Q-Borehole Survey Report

Schlumberger

Survey:	Zero Offset VSP
Company:	International Ocean Discovery Program
Well:	Expedition 400, Site U1608A
Field:	Site MB-06D
Country:	Greenland
Run:	R1D3
Date:	30-Sep-2023

Recorded by: Kirby Garrett

Witnessed by: Zenon Mateo

Introduction

<General introduction: timeline overview, key comments>

Survey Results:

<Highlight of each survey acquired during this job...>

Recommendations and Conclusions:

Well Information

Company	International Ocean Discovery Program
Well	Expedition 400, Site U1608A
Field	NW Greenland Glaciated Margin
Country	Greenland
State	Artic Ocean
Logging Date	30-Sep-2023
Run Number	R1D3
Service Order	
Well Head (Latitude)	74.128030 degrees
Well Head (Logitude)	-60.971950 degrees
Well Head (X Coordinate)	-60.97 m
Well Head (Y Coordinate)	74.13 m
Total Depth - Driller	618.4 m
Total Depth - Logger	1177 m
Maximum Hole Deviation	0 deg
Azimuth of Maximum Deviation	0 deg
Program Version	
Bit Size	9.875 in
Recorde by	Kirby Garrett
Witnessed by	Zenon Mateo

Well Deviation Survey

Well Deviation Survey Type	
Bottom of The Well Deviation Survey (MD)	

Elevation Information

Permanent Datum	MSL
Elevation Permanent Datum	0 m
Above Permanent Datum	11.4 m
Drilling Measured From	
Derrik Floor	11.4 m
Ground Level	-606.9 m
Kelly Bush	0 m
Log Measured From	DF
Elevation Log Zero	11.4 m

Depth Corrected Information

Water Velocity	1500 m/s
Seismic Reference Datum	0 m

Remarks

Well Sketch

Tool Sketch

Well Information

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

Elevation Information

Water Depth	0 m
Water Temperature	
Water Salinity	
Weathered Zone Depth	
Elevation Depth	

Sea Condition

Sea Conditioin	
Wave Height	
High Tide Level	0 m
High Tide Time	
Low Tide Level	0 m
Low Tide Time	

Velocity Information

Weathered Velocity	0 m/s
Elevation Velocity	0 m/s

Downhole Equipment Information

Seismic Tool Type	
Compined Tool	
Number of Shuttles	
Gimbaled (Y/N)	
Downhole Geophone Type	
Sensitivity	
Natural Frequency	
DC Resistance	
Tool String Numbers	
LEH-QT	
DTC-H	
SGT-N	
AH-199	
VSPC	
VSCC	
VSII #1	
VSIS Receiver #1	
VSII #2	
VSIA	

Operation Time Breakdown

SOE

Operation Time Breakdown

DATE	Time Start	Time Taken Hr : min	OPERATION
			HRS - TOTAL OPERATING TIME

VSP

General Information

Survey Type	Zero Offset VSP
Surface Recording Length	1000 msec
Surface Sampling Rate	1 msec
Downhole Recording Length	3000 msec
Downhole Sampling Rate	1 msec
Top of Survey	741.05 m
Bottom of Survey	1176.1 m
Number of Shots	187
Number of Downhole Traces	187
Number of Downhole Traces used for Processing	187

Stack Summary Listing

Stack number	Well depth[m]	TVD from SRD[m]	TT[ms]	TT(TVD Corrected)[ms]	TWT(TVD Corrected)[ms]	Interval Velocity[m/s]	Average Velocity[m/s]	RMS Velocity[m/s]
24	741.05	729.65	486.41	490.56	981.12	1910.16	1487.38	1487.38
23	761.09	749.69	496.87	501.05	1002.10	1995.09	1496.23	1497.46
22	781.04	769.64	506.83	511.05	1022.11	1938.10	1506.00	1508.77
21	801.12	789.72	517.16	521.41	1042.82	1994.67	1514.58	1518.48
20	821.06	809.66	527.13	531.41	1062.82	1905.89	1523.61	1528.81
19	841.11	829.71	537.62	541.93	1083.86	1961.24	1531.04	1537.01
18	866.07	854.67	550.32	554.66	1109.31	2017.27	1540.91	1548.05
17	891.11	879.71	562.70	567.07	1134.14	2013.33	1551.33	1559.83
16	911.09	899.69	572.60	576.99	1153.99	1959.69	1559.28	1568.74
15	931.07	919.67	582.77	587.19	1174.37	2084.38	1566.23	1576.36
14	961.04	949.64	597.12	601.57	1203.13	2067.23	1578.62	1590.39
11	1011.04	999.64	621.26	625.75	1251.50	2090.08	1597.50	1611.45
10	1031.07	1019.67	630.82	635.34	1270.67	2062.49	1604.93	1619.72
9	1050.98	1039.58	640.46	644.99	1289.98	2082.17	1611.78	1627.23
7	1071.07	1059.67	650.09	654.64	1309.27	2236.74	1618.71	1634.86
6	1091.07	1079.67	659.02	663.58	1327.16	2105.56	1627.04	1644.43
5	1111.09	1099.69	668.51	673.09	1346.17	2069.29	1633.80	1651.84
4	1131.05	1119.65	678.14	682.73	1365.46	2144.98	1639.95	1658.47
3	1151.07	1139.67	687.46	692.07	1384.13	2059.10	1646.76	1665.98
1	1176.14	1164.74	699.62	704.24	1408.48		1653.89	1673.56

Shot Summary Listing

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
1176.1	1	1	8.0	8.4	6970.4	16
1176.1	1	1	8.0	8.4	6823.1	17
1176.1	1	1	8.0	8.4	6398.5	18
1176.1	1	1	8.0	8.4	5576.9	19
1176.1	1	1	8.0	8.4	5480.0	20
1176.1	1	1	8.0	8.5	5137.0	21
1176.1	1	1	8.0	8.5	4926.0	22
1176.1	1	1	8.0	8.5	3465.2	23
1176.1	1	1	7.9	8.5	1317.6	24
1171.1	1	2	2.2	11.4	7562.1	25
1171.1	1	2	2.2	11.3	8543.4	26
1171.1	1	2	2.2	11.3	8536.2	27
1171.1	1	2	2.2	11.3	8433.0	28
1151.1	1	3	12.7	11.3	8161.8	29
1151.1	1	3	12.7	11.3	8186.9	30
1151.1	1	3	12.7	11.3	8161.8	31
1151.1	1	3	12.7	11.3	8151.0	32
1151.1	1	3	12.7	11.3	8133.1	33
1151.1	1	3	12.7	11.3	8099.9	34
1131	1	4	-6.2	11.0	8151.9	35
1131	1	4	-6.2	11.0	8426.7	36
1131	1	4	-6.2	11.0	8406.0	37
1131	1	4	-6.2	11.0	8420.4	38
1131	1	4	-6.2	11.0	8366.5	39
1131	1	4	-6.2	11.0	8348.6	40
1131	1	4	-6.2	11.0	8216.6	41
1131	1	4	-6.2	11.1	6923.7	42
1131	1	4	-6.2	11.1	6844.7	43
1131	1	4	-5.9	11.1	6409.2	44
1131	1	4	-5.9	11.1	6380.5	45
1131	1	4	-5.9	11.1	6295.2	46
1131	1	4	-5.3	11.1	7073.6	47
1111.1	1	5	0.4	11.1	7439.9	48
1111.1	1	5	5.1	11.1	7275.6	49
1111.1	1	5	5.1	11.1	7279.2	50
1111.1	1	5	5.1	11.1	7254.1	51

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
1111.1	1	5	5.1	11.1	7239.7	52
1091.1	1	6	-1.0	11.5	5682.0	53
1091.1	1	6	-1.0	11.5	5685.6	54
1091.1	1	6	-1.0	11.5	5664.0	55
1091.1	1	6	-1.0	11.5	5671.2	56
1071.1	1	7	0.1	11.6	7439.9	57
1071.1	1	7	-0.1	11.6	6950.6	58
1071.1	1	7	0.0	11.6	5382.1	59
1071.1	1	7	0.1	11.6	5453.9	60
1071.1	1	7	0.1	11.6	5436.0	61
1071.1	1	7	0.1	11.6	5421.6	62
1071.1	1	7	0.1	11.6	5278.8	63
1071.1	1	7	0.0	11.6	5182.8	64
1071.1	1	7	0.1	11.6	5907.3	65
1070.1	1	8	-20.9	12.4	5678.4	67
1070.1	1	8	-20.9	12.4	4356.8	68
1070.1	1	8	-20.9	12.4	3889.0	69
1070.1	1	8	-20.9	12.4	3599.0	70
1070.1	1	8	-25.7	12.4	4425.0	71
1070.1	1	8	-23.6	12.4	2263.9	72
1070.1	1	8	-20.6	12.4	3910.5	73
1070.1	1	8	-16.8	12.8	9768.9	75
1070.1	1	8	-16.8	12.8	10019.4	76
1070.1	1	8	-16.8	12.8	9483.4	77
1070.1	1	8	-16.8	12.8	9483.4	78
1070.1	1	8	-16.8	12.8	9380.2	79
1070.1	1	8	-16.8	12.8	9729.4	80
1070.1	1	8	-16.7	12.8	12019.8	81
1070.1	1	8	-6.4	12.8	12726.4	82
1070.1	1	8	-6.4	12.8	12762.3	83
1051	1	9	-4.1	11.8	8301.0	84
1051	1	9	-4.2	11.8	8279.4	85
1051	1	9	7.2	12.0	1127.2	87
1051	1	9	9.8	12.0	48.9	88
1051	1	9	15.6	12.0	678.3	89
1051	1	9	12.6	12.5	8230.9	90
1051	1	9	12.6	12.5	8256.1	91

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
1051	1	9	12.6	12.5	8145.6	92
1051	1	9	12.6	12.5	8145.6	93
1051	1	9	12.6	12.5	7998.4	94
1051	1	9	12.6	12.5	8053.2	95
1031.1	1	10	4.4	12.2	8225.6	96
1031.1	1	10	4.4	12.2	8254.3	97
1031.1	1	10	4.4	12.2	8232.7	98
1031.1	1	10	4.4	12.2	8257.9	99
1031.1	1	10	4.4	12.2	8275.8	100
1031.1	1	10	4.4	12.2	8257.9	101
1031.1	1	10	4.7	12.7	7248.7	102
1031.1	1	10	4.7	12.7	7291.8	103
1031.1	1	10	4.7	12.7	7273.8	104
1031.1	1	10	4.7	12.7	7235.2	105
1031.1	1	10	4.7	12.7	7270.3	106
1031.1	1	10	4.8	12.7	7113.1	107
1031.1	1	10	4.7	12.7	6659.7	108
1031.1	1	10	4.8	12.7	6656.1	109
1011	1	11	-6.3	12.2	8431.2	111
1011	1	11	-6.3	12.2	8292.0	112
1011	1	11	-6.3	12.2	8316.2	113
1011	1	11	-6.3	12.2	8281.2	114
1011	1	11	-6.3	12.2	8259.7	115
1011	1	11	-6.3	12.2	8230.9	116
991.05	1	12	-4.2	15.5	8633.2	117
991.05	1	12	-4.3	15.5	8629.6	118
991.05	1	12	-4.3	15.5	8618.8	119
991.05	1	12	-4.1	15.5	8597.3	120
991.05	1	12	-4.2	15.5	8590.1	121
991.05	1	12	-4.3	15.5	8573.9	122
991.05	1	12	-4.0	15.5	8563.1	123
991.05	1	12	-4.0	15.5	8559.6	124
990.07	1	13	-2.5	15.5	8313.5	126
990.07	1	13	-2.4	15.5	8220.2	127
990.07	1	13	-2.3	15.5	8203.1	128
990.07	1	13	-2.5	15.5	8216.6	129
990.07	1	13	-2.6	15.5	8241.7	130

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
990.07	1	13	-2.6	15.5	8288.4	131
990.07	1	13	-2.6	15.5	8281.2	132
990.07	1	13	-3.2	15.5	8092.7	133
990.07	1	13	-5.1	15.5	8188.7	134
961.04	1	14	11.3	12.2	7084.4	135
961.04	1	14	11.3	12.2	7059.3	136
961.04	1	14	11.3	12.2	7017.1	137
961.04	1	14	11.3	12.2	7037.7	138
961.04	1	14	11.3	12.2	7030.5	139
961.04	1	14	11.3	12.2	7020.7	140
931.07	1	15	-30.3	12.2	8371.9	141
931.07	1	15	-26.7	12.2	8468.9	142
931.07	1	15	-26.7	12.2	8412.3	143
931.07	1	15	-26.3	12.2	8529.0	144
931.07	1	15	-26.3	12.2	8561.3	145
911.09	1	16	-5.0	12.3	6281.7	146
911.09	1	16	-5.0	12.3	6304.2	147
911.09	1	16	-5.0	12.3	6400.2	148
911.09	1	16	-5.3	12.3	5296.8	149
911.09	1	16	-6.1	12.3	4957.4	150
911.09	1	16	-6.1	12.4	7829.6	152
911.09	1	16	-6.0	12.4	7293.6	153
911.09	1	16	-3.3	12.4	5914.5	154
891.11	1	17	-1.3	11.9	8588.3	155
891.11	1	17	-1.3	11.9	8570.3	156
891.11	1	17	-1.2	11.9	8342.3	157
866.07	1	18	-10.2	13.4	9796.8	158
866.07	1	18	-10.2	13.4	9660.3	159
866.07	1	18	-10.9	13.4	7771.2	160
866.07	1	18	-10.9	13.4	7778.4	161
841.11	1	19	-7.6	12.4	8034.3	162
841.11	1	19	-7.6	12.4	7920.3	163
841.11	1	19	-7.6	12.4	7905.9	164
821.06	1	20	-2.0	12.5	8195.9	165
821.06	1	20	-2.0	12.5	7898.7	166
821.06	1	20	-2.0	12.5	7895.2	167
821.06	1	20	-2.0	12.5	7863.7	168

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
821.06	1	20	-2.0	12.5	7938.2	169
801.12	1	21	1.2	13.0	8877.4	170
801.12	1	21	1.2	13.0	8696.0	171
801.12	1	21	1.2	13.0	8824.4	172
801.12	1	21	1.2	13.0	8885.5	173
801.12	1	21	1.2	13.0	8520.9	174
781.04	1	22	-1.9	13.6	7293.6	175
781.04	1	22	-1.2	13.6	6150.6	176
781.04	1	22	-1.2	13.6	6057.3	177
781.04	1	22	-1.0	13.6	5735.8	178
761.09	1	23	2.8	14.0	7853.0	179
761.09	1	23	2.7	14.0	7827.8	180
761.09	1	23	2.7	14.0	7778.4	181
761.09	1	23	2.7	14.0	7709.3	182
741.05	1	24	9.8	14.3	8356.6	183
741.05	1	24	9.8	14.3	8245.3	184
741.05	1	24	9.8	14.3	8950.1	185
741.05	1	24	8.6	14.4	8492.2	186
741.05	1	24	8.6	14.7	8299.2	187
741.05	1	24	8.6	14.7	7895.2	188
741.05	1	24	8.6	14.7	7902.3	189
741.05	1	24	8.8	14.7	10371.4	190
741.05	1	24	9.1	14.7	9010.3	192
741.05	1	24	9.1	14.7	9138.7	193
741.05	1	24	9.1	14.7	9127.9	194
741.05	1	24	-4.8	14.7	7173.3	195
741.05	1	24	-4.8	14.7	7348.4	196
741.05	1	24	-4.8	14.7	7198.4	197
741.05	1	24	-4.8	14.7	7362.7	198
741.05	1	24	-4.8	14.7	7205.6	199
741.05	1	25	-4.8	14.7	7820.6	200
741.05	1	25	-4.8	14.7	7384.3	201
741.05	1	25	-4.8	14.7	7228.1	202
741.05	1	25	-4.8	14.7	7277.4	203
741.05	1	25	-4.8	14.7	7231.6	204
741.05	1	26	-4.8	14.7	6948.8	205
741.05	1	26	-4.8	14.7	7387.9	206

Measured Depth [m]	Tool Number	Stack Number	Raw Relative Bearing [deg]	Caliper [in]	Anchor Force [N]	Shot Number
741.05	1	26	-4.8	14.7	10682.0	207
741.05	1	26	-4.4	14.7	4915.2	208
741.05	1	26	-4.5	14.7	7970.6	209

Source Information Page (for Air Gun)

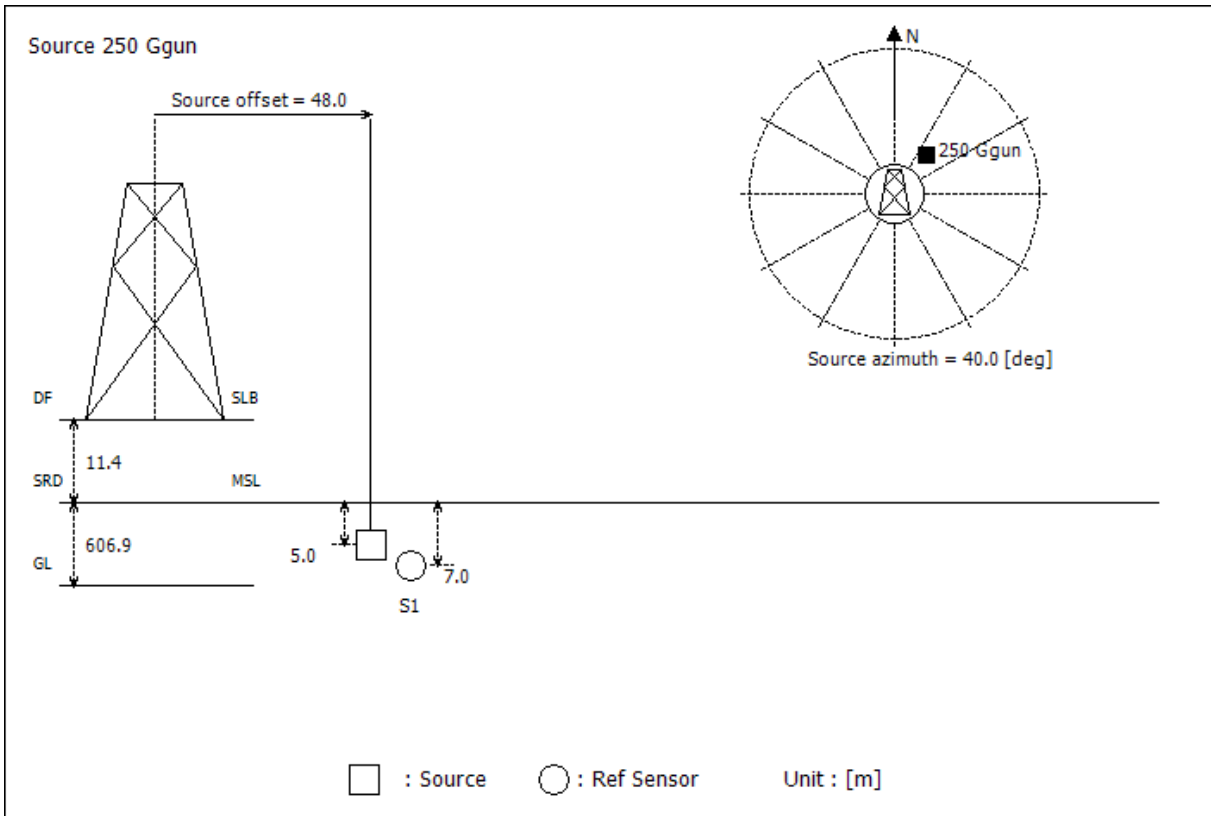
Source Location	
Source Group	
Source Offset	
Source Azimuth	
Source Depth from Surface	
Source Depth from Logging Zero	

Gun Controller Type	
Gun Controller Serial Number	
Gun Type	2x250cc G-Guns
Gun Serial Number(s)	808
Gun Chamber Volumes	
Gun Pit/Borehole Information	
Compressor Type	
Air Regulator Pressure	

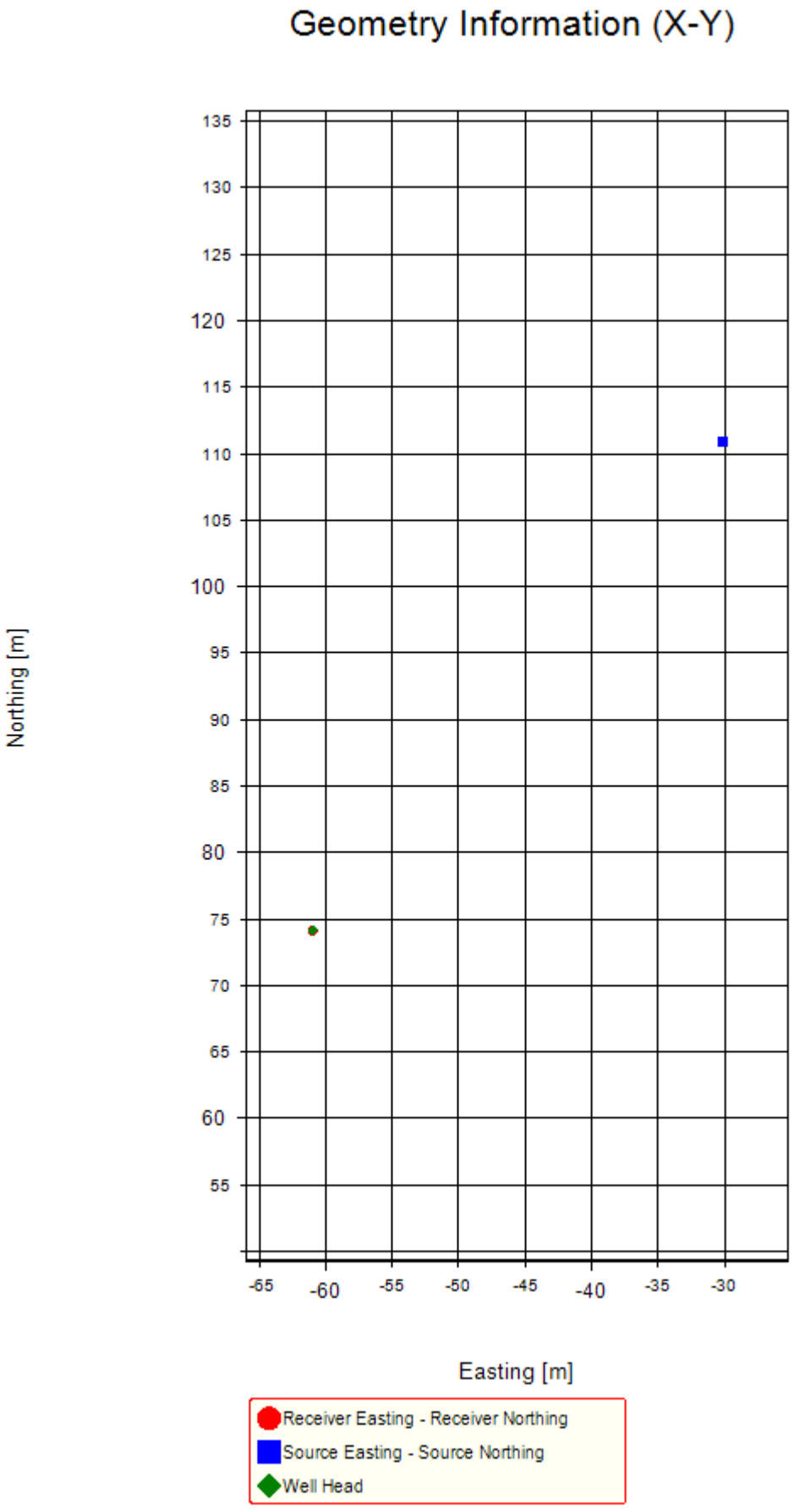
Source Configuration (Air Gun)

Number of Surface reference Sensors	
Surface Recording Length	1000 msec
Surface Sampling Rate	1 msec
Sensor Type (S1)	
Sensor Type (S2)	
Sensor Type (S3)	
Sensor Depth from Surface (S1)	
Sensor Depth from Surface (S2)	
Sensor Depth from Surface (S3)	
Sensor Depth from Logging Zero (S1)	
Sensor Depth from Logging Zero (S2)	
Sensor Depth from Logging Zero (S3)	
Sensor Offset from Source (S1)	
Sensor Offset from Source (S2)	
Sensor Offset from Source (S3)	

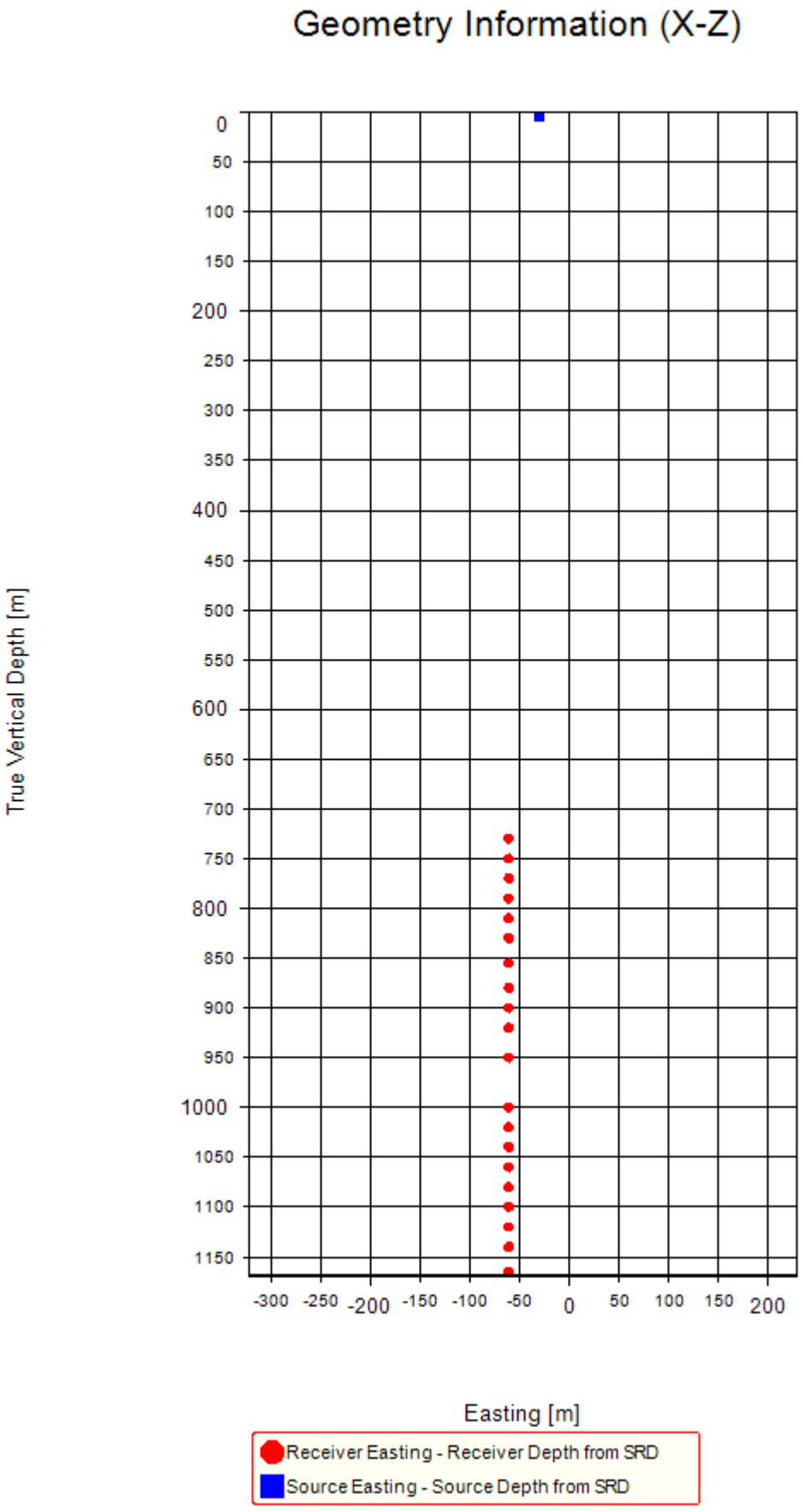
Source Geometry Sketch



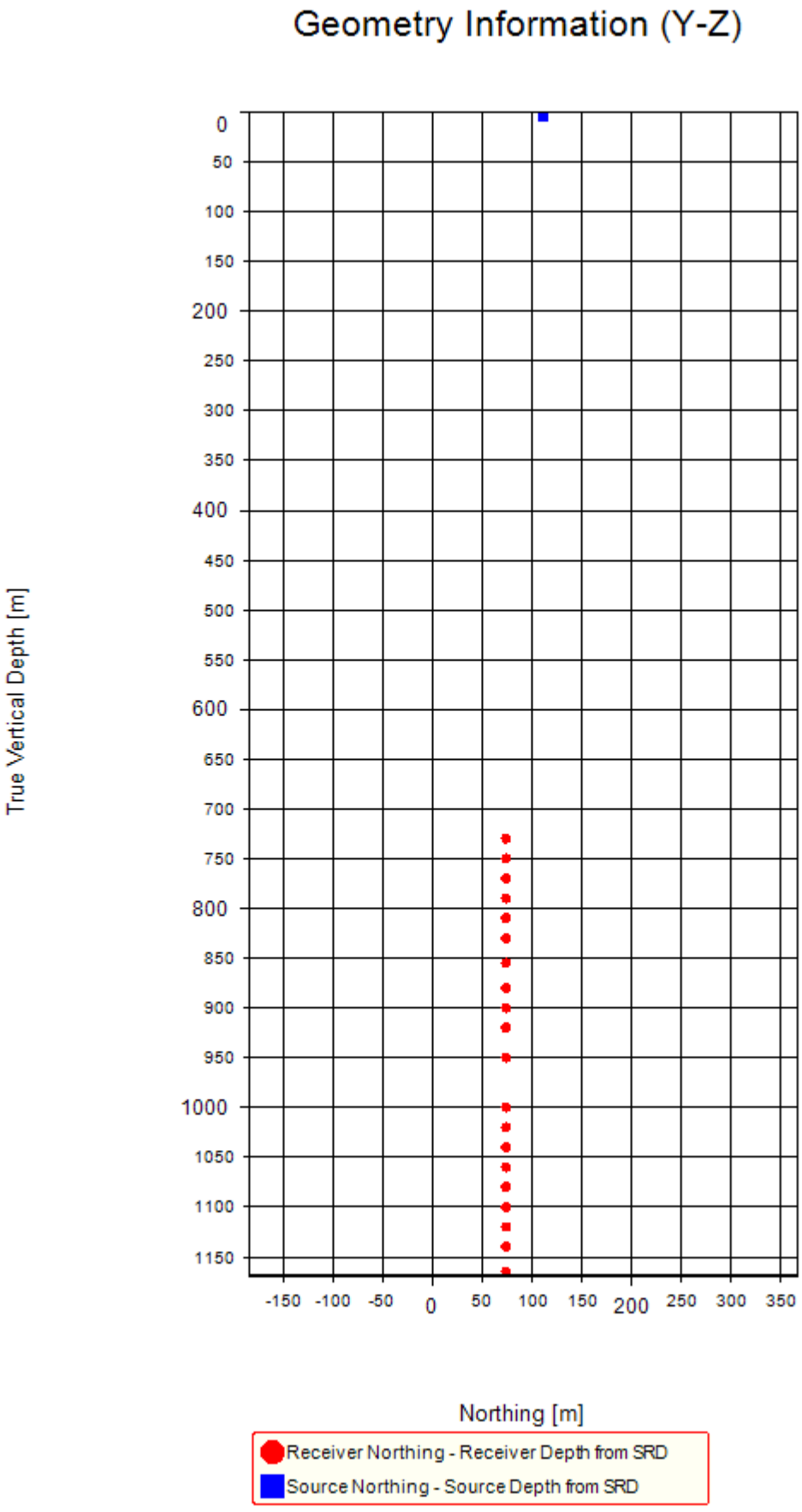
Geometry Information (X-Y)



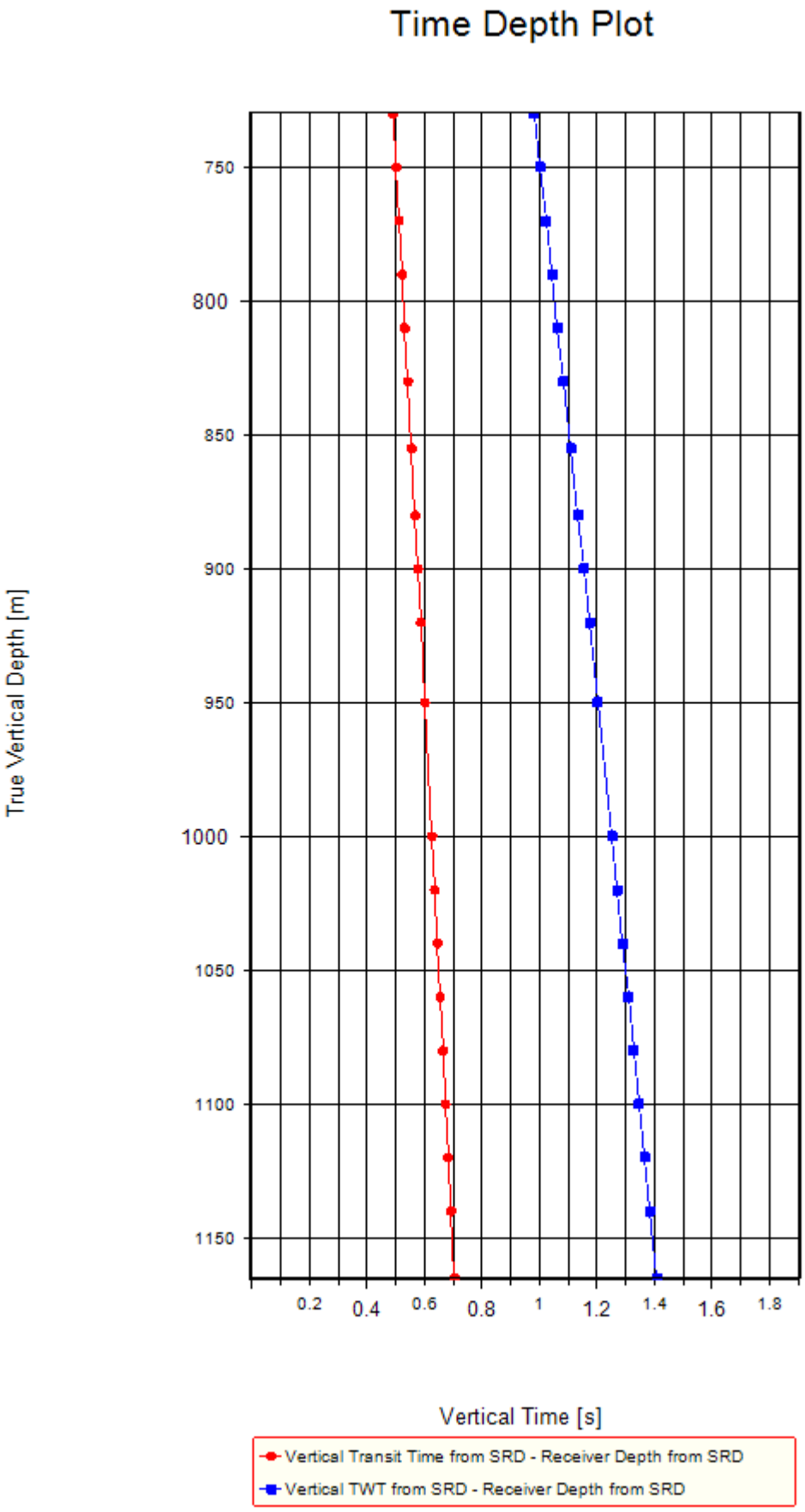
Geometry Information (X-Z)



Geometry Information (Y-Z)

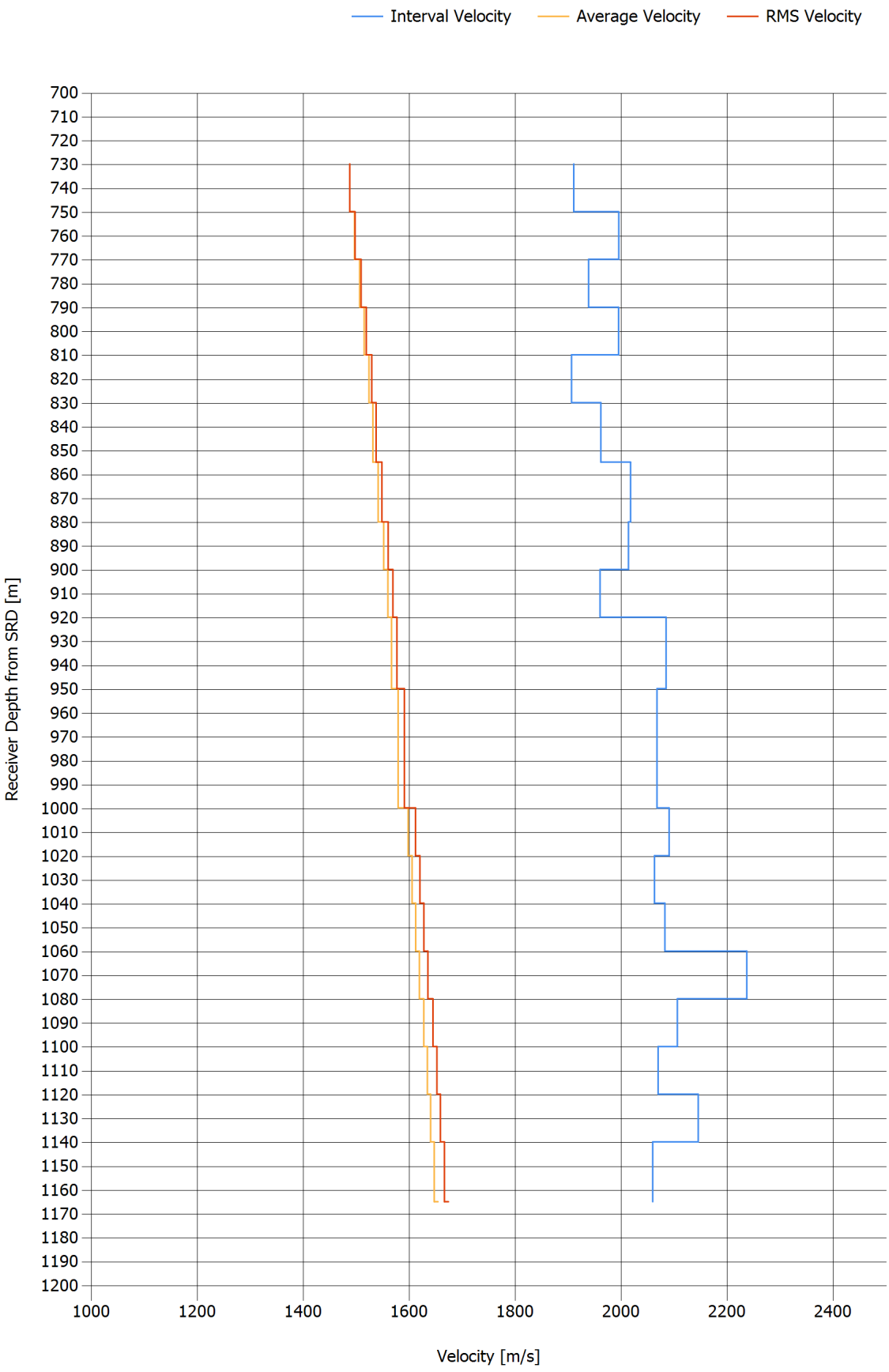


Time Depth Plot

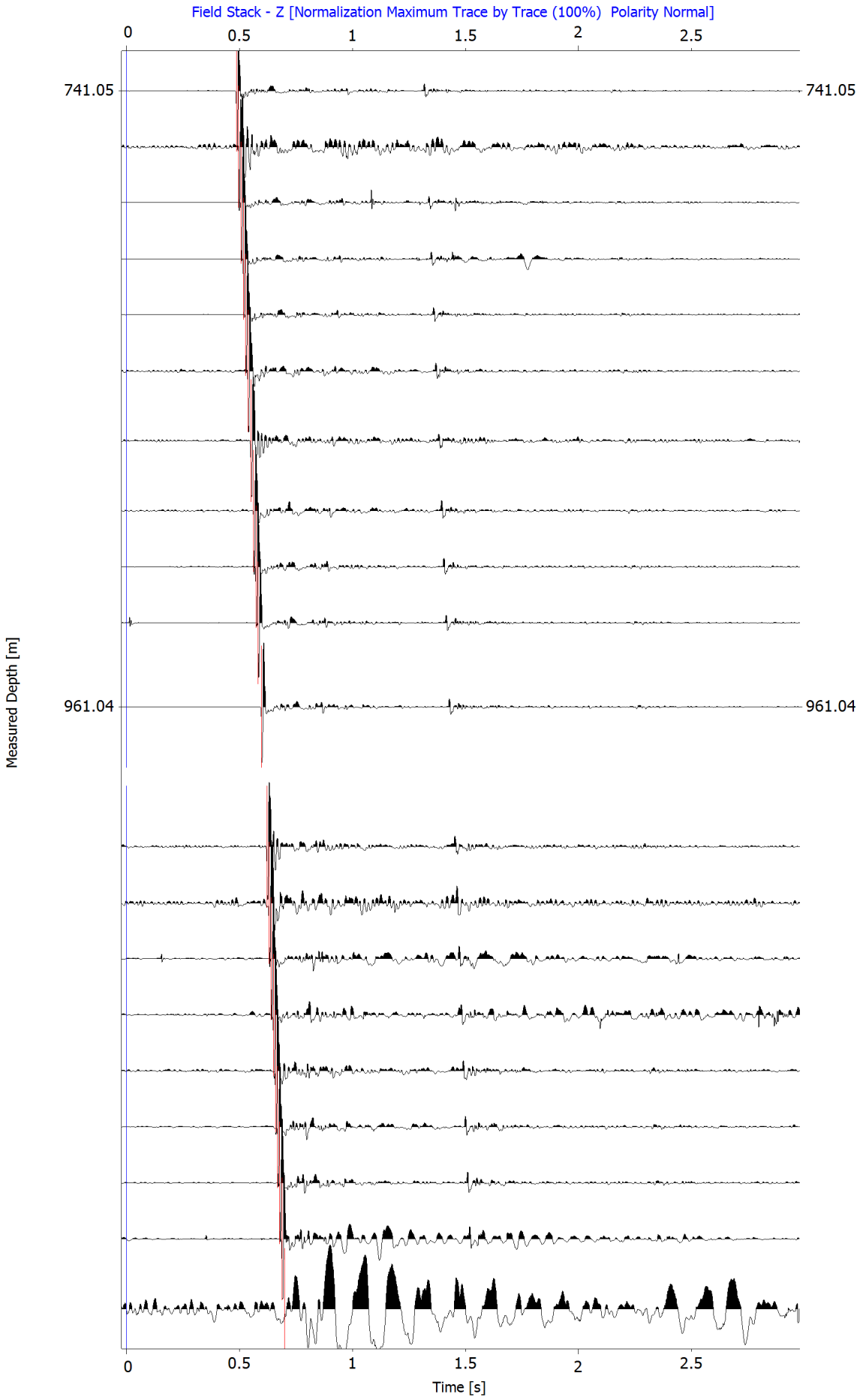


Velocity Plot

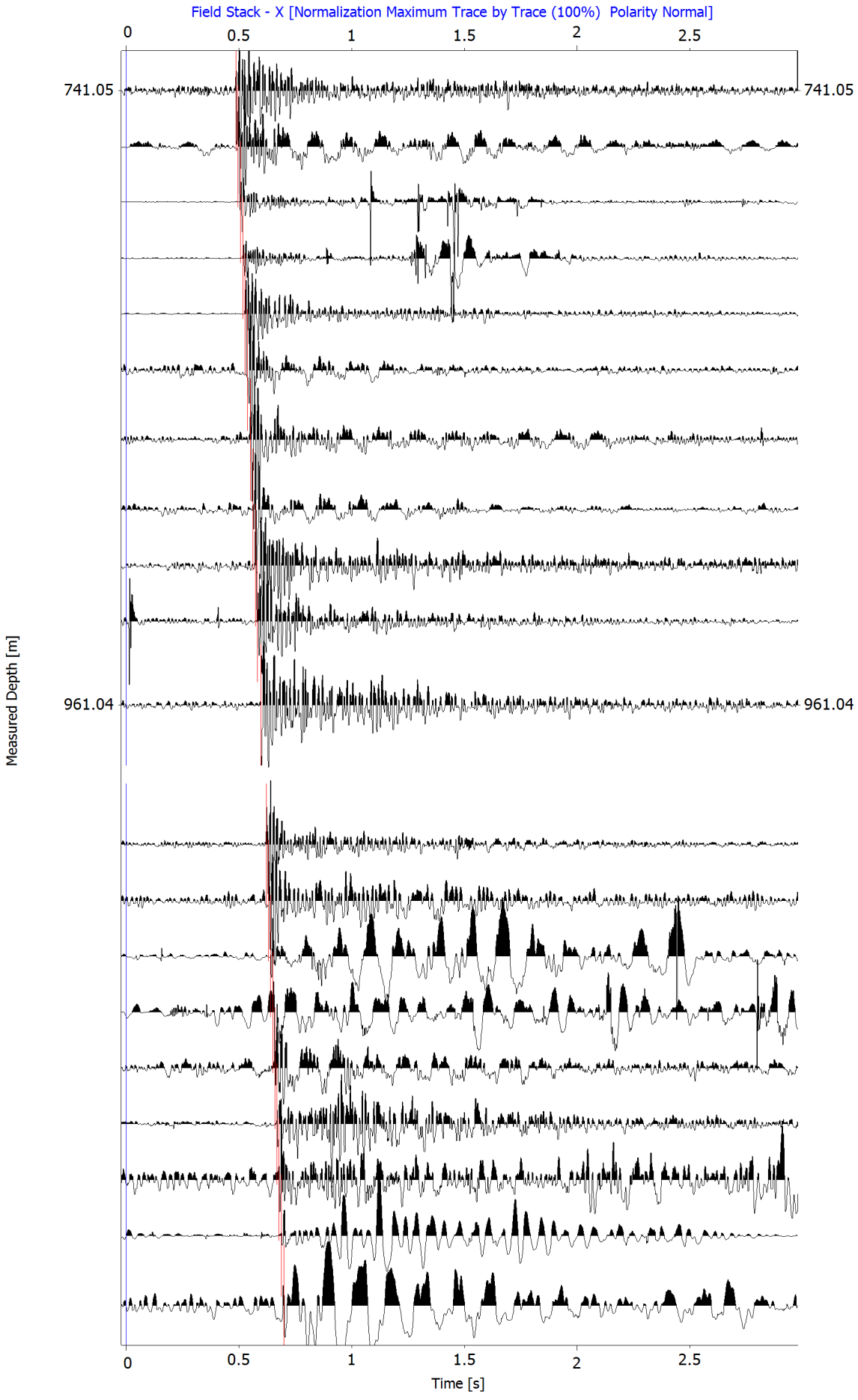
SRD below Measured Depth Zero = 11.40 m



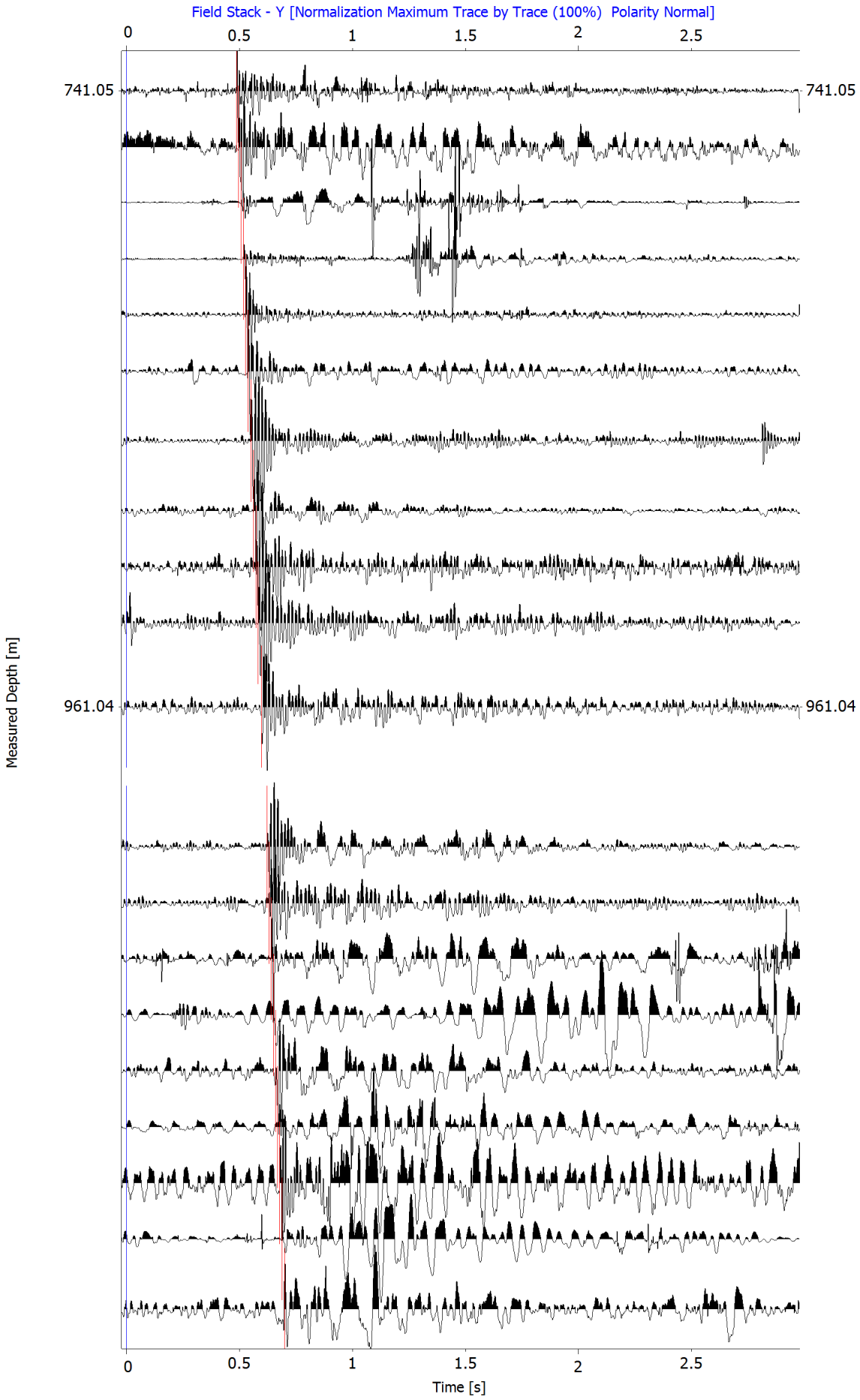
Field Stack (Z)



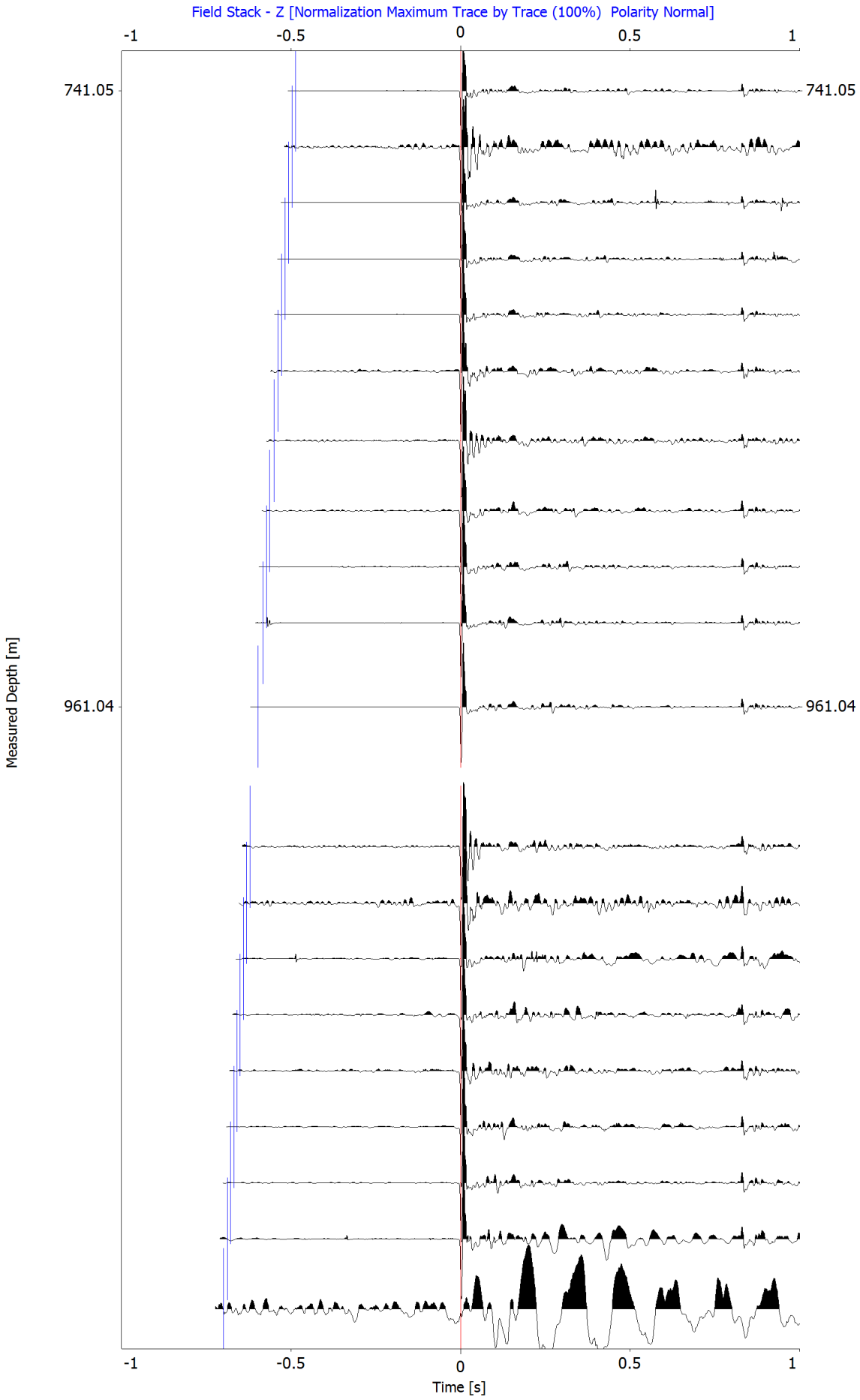
Field Stack (X)



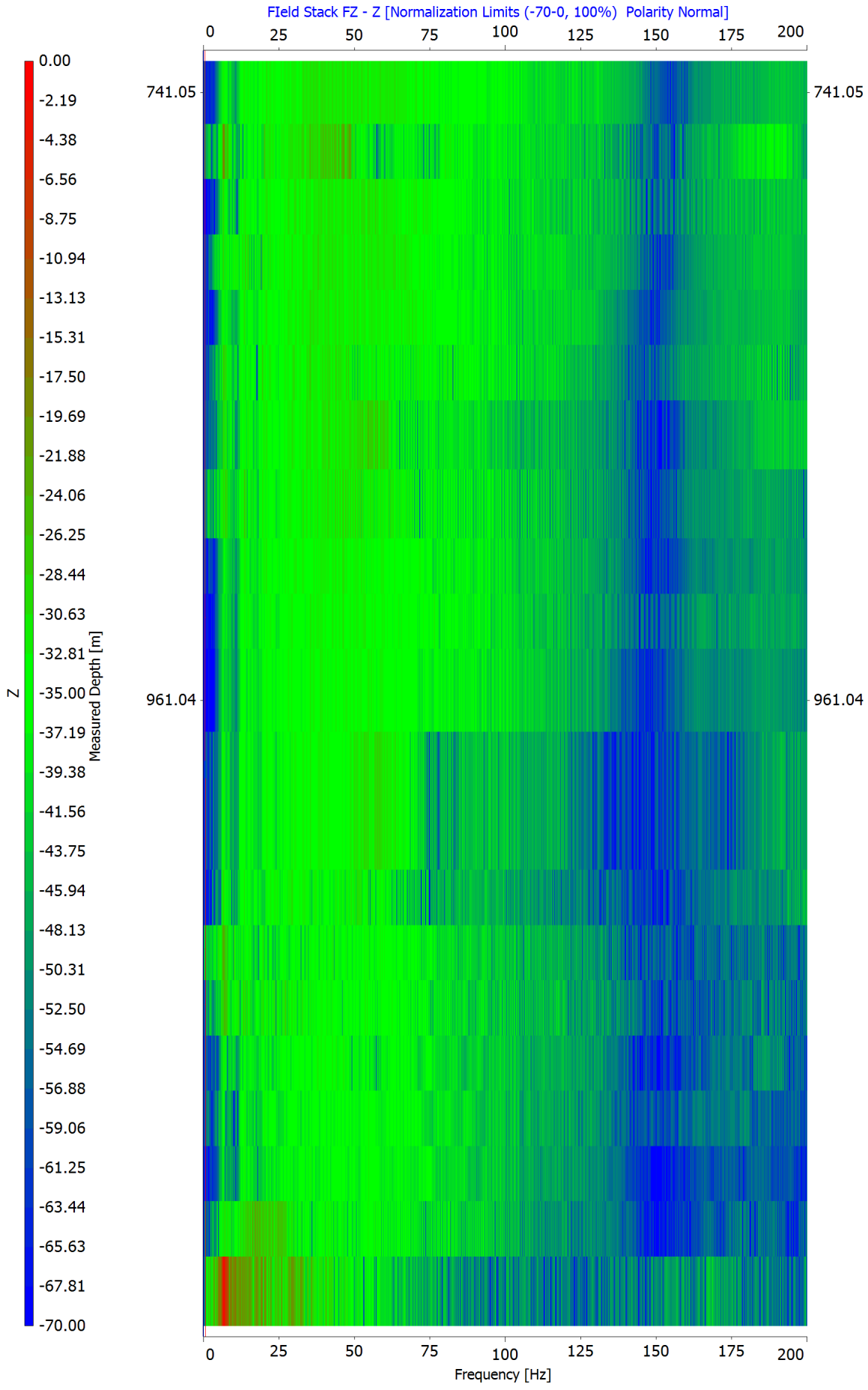
Field Stack (Y)



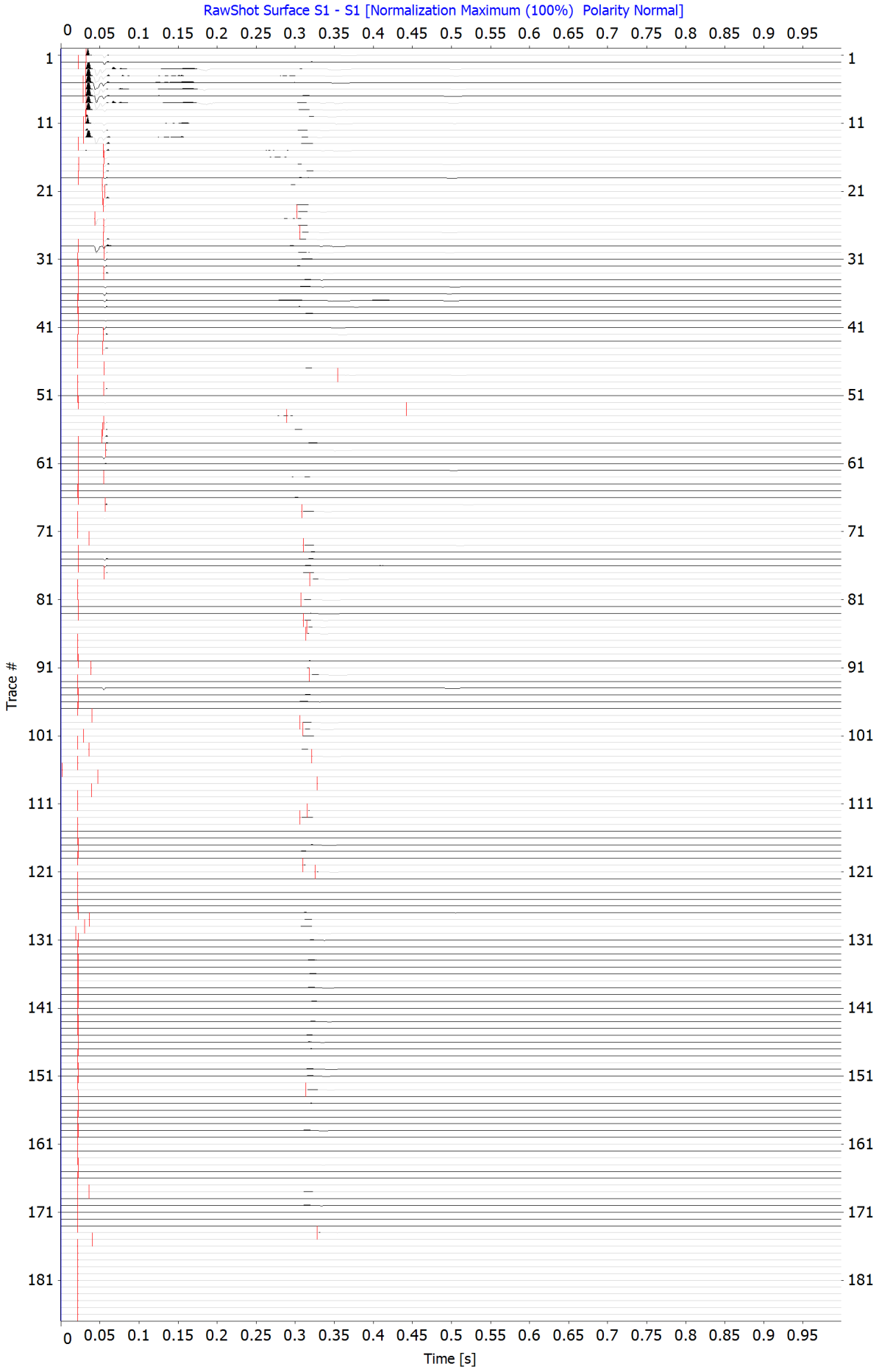
Field Stack (Z) (Magnified)



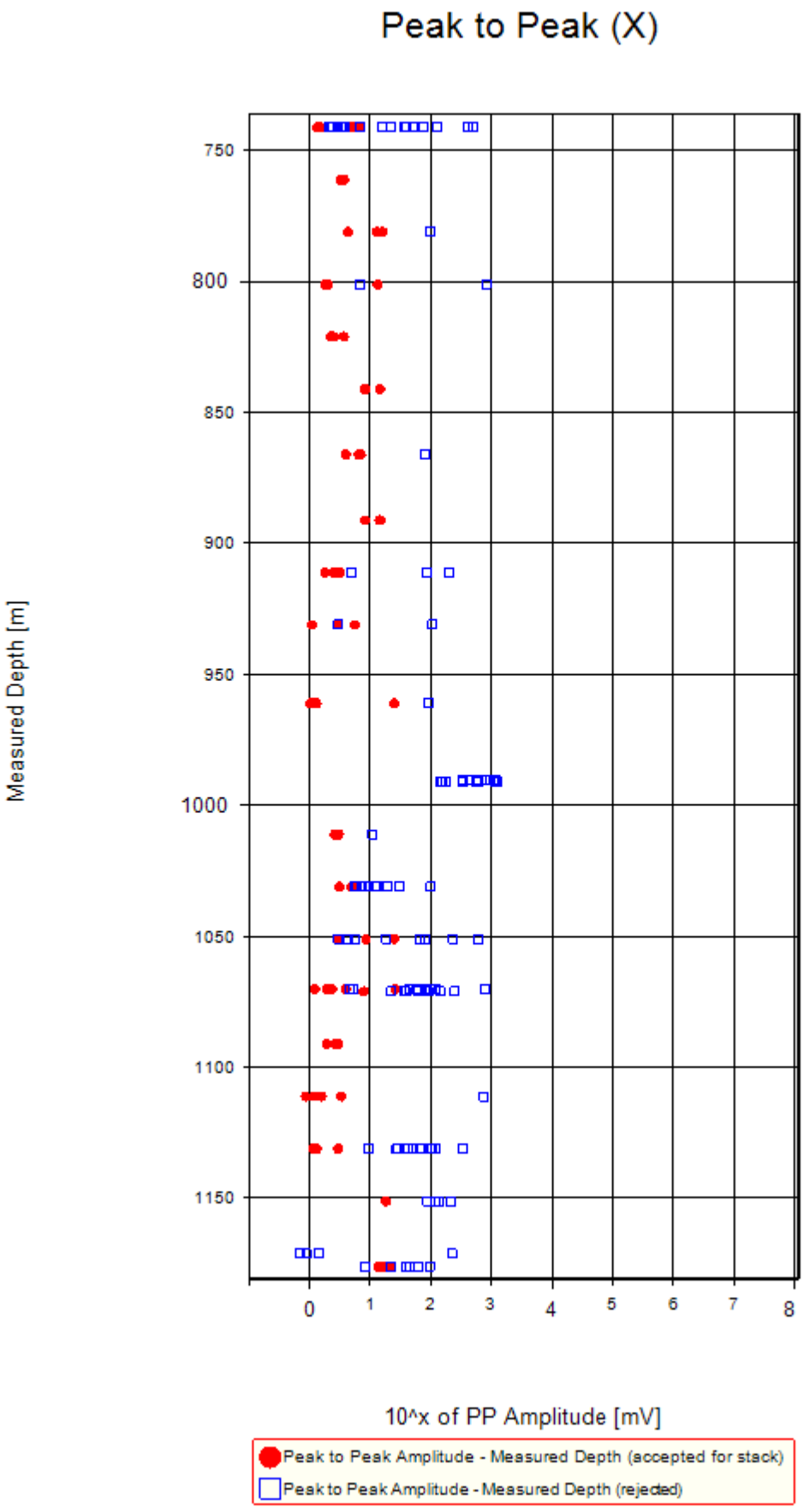
Field Stack (Z) FZ Spectrum



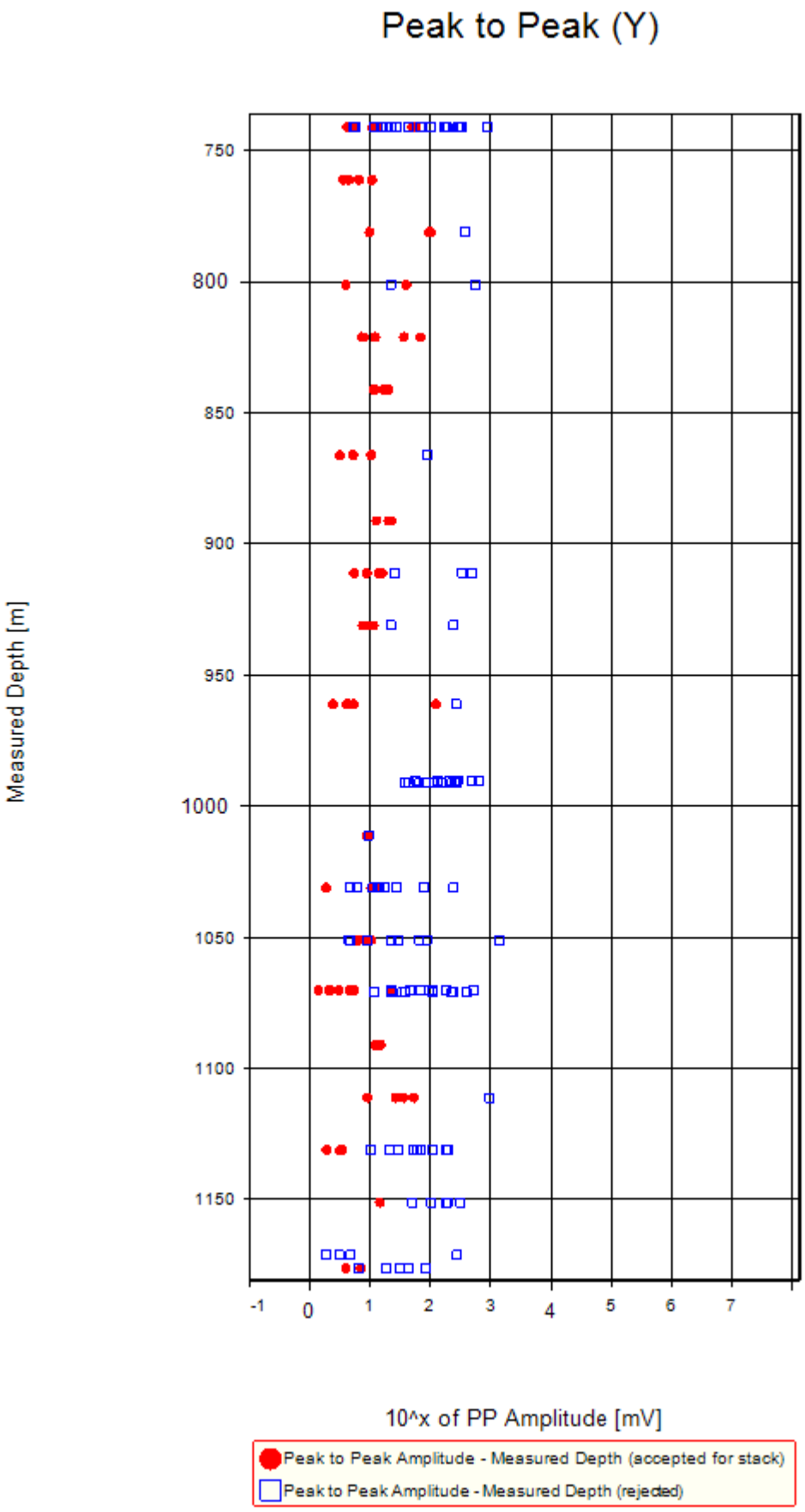
Source Sensor Signature



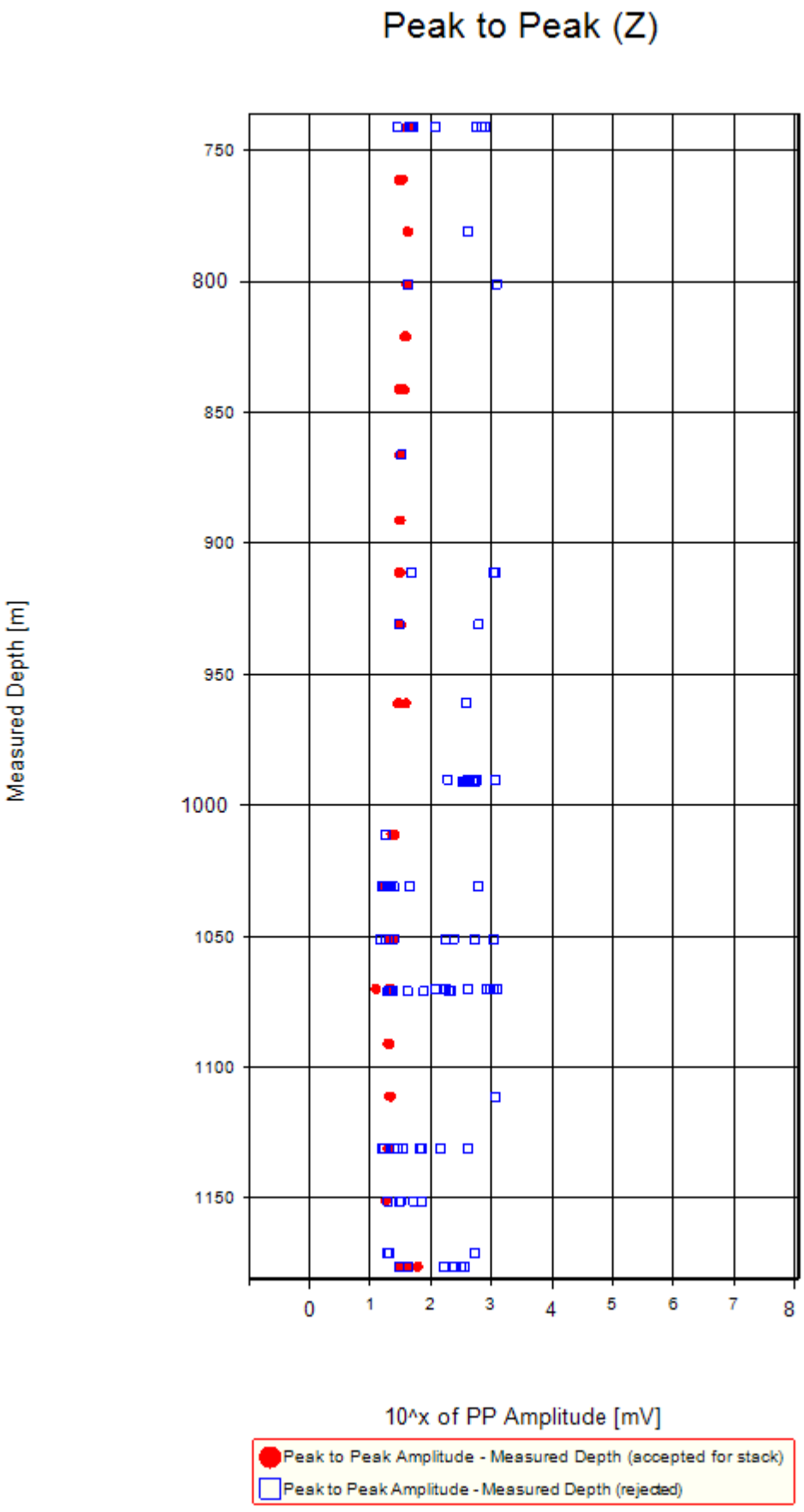
Peak To Peak Plot (X)



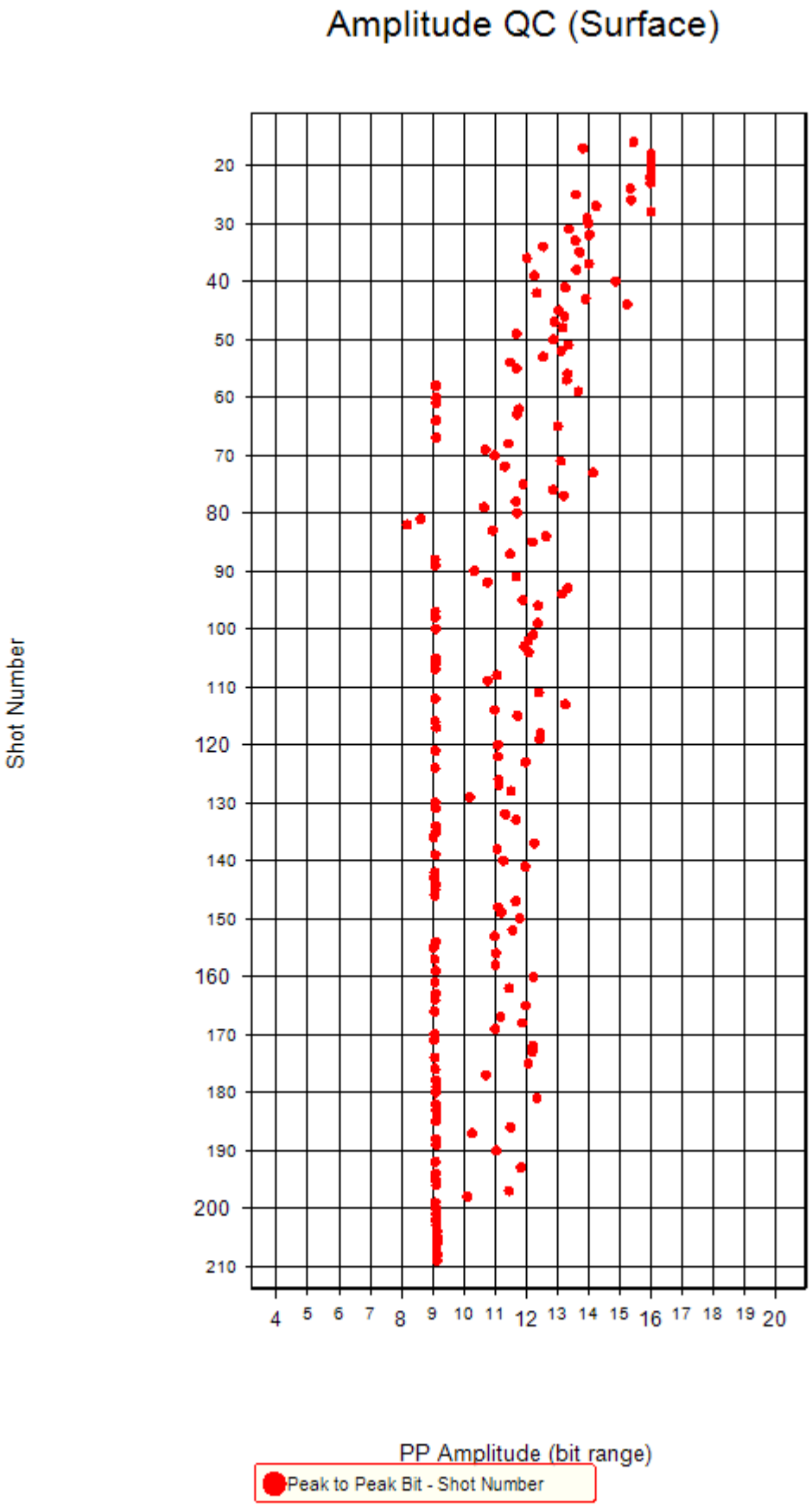
Peak To Peak Plot (Y)



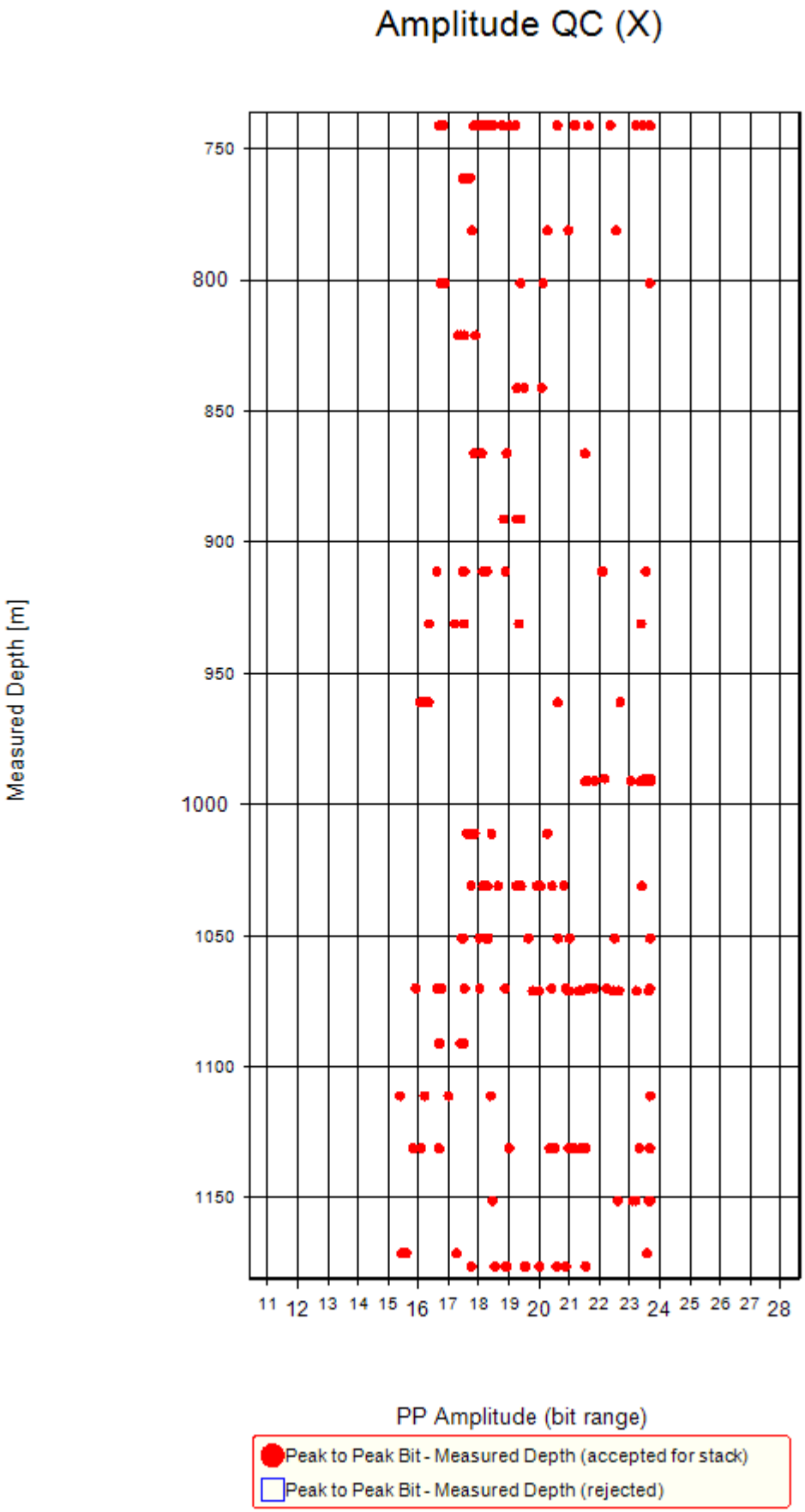
Peak To Peak Plot (Z)



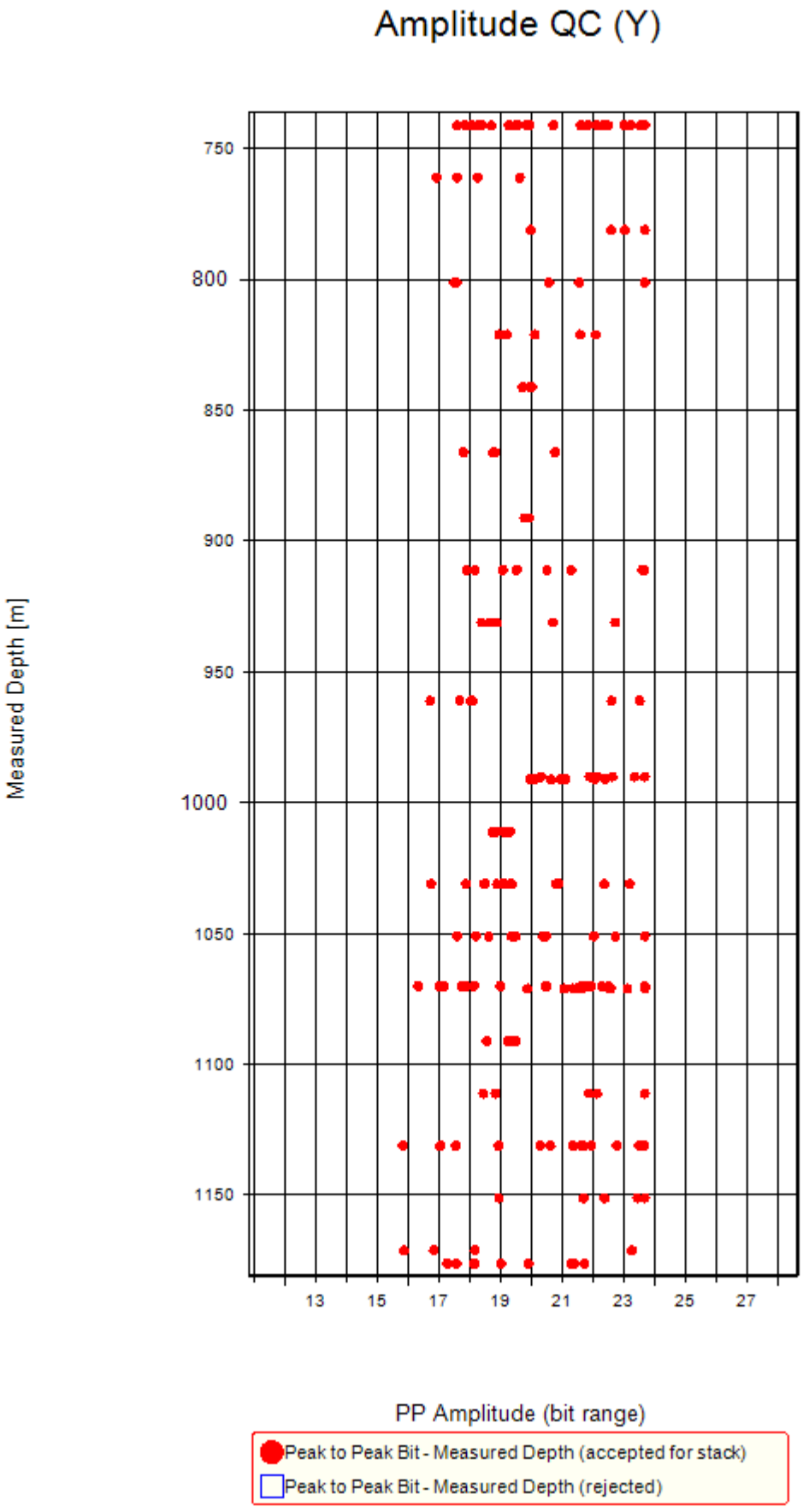
Amplitude QC Plot (Surface)



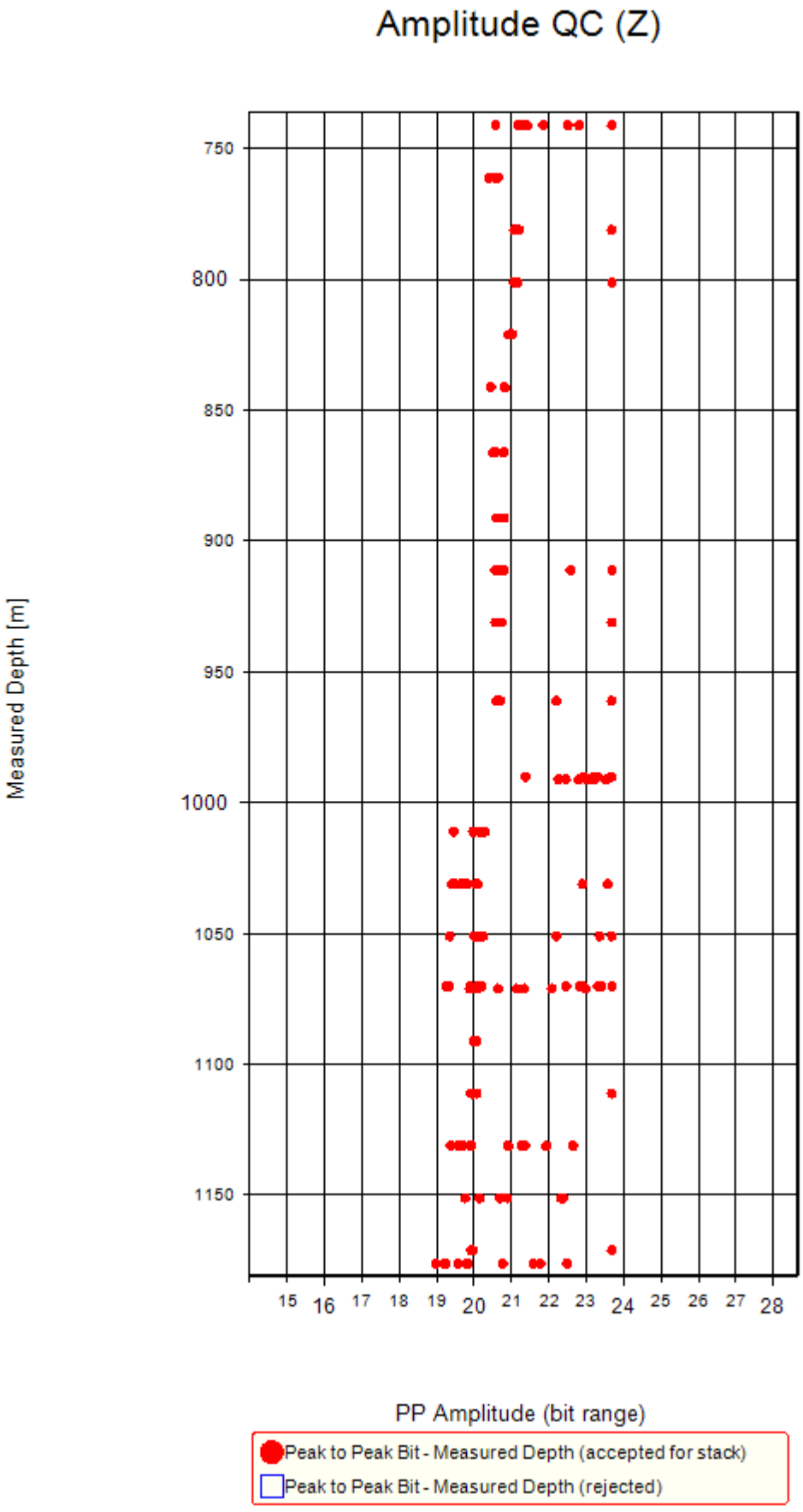
Amplitude QC Plot (X)



Amplitude QC Plot (Y)



Amplitude QC Plot (Z)



Observer's Note

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
721.2	10:59:42	ETHD	1			
721.2	10:59:53	GA01	2			
721.2	11:00:03	GA02	3			
721.2	11:00:13	GA04	4			
721.2	11:00:23	GA08	5			
721.2	11:00:34	GA16	6			
721.2	11:00:48	XTLK	7			
721.2	11:01:02	XTLK	8			
721.2	11:01:17	XTLK	9			
721.2	11:01:27	EIMP	10			
721.2	11:01:39	ENHI	11			
721.2	11:01:51	ENLO	12			
721.2	11:02:01	DRNG	13			
1176.1	11:08:50	SHAK	14			
1176.1	11:09:13	BKGD	15			
1176.1	11:13:21	SHOT	16	1		
1176.1	11:14:14	SHOT	17	1		Repick
1176.1	11:14:44	SHOT	18	1		
1176.1	11:15:13	SHOT	19	1		
1176.1	11:15:44	SHOT	20	1		Repick
1176.1	11:16:51	SHOT	21	1		
1176.1	11:17:15	SHOT	22	1		Repick
1176.1	11:17:38	SHOT	23	1		
1176.1	11:17:59	SHOT	24	1		
1171.1	11:26:27	SHOT	25	2		
1171.1	11:26:49	SHOT	26	2		good - Repick
1171.1	11:27:11	SHOT	27	2		good - Repick
1171.1	11:27:33	SHOT	28	2		good - Repick
1151.1	11:32:34	SHOT	29	3		
1151.1	11:32:52	SHOT	30	3		
1151.1	11:33:08	SHOT	31	3		

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
1151.1	11:33:25	SHOT	32	3		
1151.1	11:36:02	SHOT	33	3		
1151.1	11:36:25	SHOT	34	3		good - Repick
1131.0	11:41:37	SHOT	35	4		Repick
1131.0	11:41:54	SHOT	36	4		
1131.0	11:42:13	SHOT	37	4		
1131.0	11:42:30	SHOT	38	4		
1131.0	11:42:47	SHOT	39	4		
1131.0	11:43:04	SHOT	40	4		
1131.0	11:43:21	SHOT	41	4		
1131.0	11:43:38	SHOT	42	4		
1131.0	11:43:56	SHOT	43	4		
1131.0	11:44:31	SHOT	44	4		good
1131.0	11:44:48	SHOT	45	4		
1131.0	11:46:04	SHOT	46	4		good
1131.0	11:51:58	SHOT	47	4		good
1111.1	11:56:54	SHOT	48	5		
1111.1	11:57:11	SHOT	49	5		Good - Repick
1111.1	11:57:29	SHOT	50	5		good - Repick
1111.1	11:57:46	SHOT	51	5		good - Repick
1111.1	11:58:03	SHOT	52	5		good - Repick
1091.1	12:02:29	SHOT	53	6		good - Repick
1091.1	12:03:09	SHOT	54	6		Repick
1091.1	12:03:49	SHOT	55	6		good - Repick
1091.1	12:04:30	SHOT	56	6		good - Repick
1071.1	12:08:28	SHOT	57	7		
1071.1	12:08:58	SHOT	58	7		Ok - Repick
1071.1	12:09:28	SHOT	59	7		
1071.1	12:09:58	SHOT	60	7		
1071.1	12:10:28	SHOT	61	7		
1071.1	12:10:59	SHOT	62	7		

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
1071.1	12:11:29	SHOT	63	7		
1071.1	12:11:59	SHOT	64	7		
1071.1	12:12:29	SHOT	65	7		
1070.1	12:14:32	SHOT	67	8		Good
1070.1	12:15:03	SHOT	68	8		
1070.1	12:15:33	SHOT	69	8		
1070.1	12:16:03	SHOT	70	8		
1070.1	12:16:33	SHOT	71	8		
1070.1	12:17:03	SHOT	72	8		
1070.1	12:17:33	SHOT	73	8		
1070.1	12:19:29	SHOT	75	8		Good - Repick
1070.1	12:19:59	SHOT	76	8		
1070.1	12:20:29	SHOT	77	8		Good - Repick
1070.1	12:20:59	SHOT	78	8		Repick
1070.1	12:21:29	SHOT	79	8		Repick
1070.1	12:21:59	SHOT	80	8		
1070.1	12:25:21	SHOT	81	8		Good
1070.1	12:26:02	SHOT	82	8		Repick
1070.1	12:28:01	SHOT	83	8		Repick
1051.0	12:32:50	SHOT	84	9		
1051.0	12:33:20	SHOT	85	9		
1051.0	12:39:23	SHOT	87	9		
1051.0	12:39:56	SHOT	88	9		
1051.0	12:40:26	SHOT	89	9		
1051.0	12:42:04	SHOT	90	9		
1051.0	12:42:34	SHOT	91	9		
1051.0	12:43:04	SHOT	92	9		Repick
1051.0	12:43:34	SHOT	93	9		good
1051.0	12:44:04	SHOT	94	9		g
1051.0	12:44:34	SHOT	95	9		bad
1031.1	12:48:54	SHOT	96	10		

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
1031.1	12:49:14	SHOT	97	10		
1031.1	12:49:34	SHOT	98	10		
1031.1	12:50:06	SHOT	99	10		
1031.1	12:50:26	SHOT	100	10		Repick
1031.1	12:50:46	SHOT	101	10		Repick
1031.1	12:52:03	SHOT	102	10		
1031.1	12:52:23	SHOT	103	10		
1031.1	12:52:43	SHOT	104	10		
1031.1	12:53:03	SHOT	105	10		
1031.1	12:53:23	SHOT	106	10		
1031.1	12:53:44	SHOT	107	10		
1031.1	12:54:04	SHOT	108	10		Repick
1031.1	12:54:24	SHOT	109	10		
1011.0	12:58:41	SHOT	111	11		
1011.0	12:59:01	SHOT	112	11		good
1011.0	12:59:21	SHOT	113	11		good
1011.0	12:59:41	SHOT	114	11		Repick
1011.0	13:00:01	SHOT	115	11		Repick
1011.0	13:01:03	SHOT	116	11		good
991.1	13:04:08	SHOT	117	12		No good shots on 12
991.1	13:04:28	SHOT	118	12		
991.1	13:04:48	SHOT	119	12		
991.1	13:05:08	SHOT	120	12		
991.1	13:05:29	SHOT	121	12		
991.1	13:06:07	SHOT	122	12		
991.1	13:06:27	SHOT	123	12		
991.1	13:06:47	SHOT	124	12		
990.1	13:09:15	SHOT	126	13		No good shots on 13
990.1	13:09:35	SHOT	127	13		
990.1	13:10:01	SHOT	128	13		
990.1	13:10:25	SHOT	129	13		

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
990.1	13:10:46	SHOT	130	13		
990.1	13:11:07	SHOT	131	13		
990.1	13:11:26	SHOT	132	13		
990.1	13:11:49	SHOT	133	13		
990.1	13:12:10	SHOT	134	13		
961.0	13:18:06	SHOT	135	14		good
961.0	13:18:26	SHOT	136	14		good
961.0	13:18:47	SHOT	137	14		Repick
961.0	13:19:10	SHOT	138	14		Repick
961.0	13:19:30	SHOT	139	14		good
961.0	13:20:00	SHOT	140	14		
931.1	13:24:01	SHOT	141	15		
931.1	13:24:21	SHOT	142	15		Good
931.1	13:24:41	SHOT	143	15		
931.1	13:25:01	SHOT	144	15		Good
931.1	13:25:21	SHOT	145	15		Good
911.1	13:28:29	SHOT	146	16		Good
911.1	13:28:49	SHOT	147	16		Repick
911.1	13:29:09	SHOT	148	16		
911.1	13:29:29	SHOT	149	16		
911.1	13:29:49	SHOT	150	16		
911.1	13:30:35	SHOT	152	16		Repick
911.1	13:30:56	SHOT	153	16		No Data
911.1	13:31:27	SHOT	154	16		good
891.1	13:35:09	SHOT	155	17		good
891.1	13:35:29	SHOT	156	17		Repick
891.1	13:35:49	SHOT	157	17		good
866.1	13:40:19	SHOT	158	18		Repick
866.1	13:40:39	SHOT	159	18		
866.1	13:40:59	SHOT	160	18		Repick
866.1	13:41:19	SHOT	161	18		good

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
841.1	13:45:37	SHOT	162	19		Repick
841.1	13:45:57	SHOT	163	19		Good
841.1	13:46:17	SHOT	164	19		Good
821.1	13:49:57	SHOT	165	20		Repick
821.1	13:50:20	SHOT	166	20		good
821.1	13:50:40	SHOT	167	20		Repick
821.1	13:51:00	SHOT	168	20		Repick
821.1	13:51:22	SHOT	169	20		Repick
801.1	13:55:22	SHOT	170	21		good
801.1	13:55:42	SHOT	171	21		
801.1	13:56:02	SHOT	172	21		Repick
801.1	13:56:22	SHOT	173	21		Repick
801.1	13:56:42	SHOT	174	21		
781.0	14:00:29	SHOT	175	22		
781.0	14:00:49	SHOT	176	22		Good
781.0	14:01:09	SHOT	177	22		Repick
781.0	14:01:29	SHOT	178	22		
761.1	14:04:26	SHOT	179	23		good
761.1	14:04:46	SHOT	180	23		good
761.1	14:05:06	SHOT	181	23		good
761.1	14:05:29	SHOT	182	23		good
741.1	14:08:27	SHOT	183	24		
741.1	14:08:47	SHOT	184	24		Good
741.1	14:09:07	SHOT	185	24		
741.1	14:09:27	SHOT	186	24		
741.1	14:10:15	SHOT	187	24		Repick
741.1	14:10:35	SHOT	188	24		Good
741.1	14:10:55	SHOT	189	24		
741.1	14:11:15	SHOT	190	24		
741.1	14:11:56	SHOT	192	24		Good
741.1	14:12:16	SHOT	193	24		Good

Well depth[m]	Time(UTC)	Shot Type	Shot#	Stack#	Source	Remarks
741.1	14:12:36	SHOT	194	24		Good
741.1	14:29:53	SHOT	195	24		t3
741.1	14:30:23	SHOT	196	24		t3
741.1	14:30:53	SHOT	197	24		t3
741.1	14:31:23	SHOT	198	24		t3
741.1	14:31:53	SHOT	199	24		t3
741.1	14:32:53	SHOT	200	25		test
741.1	14:33:23	SHOT	201	25		test
741.1	14:33:53	SHOT	202	25		test
741.1	14:34:23	SHOT	203	25		test
741.1	14:34:53	SHOT	204	25		test
741.1	14:35:39	SHOT	205	26		test
741.1	14:36:09	SHOT	206	26		test
741.1	14:36:39	SHOT	207	26		test
741.1	14:37:09	SHOT	208	26		test
741.1	14:37:39	SHOT	209	26		test

Test Evaluation Report

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Total Harmonic Distortion	1	X	-103.01	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Y	-103.86	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Z	-104.31	dB	-	-90.0000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.00	dB	-0.5000	0.5000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.00	dB	-0.5000	0.5000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.00	dB	-0.5000	0.5000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**
AMPLIFIER GAIN x16 TEST	**9/30/2023 8:00:23 AM (UTC-02:00)**	**Shot No: 5**	**Station Depth: 721.17 [m]**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.01	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.01	dB	-0.5000	0.5000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**
AMPLIFIER GAIN x32 TEST	**9/30/2023 8:00:24 AM (UTC-02:00)**	**Shot No: 6**	**Station Depth: 721.17 [m]**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.15	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.00	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.14	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.01	dB	-0.5000	0.5000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk X-Y	1	-	-100.60	dB	-	-90.00000	PASS
Cross Talk X-Z	1	-	-99.05	dB	-	-90.00000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Y-Z	1	-	-98.24	dB	-	-90.00000	PASS
Cross Talk Y-X	1	-	-100.13	dB	-	-90.00000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Z-X	1	-	-97.03	dB	-	-90.00000	PASS
Cross Talk X-Y	1	-	-97.09	dB	-	-90.00000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Amplitude (0.3Hz)	1	X	-1.65	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	X	-3.67	dB	-5.0000	-	PASS
Impulse Amplitude	1	X	573.62	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	X	0.00	degree	-	-	-
Amplitude (0.3Hz)	1	Y	-1.74	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Y	-3.67	dB	-5.0000	-	PASS
Impulse Amplitude	1	Y	574.14	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Y	0.81	degree	-	-	-
Amplitude (0.3Hz)	1	Z	-1.71	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Z	-3.67	dB	-5.0000	-	PASS
Impulse Amplitude	1	Z	573.74	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Z	0.44	degree	-	-	-

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.02	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.12	micro V	-	0.5000	PASS
Noise Peak	1	X	0.49	micro V	-	2.0000	PASS
DC Offset	1	Y	-25.48	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.12	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.43	micro V	-	2.0000	PASS
DC Offset	1	Z	-24.98	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.12	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.42	micro V	-	2.0000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.39	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.11	micro V	-	0.5000	PASS
Noise Peak	1	X	0.42	micro V	-	2.0000	PASS
DC Offset	1	Y	-25.53	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.12	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.47	micro V	-	2.0000	PASS
DC Offset	1	Z	-25.38	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.12	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.41	micro V	-	2.0000	PASS

Test Name	Date	Shot No	Station Depth
Test Name	**Date**	**Shot No**	**Station Depth**

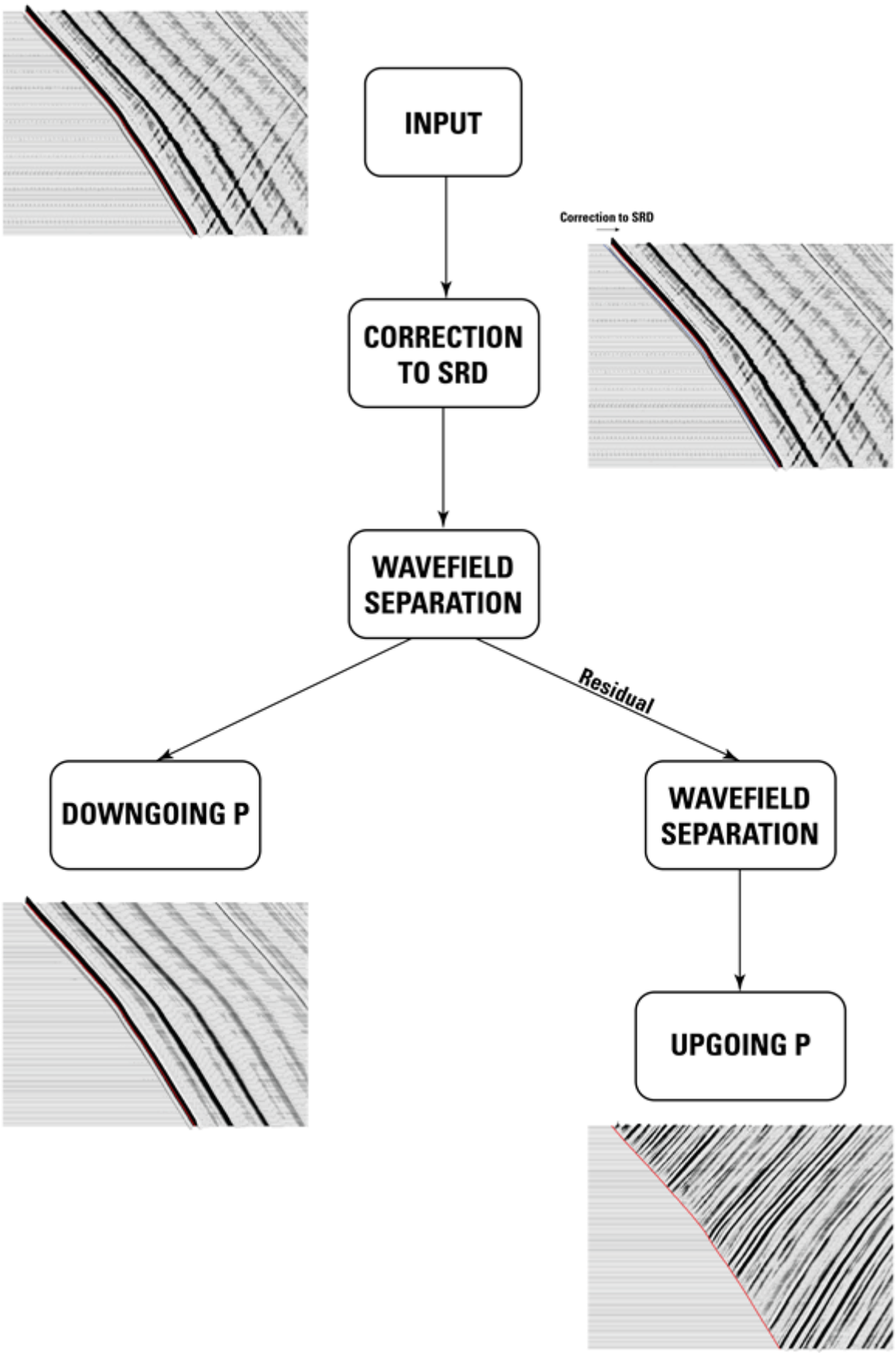
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
System Dynamic Range	1	X	107.58	dB	103.0000	-	PASS
System Dynamic Range	1	Y	107.59	dB	103.0000	-	PASS
System Dynamic Range	1	Z	107.10	dB	103.0000	-	PASS

Correlation

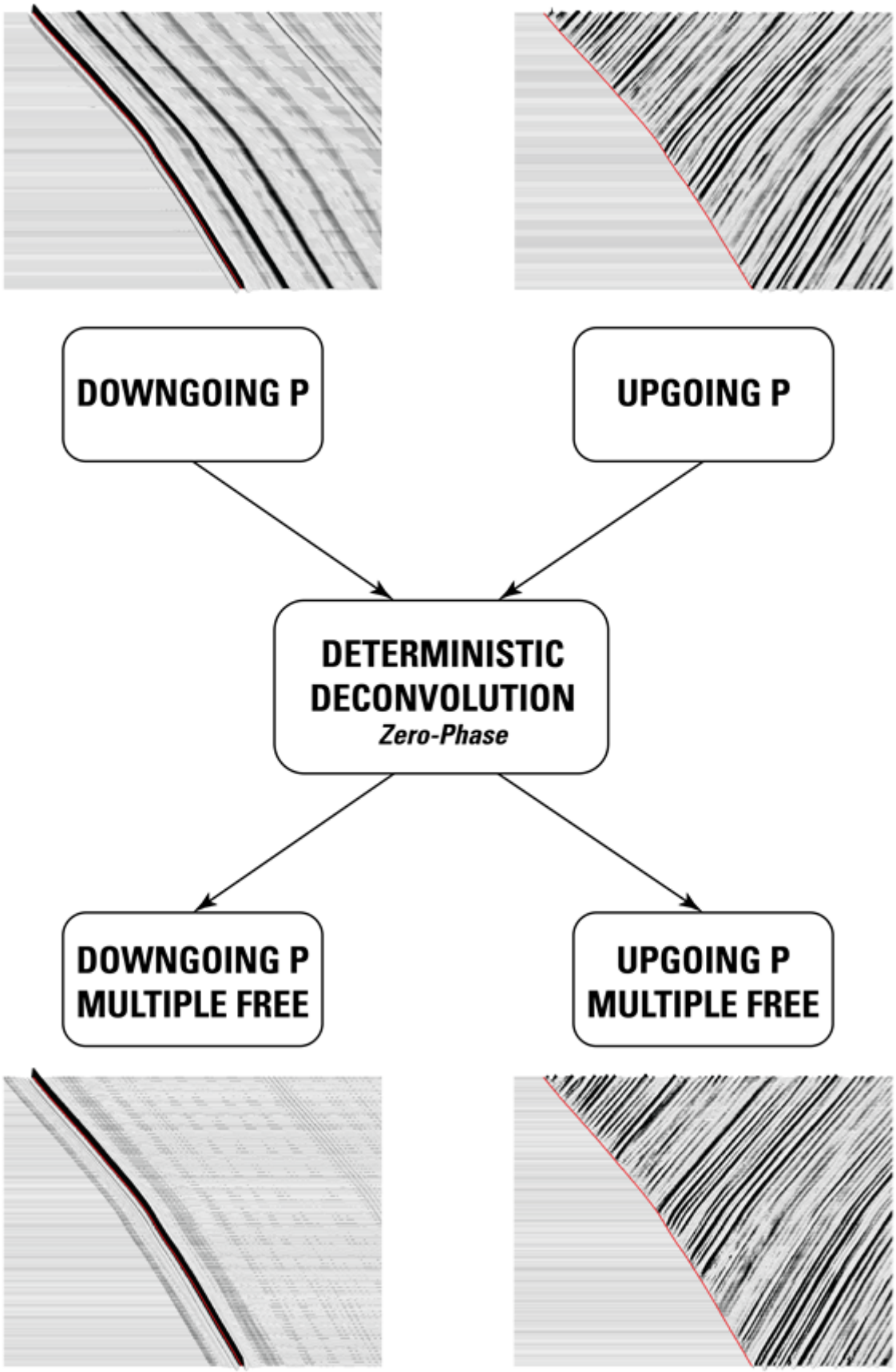
GR Depth Correlation Log

ZVSP Processing

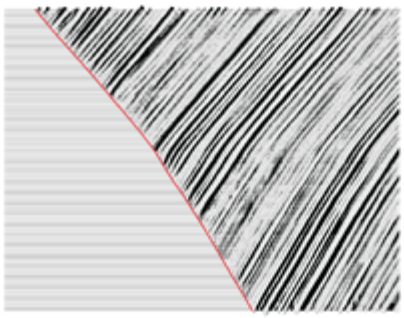
Processing - Wavefield Separation



Processing - Deconvolution

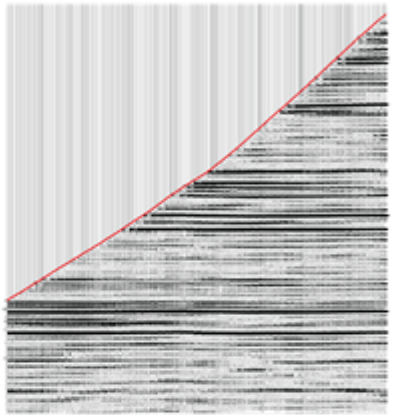


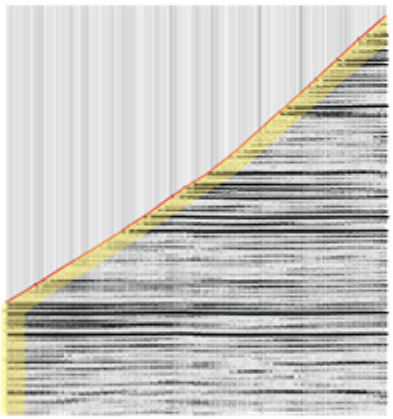
Processing - Corridor Stack



UPGOING P
MULTIPLE FREE
ZERO PHASE

ONE-WAY TIME
TO
TWO-WAY TIME
CONVERSION





CORRIDOR STACK
WINDOW

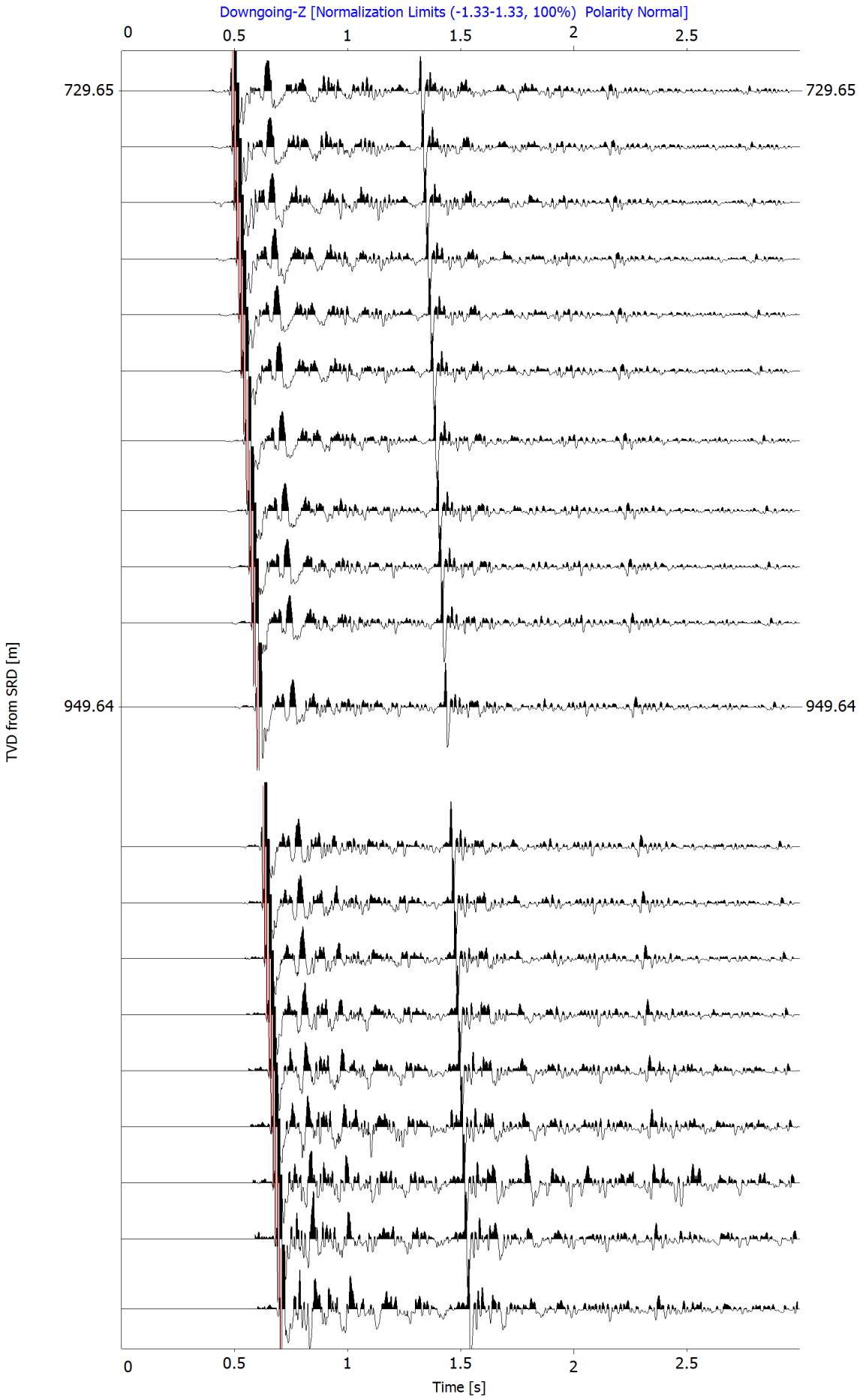
CORRIDOR
STACK

Processing Parameters

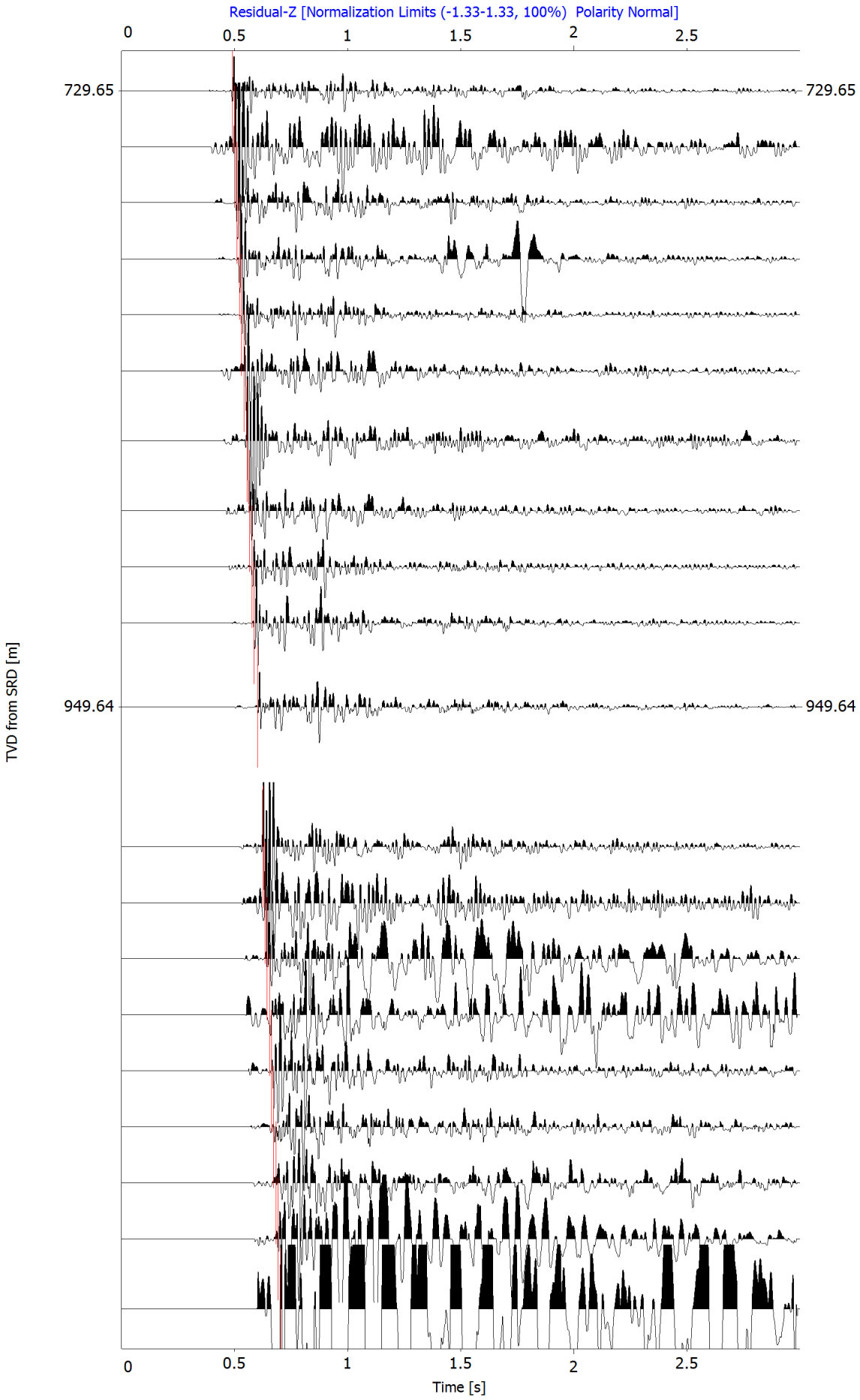
Processing	Category	Parameter	Value	Unit
Geometry Update	Well Information	Coordinate Easting (UTM)		m
		Coordinate Northing (UTM)		m
		Well Deviation Survey File, If Well Is Deviated		
		Extrapolate WDS with Constant Deviation	Yes	
	Elevation	Seismic Reference Datum (SRD) above MSL		m
		Surface/Water Velocity (SVEL)		m/s
		Permanent Datum	DF	
		Elevation of Permanent Datum above MSL for OTHER		m
		Logging Measured From	DF	
		Elevation of Kelly Bushing above MSL		m
		Elevation of Ground Level above MSL		m
		Elevation of Derrick Floor above MSL		m
	Receiver Position	Update Receiver Position	Yes	
	Source Position	Update Source Position	Yes	
		Source / Surface Sensor Depth Reference	DF	
		Source Offset		m
		Source Azimuth to Well Head		deg
		Source Depth from Reference		m
	Surface Sensor	Sensor 1 Position is	Not Used	
		S1 Offset		m
		S1 Azimuth		deg
		S1 Depth from Reference		m
		Sensor 2 Position is	Not Used	
		S2 Offset		m
		S2 Azimuth		deg
		S2 Depth from Reference		m
		Sensor 3 Position is	Not Used	
		S3 Offset		m
		S3 Azimuth		deg
		S3 Depth from Reference		m
		Sensor 4 Position is	Not Used	
		S4 Offset		m
		S4 Azimuth		deg
		S4 Depth from Reference		m
		Sensor 5 Position is	Not Used	
		S5 Offset		m
		S5 Azimuth		deg
		S5 Depth from Reference		m
		Sensor 6 Position is	Not Used	
		S6 Offset		m
		S6 Azimuth		deg
		S6 Depth from Reference		m
		Sensor 7 Position is	Not Used	
		S7 Offset		m
		S7 Azimuth		deg

Processing	Category	Parameter	Value	Unit
		S7 Depth from Reference		m
		Sensor 8 Position is	Not Used	
		S8 Offset		m
		S8 Azimuth		deg
		S8 Depth from Reference		m
Data Loading	Butterworth Filter	Low Cut Frequency	5	Hz
		High Cut Frequency	80	Hz
Wavefield Separation	Depth Range for VSP Processing	Use the Whole Range for Processing	Yes	
		Start (Top) Measured Depth for Processing		m
		End (Bottom) Measured Depth for Processing		m
	Downgoing Wavefield Separation	Stacking Mode	Median	
		Stacking Window	9	
Deconvolution	Deconvolution	Design Filter Window (ms)	1000	
		Wavelet Polarity	Positive	
Corridor Stack	Upgoing Wavefield Separation	Stacking Mode	Median	
		Stacking Window	7	
	Time Variant Gain for True Amplitude Recovery (TAR)	Travel Time Exponent	1.5	
	Corridor Stack	Replicate Corridor Stack	10	
		Corridor Stack Window (ms)	200	
		Apply BPF	Yes	
		Low Cut Frequency	5	Hz
		High Cut Frequency	80	Hz

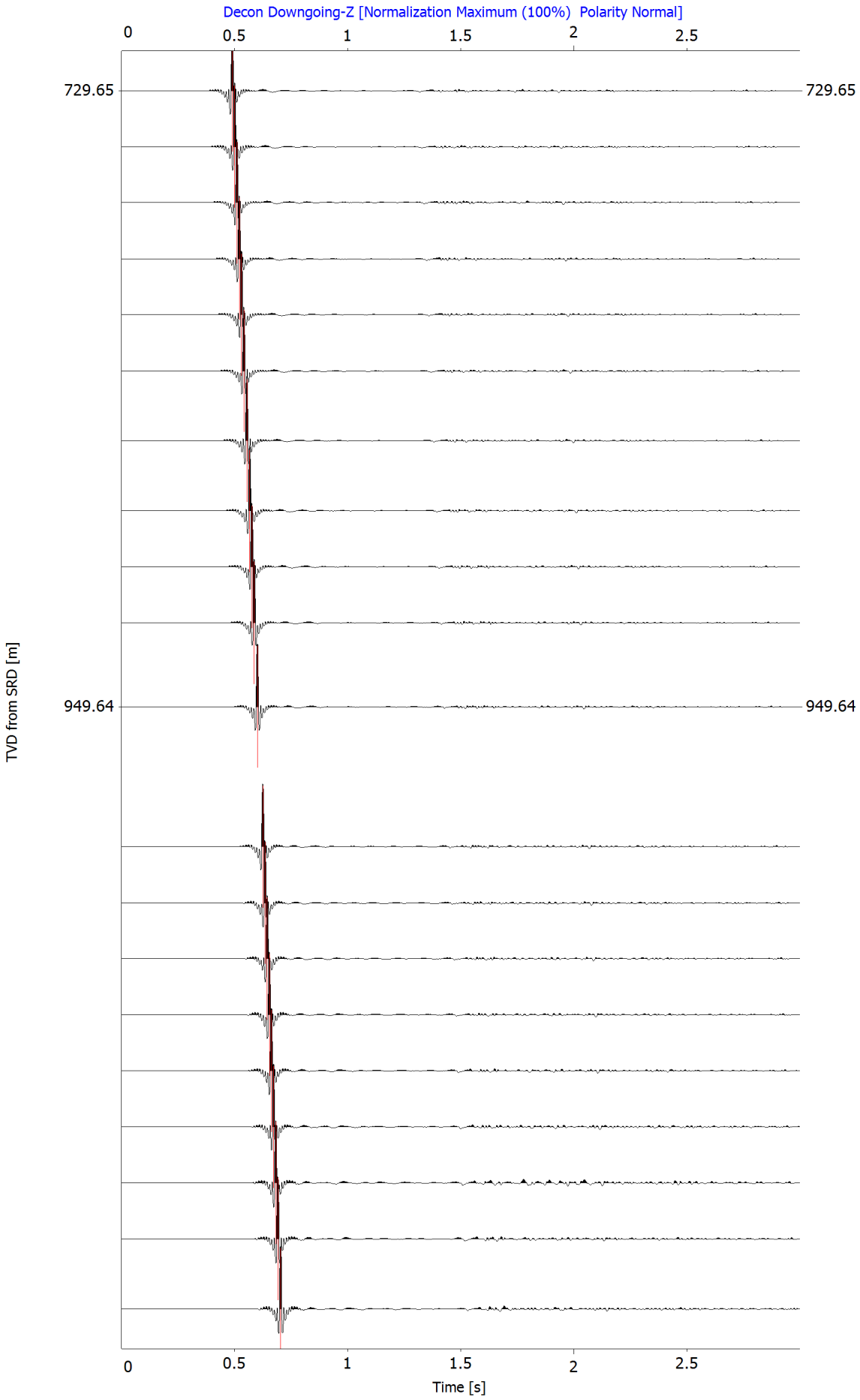
Downgoing (Z)


Downgoing-Z [Normalization Limits (-1.33-1.33, 100%) Polarity Normal]
0
0.5
1
1.5
2
2.5
729.65
729.65
949.64
949.64
TVD from SRD [m]
Time [s]

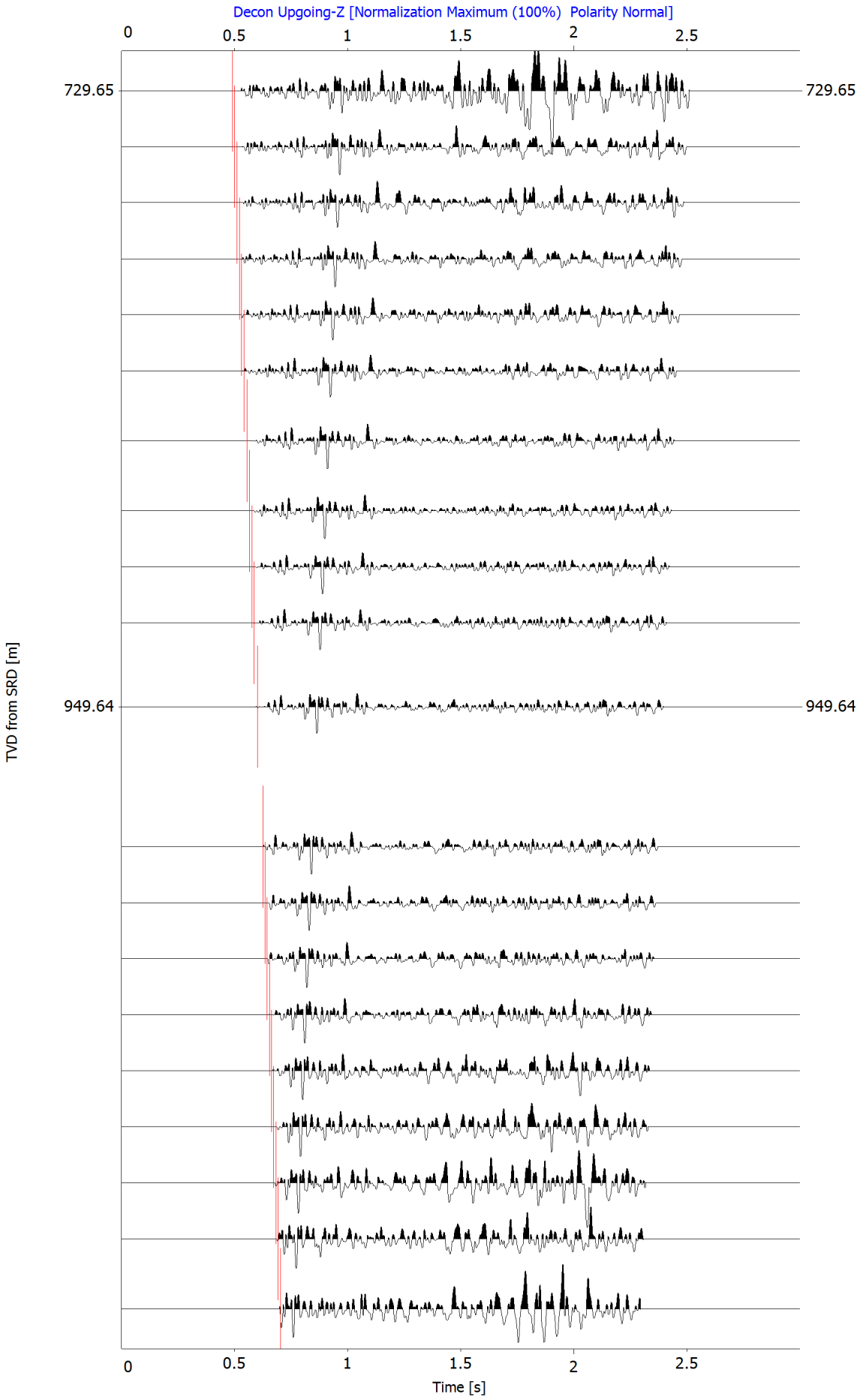
Residual 1 (Z)


Residual-Z [Normalization Limits (-1.33-1.33, 100%) Polarity Normal]
0
0.5
1
1.5
2
2.5
729.65
729.65
949.64
949.64
TVD from SRD [m]
Time [s]

Decon Downgoing (Z)

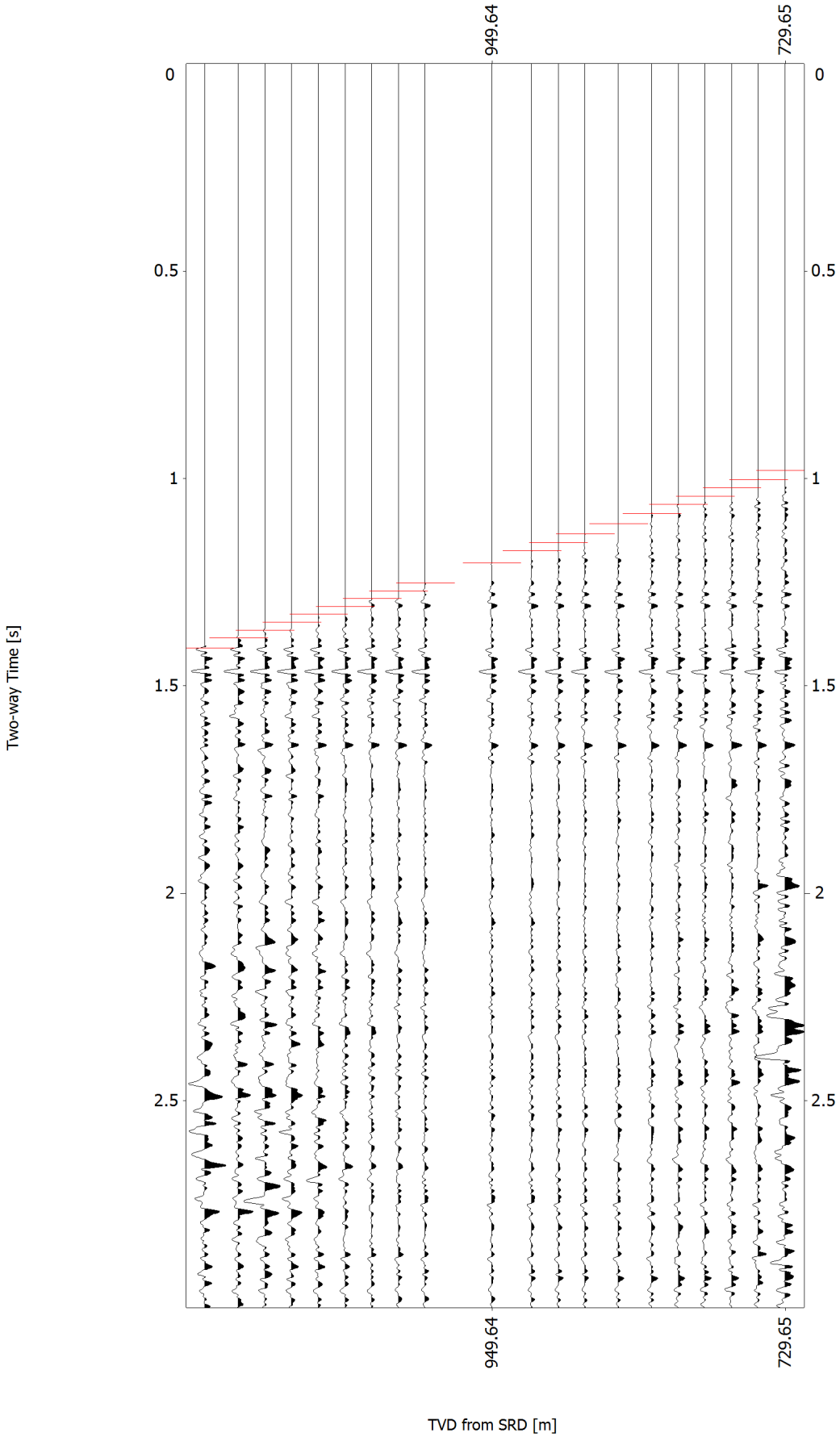


Decon Upgoing (Z)



Input for Corridor Stack in 2-Way Time

Decon Upgoin-Z (TWT) [Normalization Maximum (100%) Polarity Normal]



Corridor Stack