



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.				Company Kerr-McGee Oil & Gas Onshore, L.P.			
Well Howard 29C-21HZ				Well Howard 29C-21HZ			
Field Wattenberg				Field Wattenberg			
County Weld				County Weld			
State Colorado				State Colorado			
Location:				API # : 05-123-36794			
311 FSL, 1519 FWL, SESW Lat / Lon 40.030174 / -104.899557 SEC 21 TWP 1N RGE 67W				Other Services Gauge Ring MIT			
Permanent Datum		Ground Level		Elevation		Elevation	
Log Measured From		Kelly Bushing		(16 FT)		K.B. 5041' D.F. 5040' G.L. 5025'	
Drilling Measured From		Kelly Bushing					
Date		05-Dec-2013					
Run Number		Two					
Depth Driller		12.195 FT					
Depth Logger		7135 FT					
Bottom Logged Interval		7135 FT					
Top Log Interval		Surface					
Open Hole Size		8.750"					
Type Fluid		Water					
Density / Viscosity		8.34 lbm/gal					
Max. Recorded Temp.		223 degF					
Estimated Cement Top		1631 FT					
Time Well Ready		15:00					
Time Logger on Bottom		16:00					
Equipment Number		HD-255					
Location		Fort Lupton, CO					
Recorded By		H. Raby					
Witnessed By		Noe Pulido					
Borehole Record				Tubing Record			
Run Number		Bit		From		To	
Casing Record		Size (in)		Wgt (lbs/Ft)		Grade	
Surface Casing		9-5/8"		36#		J-55 LTC	
Intermediate #1		7"		26#		HCP-110	
Intermediate #2							
Liner		4-1/2"		11.6#		P-110	
						7097 FT	
						12.185 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.
Depth reference to Casing Tally reported Top of Liner at 7097'.
Adjusted 4' for liner top at 7097' from a 16' KB zero
RCBL-CIL ran at 2800 PSI surface induced pressure.
Estimated Cement Top recorded at 1631 FT

Thank you for choosing FMC Technologies Completion Services, Inc.

Main Pass



Logged With 2800 PSI @ Surface

Database File: 0512336794_anadarko_howard 29c-21hz_12-05-13_mit_rbl.db

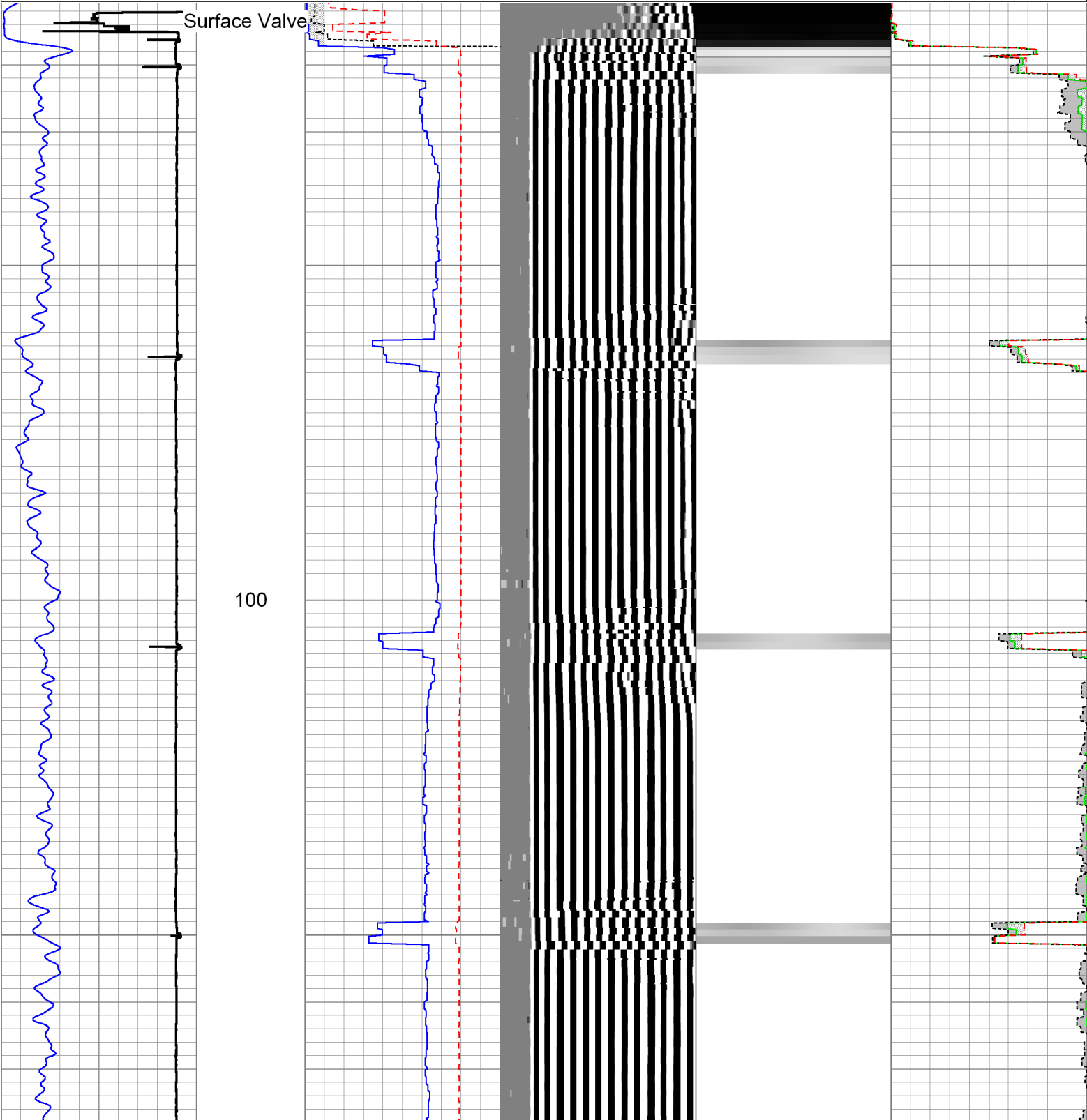
Dataset Pathname: main

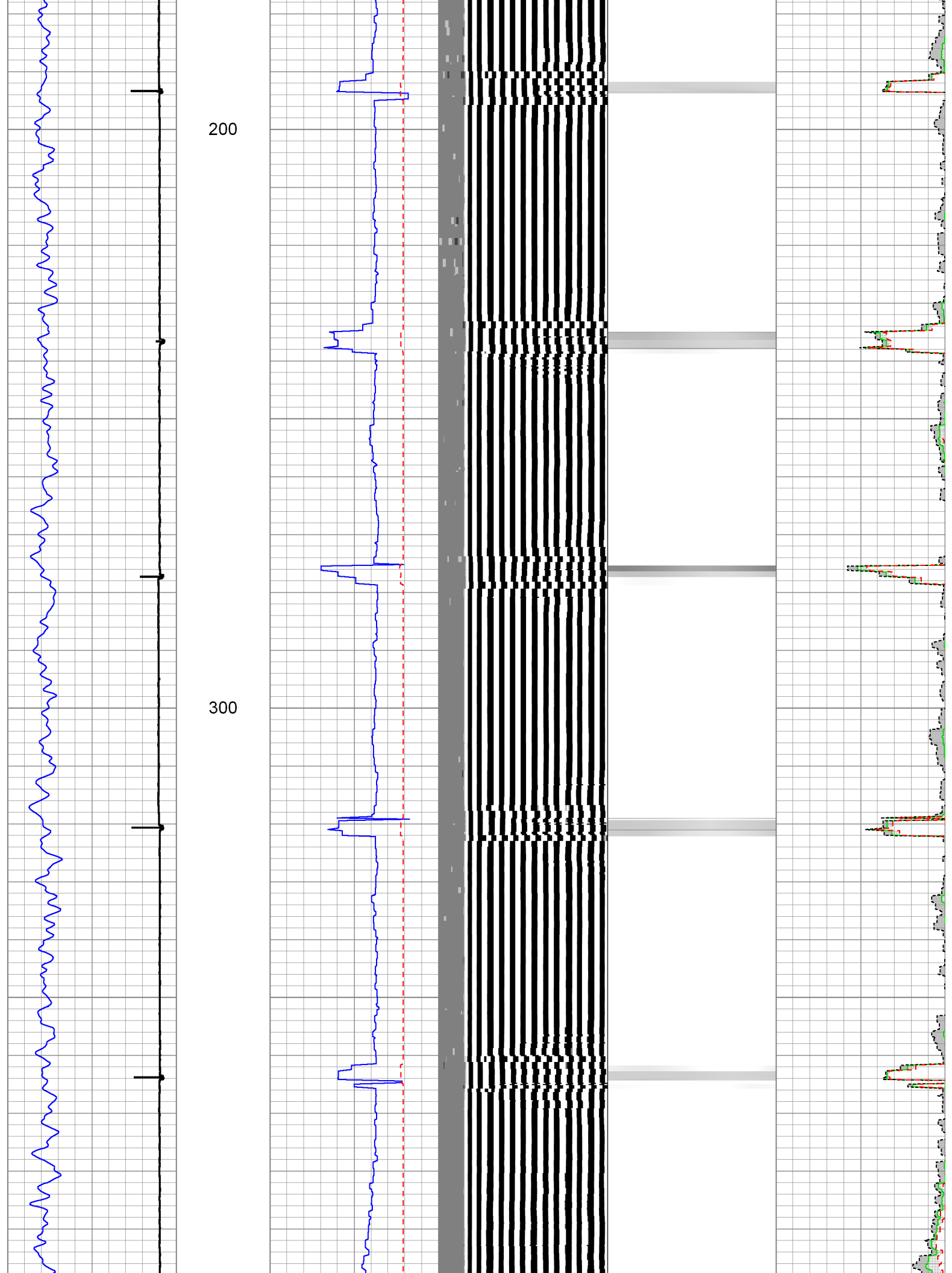
Presentation Format: rbt007

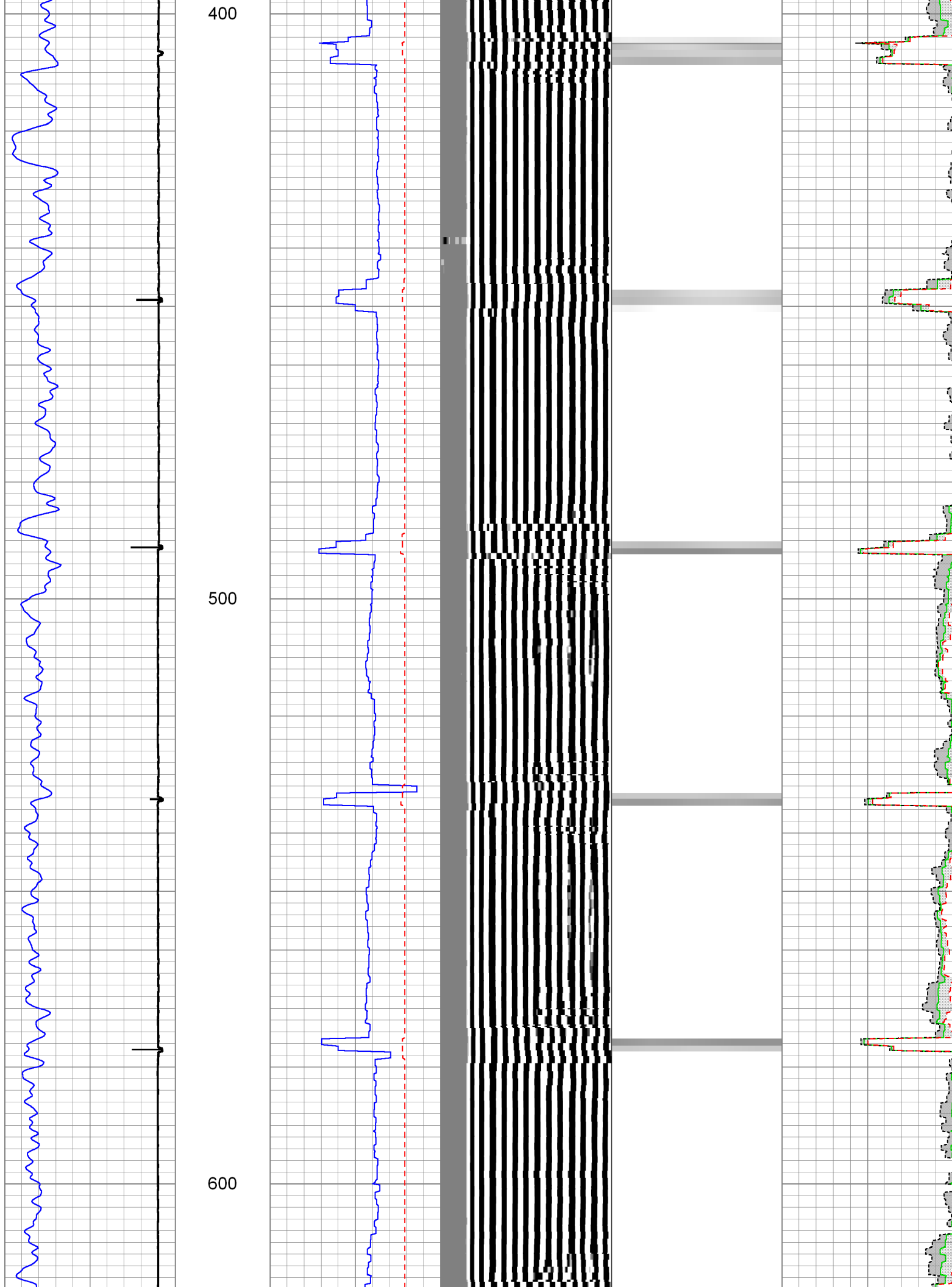
Dataset Creation: Fri Dec 06 09:55:27 2013 by Log Sondex V7.03

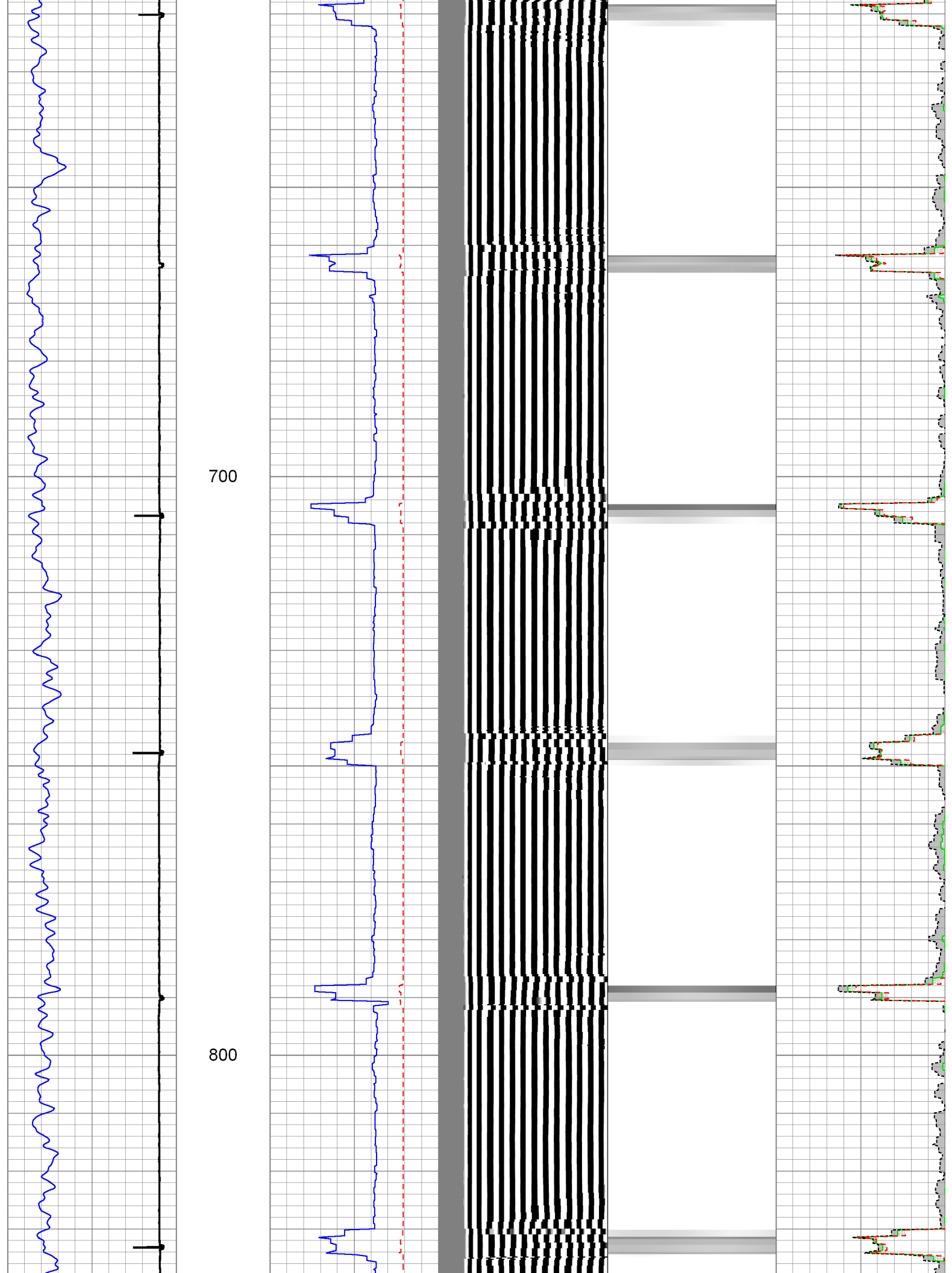
Charted by: Depth in Feet scaled 1:240

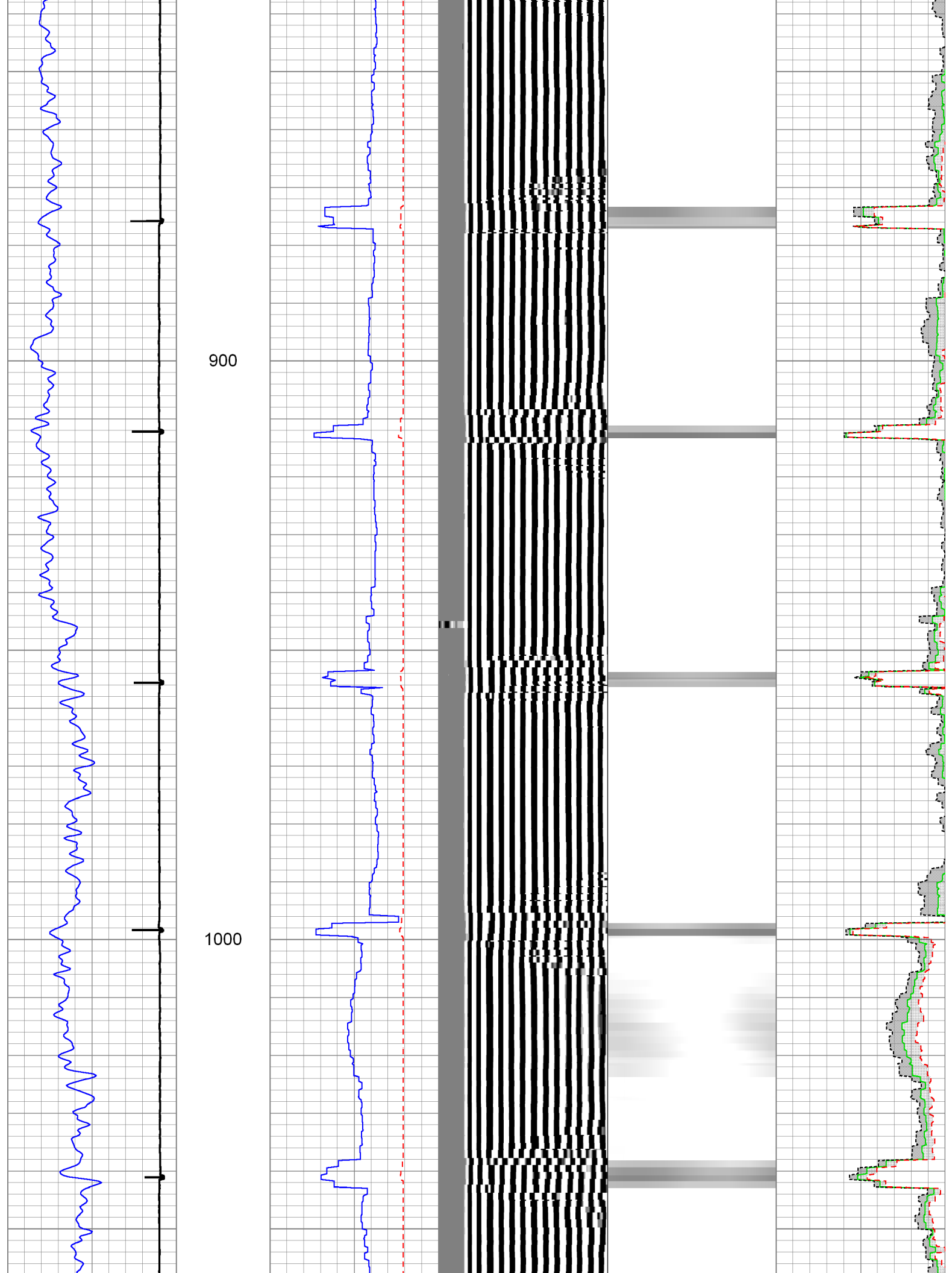
Gamma Ray		3' Amplitude		5' Variable Density Log		Sector Map		Average Amplitude	
0	(GAPI) 150	0	(mV) 100	200	1200			0	100
Collar Locator		3' Amplitude x 5						Minimum Amplitude	
		0	(mV) 20					0	100
		3' Travel Time						Maximum Amplitude	
		650	(usec) 150					0	100

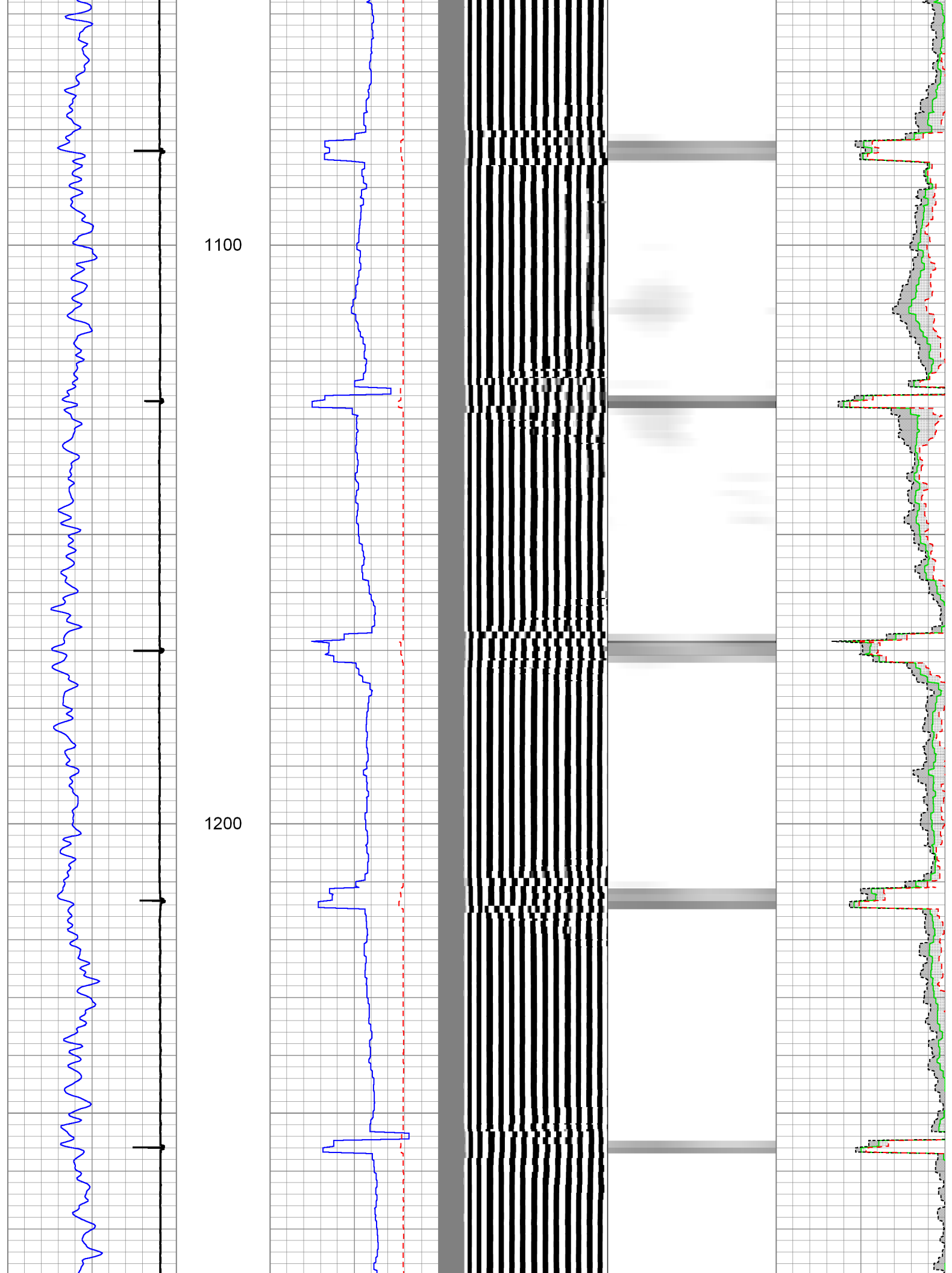


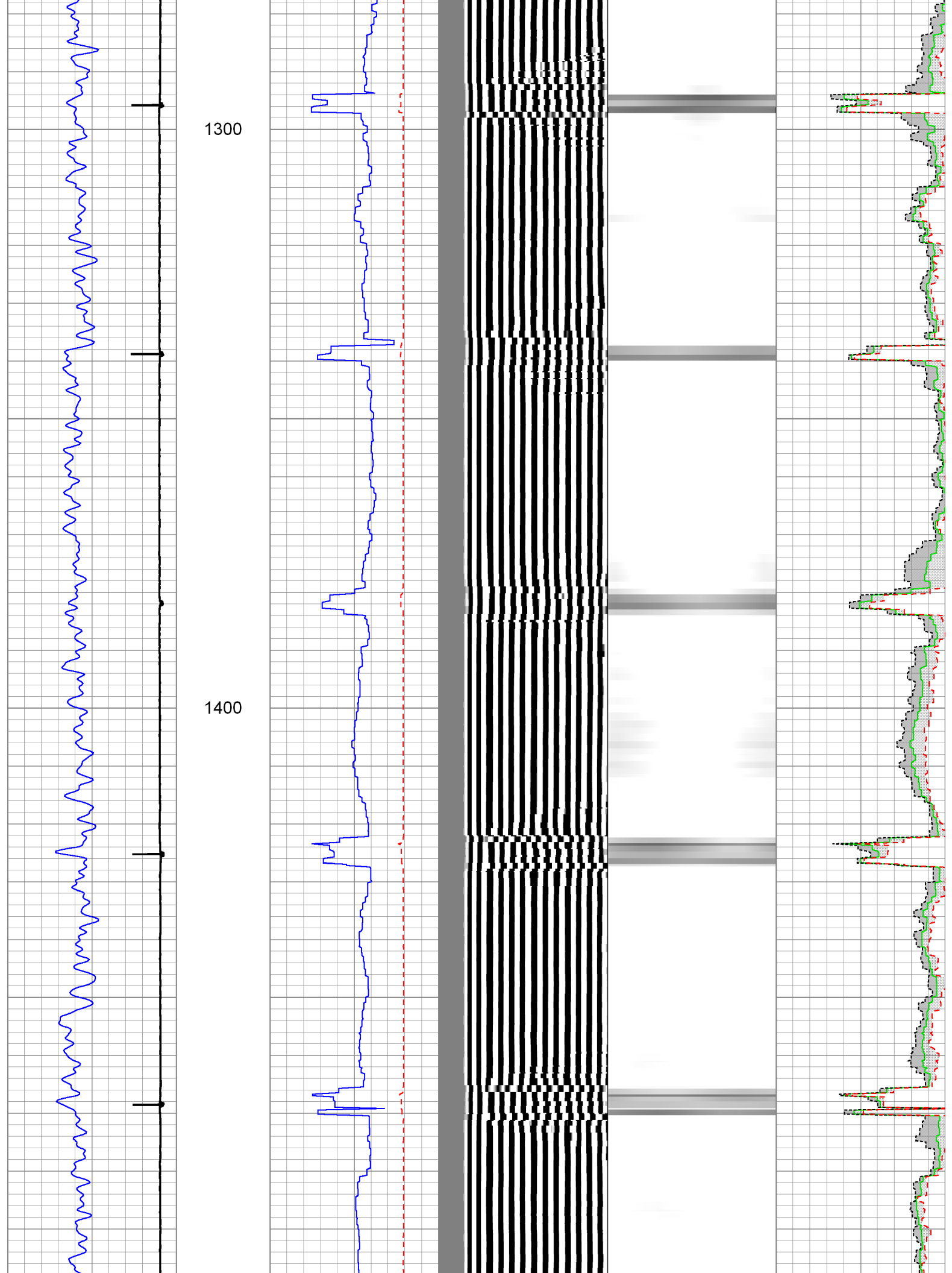


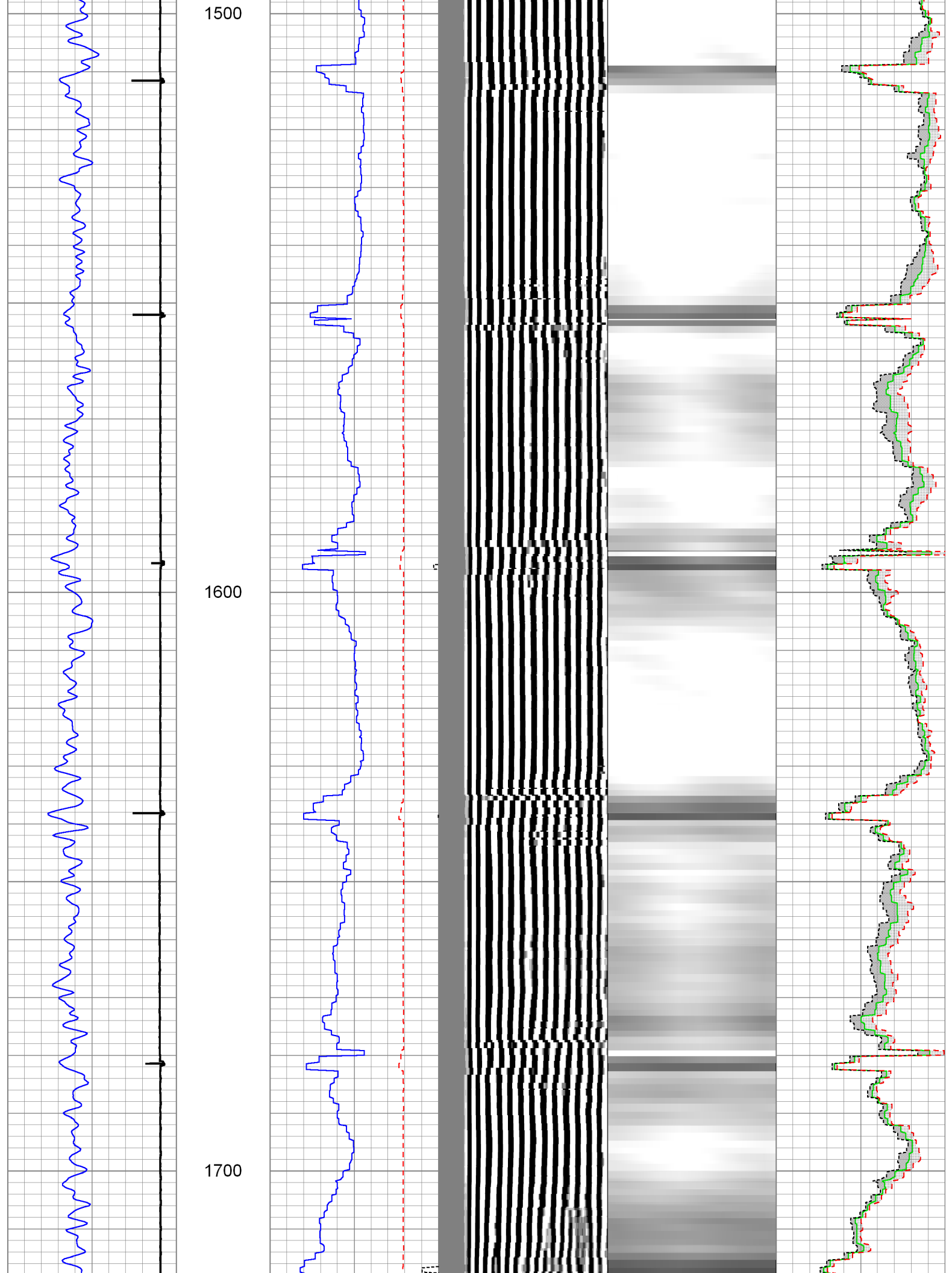


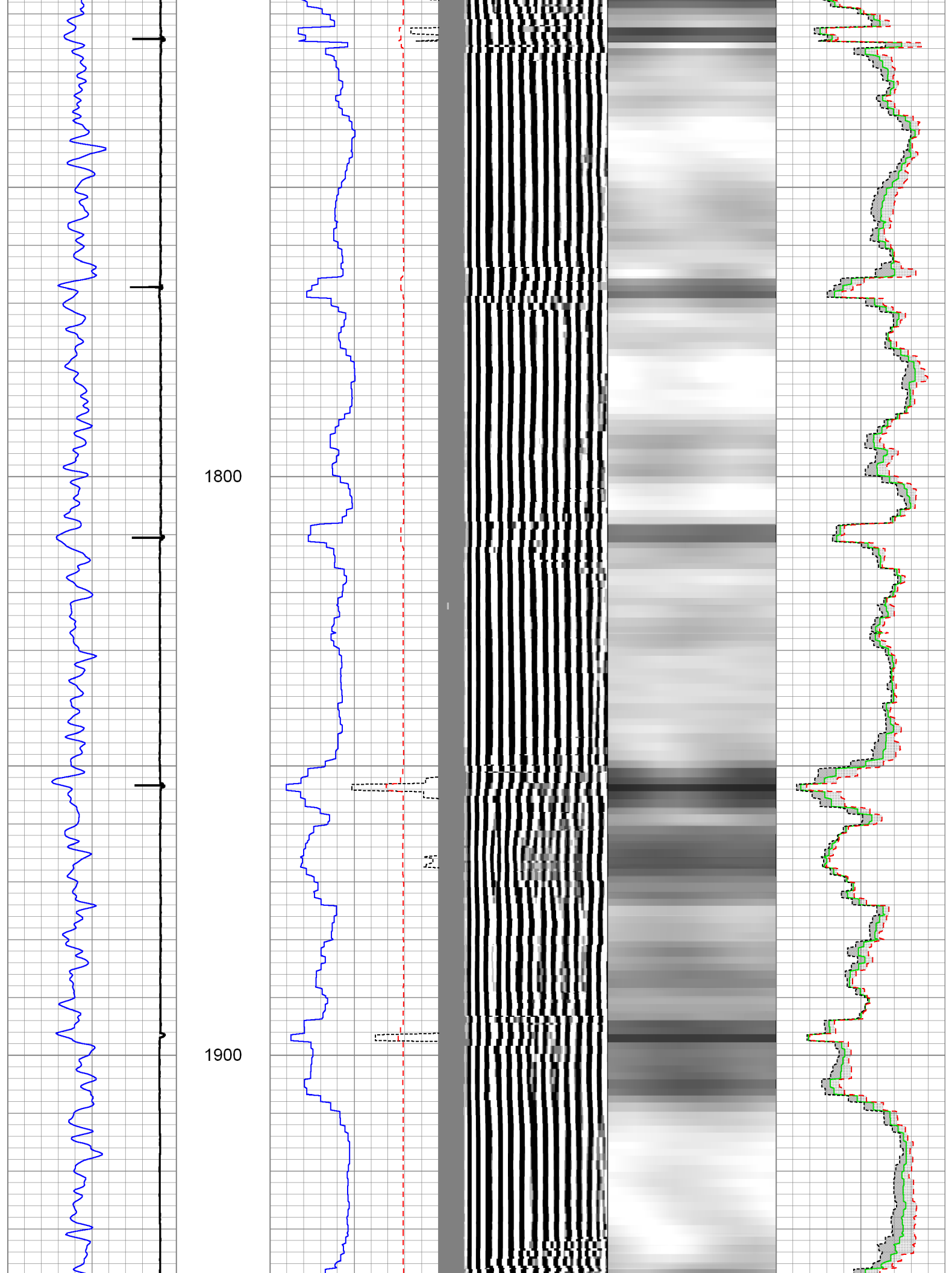






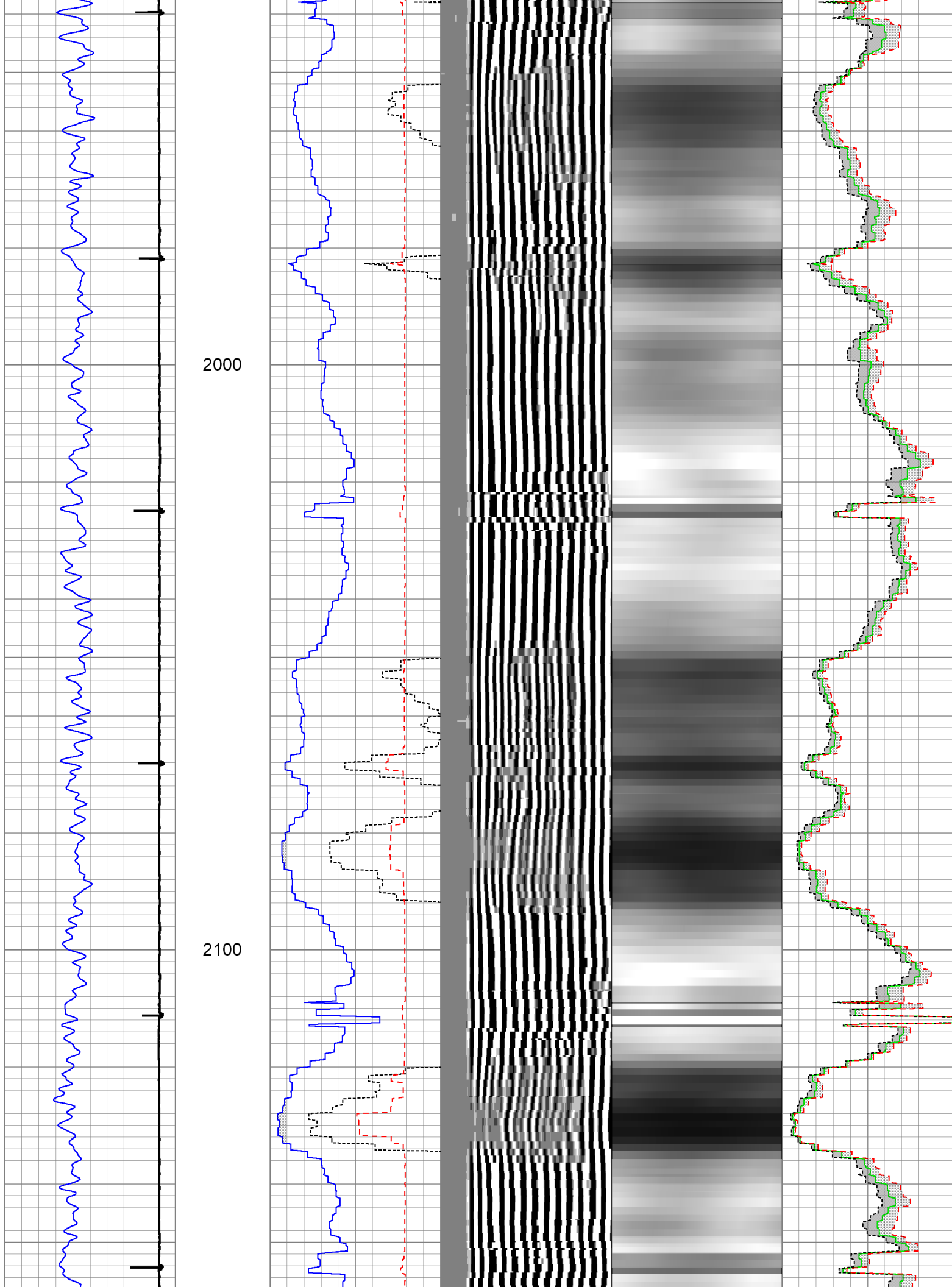






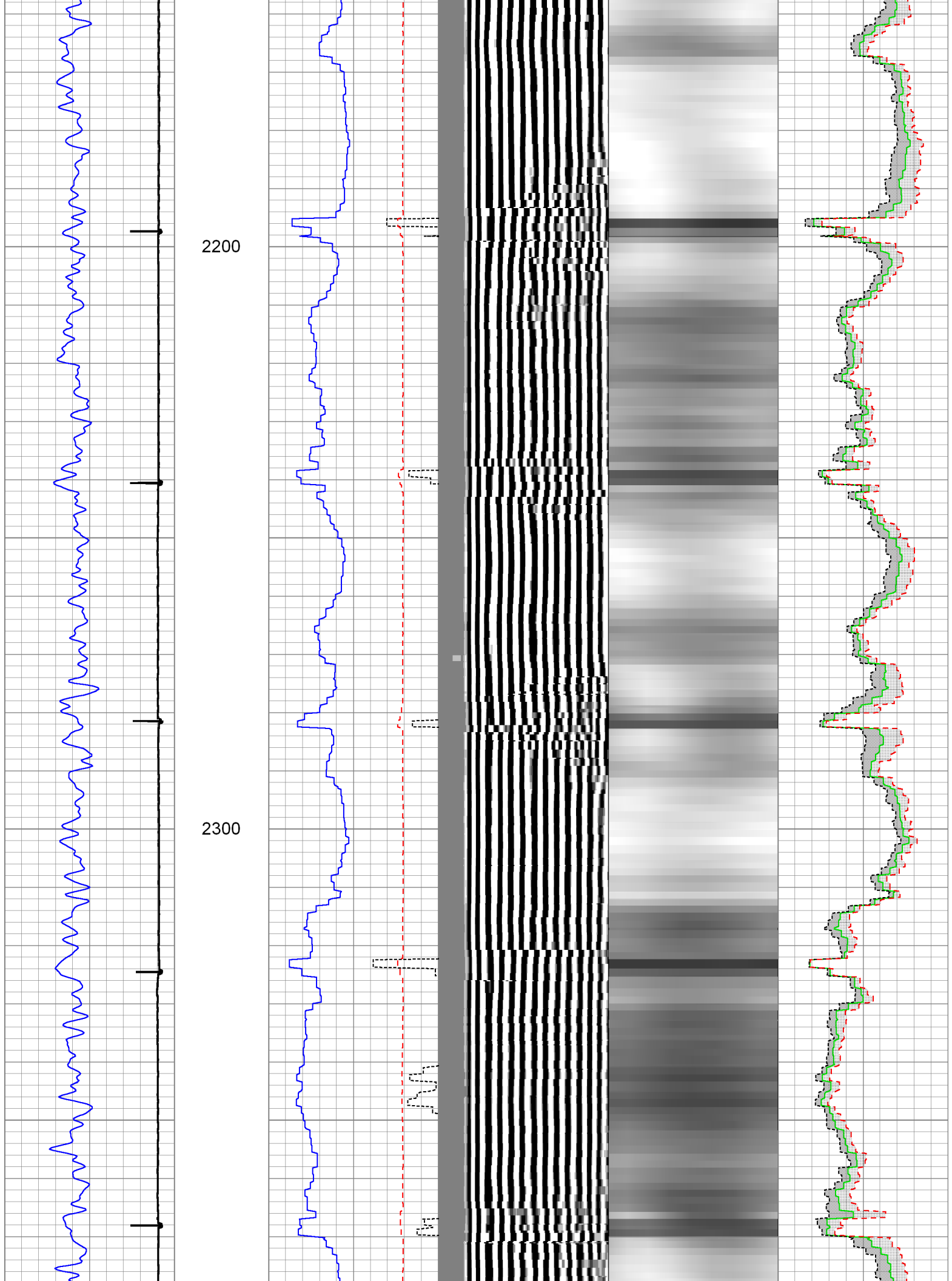
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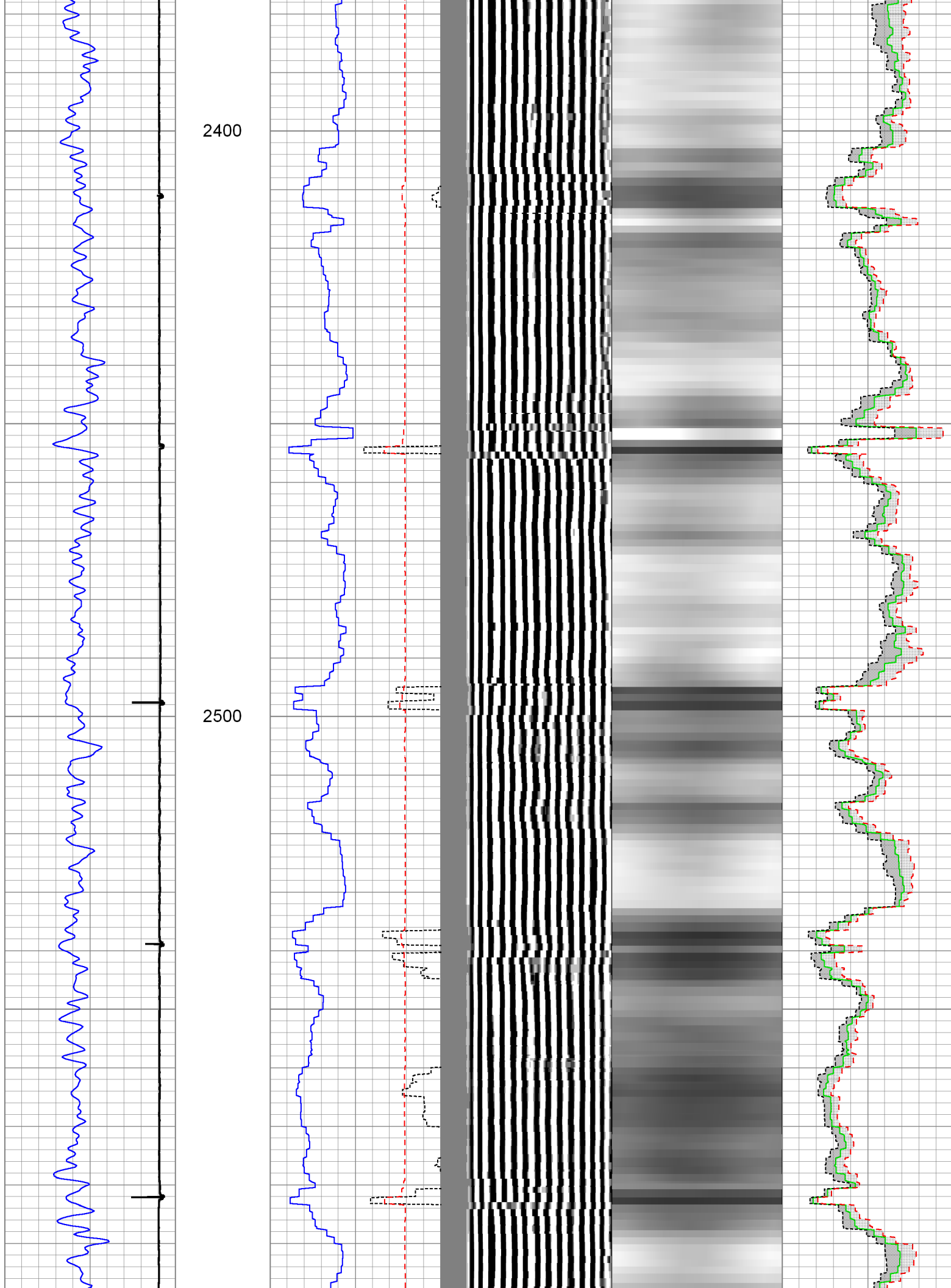
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2300



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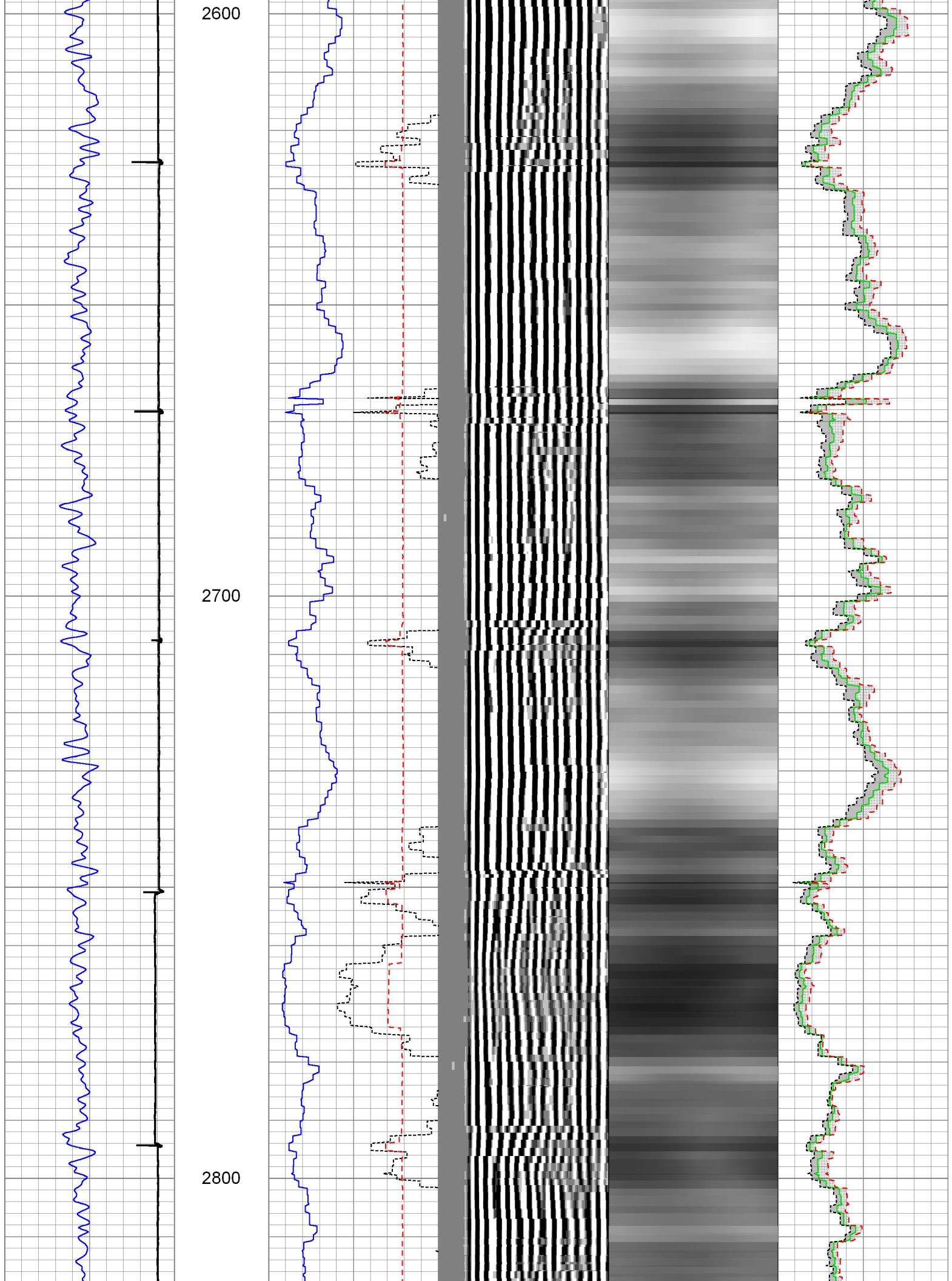
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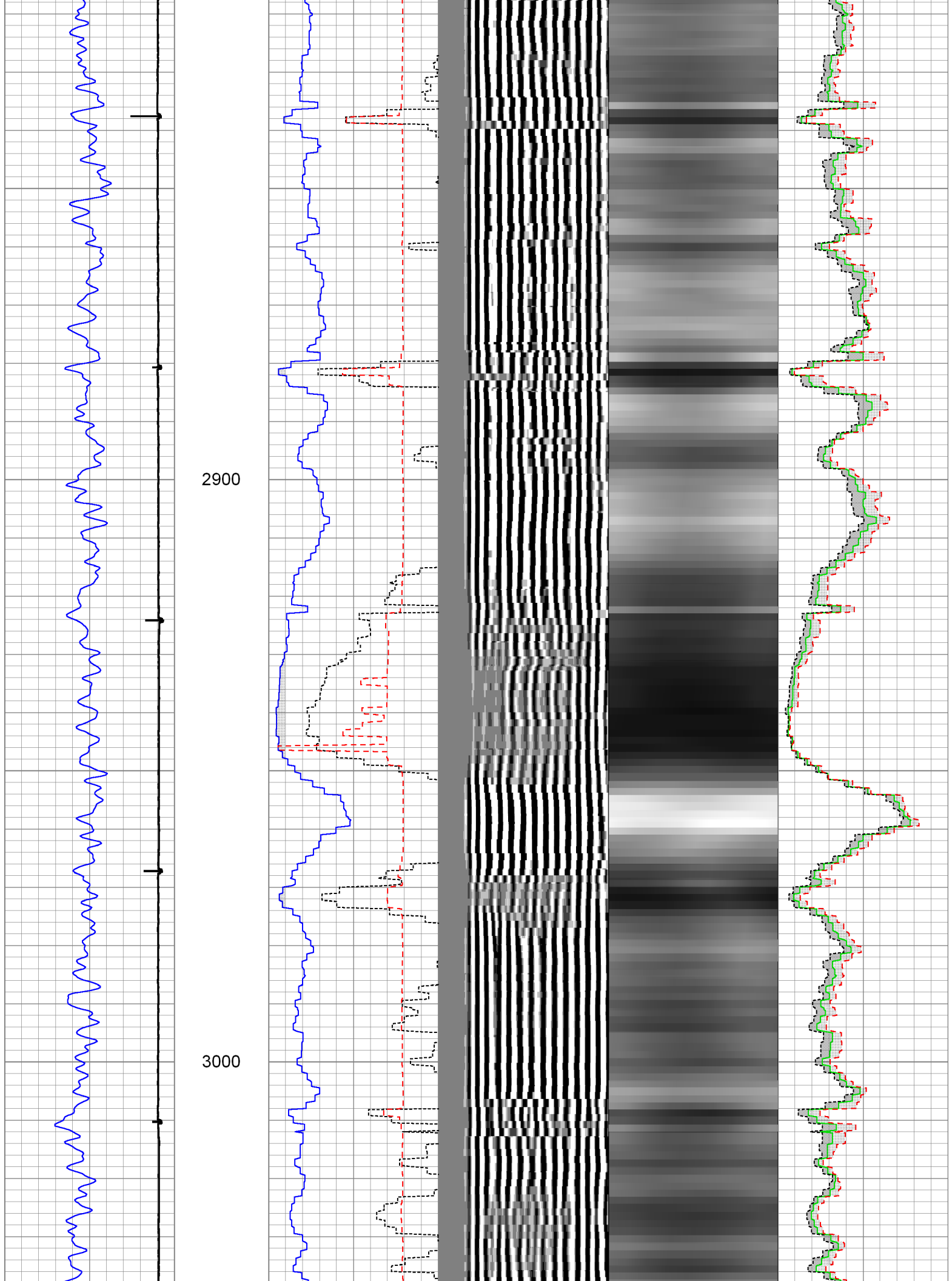
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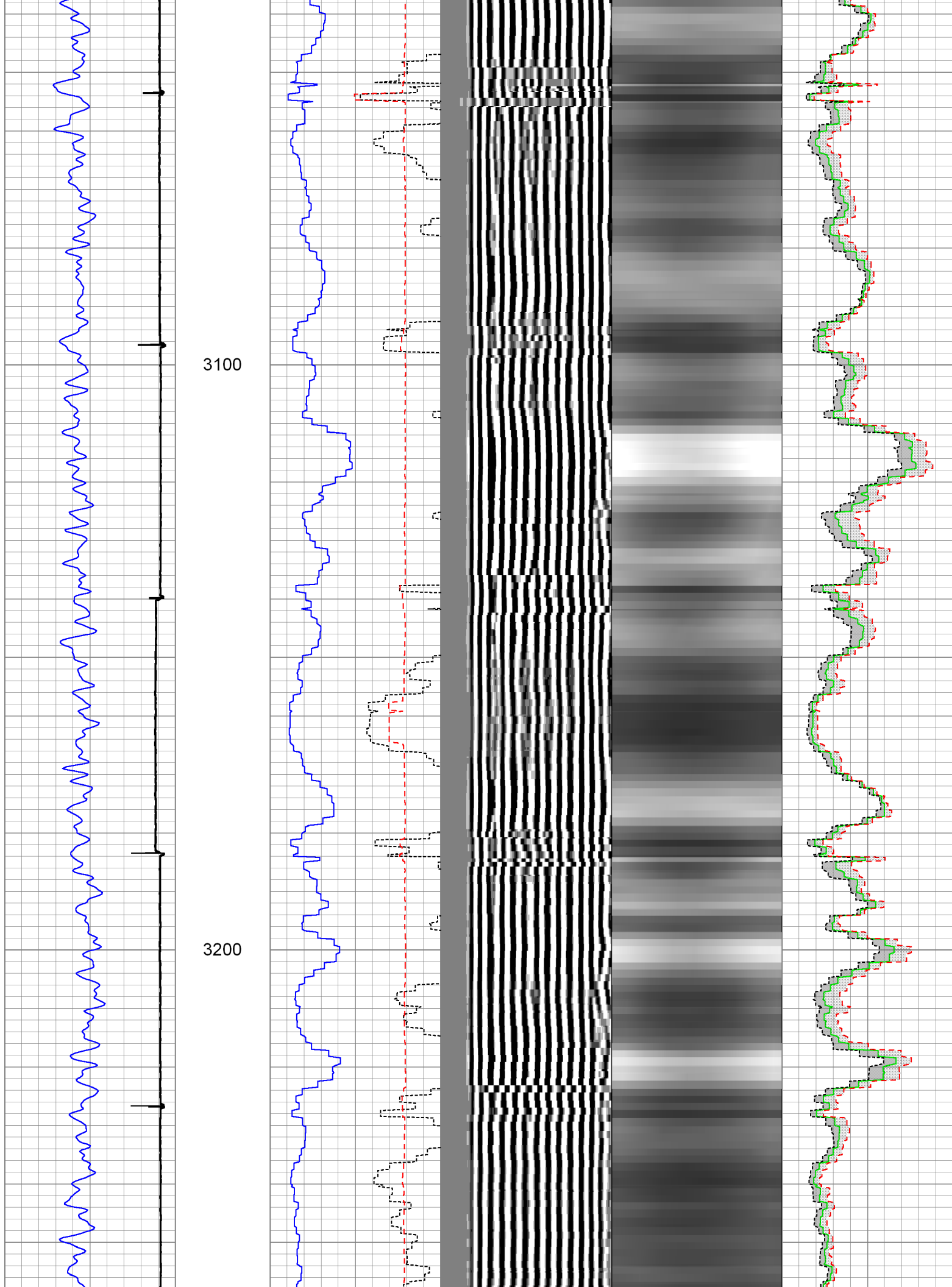
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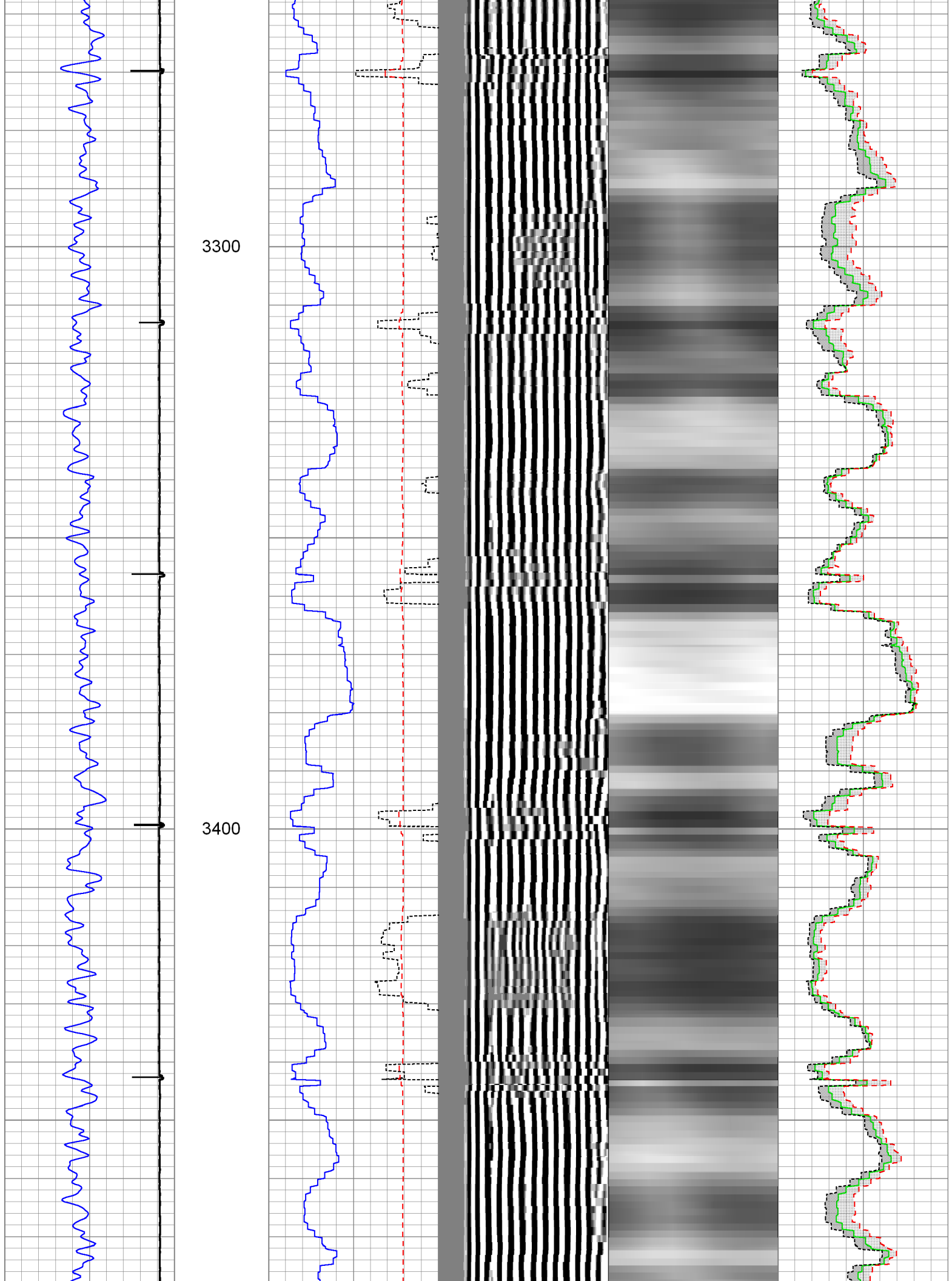
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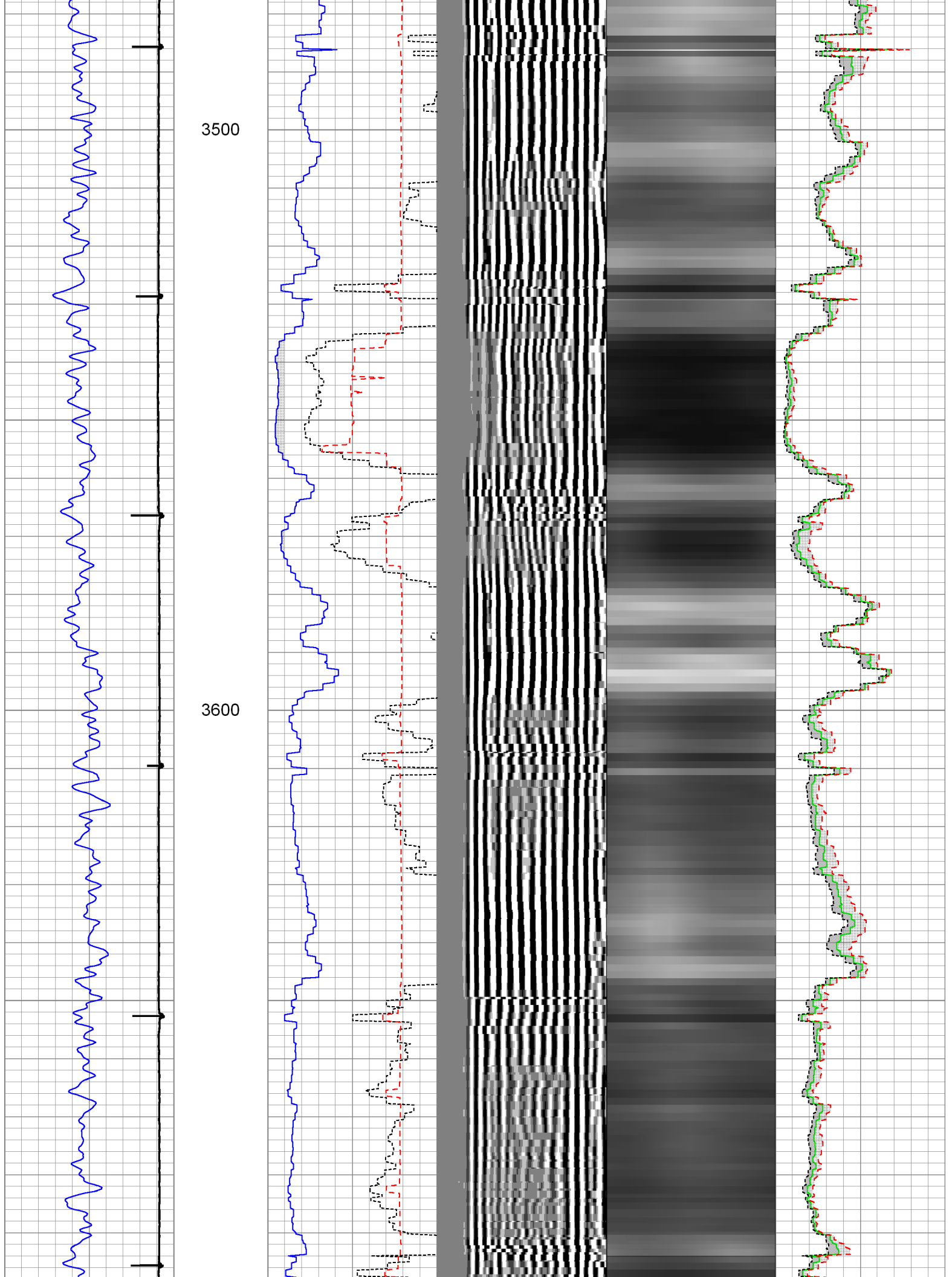
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3300

3400

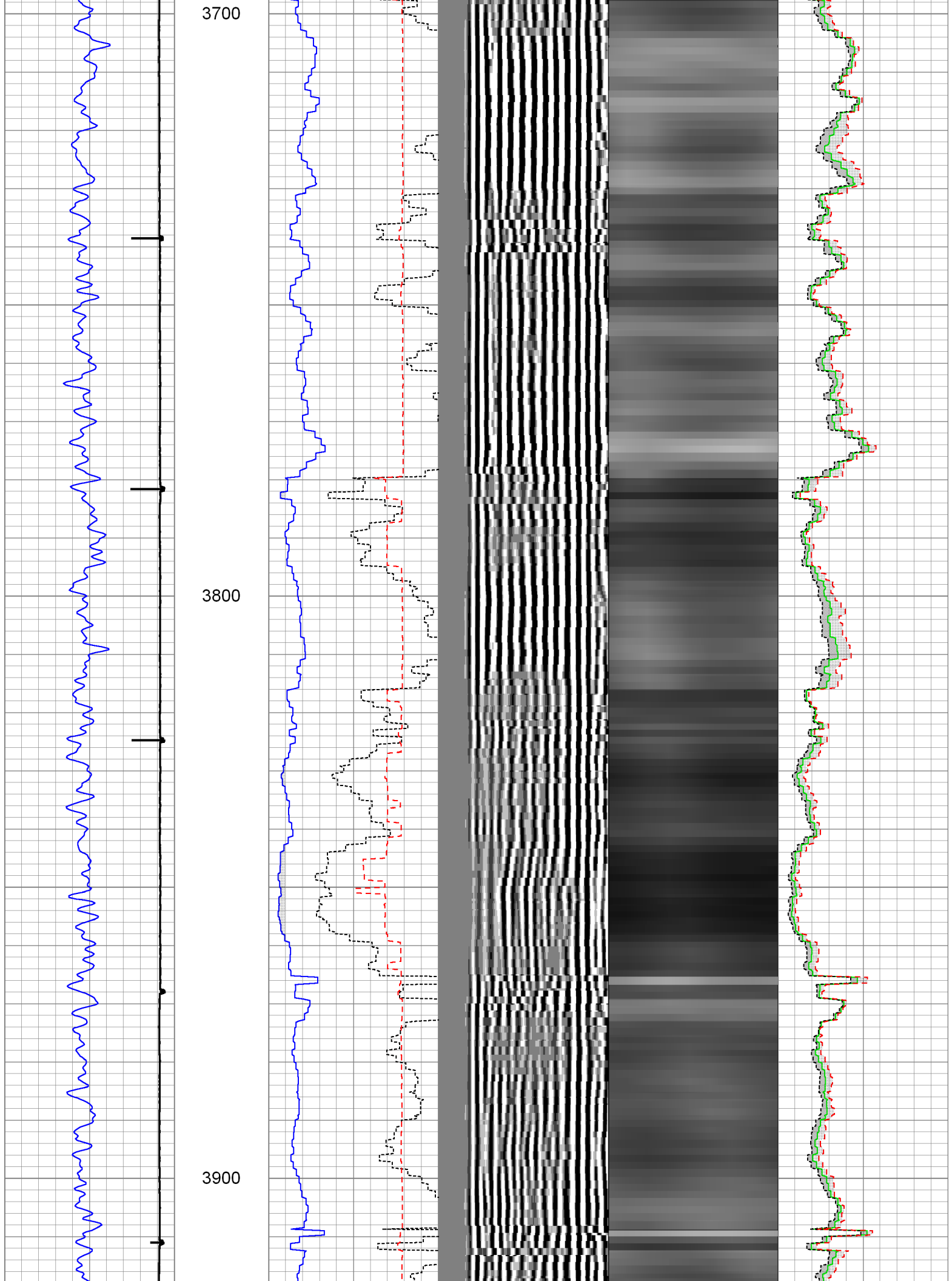


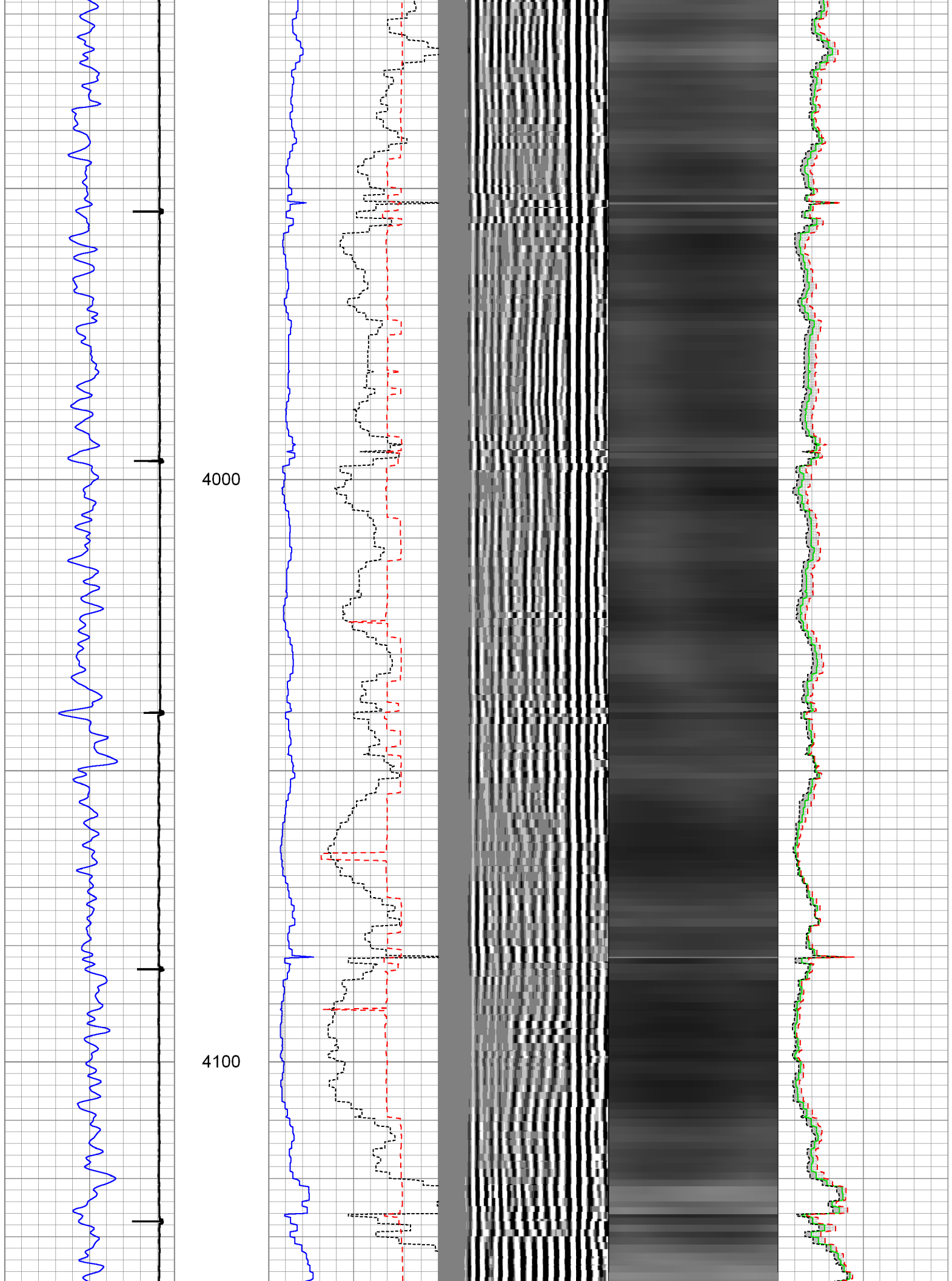


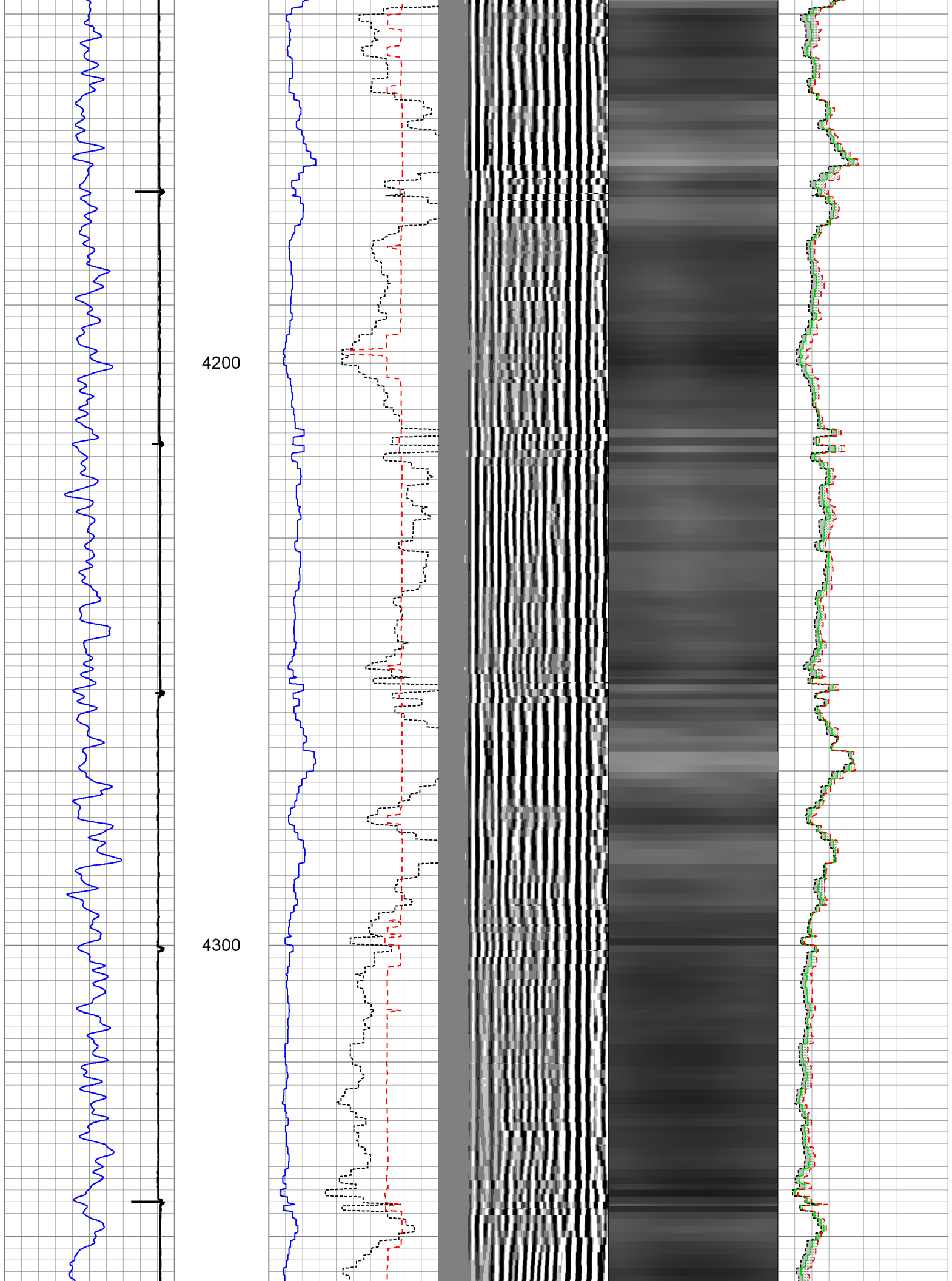
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3800

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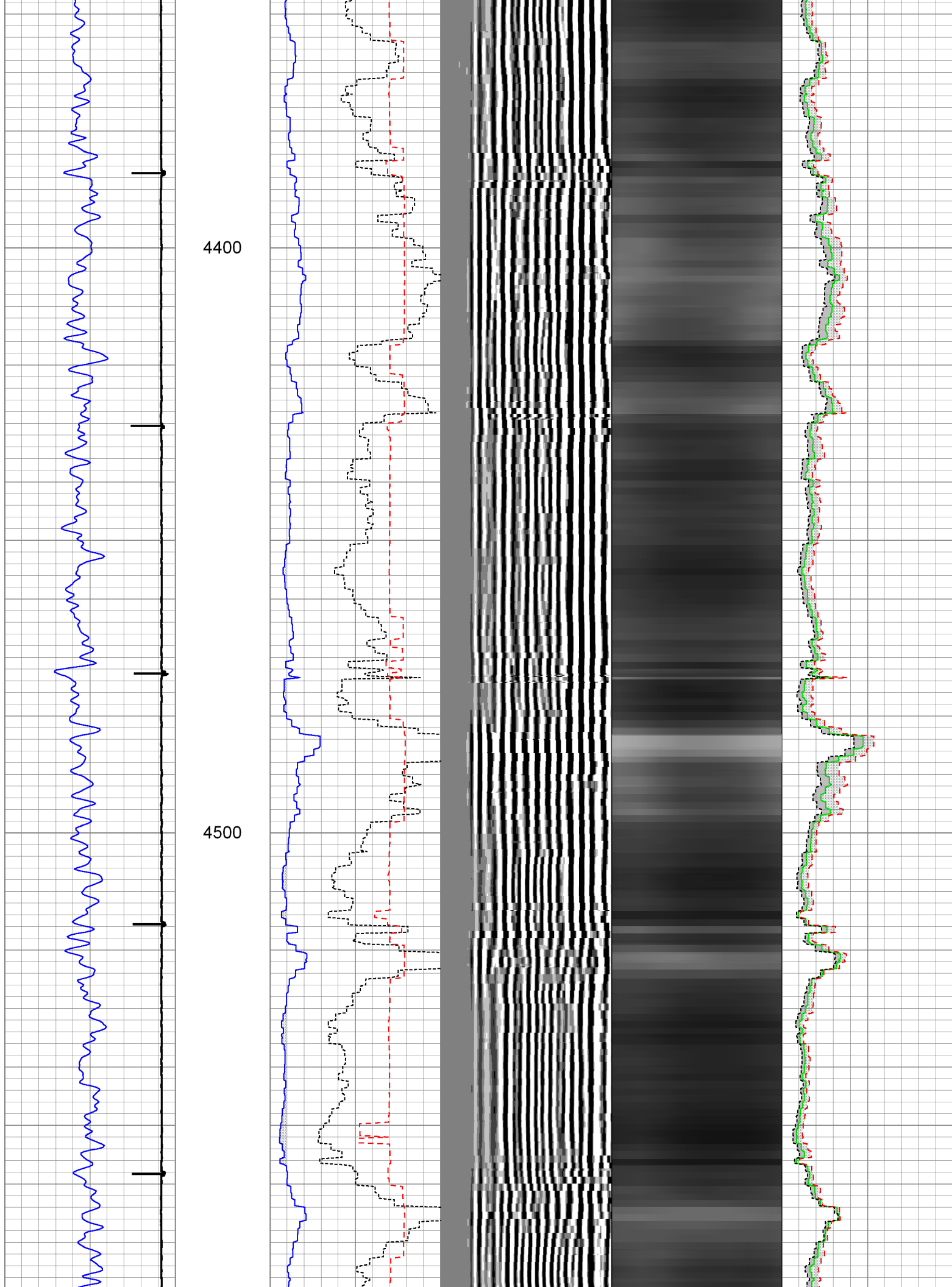






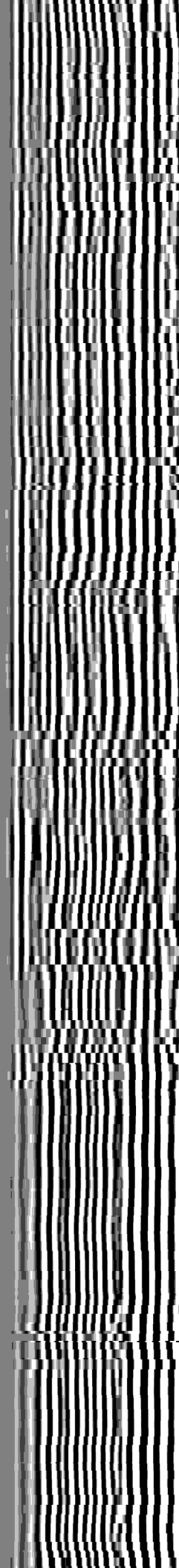
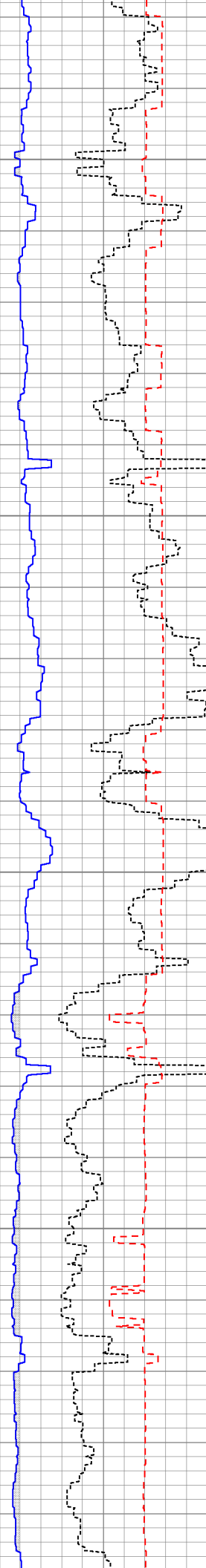
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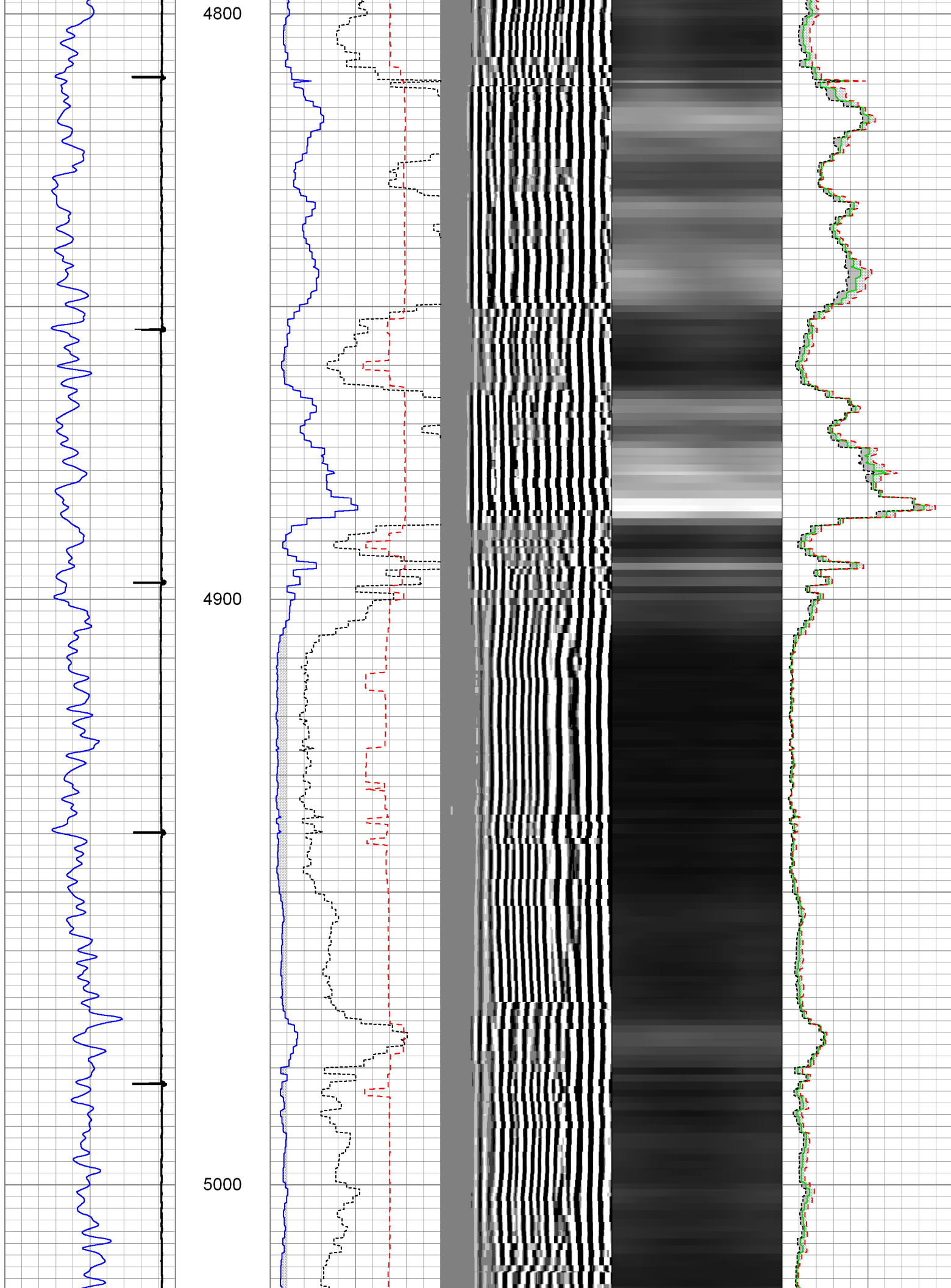
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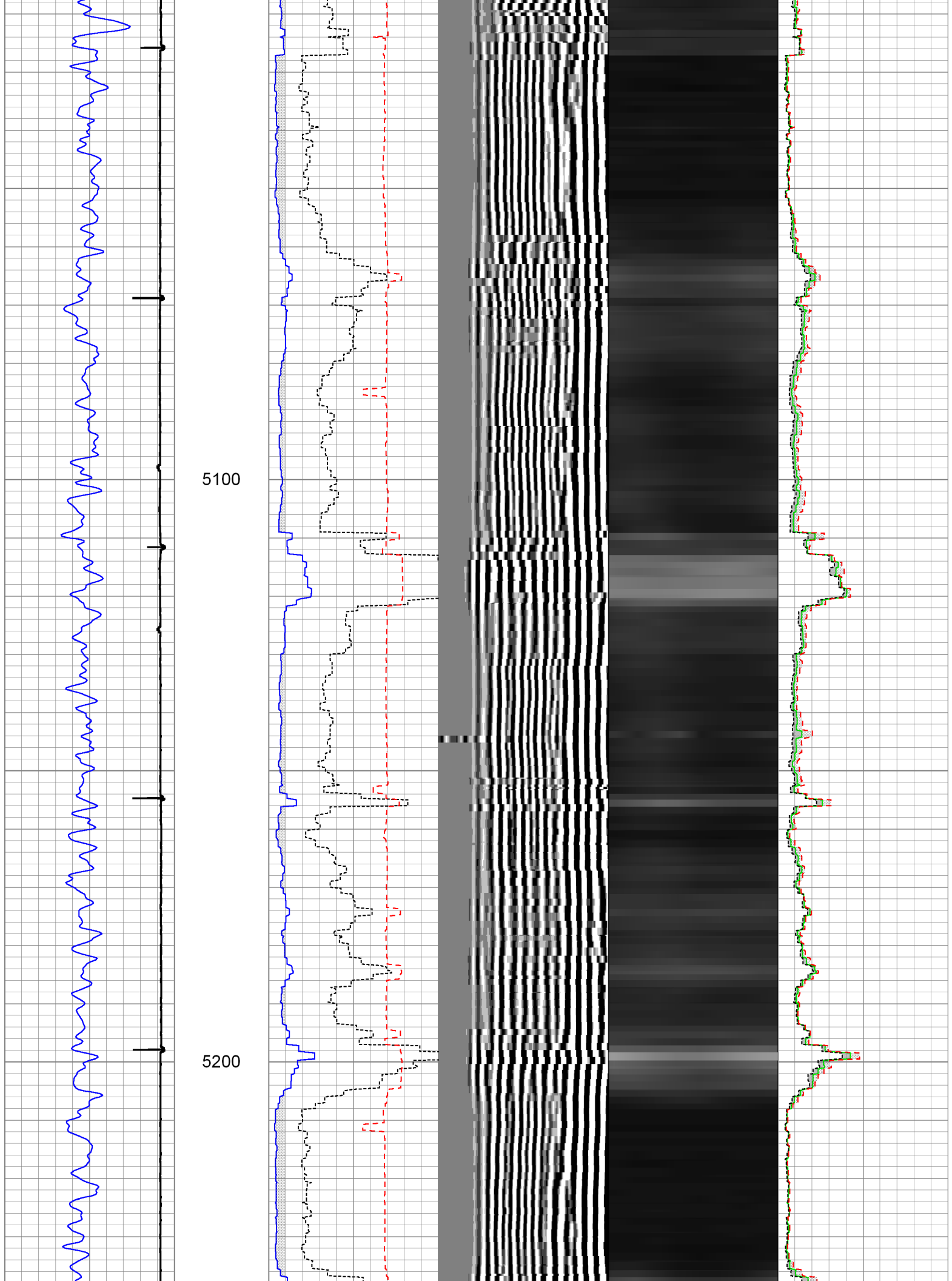


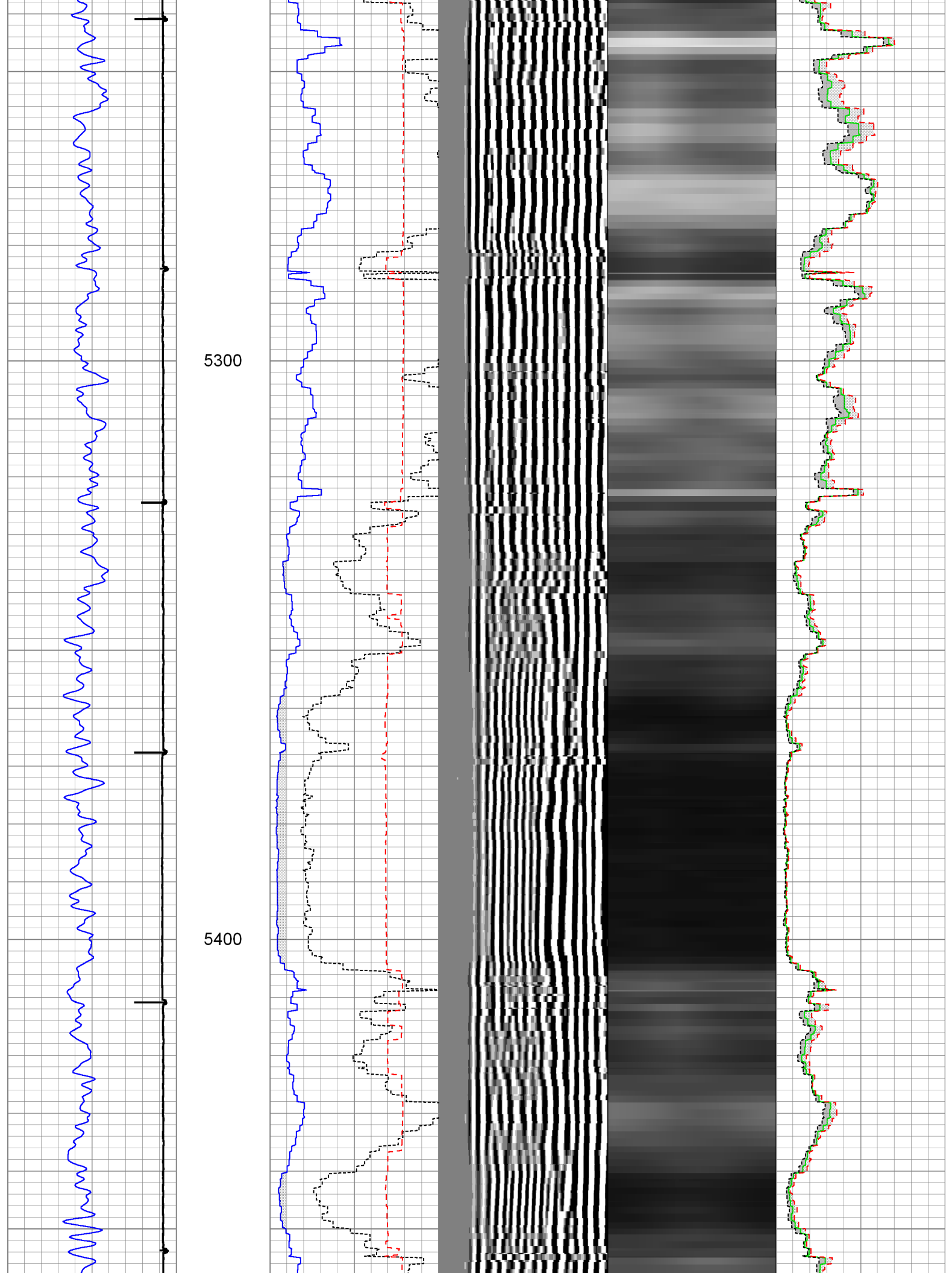
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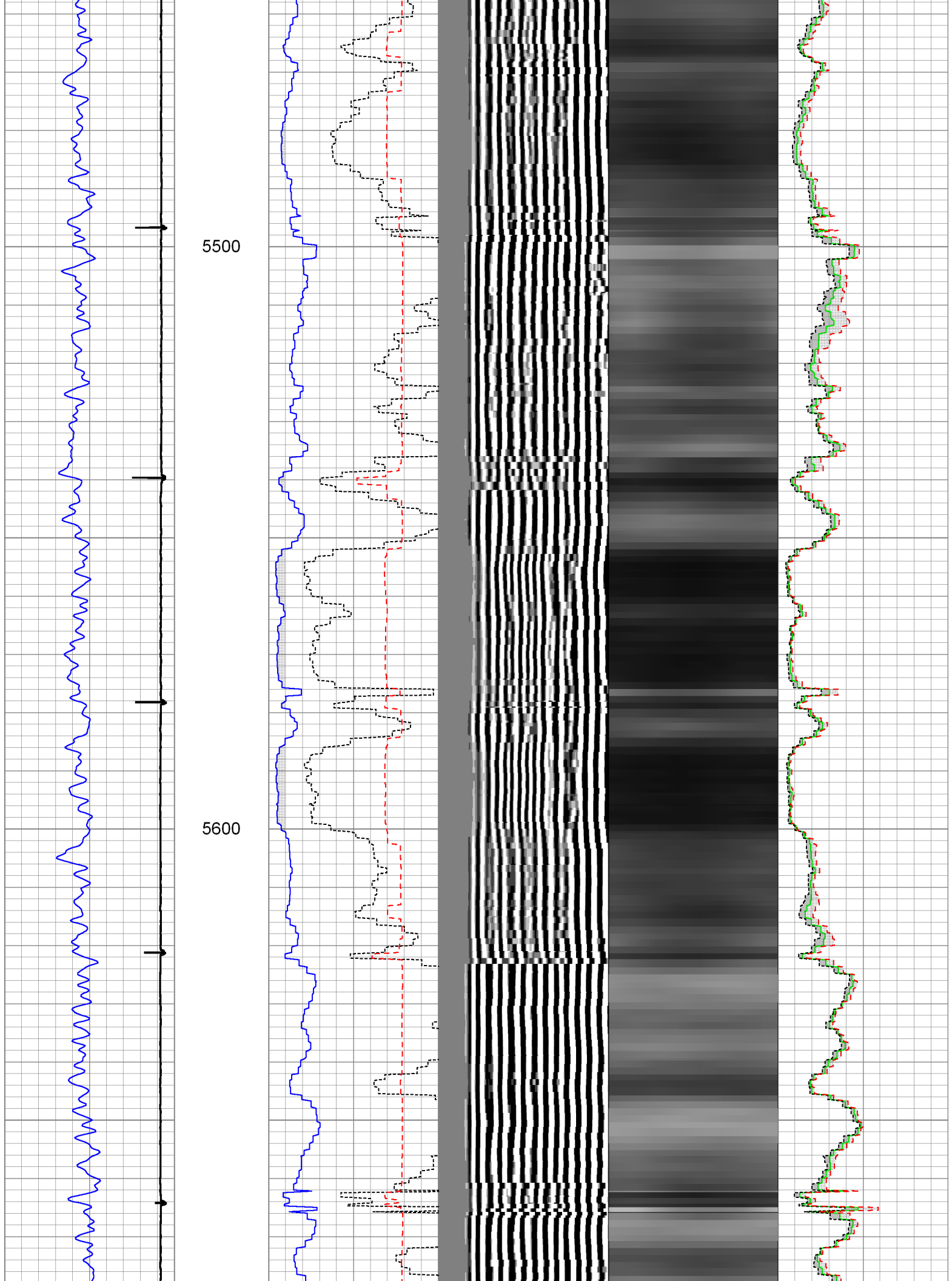
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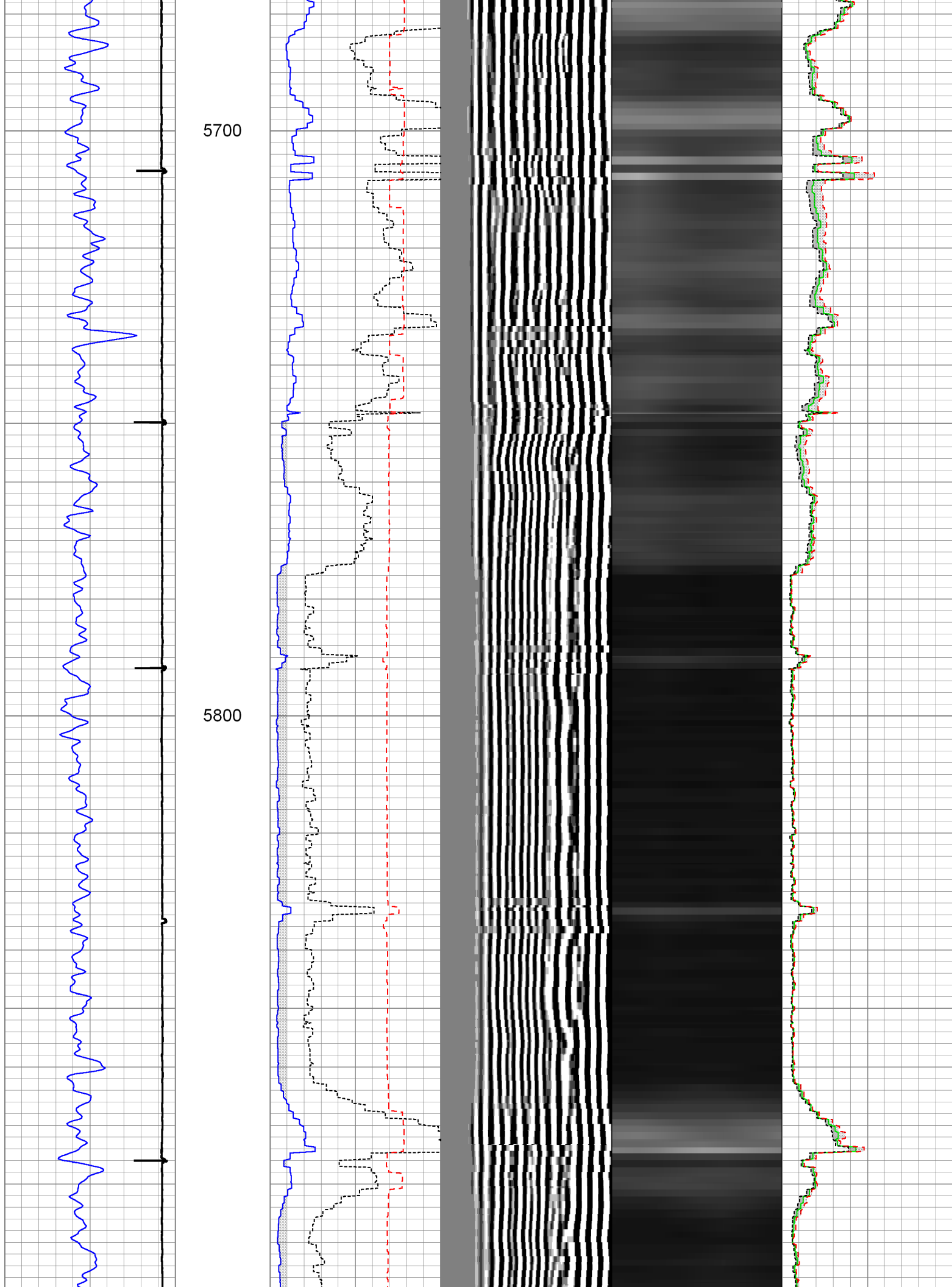


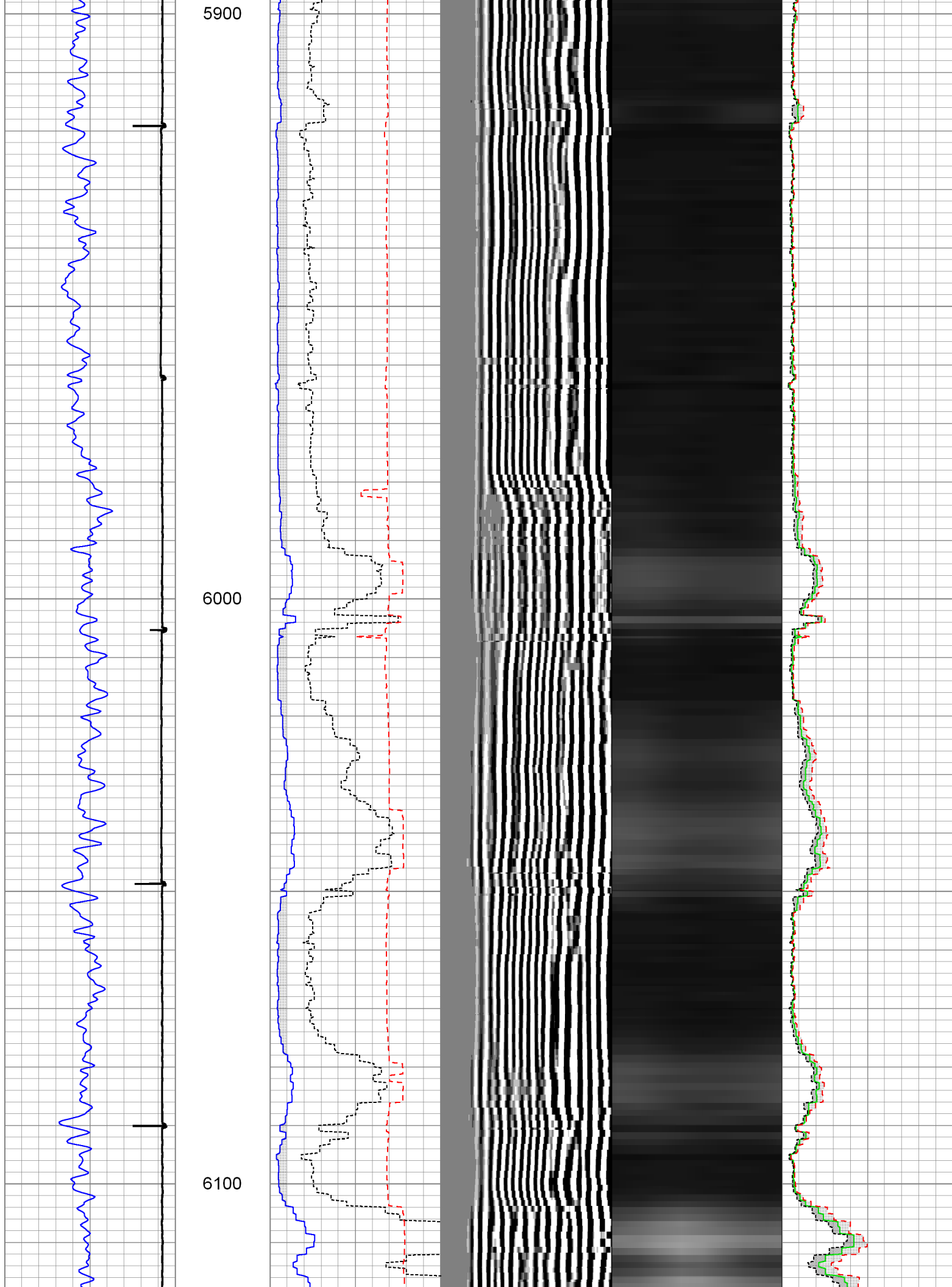


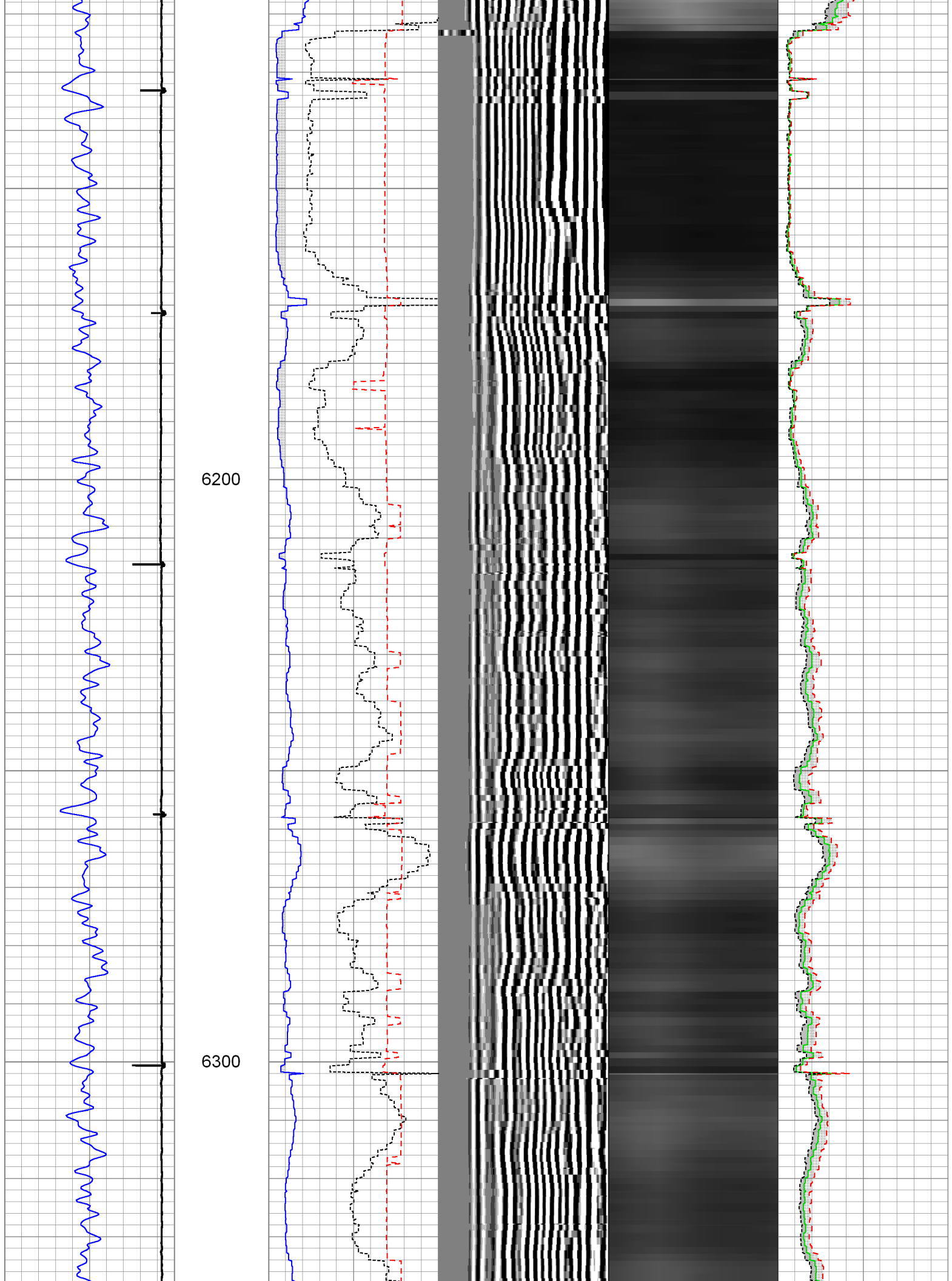


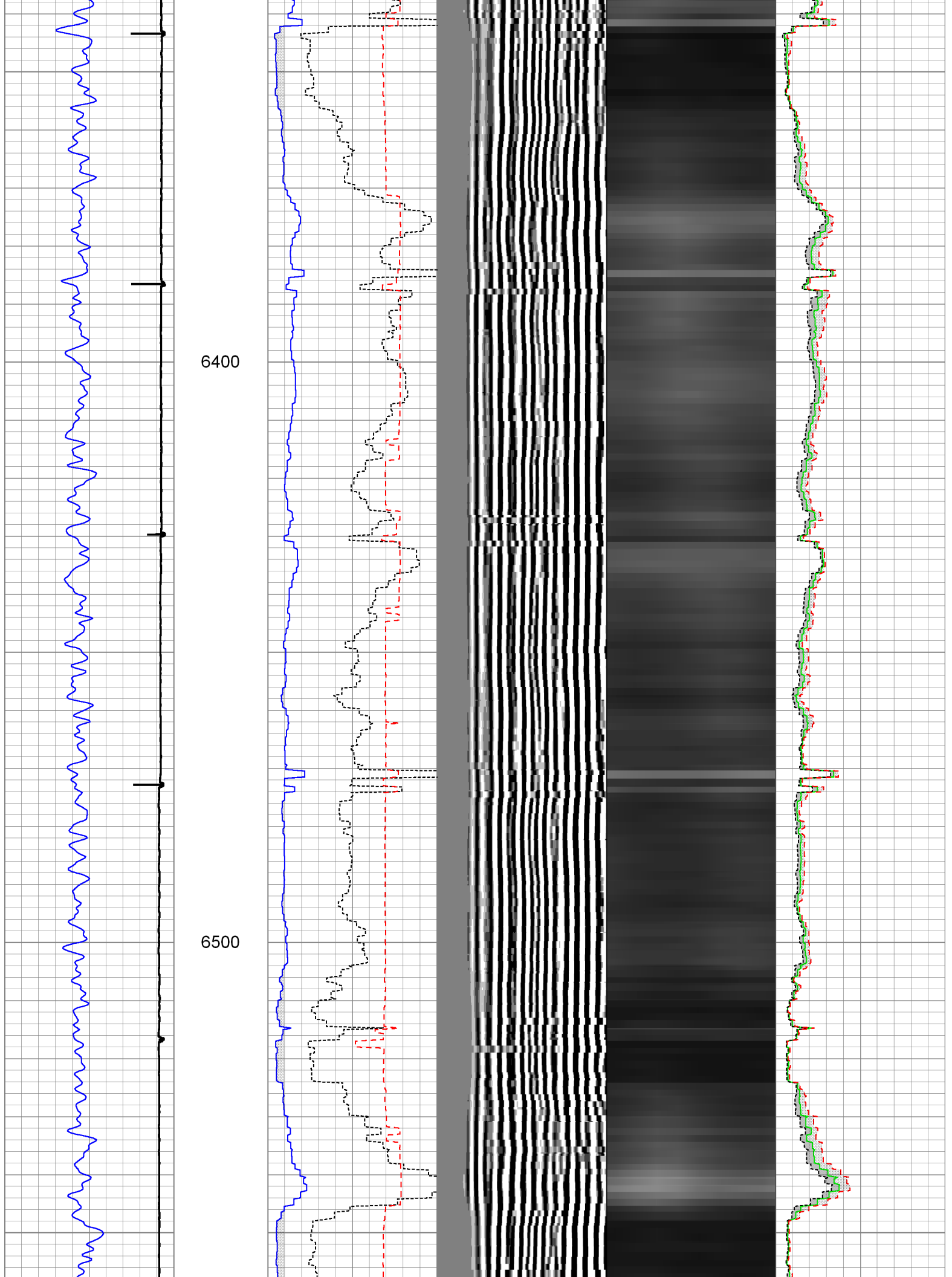
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5800



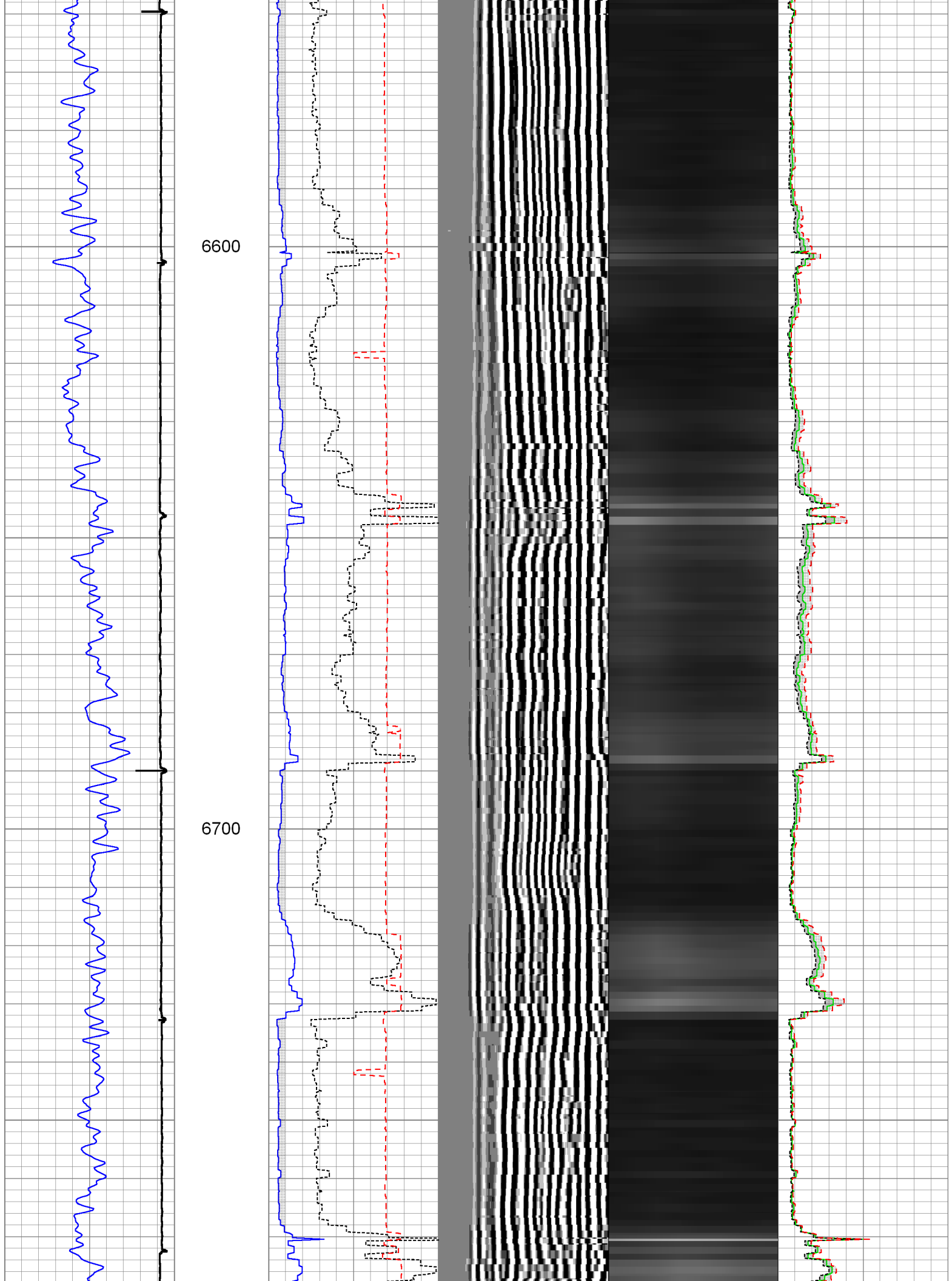


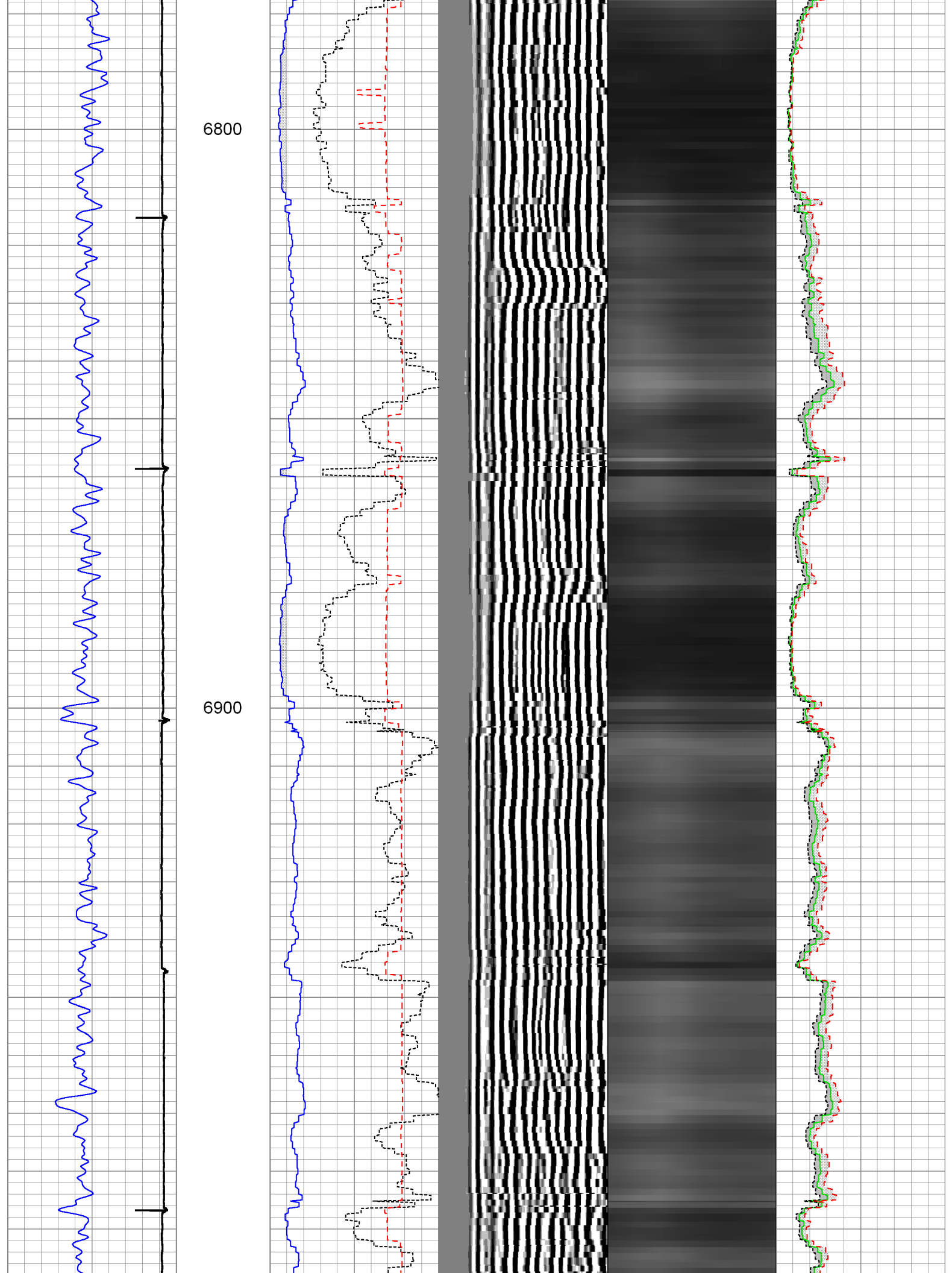


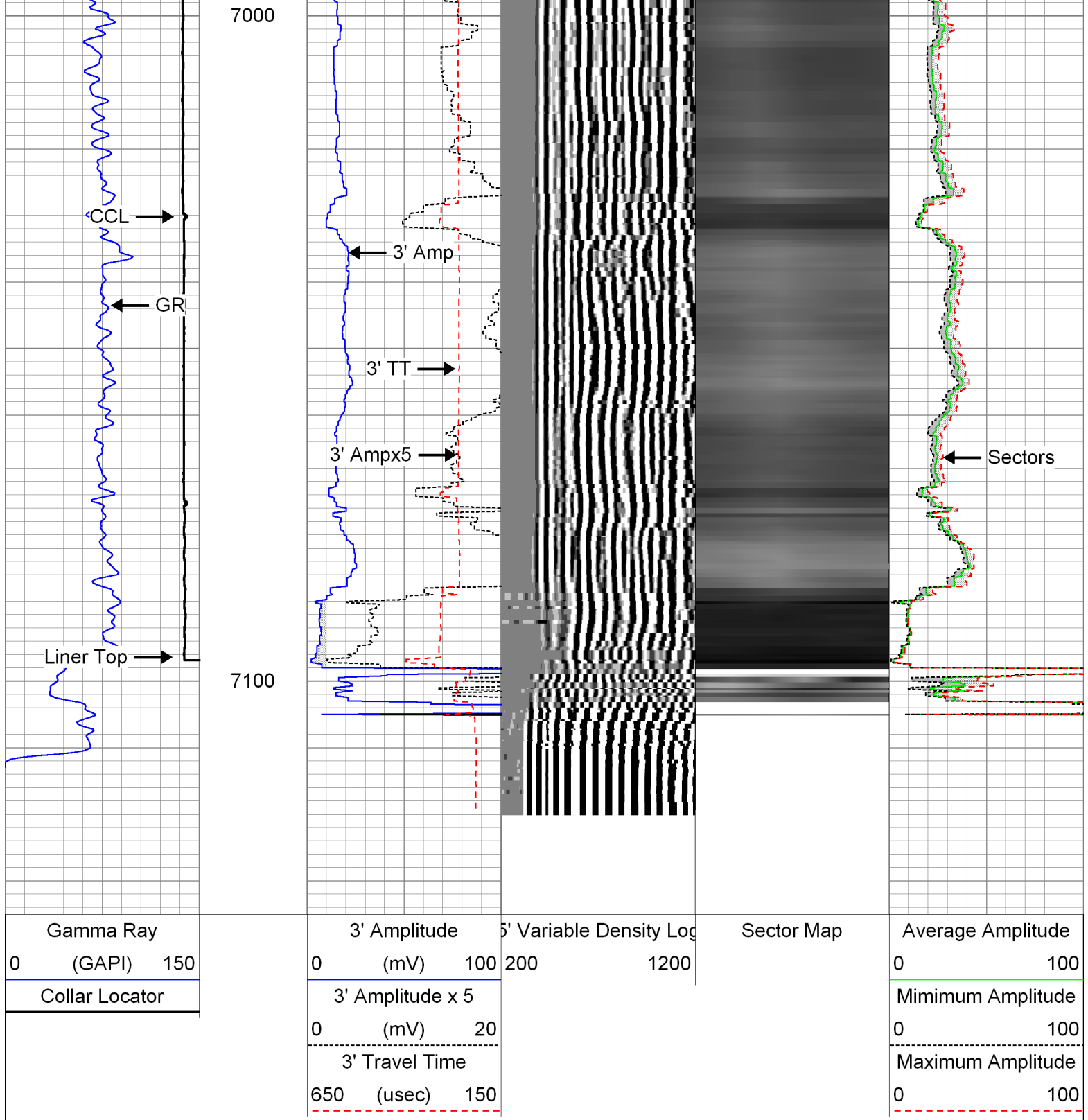


6600

6700







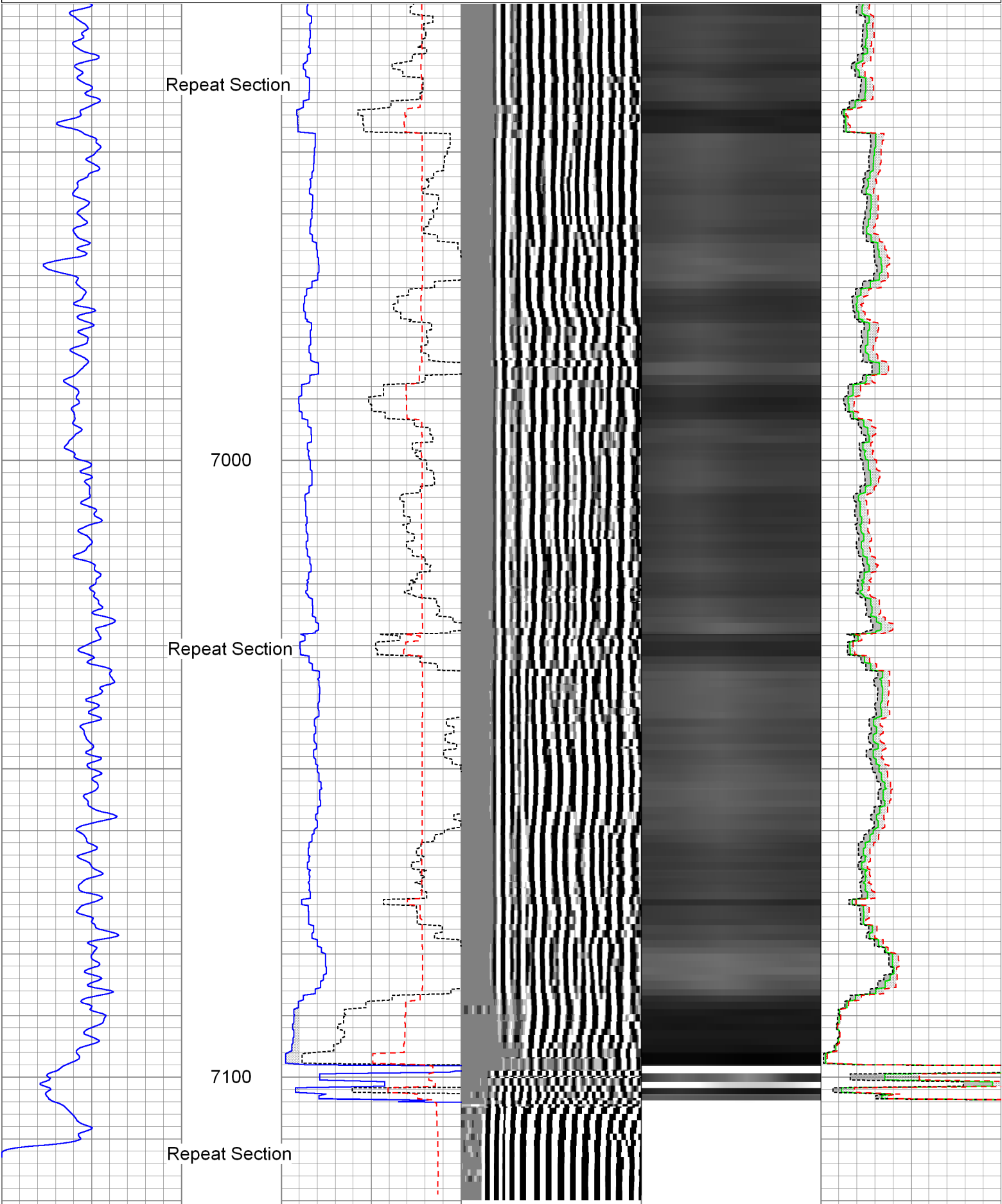
Repeat Pass

Logged With 2800 PSI @ Surface

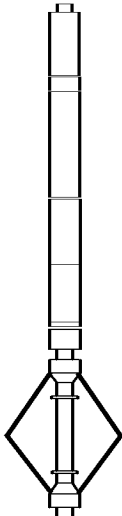
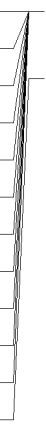
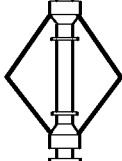
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Presentation Format: rbt007
Dataset Creation: Fri Dec 06 09:46:25 2013 by Log Sondex V7.03
Charted by: Depth in Feet scaled 1:240

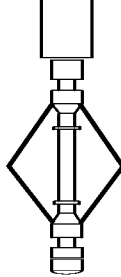
Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
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0	(GAPI)	150	0	(mV)	100	200	1200	0		100
			3' Amplitude x 5			Minimum Amplitude				
			0 (mV) 20			0 100				
			3' Travel Time			Maximum Amplitude				
			650 (usec) 150		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



Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 150		0 (mV) 100	200 1200		0 100
		3' Amplitude x 5			Mimimum 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 (1037) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WV3FT	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					
WV5FT	14.85					
MIT	5.41		PRC-057 (1102) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			MIT-042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10

TSTAMP	0.00		PRC-057 (1101) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			BUL-006 (219228) Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512336794_anadarko_howard 29c-21hz_12-05-13_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:	0512336794_anadarko_howard 29c-21hz_12-05-13_mit_rbl.db
Dataset Pathname:	main
Dataset Creation:	Fri Dec 06 09:55:27 2013 by Log Sondex V7.03

Multi-finger Imaging Tool Calibration Report
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Serial Number:	10012912
Number of Fingers:	40
Tool Model:	042

Inclinometer Calibration Report		
Performed:	Mon Jul 15 09:39:36 2013	
Calibration Angle:	45	
	Inc X	Inc Y
Vertical:	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: Fri Dec 06 07:39:37 2013

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1196	334.0	1530	404.0	1934	414.0	2348
Finger 02:	1179	336.0	1515	409.0	1924	423.0	2347
Finger 03:	1134	354.0	1488	428.0	1916	443.0	2359
Finger 04:	1153	338.0	1491	416.0	1907	435.0	2342
Finger 05:	1152	350.0	1502	418.0	1920	432.0	2352
Finger 06:	1187	352.0	1539	418.0	1957	427.0	2384
Finger 07:	1153	356.0	1509	425.0	1934	433.0	2367
Finger 08:	1185	352.0	1537	412.0	1949	429.0	2378
Finger 09:	1174	361.0	1535	411.0	1946	423.0	2369
Finger 10:	1185	364.0	1549	405.0	1954	416.0	2370
Finger 11:	1195	369.0	1564	399.0	1963	407.0	2370
Finger 12:	1190	371.0	1561	398.0	1959	414.0	2373
Finger 13:	1201	371.0	1572	385.0	1957	399.0	2356
Finger 14:	1205	381.0	1586	391.0	1977	401.0	2378
Finger 15:	1158	391.0	1549	400.0	1949	415.0	2364
Finger 16:	1164	389.0	1553	397.0	1950	413.0	2363
Finger 17:	1166	390.0	1556	390.0	1946	411.0	2357
Finger 18:	1235	378.0	1613	371.0	1984	381.0	2365
Finger 19:	1194	381.0	1575	373.0	1948	392.0	2340
Finger 20:	1192	385.0	1577	377.0	1954	394.0	2348

Finger 21:	1192	388.0	1580	372.0	1952	381.0	2333
Finger 22:	1177	382.0	1559	374.0	1933	391.0	2324
Finger 23:	1134	386.0	1520	382.0	1902	408.0	2310
Finger 24:	1205	374.0	1579	357.0	1936	367.0	2303
Finger 25:	1150	379.0	1529	378.0	1907	399.0	2306
Finger 26:	1259	353.0	1612	349.0	1961	360.0	2321
Finger 27:	1191	367.0	1558	375.0	1933	387.0	2320
Finger 28:	1217	355.0	1572	367.0	1939	377.0	2316
Finger 29:	1159	363.0	1522	387.0	1909	400.0	2309
Finger 30:	1189	356.0	1545	382.0	1927	396.0	2323
Finger 31:	1193	349.0	1542	377.0	1919	395.0	2314
Finger 32:	1172	352.0	1524	397.0	1921	412.0	2333
Finger 33:	1248	337.0	1585	373.0	1958	380.0	2338
Finger 34:	1207	333.0	1540	387.0	1927	406.0	2333
Finger 35:	1157	353.0	1510	418.0	1928	433.0	2361
Finger 36:	1162	338.0	1500	406.0	1906	425.0	2331
Finger 37:	1178	338.0	1516	400.0	1916	418.0	2334
Finger 38:	1212	332.0	1544	398.0	1942	405.0	2347
Finger 39:	1223	329.0	1552	400.0	1952	409.0	2361
Finger 40:	1169	340.0	1509	413.0	1922	424.0	2346

Segmented Cement Bond Log Calibration Report

Serial Number:	10012639in7
Tool Model:	004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	0.000 ft

Master Calibration, performed Fri Dec 06 07:25:43 2013:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.001	0.694	0.800	62.165	88.262	0.901
5FT	-0.005	0.774	0.800	62.165	78.820	1.188
S1	-0.001	0.687	0.000	100.000	145.334	0.172
S2	-0.002	0.654	0.000	100.000	152.398	0.359
S3	-0.001	0.647	0.000	100.000	154.241	0.188
S4	-0.003	0.664	0.000	100.000	149.966	0.388
S5	-0.001	0.696	0.000	100.000	143.420	0.166
S6	-0.001	0.727	0.000	100.000	137.236	0.186
S7	-0.001	0.736	0.000	100.000	135.625	0.180
S8	-0.002	0.721	0.000	100.000	138.311	0.238

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 29C-21HZ
Field	Wattenberg

