

Survey type: Zero-Offset VSP
Company: Origin Energy Resources Ltd
Well: Rockhopper-1 ST1
Field: Rockhopper
Country: Australia
Run: 5
Date: 9-Feb-2010

Recorded by: P.Guzman/ T.Ngartamta

Witnessed by: R.Blackmore/ C. Matthews

1 Introduction

A borehole seismic survey was recorded in Suite 1 Run 5 of the vertical exploration well Rockhopper-1 ST1 on 9-Feb-2010. This survey included rig source VSP measurements from 3430 m MD to 1615 m MD. The data were acquired using 4 levels VSIT-C (15.12 m spacing) downhole tool with a clustered airgun source deployed from the rig.

2 Data Acquisition

The clustered airgun (3 x 150 cu. Inch G-Gun) was deployed with 46 m fixed offset from the well head with an azimuth of 29 deg. The guns were submerged 4.8 m below the surface of the water using a buoy. The detail of the source set-up is explained in the source information pages.

TRISOR-OFS gun controller was used for auto-tuning the cluster gun. One Calibrated Near-Field hydrophones was recorded at 1.25 m below the center of the cluster gun. This report includes the QC plots such as tuning errors, gun pressure and gun depth from the gun controller.

A minimum of 5 good shots was recorded for each VSP level (3430 m to 1600 m MD). A minimum of 3 good shots was recorded for check-shot survey.

The reference log (SPE-HRLA-PEX, 04-Feb-2010) was used for the depth correlation. GR log was recorded simultaneously during the borehole seismic survey. Depth offset 1.2 m (deeper) of the main survey was observed. This report includes original GR log with the cable speed curve.

3 Transit Time Measurement

The measured transit time corresponds to an arrivals time recorded by the downhole sensors. TRISOR Gun controller fires a gun at Time-Zero, when the downhole signals start recording. First break-time picking is applied on the transformed geophone data using an inflection point tangent algorithm.

4 Transit Time Correction to Datum

The correction of the survey geometry and a static shift were applied to the stack data in order to obtain vertical travel time. The downhole receiver positions were corrected using well directional survey. A surface velocity of 1520 m/sec was used for static correction.

Depth vs Vertical time (OWT and TWT) listing is presented after the correction of tide (average 2.1 m) and depth offset (1.2 m) done by the data processing center (Perth / Australia). Seismic Reference Datum is LAT.

5 VSP Data Quality Plot

This report includes Up-going wavefield using Median Velocity Filter (9L). Up-going wavefield presents 1st order residual wavefield, which is obtained by subtracting the estimated down-going wavefield from the total wavefield.

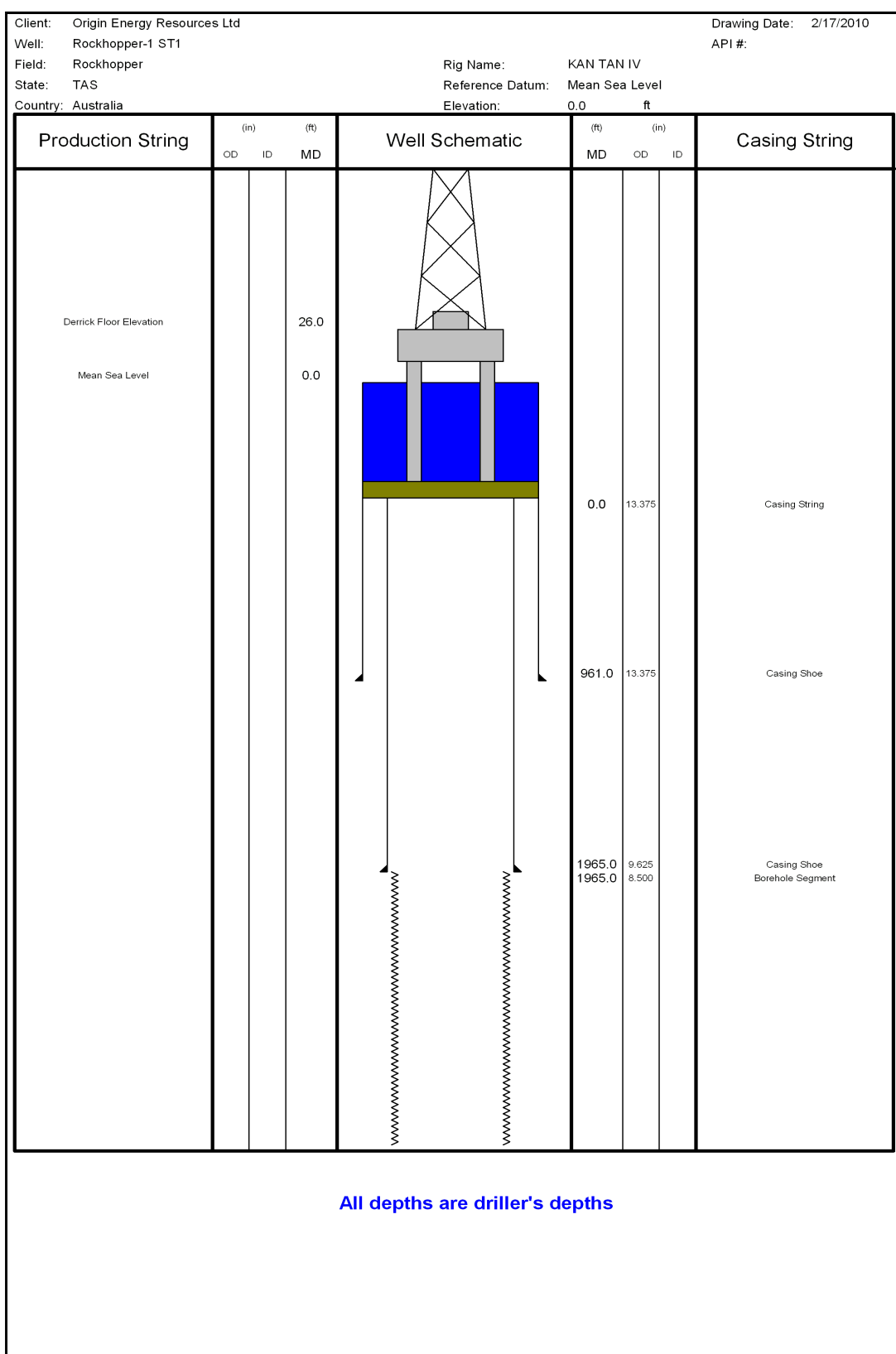
Company	Origin Energy Resources Ltd
Well	Rockhopper-1 ST1
Field	Rockhopper
Country	Australia
State	TAS
Logging Date	9-Feb-2010
Run Number	5
Service Order	
Well Head (Latitude)	39° 47' 34.18" S
Well Head (Longitude)	145° 26' 21.47" E
Well Head (X Coordinate)	366374.0938 UTM
Well Head (Y Coordinate)	5594071.5000 UTM
Total Depth - Driller	3482.0 m
Total Depth - Logger	3482.5 m
Maximum Hole Deviation	36.7 deg
Azimuth of Maximum Deviation	
Program Version	17C0-154
Bit Size	8.500 in
Recorded by	P.Guzman/ T.Ngartamta
Witnessed by	R.Blackmore/ C. Matthews

Permanent Datum	LAT
Elevation Permanent Datum	0.0 m
Above Permanent Datum	26.0 m
Drilling Measured From	DF
Derrick Floor	26.0 m
Ground Level	-74.3 m
Kelly Bush	
Log Measured From	DF
Elevation Log Zero	26.0 m

Water Velocity	1524.0 m/s
Seismic Reference Datum	0.0 m

- Rockhopper-1 ST1 is a deviated well located in T/18P in the Bass Basin.
- Toolstring run as per toolsketch.
- Data acquired until 1800 m only as per client request
- Deviation data taken from directional drillers
- Log was correlated to SPE-HRLA-PEX dated 4-feb-2010
- Maximum recorded temperature 138 degC from 3 thermometers in logging head.
-
-
-
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-
-
-
-
- Additional mud properties:
Chlorides= 3800 mg/L; FV= 66 sec/qt@ 25 degC; PV= 19 cP@ 25 degC; YP= 35 lbs/100ft2; Tot Hardness= 240 mg/l.

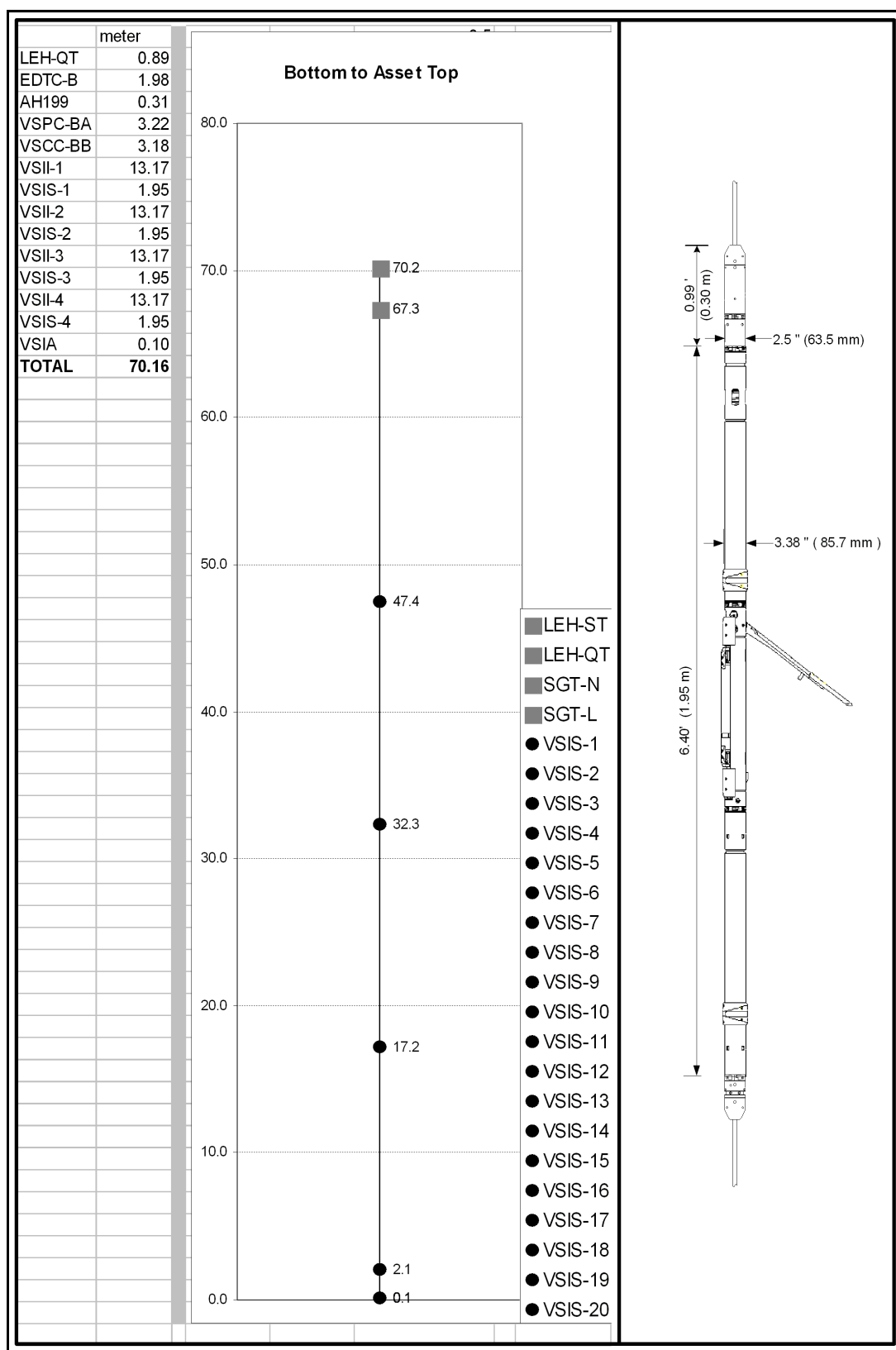
Well Sketch



MD (m)	Inclination (deg)	Azimuth (deg)	TVD (m)
100.3	0	0	100.3
242.36	0.22	278.1	242.36
327.42	0.34	318.42	327.42
356.38	0.16	310.14	356.38
414.83	0.43	334.58	414.83
502.13	0.25	356.62	502.13
559.33	0.33	356.35	559.33
645.93	0.22	77.08	645.92
733.4	0.1	264.51	733.39
819.33	0.13	204.11	819.32
907.2	0.22	337.4	907.19
956.77	0.15	112.45	956.76
980.35	0	258.48	980.34
1009.96	0.2	60.48	1009.95
1039.18	0.22	57.43	1039.17
1068.02	0.25	56.38	1068.01
1096.69	0.09	334.71	1096.68
1125.2	0.25	23.41	1125.19
1153.52	0.31	18.55	1153.51
1182.12	0.26	64.52	1182.11
1210.69	0.31	28.33	1210.68
1239.34	0.36	49.88	1239.33
1298.15	0.4	29.51	1298.14
1327.53	0.39	32.18	1327.52
1356.77	0.31	47.29	1356.76
1385.6	0.44	56.1	1385.59
1412.81	0.48	46.3	1412.8
1441.66	0.57	57.51	1441.64
1470.69	0.57	43.73	1470.67
1499.95	0.59	47.75	1499.93
1529.47	0.61	56.99	1529.45
1558.73	0.62	46.69	1558.71
1587.9	0.64	49.02	1587.88
1616.89	0.68	52.55	1616.86
1645.39	0.64	67.47	1645.36
1673.84	0.66	56.91	1673.81
1702.24	0.67	57.55	1702.21
1759.92	0.72	70.24	1759.88
1789.63	0.84	75.16	1789.59
1848.62	0.8	79	1848.58
1876.78	0.9	76.63	1876.73
1905.3	0.76	78.61	1905.25
1934.76	0.91	50.85	1934.71
1951.76	0.68	51.65	1951.7
1968.42	0.69	57.75	1968.36
1995.26	1.12	112.4	1995.2
2020.27	4.56	164.56	2020.18
2076.85	8.58	180.86	2076.37
2097.43	9.89	180.78	2096.69
2101.74	10.33	180.02	2100.93
2133.86	11	184.57	2132.49
2162.64	12.26	191.23	2160.68
2191.04	14.09	193.69	2188.33
2221.57	17.24	200.87	2217.73
2249.96	21.12	203.77	2244.53

MD (m)	Inclination	Azimuth (deg)	TVD (m)
2279.09	25.17	203.19	2271.31
2305.36	27.89	201.28	2294.82
2335.32	29.38	198.65	2321.11
2364.04	31.58	195.91	2345.86
2393.22	33.12	193.25	2370.51
2424.12	34.46	191.99	2396.19
2453.55	35.45	189.16	2420.31
2483.19	36.74	186.44	2444.26
2512.34	35.42	185.57	2467.82
2539.22	36.2	185.3	2489.62
2567.35	35.96	183.83	2512.35
2596.63	35.85	183.27	2536.07
2623.25	35.76	182.9	2557.66
2653.75	34.92	179.74	2582.54
2684.95	36.05	178.78	2607.94
2711.61	35.74	177.14	2629.54
2739.68	35.53	177.12	2652.35
2771.6	35.6	176.05	2678.32
2799.25	35.65	174.76	2700.79
2830.33	35.66	174.48	2726.05
2858.86	35.48	174.28	2749.25
2886.55	35.51	174.82	2771.8
2912.81	35.67	174.71	2793.15
2944.72	35.81	174.86	2819.05
2970.13	33.67	176.07	2839.93
3001.24	33.2	177.2	2865.89
3026.7	33.66	177.54	2887.14
3059.36	34.73	177.11	2914.16
3089.54	35.58	176.65	2938.83
3118.07	35.65	177.66	2962.02
3145.4	35.32	177.16	2984.28
3167.94	35.69	178.03	3002.63
3185.27	35.7	178.52	3016.7
3203.43	35.56	178.76	3031.46
3234.73	35.91	179.25	3056.87
3264.81	35.73	178.72	3081.26
3293.65	35.03	178.07	3104.77
3324.89	36.06	178.66	3130.19
3350.05	35.41	178.82	3150.61
3379.25	35.71	179.95	3174.37
3408.14	35.85	180.5	3197.81
3439.04	36.1	180.75	3222.81
3467.05	35.47	179.36	3245.53
3482	35.47	179.36	3257.71

Tool Sketch



Downhole Equipment Information

Tool Type	VSIT
Surface Equipment	TRISOR-OFS
Combined Tool	EDTC-B
Number of Shuttles	4
Nominal Receiver Spacing	15.12 m
Gimbaled (Y/N)	No
Downhole Geophone Type	GAC-D 3-axis orthogonal
Sensitivity	0.5 V/G 3%
Natural Frequency	20 Hz
Damping Factor	N/A
DC Resistance	1500 Ohms 3% @25 degC
Measurement Specification	
Dynamic range	> 105 dB at 36 dB
Distortion	< -90 dB
Analog Low-Cut filter	0.3 Hz, -6 dB/Oct
Digital Low-Cut filter	None
DC Offset removal	Averaging by surface software
Digital High-Cut filter	Linear phase at down hole
Pass band ripple	+/- 0.01 dB
Stop band attenuation	< -130 dB
Bandwidth	80% of Nyquist frequency
Test Signal harmonic distortion	< -110 dB
Tool SN	
VSPC-BA	8104
VSCC-BB	8104
VSII-AB	8596
Receiver #1 (VSIS-CA)	8413
VSII-AB	8439
Receiver #2 (VSIS-CA)	8229
VSII-AB	8311
Receiver #3 (VSIS-CA)	8417
VSII-AB	8595
Receiver #4 (VSIS-CA)	8480
VSIA	

Operation Time Summary

DATE	Time Start	Time Taken hh:mm	OPERATION
9-Feb-10	1:00	00:45	Rig Up VSI
	1:45	00:52	Surface Check VSI
	2:37	00:59	RIH in hole to 250 m to conduct checkshot
	3:36	00:39	VSI at 1899 m, perform second check shot
	4:15	01:40	RIH in hole to 3337 m
	5:55	00:06	VSI at 3337 m, commence GR correlation
	6:01	00:29	RIH to 3440 m
	6:30	04:25	VSP survey from 3430 m to 1600 m
	10:55	01:05	POOH with VSI tool to surface
	12:00		Rig down completed well released
		11:00	HRS –TOTAL OPERATING TIME

General Information

Survey Type	Zero Offset VSP
Surface Recording Length	1024.0 ms
Surface Sampling Rate	0.25 ms
Downhole Recording Length	5000.0 ms
Downhole Sampling Rate	1.0 ms
Top of Survey	234.8 m
Bottom of Survey	3430.5 m
Number of Shots	178
Number of Downhole Traces	712
Number of Downhole Traces used for Processing	694

Borehole Seismic Source Information

Engineer: Patricia Guzman / Togto N.

Well Name: Rockhopper-1 ST1

Date: 09-Feb-2010

Rig: Kan Tan IV

<Geometrical Coordinates>

Longitude: 145 26' 21.47" E

Latitude: 39 47' 34.18" S

<UTM Coordinates>

Easting: 366,374.124 E

Northing: 5,594,071.512 N

Permanent Datum: LAT

Log Measured From: DF

Elev. 26.0

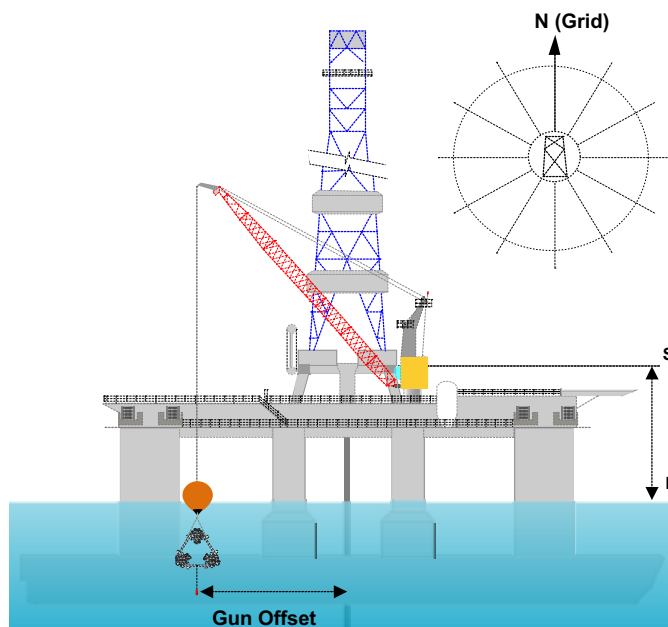
Unit : m

SRD (Seismic Reference Datum): LAT

Elev. 0.0

from SLB zero: 26.0 (SRDS)

Water Depth: 74.3



RIG Heading: 317.0 deg
 Rig Crane used: ☐ Port side ☒ Starboard side
 Rig Crane azimuth (from Rig Heading): 47.0 deg
 Gun Azimuth (Grid North): 29.0 deg (GAZI)
 Hy1 Azimuth (Grid North): 29.0 deg

Gun Offset: 46.0 (GOFF)

NF Hydrophone Offset: 46.0

Surface Velocity: 1524 m/s (SVEL)

Cluster Gun Type:

☐ WSGC-P90☒ WSGC-T90

Gun Type:

☒ WSG-G150

(G-Gun 150cu.inch)

☐ WSG-G250

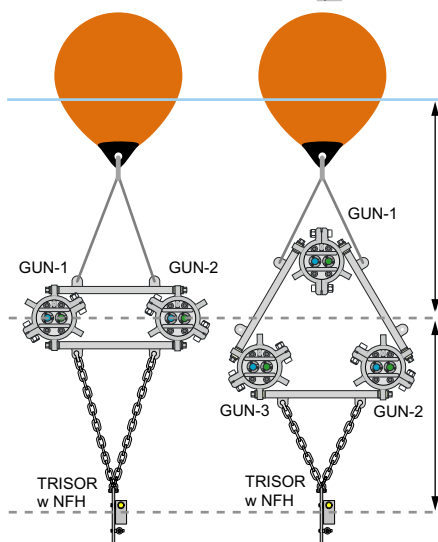
(G-Gun 250cu.inch)

GUN-1 sn: 451105

GUN-2 sn: 773101

GUN-3 sn: 451182

Cluster Frame sn: MWA04



Gun Depth from Local Tide 4.8

Gun Depth from SLB 28.7 (GDSZ)

NF Hydrophone Type: FJORD HD1-TC

SN: HD1-TC0409-068-016F (WSQB-UB 8025)

Sensitivity (nC/B): 75.8 (-016F)

Hy 1 Depth from Gun 1.25

Hy 1 Depth from LT 6.05

Hy 1 Depth from SLB zero 29.95

Air Gun Firing Pressure: 1850 psi

Accumulator Pressure (Inlet pressure): 2400 psi

Source of Air supply: N2 Gas Bottle Racks

Air Controller (Regulator) Type: WAP-SS01

sn: V18-P0001

Sea Condition

Sea Condition: Slight

Low Tide Level: 1.1

High Tide Level: 2.4

Tide Table available:

☒ Yes☐ No

Wave Height: 2.0

at 02:06 09/feb/10

at 08:06 09/feb/10

Main survey started at 06:40 09/feb/10

ended at 10:50 09/feb/10

Average Local Tide during survey 2.1 m above LAT

HSE

Safe Distance: 0.0

Observation of Marine Mammals

Marine Mammals sighted in 30 minutes before the survey

Soft-Start implemented:

☐ Yes☒ Yes☒ No☐ No

Borehole Seismic Gun Tuning Information

Surface Sensor Channels / Gun Controller

SS Channels

S1 : Near Field Hydrophone

Gun Controller

WSQB-GCRIG

WSQB-UB sn : 8025

WSQB-PC sn : 8025

WSQB-PPRIG sn : 058

WSQB-LPU sn : 1281

WSQB-UB Sensor Specifications

Sensor	Type	ADC(bit)	ADC(ms)	Gain(dB)	Filter	Accuracy
Gun TB	G-Gun M/P	12	0.1	-24 to 24	1 KHz	
NFH	HD1-TC	16	0.25	-24 to 24	8th order Bessel (1Hz to 500Hz)	
Depth	SP65B 100 A7	12	per shot	fix	N/A	1.50%
Pressure	SP97AFS-300A- 21B ABS	12	per shot	fix	N/A	2%
FP current		12	0.1	fix	N/A	

Loaded Trisor Configuration File name : 0810-048-001F_3x150.cfi

Exported Database File name : TRISOR.db

Cluster Gun Tuning / Quality Control

Gun Delay (ms)

GUN-1 AUTO

GUN-2 AUTO

GUN-3 AUTO

Gun Delay Offset value (ms) : 0.0

Cluster Gun Tuning QC

	GUN-1 DLY (ms)	GUN-2 DLY (ms)	GUN-3 DLY (ms)
Shot-1	12.9	12.6	12.6
Shot-2	12.8	13.0	12.1
Shot-3	12.8	12.5	11.6
Shot-4	13.2	12.7	11.3
Shot-5	13.0	12.9	12.1
Shot-6	12.8	13.1	12.2
Shot-7	12.9	12.9	11.5
Average	12.9	12.8	11.9

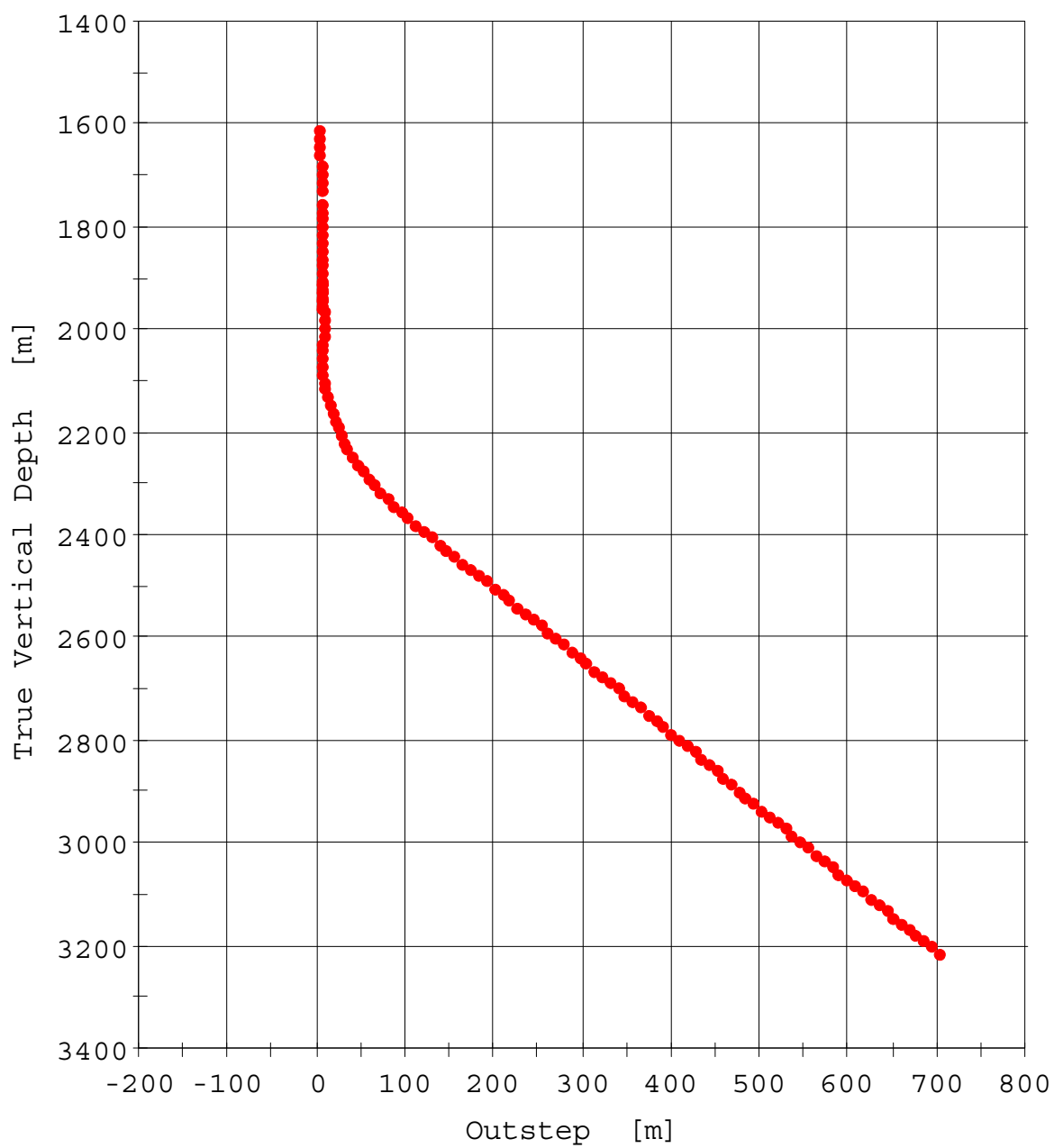
Quality Check Near Field Hydrophone / Filling Time (air Regulator)

	0 - Peak amplitude (Bar)	Filling Time (sec)
Shot-1	4.2	10
Shot-2	4.2	10
Shot-3	4.2	10
Shot-4	4.1	10
Shot-5	4.0	10

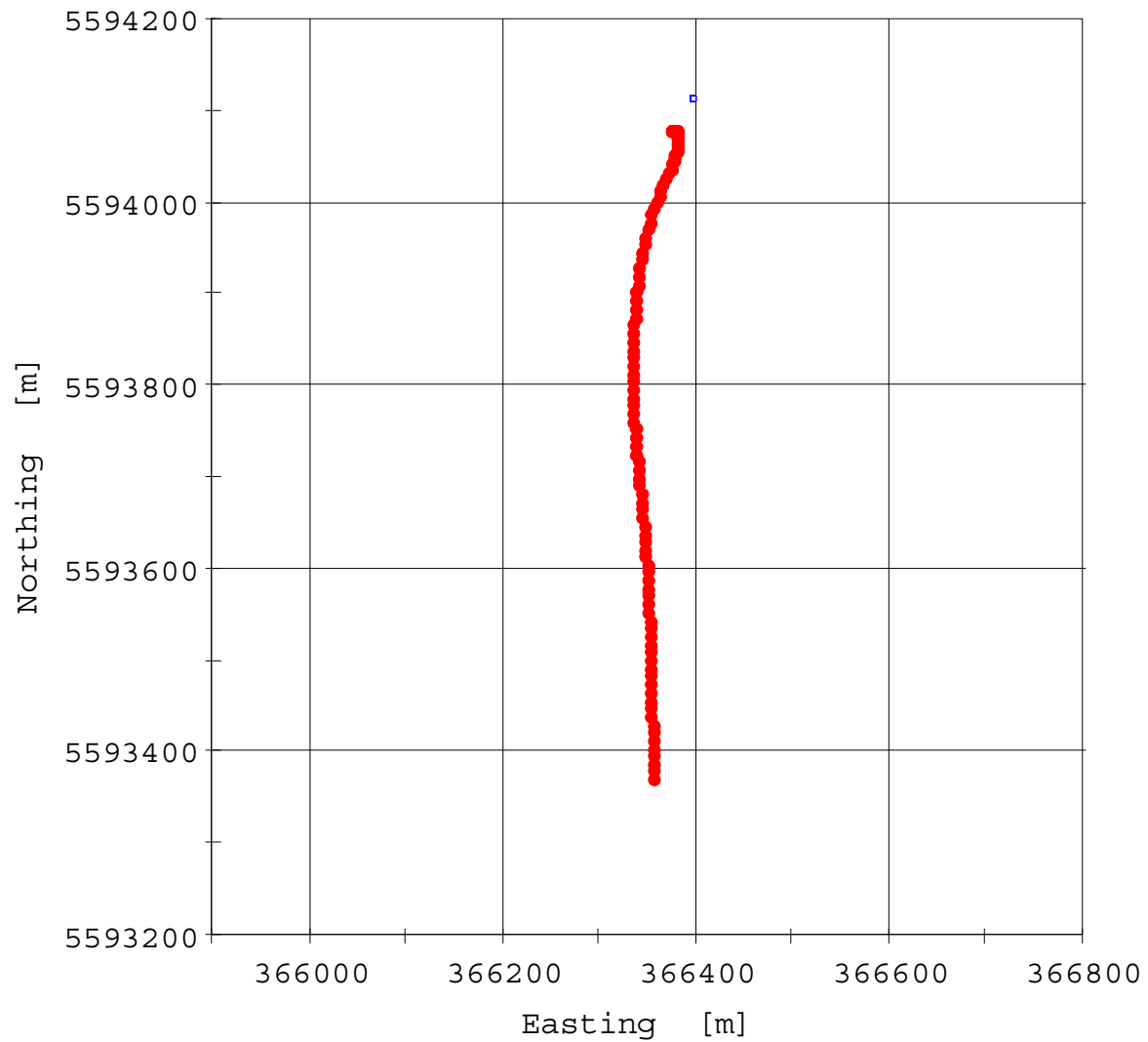
Other Logs Information

Sonic Log: DSI	Interval: from 3.434.0	to 1.965.0	Date: 8/FEB/10
Density Log: PEX	Interval: from 3.474.5	to 1.965.0	Date: 04/FEB/10

Remarks

Well Profile

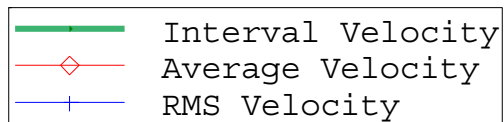
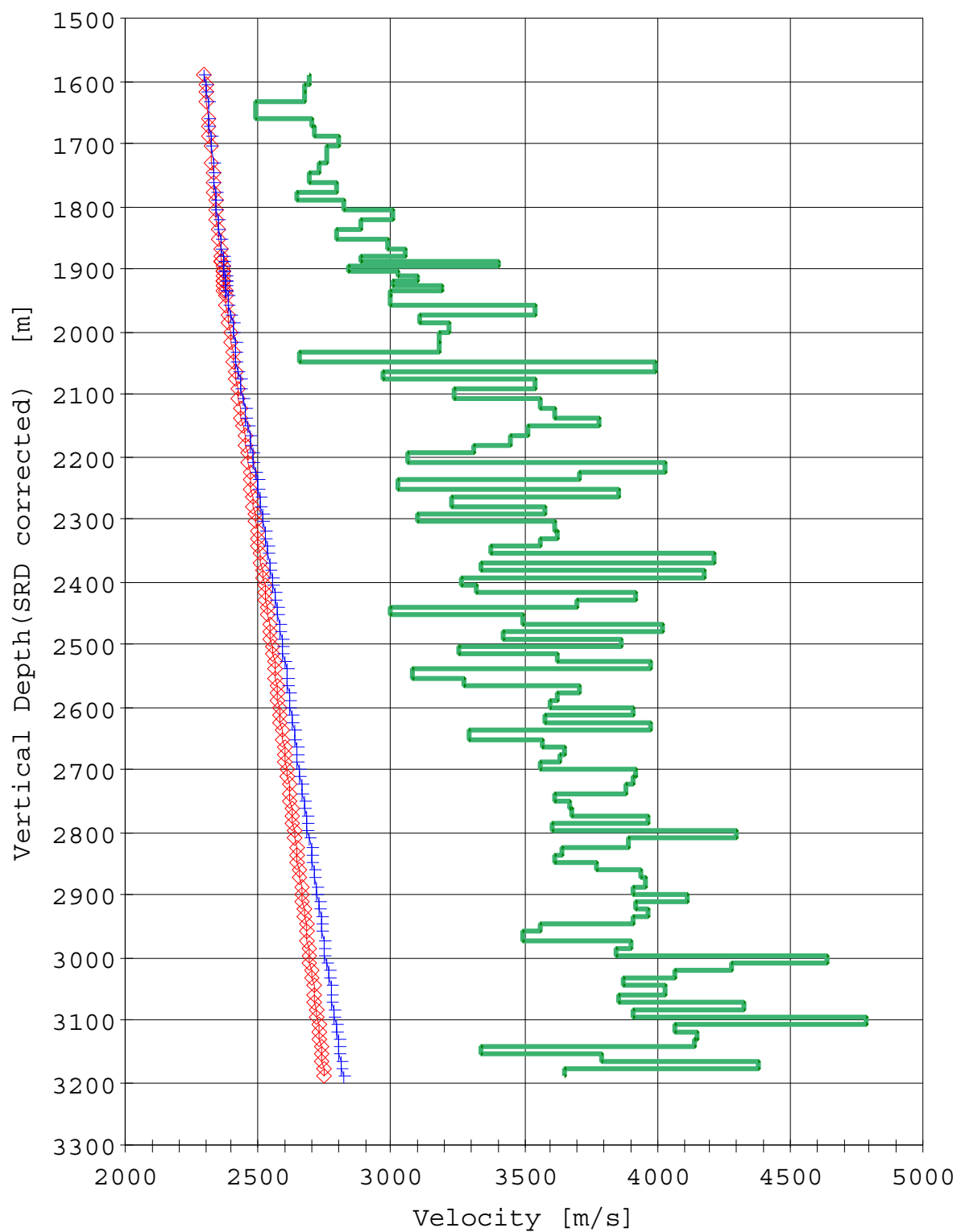
Receiver Position

Geometry Information (X-Y)

● Receiver Position
□ Source Position

Time Depth Plot

- One-way Vertical Time
- Two-way Vertical Time

Velocity Plot Page

Stack Summary Listing (1/5) from VSI_006_Rockhopper 1_geo_wavelfield_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			
						2300.0		
37	1615.2	1589.2	0.6894	0.6910	1.3819		2300.0	2300.0
						2692.2		
37	1630.4	1604.3	0.6950	0.6966	1.3932		2303.1	2303.4
						2675.1		
37	1645.5	1619.5	0.7007	0.7022	1.4045		2306.1	2306.6
						2676.8		
37	1660.6	1634.6	0.7063	0.7079	1.4158		2309.1	2309.8
						2490.9		
36	1685.1	1659.1	0.7162	0.7177	1.4354		2311.6	2312.4
						2703.5		
36	1700.2	1674.2	0.7217	0.7233	1.4466		2314.6	2315.7
						2710.2		
36	1715.3	1689.3	0.7273	0.7289	1.4578		2317.6	2318.9
						2799.9		
36	1730.4	1704.4	0.7327	0.7343	1.4686		2321.2	2322.8
						2753.7		
34	1757.3	1731.3	0.7425	0.7440	1.4881		2326.8	2329.0
						2725.2		
34	1772.4	1746.4	0.7480	0.7496	1.4992		2329.8	2332.2
						2692.0		
34	1787.5	1761.5	0.7536	0.7552	1.5104		2332.5	2335.1
						2791.8		
34	1802.7	1776.6	0.7590	0.7606	1.5212		2335.8	2338.6
						2648.2		
33	1817.9	1791.9	0.7648	0.7664	1.5327		2338.1	2341.1
						2824.7		
33	1833.0	1807.0	0.7701	0.7717	1.5434		2341.5	2344.8
						3001.9		
33	1848.1	1822.1	0.7752	0.7768	1.5535		2345.8	2349.7
						2881.8		
33	1863.3	1837.2	0.7804	0.7820	1.5640		2349.4	2353.6
						2789.8		
32	1877.7	1851.6	0.7856	0.7872	1.5744		2352.2	2356.8
						2989.1		
32	1892.8	1866.8	0.7906	0.7922	1.5845		2356.3	2361.3
						3053.3		
32	1907.9	1881.9	0.7956	0.7972	1.5944		2360.6	2366.3
						2882.4		
5	1914.1	1888.0	0.7970	0.7986	1.5972		2360.6	2366.3
						2882.4		
31	1915.3	1889.3	0.7981	0.7998	1.5995		2362.3	2368.1
						3399.5		
32	1923.0	1897.0	0.8004	0.8020	1.6040		2365.3	2371.6
						2844.5		
5	1929.2	1903.1	0.8018	0.8035	1.6069		2365.3	2371.6
						2844.5		
31	1930.5	1904.4	0.8030	0.8046	1.6093		2366.8	2373.3
						3025.6		
30	1938.8	1912.8	0.8058	0.8074	1.6148		2369.1	2375.9
						3096.4		
5	1944.3	1918.3	0.8068	0.8084	1.6168		2369.1	2375.9
						3096.4		
31	1945.6	1919.5	0.8080	0.8096	1.6191		2371.0	2378.1
						3004.4		
30	1954.0	1927.9	0.8107	0.8124	1.6247		2373.2	2380.5
						3186.9		
5	1959.4	1933.4	0.8117	0.8133	1.6266		2373.2	2380.5
						3186.9		
31	1960.7	1934.6	0.8129	0.8145	1.6290		2375.3	2383.0
						2996.6		

Stack Summary Listing (2/5) from VSI_006_Rockhopper 1_geo_wavefield_z.1df

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]
30	1969.1	1943.0	0.8157	0.8173	1.6346		2377.4	2385.3
						2993.6		
30	1984.2	1958.2	0.8207	0.8223	1.6447		2381.2	2389.6
						3540.2		
29	1999.2	1973.1	0.8249	0.8266	1.6531		2387.1	2396.8
						3104.5		
29	2014.3	1988.2	0.8298	0.8314	1.6628		2391.3	2401.6
						3220.6		
29	2029.4	2003.3	0.8345	0.8361	1.6722		2396.0	2406.9
						3179.5		
29	2044.5	2018.3	0.8392	0.8408	1.6816		2400.4	2412.0
						3177.8		
28	2059.6	2033.3	0.8439	0.8455	1.6911		2404.7	2416.9
						2653.5		
28	2074.8	2048.3	0.8496	0.8512	1.7024		2406.4	2418.6
						3990.7		
28	2089.9	2063.2	0.8534	0.8549	1.7099		2413.3	2427.7
						2969.5		
28	2105.0	2078.1	0.8584	0.8600	1.7199		2416.6	2431.2
						3541.0		
27	2120.2	2093.0	0.8626	0.8642	1.7283		2422.0	2437.8
						3233.6		
27	2135.3	2107.9	0.8673	0.8688	1.7375		2426.3	2442.7
						3560.9		
27	2150.4	2122.7	0.8714	0.8729	1.7458		2431.7	2449.2
						3612.5		
27	2165.5	2137.5	0.8756	0.8770	1.7540		2437.2	2456.0
						3777.3		
26	2180.8	2152.3	0.8795	0.8809	1.7619		2443.2	2463.4
						3510.1		
26	2195.9	2167.0	0.8838	0.8851	1.7702		2448.2	2469.4
						3447.0		
26	2211.0	2181.5	0.8880	0.8893	1.7787		2453.0	2475.0
						3313.6		
26	2226.1	2196.0	0.8925	0.8937	1.7874		2457.2	2479.7
						3060.2		
25	2241.2	2210.3	0.8972	0.8984	1.7967		2460.3	2483.1
						4030.8		
25	2256.3	2224.4	0.9008	0.9019	1.8037		2466.4	2491.0
						3710.3		
25	2271.4	2238.3	0.9046	0.9056	1.8112		2471.6	2497.2
						3027.8		
25	2286.6	2252.0	0.9092	0.9101	1.8203		2474.3	2500.2
						3855.6		
24	2301.7	2265.5	0.9128	0.9137	1.8273		2479.6	2506.8
						3224.3		
24	2316.8	2278.9	0.9171	0.9178	1.8356		2483.0	2510.5
						3574.8		
24	2331.9	2292.2	0.9209	0.9215	1.8430		2487.4	2515.7
						3099.8		
24	2347.1	2305.2	0.9253	0.9257	1.8515		2490.2	2518.6
						3615.1		
23	2362.2	2318.2	0.9291	0.9293	1.8587		2494.5	2523.8
						3622.5		
23	2377.3	2331.1	0.9328	0.9329	1.8657		2498.8	2528.9
						3564.1		
23	2392.4	2343.8	0.9366	0.9364	1.8729		2502.9	2533.6
						3376.2		
23	2407.5	2356.4	0.9405	0.9402	1.8803		2506.4	2537.5
						4216.4		
22	2422.7	2369.0	0.9437	0.9432	1.8863		2511.8	2544.6
						3339.8		

Stack Summary Listing (3/5) from VSI_006_Rockhopper 1_geo_wavefield_z.1df

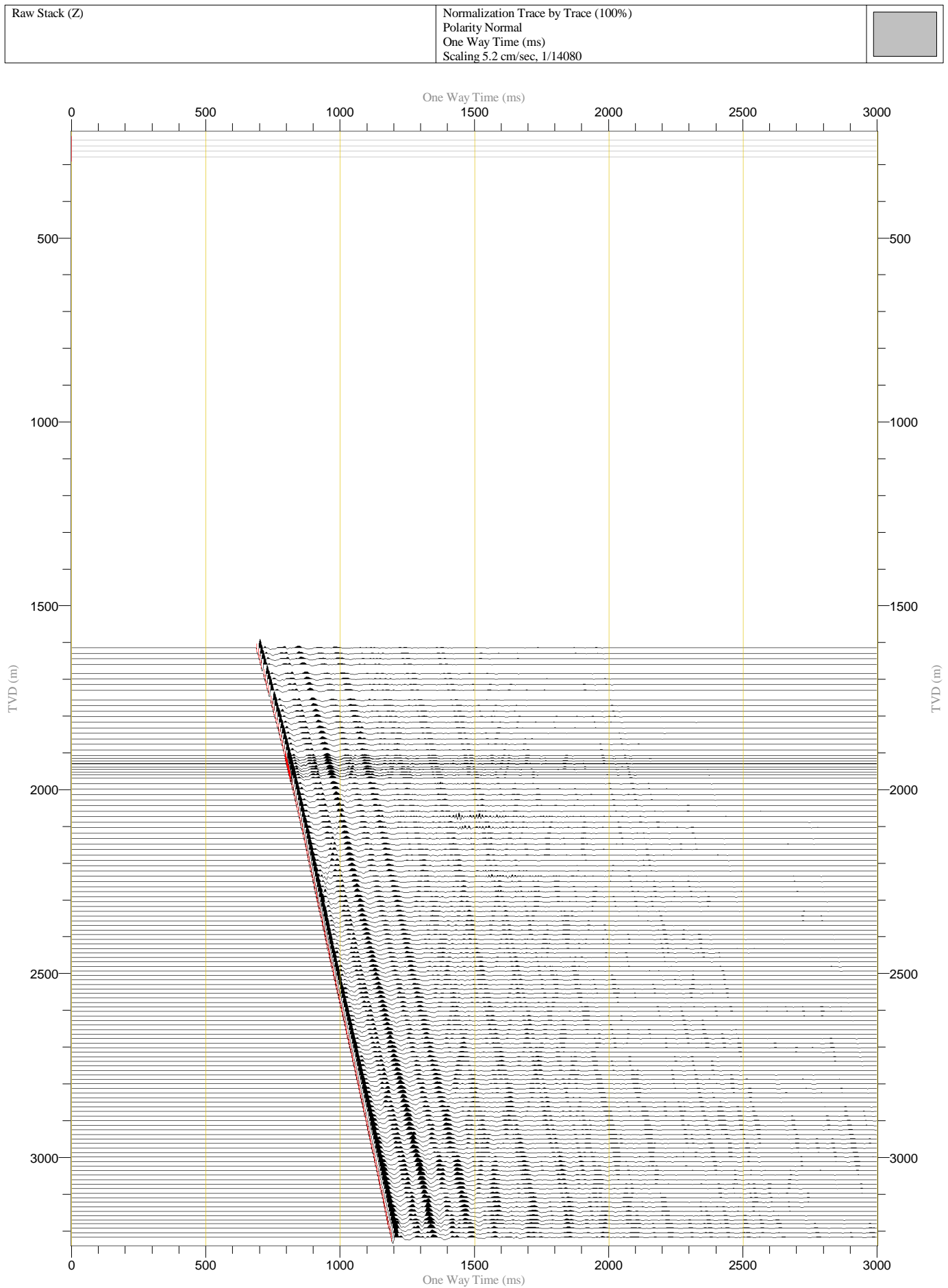
Stack Number	Measured Depth [m]	True Vertical Depth [m]	Measured Time [s]	One-way Vertical Time [s]	Two-way Vertical Time [s]	Interval Velocity [m/s]	Average Velocity [m/s]	RMS Velocity [m/s]
22	2437.8	2381.4	0.9476	0.9469	1.8937		2515.0	2548.2
						4181.6		
22	2452.9	2393.8	0.9508	0.9498	1.8997		2520.2	2554.9
						3268.9		
22	2468.0	2406.0	0.9548	0.9536	1.9071		2523.2	2558.1
						3320.3		
21	2483.1	2418.2	0.9588	0.9572	1.9145		2526.2	2561.4
						3923.7		
21	2498.2	2430.4	0.9622	0.9603	1.9207		2530.7	2567.0
						3695.9		
21	2513.3	2442.6	0.9657	0.9637	1.9273		2534.7	2571.8
						2997.8		
21	2528.4	2454.9	0.9701	0.9677	1.9355		2536.7	2573.7
						3498.4		
20	2543.6	2467.2	0.9740	0.9713	1.9425		2540.2	2577.7
						4022.0		
20	2558.8	2479.4	0.9773	0.9743	1.9486		2544.8	2583.4
						3420.1		
20	2573.9	2491.6	0.9812	0.9779	1.9558		2548.0	2587.0
						3867.4		
20	2589.0	2503.9	0.9847	0.9811	1.9621		2552.3	2592.1
						3253.0		
19	2604.1	2516.1	0.9887	0.9848	1.9696		2554.9	2595.0
						3627.5		
19	2619.2	2528.4	0.9925	0.9882	1.9764		2558.6	2599.2
						3979.4		
19	2634.3	2540.7	0.9959	0.9913	1.9825		2563.0	2604.6
						3079.0		
19	2649.4	2553.0	1.0002	0.9953	1.9906		2565.1	2606.7
						3273.2		
18	2664.5	2565.3	1.0043	0.9990	1.9981		2567.8	2609.5
						3709.3		
18	2679.7	2577.6	1.0080	1.0024	2.0047		2571.6	2614.0
						3622.7		
18	2694.8	2589.9	1.0118	1.0058	2.0115		2575.1	2618.0
						3594.8		
18	2709.9	2602.2	1.0155	1.0092	2.0183		2578.5	2621.9
						3915.3		
17	2725.1	2614.5	1.0190	1.0123	2.0246		2582.7	2626.9
						3576.0		
17	2740.2	2626.8	1.0229	1.0157	2.0315		2586.1	2630.7
						3977.8		
17	2755.3	2639.1	1.0264	1.0188	2.0377		2590.3	2635.8
						3289.9		
17	2770.4	2651.4	1.0305	1.0226	2.0451		2592.8	2638.5
						3572.1		
16	2785.6	2663.7	1.0343	1.0260	2.0520		2596.1	2642.2
						3649.8		
16	2800.7	2675.9	1.0381	1.0294	2.0588		2599.6	2646.1
						3630.7		
16	2815.8	2688.2	1.0419	1.0328	2.0655		2602.9	2650.0
						3562.8		
16	2830.9	2700.5	1.0458	1.0362	2.0724		2606.1	2653.5
						3924.2		
15	2846.0	2712.8	1.0493	1.0393	2.0787		2610.1	2658.3
						3912.6		
15	2861.1	2725.1	1.0529	1.0425	2.0850		2614.0	2662.9
						3880.9		
15	2876.3	2737.4	1.0565	1.0457	2.0913		2617.9	2667.5
						3615.5		
15	2891.4	2749.7	1.0603	1.0491	2.0981		2621.1	2671.1
						3675.2		

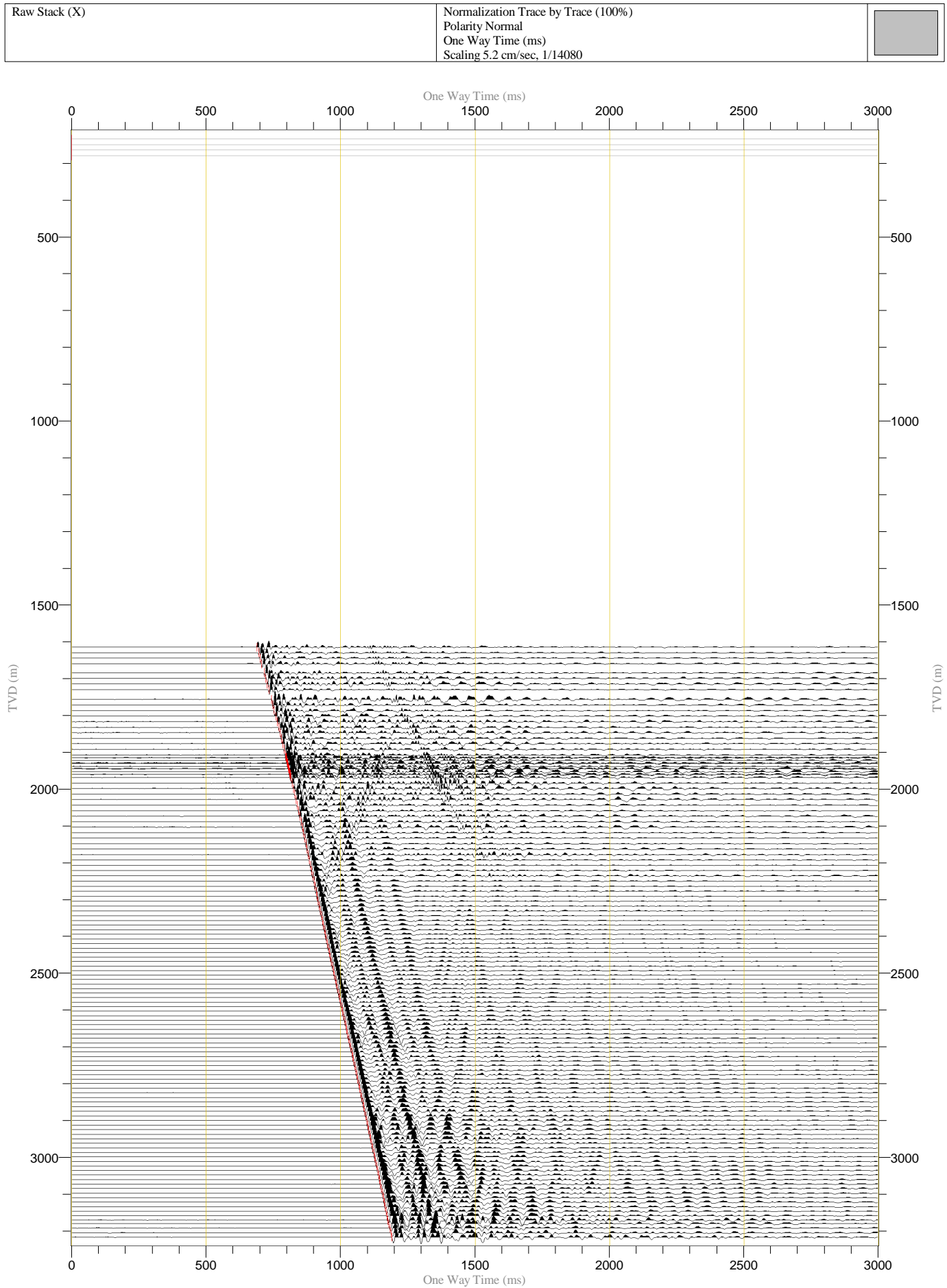
Stack Summary Listing (4/5) from VSI_006_Rockhopper 1_geo_wavefield_z.1df

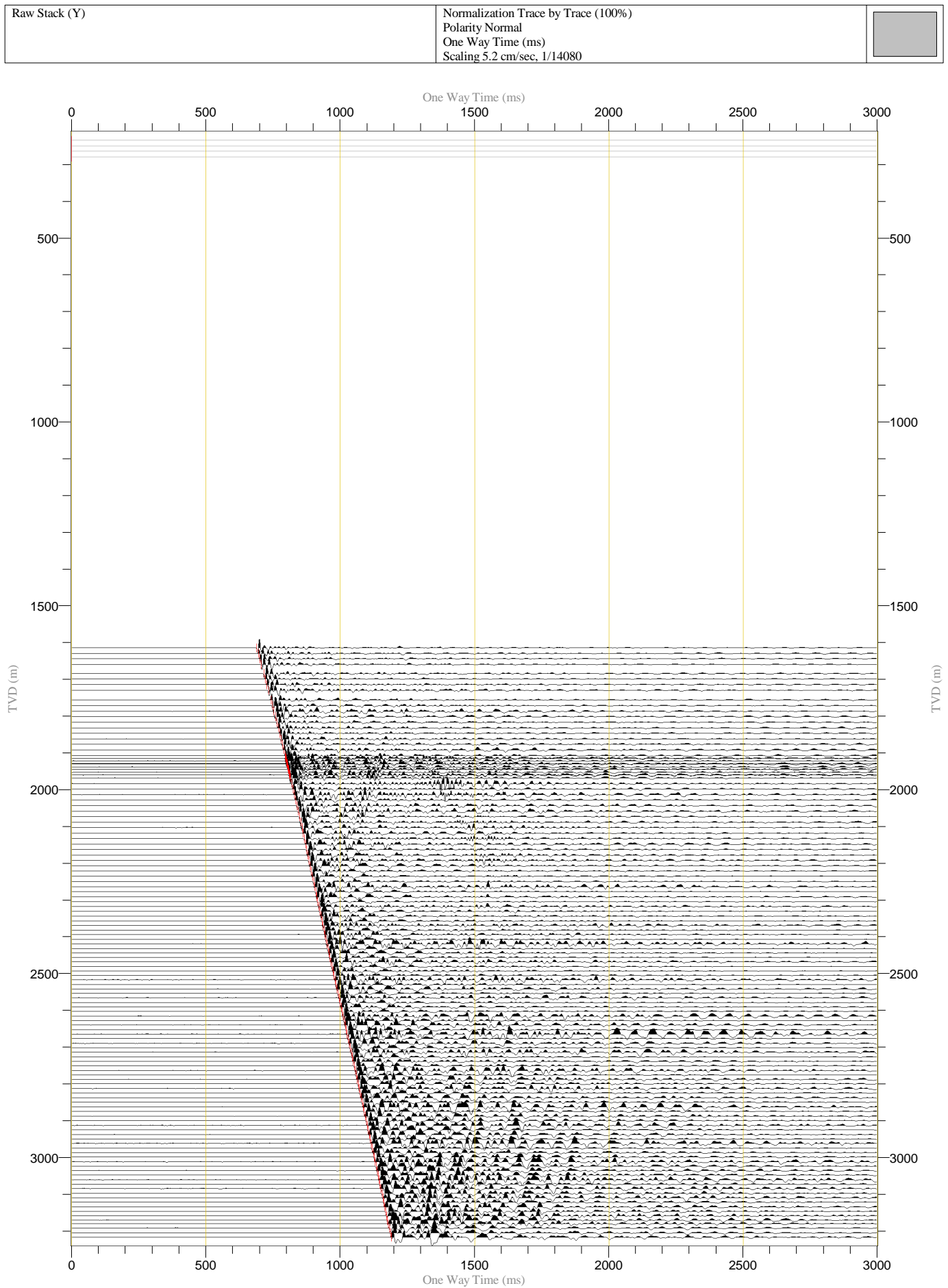
Stack Number	Measured Depth [m]	True Vertical Depth [m]	Measured Time [s]	One-way Vertical Time [s]	Two-way Vertical Time [s]	Interval Velocity [m/s]	Average Velocity [m/s]	RMS Velocity [m/s]
14	2906.4	2762.0	1.0641	1.0524	2.1048		2624.5	2674.9
						3682.7		
14	2921.6	2774.3	1.0678	1.0557	2.1115		2627.8	2678.6
						3970.0		
14	2936.7	2786.5	1.0714	1.0588	2.1176		2631.7	2683.3
						3608.9		
14	2951.8	2798.9	1.0753	1.0622	2.1245		2634.9	2686.8
						4300.4		
13	2967.0	2811.3	1.0786	1.0651	2.1303		2639.4	2692.5
						3894.6		
13	2982.1	2823.9	1.0823	1.0684	2.1367		2643.2	2696.9
						3645.4		
13	2997.2	2836.5	1.0862	1.0718	2.1437		2646.4	2700.5
						3613.9		
13	3012.3	2849.1	1.0901	1.0753	2.1506		2649.6	2704.0
						3772.5		
12	3027.4	2861.8	1.0939	1.0787	2.1573		2653.0	2708.0
						3937.2		
12	3042.6	2874.3	1.0976	1.0818	2.1637		2656.8	2712.4
						3960.8		
12	3057.7	2886.8	1.1012	1.0850	2.1700		2660.6	2716.9
						3907.5		
12	3072.8	2899.1	1.1048	1.0882	2.1763		2664.2	2721.1
						4114.6		
11	3087.9	2911.5	1.1083	1.0912	2.1823		2668.2	2725.9
						3918.7		
11	3103.0	2923.8	1.1120	1.0943	2.1886		2671.8	2730.1
						3967.2		
11	3118.2	2936.1	1.1156	1.0974	2.1948		2675.5	2734.3
						3914.0		
11	3133.3	2948.4	1.1192	1.1006	2.2011		2679.0	2738.4
						3562.8		
10	3148.4	2960.7	1.1232	1.1040	2.2080		2681.8	2741.4
						3491.5		
10	3163.6	2973.1	1.1272	1.1075	2.2151		2684.4	2744.1
						3900.0		
10	3178.7	2985.3	1.1309	1.1107	2.2214		2687.8	2748.1
						3846.7		
10	3193.8	2997.6	1.1346	1.1139	2.2278		2691.1	2751.9
						4641.3		
9	3208.9	3009.9	1.1378	1.1165	2.2331		2695.8	2757.9
						4283.0		
9	3224.0	3022.2	1.1412	1.1194	2.2388		2699.8	2762.8
						4064.9		
9	3239.1	3034.4	1.1447	1.1224	2.2448		2703.5	2767.2
						3877.0		
9	3254.3	3046.7	1.1484	1.1256	2.2512		2706.8	2770.9
						4026.3		
8	3269.4	3059.0	1.1520	1.1286	2.2573		2710.4	2775.1
						3852.2		
8	3284.5	3071.3	1.1558	1.1318	2.2637		2713.6	2778.7
						4322.2		
8	3299.6	3083.6	1.1591	1.1347	2.2694		2717.6	2783.7
						3910.9		
8	3314.7	3095.9	1.1628	1.1378	2.2757		2720.9	2787.4
						4791.8		
7	3329.7	3108.1	1.1659	1.1404	2.2807		2725.5	2793.5
						4071.9		
7	3344.8	3120.4	1.1695	1.1434	2.2868		2729.1	2797.6
						4149.2		
7	3360.0	3132.7	1.1730	1.1463	2.2927		2732.8	2801.9
						4143.8		

Stack Summary Listing (5/5) from VSI_006_Rockhopper 1_geo_wavefield.z.1df

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]
7	3375.1	3145.0	1.1765	1.1493	2.2986		2736.4	2806.2
						3341.1		
6	3386.3	3154.1	1.1796	1.1520	2.3041		2737.8	2807.6
						3787.2		
6	3401.4	3166.3	1.1835	1.1553	2.3105		2740.8	2810.8
						4381.2		
6	3416.5	3178.6	1.1869	1.1581	2.3161		2744.7	2815.7
						3652.9		
6	3431.7	3190.8	1.1908	1.1614	2.3228		2747.4	2818.5

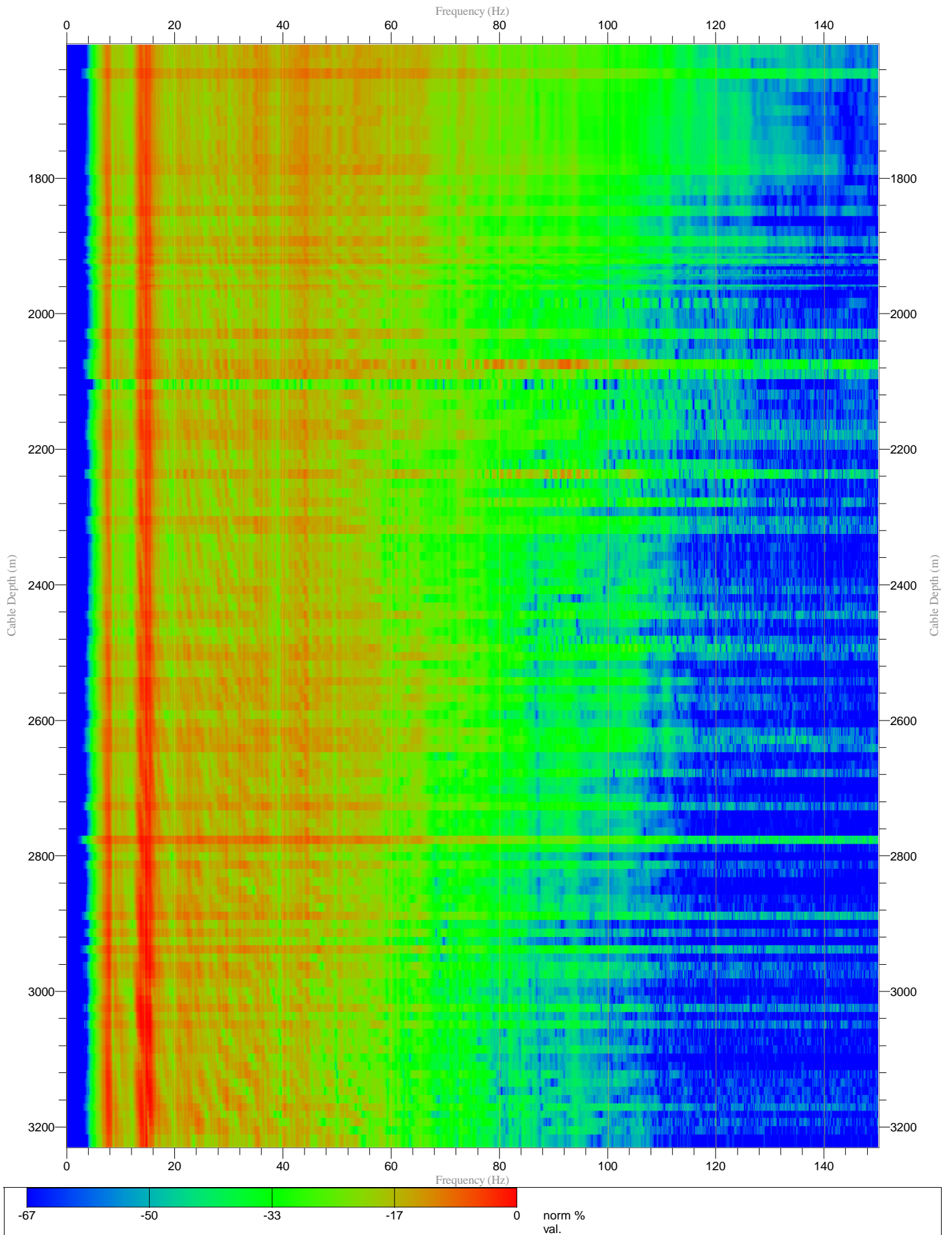






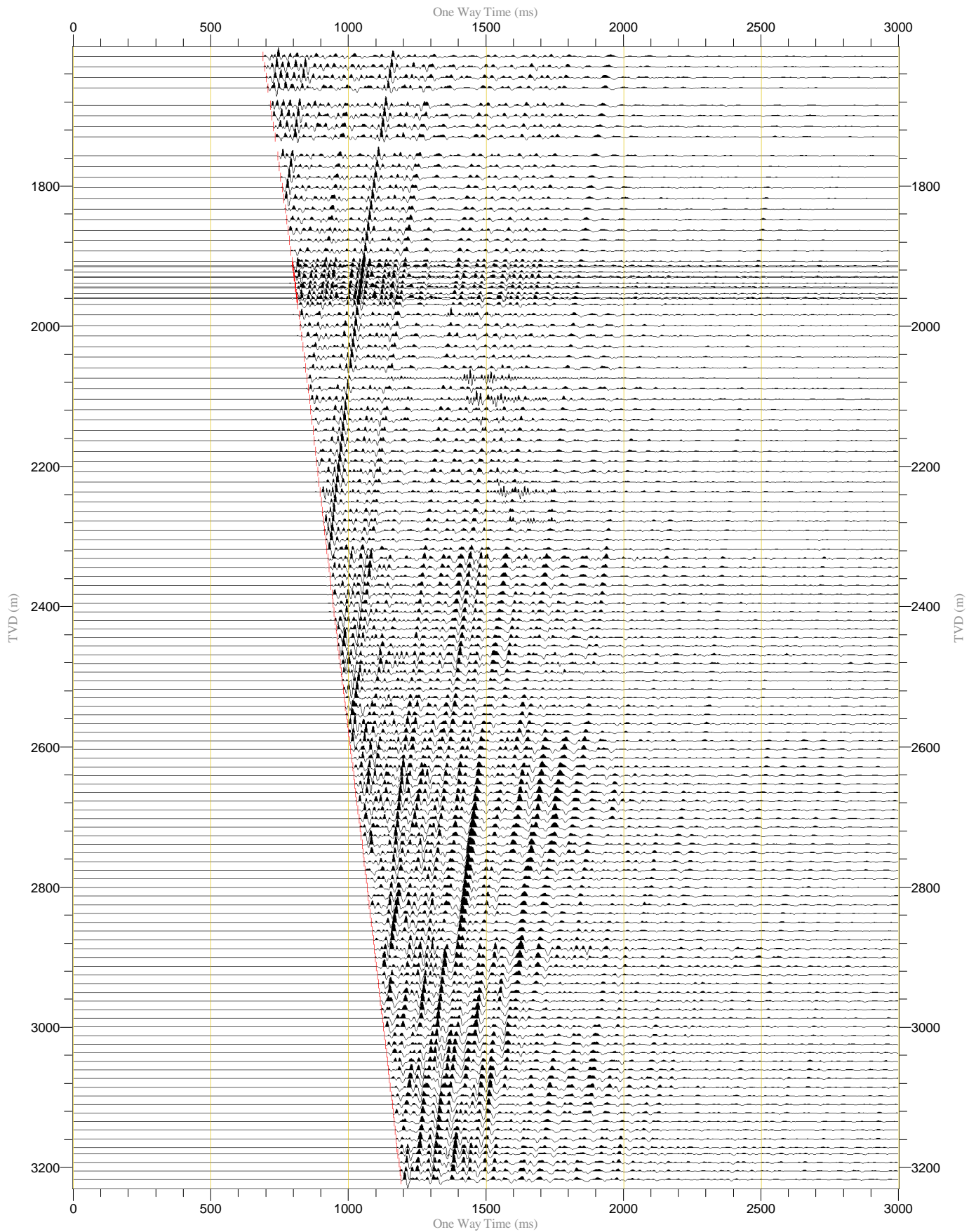
VSP Raw Stack (Z) FZ
Apply FZ

Normalization Trace by Trace (100%)
Polarity Normal
Frequency (Hz)
Scaling 0.1 cm/Hz, 1/6940



VSP Upgoing
BPF 3.0 - 110.0Hz
9 Traces

Normalization Trace by Trace (100%)
Polarity Normal
One Way Time (ms)
Scaling 5.2 cm/sec, 1/7570




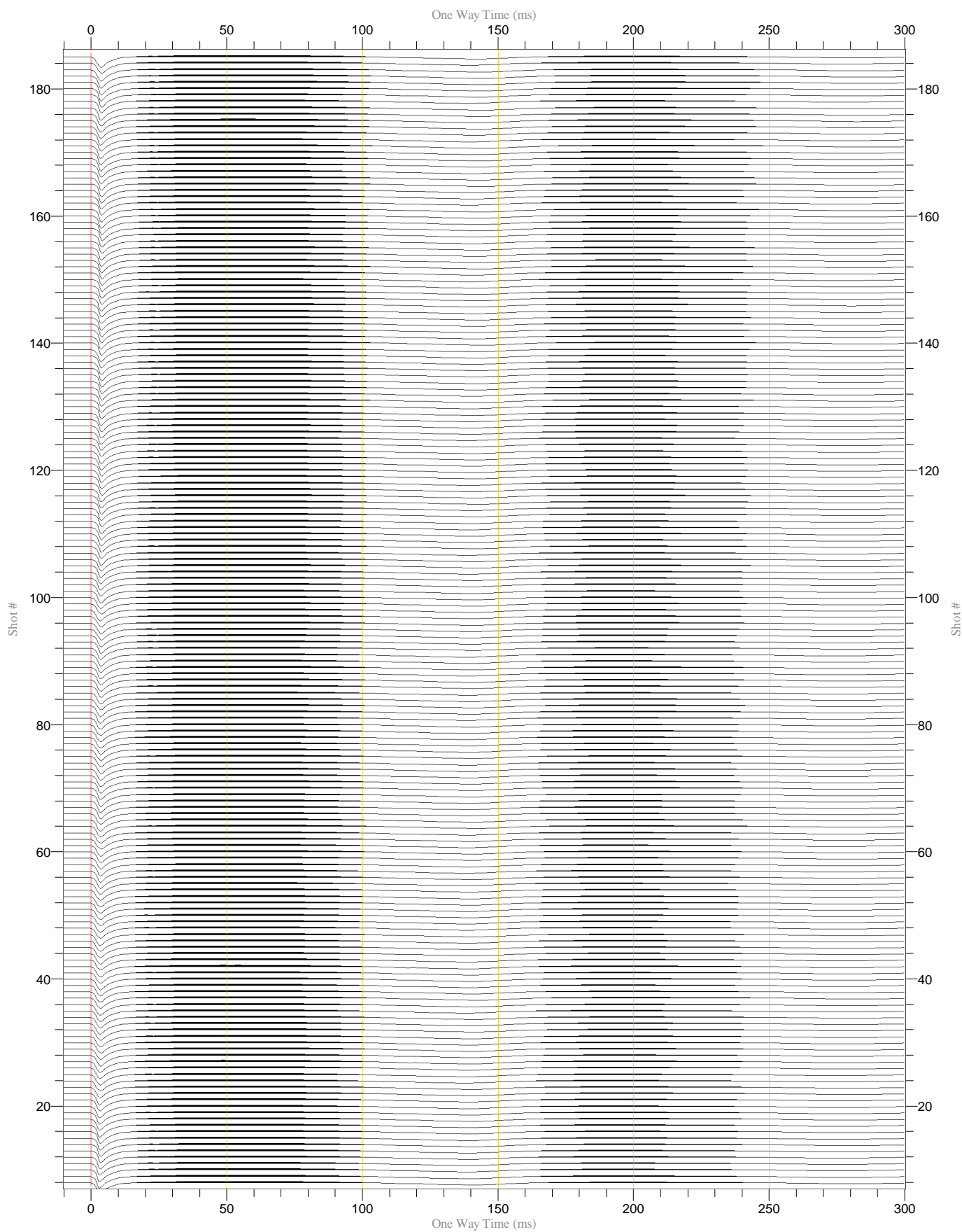
Source Signature QC Report

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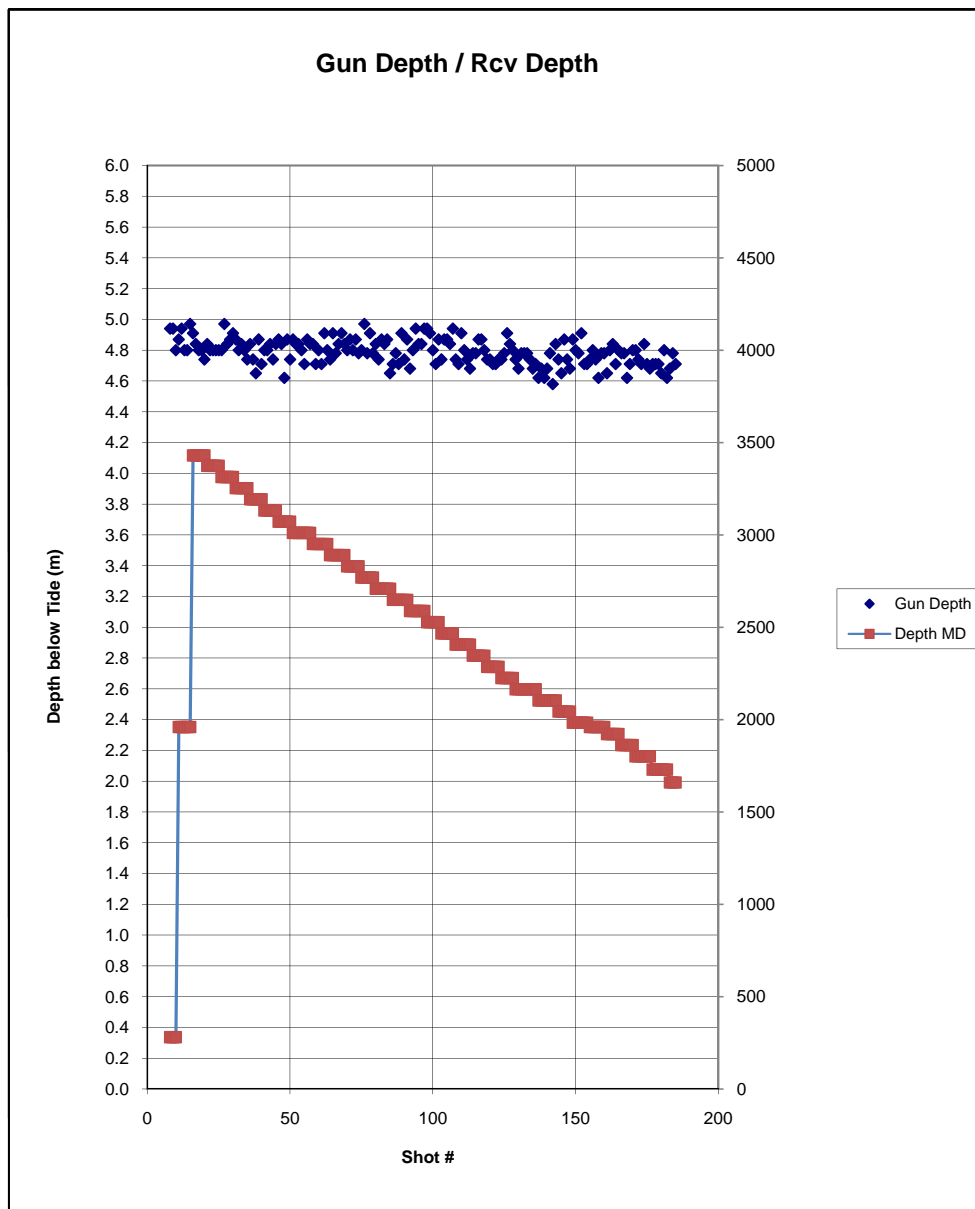
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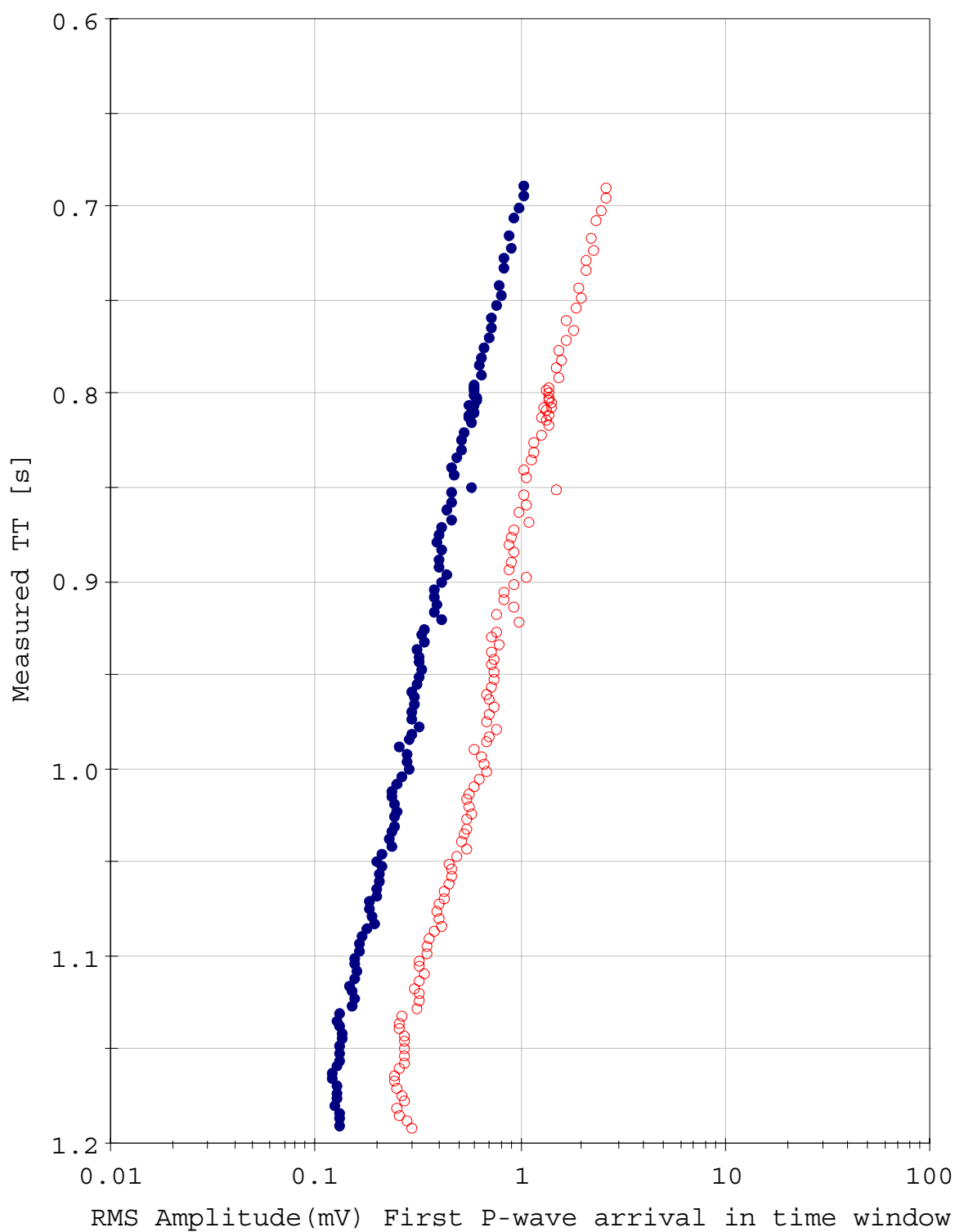
Rockhopper-1
ST1

Source Sensor Signature	Normalization Largest Trace in Gather (200%) Polarity Normal One Way Time (ms) Scaling 51.26 cm/sec, 8.33/cm	
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Trisor QC Display

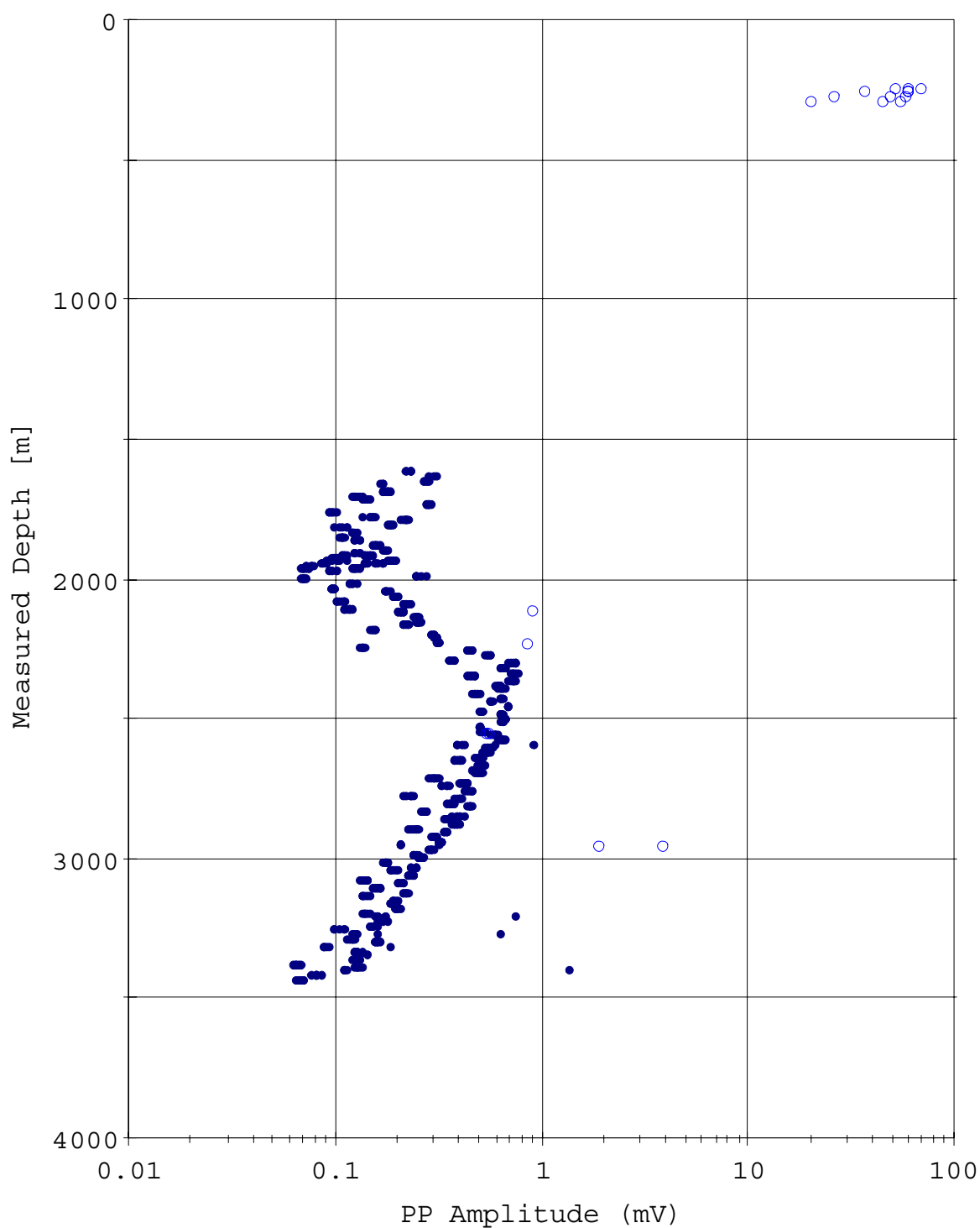


RMS amplitude Plot

P wave arrival in time window (60ms)

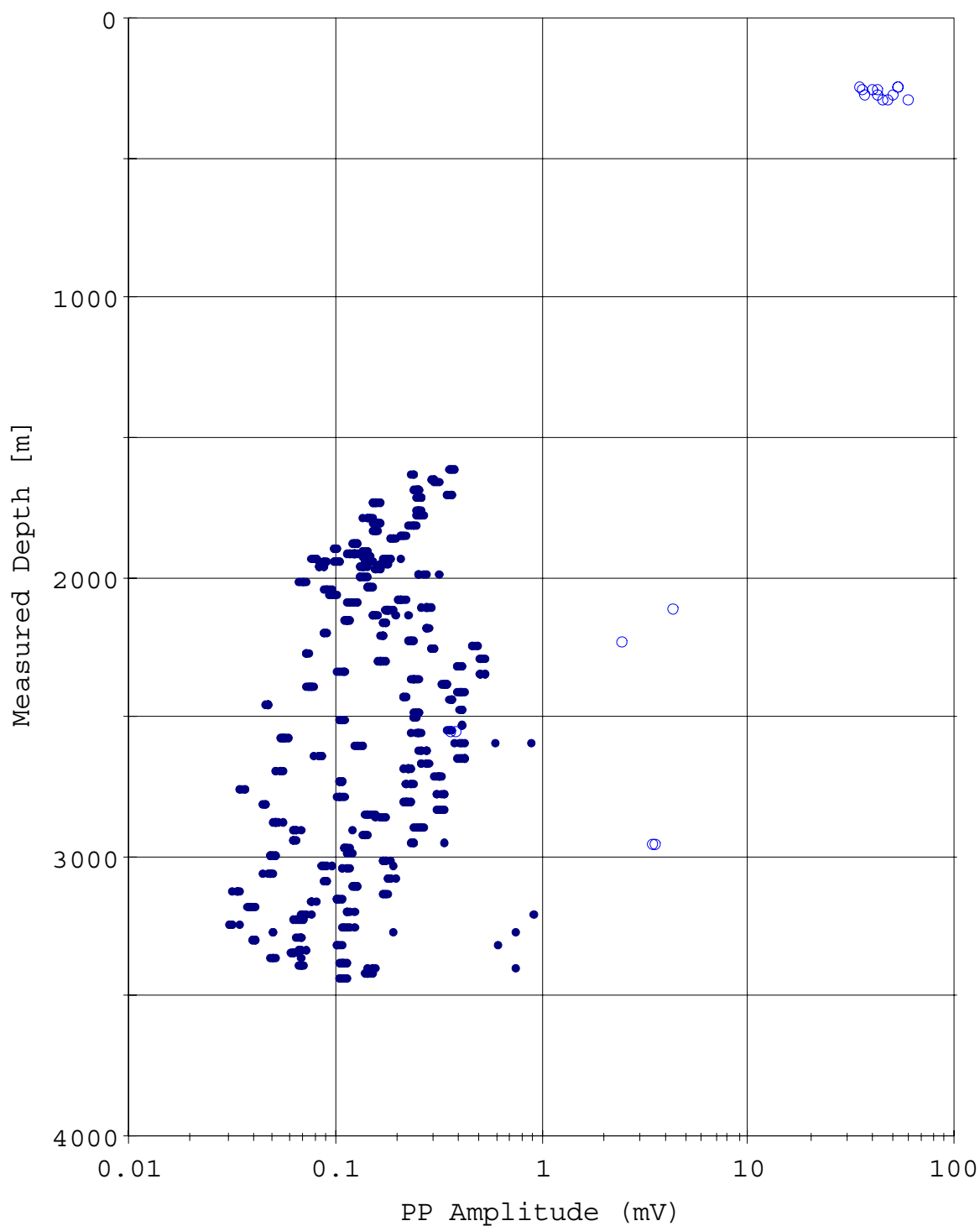
- RMS Amplitude (mV)
- MAX Amplitude (mV)

Peak To Peak Plot (X)



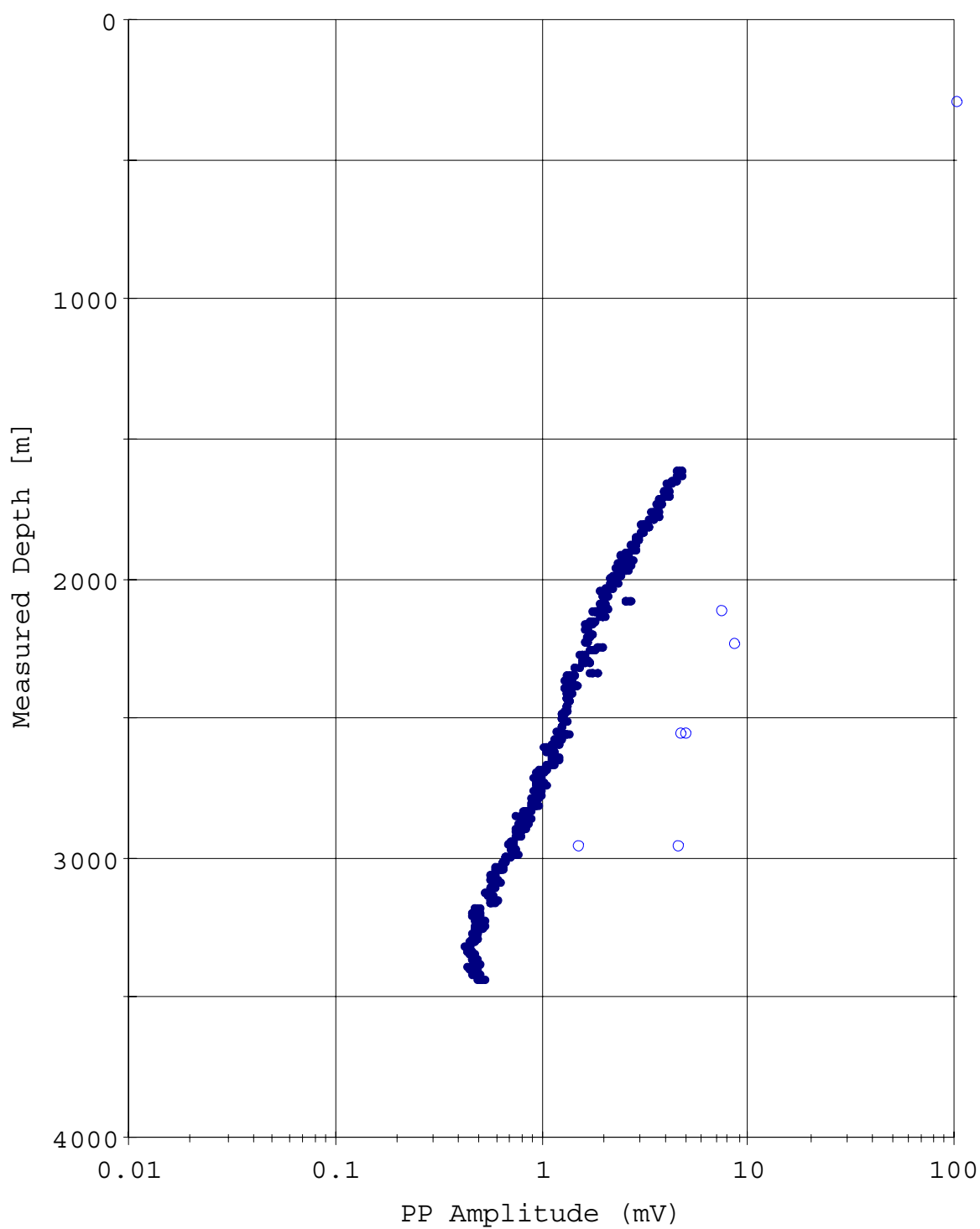
- PP Amplitude (mV) accepted for stack
- PP Amplitude (mV) rejected

Peak To Peak Plot (Y)



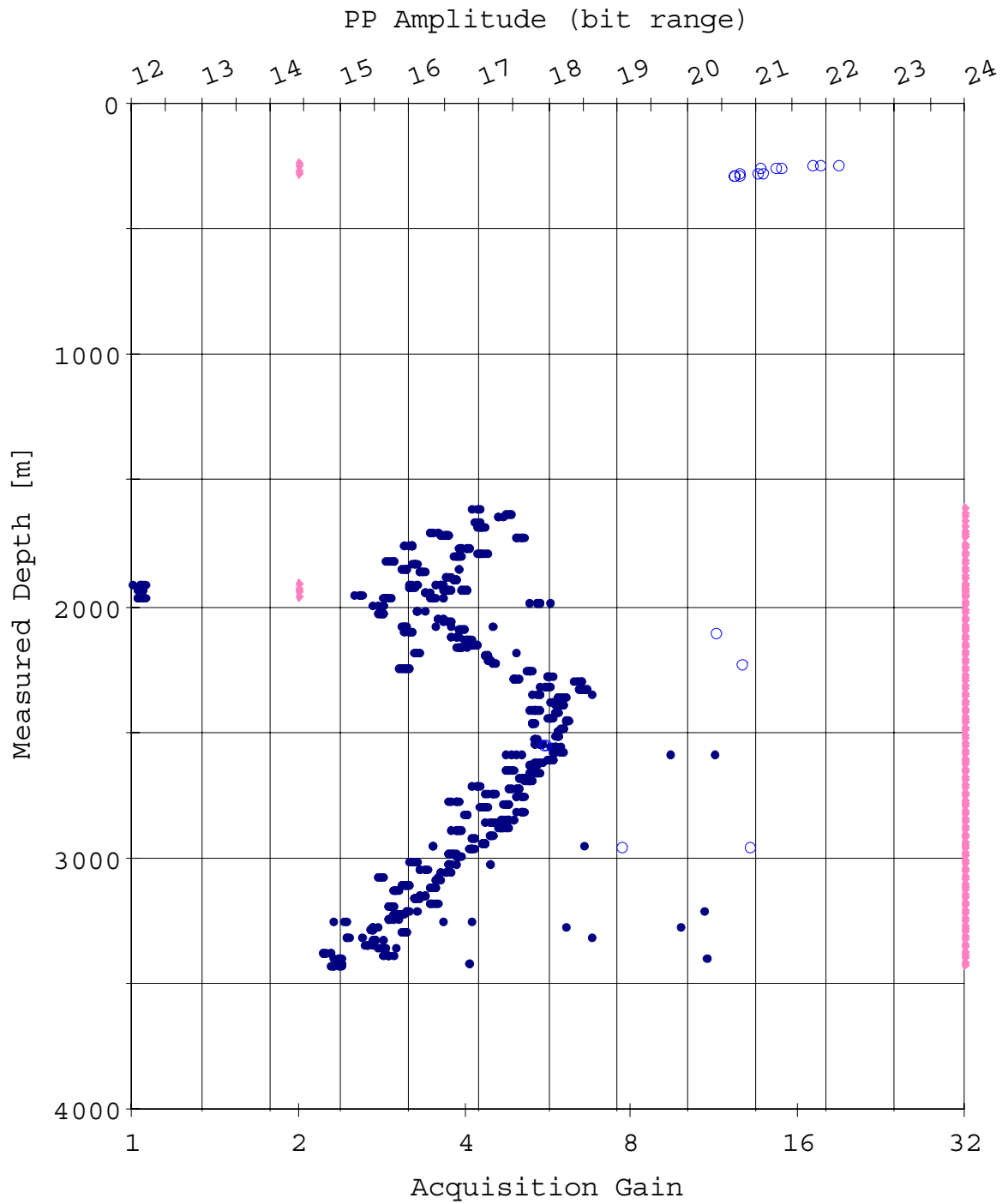
- PP Amplitude (mV) accepted for stack
- PP Amplitude (mV) rejected

Peak To Peak Plot (Z)



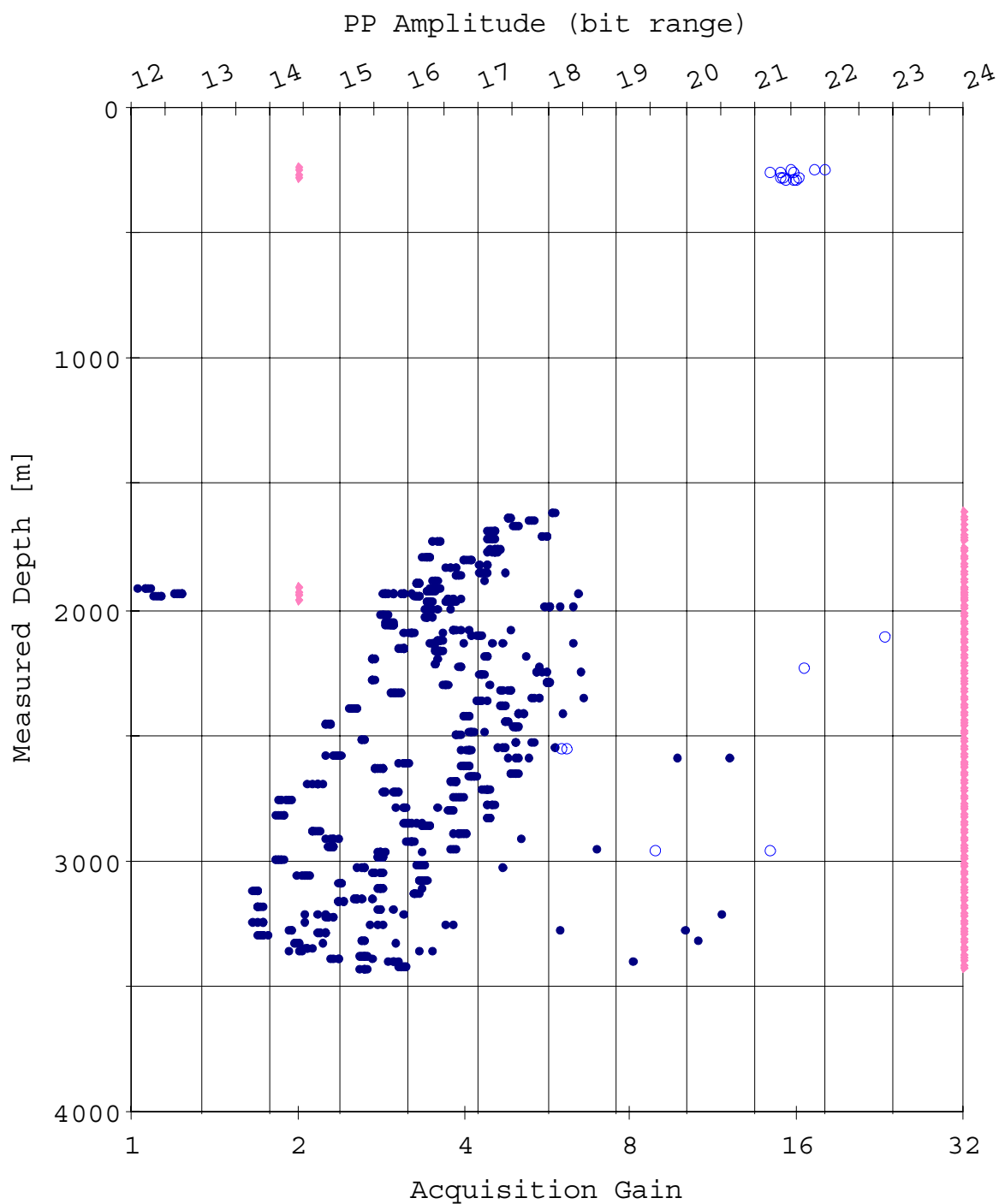
- PP Amplitude (mV) accepted for stack
- PP Amplitude (mV) rejected

Amplitude QC Plot (X)



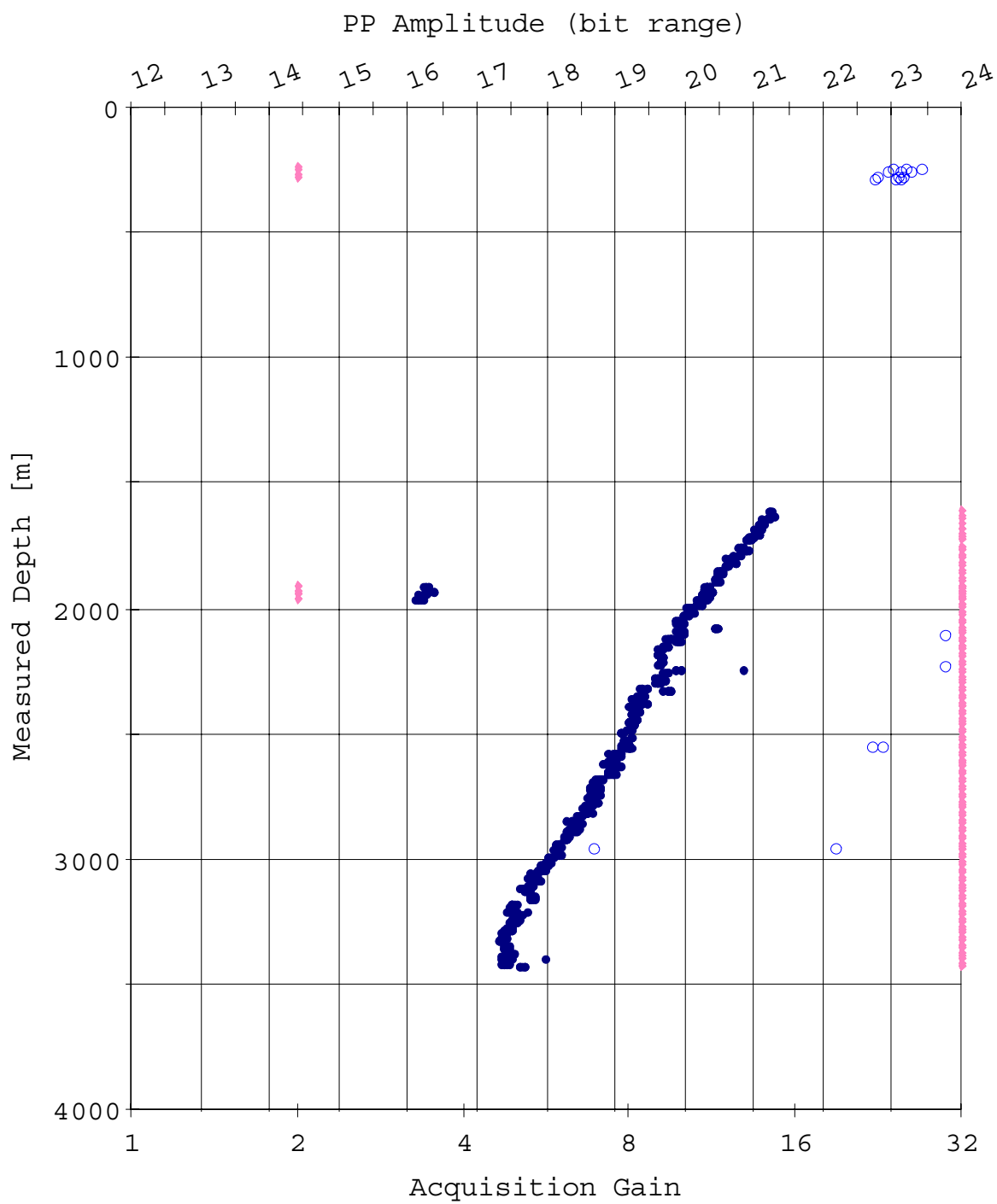
- PP Amplitude (bit range) accepted for stack
- PP Amplitude (bit range) rejected
- ◆ Acquisition Gain

Amplitude QC Plot (Y)



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

Amplitude QC Plot (Z)



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

===== Shot and Observer Report =====

Rockhopper-1
ST1

Shot Summary Listing (1/5)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
1615.2	1	37	-35.6	9.5	903.0	183, 184, 185
1630.4	2	37	-7.5	9.4	755.6	183, 184, 185
1645.5	3	37	-26.9	9.3	760.6	183, 184, 185
1660.6	4	37	13.7	9.3	687.4	183, 184, 185
1685.1	1	36	-41.7	9.5	902.0	177, 178, 179, 180, 181, 182
1700.2	2	36	-7.2	9.4	763.7	177, 178, 179, 180, 181, 182
1715.3	3	36	-27.0	9.3	746.9	177, 178, 179, 180, 181, 182
1730.4	4	36	13.5	9.4	688.3	177, 178, 179, 180, 181, 182
1757.3	1	34	-41.9	9.4	878.0	171, 172, 173, 174, 175, 176
1772.4	2	34	-7.9	9.4	750.4	171, 172, 173, 174, 175, 176
1787.5	3	34	-27.0	9.3	754.5	171, 172, 173, 174, 175, 176
1802.7	4	34	13.7	9.3	687.6	171, 172, 173, 174, 175, 176
1817.9	1	33	-41.9	9.4	883.8	166, 167, 168, 169, 170
1833.0	2	33	-7.9	9.4	743.6	166, 167, 168, 169, 170
1848.1	3	33	-27.1	9.3	746.4	166, 167, 168, 169, 170
1863.3	4	33	13.2	9.4	679.4	166, 167, 168, 169, 170
1877.7	1	32	-42.0	9.4	863.4	161, 162, 163, 164, 165
1892.8	2	32	-8.4	9.4	728.5	161, 162, 163, 164, 165
1907.9	3	32	-27.1	9.3	745.3	161, 162, 163, 164, 165
1914.1	1	5	-53.1	9.3	867.8	11, 12, 13, 14, 15
1915.3	1	31	-42.1	9.3	863.4	155, 156, 157, 158, 159, 160
1923.0	4	32	12.3	9.3	669.4	161, 162, 163, 164, 165
1929.2	2	5	-55.8	9.3	738.0	11, 12, 13, 14, 15
1930.5	2	31	-8.4	9.4	730.4	155, 156, 157, 158, 159, 160
1938.8	1	30	-42.0	9.4	852.6	149, 150, 151, 152, 153, 154
1944.3	3	5	-7.6	9.1	684.9	11, 12, 13, 14, 15
1945.6	3	31	-27.2	9.3	749.4	155, 156, 157, 158, 159, 160
1954.0	2	30	-8.8	9.3	738.0	149, 150, 151, 152, 153, 154
1959.4	4	5	15.6	9.2	658.2	11, 12, 13, 14, 15
1960.7	4	31	13.1	9.3	651.4	155, 156, 157, 158, 159, 160
1969.1	3	30	-27.8	10.2	746.4	149, 150, 151, 152, 153, 154

Shot Summary Listing (2/5)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
1984.2	4	30	29.9	14.3	625.8	149, 150, 151, 152, 153, 154
1999.2	1	29	-88.9	11.7	856.8	144, 145, 146, 147, 148
2014.3	2	29	-22.3	8.8	712.3	144, 145, 146, 147, 148
2029.4	3	29	-88.7	10.7	731.7	144, 145, 146, 147, 148
2044.5	4	29	26.9	9.3	645.7	144, 145, 146, 147, 148
2059.6	1	28	-49.9	9.4	827.4	137, 138, 139, 140, 141, 142, 143
2074.8	2	28	28.3	9.0	685.7	137, 138, 139, 140, 141, 142, 143
2089.9	3	28	-5.9	9.1	701.5	137, 138, 139, 140, 141, 142, 143
2105.0	4	28	68.3	9.0	589.4	137, 139, 140, 141, 142, 143
2120.2	1	27	-72.3	8.9	818.3	129, 130, 131, 132, 133, 134, 135, 136
2135.3	2	27	27.5	9.0	680.4	129, 130, 131, 132, 133, 134, 135, 136
2150.4	3	27	-28.1	9.1	694.1	129, 130, 131, 132, 133, 134, 135, 136
2165.5	4	27	45.6	8.8	613.6	129, 130, 131, 132, 133, 134, 135, 136
2180.8	1	26	-78.4	8.6	825.8	124, 125, 126, 127, 128
2195.9	2	26	26.7	9.1	706.3	124, 125, 126, 127, 128
2211.0	3	26	-30.3	9.0	693.1	124, 125, 126, 127, 128
2226.1	4	26	63.1	8.8	580.6	125, 126, 127, 128
2241.2	1	25	-52.5	8.9	790.8	119, 120, 121, 122, 123
2256.3	2	25	47.7	9.0	657.8	119, 120, 121, 122, 123
2271.4	3	25	-3.0	9.0	658.4	119, 120, 121, 122, 123
2286.6	4	25	66.7	8.6	540.7	119, 120, 121, 122, 123
2301.7	1	24	-26.6	8.7	812.4	114, 115, 116, 117, 118
2316.8	2	24	53.8	9.0	671.4	114, 115, 116, 117, 118
2331.9	3	24	0.6	9.3	641.2	114, 115, 116, 117, 118
2347.1	4	24	75.4	8.1	569.3	114, 115, 116, 117, 118
2362.2	1	23	-34.5	8.9	793.2	108, 109, 110, 111, 112, 113
2377.3	2	23	47.0	9.0	665.8	108, 109, 110, 111, 112, 113
2392.4	3	23	-8.5	9.2	667.2	108, 109, 110, 111, 112, 113
2407.5	4	23	63.6	8.8	557.8	108, 109, 110, 111, 112, 113
2422.7	1	22	-30.7	8.7	796.8	103, 104, 105, 106, 107
2437.8	2	22	46.7	8.9	662.8	103, 104, 105, 106, 107

Shot Summary Listing (3/5)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
2452.9	3	22	-7.5	9.1	652.6	103, 104, 105, 106, 107
2468.0	4	22	62.6	8.5	562.9	103, 104, 105, 106, 107
2483.1	1	21	-43.7	8.9	801.2	98, 99, 100, 101, 102
2498.2	2	21	33.4	9.3	653.9	98, 99, 100, 101, 102
2513.3	3	21	-12.7	9.0	671.2	98, 99, 100, 101, 102
2528.4	4	21	56.5	8.7	566.9	98, 99, 100, 101, 102
2543.6	1	20	-50.6	8.7	781.8	92, 93, 94, 95
2558.8	2	20	40.7	9.1	654.3	92, 93, 94, 95, 96, 97
2573.9	3	20	-10.4	9.3	619.7	92, 93, 94, 95, 96, 97
2589.0	4	20	53.3	8.6	581.3	92, 93, 94, 95, 96, 97
2604.1	1	19	-36.6	9.0	795.3	86, 87, 88, 89, 90, 91
2619.2	2	19	46.5	8.7	602.7	86, 87, 88, 89, 90, 91
2634.3	3	19	-3.1	9.1	648.0	86, 87, 88, 89, 90, 91
2649.4	4	19	69.9	8.6	434.6	86, 87, 88, 89, 90, 91
2664.5	1	18	-51.5	8.5	733.2	80, 81, 82, 83, 84, 85
2679.7	2	18	33.5	8.8	605.5	80, 81, 82, 83, 84, 85
2694.8	3	18	-7.3	9.0	649.4	80, 81, 82, 83, 84, 85
2709.9	4	18	63.1	8.6	545.3	80, 81, 82, 83, 84, 85
2725.1	1	17	-41.8	8.9	735.0	75, 76, 77, 78, 79
2740.2	2	17	39.5	8.6	628.5	75, 76, 77, 78, 79
2755.3	3	17	-11.3	9.3	638.9	75, 76, 77, 78, 79
2770.4	4	17	56.2	8.6	519.1	75, 76, 77, 78, 79
2785.6	1	16	-41.8	8.7	639.6	70, 71, 72, 73, 74
2800.7	2	16	38.7	9.0	633.6	70, 71, 72, 73, 74
2815.8	3	16	-12.0	9.1	626.9	70, 71, 72, 73, 74
2830.9	4	16	59.5	8.8	564.6	70, 71, 72, 73, 74
2846.0	1	15	-44.0	9.1	782.6	64, 65, 66, 67, 68, 69
2861.1	2	15	31.5	8.9	621.6	64, 65, 66, 67, 68, 69
2876.3	3	15	-14.3	9.1	599.8	64, 65, 66, 67, 68, 69
2891.4	4	15	55.8	8.6	493.9	64, 65, 66, 67, 68, 69
2906.4	1	14	-31.0	9.0	715.4	58, 59, 60, 61, 62, 63

Shot Summary Listing (4/5)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
2921.6	2	14	32.4	8.8	614.4	58, 59, 60, 61, 62, 63
2936.7	3	14	-13.1	9.2	607.5	58, 59, 60, 61, 62, 63
2951.8	4	14	60.0	8.2	448.8	59, 61, 62, 63
2967.0	1	13	-46.0	8.8	693.6	51, 52, 53, 54, 55, 56, 57
2982.1	2	13	31.4	8.8	576.3	51, 52, 53, 54, 55, 56, 57
2997.2	3	13	-18.6	9.4	608.4	51, 52, 53, 54, 55, 56, 57
3012.3	4	13	51.5	8.5	460.0	51, 52, 53, 54, 55, 56, 57
3027.4	1	12	-43.9	8.5	542.9	46, 47, 48, 49, 50
3042.6	2	12	36.2	8.9	594.9	46, 47, 48, 49, 50
3057.7	3	12	-12.8	9.1	595.1	46, 47, 48, 49, 50
3072.8	4	12	66.0	7.8	325.8	46, 47, 48, 49, 50
3087.9	1	11	-42.0	8.7	701.6	41, 42, 43, 44, 45
3103.0	2	11	29.2	9.0	608.3	41, 42, 43, 44, 45
3118.2	3	11	-15.7	9.5	564.8	41, 42, 43, 44, 45
3133.3	4	11	57.9	8.3	389.4	41, 42, 43, 44, 45
3148.4	1	10	-60.3	9.2	746.3	36, 37, 38, 39, 40
3163.6	2	10	27.3	8.9	582.8	36, 37, 38, 39, 40
3178.7	3	10	-17.5	9.1	598.0	36, 37, 38, 39, 40
3193.8	4	10	43.1	8.8	469.8	36, 37, 38, 39, 40
3208.9	1	9	-53.9	8.7	710.8	31, 32, 33, 34, 35
3224.0	2	9	20.1	8.9	566.2	31, 32, 33, 34, 35
3239.1	3	9	-19.3	9.3	580.5	31, 32, 33, 34, 35
3254.3	4	9	59.8	8.2	413.0	31, 32, 33, 34, 35
3269.4	1	8	-35.2	8.9	653.7	26, 27, 28, 29, 30
3284.5	2	8	26.6	9.2	589.2	26, 27, 28, 29, 30
3299.6	3	8	-18.2	9.3	582.4	26, 27, 28, 29, 30
3314.7	4	8	55.3	8.7	448.2	26, 27, 28, 29, 30
3329.7	1	7	-42.9	9.4	720.3	21, 22, 23, 24, 25
3344.8	2	7	24.7	9.1	578.6	21, 22, 23, 24, 25
3360.0	3	7	-15.2	9.7	579.8	21, 22, 23, 24, 25
3375.1	4	7	92.1	7.5	396.3	21, 22, 23, 24, 25

Shot Summary Listing (5/5)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
3386.3	1	6	-32.8	9.0	699.4	16, 17, 18, 19, 20
3401.4	2	6	76.9	8.1	577.1	16, 17, 18, 19, 20
3416.5	3	6	75.0	7.3	492.4	16, 17, 18, 19, 20
3431.7	4	6	-75.6	7.1	394.6	16, 17, 18, 19, 20

Observer's Note (1/3)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
280.2	02:40:39	SHAK	6			
280.2	02:41:14	BKGD	7			
280.2	03:00:47	SHOT	8	3	Rockhopper 1	CheckShoot @ 250mMD as per client request
280.2	03:02:04	SHOT	9	3	Rockhopper 1	
280.2	03:02:22	SHOT	10	3	Rockhopper 1	
1959.4	04:04:08	SHOT	11	5	Rockhopper 1	Check shoot @ 1959.5mMD
1959.4	04:04:27	SHOT	12	5	Rockhopper 1	
1959.4	04:05:41	SHOT	13	5	Rockhopper 1	
1959.4	04:06:35	SHOT	14	5	Rockhopper 1	
1959.4	04:07:11	SHOT	15	5	Rockhopper 1	
3430.5	06:38:01	SHOT	16	6	Rockhopper 1	3370.96
3430.5	06:39:09	SHOT	17	6	Rockhopper 1	
3430.5	06:40:29	SHOT	18	6	Rockhopper 1	
3430.5	06:44:28	SHOT	19	6	Rockhopper 1	
3430.5	06:45:16	SHOT	20	6	Rockhopper 1	
3373.9	06:55:15	SHOT	21	7	Rockhopper 1	3314m
3373.9	06:55:55	SHOT	22	7	Rockhopper 1	
3373.9	06:56:31	SHOT	23	7	Rockhopper 1	
3373.9	06:56:56	SHOT	24	7	Rockhopper 1	
3373.9	06:57:57	SHOT	25	7	Rockhopper 1	
3313.5	07:08:32	SHOT	26	8	Rockhopper 1	3254.05m
3313.5	07:09:57	SHOT	27	8	Rockhopper 1	
3313.5	07:10:29	SHOT	28	8	Rockhopper 1	
3313.5	07:10:47	SHOT	29	8	Rockhopper 1	
3313.5	07:11:05	SHOT	30	8	Rockhopper 1	
3253.1	07:19:00	SHOT	31	9	Rockhopper 1	3193.56m
3253.1	07:19:33	SHOT	32	9	Rockhopper 1	
3253.1	07:20:11	SHOT	33	9	Rockhopper 1	
3253.1	07:21:50	SHOT	34	9	Rockhopper 1	
3253.1	07:22:14	SHOT	35	9	Rockhopper 1	
3192.6	07:31:30	SHOT	36	10	Rockhopper 1	3133.10
3192.6	07:32:22	SHOT	37	10	Rockhopper 1	
3192.6	07:32:45	SHOT	38	10	Rockhopper 1	
3192.6	07:33:04	SHOT	39	10	Rockhopper 1	
					Rockhopper	

3192.6	07:33:22	SHOT	40	10	1	
3132.1	07:40:23	SHOT	41	11	Rockhopper 1	3072.59 m
3132.1	07:40:51	SHOT	42	11	Rockhopper 1	
3132.1	07:41:11	SHOT	43	11	Rockhopper 1	
3132.1	07:41:37	SHOT	44	11	Rockhopper 1	
3132.1	07:42:09	SHOT	45	11	Rockhopper 1	
3071.6	07:48:25	SHOT	46	12	Rockhopper 1	3012.11
3071.6	07:48:43	SHOT	47	12	Rockhopper 1	
3071.6	07:49:16	SHOT	48	12	Rockhopper 1	
3071.6	07:49:35	SHOT	49	12	Rockhopper 1	
3071.6	07:50:01	SHOT	50	12	Rockhopper 1	
3011.1	07:55:16	SHOT	51	13	Rockhopper 1	2951.62
3011.1	07:55:40	SHOT	52	13	Rockhopper 1	
3011.1	07:56:03	SHOT	53	13	Rockhopper 1	
3011.1	07:56:52	SHOT	54	13	Rockhopper 1	
3011.1	07:57:16	SHOT	55	13	Rockhopper 1	
3011.1	07:57:55	SHOT	56	13	Rockhopper 1	
3011.1	07:58:13	SHOT	57	13	Rockhopper 1	
2950.6	08:03:12	SHOT	58	14	Rockhopper 1	2891.11 m
2950.6	08:03:49	SHOT	59	14	Rockhopper 1	
2950.6	08:04:16	SHOT	60	14	Rockhopper 1	
2950.6	08:04:34	SHOT	61	14	Rockhopper 1	
2950.6	08:04:52	SHOT	62	14	Rockhopper 1	
2950.6	08:05:10	SHOT	63	14	Rockhopper 1	
2890.2	08:11:02	SHOT	64	15	Rockhopper 1	2830.69 m
2890.2	08:11:24	SHOT	65	15	Rockhopper 1	
2890.2	08:11:42	SHOT	66	15	Rockhopper 1	
2890.2	08:12:00	SHOT	67	15	Rockhopper 1	
2890.2	08:12:21	SHOT	68	15	Rockhopper 1	

Observer's Note (2/3)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
2890.2	08:12:39	SHOT	69	15	Rockhopper 1	
2829.7	08:17:25	SHOT	70	16	Rockhopper 1	2770.22 m
2829.7	08:17:43	SHOT	71	16	Rockhopper 1	
2829.7	08:18:02	SHOT	72	16	Rockhopper 1	
					Rockhopper	

2829.7	08:18:20	SHOT	73	16	1	
2829.7	08:18:38	SHOT	74	16	Rockhopper 1	
2769.2	08:24:08	SHOT	75	17	Rockhopper 1	2709.72 m
2769.2	08:24:26	SHOT	76	17	Rockhopper 1	
2769.2	08:24:44	SHOT	77	17	Rockhopper 1	
2769.2	08:25:02	SHOT	78	17	Rockhopper 1	
2769.2	08:25:20	SHOT	79	17	Rockhopper 1	
2708.7	08:31:07	SHOT	80	18	Rockhopper 1	2649.21 m
2708.7	08:31:25	SHOT	81	18	Rockhopper 1	
2708.7	08:31:43	SHOT	82	18	Rockhopper 1	
2708.7	08:32:01	SHOT	83	18	Rockhopper 1	
2708.7	08:32:19	SHOT	84	18	Rockhopper 1	
2708.7	08:32:37	SHOT	85	18	Rockhopper 1	
2648.2	08:38:27	SHOT	86	19	Rockhopper 1	2588.72 m
2648.2	08:38:52	SHOT	87	19	Rockhopper 1	
2648.2	08:39:10	SHOT	88	19	Rockhopper 1	
2648.2	08:39:29	SHOT	89	19	Rockhopper 1	
2648.2	08:39:47	SHOT	90	19	Rockhopper 1	
2648.2	08:40:05	SHOT	91	19	Rockhopper 1	
2587.8	08:45:16	SHOT	92	20	Rockhopper 1	2528.31 m
2587.8	08:45:46	SHOT	93	20	Rockhopper 1	
2587.8	08:46:04	SHOT	94	20	Rockhopper 1	
2587.8	08:46:22	SHOT	95	20	Rockhopper 1	
2587.8	08:46:40	SHOT	96	20	Rockhopper 1	
2587.8	08:46:58	SHOT	97	20	Rockhopper 1	
2527.2	08:53:01	SHOT	98	21	Rockhopper 1	2667.74 m
2527.2	08:53:26	SHOT	99	21	Rockhopper 1	
2527.2	08:53:55	SHOT	100	21	Rockhopper 1	
2527.2	08:54:13	SHOT	101	21	Rockhopper 1	
2527.2	08:54:37	SHOT	102	21	Rockhopper 1	
2466.8	09:02:55	SHOT	103	22	Rockhopper 1	2407.33 m
2466.8	09:03:16	SHOT	104	22	Rockhopper 1	
2466.8	09:03:34	SHOT	105	22	Rockhopper 1	
2466.8	09:03:52	SHOT	106	22	Rockhopper 1	
2466.8	09:04:10	SHOT	107	22	Rockhopper 1	
2406.3	09:09:17	SHOT	108	23	Rockhopper	2346.84 m

					1	
2406.3	09:09:42	SHOT	109	23	Rockhopper 1	
2406.3	09:10:00	SHOT	110	23	Rockhopper 1	
2406.3	09:10:18	SHOT	111	23	Rockhopper 1	
2406.3	09:10:36	SHOT	112	23	Rockhopper 1	
2406.3	09:10:54	SHOT	113	23	Rockhopper 1	
2345.9	09:18:11	SHOT	114	24	Rockhopper 1	2286.37 m
2345.9	09:18:53	SHOT	115	24	Rockhopper 1	
2345.9	09:19:30	SHOT	116	24	Rockhopper 1	
2345.9	09:19:50	SHOT	117	24	Rockhopper 1	
2345.9	09:20:08	SHOT	118	24	Rockhopper 1	
2285.4	09:26:53	SHOT	119	25	Rockhopper 1	2225.88 m
2285.4	09:27:19	SHOT	120	25	Rockhopper 1	
2285.4	09:27:37	SHOT	121	25	Rockhopper 1	
2285.4	09:27:55	SHOT	122	25	Rockhopper 1	
2285.4	09:28:20	SHOT	123	25	Rockhopper 1	
2224.9	09:33:51	SHOT	124	26	Rockhopper 1	2165.42 m
2224.9	09:34:18	SHOT	125	26	Rockhopper 1	
2224.9	09:34:36	SHOT	126	26	Rockhopper 1	
2224.9	09:34:54	SHOT	127	26	Rockhopper 1	
2224.9	09:35:12	SHOT	128	26	Rockhopper 1	
2164.3	09:40:55	SHOT	129	27	Rockhopper 1	2104.84 m
2164.3	09:41:30	SHOT	130	27	Rockhopper 1	
2164.3	09:41:48	SHOT	131	27	Rockhopper 1	

Observer's Note (3/3)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
2164.3	09:42:06	SHOT	132	27	Rockhopper 1	
2164.3	09:42:24	SHOT	133	27	Rockhopper 1	
2164.3	09:42:42	SHOT	134	27	Rockhopper 1	
2164.3	09:43:00	SHOT	135	27	Rockhopper 1	
2164.3	09:43:18	SHOT	136	27	Rockhopper 1	
2103.8	09:48:35	SHOT	137	28	Rockhopper 1	2044.31 m
2103.8	09:48:53	SHOT	138	28	Rockhopper 1	
2103.8	09:49:11	SHOT	139	28	Rockhopper 1	
2103.8	09:49:29	SHOT	140	28	Rockhopper 1	
					Rockhopper	

2103.8	09:49:47	SHOT	141	28	1	
2103.8	09:50:05	SHOT	142	28	Rockhopper 1	
2103.8	09:50:23	SHOT	143	28	Rockhopper 1	
2043.3	09:54:56	SHOT	144	29	Rockhopper 1	1983.85 m
2043.3	09:55:15	SHOT	145	29	Rockhopper 1	
2043.3	09:55:33	SHOT	146	29	Rockhopper 1	
2043.3	09:55:51	SHOT	147	29	Rockhopper 1	
2043.3	09:56:09	SHOT	148	29	Rockhopper 1	
1983.0	10:01:13	SHOT	149	30	Rockhopper 1	1923.52 m
1983.0	10:01:31	SHOT	150	30	Rockhopper 1	
1983.0	10:01:49	SHOT	151	30	Rockhopper 1	
1983.0	10:02:07	SHOT	152	30	Rockhopper 1	
1983.0	10:02:25	SHOT	153	30	Rockhopper 1	
1983.0	10:02:44	SHOT	154	30	Rockhopper 1	
1959.5	10:06:42	SHOT	155	31	Rockhopper 1	check shot at 1900 m
1959.5	10:07:03	SHOT	156	31	Rockhopper 1	
1959.5	10:07:21	SHOT	157	31	Rockhopper 1	
1959.5	10:07:39	SHOT	158	31	Rockhopper 1	
1959.5	10:07:57	SHOT	159	31	Rockhopper 1	
1959.5	10:08:15	SHOT	160	31	Rockhopper 1	
1921.8	10:13:56	SHOT	161	32	Rockhopper 1	1862.35 m
1921.8	10:14:21	SHOT	162	32	Rockhopper 1	
1921.8	10:14:39	SHOT	163	32	Rockhopper 1	
1921.8	10:14:57	SHOT	164	32	Rockhopper 1	
1921.8	10:15:15	SHOT	165	32	Rockhopper 1	
1862.1	10:19:47	SHOT	166	33	Rockhopper 1	1802.56 m
1862.1	10:20:05	SHOT	167	33	Rockhopper 1	
1862.1	10:20:29	SHOT	168	33	Rockhopper 1	
1862.1	10:20:47	SHOT	169	33	Rockhopper 1	
1862.1	10:21:05	SHOT	170	33	Rockhopper 1	
1801.5	10:26:59	SHOT	171	34	Rockhopper 1	1741.96 m
1801.5	10:27:18	SHOT	172	34	Rockhopper 1	
1801.5	10:27:36	SHOT	173	34	Rockhopper 1	
1801.5	10:27:54	SHOT	174	34	Rockhopper 1	
1801.5	10:28:12	SHOT	175	34	Rockhopper 1	
1801.5	10:28:30	SHOT	176	34	Rockhopper	

					1	
1729.2	10:36:54	SHOT	177	36	Rockhopper 1	QC shot at 1669.75 m
1729.2	10:37:13	SHOT	178	36	Rockhopper 1	
1729.2	10:37:31	SHOT	179	36	Rockhopper 1	
1729.2	10:37:49	SHOT	180	36	Rockhopper 1	
1729.2	10:38:51	SHOT	181	36	Rockhopper 1	
1729.2	10:39:21	SHOT	182	36	Rockhopper 1	
1659.4	10:50:02	SHOT	183	37	Rockhopper 1	QC shot at 1599.91 m
1659.4	10:50:21	SHOT	184	37	Rockhopper 1	
1659.4	10:50:39	SHOT	185	37	Rockhopper 1	

Tool Evaluation Test Report

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Rockhopper-1
ST1

VSI Seismic Evaluation Report

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GR Correlation Report

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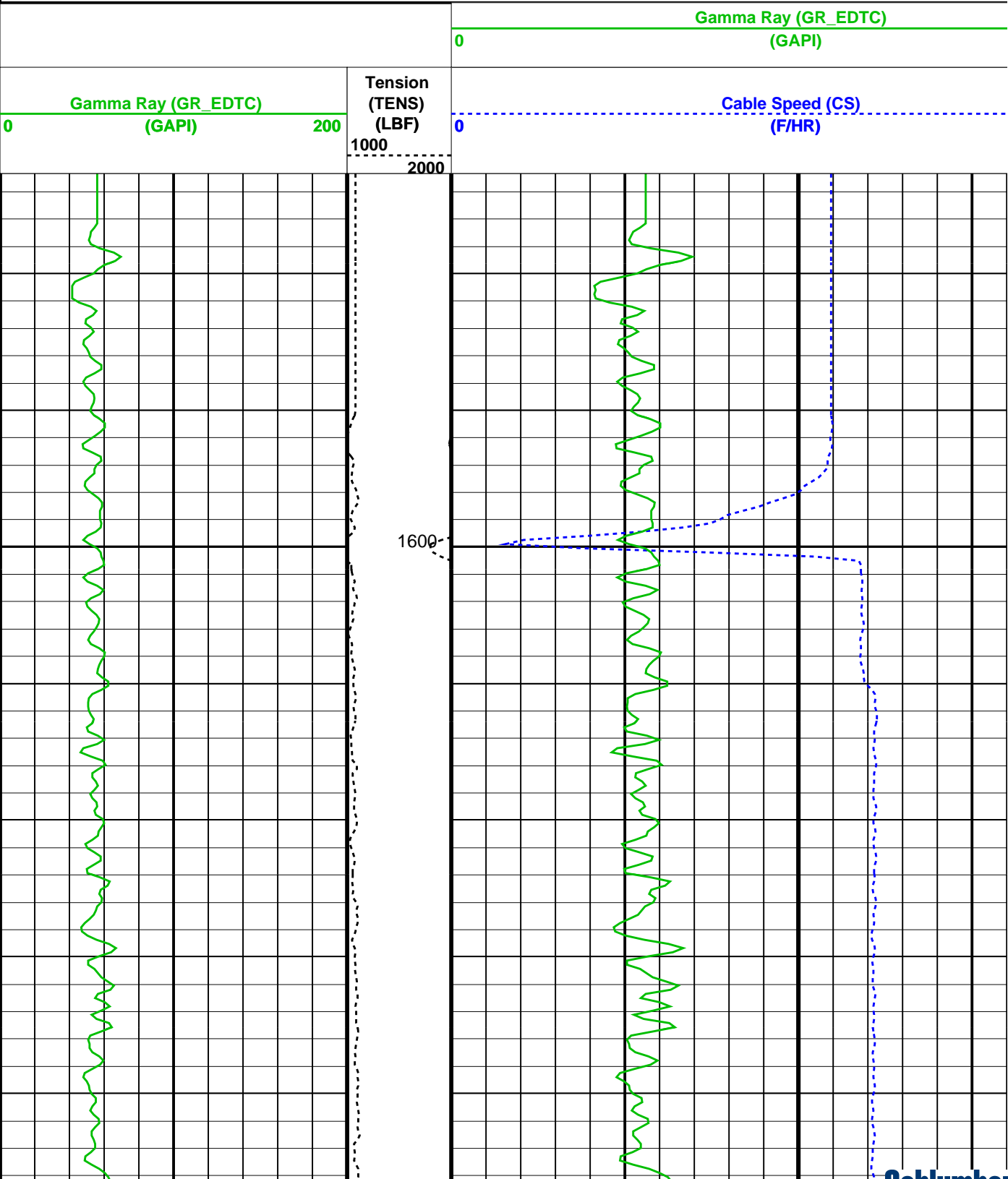
Rockhopper-1
ST1

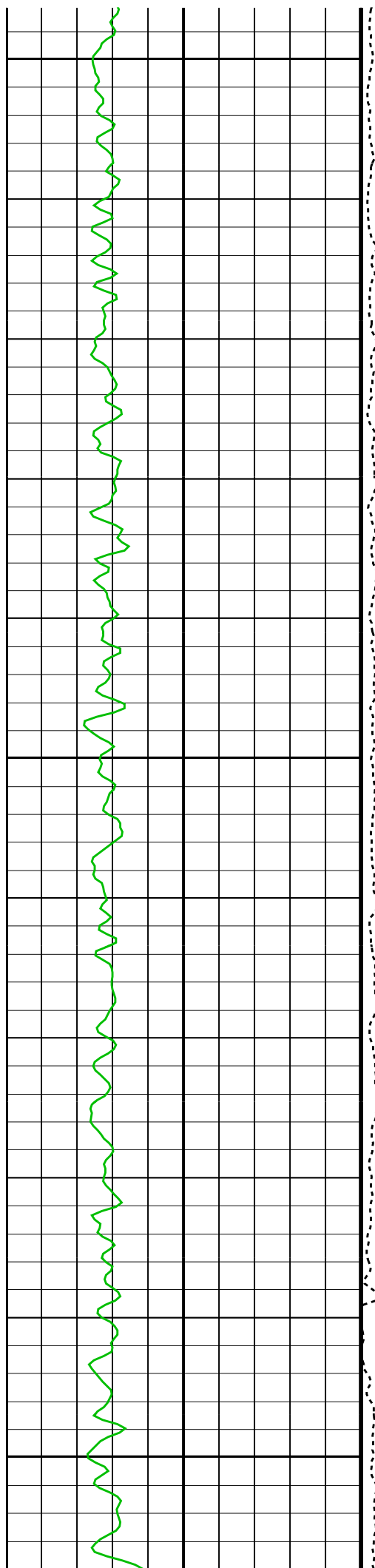
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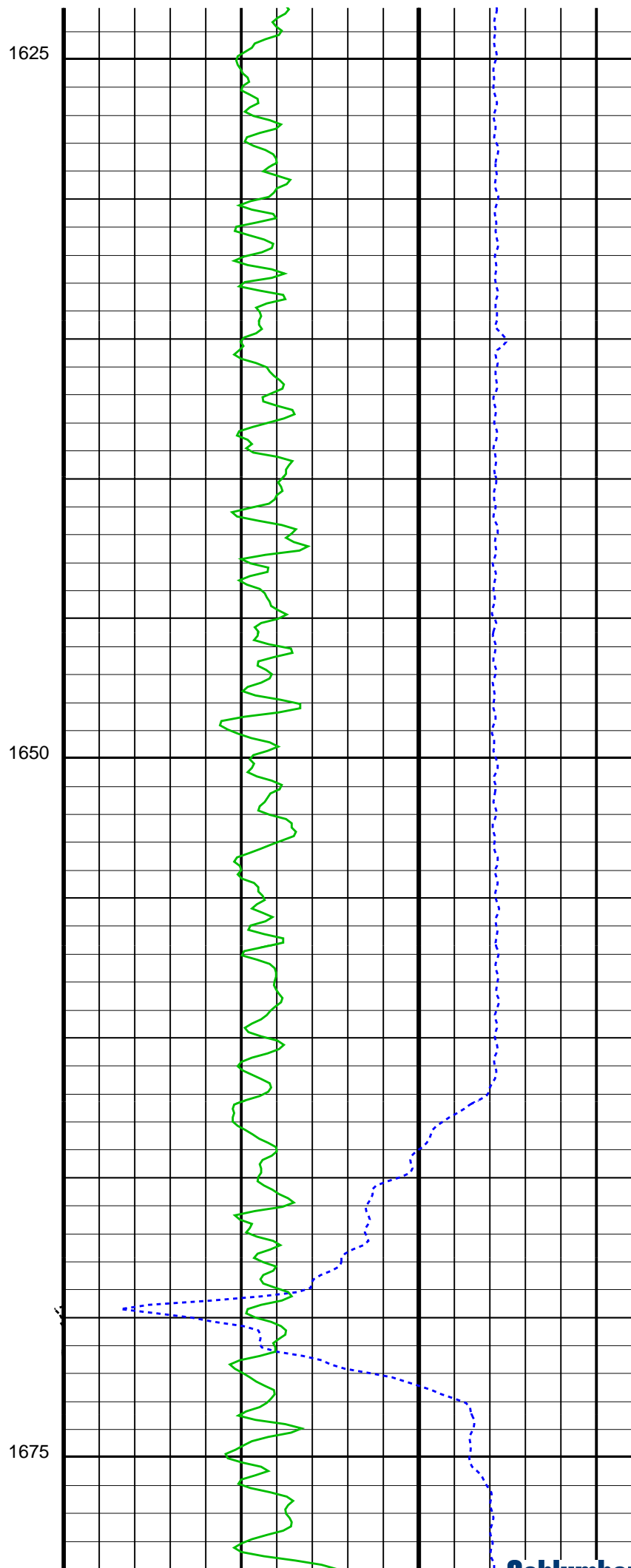
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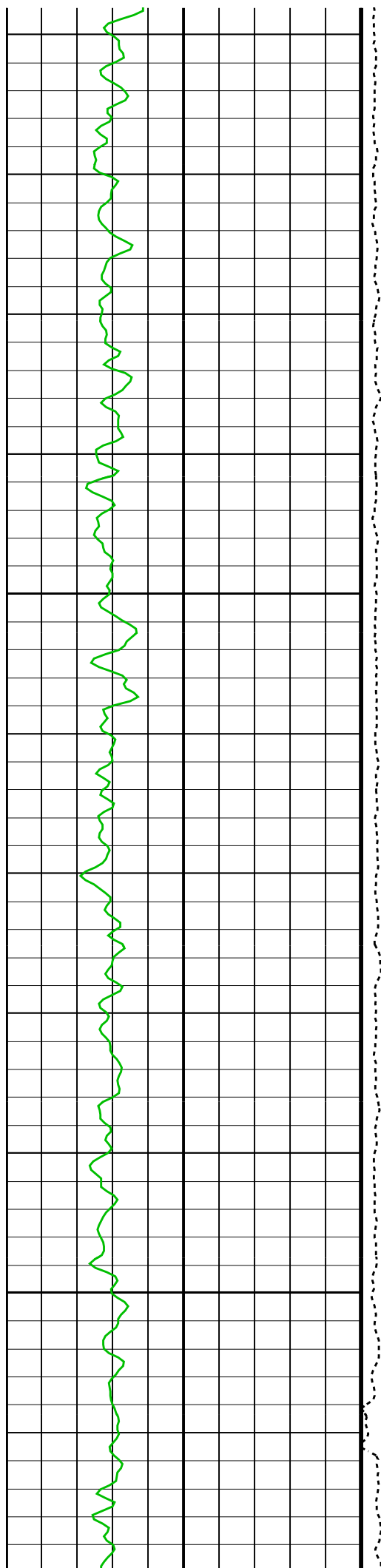




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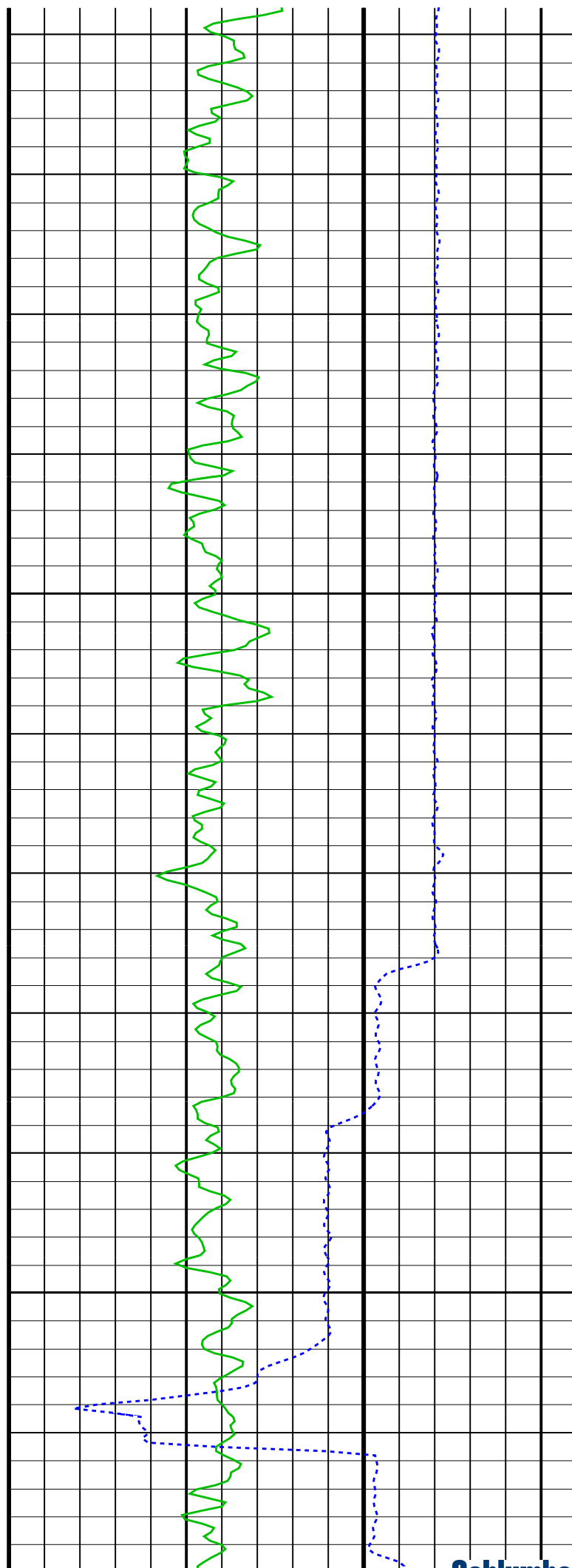
Page 52



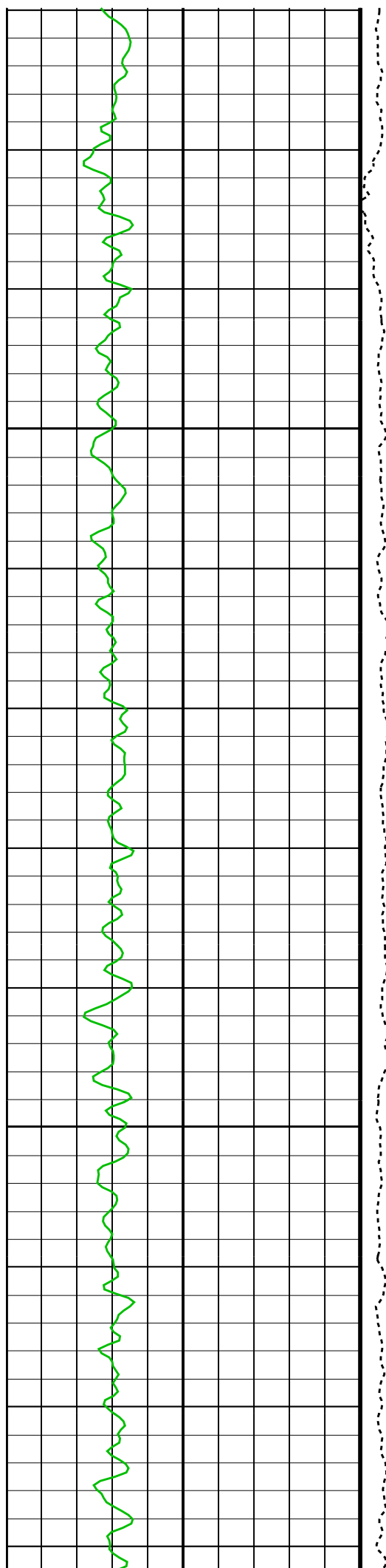
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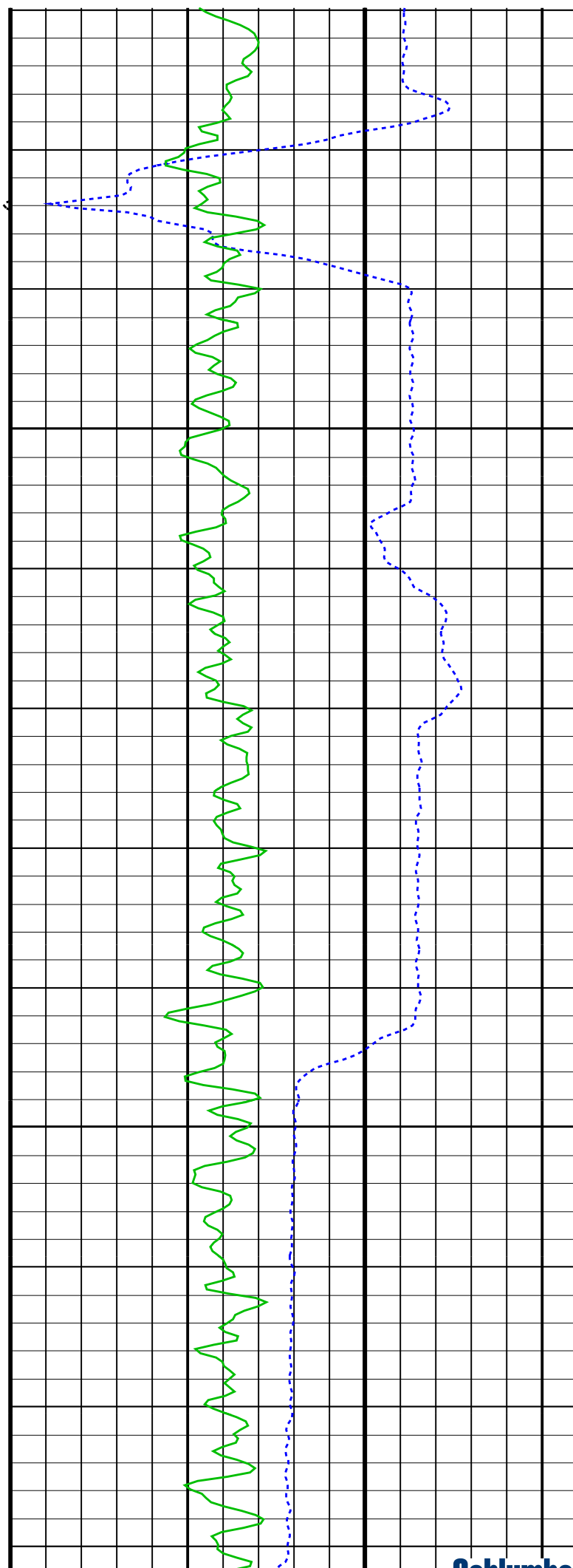
Page 53



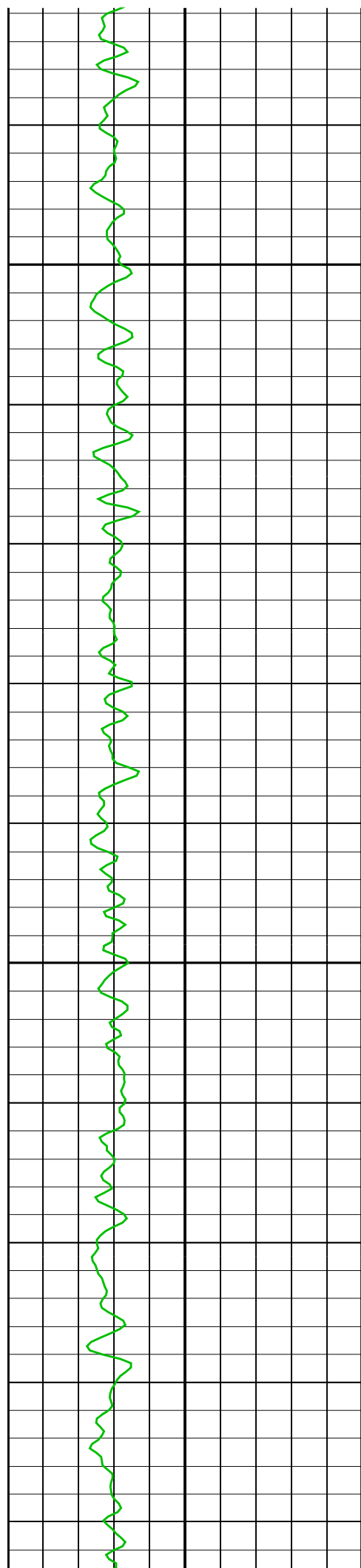
Logging date: 9-Feb-2010

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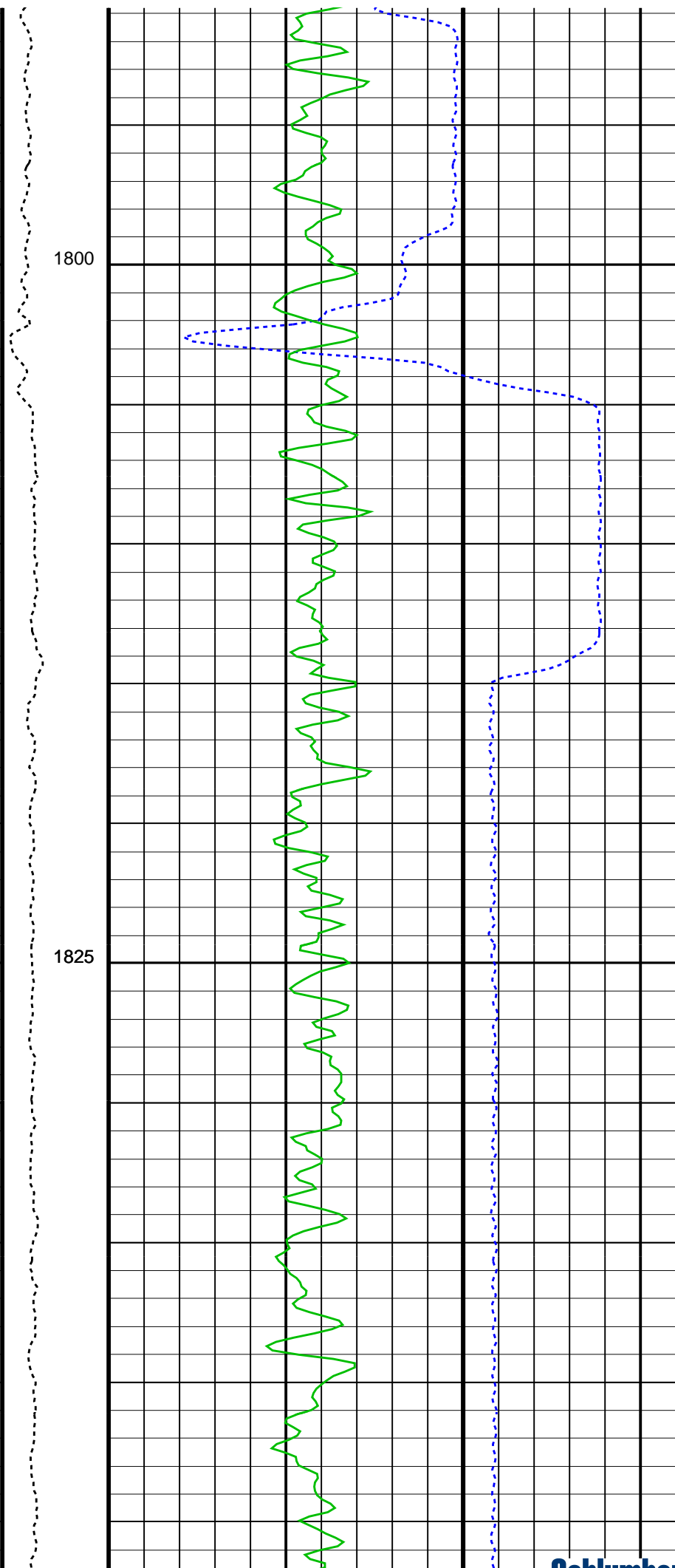
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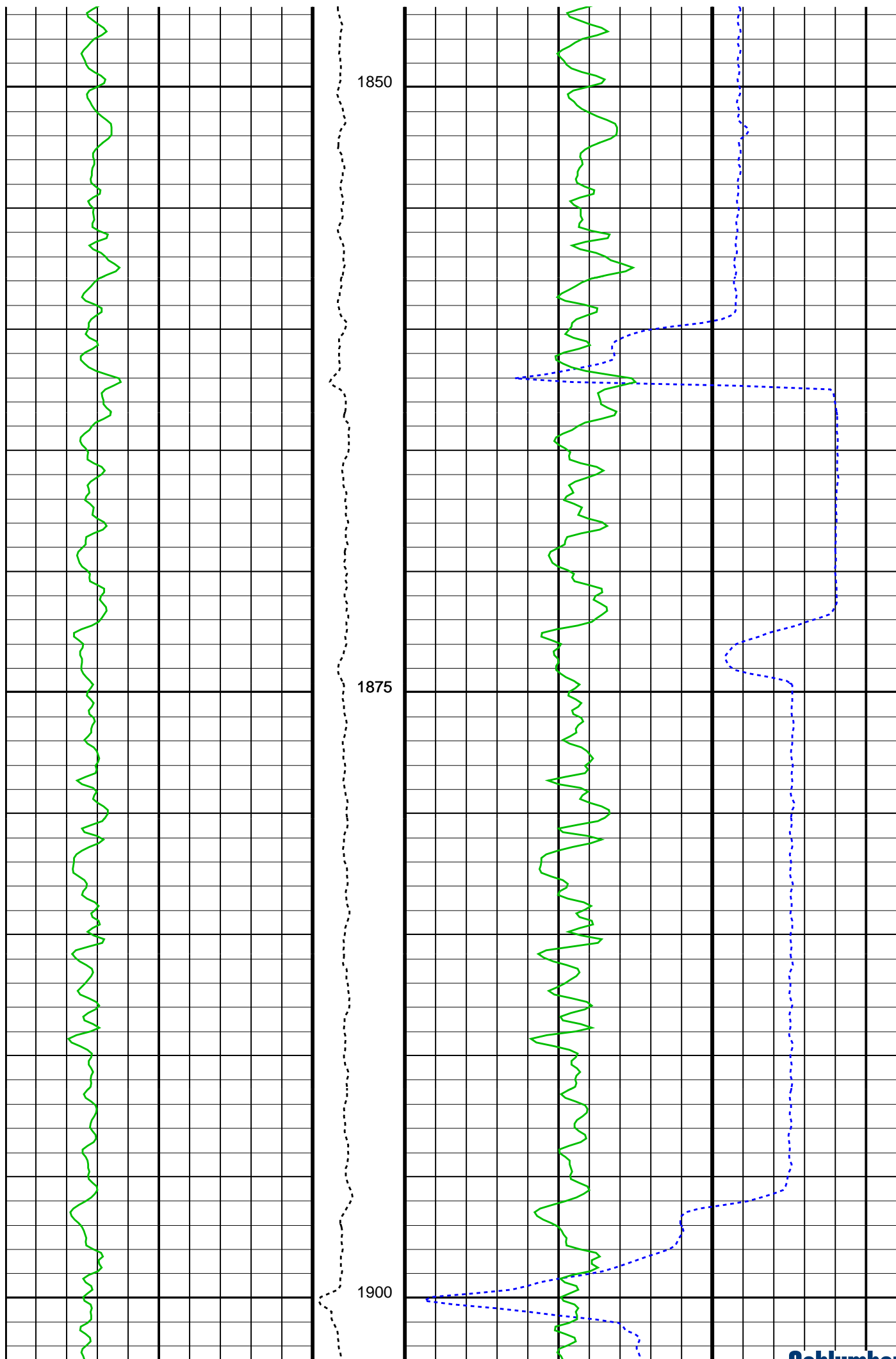
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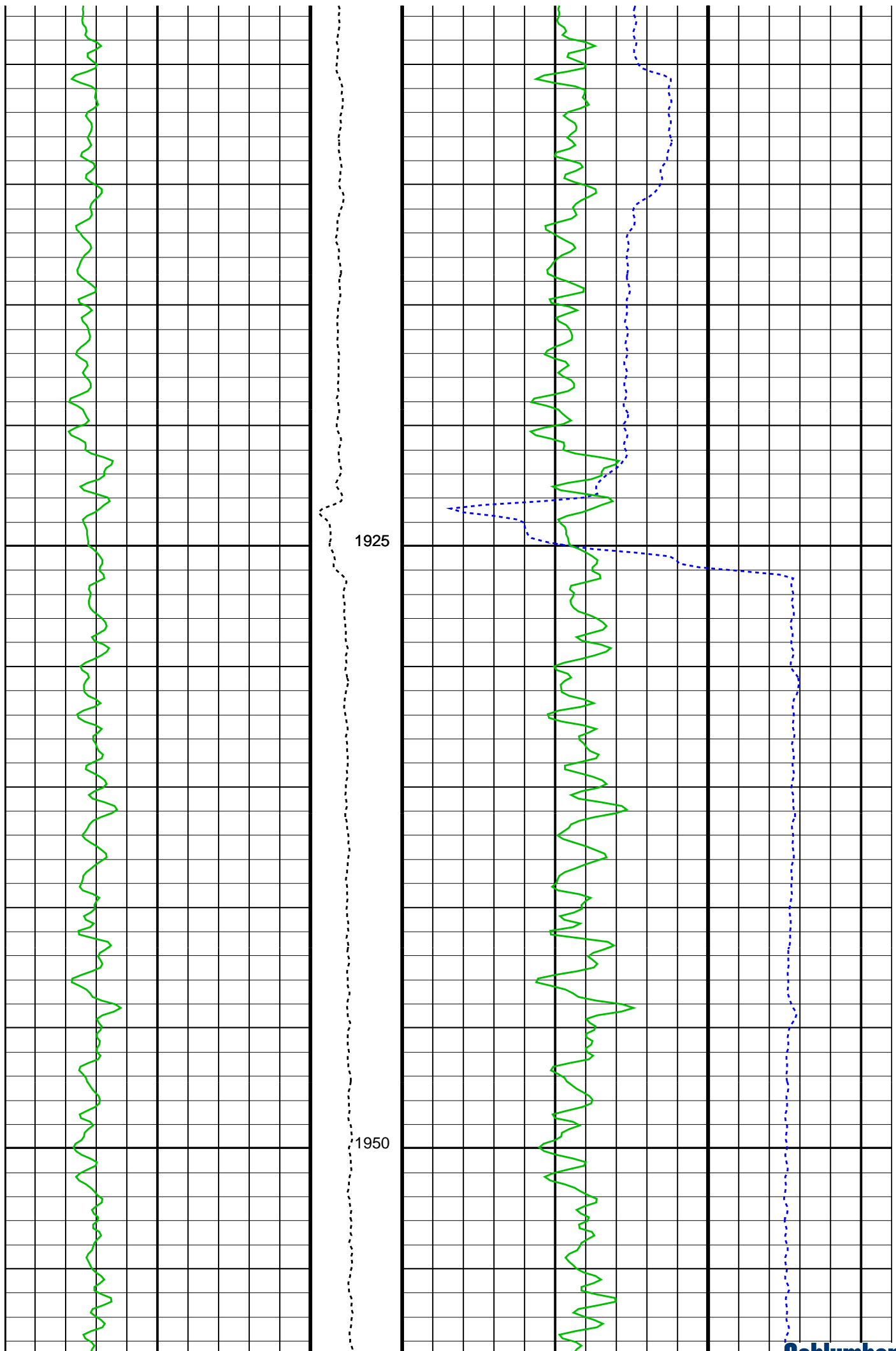


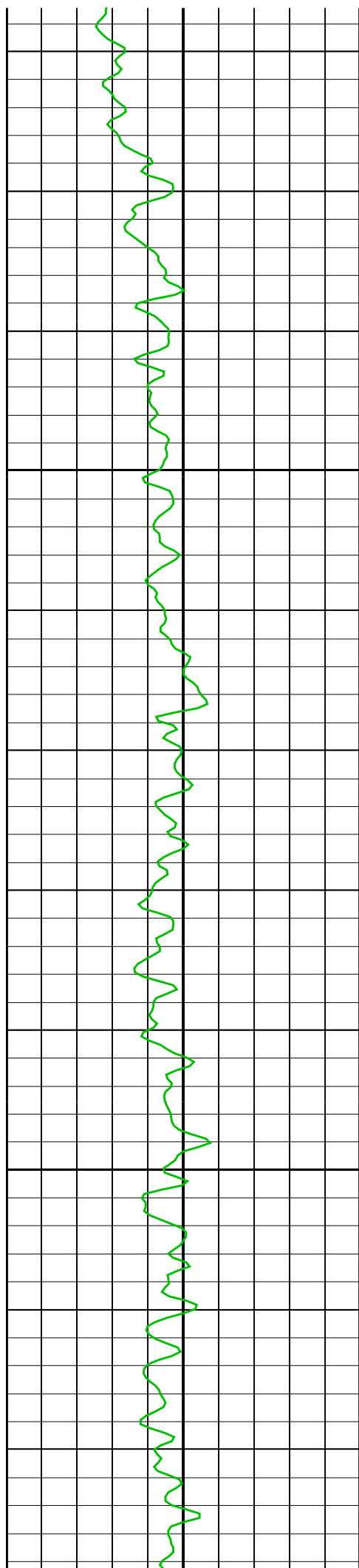
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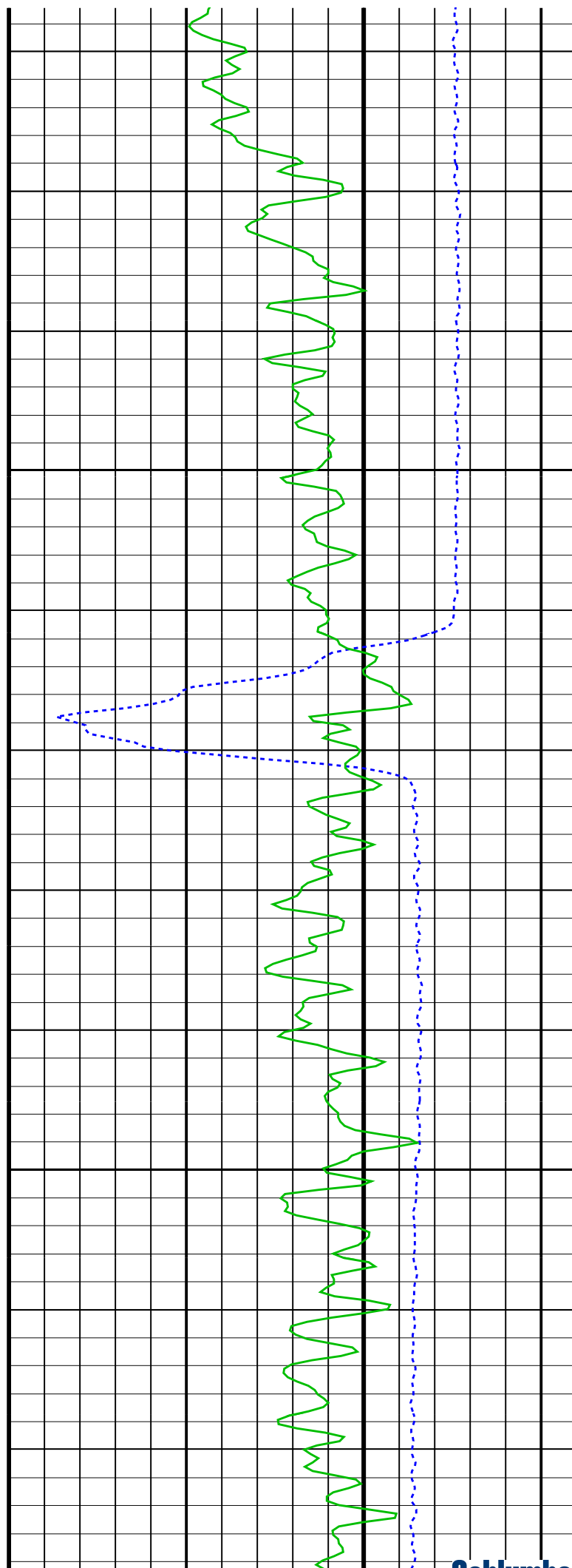
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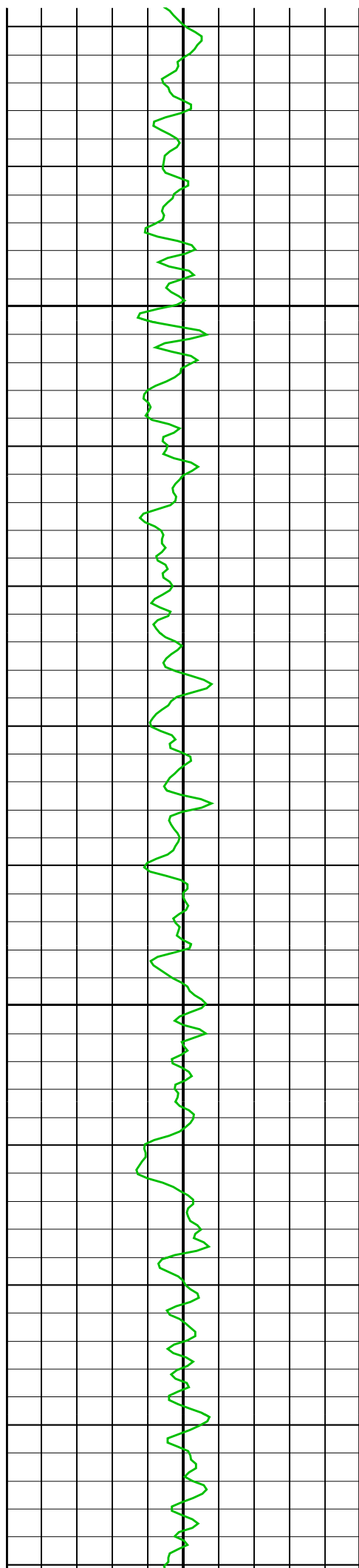






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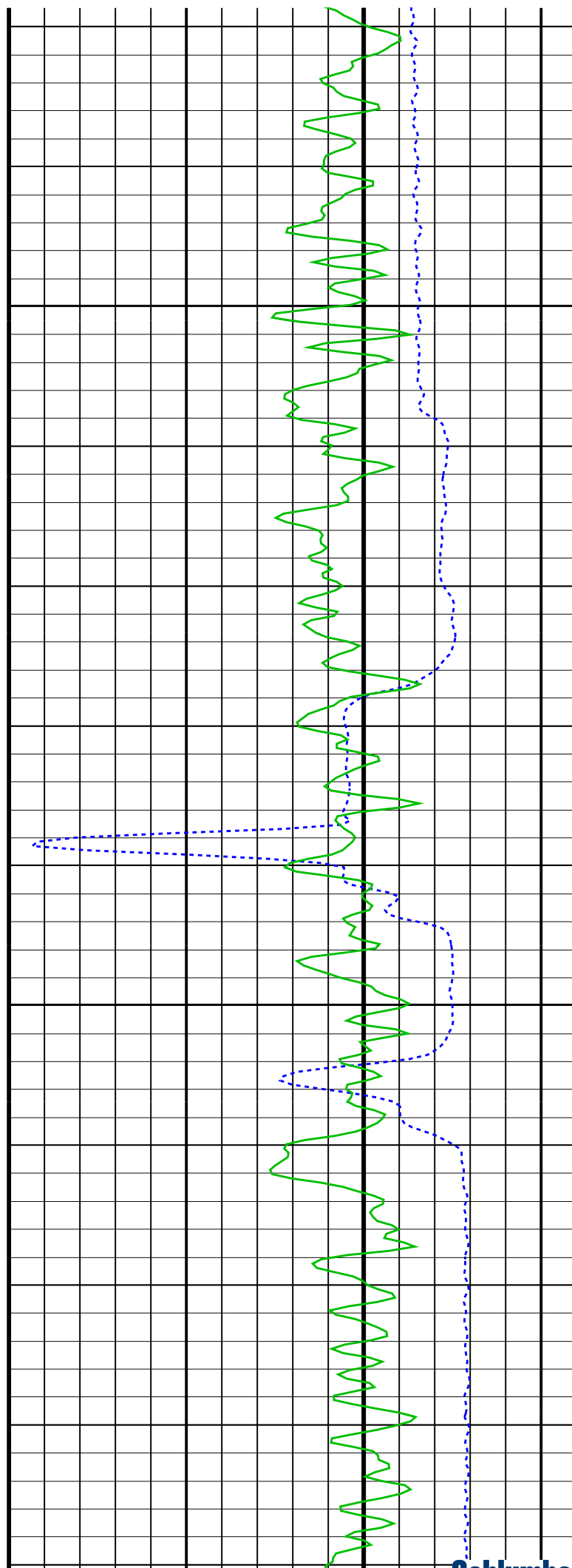


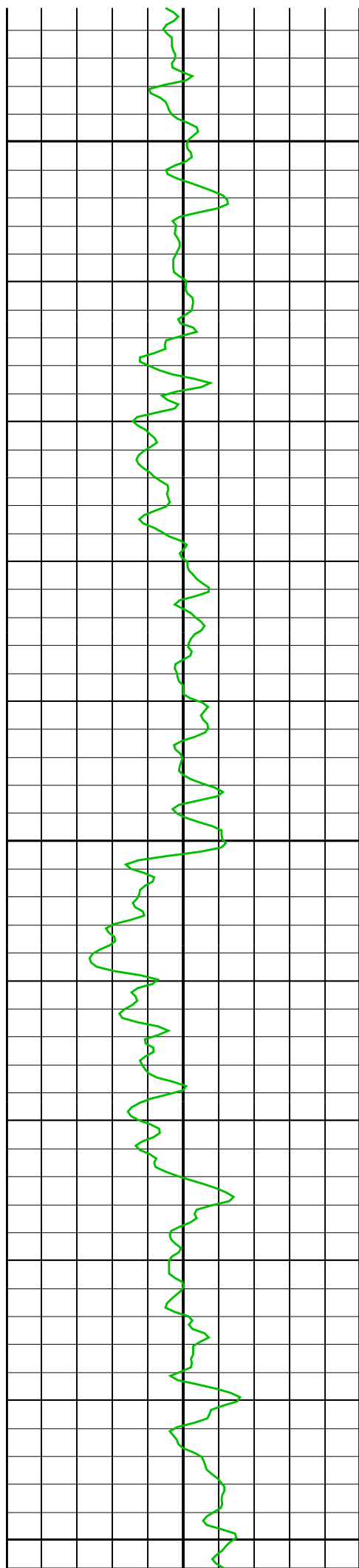
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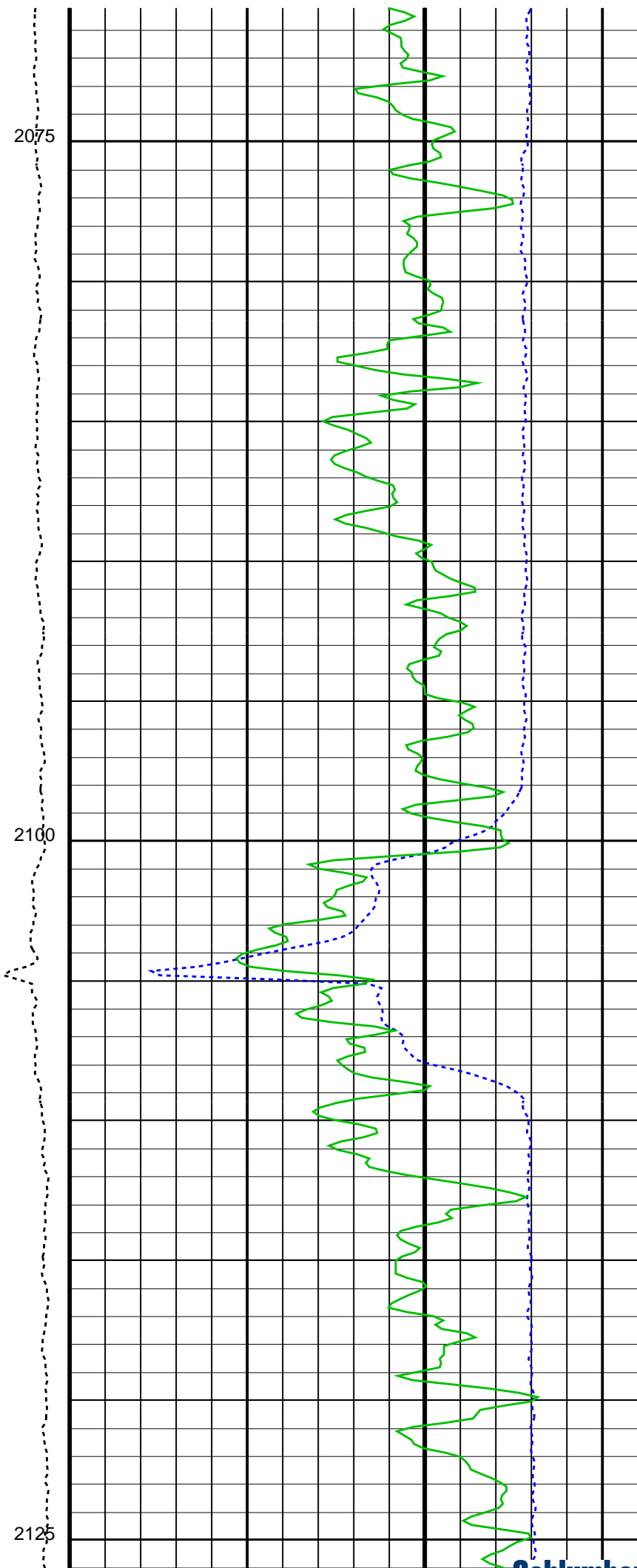
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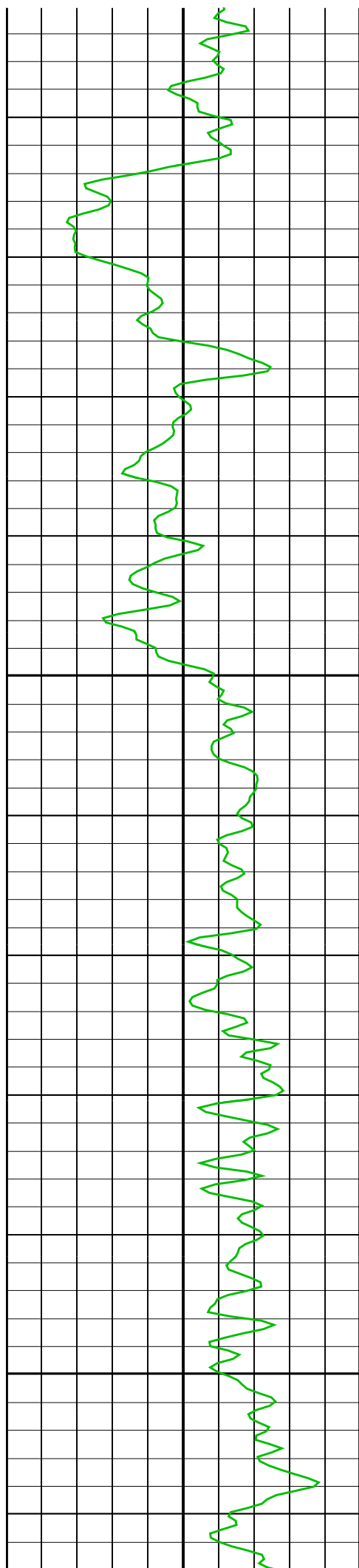




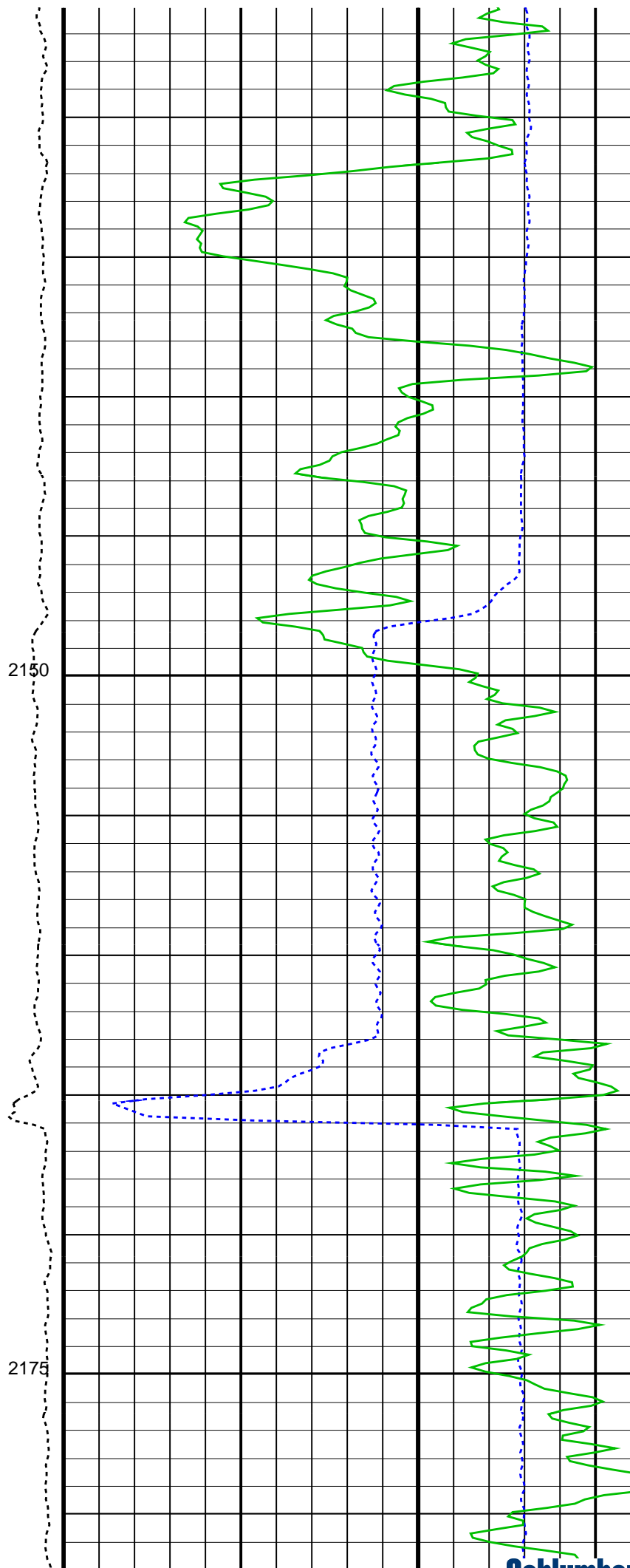
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Page 60

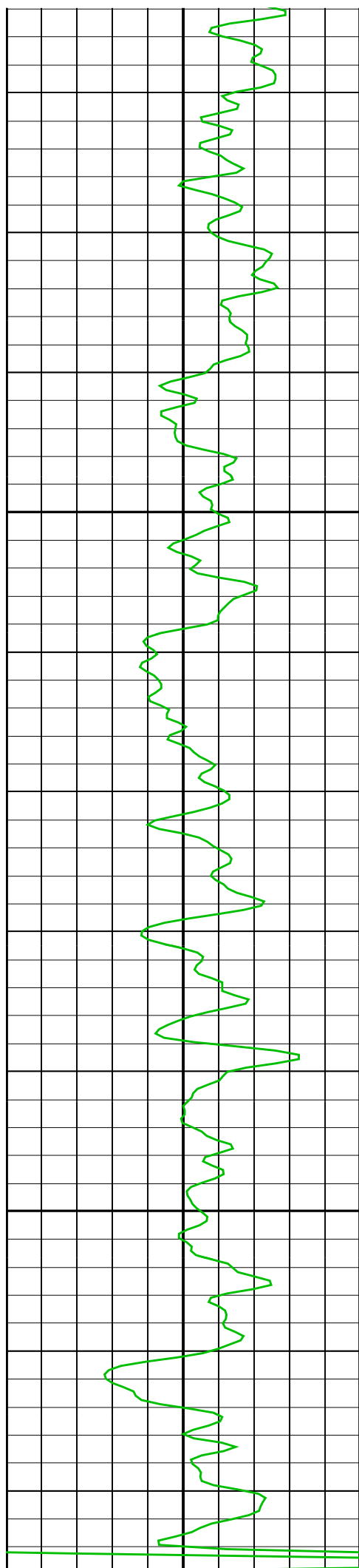


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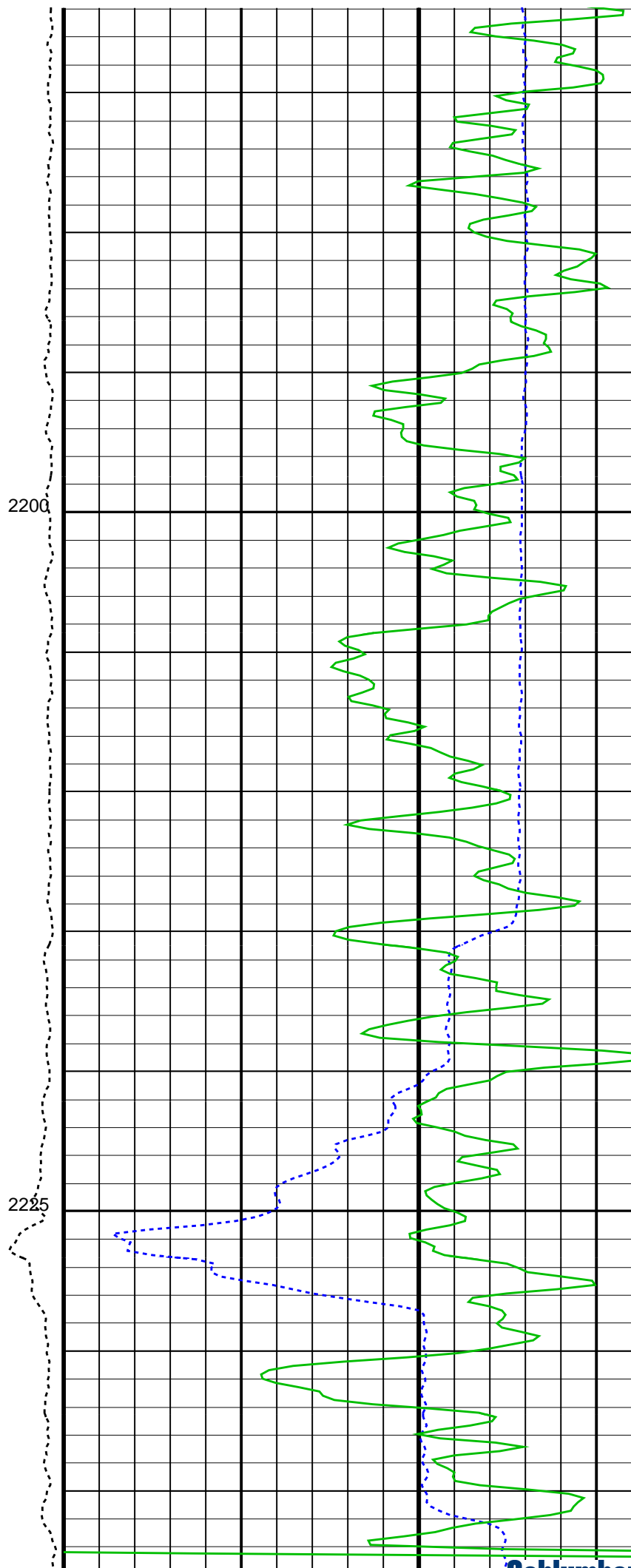


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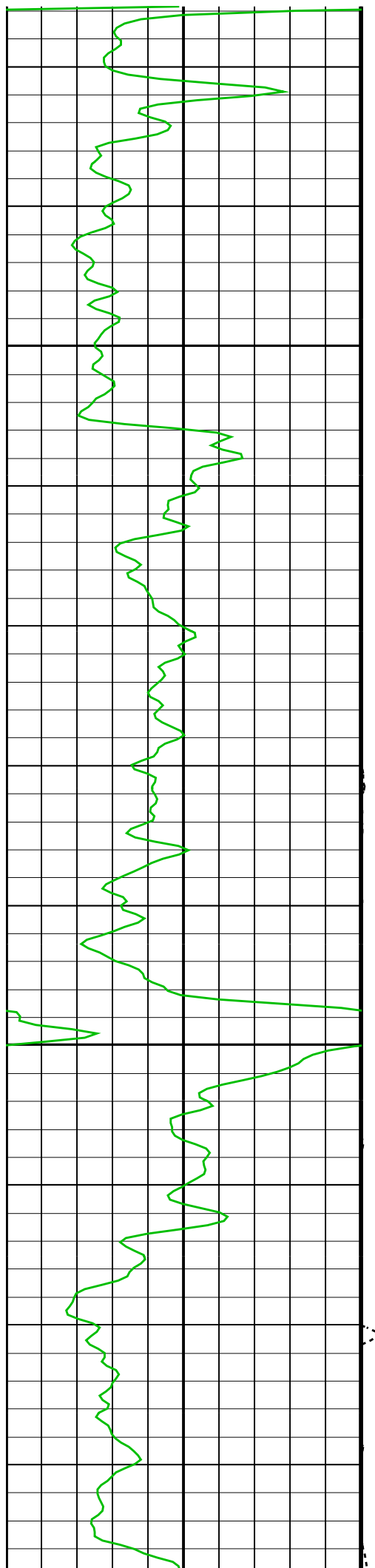
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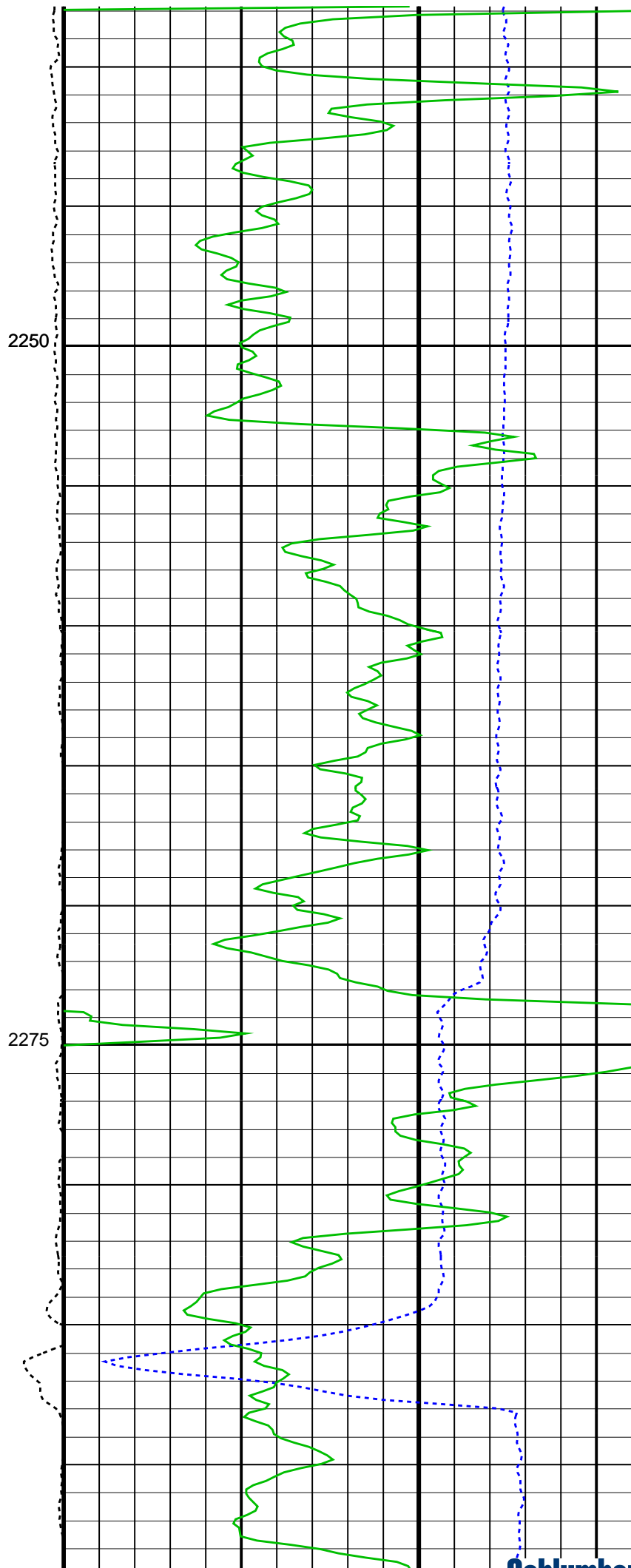
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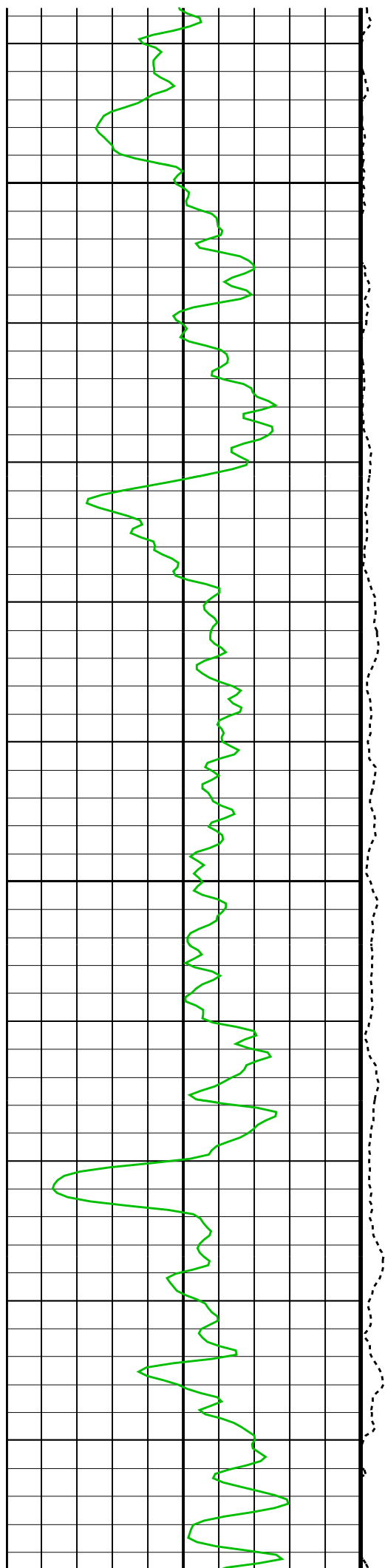
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Page 62

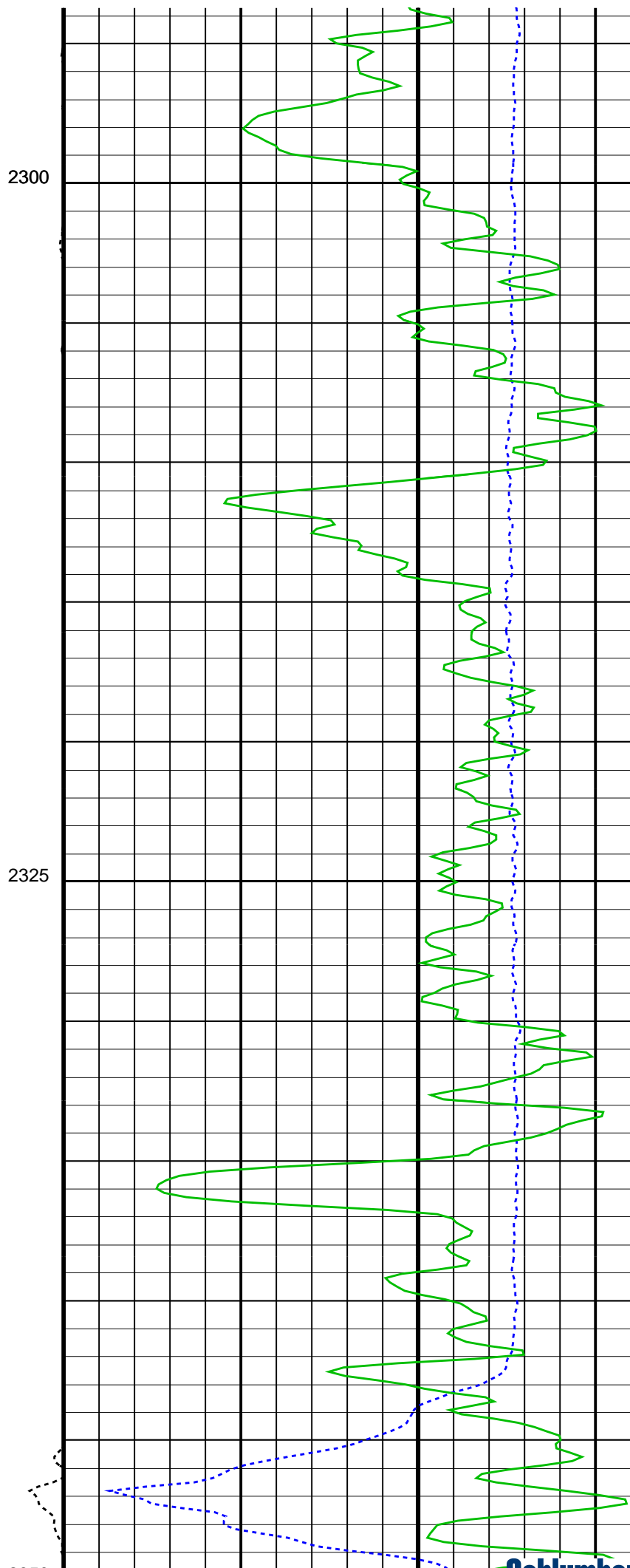


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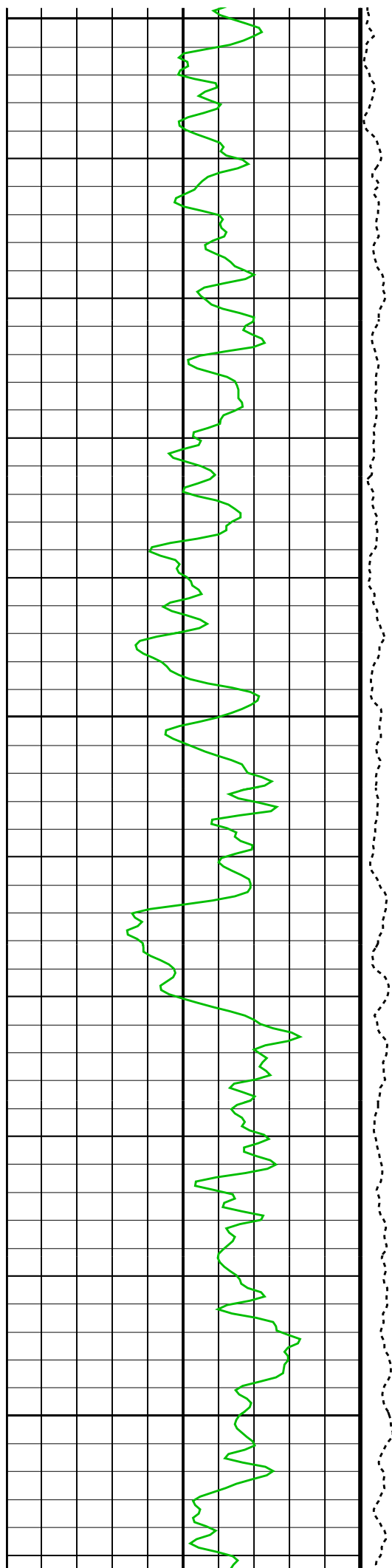


Logging date: 9-Feb-2010



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Page 64

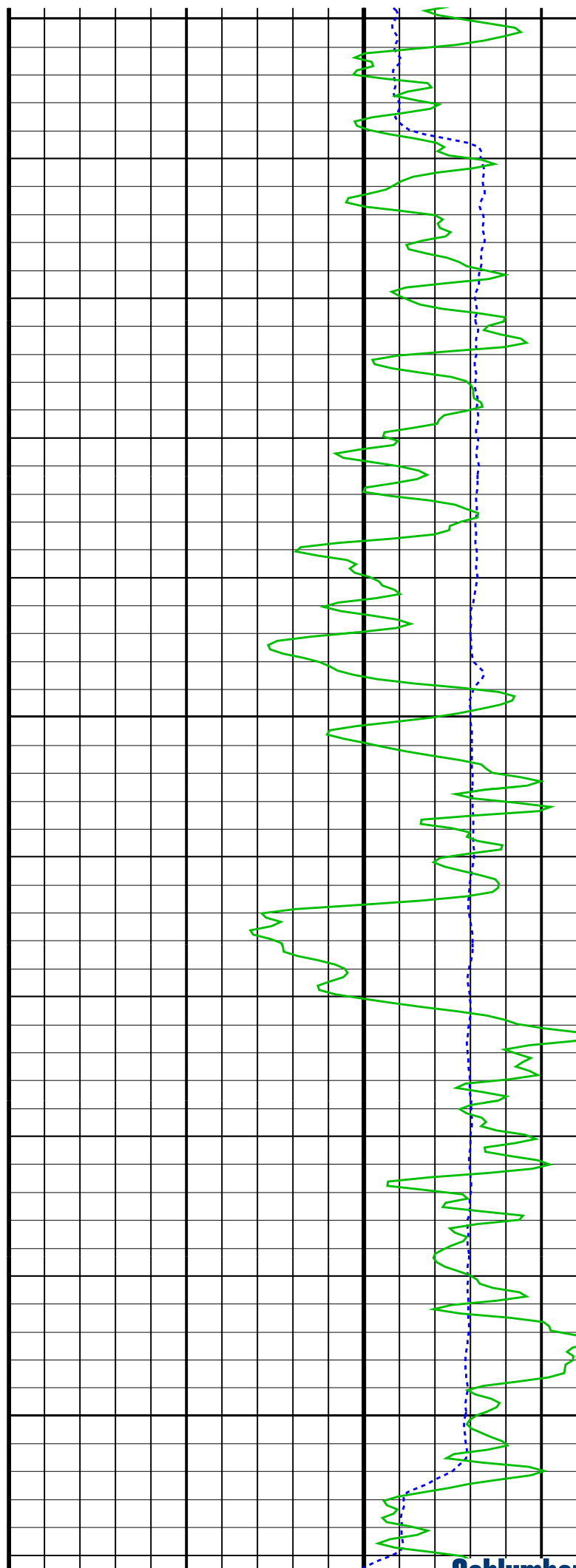


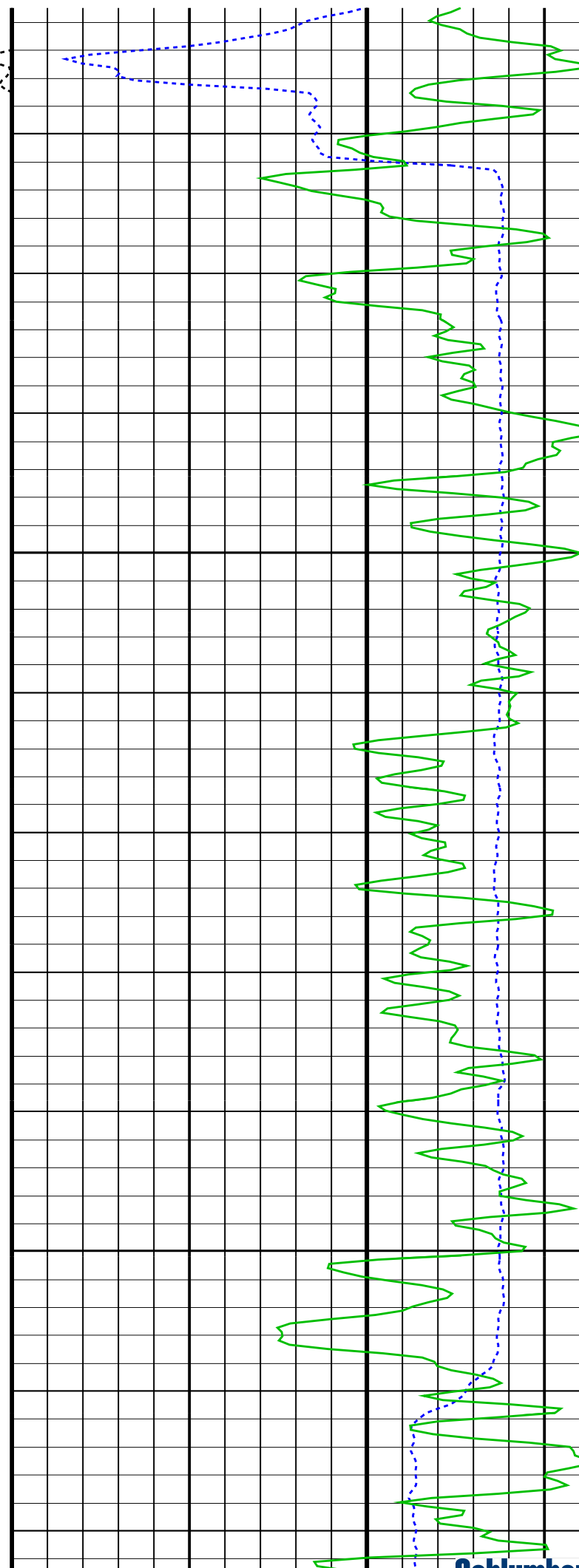
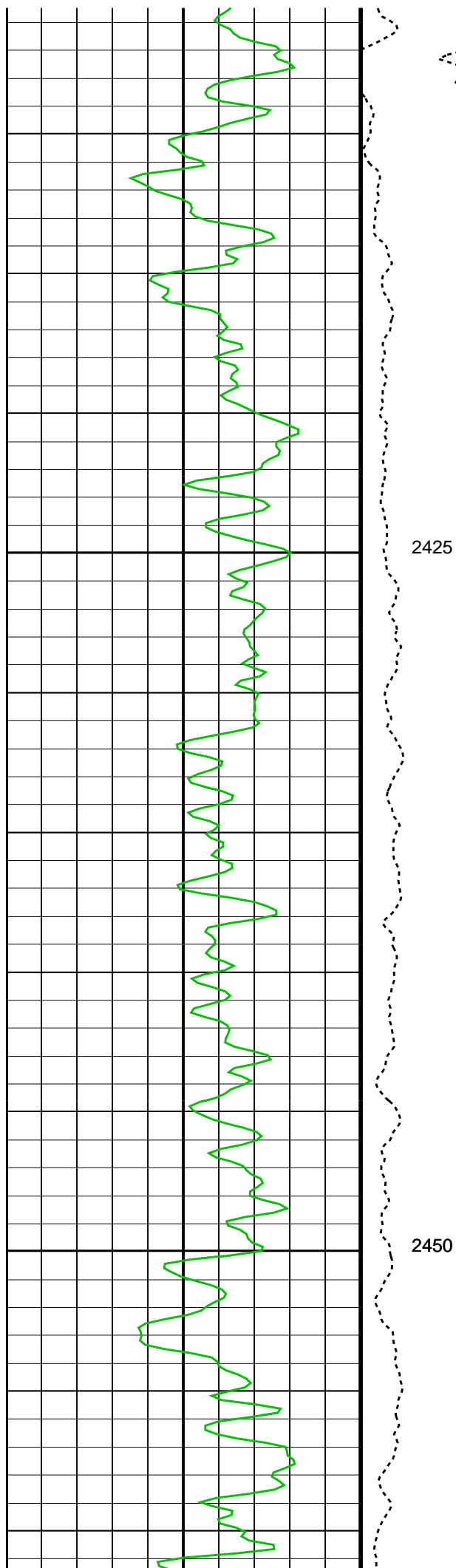
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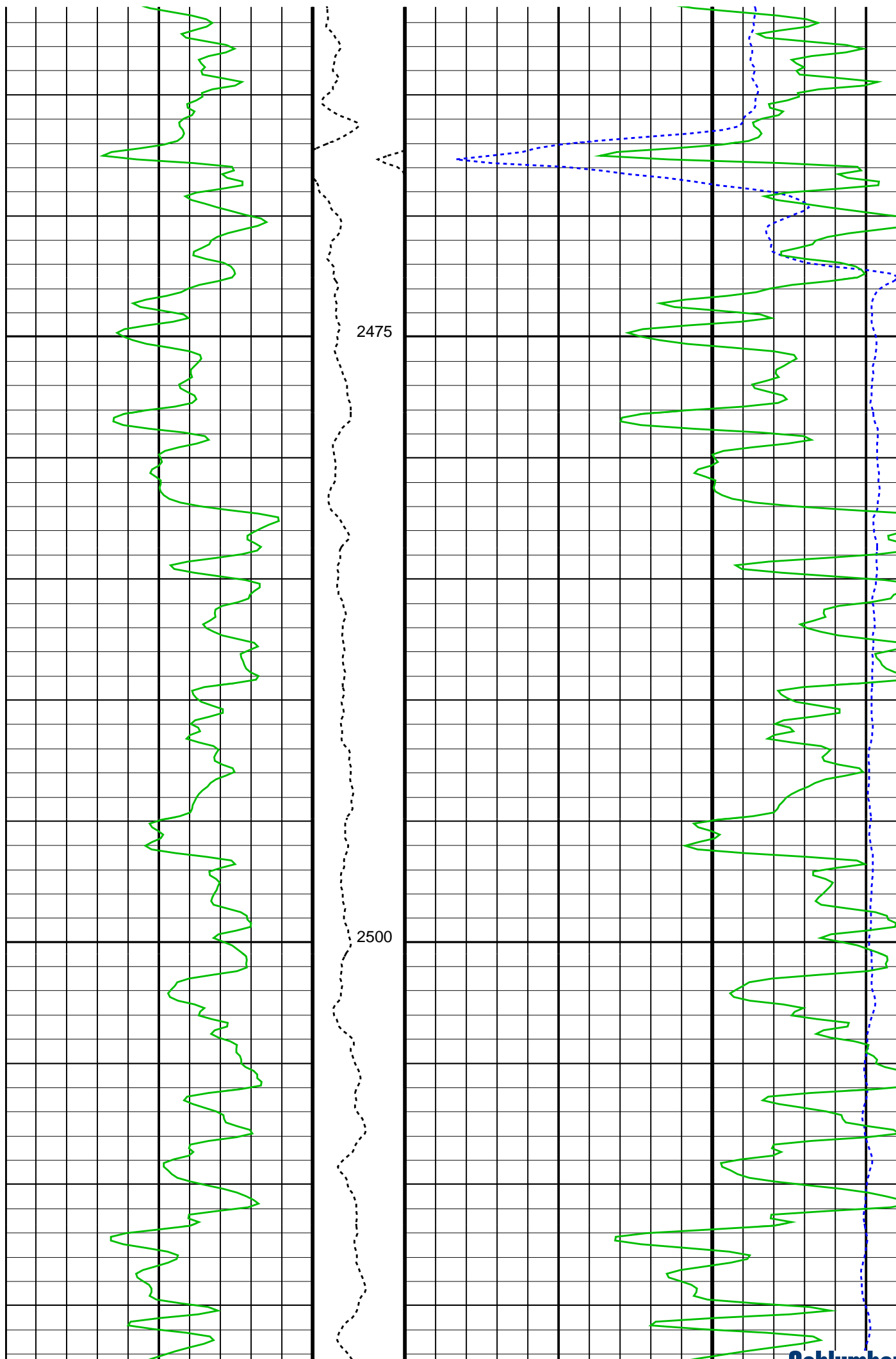
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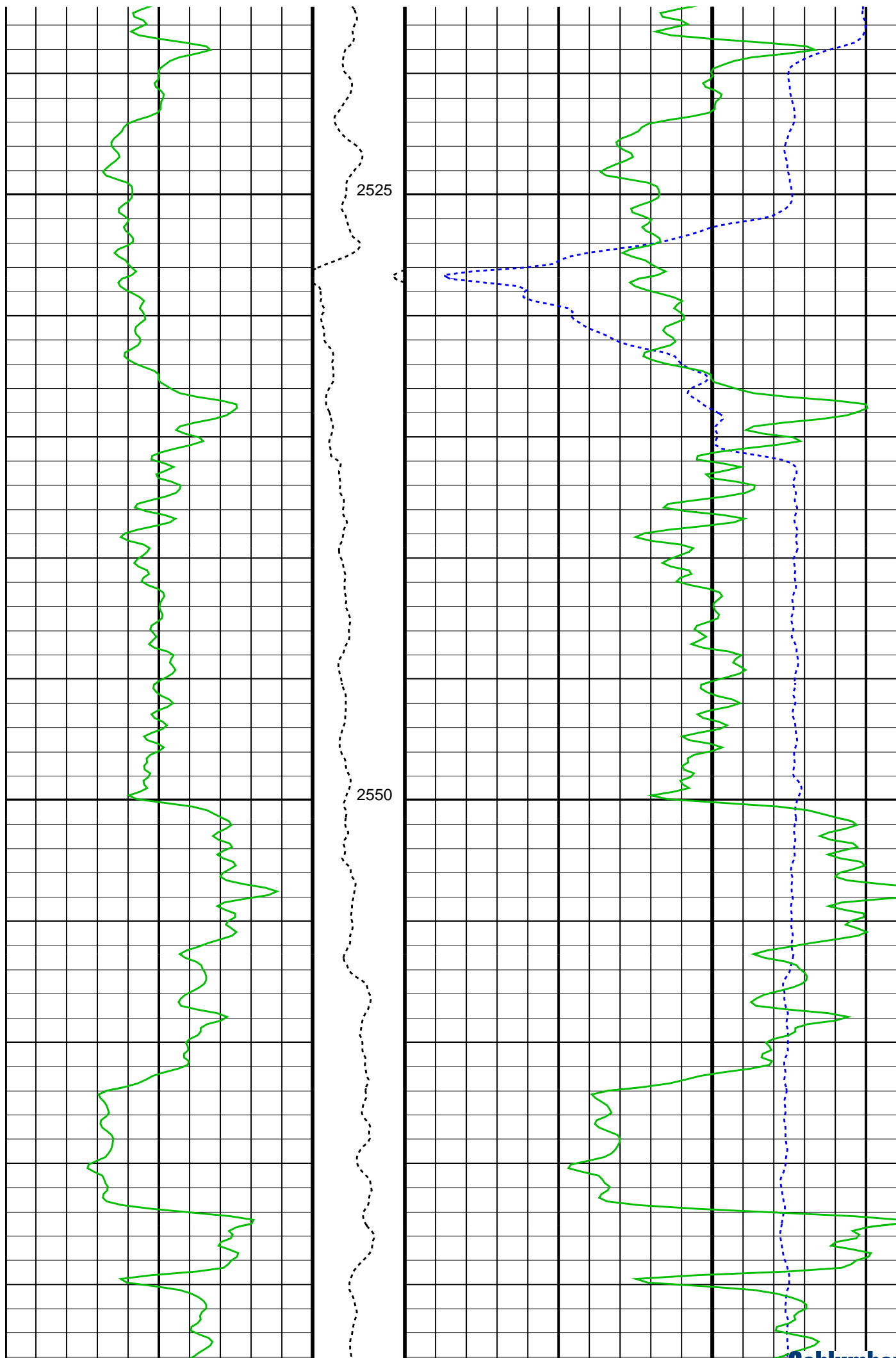
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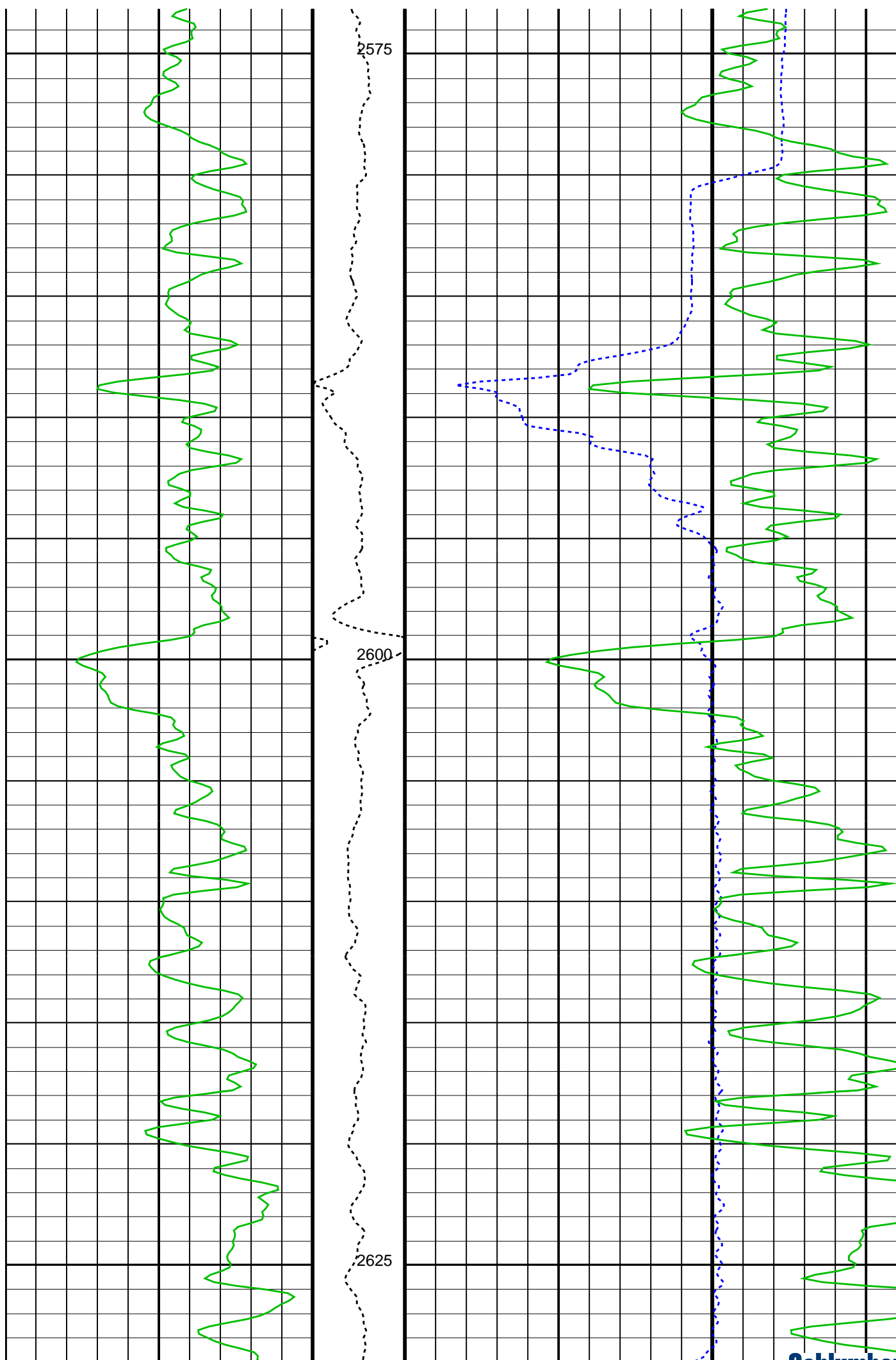
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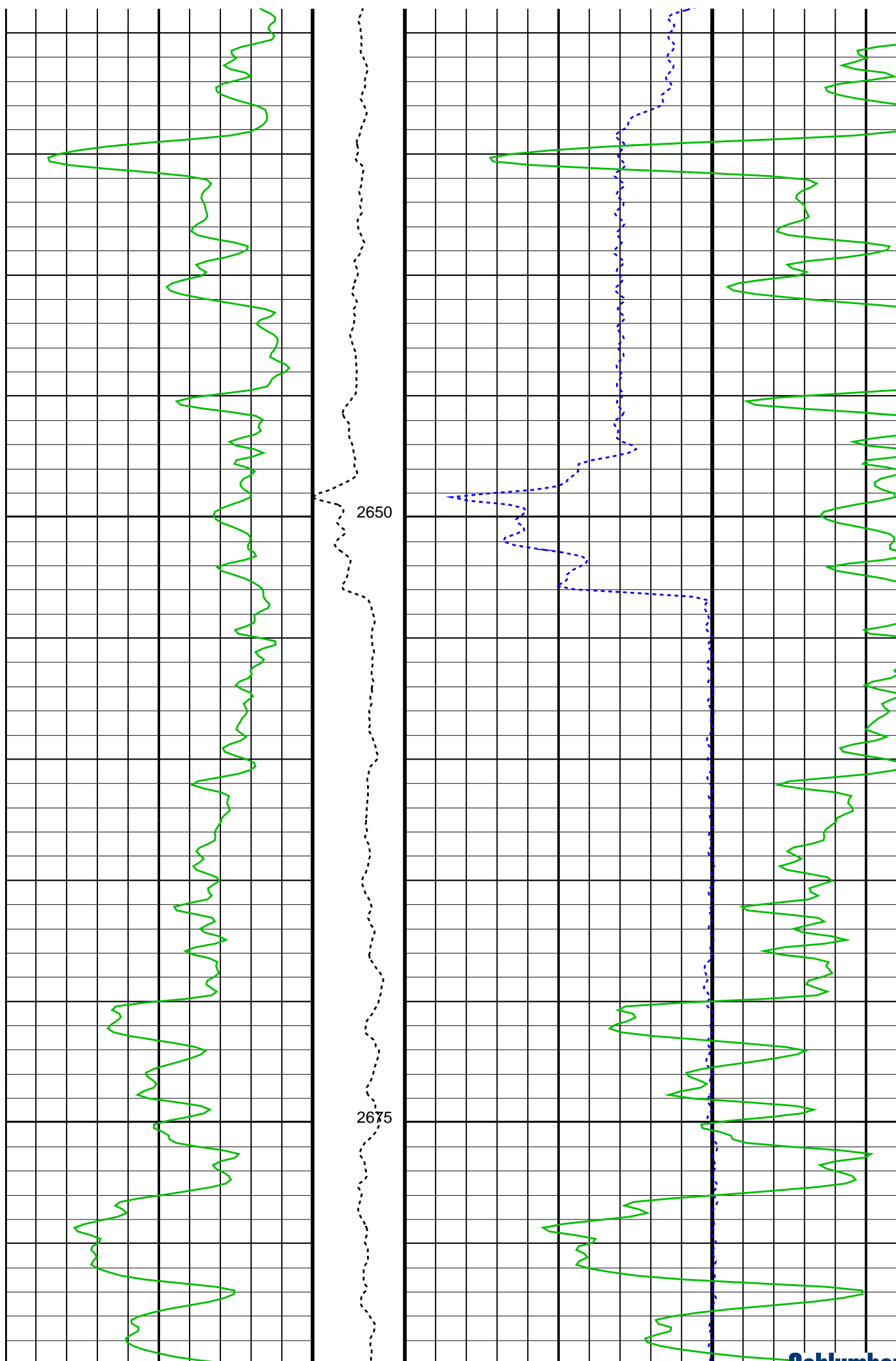


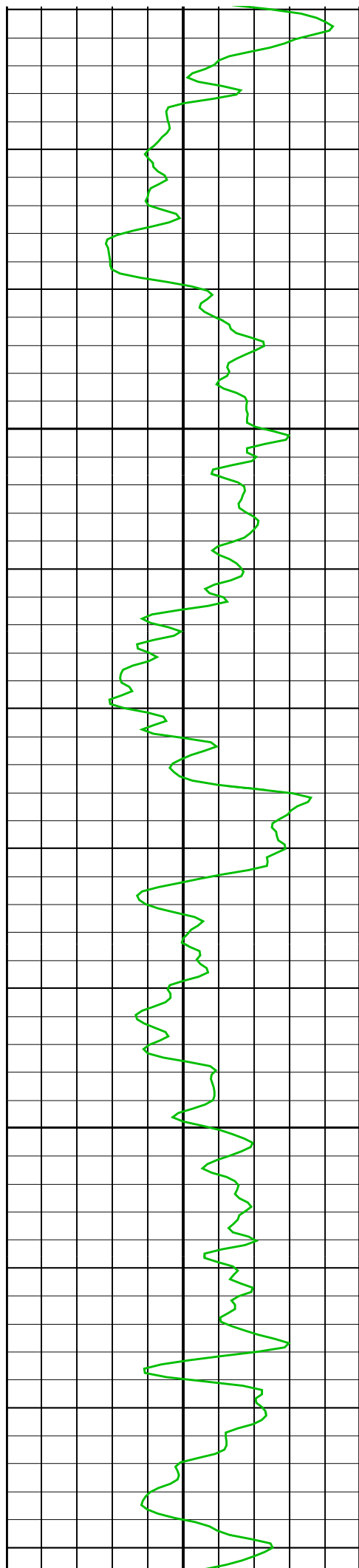




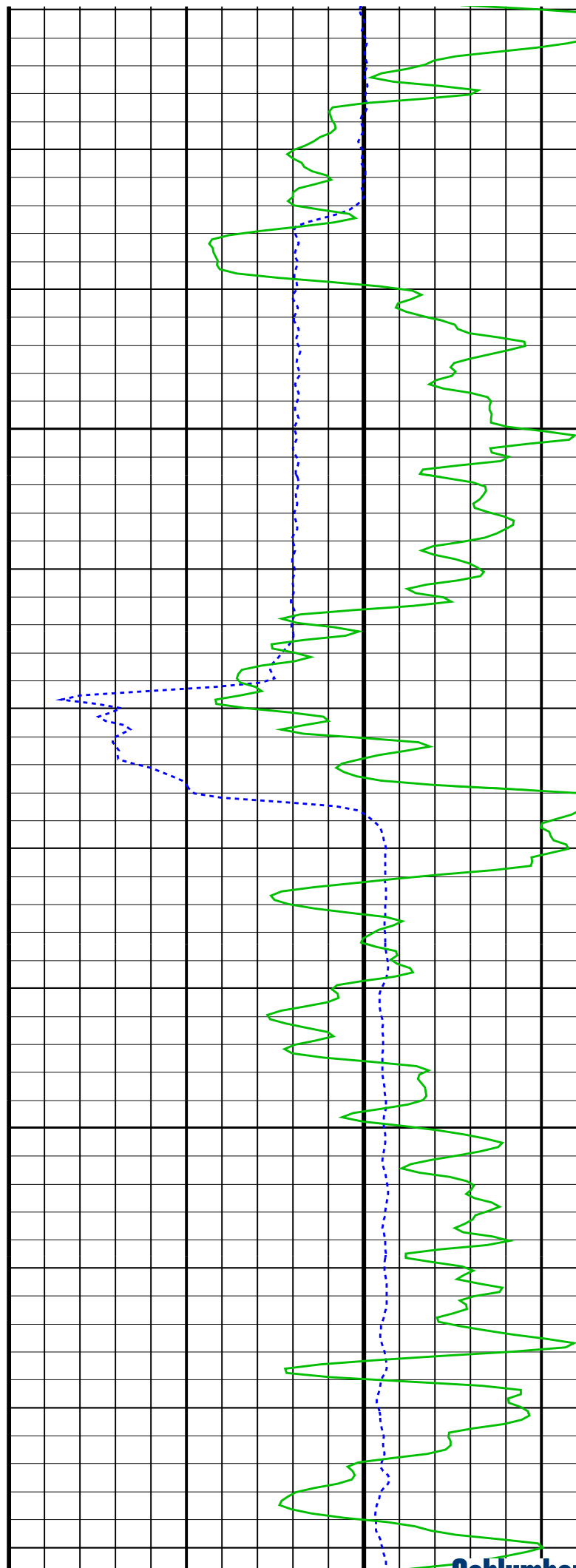


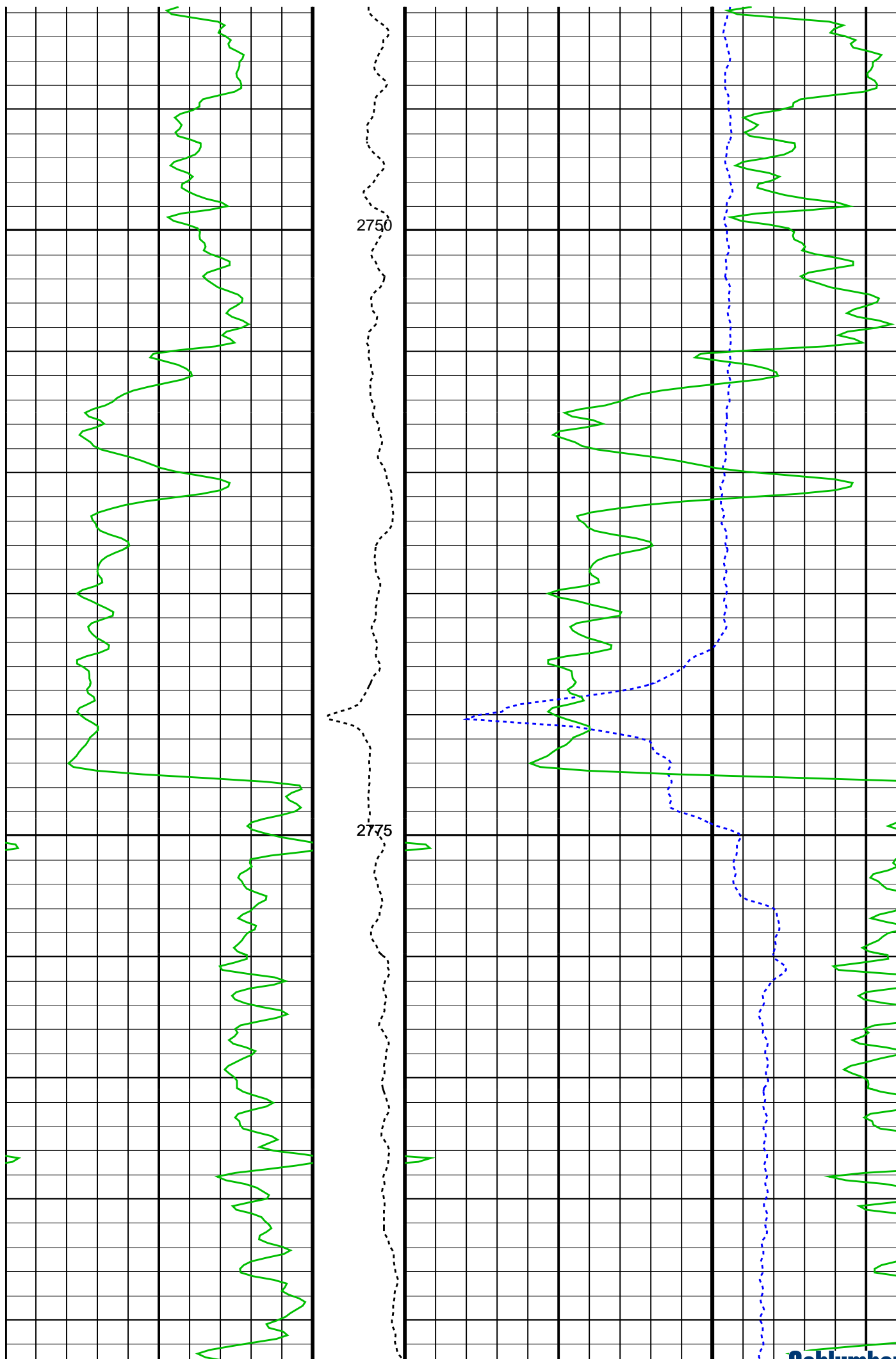


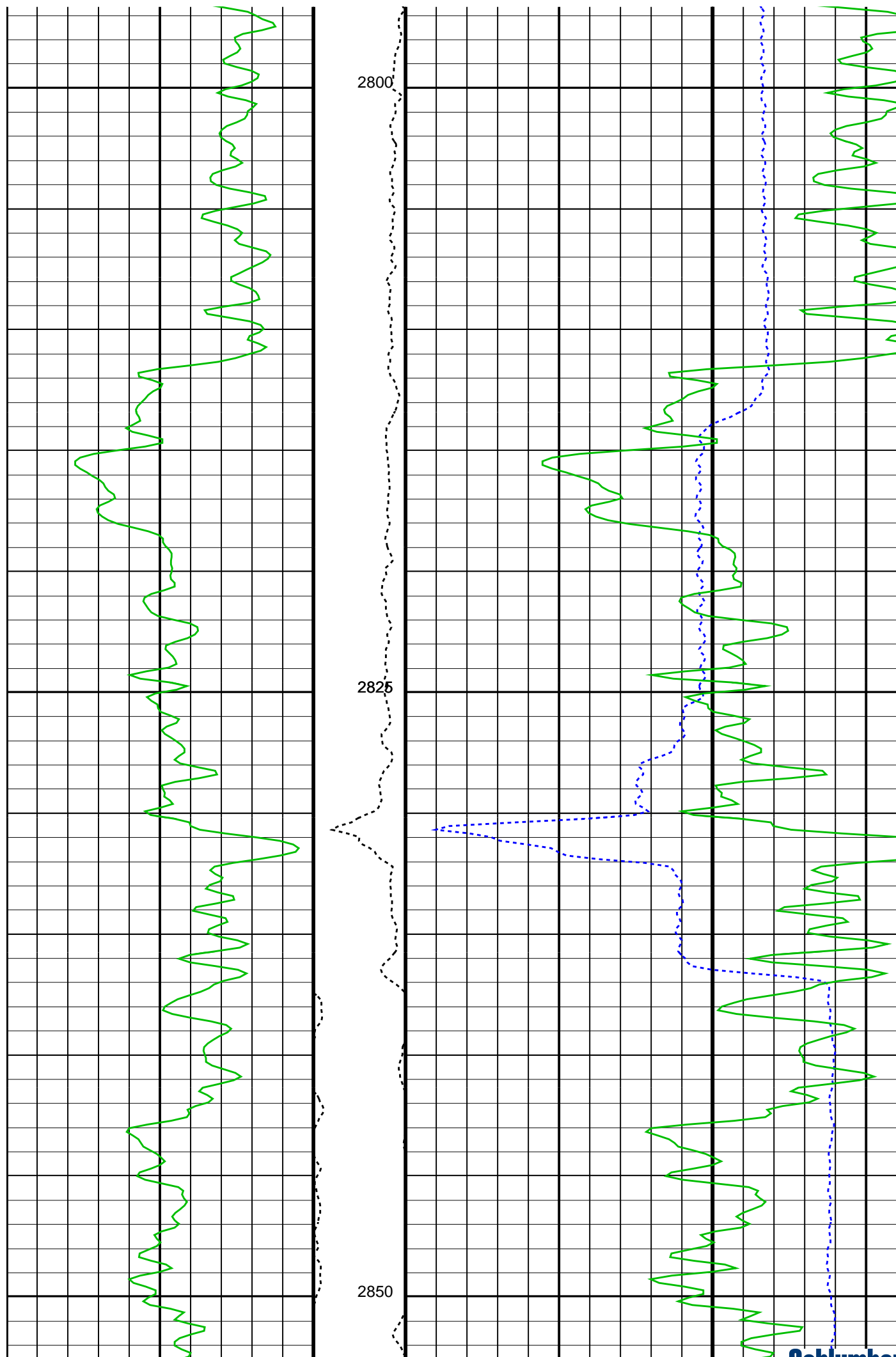


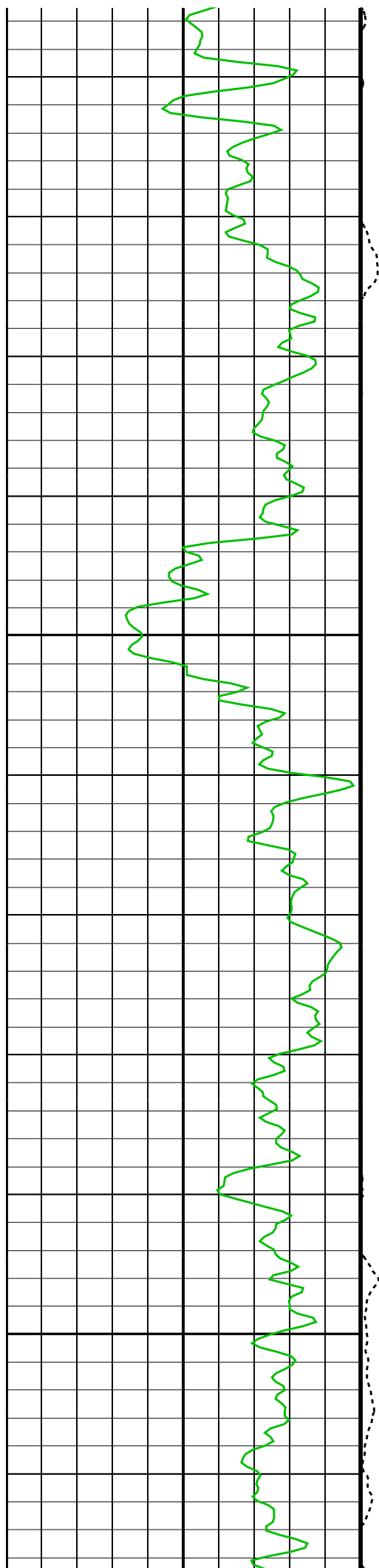


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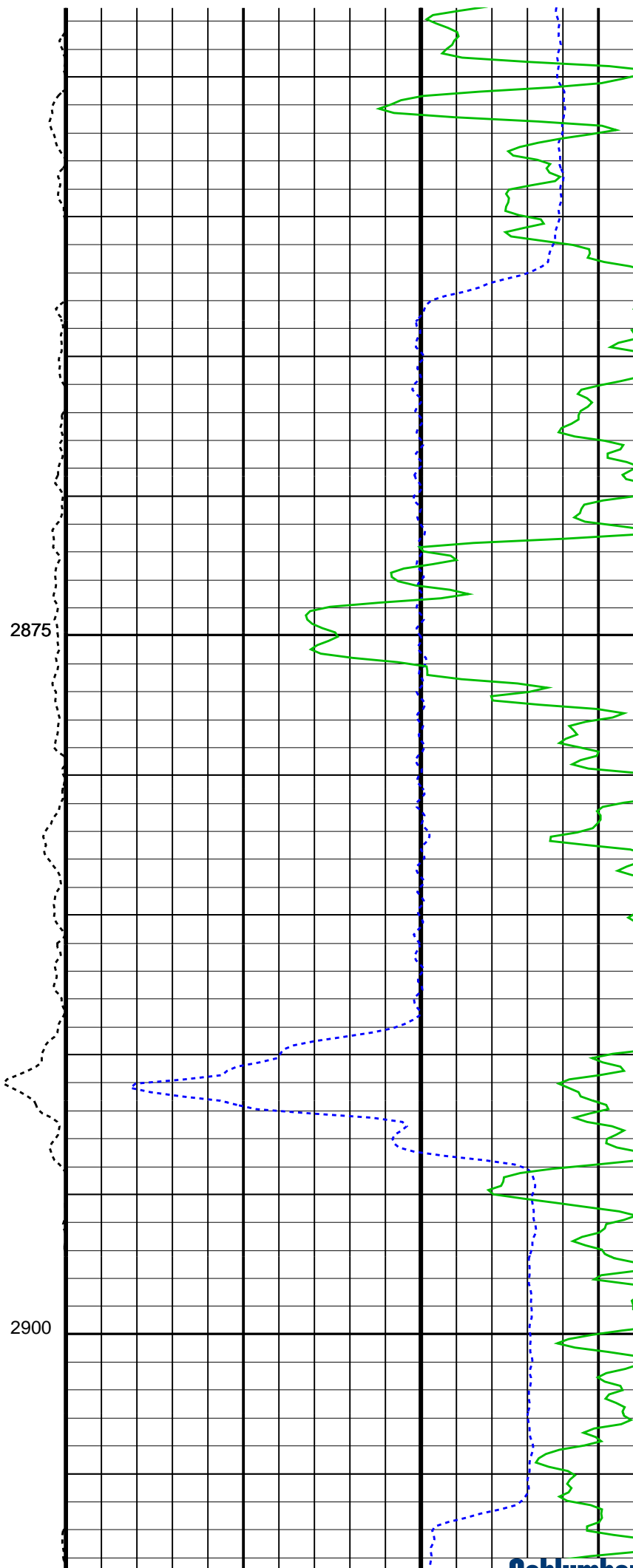


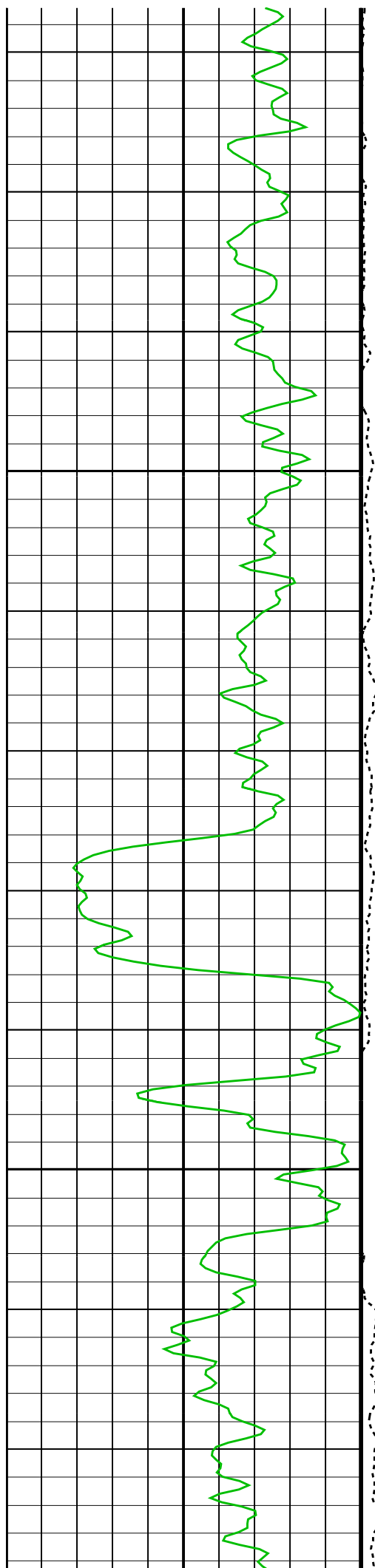






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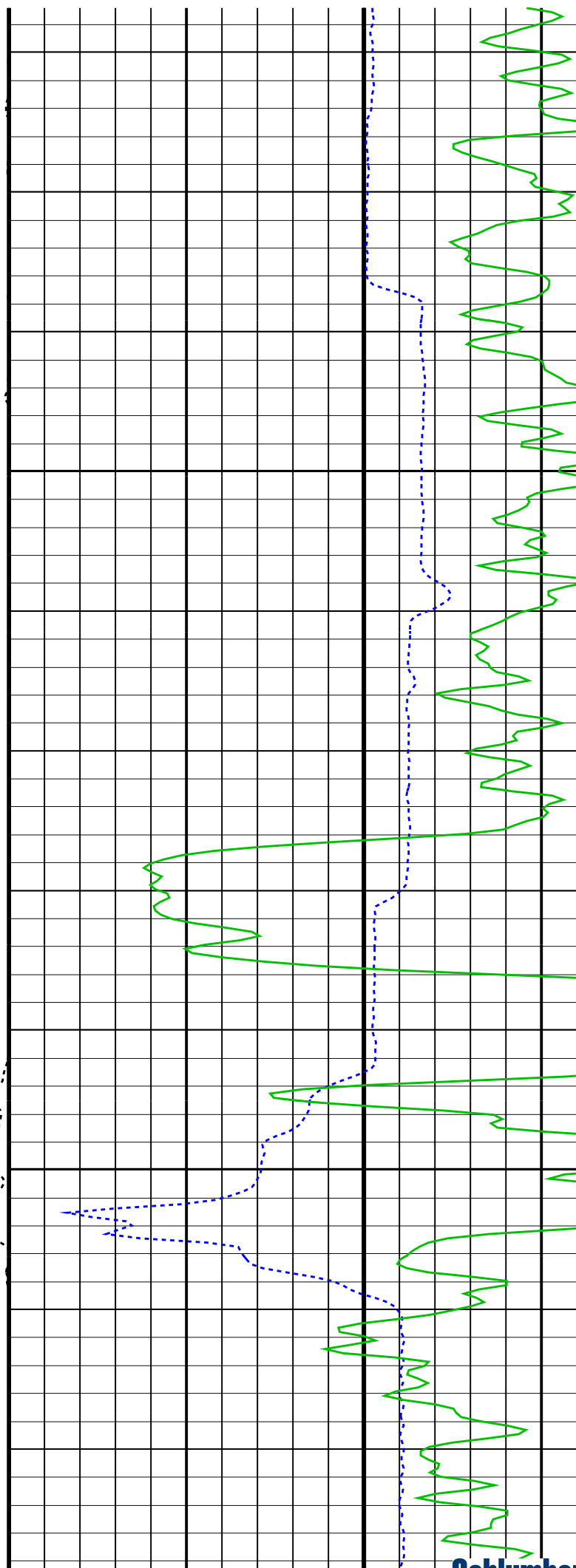




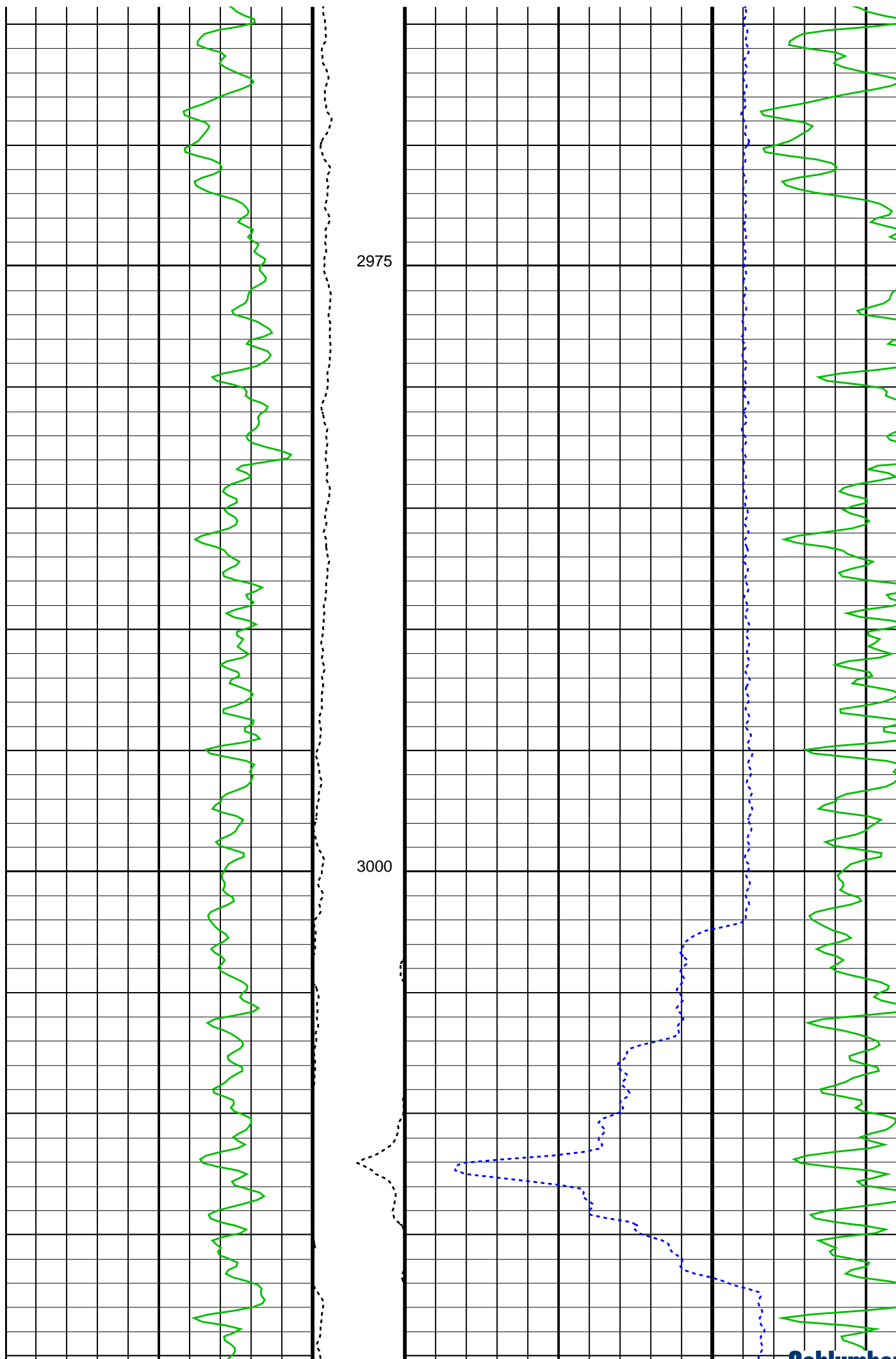
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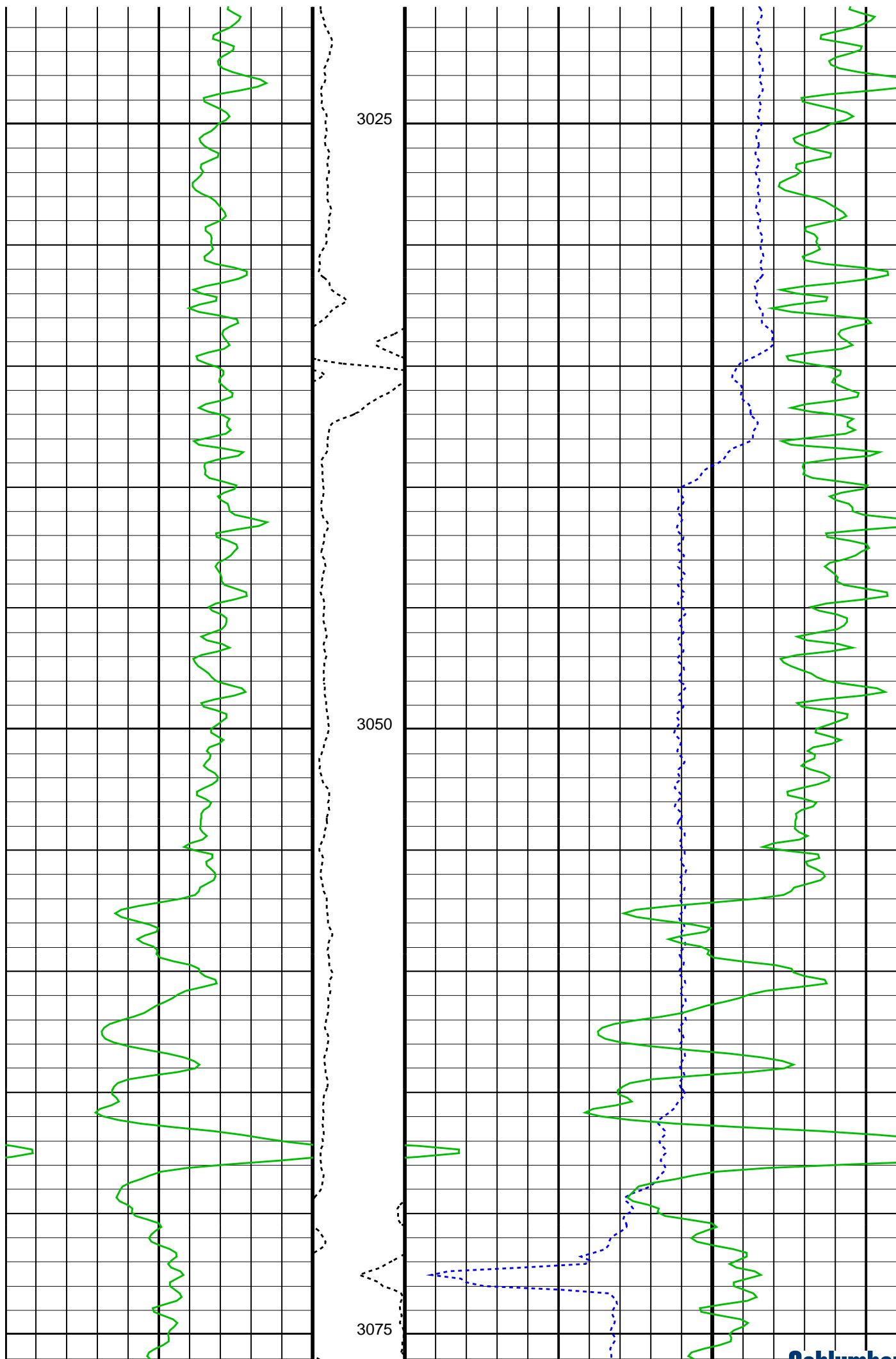
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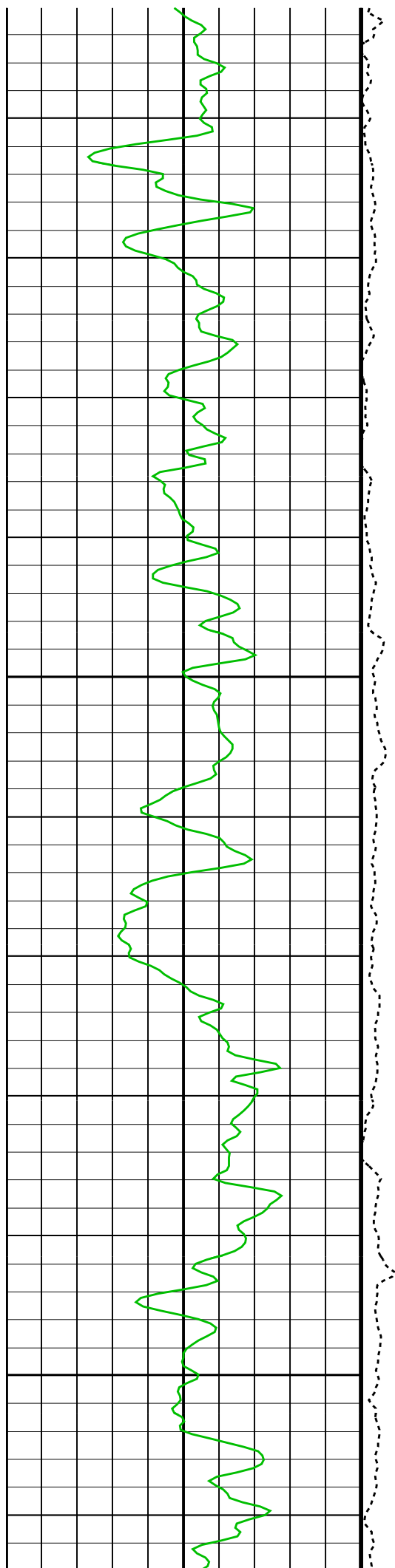
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Page 75



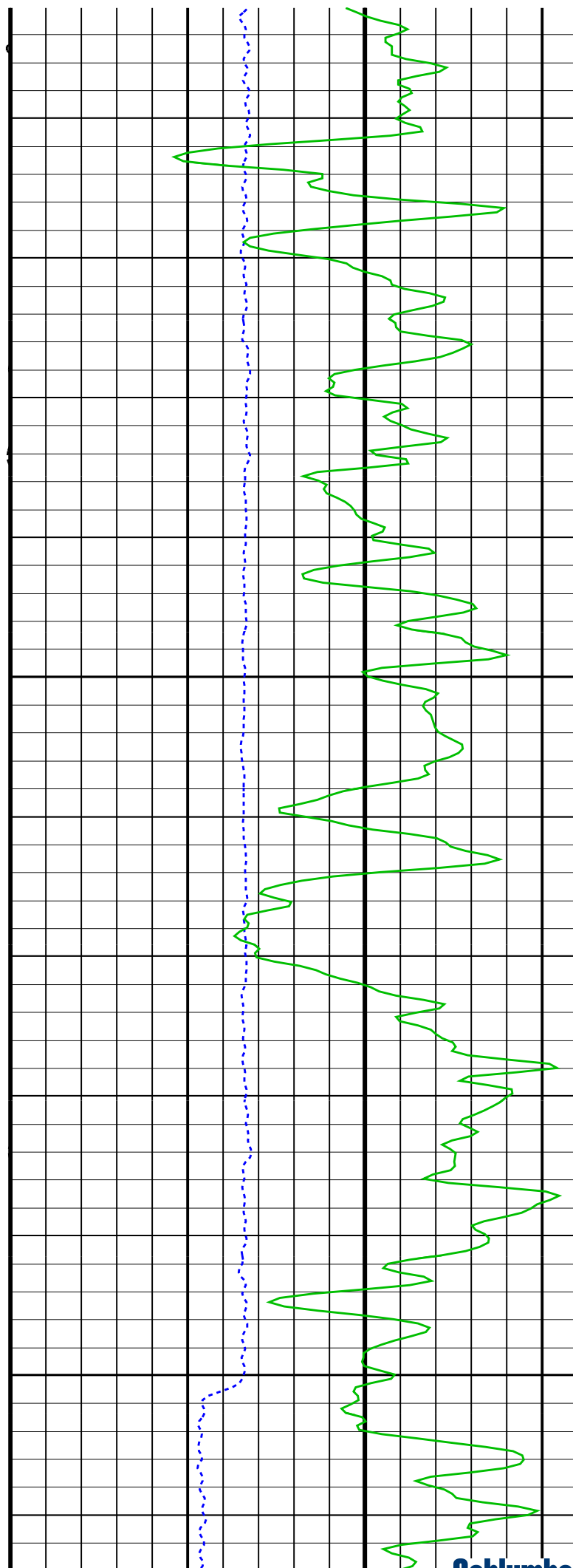


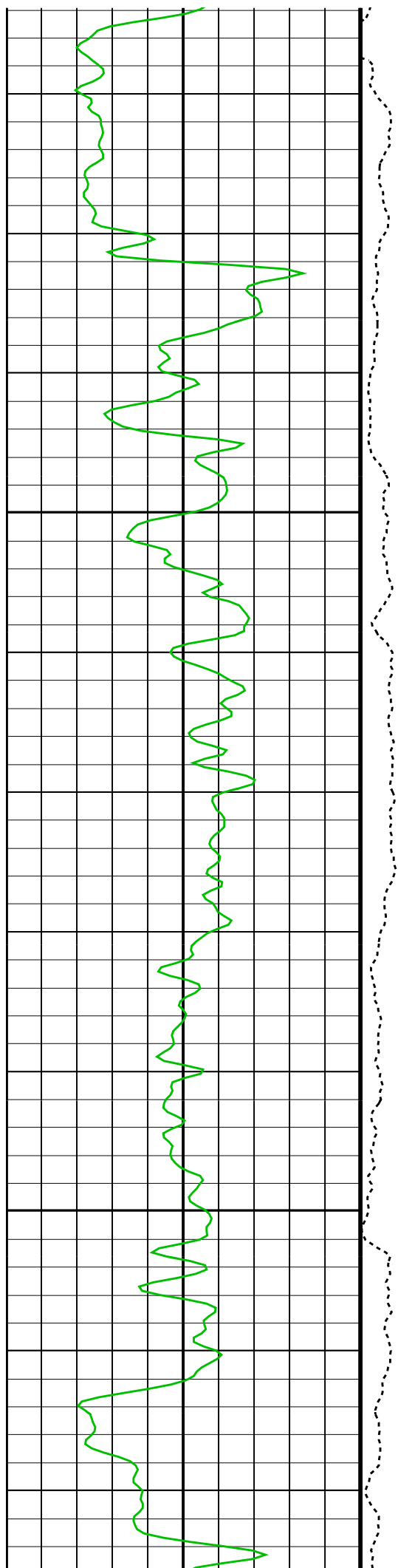


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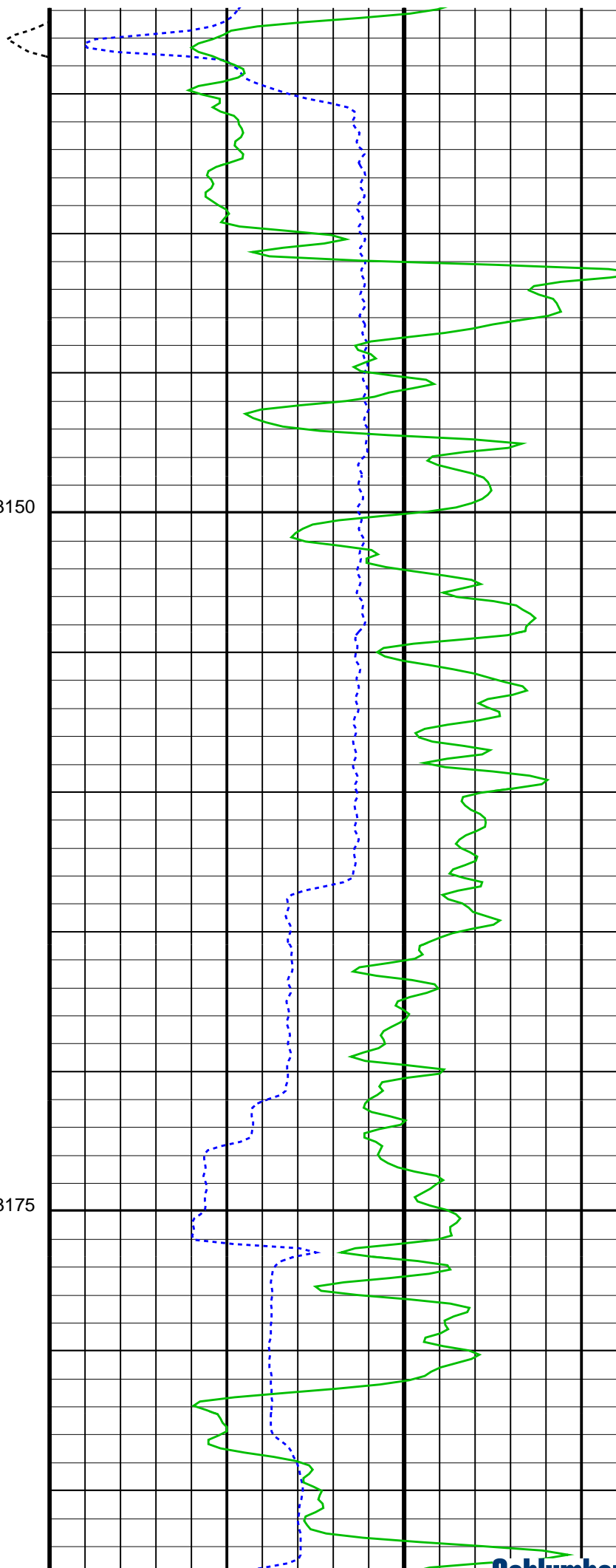
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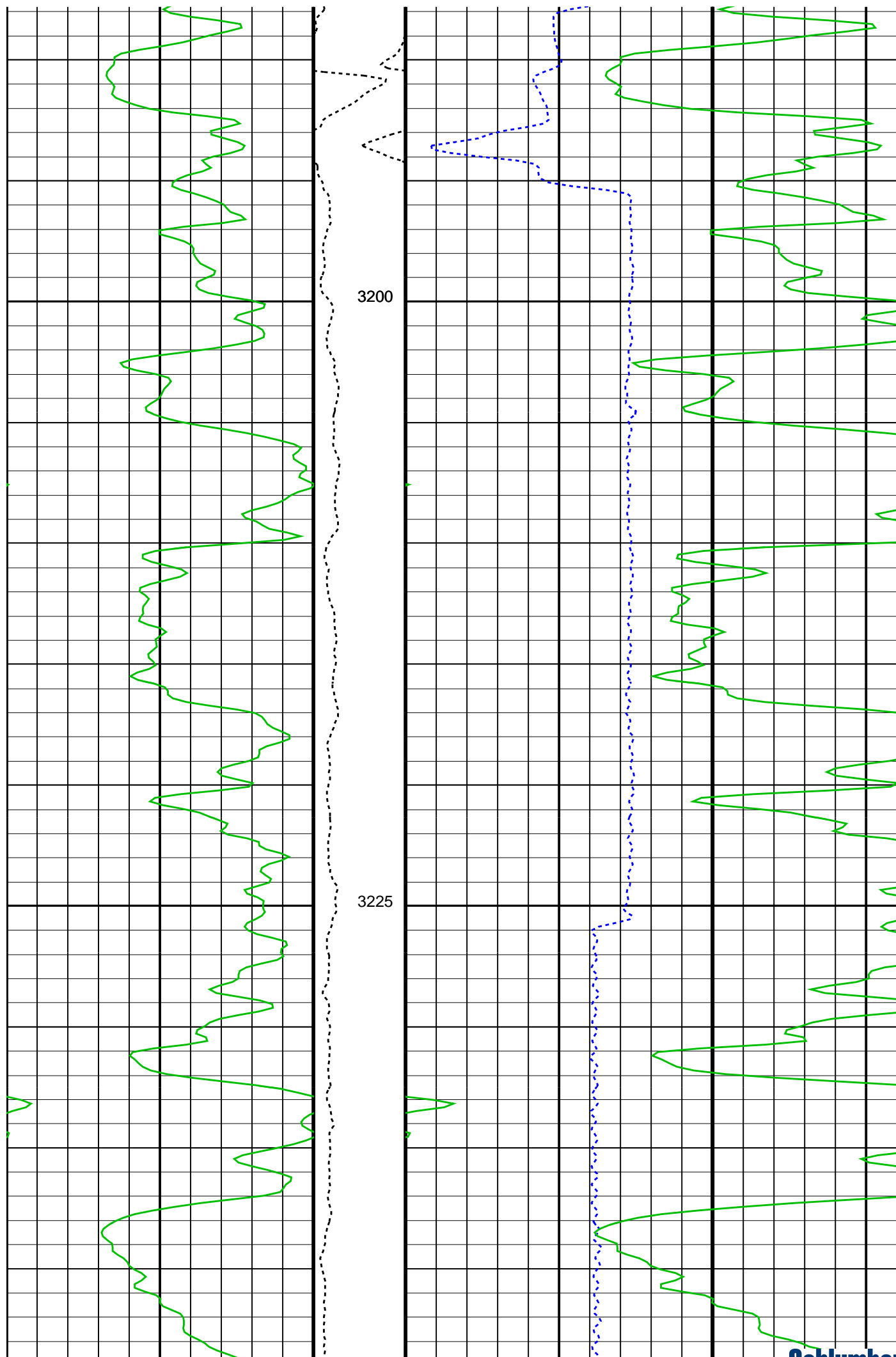


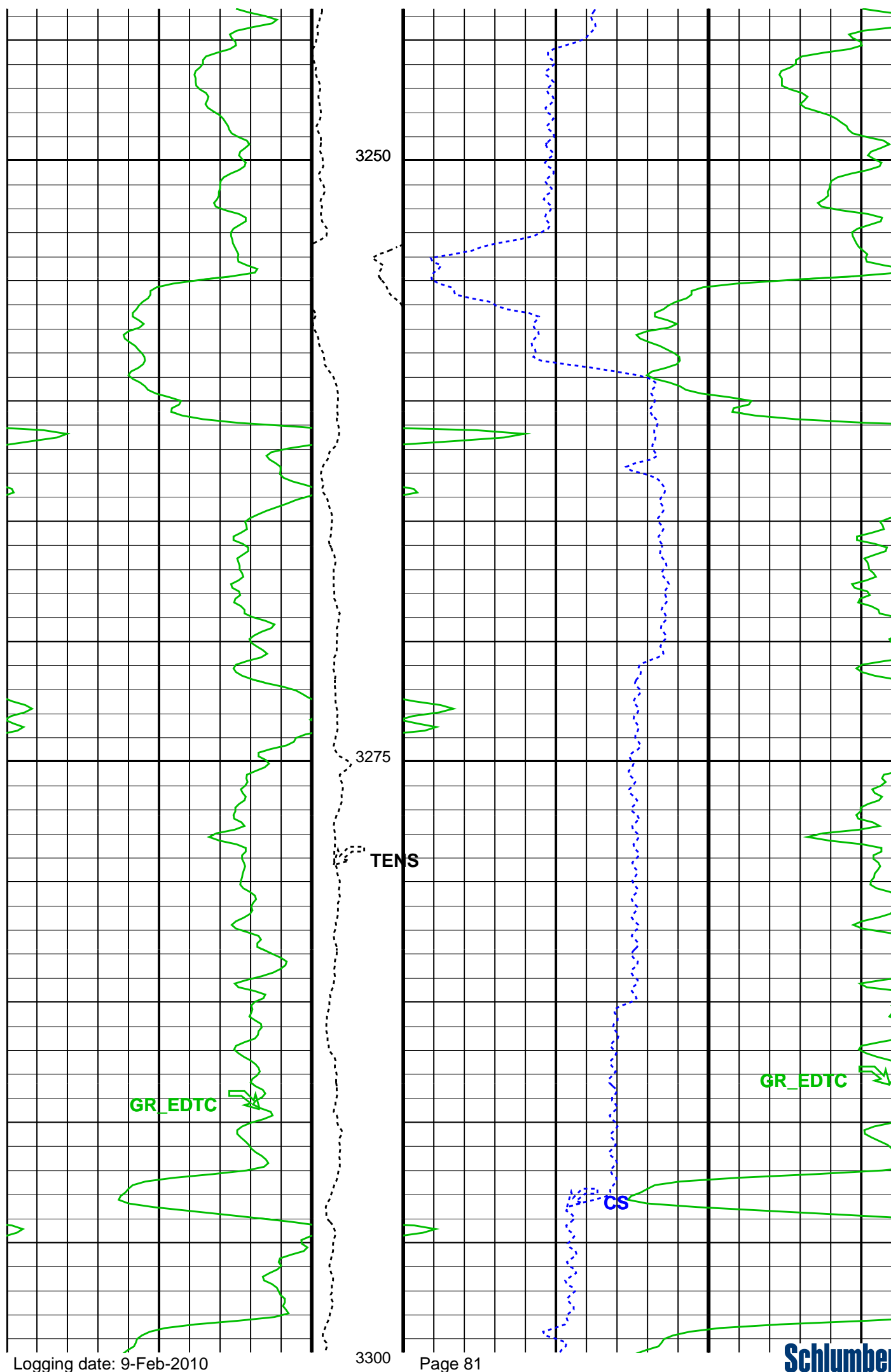


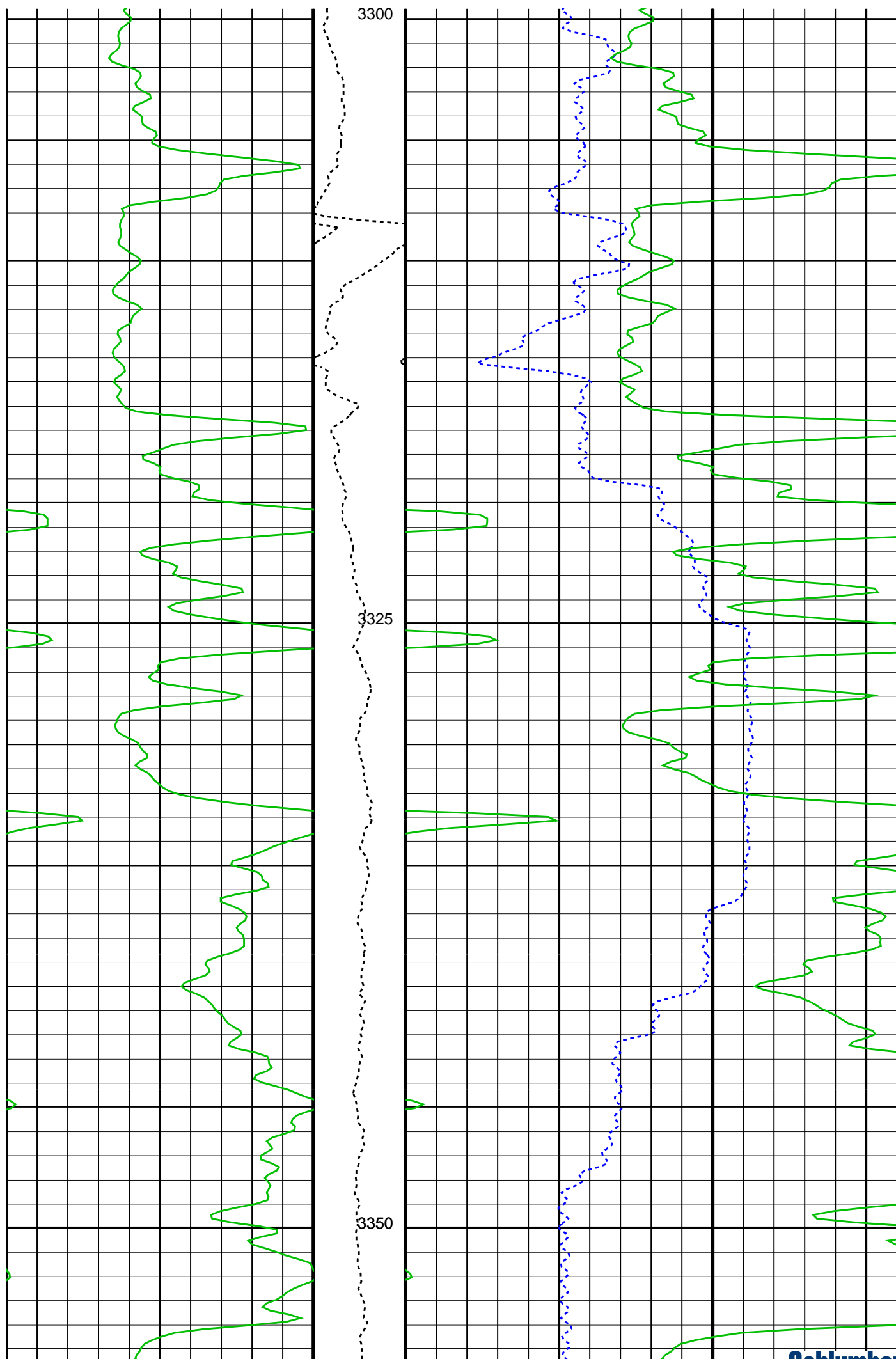
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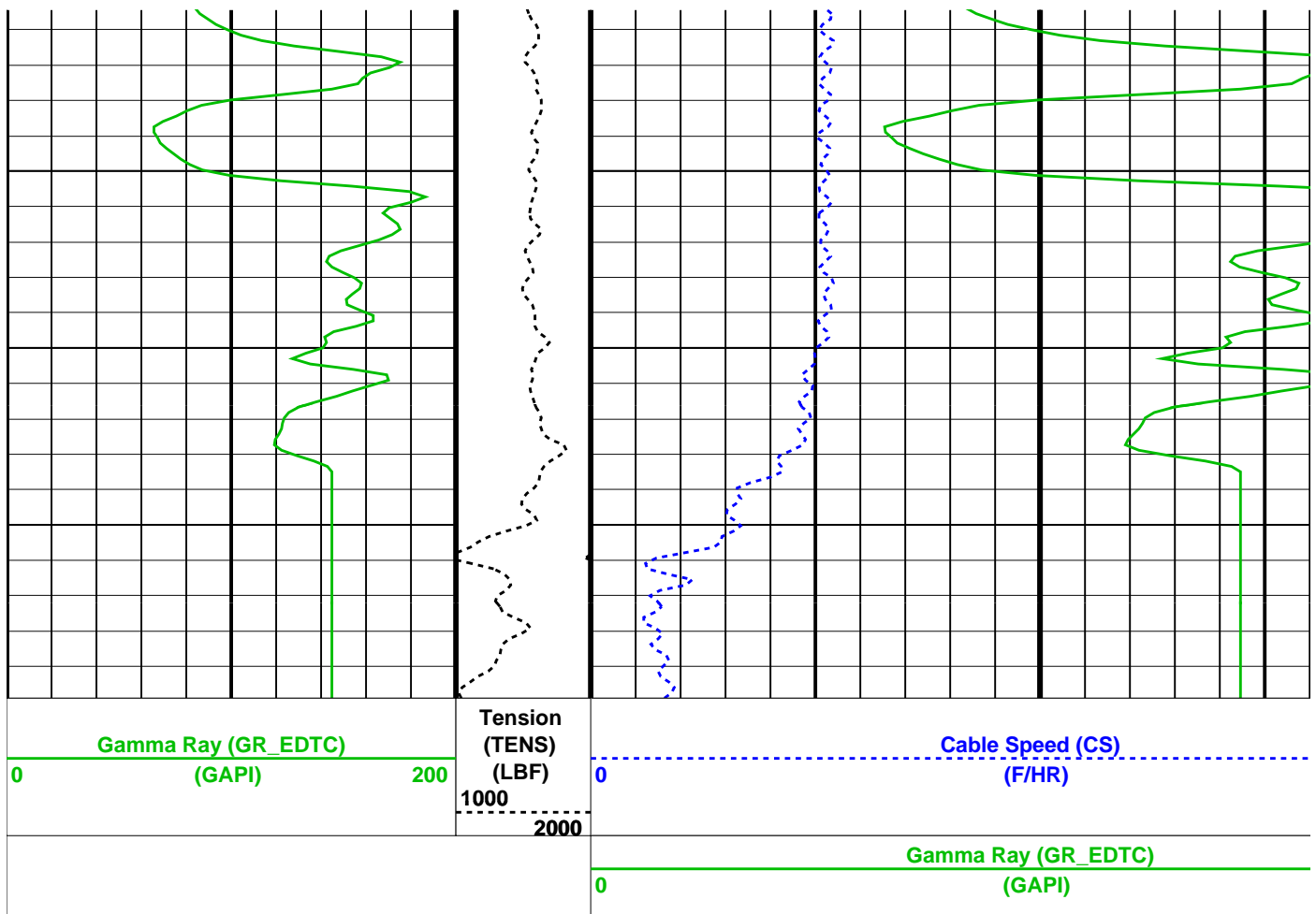
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Parameters

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PP	Depth Offset for Playback	NORMAL
	Playback Processing	
Format: CORRELATION_EDTCB Vertical Scale: 1:200 Graphics File Created: 17-Feb-2		

OP System Version: 17C0-154

VSIT-C 17C0-154 EDTC-B 17C0-154

Input DLIS Files

DEFAULT VSIT_012LUP FN:18 PRODUCER 17-Feb-2010 14:17 3374.9 M

Output DLIS Files

DEFAULT VSIT_004PUP FN:3 PRODUCER 17-Feb-2010 16:21

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Tide Level Report

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Rockhopper-1
ST1

Tidal Elevations (m) above MSL for Rockhopper-1, Feb 2010.

Times are AEST with daylight savings.

Time (AEST with DST)	Elevation above MSL (m)
08-Feb-2010 21:00	0.77
08-Feb-2010 22:00	0.56
08-Feb-2010 23:00	0.22
09-Feb-2010 00:00	-0.13
09-Feb-2010 01:00	-0.39
09-Feb-2010 02:00	-0.50
09-Feb-2010 03:00	-0.43
09-Feb-2010 04:00	-0.20
09-Feb-2010 05:00	0.11
09-Feb-2010 06:00	0.44
09-Feb-2010 07:00	0.70
09-Feb-2010 08:00	0.81
09-Feb-2010 09:00	0.73
09-Feb-2010 10:00	0.46
09-Feb-2010 11:00	0.06
09-Feb-2010 12:00	-0.38
09-Feb-2010 13:00	-0.74
09-Feb-2010 14:00	-0.95
09-Feb-2010 15:00	-0.97
09-Feb-2010 16:00	-0.80
09-Feb-2010 17:00	-0.48
09-Feb-2010 18:00	-0.10
09-Feb-2010 19:00	0.28
09-Feb-2010 20:00	0.56
09-Feb-2010 21:00	0.70
09-Feb-2010 22:00	0.65
09-Feb-2010 23:00	0.45
10-Feb-2010 00:00	0.16
10-Feb-2010 01:00	-0.12
10-Feb-2010 02:00	-0.32
10-Feb-2010 03:00	-0.38
10-Feb-2010 04:00	-0.29
10-Feb-2010 05:00	-0.09
10-Feb-2010 06:00	0.18
10-Feb-2010 07:00	0.44
10-Feb-2010 08:00	0.63
10-Feb-2010 09:00	0.69
10-Feb-2010 10:00	0.58
10-Feb-2010 11:00	0.31