



## Radial Cement Bond Log

Company Kerr-McGee Oil & Gas Onshore, L.P.				Company Kerr-McGee Oil & Gas Onshore, L.P.				
Well Highway 160 16C-2HZ				Well Highway 160 16C-2HZ				
Field Wattenberg				Field Wattenberg				
County Weld				County Weld				
State Colorado				State Colorado				
Location:				API # : 05-123-38029		Other Services		
SHL: 636' FNL 1532' FEL				GR Plug				
Lat/Long: 40.085614/-104.740313								
SEC 2 TWP 1N RGE 66W								
Permanent Datum		Ground Level		Elevation		Elevation		
Log Measured From		Kelly Bushing		13 FT		K.B. 5115'		
Drilling Measured From		Kelly Bushing				D.F. 5114'		
						G.L. 5102'		
Date		31-JAN-2014						
Run Number		One						
Depth Driller		---						
Depth Logger		7104 FT						
Bottom Logged Interval		7104 FT						
Top Log Interval		Surface						
Open Hole Size		8.750"						
Type Fluid		Water						
Density / Viscosity		8.34 lbm/gal						
Max. Recorded Temp.		215 degF						
Estimated Cement Top		1055.6 FT						
Time Well Ready		7:00						
Time Logger on Bottom		8:30						
Equipment Number		HD-134						
Location		Fort Lupton, CO						
Recorded By		C. Bryan						
Witnessed By		Edgar Chavez						
Borehole Record				Tubing Record				
Run Number		Bit	From	To	Size	Weight	From	To
Casing Record		Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom		
Surface Casing		9-5/8"	36#	---	Surface	1242 FT		
Intermediate #1		7"	26#	---	Surface	8045 FT		
Intermediate #2								
Liner		4-1/2"	11.6#	---	7065 FT	12,663 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

Log was correlated to the liner top at 7065'  
Logged With 2200 PSI at Surface

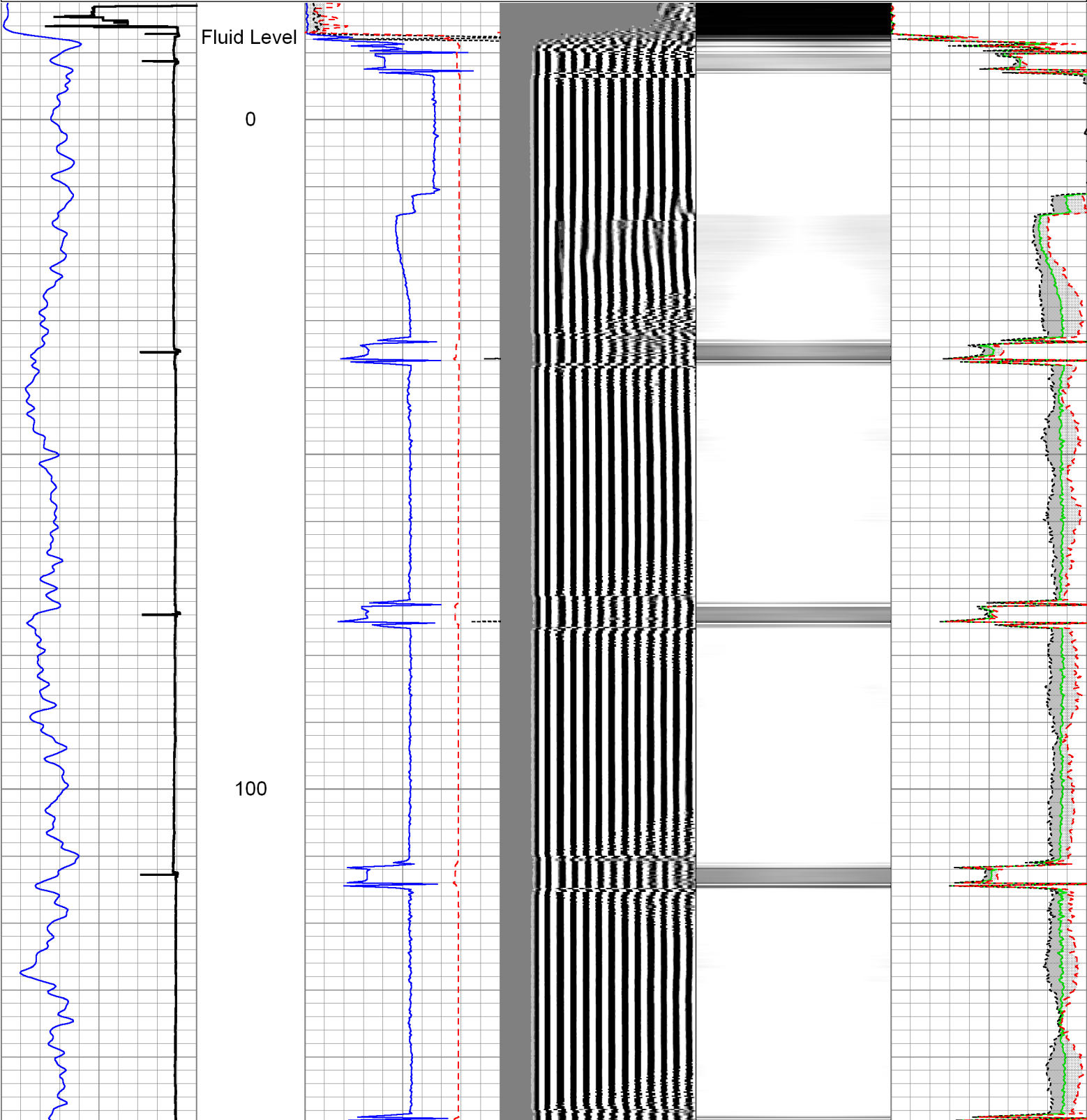
Thank you for choosing FMC Technologies Completion Services, Inc.

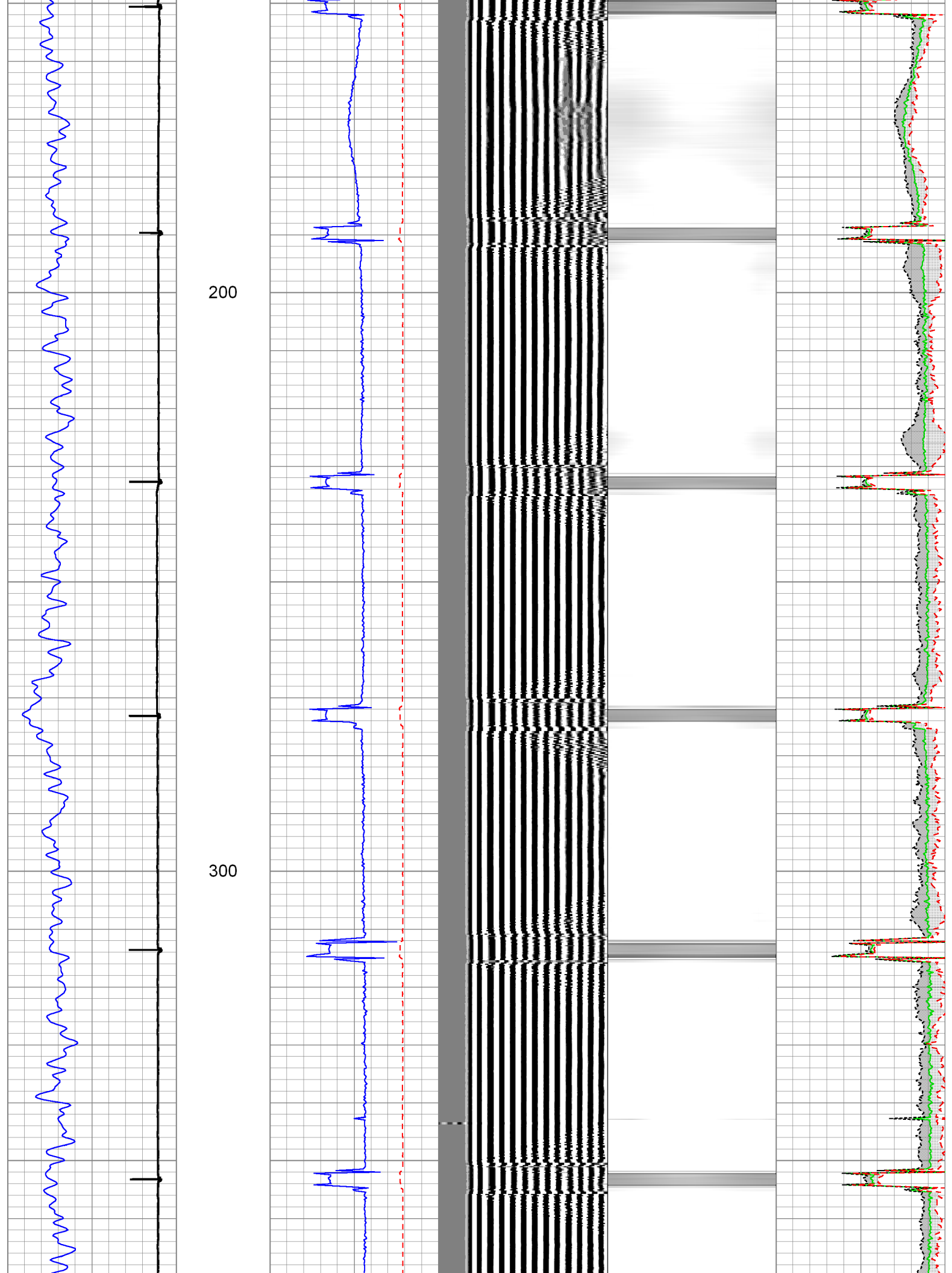


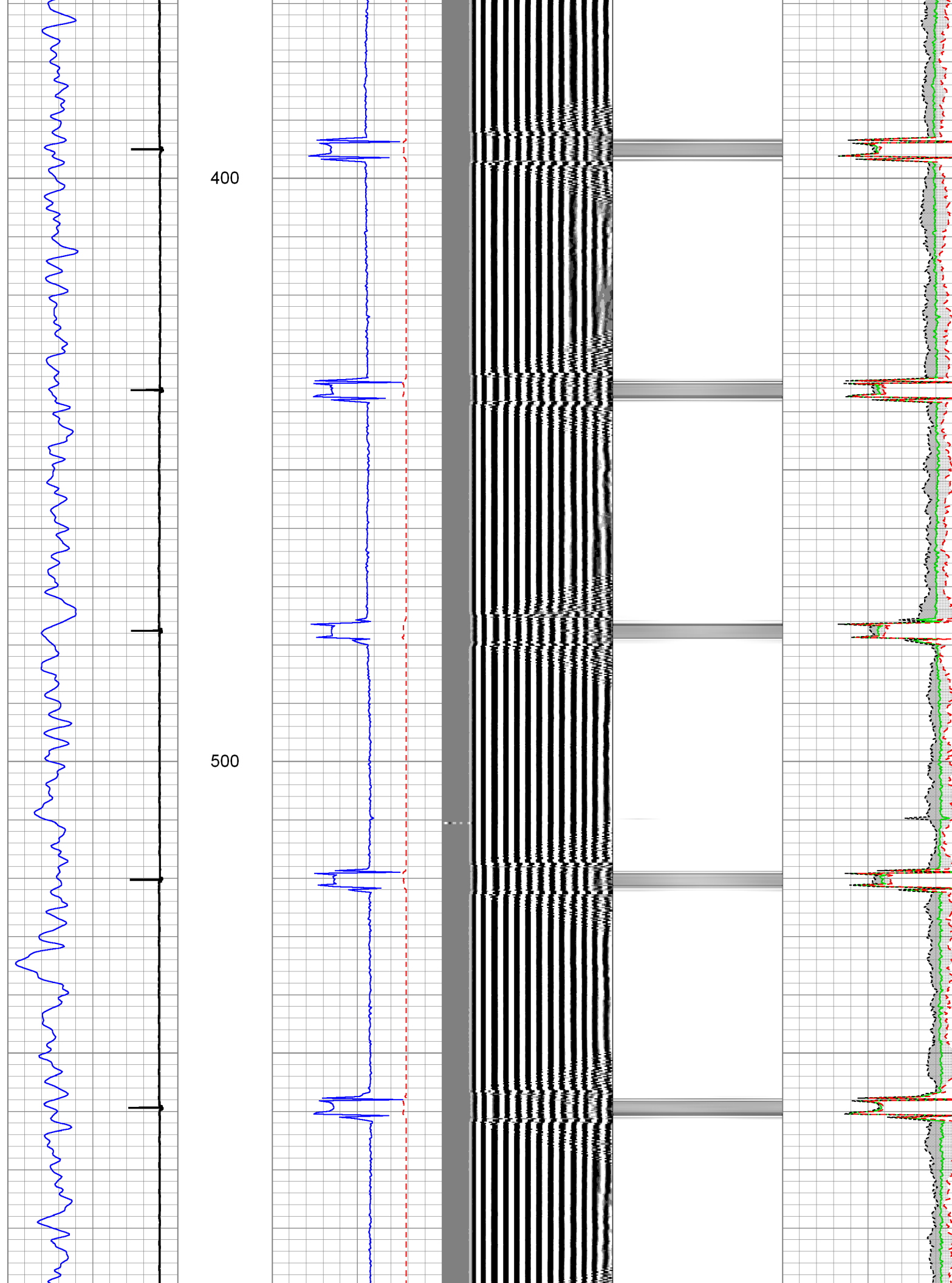
Main Pass

Logged with 2200 PSI on surface

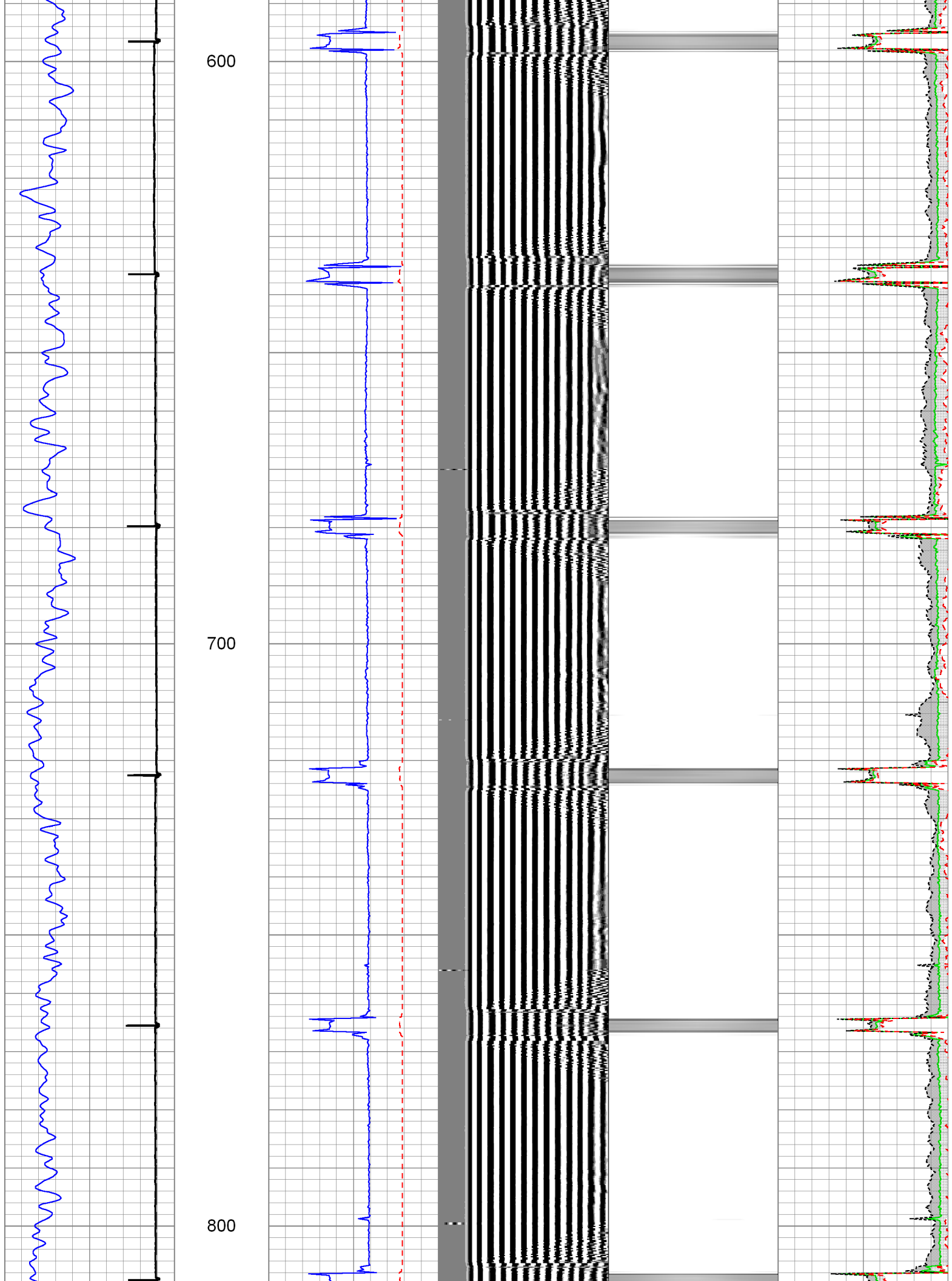
Gamma Ray			3' Amplitude		5' Variable Density Log	Sector Map	Average Amplitude		
0	(GAPI)	120	0	(mV)			100	0	100
Collar Locator			3' Amplitude x 5				Minimum Amplitude		
			0	(mV)			20	0	100
			3' Travel Time				Maximum Amplitude		
			650	(usec)			150	0	100

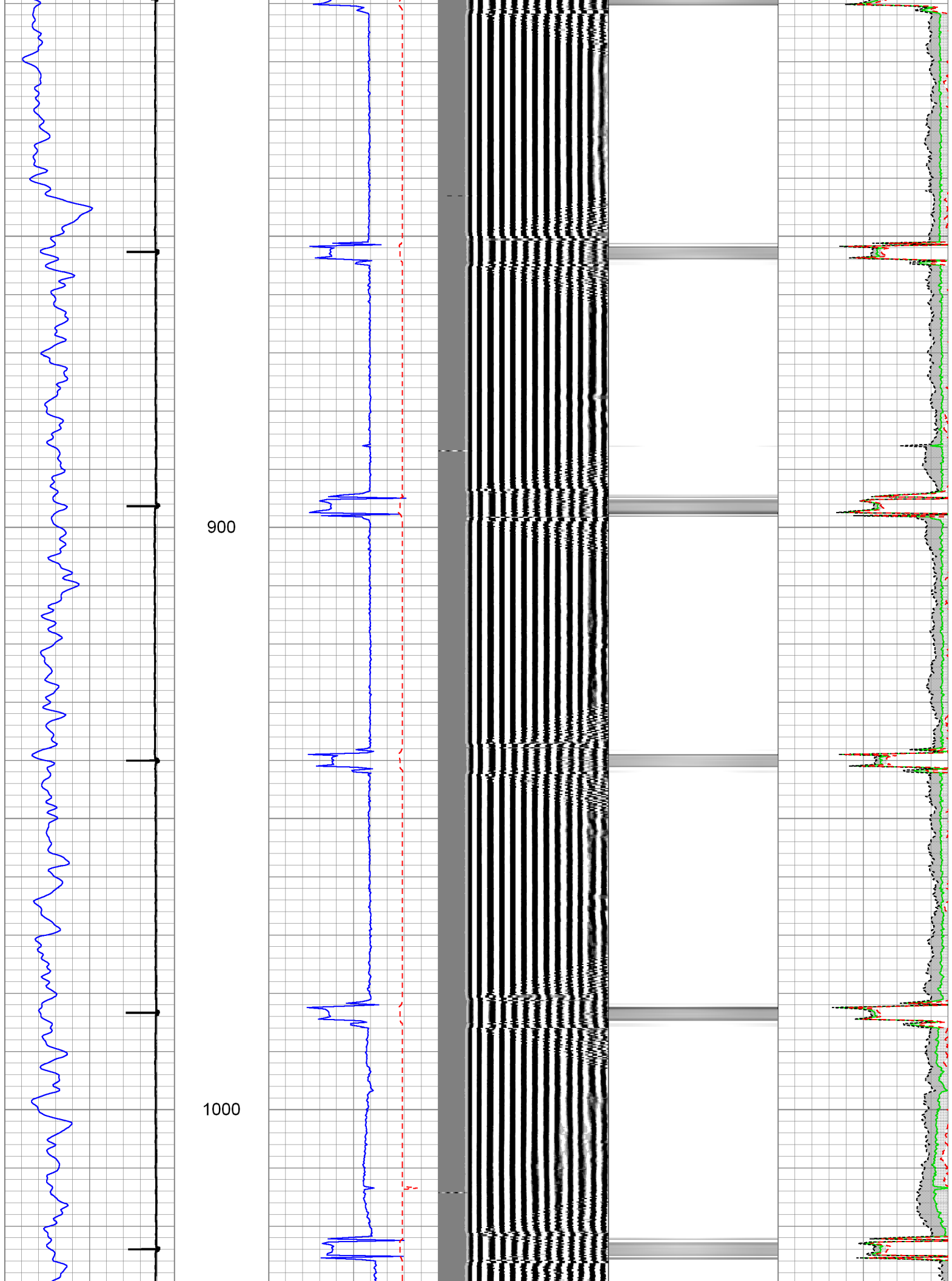


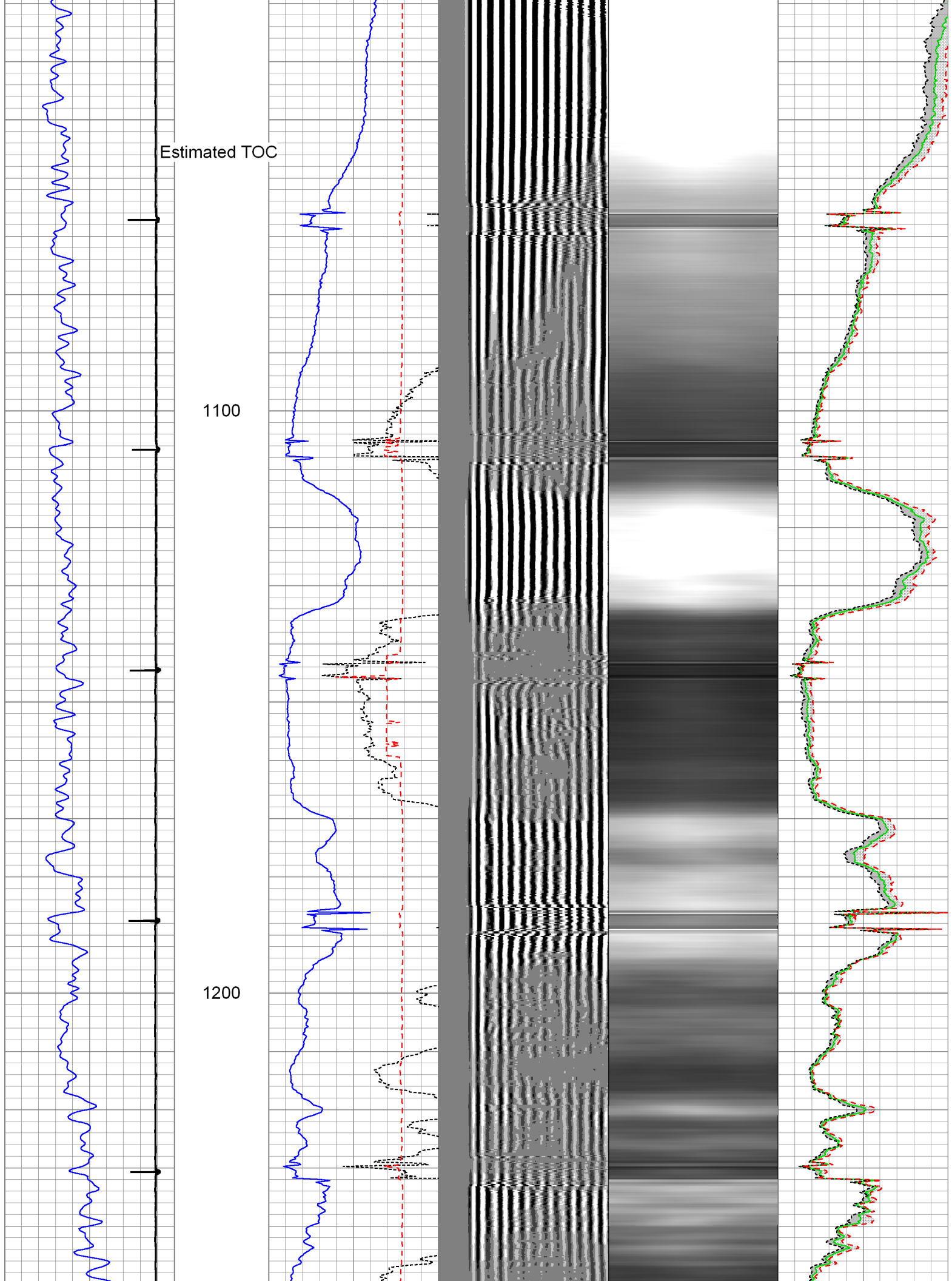


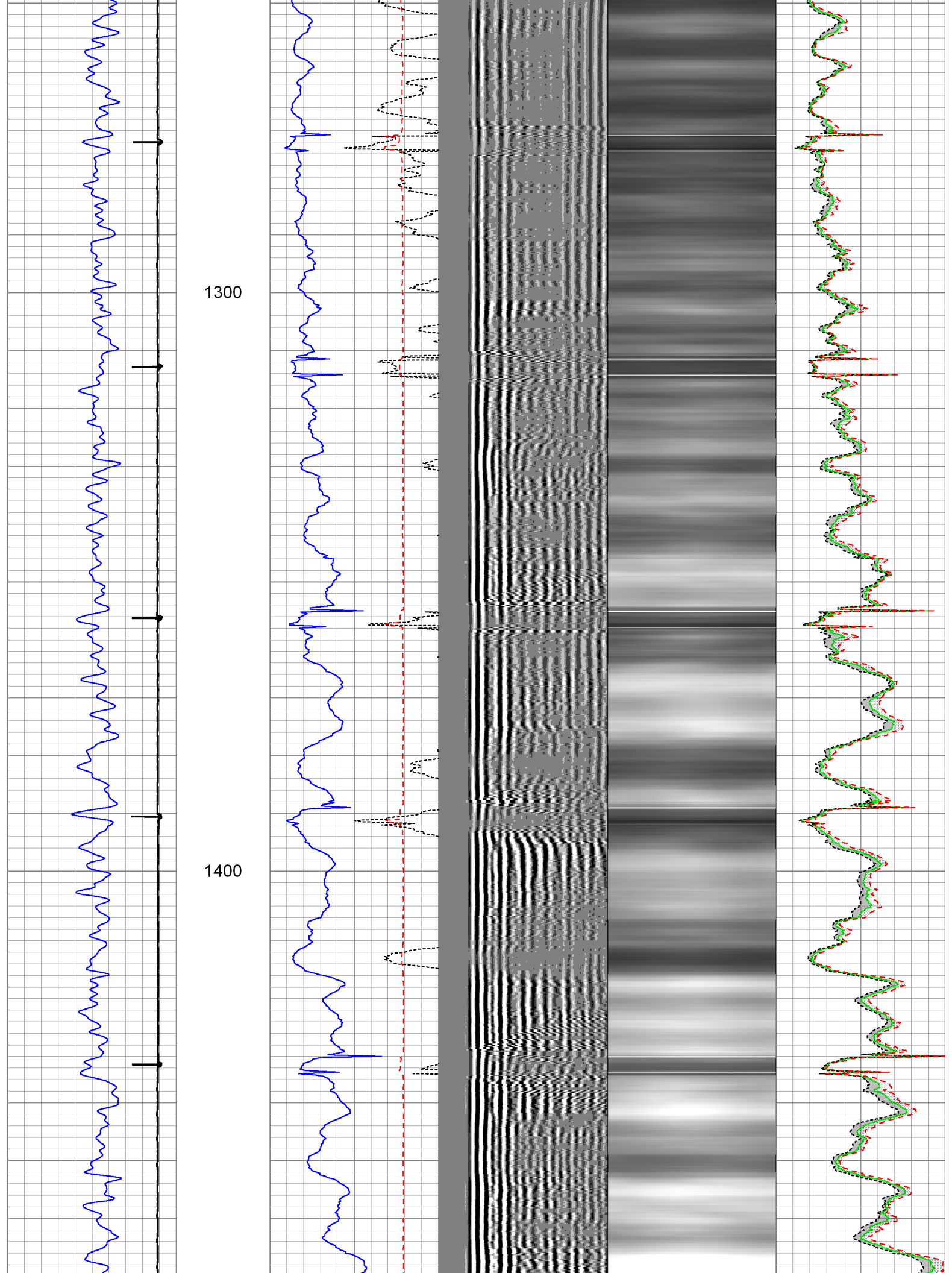


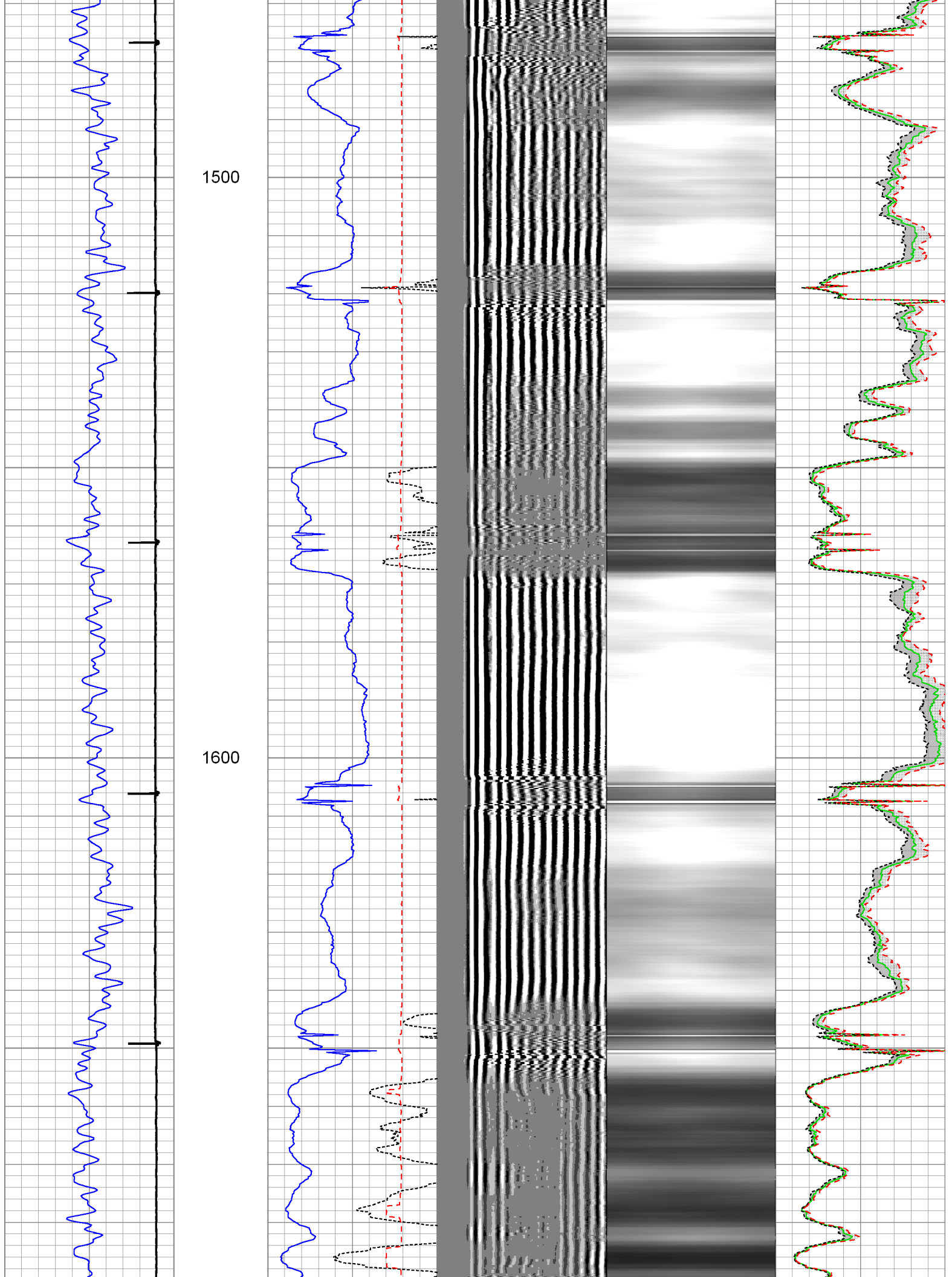




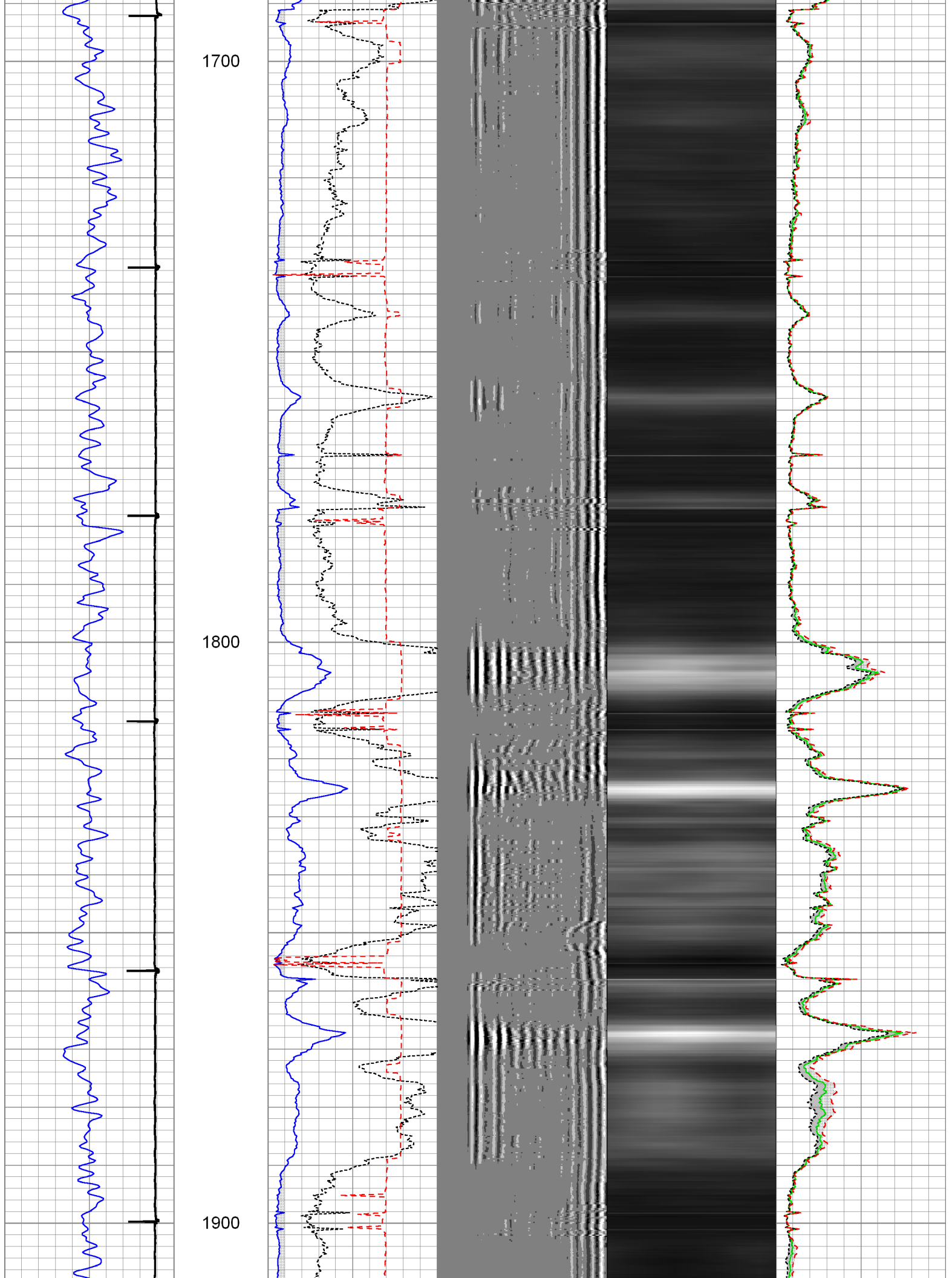




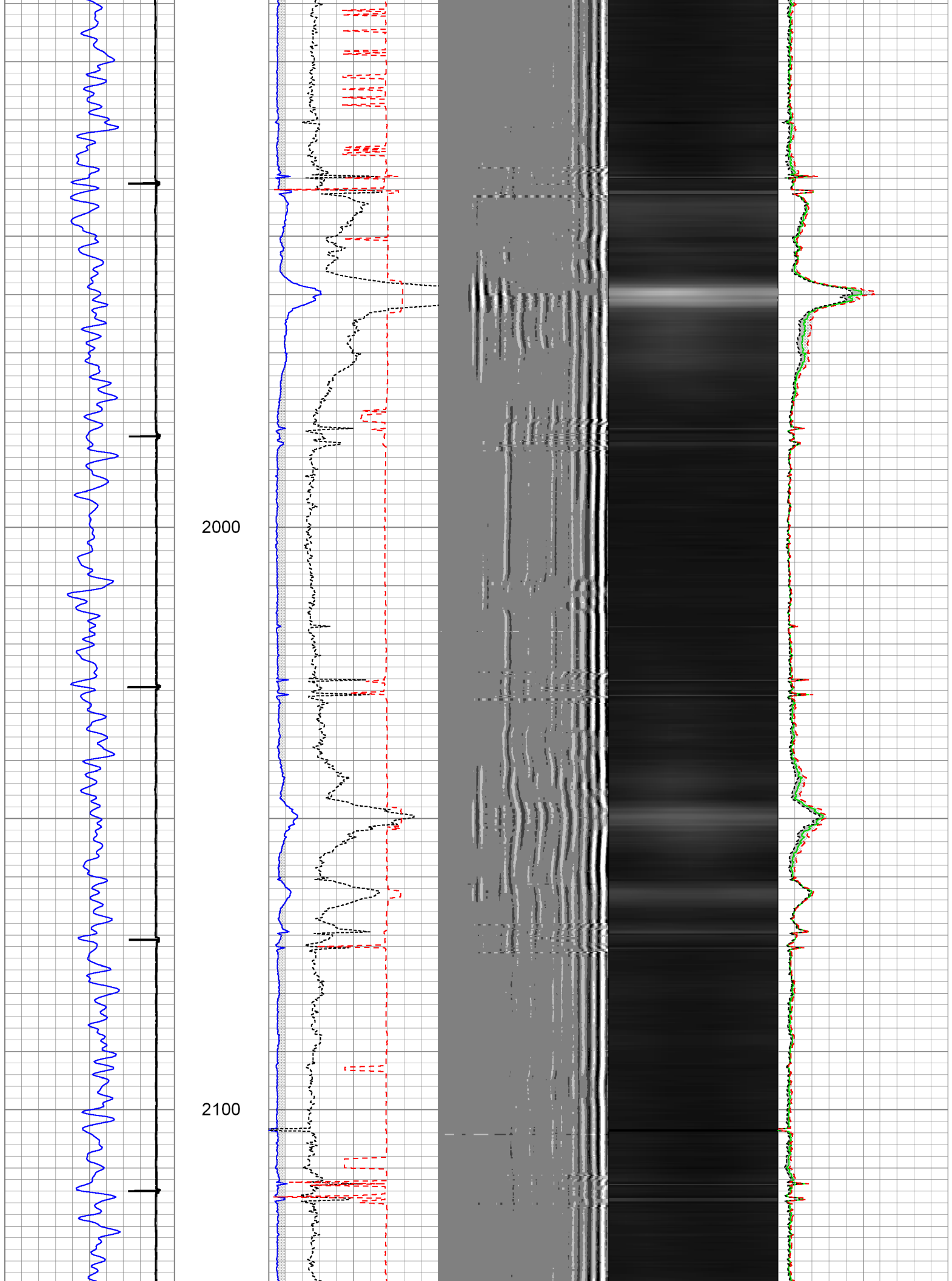


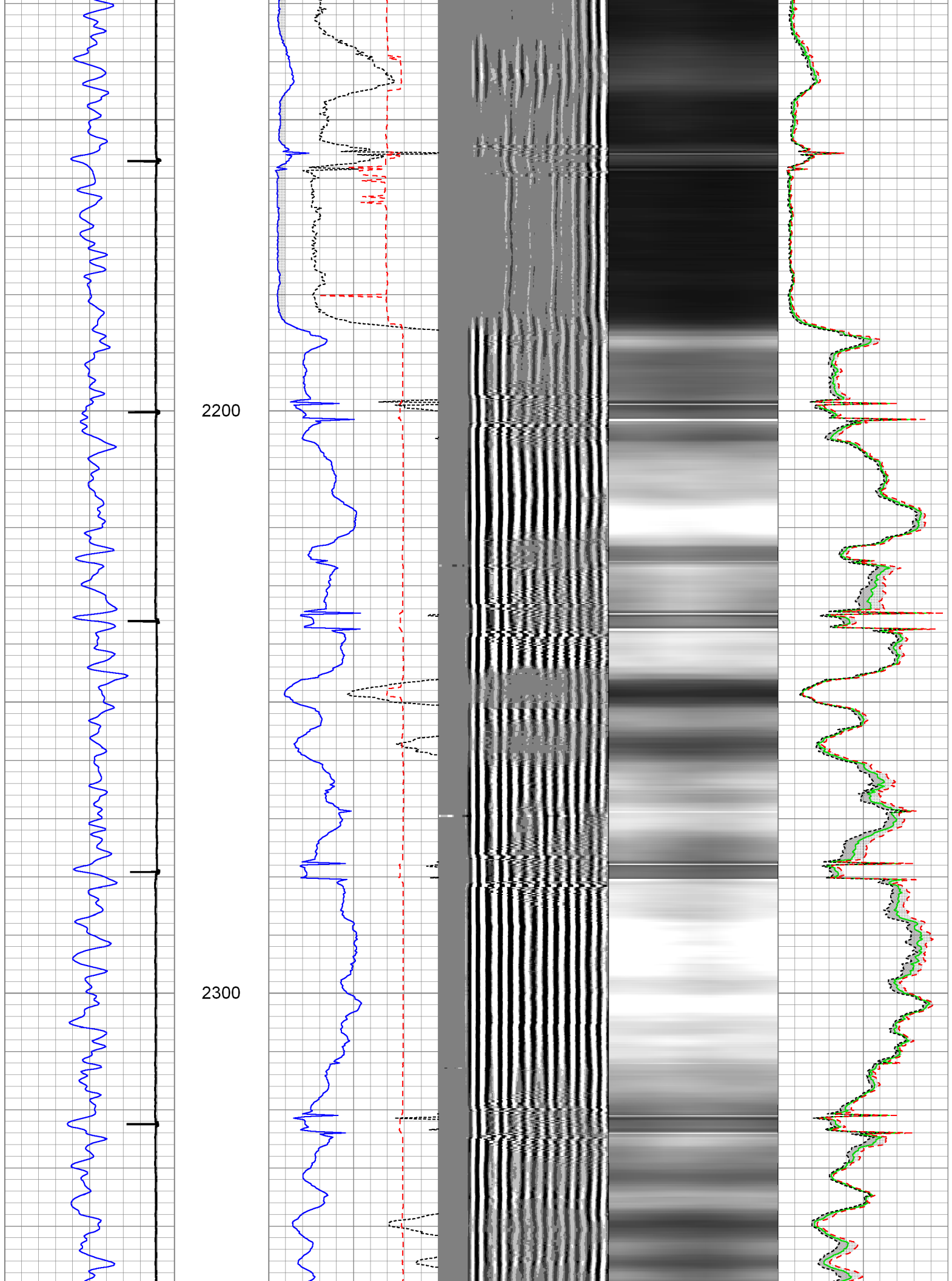


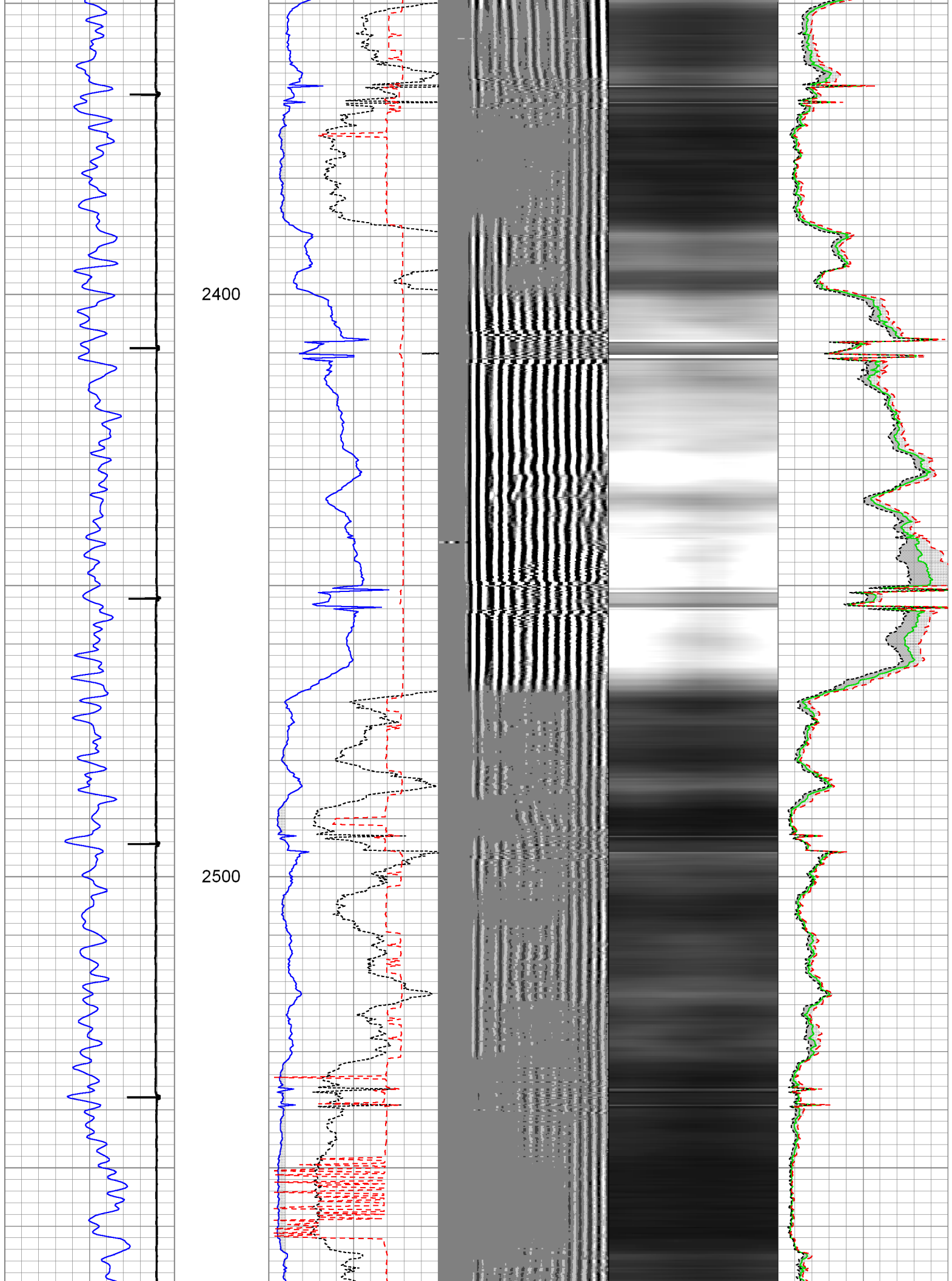






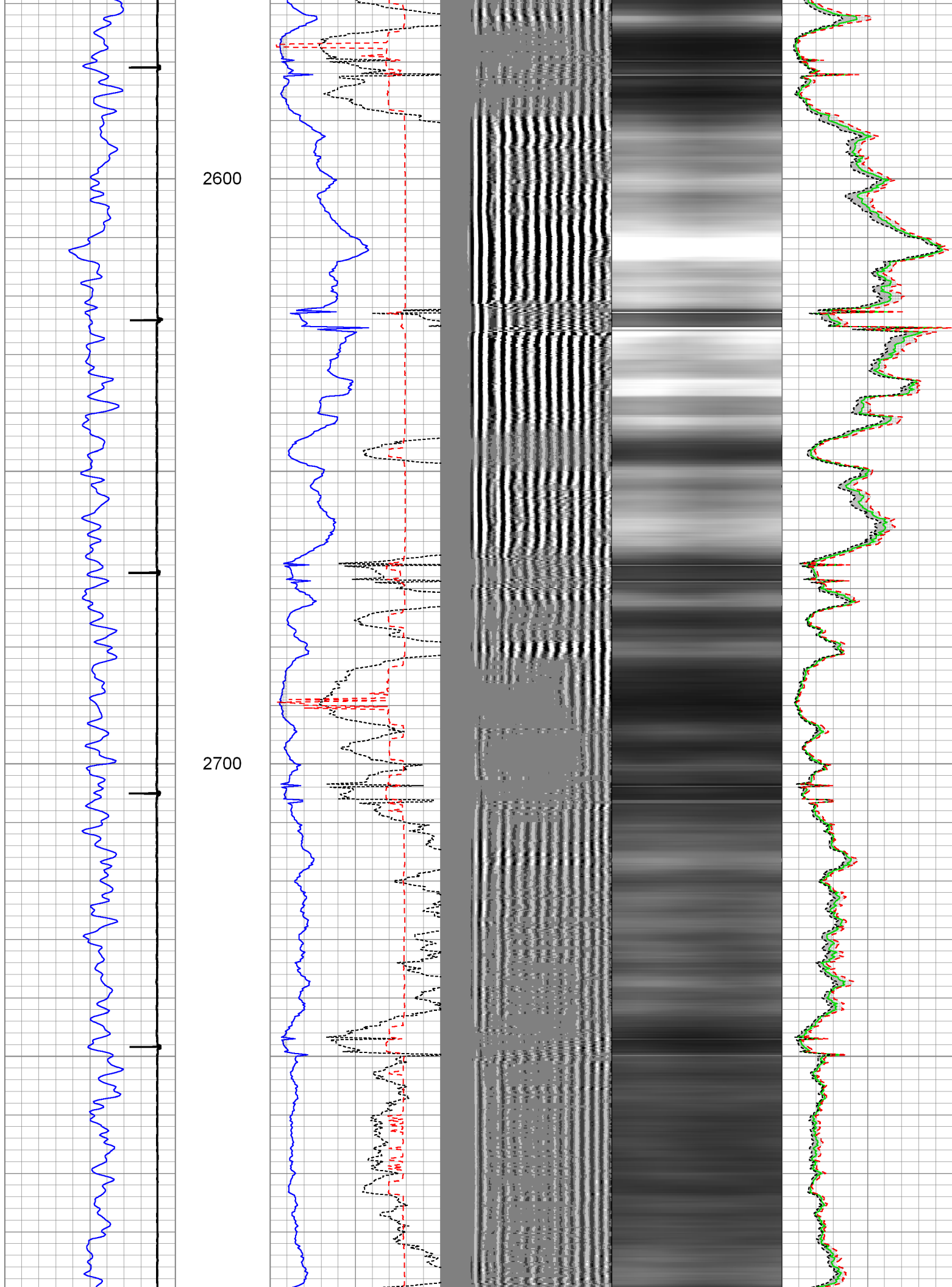






2600

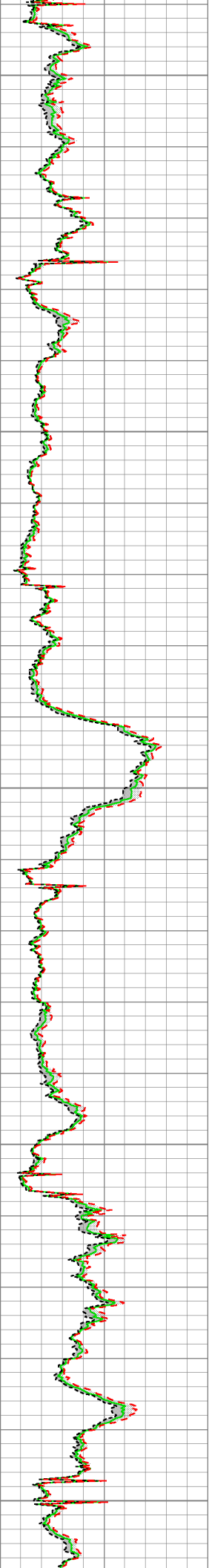
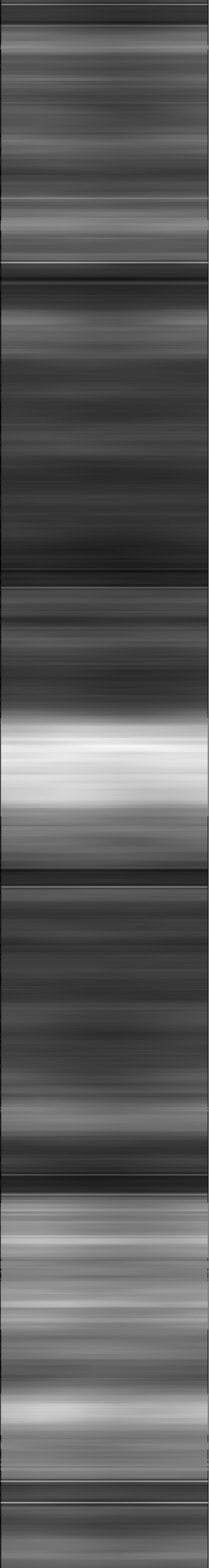
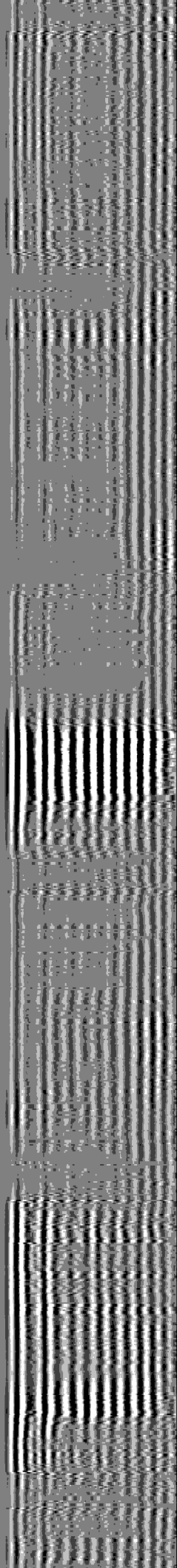
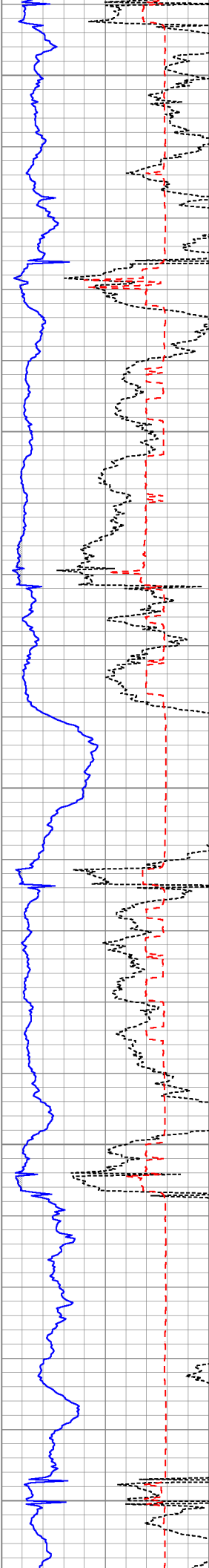
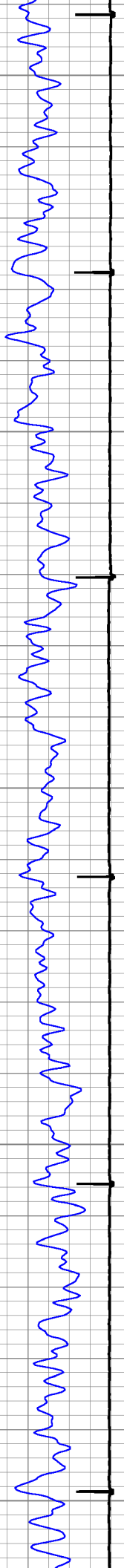
2700



2800

2900

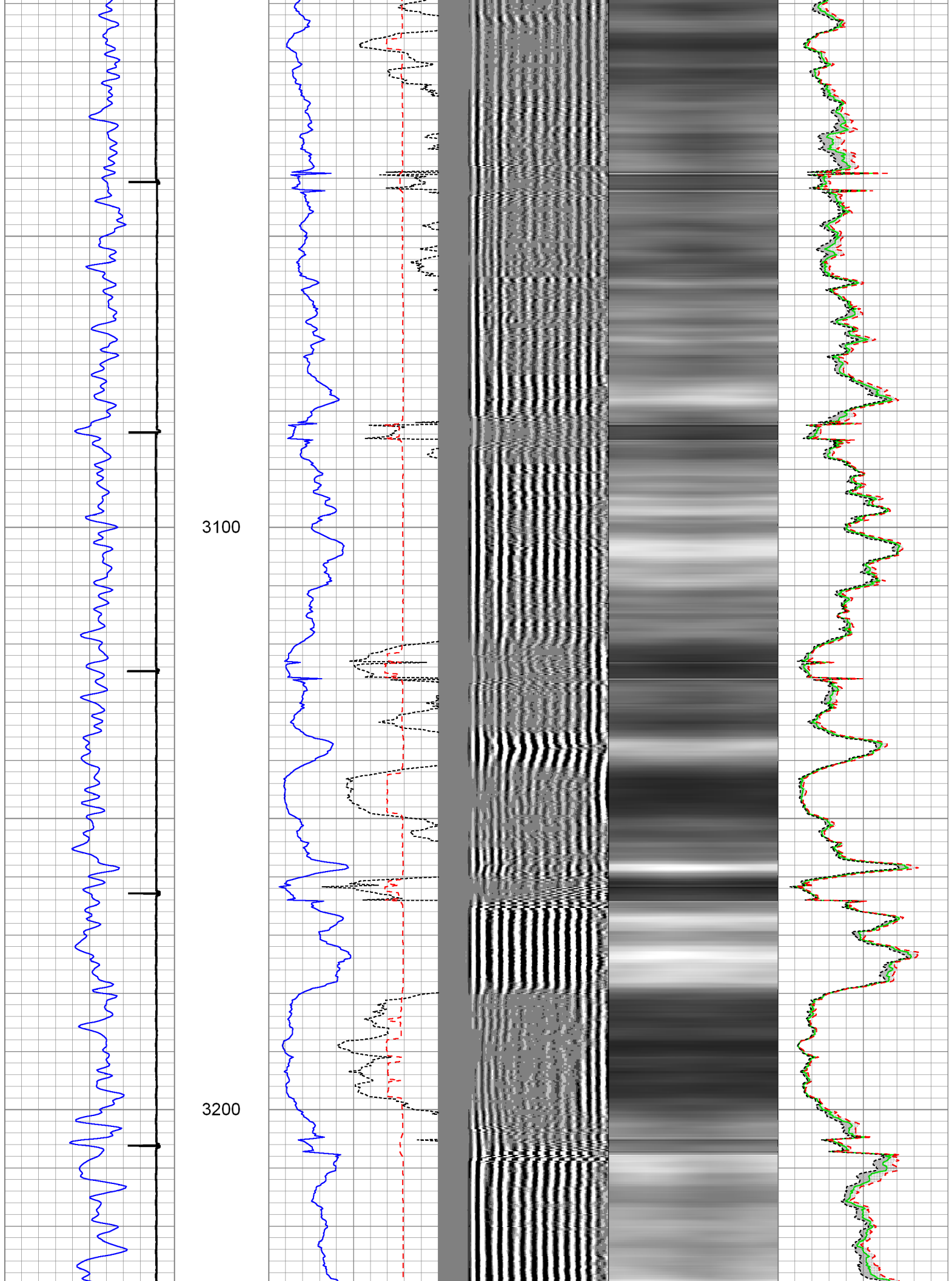
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3100

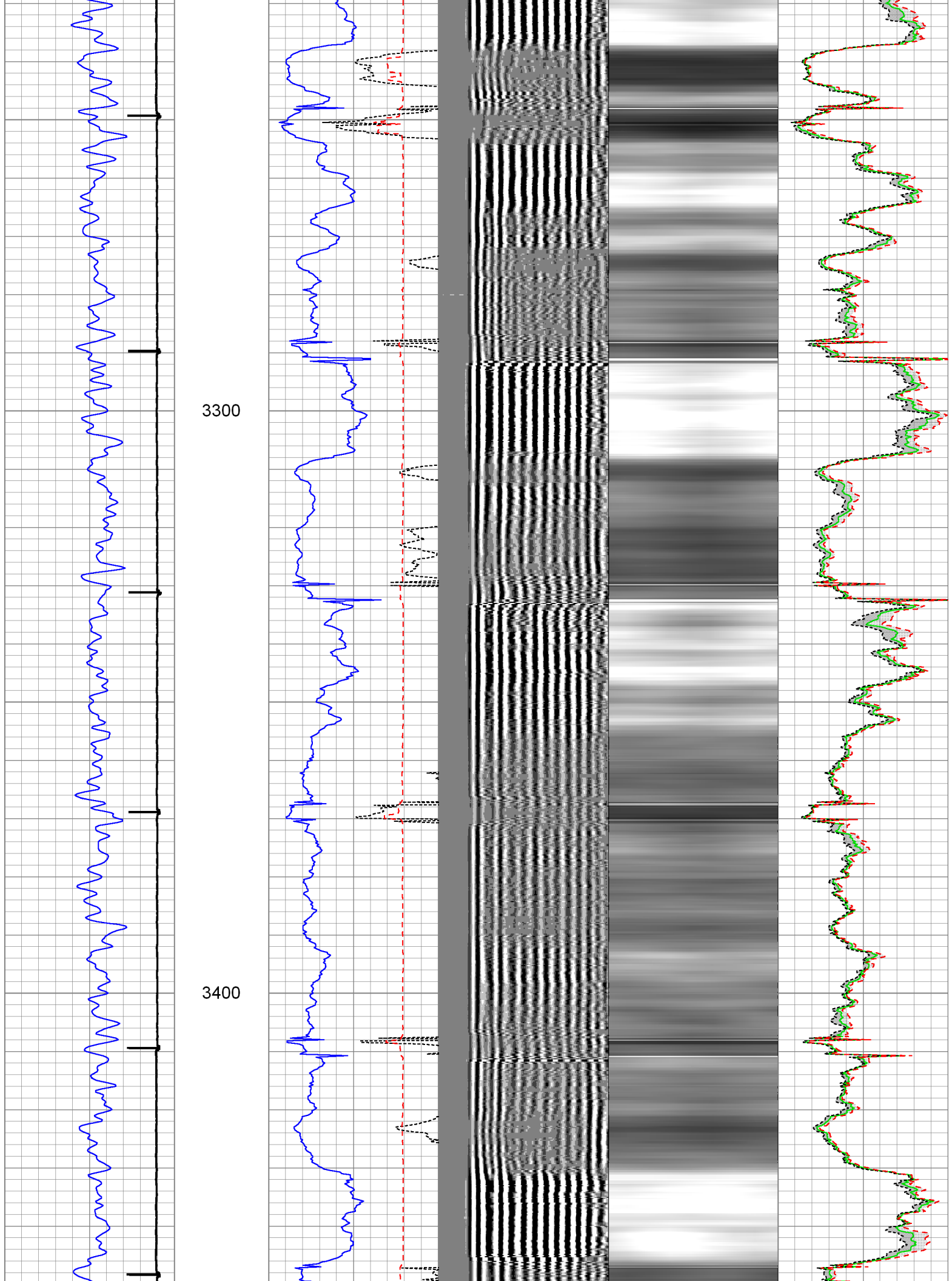
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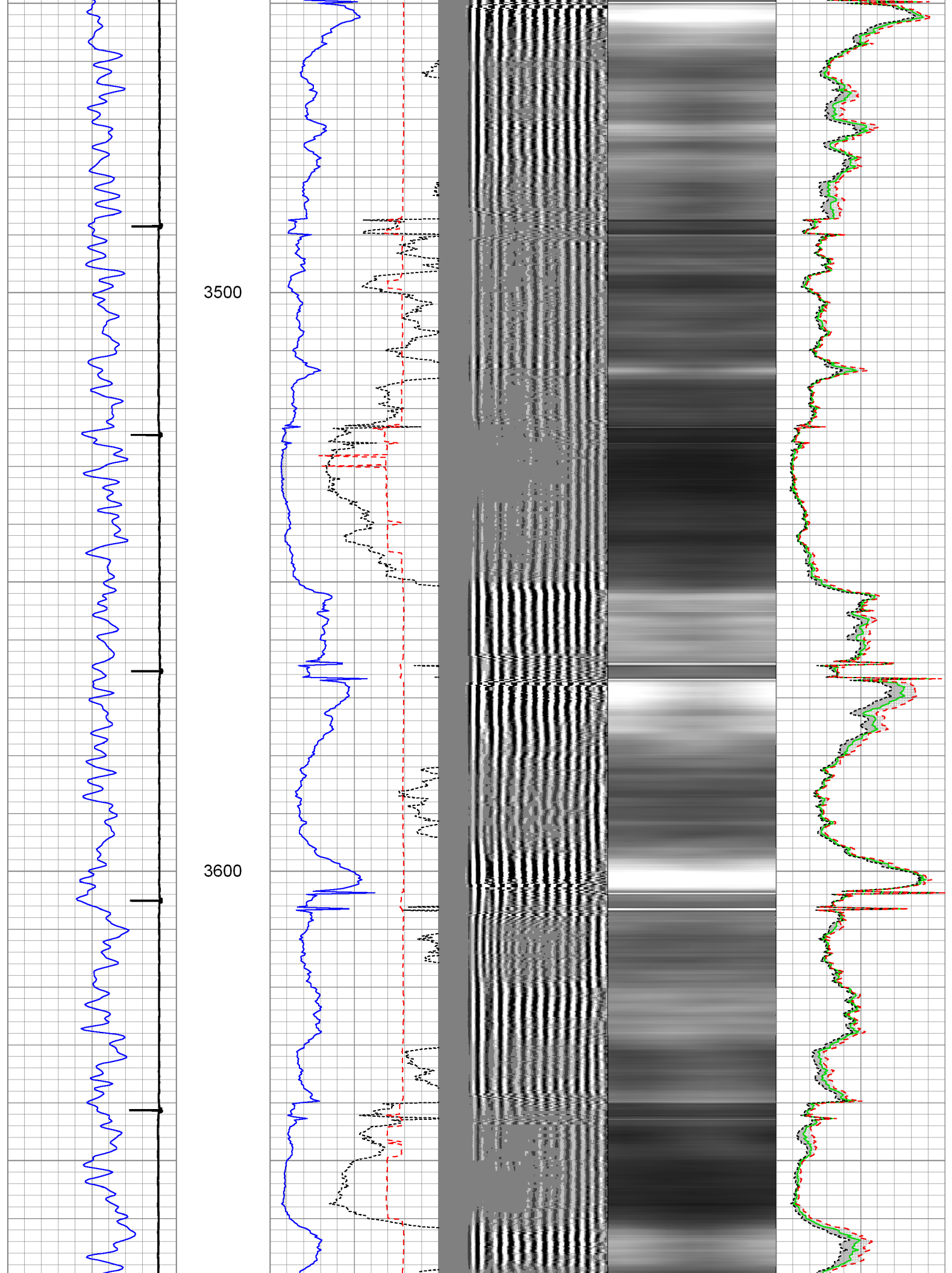




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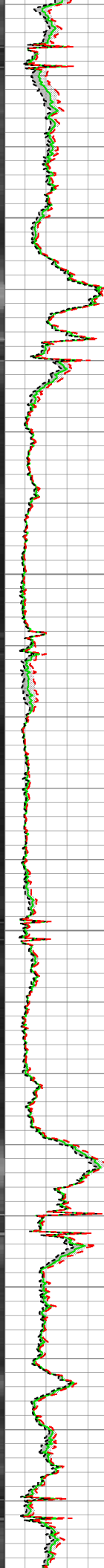
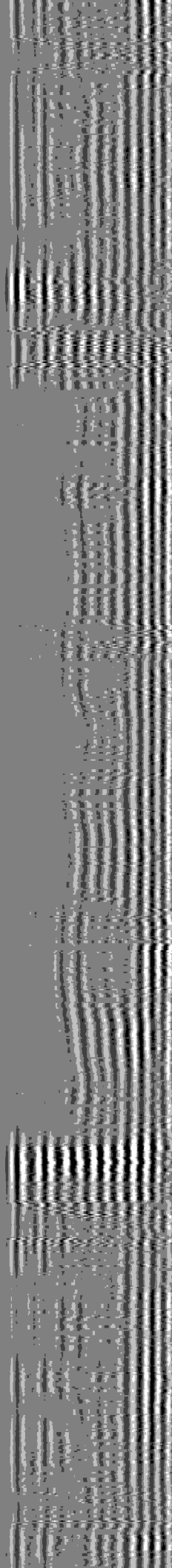
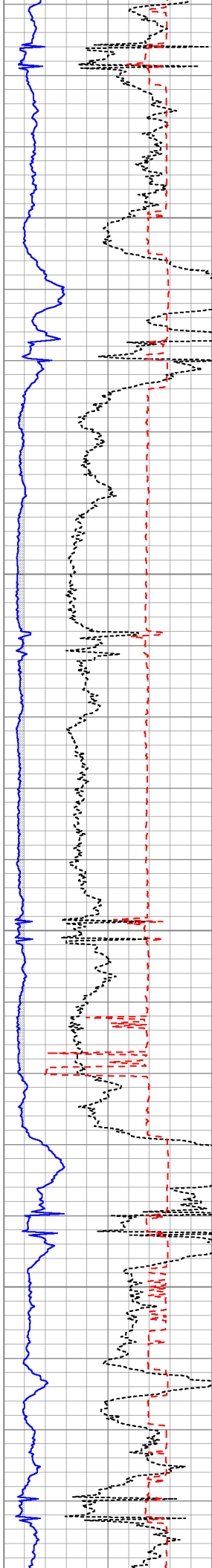
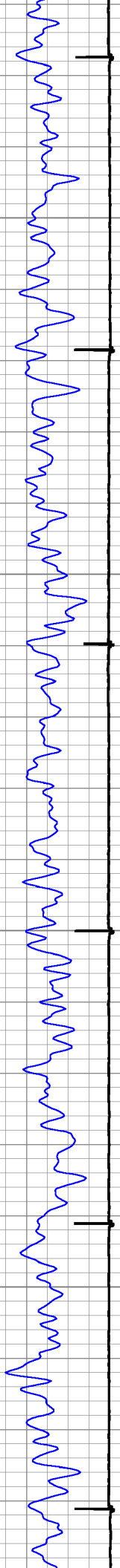
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3700

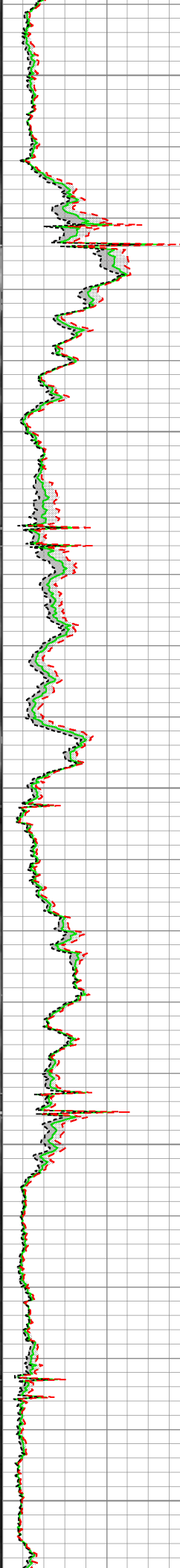
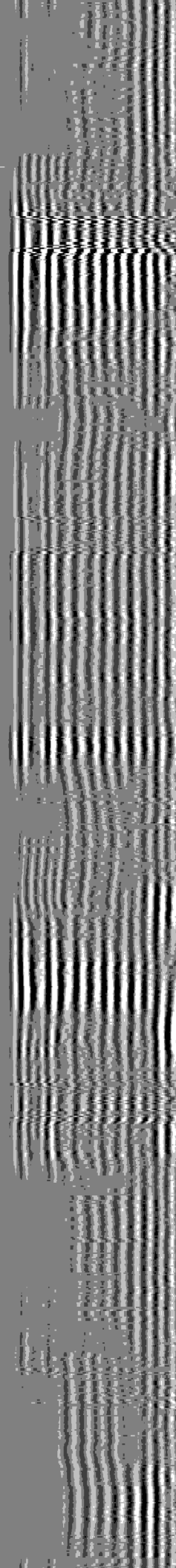
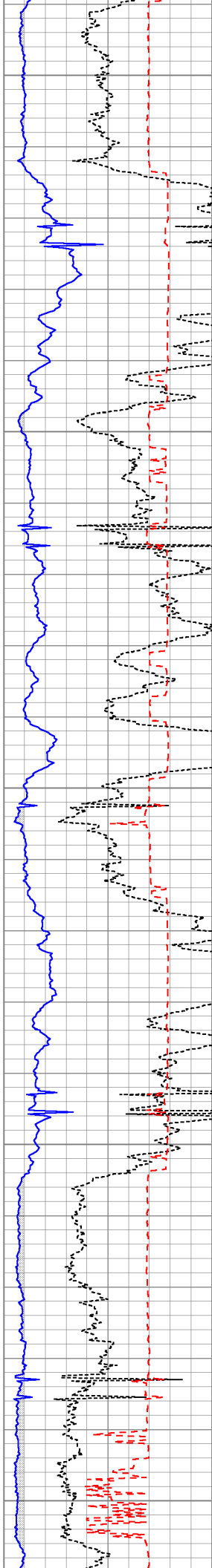
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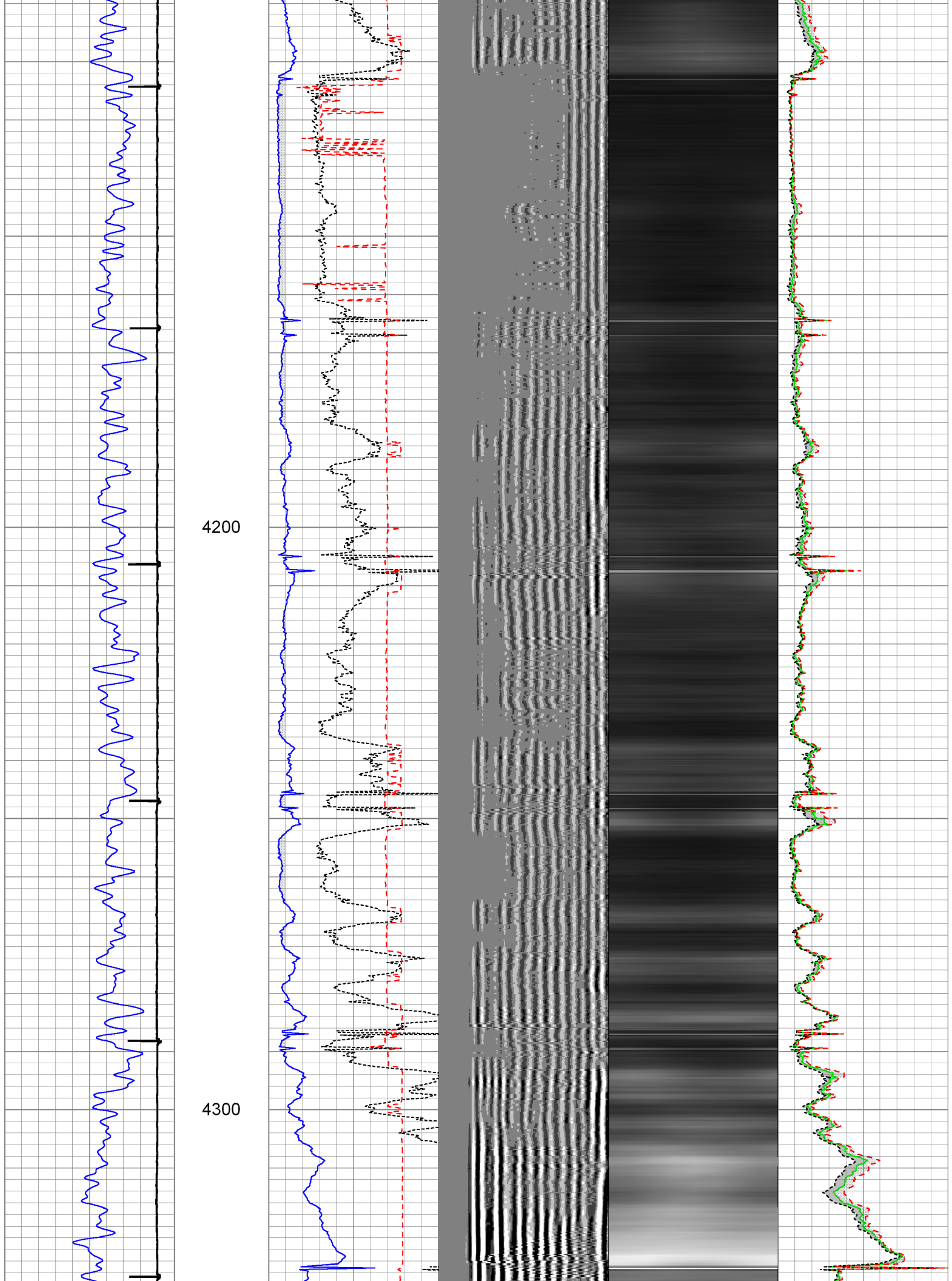


3900

4000

4100

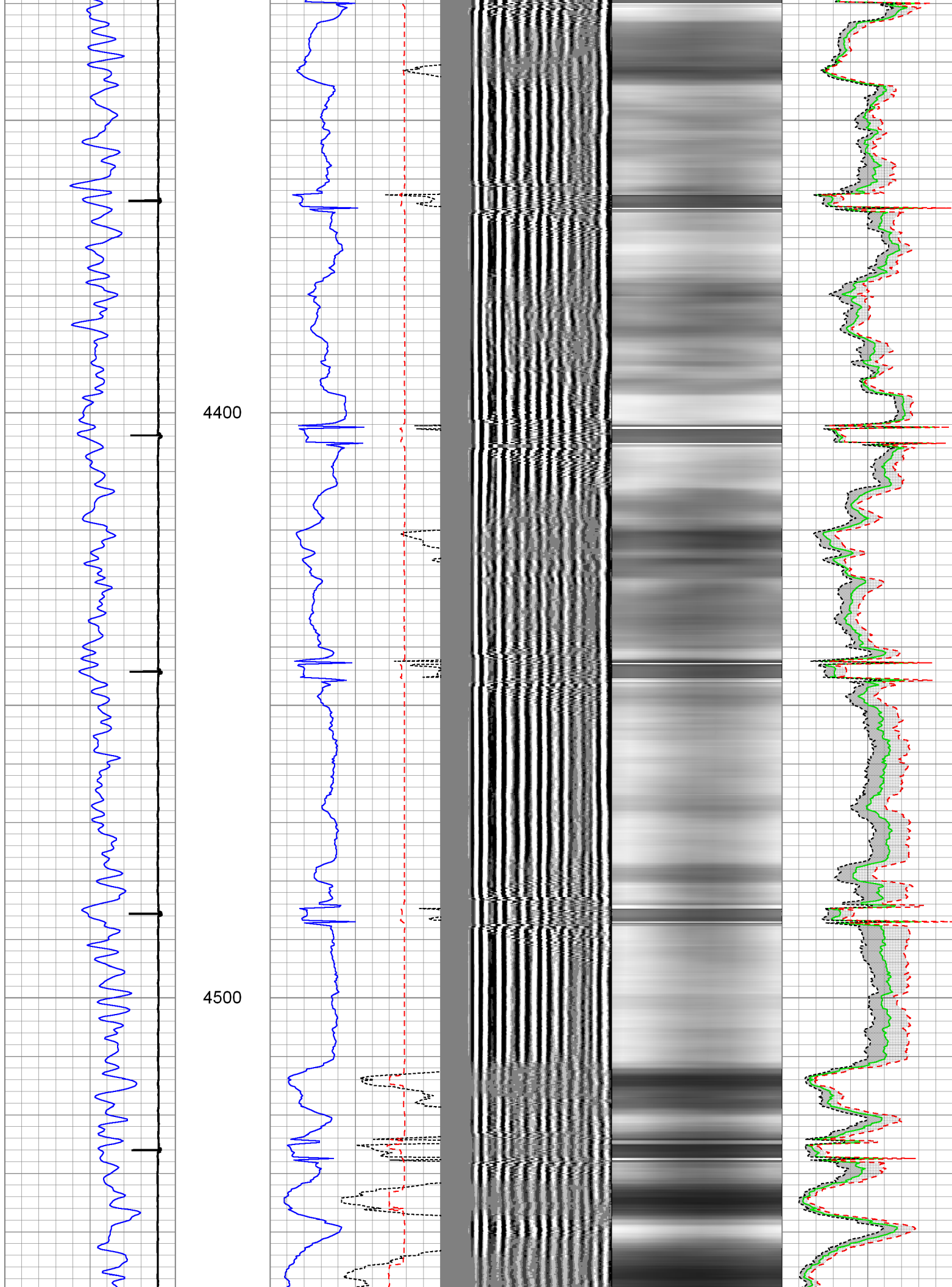




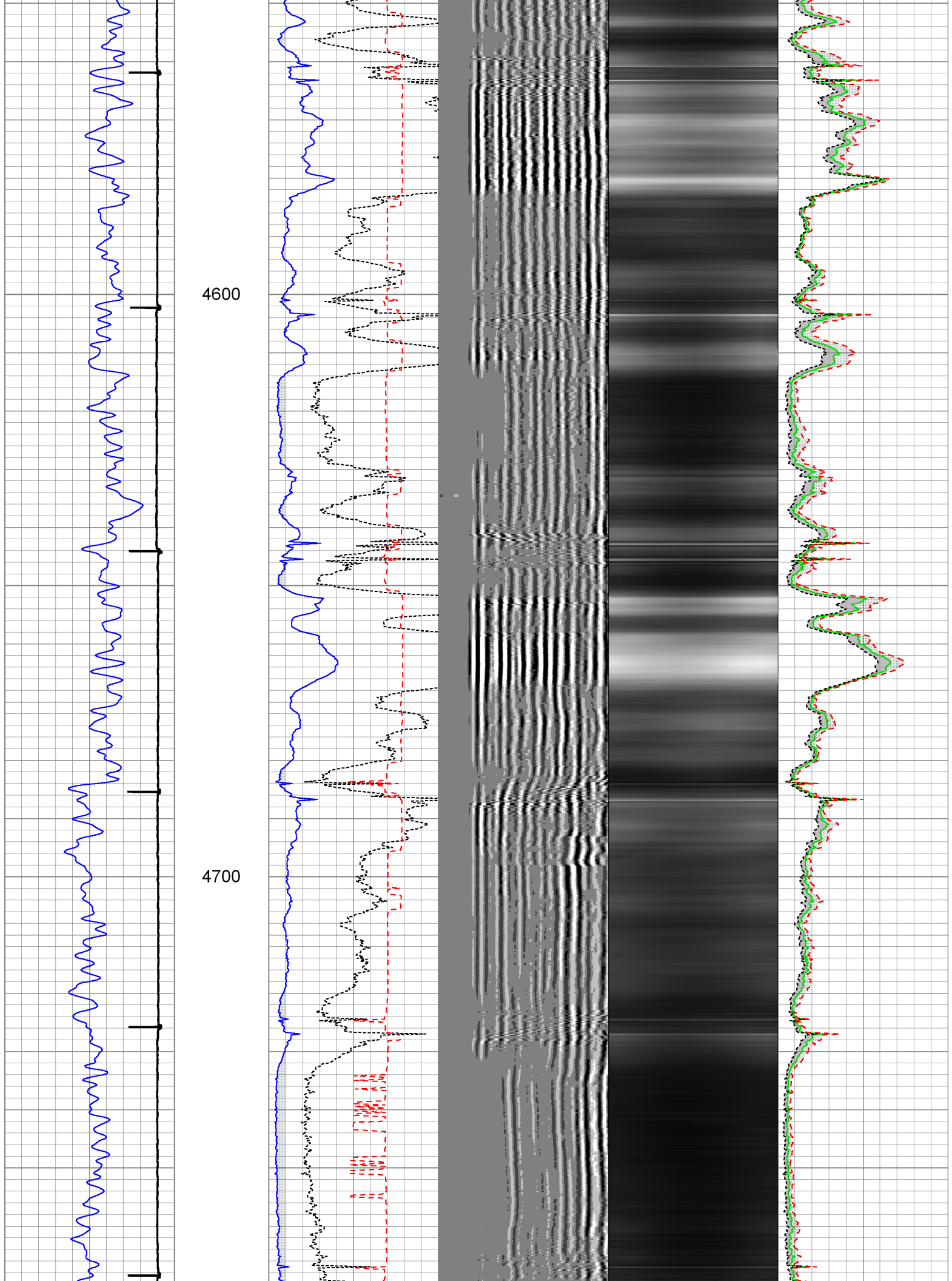


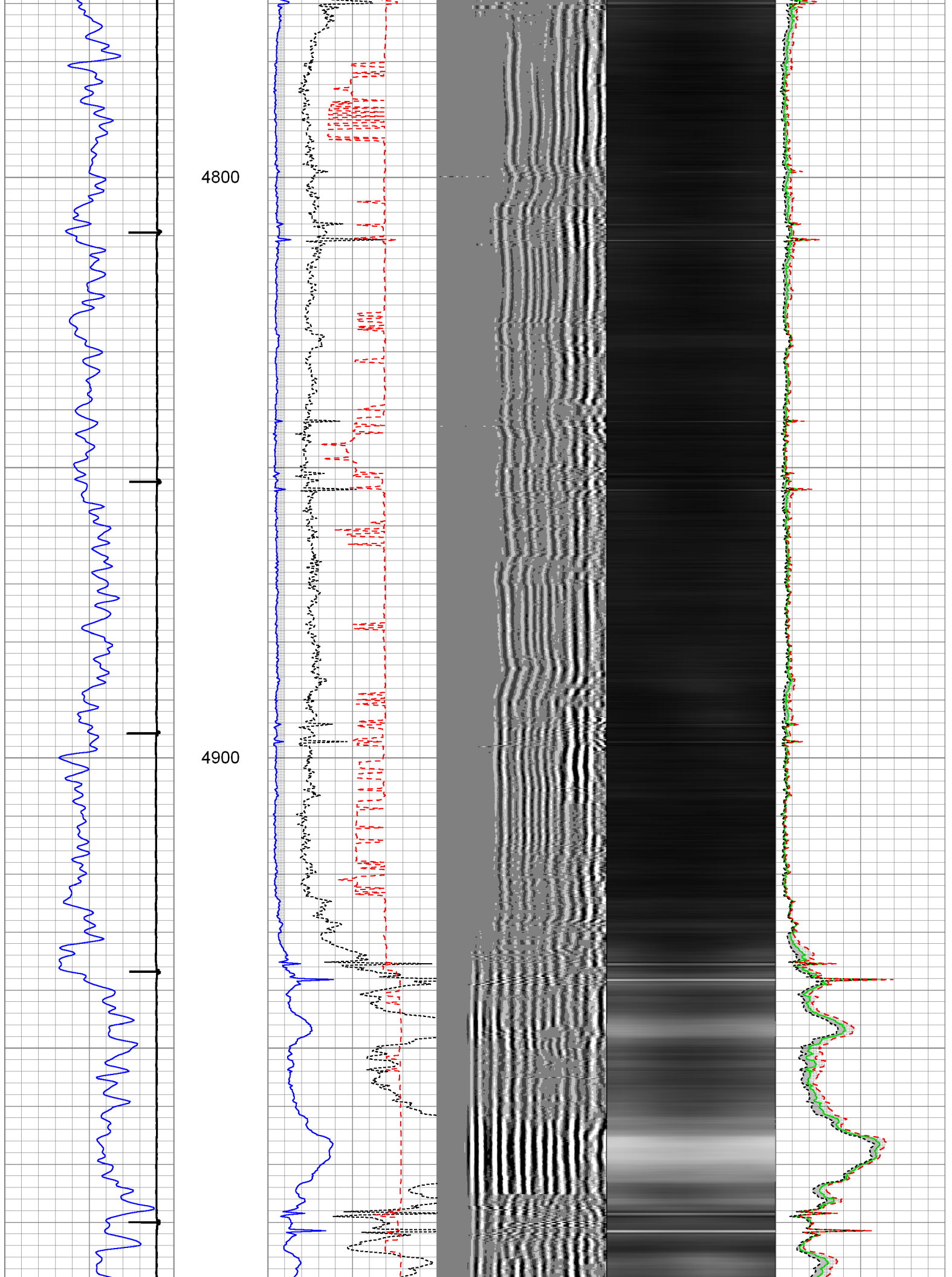
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4500





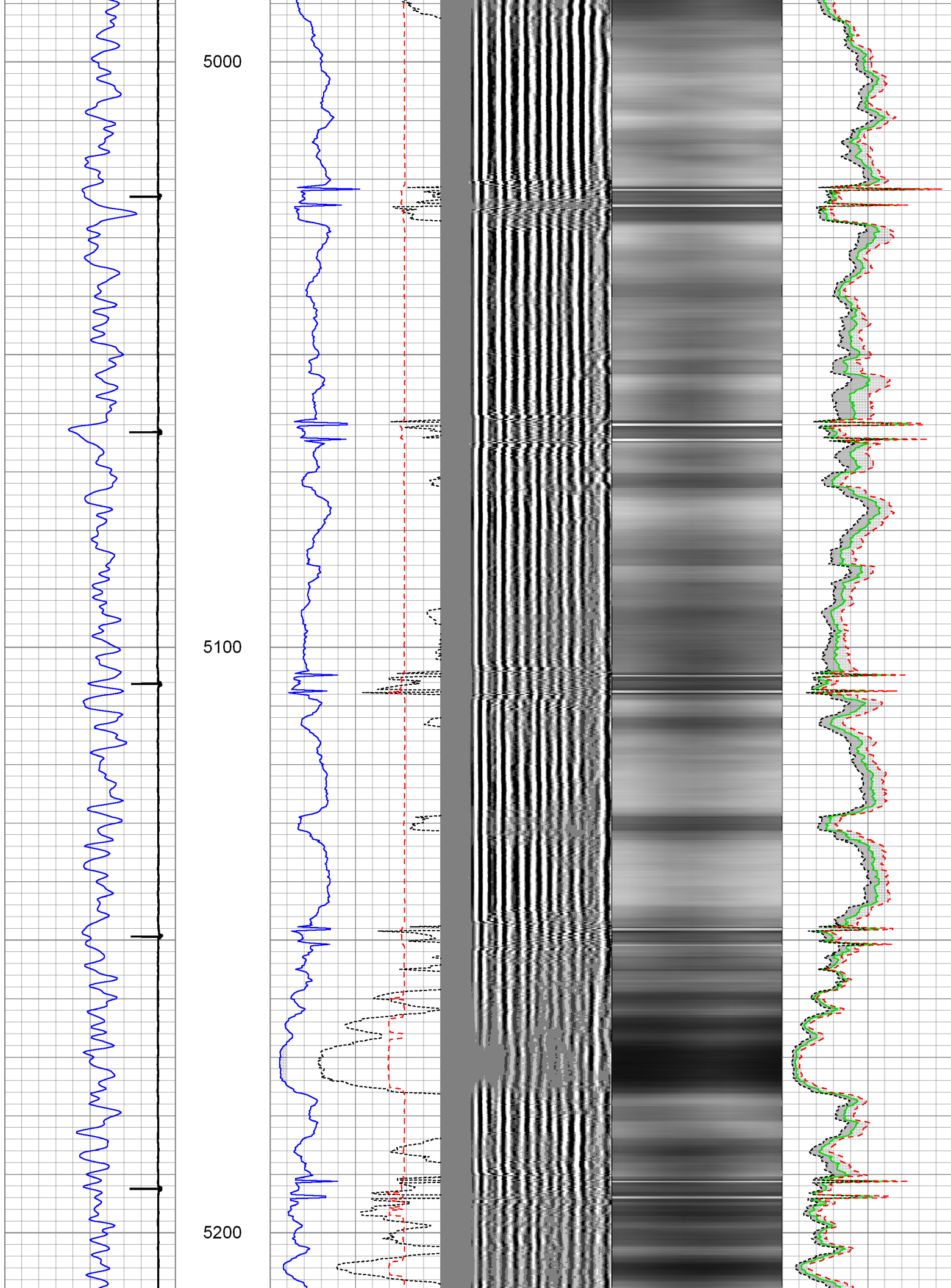


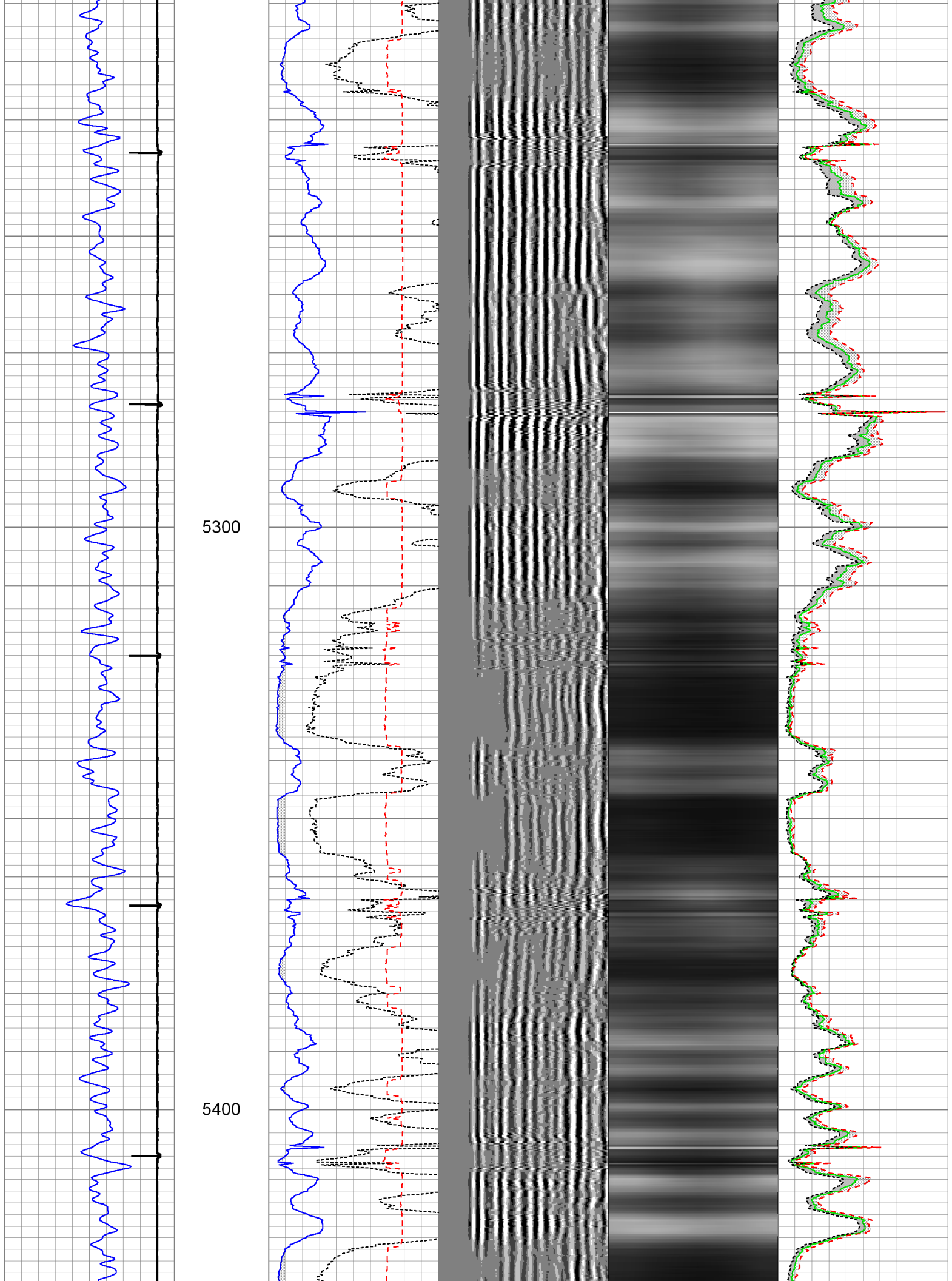


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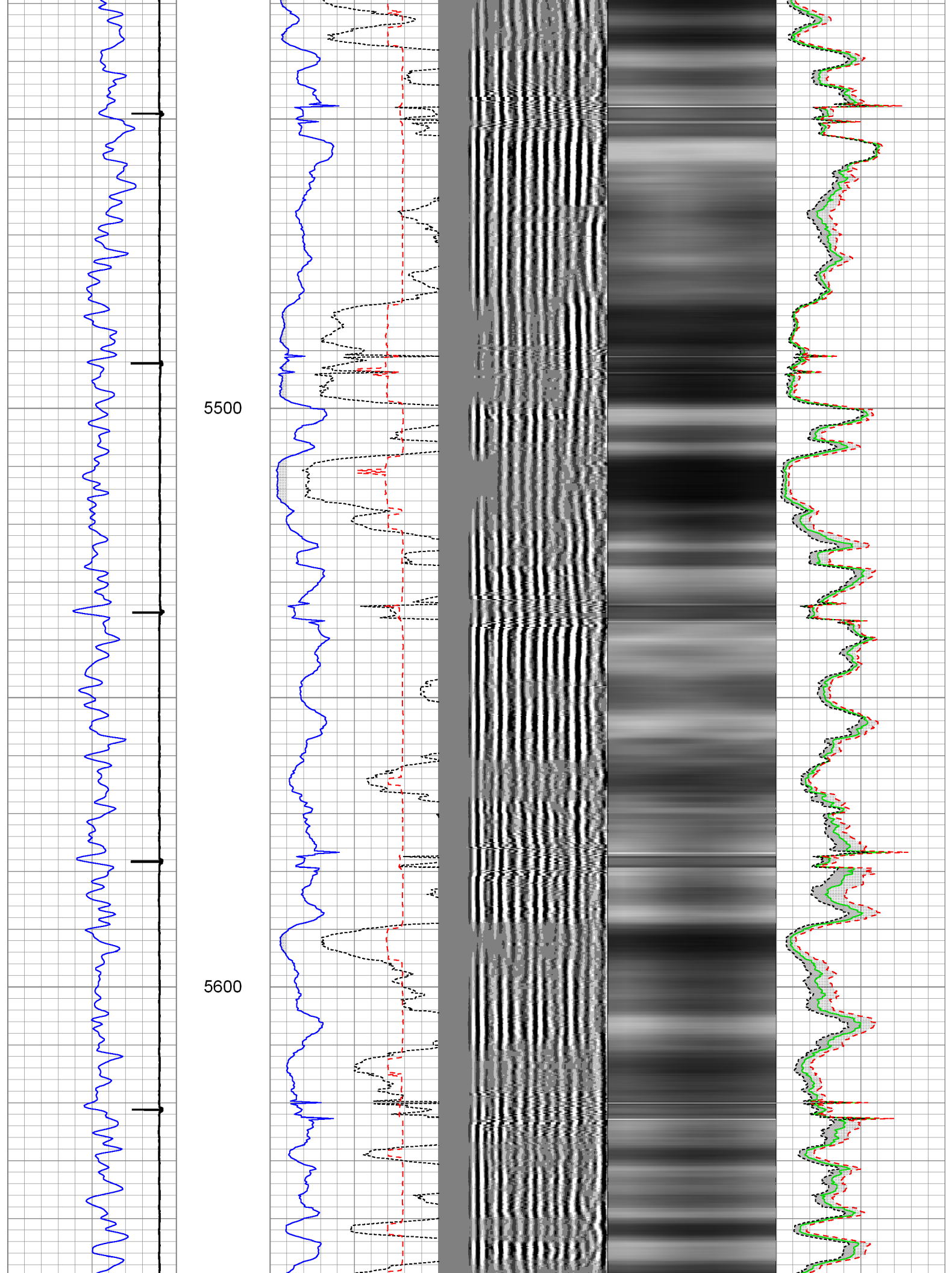
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5200



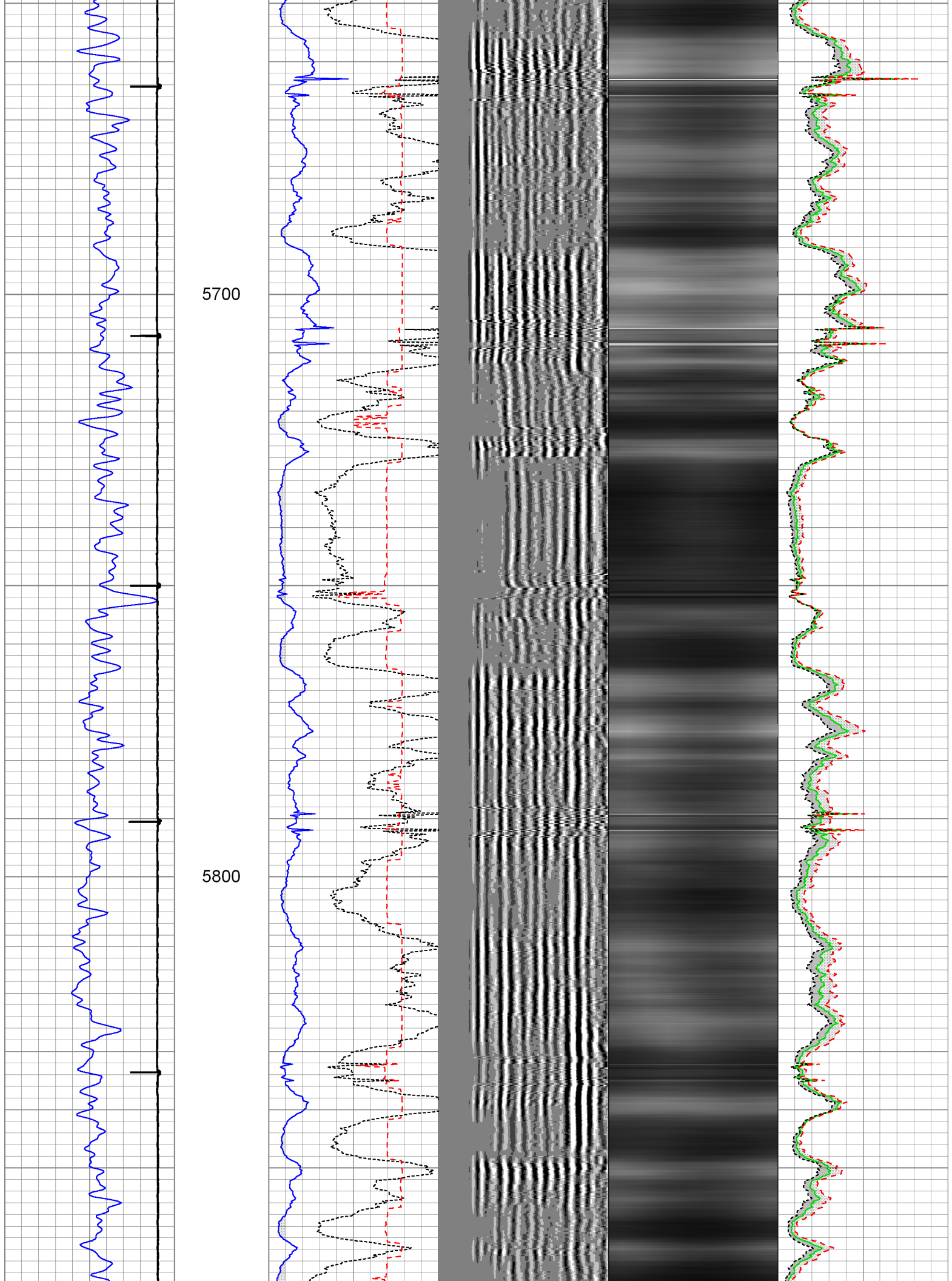






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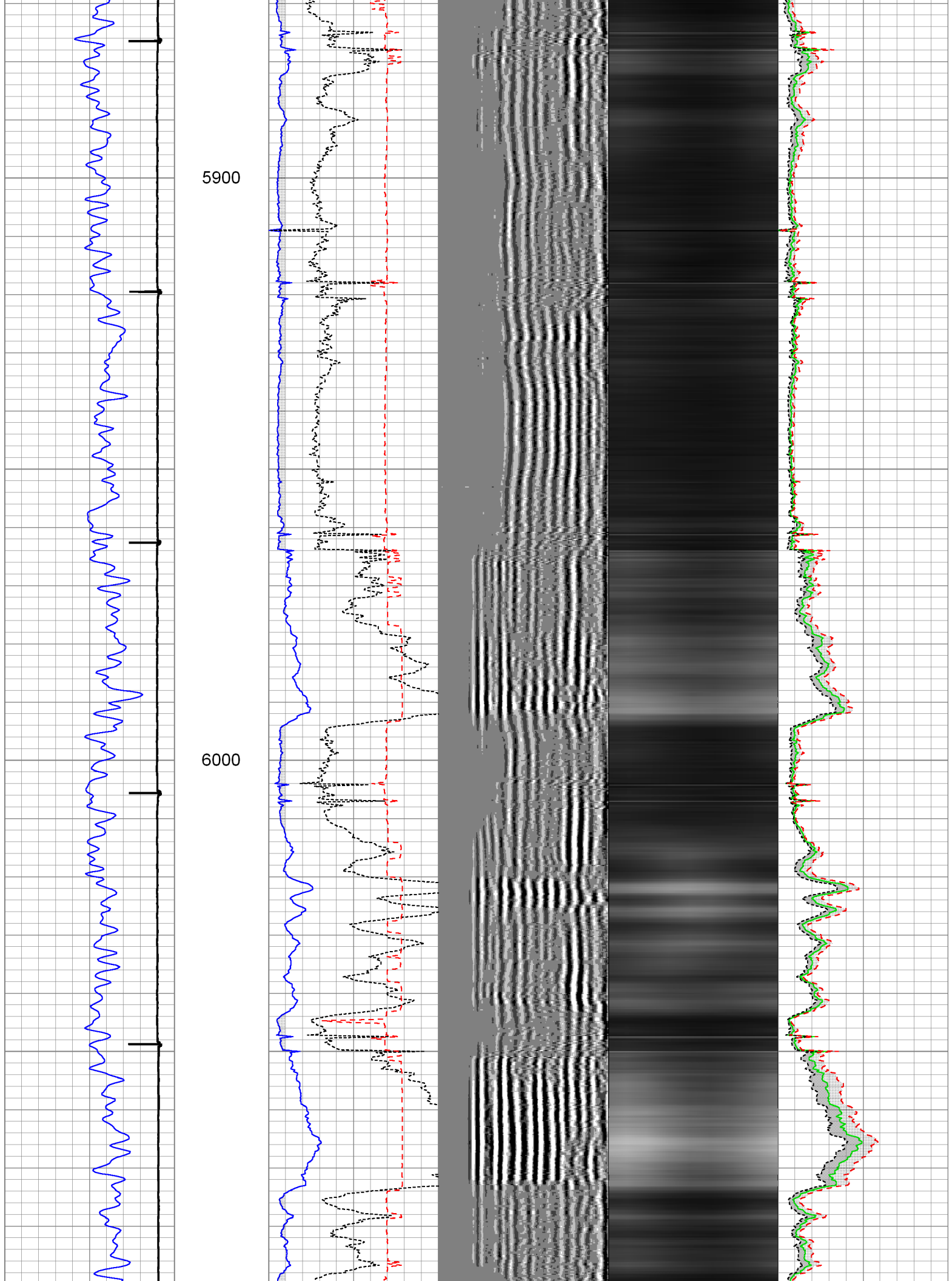
5800





5900

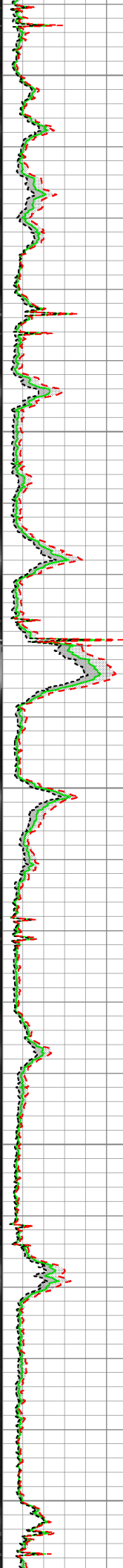
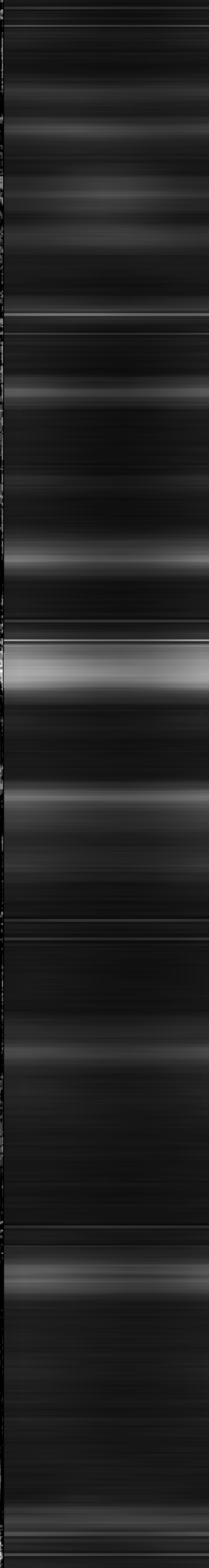
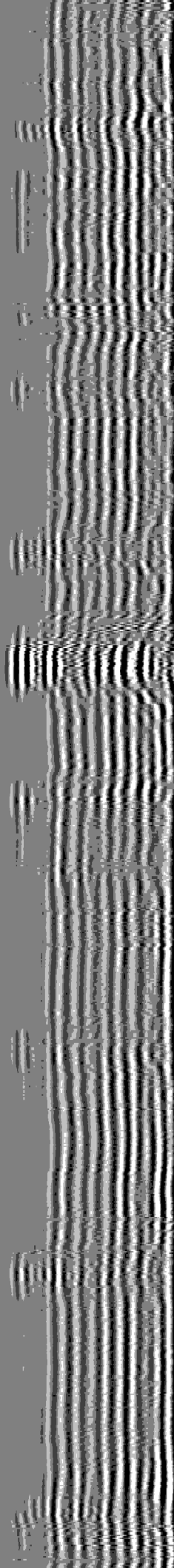
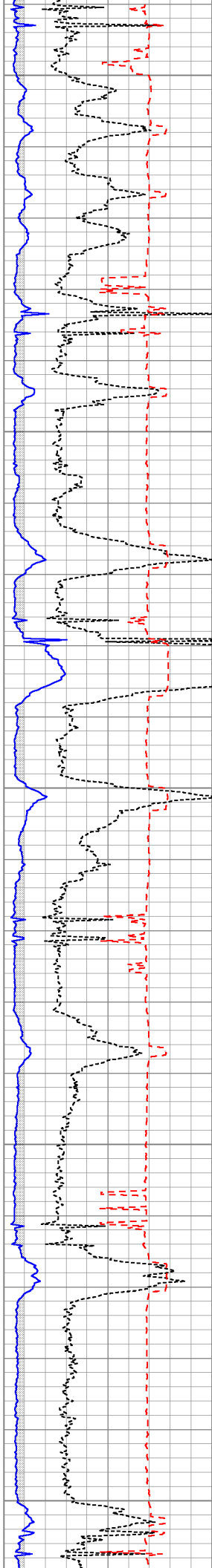
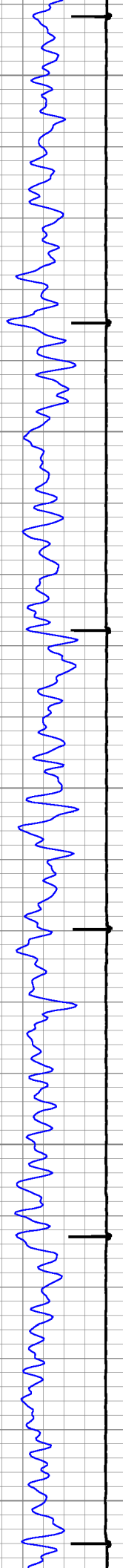
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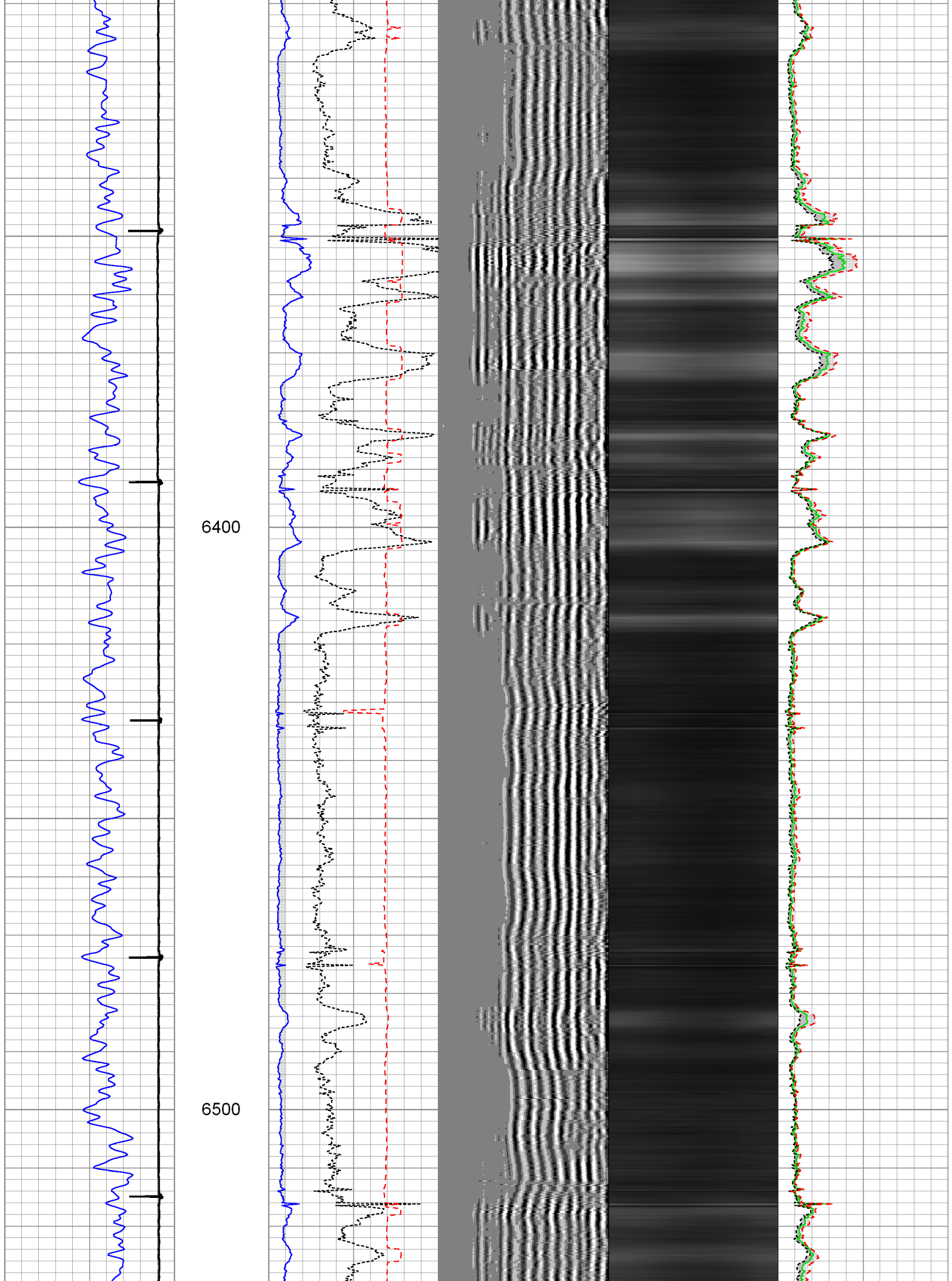


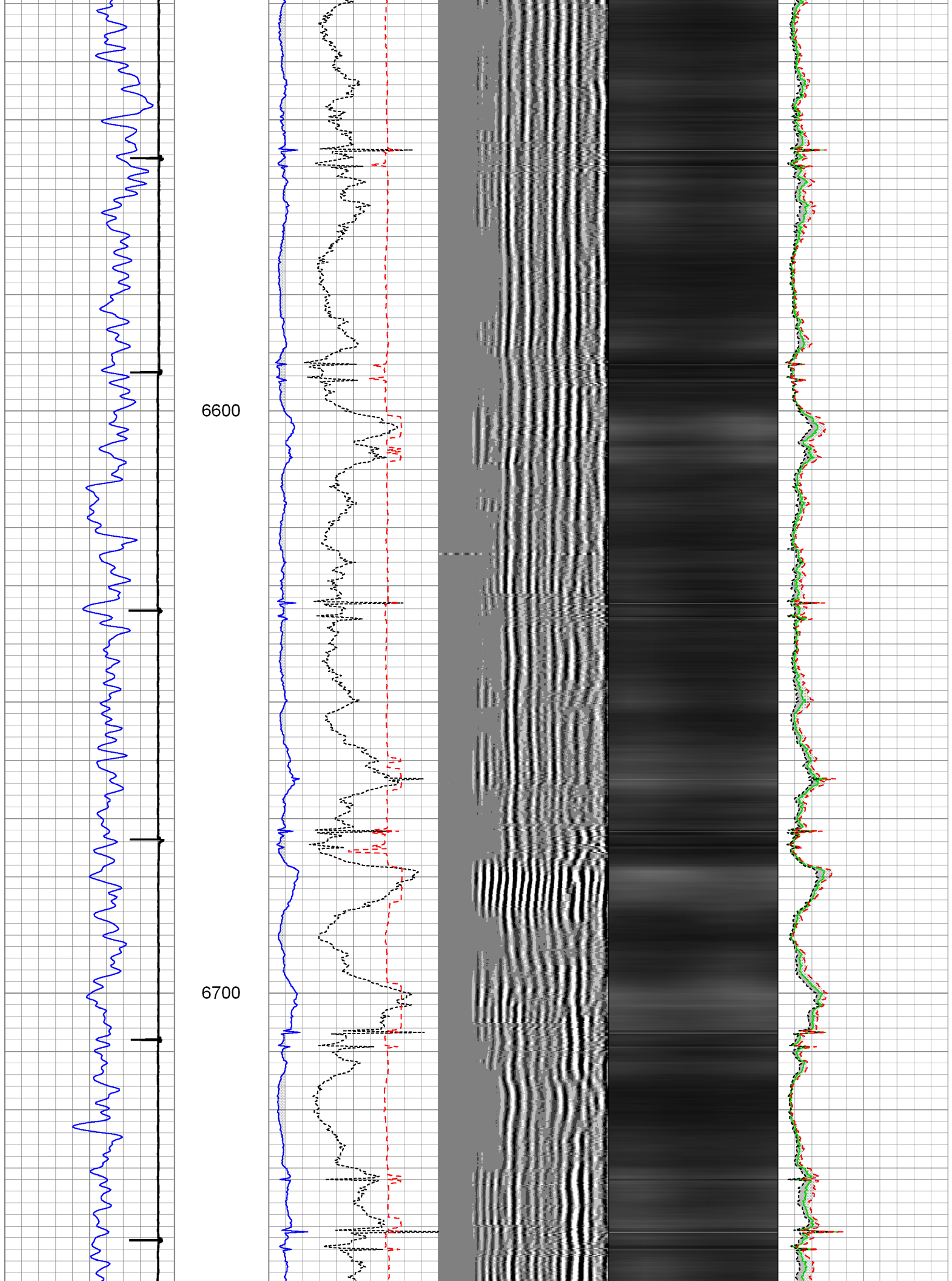
6100

6200

6300



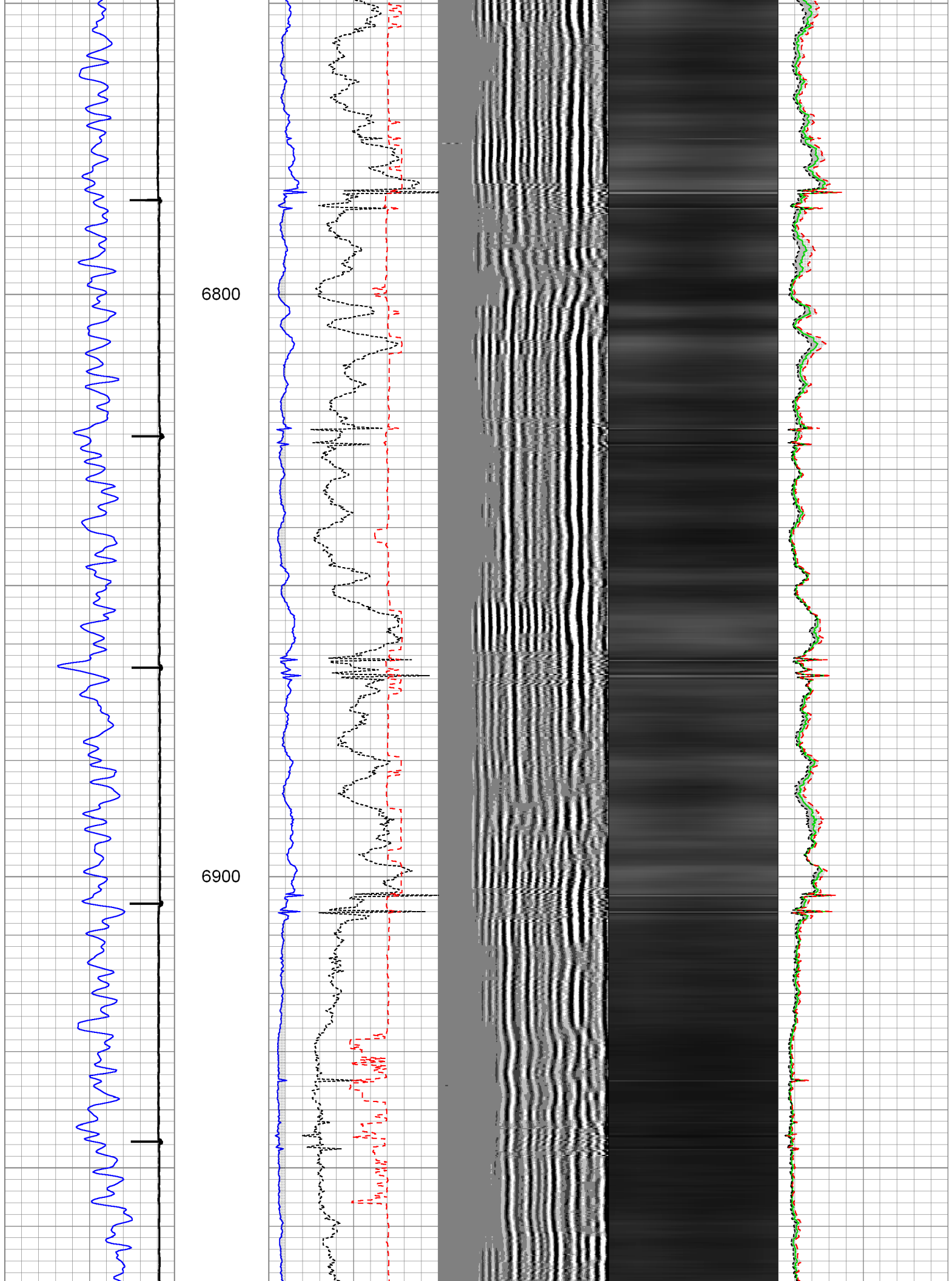




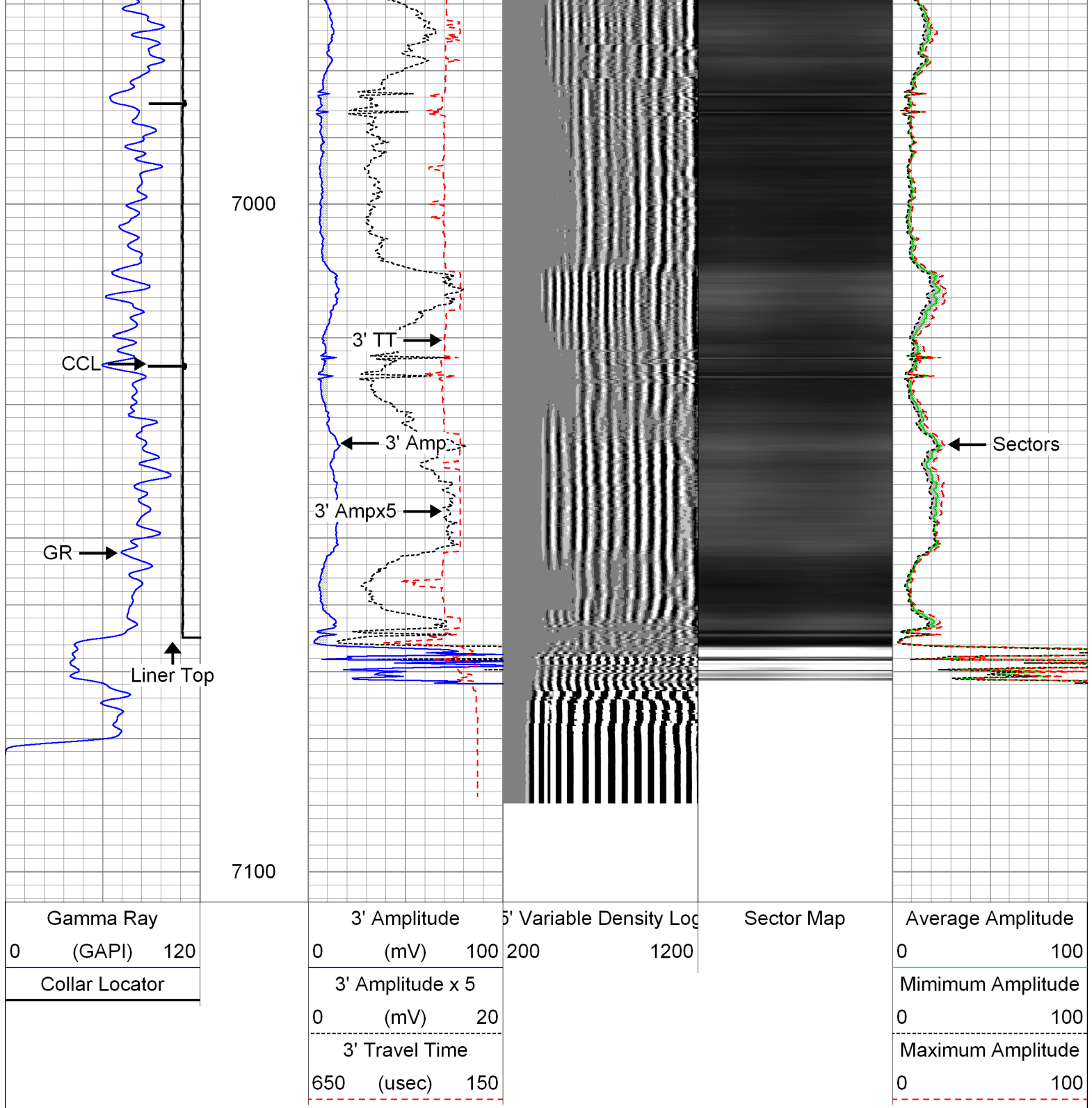


6800

6900



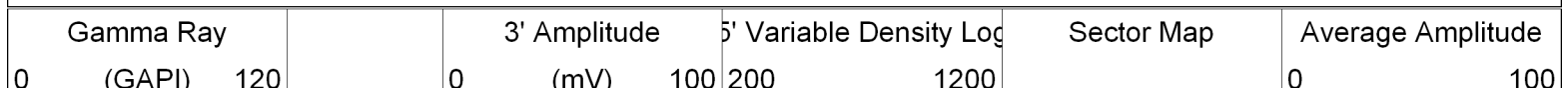




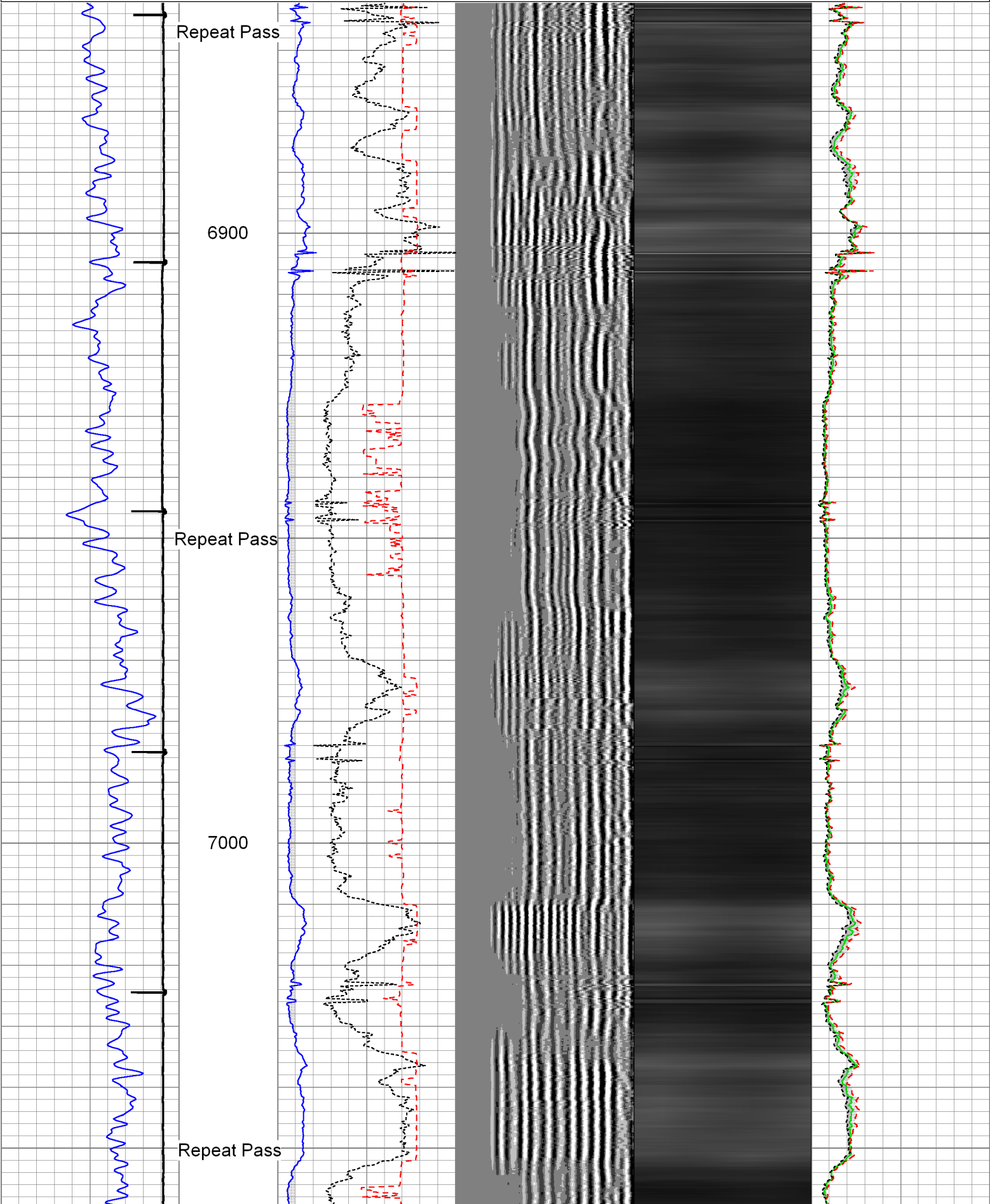
## Repeat Pass

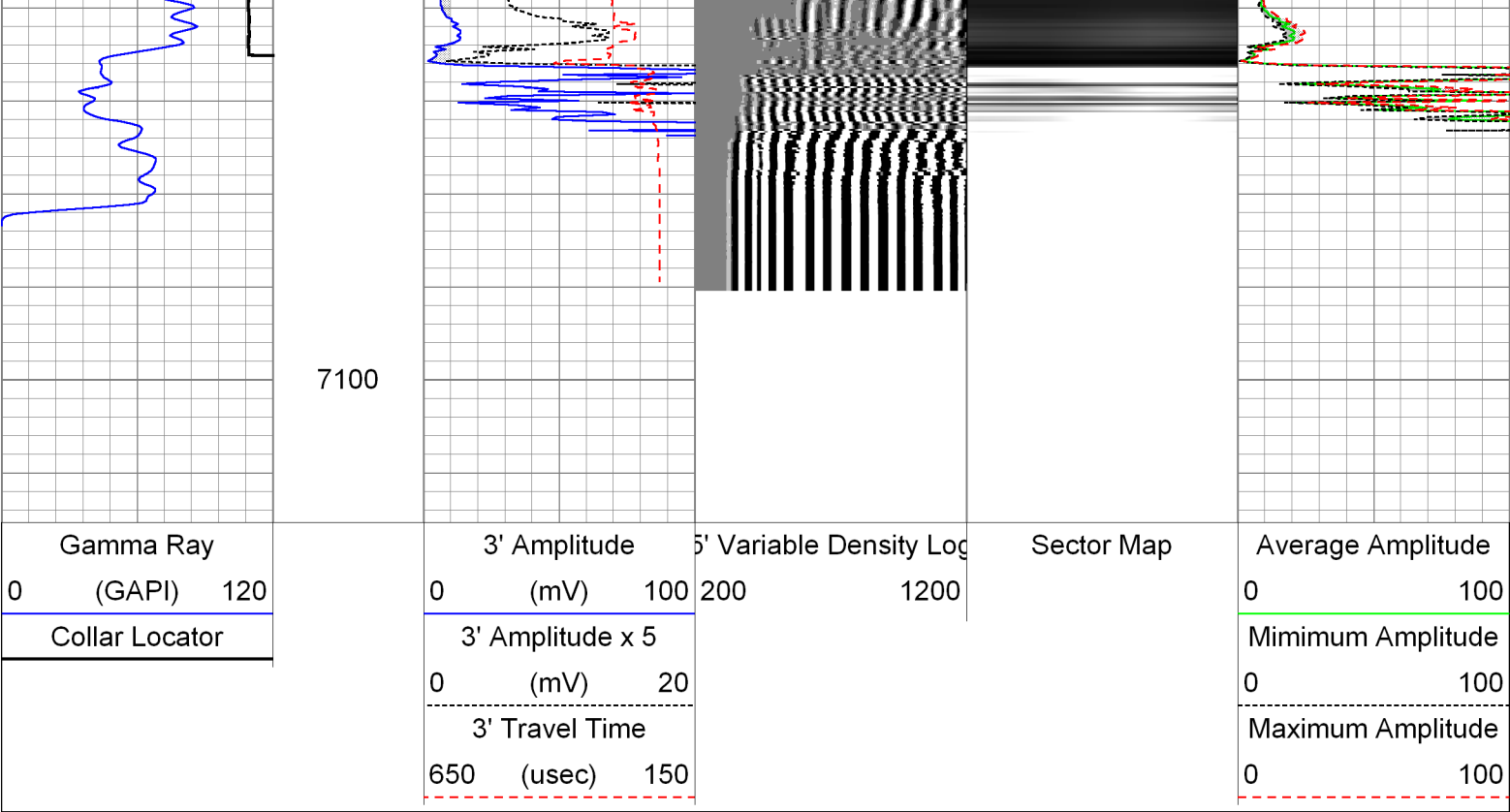
Logged with 2200 PSI at surface

Database File: 0512338029\_anadarko\_highway 160 16c-2hz\_01-31-14\_mit\_rbl.db  
Dataset Pathname: repeat  
Presentation Format: rbt007  
Dataset Creation: Fri Jan 31 08:49:05 2014 by Log Sondex V7.03  
Charted by: Depth in Feet scaled 1:240




Collar Locator	3' Amplitude x 5		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	23.67		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 (051219) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			PGR-020 (10013899) Production Gamma Ray	1.93	1.69	9.50
			PRC-057 (1101) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVFS3FT	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 WVF5FT	15.85 14.85		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		BUL-006 (219228) Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512338029_anadarko_highway 160 16c-2hz_01-31-14_mit_rbl.db: field/well/run1/main Total Length: 27.97 ft Total Weight: 316.30 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512338029_anadarko_highway 160 16c-2hz_01-31-14_mit_rbl.db		
Dataset Pathname:	main		
Dataset Creation:	Fri Jan 31 09:07:51 2014 by Log Sondex V7.03		
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: Fri Jan 31 07:43:36 2014						
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1401 275.0	1676 288.0	1964 300.0	2264			
Finger 02:	1594 257.0	1851 263.0	2114 267.0	2381			
Finger 03:	1534 285.0	1819 297.0	2116 300.0	2416			
Finger 04:	1569 269.0	1838 282.0	2120 284.0	2404			
Finger 05:	1608 254.0	1862 264.0	2126 268.0	2394			
Finger 06:	1606 261.0	1867 276.0	2143 281.0	2424			

Finger 07:	1598	268.0	1866	283.0	2149	285.0	2434
Finger 08:	1647	245.0	1892	255.0	2147	259.0	2406
Finger 09:	1585	279.0	1864	293.0	2157	296.0	2453
Finger 10:	1632	263.0	1895	274.0	2169	270.0	2439
Finger 11:	1605	264.0	1869	280.0	2149	280.0	2429
Finger 12:	1582	278.0	1860	296.0	2156	300.0	2456
Finger 13:	1594	268.0	1862	281.0	2143	280.0	2423
Finger 14:	1582	273.0	1855	288.0	2143	291.0	2434
Finger 15:	1566	272.0	1838	289.0	2127	293.0	2420
Finger 16:	1563	274.0	1837	290.0	2127	295.0	2422
Finger 17:	1552	272.0	1824	291.0	2115	296.0	2411
Finger 18:	1595	259.0	1854	274.0	2128	275.0	2403
Finger 19:	1609	250.0	1859	264.0	2123	268.0	2391
Finger 20:	1476	276.0	1752	293.0	2045	305.0	2350
Finger 21:	1430	283.0	1713	301.0	2014	316.0	2330
Finger 22:	1477	280.0	1757	295.0	2052	307.0	2359
Finger 23:	1525	259.0	1784	272.0	2056	284.0	2340
Finger 24:	1508	262.0	1770	278.0	2048	292.0	2340
Finger 25:	1482	274.0	1756	290.0	2046	300.0	2346
Finger 26:	1412	282.0	1694	297.0	1991	308.0	2299
Finger 27:	1412	276.0	1688	293.0	1981	306.0	2287
Finger 28:	1454	274.0	1728	294.0	2022	304.0	2326
Finger 29:	1428	277.0	1705	292.0	1997	301.0	2298
Finger 30:	1436	283.0	1719	295.0	2014	310.0	2324
Finger 31:	1499	253.0	1752	255.0	2007	268.0	2275
Finger 32:	1465	275.0	1740	290.0	2030	298.0	2328
Finger 33:	1440	281.0	1721	289.0	2010	290.0	2300
Finger 34:	1446	286.0	1732	295.0	2027	306.0	2333
Finger 35:	1445	278.0	1723	290.0	2013	303.0	2316
Finger 36:	1660	266.0	1926	270.0	2196	272.0	2468
Finger 37:	1294	269.0	1563	285.0	1848	299.0	2147
Finger 38:	1472	279.0	1751	290.0	2041	299.0	2340
Finger 39:	1443	279.0	1722	290.0	2012	300.0	2312
Finger 40:	1553	294.0	1847	292.0	2139	293.0	2432

Segmented Cement Bond Log Calibration Report

Serial Number:	10012639in7
Tool Model:	004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	8.709 ft

Master Calibration, performed Fri Jan 31 07:48:44 2014:							
	Raw (v)		Calibrated (mv)		Results		
	Zero	Cal	Zero	Cal	Gain	Offset	
3FT	-0.000	0.694	0.800	62.165	88.357	0.836	
5FT	-0.002	0.774	0.800	62.165	79.071	0.993	
S1	-0.000	0.687	0.000	100.000	145.576	0.005	
S2	-0.002	0.654	0.000	100.000	152.492	0.298	
S3	-0.001	0.647	0.000	100.000	154.255	0.179	
S4	-0.002	0.664	0.000	100.000	150.174	0.249	
S5	0.000	0.696	0.000	100.000	143.659	0.000	
S6	-0.001	0.727	0.000	100.000	137.261	0.168	
S7	-0.001	0.736	0.000	100.000	135.778	0.068	
S8	-0.001	0.721	0.000	100.000	138.498	0.103	

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	Highway 160 16C-2HZ
	Field	Wattenberg
	County	Weld
	State	Colorado