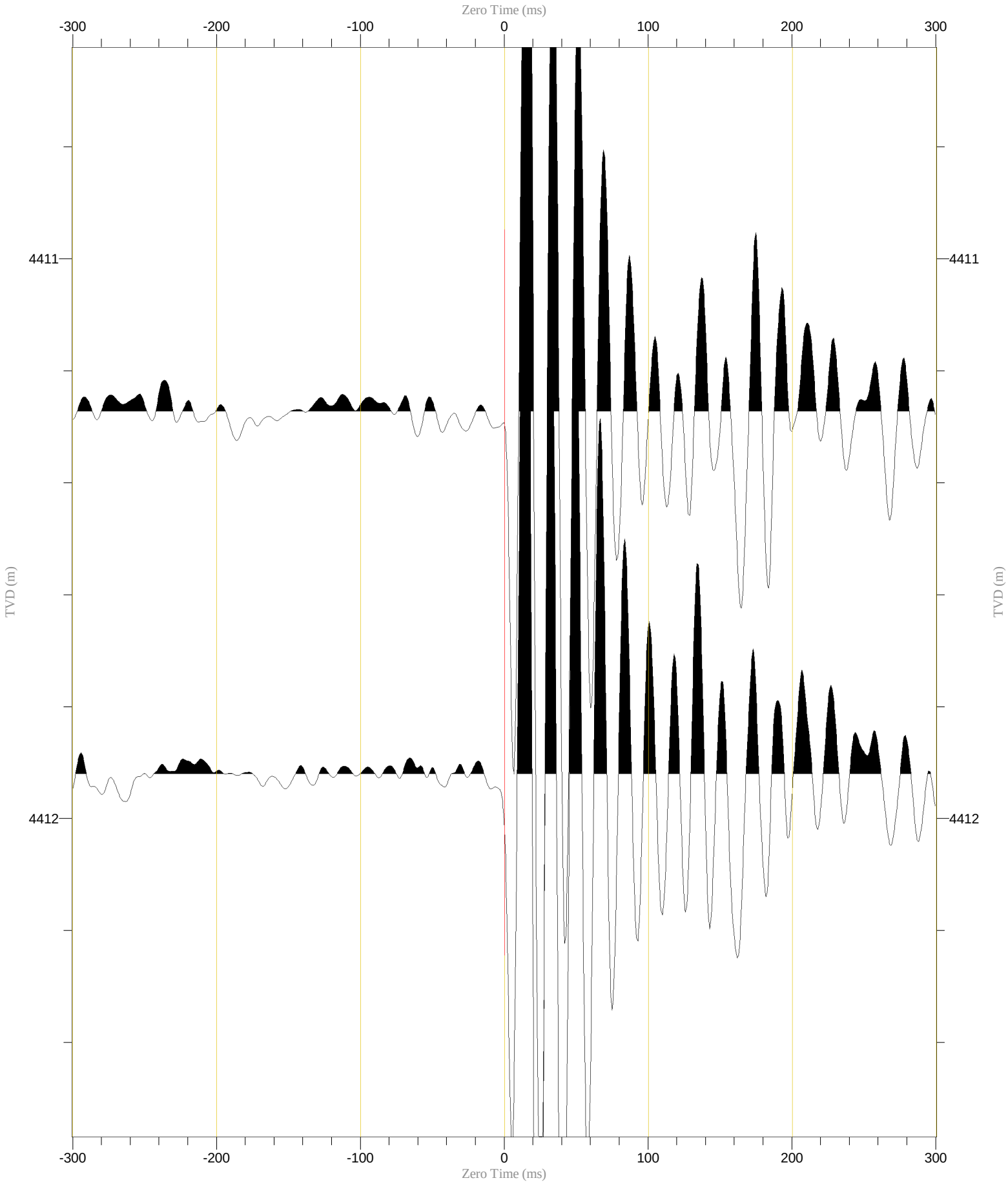
Raw Stack (Z) (Magnified)	Normalization Trace by Trace (250%) Polarity Normal Zero Time (ms) Scaling 29.5 cm/sec, 1/10	



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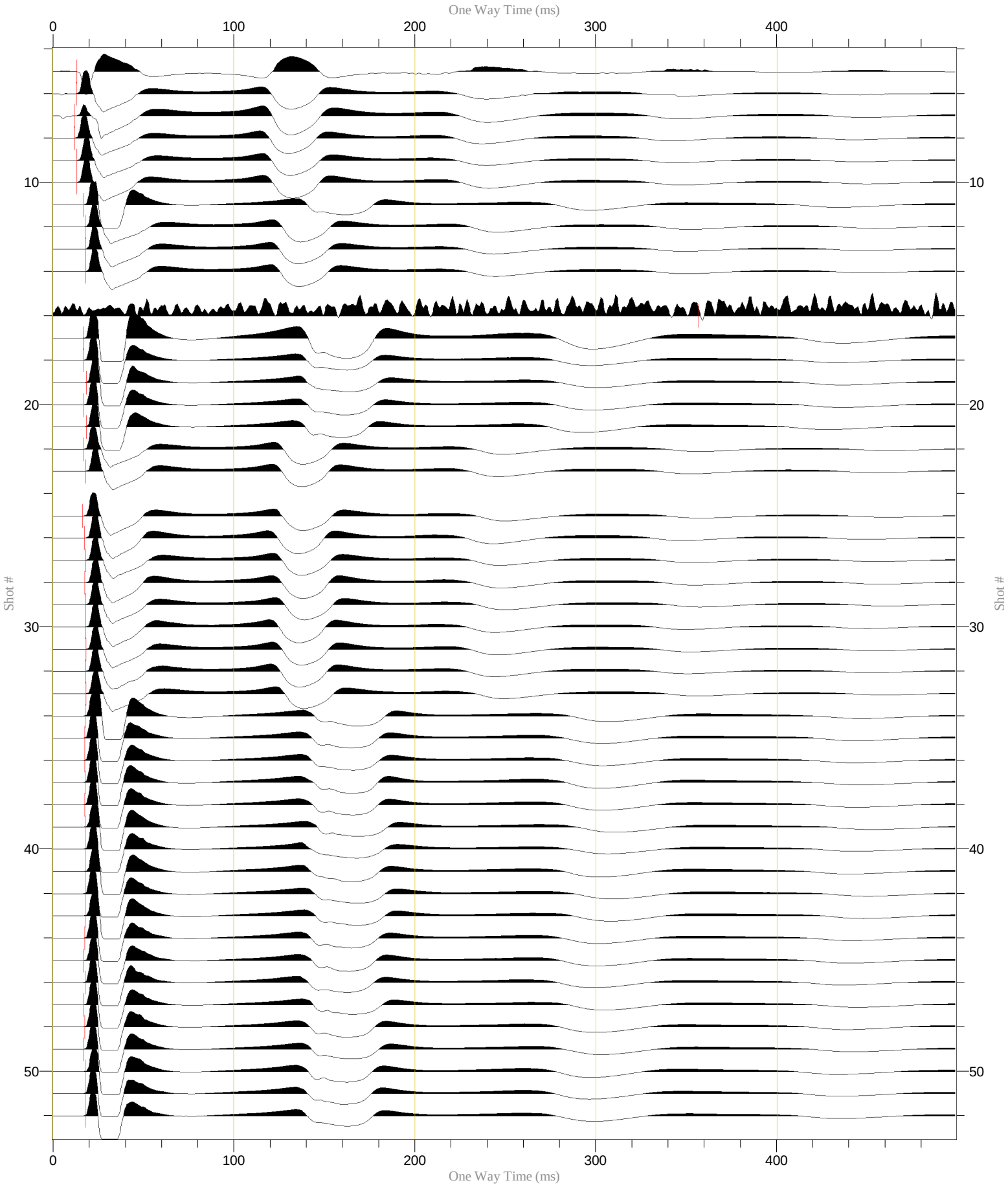
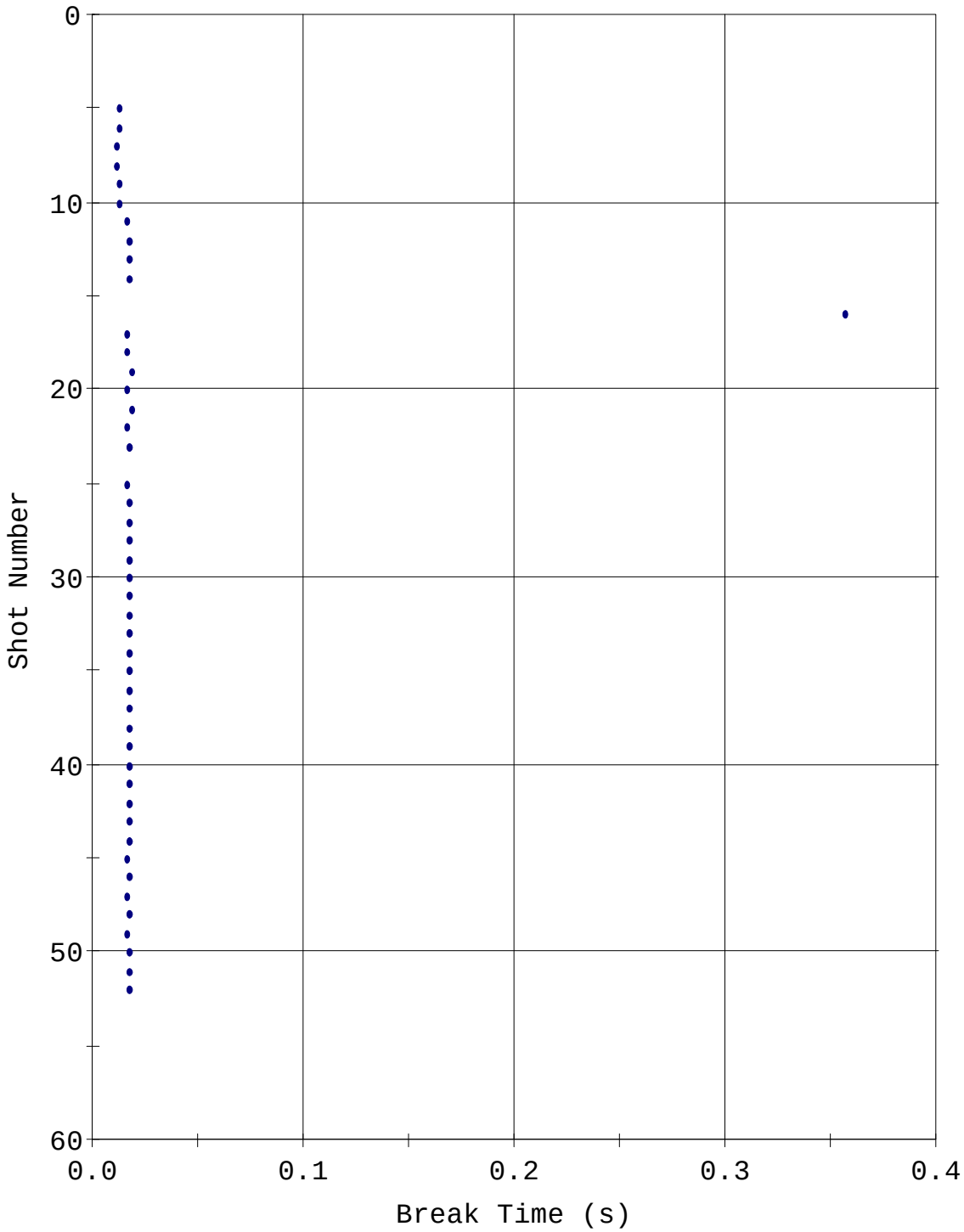
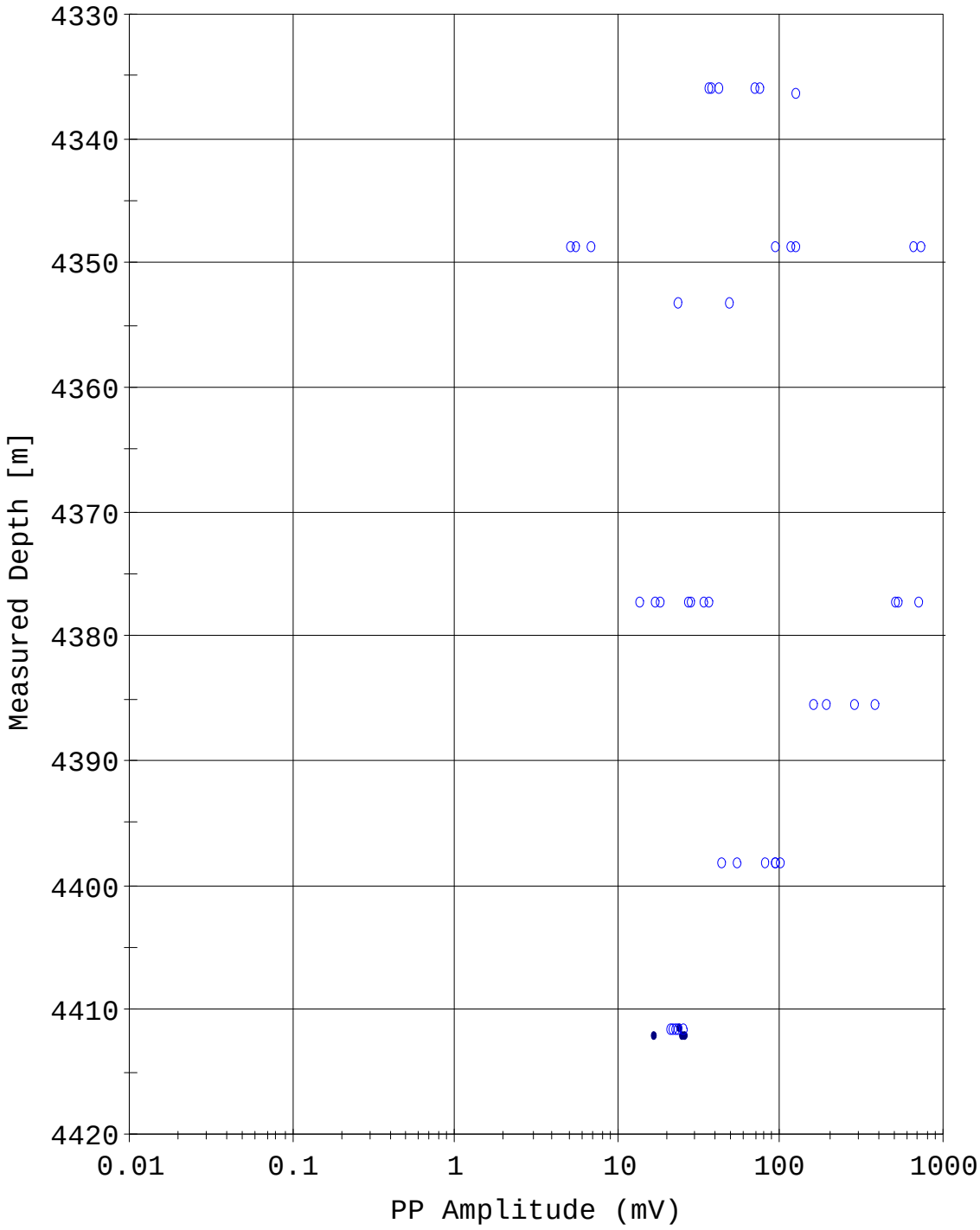
Source Sensor Signature	Normalization Trace by Trace (100%) Polarity Normal One Way Time (ms) Scaling 36.95 cm/sec, 2.20/cm	



Surface Sensor QC Plot Page



Peak To Peak Plot (Z)



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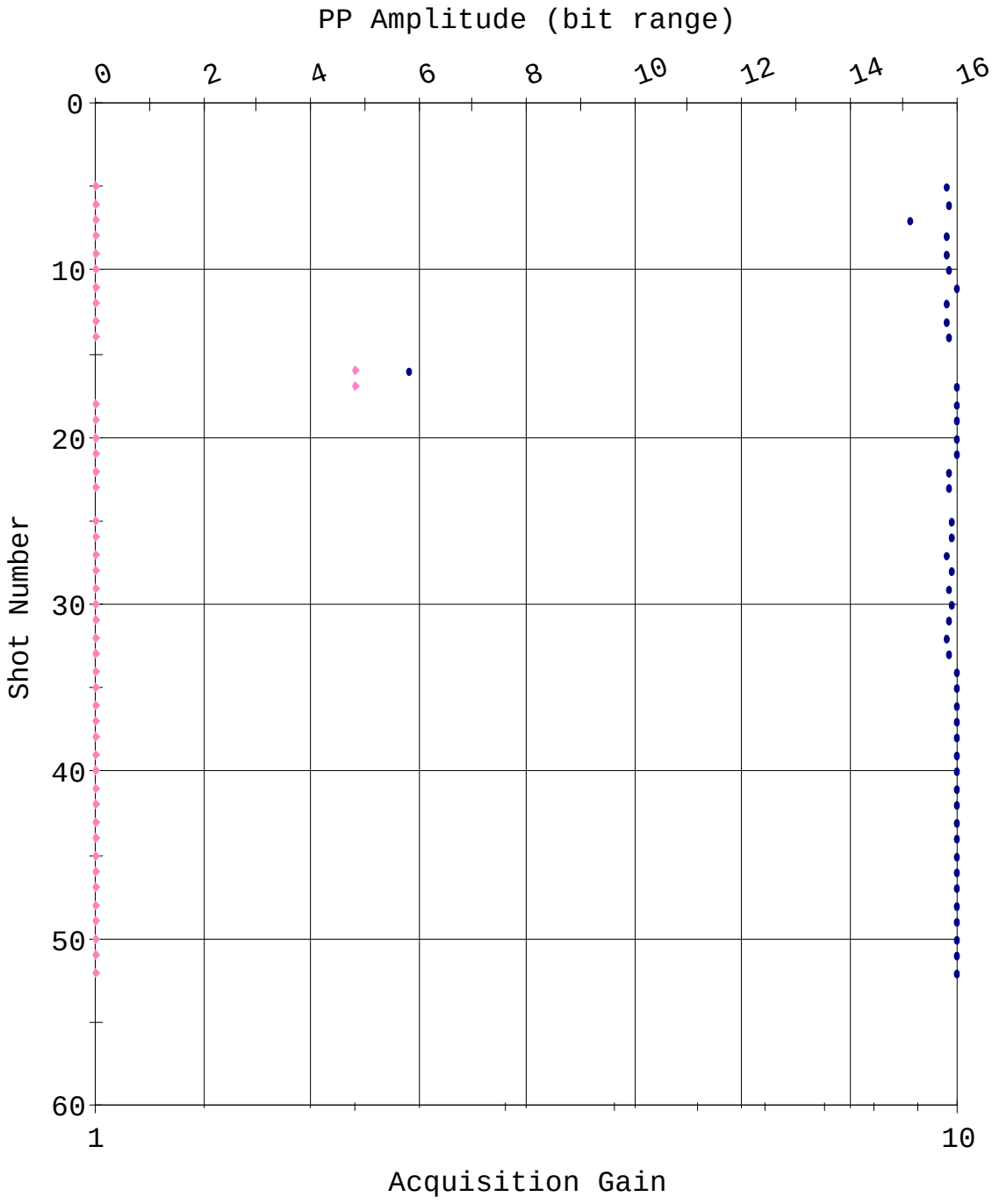
Amplitude QC Plot (Surface)



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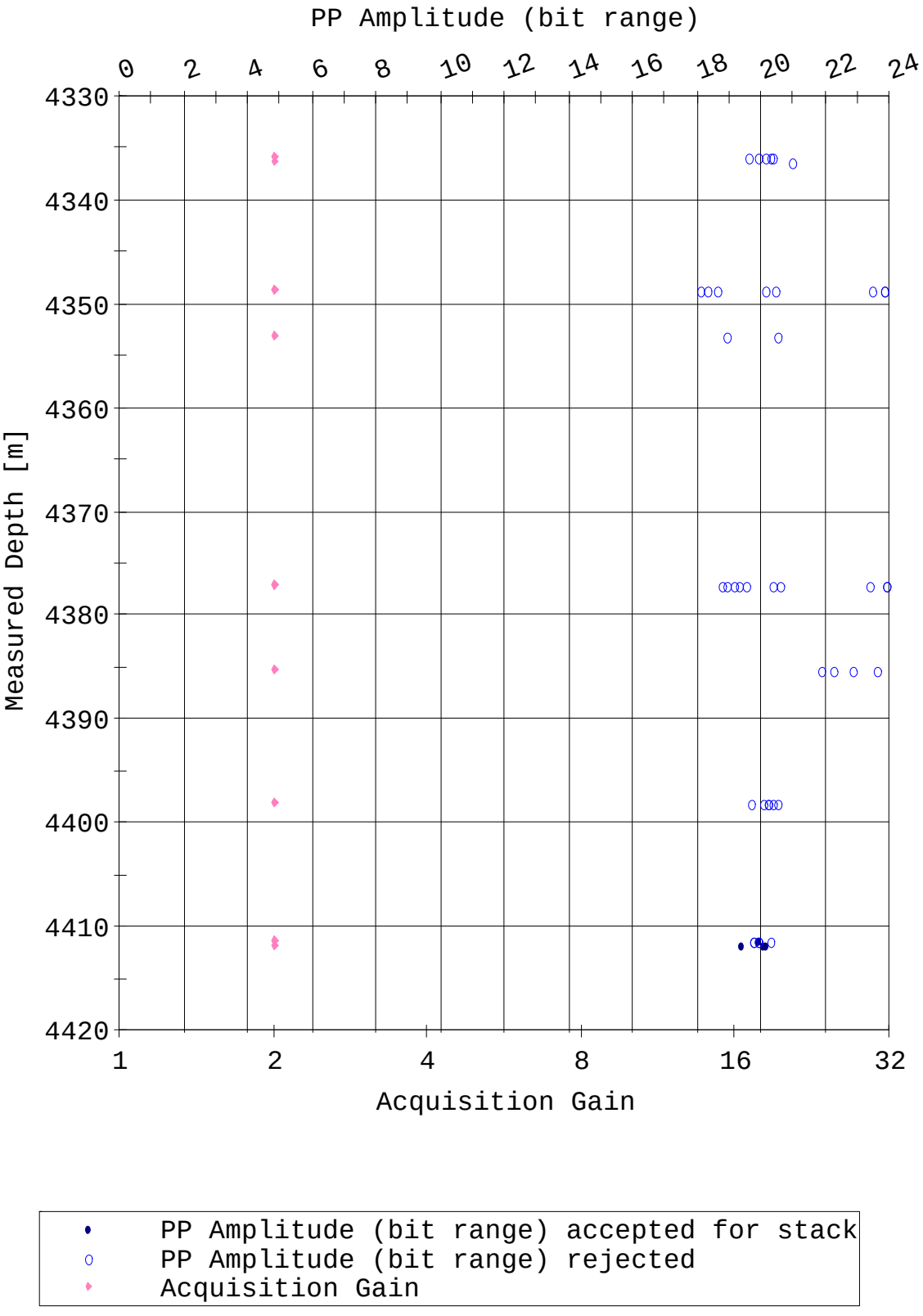
Amplitude QC Plot (Z)



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Output DLIS Files

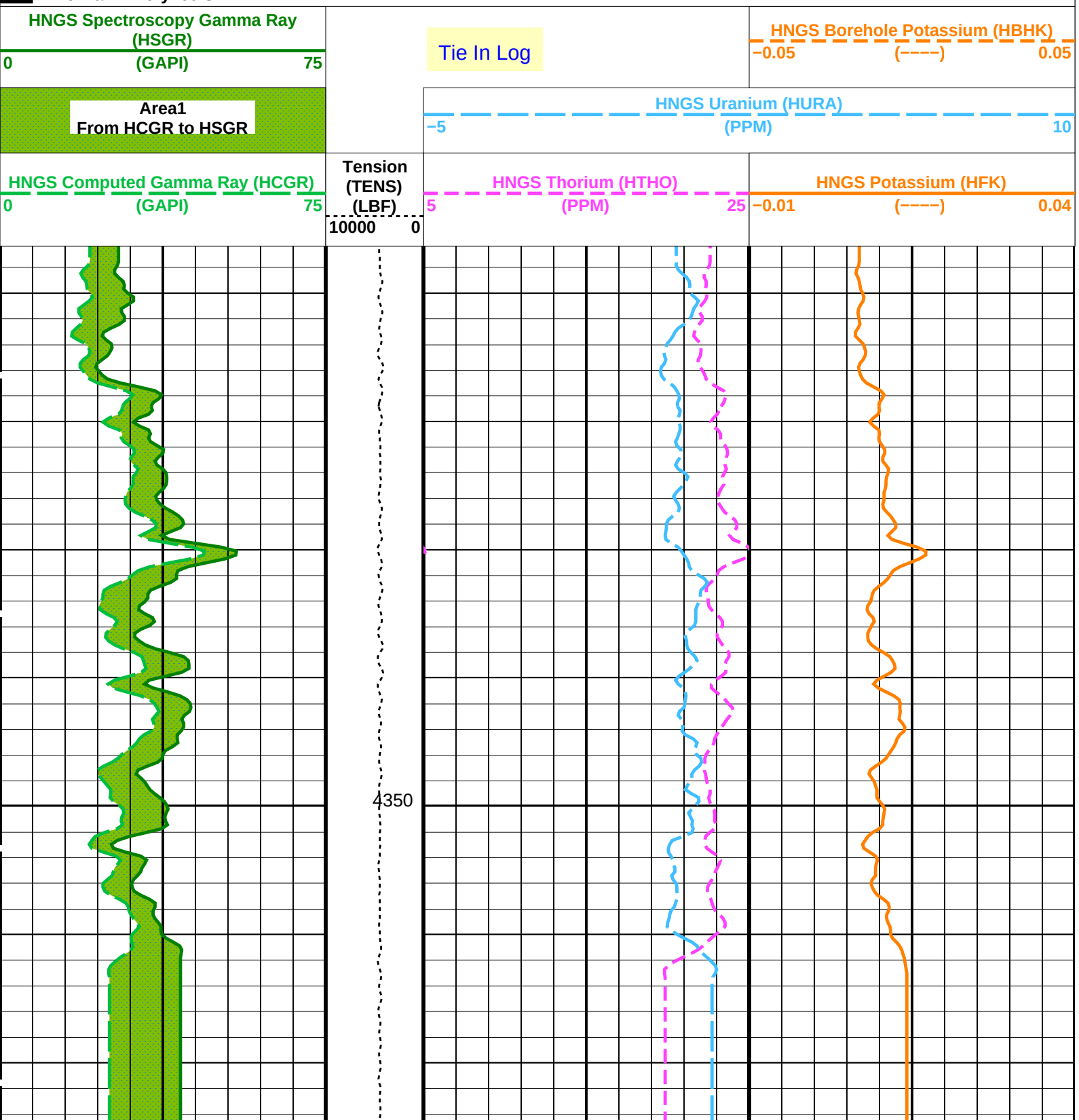
DEFAULT	VSIT_NGS_048LUP	FN:72	PRODUCER	22−Jun−2013 18:05	4364.0 M	4328.2 M
DLISDATAONLY_FMSTS	VSIT_NGS_048LUP	FN:73	PRODUCER	22−Jun−2013 18:05	4364.0 M	4328.2 M

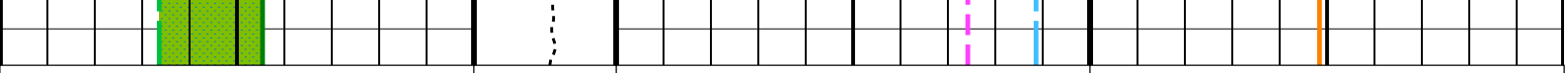
OP System Version: 19C0−187

VSIT−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

PIP SUMMARY

Time Mark Every 60 S





HNGS Computed Gamma Ray (HCGR)	Tension (TENS) (LBF)	HNGS Thorium (HTHO)	HNGS Potassium (HFK)
0 (GAPI) 75	10000 0	5 (PPM) 25	−0.01 (−−−−) 0.04

Area1
From HCGR to HSGR

HNGS Uranium (HURA)
−5 (PPM) 10

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 75

Tie In Log

HNGS Borehole Potassium (HBHK)
−0.05 (−−−−) 0.05

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.00156282	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	7.84645	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	4.12339	
	EDTC−B: Enhanced DTS Cartridge		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
	System and Miscellaneous		
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.03	G/C3

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 22−Jun−2013 18:05

OP System Version: 19C0−187

VSIT−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	VSIT_NGS_048LUP	FN:72	PRODUCER	22−Jun−2013 18:05
DLISDATAONLY_FMSD	VSIT_NGS_048LUP	FN:73	PRODUCER	22−Jun−2013 18:05

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M01							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT M0−M1 Voltage Plus − 0	0	N/A	−319.5	−319.6	−0.06070	9.681	UV
HRLT M0−M1 Voltage Plus − 1	0	N/A	−336.4	−338.8	−2.425	9.681	UV
HRLT M0−M1 Voltage Plus − 2	0	N/A	−336.7	−338.4	−1.714	9.681	UV
HRLT M0−M1 Voltage Plus − 3	0	N/A	−339.9	−341.0	−1.113	9.681	UV
HRLT M0−M1 Voltage Plus − 4	0	N/A	−327.2	−327.7	−0.4758	9.681	UV
HRLT M0−M1 Voltage Plus − 5	0	N/A	−323.2	−323.5	−0.2760	9.681	UV
HRLT M0−M1 Voltage Plus − 6	0	N/A	328.0	329.5	1.473	9.681	UV
HRLT M0−M1 Voltage Plus − 7	0	N/A	−322.7	−322.7	0	9.681	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M12							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT M1−M2 Voltage Plus − 0	0	N/A	1757	1757	−0.3696	53.42	UV
HRLT M1−M2 Voltage Plus − 1	0	N/A	1854	1865	11.04	53.42	UV
HRLT M1−M2 Voltage Plus − 2	0	N/A	1848	1856	7.536	53.42	UV
HRLT M1−M2 Voltage Plus − 3	0	N/A	1864	1868	4.795	53.42	UV
HRLT M1−M2 Voltage Plus − 4	0	N/A	1794	1795	1.535	53.42	UV
HRLT M1−M2 Voltage Plus − 5	0	N/A	1773	1773	0.4408	53.42	UV
HRLT M1−M2 Voltage Plus − 6	0	N/A	−1817	−1823	−6.657	53.42	UV
HRLT M1−M2 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M23							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT M2−M3 Voltage Plus − 0	0	N/A	1744	1742	−1.570	53.42	UV
HRLT M2−M3 Voltage Plus − 1	0	N/A	1852	1862	9.860	53.42	UV
HRLT M2−M3 Voltage Plus − 2	0	N/A	1848	1855	6.829	53.42	UV
HRLT M2−M3 Voltage Plus − 3	0	N/A	1867	1871	3.787	53.42	UV
HRLT M2−M3 Voltage Plus − 4	0	N/A	1791	1791	−0.02759	53.42	UV
HRLT M2−M3 Voltage Plus − 5	0	N/A	1770	1770	−0.4113	53.42	UV
HRLT M2−M3 Voltage Plus − 6	0	N/A	−1804	−1809	−4.846	53.42	UV
HRLT M2−M3 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V34							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT A3−A4 Voltage Plus − 0	0	N/A	68520	68530	6.273	2100	UV
HRLT A3−A4 Voltage Plus − 1	0	N/A	72600	73030	438.0	2100	UV
HRLT A3−A4 Voltage Plus − 2	0	N/A	72720	73020	299.0	2100	UV
HRLT A3−A4 Voltage Plus − 3	0	N/A	73760	73950	192.8	2100	UV
HRLT A3−A4 Voltage Plus − 4	0	N/A	70690	70750	58.16	2100	UV
HRLT A3−A4 Voltage Plus − 5	0	N/A	69900	69940	39.48	2100	UV
HRLT A3−A4 Voltage Plus − 6	0	N/A	−69680	−69950	−265.2	2100	UV
HRLT A3−A4 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V45							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT A4−A5 Voltage Plus − 0	0	N/A	68810	68810	7.523	2100	UV
HRLT A4−A5 Voltage Plus − 1	0	N/A	72970	73440	472.7	2100	UV
HRLT A4−A5 Voltage Plus − 2	0	N/A	73090	73390	301.5	2100	UV
HRLT A4−A5 Voltage Plus − 3	0	N/A	74100	74290	194.3	2100	UV
HRLT A4−A5 Voltage Plus − 4	0	N/A	70990	71050	59.49	2100	UV
HRLT A4−A5 Voltage Plus − 5	0	N/A	70190	70210	25.24	2100	UV
HRLT A4−A5 Voltage Plus − 6	0	N/A	−70060	−70330	−273.9	2100	UV
HRLT A4−A5 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V56							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT A5−A6 Voltage Plus − 0	0	N/A	68710	68710	5.008	2100	UV
HRLT A5−A6 Voltage Plus − 1	0	N/A	72700	73170	472.7	2100	UV
HRLT A5−A6 Voltage Plus − 2	0	N/A	72850	73150	304.0	2100	UV
HRLT A5−A6 Voltage Plus − 3	0	N/A	73900	74090	192.0	2100	UV
HRLT A5−A6 Voltage Plus − 4	0	N/A	70840	70910	68.19	2100	UV
HRLT A5−A6 Voltage Plus − 5	0	N/A	70060	70090	34.30	2100	UV
HRLT A5−A6 Voltage Plus − 6	0	N/A	−69770	−70030	−267.8	2100	UV
HRLT A5−A6 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT VTP							
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19							
HRLT Torpedo−M0 Voltage − 0	0	N/A	−68390	−68390	5.992	2100	UV
HRLT Torpedo−M0 Voltage − 1	0	N/A	−73050	−73490	−439.0	2100	UV
HRLT Torpedo−M0 Voltage − 2	0	N/A	−73160	−73470	−310.5	2100	UV
HRLT Torpedo−M0 Voltage − 3	0	N/A	−74210	−74390	−177.9	2100	UV

HRLT Torpedo−M0 Voltage − 4	0	N/A	−71060	−71110	−51.70	2100	UV
HRLT Torpedo−M0 Voltage − 5	0	N/A	−70230	−70250	−22.26	2100	UV
HRLT Torpedo−M0 Voltage − 6	0	N/A	70070	70320	250.7	2100	UV
HRLT Torpedo−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VBD
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19

HRLT Bridle#9−M0 Voltage − 0	0	N/A	−68370	−68380	−8.383	2100	UV
HRLT Bridle#9−M0 Voltage − 1	0	N/A	−73020	−73480	−457.3	2100	UV
HRLT Bridle#9−M0 Voltage − 2	0	N/A	−73130	−73450	−316.7	2100	UV
HRLT Bridle#9−M0 Voltage − 3	0	N/A	−74170	−74370	−204.0	2100	UV
HRLT Bridle#9−M0 Voltage − 4	0	N/A	−71040	−71110	−63.20	2100	UV
HRLT Bridle#9−M0 Voltage − 5	0	N/A	−70210	−70250	−34.00	2100	UV
HRLT Bridle#9−M0 Voltage − 6	0	N/A	70020	70300	273.8	2100	UV
HRLT Bridle#9−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT ISO
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19

HRLT Source Current Plus − 0	0	N/A	285.1	285.2	0.03937	8.520	UA
HRLT Source Current Plus − 1	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 2	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 3	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 4	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 5	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 6	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 7	0	N/A	281.1	281.1	0	8.520	UA

High Resolution Laterolog Array − B Wellsite Calibration − HRLT MV
Before: 21−Jun−2013 5:02 After: 21−Jun−2013 14:19

HRLT Vertical Voltage Pl − 0	0	N/A	−321.9	−321.9	0.03369	9.681	UV
HRLT Vertical Voltage Pl − 1	0	N/A	−331.5	−333.6	−2.111	9.681	UV
HRLT Vertical Voltage Pl − 2	0	N/A	−330.4	−332.0	−1.516	9.681	UV
HRLT Vertical Voltage Pl − 3	0	N/A	−331.7	−332.6	−0.8864	9.681	UV
HRLT Vertical Voltage Pl − 4	0	N/A	−316.3	−316.6	−0.2819	9.681	UV
HRLT Vertical Voltage Pl − 5	0	N/A	−327.4	−327.6	−0.1616	9.681	UV
HRLT Vertical Voltage Pl − 6	0	N/A	336.5	337.6	1.141	9.681	UV
HRLT Vertical Voltage Pl − 7	0	N/A	−322.7	−322.7	0	9.681	UV

Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement
Master: 23−May−2013 18:26 Before: 5−Jun−2013 5:19 After: 21−Jun−2013 15:43

SS Cs Resolution Bkg	9.000	7.935	8.049	7.894	−0.1558	1.800	%
LS Cs Resolution Bkg	9.000	8.162	8.063	8.099	0.03602	1.800	%
LSW1 Background	100.0	71.72	70.78	70.77	−0.009674	0.03000	CPS
LSW2 Background	100.0	65.95	64.89	65.91	1.019	0.03000	CPS
LSW3 Background	200.0	146.1	143.2	142.4	−0.8057	0.03000	CPS
LSW4 Background	250.0	176.3	175.6	173.4	−2.196	0.03000	CPS
LSW5 Background	600.0	404.2	405.6	401.3	−4.256	0.03000	CPS
SSW1 Background	100.0	80.22	79.61	80.05	0.4435	0.03000	CPS
SSW2 Background	200.0	141.1	142.8	140.8	−2.062	0.03000	CPS
SSW3 Background	500.0	380.9	379.7	382.0	2.379	0.03000	CPS
SSW4 Background	270.0	201.0	199.2	199.1	−0.1189	0.03000	CPS
SSW5 Background	200.0	143.8	144.9	143.3	−1.597	0.03000	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement
Master: 23−May−2013 19:07

LSW1 Aluminum	600.0	513.7	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	737.9	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	887.0	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	448.1	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	411.4	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2391	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6513	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9048	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3653	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	442.2	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement
Master: 23−May−2013 18:57

LSW1 Iron	400.0	354.2	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	602.9	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	794.0	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	408.1	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	376.8	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1748	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5423	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8249	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3342	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	391.9	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration
Before: 5−Jun−2013 5:19

HLDS Caliper Small Ring	12.00	N/A	16.02	N/A	N/A	N/A	IN

HLDS Caliper Large Ring	15.19	N/A	19.90	N/A	N/A	N/A	IN
Accelerator−Porosity Tool Wellsite Calibration − Detector Background							
Master: 24−May−2013 10:47 Before: 24−May−2013 10:54 After: 21−Jun−2013 14:24							
Near Det Bkg Cntrate	30.00	33.52	32.19	32.47	0.2844	N/A	CPS
Far Det Bkg Cntrate	30.00	33.43	32.67	32.86	0.1863	N/A	CPS
Array−1 Det Bkg Cntrate	30.00	29.51	28.88	30.28	1.405	N/A	CPS
Array−2 Det Bkg Cntrate	30.00	29.86	29.59	29.53	−0.06015	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	31.39	34.16	31.82	−2.336	N/A	CPS
Accelerator−Porosity Tool Wellsite Calibration − Calibration Ratios							
Master: 24−May−2013 10:47							
Near/Far Calibration Ratio	0.9250	0.8891	N/A	N/A	N/A	N/A	
Near/Array Calibration Ratio	1.030	1.063	N/A	N/A	N/A	N/A	
Near/Array Cal Ratio Up/Down	1.000	1.017	N/A	N/A	N/A	N/A	
Accelerator−Porosity Tool Wellsite Calibration − Tank Check							
Master: 24−May−2013 10:47							
Array−1 Standoff Porosity	11.75	10.38	N/A	N/A	N/A	N/A	PU
Array−2 Standoff Porosity	11.75	10.04	N/A	N/A	N/A	N/A	PU
Average Slowing Down Time	6.000	6.114	N/A	N/A	N/A	N/A	US
Array−1 SDT Ratio Up/Down	1.000	0.9764	N/A	N/A	N/A	N/A	
Array−2 SDT Ratio Up/Down	1.000	0.9755	N/A	N/A	N/A	N/A	
Sigma Formation	27.50	34.51	N/A	N/A	N/A	N/A	CU
Accelerator−Porosity Tool Wellsite Calibration − CCR7 signal boxes							
Master: 24−May−2013 10:47							
Near Detector Plateau Setting	1650	1732	N/A	N/A	N/A	N/A	V
Far Detector Plateau Setting	2000	2085	N/A	N/A	N/A	N/A	V
Array Detector Plateau Setting	2000	1965	N/A	N/A	N/A	N/A	V
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check							
Master: 22−May−2013 20:18 Before: 5−Jun−2013 5:31 After: 21−Jun−2013 15:44							
Na 511 Peak Loc	40.00	39.77	39.78	39.85	0.06499	1.000	
Na 511 Peak Res	15.50	15.23	15.40	12.72	−2.674	2.000	%
High Voltage	1150	1161	1143	1151	7.681	N/A	V
Na 1785 Peak Loc	142.6	143.9	143.2	141.3	−1.901	7.000	
Na 1785 Peak Res	8.500	7.558	8.088	7.759	−0.3289	2.000	%
Temperature	15.50	16.49	14.24	16.34	2.107	N/A	DEGC
Na Count Rate	45.00	14.90	15.37	14.04	−1.332	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check							
Master: 22−May−2013 20:18 Before: 5−Jun−2013 5:31 After: 21−Jun−2013 15:44							
Na 511 Peak Loc	40.00	39.67	39.68	39.51	−0.1639	1.000	
Na 511 Peak Res	15.50	15.00	15.05	15.43	0.3853	2.000	%
High Voltage	1150	1082	1074	1085	11.62	N/A	V
Na 1785 Peak Loc	142.6	141.4	140.3	143.0	2.653	7.000	
Na 1785 Peak Res	8.500	9.134	8.027	9.053	1.026	2.000	%
Temperature	15.50	16.94	14.41	18.12	3.704	N/A	DEGC
Na Count Rate	45.00	14.58	15.20	14.08	−1.128	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2							
Master: 22−May−2013 20:18 Before: 5−Jun−2013 5:31 After: 21−Jun−2013 15:44							
Coincidence Count Rate Ratio	1.000	1.024	1.014	0.9996	−0.01401	0.05000	
Hostile Natural Gamma Ray Sonde Master Calibration − Detector 1 Calibration							
Master: 22−May−2013 20:18							
Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	211.4	−−	−−	−−	−−	
Th Peak Res	7.000	6.972	−−	−−	−−	−−	%
Background Count Rate	142.5	18.97	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.011	−−	−−	−−	−−	
Hostile Natural Gamma Ray Sonde Master Calibration − Detector 2 Calibration							
Master: 22−May−2013 20:18							
Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	208.8	−−	−−	−−	−−	
Th Peak Res	7.000	6.474	−−	−−	−−	−−	%
Background Count Rate	142.5	18.20	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.001	−−	−−	−−	−−	
Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration							
Before: 21−Jun−2013 5:02							
EDTC Z−Axis Acceleration	9.810	N/A	9.801	N/A	N/A	N/A	M/S2
Enhanced DTS Cartridge Wellsite Calibration − Detector Calibration							
Before: 5−Jun−2013 5:18 After: Calibration not done							
Gamma Ray (Jig − Bkg)	156.4	N/A	156.4	N/A	N/A	0.09091	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

Accelerator−Porosity Tool − Detector Plateau Settings :

Near Detector Plateau Setting	1732 V
Far Detector Plateau Setting	2085 V
Array Detector Plateau Setting	1965 V

High Resolution Laterolog Array − B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS − B	768
Auxiliary Equipment:		
HRLT lower Housing	HRLH − B	968
HRLT Lower Cartridge	HRLC − B	974
HRLT upper Housing	HRUH − B	768
HRLT Upper Cartridge	HRUC − B	764

Hostile Litho−Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS − D	45
Hostile Litho Density High Voltage	HLDV − D	45
Gamma Source Radioactive	GSR − Z	8113
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP − C	45
Hostile Litho Density High Voltage Housi	HEH − H	47

Litho−Density Spectroscopy Cartridge − B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC − B	521
Auxiliary Equipment:		
LDSC Housing	LDSH − A	319

Accelerator−Porosity Tool / Equipment Identification

Primary Equipment:		
Accelerator−Porosity Sonde	APS − C	22
APS Minitron	MNTR − F	7341
Auxiliary Equipment:		
Accelerator−Porosity Housing	APH − AC	22
APS Calibration Water Tank	SFT − 178	1
APS Aluminum Calibrator Sleeve	SFT − 281	1

Hostile Natural Gamma Ray Cartridge − B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − B	300
Auxiliary Equipment:		
HNGC Housing	HNGH − A	115

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	194
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	205

Gamma Source Radioactive	GSR − U	616008

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value
Master		39.77
Before		39.78
After		39.85
37.50 (Minimum)	40.00 (Nominal)	43.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		15.23
Before	BEFORE−AFTER LIMIT	15.40
After		12.72
12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)

Phase	High Voltage V	Value
Master		1161
Before		1143
After		1151
900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		143.9
Before		143.2
After		141.3
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		7.558
Before		8.088
After		7.759
7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		16.49
Before		14.24
After		16.34
−28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		14.90
Before		15.37
After		14.04
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

Master: 22−May−2013 20:18 Before: 5−Jun−2013 5:31 After: 21−Jun−2013 15:44

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.67
Before		**39.68**
After		39.51
37.50 (Minimum)	40.00 (Nominal)	43.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		15.00
Before		**15.05**
After		15.43
12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)

Phase	High Voltage V	Value
Master		1082
Before		**1074**
After		1085
900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		141.4
Before		140.3
After		143.0
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		9.134
Before		8.027
After		9.053
7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		16.94
Before		14.41
After		18.12
−28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		14.58
Before		15.20
After		14.08
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

Master: 22−May−2013 20:18 Before: 5−Jun−2013 5:31 After: 21−Jun−2013 15:44

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		1.024
Before		1.014
After		0.9996
0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)

Master: 22−May−2013 20:18
Before: 5−Jun−2013 5:31
After: 21−Jun−2013 15:44

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 1 Calibration

Phase	Na 511 Peak Set Point	Value
Master		41.00
	38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)	

Phase	Th Peak Loc	Value
Master		211.4
	201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)	

Phase	Th Peak Res %	Value
Master		6.972
	5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)	

Phase	Background Count Rate CPS	Value
Master		18.97
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)	

Phase	Gain Ratio	Value
Master		1.011
	0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)	

Master: 22−May−2013 20:18

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 2 Calibration

Phase	Na 511 Peak Set Point	Value
Master		41.00
	38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)	

Phase	Th Peak Loc	Value
Master		208.8
	201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)	

Phase	Th Peak Res %	Value
Master		6.474
	5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)	

Phase	Background Count Rate CPS	Value
Master		18.20
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)	

Phase	Gain Ratio	Value
Master		1.001
	0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)	

Master: 22−May−2013 20:18

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	8305
Enhanced DTS Cartridge	EDTC − B	8317
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8303

Observer's Note (1/1)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
33.6	17:43:03	SHAK	1			shaker test on surface
33.6	17:43:24	BKGD	2			background test on surface
7.5	14:12:04	SHAK	3			surface test
7.5	14:12:25	BKGD	4			surface test
4335.7	16:52:25	SHOT	5	3	IODP_AirgunA	test at first bridge 4334m, bad shot opened to 4inch?
4335.7	16:53:31	SHOT	6	3	IODP_AirgunA	bad
4335.7	16:54:38	SHOT	7	3	IODP_AirgunA	bad
4335.7	16:55:52	SHOT	8	3	IODP_AirgunA	bad
4335.7	16:56:13	SHOT	9	3	IODP_AirgunA	bad
4336.2	17:02:43	SHOT	10	4	IODP_AirgunA	bad
4385.2	17:32:18	SHOT	11	5	IODP_AirgunA	caliper at 22, bad
4385.2	17:33:36	SHOT	12	5	IODP_AirgunA	caliper at 22, bad
4385.2	17:34:25	SHOT	13	5	IODP_AirgunA	caliper at 22, bad
4385.2	17:34:53	SHOT	14	5	IODP_AirgunA	caliper at 22inch bad shot
4385.2	17:35:31	SHAK	15			shaker bad
4398.0	18:30:01	SHOT	16	7	IODP_AirgunA	noisy
4398.0	18:30:30	SHOT	17	7	IODP_AirgunA	noisy
4398.0	18:31:12	SHOT	18	7	IODP_AirgunA	noisy
4398.0	18:31:30	SHOT	19	7	IODP_AirgunA	noisy
4398.0	18:32:41	SHOT	20	7	IODP_AirgunA	noisy
4398.0	18:33:03	SHOT	21	7	IODP_AirgunA	noisy
4353.1	18:54:48	SHOT	22	8	IODP_AirgunA	noisy
4353.1	18:56:37	SHOT	23	8	IODP_AirgunA	noisy
4353.1	18:57:06	SHAK	24			bad shaker
4348.6	19:06:54	SHOT	25	9	IODP_AirgunA	noisy
4348.6	19:07:12	SHOT	26	9	IODP_AirgunA	noisy
4348.6	19:07:34	SHOT	27	9	IODP_AirgunA	best so far
4348.6	19:09:31	SHOT	28	9	IODP_AirgunA	bad
4348.6	19:11:05	SHOT	29	9	IODP_AirgunA	bad early
4348.6	19:11:25	SHOT	30	9	IODP_AirgunA	bad
4348.6	19:11:49	SHOT	31	9	IODP_AirgunA	bad
4348.6	19:12:08	SHOT	32	9	IODP_AirgunA	bad
4348.6	19:13:28	SHOT	33	9	IODP_AirgunA	bad
4411.9	20:22:26	SHOT	34	10	IODP_AirgunA	Z ok bad pick on transit time
4411.9	20:22:44	SHOT	35	10	IODP_AirgunA	Z ok with good transit time
4411.9	20:23:17	SHOT	36	10	IODP_AirgunA	Z ok but transit time wrong
4411.3	20:30:27	SHOT	37	11	IODP_AirgunA	z ok but transit time wrong
4411.3	20:31:14	SHOT	38	11	IODP_AirgunA	bad
4411.3	20:32:29	SHOT	39	11	IODP_AirgunA	noisy
4411.3	20:33:37	SHOT	40	11	IODP_AirgunA	bad
4411.3	20:34:12	SHOT	41	11	IODP_AirgunA	bad
4411.3	20:36:36	SHOT	42	11	IODP_AirgunA	early noise
4377.0	20:59:46	SHOT	43	12	IODP_AirgunA	bad
4377.0	21:00:04	SHOT	44	12	IODP_AirgunA	Y good, x,z bad
4377.0	21:00:23	SHOT	45	12	IODP_AirgunA	bad
4377.0	21:00:41	SHOT	46	12	IODP_AirgunA	bad
4377.0	21:01:42	SHOT	47	12	IODP_AirgunA	bad
4377.0	21:02:00	SHOT	48	12	IODP_AirgunA	bad
4377.0	21:02:50	SHOT	49	12	IODP_AirgunA	bad
4377.0	21:03:08	SHOT	50	12	IODP_AirgunA	bad
4377.0	21:03:26	SHOT	51	12	IODP_AirgunA	bad
4377.0	21:03:44	SHOT	52	12	IODP_AirgunA	bad