



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				Howard 15C-33HZ			
Field				Wattenberg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-38033			
Permanent Datum				SHL: 1652' FSL & 1443' FEL			
Log Measured From				Lat/Long: 40.019357/-104.891217			
Drilling Measured From				SEC 28 TWP 1N RGE 67W			
Ground Level				Elevation 5021'			
Kelly Bushing (16 FT)				Elevation			
Kelly Bushing				K.B. 5037'			
				D.F. 5036'			
				G.L. 5021'			
Date				02-MAR-2014			
Run Number				One			
Depth Driller				12,692 FT			
Depth Logger				7,476 FT			
Bottom Logged Interval				7,473 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				249 F			
Estimated Cement Top				453 FT			
Time Well Ready				ROA			
Time Logger on Bottom				09:00			
Equipment Number				HD-311			
Location				Fort Lupton, CO			
Recorded By				Greg Jackson			
Witnessed By				Trevor Daniel			
Borehole Record				Tubing Record			
Run Number				Bit			
From				To			
				Size			
				Weight			
				From			
				To			
Casing Record				Size (in)			
Surface Casing				Wgt (lbs/Ft)			
Intermediate #1				Grade			
Intermediate #2				Top			
Liner				Bottom			
4-1/2"				11.6#			
				P-110			
				7,400 FT			
				12,677 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

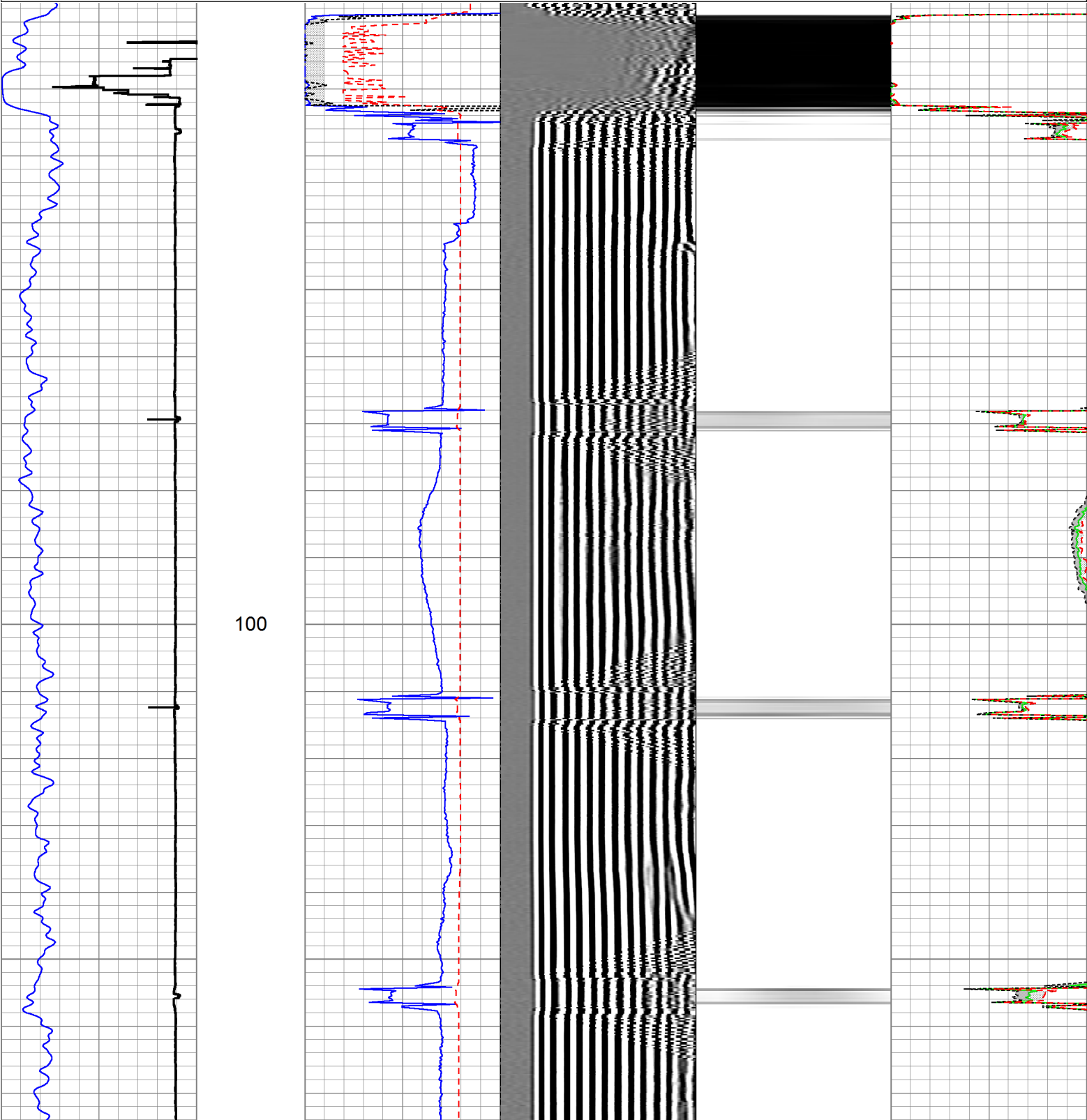
Radial Cement Bond Log - Casing Inspection Log is first recorded log in hole.  
Log correlated to reported casing tally at top of liner @ 7,400'  
RCBL-CIL ran at 2800 PSI surface induced pressure.  
Estimated Cement Top recorded at 453'

Thank you for choosing FMC Technologies Completion Services, Inc.



Main Pass

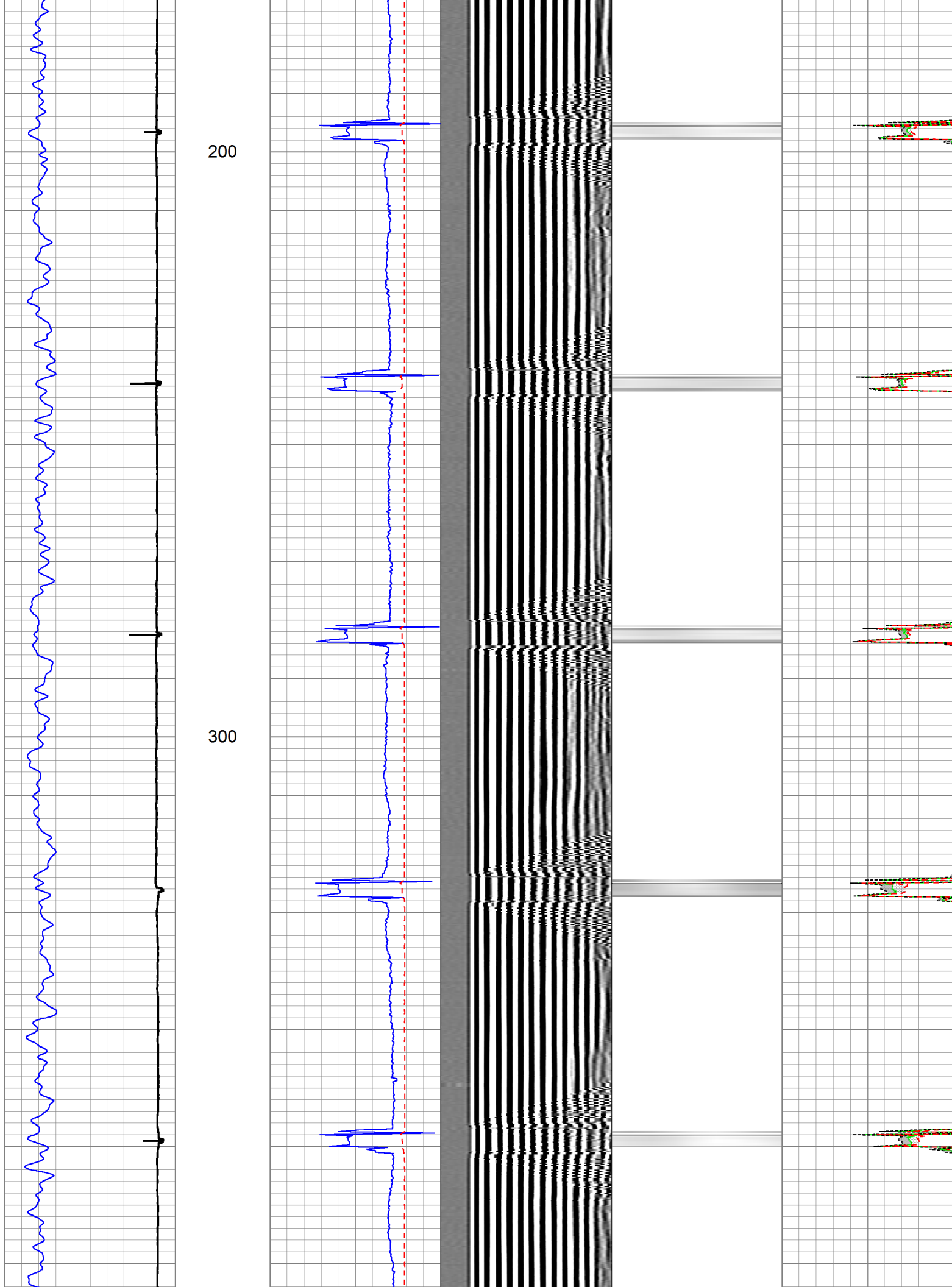
Gamma Ray		3' Amplitude		5' Variable Density Log	Sector Map	Average Amplitude	
0	(GAPI) 150	0	(mV) 100			0	100
CCL		3' Amplitude x 5		200	1200	Minimum Amplitude	
		0	(mV) 20			0	100
		3' Travel Time				Maximum Amplitude	
		650	(usec) 150			0	100





200

300

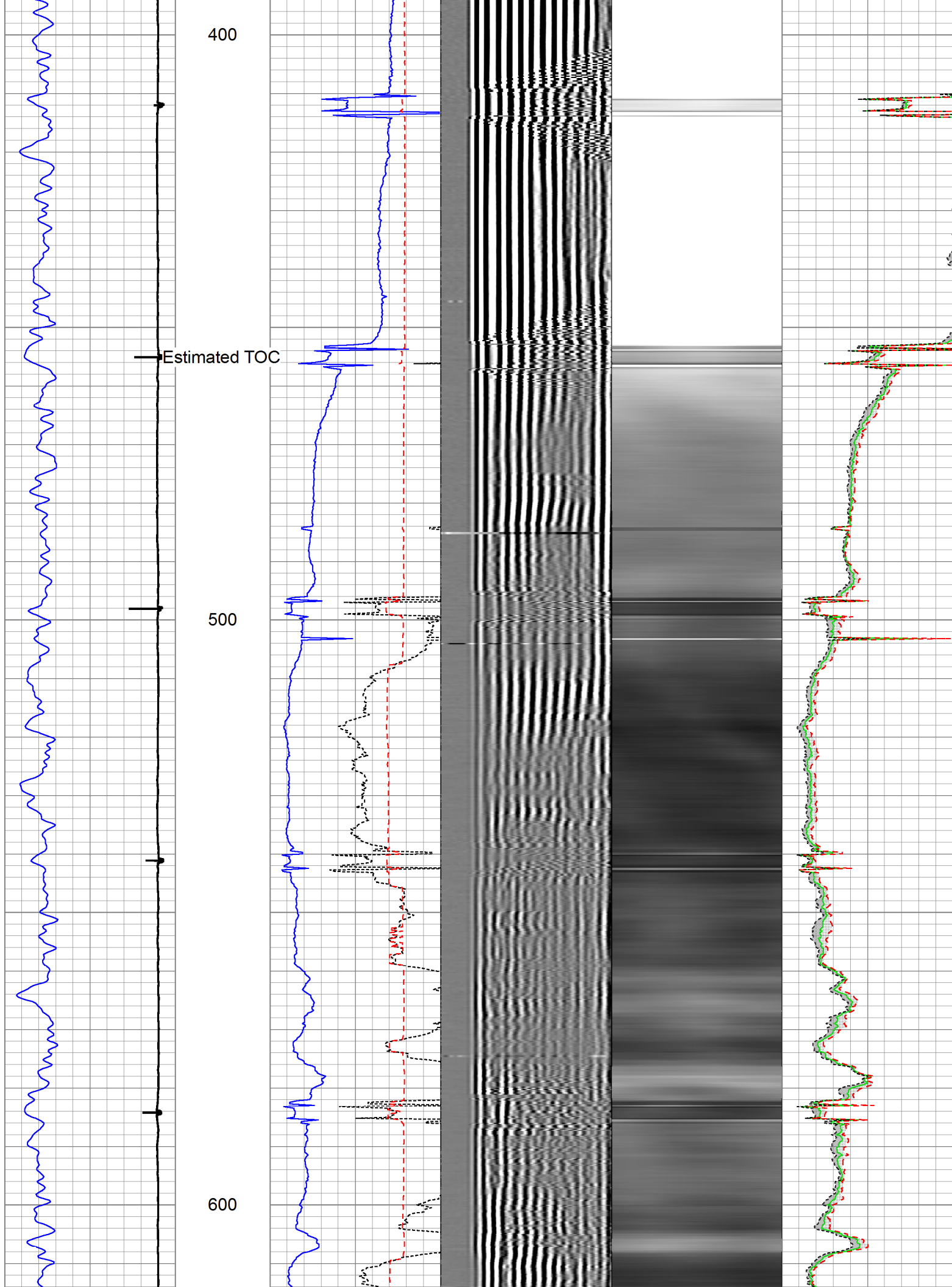


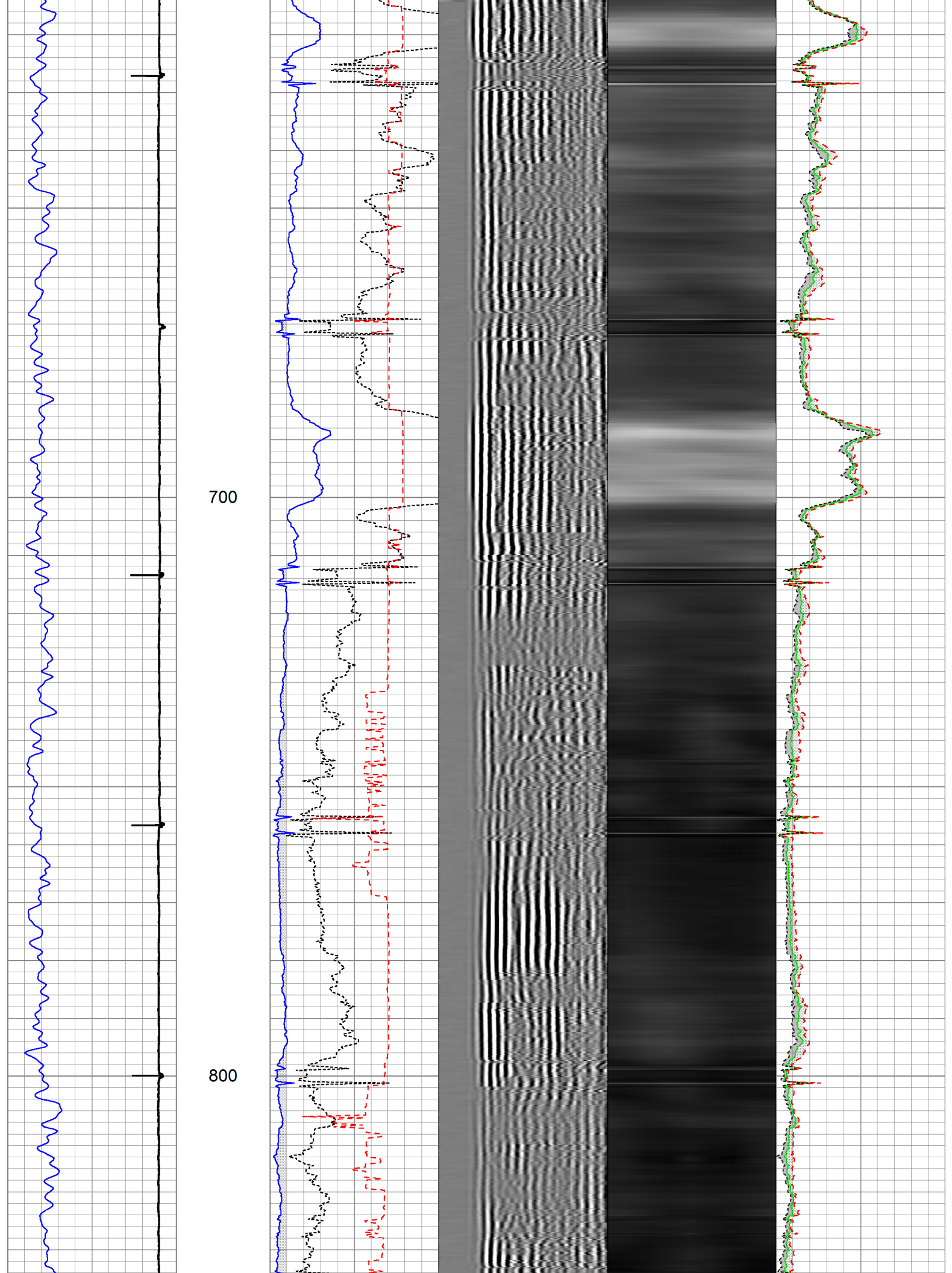
400

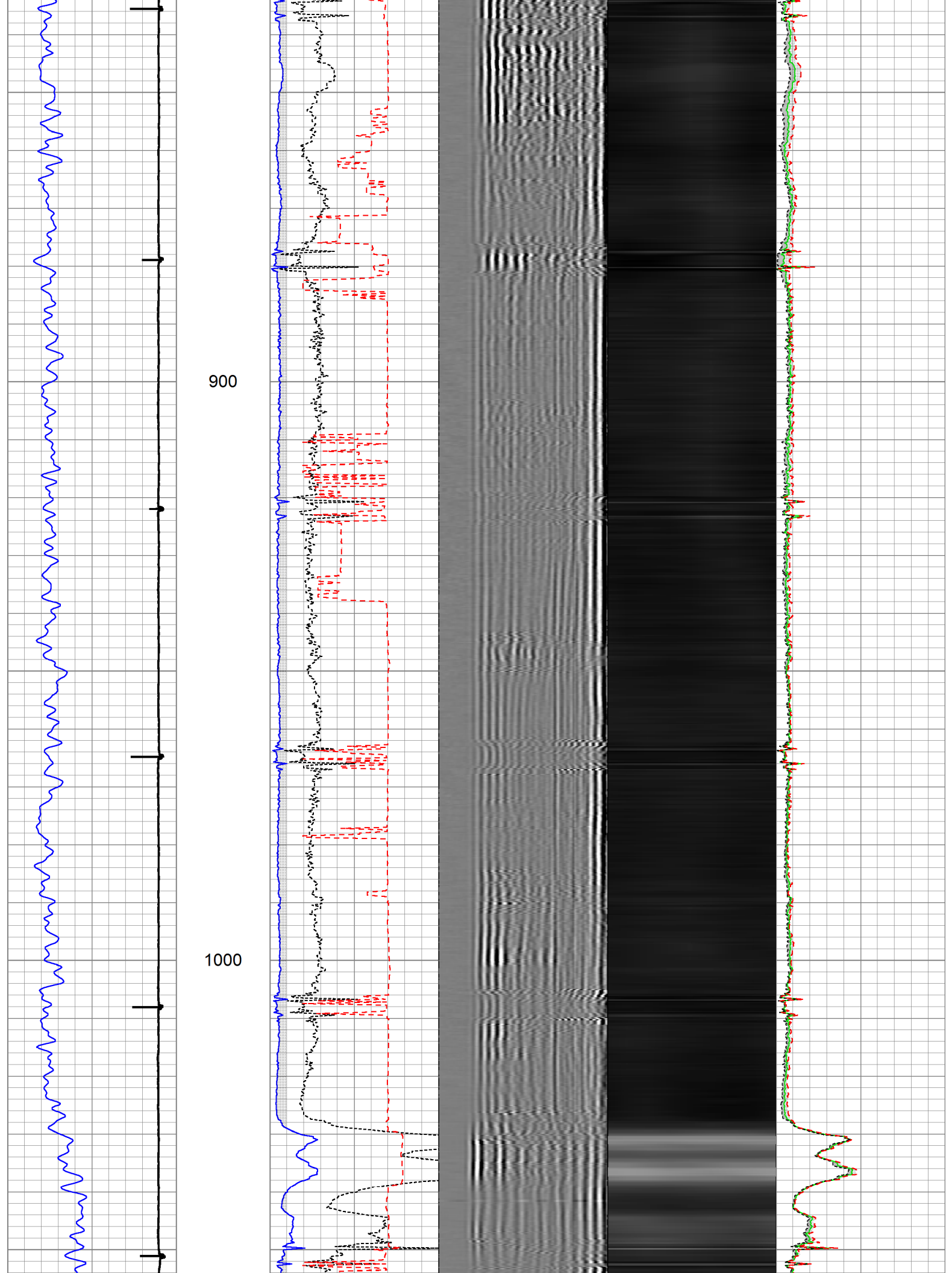
Estimated TOC

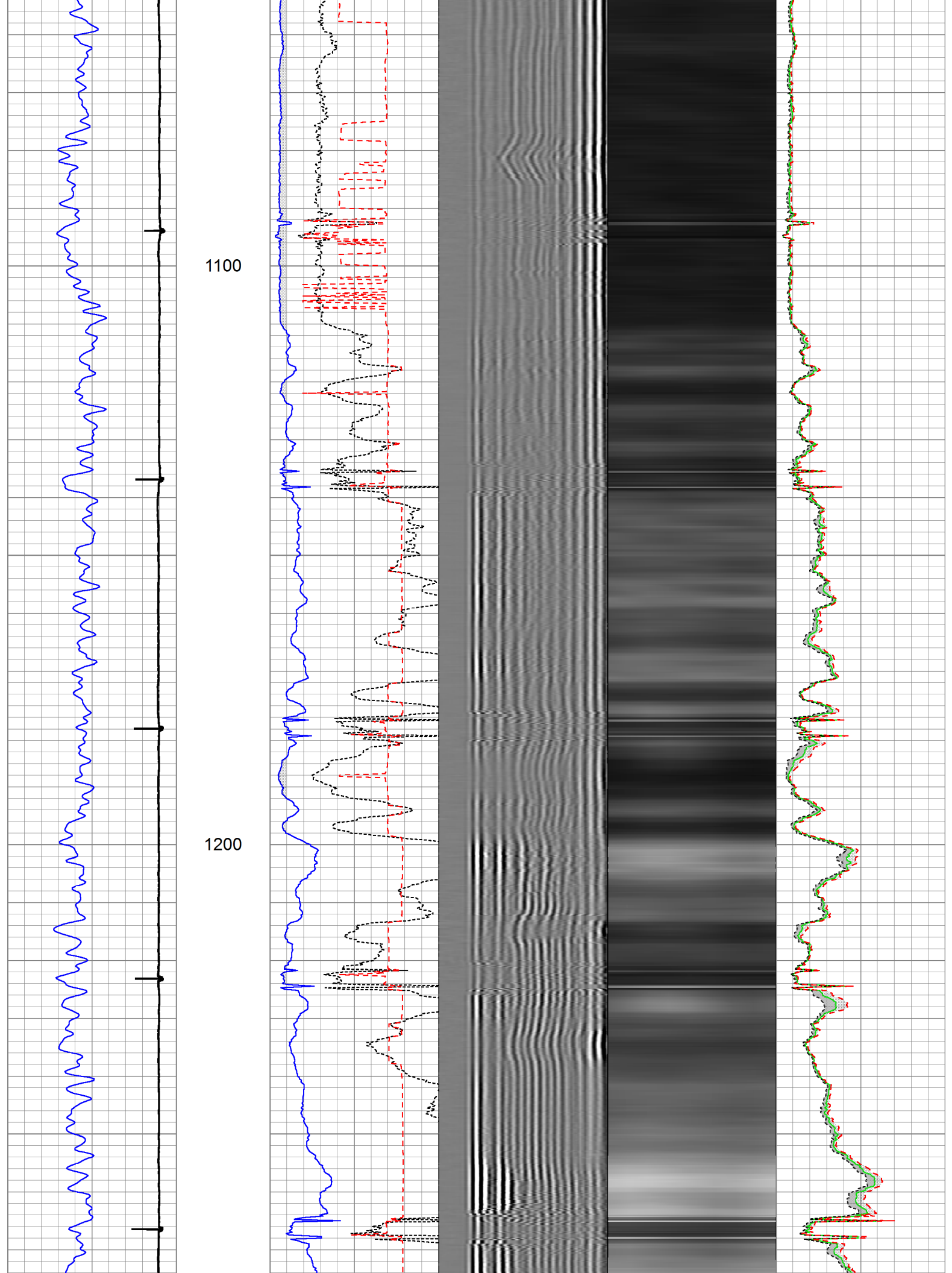
500

600





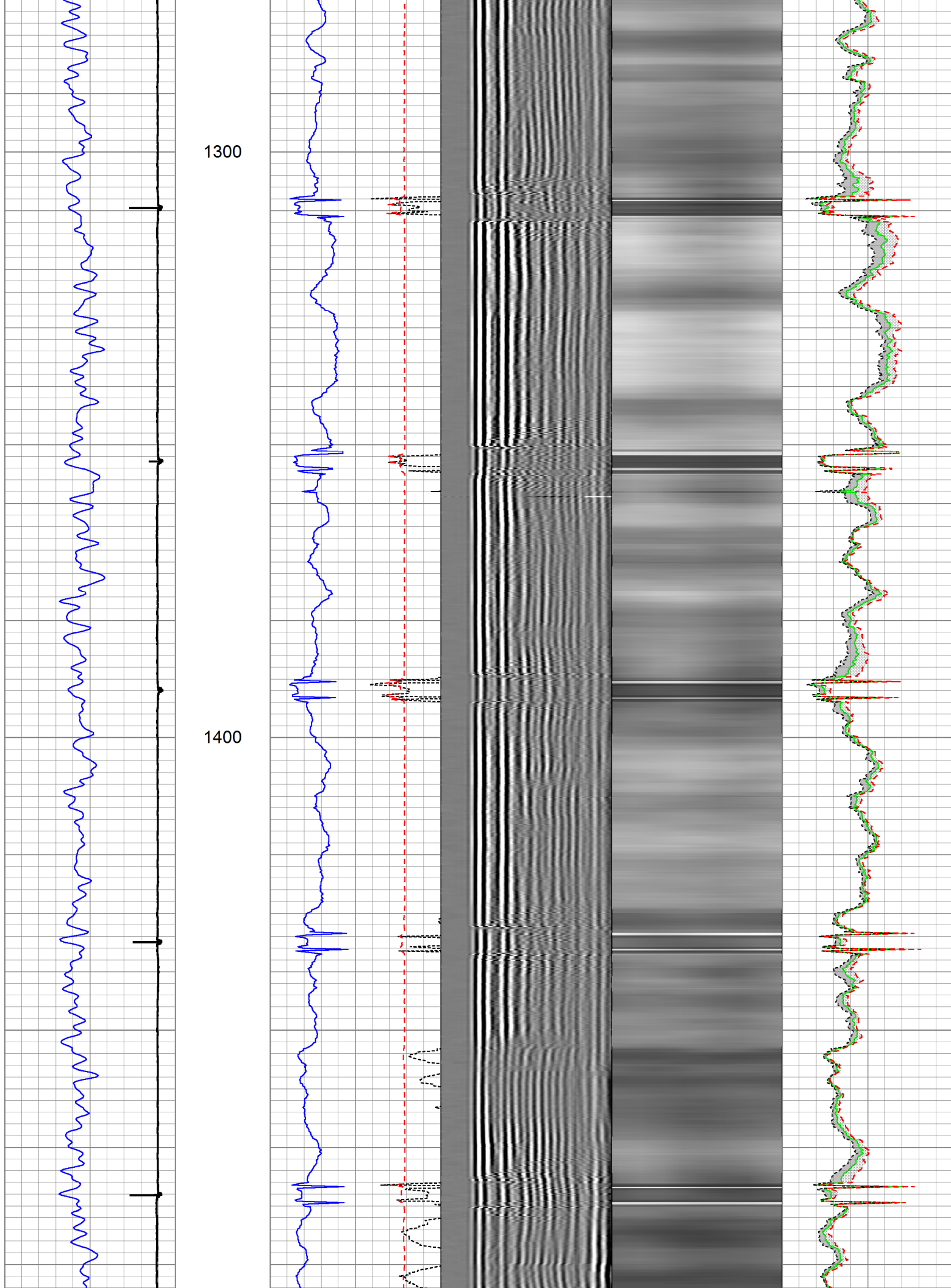


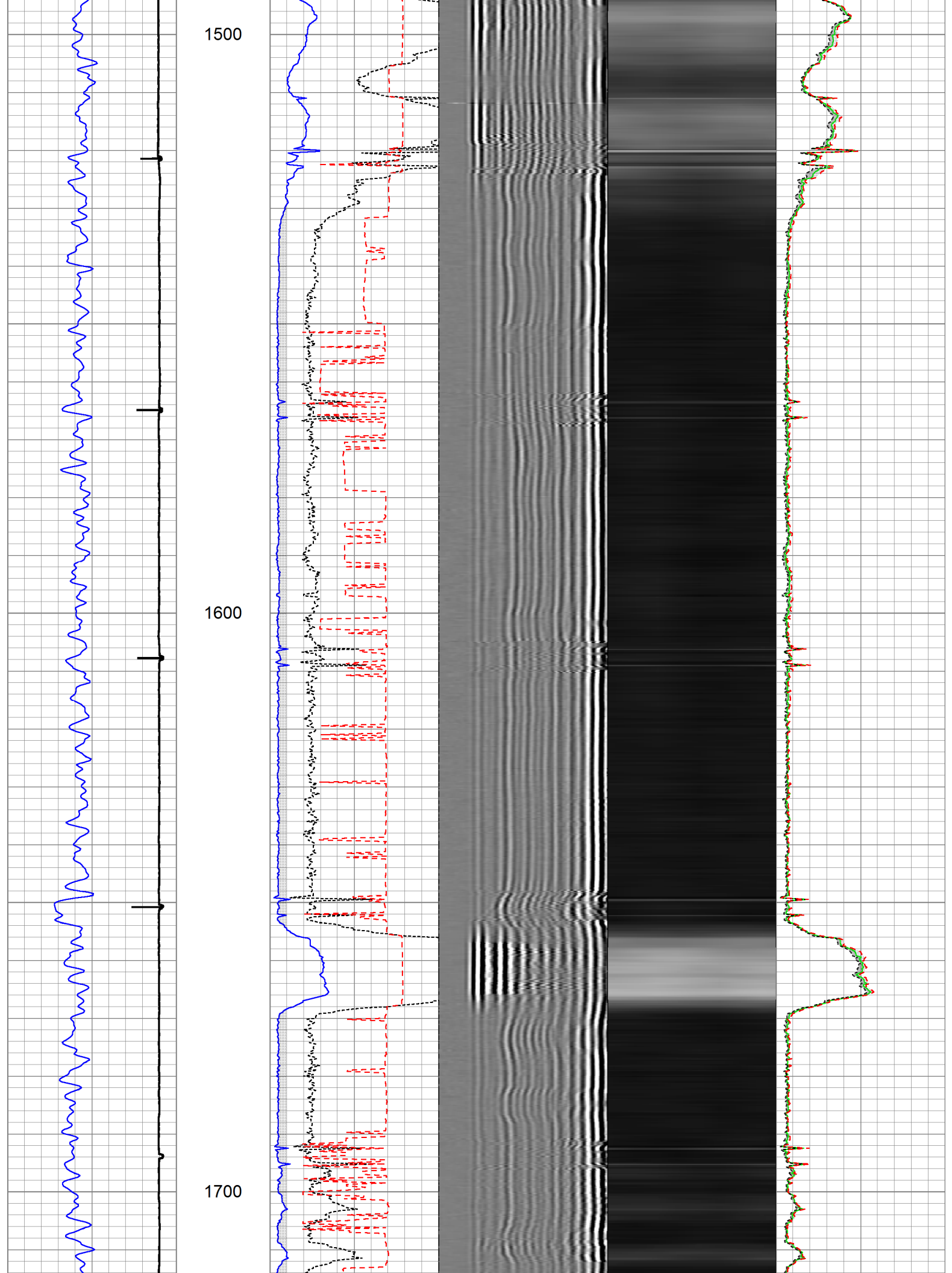


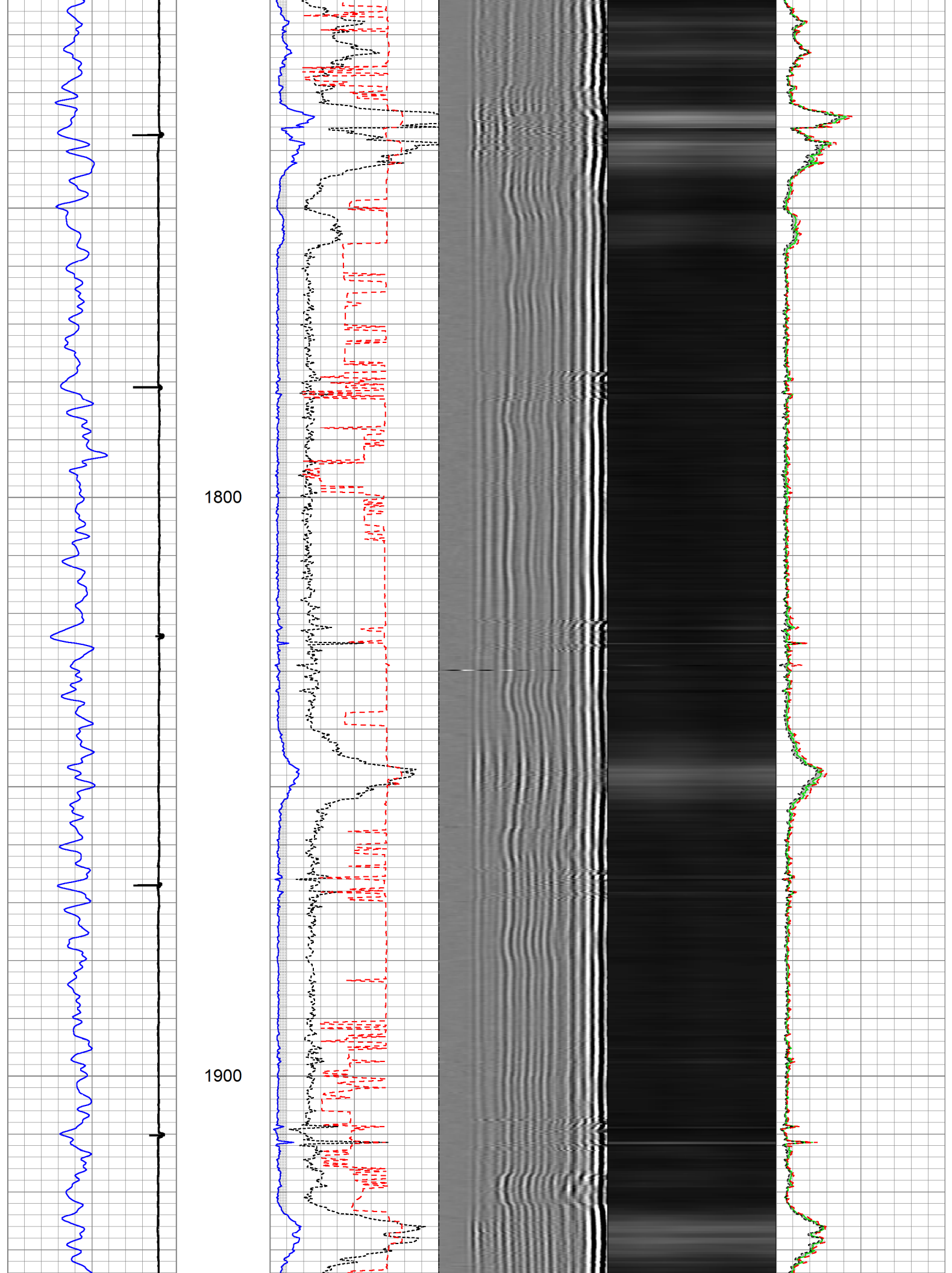


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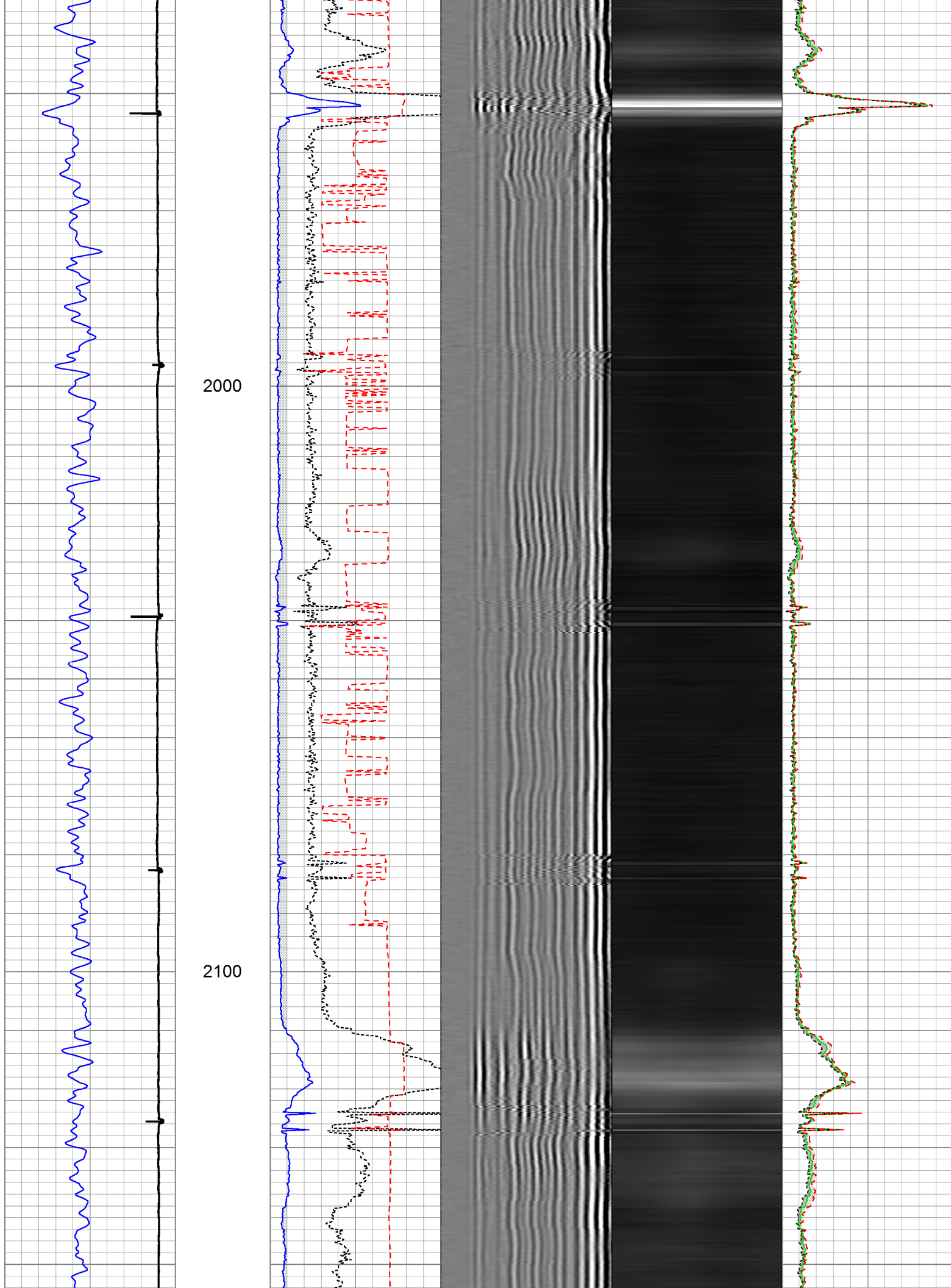






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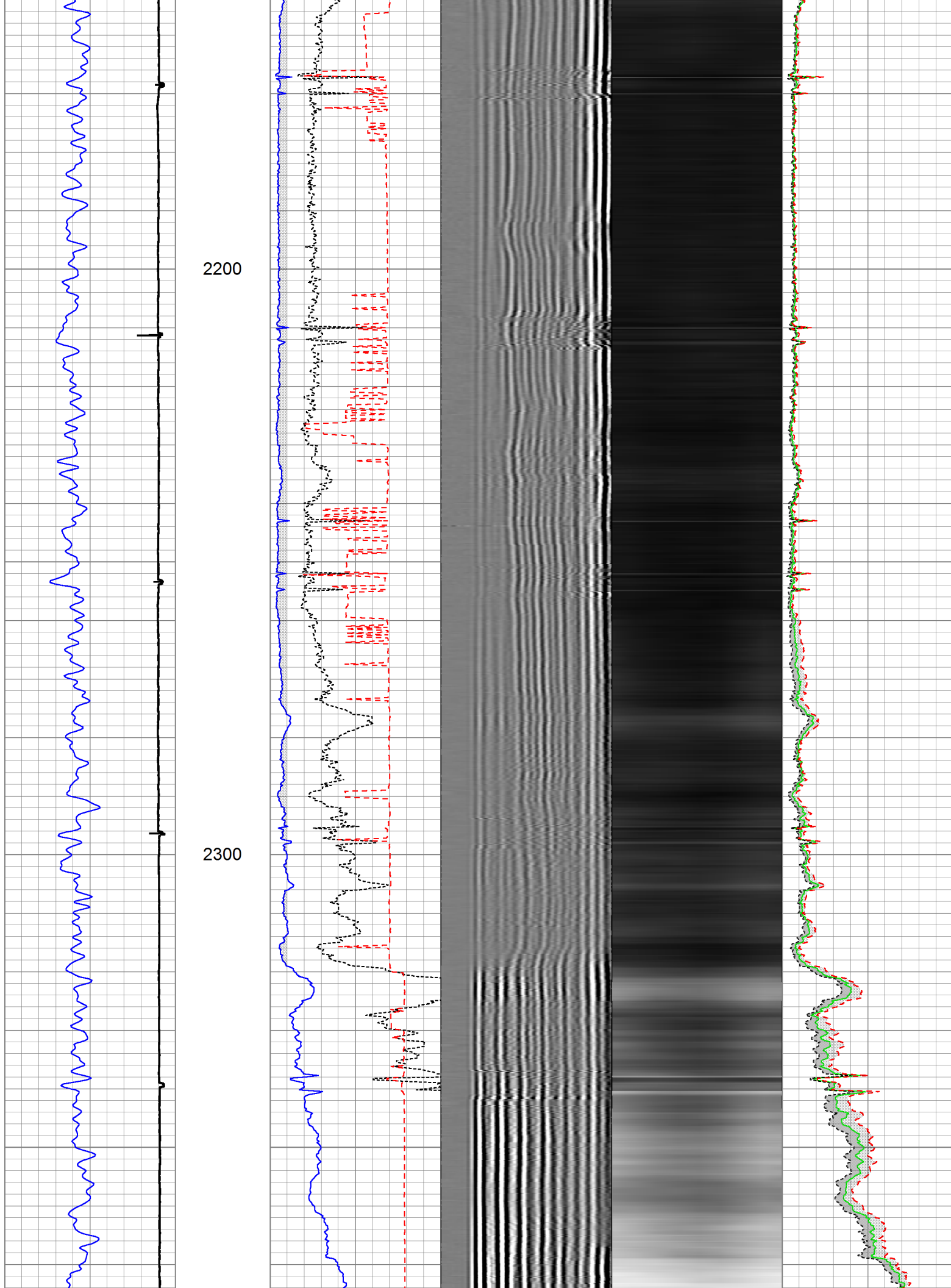
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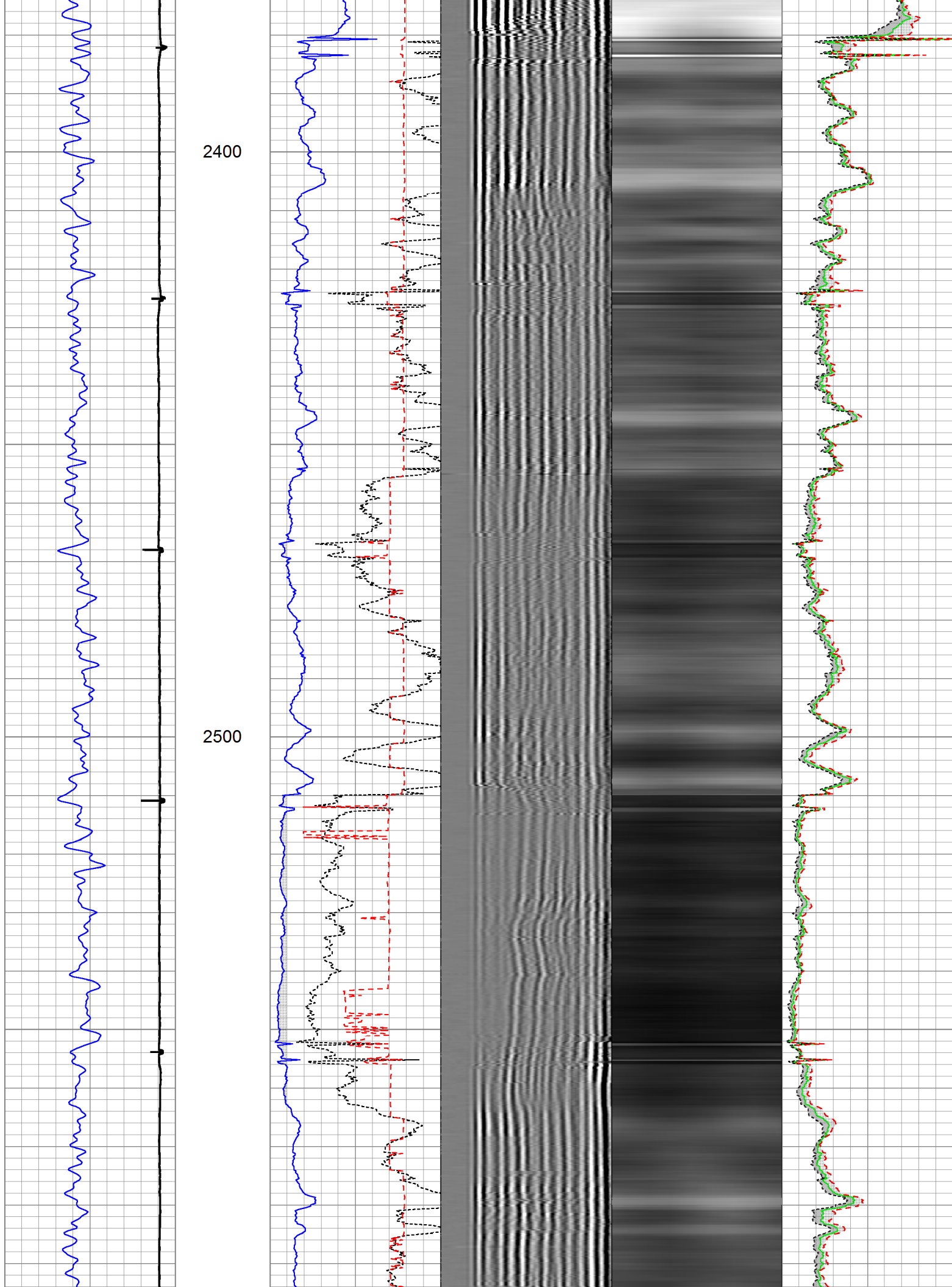
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2400

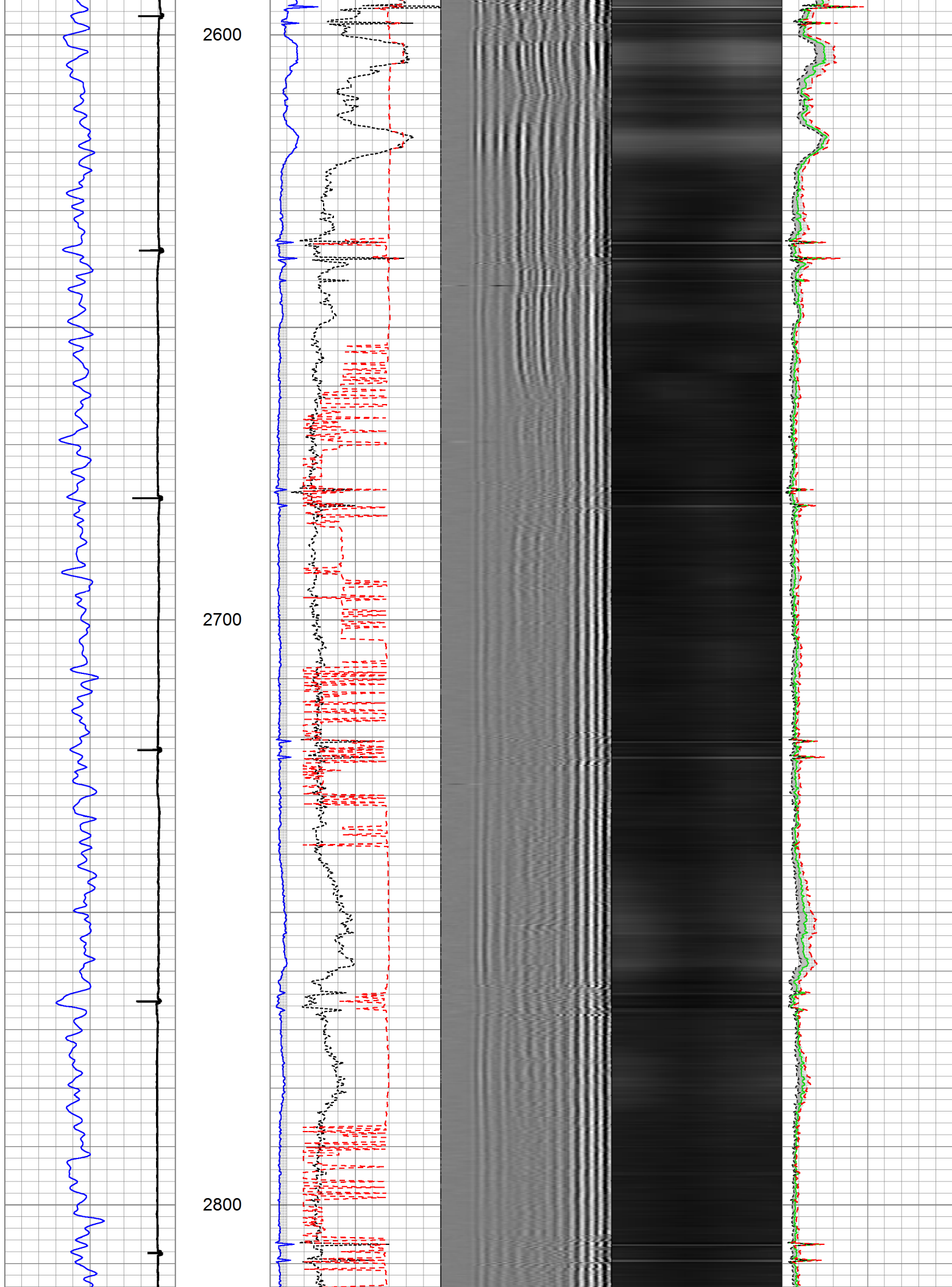
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2600

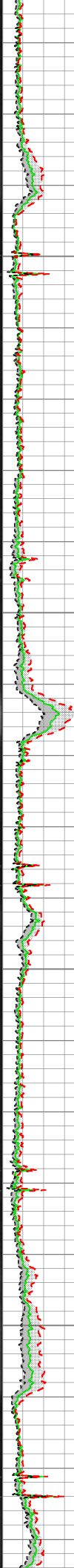
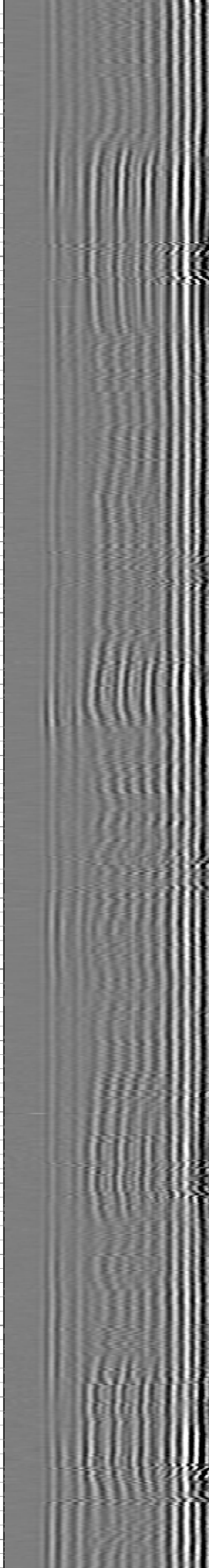
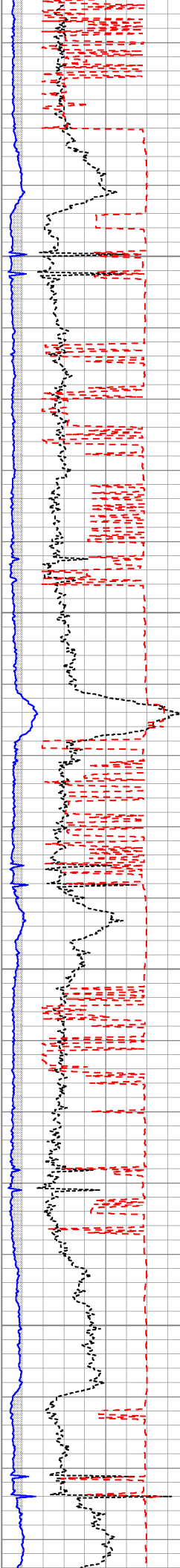
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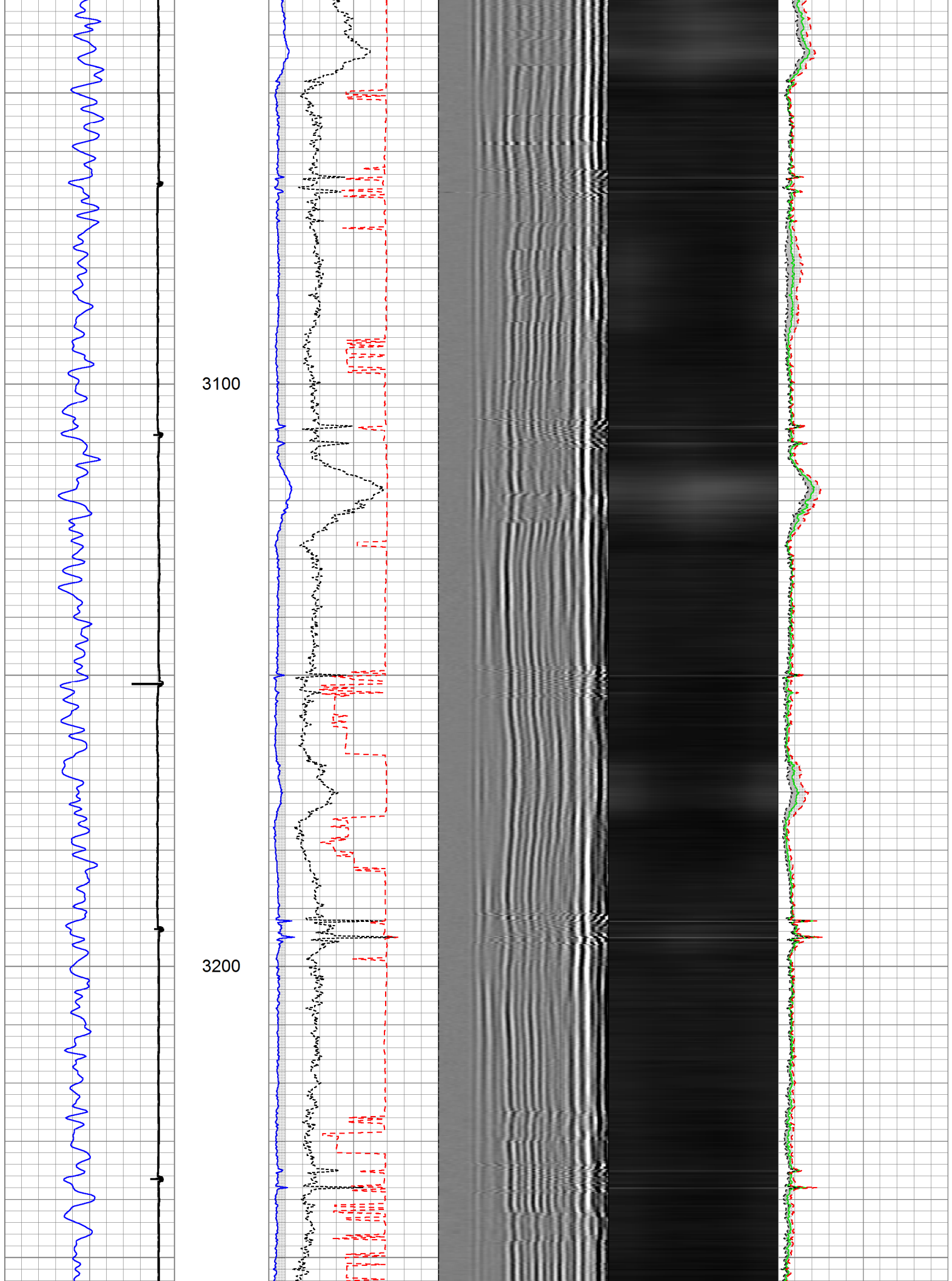
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3000



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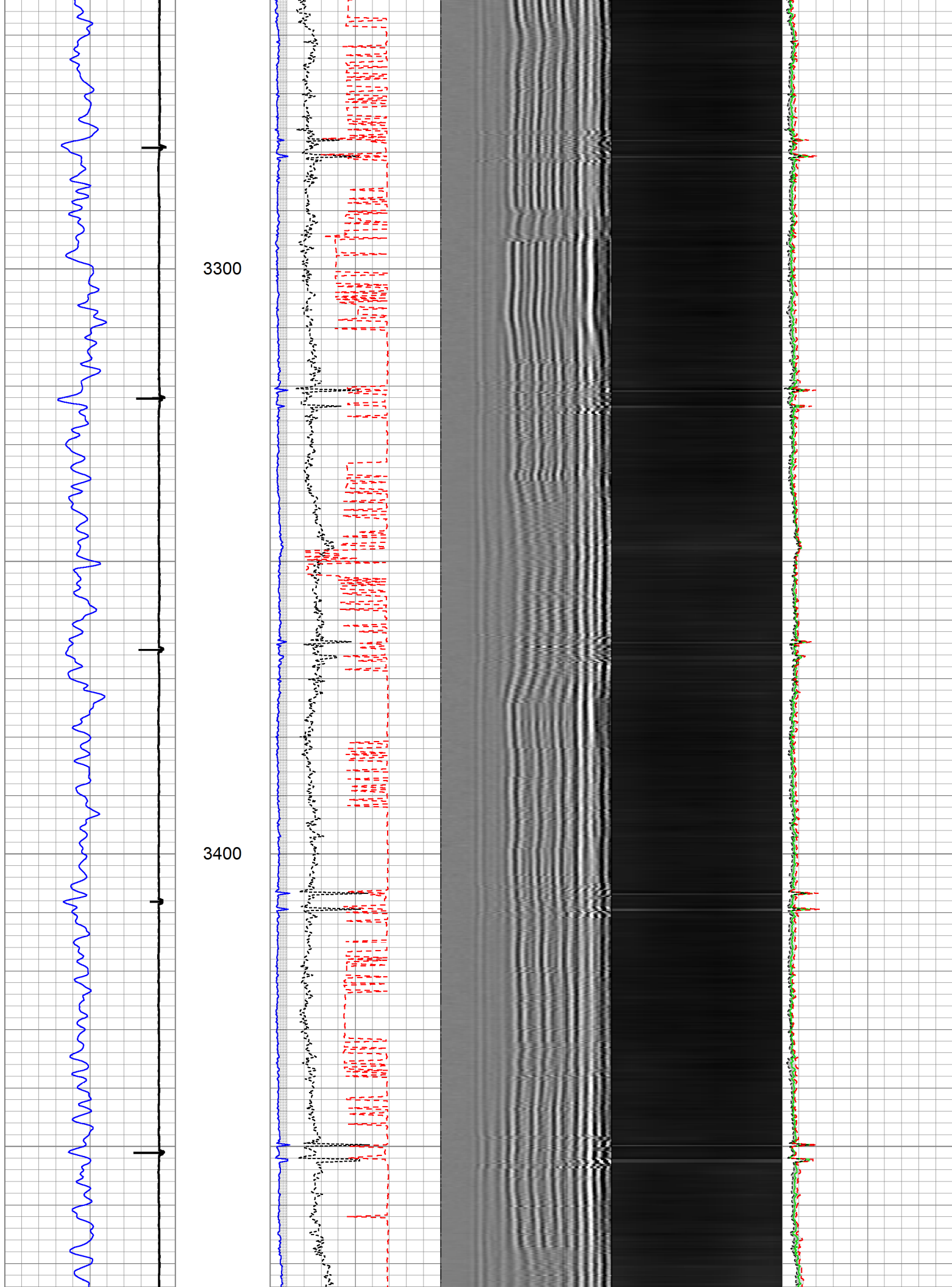
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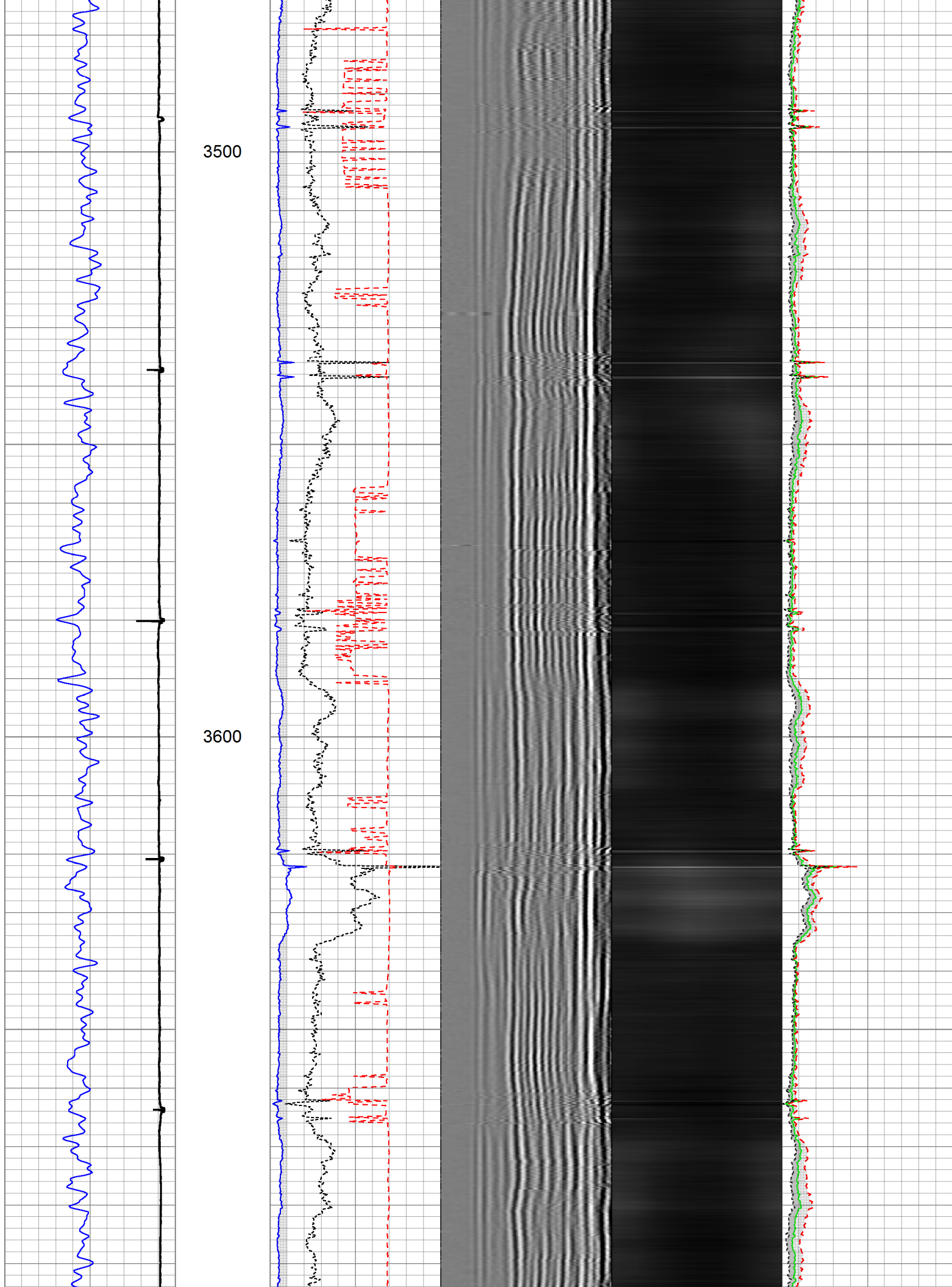
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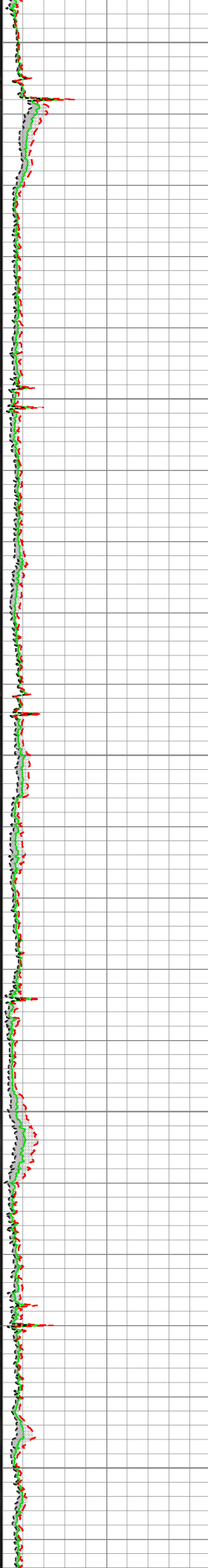
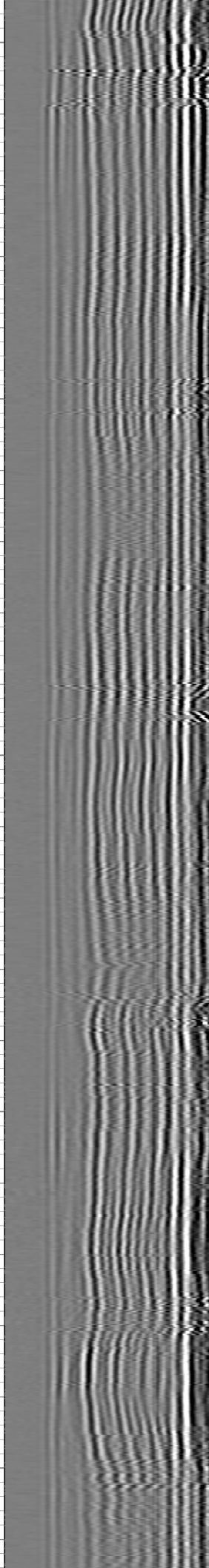
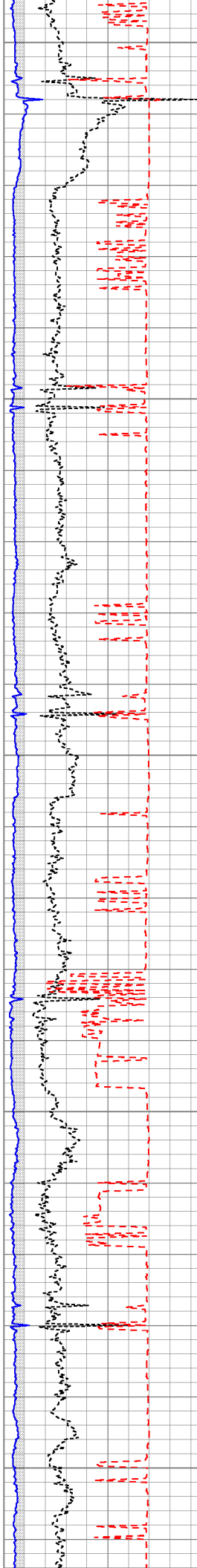
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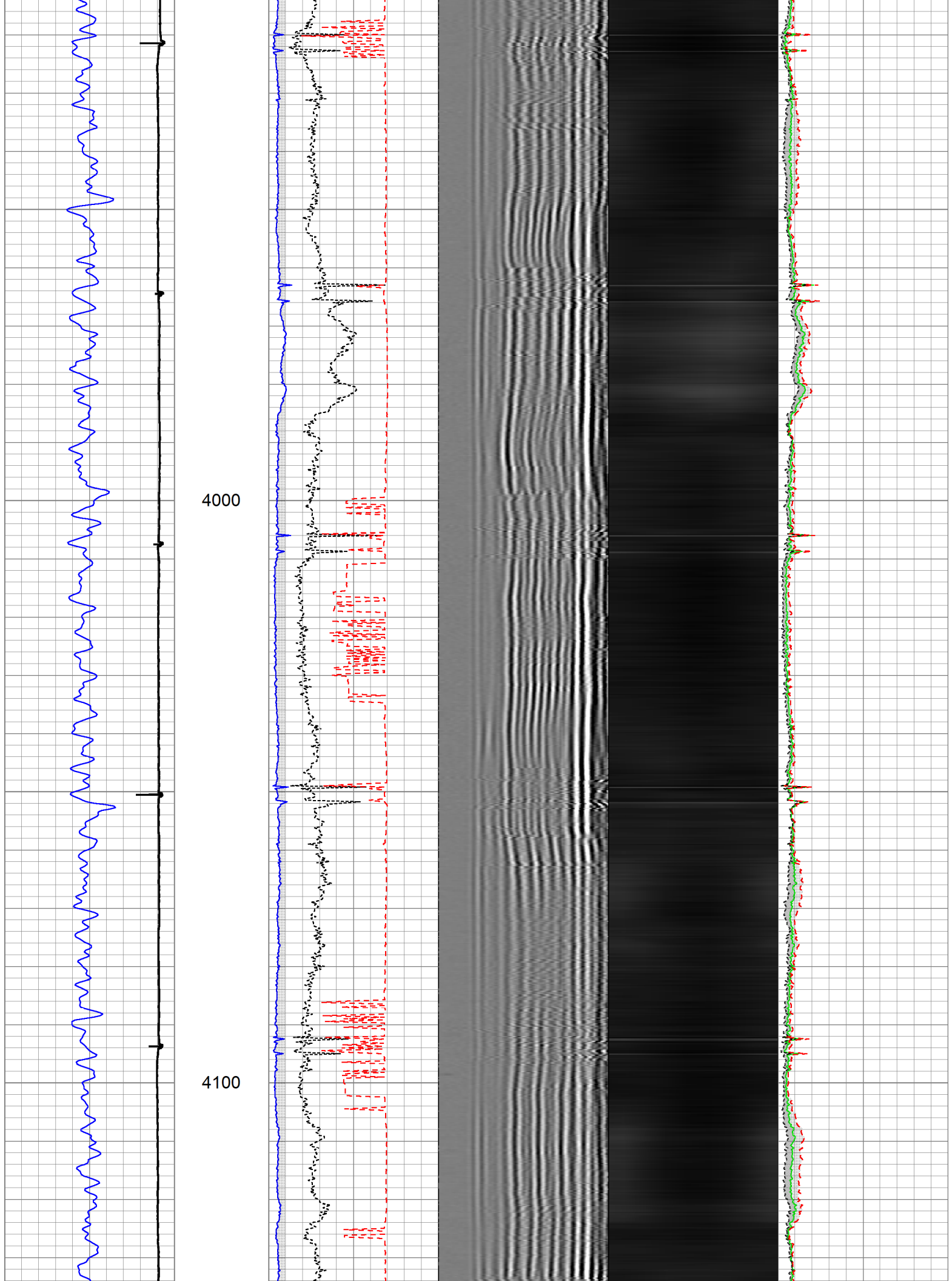


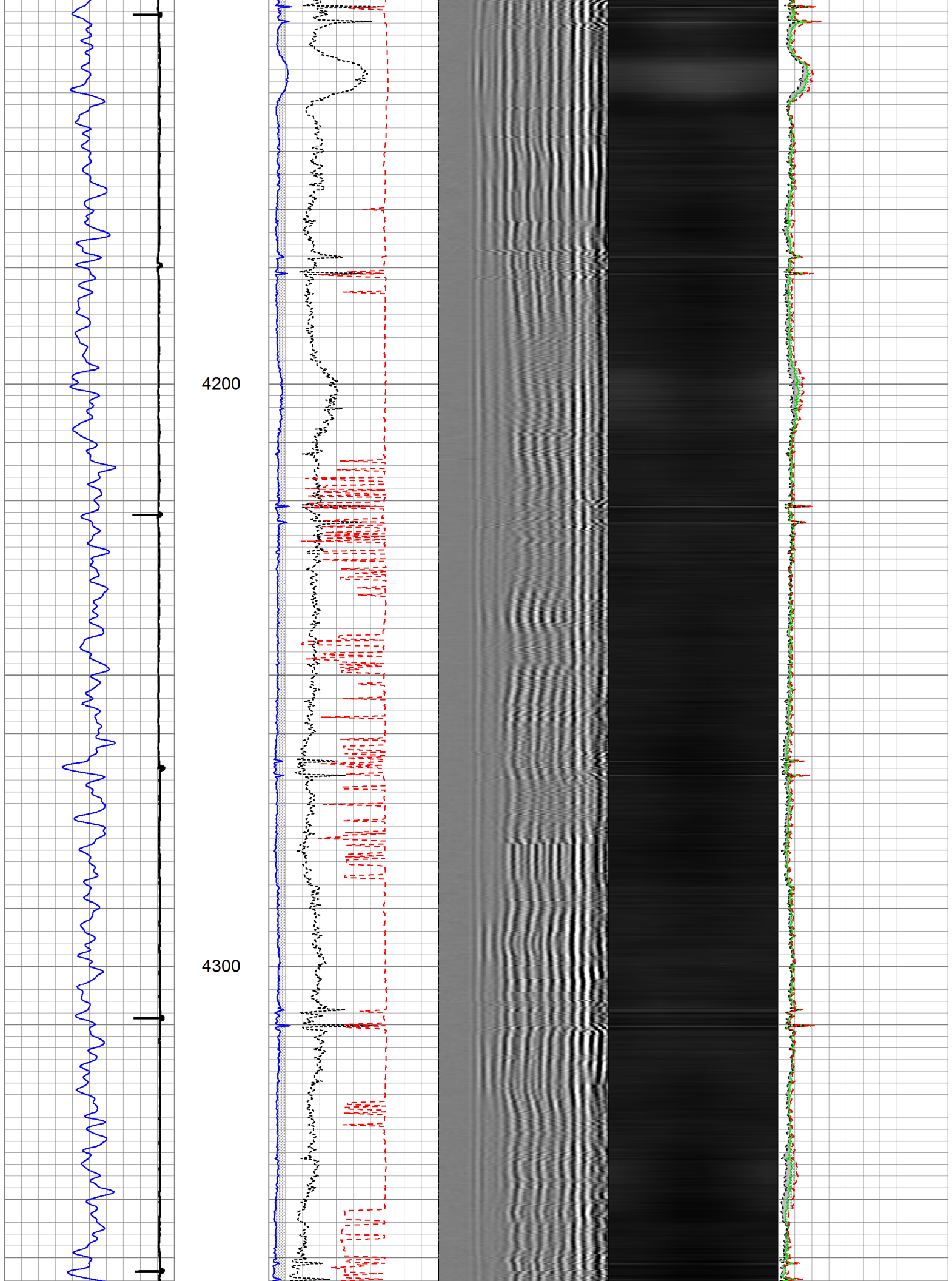
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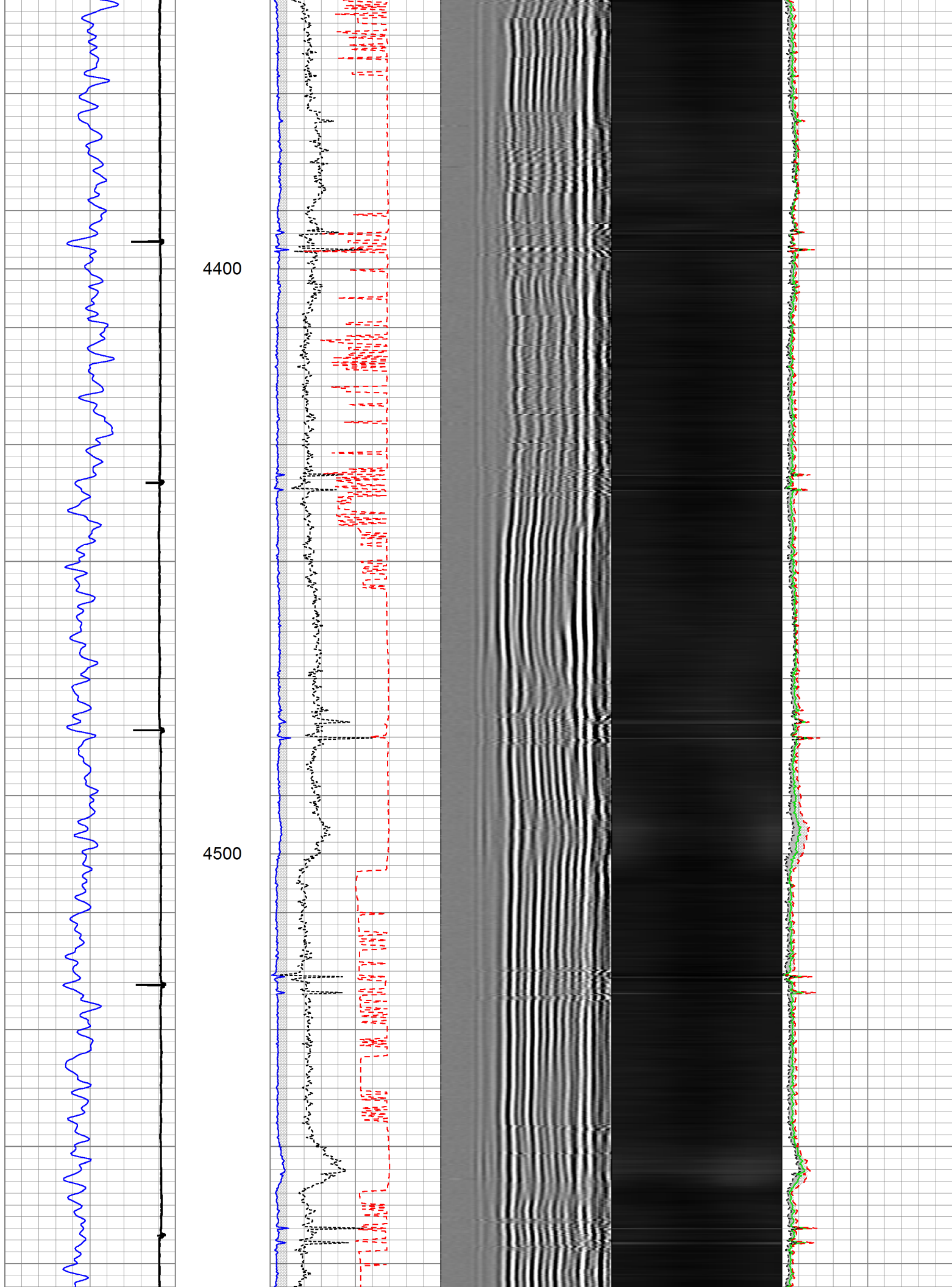






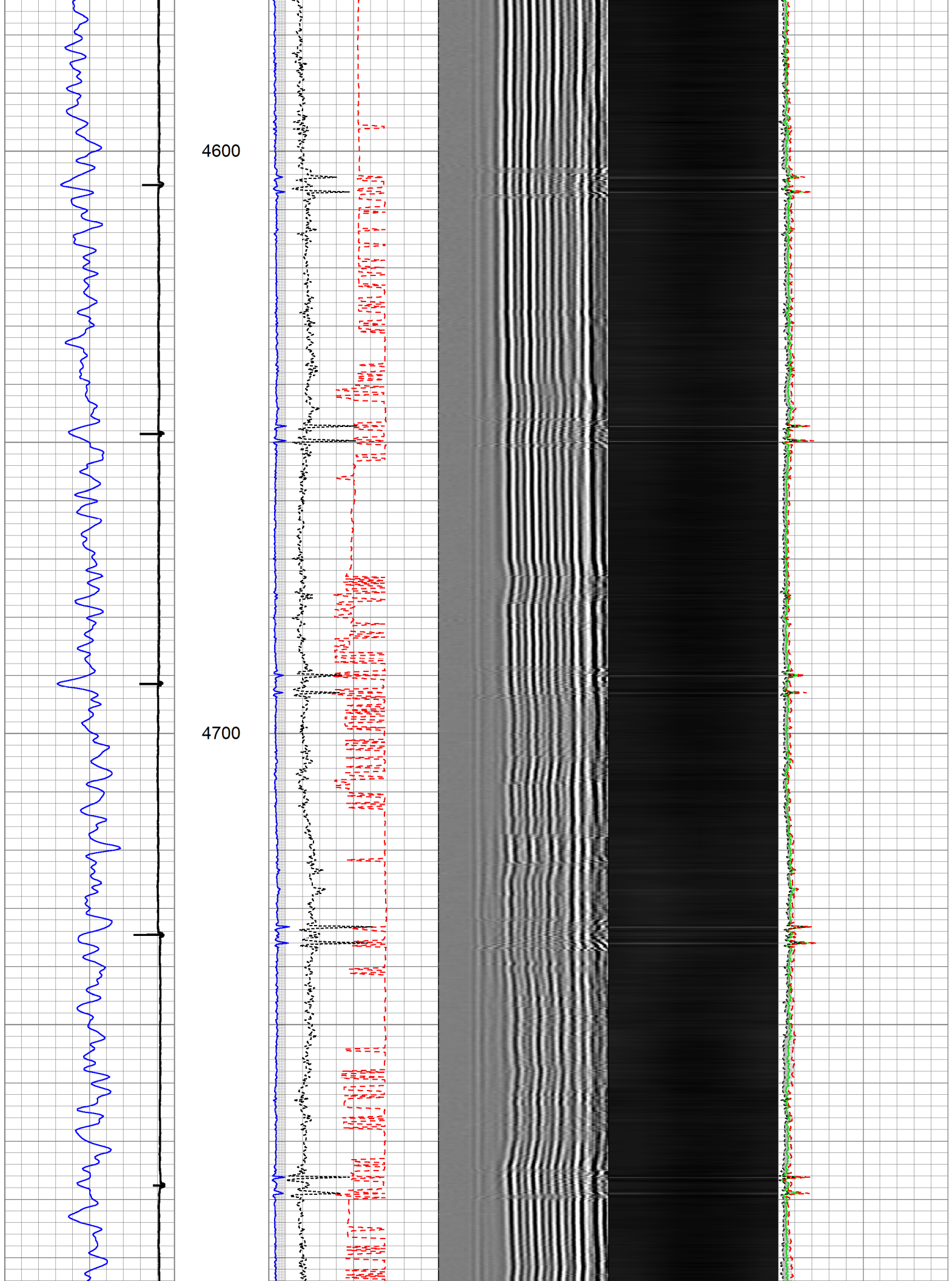
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4500



4600

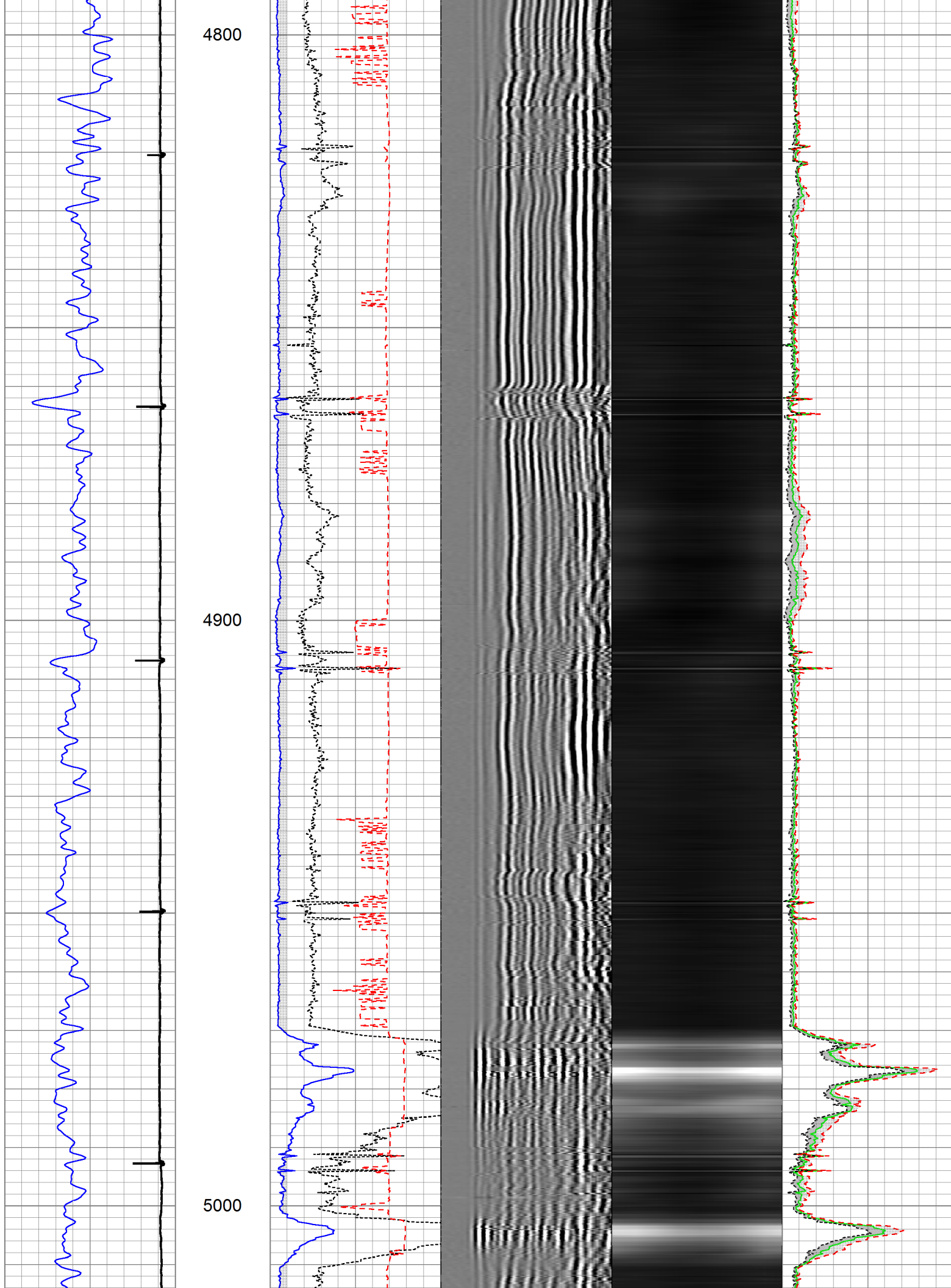
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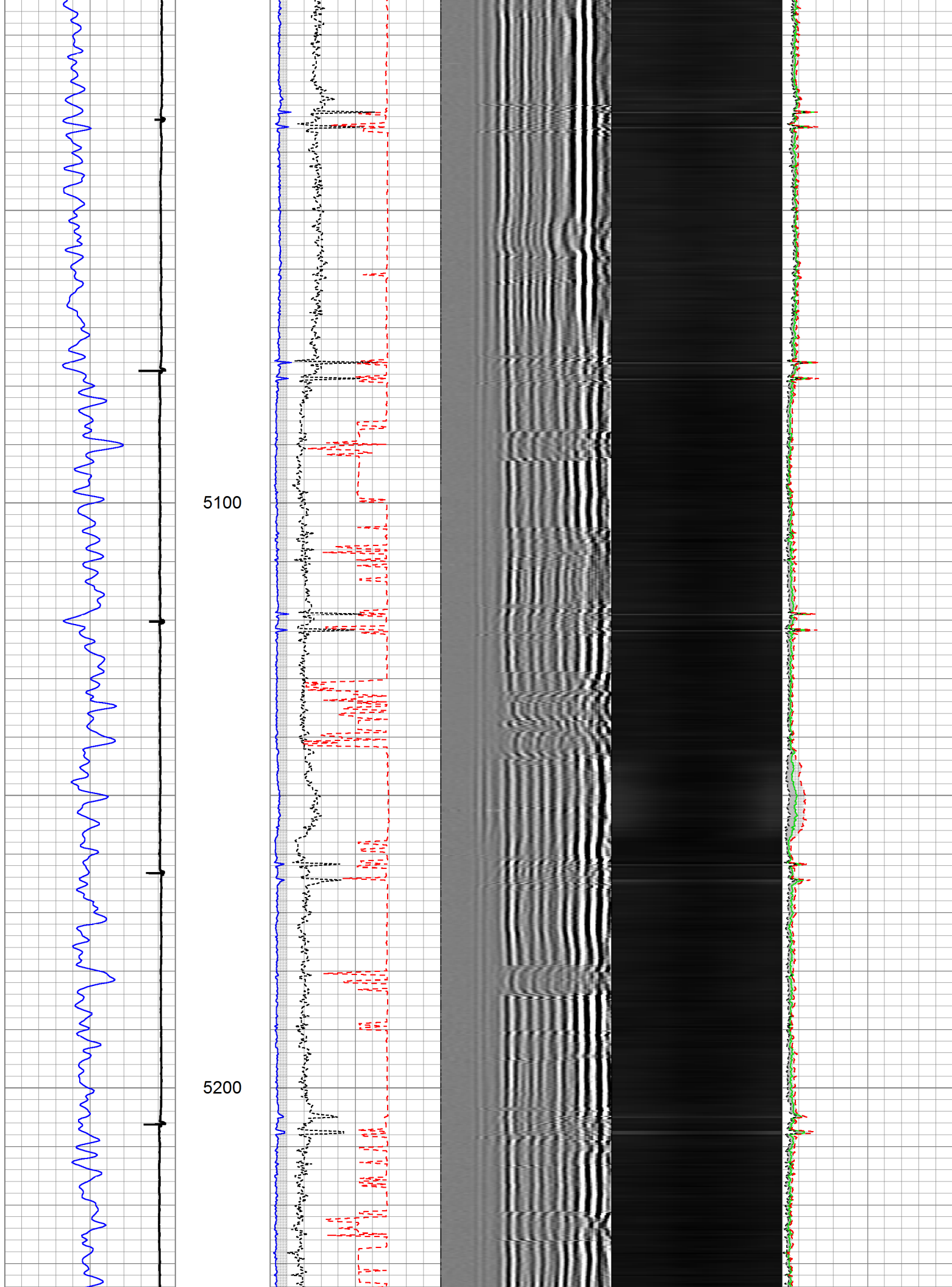
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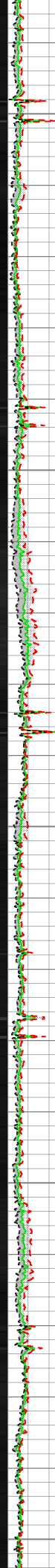
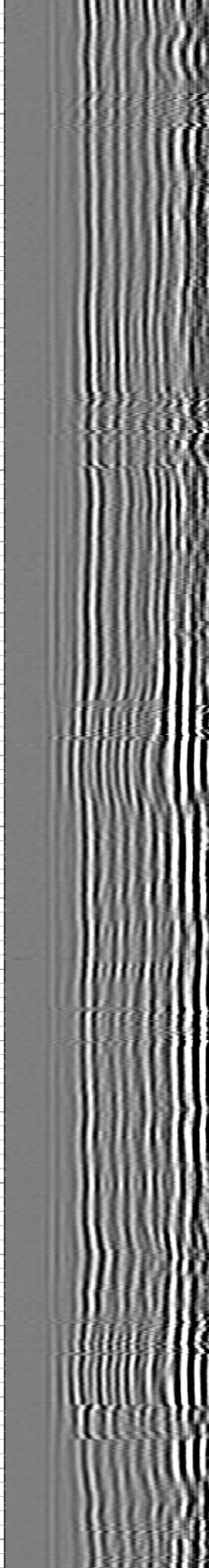
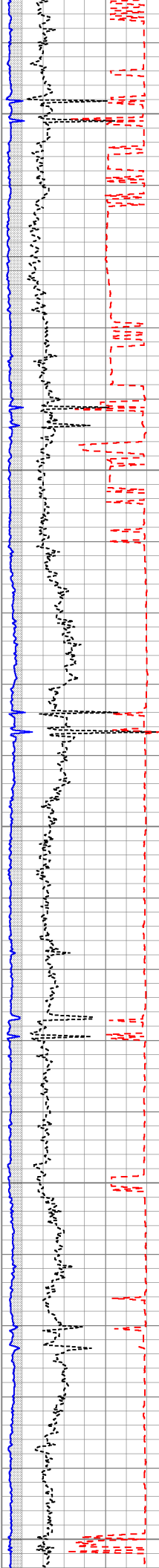
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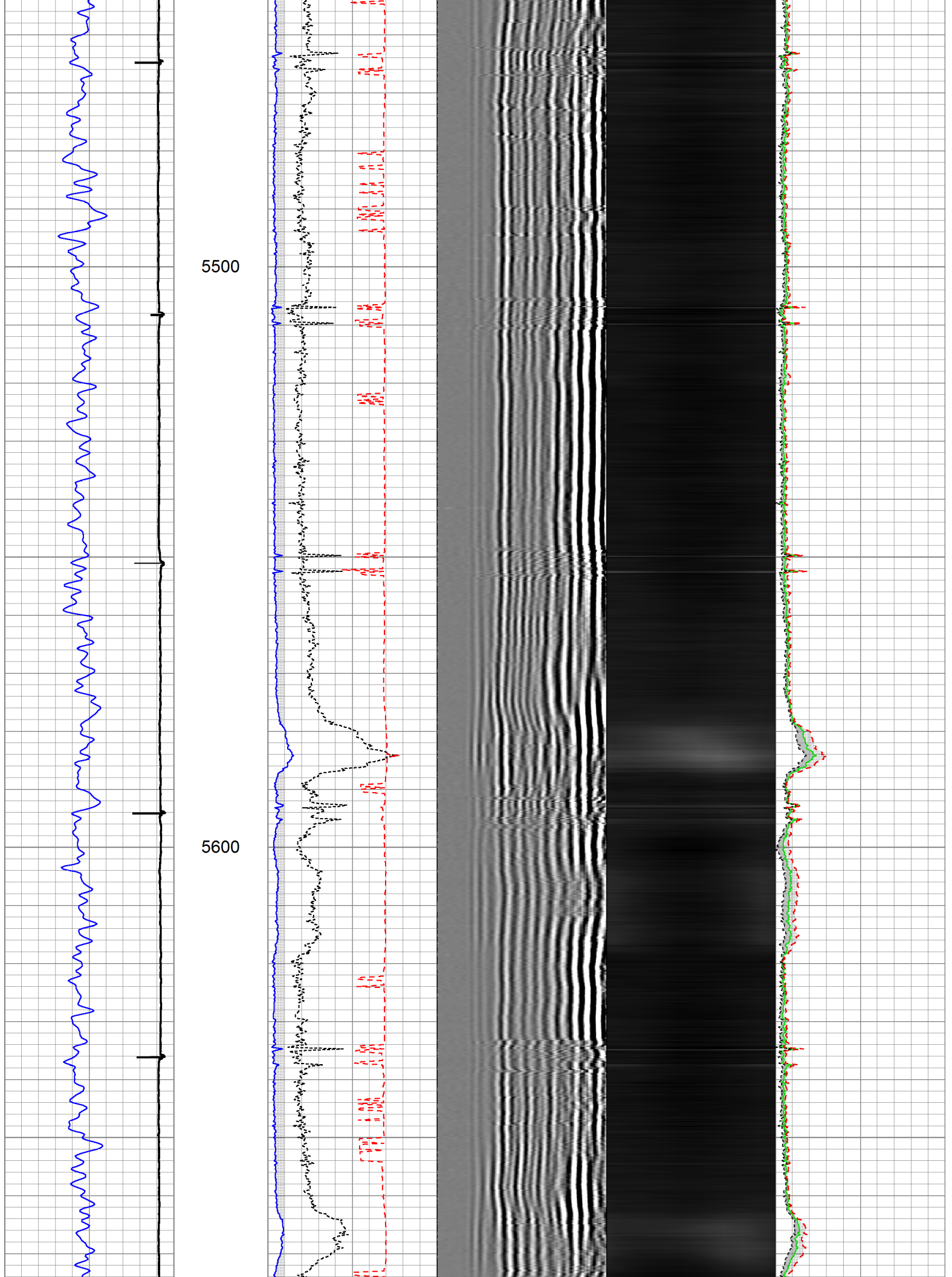


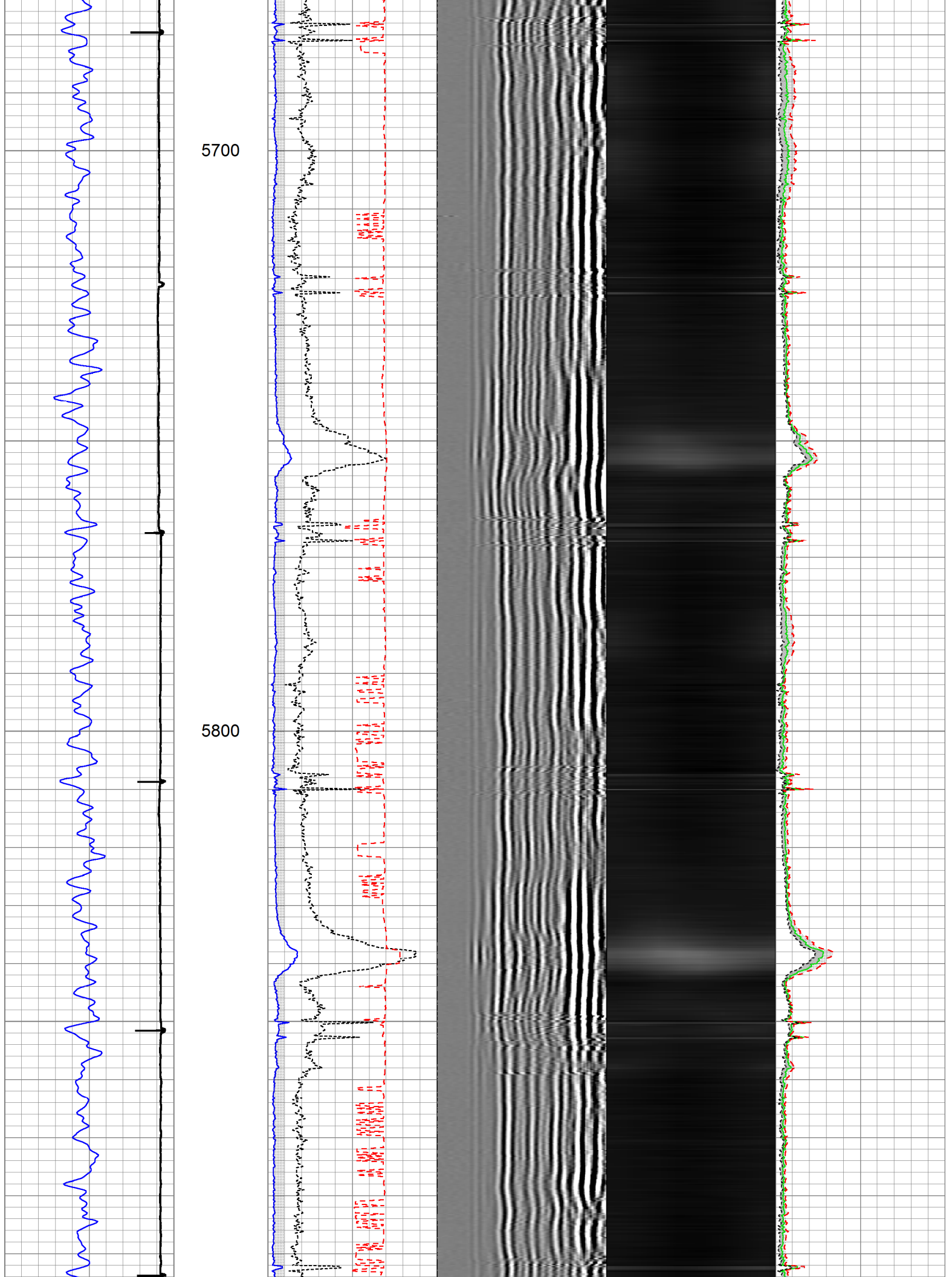


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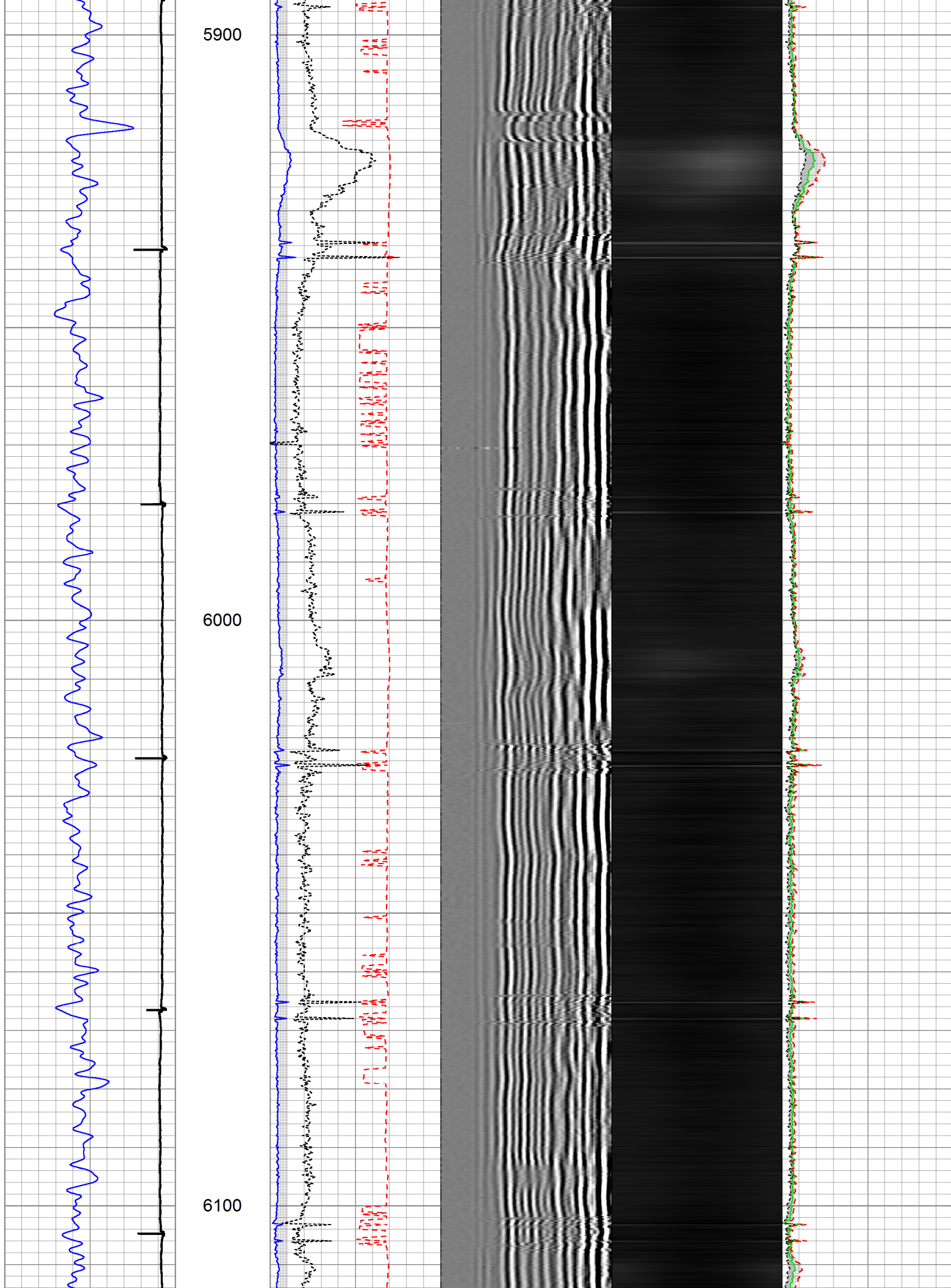




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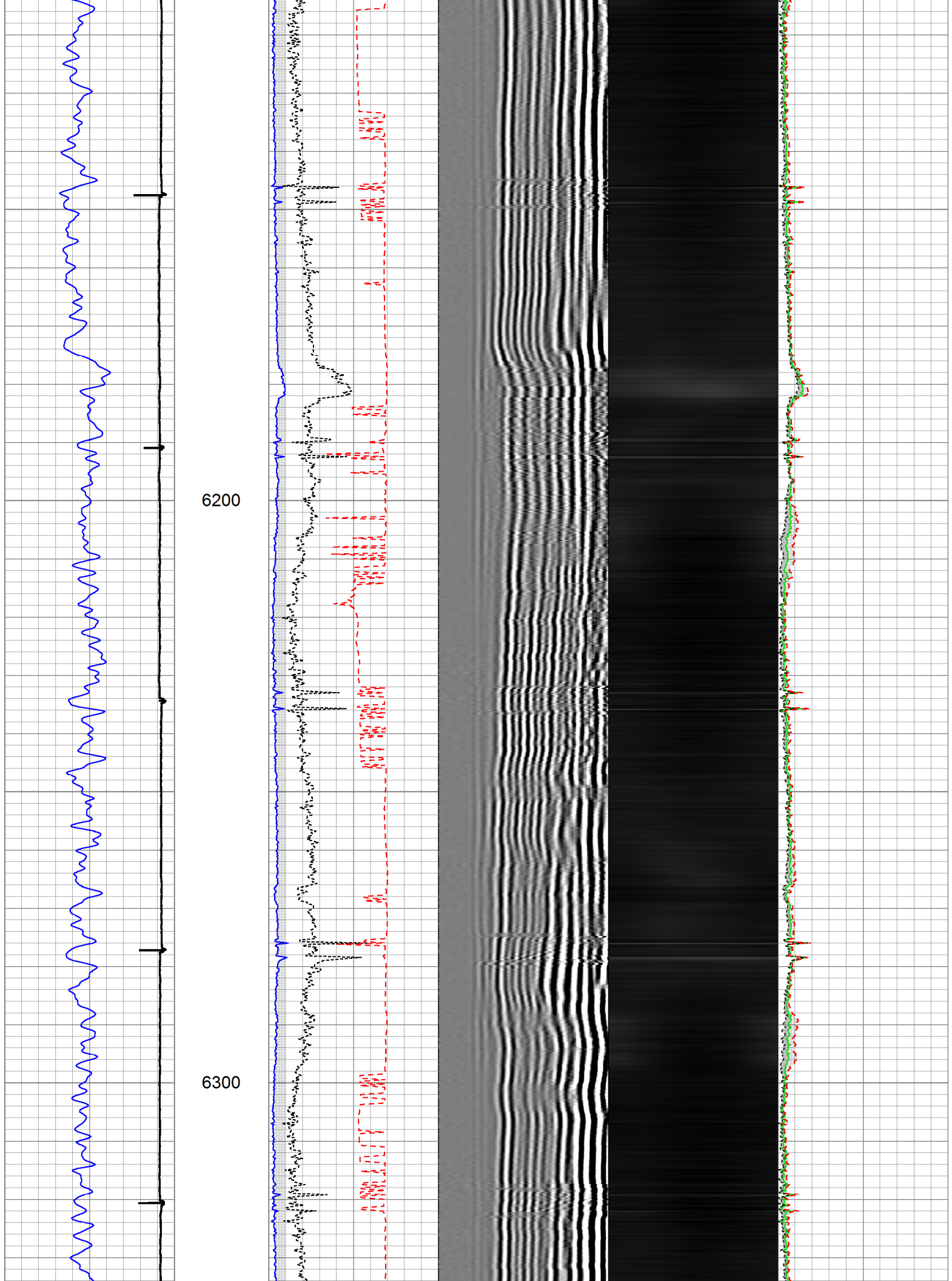
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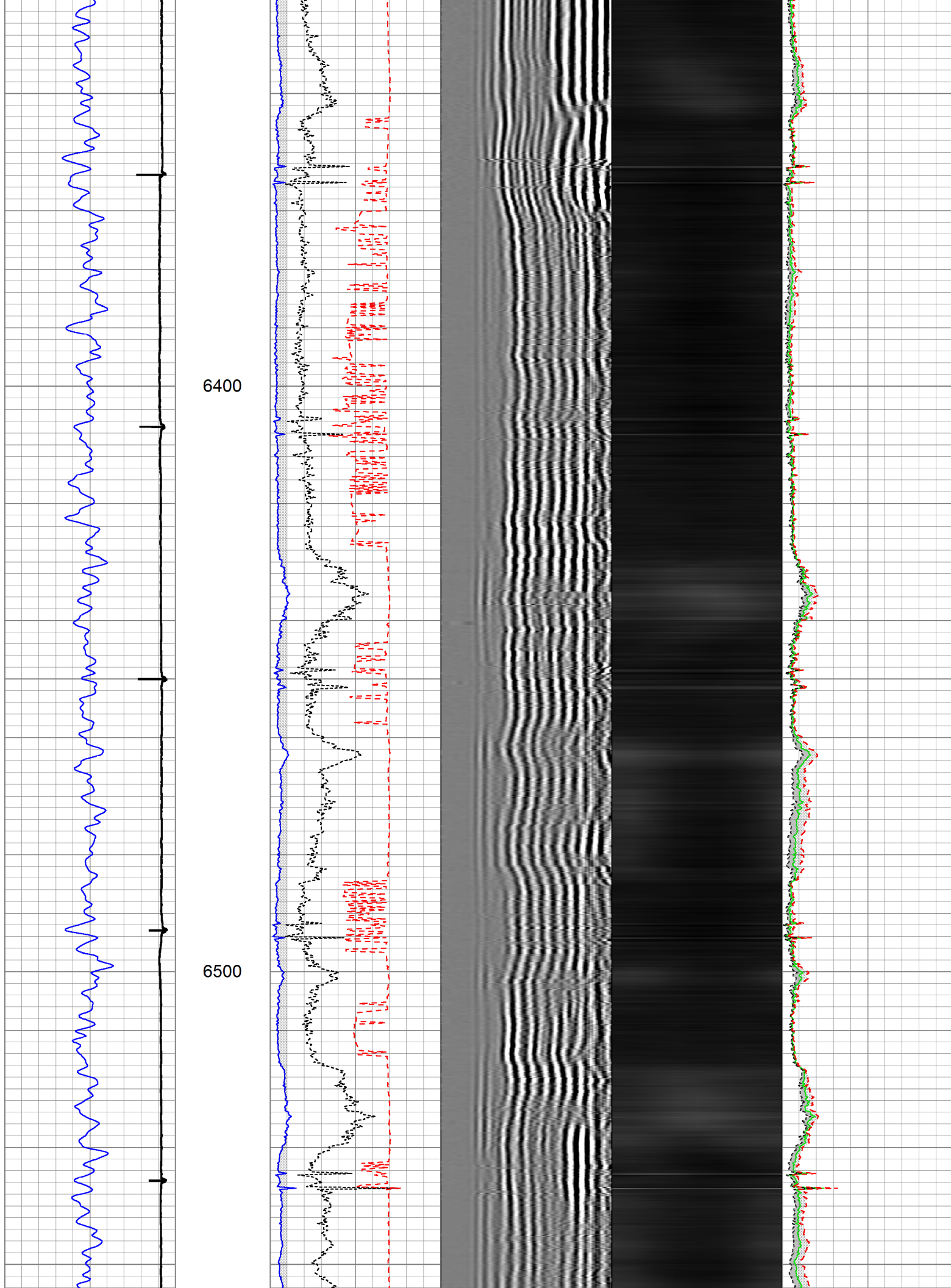
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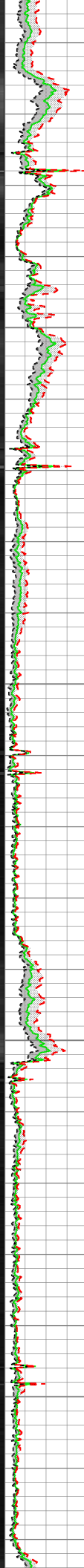
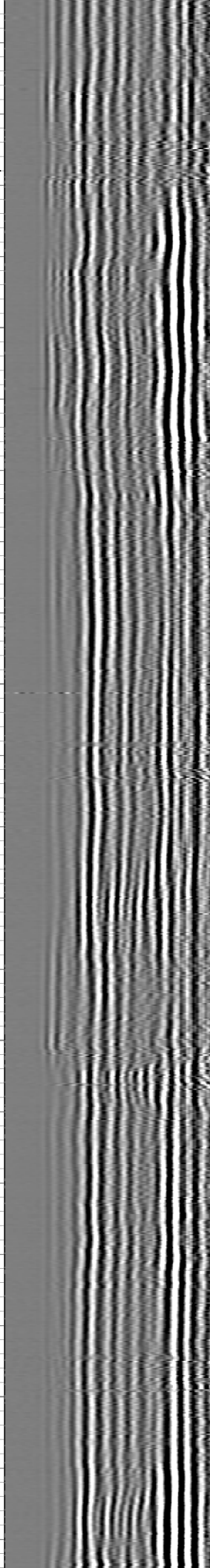
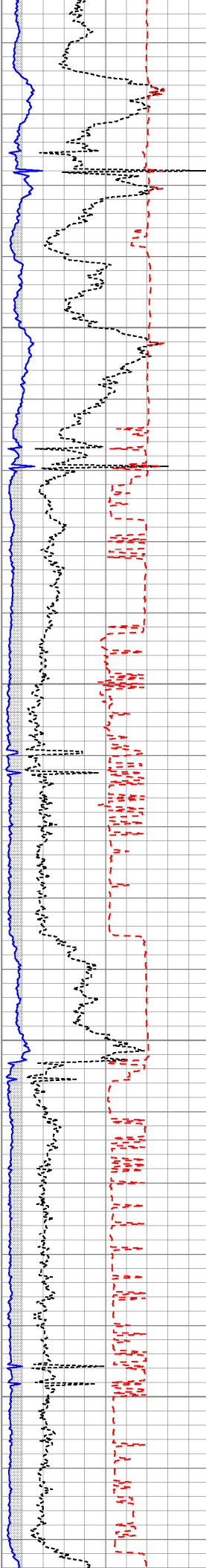
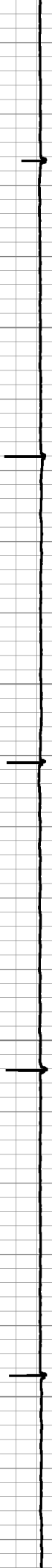
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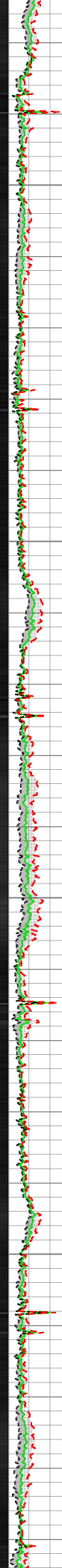
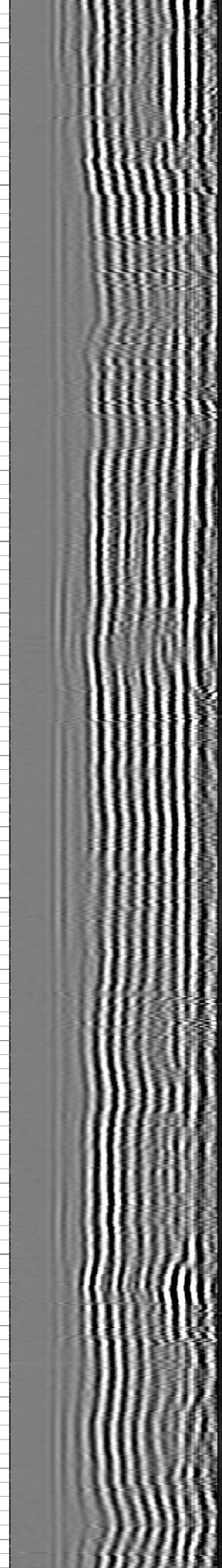
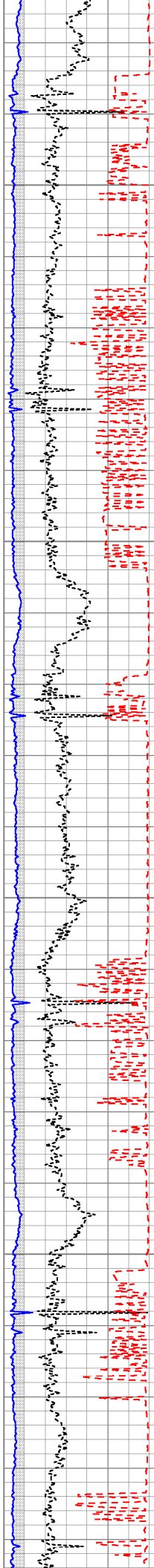
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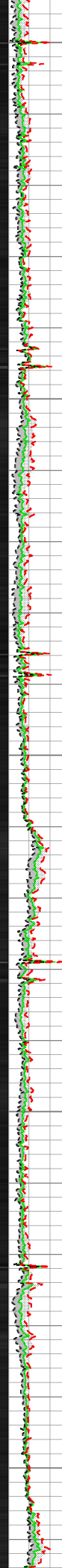
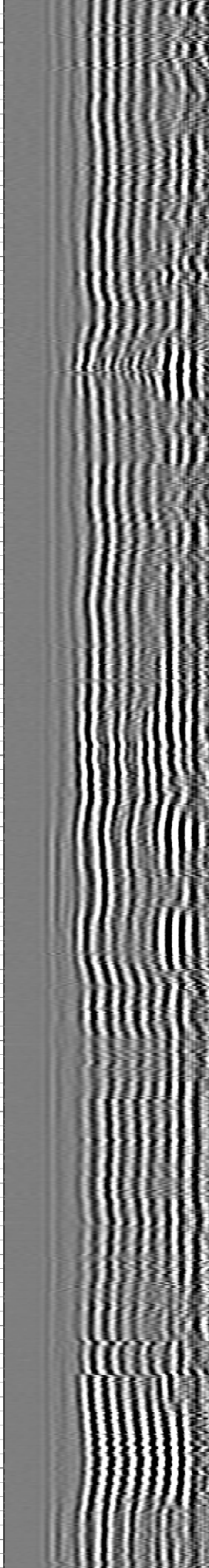
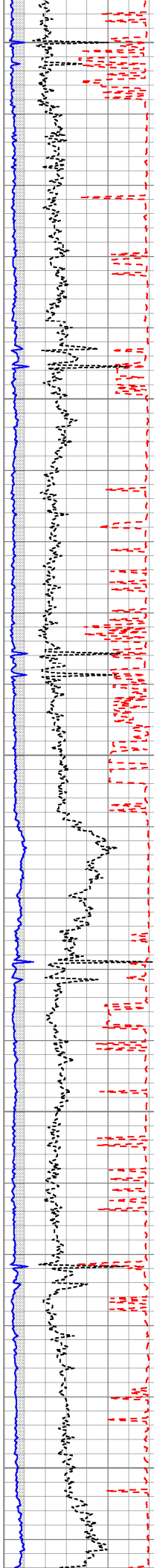
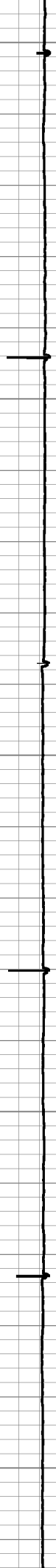


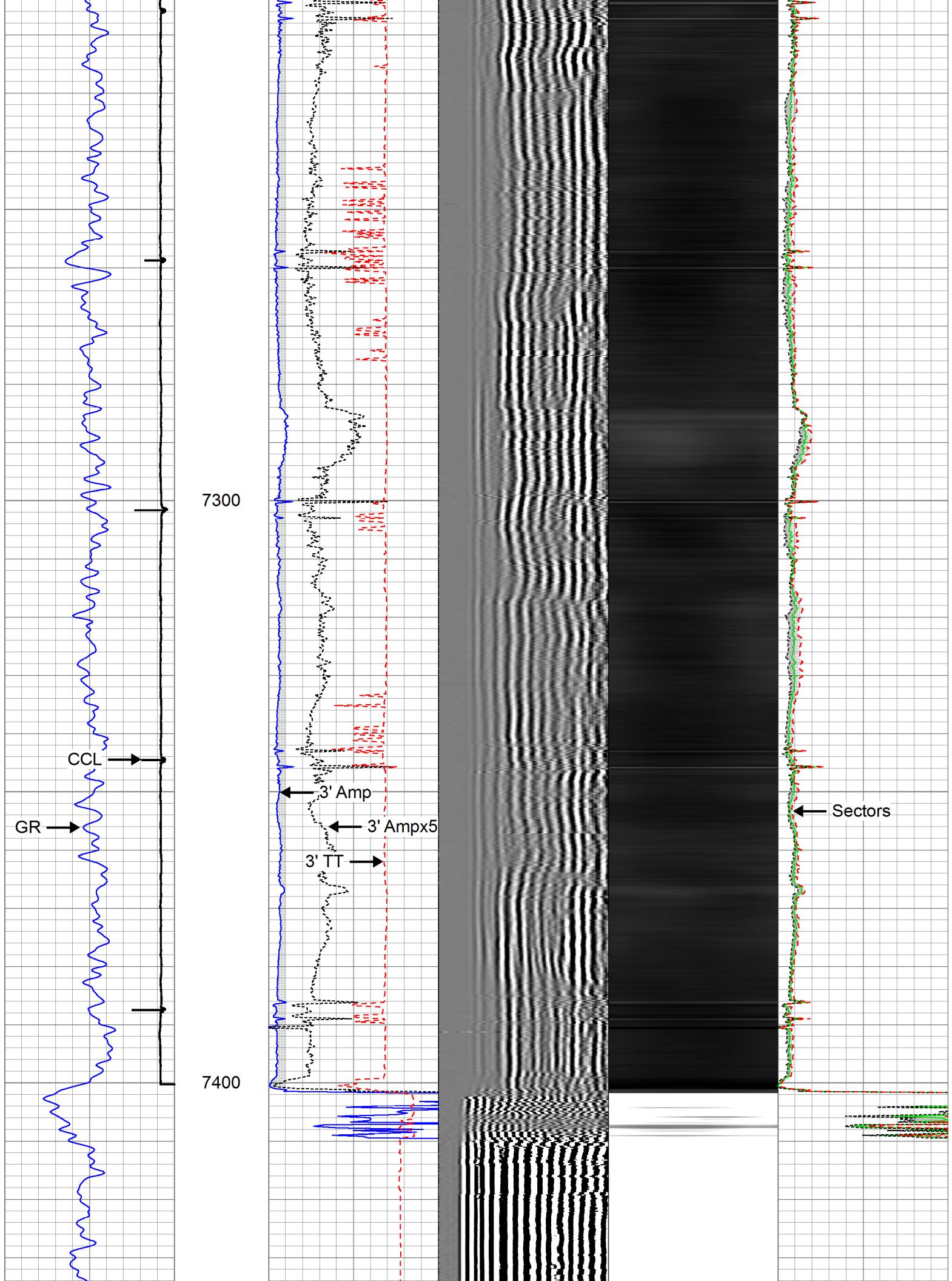


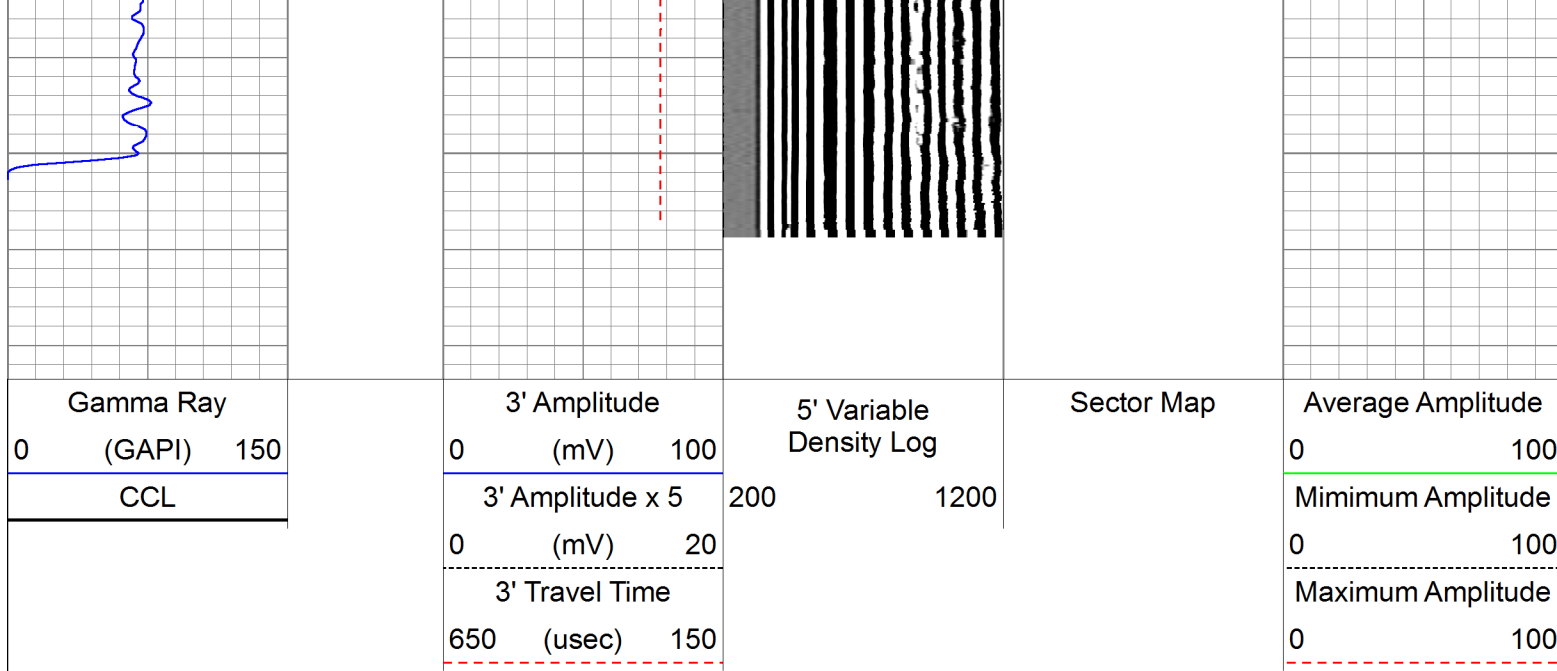
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7100

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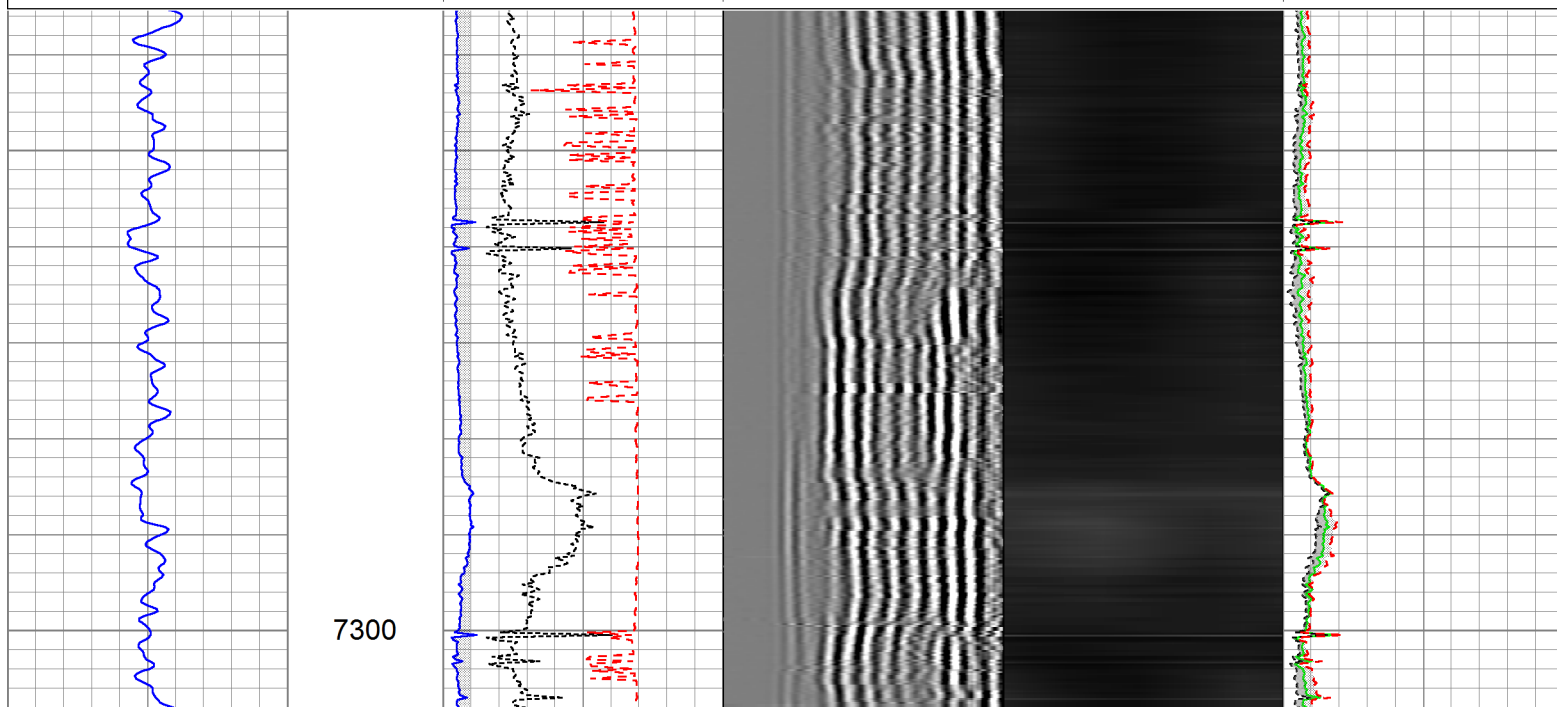
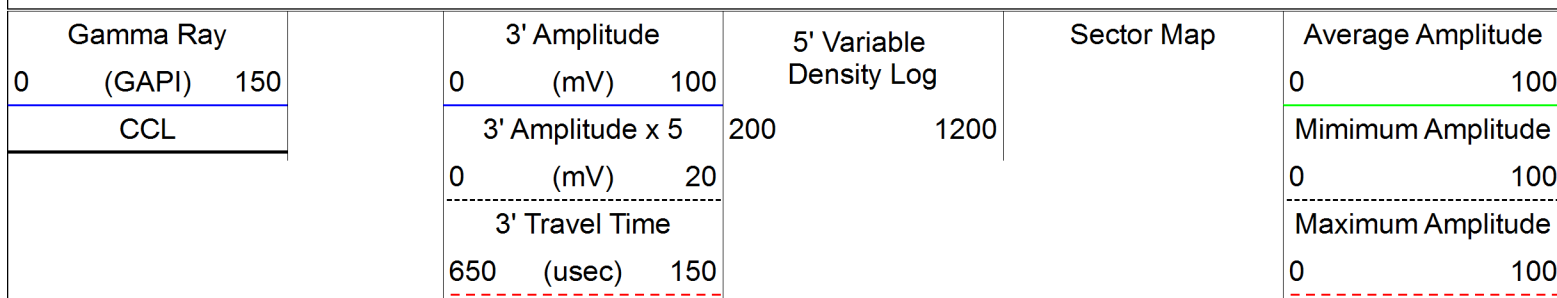


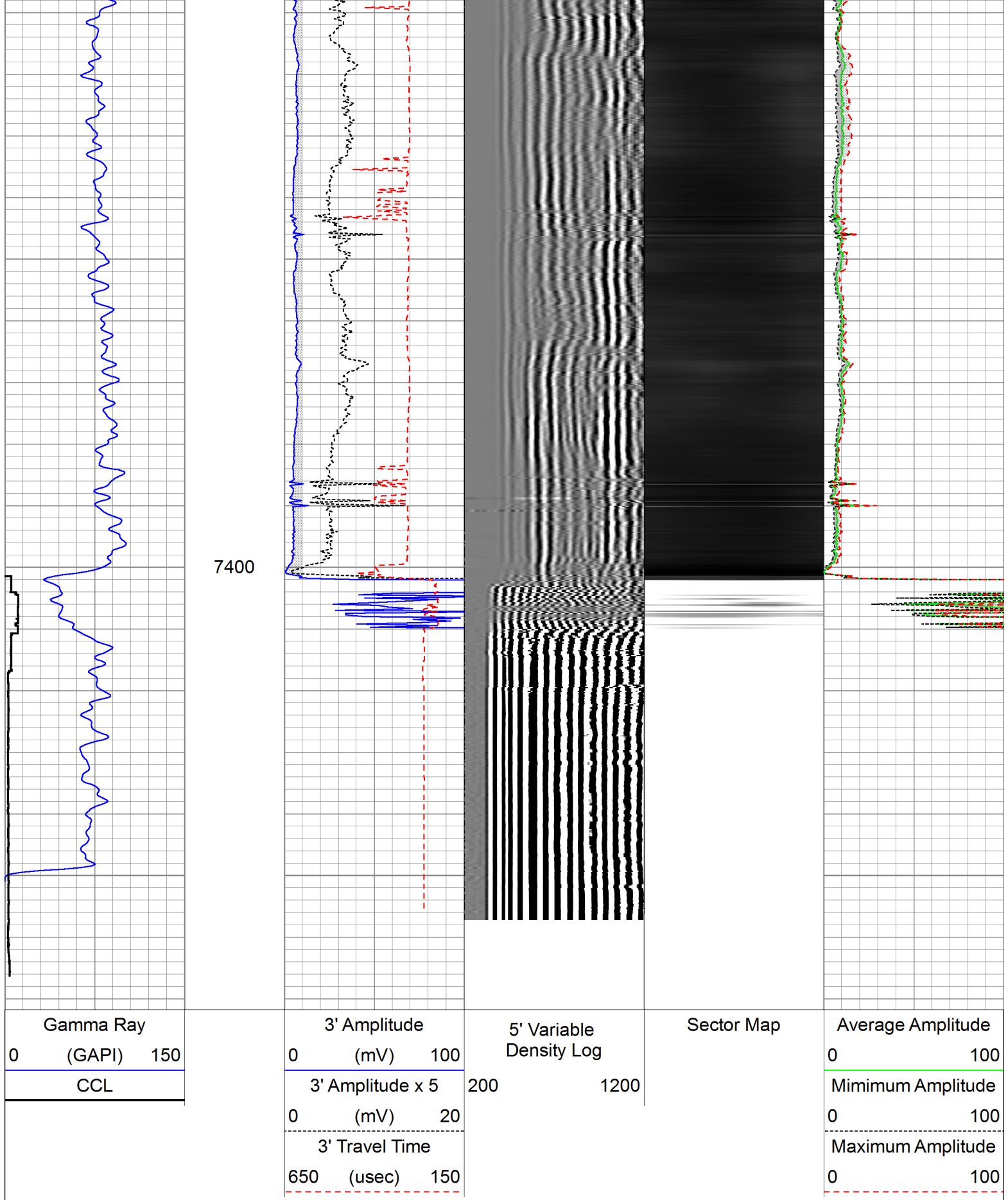





# Repeat Pass

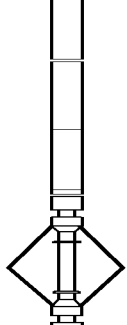

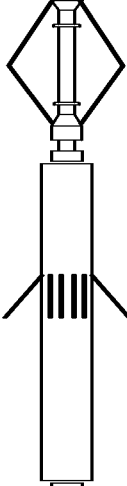
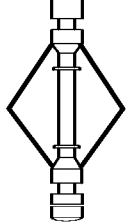
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 Dataset Pathname: repeatrdv  
 Presentation Format: rbl\_w\_te  
 Dataset Creation: Tue Mar 04 09:44:02 2014 by Calc SCH 120126  
 Charted by: Depth in Feet scaled 1:240





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			AES 1-7/16" Cablehead	1.08	1.44	1.00
			AGS-001 (219135) Adaptor GO to Sondex	0.21	1.69	1.00



GR	22.61		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		RBT-004 (10012639in7) Radial Bond Tool (UW 3 1/8)	9.47	3.13	140.00
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					
MIT	5.41		PRC-057 (1102) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			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		BUL-006 (219229) Bullnose Terminator	0.22	1.69	1.20
ITEMPX	0.00					
HVOLTX	0.00					
Dataset: 0512338033_anadarko_howard 15c-33hz_03-02-14_mit_rbl.db: field/well/run1/main2rdv Total Length: 26.91 ft Total Weight: 291.30 lb O.D. 3.13 in						

### Calibration Report

Database File: c:\warrior\data\anadarko\_howard 15c-33hz\0512338033\_anadarko\_howard 15c-33hz\_03-02-14\_m  
 Dataset Pathname: main2rdv  
 Dataset Creation: Tue Mar 04 09:37:21 2014 by Calc SCH 120126

Multi-finger Imaging Tool Calibration Report			
Serial Number:		218950	
Number of Fingers:		40	
Tool Model:		027	

Inclinometer Calibration Report			
Performed:		Fri, Oct, 10 10:41:51 2008	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1996	1975
Finger 1 up:		2238	2226
Finger 31 up:		1760	2216
Finger 21 up:		1769	1745
Finger 11 up:		2250	1738
Sensitivity ratio:	1.00023		
X-axis angle:	314.283		
Deviation const.:	339.139		

Finger Calibration Report							
Performed:				Sun Mar 02 12:49:10 2014			
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1364	288.0	1652	295.0	1947	261.0	2208
Finger 02:	1528	284.0	1812	272.0	2084	240.0	2324
Finger 03:	1461	304.0	1765	304.0	2069	271.0	2340
Finger 04:	1478	284.0	1762	288.0	2050	259.0	2309
Finger 05:	1529	272.0	1801	273.0	2074	248.0	2322
Finger 06:	1521	272.0	1793	287.0	2080	268.0	2348
Finger 07:	1504	277.0	1781	295.0	2076	281.0	2357
Finger 08:	1576	250.0	1826	266.0	2092	260.0	2352
Finger 09:	1505	285.0	1790	304.0	2094	303.0	2397
Finger 10:	1584	272.0	1856	282.0	2138	282.0	2420
Finger 11:	1538	268.0	1806	289.0	2095	300.0	2395
Finger 12:	1510	280.0	1790	303.0	2093	326.0	2419
Finger 13:	1518	266.0	1784	289.0	2073	312.0	2385
Finger 14:	1514	269.0	1783	294.0	2077	327.0	2404
Finger 15:	1519	267.0	1786	295.0	2081	337.0	2418
Finger 16:	1524	266.0	1790	296.0	2086	338.0	2424
Finger 17:	1499	269.0	1768	296.0	2064	342.0	2406
Finger 18:	1556	257.0	1813	278.0	2091	319.0	2410
Finger 19:	1586	244.0	1830	264.0	2094	308.0	2402
Finger 20:	1511	268.0	1779	290.0	2069	345.0	2414
Finger 21:	1487	272.0	1759	300.0	2059	353.0	2412
Finger 22:	1505	272.0	1777	292.0	2069	342.0	2411
Finger 23:X	1562	253.0	1815	269.0	2084	308.0	2392
Finger 24:	1559	257.0	1816	275.0	2091	316.0	2407
Finger 25:	1526	270.0	1796	286.0	2082	320.0	2402
Finger 26:	1465	279.0	1744	291.0	2035	327.0	2362
Finger 27:	1513	273.0	1786	282.0	2068	309.0	2377
Finger 28:	1476	284.0	1760	289.0	2049	315.0	2364
Finger 29:	1475	283.0	1758	284.0	2042	305.0	2347
Finger 30:	1471	286.0	1757	289.0	2046	301.0	2347
Finger 31:	1593	256.0	1849	247.0	2096	249.0	2345
Finger 32:	1506	291.0	1797	283.0	2080	278.0	2358
Finger 33:	1498	292.0	1790	283.0	2073	265.0	2338
Finger 34:	1464	300.0	1764	292.0	2056	274.0	2330
Finger 35:	1480	295.0	1775	289.0	2064	268.0	2332
Finger 36:	1655	282.0	1937	269.0	2206	239.0	2445
Finger 37:	1293	288.0	1581	286.0	1867	264.0	2131
Finger 38:	1481	303.0	1784	292.0	2076	256.0	2332
Finger 39:	1443	304.0	1747	291.0	2038	260.0	2298
Finger 40:	1567	295.0	1862	291.0	2153	251.0	2404

## 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 15C-33HZ  
 Field Wattenberg  
 County Weld  
 State Colorado