



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				Howard 37N-33HZ			
Field				Wattenberg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-38032			
Permanent Datum				SHL: 1633' FSL & 1420' FEL			
Log Measured From				Lat/Long: 40.019304/-104.891135			
Drilling Measured From				SEC 28 TWP 1N RGE 67W			
Ground Level				Elevation 5021'			
Kelly Bushing (16 FT)				K.B. 5037'			
Kelly Bushing				D.F. 5036'			
Kelly Bushing				G.L. 5021'			
02-MAR-2014							
One							
12,402 FT							
7,194 FT							
7,191 FT							
Surface							
8,750"							
Water							
8.34 lbm/gal							
246 F							
353 FT							
ROA							
09:00							
HD-311							
Fort Lupton, CO							
Greg Jackson							
Trevor Daniel							
Borehole Record				Tubing Record			
Bit From To Size Weight From To							
Casing Record				Size (in) Wgt (lbs/Ft) Grade Top Bottom			
Surface Casing				9-5/8" 36# J-55 Surface 803 FT			
Intermediate #1				7" 26# P-110 Surface 8,149 FT			
Intermediate #2							
Liner				4-1/2" 11.6# P-110 7,103 FT 12,387 FT			

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

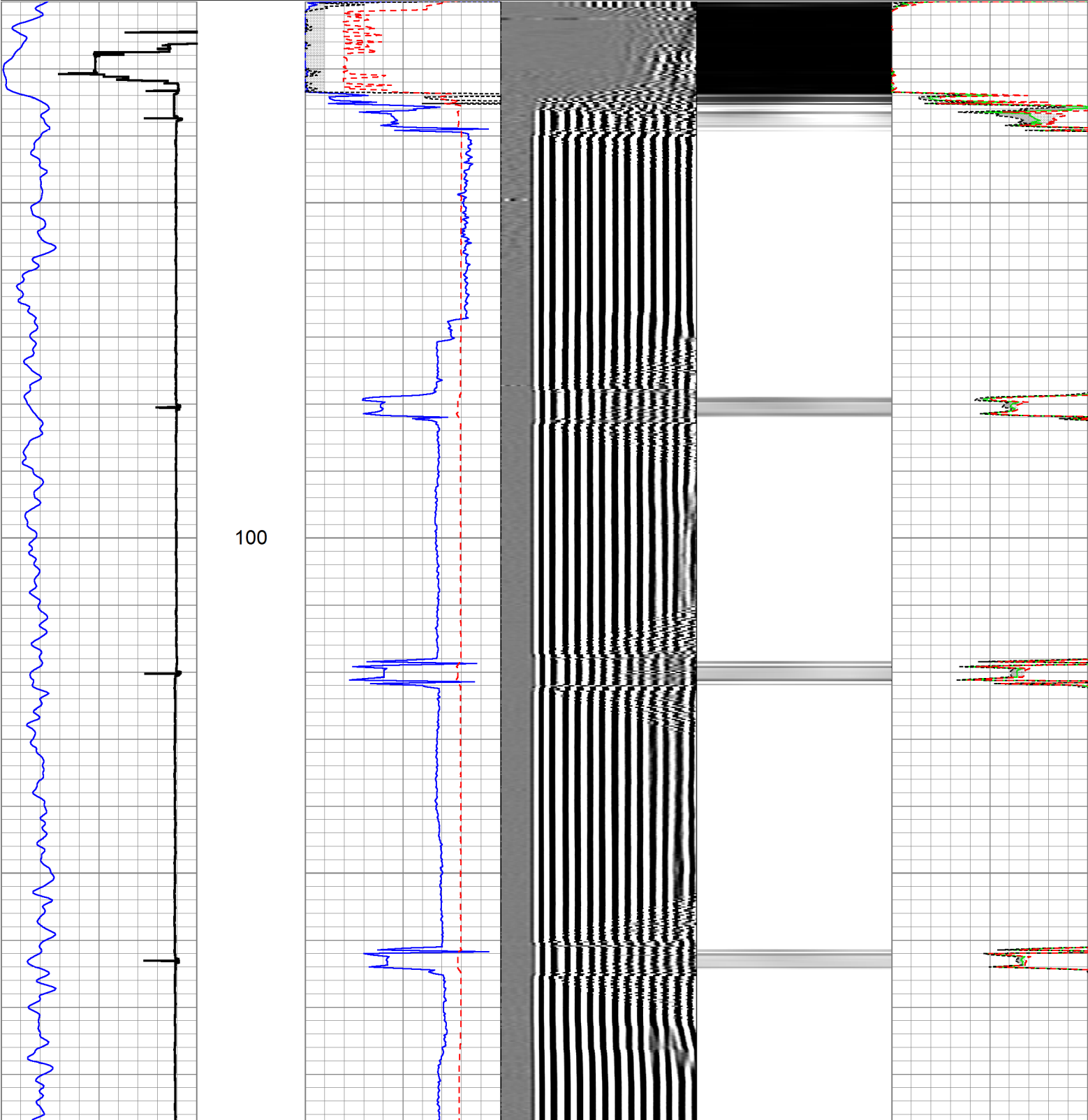
Radial Cement Bond Log - Casing Inspection Log is first recorded log in hole.
Log correlated to reported casing tally at top of liner @ 7,103'
RCBL-CIL ran at 2800 PSI surface induced pressure.
Estimated Cement Top recorded at 353'

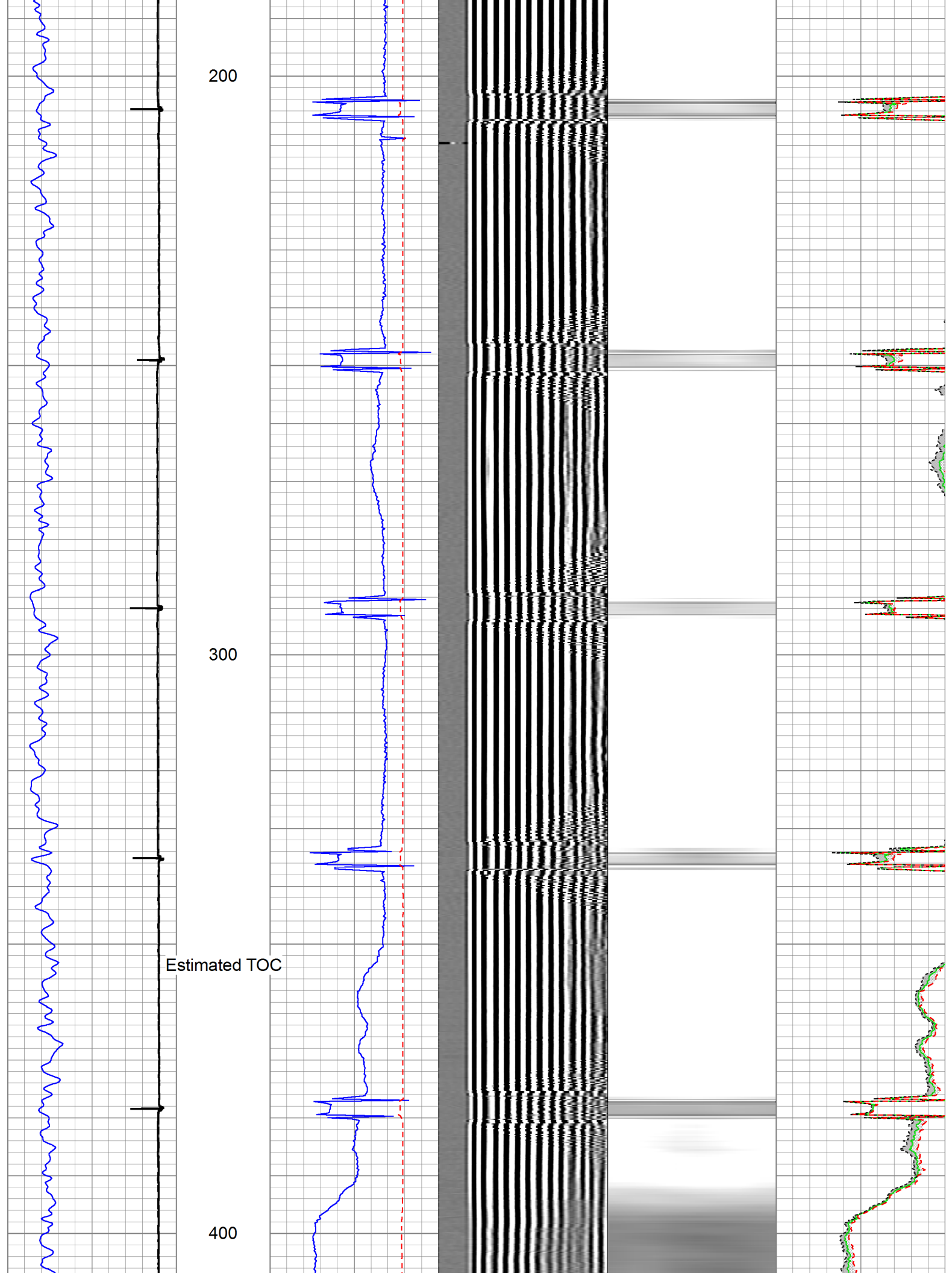
Thank you for choosing FMC Technologies Completion Services, Inc.

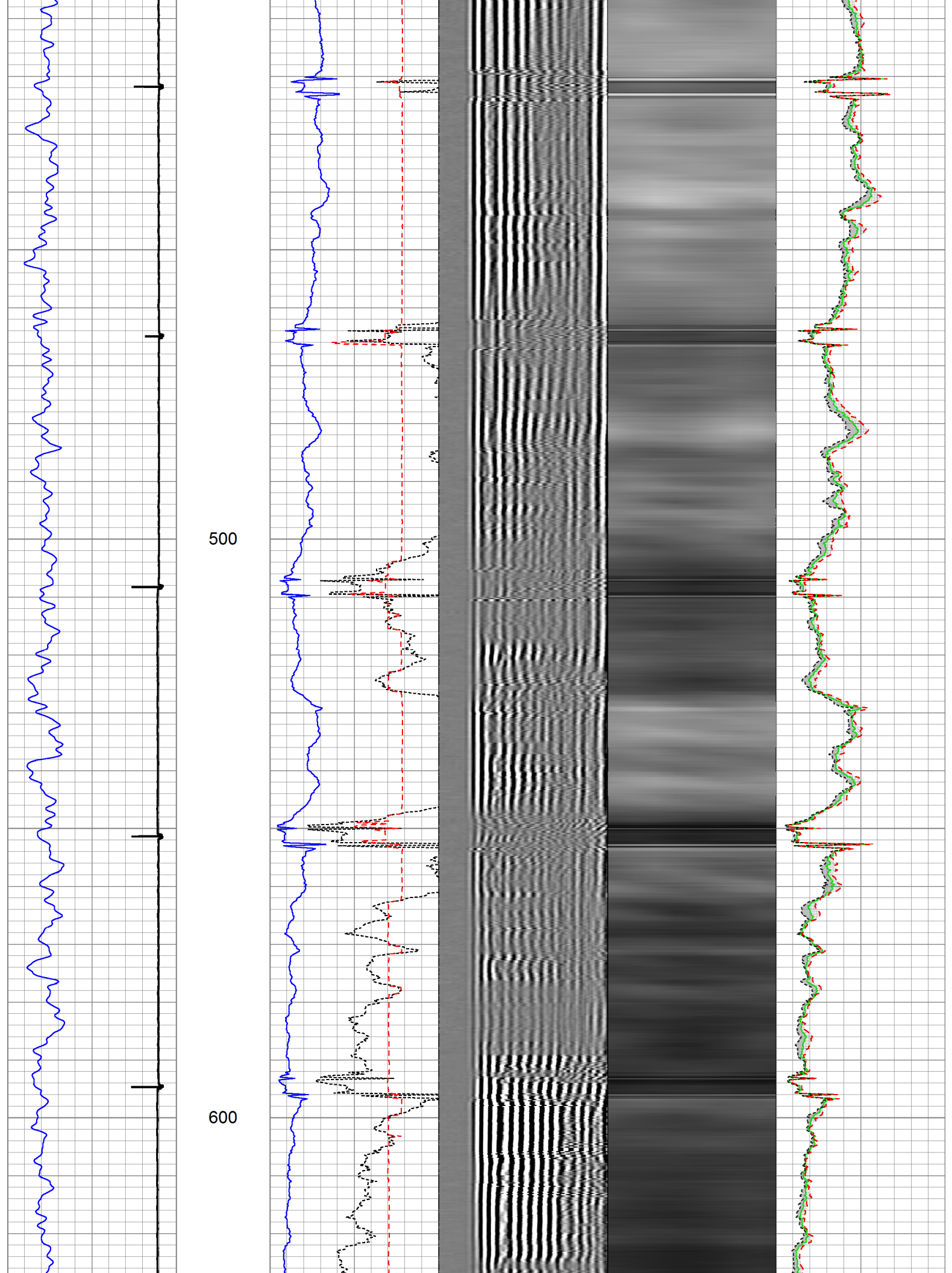


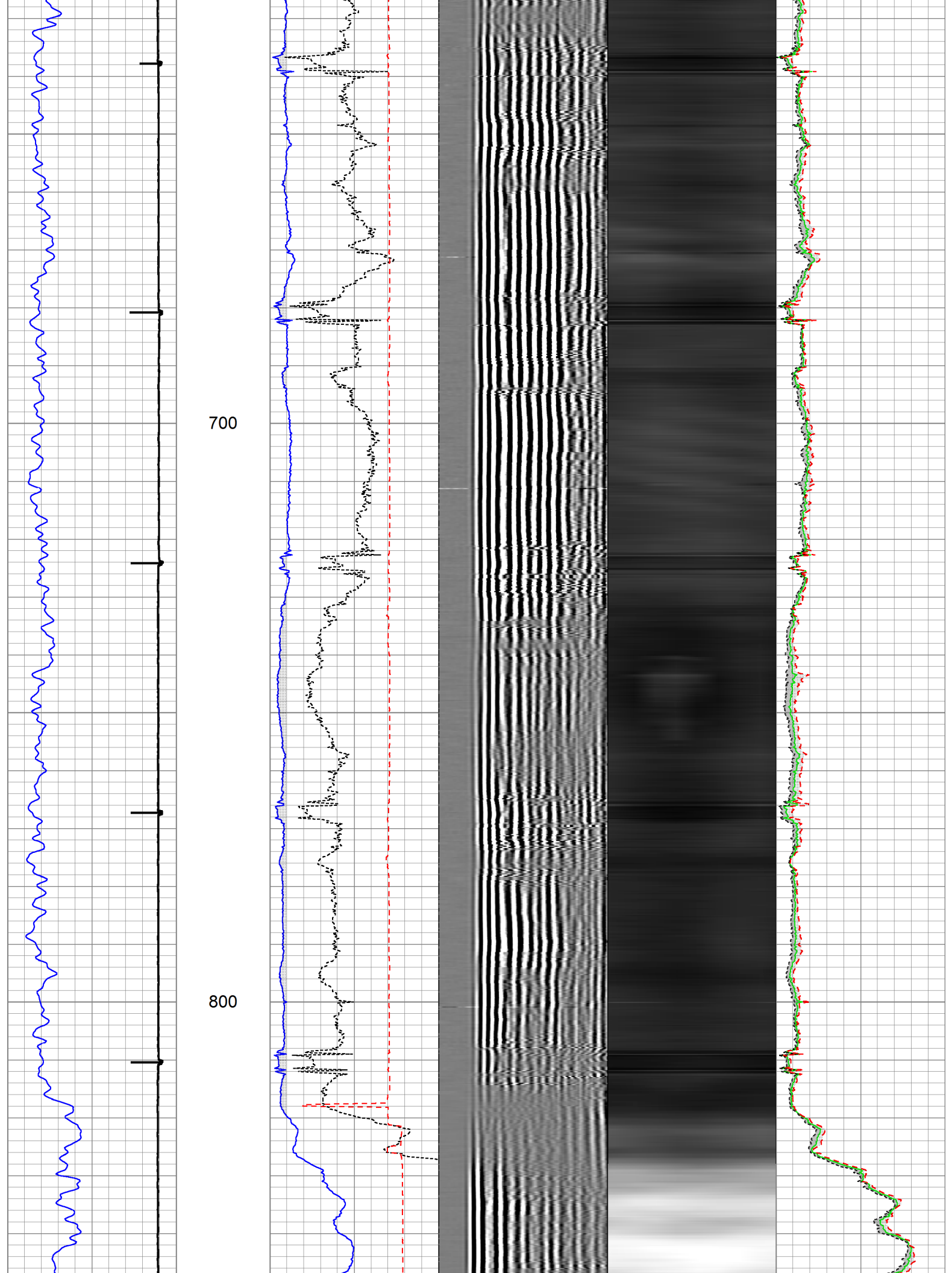
Main Pass

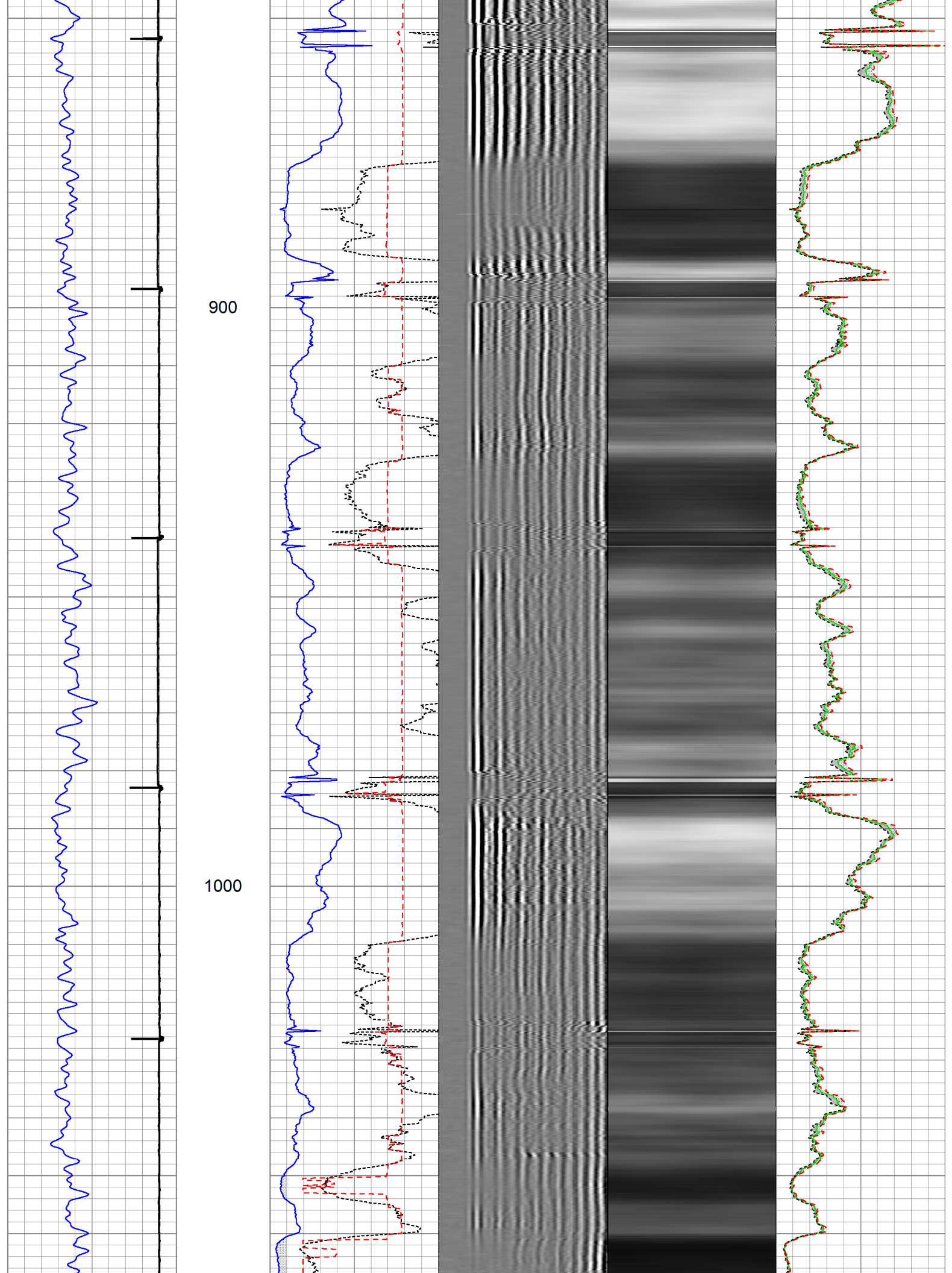
Gamma Ray			3' Amplitude			5' Variable Density Log		Sector Map		Average Amplitude	
0	(GAPI)	150	0	(mV)	100					0	100
CCL			3' Amplitude x 5			200	1200	Minimum Amplitude			
			0 (mV) 20			200		1200		0 100	
			3' Travel Time							Maximum Amplitude	
			650 (usec) 150							0 100	

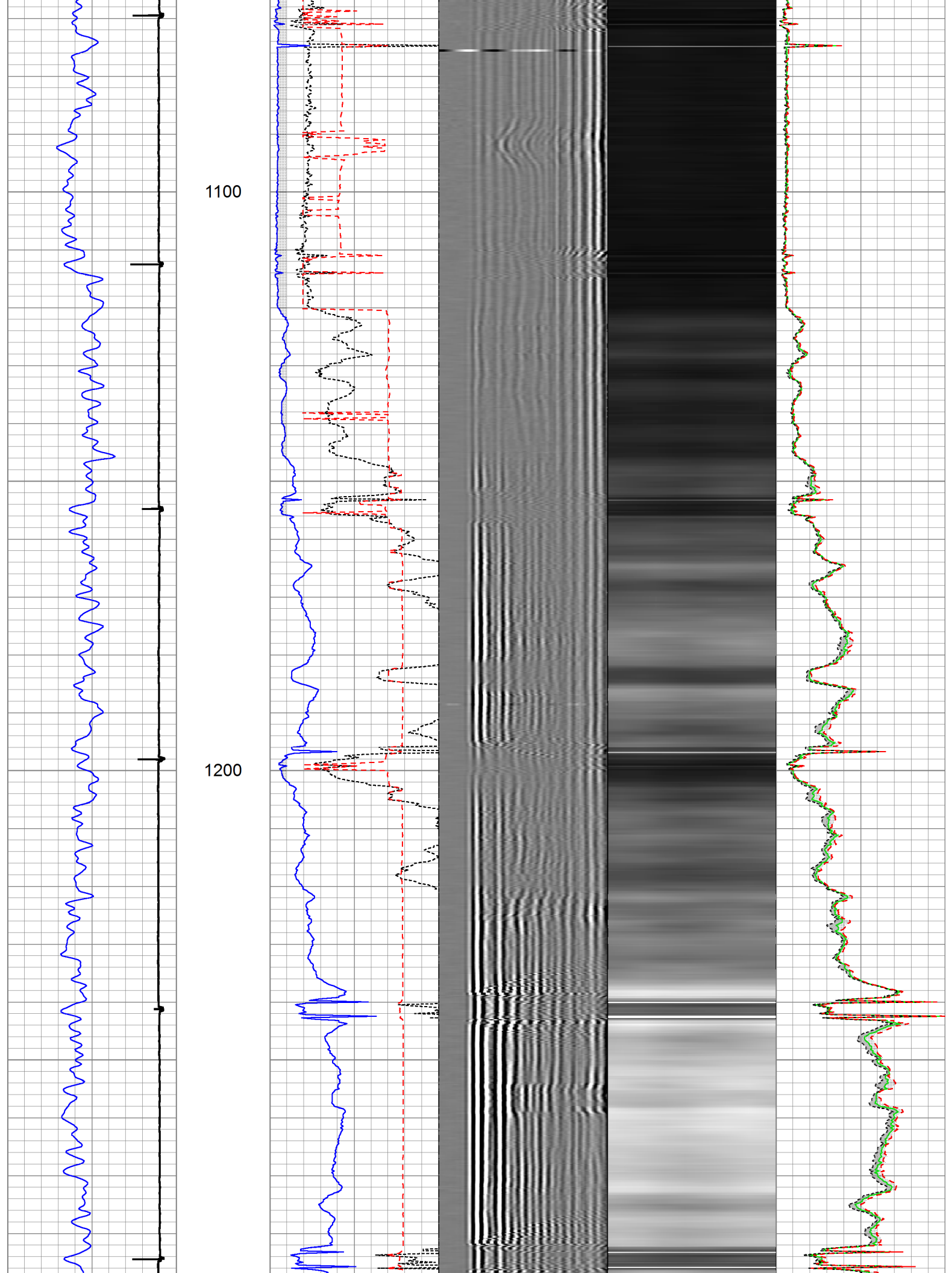


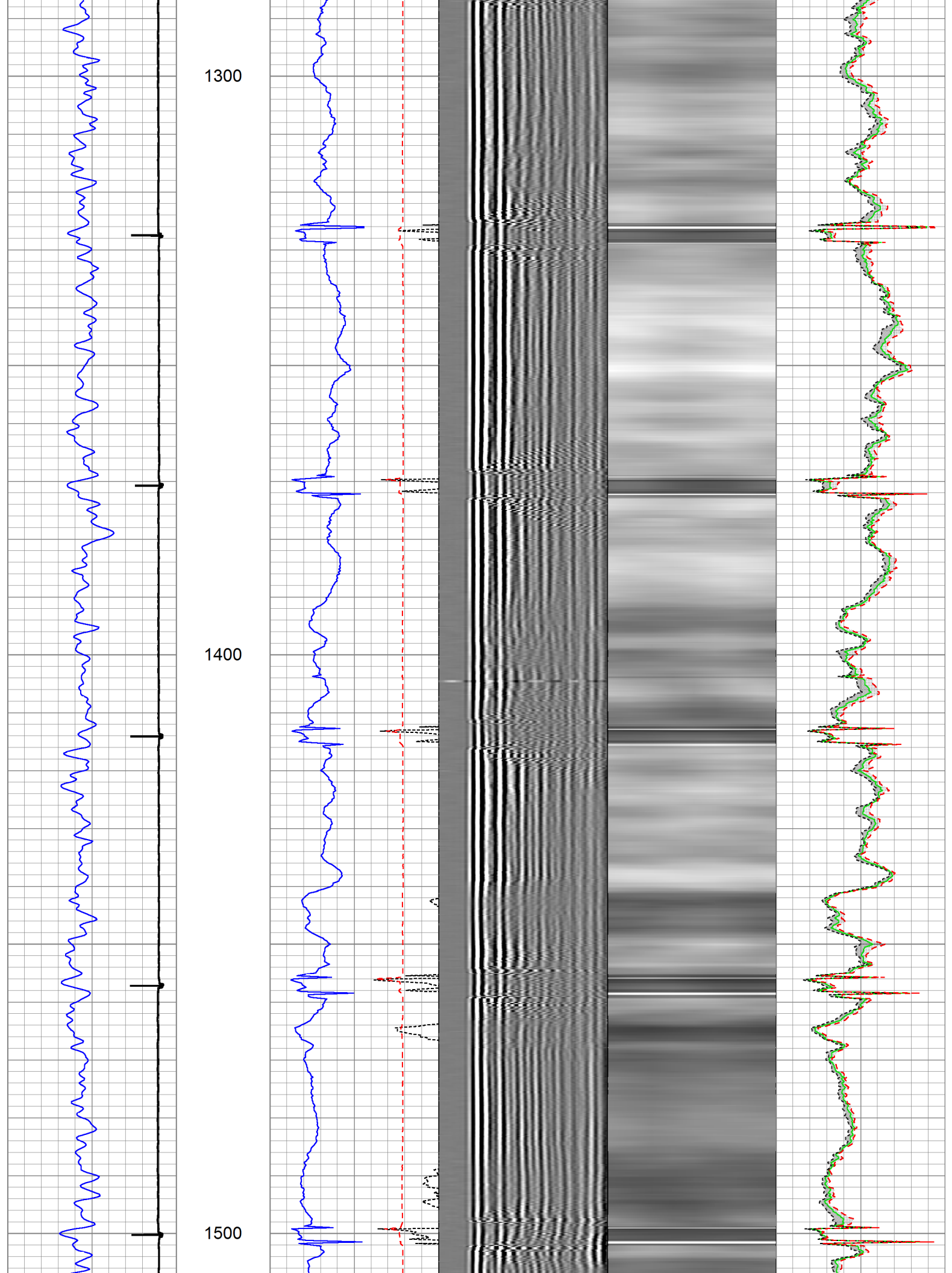


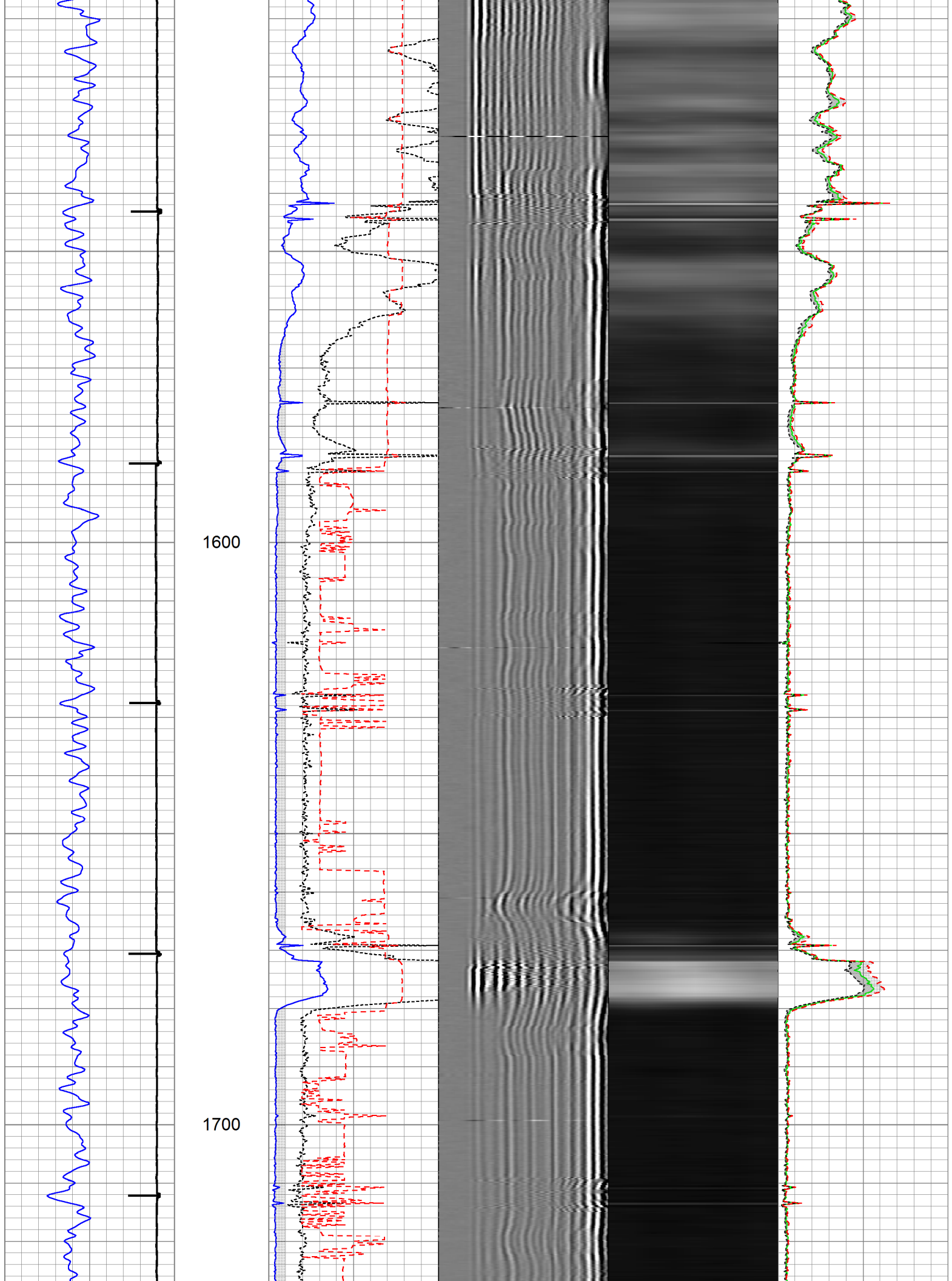


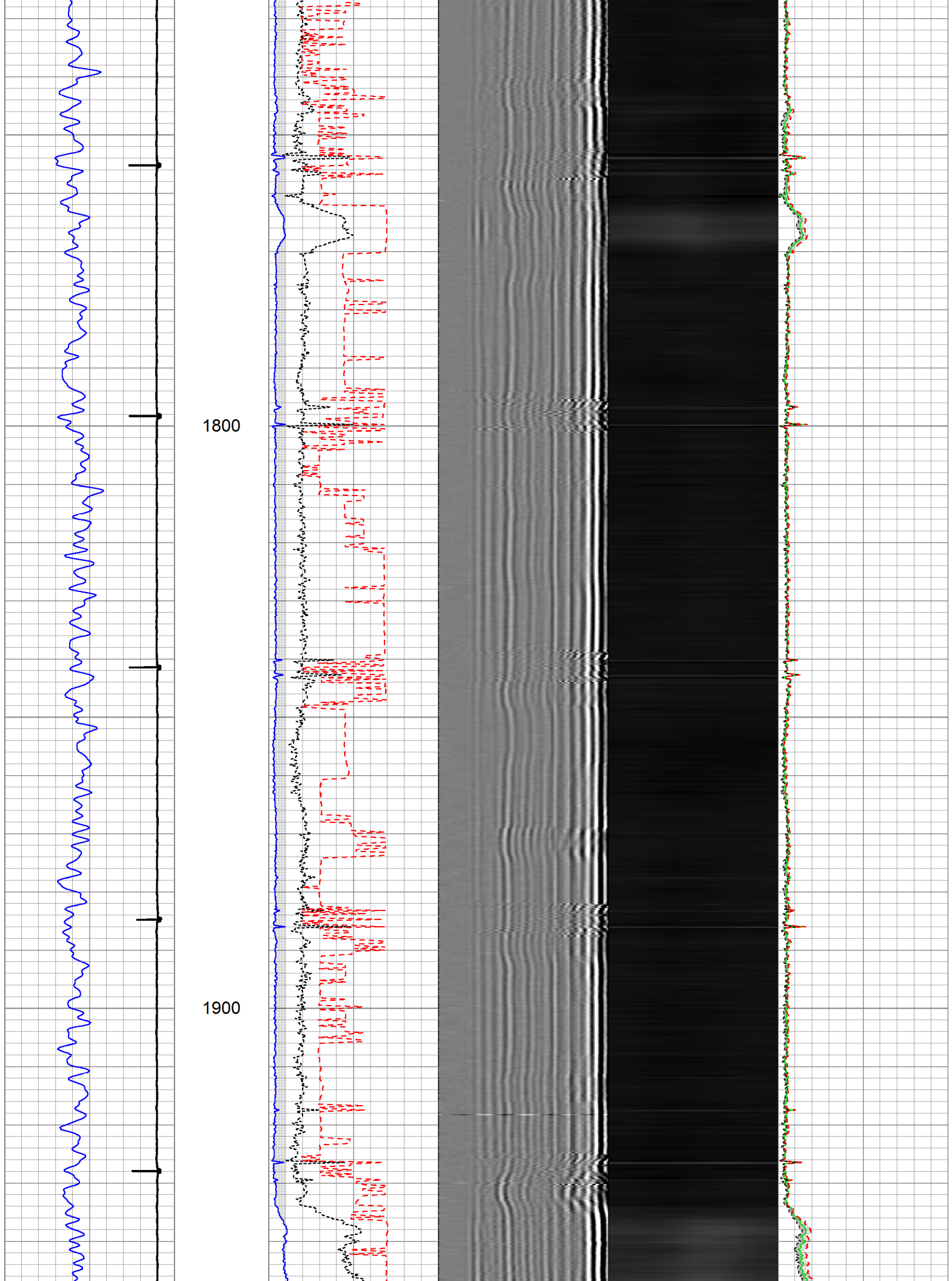


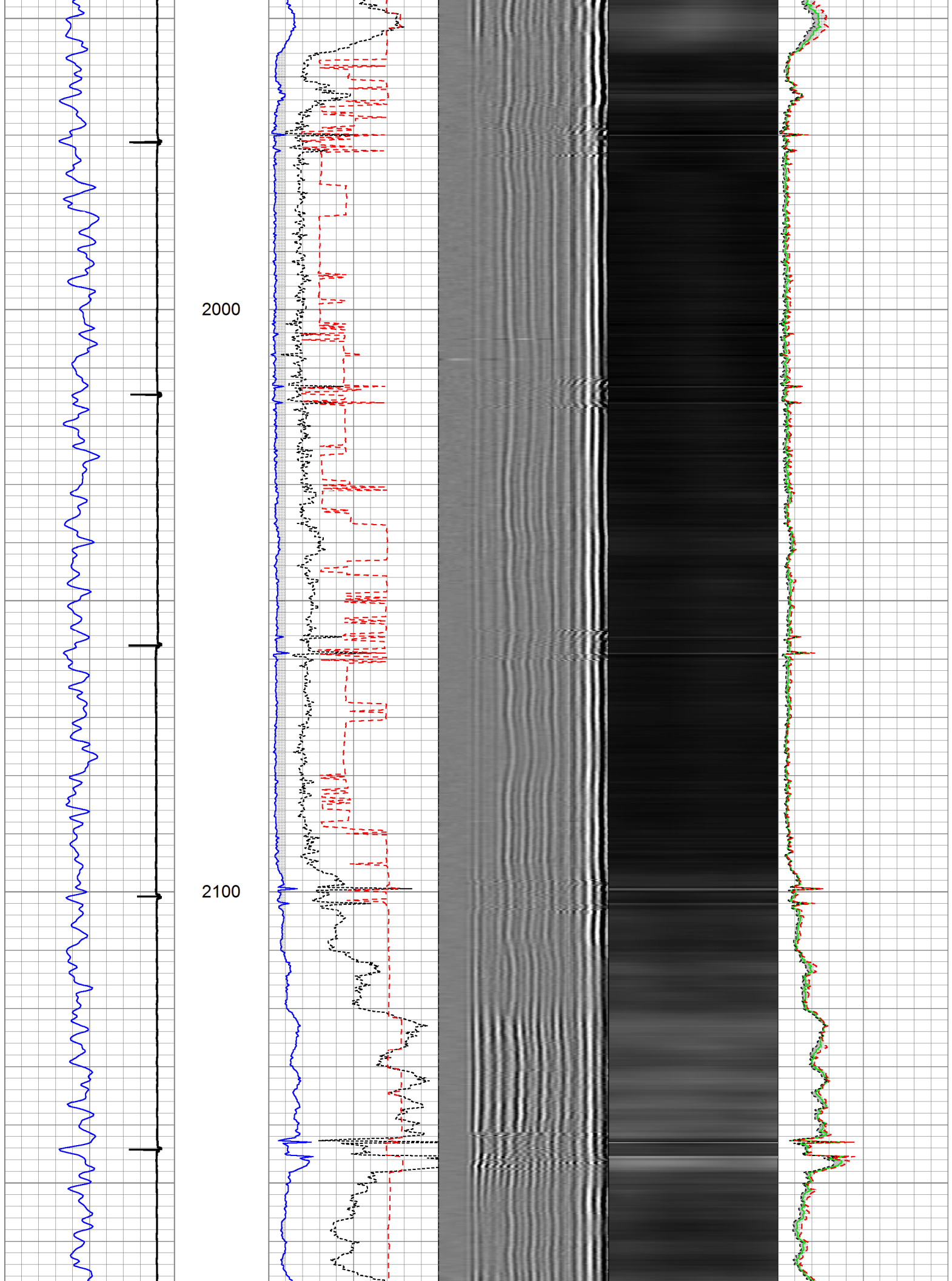






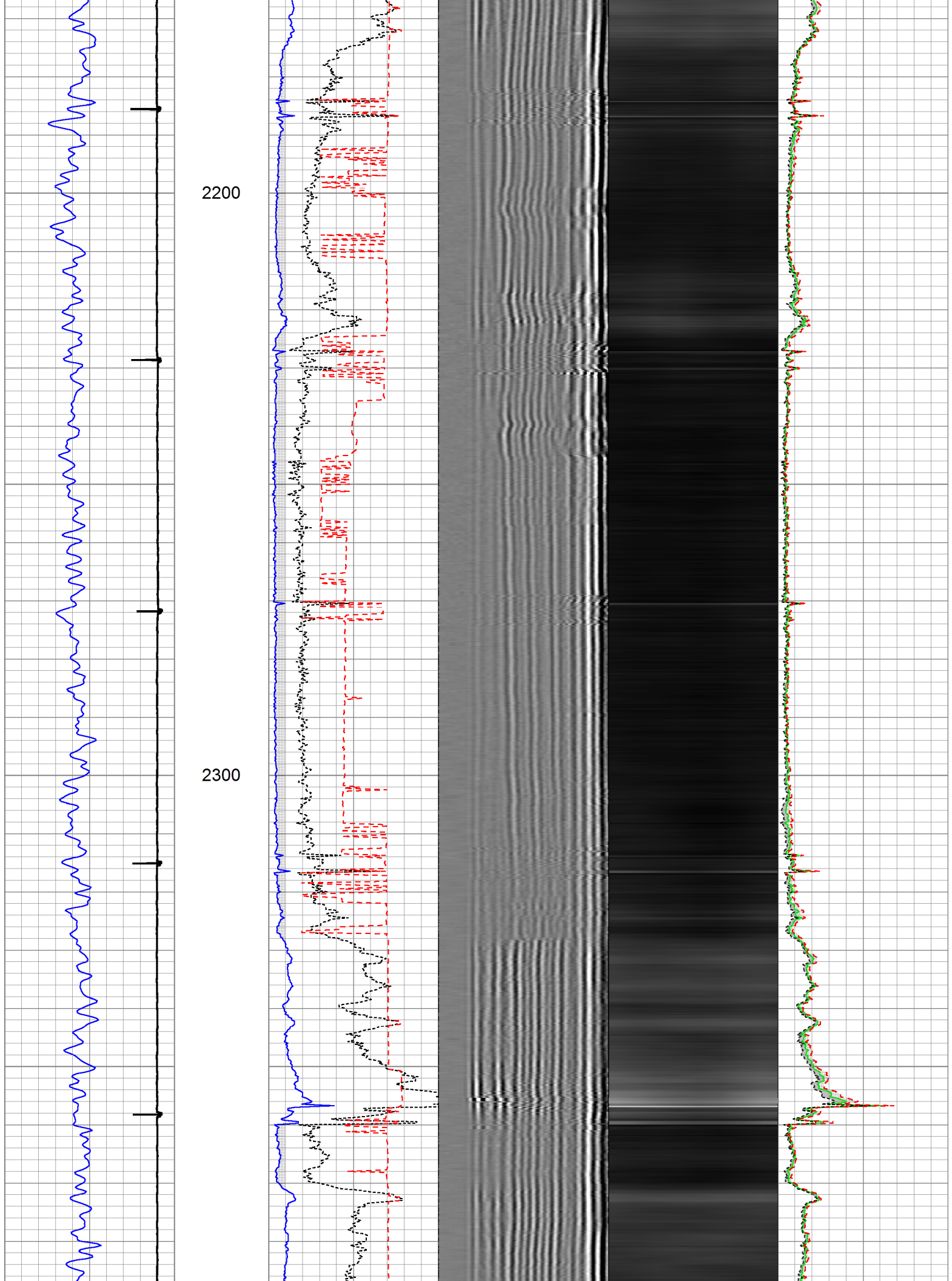


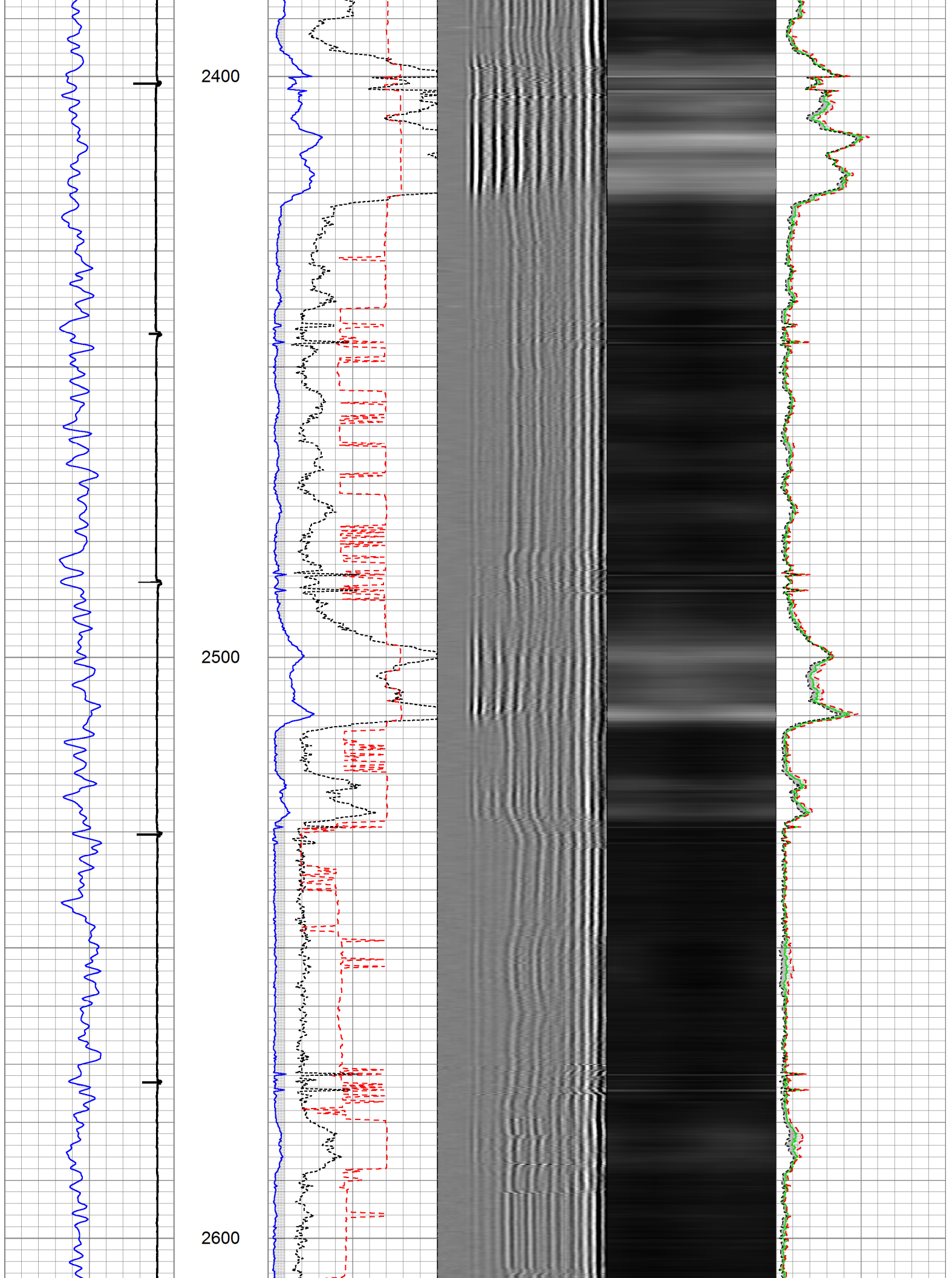


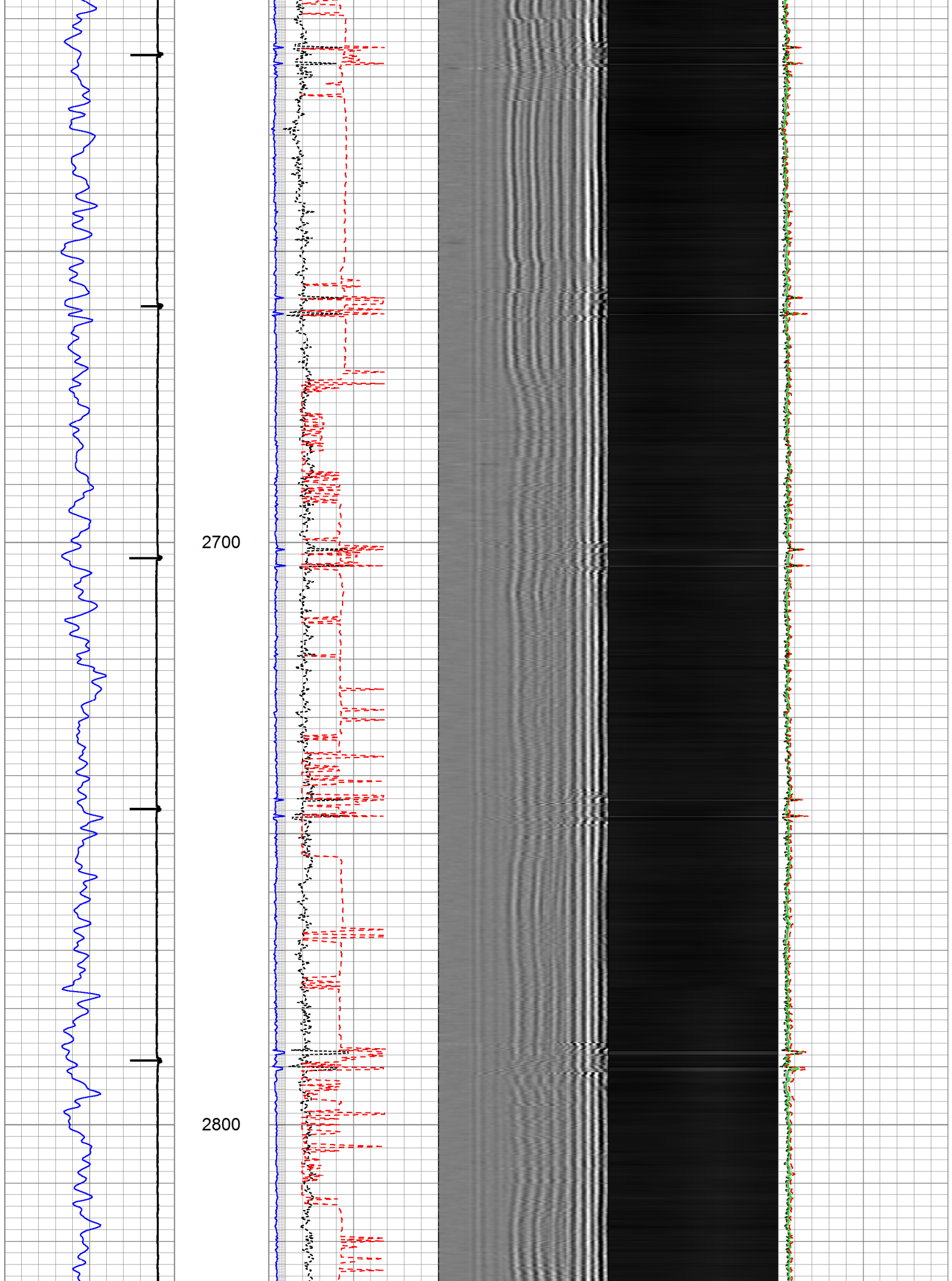


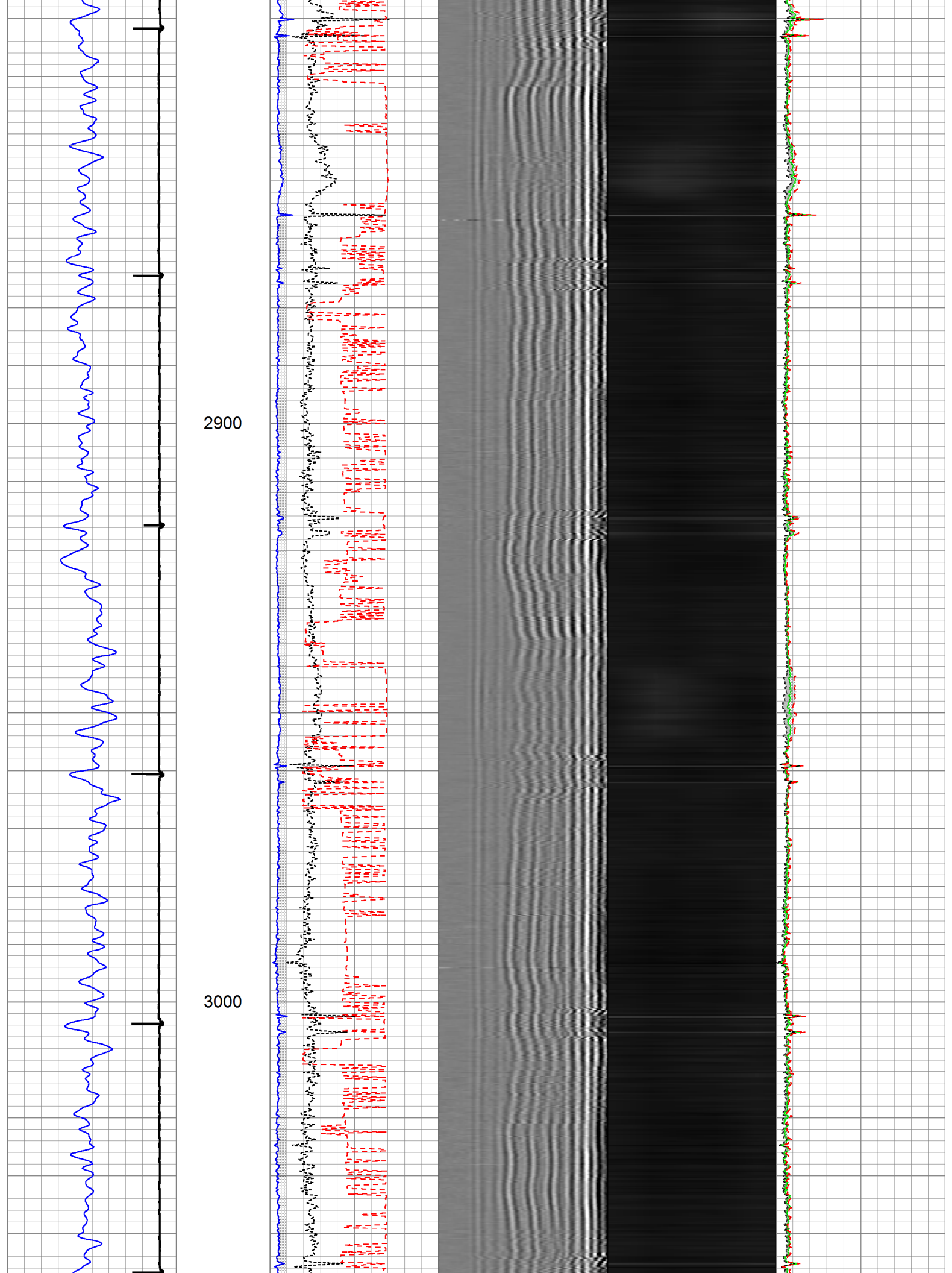
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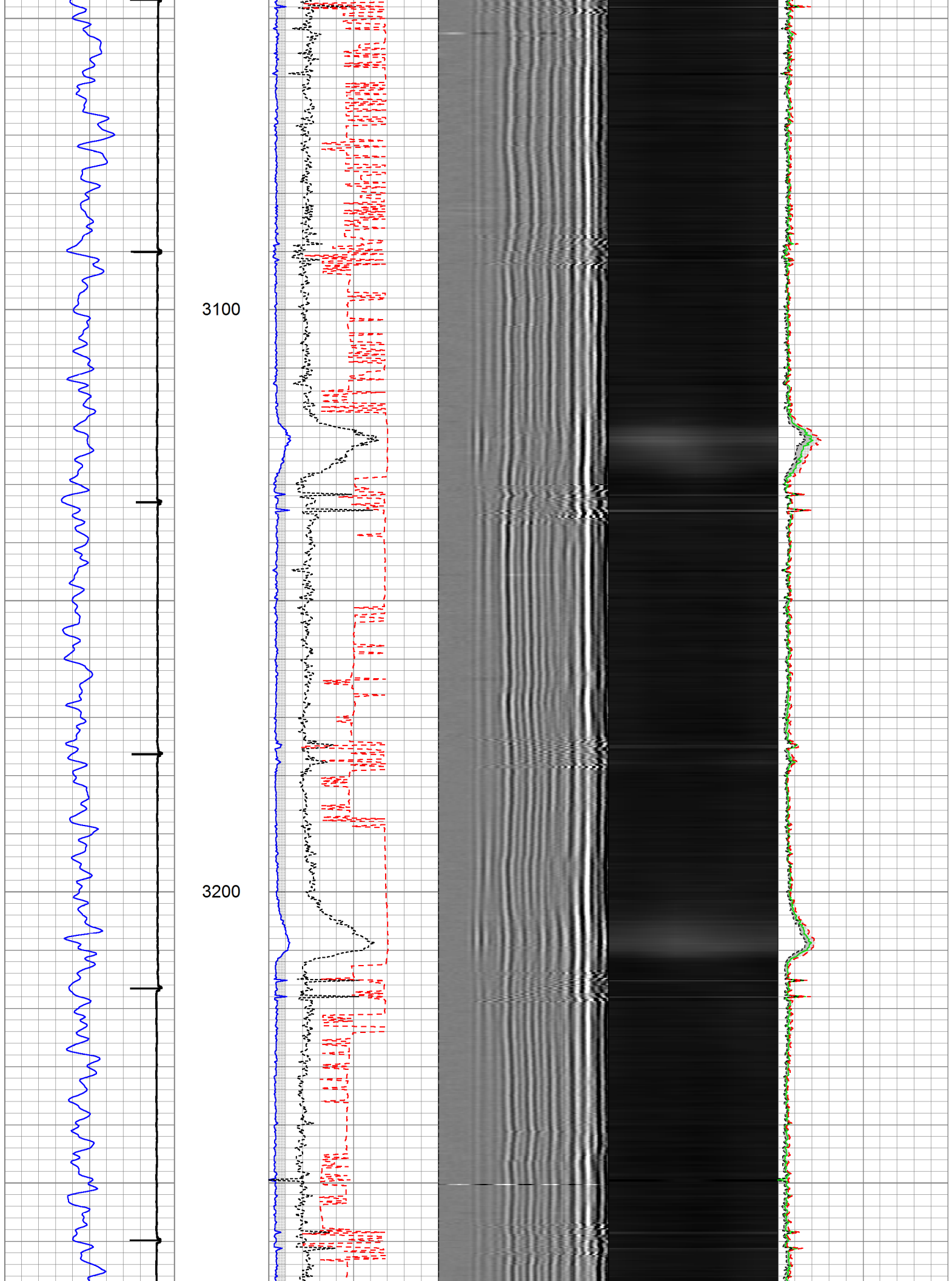
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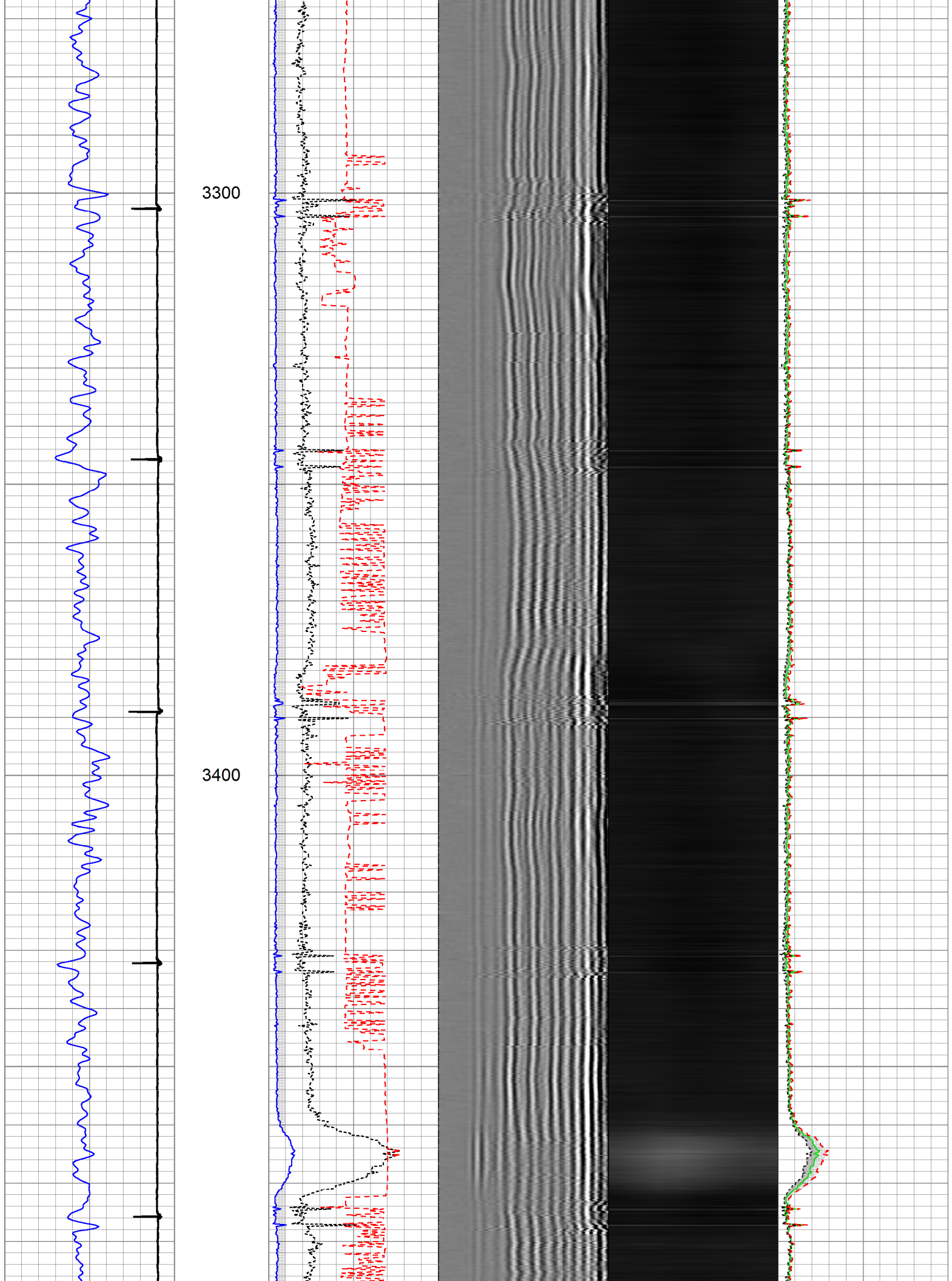


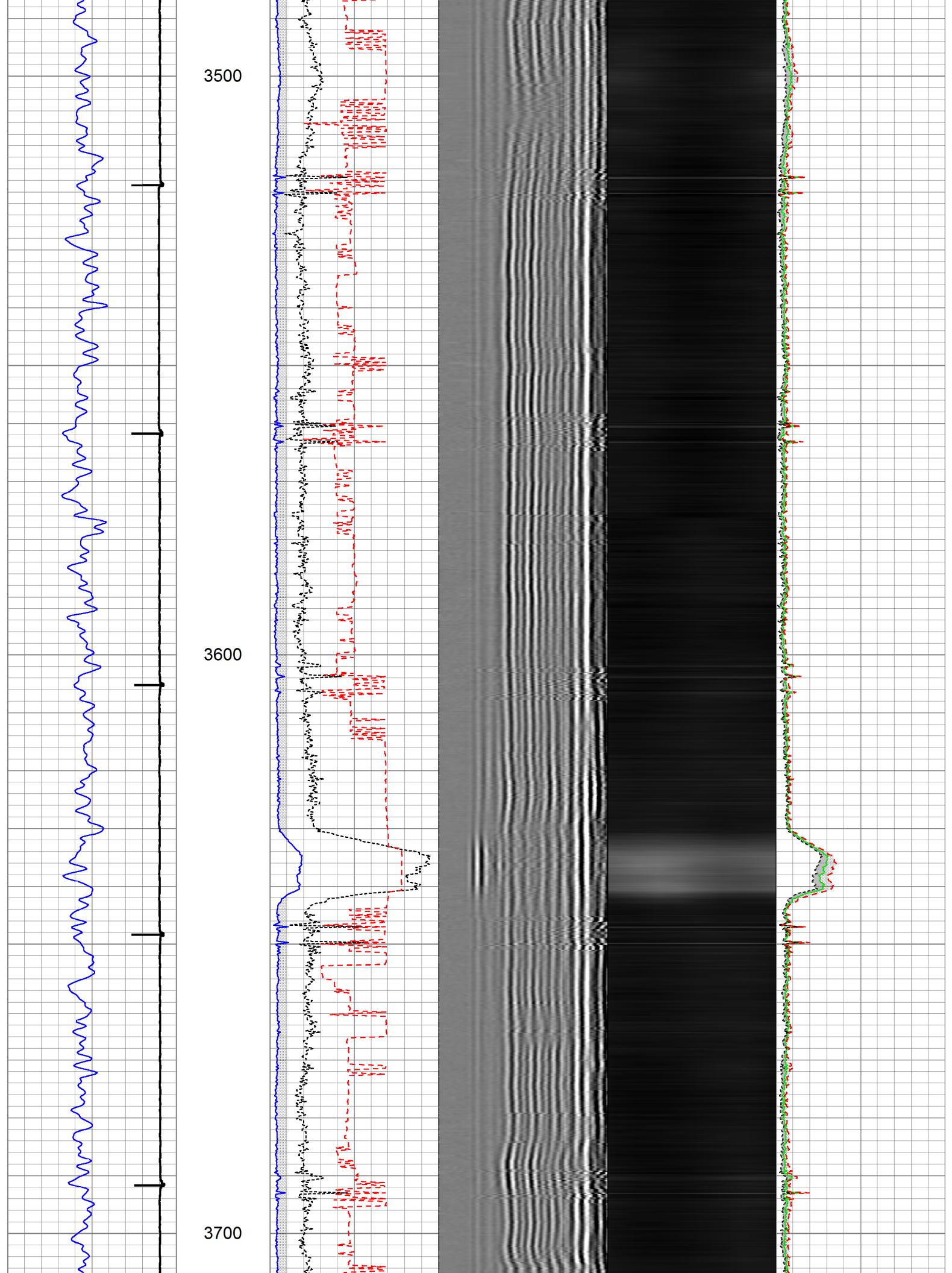


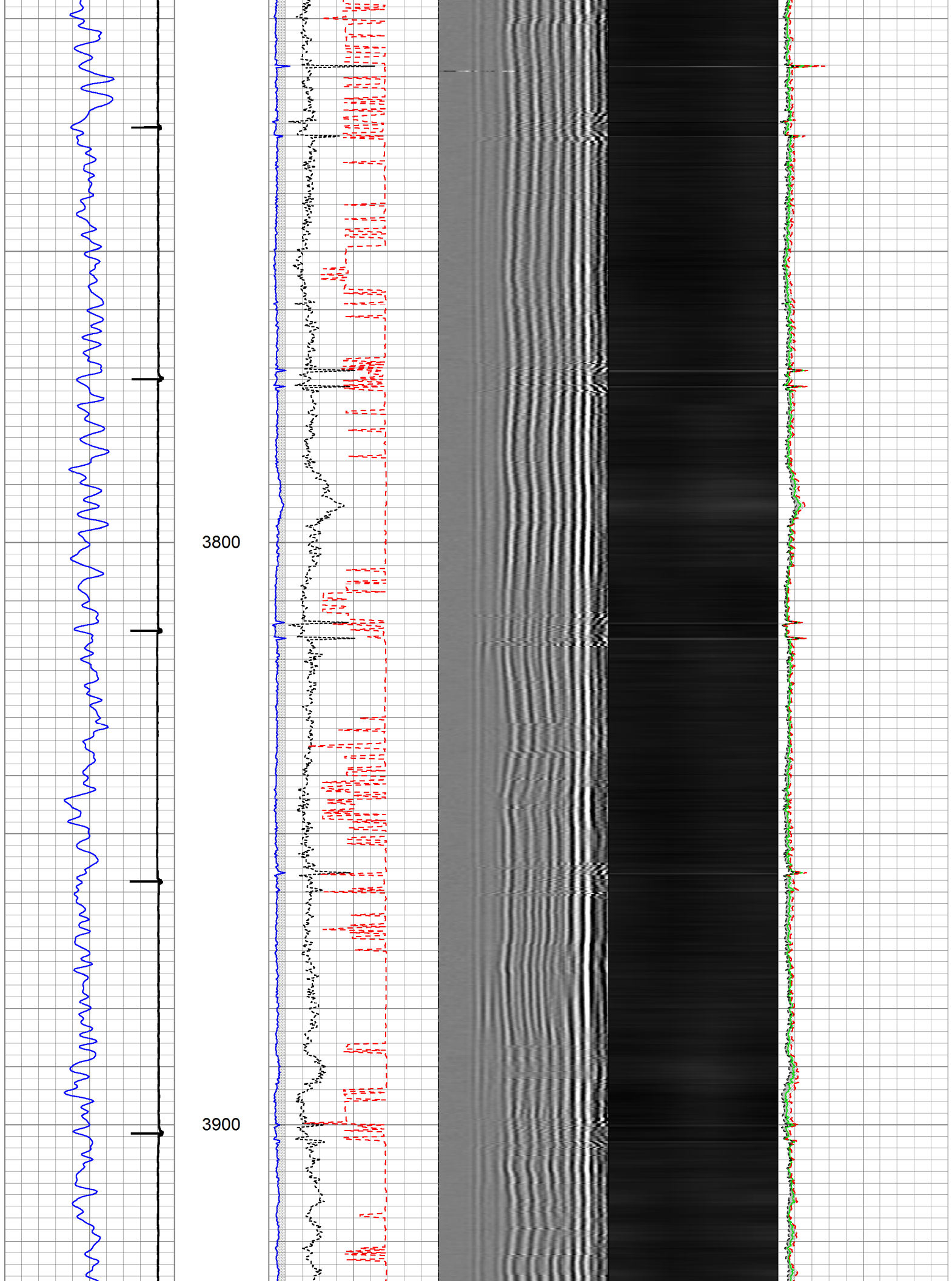


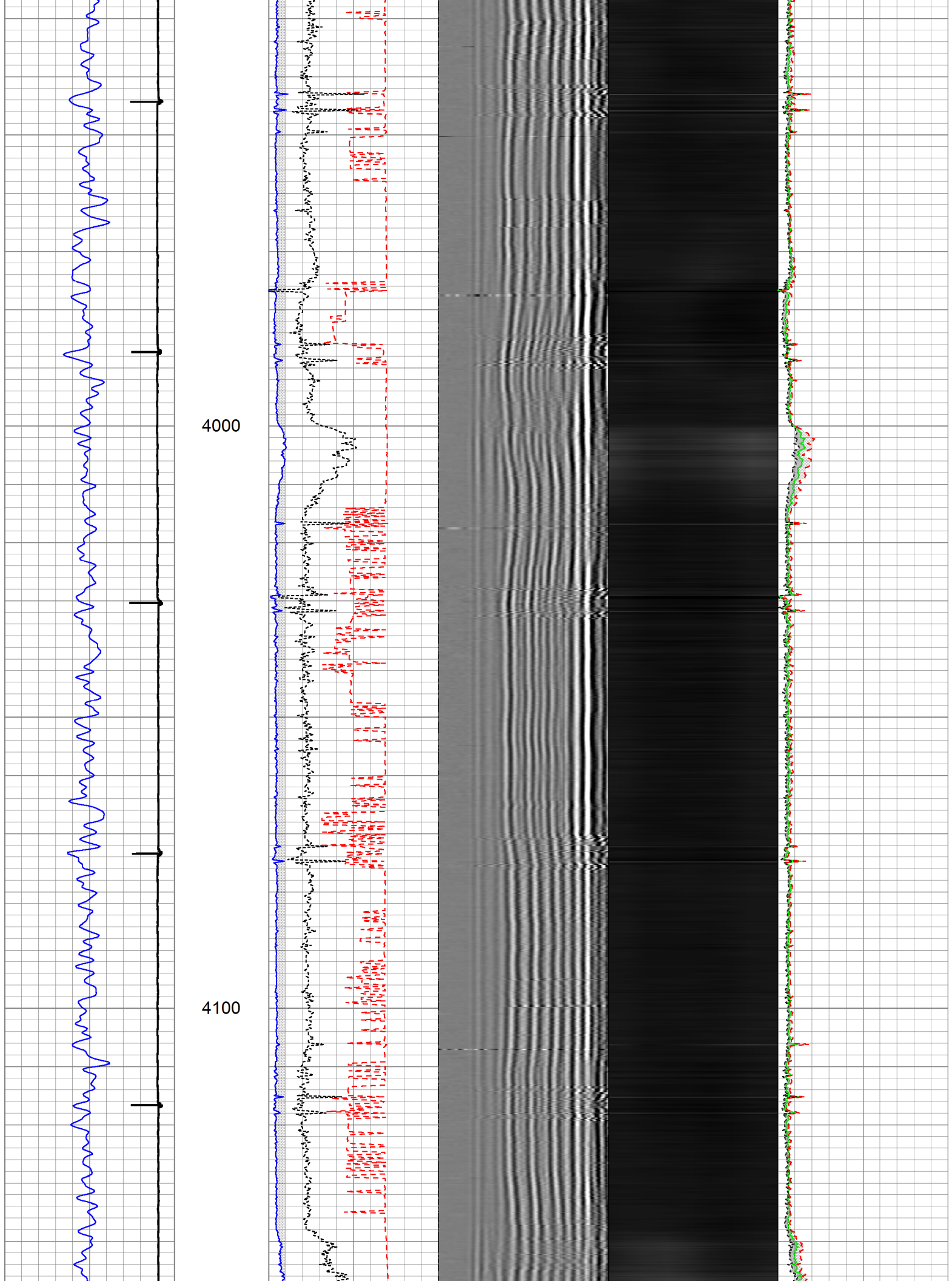


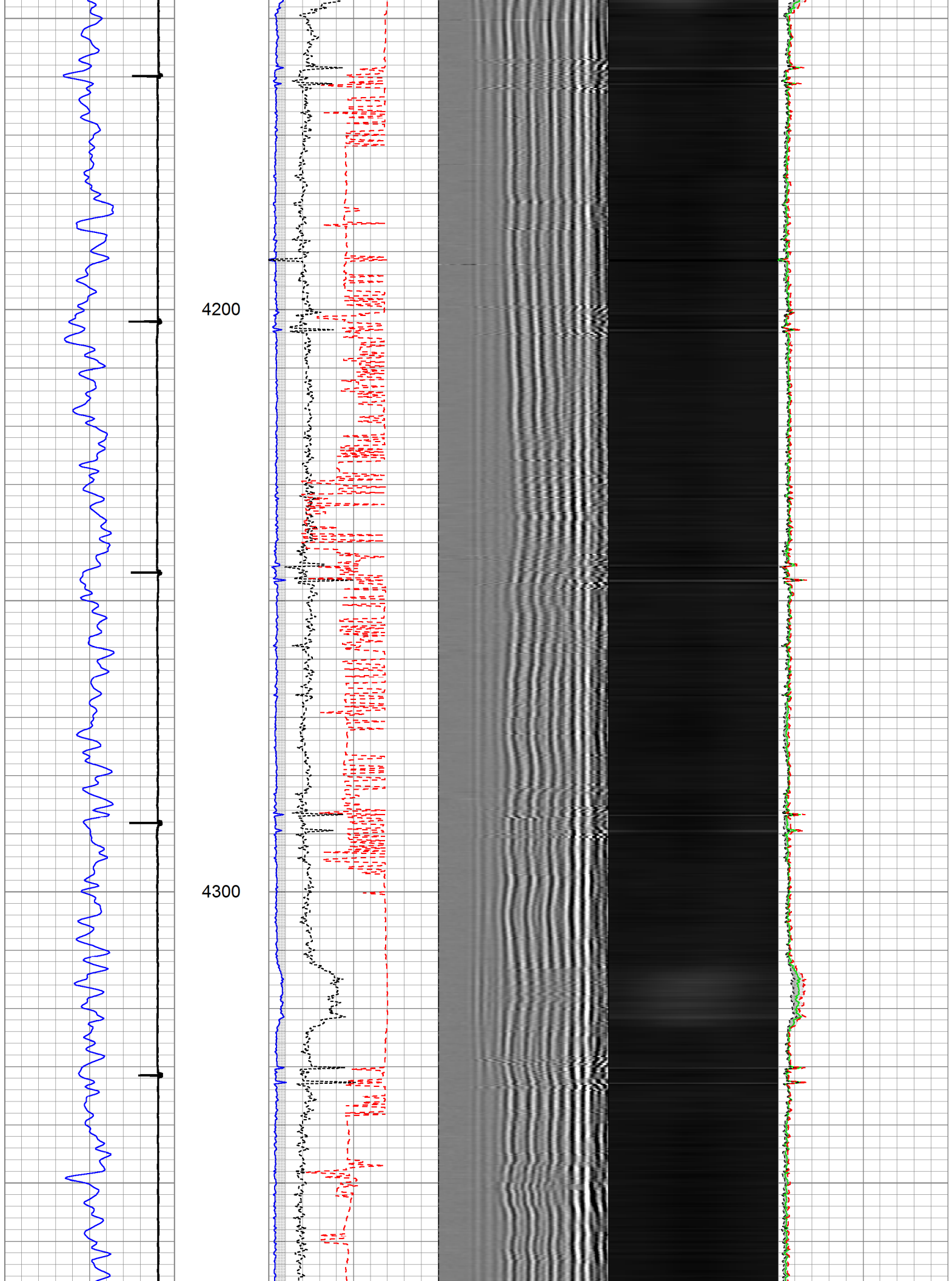






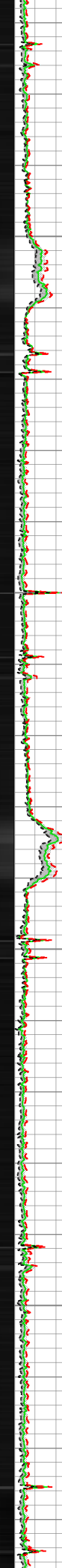
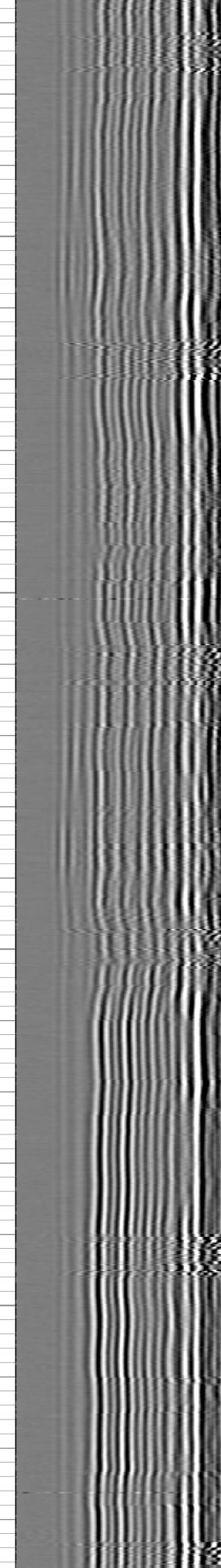
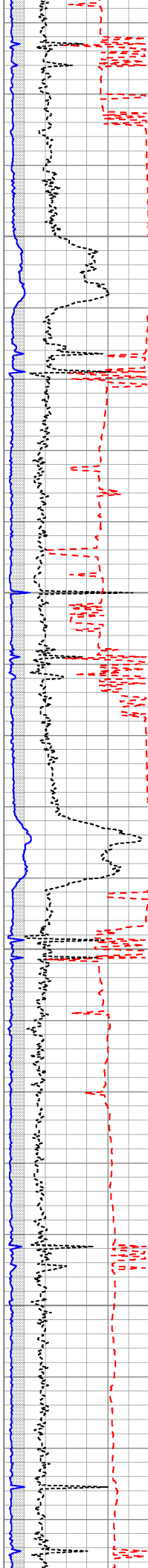
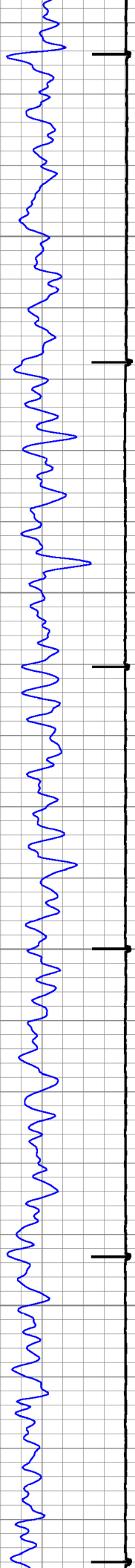


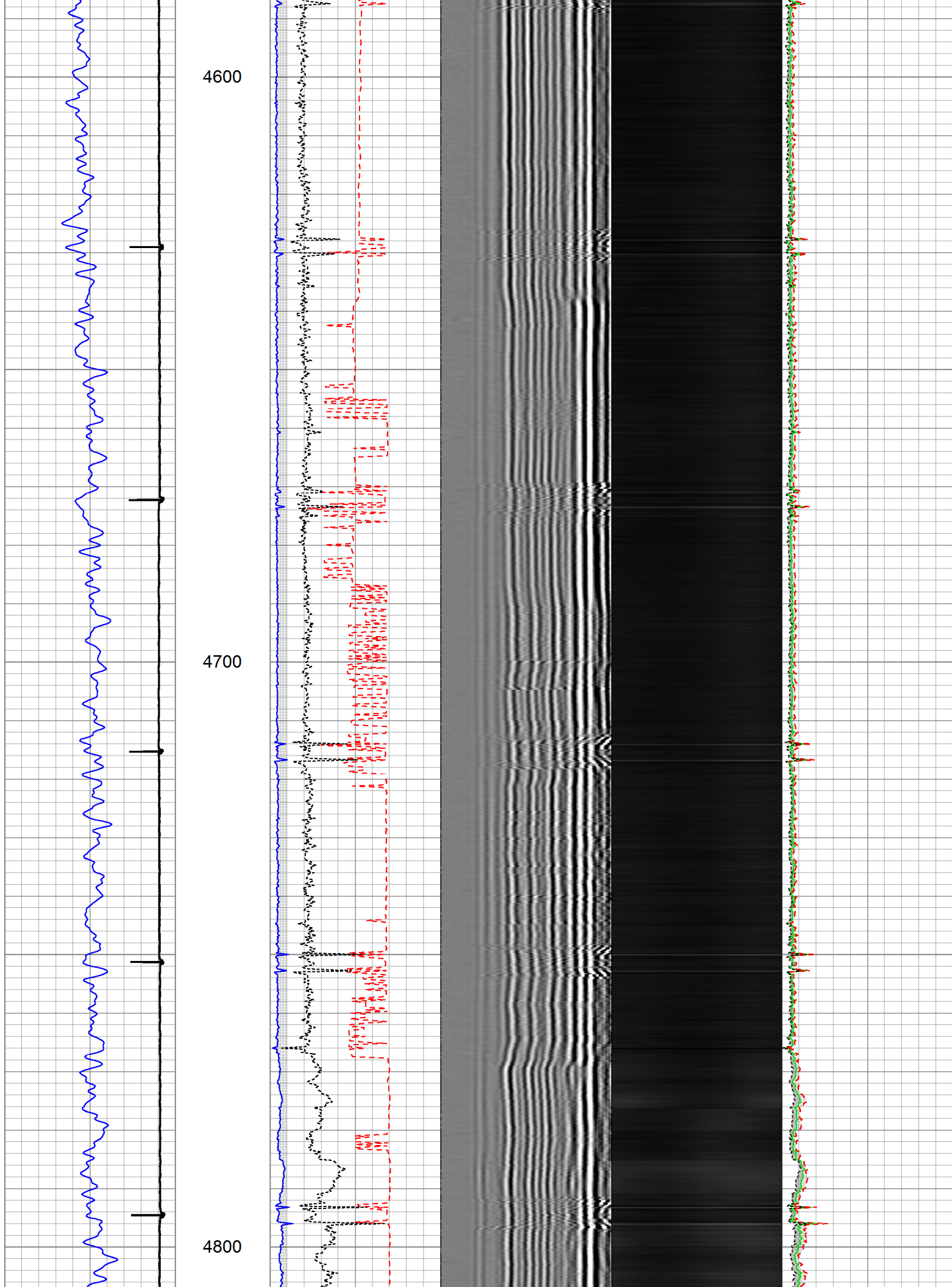


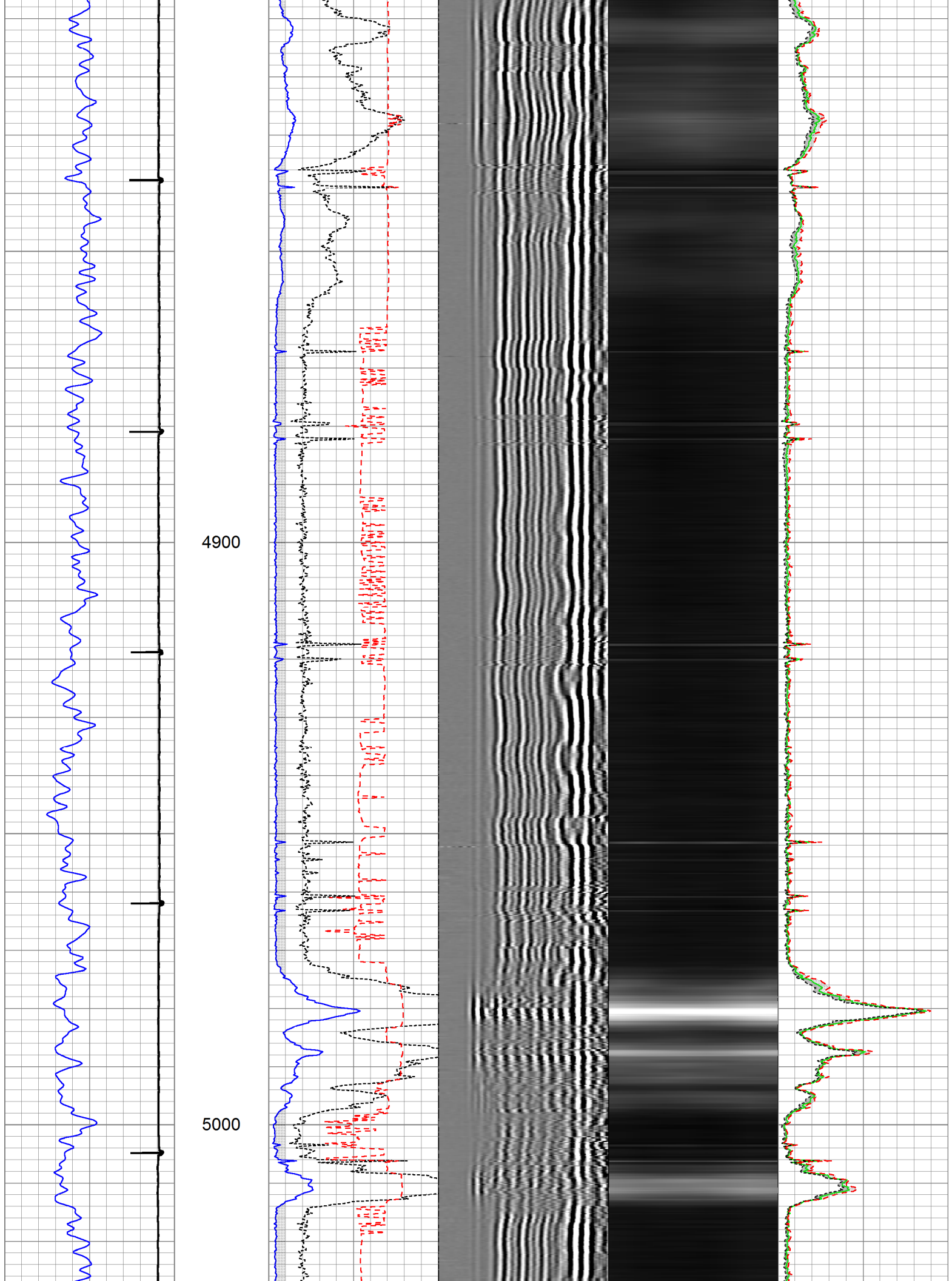


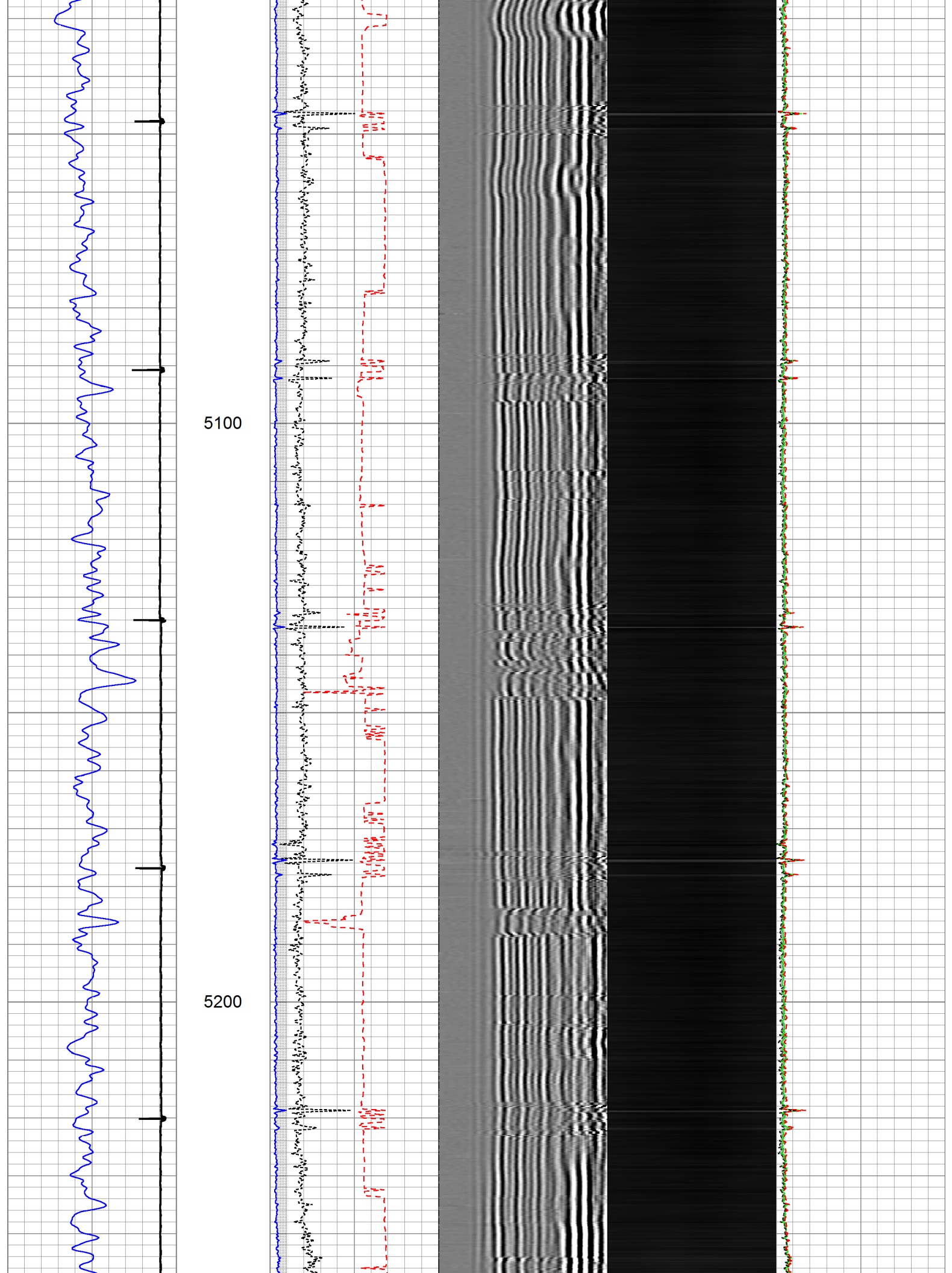
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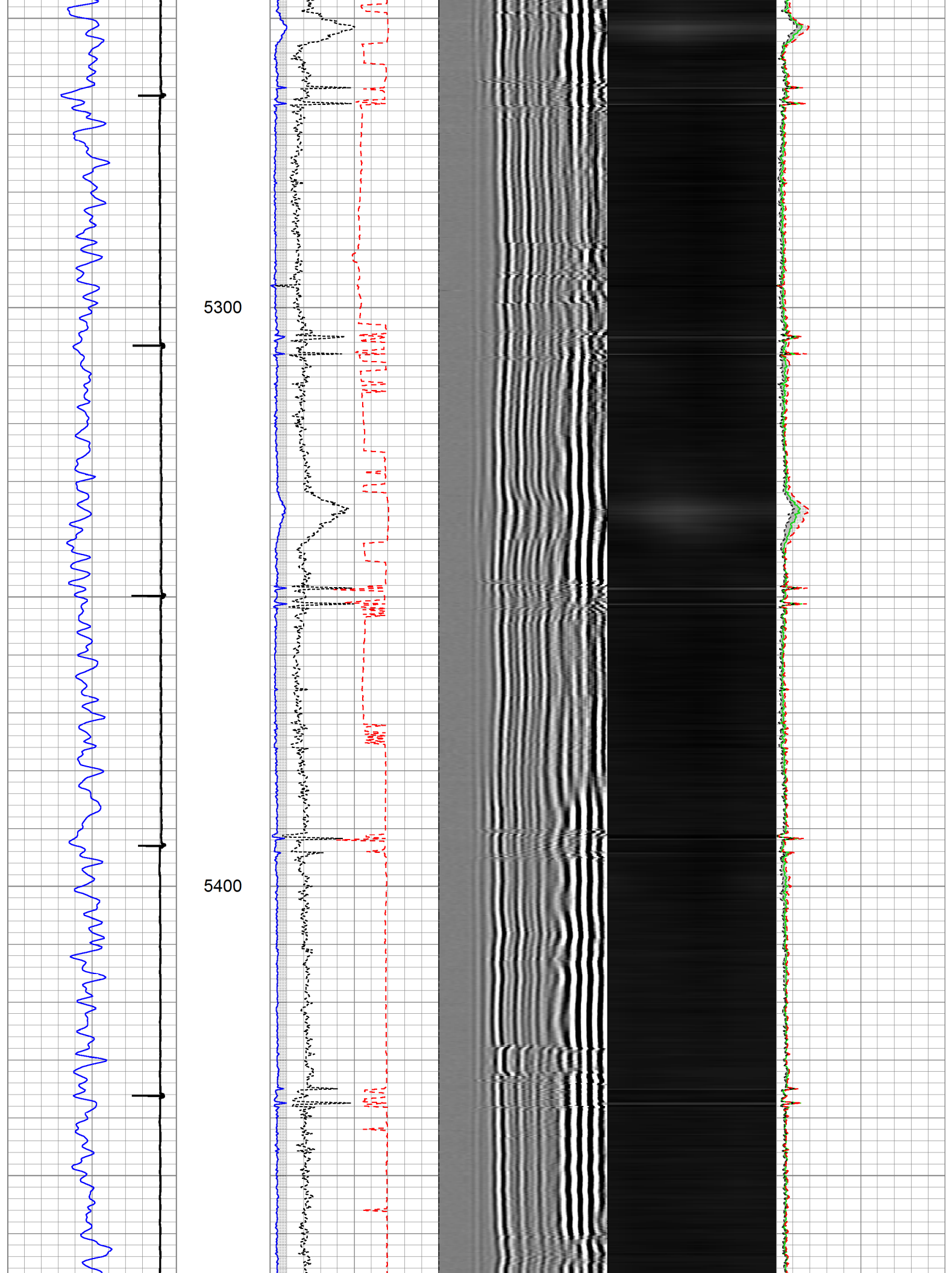
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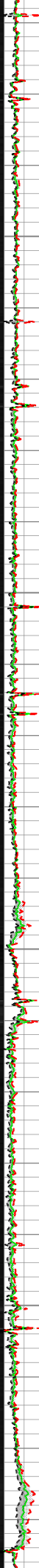
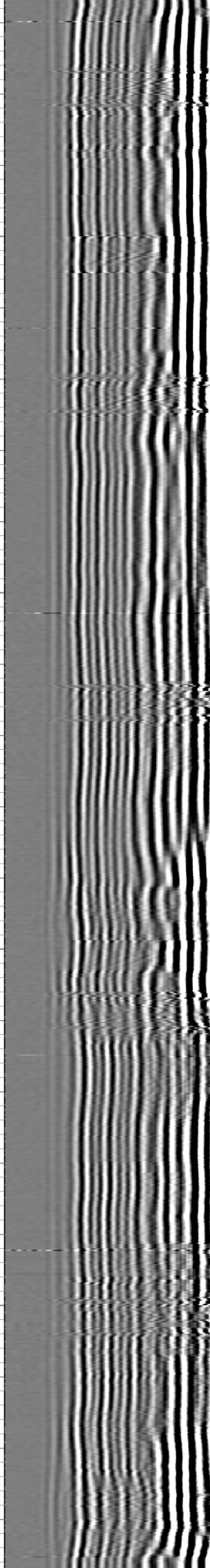
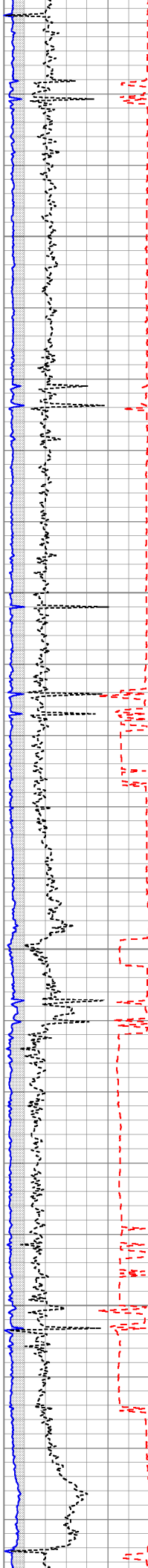
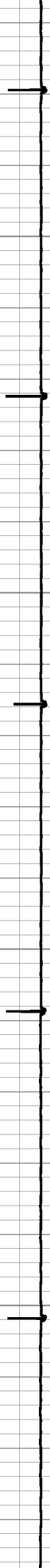


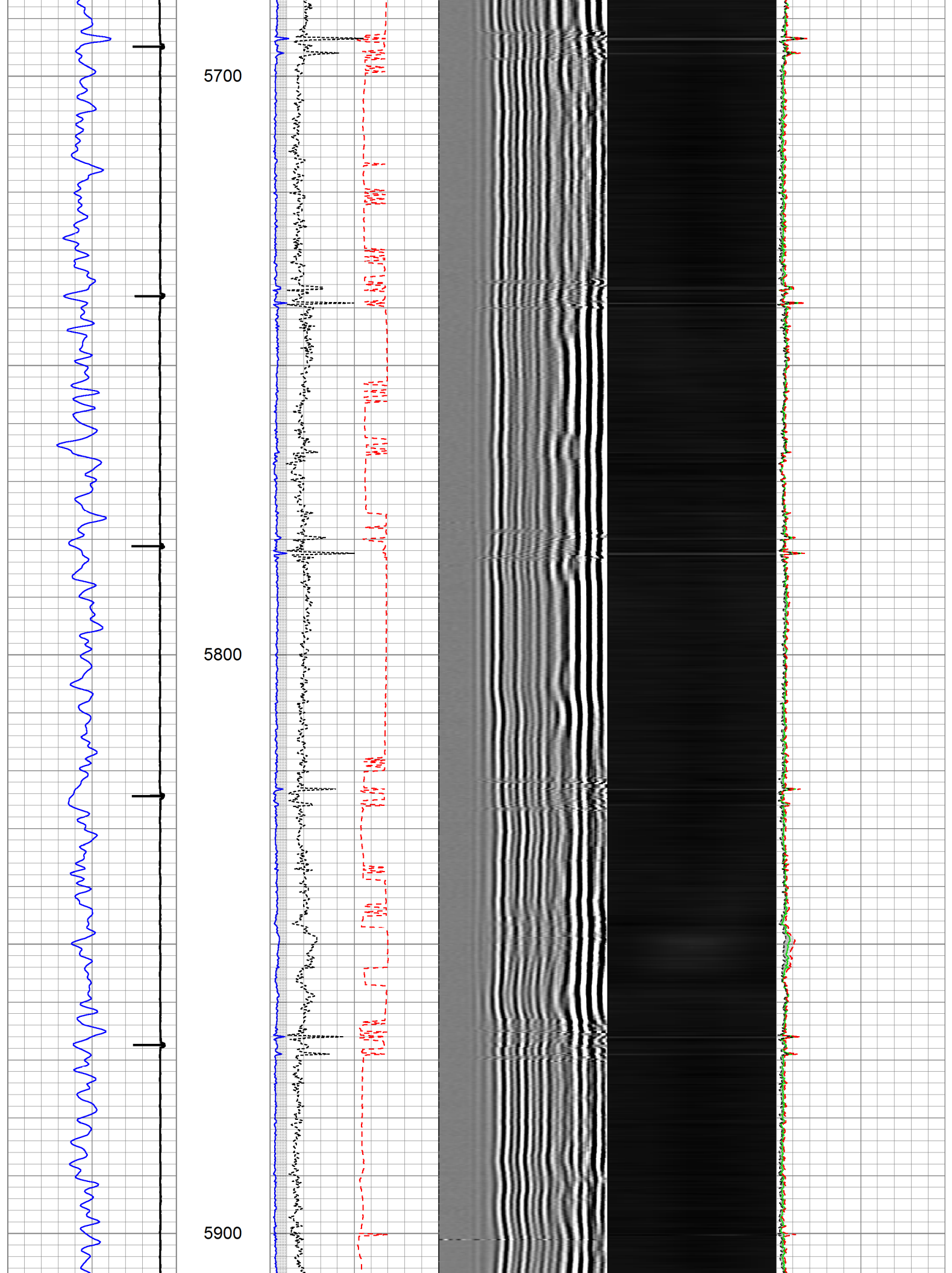


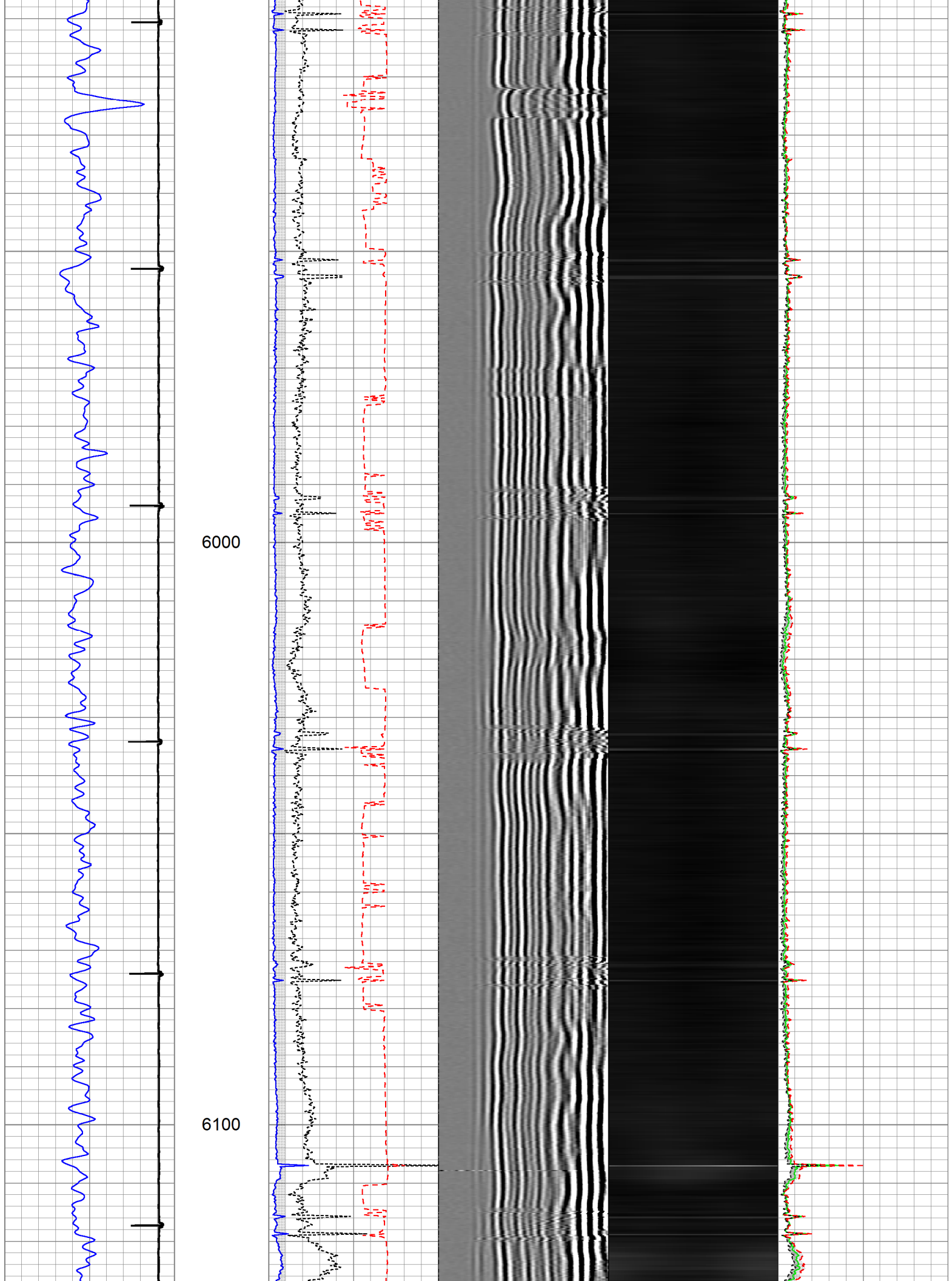


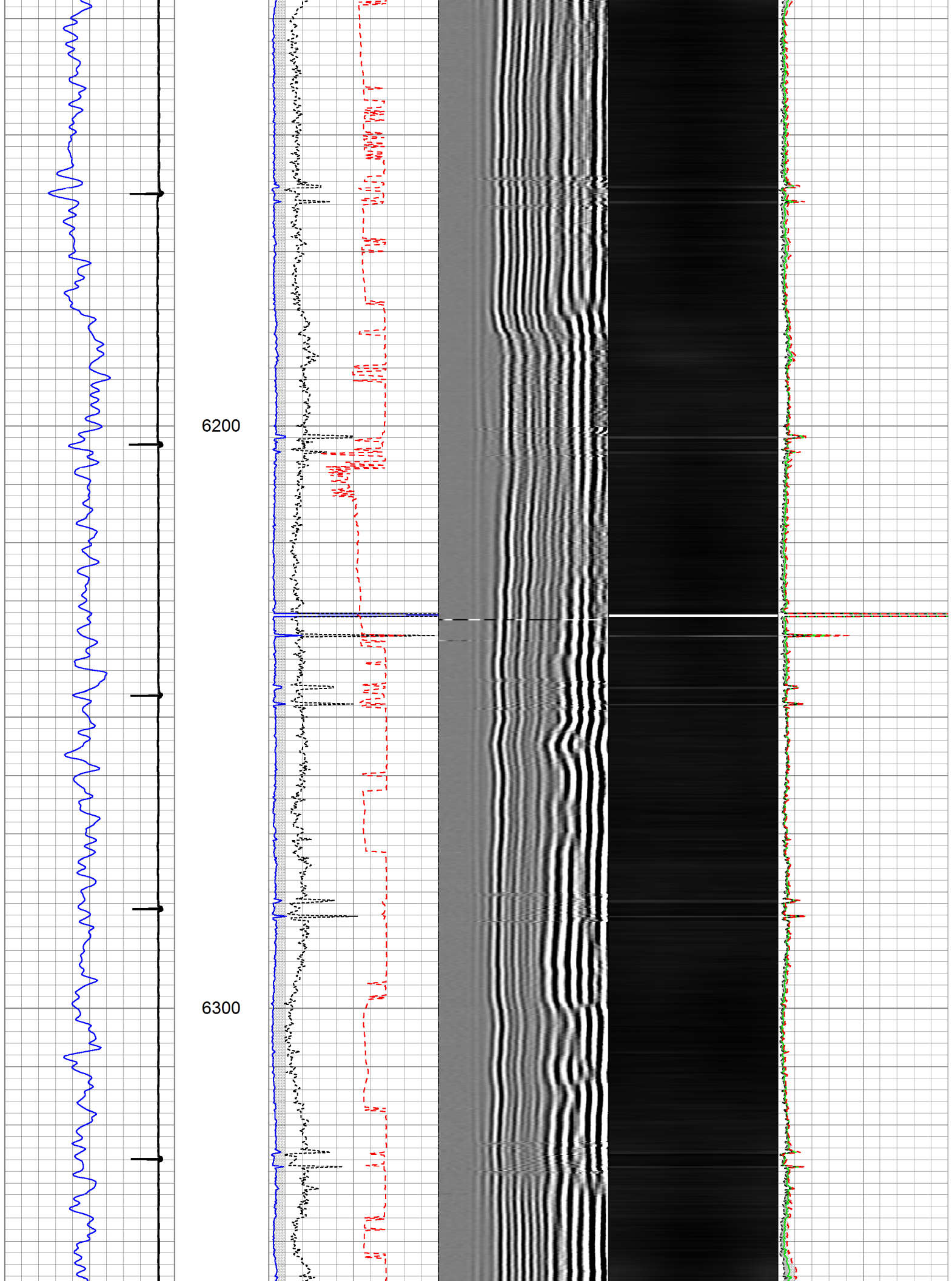
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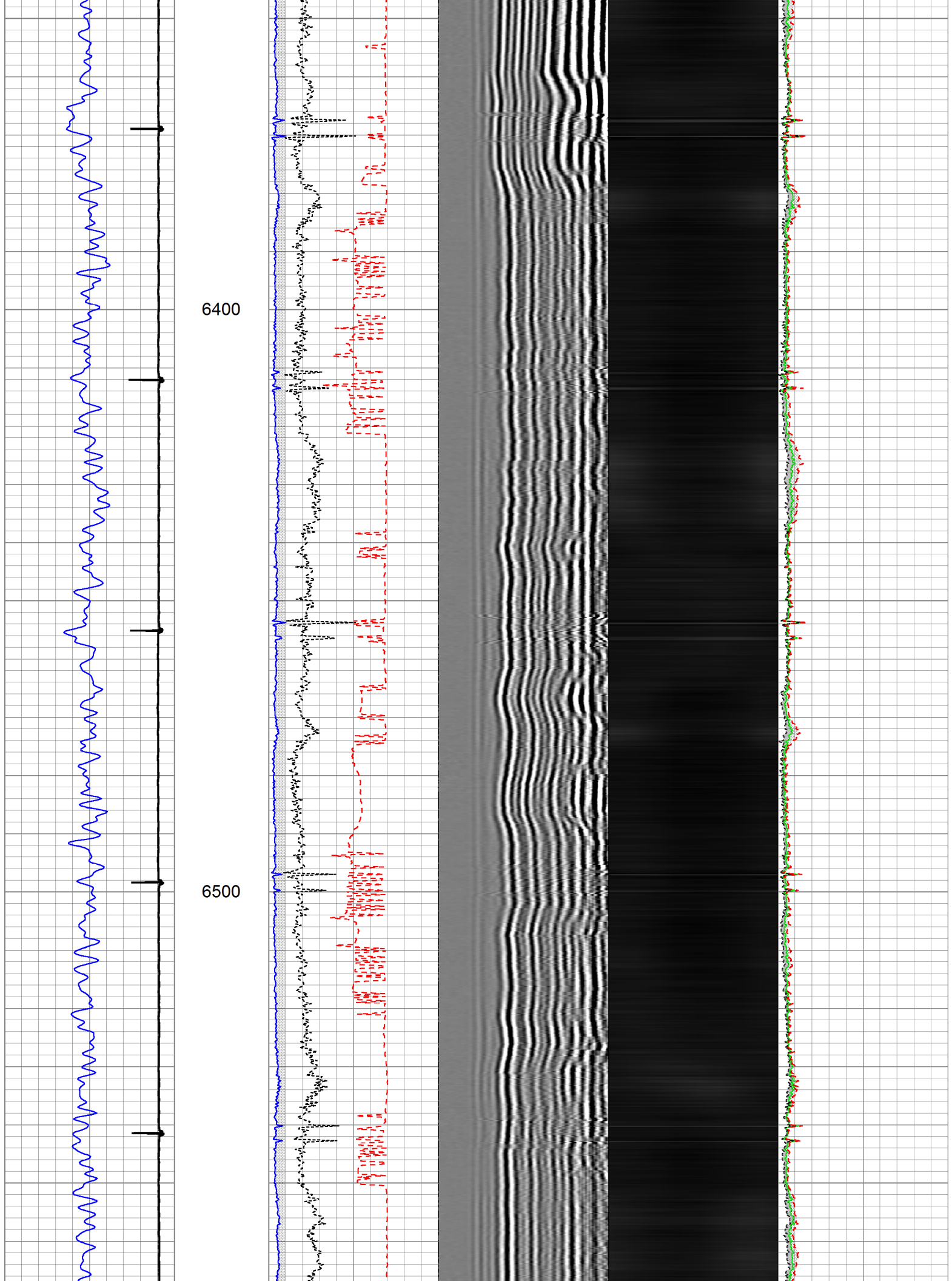
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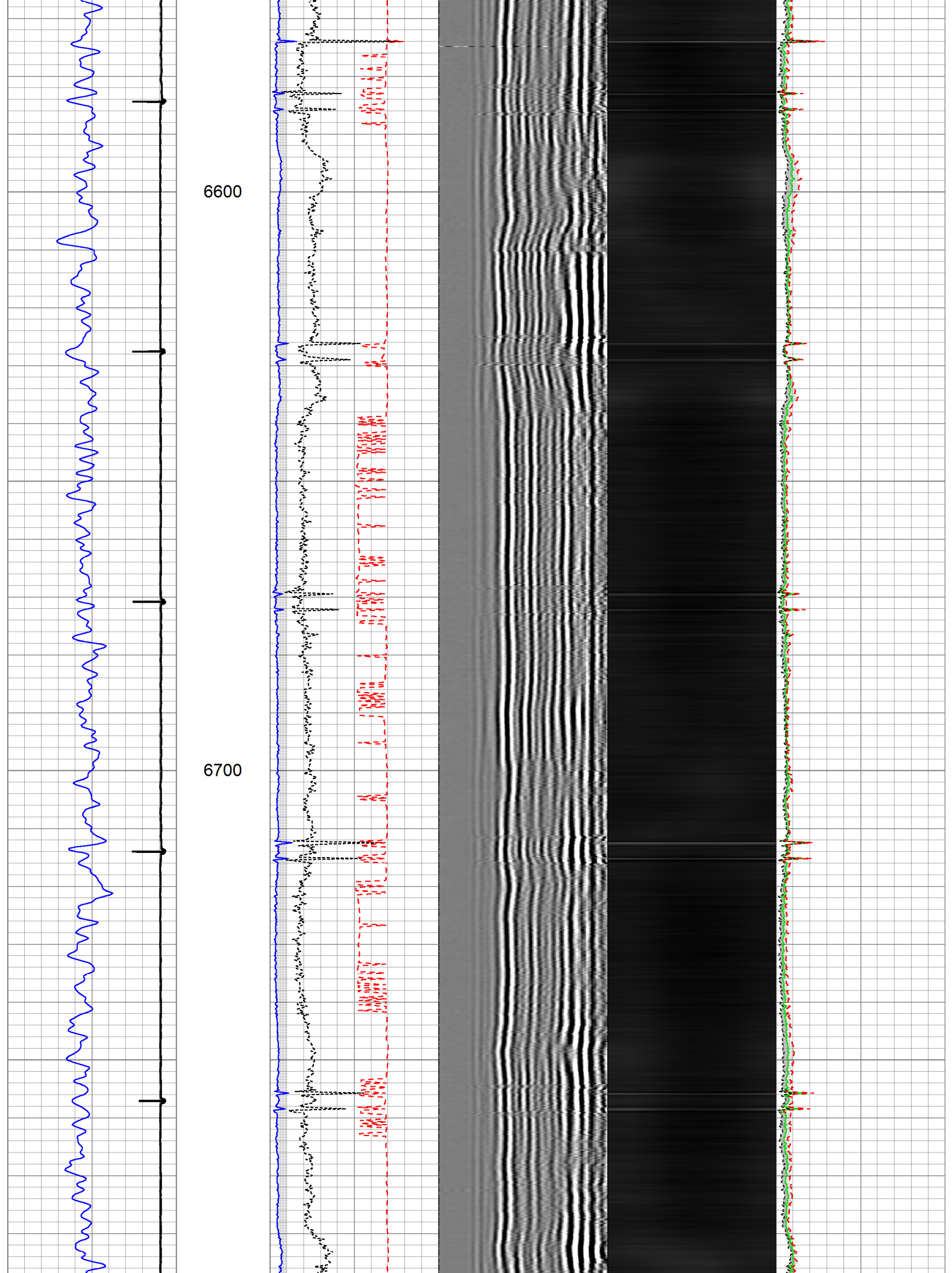








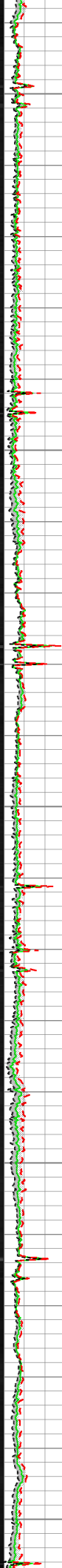
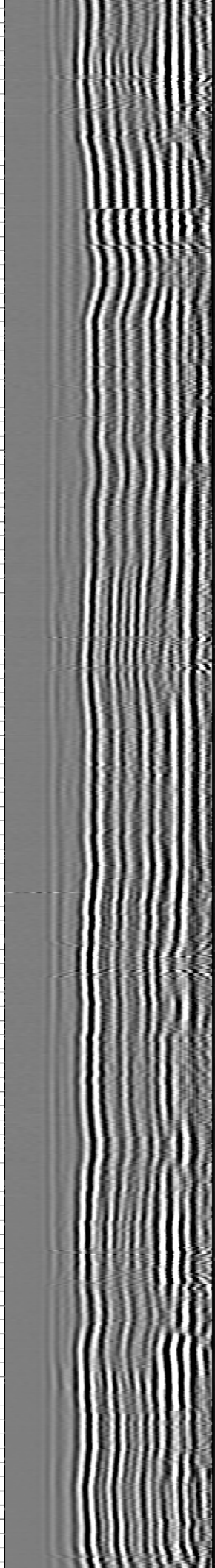
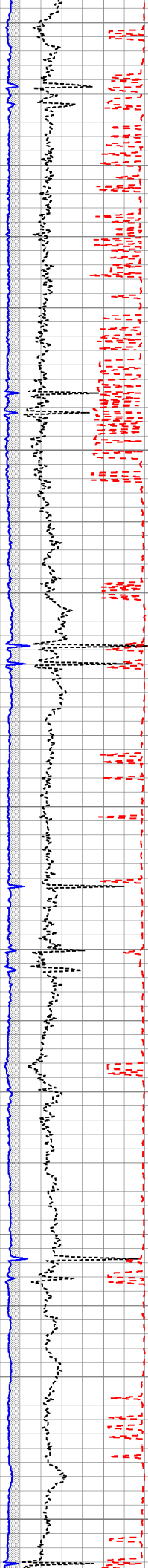
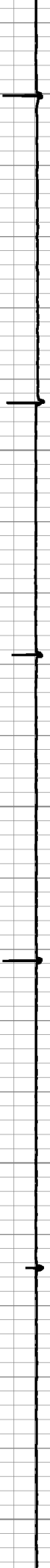


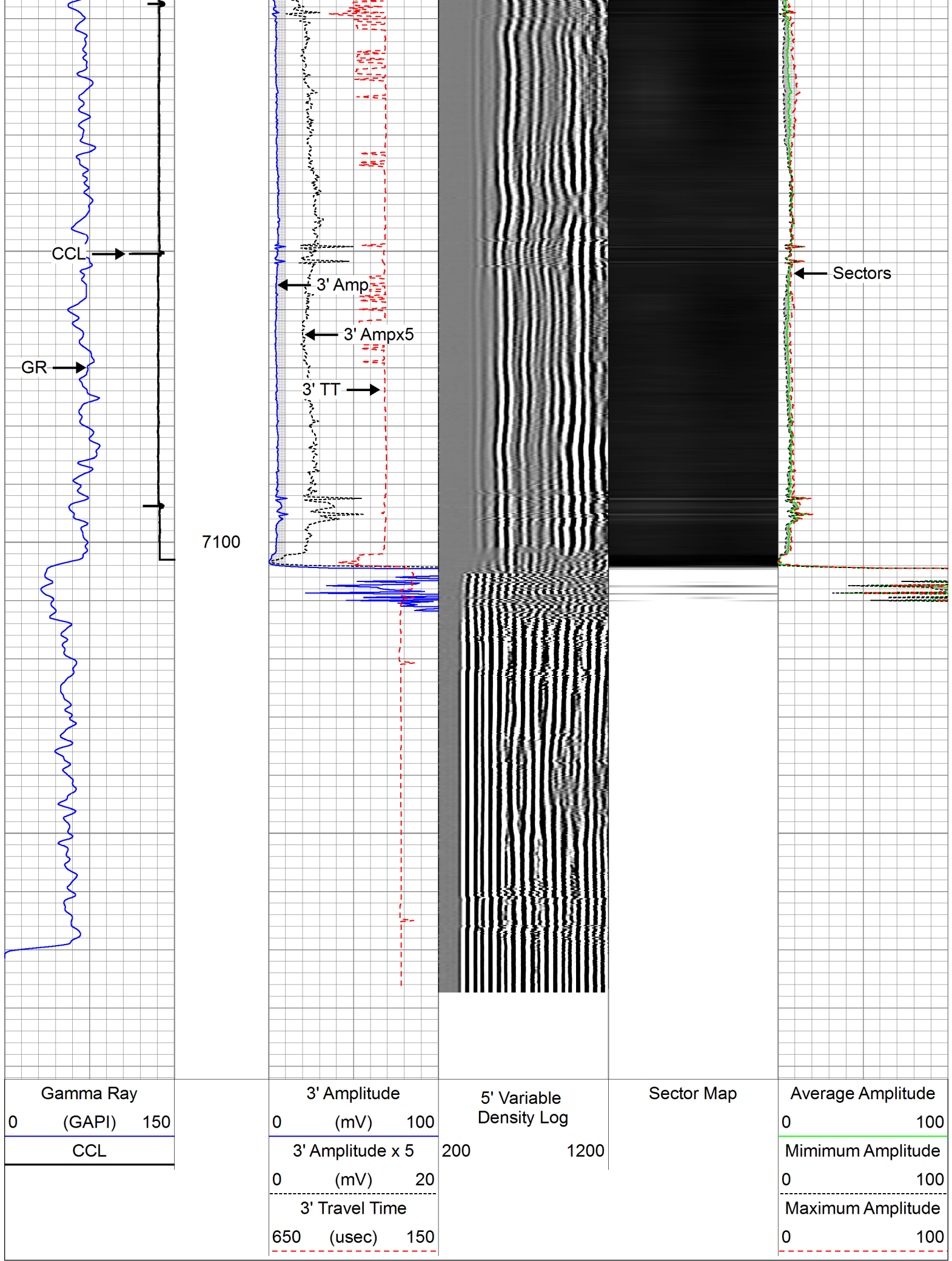


6800

6900

7000





Gamma Ray		
0	(GAPI)	150
CCL		

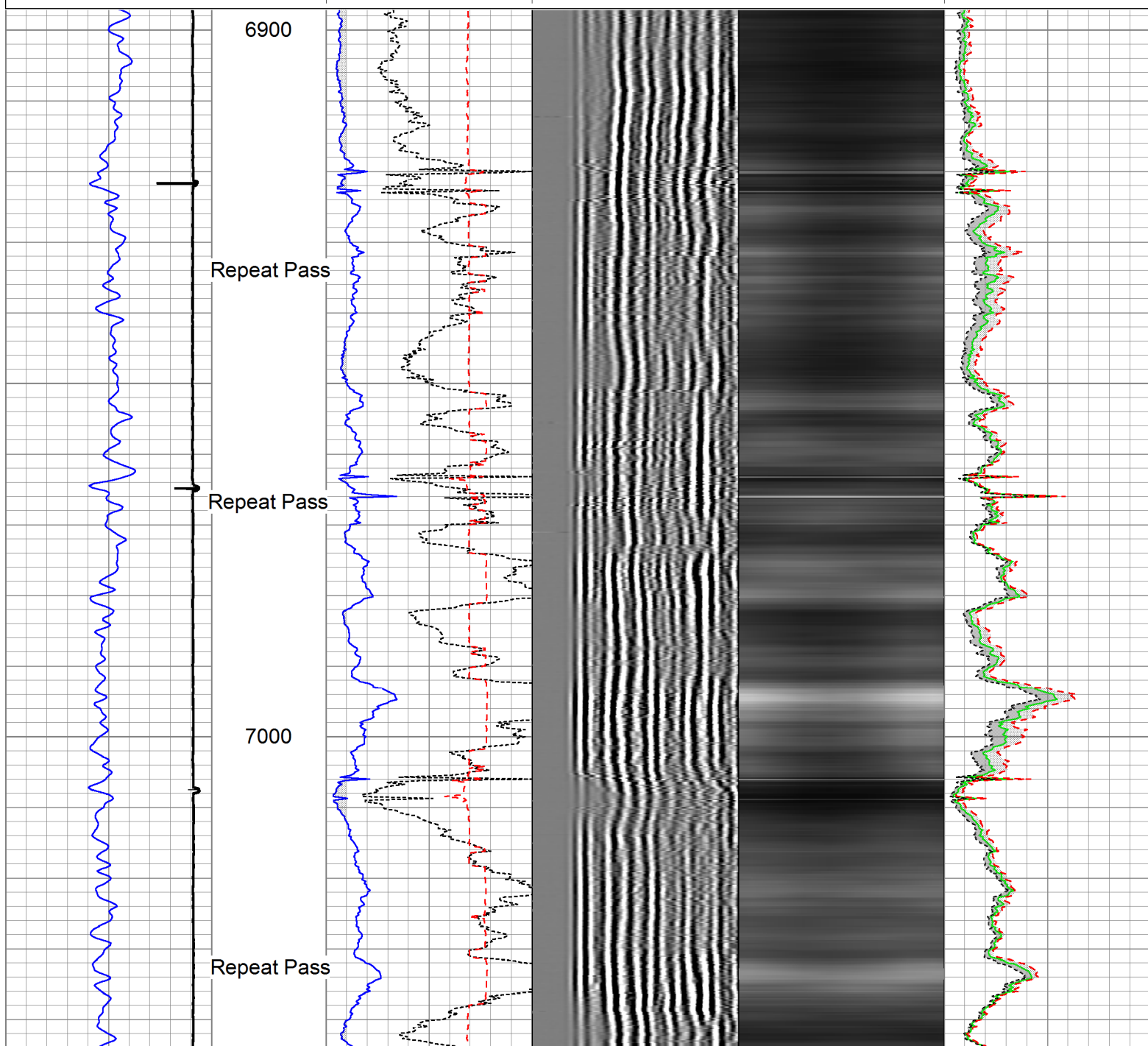
3' Amplitude		
0	(mV)	100
3' Amplitude x 5		
0	(mV)	20
3' Travel Time		
650	(usec)	150

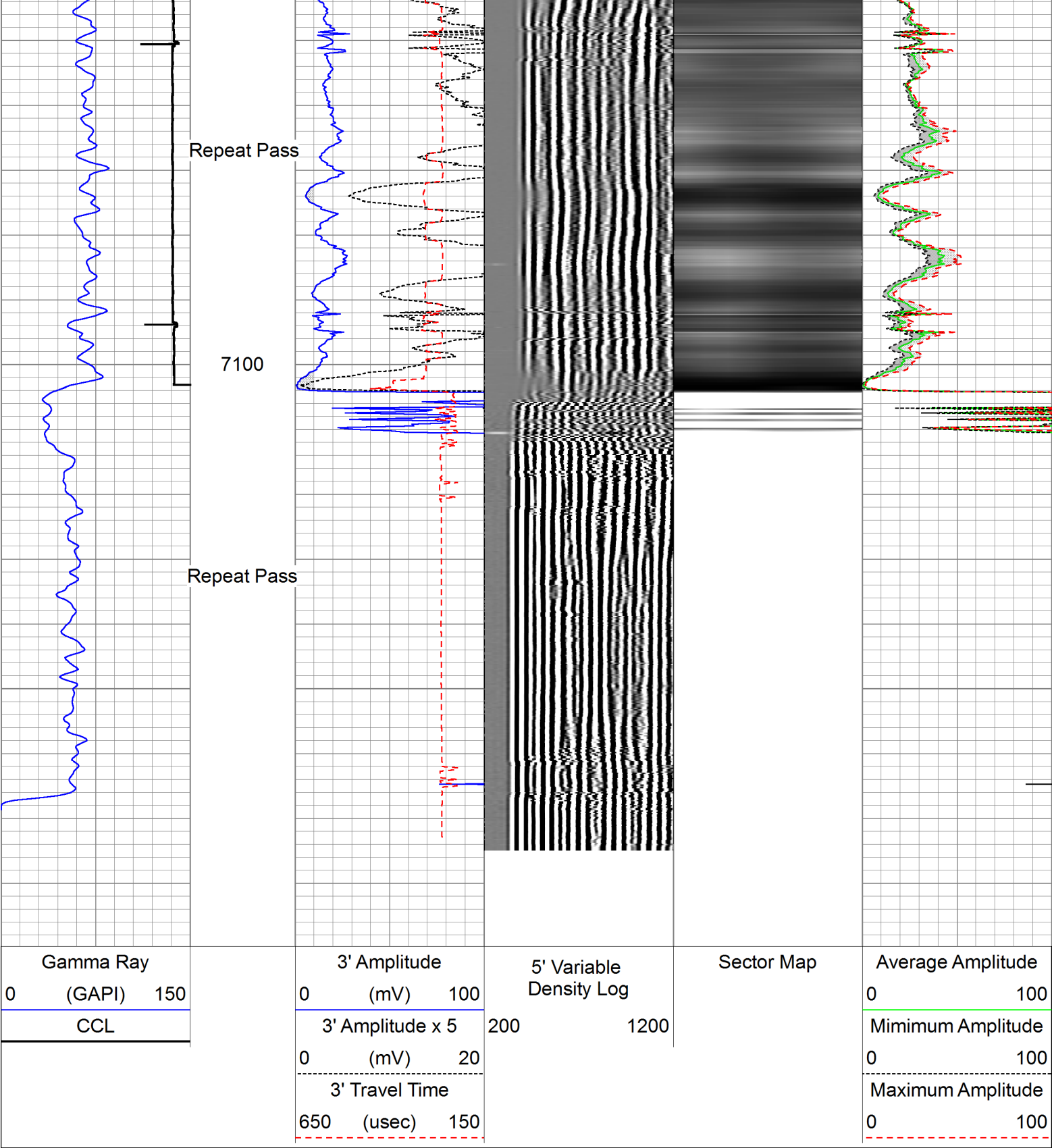
5' Variable		
Density Log		
200		1200

Sector Map		
Average Amplitude		
0		100
Minimum Amplitude		
0		100
Maximum Amplitude		
0		100

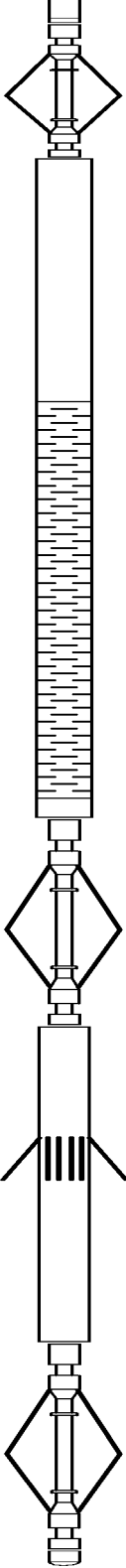
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 Dataset Pathname: repeatrdv
 Presentation Format: rbl_w_te
 Dataset Creation: Tue Mar 04 05:44:48 2014 by Calc SCH 120126
 Charted by: Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable	Sector Map	Average Amplitude
0 (GAPI) 150	0 (mV) 100	Density Log		0 100
CCL	3' Amplitude x 5	200 1200		Minimum Amplitude
	0 (mV) 20			0 100
	3' Travel Time			Maximum Amplitude
	650 (usec) 150			0 100





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	22.61		AES 1-7/16" Cablehead	1.08	1.44	1.00
			AGS-001 (219135) Adaptor GO to Sondex	0.21	1.69	1.00
			XTU-002 (219135) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			PGR-020 (10013899) Production Gamma Ray	1.93	1.69	9.50

				PRC-001 (050951) 1-11/16" 3-Arm Production Roller Centraliser	1.92	1.69	7.00
WVF3FT	15.85						
WVFS1	15.85						
WVFS2	15.85						
WVFS3	15.85						
WVFS4	15.85						
WVFS5	15.85						
WVFS6	15.85						
WVFS7	15.85						
WVFS8	15.85						
CBLTEMP	15.85						
CBLROT	15.85						
WVF5FT	14.85						
				RBT-004 (10012639in7) Radial Bond Tool (UW 3 1/8)	9.47	3.13	140.00
				PRC-057 (1102) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
MIT	5.41			MIT-027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
				PRC-057 (1038) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00						
ITEMPX	0.00			BUL-006 (219229) Bullnose Terminator	0.22	1.69	1.20
HVOLTX	0.00						
Dataset: 0512338032_anadarko_howard 37n-33hz_03-02-14_mit_rbl.db: field/well/run1/mainrdv Total Length: 26.91 ft Total Weight: 291.30 lb O.D. 3.13 in							

Calibration Report	
Database File:	c:\warrior\data\anadarko_howard 37n-33\0512338032_anadarko_howard 37n-33hz_03-02-14_mit_rbl.db
Dataset Pathname:	mainrdv
Dataset Creation:	Tue Mar 04 05:38:47 2014 by Calc SCH 120126

Multi-finger Imaging Tool Calibration Report	
Serial Number:	218950
Number of Fingers:	40
Finger Width:	0.075 in

Inclinometer Calibration Report

Performed: Fri, Oct, 10 10:41:51 2008
Calibration Angle: 45

Vertical:		Inc X	Inc Y
Finger 1 up:		1996	1975
Finger 31 up:		2238	2226
Finger 21 up:		1760	2216
Finger 11 up:		1769	1745
		2250	1738
Sensitivity ratio:	1.00023		
X-axis angle:	314.283		
Deviation const.:	339.139		

Finger Calibration Report

Performed: Sun Mar 02 07:39:55 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1361	274.0	1635	305.0	1940	313.0	2253
Finger 02:	1536	258.0	1794	283.0	2077	288.0	2365
Finger 03:	1466	281.0	1747	319.0	2066	318.0	2384
Finger 04:	1481	269.0	1750	301.0	2051	299.0	2350
Finger 05:	1531	262.0	1793	285.0	2078	282.0	2360
Finger 06:	1528	267.0	1795	296.0	2091	293.0	2384
Finger 07:	1511	276.0	1787	305.0	2092	292.0	2384
Finger 08:	1594	237.0	1831	277.0	2108	267.0	2375
Finger 09:	1515	286.0	1801	316.0	2117	304.0	2421
Finger 10:	1589	284.0	1873	280.0	2153	276.0	2429
Finger 11:	1543	277.0	1820	297.0	2117	286.0	2403
Finger 12:	1518	291.0	1809	310.0	2119	305.0	2424
Finger 13:	1517	287.0	1804	291.0	2095	282.0	2377
Finger 14:	1508	304.0	1812	296.0	2108	291.0	2399
Finger 15:	1522	294.0	1816	297.0	2113	290.0	2403
Finger 16:	1517	286.0	1803	296.0	2099	291.0	2390
Finger 17:	1483	288.0	1771	318.0	2089	291.0	2380
Finger 18:X	1540	273.0	1813	278.0	2091	268.0	2359
Finger 19:	1579	272.0	1851	256.0	2107	256.0	2363
Finger 20:	1498	298.0	1796	284.0	2080	293.0	2373
Finger 21:	1474	305.0	1779	289.0	2068	301.0	2369
Finger 22:	1495	300.0	1795	276.0	2071	295.0	2366
Finger 23:X	1546	280.0	1826	256.0	2082	270.0	2352
Finger 24:	1548	278.0	1826	260.0	2086	283.0	2369
Finger 25:	1509	294.0	1803	266.0	2069	292.0	2361
Finger 26:	1447	295.0	1742	279.0	2021	307.0	2328
Finger 27:	1505	278.0	1783	268.0	2051	298.0	2349
Finger 28:	1459	293.0	1752	276.0	2028	310.0	2338
Finger 29:	1461	282.0	1743	276.0	2019	309.0	2328
Finger 30:	1457	284.0	1741	281.0	2022	314.0	2336
Finger 31:	1584	249.0	1833	239.0	2072	265.0	2337
Finger 32:	1494	279.0	1773	277.0	2050	307.0	2357
Finger 33:	1484	281.0	1765	281.0	2046	299.0	2345
Finger 34:	1448	285.0	1733	291.0	2024	319.0	2343
Finger 35:	1466	280.0	1746	290.0	2036	311.0	2347
Finger 36:	1647	263.0	1910	272.0	2182	282.0	2464
Finger 37:	1286	267.0	1553	297.0	1850	315.0	2165
Finger 38:	1483	273.0	1756	296.0	2052	311.0	2363
Finger 39:	1437	283.0	1720	300.0	2020	311.0	2331
Finger 40:	1562	278.0	1840	299.0	2139	302.0	2441

Segmented Cement Bond Log Calibration Report

Serial Number: 10012639in7
Tool Model: 004

Calibration Casing Diameter:	7.000	in
Calibration Depth:	236.138	ft

Master Calibration, performed Sat Mar 01 11:32:37 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.009	0.526	0.800	62.165	118.666	-0.218
5FT	0.010	0.604	0.800	62.165	103.346	-0.277
S1	0.008	0.535	0.000	100.000	189.722	-1.496
S2	0.004	0.497	0.000	100.000	202.657	-0.762
S3	0.007	0.483	0.000	100.000	209.751	-1.393
S4	0.007	0.489	0.000	100.000	207.466	-1.532
S5	0.009	0.512	0.000	100.000	198.484	-1.711
S6	0.009	0.545	0.000	100.000	186.364	-1.606
S7	0.009	0.570	0.000	100.000	178.409	-1.692
S8	0.010	0.568	0.000	100.000	179.182	-1.719

Gamma Ray Calibration Report

Serial Number:	10013899	
Tool Model:	020	
Performed:	Sun Jun 13 13:33:21 1993	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	1.0000	GAPI/cps



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Howard 37N-33HZ
Field	Wattenberg
County	Weld
State	Colorado