



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				Lochbuie 4C-13HZ			
Field				Wattenberg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-38171			
Permanent Datum				SHL: 550' FSL & 603' FWL			
Log Measured From				Lat/Long: 40.045454/-104.732725			
Drilling Measured From				SEC 13 TWP 1N RGE 66W			
Ground Level				Elevation 5078'			
Kelly Bushing				13 FT			
Kelly Bushing				Elevation 5078'			
Date				10-MAR-2014			
Run Number				Two			
Depth Driller				12.111 FT			
Depth Logger				7621 FT			
Bottom Logged Interval				7618 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				221 F			
Estimated Cement Top				864 FT			
Time Well Ready				ROA			
Time Logger on Bottom				14:00			
Equipment Number				HD-134			
Location				Fort Lupton, CO			
Recorded By				H. Raby			
Witnessed By				Edgar Chaves			
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# J-55 Surface 1276 FT			
Intermediate #1				7" 26# P-110 Surface 7982 FT			
Intermediate #2							
Liner				4-1/2" 11.6# P-110 6984 FT 12.109 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 @ 6984 FT  
RCBL-CIL ran at 2200 PSI surface induced pressure.  
Estimated Cement Top recorded at 864 FT

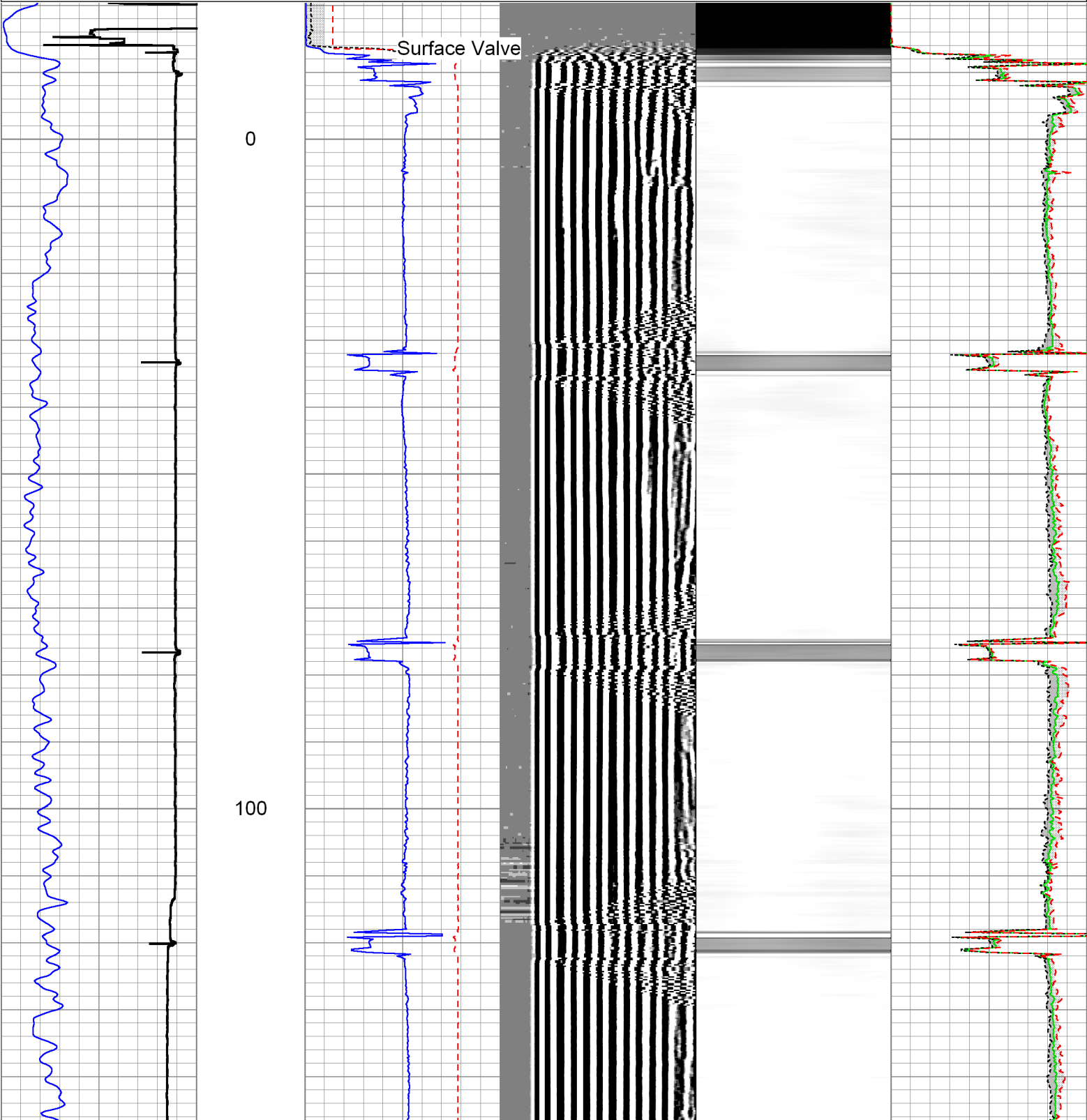
Thank you for choosing FMC Technologies Completion Services, Inc.

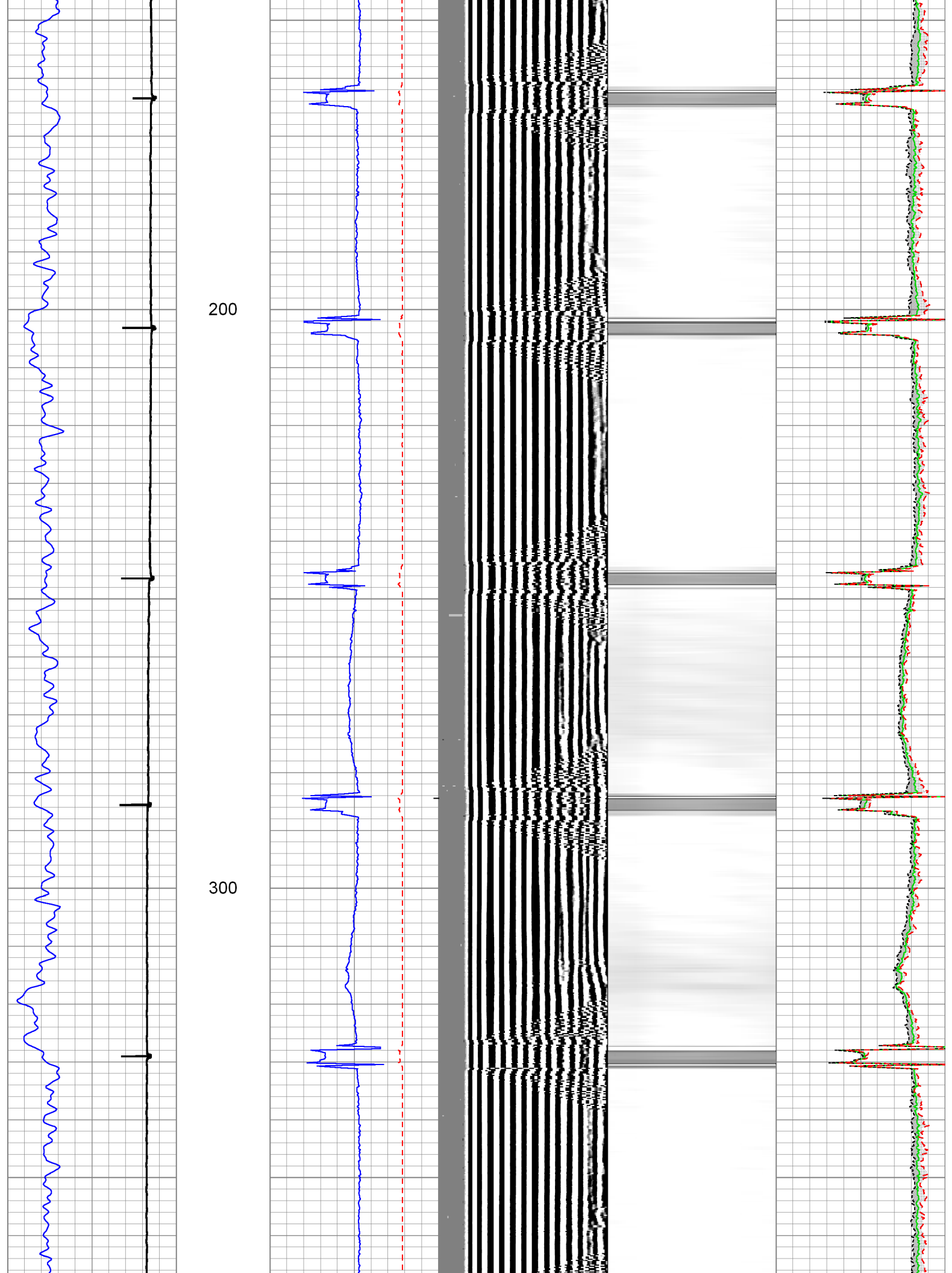
Main Pass 7"



Recorded with 2200 PSI Surface Induced Pressure

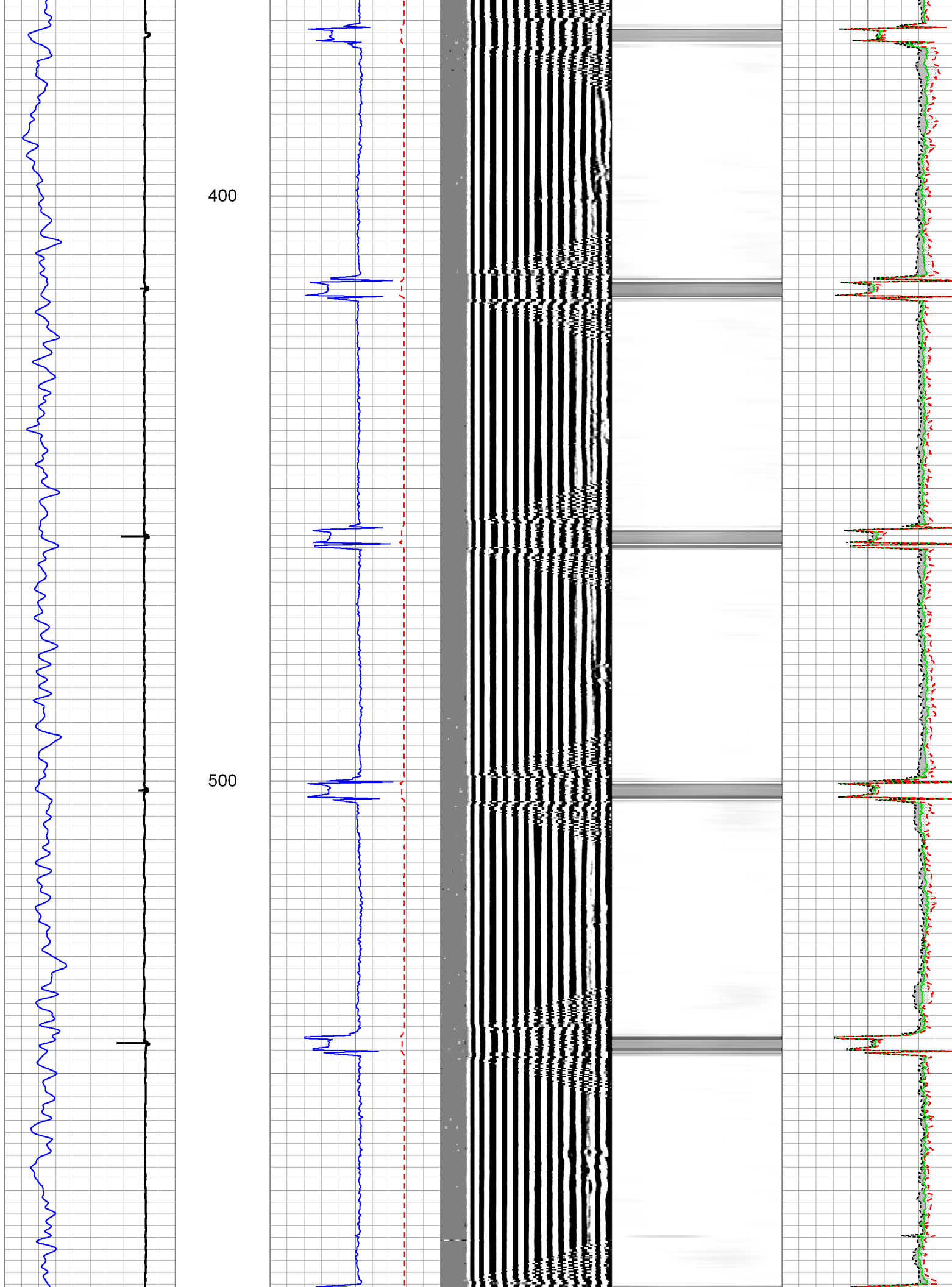
Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 150		0 (mV) 100	200 1200		0 100
Collar Locator		3' Amplitude x 5			Mimimum Amplitude
		0 (mV) 20			0 100
		3' Travel Time			Maximum Amplitude
		650 (usec) 150			0 100



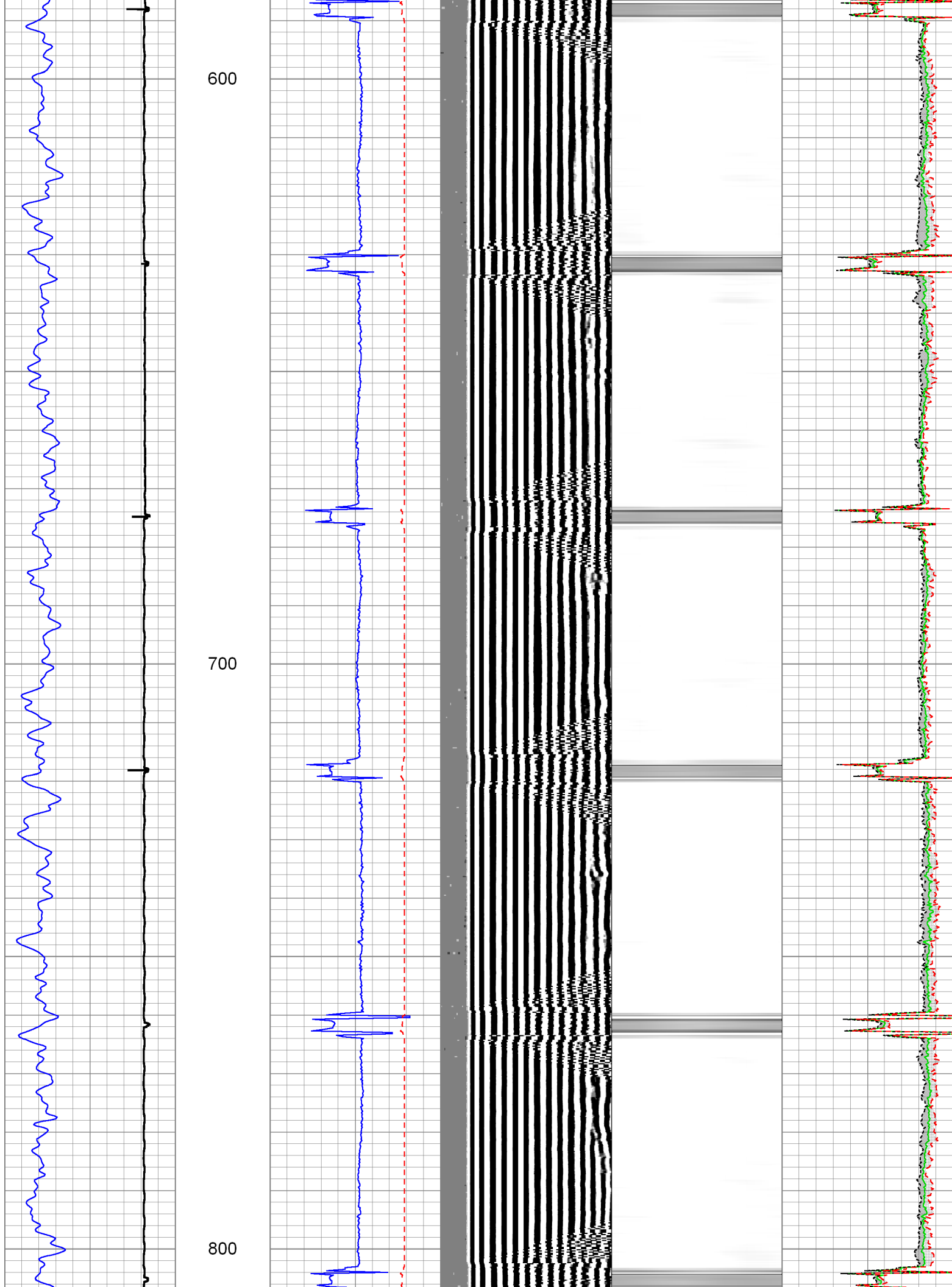


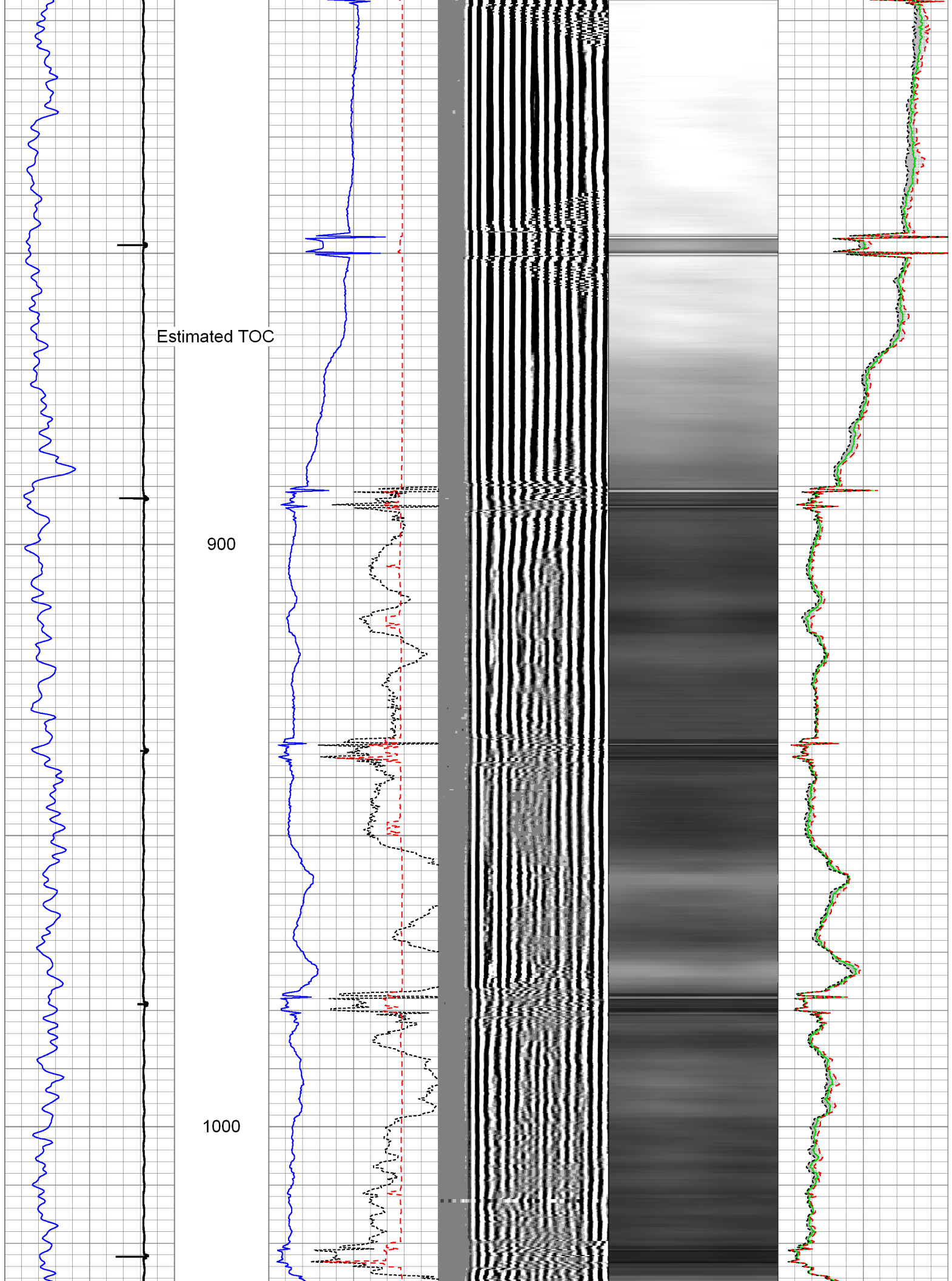
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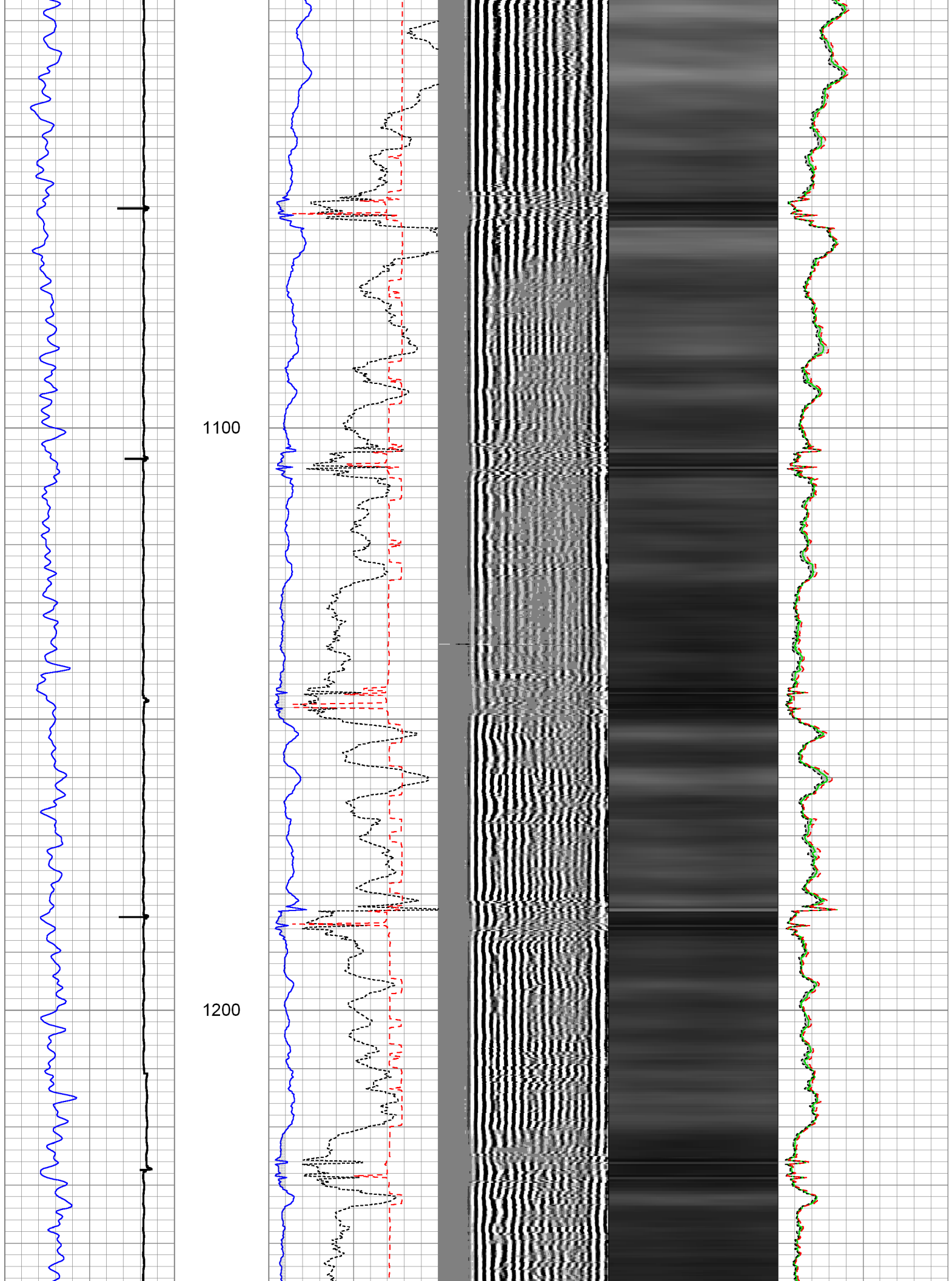
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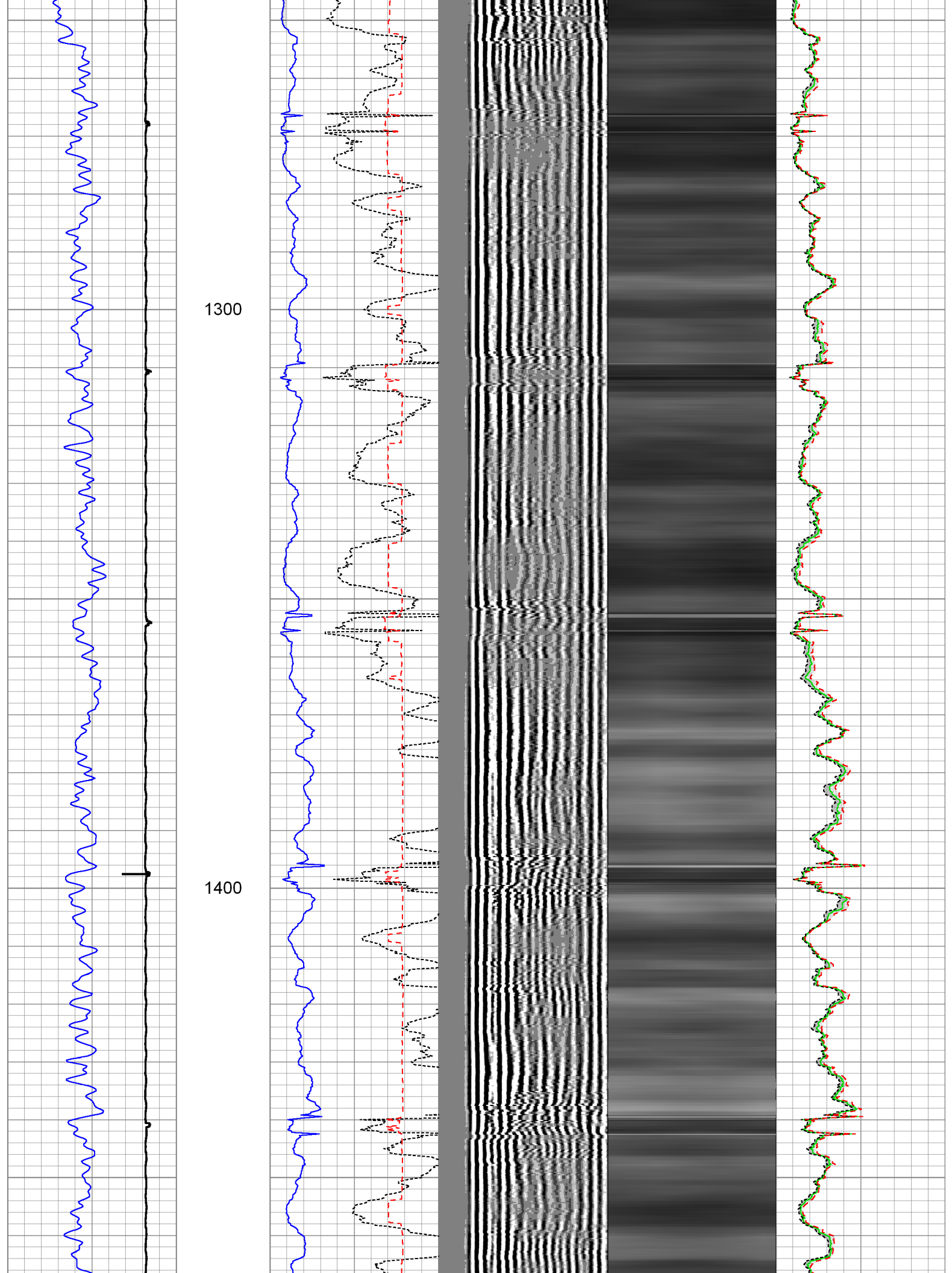


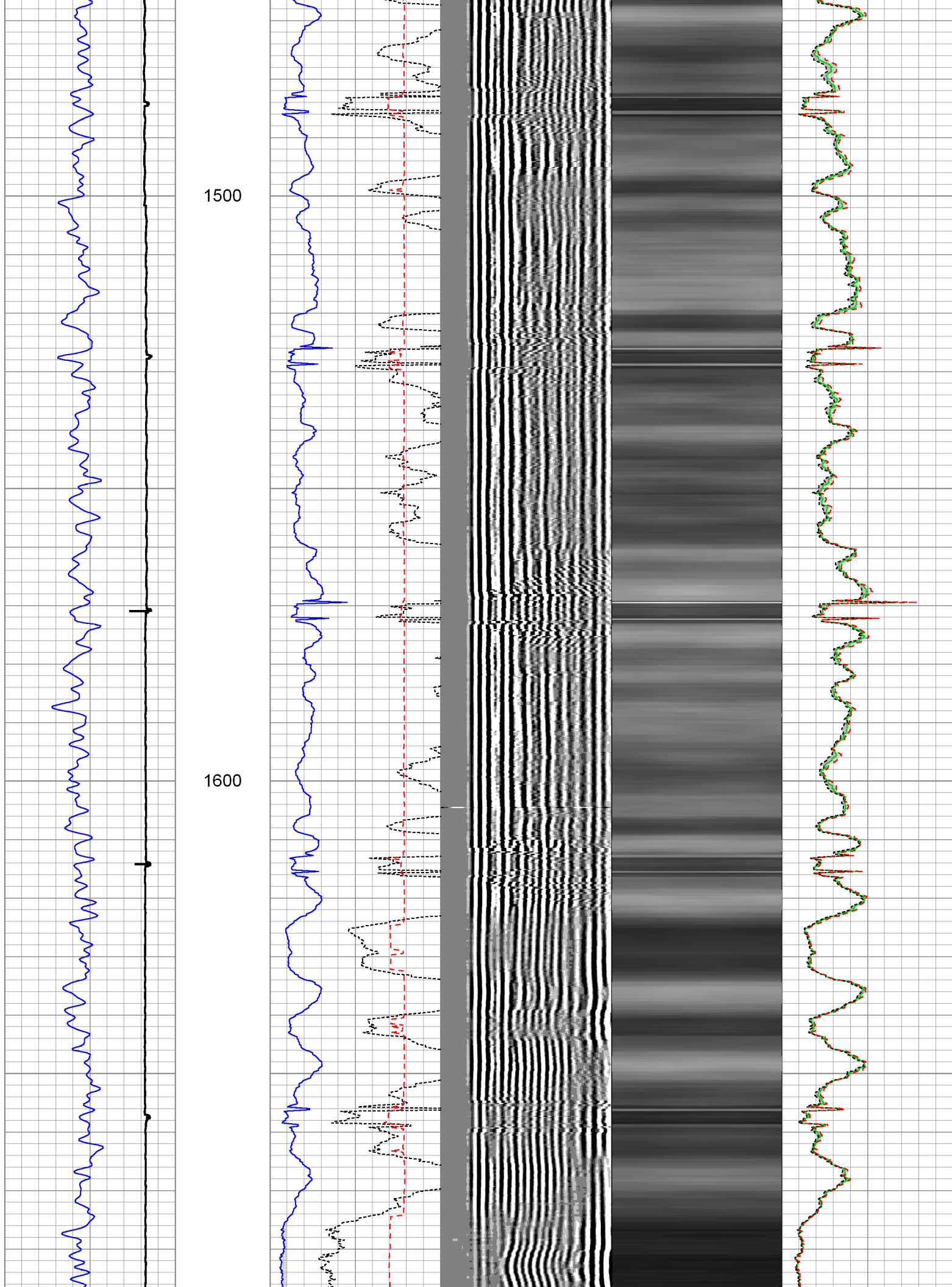




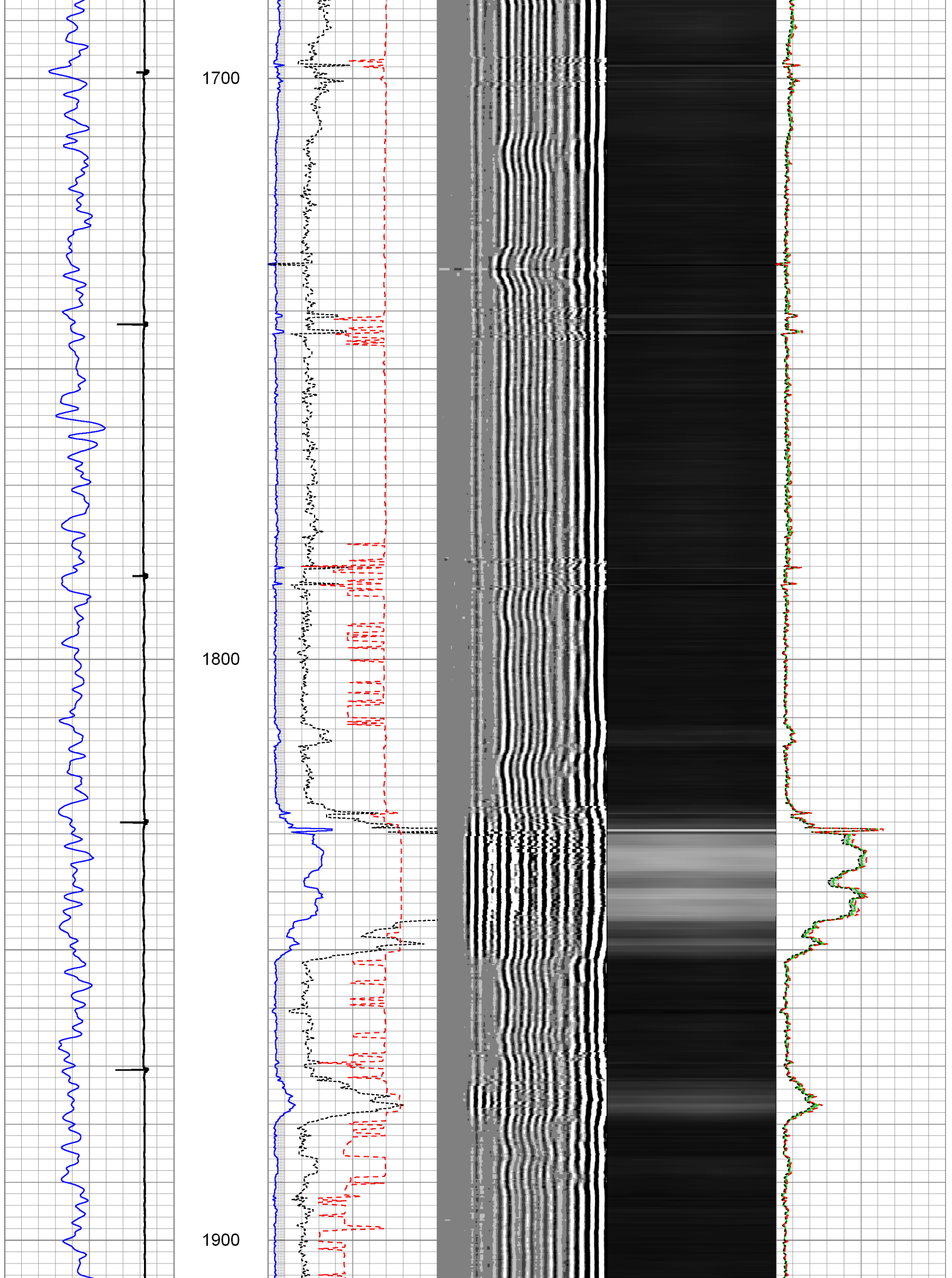




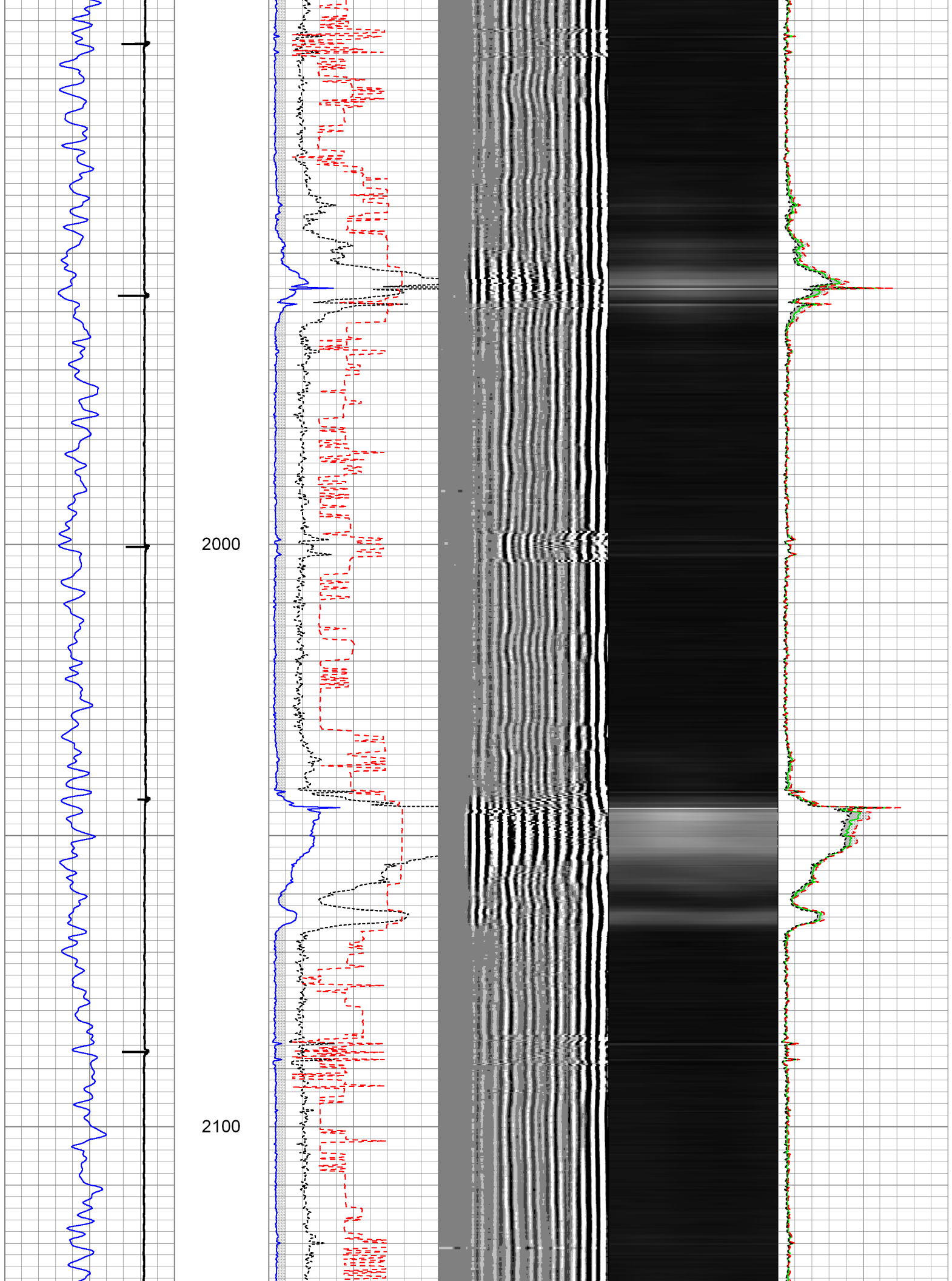






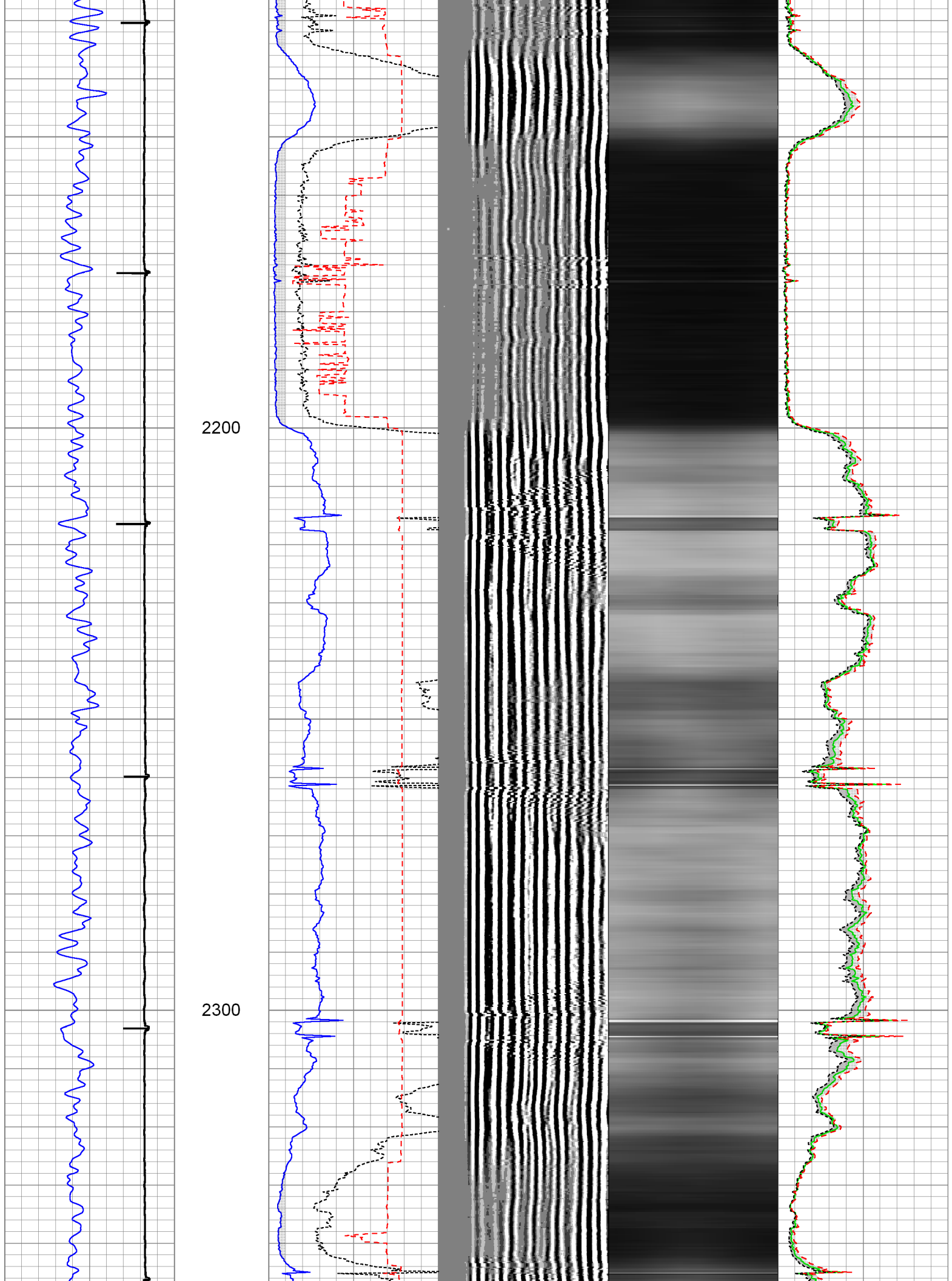


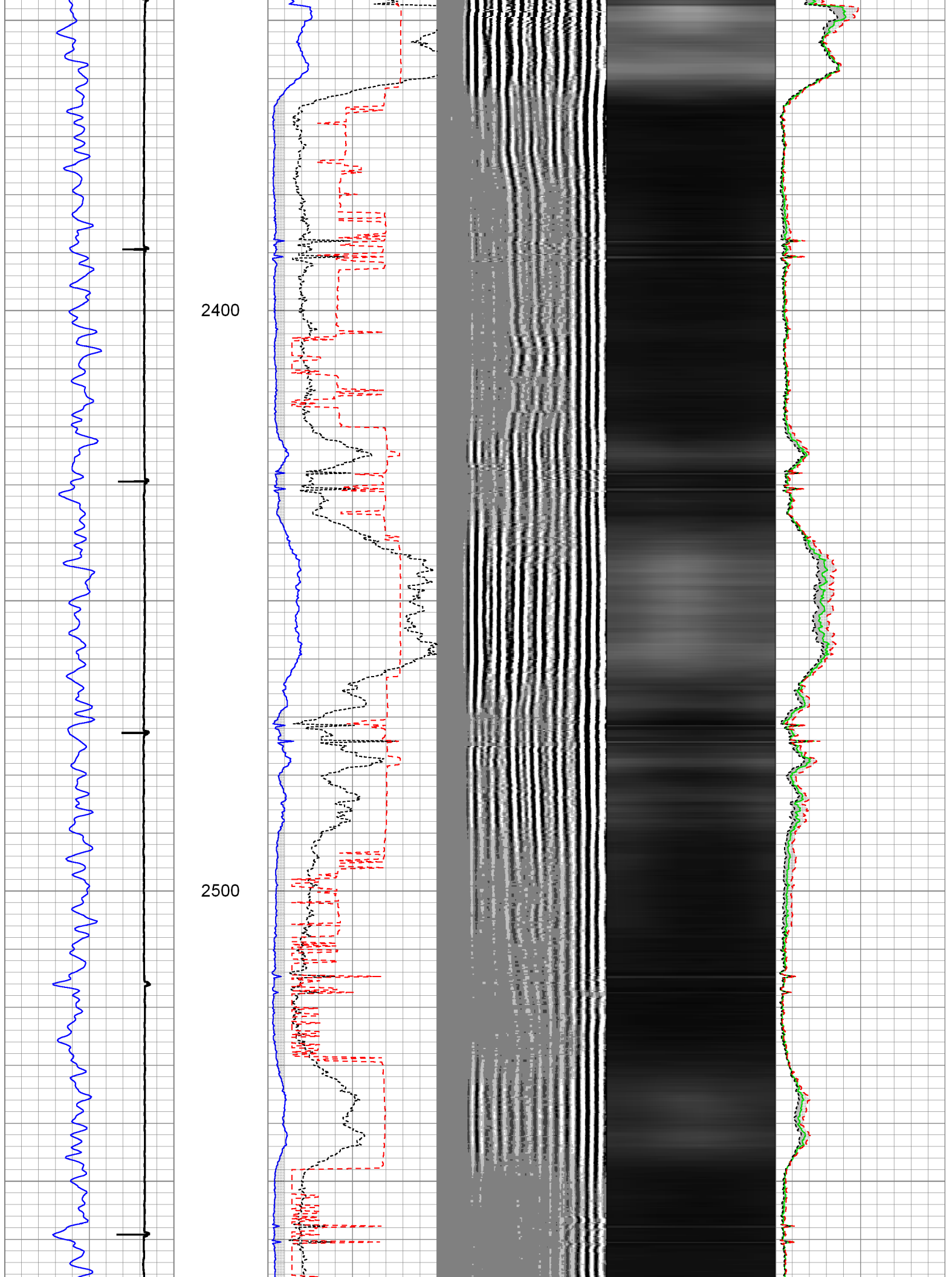




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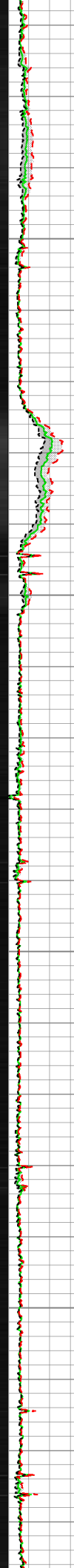
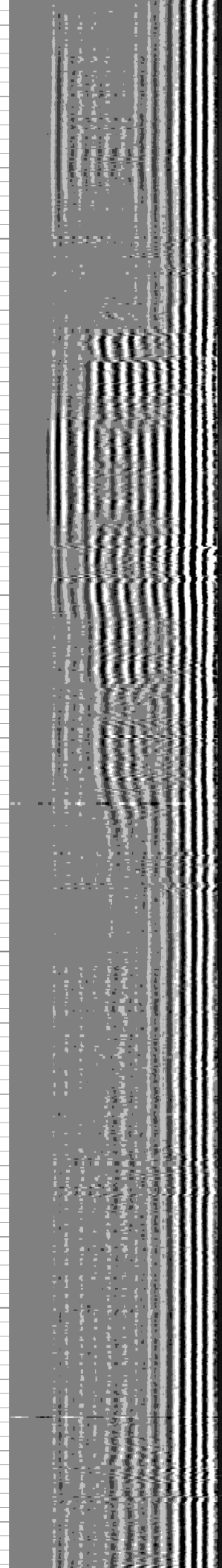
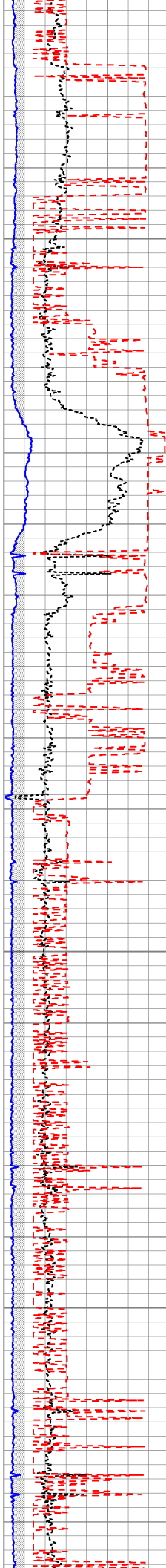
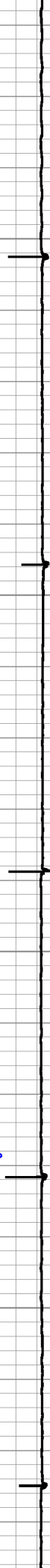
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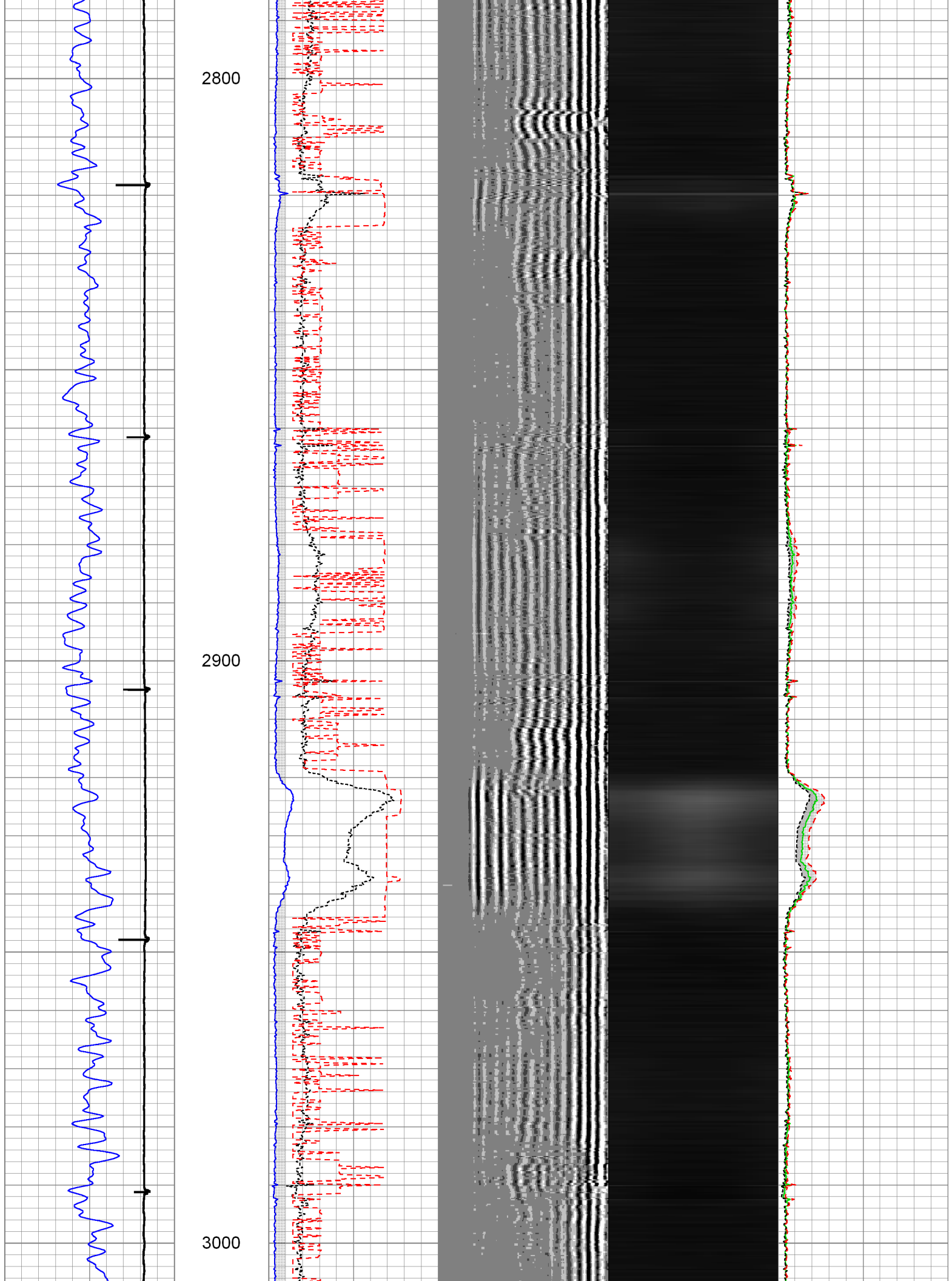
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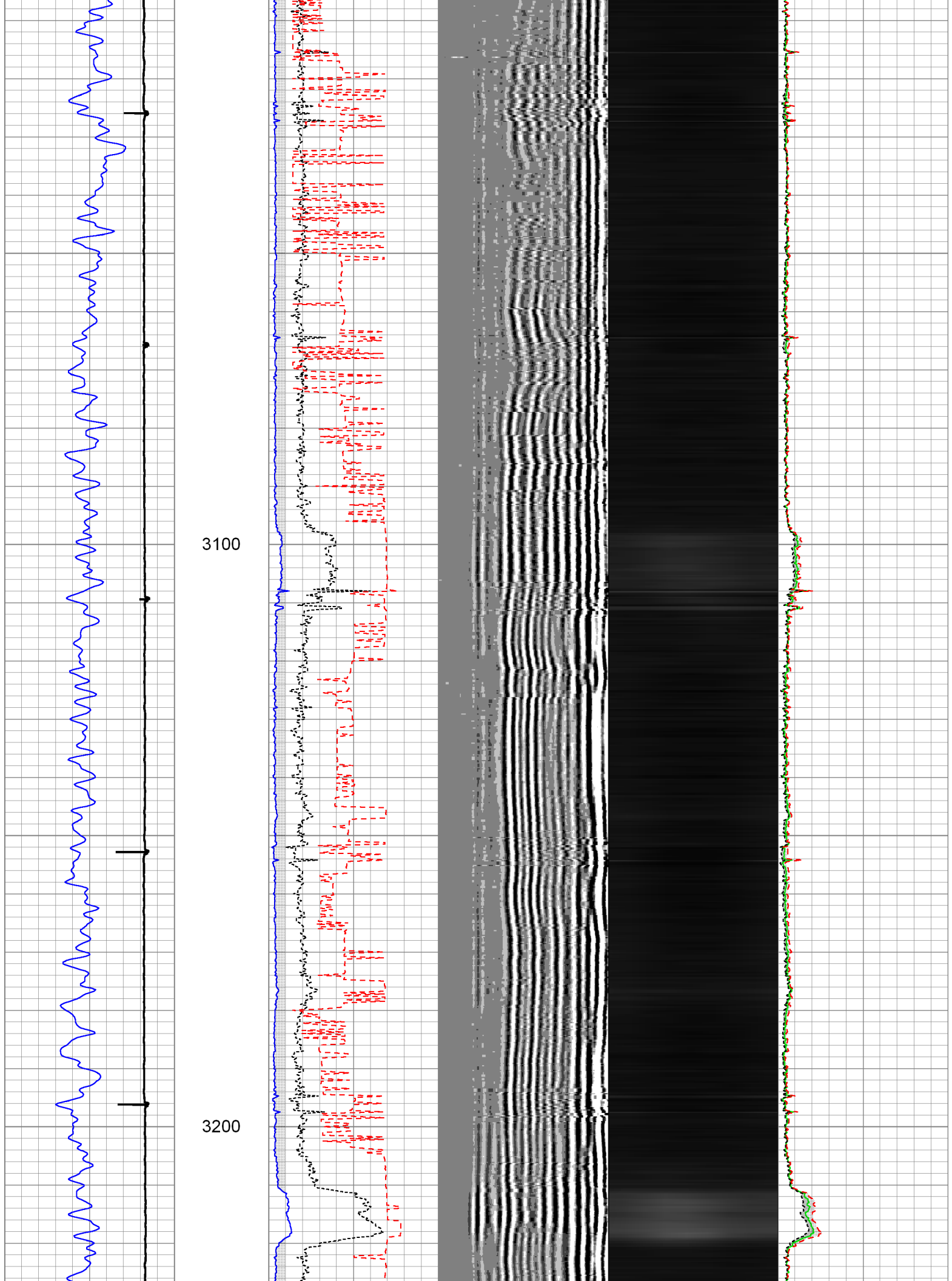
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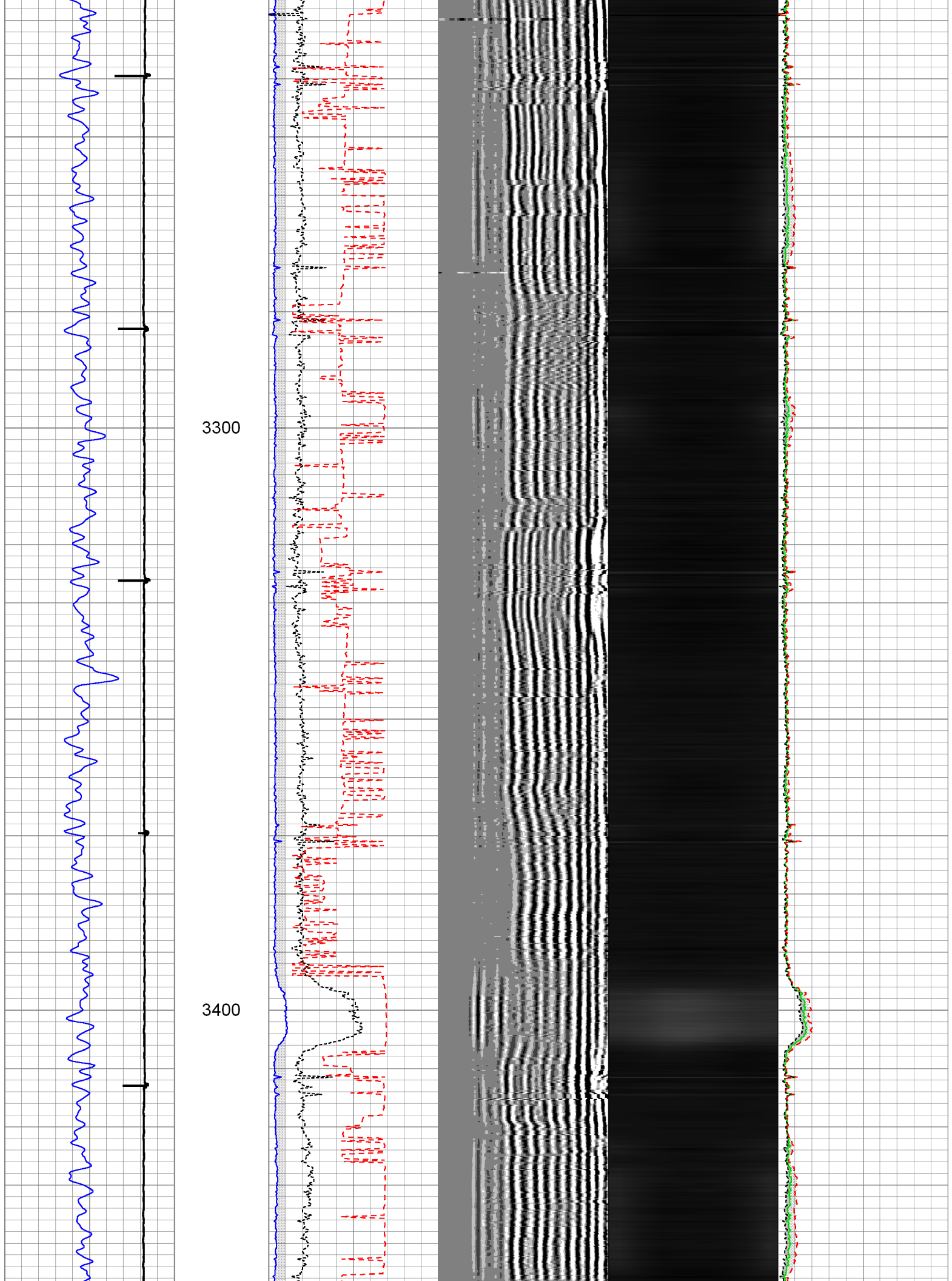
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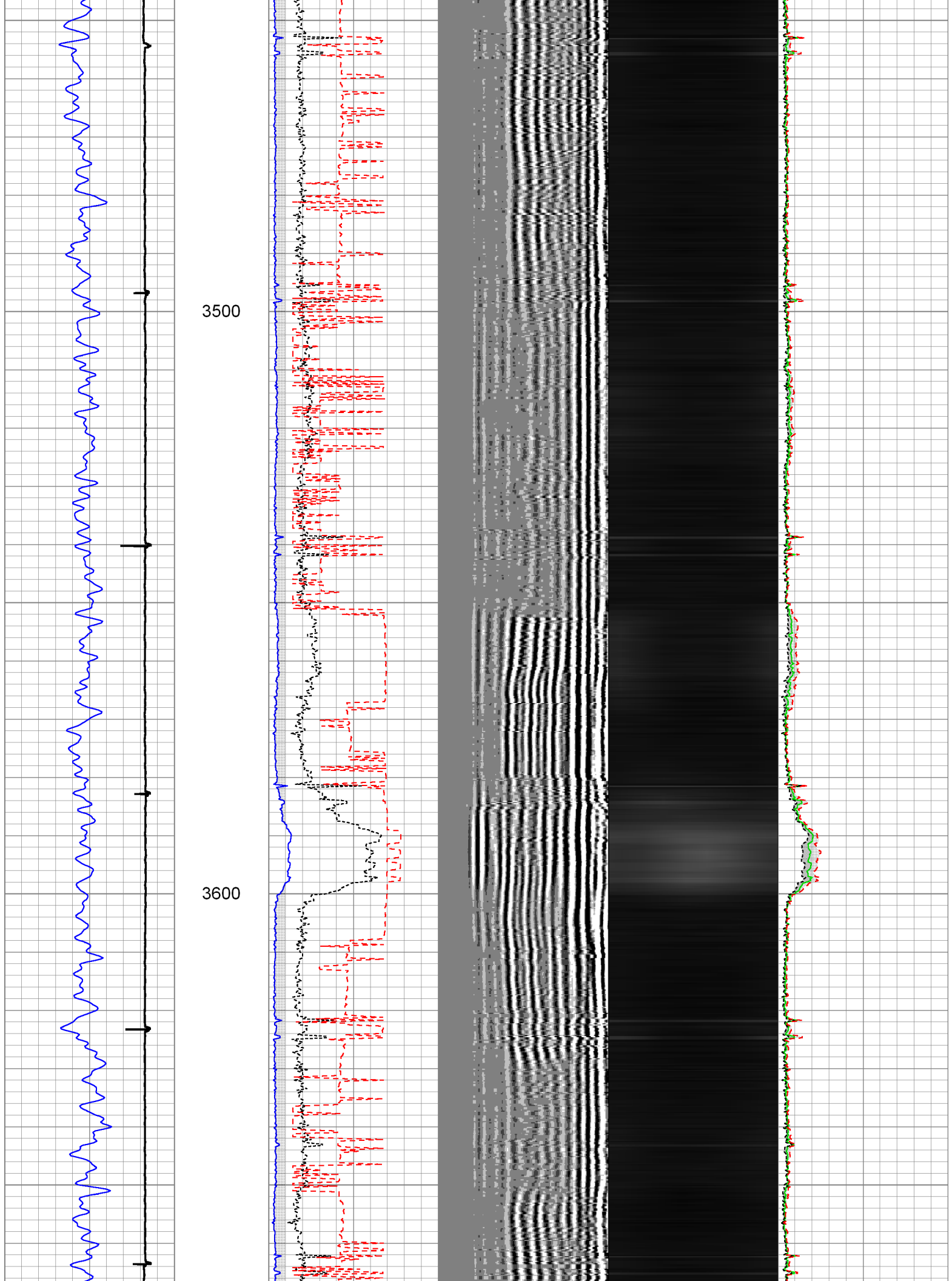






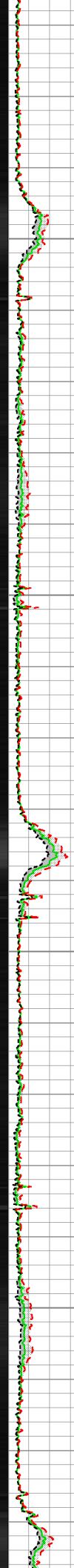
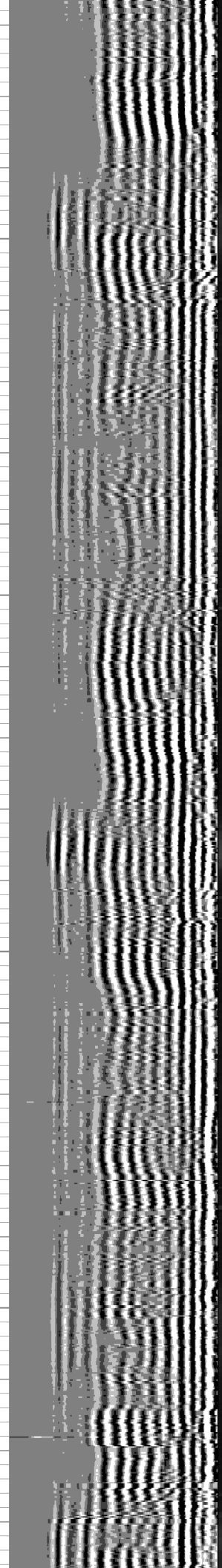
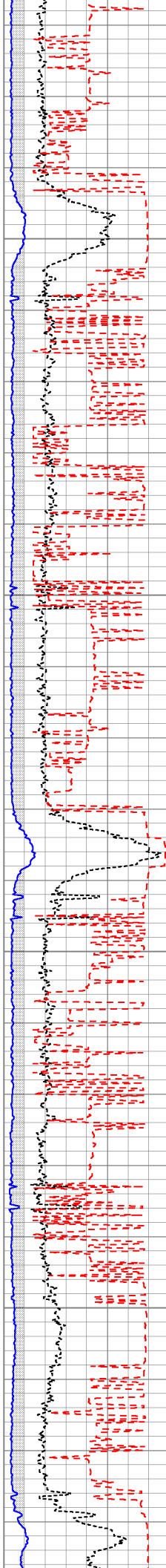
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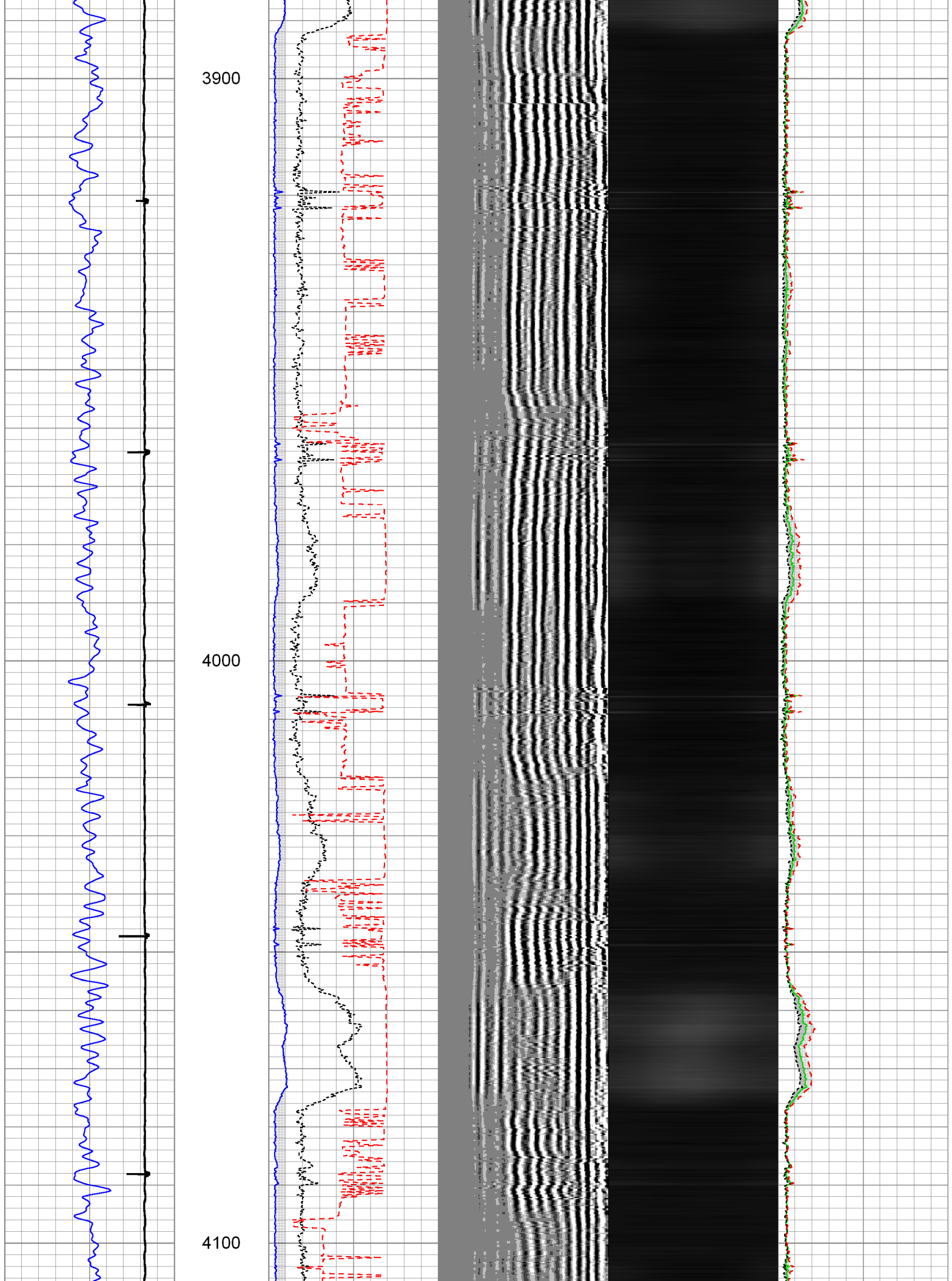
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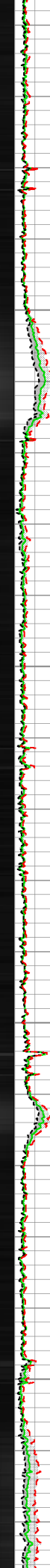
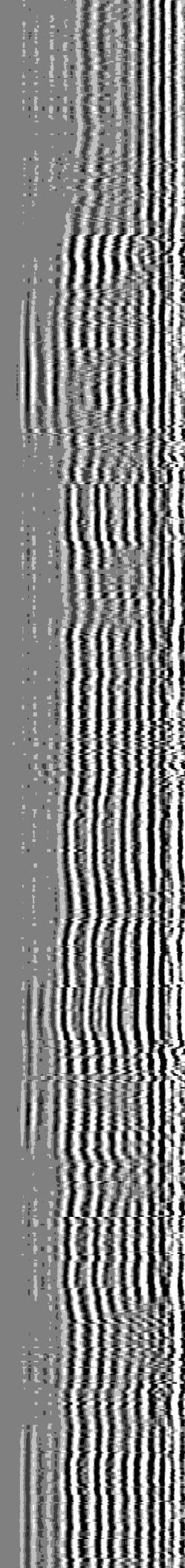
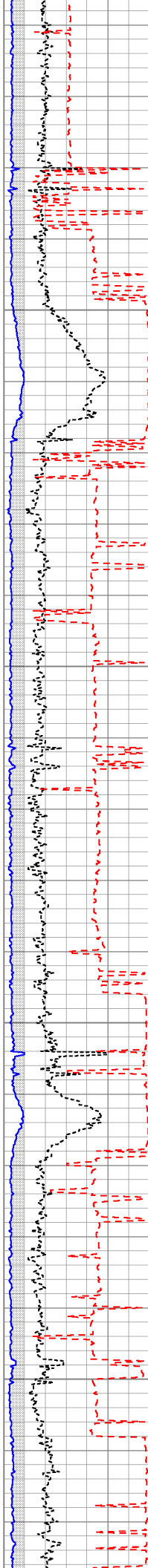
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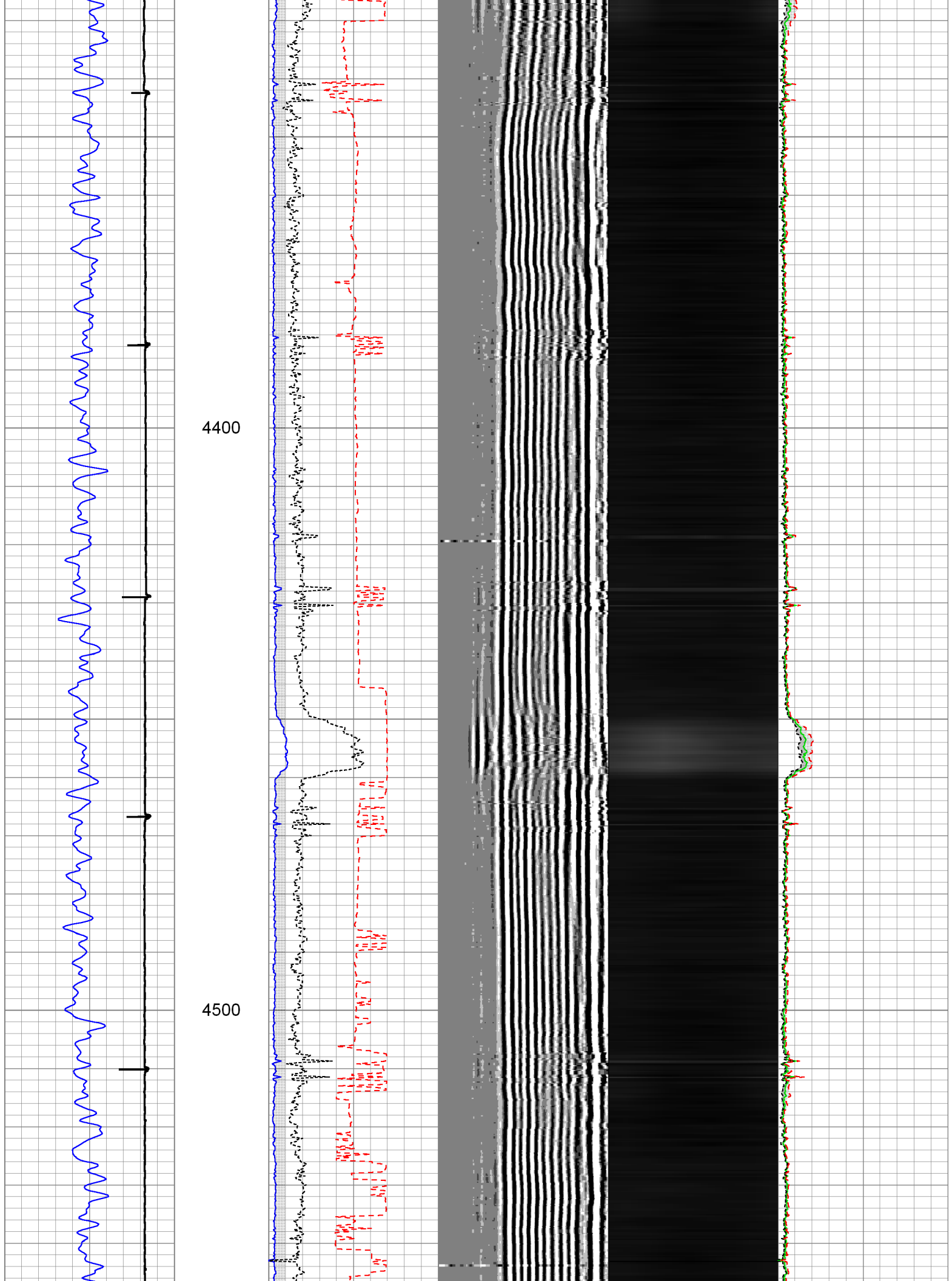




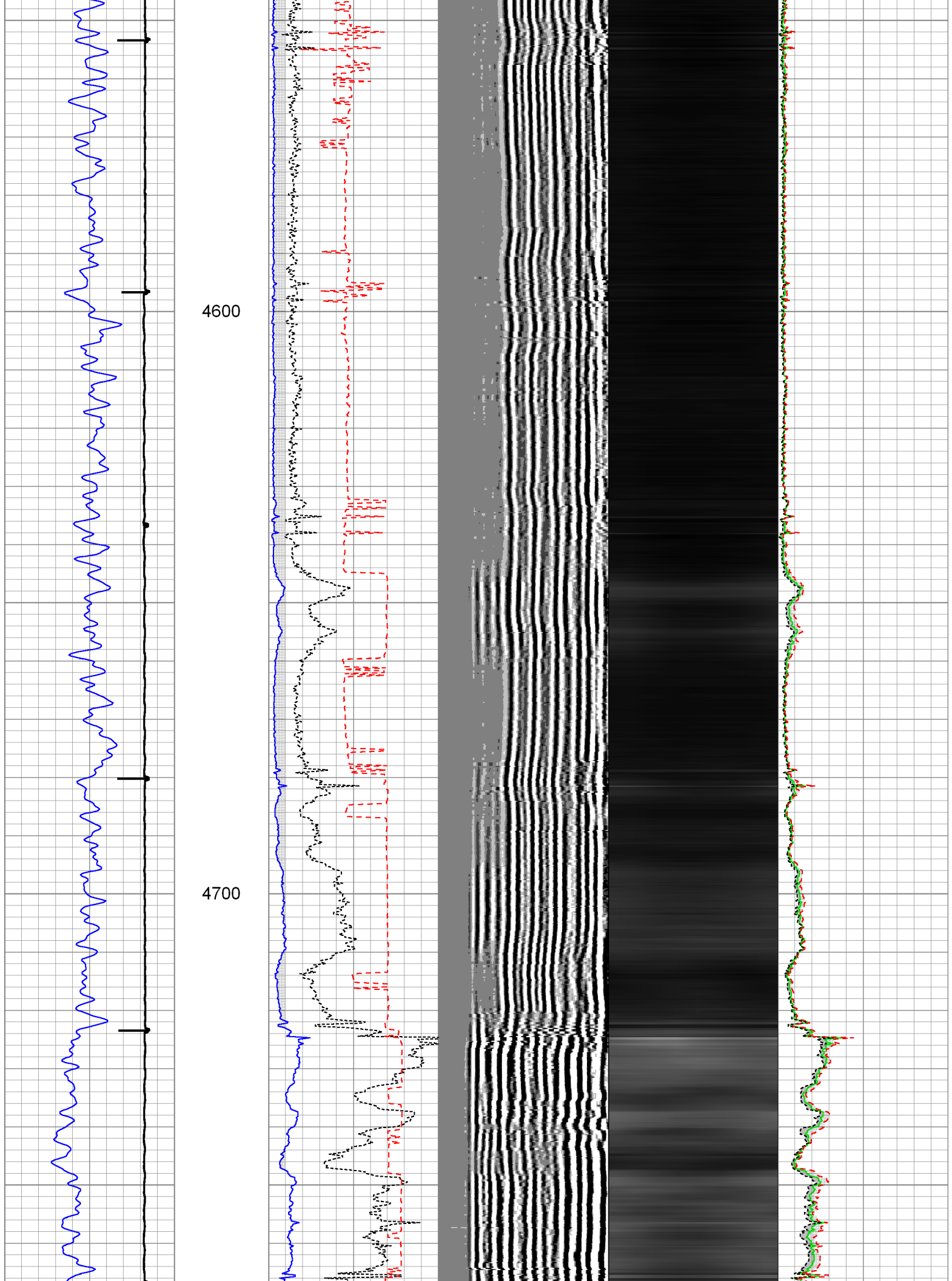
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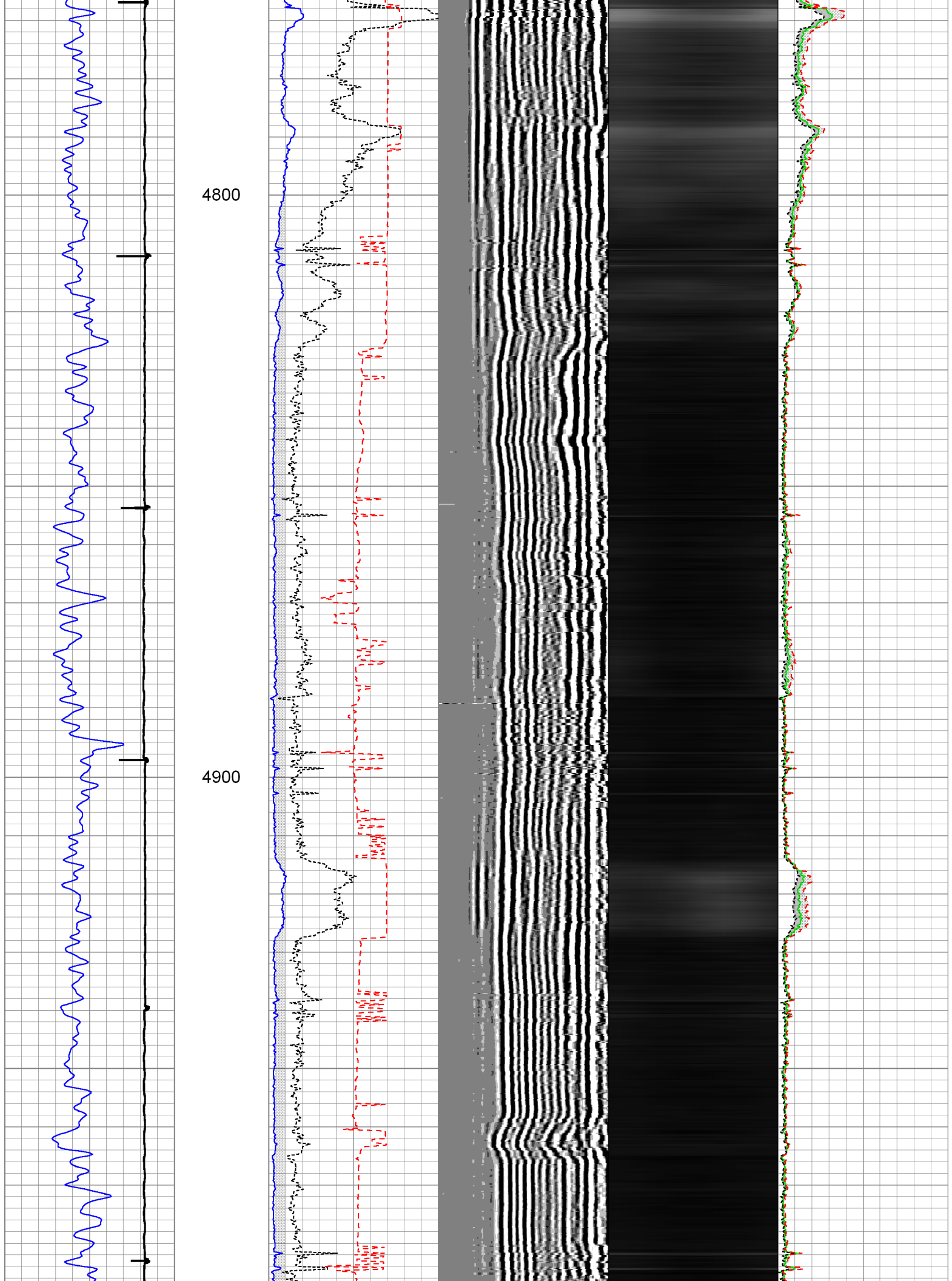


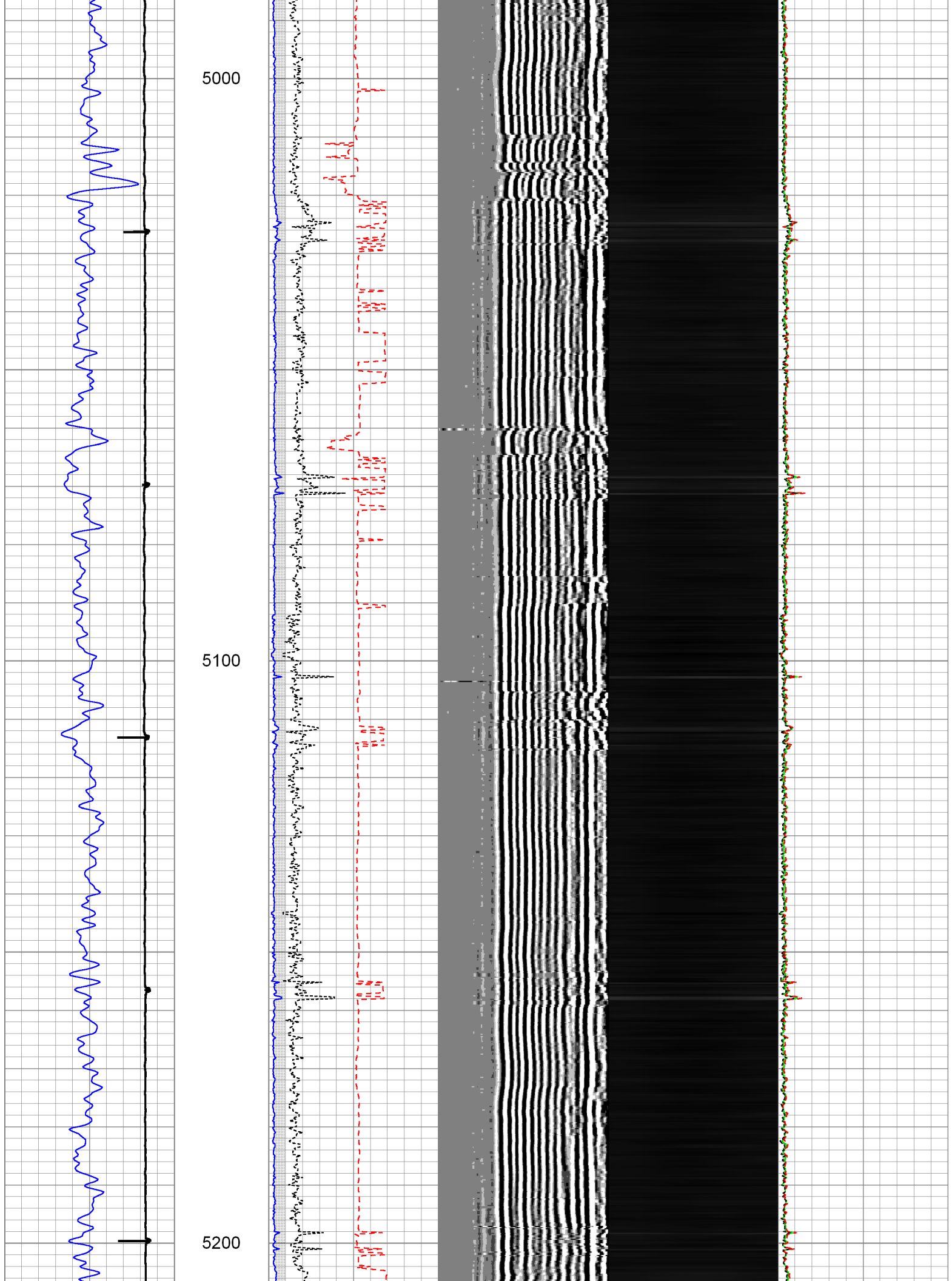




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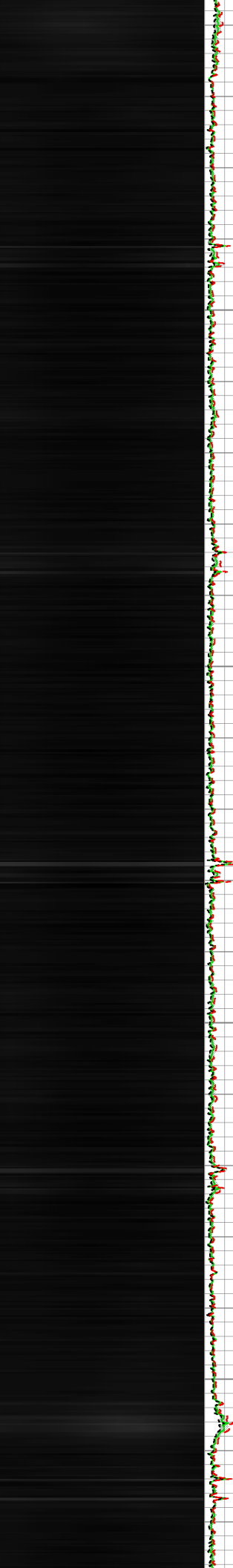
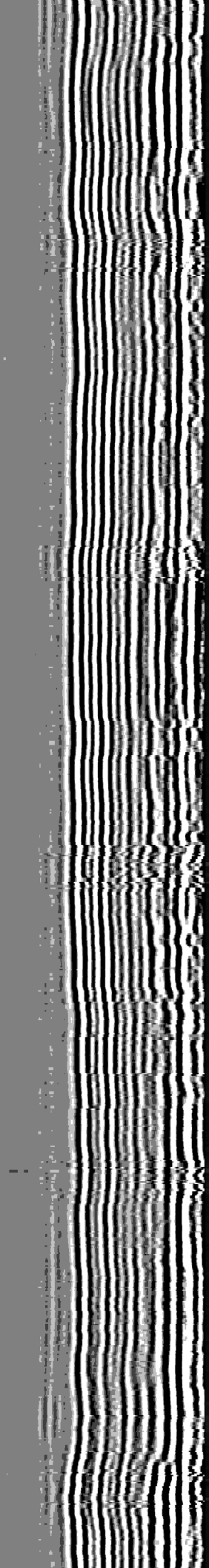
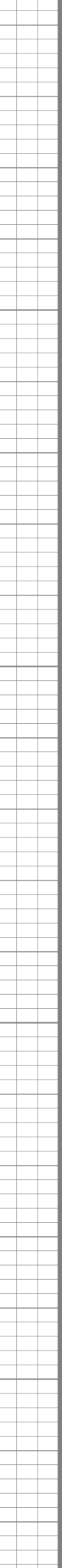
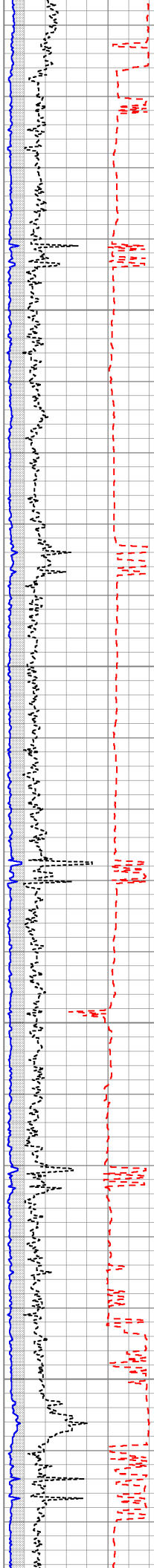
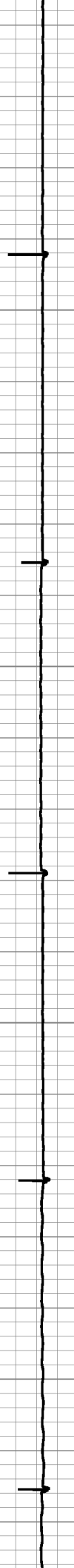
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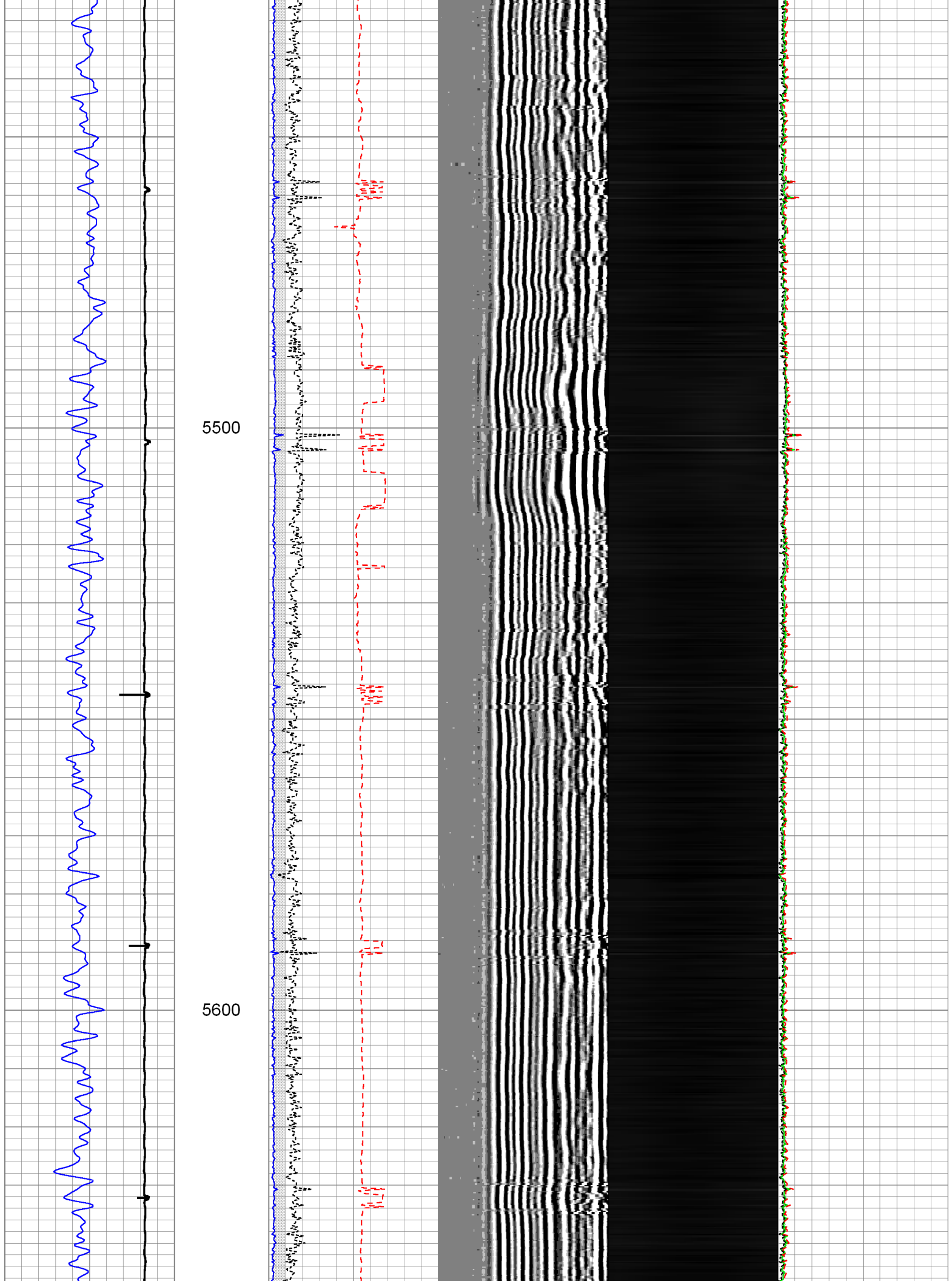




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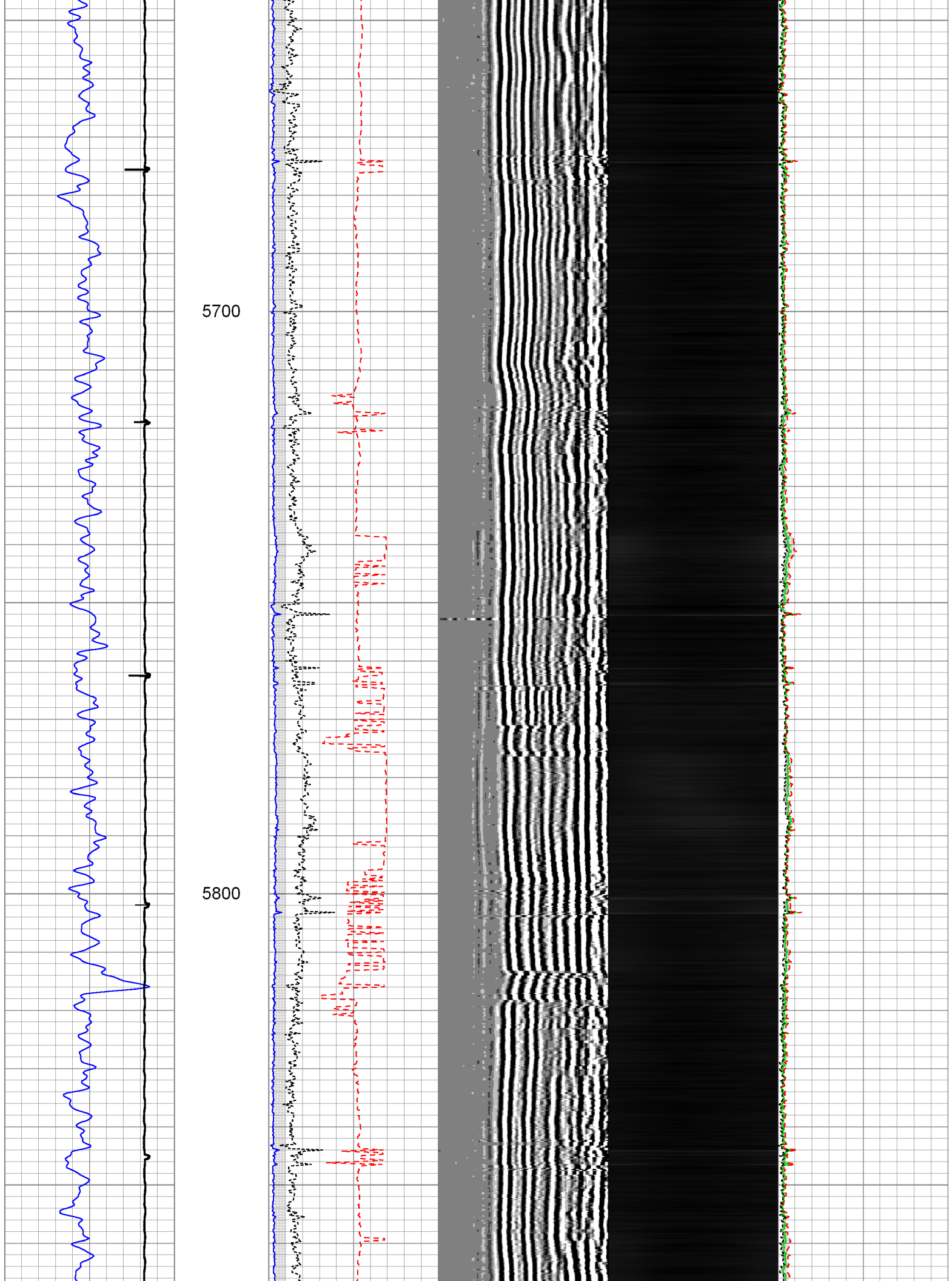






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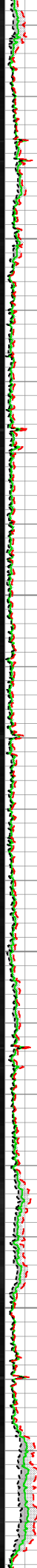
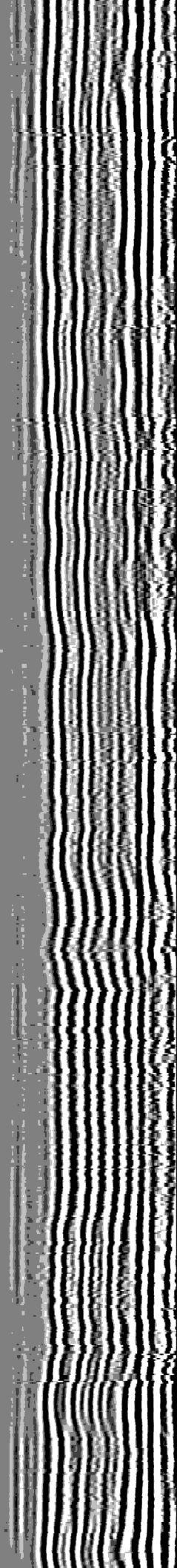
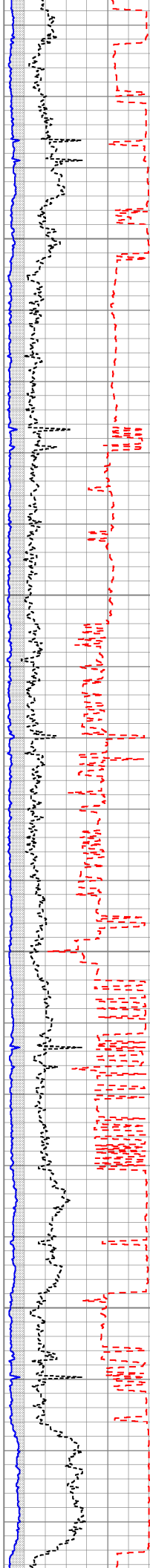
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5900

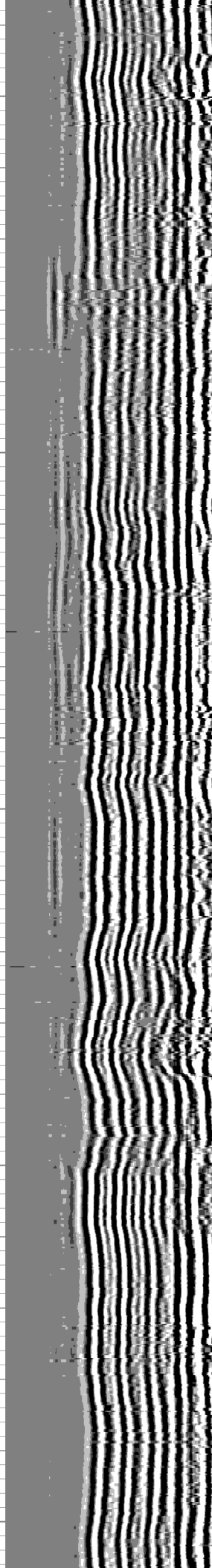
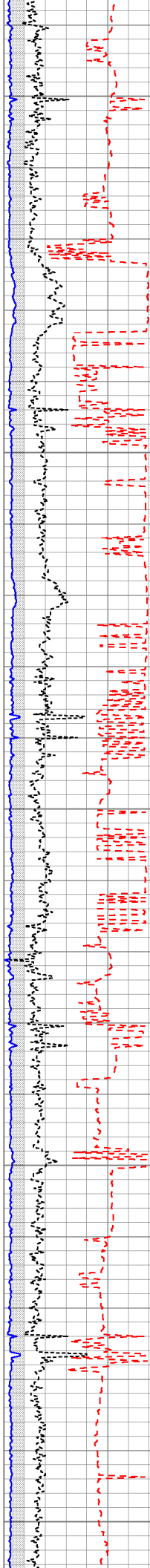
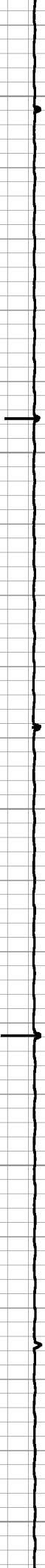
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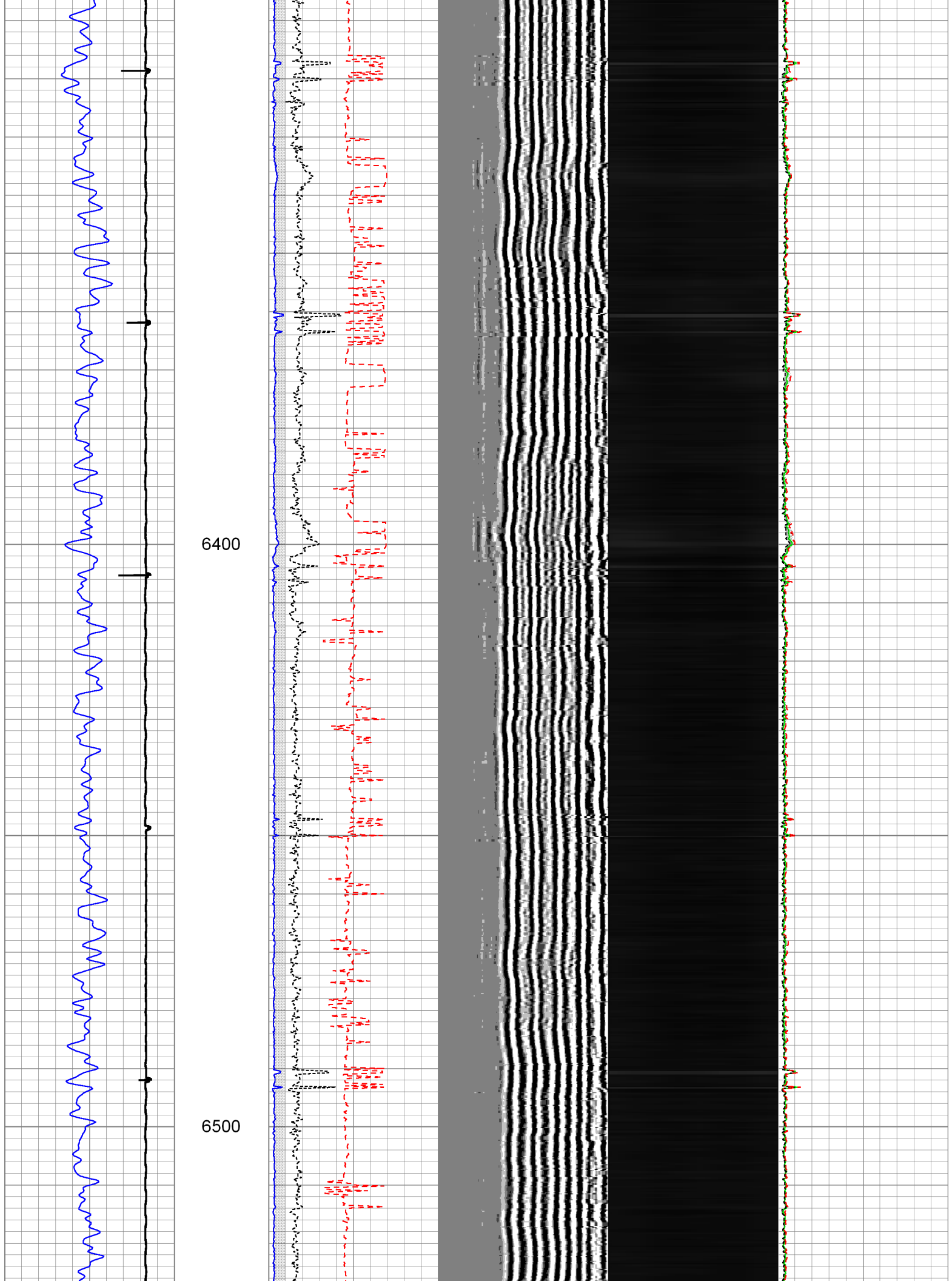


6100

6200

6300





6600

6700

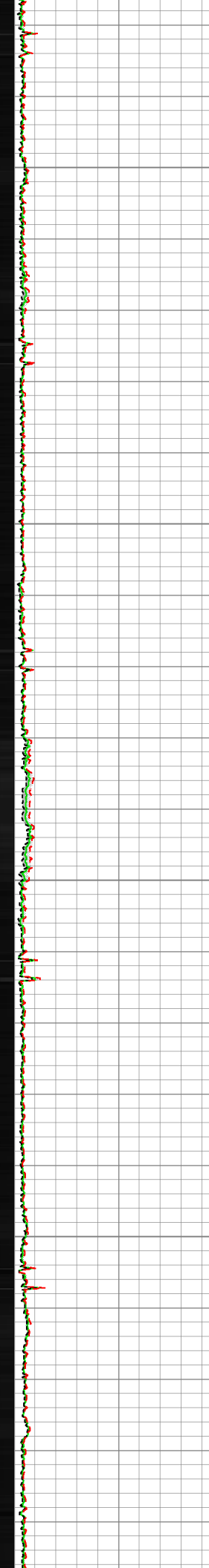
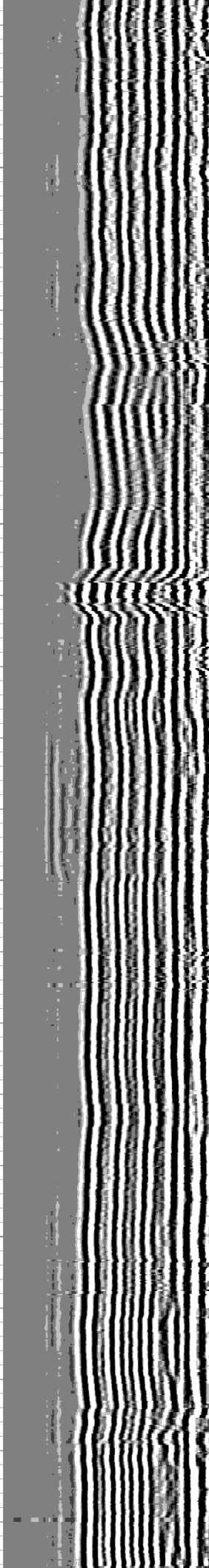
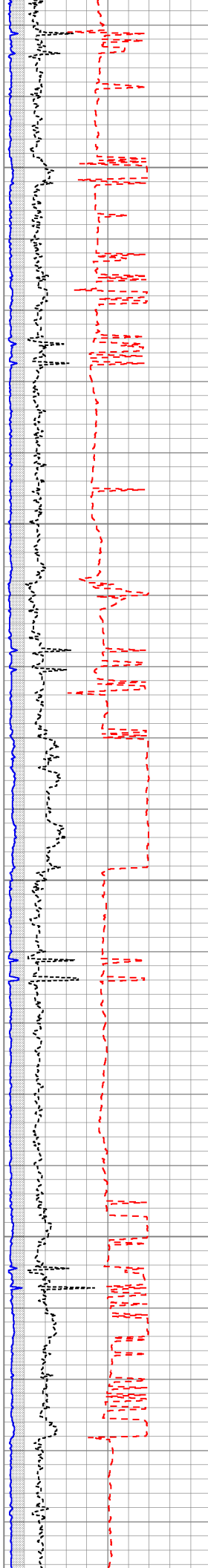


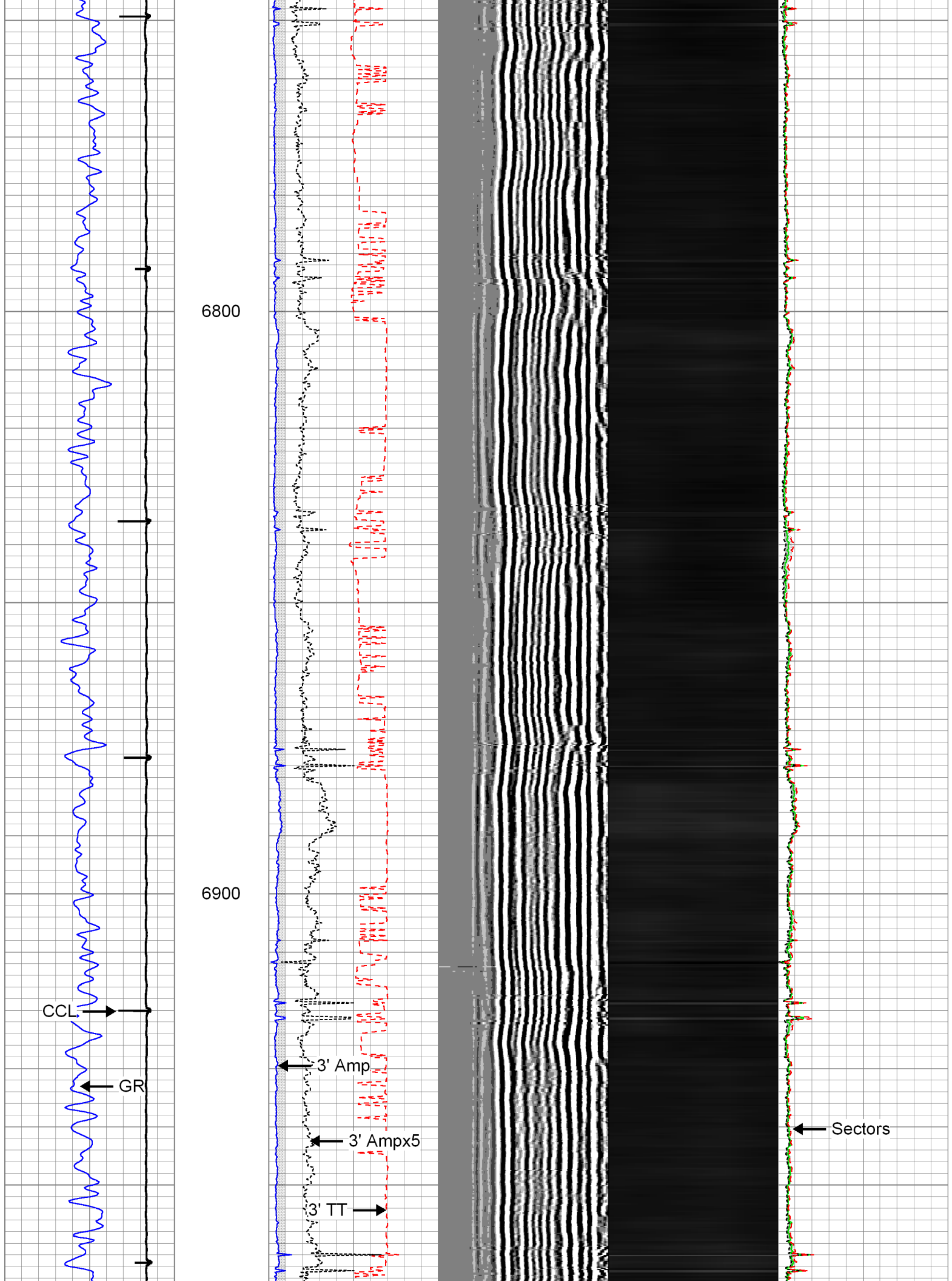
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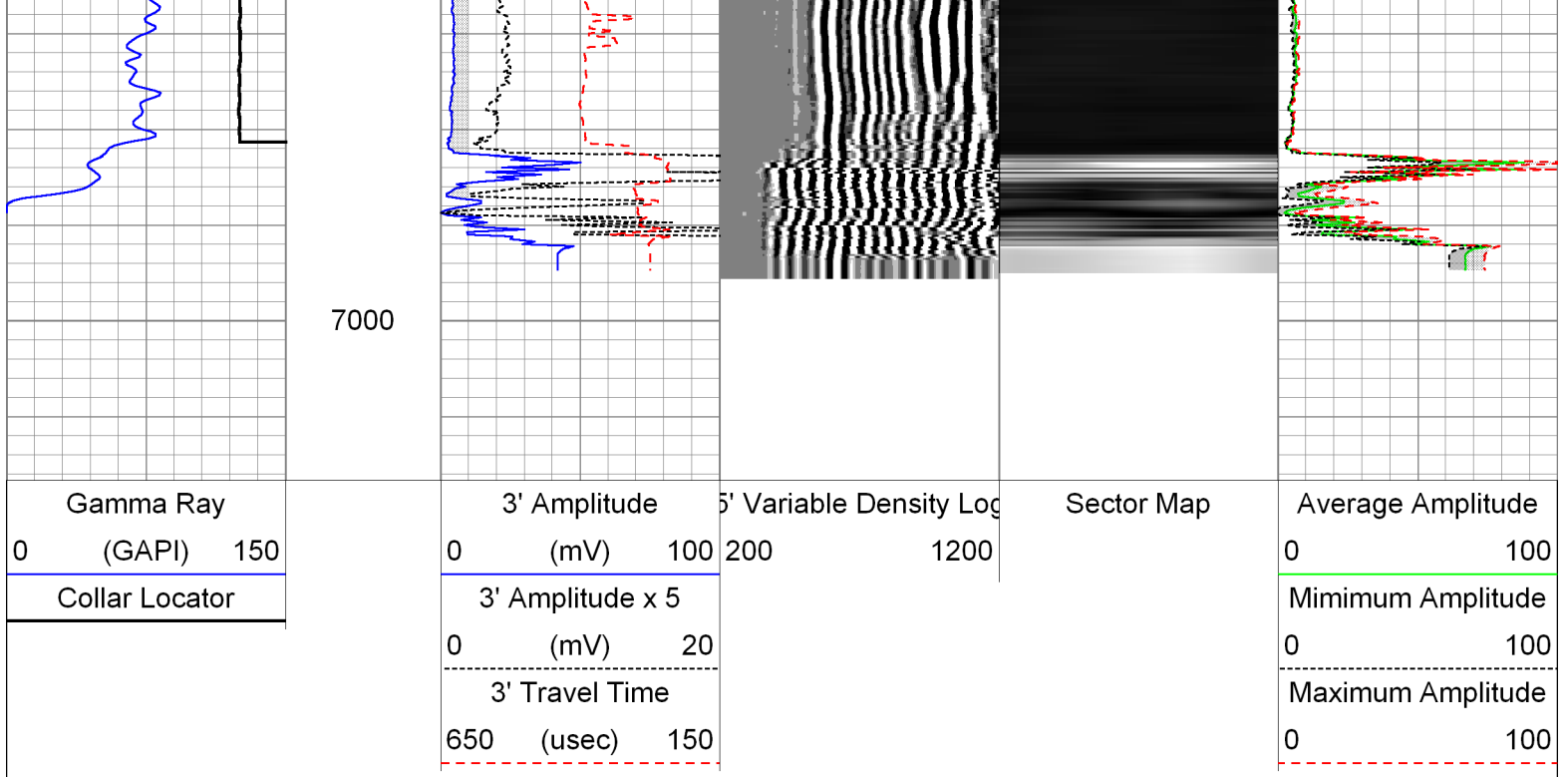
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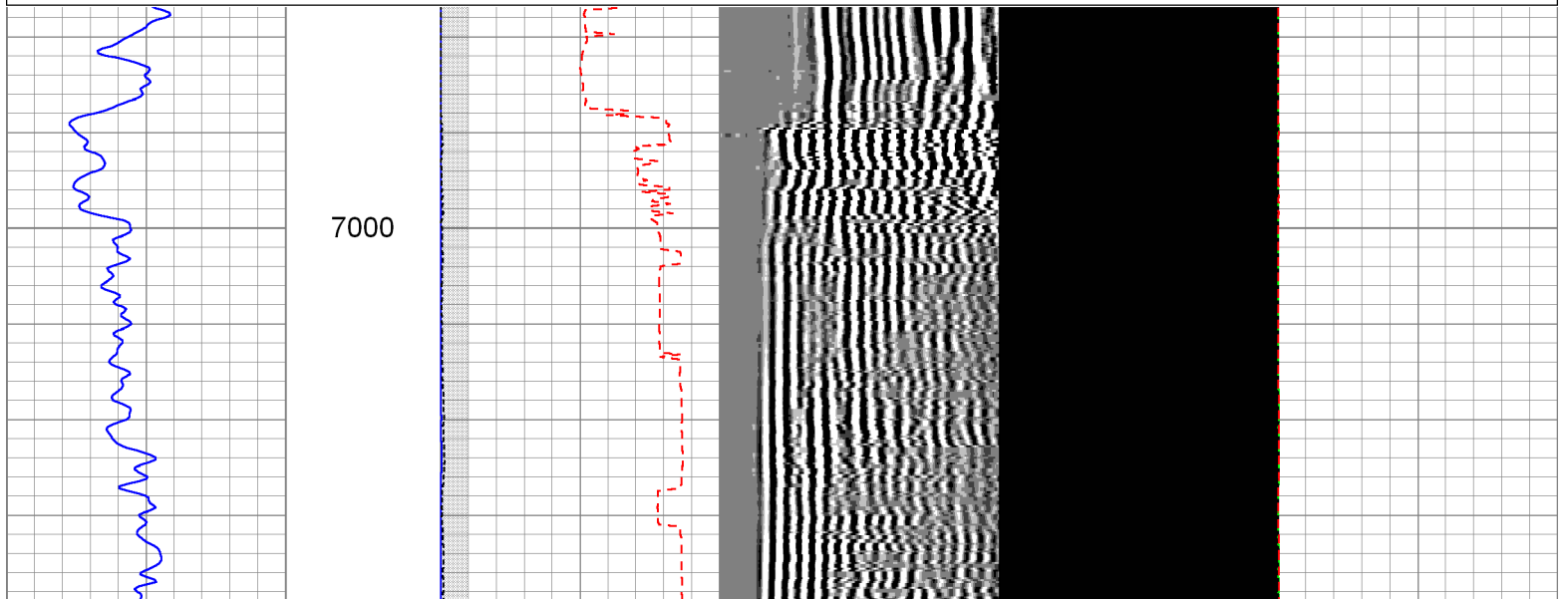
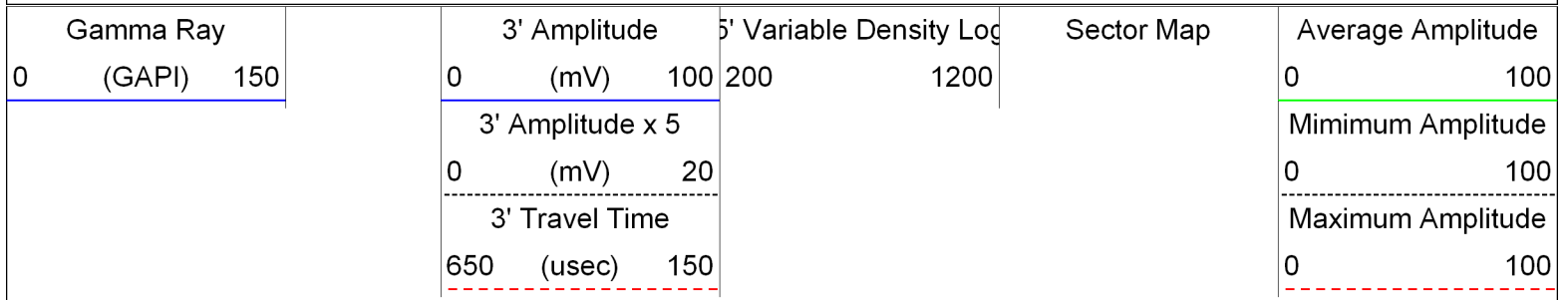


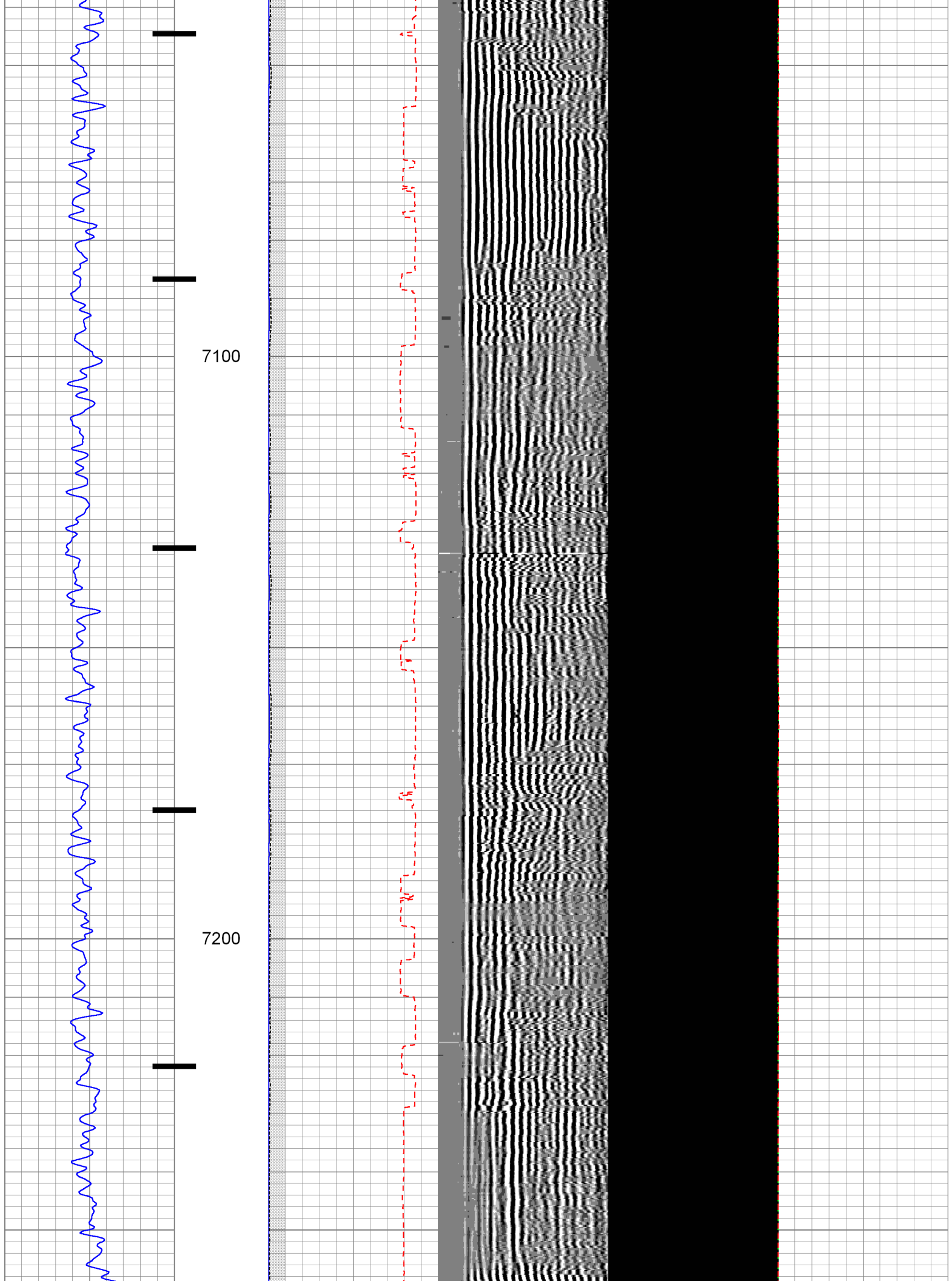


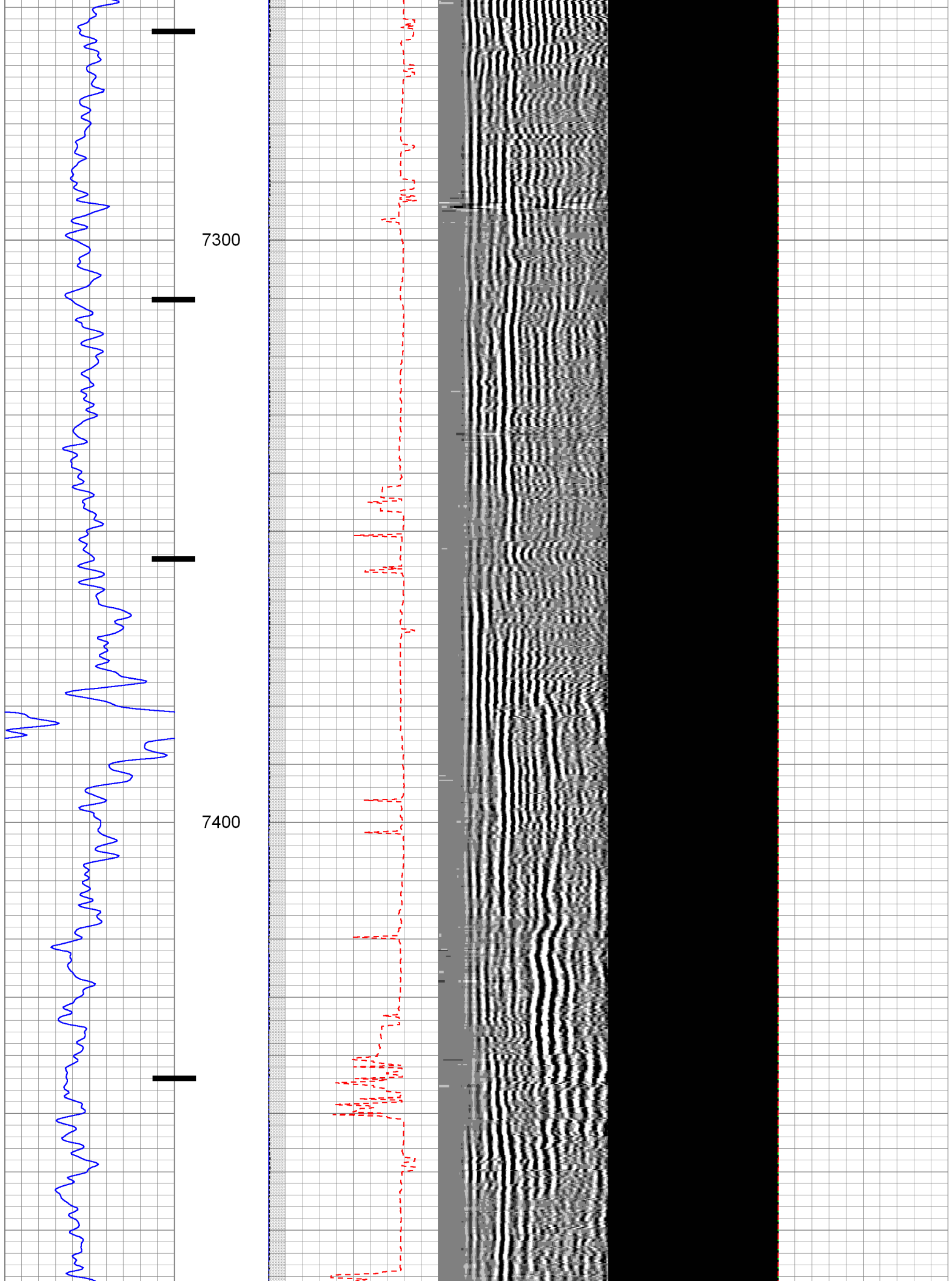
## Main Pass 4.5"

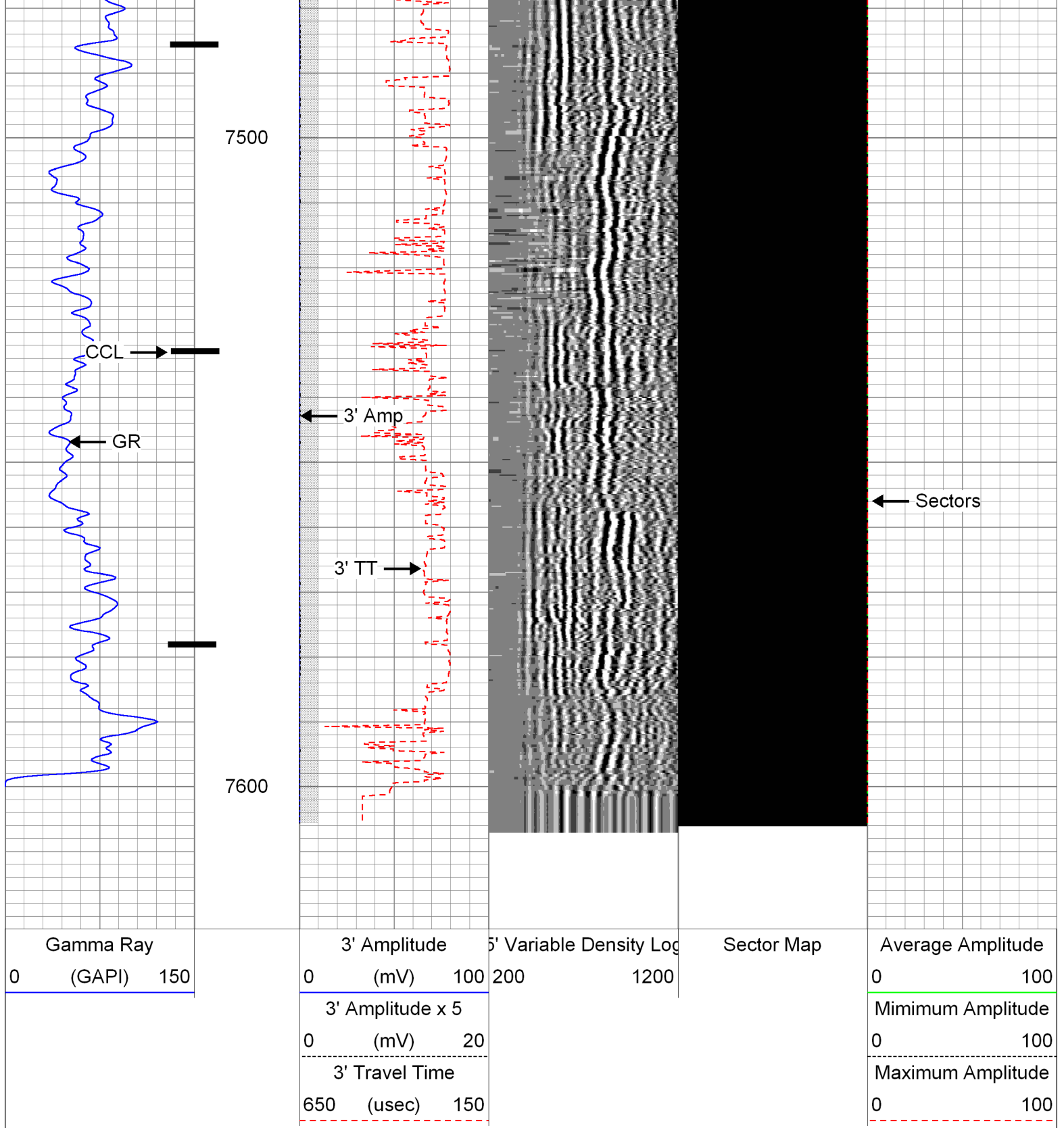
Recorded with 2200 PSI Surface Induced Pressure

Database File: 0512338171\_anadarko\_lochbuie 4c-13hz\_03-10-14\_mit\_rbl.db  
 Dataset Pathname: pass5  
 Presentation Format: rbt007  
 Dataset Creation: Mon Mar 10 13:01:14 2014 by Log Sondex V7.03  
 Charted by: Depth in Feet scaled 1:240





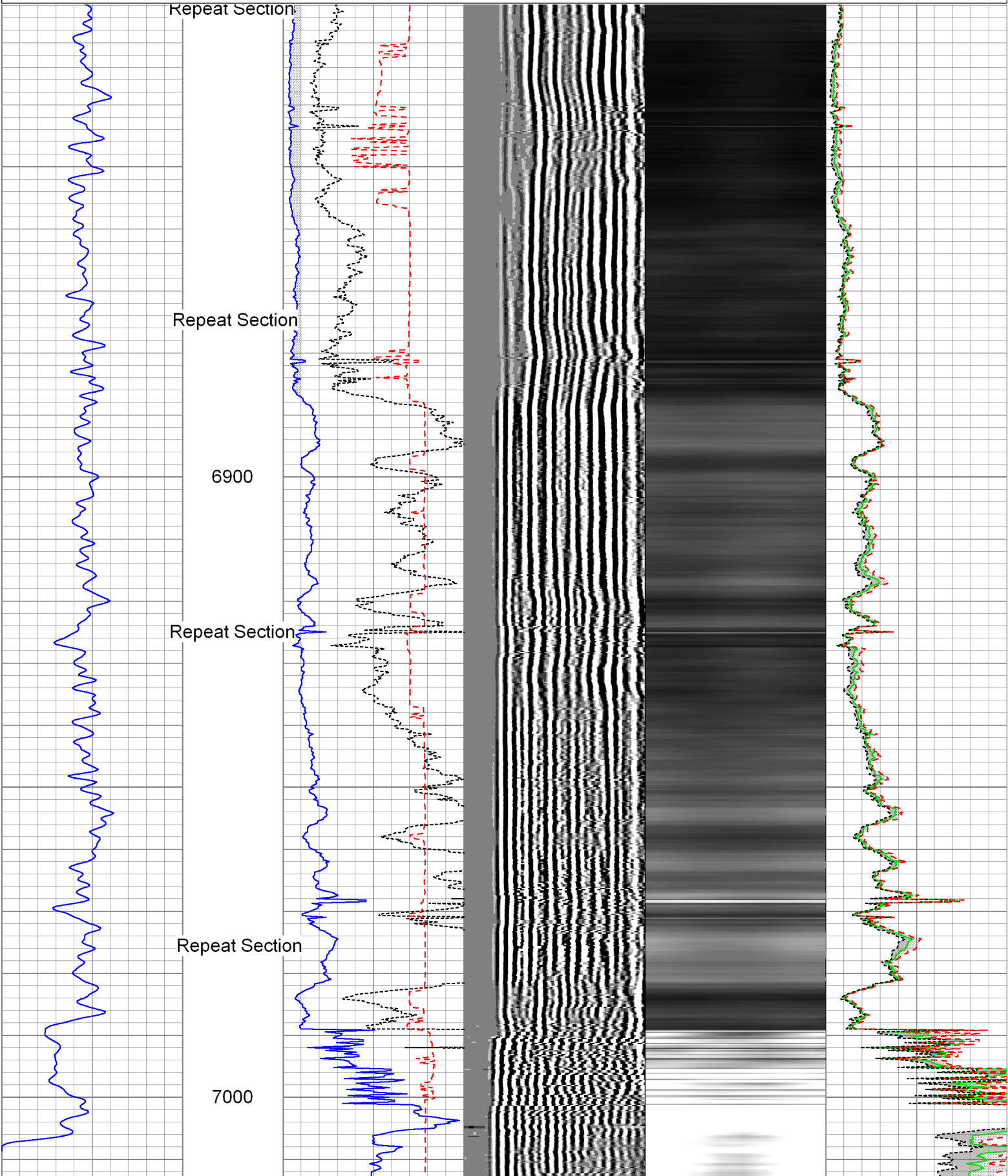




# Repeat Pass

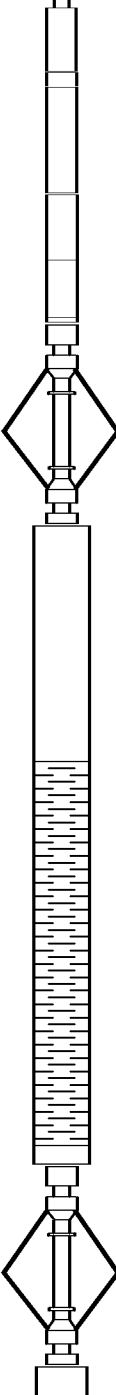
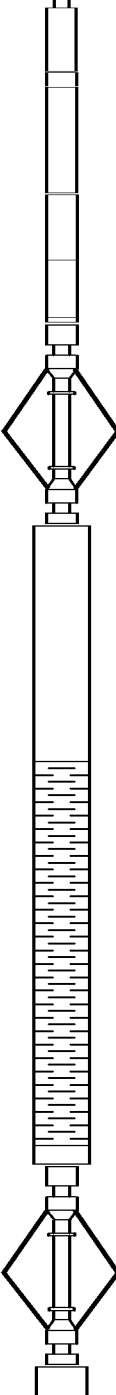
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 Presentation Format: rbt007  
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 Charted by: Depth in Feet scaled 1:240

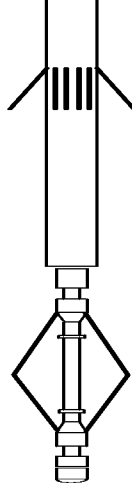
Gamma Ray			3' Amplitude			5' Variable Density Log			Sector Map			Average Amplitude		
0	(GAPI)	150	0	(mV)	100	200		1200				0		100
			3' Amplitude x 5									Minimum Amplitude		
			0	(mV)	20							0		100
			3' Travel Time									Maximum Amplitude		
			650	(usec)	150							0		100





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

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 (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-057 (1037) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
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		PRC-057 (1102) 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00

MIT	5.41		MIT-027 (218949) 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
Dataset: 0512338171_anadarko_lochbuie 4c-13hz_03-10-14_mit_rbl.db: field/well/run1/pass6 Total Length: 27.97 ft Total Weight: 316.30 lb O.D.: 3.13 in						

Calibration Report			
Database File:	0512338171_anadarko_lochbuie 4c-13hz_03-10-14_mit_rbl.db		
Dataset Pathname:	pass6		
Dataset Creation:	Mon Mar 10 13:17:21 2014 by Log Sondex V7.03		
Multi-finger Imaging Tool Calibration Report			
Serial Number:		218949	
Number of Fingers:		40	
Tool Model:		027	
Inclinometer Calibration Report			
Performed:		Mon, Oct, 06 14:03:04 2008	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1996	1984
Finger 1 up:		1780	1738
Finger 31 up:		2235	1756
Finger 21 up:		2216	2228
Finger 11 up:		1736	2196
Sensitivity ratio:	1.0062		
X-axis angle:	131.534		
Deviation const.:	331.322		

Finger Calibration Report							
Performed:				Mon Mar 10 13:17:08 2014			
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1395 296.0	1691 256.0	1947 268.0	2215			
Finger 02:	1368 304.0	1672 261.0	1933 279.0	2212			
Finger 03:	1349 302.0	1651 270.0	1921 289.0	2210			
Finger 04:	1320 303.0	1623 278.0	1901 298.0	2199			
Finger 05:	1334 304.0	1638 282.0	1920 301.0	2221			
Finger 06:	1332 298.0	1630 284.0	1914 299.0	2213			
Finger 07:	1380 283.0	1663 278.0	1941 289.0	2230			
Finger 08:	1341 298.0	1639 300.0	1939 306.0	2245			
Finger 09:	1408 277.0	1685 286.0	1971 289.0	2260			
Finger 10:	1374 283.0	1657 298.0	1955 296.0	2251			
Finger 11:	1396 280.0	1676 300.0	1976 298.0	2274			
Finger 12:	1410 276.0	1686 305.0	1991 299.0	2290			
Finger 13:	1424 256.0	1680 293.0	1973 288.0	2261			
Finger 14:	1271 276.0	1617 288.0	1867 288.0	2276			

Finger 14:	1371	276.0	1647	320.0	1967	309.0	2276
Finger 15:	1369	273.0	1642	321.0	1963	308.0	2271
Finger 16:	1338	275.0	1613	328.0	1941	315.0	2256
Finger 17:	1397	254.0	1651	306.0	1957	284.0	2241
Finger 18:	1407	260.0	1667	317.0	1984	302.0	2286
Finger 19:	1375	267.0	1642	321.0	1963	305.0	2268
Finger 20:	1393	257.0	1650	308.0	1958	288.0	2246
Finger 21:	1356	268.0	1624	324.0	1948	306.0	2254
Finger 22:	1376	257.0	1633	306.0	1939	292.0	2231
Finger 23:	1437	245.0	1682	282.0	1964	268.0	2232
Finger 24:	1358	268.0	1626	305.0	1931	297.0	2228
Finger 25:	1389	259.0	1648	291.0	1939	285.0	2224
Finger 26:	1348	280.0	1628	301.0	1929	300.0	2229
Finger 27:	1400	266.0	1666	279.0	1945	277.0	2222
Finger 28:	1407	262.0	1669	270.0	1939	269.0	2208
Finger 29:	1391	278.0	1669	278.0	1947	279.0	2226
Finger 30:	1109	280.0	1389	287.0	1676	304.0	1980
Finger 31:	1340	263.0	1603	250.0	1853	258.0	2111
Finger 32:	1336	295.0	1631	276.0	1907	288.0	2195
Finger 33:	1279	313.0	1592	291.0	1883	312.0	2195
Finger 34:	1416	282.0	1698	239.0	1937	251.0	2188
Finger 35:	1392	293.0	1685	248.0	1933	268.0	2201
Finger 36:	1382	299.0	1681	253.0	1934	274.0	2208
Finger 37:	1389	291.0	1680	248.0	1928	271.0	2199
Finger 38:	1350	300.0	1650	252.0	1902	282.0	2184
Finger 39:	1347	305.0	1652	259.0	1911	286.0	2197
Finger 40:	1378	298.0	1676	255.0	1931	274.0	2205

Segmented Cement Bond Log Calibration Report

Serial Number:	10012639in7
Tool Model:	004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	-10.809 ft

Master Calibration, performed Mon Mar 10 13:14:59 2014:							
	Raw (v)		Calibrated (mv)		Results		
	Zero	Cal	Zero	Cal	Gain	Offset	
3FT	0.001	0.732	0.800	62.165	83.907	0.707	
5FT	-0.004	0.871	0.800	62.165	70.178	1.057	
S1	0.002	0.769	0.000	100.000	130.318	-0.220	
S2	0.000	0.686	0.000	100.000	145.804	0.000	
S3	0.000	0.651	0.000	100.000	153.624	-0.039	
S4	-0.001	0.663	0.000	100.000	150.614	0.151	
S5	0.001	0.717	0.000	100.000	139.769	-0.164	
S6	0.001	0.780	0.000	100.000	128.353	-0.144	
S7	0.001	0.824	0.000	100.000	121.372	-0.065	
S8	-0.000	0.825	0.000	100.000	121.148	0.028	

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	Lochbuie 4C-13HZ
Field	Wattenberg
County	Weld
State	Colorado