Q-Borehole Survey Report

Schlumberger

Survey type:

Company:	Lamont Doherty Earth Observatory
Well:	Expedition 341, Site U1421A
Field:	Southern Alaska Margin Tectonics
Country:	USA
Run:	1
Date:	27-Jul-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 27July 2013.

Survey Results: Zero Offset VSP

A successful Zero Offset VSP was performed resulting in 6 stations of stacked waveforms. Some noise was observed in the stacked waveforms but over 60 shots were required to obtain these.
Difficulty in obtaining a good geophone clamp/anchor to the borehole wall was evident in the shots closest to the seafloor however the bottom 5 stations were of generally very good quality.

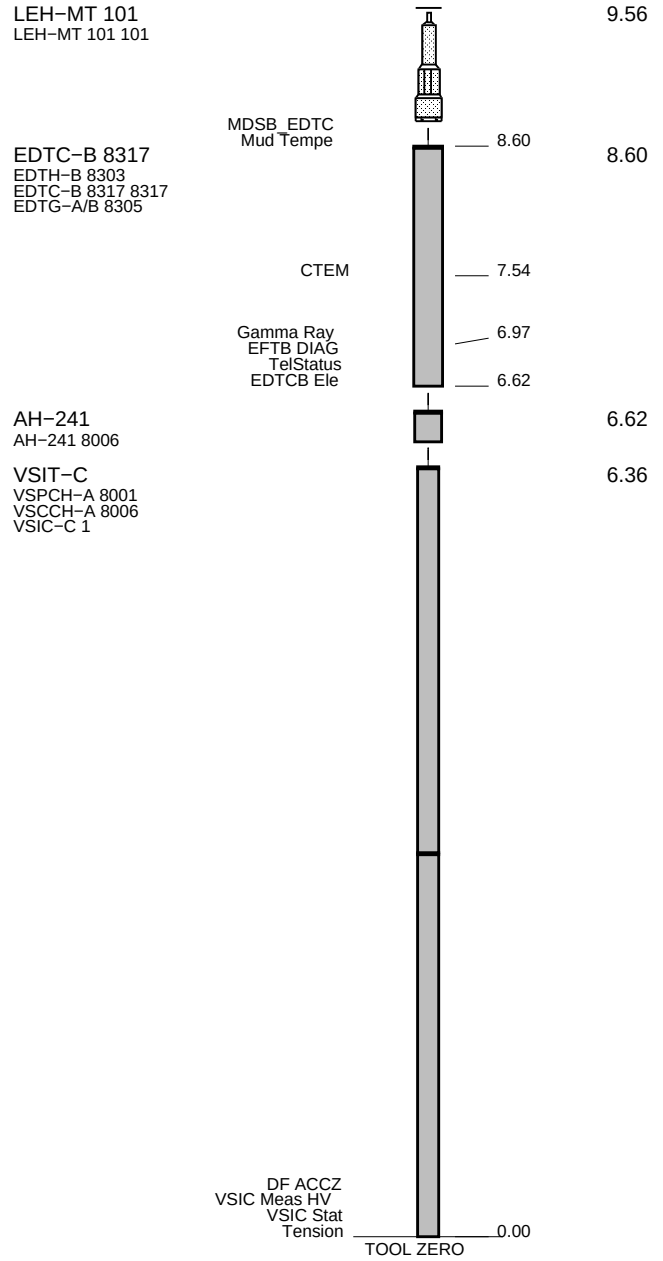
Recommendations and Conclusion

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

Production String	(in) OD	(in) ID	(M) MD	Well Schematic	(M) MD	(in) OD	(in) ID	Casing String
Kelly Bushing Elevation			0					
Derrick Floor Elevation			0					
Mean Sea Level			11					
						4.1		
					729.7	3.80		Sea Floor
					826.3	11.43		Open Hole
					1432			Total Depth

SURFACE EQUIPMENT
SIMU−WSAM
WITM (EDTS)−A 1

DOWNHOLE EQUIPMENT



MAXIMUM STRING DIAMETER 3.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Well Information

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

Elevation Information

Water Depth	718.5 mbsl
Water Temperature	-
Water Salinity	-
Weathered Zone Depth	-
Elevation Depth	-

Sea Condition

Sea Condition	1m p-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	WSAM/WSI
Combined Tool	LEHMT/EDTC/VSI-P
Number of Shuttles	1
Nominal Receiver Spacing	
Gimbaled (Y/N)	
Downhole Geophone Type	
Sensitivity	
Natural Frequency	
Damping Factor	
DC Resistance	
Receiver #1	
Receiver #2	
Receiver #3	
Receiver #4	
Receiver #5	
Receiver #6	
Receiver #7	
Receiver #8	

VSP

General Information

Survey Type	Zero 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	861.0 m
Bottom of Survey	1421.0 m
Number of Shots	60
Number of Downhole Traces	60
Number of Downhole Traces used for Processing	17

Stack Summary Listing (1/1) from VSI_001_IODP Dual Airgun_geo_wavefield_z.ldf

Stack Number	Measured Depth [m]	True Vertical Depth [m]	Measured Time [s]	One-way Vertical Time [s]	Two-way Vertical Time [s]	Interval Velocity [m/s]	Average Velocity [m/s]	RMS Velocity [m/s]
	0	0	0	0	0			
						1577.0		
9	1018.7	1007.7	0.6365	0.6390	1.2780		1577.0	1577.0
						2179.3		
6	1201.0	1190.0	0.7200	0.7227	1.4453		1646.7	1658.0
						2019.0		
5	1265.0	1254.0	0.7516	0.7544	1.5087		1662.4	1674.7
						2419.8		
4	1304.9	1293.9	0.7681	0.7708	1.5417		1678.6	1694.1
						2205.7		
3	1371.0	1360.0	0.7980	0.8008	1.6016		1698.3	1716.0
						2514.8		
2	1421.0	1410.0	0.8179	0.8207	1.6414		1718.1	1739.7

Shot Summary Listing (1/1)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
1018.7	1	9	-19.6	13.8	858.6	62
1201.0	1	6	-4.1	14.3	873.1	37
1265.0	1	5	-6.3	13.7	942.3	32, 33, 34, 35, 36
1304.9	1	4	-4.7	13.0	806.0	28
1371.0	1	3	11.8	12.0	912.0	20, 21, 22, 23, 24
1421.0	1	2	-58.6	12.0	949.3	14, 16, 18, 19

Observer's Note (1/2)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
45.3	17:28:10	ENLO	1			test going in hole
45.3	17:28:34	ENHI	2			
45.3	17:28:43	ETHD	3			
45.3	17:28:58	DRNG	4			
45.3	17:29:12	GA02	5			
45.3	17:29:22	GA04	6			
45.3	17:29:32	GA08	7			
45.3	17:29:42	GA16	8			
45.3	17:29:52	GA32	9			
45.3	17:30:06	XTLK	10			
45.3	17:30:25	XTLK	11			
45.3	17:30:43	XTLK	12			
45.3	17:31:02	EIMP	13			end test
1421.0	19:56:02	SHOT	14	2	IODP Dual Airgun	good
1421.0	19:56:23	SHOT	15	2	IODP Dual Airgun	good
1421.0	19:58:16	SHOT	16	2	IODP Dual Airgun	good
1421.0	20:00:22	SHAK	17			bad shaker
1421.0	20:00:54	SHOT	18	2	IODP Dual Airgun	good
1421.0	20:02:10	SHOT	19	2	IODP Dual Airgun	good
1371.0	20:24:35	SHOT	20	3	IODP Dual Airgun	good
1371.0	20:24:53	SHOT	21	3	IODP Dual Airgun	good
1371.0	20:25:11	SHOT	22	3	IODP Dual Airgun	good
1371.0	20:25:29	SHOT	23	3	IODP Dual Airgun	good
1371.0	20:25:47	SHOT	24	3	IODP Dual Airgun	good
1304.9	20:36:28	SHOT	25	4	IODP Dual Airgun	too low amplitude, time is right
1304.9	20:37:16	SHOT	26	4	IODP Dual Airgun	ok
1304.9	20:38:22	SHOT	27	4	IODP Dual Airgun	a little noise
1304.9	20:38:40	SHOT	28	4	IODP Dual Airgun	ok
1304.9	20:38:58	SHOT	29	4	IODP Dual Airgun	ok, needs time pick
1304.9	20:39:49	SHOT	30	4	IODP Dual Airgun	bad

1304.9	20:40:07	SHOT	31	4	IODP Dual Airgun	bad
1265.0	20:50:17	SHOT	32	5	IODP Dual Airgun	good
1265.0	20:50:39	SHOT	33	5	IODP Dual Airgun	good
1265.0	20:50:57	SHOT	34	5	IODP Dual Airgun	good
1265.0	20:51:15	SHOT	35	5	IODP Dual Airgun	good
1265.0	20:51:33	SHOT	36	5	IODP Dual Airgun	good
1201.0	21:06:47	SHOT	37	6	IODP Dual Airgun	ok
1201.0	21:07:05	SHOT	38	6	IODP Dual Airgun	bad
1201.0	21:07:24	SHOT	39	6	IODP Dual Airgun	bad
1201.0	21:07:42	SHOT	40	6	IODP Dual Airgun	bad
1201.0	21:08:00	SHOT	41	6	IODP Dual Airgun	bad
1201.0	21:08:28	SHOT	42	6	IODP Dual Airgun	bad time
1201.0	21:08:46	SHOT	43	6	IODP Dual Airgun	bad
1201.0	21:09:04	SHOT	44	6	IODP Dual Airgun	bad
1165.0	21:18:14	SHOT	45	7	IODP Dual Airgun	bad
1165.0	21:18:32	SHOT	46	7	IODP Dual Airgun	bad
1165.0	21:18:50	SHOT	47	7	IODP Dual Airgun	bad
1165.0	21:19:08	SHOT	48	7	IODP Dual Airgun	bad
1165.0	21:19:44	SHOT	49	7	IODP Dual Airgun	bad
1114.9	21:35:57	SHOT	50	8	IODP Dual Airgun	not hooked up no fire, no shot
1114.9	21:36:27	SHOT	51	8	IODP Dual Airgun	no fire
1114.9	21:37:17	SHOT	52	8	IODP Dual Airgun	no fire

1114.9	21:37:37	SHOT	53	8	IODP Dual Airgun	bad
1114.9	21:37:56	SHOT	54	8	IODP Dual Airgun	bad
1114.9	21:38:39	SHOT	55	8	IODP Dual Airgun	bad
1114.9	21:38:58	SHOT	56	8	IODP Dual Airgun	bad
1018.7	21:52:37	SHOT	57	9	IODP Dual Airgun	bad
1018.7	21:53:08	SHOT	58	9	IODP Dual Airgun	bad
1018.7	21:53:26	SHOT	59	9	IODP Dual Airgun	bad

Observer's Note (2/2)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
1018.7	21:53:44	SHOT	60	9	IODP Dual Airgun	bad
1018.7	21:54:02	SHOT	61	9	IODP Dual Airgun	bad
1018.7	21:54:49	SHOT	62	9	IODP Dual Airgun	ok
1018.7	21:55:12	SHOT	63	9	IODP Dual Airgun	bad
1018.7	21:58:11	SHOT	64	9	IODP Dual Airgun	weak
1018.7	21:58:33	SHOT	65	9	IODP Dual Airgun	bad
861.0	22:12:49	SHOT	66	10	IODP Dual Airgun	bad
861.0	22:13:15	SHOT	67	10	IODP Dual Airgun	bad
861.0	22:13:33	SHOT	68	10	IODP Dual Airgun	bad
861.0	22:14:12	SHOT	69	10	IODP Dual Airgun	bad
861.0	22:14:30	SHOT	70	10	IODP Dual Airgun	bad
861.0	22:15:19	SHOT	71	10	IODP Dual Airgun	bad
861.0	22:15:44	SHOT	72	10	IODP Dual Airgun	bad
861.0	22:16:05	SHOT	73	10	IODP Dual	bad

					Airgun	
861.0	22:16:23	SHOT	74	10	IODP Dual Airgun	bad

Source Configuration (Air Gun)

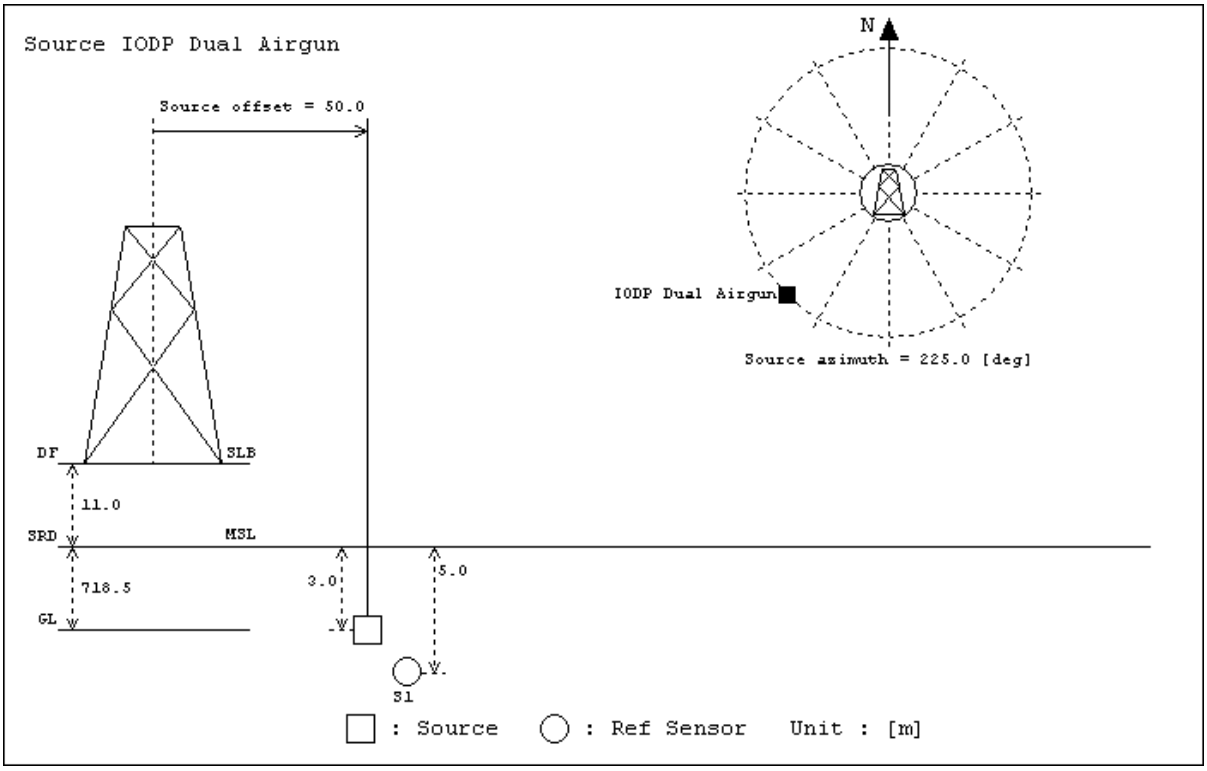
Source Location (Rig, Boat, Pit, Borehole)	Crane
Source Group ID (A, B, C, …)	A
Source Offset (for fixed offset)	50m
Source Azimuth (for fixed offset)	225
Source Depth from Surface	3
Source Depth from Logging Zero	14

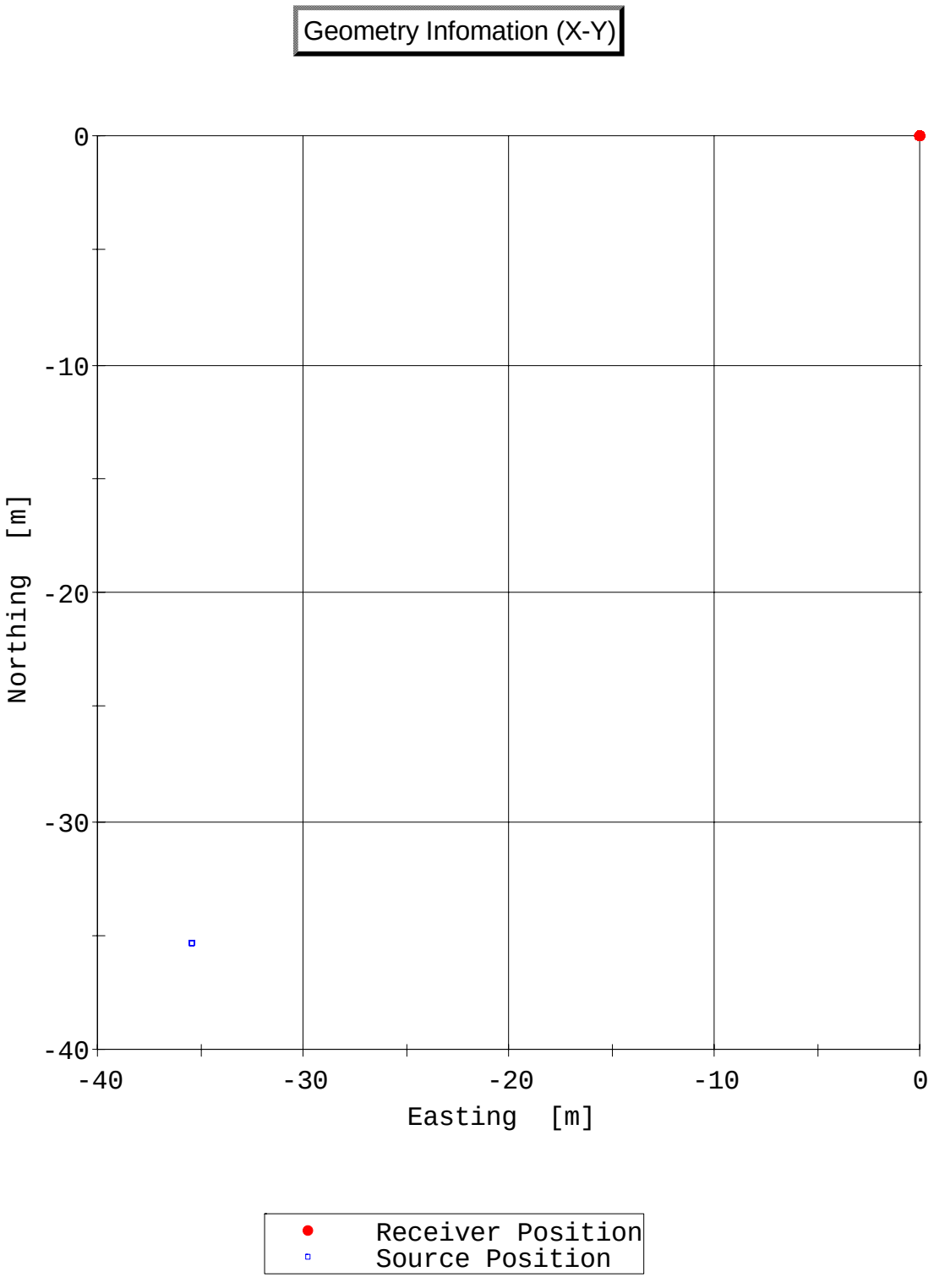
Gun Controller Type	WSI
Gun Controller Model Name	
Gun Controller Serial Number	854
Gun Type	IODP Dual Air Gun
Gun Serial Number(s)	-
Gun Configuration (3 Gun Cluster, Gun Array, etc.)	2 gun array
Gun Chamber Volumes	
Gun Pit/Borehole Information	
Compressor Type	
Compressor Flow Rate	
Air Regulator Pressure	2000 psi

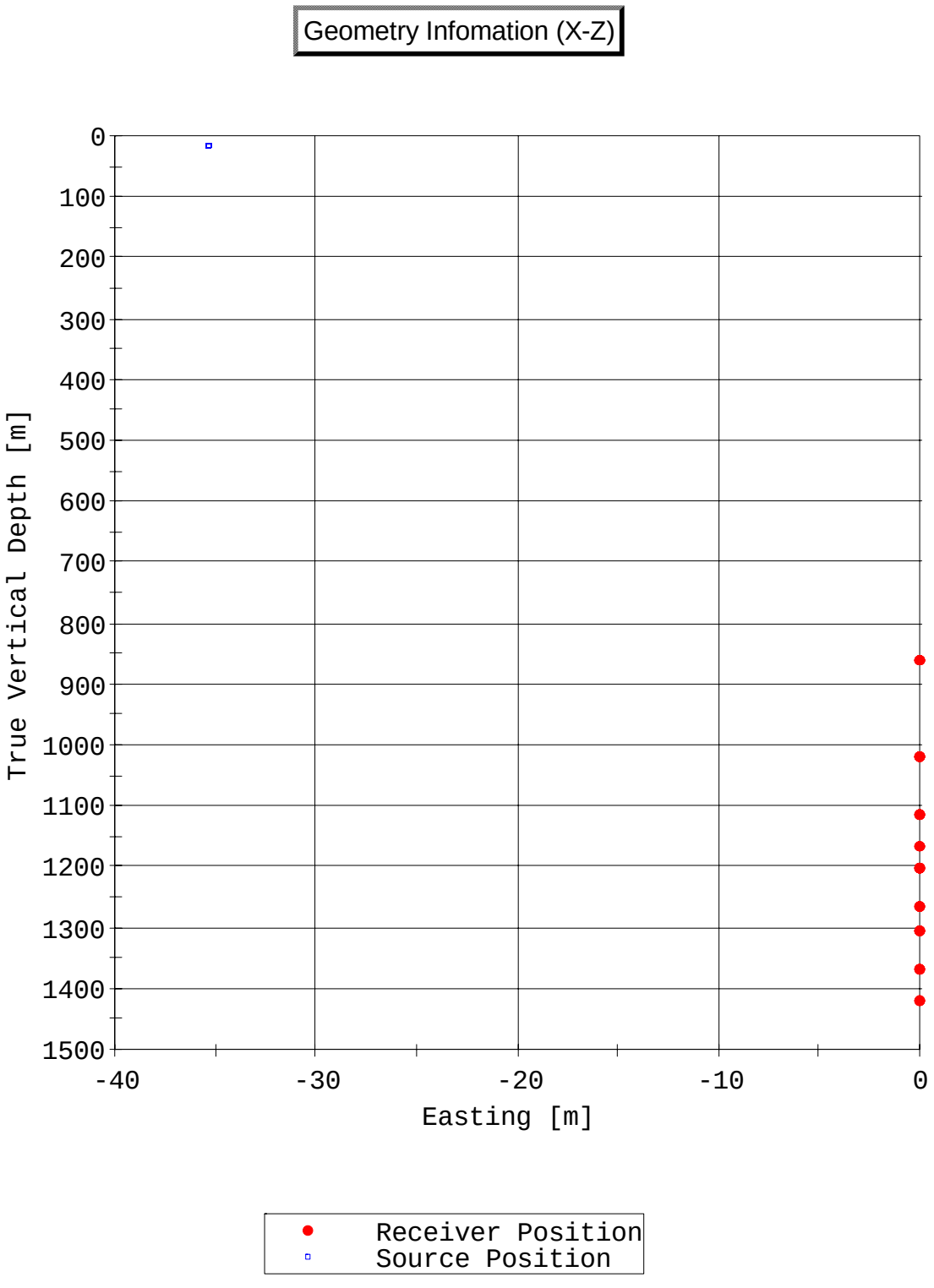
Surface Sensor Configuration

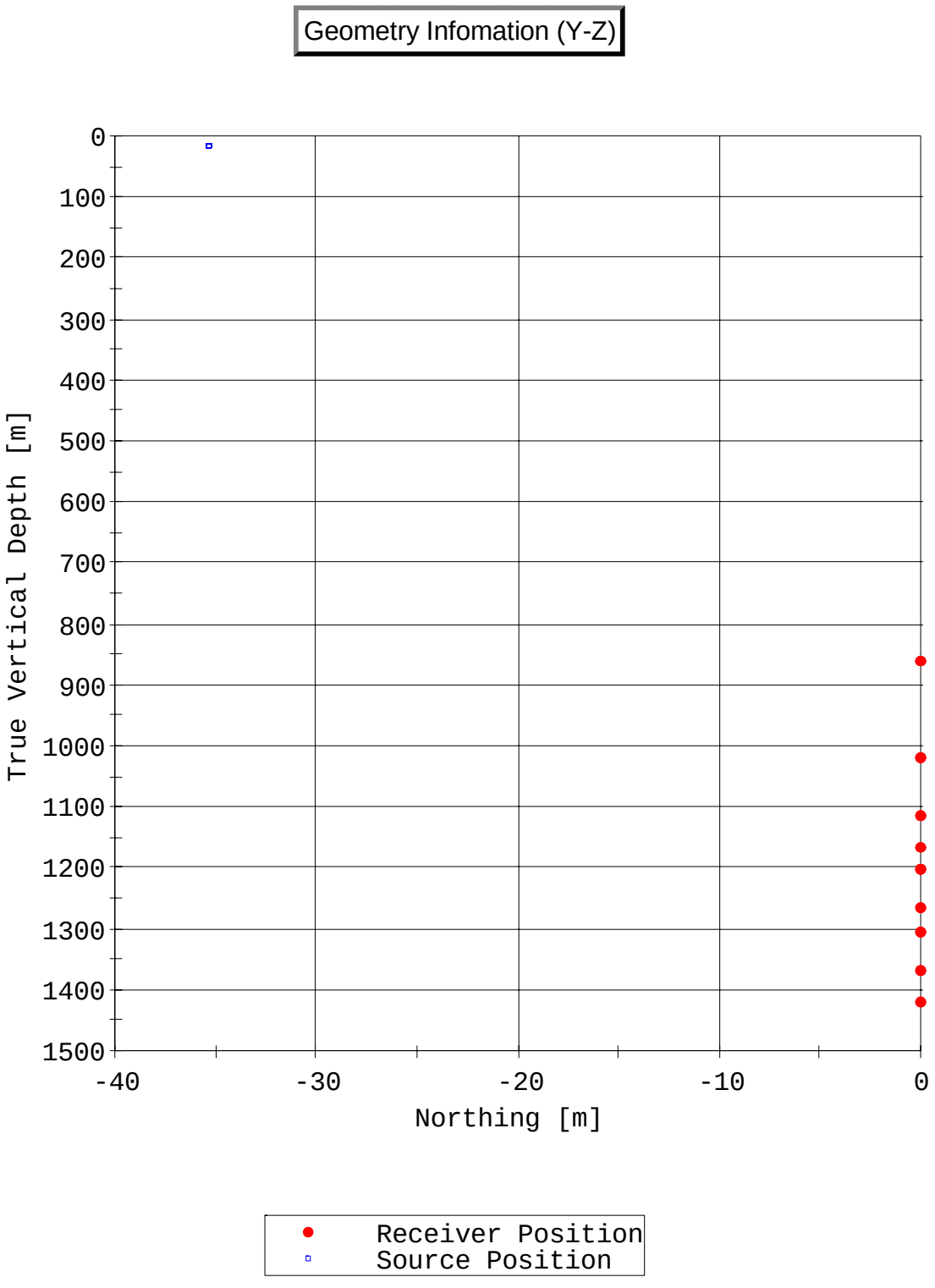
Number of Surface Reference Sensors	1
Surface Recording Length	-
Surface Sampling Rate	-
Sensor Type (S1)	-
Sensor Type (S2)	Hydraphone -
Sensor Type (S3)	
Sensor Depth from Surface (S1)	
Sensor Depth from Surface (S2)	5m
Sensor Depth from Surface (S3)	
Sensor Depth from Logging Zero (S1)	
Sensor Depth from Logging Zero (S2)	16m
Sensor Depth from Logging Zero (S2)	
Sensor Offset from Source (S1)	50m
Sensor Offset from Source (S2)	
Sensor Offset from Source (S3)	

Source Geometry Sketch

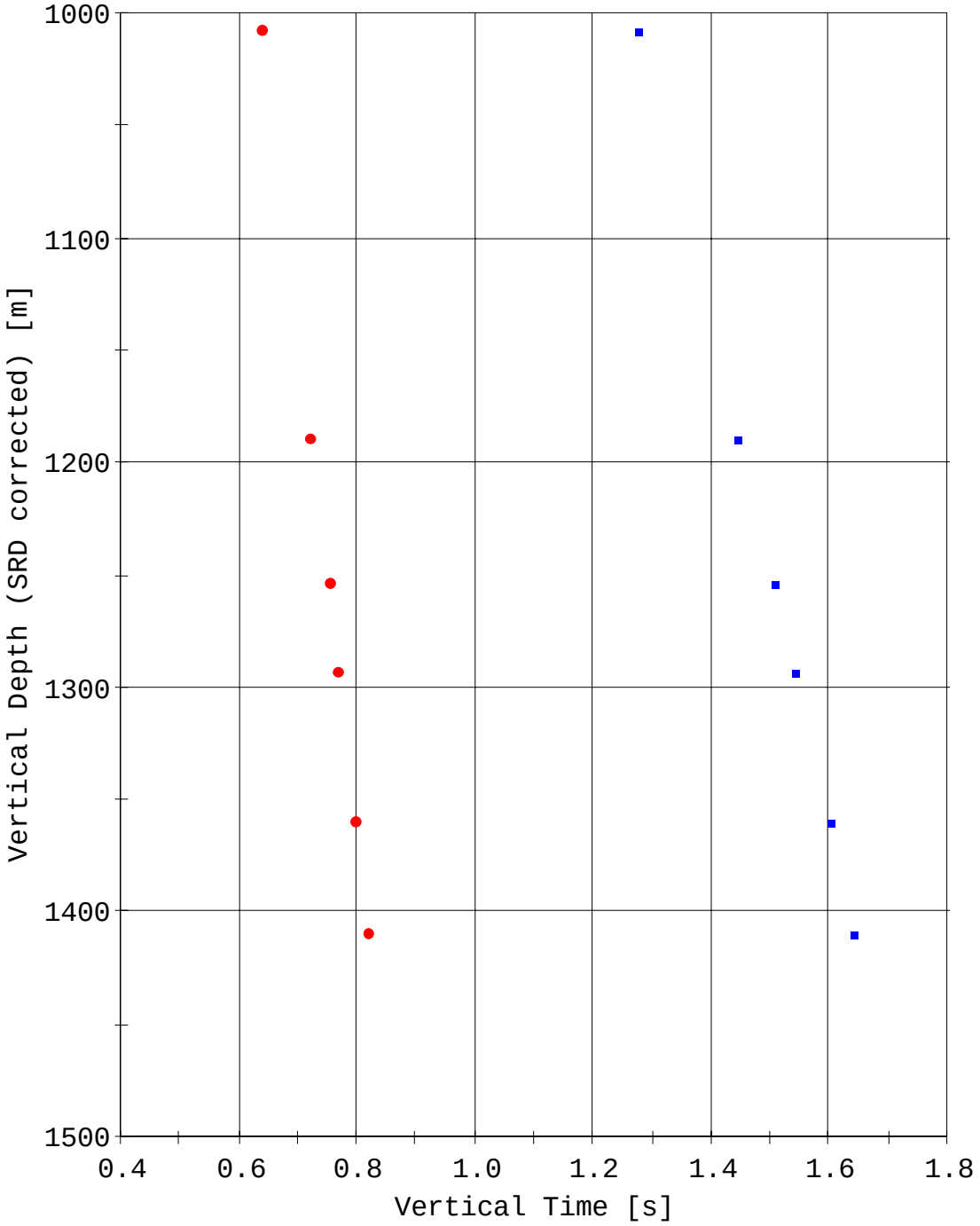



Geometry Infomation (X-Y)
0
-10
-20
-30
-40
Northing [m]
-40
-30
-20
-10
0
Easting [m]
Receiver Position
Source Position

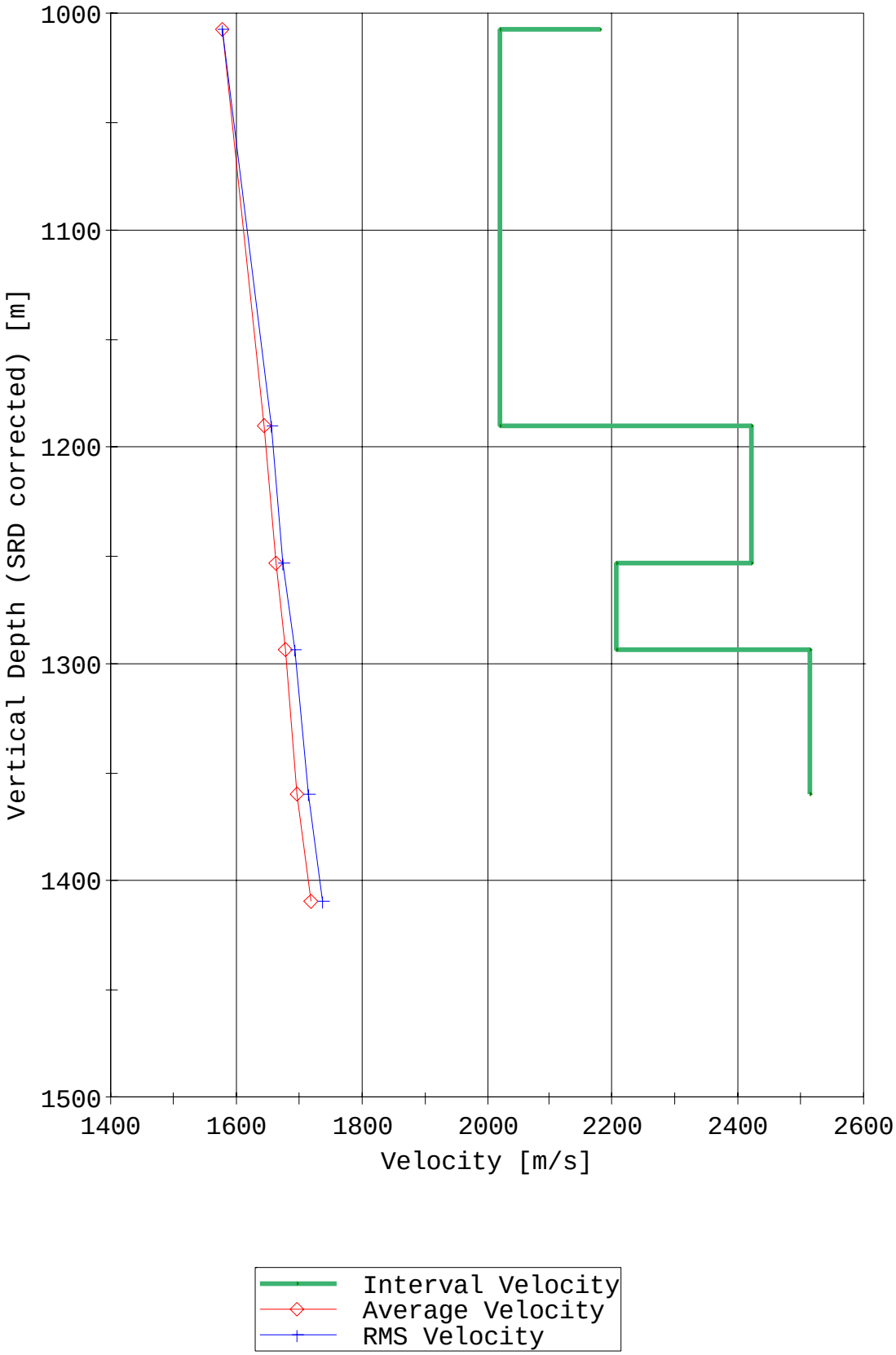

Geometry Infomation (X-Z)
True Vertical Depth [m]
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
-40
-30
-20
-10
0
Easting [m]
Receiver Position
Source Position


Geometry Infomation (Y-Z)
True Vertical Depth [m]
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
-40
-30
-20
-10
0
Northing [m]
Receiver Position
Source Position

Time Depth Plot

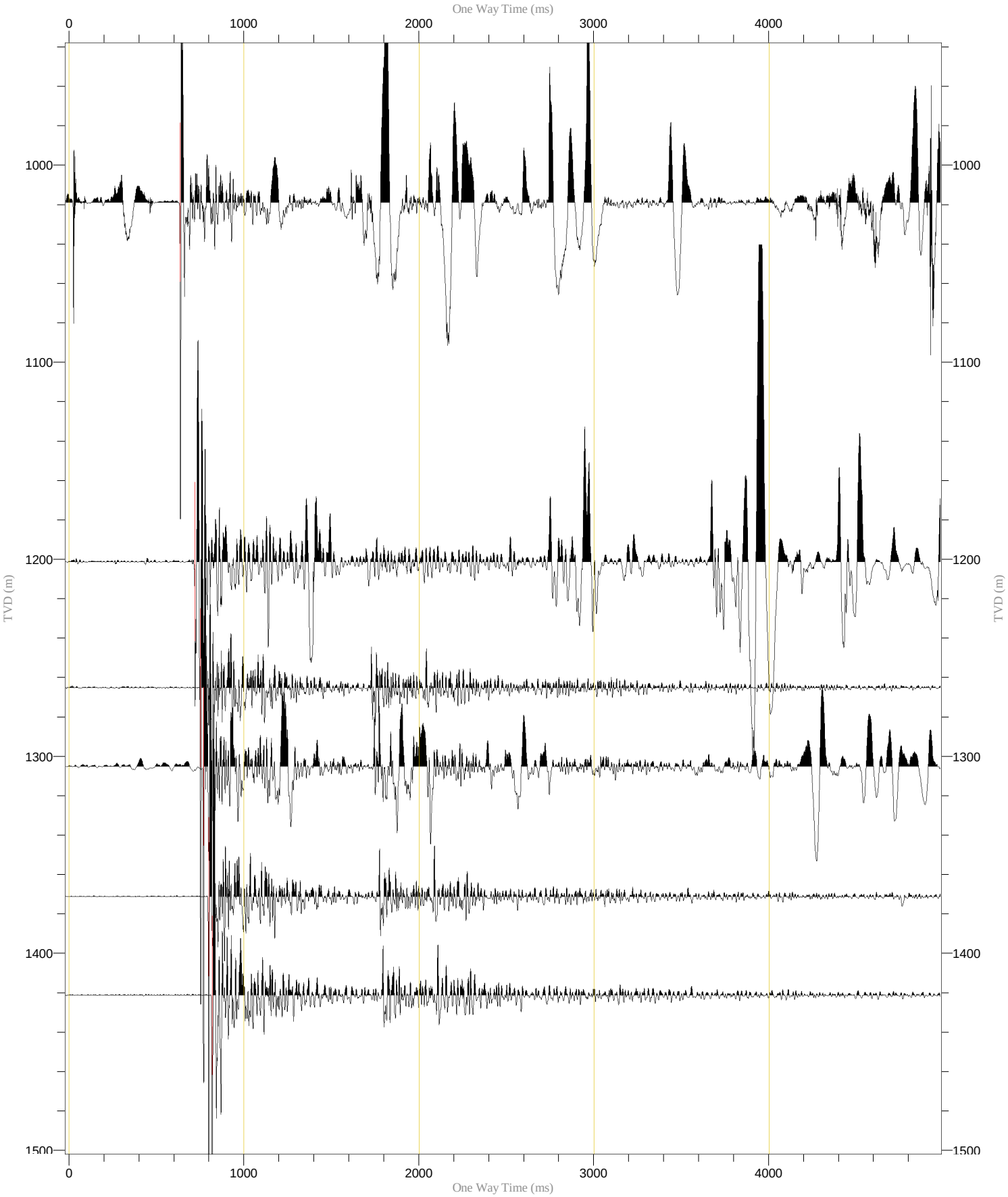


Velocity Plot



Process Flow	Parameter

Raw Stack (Z)	Normalization Trace by Trace (250%) Polarity Normal One Way Time (ms) Scaling 3.4 cm/sec, 1/2590	



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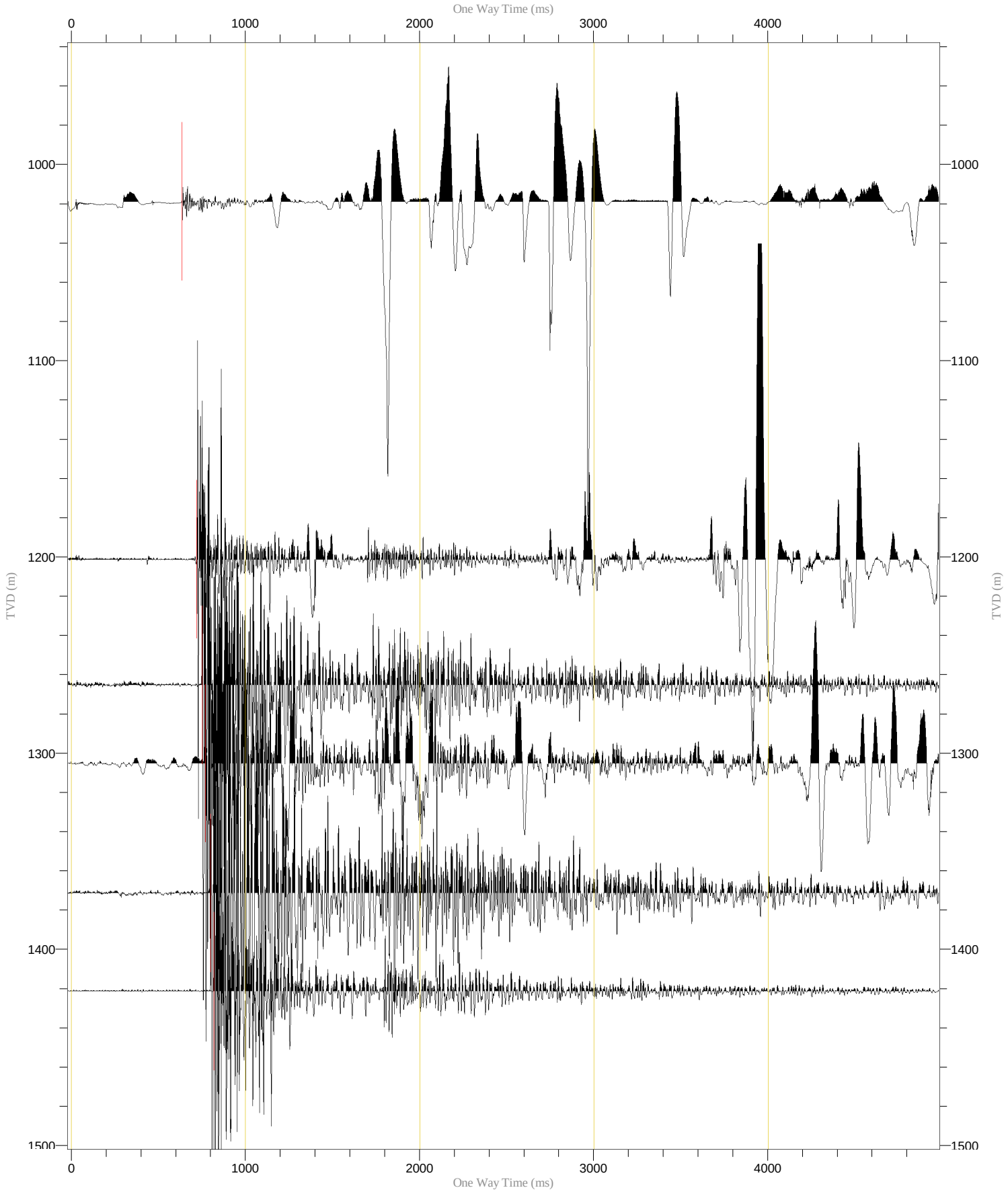
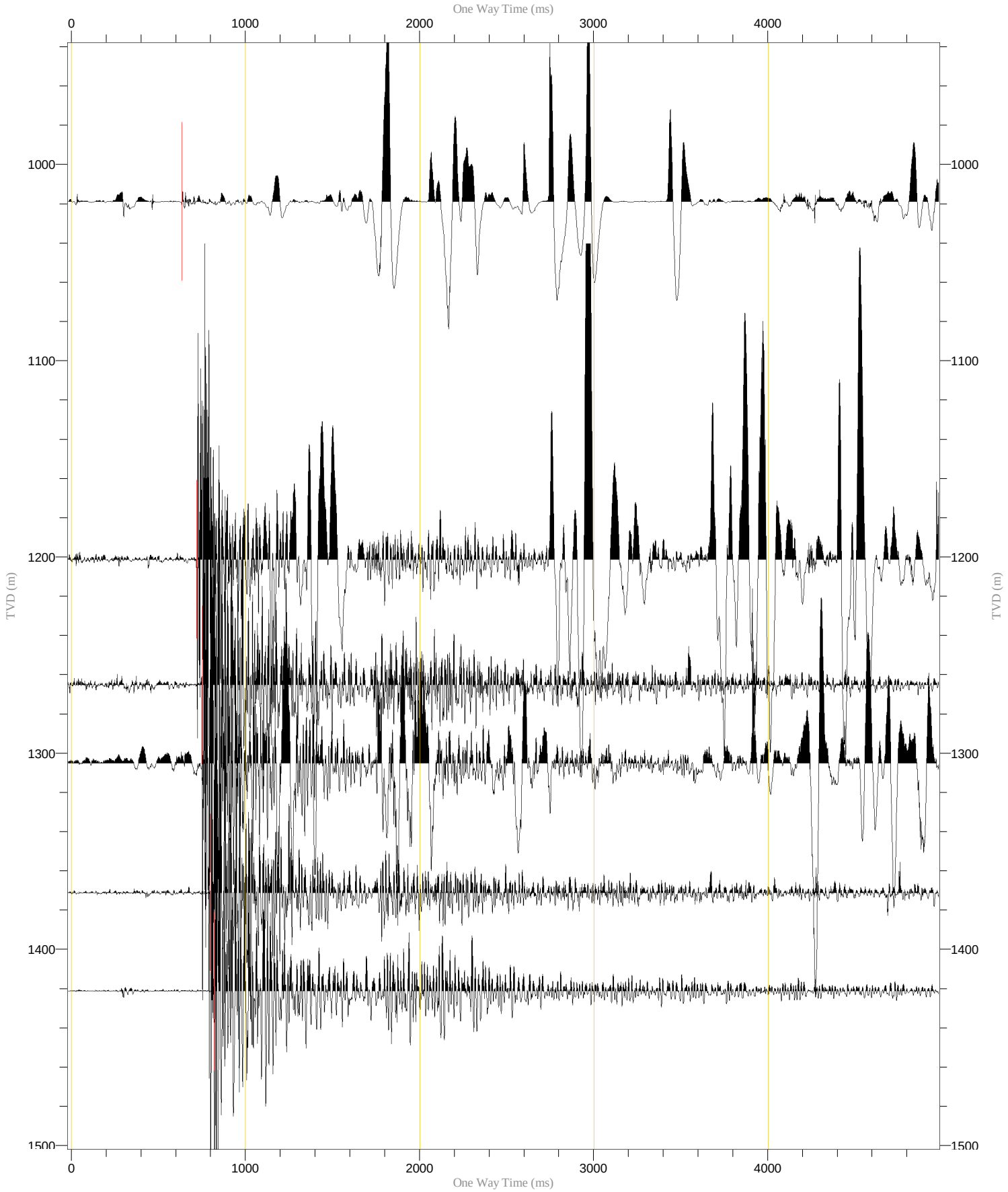
Raw Stack (X)	Normalization Trace by Trace (250%) Polarity Normal One Way Time (ms) Scaling 3.4 cm/sec, 1/2590	



Schlumberger

Raw Stack (Y)	Normalization Trace by Trace (250%) Polarity Normal One Way Time (ms) Scaling 3.4 cm/sec, 1/2590	



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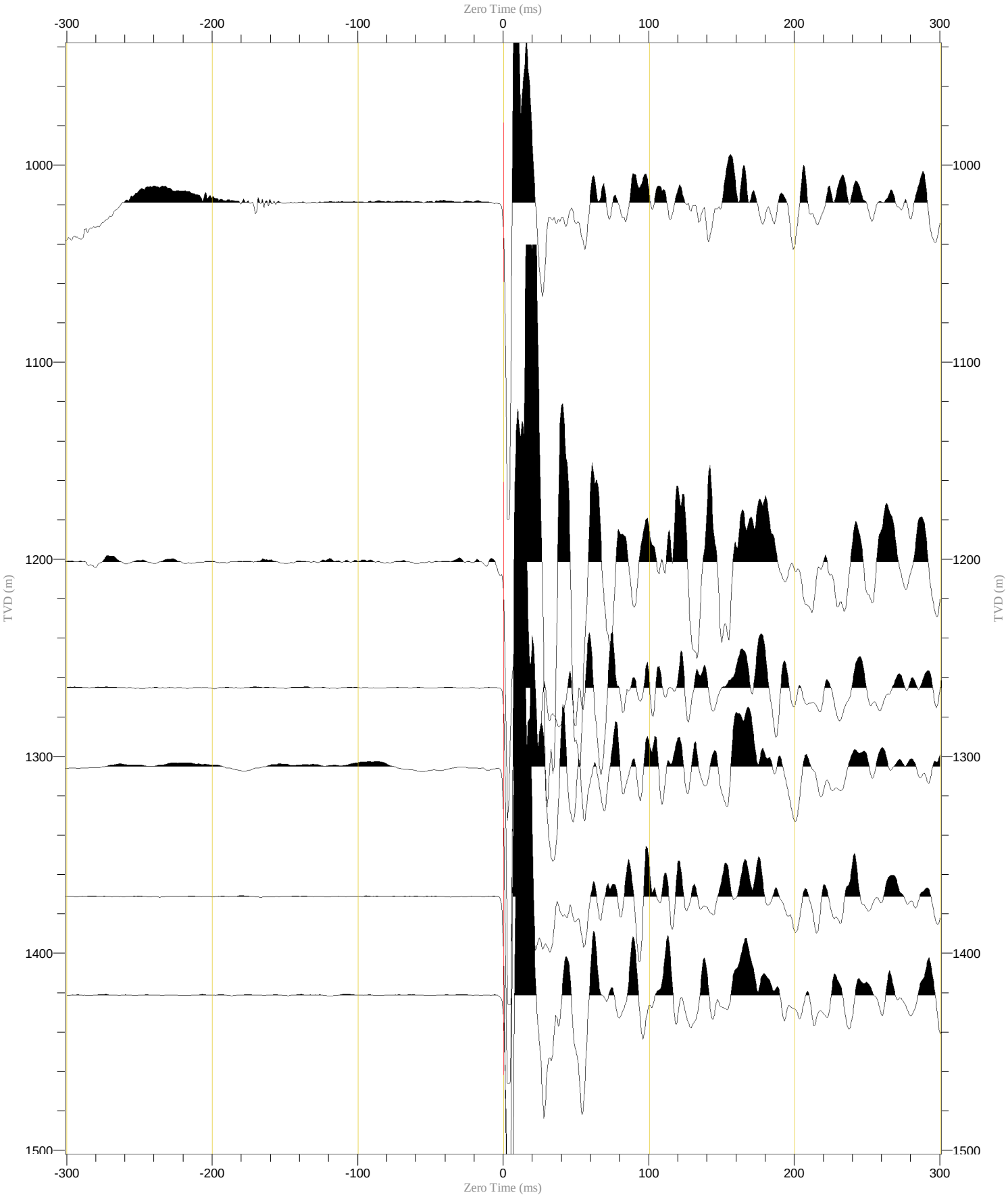
Raw Stack (Z) (Magnified)	Normalization Trace by Trace (250%) Polarity Normal Zero Time (ms) Scaling 28.5 cm/sec, 1/2590	



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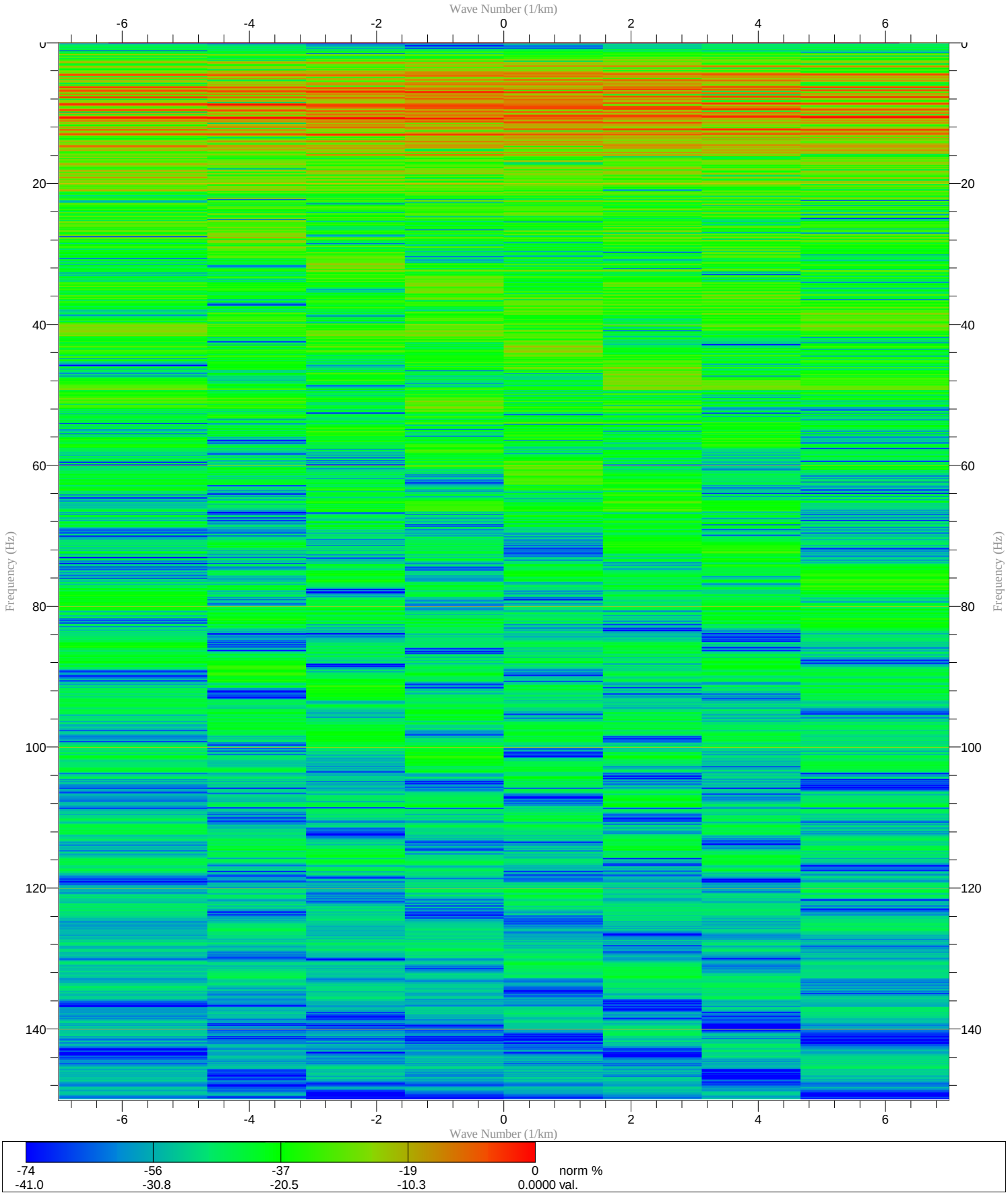
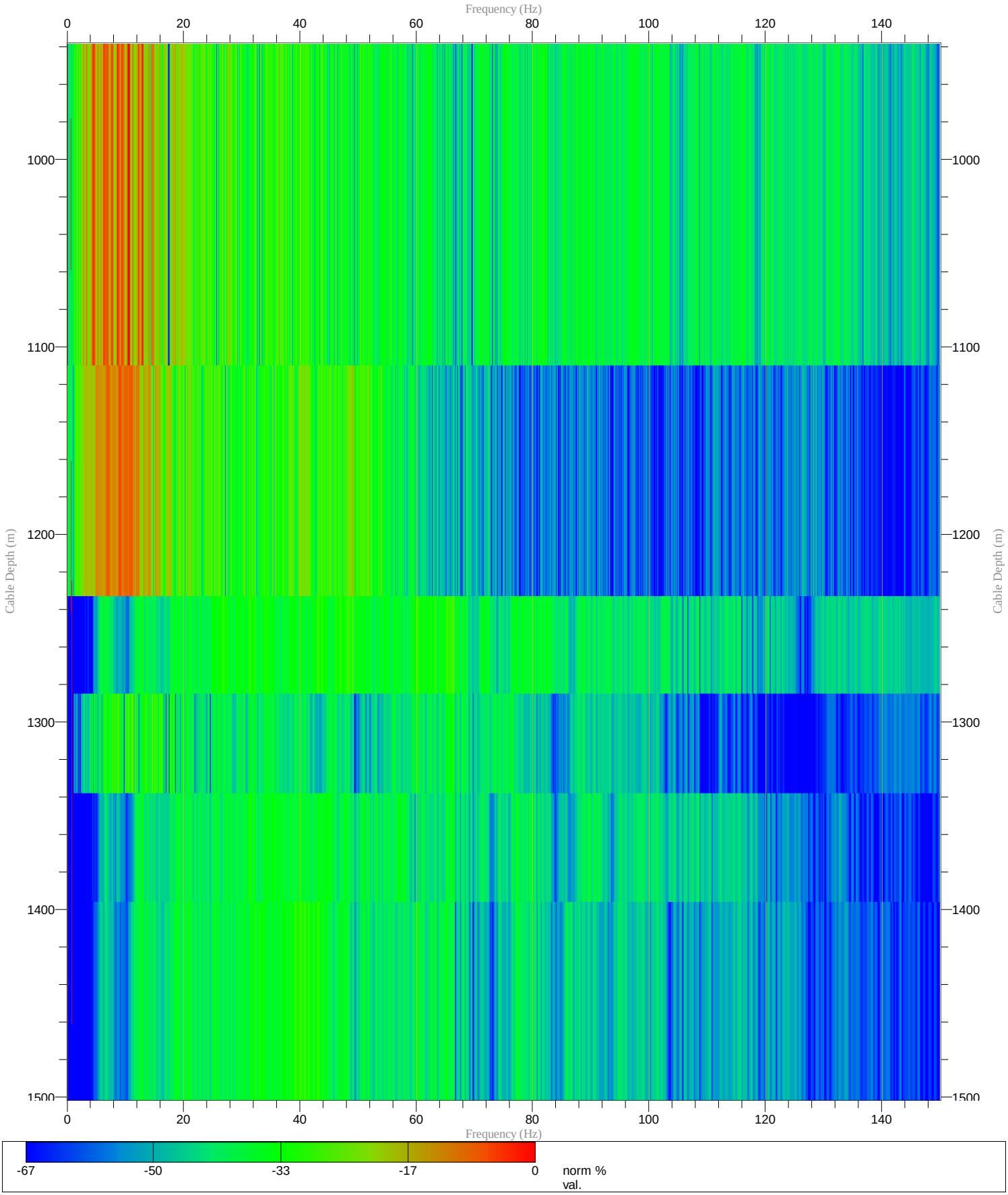
VSP Raw Stack (Z) FK Apply FK	Normalization First Trace in Gather (100%) Polarity Normal Frequency (Hz) Scaling 0.14 cm/Hz, 0.80(1/km)/cm



VSP Raw Stack (Z) FZ Apply FZ	Normalization Trace by Trace (100%) Polarity Normal Frequency (Hz) Scaling 0.1 cm/Hz, 1/2600



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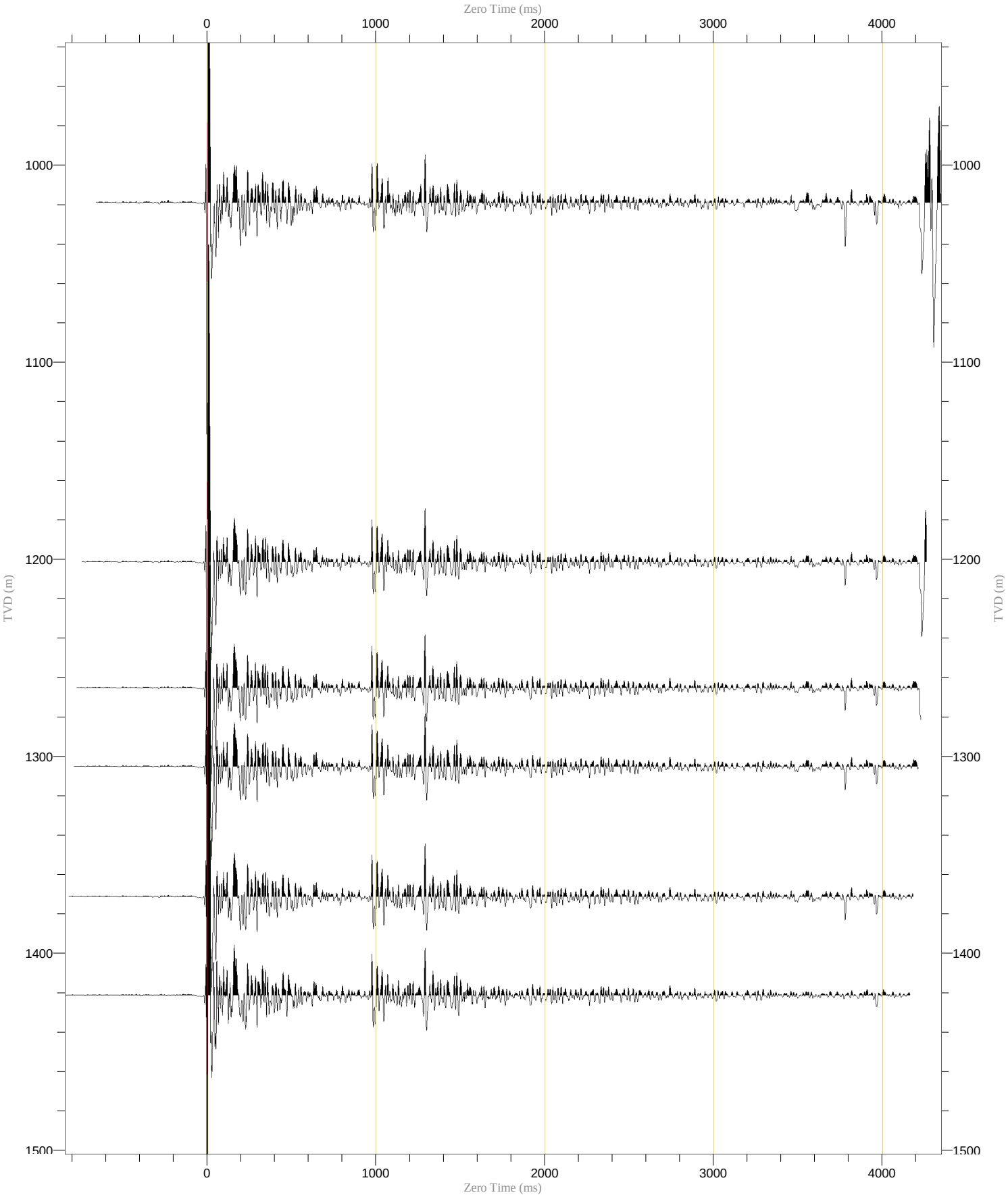
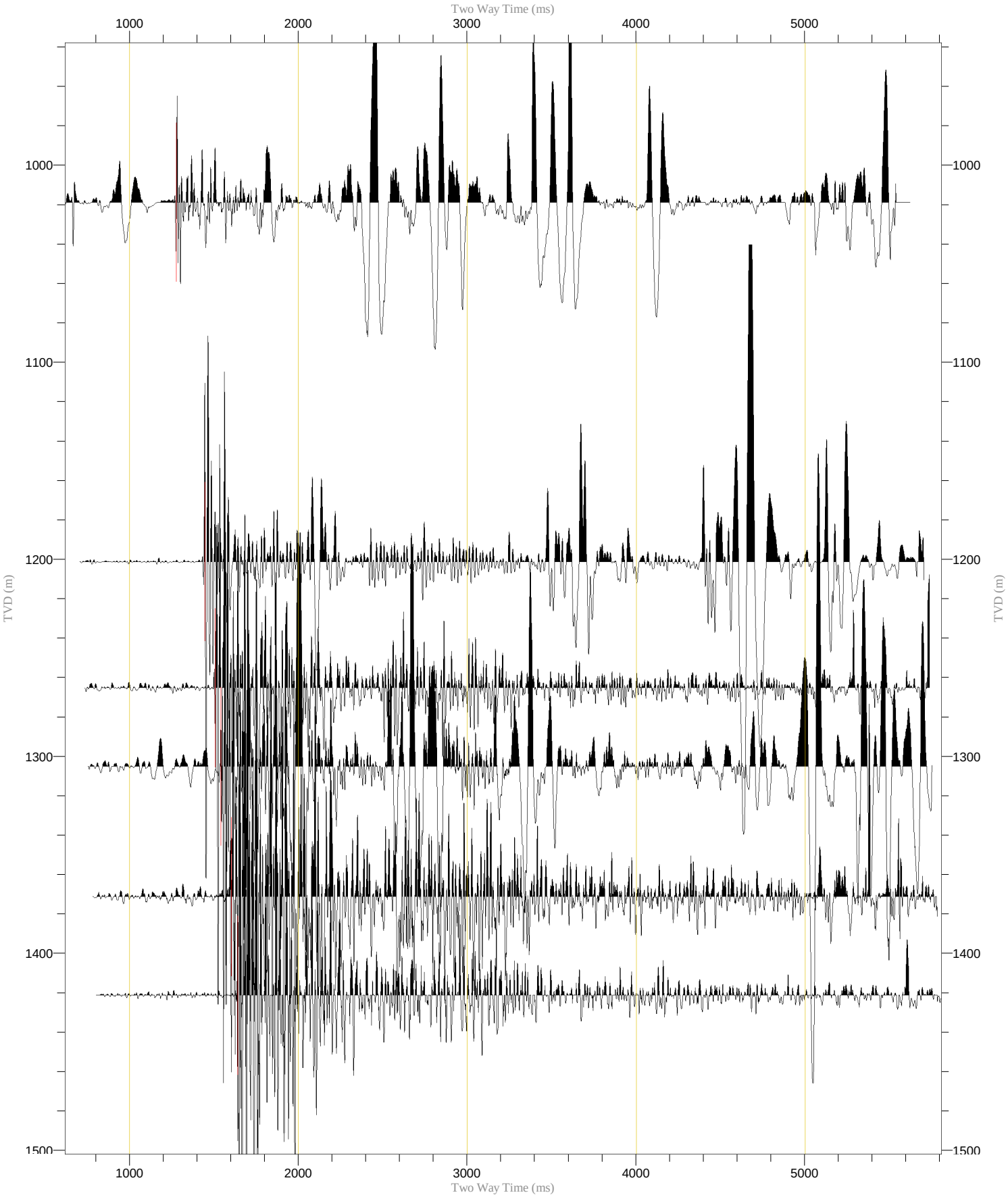
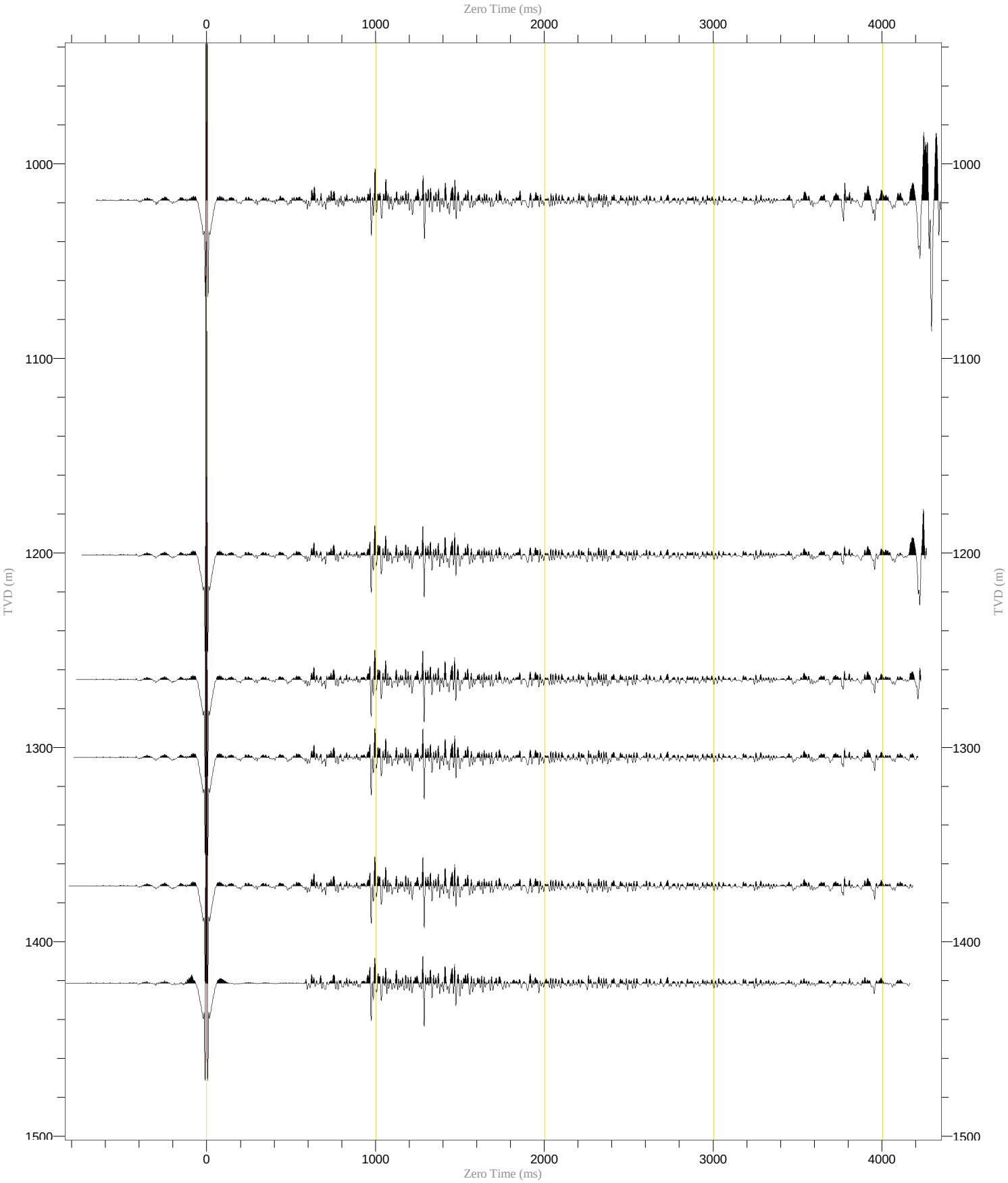
VSP Downgoing BPF 5.0 - 90.0Hz Median Filter 9 Traces	Normalization Trace by Trace (250%) Polarity Normal Zero Time (ms) Scaling 3.3 cm/sec, 1/2590



VSP Upgoing BPF 5.0 - 90.0Hz Median Filter 9 Traces	Normalization Trace by Trace (250%) Polarity Normal Two Way Time (ms) Scaling 3.3 cm/sec, 1/2590



VSP Waveshape decon downgoing BPF 5.0 - 90.0Hz Median Filter 9 Traces Waveshape Decon.(wavelet: 8.0 - 85.0 Hz zero-phase)	Normalization Trace by Trace (250%) Polarity Normal Zero Time (ms) Scaling 3.3 cm/sec, 1/2630



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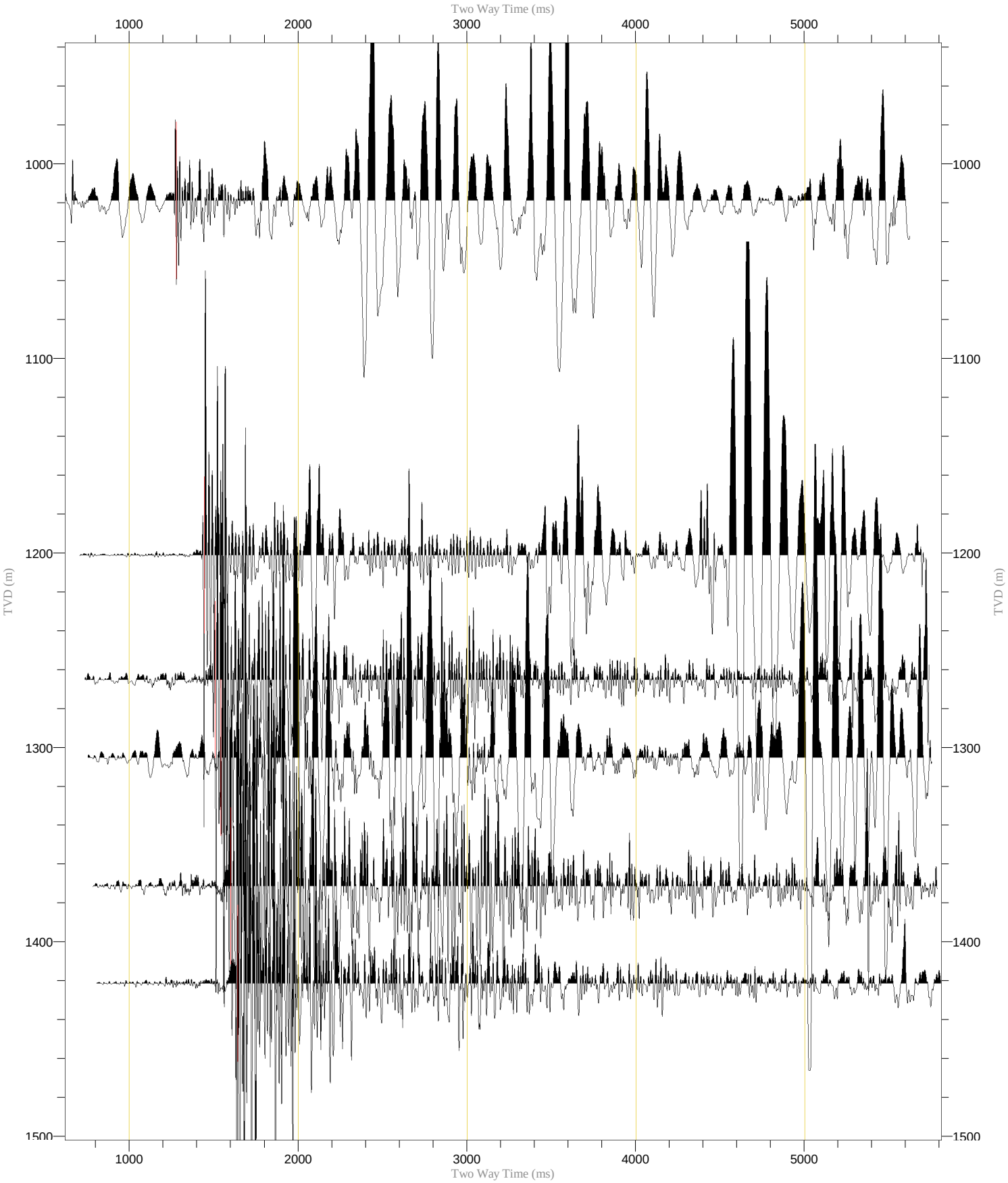
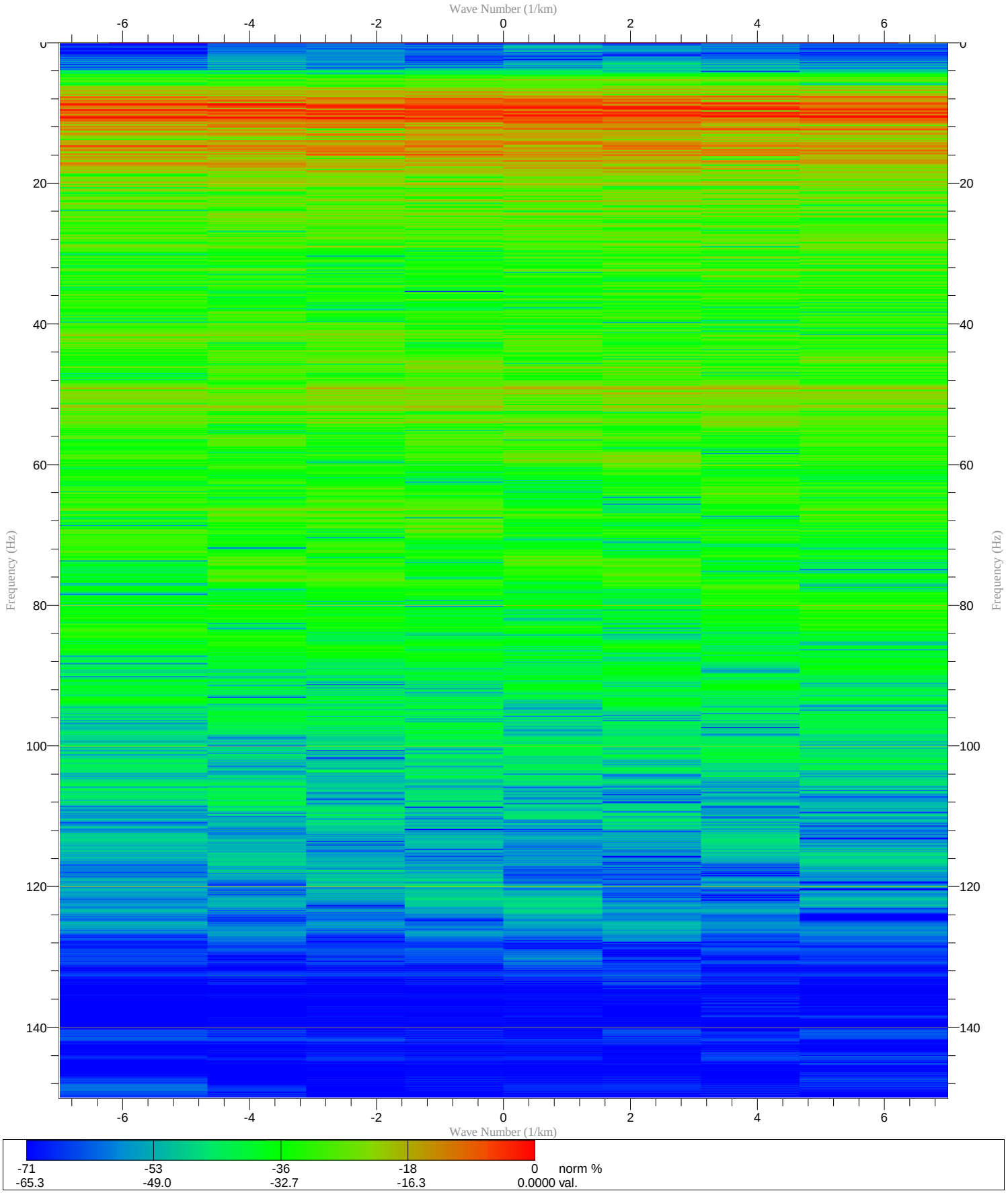
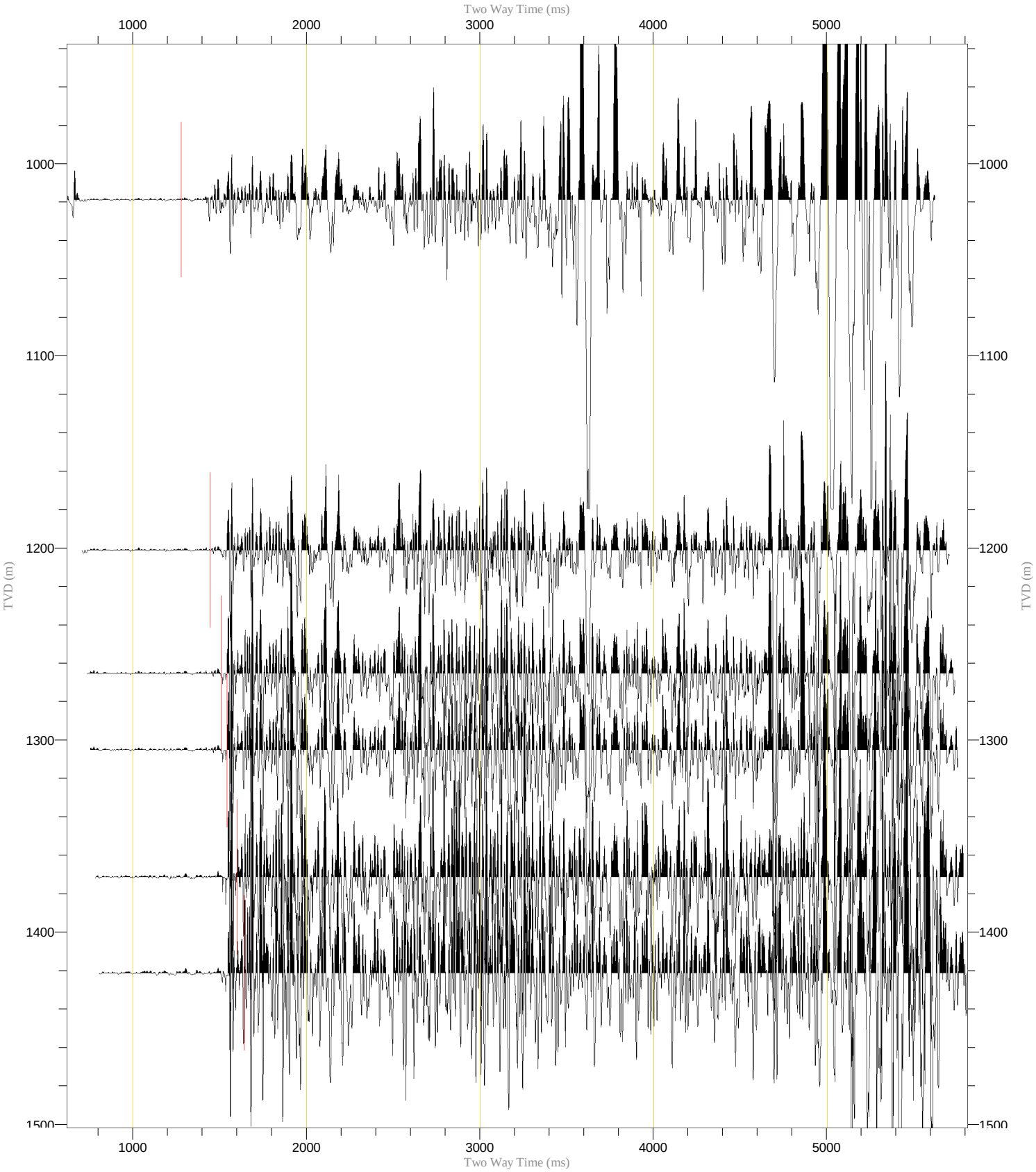
VSP Waveshape decon upgoing BPF 5.0 - 90.0Hz Median Filter 9 Traces Waveshape Decon.(wavelet: 8.0 - 85.0 Hz zero-phase)	Normalization Trace by Trace (250%) Polarity Normal Two Way Time (ms) Scaling 3.3 cm/sec, 1/2630



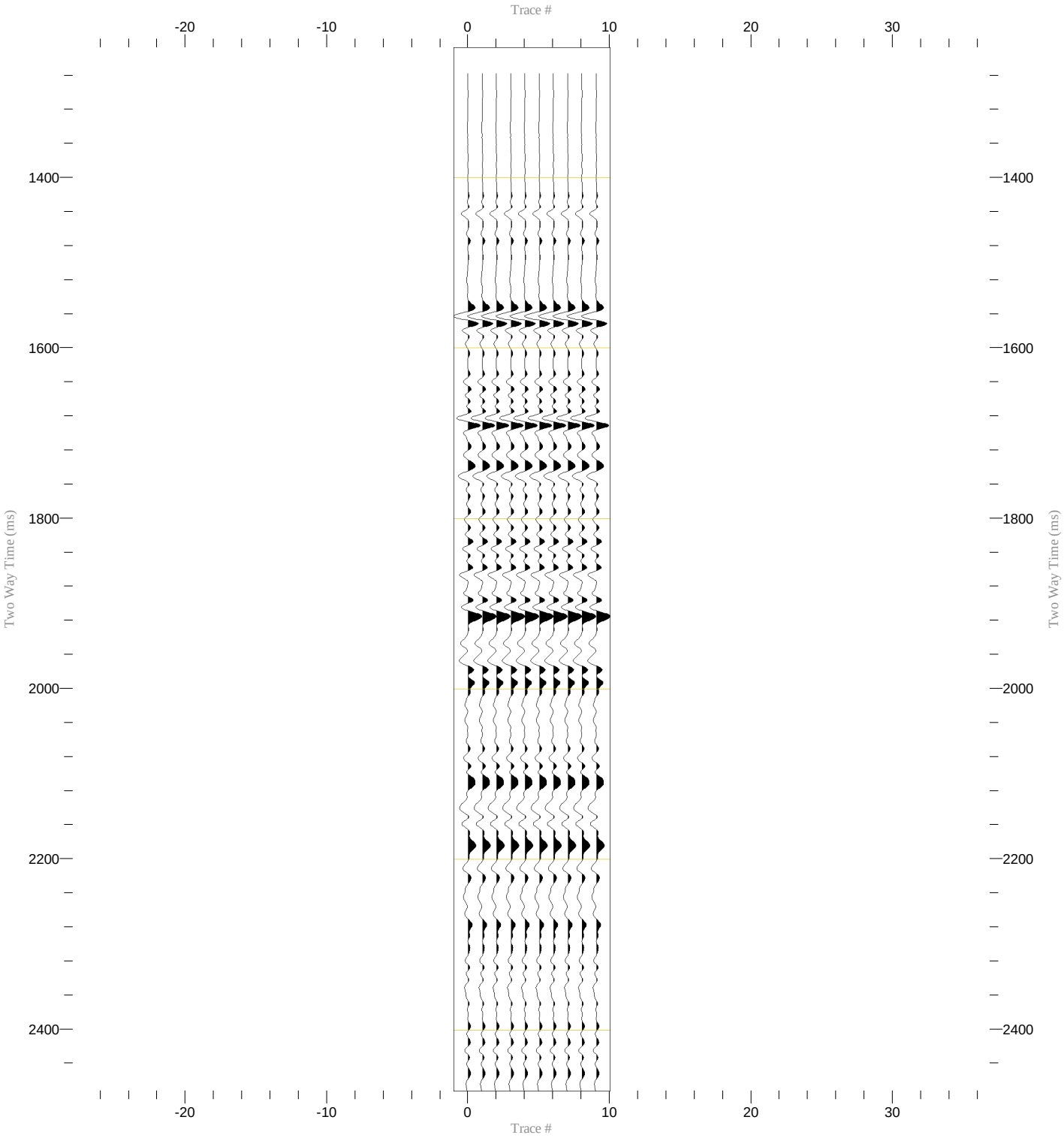
VSP Waveshape decon upgoing FK Apply FK	Normalization First Trace in Gather (100%) Polarity Normal Frequency (Hz) Scaling 0.14 cm/Hz, 0.80(1/km)/cm



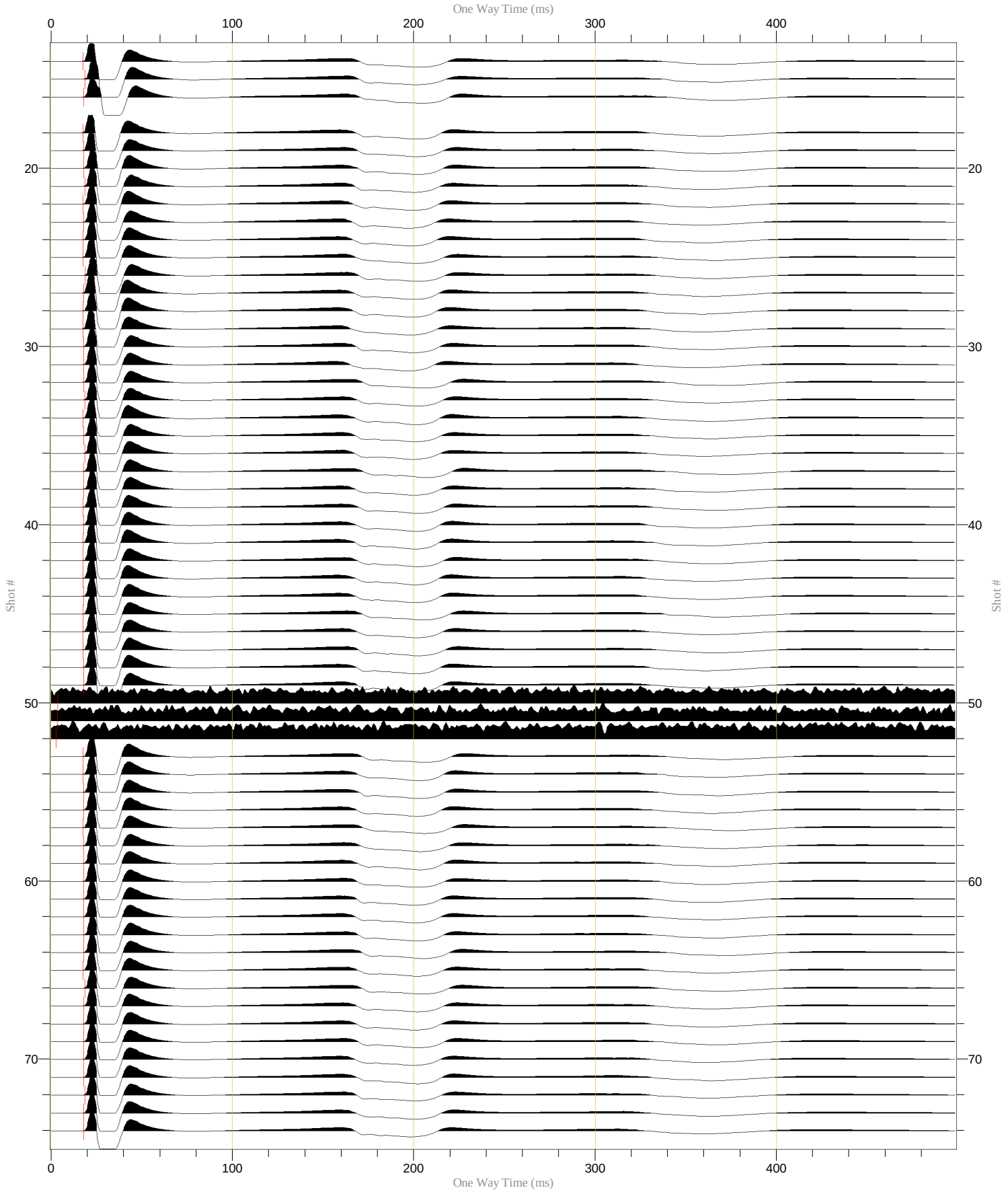
VSP Corridor Stack (Input) BPF 5.0 - 90.0Hz Median Filter 9 Traces Waveshape Decon.(wavelet: 8.0 - 85.0 Hz zero-phase) BPF 8.0 - 85.0Hz Travel time exponent = 1.50 Median Filter 7 Traces	Normalization Trace by Trace (250%) Polarity Normal Two Way Time (ms) Scaling 3.3 cm/sec, 1/2730	



VSP Corridor Stack (output) BPF 5.0 - 90.0Hz Median Filter 9 Traces Waveshape Decon.(wavelet: 8.0 - 85.0 Hz zero-phase) BPF 8.0 - 85.0Hz Travel time exponent = 1.50 Median Filter 7 Traces Corridor Stack (Mean): BPF 5.0 - 90.0Hz	Normalization Trace by Trace (250%) Polarity Normal Two Way Time (ms) Scaling 15.00 cm/sec, 4.01/cm	



Source Sensor Signature	Normalization Trace by Trace (100%) Polarity Normal One Way Time (ms) Scaling 35.67 cm/sec, 2.85/cm	



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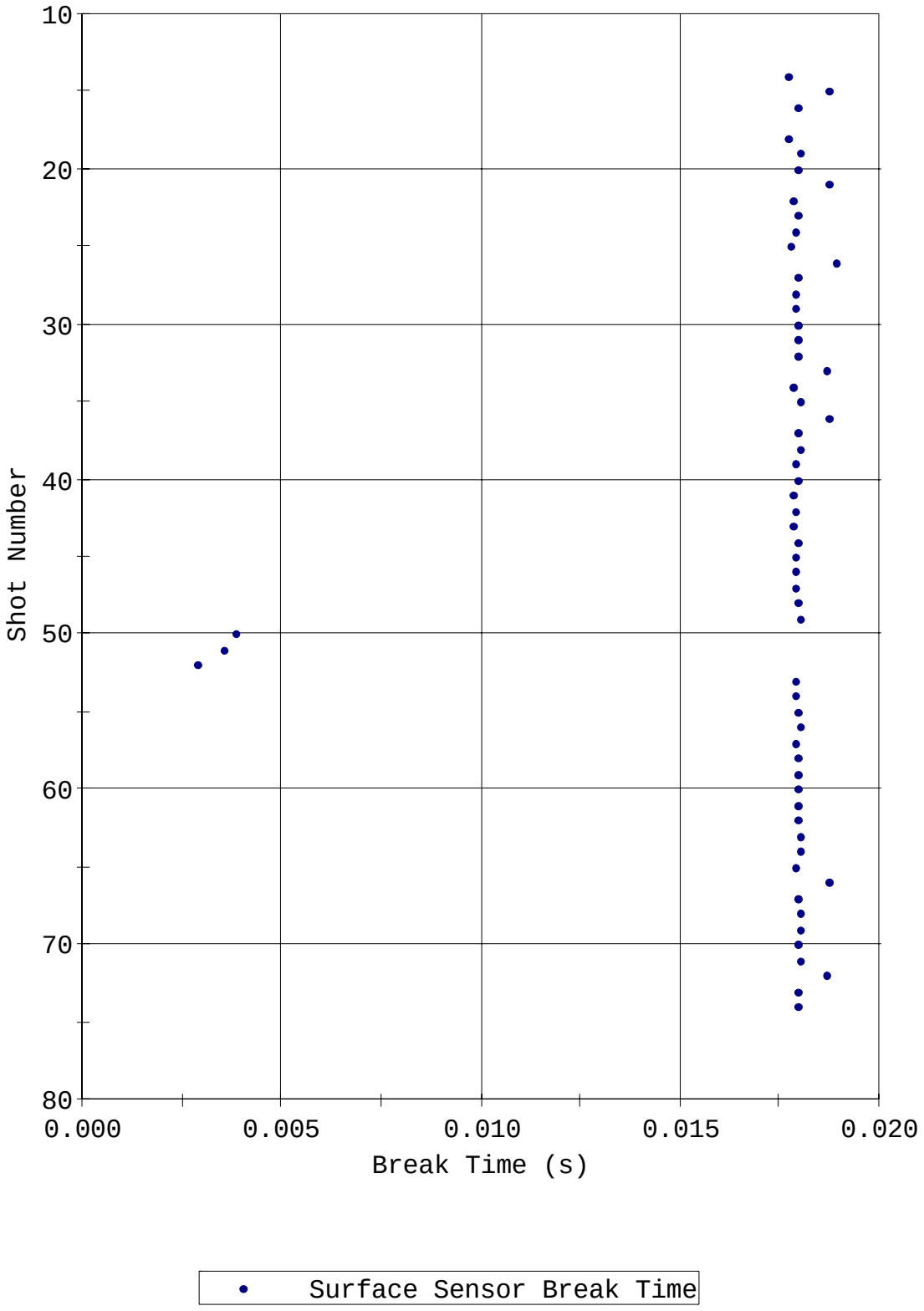
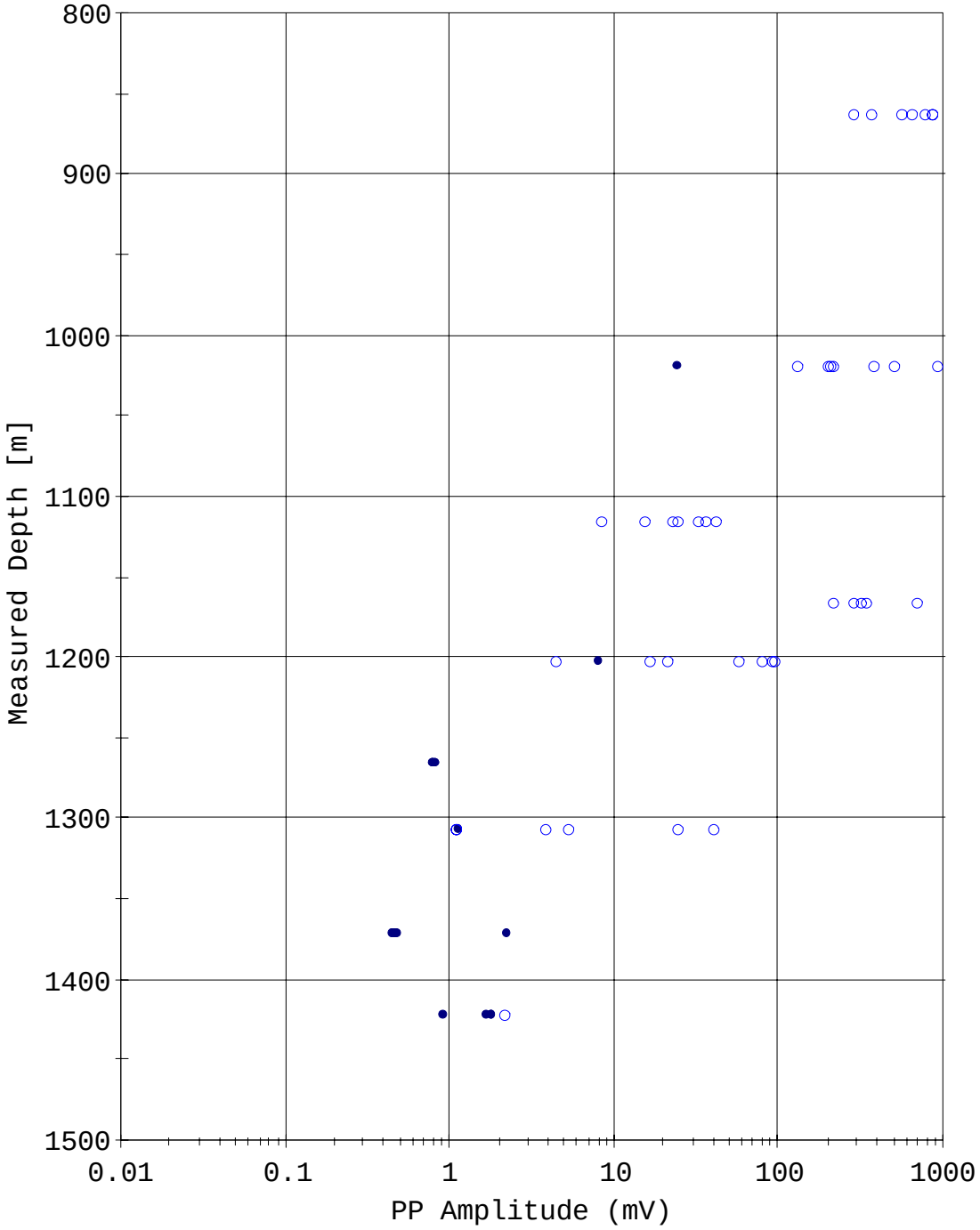
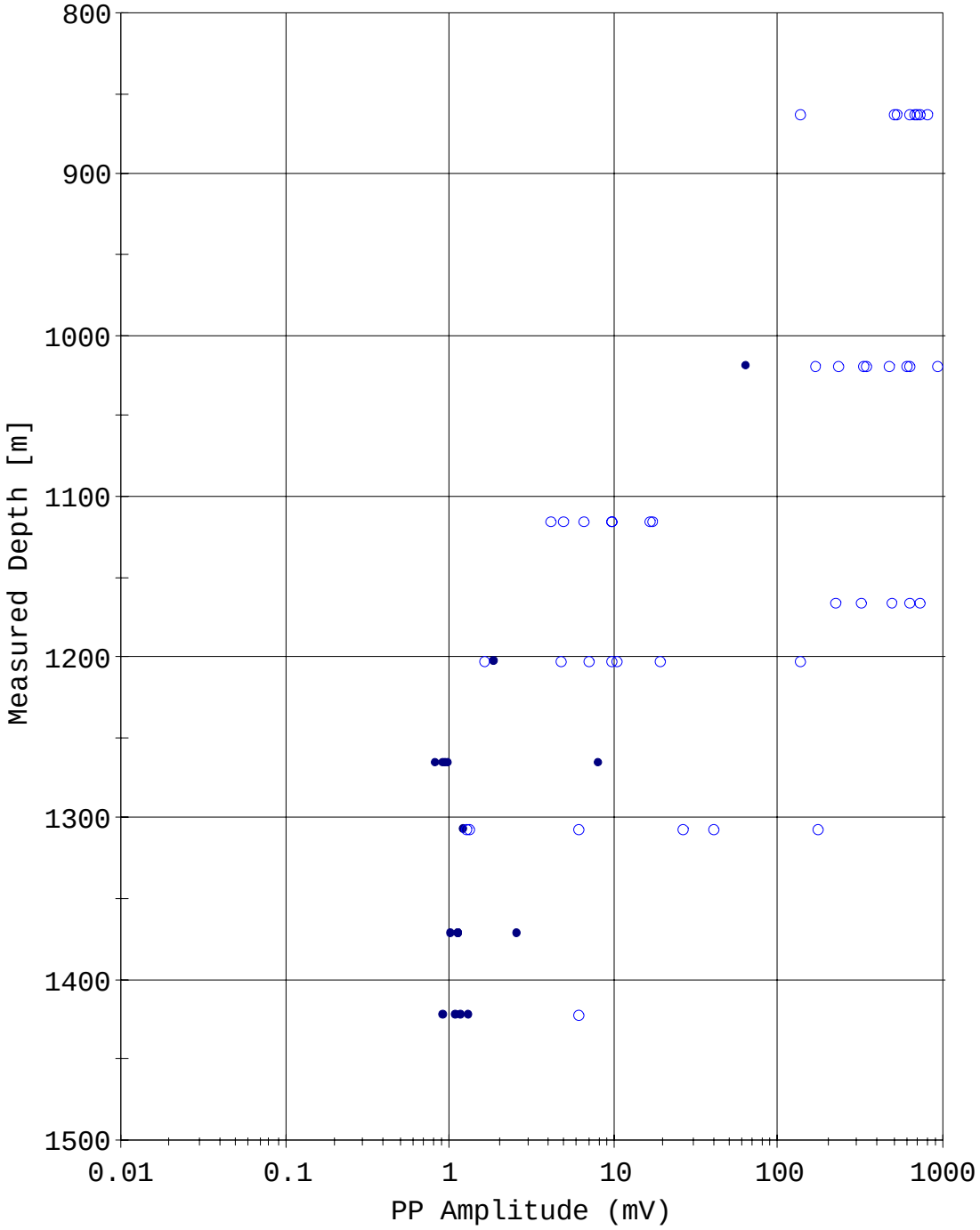
Surface Sensor QC Plot Page



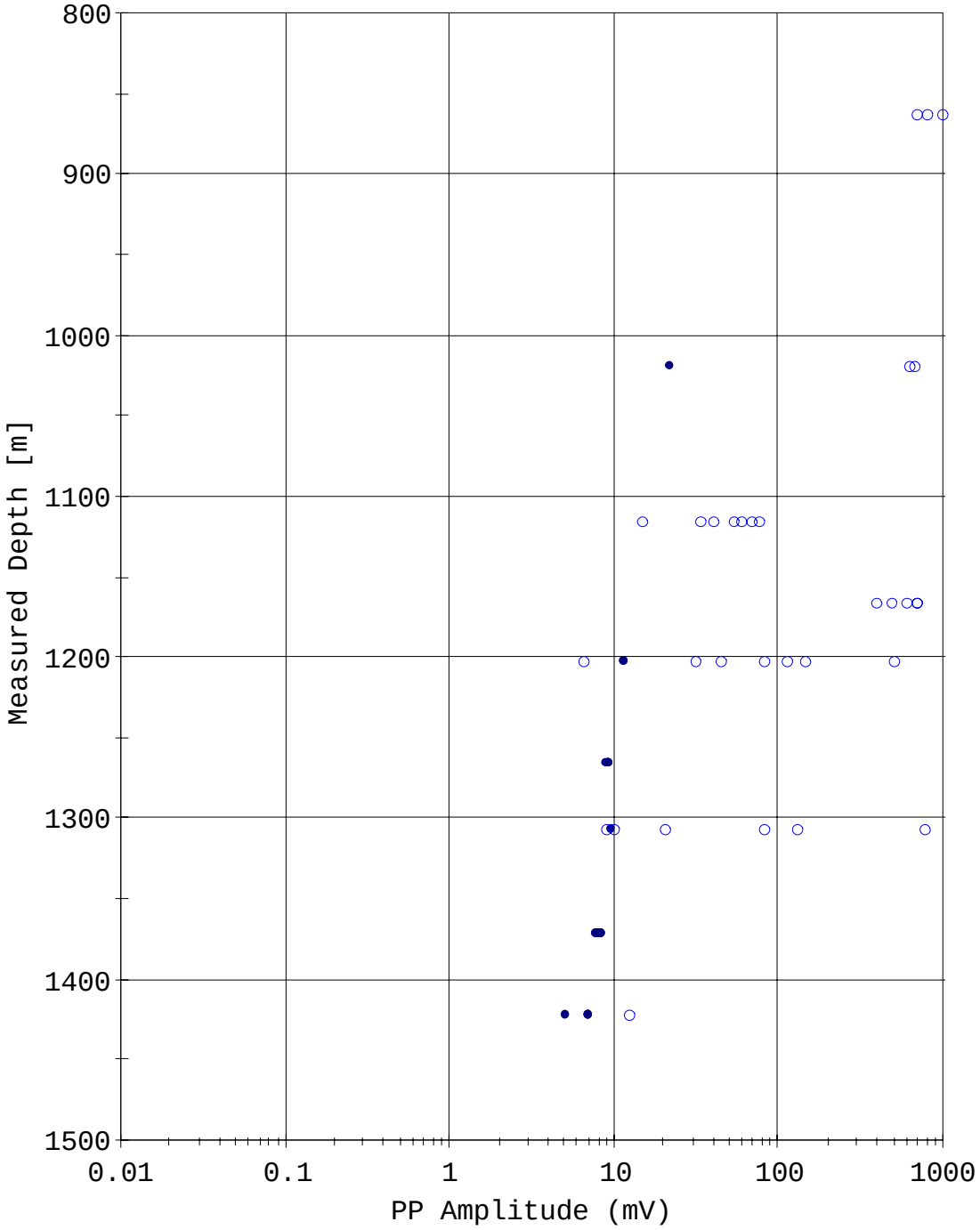
Peak To Peak Plot (X)



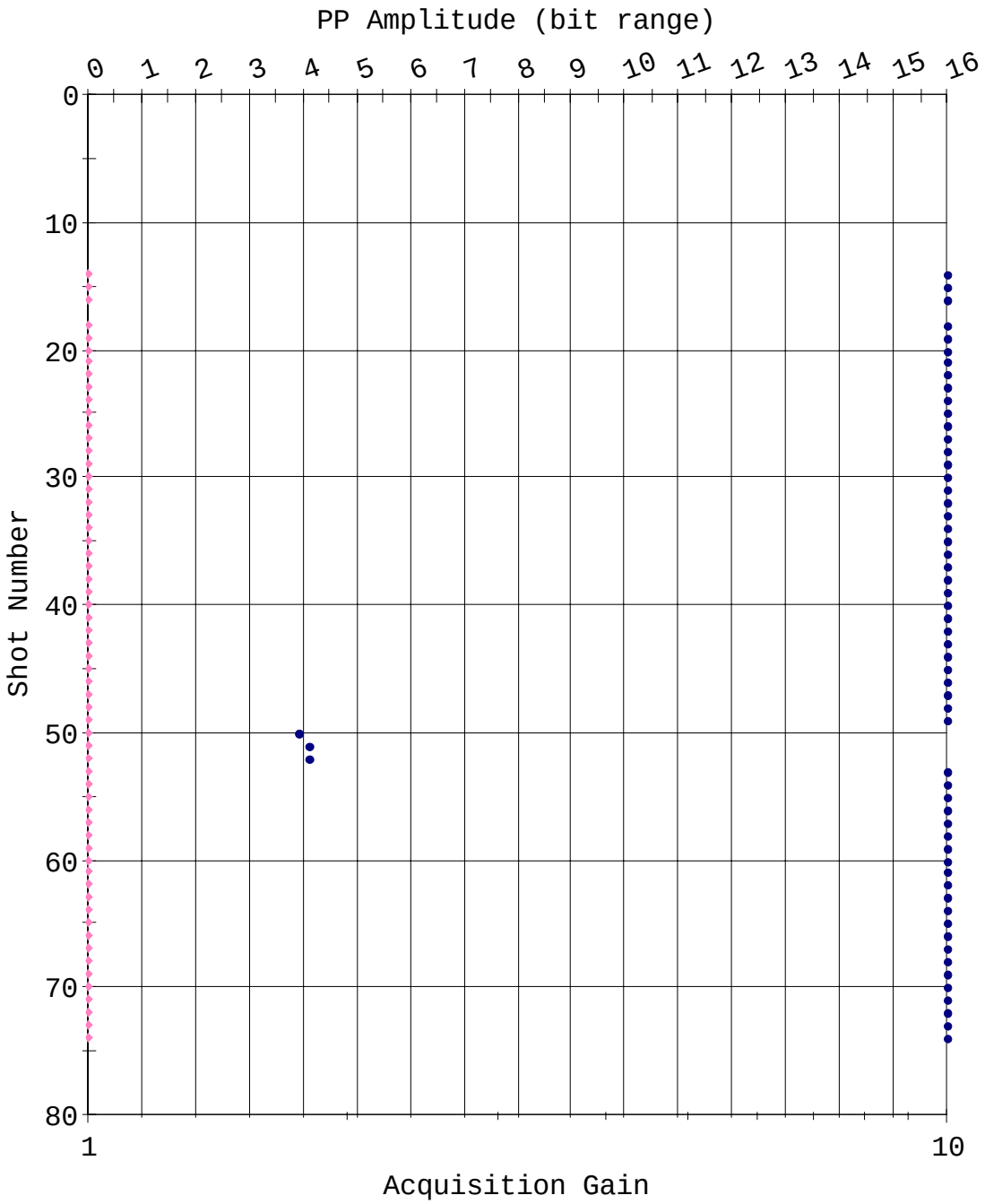
Peak To Peak Plot (Y)



Peak To Peak Plot (Z)

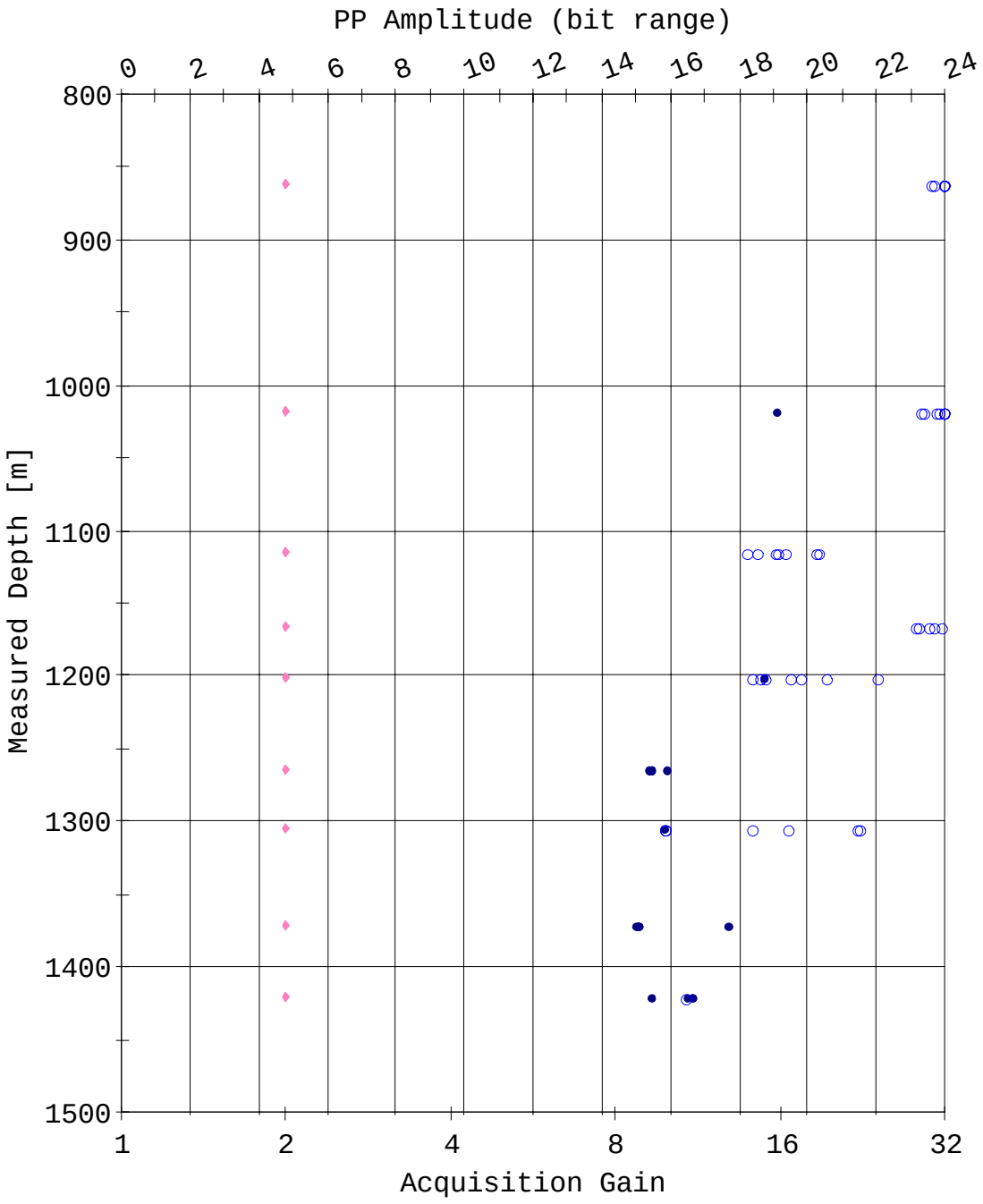


Amplitude QC Plot (Surface)



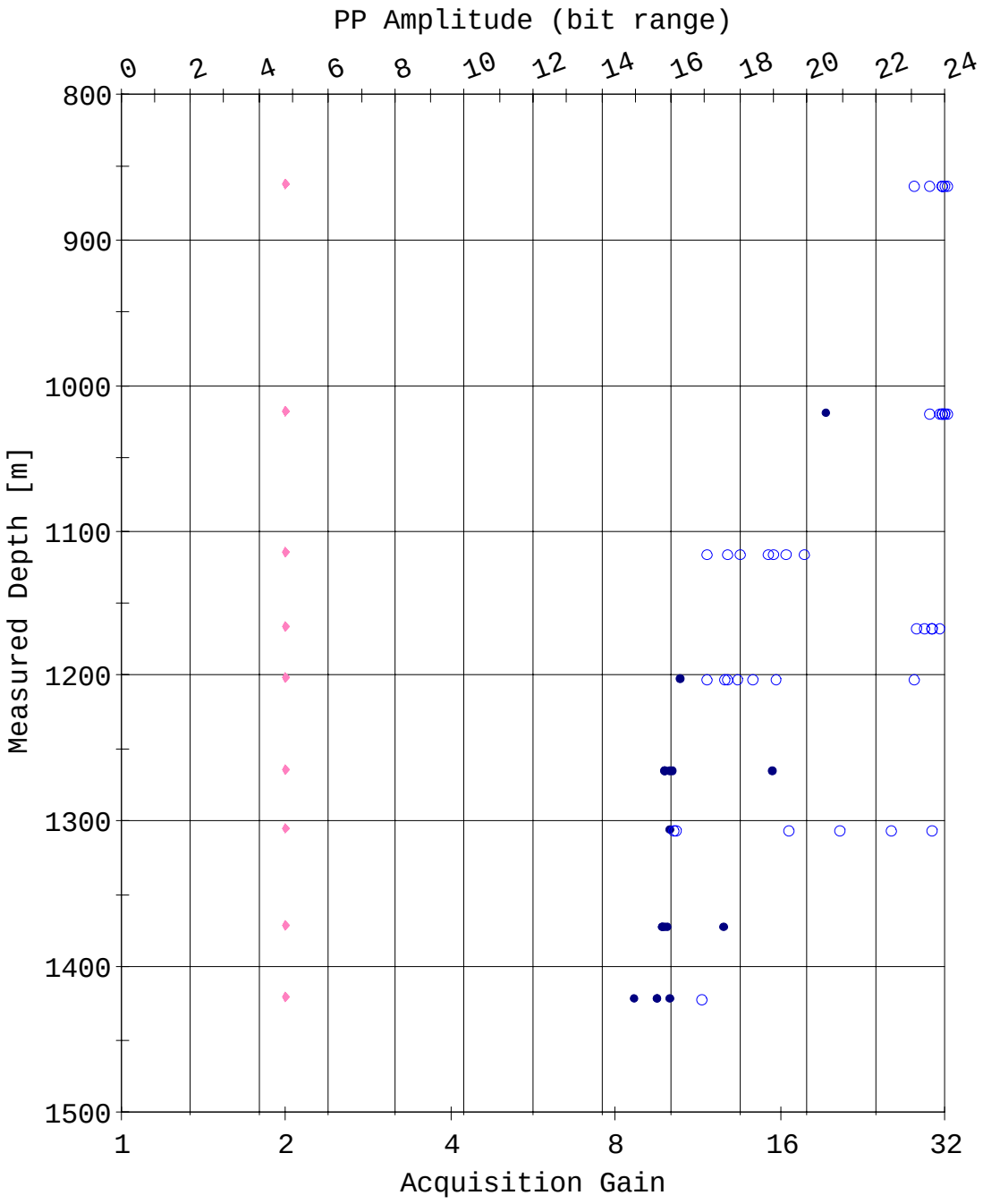
PP Amplitude (bit range) accepted for stack
PP Amplitude (bit range) rejected
Acquisition Gain

Amplitude QC Plot (X)



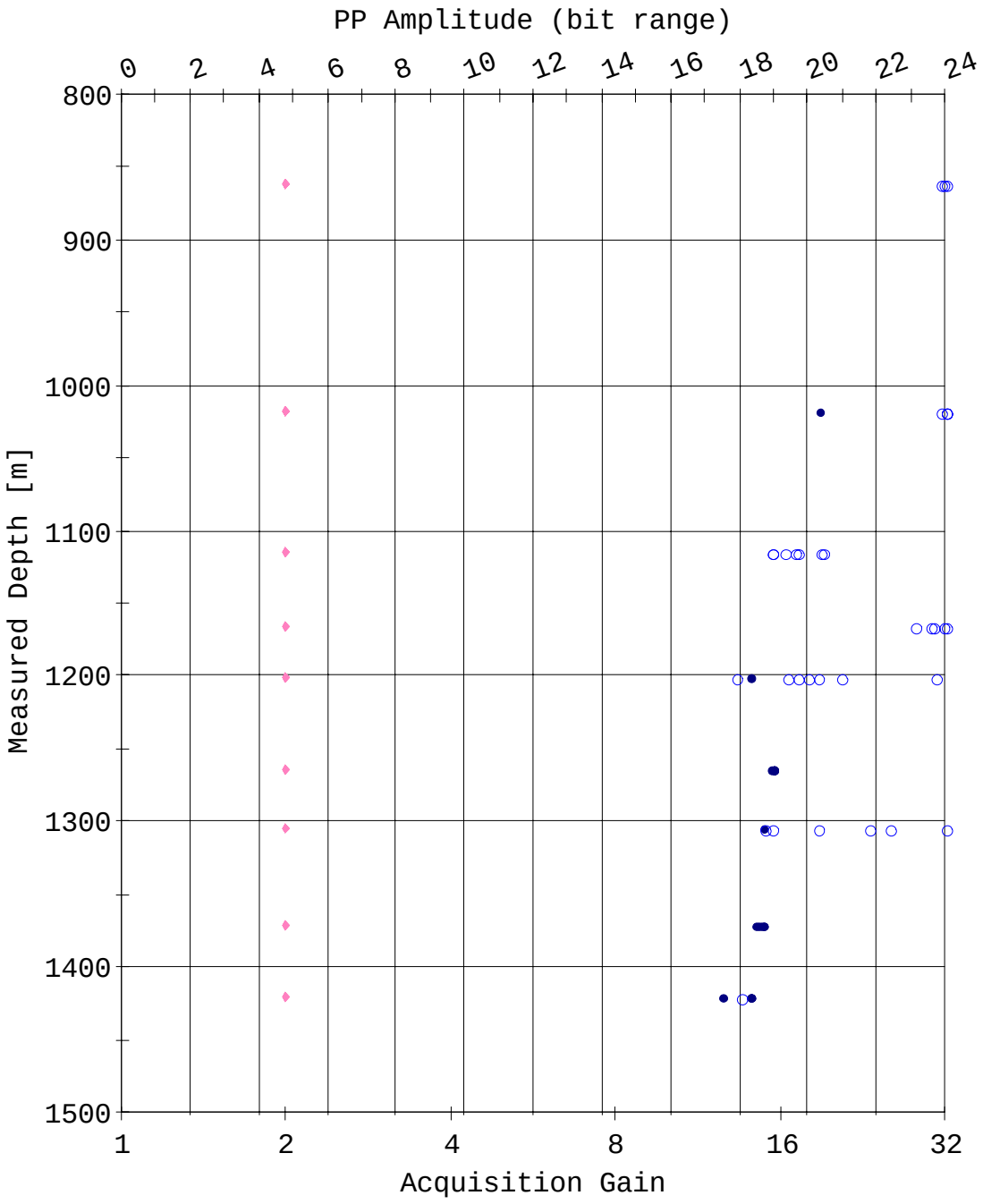
Schlumberger

Amplitude QC Plot (Y)



Schlumberger

Amplitude QC Plot (Z)



Schlumberger

Observer's Note (1/2)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
45.3	17:28:10	ENLO	1			test going in hole
45.3	17:28:34	ENHI	2			
45.3	17:28:43	ETHD	3			
45.3	17:28:58	DRNG	4			
45.3	17:29:12	GA02	5			
45.3	17:29:22	GA04	6			
45.3	17:29:32	GA08	7			
45.3	17:29:42	GA16	8			
45.3	17:29:52	GA32	9			
45.3	17:30:06	XTLK	10			
45.3	17:30:25	XTLK	11			
45.3	17:30:43	XTLK	12			
45.3	17:31:02	EIMP	13			end test
1421.0	19:56:02	SHOT	14	2	IODP Dual Airgun	good
1421.0	19:56:23	SHOT	15	2	IODP Dual Airgun	good
1421.0	19:58:16	SHOT	16	2	IODP Dual Airgun	good
1421.0	20:00:22	SHAK	17			bad shaker
1421.0	20:00:54	SHOT	18	2	IODP Dual Airgun	good
1421.0	20:02:10	SHOT	19	2	IODP Dual Airgun	good
1371.0	20:24:35	SHOT	20	3	IODP Dual Airgun	good
1371.0	20:24:53	SHOT	21	3	IODP Dual Airgun	good
1371.0	20:25:11	SHOT	22	3	IODP Dual Airgun	good
1371.0	20:25:29	SHOT	23	3	IODP Dual Airgun	good
1371.0	20:25:47	SHOT	24	3	IODP Dual Airgun	good
1304.9	20:36:28	SHOT	25	4	IODP Dual Airgun	too low amplitude, time is right
1304.9	20:37:16	SHOT	26	4	IODP Dual Airgun	ok
1304.9	20:38:22	SHOT	27	4	IODP Dual Airgun	a little noise
1304.9	20:38:40	SHOT	28	4	IODP Dual Airgun	ok
1304.9	20:38:58	SHOT	29	4	IODP Dual Airgun	ok, needs time pick
1304.9	20:39:49	SHOT	30	4	IODP Dual Airgun	bad

1304.9	20:40:07	SHOT	31	4	IODP Dual Airgun	bad
1265.0	20:50:17	SHOT	32	5	IODP Dual Airgun	good
1265.0	20:50:39	SHOT	33	5	IODP Dual Airgun	good
1265.0	20:50:57	SHOT	34	5	IODP Dual Airgun	good
1265.0	20:51:15	SHOT	35	5	IODP Dual Airgun	good
1265.0	20:51:33	SHOT	36	5	IODP Dual Airgun	good
1201.0	21:06:47	SHOT	37	6	IODP Dual Airgun	ok
1201.0	21:07:05	SHOT	38	6	IODP Dual Airgun	bad
1201.0	21:07:24	SHOT	39	6	IODP Dual Airgun	bad
1201.0	21:07:42	SHOT	40	6	IODP Dual Airgun	bad
1201.0	21:08:00	SHOT	41	6	IODP Dual Airgun	bad
1201.0	21:08:28	SHOT	42	6	IODP Dual Airgun	bad time
1201.0	21:08:46	SHOT	43	6	IODP Dual Airgun	bad
1201.0	21:09:04	SHOT	44	6	IODP Dual Airgun	bad
1165.0	21:18:14	SHOT	45	7	IODP Dual Airgun	bad
1165.0	21:18:32	SHOT	46	7	IODP Dual Airgun	bad
1165.0	21:18:50	SHOT	47	7	IODP Dual Airgun	bad
1165.0	21:19:08	SHOT	48	7	IODP Dual Airgun	bad
1165.0	21:19:44	SHOT	49	7	IODP Dual Airgun	bad
1114.9	21:35:57	SHOT	50	8	IODP Dual Airgun	not hooked up no fire, no shot
1114.9	21:36:27	SHOT	51	8	IODP Dual Airgun	no fire
1114.9	21:37:17	SHOT	52	8	IODP Dual Airgun	no fire

1114.9	21:37:37	SHOT	53	8	IODP Dual Airgun	bad
1114.9	21:37:56	SHOT	54	8	IODP Dual Airgun	bad
1114.9	21:38:39	SHOT	55	8	IODP Dual Airgun	bad
1114.9	21:38:58	SHOT	56	8	IODP Dual Airgun	bad
1018.7	21:52:37	SHOT	57	9	IODP Dual Airgun	bad
1018.7	21:53:08	SHOT	58	9	IODP Dual Airgun	bad
1018.7	21:53:26	SHOT	59	9	IODP Dual Airgun	bad

Observer's Note (2/2)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
1018.7	21:53:44	SHOT	60	9	IODP Dual Airgun	bad
1018.7	21:54:02	SHOT	61	9	IODP Dual Airgun	bad
1018.7	21:54:49	SHOT	62	9	IODP Dual Airgun	ok
1018.7	21:55:12	SHOT	63	9	IODP Dual Airgun	bad
1018.7	21:58:11	SHOT	64	9	IODP Dual Airgun	weak
1018.7	21:58:33	SHOT	65	9	IODP Dual Airgun	bad
861.0	22:12:49	SHOT	66	10	IODP Dual Airgun	bad
861.0	22:13:15	SHOT	67	10	IODP Dual Airgun	bad
861.0	22:13:33	SHOT	68	10	IODP Dual Airgun	bad
861.0	22:14:12	SHOT	69	10	IODP Dual Airgun	bad
861.0	22:14:30	SHOT	70	10	IODP Dual Airgun	bad
861.0	22:15:19	SHOT	71	10	IODP Dual Airgun	bad
861.0	22:15:44	SHOT	72	10	IODP Dual Airgun	bad
861.0	22:16:05	SHOT	73	10	IODP Dual	bad

					Airgun	
861.0	22:16:23	SHOT	74	10	IODP Dual Airgun	bad

VSI Seismic Evaluation Report

ELECTRICAL NOISE LOW TEST

2013/07/27 17:28:10

Shot No: 1 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.4655	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.1181	micro V	-	0.5000	PASS
Noise Peak	1	X	0.4739	micro V	-	2.0000	PASS
DC Offset	1	Y	-25.2465	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.1197	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.3913	micro V	-	2.0000	PASS
DC Offset	1	Z	-25.3750	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.1181	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.5775	micro V	-	2.0000	PASS

ELECTRICAL NOISE HIGH TEST

2013/07/27 17:28:34

Shot No: 2 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.4064	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.1182	micro V	-	0.5000	PASS
Noise Peak	1	X	0.4246	micro V	-	2.0000	PASS
DC Offset	1	Y	-24.7823	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.1204	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.4445	micro V	-	2.0000	PASS
DC Offset	1	Z	-24.9244	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.1196	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.3853	micro V	-	2.0000	PASS

ELECTRICAL DISTORTION TEST

2013/07/27 17:28:43

Shot No: 3 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Total Harmonic Distortion	1	X	-102.8457	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Y	-108.4887	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Z	-107.7241	dB	-	-90.0000	PASS

SYSTEM DYNAMIC RANGE TEST

2013/07/27 17:28:58

Shot No: 4 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
System Dynamic Range	1	X	107.5332	dB	103.0000	-	PASS
System Dynamic Range	1	Y	107.8158	dB	103.0000	-	PASS
System Dynamic Range	1	Z	107.3060	dB	103.0000	-	PASS

AMPLIFIER GAIN 2 TEST

2013/07/27 17:29:12

Shot No: 5 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1441	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1480	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1479	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0000	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 4 TEST

2013/07/27 17:29:22

Shot No: 6 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1407	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0034	dB	-0.5000	0.5000	PASS

Gain Accuracy	1	Y	0.1476	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0004	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1460	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0019	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 8 TEST

2013/07/27 17:29:32

Shot No: 7 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1413	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0027	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1477	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0003	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1476	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0003	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 16 TEST

2013/07/27 17:29:42

Shot No: 8 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1382	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0058	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1438	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0042	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1424	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0055	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 32 TEST

2013/07/27 17:29:52

Shot No: 9 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1392	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0048	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1469	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0011	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1408	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0071	dB	-0.5000	0.5000	PASS

CROSS TALK X TEST

2013/07/27 17:30:06

Shot No: 10 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk X-Y	1	-	-99.9703	dB	-	-90.0000	PASS
Cross Talk X-Z	1	-	-98.7651	dB	-	-90.0000	PASS

CROSS TALK Y TEST

2013/07/27 17:30:25

Shot No: 11 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Y-Z	1	-	-98.2805	dB	-	-90.0000	PASS
Cross Talk Y-X	1	-	-99.8187	dB	-	-90.0000	PASS

CROSS TALK Z TEST

2013/07/27 17:30:43

Shot No: 12 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Z-X	1	-	-97.0964	dB	-	-90.0000	PASS
Cross Talk Z-Y	1	-	-96.7414	dB	-	-90.0000	PASS

IMPULSE RESPONSE TEST

2013/07/27 17:31:02

Shot No: 13 **Station Depth: 45.29 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result

Amplitude (0.3Hz)	1	X	-1.5416	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	X	-3.5773	dB	-5.0000	-	PASS
Impulse Amplitude	1	X	574.2555	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	X	0.0000	degree	-	-	-
Amplitude (0.3Hz)	1	Y	-1.4890	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Y	-3.5745	dB	-5.0000	-	PASS
Impulse Amplitude	1	Y	574.8220	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Y	0.4393	degree	-	-	-
Amplitude (0.3Hz)	1	Z	-1.6895	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Z	-3.5771	dB	-5.0000	-	PASS
Impulse Amplitude	1	Z	574.7048	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Z	4.5479	degree	-	-	-

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration							
Before: 27−Jul−2013 10:38							
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: Calibration out of date 5−Jun−2013 5:18							
Gamma Ray (Jig − Bkg)	156.4	N/A	156.4	N/A	N/A	14.22	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	8305
Enhanced DTS Cartridge	EDTC − B 8	8317
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8303

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z−Axis Acceleration M/S2	Value
Before		9.801

9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)

Before: 27−Jul−2013 10:38

Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		6.203	Before		156.4	Before		164.0

0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)

142.2 (Minimum) 156.4 (Nominal) 170.6 (Maximum)

149.0 (Minimum) 164.0 (Nominal) 179.0 (Maximum)

Before: Calibration out of date 5−Jun−2013 5:18

Company: Lamont Doherty Earth Observatory **Well: Expedition 341, Site U1421A**

Output DLIS Files

DEFAULT	VSIT_028LUP	FN:44	PRODUCER	27−Jul−2013 19:37	1344.8 M	1288.5 M

OP System Version: 19C0−187

VSIT−C	19C0−187	EDTC−B	SKK−5169−EDTCB

Calibrated Downhole Force (CDF) (LBF)
1800 0

Gamma Ray (GR_EDTC)
0 (GAPI) 75

Tension (TENS) (LBF)
5000 0

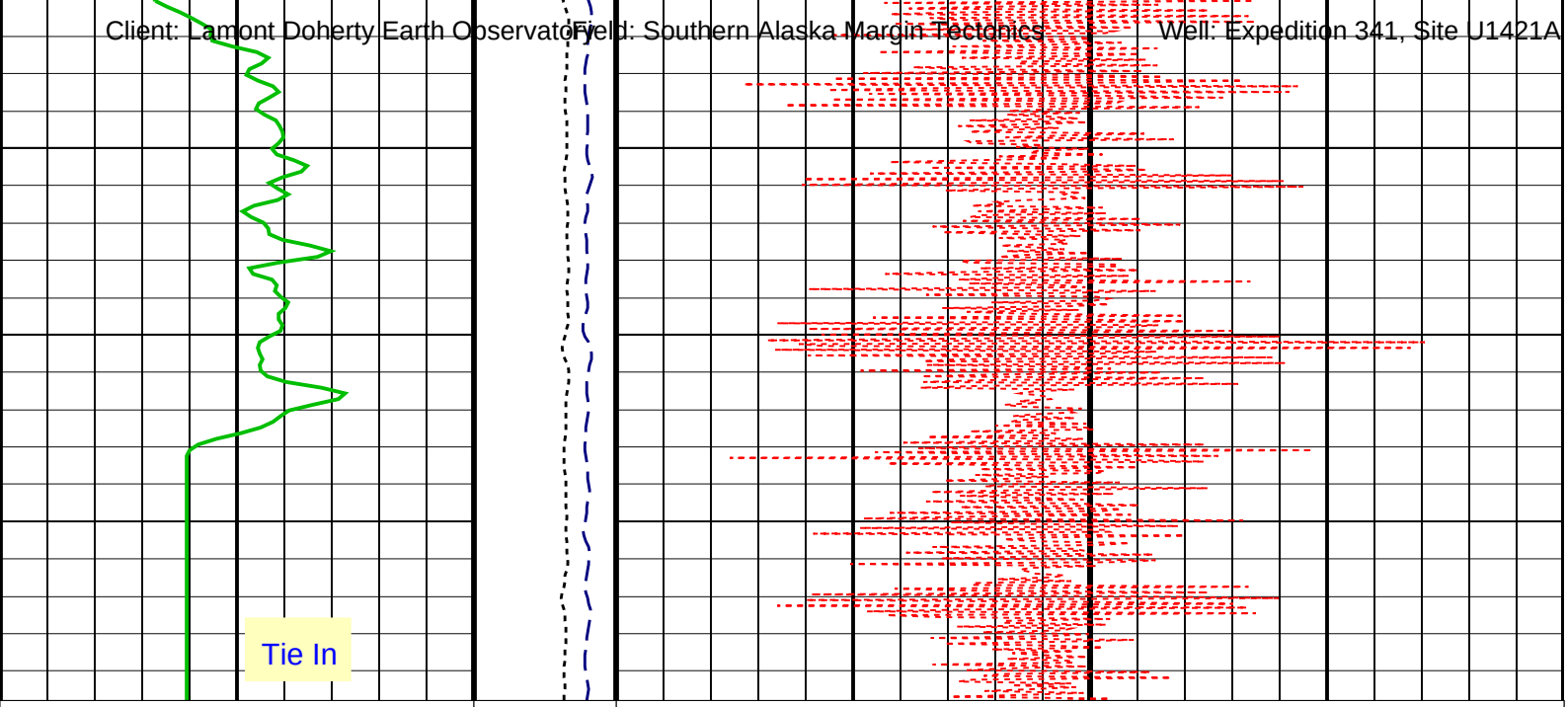
EDTC Z−Axis Accelerometer (AZ_EDTC)
8 (M/S2) 12

Tie In

1300

1325

Schlumberger



Gamma Ray (GR_EDTC)	Tension (TENS)	EDTC Z−Axis Accelerometer (AZ_EDTC)
0 (GAPI) 75	5000 (LBF) 0	8 (M/S2) 12
	Calibrated Downhole Force (CDF) 1800 (LBF) 0	

Format: CORRELATION_EDTCC **Vertical Scale: 1:200** **Graphics File Created: 27−Jul−2013 19:37**

OP System Version: 19C0−187

VSIT−C	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	VSIT_028LUP	FN:44	PRODUCER	27−Jul−2013 19:37