



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				Howard 28C - 33HZR			
Field				Wattenburg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-36932			
Permanent Datum				SHL. 340' FNL & 1094 FEL			
Log Measured From				Lat./Long. 40.02839 /-104.89003			
Drilling Measured From				SEC 28 TWP 1N RGE 67W			
Ground Level				Elevation 4983'			
Kelly Bushing				16 FT			
Kelly Bushing				K.B. 4999'			
				D.F. 4998'			
				G.L. 4983'			
Date				30-DEC-2013			
Run Number				Three			
Depth Driller				13042 FT			
Depth Logger				7229 FT			
Bottom Logged Interval				7224 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				223 deg F			
Estimated Cement Top				90 FT			
Time Well Ready				07.00			
Time Logger on Bottom				13.00			
Equipment Number				HD 134			
Location				Ft. Lupton, CO			
Recorded By				Wayne Wacker			
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			
				7199 FT			
				12990 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

Set Plug at 7270'
Radial Cement Bond Log - Caspection Log
Correlated To The Liner Top @ 7199"
Adjusted 0' To 16 KB
RCBL- CIL Ran At 2800 PSI Surface Induced Pressure

Thank You For Choosing FMC Technologies Completion Services, Inc.



Main Pass

Recorded with 2800 PSI Induced At Surface

Database File: 0512336932_anadarko_howard 28c-33hzhzr_12-30-13_mit_rbl.db

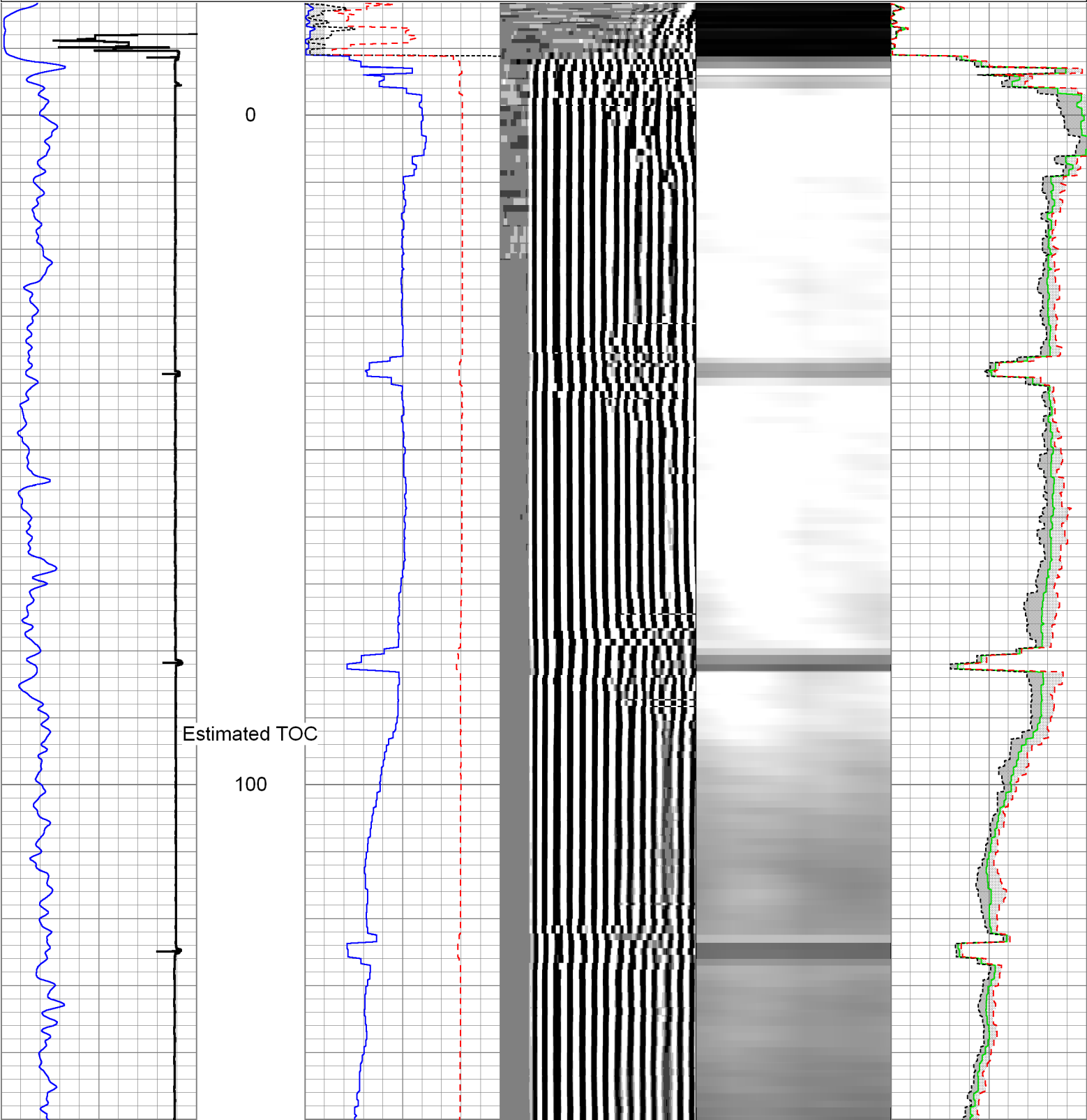
Dataset Pathname: pass5

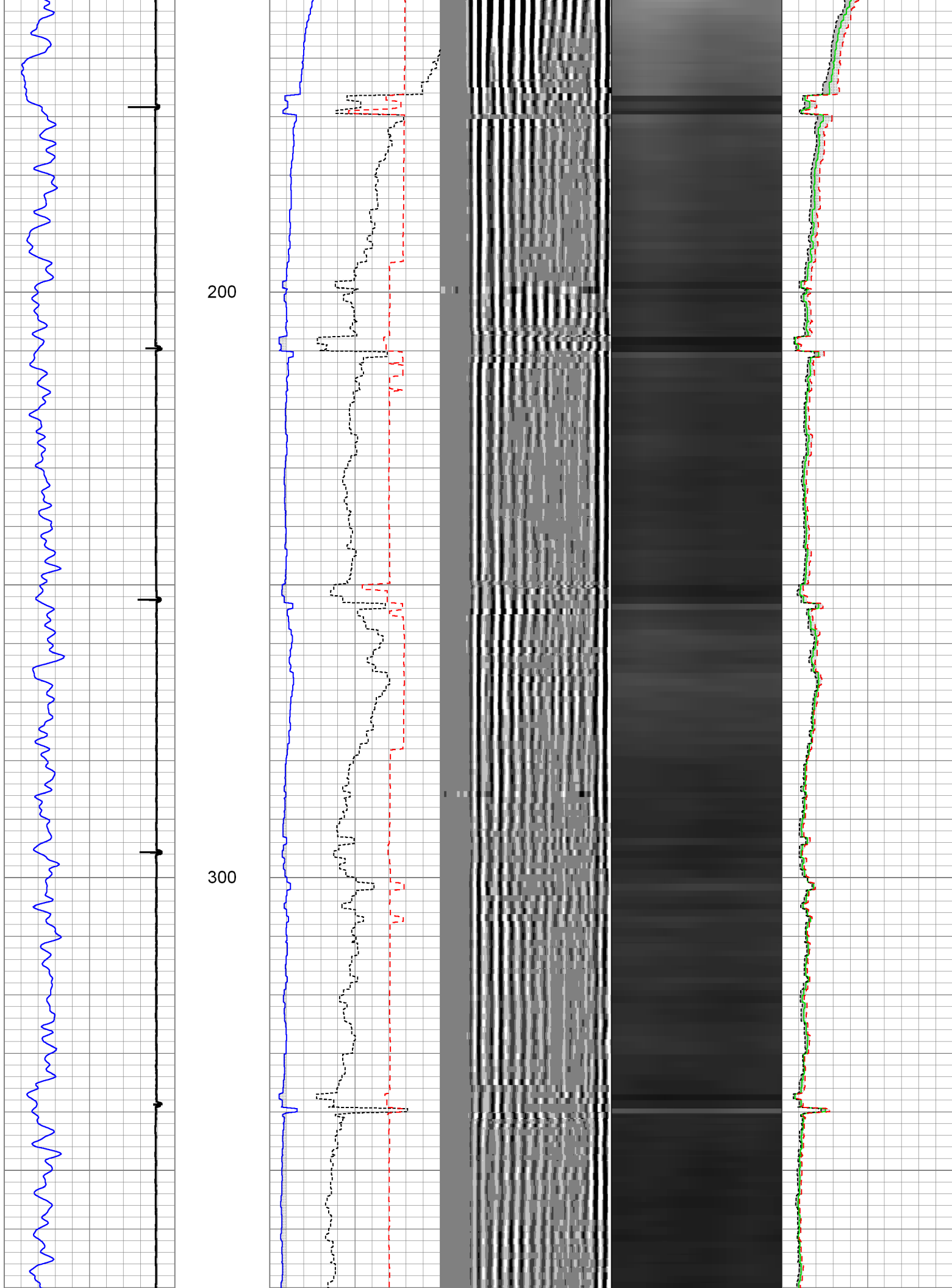
Presentation Format: rbt007

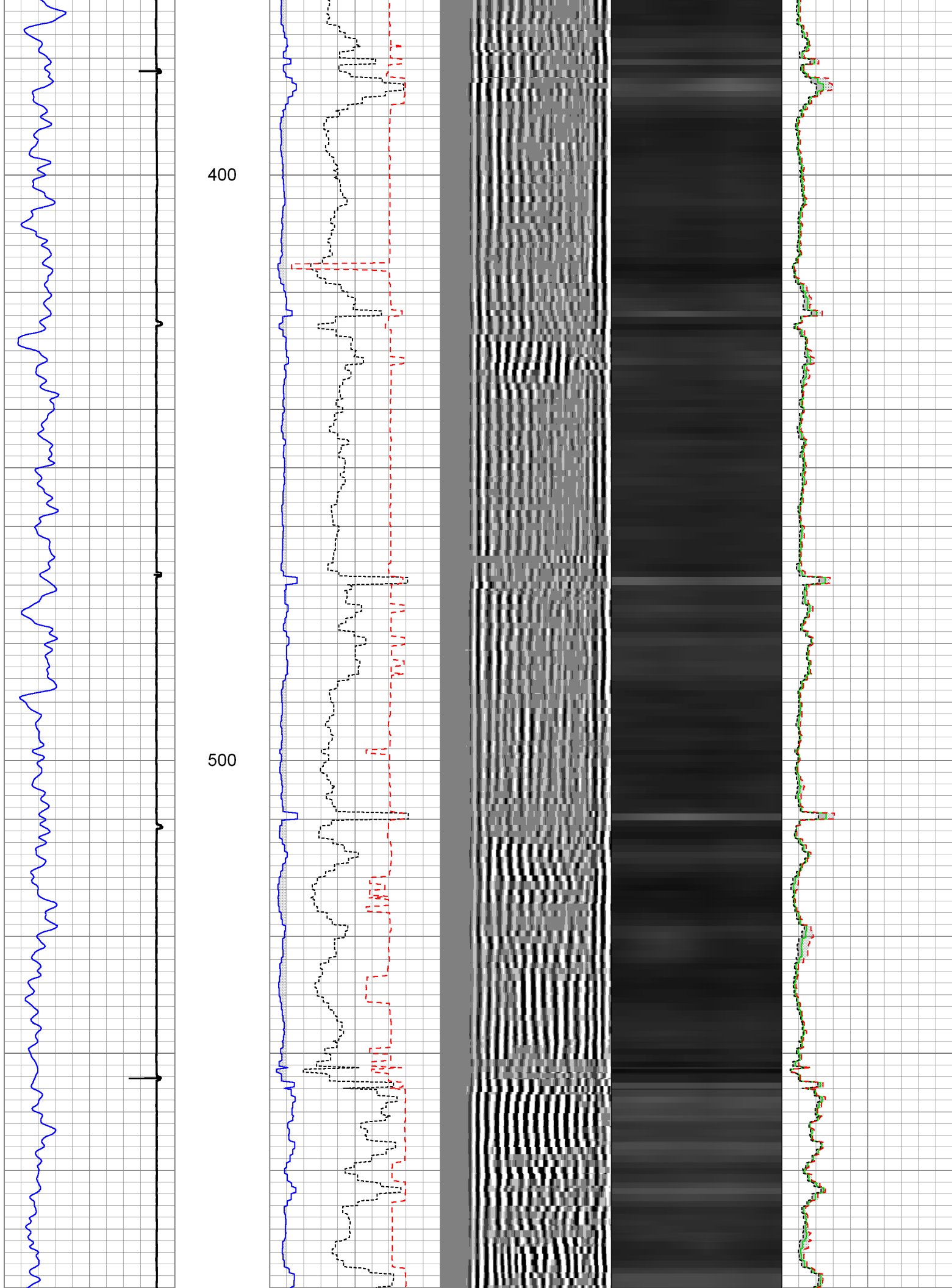
Dataset Creation: Mon Dec 30 13:54:42 2013 by Log Sondex V7.03

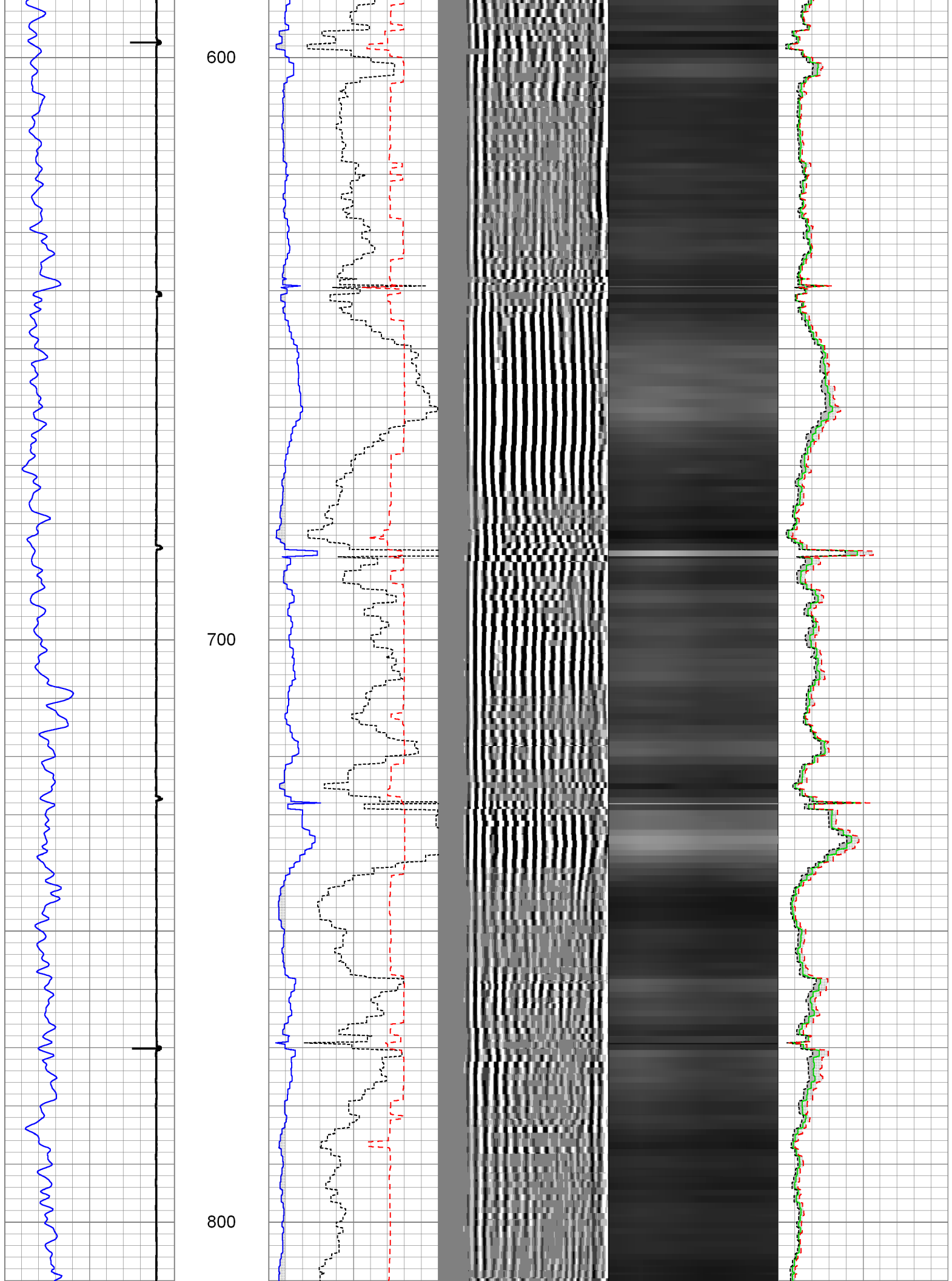
Charted by: Depth in Feet scaled 1:240

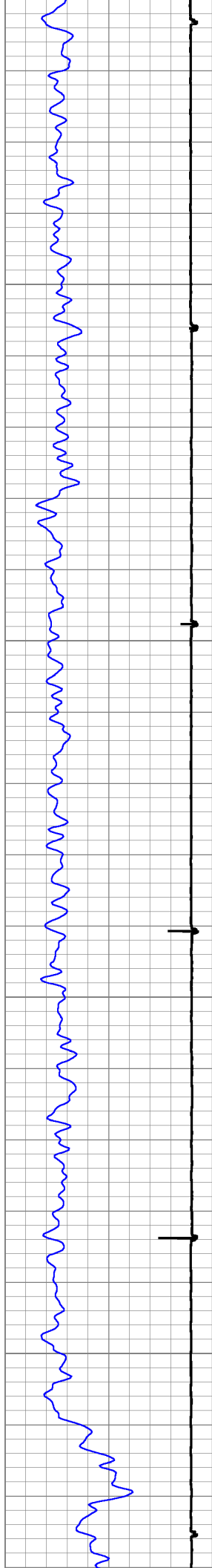
Gamma Ray		3' Amplitude		5' Variable Density Log		Sector Map		Average Amplitude	
0	(GAPI) 150	0	(mV) 100	200	1200			0	100
Collar Locator		3' Amplitude x 5						Minimum Amplitude	
		0	(mV) 20					0	100
		3' Travel Time						Maximum Amplitude	
		650	(usec) 150					0	100





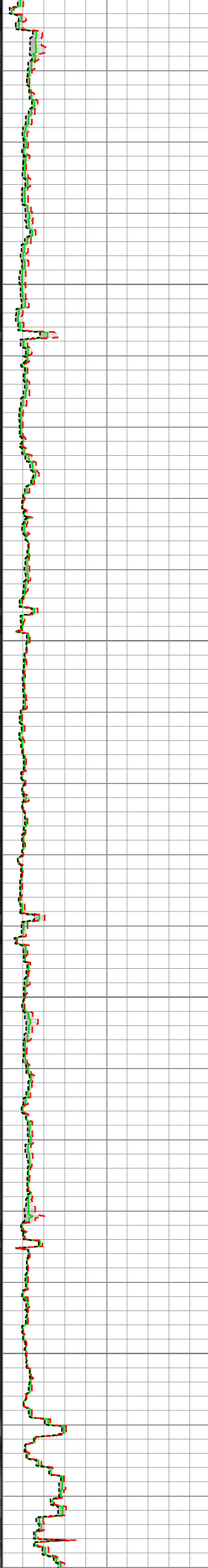
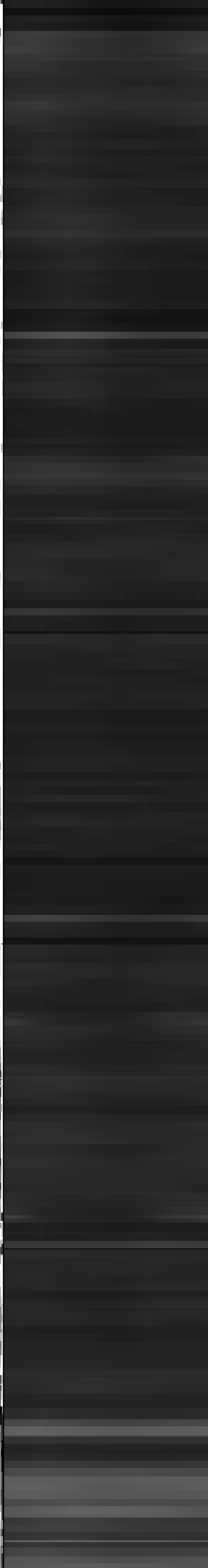
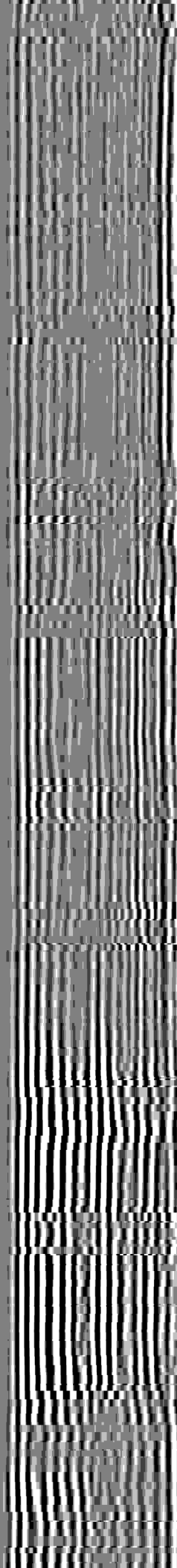
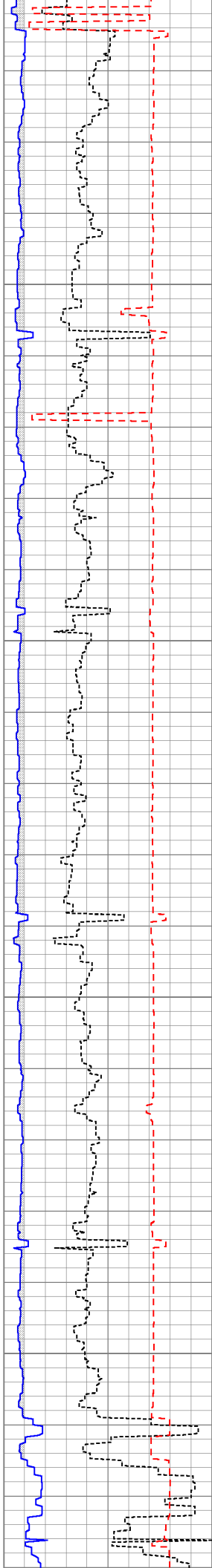


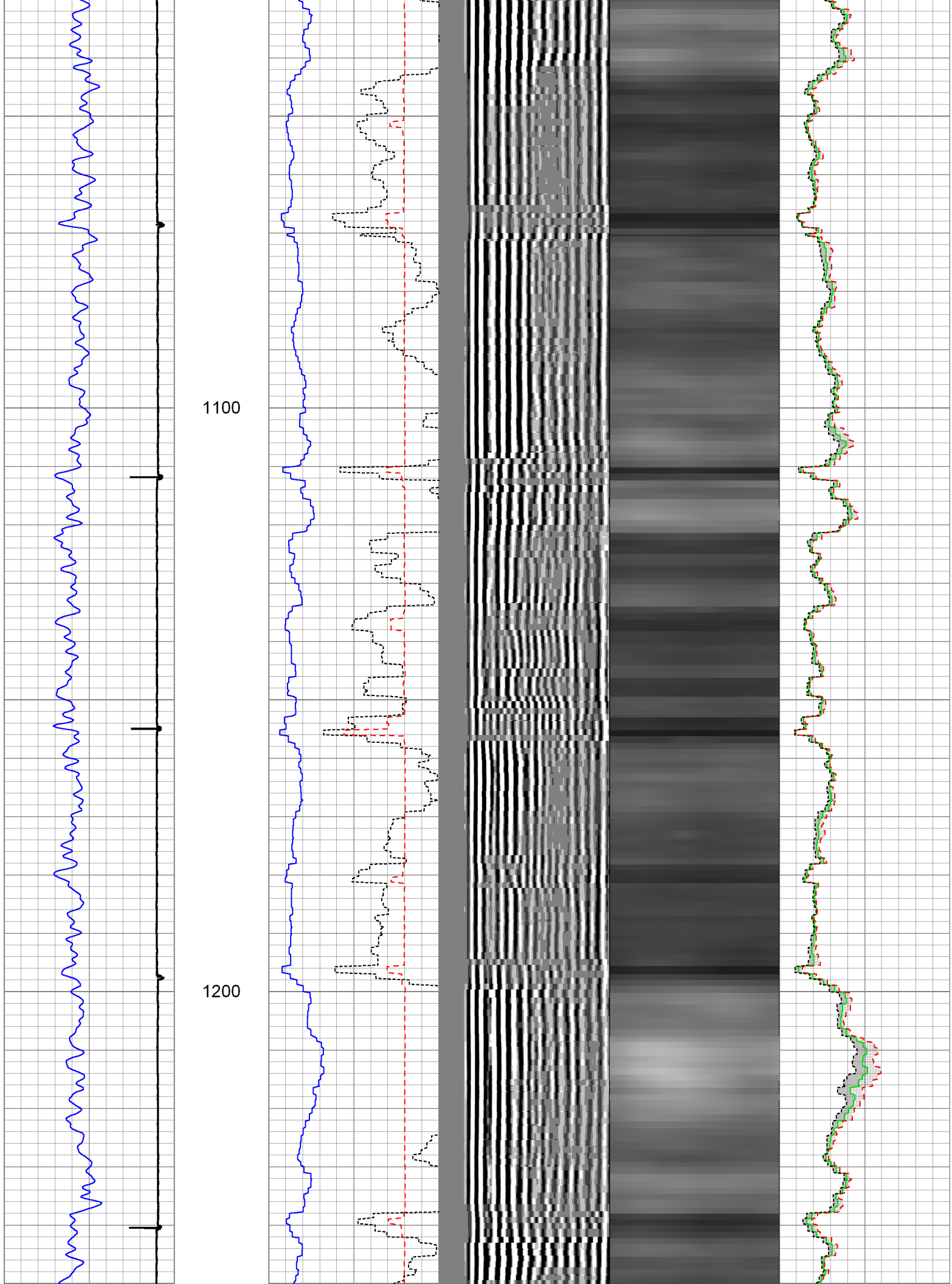


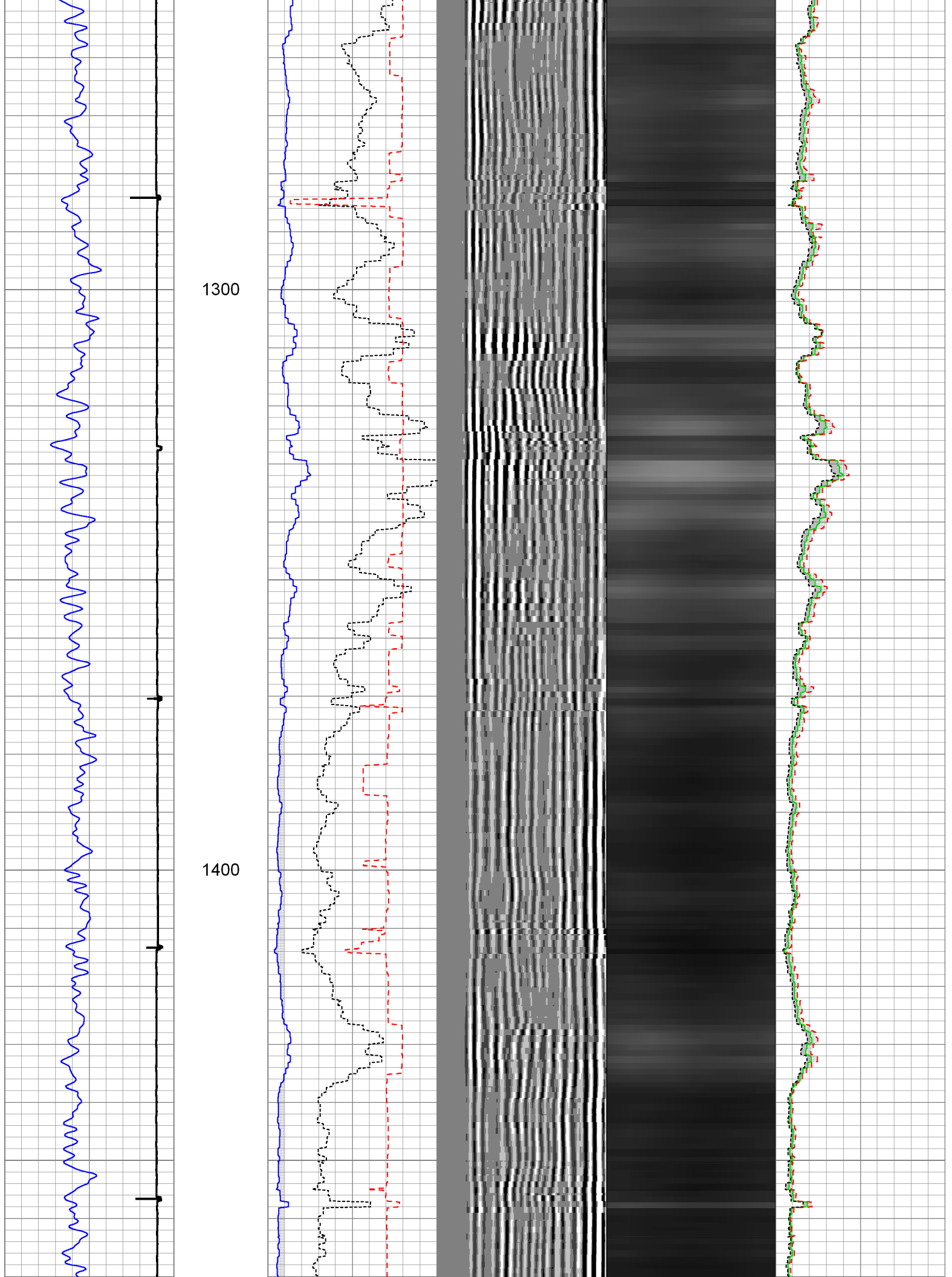


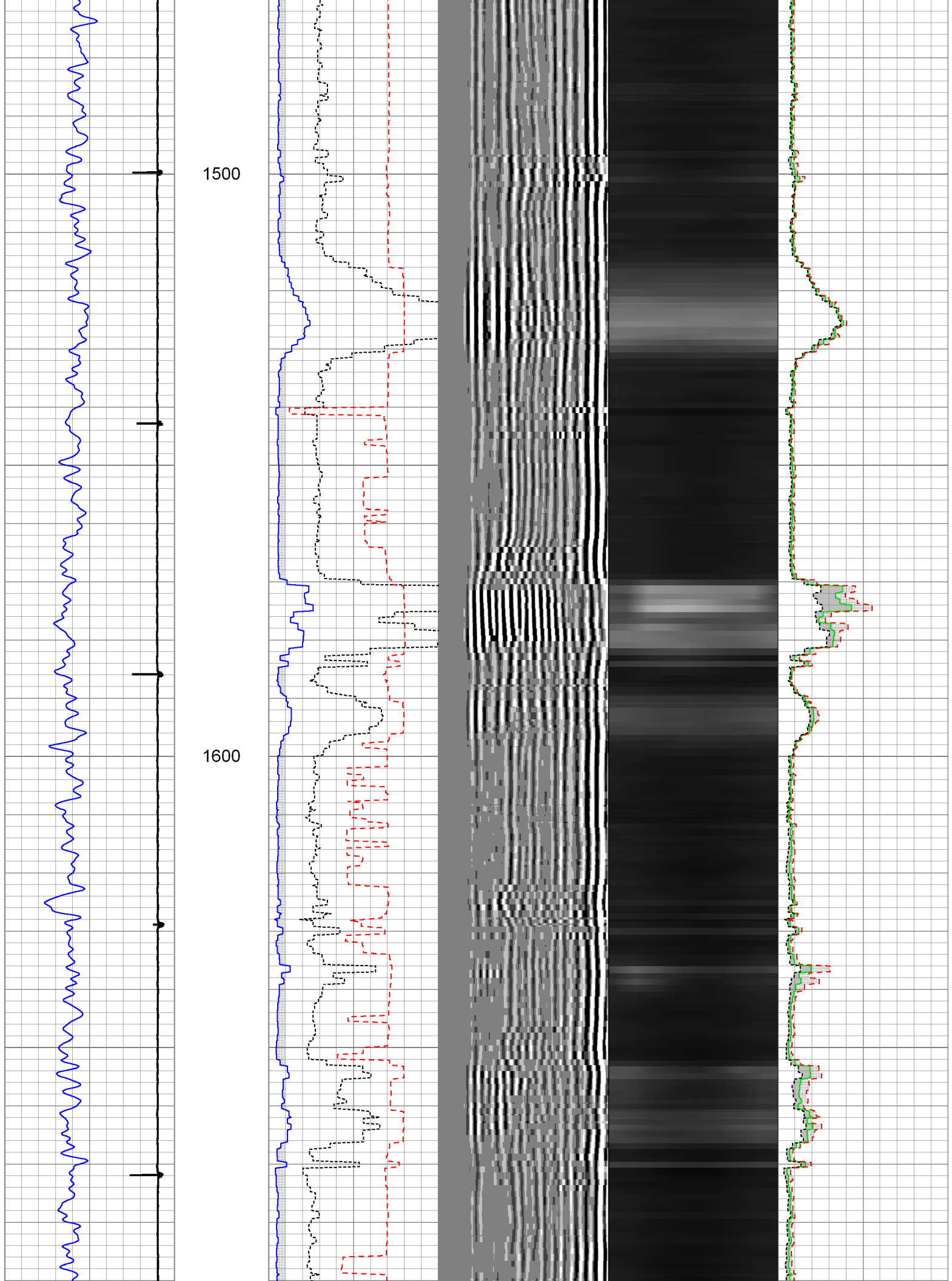
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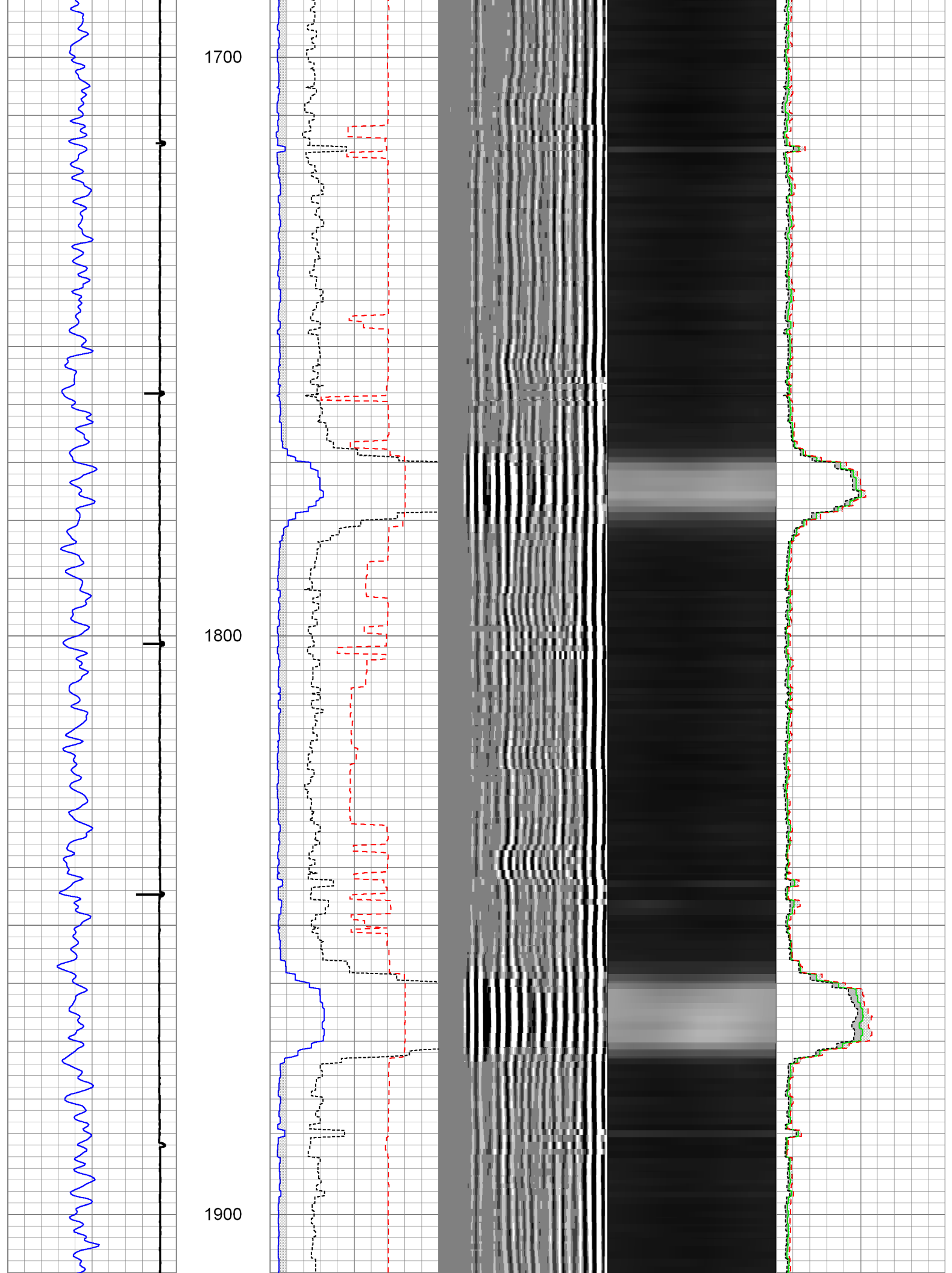
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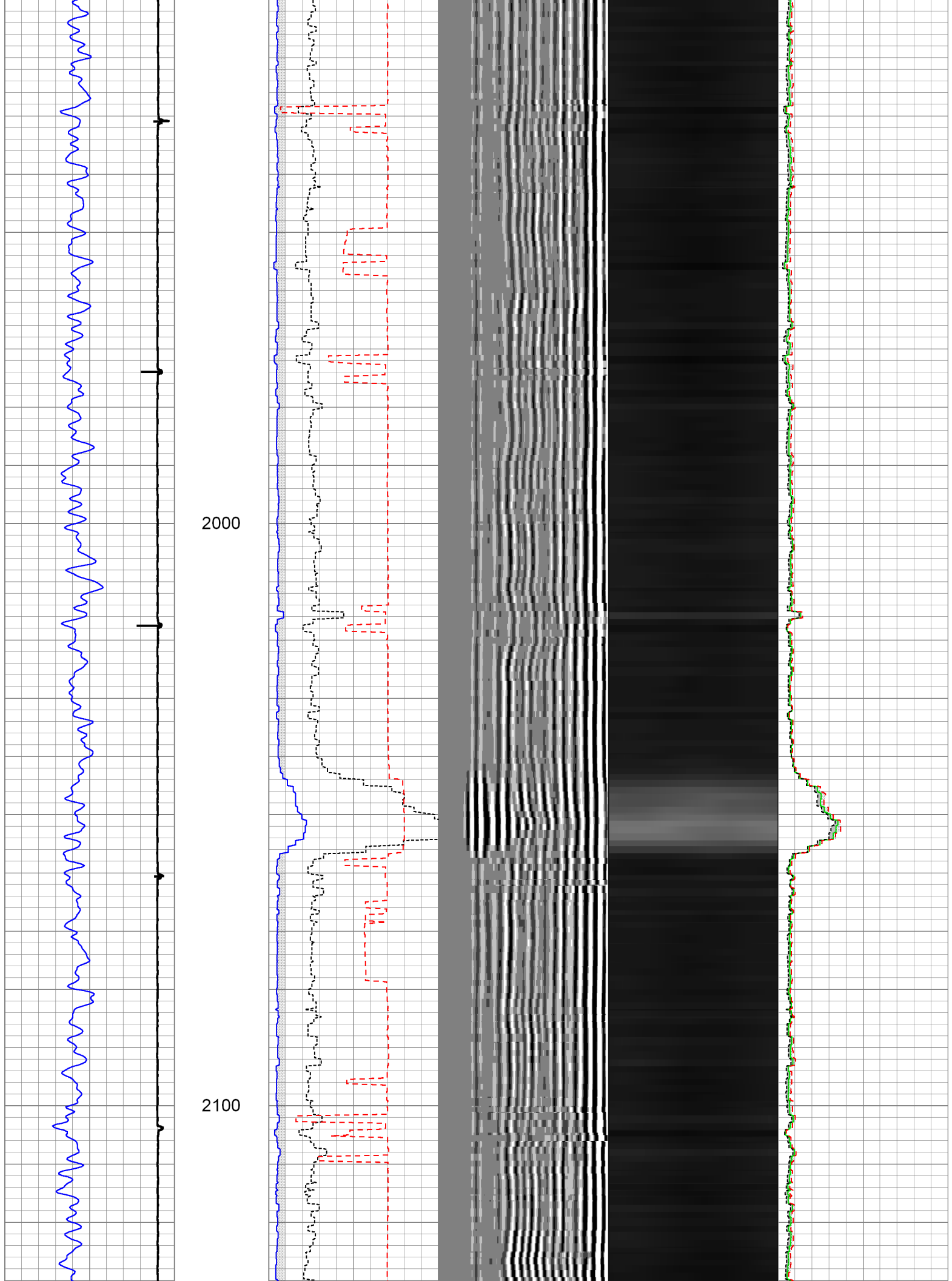






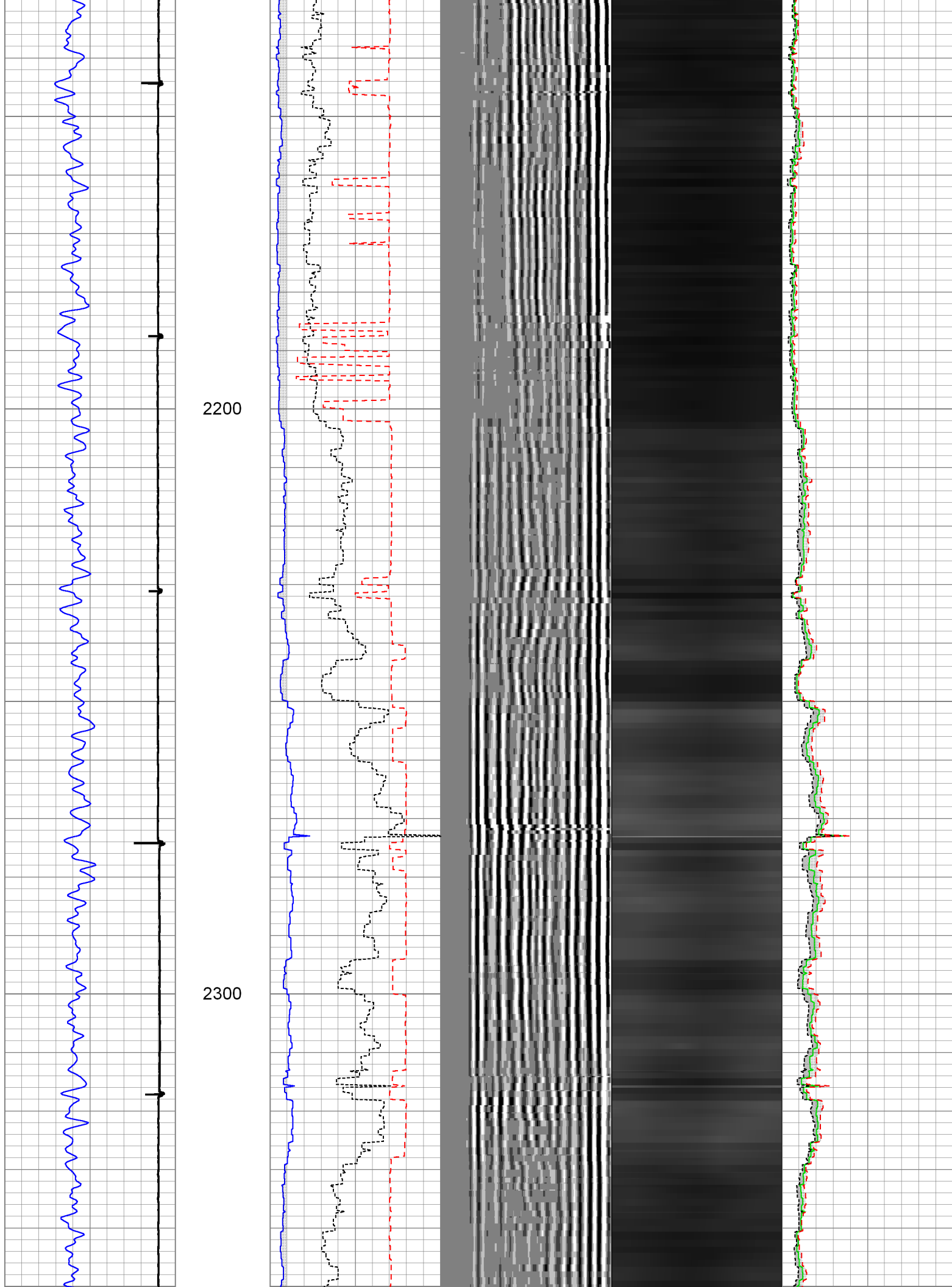






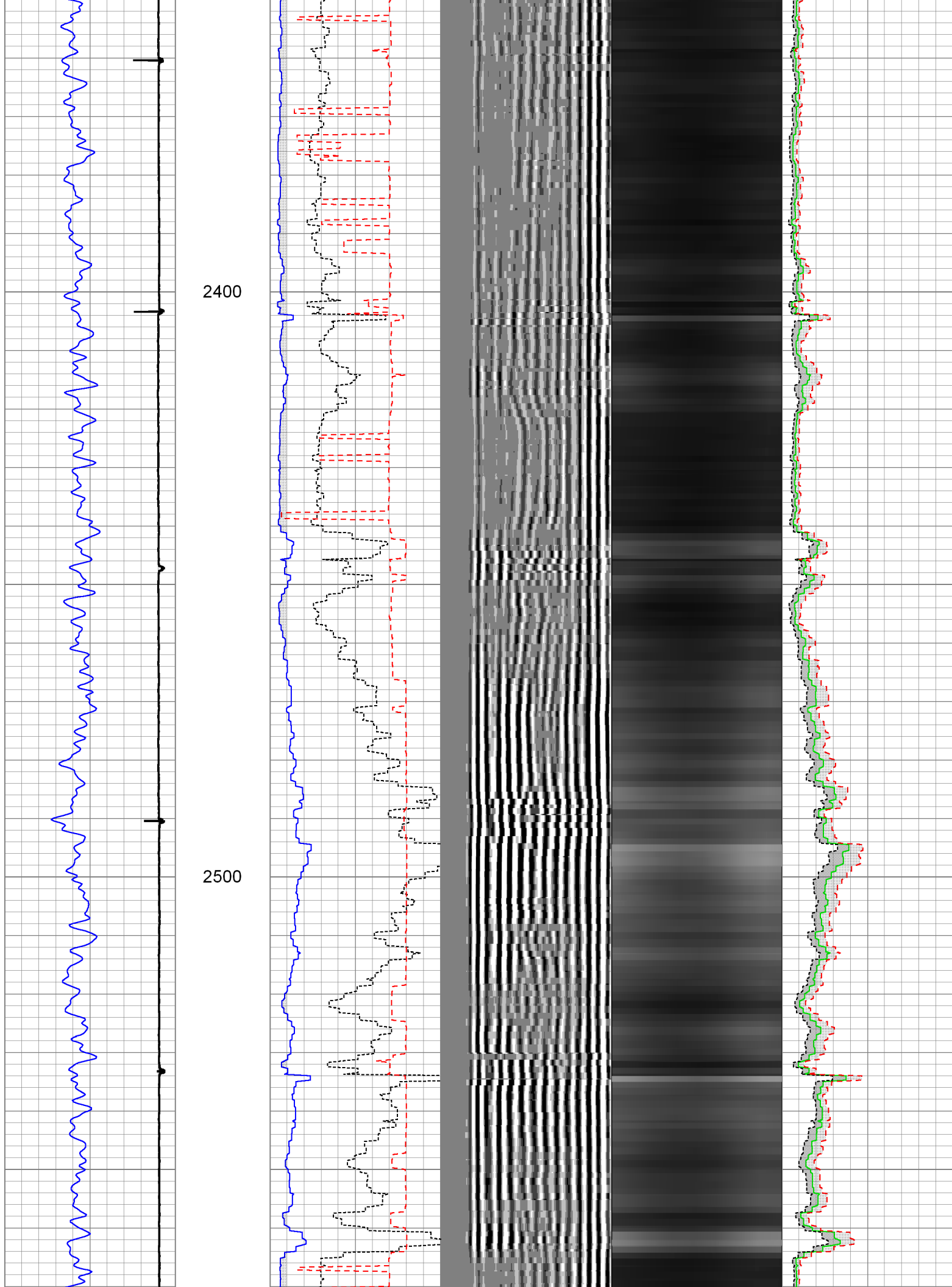
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2300



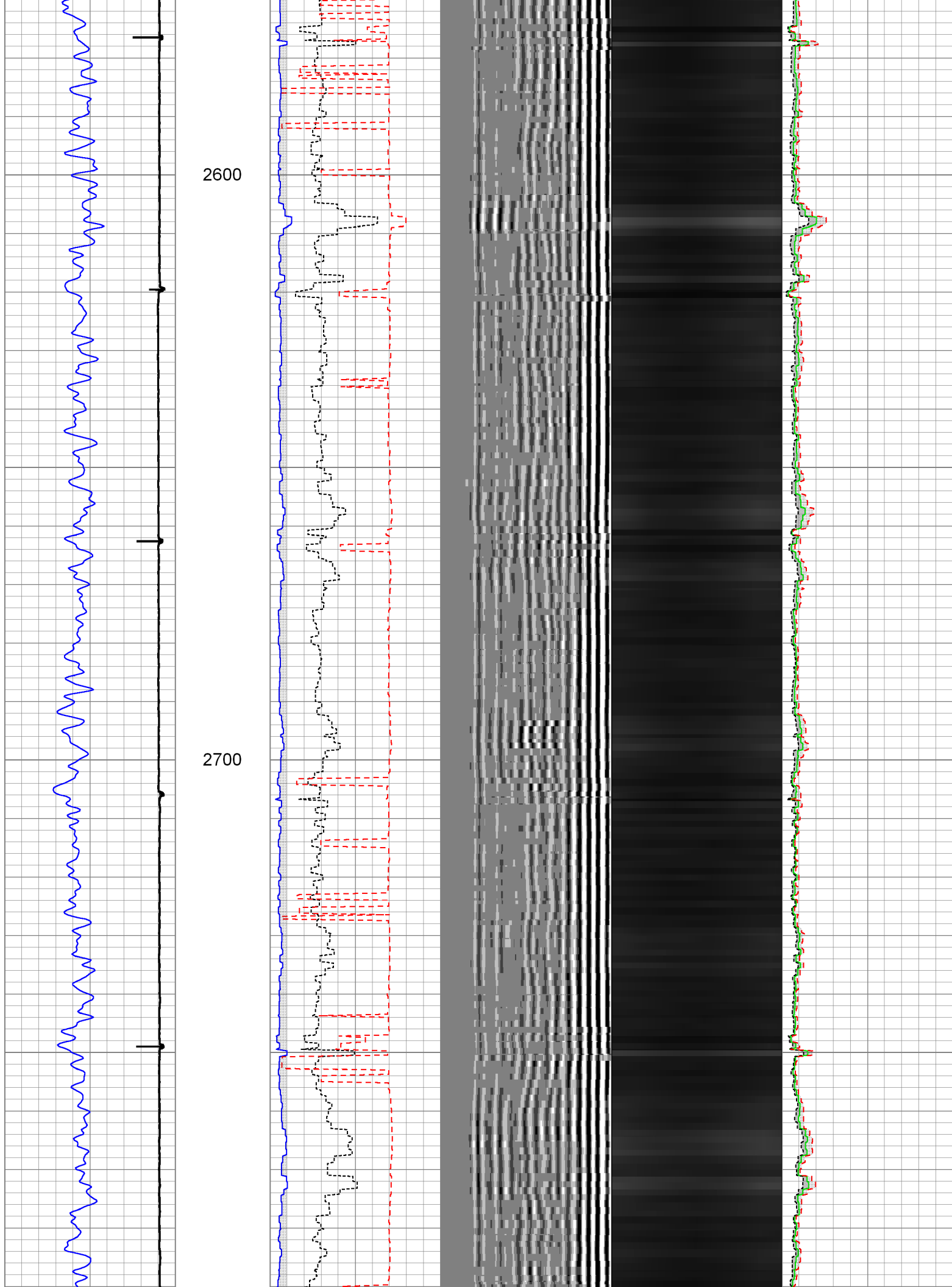
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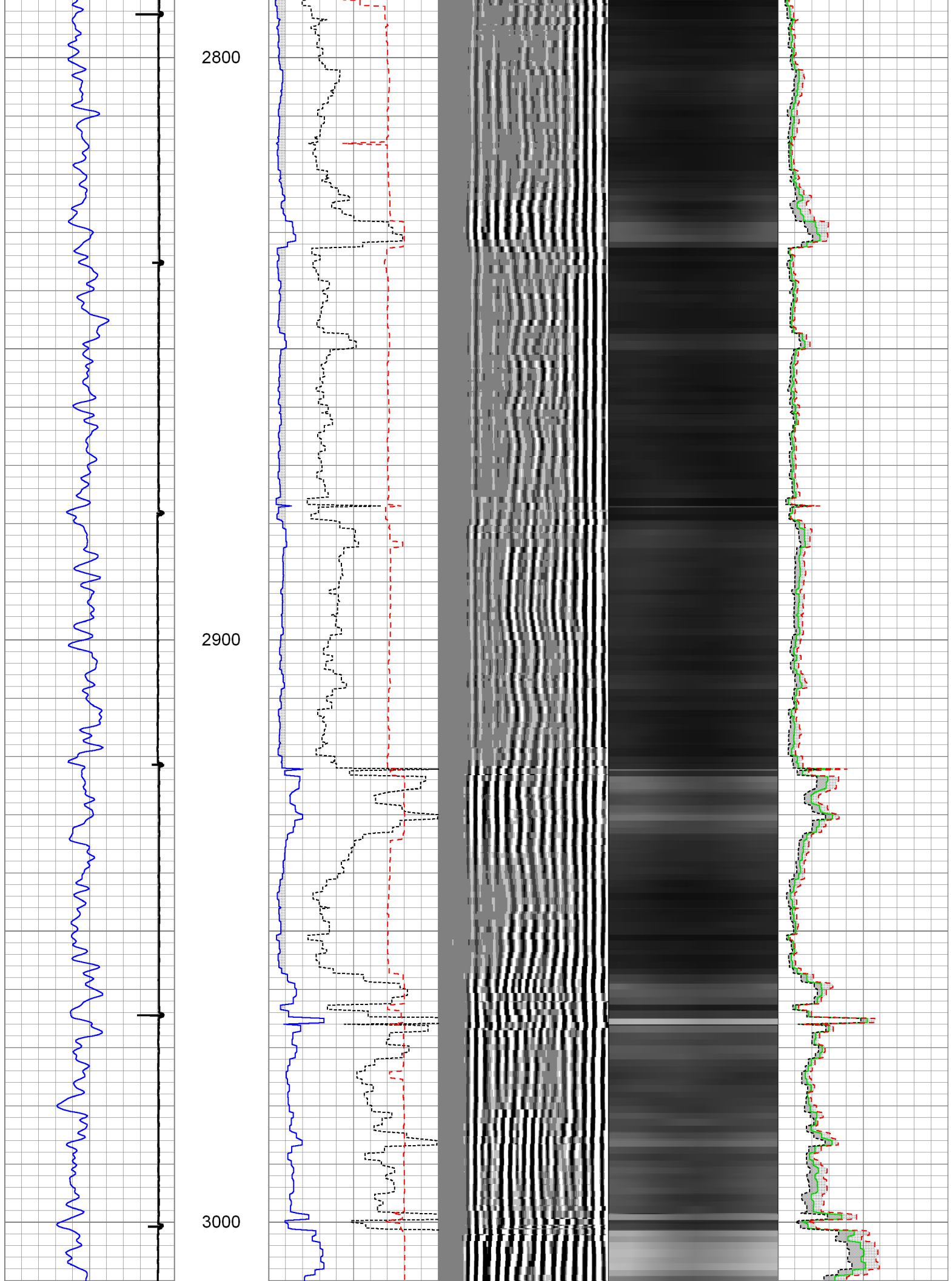
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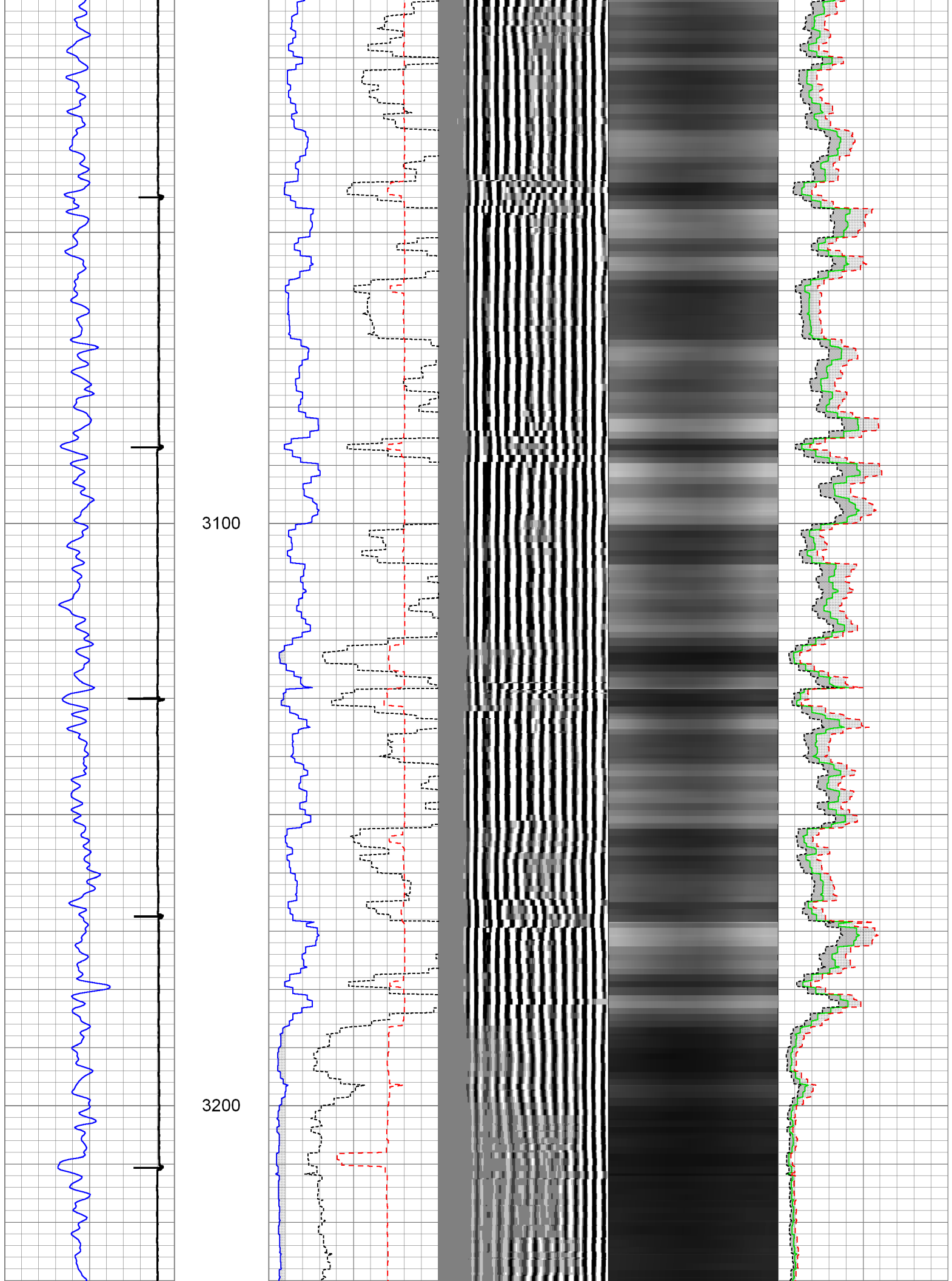


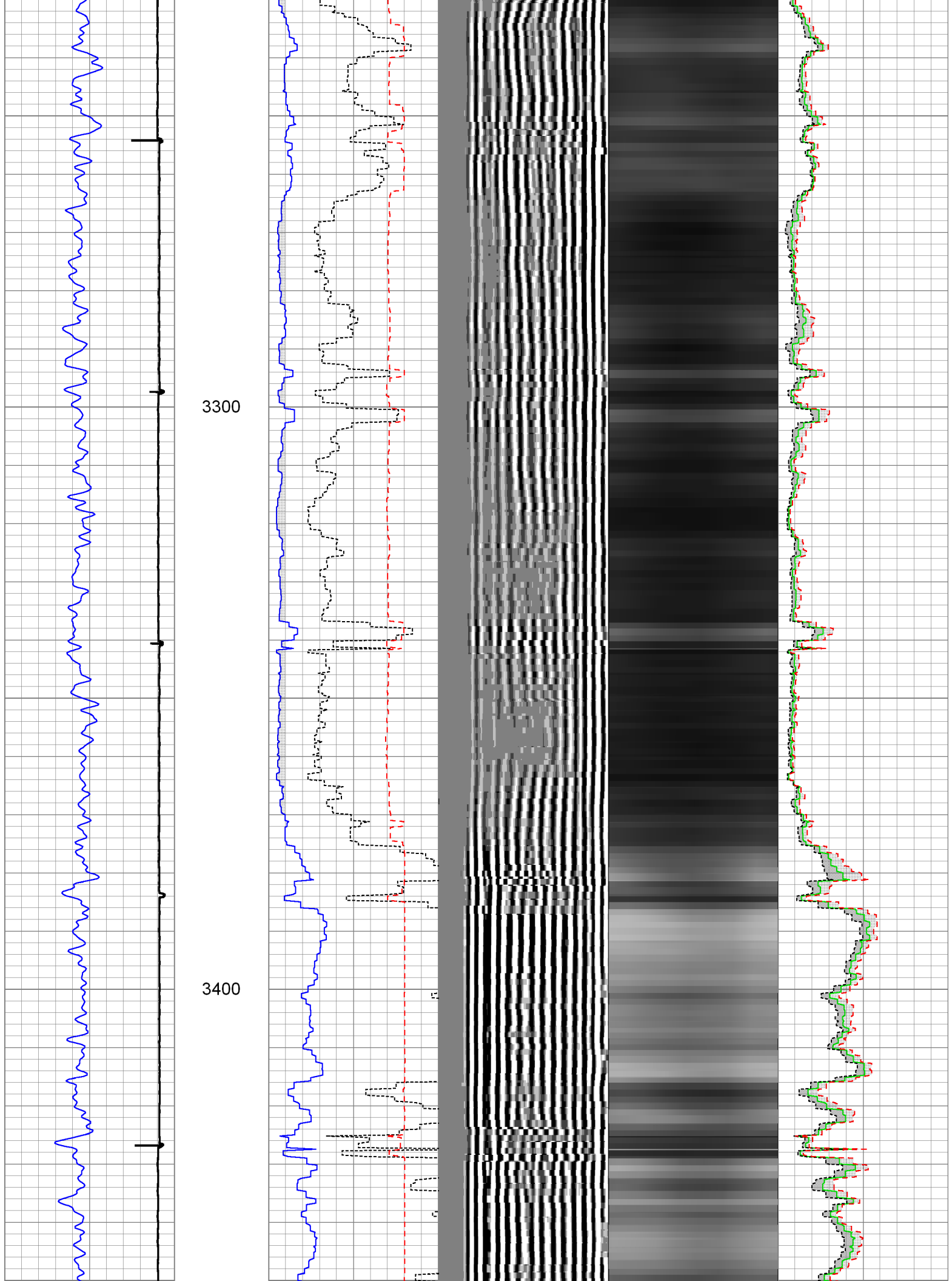
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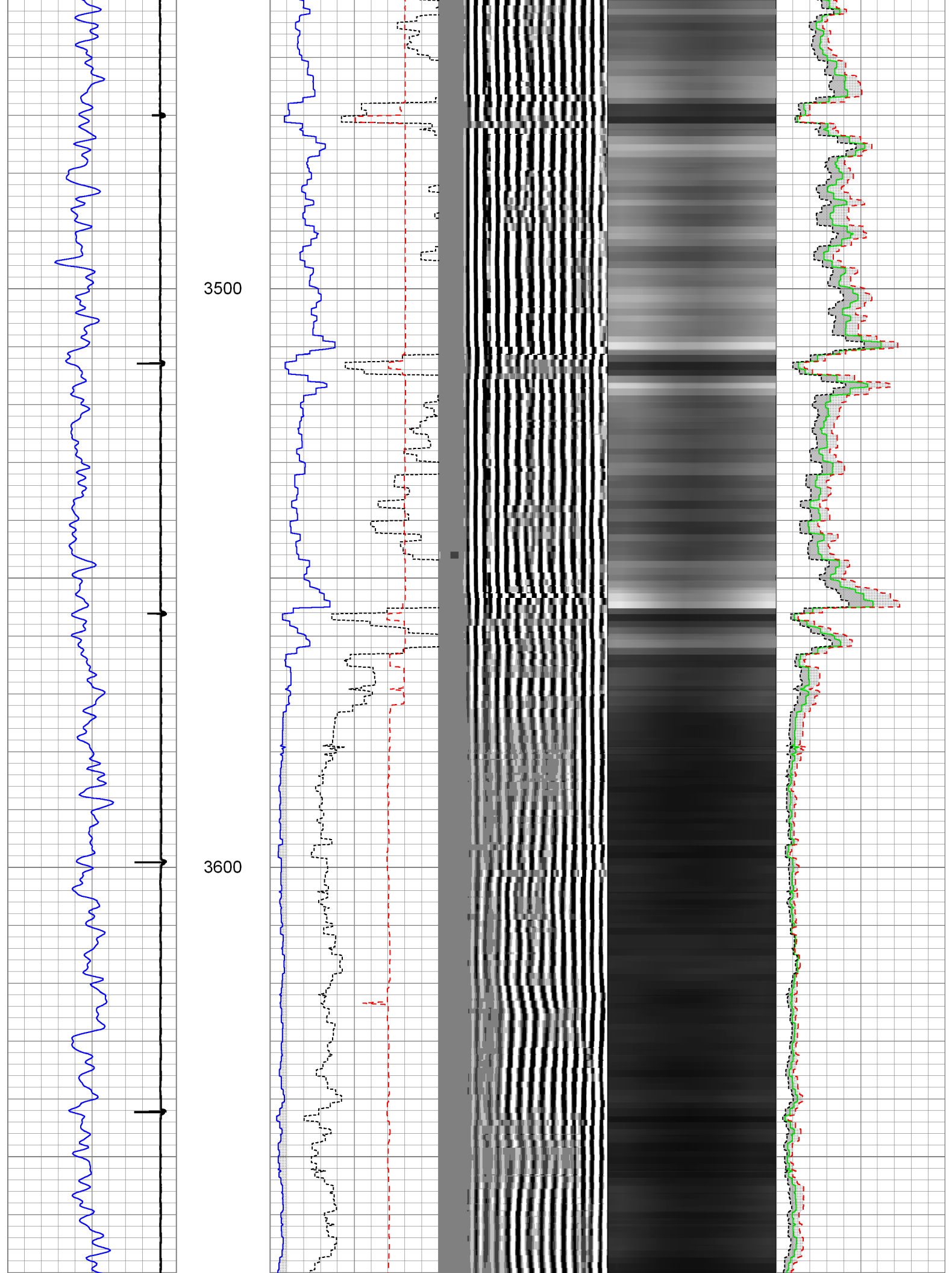
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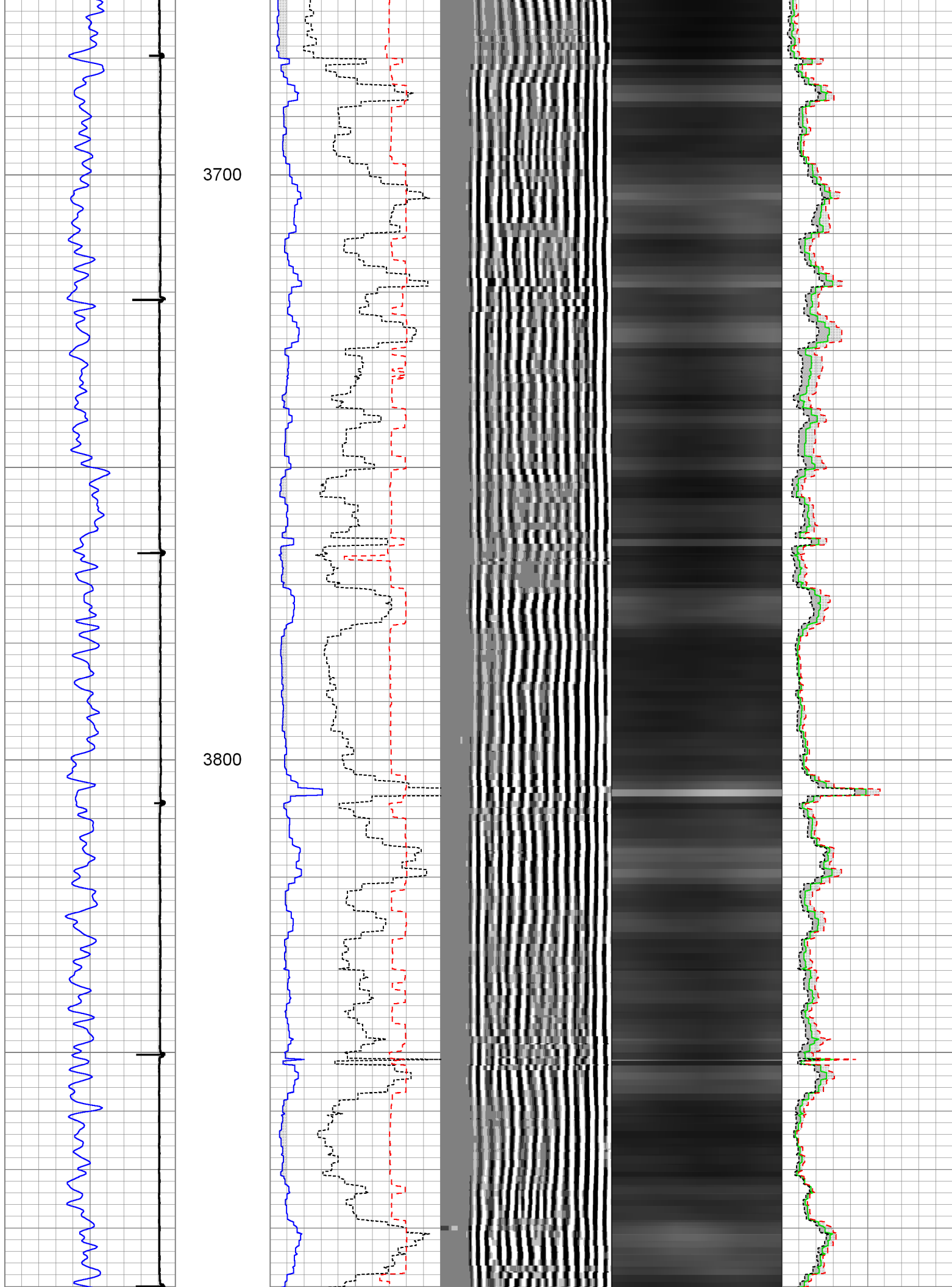


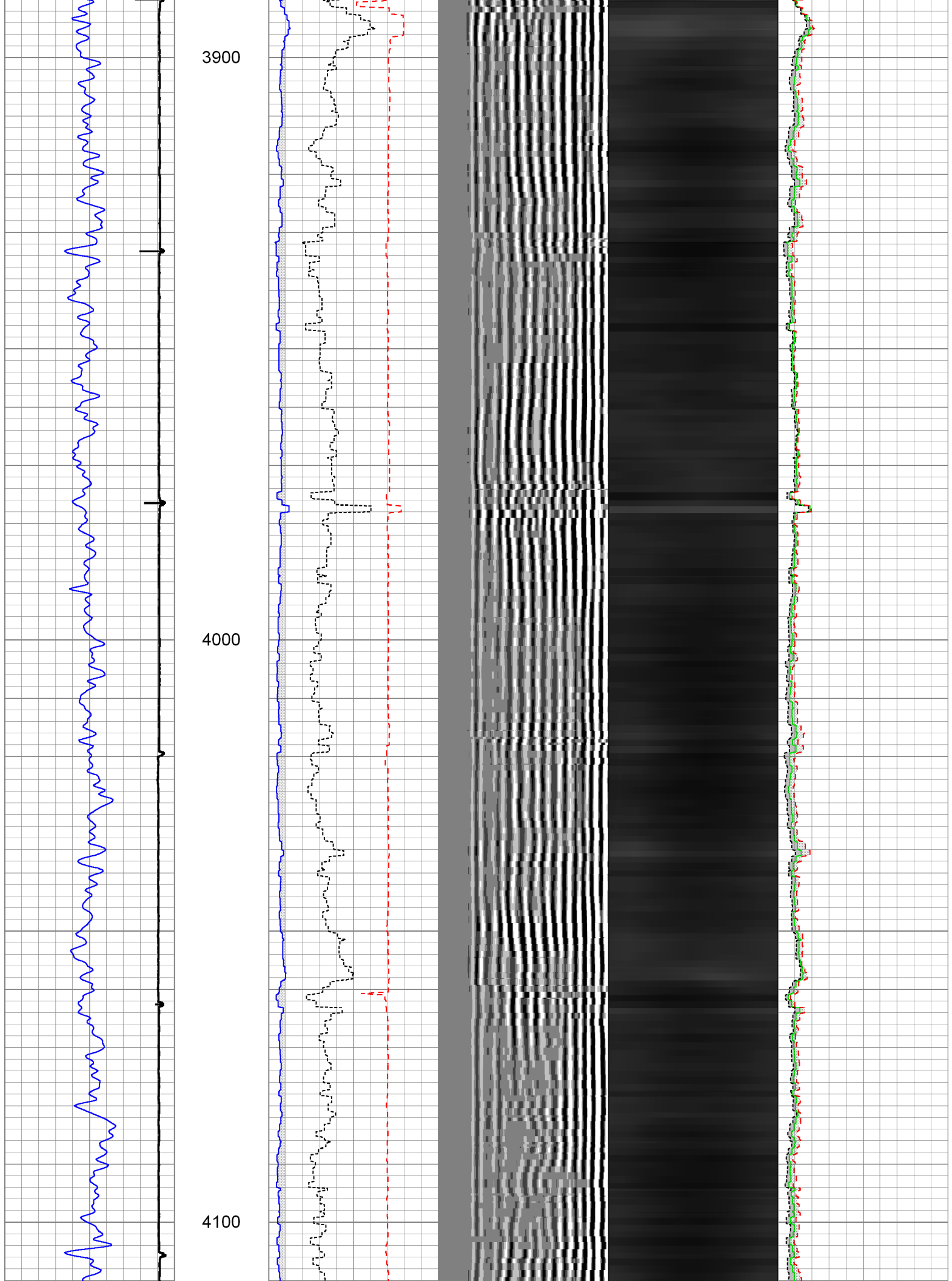


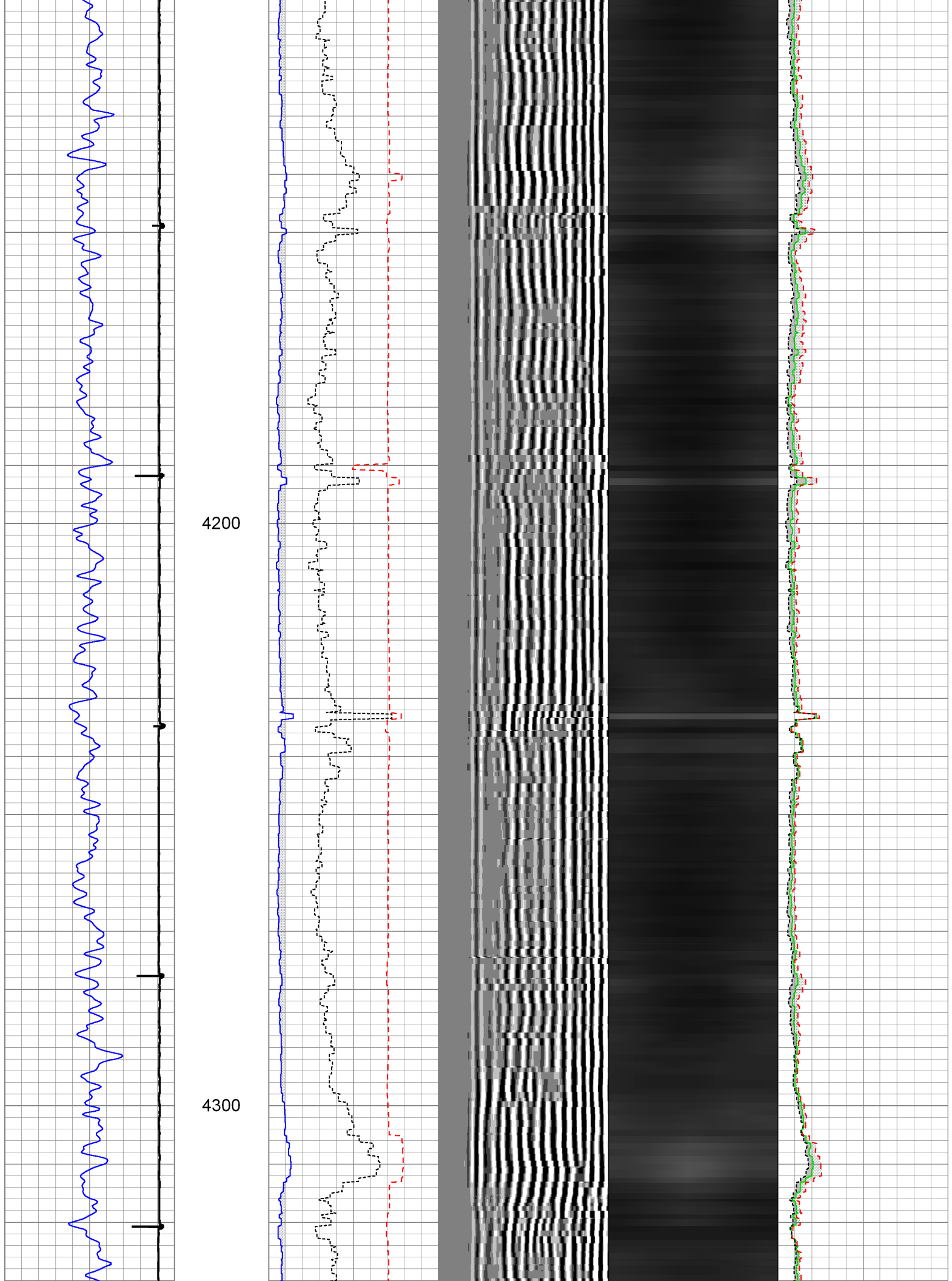


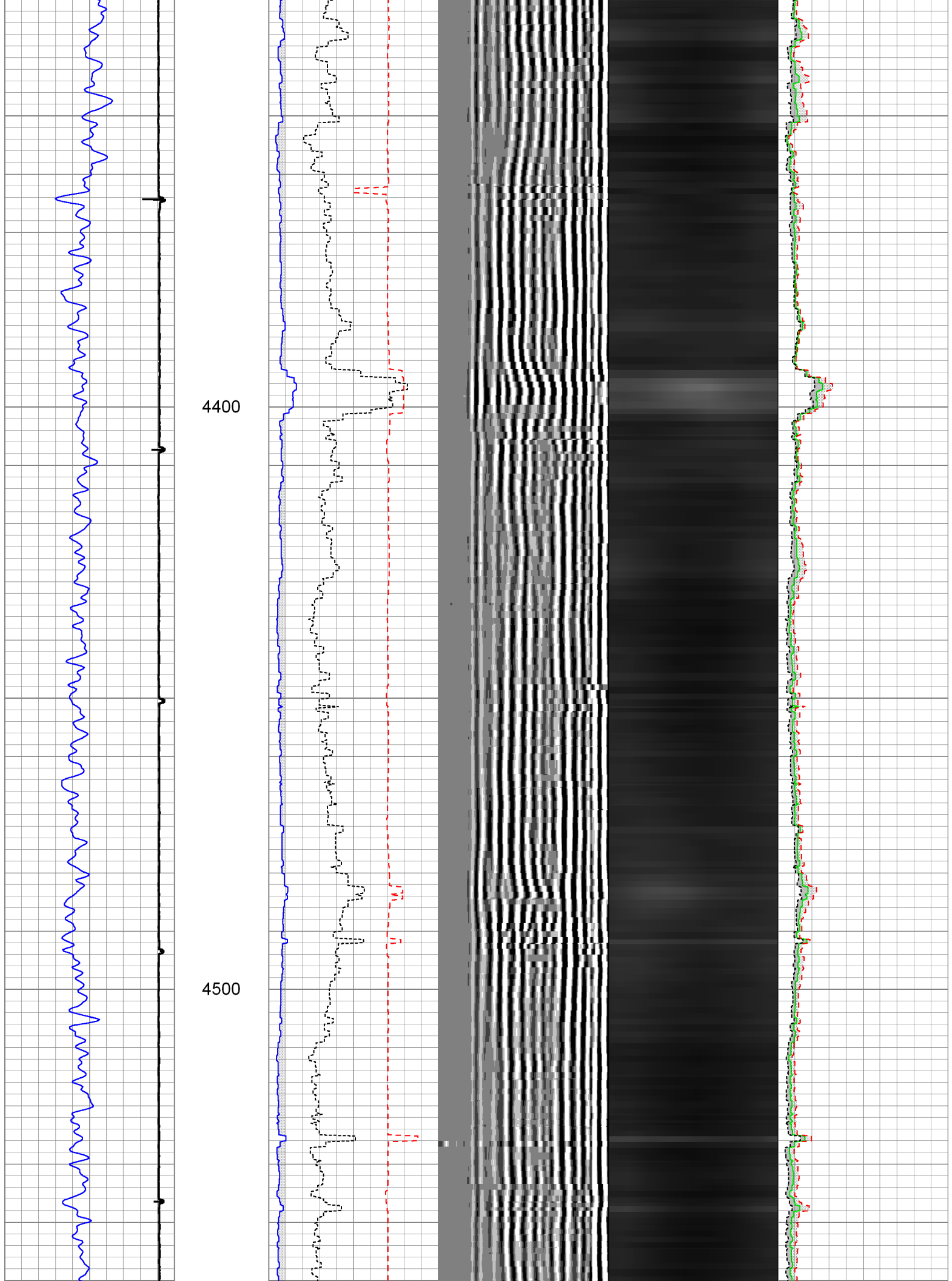
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3800



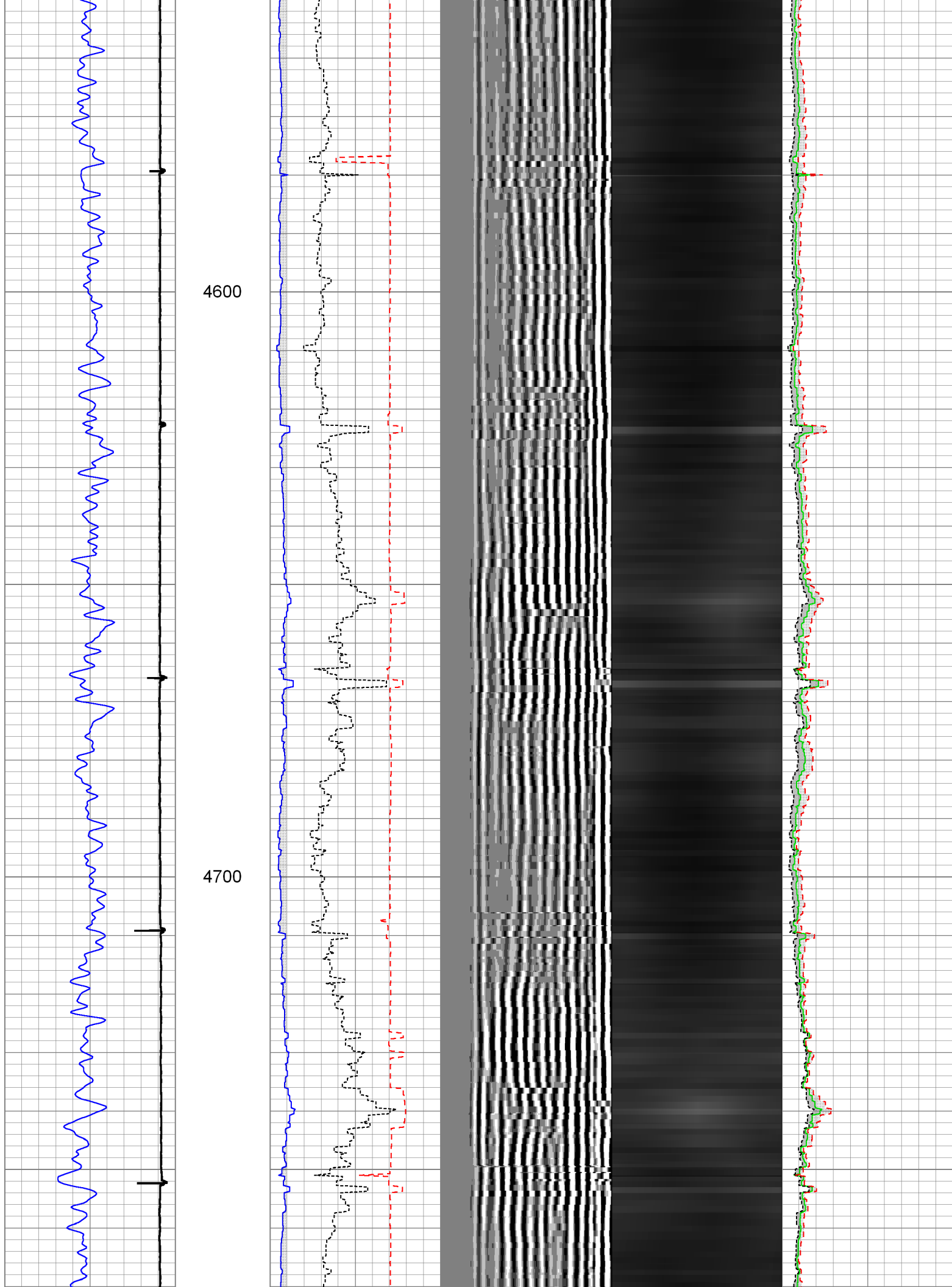


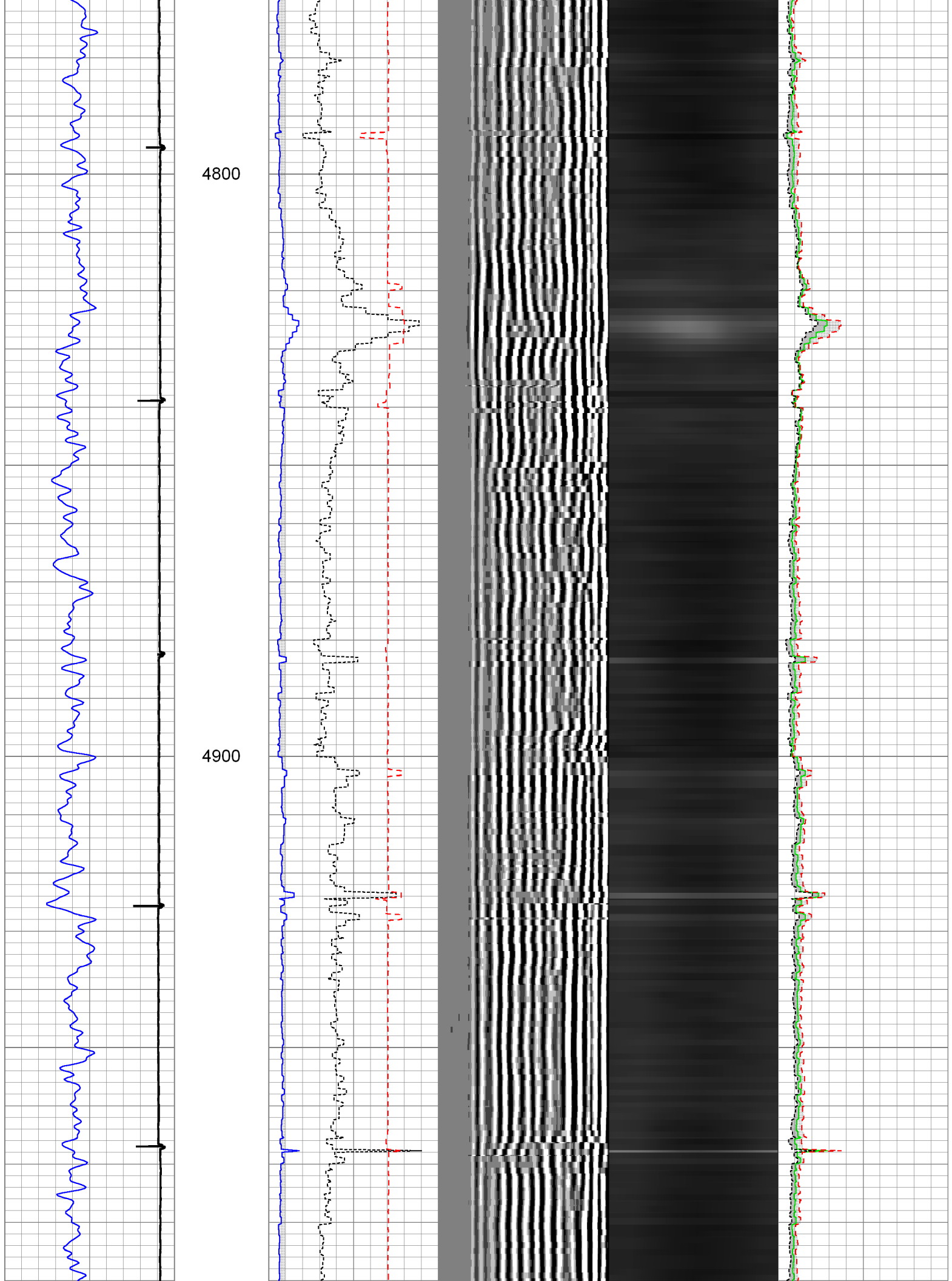




4600

4700

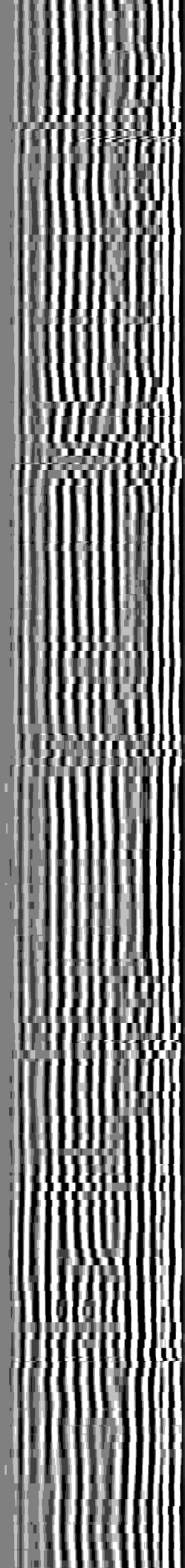
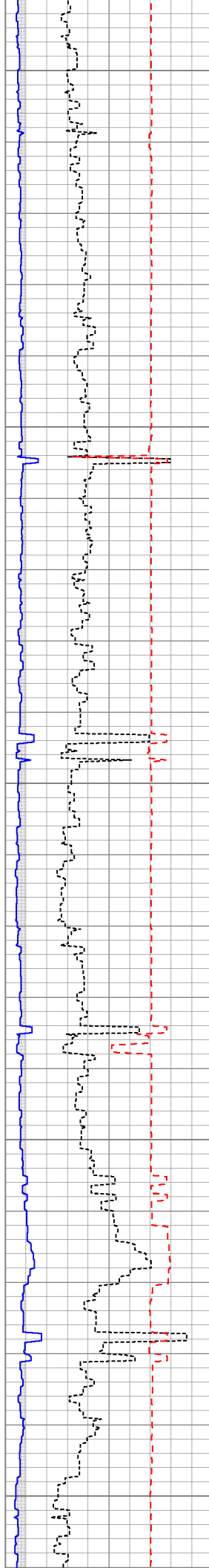
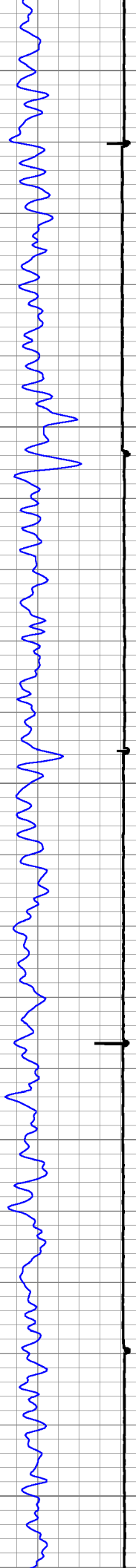


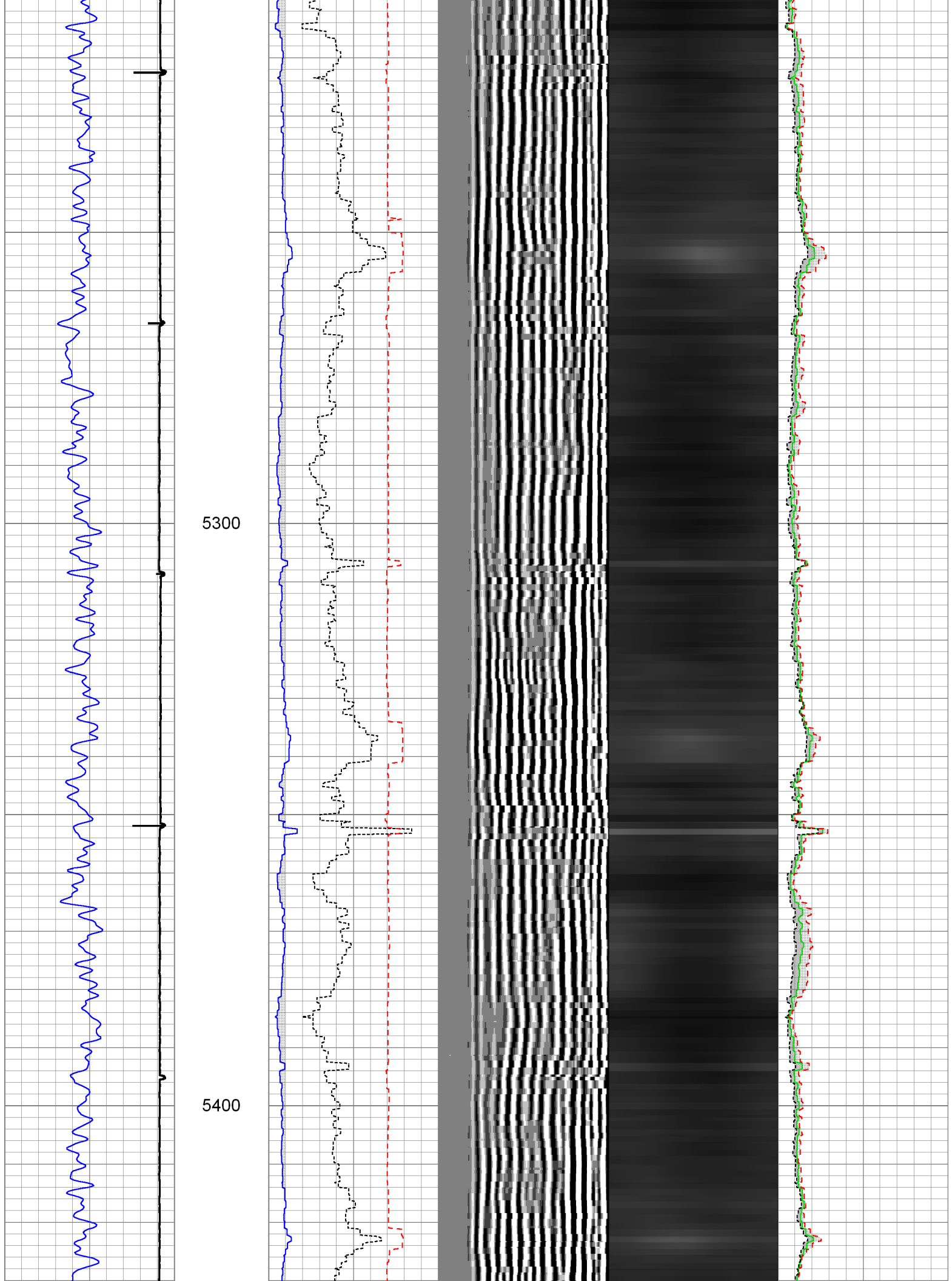


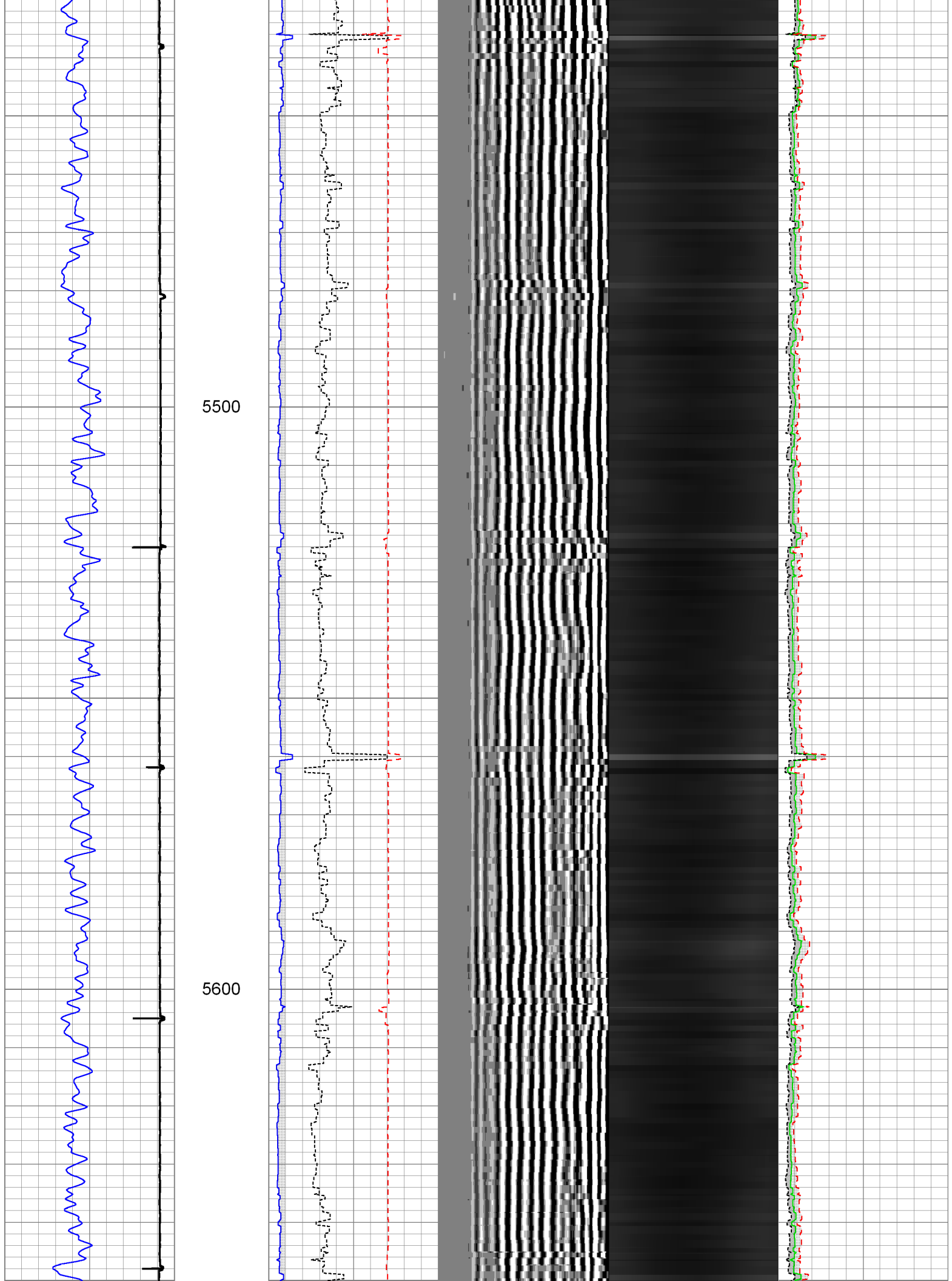
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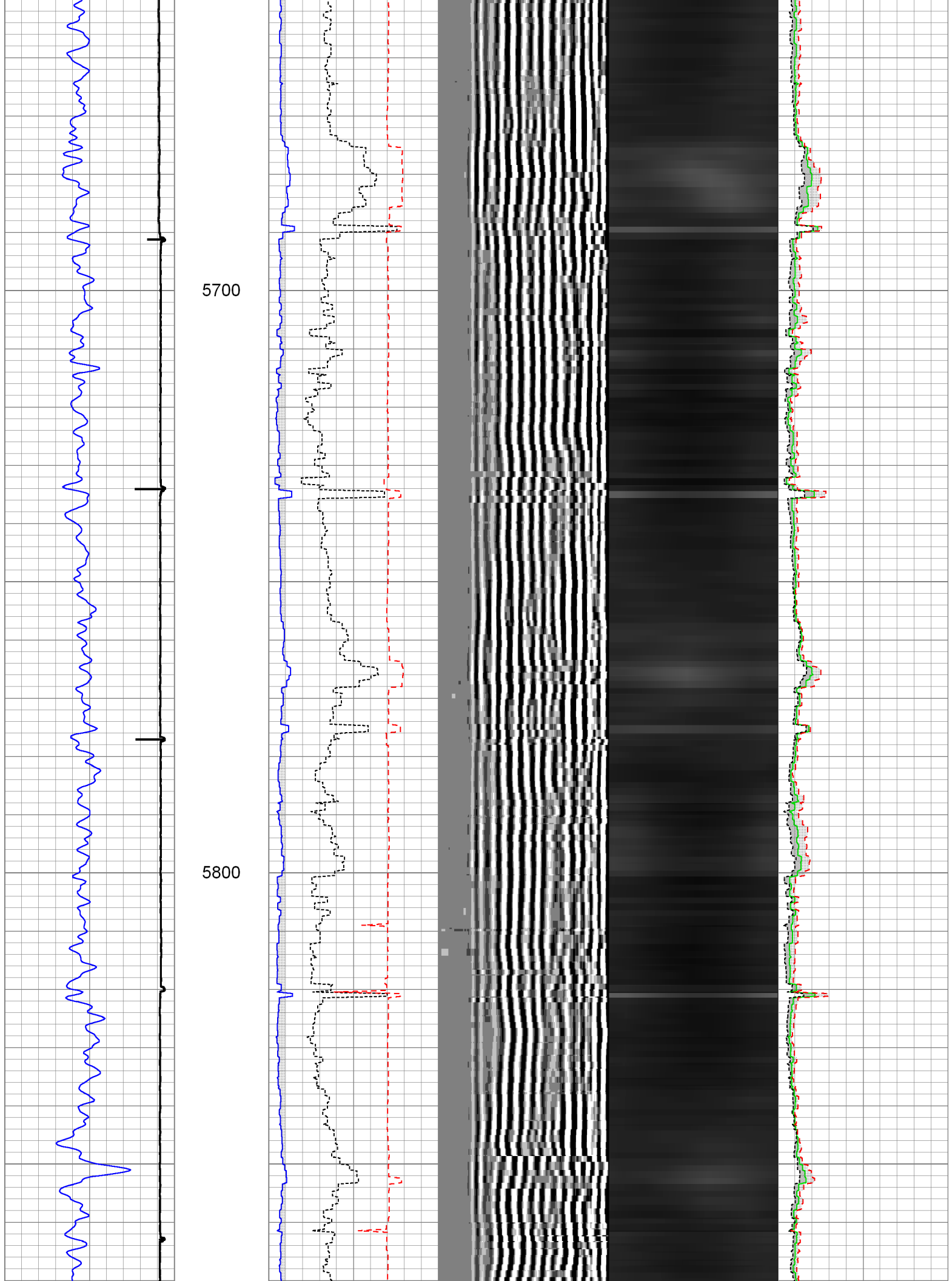
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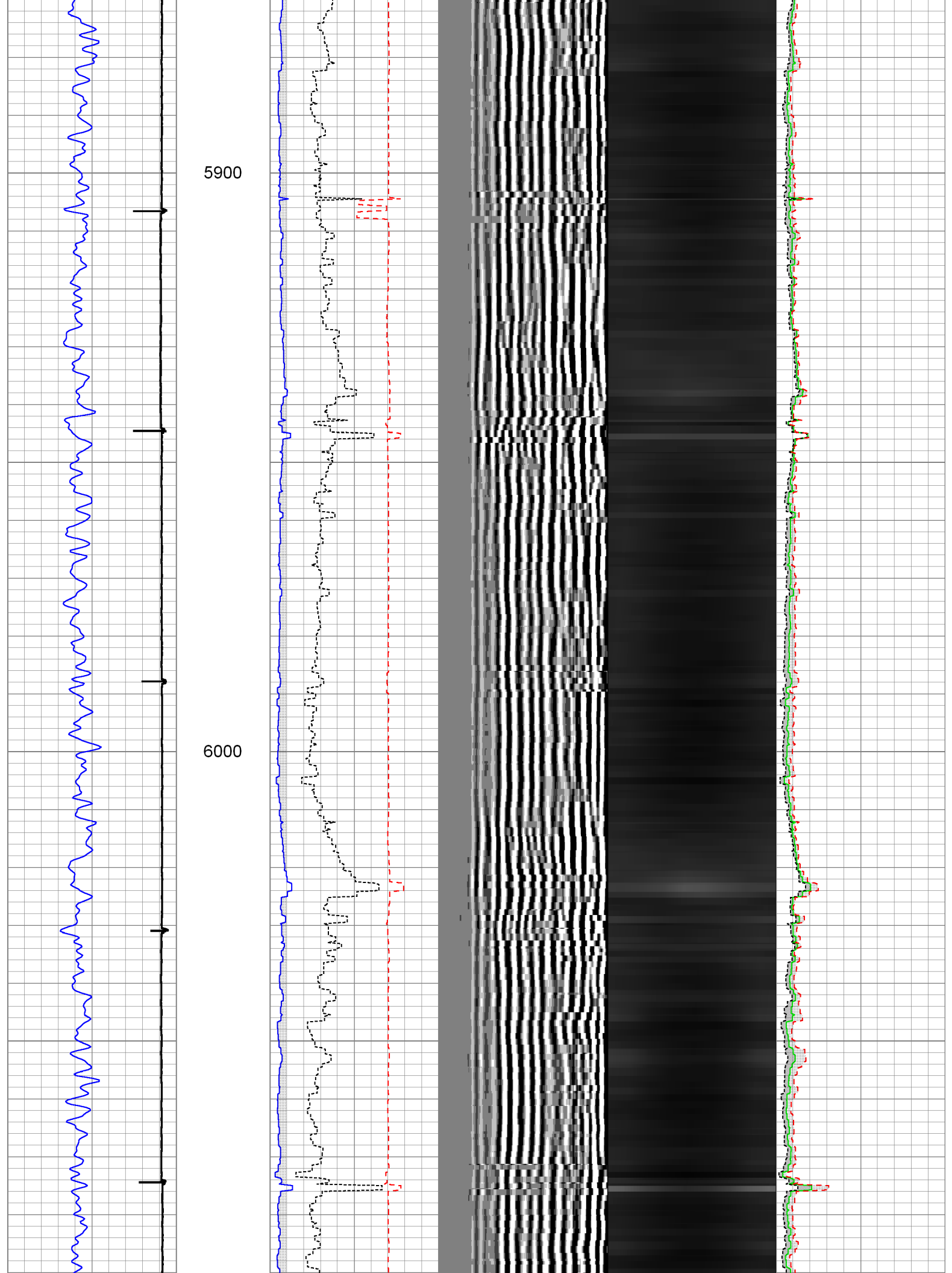
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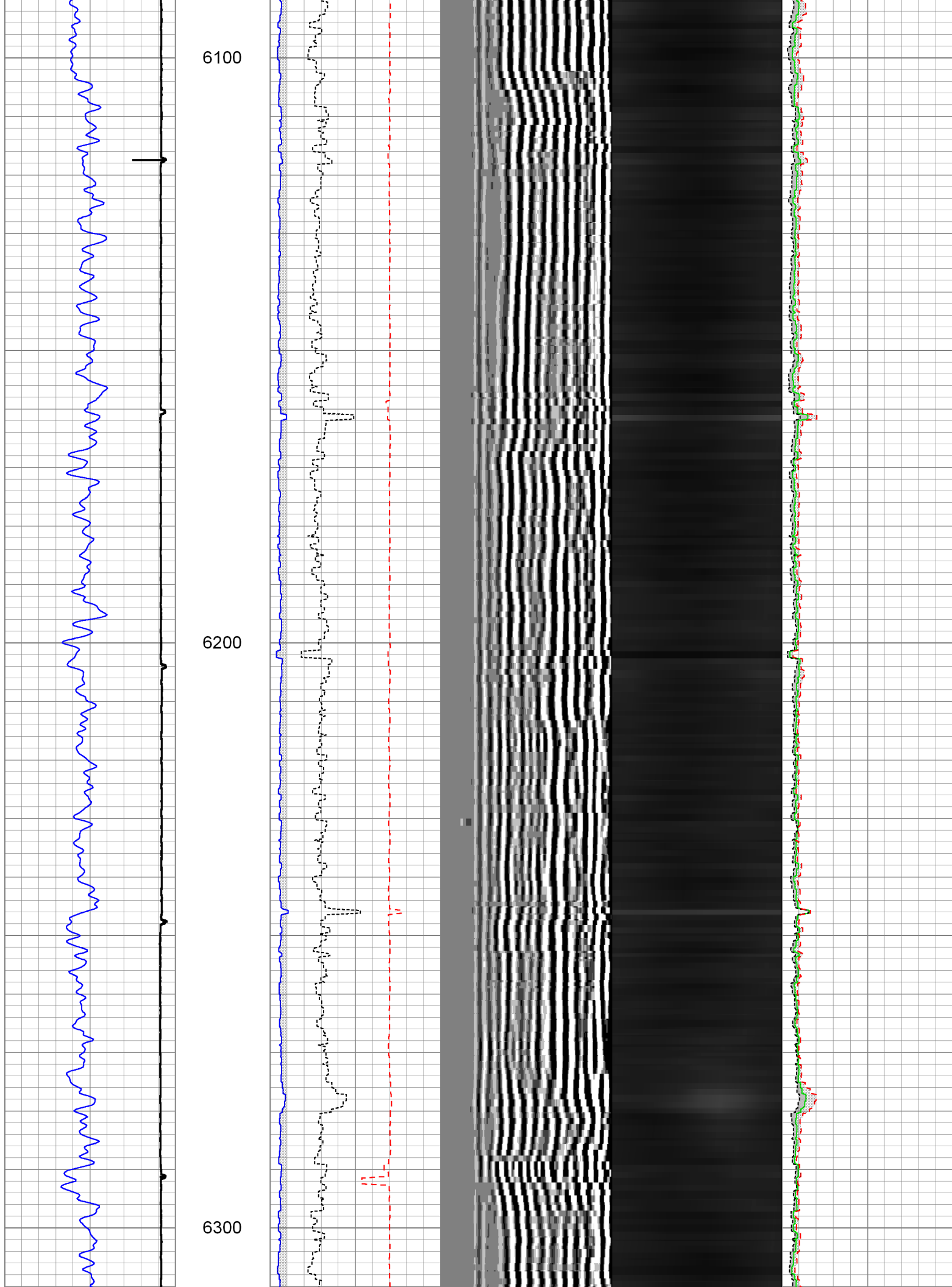


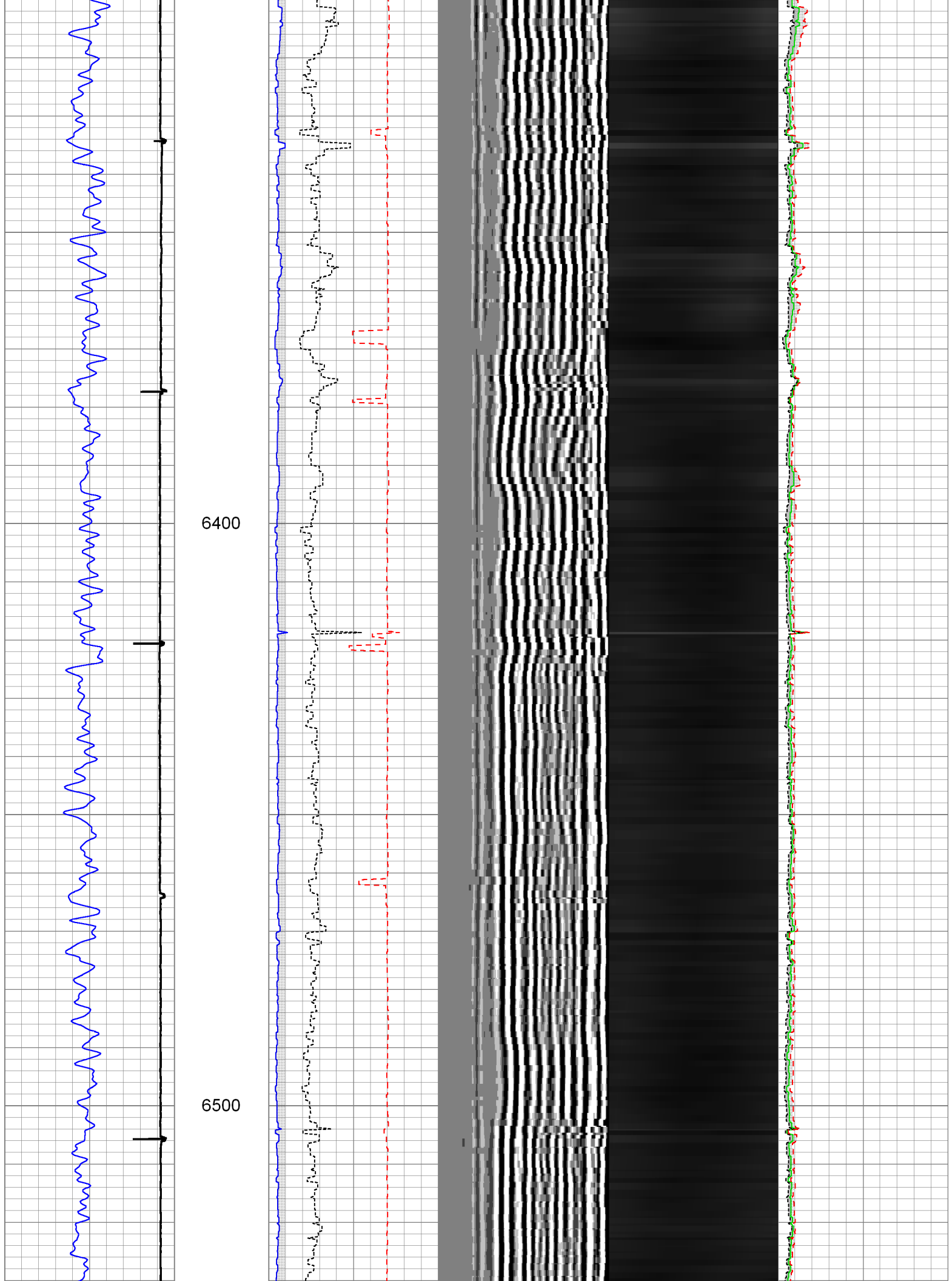


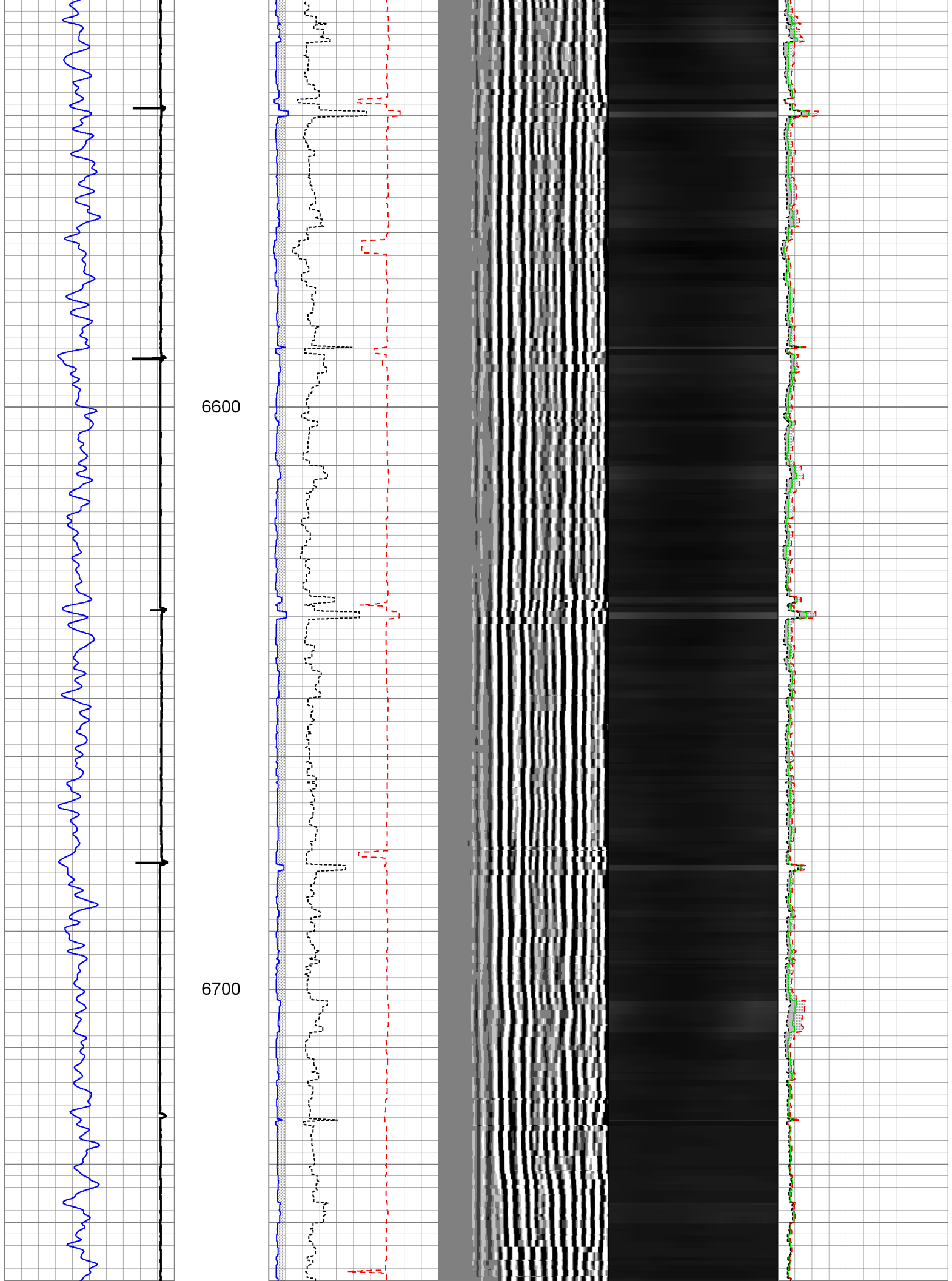


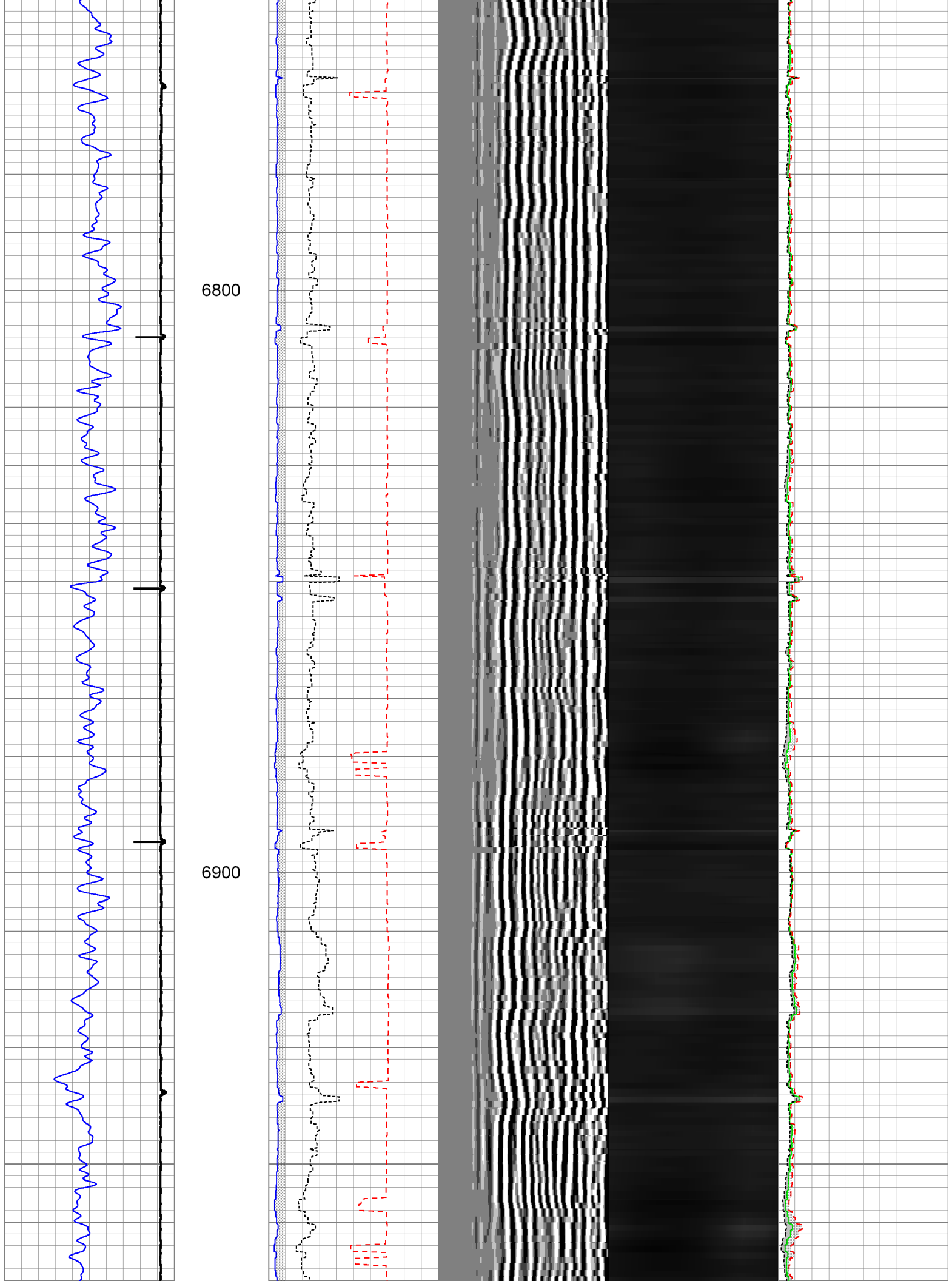


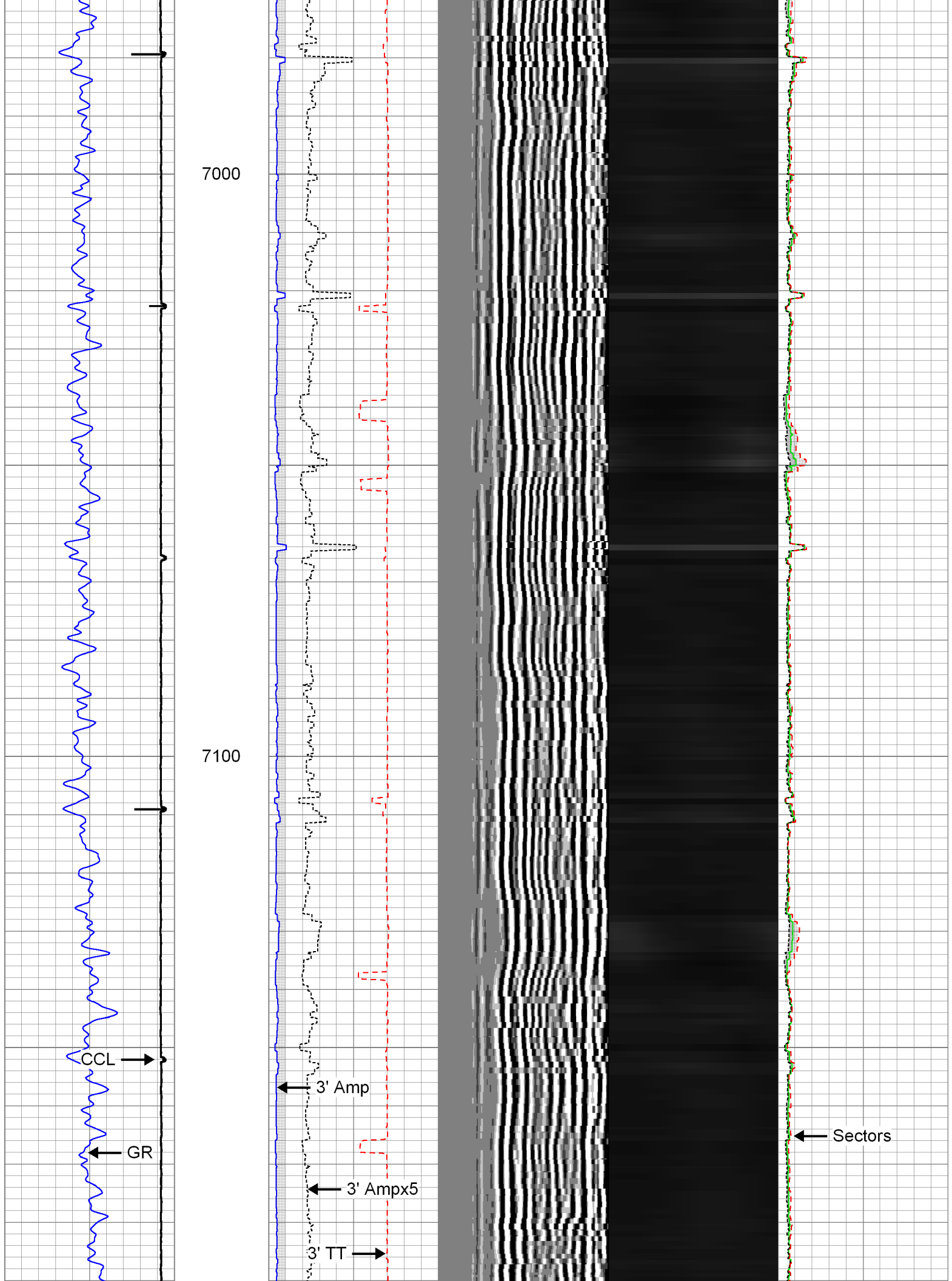


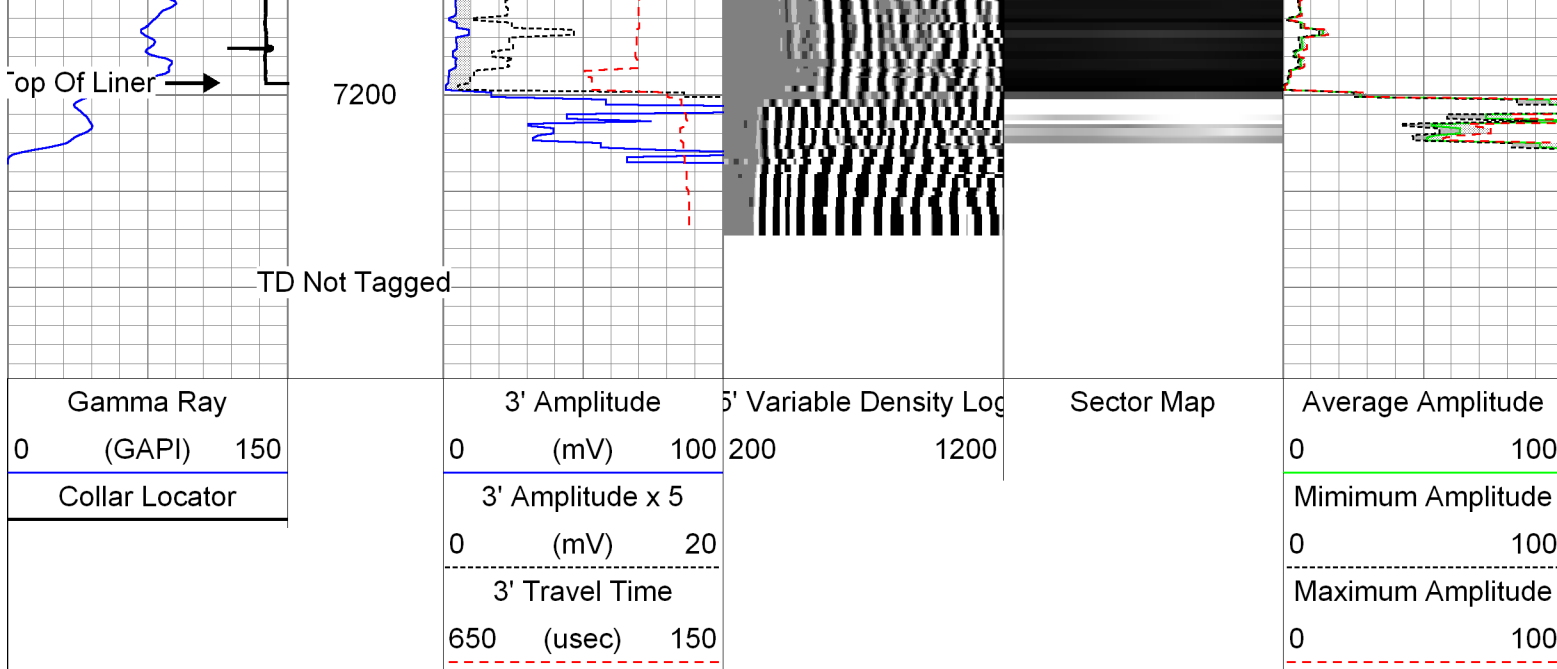






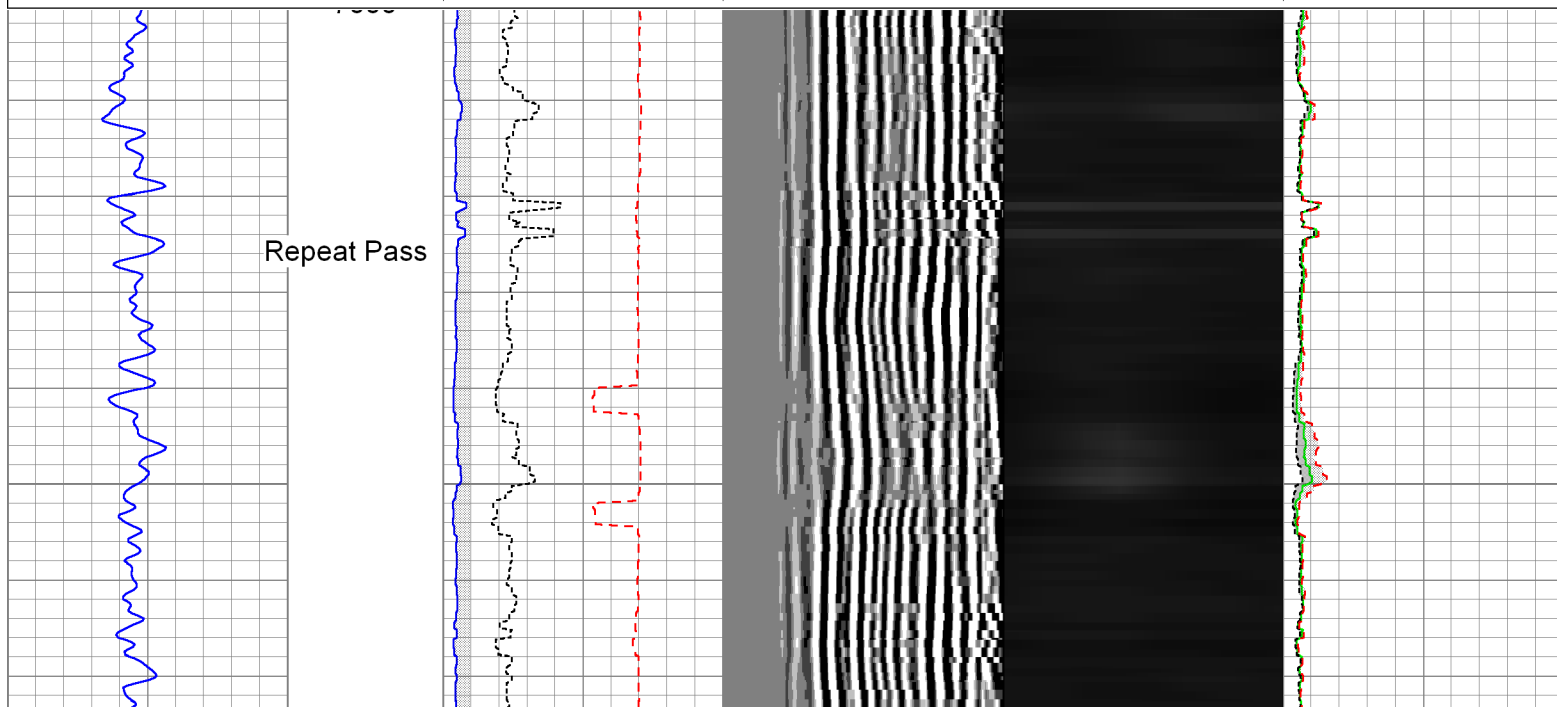
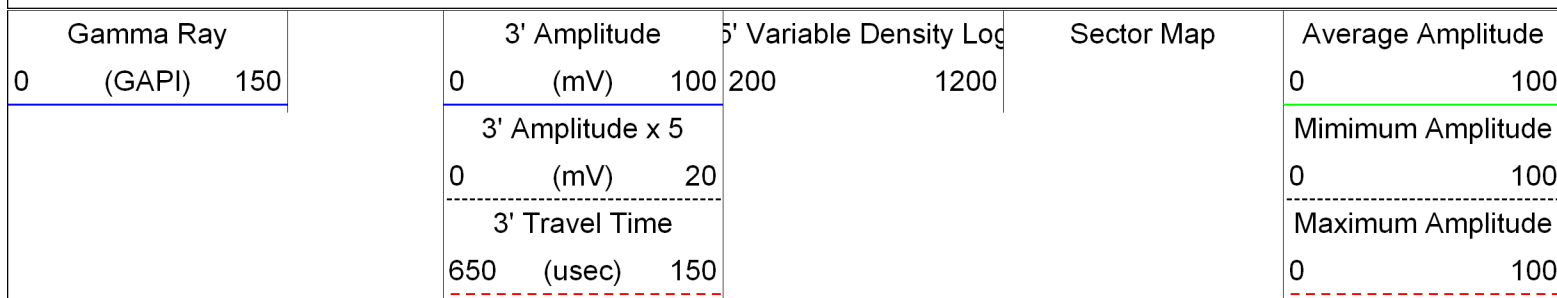


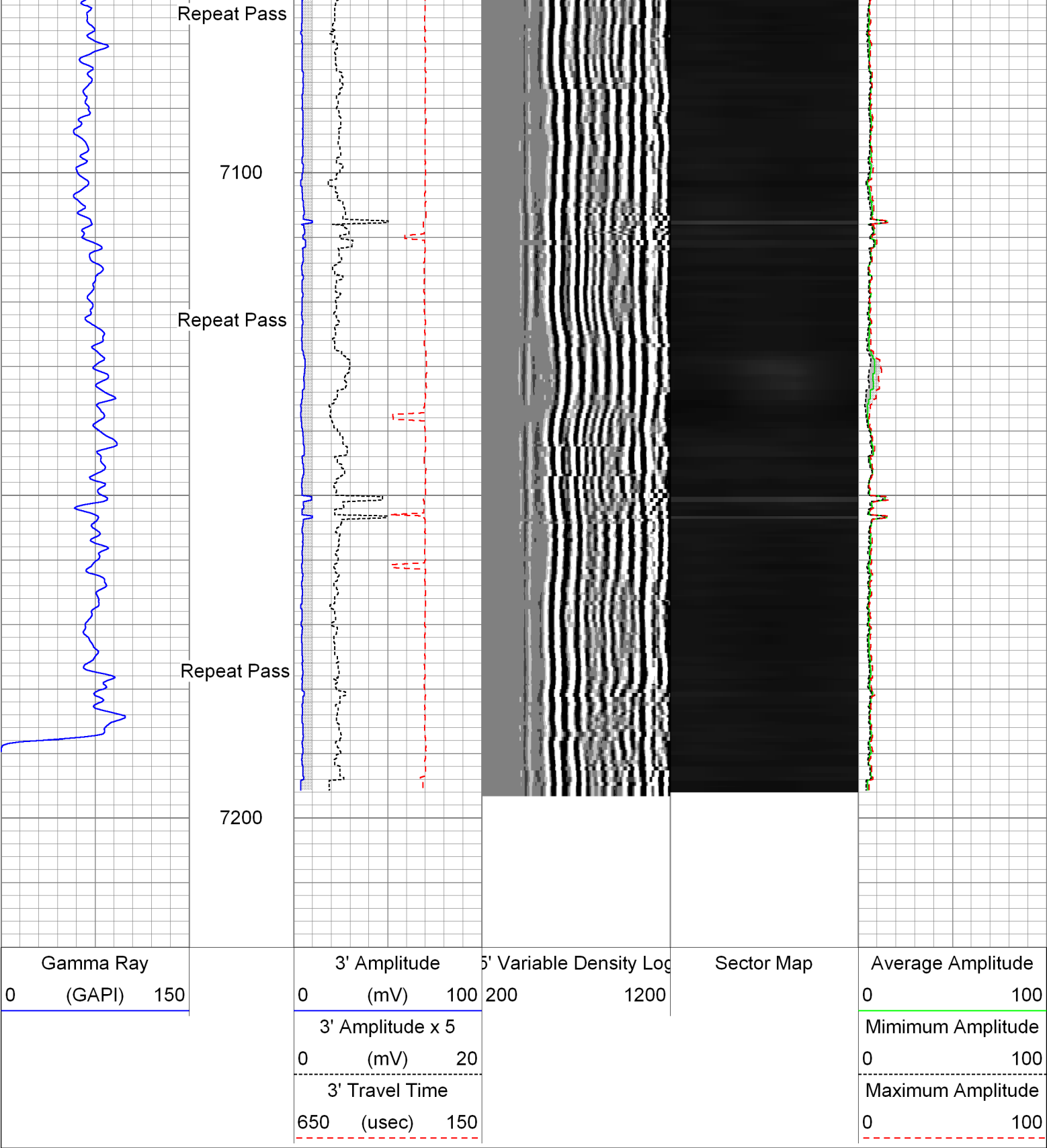





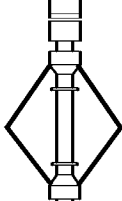

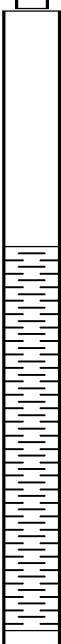
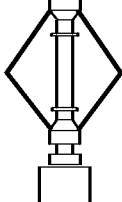
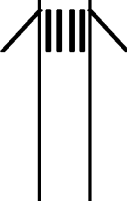
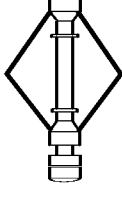
Repeat Pass

Database File: 0512336932_anadarko_howard 28c-33hzzr_12-30-13_mit_rbl.db
 Dataset Pathname: pass4
 Presentation Format: rbt007
 Dataset Creation: Mon Dec 30 13:40:54 2013 by Log Sondex V7.03
 Charted by: Depth in Feet scaled 1:240





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 (1102) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVF3FT	15.85			RBT-004 (1066in7in) 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						
				PRC-057 (1101) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
MIT	5.41			MIT-042 (10012912) 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: 0512336932_anadarko_howard 28c-33hzh_12-30-13_mit_rbl.db: field/well/run1/pass5 Total Length: 27.97 ft Total Weight: 316.30 lb O.D. 3.13 in							

Calibration Report	
Database File:	0512336932_anadarko_howard 28c-33hzh_12-30-13_mit_rbl.db
Dataset Pathname:	pass5
Dataset Creation:	Mon Dec 30 13:54:42 2013 by Log Sondex V7.03
Multi-finger Imaging Tool Calibration Report	

Serial Number:	10012912
Number of Fingers:	40

Inclinometer Calibration Report

Performed: Mon Jul 15 09:39:36 2013
 Calibration Angle: 45

Vertical:	Inc X	Inc Y
	1968	1974
Finger 1 up:	1740	1744
Finger 31 up:	2215	1741
Finger 21 up:	2205	2224
Finger 11 up:	1731	2217
Sensitivity ratio:	0.992868	
X-axis angle:	134.307	
Deviation const.:	335.589	

Finger Calibration Report

Performed: Mon Dec 30 12:39:29 2013

Ring size: (in)	4	Sens	5	Sens	6	Sens	7
Finger 01:	1207	379.0	1586	354.0	1940	407.0	2347
Finger 02:	1196	385.0	1581	350.0	1931	413.0	2344
Finger 03:	1156	406.0	1562	357.0	1919	431.0	2350
Finger 04:	1169	396.0	1565	342.0	1907	421.0	2328
Finger 05:	1173	407.0	1580	340.0	1920	416.0	2336
Finger 06:	1205	413.0	1618	335.0	1953	407.0	2360
Finger 07:	1173	416.0	1589	341.0	1930	411.0	2341
Finger 08:	1200	409.0	1609	335.0	1944	403.0	2347
Finger 09:	1189	412.0	1601	337.0	1938	402.0	2340
Finger 10:	1197	408.0	1605	338.0	1943	396.0	2339
Finger 11:	1205	403.0	1608	341.0	1949	387.0	2336
Finger 12:	1192	404.0	1596	349.0	1945	394.0	2339
Finger 13:	1202	391.0	1593	350.0	1943	381.0	2324
Finger 14:	1200	393.0	1593	364.0	1957	391.0	2348
Finger 15:	1152	393.0	1545	389.0	1934	404.0	2338
Finger 16:	1152	384.0	1536	396.0	1932	405.0	2337
Finger 17:	1150	374.0	1524	403.0	1927	408.0	2335
Finger 18:	1211	357.0	1568	394.0	1962	385.0	2347
Finger 19:	1168	351.0	1519	411.0	1930	394.0	2324
Finger 20:	1165	346.0	1511	429.0	1940	403.0	2343
Finger 21:	1158	346.0	1504	433.0	1937	392.0	2329
Finger 22:	1138	336.0	1474	440.0	1914	407.0	2321
Finger 23:	1096	334.0	1430	461.0	1891	425.0	2316
Finger 24:	1166	321.0	1487	440.0	1927	384.0	2311
Finger 25:	1110	329.0	1439	461.0	1900	420.0	2320
Finger 26:	1219	306.0	1525	430.0	1955	386.0	2341
Finger 27:	1155	315.0	1470	456.0	1926	417.0	2343
Finger 28:	1184	308.0	1492	443.0	1935	406.0	2341
Finger 29:	1134	312.0	1446	462.0	1908	430.0	2338
Finger 30:	1166	316.0	1482	452.0	1934	425.0	2359
Finger 31:	1168	316.0	1484	439.0	1923	418.0	2341
Finger 32:	1152	327.0	1479	450.0	1929	433.0	2362
Finger 33:	1230	325.0	1555	411.0	1966	400.0	2366
Finger 34:	1196	327.0	1523	416.0	1939	421.0	2360
Finger 35:	1150	355.0	1505	434.0	1939	441.0	2380
Finger 36:	1158	350.0	1508	410.0	1918	434.0	2352
Finger 37:	1180	355.0	1535	392.0	1927	423.0	2350
Finger 38:	1213	359.0	1572	377.0	1949	405.0	2354
Finger 39:	1229	363.0	1592	366.0	1958	407.0	2365
Finger 40:	1180	379.0	1559	369.0	1928	423.0	2351

Segmented Cement Bond Log Calibration Report

Serial Number: 1066in7in
 Tool Model: 004

Calibration Casing Diameter: 7.000 in
Calibration Depth: 0.840 ft

Master Calibration, performed Mon Dec 30 12:53:14 2013:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.004	0.783	0.800	62.165	78.785	0.506
5FT	-0.001	0.858	0.800	62.165	71.386	0.887
S1	0.004	0.740	0.000	100.000	135.879	-0.557
S2	0.002	0.793	0.000	100.000	126.516	-0.309
S3	0.004	0.798	0.000	100.000	125.909	-0.461
S4	0.002	0.816	0.000	100.000	122.843	-0.300
S5	0.004	0.809	0.000	100.000	124.161	-0.455
S6	0.003	0.774	0.000	100.000	129.803	-0.440
S7	0.004	0.741	0.000	100.000	135.686	-0.528
S8	0.004	0.729	0.000	100.000	138.008	-0.578

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 28C - 33HZR
Field Wattenburg
County Weld
State Colorado